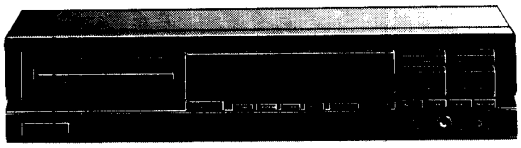
Compact disc player CD604/00B/17B

CD614/00B/00S/05B/07B/17B

Service
Service
Service



45 239 A11

Service Manual

COMPACT disc DIGITAL AUDIO

CONTENTS

(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 ricambiago 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.

(SF) Varo!

Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.

(S) Varning!

Osynlig laserstrålning när denna del är öppnad och spärren är urkopplad. Betrakta ej strålen.

CLASS 1 LASER PRODUCT

3122 110 03420

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

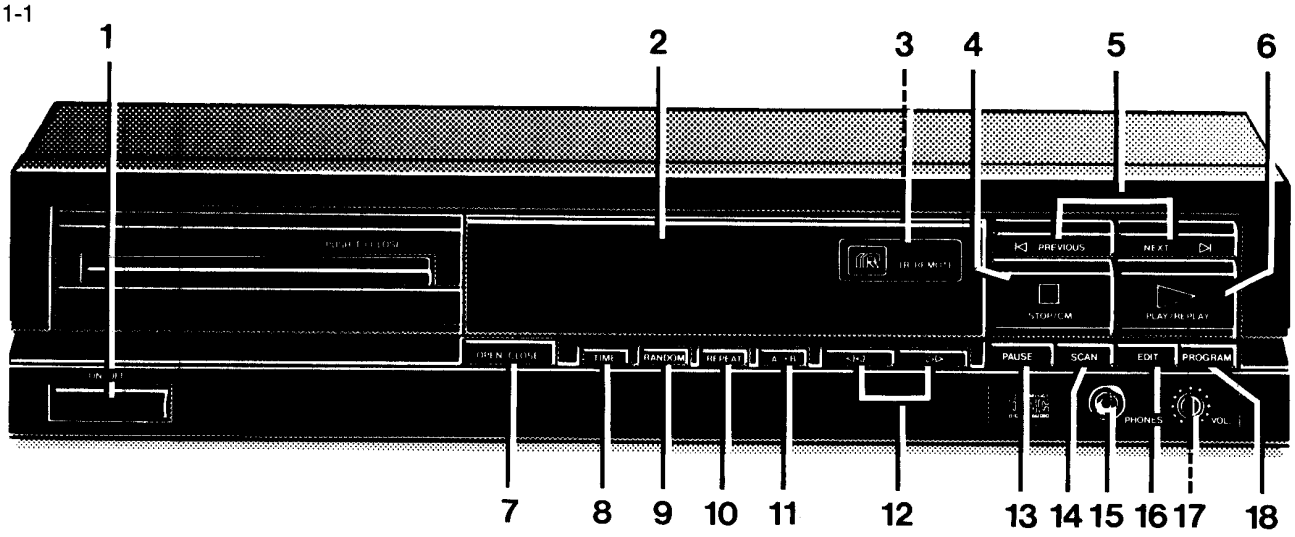
"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

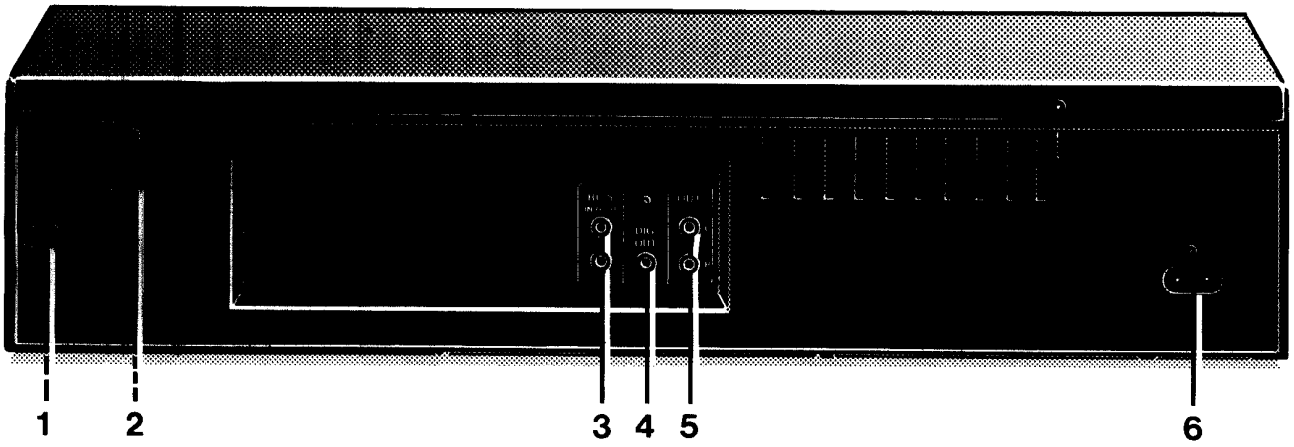
Subject to modification
4822 725 22739
Printed in The Netherlands

PHILIPS

Published by Consumer Electronics

CS 28 910





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CONTROLS AND CONNECTIONS

Front of player

1. **ON/OFF** : To turn the set on and off.
2. **DISPLAY**
3. **IR REMOTE** : Remote control eye (only for CD614)
4. **STOP/Clear Memory** : Stop the player and erases the memory.
5. **PREVIOUS** and **NEXT** :
   - Selecting tracks during play or program.
   - Selecting the recording time when making a tape recording with EDIT.
6. **PLAY/REPLAY** : Starting play or returning to the beginning of a track.
7. **OPEN/CLOSE** : To open or close the loading.
8. **TIME** : For selecting time information.
9. **RANDOM** : Plays the tracks in a random order.
10. **REPEAT** : Repeating play.
11. **A-B** : Sets the starting and the stopping point of a passage to be repeated.
12. << and >> : fast search forward and backward.
13. **PAUSE** : Interrupts play.
14. **SCAN** : Plays the beginning of each track.
15. **PHONES** : Bus for connection of headphones.
16. **EDIT** : Selects EDIT-mode to make a tape recording. The recording time can be entered by pressing NEXT.
17. **VOLume** : for adjusting the headphone volume. (Only for CD614)
18. **PROGRAM** : To store or erase a program.

Back of player

1. Mains fuse holder (not all versions)
2. Voltage selector (not all versions)
3. **RC5 IN/OUT**: This connection can be used to :
   - Connect the player to a PHILIPS HiFi set with its own remote control system.
   - Connect the remote control receiver EM2200, available as an accessory. (not in UK)
4. **DIGital OUT** : Output for the digital signal.
5. **OUT L/R** : Analog output to the amplifier.
6. Mains inlet.

TECHNICAL DATA :

General

1.	Mains voltage	:	220 , 240 Volt (+/- 10%)
2.	Mains frequency	:	50 Hz
3.	Mains voltage selection	:	By soldering or changing transformer
4.	Power consumption mains, operated	:	12W

External RC-5 connection

	Specification	:	V-in Low : from -2,0V to +1,6V V-in High : from +3V to +7,5V R-in : from 47 kOhm to 68 kOhm

Line output

1.	Number of channels	:	2
2.	Output voltage	:	2 Vrms +/- 2dB
3.	Unbalance left-right	:	max +/- 0,5dB
4.	Output resistance	:	1 kOhm
5.	Amplitude linearity	:	max. +/- 0,2dB from 20 Hz to 18 kHz typ. +/- 0,02dB from 20 Hz to 18 kHz -
6.	Phase non-linearity	:	max. +/- 1,0° from 20 Hz to 18 kHz typ. +/- 0,5° from 20 Hz to 18 kHz
7.	Signal to noise ratio	:	min. 90dB from 20 Hz to 18 kHz typ. 95dB
8.	Dynamic range (-60dB)	:	min. 80dB from 20 Hz to 18 kHz (max. 0,01 %) typ. 86dB (typ. 0,005 %)
9.	Total harmonic distortion + noise	:	min. 66dB from 20 Hz to 18 kHz (max. 0,05 %) typ. 76dB (typ. 0,016 %)
10.	Intermodulation distortion	:	min. 66dB from 20 Hz to 18 kHz (max. 0,05 %) typ. 76dB (typ. 0,016 %)
11.	Outband attenuation	:	min. 50dB above 24.8 kHz
12.	Channel separation	:	min. 80dB from 20 Hz to 18 kHz typ. 93dB
13.	Muting during random acces	:	min. 90dB from 20 Hz to 18 kHz
14.	Automatic switched de-emphasis whith time constant 15/50 µs		

Fixed headphone (CD604)

1.	Output voltage	:	max. 2 Vrms ±2dB
2.	Unbalance left-right	:	max. ± 0,5dB
3.	Output resistance	:	150 Ω
4.	load impedance range	:	30 to 600 Ω
5.	Output power	:	max. 6 W into 30 Ω max. 10 W into 150 Ω max. 6 W into 600 Ω
6.	Signal to noise ratio	:	min. 90dB from 20Hz to 18kHz
7.	Channel separation	:	min. 65dB from 20Hz to 18kHz

Variable headphone (CD614)

1.	Output voltage	:	max. 7,4 Vrms (at max. setting)
2.	Untblance left-right	:	Max. ± 0,5 dB
3.	Output resistance	:	150 Ω
4.	Load impedance range	:	30 to 600 Ω
5.	Output power	:	50 mW into 30 Ω 90 mW into 150 Ω 50 mW into 600 Ω
6.	Signal to noise ratio	:	min 90 dB from 20 Hz to 18 kHz
7.	Channel separation	:	min 65 dB from 20 Hz to 18 kHz

Dimensions and weight

1.	Apparatus tray closed	:	WxDxH 420 x 280 x 104 mm
2.	Apparatus tray open	:	WxDxH 420 x 423 x 104 mm
3.	Weight	:	4,4 kg

Laser diode

1.	Wavelength	:	780nm +/- 5nm
2.	Output power on laserdiode	:	typ. 3 mW
3.	Output power after objective lens	:	100 µW

SERVICING HINTS

In the set chip components have been applied.
For disassembly and assembly of chip components see the figure below.

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 seperate disc hold-down should be used.
(See drawing "Service disc hold-down")

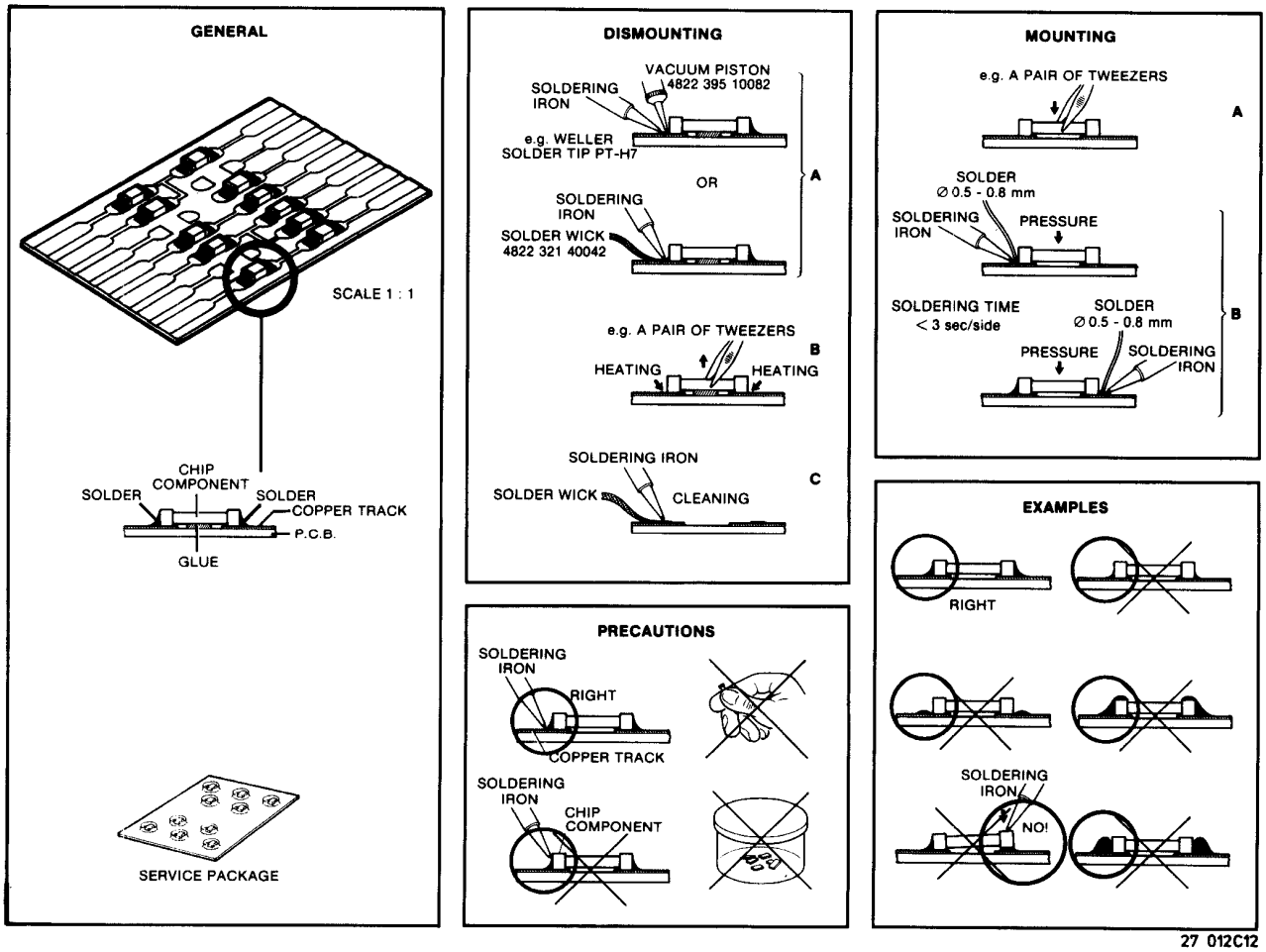
The set can function normally then.
Code number of the disc hold-down is 4822 462 50383.

When the tray mechanism has been disassembled, the tray switch must be activated immediatly after pressing the play button in order to ensure normal operation.

To avoid electric shock during servicing, it is recommended to mount an insulation cover over the mains leads on the servo & decoder panel. See drawing MDA 02548. The cover can be ordered under codenumber 4822 444 60655.

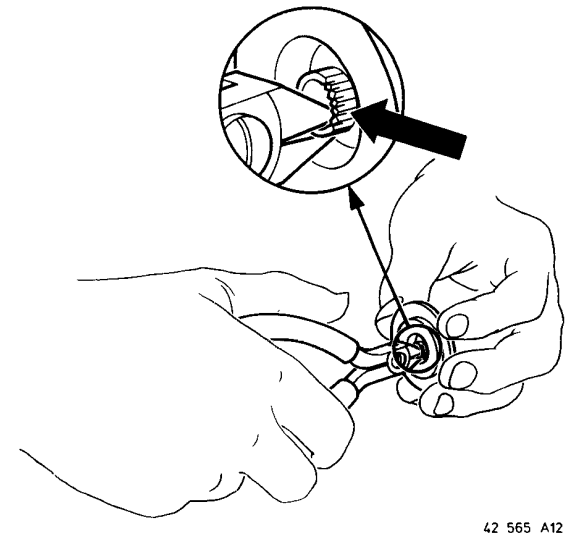
SERVICE TOOLS

Audio signals disc	4822 397 30184
Disc without errors (test disc 5) + disc with DO errors, black spots and fingerprints (test disc 5A)	4822 397 30096
Disc 65 min 1 kHz without pause	4822 397 30155
Max. diameter disc(58.0 mm)	4822 397 60141
Torx screwdrivers	
Set (straight)	4822 395 50145
Set (square)	4822 395 50132
13th order filter	4822 395 30204
Service cable (4p)	4822 321 21284
Service flexfoil (14p)	4822 322 40066
Service connector (14p)	4822 267 50676
Green LED CQY G11	5322 130 32182
Insulation cover	4822 444 60655

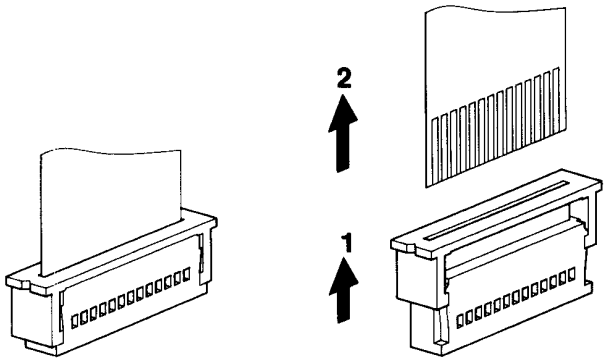


27 012C12

SERVICE DISC HOLDDOWN

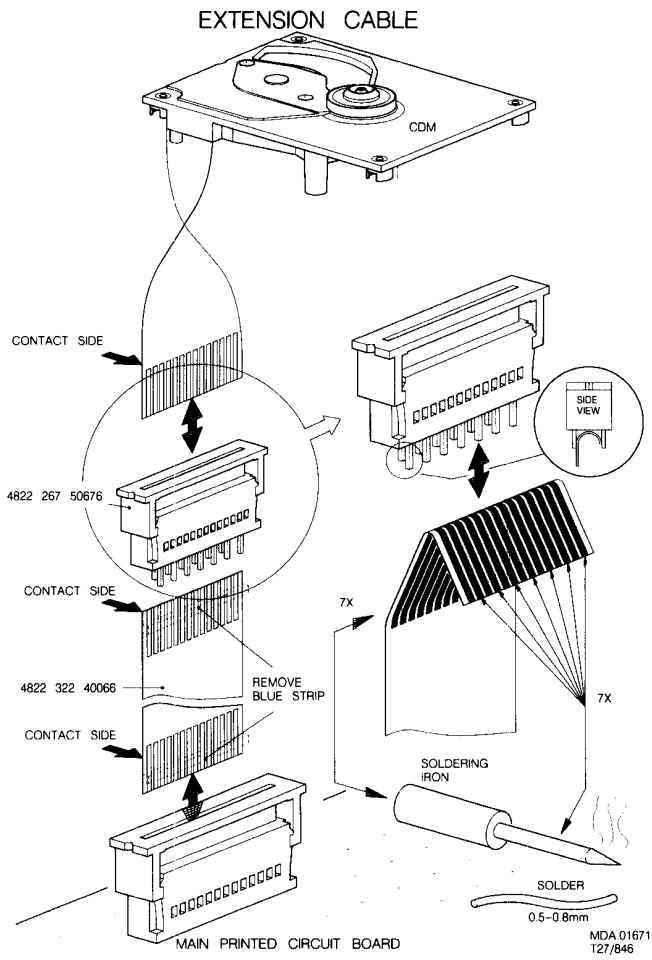


42 565 A12



MDA.01408
T28/822

SERVICE FOIL FOR CDM



MDA.01671
T27/846

(GB) WARNING

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

ESD

(NL) WAARSCHUWING

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen.
Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

(F) ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD).
Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.
Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité.
Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

(D) WARNUNG

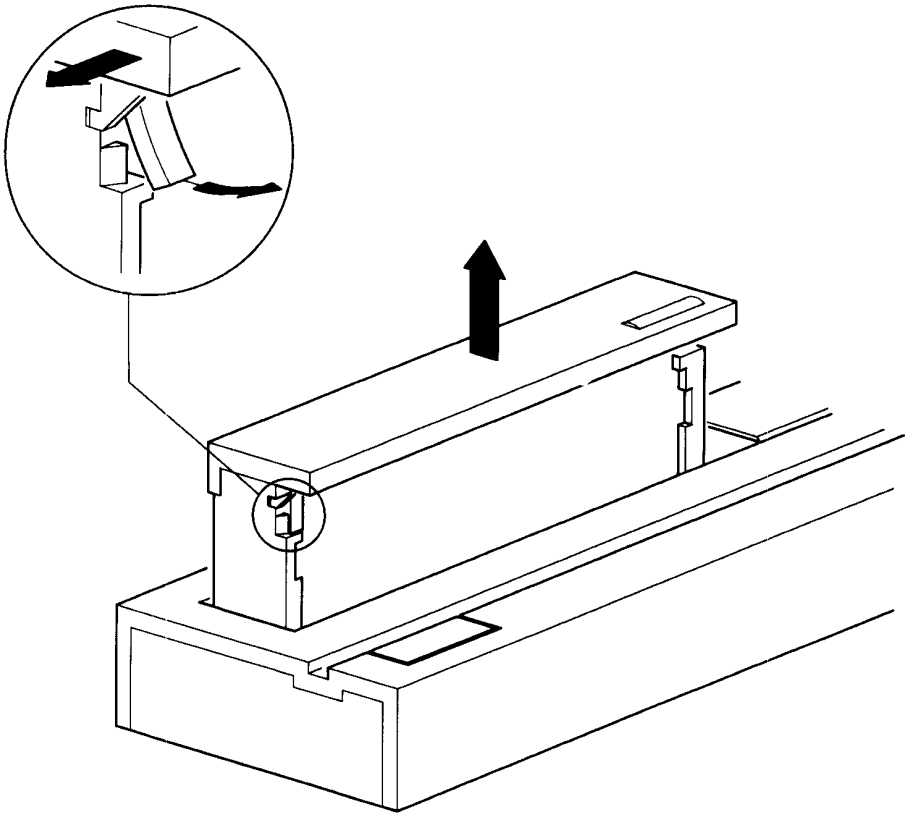
Alle ICs und viele andere Halbleiter sind empfindlich gegen elektrostatische Entladungen (ESD).
Unsorgfältige Behandlung bei der Reparatur kann die Lebensdauer drastisch vermindern.
Sorgen sie dafür, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand mit dem Massepotential des Gerätes verbunden sind.
halten Sie Bauteile und Hilfsmittel ebenfalls auf diesem Potential.

(I) AVVERTIMENTO

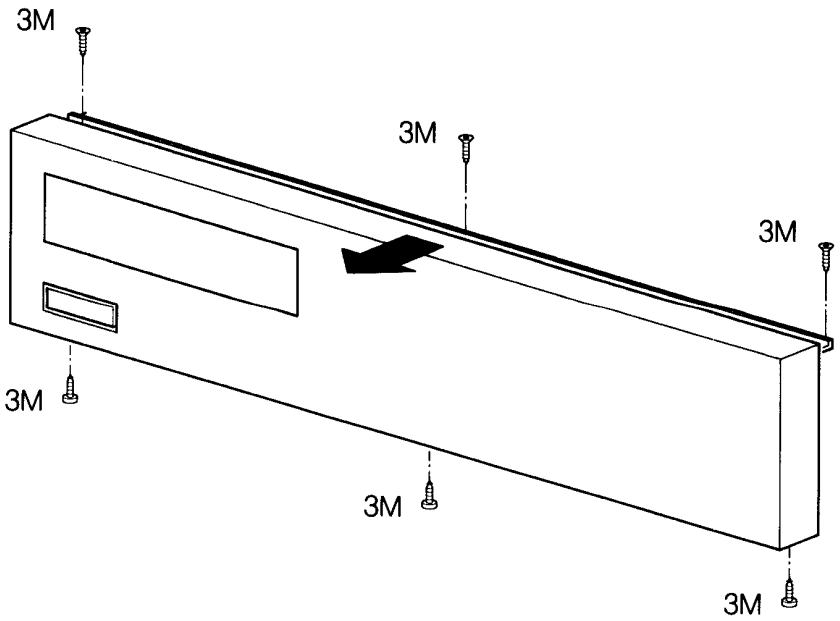
Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione.
Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

CABINET DISASSEMBLY HINTS

A

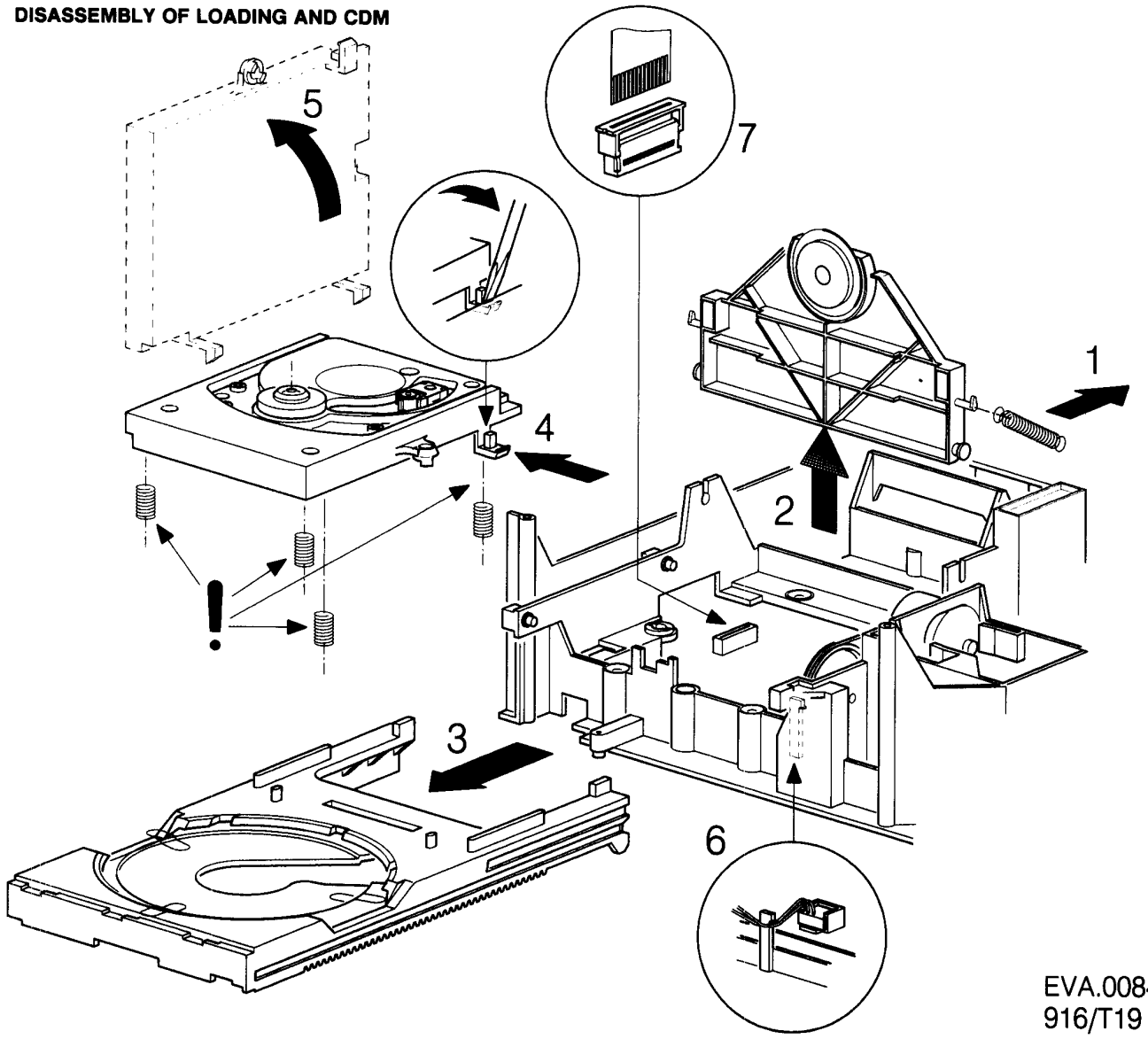


B



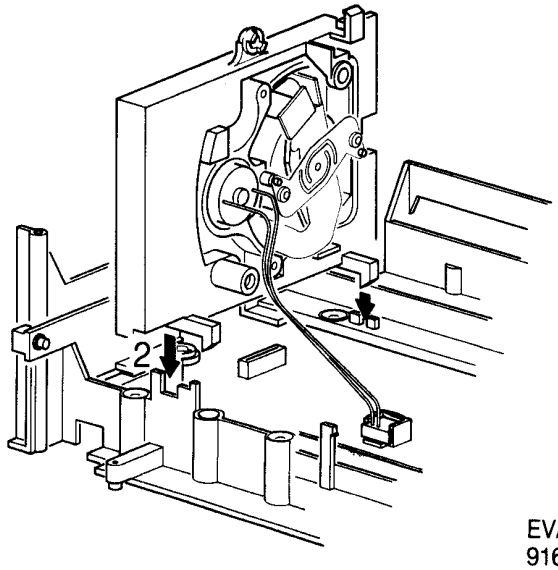
MDA.02137
916/T19

DISASSEMBLY OF LOADING AND CDM

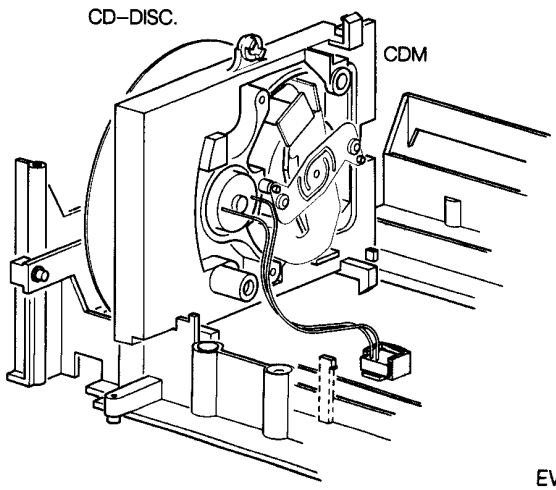


EVA.00846
916/T19

PLAY SERVICE POSITION



EVA.00848
916/T19

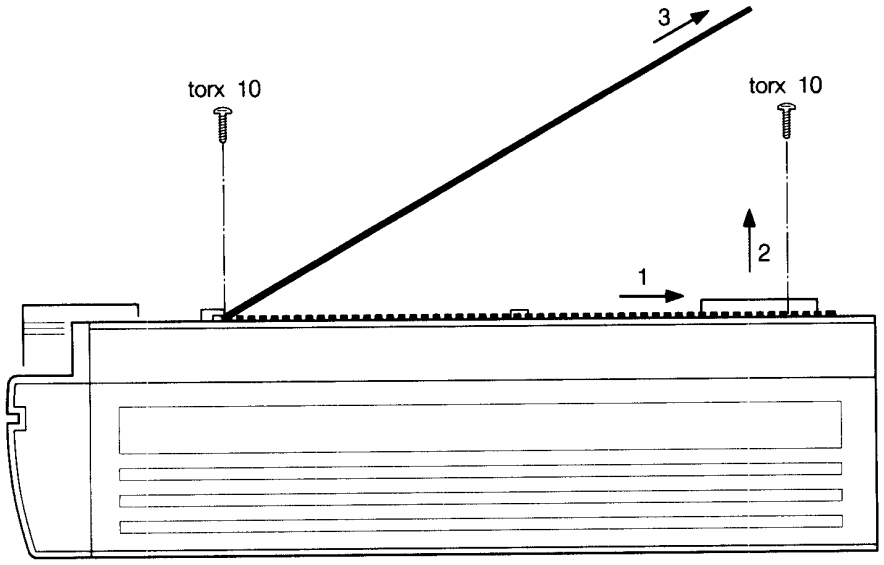


EVA.
916/

FOR ACCESS OF THE MAIN PANEL REMOVE BOTTOM PLATE

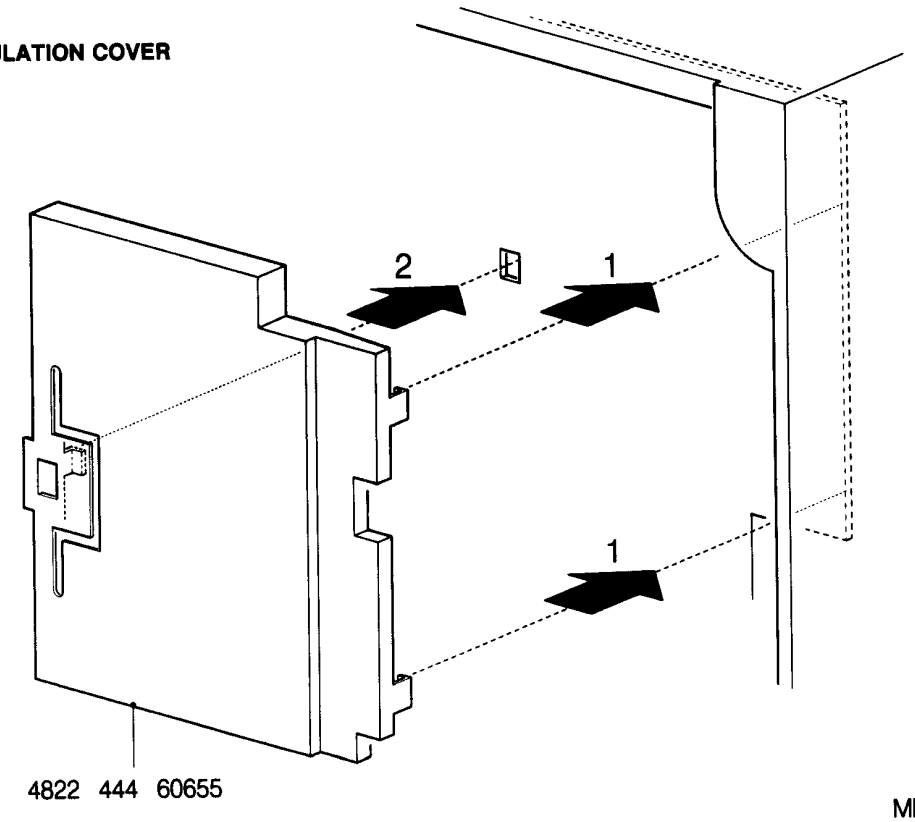
(DE)–MOUNTING THE BOTTOM PLATE

1	3
2	2
3	1



MDA.02161
T20–918

INSULATION COVER



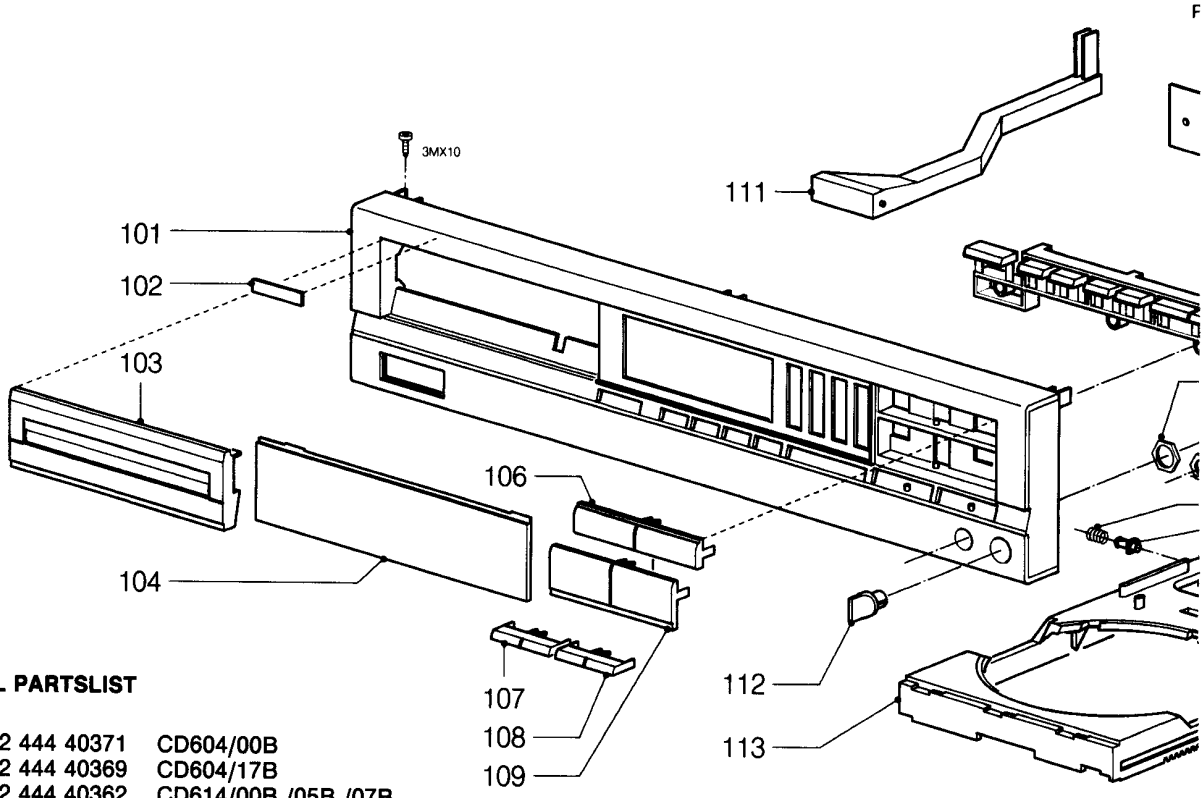
4822 444 60655

MDA.02548
T02/007

TO AVOID ELECTRIC SHOCK DURING SERVICING MOUNT INSULATION COVER OVER MAINS LEADS ON MAIN PANEL

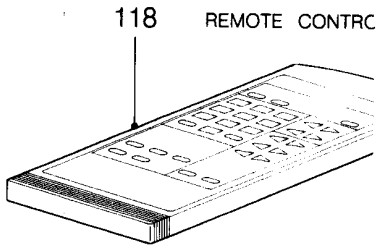
00849
Г19

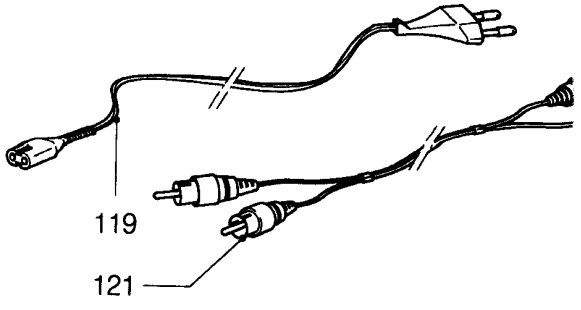
EXPLODED VIEW

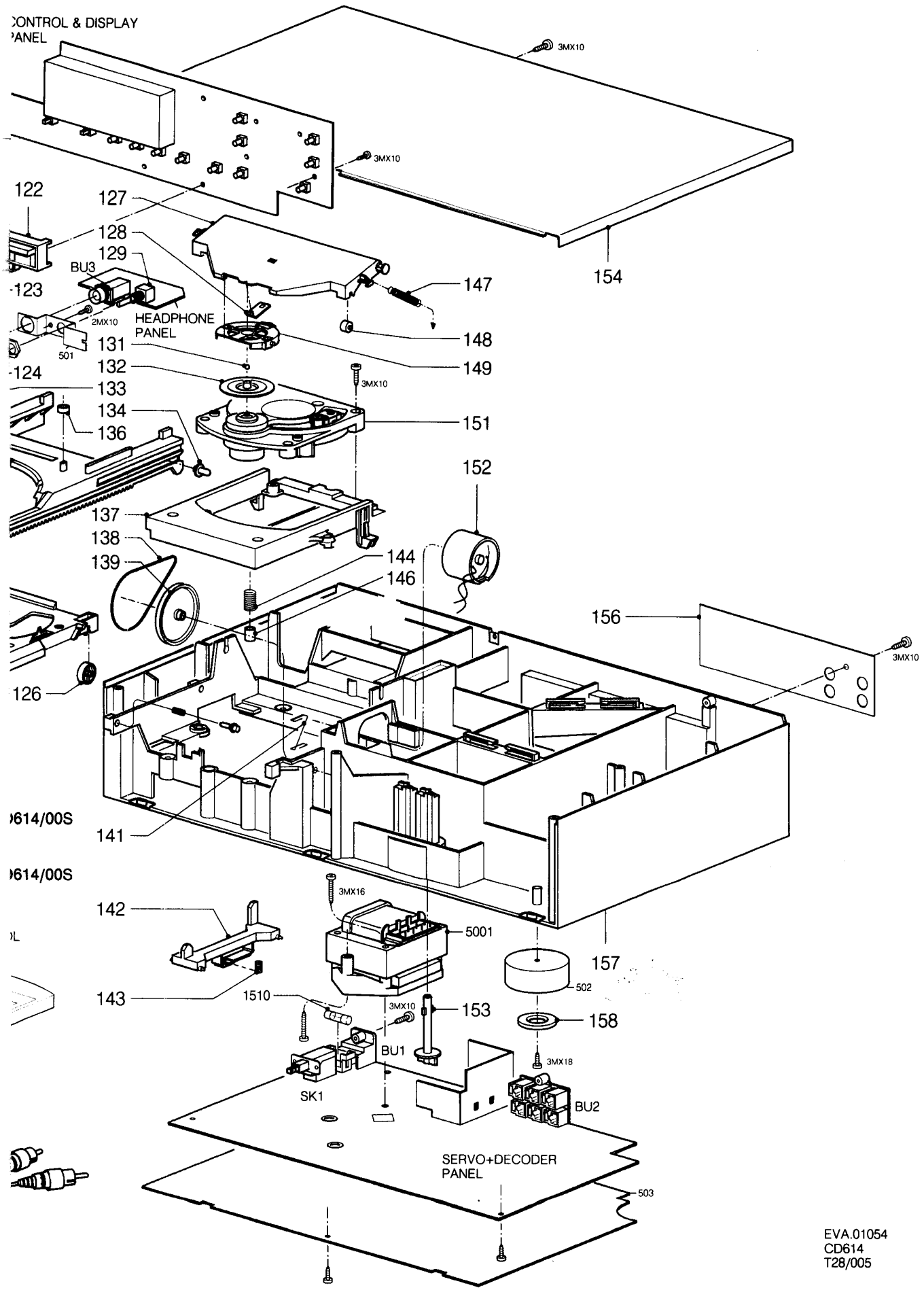


MECHANICAL PARTSLIST

101	4822 444 40371	CD604/00B
101	4822 444 40369	CD604/17B
101	4822 444 40362	CD614/00B /05B /07B
101	4822 444 40382	CD614/00S
101	4822 444 40372	CD614/17B
102	4822 459 10803	CD604/00B CD614/00B /00S /05B /07B
102	4822 459 10888	CD604/17B CD614/17B
103	4822 444 60625	
103	4822 444 60688	CD614/00S
104	4822 450 61373	CD604
104	4822 450 61355	CD614
106	4822 410 60094	
106	4822 410 60375	CD614/00S
107	4822 410 60606	
107	4822 410 60692	CD614/00S
108	4822 410 60607	
108	4822 410 60693	CD614/00S
109	4822 410 60095	
109	4822 410 60376	CD614/00S
111	4822 410 60105	
111	4822 410 60379	CD614/00S
112	4822 411 61674	CD614/00B /05B /07B /17B
112	4822 411 61692	CD614/00S
113	4822 444 50603	
114	4822 325 50176	
116	4822 325 50177	
117	4822 466 92251	
118	4822 218 10325	CD614
119	4822 321 10457	CD604/00B CD614/00B /00S
119	4822 321 10445	CD604/17B CD614/07B /17B
119	4822 321 10251	CD614/05B
121	4822 321 22832	
122	4822 410 60605	
122	4822 410 60691	CD614/00S
123	4822 505 10571	
124	4822 492 52094	
126	4822 528 90638	
127	4822 444 60568	
128	4822 466 92257	
129	4822 102 10398	CD614
131	4822 520 40177	
132	4822 530 80503	
133	4822 402 61252	
134	4822 402 61253	
136	4822 532 51756	
137	4822 402 61196	
138	4822 358 10115	
139	4822 528 81329	
141	4822 492 70332	
142	4822 402 50276	
143	4822 492 52123	
144	4822 492 51902	
146	4822 466 61587	
147	4822 492 32883	
148	4822 528 70651	
149	4822 402 61207	
151	4822 691 30209	
152	4822 361 21258	
154	4822 444 30417	
154	4822 444 30429	CD
156	4822 444 30418	
157	4822 464 50793	
157	4822 464 50802	CD
158	4822 444 30404	



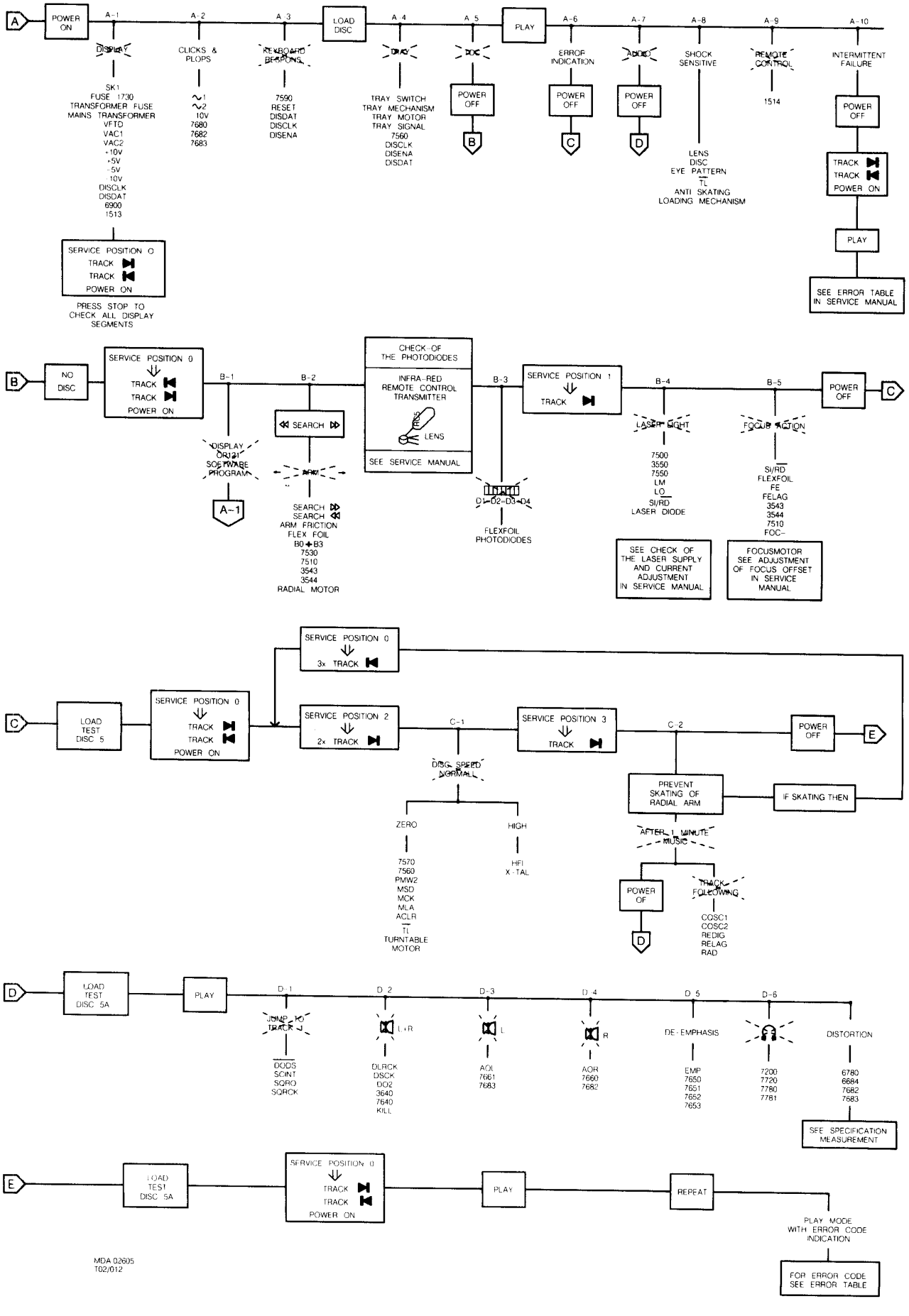




EVA.01054
CD614
T28/005

FAULTFINDING GUIDE

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 signals 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.



MDA 02605
T02/012

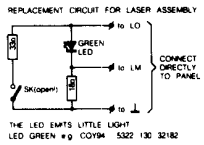
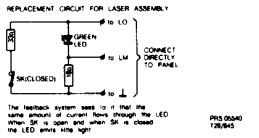
B-3 CHECK OF THE PHOTODIODES

Step	Signal	Mode	◇	∠	▭	⊓	Remarks
1	D2 D1 D3 D4	power on	◇4 ⊓ ◇6 ⊓ ◇7 ⊓ ◇8 ⊓	–	–	signal 4Ξ6Ξ7Ξ8	Signal depends on Distance lens ↔ IR LED of remote control

T-22739A

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 teh replacement circuit for laser assembly.

Step	Signal	Mode	◇	▭	Remarks
1	LO	serv. pos. 2 SK	◇9 Ⓥ	1.8<V <2.3	
	LM		◇11 Ⓥ	170<mV <220	
2	LO	serv. pos. 2 SK	◇9 Ⓥ	1.8<V <2.3	
	LM		◇11 Ⓥ	170<mV <220	
3	LO	Power on	◇9 Ⓥ	0V ± 0.2V	No light

T-22739B

B4 LASER CURRENT ADJUSTMENT

STEP	SIGNAL	MODE	◇	∠	▭	⊓	REMARKS
1	---	POWER OFF	--	--	--	--	CHECK IF FLEX-FOIL IS PROPERLY CONNECTED
2	---	POWER OFF	◇11 Ω	R3555	1kΩ +10% −0	--	PRE ADJUSTMENT OHMIC VALUE
3	---	POWER OFF	--	R3515	--	--	SET TO MID-POSITION
4	LASER CURRENT ≡ VOLTAGE ACROSS R3500	TEST DISC 5A PLAY	◇1 Ⓥ 2 mV DC	--	⩾15mV	--	IF < 15mV THEN GO TO STEP 3 AND SET R3515 TO 1/4 OR 3/4. TRY AGAIN
5	LASER CURRENT ≡ VOLTAGE ACROSS R3500	TEST DISC 5A PLAY	◇1 Ⓥ 2 mV DC	R3555	50mV	---	--
6	FE-LAG	TEST DISC 5A TRACK 1 PLAY	◇27 Ⓥ mV DC	R3515	400mV	---	FINE ADJUSTMENT

After opening SK the led will emit more light for a short moment.

MDA 02565
T-19/009

B-5 ADJUSTMENT OF FOCUS-OFFSET

Step	Signal	Mode	◇	∠	▭	⊓	Remarks
1	–	Power on no disc	–	R3515	–	–	adjust for optical mid-position of the focus motor
2	FE LAG	Play Test disc 5 Track 1	27	R3515	400mV ± 40 mV DC	–	fine adjustment

T-22739D

ERROR TABLE

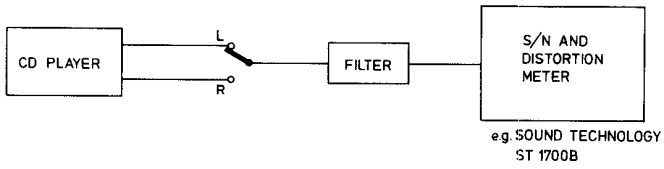
System errors

02>Err: $\overline{TL}$ pulse is missing during start-up. Check the $\overline{TL}$ signal, the HF-signal and the Photodiode signal processor. (Starting error)
03>Err: Lead-in track not found. Check the disc used. Check also that the radial arm rests against the inside. Check the RE-dig signal and the Radial error processor. (Starting error)
04>Err: Focus lost while starting: Check the focus offset
05>Err: $\overline{TL}$ pulse is low for more than 50 msec. Check the disc used. Check the HF-in signal and the photodiodes
(Error during PLAY)
06>Err: No $\overline{TL}$ pulse received within 0.5 sec. in case of track jumping. Check the RE-lag circuit. (Error during SEARCH or NEXT/PREVIOUS)
07>Err: Subcode error. In case of track loss during play the information of the subcode is used to determine the place of the last information that was still well readable. In case of an interruption of HF or other signals, this will lead to Er 07. (Error during PLAY)
08>Err: TOC error (Table of Contents). Check the quality of the disc used. Check the initial speed of the turntable motor and the motor control. Check also that the radial arm rests against the inside. (Starting error)

Operating errors

11>Err: CDI Disc
30>Err: NEXT when repeat is off.
31>Err: PREVIOUS when repeat is off.
32>Err: INDEX selected when no track selected.
33>Err: Selected index does not exist on this CD.
34>Err: Review error: no program.
35>Err: Program memory full.
36>Err: Programmed track is non existing on this CD.
37>Err: Selected track is non existing on this CD.
38>Err: Program during scan while track is not known
39>Err: Program during scan while track is already programmed
40>Err: 10 key when programmed or no valid track selection
41>Err: Track selected while programmed
50>Err: EDIT pressed while in play mode
51>Err: 0 minutes cassette time for edit
52>Err: Not-allowed key pressed while in edit
53>Err: No track possible to play in edit
56>Err: A B key pressed while not in play
60>Err: Fast forward bound
61>Err: Fast reverse bound
62>Err: Fast forward/reverse during scan
63>Err: Index +/- pressed during scan

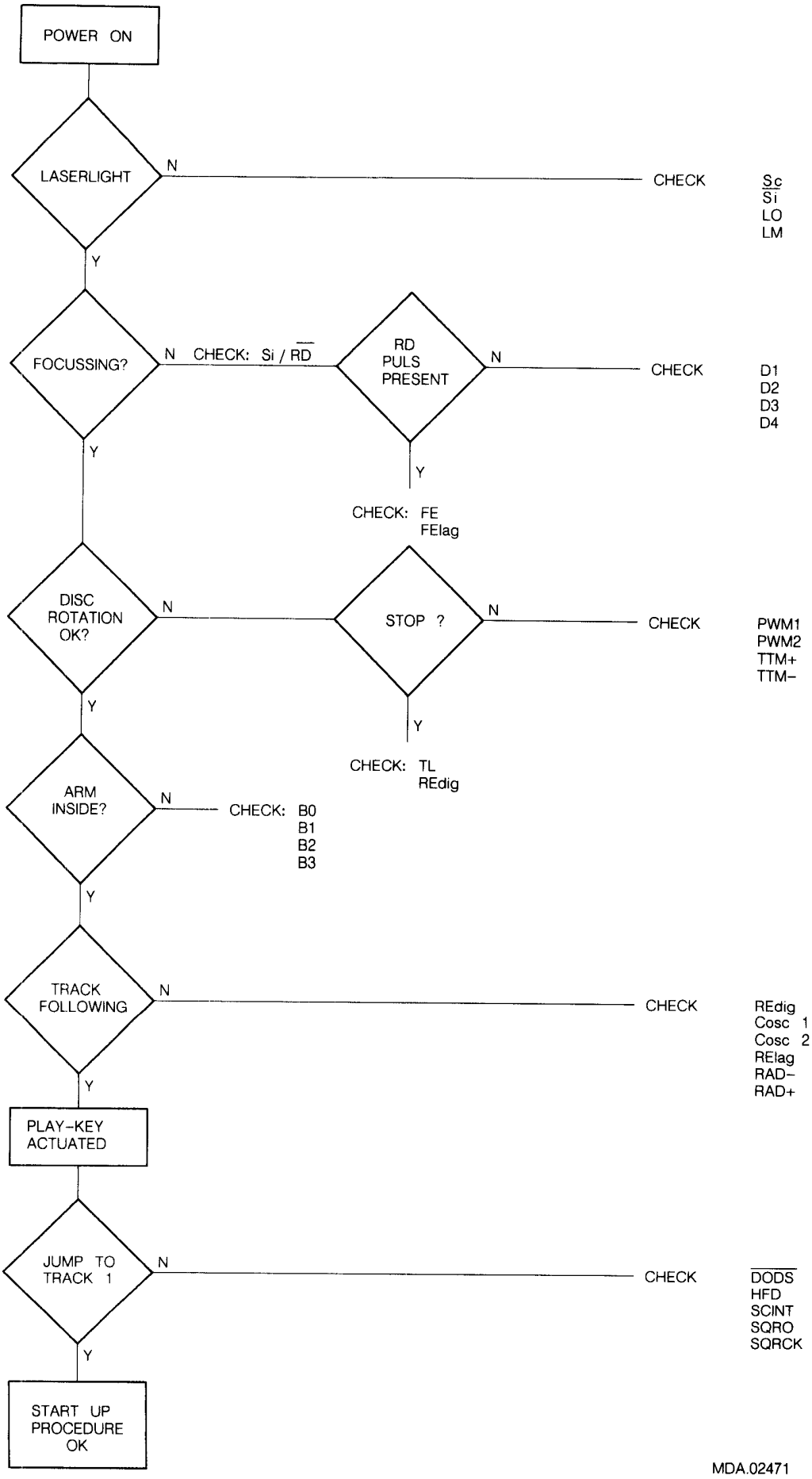
SPECIFICATION MEASUREMENT



e.g. SOUND TECHNOLOGY
ST 1700B

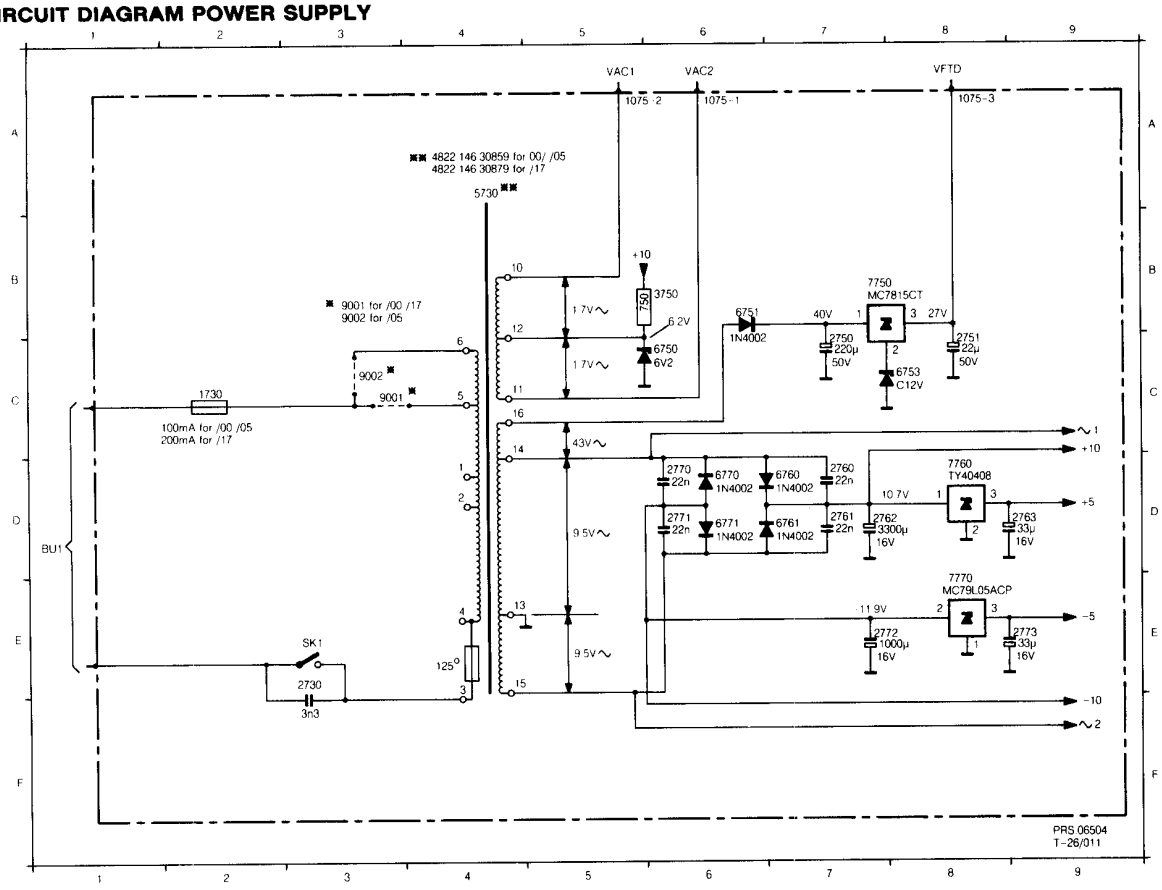
30 459 A12

START UP PROCEDURE



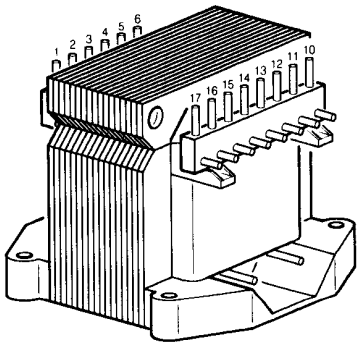
MDA.02471
T07–9001

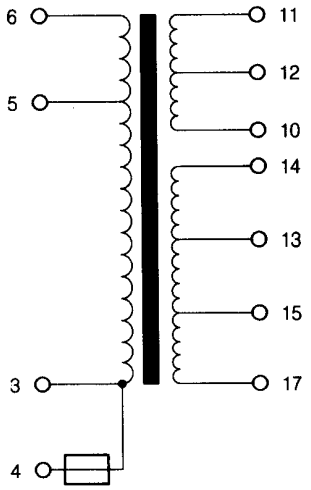
CIRCUIT DIAGRAM POWER SUPPLY



SK1 E3
1730 C2
2730 E3
2750 C7
2751 C8
2760 D7
2761 D7
2762 D7
2763 D9
2770 D6
2771 D6
2772 E7
2773 E9
3750 B6
5730 A4
6750 C6
6751 B6
6753 C8
6760 D7
6761 D7
6770 D6
6771 D6
7750 B7
7760 D8
7770 E8
9001 C3
9002 C3

TRANSFORMER CONNECTIONS



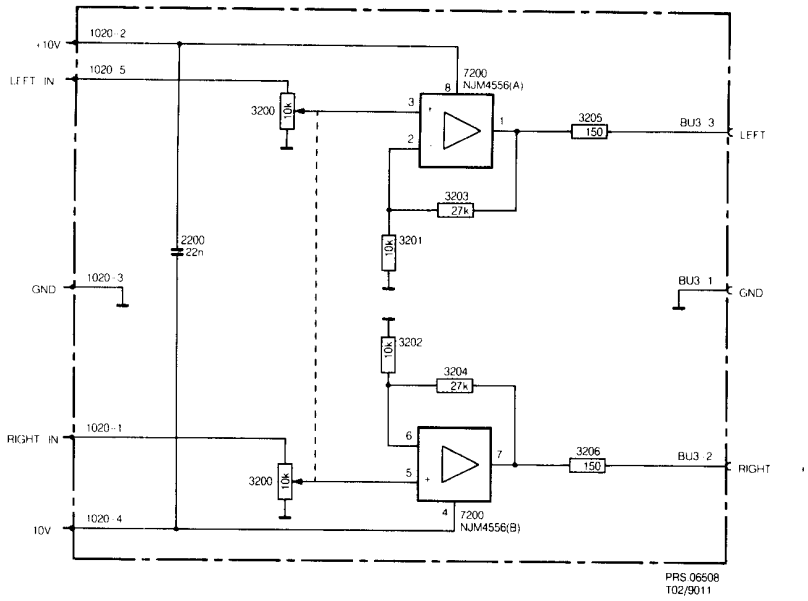


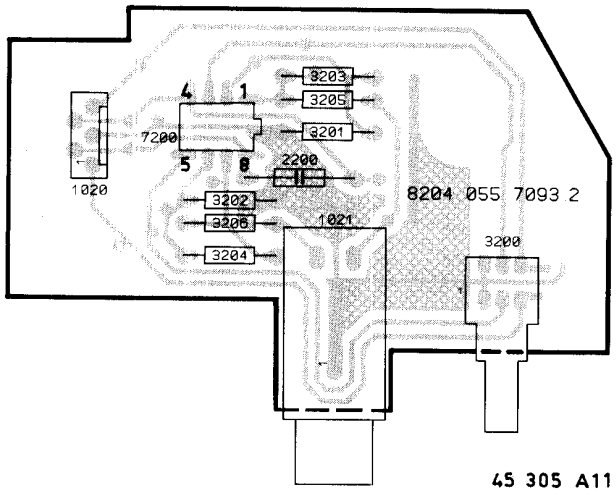
THERMAL FUSE
NOT REPLACEABLE

Vprim (v ∼)	WINDING	TRANSFORMER
110V / 60Hz	5 – 4	4822 146 30879
127V / 60Hz	6 – 4	4822 146 30879
220V / 50Hz	5 – 4	4822 146 30859
240V / 50Hz	6 – 4	4822 146 30859

MDA.02603
T07-9012

VARIABLE HEADPHONE



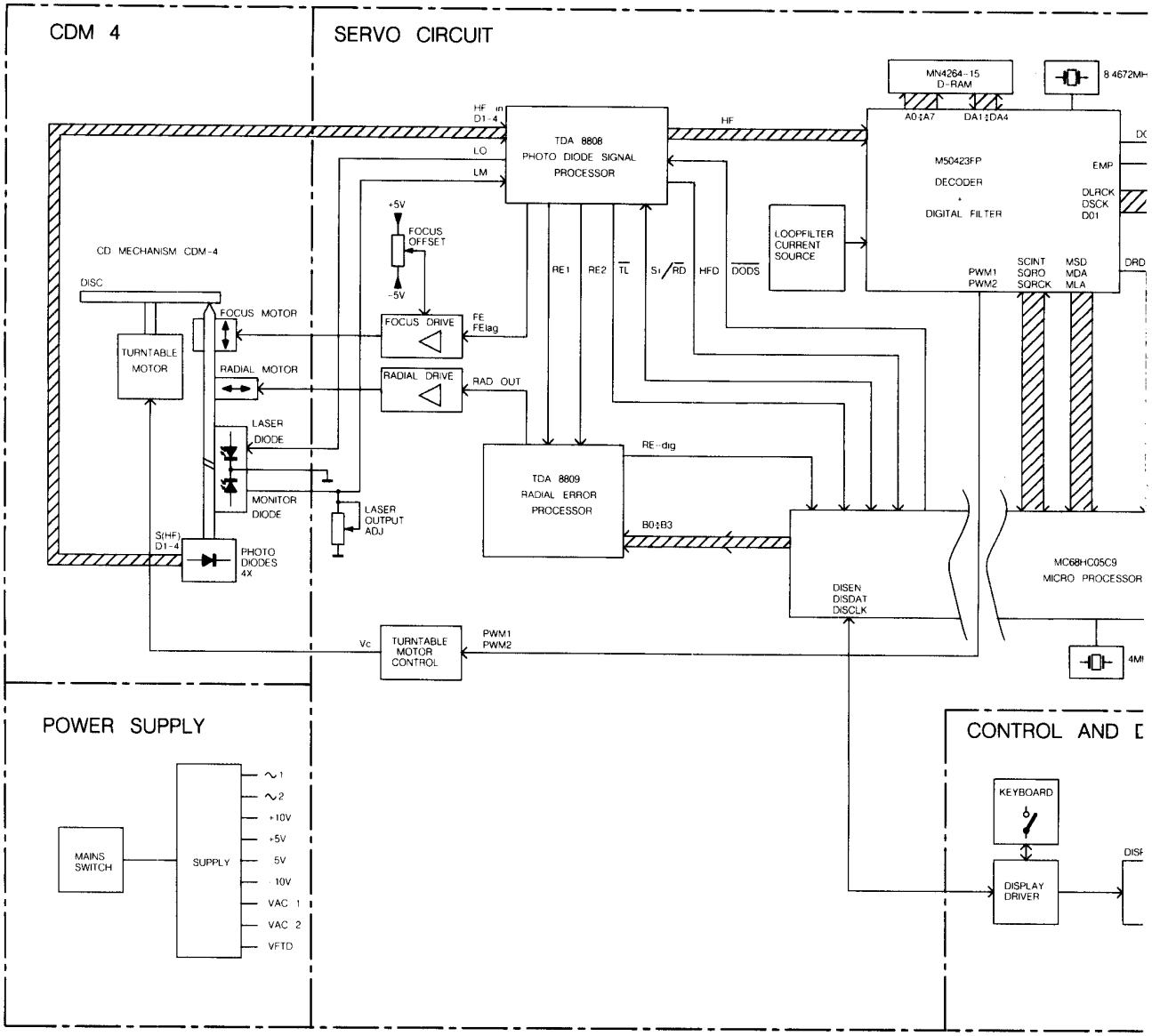


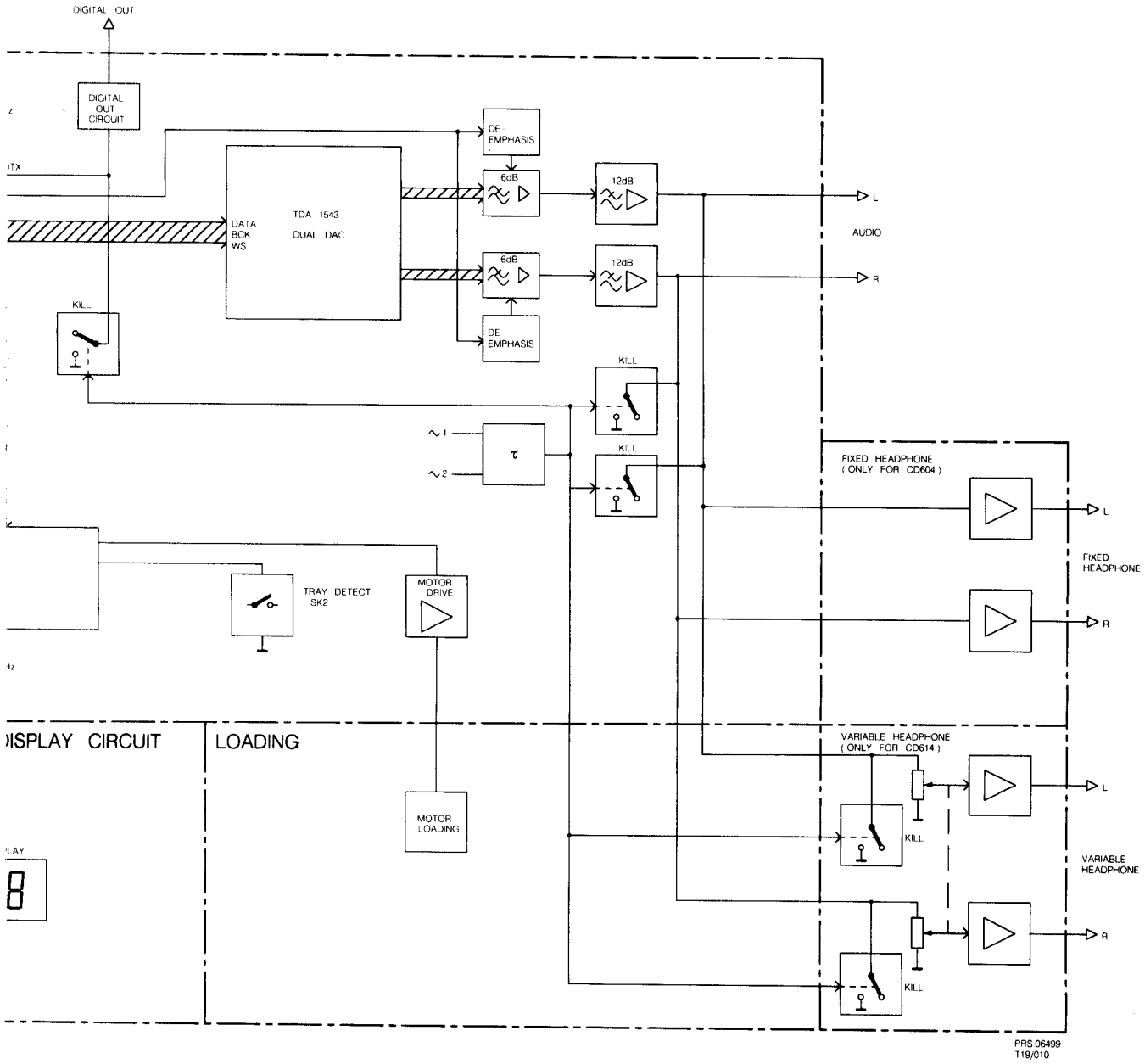
45 305 A11

Partslist variable headphone panel

2200	4822 122 10166	22nF 30% 16V
3200	4822 102 10398	10KΩ Stereo potmeter
3201	4822 111 90249	10kΩ 2% 0,25W
3202	4822 111 90249	10kΩ 2% 0,25W
3203	4822 116 52264	27kΩ 5% 0,5W
3204	4822 116 52264	27kΩ 5% 0,5W
3205	4822 050 21501	150Ω 1% 0,6W
3206	4822 050 21501	150Ω 1% 0,6W
7200	4822 209 82362	NJM4556D

BLOCK DIAGRAM

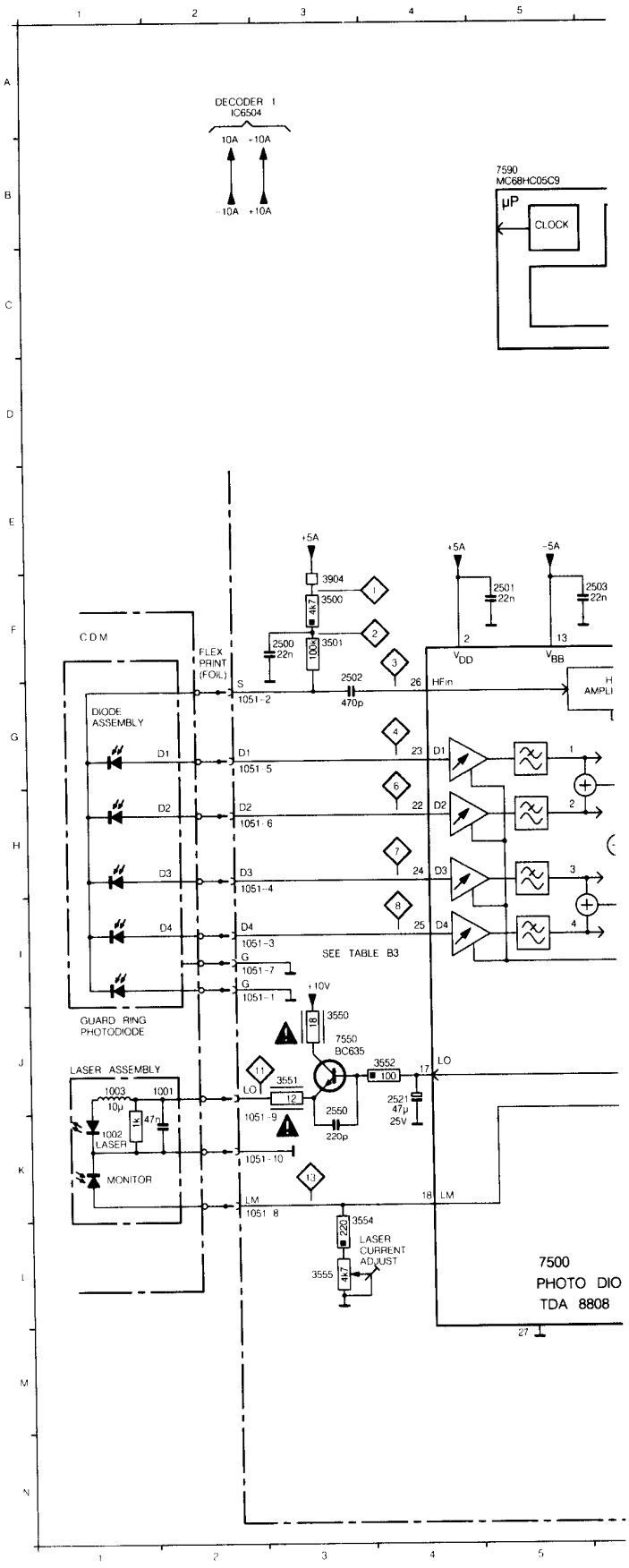


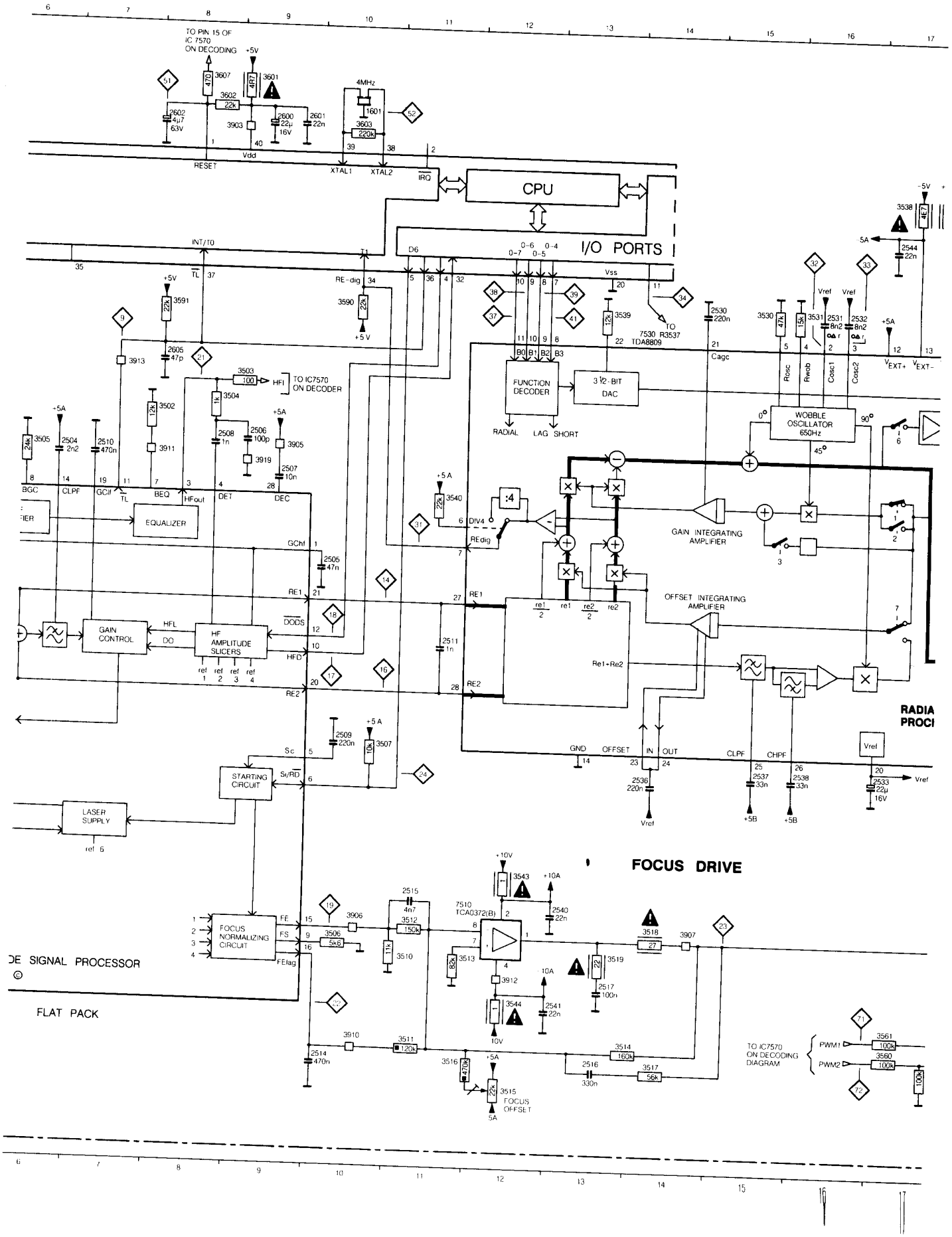

DIGITAL OUT
DIGITAL OUT CIRCUIT
DE-EMPHASIS
6dB
12dB
TDA 1543
DUAL DAC
DATA
BCK
WS
L
AUDIO
R
KILL
τ
FIXED HEADPHONE
(ONLY FOR CD604)
FIXED HEADPHONE
TRAY DETECT
SK2
MOTOR DRIVE
MOTOR LOADING
VARIABLE HEADPHONE
(ONLY FOR CD614)
VARIABLE HEADPHONE
LOADING
PRS.06499
T19/010

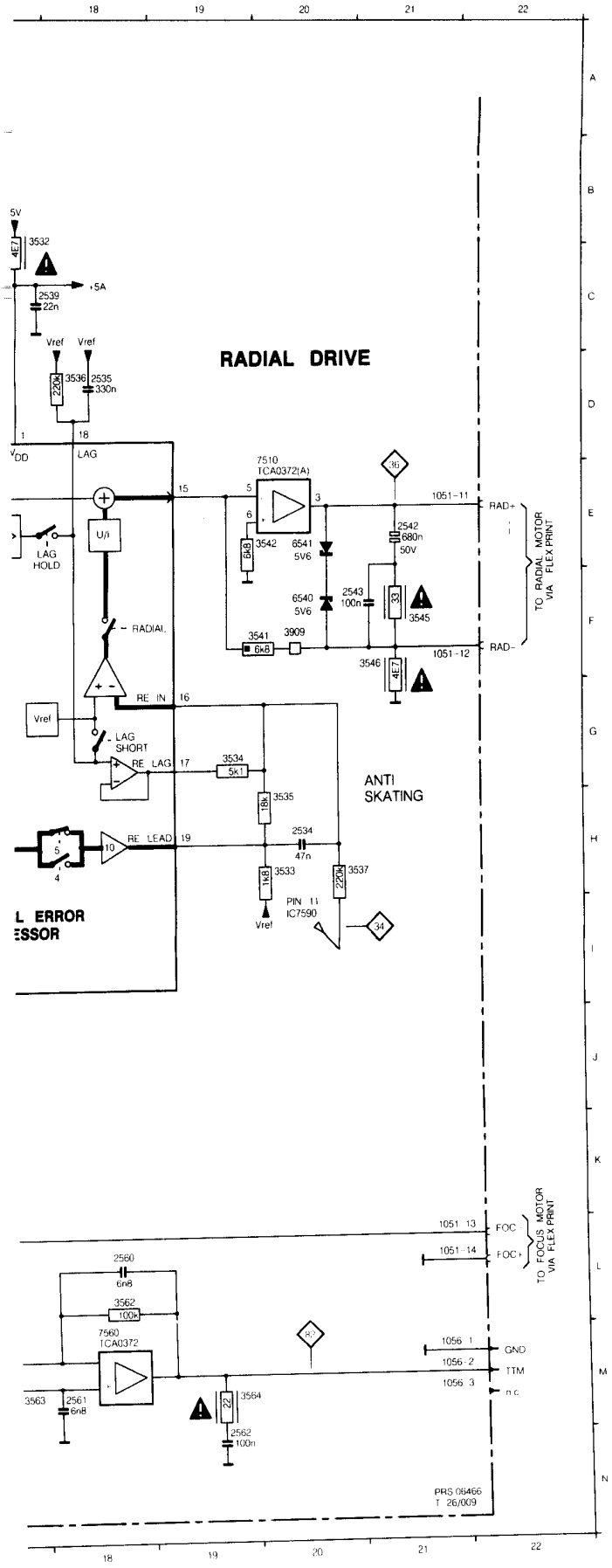
AGC	–Automatic Gain Control
B0-B3	–Control bits for radial circuit
BEQ	–Equalizer reference current input
BGC	–DC and LF gain control reference input
Cosc1	–Capacitor wobble oscillator
Cosc2	–Capacitor wobble oscillator
DEC	–Decoupling input of inkruat bypass
DET	–HF detector voltage input
DIV4	–Divide by 4 input
DODS	–Drop out detector suppression
D1+4	–Photodiode currents
FE	–Focus error signal
FE lag	–Focus error signal for LAG network
HFD	–HF detector output for Decoder
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
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 RE_2-RE_1 currents)
Rosc	–Resistor wobble oscillator
Rwob	–Wobble generator input
RE1	–Radial error signal 1 (summation of amplified currents D_3 and D_4
RE2	–Radial error signal 2 (summation of amplified currents D_1 and D_2
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
Vext–	–Supply connection
Vext+	–Supply connection

ACLR	- µ Processor interface register clear input
AOR	- Audio out right
AOL	- Audio out left
APTR	- DAC sampling clock Rch
APTL	- DAC sampling clock Lch
ACRCY	- Clock accuracy input
BCK	- Clock input
C423	- Clock output 4.2336 MHz
C846	- Clock output 8.4672 MHz
C8MO	- 1/2 divider output
C16MI	- 1/2 divider input
CAS	- Column address strobe signal output to RAM
CRCF	- Subcode Q CRC check flag output
DASEL 1-4	- DAC Interface format select
DATA	- Serial data input
DLRCK	- Lch/Rch clock
DO 1	- Dual DAC Rch serial data output
DO 2	- Dual DAC Lch serial data output
DOFK	- OSC frame clock output 7.35 kHz (duty = 50 %)
DOSEL	- Data bit select
DOTX	- Digital interface output
DRD	- Disc rotation down signal
EFFK	- EFM frame clock output
EMP	- Emphasis flag output
EST1	- Error status 1 (Error detected at C1)
EST2	- Error status 2 (Error to be interpolated detected at C2)
FSCK	- Clock output 44.1 kHz (fs)
HFD	- High frequency signal detect
HFI	- High frequency signal input
IREF	- Reference current input
LOCK/DRD	- Lock status/Disc rotation down signal
LPF	- PLL loop filter
LRCK	- Lch/Rch clock to DAC or APTR clock
MCK	- µ Processor interface clock input
MLA	- µ Processor interface latch input
MSD	- µ Processor interface data input
PWM1	- Turntable motor signal
PWM2	- Turntable motor signal
RAD0-7	- Address outputs to RAM
RAS	- Row address strobe signal output to RAM
RDB1-4	- Data I/O to RAM
SBCU	- Subcode Uch output
SBCV	- Subcode Vch output
SBCW	- Subcode Wch output
SBCQ	- Subcode Qch output
SBCR	- Subcode Rch output
SBCS	- Subcode Sch output
SBCT	- Subcode Tch output
SCCK	- Shift clock input for serial subcode output
SCINT	- Interupt output of subcode Q
SCOE1	- Enable input for subcode channels T-W
SCOE2	- Enable input for subcode channels P-S
SCOR	- Subcode sync output
SQRCK	- Subcode Q register clock
SQRO	- Subcode Q register output
TEST 1	- Test control input (normal "0")
TLC	- Output from slice level control
Vref	- Reference offset voltage
WDCK	- Word clock to DAC or APTL clock
WE	- Write enable output to RAM
WS	- Word select clock (L/R)
X-out	- Crystal oscilator output
X-in	- Crystal oscilator input

SERVO SCHEMATIC DIAGRAM




TO PIN 15 OF IC 7570 ON DECODING
+5V
4MHz
RESET
Vdd
XTAL1
XTAL2
IRQ
CPU
I/O PORTS
INT/T0
RE-dig
D6
Vss
TO 7530 R3537 TDA8809
FUNCTION DECODER
3 1/2-BIT DAC
RADIAL
LAG
SHORT
Cagc
WOBBLE OSCILLATOR 650Hz
Rosc
Rwob
Cosc1
Cosc2
VEXT+
VEXT-
TO IC7570 ON DECODER
HFI
EQUALIZER
BGC
CLPF
GCtf
BEQ
HFout
DET
DEC
GCht
RE1
RE2
GAIN CONTROL
HF AMPLITUDE SLICERS
HFL
DO
DODS
HFD
REdig
DIV4
:4
GAIN INTEGRATING AMPLIFIER
OFFSET INTEGRATING AMPLIFIER
Re1+Re2
GND
OFFSET
IN
OUT
CLPF
CHPF
Vref
STARTING CIRCUIT
Sc
Si/RD
LASER SUPPLY
ref 5
FOCUS NORMALIZING CIRCUIT
FE
FS
FElag
FOCUS DRIVE
7510 TCA0372(B)
+10V
10V
FOCUS OFFSET
TO IC7570 ON DECODING DIAGRAM
PWM1
PWM2
DE SIGNAL PROCESSOR
FLAT PACK
RADIA
PROCI



1001 J1
1002 K1
1003 J1
1601 A10
2500 F3
2502 G3
2501 F5
2503 F6
2504 F6
2505 G10
2506 E9
2507 F9
2508 F8
2509 I10
2510 F7
2511 H11
2514 M10
2515 K11
2516 M13
2517 L13
2521 J4
2530 D14
2531 D16
2532 D16
2533 J17
2534 H20
2535 D18
2536 J14
2537 J15
2538 J16
2539 C18
2540 K13
2541 L13
2542 E21
2543 F20
2544 C17
2550 K3
2560 L18
2561 M18
2562 N19
2600 B9
2601 B9
2602 B8
2605 E8
3500 F3
3501 F3
3502 E8
3503 E9
3504 E8
3505 F6
3506 L10
3507 I10
3510 L11
3511 M11
3512 K11
3513 L11
3514 M13
3515 N12
3516 M11
3517 M14
3518 L14
3519 L13
3530 D15
3531 D16
3532 B17
3533 H20
3534 G19
3535 H20
3536 D18
3537 H20
3538 B17
3539 D13
3540 F11
3541 F20
3542 E20
3543 K12
3544 L12
3545 F21
3546 F21
3550 J3
3551 J3
3552 J4
3554 L3
3555 L3
3560 M17
3561 M17
3562 L18
3563 M17
3564 M19
3590 D10
3591 D8
3601 A9
3602 A8
3603 B10
3607 A8
3903 B8
3904 F3
3905 F9
3906 K10
3907 L14
3909 F20
3910 M10
3911 F8
3912 L12
3913 E7
3919 F9
6540 F20
6541 E20
7510 E20
7510 K11
7530 D11
7550 J3
7560 M18
7590 B5

1 2 ADJUST R3555
50mV DC
SEE ALSO TABLE

4 6 7 8 SEE TABLE B 3

9 LOW PULSES DURING SEARCH

11 13 SAET TABLE B 4

14 16
5ms/DIV
3V
200mV

17 LOW PULSES DURING SEARCH

18 LOW PULSES DURING ‹TRACK AND TRACK ›

19
0 1s/DIV
SERVICE POS 1
2V
0V
0 4s

21
0 5µs/DIV
EYEPATTERN
2 5V
1 3V

22 ADJUST R3515
400mV DC
SEE ALSO TABLE B 5

23
0 2s/DIV
SERVICE POS 1
1s
0 3V
0V
1 4V

24
0 5s/DIV
0 1s
0 1s
3 25s
1 1s
0 4s
POWER ON

31
1ms/DIV
1 8ms

32 33
0 5ms/DIV
1 8ms
1 2V

34
0 5ms/DIV
2 5V
BUMP AGAINST PLAYER IN PLAY MODE

37 38 39 41

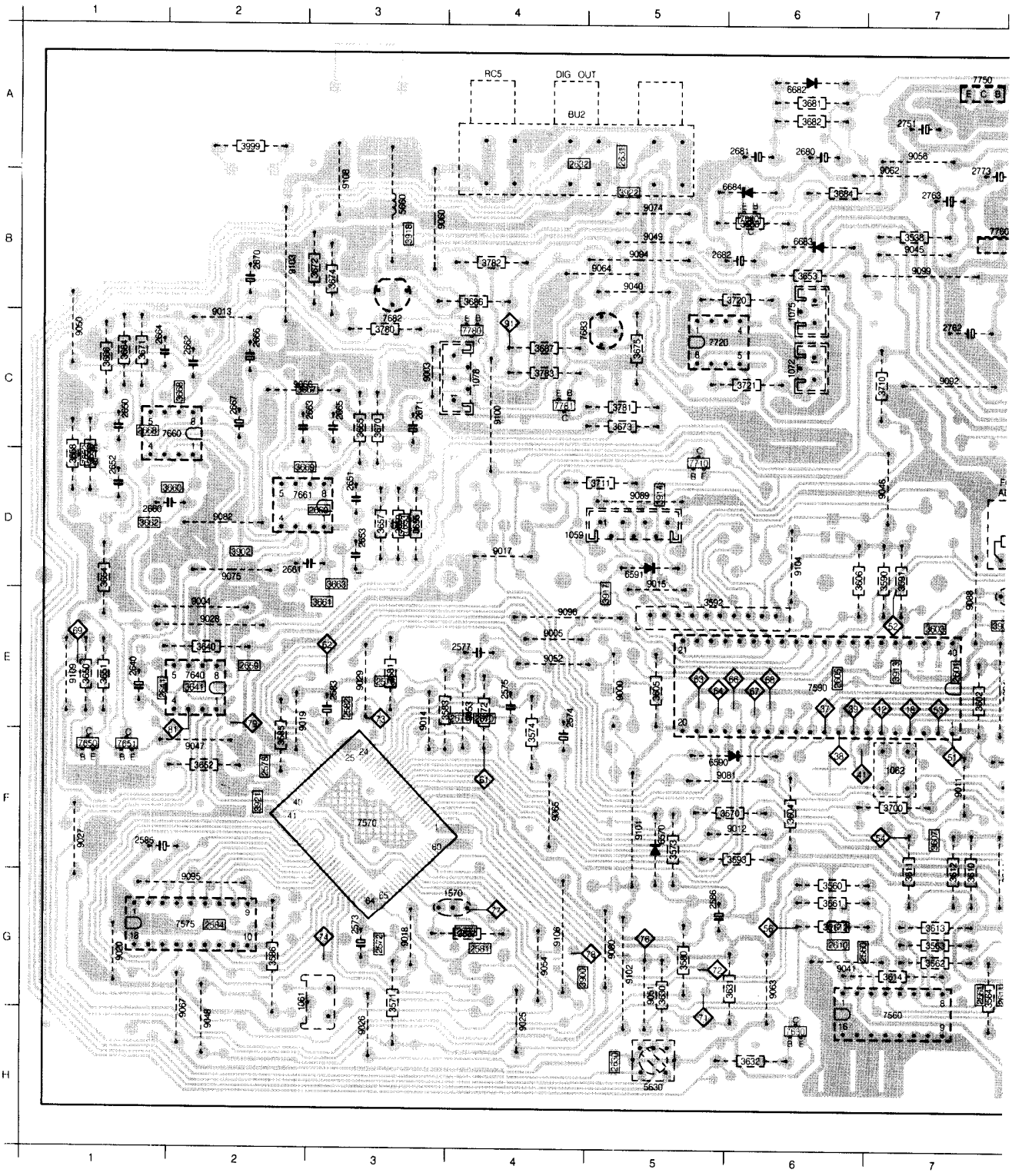
SERVICE POSITION 0		PLAY MODE
‹‹ SEARCH ››		SEARCH
B3 HIGH	HIGH	ACTIVITY
B2 HIGH	LOW	ACTIVITY
B1 HIGH	HIGH	ACTIVITY
B0 LOW	LOW	ACTIVITY

51
5V
POWER ON

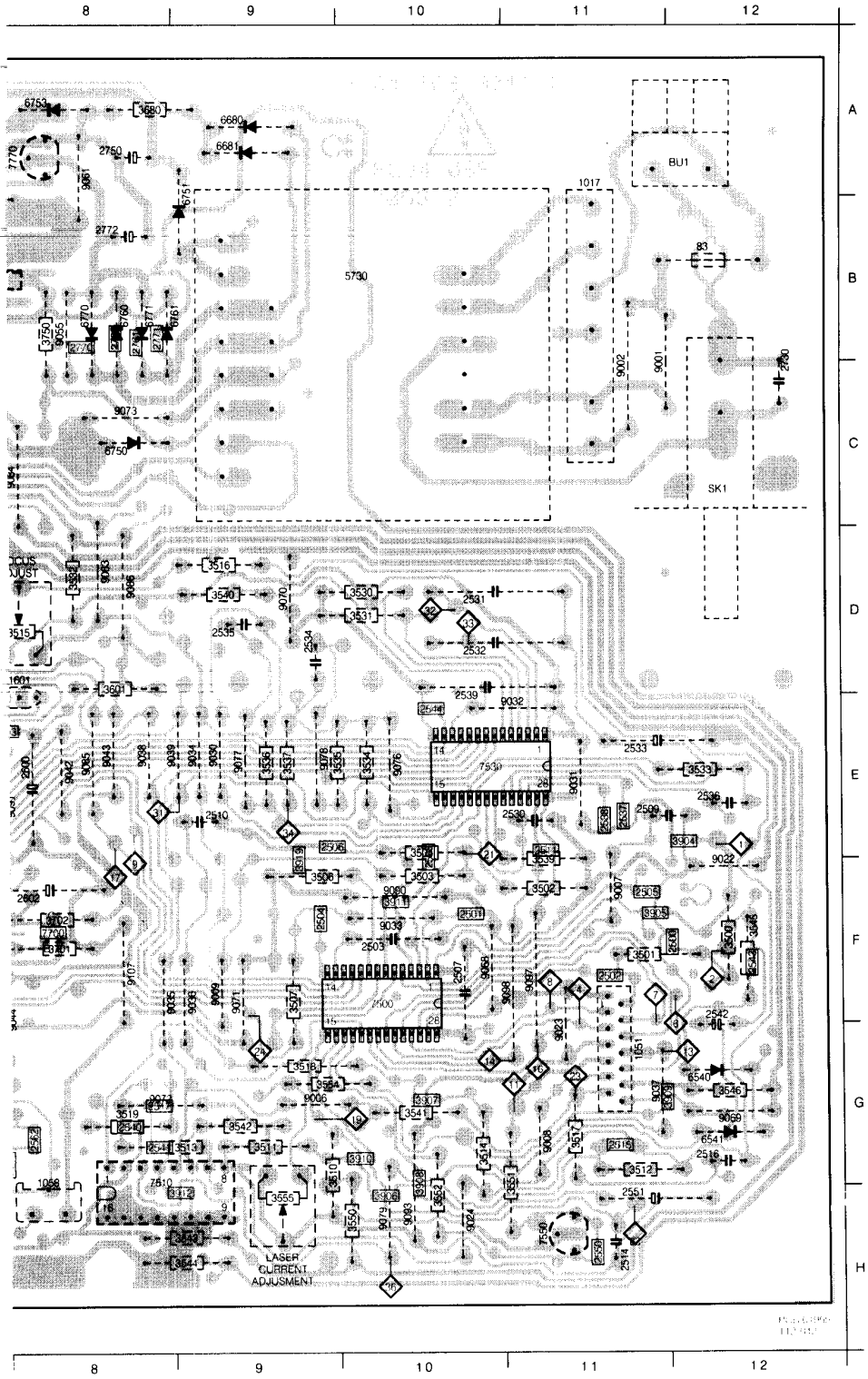
52
0 2µs/DIV
5V
0 25µs

MAIN PANEL SOLDERSIDE

2500 F12	2506 E9	2537 E11	2544 E10	2570 E4	2580 G4	2605 E6	2631 A5	2669 D2	3603 E7	3662 D1	3900 G4	39
2501 F10	2508 F10	2538 E11	2550 H11	2571 E4	2581 G4	2610 G6	2632 A4	2760 B8	3607 F7	3663 D3	3902 D2	39
2502 F11	2511 E11	2540 G8	2560 G6	2572 G3	2582 E3	2611 G7	2641 E1	2761 B8	3641 E2	3667 C2	3903 E7	39
2504 F9	2515 G11	2541 G8	2561 G7	2576 E3	2584 G2	2612 G6	2659 E2	2770 B8	3660 D1	3668 C2	3904 E12	39
2505 F11	2517 G8	2543 F12	2562 G8	2578 F2	2601 E7	2630 H5	2668 C1	2771 B8	3661 E3	3669 D2	3905 F11	39

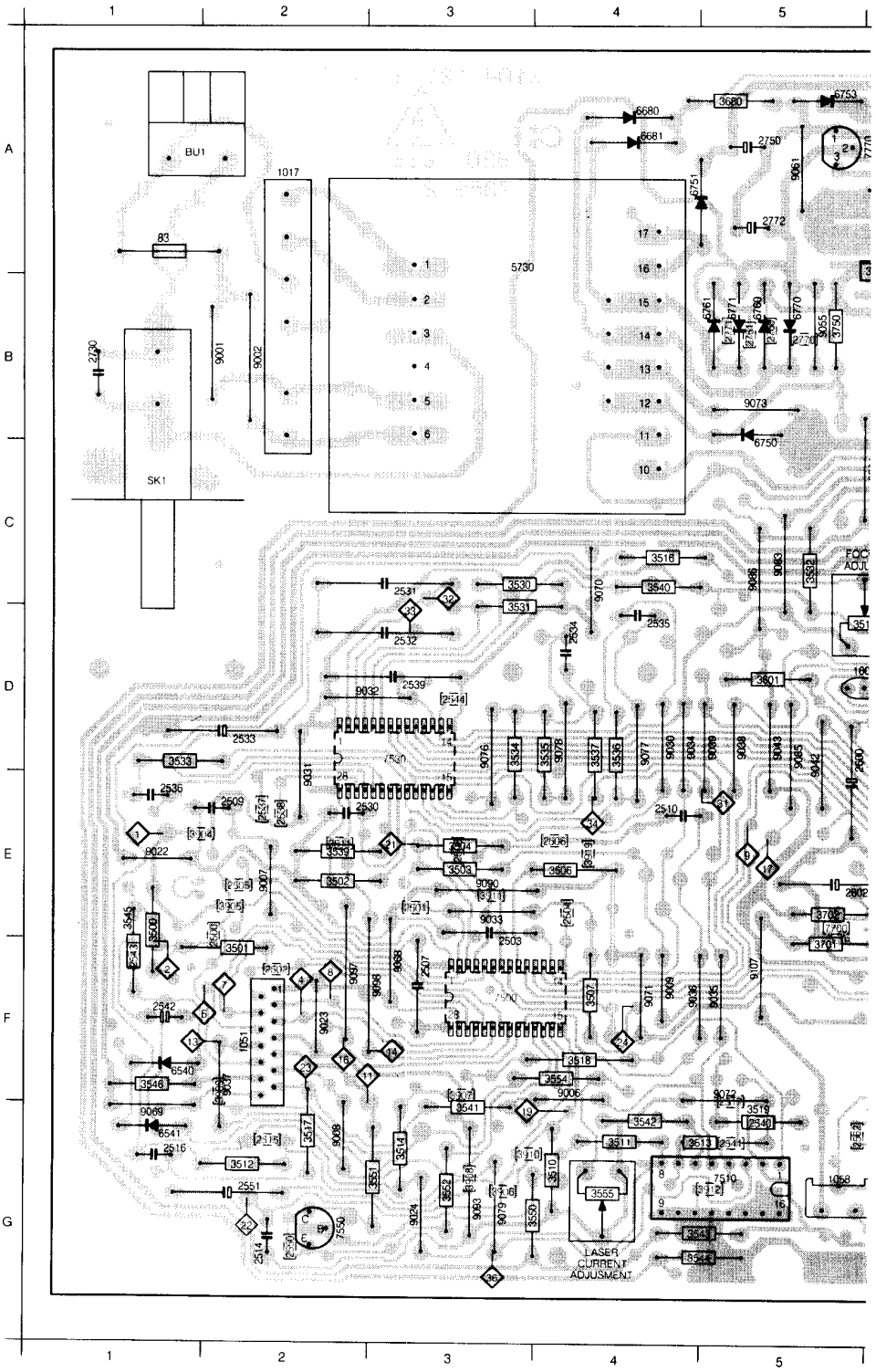


06 H10	3911 F10	3918 B3	7530 E10	7652 D1	7780 C4	
07 G10	3912 H8	3919 F9	7570 F3	7653 D3	7781 C4	
08 H10	3913 E7	3921 F2	7630 H6	7680 B6		
09 G11	3914 D5	3922 B5	7650 F1	7700 F8		
10 G10	3917 E5	7500 F10	7651 F1	7710 D5		

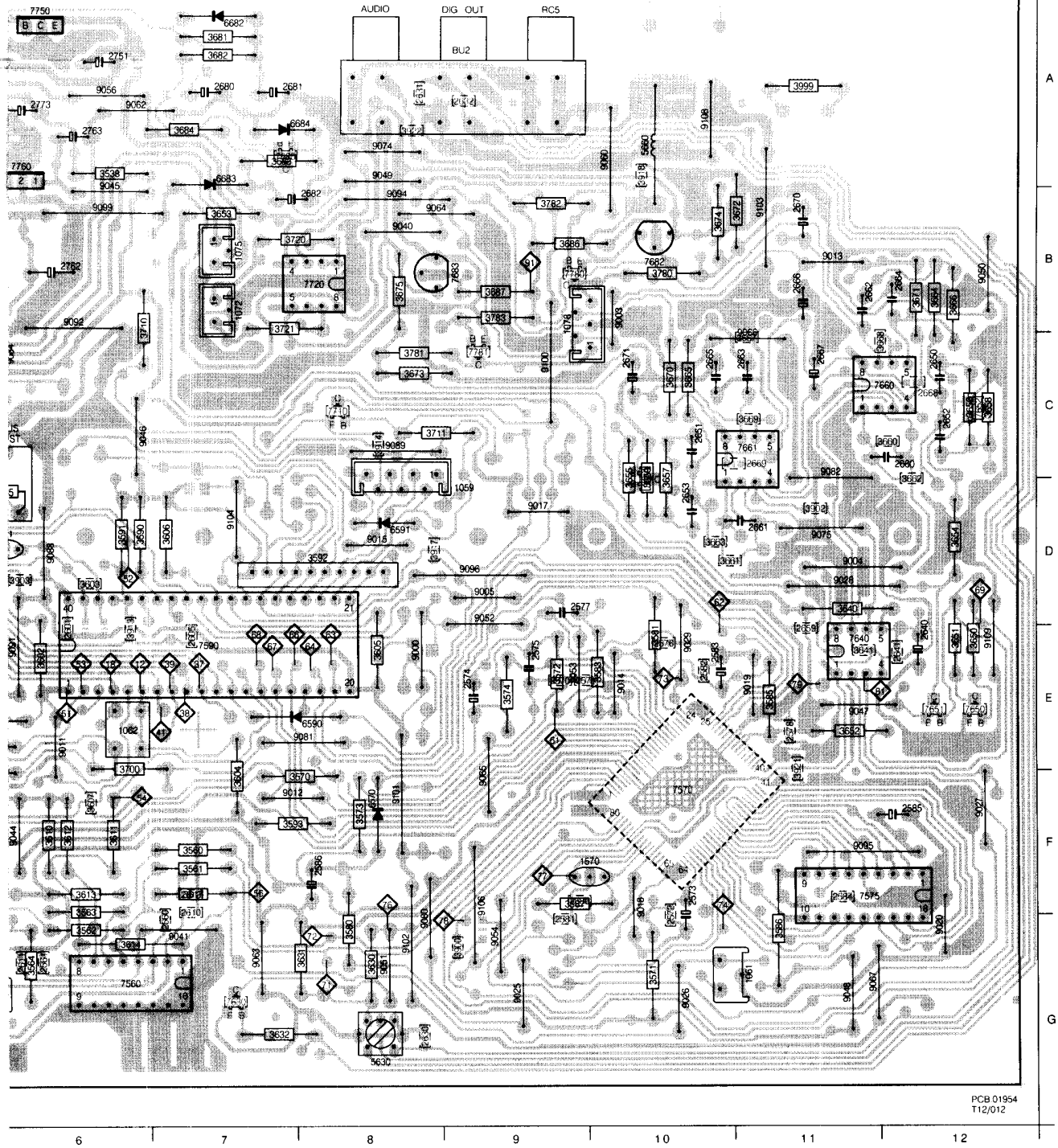


MAIN PANEL COMPONENT SIDE

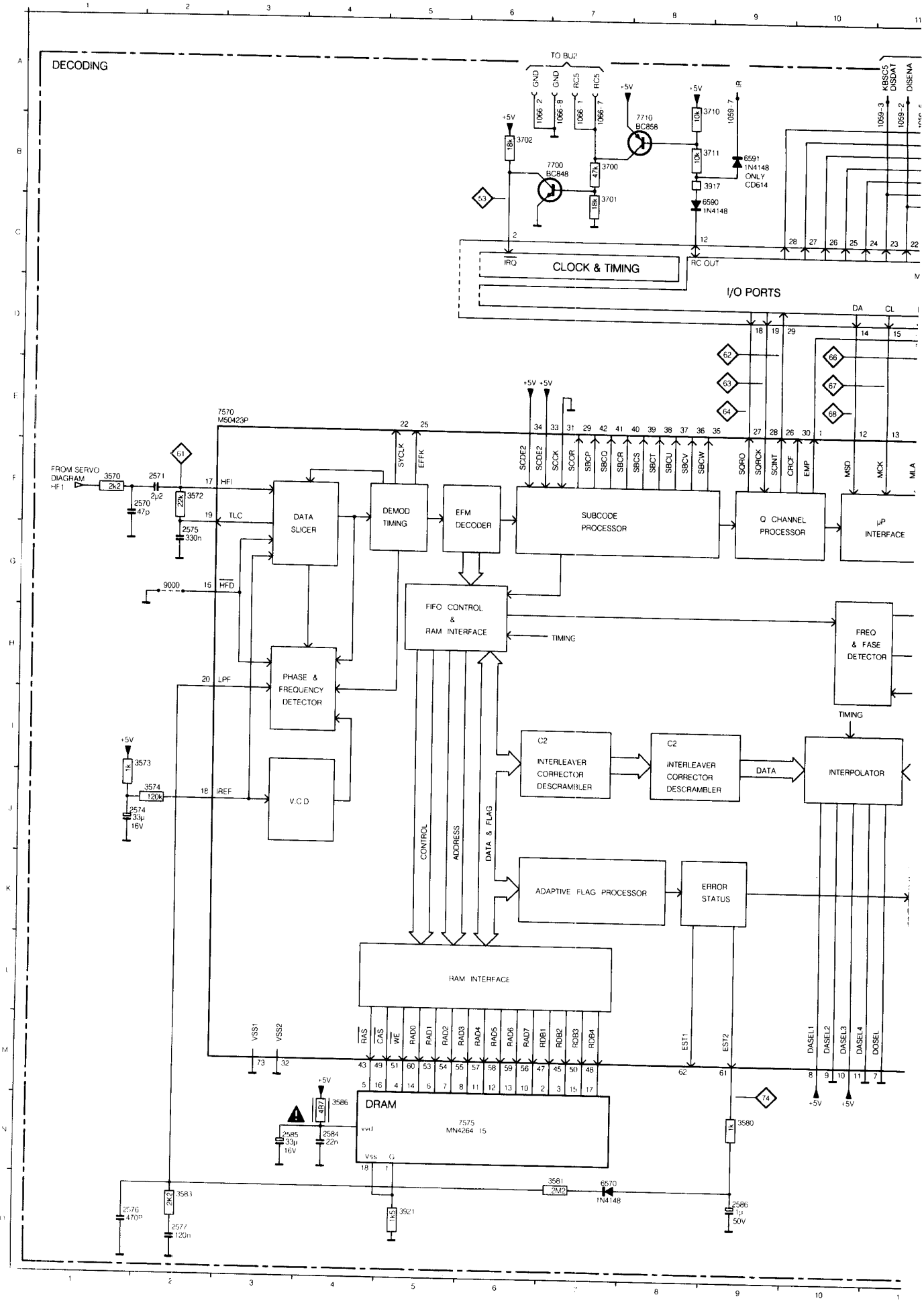
83 A1	2503 F3	2551 G2	2660 C12	2751 A6	3513 G4	3538 A6	3561 F7	3590 D6
BU1 A1	2507 F3	2573 F10	2661 D11	2762 B6	3514 G3	3539 E2	3562 G6	3591 D6
BU2 A9	2509 E2	2574 E9	2662 B11	2763 A6	3515 D5	3540 C4	3563 F6	3592 D8
SK1 C1	2510 E4	2575 E9	2663 C11	2772 A5	3516 C4	3541 G3	3564 G6	3593 F7
1017 A2	2514 G2	2577 D9	2664 B12	2773 A6	3517 G2	3542 G4	3570 F7	3601 D5
1051 F2	2516 G1	2583 E10	2665 C10	3500 F1	3518 F4	3543 G4	3571 G10	3602 E6
1058 G5	2530 E2	2585 F12	2666 B11	3501 F2	3519 G5	3544 G4	3572 E9	3604 F7
1059 D9	2531 C3	2586 F8	2667 C11	3502 E2	3530 C3	3545 E1	3573 F8	3605 E8
1061 G11	2532 D3	2600 D5	2670 B11	3503 E3	3531 D3	3546 F1	3574 E9	3606 D7
1062 E6	2533 D2	2602 E5	2671 C10	3504 E3	3532 C5	3550 G4	3580 G8	3610 F6
1072 B7	2534 D4	2640 E12	2680 A7	3506 E4	3533 D1	3551 G3	3581 E10	3611 F6
1075 B7	2535 D4	2650 C12	2681 A7	3507 F4	3534 D3	3552 G3	3583 E10	3612 F6
1078 C9	2536 E1	2651 C10	2682 B8	3510 G4	3535 D4	3554 F4	3585 E11	3613 F6
1570 F9	2539 D3	2652 C12	2730 B1	3511 G4	3536 D4	3555 G4	3586 G11	3614 G6
1601 D5	2542 F1	2653 D10	2750 A5	3512 G2	3537 D4	3560 F7	3587 F9	3617 F7

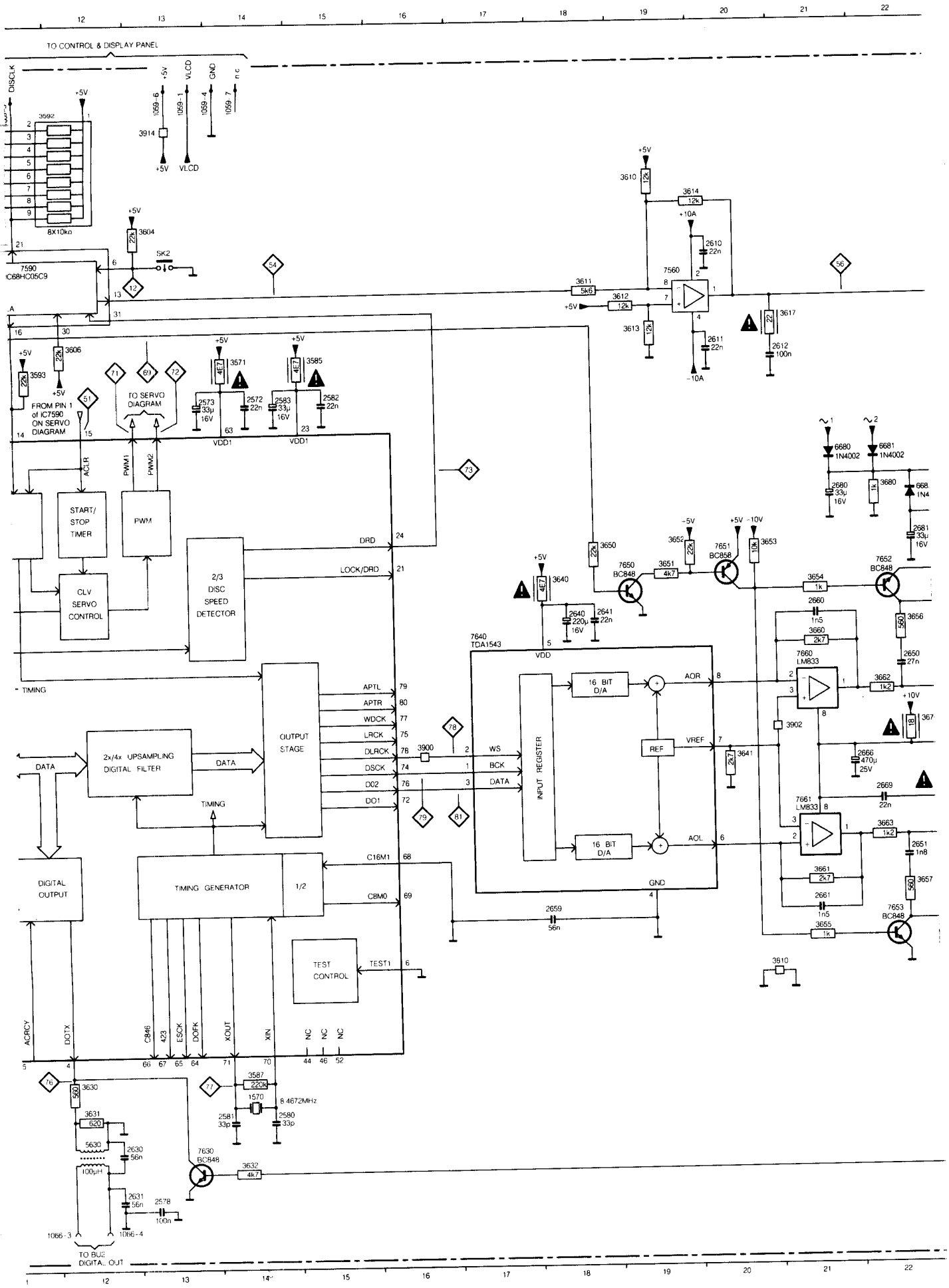


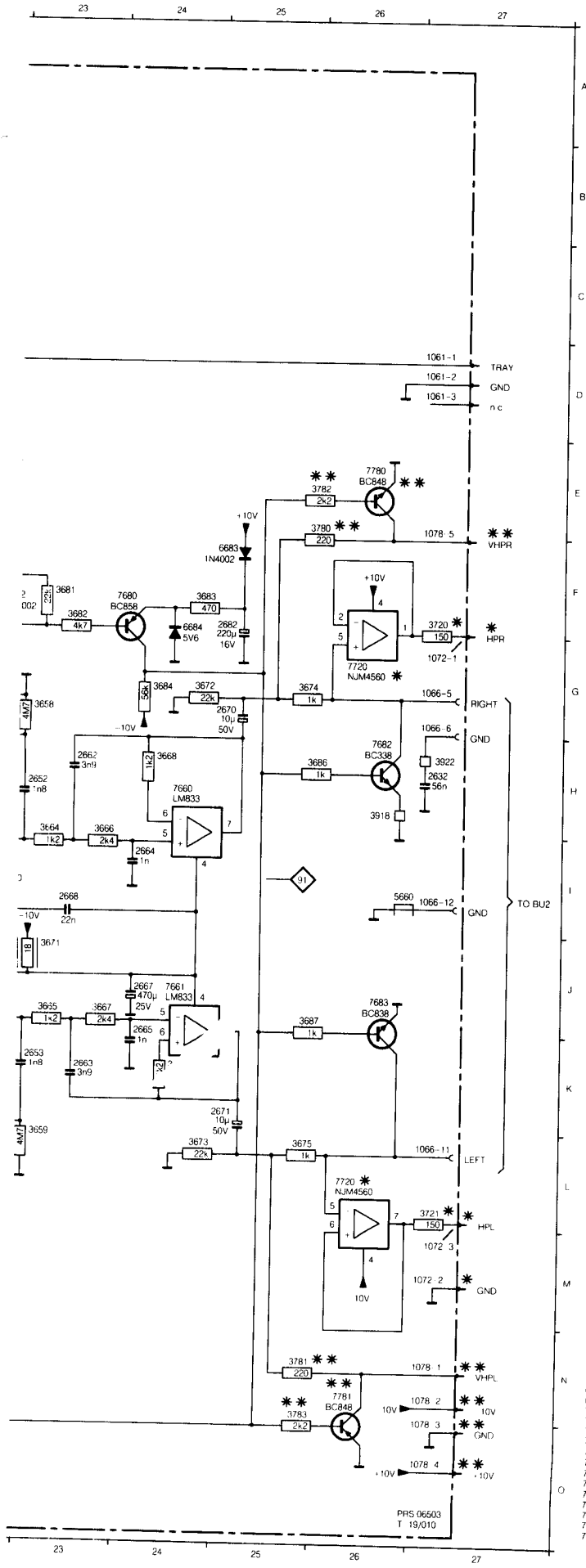
3630 G8	3665 C10	3700 F6	5730 A3	6761 B5	7760 A6	9014 E10	9031 E2	9046 C6	9064 B8	9079 G3	9095 F11
3631 G8	3666 B12	3701 F5	6540 F1	6770 B5	7770 A6	9015 D8	9032 D2	9047 E11	9065 F9	9080 G8	9096 D9
3632 G7	3670 C10	3702 E5	6541 G1	6771 B5	9000 E8	9017 D9	9033 E3	9048 G11	9066 C11	9081 E7	9097 F2
3640 D11	3671 B12	3710 C6	6570 F8	7510 G5	9001 B2	9018 G10	9034 D4	9049 A8	9067 G11	9082 C11	9098 F3
3650 E12	3672 B11	3711 C8	6590 E8	7550 G2	9002 B2	9019 E11	9035 F5	9050 B12	9068 F3	9083 C5	9099 B6
3651 E12	3673 C8	3720 B7	6591 D8	7560 G6	9003 B10	9020 G12	9036 F4	9051 G8	9069 G1	9084 C6	9100 C9
3652 E11	3674 B10	3721 C7	6680 A4	7575 F11	9004 D11	9022 E1	9037 F2	9052 D9	9070 C4	9085 D5	9101 F8
3653 B7	3675 B8	3750 B5	6681 A4	7590 E7	9005 D9	9023 F2	9038 D5	9053 E9	9071 F4	9086 C5	9102 G8
3654 D12	3680 A5	3780 B10	6682 A7	7640 E11	9006 F4	9024 G3	9039 D5	9054 G9	9072 F5	9088 D6	9103 B11
3655 D10	3681 A7	3781 C8	6683 A7	7660 C11	9007 E2	9025 G9	9040 B8	9055 B5	9073 B5	9089 C8	9104 D7
3656 C12	3682 A7	3782 B9	6684 A7	7661 C11	9008 G2	9026 G10	9041 G7	9056 A6	9074 A8	9090 E3	9106 G9
3657 D10	3683 A7	3783 B9	6750 C5	7682 B10	9009 F4	9027 F12	9042 E5	9060 A10	9075 D11	9091 E6	9107 F5
3658 C12	3684 A7	3999 A11	6751 A4	7683 B9	9011 E6	9028 D11	9043 D5	9061 A5	9076 D3	9092 B6	9108 A10
3659 D10	3686 B9	5630 G8	6753 A5	7720 B8	9012 F7	9029 E10	9044 F6	9062 A6	9077 D4	9093 G3	9109 E12
3664 B12	3687 B9	5660 A10	6760 B5	7750 A6	9013 B11	9030 D4	9045 B6	9063 G7	9078 D4	9094 B8	



DECODER CIRCUIT DIAGRAM




TO CONTROL & DISPLAY PANEL
DISCLK
+5V
VLCD
GND
n.c
1069-6
1069-1
1069-4
1069-7
3914
3592
8X10kΩ
3604
22k
5K2
7590
IC68HC05C9
3606
3593
FROM PIN 1 of IC7590 ON SERVO DIAGRAM
TO SERVO DIAGRAM
3571
3585
4E7
2573 33µ 16V
2572 22n
2583 33µ 16V
2582 22n
VDD1
ACLR
PWM1
PWM2
START/ STOP TIMER
PWM
CLV SERVO CONTROL
2/3 DISC SPEED DETECTOR
DRD
LOCK/DRO
TIMING
APTL
APTR
WDCK
LRCK
DLRCK
DSCK
DO2
DO1
2x/4x UPSAMPLING DIGITAL FILTER
DATA
OUTPUT STAGE
TIMING GENERATOR
1/2
C16M1
C8M0
DIGITAL OUTPUT
TEST CONTROL
TEST1
ACRCY
DOTX
C8M6
423
ESCK
DOFK
XOUT
XIN
NC
3610
12k
3614
+10A
2610 22n
7560
3611 5k6
3612 12k
3613 12k
2611 22n
-10A
3617
2612 100n
6680 1N4002
6681 1N4002
2680 33µ 16V
3680 1k
2681 33µ 16V
3650
3652
3653
7650 BC848
7651 BC858
3651 4k7
3640
2640 220µ 16V
2641 22n
7640 TDA1543
VDD
16 BIT D/A
AOR
AOL
REF
VREF
INPUT REGISTER
WS
BCK
DATA
GND
7652 BC848
3654 1k
2660 1n5
3660 2k7
3656 560
2650 27n
7660 LM833
3662 1k2
3902
2666 470µ 25V
3641 2k7
2669 22n
7661 LM833
3663 1k2
2651 1n8
3661 2k7
2661 1n5
3657 560
7653 BC848
3655 1k
2659 56n
3900
7630 BC848
3632 4k7
3630 560
3631 620
5630
2630 56n
100µH
2631 56n
2578 100n
3587 220k
1570 8.4672MHz
2581 33p
2580 33p
1066-3
1066-4
TO BUS DIGITAL OUT



SK2 C13
1570 N14
2570 F1
2571 F2
2572 E14
2573 E13
2574 J1
2575 G2
2576 O1
2577 O2
2578 O13
2580 N14
2581 N13
2582 E15
2583 E14
2584 N4
2585 N3
2586 O9
2610 C20
2611 D20
2612 D21
2630 N12
2631 O12
2632 H27
2640 H18
2641 H18
2650 H22
2651 K22
2652 H23
2653 K23
2659 K18
2660 H21
2661 K21
2662 H23
2663 K23
2664 I24
2665 K24
2666 I22
2667 J24
2668 I23
2669 J22
2670 G24
2671 K24
2680 F21
2681 G22
2682 F24
3570 F1
3571 D14
3572 F2
3573 I1
3574 J2
3580 N9
3581 O7
3583 O2
3585 D15
3586 N4
3587 M14
3592 A11
3593 E11
3604 C13
3606 D12
3610 B19
3611 D18
3612 D19
3613 D19
3614 B20
3617 D21
3630 M12
3631 N12
3632 N14
3640 G18
3641 I20
3648 G24
3650 G18
3651 G19
3652 G19
3653 G20
3654 G21
3655 L21
3656 H22
3657 K22
3658 G23
3659 L23
3660 H21
3661 K21
3662 H22
3663 J22
3664 H23
3665 J23
3666 H23
3667 J23
3668 H24
3669 K24
3670 I22
3671 J23
3672 G24
3673 L24
3674 G25
3675 L25
3680 F22
3681 F23
3682 F23
3683 F24
3686 H25
3687 J25
3700 B7
3701 B7
3702 B6
3710 A8
3711 B8
3720 F27
3721 L27
3780 E25
3781 N25
3782 E25
3783 N25
3810 L20
3900 I16
3902 I21
3914 B13
3917 B8
3918 H26
3921 O5
3922 H27
5630 N12
5660 I26
6570 O7
6590 B8
6591 B9
6680 F21
6681 F22
6682 F22
6683 F24
6684 F24
7570 E2
7575 N6
7590 C11
7630 N13
7640 H17
7650 G19
7651 G20
7652 G22
7653 K22
7660 H21
7660 H24
7661 J21
7661 J24

7680 F24
7682 H26
7683 J26
7700 B7
7710 A8
7720 G26
7720 L26
7780 E26
7781 N26
9000 G2

12 LOW WHEN TRAY IS OPEN OR CLOSED
HIGH WHEN TRAY IS OPENING OR CLOSING

53 ACTIVITY WHEN USING REMOTE CONTROL
(ONLY VIA RC5)

54 LOW WHEN OPENING
HIGH WHEN CLOSING
2.5V IN REST

56 +5V WHEN OPENING
0V IN REST
5V WHEN CLOSING

61 EYEPATTERN
0.5µs/DIV
2.5V
1.3V

62 SCINT
63 SQRCK
64 SQRO
80x

67 MCK
8x
68 MSD
66 MLA
50µs/DIV
SWITCHING
PAUSE ON/OFF

69 EMP : LOW ON TRACK 76,78,80,82,84,86,88
HIGH ON TRACK 77,79,81,83,85,87,89

71 72
START UP
PLAY MODE
STOP
L
H
PWM1
PWM2
10µs/DIV

73 HIGH WHEN BRAKING THE DISC BY HAND
OR BY START UP AND STOP

74 HIGH PULSES DURING NEXT IN PLAY MODE

76 ACTIVITY IN PLAY POSITION

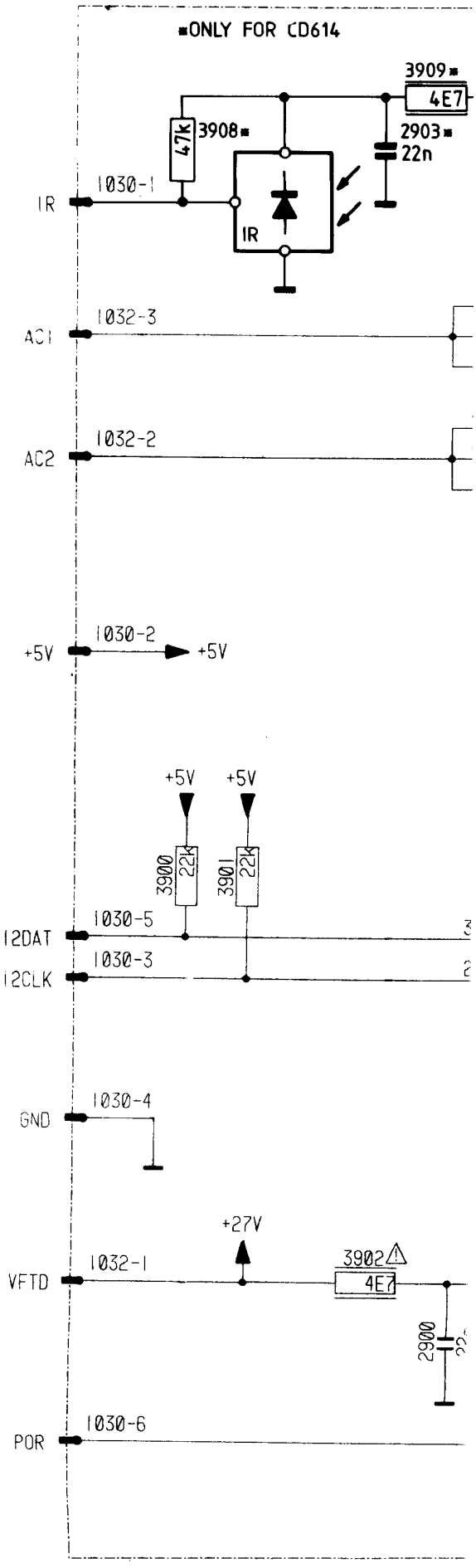
77 0.2µs/DIV
5V
0.6s

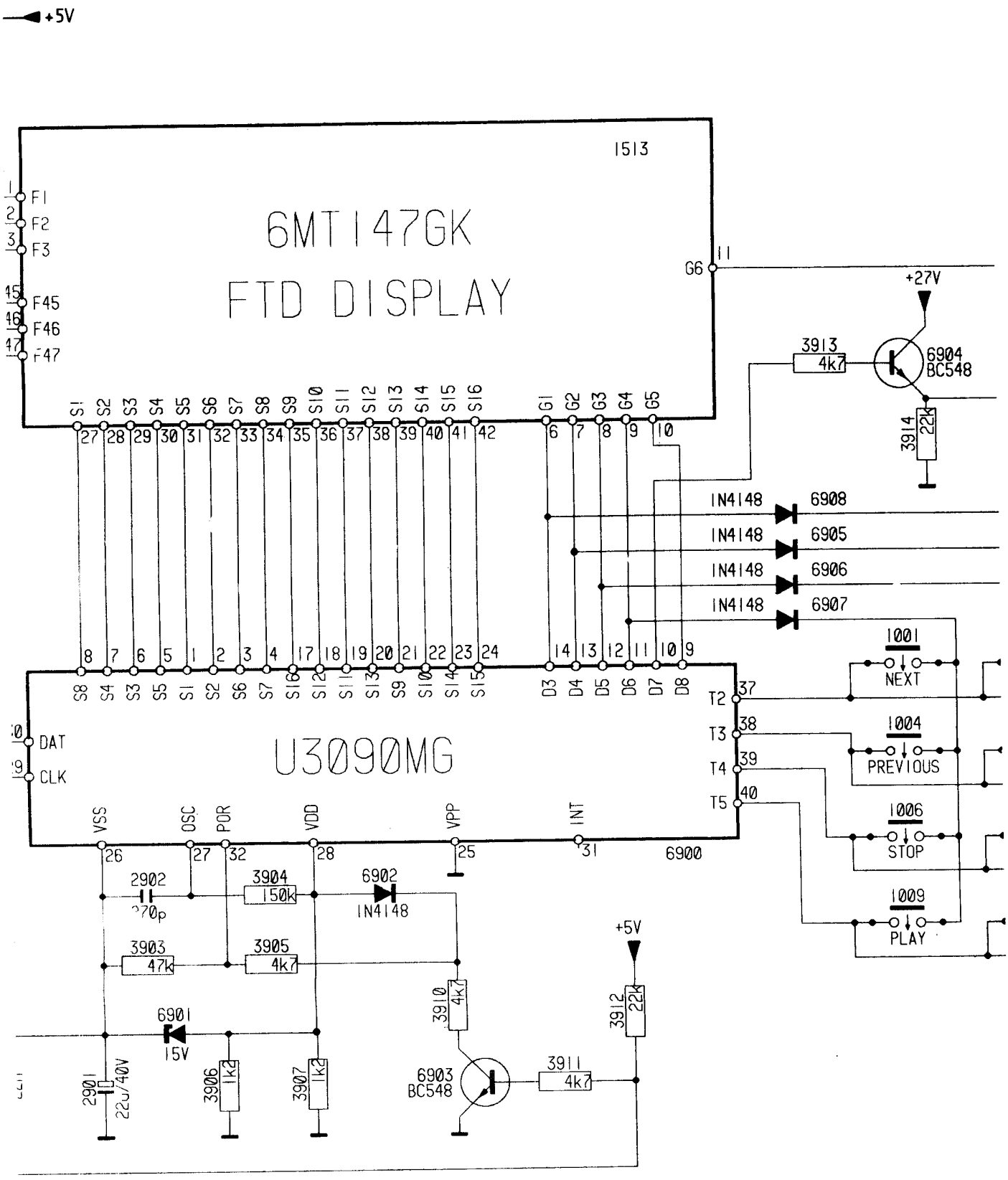
78 DLRCK
79 DSCK
81 DO2
24x
1µs/DIV

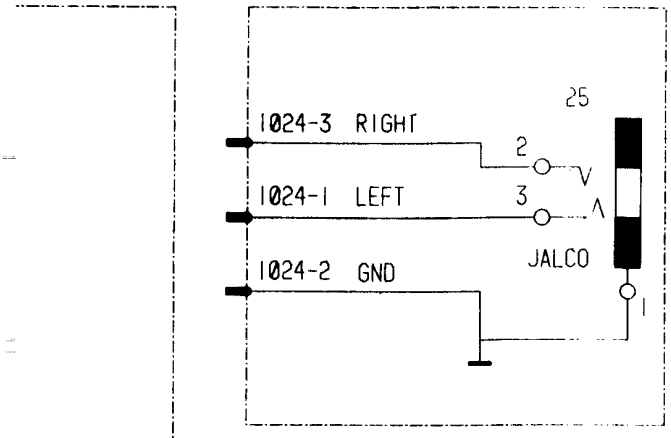
91
5V
4V
0.4µs
4V
POWER ON
POWER OFF

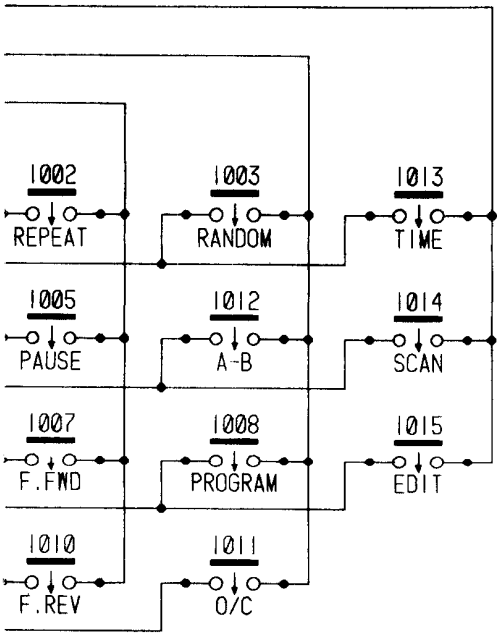
* ONLY FOR CD604
** ONLY FOR CD614

DISPLAY PANEL CIRCUIT DIAGRAM




+5V
1513
6MT147GK
FTD DISPLAY
F1
F2
F3
F45
F46
F47
G6
11
+27V
3913
4k7
6904
BC548
3914
22k
IN4148
6908
IN4148
6905
IN4148
6906
IN4148
6907
1001
NEXT
1004
PREVIOUS
1006
STOP
1009
PLAY
U3090MG
DAT
CLK
VSS
OSC
POR
VDD
VPP
INT
T2
T3
T4
T5
6900
2902
270p
3904
150k
6902
IN4148
3903
47k
3905
4k7
6901
15V
2901
22u/40V
3906
1k2
3907
1k2
3910
4k7
6903
BC548
3911
4k7
3912
22k
+5V



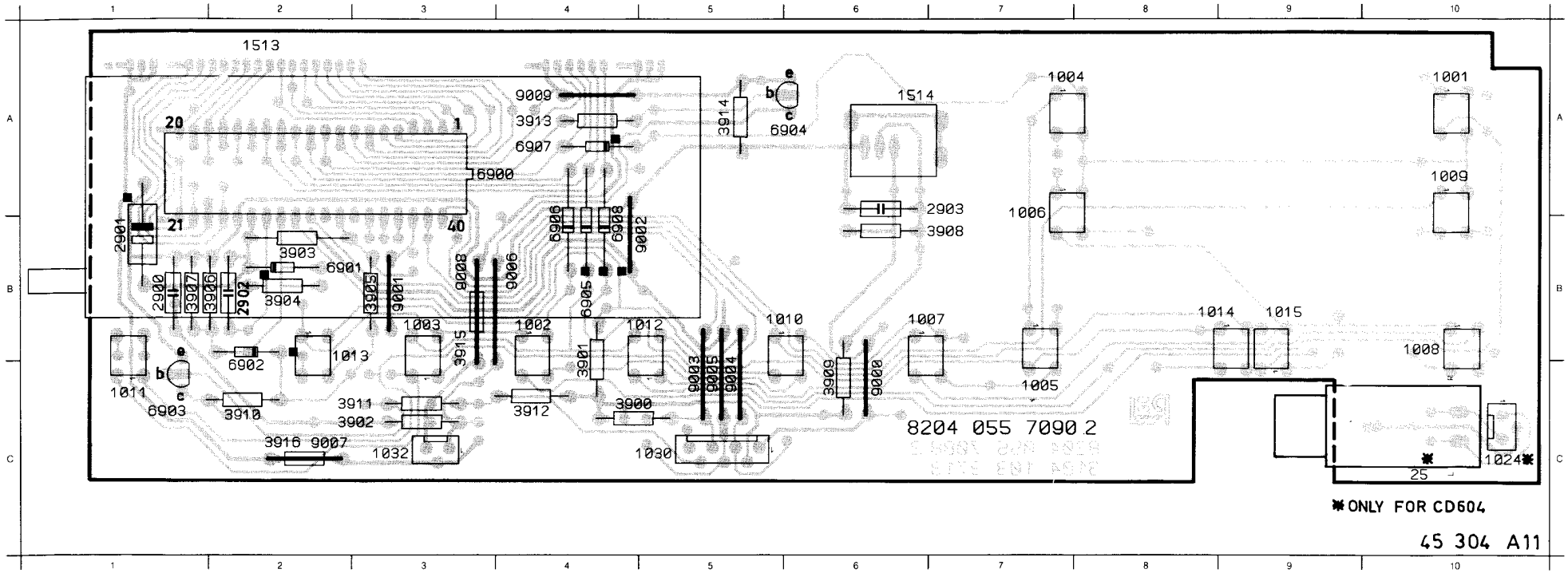


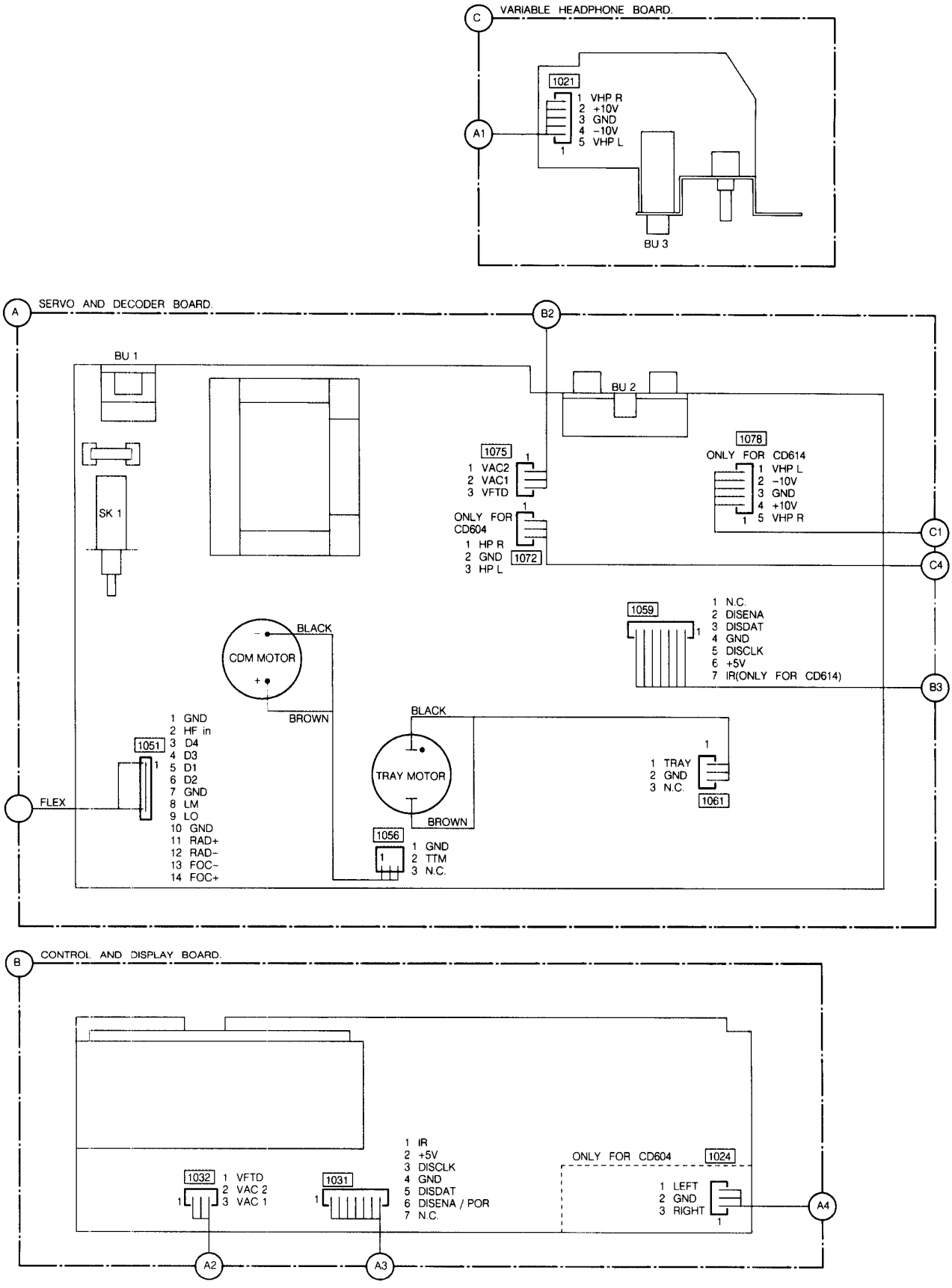
Display partslist

Miscellaneous		
BU3	4822 267 30743	
1001	4822 276 12276	TACT SWITCH
1002	4822 276 12276	TACT SWITCH
1003	4822 276 12276	TACT SWITCH
1004	4822 276 12276	TACT SWITCH
1005	4822 276 12276	TACT SWITCH
1006	4822 276 12276	TACT SWITCH
1007	4822 276 12276	TACT SWITCH
1008	4822 276 12276	TACT SWITCH
1009	4822 276 12276	TACT SWITCH
1010	4822 276 12276	TACT SWITCH
1011	4822 276 12276	TACT SWITCH
1012	4822 276 12276	TACT SWITCH
1013	4822 276 12276	TACT SWITCH
1014	4822 276 12276	TACT SWITCH
1015	4822 276 12276	TACT SWITCH
1513	4822 130 90661	6-MT-147GK
1514	4822 214 51772	GP1U521X
⊣⊢		
2900	4822 122 10166	22nF 30% 16V
2901	5322 124 21643	22µF 20% 40V
2902	4822 122 31465	270pF
2903	4822 122 10166	22nF 30% 16V
▭		
3900	4822 051 10223	22kΩ 2% 0,25W
3901	4822 051 10223	22kΩ 2% 0,25W
3902	4822 111 30499	4,7Ω 5% 0,33W
3903	4822 116 52857	47kΩ 1% 0,6W
3904	4822 050 21504	150kΩ 1% 0,6W
3905	4822 116 52921	4,7kΩ 1% 0,6W
3906	4822 051 10122	1,2kΩ 2% 0,25W
3907	4822 051 10122	1,2kΩ 2% 0,25W
3908	4822 116 52857	47kΩ 1% 0,6W
3909	4822 111 30499	4,7Ω 5% 0,33W
3910	4822 116 52921	4,7kΩ 1% 0,6W
3911	4822 116 52921	4,7kΩ 1% 0,6W
3912	4822 051 10223	22kΩ 2% 0,25W
3913	4822 116 52921	4,7kΩ 1% 0,6W
3914	4822 051 10223	22kΩ 2% 0,25W
Semiconductors		
6900	4822 209 72226	U3090
6901	4822 130 81086	BZX55-C15
6902	4822 130 30621	1N4148
6903	4822 130 40938	BC548
6904	4822 130 40938	BC548
6905	4822 130 30621	1N4148
6906	4822 130 30621	1N4148
6907	4822 130 30621	1N4148
6908	4822 130 30621	1N4148

CONTROL AND DISPLAY PANEL

1001 A10	1005 C7	1009 A10	1014 B8	1032 C3	2901 B1	3901 C4	3905 B2	3909 C6	3913 A4	6900 A3	6903 C1	6908 B4	9003 C5	9007 C2
1002 B4	1006 B7	1010 B5	1015 B9	1513 A2	2902 B2	3902 C2	3906 B1	3910 C2	3914 A5	6901 A5	6905 B4	9000 C6	9004 C5	9008 B3
1003 B3	1007 B6	1011 C1	1024 C10	1514 A6	2903 A6	3903 B2	3907 B1	3911 C2	3915 B3	6901 B2	6906 B4	9001 B3	9005 C5	9009 A4
1004 A7	1008 C10	1012 B4	1030 C4	2900 B1	3900 C4	3904 B2	3908 B6	3912 C4	3916 C2	6902 C2	6907 A4	9002 B4	9006 B4	





MDA.02593
T19/011

Partslist servo & decoder panel

2500	4822 122 33809	22nF 20% 50V
2501	4822 122 33809	22nF 20% 50V
2502	5322 122 32268	470pF 10% 50V
2503	4822 122 10166	22nF 30% 16V
2504	4822 122 33175	2,2nF 20% 50V
2505	4822 122 32542	47nF 10% 63V
2506	5322 122 32531	100pF 5% 50V
2507	4822 122 10177	10nF 20% 25V
2508	5322 122 34123	1nF 10% 50V
2509	4822 121 43375	220nF 63V
2510	4822 121 51252	470nF 5% 63V
2511	5322 122 34123	1nF 10% 50V
2514	4822 121 51252	470nF 5% 63V
2515	4822 122 33339	4,7nF 10% 50V
2516	5322 121 42661	330nF 5% 63V
2517	4822 122 33496	100nF 10% 63V
2530	4822 121 43375	220nF 63V
2531	4822 121 51321	8,2nF 1% 63V
2532	4822 121 51321	8,2nF 1% 63V
2533	5322 124 21643	22µF 20% 40V
2534	5322 121 42604	47nF 5% 63V
2535	5322 121 42661	330nF 5% 63V
2536	4822 121 43375	220nF 63V
2537	4822 122 33342	33nF 10% 63V
2538	4822 122 33342	33nF 10% 63V
2539	4822 122 10166	22nF 30% 16V
2540	4822 122 33809	22nF 20% 50V
2541	4822 122 33809	22nF 20% 50V
2542	4822 124 41583	0,68µF 20% 50V Bipolar
2543	4822 122 33496	100nF 10% 63V
2544	4822 122 33809	22nF 20% 50V
2550	4822 122 32575	220pF 10% 500V
2551	5322 124 21643	22µF 20% 40V
2560	5322 122 31866	6,8nF 10% 63V
2561	5322 122 31866	6,8nF 10% 63V
2562	4822 122 33496	100nF 10% 63V
2570	5322 122 32452	47pF 5% 50V
2571	4822 122 33175	2,2nF 20% 50V
2572	4822 122 33809	22nF 20% 50V
2573	4822 124 40272	33µF 20% 16V
2574	4822 124 40272	33µF 20% 16V
2575	5322 121 42661	330nF 5% 63V
2576	4822 122 31727	470pF 5% 63V
2577	4822 121 51356	180nF 10% 63V
2580	5322 122 32659	33pF 5% 50V
2581	5322 122 32659	33pF 5% 50V
2582	4822 122 33809	22nF 20% 50V
2583	4822 124 40272	33µF 20% 16V
2584	4822 122 33809	22nF 20% 50V
2585	4822 124 40272	33µF 20% 16V
2586	4822 124 40242	1µF 20% 63V
2600	5322 124 21643	22µF 20% 40V
2601	4822 122 33809	22nF 20% 50V
2602	4822 124 22031	4,7µF 20% 63V
2610	4822 122 33809	22nF 20% 50V
2611	4822 122 33809	22nF 20% 50V
2612	4822 122 33496	100nF 10% 63V
2630	4822 122 33485	56nF 10% 63V
2631	4822 122 33485	56nF 10% 63V
2640	4822 124 40196	220µF 20% 16V
2641	4822 122 33809	22nF 20% 50V
2650	4822 121 42888	27nF 5% 50V
2651	4822 121 42888	27nF 5% 50V
2652	4822 121 51311	1,8nF 5% 50V
2653	4822 121 51311	1,8nF 5% 50V
2659	4822 122 33485	56nF 10% 63V
2660	4822 121 43651	1,5nF 5% 50V
2661	4822 121 43651	1,5nF 5% 50V
2662	4822 121 51313	3,9nF 5% 50V
2663	4822 121 51313	3,9nF 5% 50V
2664	4822 121 51324	1nF 5% 50V
2665	4822 121 51324	1nF 5% 50V
2666	4822 124 41989	470µF 20% 16V
2667	4822 124 41989	470µF 20% 16V
2668	4822 122 33809	22nF 20% 50V
2669	4822 122 33809	22nF 20% 50V
2670	4822 124 41577	4,7µF 20% 50V
2671	4822 124 41577	4,7µF 20% 50V
2680	4822 124 40272	33µF 20% 16V
2681	4822 124 40272	33µF 20% 16V
2682	4822 124 40196	220µF 20% 16V
2730	4822 126 10454	3,3nF 20% 400V
2750	5322 124 22094	220µF 50V 20%
2751	4822 124 41596	22µF 50V 20%
2760	4822 122 33809	22nF 20% 50V
2761	4822 122 33809	22nF 20% 50V
2762	4822 124 23268	3300µF 20% 16V
2763	4822 124 40272	33µF 20% 16V
2770	4822 122 33809	22nF 20% 50V
2771	4822 122 33809	22nF 20% 50V
2772	4822 124 41853	1000µF 16V
2773	4822 124 40272	33µF 20% 16V

3500	4822 116 52921	4,7kΩ 1% 0,6W
3501	4822 116 52234	100kΩ 5% 0,5W
3502	4822 050 11203	12kΩ 1% 0,4W
3503	5322 111 90091	100Ω 2% 0,25W
3504	4822 050 21002	1kΩ 1% 0,6W
3505	4822 050 22403	24kΩ 1% 0,6W
3506	4822 050 15602	5,6kΩ 1% 0,4W
3507	4822 111 90249	10kΩ 2% 0,25W
3510	4822 050 21103	11kΩ 1% 0,6W
3511	4822 050 11204	120kΩ 1% 0,4W
3512	4822 050 21504	150kΩ 1% 0,6W
3513	4822 116 52866	82kΩ 1% 0,6W
3514	4822 050 21604	160kΩ 1% 0,6W
3515	4822 100 11193	22kΩ 20% 0,05W Trimpot. Lin
3516	4822 050 24704	470kΩ 1% 0,6W
3517	4822 050 25603	56kΩ 1% 0,6W
3518	4822 111 30519	27Ω 5% 0,33W
3519	4822 111 30517	22Ω 5% 0,33W
3530	4822 116 52857	47kΩ 1% 0,6W
3531	4822 116 53083	15kΩ 1% 0,6W
3532	4822 111 30499	4,7Ω 5% 0,33W
3533	4822 050 11802	1,8kΩ 1% 0,4W
3534	4822 050 25102	5,1kΩ 1% 0,6W
3535	4822 050 11803	18kΩ 1% 0,4W
3536	4822 050 22204	220kΩ 1% 0,6W
3537	4822 050 22204	220kΩ 1% 0,6W
3538	4822 111 30499	4,7Ω 5% 0,33W
3539	4822 050 11203	12kΩ 1% 0,4W
3540	4822 051 10223	22kΩ 2% 0,25W
3541	4822 050 16802	6,8kΩ 1% 0,4W
3542	4822 116 52441	6,8kΩ 5% 0,5W
3543	4822 111 30483	1Ω 5% 0,33W
3544	4822 111 30483	1Ω 5% 0,33W
3545	4822 111 30522	33Ω 5% 0,33W
3546	4822 111 30499	4Ω7 5% 0,33W
3550	4822 111 30515	18Ω 5% 0,33W
3551	4822 111 30511	12Ω 5% 0,33W
3552	5322 111 90091	100Ω 2% 0,25W

3554	4822 111 90178	220Ω 2% 0,25W
3555	4822 101 10685	4,7kΩ 20% 0,05W Trimpot. Lin
3560	4822 116 52234	100kΩ 5% 0,5W
3561	4822 116 52234	100kΩ 5% 0,5W
3562	4822 116 52234	100kΩ 5% 0,5W
3563	4822 116 52234	100kΩ 5% 0,5W
3564	4822 111 30517	22Ω 5% 0,33W
3570	4822 116 53025	2,2kΩ 1% 0,6W
3571	4822 111 30499	4,7Ω 5% 0,33W
3572	4822 051 10223	22kΩ 2% 0,25W
3573	4822 050 21002	1kΩ 1% 0,6W
3574	4822 050 21204	120kΩ 1% 0,6W
3580	4822 050 21002	1kΩ 1% 0,6W
3581	4822 116 52511	2,2MΩ 5% 0,5W
3583	4822 116 53025	2,2kΩ 1% 0,6W
3585	4822 111 30499	4,7Ω 5% 0,33W
3586	4822 111 30499	4,7Ω 5% 0,33W
3587	4822 050 22204	220kΩ 1% 0,6W
3590	4822 051 10223	22kΩ 2% 0,25W
3591	4822 051 10223	22kΩ 2% 0,25W
3592	5322 111 90473	Res. network 8 X 10kΩ 2%
3593	4822 051 10223	22kΩ 2% 0,25W
3601	4822 111 30499	4,7Ω 5% 0,33W
3602	4822 051 10223	22kΩ 2% 0,25W
3603	4822 116 80881	220kΩ 5% 0,1W
3604	4822 051 10223	22kΩ 2% 0,25W
3606	4822 051 10223	22kΩ 5% 1/8W
3610	4822 050 21203	12kΩ 1% 0,6W
3611	4822 050 15602	5,6kΩ 1% 0,4W
3612	4822 050 21203	12kΩ 1% 0,6W
3613	4822 050 21203	12kΩ 1% 0,6W
3614	4822 050 21203	12kΩ 1% 0,6W
3617	4822 111 30517	22Ω 5% 0,33W
3630	5322 111 90113	560Ω 2% 0,25W
3631	4822 050 26201	620Ω 1% 0,6W
3632	4822 116 52921	4,7kΩ 1% 0,6W
3640	4822 111 30499	4,7Ω 5% 0,33W
3641	4822 050 22702	2,7kΩ 1% 0,6W
3650	4822 051 10223	22kΩ 2% 0,25W
3651	4822 116 52921	4,7kΩ 1% 0,6W
3652	4822 051 10223	22kΩ 2% 0,25W
3653	4822 111 90249	10kΩ 2% 0,25W
3654	4822 050 21002	1kΩ 1% 0,6W
3655	4822 050 21002	1kΩ 1% 0,6W
3656	4822 050 25601	560Ω 1% 0,6W
3657	4822 050 25601	560Ω 1% 0,6W
3658	4822 116 52528	4,7MΩ 5% 0,5W
3659	4822 116 52528	4,7MΩ 5% 0,5W
3660	4822 116 52918	2,7kΩ 1% 0,6W
3661	4822 050 22702	2,7kΩ 1% 0,6W
3662	4822 051 20122	1,2kΩ 5% 0,1W
3663	4822 051 20122	1,2kΩ 5% 0,1W
3664	4822 051 10122	1,2kΩ 2% 0,25W
3665	4822 051 10122	1,2kΩ 2% 0,25W
3666	4822 050 12402	2,4kΩ 1% 0,4W
3667	4822 050 12402	2,4kΩ 1% 0,4W
3668	4822 051 20122	1,2kΩ 5% 0,1W
3669	4822 051 20122	1,2kΩ 5% 0,1W
3670	4822 111 30517	22Ω 5% 0,33W
3671	4822 111 30517	22Ω 5% 0,33W
3672	4822 051 10223	22kΩ 2% 0,25W
3673	4822 051 10223	22kΩ 2% 0,25W
3674	4822 050 21002	1kΩ 1% 0,6W
3675	4822 050 21002	1kΩ 1% 0,6W
3680	4822 050 21002	1kΩ 1% 0,6W
3681	4822 051 10223	22kΩ 2% 0,25W
3682	4822 050 21002	1kΩ 5% 1/8W
3683	4822 116 52224	470Ω 5% 0,5W
3684	4822 050 25603	56kΩ 1% 0,6W
3686	4822 050 21002	1kΩ 1% 0,6W
3687	4822 050 21002	1kΩ 1% 0,6W
3700	4822 116 52857	47kΩ 1% 0,6W
3701	4822 116 53084	18kΩ 1% 0,6W
3702	4822 116 53084	18kΩ 1% 0,6W
3710	4822 111 90249	10kΩ 2% 0,25W
3711	4822 111 90249	10kΩ 2% 0,25W
3720	4822 050 21501	150Ω 5% 1/8W
3721	4822 050 21501	150Ω 5% 1/8W
3750	4822 050 27501	750Ω 5% 1/8W
3780	4822 111 90178	220Ω 5% 1/8W
3781	4822 111 90178	220Ω 5% 1/8W
3782	4822 116 53025	2,2kΩ 5% 1/8W
3783	4822 116 53025	2,2kΩ 5% 1/8W
39..	4822 051 10008	Chip jumper

6540	4822 130 34173	BZX55-F5V6
6541	4822 130 34173	BZX55-F5V6
6570	4822 130 30621	1N4148
6590	4822 130 30621	1N4148
6680	5322 130 30684	1N4002
6681	5322 130 30684	1N4002
6682	5322 130 30684	1N4002
6683	5322 130 30684	1N4002
6684	4822 130 34173	BZX55-F5V6
6750	5322 130 32962	BZV85-C6V2
6751	5322 130 30684	1N4002
6753	4822 130 34197	BZX55-C12
6760	5322 130 30684	1N4002
6761	5322 130 30684	1N4002
6770	5322 130 30684	1N4002
6771	5322 130 30684	1N4002
7500	4822 209 73234	TDA8808T/C3
7510	4822 209 72587	TCA0372DP2
7530	4822 209 73235	TDA8809T/C2
7550	5322 130 44349	BC635
7560	4822 209 72587	TCA0372DP2
7570	4822 209 62112	M50423FP
7575	4822 209 70422	MN4264-15
7590	4822 209 62367	MC68HC05C8P/9441
7630	4822 130 61207	BC848
7640	4822 209 73236	TDA1543/N2
7650	4822 130 61207	BC848
7651	5322 130 42012	BC858
7652	4822 130 61207	BC848
7653	4822 130 61207	BC848
7660	4822 209 83163	LM833N
7661	4822 209 83163	LM833N
7680	5322 130 42012	BC858
7682	4822 130 44121	BC338
7683	4822 130 44121	BC338
7700	4822 130 61207	BC848
7710	5322 130 42012	BC858
7720	4822 209 83274	NJM4560D
7750	4822 209 80808	MC7815CT
7760	4822 209 71579	TY40408
7770	4822 209 73233	MC79L05ACP
7780	4822 130 61207	BC848

Miscellaneous

	4822 256 30274	Fuse holder
1570	4822 242 73586	X-tal 8,4672 MHz
1601	4822 242 72527	Ceramic resonator 4 MHz
1730	4822 070 31001	/00B /00S /05B
1730	4822 253 30322	/07B /17B
5730	4822 146 30859	/00B /00S /05B
5730	4822 146 30879	/07B /17B
BU1	4822 265 20291	Mains inlet
BU2	4822 267 40789	Cinch socket 5p
BU3	4822 267 30743	Headphone socket
SK1	4822 276 12907	Mains switch
SK2	4822 276 12523	Tact switch
5630	4822 148 80281	Transformer for digital out
5660	4822 157 60363	Anti radiation coil

Tools

4822 444 60655	Insulation cover
4822 397 30184	CD Audio signals
4822 397 30096	Audio test disc 5+5A
4822 395 30204	13th order filter
4822 397 30155	Audio test disc 1kHz
4822 322 40066	Service cable (14p)
4822 397 60141	Audio test max diam
4822 267 50676	Service conn (14p)
4822 395 50145	Torx Screwdriverset
5322 130 32182	Led green CQYG11
4822 395 50132	Torx screw square
4822 321 21284	Service cable (4p)