Compact disc player 74CD40

/01B/02B/04B/05B

Service
Service
Service

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.

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 agrées, seuls habilités à réparer votre appareil en panne".

Subject to modification
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Service Consumer Electronics

CS 25 251

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.

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

ORDERING PARTS:

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

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

PARTS ORDERING

Parts may be ordered at the following addresses:

AUSTRIA
HORNYPHON
Vertriebsgesellschaft GmbH
Wienerbergstrasse 1
A 1101 Wien
Austria
Telex: 132.332

BELGIUM
SVD DIVISION MARANTZ
Industrialaan 1
1720 Groot-Bijgaarden
Belgium
Telex: 24466

CHILE
MARANTZ
DIVISION OF PHILIPS S.A.
AV. Santa Maria, 0760
Casilla 2687
Santiago
Telex: 240.239

DENMARK
MARANTZ
DIVISION OF PHILIPS
SERVICE A/S
Prags Boulevard 80
Postbox 1919
DK-2300 København S
Denmark
Telex: 31201

FINLAND
MARANTZ
DIVISION OF OY PHILIPS Ab
Kaivokatu 8
00100 Helsinki
Finland
Telex: 124811

FRANCE
MARANTZ FRANCE
4 Rue Bernard Palissy
92600 Asnières
France
Telex: 611651

GERMANY
MARANTZ GERMANY GmbH
Max-Planck-Strasse 22
6072 Dreieich 1
Germany
Telex: 529821

THE NETHERLANDS
Elpro Marantz
Wint Hontlaan 28
3526 KV Utrecht
The Netherlands
Telex: 4748

NORWAY
MARANTZ
DIVISION OF PHILIPS A/S
Sandstuveien 40
0680 Oslo 6
Norway
Telex: 72640

GREAT BRITAIN
MARANTZ AUDIO U.K. Ltd
Unit 15/16
Saxon Way Industrial Estate
Moor Lane
Harmondsworth UB7 OLW
Great Britain
Telex: 935196

GREECE
SHERTON ELECTRONICS S.A.
P.O.Box 21025
Hippocratus Street 188
Athens 11471
Greece
Telex: 216.795

JAPAN
MARANTZ JAPAN, Inc.
35-1, 7-chome, Sagamiono
Sagamihara-shi, Kanagawa
Japan

KUWAIT
AL ALAMIAH ELECTRONICS
Ussama Building
Fahd al Saleem Street
P.O.Box 23781
Safat-Kuwait
Telex: 22694

ITALY
MARANTZ ITALIANA S.P.A.
Via Chiese, 74
20126 Milano
Italy

SAUDI ARABIA
AL ALAMIAH ELECTRONICS
P.O.Box 5954
University Street
Riyadh 11432
Saudi Arabia
Telex: 401530

SOUTH AFRICA
MARANTZ
DIVISION OF PHILIPS S.A.
Main Road Martindale
P.O. Box. 58088
Newville 21114
South Africa

SPAIN
PHONO S.A.
Ignacio Iglesias 10
Badalona (Barcelona)
Spain
Telex: 59355

SWEDEN
MARANTZ
DIVISION OF PHILIPS
Försäljning AB
Tegeluddsvägen 1
S-115 84 Stockholm
Sweden
Telex: 14060

SWITZERLAND
DYNAVOX ELECTRONICS
Route de Villars 105
1701 Fribourg
Switzerland
Telex: 942377

TURKEY
DOGRUOL Ltd.
I.M.C.
6 Blok N°6310
Unkapani
Istanbul
Turkey
Telex: 22085

MALTA
CACHIA & GALEA
Republic Street, 68D
Valetta
Telex: 1682

PORTUGAL
MARANTZ
Divisao philips S.A. service
Outurela-carnaxide
2795 LinDA-A-VELHA
Telex: 43906

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.

Fig. 1

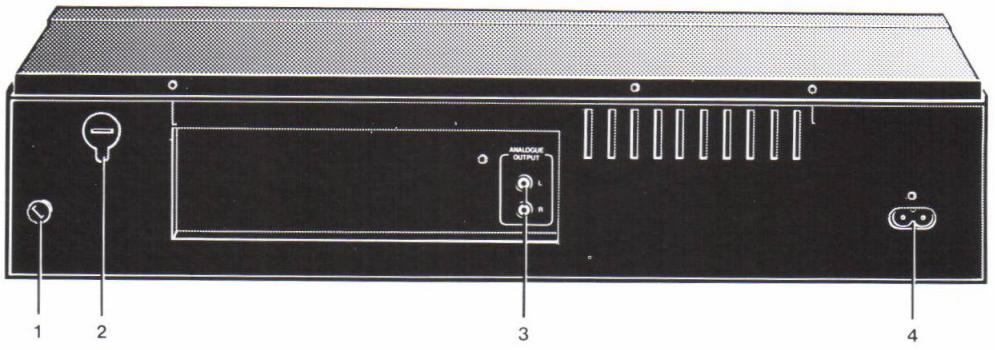
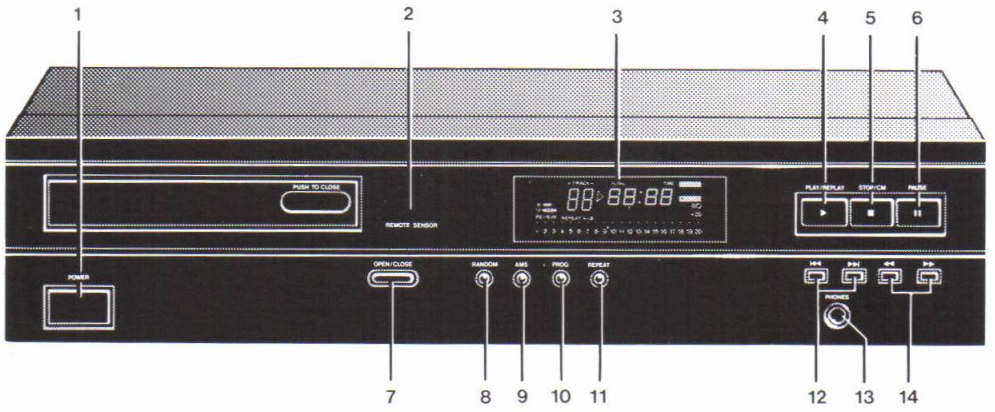


Fig. 2



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CONTROLS

CONNECTIONS (Fig. 1)

1 Fuse holder
(If voltage carousel has been mounted)

2 Voltage selector
(If voltage carousel has been mounted)

3 ANALOGUE OUTPUT
For the connection cable to the amplifier.
- Insert a red plug into the 'R' jack (right-hand channel) and the other plug into the 'L' jack (left-hand channel).
- Insert the two other plugs into the corresponding jacks of the CD or AUX input of your amplifier. You can also use the TUNER or TAPE IN connection, but **never** the PHONO input!

4 Mains socket
- Insert the plug of the mains lead cord supplied into the Mains Socket.
- Connect the other end to your mains supply.

OPERATION

FRONT OF PLAYER (Fig.2)

1 POWER
Switching on and off.

2 REMOTE SENSOR
Receives the signals from the remote control.

3 DISPLAY
Informs you about the functioning of the player.

4 PLAY/REPLAY
- Starting play (**PLAY**).
- Returning to the beginning of a track (**REPLAY**).

5 STOP/CM
- STOPPING PLAY (**STOP**).
- Erasing a programme (**CM** = Clear Memory).

6 PAUSE
Interrupting play.

7 OPEN/CLOSE
Opening and closing the disk tray.

8 RANDOM
Playing in a random order.

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

10 PROG(RAM)
- Storing tracks in a programme.
- Erasing track from a programme.
- Reviewing a programme.

11 REPEAT
Repeating a track, the entire disc or a programme.

12 ⏮ ⏭
Selecting:
- another track during play.
- a track to start play with.
- (⏮ from high to low; ⏭ **from low to high).**

13 PHONES
Connecting headphones.

14 ◀◀ ▶▶
Fast search for a particular passage; ◀◀ backwards to the beginning of the disk and ▶▶ forwards to the end of the disk.

TECHNICAL DATA

General

1. Mains voltage	: 220, 240 Volt (+/– 10%)
2. Mains frequency	: 50-60 Hz
3. Mains voltage selection	: By soldering (220/240 Volt-version) By changing transformer (110/127 Volt-version)
4. Power consumption mains, operated	: 20 W

External RC-5 connection

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

Line output

1. Number of channels	: 2
2. Output voltage	: 2 Vrms +/– 2 dB
3. Unbalance Left-Right	: max. +/– 0,2 dB
4. Output resistance	: 200 Ohm
5. Nominal load impedance	: 100 kOhm // 100 pF
6. Amplitude linearity	: max. +/– 0,1 dB from 20 Hz to 20 kHz into nominal load
7. Phase non-linearity	: max. +/– 1,0° from 20 Hz to 20 kHz into nominal load
8. Signal to noise ratio	: min 96 dB from 20 Hz to 20 kHz into nominal load
9. Dynamic range	: min 90 dB from 20 Hz to 20 kHz into nominal load
10. Total harmonic distortion + noise	: min -88 dB from 20 Hz to 20 kHz into nominal load
11. Intermodulation distortion	: max. 0.004% (min -88 dB) from 20 Hz to 20 kHz into nominal load
12. Out-band attenuation	: min 60 dB above 24,1 kHz from 20 Hz to 20 kHz into nominal load
13. Channel separation	: min 93 dB from 20 Hz to 20 kHz into nominal load
14. Muting during random access	: min 90 dB from 20 Hz to 20 kHz into nominal load
15. Automatic switched de-emphasis with time constants	: 15/50 us

Headphone (fixed)

1. Output voltage	: Max. 2 Vrms +/– 1 dB
2. Unbalance Left-right	: Max. +/– 0,2 dB
3. Output resistance	: 150 Ohm
4. Load impedance range	: 32 Ohm to 600 Ohm
5. Output power	: Max. 6 mW into 32 Ohm load Max. 10 mW into 150 Ohm load Max. 6 mW into 600 Ohm load
8. Signal to noise ratio	: Min 93 dB from 20 Hz to 20 kHz into 600 Ohm
9. Dynamic range	: Min 90 dB from 20 Hz to 20 kHz into 600 Ohm
10. Total harmonic distortion + noise	: Max 0,004% (min-88 dB) from 20 Hz to 20 kHz
11. Intermodulation distortion	: max 0,004% (min-88 dB) from 20 Hz to 20 kHz
12. Channel separation	: min 80 dB from 20 Hz to 20 kHz into 600 Ohm

Dimensions and weight

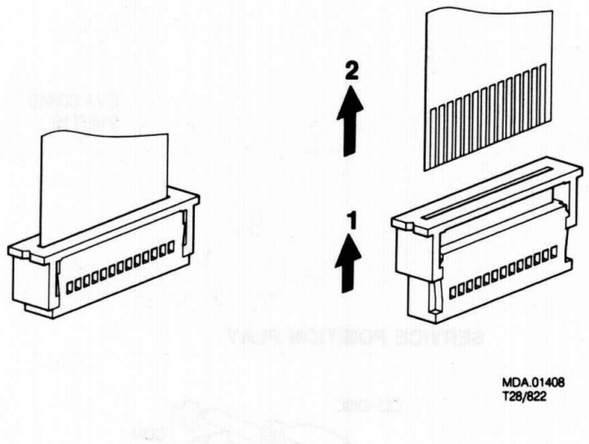
1. Place and height of feet acc. to Philips specification		
2. Apparatus tray closed	WxDxM	: 420 x 280 x 100 mm
3. Apparatus tray open	WxDxM	: 420 x 423 x 100 mm
4. Weight	4,0 kg	

2. SERVICING HINTS

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.



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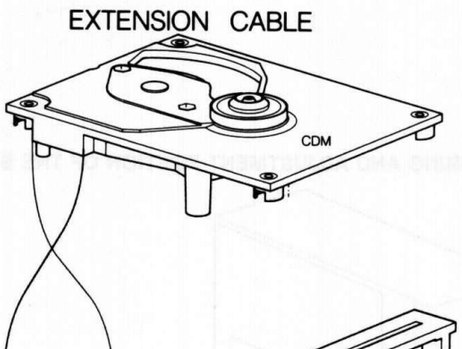
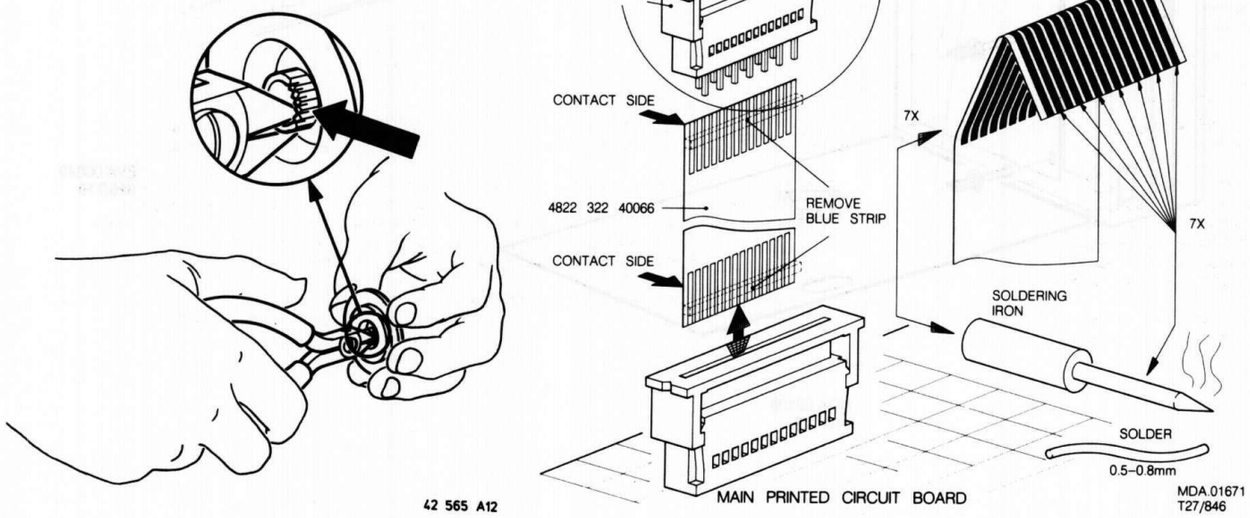
SERVICE TOOLS

Audio signals test disc	4822 397 30184
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





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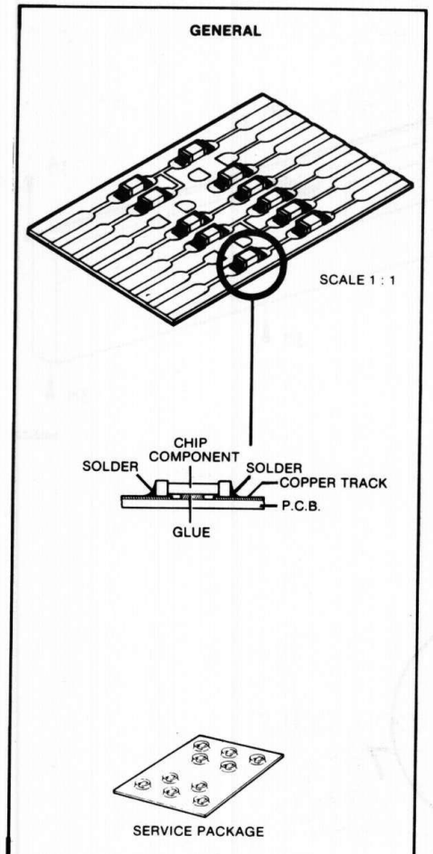
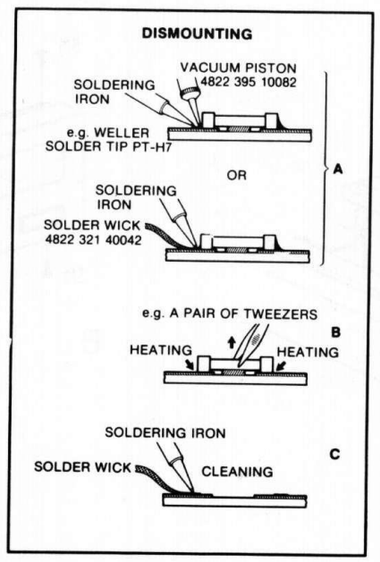
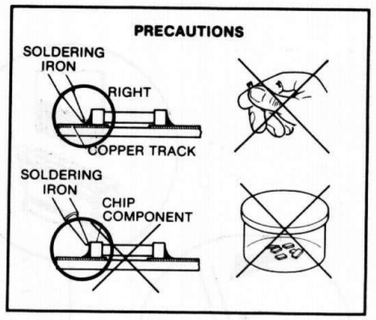
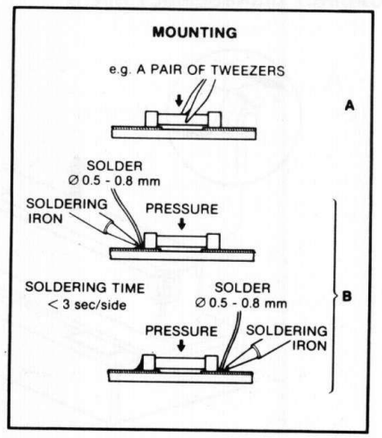
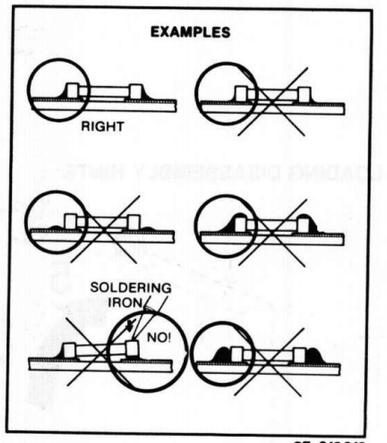










27 012C12

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.

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.

ESD

D **WARNUNG**

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kan die Lebensdauer drastisch reduzieren.
Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes.
Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

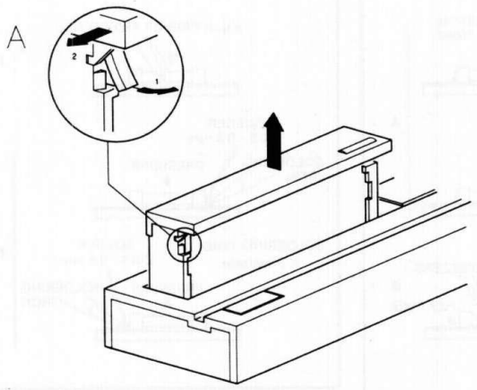
NL **WAARSCHUWING**

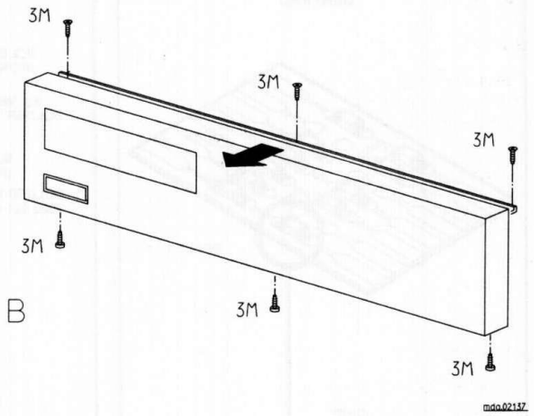
Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen.
Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa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

I **AVVERTIMENTO**

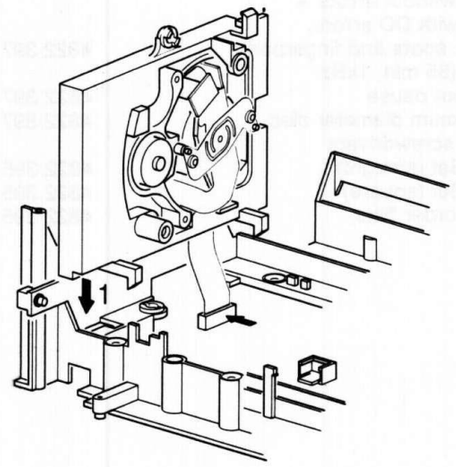
Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione.
Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello 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

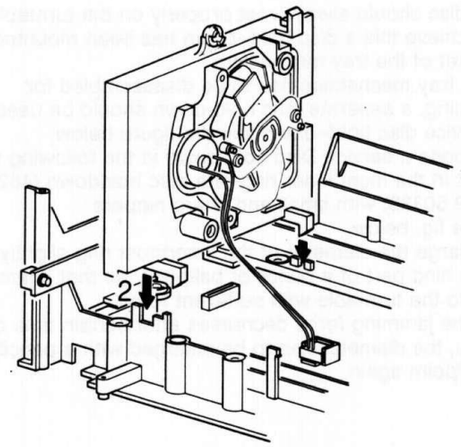




FOIL CONNECTION POSITION



PREPARE SERVICE POSTITION PLAY



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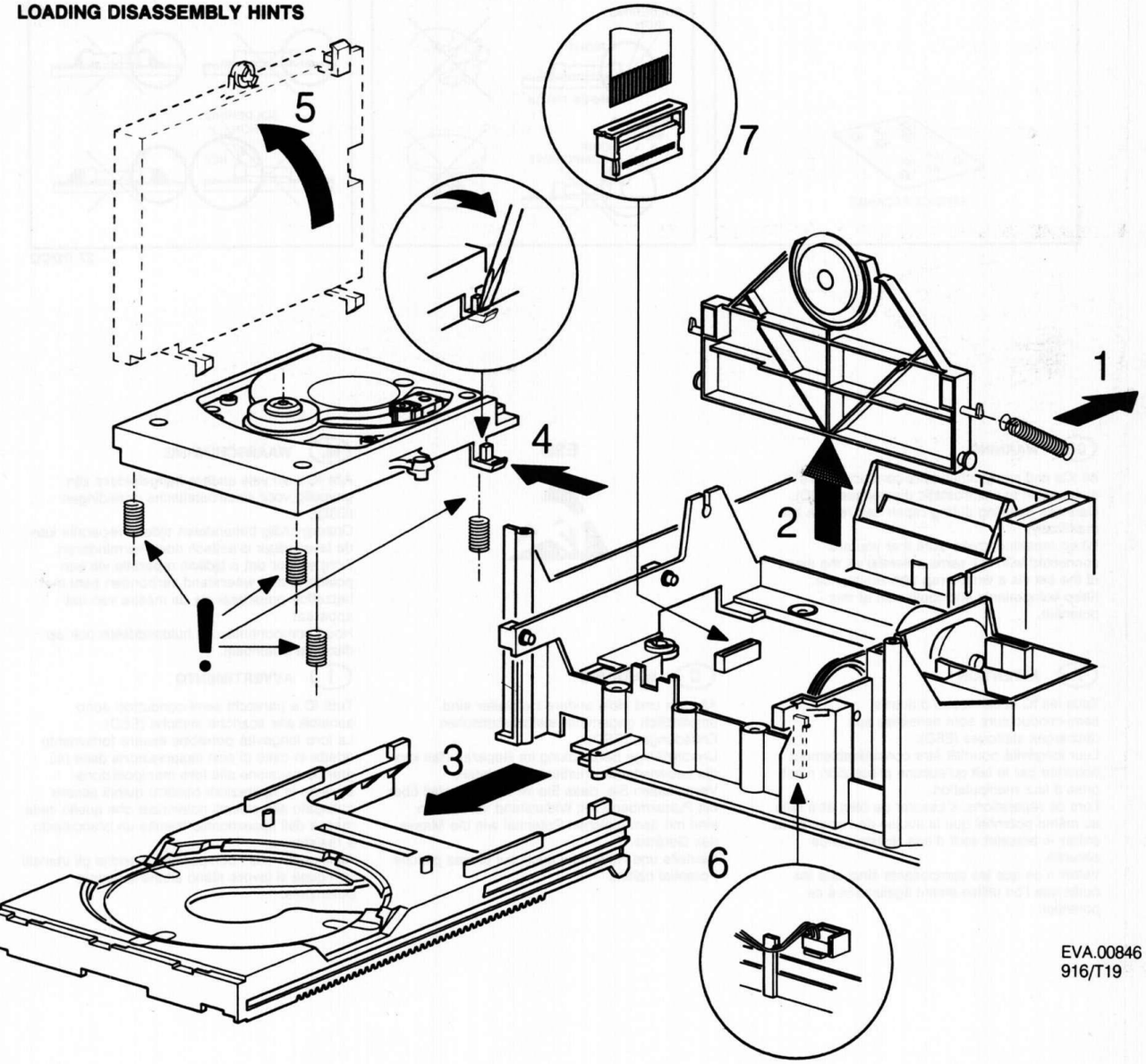
LOADING DISASSEMBLY HINTS



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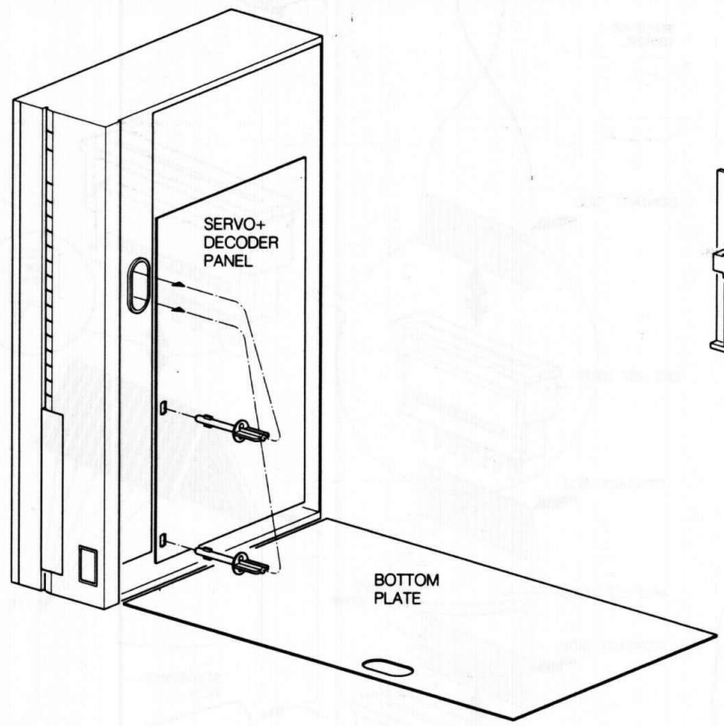
MEASURING AND ADJUSTMENT POSTION OF THE SET



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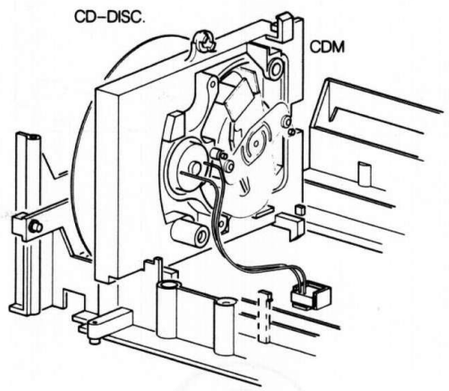
SERVICE POSITION PLAY



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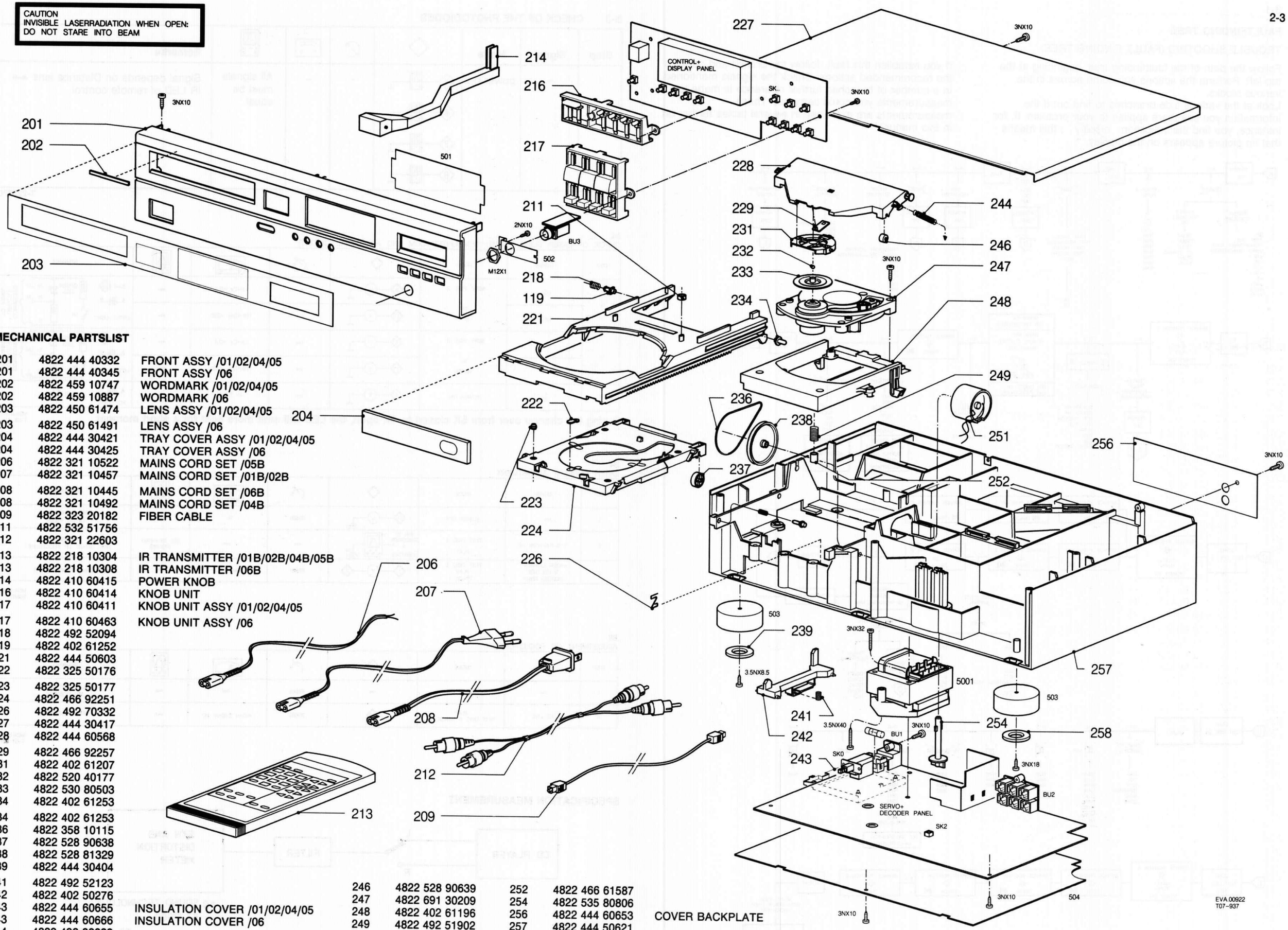
CAUTION
INVISIBLE LASERRADIATION WHEN OPEN:
DO NOT STARE INTO BEAM



MECHANICAL PARTSLIST

201	4822 444 40332	FRONT ASSY /01/02/04/05
201	4822 444 40345	FRONT ASSY /06
202	4822 459 10747	WORDMARK /01/02/04/05
202	4822 459 10887	WORDMARK /06
203	4822 450 61474	LENS ASSY /01/02/04/05
203	4822 450 61491	LENS ASSY /06
204	4822 444 30421	TRAY COVER ASSY /01/02/04/05
204	4822 444 30425	TRAY COVER ASSY /06
206	4822 321 10522	MAINS CORD SET /05B
207	4822 321 10457	MAINS CORD SET /01B/02B
208	4822 321 10445	MAINS CORD SET /06B
208	4822 321 10492	MAINS CORD SET /04B
209	4822 323 20182	FIBER CABLE
211	4822 532 51756	
212	4822 321 22603	
213	4822 218 10304	IR TRANSMITTER /01B/02B/04B/05B
213	4822 218 10308	IR TRANSMITTER /06B
214	4822 410 60415	POWER KNOB
216	4822 410 60414	KNOB UNIT
217	4822 410 60411	KNOB UNIT ASSY /01/02/04/05
217	4822 410 60463	KNOB UNIT ASSY /06
218	4822 492 52094	
219	4822 402 61252	
221	4822 444 50603	
222	4822 325 50176	
223	4822 325 50177	
224	4822 466 92251	
226	4822 492 70332	
227	4822 444 30417	
228	4822 444 60568	
229	4822 466 92257	
231	4822 402 61207	
232	4822 520 40177	
233	4822 530 80503	
234	4822 402 61253	
234	4822 402 61253	
236	4822 358 10115	
237	4822 528 90638	
238	4822 528 81329	
239	4822 444 30404	
241	4822 492 52123	
242	4822 402 50276	
243	4822 444 60655	INSULATION COVER /01/02/04/05
243	4822 444 60666	INSULATION COVER /06
244	4822 492 32883	
246	4822 528 90639	
247	4822 691 30209	
248	4822 402 61196	
249	4822 492 51902	
251	4822 361 21258	
252	4822 466 61587	
254	4822 535 80806	
256	4822 444 60653	
257	4822 444 50621	
258	4822 444 30404	

COVER BACKPLATE

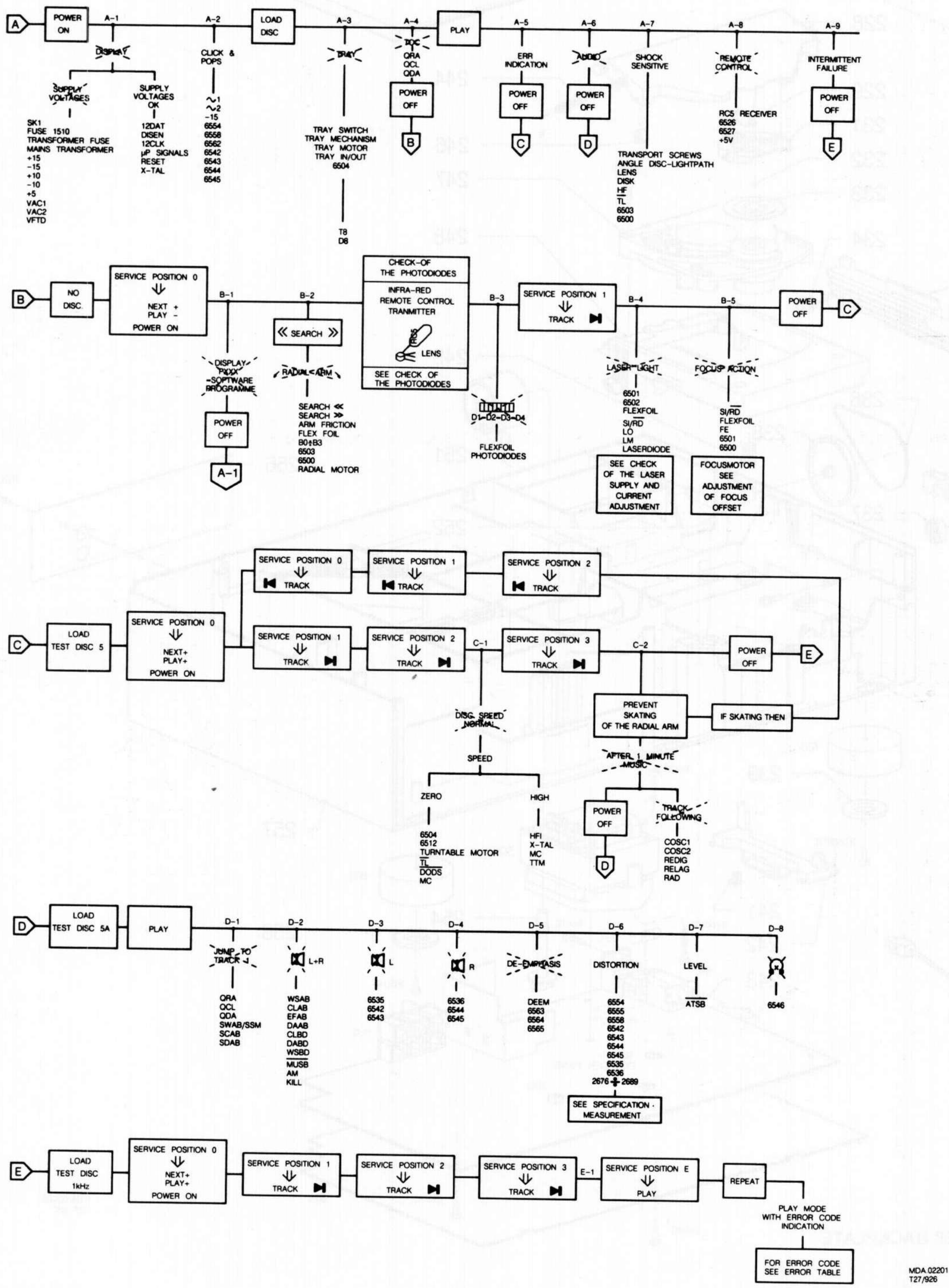
EVA.00922
T07-937

FAULTFINDING TREE

TROUBLE SHOOTING (FAULT FINDING 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 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.



B-3 CHECK OF THE PHOTODIODES

Step	Signal	Mode	◇				Remarks
1	–	power on	④ ⑥ ⑦ ⑧	–	–	All signals must be equal	Signal depends on Distance lens ↔ IR LED of remote control

T-22387C

B4
CHECK OF LASER SUPPLY (WITH DEMOUNTED CDM AND ADDITIONAL CIRCUIT)

STEP	SIGNAL	MODE	◇				REMARKS
1	LO	SERV. POS. 2 SK	⑨ V	–	1.8 < V < 2.3	–	Si=1 ㉑ A K LITTLE LIGHT; 33Ω GREEN LED to LO to LM SK 18Ω to ⏚; CONNECTED DIRECTLY TO PANEL
	LM		⑪ V	–	170 < mV < 220	–	
2	LO	SERV. POS. 2 SK	⑨ V	–	1.8 < V < 2.3	–	Si=1 ㉑ A K LITTLE LIGHT; 33Ω GREEN LED to LO to LM SK 18Ω to ⏚; CONNECTED DIRECTLY TO PANEL
	LM		⑪ V	–	170 < mV < 220	–	
3	LO	POWER ON	⑨ V	–	0V ± 0.2V	–	A K NO LIGHT Si=0 ㉑

During the change over from SK closed to SK open, the LED will emit more light for a short moment.

MDA.01379
T-08 824

B4
LASER CURRENT ADJUSTMENT

STEP	SIGNAL	MODE	◇				REMARKS
1	–	POWER OFF	⑪ Ω GND	R3520	1k	–	PRE-ADJUSTMENT OHMIC VALUE
2	EYE-PATTERN HF	TEST DISC 5 PLAY	PIN 32 DECODER A (SAA7310) 0V GND	–	–	SEE DRAWING 3701788	IF NO SIGNAL SEE: "START UP PROCEDURE"
3	LASER CURRENT ≙ VOLTAGE ACROSS R3501	TEST DISC 5 PLAY TRACK 1	① V ②	R3520	50mV DC	–	HIGH-OHMIC MEASUREMENT

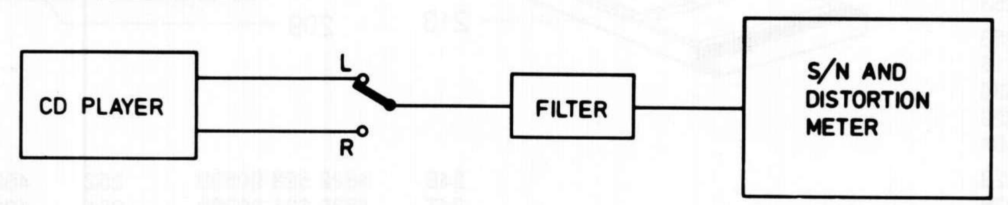
MDA.01778
T28/901

B5
ADJUSTMENT OF FOCUS-OFFSET

STEP	SIGNAL	MODE	◇				REMARKS
1	–	POWER ON	–	R3569	–	–	ADJUST FOR OPTICAL MID-POSITION
2	FE LAG	PLAY TEST DISC 5 TRACK 1	㉗	R3569	400mV ±40mV DC	–	FINE ADJUSTMENT

MDA.01381
T-08 824

SPECIFICATION MEASUREMENT



e.g. SOUND TECHNOLOGY ST 1700B

30 459 A12

SPECIFICATIONS MEASUREMENT

Signal	Mode	◇			Remarks
BU2-L	Test disc 3, play total harmonic distorsion	filter output	See spec.		See drawing 30459A12
BU2-R	Test disc 3, play total harmonic distorsion	filter output	See spec.		See drawing 30459A12
BU2-L	Test disc 3, play signal-to-noise ratio	filter output	See spec.		See drawing 30459A12
BU2-R	Test disc 3, play signal-to-noise ratio	filter output	See spec.		See drawing 30459A12

T-22255O

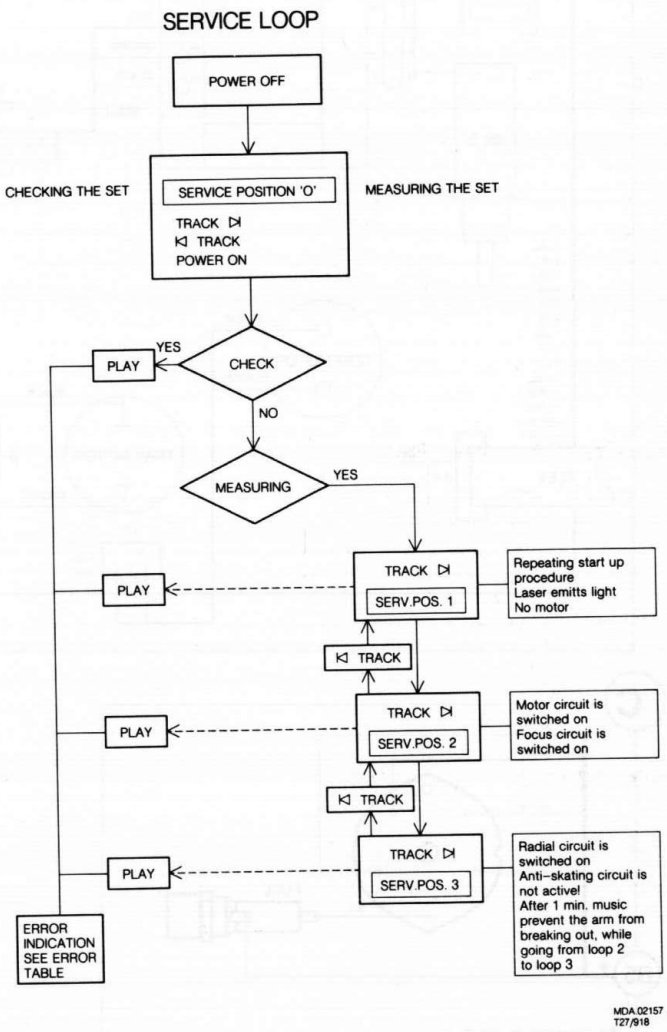
ERROR TABLE

System errors

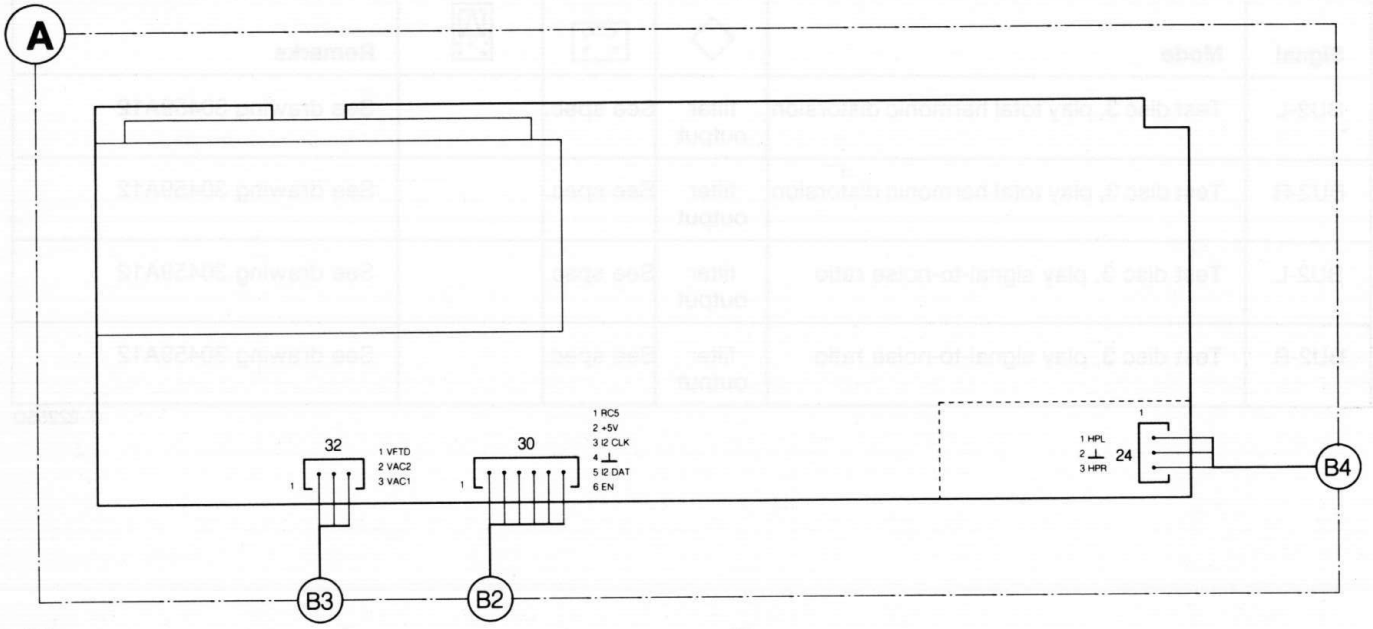
Indication	Cause	Check
Er 02	No $\overline{TL}$ pulse at start-up.	$\overline{Si}$, Sc, RD, Photodiode signal processor $\overline{TL}$, HFI, CD disc present?
Er 03	No Lead-in track found	CD disc, radial arm position, REdig, Radial error processor
Er 05	$\overline{TL}$ pulse low > 50ms during PLAY	CD disc, HFI
Er 06	No $\overline{TL}$ pulse with 0.5 sec. during track jumping	RE-lag circuit, $\overline{TL}$, REdig
Er 07	Subcode error during PLAY	HFI
Er 08	TOC error	CD disc, turntable motor control, radial arm position

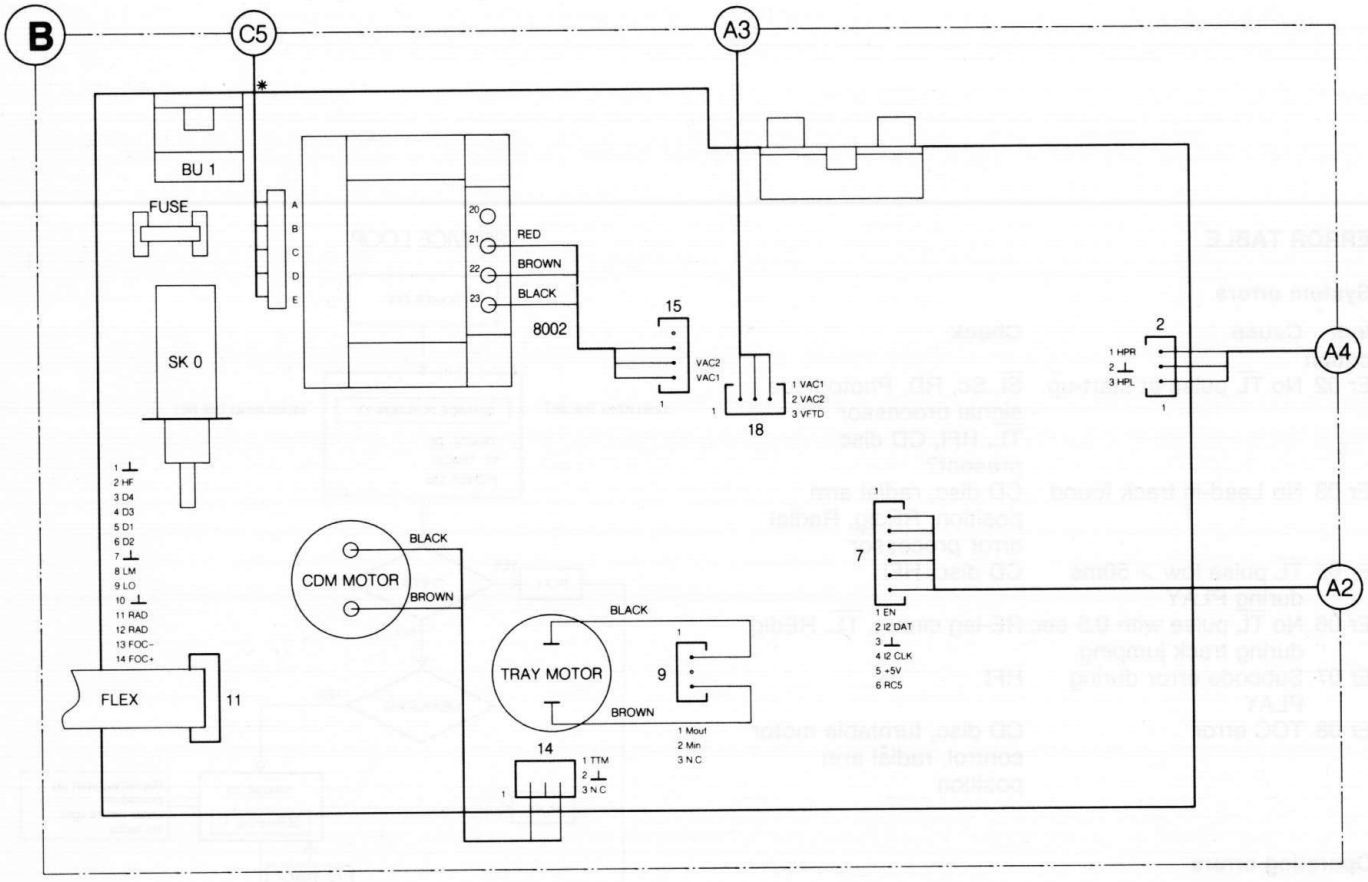
Operating errors

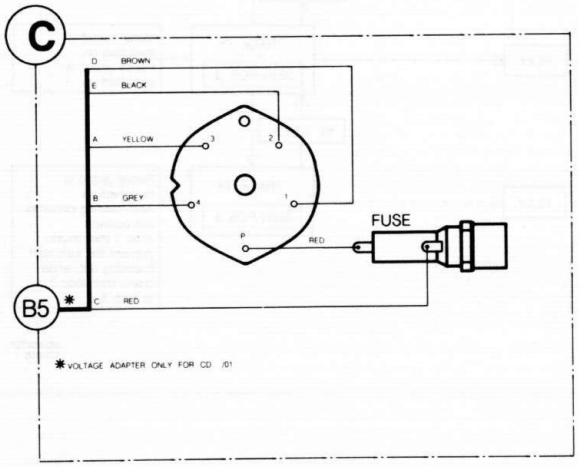
Er 30: NEXT when repeat is off.
Er 31: PREVIOUS when repeat is off.
Er 32: INDEX selected when no track selected.
Er 33: Selected index does not exist on this CD.
Er 34: Review error: no program.
Er 35: Program memory full.
Er 36: Programmed track is non existing on this CD.
Er 37: Selected track is non existing on this CD.
Er 60: Fast forward bound.
Er 61: Fast reverse bound.



WIRING DIAGRAM

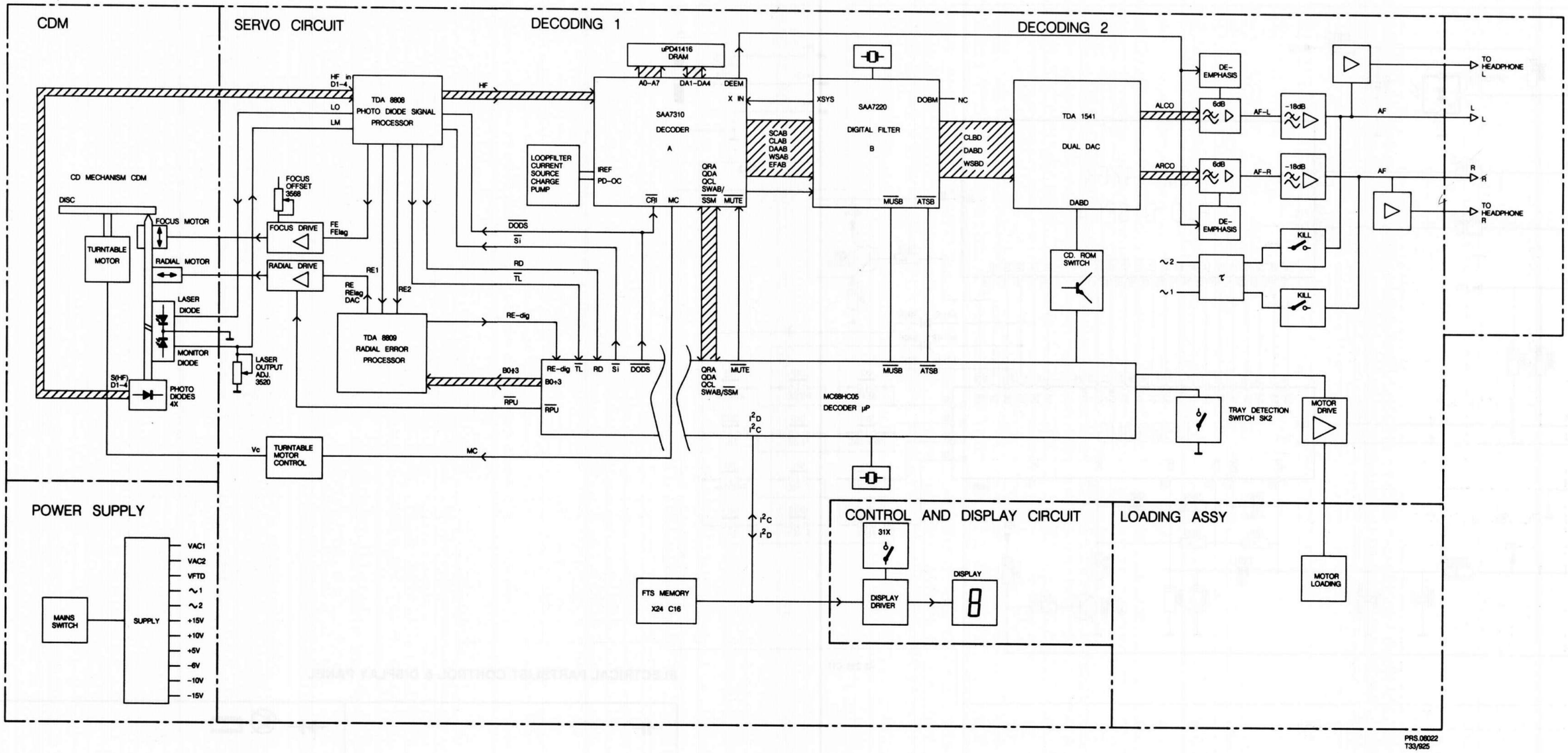






MDA 02342
T02/941

BLOCK DIAGRAM



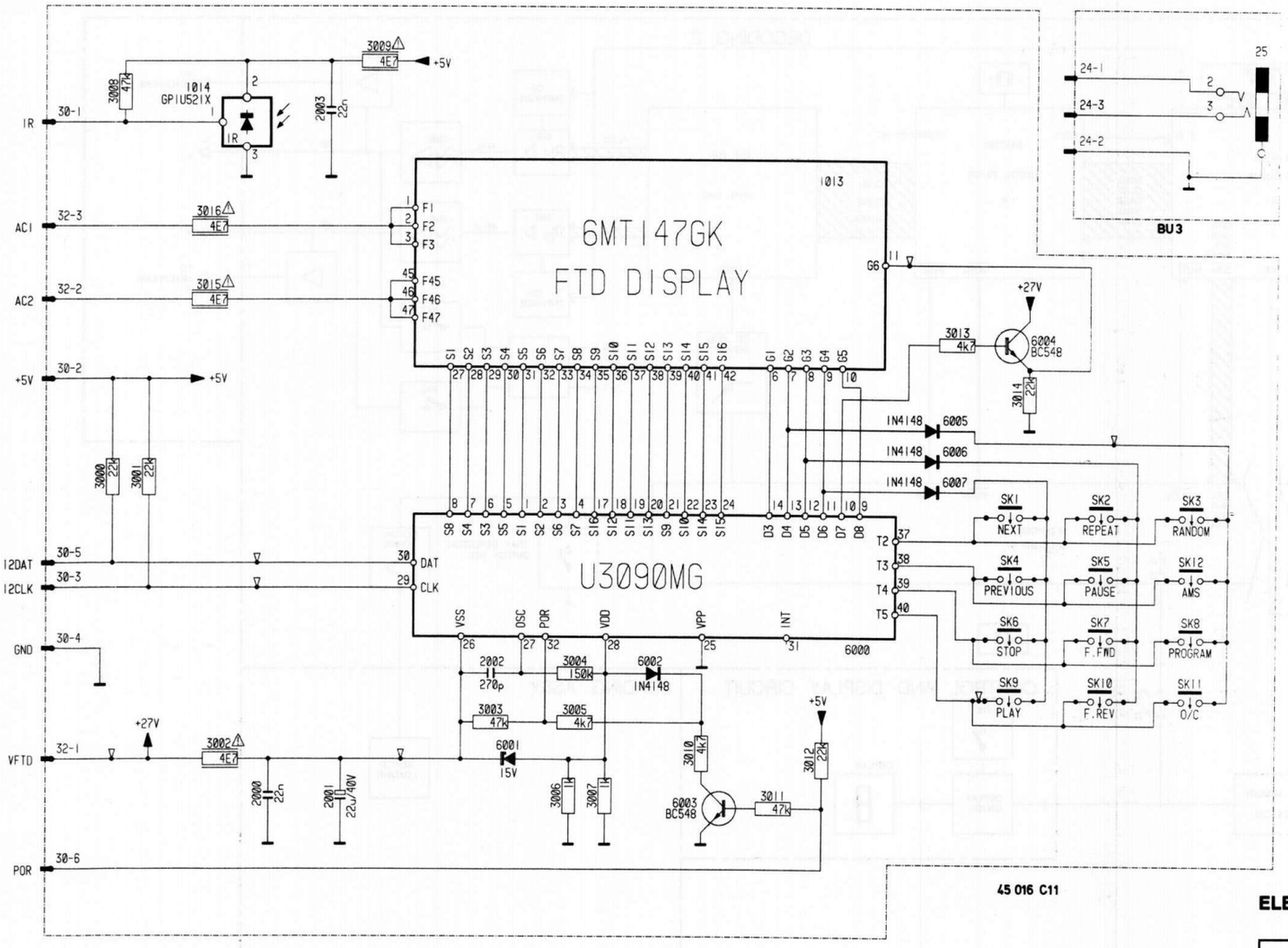
AGC – Automatic Gain Control
B0-B3 – Control bits for radial circuit
BEQ – Equalizer reference current input
BGC – DC and LF gain control reference input
Cosc1 – Capacitor wobble oscillator
Cosc2 – Capacitor wobble oscillator
DEC – Decoupling input internal bypass
DET – HF detector voltage input
DIV4 – 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 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
TTM+ – Control voltage for turntable motor
Vext– – Supply connection
Vext+ – Supply connection

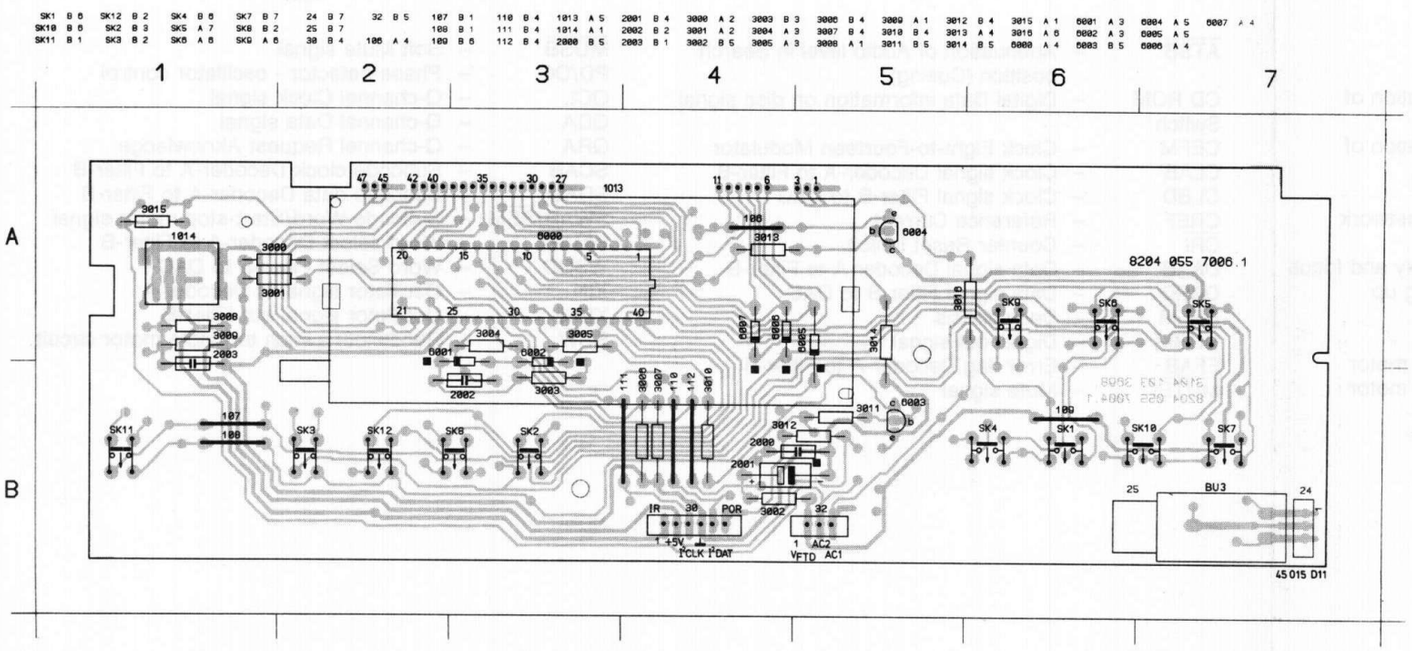
ATSB – Attenuation of Audio level in Search position (Cueing)
CD ROM Switch – Digital Data information on disc signal
CEFM – Clock Eight-to-Fourteen Modulator
CLAB – Clock signal Decoder-A to Filter-B
CLBD – Clock signal Filter-B to DAC
CREF – Reference Current
CRI – Counter Reset Inhibit
DAAB – Data 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 Aknowledge
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
BSW – Bandwidth switch turntable motor circuit

CONTROL AND DISPLAY PANEL



45 016 C11



CS 25 261

ELECTRICAL PARTSLIST CONTROL & DISPLAY PANEL

2501	5322 124 21643	22µF 20% 40V
2502	4822 122 10166	22µF 30% 16V
2503	4822 122 10172	220pF 10% 50V
2504	5322 124 21643	22µF 20% 40V

3501	4822 116 52463	22k 5% 0,5W
3502	4822 116 52463	22k 5% 0,5W
3503	4822 116 52463	22k 5% 0,5W
3504	4822 111 30499	4,7Ω 5% 0,33W
3505	4822 116 52426	4k7 5% 0,5W
3506	4822 116 52426	4k7 5% 0,5W
3507	4822 116 52472	47k 5% 0,5W
3508	4822 116 52426	4k7 5% 0,5W
3509	4822 116 52501	150k 5% 0,5W
3510	4822 116 52391	1k 5% 0,5W
3511	4822 116 52391	1k 5% 0,5W
3512	4822 111 30593	3,3Ω 5% 0,33W
3513	4822 111 30593	3,3Ω 5% 0,33W
3515	4822 111 30499	4,7Ω 5% 0,33W
3516	4822 116 52472	47k 5% 0,5W

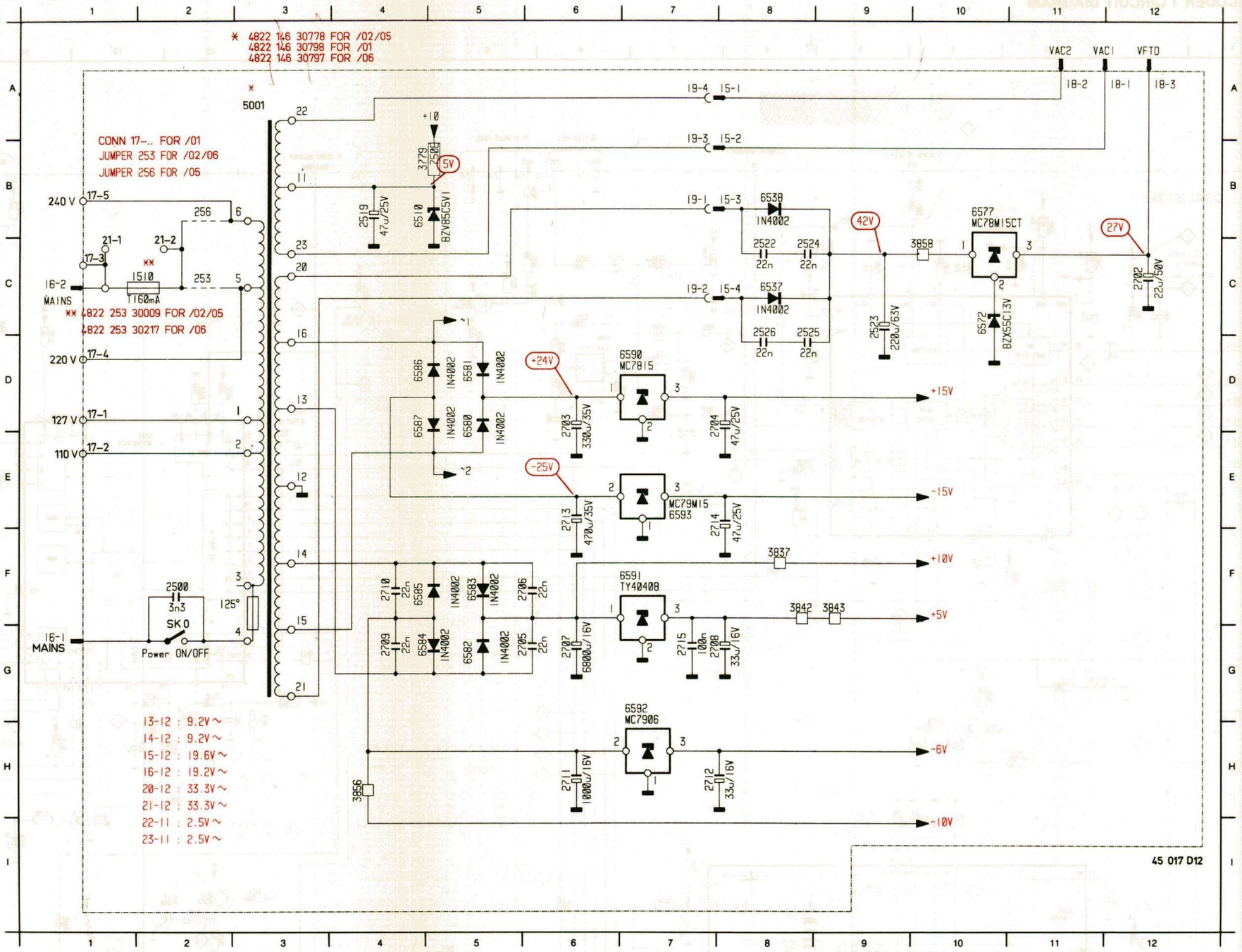
6501	4822 209 72226	U3090MG
6502	4822 130 81086	BZX55-C15
6503	4822 130 30621	1N4148
6504	4822 130 40938	BC548
6506	4822 130 30621	1N4148
6507	4822 130 30621	1N4148
6508	4822 130 30621	1N4148
6511	4822 130 30621	1N4148

SK . .	4822 276 12276	Tact switch (4.3 mm)

Miscellaneous

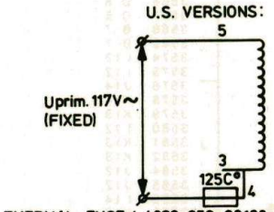
BU3	4822 267 30743	Phone socket
1502	4822 214 51772	RC receiver
1504	4822 130 90661	Display

POWER SUPPLY CIRCUIT DIAGRAM



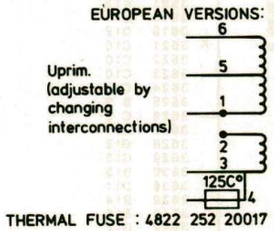
1510	C	2
2500	F	2
2519	B	4
2522	C	8
2523	C	9
2524	C	8
2525	C	8
2526	C	8
2702	C	12
2703	D	6
2704	D	7
2705	G	6
2706	F	6
2707	G	6
2708	G	8
2709	G	4
2710	F	4
2711	H	6
2712	H	7
2713	E	6
2714	E	8
2715	G	7
3779	B	5
3837	F	8
3842	F	8
3843	F	9
3856	H	4
3858	C	10
5001	A	3
6510	B	4
6537	C	8
6538	B	8
6572	C	10
6580	D	5
6581	D	5
6582	G	5
6583	F	5
6584	G	4
6585	F	4
6586	D	4
6587	D	4
6590	D	7
6591	F	7
6592	G	7
6593	E	7
SK 0	F	2

U.S. VERSIONS:

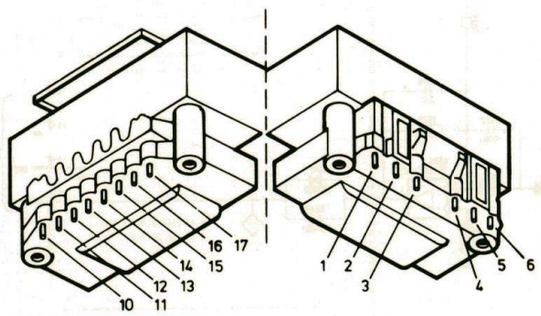


THERMAL FUSE : 4822 252 20108

EUROPEAN VERSIONS:



THERMAL FUSE : 4822 252 20017



44 577 A11

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

SERVO DECODER 1 CIRCUIT DIAGRAM

SERVO DECODER 1

EYEPATTERN

2.5V
5us/DIV

TO SERVO DECODER 2 HFI

TO SERVO DECODER 2 CRI

TO FLEX FOIL FOC+ FOC-

TO DISPLAY PANEL RCS

TO RC BUS

TO SERVO DECODER 2 SMAB/SSM

TO DISPLAY PANEL I2DAT DISEN I2CL

PHOTODIODE SIGNAL PROCESSOR

6501 TDA8808

HF AMPLIFIER

EQUALIZER

GAIN CONTROL

HF DETECTOR

FOCUS NORMALIZING CIRCUIT

STARTING CIRCUIT

LASER SUPPLY

ADJUST R3520
50 mV DC
SEE ALSO TABLE B4

SEE TABLE B3

FOCUS OFFSET ADJUST

FOCUS DRIVE

6500 TCA8372(B)

6527 BC558B

6526 BC848

50us/DIV 136us

ACTIVITY WHEN USING REMOTE CONTROL

ADJUST R3568
400mV ± 40mV
SEE ALSO TABLE B5

TRAY DETECTION

SK 2

6530 WC68HC05C8

I PORT D

I/O PORT C

I/O PORT A

I/O PORT B

RAM

ROM

CPU

TCAP TCMP VDD VSS CLOCK TIMING RESET TRO XTAL1 XTAL2

5V CLOSING
0V OPENING
2.5V REST

+5V OPENING
0V REST

6504 TCA8372(A)

MOUT MIN

TO TRAY MOTOR

AUDIO SIGNALS DISC 1 : TRACK 62 63 64 65 HIGH
TRACK 66 LOW

ANI ATSB WUSB MUTE QDA QCL QRA KILL

LOW DURING SEARCH << OR SEARCH >>

LOW DURING NEXT , PREVIOUS , PAUSE

LOW PULSES IN PAUSE POSITION

TO SERVO DECODER 2

5V
0V power on

HIGH BY BCM DISC
LOW BY I2CM DISC

BCM DISC -1V
I2CM DISC +5V

6517 BC858

6516 BC858

BCM DISC 0V
I2CM DISC OFF

BCM DISC -1V
I2CM DISC +5V

play mode
10ms/DIV
asynchronous uP dependent
10 X 8 bits
QRA

0.2ms/DIV
QCL
QDA
continue data

6504 TCA8372(B)

6547 IN4002

6549 IN4002

-2V AT BEGINNING OF DISC
-1V AT END OF DISC

TO TURNTABLE MOTOR

TURNTABLE MOTOR DRIVE

REI
RE2
5ms/DIV
SERVICE POSITION 2

SEE TABLE B4

LASER CURRENT ADJUST

SEE TABLE B4

LOW PULSES DURING SEARCH

STARTING UP
start
1s 10ns

1ms/DIV number depends on search speed

SERVICE POSITION Ø	PLAY MODE
SEARCH <<	SEARCH >>	SEARCH
32 HIGH	HIGH	ACTIVITY
33 HIGH	LOW	ACTIVITY
34 HIGH	HIGH	ACTIVITY
36 LOW	LOW	ACTIVITY

2.5V IDAC
2ms/DIV bump against player in play mode

1.2Vpp
0.5ms/DIV 1.8ms

6503 TDA8809

RADIAL MIRROR

RADIAL ARM DRIVE

6508 TCA8372(A)

play mode
1ms/DIV 1.8ms

1ms/DIV 1.8ms

RAD+ RAD-

TO FLEX FOIL

MC FROM SERVO DECODER 2

45 012 D12

TO FLEX FOIL LM GND LO

1503	G13	3721	H14
2501	C 2	3724	D15
2503	C 3	3725	D16
2504	C 2	3728	E15
2506	B 3	3729	E15
2507	B 4	3730	E15
2508	B 5	3731	E17
2509	B 5	3775	C14
2510	C 6	3807	J 7
2511	D 6	3813	F11
2513	E 5	3814	J14
2514	E 4	3815	D11
2515	E 2	3818	C 9
2520	G 4	3821	E15
2521	G 4	3822	E15
2530	H 4	3823	G14
2531	H 4	3825	F 6
2532	I 7	3827	E14
2534	J 7	3829	D 7
2535	K 4	3830	H12
2536	K 4	3831	H13
2537	K 4	3836	H16
2538	I 2	3838	D16
2540	K10	3839	D16
2545	K10	3840	I 7
2546	J 9	3845	B 4
2550	J 8	3847	C 8
2560	C 7	3848	B 9
2561	D 7	3849	F15
2562	B 8	3850	F15
2563	D 8	3851	C 7
2566	K12	3852	C14
2570	J14	3853	F15
2572	J14	3857	B14
2574	K12	3861	C10
2610	G11	3872	D11
2620	D16	6500	C 8
2621	G12	6500	J 9
2622	G12	6501	C 3
2623	G12	6502	G 4
2624	G13	6503	I 3
2645	E16	6504	E16
2646	E17	6504	K14
2693	K12	6505	K10
2695	H15	6506	K10
3328	E14	6512	K12
3501	C 2	6516	I 13
3502	C 2	6517	I 12
3503	B 3	6526	C11
3504	B 3	6527	C 9
3505	B 4	6530	D13
3506	B 4	6547	K15
3507	B 5	6548	K15
3508	C 6	6550	H14
3509	D 6	6559	H13
3510	E 6	SK 2	D11
3520	G 3		
3521	G 3		
3522	G 4		
3523	G 3		
3524	G 4		
3530	H 4		
3531	H 5		
3533	J 7		
3534	J 7		
3535	K 7		
3539	J 2		
3540	K11		
3541	I 10		
3542	K 9		
3542	K10		
3543	K 9		
3545	J 9		
3546	K 9		
3552	I 7		
3555	J 7		
3557	I 8		
3560	D 7		
3561	C 7		
3562	D 7		
3563	B 8		
3564	C 8		
3565	C 8		
3566	D 8		
3567	D 8		
3568	B 7		
3569	B 7		
3574	I 12		
3575	I 12		
3576	J14		
3578	K14		
3579	K13		
3580	I 12		
3581	K13		
3582	K13		
3584	J12		
3585	J12		
3586	I 14		
3588	K12		
3589	K11		
3591	K13		
3613	G14		
3619	D12		
3621	C10		
3622	C10		
3623	C10		
3624	C 9		
3625	B 9		
3626	C 9		
3627	G11		
3628	G12		
3629	G13		
3630	B15		
3638	D11		
3639	B14		
3640	B15		
3642	D12		
3646	F 3		
3647	I 2		
3720	H14		

SERVO DECODER PANEL COMPONENT SIDE

2	B10	166	E 4	190	F 8	212	E 8	235	D 4	1000	E10	2525	C 6	2566	F 6
6	D 6	167	D 7	191	E 2	213	C 7	236	B 7	1502	F 9	2526	C 6	2570	F 3
7	D 7	168	D 3	192	C 5	214	B 8	237	D 3	1503	D 5	2528	C 6	2572	F 5
9	E 6	169	D 3	193	C 6	215	C 8	238	E 5	1510	B 1	2529	C 5	2574	F 5
11	E 1	170	E 4	194	E 9	216	C 3	239	E 5	2500	B 1	2530	D 1	2600	D 6
14	F 4	171	F 7	195	C 5	218	C 6	240	F 5	2501	E 1	2531	D 1	2601	D 6
15	B 5	172	B 4	196	F 7	219	C 6	241	C 6	2503	E 1	2532	C 2	2602	E 6
18	B 6	173	E 3	197	F 7	220	E 4	242	E 7	2504	E 2	2534	D 1	2604	E 6
150	F 1	174	D 3	198	E 8	221	E 4	243	B 9	2506	E 2	2535	D 2	2607	E 6
151	E 8	175	B 7	199	F10	223	F 8	244	B 5	2507	E 3	2536	D 2	2608	E 6
152	F10	176	F 6	200	D10	224	B 8	245	A 7	2508	D 2	2537	D 1	2609	E 6
153	D 7	177	F 2	201	B 9	225	E 3	246	F 8	2509	D 1	2538	D 1	2610	D 5
155	F 9	178	B 8	202	E 5	226	D 2	247	B 4	2510	E 2	2540	E 1	2611	F 8
157	C 7	180	B 8	203	E 2	227	E 5	248	D 1	2511	D 2	2542	F 2	2612	F 8
158	F 5	181	F 6	204	D 4	228	E 5	249	E 2	2513	D 2	2545	E 1	2619	B 6
159	B 7	182	F 2	205	C 4	229	C 4	250	E 1	2514	D 4	2546	F 2	2620	F 3
160	F 7	183	B 7	206	C 4	230	E 4	251	D 7	2515	E 2	2550	D 3	2621	D 5
161	B 7	185	D 7	207	D 4	231	D 4	252	D 9	2520	F 1	2560	F 1	2622	D 4
162	F 9	187	F 7	208	C 4	232	E 3	253	B 1	2521	F 1	2561	F 1	2623	D 5
164	D10	188	D 3	209	F 9	233	E 3	254	E 5	2522	B 6	2562	D 1	2624	D 5
165	F 6	189	D 7	210	E 4	234	E 4	256	B 1	2524	B 6	2563	F 2	2630	F 9

2631	F 9	2669	C 7	2692	B 7	2716	C 5	3539	E 3	3575	E 3	3611	E10	3651	F 9
2632	E 8	2670	C 9	2693	F 6	3501	E 1	3540	E 1	3576	F 3	3613	D 7	3652	E10
2633	E 8	2671	C 8	2695	C 7	3502	E 1	3541	E 1	3578	F 3	3619	D 6	3653	F10
2634	D 9	2673	B 7	2696	D 9	3503	E 3	3542	E 1	3579	F 5	3621	E 5	3657	E 9
2635	D10	2674	C10	2697	D 9	3504	D 3	3543	F 1	3580	E 3	3622	C 5	3658	D 8
2636	E 8	2675	C 9	2698	D 7	3505	D 2	3545	F 2	3581	F 5	3623	E 5	3659	E10
2638	F10	2676	E 8	2699	D 8	3506	D 4	3546	D 1	3582	E 5	3624	C 6	3665	D10
2641	E10	2677	E 9	2700	B 8	3507	D 2	3552	D 3	3584	F 5	3625	C 7	3666	D 8
2642	A 7	2678	E 9	2703	A 4	3508	D 2	3555	D 2	3585	F 5	3626	C 7	3667	C 9
2644	F 4	2679	E 9	2704	A 5	3509	D 3	3557	D 4	3586	F 4	3627	D 5	3668	C 9
2645	F 3	2680	E 9	2705	B 5	3510	E 2	3560	E 3	3588	F 5	3628	D 5	3669	C 9
2646	F 4	2681	E 9	2706	B 5	3520	F 2	3561	E 1	3589	D 6	3629	D 5	3670	C 7
2651	E 9	2682	E 9	2707	A 4	3521	E 2	3562	E 1	3591	E 4	3630	D 7	3671	C 9
2652	E 8	2683	D 8	2708	B 6	3522	F 2	3563	E 1	3600	D 6	3638	D 5	3672	C 8
2653	E 9	2684	D 8	2709	C 4	3523	F 2	3564	E 1	3602	E 7	3639	D 7	3673	C 9
2654	D 8	2685	D 8	2710	C 4	3524	F 2	3565	E 2	3603	E 6	3640	D 7	3674	C 8
2664	D10	2686	D 9	2711	B 4	3530	C 3	3566	F 2	3604	E 6	3642	D 5	3675	B 9
2665	D 8	2687	D 9	2712	B 5	3531	C 2	3567	F 1	3605	E 6	3645	E 9	3676	B 7
2666	C10	2688	D 9	2713	A 4	3533	D 2	3568	D 3	3607	E 6	3646	E 3	3677	B 9
2667	C 8	2689	D 9	2714	A 5	3534	D 2	3569	D 1	3609	F 8	3647	C 4	3678	B 7
2668	C10	2690	A 6	2715	B 6	3535	D 2	3574	E 4	3610	E 6	3650	E 8	3679	B 8

3680	B 7	3737	D 9	3809	B 6	3834	D 8	3858	C 5	6517	E 4	6549	E 7	6582	B 5
3681	B10	3738	D 9	3811	C 8	3835	F 7	3860	A 6	6519	A 6	6550	D 7	6583	B 5
3682	B10	3739	D 9	3812	D 6	3837	C 5	3861	A 8	6520	E 7	6551	A 5	6584	C 4
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3706	B 8	3748	A 6	3820	B 8	3844	E 6	5503	C 8	6535	C 9	6558	A 6	6592	B 5
3707	B 8	3750	A 8	3821	E 3	3845	E 4	6500	F 1	6536	C 8	6559	C 7	6593	A 5
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3724	F 3	3801	E 4	3826	D 5	3851	F 1	6505	E 1	6542	B 8	6565	D 8		
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3730	F 3	3805	F 3	3830	D 4	3855	B 7	6513	C 7	6546	B 9	6577	C 6		
3731	F 3	3807	D 3	3831	D 4	3856	C 5	6515	C 6	6547	F 4	6580	A 5		
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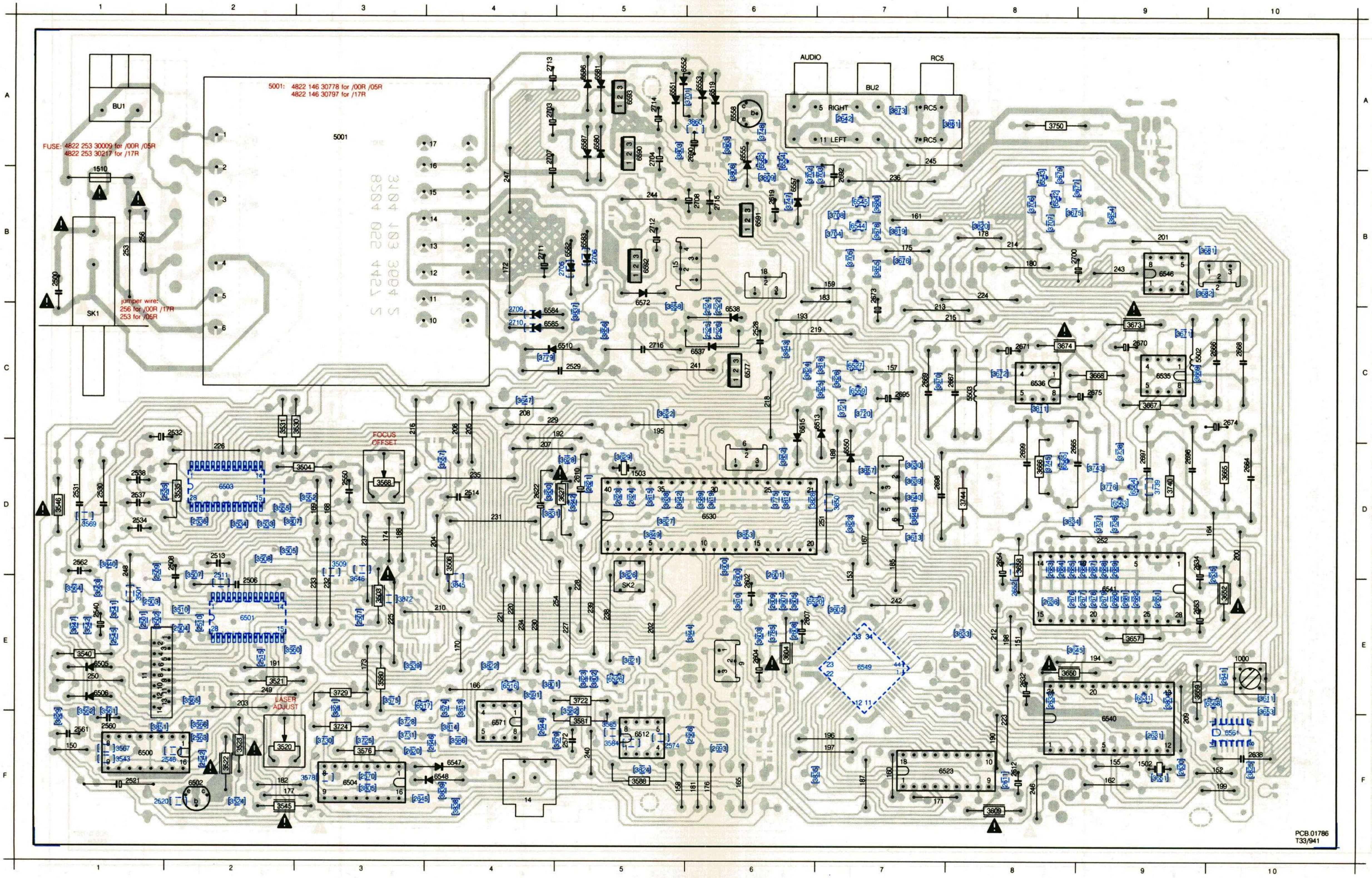

SERVO DECODER PANEL SOLDER SIDE

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7	D 7	168	D 3	192	C 5	214	B 8	237	D 3	1503	D 5	2528	C 6	2572	F 5
9	E 6	169	D 3	193	C 6	215	C 8	238	E 5	1510	B 1	2529	C 5	2574	F 5
11	E 1	170	E 4	194	E 9	216	C 3	239	E 5	2500	B 1	2530	D 1	2600	D 6
14	F 4	171	F 7	195	C 5	218	C 6	240	F 5	2501	E 1	2531	D 1	2601	D 6
15	B 5	172	B 4	196	F 7	219	C 6	241	C 6	2503	E 1	2532	C 2	2602	E 6
18	B 6	173	E 3	197	F 7	220	E 4	242	E 7	2504	E 2	2534	D 1	2604	E 6
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151	E 8	175	B 7	199	F10	223	F 8	244	B 5	2507	E 3	2536	D 2	2608	E 6
152	F10	176	F 6	200	D10	224	B 8	245	A 7	2508	D 2	2537	D 1	2609	E 6
153	D 7	177	F 2	201	B 9	225	E 3	246	F 8	2509	D 1	2538	D 1	2610	D 5
155	F 9	178	B 8	202	E 5	226	D 2	247	B 4	2510	E 2	2540	E 1	2611	F 8
157	C 7	180	B 8	203	E 2	227	E 5	248	D 1	2511	D 2	2542	F 2	2612	F 8
158	F 5	181	F 6	204	D 4	228	E 5	249	E 2	2513	D 2	2545	E 1	2619	B 6
159	B 7	182	F 2	205	C 4	229	C 4	250	E 1	2514	D 4	2546	F 2	2620	F 3
160	F 7	183	B 7	206	C 4	230	E 4	251	D 7	2515	E 2	2550	D 3	2621	D 5
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165	F 6	189	D 7	210	E 4	234	E 4	256	B 1	2524	B 6	2563	F 2	2630	F 9

2631	F 9	2669	C 7	2692	B 7	2716	C 5	3539	E 3	3575	E 3	3611	E10	3651	F 9
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2633	E 8	2671	C 8	2695	C 7	3502	E 1	3541	E 1	3578	F 3	3619	D 6	3653	F10
2634	D 9	2673	B 7	2696	D 9	3503	E 3	3542	E 1	3579	F 5	3621	E 5	3657	E 9
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2636	E 8	2675	C 9	2698	D 7	3505	D 2	3545	F 2	3581	F 5	3623	E 5	3659	E10
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2653	E 9	2684	D 8	2709	C 4	3523	F 2	3564	E 1	3602	E 7	3639	D 7	3673	C 9
2654	D 8	2685	D 8	2710	C 4	3524	F 2	3565	E 2	3603	E 6	3640	D 7	3674	C 8
2664	D10	2686	D 9	2711	B 4	3530	C 3	3566	F 2	3604	E 6	3642	D 5	3675	B 9
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2667	C 8	2689	D 9	2714	A 5	3534	D 2	3569	D 1	3609	F 8	3647	C 4	3678	B 7
2668	C10	2690	A 6	2715	B 6	3535	D 2	3574	E 4	3610	E 6	3650	E 8	3679	B 8

3680	B 7	3737	D 9	3809	B 6	3834	D 8	3858	C 5	6517	E 4	6549	E 7	6582	B 5
3681	B10	3738	D 9	3811	C 8	3835	F 7	3860	A 6	6519	A 6	6550	D 7	6533	B 5
3682	B10	3739	D 9	3812	D 6	3837	C 5	3861	A 8	6520	E 7	6551	A 5	6584	C 4
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3702	B 6	3743	D 9	3814	F 4	3839	F 4	3872	E 3	6526	E 5	6553	A 6	6586	A 5
3703	B 7	3744	D 8	3815	D 5	3840	D 1	3873	A 7	6527	C 7	6554	A 6	6587	A 5
3704	B 7	3745	D 8	3818	C 7	3842	D 5	5001	A 3	6530	D 6	6555	A 6	6590	A 5
3705	B 7	3747	B 6	3819	B 7	3843	C 6	5502	C 9	6531	E 9	6557	B 6	6591	B 6
3706	B 8	3748	A 6	3820	B 8	3844	E 6	5503	C 8	6535	C 9	6558	A 6	6592	B 5
3707	B 8	3750	A 8	3821	E 3	3845	E 4	6500	F 1	6536	C 8	6559	C 7	6593	A 5
3708	B 7	3775	D 6	3822	E 4	3847	E 1	6501	E 2	6537	C 6	6561	F10	BU1	A 1
3720	C 7	3776	D 9	3823	D 7	3848	D 7	6502	F 2	6538	C 6	6562	A 6	BU2	A 7
3721	C 7	3779	C 4	3824	F 5	3849	D 5	6503	D 2	6540	F 9	6563	D 9	SK1	C 1
3722	E 5	3785	E 6	3825	F10	3850	D 7	6504	F 3	6541	E 9	6564	D 9	SK2	E 5
3724	F 3	3801	E 4	3826	D 5	3851	F 1	6505	E 1	6542	B 8	6565	D 8		
3725	F 3	3802	E 5	3827	D 5	3852	D 6	6506	E 1	6543	B 8	6568	E10		
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3729	E 3	3804	E 9	3829	F 1	3854	B 9	6512	F 5	6545	B 7	6572	B 5		
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3731	F 3	3807	D 3	3831	D 4	3856	C 5	6515	C 6	6547	F 4	6580	A 5		
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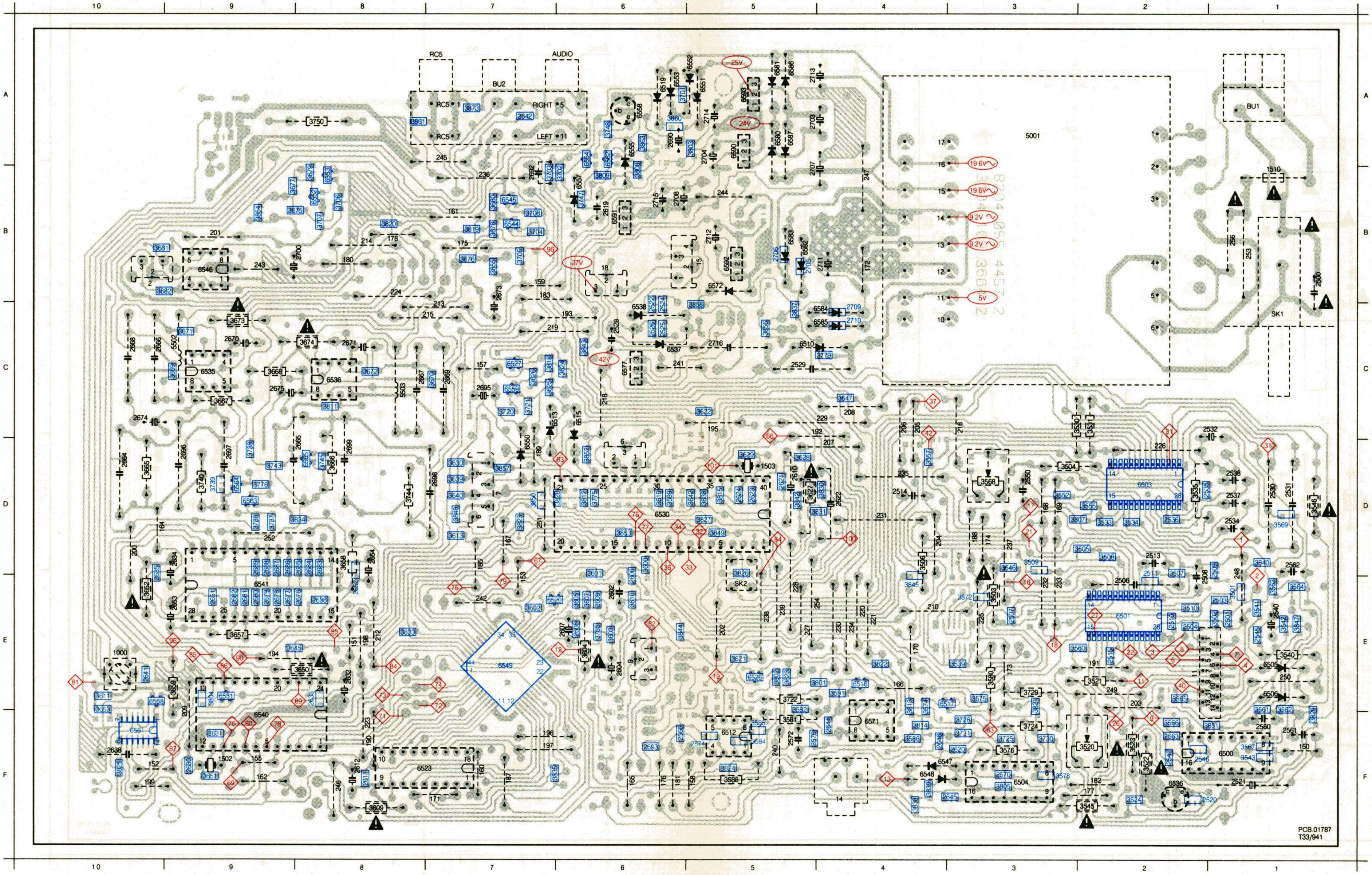

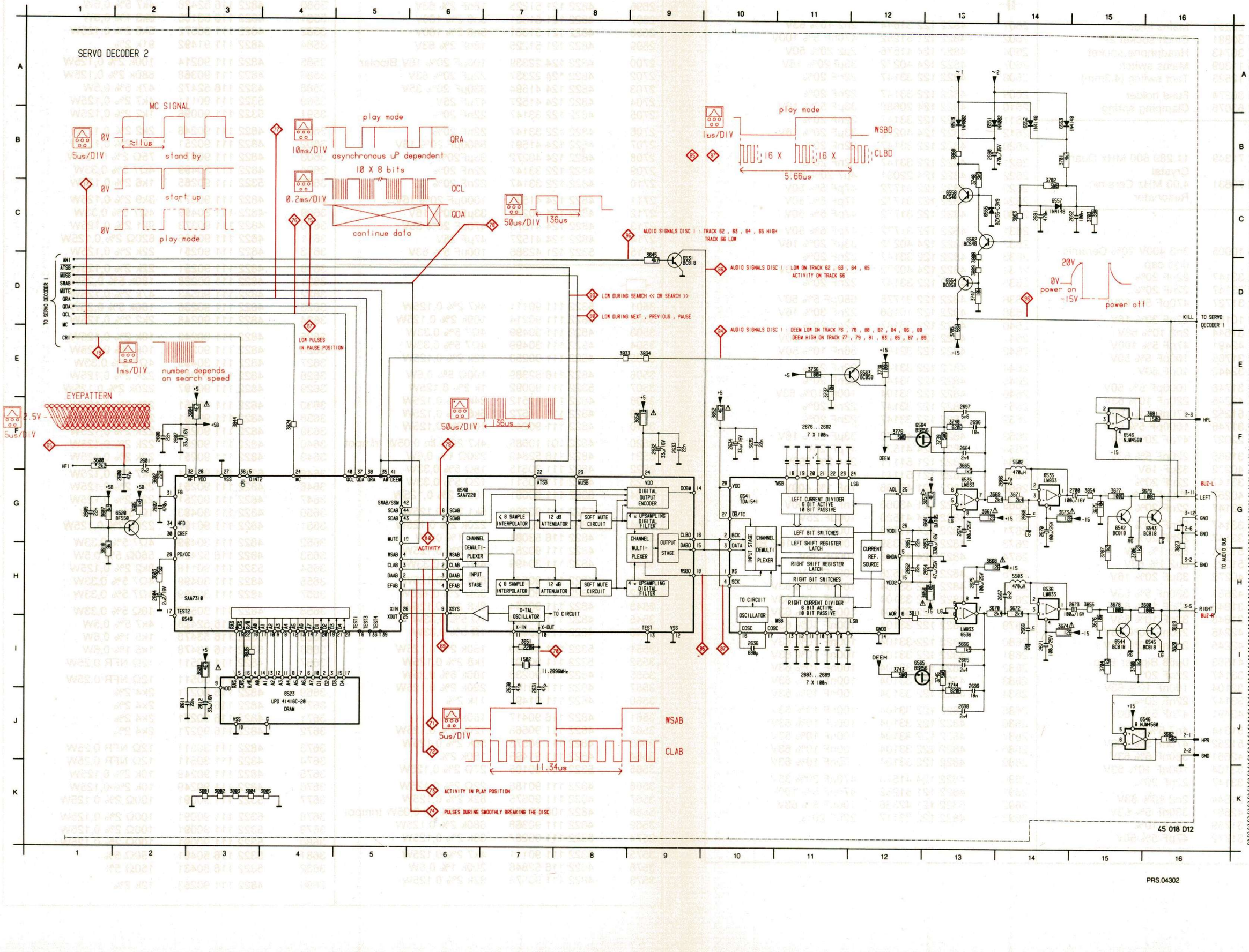

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2600	G	2	3803	K	3		
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2602	G	2	3805	K	4		
2604	H	2	3808	C	13		
2607	F	2	3809	D	13		
2608	F	2	3811	H	12		
2609	G	1	3819	H	16		
2611	J	3	3820	I	16		
2612	J	3	3824	F	4		
2630	I	7	3833	E	9		
2631	I	7	3834	E	9		
2632	F	9	3835	I	3		
2633	F	9	3844	F	3		
2634	F	10	3854	G	15		
2636	I	10	3855	H	15		
2651	G	12	3860	B	13		
2652	H	12	3863	C	14		
2653	G	13	3873	G	16		
2654	H	13	5502	F	14		
2664	F	13	5503	H	14		
2665	I	13	6519	B	13		
2666	G	14	6520	G	2		
2667	H	14	6523	J	4		
2668	G	14	6531	C	9		
2669	I	14	6535	G	13		
2670	G	14	6535	F	14		
2671	I	14	6536	H	14		
2673	H	15	6536	I	13		
2674	G	13	6540	G	6		
2675	H	13	6541	G	10		
2676	F	11	6542	G	15		
2677	F	11	6543	G	16		
2678	F	11	6544	I	15		
2679	F	11	6545	I	16		
2680	F	11	6546	F	15		
2681	F	11	6546	J	16		
2682	F	12	6549	I	3		
2683	I	11	6551	B	13		
2684	I	11	6552	B	14		
2685	I	11	6553	B	14		
2686	I	11	6554	D	13		
2687	I	11	6555	C	13		
2688	I	11	6557	C	14		
2689	I	12	6558	C	13		
2690	B	13	6562	C	13		
2691	C	14	6563	E	12		
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2697	F	13	6601	G	13		
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2699	I	13					
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3603	H	2					
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3744	I	13					
3745	I	13					
3747	D	13					
3748	B	13					
3776	F	12					
3801	K	3					

PRS.04302

ELECTRICAL PARTSLIST SERVO & DECODER PANEL

Miscellaneous

BU–1	4822 265 20291	Mains inlet
BU–2	4822 267 30881	Cinch socket 2P
BU–3	4822 267 30743	Headphone socket
SK–0	4822 276 11309	Mains switch
SK–2	4822 276 12523	Tact switch (4.3mm)
	4822 256 30274	Fuse holder
	4822 492 63076	Clamping spring

Crystal

1502	4822 242 71349	11.289 600 MHz Quartz Crystal
1503	4822 242 70831	4.00 MHz Ceramic Resonator

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2500	4822 126 10005	3n3 400V 20% Ceramic disc cap.
2501	4822 122 33147	22nF 20%
2503	4822 122 33147	22nF 20%
2504	4822 122 31727	470pF 5% 63V
2506	4822 122 10166	22nF 30% 16V
2507	4822 122 31644	2n2 10% 63V
2508	5322 121 42491	47nF 5% 100V
2509	4822 122 31765	100pF 5% 50V
2510	4822 122 32442	10nF 50V
2511	4822 122 31746	1000pF 5% 50V
2513	4822 121 42245	220nF 10% 63V
2514	4822 121 51252	470nF 5% 100V
2515	4822 122 31746	1000pF 5% 50V
2519	4822 124 22027	47µF 20% 25V
2520	4822 122 31965	220pF 5% 63V
2521	4822 124 40272	33µF 16V
2522	4822 122 33147	22nF 20%
2523	4822 124 40257	220µF 20% 63V
2524	4822 122 33147	22nF 20%
2525	4822 122 33147	22nF 20%
2526	4822 122 33147	22nF 20%
2530	4822 121 51321	8µ2 1% 63V
2531	4822 121 51321	8µ2 1% 63V
2532	4822 124 40272	33µF 20% 16V
2534	5322 121 42661	330nF 5% 63V
2535	5322 122 31848	33nF 10% 63V
2536	5322 122 31848	33nF 10% 63V
2537	4822 121 42245	220nF 10% 63V
2538	4822 121 42245	220nF 10% 63V
2540	4822 124 41583	0µ68 Bipolar Elco
2542	4822 122 33147	22nF 20%
2545	4822 122 33104	100nF 10% 63V
2546	4822 122 33147	22nF 20%
2550	5322 121 42491	47nF 5% 100V
2560	4822 121 51314	4n7 5% 50V
2561	4822 121 51252	470nF 5% 100V
2562	5322 121 42661	330nF 5% 63V
2563	4822 122 33104	100nF 10% 63V
2566	4822 122 33147	22nF 20%
2570	4822 122 31644	2n2 10% 63V
2572	5322 121 42661	330nF 5% 63V
2574	4822 122 31759	18nF 10%
2600	4822 122 31772	47pF 5% 50V

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2601	4822 122 31644	2n2 10% 63V
2602	4822 121 51252	470nF 5% 100V
2604	4822 124 41576	2µ2 20% 50V
2607	4822 124 40272	33µF20% 16V
2608	4822 122 33147	22nF 20%
2609	4822 122 33147	22nF 20%
2610	4822 124 20688	33µF 50% 16V
2611	4822 122 33147	22nF 20%
2612	4822 124 40272	33µF 20% 16V
2620	4822 122 33147	22nF 20%
2621	4822 122 33147	22nF 20%
2622	4822 124 22031	4µ7 20% 63V
2623	4822 122 31772	47pF 5% 50V
2624	4822 122 31772	47pF 5% 50V
2630	4822 122 31772	47pF 5% 50V
2631	4822 122 31772	47pF 5% 50V
2632	4822 124 40272	33µF 20% 16V
2633	4822 122 33147	22nF 20%
2634	4822 124 40272	33µF 20% 16V
2635	4822 122 33147	22nF 20%
2636	4822 122 31775	680pF 5% 50V
2638	4822 122 10166	22nF 30% 16V
2640	4822 122 33147	22nF 20%
2641	4822 122 32183	56nF 10% 50V
2642	4822 122 32183	56nF 10% 50V
2644	4822 122 33147	22nF 20%
2645	4822 122 33147	22nF 20%
2646	4822 122 33104	100nF10% 63V
2651	4822 122 33147	22nF 20%
2652	4822 122 33147	22nF 20%
2653	4822 124 40272	33µF 20% 16V
2654	4822 124 41527	47µF 25V
2664	4822 121 51111	2n4 2% 250V
2665	4822 121 51111	2n4 2% 250V
2668	4822 121 43066	1nF 1% 400V
2669	4822 121 43066	1nF 1% 400V
2670	4822 124 41528	100µF 25V
2671	4822 124 41528	100µF 25V
2673	4822 124 22339	100µF 20% 16V Bipolar
2674	4822 124 41528	100µF 25V
2675	4822 124 41528	100µF 25V
2676	4822 122 33104	100nF 10% 63V
2677	4822 122 33104	100nF 10% 63V
2678	4822 122 33104	100nF 10% 63V
2679	4822 122 33104	100nF 10% 63V
2680	4822 122 33104	100nF 10% 63V
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2685	4822 122 33104	100nF 10% 63V
2686	4822 122 33104	100nF 10% 63V
2687	4822 122 33104	100nF 10% 63V
2688	4822 122 33104	100nF 10% 63V
2689	4822 122 33104	100nF 10% 63V
2690	4822 124 41573	470µF 20% 35V
2691	4822 121 51252	470nF 5% 100V
2692	5322 121 42386	100nF 5% 63V
2693	4822 122 33147	22nF 20%

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2695	4822 124 41558	10µF 20% 25V Bipolar
2696	4822 121 51225	18nF 2% 63V
2697	4822 121 51361	5n6 2% 160V
2698	4822 121 51361	5n6 2% 160V
2699	4822 121 51225	18nF 2% 63V
2700	4822 124 22339	100µF 20% 16V Bipolar
2702	4822 124 22337	22µF 20% 63V
2703	4822 124 41594	330µF 20% 35V
2704	4822 124 41527	47µF 25V
2705	4822 122 33147	22nF 20%
2706	4822 122 33147	22nF 20%
2707	4822 124 41591	6800µF 20% 16V
2708	4822 124 40272	33µF20% 16V
2709	4822 122 33147	22nF 20%
2710	4822 122 33147	22nF 20%
2711	4822 124 41571	1000µF 20% 16V
2712	4822 124 40272	33µF 20% 16V
2713	4822 124 41573	470µF 20% 35V
2714	4822 124 41527	47µF 25V
2715	5322 121 42386	100nF 5% 63V

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3501	5322 111 90111	4k7 2% 0,125W
3502	4822 111 90214	100k 2% 0,125W
3503	4822 111 30499	4Ω7 5% 0,33W
3504	4822 111 30499	4Ω7 5% 0,33W
3505	4822 111 90253	12k 2% 0,125W
3506	4822 116 52389	100Ω 5% 0,5W
3507	5322 111 90092	1k 2% 0,125W
3508	4822 111 90512	24k 2% 0,125W
3509	4822 111 90572	5k6 2% 0,125W
3510	4822 111 90249	10k 2% 0,125W
3520	4822 101 10685	4k7 20% lin 0,05W trimpot
3521	4822 116 52849	220Ω 1% 0,6W
3522	4822 111 30515	18Ω 5% 0,33W
3523	4822 111 30511	12Ω 5% 0,33W
3524	5322 111 90091	100Ω 2% 0,125W
3533	5322 111 90268	5k1 2% 0,125W
3534	4822 111 90197	220k 2% 0,125W
3535	4822 116 53081	12k 1% 0,6W
3539	4822 111 90251	22k 2% 0,125W
3540	4822 111 30499	4Ω7 5% 0,33W
3541	4822 111 90544	6k8 2% 0,125W
3542	4822 111 90357	33Ω 2% 0,125W
3543	4822 111 90544	6k8 2% 0,125W
3545	4822 111 30483	1Ω 5% 0,33W
3546	4822 111 30483	1Ω 5% 0,33W
3551	5322 111 90099	150k 2% 0,125W
3552	5322 111 90101	1k8 2% 0,125W
3555	4822 111 90238	180k 5% 0,25W
3557	4822 111 90197	220k 2% 0,125W
3560	4822 111 91494	11k 2%
3561	4822 116 90417	150k 2%
3562	4822 111 90568	120k 2% 0,125W
3563	4822 111 90573	56k 2% 0,125W
3564	4822 111 91495	160k 2%
3565	5322 111 90105	27Ω 2% 0,125W
3566	4822 111 90186	22Ω 2% 0,125W
3567	4822 111 90575	82k 2% 0,125W
3568	4822 100 20522	22k 20% lin 0,05W trimpot
3569	4822 111 90368	680k 2% 0,125W
3574	5322 111 90267	33k 2% 0,125W
3575	5322 111 90111	4k7 2% 0,125W
3576	4822 116 52848	200k 1% 0,6W
3578	4822 111 90575	82k 2% 0,125W

⊐⊏

3579	4822 116 90417	150k 2%
3580	4822 116 52426	4k7 5% 0,5W
3581	4822 116 53105	3k3 1% 0,6W
3582	4822 111 90572	5k6 2% 0,125W
3584	4822 111 91492	91k 2%
3585	4822 111 90214	100k 2% 0,125W
3586	4822 111 90368	680k 2% 0,125W
3588	4822 116 52472	47k 5% 0,5W
3589	5322 111 90111	4k7 2% 0,125W
3591	5322 111 90096	1k2 2% 0,125W
3600	4822 111 90248	2k2 2% 0,125W
3602	4822 111 90251	22k 2% 0,125W
3603	4822 111 90371	75Ω 2% 0,125W
3604	4822 111 30499	4Ω7 5% 0,33W
3605	5322 111 90265	1k6 2% 0,125W
3607	4822 111 90571	3k9 2% 0,125W
3609	4822 111 30499	4Ω7 5% 0,33W
3610	4822 111 90373	9k1 2% 0,125W
3611	4822 111 90366	620Ω 2% 0,125W
3613	4822 111 90251	22k 2% 0,125W
3619	4822 111 90251	22k 2% 0,125W
3621	4822 111 90238	180k 5% 0,25W
3622	4822 111 90543	47k 2% 0,125W
3623	4822 111 90238	180k 5% 0,25W
3624	4822 111 90248	2k2 2% 0,125W
3625	4822 111 90249	10k 2% 0,125W
3626	4822 111 90249	10k 2% 0,125W
3627	4822 111 30499	4Ω7 5% 0,33W
3628	4822 111 90251	22k 2% 0,125W
3629	4822 111 90197	220k 2% 0,125W
3630	4822 111 90251	22k 2% 0,125W
3638	4822 111 90251	22k 2% 0,125W
3639	4822 111 90251	22k 2% 0,125W
3640	4822 111 90251	22k 2% 0,125W
3643	4822 111 90251	22k 2% 0,125W
3645	5322 111 90111	4k7 2% 0,125W
3646	4822 111 90251	22k 2% 0,125W
3647	4822 111 90251	22k 2% 0,125W
3650	4822 111 30483	1Ω 5% 0,33W
3651	4822 111 90197	220k 2% 0,125W
3652	4822 111 30499	4Ω7 5% 0,33W
3653	4822 116 52428	560Ω 5% 0,5W
3654	5322 111 90118	8k2 2% 0,125W
3655	4822 111 30499	4Ω7 5% 0,33W
3657	4822 111 30499	4Ω7 5% 0,33W
3658	4822 111 30508	10Ω 5% 0,33W
3659	4822 116 52426	4k7 5% 0,5W
3665	5322 116 53478	1k5 1% 0,6W
3666	5322 116 53478	1k5 1% 0,6W
3667	4822 111 30511	12Ω NFR 0,25W
3668	4822 111 30511	12Ω NFR 0,25W
3669	4822 116 90271	2k4 2%
3670	4822 116 90271	2k4 2%
3671	4822 116 90271	2k4 2%
3672	4822 116 90271	2k4 2%
3673	4822 111 30511	12Ω NFR 0,25W
3674	4822 111 30511	12Ω NFR 0,25W
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
3681	5322 116 80491	150Ω 5%
3682	5322 116 80431	150Ω 5%
3690	4822 111 90253	12k 2%

3691	4822 111 90253	12k 2%
3692	4822 111 90253	12k 2%
3693	5322 116 80445	4k7 5%
3694	4822 111 90253	12k 2%
3695	5322 116 80426	100Ω
3696	4822 111 30513	15Ω Safety Resistor
3697	4822 111 30513	15Ω Safety Resistor
3701	5322 111 90111	4k7 2% 0,125W
3702	4822 111 90425	5M6 5% 0,125W
3703	5322 111 90108	39k 2% 0,125W
3704	5322 111 90096	1k2 2% 0,125W
3705	4822 111 90573	56k 2% 0,125W
3706	5322 111 90096	1k2 2% 0,125W
3707	5322 111 90096	1k2 2% 0,125W
3708	5322 111 90096	1k2 2% 0,125W
3710	5322 111 90099	150k 2% 0,125W
3720	5322 111 90092	1k 2% 0,125W
3721	4822 111 90543	47k 2% 0,125W
3722	4822 111 30499	4Ω7 5% 0,33W
3724	4822 116 53081	12k 1% 0,6W
3725	4822 111 90253	12k 2% 0,125W
3726	4822 111 90251	22k 5%
3728	4822 111 90572	5k6 2% 0,125W
3729	4822 116 53081	12k 0423 ER
3730	4822 111 90253	12k 2% 0,125W
3731	4822 111 90186	22Ω 2% 0,125W
3732	4822 116 52849	220Ω 1% 0.6W
3736	4822 111 90214	100k 2% 0,125W
3737	4822 111 90249	10k 2% 0,125W
3738	4822 111 90214	100k 2% 0,125W
3739	4822 111 90425	5M6 5% 0,125W
3740	4822 116 52864	820Ω 1% 0,6W
3743	4822 111 90425	5M6 5% 0,125W
3744	4822 116 52864	820Ω 1% 0,6W
3745	4822 111 90425	5M6 5% 0,125W
3747	4822 111 90216	30k
3748	4822 111 90571	3k9 2% 0,125W
3775	5322 111 90111	4k7 2% 0,125W
3776	4822 111 90425	5M6 5% 0,125W
3779	5322 111 90306	750Ω 2% 0,125W
3785	4822 116 52493	1M 5% 0,25W
3786	4822 116 81165	1M
3787	5322 116 80426	100Ω

jumper

3801	4822 111 90163	jumper
3802	4822 111 90163	jumper
3803	4822 111 90163	jumper
3804	4822 111 90163	jumper
3805	4822 111 90163	jumper
3808	4822 111 90163	jumper
3809	4822 111 90163	jumper
3810	4822 111 90163	jumper
3811	4822 111 90163	jumper
3812	4822 111 90163	jumper
3813	4822 111 90163	jumper
3814	4822 111 90163	jumper
3818	4822 111 90163	jumper
3821	4822 111 90163	jumper
3822	4822 111 90163	jumper
3823	4822 111 90163	jumper
3824	4822 111 90163	jumper
3825	4822 111 90163	jumper
3826	4822 111 90163	jumper
3827	4822 111 90163	jumper
3828	4822 111 90163	jumper
3829	4822 111 90163	jumper

jumper

3830	4822 111 90163	jumper
3831	4822 111 90163	jumper
3833	4822 111 90163	jumper
3834	4822 111 90163	jumper
3835	4822 111 90163	jumper
3836	4822 111 90163	jumper
3837	4822 111 90163	jumper
3838	4822 111 90163	jumper
3839	4822 111 90163	jumper
3840	4822 111 90163	jumper
3841	4822 111 90163	jumper
3842	4822 111 90163	jumper
3843	4822 111 90163	jumper
3844	4822 111 90163	jumper
3845	4822 111 90163	jumper
3847	4822 111 90163	jumper
3848	4822 111 90163	jumper
3849	4822 111 90163	jumper
3850	4822 111 90163	jumper
3852	4822 111 90163	jumper
3853	4822 111 90163	jumper
3854	4822 111 90163	jumper
3855	4822 111 90163	jumper
3856	4822 111 90163	jumper
3857	4822 111 90163	jumper
3858	4822 111 90163	jumper
3859	4822 111 90163	jumper
3860	4822 111 90163	jumper
3861	4822 111 90163	jumper
3862	4822 111 90163	jumper

5502	4822 157 53141	coil 470µH
5503	4822 157 53141	coil 470µH

semi conductor

6500	4822 209 72587	TCA0372DP2
6501	4822 209 73234	TDA8808T/C3
6502	4822 130 44121	BC338
6503	4822 209 73235	TDA8809T/C2
6504	4822 209 72587	TCA0372DP2
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 61428	MC68HC05C9P/SC409010
6531	4822 130 42675	BC818
6535	4822 209 83163	LM833N
6536	4822 209 83163	LM833N
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

semi conductor

6543	4822 130 42675	BC818
6544	4822 130 42675	BC818
6545	4822 130 42675	BC818
6547	5322 130 30684	1N4002
6548	5322 130 30684	1N4002
6549	4822 209 61759	SAA7310GP/S5
6550	5322 130 30684	1N4002
6551	5322 130 30684	1N4002
6552	4822 130 30621	1N4148
6553	4822 130 30621	1N4148
6554	4822 130 42513	BC858C
6555	4822 130 31981	BZX55-C3V9
6556	4822 130 61207	BC848
6557	4822 130 30621	1N4148
6558	4822 130 40938	BC548
6559	4822 130 61207	BC848
6561	4822 209 60803	SN74LS08D
6562	4822 130 61207	BC848
6563	5322 130 42012	BC858
6564	4822 130 42633	BSR56
6565	4822 130 42633	BSR56
6568	4822 130 61207	BC848

semiconductor

6571	4822 209 60772	X24C16
6572	4822 130 34195	BZX55-C13
6575	4822 130 40823	BD135
6576	4822 130 40824	BD136
6577	4822 209 80808	MC78M15CT
6580	5322 130 30684	1N4002
6581	5322 130 30684	1N4002
6582	5322 130 30684	1N4002
6583	5322 130 30684	1N4002
6584	5322 130 30684	1N4002
6585	5322 130 30684	1N4002
6586	5322 130 30684	1N4002
6587	5322 130 30684	1N4002
6590	4822 209 80808	MC78M15CT
6591	4822 209 71579	TY40408 = MC7805CT selected
6592	5322 209 11222	MC7905CT
6593	5322 130 41899	MC7915CT