

Service Manual

74 CD72/21B/22B/25B/52B/55B
/21G/22G
Compact disc player



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CLASS 1
LASER PRODUCT
3122 110 03420

marantz®

model CD-72MKII/CD-72MKIIE

First issue: 1993
4822 725 51032

PCS 70 945

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 at our National Marantz Subsidiary or Agent.

MARANTZ EUROPE B.V.
P.O. Box 80002
Building SFF 2
5600 JB Eindhoven
The Netherlands
Phone : +31-40-732241
Fax : +31-40-735578

ORDERING PARTS

Parts can be ordered either by mail or by telex. In both cases, the 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 the 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.

ADDRESSES

AUSTRALIA
MARANTZ AUSTRALIA
Figtree Drive
Australia Centre
Homebush, NSW 2140
AUSTRALIA

FINLAND
MARANTZ
Kuortanegatan 1
00520
Helsingfors 52
Finland

ITALY
MARANTZ ITALIANA SPA
Piazza IV Novembre 3
20124 Milano
Italy

NORWAY
MARANTZ
Postboks 7034
Assiden
3007 Drammen
Norway

SPAIN
MARANTZ SPAIN
Martinez Villergas 2
Apartado 2065
Madrid 28027
Spain

AUSTRIA
MARANTZ
Hietzinger Kai 137a
1130 Wien
Austria

FRANCE
MARANTZ FRANCE
4 Rue Bernard Palissy
92600 Asnières
France

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

PORTUGAL
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Av. da Liberdade
211-2 Esq.
1200 Lisboa
Portugal

SWEDEN
MARANTZ
Box 1324
17125 Solna
Sweden

BELGIUM
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Div. Benelux
P.O.Box 80002
Building SFF 2
5600 JB Eindhoven
The Netherlands

GERMANY
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Postfach 4802
Halle-Westfalen
Germany

KUWAIT
AL ALAMIAH ELECTRONICS
P.O.Box 8196
Salmiah
22052 Kuwait

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

SWITZERLAND
MARANTZ SWITZERLAND
Postfach
8010 Zürich-Müllingen
Switzerland

CHILE
MARANTZ DIVISION OF
PHILIPS S.A.
Av.Santa Maria 0760
Casilla 2687
Santiago
Chile

GREAT BRITAIN
MARANTZ HiFi UK Ltd.
Kingsbridge House
Padbury Oaks
575-583 Bath Road
Longford Middlesex UB7 0EH,
U.K.

NETHERLANDS
MARANTZ EUROPE B.V.
Div. Benelux
P.O.Box 80002
Building SFF 2
5600 JB Eindhoven
The Netherlands

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MARANTZ S.A.
10 Bond Street
Randburg 2194
P.O. Box 7703
Johannesburg 2000
South Africa

TRADING
MARANTZ TRADING
P.O.Box 20008
Building SFF 2
5600 JB Eindhoven
The Netherlands

DENMARK
MARANTZ
Horsvinget 5
2630 Tastrup
Denmark

GREECE
ADAMCO ELECTR. SA
P.O.Box 21025
Hippocratus Str. 188
Athens 11471
Greece

All of the above locations are fully equipped to take care of your total service needs or can advise you. 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 above mentioned address.

LASER RADIATION SAFETY

Protection of eyes from laser beam during servicing.
This set employs a laser. Therefore, be sure to carefully follow the instructions below when servicing.

1. Laser Diode Properties

- Material: Al Ga As
- Wave Length: 0.78 μ m
- Emission Duration: Continuous
- Laser Output: Max. 0.11 mW

This output is the value measures at the objective lens surface on the light pen assembly.

2. During service, do not take the subchassis block apart and do not adjust the H F amp circuit. If there is a breakdown in the H F circuit (including laser diode), replace the entire subchassis block (including H F amp circuit board).

WARNING!!

When servicing, do not approach the laser exit with the eye too closely.

In case it is necessary to confirm laser beam emission, be sure to observe from a distance of more than 30 cm from the surface of the objective lens on the light pen assembly.

LASER WARNING LABELS

The labels shown below are affixed.

- 1) DHHS Protective housing label
"DANGER – INVISIBLE LASER RADIATION WHEN OPEN. AVOID DIRECT EXPOSURE TO BEAM."
- 2) DNHW Protective housing label and laser radiation sign label
"CAUTION _ HAZARDOUS LASER RADIATION WHEN OPEN AND INTERLOCK DEFETED."
"ATTENTION _ RAYONNEMENT LASER DANGFEREUX SI OUVERT AVEC L'ENCLenchement DE SECURITE ANNULE."

TECHNICAL SPECIFICATIONS

Audio Characteristics

| | |
|----------------------|----------------------|
| Channels | 2 channels |
| D/A conversion | 1-bit linear/channel |

Frequency Characteristics

| | |
|-----------------------------------|---------------------------------|
| Line output jack (FIXED) | 2 to 20,000 Hz, ± 0.2 dB |
| Line output jack (VARIABLE) | 2 to 20,000 Hz, ± 0.2 dB |
| Dynamic range | 98 dB |
| S/N ratio | 100 dB |
| Channel separation | 96 dB or more (1 kHz) |
| THD | 0.003 % (1 kHz) |
| Wow & flutter | Precision of quartz |
| Analog output jacks | |
| Line output jacks (FIXED) | Output level 2 V RMS |
| | Output impedance 200 ohms |
| Matching load impedance | 10 kohms or more |
| Line output jack (VARIABLE) | Output level 4 V RMS |
| | Output impedance 200 ohms |
| Matching load impedance | 10 kohms or more |
| Digital output | Pin jack, 0.5 Vp-p/75 ohms |
| | (Rectangular optical connector) |
| | optical output -19 dBm |

Optical Readout System

| | |
|------------------|----------------------|
| Laser | AlGaAs semiconductor |
| Wavelength | 780 nm |

Signal System

| | |
|--------------------------|---|
| Sampling frequency | 44.1 kHz |
| Quantization | 16-bit linear/channel |
| Error correction | Cross-interleave reed solomon code (CIRC), Class A D/A conversion |

Power Supply

| | |
|-------------------------|-------------------------------|
| /22/52 version | 230 V AC 50/60 Hz |
| /25/55 version | 240 V AC 50/60 Hz |
| /21 version | 110-120/220-240 V AC 50/60 Hz |
| Power Consumption | 12 W |

Cabinet, etc.

| | |
|------------------------------|-------------------------|
| Dimensions (Black) | |
| Width | 420 mm |
| Height | 119 mm |
| Depth | 297 mm |
| Net weight | 5 kg |
| Operating temperatures | + 5 °C ~ + 35 °C |
| Operating humidity | 5 % ~ 9 % (without Dew) |

Accessories

| | |
|--|------------------|
| Remote control unit (RC-72CD) | 1 |
| Dimensions (W x H x D) | 60 x 15 x 175 mm |
| Weight (without batteries) | 85 g |
| R03 Batteries | 2 |
| Stereo audio cable with RCA pins | 1 |

TROUBLE SHOOTING (FAULT FINDING TREE)

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 | D2 D1 D3 D4 | power on | | - | - | signal 4±6±7±8 | Signal depends on Distance lens ↔ IR LED of remote control |

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B-4 CHECK OF LASER SUPPLY

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

| Step | Signal | Mode | | | Remarks |
|------|----------|--------------------|------|---------------------------|--|
| 1 | LO LM | serv. pos. 2 SK | | 1.8<V <2.3 170<mV <220 | <div>REPLACEMENT CIRCUIT FOR LASER ASSEMBLY</div> <p>CONNECT DIRECTLY TO PANEL</p> <p>The feedback system sees to it that the same amount of current flows through the LED. When SK is open and when SK is closed the LED emits little light</p> <p>PRS 06615 T02/9020</p> |
| 2 | LO LM | serv. pos. 2 SK | | 1.8<V <2.3 170<mV <220 | |
| 3 | LO | Power on | | 0V ± 0.2V | |
| | | | | No light | |

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

T-22793B

B-4 LASER CURRENT ADJUSTMENT

| STEP | SIGNAL | MODE | | | | | REMARKS |
|------|--------------------------------------|------------------------------|----|------|----------------|----|---|
| 1 | -- | POWER OFF | -- | -- | -- | -- | CHECK IF FLEX-FOIL IS PROPERLY CONNECTED |
| 2 | -- | POWER OFF | | R134 | 1kΩ +10% -0 | -- | PRE ADJUSTMENT OHMIC VALUE |
| 3 | -- | POWER OFF | -- | R136 | -- | -- | SET TO MID-POSITION |
| 4 | LASER CURRENT VOLTAGE ACROSS R114 | TEST DISC 5A PLAY | | -- | ≥15mV | -- | IF < 15mV THEN GO TO STEP 3 AND SET R136 TO 1/4 OR 3/4. TRY AGAIN |
| 5 | LASER CURRENT VOLTAGE ACROSS R114 | TEST DISC 5A PLAY | | R134 | 50mV | -- | -- |
| 6 | FE-LAG | TEST DISC 5A TRACK 1 PLAY | | R136 | 400mV | -- | FINE ADJUSTMENT |

MDA 02673
T28/020

B-5
ADJUSTMENT OF FOCUS-OFFSET

| Step | Signal | Mode | | | | | Remarks |
|------|--------|--------------------------------|----|------|---------------------|---|--|
| 1 | - | Power on no disc | - | R136 | - | - | adjust for optical mid-position of the focus motor |
| 2 | FE LAG | Play Test disc 5 Track 1 | 22 | R136 | 400mV ± 40 mV DC | - | fine adjustment |

ERROR TABLE

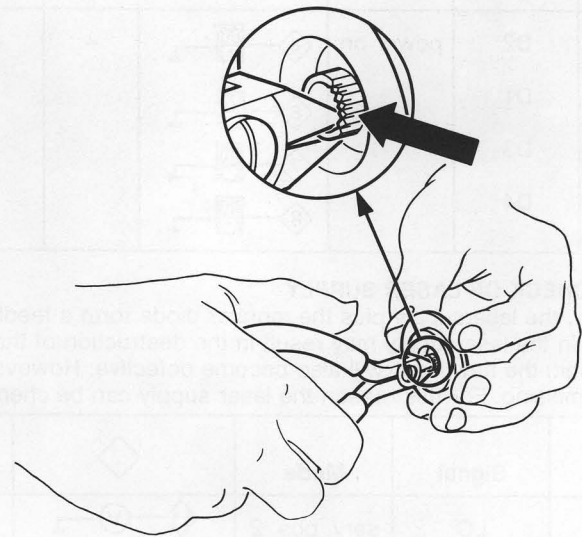
System errors

| Indi- cation | 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 | |
| Er 06 | No \overline{TL} pulse within 0.5 sec. during track jumping | CD disc, radial arm position, $REdig$, Radial error processor |
| Er 07 | Subcoding error during $PLAY$ | RE -lag circuit, \overline{TL} , $REdig$ |
| Er 08 | TOC error | HFI CD disc, turntable motor control, radial arm position |

Operating errors

| | |
|-------|---|
| Er 30 | "NEXT" key operated during the last track, with "REPEAT" turned off. |
| Er 31 | "PREVIOUS" key operated during the first track, with "REPEAT" turned off. |
| Er 32 | AB key operated in AMS mode. |
| Er 33 | The selected index number does not exist on this disc. |
| Er 34 | Programme survey requested; no programme present. |
| Er 35 | The programme memory is full. |
| Er 36 | The programmed track is not present on this CD disc. |
| Er 37 | The selected track is not present on this CD disc. |
| Er 38 | $MEMO$ pressed during AMS while track not known. $MEMO$ pressed during $EDIT$ while cassette time = 0 sec. |
| Er 39 | $MEMO$ or $CANCEL$ pressed while in play program. |
| Er 40 | $MEMO$ pressed when already a delete program has been made. |
| Er 41 | $CANCEL$ pressed when already a not deleted program has been made. |
| Er 42 | Selected track is not a program block. |
| Er 43 | FTS store error: memory full. |
| Er 44 | FTS store error: no program.. |
| Er 46 | FTS play error: no FTS program in memory. |
| Er 47 | FTS selection error: upper bound of fts memory. (next). |
| Er 49 | FTS selection error: selection request while storing. (next/prev). |
| Er 51 | FTS selection error: selection request while storing. (review). |
| Er 52 | FTS selection clear error: clear request while storing. |
| Er 54 | FTS store error: no record id (toc) available. |
| Er 56 | AB key pressed when not in $PLAY$ mode. |
| Er 60 | Fast forward/reverse bound. |
| Er 63 | No track possible to play in edit mode. |
| Er 74 | Relative time not found. |
| Er 75 | Binary search time out error. |
| Er 76 | Time search time out error. |

SERVICE DISC HOLD-DOWN

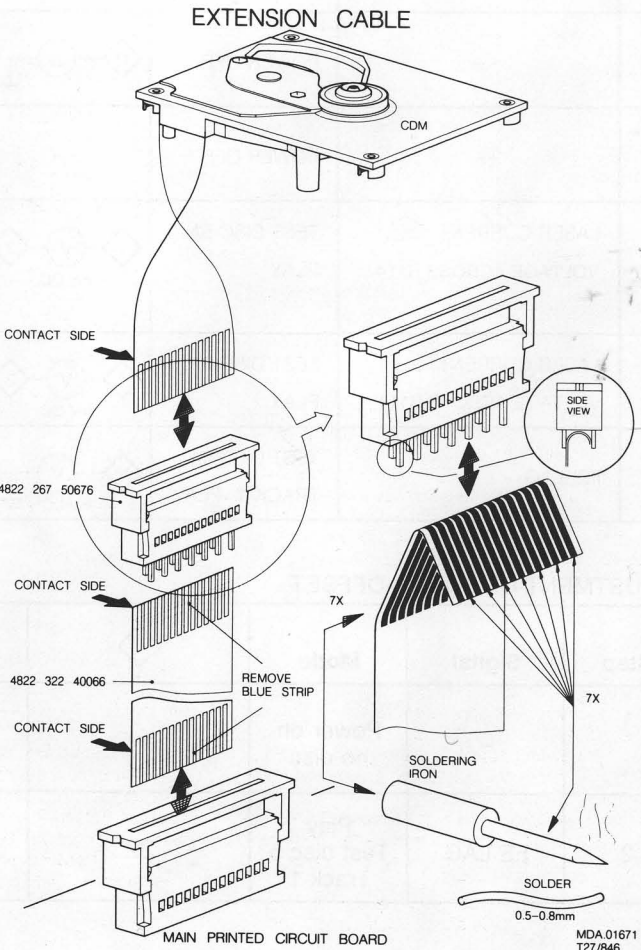


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Compose a service Disc hold-down in the following way

- Cut in the most inner ring of a disc hold-down (4822 462 50383) with small and sharp nippers, see fig. above.
- 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.

SERVICE FOIL FOR CDM



MDA.01671
T27/846

SERVICING HINTS

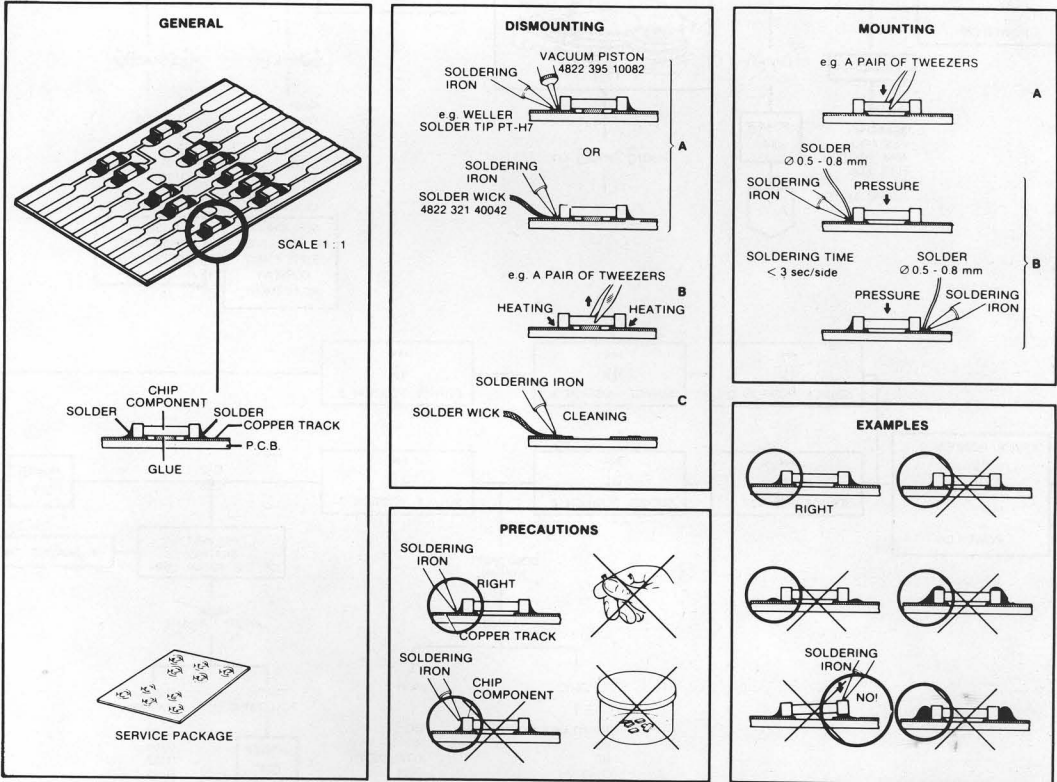
In the set chip components have been applied.
For disassembly and assembly of chip components see the figure below.

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 separate 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 immediately after pressing the play button in order to ensure normal operation.

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 |



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 enfilier 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.

ESD



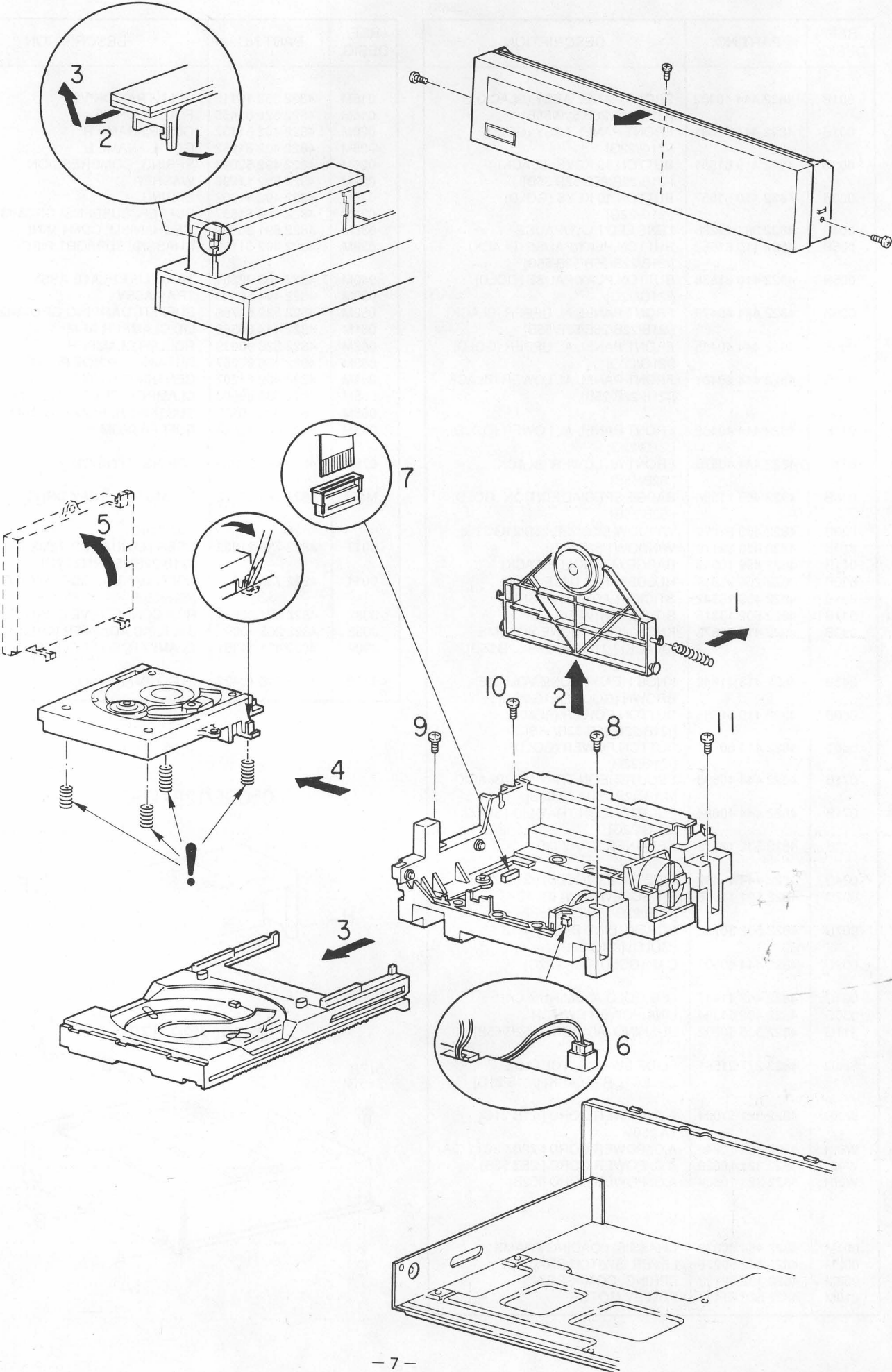
NL WAARSCHUWING

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.

I AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD). La loro longevità potrebbe essere fortemente ridotta 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.

DISASSEMBLY OF LOADING AND CAM

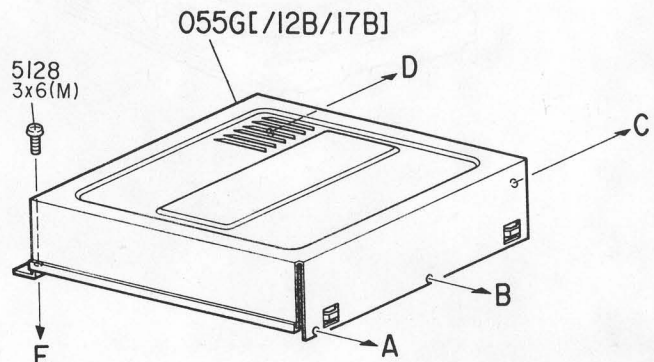
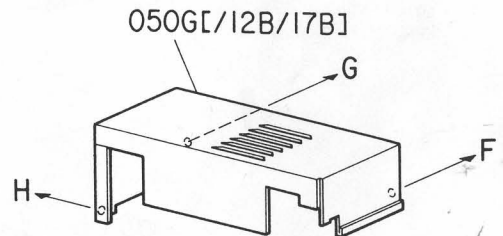


MECHANICAL PARTS LIST

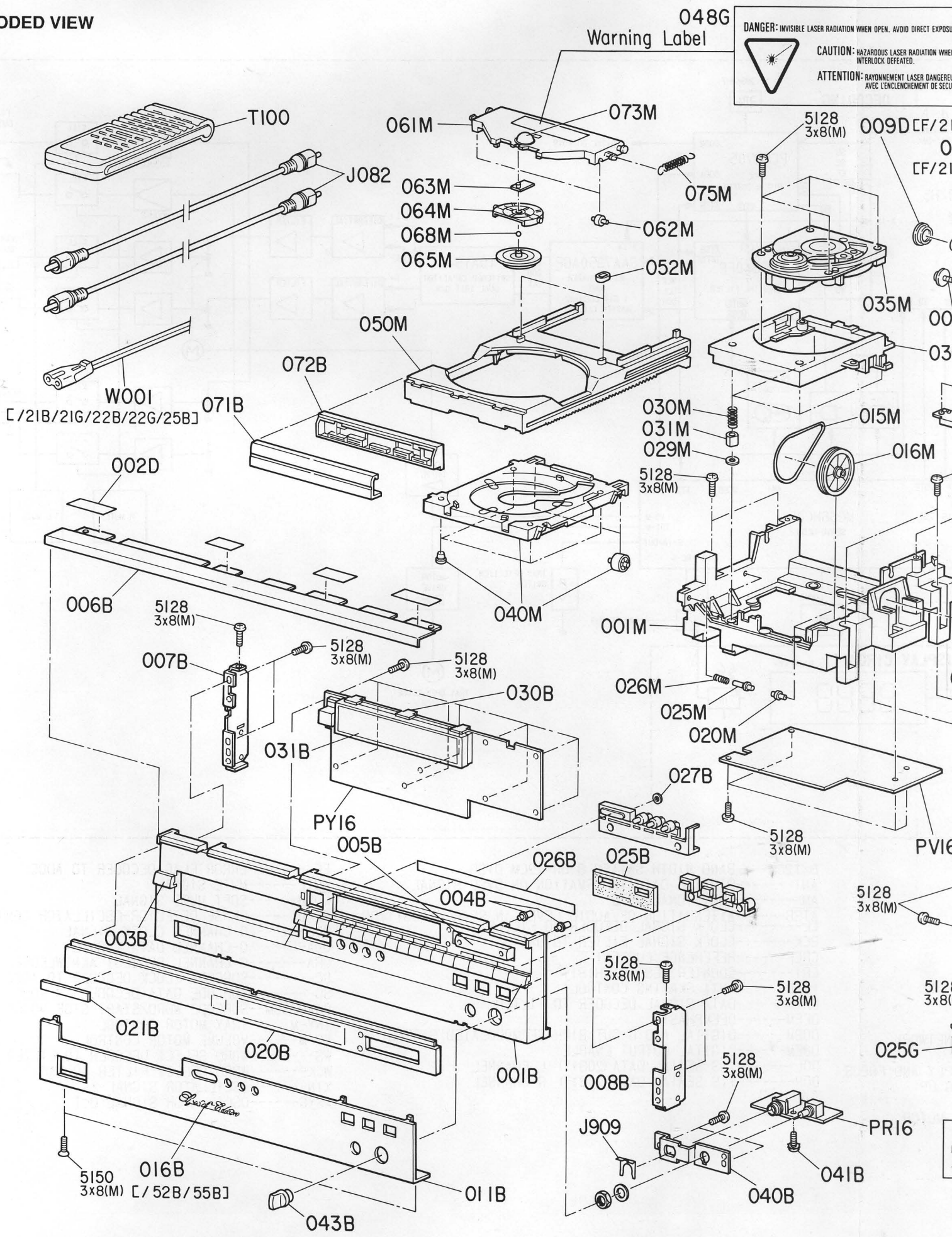
(288K)

| REF. DESIG. | PART NO. | DESCRIPTION |
|-------------|----------------|--|
| 001B | 4822 444 40482 | FRONT PANEL ASSY (BLACK) [21B/22B/25B/52B/55B] |
| 001B | 4822 444 40681 | FRONT PANEL ASSY (GOLD) [21G/22G] |
| 003B | 4822 410 61551 | BUTTON,10 KEYS (BLACK) [21B/22B/25B/52B/55B] |
| 003B | 4822 410 61557 | BUTTON,10 KEYS (GOLD) [21G/22G] |
| 004B | 4822 381 11285 | LENS,LED PLAY/PAUSE |
| 005B | 4822 410 61552 | BUTTON,PLAY/PAUSE (BLACK) [21B/22B/25B/52B/55B] |
| 005B | 4822 410 61558 | BUTTON,PLAY/PAUSE (GOLD) [21G/22G] |
| 006B | 4822 444 40479 | FRONT PANEL AL UPPER (BLACK) [21B/22B/25B/52B/55B] |
| 006B | 4822 444 40485 | FRONT PANEL AL UPPER (GOLD) [21G/22G] |
| 011B | 4822 444 40481 | FRONT PANEL AL LOWER (BLACK) [21B/22B/25B] |
| 011B | 4822 444 40486 | FRONT PANEL AL LOWER (GOLD) [21G/22G] |
| 011B | 4822 444 40575 | FRONT AL LOWER (BLACK) [52B/55B] |
| 016B | 4822 459 11096 | BADGE,SPECIAL EDITION (GOLD) [52B/55B] |
| 020B | 4822 450 62099 | WINDOW [21B/22B/25B/21G/22G] |
| 020B | 4822 450 62119 | WINDOW [52B/55B] |
| 021B | 4822 459 10943 | BADGE,MZ (GOLD/BLACK) |
| 030B | 4822 256 91819 | HOLDER, F.L. TUBE |
| 031B | 4822 459 10942 | STICKER ADHESIVE SHEET |
| 041B | 4822 502 13315 | B.T.SCREW(W/TL) |
| 043B | 4822 410 60873 | KNOB,HEAD PHONE VOLUME (BLACK) [21B/22B/25B/52B/55B] |
| 043B | 4822 413 41642 | KNOB,HEAD PHONE VOLUME BROWN (GOLD) [21G/22G] |
| 060B | 4822 410 61556 | BUTTON,POWER (BLACK) [21B/22B/25B/52B/55B] |
| 060B | 4822 410 60741 | BUTTON,POWER (GOLD) [21G/22G] |
| 071B | 4822 444 40693 | ESCUTCHEON,TRAY LID (BLACK) [21B/22B/25B/52B/55B] |
| 071B | 4822 444 40694 | ESCUTCHEON,TRAY LID (GOLD) [21G/22G] |
| 072B | 4822 532 12112 | RETAINER, TRAY LID |
| 004D | 4822 444 40499 | SIDE PANEL (GOLD) [21G/22G] |
| 007D | 4822 501 11008 | B.T.SCREW(W/W) (BLACK) [21B/22B/25B/52B/55B] |
| 007D | 4822 502 30732 | SCREW, BIND B-TITE 4x13 (GOLD) [21G/22G] |
| 009D | 4822 444 60607 | CAP (GOLD) [21G/22G] |
| 004G | 4822 462 41947 | LEG,GOLD ALUMINUM CAP |
| 030G | 4822 402 61394 | LINK,POWER SWITCH |
| 911G | 4822 325 50202 | BUSHING, AC CORD [52B/55B] |
| SH02 | 4822 277 21561 | SLIDE SWITCH, VOLTAGE SELECTOR (BLACK) [21B/21G] |
| W001 | 4822 321 11004 | A.C. POWER CORD [21B/21G] 1A 250V |
| W001 | 4822 321 10249 | A.C. POWER CORD [22B/22G] 2..5A |
| W001 | 4822 321 10629 | A.C. POWER CORD [25B/55B] |
| W001 | 4822 321 10804 | A.C. POWER CORD [52B] |
| 001M | 4822 464 50872 | CHASSIS, LOADING FRAME |
| 002M | 4822 402 50276 | LEVER, SWITCH BRACKET |
| 003M | 4822 492 52123 | SPRING, COMPSRING |
| 010M | 4822 528 81447 | PULLEY,MOTOR |

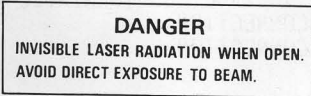
| REF. DESIG. | PART NO. | DESCRIPTION |
|-------------|----------------|--|
| 015M | 4822 358 10115 | BELT,TRAY DRIVE |
| 016M | 4822 528 81455 | PULLEY,DRIVE |
| 020M | 4822 402 61132 | GUIDE,FRAME R |
| 025M | 4822 402 61252 | GUIDE,FRAME L |
| 026M | 4822 492 52094 | SPRING, COMPRESSION |
| 029M | 4822 532 11396 | WASHER |
| 030M | 4822 492 51902 | SPRING |
| 031M | 4822 466 61587 | BUFFER, SUSPENS. GROMMET |
| 035M | 4822 691 30209 | MECHANISM, CDM4 MINI |
| 036M | 4822 402 61196 | CHASSIS, SUPPORT PIECE |
| 040M | 4822 466 92251 | TRAY, LIFT PLATE ASSY |
| 050M | 4822 444 50603 | TRAY ASSY |
| 052M | 4822 532 51756 | BUFFER, DAMPING GROMMET |
| 061M | 4822 444 60568 | LID,CLAMPER ARM |
| 062M | 4822 528 90639 | ROLLER,CLAMPER |
| 063M | 4822 466 92257 | RETAINER, PIVOT PLATE |
| 064M | 4822 402 61207 | CENTRING RING |
| 065M | 4822 530 80503 | CLAMPER, PRESSURE RING K |
| 068M | 4822 520 40177 | SUSTAINER, BEARING BALL |
| 073M | 4822 462 42044 | BUFFER,060M |
| 075M | 4822 492 32883 | SPRING, TENSION |
| M001 | 4822 361 30368 | D.C.MOTOR, TRAY DRIVE |
| 001T | 4822 736 21802 | PACKING USER MANUAL CD-72MK2 [21B/22B/25B/21G/22G] |
| 001T | 4822 736 21827 | USER MANUAL CD-72MK2SE [52B/55B] |
| J082 | 4822 321 22611 | RCA CONNECTIVE CORD (GOLD) |
| J083 | 4822 265 10092 | JACK, AC ADAPTER [21B/21G] |
| J909 | 4822 401 11351 | CLAMPER, SNAP PLATE |
| T100 | 4822 218 10427 | IR COMMANDER |



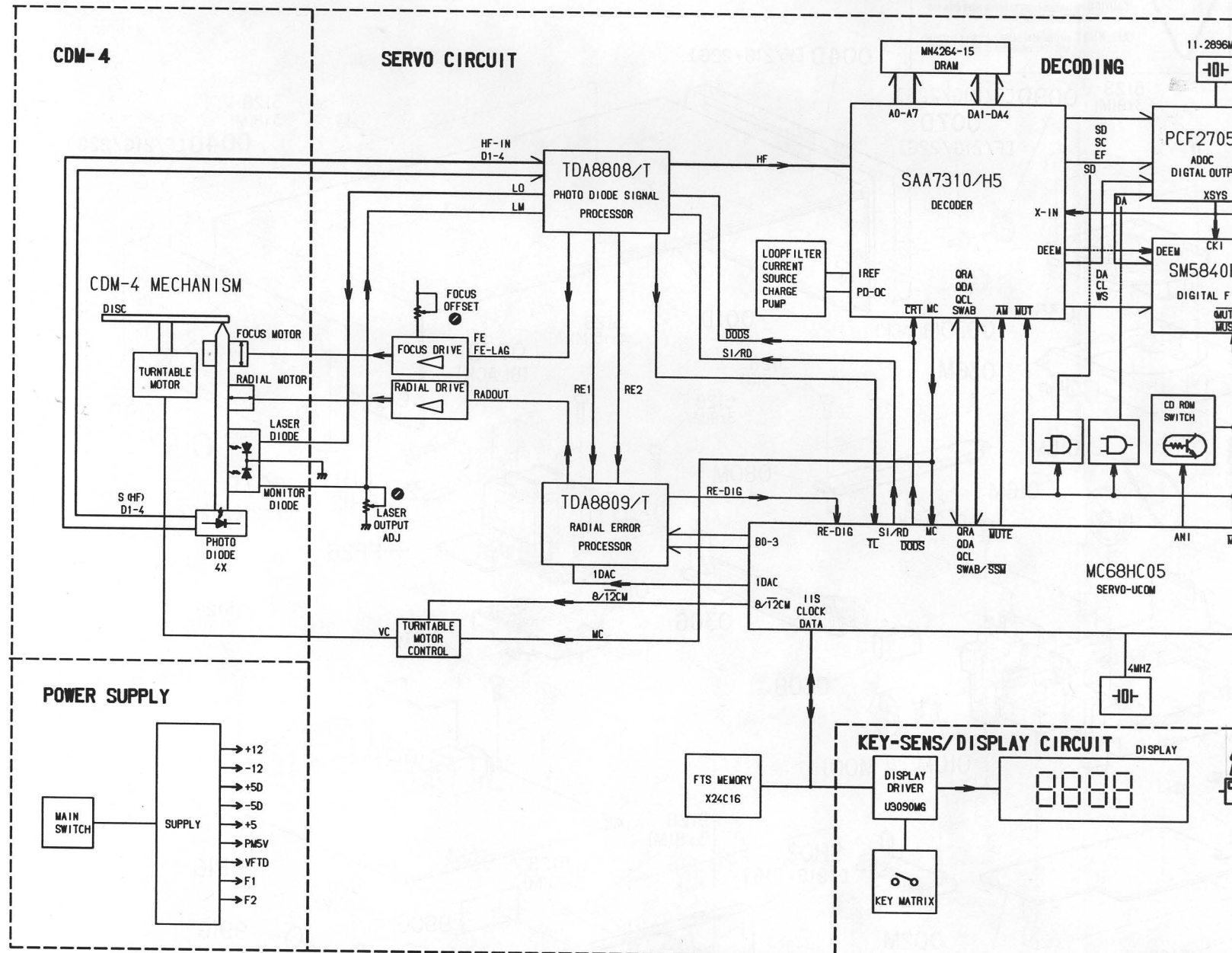
EXPLODED VIEW



ATTENTION: RAYONNEMENT LASER DANGEREUX SI OUVERT
AVEC L'ENCLÈCHEMENT DE SÉCURITÉ ANNULÉ



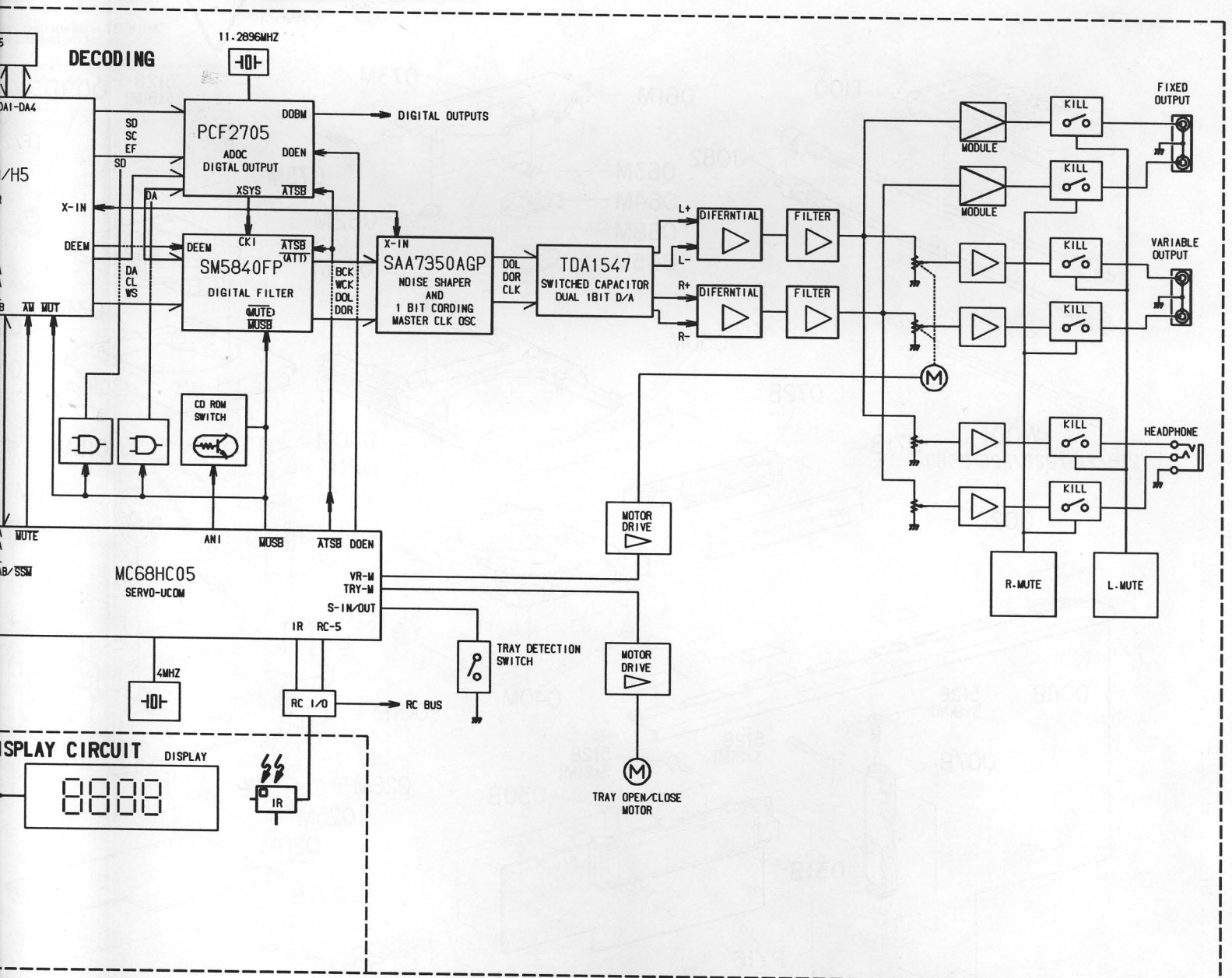
BLOCK DIAGRAM



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
 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-----MONITOR CONTROL SIGNAL
 OFFSET IN-----OFFSET CONTROL INPUT
 OFFSET OUT-----OFFSET CONTROL OUTPUT
 PLLH-----PLL ON HOLD OUTPUT
 RADOUT-----OUTPUT OF RE2-RE1 INPUT
 ROSC-----RESISTOR WOBBLE OSCILLATOR
 RWOB-----WOBBLE GENERATOR INPUT
 RE1-----RADIAL ERROR SIGNAL 1
 RE2-----RADIAL ERROR SIGNAL 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
 TL-----TRACK LOSS OUTPUT SIGNAL
 VC-----CONTROL VOLTAGE FOR TURNABLE MOTOR
 VEXT+ ---SUPPLY CONNECTION
 VEXT- ---SUPPLY CONNECTION

8/12CM-----
 ANI-----
 AM-----
 ATSB-----
 CL-----
 BCK-----
 CREF-----
 CRI-----
 1DAC-----
 DA-----
 DEEM-----
 DOBM-----
 DOEM-----
 DOL-----
 DOR-----



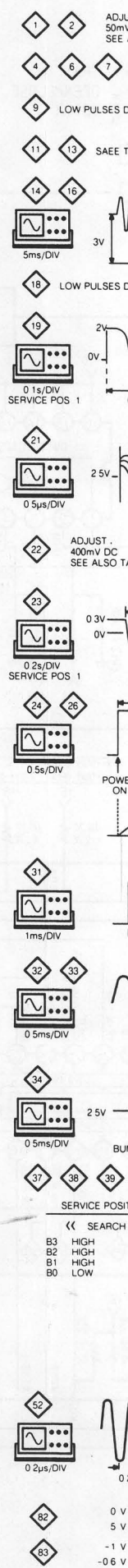
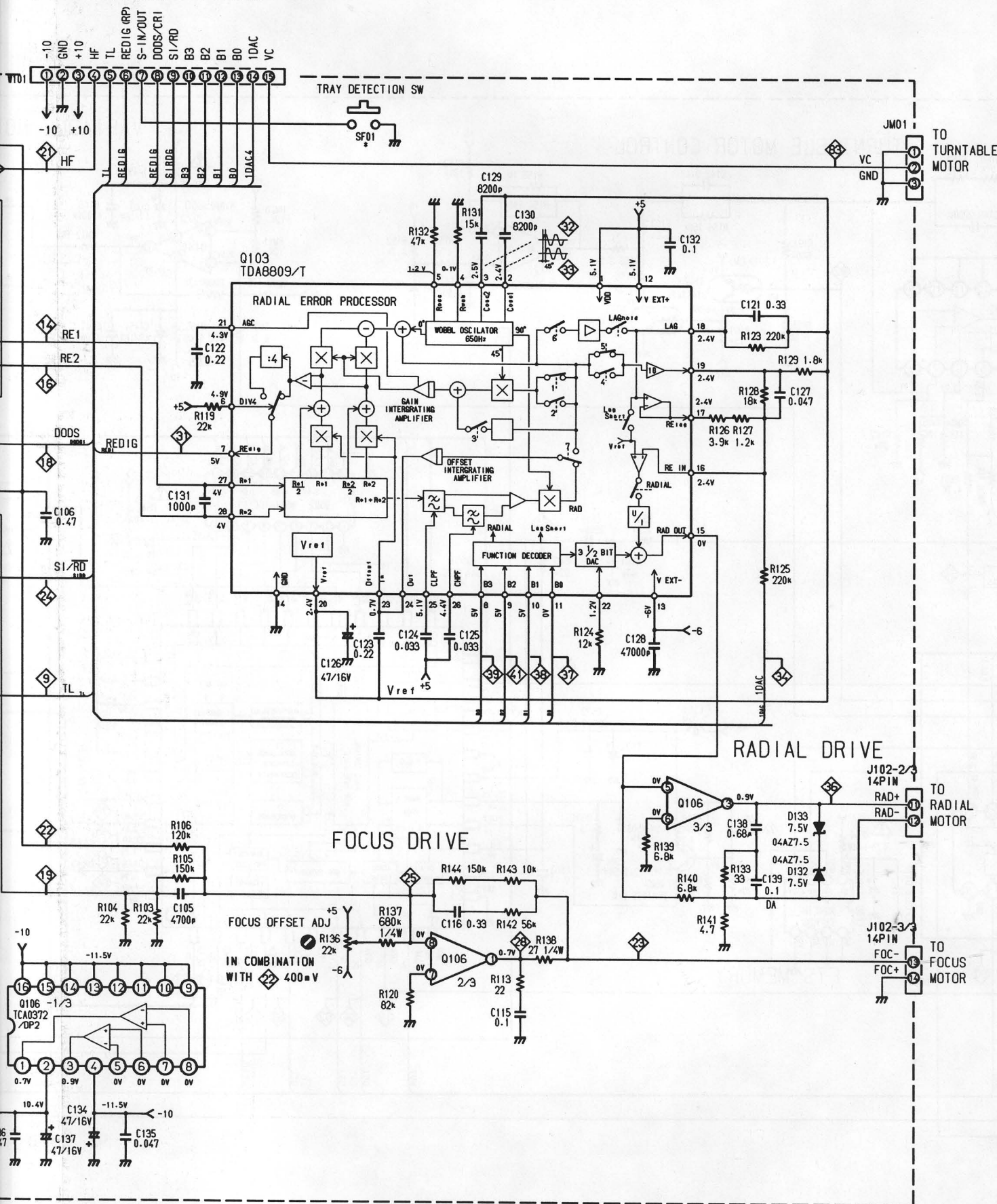
8/12CM---BAND WIDTH SWITCH 8 OR 12CM DISC
 ANI-----DIGITAL DATA INFORMATION ON DISC SIGNAL
 AM-----ADDITIONAL MUTE
 ATSB-----ATTENUATION OF AUDIO LEVEL IN SEARCH POSITION
 CL-----CLOCK SIGNAL DECODER TO FILTER
 BCK-----CLOCK SIGNAL FILTER TO DAC
 CREF-----REFERENCE CURRENT
 CRI-----COUNTER RESET INHIBIT
 1DAC-----ANTI SKATING CONTROL
 DA-----DATA SIGNAL DECODER TO FILTER
 DEEM-----DEEMPHASIS
 DOBM-----DIGITAL AUDIO OUT:BIPHASE MODULATED SIGNAL
 DOEN-----DIGITAL OUTPUT ENABLE
 DOL-----IIS SERIAL DATA (20BIT) L CHANNEL
 DOR-----IIS SERIAL DATA (20BIT) R CHANNEL

EF-----ERROR FLAG DECODER TO ADOC
 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
 SC-----SUBCODE CLOCK DECODER TO ADOC
 SD-----SUBCODE DATA DECODER TO ADOC
 SWAB/SSM---SUBCODE WORD/START-STOP MOTOR SIGNAL
 TRY-M ---TRAY MOTOR CONTROL
 VR-M-----VOLUME MOTOR CONTROL
 WS-----WORD SELECT DECODER TO FILTER
 WCK-----WORD SELECT FILTER TO DAC
 XIN-----OSCILLATOR SIGNAL IN
 XSYS-----OSCILLATOR SIGNAL OUT

SERVO CIRCUIT DIAGRAM



FROM DECODER CIRCUIT PP16 (JF01)

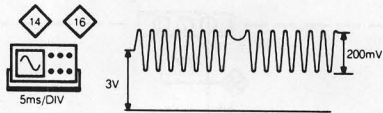


1 2 ADJUST
50mV DC
SEE ALSO TABLE

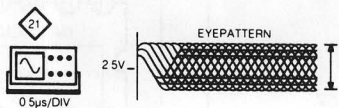
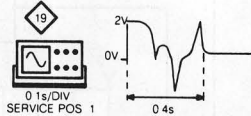
4 6 7 8 SEE TABLE

9 LOW PULSES DURING SEARCH

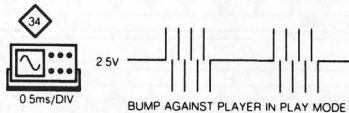
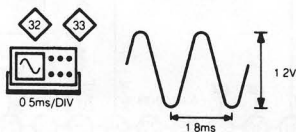
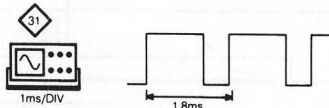
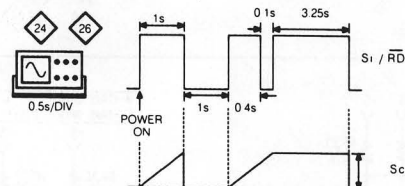
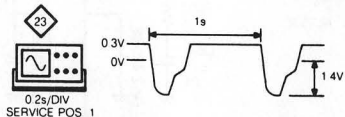
11 13 SAAE TABLE



18 LOW PULSES DURING <TRACK AND TRACK>



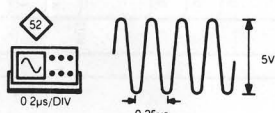
22 ADJUST
400mV DC
SEE ALSO TABLE



37 38 39 41

SERVICE POSITION 0 PLAY MODE

| | SEARCH | SEARCH |
|----|----------|----------|
| B3 | HIGH | HIGH |
| B2 | HIGH | LOW |
| B1 | HIGH | HIGH |
| B0 | LOW | LOW |
| | ACTIVITY | ACTIVITY |



52 0 V FOR 12 cm DISC

53 5 V FOR 8 cm DISC

54 -1 V AT BEGINNING OF DISC

55 -0.6 V AT END OF DISC

Q108

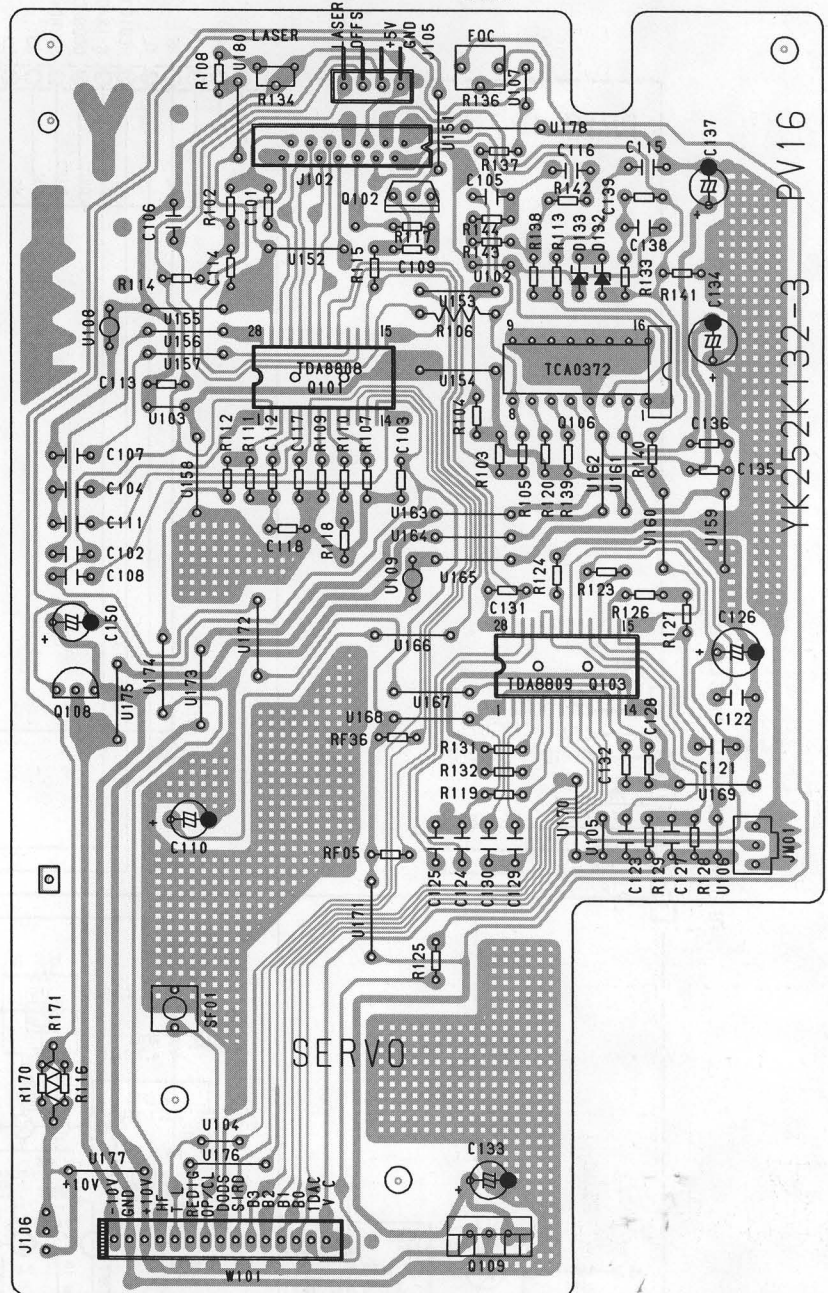
Q101

Q102

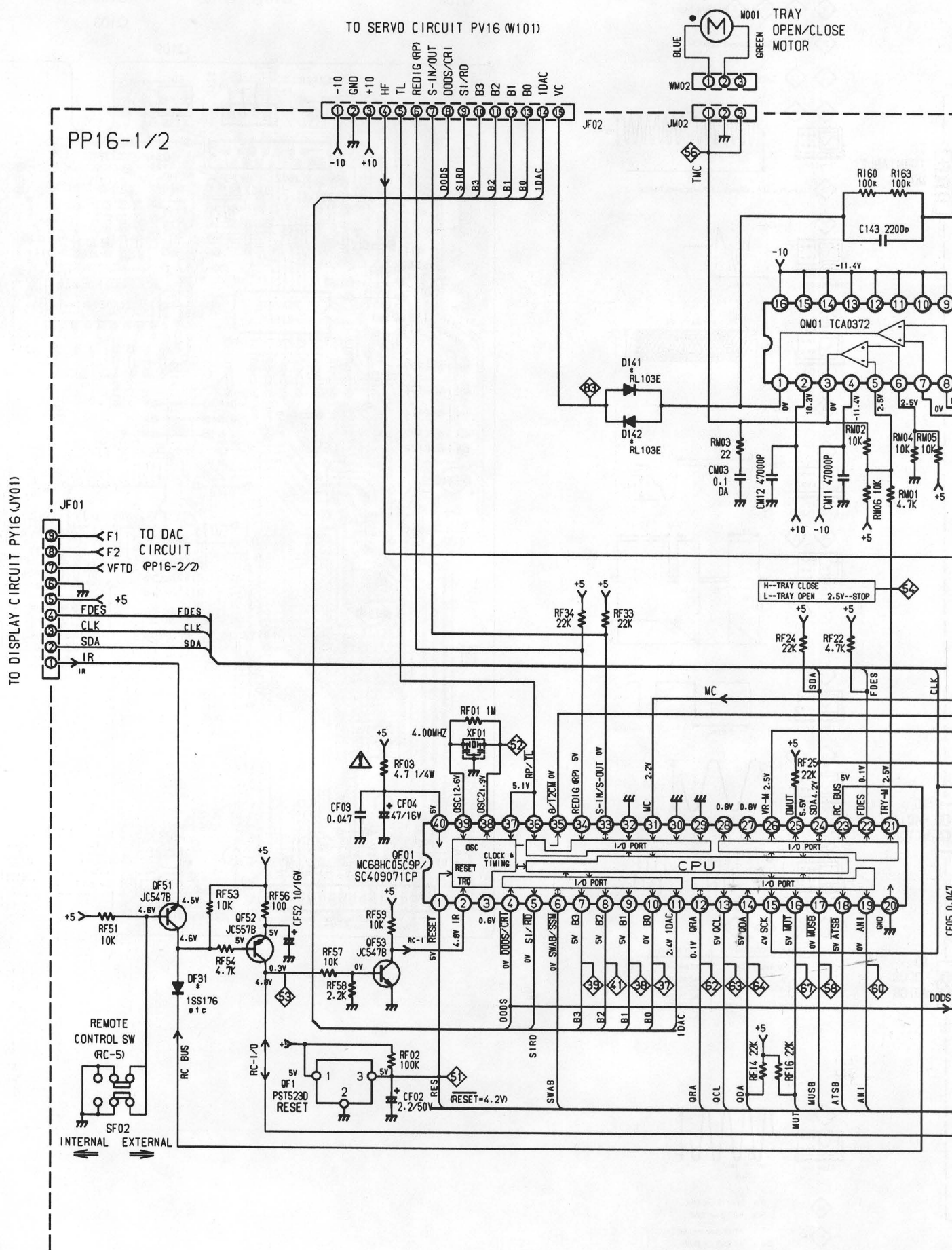
Q106

Q103

Q109



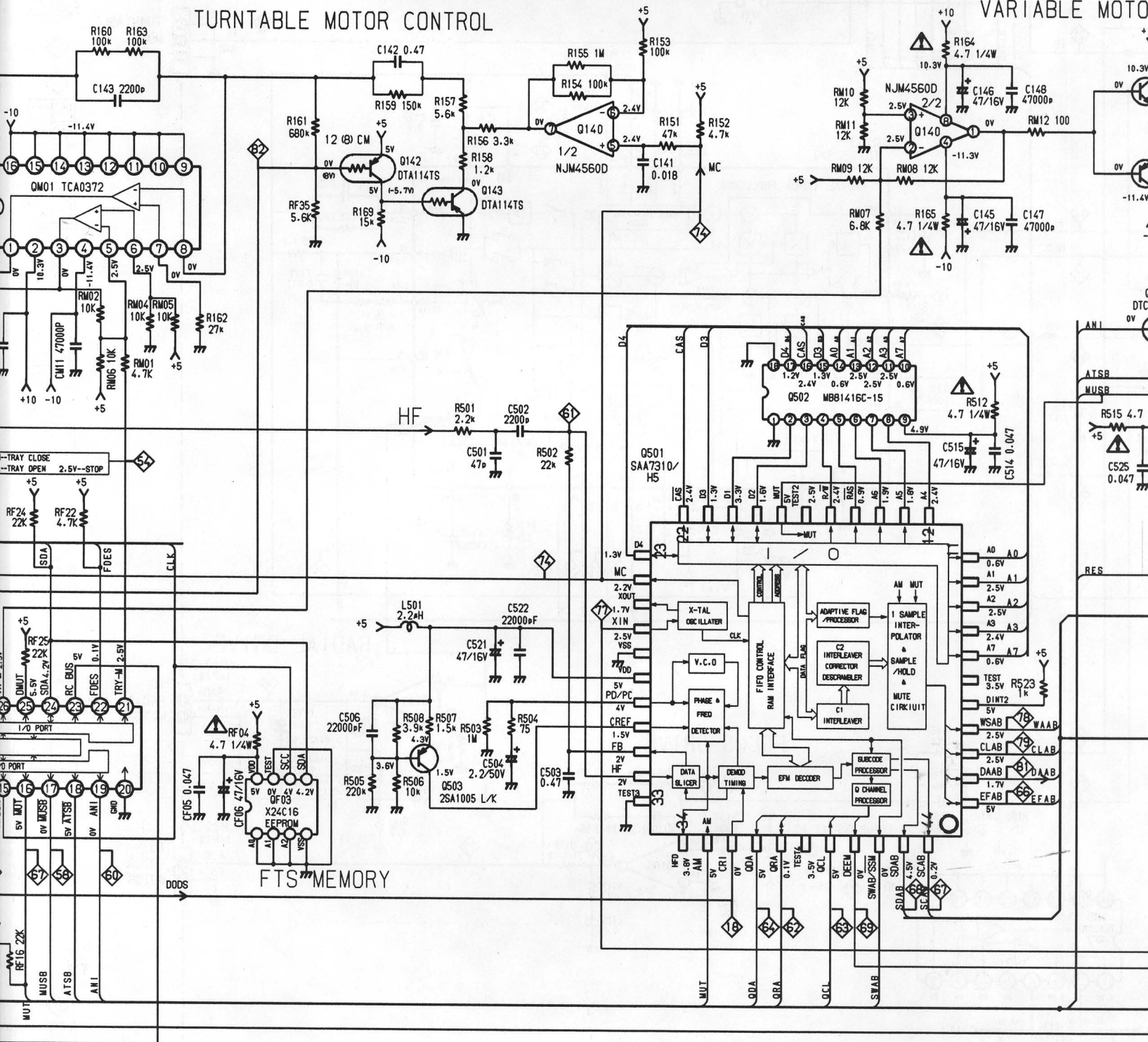
DECODER CIRCUIT DIAGRAM



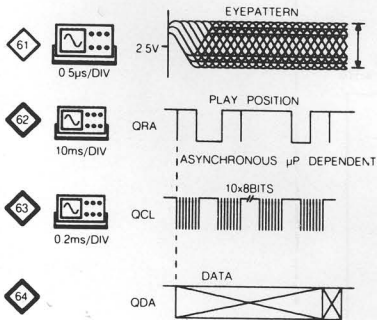
TRAY
OPEN/CLOSE
MOTOR

TURNTABLE MOTOR CONTROL

VARIABLE MOTOR



- 18 LOW PULSES DURING NEXT AND PREVIOUS
- 53 ACTIVITY WHEN USING AN IR REMOTE CONTROL

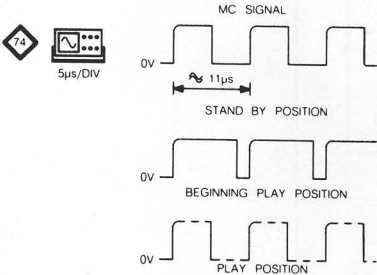


- 66 PULSES WHEN THE DISC IS SLOWLY BRAKED BY HAND

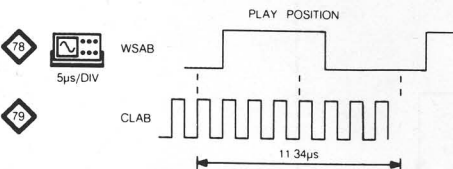


- 68 ACTIVITY DURING PLAY

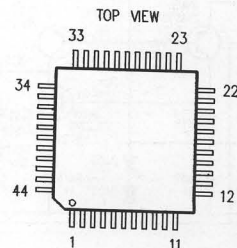
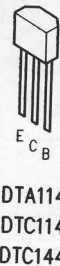
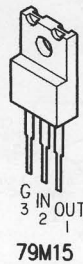
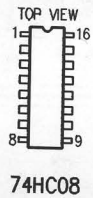
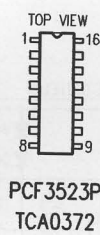
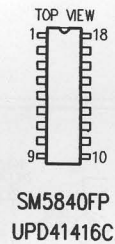
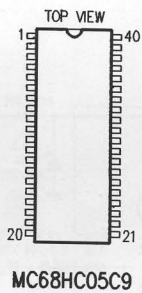
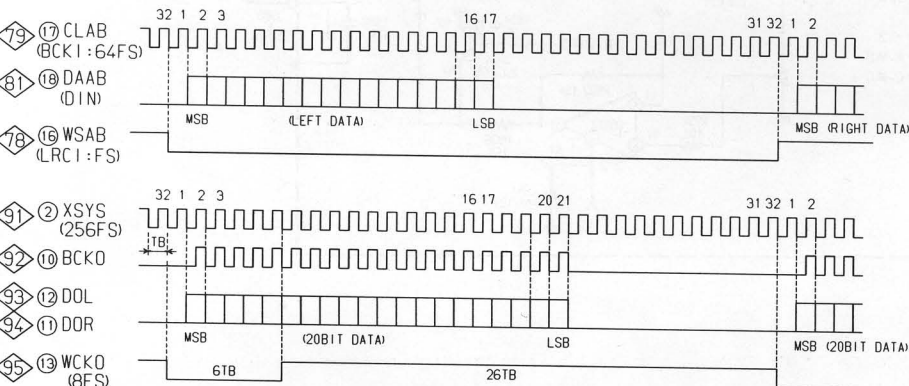
- 69 AUDIO SIGNALS DISC: HIGH ON TRACK 76 78 80 82 84 86 88
LOW ON TRACK 77 79 81 83 85 87 89



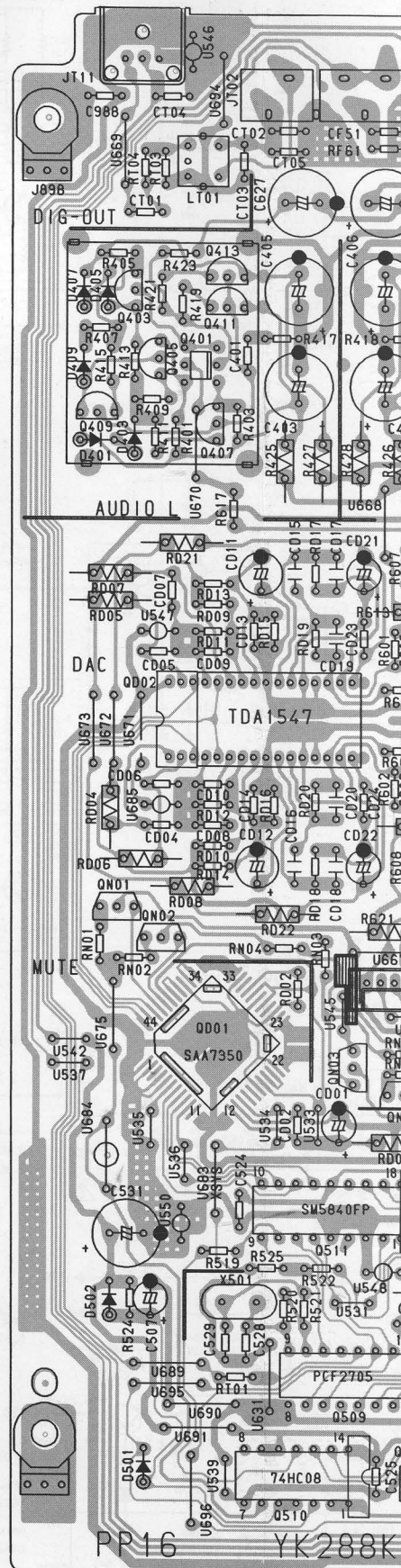
- 77 11.2896 MHz SINEWAVE



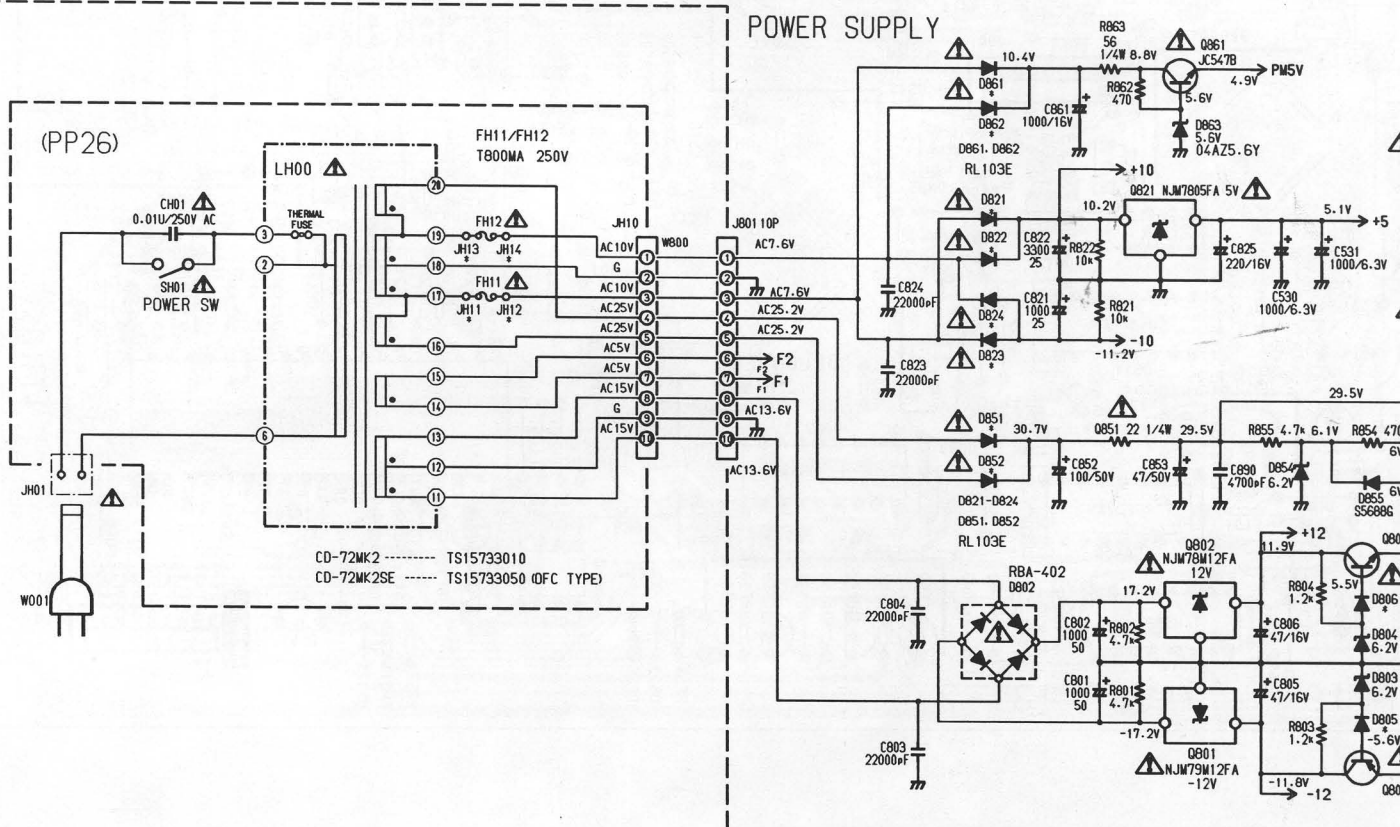
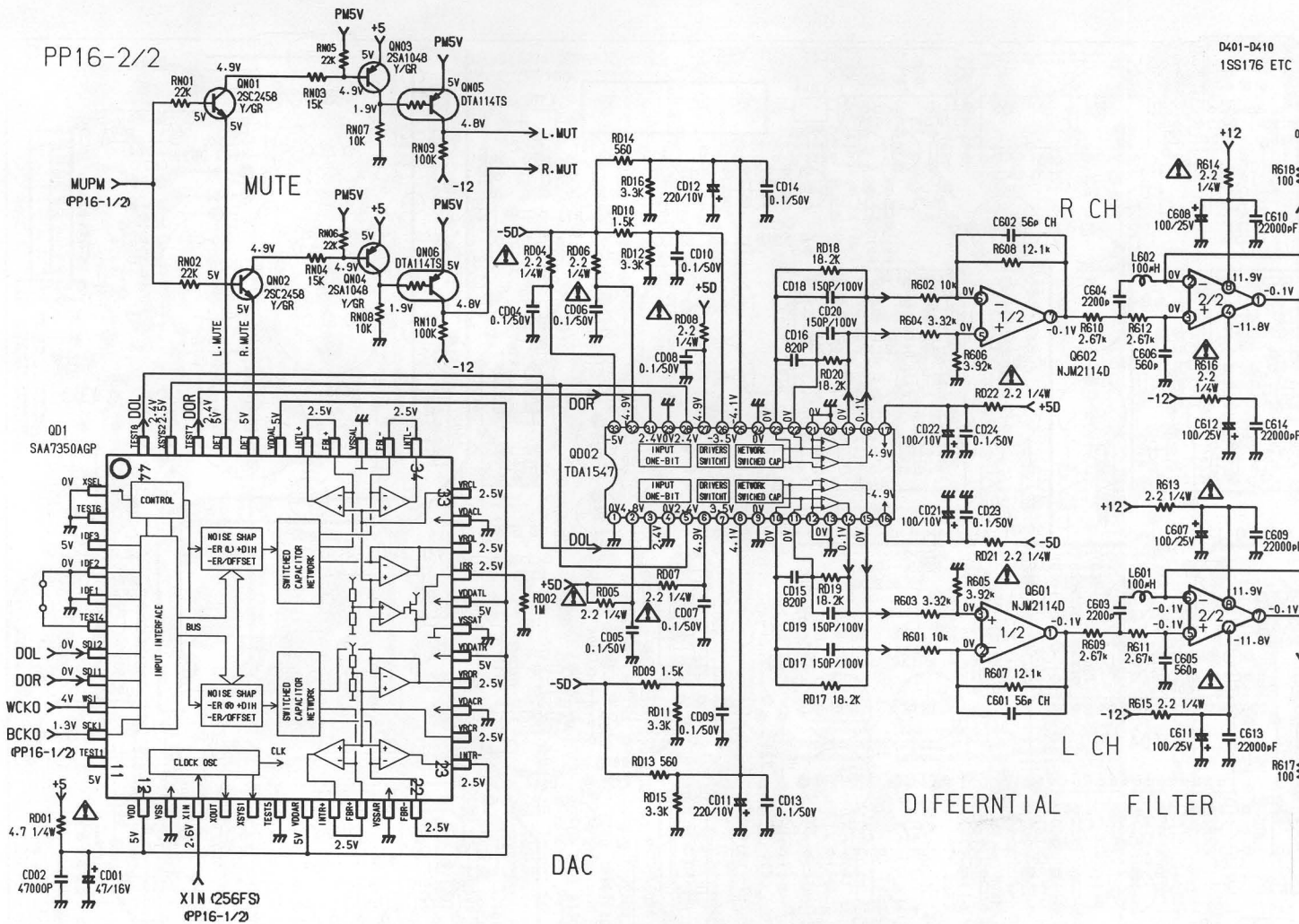
- 81 ACTIVITY DURING PLAY



Q403 Q411 Q413
Q409 Q405 Q401 Q407
QN01 QN02 QD01 QD02 Q509~Q5



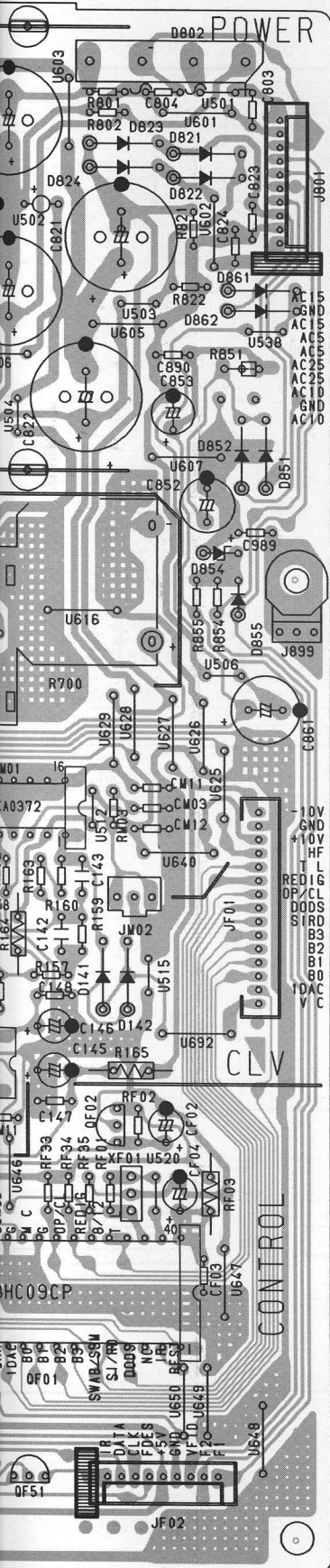
DAC/HEADPHONE/POWER SUPPLY CIRCUIT DIAGRAM



QM01

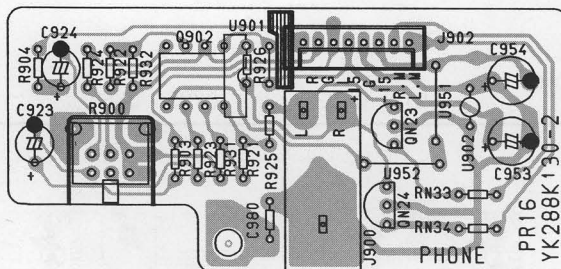
Q2 Q143 Q140

QF51 QF01 QF02



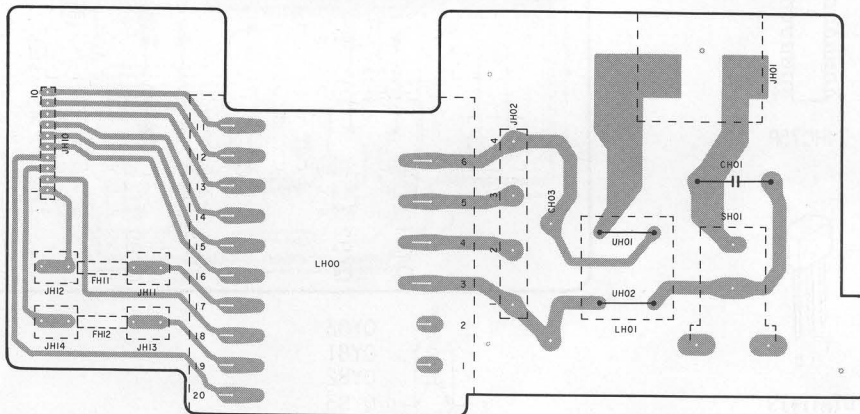
Q902

QN23 QN24

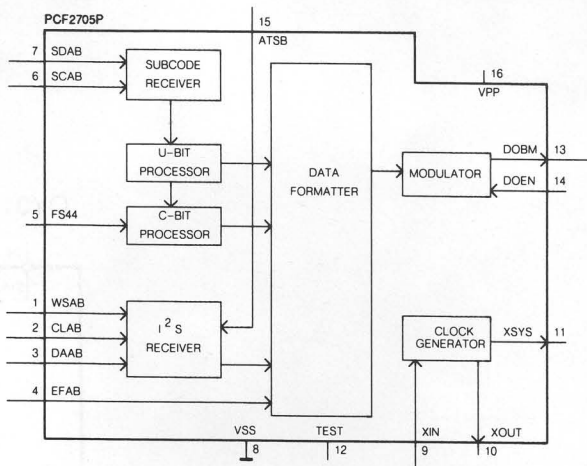


NJM4556D 2SC2878A/B

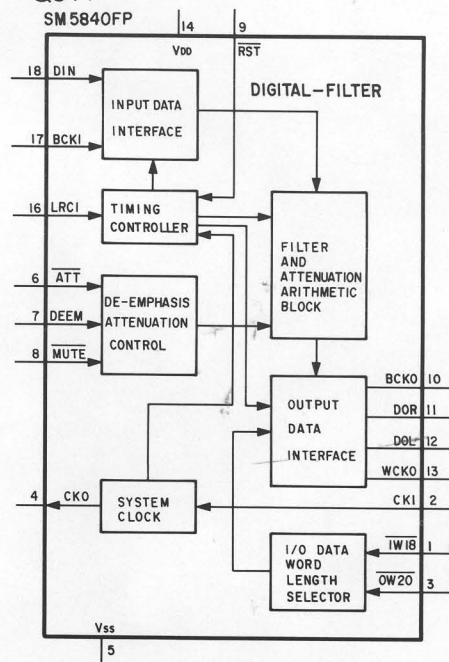
PP26

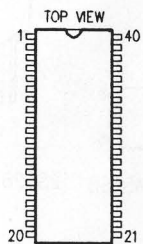


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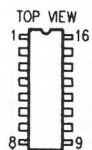


Q511





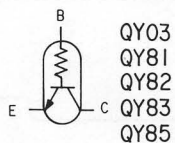
U3090MG



74HC75P



DTA114TS



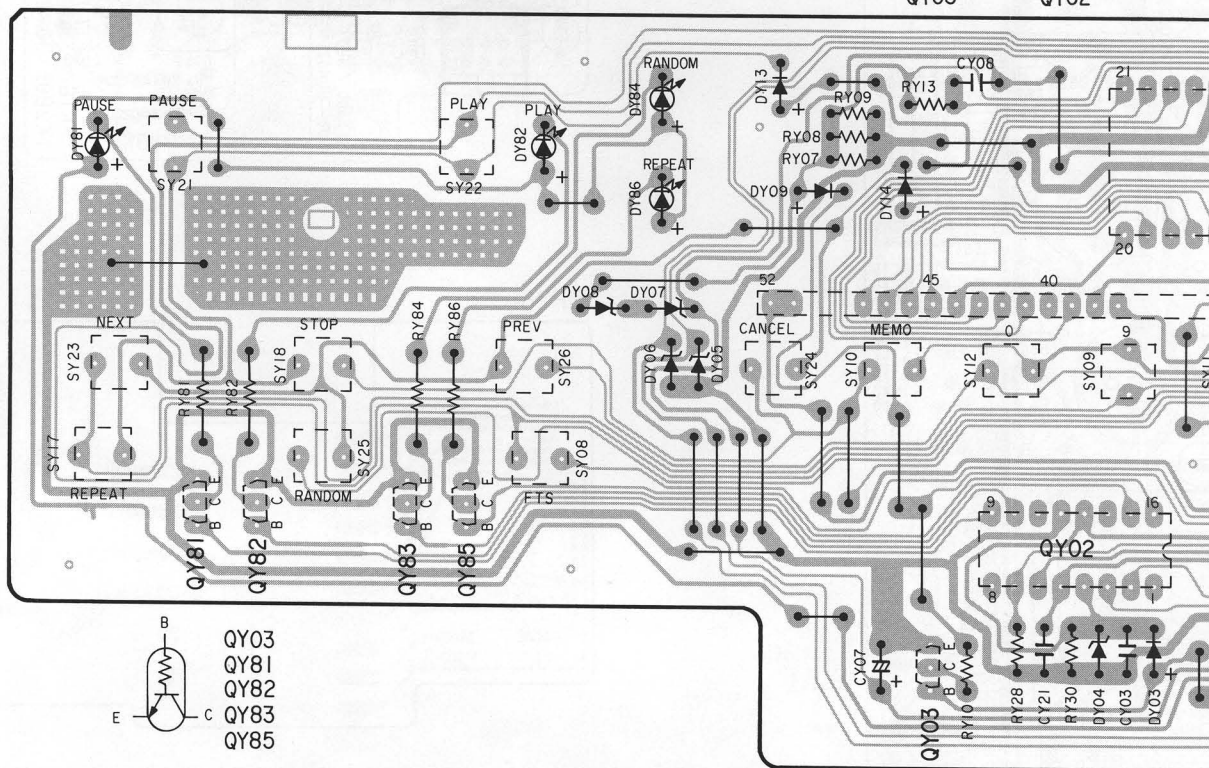
PY16

QY81 QY82

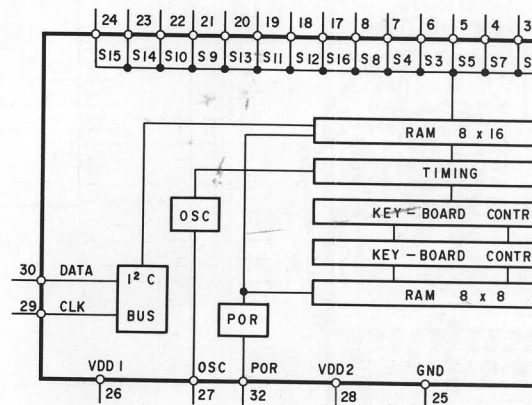
QY83 QY85

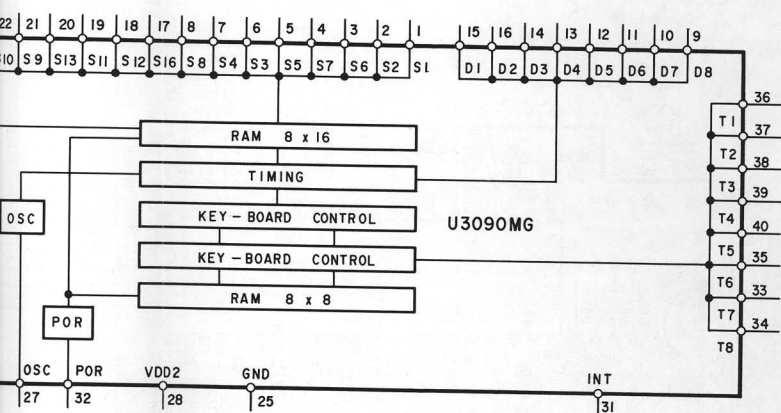
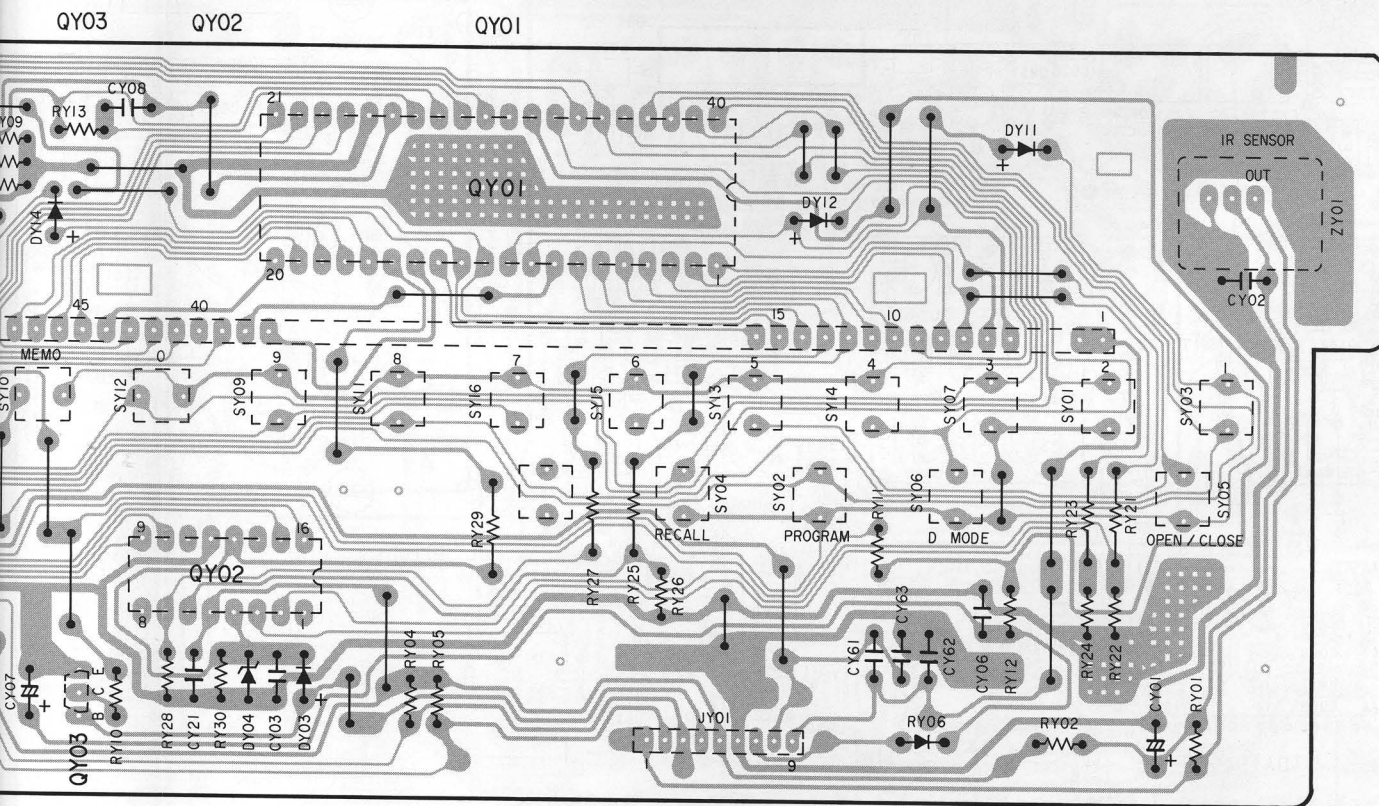
QY03

QY02



QY01

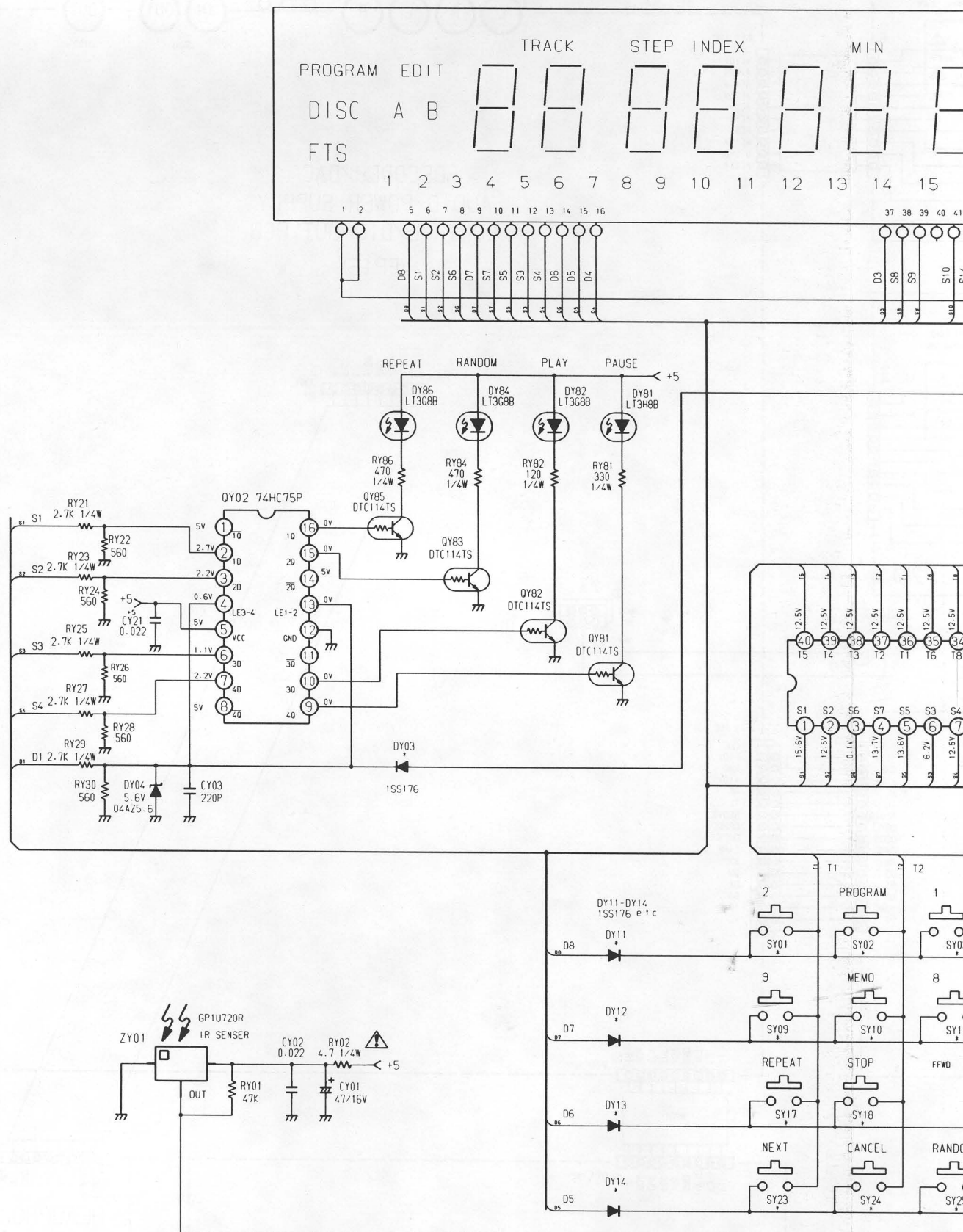




DISPLAY CIRCUIT DIAGRAM

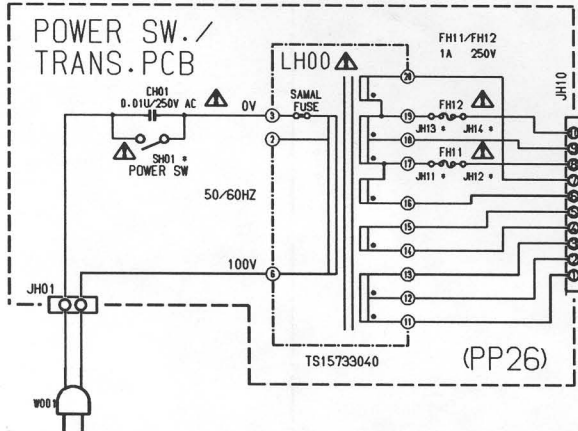
PY16

FTD DISPLAY FV364G VY01

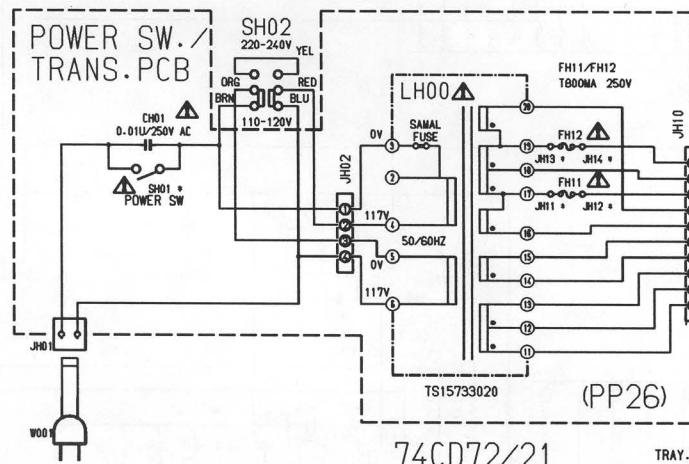
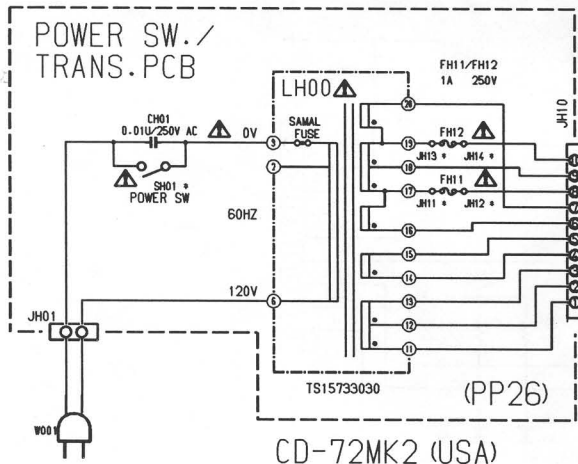
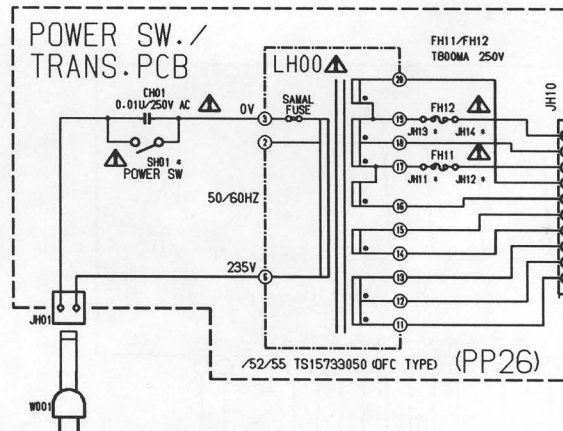


WIRING DIAGRAM

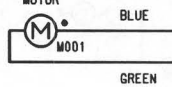
CD-72a (F)



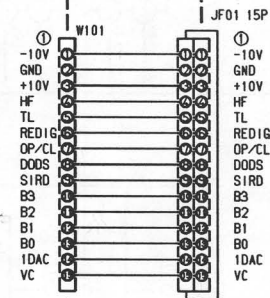
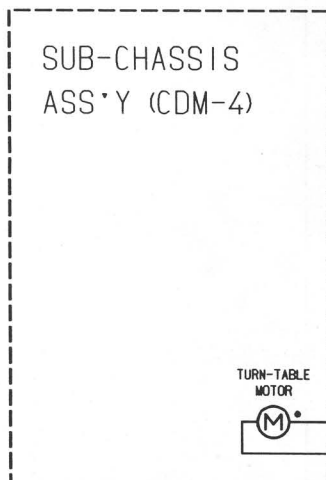
74CD72/22/25/52/55

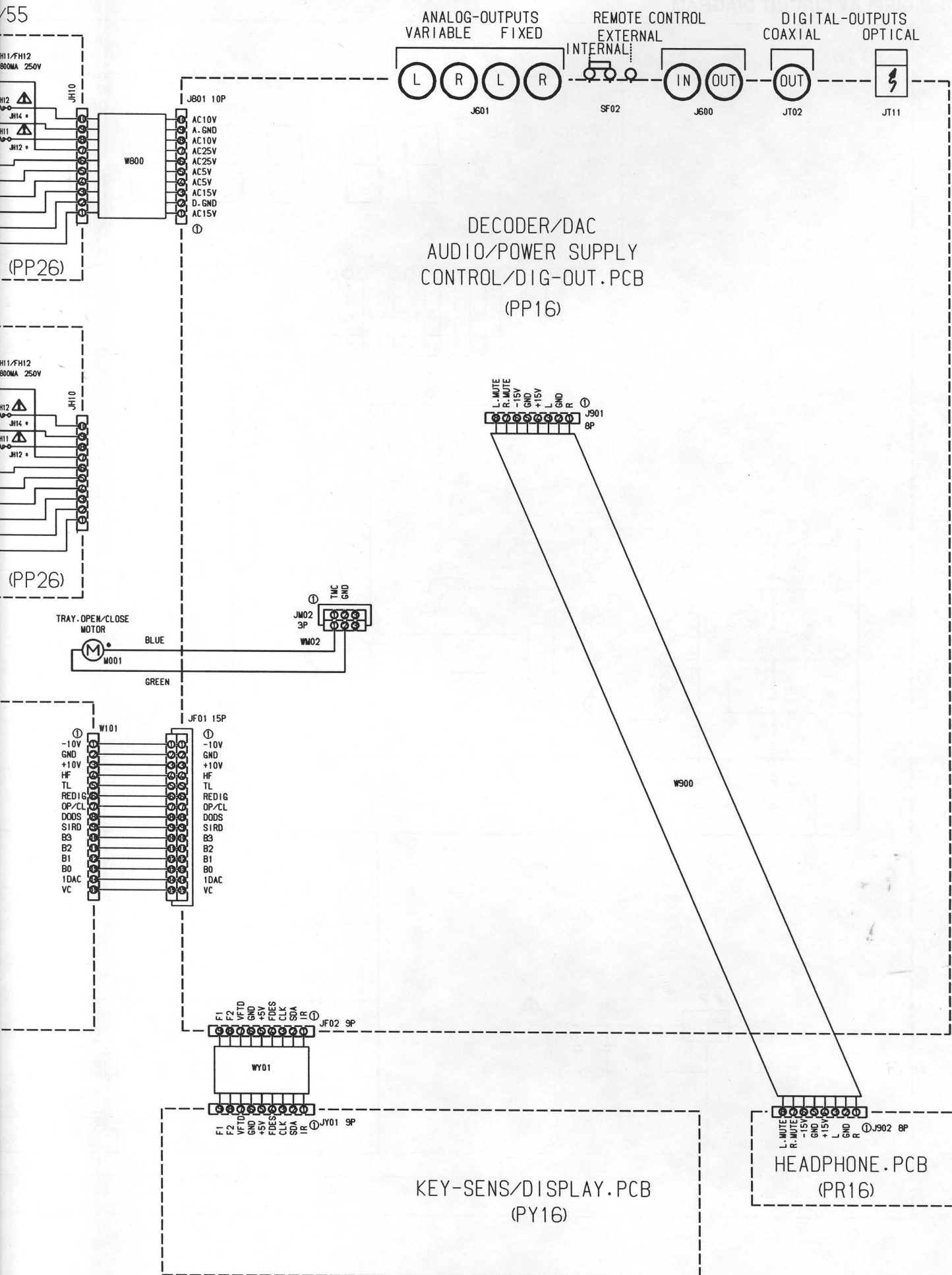


TRAY OPEN/CLOSE MOTOR



SERVO.PCB (PV16)





ELECTRICAL PARTS LIST

ASSIGNMENT OF COMMON PARTS CODES.

RESISTOR
R * * * : (1) GD05 xxx 140, Carbon film fixed resistor, ±5% 1/4W
R * * * : (2) GD05 xxx 160, Carbon film fixed resistor, ±5% 1/6W

① — Resistance value
Examples ;
① Resistance value
0.1 Ω 001 10 Ω 100 1 kΩ 102 100 kΩ 104
0.5 Ω 005 18 Ω 180 2.7 kΩ 272 680 kΩ 684
1 Ω 010 100 Ω 101 10 kΩ 103 1 MΩ 105
6.8 Ω 068 390 Ω 391 22 kΩ 223 4.7 MΩ 475

(Note) Please distinguish 1/4W from 1/6W by the shape of parts used actually.

C * * * : CERAMIC CAP.
(1) DD1x xxx 370, Ceramic capacitor
Disc type
Temp. coeff. P350 ~ N1000, 50V
① ②
Capacity value
Tolerance

Examples ;
① Tolerance (Capacity deviation)
± 0.25pF 0
± 0.5pF 1
± 5% 5
* Tolerance of COMMON PARTS handled here are as follows :
0.5pF ~ 5pF ± 0.25pF
6pF ~ 10pF ± 0.5pF
12pF ~ 560pF ± 5%

② Capacity value
0.5 pF 005 3 pF 030 100 pF 101
1 pF 010 10 pF 100 220 pF 221
1.5 pF 015 47 pF 470 560 pF 561

C * * * : CERAMIC CAP.
(1) DK16 xxx 300, High dielectric constant ceramic capacitor
Disc type
Temp. chara. 2B4, 50V
①
Capacity value

Examples ;
② Capacity value
100 pF 101 1000 pF 102 10000 pF 103
470 pF 471 2200 pF 222

C * * * : ELECTROLY CAP. (⏏), FILM CAP. (⏏)
(1) EA xxx xxx 10, Electrolytic capacitor
One-way lead type,
Tolerance ± 20%
① ②
Working voltage
Capacity value

Examples ;
① Capacity value
0.1 μF 104 4.7 μF 475 100 μF 107
0.33 μF 334 10 μF 106 330 μF 337
1 μF 105 22 μF 226 1100 μF 118
2200 μF 228

② Working voltage
6.3 V 006 25 V 025
10 V 010 35 V 035
16 V 016 50 V 050

(2) DF15 xxx 350, Plastic film capacitor
One-way type, Mylar ± 5% 50V
①
Capacity value

Examples ;
① Capacity value
0.001 μF (1000pF) 102 0.1 μF 104
0.0018 μF 182 0.56 μF 564
0.01 μF 103 1 μF 105
0.015 μF 153

NOTE : The above CODES (R * * * , R * * * , C * * * , C * * * and C * * *) are omitted on the schematic diagram in some case.
On the occasion, be confirmed common parts on the parts list.

| REF. DESIG. | PART NO. | DESCRIPTION |
|-------------|----------------|--|
| | | PP16-AUDIO/POWER CIRCUIT BOAARD |
| | | PP16-CAPACITORS |
| CD01 | 4822 124 41539 | ELECT 47μF 16V |
| CD02 | 4822 122 40589 | CERAMIC 0.047μF +80%-20% 50V |
| CD04 | | |
| § | 4822 126 11558 | CERAMIC 0.1μF +80%-20% 50V |
| CD10 | | |
| CD11 | 4822 124 90363 | ELECT 220μF 10V |
| CD12 | 4822 124 90363 | ELECT 220μF 10V |
| CD13 | 4822 126 11558 | CERAMIC 0.1μF +80%-20% 50V |
| CD14 | 4822 126 11558 | CERAMIC 0.1μF +80%-20% 50V |
| CD15 | 4822 121 70089 | FILM 820PF ± 5% 50V |
| CD16 | 4822 121 70089 | FILM 820PF ± 5% 50V |
| CD17 | | |
| § | 4822 122 10367 | CERAMIC 150PF ± 5% 50V |
| CD20 | | |
| CD21 | 4822 124 90353 | ELECT 100μF 10V |
| CD22 | 4822 124 90353 | ELECT 100μF 10V |
| CD23 | 4822 126 11558 | CERAMIC 0.1μF +80%-20% 50V |
| CD24 | 4822 126 11558 | CERAMIC 0.1μF +80%-20% 50V |
| CF02 | 4822 124 90357 | ELECT 2.2μF 50V |
| CF03 | 4822 122 40589 | CERAMIC 0.047μF +80%-20% 50V |
| CF04 | 4822 124 41539 | ELECT 47μF 16V |
| CF05 | 4822 122 40589 | CERAMIC 0.047μF +80%-20% 50V |
| CF06 | 4822 124 41539 | ELECT 47μF 16V |
| CF51 | 4822 122 40589 | CERAMIC 0.047μF +80%-20% 50V |
| CF52 | 4822 124 90352 | ELECT 10μF 16V |
| CM03 | | CERAMIC 0.1μF +80%-20% 50V |
| CM11 | 4822 122 40589 | CERAMIC 0.047μF +80%-20% 50V |
| CM12 | 4822 122 40589 | CERAMIC 0.047μF +80%-20% 50V |
| CT01 | 4822 126 11558 | CERAMIC 0.1μF +80%-20% 50V |
| CT02 | 4822 126 11558 | CERAMIC 0.1μF +80%-20% 50V |
| CT03 | 4822 122 33795 | CERAMIC 4700PF +80%-20% |
| CT04 | 4822 122 40589 | CERAMIC 0.047μF +80%-20% 50V |
| CT05 | 4822 126 11726 | CERAMIC 2200PF +80%-20% |
| C145 | 4822 124 41539 | ELECT 47μF 16V |
| C146 | 4822 124 41539 | ELECT 47μF 16V |
| C147 | 4822 122 40589 | CERAMIC 0.047μF +80%-20% 50V |
| C148 | 4822 122 40589 | CERAMIC 0.047μF +80%-20% 50V |
| C401 | 4822 126 10362 | CERAMIC 22PF ± 5% |
| C402 | 4822 126 10362 | CERAMIC 22PF ± 5% |
| C403 | | |
| § | 4822 124 23649 | ELECT 470μF 25V |
| C406 | | |
| C501 | 4822 126 10513 | CERAMIC 47PF ± 5% 50V |
| C502 | 4822 126 11726 | CERAMIC 2200PF +80%-20% |
| C503 | | FILM 0.47μF 50V |
| C504 | 4822 124 90357 | ELECT 2.2μF 50V |
| C506 | 4822 122 40588 | CERAMIC 0.022μF ± 20% |
| C507 | 4822 124 41543 | ELECT 1μF 50V |
| C514 | 4822 122 40589 | CERAMIC 0.047μF +80%-20% 50V |
| C515 | 4822 124 41539 | ELECT 47μF 16V |
| C521 | 4822 124 41539 | ELECT 47μF 16V |
| C522 | 4822 122 40588 | CERAMIC 0.022μF ± 20% |
| C523 | 4822 124 41539 | ELECT 47μF 16V |
| C524 | 4822 122 40589 | CERAMIC 0.047μF +80%-20% 50V |
| C525 | 4822 122 40589 | CERAMIC 0.047μF +80%-20% 50V |
| C527 | 4822 122 40588 | CERAMIC 0.022μF ± 20% |
| C528 | 4822 122 33638 | CERAMIC 27PF ± 5% |
| C529 | 4822 122 33638 | CERAMIC 27PF ± 5% |
| C530 | 4822 124 22694 | ELECT 1000μF 6.3V |
| C531 | 4822 124 22694 | ELECT 1000μF 6.3V |
| C601 | 4822 122 32027 | CERAMIC 56PF ± 5% 50V |
| C602 | 4822 122 32027 | CERAMIC 56PF ± 5% 50V |
| C605 | 5322 122 32336 | FILM 560PF ± 5% 50V |

| REF. DESIG. | PART NO. | DESCRIPTION |
|-------------|----------------|--|
| C606 | 5322 122 32336 | FILM 560PF \pm 5% 50V |
| C607 | 4822 124 22238 | ELECT 100 μ F 25V |
| C608 | 4822 124 22238 | ELECT 100 μ F 25V |
| C609 | 4822 122 40588 | CERAMIC 0.022 μ F \pm 20% |
| C610 | 4822 122 40588 | CERAMIC 0.022 μ F \pm 20% |
| C611 | 4822 124 22238 | ELECT 100 μ F 25V |
| C612 | 4822 124 22238 | ELECT 100 μ F 25V |
| C613 | 4822 122 40588 | CERAMIC 0.022 μ F \pm 20% |
| C614 | 4822 122 40588 | CERAMIC 0.022 μ F \pm 20% |
| C627 | 4822 124 22039 | ELECT 220 μ F 16V [21B/22B/25B/21G/22G] |
| C627 | 4822 124 80123 | ELECT 220 μ F 16V [52B/55B] |
| C628 | 4822 124 22039 | ELECT 220 μ F 16V [21B/22B/25B/21G/22G] |
| C628 | 4822 124 80123 | ELECT 220 μ F 16V [52B/55B] |
| C629 | 4822 124 22039 | ELECT 220 μ F 16V [21B/22B/25B/21G/22G] |
| C629 | 4822 124 80123 | ELECT 220 μ F 16V [52B/55B] |
| C630 | 4822 124 22039 | ELECT 220 μ F 16V [21B/22B/25B/21G/22G] |
| C630 | 4822 124 80123 | ELECT 220 μ F 16V [52B/55B] |
| C631 | 4822 126 10364 | CERAMIC 100PF \pm 10% |
| C632 | 4822 126 10364 | CERAMIC 100PF \pm 10% |
| C727 | 4822 124 90354 | ELECT 100 μ F 16V |
| C728 | 4822 124 90354 | ELECT 100 μ F 16V |
| C731 | 4822 126 10364 | CERAMIC 100PF \pm 10% |
| C732 | 4822 126 10364 | CERAMIC 100PF \pm 10% |
| C787 | 4822 124 90354 | ELECT 100 μ F 16V |
| C788 | 4822 124 90354 | ELECT 100 μ F 16V |
| C801 | 4822 124 23918 | ELECT 1000 μ F 50V [21B/22B/25B/21G/22G] |
| C801 | 4822 124 80257 | ELECT 1000 μ F 35V [52B/55B] |
| C802 | 4822 124 23918 | ELECT 1000 μ F 50V [21B/22B/25B/21G/22G] |
| C802 | 4822 124 80257 | ELECT 1000 μ F 35V [52B/55B] |
| C803 | 4822 122 40588 | CERAMIC 0.022 μ F \pm 20% |
| C804 | 4822 122 40588 | CERAMIC 0.022 μ F \pm 20% |
| C805 | 4822 124 41539 | ELECT 47 μ F 16V |
| C806 | 4822 124 41539 | ELECT 47 μ F 16V |
| C807 | 4822 124 23363 | ELECT 220 μ F 6.3V |
| C808 | 4822 124 23363 | ELECT 220 μ F 6.3V |
| C821 | 4822 124 23918 | ELECT 1000 μ F 50V |
| C822 | 4822 124 22239 | ELECT 3300 μ F 25V |
| C823 | 4822 122 40588 | CERAMIC 0.022 μ F \pm 20% |
| C824 | 4822 122 40588 | CERAMIC 0.022 μ F \pm 20% |
| C825 | 4822 124 90364 | ELECT 220 μ F 16V |
| C852 | 4822 124 90355 | ELECT 100 μ F 50V |
| C853 | 4822 124 22276 | ELECT 47 μ F 50V |
| C861 | 4822 124 22722 | ELECT 1000 μ F 16V |
| C890 | 4822 122 33795 | CERAMIC 4700PF +80%-20% |
| C980 | 4822 122 33795 | CERAMIC 4700PF +80%-20% |
| C*** | | PP16-CAPACITORS (COMMON) Plastic film capacitor One-way type, Mylar \pm 5% 50V C141~C143, C503, C603, C604 |
| Q851 | 4822 116 60318 | PP16-RESISTORS 2.2 Ω \pm 5% 1/4W |
| RD01 | 4822 111 90967 | 4.7 Ω \pm 5% 1/4W FUSE |
| RD04 | | |
| RD08 | 4822 116 83963 | 2.2 Ω \pm 5% 1/4W |
| RD17 | | |
| RD20 | 4822 117 10448 | 18.2K Ω \pm 1% 1/6W |
| RD21 | 4822 116 83963 | 2.2 Ω \pm 5% 1/4W |
| RD22 | 4822 116 83963 | 2.2 Ω \pm 5% 1/4W |
| RF03 | 4822 111 90967 | 4.7 Ω \pm 5% 1/4W FUSE |
| RF04 | 4822 111 90967 | 4.7 Ω \pm 5% 1/4W FUSE |

| REF. DESIG. | PART NO. | DESCRIPTION |
|-------------|----------------|---|
| R164 | 4822 111 90967 | 4.7 Ω \pm 5% 1/4W FUSE |
| R165 | 4822 111 90967 | 4.7 Ω \pm 5% 1/4W FUSE |
| R425 | | |
| S | 4822 050 21021 | 100 Ω \pm 5% 1/4W |
| R428 | | |
| R504 | 4822 111 41355 | 75 Ω \pm 5% 1/6W |
| R512 | 4822 111 90967 | 4.7 Ω \pm 5% 1/4W FUSE |
| R513 | 4822 111 90967 | 4.7 Ω \pm 5% 1/4W FUSE |
| R515 | 4822 111 90967 | 4.7 Ω \pm 5% 1/4W FUSE |
| R601 | 4822 116 82752 | 10K Ω \pm 1% 1/6W |
| R602 | 4822 116 82752 | 10K Ω \pm 1% 1/6W |
| R603 | 4822 117 10439 | 3.32K Ω \pm 1% 1/6W |
| R604 | 4822 117 10439 | 3.32K Ω \pm 1% 1/6W |
| R605 | 4822 117 10441 | 3.92K Ω \pm 1% 1/6W |
| R606 | 4822 117 10441 | 3.92K Ω \pm 1% 1/6W |
| R607 | 4822 116 82753 | 12.1K Ω \pm 1% 1/6W |
| R608 | 4822 116 82753 | 12.1K Ω \pm 1% 1/6W |
| R609 | | |
| S | 4822 117 10449 | 2.67K Ω \pm 1% 1/6W |
| R612 | | |
| R613 | | |
| S | 4822 116 83963 | 2.2 Ω \pm 5% 1/4W |
| R616 | | |
| R621 | 4822 116 83963 | 2.2 Ω \pm 5% 1/4W |
| R622 | 4822 116 83963 | 2.2 Ω \pm 5% 1/4W |
| R700 | 4822 101 30763 | 10K Ω x 2 B VARIABLE |
| R787 | 4822 116 83963 | 2.2 Ω \pm 5% 1/4W |
| R788 | 4822 116 83963 | 2.2 Ω \pm 5% 1/4W |
| R*** | | PP16-RESISTORS (COMMON) CARBON FILM FIXED RESISTOR, \pm 5% 1/4W: U631 |
| R*** | | CARBON FILM FIXED RESISTOR \pm 5% 1/6W: RD02, RD09~RD16, RF01, RF02, RF14, RF16, RF22, RF24, RF25, RF33~RF35, RF51, RF53, RF54, RF56~RF59, RF61, RM01~RM12, RN01~RN10, RN15~RN18, RN21~RN24, RT03, RT04, R151~R503, R505~R508, R517, R519~R524, R617~R620, R631~R636, R701, R702, R719~R730, R801~R804, R821, R822, R854, R855, R861, R862 U683, U689 |
| DF31 | 4822 130 33305 | PP16-SEMICONDUCTORS DIODE, 1SS176, MA165, 1SS254 30V 0.1A |
| D141 | 4822 130 32508 | DIODE, RL103E, DSF10C |
| D142 | 4822 130 32508 | DIODE, RL103E, DSF10C |
| D401 | | |
| S | 4822 130 33305 | DIODE, 1SS176, MA165, 1SS254 30V 0.1A |
| D410 | | |
| D501 | 4822 130 33305 | DIODE, 1SS176, MA165, 1SS254 30V 0.1A |
| D502 | 4822 130 33305 | DIODE, 1SS176, MA165, 1SS254 30V 0.1A |
| D802 | 4822 130 82425 | DIODE, RBA-402 BRIDGE |
| D803 | 4822 130 80932 | ZENER DIODE, 04AZ6.2-Y 6.2V |
| D804 | 4822 130 80932 | ZENER DIODE, 04AZ6.2-Y 6.2V |
| D805 | 4822 130 33305 | DIODE, 1SS176, MA165, 1SS254 30V 0.1A |
| D806 | 4822 130 33305 | DIODE, 1SS176, MA165, 1SS254 30V 0.1A |
| D821 | | |
| S | 4822 130 32508 | DIODE, RL103E, DSF10C |
| D824 | | |
| D851 | 4822 130 32508 | DIODE, RL103E, DSF10C |
| D852 | 4822 130 32508 | DIODE, RL103E, DSF10C |
| D853 | 4822 130 80932 | ZENER DIODE, 04AZ6.2-Y 6.2V |

| REF. DESIG. | PART NO. | DESCRIPTION |
|-------------|----------------|---|
| D854 | 4822 130 80932 | ZENER DIODE, 04AZ6.2-Y 6.2V |
| D855 | 4822 130 80839 | DIODE, S5688G 1A 400V |
| D861 | 4822 130 32508 | DIODE, RL103E, DSF10C |
| D862 | 4822 130 32508 | DIODE, RL103E, DSF10C |
| D863 | 4822 130 33948 | ZENER DIODE, 04AZ5.6-Y 5.6V |
| QD01 | 4822 209 31356 | IC, BS DAC SAA7350 AGP |
| QD02 | 4822 209 31013 | IC, TDA1547 |
| QF01 | 4822 209 32172 | MICROPROCESSOR, MC68HC05C9 MAIN μ -COM |
| QF02 | 4822 209 73951 | IC, RESET PST523D |
| QF03 | 4822 209 52171 | IC, EEPROM X24C16 |
| QF51 | 4822 130 62295 | TRANSISTOR, JC547B |
| QF52 | 4822 130 62386 | TRANSISTOR, JC557B |
| QF53 | 4822 130 62295 | TRANSISTOR, JC547B |
| QM01 | 4822 209 62755 | IC, POWER OP AMP TCA0372 |
| QM02 | 4822 130 61441 | TRANSISTOR, 2SD1862 (Q,R) |
| QM03 | 4822 130 61417 | TRANSISTOR, 2SB1240 (Q,R) |
| QN01 | 4822 130 60839 | TRANSISTOR, 2SC2458 (Y, GR) |
| QN02 | 4822 130 60839 | TRANSISTOR, 2SC2458 (Y, GR) |
| QN03 | 4822 130 60107 | TRANSISTOR, 2SA1048 (Y, GR) |
| QN04 | 4822 130 60107 | TRANSISTOR, 2SA1048 (Y, GR) |
| QN05 | 4822 130 63211 | DIGITAL TRANSISTOR, DTA114TS |
| QN06 | 4822 130 63211 | DIGITAL TRANSISTOR, DTA114TS |
| QN11 | | |
| § | 4822 130 43819 | TRANSISTOR, 2SC2878 (A, BRANK) |
| QN14 | | |
| QN17 | | |
| § | 4822 130 43819 | TRANSISTOR, 2SC2878 (A, BRANK) |
| QN20 | | |
| Q140 | 4822 209 83627 | IC, NJM4560D |
| Q142 | 4822 130 63211 | DIGITAL TRANSISTOR, DTA114TS |
| Q143 | 4822 130 63211 | DIGITAL TRANSISTOR, DTA114TS |
| Q401 | 4822 130 63382 | F.E.T. 2SK332 D |
| Q402 | 4822 130 63382 | F.E.T. 2SK332 D |
| Q403 | 4822 130 43233 | TRANSISTOR, 2SC2240 (GR, BL) |
| Q404 | 4822 130 43233 | TRANSISTOR, 2SC2240 (GR, BL) |
| Q405 | | |
| § | 4822 130 42951 | TRANSISTOR, 2SA970 (GR, BL) |
| Q408 | | |
| Q409 | 4822 130 43233 | TRANSISTOR, 2SC2240 (GR, BL) |
| Q410 | 4822 130 43233 | TRANSISTOR, 2SC2240 (GR, BL) |
| Q411 | 5322 130 41844 | F.E.T. 2SK170 BL |
| Q412 | 5322 130 41844 | F.E.T. 2SK170 BL |
| Q413 | 4822 130 62649 | F.E.T. 2SJ74 BL |
| Q414 | 4822 130 62649 | F.E.T. 2SJ74 BL |
| Q501 | 4822 209 63453 | IC,DEM/ERCO SAA7310 QFP |
| Q502 | 4822 209 73952 | IC, D-RAM MB81416C-15 MN4264P-15 |
| Q503 | 4822 130 61438 | TRANSISTOR, 2SA1005 (L, K) |
| Q509 | 4822 209 62588 | IC, PCF2705P |
| Q510 | 4822 209 63471 | IC, AND GATE 74HC08 |
| Q511 | 4822 209 30435 | IC, DIGITAL FILTER SM5840FP |
| Q512 | 4822 130 61189 | DIGITAL TRANSISTOR, DTC114TS |
| Q601 | 4822 209 31153 | IC, NJM2114D |
| Q602 | 4822 209 31153 | IC, NJM2114D |
| Q703 | 4822 209 31153 | IC, NJM2114D |
| Q801 | 4822 209 63641 | IC, NJM79M12FA |
| Q802 | 4822 209 31712 | IC, NJM78M12FA |
| Q803 | 4822 130 63308 | TRANSISTOR, 2SA1859 (O, Y) |
| Q804 | 4822 130 63312 | TRANSISTOR, 2SC4883 (O, Y) |
| Q821 | 4822 209 31631 | IC, NJM7805FA |
| Q861 | 4822 130 62295 | TRANSISTOR, JC547B |
| | | PP16-MISCELLANEOUS |
| JT02 | 4822 265 20354 | TERMINAL, 1P RCA (GOLD) DIGITAL |
| JT11 | 4822 267 31369 | JACK, GP1F32T OPTICAL OUTPUT |
| J600 | 4822 266 30274 | TERMINAL, 2P RCA |

| REF. DESIG. | PART NO. | DESCRIPTION |
|-------------|----------------|---|
| J601 | 4822 266 30369 | TERMINAL, 4P (GOLD) RCA AUDIO |
| LT01 | 4822 142 60388 | PULSE TRANSFORMER |
| L501 | 4822 152 20647 | CHOKE COIL, 2.2 μ H |
| L601 | 4822 157 62919 | CHOKE COIL, 100 μ H |
| L602 | 4822 157 62919 | CHOKE COIL, 100 μ H |
| L605 | 4822 158 60605 | FERRITE CORE, BEADS |
| L606 | 4822 158 60605 | FERRITE CORE, BEADS |
| L705 | 4822 158 60605 | FERRITE CORE, BEADS |
| L706 | 4822 158 60605 | FERRITE CORE, BEADS |
| SF02 | 4822 277 21559 | SLIDE SWITCH, INT/EXT RC-5 |
| XF01 | 4822 242 72223 | CERAMIC VIBRATOR 4.00MHz CST4.00MGW |
| X501 | 4822 242 72395 | CRYSTAL, 11.2896MHz |
| | | PP26-POWER SW CIRCUIT BOARD |
| | | PP26-CAPACITORS |
| CH01 | 4822 121 43732 | FILM 0.01 μ F \pm 20% 250V [21B/22B/52B/21G/22G] |
| CH01 | 4822 122 33276 | CERAMIC 0.01 μ F \pm 20% 400V [25B/55B] |
| | | PP26-MISCELLANEOUS |
| FH11 | 4822 253 30402 | FUSE, 800 MA 250V BS LISTED |
| FH12 | 4822 253 30402 | FUSE, 800 MA 250V BS LISTED |
| JH01 | 4822 267 31416 | JACK, AC INLET [21B/22B/25B/55B/21G/22G] |
| JH01 | 4822 267 31521 | PLUG, AC INLET [52B] |
| JH11 | 4822 256 30329 | JACK, FUSE HOLDER |
| JH12 | 4822 267 30978 | JACK, FUSE HOLDER |
| JH13 | 4822 256 30329 | JACK, FUSE HOLDER |
| JH14 | 4822 267 30978 | JACK, FUSE HOLDER |
| LH00 | 4822 146 21742 | POWER TRANSFORMER 230V [21B/22B/25B/21G/22G] |
| LH00 | 4822 146 21745 | POWER TRANSFORMER 230V OFC [52B/55B] |
| SH01 | 4822 276 12925 | PUSH SWITCH, POWER |
| | | PR16-HEAD AMP CIRCUIT BOARD |
| | | PR16-CAPACITORS |
| C923 | 4822 124 90352 | ELECT 10 μ F 16V |
| C924 | 4822 124 90352 | ELECT 10 μ F 16V |
| C953 | 4822 124 90354 | ELECT 100 μ F 16V |
| C954 | 4822 124 90354 | ELECT 100 μ F 16V |
| | | PR16-RESISTORS |
| R900 | 4822 100 20421 | 10K Ω X2 (B) VARIABLE |
| | | PR16-RESISTORS (COMMON) |
| | | CARBON FILM FIXED RESISTOR, \pm 5% 1/6W: RN33, RN34, R903, R904, R921~R926, R931, R932 |
| | | PR16-SEMICONDUCTORS |
| QN23 | 4822 130 43819 | TRANSISTOR, 2SC2878 (A, BRANK) |
| QN24 | 4822 130 43819 | TRANSISTOR, 2SC2878 (A, BRANK) |
| Q902 | 4822 209 83654 | IC, NJM4556D |

| REF. DESIG. | PART NO. | DESCRIPTION |
|---------------------------------|----------------|--|
| PV16-SERVO CIRCUIT BOARD | | |
| PV16-CAPACITORS | | |
| C101 | 4822 126 11127 | CERAMIC 470PF ± 10% |
| C103 | 4822 122 40589 | CERAMIC 0.047μF +80%-20% 50V |
| C109 | 4822 126 10408 | CERAMIC 220PF ± 10% |
| C110 | 4822 124 41539 | ELECT 47μF 16V |
| C112 | 4822 122 33639 | CERAMIC 1000PF ± 10% |
| C113 | 4822 122 40589 | CERAMIC 0.047μF +80%-20% 50V |
| C114 | 4822 122 40589 | CERAMIC 0.047μF +80%-20% 50V |
| C117 | 4822 126 10408 | CERAMIC 220PF ± 10% |
| C118 | 4822 126 10364 | CERAMIC 100PF ± 10% |
| C126 | 4822 124 23056 | ELECT 47μF 16V |
| C128 | 4822 122 40589 | CERAMIC 0.047μF +80%-20% 50V |
| C131 | 4822 122 33639 | CERAMIC 1000PF ± 10% |
| C132 | | CERAMIC 0.1μF +80%-20% 50V |
| C133 | 4822 124 41539 | ELECT 47μF 16V |
| C134 | 4822 124 23056 | ELECT 47μF 16V |
| C135 | 4822 122 40589 | CERAMIC 0.047μF +80%-20% 50V |
| C136 | 4822 122 40589 | CERAMIC 0.047μF +80%-20% 50V |
| C137 | 4822 124 41539 | ELECT 47μF 16V |
| C139 | | CERAMIC 0.1μF +80%-20% 50V |
| C150 | 4822 124 41539 | ELECT 47μF 16V |
| PV16-CAPACITORS (COMMON) | | |
| C*** | | Plastic film capacitor One-way type, Mylar ± 5% 50V C102, C104~C108, C111, C115, C116, C121~C125, C127, C129, C130, C138 |
| PV16-RESISTORS | | |
| R134 | 4822 101 30707 | 2.2K Ω TRIMMING LASER |
| R136 | 4822 100 20539 | 22K Ω TRIMMING FOC |
| PV16-RESISTORS (COMMON) | | |
| R*** | | CARBON FILM FIXED RESISTOR, ± 5% 1/6W: R102~R120, R123~R129, R131~R133, R137~R144, R170, RF05, RF36 |
| PV16-SEMICONDUCTORS | | |
| D132 | 4822 130 80272 | ZENER DIODE, 04AZ7.5-Z 7.5V |
| D133 | 4822 130 80272 | ZENER DIODE, 04AZ7.5-Z 7.5V |
| Q101 | 4822 209 30436 | IC,HF & FOC TDA8808 QFP |
| Q102 | 4822 130 61441 | TRANSISTOR, 2SD1862 (Q,R) |
| Q103 | 4822 209 30437 | IC, TDA8809 (RAD) QFP |
| Q106 | 4822 209 62755 | IC, POWER OP AMP TCA0372 |
| Q108 | 4822 209 30442 | IC, NJM79L06A |
| Q109 | 4822 209 31631 | IC, NJM7805FA |
| PV16-MISCELLANEOUS | | |
| JM01 | 4822 265 30777 | PLUG, 3P |
| J102 | 4822 267 50676 | JACK, SUB CHASSIS CONNECTOR |
| SF01 | 4822 276 13296 | PUSH SWITCH,, TRAY DETECTOR |
| PY16-FRONT CIRCUIT BOARD | | |
| PY16-CAPACITORS | | |
| CY01 | 4822 124 41539 | ELECT 47μF 16V |
| CY02 | 4822 122 40588 | CERAMIC 0.022μF ± 20% |
| CY03 | 4822 126 10408 | CERAMIC 220PF ± 10% |
| CY06 | 4822 122 40588 | CERAMIC 0.022μF ± 20% |
| CY07 | 4822 124 22276 | ELECT 47μF 50V |
| CY08 | 4822 126 11127 | CERAMIC 470PF ± 10% |
| CY21 | 4822 122 40588 | CERAMIC 0.022μF ± 20% |
| CY61 | 4822 122 40588 | CERAMIC 0.022μF ± 20% |
| CY62 | 4822 122 40589 | CERAMIC 0.047μF +80%-20% 50V |
| CY63 | 4822 122 40589 | CERAMIC 0.047μF +80%-20% 50V |
| PY16-RESISTORS | | |
| RY02 | 4822 111 90967 | 4.7 Ω ± 5% 1/4W FUSE |

| REF. DESIG. | PART NO. | DESCRIPTION |
|--------------------------------|----------------|--|
| PY16-RESISTORS (COMMON) | | |
| R*** | | CARBON FILM FIXED RESISTOR, ± 5% 1/4W: RY21, RY23, RY25, RY27, RY29, RY81, RY82, RY84, RY86 |
| PY16-SEMICONDUCTORS | | |
| RY06 | 4822 130 80839 | DIODE, S5688G VRM400V IO=1A |
| DY03 | 4822 130 33305 | DIODE, 1SS176,MA165,1SS254 30V 0.1A |
| DY04 | 4822 130 33948 | ZENER DIODE, 04AZ5.6-Y 5.6V |
| DY05 | 4822 130 33948 | ZENER DIODE, 04AZ5.6-Y 5.6V |
| DY06 | 4822 130 33948 | ZENER DIODE, 04AZ5.6-Y 5.6V |
| DY07 | 4822 130 80272 | ZENER DIODE, 04AZ7.5-Z 7.5V |
| DY08 | 4822 130 80272 | ZENER DIODE, 04AZ7.5-Z 7.5V |
| DY09 | 4822 130 33305 | DIODE, 1SS176,MA165,1SS254 30V 0.1A |
| DY11 | | |
| \$ | 4822 130 33305 | DIODE, 1SS176,MA165,1SS254 30V 0.1A |
| DY14 | | |
| DY81 | 4822 130 80325 | L.E.D. LT3H8B (YELLOW) |
| DY82 | 4822 130 82964 | L.E.D. LT3G8B (GREEN) |
| DY84 | 4822 130 82964 | L.E.D. LT3G8B (GREEN) |
| DY86 | 4822 130 82964 | L.E.D. LT3G8B (GREEN) |
| QY01 | 4822 209 30434 | IC, DISPLAY DRIVER U3090MG |
| QY02 | 4822 209 30443 | IC, 4BIT D TYPE LATCH 74HC75AP |
| QY03 | 4822 130 61189 | DIGITAL TRANSISTOR, DTC114TS |
| QY81 | | |
| \$ | 4822 130 61189 | DIGITAL TRANSISTOR, DTC114TS |
| QY83 | | |
| QY85 | 4822 130 61189 | DIGITAL TRANSISTOR, DTC114TS |
| PY16-MISCELLANEOUS | | |
| SY01 | | |
| \$ | 4822 276 20508 | PUSH SWITCH |
| SY18 | | |
| SY21 | | |
| \$ | 4822 276 20508 | PUSH SWITCH |
| SY26 | | |
| VY01 | 4822 130 91032 | DISPLAY UNIT FV364G |
| ZY01 | 4822 130 82393 | PHOTO UNIT IR-RECEIVER GP1U720R 36KHZ |

NOTE ON SAFETY

Symbol ▲ Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol ▲ . Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.