

SONY[®]

DIGITAL AUDIO RECORDER

PCM-7030



MAINTENANCE MANUAL

1st Edition (Revised 7)

Serial No. 20001 and Higher (UC)

Serial No. 50001 and Higher (EK)

WARNING

For the customers in U.S.A.

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

Important—To insure that the complete system (including this peripheral) is capable of complying with the FCC requirements, it is recommended that the user make sure that the individual equipment of the complete system has a label with one of the following statements.

"This equipment has been tested with a Class A Computing Device and has been found to comply with Part 15 of FCC rules."

—or—

"This equipment complies with the requirements in Part 15 of FCC rules for a Class A Computing Device."

—or equivalent.

The shielded interface cable recommended in this manual must be used with this equipment in order to comply with the limits for a computing device pursuant to Subpart J of Part 15 of FCC Rules.

For the customers in Canada

This apparatus complies with the Class A limits for radio noise emissions set out in Radio Interference Regulations.

Pour les utilisateurs au Canada

Cet appareil est conforme aux normes Classe A pour bruits radioélectriques, spécifiés dans le Règlement sur le brouillage radioélectrique.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

Check the metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 3.5 mA. Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 5.25 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 20 V AC range are suitable. (See Fig. A)

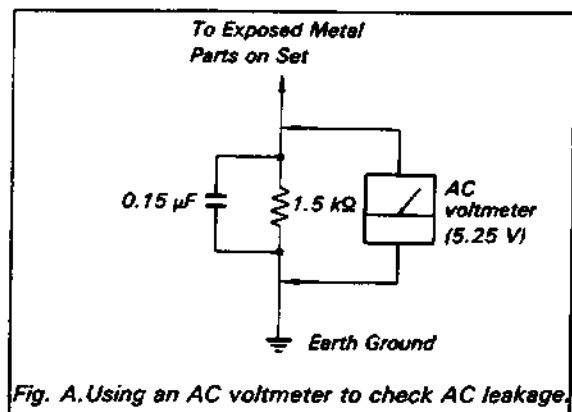


Fig. A. Using an AC voltmeter to check AC leakage.

TABLE OF CONTENTS

1. INSTALLATION

1-1. Packing	1-1
1-2. Installation Environment and Installation Space	1-2
1-2-1. Operating environment	1-2
1-2-2. Installation Space	1-2
1-3. Rack mounting method	1-4
1-4. Installation of the DABK-7030, DABK-7031, DABK-7032 and DABK-7033	1-7
1-4-1. DABK-7030 Installation Procedure	1-7
1-4-2. DABK-7031 Installation Procedure	1-11
1-4-3. DABK-7032 Installation Procedure	1-14
1-4-4. DABK-7033 Installation Procedure	1-16
1-5. Initial Settings of the Board's Switches and Volumes	1-20
1-5-1. Level schedule change (ADA-18 Board)	1-20
1-5-2. Fader Start/Stop Change Procedure (RM-77 Board)	1-21

2. SERVICE INFORMATION

2-1. Removal of Boards and Major Mechanical Parts	2-1
2-2. Board Arrangement View For PCM-7030	2-15
2-3. Cassette Compartment Service Information	2-16
2-4. Precautions for the main Parts replacement procedure	2-19
2-4-1. Installation position of the front panel and cassette compartment	2-19
2-5. Chip Part Replacement Procedure	2-19
2-6. SERVICE INFORMATION CONCERNING THE SY-155B BOARD (SYSTEM CONTROL)	2-20
2-6-1. LED for confirming the operations of the SY-155B Board	2-20

2-6-2. Replacing the SY-155B Board	2-23
2-6-3. Replacing the lithium battery (CR-2450)	2-25
2-7. SELF-DIAGNOSIS (ERROR CODE)	2-26
2-7-1. Error codes	2-26
2-7-2. Remedy for error code "Error 2-05"	2-31
2-8. SERVICE MENU	2-31
2-8-1. SERVICE MENU Structure	2-32
2-8-2. SERVICE MENU items	2-33
2-9. Tools and Instruments	2-47

3. PERIODICAL INSPECTION AND MAINTENANCE

3-1. Cleaning	3-1
3-2. Periodical Inspection and Maintenance Procedures	3-2
3-3. Post-Repair Maintenance	3-2

4. MECHANICAL ADJUSTMENT, TAPE PATH ADJUSTMENT, SERVO BLOCK ADJUSTMENT, RECORDING/PLAYBACK BLOCK ADJUSTMENT, AND ERROR RATE CHECK

4-1. Preparation	4-5
4-2. Mechanical Device Test (operation check)	4-6
4-3. Mechanical Adjustment	4-6
4-3-1. Rotary encoder position adjustment	4-7
4-3-2. End sensor (S side, T side) operation check	4-9
4-3-3. FF/REW torque check	4-10
4-3-4. REW torque adjustment (DR-139 board adjustment)	4-11
4-3-5. REV torque adjustment	4-12
4-3-6. FWD back tension adjustment	4-13
4-3-7. EJECT torque check	4-13
4-3-8. FF/REW time check	4-14
4-4. Tape Path Adjustment	4-14
4-4-1. Tape running check (1)	4-14
4-4-2. Tape running check (2)	4-16
4-4-3. Tape path fine adjustment	4-16
4-4-4. RF raise up time check	4-19

4-4-5. Lack of RF waveform check in FF/REW	4-19
4-4-6. Overall tape path check	4-20
4-5. Servo Block Adjustment	4-21
4-5-1. SWP position adjustment	4-21
4-5-2. ATF playback AGC adjustment	4-22
4-6. Recording/Playback Block Adjustment(Recording current level)	4-24
4-6-1. Adjustment using the RF LEVEL CHECKER PD-817	4-24
4-6-2. Adjustment using a spectrum analyzer	4-32
4-7. EQ-H preset (RF-31 board) and error rate check	4-39
4-7-1. EQ-H preset (RF-31 board)	4-39
4-7-2. Error Rate Check	4-39
4-8. Cassette Compartment Operation Check	4-46

5. ELECTRICAL ADJUSTMENTS

5-1. Initial Preparation	5-2
5-1-1. Equipment Required	5-2
5-1-2. Initial switch and control settings	5-3
5-2. Signal Processing Adjustment (SP-13 BOARD)	5-5
5-2-1. RF PLL Adjustment	5-5
5-2-2. LTS Adjustment	5-9
5-3. A/D and D/A Adjustment (ADA-18 BOARD)	5-11
5-3-1. A/D Conversion Level Adjustment	5-11
5-3-2. Center potential adjustment	5-13
5-3-3. D/A conversion level adjustment	5-13
5-4. Time Code Adjustment (With the optional TC-58 board (DABK - 7030) installed.)	5-17

A. BLOCK DIAGRAMS

OVERALL	A-2
MECHANISM DECK	A-5
ADA-18	A-9
DR-139	A-13

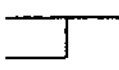

KY-192/LED-104/SW-420	A-17
PS-211	A-20
RF-31	A-23
RM-77	A-26
SP-13	A-33
SP-17B	A-41
SP-17C	A-45
SY-155B	A-49
SV-123	A-57

B. CIRCUIT BOARD DIAGRAMS

AC-104	B-2
ADA-18	B-6
CP-157A	B-11
CP-158	
CP-171	
CP-172A	B-12
CP-172B	
DC-47	B-14
DR-139	B-16
HP-48	
KY-192	B-20
LE-90A	B-24
LE-90B	
LED-104	
PS-211	B-27
RF-31	B-31
RM-77	
SP-13	B-36
SP-17B/17C	B-41
SV-123	B-45
SW-420	B-48
SW-426	
SW-452	
SY-155B	B-52
VR-109	

C. SCHEMATIC DIAGRAMS

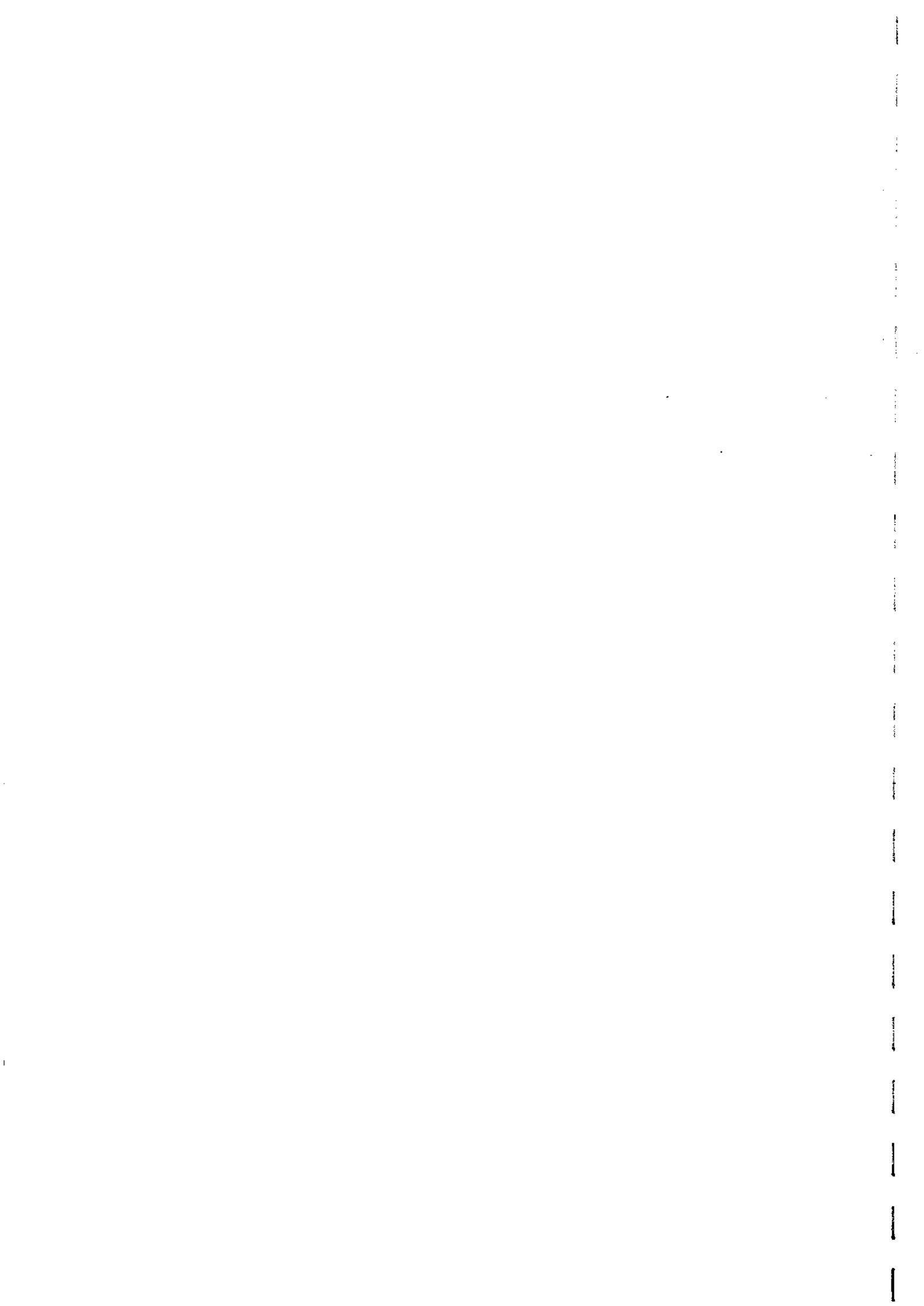
AC-104	C-2
ADA-18 (1/2)	C-7
ADA-18 (2/2)	C-13
CP-157A	C-21
CP-158	C-23
CP-171	C-25

CP-172A	C-29
CP-172B	C-31
DC-47	C-33
DR-139	C-37
HP-48	C-43
KY-192	C-45
LE-90A	C-53
LE-90B	C-55
LED-104	C-57
PS-211	C-59
RF-31	C-63
RM-77	C-67
SP-13	C-71
SP-17B	C-79
SP-17C	C-83
SV-123	C-87
SW-420	C-93
SW-426 	C-97
SW-452 	
SY-155B (1/2)	C-99
SY-155B (2/2)	C-105
VR-109	C-111
FRAME (1/4)	C-113
FRAME (2/4)	C-121
FRAME (3/4)	C-127
FRAME (4/4)	C-135

D. SEMICONDUCTOR PIN ASSIGNMENTS

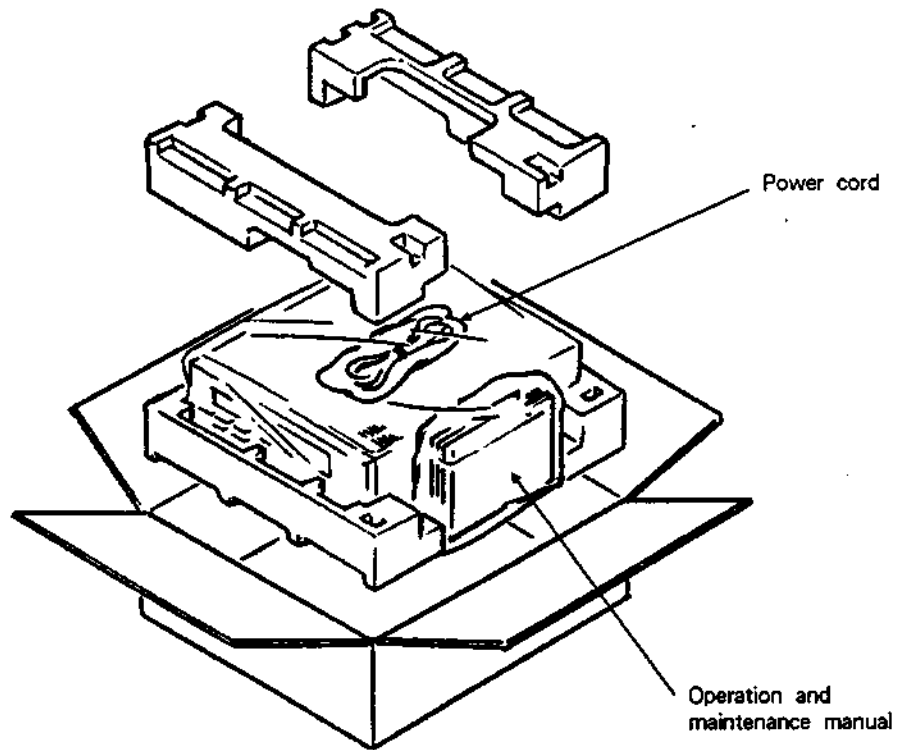
E. REPLACEABLE PARTS

E-1. PARTS ORDERING INFORMATION	E-1
E-2. EXPLODED VIEWS AND PARTS	E-2
E-3. ELECTRICAL PARTS LIST	E-27



SECTION 1
INSTALLATION

1-1. Packing



1-2. Installation Environment and Installation Space

Be sure to observe the following precautions including operation environment and installation space when you install the PCM-7030 Digital Audio Recorder.

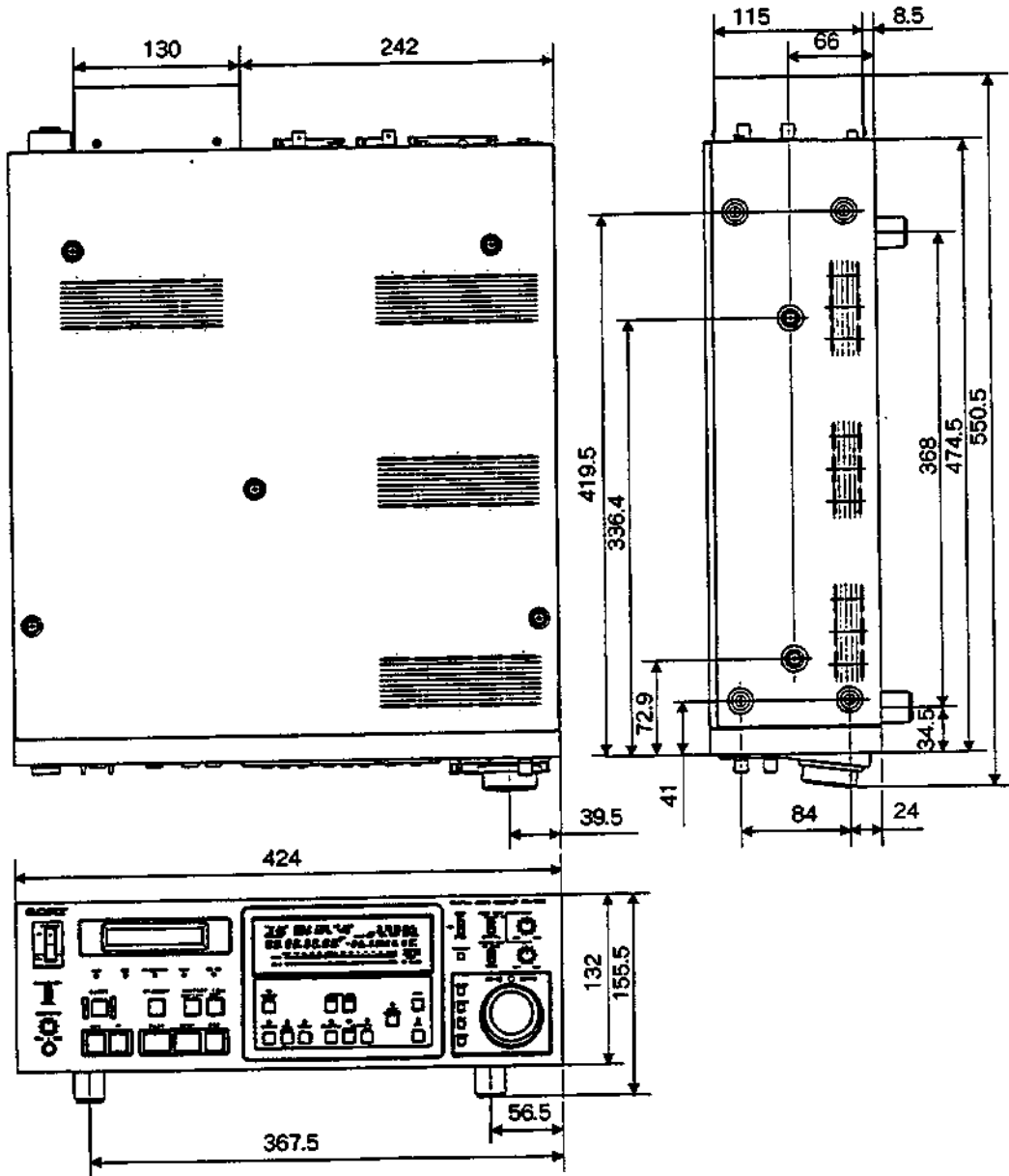
1-2-1. Operating environment

1. Do not install the unit in a place subject to direct sunlight or strong light, excessive dust, and frequent vibrations. Also do not install the unit near intense electric or magnetic fields.
2. Give consideration to the air circulation of the installation site to prevent the temperature of the inside unit from rising.
3. The operating temperature inside the unit is 5°C to 35°C (41°F to 95°F). Do not install the unit in a place near heat sources.

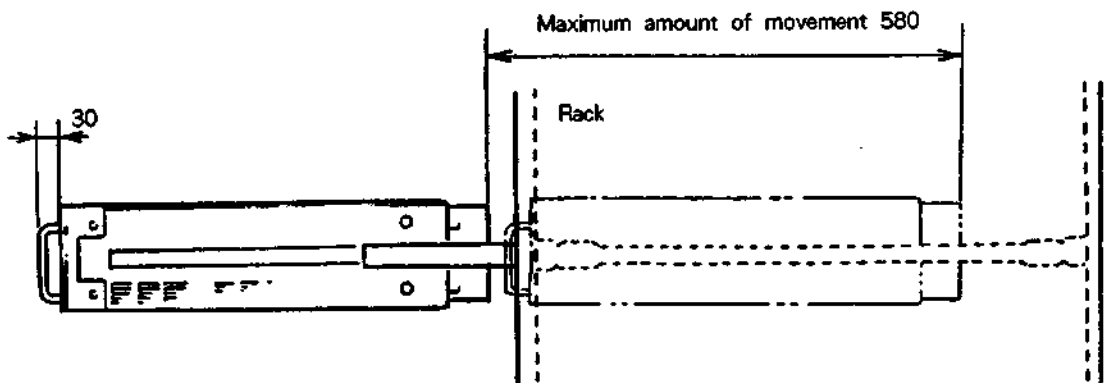
1-2-2. Installation space

1. The outside dimensions of the unit is given in the figure on next page.
2. Be sure to install the unit with a clearance of at least 40cm (15.75") between the wall and the rear surface of the unit for ventilation and easier maintenance.
3. When you use the unit on a desk, provide a clearance of at least 40cm (15.75") above the upper surface of the unit for easier maintenance of the printed circuit board. On the other hand, when you mount the unit on a rack, you can insert or remove the printed circuit board by drawing the unit forward. Therefore, you do not have to provide the clearance over the upper surface of the unit.

External dimensions



When mounted in a rack



unit : mm

1-3. Rack mounting method

The PCM-7030 can be used together with the EIA 19 inch standard rack.

It is recommended to use the rail and handles below to install it in the rack.

Rail : Rack mount rail RMM-30 (option)
suitable for a rack 660-830mm (26~33 3/4 inches) long.

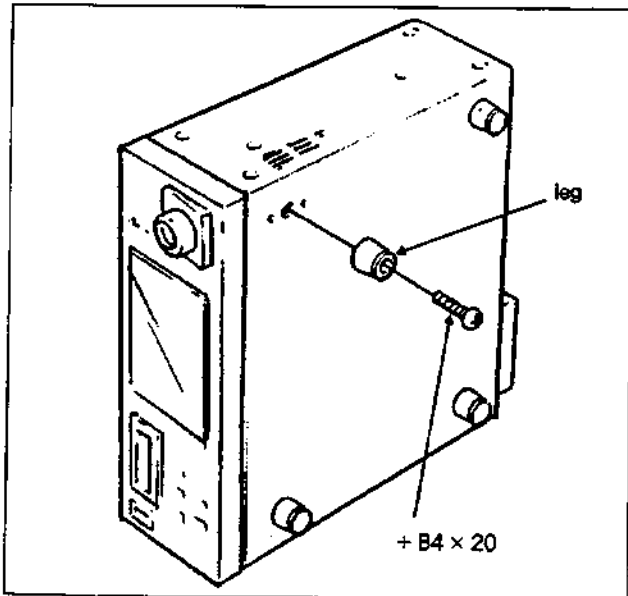
Handle : Rack mount adapter RMM-31 (option)

Note :

Please be sure to carry out the installation with two or more persons. If the PCM-7030 is not supported securely when being inserted onto the rack's rails, injury or damage can result.

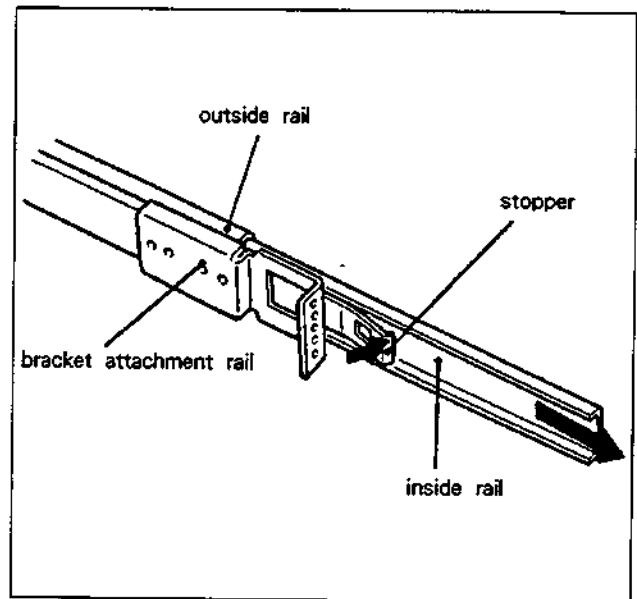
Preparation

Remove the four legs of the PCM-7030.

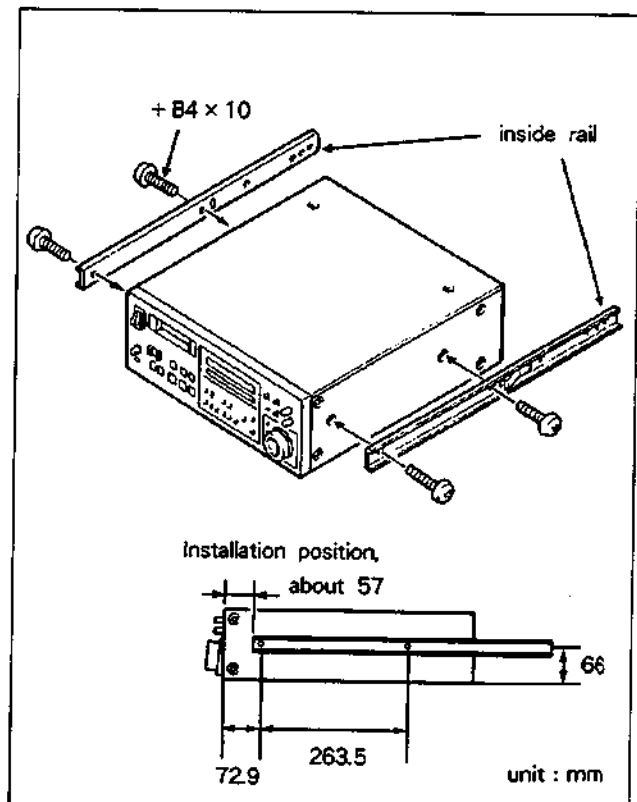


Rack mounting procedure (for RMM-30, RMM-31)

(1) Remove the inside rail from the RMM-30 bracket attachment rail.



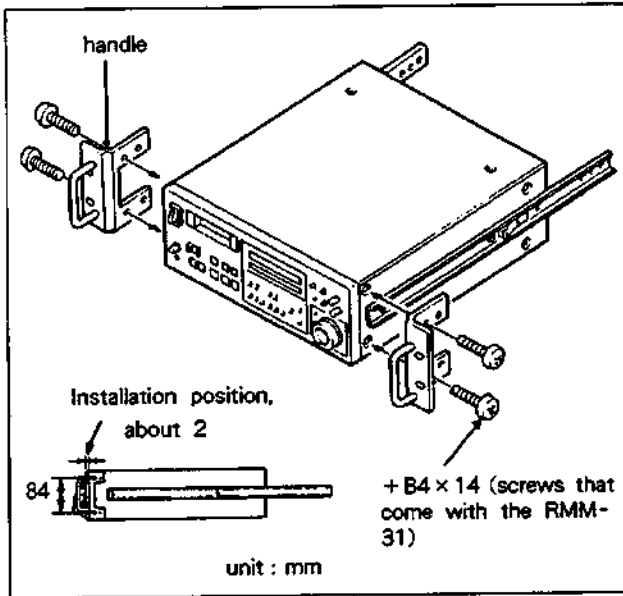
(2) Remove the side panel screws of the PCM-7030 (+ B4 x 10, two places on the right and left respectively) and remove the inside rail as in the illustration. (Use the removed screws (+ B4 x 10) for the installation.)



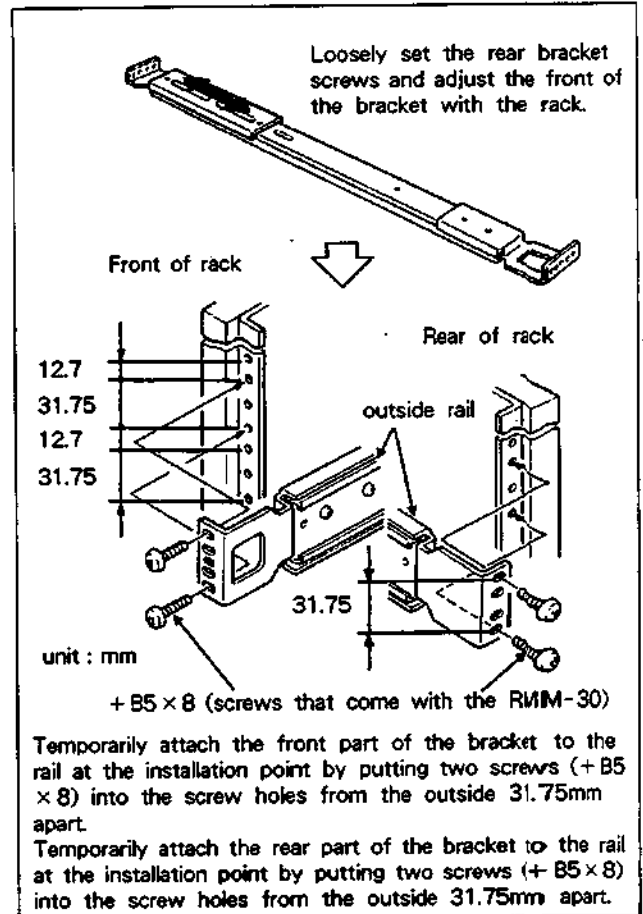
- (3) Remove the side panel screws (+B4×6) of the PCM-7030 and install the RMM-31 handles as illustrated.

(To install, use the screws (+B4×14) that come with the RMM-31.)

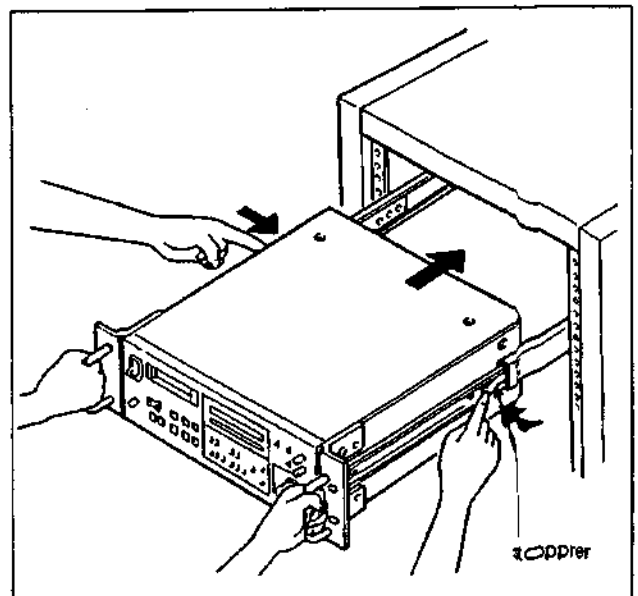
Note: Save the screws removed so they can be used later.



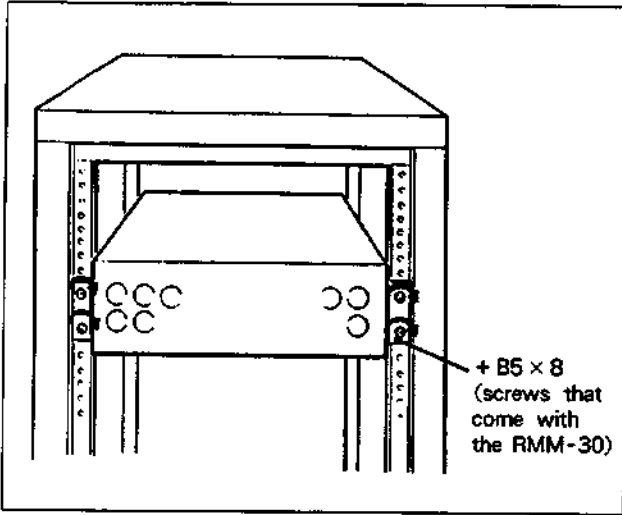
- (4) Temporarily attach the outside rail of the RMM-30 bracket attachment rail to the rack. (To install, use the screws (+B5×8) that come with the RMM-30.)



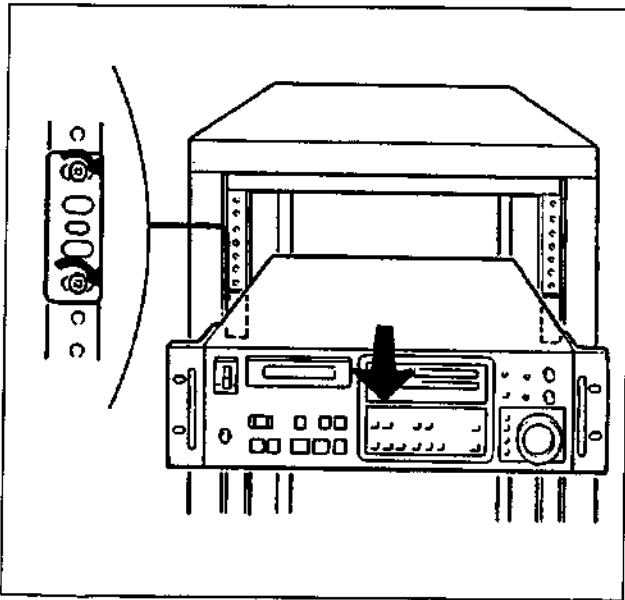
- (5) While pressing the stoppers on the inside rails, insert the PCM-7030 on the outside rails and push to the rear of the rack.



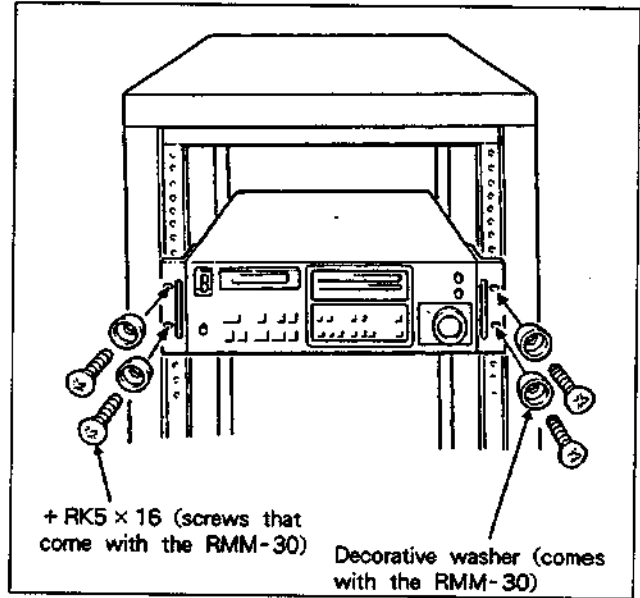
(6) Firmly tighten the rear bracket screws.



(7) Pull the PCM-7030 out about 20cm and firmly tighten the front bracket screws.



(8) Push the PCM-7030 into the rack and attach the handles to the rack with the screws (+ RK5 x 16) and decorative washers that come with the RMM-30.



1-4. Installation of the DABK-7030, DABK-7031, DABK-7032 and DABK-7033

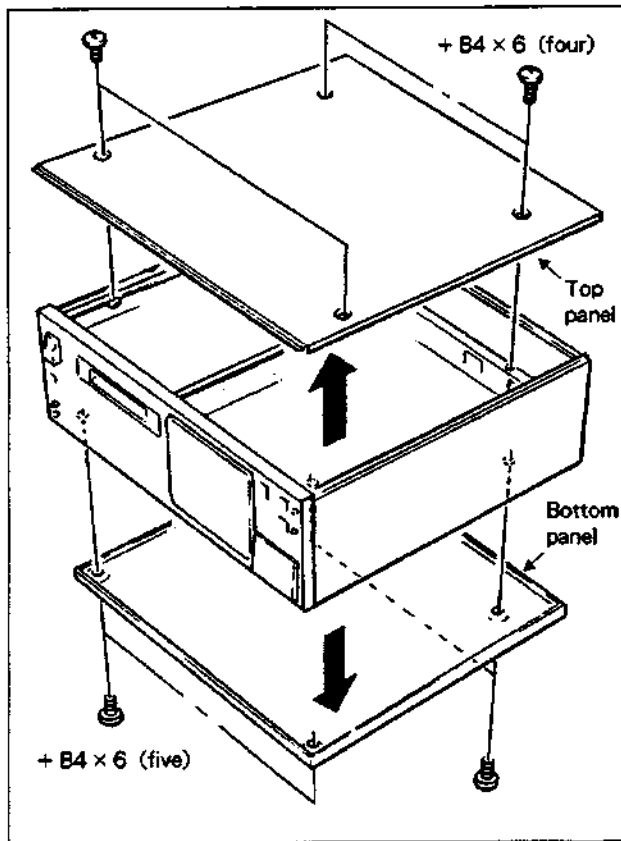
1-4-1. DABK-7030 Installation Procedure

The DABK-7030 comprises the following:

TC-58 (UC) or	
TC-58P (EK) board	: 1
TC panel	: 1
Screws (+ PWH3 × 6)	: 2
Nylon rivets	: 2
Flexible card cable (30P)	: 1

Initial preparation

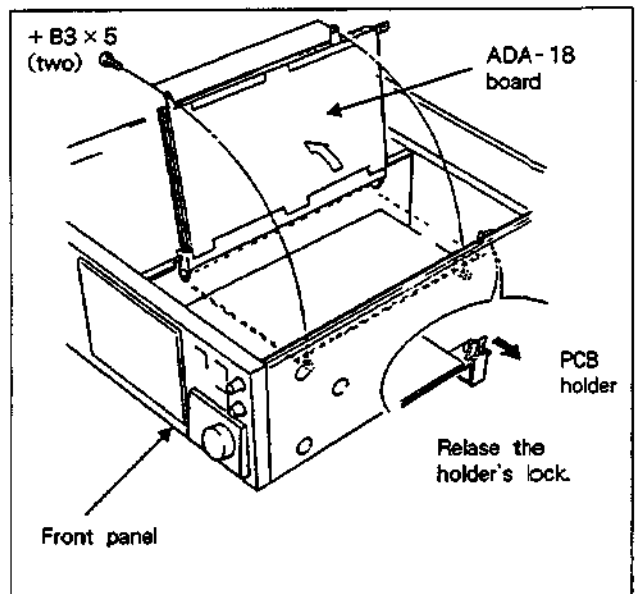
Remove the unit's top panel (secured by four + B4 × 6 screws) and the bottom panel (secured by five + B4 × 6 screws).



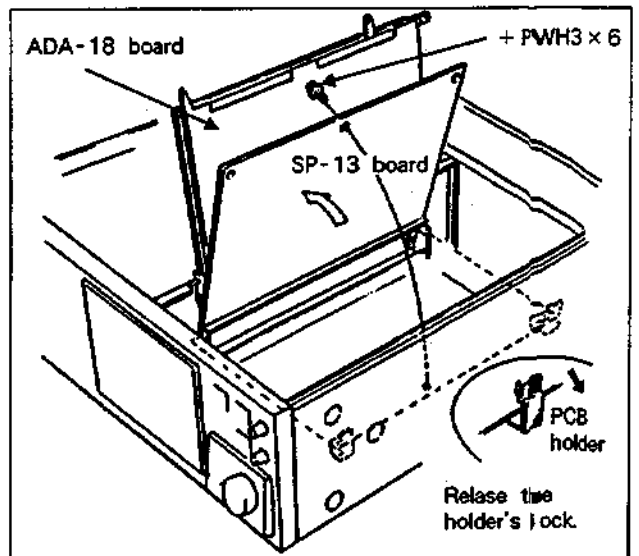
Note: Before installing the DABK-7030, turn off the unit's POWER switch.

1) Flexible card cable (30P) connection to the SY-155B board

- (1) Remove the ADA-18 board's two screws (+ B3 × 5).
- (2) Release the PCB holder's lock and open the ADA-18 board as shown by the arrow.

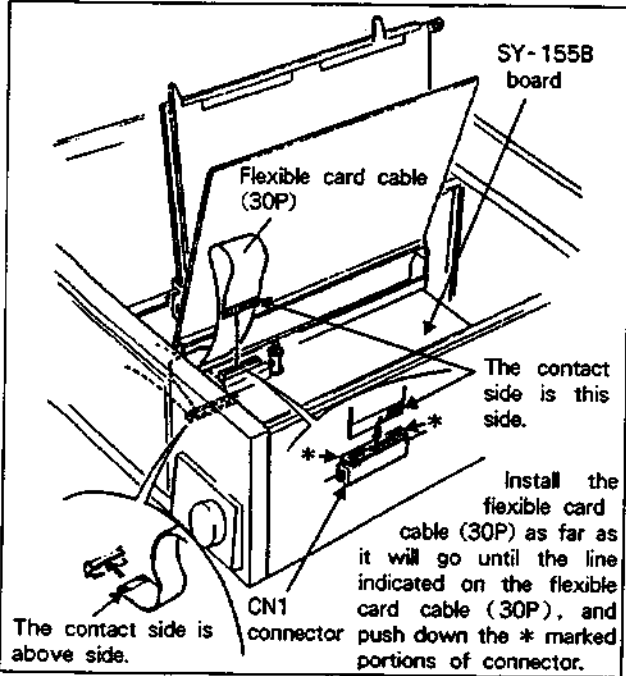


- (3) Remove the SP-13 board's screw (+ PWH3 × 6).
- (4) Release the PCB holder's locks and open the SP-13 board as shown by the arrow.

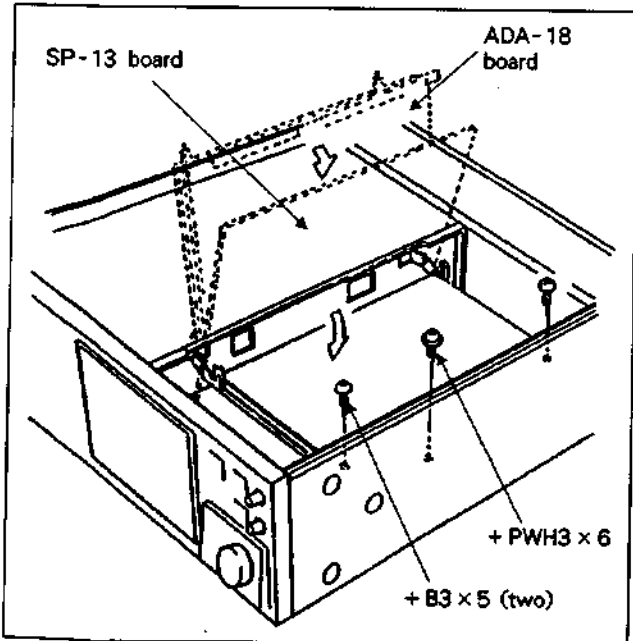


- (5) Insert the flexible card cable (30P) through the chassis hole. Keep inserting the cable until it locks into the CN1 connector on the SY-155B board.

Note: Take care to insert the flexible card of the contact/incontact side.

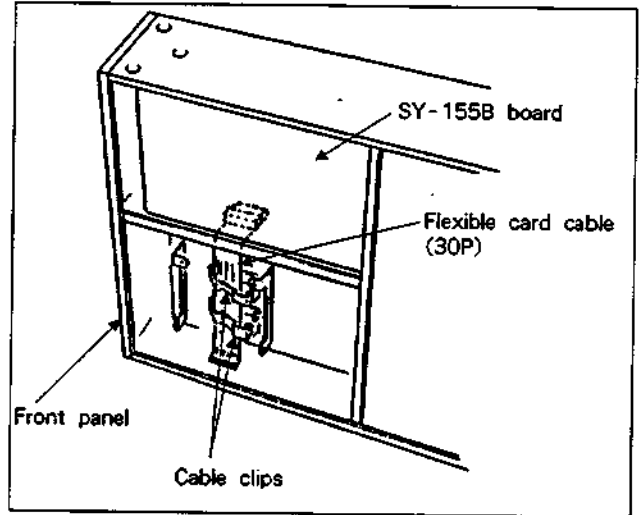


- (6) Close the SP-13 board until the two PCB holders lock. Then tighten the screw (+ PWH3 × 6) removed in step (3).
- (7) Close the ADA-18 board until the PCB holder locks. Then tighten the two screws (+ B3 × 5) removed in step (1).

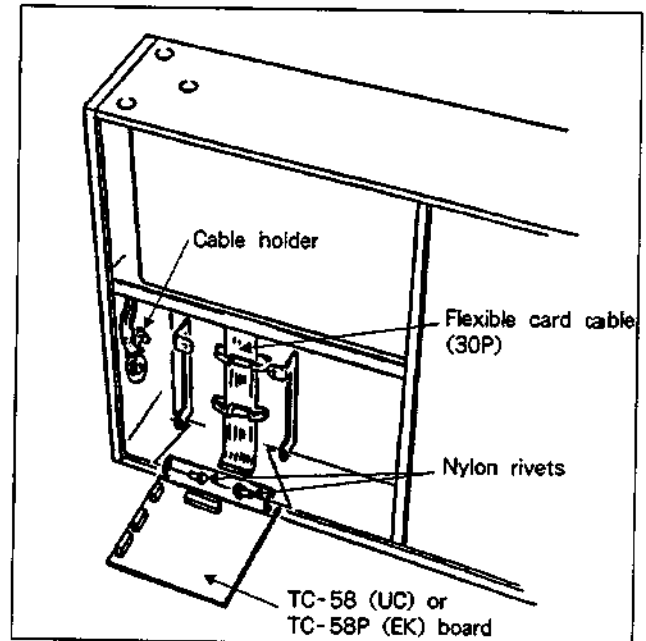


- 2) TC-58 (UC) or TC-58P (EK) board installation

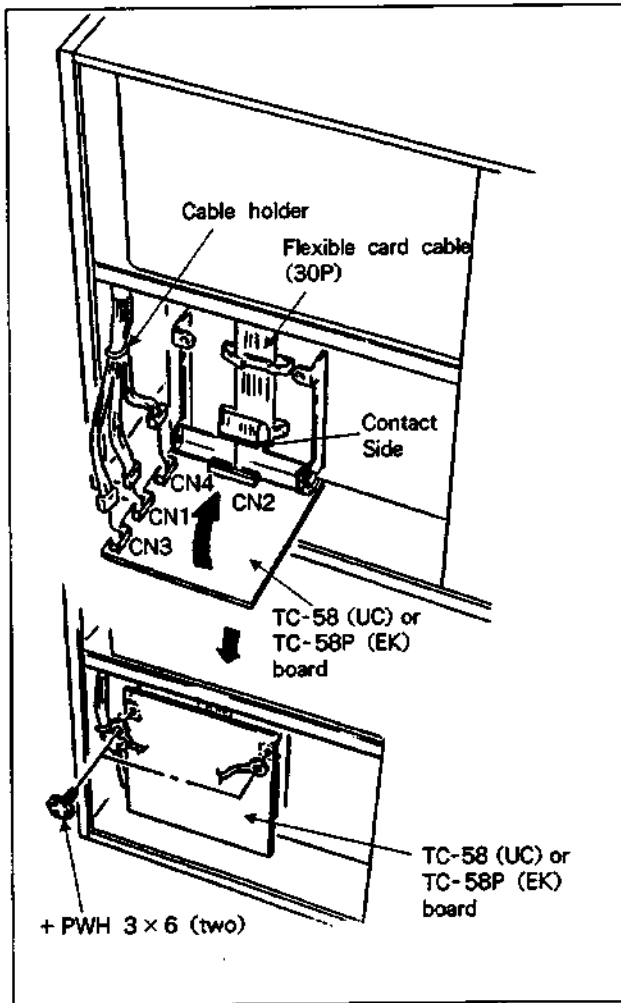
- (1) Lay the unit so that the bottom side is in front of you.
- (2) Secure the flexible card cable with the two cable clips.



- (3) Fasten the TC-58 (UC) or TC-58P (EK) board to the chassis with the two nylon rivets.

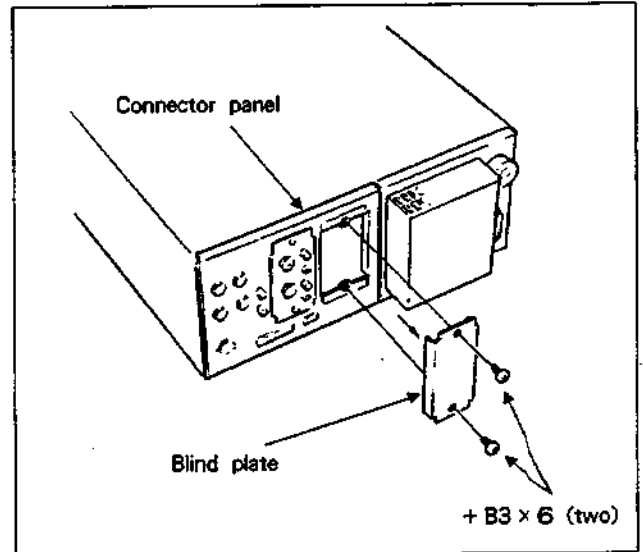


- (4) Connect the flexible card cable (30P) to the CN2 connector on the TC-58 (UC) or TC-58P (EK) board.
- (5) Connect the 4P, 5P, and 6P harnesses held by the cable holder to CN1 (5P), CN3 (4P), and CN4 (6P) respectively on the TC-58 (UC) or TC-58P (EK) board.
- (6) Close the TC-58 (UC) or TC-58P (EK) board as shown by the arrow.
- (7) Secure the TC-58 (UC) or TC-58P (EK) board to the chassis with the two screws (+ PWH3 × 6).

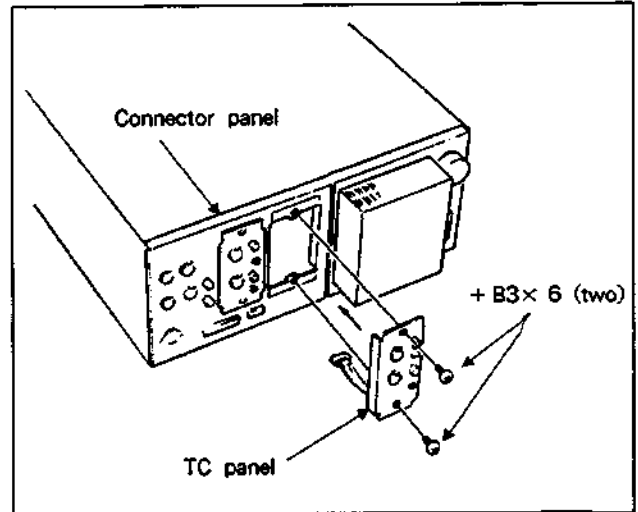


3) Installation of Connector Panel to TC Panel

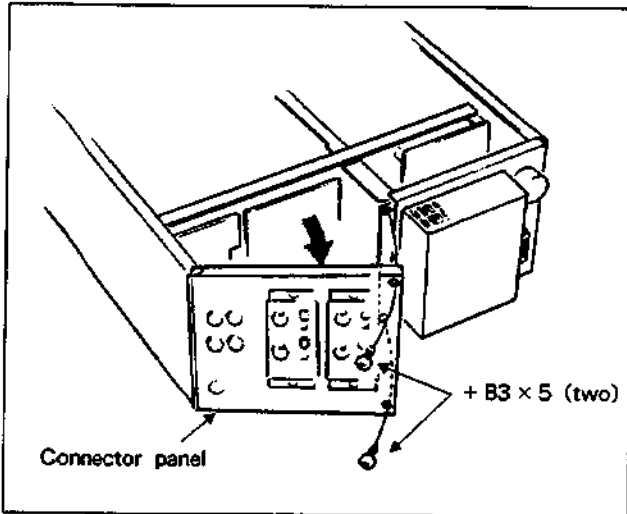
- (1) Remove the blind plate from the connector panel.



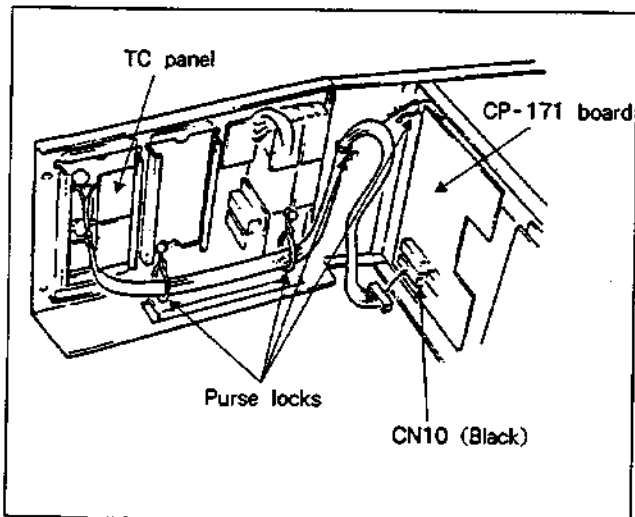
- (2) Install the TC panel on the connector panel (where the blind plate was removed) and secure it with the + B3 × 6 screws removed in step (1).



- (3) Remove the two connector panel screws (+ B3 × 5) and open the connector panel as shown by the arrow.



- (4) Connect the TC panel's harness to the CP-171 board's CN10 connector (black). Secure the harness with the four purse locks shown in the figure below.



- (5) Close the connector panel.
 (6) Fasten the connector panel to the chassis with the two + B3 × 5 screws removed in step (3).
 (7) Re-install the top panel (with the four + B4 × 6 screws) and bottom panel (with the five + B4 × 6 screws) on the unit.

4) Post-Installation Check

After installing the DABK-7030, do the following check.

1. Video synchronization signal input check

- (1) From the video synchronization signal generator, input the signal to the TC panel's REF VIDEO INPUT terminal.

Note: The unit's video synchronization signal frequency setting must match the input signal. Refer to the menu operation in the Operation Manual.

- (2) Set the TC panel's 75 ohm termination ON/OFF switch to ON.
 (3) Set the SYNC switch on the front panel to VIDEO.
 (4) Make sure the VIDEO display on the front panel's display is lit.
 (5) Then set the 75 ohm termination ON/OFF switch to OFF.

2. Time code I/O check

- (1) Connect the INPUT and OUTPUT terminals of the TIME CODE terminal on the TC panel.
 (2) Play the tape containing the time code.
 (3) Press the DISPLAY key on the front panel to display the EXT TIME CODE on the display's work area.
 (4) On the display, make sure the tape time area's time code display matches the work area's time code display.

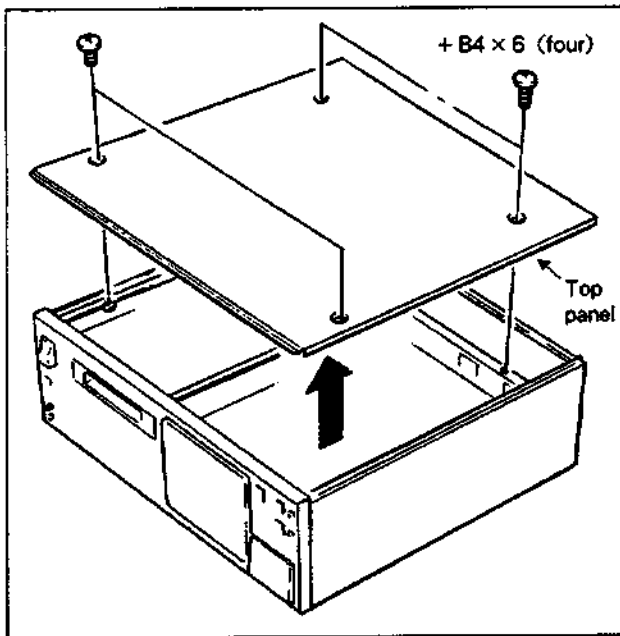
1-4-2. DABK-7031 Installation Procedure

The DABK-7031 comprises the following :

DIO-10 board	: 1
DIO panel	: 1
Screw (+ PWH3 × 6)	: 1

Initial preparation

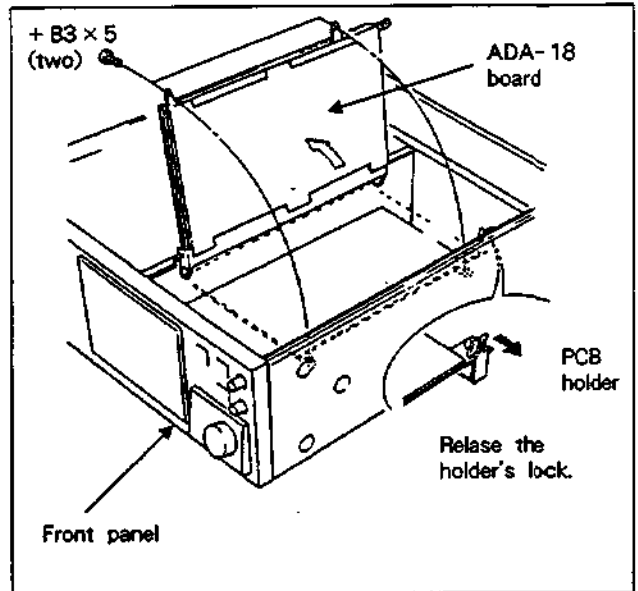
Remove the PCM-7030's top panel by removing the four +B4 × 6 screws. Remove the top panel as shown by the arrow.



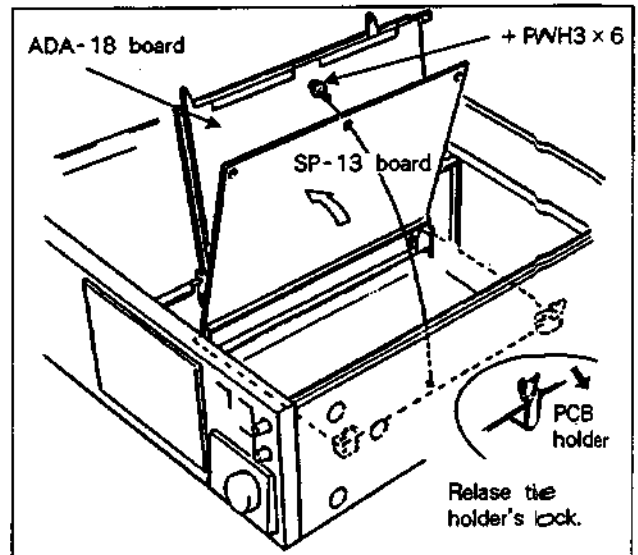
Note : Before installing the DABK-7031, turn off the unit's POWER switch.

1) Installation of DIO-10 board to SY-155B board

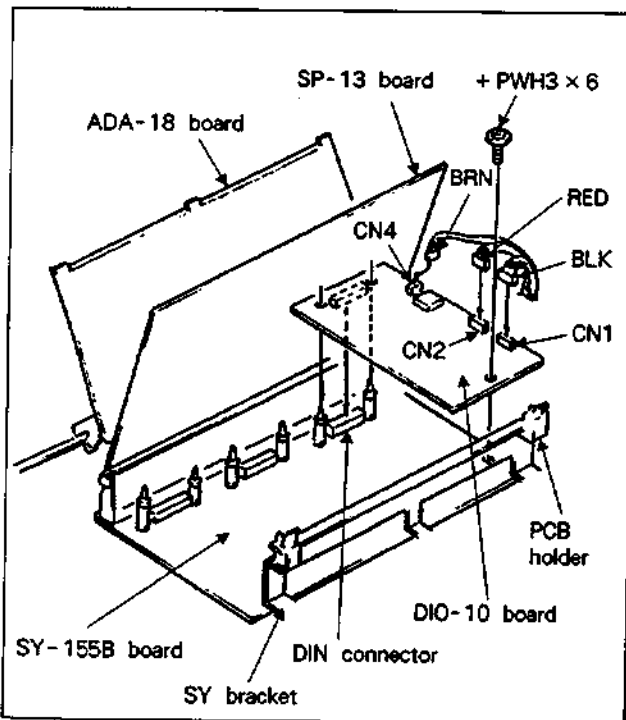
- (1) Remove the ADA-18 board's two +B3 × 5 screws.
- (2) Release the PCB holder's lock and open the ADA-18 board as shown by the arrow.



- (3) Remove the SP-13 board's screw (+ PWH3 × 6).
- (4) Release the PCB holders' locks and open the SP-13 board as shown by the arrow.



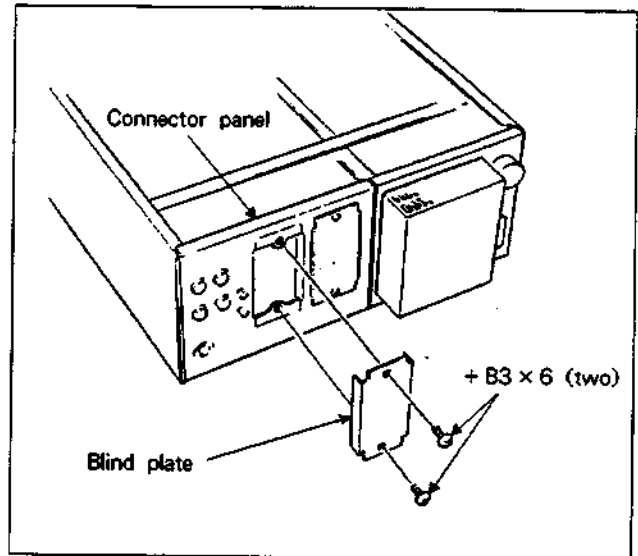
- (5) Insert the DIO-10 board's DIN connector into the SY-155 (B) board's DIN connector. Insert the DIO-10 board until the SY-155B SY bracket supporters lock in place.
- (6) Use the +PWH3×6 screw to fasten the DIO-10 board to the SY-155B board's SY bracket.
- (7) Connect the harnesses (held by the cable holder on the chassis) to the CN1 (black), CN2 (red), and CN4 (brown) connectors on the DIO-10 board. The color of the harness must match the color of the respective connector.



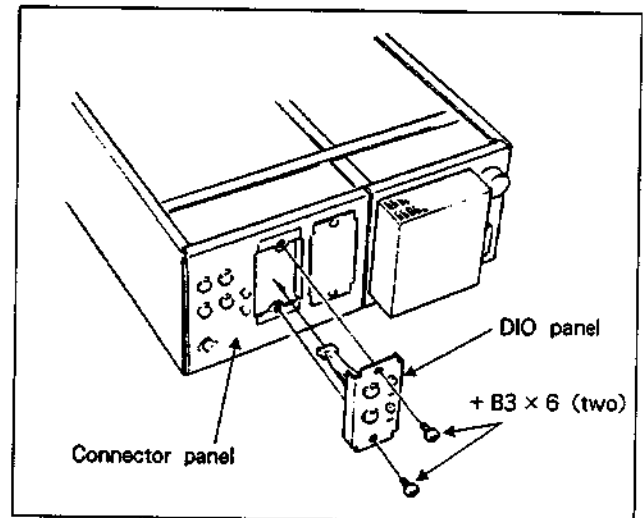
- (8) Close the SP-13 board until the two PCB holders lock.
- (9) Fasten the SP-13 board to the SY bracket with the +PWH3×6 screw that was removed in step (3).
- (10) Close the ADA-18 board until the PCB holder locks.
- (11) Fasten the ADA-18 board to the chassis with the two +B3×5 screws that were removed in step (1).

2) Installation of DIO panel to Connector panel

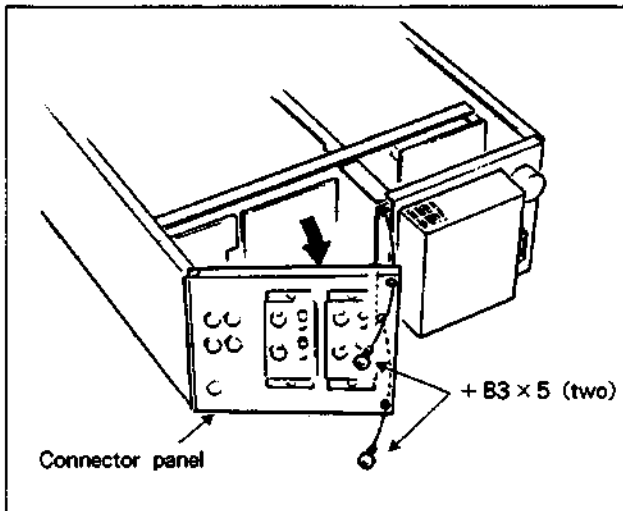
- (1) Remove the blind plate.



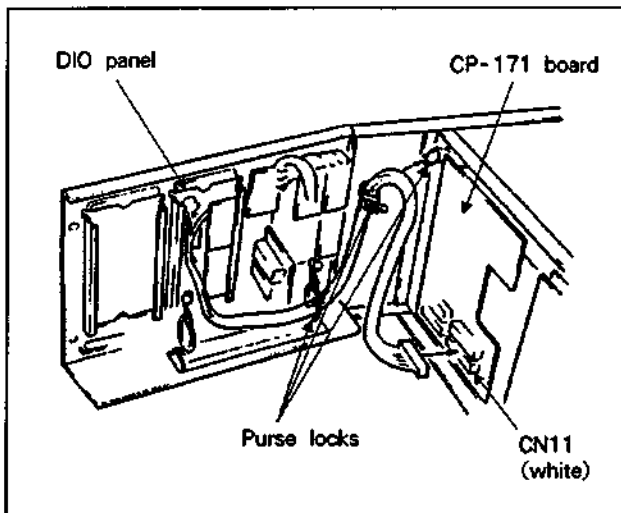
- (2) Install the DIO panel on the connector panel (where the blind plate was removed) with the +B3×6 screws removed in step (1).



- (3) Remove the two + B3 × 5 screws and open the connector panel as shown by the arrow.



- (4) Connect the DIO panel assembly harness to the CN11 connector (white) on the CP-171 board. Insert the harness through the three purse locks shown below.



- (5) Close the connector panel and secure it to the chassis with the two + B3 × 5 screws removed in step (3).
- (6) Re-install the top panel on the unit with the four + B4 × 6 screws.

3) Post-Installation check

After installing the DABK-7031, do the following check:

WORD synchronization signal input check

- (1) From the device having the WORD synchronization signal output, input the signal to the DIO panel's WORD SYNC INPUT terminal.

Note : The unit's sampling frequency setting must match the frequency of the synchronization signal that is input.

- (2) On the DIO panel, set the 75 ohm termination switch to ON and set the EXT SYNC switch to WORD.
- (3) On the front panel, set the SYNC switch to EXT.
- (4) Check if the EXT SYNC display is lit on the display.

- (5) After the above check, set the SYNC switch on the front panel and the 75 ohm termination switch and EXT SYNC switch on the DIO panel as follows :

SYNC switch	: INT
75 ohm termination switch	: OFF
EXT SYNC switch	: D-I

WORD synchronization signal output check

- (1) Connect an oscilloscope or a frequency counter to the WARD SYNC OUTPUT terminal on the DIO panel.
- (2) Check if the stipulated waveform or frequency is being output.

DIGITAL AUDIO signal I/O check

- (1) Input the digital signal to the DIGITAL INPUT terminal on the DIO panel.
- (2) On the front panel, set the AUDIO INPUT switch to DIGITAL and turn on the INPUT MONITOR switch.
- (3) Check if the level meter on the display moves in accordance with the input signal.
- (4) Turn off the INPUT MONITOR switch on the front panel.
- (5) Connect the device having the digital signal input to the DIGITAL OUTPUT terminal on the DIO panel.
- (6) Play a pre-recorded tape (music, etc.) to check if the signal is being input to the device in step (5).

1-4-3. DABK-7032 Installation Procedure

The DABK-7032 comprises the following :

MEM-40B board	: 1
Screw (+ PWH3 × 6)	: 1

Initial preparation

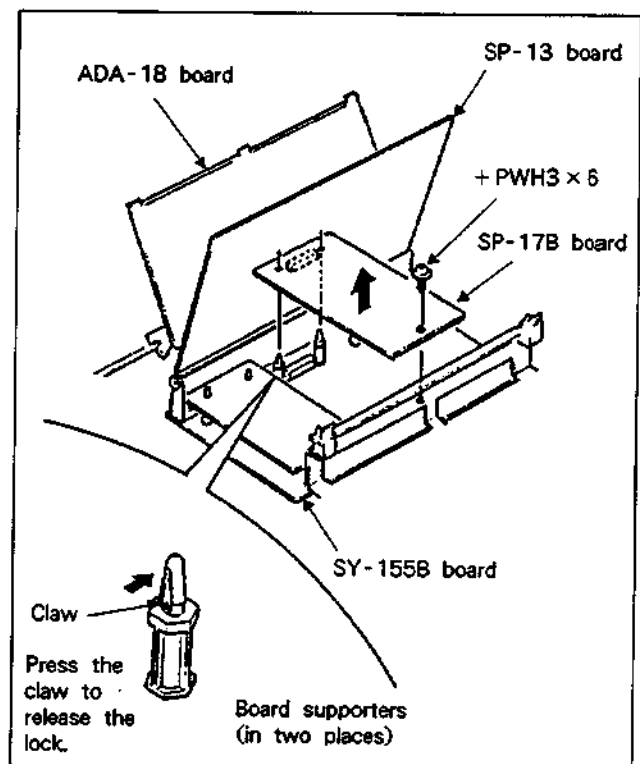
Remove the unit's top panel.

(Refer to the 1-4-1. DABK-7031 installation procedure.)

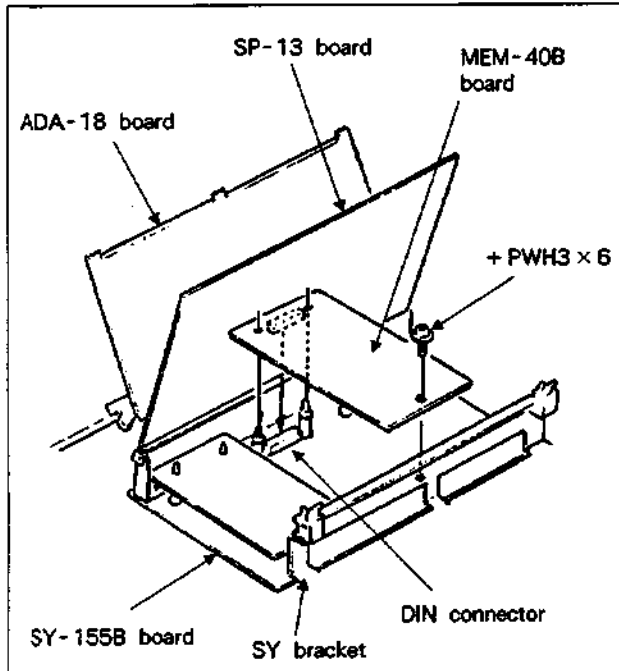
Note : Before installing the DABK-7032, turn off the unit's POWER switch.

1) Installation of MEM-40B board to SY-155B board

- (1) Open the ADA-18 board and the SP-13 board. (Refer to the 1-4-1. DABK-7031 installation procedure.)
- (2) Remove the SP-17C board from the SY-155B board. (The board supporters are located in two places. One + PWH3 × 6 screw.)



- (3) Insert the MEM-40B board's DIN connector into the SY-155B board's DIN connector. Insert the MEM-40B board until the SY-155B board's board supporters lock.
- (4) Fasten the MEM-40B board to the SY-155B board's SY bracket with the +PWH3×6 screw.



- (5) Close the SP-13 board and ADA-18 board. (Refer to "1-4-1. DABK-7031 Installation Procedure.")
- (6) Install the top panel on the unit with the four +B4×6 screws.

2) Post-Installation check

After installing the DABK-7032, do the following check.

- (1) Open the SERVICE menu. (Simultaneously press the STOP, DISPLAY, and SET keys on the front panel.)
- (2) Open the TEST menu.
 - ① While pressing the MENU key, turn the dial counterclockwise to display the following:
[tEst] cLoSE
 - ② While pressing the DATA key, turn the dial until "oPEn" is displayed. Then press the SET key.
 - ③ While pressing the MENU key, turn the dial clockwise to display the following:
[iS_Ed] cLoSE
 - ④ While pressing the DATA key, turn the dial until "oPEn" is displayed. Then press the SET key.
- (3) While pressing the MENU key, turn the dial clockwise to display the following:
inStAnt tEst
- (4) Press the SET key and check if "noError" is displayed about 20 seconds later.
- (5) Close the SERVICE menu. (Simultaneously press the STOP, DISPLAY, and RESET keys)

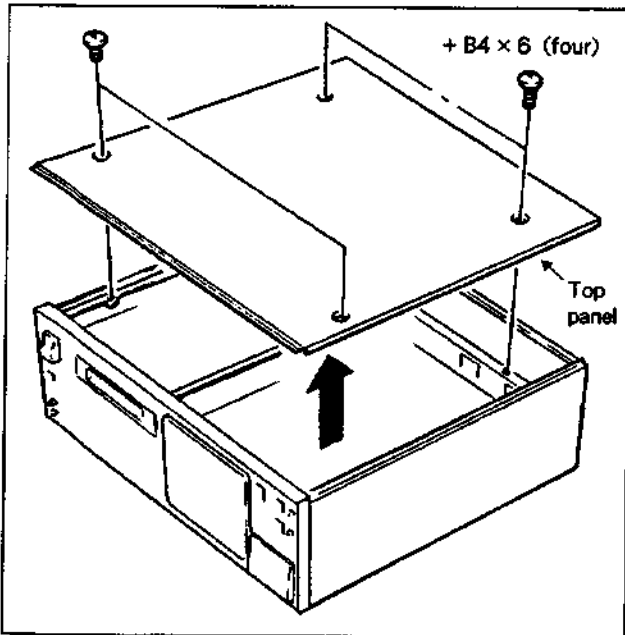
1-4-4. DABK-7033 Installation Procedure

The DABK-7033 comprises the following :

IF-283 board	: 1
Board supporter	: 3
Harness with D-SUB connector	: 1
D-SUB connector screws	: 2
ROM	: 2
Sample Disk	: 1

Initial preparation

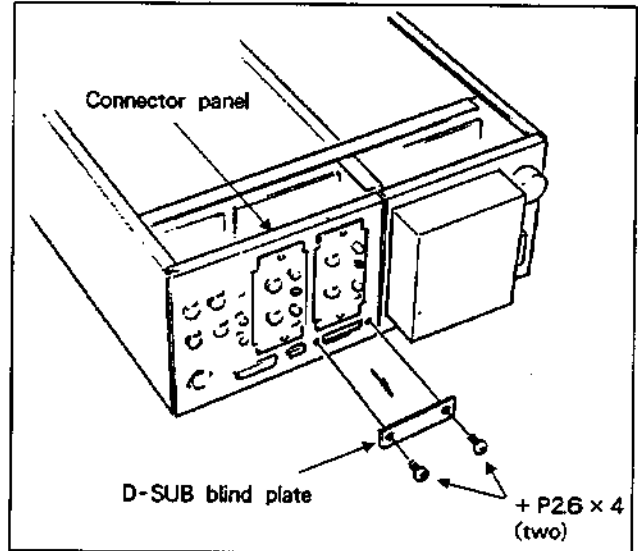
Remove the top panel by removing the four +B4 × 6 screws. Remove the top panel as shown by the arrow.



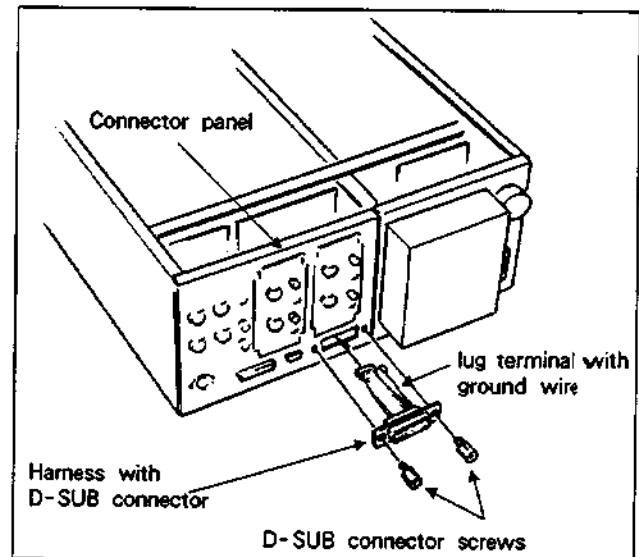
Note : Before installing the DABK-7033, turn off the unit's POWER switch.

1) Installation of Harness with D-SUB connector to the connector panel

(1) Remove the D-SUB blind plate from the connector panel.

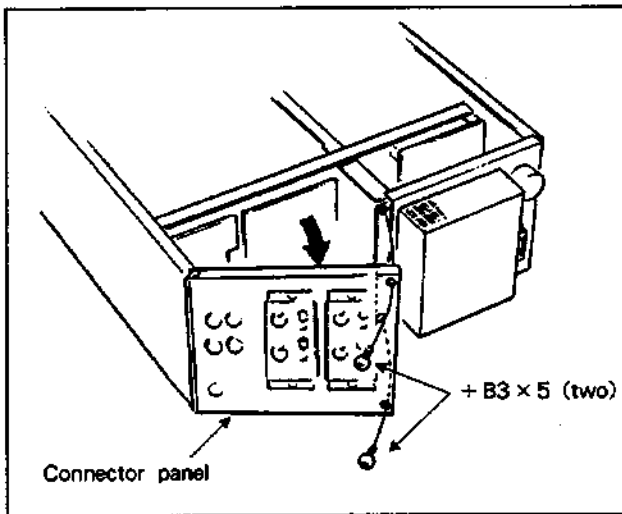


(2) Install the harness with D-SUB connector on the connector panel (where the D-SUB blind plate was removed) with the two D-SUB connector screws.

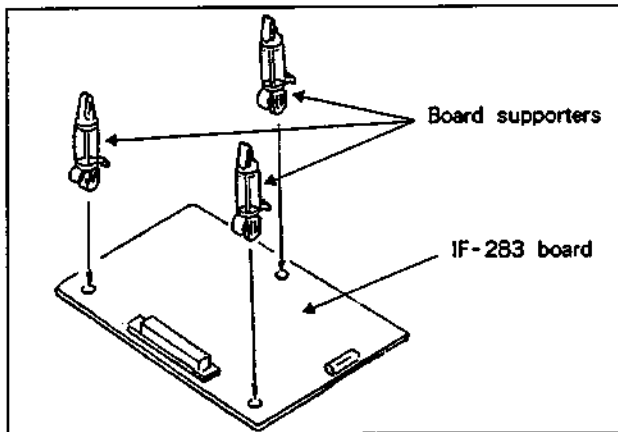


2) IF-283 board installation on the RM-77 board

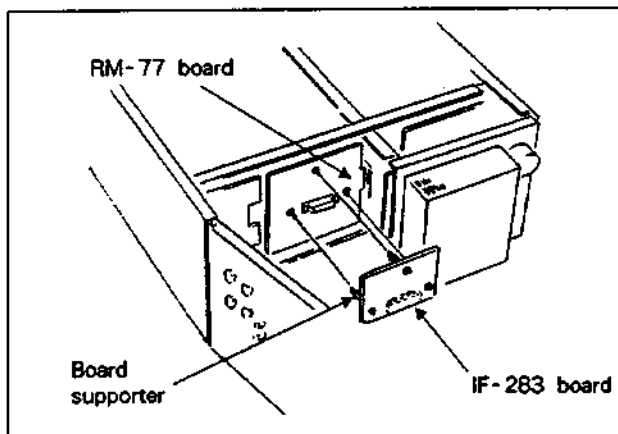
- (1) Remove the two +B3×5 screws and open the connector panel as shown by the arrow.



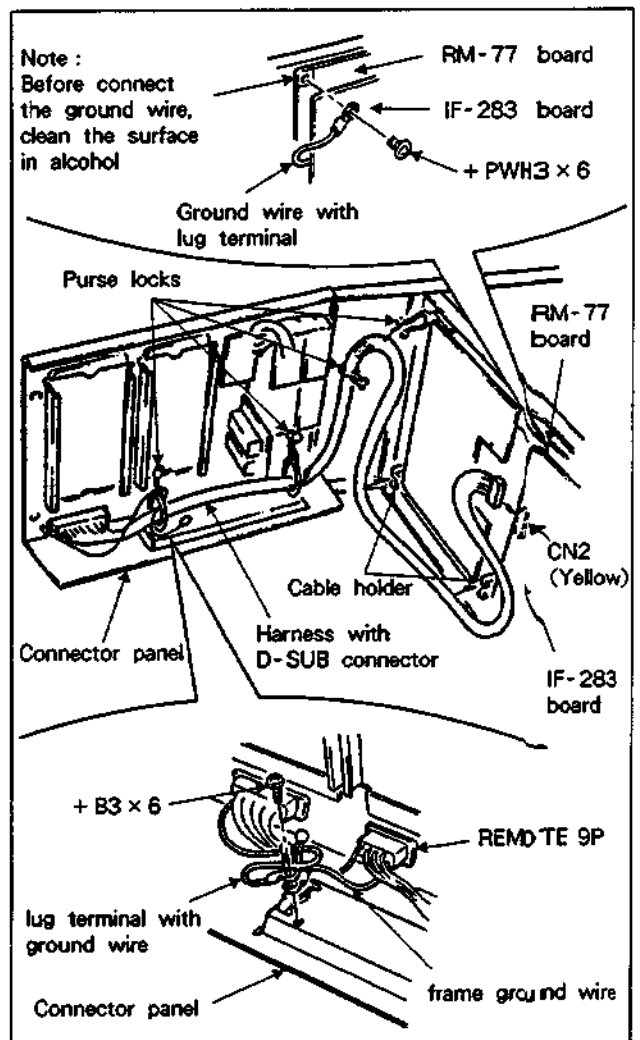
- (2) Insert the three board supporters into the IF-283 board as shown in the figure below.



- (3) Mount the IF-283 board to the RM-77 board and push it in until the board supporters lock.



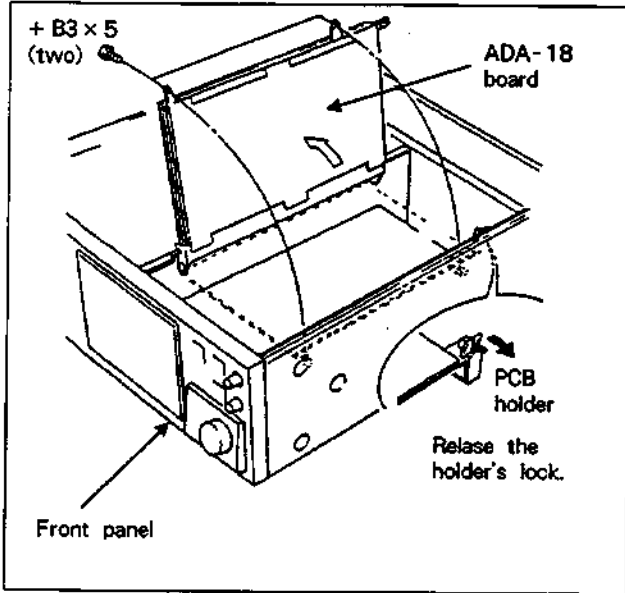
- (4) Connect the harness with D-SUB connector to the IF-283 board's CN2 connector (yellow). Connect the harness by securing it with the four purse locks.
- (5) Remove the screw (+PWH3×6) that is stopping on the RM-77 board (A Side board address A-1) and install the harness together with the ground wire with the lug terminal provided with the IF-283 board.
- (6) Remove the screw (+B3×6) holding the frame ground wire of the D-SUB 9 pin (REMOTE 9P). Secure the lug terminal with ground wire of the harness with the D-SUB connector with a purse lock, and install it together with the removed frame ground wire with a screw (+B3×6).



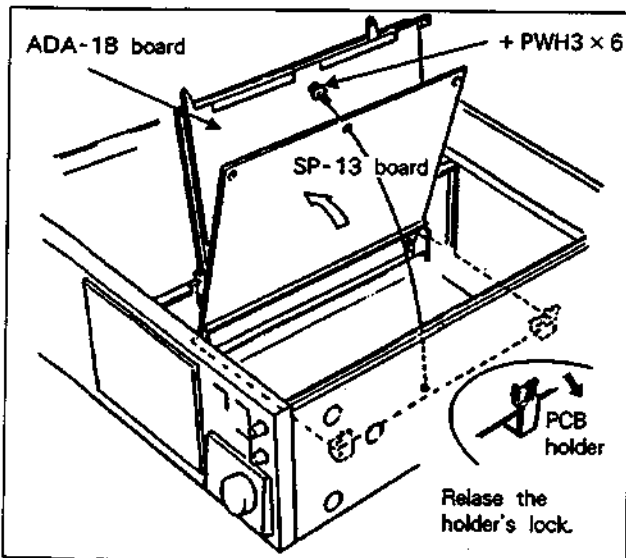
- (7) Close the connector panel.
- (8) Fasten the connector panel to the chassis with the two +B3×5 screws removed in step (1).

3) ROM Replacement

- (1) Remove the ADA-18 board's two +B3×5 screws.
- (2) Release the PCB holder's lock and open the ADA-18 board as shown by the arrow.



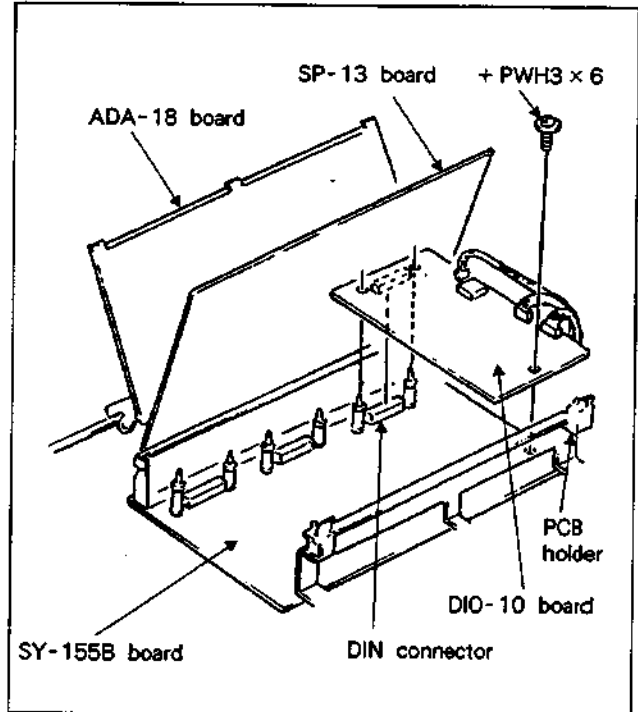
- (3) Remove the SP-13 board's screw (+PWH3×6).
- (4) Release the PCB holders' locks and open the SP-13 board as shown by the arrow.



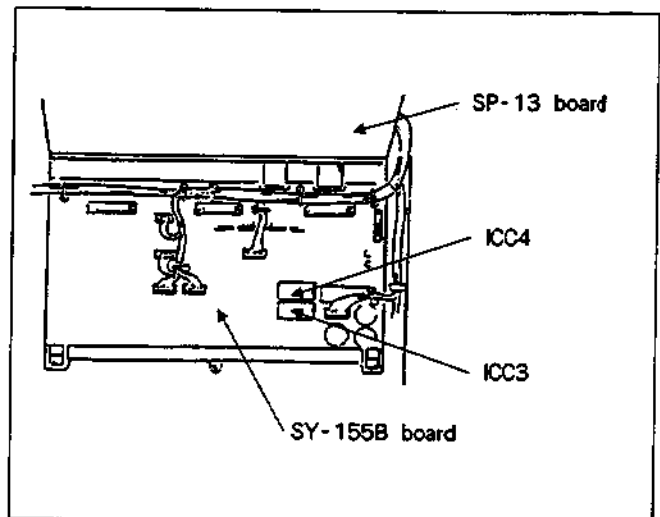
- (5) Remove the DIO-10 board from the SY-155B board.

Note :

Do this when the PCM-7030 is equipped with the DABK-7031 (optional).



- (6) Remove the ROM SYC3V *.* (board address C-3) on the SY-155B board and install the ROM (IFC3V *.*) that goes with the DABK-7033.
- (7) Remove the ROM SYC4V *.* (board address C-4) on the SY-155B board and install the ROM (IFC4V *.*) that goes with the DABK-7033.



- (8) Install the DIO-10 board on the SY-155B board.

Note :

Do this when the PCM-7030 is equipped with the DABK-7031 (optional).

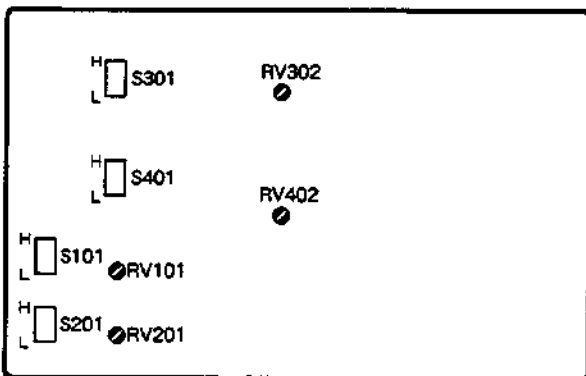
- (9) Close the SP-13 board until the two PCB holders lock.
- (10) Fasten the SP-13 board to the board guide with the +PWH3×6 screw that was removed in step (3).
- (11) Close the ADA-18 board until the PCB holder locks.
- (12) Fasten the ADA-18 board to the chassis with the two +B3×5 screws that were removed in step (1).
- (13) Install the top cover on the unit with the four +B4×6 screws.

1-5. Initial Settings of the Board's Switches and Volumes

The switch and volume settings required for level schedule changes (ADA-18 board) and fader start/stop procedure changes (RM-77 board) are described below.

Note: Do not touch any switches and volumes other than those specified below.

1-5-1. Level schedule change (ADA-18 board)



ADA-18 BOARD
COMPONENT SIDE
BOARD No. 1-637-267-11

(1) If the standard signal level used is small (around -20dBs), do the following:

Switchover the S101, S201, S301, and S401 switches in correspondence to the analog audio I/O signal's standard signal level.

This is to be used if the standard level is set low, at around -20dBs.

If all the switches are set to H, the +4dBs input signal will be displayed as -20dB on the level meter. (Setting upon factory shipment.)

If all the switches are set to L, the -20dBs input signal will be displayed as -20dB on the level meter.

(2) Level schedule change

Upon factory shipment, the RV101, RV201, RV301, and RV401 volumes are set to the level schedule (+4dBs input → 20dB display → 4dBs output).

To change the above volumes' level schedule, adjust the volumes as described below.

First set the ANALOG AUDIO INPUT level adjustment knob (CH1 and CH2 on the front panel) to the center position.

RV101 and RV201 input level adjustment

For RV101, adjust the CH1 input level. When it is turned clockwise, the level will increase.

For RV201, adjust the CH2 input level. When it is turned clockwise, the level will increase.

The level setting (+4dBs = -20dB) upon factory shipment has a variable range of +8/-14dB for RV101 and RV201.

RV302 and RV402 output level adjustment

For RV302, adjust the CH1 output level. When it is turned clockwise, the level will increase.

For RV402, adjust the CH2 output level. When it is turned clockwise, the level will increase.

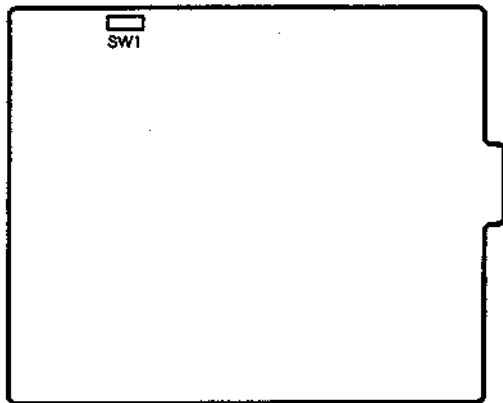
The level setting (-20dB = +4dBs) upon factory shipment has a variable range of +4/-12dB.

1-5-2. Fader Start/Stop Change Procedure (RM-77 Board)

The following two methods can be used for tape transport control with the fader :

1. Start the tape transport by raising the fader and stop it with the STOP key.Or, start the tape transport with the START key and stop it with the STOP key.
2. Start the tape transport by raising the fader and stop it by lowering the fader.

Select one of the above methods with SW1.



RM-77 BOARD
COMPONENT SIDE
BOARD No. 1-637-272-11

Setting upon factory shipment : The start and stop are independent.



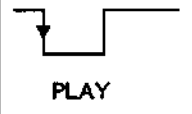
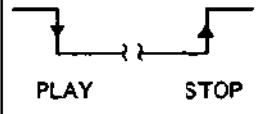




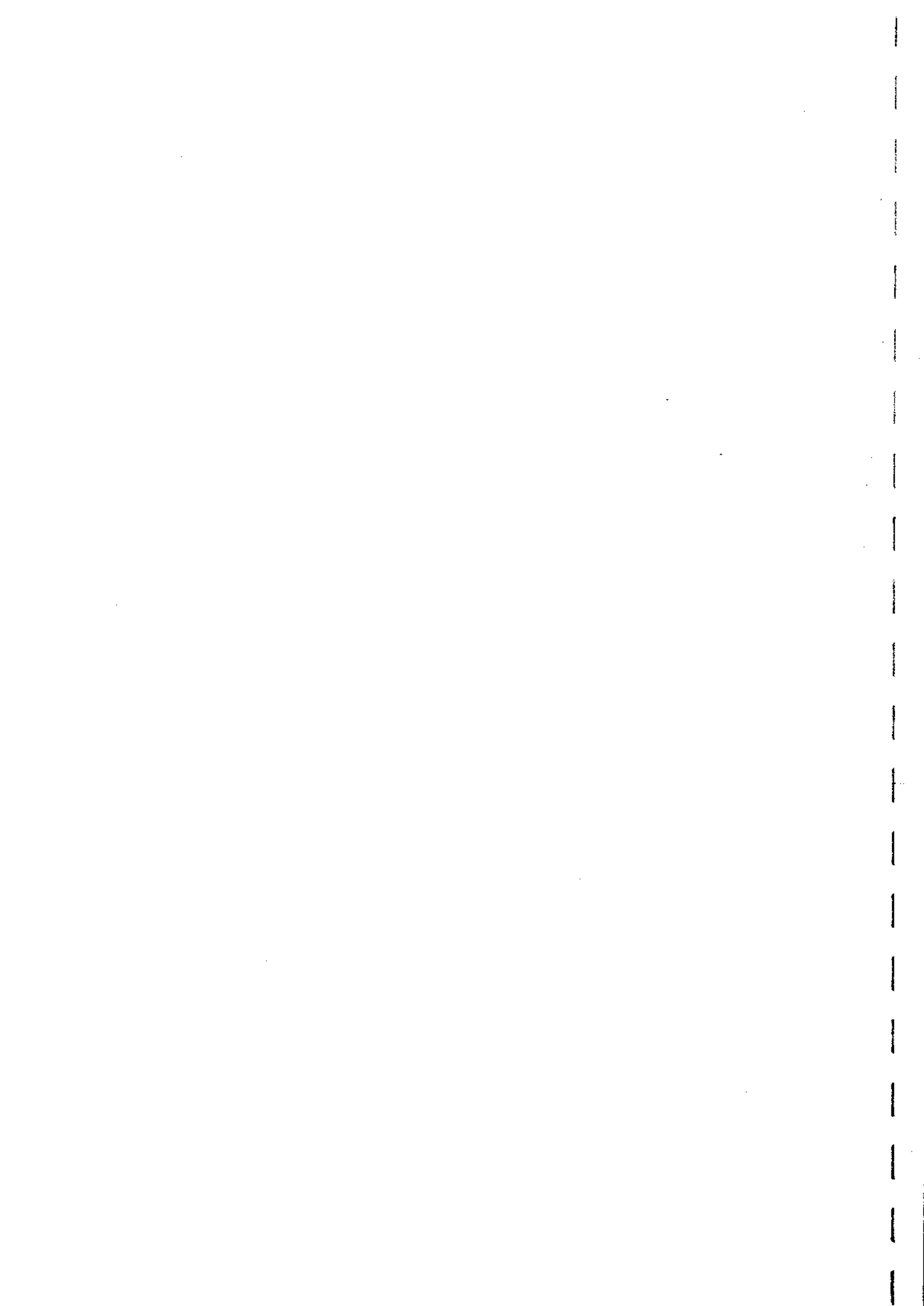
Pin 1 of the 8-pin remote terminal is dedicated to the PLAY command.The fader start can be done with an external fader (mixer).Pin 2 is dedicated to the STOP command.

When the switch is set, the setting will apply to both start and stop.



From pin 1 of the 8-pin remote terminal, the PLAY and STOP commands will be input alternately.This allows an external fader (mixer) to perform fader start and fader stop.The signal from of the 8-pin remote terminal's pin 1 will thereby change as follows :

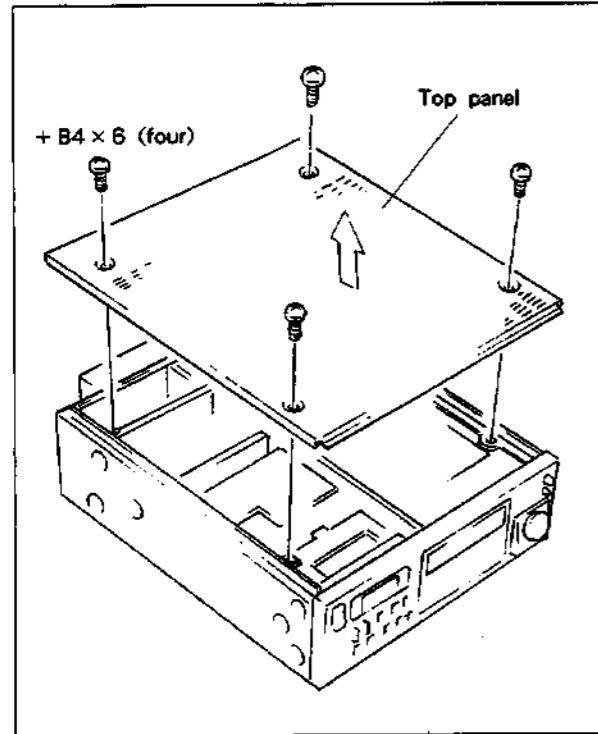
8-pin remote terminal	 SW1	 SW1
pin 1	 PLAY	 PLAY STOP
pin 2	 STOP	



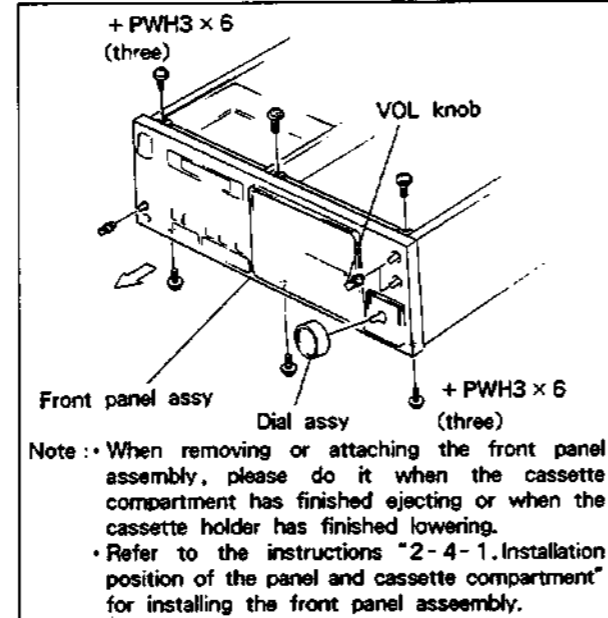
SECTION 2 SERVICE INFORMATION

2-1. Removal of Boards and Major Mechanical Parts

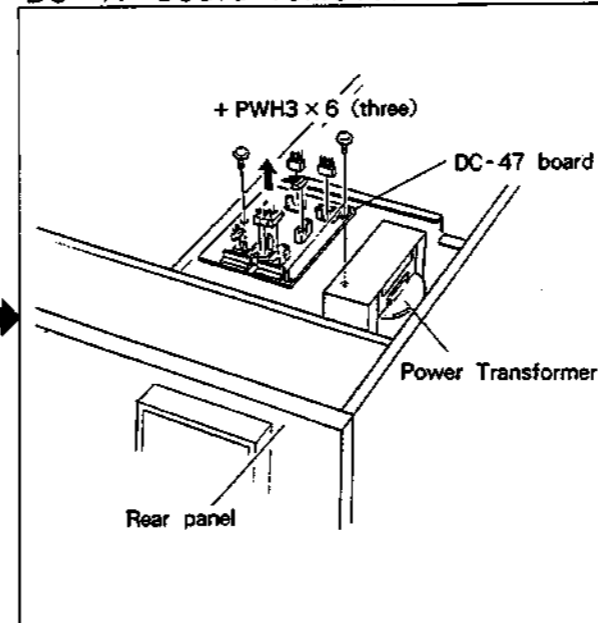
Top panel removal



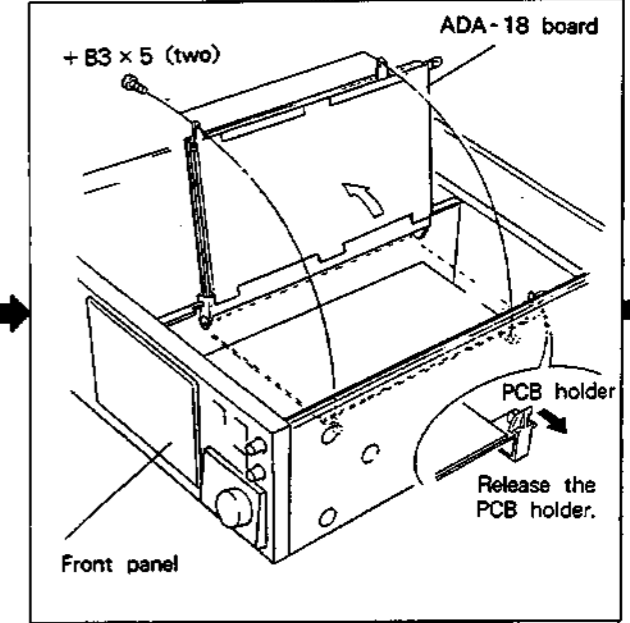
Removal of front panel assembly



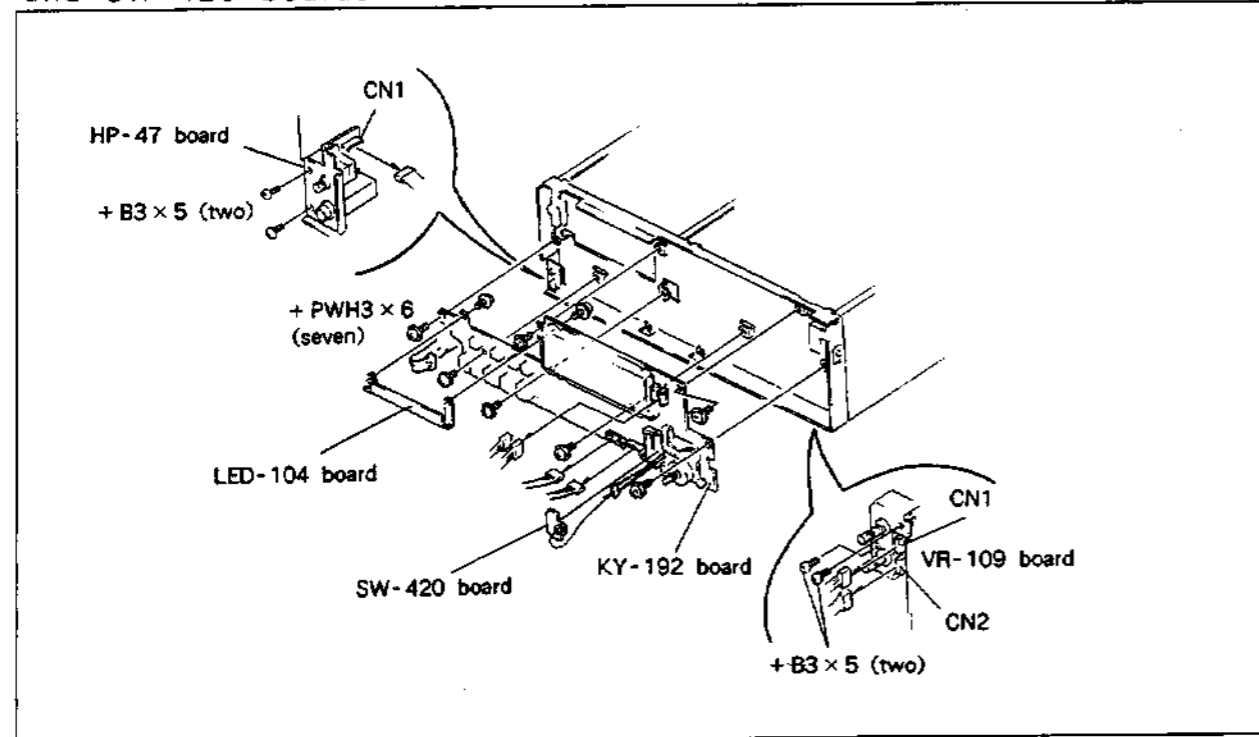
DC-47 board removal



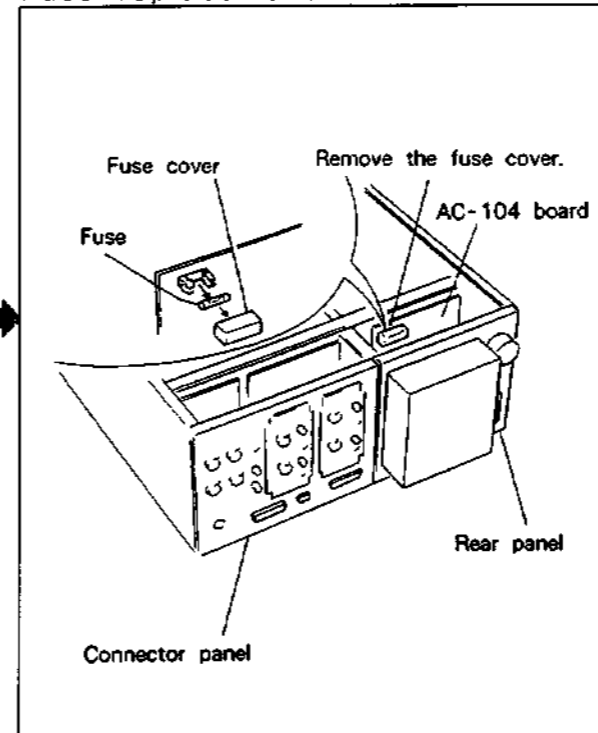
Opening the ADA-18 board



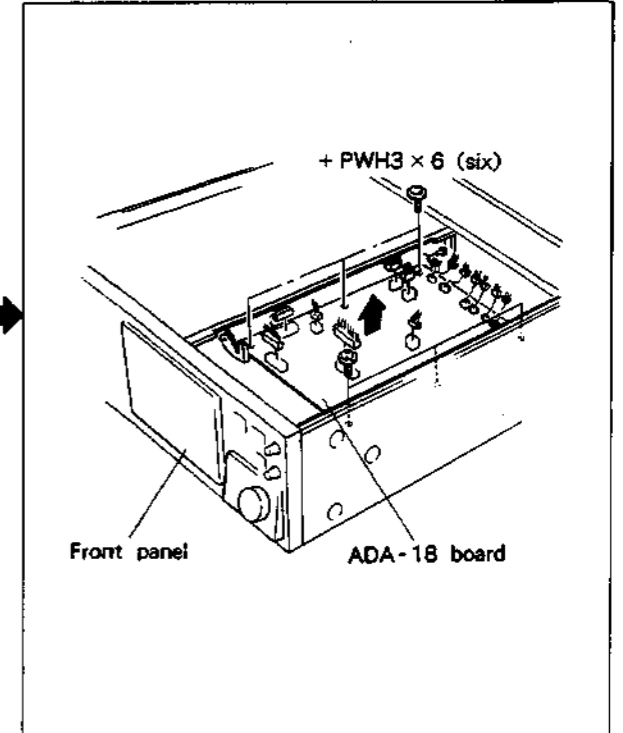
Removal of KY-192, HP-47, VR-109, LED-104, and SW-420 boards



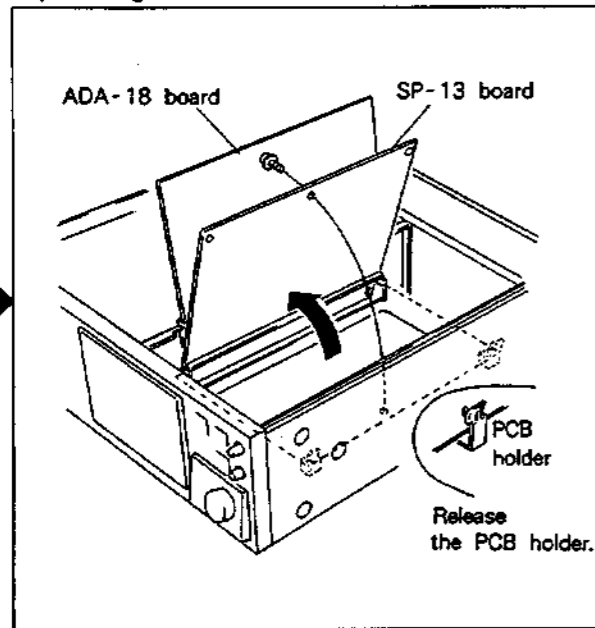
Fuse replacement



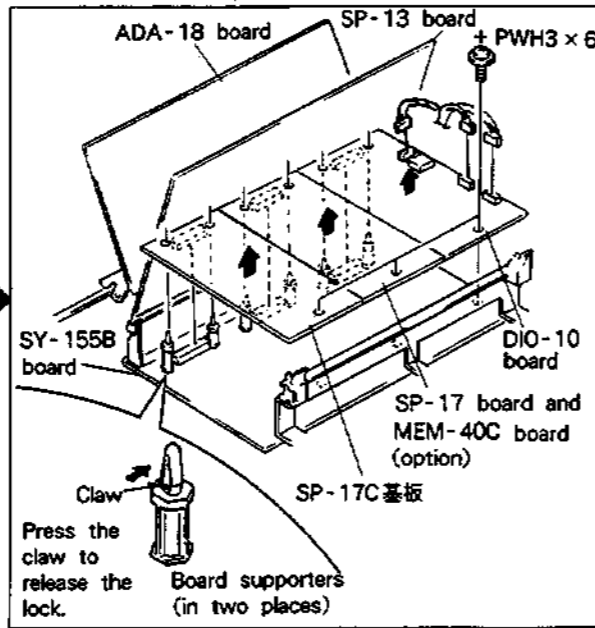
ADA-18 board removal



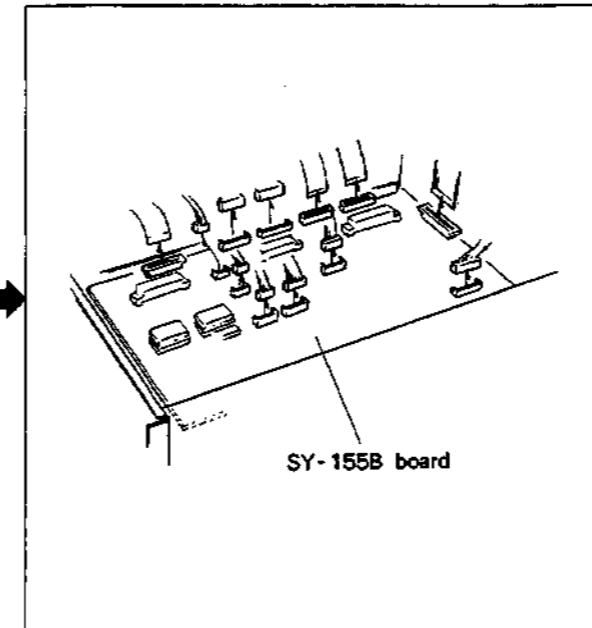
Opening the SP-13 board



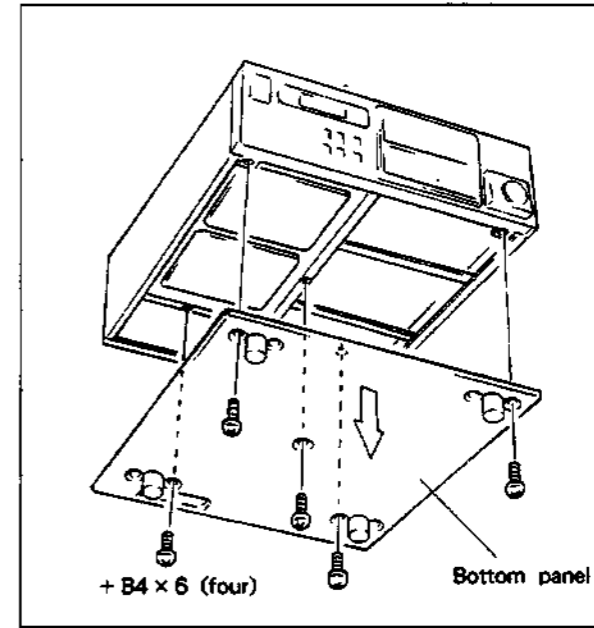
DIO-10, MEM-40A, SP-17C and MEM-40C (option) board removal



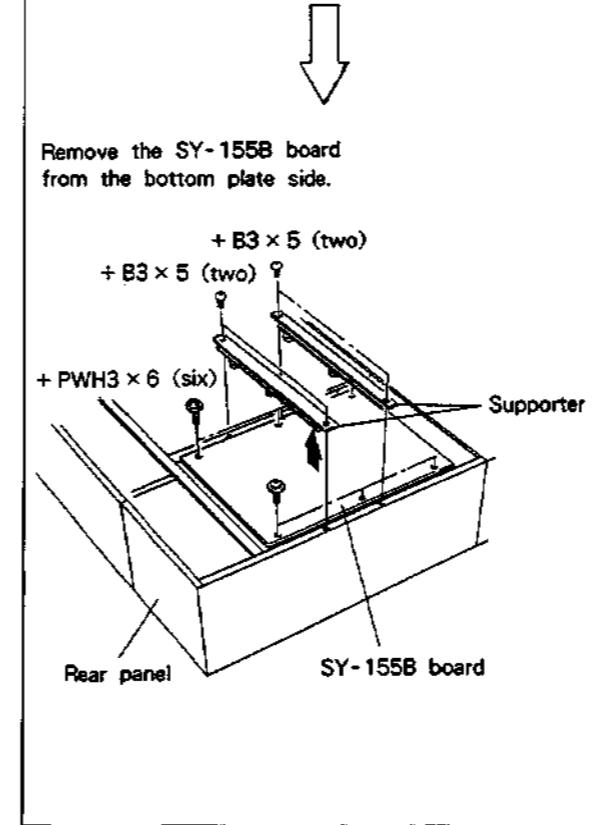
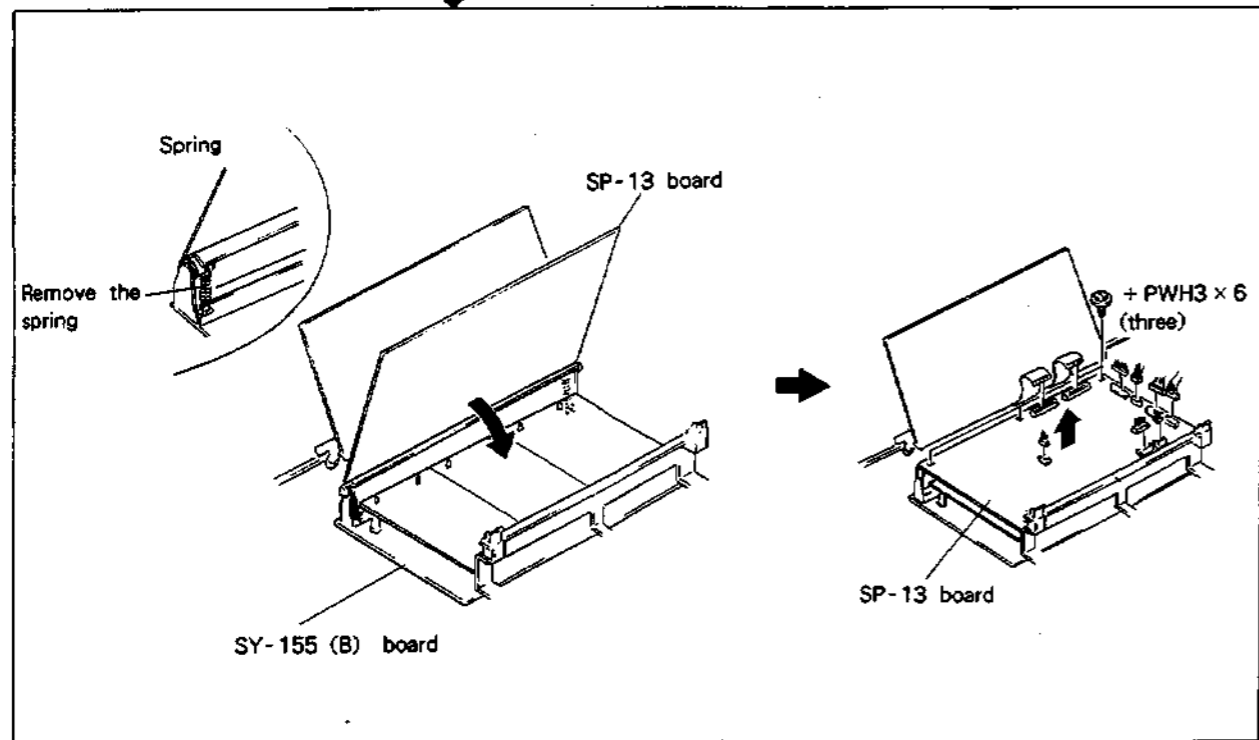
SY-155B board removal



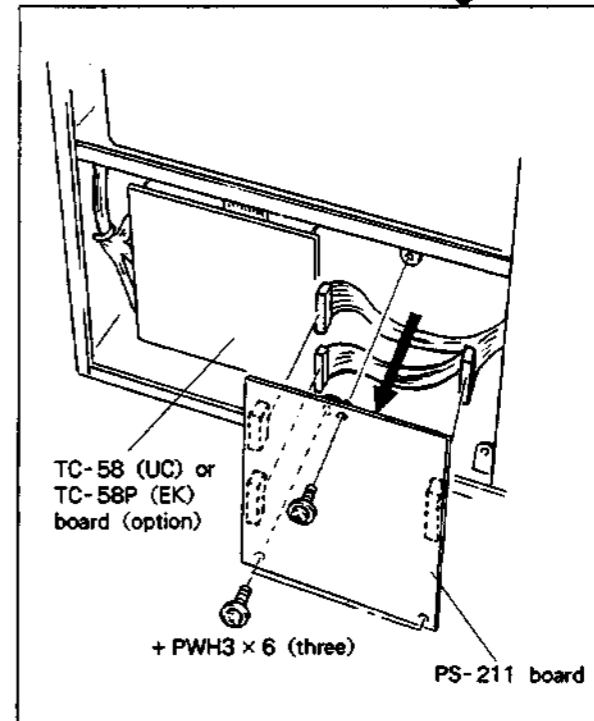
Bottom panel removal



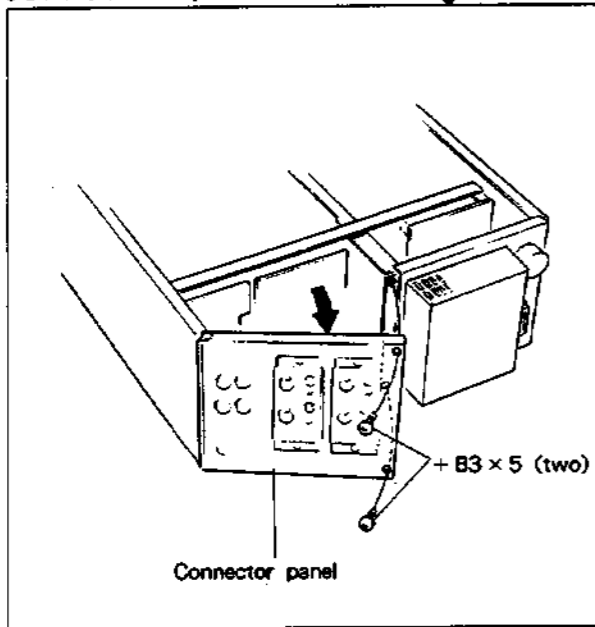
SP-13 board removal



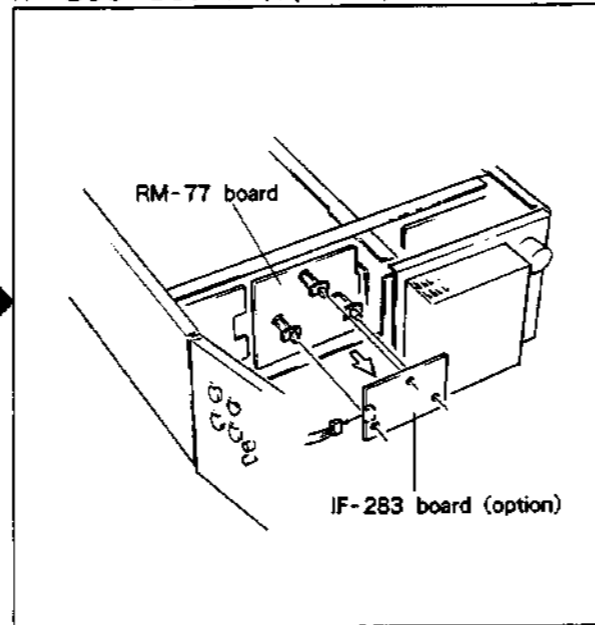
PS-211 board removal



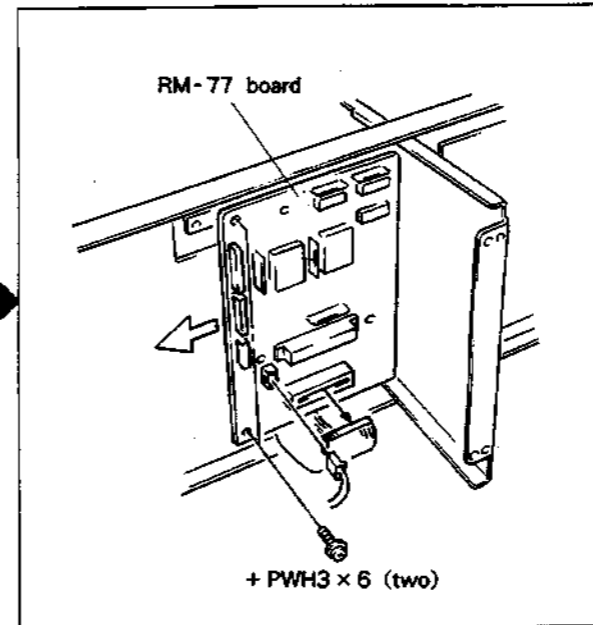
Opening the connector panel



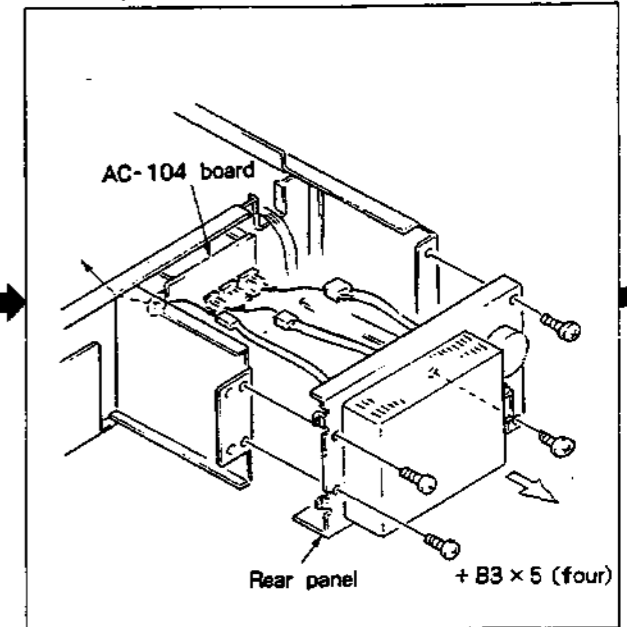
IF-283 board (option) removal



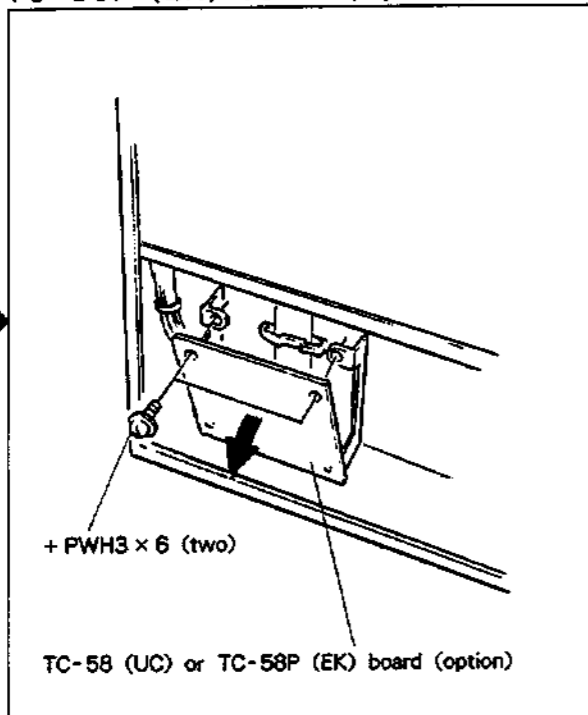
RM-77 board removal



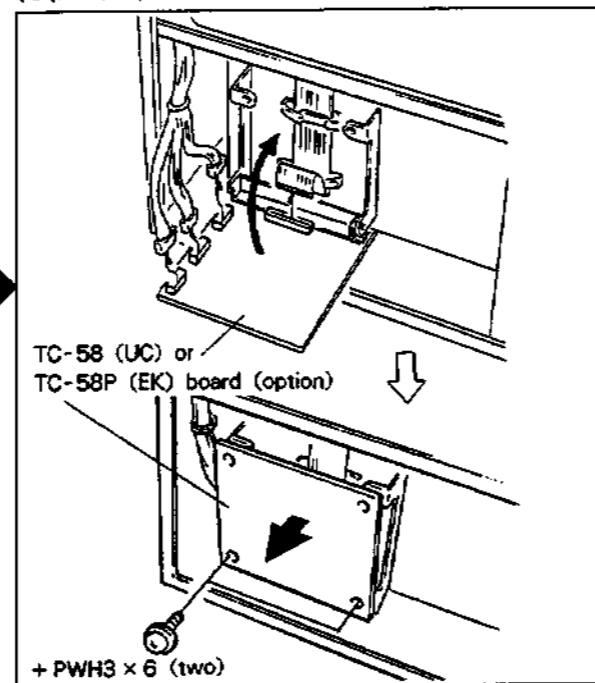
Rear panel removal



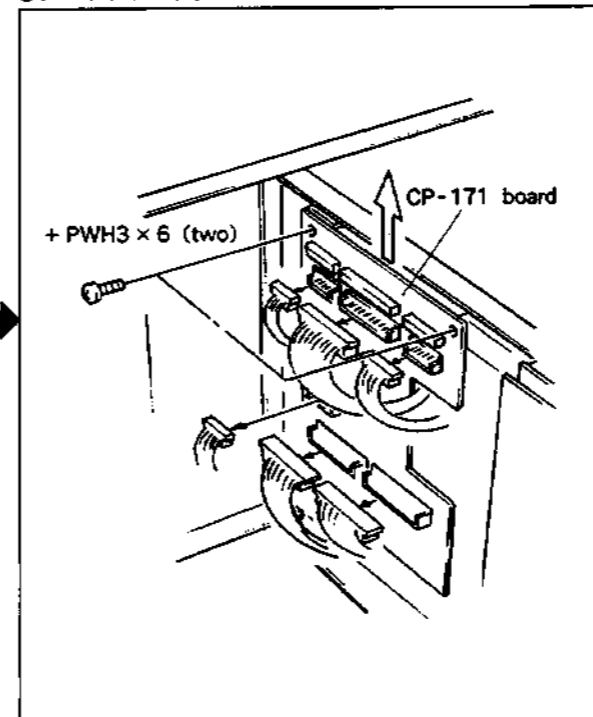
Opening the TC-58 (UC) or TC-58P (EK) board (option)



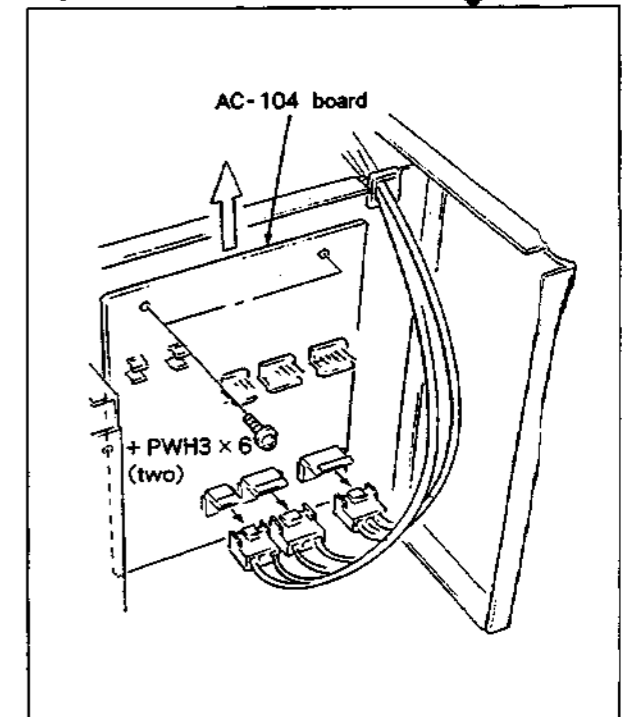
TC-58 (UC) or TC-58P (EK) board (option) removal



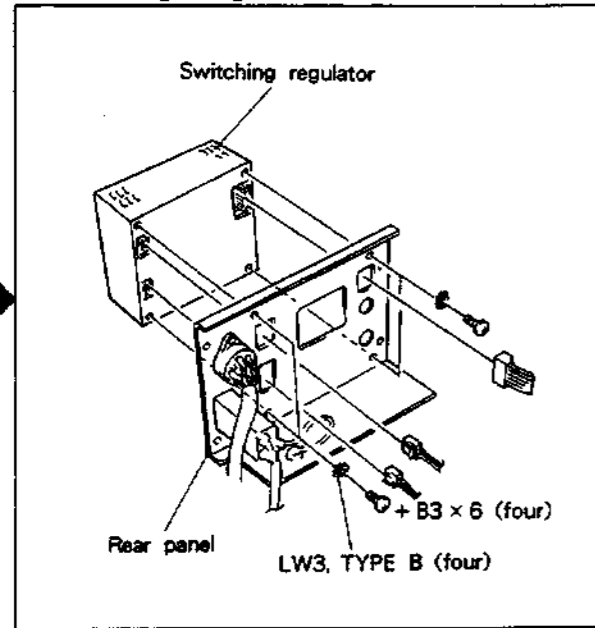
CP-171 board removal



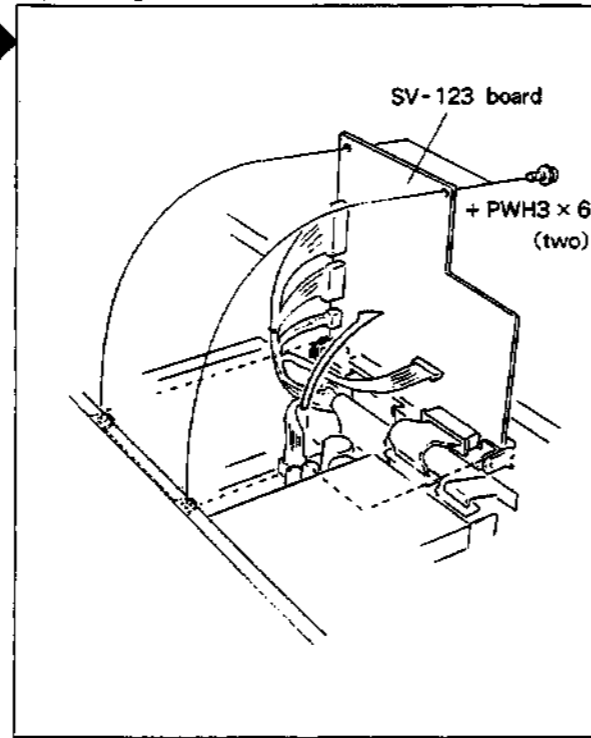
AC-104 board removal



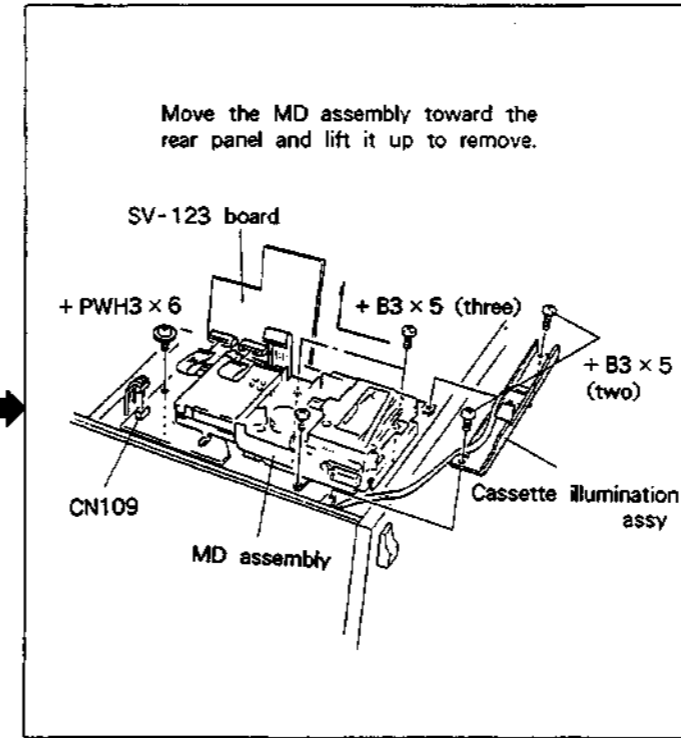
Switching regulator removal



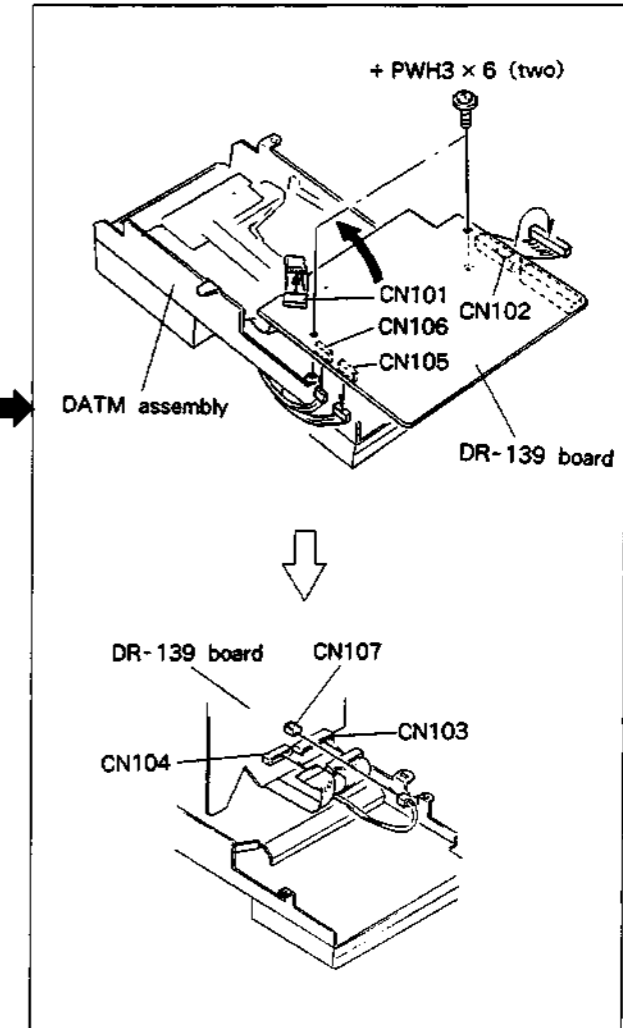
Opening the SV-123 board



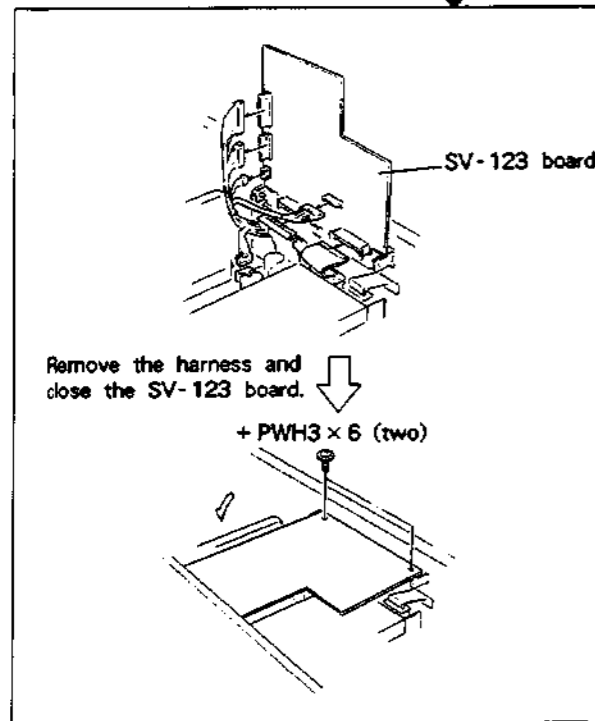
MD assembly removal



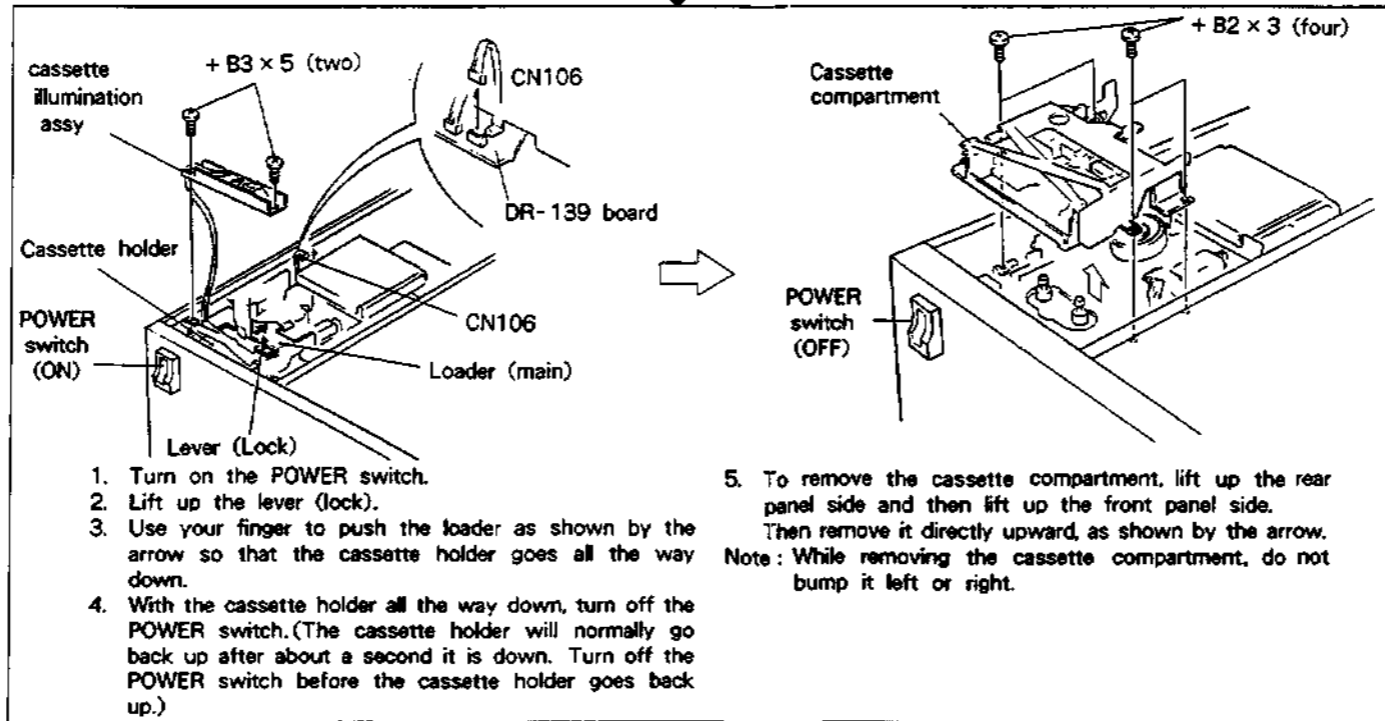
DR-139 board removal



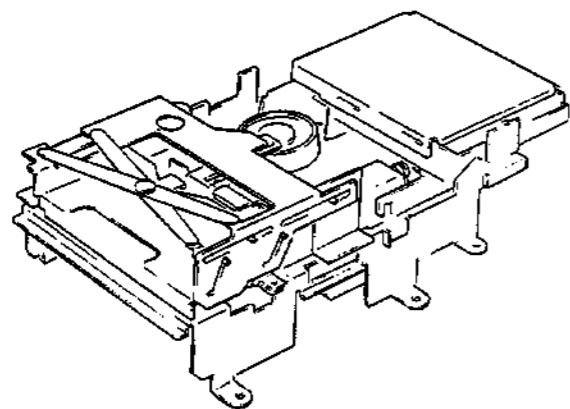
SV-123 board removal



Cassette compartment removal

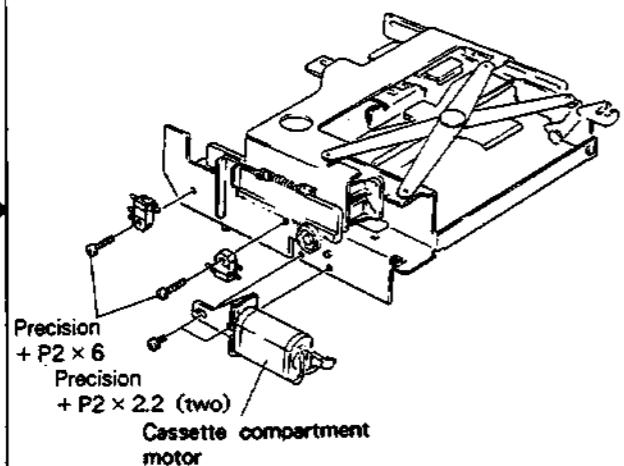


DATM assembly and Cassette compartment

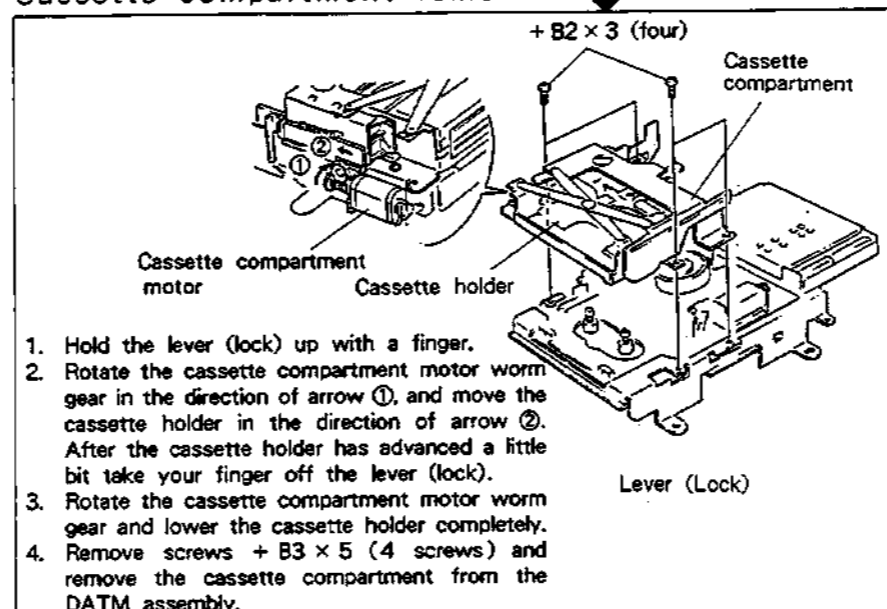


Note: Refer to the instructions "2-4-1. Installation position of the front panel and cassette compartment" for installing the DATM assembly and the cassette compartment.

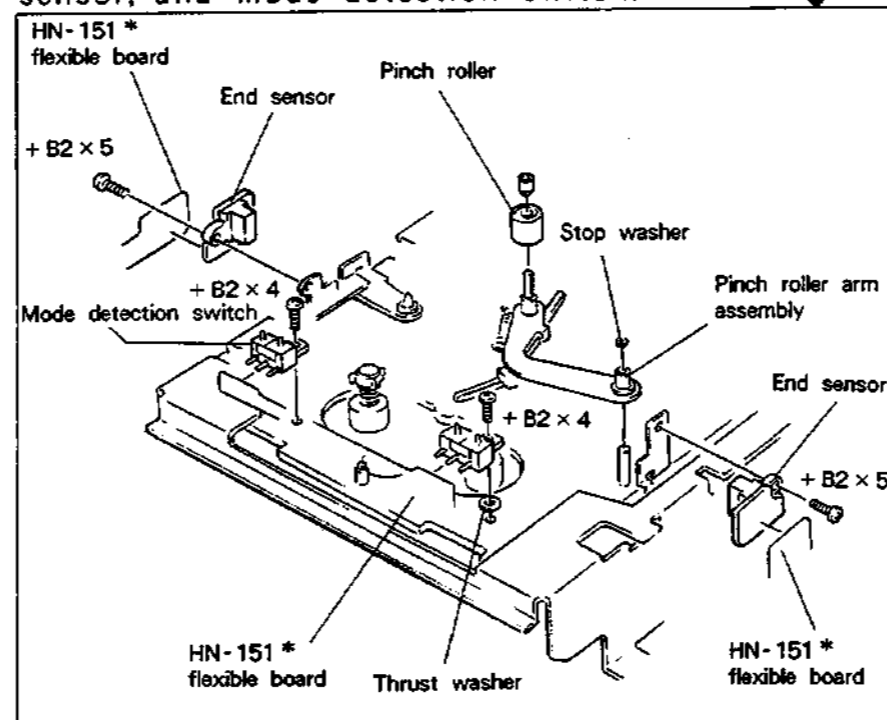
Removal of the cassette compartment motor and cassette holder detection switches (S1 and S2)



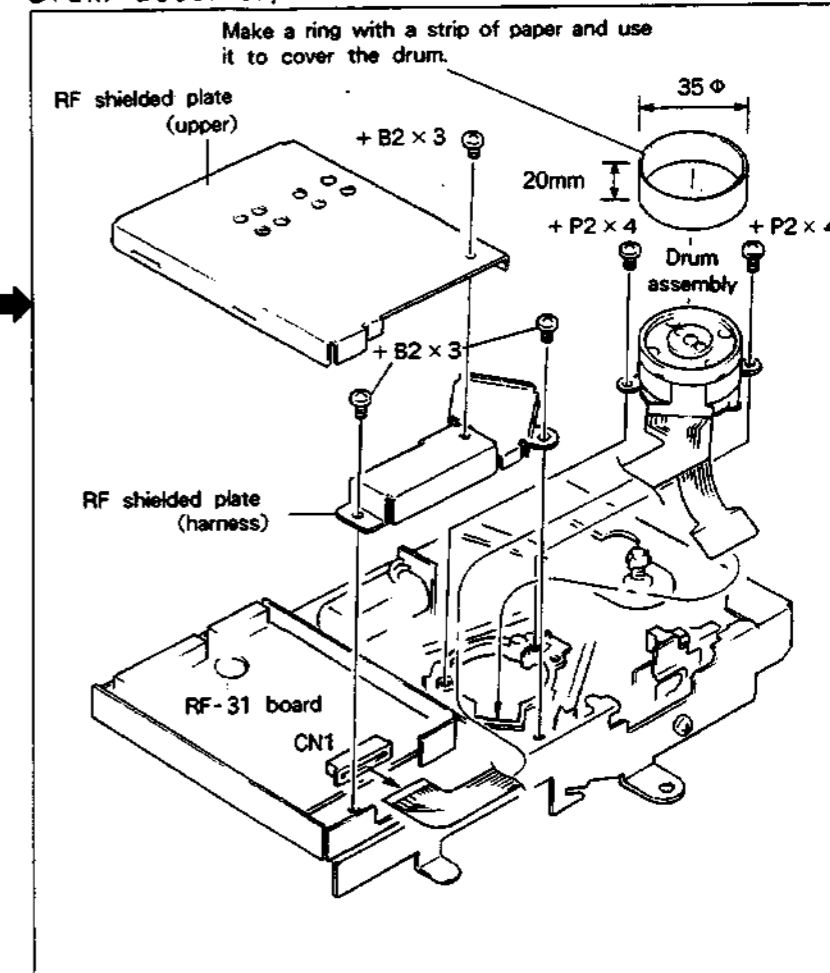
Cassette compartment removal



Removal of the pinch roller, tape-end sensor, and mode detection switch.



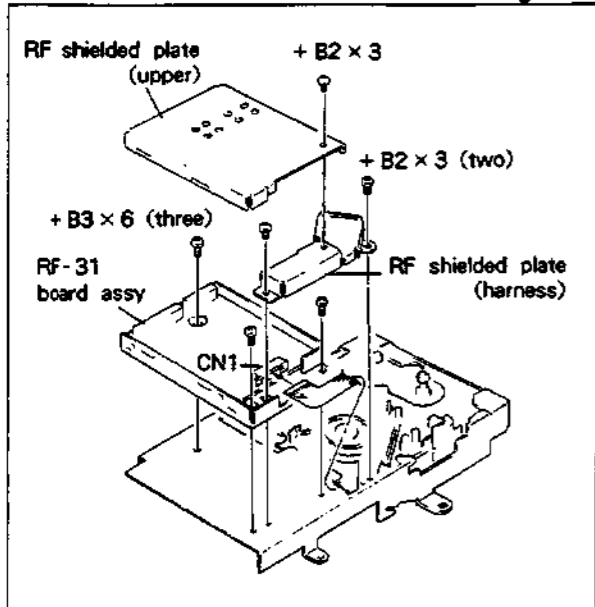
Drum assembly removal



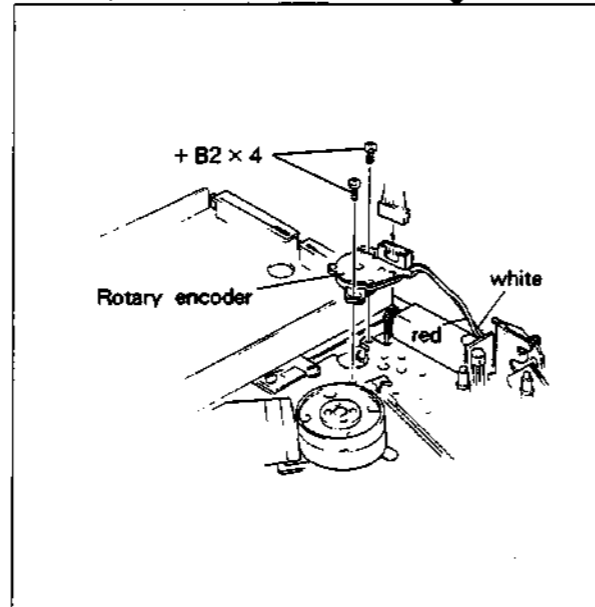
* Handling the flexible printed board

- Keep the soldering iron temperature at around 270°C.
- Do not touch the same pattern more than 3 times with the soldering iron.
- Do not exert any excessive force on the pattern.

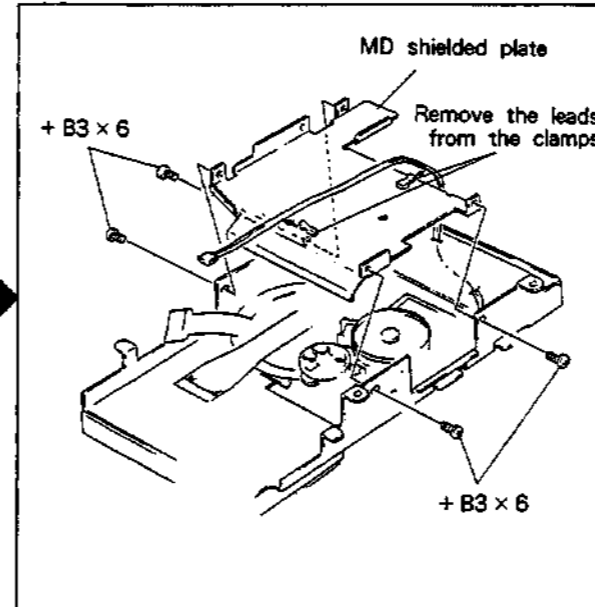
RF-31 board assembly removal



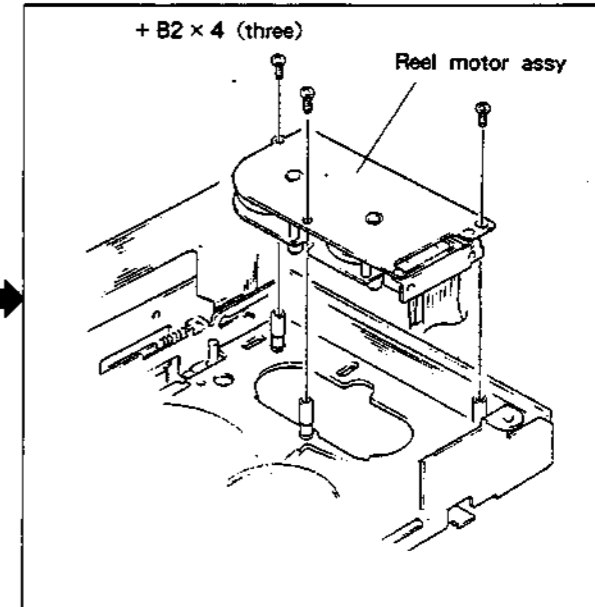
Rotary encoder removal



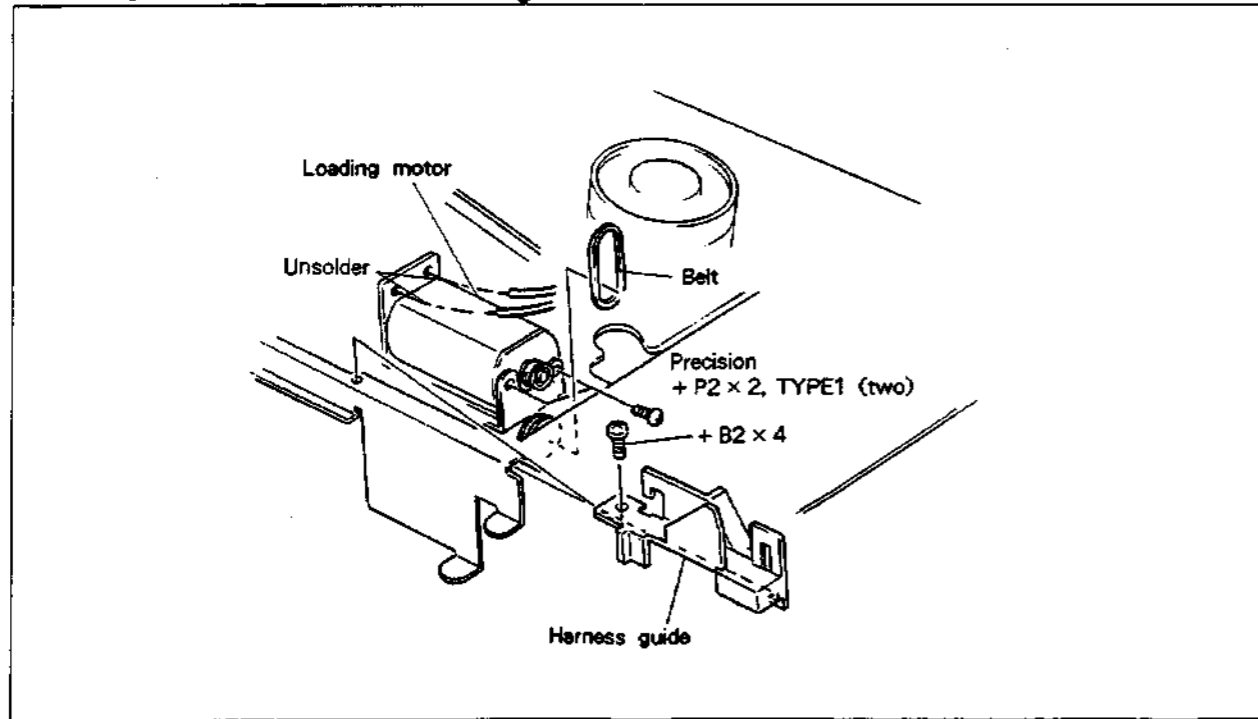
MD shielded plate removal



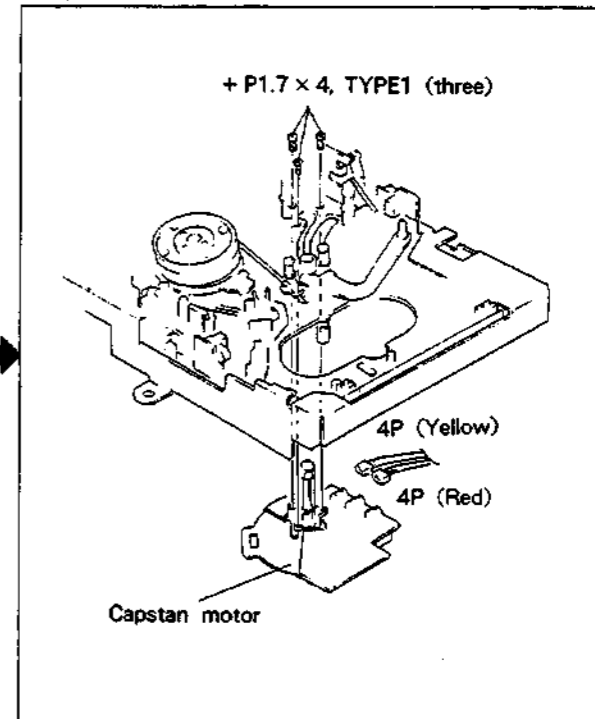
Reel motor assembly removal



Loading motor removal



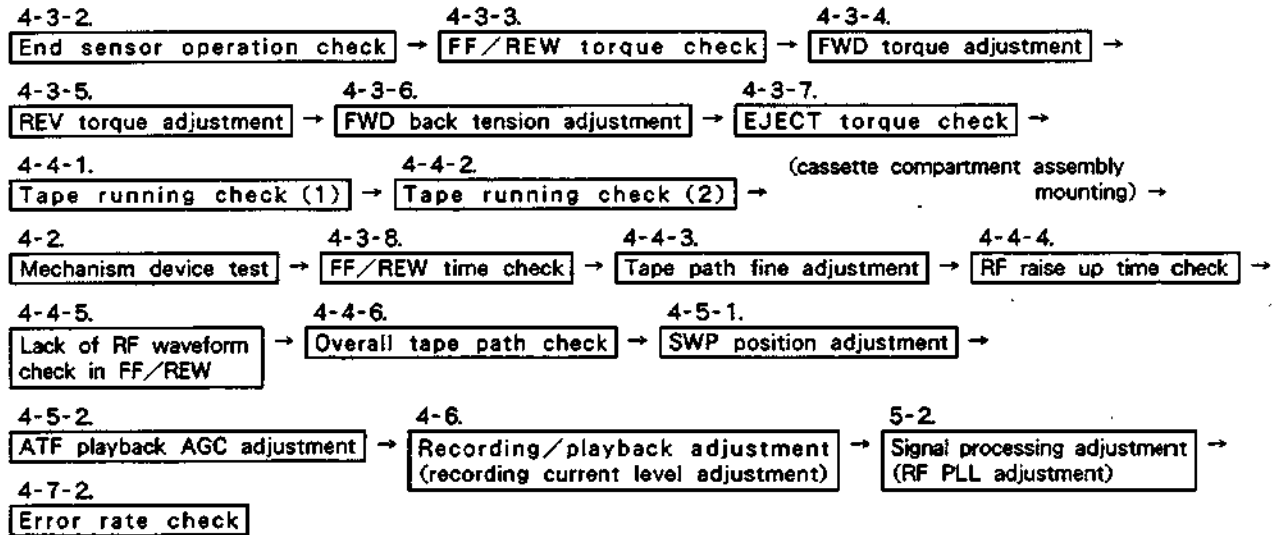
Capstan motor removal



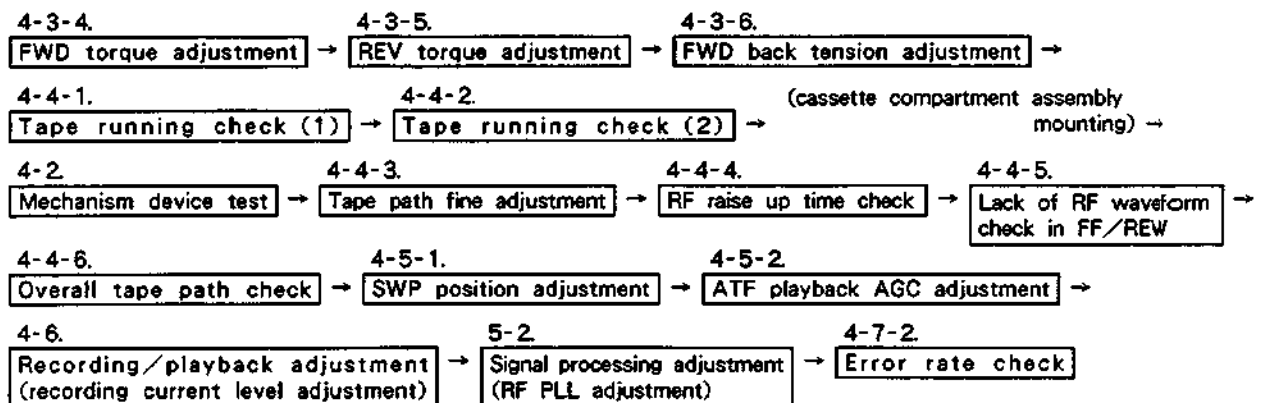
ADJUSTMENTS (CONFIRMATIONS) AFTER MAJOR PARTS REPLACEMENTS

When you replace major parts, be sure to adjust and confirm the following items.

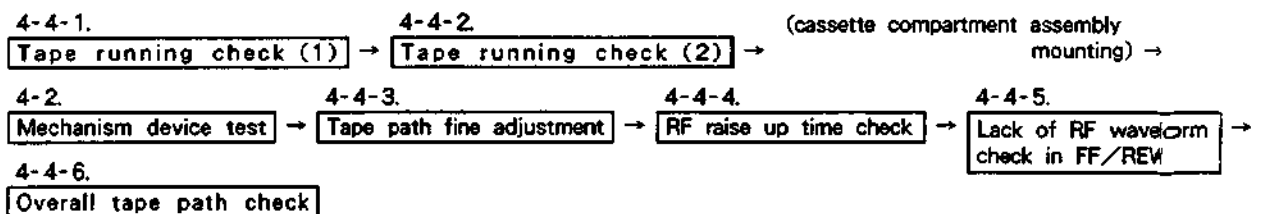
Mechanism Deck Assembly (DATM-06R)



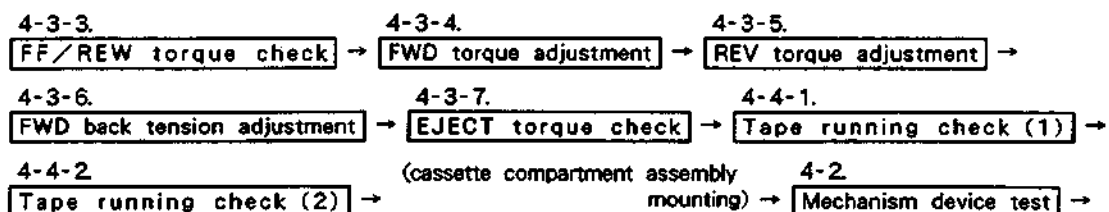
Drum Assembly (DDH-14AR)

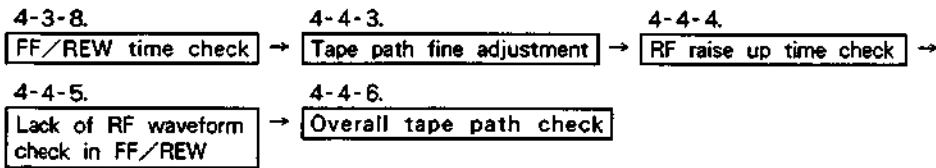


Capstan Motor (BHF2803A)

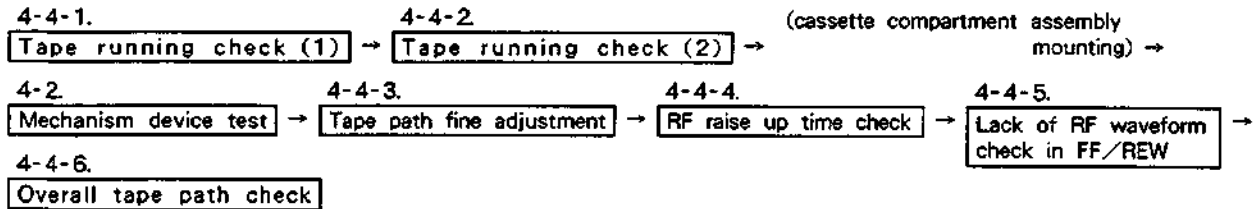


Reel Motor (U-2A)

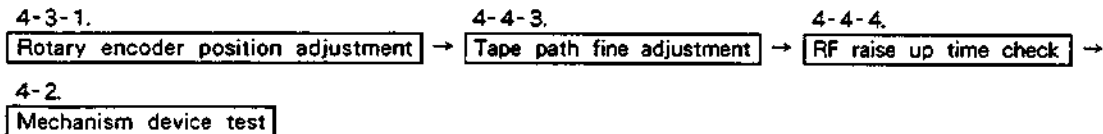




Pinch Roller Block Assembly



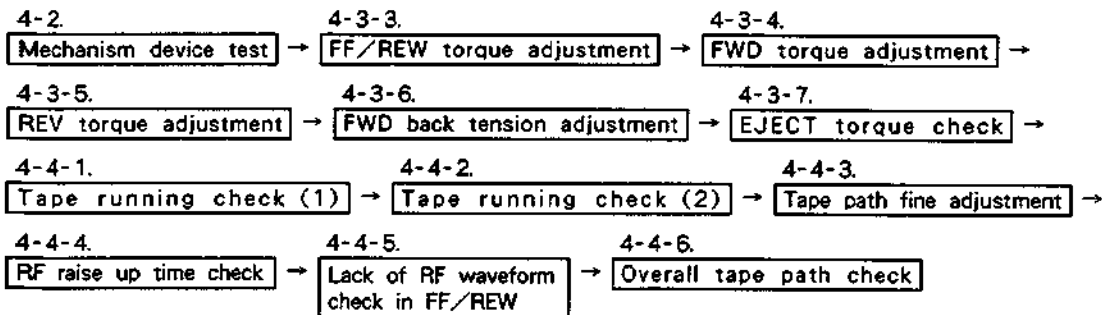
Rotary Encoder



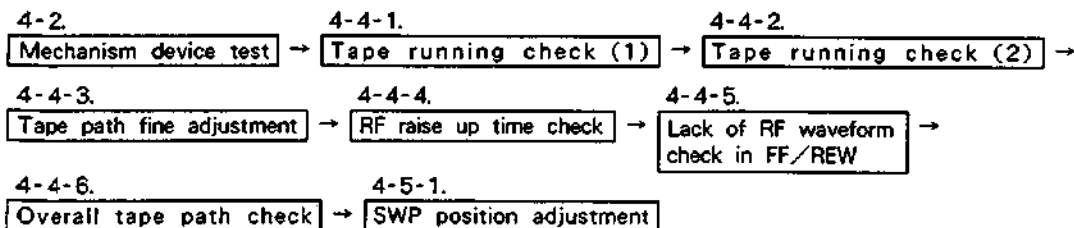
Cassette Compartment Assembly



DR-139 Board



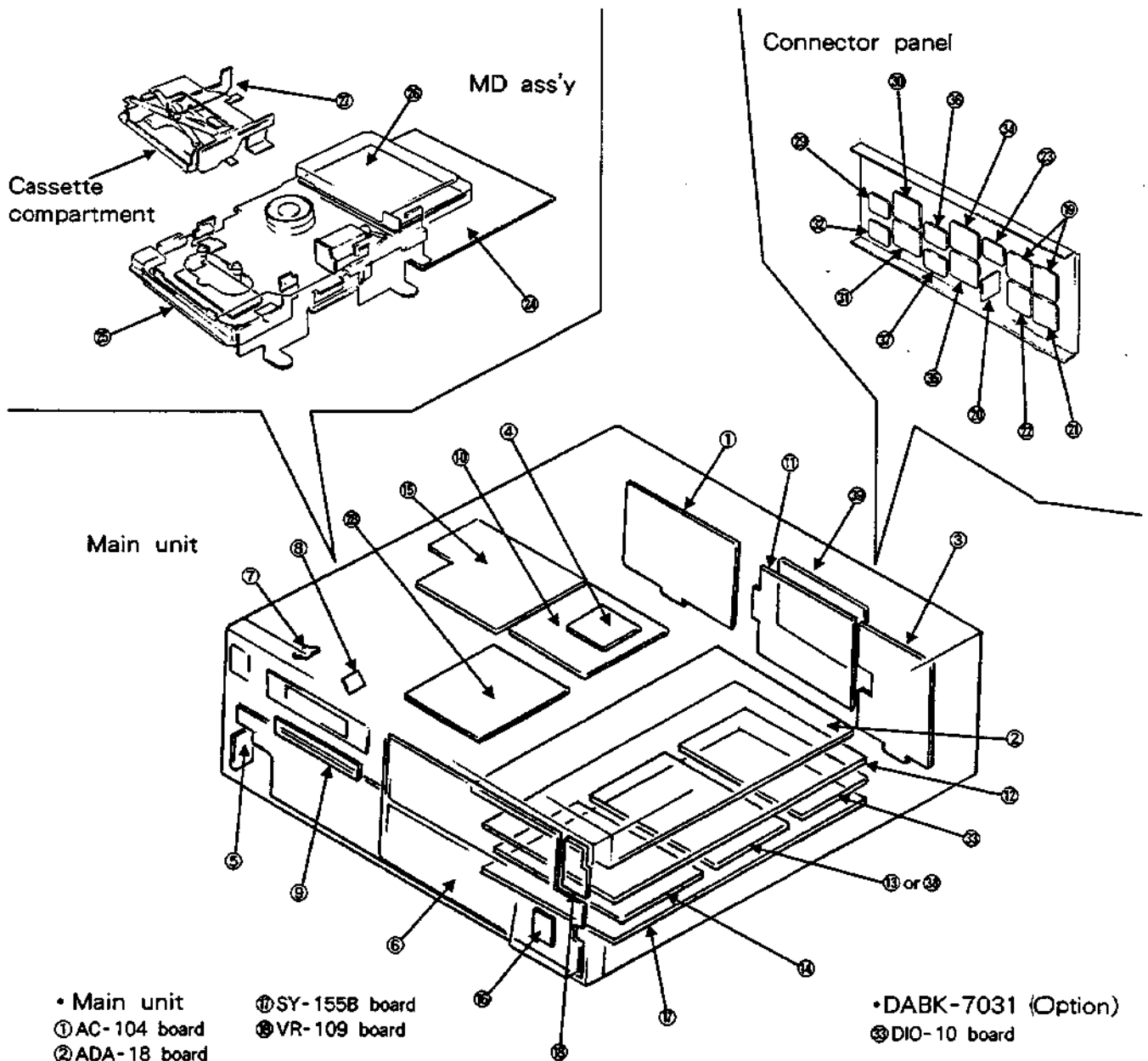
SV-123 Board



RF-31 Board Assembly



2-2. Board Arrangement View For PCM-7030



• Main unit

- ① AC-104 board
- ② ADA-18 board
- ③ CP-171 board
- ④ DC-47 board
- ⑤ HP-47 board
- ⑥ KY-192 board
- ⑦ LE-90A board
- ⑧ LE-90B board
- ⑨ LED-104 board
- ⑩ PS-211 board
- ⑪ RM-77 board
- ⑫ SP-13 board
- ⑬ SP-17B board
- ⑭ SP-17C board
- ⑮ SV-123 board
- ⑯ SW-420 board

⑰ SY-155B board

- ⑱ VR-109 board

< Connector panel >

- ⑳ CP-157B board
- ㉑ CP-158 board
- ㉒ CP-172C board
- ㉓ CP-172D board
- ㉔ SW-426 board

< MD ass'y >

- ㉕ DR-139 board
- ㉖ HN-151 board
- ㉗ RF-31 board

< Cassette compartment >

- ㉘ SW-452 board

• DABK-7030 (Option)

- ㉙ TC-58 board

< Connector panel >

- ㉚ CP-152 board
- ㉛ CP-159C board
- ㉜ CP-159D board
- ㉝ SW-455 board

• DABK-7031 (Option)

- ㉞ DIO-10 board

< Connector panel >

- ㉟ CP-173A board
- ㊱ CP-173B board
- ㊲ SW-453 board
- ㊳ SW-454 board

• DABK-7032 (Option)

- ㊴ MEM-40B board

• DABK-7033 (Option)

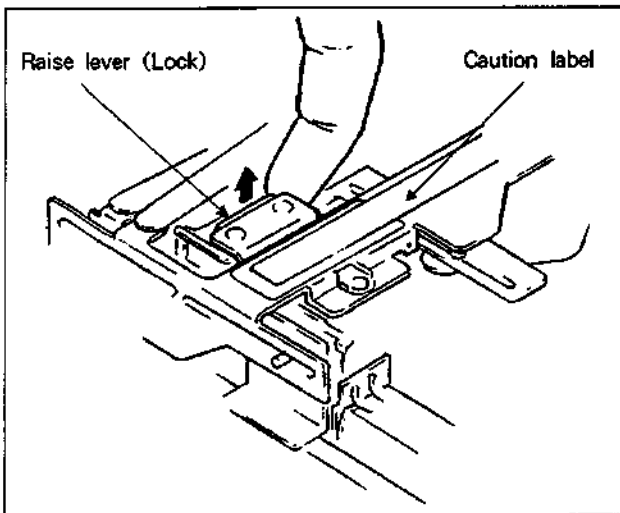
- ㊵ IF-283 board

2-3. Cassette Compartment Service Information

1) Releasing the cassette compartment lever

Be sure to release the lever (lock) before turning (by hand) the cassette control motor's worm gear to move the cassette holder when the cassette compartment is to be replaced, etc.

Raise the lever (lock) as shown below to release the lock.



2) Extracting a cassette tape when EJECT and cassette UP are inoperational.

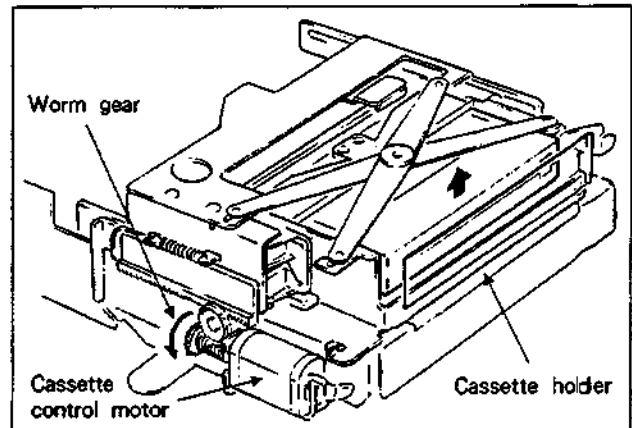
If the EJECT operation does not work or if the cassette compartment does not go up, extract the cassette tape by following the procedure below.

Procedure

- (1) Turn off the POWER switch.
- (2) Remove the top panel.(Refer to 2-1.)
- (3) Check whether the tape is out of the cassette or contained in the cassette.

If the tape is contained in the cassette, do the following :

- (4) Turn the cassette control motor's worm gear as shown by the arrow to raise the cassette holder.

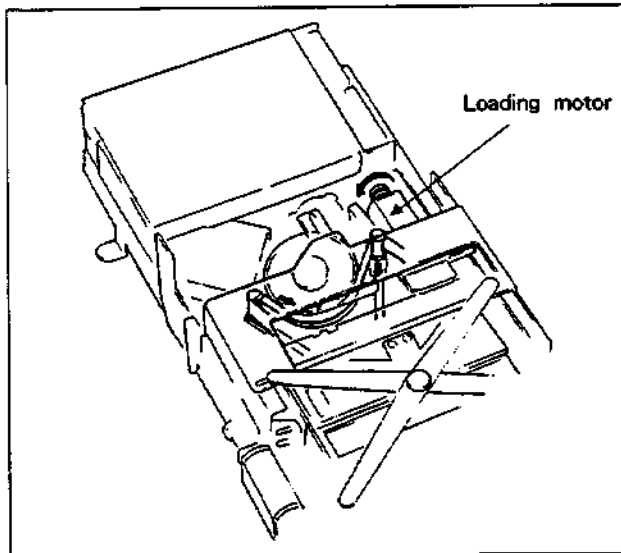


- (5) Eject the cassette when the cassette door on the front panel opens upward in link with the raising of the cassette holder (cassette tape).
- (6) Turn the worm gear until the cassette is positioned to be taken out.
- (7) Check for any problems after taking out the cassette. Execute proper countermeasures if necessary.

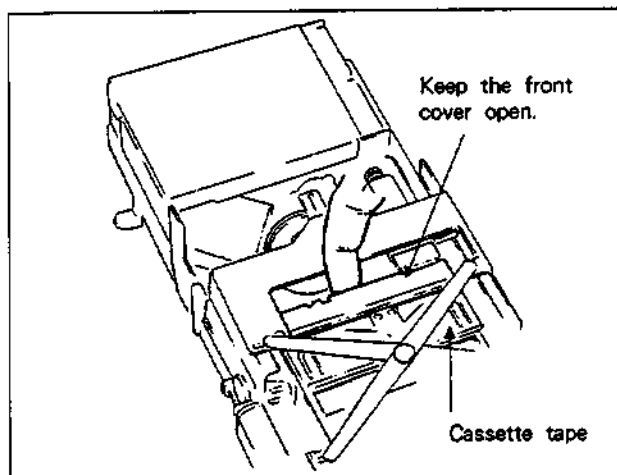
If the tape is out of the cassette, do the following:

- (4) Turn (by hand) the loading motor pulley on the mechanical deck, as shown by the arrow (ccw).

Unload the eject guide to return it. The tape will then be in the loading position.



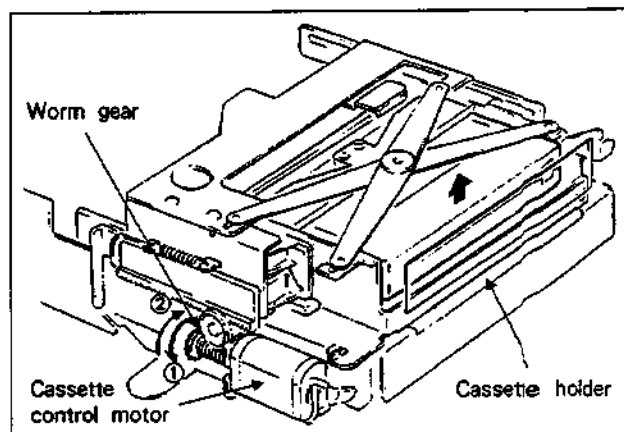
- (5) Remove the cassette compartment. (Refer to 2-1.) Slowly take out the cassette compartment while keeping the front cover open with your fingers.



- (6) Carefully take out the tape remaining in the unit (mechanical deck) without scratching it.
- (7) While keeping the cassette's front cover open, turn the reel hub in the cassette to wind the tape around the reel.

- (8) Turn the cassette control motor's worm gear to raise the cassette holder, as shown by the arrow ①. Then take out the cassette. Check for any problems after taking out the cassette. Execute proper countermeasures if necessary. After executing countermeasures, install the cassette compartment on the mechanical deck. To install, turn the worm gear in reverse to lower the cassette holder, as shown by the arrow ②. Turn the worm gear until the cassette holder goes all the way down. Then attach the cassette compartment to the MD with the four screws (+ B2 x 3).

Turn on the POWER switch to return the cassette compartment to its proper position.



3) Operation Without the Cassette Compartment (Using the cassette weight and cassette compartment dummy connector)

To operate the unit while the cassette compartment is removed, use the cassette compartment dummy connector* to stop the function of the cassette compartment motor control. Also use the cassette weight (J-6224-140-A) to insert a cassette (test tape, etc.) and to operate the unit.

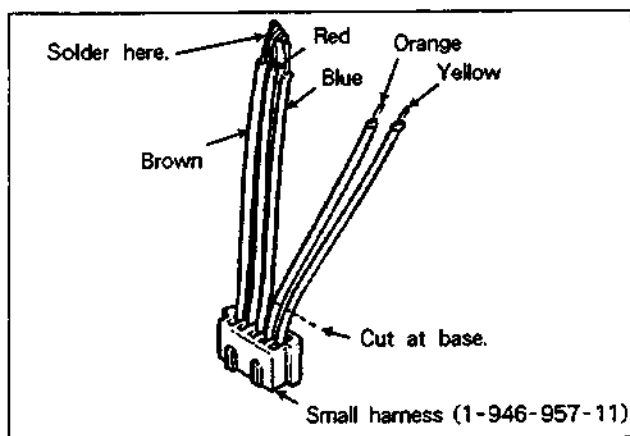
* About the cassette compartment dummy connector
The cassette compartment dummy connector is used to short pins 1, 2, and 3 of the CN106 connector on the DR-139 board.

You can make it simply in the following way using a small harness (CCP).

Required item :

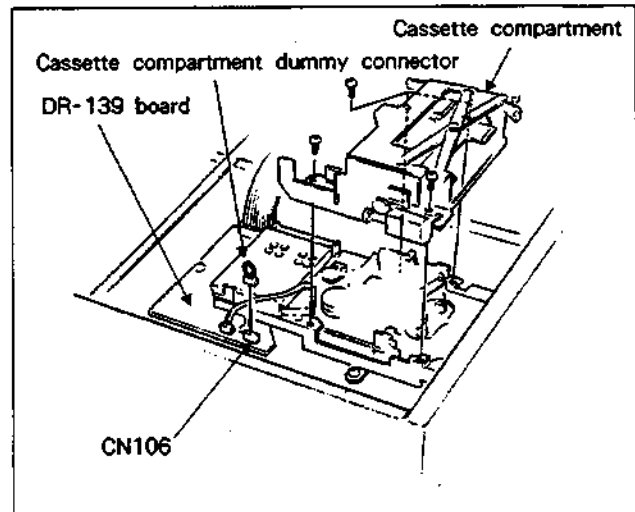
Small harness (CCP), part number 1-946-957-11

- (1) Cut the orange and yellow lead wires of the harness (CCP) at the base as shown in the figure.
- (2) Short (solder) the three remaining lead wires (red, brown, and blue) as shown in the figure.

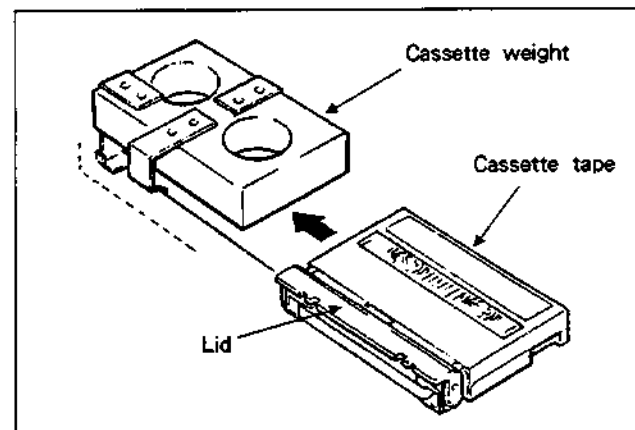


Using the Cassette compartment dummy connector and cassette weight

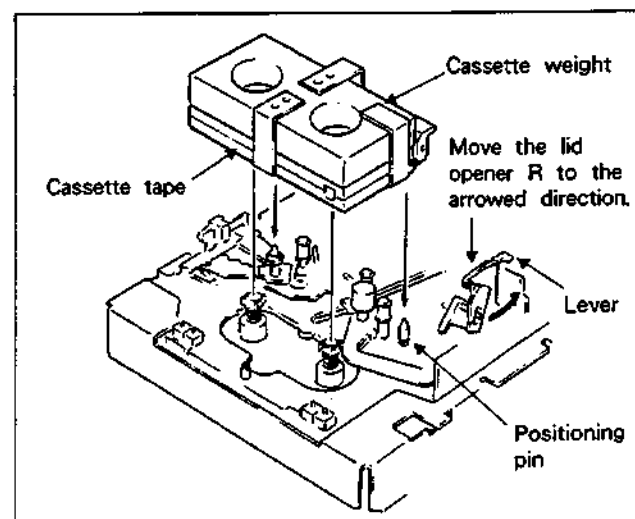
- (1) Remove the top panel.
- (2) Remove the cassette compartment.
(Refer to the removal procedure in 2-1.)
- (3) Insert the cassette compartment dummy connector into the CN106 connector on the mechanical deck's DR-139 board.



- (4) Attach the cassette tape (test tape, etc.) to the cassette weight.



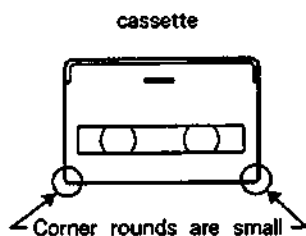
- (5) Align the cassette weight attached the cassette tape over the cassette positioning pin and mount it on the mechanical deck.



2-4. Precautions for the main parts replacement procedure

2-4-1. Installation position of the front panel and cassette compartment

Some DAT cassettes have a different external shape with a small corner round as shown below.



Using this type of cassette causes the round part of the corner of cassette tape being caught in the front panel window if the gaps between the cassette and the insertion window of the front panel are insufficient as shown below, and the error message "ERROR 2-21" may be displayed on the display of the front panel.

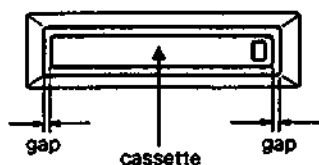
- ① DATM assembly (DATM-06R)
- ② Cassette compartment assembly
- ③ Front panel assembly

Ensure to have spaces between the cassette and front panel window when reinstalling the above parts after exchanging them for repairment.

Adjust the installing position within the range of the holes in order to install the front panel assembly and DATM assembly. Install the whole DATM by clockwise to make gaps easier.

After installation, carry out an eject operation several times by using an optional cassette tape and confirm that the both sides of the cassette tape do not touch the front panel window.

the front panel cassette window



2-5. Chip Part Replacement Procedure

Tools : Soldering iron of 20W (Use a temperature controller, if possible, which can set control the iron temperature to $270 \pm 10^\circ\text{C}$)

Solder (0.6 mm dia.)

Desoldering metal braid (Solder wick or equivalent)

Tweezers

Soldering Conditions : Tip temperature ; $270 \pm 10^\circ\text{C}$
Within the 2 seconds.

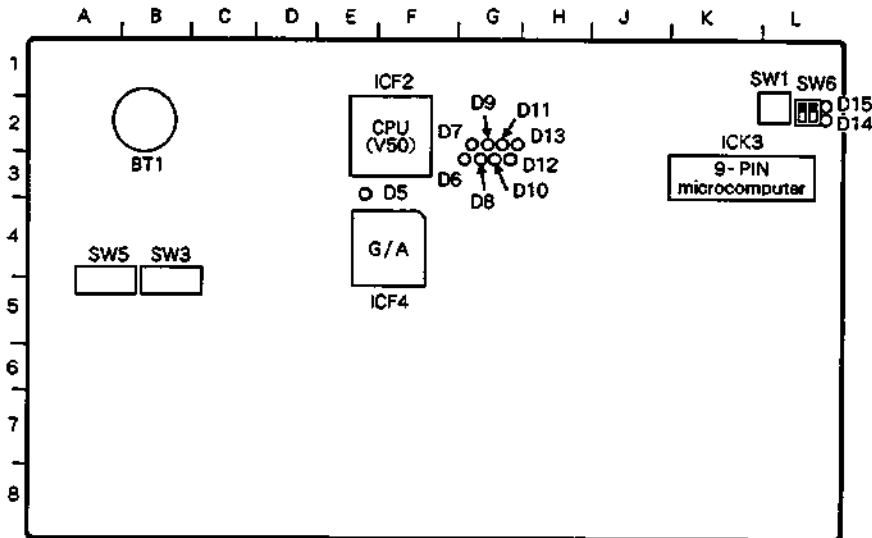
1. To remove a resistor or capacitor, place the tip of a soldering iron on chip parts to heat the parts, and then move it horizontally for removal while being desoldered.
For removal of a diode or transistor, heat the one side, with two pins, of chip parts at the same time, set the parts up when desoldered, and remove the two pins.
And then, remove the pin on another side.
2. Absorb solder by using a desoldering metal braid to smooth the land surface of board after removal.
3. Confirm by visual check that no pattern of the removed chip parts is peeled off and no adjacent parts is damaged or bridged.
4. Perform a thin pretinning on the pattern.
5. Place new chip parts on the pattern to solder its both sides.

Note :

- The chip part removed should not be used again.
- When mounting the new chip part, should not shift so that it not short.
- Use the soldering iron vertically as much as possible.
- When mounting the new chip part, heat it from pattern side. Never contact the tip of the soldering iron to the part.

2-6. SERVICE INFORMATION CONCERNING THE SY-155B BOARD (SYSTEM CONTROL)

2-6-1. LED for confirming the operations of the SY-155B board



SY-155B Board
(component side)

There are 11 LED, D5-D15, to confirm the operations of the SY-155B board.

The following explains the workings of each LED.

D5 (RED) : HARD INITIALIZE completion TALLY (SYS-INIT)

- Lights when the power source voltage monitoring circuit (ICK2) is reset.
- Extinguished when initialization (SYS-INIT ROUTINE) is completed.

D6 (RED) : BACKUP MEMORY INITIALIZE TALLY

- Lights when the backup memory is initialized at the DEFAULT value.

D7 (GREEN) : SYS normal TALLY

- Blinks when the system component (SYSCON) operates normally. (200ms interval)

D8 (YELLOW) : SP-13 MUTE TALLY

- Lights when the system activates muting on the SP-13 board

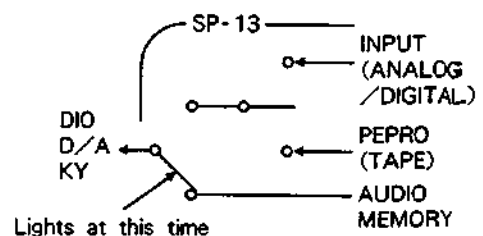
MUTE

- PB AUDIO MUTE
- SP-13 OUTPUT MUTE

(Lights in each case.)

D9 (YELLOW) : AUDIO MEMORY DATA OUT TALLY

- AUDIO MEMORY (MEM-40 board) Lights when data is output from the SP-13 board
- Lights when the monitor is set to REPRO in the SYNC REC (RMW) mode.



D10 (YELLOW): RMW TALLY

Lights when the operating mode of the CXD1008/1009 (SP-13 board) is RMW (Read Modify Write).

- ① When the recording system mode is SYNC REC.
- ② When SOFT tape (wide track pitch) is loaded.
- ③ When the leading head is selected on the ERROR RATE HEAD menu (SERVICE MENU)
- ④ When trailing head is selected on the TEST signal recording menu (SERVICE MENU)

D13 (RED) : 9-PIN data signal transmission TALLY (9-PIN microcomputer ← SYSCON)
 • Lights when data is transmitted to a 9-PIN microcomputer.

D14 (RED) : 9-PIN data signal reception TALLY (SCU → 9-PIN microcomputer)
 • Lights when receiving data from a SCU (μ PD71051) ICK4.

D15 (GREEN) : 9-PIN data signal transmission TALLY (SCU ← 9-PIN microcomputer)
 • Lights when data is transmitted to a SCU.

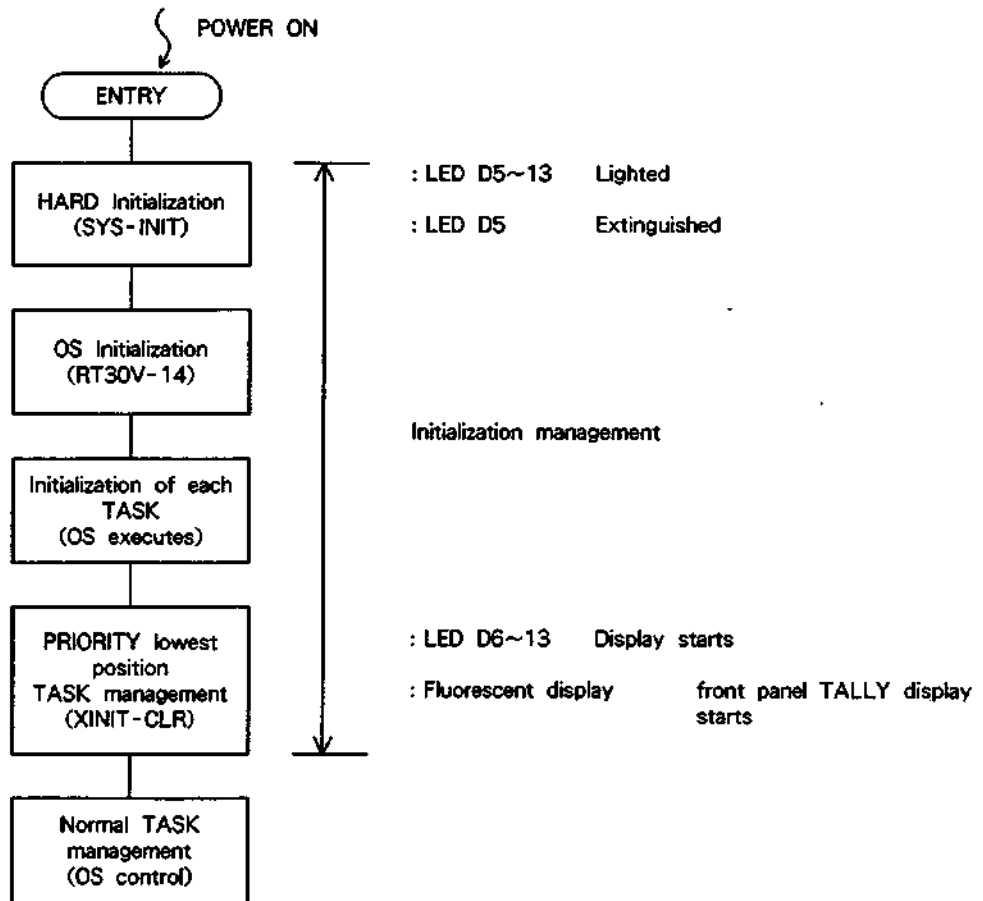
Conditions	08/09 MODE	Leading head mode	Trailing head mode
The above	② or ③ or ④	AUDIO SUB (PB)	AUDIO SUB REC
SYNC REC	SAFE	AUDIO SUB (PB)	AUDIO SUB REC
SYNC REC	ASSEMBLE	AUDIO SUB (PB)	AUDIO SUB REC
SYNC REC	AUDIO INSERT	AUDIO SUB (PB)	AUDIO SUB REC PB
SYNC REC	SUB INSERT	AUDIO SUB PB	AUDIO SUB (PB) REC
MONITOR REC	SAFE	AUDIO SUB REC	AUDIO SUB (PB)
MONITOR REC	ASSEMBLE	AUDIO SUB REC	AUDIO SUB (PB)
MONITOR REC	AUDIO INSERT	AUDIO SUB REC PB	AUDIO SUB (PB)
MONITOR REC	SUB INSERT	AUDIO SUB PB	AUDIO SUB (PB) REC

○ mark : Sound comes out from here

D11 (GREEN) : 9-PIN microcomputer normal TALLY
 • Lights when communication between the 9-PIN microcomputer (ICK3) and the system (ICF2) has been confirmed.

D12 (RED) : 9-PIN data signal reception TALLY (9-PIN microcomputer → SYSCON)
 • Lights when receiving data from a 9-PIN microcomputer.

LED display management after power is on



2-6-2. Replacing the SY-155B board

The following two items are necessary when replacing the SY-155B board

- (1) Initialization of the SETUP item to back up
- (2) Writing to the SERVO system DPG and AGC DATA backup memory

Make sure that the following time information (①~⑤) is reset by doing step (1).

① HOUR TIME (DRUM ON TIME) :

display menu, service menu

② OPERATION TIME : service menu

③ TAPE RUNNING TIME : service menu

④ TOTAL HOUR TIME : service menu

⑤ THREAD/UNTHREAD COUNTER :

service menu

Consequently, before replacing the SY-155B board make a note of this information. After replacing, it is important to figure out the sum of the information taken note of and the newly displayed time to set the correct time.

SY-155B board replacing procedure

Step 1 Make a note of the hour meter data

- (1) Turn on the power (POWER) to the unit.
- (2) Open the service menu by simultaneously pressing the STOP, DISPLAY and SET keys on the front panel.
- (3) While pressing the DATA key, turn the search dial to the right to set the work area of the display of the front panel to the following.
Display (work area) : oPEN
- (4) Press the SET key.
- (5) While pressing the MENU key, turn the search dial to the right, display the hour meter data (①~⑤) and make a note of them.
- (6) Turn the power (POWER) OFF.

Step 2 Removing the SY-155B board

Carry out the following procedure while referring to the instructions for "2-1. Removal of boards and major mechanical parts".

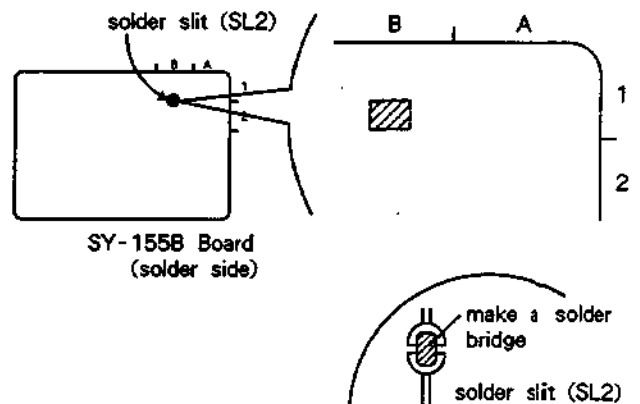
Note : Carry out removal with the power (POWER) turned off.

- (1) Remove the top and bottom panels from the unit.
- (2) Open the ADA-18 board and the SP-13 board
- (3) Remove the DIO-10 board and the optional MEM-40B board (if the DABK-7032 is installed).
- (4) Remove the harness from each connector of the SY-155B board.
- (5) Remove the SY-155B board from the bottom panel.

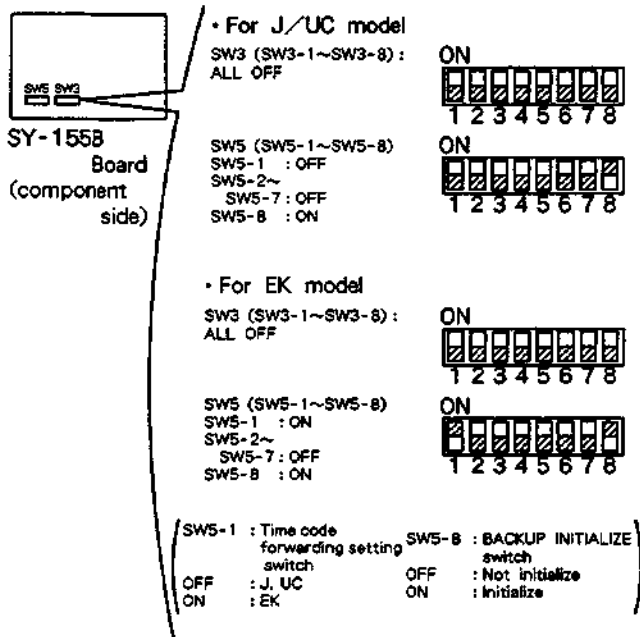
Step 3 Installation of the new SY-155B board

(1) Carry out the following procedures before installing the SY-155B board in the unit.

- ① Solder (solder bridge) the battery backup solder slit (SL2) (see diagram below) on the solder side of the SY-155B board.



- ② Set the bit switches (SW5, SE,3) on the component side of the SY-155B board in the following way.



- (3) Install the SY-155B board in the unit.
(4) Attach the bottom panel to the unit.

Step 4 Initialization of set up data and time information data

- (1) Turn the main unit power switch (POWER) to ON.
- (2) Confirm that LED D6, that confirms the operation of the SY-155B board, is lighted.
(Execute the initialization of the back up memory TALLY)
- (3) Confirm that the FL display of the front panel display is as below.
(That is ; SERVO DPG, AGC DATA CLEAR)
FL display : Error 2-05
- (4) Turn main unit power switch to OFF.
- (5) Set switch number 8 of the SY-155B board's bit switch (SW5) to OFF.

Note : Make sure that this switch (SW5-8) is off. If it is left on, the back up memory will be initialized each time the power switch is turned on.

- (6) Confirm that the SY-155B board's LED D6 (red) goes out when the power switch is turned on. (At this point the Error 2-05 indicator is displayed on the FL display because the SERVO is not yet adjusted.)

Further, confirm that the time code indicator (upper left) and time code mode indicator (time area, upper right) are set in the tape time area of the FL display in the following way.

Destination	Tape time area	
	Set time code display	Time code mode display
J, UC	SMPTE	DF
EK	EBU	—

If the display is different, confirm the setting of switch 1 (time code setting switch that depends on the destination) of the SY-155B board's bit switch (SW5) and redo the step 4 procedure form (1).

(It must be redone. The TC format's default value is set by the number 1 switch during backup memory initialaization.)

Step 5 Writing the servo system's DPG and AGC data into memory

- (1) Perform adjustment of DPG and AGC by opening up the test menu in the service menu.
Concerning adjustment. Perform it while referring to 4-21 page, 4-5-1. SWP position adjustment and 4-22 page, 4-5-2. ATG playback AGC adjustment
- (2) Confirm that Error 2-05 is not displayed in the FL display. Further, insert a cassette that has finished being recorded (music) and replay it to confirm that the sound is reproduced.
- (3) Turn the power switch (POWER) to OFF.
- (4) Turn the power switch (POWER) to ON.
- (5) Confirm that the following indicators are not displayed on the FL display.

Display indicator (work area) : Error 1-05

If the indicator is displayed confirm the battery backup's solder slit.

- (6) Turn the power switch (POWER) to OFF.
- (7) Install the optional board.
- (8) Close the SP-13 board and ADA-18 board and fasten with screws.
- (9) Put on the top panel.

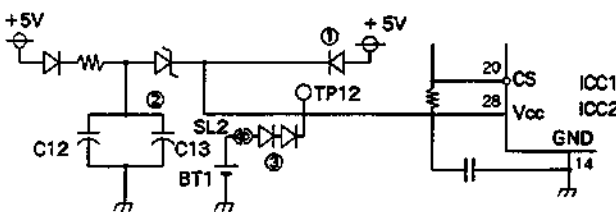
2-6-3. Replacing the lithium battery (CR-2450)

Replace the SY-155B board's lithium battery (CR-2450) for battery backup according to the following procedure.

Name of parts

Lithium battery (CR-2450) : 1 (part number : 1-528-229-11)

Explanation of operation



In the above circuits, Vcc +5V and CS pull-up resistor +5V are supplied to ICC1 and ICC2 by three power circuits as follows :

- ① Power source of the unit
 - ② +5V from C12 and C13 charged by the power source of the unit.
 - ③ +3V from BT1
- During operation of the unit the above voltages are supplied by ①, and ② recharges.
 - When the unit is off the above voltages are supplied by ②.
 - When ② is completely discharged, the above voltages are supplied by ③.

In this way the ICC1's and ICC2's SRAM data is backed up.

Replacing procedure

- (1) Turn the power switch (POWER) of the PCM-7030 to ON and wait for more than 10 minutes.
- (2) Turn the power switch (POWER) to OFF.
- (3) Remove the SY-155B board from the unit.
- (4) Remove the solder from the solder slit (SL2) on the solder side of the SY-155B board.
- (5) Remove the lithium battery (BT1) from the SY-155B board.
- (6) Solder (solder bridge) a new lithium battery (CR-2450).
- (7) Solder (solder bridge) the solder slit (SL2).
- (8) Install the SY-155B board in the unit.
- (9) Turn the power switch (POWER) to ON.
- (10) Confirm that the ARAM (ALARM) indicator on the front panel is extinguished.

Precautions :

- Perform the change carefully because the contents of the SRAM will be destroyed if the pins of TP12, ICC1 and ICC2 are shorted.
- In procedure (8) above if ARAM (ALARM) is lighted (Error 1-05 or Error 2-05 are displayed in the FL display), their ALARM management is carried out. (Refer to the item on setting the servo data)
- Replace them after confirming that the voltage of the new batteries is 2.6V or more.

2-7. SELF-DIAGNOSIS (ERROR CODE)

2-7-1. Error codes

This section shows the error codes and the malfunctioning parts that can be assumed from the error codes displayed (refer to the OPERATION MANUAL's pages 7-6, 7-2-2. for the section on error codes) by the self-diagnosis function of the SYS CPU (SY-155B board's ICF2, μ PD70216 [V50]). With these it is possible to know what caused the error.

Error code1-** (Error 1-**)

Errors that occur related to the SY-155 board (system control)

Error code	Error content	Error level	Assumed malfunctioning parts
1-01	Error in ADDRESS BUS	5	<ul style="list-style-type: none"> • μ PD70216L (CPU) (ICF2) • CXD8139AQ (ICF4) • ADDRESS (A0~A19) pattern
1-02	Error in DATA BUS	5	<ul style="list-style-type: none"> • μ PD70216L (CPU) (ICF2) • CXD8139AQ (ICF4) • DATA (D0~D15) pattern
1-03	Error in ROM	5	<ul style="list-style-type: none"> • AM27C010 (ROM) (ICC3, ICC4) • ADDRESS, DATA or CONTROL pattern in ROM
1-04	Error in RAM	5	<ul style="list-style-type: none"> • μ PD43256AGU (RAM) (ICC1, ICC2) • ADDRESS, DATA or CONTROL pattern in RAM
1-05*	BACKUP MEMORY DATA has been destroyed	5	<ul style="list-style-type: none"> • Battery backup circuit • RAM • TL7705CPS (RESET IC) (ICK2) • SN74LS03NS (ICD3)
1-10	Invalid interrupt occurred	5	<ul style="list-style-type: none"> • μ PD71059GB (ICU) (ICG1, ICH1) • ADDRESS, DATA or CONTROL pattern in ICU

* Refer to the 2-7-2. Remedy for error code "Error 2-05" on page 2-31.

Error code 2-*** (Error 2-***)

Errors that occur related to the SV-123 board
(servo)

Error code	Error content	Error level	Assumed malfunctioning parts
2-02	Error in DATA BUS	5	<ul style="list-style-type: none"> • CXD8139AQ (ICF4), SY-155 board (SV I/F circuit) • CXP80524 (CPU) (IC101), SV-123 board • 8P harness, SV-123 board
2-04	Error in RAM	5	<ul style="list-style-type: none"> SV-123 board • CXP80524 (CPU) (IC101)
2-05*	BACKUP MEMORY for servo has been destroyed	5	Same as error code 1-05 (System backs up servo-system's DPG and AGC data)
2-10	Interrupt error during communications	5	<ul style="list-style-type: none"> SV-123 board • CXP80524 (CPU) (IC101) • SV INT signal pattern • 8P harness
2-20	Position error inside cassette insertion part	5	<ul style="list-style-type: none"> • Cassette compartment (mechanical trouble) • Cassette compartment sensors (CC UP, CC DOWN signals) and harness
2-21	Malfunction inside cassette insertion part	5	<ul style="list-style-type: none"> • Cassette tape is stuck in the cassette compartment • Cassette compartment sensors (CC UP, CC DOWN signals) and harness • Cassette compartment motor and cassette compartment motor drive circuit (DR-139 board)
2-22	Position error on tape guide	5	<ul style="list-style-type: none"> • Mechanical deck (tape guide, pinch roller, etc.) • MD sensor (RE STOP, RE FWD, LIM SW signals) and harness
2-23	Malfunction of cassette loading motor	5	<ul style="list-style-type: none"> • Mechanical deck • MD sensor (RE STOP, RE FWD, LIM SW signals) and harness
2-24	Malfunction of pinch roller	5	<ul style="list-style-type: none"> • Loading motor and loading motor drive circuit (DR-139 board)
2-30	Malfunction of head drum motor	5	<ul style="list-style-type: none"> • Head drum • Drum motor and drum motor drive circuit (DR-139 board) • DFG sensor (drum FG) and harness

* Refer to the 2-7-2. Remedy for error code "Error 2-05" on page 2-31.

Error code	Error content	Error level	Assumed malfunctioning parts
2-31	Head drum motor doesn't revolve (Drum stopped)	5	<ul style="list-style-type: none"> • Head drum • DFG sensor and harness • Drum motor and drum motor drive circuit (DR-139 board)
2-32	Abnormal head drum rotation speed (Drum revolves at high speed)	5	<ul style="list-style-type: none"> • Drum motor drive circuit (DR-139 board) • DFG sensor and harness
2-33	Head drum motor doesn't stop	5	<ul style="list-style-type: none"> • Drum motor drive circuit (DR-139 board) • DFG sensor and harness
2-40	Capstan motor doesn't rotate	5	<ul style="list-style-type: none"> • Tape is wrapped around the pinch roller (or tape guide) • Capstan motor and capstan motor drive circuit (DR-139 board) • CFG sensor (capstan FG) and harness
2-41	Capstan motor won't stop	5	<ul style="list-style-type: none"> • Capstan motor drive circuit (DR-139 board) • CFG sensor and harness
2-50	Take-up reel motor won't revolve	5	<ul style="list-style-type: none"> • Reel motor • Tape end sensor • Cassette tape load is abnormal • TFG sensor (Take-up FG) and harness
2-51	Supply reel motor won't revolve	5	<ul style="list-style-type: none"> • Reel motor • Tape end sensor • Cassette tape load is abnormal • SFG sensor (supply FG) and harness
2-52	Take-up reel motor won't stop	5	<ul style="list-style-type: none"> • Take-up reel drive circuit (DR-139 board) • TFG sensor and harness
2-53	Supply reel motor won't stop	5	<ul style="list-style-type: none"> • Supply reel drive circuit (DR-139 board) • SFG sensor and harness
2-60	Abnormal tape travel motion	5	<ul style="list-style-type: none"> • Supply torque (torque value adjustment) • Tape guide and head drum, etc.
2-70	Condensation on head drum	5	<ul style="list-style-type: none"> • Condensation sensor

Error code3-*** (Error 3-***)

Errors that occur related to the SP-13 board (signal management)

Error code	Error content	Error level	Assumed malfunctioning parts
3-02	Error in DATA BUS	5	<ul style="list-style-type: none"> • CN10, 20P flexible wire • CXD8184AQ (ICD3) (SYS L/F circuit)
3-10	Error in clock system (forward head)	5	<ul style="list-style-type: none"> • CN9, 20P flexible wire • CXD1009Q (ICD9)
3-11	Error in clock system (reverse head)	5	<ul style="list-style-type: none"> • CN9, 20P flexible wire • CXD1009Q (ICJ9)
3-12	Error in clock system ("DAT FRAME")	5	<ul style="list-style-type: none"> • CN9, 20P flexible wire • CXD8185AQ (ICC3) • CXD1008Q (ICC9)

Error code4-*** (Error 4-***)

Errors that occur related to the DIO-10 board (digital I/O)

Error code	Error content	Error level	Assumed malfunctioning parts
4-02	Error in DATA BUS	4	<ul style="list-style-type: none"> • CN15 (SY-155 board), CN3 (DIO-10 board) 48P D-SUB connector • CXD8134Q (IC12) (SYS L/F CIRCUIT)

Error code5-*** (Error 5-***)

Errors that occur related to the TC-58 board (time code reader/generator)
(When the DABK-7030 option is installed)

Error code	Error content	Error level	Assumed malfunctioning parts
5-02	Error in DATA BUS	4	<ul style="list-style-type: none"> • CN11 (SY-155 board), CN2 (TC-58 board) 30P flexible wire • CXD8140Q (ICG4) (SYS L/F circuit)

Error code 6- (Error 6-**)**

Errors that occur related to the MEM-40B board
(memory-start)

(When the DABK-7032 option is installed)

Error code	Error content	Error level	Assumed malfunctioning parts
6-01	Error in ADDRESS BUS	4	<ul style="list-style-type: none"> • CN13 (SY-155 board), CN1 (MEM-40A board) 48P D-SUB connector • CXD8163AQ (IC1) (SYS I/F circuit)
6-02	Error in DATA BUS	4	<ul style="list-style-type: none"> • CN13 (SY-155 board), CN1 (MEM-40A board) 48P D-SUB connector • CXD8163AQ (IC1) (SYS I/F circuit)
6-04	Error in RAM	4	<ul style="list-style-type: none"> • CN13 (SY-155 board), CN1 (MEM-40A board) 48P D-SUB connector • CXD8163AQ (IC1) (SYS I/F circuit) • TMS44C256-00 (IC2~IC9)

Error code 8- (Error 8-**)**

Errors that occur related to the IF-283 board (RS
-232C Interface)

(When the DABK-7033 option is installed)

Error code	Error content	Error level	Assumed malfunctioning parts
8-02	Error in DATA BUS	4	<ul style="list-style-type: none"> • CN12 (SY-155 board) CN1 (RM-77 board) CN2 (RM-77 board) CN1 (IF-283 board) 30P flexible wire • IC1, 2, 3, 5 (RM-77 board) (SYS I/F circuit) • IC1 (IF-283 board) (SYS I/F circuit)

2-7-2. Remedy for error code "Error 2-05"

The SWP position DPG data and ATF playback AGC data are stored in the backup RAM of the SY-155B board. When the backup RAM is initialized if the SY-155B board's lithium battery is exhausted or the ROM chip has been improperly mounted, "Error 1-05" (backup memory destroyed) as well as "Error 2-05" occurs. In this case, write both servo-data into the backup RAM in the following way.

Procedure

Step 1. Opening the test menu in the service menu

- (1) Press the SET key while holding down the STOP key and the DISPLAY key. The service menu opens.

"[dSPLY] cLoSE"

- (2) While pressing the MENU key, turn the search dial and set the following display.

"[tEst] cLoSE"

Next, while pressing the DATA key, turn the search dial and set the display to "oPen", and press the SET key. The test menu in the service menu opens.

"[tEst] oPen"

- (3) While pressing the MENU key, turn the search dial and set the following display.

"[trnSP] cLoSE"

Next, while pressing the DATA key, turn the search dial and set the display to "oPen", and press the SET key. The servo menu in the test menu opens.

"[trnSP] oPen"

Step 2. Writing the DPG data into RAM

- (1) While pressing the MENU key, turn the search dial and set the following display.

"dPG Adj 00 oFF"
 ↑
 DPG data

- (2) Insert the test tape TY-7111D, and press the PLAY key to put it in the playback mode.

- (3) While pressing the DATA key, turn the search dial and set the display to "on", and press the SET key.

- (4) If the DPG data is other than 00, while pressing the DATA key, turn the search dial and set the display to "oFF", and press the SET key.

The DPG data is read into the backup RAM.
DPG data's guideline : 5 * to 6 *

Step 3. Writing the AGC data into RAM

- (1) While pressing the MENU key, turn the search dial and set the following display.

"AGc Adj 00 00 oFF"
 ↑
 AGC data

- (2) Insert the test tape TY-7111D, and press the PLAY key to put it in the playback mode.

- (3) While pressing the DATA key, turn the search dial and set the display to "on", and press the SET key.

The display will change from being lit steadily to flashing, and begin automatic adjustment.

- (4) If the display changes from flashing to being lit steadily, while pressing the DATA key, turn the search dial and set the display to "oFF", and press the SET key.

The AGC data is read into the backup RAM. If an "Error" display appears, perform steps (3) and (4) above.

AGC data guideline : 1 * to 2 *

Step 4. Confirmation

- (1) After turning the power off, turn it on again. Confirm that "ERROR 1-05" or "ERROR 2-05" are not displayed.

- (2) Playback a pre-recorded (music sound) tape. Confirm that the SERVO indicator of the front panel is lit, and that the sound is coming out.

- (3) Record the audio signals in the assemble mode. After recording, playback the tape.

Confirm that the SERVO indicator of the front panel is lit, and that the sound is coming out.

Note : If "ERROR 1-05" incessantly occurs, the lithium battery may be exhausted. In this case, it is necessary to replace it.

2-8. SERVICE MENU

The SERVICE MENU consists of the following two submenus.

DISPLAY MENU : Displays data such as the hour meter and FS counter.

TEST MENU : Execute self-diagnosis and each adjustment mode.

You can enter/exit (OPEN/CLOSE) the SERVICE MENU using the STOP, DISPLAY, SET, and RESET keys on the front panel as follows.

To enter the SERVICE MENU

Press the STOP, DISPLAY, and SET keys simultaneously (press all three keys at the same time). When you enter the SERVICE MENU, the first item of the SERVICE MENU will appear on the FL tube display.

FL tube display message : [dSPly] cLoSE

To exit the SERVICE MENU

Press the STOP, DISPLAY, and RESET keys simultaneously (press all three keys at the same time).

Notes :

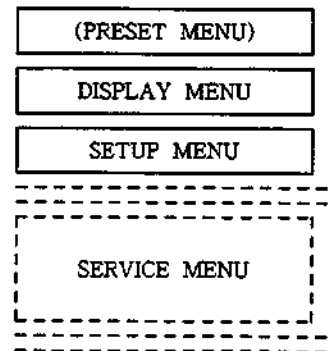
- The OPEN/CLOSE status of the SERVICE MENU and the SERVICE MENU settings will not be stored in the backup memory.

In other words, all settings are canceled when you turn OFF the power.

- When you turn ON the power, the SERVICE MENU status will be CLOSE.

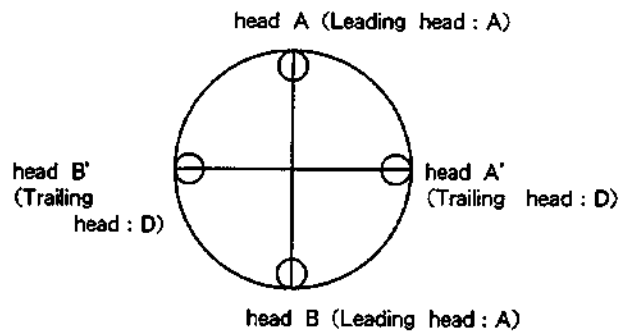
You can set and modify each item in the SERVICE MENU (DISPLAY MENU and TEST MENU) using the MENU, SET, RESET, and DATA keys and the SEARCH dial on the front panel. The setting data will be displayed in the Tape Time Area and Work Area of the FL tube display.

The SERVICE MENU follows the SETUP MENU in the menu hierarchy.



Head nomenclature

The four heads on the drum of this unit, as in the diagram below, include two Leading system heads (heads A and B) and two Trailing head system (heads A' and B').

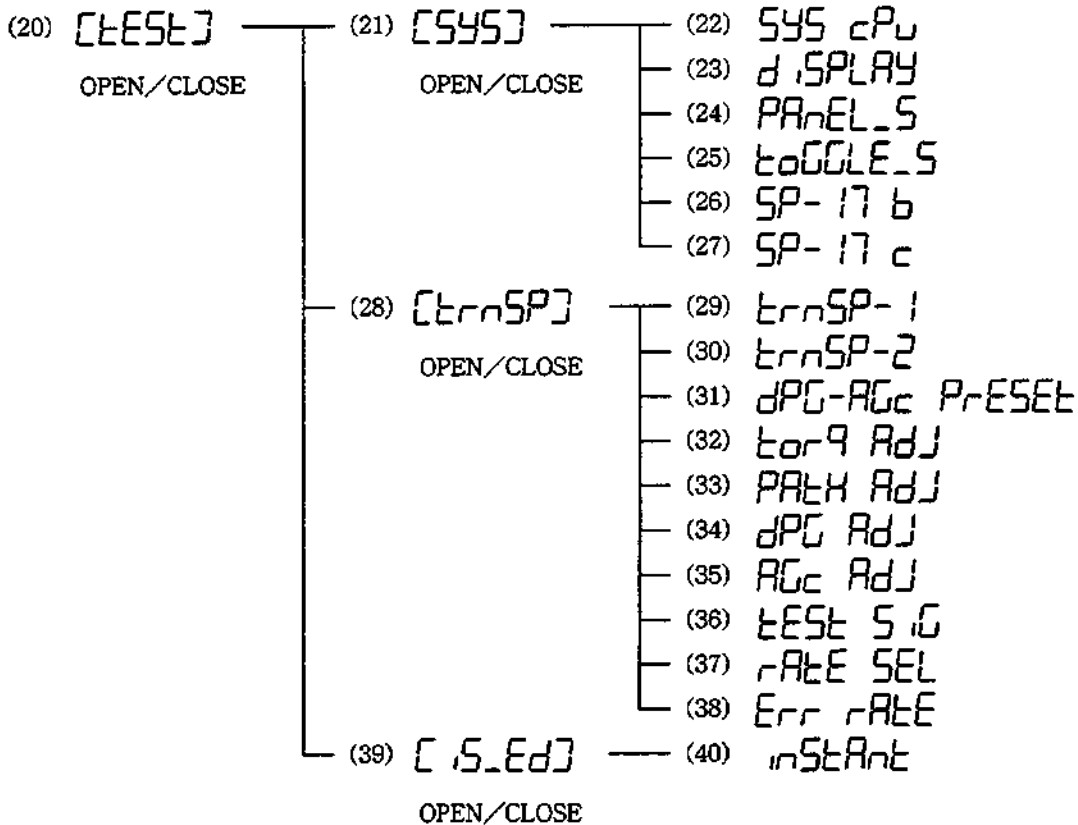
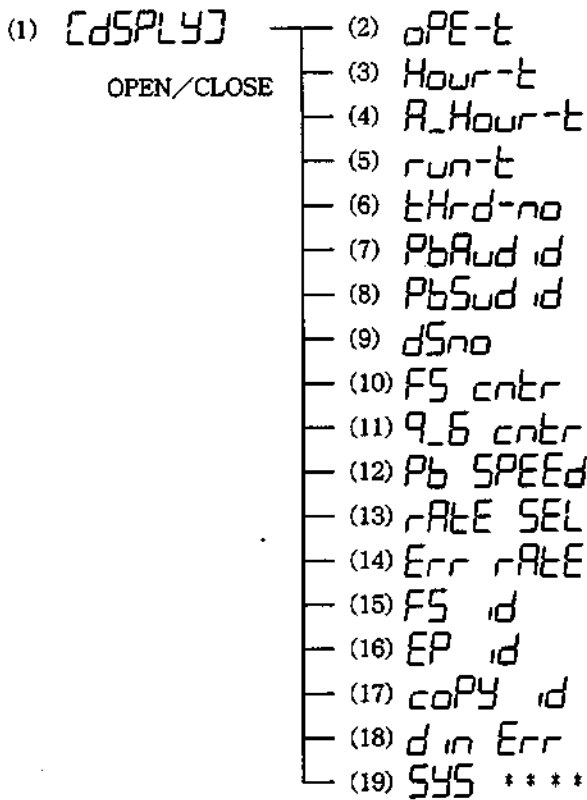


The nomenclature for these is as below :

nomenclature

+ (plus) azimuth head : A and A'
 - (minus) azimuth head : B and B'
 Leading head : (A-A, A-B) or (A, B)
 Trailing head : (D-A, D-B) or (A', B')

2-8-1. SERVICE MENU Structure



2-8-2. SERVICE MENU items

(1) [dSPLY] (Display)

Selects/cancels (OPEN/CLOSE) DISPLAY MENU items ((2) to (19)) in the SERVICE MENU.

Specification conditions : None

Specification method :

Hold down the DATA key and turn the SEARCH dial. Then, press the SET key to specify OPEN /CLOSE.

1) Enter (OPEN) the SERVICE MENU.

FL tube display message : [dSPLY] cLoSE

To select (OPEN) a DISPLAY MENU item

2) Hold down the DATA key and turn the SEARCH dial until the following message appears. Then, press the SET key.

FL tube display message : [dSPLY] oPeN
(flashing → ON)

3) After you enter (OPEN) the DISPLAY MENU, hold down the MENU key and turn the SEARCH dial to select the required DISPLAY MENU item ((2) to (18)). (Turn the dial until the required item appears on the FL tube display.)

To cancel (close) a DISPLAY MENU item

2) Hold down the DATA key and turn the SEARCH dial until the following message appears. Then, press the SET key.

FL tube display message : [dSPLY] cLoSE
(flashing → ON)

The DISPLAY MENU items ((2) to (18)) are listed below. After you enter (OPEN) the DISPLAY MENU, hold down the MENU key and turn the SEARCH dial to select the required DISPLAY MENU item ((2) to (18)). (Turn the dial until the required item appears on the FL tube display.)

Uses of the DISPLAY MENU items

HOUR METER : "oPE-t," "Hour-t," "run-t," and "thrd-no"

- Indicates the time to perform head cleaning and time to replace the drum, mechanism deck, and cassette compartment.

PB MAIN ID	: "Pb Aud id"
	• Main ID data during CAUTION 1-01 (main ID invalid).
	• Copy ID data.
PB SUB ID	: "Pb Sub id"
	• Sub-ID data during CAUTION 1-02 (sub-ID invalid).
FS COUNTER	: "Fs cnt"
	• Checks the EXT SYNC (the input Fs can be counted backward using the display data).
9.6K COUNTER	: "9.6 cnt"
	• Checks the VARI control clock to be input from REMOTE 37P (the input signal frequency is counted backward using the display data).
ERROR RATE	: "Err rAtE"
	• Error rate when the PB CONDITION TALLY (when the SET UP PB COND : BAD CONDITION is set) turns ON (lights when the condition deteriorates beyond 8×10^{-2}).
	• Measurement after replacing a drum and mechanism deck.
	• Measurement after servo-related adjustments (torque, tape path, DPG, AGC).
	• Measurement after RF-related adjustments (recording current, RF PLL).
FS ID	: "Fs id"
	• Fs (Sampling frequency) ID data
EMPHASIS ID	: "EP id"
	• EMPHASIS ID data
COPY ID	: "coPY id"
	• COPY ID data
DIN ERROR	: "din Err"
	• Error cause for flashing "D-I" message on FL tube display
	• Pro/consumer data of input digital audio signal

(7) PB Aud id (PB Main ID Data)

Displays the main ID data recorded on the playback tape in the Work Area of the FL tube display.

FL tube display message (Work Area) :

* * * * *
 ⑧ ⑦ ⑥ ⑤ ④ ③ ② ①

No.	ID Name	Display	Description
①	Format ID	0 1 2 3	AUDIO USE Reserved Reserved Reserved
②	ID1, Emphasis	0 1 2 3	OFF 50/15 μ sec Reserved Reserved
③	ID2, Fs	0 1 2 3	48kHz 44.1kHz 32kHz Reserved
④	ID3, Number of Channel	0 1 2 3	2channels 4channels Reserved Reserved
⑤	ID4, Quantization	0 1 2 3	16-bits linear 12-bits non linear Reserved Reserved
⑥	ID5, Track pitch	0 1 2 3	Normal Wide Reserved Reserved
⑦	ID6, Copy	0 1 2 3	Permitted Reserved Prohibited Pre recorded
⑧	ID7, pack contents	—	—

(8) Pb Sub id (PB Sub ID Data)

Displays the sub-ID data recorded on the playback tape in the Work Area of the FL tube display.

FL tube display message (Work Area) :

- * * * - * * *
 ④ ③ ② ①

No.	ID Name	Display	Description
①	Data ID	0	When 0, it has the meaning of ② ③ ④ below When not 0, it is invalid.
②	Control ID	4-bit Hex.	
③	Pack ID	0 ~ 7	Number of recorded packs.
④	P No.	000 ? 799 0AA 0BB 0EE	program number invalid lead in area lead out area (END ID)

(9) dSno (Sample Number)

Displays the difference between TARGET TC and PB TC by a word unit on the FL tube display.

FL tube display message (Work Area) :

Sign 0 0 0 ** ** (Word)

When the difference exceeds FFFFH, the data will flash.

(10) FS cntr (Fs Counter)

Displays the counter data of the EXT SYNC signal in the Work Area of the FL tube display.

FL tube display message (Work Area) :

- - - - * * * * (Hex.)

$$\text{Fs counter (Hex.)} = \frac{\text{Counter clock frequency (Hz)} \times 256}{\text{EXT clock frequency (Hz)}}$$

Counter clock 48kHz : 6.1440MHz
 (128Fs) 44.1kHz: 5.6448MHz

(11) 9.6 cntr (9.6K Counter)

Displays the counter data of the 9.6K clock signal input from the remote 37P in the Work Area of the FL tube display.

FL tube display message (Work Area) :

**** **** (HEX)
② ①

① Moving average of the 9.6K counter (average for 8 times)

② 9.6K counter value

$$\text{9.6K counter (Hex.)} = \frac{\text{Counter clock frequency (Hz)} \times 256}{\text{9.6K clock frequency (Hz)}}$$

Counter clock 48kHz : 1.536MHz
(32Fs) 44.1kHz: 1.4112MHz

(12) Pb SPEEd (PB Speed)

Displays the VARI speed data executed during VARI mode in the Work Area of the FL tube display.

FL tube display message (Work Area) :

Sign * * * %

Example of message :-12 5→-12.5 %

(13) rAtE SEL (Error Rate Select)

Selects and sets the head (Leading or Trailing) and channel (A or B) whose playback data will be used during Err rAtE (error rate is displayed).

Specification conditions :

The "tEST SiG" of the STOP mode and test menu must be OFF.

Specification method :

Hold down the DATA key and turn the SEARCH dial to display the required item on the FL tube display. Then, press the SET key. The items to be selected are listed below.

Display	Playback data to be selected
Auto	Complies with the recording system mode (RAW/RMW). • RMW : Average of Leading head A and B channels • RAW : Average of Trailing head A and B channels
d-Ab	Average of Trailing head A and B channels
d-A	Trailing head A channel
d-b	Trailing head B channel
A-Ab	Average of Leading head A and B channels
A-A	Leading head A channel
A-b	Leading head B channel

When you press the SET key, the display data will be selected (flashing → ON).

Note : When you select data besides "Auto," the ALARM indicator on the front panel will flash.

(14) Err rAtE (Error Rate)

Displays the error rate calculated from the playback data of the head and channel selected in the "rAtE SEL" menu, in the Work Area of the FL tube display. (Ignore fractions following two decimal places.)

FL tube display message (Work Area) :

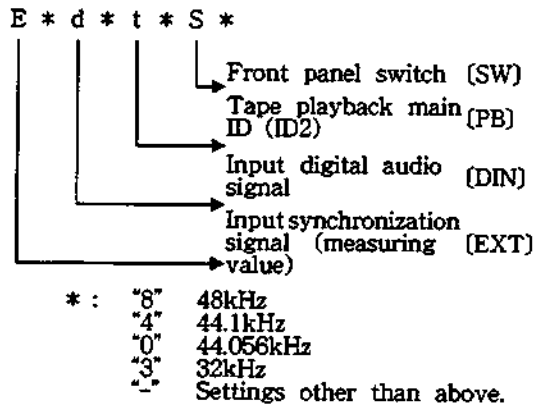
_-* (= *.* × 10^{**})

Example of message : 1_0-4 → 1.0 × 10⁻⁴

Note : No error rate will be displayed for invalid measurement data. Only a dashed line (- - - - -) will appear.

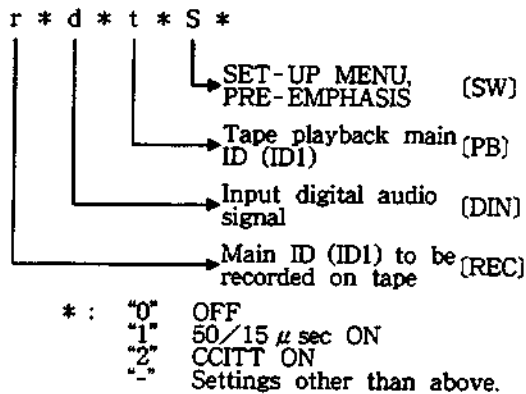
(15) FS id (Fs ID) : Displays each Fs ID in the Work Area of the FL tube display.

FL tube display message (Work Area) :



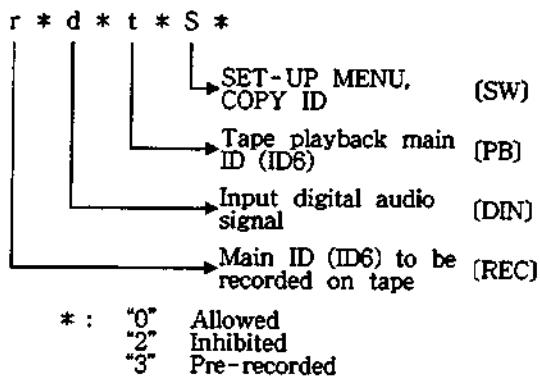
(16) EP id (EMPHASIS ID) : Displays each EMPHASIS ID in the Work Area of the FL tube display.

FL tube display message (Work Area) :



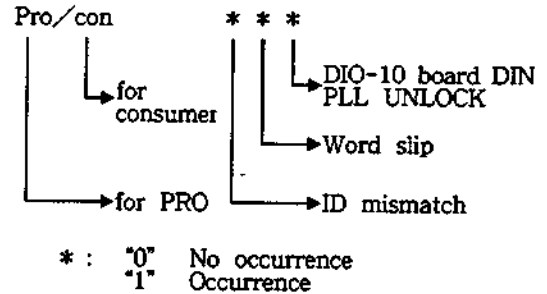
(17) coPY id (COPY ID) : Displays each COPY ID in the Work Area of the FL tube display.

FL tube display message (Work Area) :



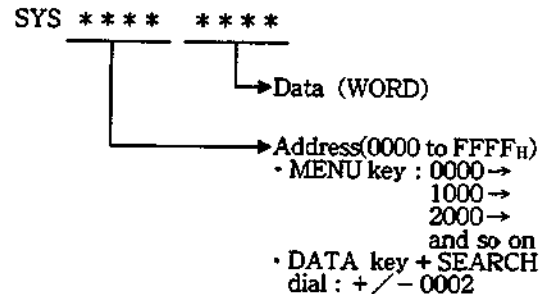
(18) din Err (DIN ERROR) : Displays (in the Work Area) the error cause for the flashing "D-I" message on the FL tube as well as the pro/consumer data of input digital audio signal.

FL tube display message (Work Area) :



(19) SYS * * * * (SYSCOM RAM data) : Displays the system component RAM data (64k byte) in the Work Area of the FL tube display.

FL tube display message (Work Area) :



(20) [tEST] (Test)

Selects/cancels (OPEN/CLOSE) the TEST MENU items in the SERVICE MENU.

Specification conditions : None

Specification method :

Hold down the DATA key and turn the SEARCH dial. Then, press the SET key to specify OPEN/CLOSE.

1) Enter (OPEN) the SERVICE MENU.

FL tube display message : [dSPly] cLoSE

To select (OPEN) a TEST MENU item

2) Hold down the MENU key and turn the SEARCH dial until the following message appears.

FL tube display message : [tESt] cLoSE

- 3) Hold down the DATA key turn the SEARCH dial until the following message appears. Then, press the SET key.

FL tube display message : [tEST] oPEn
(flashing → ON)

To cancel (close) a TEST MENU item

- 2) Hold down the DATA key and turn the SEARCH dial until the following message appears. Then, press the SET key.

FL tube display message : [tEST] cLoSE
(flashing → ON)

(21) [SYS] (System control)

Selects/cancels (OPEN/CLOSE) the System control related test items in the TEST MENU. The test items are: (22) SYS cPu, (23) diSPLAY, (24) PAnEL-S, and (25) toGGLE-S, (26) SP-17b, (27) SP-17c

Specification conditions : None

Specification method :

Hold down the DATA key and turn the SEARCH dial. Then, press the SET key to specify OPEN/CLOSE.

- 1) Enter (OPEN) the SERVICE MENU.
- 2) Enter (OPEN) the TEST MENU.

FL tube display message : [tEST] oPEn

To select (OPEN) a TEST MENU item

- 3) Hold down the MENU key and turn the SEARCH dial until the following message appears.

FL tube display message : [SYS] cLoSE

- 4) Hold down the DATA key and turn the SEARCH dial until the following message appears. Then, press the SET key.

FL tube display message : [SYS] oPEn
(flashing → ON)

- 5) After System control is executed (OPEN), hold down the MENU key and turn the SEARCH dial to select the required test item ((22) to (27)).

To cancel (close) a TEST MENU item

- 6) Hold down the DATA key and turn the SEARCH dial until the following message appears. Then, press the SET key.

FL tube display message : [SYS] cLoSE
(flashing → ON)

The TEST MENU items ((22) to (27)) are listed below. After you enter (OPEN) the [SYS] MENU, hold down the MENU KEY AND turn the SEARCH dial to select the required TEST MENU item. (Turn the dial until the required item appears on the FL tube display.)

(22) [SYS cPu] (System control CPU)

Tests the address bus, data bus, ROM, and RAM of the System control CPU.

Specification conditions : STOP mode

Specification method :

Start/cancel the test mode using the SET, DATA, and RESET keys.

- 1) Enter (OPEN) the SERVICE MENU.
- 2) Enter (OPEN) the TEST MENU ([tEST]).
- 3) Enter (OPEN) the [SYS] MENU.

FL tube display message : [SYS] oPEn

- 4) Hold down the MENU key and turn the SEARCH dial until the following message is displayed.

FL tube display message : [SYS cPu] tEST
(rapid flashing)

Starting the test

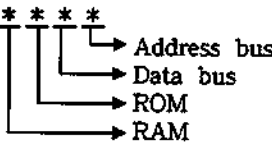
- 5) Press the SET key.

The display message "tEST" will flash at a slower speed than before, indicating the start of the test.

(Approximately 6 seconds)

6) After the test ends, the results appear in the Work Area of the FL tube display.

Results (Work Area of the FL tube display) :

Result	Work Area Display
① No error	no Error
② Error	<p style="text-align: center;">* * * * *</p>  <p style="text-align: center;">When an error is detected, a "1" is indicated at the corresponding position.</p>

Canceling the test

7) Press the DATA and RESET keys simultaneously.

The display message "tEst" will flash at a higher speed than before, indicating the suspension of the test.

(23) [diSPLAY] (Display Test)

Tests the FL tube display and indicator lamps.

Specification conditions : STOP mode

Specification method :

Start/cancel the test mode using the SET, DATA, and RESET keys.

- 1) Enter (OPEN) the SERVICE MENU.
- 2) Enter (OPEN) the TEST MENU ([tEst]).
- 3) Enter (OPEN) the [SYS] MENU.

FL tube display message : [SYS] oPEn

4) Hold down the MENU key and turn the SEARCH dial until the following message appears.

FL tube display message : diSPLAY tEst (rapid flashing)

Starting the test

5) Press the SET key.

6) The FL tube display and the LED indicator lamps of the front panel will light in the following sequence (cycle).

- ① All lamps will turn ON. →② The LED indicator lamps will turn ON one after another.
- ③ The segments (0 to 31) of the FL tube display will turn ON one after another. →④

The grids (0 to 7) of the FL tube display will turn ON one after another. →①

During the test mode, the FL tube display and indicator lamps will light in the above cycle ① to ④. (Approximately 40 seconds per cycle)

Canceling the test

7) Press the DATA and RESET keys simultaneously.

(24) [PAnEL-S] (Panel Switch Test)

Tests the connections of each front panel key switch.

Specification conditions : STOP mode

Specification method :

Start/cancel (stop) the test mode using the SET, DATA, and RESET keys.

- 1) Enter (OPEN) the SERVICE MENU.
- 2) Enter (OPEN) the TEST MENU ([tEst]).
- 3) Enter (OPEN) the [SYS] MENU.

FL tube display message : [SYS] oPEn

4) Hold down the MENU key and turn the SEARCH dial until the following message appears.

FL tube display message : PanEL tEst (rapid flashing)

5) Press the SET key.

6) Test method

Press all 26 key switches on the front panel one by one. If the bit corresponding to each key switch displayed in the Work Area of the FL tube display is a "1," that key is good. (See the table below.)

After you press all keys, the test results will be displayed in the Work Area of the FL tube display.

Results (Work Area on the FL tube display) :

Result	Work Area Display
No error	no Error
Error	<p>- * * * * (HEX)</p> <p>⑦ ⑥⑤ ④③ ②①</p> <p>When data displayed in HEX is converted to binary, the key switches that correspond to the bits that have become 0 are inoperative.</p> <p>example</p> <p>F FF FF dF (HEX display)</p> <p>②↓</p> <p>1101 (Binary display)</p> <p>↓</p> <p>bit5 is 0</p> <p>↓</p> <p>CUE switch is inoperative</p>

Canceling the test

- 7) Press the DATA and RESET keys simultaneously.

Corresponding table for bits and key switch

- * ** ** ** (Hex.)
 ⑦ ⑥⑤ ④③ ②①



bit NO.	Key switch
bit0	EJECT ▲
1	STOP ■
2	STANDBY ▶
3	FF ▶▶
4	REW ◀◀
5	CUE
6	PLAY ▶
7	REC ●
8	SID WRITE
9	SID ERASE
10	SID NEXT ▶▶
11	SID PREVIOUS ◀◀
12	LOCATE
13	VARI
14	CHASE
15	MONITOR



bit NO.	Key switch
bit0	MARK
1	DISPLAY
2	MENU
3	DATA
4	SET
5	RESET
6	MEMORY START
7	SUB INSERT
8	AUDIO INSERT
9	ASSEMBLE

(25) [toGGLE-S] (Toggle Switch Test)

Tests the connections of the toggle switch and SEARCH dial on the front panel; of the TC EXT/INT switch (when it is installed with the optional DABK-7030) and D-I/WORD switch on the rear panel.

Specification conditions : STOP mode

Specification method :

Start/cancel the test mode using the SET, DATA, and RESET keys.

- 1) Enter (OPEN) the SERVICE MENU.
- 2) Enter (OPEN) the TEST MENU ([tEst]).
- 3) Enter (OPEN) the [SYS] MENU.

FL tube display message : [SYS] oPen

- 4) Hold down the MENU key and turn the SEARCH dial until the following message appears.

FL tube display message : toGGLE-S tEst
(rapid flashing)

- 5) Press the SET key.

6) Test method

- ① Switch the front panel toggle switch (REMOTE/LOCAL, EXT/INT, ANALOG/DIGITAL, FS 44.1K/FS 48K).
- ② Turn the SEARCH dial in both directions.
- ③ Switch the D-I/WORD switch on the connector panel.
- ④ Switch the TC INT/EXT switch on the connector panel.

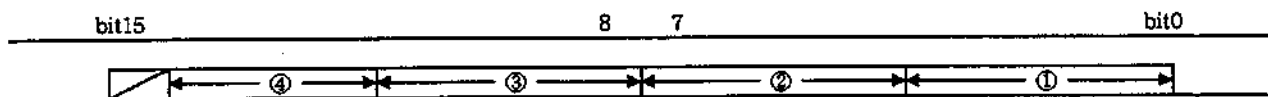
- 7) The test results will be displayed in the Work Area of the FL tube display as shown in the table below.

Results (Work Area on the FL tube display) :

Result	Work Area Display
No error	no Error
Error	<p>--- * * * * (Hex.) ④ ③ ② ①</p> <p>When data displayed in HEX is converted to binary, the key switches that correspond to the bits that have become 0 are inoperative.</p>

Corresponding table for bits and key switches

--- * * * * (Hex.)
 ④ ③ ② ①



bit NO.	Key switch
bit0	REMOTE
1	LOCAL
2	EXT
3	INT
4	VIDEO
5	ANALOG
6	DIGITAL
7	FS 44.1K
8	FS 48K
9	DIAL FWD (clockwise)
10	DIAL REV (counter clockwise)
11	WORD (DIO OPTION)
12	DI (DIO OPTION)
13	TC INT (TC OPTION)
14	TC EXT (TC OPTION)

(26) SP-17b (SP-17B Test) : Checks the SP-17B board used for the SYNC REC mode.

Specification conditions :

- STOP modes
- The SP-17B board must be installed (no testing is required if the MEM-40B (DABK-7032 option) board is installed).

Specification method :

Use the SET, DATA, and RESET keys to start and cancel the test.

- 1) Enter (OPEN) the SERVICE MENU.
- 2) Enter (OPEN) the TEST MENU.
- 3) Select (OPEN) the [SYS] mode.

FL tube display message : [SYS] oPEn

- 4) Hold down the MENU key and turn the SEARCH dial until the following message appears.

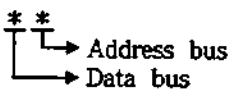
FL tube display message : [SP-17B] tESt

- 5) Press the SET key.

The Work Area message "tESt" will flash at a slower speed than before, indicating the start of the test.

- 6) After the test ends, the results will be displayed in the Work Area of the FL tube display.

Results (Work Area of the FL tube display) :

Result	Work Area Display
No error	no Error
Error	 <p>The item corresponding to the bit containing a "1" is defective.</p>

Canceling the test

- 7) Press the DATA and RESET keys simultaneously.

(27) SP-17c (SP-17C Test) : Checks the SP-17C board used for the SYNC REC mode.

Specification conditions :

- STOP modes
- The SP-17C board must be installed.

Specification method :

Use the SET, DATA, and RESET keys to start and cancel the test.

- 1) Enter (OPEN) the SERVICE MENU.
- 2) Enter (OPEN) the TEST MENU.
- 3) Select (OPEN) the [SYS] mode.

FL tube display message : [SYS] oPEn

- 4) Hold down the MENU key and turn the SEARCH dial until the following message appears.

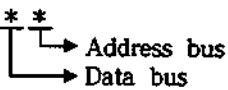
FL tube display message : [SP-17c] tESt

- 5) Press the SET key.

The Work Area message "tESt" will flash at a slower speed than before, indicating the start of the test.

- 6) After the test ends, the results will be displayed in the Work Area of the FL tube display.

Results (Work Area of the FL tube display) :

Result	Work Area Display
No error	no Error
Error	 <p>The item corresponding to the bit containing a "1" is defective.</p>

Canceling the test

- 7) Press the DATA and RESET keys simultaneously.

(28) [trnSP] (Transport)

Selects/cancels (OPEN/CLOSE) the mechanism deck and servo (SV) related test and adjustment items in the TEST MENU. The test items are : (29) trn SP-1, (30) trn SP-2, (31) dPG AGc PrESet, (32) torq Adj, (33) PAth Adj, (34) dPC Adj, (35) AGc Adj, (36) tESt SiG, (37) rAtE SEL, and (38) Err rAtE.

Specification conditions : None

Specification method :

Hold down the DATA key and turn the SEARCH dial. Then, press the SET key to specify OPEN/CLOSE.

- 1) Enter (OPEN) the SERVICE MENU.
- 2) Enter (OPEN) the TEST MENU (tEST).
FL tube display message : [tEST] oPEn
To select (OPEN) the Transport test item
- 3) Hold down the MENU key and turn the SEARCH dial until the following message appears.
FL tube display message : [trnSP] cLoSE
- 4) Hold down the DATA key and turn the SEARCH dial until the following message appears. Then, press the SET key.
FL tube display message : [trnSP] oPEn
(flashing → ON)
- 5) After Transport is selected (OPEN), hold down the MENU key and turn the SEARCH dial to select the required test item ((29) to (38)).
To cancel (close) the Transport test item
- 6) Hold down the DATA key and turn the SEARCH dial until the following message is displayed. Then, press the SET key.
FL tube display message : [trnSP] cLoSE
The TEST MENU items ((29) to (38)) are listed below. After you enter (OPEN) the [trnSP] MENU, hold down the MENU key and turn the SEARCH dial to select the required Transport test item. (Turn the dial until the required item appears on the FL tube display.)

(29) [trn SP-1] (Transport-1)

Tests the cassette compartment, loading motor, drum motor, reel motor, and capstan motor operations.

Specification conditions :

No cassette (Do not insert a cassette.)

Specification method :

Start/cancel (stop) the test mode using the SET, DATA, and RESET keys.

- 1) Enter (OPEN) the SERVICE MENU.
- 2) Enter (OPEN) the TEST MENU ([tEST]).
- 3) Enter (OPEN) the [trnSP] MENU.
FL tube display message : [trnSP] oPEn
- 4) Hold down the MENU KEY AND turn the SEARCH dial until the following message appears.

FL tube display message : trnSP-1 tEST (rapid flashing)

- 5) Press the SET key without loading a cassette. The display message "tEST" will flash at a slower speed than before, indicating the start of the test.
- 6) Test method
Load a cassette. When you load a cassette, the following operations are automatically checked. Cassette loading. → Cassette eject operation (checks the cassette compartment). → Loading operation. → Drum rotation operation. → Reel motor and capstan rotation operations. → End. These operation checks are started about 10 seconds after you load a cassette.
- 7) After the operations are checked, the test results will be displayed in the Work Area of the FL tube display as shown in the table below.

Results (Work Area on the FL tube display) :

Result	Work Area Display
No error	no Error
Error	** ** ** ** ⑧⑦ ⑥⑤ ④③ ②① The tested item corresponding to the bit containing a "1" is defective. ① Cassette compartment ② Loading motor ③ Brake ④ Cassette hole sensor switch ⑤ Take-up reel ⑥ Supply reel ⑦ Capstan motor ⑧ Drum motor

Canceling the test

- 8) Press the DATA and RESET keys simultaneously.

(30) [trn SP-2] (Transport-2)

Tests the pinch roller operation.

Specification conditions :

No cassette (Do not insert a cassette.)

Specification method :

Start/cancel (stop) the test mode using the SET, DATA, and RESET keys.

- 1) Enter (OPEN) the SERVICE MENU.
- 2) Enter (OPEN) the TEST MENU ([tEst]).
- 3) Enter (OPEN) the [trnSP] MENU.
FL tube display message : [trnSP] oPEn
- 4) Hold down the MENU key and turn the SEARCH dial until the following message appears.
FL tube display message : trnSP-2 tEst (rapid flashing)
- 5) Press the SET key without loading a cassette.
The display message "tEst" will flash at a slower speed than before, indicating the start of the test.
The pinch roller will repeat loading and unloading operations 5 times.

Canceling the test

- 6) Press the DATA and RESET keys simultaneously.

(31) [dPG-AGc] (DPG-AGC Preset)

Presets the DPG and AGC data before performing the torque, tape path, DPG and AGC adjustments.

Specification conditions :

No cassette (Do not load a cassette.)

Specification method :

Preset the DPG and AGC data using the DATA and SET keys.

- 1) Enter (OPEN) the SERVICE MENU.
- 2) Enter (OPEN) the TEST MENU ([tEst]).
- 3) Enter (OPEN) the [trnSP] MENU.
FL tube display message : [trnSP] oPEn
- 4) Hold down the MENU key and turn the SEARCH dial until the following message appears.
FL tube display message : dPG-AGc PrESEt
- 5) Press the DATA and SET keys simultaneously.
The DPG data (60 (H)) and AGC data (A channel : 20 (H), and B channel : 20 (H)) will be set.

(32) [torq Adj] (Torque Adjustment)

To perform the reel torque adjustment, use this menu to specify the adjustment mode. Use this menu also to display the speed during the CUE mode.

Specification conditions : None

Specification method :

Hold down the DATA key and turn the SEARCH dial. Then, press the SET key to turn ON/OFF the adjustment mode.

- 1) Enter (OPEN) the SERVICE MENU.
- 2) Enter (OPEN) the TEST MENU ([tEst]).
- 3) Enter (OPEN) the [trnSP] MENU.
FL tube display message : [trnSP] oPEn
- 4) Hold down the MENU key and turn the SEARCH dial until the following message appears.
FL tube display message : torq Adj oFF
- 5) Hold down the DATA key and turn the SEARCH dial until the following message appears.
FL tube display message : torq Adj on
- 6) Press the SET key to turn ON the adjustment mode. Perform each torque adjustment under this condition. See section 4-3. Mechanism Adjustment for the adjustment methods.

Note : When you set the adjustment mode to ON, the ALARM indicator on the front panel will flash.

Setting the adjustment mode OFF

- 1) Hold down the DATA key and turn the SEARCH dial until the following message appears. Then, press the SET key.
FL tube display message : torq Adj oFF
The Work Area of the FL tube display indicates the speed during the CUE mode besides the ON/OFF data of the test mode.

Data (Work Area of the FL tube display) :

* * * * OFF (on)
 ↑
 CUE speed data Display

- Other than the CUE mode : - - - -
- STILL mode : 0
- (-) 1/5 : (-) 0_2
- (-) 1/2 : (-) 0_5
- (-) 1 : (-) 1
- (-) 3 : (-) 3
- (-) 8 : (-) 8
- (-) 16 : (-) 16

(33) [PatH Adj] (Path Adjustment)

To perform the tape path adjustment, use this menu to specify the adjustment mode.

Specification conditions : None

Specification method :

Hold down the DATA key and turn the SEARCH dial. Then, press the SET key to turn ON/OFF the adjustment mode.

- 1) Enter (OPEN) the SERVICE MENU.
- 2) Enter (OPEN) the TEST MENU ([tEst]).
- 3) Enter (OPEN) the [trnSP] MENU.
 FL tube display message : [trnSP] oPEN
- 4) Hold down the MENU key and turn the SEARCH dial until the following message appears.
 FL tube display message : PatH Adj oFF
- 5) Hold down the DATA key and turn the SEARCH dial until the following message appears.
 FL tube display message : PatH Adj on
- 6) Press the SET key to turn ON the adjustment mode.

Perform each tape path adjustment under this condition. See section 4-4. Tape Path Adjustment for the adjustment methods.

Note : When you set the adjustment mode to ON, the ALARM indicator on the front panel will flash.

Setting the adjustment mode OFF

- 7) Hold down the DATA key and turn the SEARCH dial until the following message appears. Then, press the SET key.

FL tube display message : PatH Adj oFF

(34) [dPG Adj] (DPG Adjustment)

To perform the SWP adjustment of the servo block, use this menu to specify the adjustment mode. The adjusted data is stored in the backup memory of System control when you set the adjustment mode to OFF.

Specification conditions : None

Specification method :

Hold down the DATA key and turn the SEARCH dial. Then, press the SET key to turn ON/OFF the adjustment mode.

- 1) Enter (OPEN) the SERVICE MENU.
- 2) Enter (OPEN) the TEST MENU ([tEst]).
- 3) Enter (OPEN) the [trnSP] MENU.
 FL tube display message : [trnSP] oPEN
- 4) Hold down the MENU key and turn the SEARCH dial until the following message appears.
 FL tube display message : dPG Adj oFF
- 5) Hold down the DATA key and turn the SEARCH dial until the following message appears.
 FL tube display message : dPG Adj on
- 6) Press the SET key to turn ON the adjustment mode. Perform the SWP adjustment under this condition. See the section 4-5. Servo Block Adjustment for the adjustment methods.

Note : When you set the adjustment mode to ON, the ALARM indicator on the front panel will flash.

Setting the adjustment mode OFF

- 7) Hold down the DATA key and turn the SEARCH dial until the following message appears. Then, press the SET key.

FL tube display message : dPG Adj * * oFF

↑
 Data stored in the backup memory.

After the adjustment, the adjusted data will be stored in the backup memory when you set the adjustment mode to OFF. The stored data will be displayed in the Work Area of the FL tube display.

Data (Work Area of the FL tube display) :

** oFF
↑
Data stored in the backup memory.

(35) [AGc Adj] (AGC Adjustment)

Performs the gain adjustment of the AGC. When you set this adjustment mode to ON, the SV CPU will automatically perform the adjustment. The adjusted gain data will be stored in the backup memory of System control.

Specification conditions : None

Specification method :

Turn ON/OFF the adjustment mode using the SET, DATA, and RESET keys.

- 1) Enter (OPEN) the SERVICE MENU.
- 2) Enter (OPEN) the TEST MENU ([tEST]).
- 3) Enter (OPEN) the [trnSP] MENU.
FL tube display message : [trnSP] oPEn
- 4) Hold down the MENU key and turn the SEARCH dial until the following message appears.
FL tube display message : AGc Adj oFF
- 5) Hold down the DATA key and turn the SEARCH dial until the following message appears.
FL tube display message : AGc Adj on
- 6) Press the SET key to turn ON the adjustment mode. When you press the SET key, the gain adjustment of AGC will start automatically. See the section 4-5. Servo Block Adjustment for adjustment methods.

Note : When you set the adjustment mode to ON, the ALARM indicator on the front panel will flash.

Setting the adjustment mode OFF

- 7) Hold down the DATA key and turn the SEARCH dial until the following message appears. Then, press the SET key.

FL tube display message : AGc Adj **** oFF
↑
Data stored in the backup memory.

After the adjustment, the adjusted data will be stored in the backup memory when you set the adjustment mode to OFF. The stored data will be displayed in the Work Area of the FL tube display.

Data (Work Area of the FL tube display) :

** ** oFF
↑
Data stored in the backup memory.

(36) tEST SiG (Test Signal)

Selects the test signal to be recorded. The selected signals will be recorded using the REC and PLAY keys.

Specification conditions :

- Insert a cassette (the cassette with the tab hole open).
- Exclude software tapes.
- STOP mode.
- Set the test menu "rAtE SEL" to the "Auto".

Specification method :

Hold down the DATA key and turn the SEARCH dial. Then, press the SET key to set the test signal.

- 1) Enter (OPEN) the SERVICE MENU.
- 2) Enter (OPEN) the TEST MENU ([tEST]).
- 3) Enter (OPEN) the [trnSP] MENU.
FL tube display message : [trnSP] oPEn
- 4) Hold down the MENU key and turn the SEARCH dial until the following message appears.
FL tube display message : tEST SiG oFF

- 5) Hold down the DATA key and turn the SEARCH dial until the required test signal appears in the Work Area of the FL tube display. Then, press the SET key.
When you press the SET key, the Work Area message will light without flashing.

Work Area Display	Signal to be recorded
1) OFF	—
2) A-A 157	Leading head A ch 1.57M
3) A-b 157	Leading head B ch 1.57M
4) d-A 157	Trailing head A ch 1.57M
5) d-b 157	Trailing head B ch 1.57M
6) A-47 157	Leading head A ch 4.7M B ch 1.57M
7) A- 157 47	Leading head A ch 1.57M B ch 4.7M
8) d-47 157	Trailing head A ch 4.7M B ch 1.57M
9) d- 157 47	Trailing head A ch 1.57M B ch 4.7M
10) A- 13 157	Leading head A ch 130K B ch 1.57M
11) A- 157 13	Leading head A ch 1.57M B ch 130K
12) d- 13 157	Trailing head A ch 130K B ch 1.57M
13) d- 157 13	Trailing head A ch 1.57M B ch 130K
14) A-tSt in	Leading head TEST INPUT
15) d-tSt in	Trailing head TEST INPUT
16) A- inPut	Leading head NORMAL INPUT
17) d- inPut	Trailing head NORMAL INPUT

Note: If you do not set the [tEST SiG] mode to OFF (Step 4), the ALARM indicator on the front panel will flash.

(37) rAtE SEL (Error Rate Select)

Same as the "rAtE SEL" menu item in the DISPLAY MENU.

(38) Err rAtE (Error Rate)

Same as the "Err rAtE" menu item in the DISPLAY MENU.

(39) [iS-Ed] (Instant-Edit)

Enters/exits (OPEN/CLOSE) the test menus of the MEMORY START memory and EDIT MEMORY option board.

Specification conditions: Option board must be installed.

Specification method:

Hold down the DATA key and turn the SEARCH dial. Then, press the SET key to OPEN/CLOSE the mode.

1) Enter (OPEN) the SERVICE MENU.

2) Enter (OPEN) the TEST MENU ([tEST]).

FL tube display message: [tEST] oPEN
Starting (OPEN) the [iS-Ed] mode

3) Hold down the MENU key and turn the SEARCH dial until the following message appears.

FL tube display message: [iS-Ed] cLoSE

4) Hold down the DATA key and turn the SEARCH dial until the following message appears. Then, press the SET key.

FL tube display message: [iS-Ed] oPEN
(flashing → ON)

5) After the mode is OPEN, hold down the MENU key and turn the SEARCH dial to select either (33) "inStAnt" or (34) "Edit" menu.
Ending (CLOSE) the [iS-Ed] mode

6) Hold down the DATA key and turn the SEARCH dial until the following message appears. Then, press the SET key.

FL tube display message: [iS-Ed] cLoSE
The TEST MENU items ((33) and (34)) are listed below. After you start the [iS-Ed] MENU (OPEN), hold down the MENU key and turn the SEARCH dial to select the required TEST MENU item. (Turn the dial until the required item appears on the FL tube display.)

(40) [inStAnt] (Instant Test)

Tests the memory used for MEMORY START.

Specification conditions : STOP mode

Specification method :

Start/cancel the test using the SET, DATA, and RESET keys.

- 1) Enter (OPEN) the SERVICE MENU.
- 2) Enter (OPEN) the TEST MENU ([tEST]).
- 3) Enter (OPEN) the [iS-Ed] MENU.

FL tube display message : [iS-Ed] oPEN

- 4) Hold down the MENU key and turn the SEARCH dial until the following message appears.

FL tube display message : inStAnt tEst

(rapid flashing)

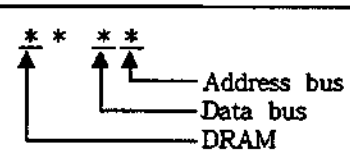
Starting the test

- 5) Press the SET key.

The Work Area message "tEst" will flash at a slower speed than before, indicating the start of the test.

- 6) After the test ends, the results will be displayed in the Work Area of the FL tube display.

Results (Work Area of the FL tube display) :

Result	Work Area Display
No error	no Error
Error	 <p>The item corresponding to the bit containing a "1" is defective.</p>

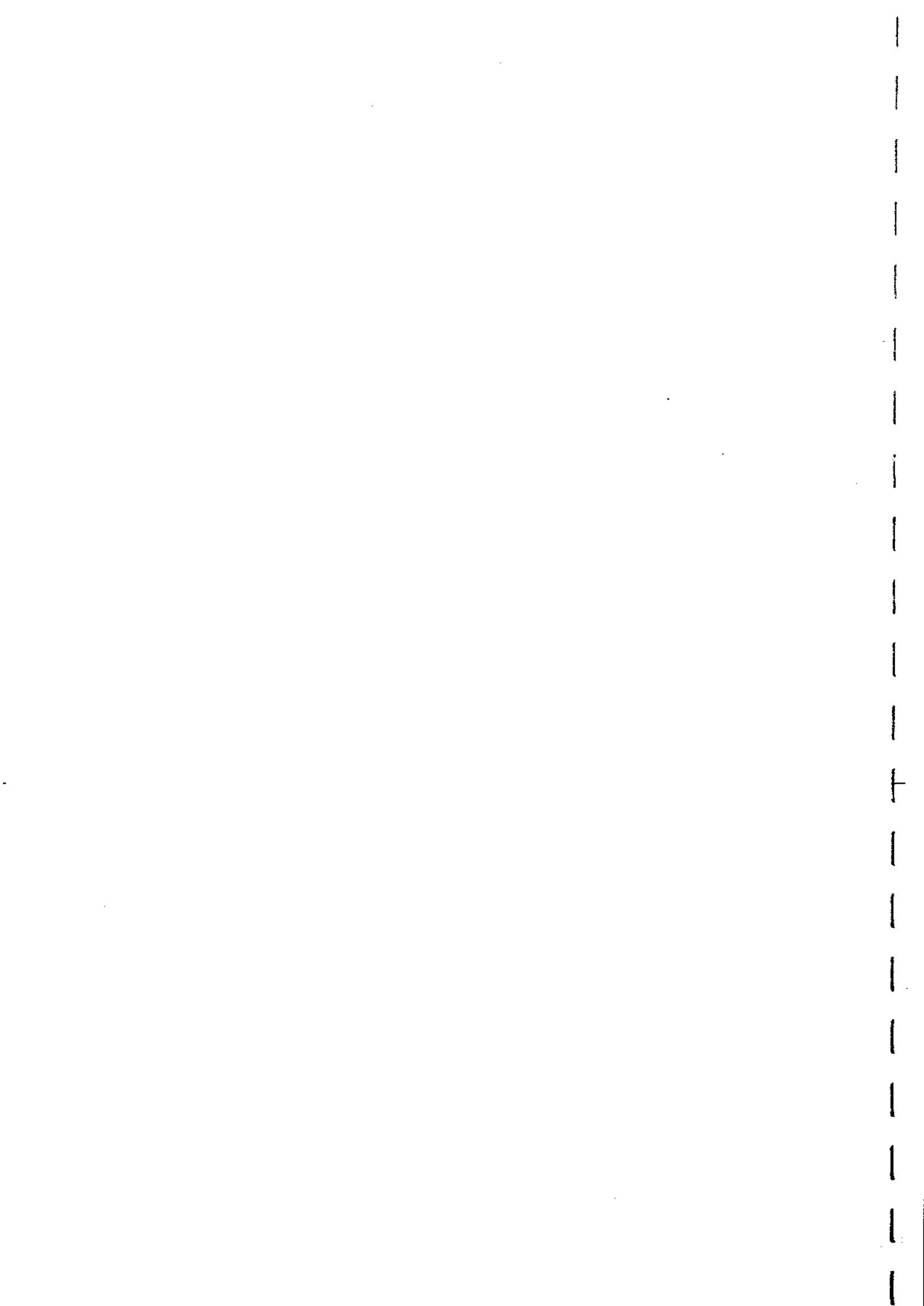
Caution : When you perform this test, the audio data stored in the memory will be lost.

Canceling the test

- 7) Press the DATA and RESET keys simultaneously.

2-9. Tools and Instruments

Item	Part No.	Remarks
Adjustment mirror	J-6080-029-A	For tape pass adjustment
Spare mirror	J-6080-030-1	For tape pass adjustment
Thickness gauge	9-911-053-00	For spacing check
Cassette weight	J-6224-140-A	For tape pass adjustment
Cleaning cassette DT-10CL	—	For head cleaning (Sony product)
Adjustment driver	J-6225-100-A	For tape pass adjustment
Test tape TY-7111D	8-909-820-00	For playback level check
Test tape TY-7251	8-909-813-00	For tracking adjustment
Test tape TY-7212	8-960-081-01	For error rate check
Blank tape TY-30B	8-892-358-00	For recording level adjustment
Torque meter TW-7131	8-909-708-71	For FWD and REV torque adjustment
Torque meter TW-7231	8-909-708-72	For FF and REW torque check
Molycote grease EM-30L	4-918-645-01	For cassette Up compartment
EX-264 extension board	J-6226-090-A	For DIO-10 and MEM-40 boards check
EX-265 extension board	J-6226-100-A	For DIO-10 and MEM-40 boards check
Cleaning fluid	9-919-573-00	For cleaning
Cleaning piece (chamois)	2-034-697-00	For cleaning
PD-817 RF LEVEL CHECKER	J-6228-170-A	For Recording/Playback Block Adjustment



SECTION 3

Periodical Inspection and Maintenance

3-1. Cleaning

After cleaning, thoroughly wipe the drum surface using a dry cloth before inserting a cassette. If you do not wipe the drum surface completely with a dry cloth, the tape may be damaged due to an effect similar to moisture condensation.

1) Normal cleaning

Clean the drum and tape passing system once a week using the following cleaning cassette.

Note: Run the cleaning cassette for no more than 30 seconds.

2) When dirt is not removed completely with the cleaning cassette (perform this cleaning once a month)

Cleaning the drum

- (1) Wipe the lower section of the drum along the lead using a cleaning piece moistened with alcohol. Never touch the side surface of a drum with your bare hands.
- (2) Use a dry cleaning piece and wipe the section you just wiped in the previous step. Be sure to perform step (2) immediately after (1). After the alcohol dries up, removing the remaining dirt just by wiping with a dry cloth will be difficult.
- (3) Clean the upper section of the drum using a cleaning piece moistened with alcohol. Never touch the side surface of upper drum with

your hands. Rotate the drum in the direction of the arrow (⇒) to wipe the side surfaces of the upper drum and head. Repeat this procedure for approximately three rotations of the upper drum.

(4) Wipe the upper section of the drum using a dry cleaning piece along the lead and rotate the upper drum approximately twice to wipe with a dry cleaning piece.

Be sure to perform step (4) immediately after (3). After the alcohol dries up, removing the remaining dirt just by wiping with a dry cloth will be difficult.

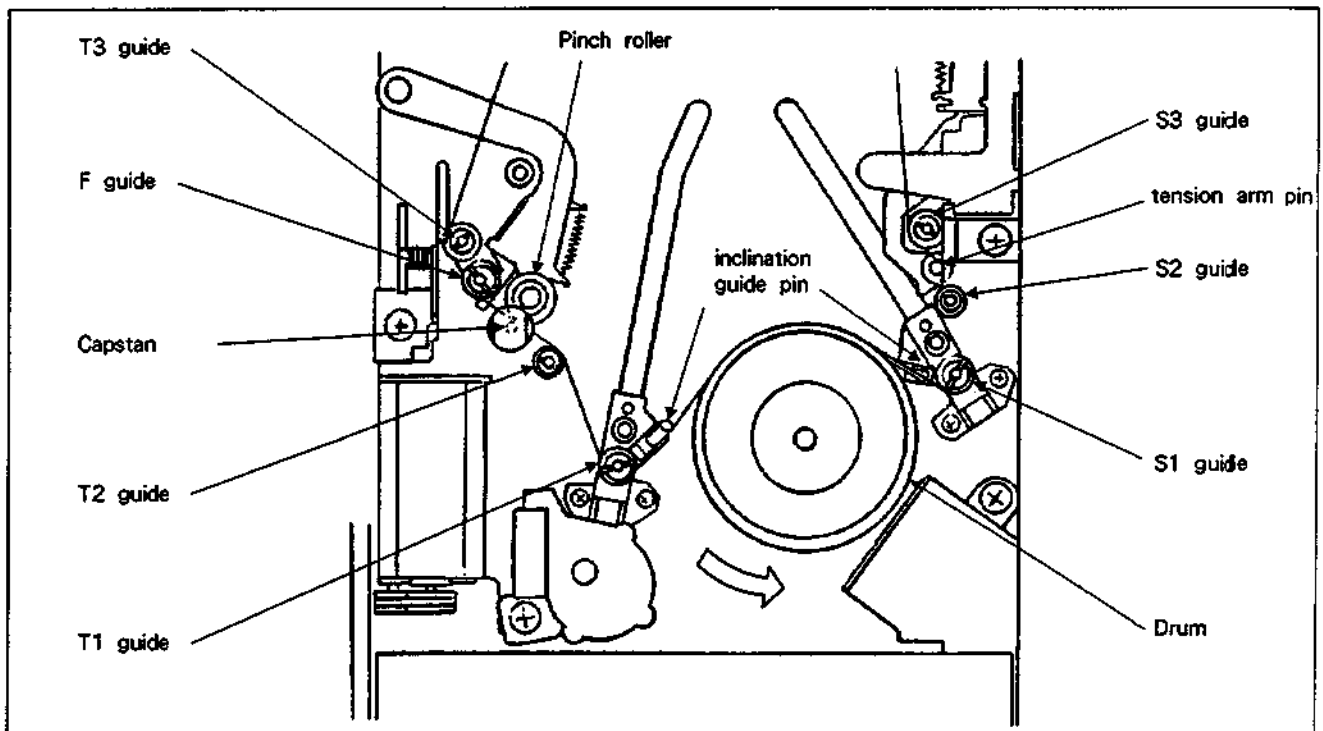
(5) Inspect the entire circumference of upper drum by sight to make sure no fingerprints and no stains remain when the alcohol dries up.

Notes:

1. Never clean the drum while it is being driven.
2. Do not wipe with the cleaning piece in a vertical motion with respect to the head chip. Doing so will most likely damage the head chip.

Cleaning the tape running system

- (1) Remove the dirt on the capstan axis, pinch roller, tension arm pin, and inclination guide pin using a cleaning piece moistened with alcohol. Wipe these parts then with a dry cleaning piece.
- (2) Peel off the dirt on the rotation rollers (T1, T2, T3, S1, S2, S3, and F guides) using a stick made of pliant piece such as bamboo before too much dirt accumulates. Then, wipe these areas with a dry cleaning piece.



3-2. Periodical Inspection and Maintenance Procedures

To maintain proper performance, replace worn parts, clean the mechanical parts, inspect the mechanical and electrical systems, and make necessary adjustments. As a guideline, refer to the hour meter (Hour-t (HOUR-TIME)) reading in the display menu to determine the inspection and maintenance intervals. The table below shows the maintenance and inspection guidelines corresponding to the hour meter readings. A list of replacement parts is also shown. The part replacement intervals are based on the part's service life recorded in the past. These intervals may be changed in the future.

Regular inspection and maintenance schedule

Part Name (Part No.)	Head Hour Meter (h)						Remarks
	1Week	500H	1500H	3000H	4500H	6000H	
DATM assembly DATM-06R (A-7806-080-A)						☆	Replace every 6000 H.
Drum assembly DOM-14AR (8-848-548-11)	○		☆	☆	☆	(☆)	Clean once week and replace every 1500 H.
Capstan DC motor BHF-2803A (8-835-206-01)	○			☆		(☆)	Clean every week and replace every 3000 H.
Reel, U-2A DC motor (8-835-205-01)				☆		(☆)	Replace every 3000 H.
Pinch roller assembly (A-7810-488-A)	○		☆	☆	☆	(☆)	Clean once week and replace every 1500 H.
Rotary encoder (1-464-724-11)			☆	☆	☆	(☆)	Replace every 1500 H.
Cassette compartment assembly (A-7810-496-A)						☆	Replace every 6000 H.
Lithium Battly CR-2450 (1-528-229-11)			☆	☆	☆	☆	Replace when the drum assembly is replaced.

○ : Clean. ☆ : Replace. (☆) : This part is in the DATM assembly. Therefore it will be replaced at the same time when the DATM assembly is replaced.

3-3. Post-Repair Maintenance

After repairing a unit, do the following regardless of the unit's length of service.

1. Clean the drum head.
2. Clean the tape transport surfaces.

SECTION 4

MECHANICAL ADJUSTMENT, TAPE PATH ADJUSTMENT, SERVO BLOCK ADJUSTMENT, RECORDING/PLAYBACK BLOCK ADJUSTMENT, AND ERROR RATE CHECK

This section provides information on the adjustments and checks required when you replace the following main parts of the mechanical deck.

1. Mechanical deck assembly
2. Drum assembly
3. Capstan motor
4. Reel motor
5. Pinch roller assembly
6. Rotary encoder
7. Cassette compartment assembly

The following adjustment and check items are explained here. Perform each adjustment and check using the corresponding TEST MENU item (see list below) in the SERVICE MENU.

See "2-8. Service Menu" of Section 2 for details on the TEST MENU.

Adjustment Item		TEST MENU Item (FL display)
4-2. Mechanical Device Test (operation check)		transP-1 tEst (trAnSP-1 tEst)
4-3. Mechanical Adjustment	4-3-1. Rotary encoder position adjustment	—
	4-3-2. End sensor operation check	torq Adj oFF (torq Adj oFF)
	4-3-3. FF/REW torque adjustment	torq Adj on (torq Adj on)
	4-3-4. FWD torque adjustment	torq Adj on (torq Adj on)
	4-3-5. REV torque adjustment	torq Adj on (torq Adj on)
	4-3-6. FWD back tension adjustment	torq Adj on (torq Adj on)
	4-3-7. EJECT torque adjustment	torq Adj on (torq Adj on)
	4-3-8. FF/REW time check	torq Adj oFF (torq Adj oFF)
4-4. Tape Path Adjustment	4-4-1. Tape running check (1)	PAth Adj oFF (PAth Adj oFF)
	4-4-2. Tape running check (2)	PAth Adj oFF (PAth Adj oFF)
	4-4-3. Tape path fine adjustment	PAth Adj on (PAth Adj on)
	4-4-4. RF raise up time check	PAth Adj on (PAth Adj on)
	4-4-5. Lack of RF waveform check in FF/REW	PAth Adj oFF (PAth Adj oFF)
	4-4-6. Overall tape path check	PAth Adj oFF (PAth Adj oFF)
4-5. Servo Block Adjustment	4-5-1. SWP position adjustment	PAth Adj on (PAth Adj on) and DPG Adj on (dPG Adj on)
	4-5-2. ATF playback AGC adjustment	AGc Adj on (AGc Adj on)
4-6. Recording /Playback Block Adjustment	4-6-1. Adjustment using the RF level checker PD-817	tEst SiG A-tst in (tEst SiG A-tst in)
		tEst SiG d-tst in (tEst SiG d-tst in)
	4-6-2. Adjustment using a spectrum analyzer	tEst SiG A-157-13 (tEst SiG A-157-13)
		tEst SiG A-13-157 (tEst SiG A-13-157)
	tEst SiG d-157-13 (tEst SiG d-157-13)	
	tEst SiG d-13-157 (tEst SiG d-13-157)	
4-7. EQ-H Preset and Error Rate Check	4-7-1. EQ-H preset	—
	4-7-2. Error rate check	rAtE SEL A-Ab (rAtE SEL A-Ab) rAtE SEL nor (rAtE SEL d-Ab) and Err rAtE (Err rAtE)
4-8. Cassette Compartment Operation Check		—

Adjustment Procedure after Replacing the Main Parts

Use the following procedure to make adjustments after you replace the main parts.

Parts Replaced	Adjustment Procedure
Mechanical Deck Assembly (DATM-06R)	<p>4-3-2. End sensor operation check → 4-3-3. FF/REW torque check → 4-3-4. FWD torque adjustment →</p> <p>4-3-5. REV torque adjustment → 4-3-6. FWD back tension adjustment → 4-3-7. EJECT torque check →</p> <p>4-4-1. Tape running check (1) → 4-4-2. Tape running check (2) → (cassette compartment assembly mounting) →</p> <p>4-2. Mechanism device test → 4-3-8. FF/REW time check → 4-4-3. Tape path fine adjustment →</p> <p>4-4-4. RF raise up time check → 4-4-5. Lack of RF waveform check in FF/REW → 4-4-6. Overall tape path check →</p> <p>4-5-1. SWP position adjustment → 4-5-2. ATF playback AGC adjustment →</p> <p>4-6. Recording/playback adjustment (recording current level adjustment) → 5-2. Signal processing adjustment (RF PLL adjustment) → 4-7-2. Error rate check</p>
Drum Assembly (DDH-14AR)	<p>4-3-4. FWD torque adjustment → 4-3-5. REV torque adjustment → 4-3-6. FWD back tension adjustment →</p> <p>4-4-1. Tape running check (1) → 4-4-2. Tape running check (2) → (cassette compartment assembly mounting) →</p> <p>4-2. Mechanism device test → 4-4-3. Tape path fine adjustment → 4-4-4. RF raise up time check →</p> <p>4-4-5. Lack of RF waveform check in FF/REW → 4-4-6. Overall tape path check → 4-5-1. SWP position adjustment →</p> <p>4-5-2. ATF playback AGC adjustment → 4-6. Recording/playback adjustment (recording current level adjustment) →</p> <p>5-2. Signal processing adjustment (RF PLL adjustment) → 4-7-2. Error rate check</p>
Capstan Motor (BHF2803A)	<p>4-4-1. Tape running check (1) → 4-4-2. Tape running check (2) → (cassette compartment assembly mounting) →</p> <p>4-2. Mechanism device test → 4-4-3. Tape path fine adjustment → 4-4-4. RF raise up time check →</p> <p>4-4-5. Lack of RF waveform check in FF/REW → 4-4-6. Overall tape path check</p>

Parts Replaced	Adjustment Procedure
Reel Motor (U-2A)	<p>4-3-3. FF/REW torque check → 4-3-4. FWD torque adjustment → 4-3-5. REV torque adjustment →</p> <p>4-3-6. FWD back tension adjustment → 4-3-7. EJECT torque check → 4-4-1. Tape running check (1) →</p> <p>4-4-2. Tape running check (2) → (cassette compartment assembly mounting) → 4-2. Mechanism device test →</p> <p>4-3-8. FF/REW time check → 4-4-3. Tape path fine adjustment → 4-4-4. RF raise up time check →</p> <p>4-4-5. Lack of RF waveform check in FF/REW → 4-4-6. Overall tape path check</p>
Pinch Roller Assembly	<p>4-4-1. Tape running check (1) → 4-4-2. Tape running check (2) → (cassette compartment assembly mounting) →</p> <p>4-2. Mechanism device test → 4-4-3. Tape path fine adjustment → 4-4-4. RF raise up time check →</p> <p>4-4-5. Lack of RF waveform check in FF/REW → 4-4-6. Overall tape path check → 4-5-1. SWP position adjustment</p>
Rotary Encoder	<p>4-3-1. Rotary encoder position adjustment → 4-4-3. Tape path fine adjustment → 4-4-4. RF raise up time check →</p> <p>4-2. Mechanism device test</p>
Cassette Compartment Assembly	<p>4-2. Mechanism device test → 4-8. Cassette compartment operation check → 4-3-8. FF/REW time check</p>

The following table lists the items that must be adjusted when you replace the main parts. An item indicated with a circle requires adjustment.

Main Replacement Parts Adjustment Item	Mechanical Deck	Drum Assembly	Capstan Motor	Reel Motor	Pinch Roller Assembly	Rotary Encoder	Cassette Compartment
4-2. Mechanical Device Test	○	○	○	○	○	○	○
4-3-1. Rotary encoder position adjustment						○	
4-3-2. End sensor operation check	○						
4-3-3. FF/REW torque adjustment	○			○			
4-3-4. FWD torque adjustment	○	○		○			
4-3-5. REV torque adjustment	○	○		○			
4-3-6. FWD back tension adjustment	○	○		○			
4-3-7. EJECT torque adjustment	○			○			
4-3-8. FF/REW time check	○			○			○
4-4-1. Tape running check (1)	○	○	○	○	○		
4-4-2. Tape running check (2)	○	○	○	○	○		
4-4-3. Tape path fine adjustment	○	○	○	○	○		
4-4-4. RF raise up time check	○	○	○	○	○		
4-4-5. Lack of RF waveform check in FF/REW	○	○	○	○	○		
4-4-6. Overall tape path check	○	○	○	○	○		
4-5-1. SWP position adjustment	○	○					
4-5-2. ATF playback AGC adjustment	○	○					
4-6. Recording/Playback Block Adjustment	○	○					
4-7-2. Error Rate Check	○	○					
4-8. Cassette Compartment Operation Check							○
5-2. Signal processing adjustment (RF PLL adjustment)	○	○					

4-1. Preparation

Equipment Required

Item	Minimum Specifications	Model
Spectrum analyzer	<ul style="list-style-type: none"> • frequency range : - 10 MHz and above • frequency span : zero span measurement is possible • sweep time : 100 msec and below is possible • averaging, exterior trigger is possible 	advanced R3261A or equivalent
Oscilloscope	<ul style="list-style-type: none"> • frequency range : DC - 100 MHz and above • accuracy : 5mV • occurrence : 2 occurrences or more 	TEKTRONIX 2445A or equivalent
Audio frequency oscillator	<ul style="list-style-type: none"> • oscillating frequencies : 20 Hz - 100 kHz • output level : - + 4 dBm and above 	—

Tools Required

Item	Part No.	Remarks
Cassette compartment dummy connector	—	Make a cassette compartment dummy connector using a small harness (ccp). See "3) Operation Without the Cassette Compartment" on page 2-16 for the procedure to make a dummy connector.
Cassette weight	J-6224-140-A	Used for making adjustments (checks) while the cassette compartment is removed.
Screwdriver for adjusting	J-6225-100-A	Used for the tape path fine adjustment.
RF LEVEL CHECKER PD-817	J-6228-170-A	For Recording/Playback Block

Test Tape and Torque Meter

Item	Part No.	Remarks
Test tape TY-7111D	8-909-820-00	Used for the playback level check.
Test tape TY-7251	8-909-813-00	Used for the tracking adjustment.
Test tape TY-30B	8-892-358-00	Used for the recording level adjustment.
Test tape TY-7212	8-960-081-01	Used for the error rate check.
Torque cassette TW-7131	8-909-708-71	Used for the FWD/REV torque adjustment.
Torque cassette TW-7231	8-909-708-72	Used for the FF/REW torque check.
Cassette tape for testing the operations	—	Any 120-minute tape sold in the market

4-2. Mechanical Device Test (operation check)

Perform the Mechanical Device Test when you replace major parts including the mechanical deck assembly, drum assembly, capstan motor, reel motor, pinch roller assembly, cassette compartment, DR-139 board and SV-123 board.

Equipment and Tools Required

Cassette tape for testing the operations

Procedure

- (1) Enter (OPEN) the [trnSP] test menu in the SERVICE MENU and select the following test item. Then, press SET.

FL tube display message : trnSP-1 tEst
(rapid flashing→slow flashing)

- (2) Load a cassette tape (any tape sold in the market) to test the operations. The test will automatically start checking the operations of the cassette compartment, loading motor, drum motor, reel motor, and capstan motor.(The test cassette tape will be automatically ejected.)

- (3) After the operations have been tested, make sure the FL tube display indicates the following message.

FL tube display message : trnSP-1 no Error

Notes :

You must perform the above operation tests with the cassette compartment mounted in the mechanical deck (normal operating condition). See "2-8. Service Menu" in Section 2 for the TEST MENU specification procedure.

4-3. Mechanical Adjustment

Each mechanical adjustment and check item must be performed while the cassette compartment is removed from the mechanical deck.(See "2-1. Removal of Boards and Major Mechanical Parts" on page 2-7 for the cassette compartment removal procedure.) The test cassette tape and torque meter will be used after they are mounted in the cassette weight.(See "3) Operation Without the Cassette Compartment" on page 2-18 for information on using the cassette weight.)

Equipment and Tools Required

Oscilloscope

TW-7131 Torque cassette (8-909-708-71)

Cassette tape (any 120-minute cassette tape sold in the market) for testing the operations

Cassette weight (J-6224-140-A)

Cassette compartment dummy connector *

* Make a cassette compartment dummy connector using a small harness (ocp). See "3) Operation Without the Cassette Compartment" on page 2-16 for the procedure to make a dummy connector.

Preparations

Insert the cassette compartment dummy connector in the CN106 connector on the DR-139 board.

4-3-1. Rotary encoder position adjustment

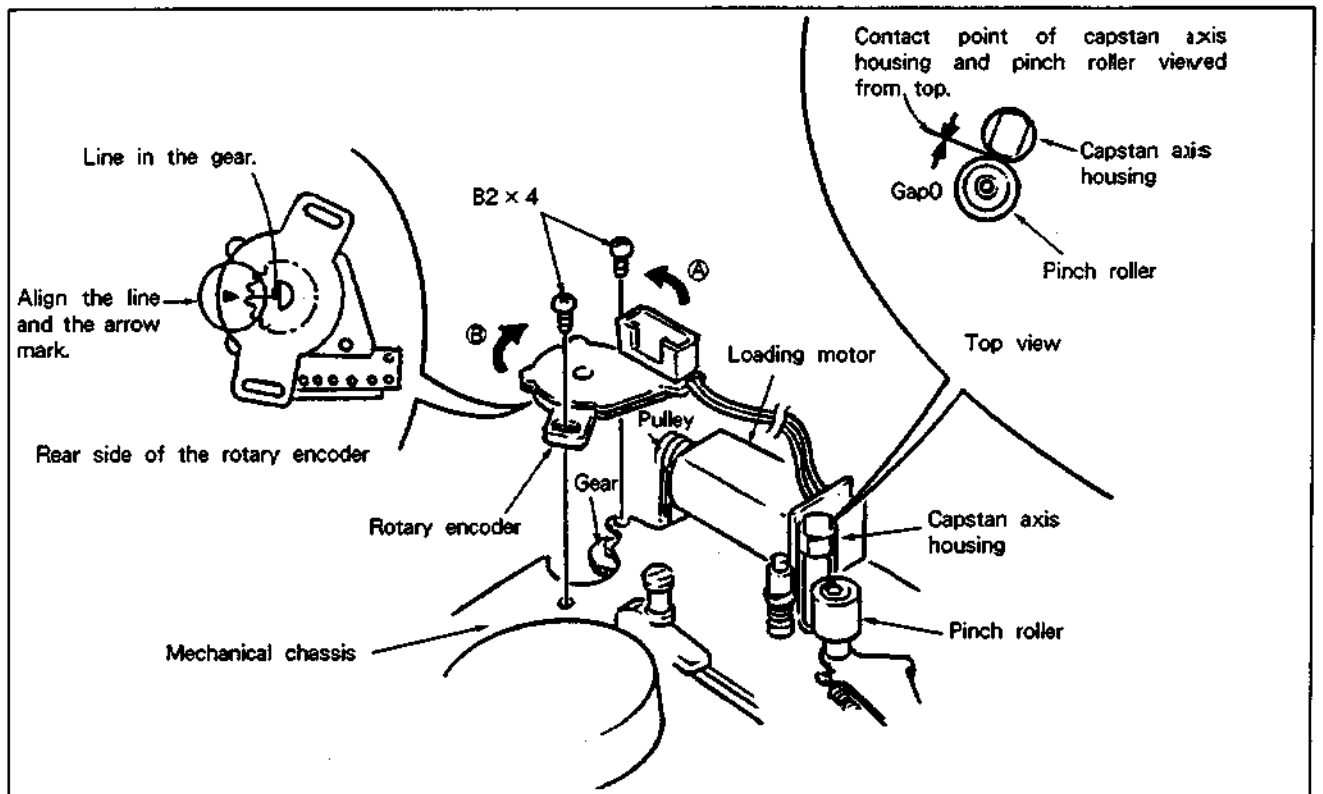
Adjust the rotary encoder position when you replace the rotary encoder.

Procedure

- (1) Switch off the POWER of the unit.
- (2) Remove the rotary encoder.
(Remove the rotary encoder mounting screws before disconnecting its connector.)
- (3) Turn the loading motor pulley and move the pinch roller so that the roller comes in contact with the capstan axis housing as shown in the figure below.
- (4) Align the arrow mark and the line in the gear of the rotary encoder (rear side) as shown in the figure below.
- (5) Use two screws (+ B2x4) to mount the rotary encoder lightly on the mechanical chassis so that the gear of the rotary encoder properly engages the gear of the mechanical chassis. (Lightly tighten the screws at the center of the long holes of rotary encoder.)
- (6) Switch on the POWER. Hold down cassette sensor switch and press PLAY to set the playback mode temporarily. Then, press STOP to set the mechanical deck to STOP mode. During the STOP mode, check the following items ((1),(2), and (3)). Adjust the rotary encoder mounting position as shown in the figure below to comply with the specifications. Make adjustments while POWER is switched off and check the position when POWER is on.

Specifications :

- ① The tension regulator release pin shall be set at the OFF position of the tension regulator.
- ② The gap between the capstan axis and the pinch roller shall be 1.5mm to 2.5mm.
- ③ The F guide must be in contact with the groove of the square hole of the mechanical chassis.



Adjustment location :

Move the mounting position of the rotary encoder.

Adjustment direction	Distance to pinch roller
Direction A	Closer
Direction B	Wider

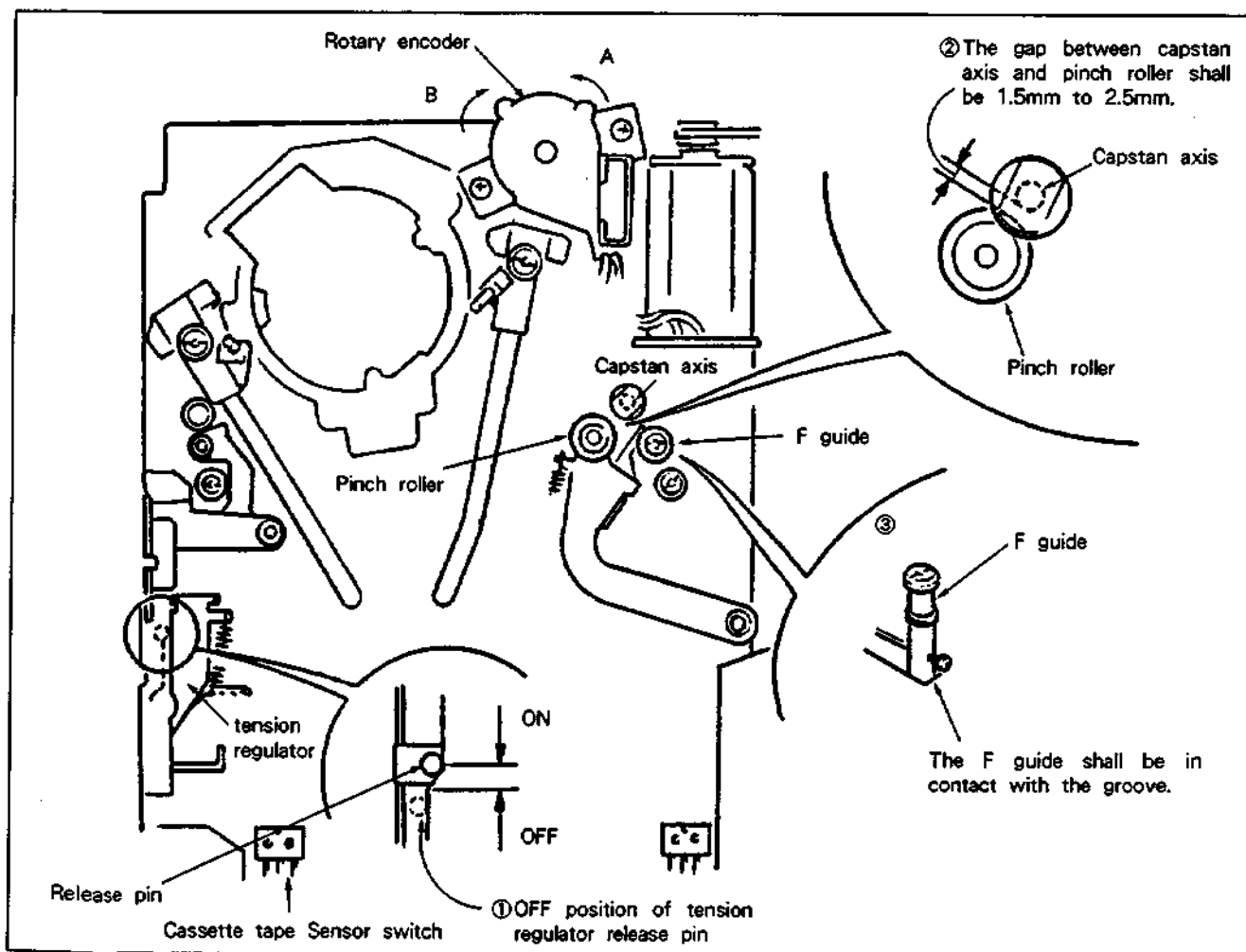
(7) Set the mechanical deck (guide) to FWD mode. Make sure the rotary encoder position complies with the following specifications in this condition.
Specifications :

- ① Tension regulator release pin shall be at the ON position of the tension regulator.
- ② The pinch roller shall be in contact with the capstan axis.

(8) Set the mechanical deck (guide) to STOP mode again. In this condition, make sure the rotary encoder position complies with the specifications indicated in step (6).

(9) This time, firmly tighten two screws (+ B2x4) which mount the rotary encoder on the mechanical chassis.

If the rotary encoder position does not comply with the specifications of steps (6) and (7), retry the procedure from step (1).



4-3-2. End sensor (S side, T side) operation check

Check the operation of the end sensor when you replace the mechanical deck.

Equipment and Tools Required

Oscilloscope

CH1 : DC 500mV/DIV

CH2 : DC 500mV/DIV

500usec/DIV

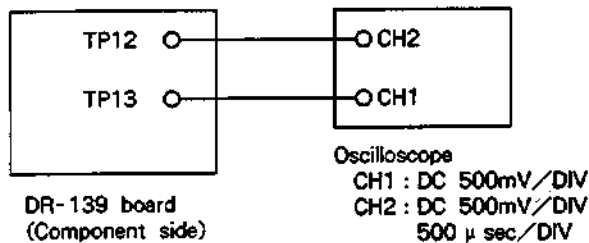
Note : When the DC measurement causes a scale overflow, measure in AC mode.

TY-30B Test tape (8-892-358-00)

Cassette compartment dummy connector

Cassette weight (J-6224-140-A)

Connections

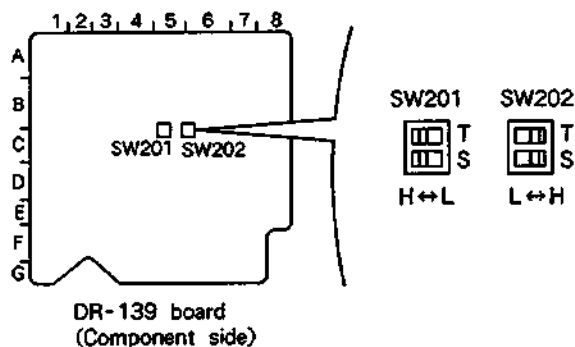


Switch settings

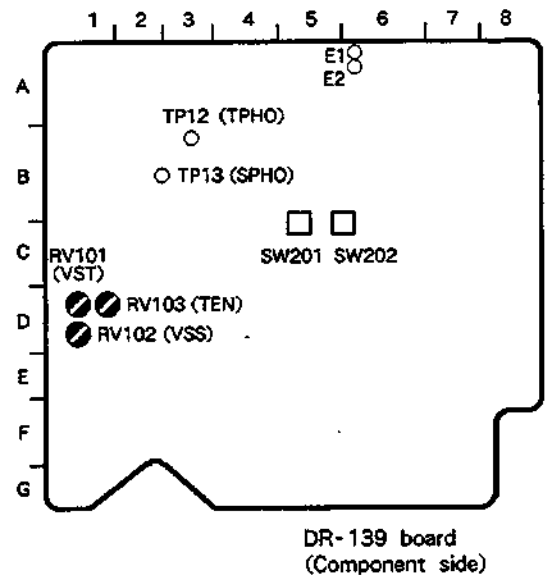
DR-139 board

SW201 (C,5) : H (Both switches S and T) See figure below.

SW202 (C,5) : H (Both switches S and T) See figure below.



Measurement Location

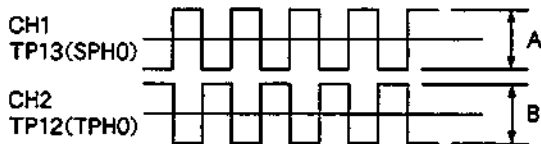


Procedure

- Enter (OPEN) the TEST MENU [trnSP] in the SERVICE MENU and make the following selection.
FL tube display : torq Adj oFF
Note : When ON is set from the POWER switch OFF status, this mode is automatically selected.
- Connect the oscilloscope to the following connectors of the DP-139 board.
CH1 : TP13 (SPHO) · E1 (GND), DR-139 board
CH2 : TP12 (TPHO) · E2 (GND), DR-139 board
- Attach the TY-30B test tape to the cassette weight and mount it on the mechanical deck.
Note : Since the loading operation will start almost immediately after you mount the cassette weight on the mechanical deck, be sure to mount it quickly.
- Press REW and rewind the tape to its beginning to make sure the output level of the TP12 (TPHO) at the reader tape section complies with the following specifications. (Check operation of the T side end sensor.)
- Press FF and feed the tape to the its end to make sure the output level of the TP13 (SPHO) at the reader section complies with the following specifications. (Check operation of the S side end sensor.)

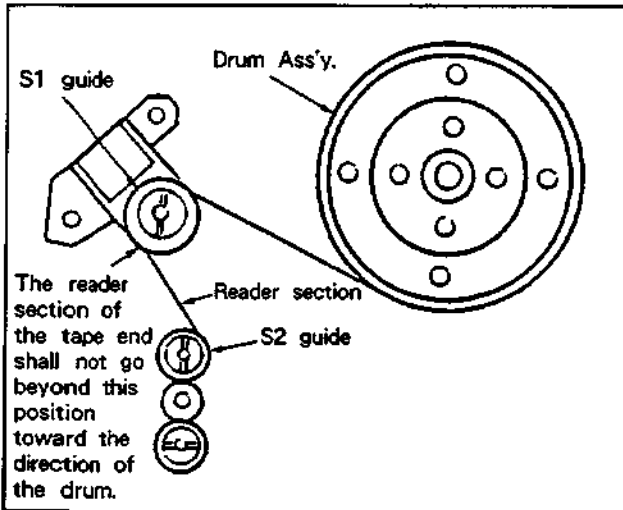
Note : When you check the operation of the T side end sensor, the tape will be rewound automatically a little at the tape beginning and the FF/REW operations will be repeated.

Specifications : S side output level (A) 800mVp-p
T side output level (B) 800mVp-p

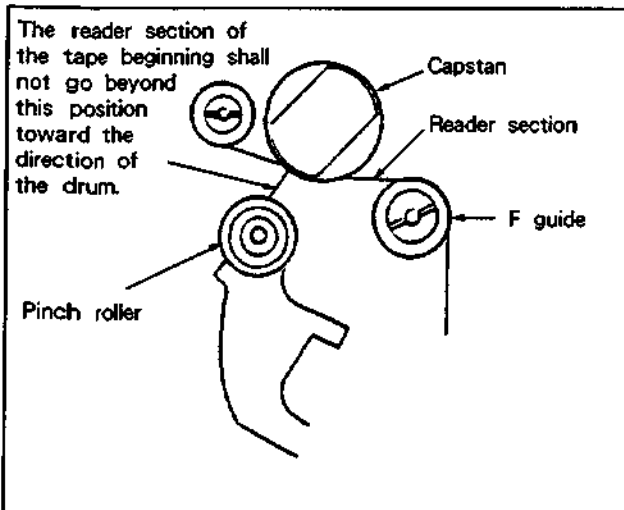


(6) Perform FF and REW operations and make sure the beginning and end of a tape stop at the following positions.

Tape end position check (FF operation)



Tape start position check (REW operation)



(7) Press EJECT. After a tape is wound, remove the cassette tape from the mechanical deck.

4-3-3. FF/REW torque check

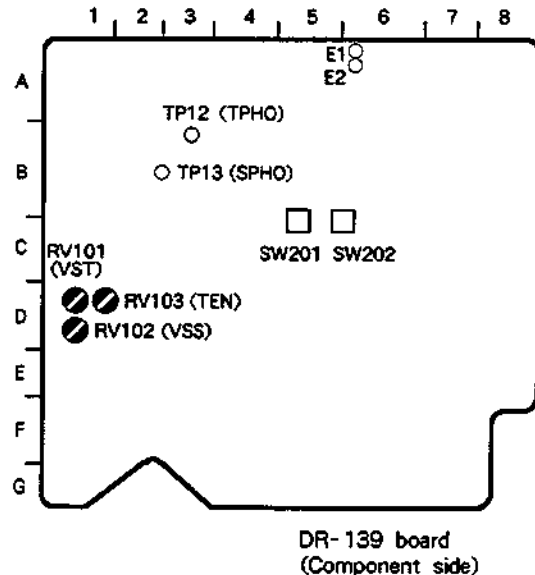
Check the FF/REW torque operations when you replace the reel motor, and DR-139 board. Be sure to perform the following adjustments after you check the FF/REW torque operations.

- 4-3-4. FWD torque adjustment
- 4-3-5. REV torque adjustment
- 4-3-6. FWD back tension adjustment

Equipment and Tools Required

- TW-7231 Torque cassette (8-909-708-72)
- Cassette weight (J-6224-140-A)
- Cassette compartment dummy connector

Adjustment Locations



Procedure

(1) Enter (OPEN) the TEST MENU [trnSP] in the SERVICE MENU and make the following selection.

FL tube display message : torq Adj on
(At this time, the ALARM indicator on the front panel will flash.)

- (2) Attach the TW-7231 torque cassette to the cassette weight and mount it on the mechanical deck.

Note: Since the loading operation will start almost immediately after you mount the cassette weight on the mechanical deck, mount it quickly.

- (3) Turn ●RV101 (VST) and ●RV102 (VSS) fully clockwise.
- (4) Press FF to select the FF mode.
- (5) When the FF mode stabilizes, make sure the maximum torque value of the TW-7231 torque cassette (take-up reel side) complies with the following specifications.

Specifications:

Maximum FF torque 25 to 40g·cm

- (6) Press STOP.
- (7) Press REW to select the REW mode.
- (8) When the REW mode stabilizes, make sure the maximum torque value of the TW-7231 torque cassette (supply reel side) complies with the following specifications.

Specifications:

Maximum REW torque 25 to 40g·cm

- (9) Set ●RV101 (VST) and ●RV102 (VSS) of the DR-139 board at the detent position (the midpoint of a full rotation).

4-3-4. FWD torque adjustment (DR-139 board adjustment)

Perform this adjustment when you replace the mechanical deck assembly, drum assembly, reel motor, and DR-139 board.

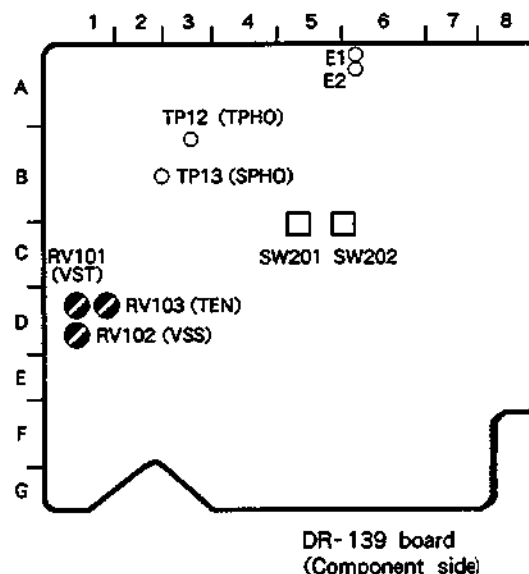
Equipment and Tools Required

TW-7131 Torque cassette (8-909-708-71)

Cassette weight (J-6224-140-A)

Cassette compartment dummy connector

Adjustment Locations



Procedure

- (1) Enter (OPEN) the TEST MENU [trnSP] in the SERVICE MENU and make the following selection.

FL tube display message: torq Adj on

(At this time, the ALARM indicator on the front panel will flash.)

- (2) Attach the TW-7131 torque cassette to the cassette weight and mount it on the mechanical deck.

Note: Since the loading operation will start almost immediately after you mount the cassette weight on the mechanical deck, mount it quickly.

- (3) Press PLAY to start the playback mode.

- (4) Adjust \odot RV101 (VST) of the DR-139 board so that the torque value of the TW-7131 torque cassette (take-up reel side) complies with the following specifications. Make the adjustment in accordance with the structure of the S2 guide.

Specifications :

S2 guide structure	FWD torque (g · cm)
Fixed guide	12 to 14
Roller guide	8 to 10

Note : When the meter indication fluctuates, make adjustments so that the center of this fluctuation complies with the specifications.

Adjustment Location :

\odot RV101 (VST), DR-139 board

- (5) Press EJECT. After the tape is wound, remove the TW-7131 torque cassette from the mechanical deck.

4-3-5. REV torque adjustment

Perform this adjustment when you replace the mechanical deck assembly, drum assembly, and reel motor, and DR-139 board.

Equipment and Tools Required

TW-7131 Torque cassette (8-909-708-71)

Cassette weight (J-6224-140-A)

Cassette compartment dummy connector

Adjustment Location

See "Adjustment Locations" in 4-3-4. FWD torque adjustment.

Procedure

- (1) Enter (OPEN) the TEST MENU [trnSP] in the SERVICE MENU and make the following selection.

FL tube display message : torq Adj on

(At this time, the ALARM indicator on the front panel will flash.)

- (2) Attach the TW-7131 torque cassette to the cassette weight and mount it on the mechanical deck.

Note : Since the loading operation will start almost immediately after you mount the cassette weight on the mechanical deck, mount it quickly.

- (3) Press CUE to start the REVx (-1) mode of the CUE mode (turn the SEARCH dial counter clockwise until "-1" appears on the FL tube display).

- (4) Adjust \odot RV102 of the DR-139 board so that the torque value of the TW-7131 torque cassette (supply reel side) complies with the following specifications.

Specifications : REV torque $14 \pm \frac{1}{2}$ g · cm

Adjustment Location : \odot RV102, DR-138 board

- (5) Press EJECT. After the tape is wound, remove the TW-7131 torque cassette from the mechanical deck.

4-3-6. FWD back tension adjustment

Perform this adjustment when you replace the mechanical deck assembly, drum assembly, reel motor, and DR-139 board.

Equipment and Tools Required
 TW-7131 Torque cassette (8-909-708-71)
 Cassette weight (J-6224-140-A)
 Cassette compartment dummy connector

Adjustment Location
 See "Adjustment Locations" in section 4-3-4. FWD torque adjustment.

Procedure

- (1) Enter (OPEN) the TEST MENU [trnSP] in the SERVICE MENU and make the following selection.
 FL tube display message : torq Adj on
 (At this time, the ALARM indicator on the front panel will flash.)
- (2) Attach the TW-7131 torque cassette to the cassette weight and mount it on the mechanical deck.
 Note : Since the loading operation will start almost immediately after you mount the cassette weight on the mechanical deck, mount it quickly.
- (3) Press PLAY to start the playback mode.
- (4) Adjust ●RV103 (TEN) of the DR-139 board so that the torque value of the TW-7131 torque cassette (supply reel side) complies with the following specifications. Make the adjustment in accordance with the structure of the S2 guide.

Specifications :

S2 guide structure	FWD back tension (g · cm)
Fixed guide	4.5 ± 0.5
Roller guide	5.5 ± 0.5

Adjustment Location : ●RV103, DR-139 board

- (5) Press EJECT. After the tape is wound, remove the TW-7131 torque cassette from the mechanical deck.

4-3-7. EJECT torque check

Check the EJECT torque when you replace the reel motor, and DR-139 board.

Equipment and Tools Required
 TW-7131 Torque cassette (8-909-708-71)
 Cassette weight (J-6224-140-A)
 Cassette compartment dummy connector

Procedure

- (1) Enter (OPEN) the TEST MENU [trnSP] in the SERVICE MENU and make the following selection.
 FL tube display message : torq Adj on
 (At this time, the ALARM indicator on the front panel will flash.)
- (2) Attach the TW-7131 torque cassette to the cassette weight and mount it on the mechanical deck.
 Note : Since the loading operation will start almost immediately after you mount the cassette weight on the mechanical deck, mount it quickly.
- (3) Press PLAY to start the playback mode.
- (4) Press EJECT and make sure the torque value of the TW-7131 torque cassette (both supply and take-up reel sides) complies with the following specifications during the unthreading (unloading) operation.
 Specifications : EJECT torque 5 to 10g · cm
- (5) Set the torq Adj test menu to OFF (the following message should appear).
 FL tube display message : torq Adj oFF

4-3-8. FF/REW time check

Check the FF/REW time when you replace the mechanical deck assembly, drum assembly, and reel motor.

Equipment and Tools Required

Cassette tape (any 120-minute tape sold in the market) for checking the operation

Cassette weight (J-6224-140-A)

Cassette compartment dummy connector

Procedure

(1) Enter (OPEN) the TEST MENU [trnSP] in the SERVICE MENU and make the following selection.

FL tube display message : torq Adj oFF

(2) Attach the 120-minute cassette tape for the operation check to the cassette weight and mount the weight on the mechanical deck.

Note : Since the loading operation will start almost immediately after you mount the cassette weight on the mechanical deck, mount it quickly.

(3) Press FF to start the FF operation from the beginning to the end of the tape. Make sure the tape winding time complies with the following specifications.

Specifications :

Tape winding time Maximum 60 seconds

(4) Press REW to start the REW operation from the end to the beginning of the tape. Make sure the tape winding time complies with the following specifications.

Specifications : REW mode time Maximum 60 seconds

(5) Press EJECT. After the tape is wound, remove the cassette tape from the mechanical deck.

4-4. Tape Path Adjustment

4-4-1. Tape running check (1)

Check the tape running system when you replace the mechanical deck assembly, drum assembly, capstan motor, reel motor, pinch roller assembly, and DR-139 board. The following section explains how to check tape running conditions in the PLAY mode or CUE mode. (The state in which the capstan axis and pinch roller are in contact with each other.) Perform the following procedure while the cassette compartment is removed from the mechanical deck.

Equipment and Tools Required

Cassette tape (any 120-minute tape sold in the market) for checking the operation

Cassette weight (J-6224-140-A)

Cassette compartment dummy connector

Preparation

Insert the cassette compartment dummy connector in the CN106 connector on the DR-139 board.

Procedure

(1) Enter (OPEN) the TEST MENU [trnSP] and make the following selection.

FL tube display message : Path Adj oFF

(2) Attach the 120-minute cassette tape for the operation check to the cassette weight and mount them on the mechanical deck.

(3) Press PLAY to start the playback mode.

(4) Follow instructions ① and ② below to check the tape running conditions. See the Guide Position Diagram for each guide position.

① Confirm that the tape does not come out from the flanges of the S1, T1, S2, T2, S3, T3 and F guides.

Note : Tape curling is accepted as long as it is within the specified range (see figure below). If the S1 and T1 guides are displaced to a large height, tape curling may occur at the S2 and T2 guides. In that case, first follow the procedure

in "4-4-3. Tape path fine adjustment" and adjust the S1 and T1 guides, and then check item ① above.

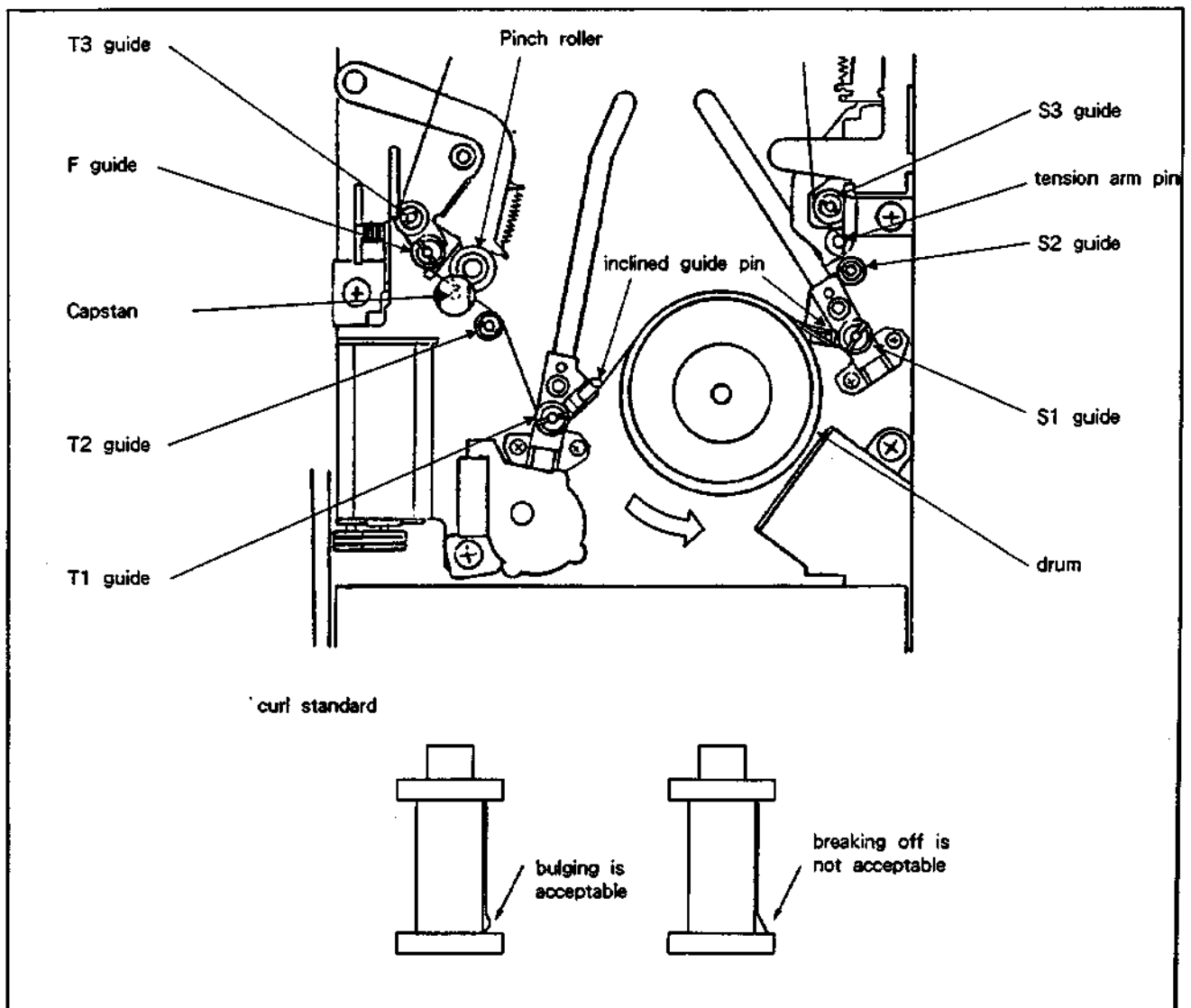
- ② Confirm that the tape is not slack end, wrinkled, or twisted before and after the pinch roller (capstan axis).

Note: When you switch between the FWD and REV modes, a tape may sometimes be stretched or twisted. If the tape recovers from such a slack end or twist within 2 seconds, the condition is acceptable. Wrinkling of tape, however, is not acceptable.

- (5) Check items 1 and 2 of step (4) above for each operation (FWD 1/5, 1/2, 1, 3, 8, 16; REV -1/5, -1/2, -1, -3, -8, -16) of the CUE mode.

Note: You can display the speed of each mode on the FL tube display. See "2-8. Service Menu" in Section 2 for information on the displaying method.

Example: FWD 1/5 → 0_2 (display)



4-4-2. Tape running check (2)

Check the tape running system when you replace the mechanical deck assembly, drum assembly, capstan motor, reel motor, and pinch roller assembly, and DR-139 board. The following section explains how to check the tape running conditions in the FF mode or REW mode. (The state in which the capstan axis and pinch roller are separated from each other.) Perform the following procedure while the cassette compartment is removed from the mechanical deck.

Equipment and Tools Required

- Cassette tape (any 120-minute tape sold in the market) for checking the operation
- Cassette weight (J-6224-140-A)
- Cassette compartment dummy connector

Preparation

Insert the cassette compartment dummy connector in the CN106 connector on the DR-139 board.

Procedure

- (1) Enter (OPEN) the TEST MENU [trnSP] and make the following selection.
FL tube display message : PATH Adj OFF
- (2) Attach the 120-minute operation check cassette tape to the cassette weight and mount them on the mechanical deck.
- (3) Press FF to start the FF mode.
- (4) Follow the instructions below to check the tape running condition near the beginning of a tape. Confirm that the tape is not come out from the flanges of the S1, T1, S2, T2, S3, T3 and F guides.
Note : Tape curling is accepted as long as it is within the specified range (see page 4-15 for curl specifications).
- (5) Press REW to start the REW mode.
- (6) Follow the instructions indicated in step (4) to check the tape running condition near the end of a tape.

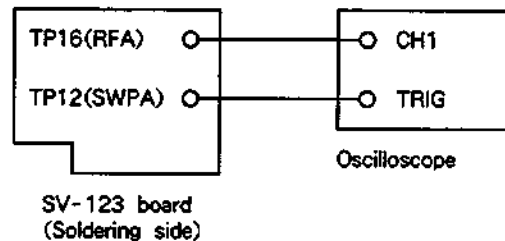
4-4-3. Tape path fine adjustment

Make fine adjustments of the tape path when you replace the mechanical deck assembly, drum assembly, capstan motor, reel motor, and pinch roller assembly, and DR-139 board. Perform the following adjustment and the subsequent items while the cassette compartment is mounted in the mechanical deck. Be sure to execute the procedure in "4-2. Mechanism Device Test" to make sure there are no errors when the cassette compartment is mounted in the mechanical deck.

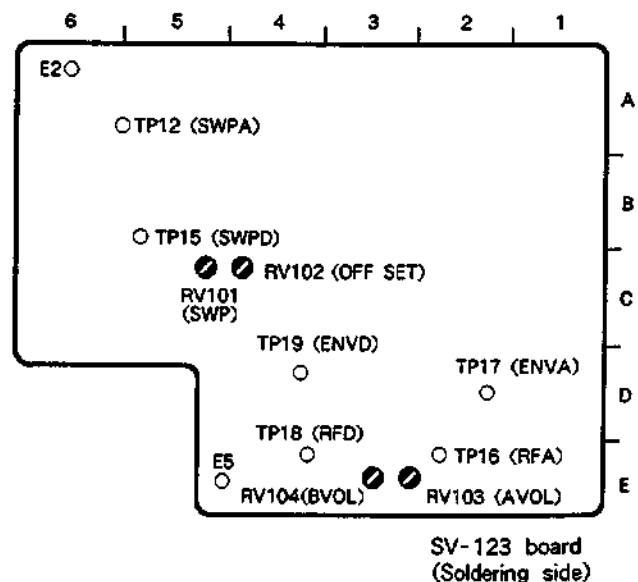
Equipment and Tools Required

- Oscilloscope
- CH1 : AC 200mV/DIV
- TY-7251 Test tape (8-909-813-00)
- Adjustment driver (J-6225-100-A)

Connections



Adjustment Location



Procedure

- (1) Enter (OPEN) the TEST MENU [trnSP] and make the following selection.

FL tube display message : PatH Adj on

- (2) Connect the oscilloscope to the SV-123 board as indicated below.

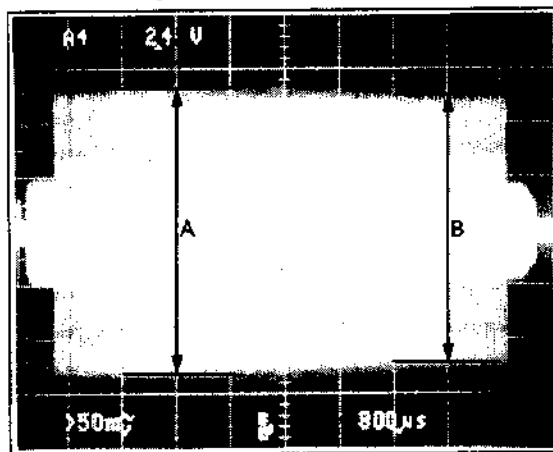
CH1 : TP16 (RF-A) · E5 (GND), SV-123 board

TRIG : TP12 (SWP-A) · E2 (GND), SV-123 board

- (3) Load the TY-7251 test tape.
- (4) Press PLAY to playback the TY-7251 test tape.
- (5) Adjust RV102 on the SV-123 board to obtain maximum output of the RF signal waveform on the oscilloscope.
- (6) Make fine adjustments of the S1 and T1 guides so that the RF signal waveform of the oscilloscope CH1 complies with the following specifications.

Specifications : $\frac{B}{A} \times 100(\%) \geq 90\%$

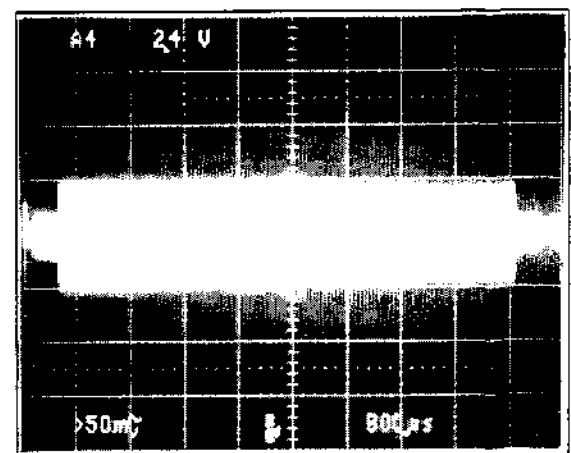
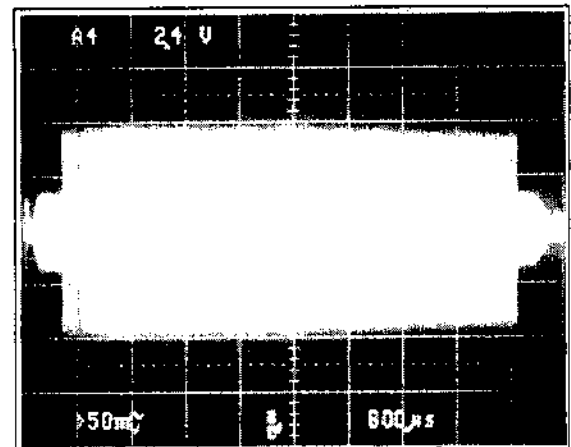
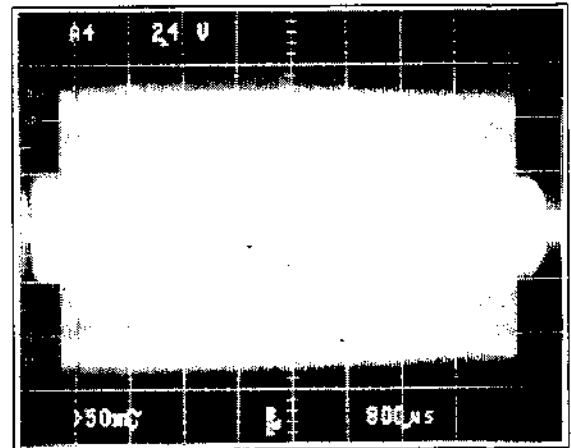
TP16 RF signal waveform A ch



max A
min B

Note : If you adjust the S1 and/or T1 guides, press PLAY again after pressing EJECT and make sure the RF signal waveform complies with the above specifications. (This is because, sometimes, a guide may become skewed when you apply force to the adjusting screwdriver during adjustment.)

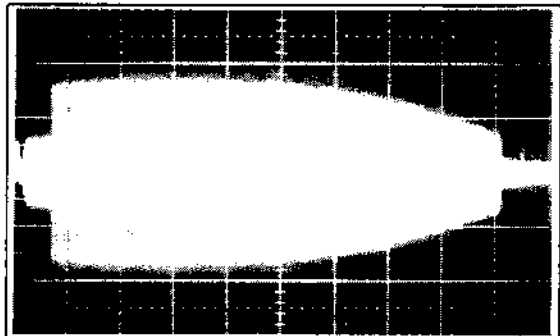
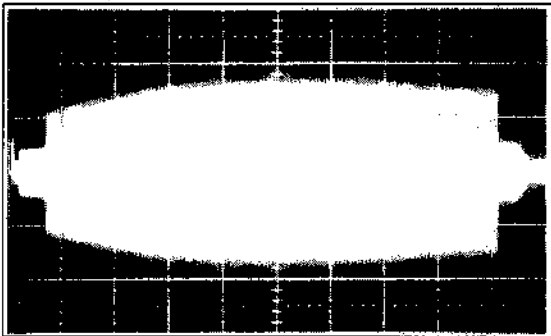
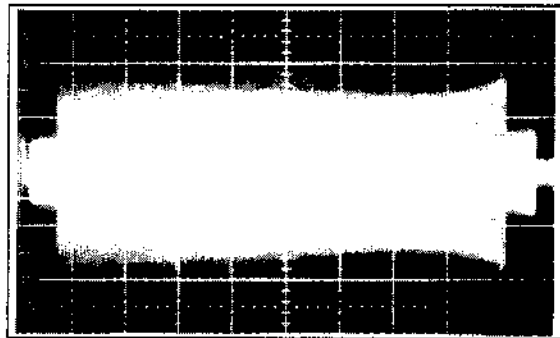
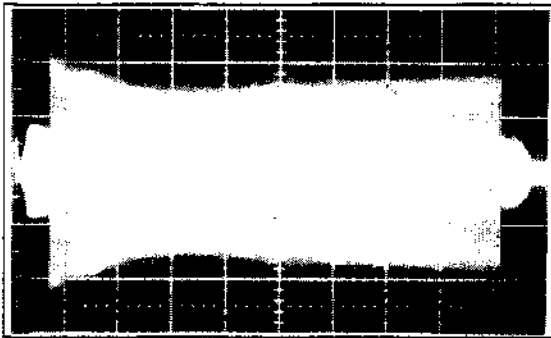
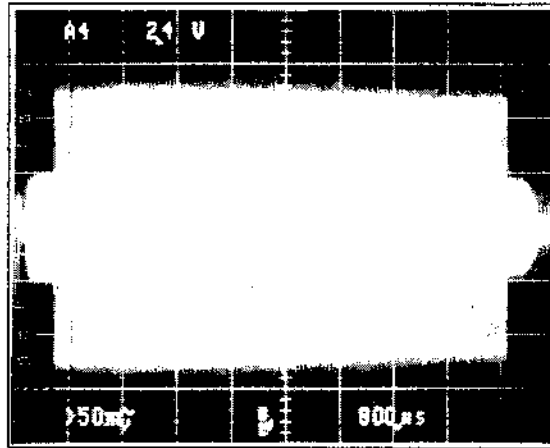
- (7) Turn RV102 (OFFSET VR) on the SV-123 board to make sure the above RF signal waveform is changed in a parallel direction.



→OK

If the waveform is not good

TP16 RF signal waveform A ch

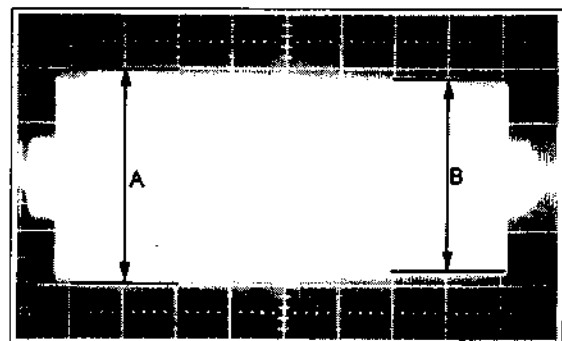


If the input waveform is not good,
readjust the S1 guide.

If the output waveform is no good,
readjust the T1 guide.

- (8) Turn \odot RV102 (OFFSET VR) on the DR-139 board so that the RF signal waveform level will be at 80% (maximum). At that time, confirm that the RF signal waveform complies with the following specifications. If the waveform is not good, repeat steps (6) and (7).

Specifications : $\frac{B}{A} \times 100(\%) \geq 80\%$



TP16 RF signal waveform A ch

4-4-4. RF raise up time check

Equipment and Tools Required

Oscilloscope

CH1 : AC 200mV/DIV

TY-7251 Test tape (8-909-813-00)

Connections

Same as "4-4-3. Tape path fine adjustment."

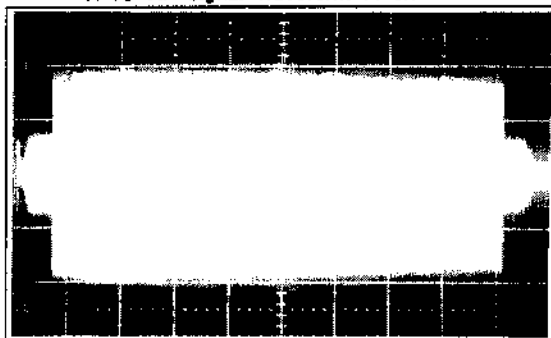
Adjustment Location

See adjustment location in "4-4-3. Tape path fine adjustment."

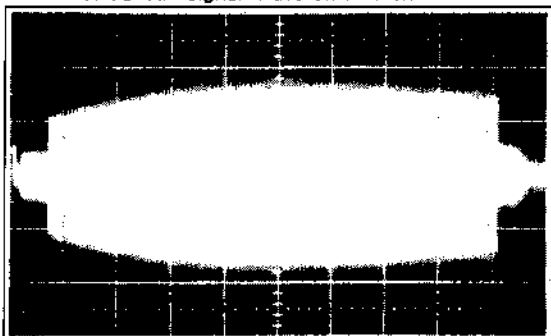
Procedure

- (1) Enter (OPEN) the TEST MENU [trnSP] and make the following selection.
FL tube display message : PAth Adj on
- (2) Connect the oscilloscope to the SV-123 board as indicated below.
Oscilloscope
CH1 : TP16 (RF-A) · E5 (GND), SV-123 board
TRIG : TP12 (SWP-A) · E2 (GND), SV-123 board
- (3) Load the TY-7251 test tape in the mechanical deck.
- (4) Press PLAY to playback the TY-7251 test tape.
- (5) Press STANDBY to set the STANDBY mode to OFF. Make sure the drum rotation has stopped. Then, press PLAY to check if the oscilloscope waveform will stabilize within 2 seconds.

TP16 RF signal waveform A ch



TP16 RF signal waveform A ch



4-4-5. Lack of RF waveform check in FF/REW

Equipment and Tools Required

Oscilloscope

CH1 : AC 200mV/DIV

Cassette tape (any 120-minute tape sold in the market) for checking the operation

Connections

Same as "4-4-3. Tape path fine adjustment."

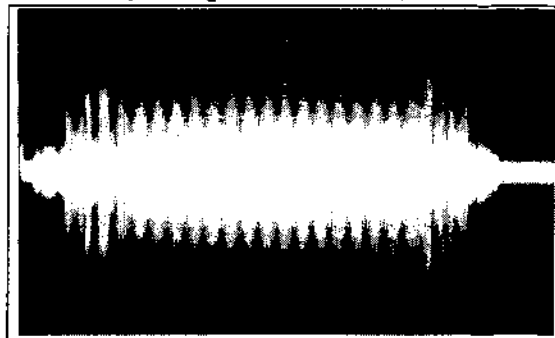
Adjustment Location

See adjustment location in "4-4-3. Tape path fine adjustment."

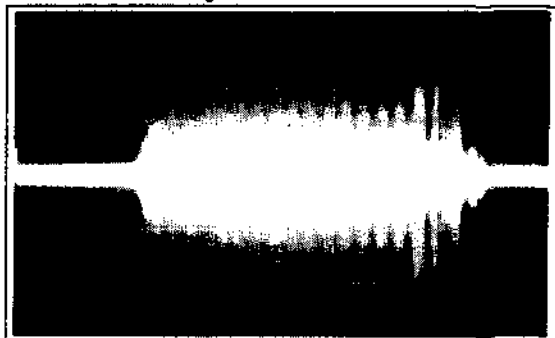
Procedure

- (1) Set the TEST MENU [trnSP] to the following selection.
FL tube display message : PAth Adj oFF
- (2) Connect the oscilloscope to the SV-123 board as indicated below.
Oscilloscope
CH1 : TP16 (RF-A) · E5 (GND), SV-123 board
TRIG : TP12 (SWP-A) · E2 (GND), SV-123 board
- (3) Load the 120-minute cassette tape for checking the operation in the mechanical deck.
- (4) Perform FF and REW operations at the beginning and end of the tape and confirm that the RF signal waveform of the oscilloscope does not lack.

TP16 RF signal waveform A ch



TP16 RF signal waveform A ch



4-4-6. Overall tape path check

Equipment and Tools Required

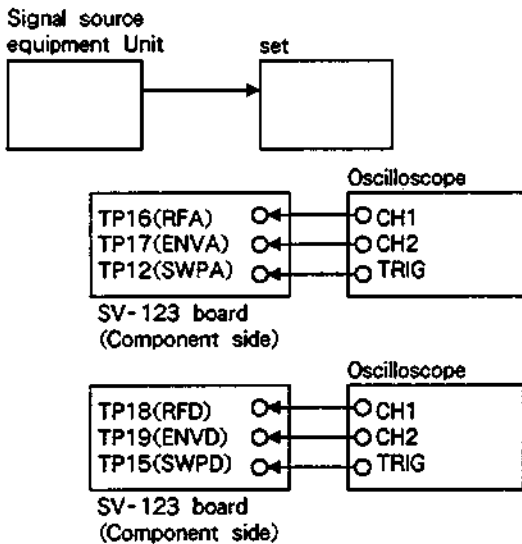
Oscilloscope

Cassette tape (any 120-minute tape sold in the market) for checking the operation

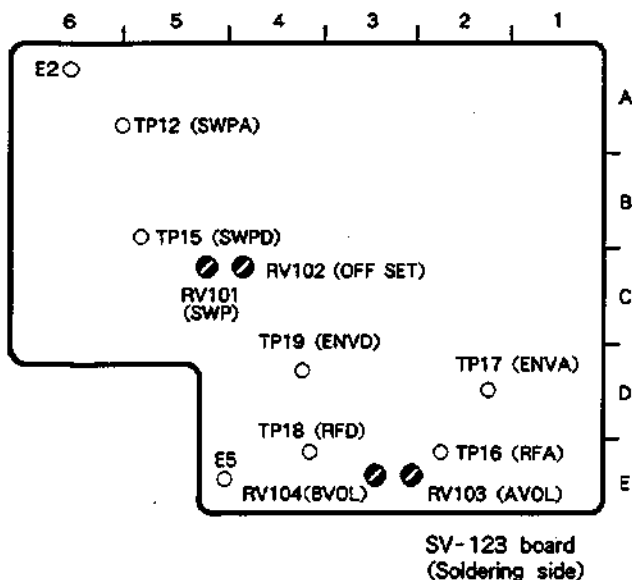
Signal source equipment (low frequency oscillator)

A signal can be a sine wave or a music signal with a signal input level of about standard level.

Connections



Measurement Location



Procedure

(1) Enter (OPEN) the TEST MENU [trnSP] and make the following selection.

FL tube display message : PatH Adj oFF

(2) Transmit an input signal level of about 0dB from the signal source equipment.

(3) Load the 120-minute cassette tape for checking the operation in the mechanical deck.

(4) Set the recording mode to ASSEMBLE and record the signal of step (2) above (for about 2 minutes).

(5) Playback the recorded portion and check the following items.

Leading head RF check

(6) Connect the oscilloscope to the SV-123 board as indicated below.

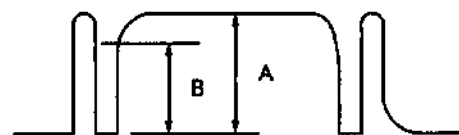
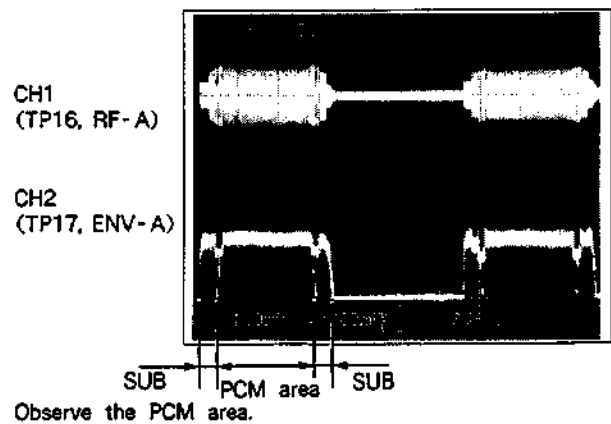
Oscilloscope

CH1 : TP16 (RF-A) · E5 (GND), SV-123 board

CH2 : TP17 (ENV-A) · E5 (GND), SV-123 board

TRIG : TP12 (SWP-A) · E2 (GND), SV-123 board

(7) Make sure the PCM area of the oscilloscope CH2 waveform (TP17, envelope) complies with the following specifications.

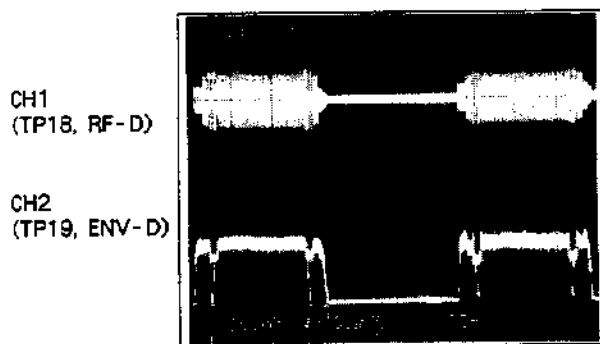


$$\text{Specifications : } \frac{B}{A} \times 100\% \geq 80\%$$

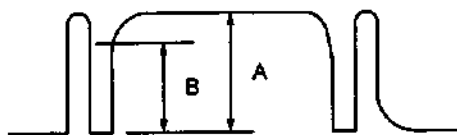
- (8) After pressing EJECT, load a cassette tape to check the operation again. Press PLAY and check if the oscilloscope CH2 waveform (TP17, envelope) attains the specification range indicated in step (7) within 3 seconds (the waveform stabilizes within 3 seconds).
- (9) In the same way as step (8), change the mode to PLAY from REV (x1) and check if the oscilloscope CH2 waveform (TP16, envelope) attains the specification range indicated in step (7) within 2 seconds (the waveform stabilizes within 2 seconds).
- (10) Press STOP.

Trailing head RF check

- (11) Connect the oscilloscope to the SV-123 board as indicated below.
Oscilloscope
CH1: TP18 (RF-D) · E5 (GND), SV-123 board
CH2: TP19 (ENV-D) · E5 (GND), SV-123 board
TRIG: TP15 (SWP-D) · E2 (GND), SV-123 board
- (12) Press PLAY to playback the portion recorded in step (4) and check the following item.
- (13) Make sure the PCM area of oscilloscope CH2 waveform (TP19, envelope) complies with the following specifications.



Observe the PCM area.



$$\text{Specifications: } \frac{B}{A} \times 100\% \geq 80\%$$

- (14) After pressing EJECT, load a cassette tape to check the operation again. Press PLAY and check if the oscilloscope CH2 waveform (TP19, envelope) attains the specification range indicated in step (13) within 3 seconds (the waveform stabilizes within 3 seconds).
- (15) In the same way as step (14), change the mode to PLAY from REV (x1) and check if the oscilloscope CH2 waveform (TP19, envelope) attains the specification range indicated in step (13) within 2 seconds (the waveform becomes stable within 2 seconds).
- (16) Press EJECT and remove the cassette tape for checking the operation.

4-5. Servo Block Adjustment

4-5-1. SWP position adjustment

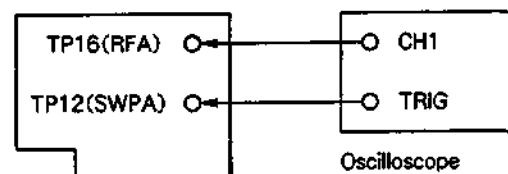
Adjust the SWP position when you replace the mechanical deck assembly, drum assembly, and SV-123 board. Perform the following adjustment while the cassette compartment is mounted in the mechanical deck.

Equipment and Tools Required

Oscilloscope

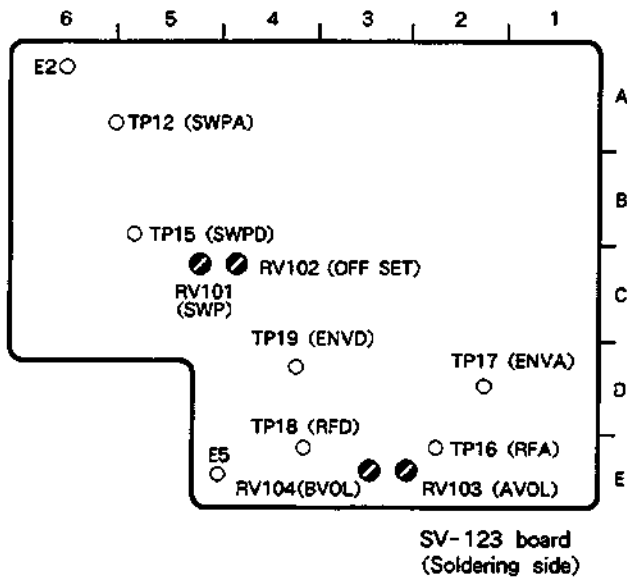
TY-7251 Test tape (8-909-813-00)

Connections



SV-123 board
(Soldering side)

Adjustment Location



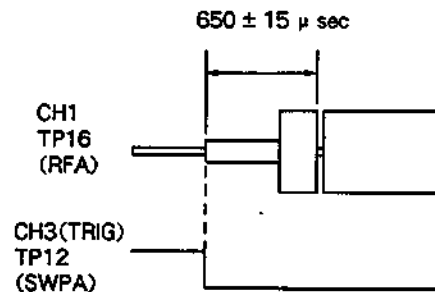
SV-123 board
(Soldering side)

Procedure

- (1) Enter (OPEN) the TEST MENU [trnSP] and make the following selections.
FL tube display message : PatH Adj on and
FL tube display message : dPG Adj on
- (2) Connect the oscilloscope to the SV-123 board as indicated below.
CH1 : TP16 (RF-A) • E5 (GND), SV-123 board
CH2 : TP18 (RF-D) • E5 (GND), SV-123 board
CH3 : TP12 (SWP-A) • E1 (GND), SV-123 board
- (3) Load the TY-7251 test tape.
- (4) Press PLAY to playback the TY-7251 test tape.
- (5) Adjust \odot RV102 on the SV-123 board to obtain maximum output of the RF waveform of oscilloscope CH1.
- (6) Adjust \odot RV101 on the SV-123 board so that the RF output waveform of oscilloscope CH1 complies with the following specifications.
Specifications :
T of the RF A output waveform = 650usec. \pm 15usec.
Adjustment Location : \odot RV101, SV-123 board
- (7) Press EJECT to remove the TY-7251 test tape from the mechanical deck.

- (8) Select the following TEST MENU modes.

FL tube display message : dPG Adj oFF and
FL tube display message : PatH Adj oFF



4-5-2. ATF playback AGC adjustment

Adjust the ATF playback AGC when you replace the mechanical deck assembly and drum assembly. Perform the following adjustment while the cassette compartment is mounted in the mechanical deck.

Equipment and Tools Required

- Oscilloscope
- TY-7111D Test tape (8-909-820-00)

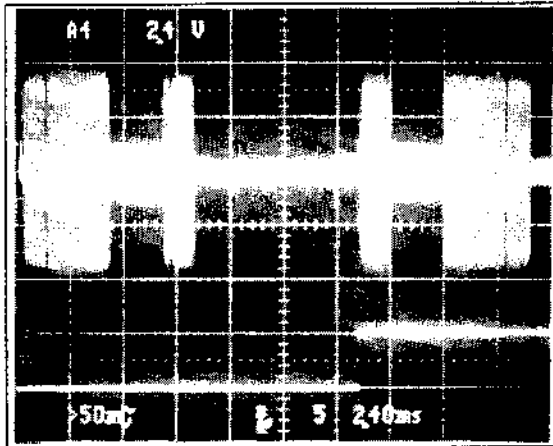
Connections

Same as "4-5-1. SWP position adjustment"

Procedure

- (1) Enter (OPEN) the TEST MENU [trnSP] and make the following selections.
FL tube display message : AGC Adj on
(flashing)
- (2) Load the TY-7111D test tape.

- (3) Press PLAY to playback the TY-7111D test tape. At that time, make sure the RF waveform is output properly. The output level of 1.57MHz should be 250mV or more.



- (4) Press SET. When you press SET, the message "ON" in the Work Area of FL tube display will be lit instead of flashing. This status indicates that the ATF playback AGC gain is being automatically adjusted (set). The adjusted gain will be displayed on the FL tube display.
- (5) Select the following TEST MENU mode and then press SET.
FL tube display message : AGc Adj oFF
- (6) Press EJECT to remove the TY-7111D test tape from the mechanical deck.

4-6. Recording/Playback Block Adjustment (Recording current level adjustment)

Adjust the recording current level when you replace the mechanical deck assembly, drum assembly, and RF-31 board assembly. Perform the adjustment while the cassette compartment is mounted in the mechanical deck.

4-6-1. Adjustment using the RF LEVEL CHECKER PD-817

This section provides information on the adjustment method using the RF LEVEL CHECKER PD-817, which is a dedicated adjustment tool. Follow the sequence below to make adjustments :

Equipment and Tools Required

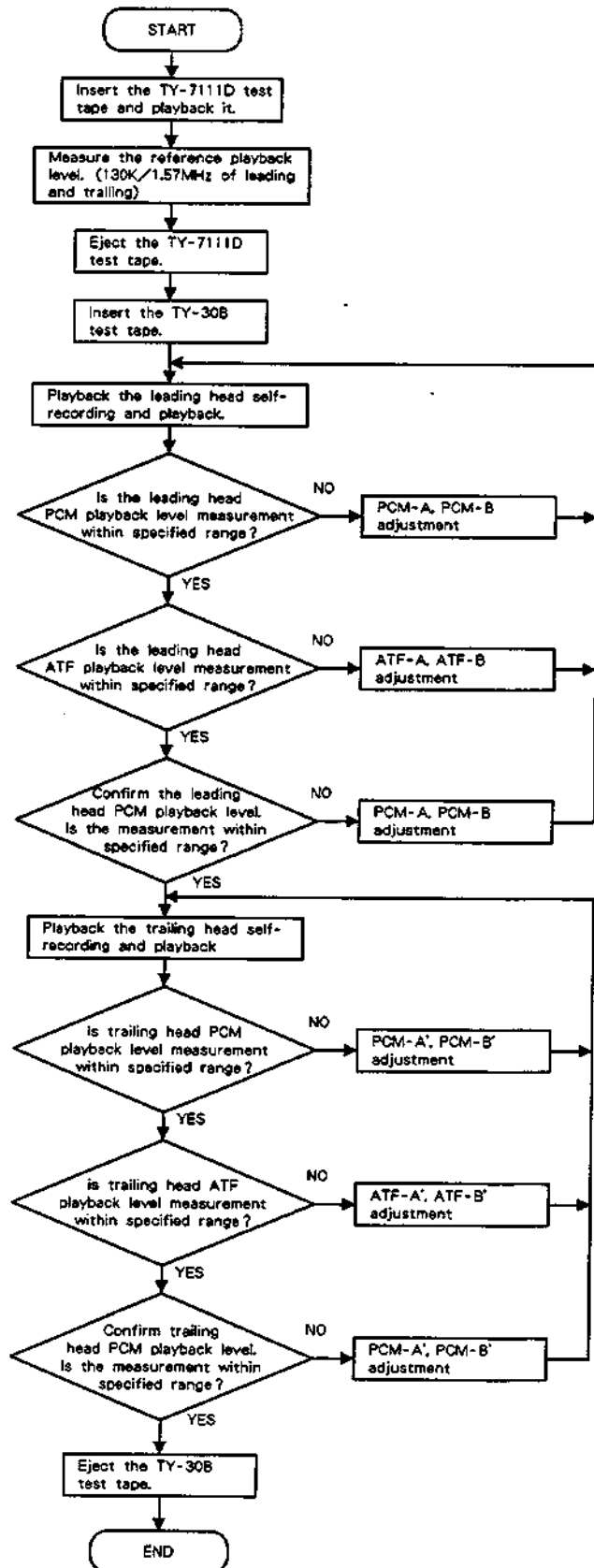
Oscilloscope

RF LEVEL CHECKER PD-817: (part no.: J-6228-170-A)

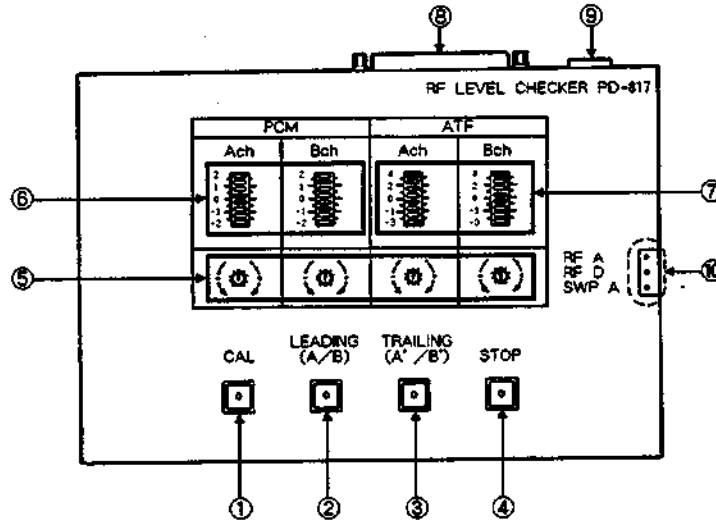
TY-7111D Test tape (part no.: 8-909-820-00)

TY-30B Test tape (part no.: 8-892-358-00)

Adjustment procedure



RF LEVEL CHECKER PD-817



Switches

① CAL :

Used for automatically measuring the reference level of the TY-7111D test tape. The indicator flashes during measurement. The flashing stops and the measurement is finished (the indicator lights.).

② LEADING (A, B) :

Used for self-recording and playback (automatic measurement) of PCM and ATF of the leading head using the TY-30B test tape. The indicator flashes during self-recording and playback. The flashing stops and the measurement is finished (the indicator lights.).

③ TRAILING (A, B) :

Used for self-recording and playback (automatic measurement) of PCM and ATF of the trailing head using the TY-30B test tape. The indicator flashes during self-recording and playback. The flashing stops and the measurement is finished (the indicator lights.).

④ STOP :

Used for canceling the measurements of ①, ② and ③ above.

Control

⑤ Offset dial :

Used for setting the measurement level of the TY-7111D test tape in accordance with the correction value table provided with the TY-7111D test tape to be used.

Level meter

⑥ PCM Ach, Bch :

Used for displaying the measurement results compared with the reference level of the TY-7111D test tape when the leading/trailing head PCM self-recording and playback level has been measured.

⑦ ATF Ach, Bch :

Used for displaying the measurement results compared with the reference level of the TY-7111D test tape when the leading/trailing head ATF self-recording and playback level has been measured.

Connectors

⑧ 37-Pin remote connector (D-SUB, female) :

Used to connect the supplied 37P parallel remote cable.

⑨ 6-pin connector (CN1) :

Used to connect the supplied 6P connector with RF-EXT board.

⑩ Monitor output (RF A, RF B, SWP-A) terminals :

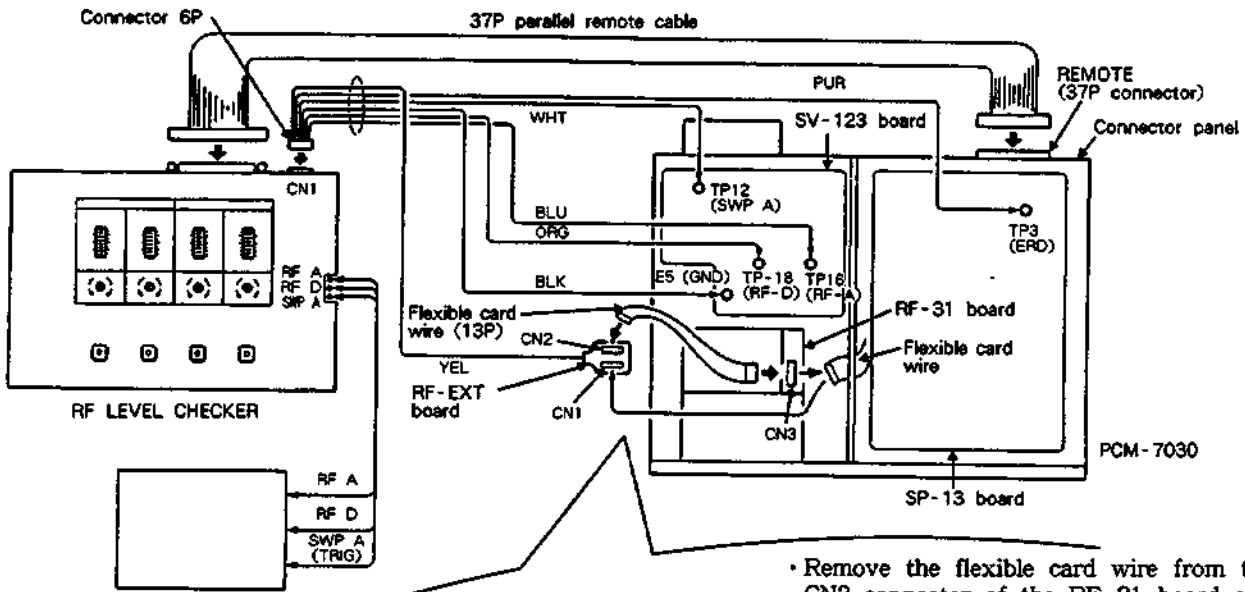
Used to connect the oscilloscope and monitor the RF A and RF B signals (SWP A is TRIG).

Accessories supplied

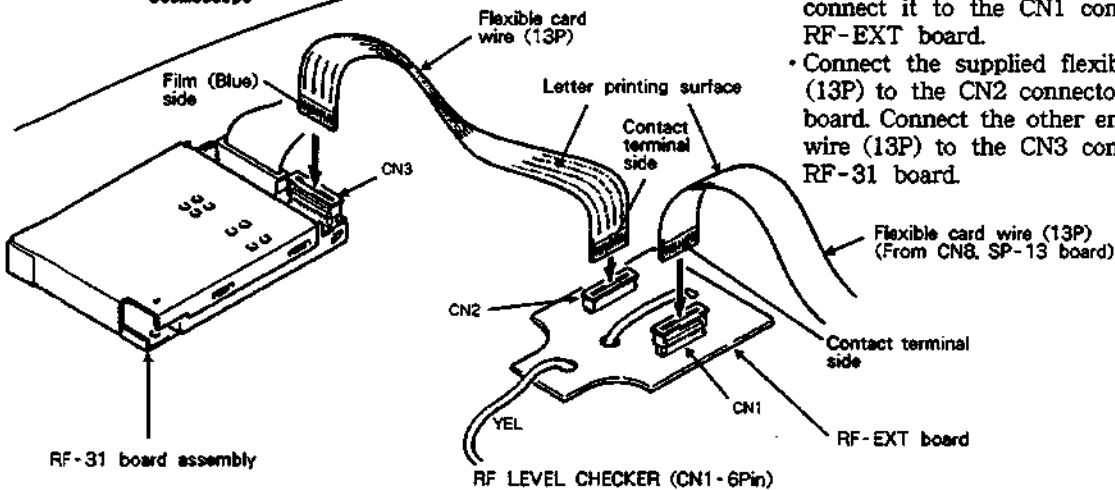
- 37P parallel remote cable : 1
- Flexible card wire 13P : 1
- RF-EXT board : 1

Connections

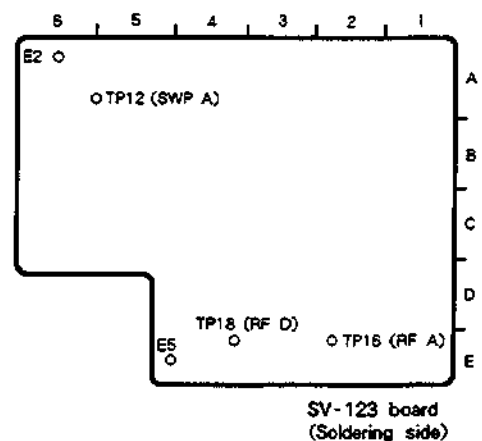
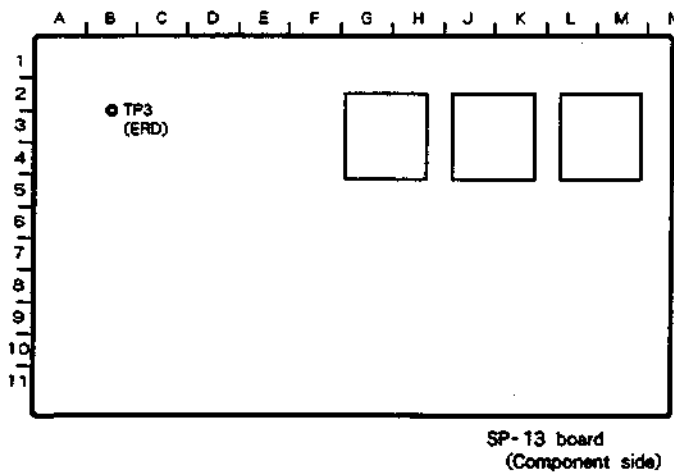
Note : When making the connections, be sure to turn off the power of the PCM-7030.



- Remove the flexible card wire from the CN3 connector of the RF-31 board and connect it to the CN1 connector of the RF-EXT board.
- Connect the supplied flexible card wire (13P) to the CN2 connector of RF-EXT board. Connect the other end of the card wire (13P) to the CN3 connector of the RF-31 board.



Measurement location



Preparations

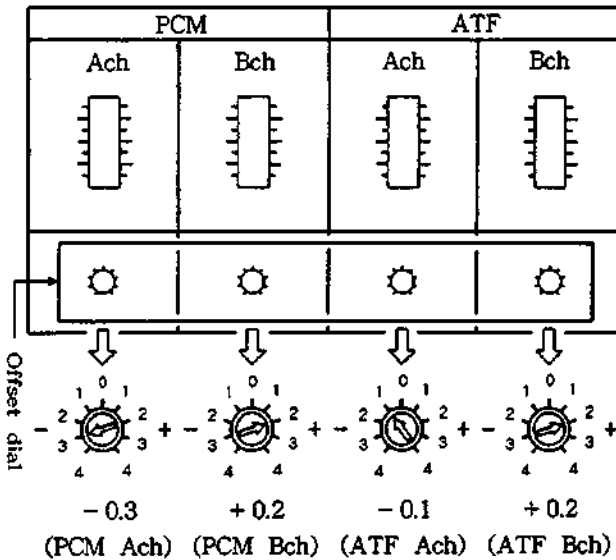
1. Use the offset dial of the RF level checker and set the correction values of the 1.57MHz and 130KHz Ach/Bch in accordance with the correction value table provided with the TY-7111D test tape to be used.

Setting example

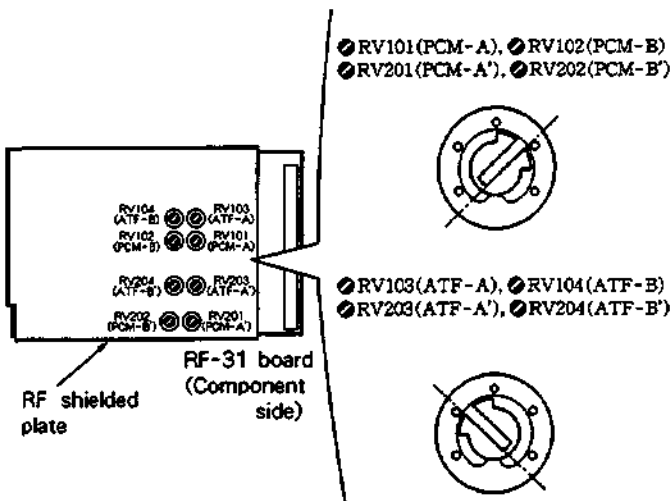
Example of correction value table :

	130.7 (KHz)	1.568 (MHz)
Ach	-0.1	-0.3
Bch	+0.2	+0.2

Offset dial setting (In the case of above correction values)



2. Set each control volume on the RF-31 board mechanically as indicated below.

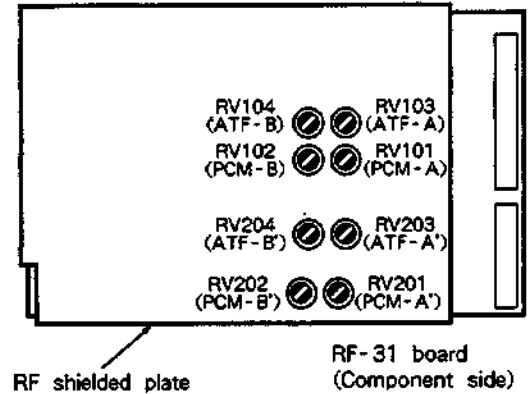


Switches and control setting

PCM-7030 front panel

SYNC mode switch ; INT (internal synchronization mode)

Adjustment location



1. Leading and trailing heads PCM/ATF reference recording current level measurement (TY-7111D test tape playback level measurement)

- (1) Insert the TY-7111D test tape.
- (2) Press the CAL switch of the RF LEVEL CHECKER. The playback level of 1.57MHz/130KHz of the leading and trailing heads are automatically measured, The CAL indicator flashes during measurement.
- (3) The flashing stops and the measurement is finished (The indicator lights.).
- (4) Eject the TY-7111D test tape.

Note : Rapid Flashing of the CAL Indicator :

If the playback level data on the TY-7111D test tape cannot be fed for the 128DAT frame, the CAL indicator flashes rapidly.

In this case, perform the following procedures.

- ① Advance the test tape (playback portion) slightly and perform the measurement again.
- ② Replace the TY-7111D test tape with a new one and perform the measurement. If the situation remains the same even when the new test tape is used, the drum may be defective. Replace the drum.

2. Leading head PCM/ATF recording current level adjustment

Notes on adjustment :

1. When adjusting ●RV101, ●RV102, ●RV103, and ●RV104 be aware of the following items.

1) Mutual relationship between Ach and Bch of PCM adjustment level

• When adjusting the level of the Ach (Bch) indicator to high, the level of the Bch (Ach) indicator will drop slightly.

• When adjusting the level of the Ach (Bch) indicator to low, the level of the Bch (Ach) indicator will drop slightly.

2) Mutual relationship between PCM level and ATF level

• When adjusting the level of the Ach PCM indicator to high (low), the level of the Ach ATF indicator will increase (drop) slightly.

• When adjusting the level of the Bch PCM indicator to high (low), the level of the Bch ATF indicator will increase (drop) slightly.

2. Note on the test menu settings when the TY-30B test tape is loaded.

The test menu "tEst SiG A-tEst in" previously set, will be voided if the tape is repeatedly loaded and ejected. In this case, the test menu "tEst SiG A-tEst in" should be set again, otherwise recordings are not possible.

Leading head PCM (Ach, Bch) recording current level adjustment

(1) Load the TY-30B test tape (blank).

(2) Enter (OPEN) the SERVICE MENU and set the following TEST MENU mode.

FL tube display message : tEst SiG A-tSt in (The ALARM indicator flashes and the ASSEMBLE key indicator lights.)

(3) Press the LEADING switch of the RF level checker to perform the self-recording and playback (automatic measurement).

The LEADING switch indicator flashes during self-recording and playback. The flashing stops and the measurement is finished (The indicator lights.).

Note : If the TY-30B test tape to be used already has a recording, the tape will play for 15 seconds and then stop. If this happens, replace the TY-30B test tape with a blank tape and retry from step (3).

(4) Make sure the level meter indication (Ach and Bch PCM levels) of the RF level checker complies with the following specifications.

If the playback Ach and Bch PCM levels do not comply with the specifications, adjust

●RV101 and ●RV102 on the RF-31 board as indicated below.

If the indication level of a level meter is higher than the specifications :

• Leading head Ach PCM level ;

Turn ⒶRV101 counterclockwise.

• Leading head Bch PCM level ;

Turn ⒶRV102 counterclockwise.

If the indication level of a level meter is lower than the specifications :

• Leading head Ach PCM level ;

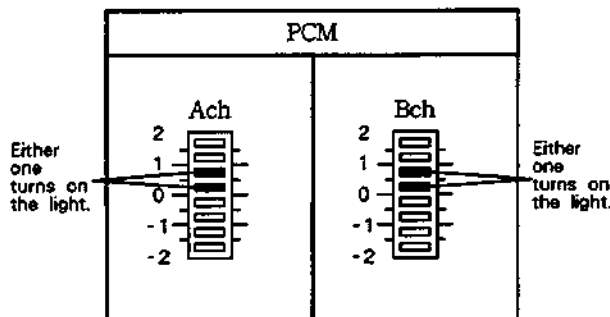
Turn ⒶRV101 clockwise.

• Leading head Bch PCM level ;

Turn ⒶRV102 clockwise.

Specifications :

Level indicators of the PCM (Ach, Bch) level meter of the RF LEVEL CHECKER = Light indicators between 0dB and 1dB.



Adjustment : ⒶRV101 (Ach, PCM), RF-31 board

ⒶRV102 (Bch, PCM), RF-31 board

Note : Rapid flashing of the LEADING switch

indicator means that enough data cannot be gathered for the 128 DAT frame because the recording current level is considerably lower than the reference level. In this case, the indicator flashes rapidly.

Under this condition, adjust the control volume (turn ⒶRV101 and ⒶRV102 clockwise). Perform the measurement by pressing the LEADING switch again.

If the same condition occurs even when you increase the recording level to maximum (by turning ⒶRV101 and ⒶRV102 clockwise), the TY-30B test tape may be slack or the drum may be defective. Therefore, replace the TY-30B test tape or the drum with new ones.

(5) Repeat steps (3) and (4) until you get the playback level that complies with the specifications indicated in step (4).

Leading head ATF (Ach, Bch) recording current level adjustment

(6) Press the LEADING switch of the RF LEVEL CHECKER to perform the self-recording and playback (automatic measurement).

The LEADING switch indicator flashes during self-recording and playback. The flashing stops and the measurement is finished (the indicator lights.).

(7) Make sure the level meter indication (leading head Ach and Bch ATF level) of the RF LEVEL CHECKER complies with the following specifications.

If the playback Ach and Bch ATF levels do not comply with the specifications, adjust ⒶRV103 and ⒶRV104 on the RF-31 board as indicated below.

If the indication level of a level meter is higher than the specifications :

• Leading head Ach ATF level ;

Turn ⒶRV103 counterclockwise.

• Leading head Bch ATF level ;

Turn ⒶRV104 counterclockwise.

If the indication level of a level meter is lower than the specifications :

• Leading head Ach ATF level ;

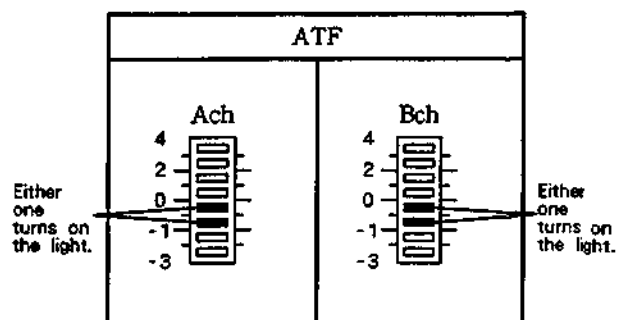
Turn ⒶRV103 clockwise.

• Leading head Bch ATF level ;

Turn ⒶRV104 clockwise.

Specifications :

Level indicators of the ATF (Ach, Bch) level meter of the RF LEVEL CHECKER = Light indicators between -1dB and 0dB.



Adjustment : ⒶRV103 (Ach, ATF), RF-31 board

ⒶRV104 (Bch, ATF), RF-31 board

(8) Repeat steps (6) and (7) until you get the playback level that complies with the specifications indicated in step (7).

(9) After adjusting the ATF level, make sure the PCM (Ach, Bch) level indication complies with the specifications indicated in step (4).

If the PCM level does not comply with the specifications, make adjustments as indicated in step (3) onwards.

3. Trailing head PCM/ATF recording current level adjustment

Notes on adjustment :

1. When adjusting RV201, RV202, RV203, and RV204 be aware of the following items.

1) Mutual relationship between Ach and Bch of PCM adjustment level

- When adjusting the level of the Ach (Bch) indicator to high, the level of the Bch (Ach) indicator will drop slightly.
- When adjusting the level of the Ach (Bch) indicator to low, the level of the Bch (Ach) indicator will drop slightly.

2) Mutual relationship between PCM level and ATF level

- When adjusting the level of the Ach PCM indicator to high (low), the level of the Ach ATF indicator will increase (drop) slightly.
- When adjusting the level of the Bch PCM indicator to high (low), the level of the Bch ATF indicator will increase (drop) slightly.

2. Note on the test menu settings when the TY-30B test tape is loaded.

The test menu "tESt SiG d-tESt in" previously set, will be voided if the tape is repeatedly loaded and ejected. In this case, the test menu "tESt SiG d-tESt in" should be set again otherwise recordings are not possible.

Trailing head PCM (Ach, Bch) recording current level adjustment

- (1) Insert the TY-30B test tape (blank).
- (2) Enter (OPEN) the SERVICE MENU and select the

following TEST MENU mode.

FL tube display message : tESt SiG d-tSt in
(Only the ALARM indicator flashes.)

(3) Press the TRAILING switch of the RF level checker to perform the self-recording and playback (automatic measurement).

The TRAILING switch indicator flashes during self-recording and playback. The flashing stops and the measurement is finished (The indicator lights.)

(4) Make sure the level meter indication (Ach and Bch PCM level) of the RF level checker complies with the following specifications.

If the playback Ach and Bch PCM levels do not comply with the specifications, adjust

RV201 and RV202 on the RF-31 board as indicated below.

If the indication level of a level meter is higher than the specifications :

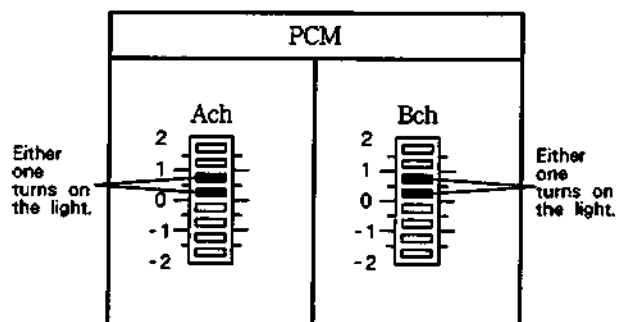
- Trailing head Ach PCM level ;
Turn RV201 counterclockwise.
- Trailing head Bch PCM level ;
Turn RV202 counterclockwise.

If the indication level of a level meter is lower than the specifications :

- Trailing head Ach PCM level ;
Turn RV201 clockwise.
- Trailing head Bch PCM level ;
Turn RV202 clockwise.

Specifications :

Level indicators of the PCM (Ach, Bch) level meter of the RF LEVEL CHECKER = Light indicators between 0dB and 1dB.



Adjustment : RV201 (Ach, PCM), RF-31 board
RV202 (Bch, PCM), RF-31 board

Note : Rapid flashing of the TRAILING switch indicator means that enough data cannot be gathered for the 128DAT frame because the recording current level is considerably lower than the reference level. In this case, the indicator flashes rapidly.

Under this condition, adjust the control volume (turn ⓄRV201 and ⓄRV202 clockwise). Perform the measurement by pressing the TRAILING switch again.

If the same condition occurs even when you increase the recording level to maximum (by turning ⓄRV201 and ⓄRV202 clockwise), the TY-30B test tape may be slack or the drum may be defective. Therefore, replace the TY-30B test tape or the drum with new ones.

- (5) Repeat steps (3) and (4) until you get the playback level that complies with the specifications indicated in step (4).

Trailing head ATF (Ach, Bch) recording current level adjustment

- (6) Press the TRAILING switch of the RF LEVEL CHECKER to perform the self-recording and playback (automatic measurement).

The TRAILING switch indicator flashes during self-recording and playback. The flashing stops and the measurement is finished (The indicator lights.).

- (7) Make sure the level meter indication (trailing head Ach and Bch ATF level) of the RF LEVEL CHECKER complies with the following specifications. If the playback Ach and Bch ATF levels do not comply with the specifications, adjust ⓄRV203 and ⓄRV204 on the RF-31 board as indicated below.

If the indication level of a level meter is higher than the specifications :

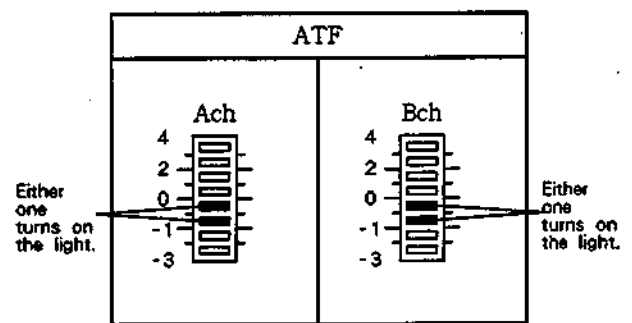
- Trailing head Ach ATF level ;
Turn ⓄRV203 counterclockwise.
- Trailing head Bch ATF level ;
Turn ⓄRV204 counterclockwise.

If the indication level of a level meter is lower than the specifications :

- Trailing head Ach ATF level ;
Turn ⓄRV203 clockwise.
- Trailing head Bch ATF level ;
Turn ⓄRV204 clockwise.

Specifications :

Level indicators of the ATF (Ach, Bch) level meter of the RF LEVEL CHECKER = Light indicators between -1dB and 0dB.



- Adjustment : ⓄRV203 (Ach, ATF), RF-31 board
ⓄRV204 (Bch, ATF), RF-31 board

- (8) Repeat steps (6) and (7) until you get the playback level that complies with the specifications indicated in step (7).
- (9) After adjusting the ATF level, make sure the PCM (Ach, Bch) level indication complies with the specifications indicated in step (4).
If the PCM level does not comply with the specifications, make adjustments as indicated in step (3) onwards.

4-6-2. Adjustment using a spectrum analyzer

This section provides information on the adjustment method using the spectrum analyzer. Follow the sequence below to make adjustments:

Adjustment Location

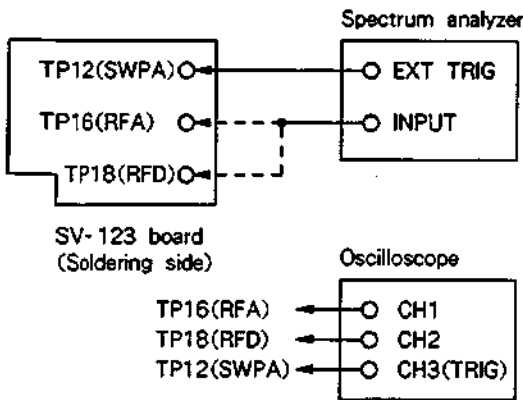
1. Leading head PCM recording current level adjustment
2. Leading head ATF recording current level adjustment
3. Trailing head PCM recording current level adjustment
4. Trailing head ATF recording current level adjustment

Note: Perform the adjustment while the cassette compartment is mounted in the mechanical deck.

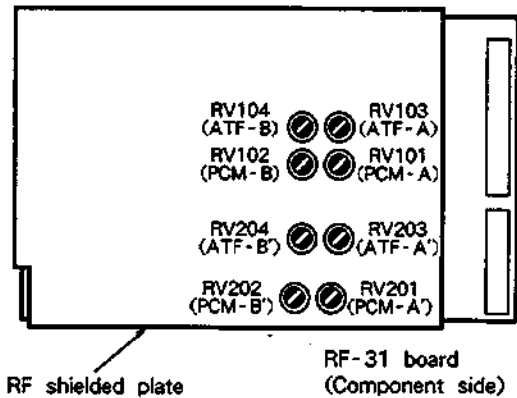
Equipment and Tools Required

- Spectrum analyzer
- Oscilloscope
- TY-7111D Test tape (8-909-820-00)
- TY-30B test tape (8-892-358-00)

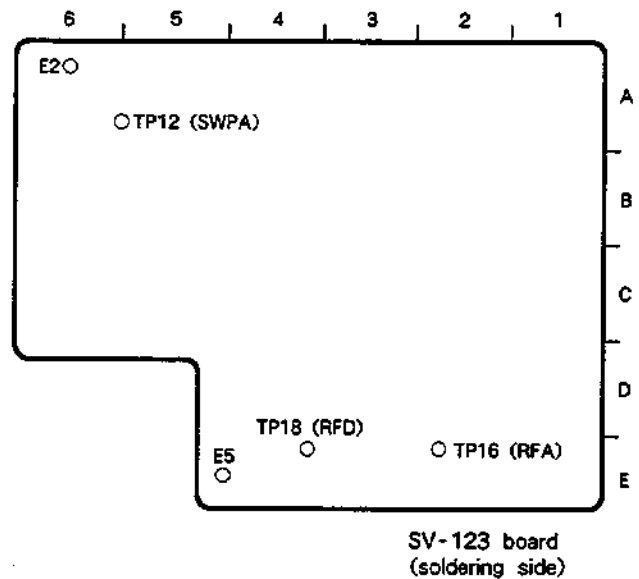
Connections



Adjustment Location

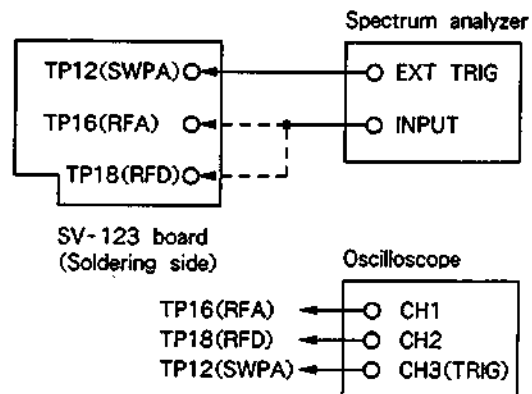


Measurement Location



1. Leading head PCM recording current level adjustment

Leading head Ach recording current level adjustment
 (1) Connect the spectrum analyzer to the SV-123 board as shown below.



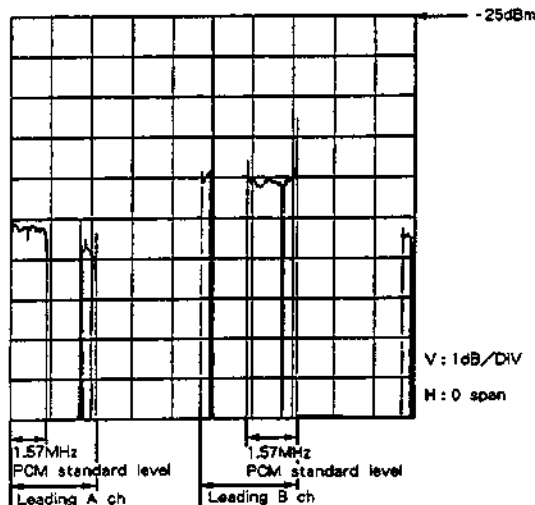
PCM - 7080 (UC, EK)

- (2) Set the spectrum analyzer as indicated below.

Center frequency : 1.57MHz
 Reference level : -25dBm
 Frequency span : 0Hz
 Resolution Bandwidth (RBW) : 30kHz
 Video Bandwidth (VBW) : 300kHz
 Input ATT : 10dB
 SWP : 30msec.

- (3) Load the TY-7111D test tape and play the tape.

- (4) Find the average of the RF output waveforms using the spectrum analyzer and store the data in the spectrum analyzer memory.



- (5) Press EJECT to remove the TY-7111D test tape.

- (6) Load the TY-30B test tape (blank).

Note : You need to load the TY-30B test tape to specify the "tESt SiG A-157_13" of the TEST MENU.

- (7) Enter (OPEN) the SERVICE MENU and select the following TEST MENU mode.

FL tube display message : tESt SiG OFF

- (8) Hold down the DATA key and turn the SEARCH dial clockwise until the following message appears. Then, press SET.

FL tube display message : tESt SiG A-157_13
 (flashing → ON)

- (9) Press REC and PLAY to record the test signal specified in step (7) (for about 30 seconds).

Note : Since the time code will not be recorded

in this mode, specify the display counter mode and use it as a guide to find the recorded portion of a tape.

- (10) Playback the portion of the TY-30B test tape recorded in step (9).

- (11) Make sure the playback Leading head Ach PCM level (TY-30B test tape) of the spectrum analyzer complies with the following specifications against the previously stored standard Leading head Ach PCM level (TY-7111D test tape). If the playback Leading head Ach PCM level does not comply with the specifications, adjust RV101 on the RF-31 board as indicated below.

If the playback level is higher than the specifications, turn RV101 counterclockwise. If the playback level is lower than the specifications, turn RV101 clockwise.

Specifications :

TY-30B test tape playback level (Leading head Ach) = (Standard level * + 0.5dB) ± 0.5dB

* Standard level = Playback level of the TY-7111D test tape ± correction value (See the correction value table provided with the TY-7111D test tape for the correction value you should use.)

Adjustment Location : RV101, RF-31 board

- (12) Repeat steps (6) to (11) until you get the playback level that complies with the specifications indicated in step (10). (Repeat the self-recording and playback.)

Caution : Be careful not to overwrite the TY-30B test tape when you perform the recording.

Leading head Bch recording current level adjustment

- (13) Hold down the DATA key and turn the SEARCH dial counterclockwise until the following message appears. Then, press SET. (Set the mode during the STOP mode.)

FL tube display message : tESt SiG A-13_157
 (flashing → OFF)

- (14) Press REC and PLAY to record the test signal specified in step (13) using the TY-30B test tape (for about 30 seconds).
- (15) Playback the portion of the TY-30B test tape recorded in step (14).
- (16) Make sure the playback Leading head Bch PCM level (TY-30B test tape) of the spectrum analyzer complies with the following specifications against the previously stored standard Leading head Bch PCM level (TY-7111D test tape). If the playback Leading head Bch PCM level does not comply with the specifications, adjust RV102 on the RF-31 board as indicated below.

If the playback level is higher than the specifications, turn RV102 counterclockwise. If the playback level is lower than the specifications, turn RV102 clockwise.

Specifications :

TY-30B test tape playback level (Leading head Bch) = (Standard level * + 0.5dB) ± 0.5dB

* Standard level = Playback level of the TY-7111D test tape ± correction value (See the correction value table provided with the TY-7111D test tape for the correction value you should use.)

Adjustment Location : RV102, RF-31 board

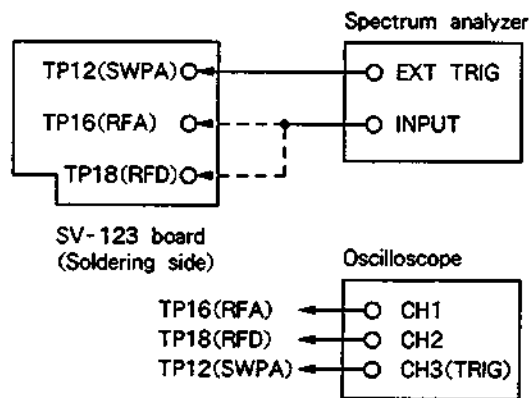
- (17) Repeat steps (14) to (16) until you get the playback level that complies with the specifications indicated in step (16). (Repeat the self-recording and playback.)
- (18) Since RV101 and RV102 affect each other, perform steps (6) to (11) after you adjust RV102 to confirm that the Ach PCM level complies with the specifications indicated in step (11).
- (19) After you adjust the Leading head PCM recording current level, be sure to adjust the "2. Leading head ATF recording current level".

2. Leading head ATF recording current level adjustment

Be sure to adjust the Leading head ATF recording current level when you adjust the "1. Leading head PCM recording current level".

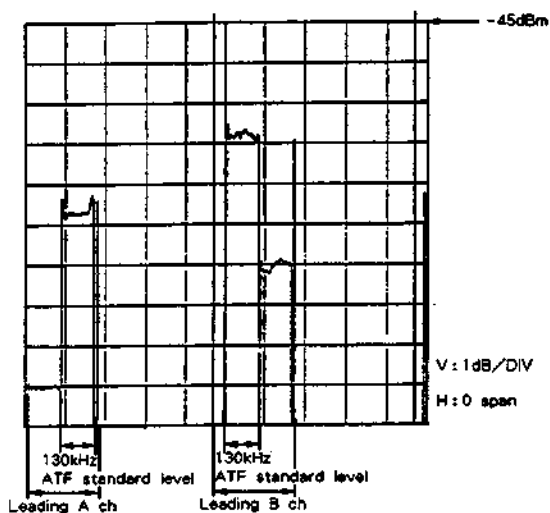
Leading head Ach ATF recording current level adjustment

- (1) Connect the spectrum analyzer to the SV-123 board as shown below.



- (2) Set the spectrum analyzer as indicated below.

Center frequency	: 130kHz
Reference level	: -45.0dBm
Frequency span	: 0Hz
Resolution Bandwidth (RBW)	: 30kHz
Video Bandwidth (VBW)	: 300kHz
Input ATT	: 10dB
SWP	: 30msec.
- (3) Load the TY-7111D test tape and play the tape.
- (4) Find the average of the RF output waveforms using the spectrum analyzer and store the data in the spectrum analyzer memory.



- (5) Press EJECT to remove the TY-7111D test tape.
- (6) Load the TY-30B test tape (blank).
- (7) Select the following TEST MENU mode.

FL tube display message : tESt SiG A-13_157
(flashing → ON)

- (8) Press REC and PLAY to record the test signal specified in step (7) (for about 30 seconds).
- (9) Playback the portion of the TY-30B test tape recorded in step (8).
- (10) Make sure the playback Ach ATF level (TY-30B test tape) of the spectrum analyzer complies with the following specifications against the previously stored standard playback Ach ATF level (TY-7111D test tape). If the playback Ach ATF level does not comply with the specifications, adjust RV103 on the RF-31 board as indicated below.

If the playback level is higher than the specifications, turn RV103 counterclockwise.
If the playback level is lower than the specifications, turn RV103 clockwise.

Specifications :

TY-30B test tape playback level (Leading head Ach ATF) = (Standard level* - 0.5dB) ± 0.5dB

* Standard level = Playback level of the TY-7111D test tape ± correction value (See the correction value table provided with the TY-7111D test tape for the correction value you should use.)

Adjustment Location : RV103, RF-31 board

- (11) Repeat steps (6) to (10) until you get the playback level that complies with the specifications indicated in step (10). (Repeat the self-recording and playback.)

Leading head Bch ATF recording current level adjustment

- (12) Hold down the DATA key and turn the SEARCH dial counterclockwise until the following message appears. Then, press SET. (Set the mode during the STOP mode.)

FL tube display message : tESt SiG A-157_13
(flashing → ON)

- (13) Press REC and PLAY to record the test signal specified in step (12) using the TY-30B test tape (for about 30 seconds).
- (14) Playback the portion of the TY-30B test tape recorded in step (13).
- (15) Make sure the playback Bch ATF level (TY-30B test tape) of the spectrum analyzer complies with the following specifications against the previously stored standard playback Bch ATF level (TY-7111D test tape). If the playback Bch ATF level does not comply with the specifications, adjust RV104 on the RF-31 board as indicated below.

If the playback level is higher than the specifications, turn RV104 counterclockwise.
If the playback level is lower than the specifications, turn RV104 clockwise.

Specifications :

TY-30B test tape playback level (Leading head Bch ATF) = (Standard level* - 0.5dB) ± 0.5dB
* Standard level = Playback level of the TY-7111D test tape ± correction value (See the correction value table provided with the TY-7111D test tape for the correction value you should use.)

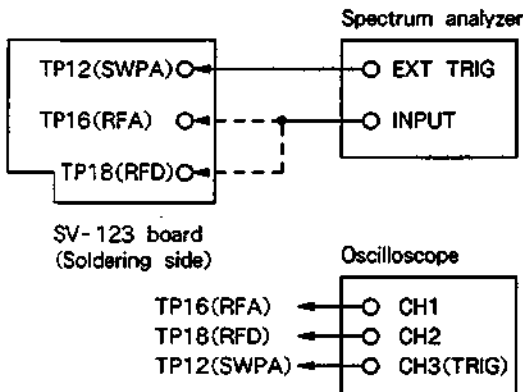
Adjustment Location : RV104, RF-31 board

- (16) Repeat steps (13) to (15) until you get the playback level that complies with the specifications indicated in step (15). (Repeat the self-recording and playback.)

3. Trailing head PCM recording current level adjustment

Trailing head Ach recording current level adjustment

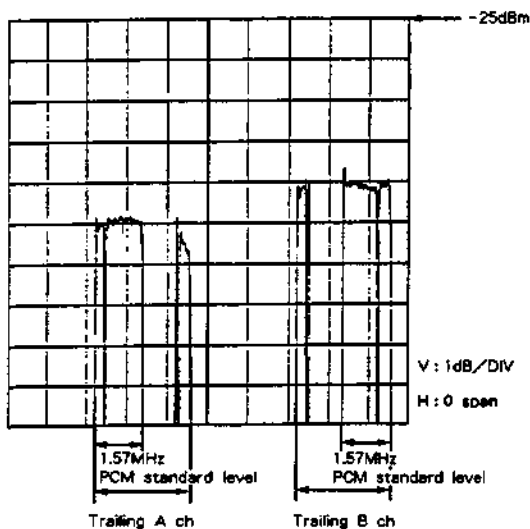
- (1) Connect the spectrum analyzer to the SV-123 board as shown below.



- (2) Set the spectrum analyzer as indicated below.

Center frequency	: 1.57MHz
Reference level	: -25dBm
Frequency span	: 0Hz
Resolution Bandwidth (RBW)	: 30kHz
Video Bandwidth (VBW)	: 300kHz
Input ATT	: 10dB
SWP	: 30msec.

- (3) Load the TY-7111D test tape and play the tape.
 (4) Find the average of the RF output waveforms using the spectrum analyzer and store the data in the spectrum analyzer memory.



- (5) Press EJECT to remove the TY-7111D test tape.
 (6) Load the TY-30B test tape (blank).
 (7) Enter (OPEN) the SERVICE MENU and select the following TEST MENU mode.

FL tube display message: tEST SiG OFF

- (8) Hold down the DATA key and turn the SEARCH dial clockwise until the following message appears. Then, press SET.

FL tube display message: tEST SiG D-157_13
 (flashing → ON)

- (9) Press REC and PLAY to record the test signal specified in step (7) (for about 30 seconds).
 (10) Playback the portion of the TY-30B test tape recorded in step (9).
 (11) Make sure that the Trailing head playback Ach PCM level (TY-30B test tape) of the spectrum analyzer complies with the following specifications against the previously stored standard Trailing head Ach PCM level (TY-7111D test tape). If the Trailing head playback Ach PCM level does not comply with the specifications, adjust RV201 on the RF-31 board as indicated below.

If the playback level is higher than the specifications, turn RV201 counterclockwise. If the playback level is lower than the specifications, turn RV201 clockwise.

Specifications :

TY-30B test tape playback level (Trailing head Ach PCM) = (Standard level * + 0.5dB) ± 0.5dB
 * Standard level = Playback level of the TY-7111D test tape ± correction value (See the correction value table provided with the TY-7111D test tape for the correction value you should use.)

Adjustment Location : RV201, RF-31 board

- (12) Repeat steps (6) to (11) until you get the playback level that complies with the specifications indicated in step (10). (Repeat the self-recording and playback.)

Caution : Be careful not to overwrite the TY-30B test tape when you perform the recording.

Trailing head Bch PCM recording current level adjustment

(13) Hold down the DATA key and turn the SEARCH dial counterclockwise until the following message appears. Then, press SET. (Set the mode during the STOP mode.)
 FL tube display message : tEst SiG D-13_157
 (flashing → ON)

(14) Press REC and PLAY to record the test signal specified in step (13) using the TY-30B test tape (for about 30 seconds).

(15) Playback the portion of the TY-30B test tape recorded in step (14).

(16) Make sure the playback Trailing head Bch PCM level (TY-30B test tape) of the spectrum analyzer complies with the following specifications against the previously stored standard Trailing head Bch PCM level (TY-7111D test tape). If the playback Trailing head Bch PCM level does not comply with the specifications, adjust RV202 on the RF-31 board as indicated below.

If the playback level is higher than the specifications, turn RV202 counterclockwise. If the playback level is lower than the specifications, turn RV202 clockwise.

Specifications :

TY-30B test tape playback level (Trailing head Bch PCM) = (Standard level* + 0.5dB) ± 0.5dB
 * Standard level = Playback level of the TY-7111D test tape ± correction value (See the correction value table provided with the TY-7111D test tape for the correction value you should use.)

Adjustment Location : RV202, RF-31 board

(17) Repeat steps (14) to (16) until you get the playback level that complies with the specifications indicated in step (16). (Repeat the self-recording and playback.)

(18) Since RV201 and RV202 affect each other, perform steps (6) to (11) after you adjust RV202 to make sure the Ach PCM level complies with the specifications indicated in step (11).

(19) After you adjust the Trailing head PCM

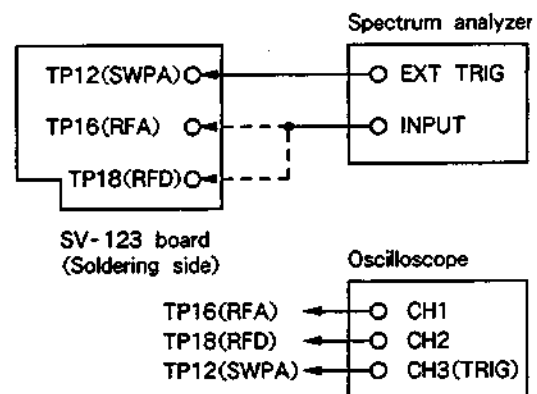
recording current level, be sure to adjust the "4. Trailing head ATF recording current level".

4. Trailing head ATF recording current level adjustment

Be sure to adjust the Trailing head ATF recording current level when you adjust the "3. Trailing head PCM recording current level".

Trailing head Ach ATF recording current level adjustment

(1) Connect the spectrum analyzer to the SV-123 board as shown below.

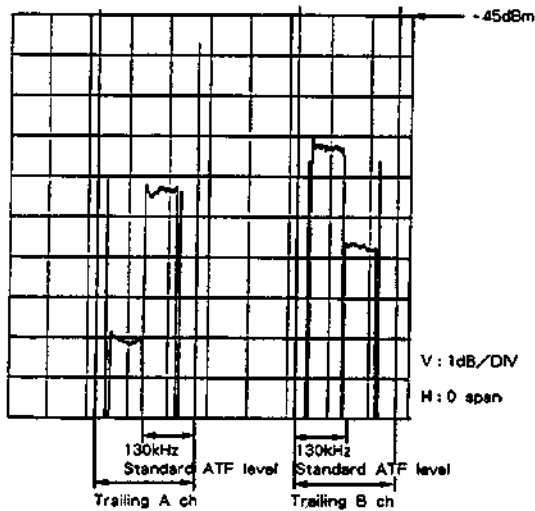


(2) Set the spectrum analyzer as indicated below.

Center frequency	: 130kHz
Reference level	: -45.0dBm
Frequency span	: 0Hz
Resolution Bandwidth (RBW)	: 30kHz
Video Bandwidth (VBW)	: 300kHz
Input ATT	: 10dB
SWP	: 30msec.

(3) Load the TY-7111D test tape and play the tape.

(4) Find the average of the RF output waveforms using the spectrum analyzer and store the data in the spectrum analyzer memory.



- (5) Press EJECT to remove the TY-7111D test tape.
- (6) Load the TY-30B test tape (blank).
- (7) Select the following TEST MENU mode.
FL tube display message : tESt SiG D-13_157
- (8) Press REC and PLAY to record the test signal specified in step (7) (for about 30 seconds).
- (9) Playback the portion of the TY-30B test tape recorded in step (8).
- (10) Make sure the playback Trailing head Ach ATF level (TY-30B test tape) of the spectrum analyzer complies with the following specifications against the previously stored standard playback Ach ATF level (TY-7111D test tape). If the playback Trailing head Ach ATF level does not comply with the specifications, adjust RV203 on the RF-31 board as indicated below.

If the playback level is higher than the specifications, turn RV203 counterclockwise.
If the playback level is lower than the specifications, turn RV203 clockwise.

Specifications :

TY-30B test tape playback level (Trailing head Ach ATF) = (Standard level* - 0.5dB) ± 0.5dB
* Standard level = Playback level of the TY-7111D test tape ± correction value (See the correction value table provided with the TY-7111D test tape for the correction value you should use.)

Adjustment Location : RV203, RF-31 board

- (11) Repeat steps (6) to (10) until you get the playback level that complies with the specifications indicated in step (10). (Repeat the self-recording and playback.)

Trailing head Bch ATF recording current level adjustment

- (12) Hold down the DATA key and turn the SEARCH dial counterclockwise until the following message appears. Then, press SET. (Set the mode during the STOP mode.)

FL tube display message : tESt SiG D-157_13
(flashing → ON)

- (13) Press REC and PLAY to record the test signal specified in step (12) using the TY-30B test tape (for about 30 seconds).
- (14) Playback the portion of the TY-30B test tape recorded in step (13).
- (15) Make sure the playback Bch ATF level (TY-30B test tape) of the spectrum analyzer complies with the following specifications against the previously stored standard playback Bch ATF level (TY-7111D test tape). If the playback Bch ATF level does not comply with the specifications, adjust RV204 on the RF-31 board as indicated below.

If the playback level is higher than the specifications, turn RV204 counterclockwise.
If the playback level is lower than the specifications, turn RV204 clockwise.

Specifications :

TY-30B test tape playback level (Trailing head Bch ATF) = (Standard level* - 0.5dB) ± 0.5dB
* Standard level = Playback level of the TY-7111D test tape ± correction value (See the correction value table provided with the TY-7111D test tape for the correction value you should use.)

Adjustment Location : RV204, RF-31 board

- (16) Repeat steps (13) to (15) until you get the playback level that complies with the specifications indicated in step (15). (Repeat the self-recording and playback.)

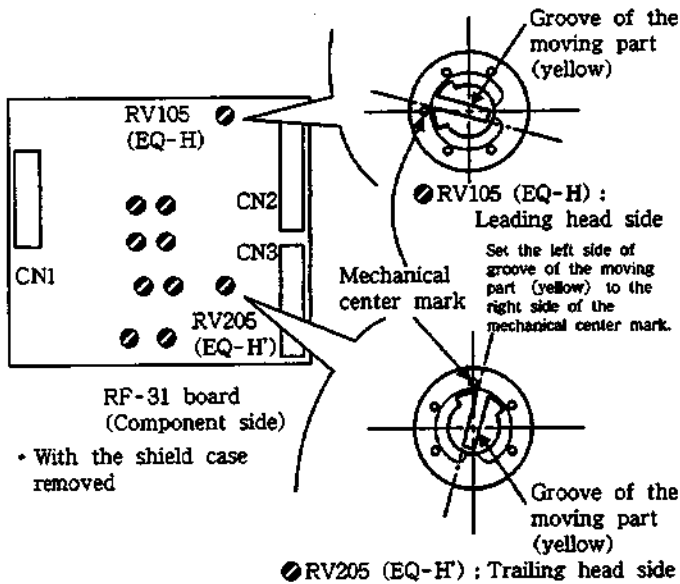
4-7. EQ-H preset (RF-31 board) and error rate check

4-7-1. EQ-H preset (RF-31 board)

The LTS voltage control volume ●RV105 (EQ-H) and ●RV205 (EQ-H') on the RF-31 board are set as follows when it is shipped. Follow the set procedure below after the replacement of RV105 or RV205.

Specifications :

Set ●RV105 (EQ-H) and ●RV205 (EQ-H') automatically as shown below (set as when it is shipped) :



4-7-2. Error Rate Check

Check the error rate after performing "5-2. Signal Processing Adjustment (SP-13 board)" (page 5-5) when you removal the mechanical deck assembly, drum assembly SP-13 board and RF-31 board. Follow the sequence below for checking: 4-40 page

Equipment and Tools Required

Audio frequency oscillator

TY-30B Test tape (8-892-358-00)

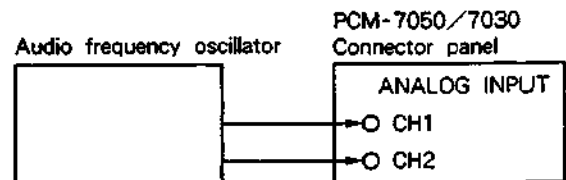
TY-7212 Test tape (8-960-081-01)

Switch and Control Settings

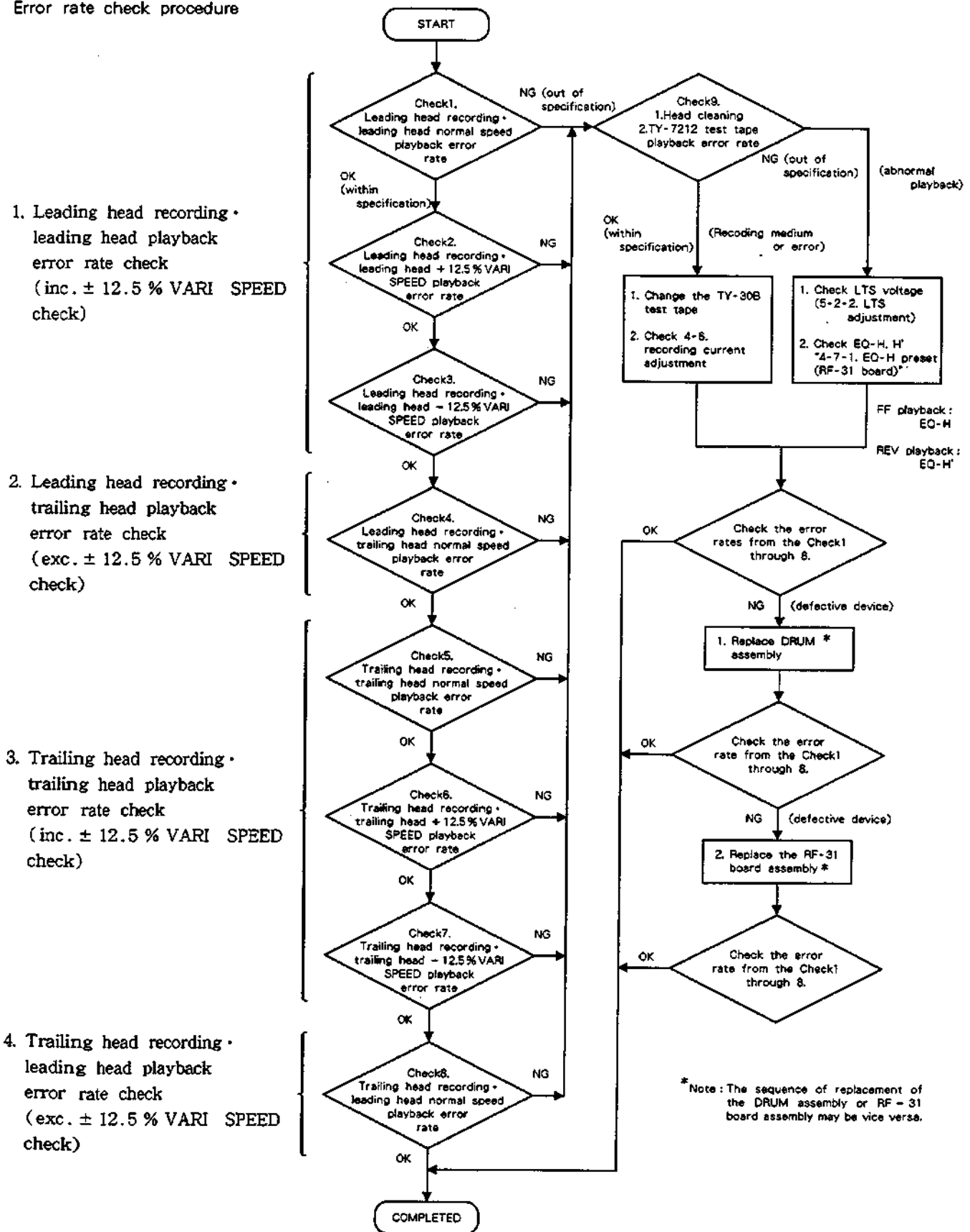
Front panel

REMOTE/LOCAL selection switch	: LOCAL
SYNC Select switch	: INT
AUDIO INPUT Select switch	: ANALOG
SAMPLING FREQ Select switch	: 48kHz
CH1 ANALOG INPUT level control	: Center detent position
CH2 ANALOG INPUT level control	: Center detent position
INPUT MONITOR key	: ON
Recording mode setting key	: ASSEMBLE
Connector panel	
600-ohm ON/OFF switch	: ON

Connections



Error rate check procedure



1. Leading head recording • leading head playback error rate check
(Including $\pm 12.5\%$ VARI SPEED check)

Check1. Leading head recording • leading head normal speed playback error rate

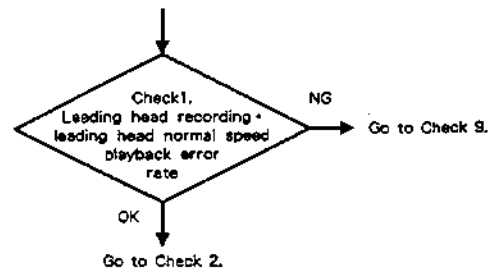
- (1) Transmit a 1kHz, standard level input signal (sine wave) to the ANALOG INPUT CH1 and CH2 connectors from the low frequency oscillator.
- (2) Adjust the CH1 and CH2 ANALOG INPUT level controls so that the level meter pointer on the front panel shows full deflection.
- (3) Set the "SYnc rEc" mode of SET-UP MENU to "oFF" to select the RAW mode (leading head recording) and press the **ASSEMBLE** key. Load the TY-30B test tape (blank) and record the signal specified in step (2) for about 2 minutes. After recording, rewind the tape to the beginning of the recorded portion.
- (4) Select the following TEST MENU mode (the following message will appear).
FL tube display message : rAtE SEL Auto
- (5) Hold down the **DATA** key and turn the **SEARCH** dial clockwise until the following message appears. Then, press **SET**.
FL tube display message : rAtE SEL A-Ab
- (6) Hold down the **MENU** key and turn the **SEARCH** dial clockwise to select the following TEST MENU mode (turn the dial until the following message appears). Then, press **SET**.
FL tube display message : Err rAtE
- (7) Press **PLAY** and play the TY-30B test tape.
- (8) Make sure the error rate displayed on the FL tube display 6 seconds after playback starts complies with the following specifications (the average of error rates for about 30 seconds).

Specifications :

Leading head recording • leading head normal speed playback error rate = 5×10^{-3} or less

Sample message appears on the display :

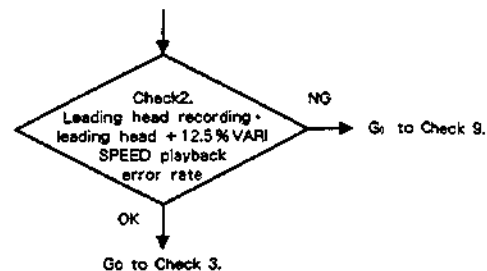
5_8-4 → 5.8×10^{-4}



- (9) Press **STOP** key.

Check2. Leading head recording • leading head + 12.5% VARI SPEED playback error rate

- (10) Press **VARI SPEED**
- (11) Hold down the **DATA** key and turn the **SEARCH** dial clockwise until the following message appears.
FL tube display message : 12 5 %
- (12) Hold down the **MENU** key and turn the **SEARCH** dial clockwise to select the following TEST MENU mode (turn the dial until the following message appears).
FL tube display message : Err rAtE
- (13) Make sure the error rate displayed on the FL tube display complies with the following specifications (the average of error rates for about 10 seconds).
Specifications :
Leading head recording • leading head + 12.5% VARI SPEED playback error rate = 9.9×10^{-3} or less



Check3. Leading head recording • leading head - 12.5% VARI SPEED playback error rate

- (14) Press **VARI SPEED** twice.
- (15) Press **DATA** and **RESET** simultaneously (resets the VARI SPEED to 0%). Then, Hold down the

DATA key and turn the **SEARCH** dial counterclockwise until the following message appears.

FL tube display message: -12.5 %

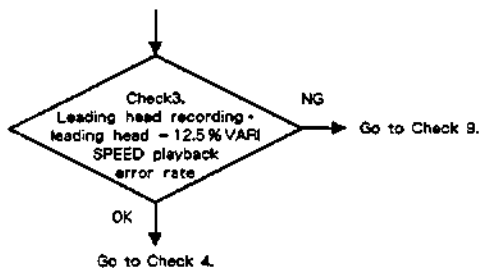
- (16) Hold down the **MENU** key and turn the **SEARCH** dial slightly clockwise until the following message appears.

FL tube display message: Err rAtE

- (17) Make sure the error rate displayed on the FL tube display complies with the following specifications (the average of error rates for about 10 seconds).

Specifications:

Leading head recording • leading head -12.5 % VARI SPEED playback error rate = 9.9×10^{-3} or less



- (18) Press **STOP** key.

2. Leading head recording • trailing head playback error rate check
(excluding $\pm 12.5\%$ VARI SPEED, playback check)

Check4. Leading head recording • trailing head normal speed playback error rate

- (19) Press the **VARI SPEED** key once (to return to the normal speed condition).

- (20) Hold down the **MENU** key and turn the **SEARCH** dial counterclockwise until the following message appears.

FL tube display message: rAtE SEL A-Ab

- (21) Hold down the **DATA** key and turn the **SEARCH** dial counterclockwise until the following message appears. Then, press **SET**.

FL tube display message: rAtE SEL nor

- (22) Hold down the **MENU** key and turn the **SEARCH** dial clockwise to select the following

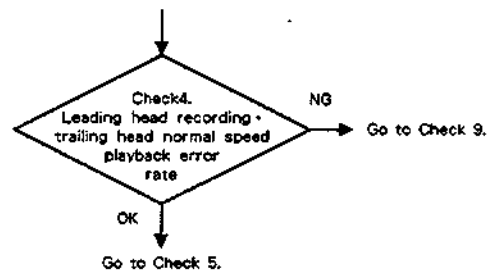
TEST MENU mode (turn the dial until the following message appears).

FL tube display message: Err rAtE

- (23) Press **PLAY** and play the TY-30B test tape.

- (24) Make sure the error rate displayed on the FL tube display 6 seconds after playback starts complies with the following specifications (the average of error rates for about 30 seconds). Specifications:

Leading head recording • trailing head normal speed playback error rate = 5×10^{-3} or less



- (25) Press **STOP** key.

3. Trailing head recording • trailing head playback error rate check
(Including $\pm 12.5\%$ VARI SPEED playback check)

Check5. Trailing head recording • trailing head normal speed playback error rate check

- (1) After turning the POWER switch to OFF, turn the POWER switch ON (to reset)

- (2) Set the "Sync rEc" mode of SET-UP MENU to "on" to select the RMW mode (trailing head recording) and press the **ASSEMBLE** key.

Load the TY-30B test tape (blank).

Record the signal specified for about two minutes.

After recording, rewind the tape to the beginning of the recorded portion.

- (3) Select the TEST MENU mode (display indication) as indicated below.

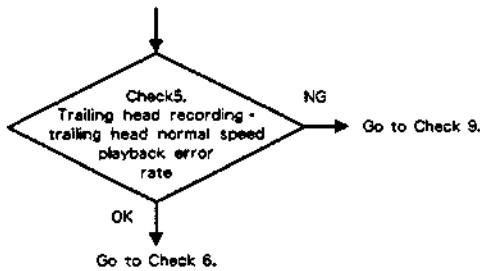
FL tube display message: rAtE SEL Auto

- (4) Hold down the **DATA** key and turn the **SEARCH** dial clockwise until the following message appears. Then, press the **SET** key.

- FL tube display message : rAtE SEL d-Ab
- (5) While pressing the **MENU** key, turn the **SEARCH** dial clockwise to select the following TEST MENU (display).

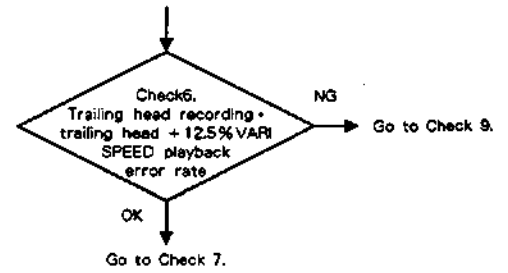
FL tube display message : Err rAtE

- (6) Press the **PLAY** key and play the test tape.
- (7) After playing for 6 seconds confirm that the error rate conforms to the following specifications (the average error rate for about 30 seconds).
Specifications : Trailing head recording/trailing head normal speed playback error rate = 5×10^{-3} or less.



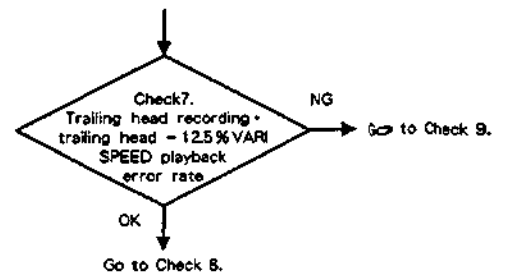
Check 6. Trailing head recording • trailing head + 12.5 % VARI SPEED playback error rate

- (8) Press **VARI SPEED** key.
- (9) Hold down the **DATA** key and turn the **SEARCH** dial clockwise until the following message appears.
FL tube display message : 12 5 %
- (10) Hold down the **MENU** key and turn the **SEARCH** dial clockwise to select the following TEST MENU mode (turn the dial until the following message appears).
FL tube display message : Err rAtE
- (11) Make sure the error rate displayed on the FL tube display complies with the following specifications (the average of error rates for about 10 seconds).
Specifications :
Trailing head recording • trailing head + 12.5 % VARI SPEED playback error rate = 9.9×10^{-3} or less



Check 7. Trailing head recording • trailing head - 12.5 % VARI SPEED playback error rate

- (12) Press **VARI SPEED** twice.
- (13) Press **DATA** and **RESET** simultaneously (resets the VARI SPEED to 0%). Then, Hold down the **DATA** key and turn the **SEARCH** dial counterclockwise until the following message appears.
FL tube display message : -12 5 %
- (14) Hold down the **MENU** key and turn the **SEARCH** dial slightly clockwise until the following message appears.
FL tube display message : Err rAtE
- (15) Make sure the error rate displayed on the FL tube display complies with the following specifications (the average of error rates for about 10 seconds).
Specifications :
Trailing head recording • trailing head - 12.5 % VARI SPEED playback error rate = 9.9×10^{-3} or less
- (16) Press the **STOP** key.



4. Trailing head recording • leading head playback error rate check

(Excluding $\pm 12.5\%$ VARI SPEED check)

Check 8. Trailing head recording • leading head normal speed playback error rate

(17) Press the **VARI SPEED** key once (to return to the normal speed condition).

(18) Hold down the **MENU** key and turn the **SEARCH** dial clockwise until the following message appears.

FL tube display message: rAtE SEL d-Ab

(19) Hold down the **DATA** key and turn the **SEARCH** dial counterclockwise until the following message appears. Then, press **SET**.

FL tube display message: rAtE SEL A-Ab

(20) While pressing the **MENU** key, turn the **SEARCH** dial clockwise to select the following TEST MENU (display).

FL display: Err rAtE

(21) Press the **PLAY** key and play the test tape.

(22) After playing for 6 seconds confirm that the error rate conforms to the following specifications (the average error rate for about 30 seconds).

Specifications:

Trailing head recording • leading head normal speed playback error rate = 5×10^{-3} or less.

(23) Press the **STOP** key.

(24) Press the **EJECT** key and remove the TY-30B test tape.

Check 9. Head cleaning and TY-7212 test tape playback error rate

In case that the error rates from the Check 1. through 8. do not comply with the specifications, perform head cleaning by using a cleaning cassette tape (See page 3-1, "3-1. Cleaning") and playback the TY-7212 error rate test tape.

If the error rate after playback the TY-7212 test tape does:

(1) comply with the specifications, perform the following ① or ② and check the error rates from the Check 1. through 8.

① Change the TY-30B test tape.

② Perform "4-6. Recording current level adjustment" again, or

(2) not comply with the specification, then, perform the following ① or ② and check the error rates from the Check 1. through 8.

① Review the instructions in 5-2-2. Standard level of LTS adjustment (SP-13 board) and perform readjustment if the level is out of standard.

② Review the instructions in 4-7-1. adjustment position of \odot RV105, \odot RV205 of EQ-H preset (RF-31 board) and perform readjustment if the level is out of standard.

Leading head playback: \odot RV105 (EQ-H)

Trailing head playback: \odot RV205 (EQ-H)

(3) not comply with the specification even the above (1),(2) are performed, then, change the drum assembly and check the error rates from the Check 1. through 8.

(4) not comply with the specification even the above (3) is performed, change the RF-31 board assembly and check the error rates from the Check 1. through 8.

Note: (3) and (4) specified above should be performed vice versa if only the RF board assembly is replaced before the error rate check.

Precautions on checking

1) In 1. Leading head recording • leading head playback error rate check:

• The error rates in the Check 1. and 2. are O.K. and NG in the Check 3.

• The error rates in the Check 1. and 3. are O.K. and NG in the Check 2.

2) In 3. Trailing head recording • trailing head playback error rate check:

• The error rates in the Check 5. and 6. are O.K. and NG in the Check 7.

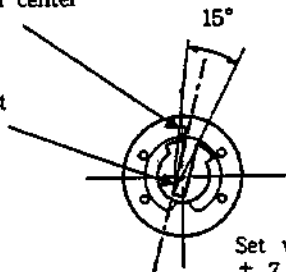
• The error rates in the Check 5. and 7. are O.K. and NG in the Check 6.

In case of above 1) and 2), execute the setting of \odot RV105 (EQ-H) or \odot RV205 (EQ-H') on the RF-31 board according to the range below and recheck the error rate.

\odot RV105/ \odot RV205 (RF-31 board)

Mechanical center mark

Groove of moving part (Yellow)



Set within the range of $\pm 7.5^\circ$ against the installation position of 4-7-1. EQ-H preset.

- 1) Leading head recording • leading head playback :
 \odot RV105 (EQ-H)
- 2) Trailing head recording • trailing head playback :
 \odot RV205 (EQ-H')

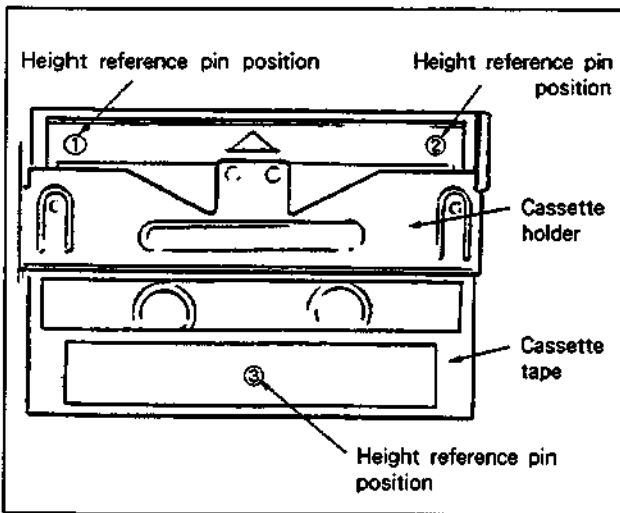
4-8. Cassette Compartment Operation Check

Equipment Required

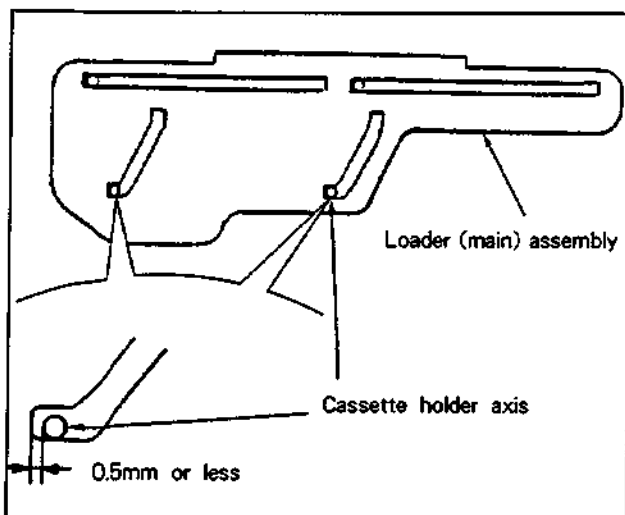
Cassette tape (any 120-minute tape sold in the market) for checking the operation

Procedure

- (1) Load the cassette tape for checking the operation.
- (2) Press down the following three points (①, ②, and ③) to make sure the cassette tape does not project from the height reference pin on the mechanical deck while the tape is inside.



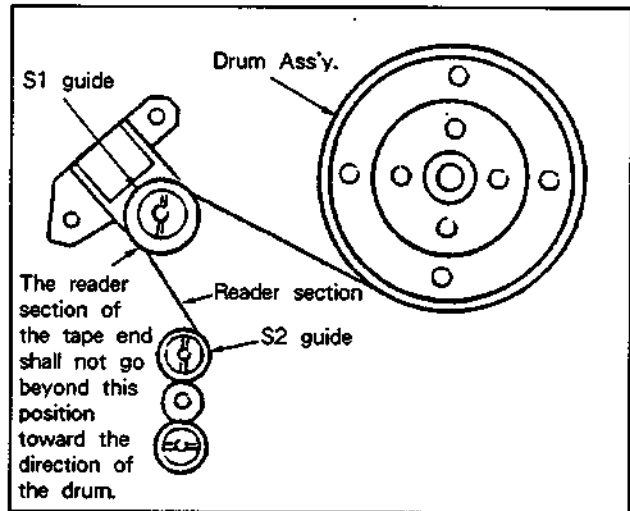
- (3) Make sure the cassette holder axis is located at the loader (main) assembly guide position on the right side of the cassette compartment, as shown in the figure below, while a cassette tape is inside.



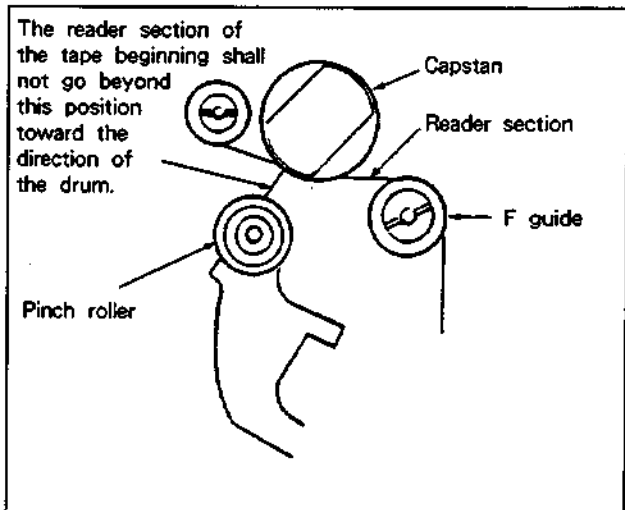
- (4) Perform FF/REW operations and make sure that the beginning and end (reader tape portion) of the cassette tape stops at the position shown in the figure below.

- (5) Press EJECT and make sure the cassette tape is ejected properly.

Tape end position check (FF operation)



Tape start position check (REW operation)



SECTION 5 Electrical Adjustments

This chapter describes the electrical adjustments required when a board is repaired or maintained. Do the adjustments in accordance with "Electrical Adjustment Items." Before making an adjustment, the items to be adjusted beforehand must have been completed. If there are multiple adjustment item problems, check the adjustment items before and after the suspect adjustment item. This chapter describes the adjustments of the internal switches and controls required to meet the unit's specifications. Regarding the adjustments of the external switches and controls and the unit operation, refer to the Operation Manual.

Electrical Adjustment Items

5-2. Signal processing adjustment (SP-13 board)

5-2-1. RF PLL adjustment

- 1) Leading head RF PLL adjustment
- 2) Trailing head RF PLL adjustment
- 3) RF PLL fine adjustment and check



5-2-2. LTS adjustment

5-3. A/D and D/A adjustment (ADA-18 board)

5-3-1. A/D conversion level adjustment



5-3-2. D/A conversion level adjustment

5-4. Time code adjustment (Applicable if the optional TC-58 board (DABK-7030) is installed.)

Time code output level adjustment

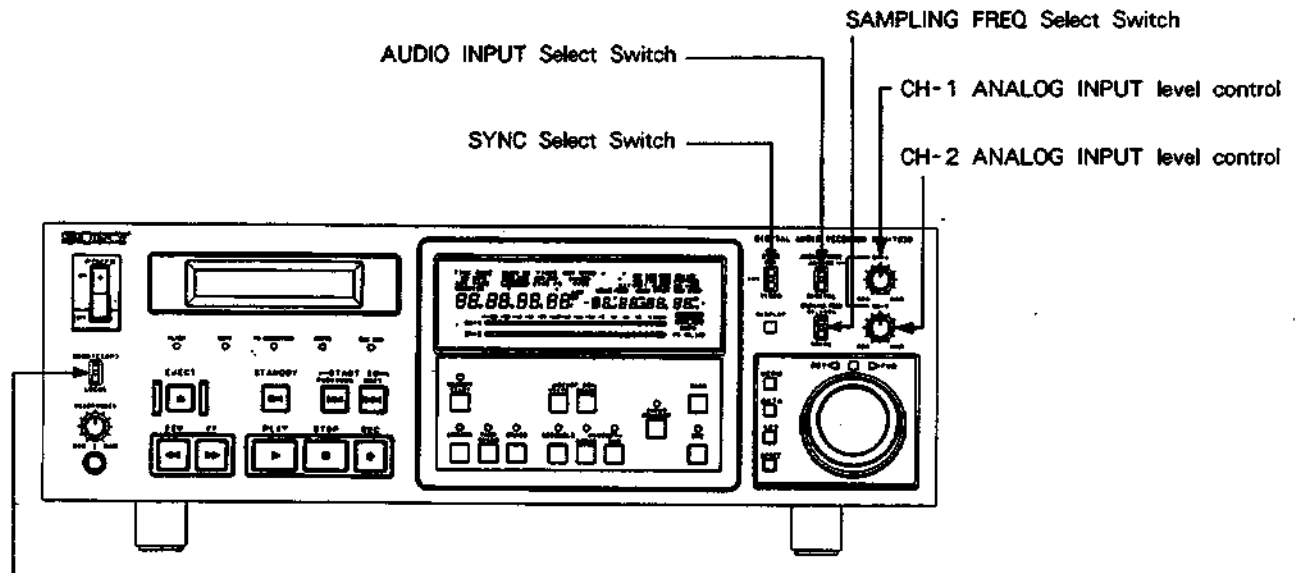
5-1. Initial Preparation

5-1-1. Equipment Required

Equipment	Minimum Specifications	Model
Oscilloscope	f : DC to 100 MHz Precision : 5 mV	—
Digital DC voltmeter	Valid digits : 4 1/2 digits or more Precision : 1 mV	—
Audio analyzer	f : 0 kHz to 30 kHz Level : +24 dBm to -70 dBm Distortion : 0.001 % S/N : 98 dB	TEKTRONIX SG505 or equivalent

5-1-2. Initial switch and control settings

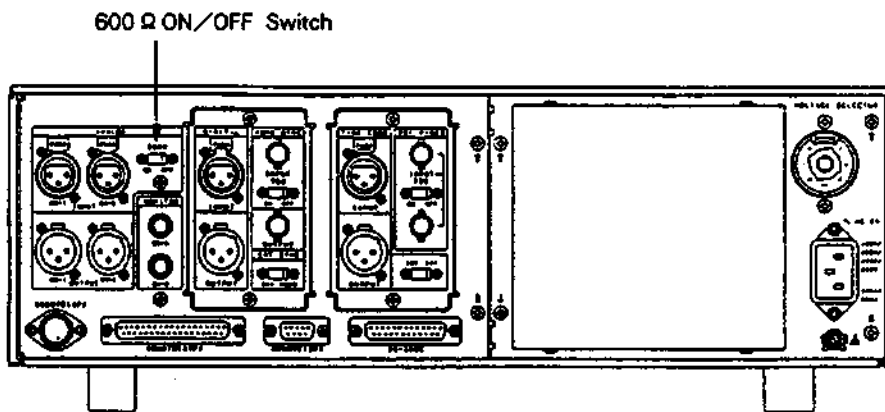
Front panel



REMOTE/LOCAL Select Switch

- REMOTE/LOCAL Select Switch ; LOCAL
- SYNC Select Switch ; INT
- AUDIO INPUT Select Switch ; ANALOG
- SAMPLING FREQ Select Switch ; 48kHz
- CH1 ANALOG INPUT level control ; Click center position
- CH2 ANALOG INPUT level control ; Click center position

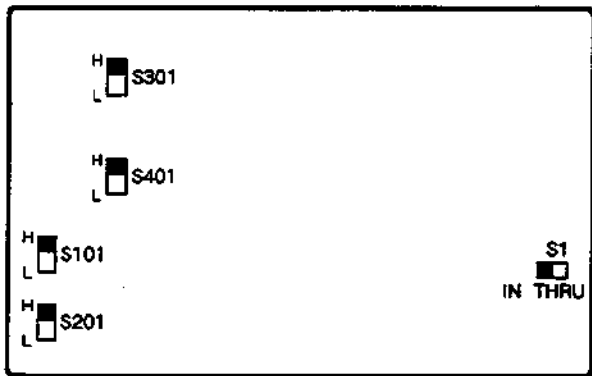
Connector panel



600 Ω ON/OFF Switch ; ON

ADA-18 Board

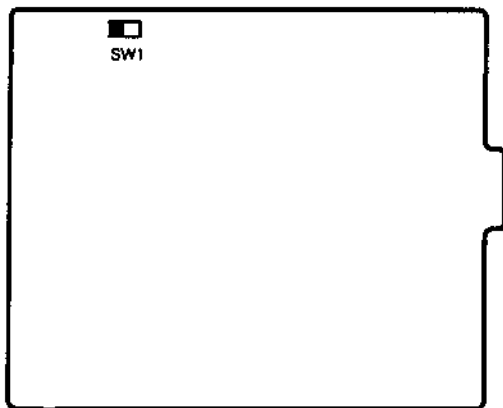
- S1, IN/THRU selection switch ; IN (Factory setting.)
- S101, input level setting switch ; H (Factory setting.)
- S201, input level setting switch ; H (Factory setting.)
- S301, input level setting switch ; H (Factory setting.)
- S401, input level setting switch ; H (Factory setting.)



ADA-18 BOARD COMPONENT SIDE

RM-77 Board

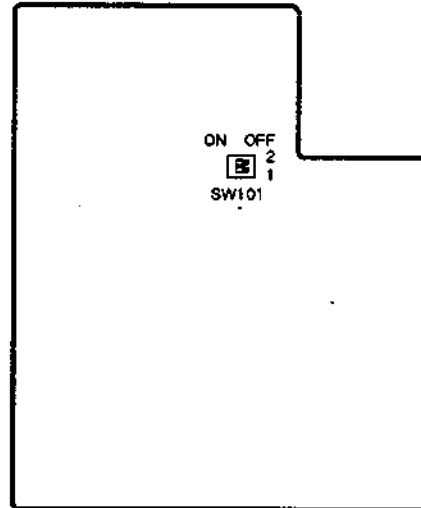
- SW1, fader start/stop method selection switch ; (Factory setting.)



RM-77 Board COMPONENT SIDE

SV-123 Board

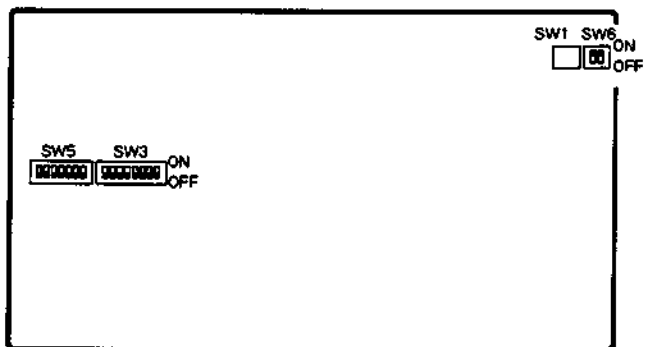
- SW101 (SW101-1, SW101-2) Setting check switch ; All OFF. (Factory setting.)



SV-123 BOARD COMPONENT SIDE

SY-155B Board

- SW1, CPU reset switch
- SW3 (SW3-1 to SW3-8) unused ; All OFF
- SW5, time code destination setting
 - SW5-1, time code destination setting switch ; OFF (J, UC)
 - SW5-2 to SW5-7, spare switches ; ON (EK)
 - SW5-8, initialize switch ; OFF
- SW6, design check switches
 - SW6-1 and SW6-2 ; ON



SY-155B BOARD COMPONENT SIDE

5-2. Signal Processing Adjustment (SP-13 board)

To make the adjustment, first remove the top panel and open the ADA-18 board. (Refer to the removal procedure in 2-1.)

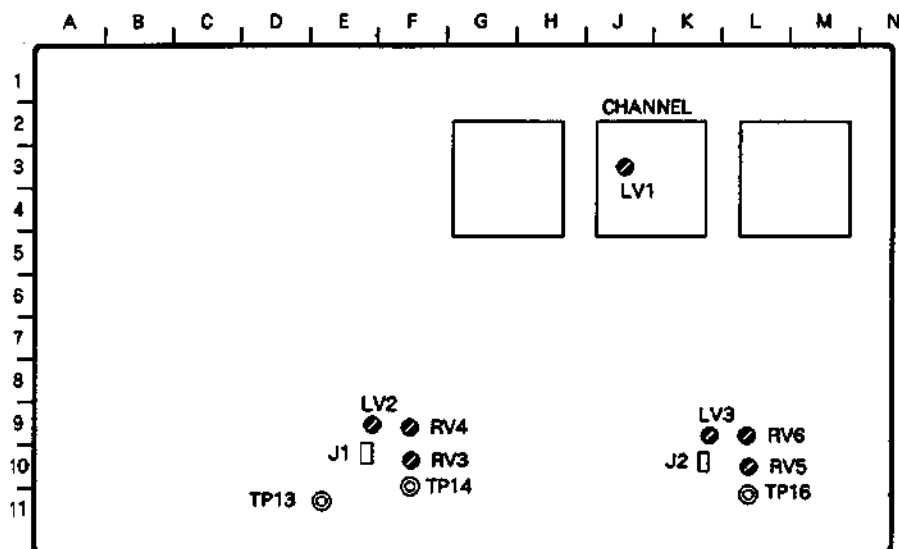
5-2-1. RF PLL adjustment

The RF PLL block generates the clock for extracting the playback data from the head. In correspondence to the head/RF amplifier characteristics, adjust the RF PLL block to obtain the best error rate. Do this adjustment when replacing the SP board or the head and RF assembly.

Initial preparation

1. Take out J1 and J2 from the SP-13 board. (See "Adjustment Location.") J1 and J2 are to be reinserted after the RF PLL adjustment.
2. Remove the shielded case's top cover in the CHANNEL block on the SP-13 board. (See "Adjustment Location.") (The top cover is to be re-installed after the RF PLL fine adjustment and check.)

Adjustment Location



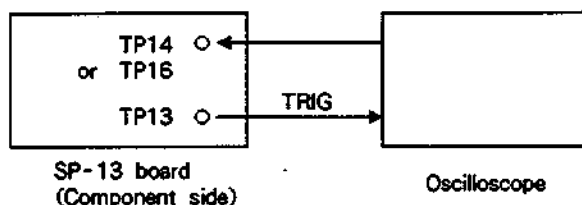
SP-13 board
(Component side)

Equipment Required

Oscilloscope

Pre-recorded music cassette tape (Fs = 48 kHz)

Connections

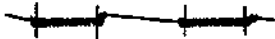




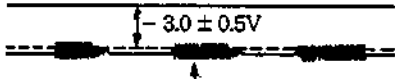





Switch and Control Settings

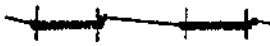




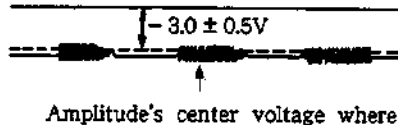



Front panel

- REMOTE (9P) / LOCAL selection switch ; LOCAL
- SYNC EXT/INT/VIDEO selection switch ; INT
- SAMPLING FREQ 44.1 kHz / 48 kHz Selection switch ; 48 kHz
- POWER switch ; ON

1) Leading head RF PLL Adjustment

Step	Adjustment Condition	Specification	Adjustment Location (SP-13 board)
1	Insert the pre-recorded music cassette tape (Fs = 48kHz) and playback the tape. (PLAY mode)	TP14 (F, 10) output waveform OK  NG  NG  NG  TRIG: TP13 (E, 11)	⓪RV4 (F, 9) If the waveform is no good, turn ⓪RV3 slightly and then readjust ⓪RV4.
2	Same as step 1.	TP14 (F, 10) output waveform  This portion is to be flat. TRIG: TP13 (E, 11)	⓪RV3 (F, 10)
3	Same as step 2.	TP14 (F, 10) output waveform  Amplitude's center voltage where is RF. TRIG: TP13 (E, 11)	⓪LV2 (E, 9) Note: After being turned clockwise all the way, adjust ⓪LV2 so that it can be loosened within one full turn. If it is too tight, the core may be damaged. And if it is too loose, the core may come off.
4	Insert the pre-recorded music cassette tape (Fs = 48kHz) and set CUE FWD (×16 speed).	TP14 (F, 10) output waveform  This portion is to be flat. TRIG: TP13 (E, 11)	⓪RV4 (F, 9)
5	Insert the pre-recorded music cassette tape (Fs = 48kHz) and set CUE REV (×16 speed).	TP14 (F, 10) output waveform  This portion is to be flat. TRIG: TP13 (E, 11)	⓪RV4 (F, 9)
6	Insert the pre-recorded music cassette tape (Fs = 48kHz) and set CUE FWD and CUE REV (×3 speed). Repeatedly two or three times.	TP14 (F, 10) output waveform  This portion is to be flat while the tape is running. TRIG: TP13 (E, 11)	

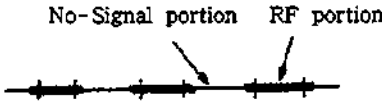
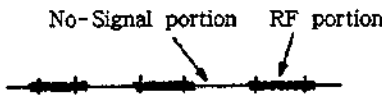


2) Trailing head RF PLL Adjustment

Step	Adjustment Condition	Specification	Adjustment Location (SP-13 board)
1	Insert the pre-recorded music cassette tape (Fs = 48kHz) and playback the tape. (PLAY mode)	<p>TP16 (L, 10) output waveform</p> <p>OK </p> <p>NG </p> <p>NG </p> <p>NG </p> <p>TRIG : TP13 (E, 10)</p>	<p>RV6 (L, 9)</p> <p>If the waveform is no good, turn RV5 slightly and then re-adjust RV6.</p>
2	Same as step 1.	<p>TP16 (L, 10) output waveform</p>  <p>This portion is to be flat.</p> <p>TRIG : TP13 (E, 10)</p>	RV5 (L, 10)
3	Same as step 2.	<p>TP16 (L, 10) output waveform</p>  <p>-3.0 ± 0.5V</p> <p>Amplitude's center voltage where is RF.</p> <p>TRIG : TP13 (E, 10)</p>	<p>LV3 (L, 9)</p> <p>Note: After being turned clockwise all the way, adjust LV3 so that it can be loosened within one full turn. If it is too tight, the core may be damaged. And if it is too loose, the core may come off.</p>
4	Insert the pre-recorded music cassette tape (Fs = 48kHz) and set CUE FWD (×16 speed).	<p>TP16 (L, 10) output waveform</p>  <p>This portion is to be flat.</p> <p>TRIG : TP13 (E, 10)</p>	RV6 (L, 9)
5	Insert the pre-recorded music cassette tape (Fs = 48kHz) and set CUE REV (×16 speed).	<p>TP16 (L, 10) output waveform</p>  <p>This portion is to be flat.</p> <p>TRIG : TP13 (E, 10)</p>	RV6 (L, 9)
6	Insert the pre-recorded music cassette tape (Fs = 48kHz) and set CUE FWD and CUE REV (×3 speed). Repeatedly two or three times.	<p>TP16 (L, 10) output waveform</p>  <p>This portion is to be flat while tape is running.</p> <p>TRIG : TP13 (E, 10)</p>	

3) RF PLL Fine Adjustment and Check

Before making the adjustment, turn off the POWER switch and re-insert J1 and J2 into the SP-13 board. Then turn on the POWER switch and make the adjustment.

After completing the adjustment, turn off the POWER switch and re-install the top cover on the CHANNEL block's shielded case on the SP-13 board.

Step	Adjustment Condition	Specification	Adjustment Location (SP-13 board)
1	Insert the pre-recorded music cassette tape (Fs = 48kHz) and playback the tape. (PLAY mode)	TP16 (L, 10) output waveform  TRIG : TP13 (E, 10)	⦿LV1 (J, 2) Adjust ⦿LV1 so that the center of the RF portion and no signal portion becomes flat. If the center cannot be flattened, redo the adjustments from steps 3 to 6 for the back ward RF PLL adjustment described in 2). Before making the re-adjustment, shift the center voltage within the adjustment standard range stated in step 3 of the back ward RF PLL adjustment described in 2). Note : After being turned clockwise all the way, adjust ⦿LV1 so that it can be loosened within one full turn.If it is too tight, the core may be damaged.And if it is too loose, the core may come off.
2	Same as step 1.	TP14 (E, 10) output waveform  TRIG : TP13 (E, 10)	⦿LV2 (E, 9) Adjust ⦿LV2 so that the center of the RF portion and no signal portion becomes flat. If the center cannot be flattened, redo the adjustments from steps 3 to 6 for the forward RF PLL adjustment described in 2). Before making the re-adjustment, shift the center voltage within the adjustment standard range stated in step 3 of the forward RF PLL adjustment described in 2). Note : After being turned clockwise all the way, adjust ⦿LV2 so that it can be loosened within one full turn.If it is too tight, the core may be damaged.And if it is too loose, the core may come off.
3	Insert the pre-recorded music cassette tape (Fs = 48kHz) and set the FF and REW modes.	TP14 (F, 10) and TP16 (L, 10) output waveform OK  NG  As the voltage is high, the waveform swings to plus. TRIG : TP13 (E, 10)	

5-2-2. LTS Adjustment

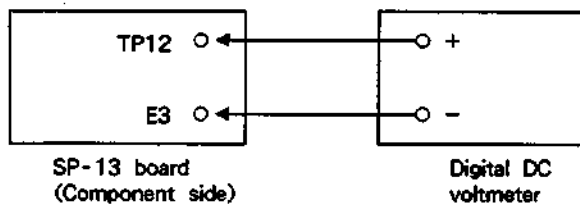
LTS ; Longitudinal Tape Speed

During vari-pitch playback, adjust the control voltage to optimize the RF equalizer's characteristics. Do this adjustment after replacing the SP board or the head and RF assembly.

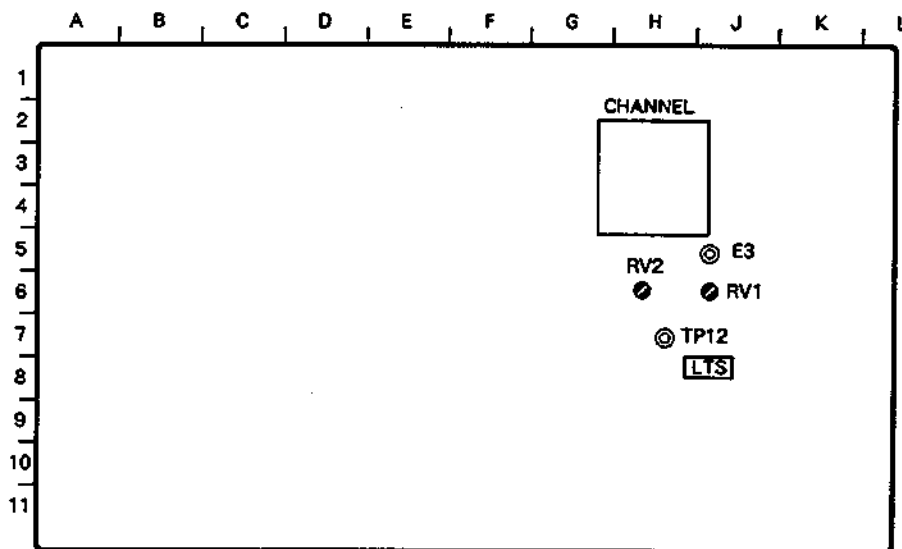
Equipment Required

Digital DC voltmeter

Connections



Adjustment Location



Switch and control settings

Front panel

POWER switch ; ON
 REMOTE (9P) / LOCAL switch ; LOCAL
 SYNC EXT/INT/VIDEO selection switch ; INT
 SAMPLING FREQ 44.1 kHz / 48 kHz switch ; 48 kHz

|||||

Step	Adjustment Condition	Specification	Adjustment Location (SP-13 board)
1	• A cassette tape has not been inserted.	DC voltage between TP12 (K,6) and E3 (K, 4) $0 \pm 0.02 \text{ V}$	●RV1 (K, 5)
2	• Vari-speed + 12.5 % A cassette tape has not been inserted.	DC voltage between TP12 (K,6) and E3 (K, 4) $+ 0.27 \pm 0.01 \text{ V}$	●RV2 (J, 2)
3	• Vari-speed + 12.5 % A cassette tape has not been inserted.	DC voltage between TP12 (K,6) and E3 (K, 4) $-0.27 \pm 0.05 \text{ V}$	

5-3. A/D and D/A Adjustment (ADA-18 board)

Remove the top panel before making the adjustment.
(Refer to the removal procedure in 2-1.)

Equipment Required

Audio analyzer
Oscilloscope

Switch, control setting

Front panel

POWER switch ; ON
SAMPLING FREQ 44.1kHz/48kHz switch ; 48kHz
AUDIO INPUT ANALOG/DIGITAL selection switch ; ANALOG
ANALOG CH1 input level control ; Click center position
ANALOG CH2 input level control ; Click center position
INPUT MONITOR key ; ON (LED lights)

Connector panel

Analog audio signal I/O terminal
600 ohm ON/OFF switch ; ON
ADA-18 board
S101, S201, S301, and S401 ; H

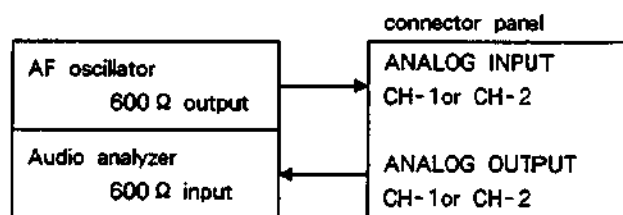
5-3-1. A/D conversion level adjustment

Do electrical adjustments on the A/D block on the ADA-18 board. After replacing the ADA-18 board, do this adjustment first.

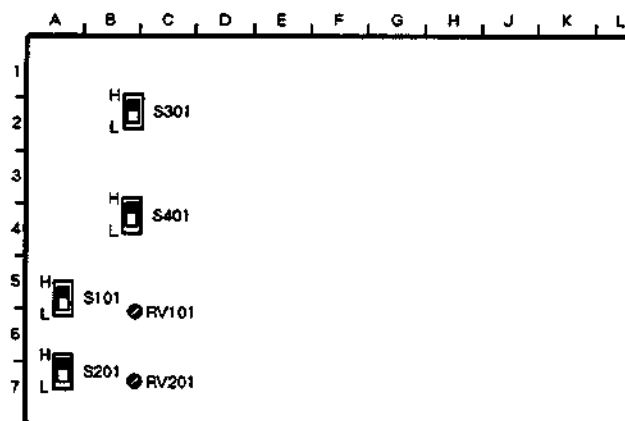
Equipment Required

Audio analyzer
(equipment measuring audio characteristics)

Connections



Adjustment Location



ADA-18 board
(Component side)

Before making the adjustment, set the FL tube display on the front panel as follows. Regarding the procedure, refer to the Operation Manual.

FL tube display

Au-rEF (input signal level's digital display mode)

EMPH OFF (emphasis OFF mode)

Step	Adjustment Condition	Specification	Adjustment Location (ADA-18 board)
1	• Input a 1kHz, +4dBs signal into the ANALOG IN CH-1 connector.	Value of the Au-rEF CH1 (left side) on the FL tube display. -20.0 dB	●RV101 (B, 6)
2	• Input a 1kHz, +4dBs signal into the ANALOG IN CH-2 connector.	Value of the Au-rEF CH2 (right side) on the FL tube display. -20.0 dB	●RV201 (B, 7)
3	• Same as step 2. • Turn the POWER switch OFF/ON once, then set the INPUT MONITOR mode.	Only the $-\infty$ dot should be lit on the CH-1 level meter. CH-2 Au-rEF value. -20.0 dB	

5-3-2. Center potential adjustment

This adjustment applies to the ADA-18 board on the following board numbers which end in -14 and higher.

ADA-18 board

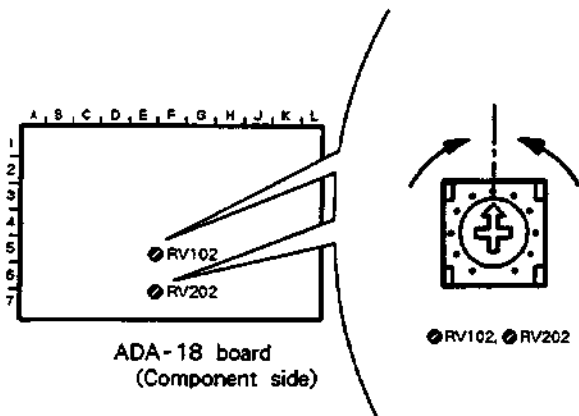
Board No : 1-637-267-14 and higher

Specification method :

The center potential should always be adjusted as figure below when RV102, RV202 are replaced.

Specification :

Set RV102 (E,7) and RV202 (E,7) to the center (as the adjustment when shipped).



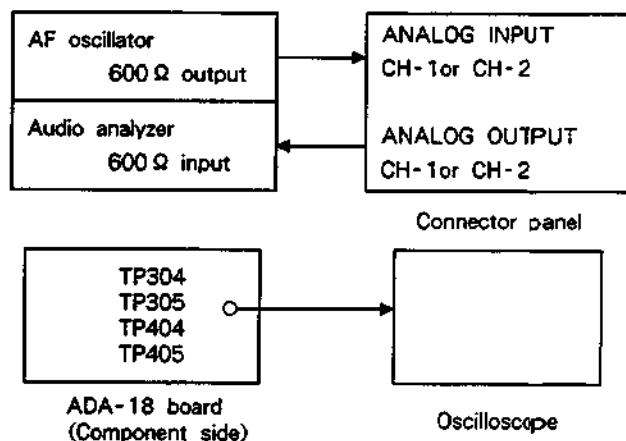
5-3-3. D/A conversion level adjustment

Do electrical adjustments on the D/A block on the ADA-18 board. After replacing the ADA-18 board, do this adjustment after completing "A/D conversion level adjustment."

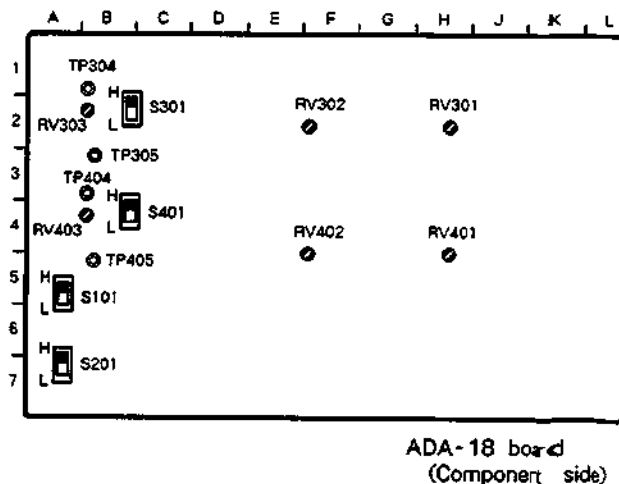
Equipment Required

Audio characteristic measuring equipment
(AF oscillator/audio analyzer) Oscilloscope

Connections



Adjustment Location



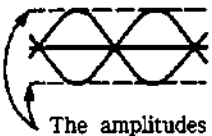
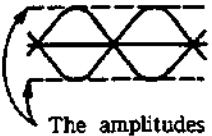
1. This adjustment applies to the ADA-18 board on the following board numbers which end in -11, -12, -13.

ADA-18 board

Board No : 1-637-267-11

1-637-267-12

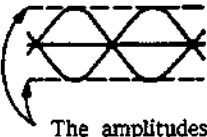
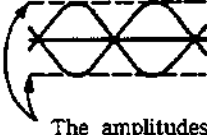
1-637-267-13

Step	Adjustment Condition	Specification	Adjustment Location (ADA-18 board)
1	• Input a 1kHz, +4dBs signal into the ANALOG IN CH-1 connector.	ANALOG OUTPUT CH1 output level + 4 dBs \pm 0.1 dB	RV302 (F, 2)
2	• Same as step 1.	Adjust the ANALOG OUTPUT CH1 distortion to the minimum. The distortion should be 0.05 % or less.	RV301 (H, 2)
3	• Same as step 1.	TP304 (A, 1) to TP305 (B, 3)  The amplitudes are to be equal.	RV303 (A, 2)
4	• Input a 1kHz, +4dBs signal into the ANALOG IN CH-2 connector.	ANALOG OUTPUT CH2 output level + 4 dBs \pm 0.1 dB	RV402 (E, 4)
5	• Same as step 4.	Adjust the ANALOG OUTPUT CH2 distortion to the minimum. The distortion should be 0.05 % or less.	RV401 (H, 4)
6	• Same as step 4.	TP404 (A, 3) to TP405 (B, 4)  The amplitudes are to be equal.	RV403 (A, 4)

2. This adjustment applies to the ADA-18 board on the following board numbers which end in -14 and higher.

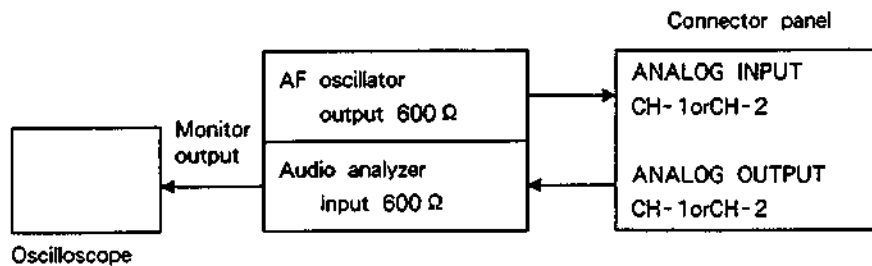
ADA-18 board

Board No : 1-637-267-14 and higher

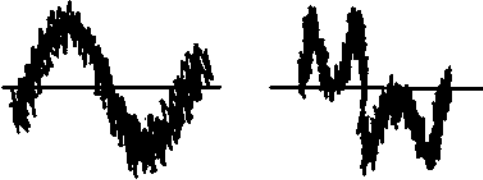
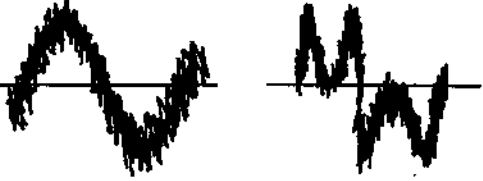
Step	Adjustment Condition	Specification	Adjustment Location (ADA-18 board)
1	• Input a 1kHz, +4dBs signal into the ANALOG IN CH-1 connector.	ANALOG OUTPUT CH1 output level + 4dBs \pm 0.1dB	RV302 (F, 2)
2	• Same as step 1.	TP304 (A, 1) ~TP305 (B, 3)  The amplitudes are to be equal.	RV303 (A, 2)
3	• Input a 1kHz, +4dBs signal into the ANALOG IN CH-2 connector.	ANALOG OUTPUT CH2 output level + 4dBs \pm 0.1dB	RV402 (E, 4)
4	• Same as step 3.	TP404 (A, 3) ~TP405 (B, 4)  The amplitudes are to be equal.	RV403 (A, 4)

Connection (step 5, 6)

Connect the oscilloscope to the monitor output of the audio analyzer.



Note : Adjustment for ⓇRV301, ⓇRV401 have to be done after heating up the body with the top board installed, then remove the top board before adjustment.

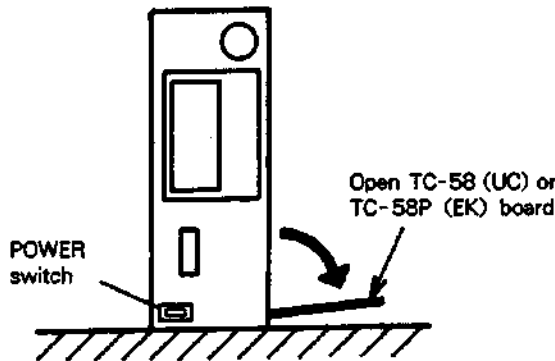
Step	Adjustment Condition	Specification	Adjustment Location (ADA-18 board)
5	<ul style="list-style-type: none"> Input a 1kHz, -60dBs signal into the ANALOG IN CH-1 connector. 	Satisfy ①, ② below both at the same time. ① Output level of CH1 : Between -61.0 ~ -61.5dBs ② Oscilloscope wave : sin wave 	ⓇRV301 (H, 2)
6	<ul style="list-style-type: none"> Input a 1kHz, -60dBs signal into the ANALOG IN CH-2 connector. 	Satisfy ①, ② below both at the same time. ① Output level of CH2 : Between -61.0 ~ -61.5dBs ② Oscilloscope wave : sin wave 	ⓇRV401 (H, 4)

5-4. Time Code Adjustment (With the optional TC-58 board (DABK-7030) installed.)

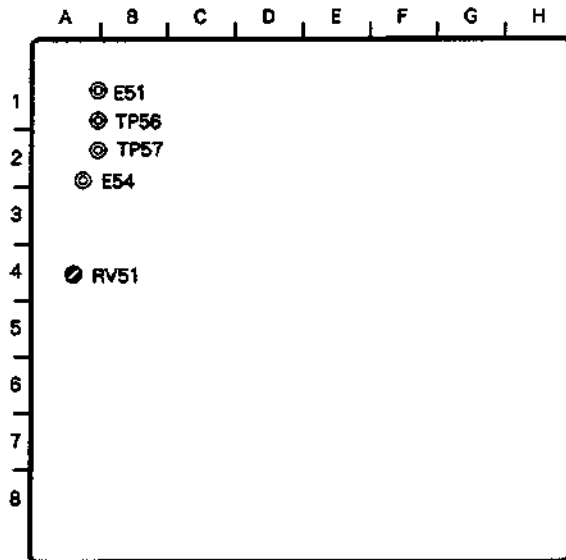
Do this adjustment if the DABK-7030 (TIME CODE OPTION) is installed on the PCM-7030/PCM-7050 or if the time code output level is to be changed.

Initial preparation

1. As shown in the figure below, lay the unit with the POWER switch on the front panel facing down.
2. Remove the bottom panel and open the TC-58 board to expose the component side. (See the figure below.) Refer to the removal procedure in 2-1.



Adjustment Location



TC-58 (UC) or TC-58P (EK) board (Component side)

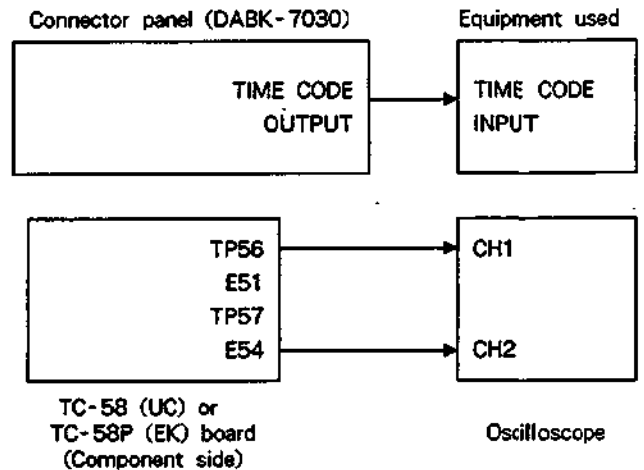
Equipment Required

Oscilloscope

Cassette tape recorded with a time code

Equipment connected to the time code output


Connections



Switch and control settings

Same as the initial settings.

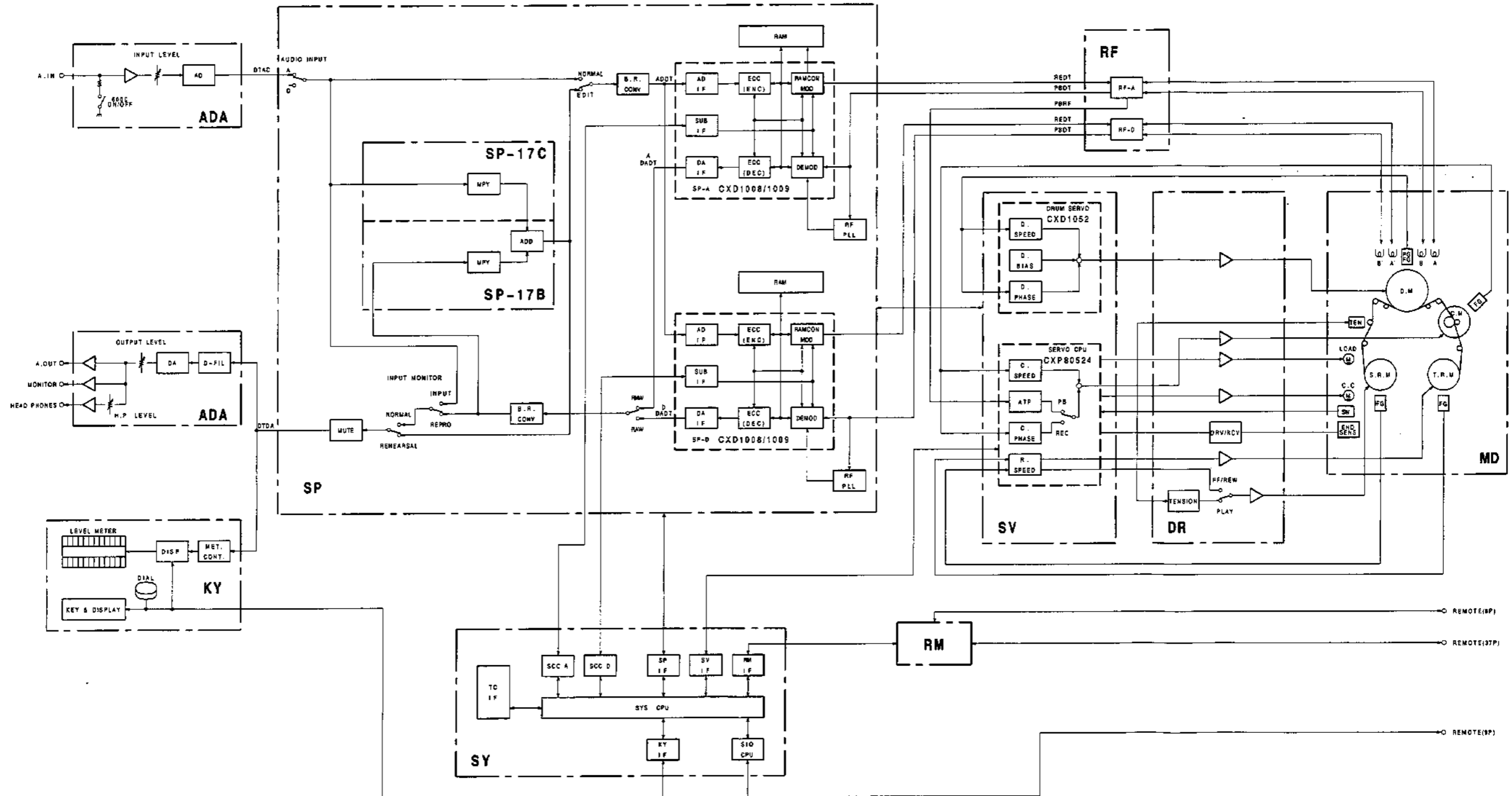
00000000

Adjustment Condition	Specification	Adjustment Location (TC-58 board)
<p>Insert the time code-recorded cassette tape and playback the tape.(PLAY mode)</p> <ul style="list-style-type: none"> • Connect the oscilloscope's CH1 and GND to TP56 (A, 1) and E51 (A, 1) respectively. • Connect the oscilloscope's CH2 and GND to TP57 (A, 1) and E54 (A, 2) respectively. 	<p>Oscilloscope CH-1 Oscilloscope CH-2 ; INVERT } Both channels : ADD mode</p>  <p style="text-align: center;">$A = 2.4 V_{p-p}$</p> <ul style="list-style-type: none"> • If the time code output level is to be changed, adjust RV51 so that voltage A above becomes the desired voltage. 	<p>RV51 (A, 4)</p>

OVERALL BLOCK DIAGRAM

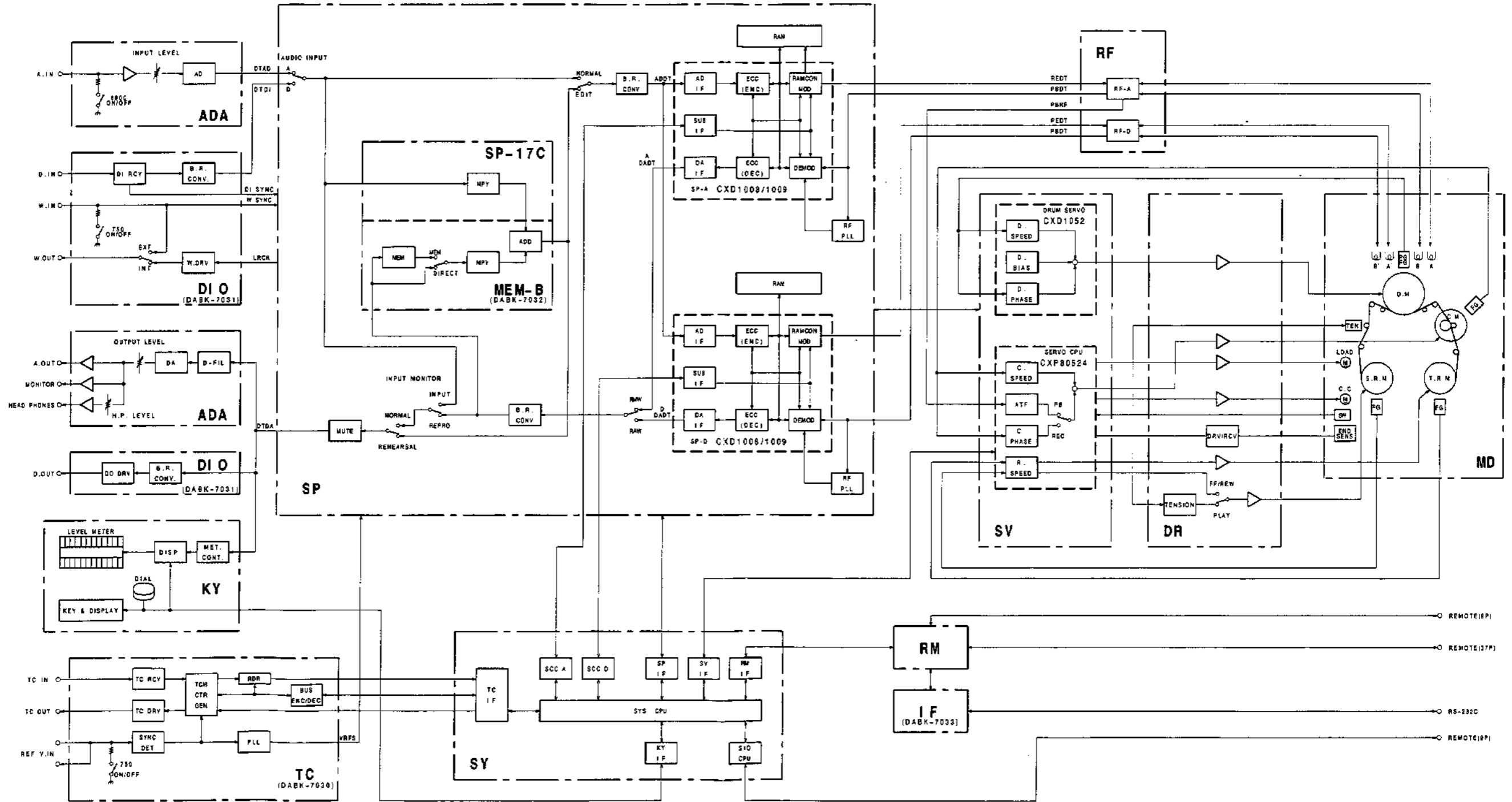
SECTION A
BLOCK DIAGRAMS

OVERALL(without option)



OVERALL
(without option)
PCM-7030

OVERALL(with all the options)

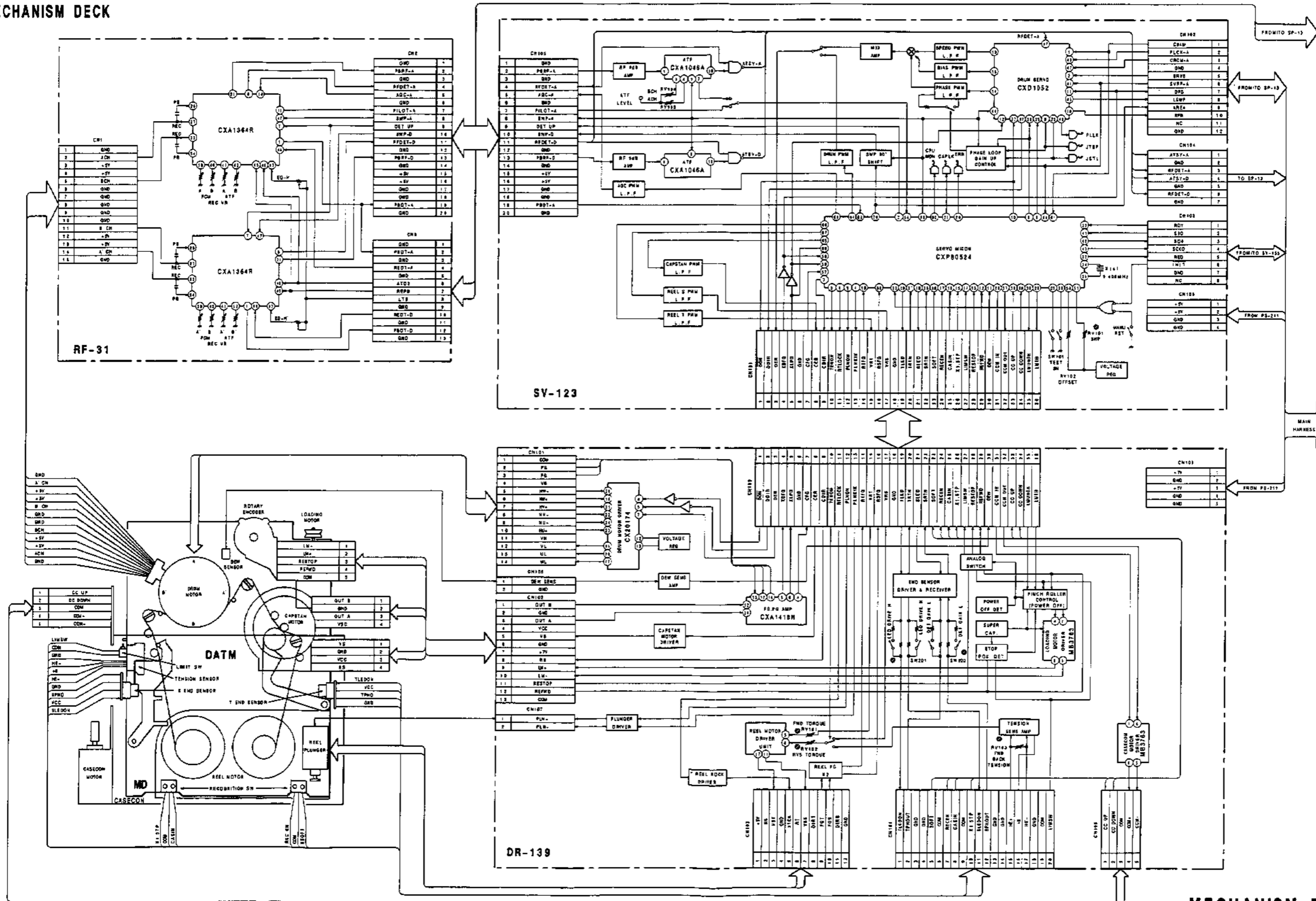


OVERALL (with all the options) PCM-7030

MECHAN



MECHANISM DECK



MECHANISM DECK

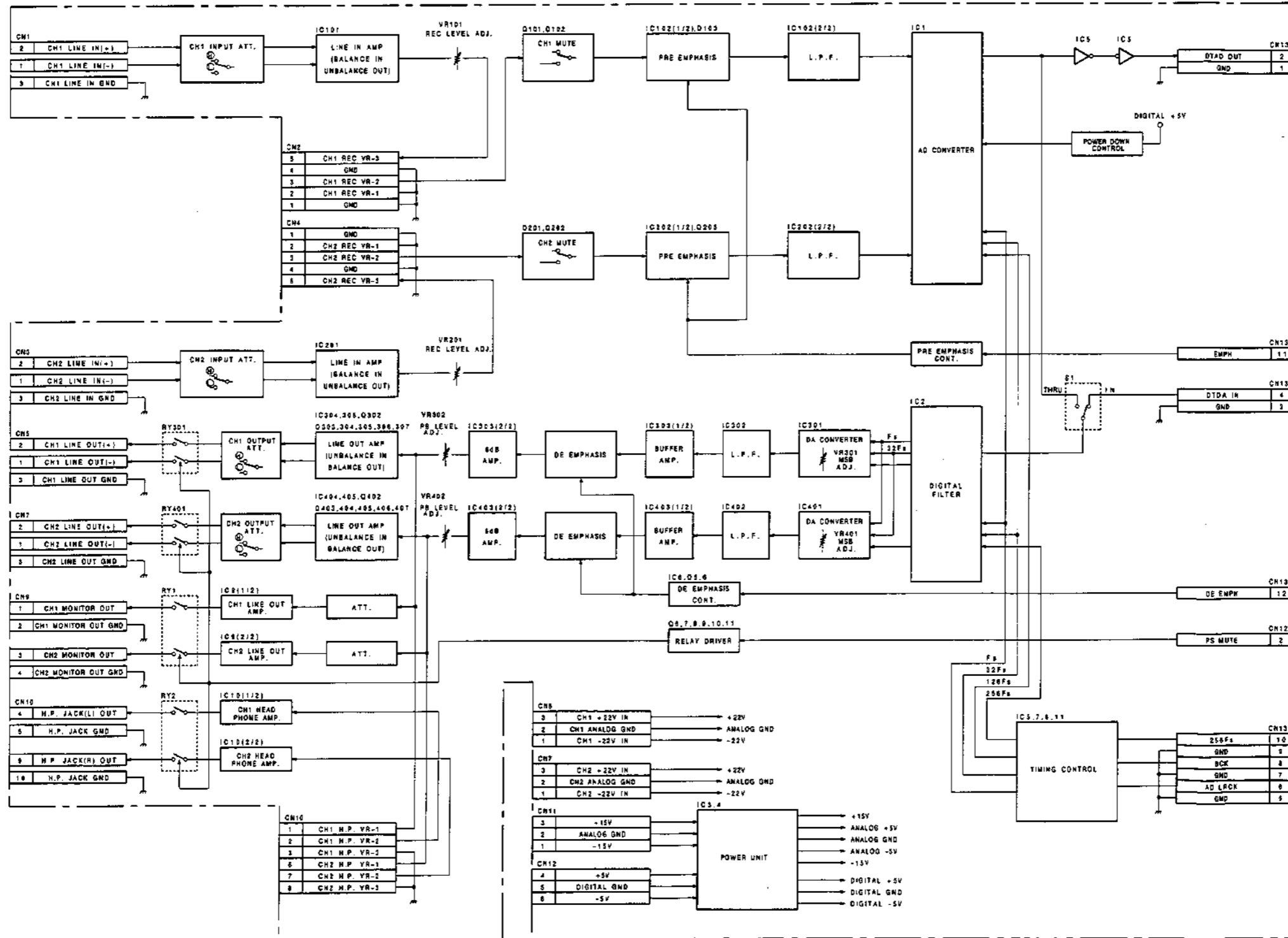
PCM-7030

(A/D,D/A CONVERTER)
BLOCK DIAGRAM ADA-18

(A/D,D/A CONVERTER)
ADA-18 BLOCK DIAGRAM

ADA-18 BOARD
REC Audio,A/D Converter
PB Audio,D/A Converter

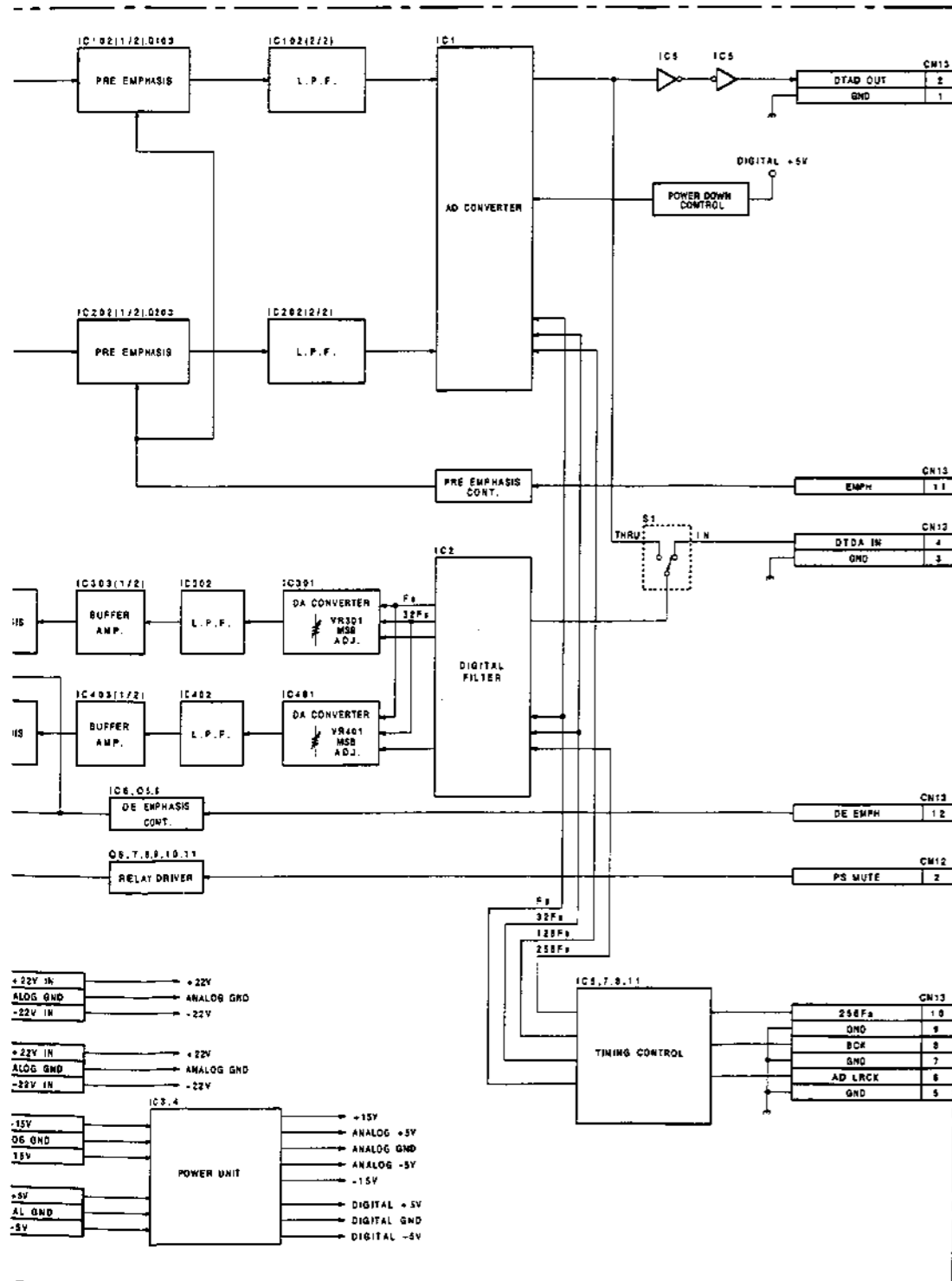
Serial No. UC 20001 to 20115
EK 50001 to 50380



A-9(a)

A-10(a)

ADA-18
PCM-7030



ADA-18
PCM-7030

A-10(a)

ADA-18 Board

The ADA-18 board consists of the A/D converter, D/A converter of two channels, and timing control block.

The A/D converter converts the analog signal to the digital signal of two channels and output the digital signal to the SP-13 board.

The D/A converter converts the digital signal of two channels transmitted from the SP-13 board to the analog signal.

1. A/D converter

A/D converter consists of -20dBs/+4dBs input level change circuit, LINE IN AMP (IC101/IC201), MUTE (Q101, 102/Q201, 202), PRE-EMPHASIS (IC102, Q103/IC102, Q203), and L.P.F.(IC102, IC202). The circuit offset (OFFSET CALIBRATION) is canceled automatically when the power turns on. The input level can be set to -20dBs or +4dBs by INPUT ATT SWITCH.(S101/S201)

2. D/A converter

D/A converter consists of the digital filter (IC2), D/A converter (IC301,IC401), L.P.F.(IC301/IC402), DE-EMPHASIS, LINE OUT AMP (IC304, 305, Q302-307 / IC404, 405, Q402-407), -20dBs/+4dBs output level change circuit, MONITOR OUT AMP (IC9) and HEADPHONE AMP (IC10). It can make the cut off characteristic of the L.P.F. moderate to make the sampling frequency eight times by using the digital filter. This improves a linear phase characteristic in the audible frequency range. The output level can be set to -20dBs or +4dBs by OUTPUT ATT SWITCH (S301, S401).

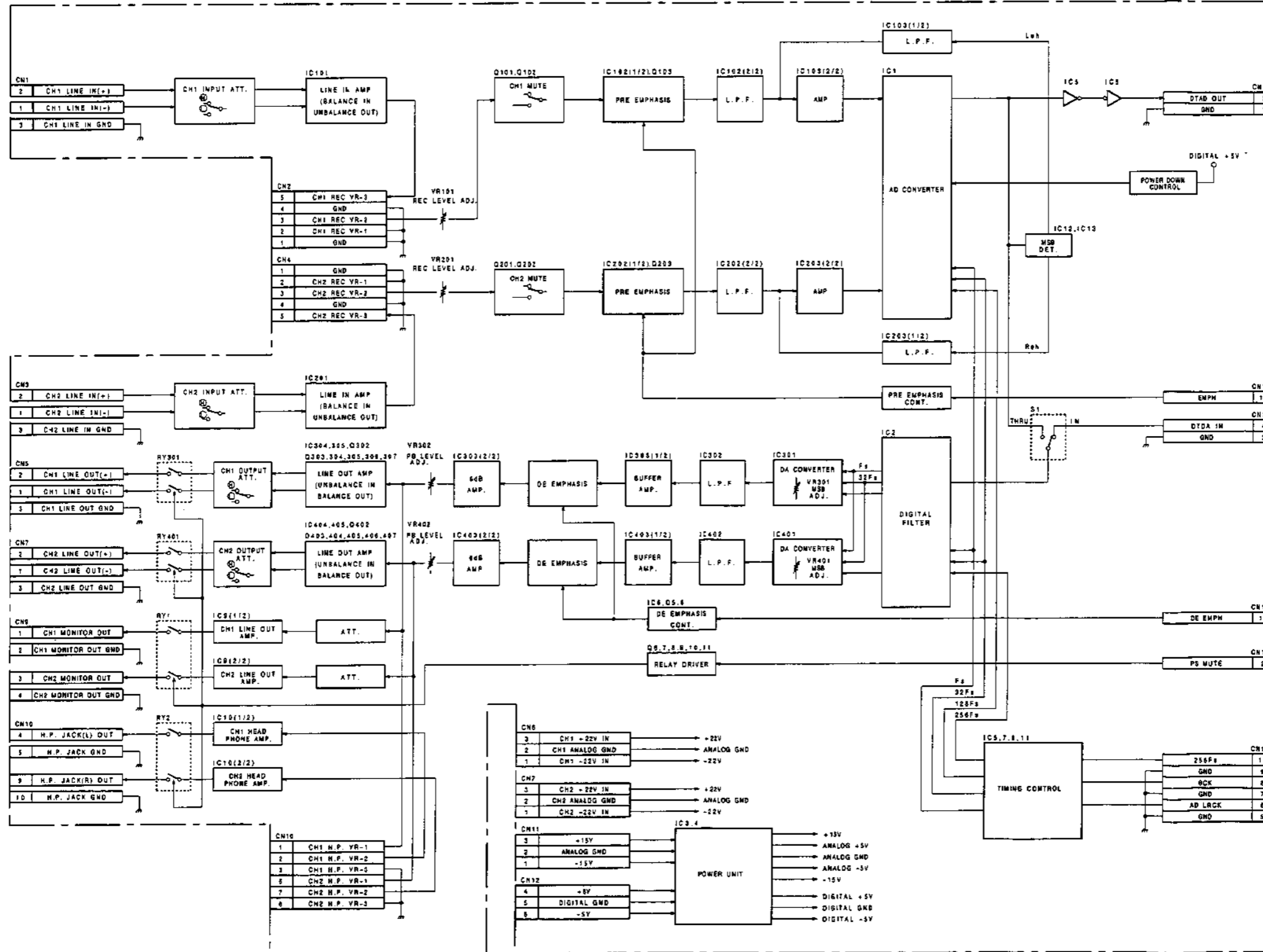
3. Timing control division (IC5, 7, 8, 11)

It regenerates the each timing signal (AD LRCK, BCK, 256Fs) transmitted from the SP-13 board into timing signals (Fs, 32Fs, 128Fs, 256Fs) which are required for A/D and D/A conversion.

A-11(a)

ADA-18 BOARD
REC Audio,A/D Converter
PB Audio,D/A Converter

Serial No. UC 20116 and higher
EK 50381 and higher



ADA-18 Board

The ADA-18 board consists of the A/D converter, D/A converter of two channels, and timing control block.

The A/D converter converts the analog signal to the digital signal of two channels and output the digital signal to the SP-13 board.

The D/A converter converts the digital signal of two channels transmitted from the SP-13 board to the analog signal.

1. A/D converter

A/D converter consists of -20dBs/+4dBs input level change circuit, LINE IN AMP (IC101/IC201), MUTE (Q101, 102/Q201, 202), PRE-EMPHASIS (IC102, Q103/IC102, Q203), and L.P.F.(IC102, IC202). The circuit offset (OFFSET CALIBRATION) is canceled automatically when the power turns on. The input level can be set to -20dBs or +4dBs by INPUT ATT SWITCH.(S101/S201)

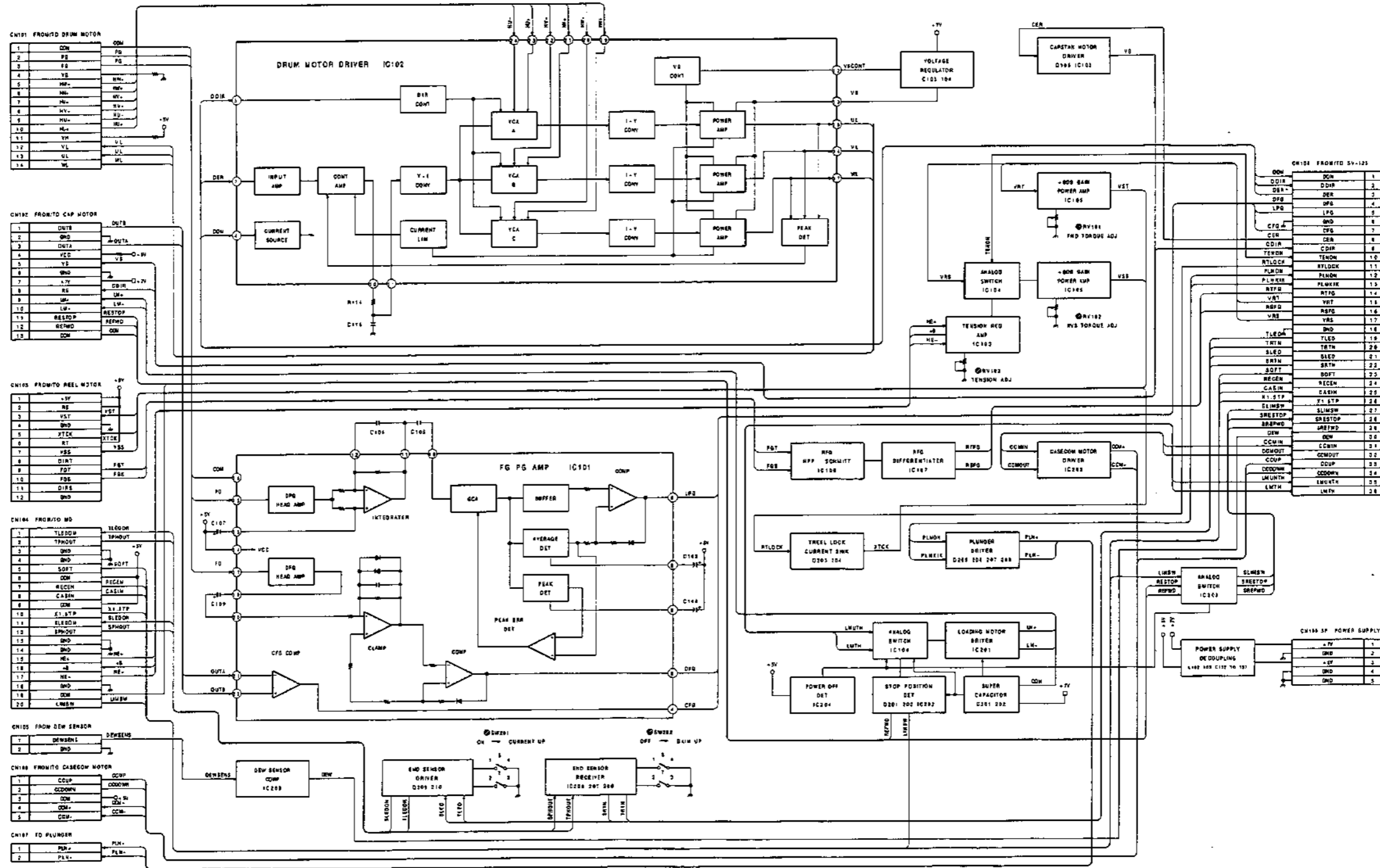
2. D/A converter

D/A converter consists of the digital filter (IC2), D/A converter (IC301,IC401), L.P.F.(IC301/IC402), DE-EMPHASIS, LINE OUT AMP (IC304, 305, Q302-307 / IC404, 405, Q402-407), -20dBs/+4dBs output level change circuit, MONITOR OUT AMP (IC9) and HEADPHONE AMP (IC10). It can make the cut off characteristic of the L.P.F. moderate to make the sampling frequency eight times by using the digital filter. This improves a linear phase characteristic in the audible frequency range. The output level can be set to -20dBs or +4dBs by OUTPUT ATT SWITCH (S301, S401).

3. Timing control division (IC5, 7, 8, 11)

It regenerates the each timing signal (AD LRCK, BCK, 256Fs) transmitted from the SP-13 board into timing signals (Fs, 32Fs, 128Fs, 256Fs) which are required for A/D and D/A conversion.

DR-139 BOARD
Motor Drive, Sensor



DR-139

The hard following

1. Drum

Drum FQ magnetizi alteration coil. Drum a compar. integrator (IC101).

through a amplifier IC (IC101)

Three ph motor. Th SV-123 1

passing 1 MOTOR.

The diffe peak dete receives

which is is input rotation

of VCA elements output is

I-V conv signals re that gene

regulator IC102 by to the o

2. Capst (Q105)

The caps pattern (a magn elements.

is input

DR-139 Board

The hardware of DR-139 board consists of the following blocks:

1. Drum FG, PG amplifier and driver (IC101, 102)

Drum FG and PG are a system that forms a magnetizing pattern on the drum and detects the alteration of a magnetic field with a fixed printed coil. Drum PG is converted to TTL LEVEL through a comparator after passing through the head amplifier, integrator and AGC AMP in the FG, PG AMP IC (IC101). Drum FG is converted to TTL LEVEL through a comparator after passing through the head amplifier and the level clamper in the FG, PG AMP IC (IC101).

Three phase brushless motors is used as the drum motor. The drum servo error voltage (DER) from the SV-123 board will be into the control amplifier after passing through the input amplifier in the DRUM MOTOR DRIVER (IC102).

The difference between each phase detected by the peak detector and the output amplitude is taken and receives V-I conversion after passing through L.P.F. which is to stabilize the amplitude control loop, and is input to VCA. On the other hand, the drum rotation phase information input as control signals of VCA for each phase after detected with hall elements (HU-, HU+, HV-, HV+, HW-, HW+). VCA output is connected to the motor coil through the I-V converter and power amplifier, and VCA control signals rotate the motor by the current into the coil that generates a rotating magnetic field. The voltage regulator (Q103, Q104) reduce the power loss of IC102 by providing it with driving voltage according to the output amplitude.

2. Capstan FG amplifier and driver (IC101, 103, Q105)

The capstan FG is a system that forms a magnetizing pattern on the rotor and detects the alteration of a magnetic field with fixed magnetic reluctance elements. The differential output signal (OUTA, OUTB) is input to the comparator in FG, PG AMP IC (IC101)

and is converted to TTL LEVEL (CFG). Three phase brushless motor is used as the capstan motor. The driver is in the board unified with the capstan motor, however, most of the power loss is borne by Q105 on this board.

3. Reel FG forming circuit and driver (IC104-107)

The reel FG uses an optical system and is detected in the reel motor and is converted to TTL LEVEL. This FG are detected by differential circuit after passing HPF and the Schmitt circuit (IC106) and is transmitted to the servo micro-computer (CXP-80524 on the SV-123 board). On the other hand, T-side reel error signal (VRT) from the SV-123 board, pass through the attenuator for the FWD torque adjustment and input to the power amplifier (IC105). This power amplifier has 6dB gain. Three-phase brushless motors are used as reel motors. The driver is in the board in the reel motor, however, most of the power loss is borne by Q105. S-side reel error signal (VRS) is shifted to the output signal of the tention regulator amplifier according to modes by the analog switch (IC104) and is input to IC105.

4. Tention regurator amplifier (IC103)

The positioning information of the tention regurator on the mechanical deck is detected by the hall elements and is input to the differential amplifier of IC103 (HE+, HE-). The amplified signal will be selected by the analog switch in record mode and play mode, and the tention servo loop will be formed. RV103 is for FWD tention adjustment.

5. Plunger driver (Q205-208)

The break for the reel motors shall be released by using plunger. The voltage required for kicking and holding plunger is shifted.

6. End sensor driver/receiver (IC206-208, Q209, 210)

By using end sensor driver (Q209, Q210), the square wave of 1KHz comes from servo micro-computer drive LED in the end sensor unit. The driving current value shall be shifted into two steps by using SW201. When a tape ends, the light from LED is reflected by prism in the cassette and is input into the photo transistor inside the end sensor unit.

Photo transistor output (TPH OUT, SPH OUT) enters the END sensor receiver (IC206, 207, 208), changed into TTL LEVEL by compalator then transmitted to micro computer (IC101) in the SV-123 board.

Gain of the amplifier section shall be shifted into two steps by using SW202.

7. Loading cassette compartment motor driver (IC104, 201-204, Q201, 202)

The loading motor driver (IC201) is a bidirectional driver for a loading motor. In order to avoid the transformation of a pinch roller, it includes a circuits (Q201, Q202, IC202) that return to STOP position when the power turned off during installation. The cassette compartment motor driver (IC203) is a bidirectional driver for the cassette compartment motor.

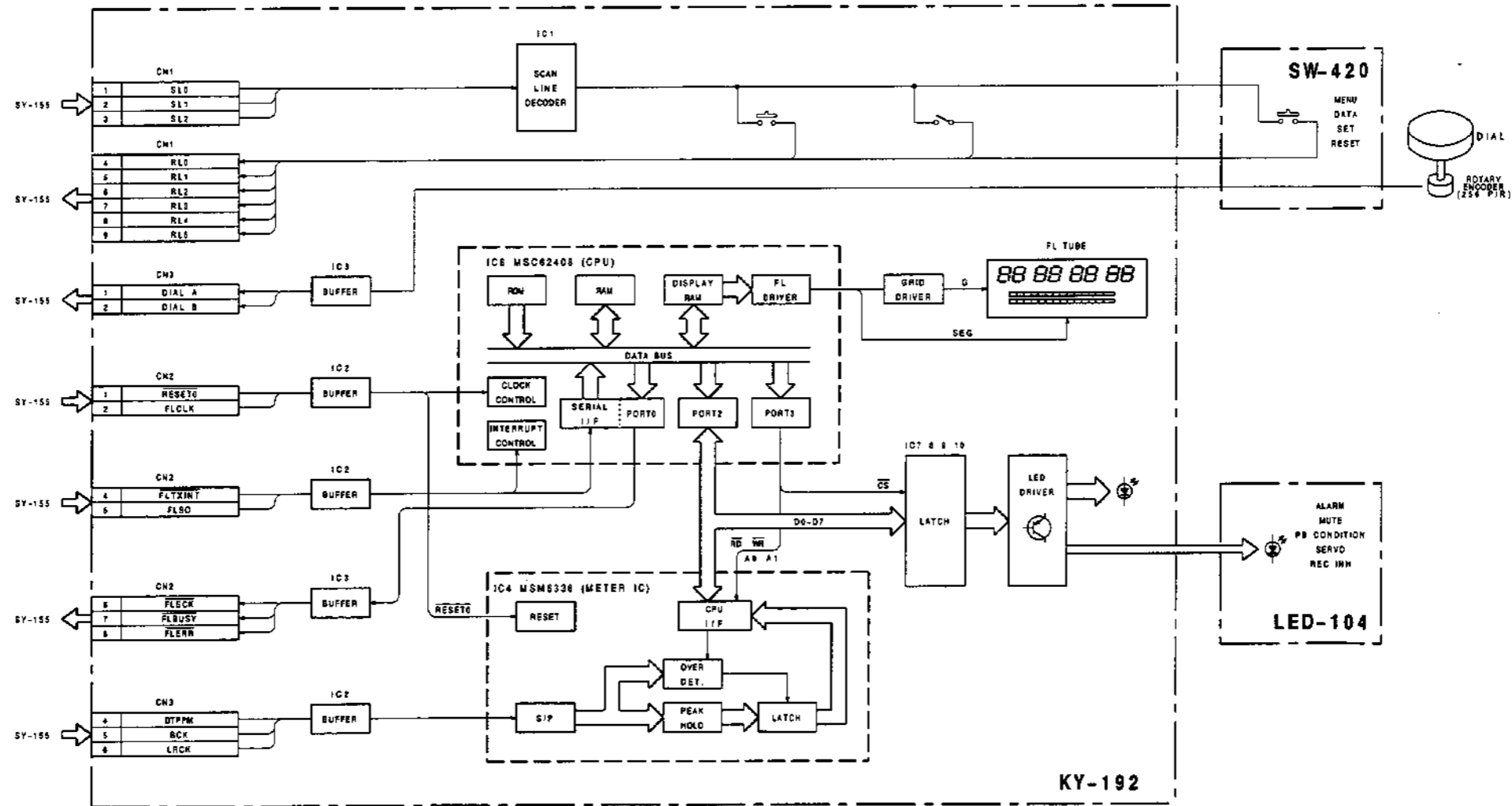
8. T-side reel lock circuit (Q203, 204)

This is to shunt service voltage of T-side reel motor and lock the motor in order to avoid the slack of the tape during loading and unloading mode.

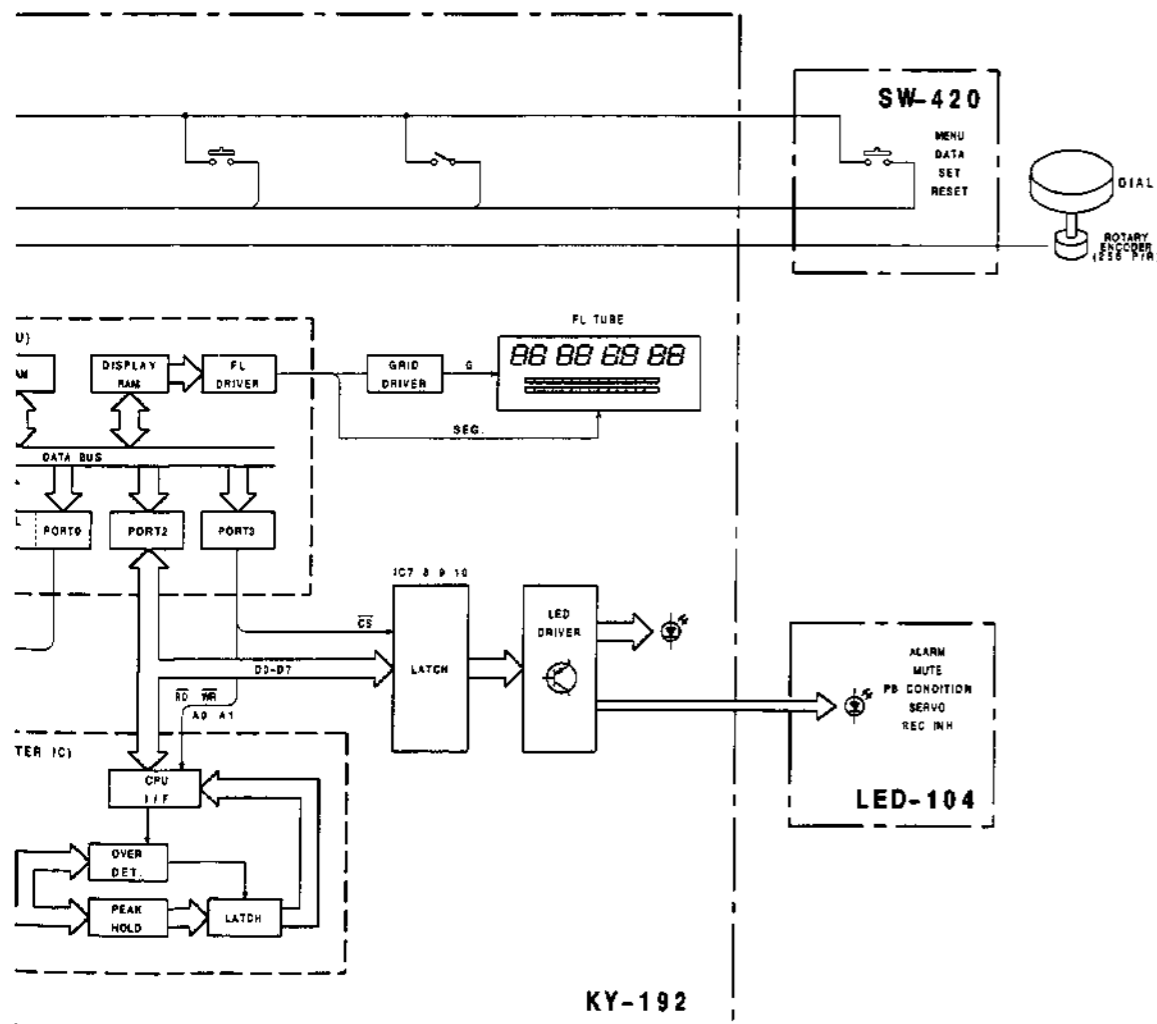
9. Dew sensor detecting circuit (IC209)

The resistance value of sensor mounted on the mechanical deck decreases when humidity is increased. It detects the change and transmits to servo micro-computer.

KY-192 BOARD/LED-104 BOARD/SW-420 BOARD
Key Board/Display



KY-192
LED-104
SW-420
PCM-7030



KY-192, LED-104 and SW-420 Boards

The KY-192 board consists of KEY and SELECTOR on the front panel scan block, and FL tube and LED display block. The METER IC (IC4) performs a holding of a peak value of 16 bit serial audio data and a detection of OVER LEVEL. CPU (IC6) is a 8bits CPU with ROM, RAM, and FL DRIVER. It display FL tube and LED according to the serial data from SY-155 and the audio peak data from the METER IC (IC4).

1. KEY, SW SCAN block

It decode (IC1) the SCAN LINE DATA (SL0, 1, 2) transmitted from ICA4 (TMP82C79) on the SY-155 board and output the RETURN LINE DATA (RL0-5) to the SY-155 board. The Key scan is performed for all keys and selectors on the front panel. Also it outputs the rotary encoder pulse data of the dial to the SY-155 board (Dial A, B) via the SW-420 board.

2. FL tube, LED display block

The 16bit digital audio data (DTPPM) input from the SP-13 board via the SY-155 board will be inserted into IC4 (MSM6338) together with LRCK, BCK signals. In this division, the peak value is held after the S/P conversion and the absolute value conversion. The detection of over level is performed simultaneously according to the over level value and over level sensitivity. The IC6 (MSC62408) executes serial communication with ICF2, MAIN CPU (UPD70216 (V50)) on the SY-155 board and performs lighting, and flashing of FL tube and LED as well as the METER display mode (ex. PEAK HOLD MODE, HOLD TIME).

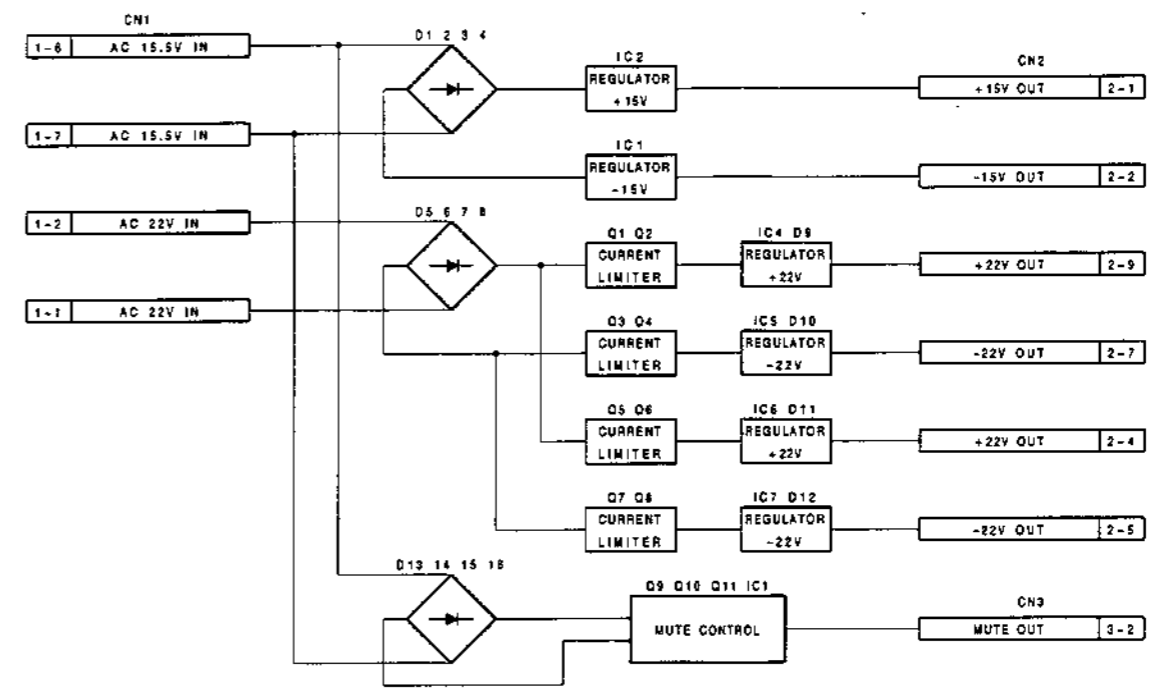
It reads the peak data from the METER IC (IC4) and converts it to the segments data according to the parameter specified from the main CPU (V50).

KY-192
LED-104
SW-420

PCM-7030

PS-211 BOARD
Power Supply

PS-211
The PS-
system (I
D9/IC5,
CONTROL
the powe
+ 15V us
18 board
source o
different :
(Q1, Q2/
more than
The MUT
three sec
-18 board
off, it sen
relay in o



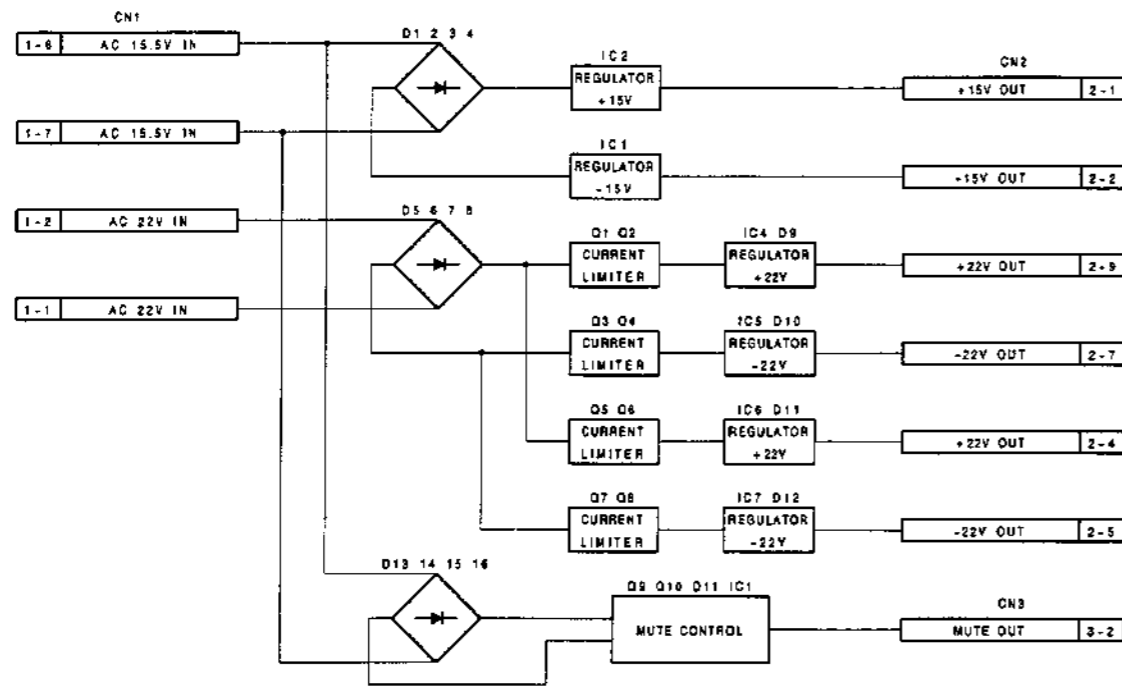
PS-211
PCM-7030

PS-211 BOARD
Power Supply

PS-211 Board

The PS-211 board consists of one analog +15V system (IC1/IC2), two analog +22V systems (IC4, D9/IC5, D10/IC6, D11/IC7, D12) and the MUTE CONTROL (Q9-Q11, IC1) which controls mute when the power turned ON/OFF.

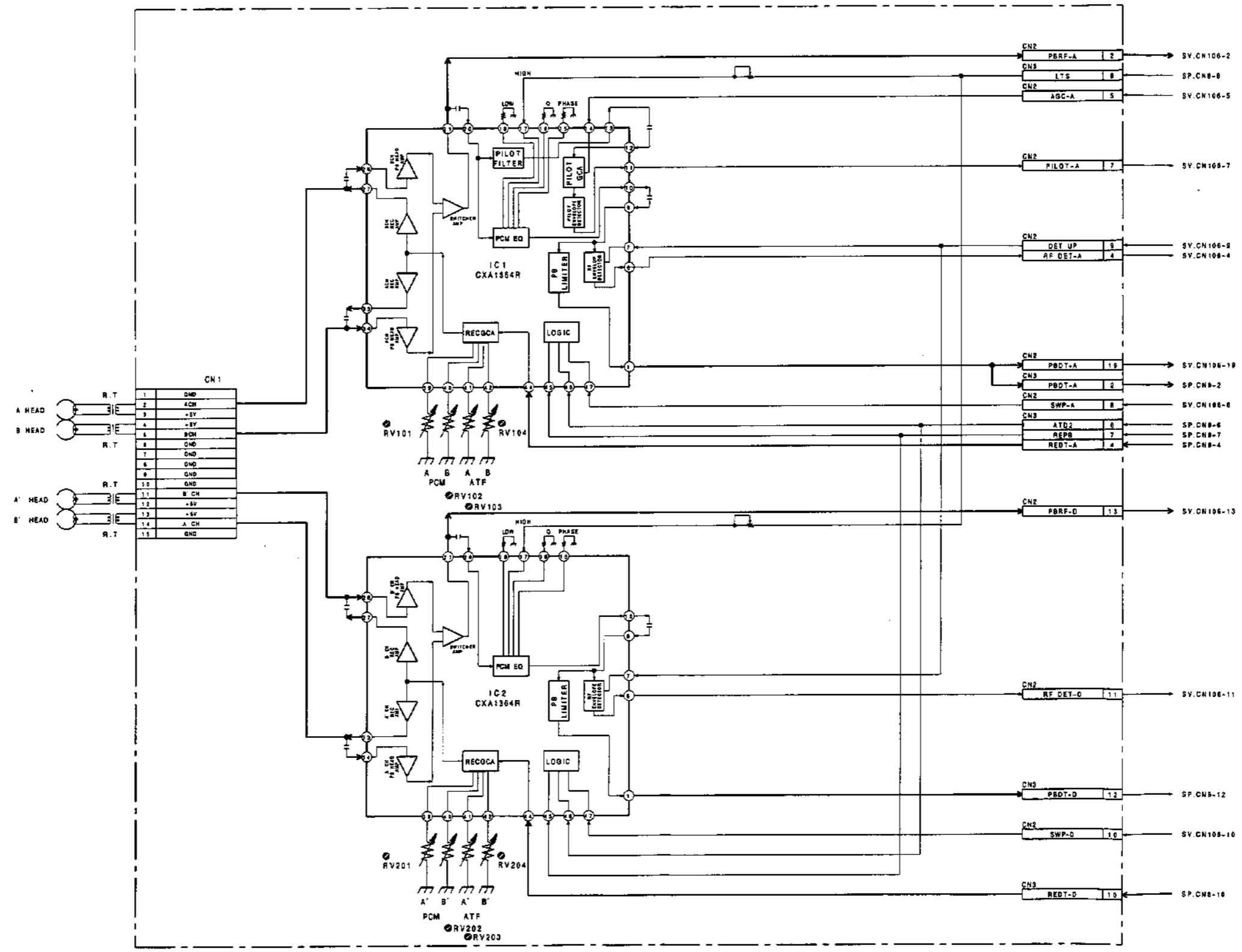
+15V uses the analog power source of the ADA-18 board and +22V uses the LINE OUT AMP power source of the ADA-18 board supplying in the different system for ch1 and ch2. The current limiter (Q1, Q2/Q3, Q4/Q5, Q6/Q7, Q8) will work when more than 100mA electricity is sent to the regulator. The MUTE CONTROL outputs the mute release signal three seconds after power on and relay on the ADA-18 board will be turned on, and shortly after power off, it sends the MUTE ON signals and turn off the relay in order to avoid the occurrence of popping noise.



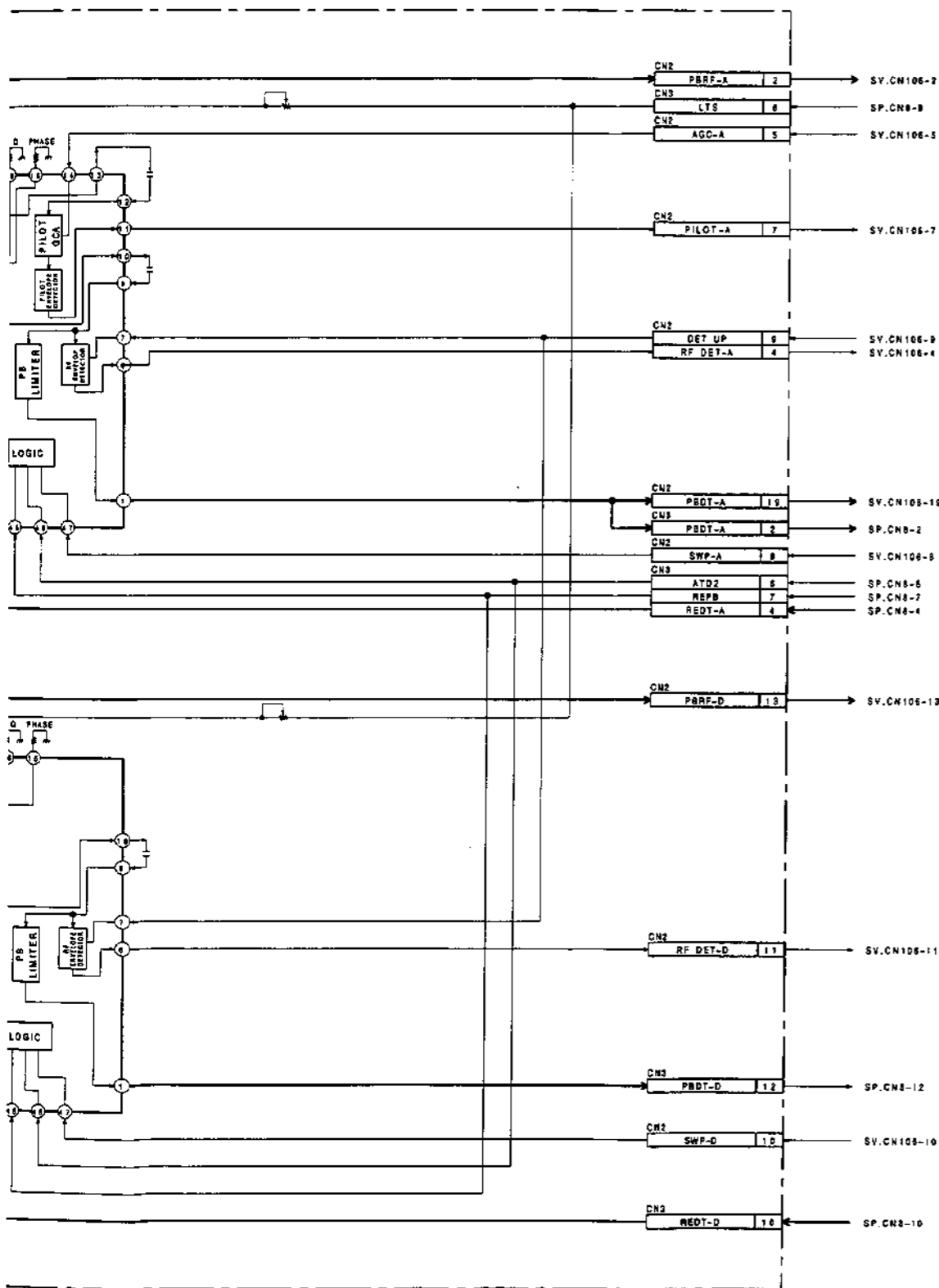
PS-211
PCM-7030

(RF AMPLIFIER) BLOCK DIAGRAM RF-31 (RF AMPLIFIER) RF-31 BLOCK DIAGRAM

RF-31 BOARD
RF Amplifier



RF-31
PCM-7030



RF-31
PCM-7030

RF-31 Board

The RF-31 board can record and playback the digital signal into the tape and mainly consists of two RF amplifier ICs (IC1, 2) for leading head and trailing head.

The RF amplifier IC is integrated the recording/playback amplifier, PCM equalizer and ATF analog signal processing block into one chip.

1. The REC signal flow

During recording, the recording signal REDT-A (A, Bch) and REDT-D (A', B'ch) from the digital signal processing IC on the SP-13 board is entered into the REC gain control division of the IC (IC1 for leading head recording and IC2 for trailing head recording) on the SP-13 board. The recording signal is converted from the voltage into the current and the current is adjusted to meet the head feature of A, B, A', B'ch (PCM current adjustment leading head: RV101 for Ach, RV102 for Bch, trailing head: RV201 for A'ch, RV202 for B'ch, ATF current adjustment leading head: RV103 for Ach, RV104 for Bch, trailing head: RV203 for A'ch, RV204 for B'ch). Then, it is amplified 40dB by the amplifier in the IC and is output to the drum.

2. The PB signal flow

The playback signal from the head is amplified 60dB (IC1 amplifies the leading head A, Bch and IC2 amplifies the trailing head A', B'ch) and is output to the SV-123 board as PBRF-A (A, Bch) and PBRF-D (A', B'ch). On the other hand, the playback signal amplified 60dB is amplified and phase-equalized in

each EQ division of IC1 and IC2 (High frequency characteristic adjustment: leading head A, Bch = RV105, trailing head A', B'ch = RV205). During the VARI PITCH. The EQ high frequency characteristic is controlled by VARI PITCH voltage (LTS) from SP-13 board in order to check inferiority of the error rate. The wave-equalized playback signal is converted to the rectangular wave with an amplitude of 870mVp-p by the limiter in the IC and is output as REDT-A (leading head A, Bch) and REDT-D (trailing head A', B'ch).

3. ATF analog signal process division

(1) Detection the detection signal of tracking error (normal speed and variable speed playback)

The IC1 on the RF-31 board extracts the pilot signal (130KHz) from the playback signal and adjusts the gain based on the features of A and B head by the AGC-A signal that the pilot gain control amplifier in the IC1 is transmitted from the SV board. Then, the envelope of the pilot signal is generated and output to the PILOT-A.

(2) RF envelope detection

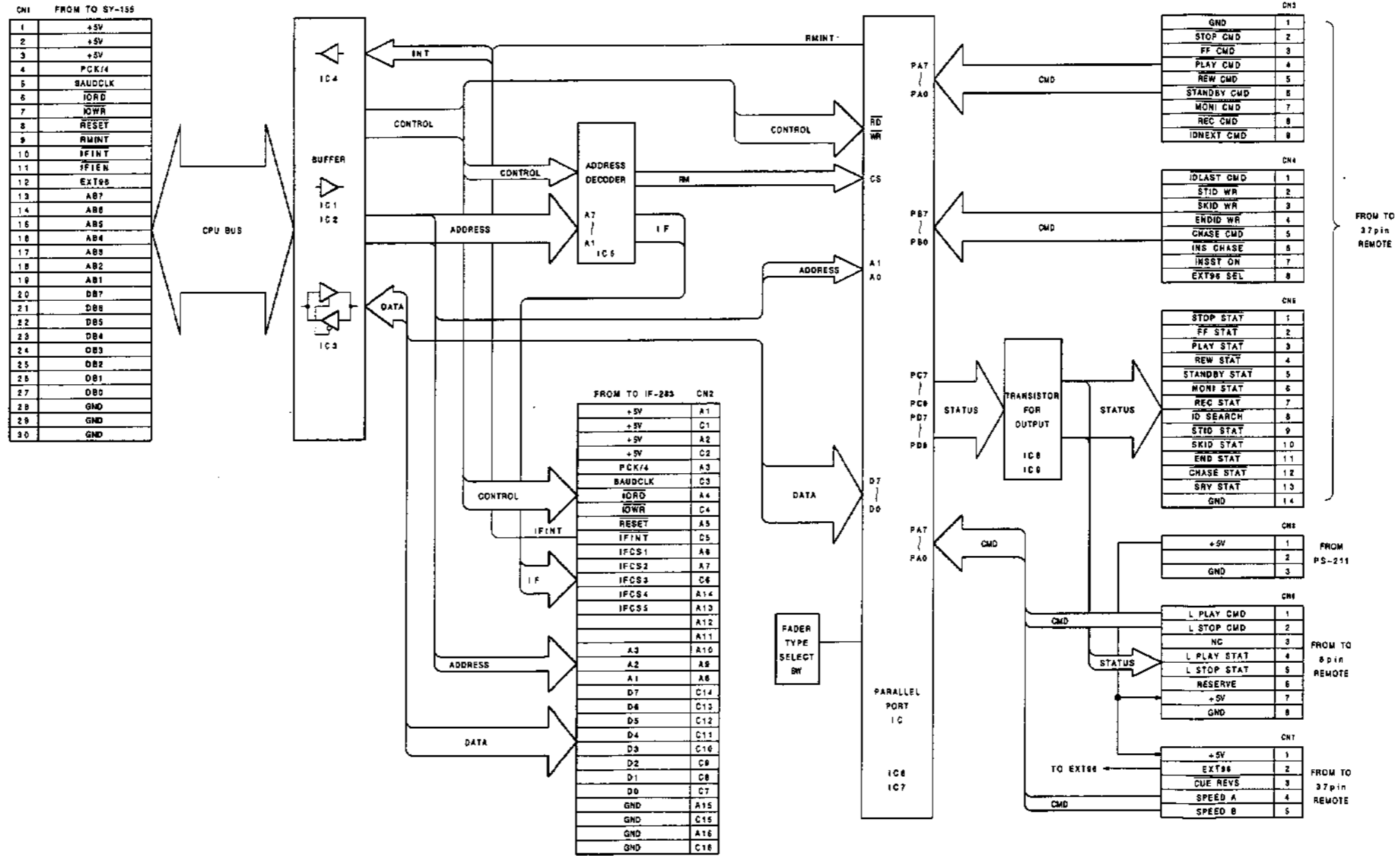
The RF envelop detector in the IC inputs the PCM equalizer output and detects the PCM band signal out of the RF signal and output the outcome to the RF DET-A (IC1 leading head A, Bch) and RFDET-D (IC2 trailing head A', B'ch). It also shifts the threshold voltage level to normal PB mode and search mode.

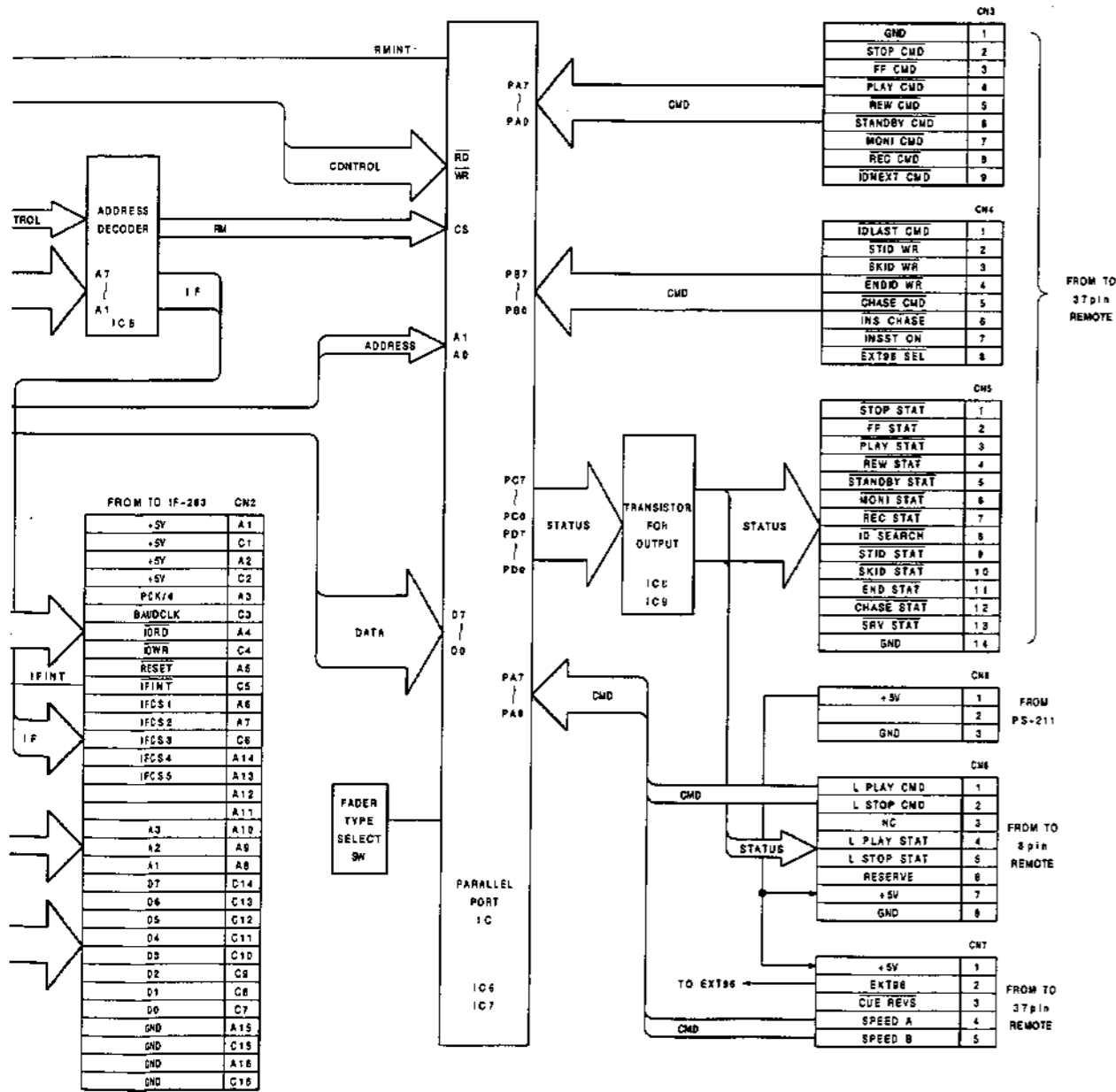
	Ach		Bch		A'ch		B'ch	
	PCM	ATF	PCM	ATF	PCM	ATF	PCM	ATF
	REC	PB	REC	PB	REC	PB	REC	PB
REPB	H	L	H	L	H	L	H	L
ATD2	L	L	H	H	L	L	H	H
SWP-A	L	L	L	L	H	H	H	H
SWP-D	-	-	-	-	-	-	L	L

REC/PB SYSTEM CONTROL LOGIC TRUTH VALUE

RM-77 BOARD
Parallel Remote

RM-77
The RM-77
and 8pin
PORT ga
It sends
process
command
The PS-2
CN6 and
500 (mA)
SW1 is
fader star
for level
CN2 48pi
to install
DABK-7C





RM-77 Board

The RM-77 board is to control 37pin parallel remote and 8pin fader start remote. It uses two 32bit I/O PORT gate arrays (IC6, 7) to output the status. It sends the SY-155 board an offering signal for process requirement when 50msec pulse input command is transmitted.

The PS-211 board supplies +5V to 7pin of connector CN6 and 1pin of CN7 and is able to supply up to 500 (mA).

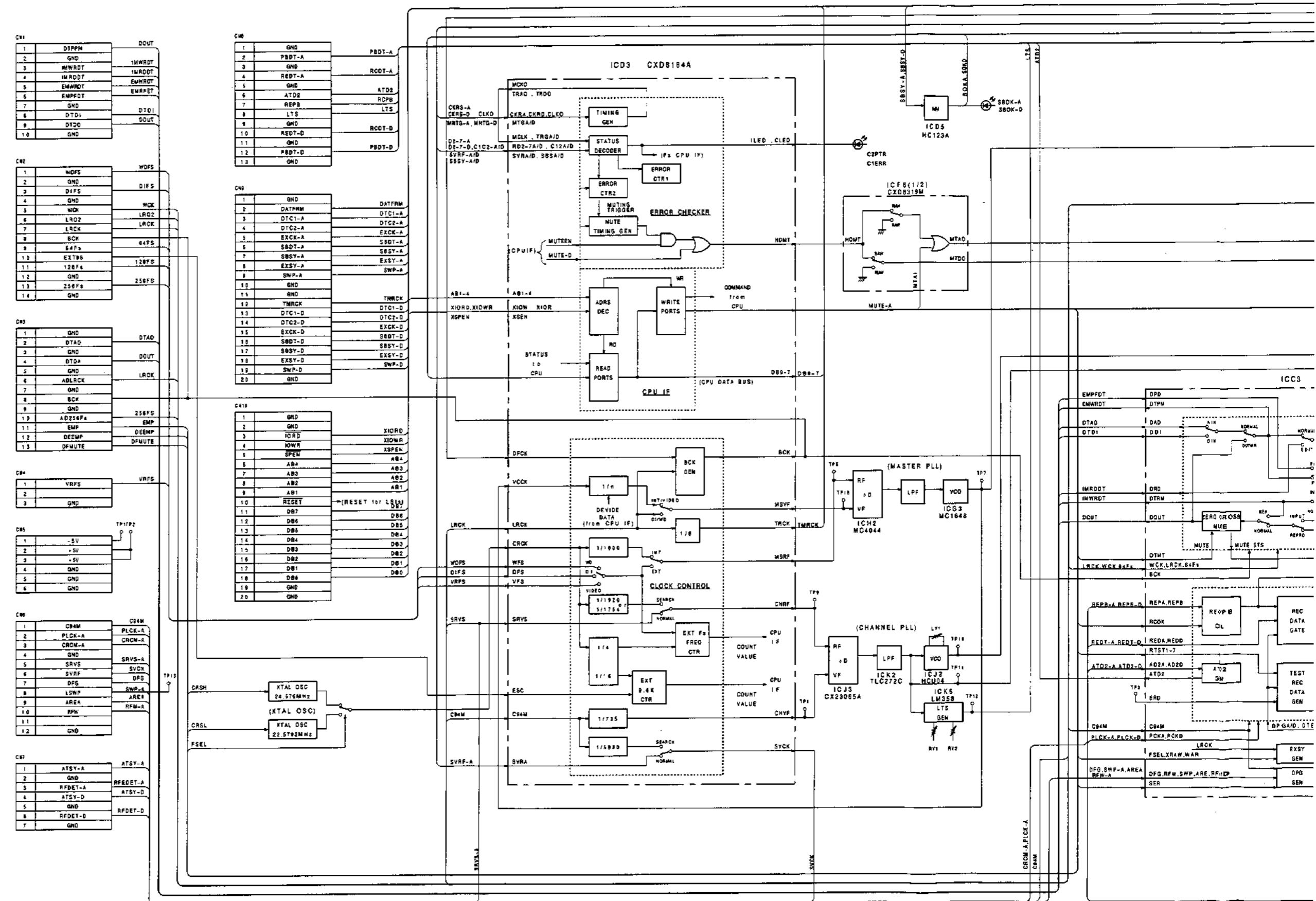
SW1 is to specify the shift the PLAY/STOP for fader start to 2 switch for pulse input and 1 switch for level input.

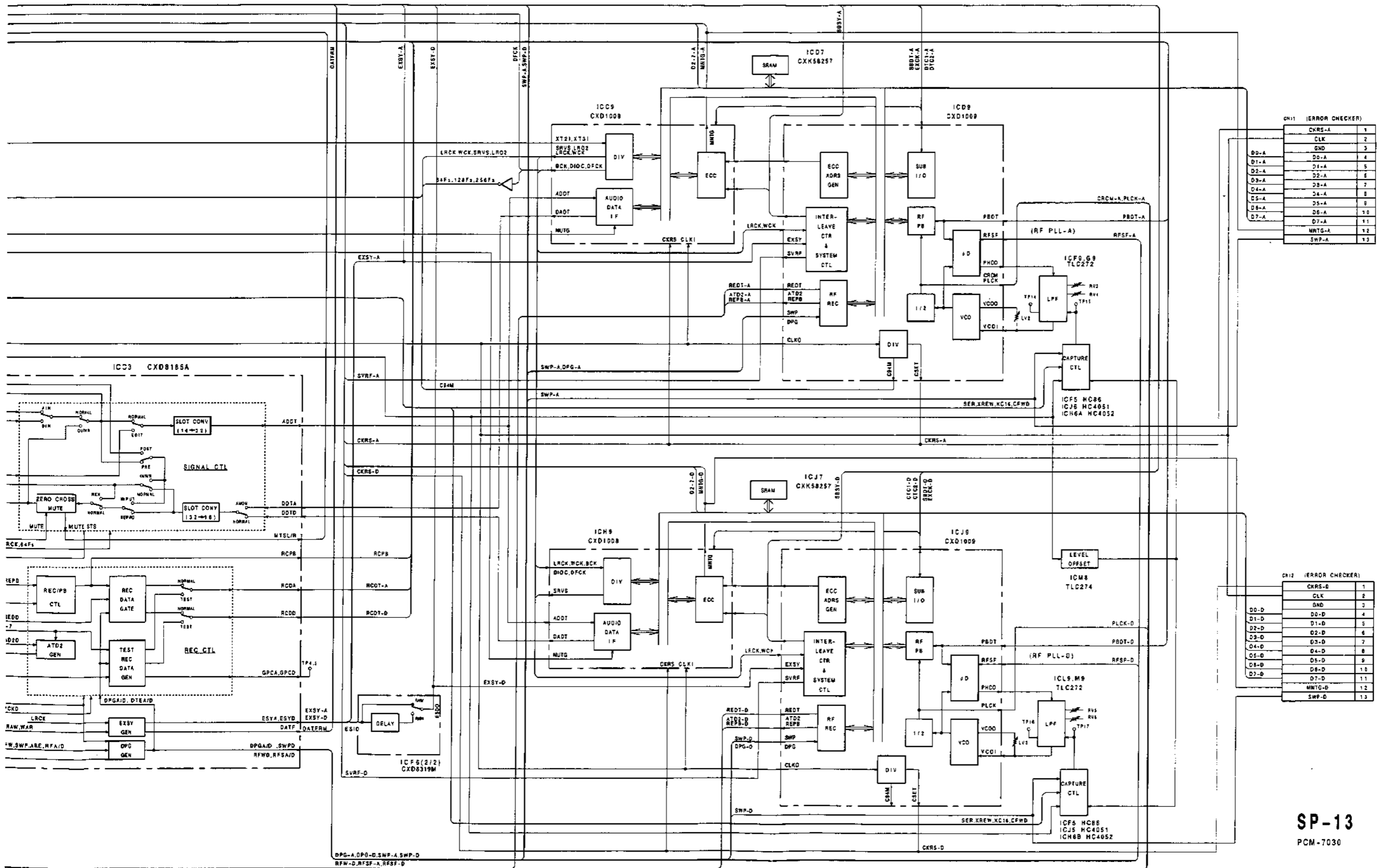
CN2 48pin DIN connector on the RM-77 board is to install the optional board (IF-283 board) for the DABK-7033 RS-232C.

RM-77
PCM-7030

(SIGNAL PROCESSOR) BLOCK DIAGRAM SP-13 (SIGNAL PROCESSOR) SP-13 BLOCK DIAGRAM

SP-13 BOARD
Signal Processor





CH1 (ERROR CHECKER)

CKRS-A	1
CLK	2
SHD	3
D0-A	4
D1-A	5
D2-A	6
D3-A	7
D4-A	8
D5-A	9
D6-A	10
D7-A	11
MNTG-A	12
SWP-A	13

CH2 (ERROR CHECKER)

CKRS-D	1
CLK	2
SHD	3
D0-D	4
D1-D	5
D2-D	6
D3-D	7
D4-D	8
D5-D	9
D6-D	10
D7-D	11
MNTG-D	12
SWP-D	13

SP-13
PCM-7030

SP-13 Board

The SP-13 board has the features that encodes the audio and sub-code signals according to the DAT format and sends the encoded signal to the recording amplifier; decodes the signal transmitted from the playback amplifier and takes the audio and sub-code signals to send each boards.

The audio signals transmitted from the A/D converter (ADA-18 board) and AES/EBU D-IN (DIO-10 board) are first entered into CXD8185A (ICC3). The audio signal from ICC3 will be transmitted to CXD1008 (IC9/ICH9) through the conversion from 16bit slot into 32bit slot after selected by the AUDIO INPUT switch (ANALOG/DIGITAL) in ICC3. On the other hand, the sub-code came from the SY-155 board enters into CXD1009 (ICD9/ICJ9). The audio signal and the sub-code signal receive the interleave, ECC encoding and 8-10 modulation in CXD1008 and CXD1009, and are transmitted to the recording amplifier (RF-31 board) with the ATF signal and are recorded on the tape (RCDT-A, RCDT-D).

The playback signal (PBDT-A, PBDT-D) transmitted from the playback amplifier (RF-31 board) enters into CXD1009. Data extraction clock is generated by RFPLL circuit and the playback data is extracted by this clock. The extracted data receive the 10-8 demodulation, ECC decoding and deinterleave in CXD1008 and CXD1009, and are output as the audio signal and sub-code signal. The sub-code signal is sent to the SY-155 board. The audio signal receives the conversion from 32bit slot to 16bit slot in CXD8185A and is transmitted to the D/A converter (ADA-18 board), AES/EBU D-OUT (DIO-10 board), METER (KY-192 board) and MEMORY (MEM-40 board).

The signal process ICs for DAT (CXD1008, 1009) are used in pairs in the leading head and trailing head. Generally, the leading head for recording and the trailing head for playback. In SUB INSERT mode, the leading head for playback and the trailing head for recording the sub-code. Also, the tape recorded with the Wide track mode is played back the leading head.

The SP-13 board includes the following circuit other than the above:

Error block counter (in CXD8184A): enables the CPU (SY-155 board) to monitor the error rate by counting the numbers of error detected blocks during playback.

Muting circuit (in CXD8184A and CXD8185A): performs a zero-cross mute to the playback audio signal when playback error rate becomes worse than the initially set-up threshold.

PLL circuit: consists of the Master PLL which generates master clock and the Channel PLL which generates the reference clock for the recording signal. The dividing circuit (in CXD8184A) is controlled by CPU and enables the VARI SPEED function.

Frequency counter (in CXD8184A): measures frequency of the external reference clock and EXT SOURCE from the parallel remote connector.

Audio signal switch circuit (in CXD8185A): shifts signal flow by corresponding with the modes such as memory start, editing as well as the normal recording and playback.

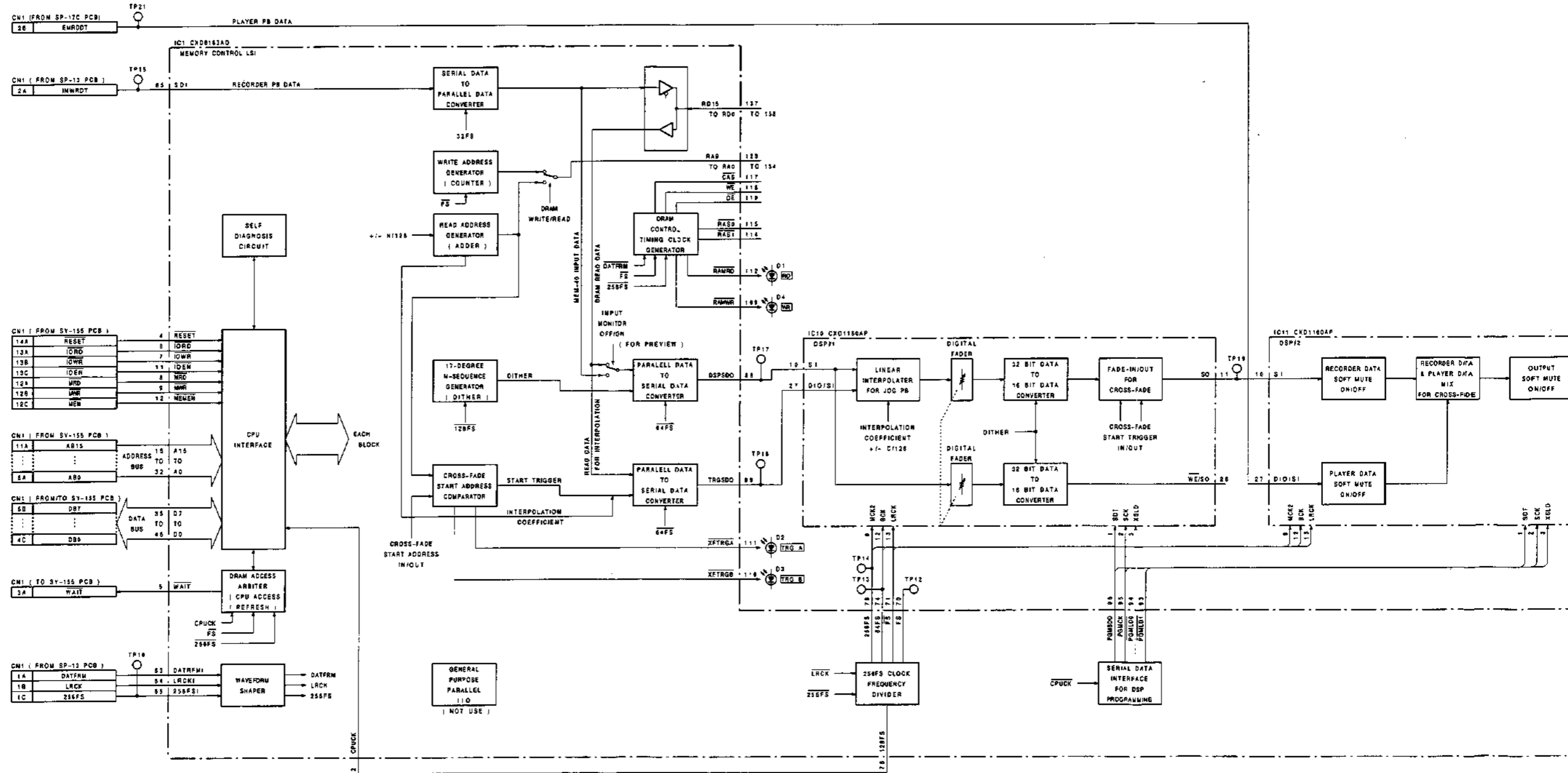
Test signal generating circuit (in CXD8185A): generates test signals in order to make the test tape for the mechanical servo adjustment.

(SIGNAL PROCESSOR)
BLOCK DIAGRAM SP-13



(SIGNAL PROCESSOR)
SP-13 BLOCK DIAGRAM

SP-17B BOARD
Repro Fader

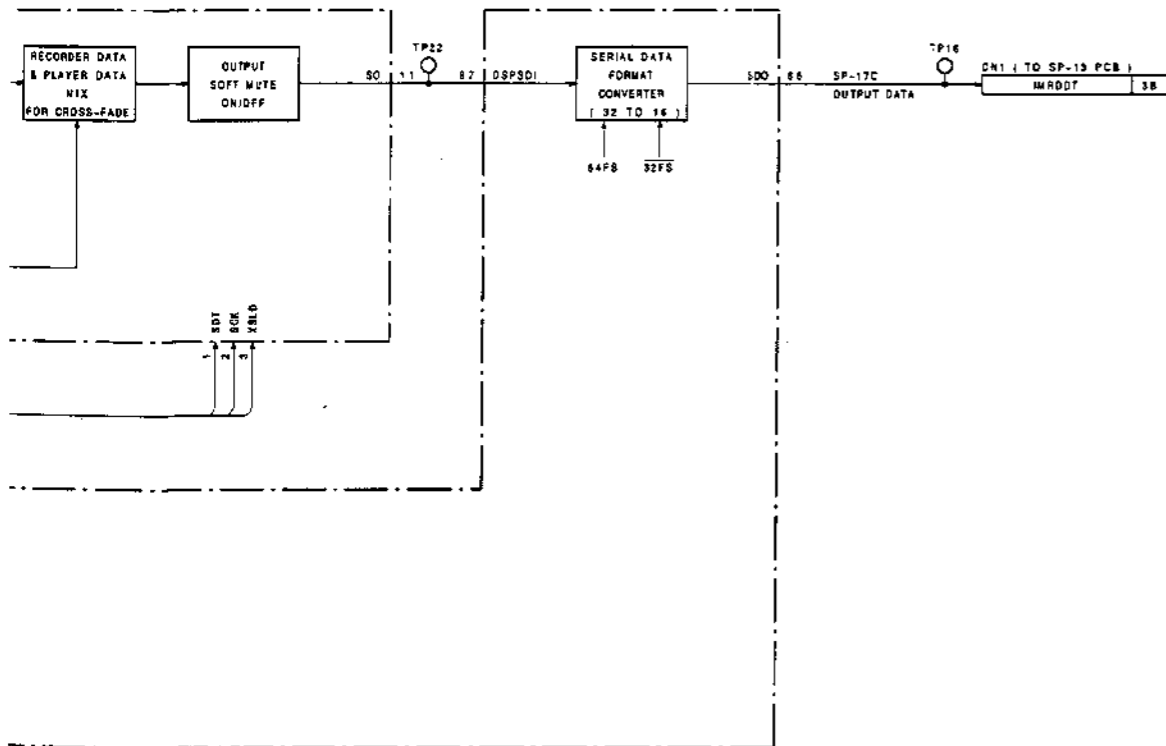


SP-17B Board

The SP-17B board consists of two DSPs (CXD1160AP, IC10, CXD1160AP, IC11) and the gate array (IC1, CXD8163AQ) that controls them. It performs signal processing of the tape playback sound with DSPs, and using SP-17C board enables to cross-fade this sound signal with the player sound at an editing point.

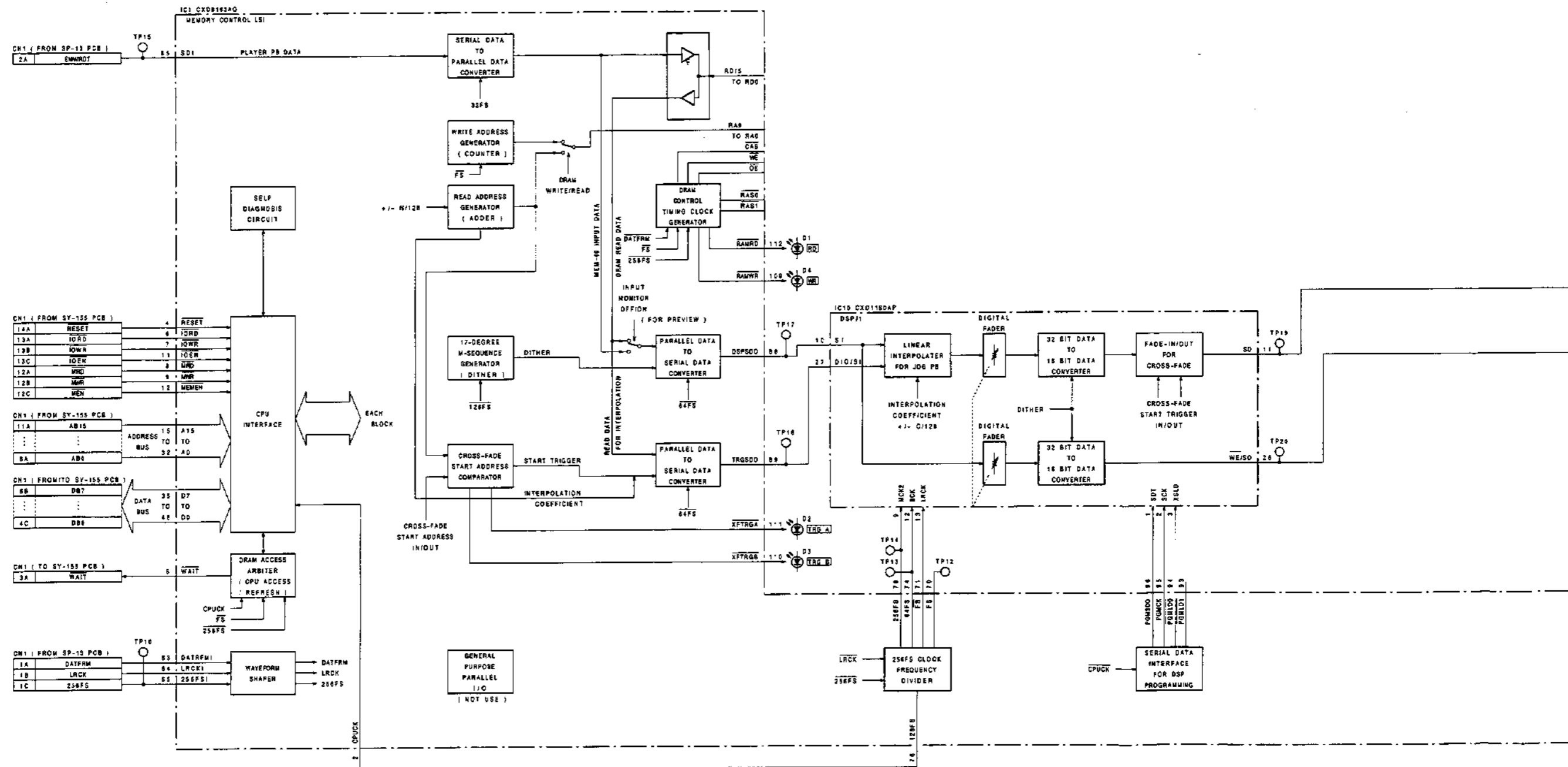
The DSP program is set by the system control through the DSP serial interface built into the gate array when the power is turned on. Starting triggers for cross-fade and FADE-OUT/FADE-IN are generated in the gate array and are transmitted to the DSP.

The sound after its signal processing in the DSP returns to the gate array and is output to the SP-13 board. After that, it is converted digital to analog (D/A conversion) on the ADA-18 board, is output in digital from the DIO-10 board and is recorded on the tape of the recorder.



SP-17B
PCM-7030

SP-17C BOARD
Input Fader



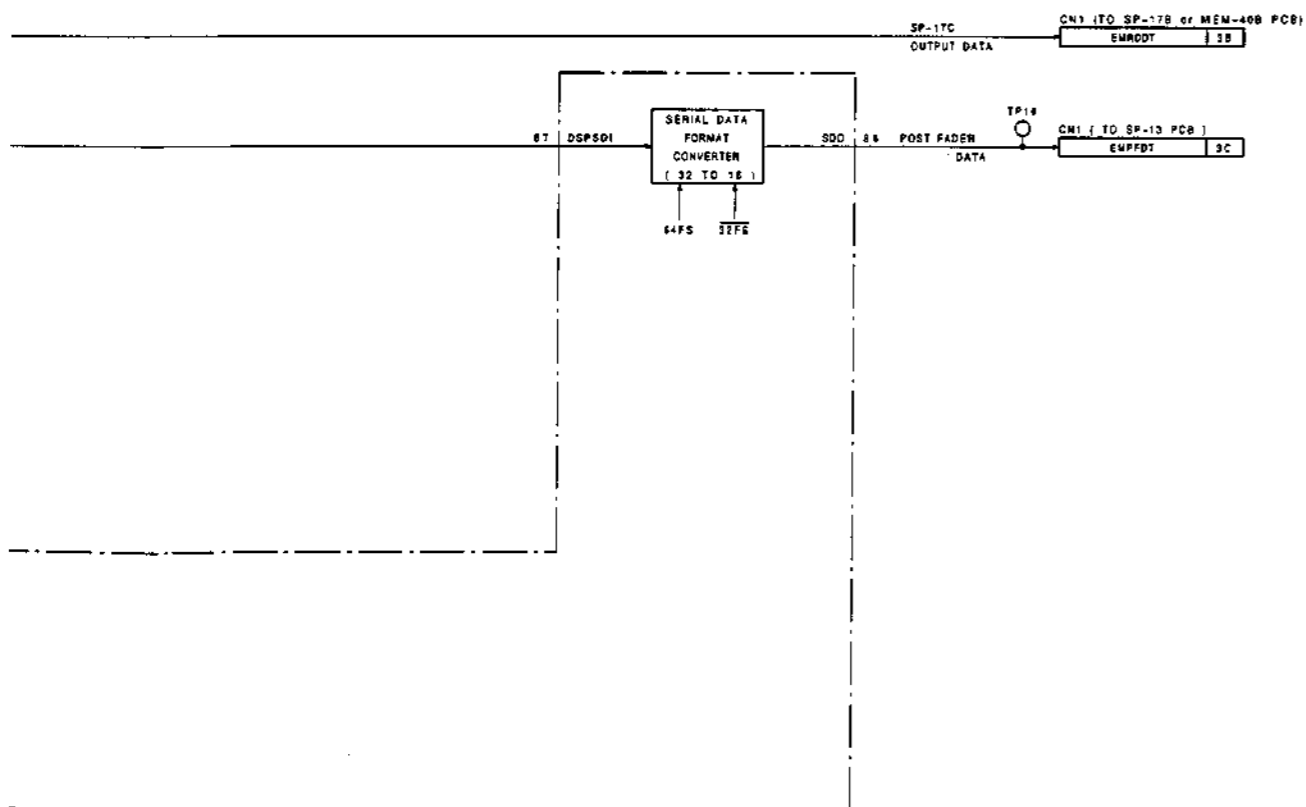
SP-17C Board

The SP-17C board consists of the DSP (CXD1160AP, IC10) and the gate array (CXD8163AQ, IC1) that controls them. It performs an input signal processing from the outside with DSP, and using SP-17C board enables to cross-fade this sound signal with the recorder sound at an editing point.

The DSP program is set by the system control through the DSP serial interface built into the gate array when the power is turned on. Starting triggers for cross-fade and FADE-OUT/FADE-IN are generated in the gate array and are transmitted to the DSP.

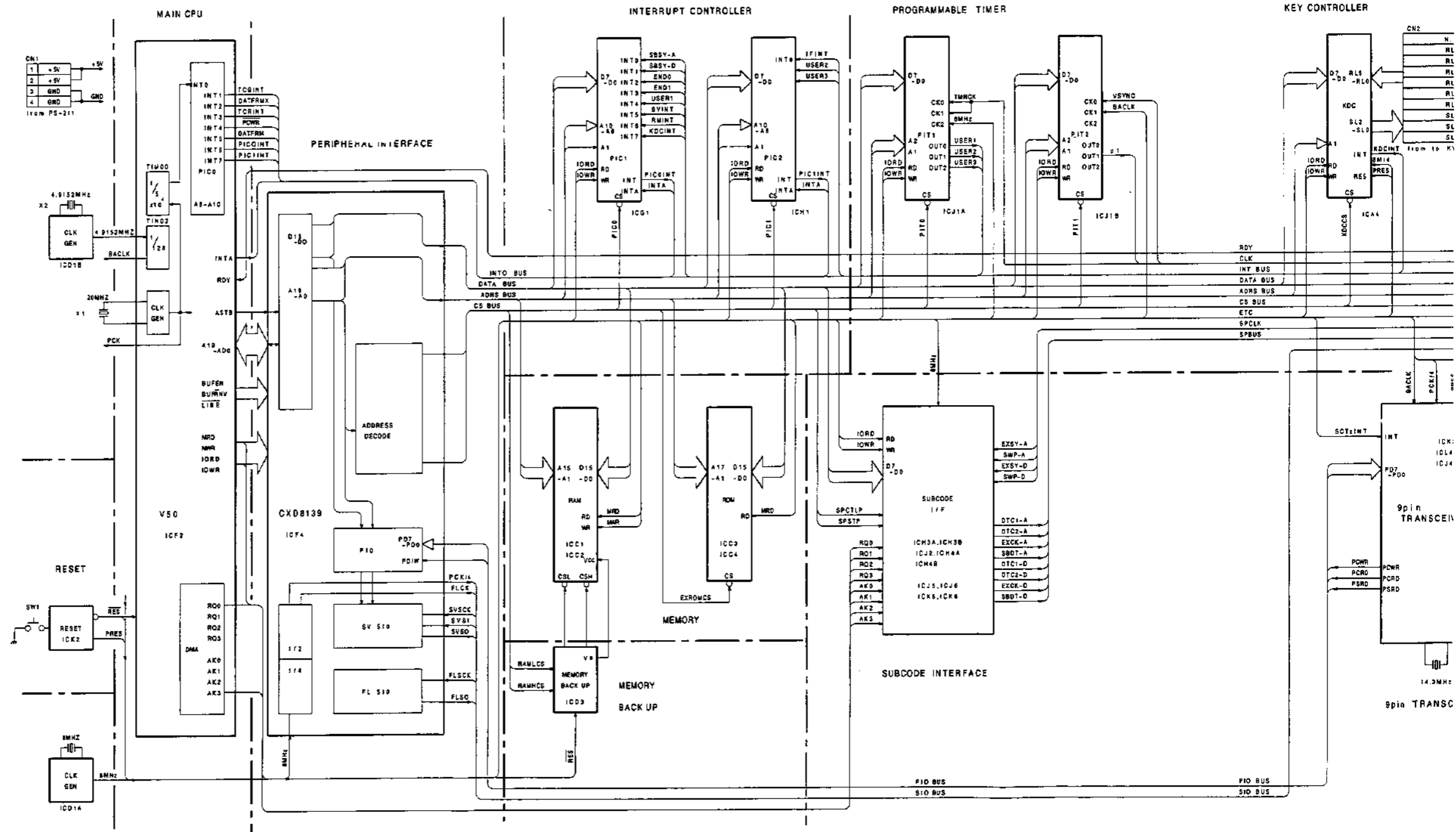
The sound after its signal processing in the DSP is sent to the SP-17B board. It is added to the recorder sound in the DSP (CXD1160AP, IC11) on the SP-17B board, and is returned again to the gate array.

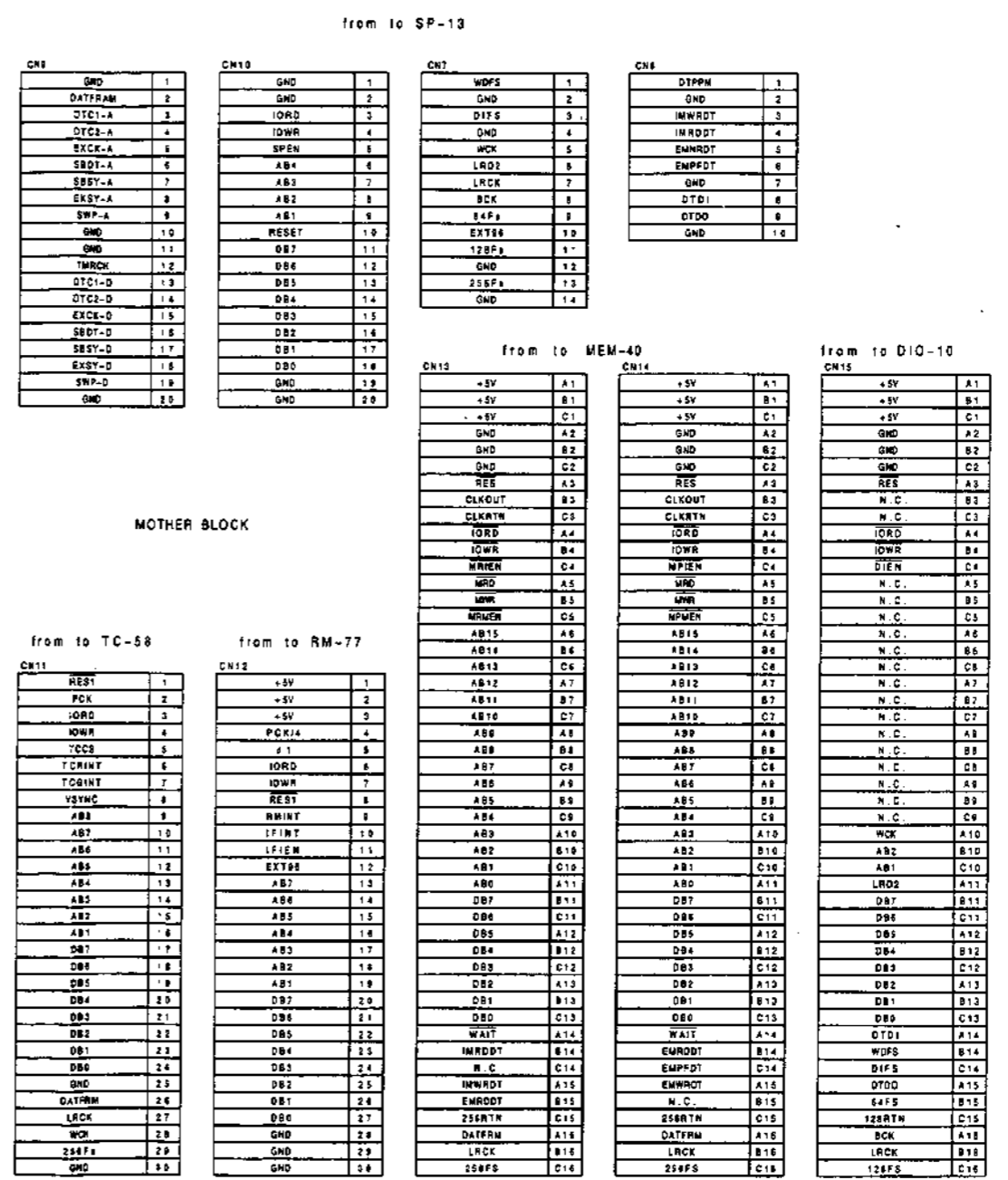
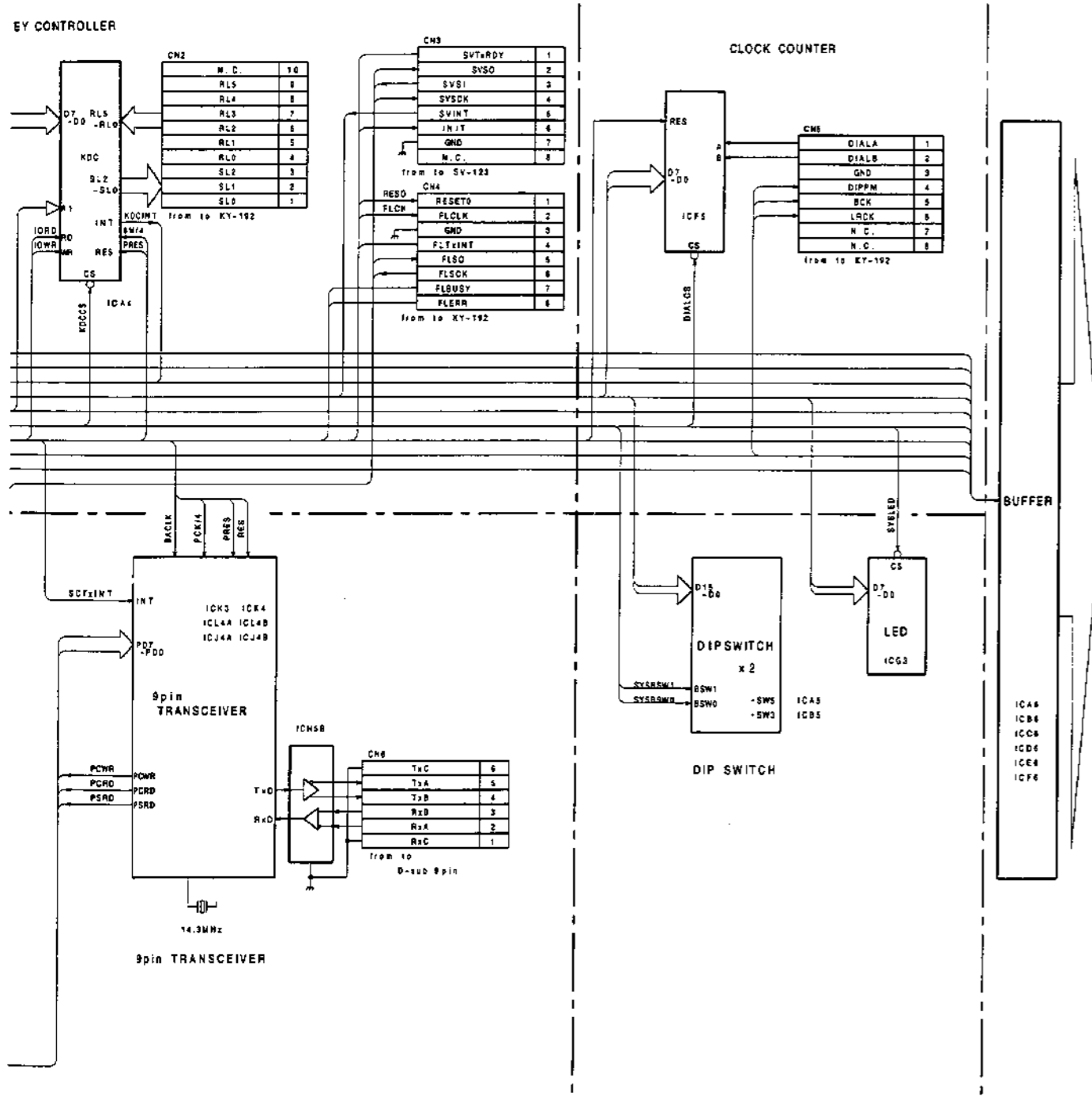
After that, it is output to the SP-13 board.



SP-17C
PCM-7030

SY-155 BOARD
System Control





SY-155
PCM-7030

SY-155 Board

The SY-155 board is the main CPU (ICF2) and peripheral circuit that perform the main control operation as well as the mother board of the PCM -7050/7030.

There are a gate array (ICF4), an interrupting controller (PIC) (ICG1, ICH), an interval timer (PIT) (ICJ1A, B), a key encoder (ICA4), a sub-code serial I/F (ICJ6, ICK6), a two-phase clock counter, ROM (256K) (ICC3, ICC4), RAM (64K) (ICC1, ICC2), RAM BACK UP circuit (ICD3), a sub-CPU for RS422 (ICK3, ICK4) as peripheral units.

MAIN CPU (μ D70216-10, ICF2);

PD70216-10 (V50) is a 16bit micro-processor with the operation frequency of 10MHz.

Gate array for sub-CPU I/F (CXD8139AQ, ICF4); consists of two synchronous SIOs, one PIO and the address decoder.

PIC (μ D71059, (ICG1, ICH1));

Control 17 interrupts with a master PIC in the main CPU chip.

PIT (μ D71054 (ICJ1A, ICJ1B));

An interval timer with three 16bit, used for a timer for the operation system, baud rate generator, V-SYNC input detector.

Key encoder (TMP82C79, ICA4);

Inputs key data from the KY-192 board and performs sensor matrix process.

Sub-code serial I/F (CXD8130Q (ICJ6, ICK6), 27C256 -SCCKV1.0 (ICK5, ICJ5));

Synchronous SIO for controlling CXD1009 in the SP-13 board.

Two-phase clock counter (μ D4702G, ICF5);

Two-phase clock counter from the dial.

MEMORY (RAM) back up circuit (ICD3);

Performs back up for the MEMORY (RAM) during the power-off by using a condenser (C12, C13) and lithium battery (BT1).

Sub-CPU for the RS-422 (μ PD78C11 (ICK3), μ PD71051 (ICK4));

Converts the RS-422 serial communication into the parallel communication for the main CPU.

DESCRIPTION OF THE INTERRUPT

PIC0: INT0: System timer interruption for a real-time operating system RT30V for 5msec.

INT1: Interruption for the data loading from the time code generator.

INT3: Interruption for data ready from the external time code reader.

INT4: Interruption of the PIO RxRDY.

INT5: DAT FRAME interruption for 30msec.

INT6: Receiving usage for PIC1

INT7: Receiving usage for PIC2

PIC1: INT0: Interruption for the sub-code input/output of the leading processor.

INT1: Interruption for the sub-code input/output of the trailing processor.

INT2: Interruption by the access completion of the leading processor.

INT3: Interruption by the access completion of the trailing processor.

INT4: RESERVED

INT5: Interruption from the servo CPU (CX80524).

INT6: Interruption to inform the input alternation of the parallel remote.

INT7: Interruption from the Key encoder (TMP82C79).

PIC2: INT0: Interruption for IF-283, RS-232C

INT1: RESERVED

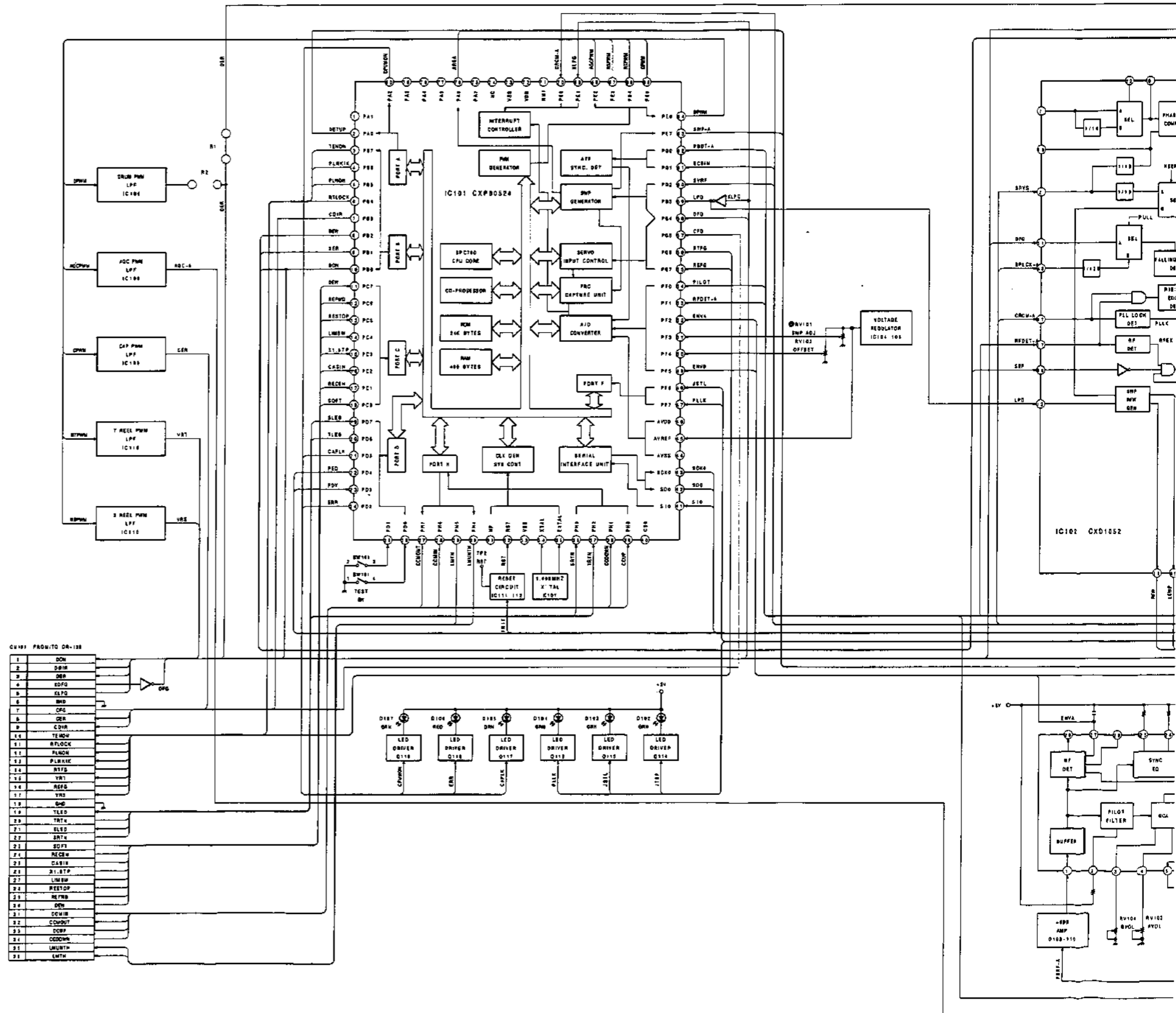
INT2: Timer interruption for the FL tube CPU.

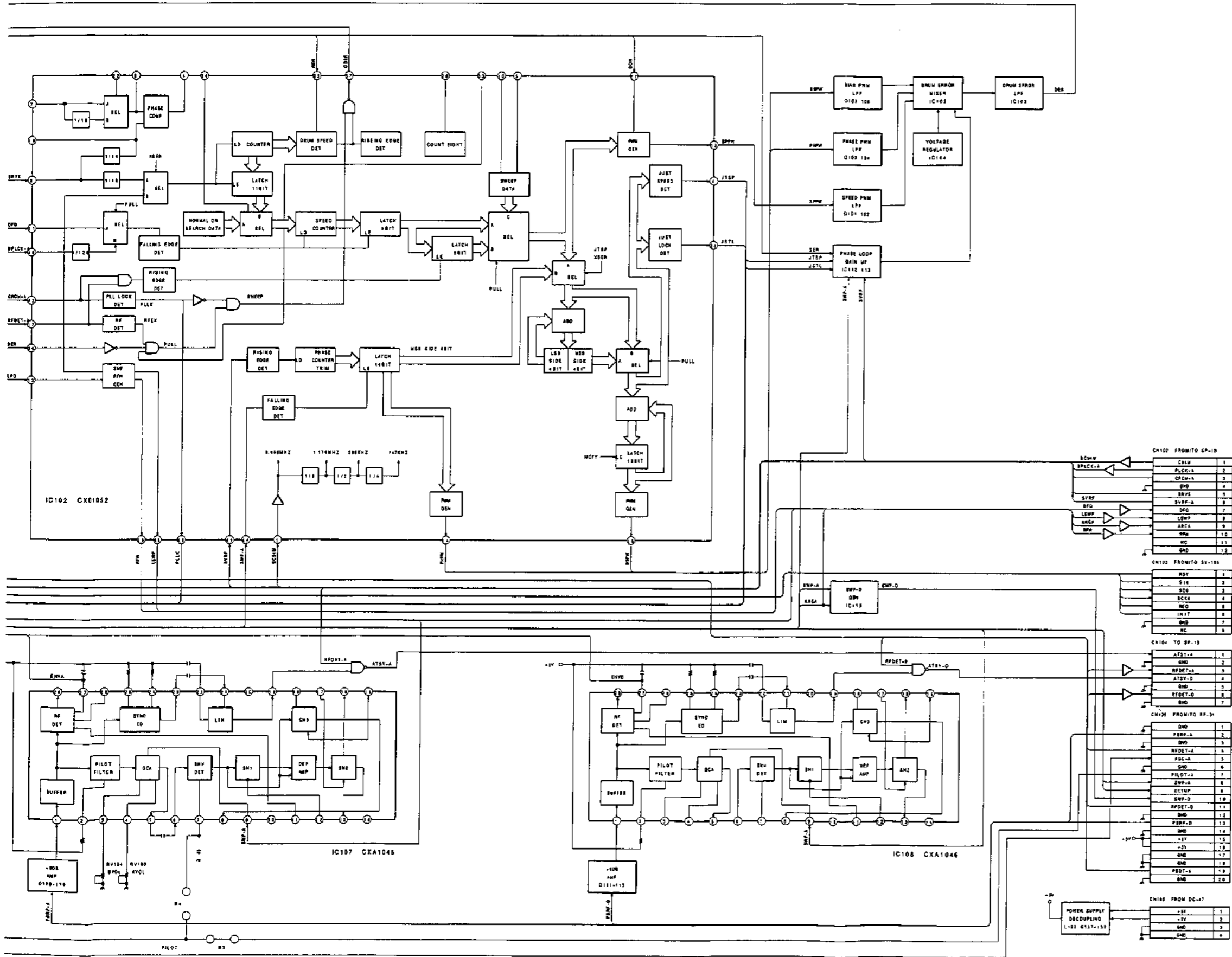
(SYSTEM CONTROL)
BLOCK DIAGRAM SY-155



(SYSTEM CONTROL)
SY-155 BLOCK DIAGRAM

SV-123 BOARD
Servo





CH102 FROM/TO SP-10

CMW	1
PLCK-A	2
CPDM-A	3
SD	4
SVS	5
SVS-A	6
SP	7
LEW	8
AREA	9
SW	10
HC	11
SD	12

CH102 FROM/TO SV-155

SD	1
S10	2
SD	3
SCC	4
NEG	5
INJT	6
SD	7
HC	8

CH104 TO SP-10

ATSY-A	1
RFDET-A	2
ATSY-D	3
SD	4
RFDET-B	5
SD	6

CH105 FROM/TO SP-31

SD	1
FBF-A	2
SD	3
RFDET-A	4
SD	5
PILOT-A	6
SWP-A	7
DETUP	8
SWP-D	9
RFDET-B	10
SD	11
FBF-D	12
SD	13
SD	14
-1Y	15
-2Y	16
SD	17
PRET-A	18
SD	19

CH108 FROM DC-17

-2Y	1
-1Y	2
SD	3
SD	4

SV-123 Board

The hardware of SV-123 board consists of the following blocks.

1. CXP80524 (IC101) and its peripheral circuit

CXP80524 (IC101) is the one-chip microprocessor which leads the center of the SV-123 board. It consists of CPU core, ROM, RAM blocks and the peripherals such as FRC capture, ATF sync detection circuit, etc. The error signals of each servo system are output as PWM waveforms (DRUM, AGC, CAP, T REEL, S REEL) and transmitted to each motor driver after removing carrier in L.P.F. (IC106, IC109, IC110).

(1) Operation process of the capstan servo

During REC mode, forward the tape in constant speed in order to get a track pitch based on the format. During play mode, use the tracking servo in order to make that the head traces correctly on the track and control the forward phase of tape. During CUE mode, run the tape for both forward and backward with multiple speed of 1/5, 1/2, 1, 2.5, 8, 16.

(2) Operation process of the reel servo

During FF and REW modes, use servo as the tape linear speed becomes 150 times. Reduce the speed to 80 times at the end of the tape.

During REC and play modes, feed back the positioning information of the tension regulator to S-motor in order to stabilize the head contact. In other mode, output a fixed data that generates an appropriate torque.

(3) Operation process of the reel counter

The tape running distance is calculated from the reel FG.

The tape running time is displayed in realtime at the display.

(4) The switch conditions on the mechanical deck receiving and device control

• Control for the loading motor

The loading motor is controlled by detecting the position of the rotary encoder condition.

• Control for the cassette compartment motor

The cassette compartment motor is controlled in accordance with the cassette compartment switch condition.

• Detection for the condition of the cassette identification holes (detection of cassette in/out, REC inhibit, track pitch and pre-recorded tape).

• The end sensors driving signal generation and tape end detection.

• Control for the reel break plunger.

(5) Drum servo IC control

CXD1052 (IC102) and CX20174 on DR-139 board are controlled.

(6) Generation for the information signal of the drum rotary phase

SWP-A, AREA signals are generated. These signals are sent to the RF-31 board and SP-13 board. Play the test tape during the SWP adjustment mode and adjust the phase between the SWP-A and playback RF waveform to comply with the standard. The adjusting data is stored in the memory of the SY-155 board.

(7) Gain control of the PILOT GCA in CXA1364 (RF-31 board)

Playback the test tape during the AGC adjusting mode, and perform automatic adjustment on each A head and B head for the PILOT GCA gain to stabilize the added voltage of the track contents of the pilot envelope waveform.

The adjusting data is stored in the memory of the SY-155 board.

(8) Communication with the system controller

Asynchronous serial communication is performed between SY-155 board.

2. CXD1052 (IC102) and its peripheral circuit

CXD1052 (IC102) is the digital servo IC for the drum motor. It has the loops for speed, phase and bias control, outputs the error signals in PWM waveforms (SPPW, PHPW, BSPW) which are added after removing the carrier in L.P.F. and transmitted to the motor driver (DR-139 board).

(1) Operation process of normal servo

During REC and PLAY modes, CXD1052 operates to lock the drum phase to the reference phase of signal processing block.

In REC mode, the drum rotates to make the tape pattern specified by DAT format.

In PLAY mode, the drum rotates to time the reproduced RF signal to the reference phase of signal processing block.

A gain-up circuit is added to speed up the phase lock operation.

(2) Operation process of search servo

During FF and REW modes, CXD1052 operates to regulate the period of PLL CK extracted from RF signal.

In this way, the relative speed between heads and tape is kept constant as long as the servo loop operates.

This makes it possible to read sub-code data intermittently.

During this mode, the PWM waveform of phase servo loop (PHPW) does not change.

(3) Generation for information signal of the drum rotary phase

LSWP, RFW signals are generated. These signals are sent to the SP-13 board.

3. CXA1046 (IC108) and its peripheral circuit

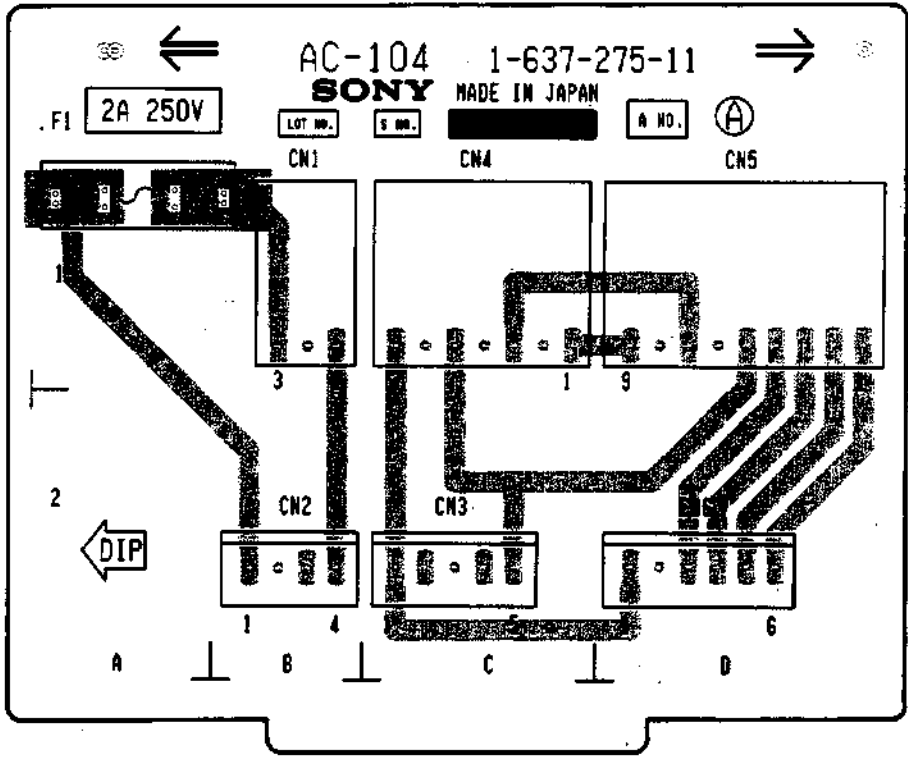
During the assemble recording in DAT, the recording is performed based on the drum PG. During the post-recording, it acknowledges the position from ATF patten recorded on the tape to the head and generate the timing. Reproduced RF signal is equalized by

IC108 and transformed to ATF SYNC signal as its limiter output.

This signal is sent to SP-13 board to generate the timing to flow recording current.

SECTION B
CIRCUIT BOARD DIAGRAMS

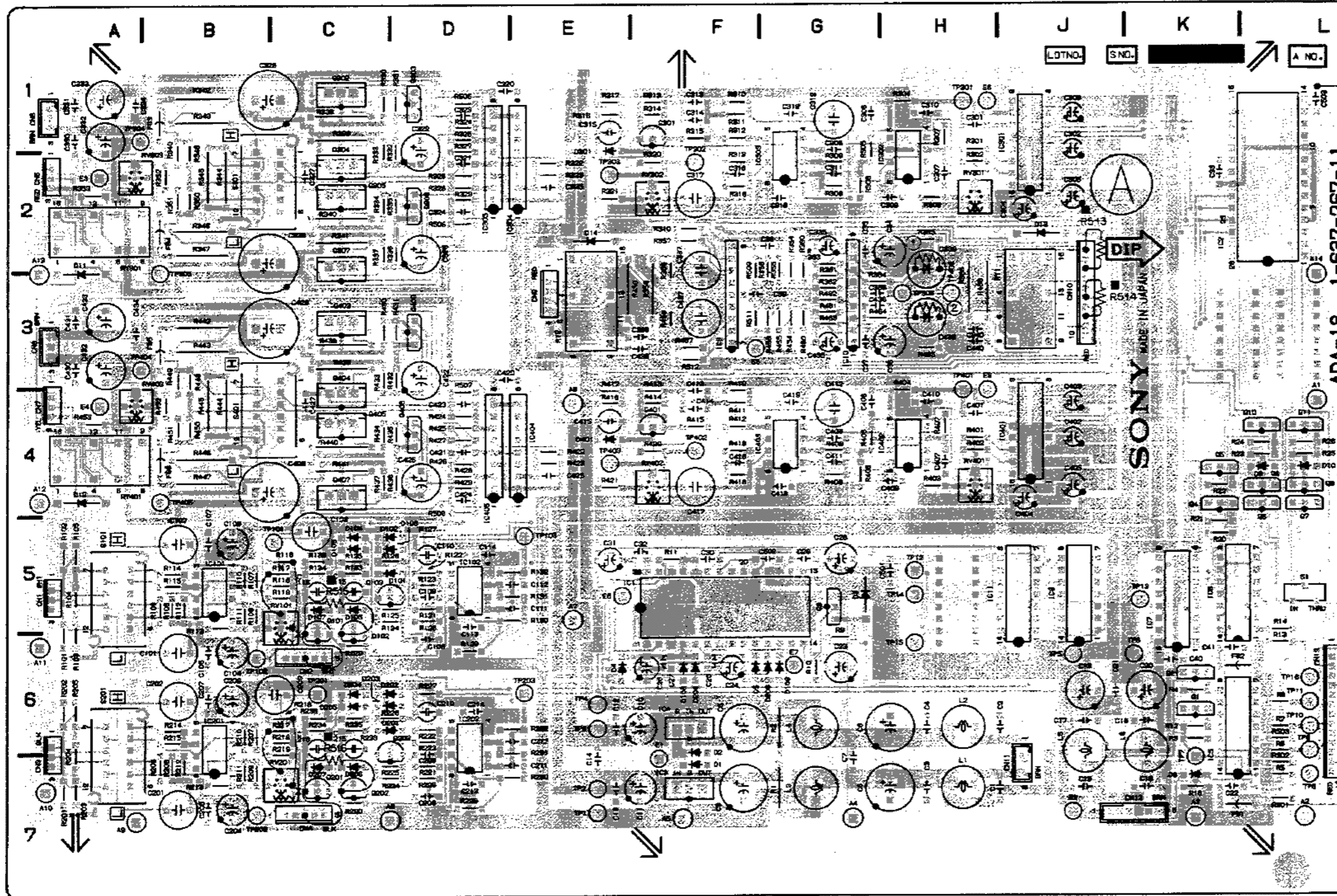
AC-104 BOARD (PCM-7030)
 (1-637-275-11)
 Component Side



SOLDER SIDE PATTERN 1-637-275-11

ADA-18 BOARD (PCM-7030)
 (1-637-267-11)
 Component Side

Serial No. UC 20001 to 20025
 EK 50001 to 50060

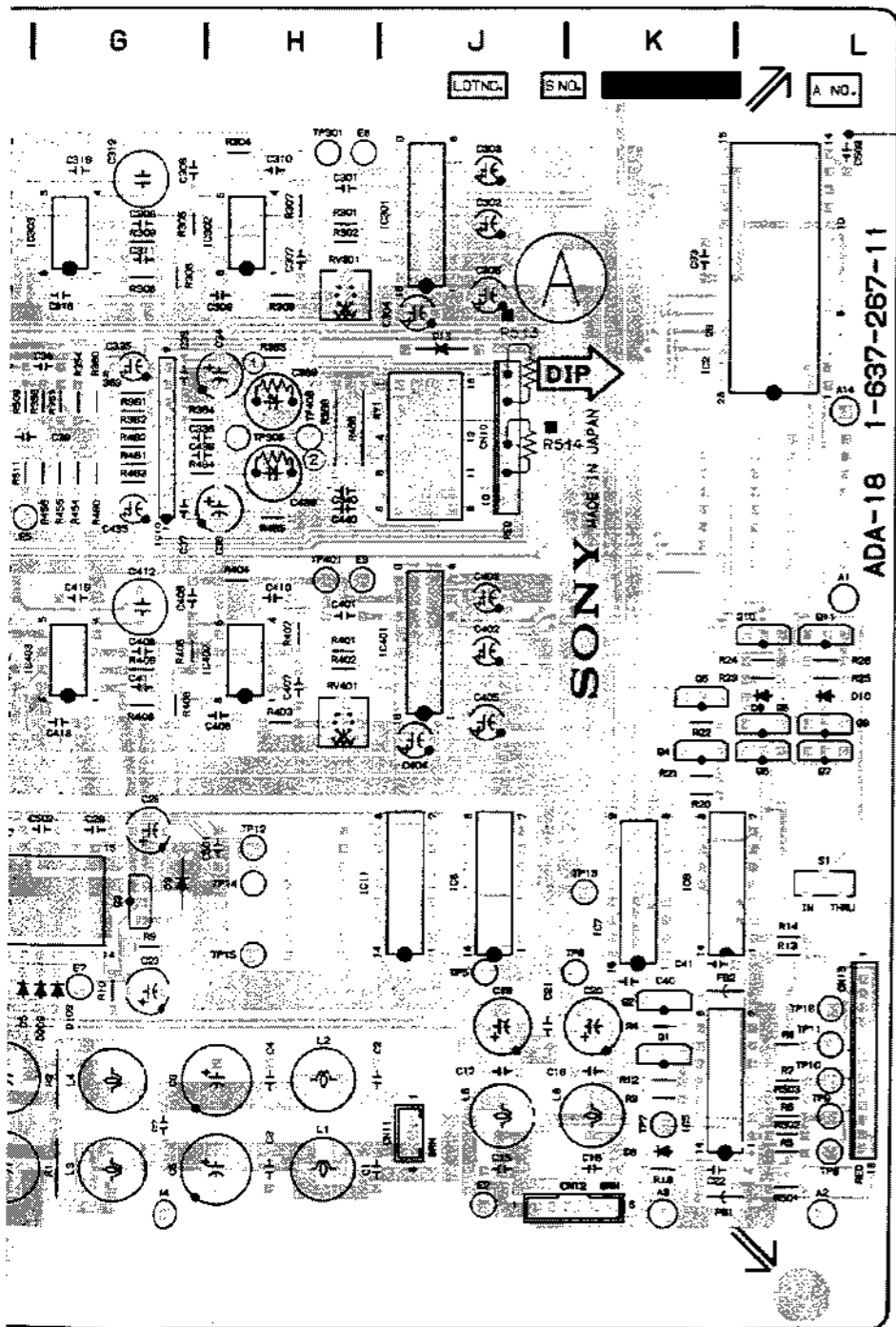


ADA-18 1-637-267-11

Applied Serial No. UC 20001 to 20025 EK 50001 to 50060			
Jumpers that have been soldered or cut.	(Component Side)	(Solder Side)	
	RV101-2 → C101-D RV201-2 → C201-D C505 — GND(chassis)	R115 → R117 R215 → R217 RV101- → CN2-3 RV201- → CN4-3	Q101- Q201- RV101- RV201-
Parts marked with * that have been installed on the solder side.	*R513 *R514 *R515 *R516		
Parts that have been changed.	C339 → ① 00 C438 → ② 00		

B-6(a)

B-7(a)



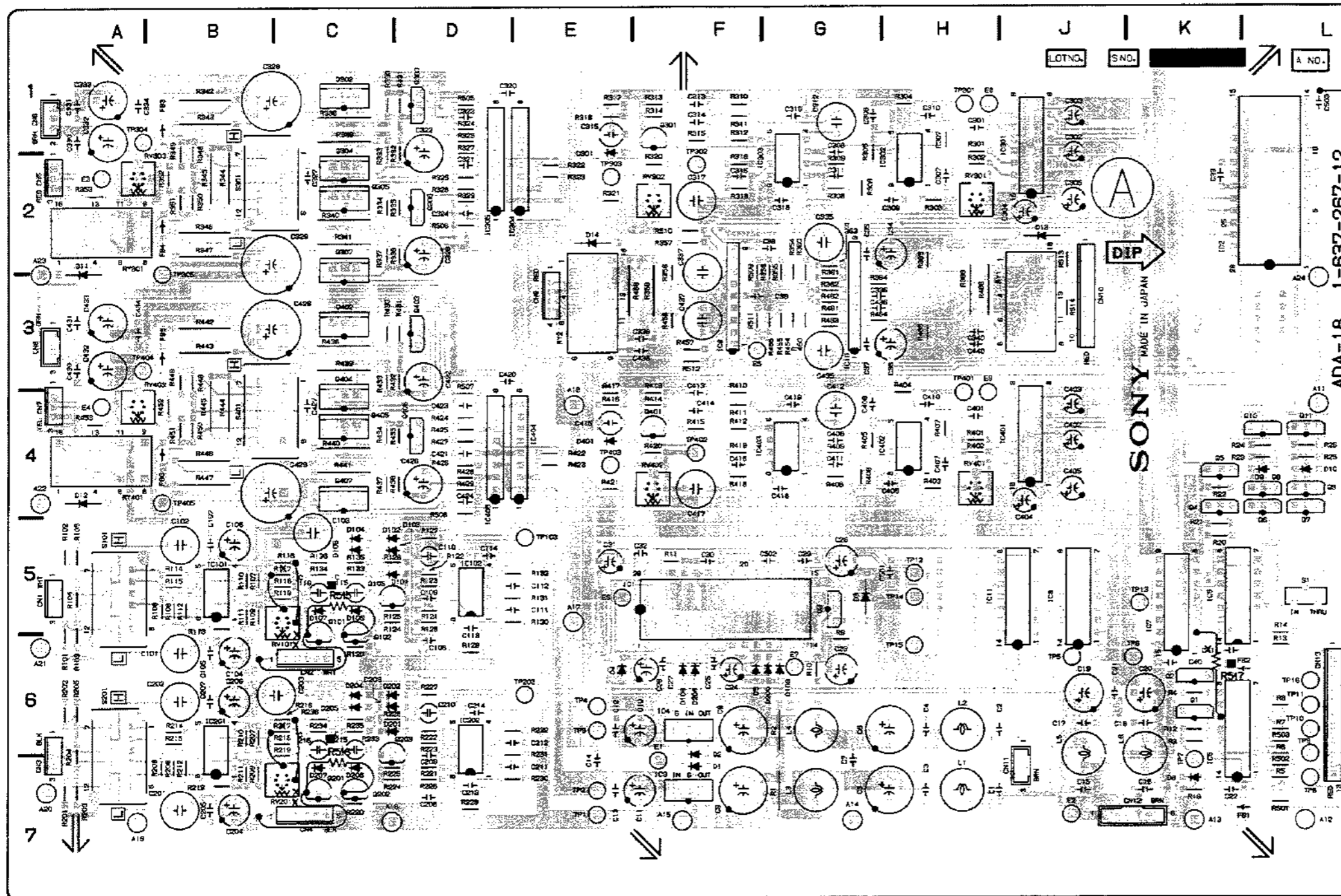
ADA-18 1-637-287-11

D1	F-7	IC5	K-7	Q402	C-3	TP305	B-3
D2	F-7	IC6	K-5	Q403	D-3	TP306	H-3
D3	G-5	IC7	K-5	Q404	C-3	TP401	H-3
D4	E-6	IC8	J-5	Q405	C-4	TP402	F-4
D5	F-6	IC9	F-3	Q406	D-4	TP403	E-4
D8	K-7	IC10	G-3	Q407	C-4	TP404	B-3
D9	L-4	IC11	H-5			TP405	B-4
D10	L-4	IC101	B-5	RV101	C-5	TP406	H-3
D11	A-2	IC102	D-5	RV201	C-7		
D12	A-4	IC201	B-6	RV301	H-2		
D13	J-2	IC202	D-6	RV302	F-2		
D14	E-2	IC301	J-2	RV303	B-2		
D101	D-5	IC302	H-2	RV401	H-4		
D102	C-5	IC303	F-2	RV402	F-4		
D103	D-5	IC304	E-2	RV403	B-3		
D104	C-5	IC305	D-2				
D105	C-5	IC401	J-4	S101	A-5		
D106	C-5	IC402	H-4	S201	A-6		
D107	C-5	IC403	F-4	S301	B-2		
D108	F-6	IC404	E-4	S401	B-4		
D109	G-6	IC406	D-4				
D201	C-6			TP1	E-7		
D202	C-6	Q1	K-6	TP2	E-7		
D203	C-6	Q2	K-6	TP3	E-6		
D204	C-6	Q3	G-5	TP4	E-6		
D205	C-6	Q4	K-4	TP5	J-6		
D206	C-7	Q5	K-4	TP6	K-6		
D207	C-7	Q6	L-5	TP7	K-7		
D208	F-6	Q7	L-5	TP8	L-7		
D209	G-6	Q8	L-4	TP9	L-6		
D301	E-2	Q9	L-4	TP10	L-6		
D401	E-4	Q10	L-4	TP11	L-6		
		Q11	L-4	TP12	H-5		
E1	F-6	Q101	C-5	TP13	K-5		
E2	J-7	Q102	C-6	TP14	H-5		
E3	A-2	Q103	C-5	TP15	H-6		
E4	A-4	Q201	C-7	TP16	L-6		
E5	F-3	Q202	C-7	TP101	C-5		
E6	E-5	Q203	D-6	TP102	B-6		
E7	G-6	Q301	F-1	TP103	E-5		
E8	H-1	Q302	C-1	TP201	C-6		
E9	H-3	Q303	D-1	TP202	B-7		
		Q304	C-2	TP203	E-6		
		Q305	C-2	TP301	H-1		
IC1	F-5	Q306	D-2	TP302	F-2		
IC2	K-2	Q307	C-2	TP303	E-2		
IC3	F-7	Q401	F-4	TP304	A-1		
IC4	F-6						

Applied Serial No. UC 20001 to 20025 EK 50001 to 50060			
Jumpers that have been soldered or out.	Component Side: RV101-2 * Q101-D RV201-2 * Q201-D C508 — GND; chassis	Solder Side: R116 * R117 R216 * R217 RV101-1 * CN2-3 RV201-1 * CN4-3	C101-D — CN2-3 C201-D — CN4-3 RV101-1 — R116 RV101-2 — R117 RV201-1 — R216
Parts marked with * that have been installed on the solder side.	*R513 *R514 *R515 *R516		
Parts that have been changed.	C355 — ① 00 C438 — ② 00		

ADA-18 BOARD (PCM-7030)
(1-637-267-12)
Component Side

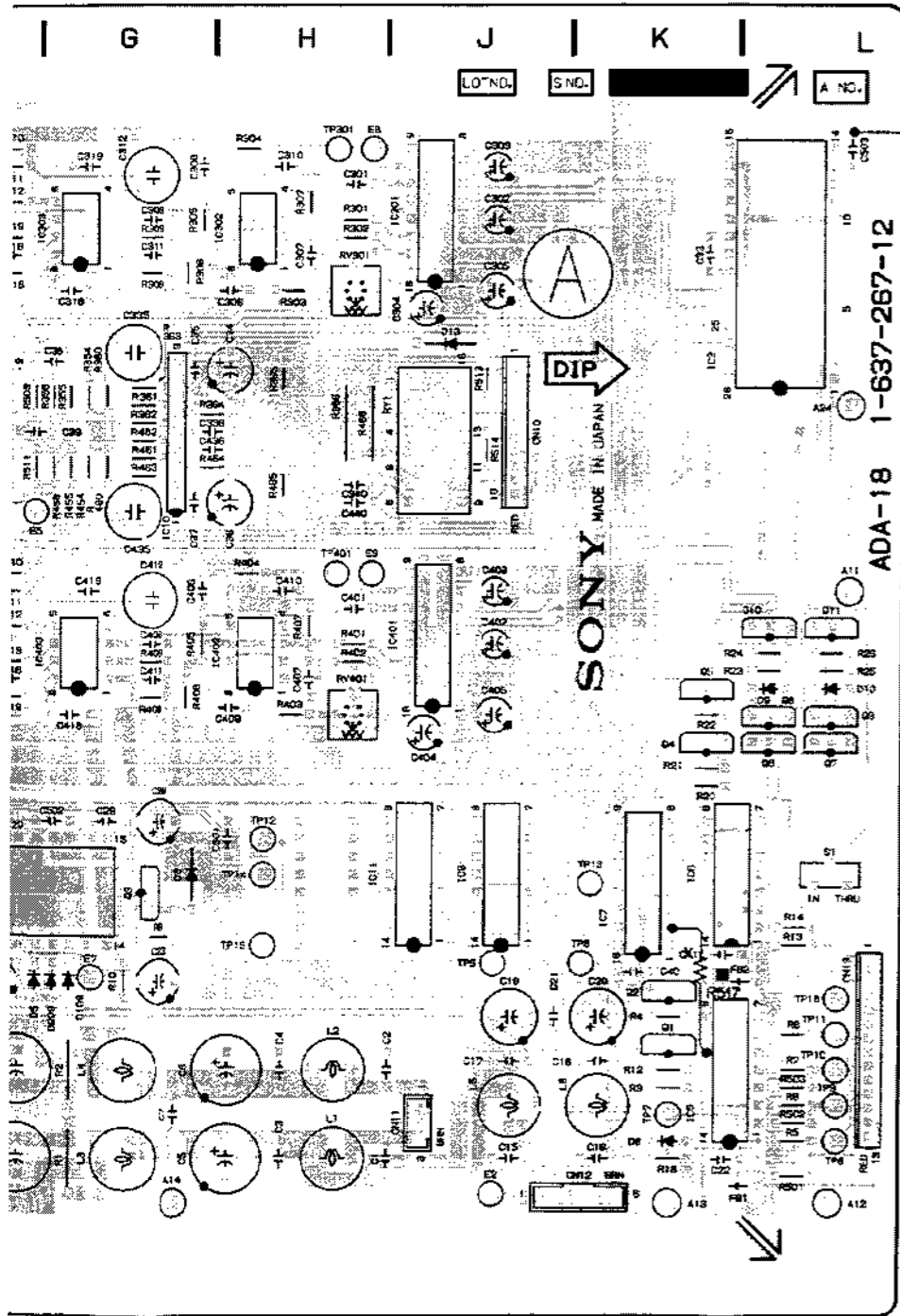
Serial No. UC 20026 to 20115
EK 50061 to 50380



Applied Serial No. UC 20026 to 20045 EK 50061 to 50270		
Jumpers that have been soldered or cut:	Component Side:	Solder Side:
	RV101-2 * Q101-D RV201-2 * Q201-D C505 — GND(chassis)	R116 * R117 R216 * R217 RV101-1 * CN2-3 RV201-1 * CN4-3
Parts marked with * that have been installed on the solder side.	* R515 * R516	
Applied Serial No. UC 20046 to 20115 EK 50271 to 50380		
Jumpers that have been soldered or cut:	Component Side:	Solder Side:
	RV101-2 * Q101-D RV201-2 * Q201-D	IC6-10 * IC7-2 R116 * R117 R216 * R217 RV101-1 * CN2-3 RV201-1 * CN4-3
Parts marked with * that have been installed on the solder side.	* R515 * R516 * R517	

B-6(b)

B-7(b)



(chassis)

ADA-18 1-637-267-12

Applied Serial No. UC 20028 to 20045
EK 50061 to 50200

Jumpers that have been soldered or cut	Component Side		Solder Side	
	RV101-2	Q101-D	R116	R117
	RV201-2	Q201-D	R216	R217
	C503	GN D(chassis)	RV201-1	CN2-3
			RV201-2	CN4-2

Parts marked with * that have been installed on the solder side.	*R515	*R516

Applied Serial No. UC 20046 to 20115
EK 50201 to 50380

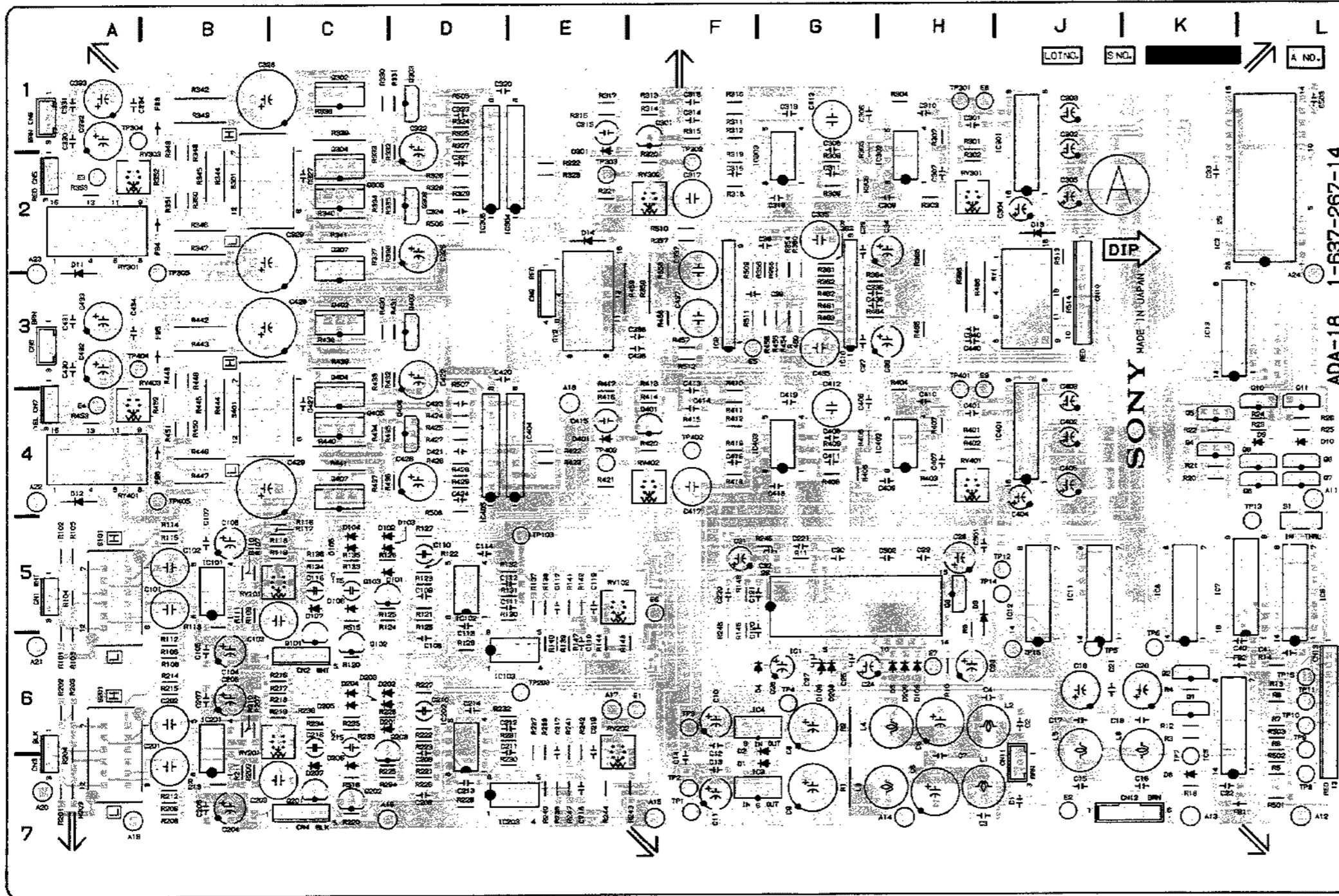
Jumpers that have been soldered or cut	Component Side		Solder Side	
	RV101-2	Q101-D	IC5-10	IC7-2
	RV201-2	Q201-D	R116	R117
			R216	R217
			RV101-1	CN2-3
			RV101-2	CN4-2
			RV201-1	
			RV201-2	

Parts marked with * that have been installed on the solder side.	*R515	*R516	*R517

- | | | | | | | | |
|------|-----|-------|-----|-------|-----|-------|-----|
| D1 | F-7 | IC5 | K-7 | Q402 | C-3 | TP404 | B-3 |
| D2 | F-7 | IC6 | K-5 | Q403 | D-3 | TP405 | B-4 |
| D3 | G-5 | IC7 | K-5 | Q404 | C-3 | | |
| D4 | E-6 | IC8 | J-5 | Q405 | C-4 | | |
| D5 | F-6 | IC9 | F-3 | Q406 | D-4 | | |
| D8 | K-7 | IC10 | G-3 | Q407 | C-4 | | |
| D9 | L-4 | IC11 | H-5 | | | | |
| D10 | L-4 | IC101 | B-5 | RV101 | C-5 | | |
| D11 | A-2 | IC102 | D-5 | RV201 | C-7 | | |
| D12 | A-4 | IC201 | B-6 | RV301 | H-2 | | |
| D13 | J-2 | IC202 | D-6 | RV302 | F-2 | | |
| D14 | E-2 | IC301 | J-2 | RV303 | B-2 | | |
| D101 | D-5 | IC302 | H-2 | RV401 | H-4 | | |
| D102 | C-5 | IC303 | F-2 | RV402 | F-4 | | |
| D103 | D-5 | IC304 | E-2 | RV403 | B-3 | | |
| D104 | C-5 | IC305 | D-2 | | | | |
| D105 | C-5 | IC401 | J-4 | S101 | A-5 | | |
| D106 | C-5 | IC402 | H-4 | S201 | A-6 | | |
| D107 | C-5 | IC403 | F-4 | S301 | B-2 | | |
| D108 | F-6 | IC404 | E-4 | S401 | B-4 | | |
| D109 | G-6 | IC405 | D-4 | | | | |
| D201 | C-6 | | | TP1 | E-7 | | |
| D202 | C-6 | Q1 | K-6 | TP2 | E-7 | | |
| D203 | C-6 | Q2 | K-6 | TP3 | E-6 | | |
| D204 | C-6 | Q3 | G-5 | TP4 | E-6 | | |
| D205 | C-6 | Q4 | K-4 | TP5 | J-6 | | |
| D206 | C-7 | Q5 | K-4 | TP6 | K-6 | | |
| D207 | C-7 | Q6 | L-5 | TP7 | K-7 | | |
| D208 | F-6 | Q7 | L-5 | TP8 | L-7 | | |
| D209 | G-6 | Q8 | L-4 | TP9 | L-6 | | |
| D301 | E-2 | Q9 | L-4 | TP10 | L-6 | | |
| D401 | E-4 | Q10 | L-4 | TP11 | L-6 | | |
| | | Q11 | L-4 | TP12 | H-5 | | |
| E1 | F-6 | Q101 | C-5 | TP13 | K-5 | | |
| E2 | J-7 | Q102 | C-6 | TP14 | H-5 | | |
| E3 | A-2 | Q103 | C-5 | TP15 | H-6 | | |
| E4 | A-4 | Q201 | C-7 | TP16 | L-6 | | |
| E5 | F-3 | Q202 | C-7 | TP103 | E-5 | | |
| E6 | E-5 | Q203 | D-6 | TP203 | E-6 | | |
| E7 | G-6 | Q301 | F-1 | TP301 | H-1 | | |
| E8 | H-1 | Q302 | C-1 | TP302 | F-2 | | |
| E9 | H-3 | Q303 | D-1 | TP303 | E-2 | | |
| | | Q304 | C-2 | TP304 | A-1 | | |
| | | Q305 | C-2 | TP305 | B-3 | | |
| IC1 | F-5 | Q306 | D-2 | TP401 | H-3 | | |
| IC2 | K-2 | Q307 | C-2 | TP402 | F-4 | | |
| IC3 | F-7 | Q401 | F-4 | TP403 | E-4 | | |
| IC4 | F-6 | | | | | | |

ADA-18 BOARD (PCM-7030)
(1-637-267-14)
Component Side

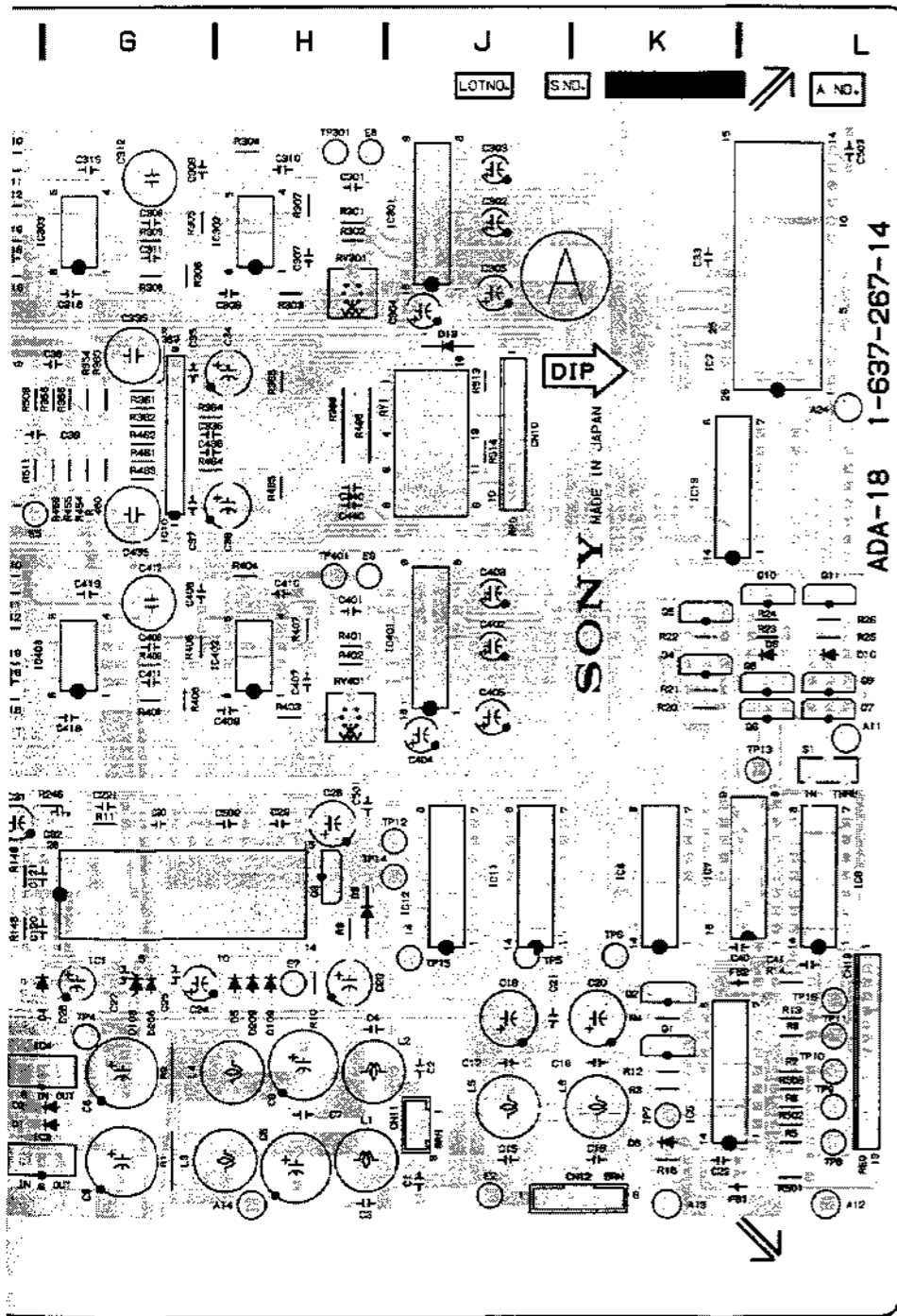
Serial No. UC 20116 to 25020
EK 50381 to 55040



B - 6 (c)

B - 7 (c)

D1	F-7
D2	F-7
D3	G-6
D4	E-6
D5	F-6
D6	K-7
D7	L-4
D8	L-4
D9	A-2
D10	A-4
D11	J-2
D12	E-2
D13	D-5
D14	C-5
D101	C-5
D102	C-5
D103	C-5
D104	C-5
D105	C-5
D106	C-5
D107	C-5
D108	F-6
D109	G-6
D201	C-6
D202	C-6
D203	C-6
D204	C-6
D205	C-6
D206	C-7
D207	C-7
D208	F-6
D209	G-6
D301	E-2
D401	E-4
E1	F-6
E2	J-7
E3	A-2
E4	A-4
E5	F-3
E6	E-5
E7	G-6
E8	H-1
E9	H-3
IC1	F-5
IC2	K-2
IC3	F-7
IC4	F-6



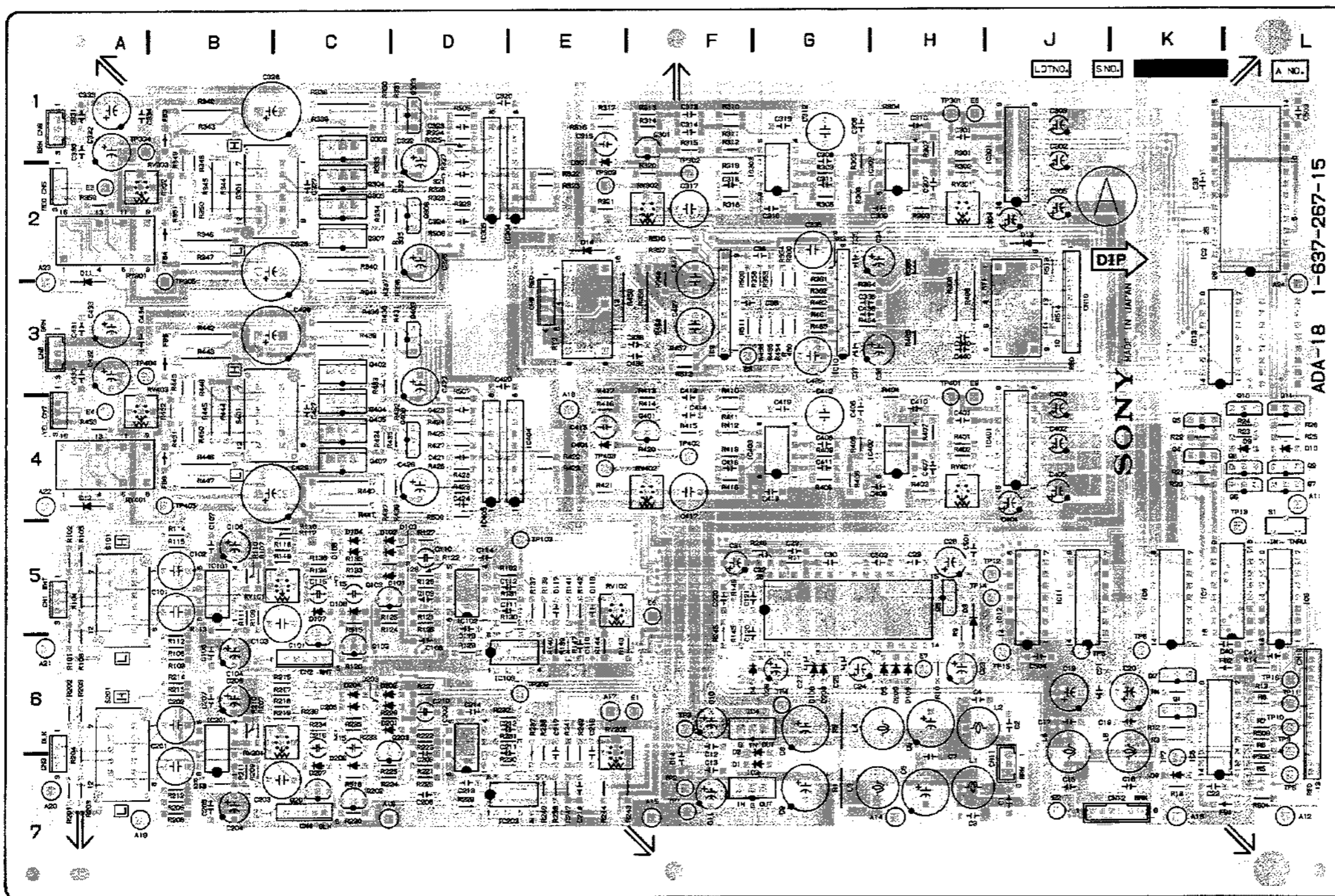
B-7(c)

D1	F-7	IC5	K-7	Q402	C-3	TP404	B-3
D2	F-7	IC6	K-5	Q403	D-3	TP405	B-4
D3	G-5	IC7	K-5	Q404	C-3		
D4	E-6	IC8	J-5	Q405	C-4		
D5	F-6	IC9	F-3	Q406	D-4		
D8	K-7	IC10	G-3	Q407	C-4		
D9	L-4	IC11	H-5				
D10	L-4	IC101	B-5	RV101	C-5		
D11	A-2	IC102	D-5	RV201	C-7		
D12	A-4	IC201	B-6	RV301	H-2		
D13	J-2	IC202	D-6	RV302	F-2		
D14	E-2	IC301	J-2	RV303	B-2		
D101	D-5	IC302	H-2	RV401	H-4		
D102	C-5	IC303	F-2	RV402	F-4		
D103	D-5	IC304	E-2	RV403	B-3		
D104	C-5	IC305	D-2				
D105	C-5	IC401	J-4	S101	A-5		
D106	C-5	IC402	H-4	S201	A-6		
D107	C-5	IC403	F-4	S301	B-2		
D108	F-6	IC404	E-4	S401	B-4		
D109	G-6	IC405	D-4				
D201	C-6			TP1	E-7		
D202	C-6	Q1	K-6	TP2	E-7		
D203	C-6	Q2	K-6	TP3	E-6		
D204	C-6	Q3	G-5	TP4	E-6		
D205	C-6	Q4	K-4	TP5	J-6		
D206	C-7	Q5	K-4	TP6	K-6		
D207	C-7	Q6	L-5	TP7	K-7		
D208	F-6	Q7	L-5	TP8	L-7		
D209	G-6	Q8	L-4	TP9	L-6		
D301	E-2	Q9	L-4	TP10	L-6		
D401	E-4	Q10	L-4	TP11	L-6		
		Q11	L-4	TP12	H-5		
E1	F-6	Q101	C-5	TP13	K-5		
E2	J-7	Q102	C-6	TP14	H-5		
E3	A-2	Q103	C-5	TP15	H-6		
E4	A-4	Q201	C-7	TP16	L-6		
E5	F-3	Q202	C-7	TP103	E-5		
E6	E-5	Q203	D-6	TP203	E-6		
E7	G-6	Q301	F-1	TP301	H-1		
E8	H-1	Q302	C-1	TP302	F-2		
E9	H-3	Q303	D-1	TP303	E-2		
		Q304	C-2	TP304	A-1		
IC1	F-5	Q305	C-2	TP305	B-3		
IC2	K-2	Q306	D-2	TP401	H-3		
IC3	F-7	Q307	C-2	TP402	F-4		
IC4	F-6	Q401	F-4	TP403	E-4		

B-8(c)

ADA-18 BOARD (PCM-7030)
(1-637-267-15)
Component Side

Serial No. UC 25021 and higher
EK 55041 and higher

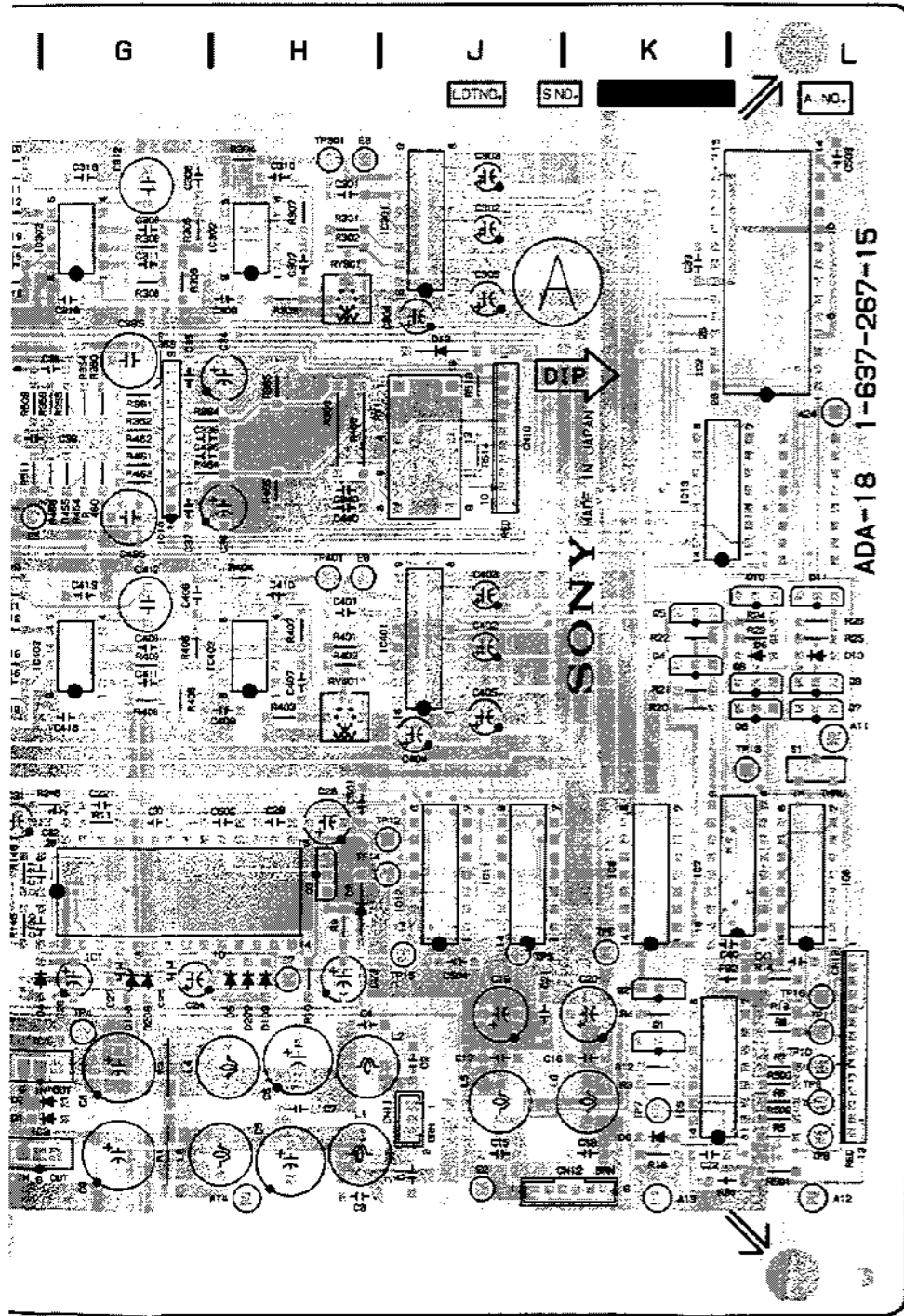
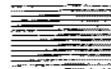


ADA-18 1-637-267-15

SOLDER GATE PATTERN

B-6(d)

B-7(d)

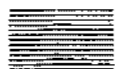


B-7(d)

D1	F-7	IC5	K-7	Q305	C-2	TP302	F-2
D2	F-7	IC6	L-5	Q306	D-2	TP303	E-2
D3	H-5	IC7	K-5	Q307	C-2	TP304	A-1
D4	F-6	IC8	K-5	Q401	F-4	TP305	B-3
D5	H-6	IC9	F-3	Q402	C-3	TP401	H-3
D8	K-7	IC10	G-3	Q403	D-3	TP402	F-4
D9	L-4	IC11	H-5	Q404	C-3	TP403	E-4
D10	L-4	IC12	H-5	Q405	C-4	TP404	B-3
D11	A-2	IC13	K-3	Q406	D-4	TP405	B-4
D12	A-4	IC101	B-5	Q407	C-4		
D13	J-2	IC102	D-5				
D14	E-2	IC103	E-6	RV101	C-5		
D101	D-5	IC201	B-6	RV102	E-5		
D102	O-5	IC202	D-6	RV201	C-7		
D103	D-5	IC203	E-7	RV202	E-7		
D104	C-5	IC301	J-2	RV301	H-2		
D105	C-5	IC302	H-2	RV302	F-2		
D106	C-5	IC303	G-2	RV303	B-2		
D107	C-5	IC304	E-2	RV401	H-4		
D108	G-6	IC305	D-2	RV402	F-4		
D109	H-6	IC401	J-4	RV403	B-3		
D201	C-6	IC402	H-4				
D202	C-6	IC403	G-4	S1	L-5		
D203	C-6	IC404	E-4	S101	A-5		
D204	C-6	IC405	D-4	S201	A-6		
D205	C-6			S301	B-2		
D206	C-7	Q1	K-6	S401	B-4		
D207	C-7	Q2	K-6				
D208	G-6	Q3	H-5	TP1	F-7		
D209	H-6	Q4	K-4	TP2	F-7		
D301	E-2	Q5	K-4	TP3	F-6		
D401	E-4	Q6	L-4	TP4	G-6		
		Q7	L-4	TP5	J-6		
		Q8	L-4	TP6	K-6		
E1	F-6	Q9	L-4	TP7	K-7		
E2	J-7	Q10	L-4	TP8	L-7		
E3	A-2	Q11	L-4	TP9	L-6		
E4	A-4	Q101	C-5	TP10	L-6		
E5	F-3	Q102	C-6	TP11	L-6		
E6	F-5	Q103	C-5	TP12	H-5		
E7	H-6	Q201	C-7	TP13	L-5		
E8	H-1	Q202	C-7	TP14	H-5		
E9	H-3	Q203	D-6	TP15	J-6		
		Q301	F-1	TP16	L-6		
IC1	G-5	Q302	C-1	TP103	E-5		
IC2	K-2	Q303	D-1	TP203	E-6		
IC3	F-7	Q304	C-2	TP301	H-1		
IC4	F-6						

B-8(d)

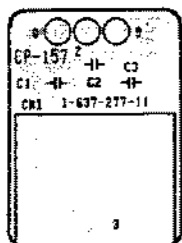
CP-157A/158/171



CP-172A/172B

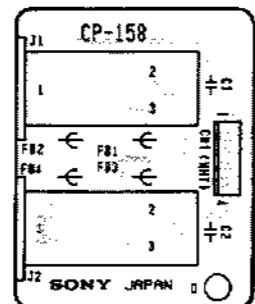
CP-157A BOARD (PCM-7030)
(1-637-277-11)
Component Side

Serial No. UC 20001 to 20045
EK 50001 to 50200



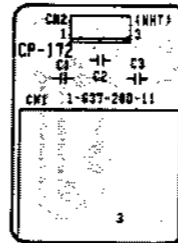
CP-158 BOARD (PCM-7030)
(1-637-282-12)
Component Side

Serial No. UC 20001 to 20045
EK 50001 to 50200



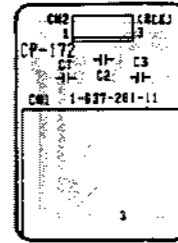
CP-172A BOARD (PCM-7030)
(1-637-280-11)
Component Side

Serial No. UC 20001 to 20045
EK 50001 to 50200

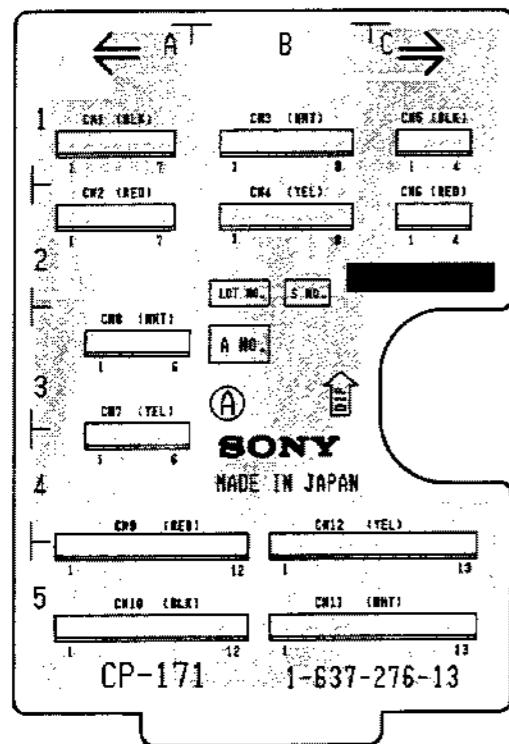


CP-172B BOARD (PCM-7030)
(1-637-281-11)
Component Side

Serial No. UC 20001 to 20045
EK 50001 to 50200



CP-171 BOARD (PCM-7030)
(1-637-276-13)
Component Side



B-11(a)

B-12(a)

CP-157A/158

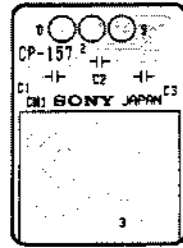


CP-172A/172B

CP-157A BOARD (PCM-7030)

(1-637-277-13)
Component Side

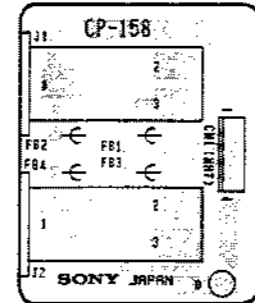
Serial No. UC 20046 and higher
EK 50201 and higher



CP-158 BOARD (PCM-7030)

(1-637-282-14)
Component Side

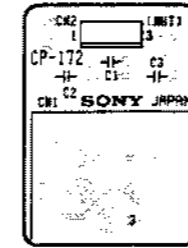
Serial No. UC 20046 and higher
EK 50201 and higher



CP-172A BOARD (PCM-7030)

(1-637-280-13)
Component Side

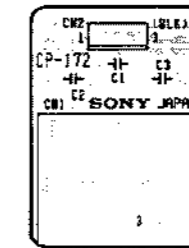
Serial No. UC 20046 and higher
EK 50201 and higher



CP-172B BOARD (PCM-7030)

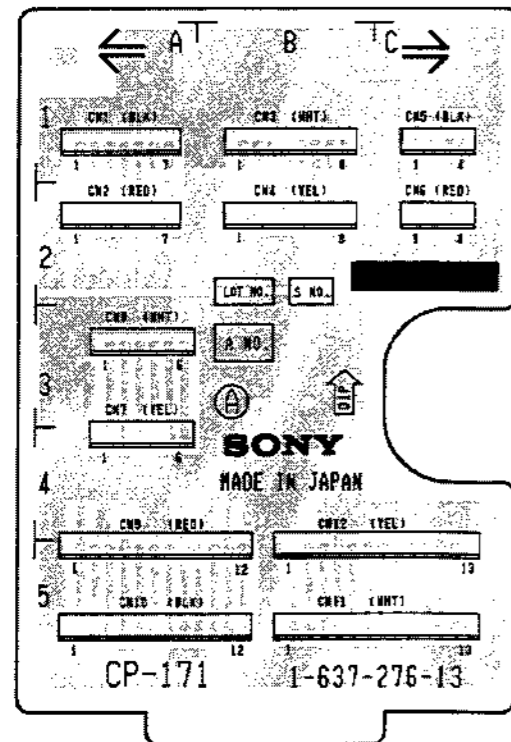
(1-637-281-13)
Component Side

Serial No. UC 20046 and higher
EK 50201 and higher



CP-171 BOARD (PCM-7030)

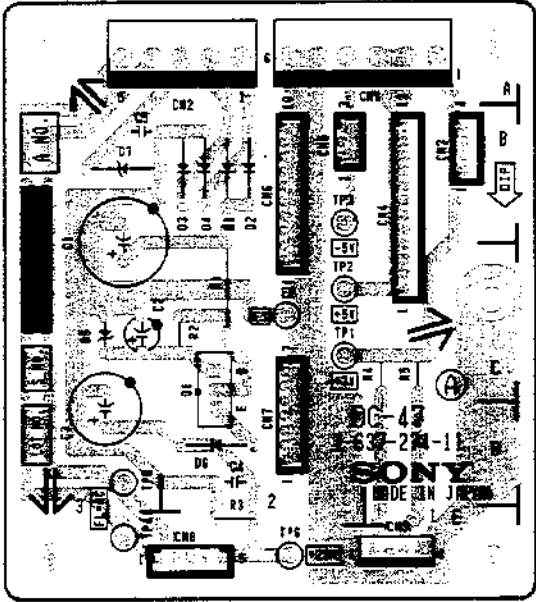
(1-637-276-13)
Component Side



B-11(b)

B-12(b)

DC-47 BOARD (PCM-7030)
 (1-637-274-11)
 Component Side



- D1 B-2
- D2 B-2
- D3 B-2
- D4 B-2
- D6 C-3
- D6 D-2
- D7 B-3

- E1 C-2

- Q1 C-2

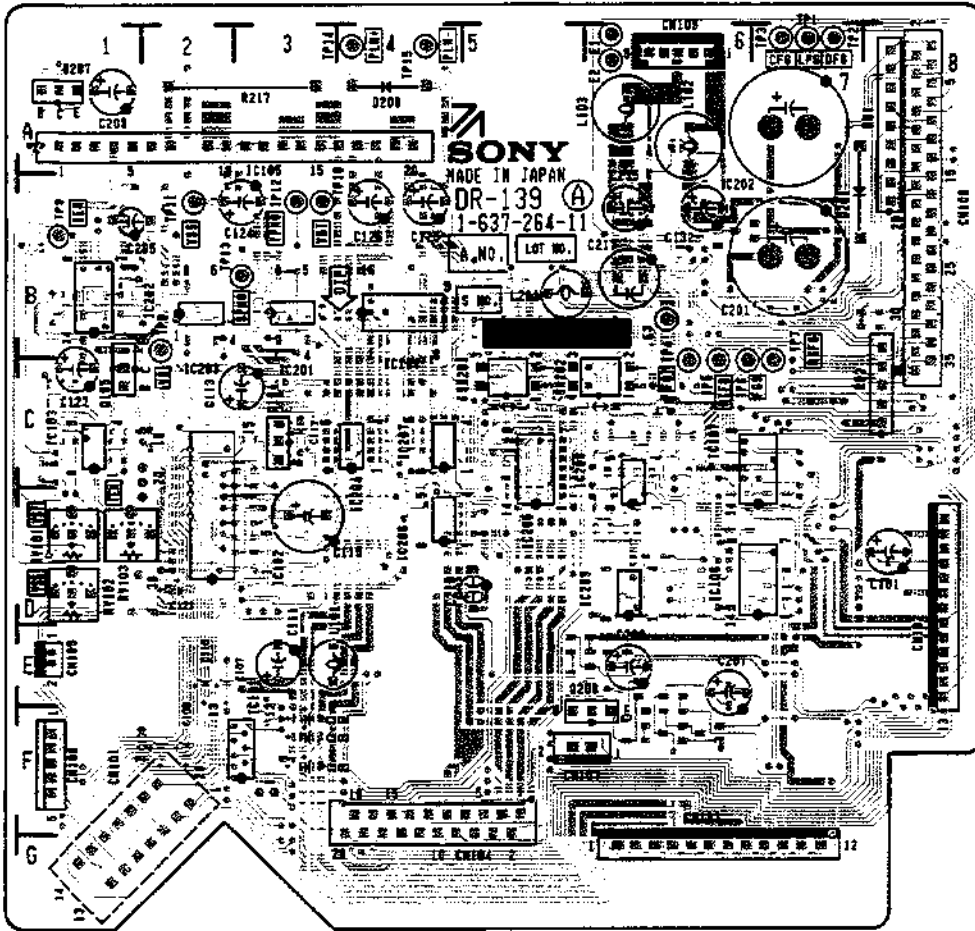
- TP1 C-2
- TP2 C-2
- TP3 B-2
- TP4 E-3
- TP5 D-3
- TP6 E-2



DR-139, HP-48

DR-139 BOARD (PCM-7030)
(1-637-264-11)
Component Side

Serial No. UC 20001 to 20045
EK 50001 to 50200



D201 B-7
D208 A-4
E1 A-6
E2 A-6
E3 B-6

IC101 F-3
IC102 D-3
IC103 C-1
IC104 C-4
IC105 A-3
IC106 D-6
IC107 C-6
IC201 C-3
IC202 B-2
IC203 C-2
IC204 D-4
IC205 D-5
IC206 D-4
IC207 C-4
IC208 C-5
IC209 D-5

Q104 C-3
Q105 C-1
Q207 A-1
Q208 E-5

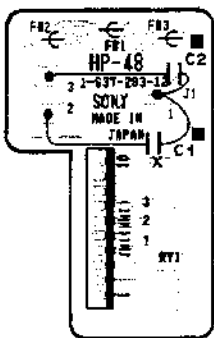
RV101 D-1
RV102 D-1
RV103 D-1

SW201 C-5
SW202 C-5

TP1 A-7
TP2 A-7
TP3 A-7
TP4 C-6
TP5 C-6
TP6 C-6
TP7 B-7
TP8 B-2
TP9 B-1
TP10 B-3
TP11 B-2
TP12 B-3
TP13 B-2
TP14 A-3
TP15 A-4

HP-48 BOARD (PCM-7030)
(1-637-283-12)
Component Side

Serial No. UC 20001 to 20045
EK 50001 to 50200



Applied Serial No. UC 20001 to 20045
EK 50001 to 50200

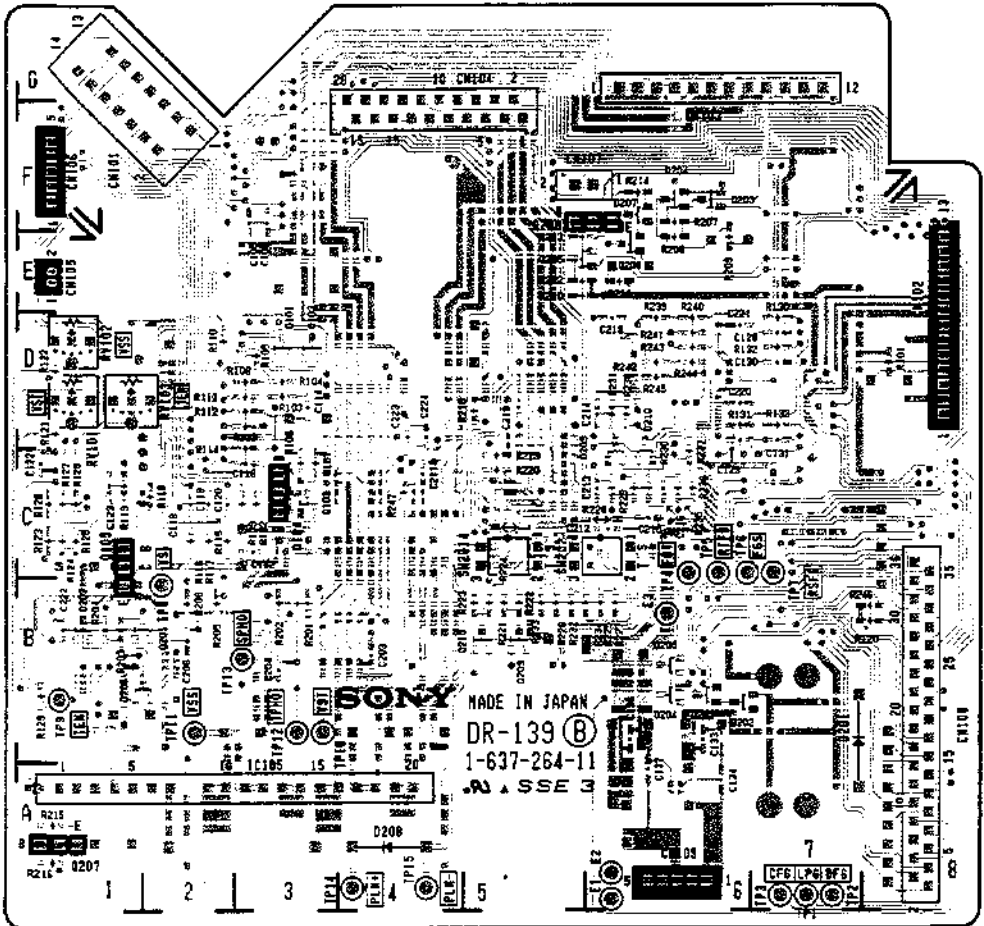
Jumpers that have been cut. CN1-10 X GND

Parts marked with *
that have been installed
on the splice side

* C1
* C2

DR-139 BOARD (PCM-7030)
 (1-637-264-11)
 Solder Side

Serial No. UC 20001 to 20045
 EK 50001 to 50200



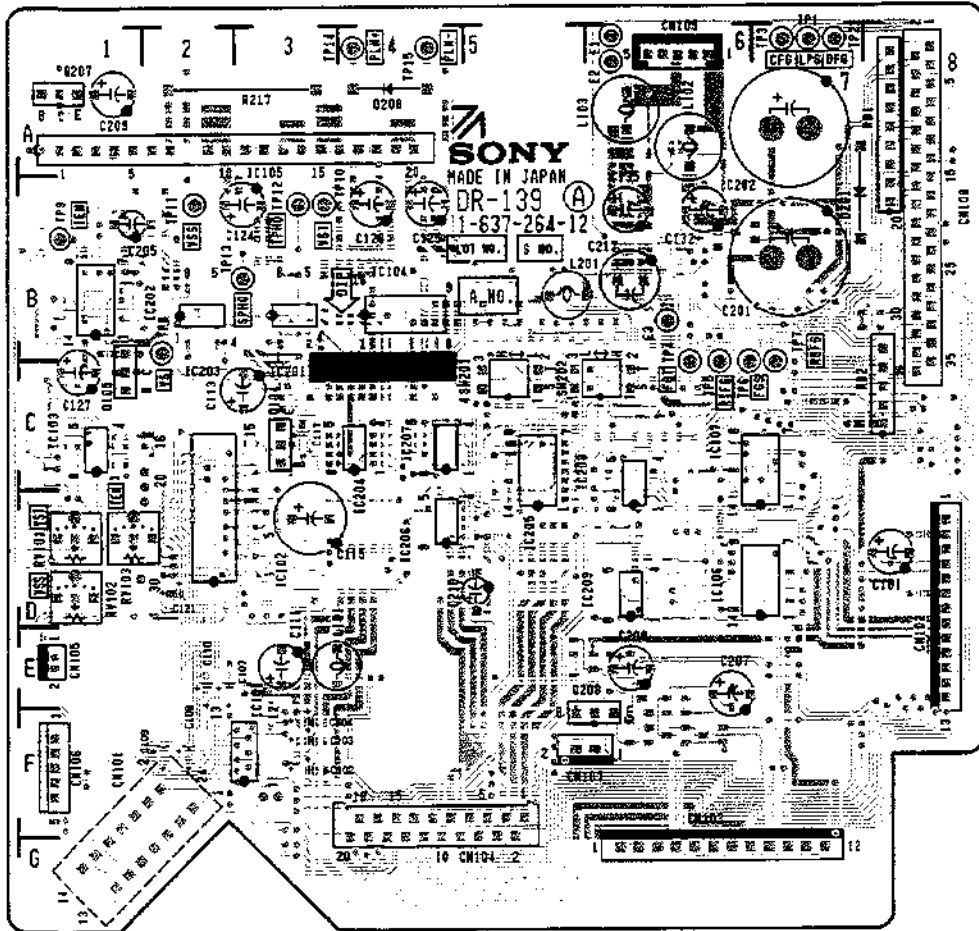
- | | |
|------|-----|
| D202 | B-6 |
| D203 | B-6 |
| D204 | B-6 |
| D205 | B-6 |
| D206 | B-1 |
| D207 | F-6 |
| D209 | C-6 |
| D210 | D-6 |
| Q101 | D-3 |
| Q102 | D-3 |
| Q103 | C-3 |
| Q201 | B-2 |
| Q202 | B-1 |
| Q203 | F-6 |
| Q204 | F-6 |
| Q205 | E-5 |
| Q206 | F-6 |
| Q208 | B-5 |
| Q210 | B-5 |

ALL DIMENSIONS IN MILLIMETERS

DR-139, HP-48

DR-139 BOARD (PCM-7030)
 (1-637-264-12)
 Component Side

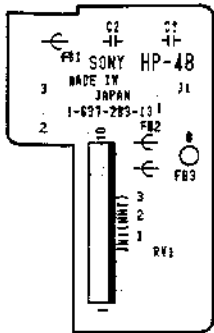
Serial No. UC 20046 to 25180
 EK 50201 to 55040



- D201 B-7
- D208 A-4
- E1 A-6
- E2 A-6
- E3 B-6
- IC101 F-3
- IC102 D-3
- IC103 C-1
- IC104 C-4
- IC105 A-3
- IC106 D-6
- IC107 C-6
- IC201 C-3
- IC202 B-2
- IC203 C-2
- IC204 D-4
- IC205 D-5
- IC206 D-4
- IC207 C-4
- IC208 C-5
- IC209 D-5
- Q104 C-3
- Q105 C-1
- Q207 A-1
- Q208 E-5
- RV101 D-1
- RV102 D-1
- RV103 D-1
- SW201 C-5
- SW202 C-5
- TP1 A-7
- TP2 A-7
- TP3 A-7
- TP4 C-6
- TP5 C-6
- TP6 C-6
- TP7 B-7
- TP8 B-2
- TP9 B-1
- TP10 B-3
- TP11 B-2
- TP12 B-3
- TP13 B-2
- TP14 A-3
- TP15 A-4

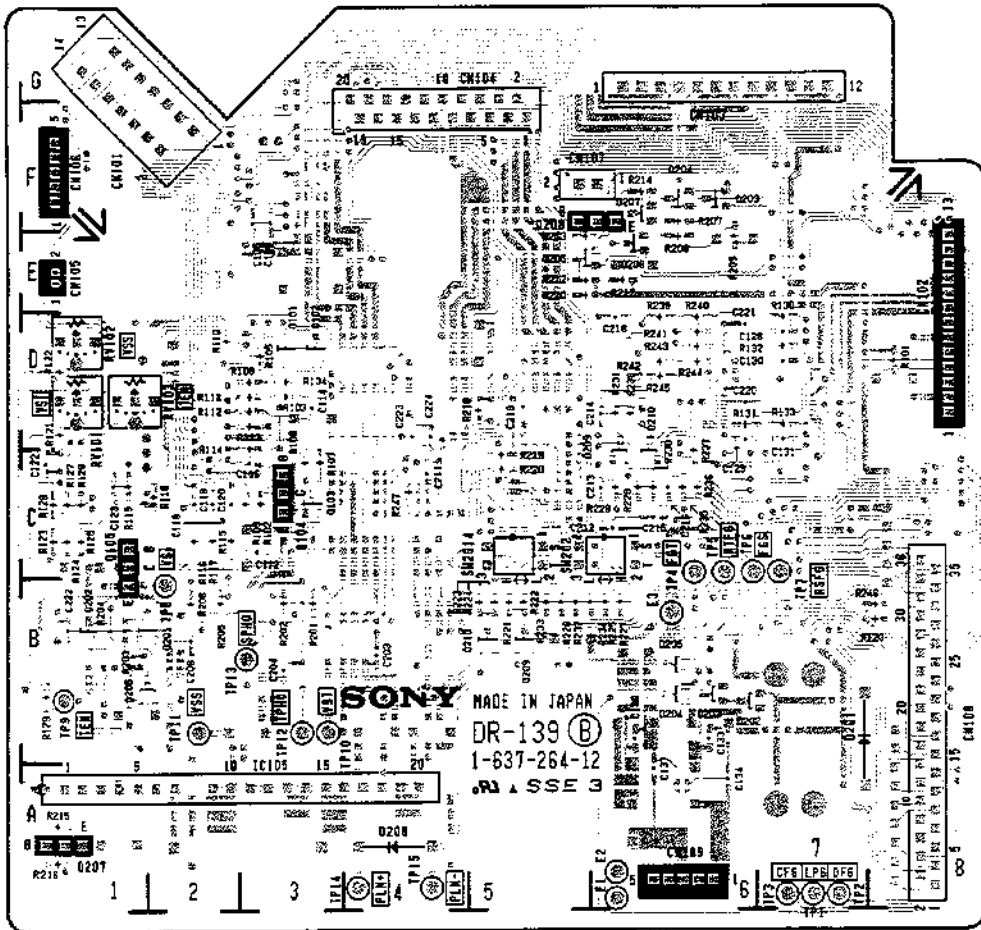
HP-48 BOARD (PCM-7030)
 (1-637-283-13)
 Component Side

Serial No. UC 20046 and higher
 EK 50201 and higher



DR-139 BOARD (PCM-7030)
 (1-637-264-12)
 Solder Side

Serial No. UC 20046 to 25180
 EK 50201 to 55040

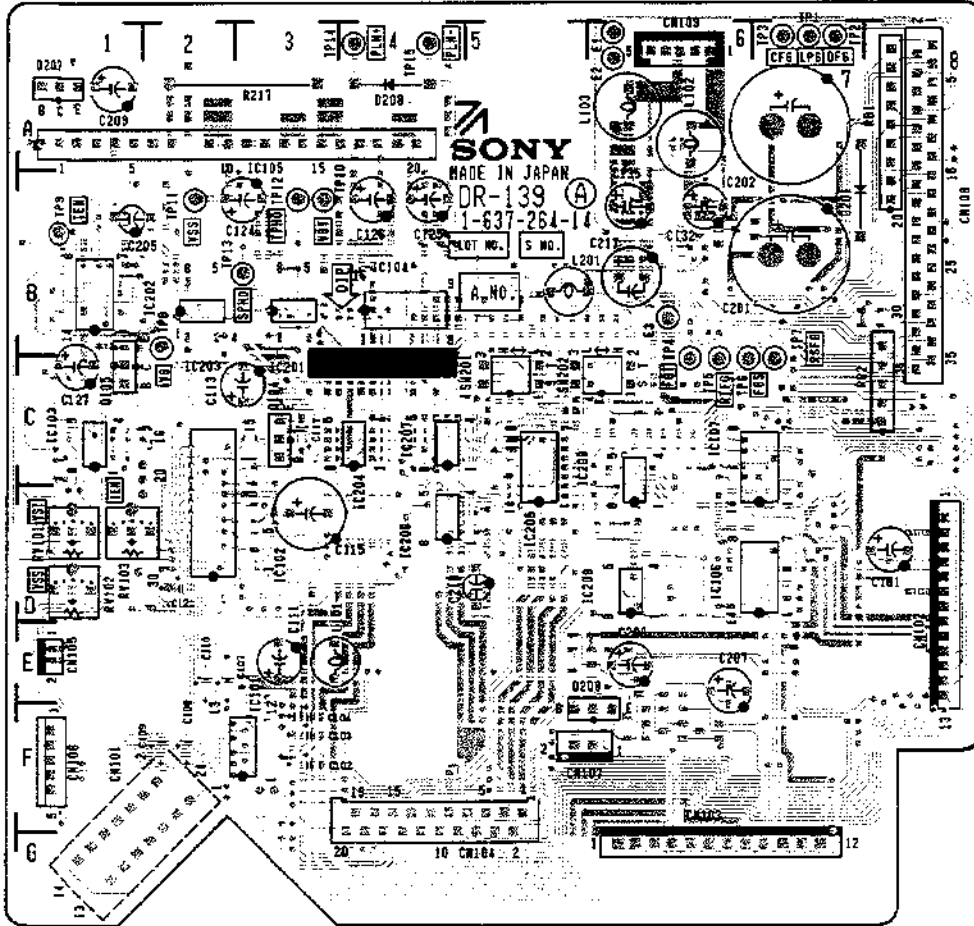


- | | |
|------|-----|
| D202 | B-6 |
| D203 | B-6 |
| D204 | B-6 |
| D205 | B-6 |
| D206 | B-1 |
| D207 | F-6 |
| D209 | C-6 |
| D210 | D-6 |
| Q101 | D-3 |
| Q102 | D-3 |
| Q103 | C-3 |
| Q201 | B-2 |
| Q202 | B-1 |
| Q203 | F-6 |
| Q204 | F-6 |
| Q205 | E-5 |
| Q206 | E-6 |
| Q209 | B-5 |
| Q210 | B-5 |

DR-139, HP-48

DR-139 BOARD (PCM-7030)
(1-637-264-14)
Component Side

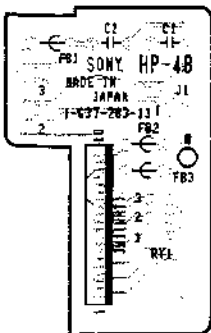
Serial No. UC 25181 and higher
EK 55041 and higher



- D201 B-7
- D208 A-4
- E1 A-6
- E2 A-6
- E3 B-6
- IC101 F-3
- IC102 D-3
- IC103 C-1
- IC104 B-4
- IC105 A-3
- IC106 D-6
- IC107 C-6
- IC201 C-3
- IC202 B-2
- IC203 C-2
- IC204 D-4
- IC205 D-5
- IC206 D-4
- IC207 C-4
- IC208 C-5
- IC209 D-5
- Q104 C-3
- Q105 C-1
- Q207 A-1
- Q208 E-5
- RV101 D-1
- RV102 D-1
- RV103 D-1
- SW201 C-5
- SW202 C-5
- TP1 A-7
- TP2 A-7
- TP3 A-7
- TP4 C-6
- TP5 C-6
- TP6 C-6
- TP7 B-7
- TP8 B-2
- TP9 B-1
- TP10 B-3
- TP11 B-2
- TP12 B-3
- TP13 B-2
- TP14 A-3
- TP15 A-4

HP-48 BOARD (PCM-7030)
(1-637-283-13)
Component Side

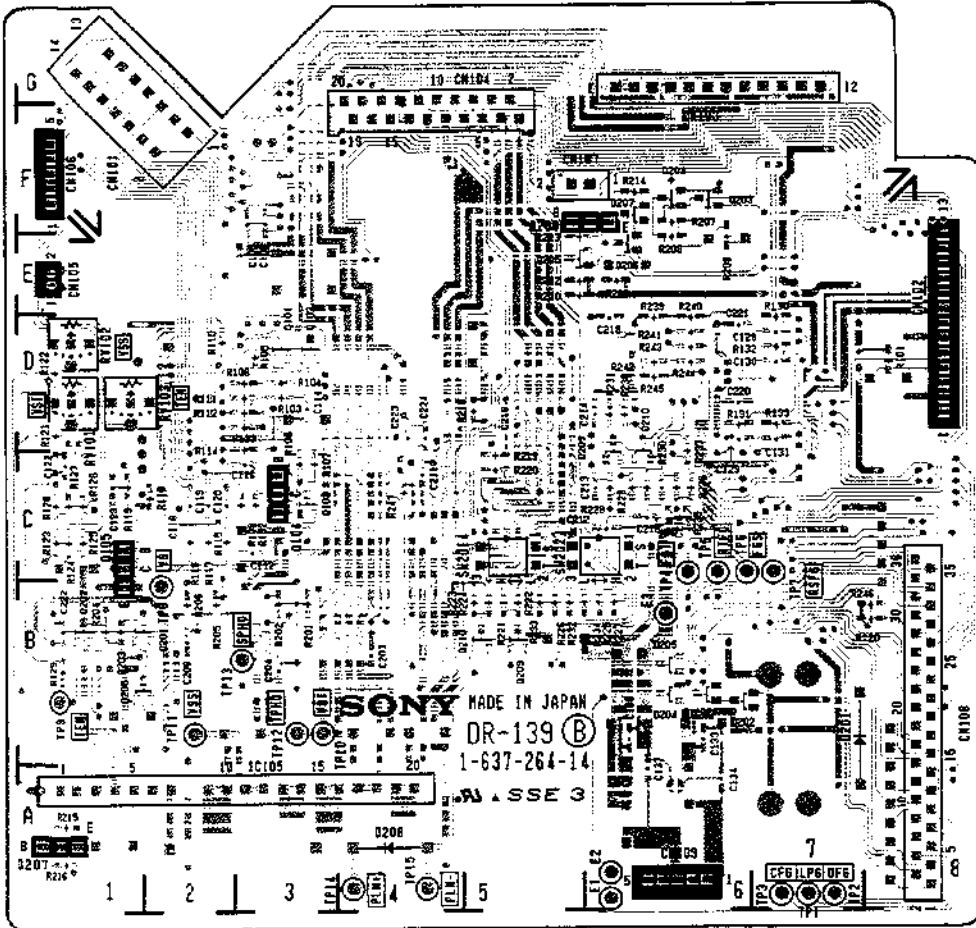
Serial No. UC 20046 and higher
EK 50201 and higher



DR-139

DR-139 BOARD (PCM-7030)
(1-637-264-14)
Solder Side

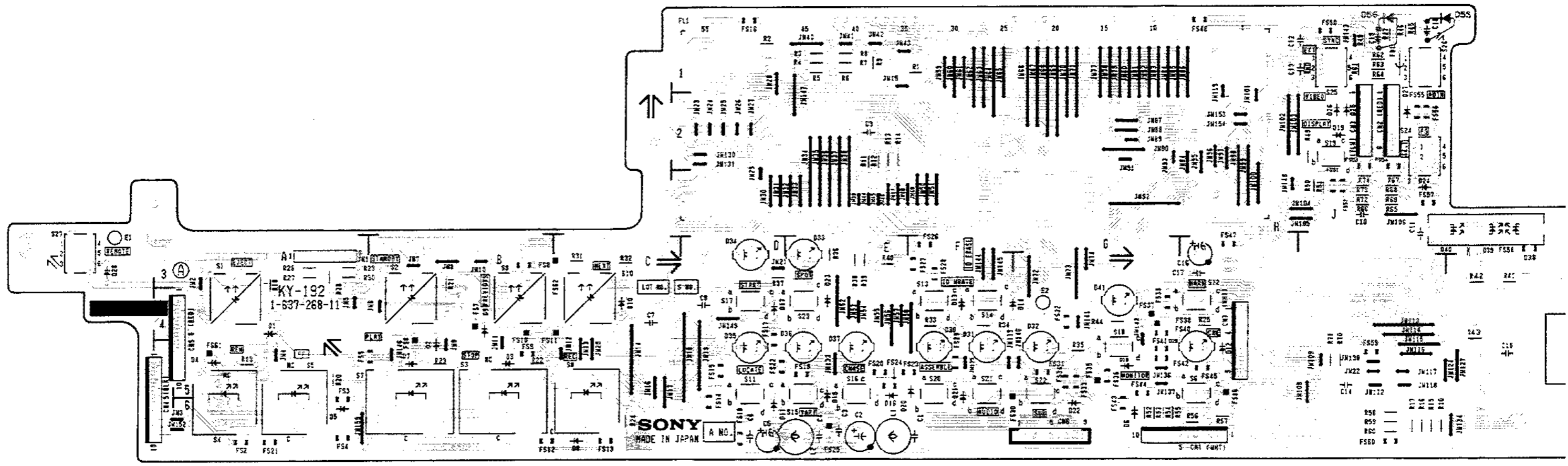
Serial No. UC 25181 and higher
EK 55041 and higher



- | | |
|------|-----|
| D202 | B-6 |
| D203 | B-6 |
| D204 | B-6 |
| D205 | B-6 |
| D207 | F-6 |
| D209 | C-6 |
| D210 | D-6 |
| | |
| Q101 | D-3 |
| Q102 | D-3 |
| Q103 | C-3 |
| Q201 | B-2 |
| Q202 | B-1 |
| Q203 | F-6 |
| Q204 | F-6 |
| Q205 | F-5 |
| Q206 | F-6 |
| Q209 | B-5 |
| Q210 | B-5 |

KY-192 BOARD (PCM-7030)
(1-637-268-11)
Component Side

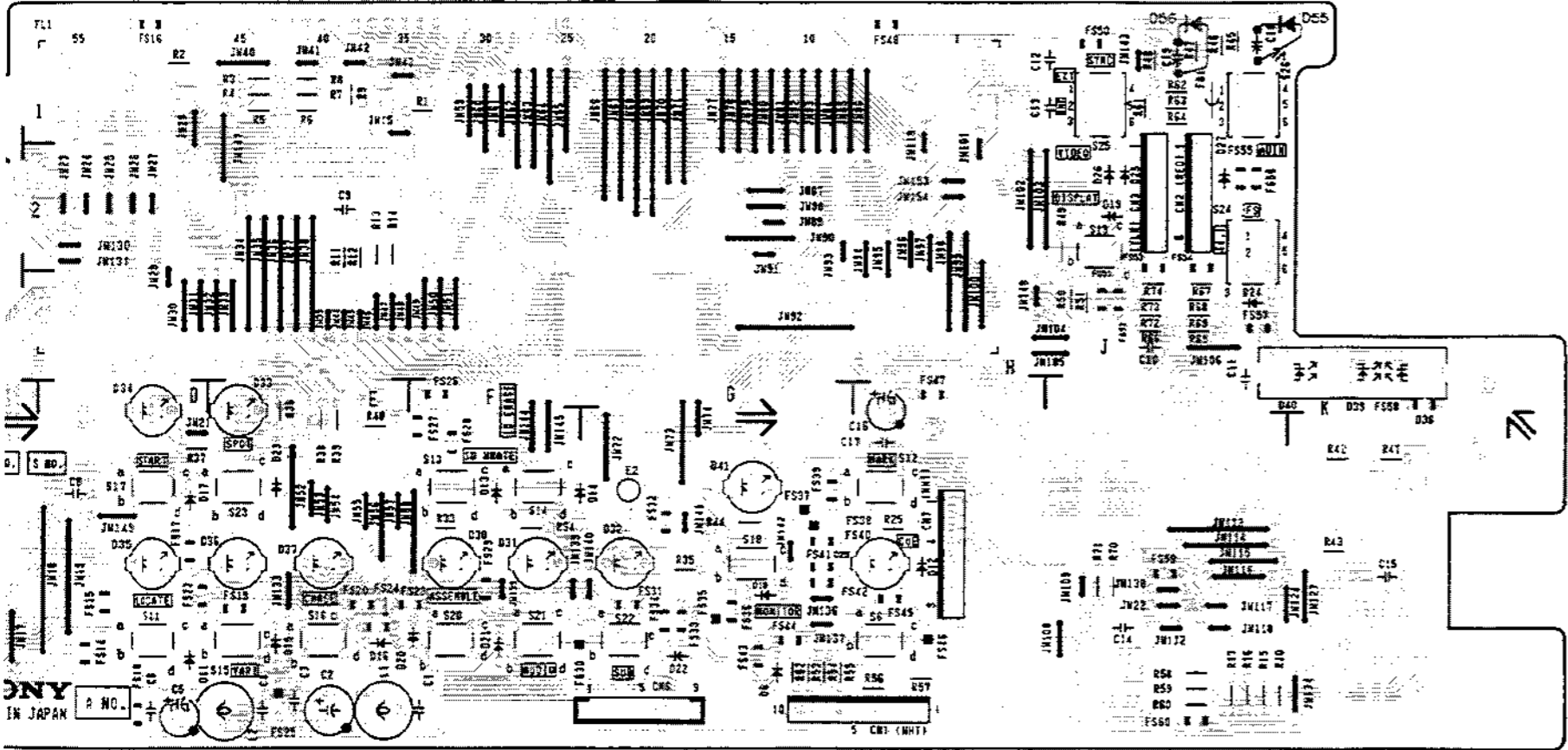
Serial No. UC 20001 to 20045
EK 50001 to 50200



Applied Serial No. UC 20001 to 20045
EK 50001 to 50200

Parts that have been changed:

C18	→	D55
C19	→	D56



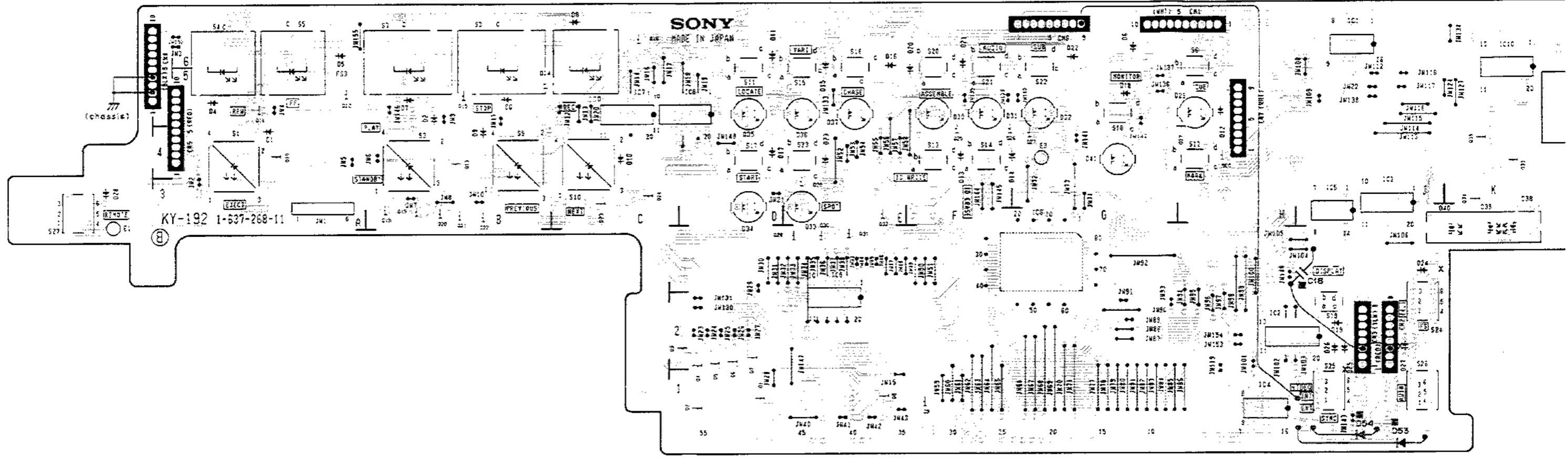
Applied Serial No. UC 20001 to 30045
 EK 50001 to 50200

Parts that have been changed: C18 → D55
 C19 → D56

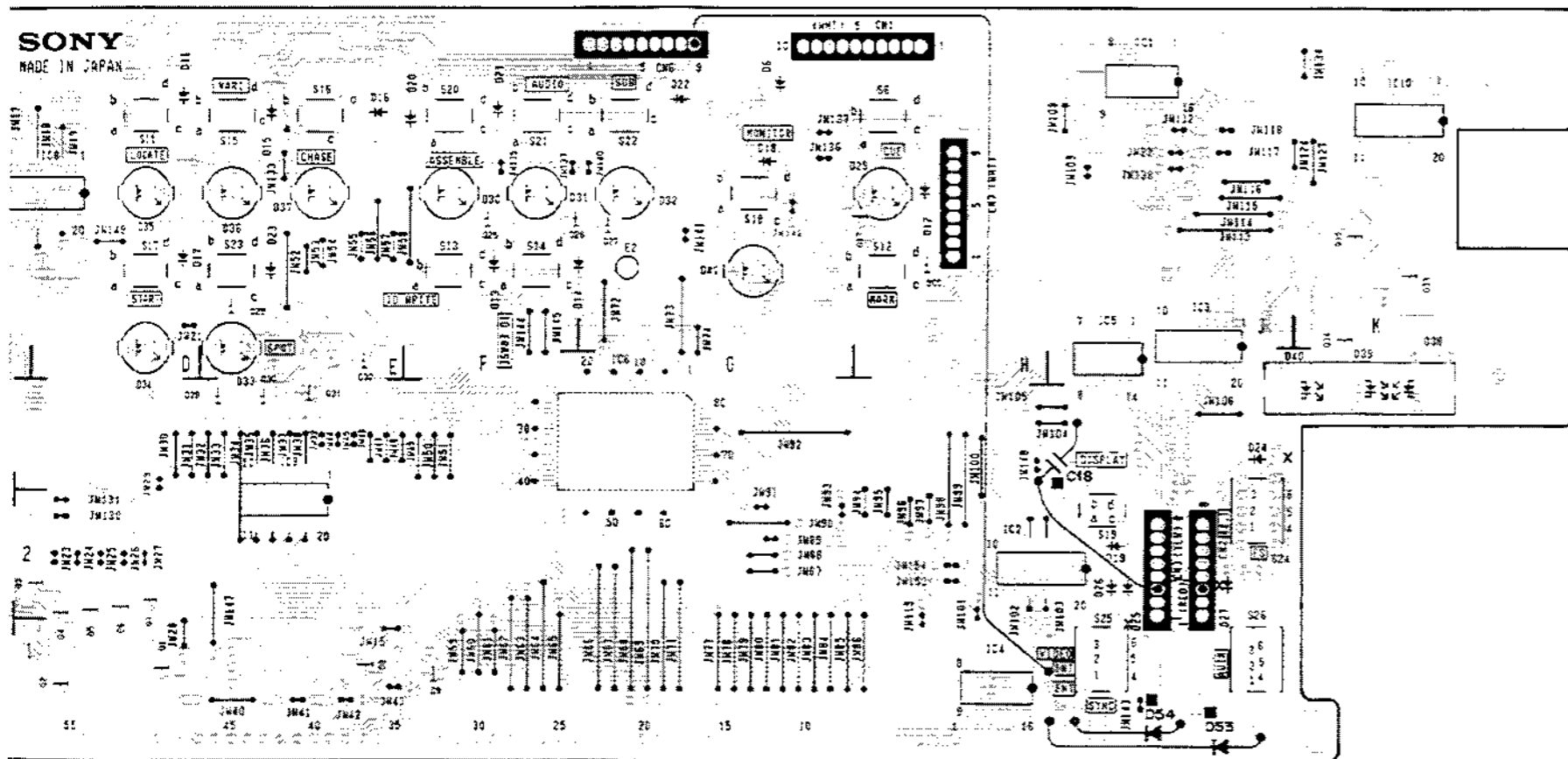
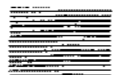
- | | | | |
|-----|-----|-----|-----|
| D1 | A-4 | S3 | B-5 |
| D2 | B-5 | S4 | A-6 |
| D3 | B-5 | S6 | A-5 |
| D4 | A-5 | S6 | H-5 |
| D5 | A-6 | S7 | A-5 |
| D6 | G-6 | S8 | C-6 |
| D7 | B-5 | S9 | B-3 |
| D8 | C-6 | S10 | C-3 |
| D9 | B-4 | S11 | D-5 |
| D10 | C-4 | S12 | H-3 |
| D11 | D-6 | S13 | F-3 |
| D12 | H-5 | S14 | F-4 |
| D13 | F-4 | S15 | E-5 |
| D14 | G-4 | S16 | E-5 |
| D15 | E-5 | S17 | D-4 |
| D16 | E-5 | S18 | G-4 |
| D17 | D-4 | S19 | J-2 |
| D18 | G-5 | S20 | F-5 |
| D19 | J-2 | S21 | F-5 |
| D20 | F-5 | S22 | G-5 |
| D21 | F-5 | S23 | E-4 |
| D22 | G-6 | S24 | J-2 |
| D23 | E-3 | S25 | J-1 |
| D24 | J-3 | S26 | J-1 |
| D25 | J-2 | S27 | A-3 |
| D26 | J-2 | | |
| D27 | J-2 | | |
| D28 | A-3 | | |
| D29 | G-5 | | |
| D30 | F-4 | | |
| D31 | F-4 | | |
| D32 | G-4 | | |
| D33 | E-3 | | |
| D34 | D-3 | | |
| D35 | D-4 | | |
| D36 | E-4 | | |
| D37 | E-4 | | |
| D38 | K-3 | | |
| D39 | K-3 | | |
| D40 | K-3 | | |
| D41 | G-4 | | |
| E1 | A-3 | | |
| E2 | G-4 | | |
| S1 | A-3 | | |
| S2 | B-3 | | |

KY-192 BOARD (PCM-7030)
 (1-637-268-11)
 Solder Side

Serial No. UC 20001 to 20045
 EK 50001 to 50200



Applied Serial No. UC 20001 to 20045 EK 50001 to 50200		
Jumpers that have been soldered or cut.	CN2-3 <input checked="" type="checkbox"/> GND CN3-3 <input checked="" type="checkbox"/> GND D40 cathode <input checked="" type="checkbox"/> GND	CN2-3 CN3-3 CN4-1 D18
Parts marked with * that have been installed on the solder side.	* D52 * D54 * C18	

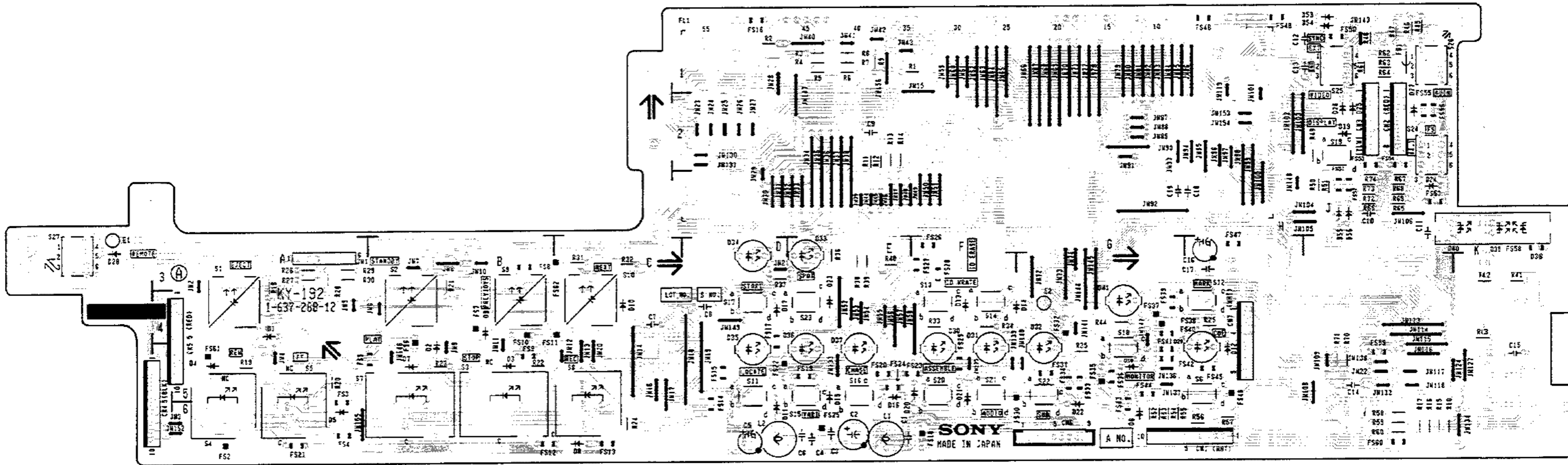


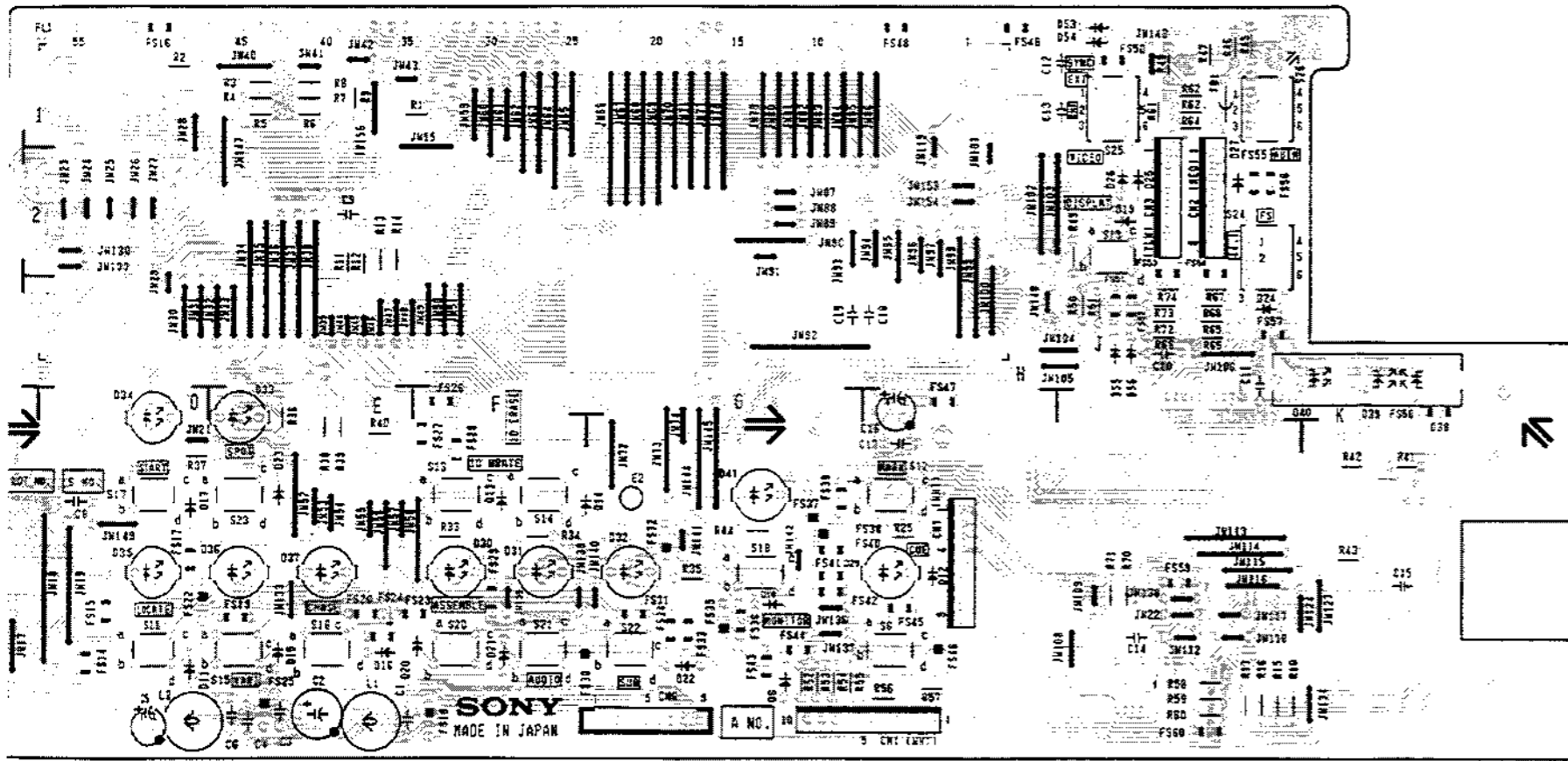
Applied Serial No. UD 20001 to 20045 EK 50001 to 50200			
Jumpers that have been soldered or cut:	CN2-3	X GND	CN3-3
	CN3-5	X GND	CN3-3
	D40 anode	X GND	CN4-2,4
Parts marked with * that have been installed on the solder side	* C59	* D54	* C18

D1	A-4	IC3	J-3	S2	S-3
D2	B-5	IC4	H-1	S3	B-5
D3	B-5	IC5	J-3	S4	A-6
D4	A-5	IC6	G-3	S5	A-5
D5	A-6	IC7	C-5	S6	H-5
D6	G-6	IC8	D-5	S7	A-5
D7	B-5	IC9	E-3	S8	C-5
D8	C-6	IC10	K-6	S9	B-3
D9	B-4			S10	C-3
D10	C-4	Q1	D-1	S11	D-5
D11	D-6	Q2	D-1	S12	H-3
D12	H-5	Q3	C-2	S13	F-3
D13	F-4	Q4	D-1	S14	F-4
D14	G-4	Q5	D-1	S15	E-5
D15	E-5	Q6	D-1	S16	E-5
D16	E-5	Q7	D-1	S17	D-4
D17	O-4	Q8	E-1	S18	G-4
D18	G-5	Q9	F-1	S19	J-2
D19	J-2	Q10	A-4	S20	F-5
D20	F-5	Q11	A-5	S21	F-5
D21	F-5	Q12	A-5	S22	G-5
D22	G-6	Q13	B-4	S23	E-4
D23	E-3	Q14	B-5	S24	J-2
D24	J-3	Q15	B-5	S25	J-1
D25	J-2	Q16	C-6	S26	J-1
D26	J-2	Q17	H-4	S27	A-3
D27	J-2	Q18	S-3		
D28	A-3	Q19	B-3		
D29	G-5	Q20	B-3		
D30	F-4	Q21	B-3		
D31	F-4	Q22	B-3		
D32	G-4	Q23	C-3		
D33	E-3	Q24	C-3		
D34	D-3	Q25	F-4		
D35	D-4	Q26	G-4		
D36	E-4	Q27	G-4		
D37	E-4	Q28	D-3		
D38	K-3	Q29	E-3		
D39	K-3	Q30	E-3		
D40	K-3	Q31	E-3		
D41	G-4	Q32	E-3		
		Q33	K-4		
E1	A-3	Q34	K-3		
E2	G-4	Q35	K-4		
		Q36	H-4		
IC1	J-6				
IC2	H-2	S1	A-3		

KY-192 BOARD (PCM-7030)
(1-637-268-12)
Component Side

Serial No. UC 20046 to 20115
EK 50201 to 50580

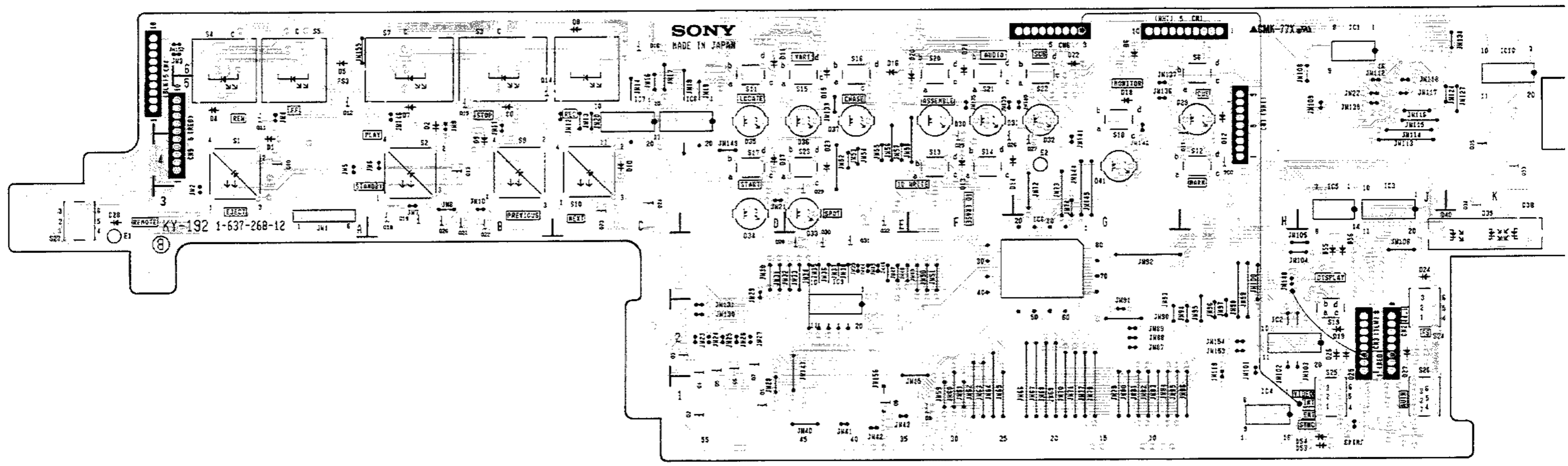




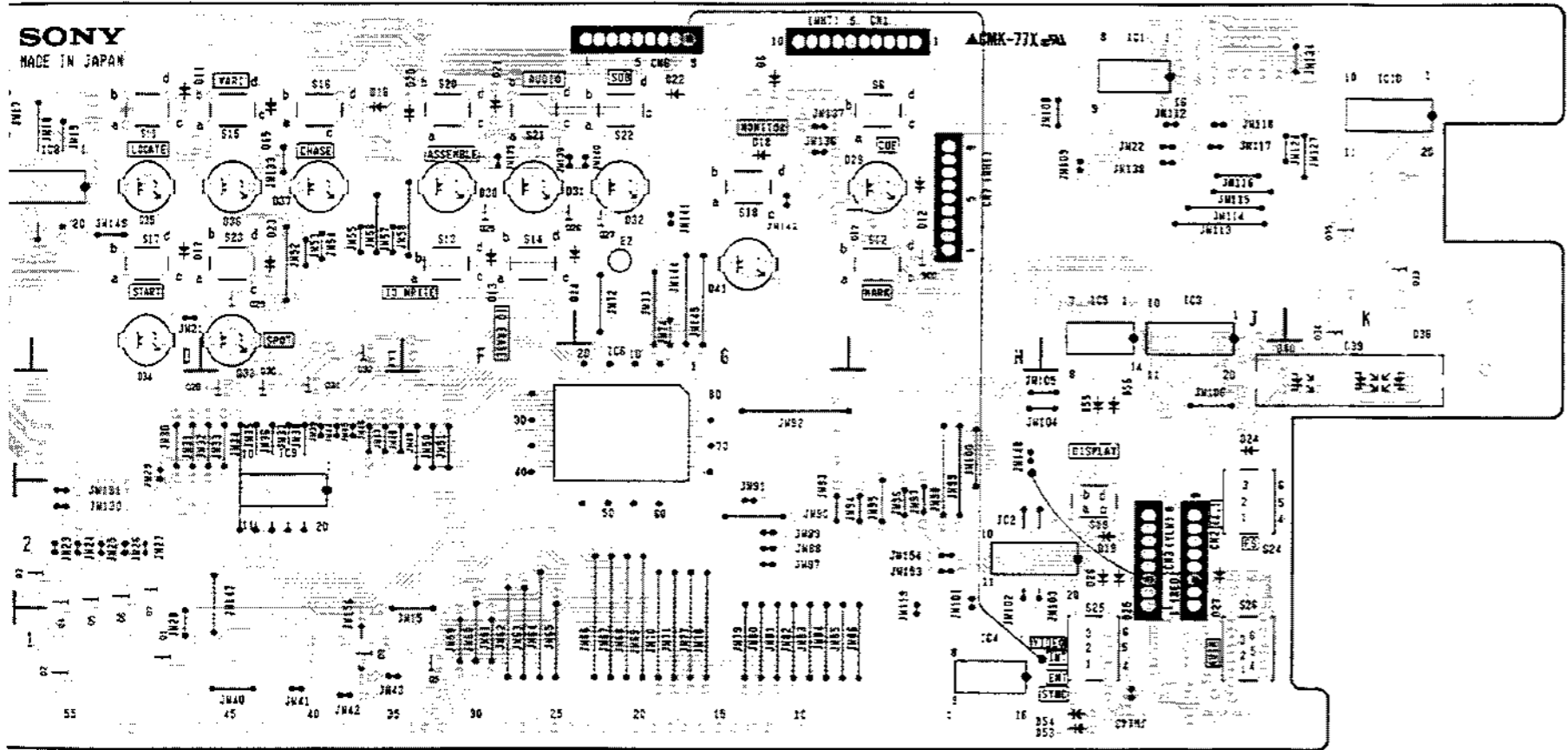
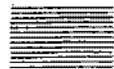
D1	A-4	S3	B-5
D2	B-5	S4	A-6
D3	B-5	S5	A-5
D4	A-5	S6	H-5
D5	A-6	S7	A-5
D6	G-6	S8	C-5
D7	B-5	S9	B-3
D8	C-6	S10	C-3
D9	B-4	S11	D-5
D10	C-4	S12	H-3
D11	D-6	S13	F-3
D12	H-5	S14	F-4
D13	F-4	S15	E-5
D14	G-4	S16	E-5
D15	E-5	S17	D-4
D16	E-5	S18	G-4
D17	D-4	S19	J-2
D18	G-5	S20	F-5
D19	J-2	S21	F-5
D20	F-5	S22	G-5
D21	F-6	S23	E-4
D22	G-6	S24	J-2
D23	E-3	S25	J-1
D24	J-3	S26	J-1
D25	J-2	S27	A-3
D26	J-2		
D27	J-2		
D28	A-3		
D29	G-5		
D30	F-4		
D31	F-4		
D32	G-4		
D33	E-3		
D34	D-3		
D35	D-4		
D36	E-4		
D37	E-4		
D38	K-3		
D39	K-3		
D40	K-3		
D41	G-4		
E1	A-3		
E2	G-4		
S1	A-3		
S2	B-3		

KY-192 BOARD (PCM-7030)
(1-637-268-12)
Solder Side

Serial No. UC 20046 to 20115
EK 50201 to 50580



Applied Serial No. UC 200	
EK 502	
Jumpers that have been soldered	C
	C



Applied Serial No. UC 22046 to 22115
EK 50201 to 50580

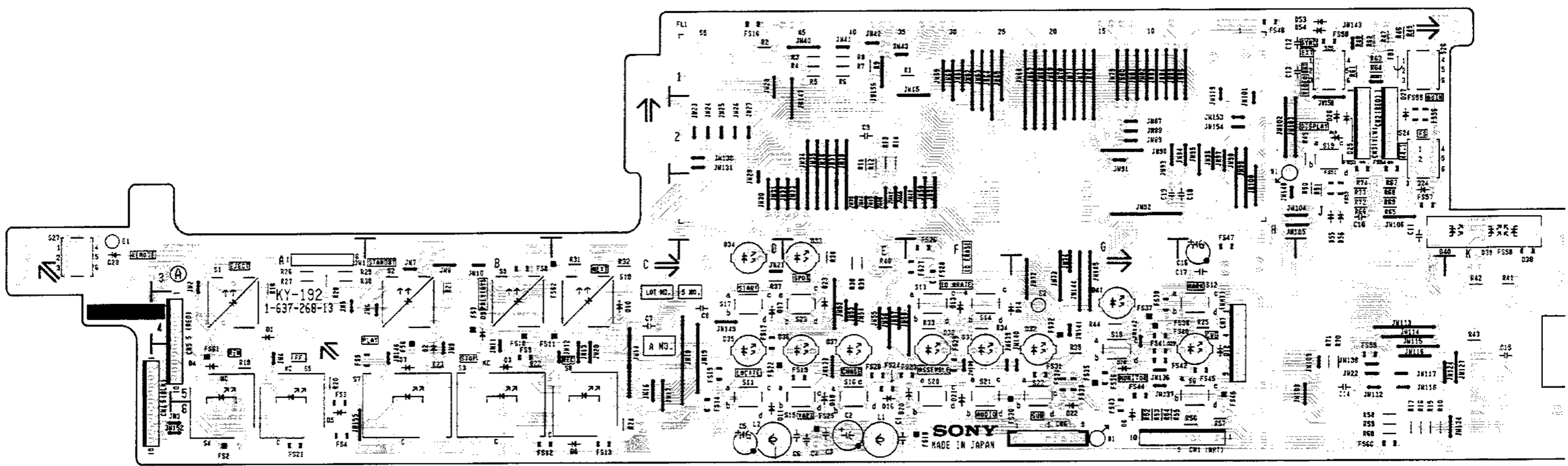
Jumpers that have been soldered

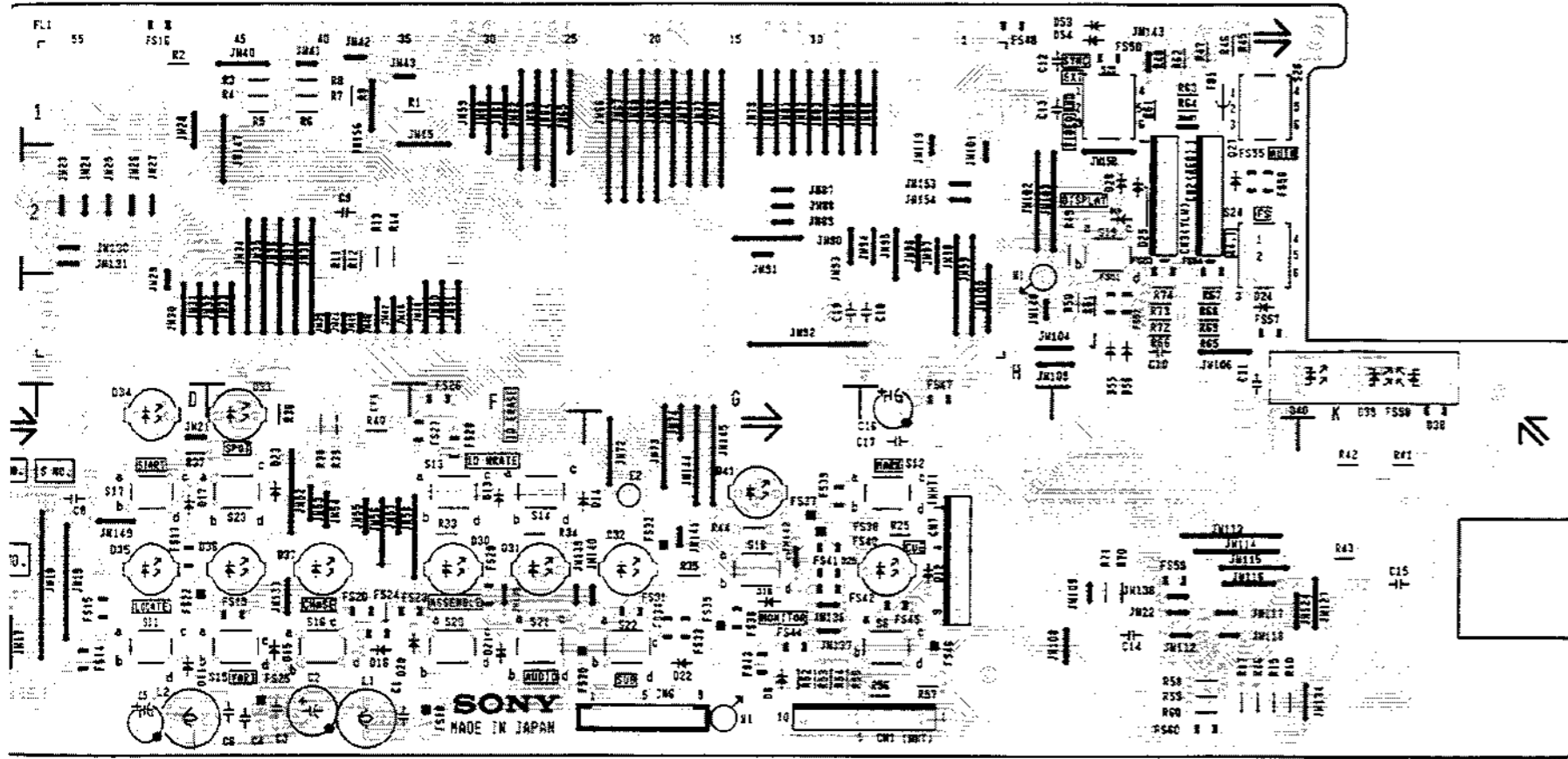
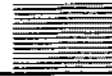
CN2-3	CN3-9
CN3-5	JW48
C12	CN6-9

D1	A-4	IC3	J-3	S2	B-3
D2	B-5	IC4	H-1	S3	B-5
D3	B-5	IC5	J-3	S4	A-6
D4	A-5	IC6	G-3	S5	A-5
D5	A-6	IC7	C-5	S6	H-5
D6	G-6	IC8	D-5	S7	A-5
D7	B-5	IC9	E-3	S8	C-5
D8	C-6	IC10	K-6	S9	B-3
D9	B-4			S10	C-3
D10	C-4	Q1	D-1	S11	D-5
D11	D-6	Q2	D-1	S12	H-3
D12	H-5	Q3	C-2	S13	F-3
D13	F-4	Q4	D-1	S14	F-4
D14	G-4	Q5	D-1	S15	E-6
D15	E-5	Q6	D-1	S16	E-6
D16	B-5	Q7	D-1	S17	D-4
D17	D-4	Q8	E-1	S18	G-4
D18	G-5	Q9	F-1	S19	J-2
D19	J-2	Q10	A-4	S20	F-5
D20	F-5	Q11	A-6	S21	F-5
D21	F-5	Q12	A-5	S22	G-5
D22	G-6	Q13	B-4	S23	E-4
D23	E-3	Q14	B-5	S24	J-2
D24	J-3	Q15	B-5	S25	J-1
D25	J-2	Q16	C-6	S26	J-1
D26	J-2	Q17	H-4	S27	A-3
D27	J-2	Q18	B-3		
D28	A-3	Q19	B-3		
D29	G-5	Q20	B-3		
D30	F-4	Q21	B-3		
D31	F-4	Q22	B-3		
D32	G-4	Q23	C-3		
D33	E-3	Q24	C-3		
D34	D-3	Q25	F-4		
D35	D-4	Q26	G-4		
D36	E-4	Q27	G-4		
D37	E-4	Q28	D-3		
D38	K-3	Q29	E-3		
D39	K-3	Q30	E-3		
D40	K-3	Q31	E-3		
D41	G-4	Q32	E-3		
		Q33	K-4		
E1	A-3	Q34	K-3		
E2	G-4	Q35	K-4		
		Q36	H-4		
IC1	J-6				
IC2	H-2	S1	A-3		

KY-192 BOARD (PCM-7030)
(1-637-268-13)
Component Side

Serial No. UC 20116 and higher
EK 50581 and higher

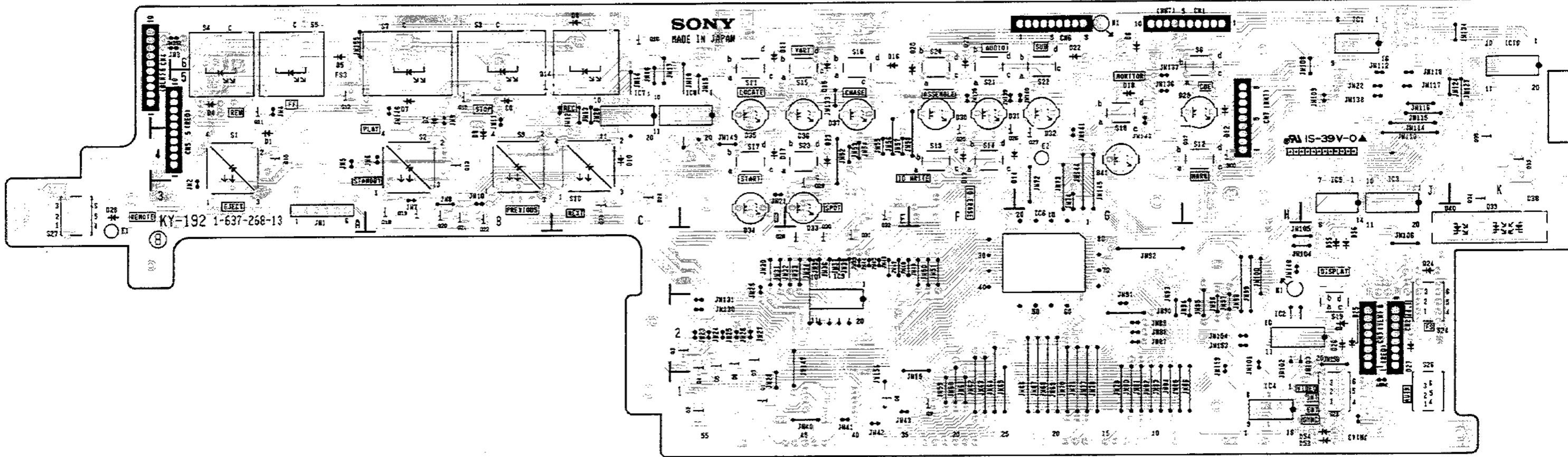


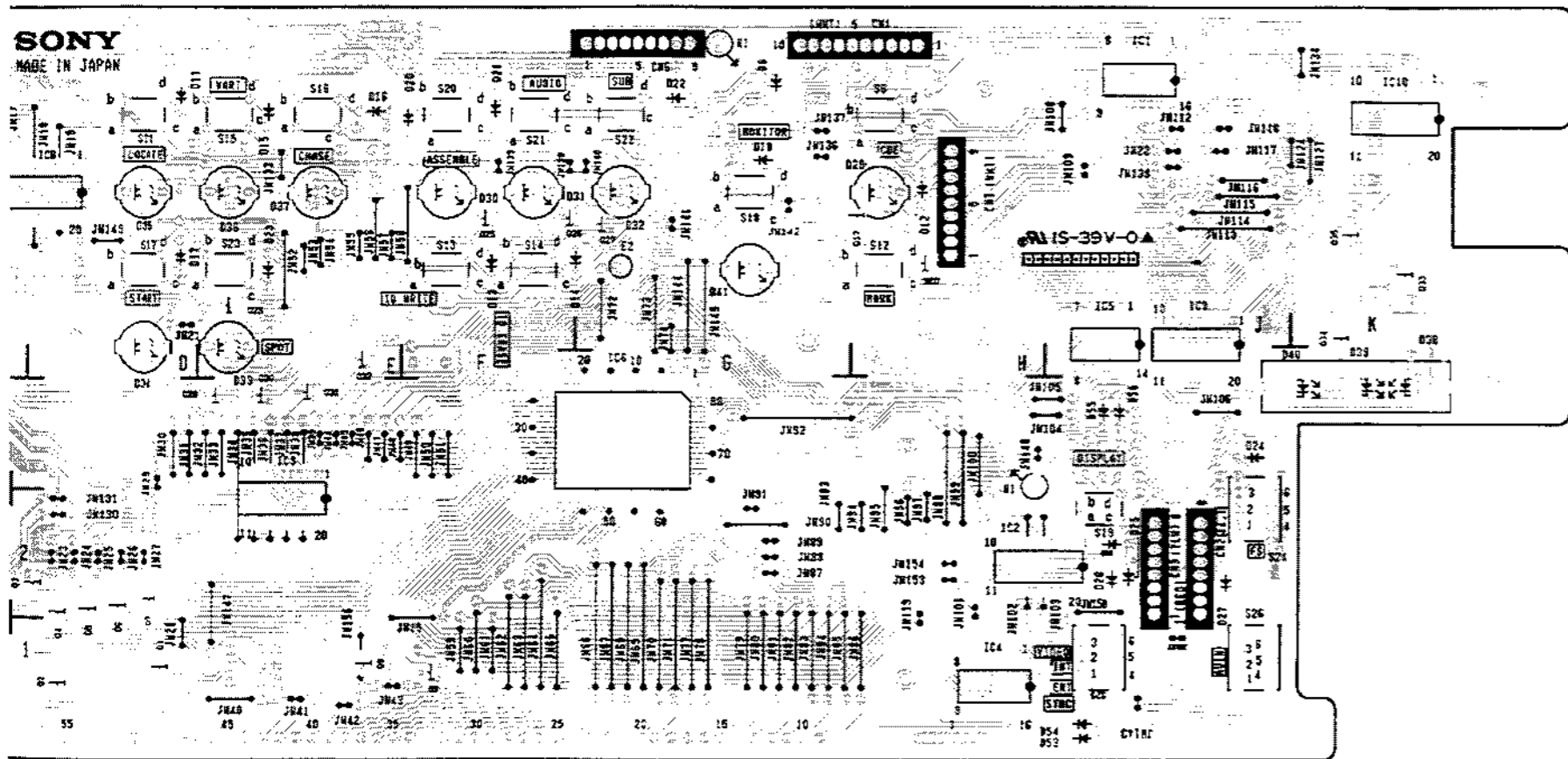


D1	A-4	S3	B-5
D2	B-5	S4	A-6
D3	B-5	S5	A-6
D4	A-5	S6	H-5
D5	A-6	S7	A-5
D6	G-6	S8	C-5
D7	B-5	S9	B-3
D8	C-6	S10	C-3
D9	B-4	S11	D-5
D10	D-4	S12	H-3
D11	D-6	S13	F-3
D12	H-5	S14	F-4
D13	F-4	S15	E-5
D14	G-4	S16	E-6
D15	E-5	S17	D-4
D16	E-5	S18	G-4
D17	D-4	S19	J-2
D18	G-5	S20	F-5
D19	L-2	S21	F-5
D20	F-5	S22	G-5
D21	F-5	S23	E-4
D22	G-5	S24	J-2
D23	E-3	S25	J-1
D24	J-3	S26	J-1
D25	J-2	S27	A-3
D26	J-2		
D27	J-2		
D28	A-3		
D29	G-5		
D30	F-4		
D31	F-4		
D32	G-4		
D33	E-3		
D34	D-3		
D35	D-4		
D36	E-4		
D37	E-4		
D38	K-3		
D39	K-3		
D40	K-3		
D41	G-4		
E1	A-3		
E2	G-4		
S1	A-3		
S2	B-3		

KY-192 BOARD (PCM-7030)
(1-637-268-13)
Solder Side

Serial No. UC 20116 and higher
EK 505B1 and higher





D1	A-4	IC3	J-3	S2	B-3
D2	B-5	IC4	H-1	S3	B-5
D3	B-5	IC5	J-3	S4	A-6
D4	A-5	IC6	G-3	S5	A-5
D5	A-6	IC7	C-5	S6	H-5
D6	G-6	IC8	D-5	S7	A-5
D7	B-5	IC9	E-3	S8	C-5
D8	C-6	IC10	K-6	S9	B-3
D9	B-4			S10	C-3
D10	C-4	Q1	D-1	S11	D-5
D11	D-6	Q2	D-1	S12	H-3
D12	H-5	Q3	C-2	S13	F-3
D13	F-4	Q4	D-1	S14	F-4
D14	G-4	Q5	D-1	S15	E-5
D15	E-5	Q6	D-1	S16	E-5
D16	E-5	Q7	D-1	S17	D-4
D17	D-4	Q8	E-1	S18	G-4
D18	G-5	Q9	F-1	S19	J-2
D19	J-2	Q10	A-4	S20	F-5
D20	F-5	Q11	A-5	S21	F-5
D21	F-5	Q12	A-5	S22	G-5
D22	G-6	Q13	B-4	S23	E-4
D23	E-3	Q14	B-5	S24	J-2
D24	J-3	Q15	B-5	S25	J-1
D25	J-2	Q16	C-6	S26	J-1
D26	J-2	Q17	H-4	S27	A-3
D27	J-2	Q18	B-3		
D28	A-3	Q19	B-3		
D29	G-5	Q20	B-3		
D30	F-4	Q21	B-3		
D31	F-4	Q22	B-3		
D32	G-4	Q23	C-3		
D33	E-3	Q24	C-3		
D34	D-3	Q25	F-4		
D35	D-4	Q26	G-4		
D36	E-4	Q27	G-4		
D37	E-4	Q28	D-3		
D38	K-3	Q29	E-3		
D39	K-3	Q30	E-3		
D40	K-3	Q31	E-3		
D41	G-4	Q32	E-3		
		Q33	K-4		
E1	A-3	Q34	K-3		
E2	G-4	Q35	K-4		
		Q36	H-4		
IC1	J-6				
IC2	H-2	S1	A-3		

LE-90A/90B, LED-104

LE-90A BOARD (PCM-7030)
 (1-637-285-12)
 Component Side



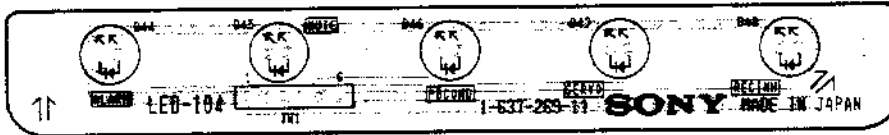
LE-90A BOARD (PCM-7030) (1-637-285-12)

LE-90B BOARD (PCM-7030)
 (1-637-286-12)
 Component Side

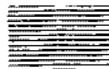


LE-90B BOARD (PCM-7030) (1-637-286-12)

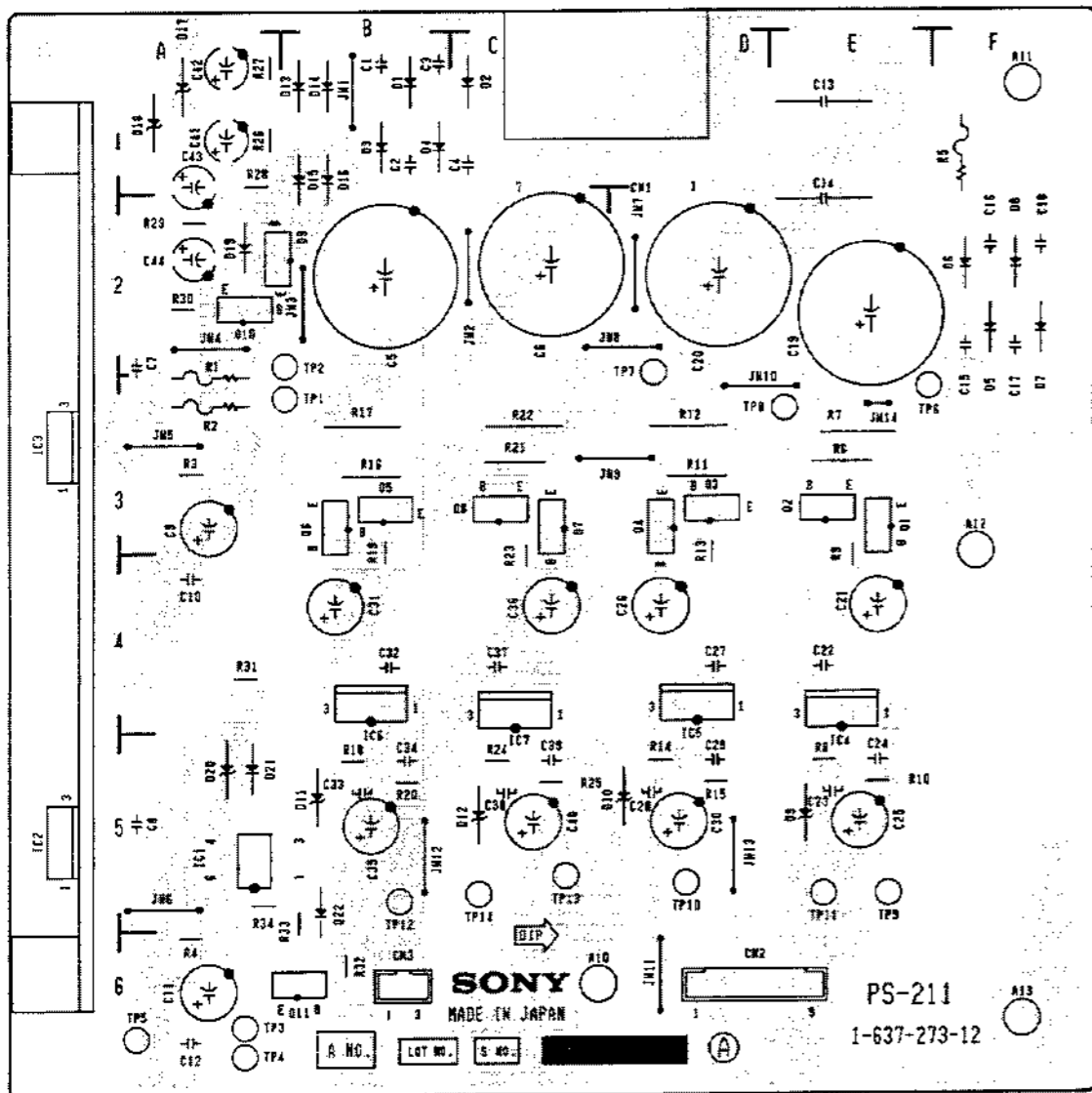
LED-104 BOARD (PCM-7030)
 (1-637-269-11)
 Component Side



LED-104 BOARD (PCM-7030) (1-637-269-11)

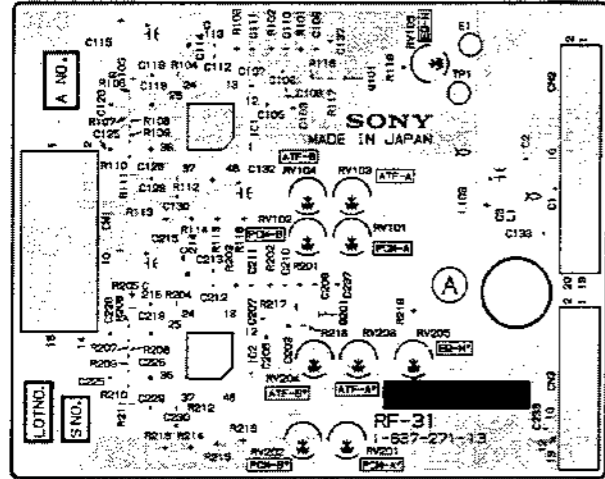


PS-211 BOARD (PCM-7030)
 (1-637-273-12)
 Component Side

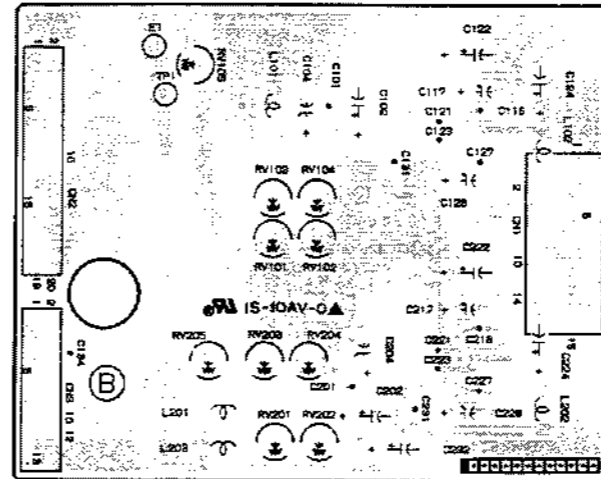


D1	B-1	TP5	A-6
D2	C-1	TP6	E-2
D3	B-1	TP7	D-2
D4	B-1	TP8	D-3
D5	F-3	TP9	E-5
D6	F-2	TP10	D-5
D7	F-3	TP11	E-5
D8	F-2	TP12	B-5
D9	E-5	TP13	C-5
D10	D-5	TP14	C-5
D11	B-5		
D12	C-5		
D13	B-1		
D14	B-1		
D15	B-1		
D16	B-1		
D17	A-1		
D18	A-1		
D19	A-2		
D20	A-5		
D21	A-5		
D22	B-4		
IC1	A-5		
IC2	A-5		
IC3	A-3		
IC4	E-5		
IC5	D-4		
IC6	B-4		
IC7	C-5		
Q1	E-3		
Q2	E-3		
Q3	D-3		
Q4	D-3		
Q5	B-3		
Q6	B-3		
Q7	C-3		
Q8	C-3		
Q9	B-2		
Q10	A-2		
Q11	B-6		
TP1	B-3		
TP2	B-3		
TP3	A-6		
TP4	A-6		

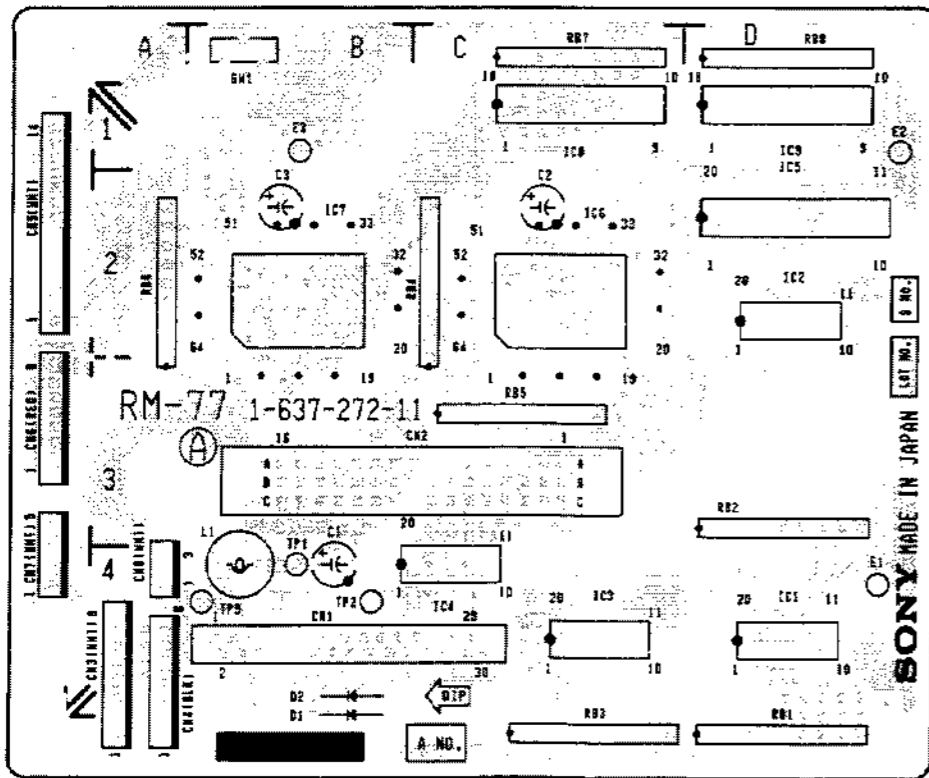
RF-31 BOARD (PCM-7030)
(1-637-271-13)
Component Side



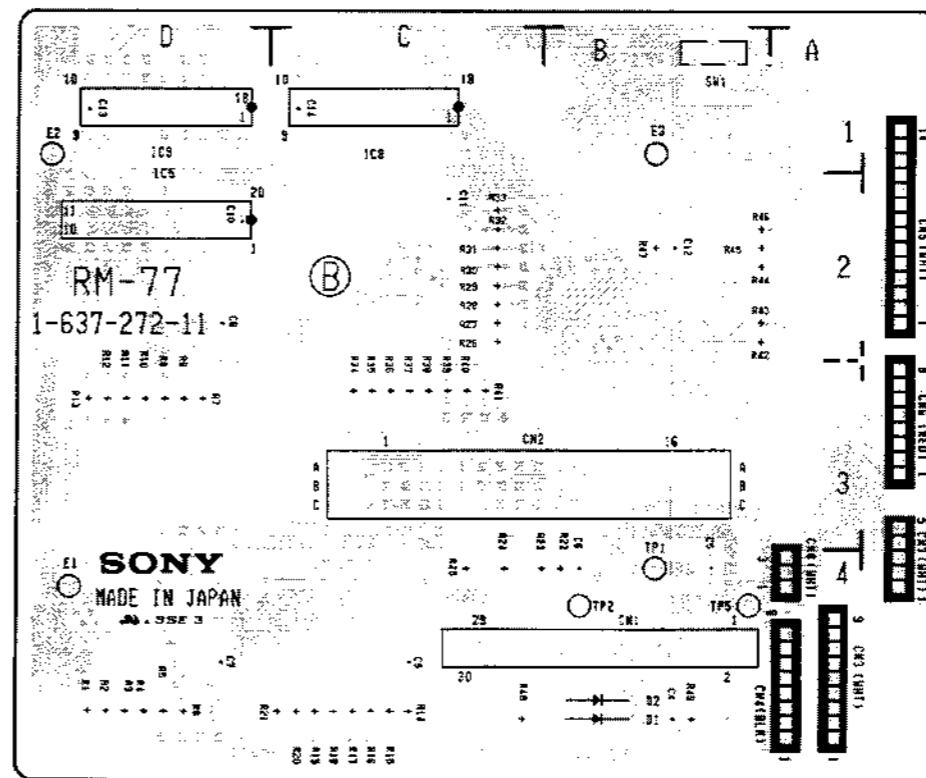
Solder Side



RM-77 BOARD (PCM-7030)
(1-637-272-11)
Component Side

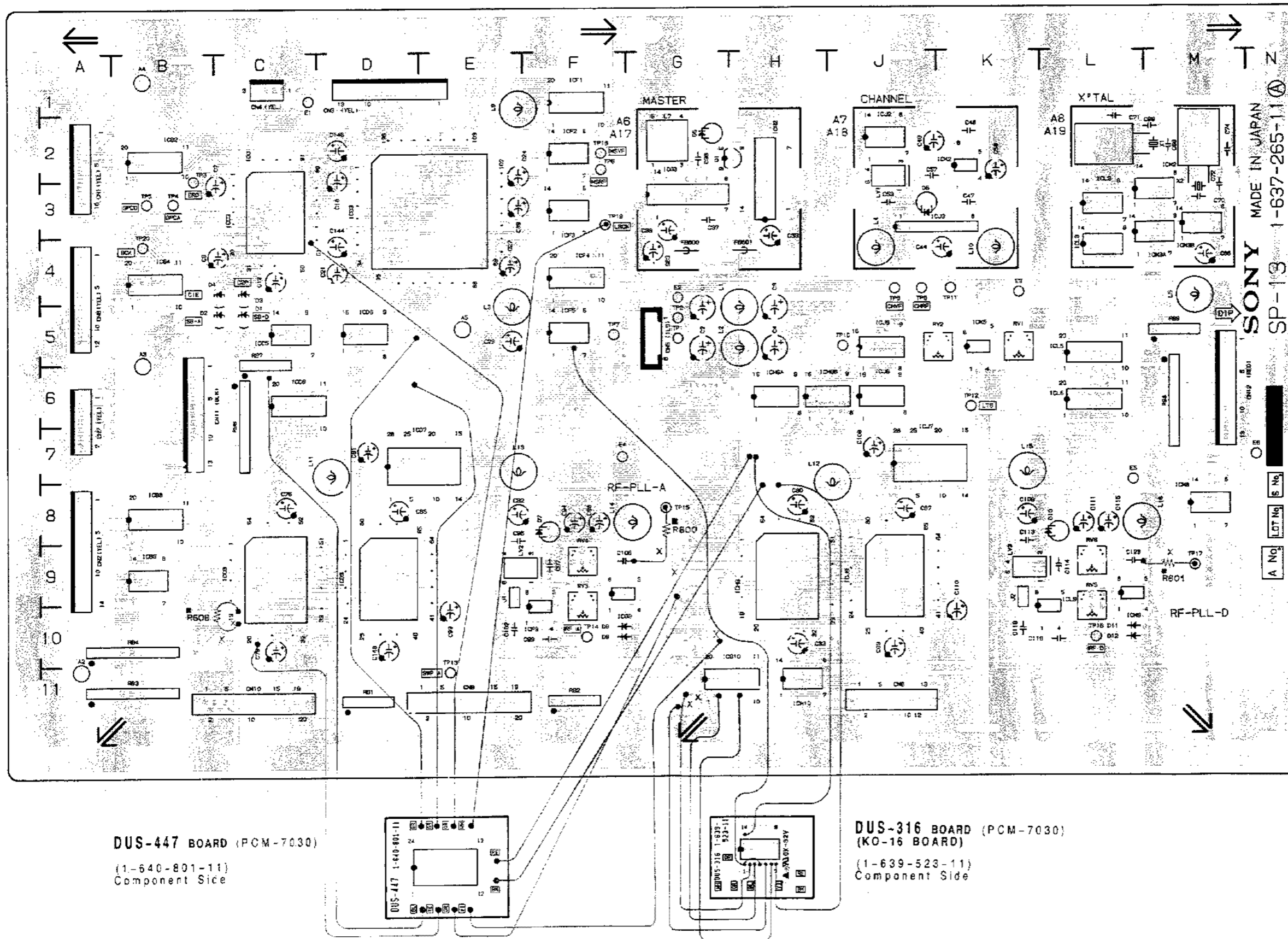


Solder Side



SP-13 BOARD (PCM-7030)
(1-637-265-11)
Component Side

Serial No. UC 20001 to 20045
EK 50001 to 50200



DUS-447 BOARD (PCM-7030)
(1-640-801-11)
Component Side

DUS-316 BOARD (PCM-7030)
(KO-16 BOARD)
(1-639-523-11)
Component Side

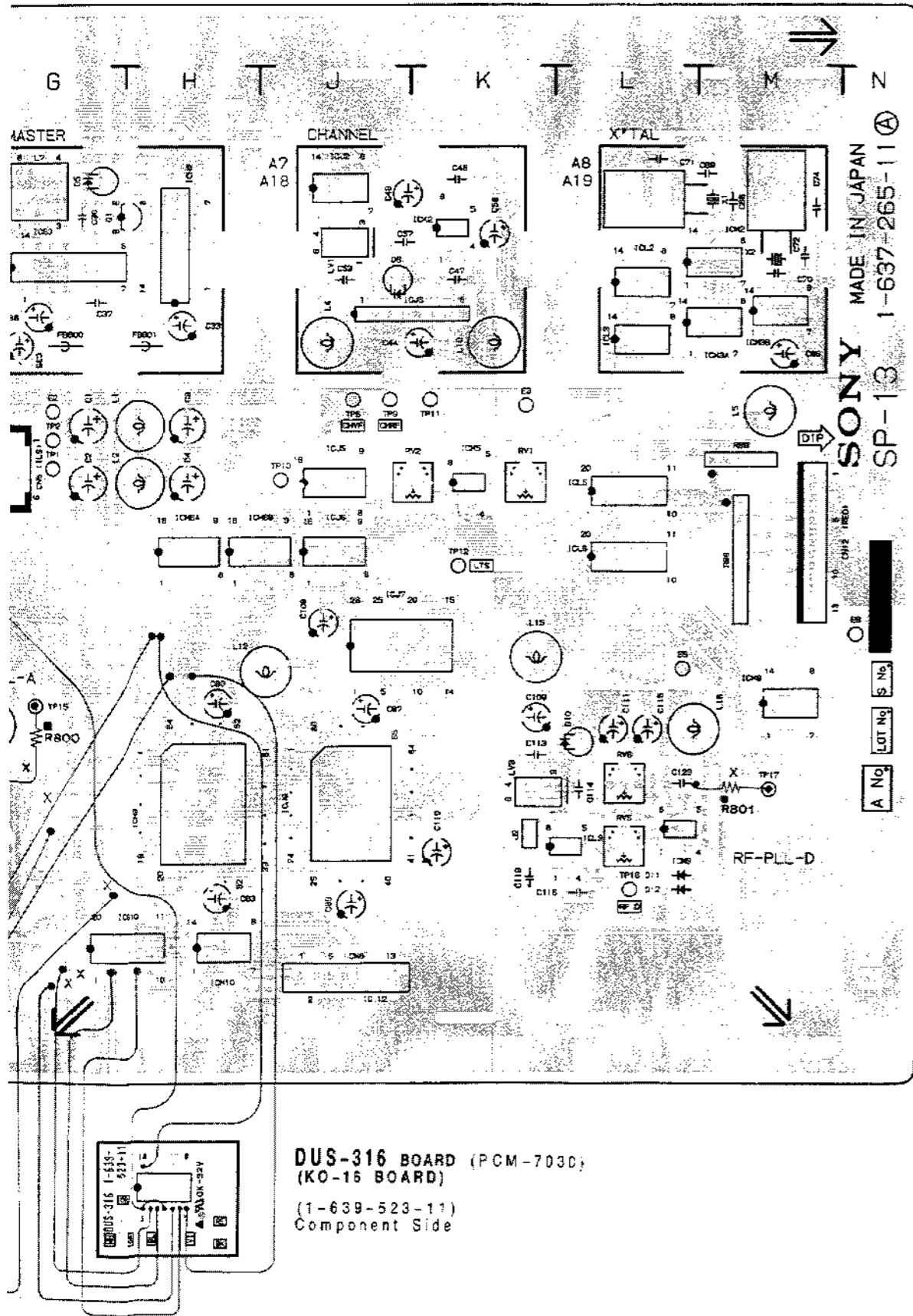
Applied Serial No. UC 20001 to 20045 EK 50001 to 50000	
Jumpers that have been soldered or cut.	IC09-18 X IC09
Parts that have been added.	R602

Applied Serial No. UC 20026 to 20045 EK 50001 to 50200	
Jumpers that have been soldered or cut.	IC01-03 X IC05 IC01-07 X IC09 C106 X TP15 C123 X TP17
Parts marked with * that have been installed on the component side.	*R520 *R521

Applied Serial No. UC 20001 to 20045 EK 50001 to 50200	
Jumpers that have been soldered or cut.	IC07-14 --- +EV IC07-7 --- GND IC07-1,4 --- IC01 IC07-2 --- IC09 IC07-3 --- IC01 IC07-5 --- IC09 IC07-6 --- IC01 IC03-47 X IC09 IC03-48 X IC09 IC03-43 X C-9 IC06-1 --- C03
Parts that have been added.	IC07 DUS-016 Box IC06 DUS-447 Box

B-36-1(a)

B-37-1(a)



DUS-316 BOARD (PCM-703D)
(KO-16 BOARD)
(1-638-523-11)
Component Side

B-37-1(a)

Applied Serial No. UC 20001 to 20025 EK 50001 to 50080
Jumpers that have been soldered or cut: C09-18 -X- IC08-5
Parts that have been added: 9602

Applied Serial No. UC 20026 to 20045 EK 50051 to 50200
Jumpers that have been soldered or cut: C010-2 -X- IC02-25 IC010-7 -X- IC09-25 C105 -X- TP+5 C122 -X- TP+7
Parts marked with * that have been installed on the component side: * R509 * R5C1

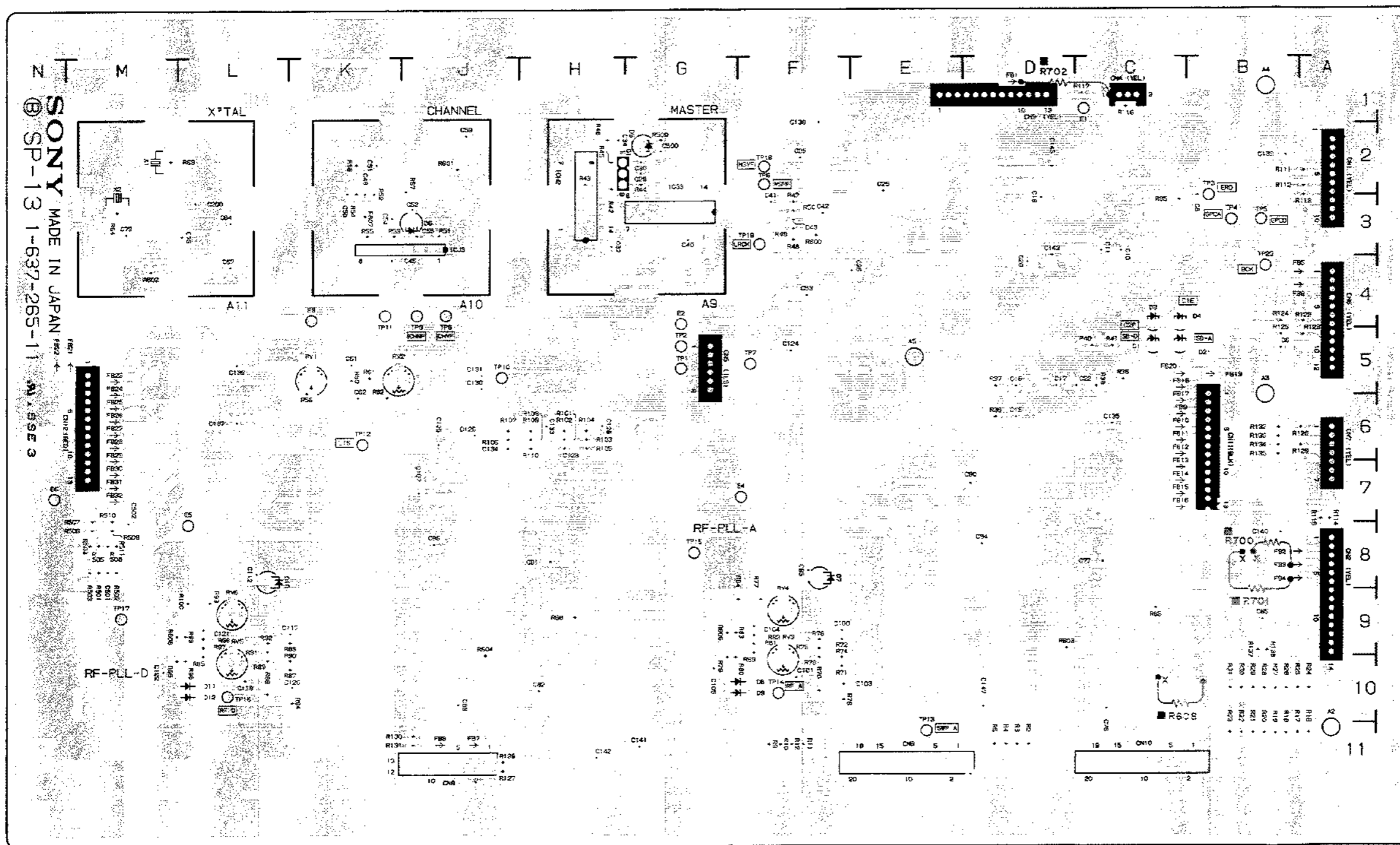
Applied Serial No. UC 20046 to 20045 EK 50051 to 50200		
Jumpers that have been soldered or cut:	IC07-14 --- -5V(RED);	ICF5-2 --- GND(BLK);
	IC07-7 --- GND(BLK);	ICF6-3 --- GND(BLK);
	IC07-1.4 --- ICF5-5(OR);	ICF6-6 --- IC09-29(YEL);
	IC07-2 --- IC09-25(WHT);	ICF6-7 --- IC08-29(GRY);
	IC07-3 --- IC09-5(GRY);	ICF6-8 --- IC08-32(VIC);
	IC07-5 --- IC08-25(BLU);	ICF6-11 --- GND(BLK);
	IC07-5 --- IC09-7(VIO);	ICF6-12 --- GND(BLK);
	IC03-47 -X- IC08-29;	ICF6-18 --- IC09-27(WHT);
	IC03-46 -X- C09-29;	ICF6-20 --- IC03-54(OR);
	IC03-43 -X- C09-30;	ICF6-21 --- IC03-46(GRY);
	ICF6-1 --- C03-43(BLU);	ICF6-22 --- IC08-47(BRO);
		ICF6-24 --- +5V(RED);
Parts that have been added:	IC07 DUS-316 Board (KO-16 Board);	
	ICF6 DUS-447 Board;	

D1	C-5	ICJ3	J-3	X1	M-2
D2	B-5	ICJ5	J-5	X2	M-3
D3	C-4	ICJ6	J-6		
D4	B-4	ICJ7	J-7		
D5	G-2	ICJ9	J-9		
D6	J-3	ICK2	K-2		
D7	F-8	ICK5	K-5		
D8	F-10	ICL2	L-3		
D9	F-10	ICL3	L-4		
D10	L-8	ICL5	L-5		
D11	L-10	ICL6	L-6		
D12	L-10	ICL9	L-9		
		ICM2	M-2		
E1	C-1	ICM3A	M-4		
E2	G-4	ICM3B	M-4		
E3	K-4	ICM8	M-8		
E4	F-7	ICM9	L-10		
E5	L-7				
E6	N-7	Q1	G-2		
ICB2	B-2	RV1	K-5		
ICB4	B-4	RV2	J-5		
ICB8	B-8	RV3	F-9		
ICB9	B-9	RV4	F-9		
ICC3	C-3	RV5	L-9		
ICC5	C-5	RV6	L-9		
ICC6	C-6				
ICC9	C-9	TP1	G-5		
ICD3	D-3	TP2	G-5		
ICD5	D-5	TP3	B-2		
ICD7	D-7	TP4	B-3		
ICD9	D-9	TP5	B-3		
ICF1	F-1	TP6	F-2		
ICF2	F-2	TP7	F-5		
ICF3	F-3	TP8	J-4		
ICF4	F-4	TP9	J-4		
ICF5	F-5	TP10	J-5		
ICF9	F-10	TP11	K-4		
ICG3	G-2	TP12	K-6		
ICG9	F-10	TP13	E-10		
ICG10	G-10	TP14	F-10		
ICH2	H-2	TP15	G-8		
ICH6A	H-6	TP16	L-10		
ICH6B	H-6	TP17	M-9		
ICH9	H-9	TP18	F-2		
ICH10	H-11	TP19	F-3		
ICJ2	J-2	TP20	B-4		

B-38-1(a)

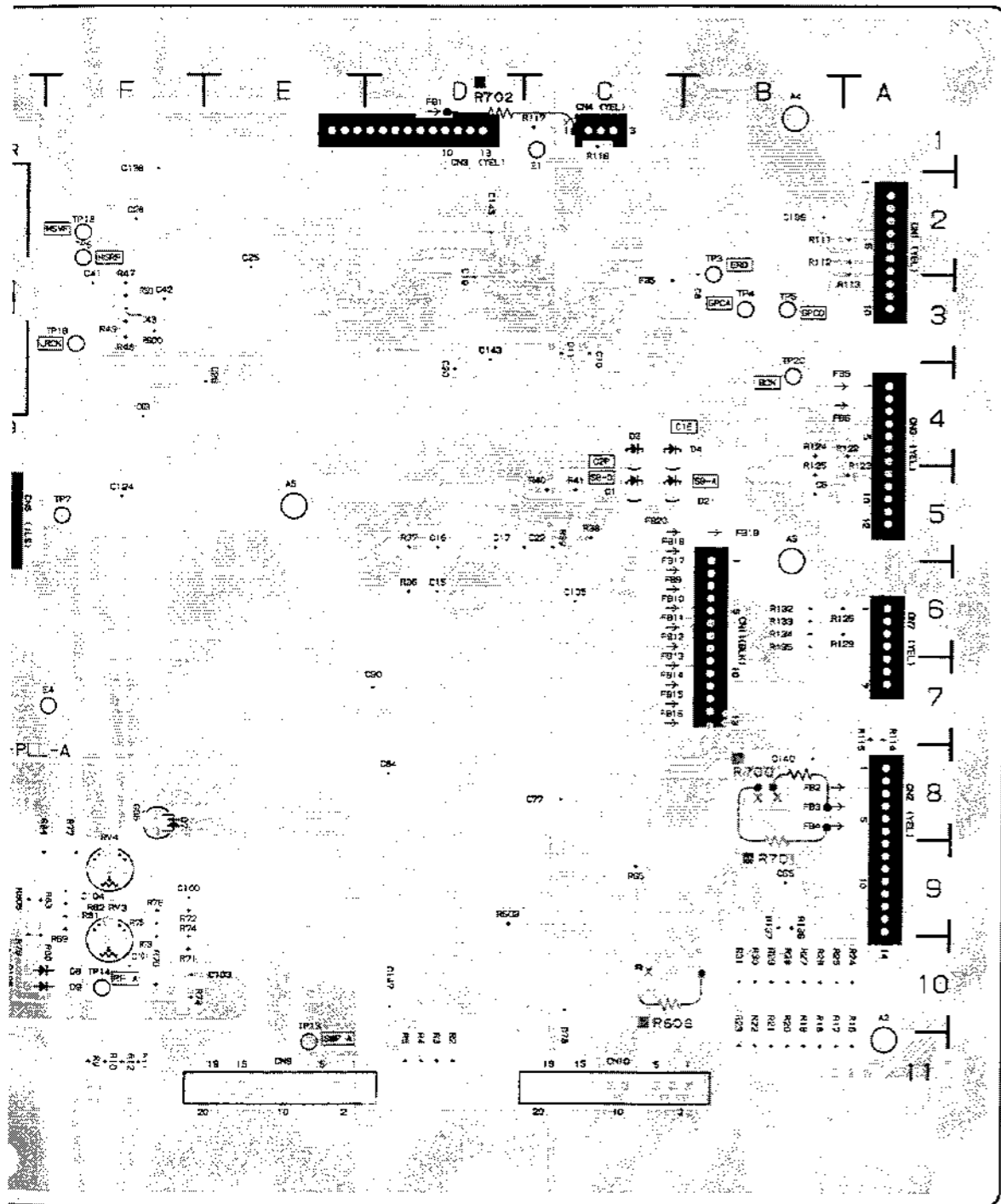
SP-13 BOARD (PCM-7030)
 (1-637-265-11)
 Solder Side

Serial No. UC 20001 to 20045
 EK 50001 to 50200



SONY MADE IN JAPAN 9922
 SP-13 1-637-265-11
 A 9SE 3

Applied Serial No. UC 20025 to 20245 EK 50061 to 50200	
Jumpers that have been soldered or cut.	IC08-1a -> IC21
Parts marked with * that have been installed on the solder side.	*R6CE
Applied Serial No. UC 20501 to 20045 EK 50001 to 50200	
Jumpers that have been soldered or cut.	F31 -> IC68-12 F33 -> IC68-16 F34 -> IC68-14
Parts marked with * that have been installed on the solder side.	*R700 *R701 *R702



B-37-2(a)

D1	C-5	ICJ3	J-3	X1	M-2
D2	B-5	ICJ5	J-5	X2	M-3
D3	C-4	ICJ6	J-6		
D4	B-4	ICJ7	J-7		
D5	G-2	ICJ9	J-9		
D6	J-3	ICK2	K-2		
D7	F-8	ICK5	K-5		
D8	F-10	ICL2	L-3		
D9	F-10	ICL3	L-4		
D10	L-8	ICL5	L-5		
D11	L-10	ICL6	L-6		
D12	L-10	ICL9	L-9		
E1	C-1	ICM2	M-2		
E2	G-4	ICM3A	M-4		
E3	K-4	ICM3B	M-4		
E4	F-7	ICM8	M-8		
E5	L-7	ICM9	L-10		
E6	N-7	Q1	G-2		
ICB2	B-2	RV1	K-5		
ICB4	B-4	RV2	J-5		
ICB8	B-8	RV3	F-9		
ICB9	B-9	RV4	F-9		
ICC3	C-3	RV5	L-9		
ICC5	C-5	RV6	L-9		
ICC6	C-6				
ICC9	C-9	TP1	G-5		
ICD3	D-3	TP2	G-5		
ICD5	D-5	TP3	B-2		
ICD7	D-7	TP4	B-3		
ICD9	D-9	TP5	B-3		
ICF1	F-1	TP6	F-2		
ICF2	F-2	TP7	F-5		
ICF3	F-3	TP8	J-4		
ICF4	F-4	TP9	J-4		
ICF5	F-5	TP10	J-5		
ICF9	F-10	TP11	K-4		
ICG3	G-2	TP12	K-6		
ICG9	F-10	TP13	E-10		
ICG10	G-10	TP14	F-10		
ICH2	H-2	TP15	G-8		
ICH5A	H-5	TP16	L-10		
ICH6B	H-6	TP17	M-9		
ICH9	H-9	TP18	F-2		
ICH10	H-11	TP19	F-3		
ICJ2	J-2	TP20	B-4		

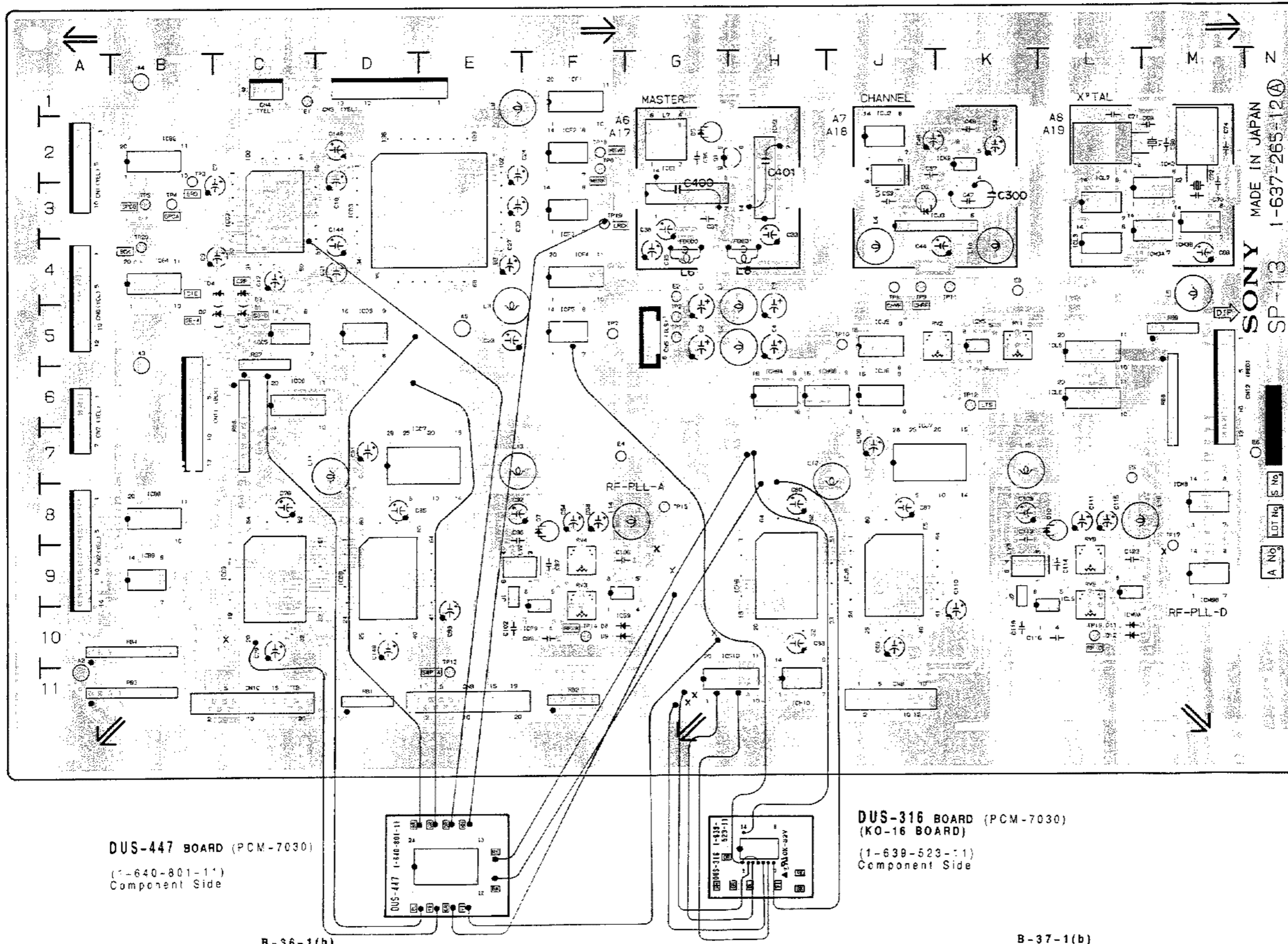
Applied Serial No. UC 20026 to 20045 EK 50251 to 50290	
Jumpers that have been soldered or cut.	ICG9-18 X ICB8-5
Parts marked with * that have been installed on the solder side.	*R602

Applied Serial No. UC 20001 to 20045 EK 50001 to 50200	
Jumpers that have been soldered or cut.	FB1 X ICB5-12 FB3 X ICB5-16 FB4 X ICB8-14
Parts marked with * that have been installed on the solder side.	*R700 *R701 *R702

B-38-2(a)

SP-13 BOARD (PCM-7030)
(1-637-265-12)
Component Side

Serial No. UC 20046 to 20115
EK 50201 to 50580



DUS-447 BOARD (PCM-7030)
(1-640-801-11)
Component Side

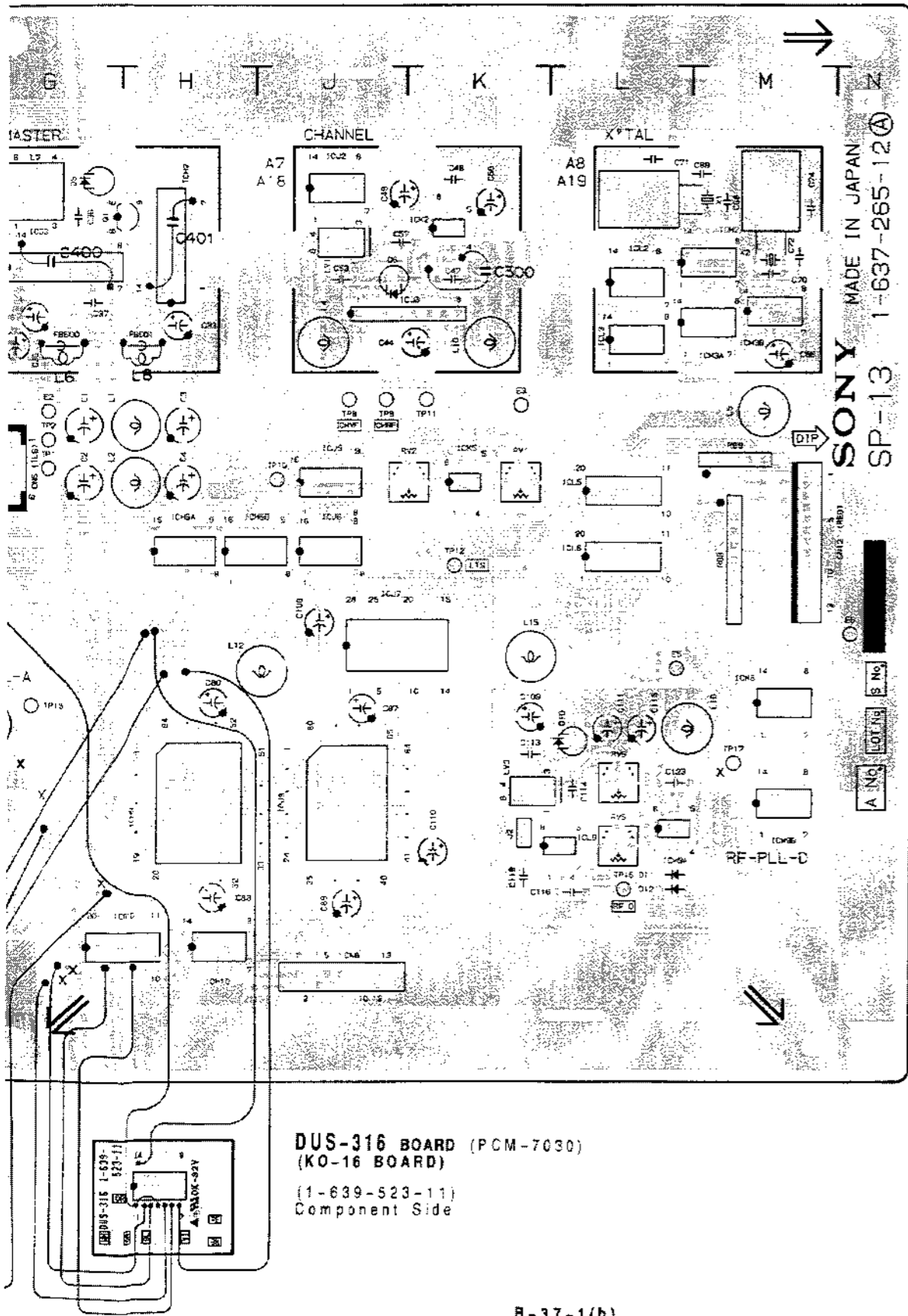
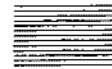
DUS-316 BOARD (PCM-7030)
(KO-16 BOARD)
(1-639-523-11)
Component Side

Applied Serial No. UC 20046 to 20115 EK 50201 to 50580	
Jumpers that have been soldered or cut:	IC315-3 - X - IC35-2 IC315-7 - X - IC35-2 C166 - X - TP15 C123 - X - TP17
Parts that have been added:	IC37 DUS-316 Board IC38 DUS-447 Board

Applied Serial No. UC 20116 and higher EK 50281 and higher	
Parts that have been changed:	FB40C → J6 F560
Parts that have been added:	C326, 402, 421

B-36-1(b)

B-37-1(b)



DUS-316 BOARD (PCM-7030)
(KO-16 BOARD)

(1-639-523-11)
Component Side

B-37-1(b)

D1	C-5	ICJ3	J-3	X1	M-2
D2	B-5	ICJ5	J-6	X2	M-3
D3	C-4	ICJ6	J-6		
D4	B-4	ICJ7	J-7		
D5	G-2	ICJ9	J-9		
D6	J-3	ICK2	K-2		
D7	F-8	ICK5	K-5		
D8	F-10	ICL2	L-3		
D9	F-10	ICL3	L-4		
D10	L-8	ICL5	L-5		
D11	L-10	ICL6	L-6		
D12	L-10	ICL9	L-9		
		ICM2	M-2		
E1	C-1	ICM3A	M-4		
E2	G-4	ICM3B	M-4		
E3	K-4	ICM8	M-8		
E4	F-7	ICM9	L-10		
E5	L-7				
E6	N-7	Q1	G-2		
ICB2	B-2	RV1	K-5		
ICB4	B-4	RV2	J-5		
ICB8	B-8	RV3	F-9		
ICB9	B-9	RV4	F-9		
ICC3	C-3	RV5	L-9		
ICC5	C-5	RV6	L-9		
ICC6	C-6				
ICC9	C-9	TP1	G-5		
ICD3	D-3	TP2	G-5		
ICD5	D-5	TP3	B-2		
ICD7	D-7	TP4	B-3		
ICD9	D-9	TP5	B-3		
ICF1	F-1	TP6	F-2		
ICF2	F-2	TP7	F-5		
ICF3	F-3	TP8	J-4		
ICF4	F-4	TP9	J-4		
ICF5	F-5	TP10	J-5		
ICF9	F-10	TP11	K-4		
ICG3	G-2	TP12	K-6		
ICG9	F-10	TP13	E-10		
ICG10	G-10	TP14	F-10		
ICH2	H-2	TP15	G-8		
ICH6A	H-6	TP16	L-10		
ICH6B	H-6	TP17	M-9		
ICH9	H-9	TP18	F-2		
ICH10	H-11	TP19	F-3		
ICJ2	J-2	TP20	B-4		

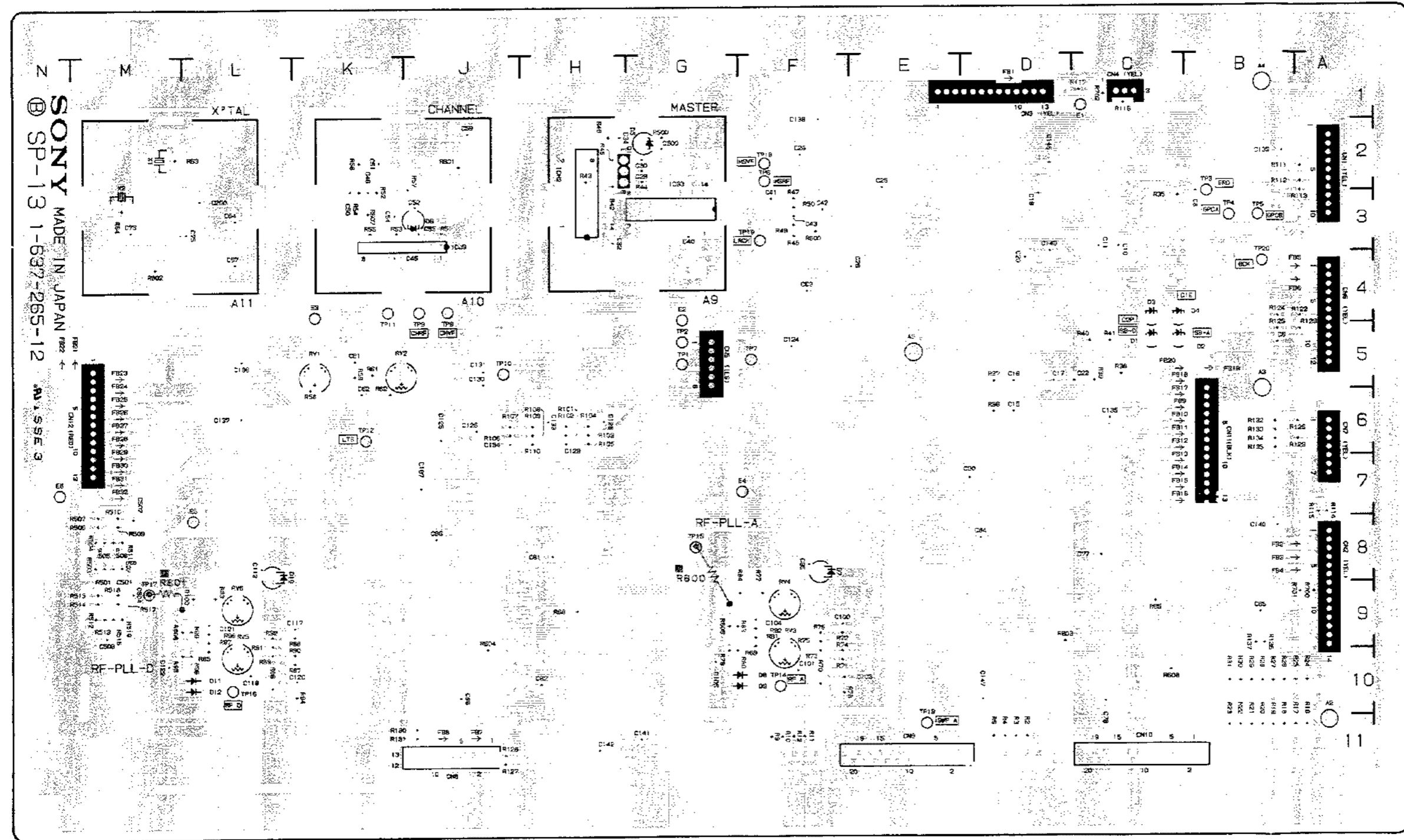
Applied Serial No. UC 20248 to 20115 EK 50201 to 50580			
Jumpers that have been soldered or cut.	ICG10-3 X C09-25	ICG7-14 — +5V(RED)	ICF5-2 — GND(BLK)
	ICG10-7 X C18-25	ICG7-7 — GND(BLK)	ICF5-3 — GND(BLK)
	C106 X TP15	ICG7-13 — ICFS-5(ORG)	ICF5-6 — ICC9-29(YEL)
	C123 X TP17	ICG7-2 — ICDB-25(WHT)	ICF5-7 — ICMS-29(GRY)
		ICG7-3 — IC6-6-3(GRY)	ICF5-8 — ICJ9-82(VIO)
		ICG7-5 — ICJ9-25(BLU)	ICF6-1 — GND(BLK)
		ICG7-6 — IC610-7(VIO)	ICF6-12 — GND(BLK)
		ICD3-47 X ICC9-29	ICF6-19 — ICC9-27(WHT)
		ICD3-48 X ICH8-29	ICF6-20 — ICC3-54(ORG)
		ICD3-45 X ICJ9-02	ICF6-21 — ICDS-46(GRY)
		ICF6-1 — ICC2-43(BLU)	ICF6-22 — ICDS-47(BRO)
			ICF6-24 — +5V(RED)
Parts that have been added. IC97 — DUS-315 Board(KO-16 Board); ICF6 — DUS-447 Board;			

Applied Serial No. UC 20116 and higher EK 50381 and higher	
Parts that have been changed.	FB600 → L6 FB601 → L5
Parts that have been added.	C302, A00 C01

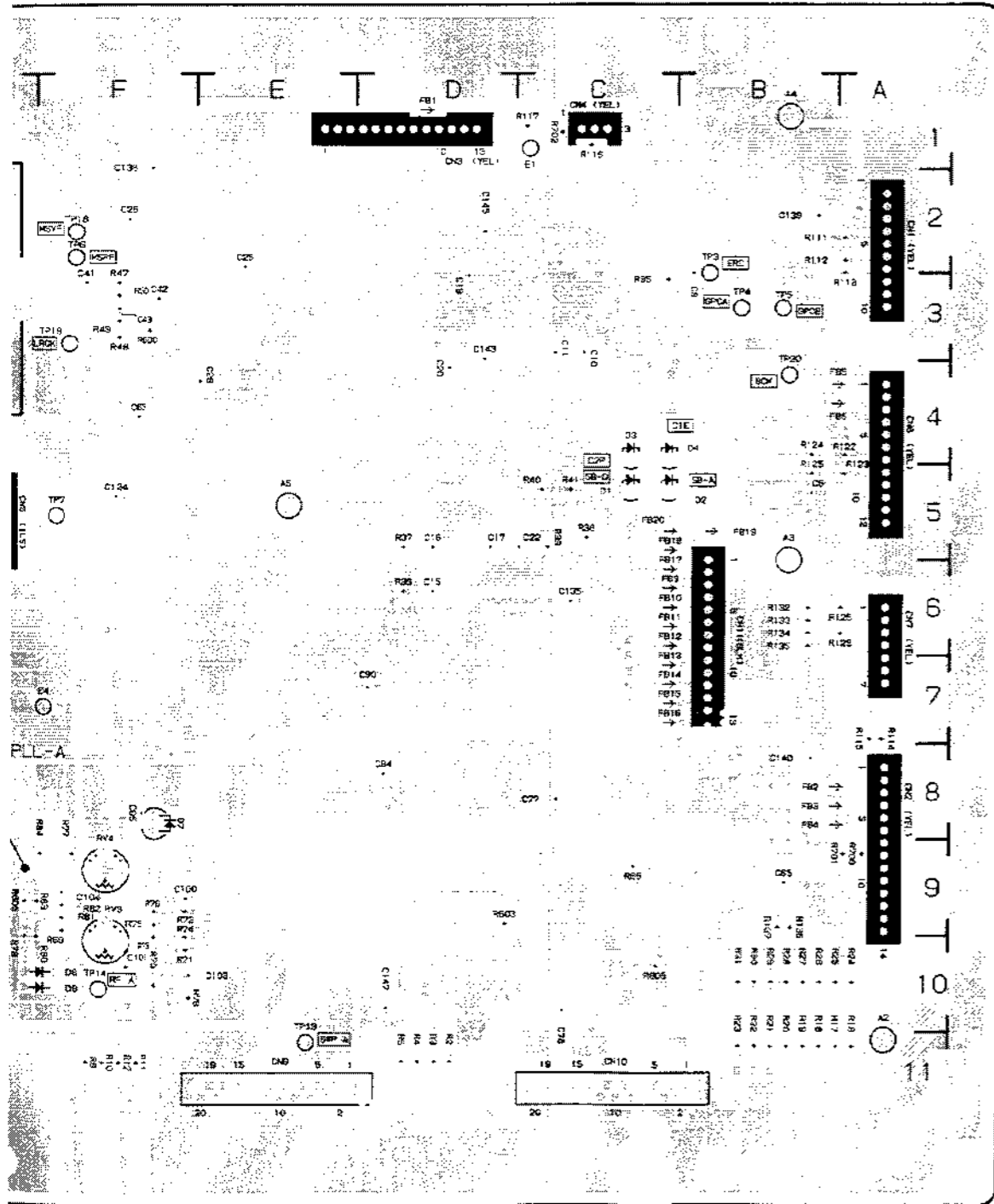
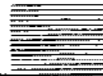
B-38-1(b)

SP-13 BOARD (PCM-7030)
(1-637-265-12)
Solder Side

Serial No. UC 20046 to 20115
EK 50201 to 50580



Applied Serial No. UC 20046 to 20115 EK 50201 to 50580	
Parts marked with * that have been installed on the solder side.	*R800 *R801



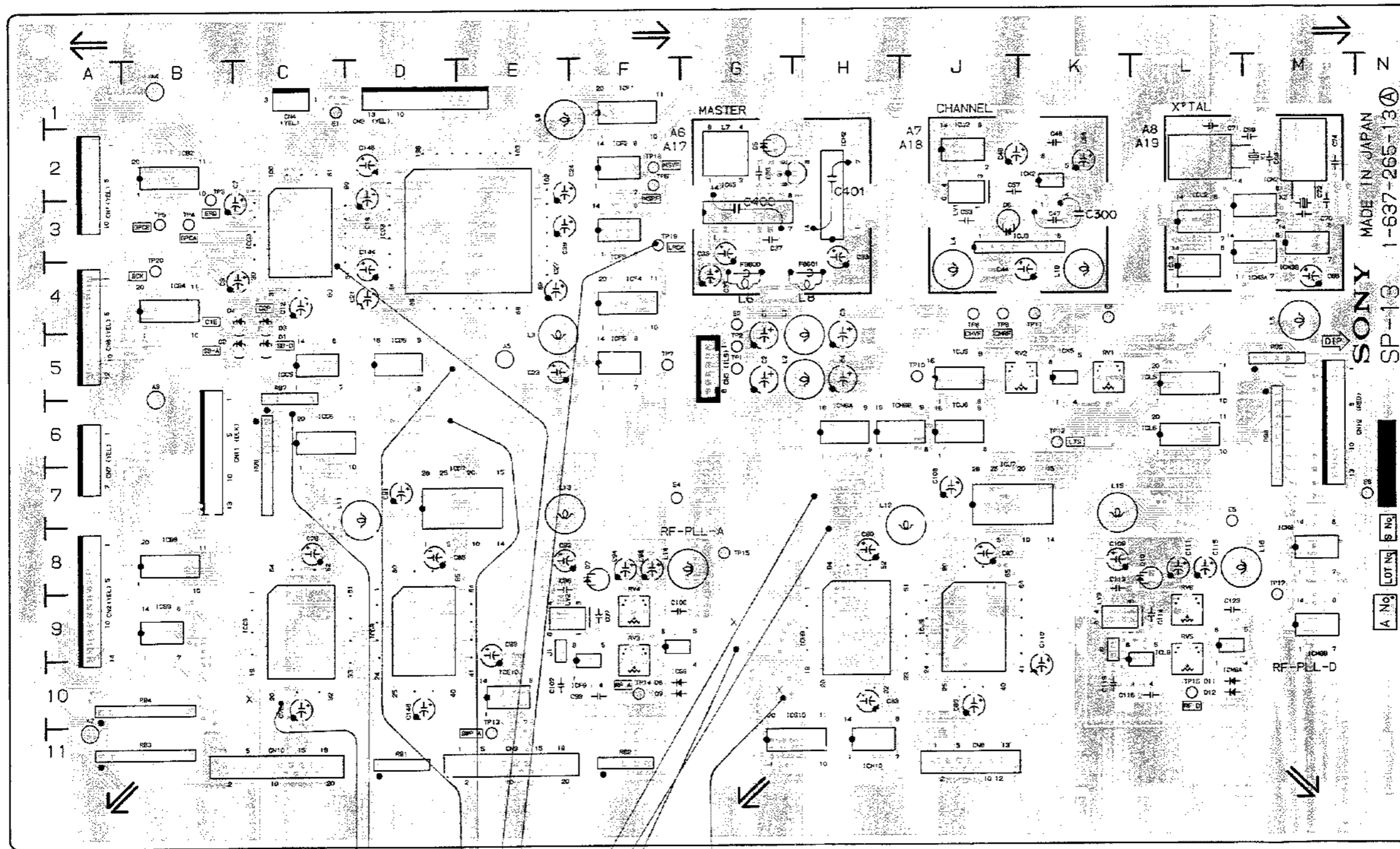
D1	C-5	ICJ3	J-3	X1	M-2
D2	B-5	ICJ5	J-5	X2	M-3
D3	C-4	ICJ6	J-6		
D4	B-4	ICJ7	J-7		
D5	G-2	ICJ9	J-9		
D6	J-3	ICK2	K-2		
D7	F-8	ICK5	K-5		
D8	F-10	ICL2	L-3		
D9	F-10	ICL3	L-4		
D10	L-8	ICL5	L-5		
D11	L-10	ICL6	L-6		
D12	L-10	ICL9	L-9		
E1	C-1	ICM2	M-2		
E2	G-4	ICM3A	M-4		
E3	K-4	ICM3B	M-4		
E4	F-7	ICM8	M-8		
E5	L-7	ICM9	L-10		
E6	N-7	O1	G-2		
ICB2	B-2	RV1	K-5		
ICB4	B-4	RV2	J-5		
ICB8	B-8	RV3	F-9		
ICB9	B-9	RV4	F-9		
ICC3	C-3	RV5	L-9		
ICC5	C-5	RV6	L-9		
ICC6	C-6				
ICC9	C-9	TP1	G-5		
ICD3	D-3	TP2	G-5		
ICD5	D-5	TP3	B-2		
ICD7	D-7	TP4	B-3		
ICD9	D-9	TP5	B-3		
ICF1	F-1	TP6	F-2		
ICF2	F-2	TP7	F-5		
ICF3	F-3	TP8	J-4		
ICF4	F-4	TP9	J-4		
ICF5	F-5	TP10	J-5		
ICF9	F-10	TP11	K-4		
ICG3	G-2	TP12	K-6		
ICG9	F-10	TP13	E-10		
ICG10	G-10	TP14	F-10		
ICH2	H-2	TP15	G-8		
ICH6A	H-6	TP16	L-10		
ICH6B	H-6	TP17	M-9		
ICH9	H-9	TP18	F-2		
ICH10	H-11	TP19	F-3		
ICJ2	J-2	TP20	B-4		

Applied Serial No. UC 20046 to 20115
EK 30201 to 30580

Parts marked with * that have been installed on the solder side.	*R400 *R301
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SP-13 BOARD (PCM-7030)
(1-637-265-13)
Component Side

Serial No. UC 20116 to 25020
EK 50581 to 55040



SONY MADE IN JAPAN
SP-13 1-637-265-13A

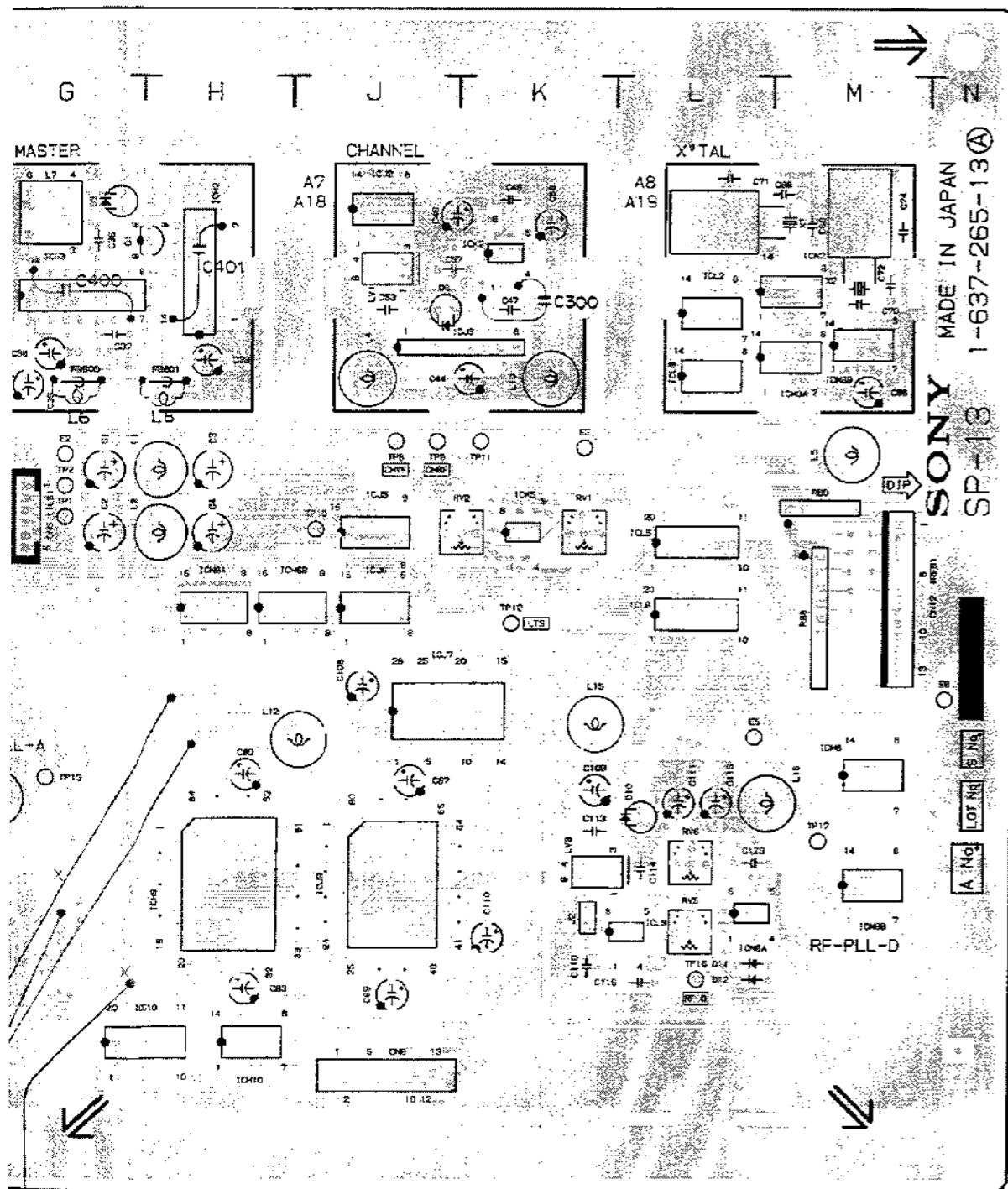
A No. LOT No. S No.

Applied Serial No. UC 20116 and higher EK 50581 and higher	
Parts that have been changed:	FB900 — 1B FB901 — 1B
Parts that have been replaced or cut:	IC03-43 — X IC15-3 IC03-46 — X IC06-2 IC05-47 — X IC05-2 IC05-1 — IC03-4 IC05-2 — GND(8L) IC05-3 — GND(8L) IC05-6 — IC09-2 IC05-7 — IC05-2 IC05-8 — IC05-3
Parts that have been added:	CS00400.401 ICF9DJ5-447 (Board)

DUS-447 BOARD (PCM-7030)
(1-640-801-11)
Component Side

B-36-1(c)

B-37-1(c)



B-37-1(c)

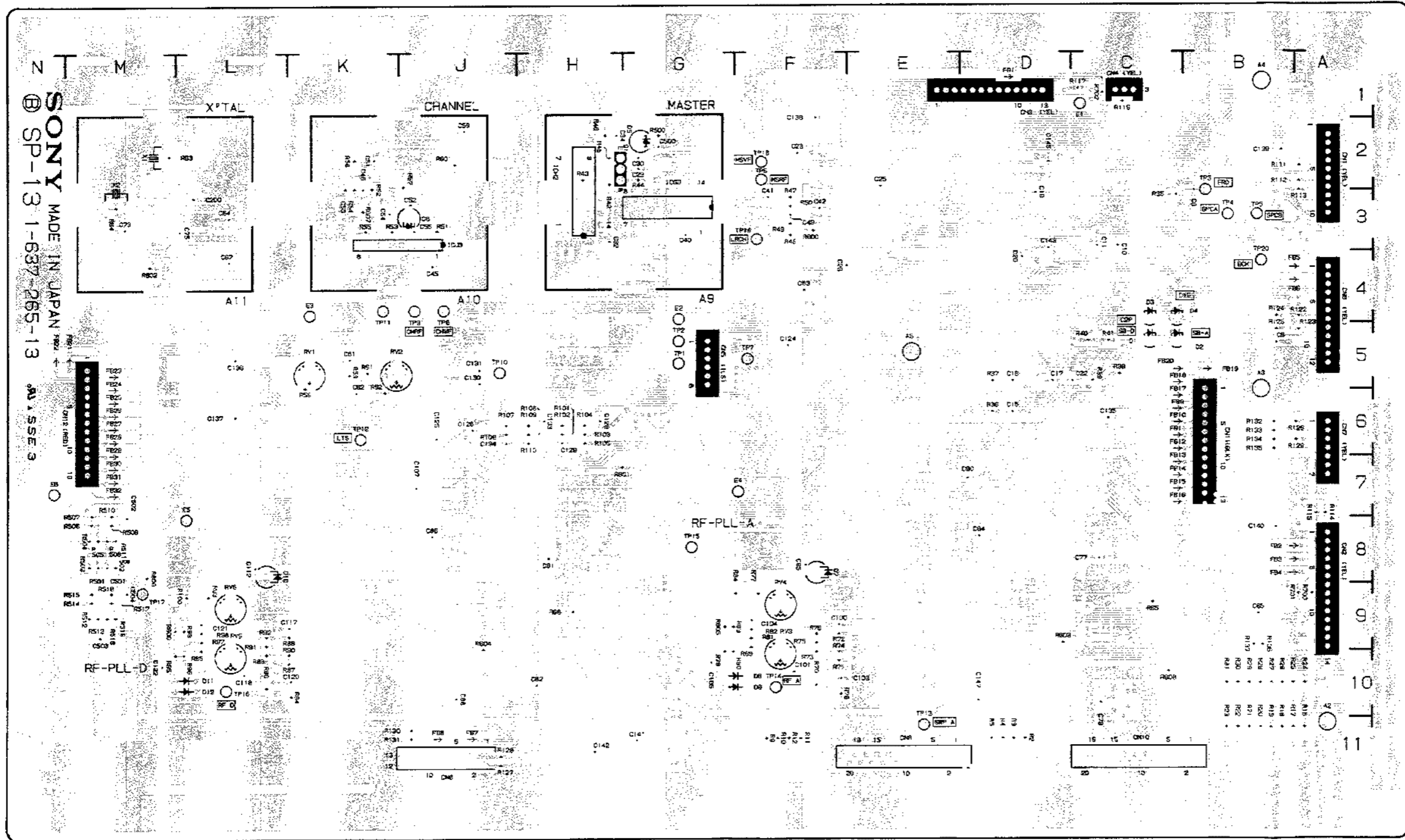
D1	C-5	ICJ3	J-3	X1	M-2
D2	B-5	ICJ5	J-5	X2	M-3
D3	C-4	ICJ6	J-6		
D4	B-4	ICJ7	J-7		
D5	G-2	ICJ9	J-9		
D6	J-3	ICK2	K-2		
D7	F-8	ICK5	K-5		
D8	F-10	ICL2	L-3		
D9	F-10	ICL3	L-4		
D10	L-8	ICL5	L-5		
D11	L-10	ICL6	L-6		
D12	L-10	ICL9	L-9		
		ICM2	M-2		
E1	C-1	ICM3A	M-4		
E2	G-4	ICM3B	M-4		
E3	K-4	ICM8	M-8		
E4	F-7	ICM9	L-10		
E5	L-7				
E6	N-7	Q1	G-2		
ICB2	B-2	RV1	K-5		
ICB4	B-4	RV2	J-5		
ICB8	B-8	RV3	F-9		
ICB9	B-9	RV4	F-9		
ICC3	C-3	RV5	L-9		
ICC5	C-5	RV6	L-9		
ICC6	C-6				
ICD9	C-9	TP1	G-5		
ICD3	D-3	TP2	G-5		
ICD5	D-5	TP3	B-2		
ICD7	D-7	TP4	B-3		
ICD9	D-9	TP5	B-3		
ICF1	F-1	TP6	F-2		
ICF2	F-2	TP7	F-5		
ICF3	F-3	TP8	J-4		
ICF4	F-4	TP9	J-4		
ICF5	F-5	TP10	J-5		
ICF9	F-10	TP11	K-4		
ICG3	G-2	TP12	K-6		
ICG9	F-10	TP13	E-10		
ICG10	G-10	TP14	F-10		
ICH2	H-2	TP15	G-8		
ICH6A	H-6	TP16	L-10		
ICH6B	H-6	TP17	M-9		
ICH9	H-9	TP18	F-2		
ICH10	H-11	TP19	F-3		
ICJ2	J-2	TP20	B-4		

Applied Serial No. UC 20115 and higher EX 50331 and higher	
Parts that have been changed.	FB600 - L6 FB601 - L8
Parts that have been soldered or put.	ICD3-43 X ICJ9-32 ICD3-45 X ICH9-25 ICD3-47 X ICC9-28 ICF6-1 --- ICC3-43(BLK) ICF6-11 --- GND(BLK) ICF6-2 --- GND(BLK) ICF6-12 --- GND(BLK) ICF6-3 --- GND(BLK) ICF6-13 --- ICC9-27(WHT) ICF6-6 --- ICC9-29(YEL) ICF6-20 --- ICC3-54(DRG) ICF6-7 --- ICH9-25(GRY) ICF6-21 --- ICC3-46(GRY) ICF6-8 --- ICJ9-32(Y.O) ICF6-22 --- ICC3-47(BRO) ICF6-24 --- +5V(RED)
Parts that have been added.	C300,400,491 ICF6(DUS-447 Board)

B-38-1(c)

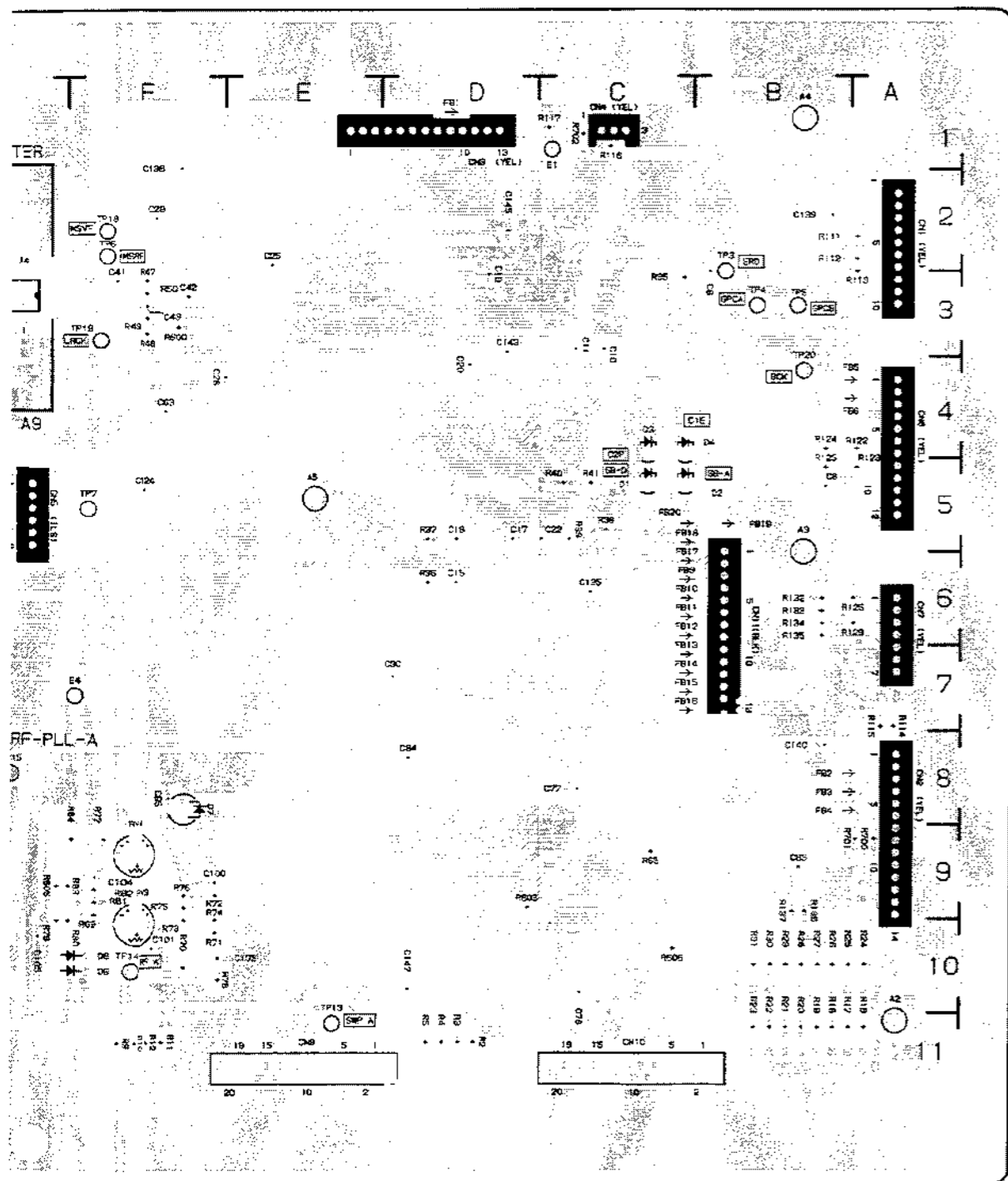
SP-13 BOARD (PCM-7030)
(1-637-265-13)
Solder Side

Serial No. UC 20116 to 25020
EK 50581 to 55040



B-36-2(c)

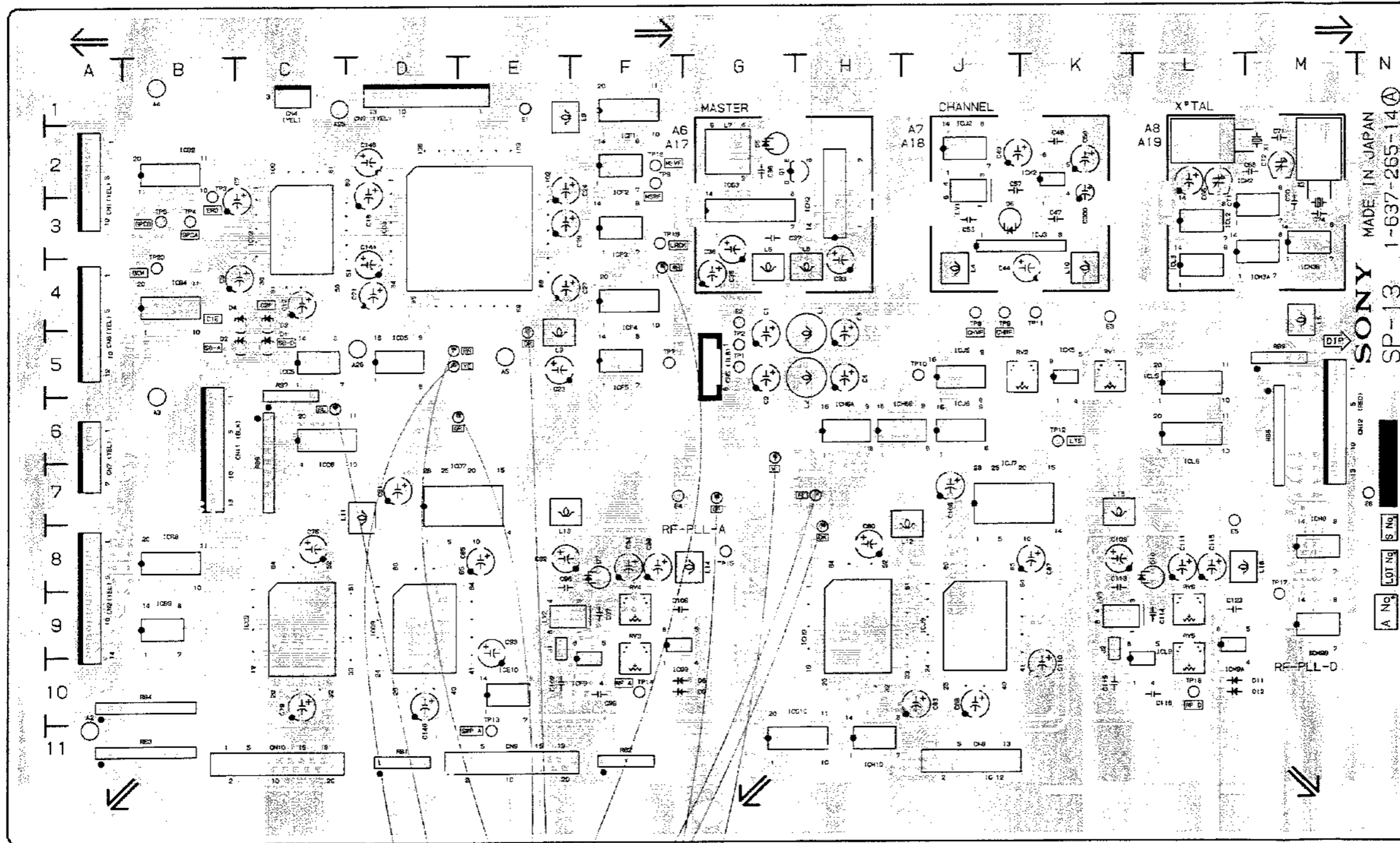
B-37-2(c)



D1	C-5	ICJ3	J-3	X1	M-2
D2	B-5	ICJ5	J-5	X2	M-3
D3	C-4	ICJ6	J-6		
D4	B-4	ICJ7	J-7		
D5	G-2	ICJ9	J-9		
D6	J-3	ICK2	K-2		
D7	F-8	ICK5	K-5		
D8	F-10	ICL2	L-3		
D9	F-10	ICL3	L-4		
D10	L-8	ICL5	L-5		
D11	L-10	ICL6	L-6		
D12	L-10	ICL9	L-9		
E1	C-1	ICM2	M-2		
E2	G-4	ICM3A	M-4		
E3	K-4	ICM3B	M-4		
E4	F-7	ICM8	M-8		
E5	L-7	ICM9	L-10		
E6	N-7	Q1	G-2		
ICB2	B-2	RV1	K-5		
ICB4	B-4	RV2	J-5		
ICB8	B-8	RV3	F-9		
ICB9	B-9	RV4	F-9		
ICC3	C-3	RV5	L-9		
ICC5	C-5	RV6	L-9		
ICC6	C-6				
ICC9	C-9	TP1	G-5		
ICD3	D-3	TP2	G-5		
ICD5	D-5	TP3	B-2		
ICD7	D-7	TP4	B-3		
ICD9	D-9	TP5	B-3		
ICF1	F-1	TP6	F-2		
ICF2	F-2	TP7	F-5		
ICF3	F-3	TP8	J-4		
ICF4	F-4	TP9	J-4		
ICF5	F-5	TP10	J-5		
ICF9	F-10	TP11	K-4		
ICG3	G-2	TP12	K-6		
ICG9	F-10	TP13	E-10		
ICG10	G-10	TP14	F-10		
ICH2	H-2	TP15	G-8		
ICH5A	H-6	TP16	L-10		
ICH6B	H-6	TP17	M-9		
ICH9	H-9	TP18	F-2		
ICH10	H-11	TP19	F-3		
ICJ2	J-2	TP20	B-4		

SP-13 BOARD (PCM-7030)
(1-637-265-14)
Component Side

Serial No. UC 25021 to 25120



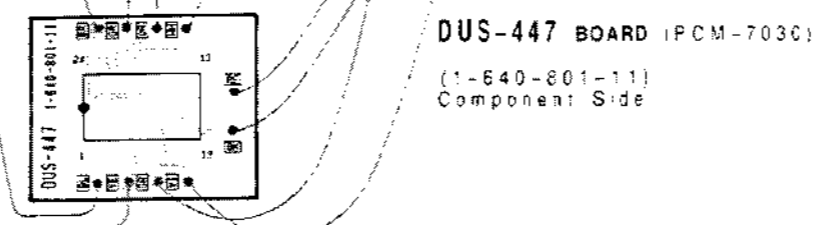
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SONY
SP-13 1-637-265-14

A No. [] LOT No. [] S No. []

Applied Serial No. UC 26021 and higher

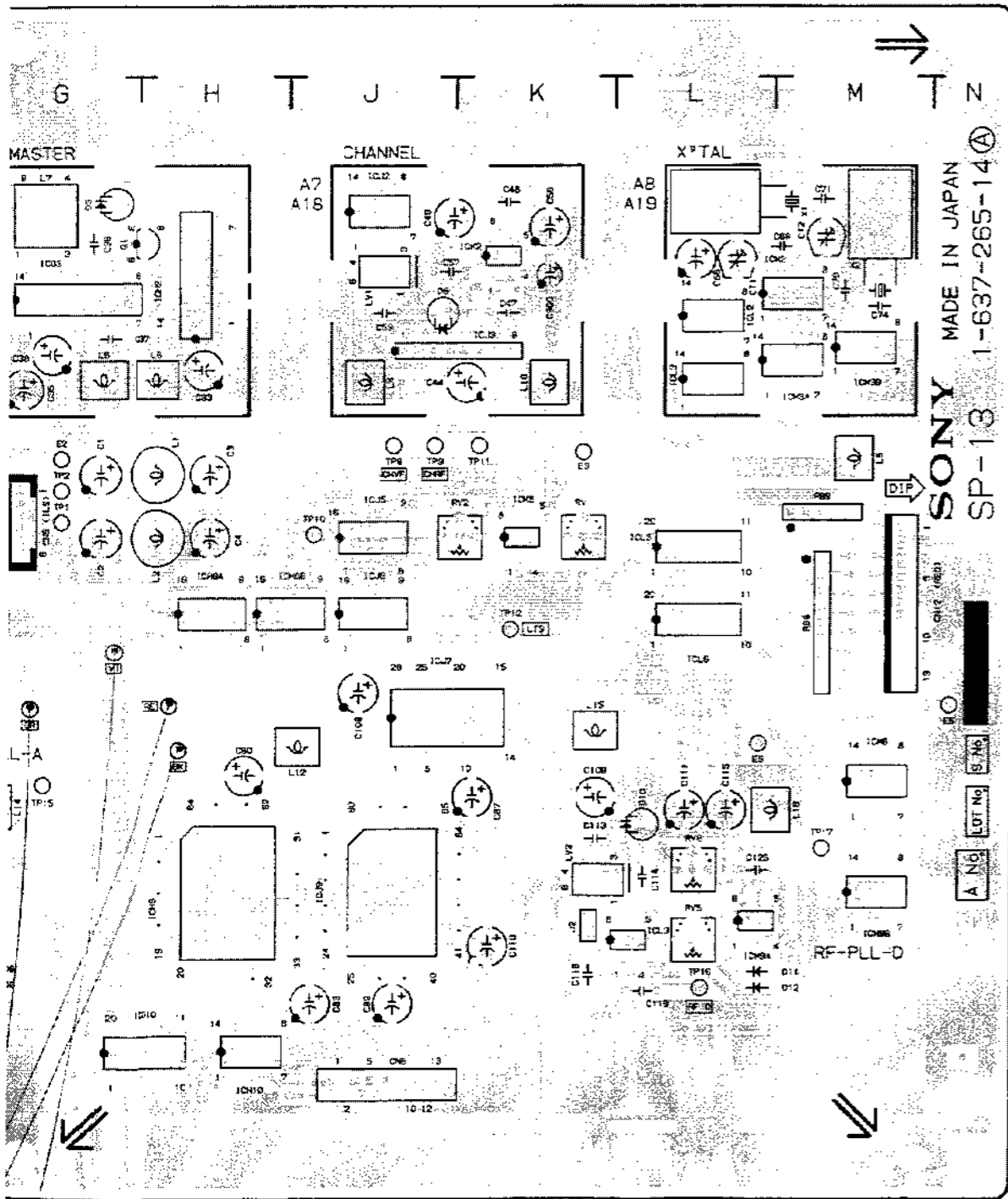
Parts that have been soldered	ICF6-1	ICD3-4
	ICF6-2	GN2/BL
	ICF6-3	GN2/BL
	ICF6-8	ICD9-2
	ICF6-7	ICD5-2
	ICF6-8	ICD9-2
	ICF6-11	GN2/BL
	ICF6-12	GN2/BL

Parts that have been added: DFB (DUS-447 Board)



B-36-1(d)

B-37-1(d)



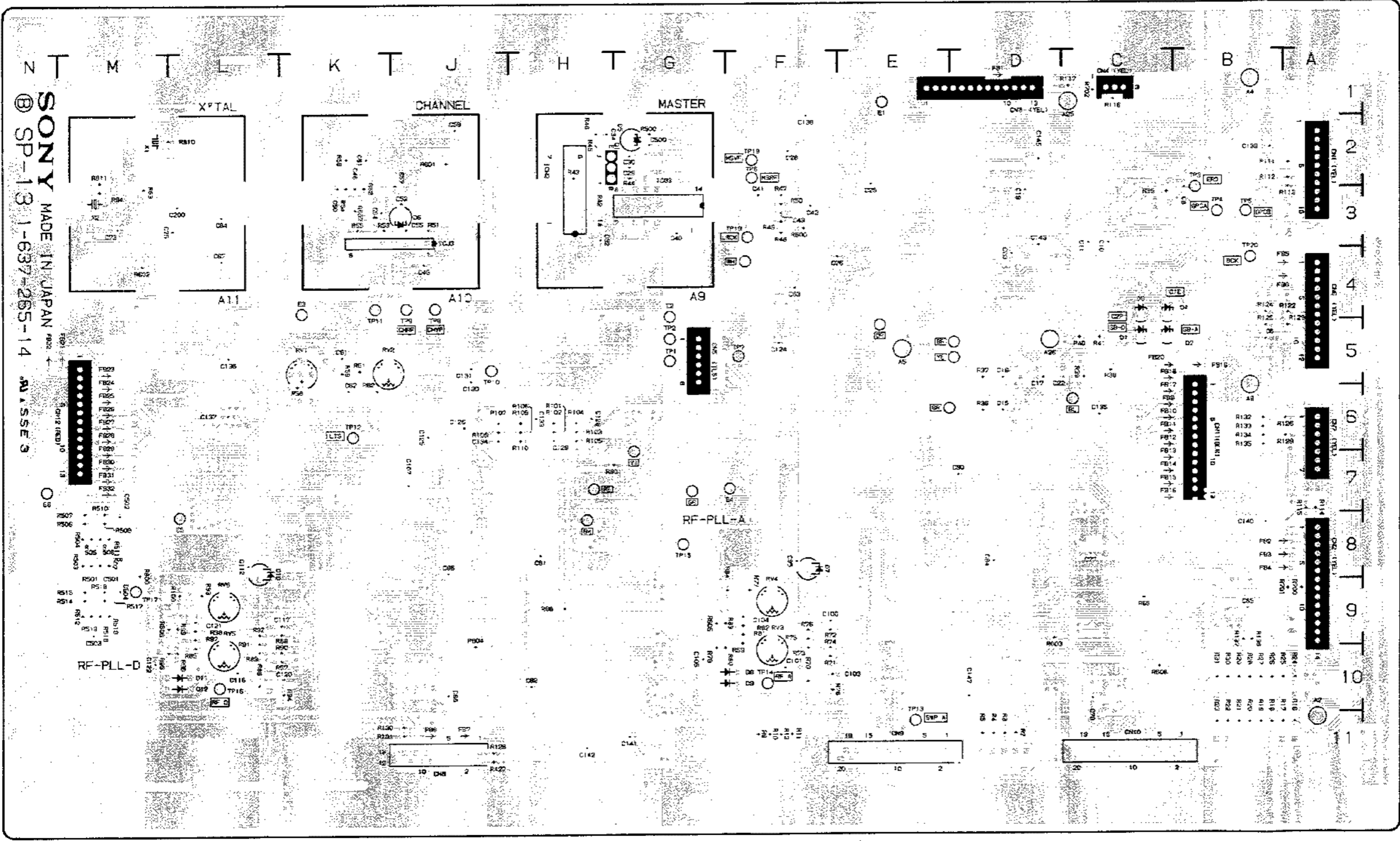
D1	C-5	ICJ3	J-3	X1	M-2
D2	B-6	ICJ5	J-5	X2	M-3
D3	C-4	ICJ6	J-6		
D4	B-4	ICJ7	J-7		
D5	G-2	ICJ9	J-9		
D6	J-3	ICK2	K-2		
D7	F-8	ICK5	K-5		
D8	F-10	ICL2	L-3		
D9	F-10	ICL3	L-4		
D10	L-8	ICL5	L-5		
D11	L-10	ICL6	L-6		
D12	L-10	ICL9	L-9		
		ICM2	M-2		
E1	E-1	ICM3A	M-4		
E2	G-4	ICM3B	M-4		
E3	K-4	ICM8	M-8		
E4	F-7	ICM9A	L-9		
E5	L-7	ICM9B	M-9		
E6	N-7				
		Q1	G-2		
ICB2	B-2				
ICB4	B-4	RV1	K-5		
ICB8	B-8	RV2	J-5		
ICB9	B-9	RV3	F-9		
ICC3	C-3	RV4	F-9		
ICC5	C-5	RV5	L-9		
ICC6	C-6	RV6	L-9		
ICC9	C-9				
ICD3	D-3	TP1	G-5		
ICD5	D-5	TP2	G-5		
ICD7	D-7	TP3	B-2		
ICD9	D-9	TP4	B-3		
ICE10	E-10	TP5	B-3		
ICF1	F-1	TP6	F-2		
ICF2	F-2	TP7	F-5		
ICF3	F-3	TP8	J-4		
ICF4	F-4	TP9	J-4		
ICF5	F-5	TP10	J-5		
ICF9	F-10	TP11	K-4		
ICG3	G-2	TP12	K-6		
ICG9	F-10	TP13	E-11		
ICG10	G-10	TP14	F-10		
ICH2	H-2	TP15	G-8		
ICH6A	H-6	TP16	L-10		
ICH6B	H-6	TP17	M-9		
ICH9	H-9	TP18	F-2		
ICH10	H-11	TP19	F-3		
ICJ2	J-2	TP20	B-4		

Applied Serial No. UC 25021 and higher			
Parts that have been so checked:	ICF6-1	ICD3-40(BLU)	ICF6-15
	ICF6-2	ICD3-41(BLU)	ICD9-23(WHT)
	ICF6-3	ICD3-42(BLU)	ICF6-20
	ICF6-4	ICD3-43(BLU)	ICD3-34(ORG)
	ICF6-5	ICD3-44(BLU)	ICF6-21
	ICF6-6	ICD3-45(BLU)	ICD3-45(ORG)
	ICF6-7	ICD3-46(BLU)	ICF6-22
	ICF6-8	ICD3-47(BLU)	ICD3-47(BRD)
	ICF6-9	ICD3-48(BLU)	ICF6-23
	ICF6-10	ICD3-49(BLU)	ICF6-24
	ICF6-11	ICD3-50(BLU)	*SVIRED
	ICF6-12	ICD3-51(BLU)	
Parts that have been added:	ICF6 (DUS-447 Board)		

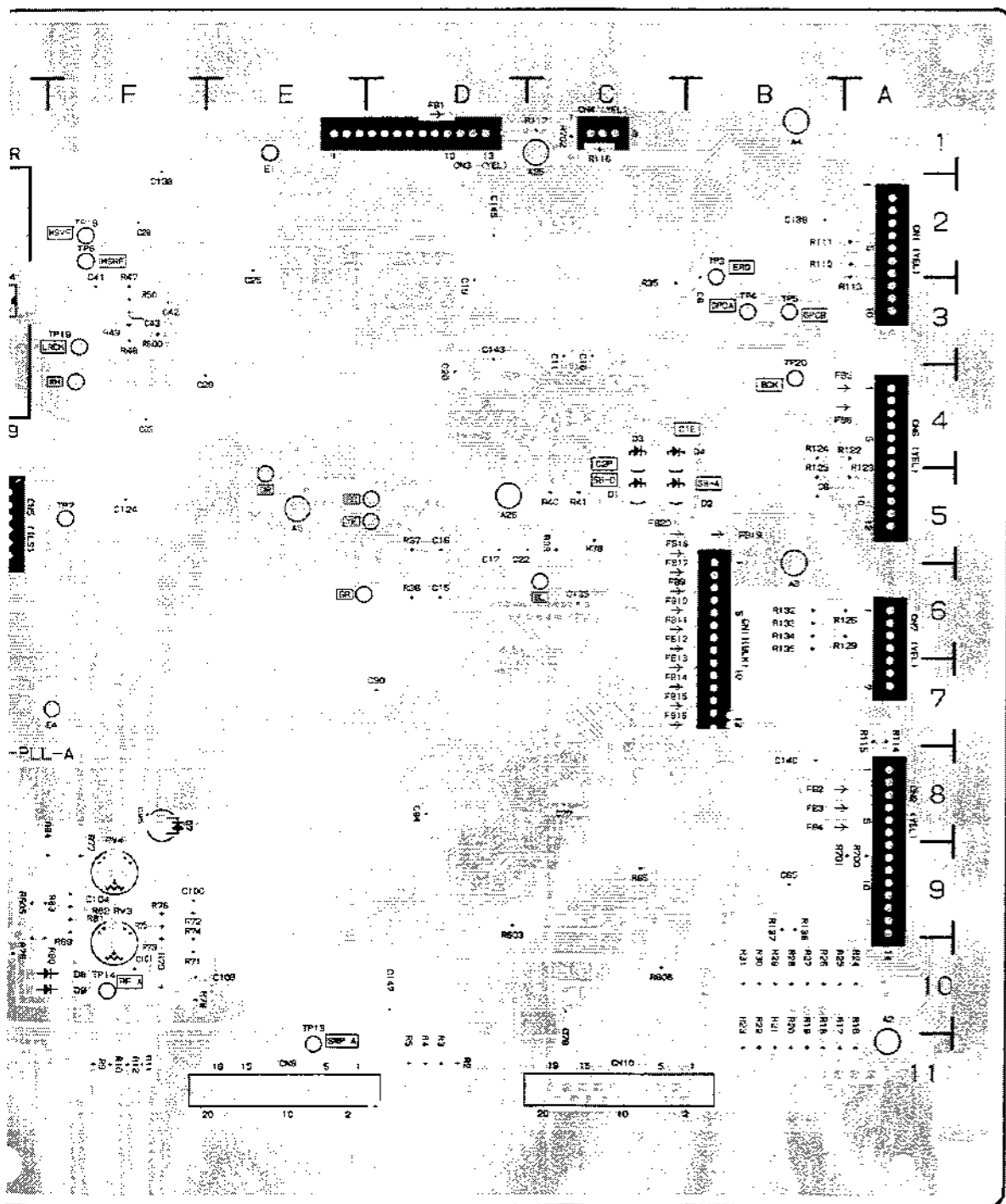
DUS-447 BOARD (PCM-7030)
 (1-640-811-11)
 Component Size

SP-13 BOARD (PCM-7030)
(1-637-265-14)
Solder Side

Serial No. UC 25021 to 25180



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SP-13 1-637-265-14 RMASSE 3



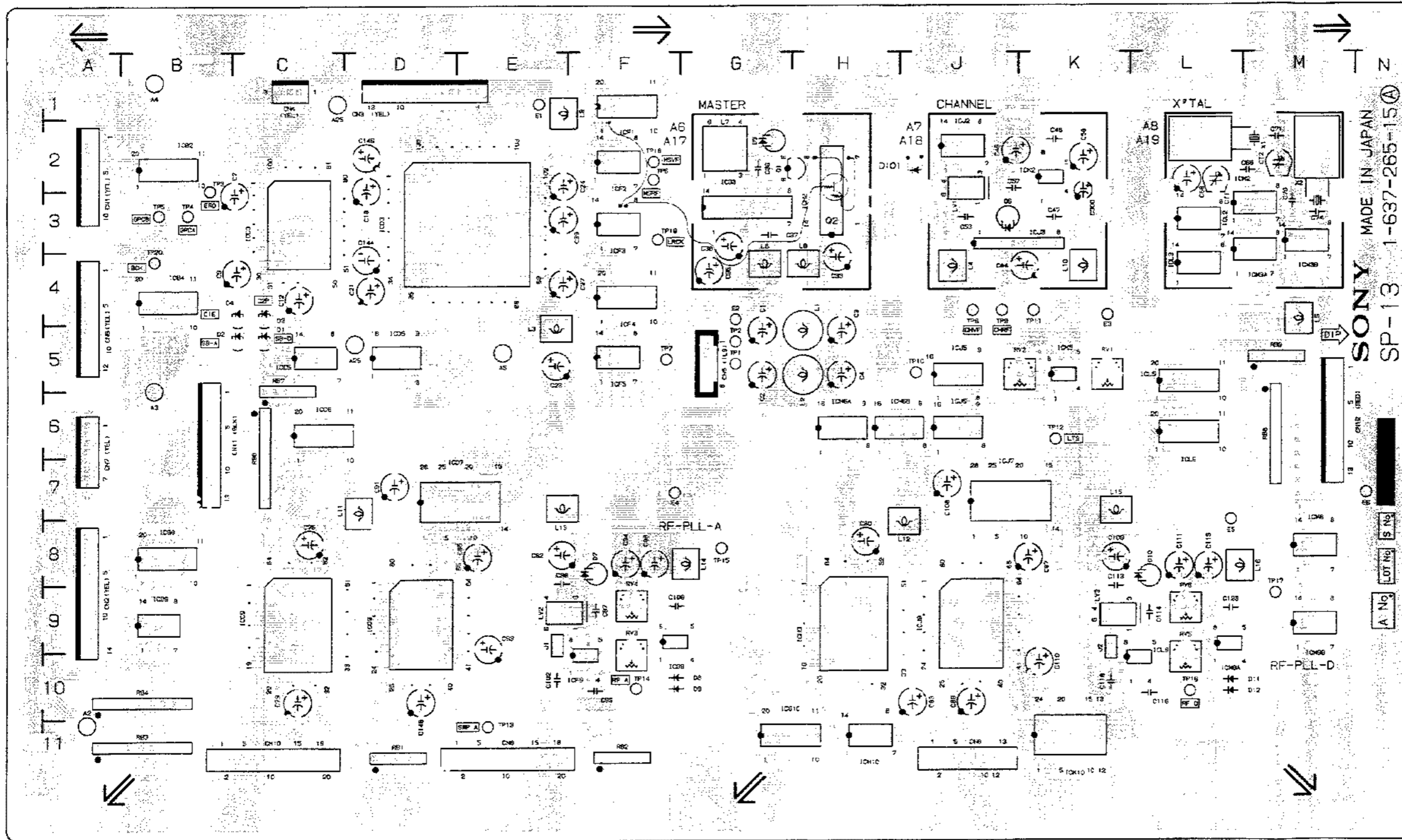
B-37-2(d)

D1	C-5	ICJ3	J-3	X1	M-2
D2	B-5	ICJ5	J-5	X2	M-3
D3	C-4	ICJ6	J-6		
D4	B-4	ICJ7	J-7		
D5	G-2	ICJ9	J-9		
D6	J-3	ICK2	K-2		
D7	F-8	ICK5	K-5		
D8	F-10	ICL2	L-3		
D9	F-10	ICL3	L-4		
D10	L-8	ICL5	L-5		
D11	L-10	ICL6	L-6		
D12	L-10	ICL9	L-9		
E1	E-1	ICM2	M-2		
E2	G-4	ICM3A	M-4		
E3	K-4	ICM3B	M-4		
E4	F-7	ICM8	M-8		
E5	L-7	ICM9A	L-9		
E6	N-7	ICM9B	M-9		
		Q1	G-2		
ICB2	B-2	RV1	K-5		
ICB4	B-4	RV2	J-5		
ICB9	B-8	RV3	F-9		
ICB9	B-9	RV4	F-9		
ICC3	C-3	RV5	L-9		
ICC5	C-5	RV6	L-9		
ICC6	C-6				
ICC9	C-9				
ICD3	D-3	TP1	G-5		
ICD5	D-5	TP2	G-5		
ICD7	D-7	TP3	B-2		
ICD9	D-9	TP4	B-3		
ICE10	E-10	TP5	B-3		
ICF1	F-1	TP6	F-2		
ICF2	F-2	TP7	F-5		
ICF3	F-3	TP8	J-4		
ICF4	F-4	TP9	J-4		
ICF5	F-5	TP10	J-5		
ICF9	F-10	TP11	K-4		
ICG3	G-2	TP12	K-6		
ICG9	F-10	TP13	E-11		
ICG10	G-10	TP14	F-10		
ICH2	H-2	TP15	G-8		
ICH6A	H-6	TP16	L-10		
ICH6B	H-6	TP17	M-9		
ICH9	H-9	TP18	F-2		
ICH10	H-11	TP19	F-3		
ICJ2	J-2	TP20	B-4		

B-38-2(d)

SP-13 BOARD (PCM-7030)
(1-637-265-15)
Component Side

Serial No. UG 25181 and higher
EK 55041 and higher

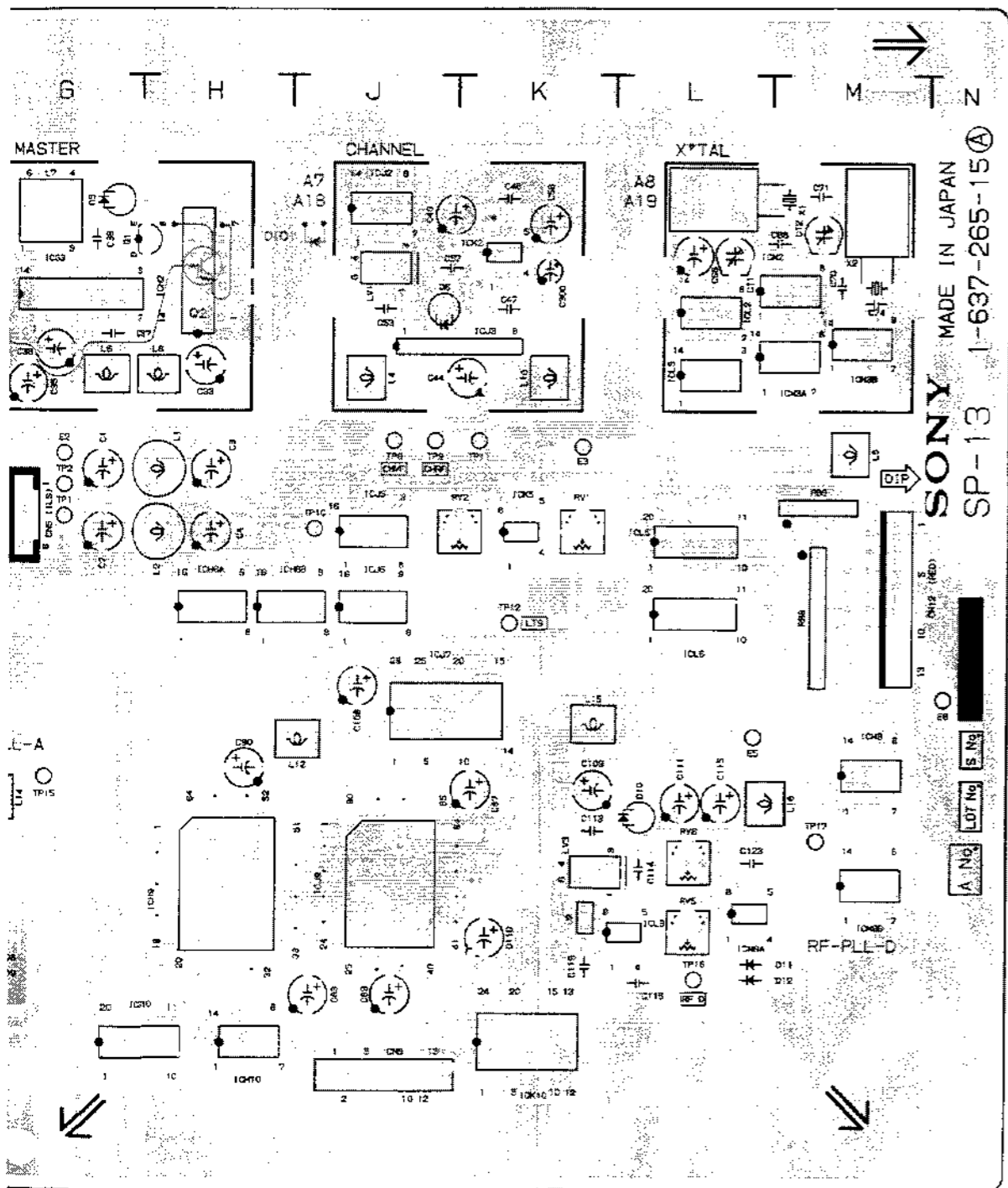


MADE IN JAPAN
SONY
SP-13 1-637-265-15

A No. [] LOT No. [] S No. []

Applied Serial No. UG 25471 and higher
Parts that have been replaced
ICF1-2
ICF3-10
Q2/RFset
Q2

Applied Serial No. UG 30030 and higher
Parts that have been replaced
EK 55021 and higher
D101



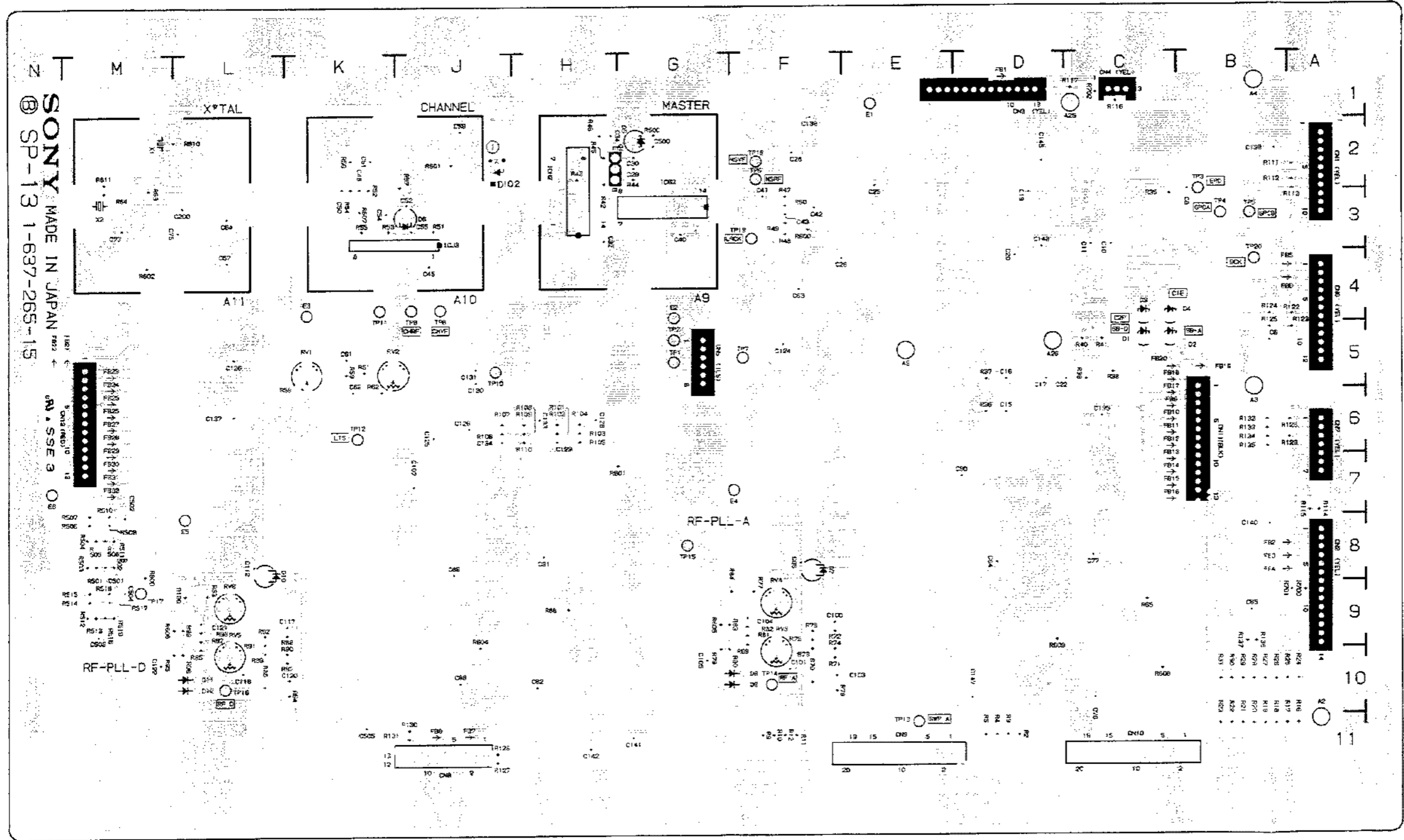
Applied Serial No. UC 25471 and higher
 EE 55603 and higher
 Parts not have been IC1-4 DF3-11
 added: IC12 IC13 Q2(6888)
 added: Q1

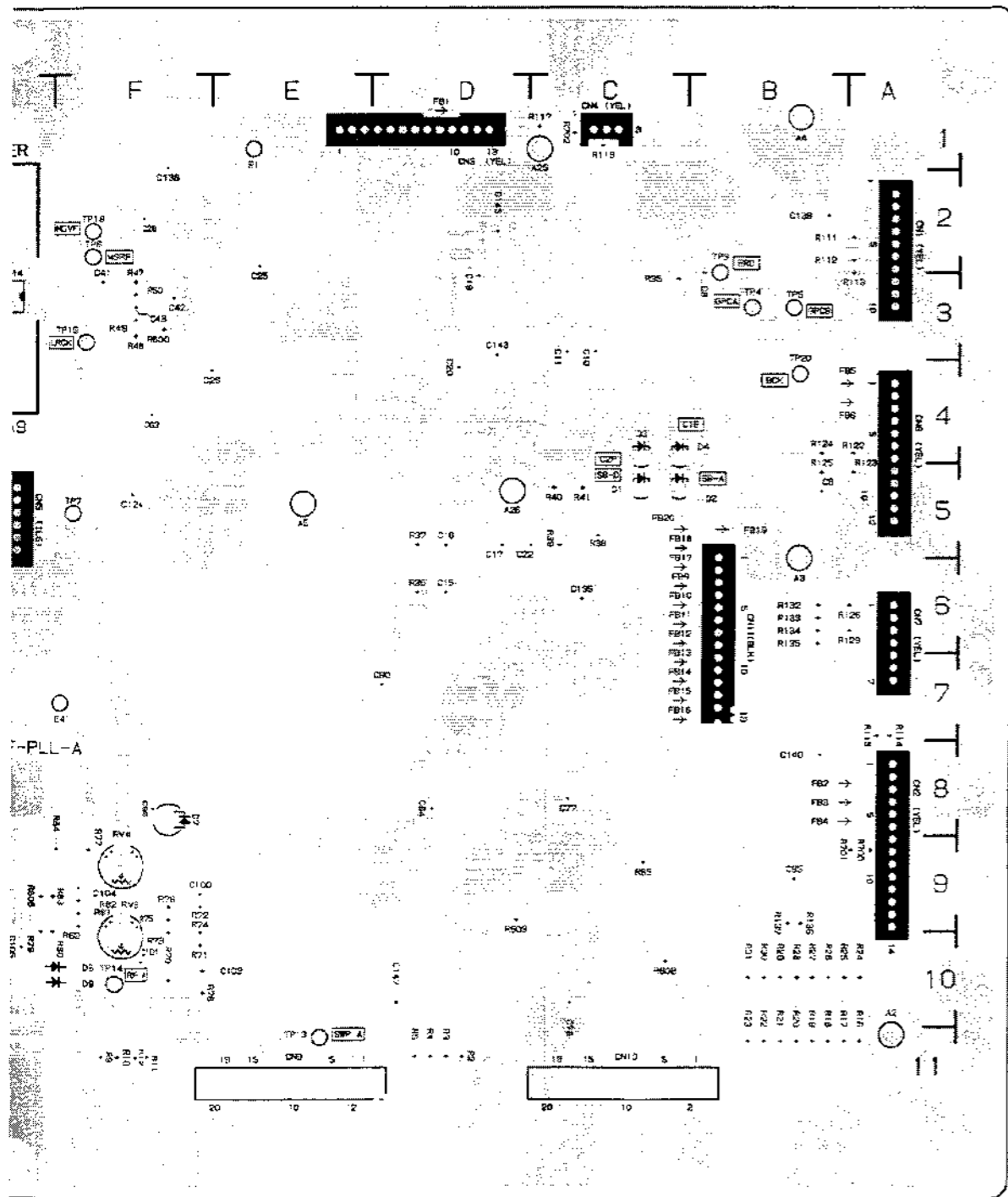
Applied Serial No. UC 30030 and higher
 EK 55613 and higher
 Parts not have been Q101
 added

D1	C-5	ICJ7	J-7
D2	B-5	ICJ9	J-9
D3	C-4	ICK2	K-2
D4	B-4	ICK5	K-5
D5	G-2	ICK10	K-10
D6	J-3	ICL2	L-3
D7	F-8	ICL3	L-4
D8	F-10	ICL5	L-5
D9	F-10	ICL6	L-6
D10	L-8	ICL9	L-9
D11	L-10	ICM2	M-2
D12	L-10	ICM3A	M-4
		ICM3B	M-4
E1	F-1	ICM8	M-8
E2	G-4	ICM9A	L-9
E3	K-4	ICM9B	M-9
E4	F-7		
E5	L-8	Q1	G-2
E6	N-7	Q2	H-2
ICB2	B-2	RV1	K-5
ICB4	B-4	RV2	J-5
ICB8	B-8	RV3	F-9
ICB9	B-9	RV4	F-9
ICC3	C-3	RV5	L-9
ICC5	C-5	RV6	L-9
ICC6	C-6		
ICC9	C-9	TP1	G-5
ICD3	D-3	TP2	G-5
ICD5	D-5	TP3	B-2
ICD7	D-7	TP4	B-3
ICD9	D-9	TP5	B-3
ICF1	F-1	TP6	F-2
ICF2	F-2	TP7	F-5
ICF3	F-3	TP8	J-4
ICF4	F-4	TP9	J-4
ICF5	F-5	TP10	J-5
ICF9	F-10	TP11	K-4
ICG3	G-2	TP12	K-6
ICG9	F-10	TP13	E-11
ICG10	G-10	TP14	F-10
ICH2	H-2	TP15	G-8
ICH6A	H-6	TP16	L-10
ICH6B	H-6	TP17	M-9
ICH9	H-9	TP18	F-2
ICH10	H-11	TP19	F-3
ICJ2	J-2	TP20	B-4
ICJ3	J-3		
ICJ5	J-5	X1	M-2
ICJ6	J-6	X2	M-3

SP-13 BOARD (PCM-7033)
(1-637-265-15)
Solder Side

Serial No. UC 25181 and higher
EK 55041 and higher

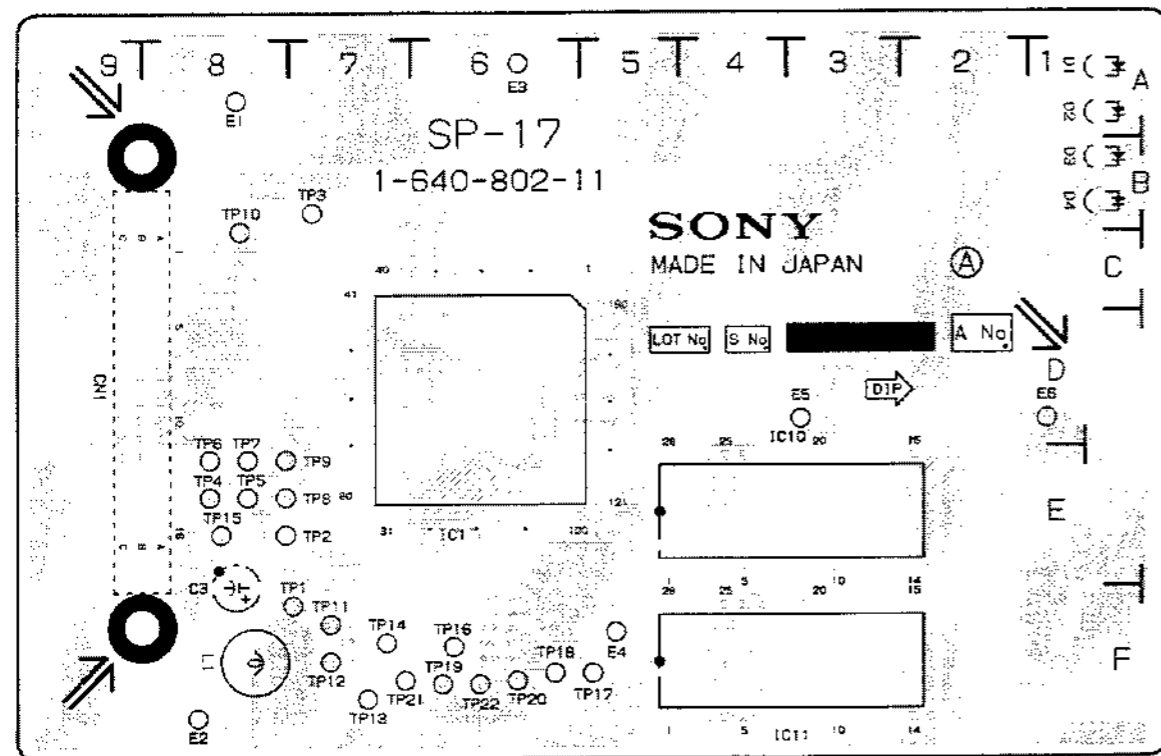




D1	C-5	ICJ5	J-5	X1	M-2
D2	B-5	ICJ6	J-6	X2	M-3
D3	C-4	ICJ7	J-7		
D4	B-4	ICJ9	J-9		
D5	G-2	ICK2	K-2		
D6	J-3	ICK5	K-5		
D7	F-8	ICK10	K-10		
D8	F-10	ICL2	L-3		
D9	F-10	ICL3	L-4		
D10	L-8	ICL5	L-5		
D11	L-10	ICL6	L-6		
D12	L-10	ICL9	L-9		
		ICM2	M-2		
E1	E-1	ICM3A	M-4		
E2	G-4	ICM3B	M-4		
E3	K-4	ICM8	M-8		
E4	F-7	ICM9A	L-9		
E5	L-8	ICM9B	M-9		
E6	N-7				
		Q1	G-2		
ICB2	B-2				
ICB4	B-4	RV1	K-5		
ICB8	B-8	RV2	J-5		
ICB9	B-9	RV3	F-9		
ICC3	C-3	RV4	F-9		
ICC5	C-5	RV5	L-9		
ICC6	C-6	RV6	L-9		
ICC9	C-9				
ICD3	D-3	TP1	G-5		
ICD5	D-5	TP2	G-5		
ICD7	D-7	TP3	B-2		
ICD9	D-9	TP4	B-3		
ICF1	F-1	TP5	B-3		
ICF2	F-2	TP6	F-2		
ICF3	F-3	TP7	F-5		
ICF4	F-4	TP8	J-4		
ICF5	F-5	TP9	J-4		
ICF9	F-10	TP10	J-5		
ICG3	G-2	TP11	K-4		
ICG9	F-10	TP12	K-8		
ICG10	G-10	TP13	E-11		
ICH2	H-2	TP14	F-10		
ICH6A	H-6	TP15	G-8		
ICH6B	H-6	TP16	L-10		
ICH8	H-8	TP17	M-9		
ICH10	F-11	TP18	F-2		
ICJ2	J-2	TP19	F-3		
ICJ3	J-3	TP20	B-4		

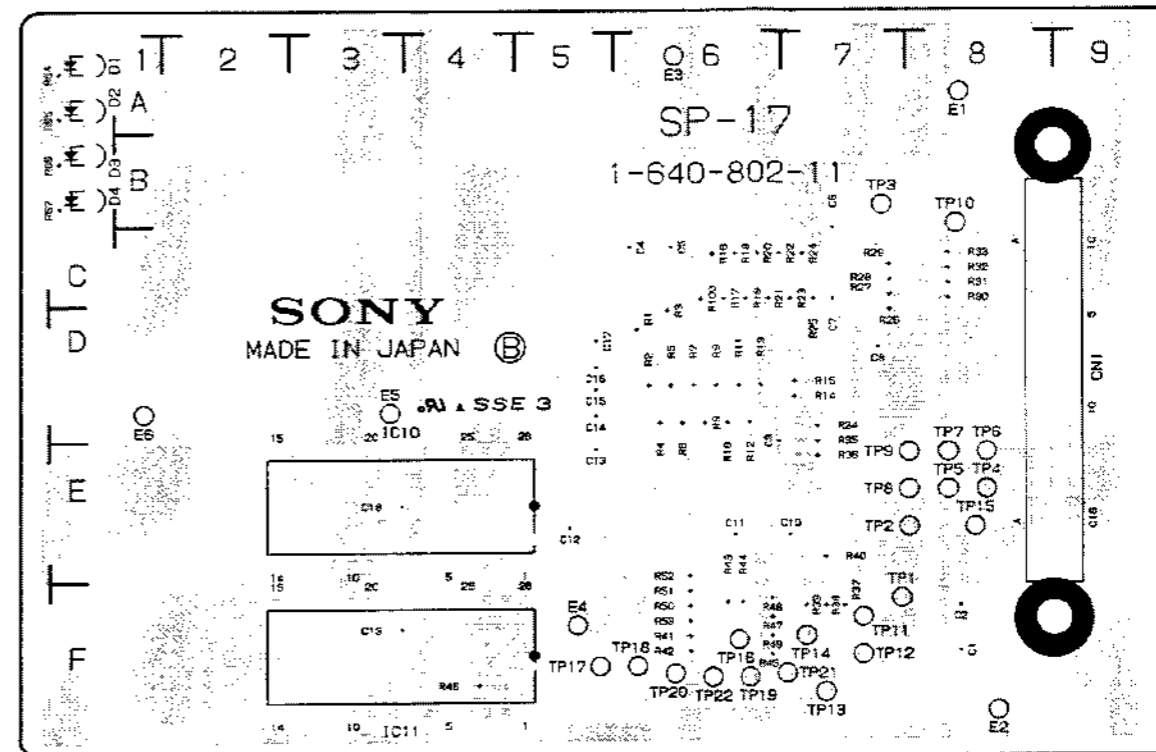
Applies Serial No. J0 00000 and higher
 EK 00001 and higher
 Jumpers that were added See the board
 See the board
 Part marked with * that
 have been installed on * 0102
 the bridge S 4.

SP-17B/17C BOARD (PCM-7030)
(1-640-802-11)
Component Side



D1	A-1	TP8	E-7
D2	A-1	TP9	E-7
D3	B-1	TP10	B-8
D4	B-1	TP11	E-7
		TP12	F-7
E1	A-8	TP13	F-7
E2	F-8	TP14	F-7
E3	A-6	TP15	E-8
E4	F-5	TP16	F-6
E5	D-1	TP17	F-5
		TP18	F-6
IC1	E-6	TP19	F-6
IC10	E-3	TP20	F-6
IC11	F-3	TP21	F-6
TP1	E-7		
TP2	E-7		
TP3	B-7		
TP4	D-8		
TP5	D-8		
TP6	D-8		
TP7	D-8		

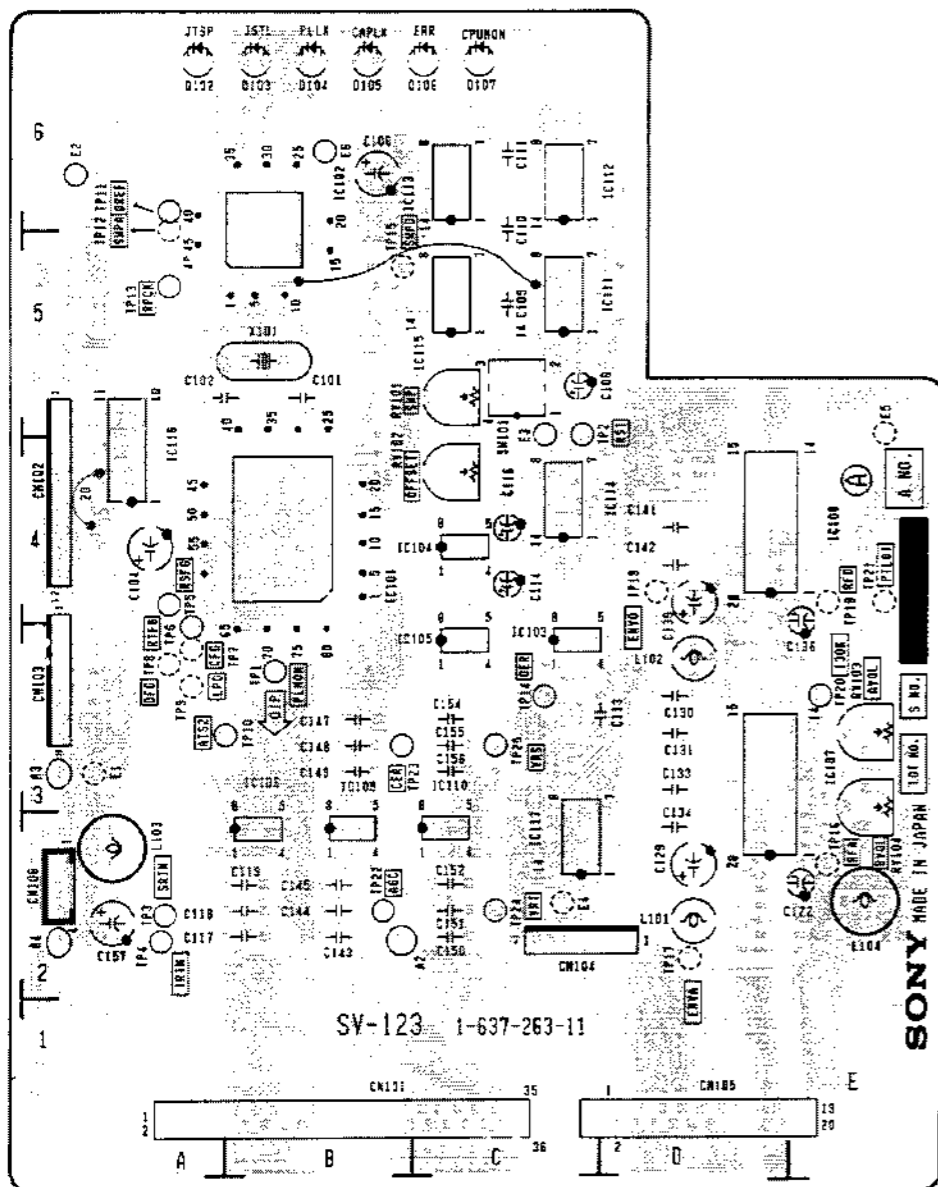
Solder Side



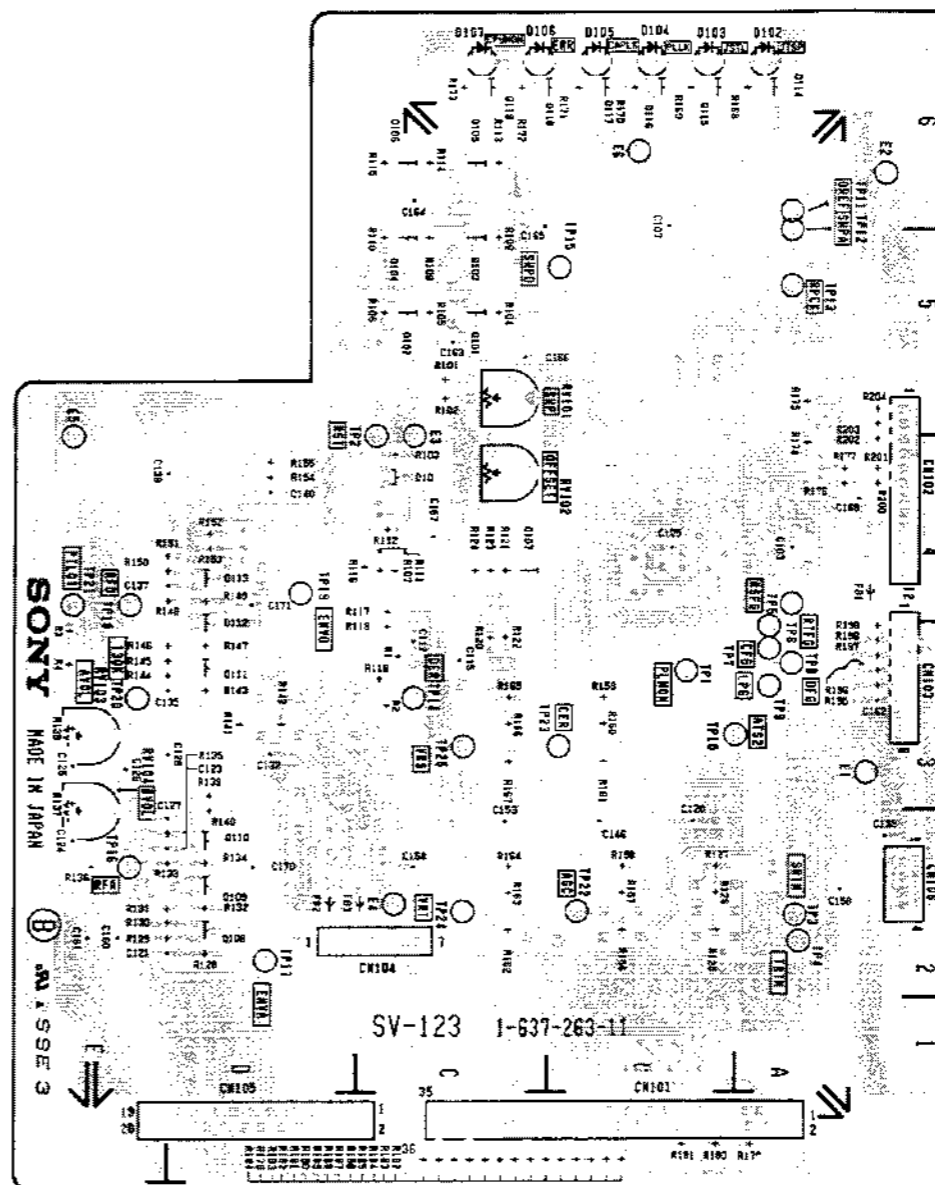
SV-123 BOARD (PCM-7030)
 (1-637-263-11)
 Component Side

Serial No. UC 20001 to 20025
 EK 50001 to 50060

Solder Side



- | | | | |
|-------|-----|------|-----|
| D102 | A-6 | TP22 | B-2 |
| D103 | B-6 | TP23 | B-3 |
| D104 | B-6 | TP24 | C-3 |
| D105 | B-6 | TP25 | C-3 |
| D106 | C-6 | X101 | B-5 |
| D107 | C-6 | | |
| E2 | A-6 | | |
| E3 | C-4 | | |
| E6 | B-6 | | |
| IC101 | B-4 | | |
| IC102 | B-6 | | |
| IC103 | C-3 | | |
| IC104 | B-4 | | |
| IC105 | B-3 | | |
| IC106 | B-3 | | |
| IC107 | B-3 | | |
| IC108 | B-4 | | |
| IC109 | B-3 | | |
| IC110 | C-3 | | |
| IC111 | D-5 | | |
| IC112 | D-6 | | |
| IC113 | C-6 | | |
| IC114 | D-4 | | |
| IC115 | C-5 | | |
| IC116 | A-4 | | |
| IC117 | C-2 | | |
| RV101 | B-5 | | |
| RV102 | B-4 | | |
| RV103 | B-3 | | |
| RV104 | B-2 | | |
| SW101 | C-4 | | |
| TP1 | B-3 | | |
| TP2 | D-4 | | |
| TP3 | A-2 | | |
| TP4 | A-2 | | |
| TP5 | A-4 | | |
| TP6 | A-3 | | |
| TP10 | B-3 | | |
| TP11 | A-6 | | |
| TP13 | A-5 | | |
| TP14 | C-3 | | |
| TP20 | E-3 | | |



- | | |
|------|-----|
| D101 | C-4 |
| E1 | A-3 |
| E4 | C-2 |
| E5 | E-5 |
| Q101 | C-5 |
| Q102 | C-5 |
| Q103 | C-5 |
| Q104 | C-5 |
| Q105 | C-6 |
| Q106 | C-6 |
| Q107 | C-4 |
| Q108 | D-2 |
| Q109 | D-2 |
| Q110 | D-2 |
| Q111 | D-3 |
| Q112 | D-4 |
| Q113 | D-4 |
| Q114 | A-6 |
| Q115 | B-6 |
| Q116 | B-6 |
| Q117 | B-6 |
| Q118 | B-6 |
| Q119 | C-6 |
| TP7 | B-3 |
| TP8 | A-3 |
| TP9 | A-3 |
| TP12 | A-5 |
| TP15 | B-5 |
| TP16 | E-2 |
| TP17 | C-2 |
| TP18 | E-4 |
| TP19 | D-4 |
| TP21 | E-4 |

Applied Serial No. UC 20001 to 20025
 EK 50001 to 50060

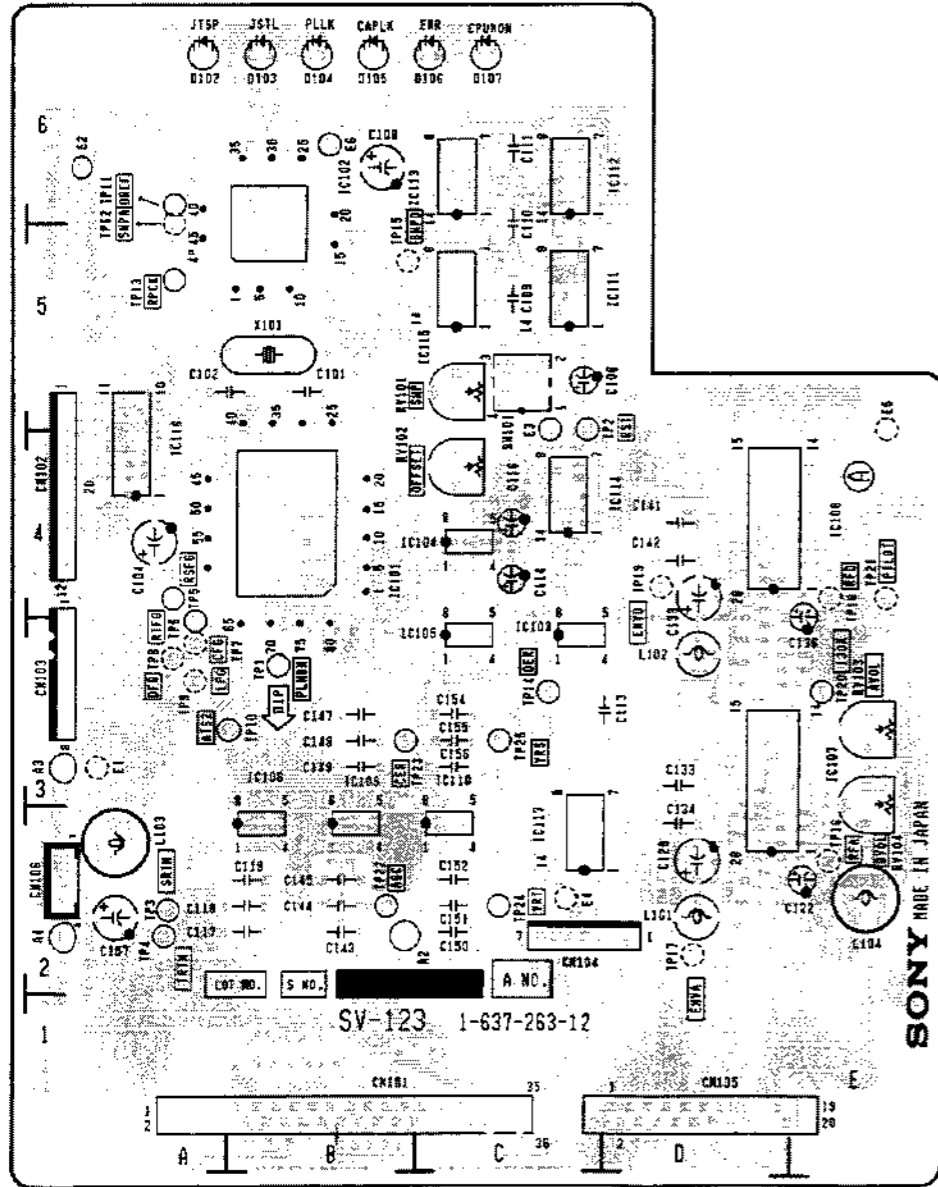
Jumps that have been soldered:

IC111-10	IC102-12
IC118-18	CN102-7

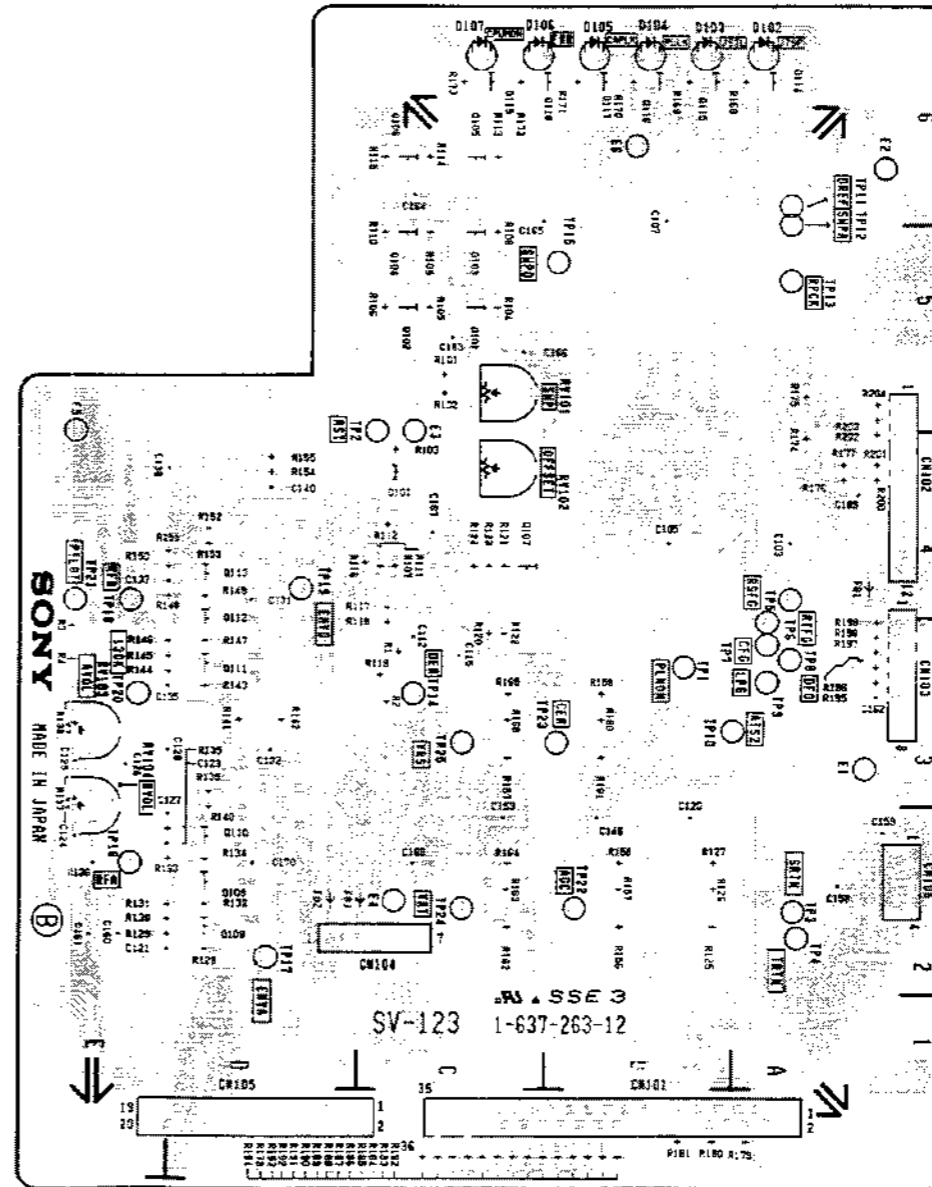
SV-123 BOARD (PCM-7030)
(1-637-263-12)
Component Side

Serial No. UC 20026 and higher
EK 50061 and higher

Solder Side



- | | | | |
|-------|-----|------|-----|
| D102 | A-6 | TP22 | B-2 |
| D103 | B-6 | TP23 | B-3 |
| D104 | B-6 | TP24 | C-2 |
| D105 | B-6 | TP25 | C-3 |
| D106 | C-6 | | |
| D107 | C-6 | X101 | B-5 |
| | | | |
| E2 | A-6 | | |
| E3 | C-4 | | |
| E6 | B-6 | | |
| | | | |
| IC101 | B-4 | | |
| IC102 | B-6 | | |
| IC103 | C-3 | | |
| IC104 | B-4 | | |
| IC105 | B-3 | | |
| IC106 | B-3 | | |
| IC107 | E-3 | | |
| IC108 | E-4 | | |
| IC109 | B-3 | | |
| IC110 | C-3 | | |
| IC111 | D-5 | | |
| IC112 | D-6 | | |
| IC113 | C-6 | | |
| IC114 | D-4 | | |
| IC115 | C-5 | | |
| IC116 | A-4 | | |
| IC117 | C-2 | | |
| | | | |
| RV101 | B-5 | | |
| RV102 | B-4 | | |
| RV103 | E-3 | | |
| RV104 | E-2 | | |
| | | | |
| SW101 | C-4 | | |
| | | | |
| TP1 | B-3 | | |
| TP2 | D-4 | | |
| TP3 | A-2 | | |
| TP4 | A-2 | | |
| TP5 | A-4 | | |
| TP6 | A-3 | | |
| TP10 | B-3 | | |
| TP11 | A-6 | | |
| TP13 | A-5 | | |
| TP14 | C-3 | | |
| TP20 | E-3 | | |

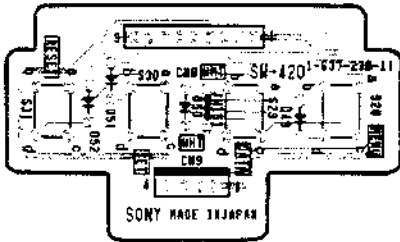


- | | |
|------|-----|
| D101 | C-4 |
| | |
| E1 | A-3 |
| E4 | C-2 |
| E5 | E-5 |
| | |
| Q101 | C-5 |
| Q102 | C-5 |
| Q103 | C-5 |
| Q104 | C-5 |
| Q105 | C-6 |
| Q106 | C-6 |
| Q107 | C-4 |
| Q108 | D-2 |
| Q109 | D-2 |
| Q110 | D-2 |
| Q111 | D-3 |
| Q112 | D-4 |
| Q113 | D-4 |
| Q114 | A-6 |
| Q115 | B-6 |
| Q116 | B-6 |
| Q117 | B-6 |
| Q118 | B-6 |
| Q119 | C-6 |
| | |
| TP7 | B-6 |
| TP8 | A-3 |
| TP9 | A-3 |
| TP12 | A-5 |
| TP15 | B-5 |
| TP16 | E-2 |
| TP17 | D-2 |
| TP18 | E-4 |
| TP19 | D-4 |
| TP21 | E-4 |



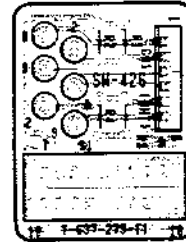
SW-420/426/452

SW-420 BOARD (PCM-7030)
(1-637-270-11)
Component Side



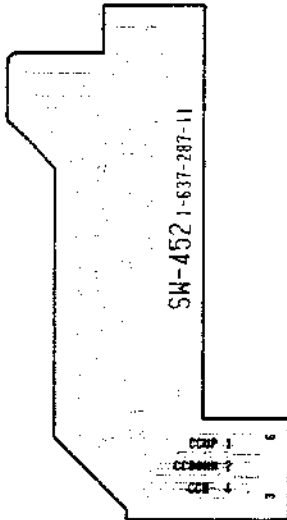
TOP COVER - 8 DEPART

SW-426 BOARD (PCM-7030)
(1-637-279-11)
Component Side



TOP COVER - 8 DEPART

SW-452 BOARD (PCM-7030)
(1-637-287-11)
Component Side



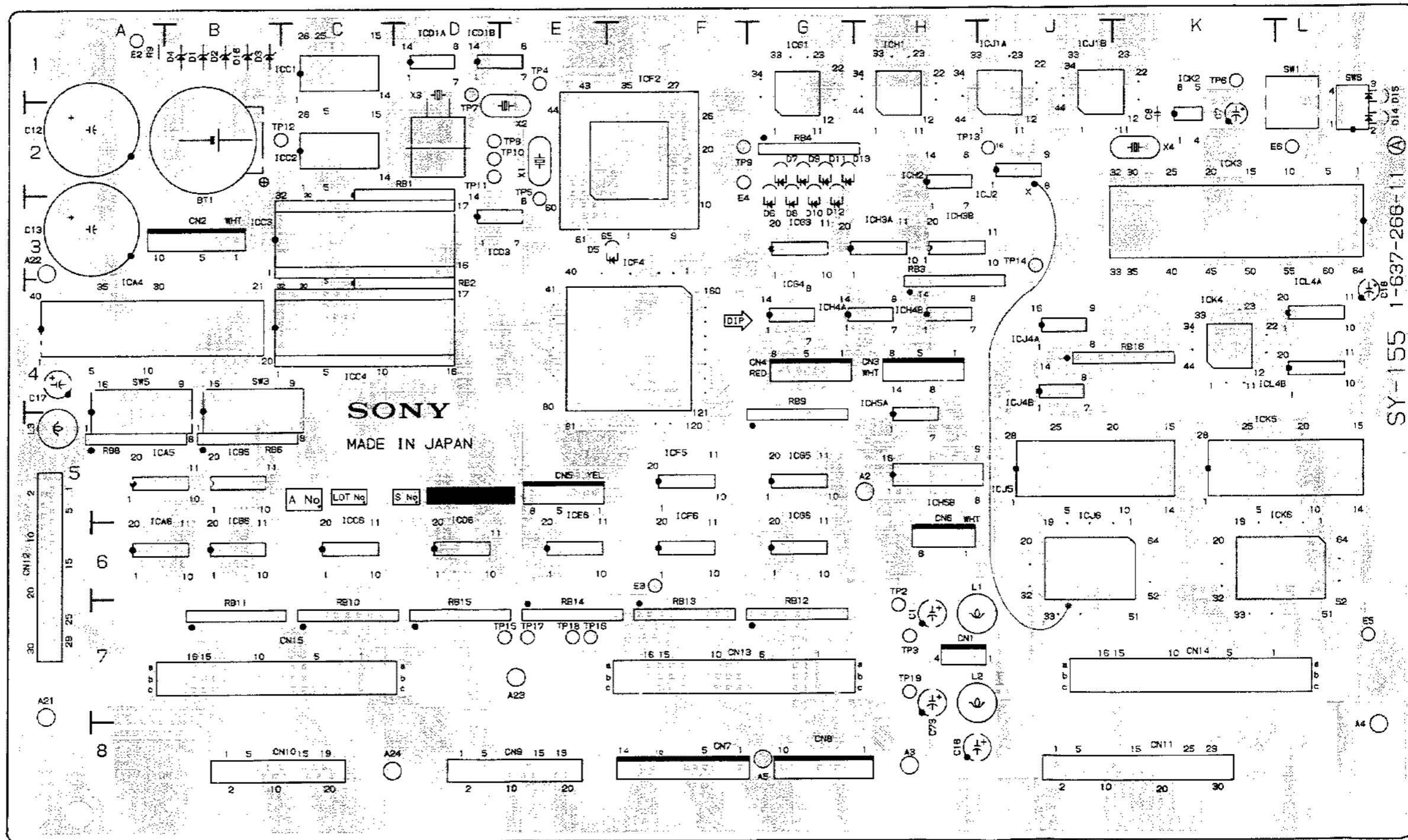
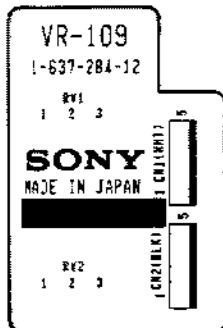
TOP COVER - 8 DEPART

VR-109 BOARD (PCM-7030)
(1-637-284-12)
Component Side

SY-155B BOARD (PCM-7030)
(1-637-266-11)
Component Side

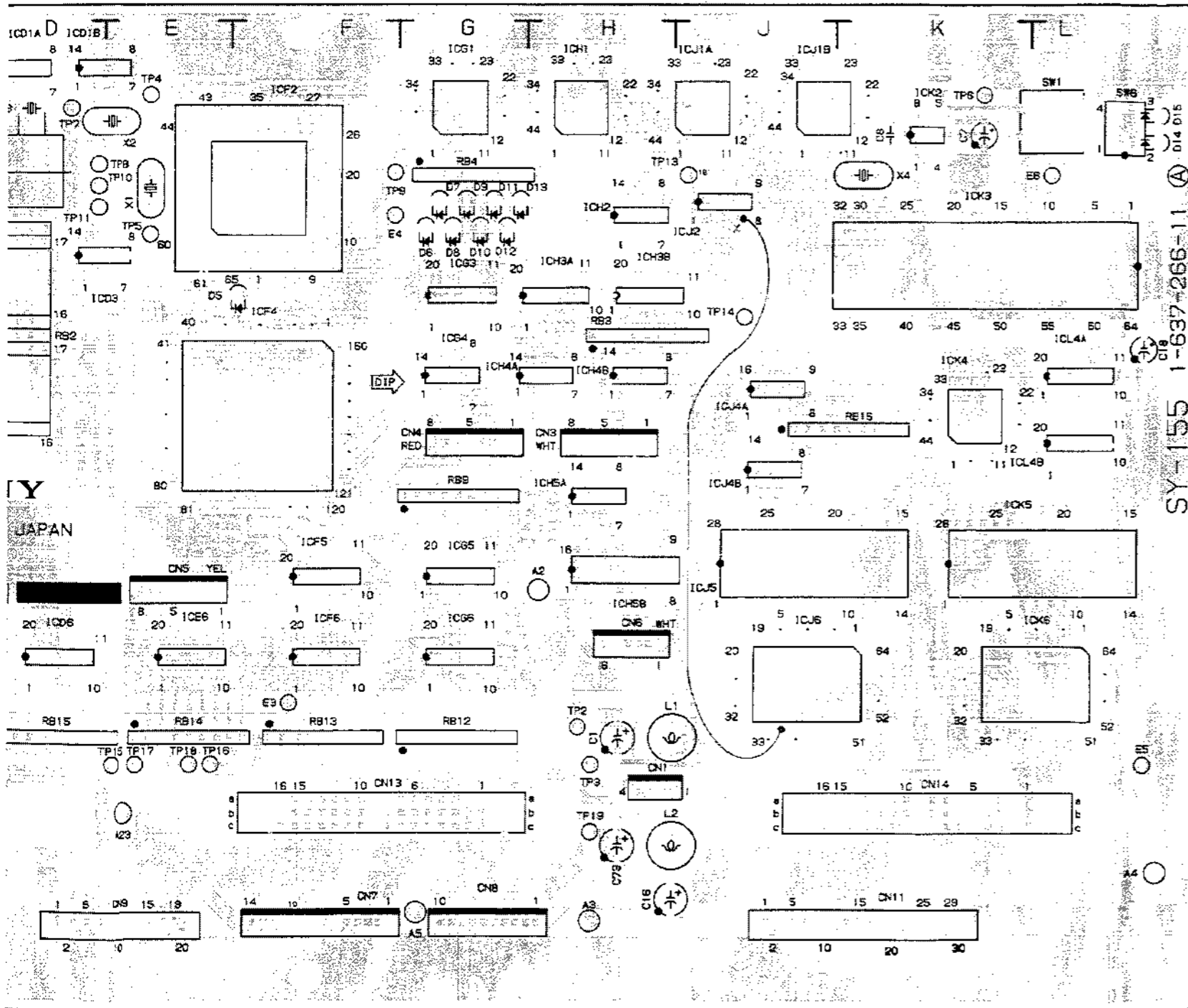
Serial No. UC 20001 to 20025
EK 50001 to 50060

Serial No. UC 20001 to 20025
EK 50001 to 50060



SY-155 1-637-266-11

001 to 20025
001 to 50060



D1	B-1	ICH1	H-1	X1	E-2
D2	B-1	ICH2	H-2	X2	E-2
D3	B-1	ICH3A	H-3	X3	D-1
D4	B-1	ICH3B	H-3	X4	K-2
D5	E-3	ICH4A	G-4		
D6	G-3	ICH4B	H-4		
D7	G-2	ICH5A	H-5		
D8	G-3	ICH5B	H-5		
D9	G-2	ICJ1A	J-1		
D10	G-3	ICJ1B	J-1		
D11	G-2	ICJ2	J-3		
D12	G-3	ICJ4A	J-4		
D13	G-2	ICJ4B	J-4		
D14	L-2	ICJ5	J-5		
D15	L-2	ICJ6	J-6		
D16	B-1	ICK2	K-1		
		ICK3	K-2		
E2	A-1	ICK4	K-4		
E3	F-6	ICK5	K-5		
E4	F-3	ICK6	L-6		
E5	L-7	ICL4A	L-4		
E6	L-2	ICL4B	L-4		
ICA4	A-4	SW1	L-1		
ICA5	A-5	SW3	B-4		
ICA6	A-6	SW5	A-4		
ICB5	B-5	SW6	L-1		
ICB6	B-6				
ICC1	C-1	TP2	H-6		
ICC2	C-2	TP3	H-7		
ICC3	B-3	TP4	E-1		
ICC4	C-4	TP5	E-3		
ICC6	C-6	TP6	K-1		
ICD1A	D-1	TP7	D-2		
ICD1B	D-1	TP8	E-2		
ICD3	D-3	TP9	F-2		
ICD6	D-6	TP10	E-2		
ICE6	E-6	TP11	D-2		
ICF2	F-1	TP12	C-2		
ICF4	F-3	TP13	H-2		
ICF5	F-5	TP14	J-3		
ICF6	F-6	TP15	E-7		
ICG1	G-1	TP16	E-7		
ICG3	G-3	TP17	E-7		
ICG4	G-4	TP18	E-7		
ICG5	G-5	TP19	H-7		
ICG6	G-6				

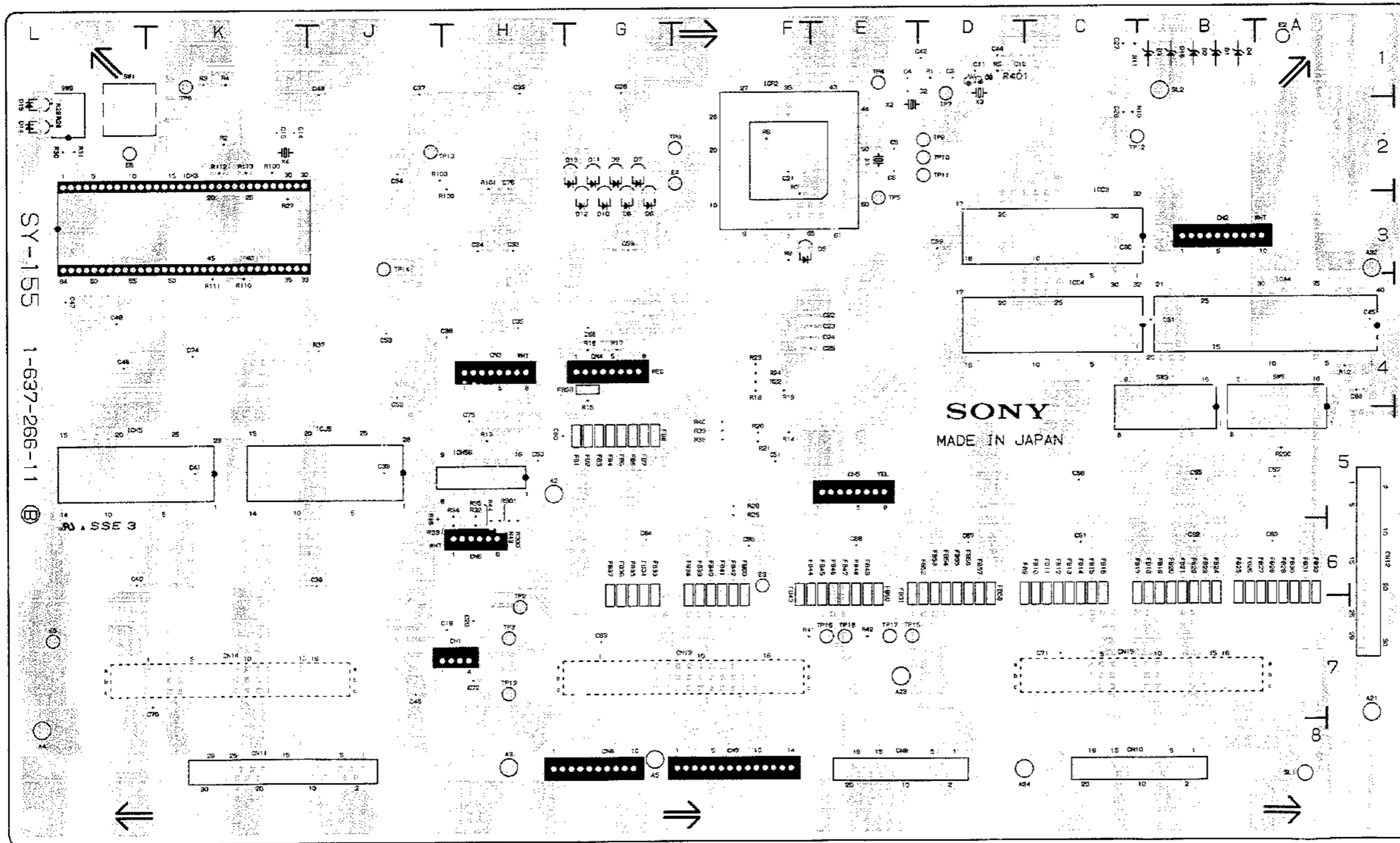
Applied Serial No. UC 20001 to 20025
EK 50001 to 50060

Jumpers that have been soldered or out.

ICJ2-6	ICJ2-7
ICJ2-6	ICJ2-7

SY-155B BOARD (PCM-7030)
 (1-637-266-11)
 Solder Side

Serial No. UC 20001 to 20025
 EK 50001 to 50060



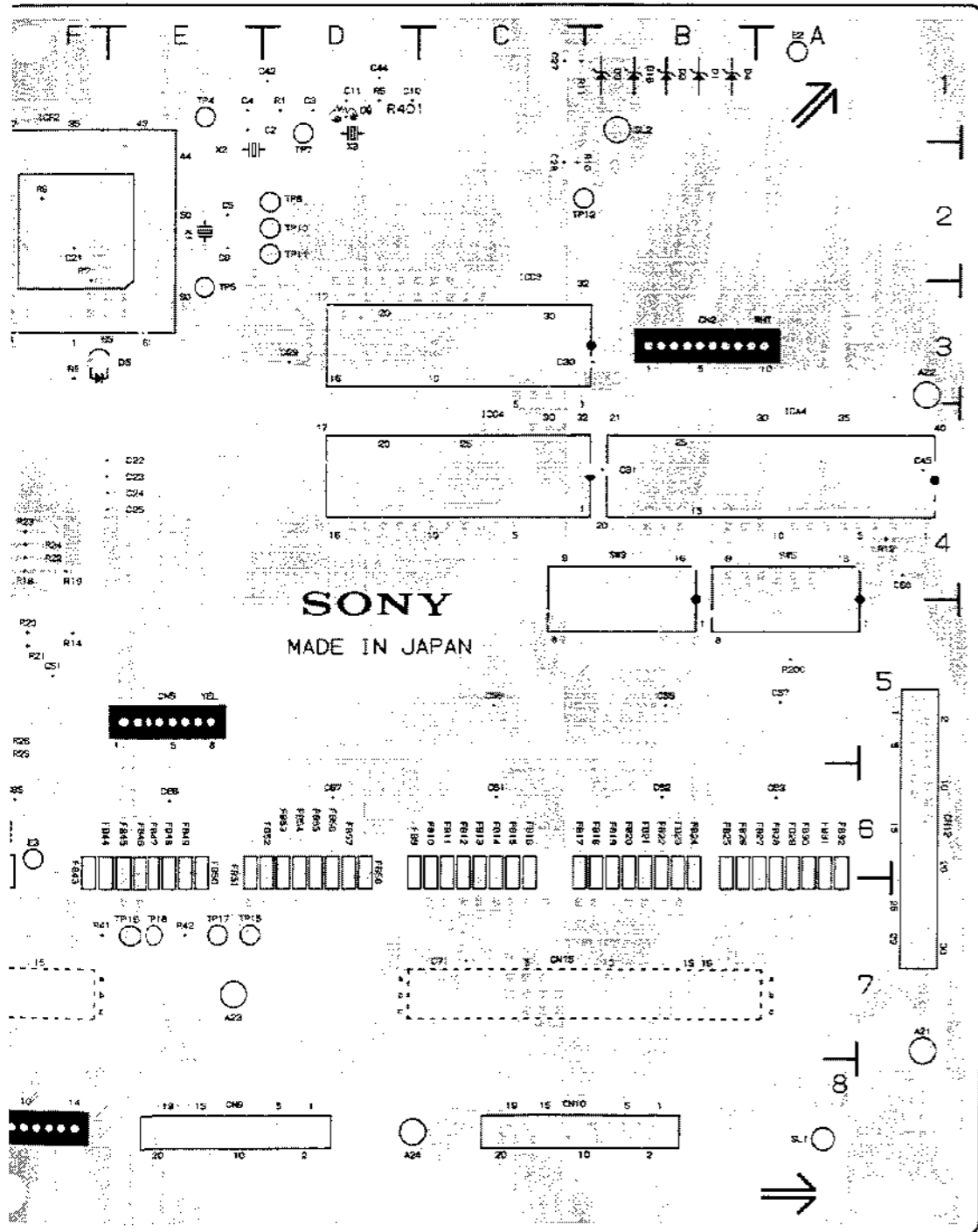
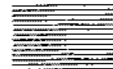
- D1 B-1
- D2 B-1
- D3 B-1
- D4 B-1
- D5 F-3
- D6 G-3
- D7 G-2
- D8 G-3
- D9 G-2
- D10 G-3
- D11 G-2
- D12 G-3
- D13 G-2
- D14 L-2
- D16 L-2
- D16 B-1

- E2 A-1
- E3 F-6
- E4 F-3
- E5 L-7
- E6 L-2

- ICA4 A-4
- ICA5 A-5
- ICA6 A-5
- ICB5 B-5
- ICB6 B-6
- ICC1 C-1
- ICC2 C-2
- ICC3 B-3
- ICC4 C-4
- ICC6 C-6
- ICD1A D-1
- ICD1B D-1
- ICD3 D-3
- ICD6 D-6
- ICE6 E-5
- ICF2 F-1
- ICF4 F-3
- ICF5 F-5
- ICF6 F-5
- ICG1 G-1
- ICG3 G-3
- ICG4 G-4
- ICG5 G-5
- ICG6 G-6

Applied Serial No. UC 20001 to 20025
 EK 50001 to 50060

Parts that have been changed. C8 → R401



D1	B-1	ICH1	H-1	X1	E-2
D2	B-1	ICH2	H-2	X2	E-2
D3	B-1	ICH3A	H-3	X3	D-1
D4	B-1	ICH3B	H-3	X4	K-2
D5	E-3	ICH4A	G-4		
D6	G-3	ICH4B	H-4		
D7	G-2	ICH5A	H-5		
D8	G-3	ICH5B	H-5		
D9	G-2	ICJ1A	J-1		
D10	G-3	ICJ1B	J-1		
D11	G-2	ICJ2	J-3		
D12	G-3	ICJ4A	J-4		
D13	G-2	ICJ4B	J-4		
D14	L-2	ICJ5	J-5		
D15	L-2	ICJ6	J-5		
D16	B-1	ICK2	K-1		
		ICK3	K-2		
		ICK4	K-4		
E2	A-1	ICK5	K-5		
E3	F-6	ICK6	L-5		
E4	F-3	ICL4A	L-4		
E5	L-7	ICL4B	L-4		
E6	L-2				
ICA4	A-4	SW1	L-1		
ICA5	A-5	SW3	B-4		
ICA6	A-5	SW5	A-4		
ICB5	B-5	SW6	L-1		
ICB6	B-6				
ICC1	C-1	TP2	H-6		
ICC2	C-2	TP3	H-7		
ICC3	B-3	TP4	E-1		
ICC4	C-4	TP5	E-3		
ICC6	C-6	TP6	K-1		
ICD1A	D-1	TP7	D-2		
ICD1B	D-1	TP8	E-2		
ICD3	D-3	TP9	F-2		
ICD6	D-6	TP10	E-2		
ICE6	E-5	TP11	D-2		
ICF2	F-1	TP12	C-2		
ICF4	F-3	TP13	H-2		
ICF5	F-5	TP14	J-3		
ICF6	F-5	TP15	E-7		
ICG1	G-1	TP16	E-7		
ICG3	G-3	TP17	E-7		
ICG4	G-4	TP18	E-7		
ICG5	G-5	TP19	H-7		
ICG6	G-6				

Applied Serial No. UC 20001 to 20025
EK 50001 to 50060

Parts that have been changed. CB → R4C1

VR-109 BOARD (PCM-7030)

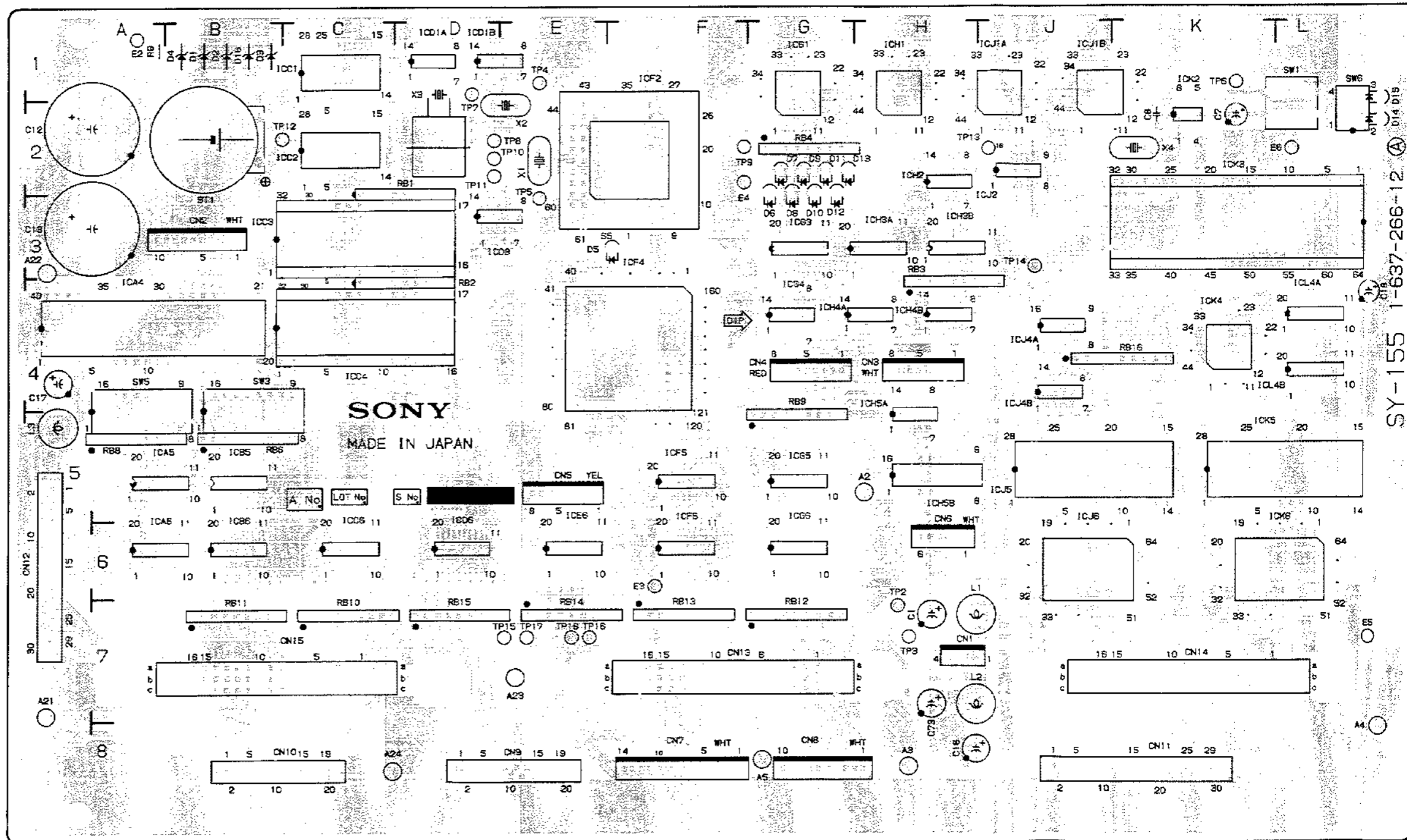
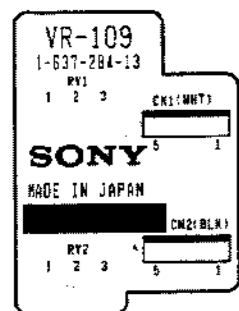
(1-637-284-13)
Component Side

Serial No. UC 20026 and higher
EK 50061 and higher

SY-155B BOARD (PCM-7030)

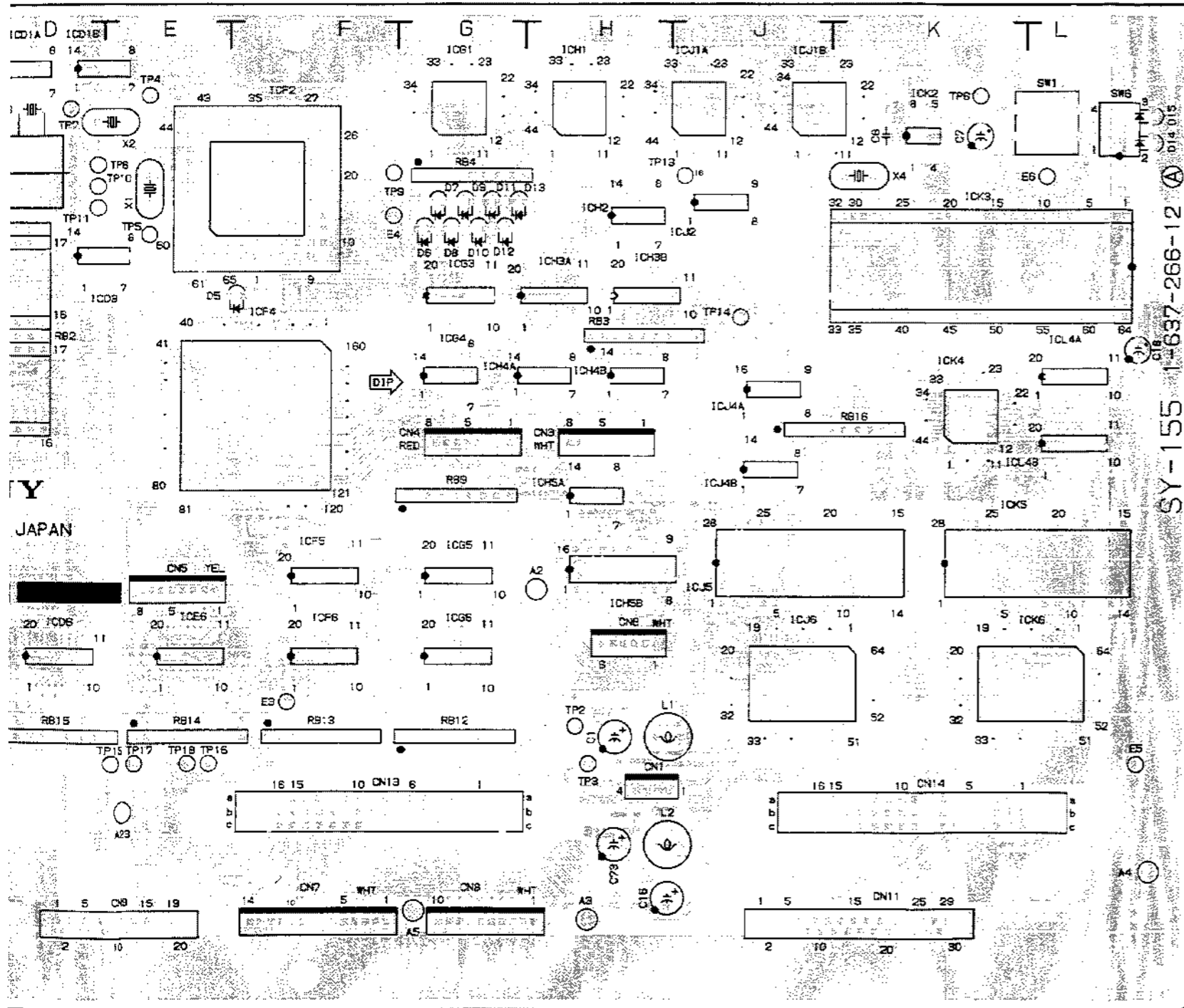
(1-637-266-12)
Component Side

Serial No. UC 20026 and higher
EK 50061 and higher



SY-155 1-637-266-12

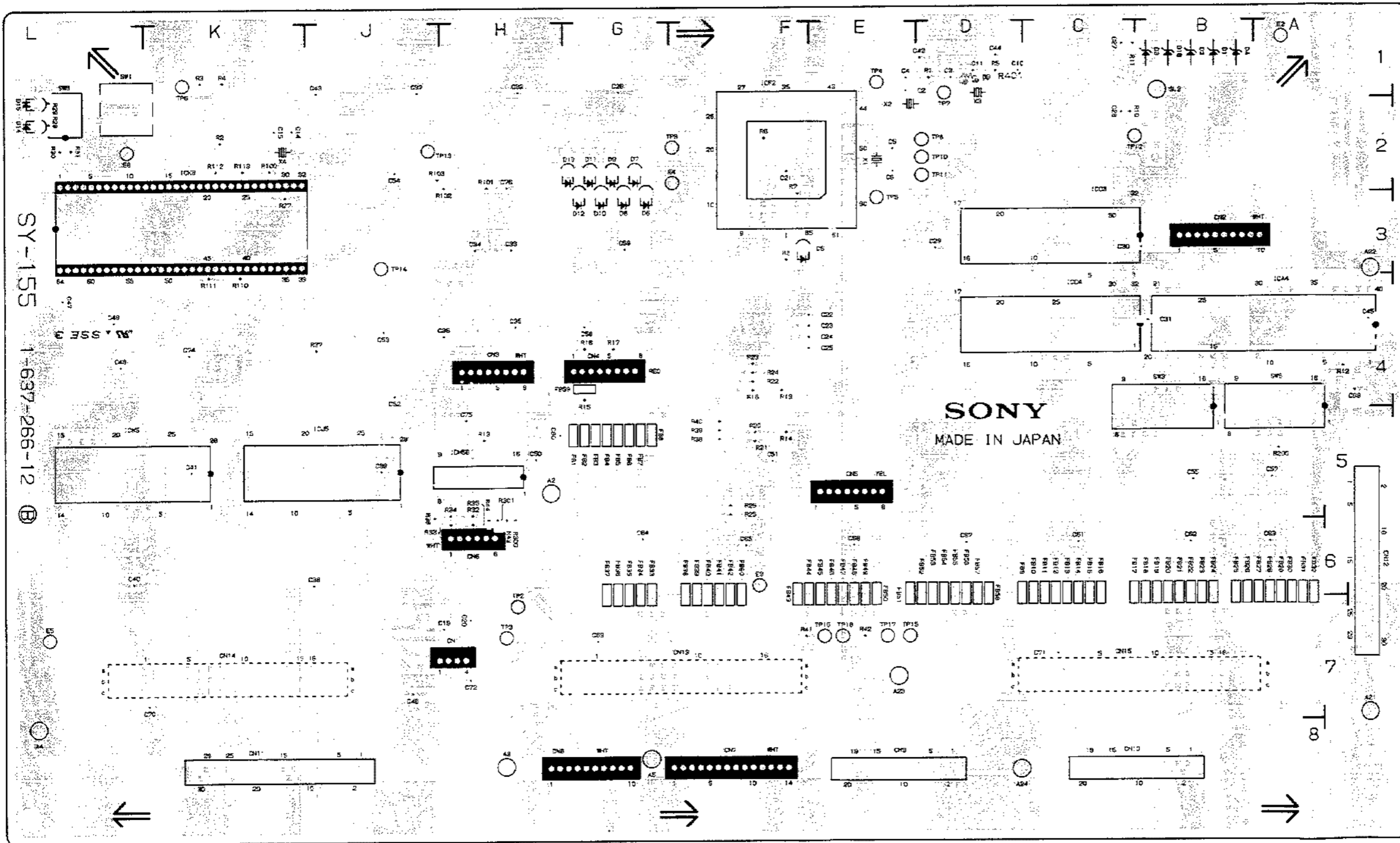
026 and higher
061 and higher



D1	B-1	ICH1	H-1	X1	E-2
D2	B-1	ICH2	H-2	X2	E-2
D3	B-1	ICH3A	H-3	X3	D-1
D4	B-1	ICH3B	H-3	X4	K-2
D5	E-3	ICH4A	G-4		
D6	G-3	ICH4B	H-4		
D7	G-2	ICH5A	H-5		
D8	G-3	ICH5B	H-5		
D9	G-2	ICJ1A	J-1		
D10	G-3	ICJ1B	J-1		
D11	G-2	ICJ2	J-3		
D12	G-3	ICJ4A	J-4		
D13	G-2	ICJ4B	J-4		
D14	L-2	ICJ5	J-5		
D15	L-2	ICJ6	J-5		
D16	B-1	ICK2	K-1		
		ICK3	K-2		
E2	A-1	ICK4	K-4		
E3	F-6	ICK5	K-5		
E4	F-3	ICK6	L-5		
E5	L-7	ICL4A	L-4		
E6	L-2	ICL4B	L-4		
ICA4	A-4	SW1	L-1		
ICA5	A-5	SW3	B-4		
ICA6	A-5	SW5	A-4		
ICB5	B-5	SW6	L-1		
ICB6	B-6				
ICC1	C-1	TP2	H-6		
ICC2	C-2	TP3	H-7		
ICC3	B-3	TP4	E-1		
ICC4	C-4	TP5	E-3		
ICC6	C-6	TP6	K-1		
ICD1A	D-1	TP7	D-2		
ICD1B	D-1	TP8	E-2		
ICD3	D-3	TP9	F-2		
ICD6	D-6	TP10	E-2		
ICE6	E-5	TP11	D-2		
ICF2	F-1	TP12	C-2		
ICF4	F-3	TP13	H-2		
ICF5	F-5	TP14	J-3		
ICF6	F-5	TP15	E-7		
ICG1	G-1	TP16	E-7		
ICG3	G-3	TP17	E-7		
ICG4	G-4	TP18	E-7		
ICG5	G-5	TP19	H-7		
ICG6	G-6				

SY-155B BOARD (PCM-7030)
 (1-637-266-12)
 Solder Side

Serial No. UC 20026 and higher
 EK 50061 and higher



- D1 B-1
- D2 B-1
- D3 B-1
- D4 B-1
- D5 E-3
- D6 G-3
- D7 G-2
- D8 G-3
- D9 G-2
- D10 G-3
- D11 G-2
- D12 G-3
- D13 G-2
- D14 L-2
- D15 L-2
- D16 B-1

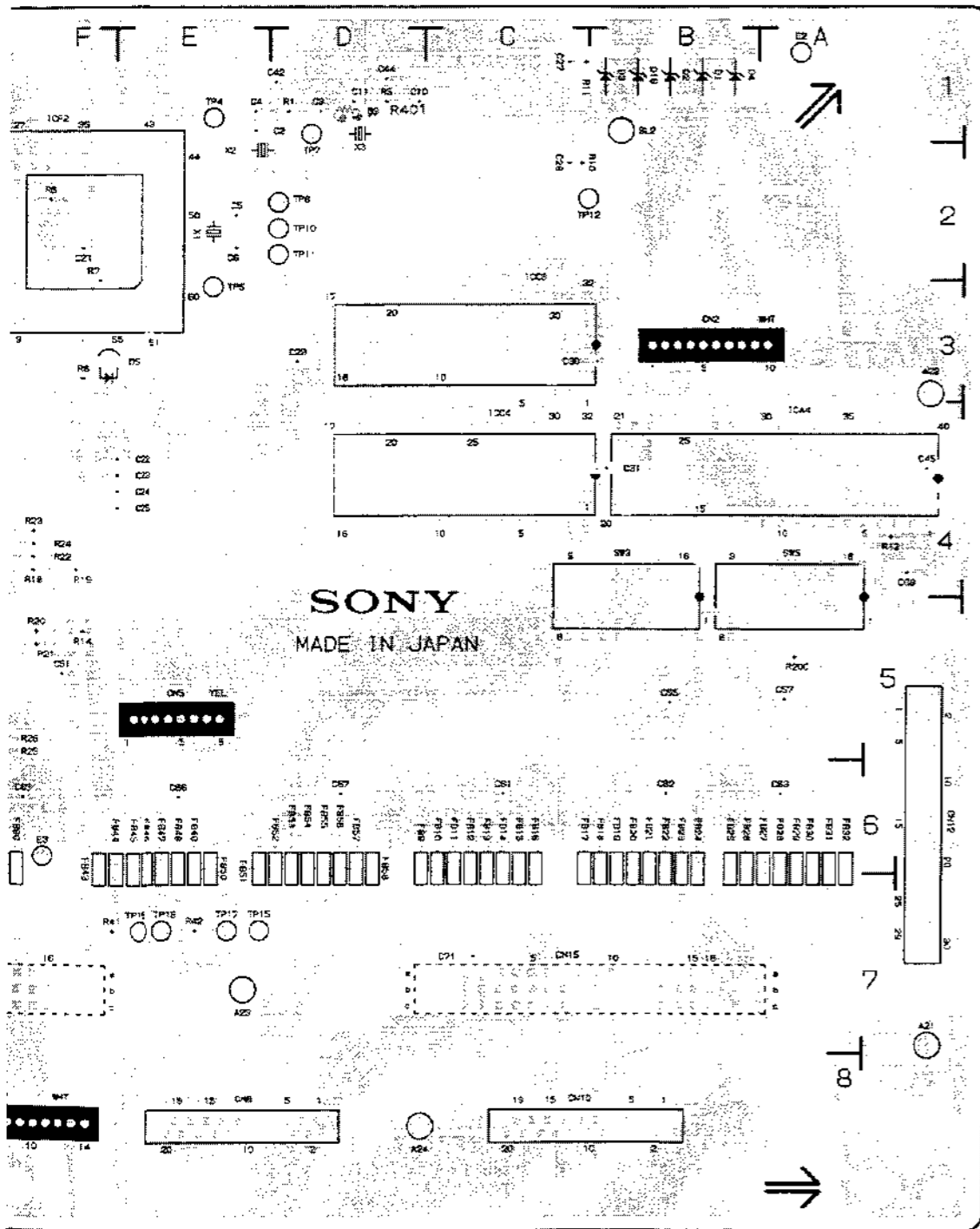
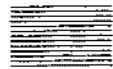
- E2 A-1
- E3 F-6
- E4 F-3
- E5 L-7
- E6 L-2

- ICA4 A-4
- ICA5 A-5
- ICA6 A-5
- ICB5 B-5
- ICB6 B-6
- ICC1 C-1
- ICC2 C-2
- ICC3 B-3
- ICC4 C-4
- ICC6 C-6
- ICD1A D-1
- ICD1B D-1
- ICD3 D-3
- ICD6 D-6
- ICE6 E-5
- ICF2 F-1
- ICF4 F-3
- ICF5 F-5
- ICF6 F-5
- ICG1 G-1
- ICG3 G-3
- ICG4 G-4
- ICG5 G-5
- ICG6 G-6

Applied Serial No. UC 20026 and higher
 EK 50061 and higher

Parts list have been changed

CE → R401



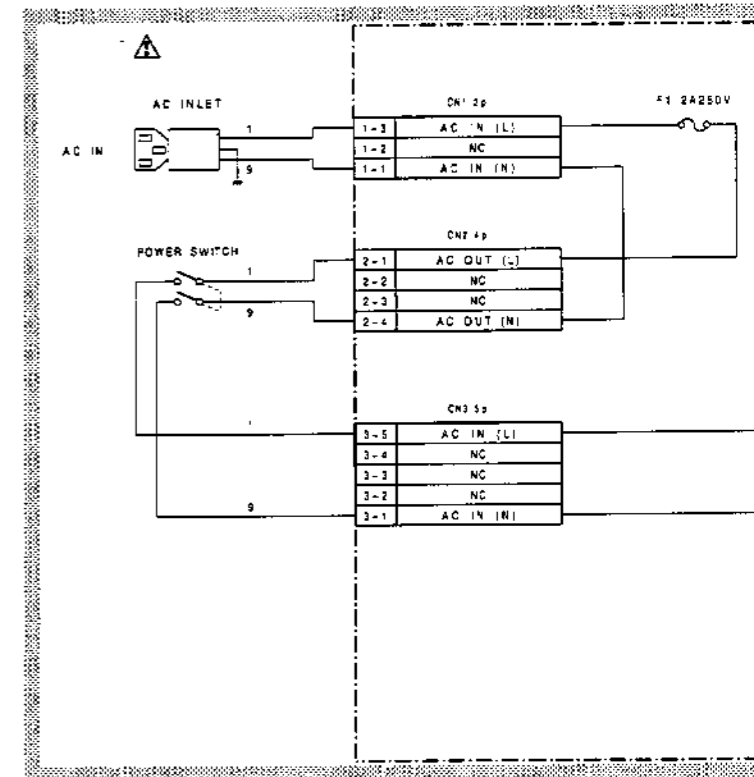
D1	B-1	ICH1	H-1	X1	E-2
D2	B-1	ICH2	H-2	X2	E-2
D3	B-1	ICH3A	H-3	X3	D-1
D4	B-1	ICH3B	H-3	X4	K-2
D5	E-3	ICH4A	G-4		
D6	G-3	ICH4B	H-4		
D7	G-2	ICH5A	H-5		
D8	G-3	ICH5B	H-6		
D9	G-2	ICJ1A	J-1		
D10	G-3	ICJ1B	J-1		
D11	G-2	ICJ2	J-3		
D12	G-3	ICJ4A	J-4		
D13	G-2	ICJ4B	J-4		
D14	L-2	ICJ5	J-5		
D15	L-2	ICJ6	J-5		
D16	B-1	ICK2	K-1		
		ICK3	K-2		
E2	A-1	ICK4	K-4		
E3	F-6	ICK5	K-5		
E4	F-3	ICK6	L-5		
E5	L-7	ICL4A	L-4		
E6	L-2	ICL4B	L-4		
		SW1	L-1		
		SW3	B-4		
		SW5	A-4		
		SW6	L-1		
		TP2	H-6		
		TP3	H-7		
		TP4	E-1		
		TP5	E-3		
		TP6	K-1		
		TP7	D-2		
		TP8	E-2		
		TP9	F-2		
		TP10	E-2		
		TP11	D-2		
		TP12	C-2		
		TP13	H-2		
		TP14	J-3		
		TP15	E-7		
		TP16	E-7		
		TP17	E-7		
		TP18	E-7		
		TP19	H-7		

Applied Serial No. LC 20026 and higher
EK 50031 and higher

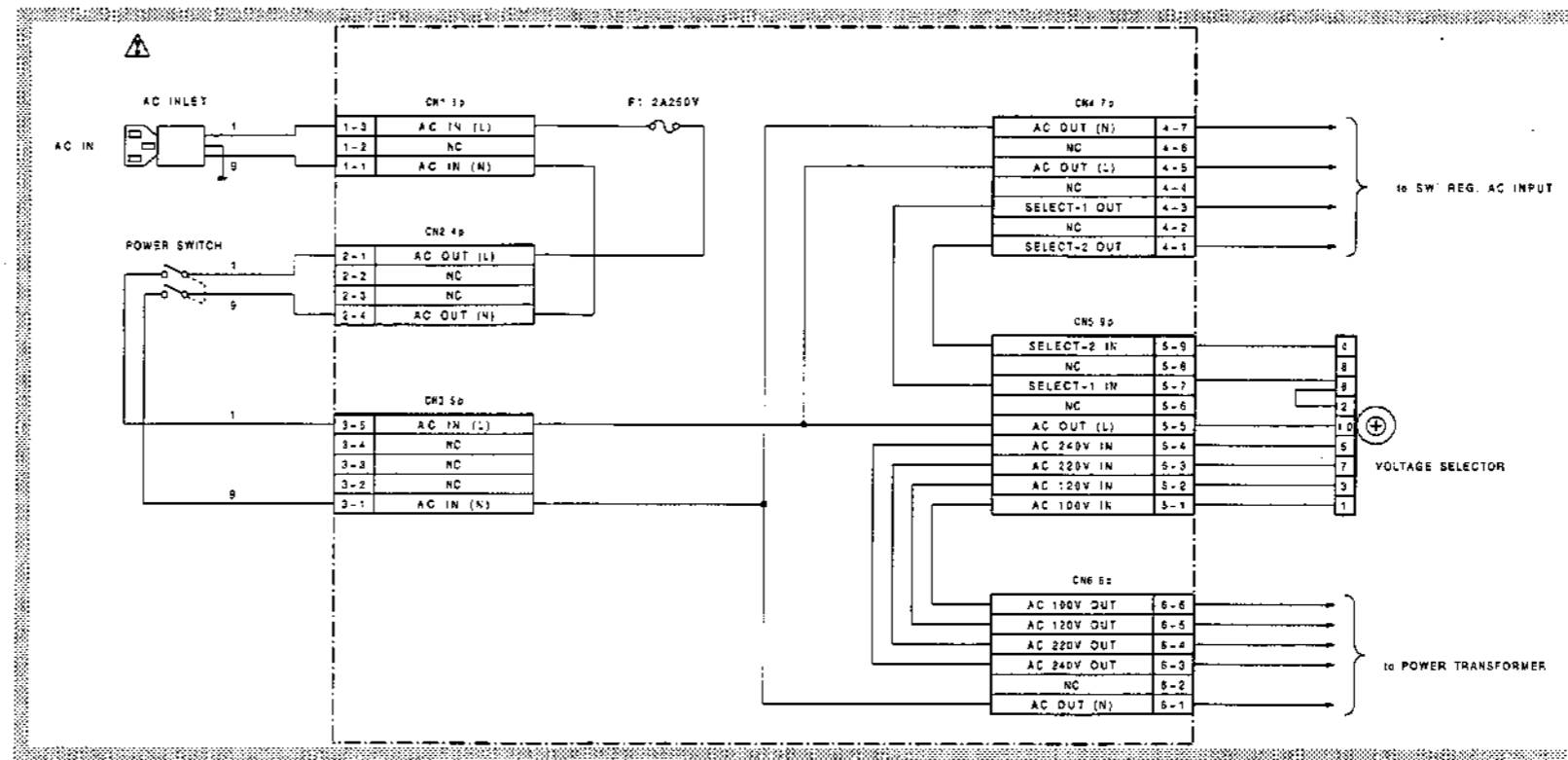
Parts that have been changed. C9 → R401

SECTION C
SCHEMATIC DIAGRAMS

AC-104 BOARD (PCM-7030)
AC Fuse



AC-104 BOARD (PCM-7030)
AC Fuse

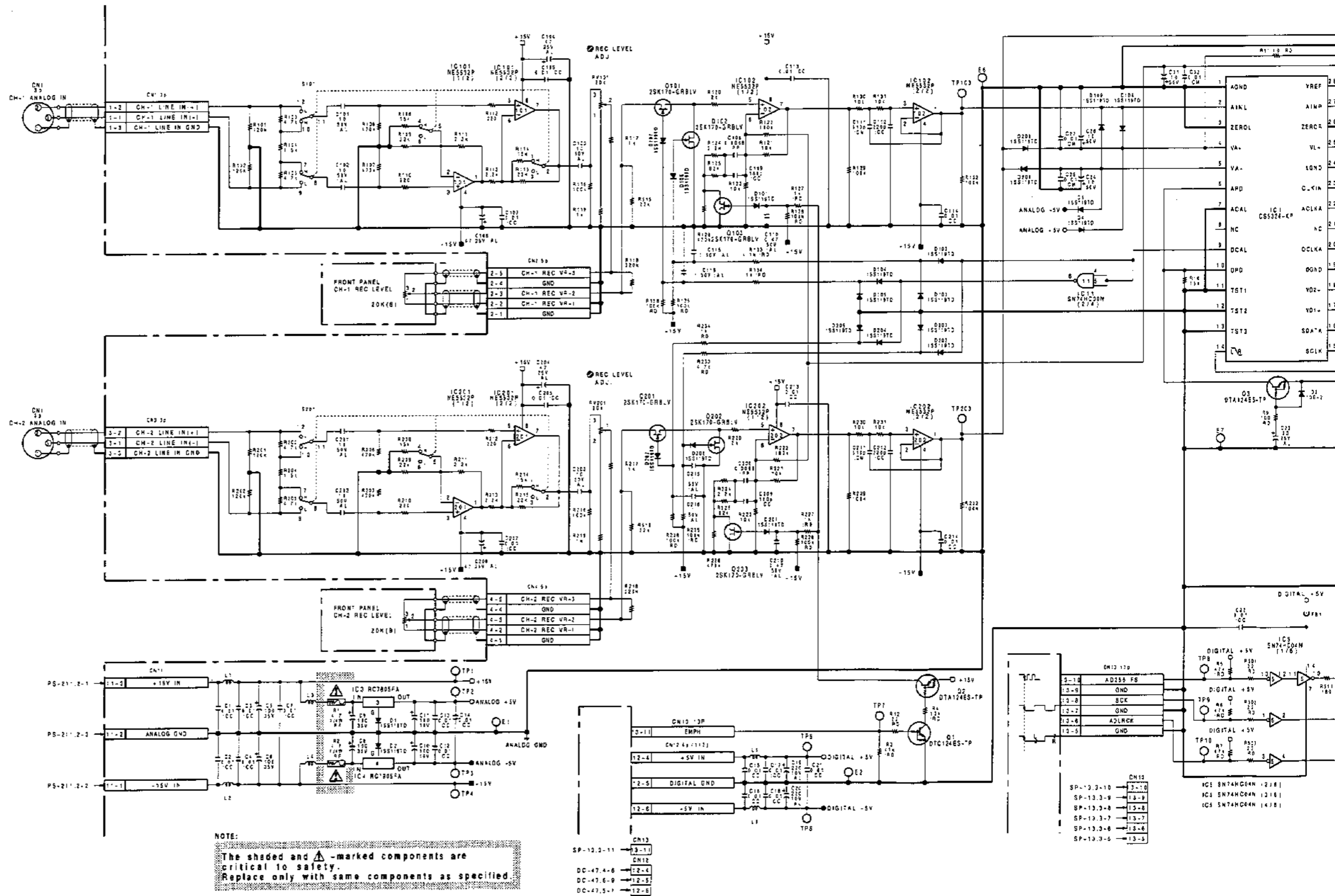


NOTE:
The shaded and ⚠-marked components are critical to safety.
Replace only with same components as specified.

AC-104 BOARD
BOARD NO.1-837-275-11 & HIGHER
PCM-7030

ADA-18(1/2) BOARD (PCM-7030)
REC Audio A/D Converter

Serial No. UC 20001 to 20115
EK 50001 to 50580



C-7(a)

C-8(a)

A

B

C

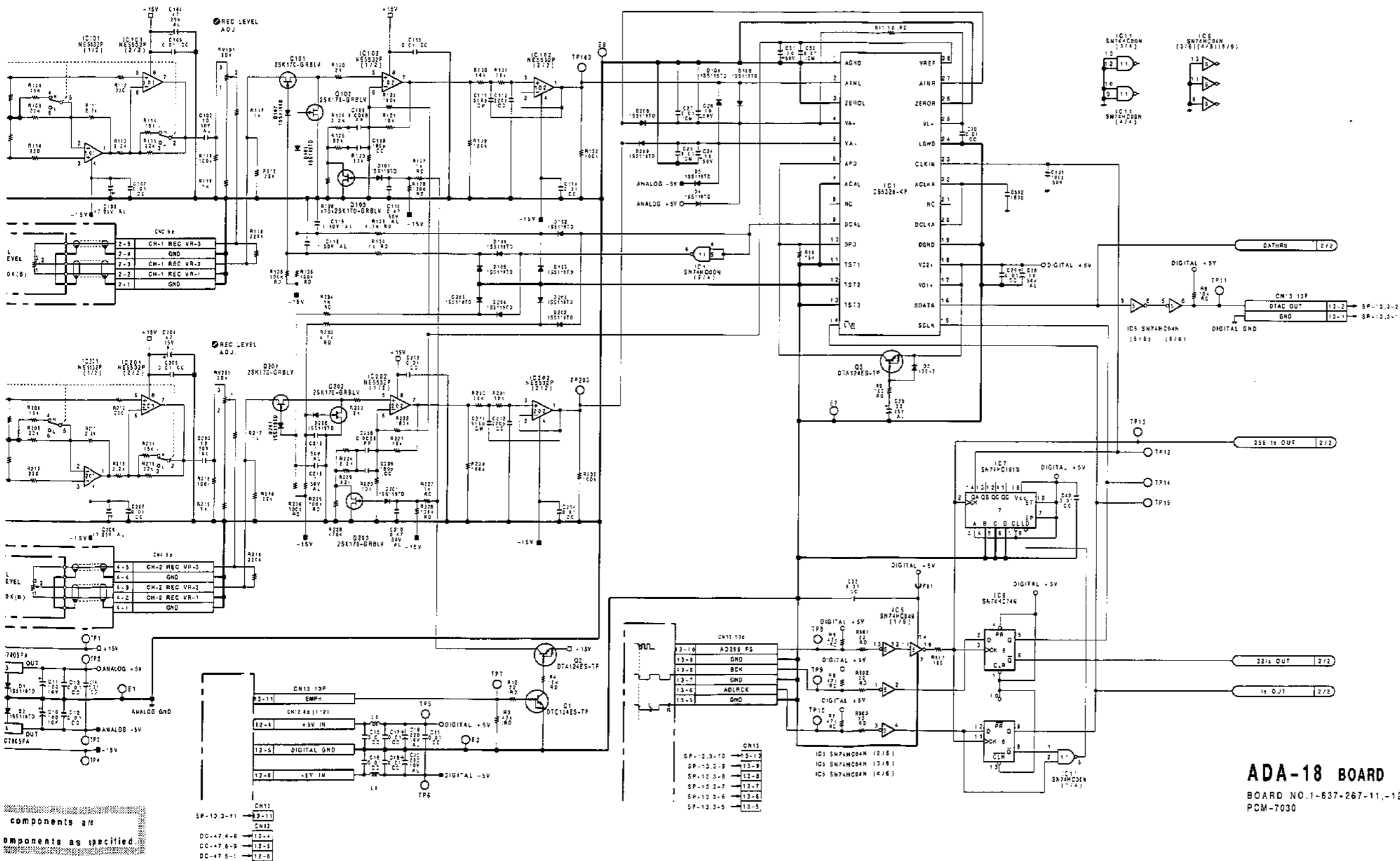
D

F

F

G

H



components as specified

- SP-10.3-11
- DC-47.4-8
- DC-47.6-9
- DC-47.5-1

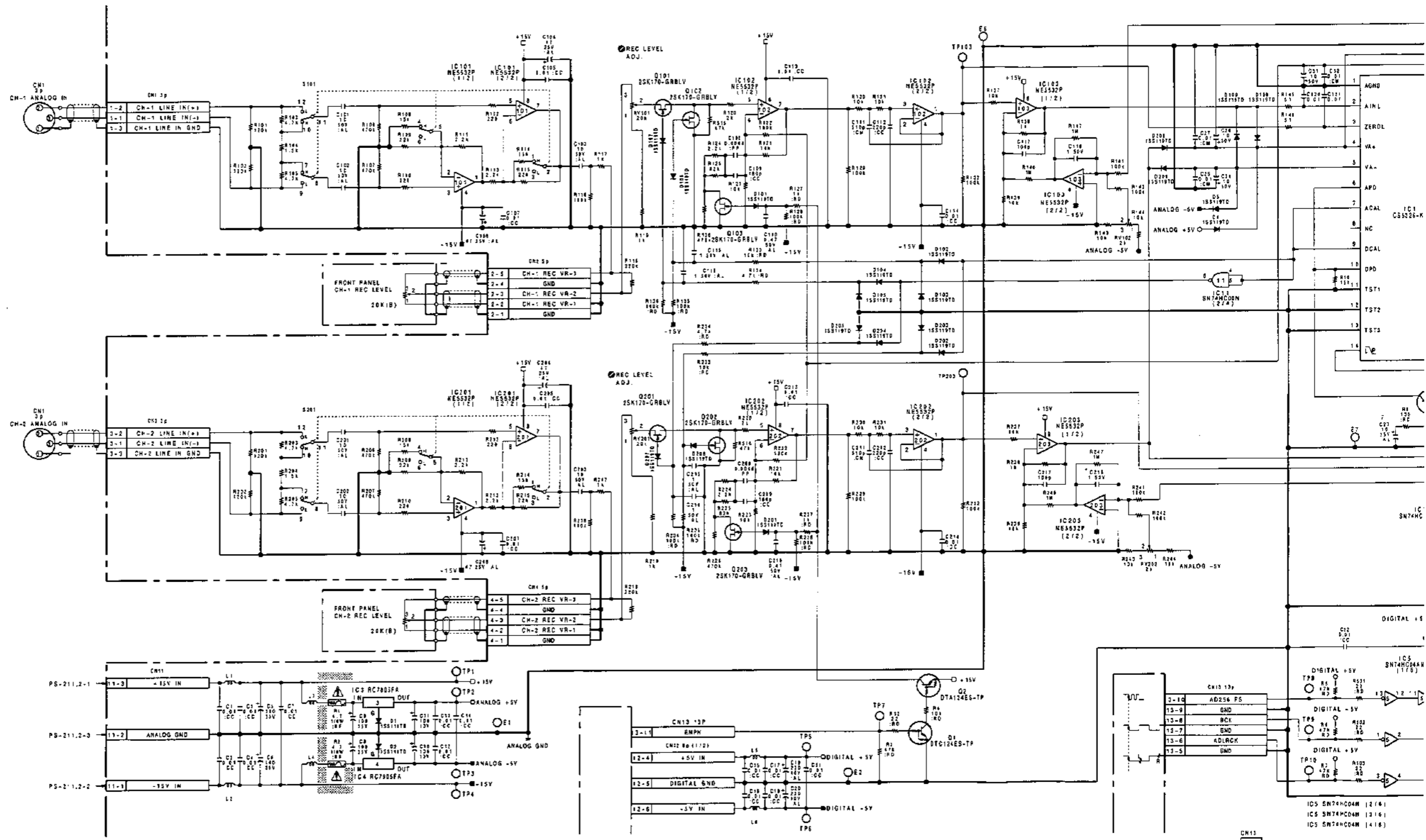
C-8(a)

ADA-18 BOARD (1/2)
 BOARD NO.1-637-267-11,-12,-13
 PCM-7030

C-9(a)

ADA-18(1/2) BOARD (PCM-7030)
REC Audio, A/D Converter

Serial No. UC 20116 and higher
EK 50581 and higher



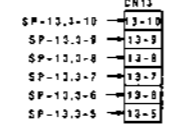
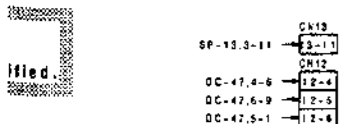
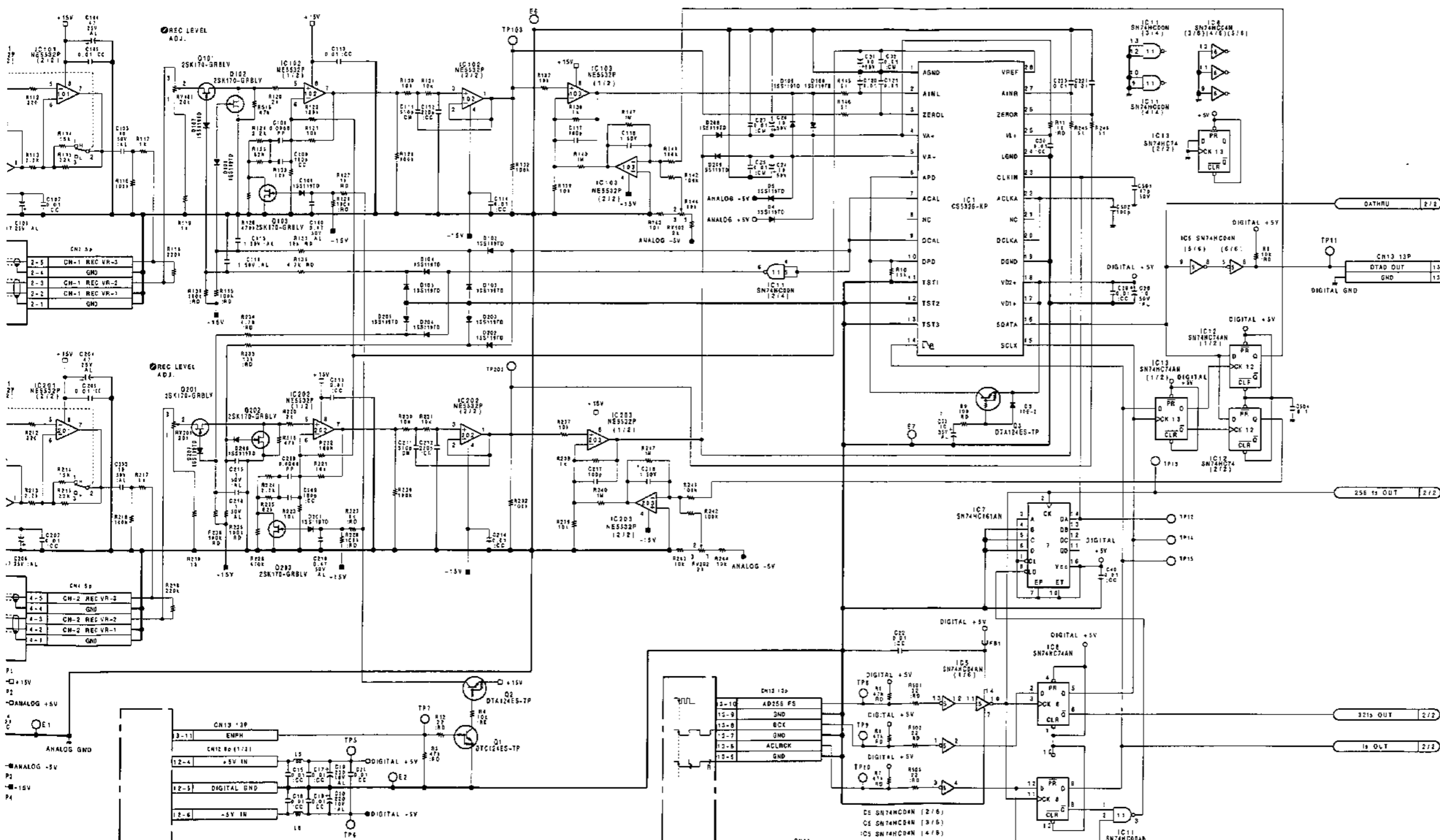
NOTE:
The shaded and Δ -marked components are critical to safety. Replace only with same components as specified.

- SP-13,3-11 CH13
- DC-47,4-8 CH2
- DC-47,6-9 CH2
- DC-47,5-1 CH2

- SP-13,3-10 CH13
- SP-13,3-9 CH13
- SP-13,3-8 CH13
- SP-13,3-7 CH13
- SP-13,3-6 CH13
- SP-13,3-5 CH13

C-7(b)

C-8(b)



ADA-18 BOARD (1/2)

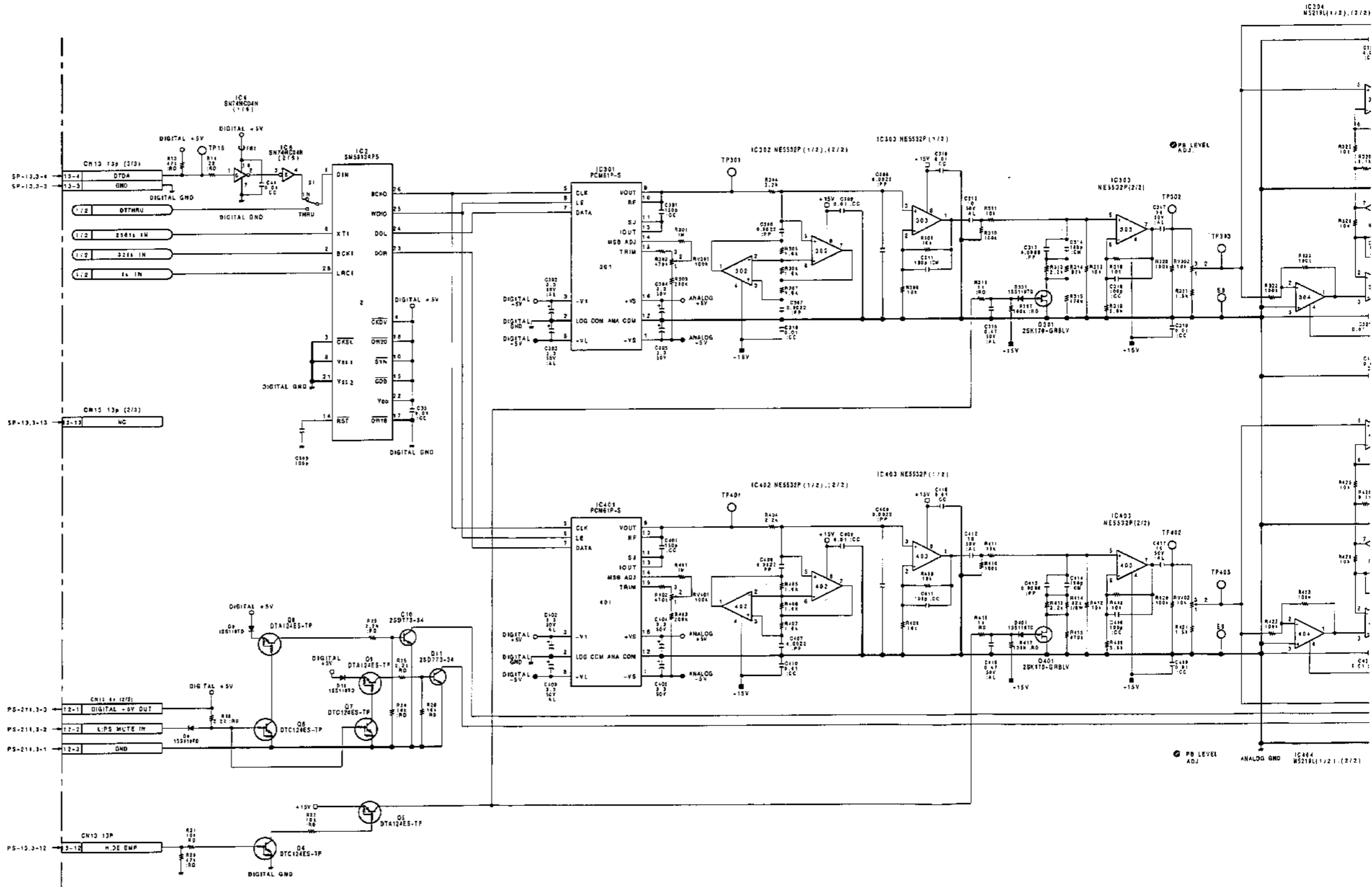
BOARD NO.1-837-267-14 & HIGHER
PCM-7030

Changed Information	
Applied Serial No.	Parts that have been changed.
UC-25471 and higher	C23 53uF 25V
EK-55371 and higher	→ 10uF 35V

C-8(b)

C-9(b)

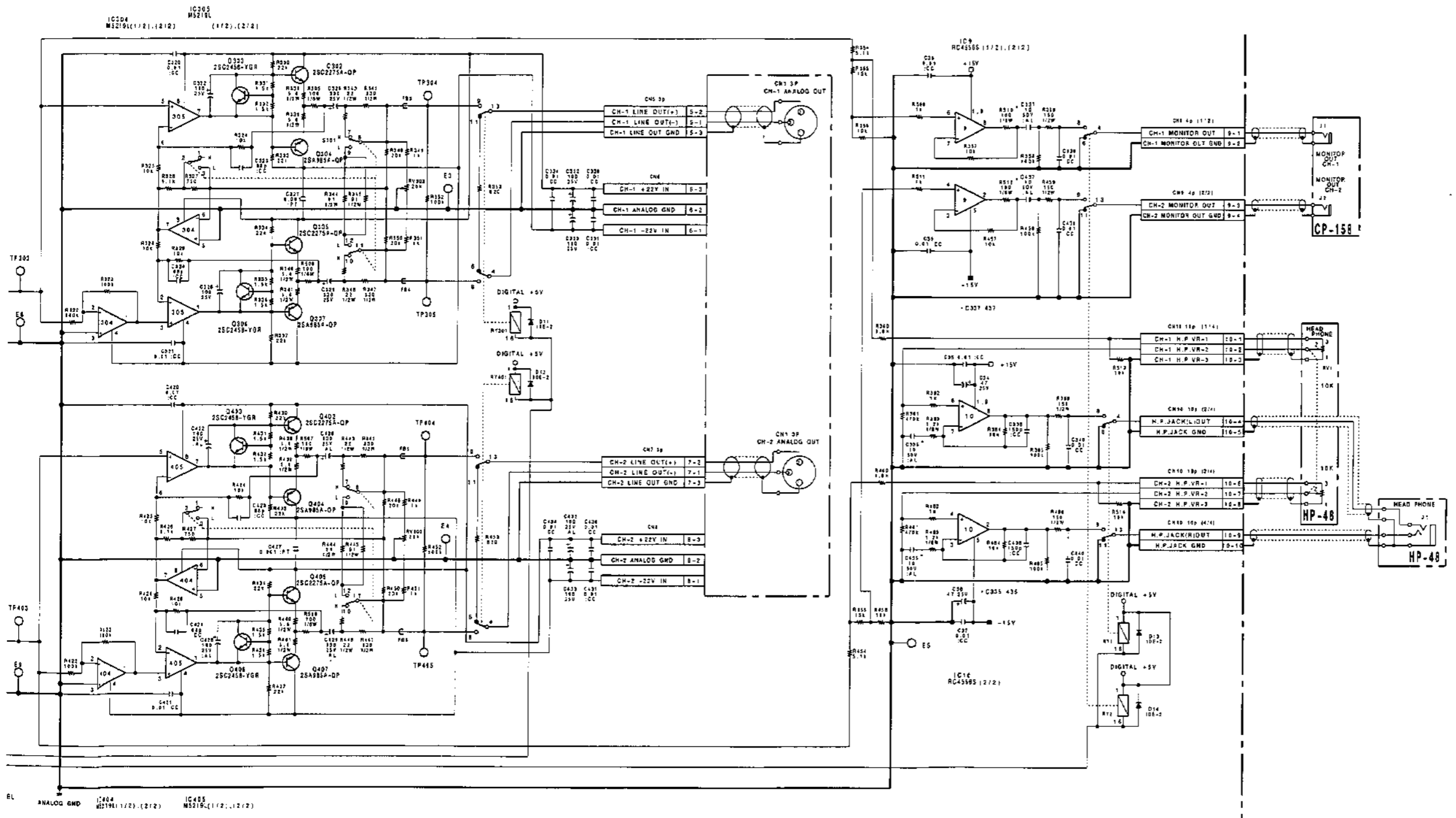
ADA-18(2/2) BOARD (PCM-7030)
PB Audio, D/A Converter



C-13

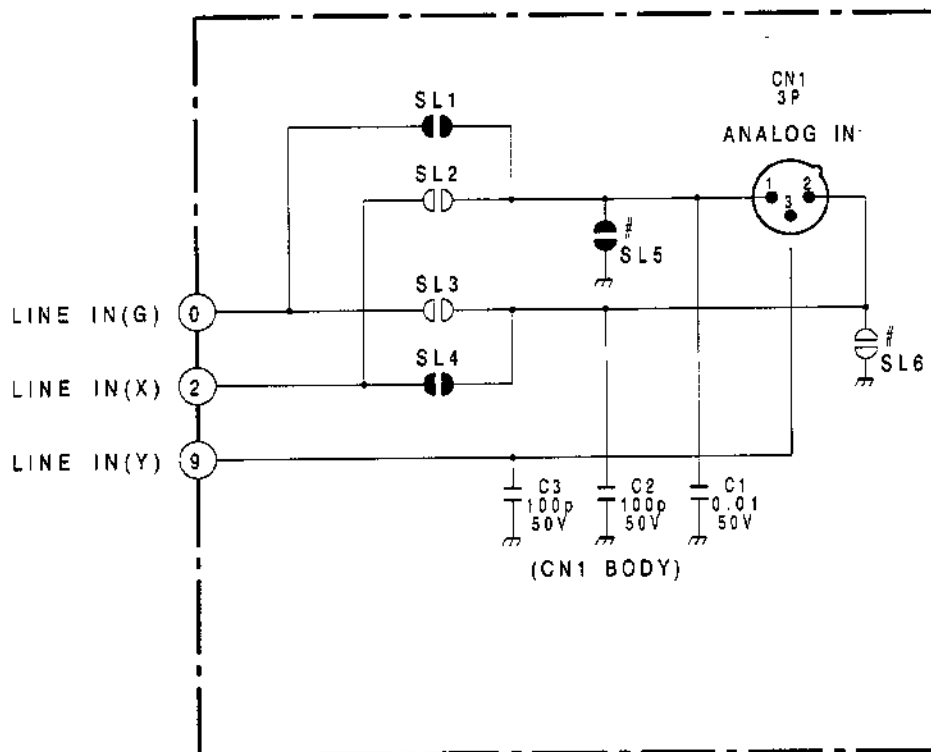
C-14

A | B | C | D | E | F | G | H



ADA-18 BOARD (2/2)
 BOARD NO.1-837-267-11 & HIGHER
 PCM-7030

CP-157A BOARD (PCM-7030)
Connector(ANALOG IN)



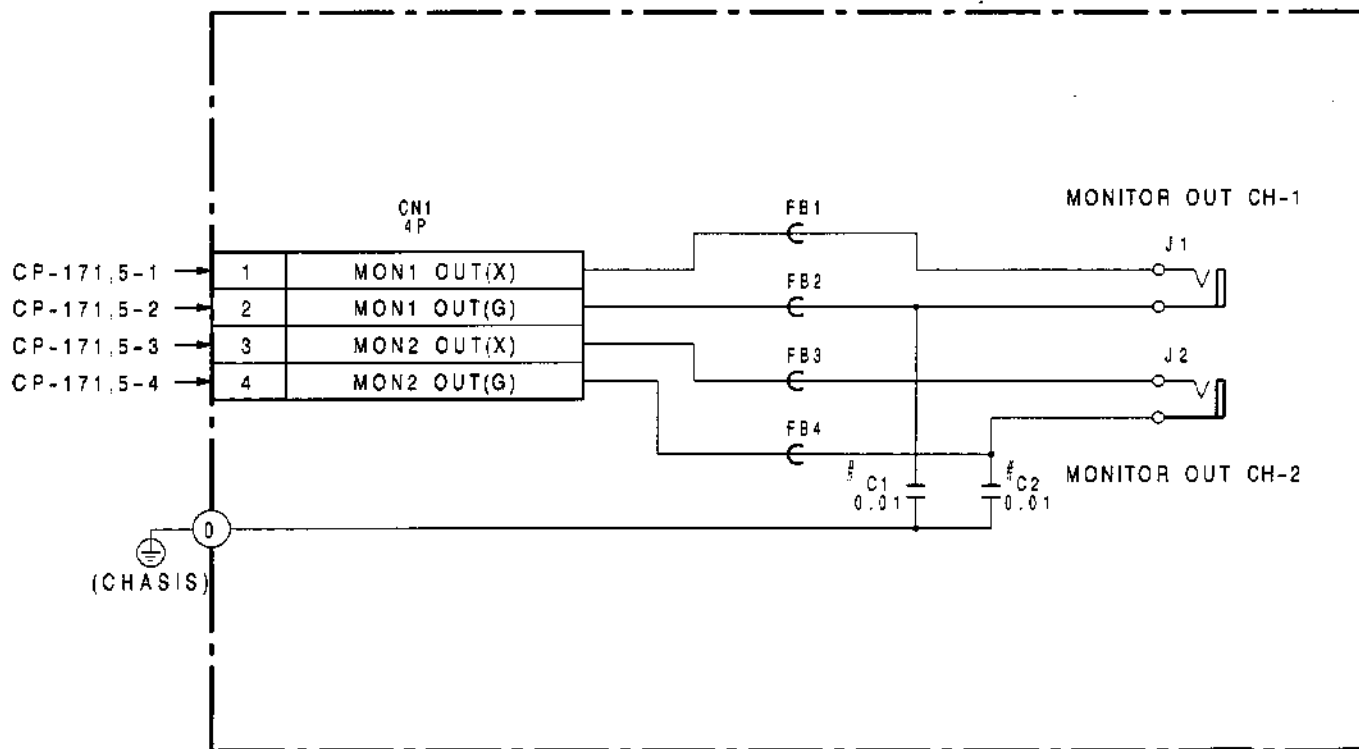
Changed Information

Applied Serial No.	Parts that have been added.
UC:20046 and higher	S-5
EK 5020* and higher	S-6

CP-157A BOARD

BOARD NO.1-637-277-11 & HIGHER
PCM-7030

CP-158 BOARD (PCM-7030)
Connector (MONITOR)



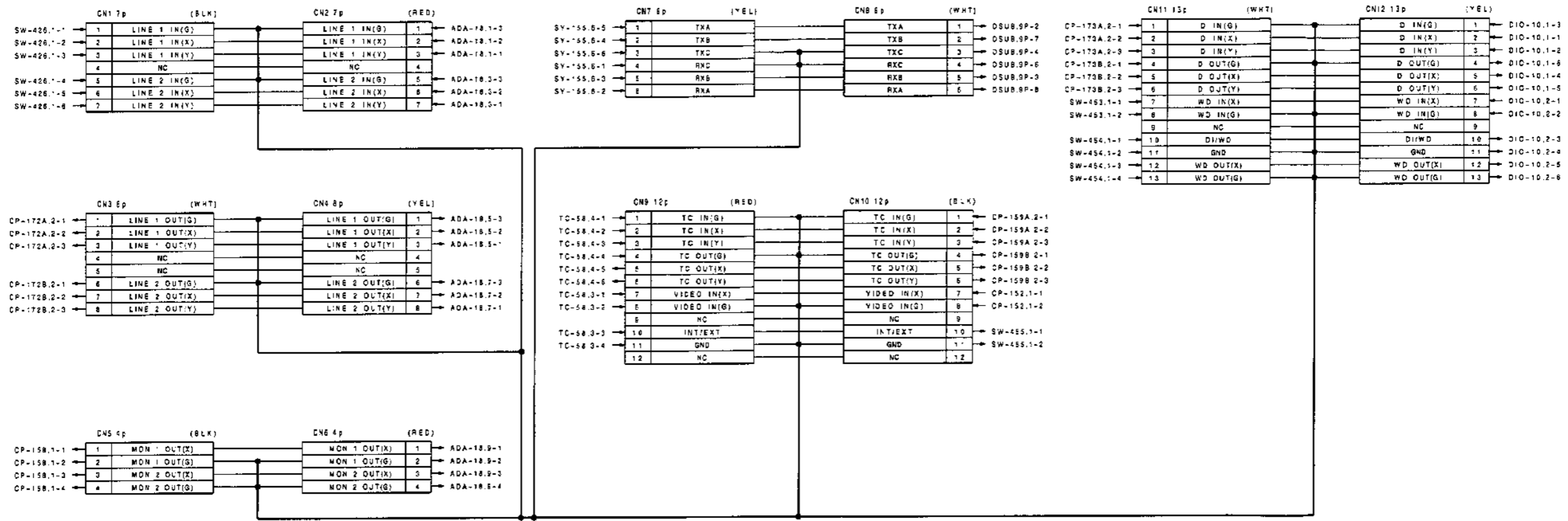
Changed Information

Applied Serial No.	Parts that have been deleted.
UC:20045 and higher	C1
EK:50201 and higher	C2

CP-158 BOARD

BOARD NO.1-637-282-11 & HIGHER
PCM-7030

CP-171 BOARD (PCM-7030)
Connector



CP-171 BOARD
BOARD NO.1-637-276-11 & HIGHER
PCM-7030

1

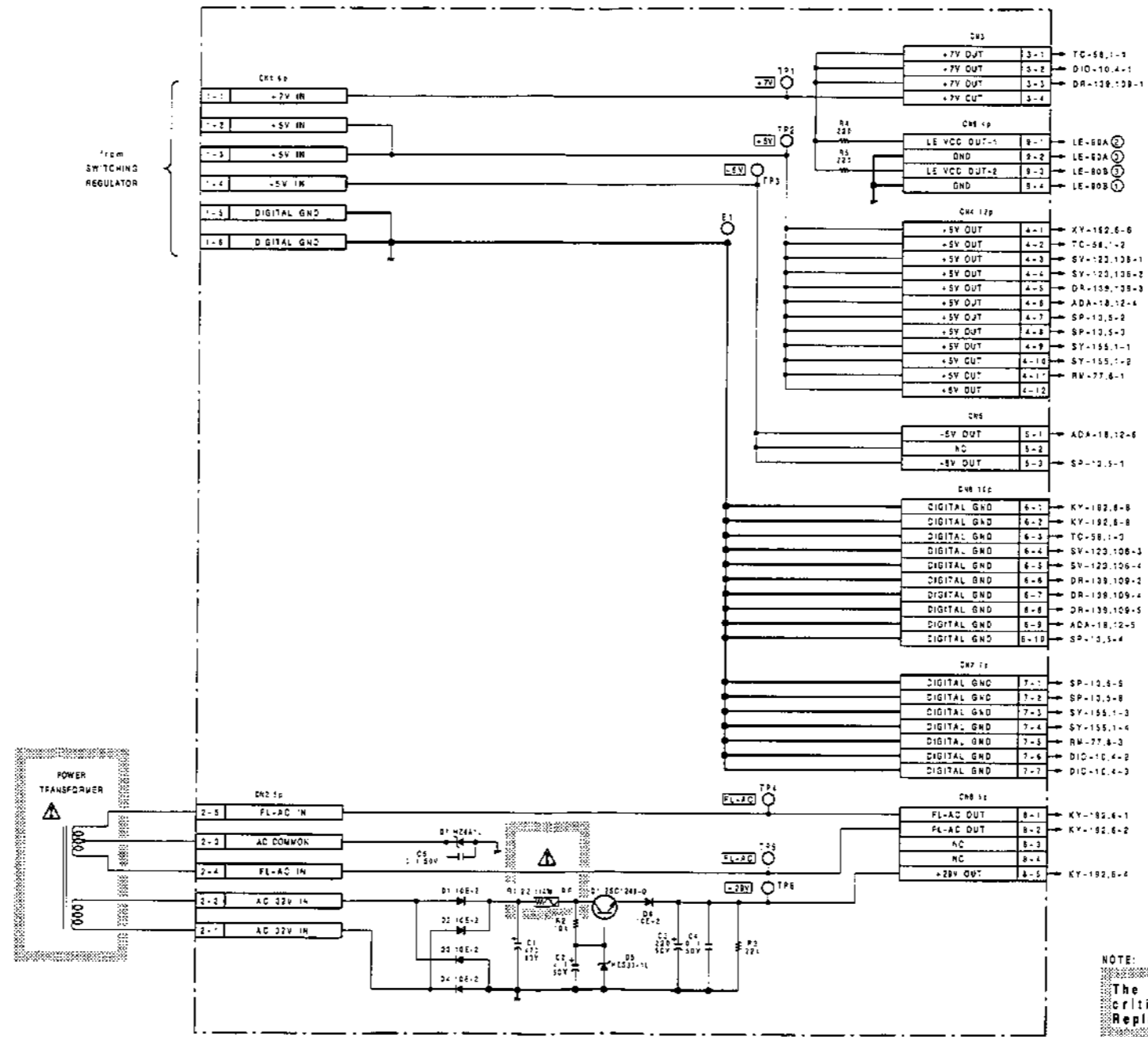
2

3

4

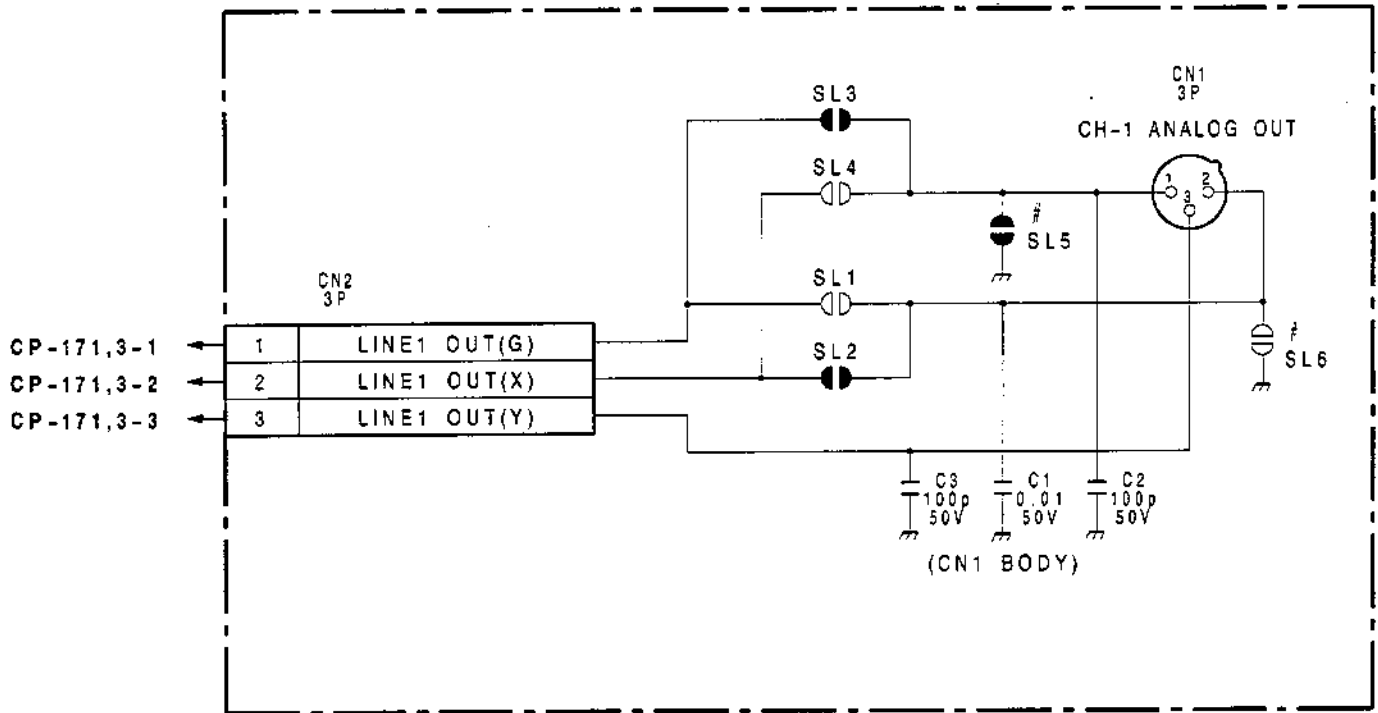
5

DC-47 BOARD (PCM-7030)
DC



DC-47 BOARD
BOARD NO.1-637-274-11 & HIGHER
PCM-7030

CP-172A BOARD (PCM-7030)
Connector(ANALOG OUT)

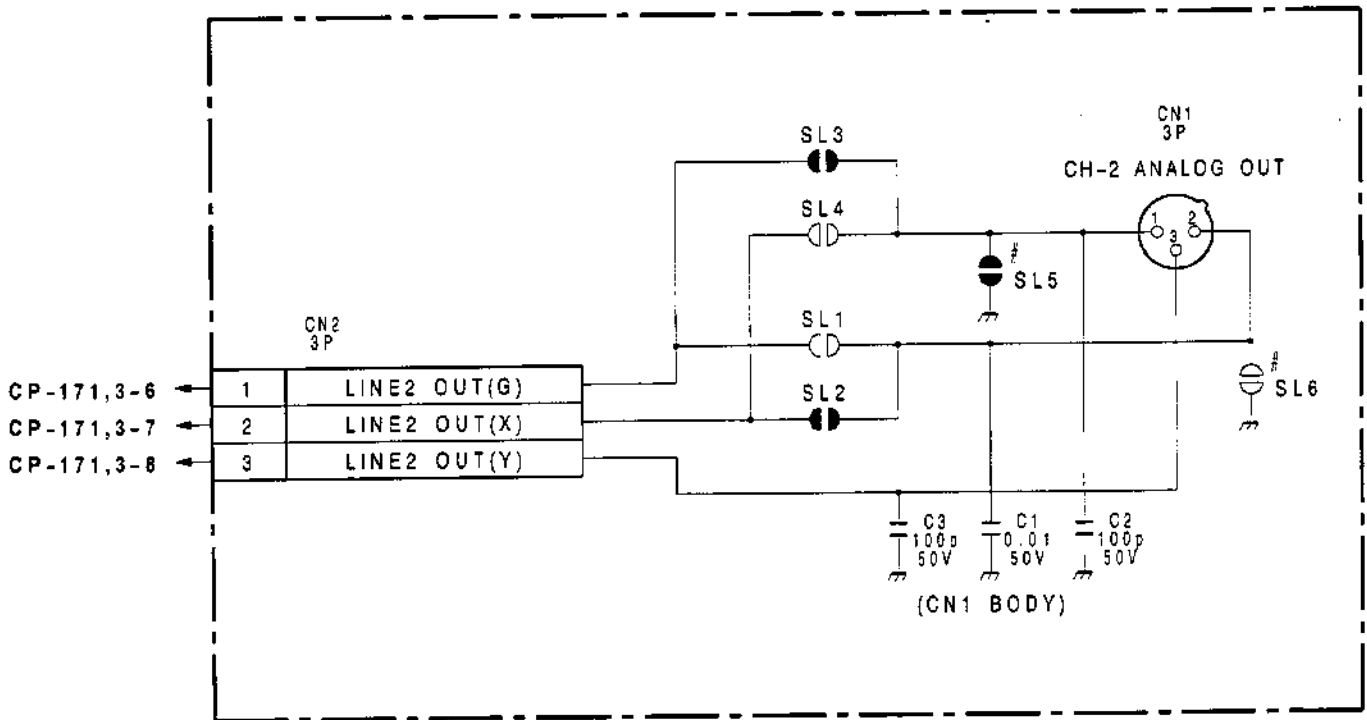


Changed information

Applied Serial No.	Parts that have been added.
LC:20046 and higher	SL5
EK:50201 and higher	SL6

CP-172A BOARD
BOARD NO.1-637-280-11 & HIGHER
PCM-7030

CP-172B BOARD (PCM-7030)
Connector(ANALOG OUT)

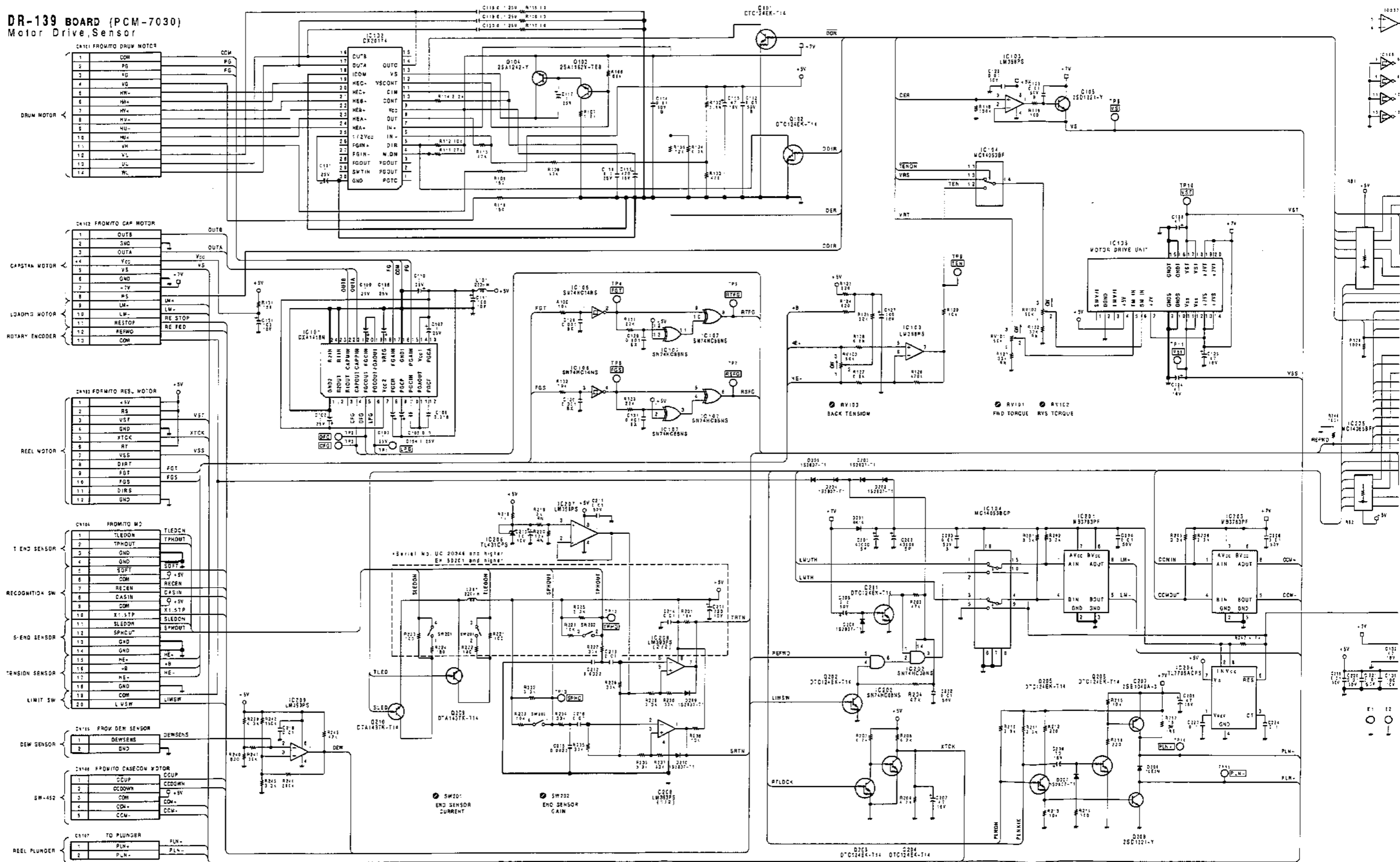


Changed Information

Applied Serial No.	Parts that have been added.
UC:20046 and higher	SL5
EK:50201 and higher	SL6

CP-172B BOARD
BOARD NO.1-837-281-11 & HIGHER
PCM-7030

DR-139 BOARD (PCM-7030)
Motor Drive Sensor



C-37

C-38

A

B

C

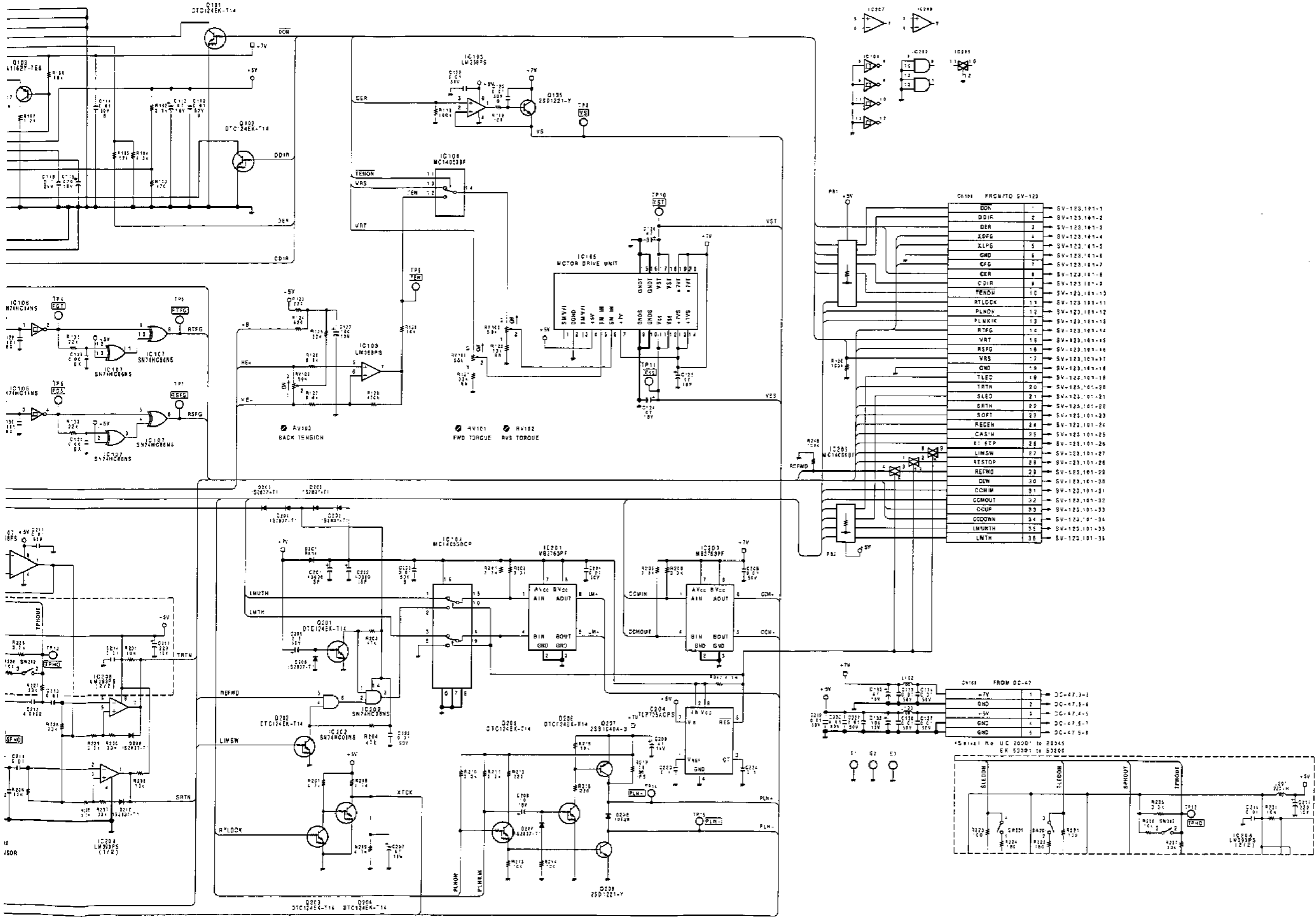
D

E

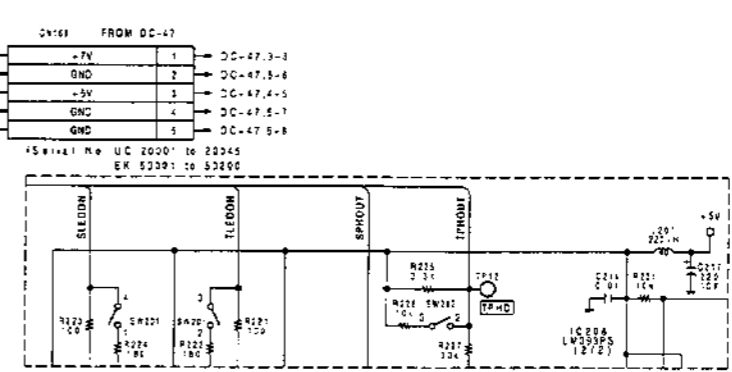
F

G

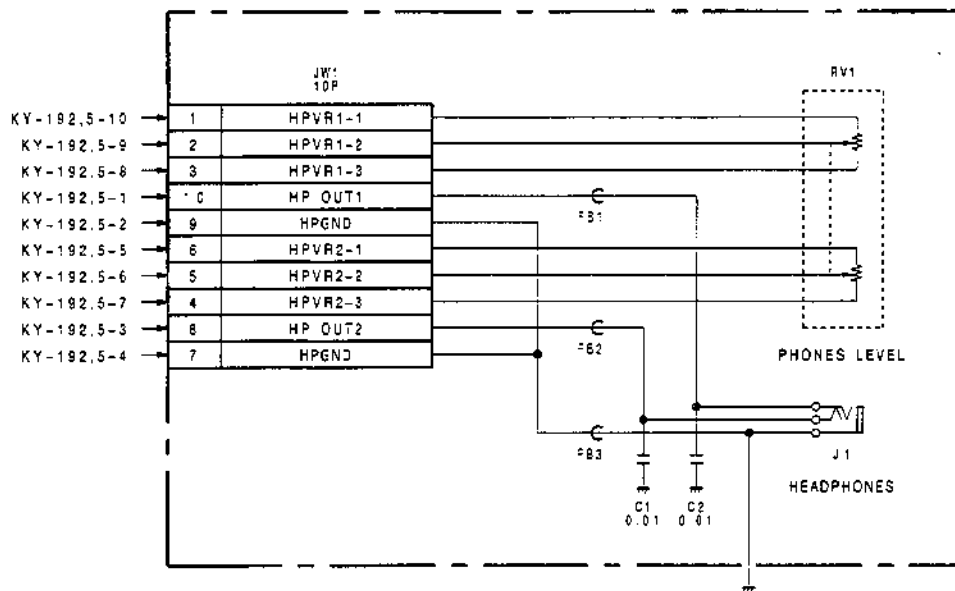
H



Pin	Signal Name	Connection
1	DDW	SV-123.101-1
2	DDIR	SV-123.101-2
3	DER	SV-123.101-3
4	XLPG	SV-123.101-4
5	GMD	SV-123.101-5
6	CFG	SV-123.101-6
7	CER	SV-123.101-7
8	CDIR	SV-123.101-8
9	TENDN	SV-123.101-9
10	RTLOCK	SV-123.101-10
11	PLMCK	SV-123.101-11
12	PLNCK	SV-123.101-12
13	RTFG	SV-123.101-13
14	VRT	SV-123.101-14
15	RSPG	SV-123.101-15
16	VAS	SV-123.101-16
17	GMD	SV-123.101-17
18	TLED	SV-123.101-18
19	TRTN	SV-123.101-19
20	SLED	SV-123.101-20
21	SRTN	SV-123.101-21
22	SOFT	SV-123.101-22
23	RECEN	SV-123.101-23
24	CASIN	SV-123.101-24
25	K1 STP	SV-123.101-25
26	LIMSW	SV-123.101-26
27	RESTOP	SV-123.101-27
28	REFWD	SV-123.101-28
29	DEM	SV-123.101-29
30	CCMIN	SV-123.101-30
31	CCMOUT	SV-123.101-31
32	CCUP	SV-123.101-32
33	CCDOWN	SV-123.101-33
34	LMNTH	SV-123.101-34
35	LMNTH	SV-123.101-35
36	LMNTH	SV-123.101-36



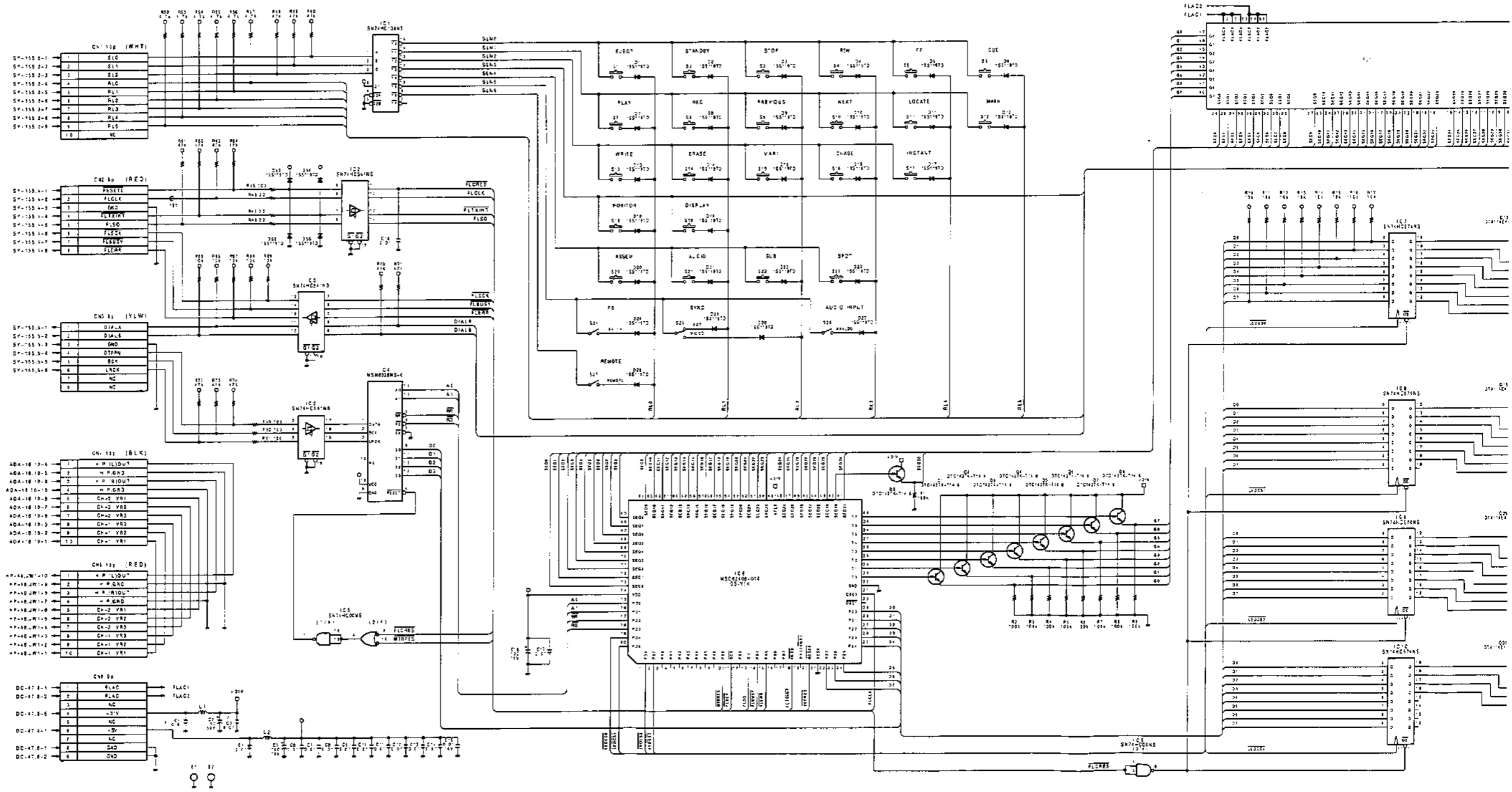
HP-48 BOARD (PCM-7030)
Headphones



HP-48 BOARD

BOARD NO.1-637-283-12 & HIGHER
PCM-7030

KY-192 BOARD (PCM-7030)
Key, Display

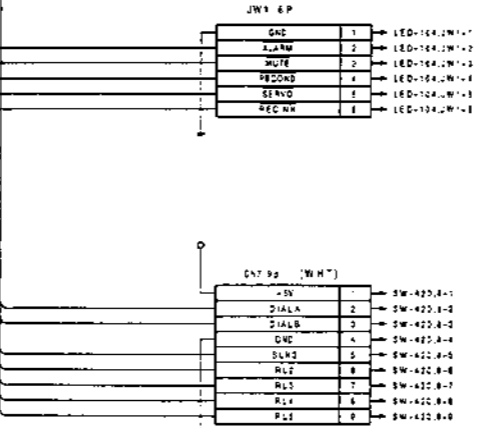
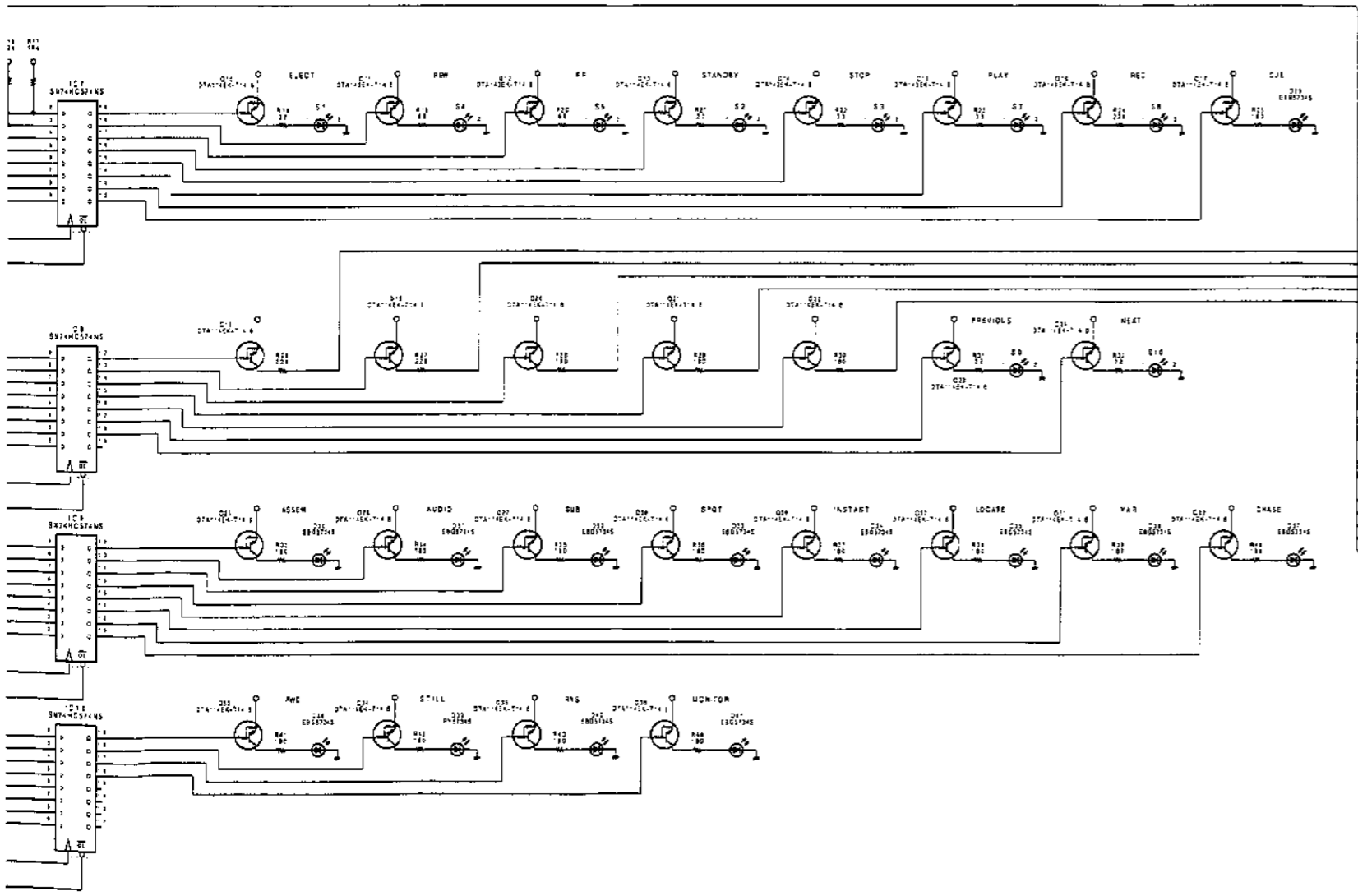
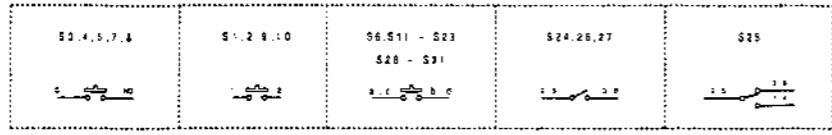


C-45

C-46

A | B | C | D | E | F | G | H

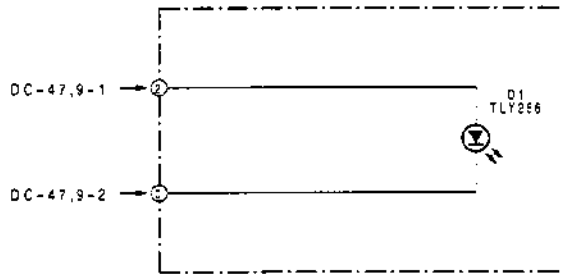
10001	10002	10003	10004	10005	10006	10007	10008	10009	10010	10011	10012	10013	10014	10015	10016	10017	10018	10019	10020	10021	10022	10023	10024	10025	10026	10027	10028	10029	10030	10031	10032	10033	10034	10035	10036	10037	10038	10039	10040	10041	10042	10043	10044	10045	10046	10047	10048	10049	10050
-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------



KY-192 BOARD
BOARD NO.1-837-268-11 & HIGHER
PCM-7030

Changed Information
Applied Serial No. Parts that have been deleted.
VC:25471 and higher Cr.3
EK:55401 and higher Cr.3

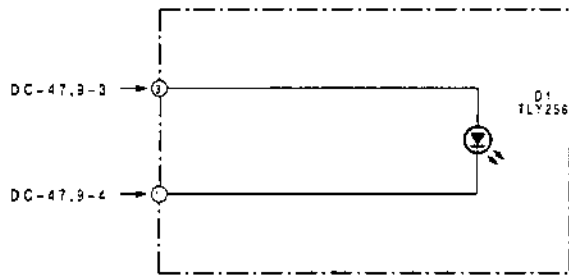
LE-90A BOARD (PCM-7030)
LED



LE-90A BOARD

BOARD NO.1-637-285-12 & HIGHER
PCM-7030

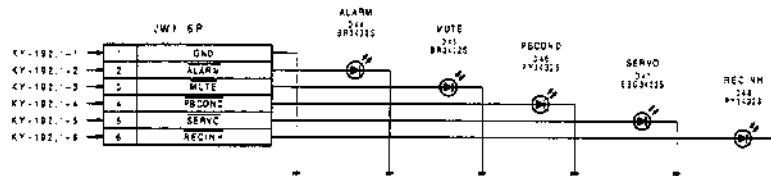
LE-90B BOARD (PCM-7030)
LED



LE-90B BOARD

BOARD NO.1-837-286-12 & HIGHER
PCM-7030

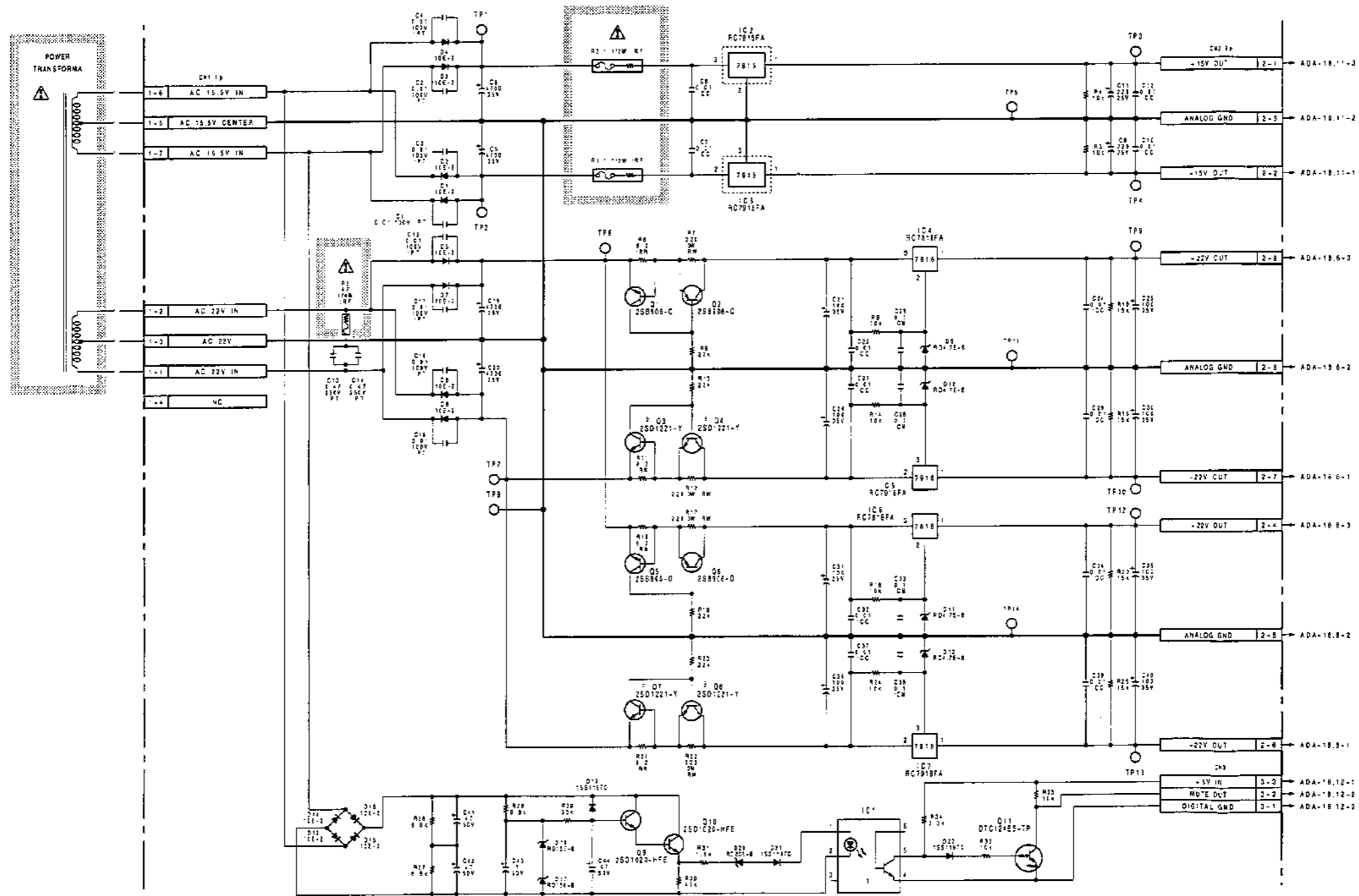
LED-104 BOARD (PCM-7030)
LED(STATUS)



LED-104 BOARD
BOARD NO.1-637-269-11 & HIGHER
PCM-7030

PS-211 PS-211

PS-211 BOARD (PCM-7030)
Power Supply



NOTE:
The shaded and Δ -marked components are critical to safety. Replace only with same components as specified.

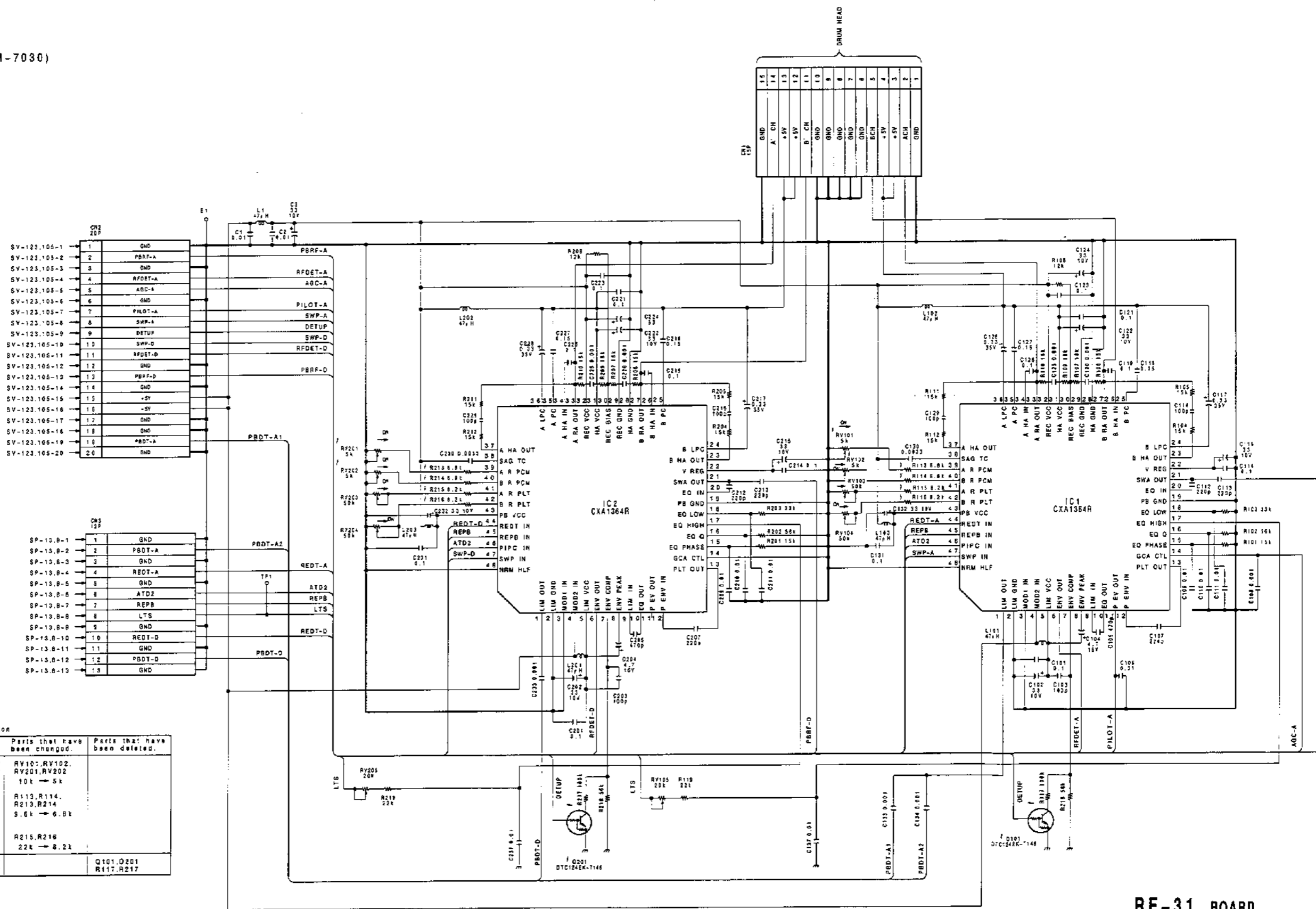
Changed Information	
Applied Serial No	Parts that have been changed.
JC:25501 and higher EK:55521 and higher	Q3, 4, 7, 8 2SC1221-0 2SC1221-Y

PS-211 BOARD
BOARD NO.1-637-273-11 & HIGHER
PCM-7030

C-59

C-60

RF-31 BOARD (PCM-7030)
RF Amplifier



* Changed Information

Applied Serial No.	Parts that have been changed.	Parts that have been deleted.
UC:20001 and higher EK:50001 and higher	RV10:RV102, RV201,RV202 10k → 5k R113,R114, R213,R214 5.6k → 6.8k R215,R216 22k → 8.2k	
UC:20115 and higher EK:50381 and higher		Q101,Q201 R117,R217

RF-31 BOARD

BOARD NO.1-637-271-11 & HIGHER
PCM-7030

C-63

C-64

A

I

B

C

D

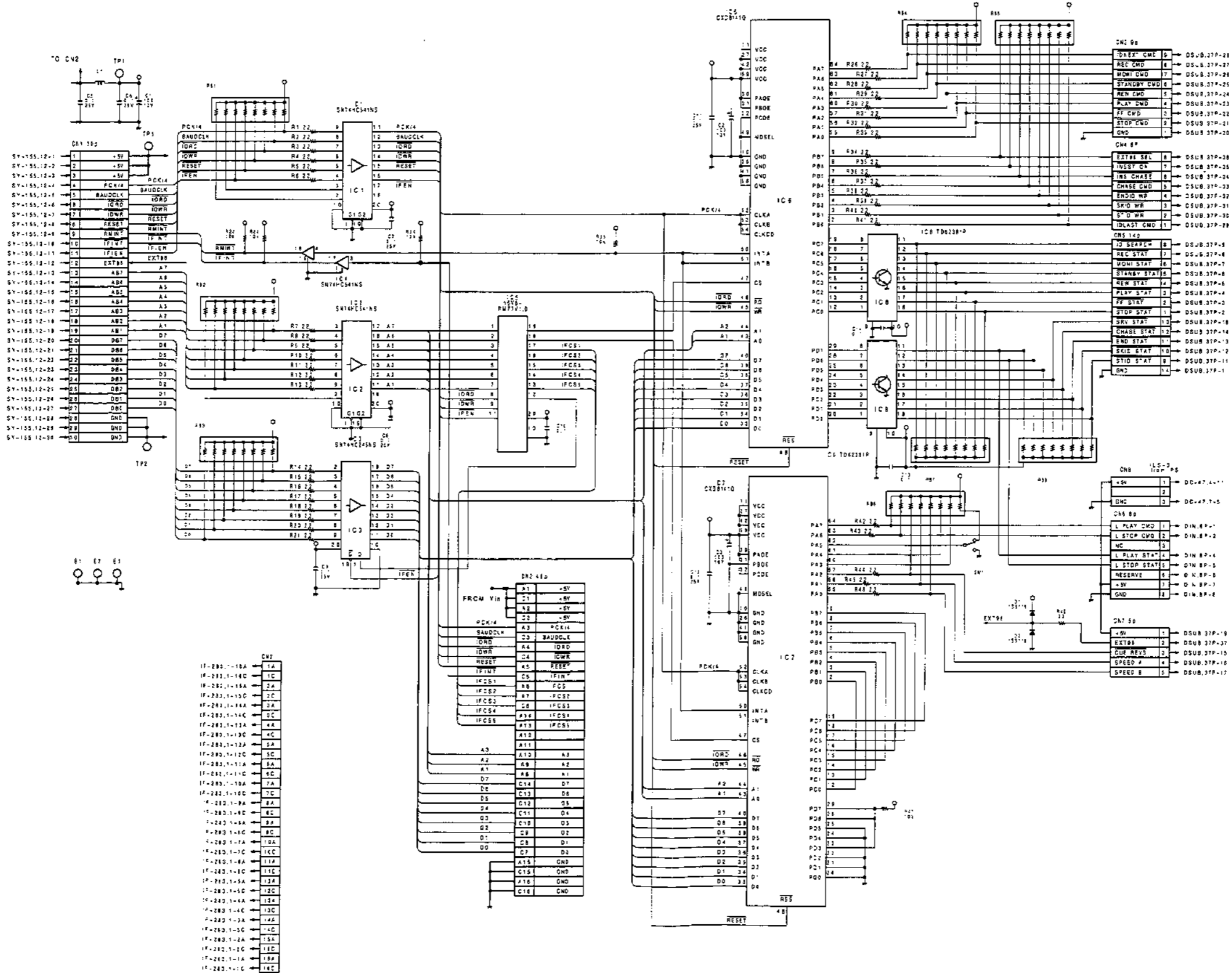
E

F

G

H

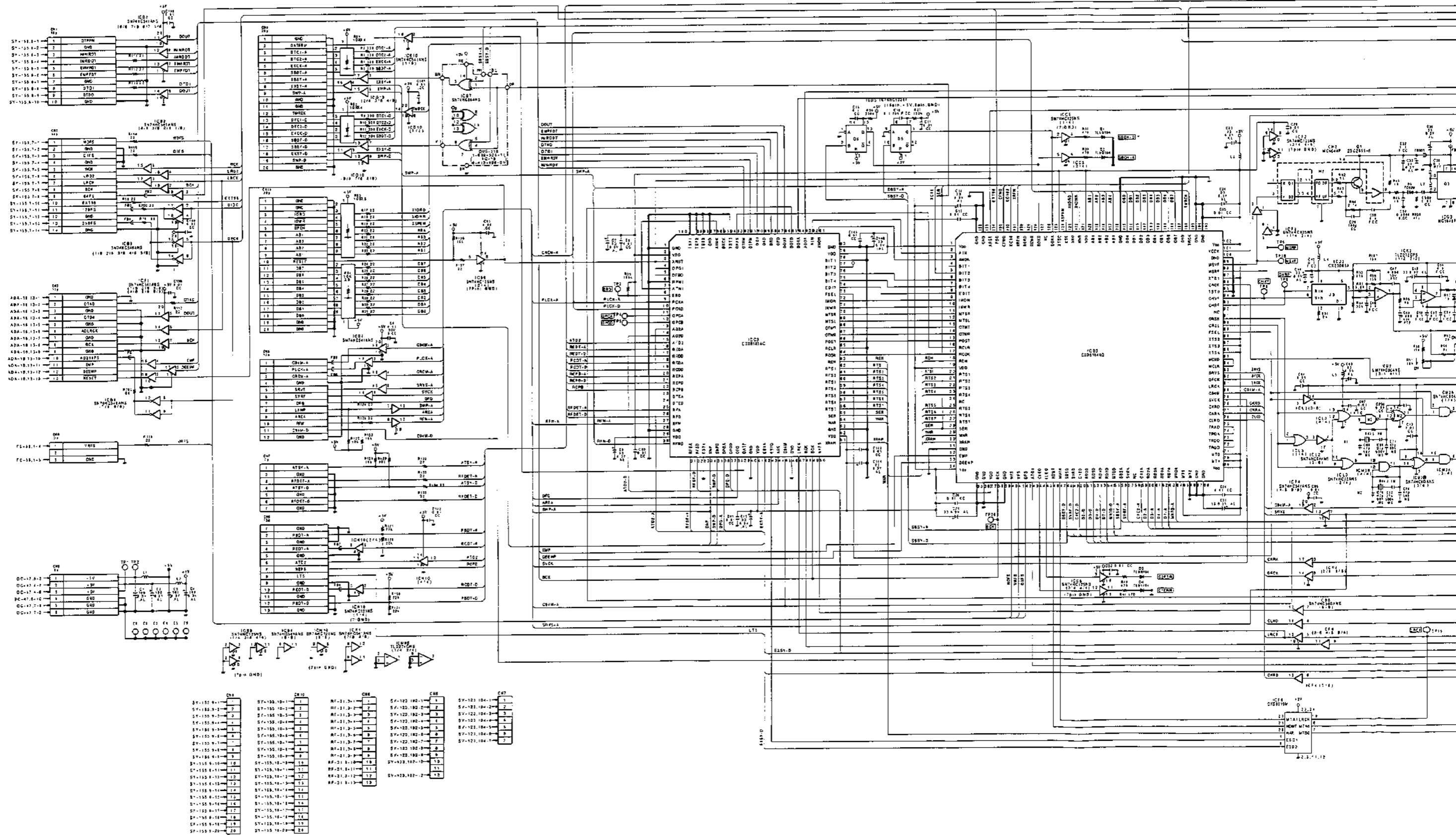
RM-77 BOARD (PCM-7030) Parallel Remote



RM-77 BOARD BOARD NO.1-637-272-11 & HIGHER PCM-7030

SP-13 BOARD (PCM-7030)
Signal Processor

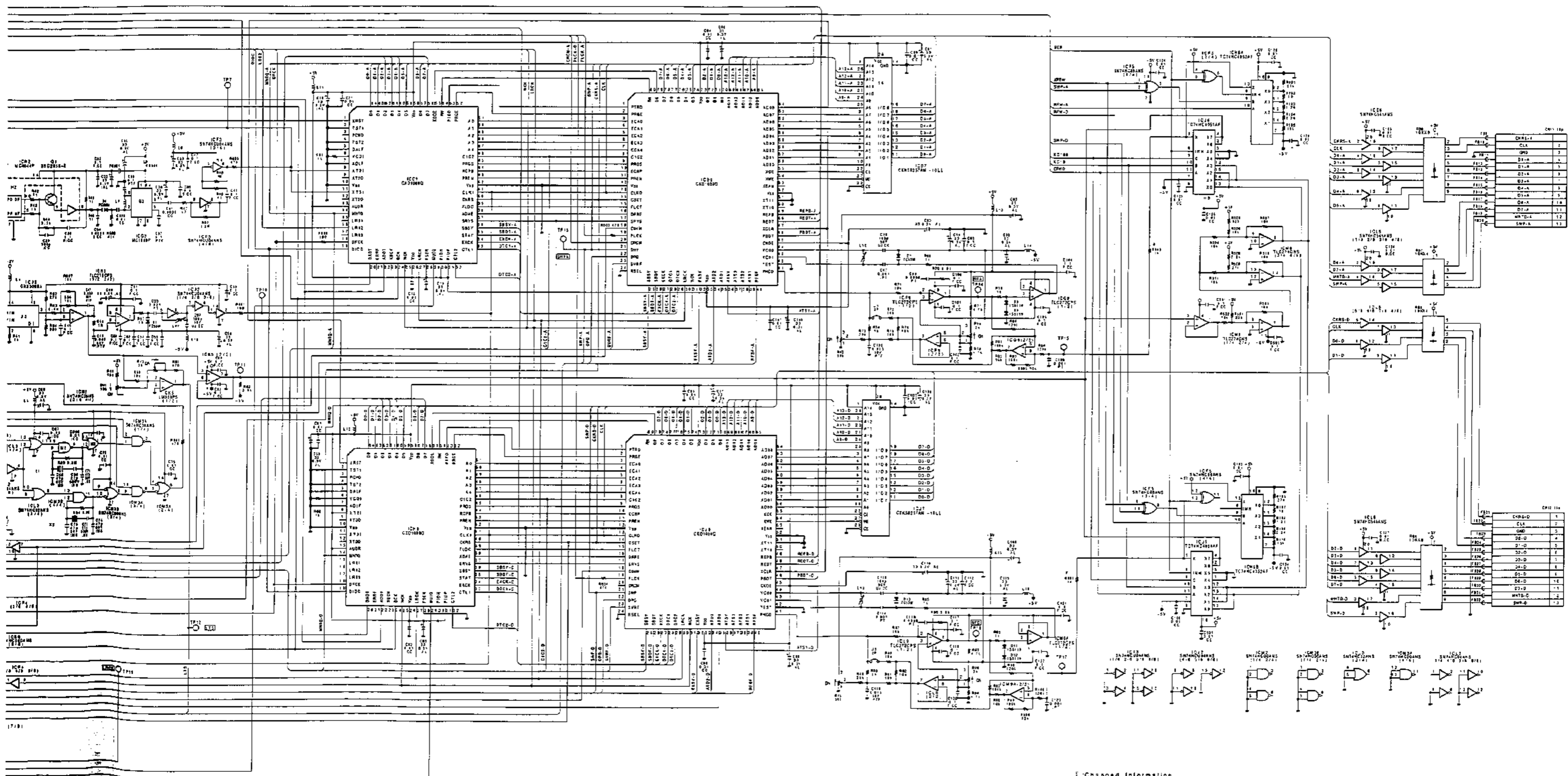
Serial No. UC 20001 to 20045
EK 50001 to 50200



C-71(a)

C-72(a)

A | B | C | D | E | F | G | H



Changed Information

Applied Serial No.	Parts that have been added.
UC 20026 and higher:	R800
EK 50081 and higher:	R801

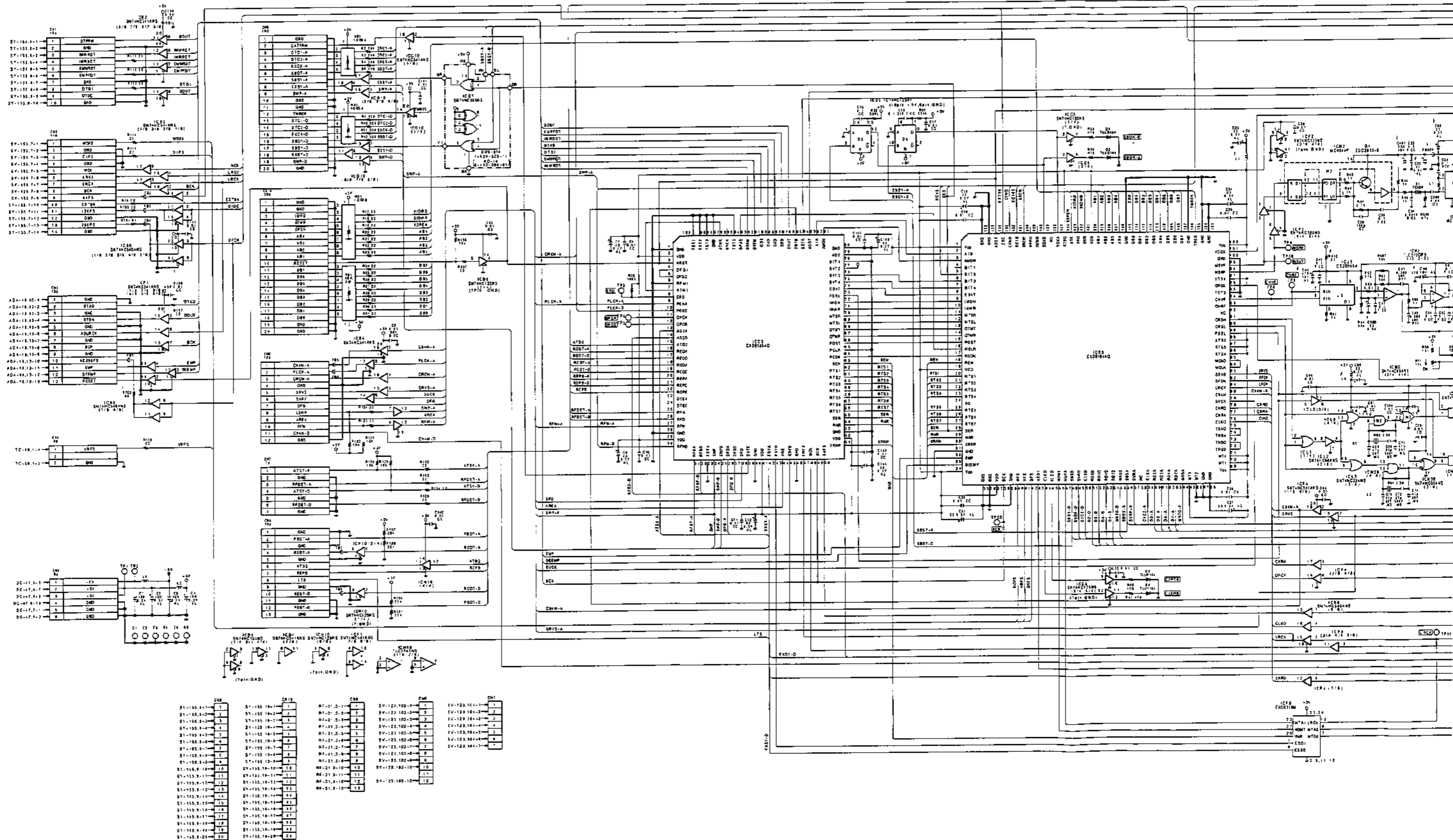
SP-13 BOARD
BOARD NO.1-637-265-11
PCM-7030

C-73(a)

C-74(a)

SP-13 BOARD (PCM-7030)
Signal Processor

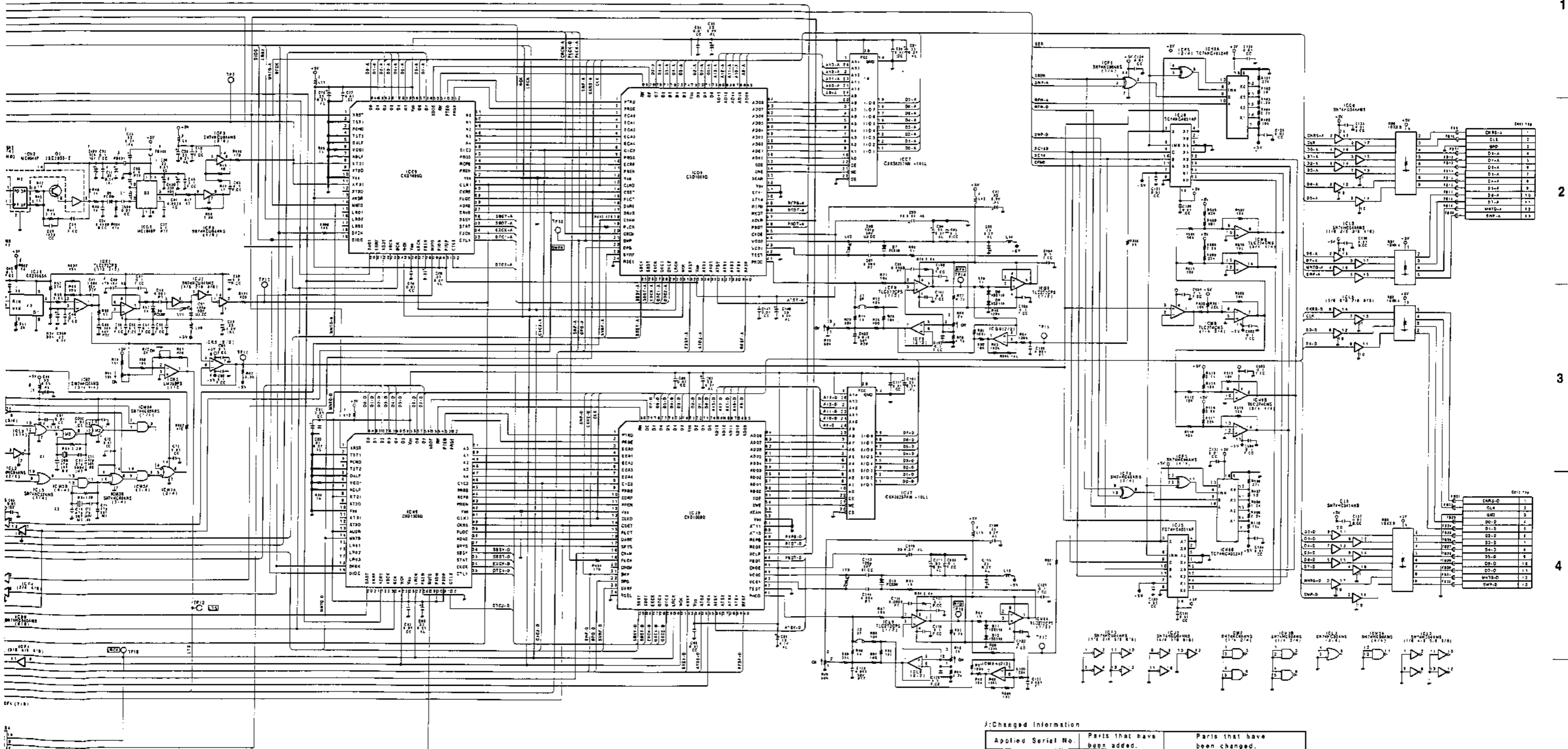
Serial No: UC 20046 to 20115
EK 50201 to 50580



C-71(b)

C-72(b)

A | B | C | D | E | F | G | H



Changed Information

Applied Serial No.	Parts that have been added.	Parts that have been changed.
UC 20116 and higher	C300	C33,35,38 33 μ F - 330 μ F
EK 50381 and higher	C400	C44,49 470 μ F - 330 μ F
	C401	R802 220 - L4 100 μ H
		L3,5,9,11 45 μ H - 100 μ H
		L12,13,15 45 μ H - 100 μ H
		FB000 - L6 470 μ H
		FB501 - L8 470 μ H
		R702 680 - 2200

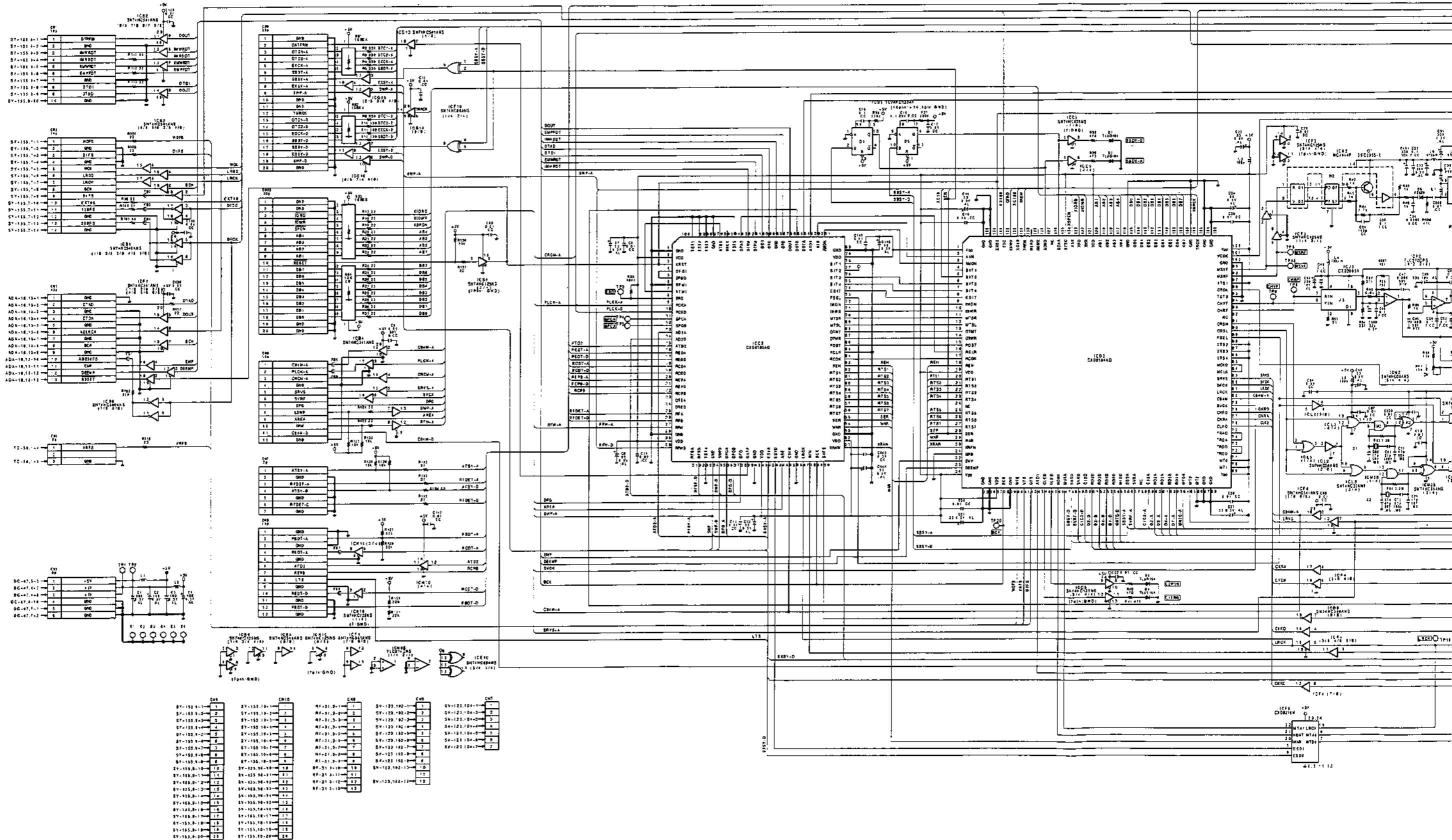
SP-13 BOARD
 BOARD NO.1-637-265-12
 PCM-7030

C-73(b)

C-74(b)

SP-13 BOARD (PCM-7030)
Signal Processor

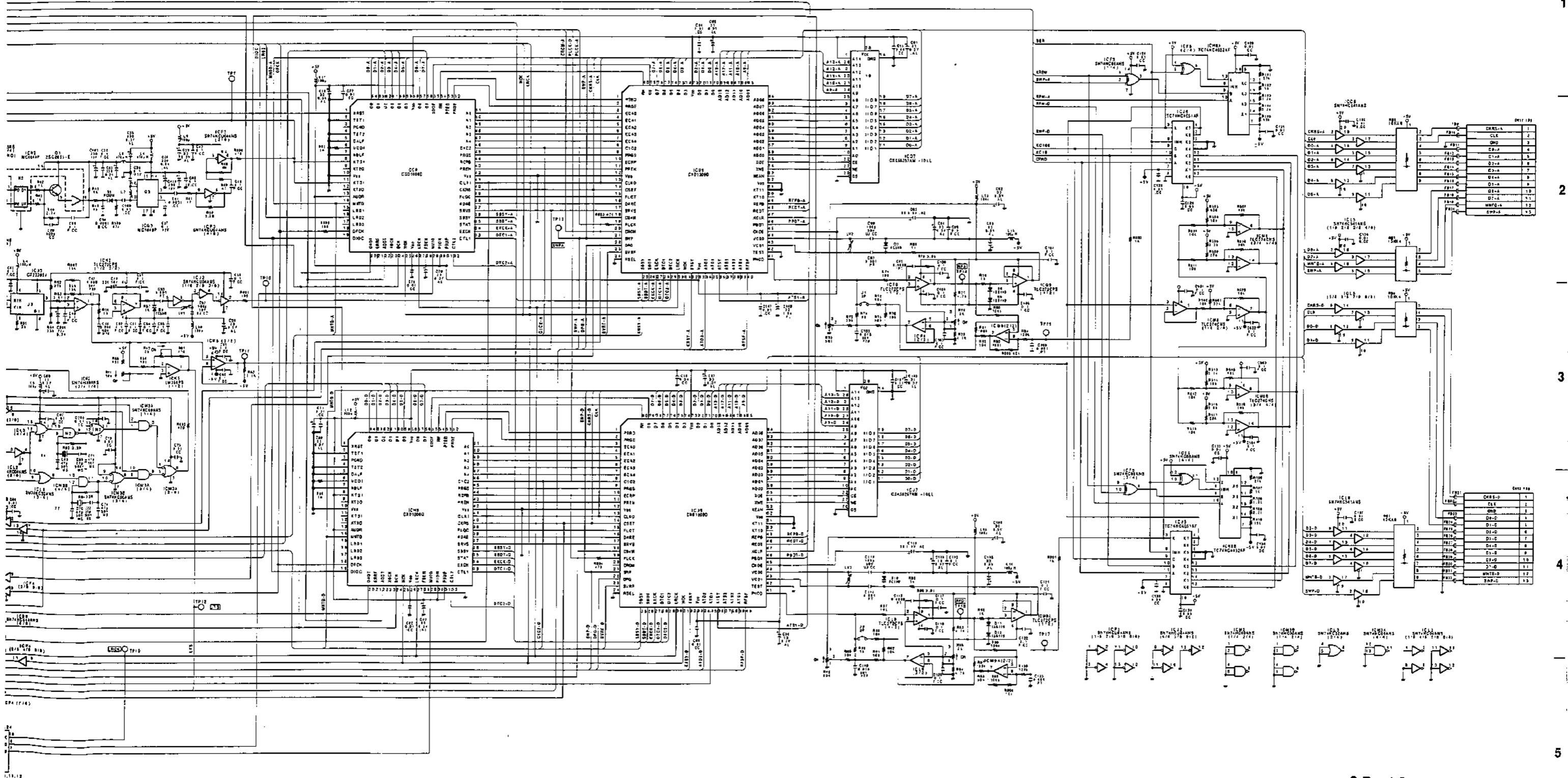
Serial No. UC 20116 to 25020
EK 50581 to 55040



C-71(c)

C-72(c)

A | B | C | D | E | F | G | H



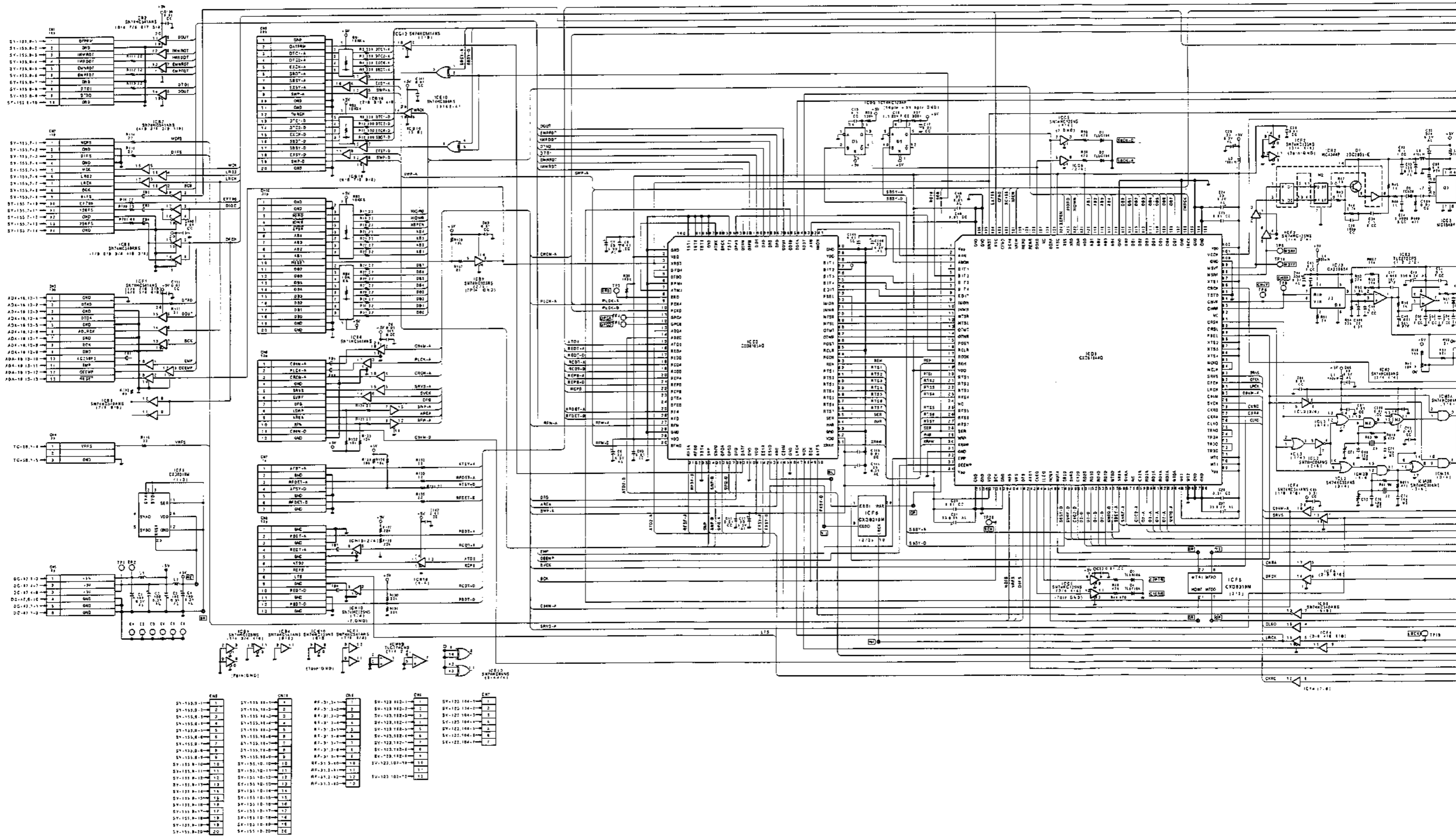
SP-13 BOARD
 BOARD NO.1-837-265-13
 PCM-7030

C-73(c)

C-74(c)

SP-13 BOARD (PCM-7030)
Signal Processor

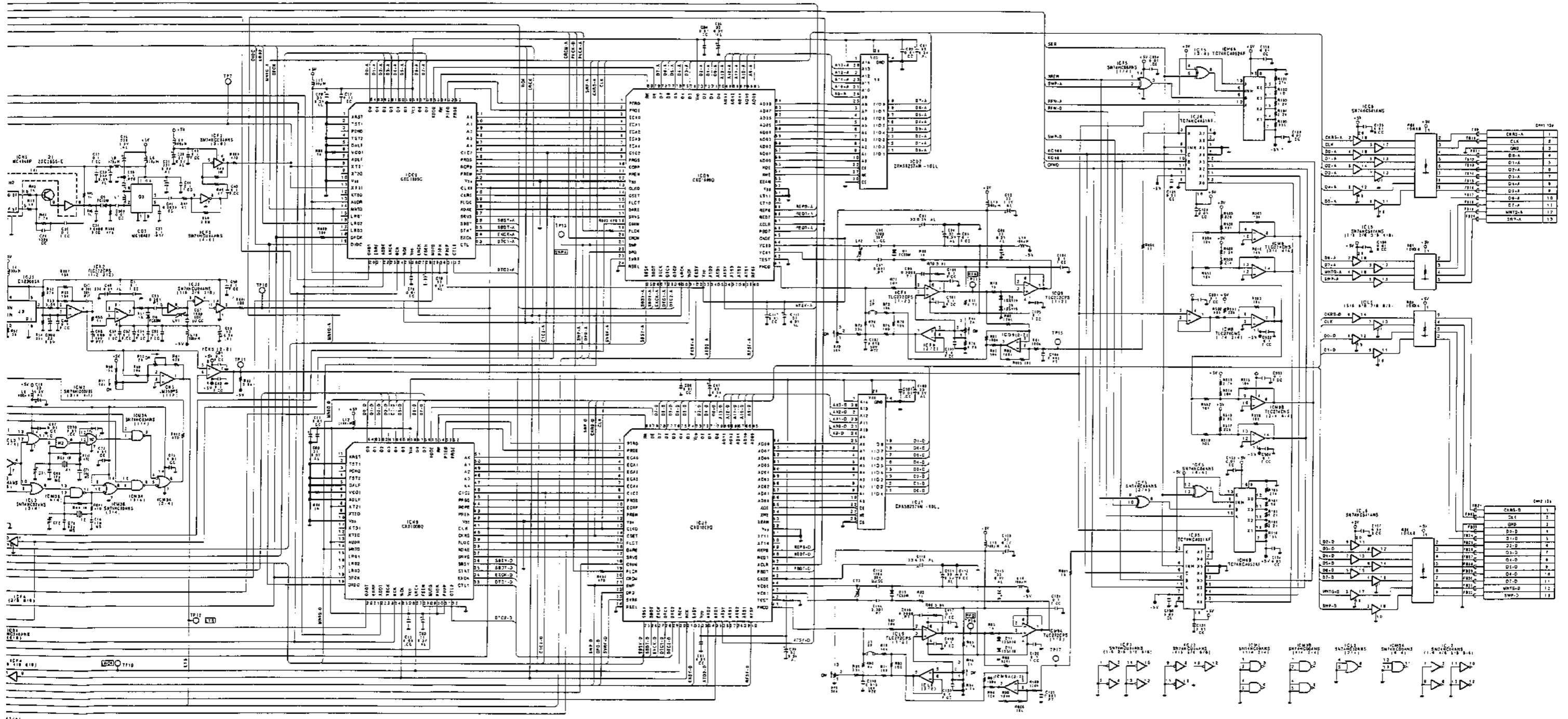
Serial No. UC 25021 to 25180



C-71(d)

C-72(d)

A | B | C | D | E | F | G | H



Changed Information
 Applied Serial No. Parts that have been
 DC 25921 and Higher: R621 100 → 22

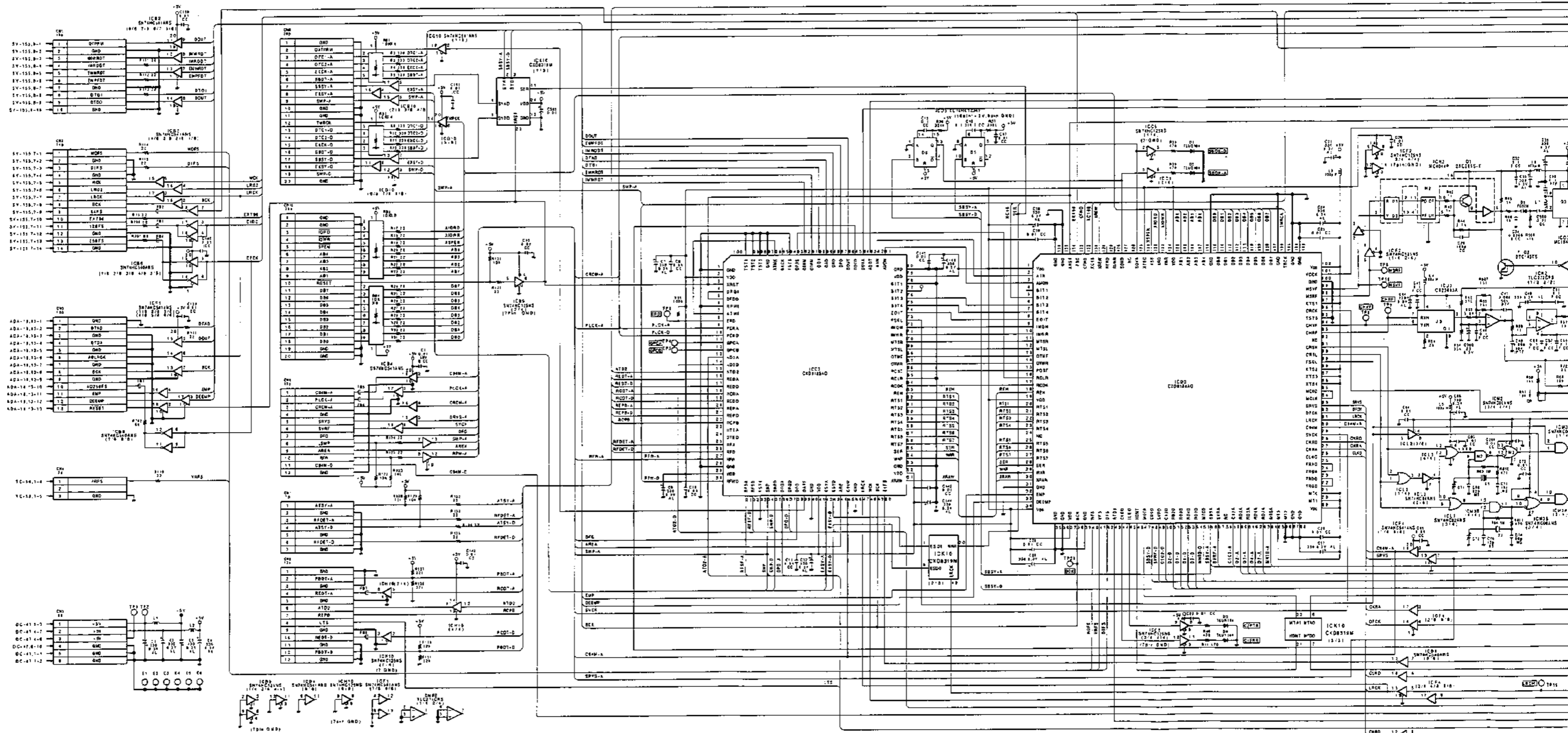
SP-13 BOARD
 BOARD NO.1-637-265-14
 PCM-7030

C-73(d)

C-74(d)

SP-13 BOARD (PCM-7030) Signal Processor

Serial No. UC 25181 and higher
EK 55041 and higher

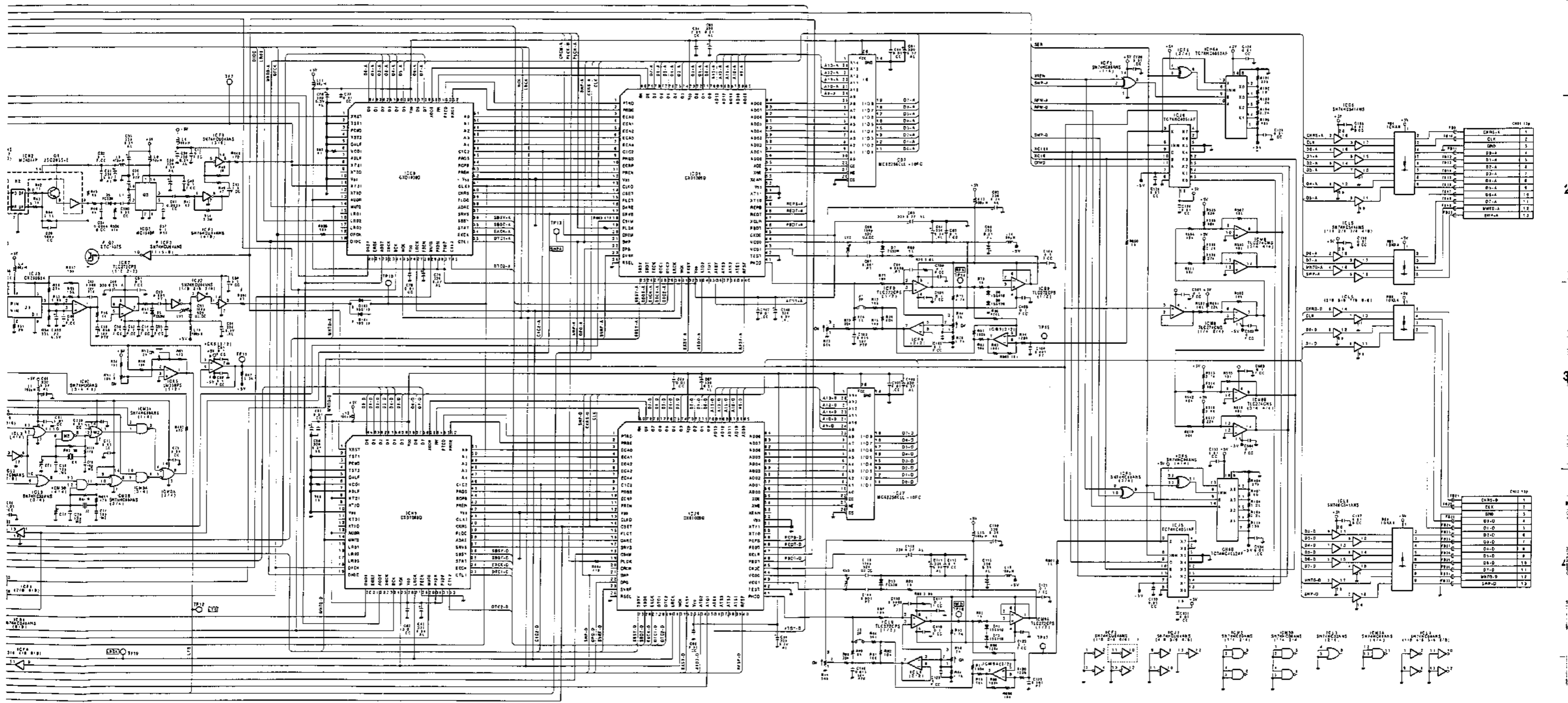


SV-150.1-1	SV-150.1-2	SV-150.1-3	SV-150.1-4	SV-150.1-5	SV-150.1-6	SV-150.1-7	SV-150.1-8	SV-150.1-9	SV-150.1-10	SV-150.1-11	SV-150.1-12	SV-150.1-13	SV-150.1-14	SV-150.1-15	SV-150.1-16	SV-150.1-17	SV-150.1-18	SV-150.1-19	SV-150.1-20
SV-150.2-1	SV-150.2-2	SV-150.2-3	SV-150.2-4	SV-150.2-5	SV-150.2-6	SV-150.2-7	SV-150.2-8	SV-150.2-9	SV-150.2-10	SV-150.2-11	SV-150.2-12	SV-150.2-13	SV-150.2-14	SV-150.2-15	SV-150.2-16	SV-150.2-17	SV-150.2-18	SV-150.2-19	SV-150.2-20
SV-150.3-1	SV-150.3-2	SV-150.3-3	SV-150.3-4	SV-150.3-5	SV-150.3-6	SV-150.3-7	SV-150.3-8	SV-150.3-9	SV-150.3-10	SV-150.3-11	SV-150.3-12	SV-150.3-13	SV-150.3-14	SV-150.3-15	SV-150.3-16	SV-150.3-17	SV-150.3-18	SV-150.3-19	SV-150.3-20
SV-150.4-1	SV-150.4-2	SV-150.4-3	SV-150.4-4	SV-150.4-5	SV-150.4-6	SV-150.4-7	SV-150.4-8	SV-150.4-9	SV-150.4-10	SV-150.4-11	SV-150.4-12	SV-150.4-13	SV-150.4-14	SV-150.4-15	SV-150.4-16	SV-150.4-17	SV-150.4-18	SV-150.4-19	SV-150.4-20
SV-150.5-1	SV-150.5-2	SV-150.5-3	SV-150.5-4	SV-150.5-5	SV-150.5-6	SV-150.5-7	SV-150.5-8	SV-150.5-9	SV-150.5-10	SV-150.5-11	SV-150.5-12	SV-150.5-13	SV-150.5-14	SV-150.5-15	SV-150.5-16	SV-150.5-17	SV-150.5-18	SV-150.5-19	SV-150.5-20
SV-150.6-1	SV-150.6-2	SV-150.6-3	SV-150.6-4	SV-150.6-5	SV-150.6-6	SV-150.6-7	SV-150.6-8	SV-150.6-9	SV-150.6-10	SV-150.6-11	SV-150.6-12	SV-150.6-13	SV-150.6-14	SV-150.6-15	SV-150.6-16	SV-150.6-17	SV-150.6-18	SV-150.6-19	SV-150.6-20
SV-150.7-1	SV-150.7-2	SV-150.7-3	SV-150.7-4	SV-150.7-5	SV-150.7-6	SV-150.7-7	SV-150.7-8	SV-150.7-9	SV-150.7-10	SV-150.7-11	SV-150.7-12	SV-150.7-13	SV-150.7-14	SV-150.7-15	SV-150.7-16	SV-150.7-17	SV-150.7-18	SV-150.7-19	SV-150.7-20
SV-150.8-1	SV-150.8-2	SV-150.8-3	SV-150.8-4	SV-150.8-5	SV-150.8-6	SV-150.8-7	SV-150.8-8	SV-150.8-9	SV-150.8-10	SV-150.8-11	SV-150.8-12	SV-150.8-13	SV-150.8-14	SV-150.8-15	SV-150.8-16	SV-150.8-17	SV-150.8-18	SV-150.8-19	SV-150.8-20
SV-150.9-1	SV-150.9-2	SV-150.9-3	SV-150.9-4	SV-150.9-5	SV-150.9-6	SV-150.9-7	SV-150.9-8	SV-150.9-9	SV-150.9-10	SV-150.9-11	SV-150.9-12	SV-150.9-13	SV-150.9-14	SV-150.9-15	SV-150.9-16	SV-150.9-17	SV-150.9-18	SV-150.9-19	SV-150.9-20
SV-150.10-1	SV-150.10-2	SV-150.10-3	SV-150.10-4	SV-150.10-5	SV-150.10-6	SV-150.10-7	SV-150.10-8	SV-150.10-9	SV-150.10-10	SV-150.10-11	SV-150.10-12	SV-150.10-13	SV-150.10-14	SV-150.10-15	SV-150.10-16	SV-150.10-17	SV-150.10-18	SV-150.10-19	SV-150.10-20

C-71(e)

C-72(e)

A B C D E F G H



Changed Information

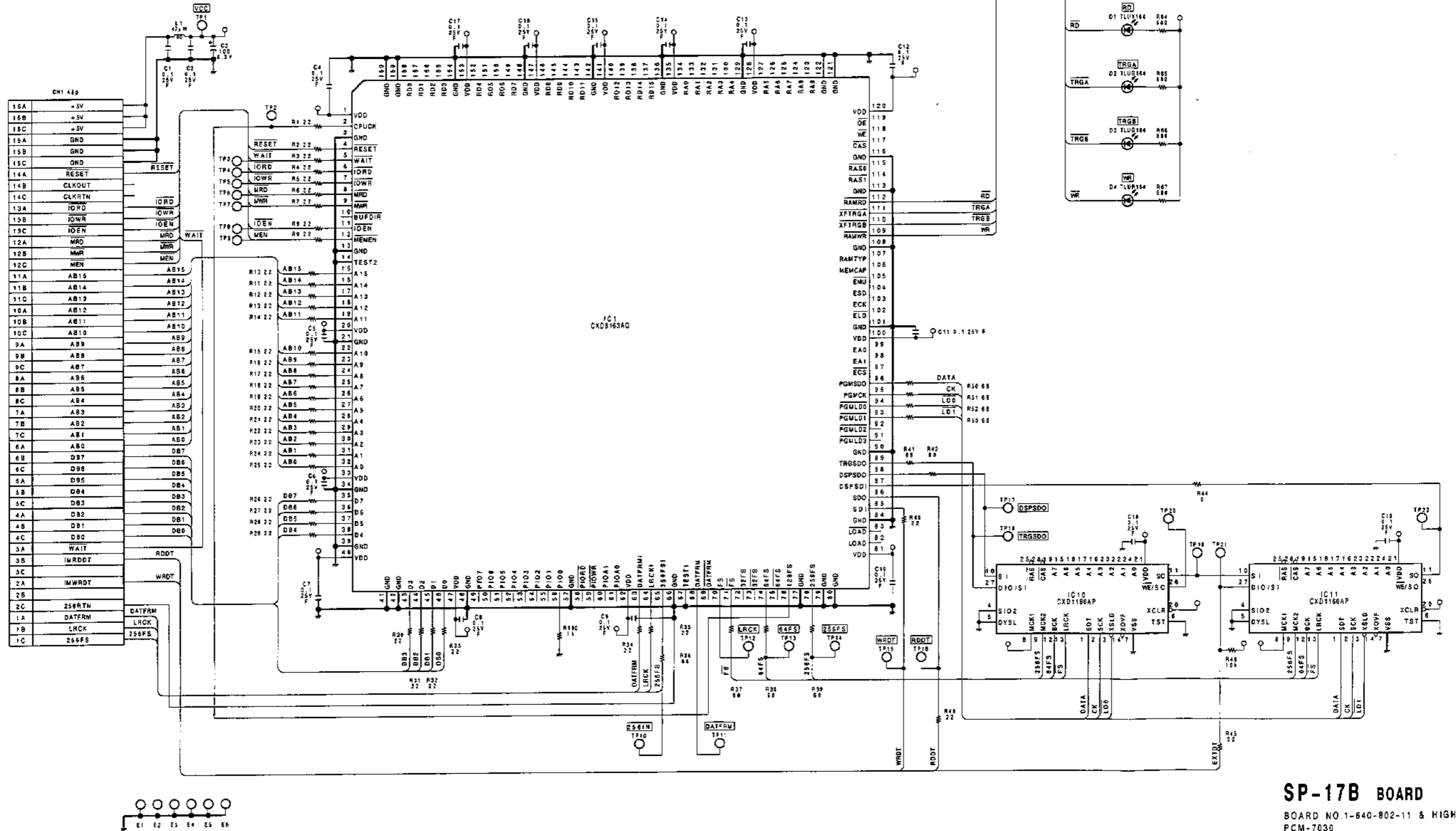
Applied Series No.	Parts that have been added.	Parts that have been changed.
UC22471 and higher	Q2	
EC35581 and higher	IC1310(a)	
UC13020 and higher	Q101, Q102	R001 22 → 47
EC35581 and higher		

SP-13 BOARD
 BOARD NO.1-637-265-15 & HIGHER
 PCM-7030

C-73(e)

C-74(e)

SP-17B BOARD (PCM-7030)
Signal Processor



SP-17B BOARD
BOARD NO.1-640-802-11 & HIGHER
PCM-7030

C-79

C-80

A

B

C

D

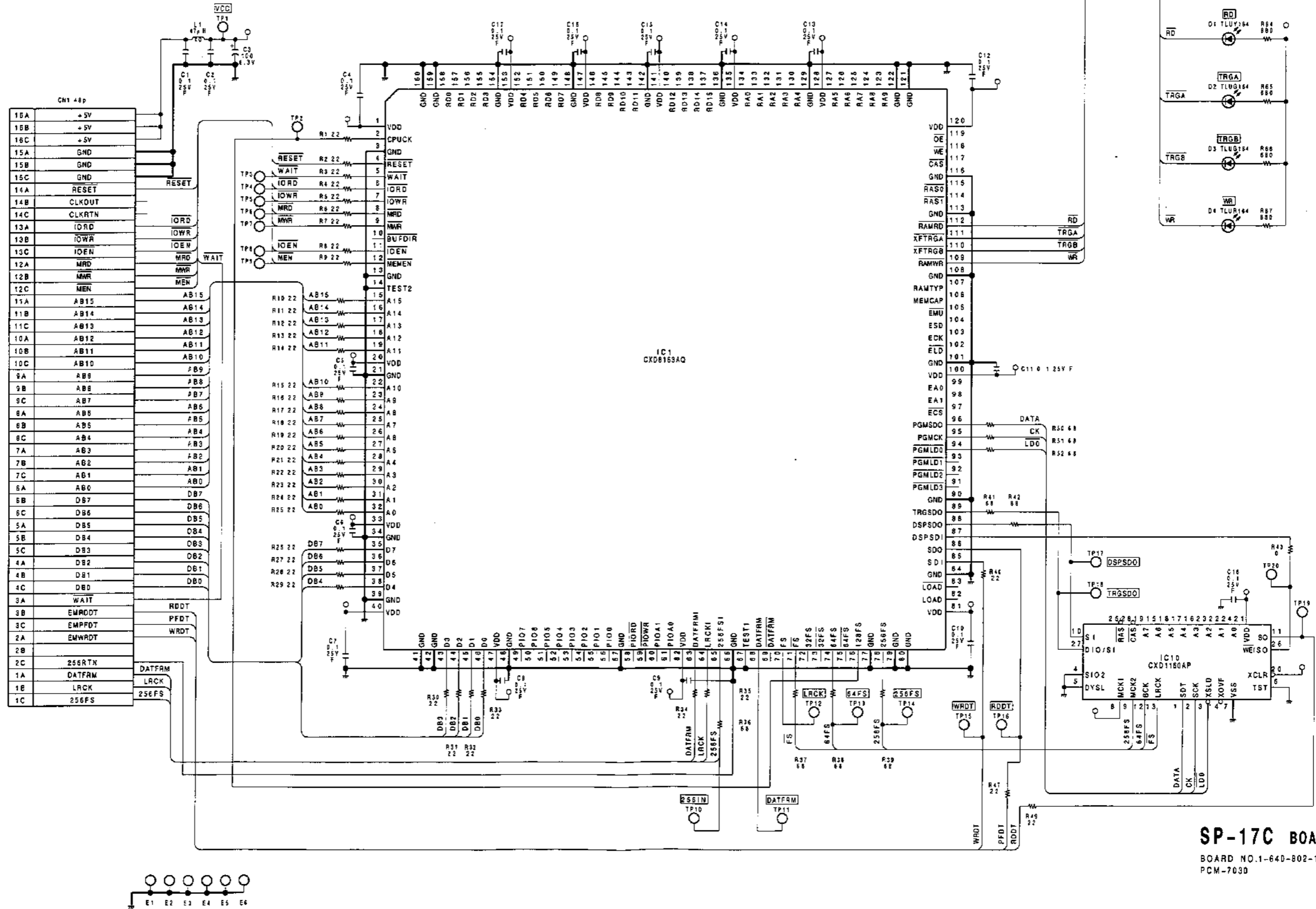
E

F

G

H

SP-17C BOARD (PCM-7030)
Signal Processor



SP-17C BOARD

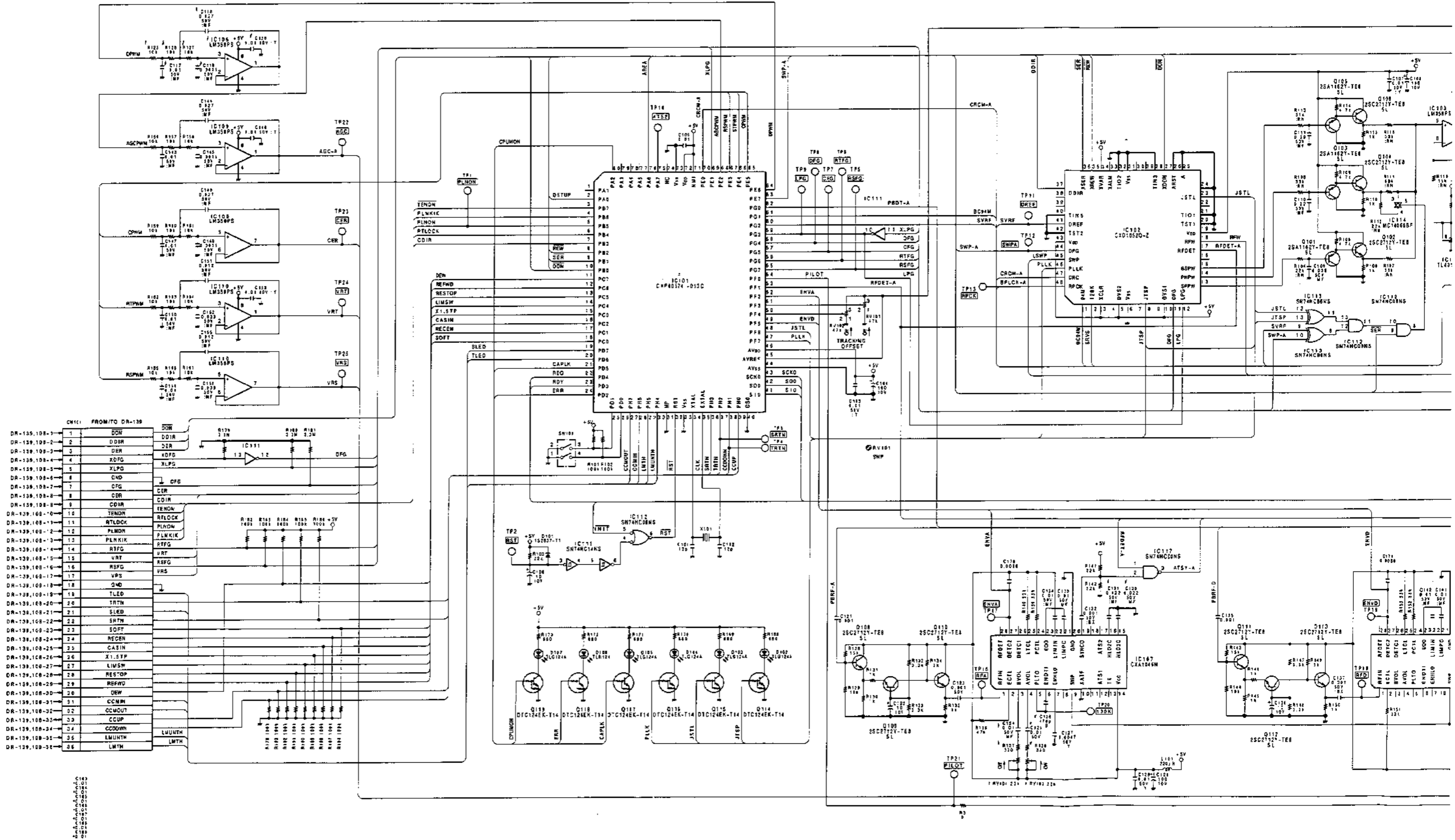
BOARD NO.1-640-802-11 & HIGHER
PCM-7030

C-83

C-84

A | B | C | D | E | F | G | H

SV-123 BOARD (PCM-7030) Servo



CM1: FROM/TO DR-138

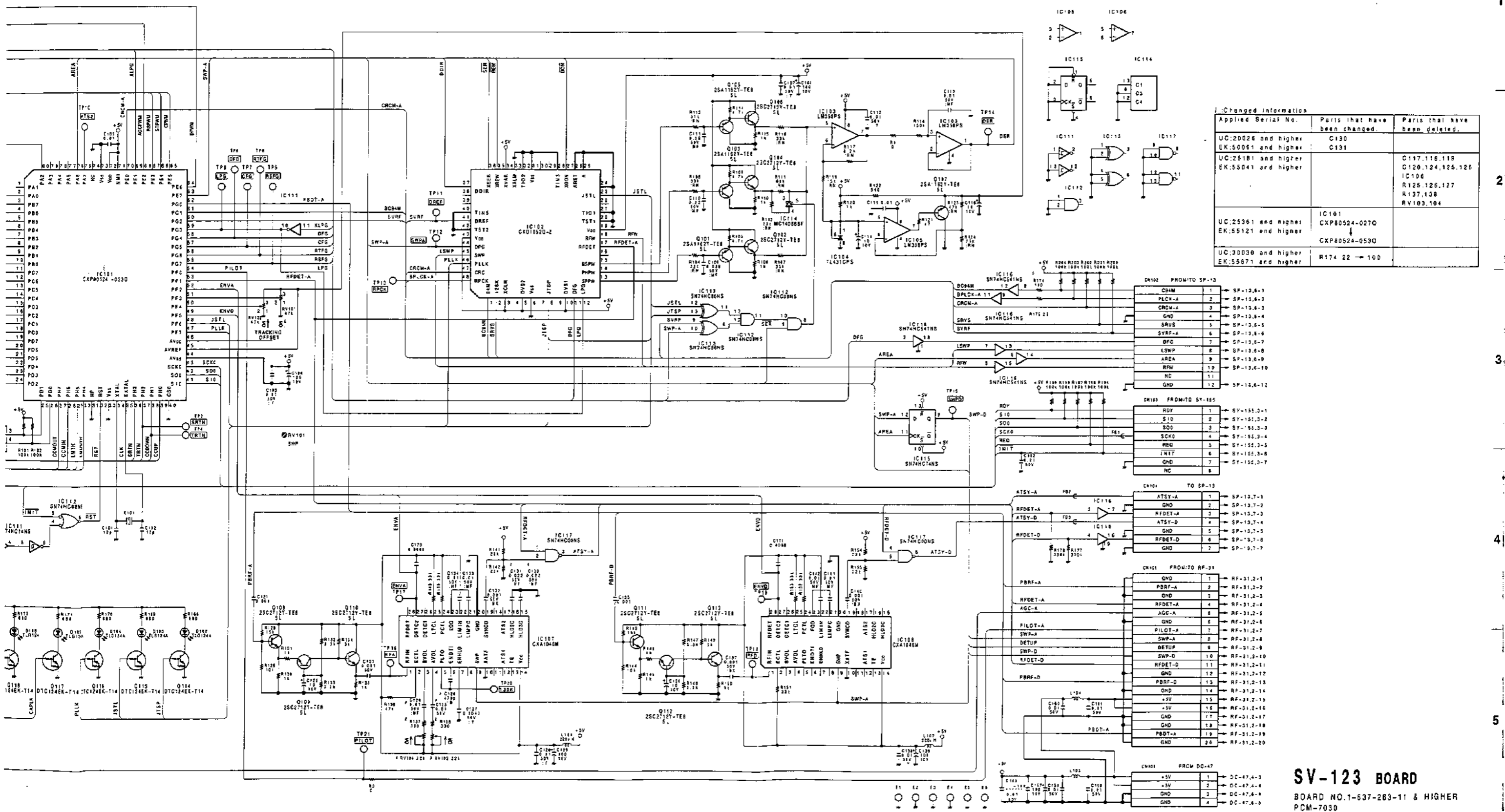
DR-138,108-1	1	DDN	DDN
DR-138,108-2	2	DDIR	DDIR
DR-138,108-3	3	DER	DER
DR-138,108-4	4	KDFG	KDFG
DR-138,108-5	5	XLPG	XLPG
DR-138,108-6	6	CND	CND
DR-138,108-7	7	DFG	DFG
DR-138,108-8	8	CER	CER
DR-138,108-9	9	CDIR	CDIR
DR-138,108-10	10	TENDN	TENDN
DR-138,108-11	11	ATLOCK	ATLOCK
DR-138,108-12	12	PLMND	PLMND
DR-138,108-13	13	PLKIK	PLKIK
DR-138,108-14	14	RTFG	RTFG
DR-138,108-15	15	VRT	VRT
DR-138,108-16	16	RSFG	RSFG
DR-138,108-17	17	VRS	VRS
DR-138,108-18	18	QND	QND
DR-138,108-19	19	TLED	TLED
DR-138,108-20	20	TRM	TRM
DR-138,108-21	21	SLED	SLED
DR-138,108-22	22	SRTM	SRTM
DR-138,108-23	23	SOFT	SOFT
DR-138,108-24	24	RECEN	RECEN
DR-138,108-25	25	CASIN	CASIN
DR-138,108-26	26	X1.STP	X1.STP
DR-138,108-27	27	LIMSW	LIMSW
DR-138,108-28	28	RESTOP	RESTOP
DR-138,108-29	29	REFWD	REFWD
DR-138,108-30	30	DEW	DEW
DR-138,108-31	31	CCNM	CCNM
DR-138,108-32	32	CCMOUT	CCMOUT
DR-138,108-33	33	CCUP	CCUP
DR-138,108-34	34	CCDOWN	CCDOWN
DR-138,108-35	35	LMUNTH	LMUNTH
DR-138,108-36	36	LMTH	LMTH

- C103
- C104
- C105
- C106
- C107
- C108
- C109
- C110
- C111
- C112
- C113
- C114

C-87

C-88

A B C D E F G H



Changed Information

Applied Serial No.	Parts that have been changed.	Parts that have been deleted.
UC:20026 and higher EK:50061 and higher	C130 C131	
UC:25181 and higher EK:55041 and higher		C117,118,119 C120,124,125,126 IC106 R125,126,127 R137,138 RV103,104
UC:25061 and higher EK:55121 and higher	IC101 CXP80524-027Q CXP80524-053Q	
UC:30030 and higher EK:55671 and higher	R174 22 → 100	

Pinout for CN101 (FROM TO SP-13)

Pin	Signal	Destination
1	CDAM	SP-13,6-1
2	PLCK-A	SP-13,6-2
3	CRCM-A	SP-13,6-3
4	GND	SP-13,6-4
5	SRVS	SP-13,6-5
6	SVRF-A	SP-13,6-6
7	DFG	SP-13,6-7
8	LSWP	SP-13,6-8
9	AREA	SP-13,6-9
10	RFW	SP-13,6-10
11	NC	SP-13,6-11
12	GND	SP-13,6-12

Pinout for CN102 (FROM TO SY-155)

Pin	Signal	Destination
1	RDY	SY-155,3-1
2	SIO	SY-155,3-2
3	SOC	SY-155,3-3
4	SCKO	SY-155,3-4
5	REQ	SY-155,3-5
6	INRT	SY-155,3-6
7	GND	SY-155,3-7
8	NC	SY-155,3-8

Pinout for CN103 (TO SP-13)

Pin	Signal	Destination
1	ATSY-A	SP-13,7-1
2	GND	SP-13,7-2
3	RFDET-A	SP-13,7-3
4	ATSY-D	SP-13,7-4
5	GND	SP-13,7-5
6	RFDET-D	SP-13,7-6
7	GND	SP-13,7-7

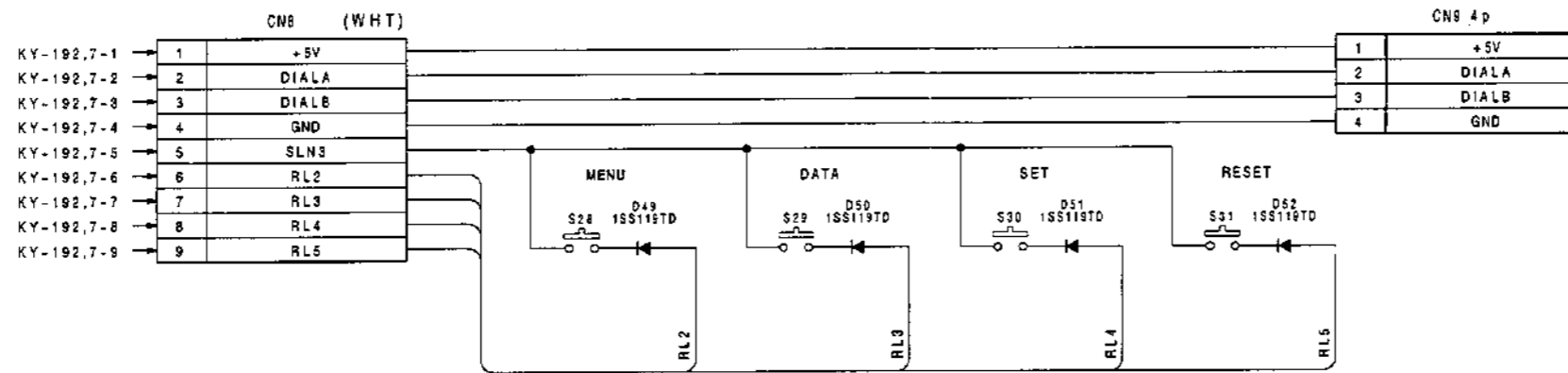
Pinout for CN104 (FROM TO RF-31)

Pin	Signal	Destination
1	GND	RF-31,2-1
2	PBRF-A	RF-31,2-2
3	GND	RF-31,2-3
4	RFDET-A	RF-31,2-4
5	AGC-A	RF-31,2-5
6	GND	RF-31,2-6
7	PILOT-A	RF-31,2-7
8	SWP-A	RF-31,2-8
9	DETUP	RF-31,2-9
10	SWP-D	RF-31,2-10
11	RFDET-D	RF-31,2-11
12	GND	RF-31,2-12
13	PBRF-D	RF-31,2-13
14	GND	RF-31,2-14
15	+5V	RF-31,2-15
16	+5V	RF-31,2-16
17	GND	RF-31,2-17
18	PBDT-A	RF-31,2-18
19	GND	RF-31,2-19
20	GND	RF-31,2-20

Pinout for CN105 (FROM DC-47)

Pin	Signal	Destination
1	+5V	DC-47,4-3
2	+5V	DC-47,4-4
3	GND	DC-47,4-5
4	GND	DC-47,4-6

SW-420 BOARD (PCM-7030)
Switch(MENU)



SW-420 BOARD
BOARD NO.1-537-270-11 & HIGHER
PCM-7030

C-93

C-94

A

B

C

D

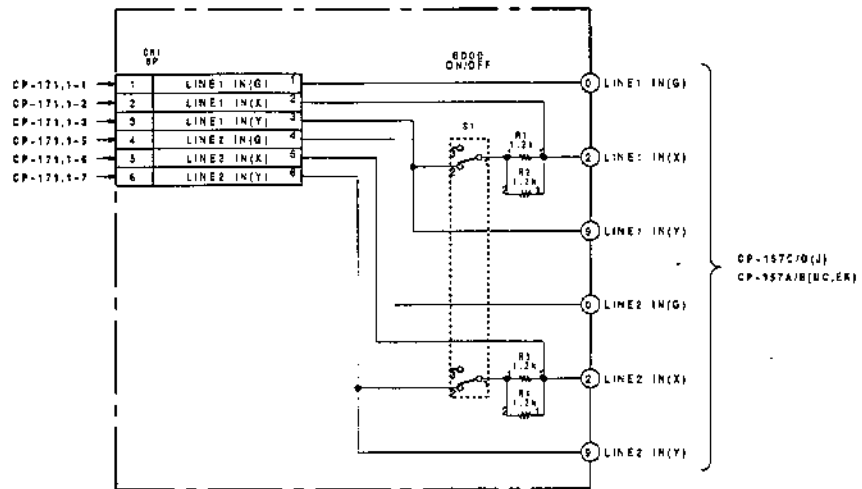
E

F

G

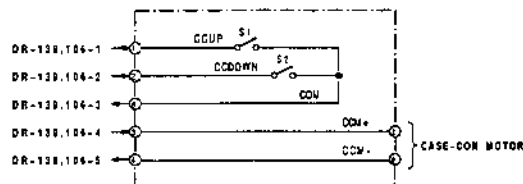
H

SW-426 BOARD (PCM-7030)
Switch(600Q)



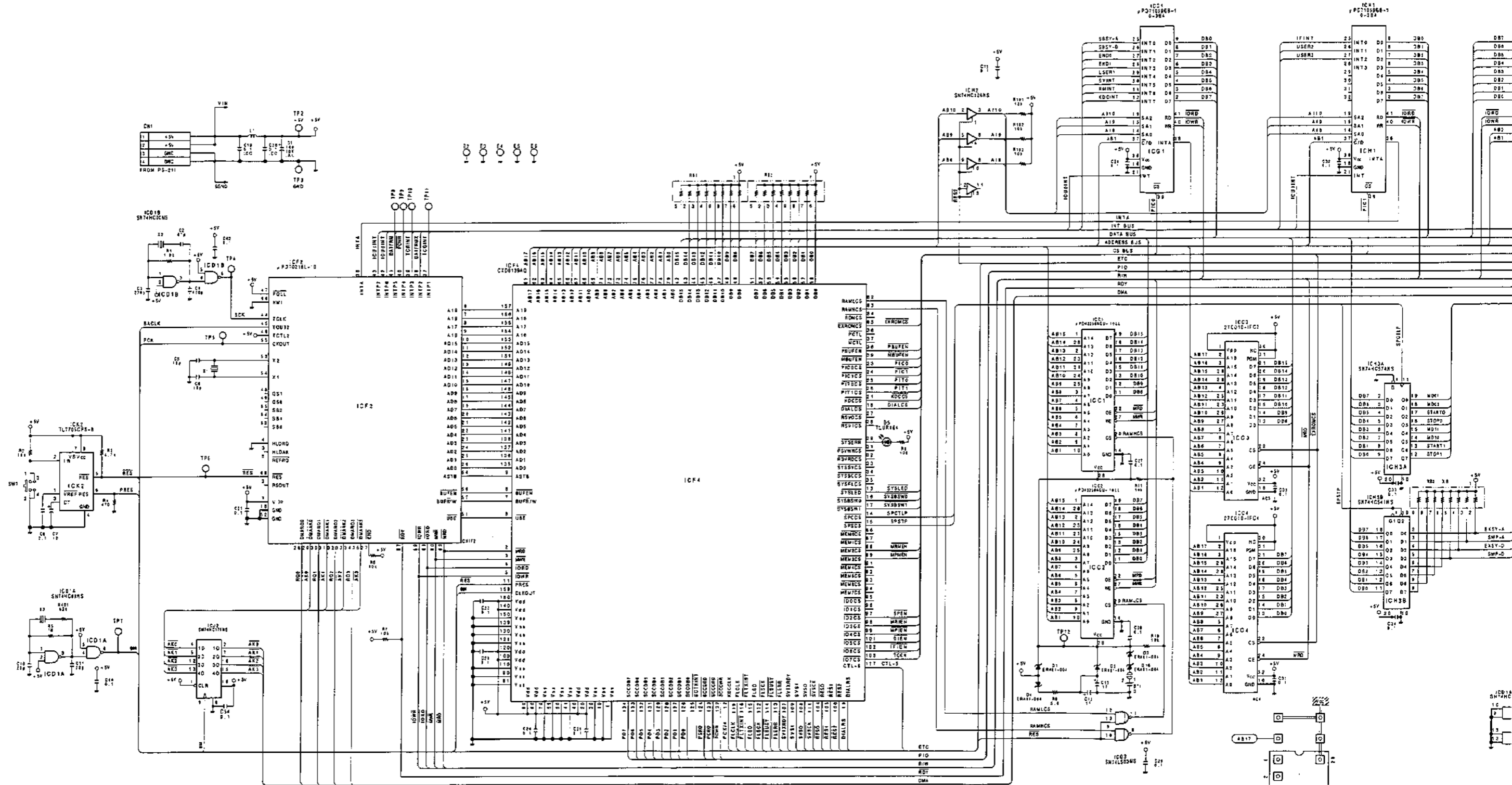
SW-426 BOARD
BOARD NO.1-637-279-11 & HIGHER
PCM-7030

SW-452 BOARD (PCM-7030)
Switch(CASSETTE)

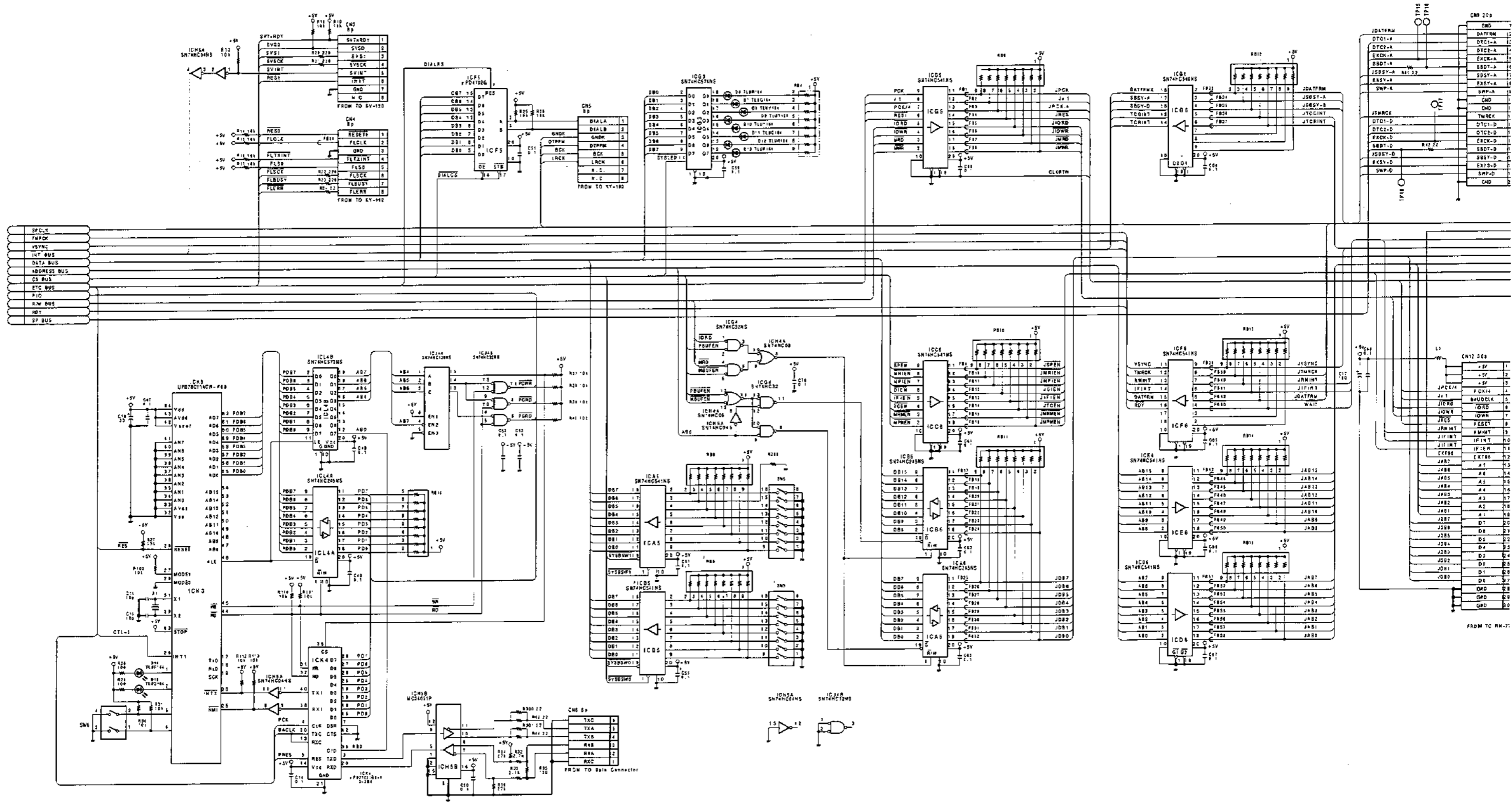


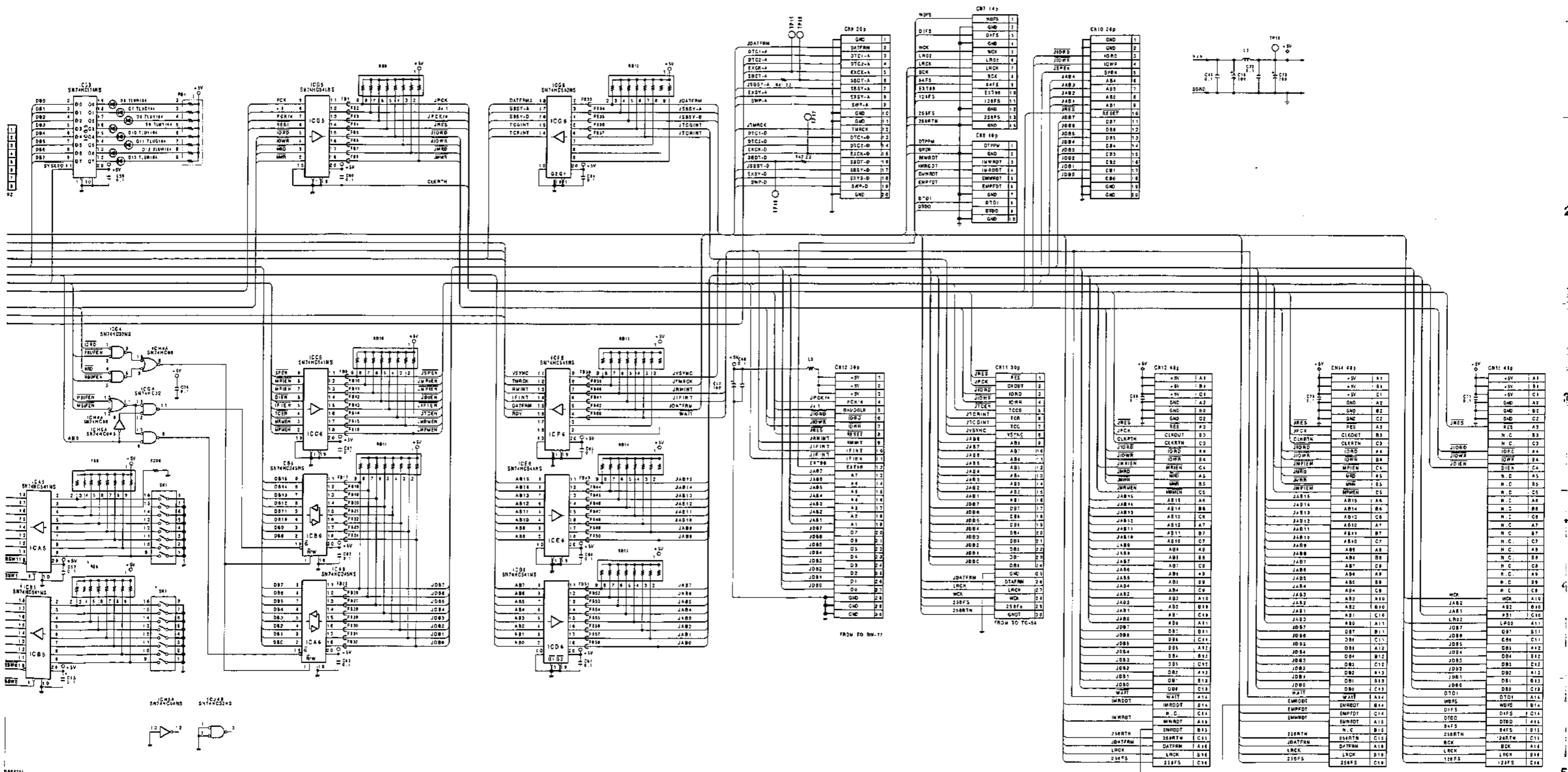
SW-452 BOARD
BOARD NO.1-637-287-11 & HIGHER
PCM-7030

SY-155B(1/2) BOARD (PCM-7030)
System Control



SY-155B(2/2) BOARD (PCM-7030)
System Control



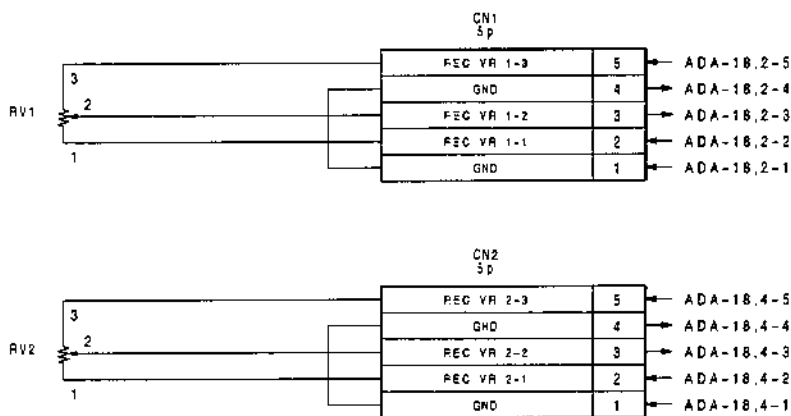


Changed Information
 Applies Serial No. Parts that have been deleted.
 UC 25181 and higher CSS
 EK 55041 and higher IC8s
 RB5
 (SW)

SY-155B BOARD (2/2)

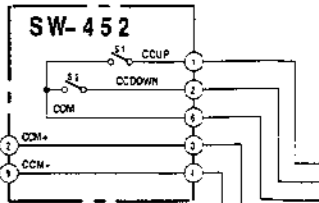
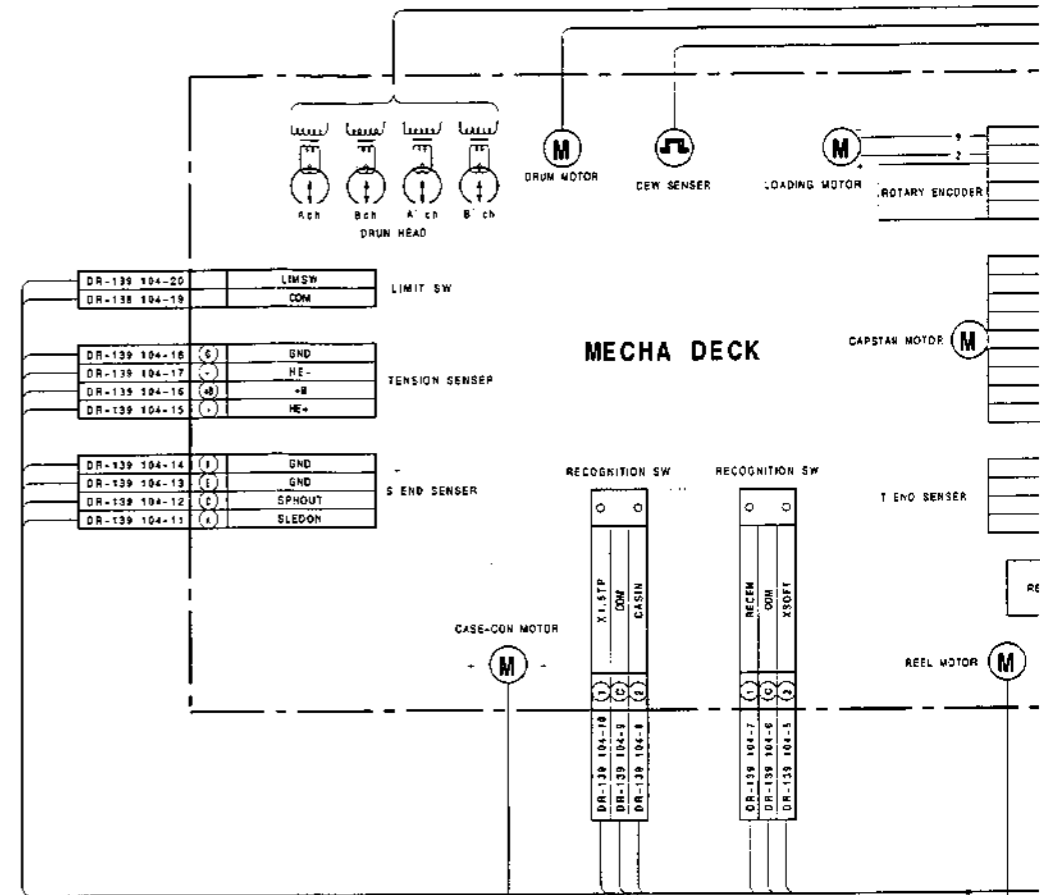
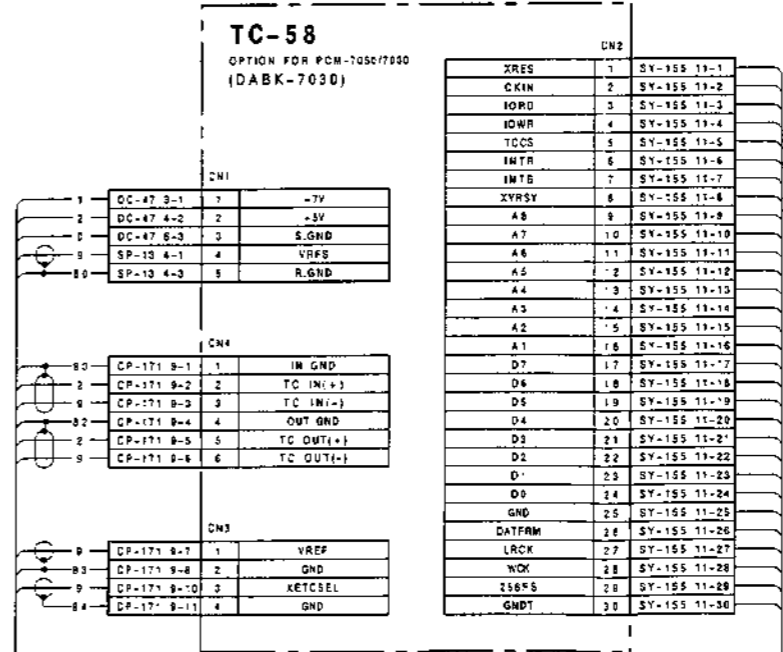
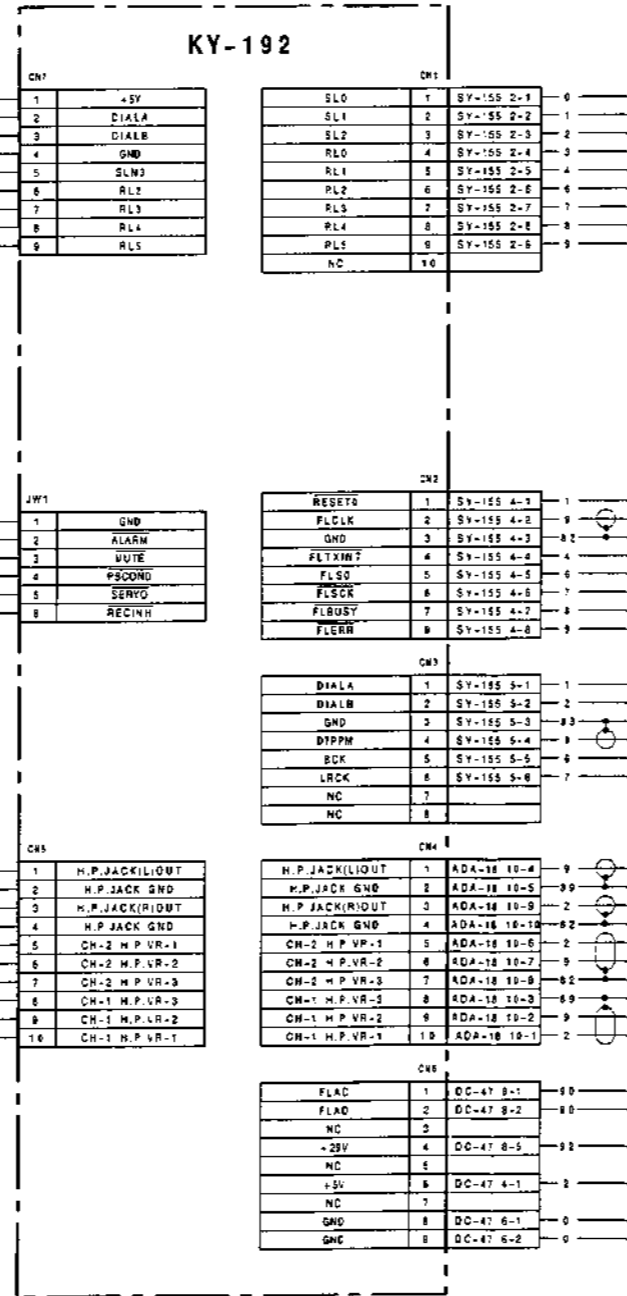
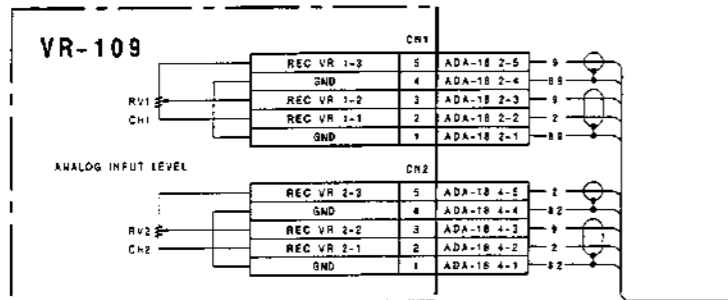
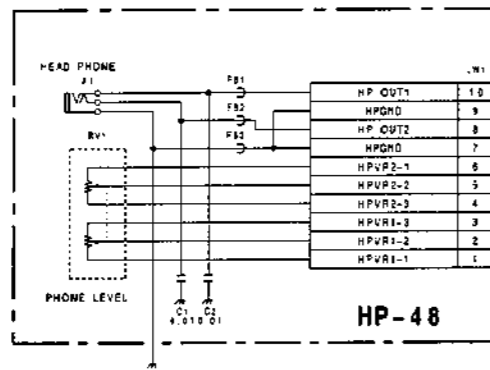
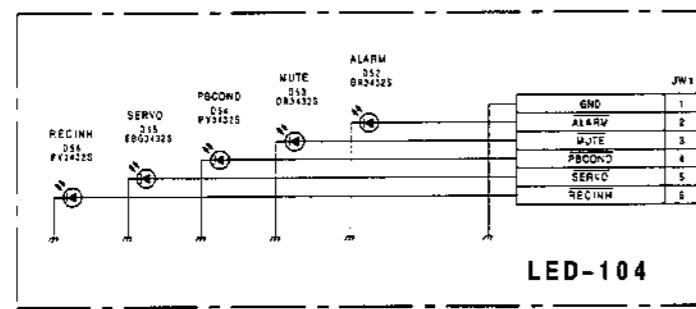
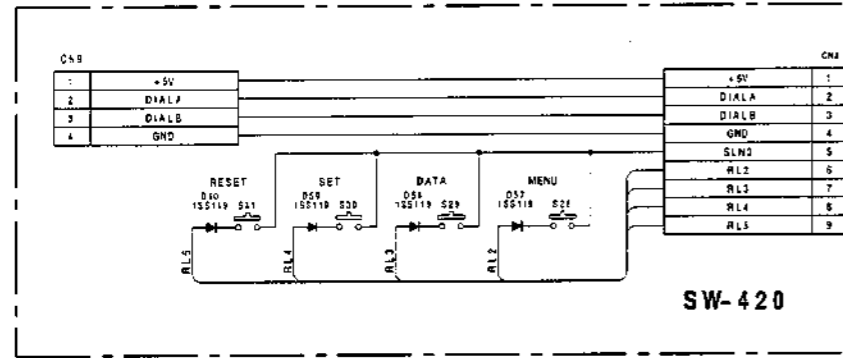
BOARD NO. 1-637-266-11 & HIGHER
 PCM-7030

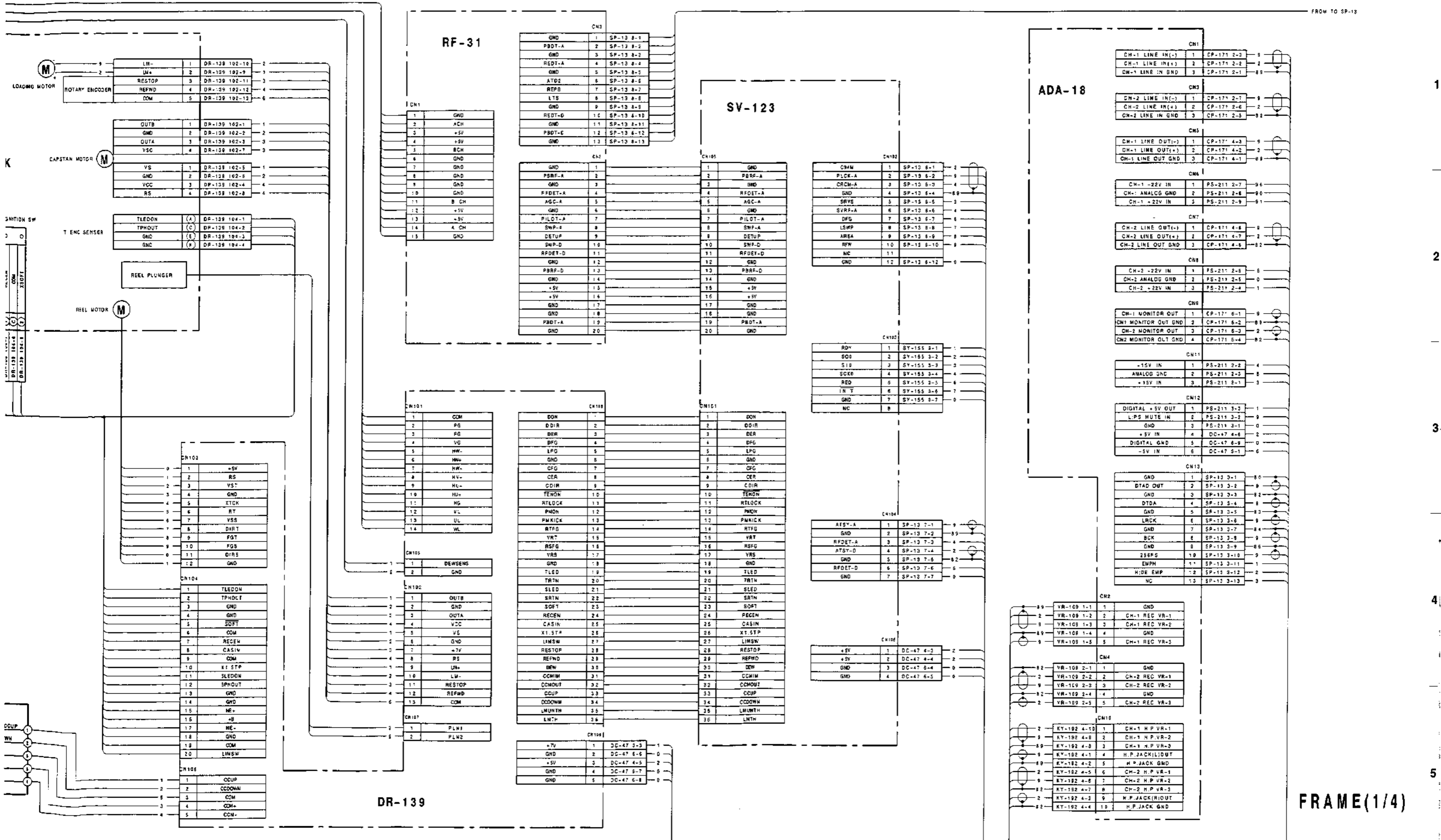
VR-109 BOARD (PCM-7030)
Level Control



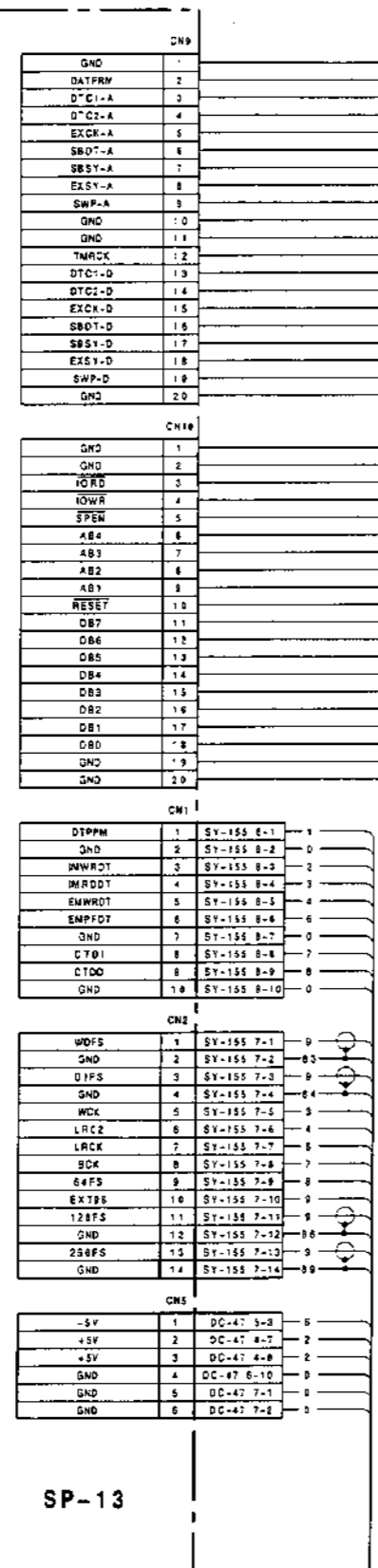
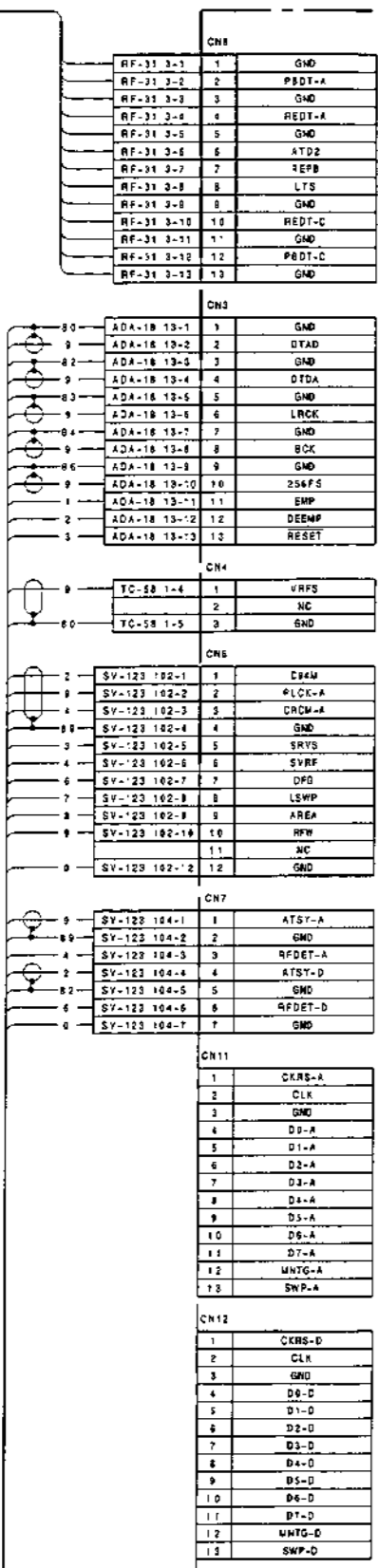
VR-109 BOARD

BOARD NO.1-637-284-12 & HIGHER
PCM-7030

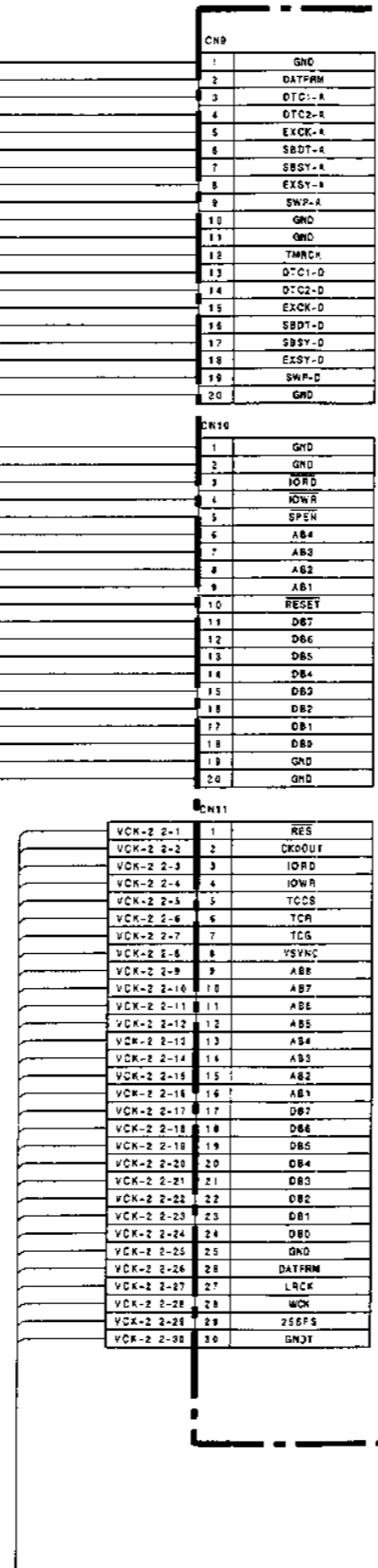




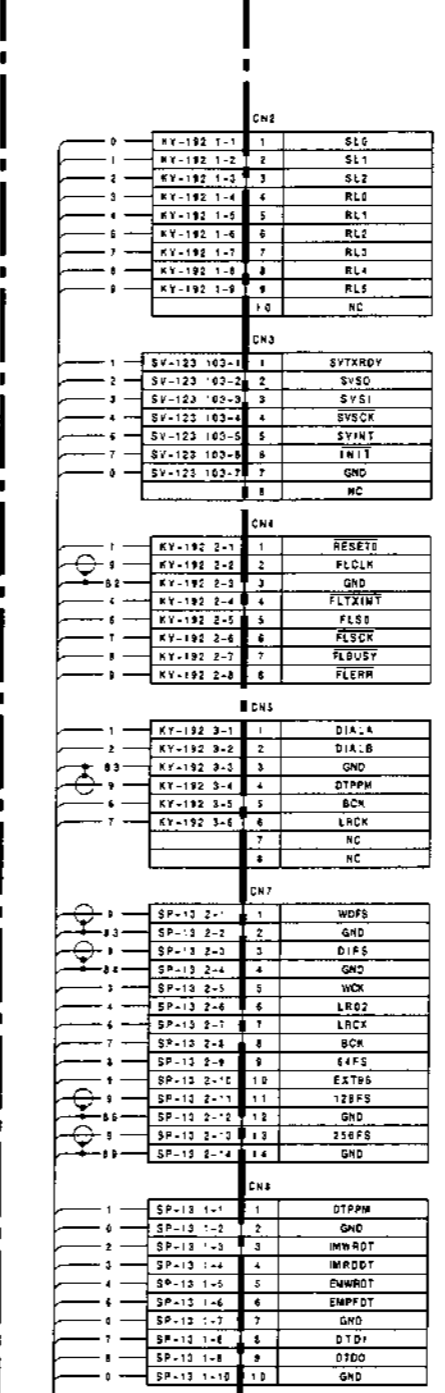
FROM RF-31



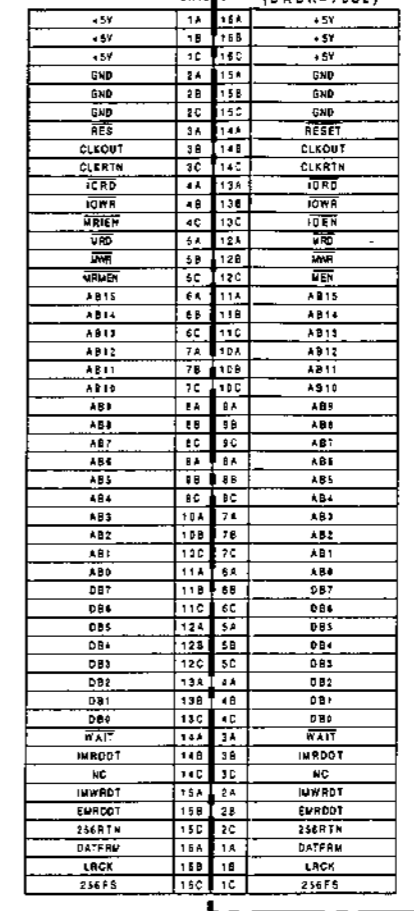
SP-13



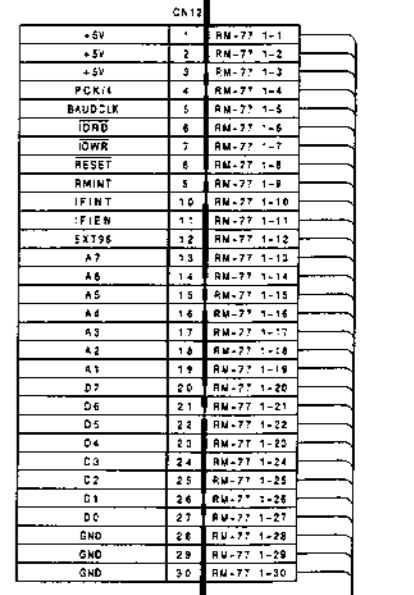
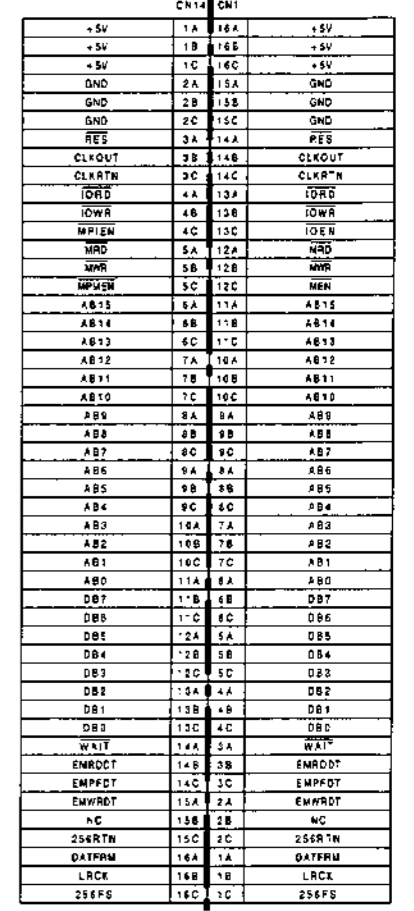
SY-155



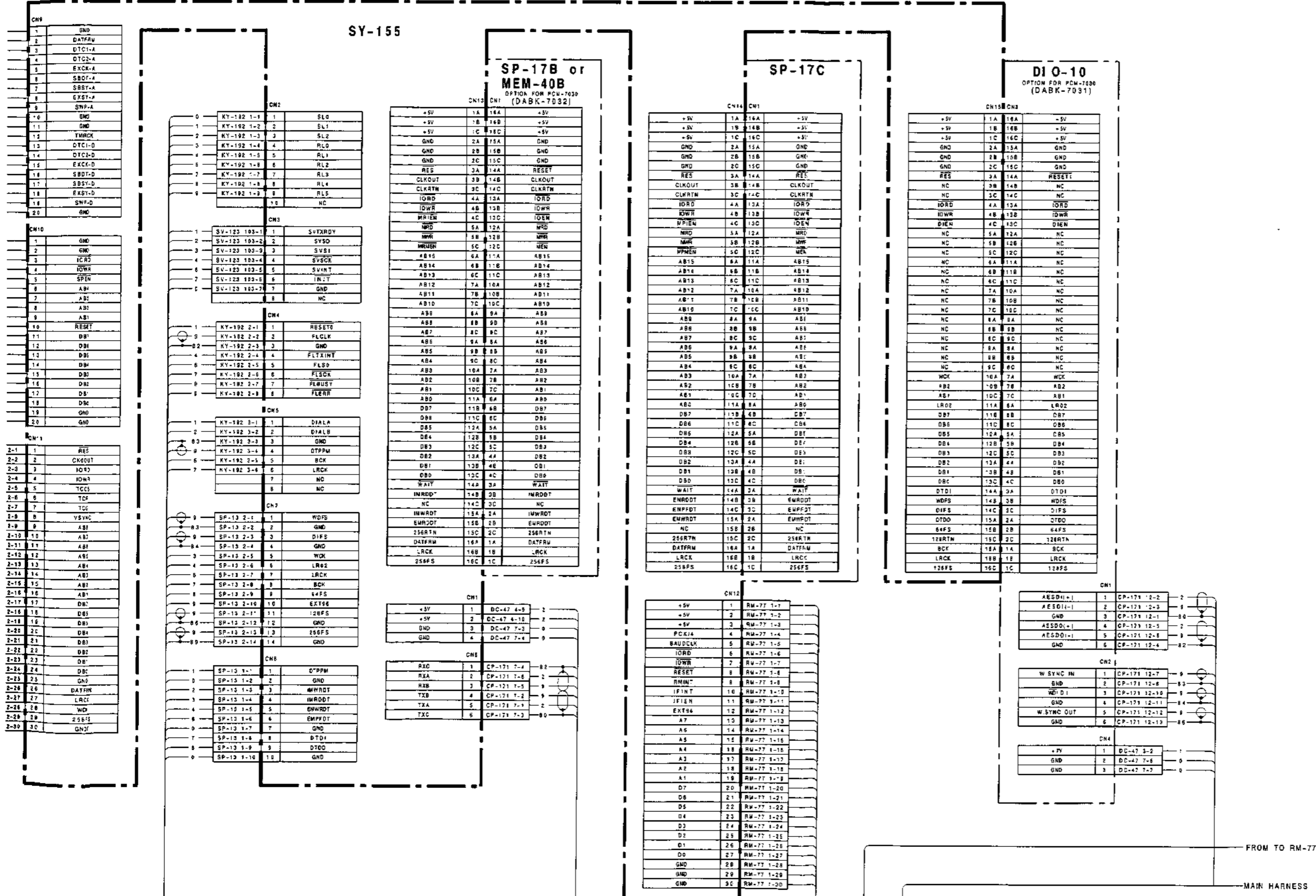
SP-17B or MEM-40B OPTION FOR PCM-7030 (DABK-7032)



SP-17C



FROM TC TC-58 MAIN HARNESS



C-122

C-123

FRAME(2/4)

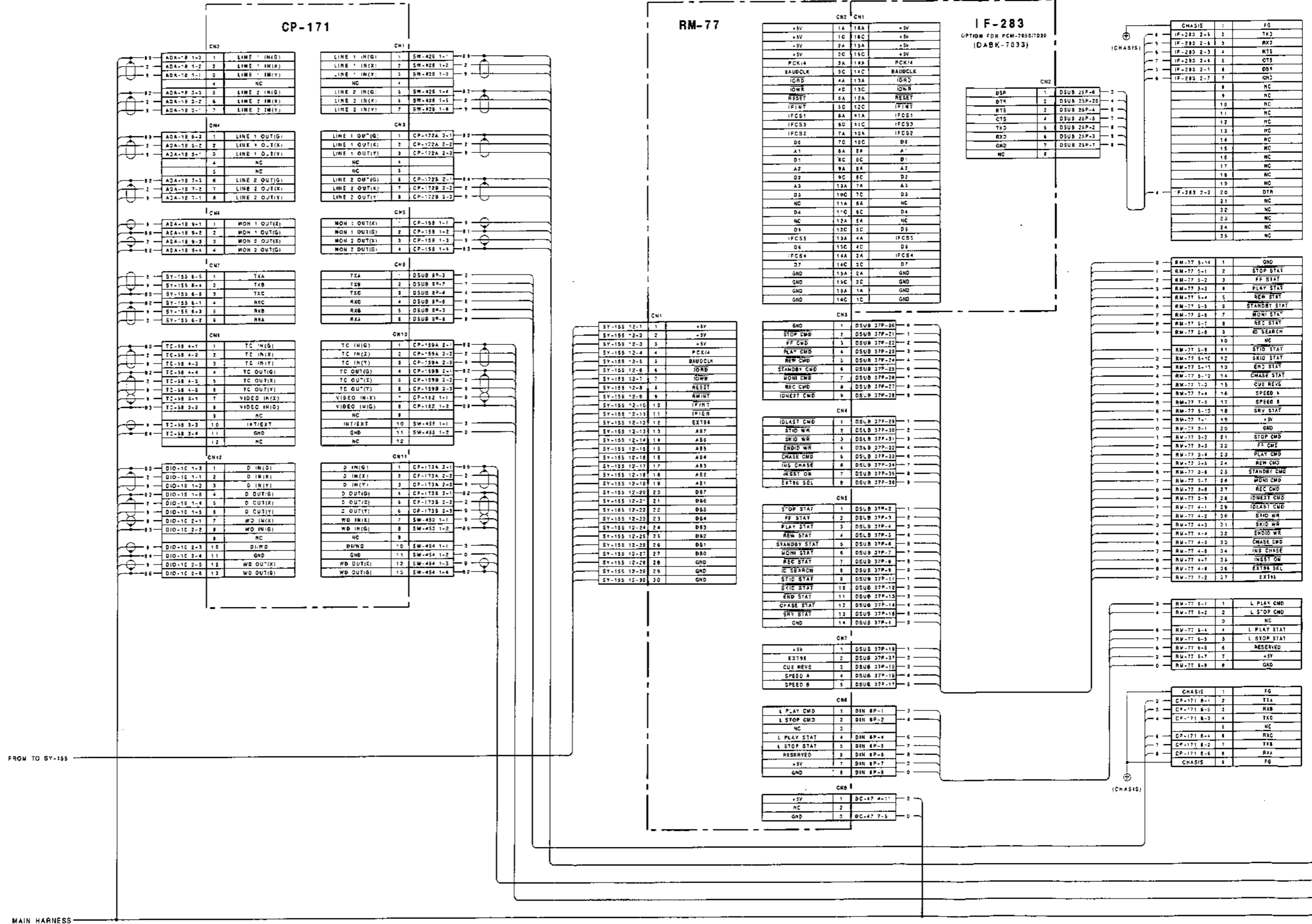
FRAME(3/4)

CP-171

RM-77

IF-283

OPTION FOR PCM-7050/7030
(DABK-7033)

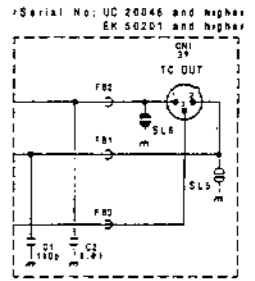
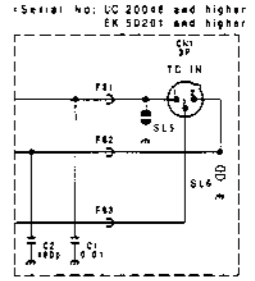
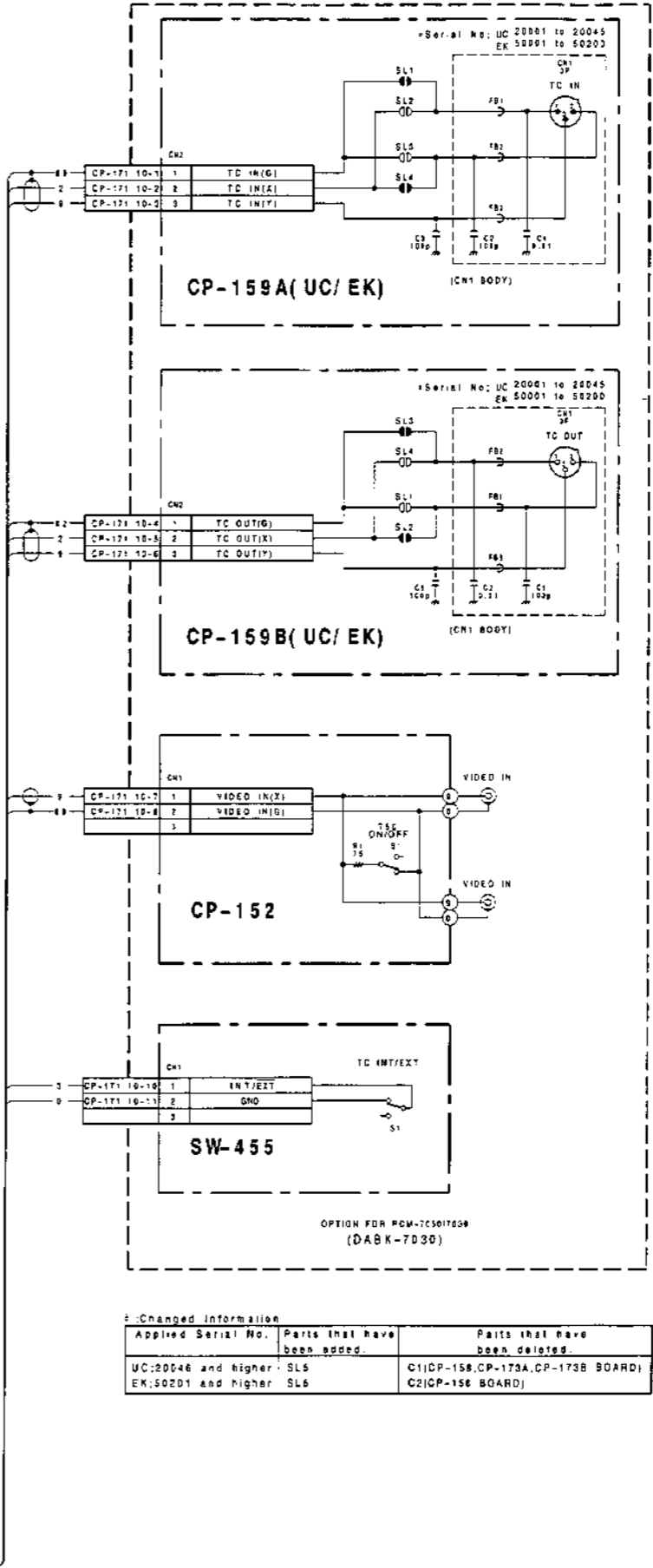
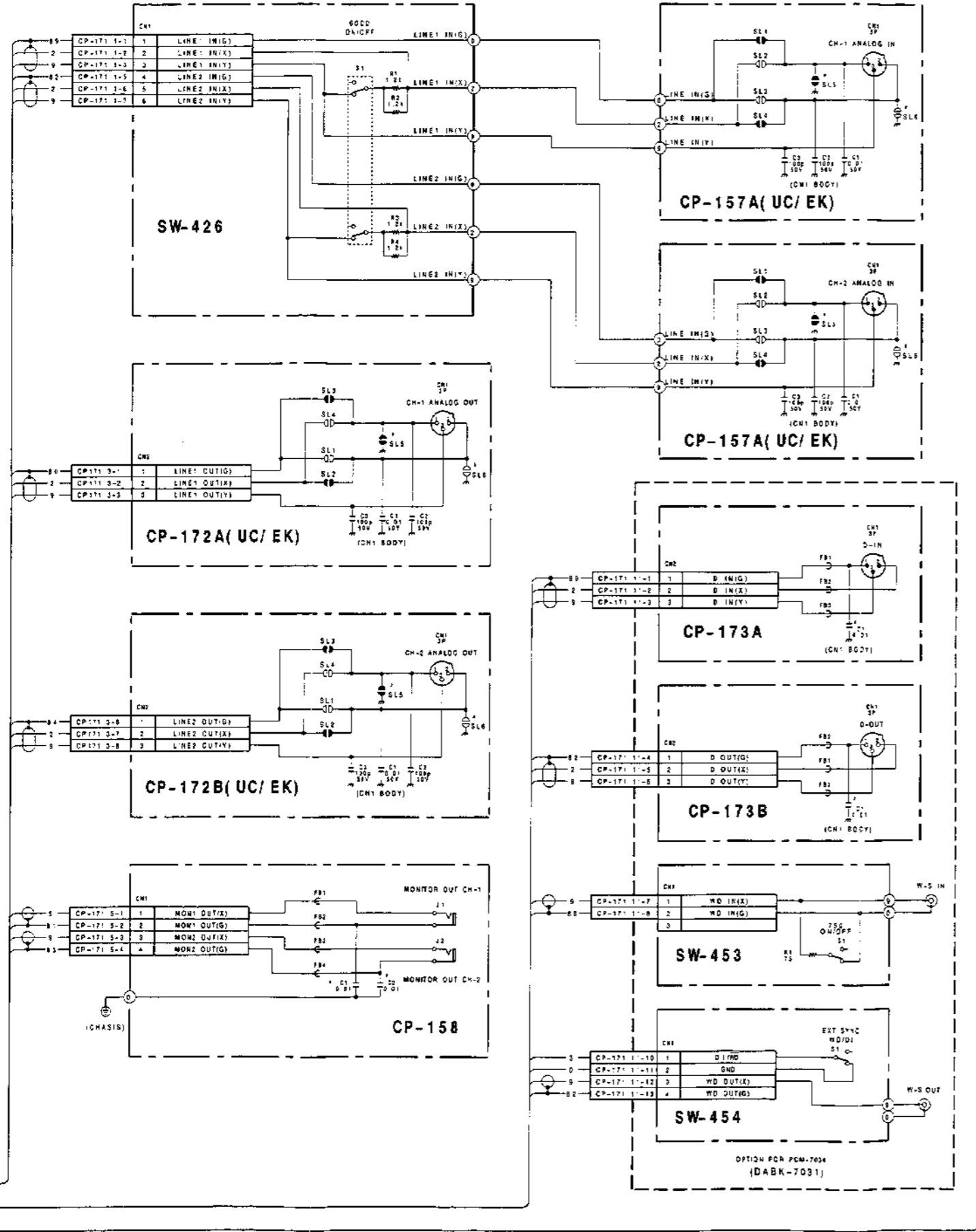


1	1	PG
2-5	2	TXD
2-6	2	RXD
2-3	2	HSS
2-4	5	CYS
2-1	6	DSR
2-7	7	GND
8		NC
9		NC
10		NC
11		NC
12		NC
13		NC
14		NC
15		NC
16		NC
17		NC
18		NC
19		NC
2-2	20	DTR
21		NC
22		NC
23		NC
24		NC
25		NC

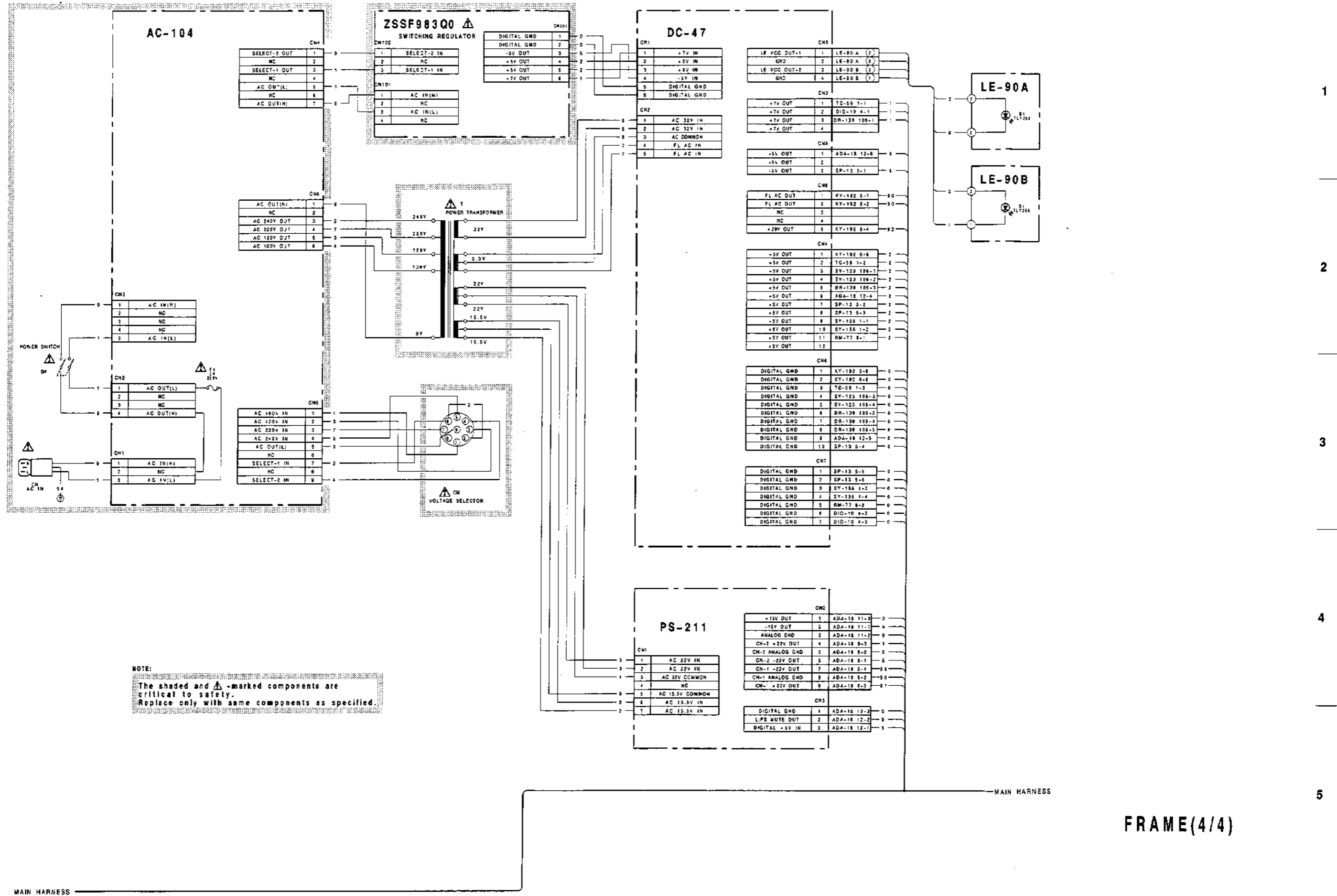
-14	1	GND
-1	2	STOP STAT
-2	3	FP STAT
-3	4	PLAY STAT
-4	5	WEN STAT
-5	6	STANDBY STAT
-6	7	MONI STAT
-7	8	REC STAT
-8	9	ID SEARCH
19		NC
-9	10	STID STAT
-10	11	SKID STAT
-11	12	END STAT
-12	13	CHASE STAT
-13	14	CUE REVS
-4	15	SPEED A
-5	17	SPEED B
-13	18	SKV STAT
-1	19	+5V
-1	20	GND
-2	21	STOP CMD
-3	22	FP CMD
-4	23	PLAY CMD
-5	24	REW CMD
-6	25	STANDBY CMD
-7	26	MONI CMD
-8	27	REC CMD
-9	28	IDLEST CMD
-1	29	IDLAST CMD
-2	30	STID WR
-3	31	SKID WR
-4	32	END WR
-5	33	CHASE CMD
-6	34	INS CHASE
-7	35	FRS ON
-8	36	EXTIME SEL
-2	37	EXTRE

-1	1	L PLAY CMD
-2	2	L STOP CMD
3		NC
-4	4	L PLAY STAT
-5	5	L STOP STAT
-6	6	RESERVED
-7	7	+5V
-8	8	GND

1	1	PG
-1	2	TXA
-3	3	RXB
-3	4	TXC
5		NC
-9	6	RXC
-2	7	*RB
-3	8	RXA
9		FG



Changed Information		
Applied Serial No.	Parts that have been added.	Parts that have been deleted.
UC:20046 and higher EK:50201 and higher	SL5	C1(CP-158,CP-173A,CP-173B BOARD) C2(CP-158 BOARD)



NOTE:
 The shaded and ⚠-marked components are critical to safety. Replace only with same components as specified.

SECTION D

SEMICONDUCTOR PIN ASSIGNMENTS

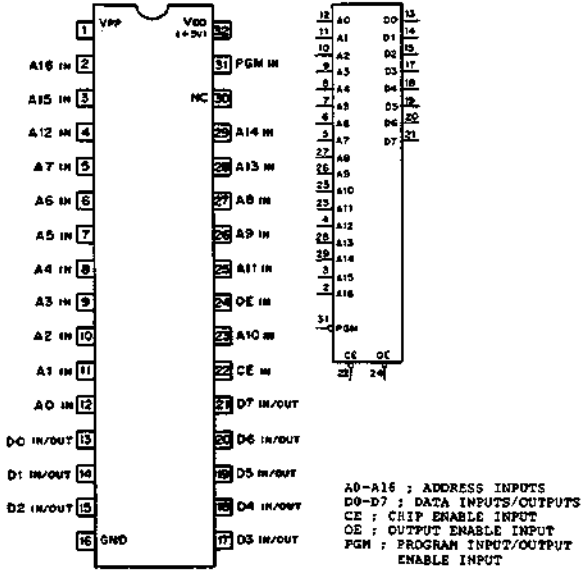
この章の図の中には互換性のないダイオード、トランジスタ、ICが併記されていることがあります。部品を交換するときには必ず部品表を参照してください。

等価回路はICメーカーのData Bookに従いました。

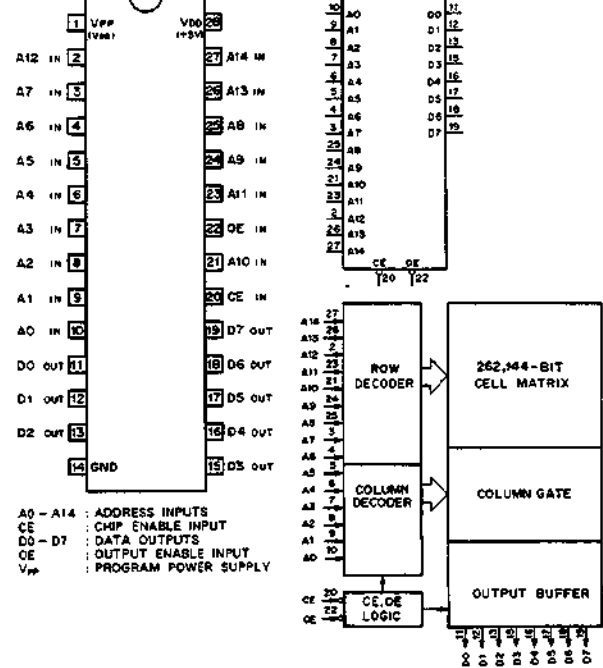
The chart in this section may sometimes show diodes, transistors, and ICs that are not interchangeable. When replacing a component, be sure to refer to the parts list. The circuit diagram of each IC is obtained from the IC data book published by the manufacturer.

IC	PAGE	IC	PAGE	TRANSISTOR	PAGE	DIODE	PAGE
AM27C010-150DC	D-2	SN74HC04AN	D-23	2SA1162Y	D-33	10E-2	D-34
AM27C010-155DC	D-2	SN74HC04ANS	D-23	2SA1242	D-33	10E2N	D-34
AM27C256-150DC	D-2	SN74HC08ANS	D-23	2SA985A	D-33	1S2837	D-34
AM27C256-155DC	D-2	SN74HC125NS	D-23	2SB1040A	D-33	1SS119	D-34
CS5326-KP	D-3	SN74HC126NS	D-23	2SB906	D-33	BR3432S	D-34
CX20174	D-3	SN74HC138ANS	D-23	2SC2275A	D-33	EBG3432S	D-34
CX23065A	D-3	SN74HC14ANS	D-23	2SC2458	D-33	EBG5734S	D-34
CXA1046M	D-4	SN74HC161AN	D-24	2SC2712Y	D-33	ERA81-004	D-34
CXA1364R	D-4	SN74HC175ANS	D-24	2SC2855	D-33	ERC81-004	D-34
CXA1418N	D-5	SN74HC245ANS	D-24	2SD1020	D-33	FC52M	D-34
CXD1008Q	D-6	SN74HC32ANS	D-24	2SD1221	D-33	FC53M	D-34
CXD1009Q	D-7	SN74HC540ANS	D-24	2SD1266	D-33	GL-3HY8	D-34
CXD1052Q-Z	D-8	SN74HC541ANS	D-25	2SD773	D-33	HZ ? ? A ?	D-34
CXD1160AP	D-9	SN74HC573BNS	D-25	2SK170	D-33	HZS ? ? L	D-34
CXD8130Q	D-10	SN74HC574ANS	D-25	DTA114EK	D-33	PY3432S	D-34
CXD8139AQ	D-10	SN74HC74AN	D-25	DTA124ES	D-33	PY5734S	D-34
CXD8141Q	D-12	SN74HC74ANS	D-25	DTA143EK	D-33	RD ? ? EB ?	D-34
CXD8163AQ	D-12	SN74HC86ANS	D-19	DTA143TK	D-33	RD ? ? ESB ?	D-34
CXD8184AQ	D-14	SN74HCU04ANS	D-23	DTC124EK	D-33	RK14	D-34
CXD8185AQ	D-16	SN74LS03NS	D-25	DTC124ES	D-33	SLR-34PG5	D-34
CXD8319M	D-17	TC74HC123AF	D-25	DTC143TK	D-33	TLG124A	D-34
CXK58257AM-10LL	D-17	TC74HC4051AF	D-26	DTC143TS	D-33	TLR124	D-34
HD140538FP	D-18	TC74HC4052AF	D-26	PS2604	D-33	TLUG164	D-34
LM358PS	D-18	TC74HC574F	D-25			TLUR164	D-34
LM393PS	D-18	TC74HC86AF	D-19			TLUY164	D-34
M5219L	D-18	TD62381P	D-26			TLY256	D-34
MB3763PF	D-18	TL431CPS	D-26				
MC140538F	D-18	TL7705ACPS	D-26				
MC14066BF	D-18	TL7705CPS-B	D-26				
MC1648P	D-18	TLC272CPS	D-26				
MC34051P	D-19	TLC274CNS	D-26				
MC4044P	D-19	TMP82C79P-2	D-27				
MC74HC86AF	D-19	UPD43256AGU-10LL	D-28				
MSC62408	D-20	UPD4702G	D-28				
MSM6338MS-K	D-21	UPD70216L-10	D-29				
NE5532P	D-21	UPD71051GB-10-3B4	D-30				
PALCE16V8H-25PC	D-21	UPD71054GB-10-3B4	D-30				
PCM61P-S-2	D-21	UPD71059GB-10-3B4	D-31				
MS62256CLL-10FC	D-17	UPD78C11ACW-F08	D-32				
RC4556S	D-22						
RC7805FA	D-22						
RC7815FA	D-22						
RC7818FA	D-22						
RC78L05A	D-22						
RC7905FA	D-22						
RC7915FA	D-22						
RC7918FA	D-22						
SM5813APS	D-22						
SN74HC00AN	D-23						
SN74HC00ANS	D-23						

AM27C010-150DC (AMD)
 AM27C010-155DC (AMD)
 C-MOS 1M (131072x8)-BIT EPROM
 - TOP VIEW -



AM27C256-150DC (AMD)
 AM27C256-155DC (AMD)
 C-MOS 256K (32Kx8)-BIT UV ERASABLE PROM WITH 3-STATE OUTPUTS
 - TOP VIEW -



READ MODE (VDD=+5V, Vpp=+5V)

OE	CE	PGM	A0-A16	D0-D7	FUNCTION
0	0	1	A IN	D OUT	ACTIVE
X	1	X	X	HI-Z	STANDBY
1	0	X	A IN	HI-Z	OUTPUT
X	0	0	A IN	HI-Z	DISABLE

0: LOW LEVEL
 1: HIGH LEVEL
 X: DON'T CARE
 HI-Z: HIGH-IMPEDANCE

PROGRAM MODE (VDD=+6V, Vpp=+12.5V)

MODE	OE	CE	PGM	A0 - A16	D0-D7	FUNCTION
1-BYTE PROGRAM MODE	0	0	1	A IN	D IN	PROGRAM
	0	0	1	A IN	D OUT	VERIFY
	1	0	1	A IN	HI-Z	PROGRAM INHIBIT
	1	1	1	A IN	D IN	PROGRAM DATA INPUT
4-BYTE PROGRAM MODE	0	1	0	A0, A1: X A2-A16: A IN	HI-Z	PROGRAM
	0	0	1	A IN	D OUT	VERIFY
	0	1	1	A IN	HI-Z	PROGRAM INHIBIT

An	CE	OE	VDD	Vpp	Dn	FUNCTION
An	0	0	+5V	+5V	D out	READ
An	0	1	+5V	+5V	HI-Z	OUTPUT DISABLE
X	1	X	+5V	+5V	HI-Z	STANDBY
An	0	1	+5V	+12.5V	D in	PGM
An	1	0	+6V	+12.5V	D out	PGM VERIFY(1)
An	0	0	+6V	+12.5V	D out	PGM VERIFY(2)
X	1	1	+6V	+12.5V	HI-Z	PGM INH
A0	0	0	+5V	+5V		DEVICE CODE ELECTRONIC SIGNATURE*

* SEE FOLLOWING DESCRIPTION.

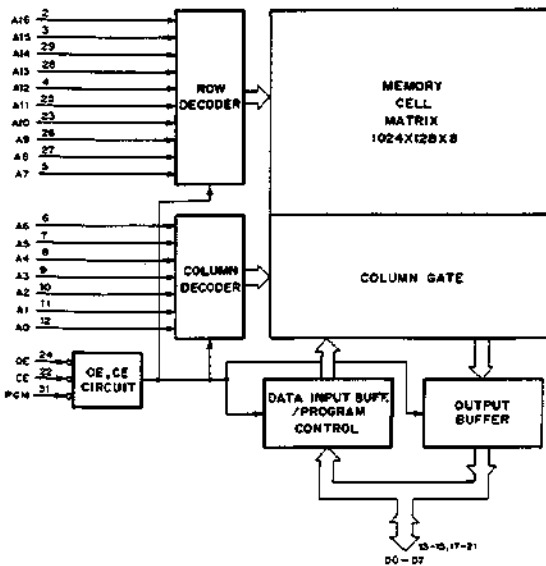
ELECTRONIC SIGNATURE FOR P ROM WRITER

ADDRESS SETTINGS IN READ MODE

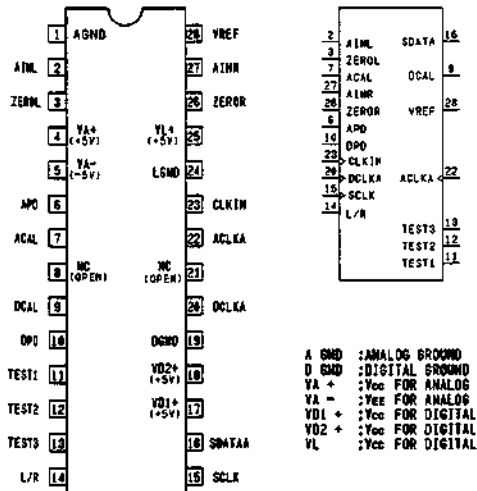
A1 - A8	A9	A10 - A13	A14, Vpp
0	12V	0	1

CODE DATA								
AO	D7	D6	D5	D4	D3	D2	D1	DO
0	0	0	0	0	0	0	1	0
0	0	0	0	0	0	0	0	0

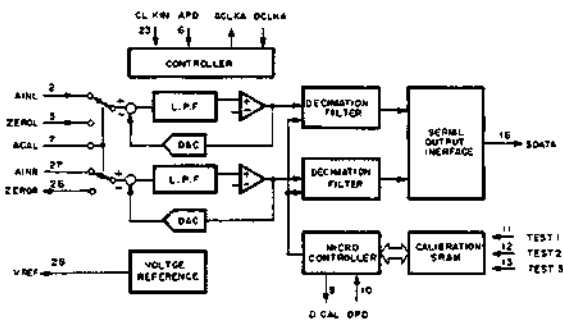
MAKER CODE: 0 0 0 0 0 0 0 1 0 0 04H
 DEVICE CODE: 1 0 1 1 0 0 0 1 0 162H



CS5326-KP (ASAHKASEI)
16BIT OVERSAMPLING STEREO A/D CONVERTER
- TOP VIEW -



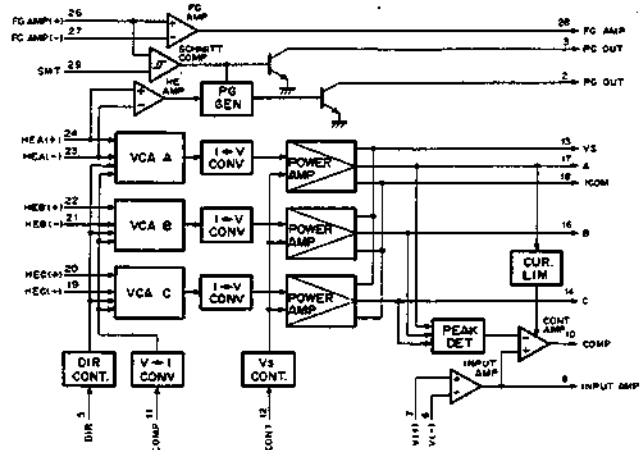
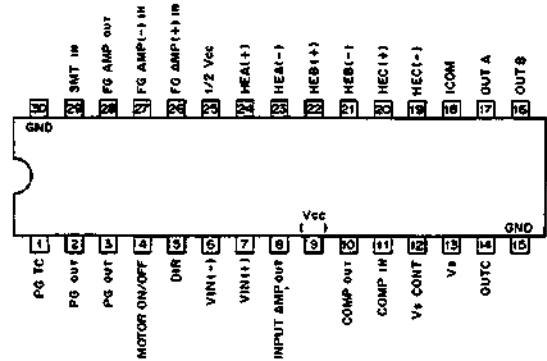
A GND : ANALOG GROUND
 D GND : DIGITAL GROUND
 VA + : Vcc FOR ANALOG
 VA - : Vee FOR ANALOG
 VD1 + : Vcc FOR DIGITAL
 VD2 + : Vcc FOR DIGITAL
 VL : Vcc FOR DIGITAL



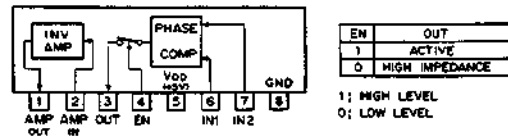
INPUT
 ACAL : ANALOG CALIBRATION NORMALLY, CONNECT TO DCAL PIN.
 AINL : L CHANNEL ANALOG INPUT
 AINR : R CHANNEL ANALOG INPUT
 APD : ANALOG POWER DOWN (H = POWER DOWN MODE) NORMALLY, CONNECT TO DPD PIN.
 CLKIN : MASTER CLOCK
 DCLKA : DIGITAL SYSTEM CLOCK, CONNECT TO ACLKA PIN.
 DPD : DIGITAL POWER DOWN (H = POWER DOWN MODE)
 L/R : INPUT CHANNEL SELECTION, DATA CHANNEL OUTPUT FROM SDATA PIN IS SELECTED. (H = L CHANNEL DATA, L = R CHANNEL DATA)
 SCLK : SERIAL DATA OUTPUT CLOCK
 TEST1~TEST3 : TEST (CONNECT TO DGND)
 ZEROL : L CHANNEL ZERO LEVEL INPUT
 ZEROR : R CHANNEL ZERO LEVEL INPUT

OUTPUT
 ACLKA : ANALOG SYSTEM CLOCK (CONNECT TO DCLKA PIN.)
 DCAL : DIGITAL CALIBRATION
 SDATA : SERIAL DATA OUTPUT, DATA IS OUTPUT IN ORDER FROM MSB IN 2ND COMPLEMENT.
 VREF : REFERENCE VOLTAGE SUPPLY OF -3.6V

CX20174 (SONY)
THREE-PHASE LINEAR BSL MOTOR DRIVE
- TOP VIEW -

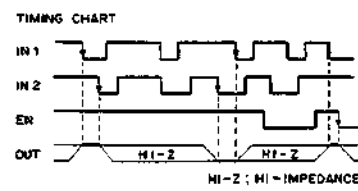


CX23065A (SONY)
N-MOS PHASE COMPARATOR WITH INVERSION AMPLIFIER
- PRINTED SIDE VIEW -



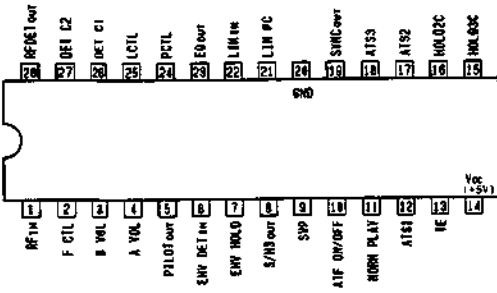
EN	OUT
1	ACTIVE
0	HIGH IMPEDANCE

1: HIGH LEVEL
 0: LOW LEVEL

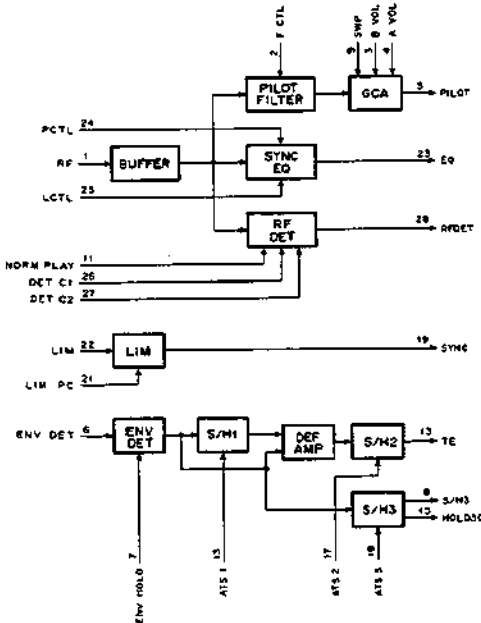


CXA1046M (SONY)

ATF FOR R-DAT
- TOP VIEW -

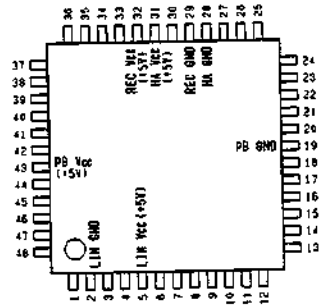


- INPUT**
- A VOL : RESISTOR AND BY-PASS CAPACITOR CONNECTION FOR ADJUSTING ACH GAIN OF THE GAIN CONTROL AMPLIFIER
 - ATF ON/OFF : ATF BLOCK ON/OFF (L:ON)
 - ATSG-ATSG : SAMPLE PULSE INPUT FOR SAMPLE AND HOLD
 - ENV DET IN : ENVELOPE DETECTOR INPUT
 - LIM IN : LIMITER INPUT
 - LIM PC : BYPASS CAPACITOR FOR LIMITER BLOCK
 - NORM PLAY : DETERMINES IF NORMAL MODE(L:NORMAL MODE)
 - RF IN : RF INPUT
 - SWP : ACH/BCH SELECT CONTROL OF PROCESS SIGNAL (H:SCH,L:ACH)
- OUTPUT**
- EO OUT : ATF SYNC EQUALIZER OUTPUT
 - PILOT OUT : PILOT SIGNAL OUTPUT
 - RF DET OUT : RF DETECTOR OUTPUT
 - S/H3 OUT : SAMPLE HOLD 3 OUTPUT
 - SYNC OUT : ATF SYNC OUTPUT
 - TE : TRACKING ERROR OUTPUT
- OTHERS**
- B VOL : RESISTOR AND BY-PASS CAPACITOR CONNECTION FOR ADJUSTING BCH GAIN OF THE GAIN CONTROL AMPLIFIER
 - DET C1 : CAPACITOR CONNECTION FOR SMOOTHING FILTER TO DETERMINE THE RF DETECTOR THRESHOLD LEVEL
 - DET C2 : EXTERNAL CAPACITOR CONNECTION FOR RF ENVELOPE WAVEFORM ADJUSTMENT
 - ENV HOLD : ENVELOPE DETECTOR HOLD CAPACITOR CONNECTION
 - F CTL : EXTERNAL RESISTOR CONNECTION FOR DECIDING THE PILOT FILTER (L,P,F)
 - LCTL : EXTERNAL RESISTOR CONNECTION FOR DECIDING THE SYNC EQUALIZER LOW BAND
 - PCTL : EXTERNAL RESISTOR CONNECTION FOR DECIDING THE SYNC EQUALIZER PHASE
 - HOLD2C : EXTERNAL HOLD CAPACITOR CONNECTION FOR SAMPLE AND HOLD 2
 - HOLD3C : EXTERNAL HOLD CAPACITOR CONNECTION FOR SAMPLE AND HOLD 3



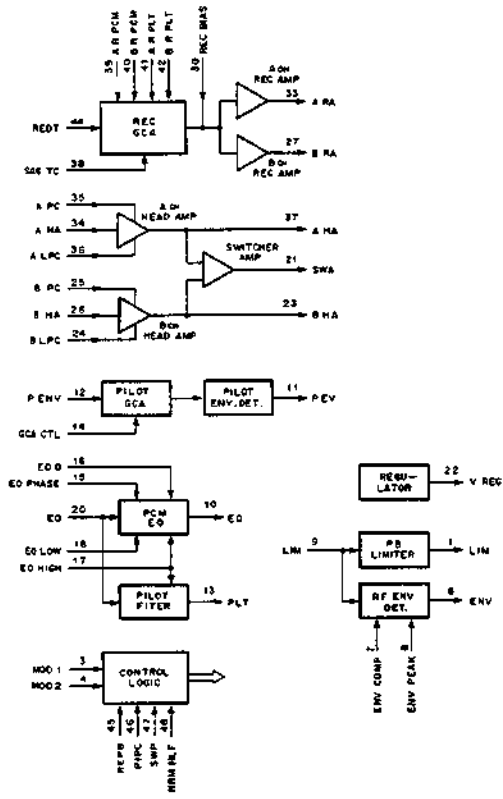
CXA1364R (SONY)

REC/PB AMP FOR R-DAT
- TOP VIEW -

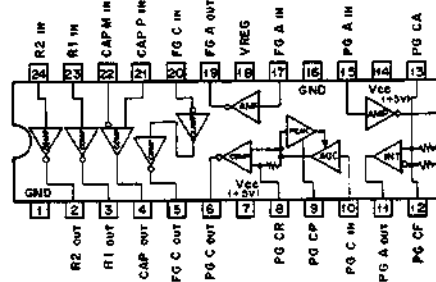


PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	O	LIM OUT	13	O	PLT OUT	25	-	B PC	37	O	A HA OUT
2	-	LIM GND	14	I	GCA CTL	26	I	B HA IN	38	-	SAG TC
3	I	MOD1 IN	15	-	EQ PHASE	27	O	B RA OUT	39	-	A R PCM
4	I	MOD2 IN	16	-	EQ C	28	-	HA GND	40	-	B R PCM
5	-	LIM Vcc	17	-	EQ HIGH	29	-	REC GND	41	-	A R PLT
6	O	ENV OUT	18	-	EQ LOW	30	I	REC BIAS	42	-	B R PLT
7	-	ENV COMP	19	-	PB GND	31	-	HA Vcc	43	-	PB Vcc
8	-	ENV PEAK	20	I	EQ IN	32	-	REC Vcc	44	I	REDT IN
9	I	LIM IN	21	O	SWA OUT	33	O	A RA OUT	45	I	REPB IN
10	O	EQ OUT	22	O	V REG	34	I	A HA IN	46	I	PIPC IN
11	O	P EV OUT	23	O	B HA OUT	35	-	A PC	47	I	SWP IN
12	I	P ENV IN	24	-	B LPC	36	-	A LPC	48	I	NRM HLF

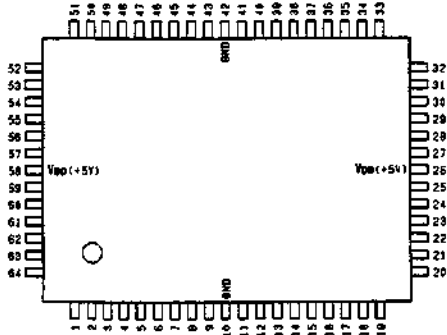
- INPUT**
- A HA IN : Ach HEAD AMPLIFIER INPUT
 - B HA IN : Bch HEAD AMPLIFIER INPUT
 - EQ IN : PCM EQ INPUT
 - GCA CTL : PILOT GCA GAIN CONTROL VOLTAGE INPUT
 - LIM IN : PB LIMITER AND RF ENVELOPE DETECTOR INPUT
 - MOD1 IN, MOD2 IN : OPERATION MODE SWITCHING LOGIC INPUT
 - NRM HLF : NORMAL/HALF SPEED SWITCHING SIGNAL INPUT
 - P ENV IN : PILOT GCA INPUT
 - PIPC IN : PCM/PILOT REC AREA SWITCHING SIGNAL INPUT
 - REC BIAS : REC SIGNAL STAGE CURRENT AMPLIFIER INPUT
 - REC IN : REC SIGNAL INPUT
 - REPB IN : REC/PB SWITCHING SIGNAL INPUT
 - SWP IN : A/B SWITCHING SIGNAL INPUT
- OUTPUT**
- A HA OUT : Ach HEAD AMPLIFIER OUTPUT
 - B HA OUT : Bch HEAD AMPLIFIER OUTPUT
 - B RA OUT : Bch REC AMPLIFIER OUTPUT
 - ENV OUT : RF ENVELOPE DETECTOR OUTPUT
 - EQ OUT : PCM EQUALIZER OUTPUT
 - LIM OUT : PB LIMITER OUTPUT
 - P EV OUT : PILOT ENVELOPE OUTPUT
 - PLT OUT : PILOT FILTER OUTPUT
 - SWA OUT : SWITCH AMPLIFIER OUTPUT
 - V REG : REGULATOR OUTPUT
- OTHERS**
- A LPC : CONNECTION PIN FOR SMOOTHING CAPACITOR OF Ach HEAD AMPLIFIER DC SERVO
 - A PC : CONNECTION PIN FOR EMITTER BYPASS CAPACITOR OF Ach HEAD AMPLIFIER FIRST STAGE GROUNDED EMITTER TRANSISTOR
 - A R PCM : CONNECTION PIN FOR RESISTOR DETERMINING Ach REC CURRENT
 - A R PLT : CONNECTION PIN FOR RESISTOR DETERMINING Ach REC CURRENT
 - B LPC : CONNECTION PIN FOR DC SMOOTHING CAPACITOR OF Bch HEAD AMPLIFIER DC SERVO
 - B PC : CONNECTION PIN FOR EMITTER BYPASS CAPACITOR OF Bch HEAD AMPLIFIER FIRST STAGE GROUNDED EMITTER TRANSISTOR
 - B R PCM : CONNECTION PIN FOR RESISTOR DETERMINING Bch REC CURRENT
 - B R PLT : CONNECTION PIN FOR RESISTOR DETERMINING Bch REC CURRENT
 - ENV COMP : CONNECTION PIN FOR RESISTOR DETERMINING Ach REC CURRENT
 - ENV PEAK : CONNECTION PIN FOR RESISTOR DETERMINING Bch REC CURRENT
 - EQ HIGH : RESISTOR OR CURRENT SOURCE IS CONNECTED FOR DETERMINING PCM EQ HIGH BAND PEAK FREQUENCY AND PILOT FILTER CUT OFF FREQUENCY.
 - EQ LOW : RESISTOR OR CURRENT SOURCE IS CONNECTED FOR DETERMINING PCM EQ LOW BAND CHARACTERISTIC.
 - EQ PHASE : RESISTOR OR CURRENT SOURCE IS CONNECTED FOR DETERMINING PCM EQ PHASE CHARACTERISTIC.
 - EQ C : RESISTOR OR CURRENT SOURCE IS CONNECTED FOR DETERMINING PCM EQ HIGH BAND PEAK GAIN.
 - SAG TC : CONNECTION PIN FOR CAPACITOR CORRECTING THE REC WAVEFORM SAG



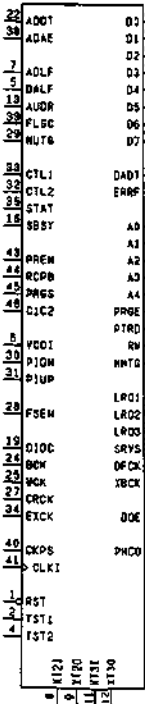
CXA1418N (SONY)
 SENSOR AMPLIFIER FOR R-DAT
 - TOP VIEW -



CXD1008Q (SONY)
 C-MOS R-DAT SIGNAL PROCESSING (ERROR CORRECTION)
 - TOP VIEW -



PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	I	RST	17	I/O	LR03	33	I/O	CTL1	49	O	A2
2	I	TST1	18	I/O	DFCK	34	I/O	EXCK	50	O	A1
3	O	PHCO	19	I/O	DFOC	35	I/O	STAT	51	O	A0
4	I	TST2	20	O	DADT	36	I/O	SBSY	52	O	PRGE
5	I	DALF	21	O	ERRF	37	I/O	SRVS	53	O	PTRD
6	I/O	VCO1	22	I	ADDT	38	I	ADAE	54	O	RW
7	I	ADLF	23	I/O	XBCK	39	I/O	FLGC	55	I	DOE
8	I	XTZ1	24	I/O	BCK	40	I	CKRS	56	I/O	D7
9	O	XTZ0	25	I/O	WCK	41	I	CLKI	57	I/O	D6
10	-	GND	26	-	VDD	42	-	GND	58	-	VDD
11	I	XTZ3	27	I/O	LRCK	43	I	PREN	59	I/O	D5
12	O	XTZ0	28	I	FSEN	44	I/O	RCPB	60	I/O	D4
13	I	AUDR	29	I	MUTG	45	I/O	PRGS	61	I/O	D3
14	I/O	MUTG	30	I/O	PION	46	I/O	CYC2	62	I/O	D2
15	I/O	LR01	31	I/O	RIUP	47	O	A4	63	I/O	D1
16	I/O	LR02	32	I/O	CTL2	48	O	A3	64	I/O	D0



INPUT

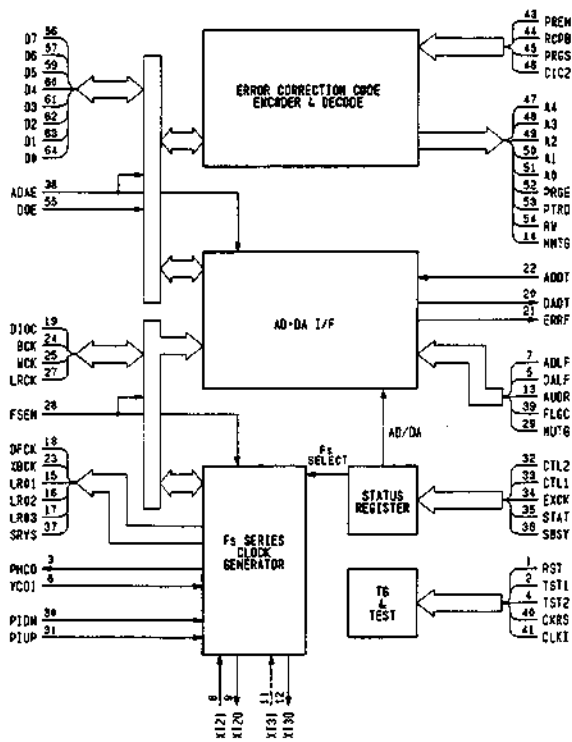
- ADAE : INDICATES THAT DATA BUS IS OCCUPIED BY AD AND DA.
- ADDT : AD DATA (REC DATA) INPUT.
- ADLF : SELECTS LSB FIRST OR MSB FIRST OF AD DATA INPUT. ('H':LSB FIRST)
- AUDR : SELECTS WHETHER THE PLAYBACK DATA IS AUDIO DATA. ('H':AUDIO DATA)
- CLKI : MASTER CLOCK (18.438 MHz)
- CTL1 : STATUS DATA SHIFT IN CHARGE SIGNAL
- CTL2 : SELECTS LSB FIRST OR MSB FIRST OF DA DATA OUTPUT. ('H':LSB FIRST)
- DALF : STATUS SHIFT IN CLOCK.
- EXCK : CONTROLS FORCIBLY ERROR FLAG, ERASURE CORRECTION PROHIBIT AND MUTING BY THE SWAPPING.
- FSEN : SPECIFIES OUTPUT OR NOT OF DFCK, DIOC, BCK, WCK AND LRCK. 'H':OUTPUT
- MUTG : MUTING CONTROL SIGNAL INPUT. 'H':MUTE ON
- PION : PITCH DOWN CONTROL.
- PION : PITCH UP CONTROL.
- PREN : ECC DATA INPUT/OUTPUT REQUEST INHIBIT SIGNAL.
- PRGS : ECC PROGRAM START.
- RCPB : SELECTS REC NODE/PB OF ECC. ('H':REC NODE)
- SBSY : STATUS LOAD CLOCK.
- STAT : STATUS SHIFT IN DATA INPUT
- TST1 : TEST PIN, NORMALLY FIXED TO 'L'.
- TST2 : TEST PIN, NORMALLY FIXED TO 'L'.
- VCO1 : VCO INPUT.
- DOE : READ/WRITE SWITCHING OUTPUT ENABLE SIGNAL. 'L':OUTPUT.
- RST : RESET SIGNAL. 'L':RESET.
- XTZ1 : CRYSTAL INPUT (22.576 MHz).
- XTZ3 : CRYSTAL INPUT (24.576 MHz).

OUTPUT

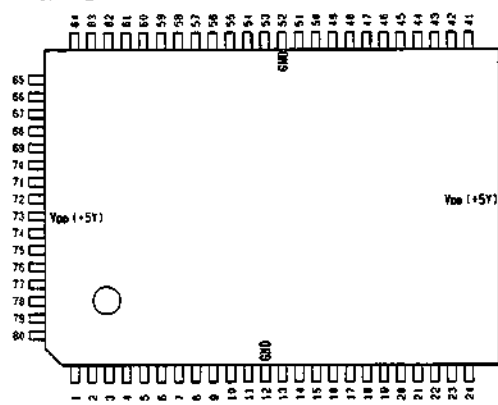
- A0-A4 : ECC DATA ADDRESS (A0 TO A4 INDICATES CODE LOCATION)
- D0-D7 : DE DATA (PLAYBACK DATA OR REC MONITOR DATA) OUTPUT
- DFCK : 256 FS OUTPUT. FSEN='H':OUTPUT. (TRISTATE)
- ERRF : DA DATA ERROR FLAG OUTPUT. ('H':ERROR)
- LR01 : 15 BCK DELAYED SIGNAL OF LRCK
- LR02 : 16 BCK DELAYED SIGNAL OF LRCK
- LR03 : 'H' AND 'L' INVERSION SIGNAL OF LR02
- NMTG : 'H' INDICATES THAT ERROR MONITOR BEING OUTPUT TO D7 TO D0
- PHCO : PHASE COMPARISON OUTPUT FOR VARIABLE PITCH (TRISTATE)
- PRGE : ECC DATA ADDRESS (INVERSION EACH ONE CODE PROCESSING)
- PTRD : ERROR POINTER/CODE DATA SWITCHING. 'H':POINTER IS R/W.
- RW : READ/WRITE SWITCHING. ('H':READ)
- SRVS : SERVO REFERENCE SIGNAL (12.8 kHz)
- WCK : 'H' AND 'L' INVERSION SIGNAL OF BCK
- XTZ0 : CRYSTAL OUTPUT
- XTZ3 : CRYSTAL OUTPUT

INPUT/OUTPUT

- BCK : 16FS INPUT/OUTPUT. FSEN='H':OUTPUT
- D0-D7 : DATA BUS INPUT/OUTPUT. (D7-MSB, D0-LSB)
- DIOC : 128FS INPUT/OUTPUT. FSEN='H':OUTPUT
- LRCK : 16FS INPUT/OUTPUT. FSEN='H':OUTPUT
- WCK : 2FS INPUT/OUTPUT. FSEN='H':OUTPUT

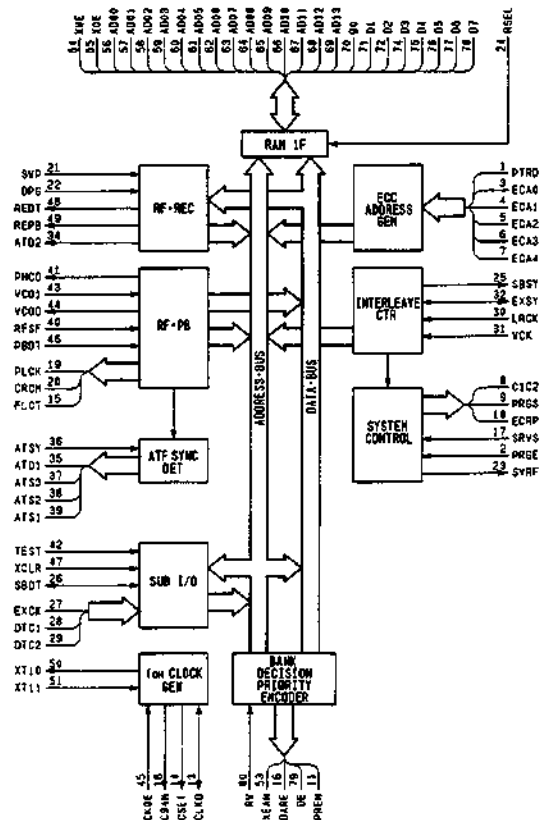
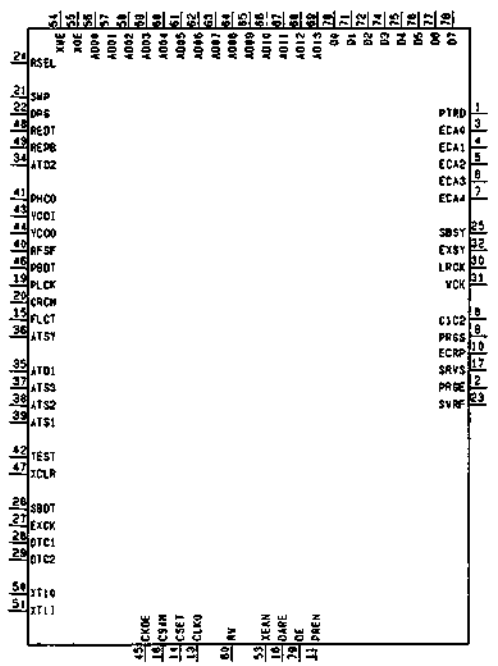


CXD1009Q (SONY)
CMOS SIGNAL PROCESSING (RAM CONTROL) FOR R-DAT
- TOP VIEW -

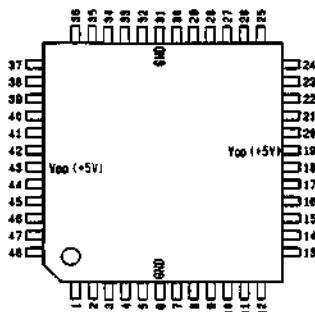


PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	I	PTRD	21	I	SWP	41	O	PHCO	61	I/O	AD05
2	I	PRGE	22	I	DRG	42	I	TEST	62	I/O	AD06
3	I	ECA0	23	O	SVRF	43	I	VCOH	63	I/O	AD07
4	I	ECA1	24	O	RSEL	44	O	VCOO	64	I/O	AD08
5	I	ECA2	25	O	SSSY	45	I	CKOE	65	I/O	AD09
6	I	ECA3	26	I/O	SBDT	46	I	PBDT	66	O	AD10
7	I	ECA4	27	I	EXCK	47	I	YCLR	67	O	AD11
8	O	C1C2	28	I	DTC1	48	O	REDT	68	O	AD12
9	O	PRGS	29	I	DTC2	49	O	REPB	69	O	AD13
10	O	ECRP	30	I	LRCK	50	O	XTI0	70	I/O	D0
11	O	PREN	31	I	WCK	51	I	XTI1	71	I/O	D1
12	-	GND	32	I/O	EXSY	52	-	GND	72	I/O	D2
13	I/O	CLKO	33	-	VCO	53	O	XEAN	73	-	V00
14	O	CSET	34	O	ATD2	54	O	XWE	74	I/O	D3
15	O	FLCT	35	O	ATD1	55	O	XOE	75	I/O	D4
16	O	DARE	36	I	ATSY	56	I/O	AD00	76	I/O	D5
17	I	SRVS	37	O	ATSS	57	I/O	AD01	77	I/O	D6
18	O	C34M	38	O	ATSZ	58	I/O	AD02	78	I/O	D7
19	O	PLCK	39	O	ATSI	59	I/O	AD03	79	O	DE
20	O	CRCM	40	I	RFSFO	60	I/O	AD04	80	I	RW

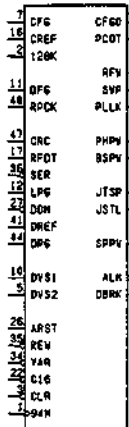
- INPUT**
- ATSY : DATA SIGNAL AFTER ATF EQ
 - CLKO : CLKO PIN I/O CONTROL (Fch: CLOCK INPUT/OUTPUT SWITCHING)
 - CKOE : (L: Fch CLOCK OUT, H: Fch CLOCK EXTERNAL INPUT)
 - DRG : FG SIGNAL INPUT PIN (REFERENCE = FALLING EDGE)
 - DTC1 - DTC2 : SBDT MODE DESIGNATION SIGNAL
 - ECA0 - ECA4 : ECC LOCATION ADDRESS (ECA0 = LSB, ECA4 = MSB)
 - EXCK : SBDT INPUT/OUTPUT CLOCK
 - LRCK : Lch/Rch DISCRIMINATION SIGNAL OF AD/DA DATA
 - PLCK : (SAME FREQUENCY CLOCK AS FS) (Lch: L, Rch: H)
 - PBDT : RF PLAYBACK SIGNAL
 - PRGE : ECC PROGRAM END SIGNAL
 - PTRD : POINTER READ SIGNAL
 - RFSF : RF ENVELOPE DETECT SIGNAL
 - RSEL : RAM SELECT PIN (SRAM: L, DRAM: H)
 - RW : ECC DATA READ/WRITE DISCRIMINATION SIGNAL (READ: H, WRITE: L)
 - SRVS : DRUM FG REFERENCE SIGNAL (12.8K)
 - SWP : TRACK DISCRIMINATION OF +AZIMUTH AND -AZIMUTH (+AZIMUTH: L, -AZIMUTH: H)
 - TEST : LSI TEST PIN (NORMAL: L, TEST: H)
 - VCOI : VCO INPUT PIN
 - WCK : 1 WORD (= 16 bit) DISCRIMINATION REFERENCE SIGNAL
 - XCLR : LSI TEST PIN (NORMALLY FIXED TO H.)
 - XTI1 : CRYSTAL CONNECTION PIN
- OUTPUT**
- ATD1 : OFF TRACK DETECTION SIGNAL (WHEN PB: OFF, H, ON: L, WHEN REC: FIXED TO L)
 - ATD2 : DISCRIMINATION SIGNAL OF ATF PILOT SIGNAL (130kHz) (WHEN ALL REC (130kHz): H, WHEN OTHER THAN ALL REC: FIXED TO L)
 - ATS1 - ATS3 : ATF PILOT SIGNAL DETECTION SAMPLING PULSE (WHEN PB: SAMPLING: H, HOLD: L, WHEN REC: FIXED TO L)
 - C1C2 : C1/C2 DISCRIMINATION SIGNAL (C1: H, C2: L)
 - C34M : 9.408MHz CRYSTAL CLOCK
 - CRCM : CRC DETECTION RESULT (OK: H, NG: L)
 - CSET : Fch/SYSTEM CLOCK (4.704MHz) SYNCHRONIZATION RESET SIGNAL
 - DARE : INDICATES THAT AD/DA SYSTEM HAS PRIORITY TO USE OF THE DATA BUS.
 - DE : OB DATA OUTPUT SYNC ENABLE SIGNAL
 - ECRP : ECC ENCODE/DECODE SWITCHING SIGNAL (ENCODE: H, DECODE: L)
 - FLCT : DISCRIMINATION SIGNAL (TIME DIVISION) FOR FORCED INTERPOLATION, C2 ERASURE FORBID, D CROSS MUTE, etc.
 - PHCO : PHASE COMPARATOR OUTPUT PIN
 - PLCK : PLL CLOCK EXTRACTED FROM PBDT SIGNAL
 - PREN : ECC RAM ACCESS ENABLE SIGNAL
 - PRGS : ECC PROGRAM START SIGNAL
 - REDT : RF REC SIGNAL
 - REPB : REC/PB SWITCHING SIGNAL OF RF AMPLIFIER (REC: H, PB: L)
 - SBSY : SUBCODE DATA I/O TIMING REFERENCE SIGNAL (OTHER THAN SEARCH = DUTY 50)
 - SVRF : DRUM SERVO REFERENCE SIGNAL (100/3Hz) (DUTY 50)
 - VCOO : VCO OUTPUT PIN
 - XEAN : EXTERNAL RAM ACCESS TIMING SIGNAL
 - XOE : RAM OUTPUT ENABLE SIGNAL
 - XTI0 : CRYSTAL CONNECTION PIN
 - XWE : RAM WRITE ENABLE SIGNAL
- INPUT/OUTPUT**
- AD00 - AD13 : ADDRESS BUS (AD0 = LSB, AD13 = MSB)
 - CLKO : Fch CLOCK (18.815MHz)
 - D0 - D7 : DATA BUS (D0 = LSB, D7 = MSB)
 - EXSY : EXTERNAL SYSTEM SYNC SIGNAL (DUTY 50)
 - SBDT : SERIAL I/O PORT FOR SUBCODE DATA, STATUS INFORMATION, etc.



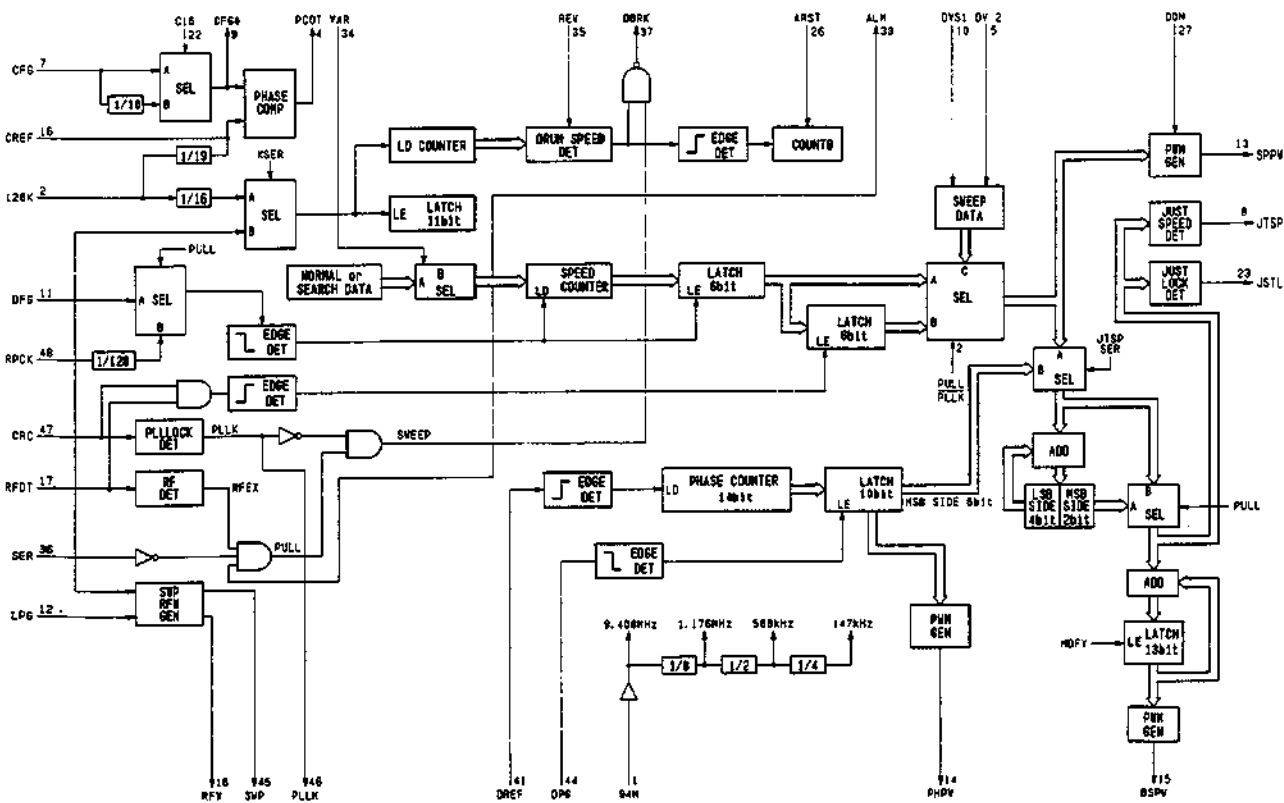
CXD10520-Z (SONY)
CMOS SERVO CONTROL FOR R-DAT
- TOP VIEW -



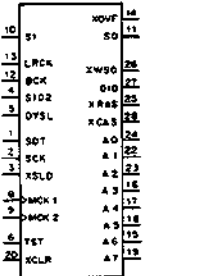
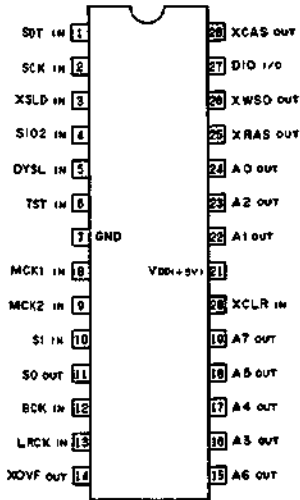
PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL
1	E	S4H	13	O	SPPW	25	I	TIN1	37	O	DRBK
2	E	128K	14	O	PHPW	26	I	ARST	38	O	TOU1
3	E	CLR	15	O	BSPW	27	I	DDN	39	O	TOU2
4	O	PCOT	16	O	CREF	28	I	TIN2	40	I	TIN5
5	I	DVS2	17	I	RFDT	29	O	TOR0	41	I	DREF
6	-	GND	18	O	RFW	30	O	TOR0	42	I	TST2
7	I	CF6	19	-	VDD	31	-	GND	43	-	VDD
8	O	JTSP	20	I	TST1	32	I/O	TIO2	44	I	DP6
9	O	CF60	21	I/O	TIO1	33	O	ALM	45	O	SPP
10	I	DVS1	22	I	C16	34	I	VAR	46	O	PLLK
11	I	DF6	23	O	JSTL	35	I	REV	47	I	CRC
12	I	LPG	24	I	TIM4	36	I	SER	48	I	RPOK



- INPUT**
- 128K : SERVO REFERENCE INPUT (12.8kHz)
 - 94M : MASTER CLOCK INPUT (9.408MHz)
 - ARST : ALARM RELEASE INPUT AT SEARCH (RELEASE WHEN L)
 - C16 : CAPSTAN MODE SWITCHING (X16 MODE WHEN L)
 - CF6 : CAPSTAN FREQUENCY GENERATOR INPUT
 - CLR : RESET INPUT (RESET WHEN L)
 - CRC : CYCLIC REDUNDANCY CHECK SIGNAL INPUT (CRC OK WHEN H)
 - DF6 : DRUM FREQUENCY GENERATOR INPUT
 - DDN : DRUM ON/OFF SWITCHING INPUT (ON WHEN L)
 - DP6 : DELAY PG INPUT
 - DREF : DRUM PG REFERENCE INPUT
 - DVS1 : SETS VOLTAGE GIVEN TO DRUM MOTOR DURING SERVO LOCK-IN IN SEARCH MODE
 - DVS2 : SET VOLTAGE GIVEN TO DRUM MOTOR DURING SERVO LOCK-IN IN SEARCH MODE
 - LPG : DRUM PHASE GENERATOR INPUT
 - REW : FAST FORWARD REWIND SETTING (REWIND WHEN L)
 - RFDT : RF SIGNAL INPUT
 - RPOK : REFERENCE INPUT AT SEARCH
 - SER : SEARCH MODE SETTING (SEARCH WHEN L)
 - TIN1 - TIN5 : TEST INPUT (NORMALLY FIXED TO L)
 - TST1, TST2 : TEST INPUT (NORMALLY FIXED TO L)
 - VAR : EXTERNAL REFERENCE SETTING PIN OF PIN No.2 (NORMALLY FIXED TO H)
- OUTPUT**
- ALM : ALARM OUTPUT AT SEARCH (ALARM CONDITION WHEN L)
 - BSPW : BIAS SERVO PWM OUTPUT
 - CFGO : CAPSTAN FREQUENCY GENERATOR OUTPUT
 - CREF : CAPSTAN FREQUENCY REFERENCE OUTPUT
 - DRBK : DRUM BRAKE OUTPUT (BRAKE ON WHEN H)
 - JSTL : JUST LOCK MONITOR (JUST WHEN H)
 - JTSP : JUST SPEED MONITOR OUTPUT (JUST SPEED WHEN H)
 - PCOT : CAPSTAN PHASE COMPARATOR OUTPUT (TRISTATE OUTPUT)
 - PHPW : PHASE SERVO PWM OUTPUT
 - PLLK : DRUM LOCK MONITOR OUTPUT (AT SEARCH LOCK WHEN H)
 - RFW : RF WINDOW OUTPUT (RF SPECIFIED AREA WHEN L)
 - SPPW : SPEED SERVO PWM OUTPUT
 - SPPW : SWITCHING PULSE OUTPUT
 - TOU1 - TOU4 : TEST OUTPUT
- INPUT/OUTPUT**
- TIO1, TIO2 : TEST INPUT/OUTPUT (NORMALLY FIXED TO L)



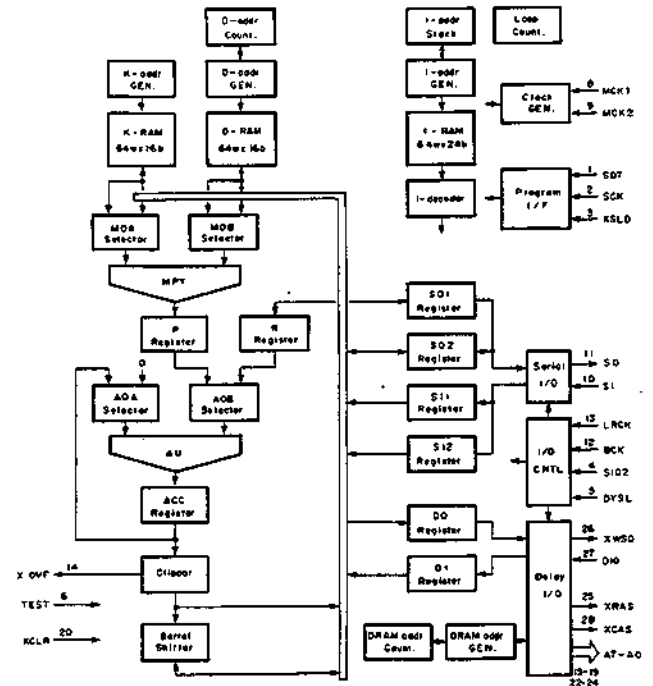
CXD1160AP (SONY)
 CMOS DIGITAL AUDIO SIGNAL PROCESSOR
 - TOP VIEW -



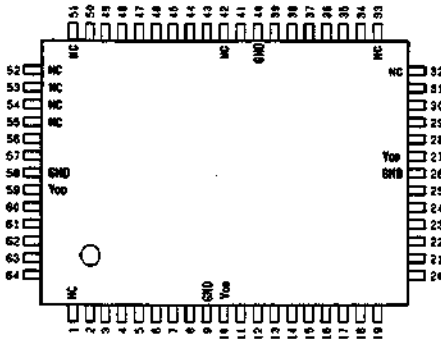
INPUT
 BCK : SERIAL BIT CLOCK FOR SERIAL INPUT DATA (SI) AND SERIAL OUTPUT DATA (SO)
 DYSL : DELAY I/O MODE SELECT
 LRCK : SAMPLING FREQ. CLOCK
 MCK1 : MASTER CLOCK 1
 MCK2 : MASTER CLOCK 2
 SCK : SERIAL CLOCK FOR SDT
 SDT : SERIAL DATA FROM CPU
 SI : SERIAL DATA (2% COMPLEMENT)
 SIO2 : BCK CLOCK MODE SELECT (L (GND) : 32 BIT CLOCK MODE, H (+5V) : 24 BIT CLOCK MODE)
 TST : FOR TEST
 XCLR : LATCH FOR SDT (SERIAL DATA) ACTIVE LOW

OUTPUT
 A0 - A7 : ADDRESS FOR EXT. DRAM
 SO : SERIAL DATA (2% COMPLEMENT)
 XCAS : COLUMN ADDRESS STROBE FOR EXT. DRAM
 XOVF : OVERFLOW DETECT
 XRAS : LOW ADDRESS STROBE FOR EXT. DRAM

INPUT/OUTPUT
 DIO : SERIAL DATA INPUT (DYSL = L) OR DATA INPUT/OUTPUT FOR EXT. DRAM (DYSL = H)

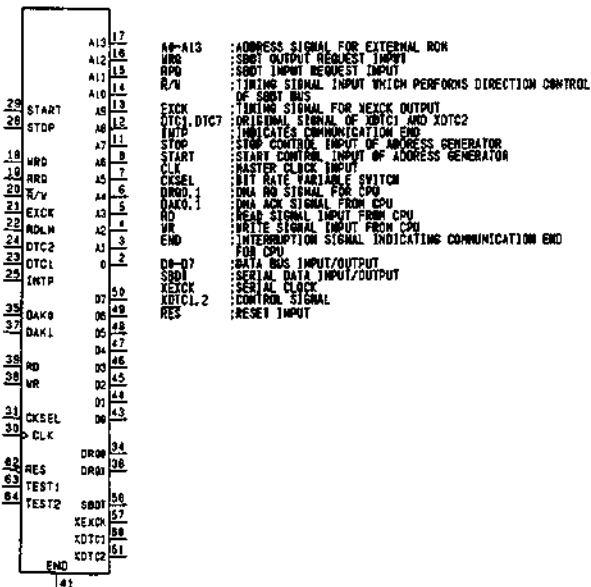
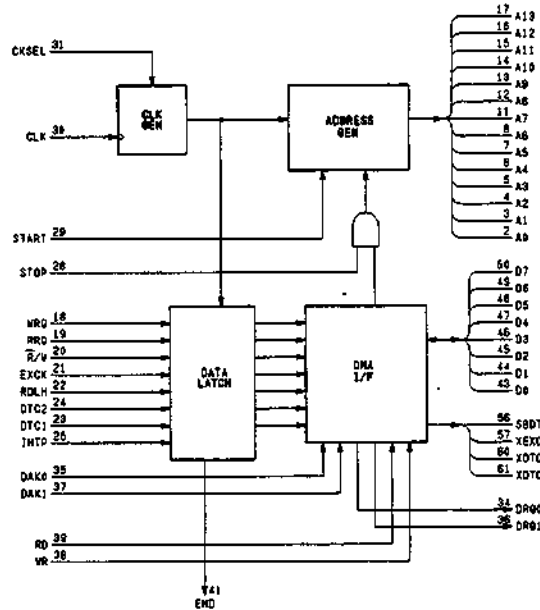


CXD8130Q (SONY)
 C-MOS DMA SERIAL INTERFACE
 - TOP VIEW -

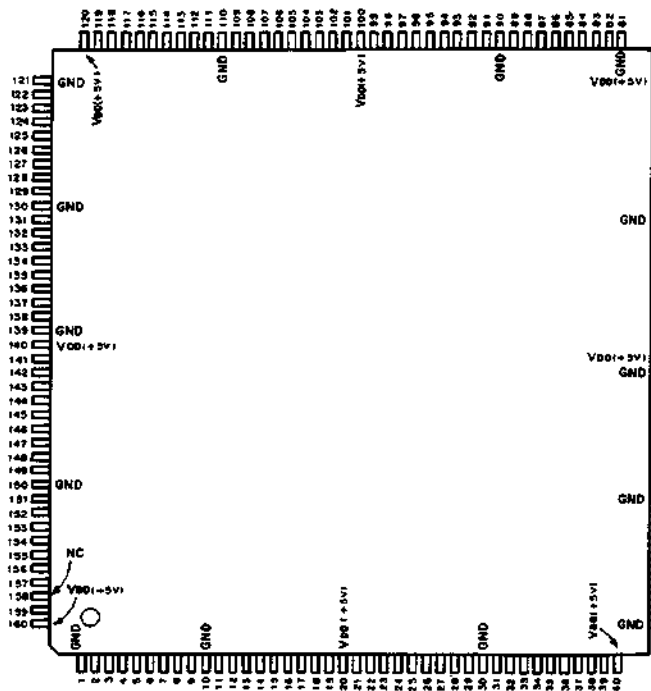


(V_{DD} = +5V)

PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	-	NC	17	O	A13	33	-	NC	49	I/O	D6
2	O	A0	18	I	WRQ	34	O	DRQ0	50	I/O	D7
3	O	A1	19	I	RRQ	35	I	DAK0	51	-	NC
4	O	A2	20	I	R/W	36	O	DRQ1	52	-	NC
5	O	A3	21	I	EXCK	37	I	DAK1	53	-	NC
6	O	A4	22	I	RD/LH	38	I	WR	54	-	NC
7	O	A5	23	I	DTC1	39	I	RD	55	-	NC
8	O	A6	24	I	DTC2	40	-	GND	56	O	SBDT
9	-	GND	25	I	INTP	41	O	END	57	O	XEXCK
10	-	V _{DD}	26	-	GND	42	-	NC	58	-	GND
11	O	A7	27	-	V _{DD}	43	I/O	D0	59	-	V _{CC}
12	O	A8	28	I	STOP	44	I/O	D1	60	O	XDTC1
13	O	A9	29	I	START	45	I/O	D2	61	O	XDTC2
14	O	A10	30	I	CLK	46	I/O	D3	62	I	RES
15	O	A11	31	I	CKSEL	47	I/O	D4	63	I	TEST1
16	O	A12	32	-	NC	48	I/O	D5	64	I	TEST2



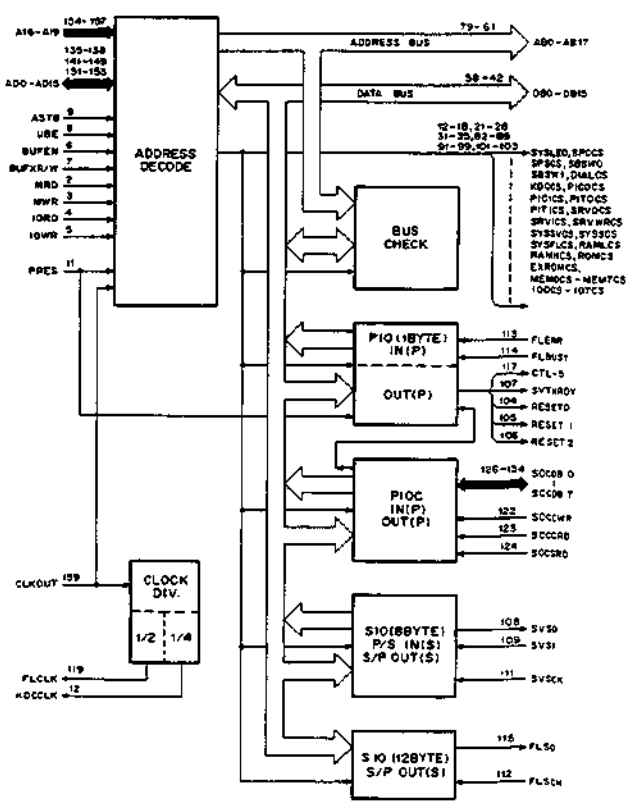
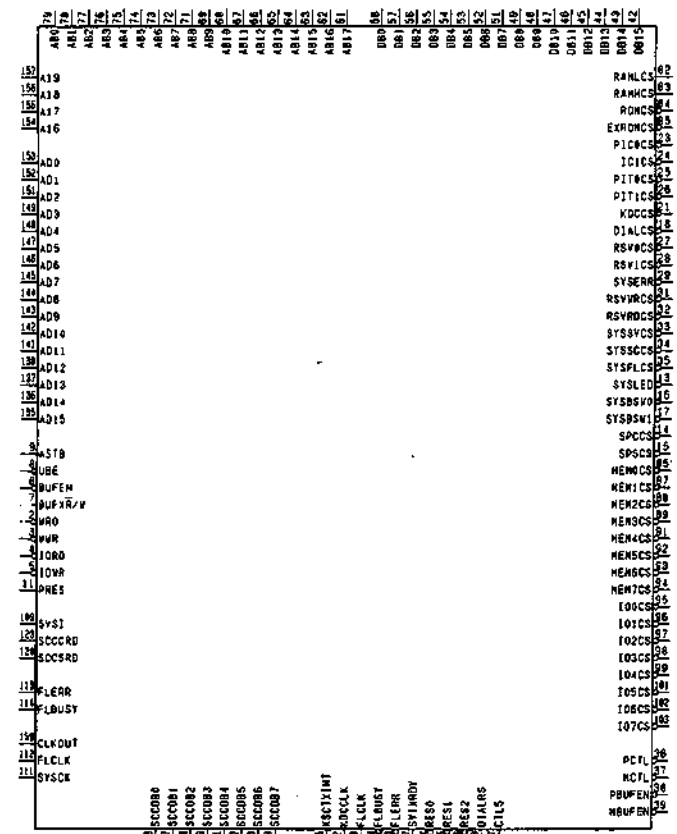
CXD8139AQ (SONY) FLAT PACKAGE
 C-MOS PERIPHERAL INTERFACE UNIT
 - TOP VIEW -



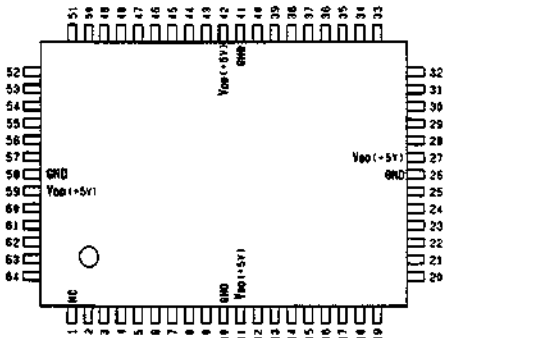
(VDD = +5V)

Pin No.	I/O	SIGNAL	Pin No.	I/O	SIGNAL	Pin No.	I/O	SIGNAL	Pin No.	I/O	SIGNAL
1	-	GND	41	-	GND	81	-	GND	121	-	GND
2	I	XNRD	42	I/O	DB15	82	O	RAMLCS	122	I	XSCCWR
3	I	XNWR	43	I/O	DB14	83	O	RAMHCS	123	I	XSCCRD
4	I	XRD	44	I/O	DB13	84	O	XROMCS	124	I	XSCSRD
5	I	XIOWR	45	I/O	DB12	85	O	XEXROMCS	125	O	XSCIXINT
6	I	XBUFEN	46	I/O	DB11	86	O	XMEM7CS	126	I/O	SCCDB0
7	I	BUFEXRW	47	I/O	DB10	87	O	XMEM7CS	127	I/O	SCCDB1
8	I	XUBE	48	I/O	DB09	88	O	XMEM7CS	128	I/O	SCCDB2
9	I	ASTB	49	I/O	DB08	89	O	XMEM7CS	129	I/O	SCCDB3
10	-	GND	50	-	GND	90	-	GND	130	-	GND
11	I	XPRES	51	I/O	DB07	91	O	XMEM7CS	131	I/O	SCCDB4
12	O	KDCLK	52	I/O	DB06	92	O	XMEM7CS	132	I/O	SCCDB5
13	O	XSYSLED	53	I/O	DB05	93	O	XMEM7CS	133	I/O	SCCDB6
14	O	XSPCS	54	I/O	DB04	94	O	XMEM7CS	134	I/O	SCCDB7
15	O	XSPSCS	55	I/O	DB03	95	O	XI0CS	135	I/O	AD00
16	O	XBSW0	56	I/O	DB02	96	O	XI0CS	136	I/O	AD01
17	O	XBSW1	57	I/O	DB01	97	O	XI0CS	137	I/O	AD02
18	O	XDIALCS	58	I/O	DB00	98	O	XI0CS	138	I/O	AD03
19	O	XDIALRES	59	-	GND	99	O	XI0CS	139	-	GND
20	-	VDD	60	-	VDD	100	-	VDD	140	-	VDD
21	O	XKDCCS	61	O	AB17	101	O	XI0CS	141	I/O	AD04
22	O	XSCUCS	62	O	AB16	102	O	XI0CS	142	I/O	AD05
23	O	XPCDCS	63	O	AB15	103	O	XI0CS	143	I/O	AD06
24	O	XPI0CS	64	O	AB14	104	O	XRESET0	144	I/O	AD07
25	O	XPI1CS	65	O	AB13	105	O	XRESET1	145	I/O	AD08
26	O	XPI2CS	66	O	AB12	106	O	XRESET2	146	I/O	AD09
27	O	XSRV0CS	67	O	AB11	107	O	SVTXRDY	147	I/O	AD10
28	O	XSRV1CS	68	O	AB10	108	O	SVSO	148	I/O	AD11
29	O	XSYSERR	69	O	AB09	109	I	SVSI	149	I/O	AD12
30	-	GND	70	-	GND	110	-	GND	150	-	GND
31	O	XSRVWRCS	71	O	AB08	111	I	XSYSCK	151	I/O	AD13
32	O	XSRVDCS	72	O	AB07	112	I	XFLSK	152	I/O	AD14
33	O	XSYSVCS	73	O	AB06	113	I	XFLERR	153	I/O	AD15
34	O	XSYS0CS	74	O	AB05	114	I	XFLBUSY	154	I	A16
35	O	XSYSFLCS	75	O	AB04	115	O	FLS0	155	I	A17
36	O	XPCIL	76	O	AB03	116	O	XFLYXINT	156	I	A18
37	O	XMCIL	77	O	AB02	117	O	CTL-5	157	I	A19
38	O	XMBUFEN	78	O	AB01	118	I	STS-4	158	-	NC
39	O	XMBUFEN	79	O	AB00	119	O	FLCLK	159	I	CLKOUT
40	-	VDD	80	-	VDD	120	-	VDD	160	-	VDD

- INPUT**
- A16 - A19 : ADDRESS BUS
 - ASTB : ADDRESS STROBE
 - BUFEN : BUFFER ENABLE
 - BUFEXRW : BUFFER READ/WRITE
 - CLKOUT : CLOCK
 - FLBUSY : BUSY STATUS
 - FLERR : ERROR STATUS
 - FLSK : SERIAL CLOCK
 - IOWR : I/O WRITE
 - MRO : MEMORY READ
 - MWR : MEMORY WRITE
 - PRES : POWERON RESET
 - SCCDB : DATA READ CHIP SELECT
 - SCCWR : DATA WRITE CHIP SELECT
 - SCCSR : STATUS READ CHIP SELECT
 - STS4 : I/O READ
 - SVS CK : SERIAL CLOCK
 - SVSI : SERIAL DATA
 - SVSE : UPPER BYTE ENABLE
- OUTPUT**
- AB00 - AB17 : SYSTEM ADDRESS BUS
 - CTL-5 : I/O WRITE
 - DIAL CS : CHIP SELECT
 - DIAL CS : RESET
 - FLCLK : 1/2 CLOCK OUT
 - FLSK : SERIAL DATA
 - FLTXINT : TX INTERRUPT
 - IO CCS - TCS : CHIP SELECT
 - KDCLK : 1/4 CLOCK OUT
 - KDCCS : CHIP SELECT
 - MBUFEN : DATA TRANSCIVER (MEMORY DATA ENABLE)
 - MCIL : DATA TRANSCIVER
 - MEM7CS - MEM7CS : CHIP SELECT
 - PBUFEN, PCTL : DATA TRANSCIVER
 - PROCS, 1CS : CHIP SELECT
 - PITCS, 1CS : CHIP SELECT
 - RAMLCS, HCS : CHIP SELECT
 - RESET0 - RESET2 : RESET
 - R0MCS : CHIP SELECT
 - SBSW0, 1 : CHIP SELECT
 - SCTXINT : TX INTERRUPT
 - SCUCS, SPCCS : CHIP SELECT
 - SPSCS : CHIP SELECT
 - SRV0CS, 1CS : CHIP SELECT
 - SRVDCS, SRVWRCS : CHIP SELECT
 - SVSO : SERIAL DATA
 - SVTXRDY : TX READY
 - SYSERR : LED OUTPUT
 - SYSFLCS, SYSLED : CHIP SELECT
 - SYS0CS, SVSVCs : CHIP SELECT
- INPUT/OUTPUT**
- AD00 - AD15 : ADDRESS/DATA BUS
 - DB00 - DB15 : SYSTEM DATA BUS
 - SCCDB0 - SCCDB7 : DATA BUS



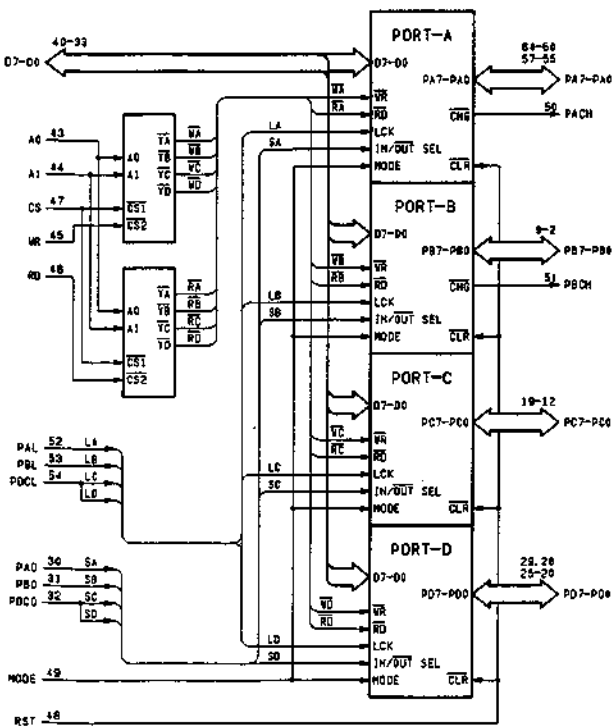
CXD8141Q (SONY)
CMOS PARALLEL I/O PORT
- TOP VIEW -



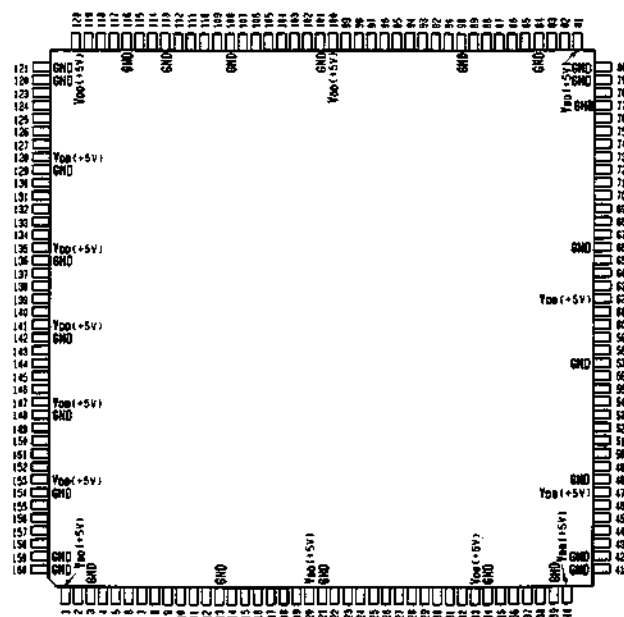
33	DP	55	INPUT
34	D1	56	A1: A0
35	D2	57	CS
36	D3	58	CHP SELECT
37	D4	59	D7 - D0
38	D5	60	MODE
39	D6	61	LATCH SIGNAL INPUT FOR PORT-A
40	D7	62	LATCH SIGNAL INPUT FOR PORT-B
41	RD	63	L: PORT-A IS USED AS OUTPUT PORT.
42	CS	64	H: PORT-A IS USED AS INPUT PORT.
43	RD	65	LATCH SIGNAL INPUT FOR PORT-B
44	A1	66	L: PORT-B IS USED AS OUTPUT PORT.
45	CS	67	H: PORT-B IS USED AS INPUT PORT.
46	WR	68	A0
47	CS	69	LATCH SIGNAL FOR PORT-C/D
48	RD	70	L: PORT-C/D IS USED AS OUTPUT PORT.
49	RD	71	H: PORT-C/D IS USED AS INPUT PORT.
50	WR	72	WHEN SET TO "L" IN CASE OF CS "L", PORT DATA SELECTED AT A1 AND A0 IS OUTPUT TO D7 - D0.
51	RD	73	RST
52	RD	74	RESET
53	WR	75	WHEN SET FROM "L" TO "H" IN CASE OF CS "L", D7 - D0 DATA IS OUTPUT TO THE PORT SELECTED AT A1 AND A0.
54	RD	76	OUTPUT
55	PAL	77	FACH
56	PBL	78	OUTPUT "L" WHEN PORT-A DATA VARIED
57	PCL	79	BECOMING "HI-Z" WHEN PORT-A DATA NOT VARIED
58	PCL	80	OUTPUT "L" WHEN PORT-B DATA VARIED
59	PCL	81	BECOMING "HI-Z" WHEN PORT-B DATA NOT VARIED
60	PC0	82	INPUT/OUTPUT
61	PC1	83	PA7 - PA0
62	PC2	84	OUTPUT (PAC: "L"), INPUT (PAC: "H")
63	PC3	85	OUTPUT (PBC: "L"), INPUT (PBC: "H")
64	PC4	86	OUTPUT (PCD: "L"), INPUT (PCD: "H")
65	PC5	87	OUTPUT (PDC: "L"), INPUT (PDC: "H")
66	PC6	88	OUTPUT (PDD: "L"), INPUT (PDD: "H")
67	PC7	89	OUTPUT (PDC: "L"), INPUT (PDC: "H")
68	PC7	90	OUTPUT (PDD: "L"), INPUT (PDD: "H")
69	PC7	91	OUTPUT (PDC: "L"), INPUT (PDC: "H")
70	PC7	92	OUTPUT (PDD: "L"), INPUT (PDD: "H")
71	PC7	93	OUTPUT (PDC: "L"), INPUT (PDC: "H")
72	PC7	94	OUTPUT (PDD: "L"), INPUT (PDD: "H")
73	PC7	95	OUTPUT (PDC: "L"), INPUT (PDC: "H")
74	PC7	96	OUTPUT (PDD: "L"), INPUT (PDD: "H")
75	PC7	97	OUTPUT (PDC: "L"), INPUT (PDC: "H")
76	PC7	98	OUTPUT (PDD: "L"), INPUT (PDD: "H")
77	PC7	99	OUTPUT (PDC: "L"), INPUT (PDC: "H")
78	PC7	100	OUTPUT (PDD: "L"), INPUT (PDD: "H")
79	PC7	101	OUTPUT (PDC: "L"), INPUT (PDC: "H")
80	PC7	102	OUTPUT (PDD: "L"), INPUT (PDD: "H")
81	PC7	103	OUTPUT (PDC: "L"), INPUT (PDC: "H")
82	PC7	104	OUTPUT (PDD: "L"), INPUT (PDD: "H")
83	PC7	105	OUTPUT (PDC: "L"), INPUT (PDC: "H")
84	PC7	106	OUTPUT (PDD: "L"), INPUT (PDD: "H")
85	PC7	107	OUTPUT (PDC: "L"), INPUT (PDC: "H")
86	PC7	108	OUTPUT (PDD: "L"), INPUT (PDD: "H")
87	PC7	109	OUTPUT (PDC: "L"), INPUT (PDC: "H")
88	PC7	110	OUTPUT (PDD: "L"), INPUT (PDD: "H")
89	PC7	111	OUTPUT (PDC: "L"), INPUT (PDC: "H")
90	PC7	112	OUTPUT (PDD: "L"), INPUT (PDD: "H")
91	PC7	113	OUTPUT (PDC: "L"), INPUT (PDC: "H")
92	PC7	114	OUTPUT (PDD: "L"), INPUT (PDD: "H")
93	PC7	115	OUTPUT (PDC: "L"), INPUT (PDC: "H")
94	PC7	116	OUTPUT (PDD: "L"), INPUT (PDD: "H")
95	PC7	117	OUTPUT (PDC: "L"), INPUT (PDC: "H")
96	PC7	118	OUTPUT (PDD: "L"), INPUT (PDD: "H")
97	PC7	119	OUTPUT (PDC: "L"), INPUT (PDC: "H")
98	PC7	120	OUTPUT (PDD: "L"), INPUT (PDD: "H")
99	PC7	121	OUTPUT (PDC: "L"), INPUT (PDC: "H")
100	PC7	122	OUTPUT (PDD: "L"), INPUT (PDD: "H")
101	PC7	123	OUTPUT (PDC: "L"), INPUT (PDC: "H")
102	PC7	124	OUTPUT (PDD: "L"), INPUT (PDD: "H")
103	PC7	125	OUTPUT (PDC: "L"), INPUT (PDC: "H")
104	PC7	126	OUTPUT (PDD: "L"), INPUT (PDD: "H")
105	PC7	127	OUTPUT (PDC: "L"), INPUT (PDC: "H")
106	PC7	128	OUTPUT (PDD: "L"), INPUT (PDD: "H")
107	PC7	129	OUTPUT (PDC: "L"), INPUT (PDC: "H")
108	PC7	130	OUTPUT (PDD: "L"), INPUT (PDD: "H")
109	PC7	131	OUTPUT (PDC: "L"), INPUT (PDC: "H")
110	PC7	132	OUTPUT (PDD: "L"), INPUT (PDD: "H")
111	PC7	133	OUTPUT (PDC: "L"), INPUT (PDC: "H")
112	PC7	134	OUTPUT (PDD: "L"), INPUT (PDD: "H")
113	PC7	135	OUTPUT (PDC: "L"), INPUT (PDC: "H")
114	PC7	136	OUTPUT (PDD: "L"), INPUT (PDD: "H")
115	PC7	137	OUTPUT (PDC: "L"), INPUT (PDC: "H")
116	PC7	138	OUTPUT (PDD: "L"), INPUT (PDD: "H")
117	PC7	139	OUTPUT (PDC: "L"), INPUT (PDC: "H")
118	PC7	140	OUTPUT (PDD: "L"), INPUT (PDD: "H")
119	PC7	141	OUTPUT (PDC: "L"), INPUT (PDC: "H")
120	PC7	142	OUTPUT (PDD: "L"), INPUT (PDD: "H")
121	PC7	143	OUTPUT (PDC: "L"), INPUT (PDC: "H")
122	PC7	144	OUTPUT (PDD: "L"), INPUT (PDD: "H")
123	PC7	145	OUTPUT (PDC: "L"), INPUT (PDC: "H")
124	PC7	146	OUTPUT (PDD: "L"), INPUT (PDD: "H")
125	PC7	147	OUTPUT (PDC: "L"), INPUT (PDC: "H")
126	PC7	148	OUTPUT (PDD: "L"), INPUT (PDD: "H")
127	PC7	149	OUTPUT (PDC: "L"), INPUT (PDC: "H")
128	PC7	150	OUTPUT (PDD: "L"), INPUT (PDD: "H")
129	PC7	151	OUTPUT (PDC: "L"), INPUT (PDC: "H")
130	PC7	152	OUTPUT (PDD: "L"), INPUT (PDD: "H")
131	PC7	153	OUTPUT (PDC: "L"), INPUT (PDC: "H")
132	PC7	154	OUTPUT (PDD: "L"), INPUT (PDD: "H")
133	PC7	155	OUTPUT (PDC: "L"), INPUT (PDC: "H")
134	PC7	156	OUTPUT (PDD: "L"), INPUT (PDD: "H")
135	PC7	157	OUTPUT (PDC: "L"), INPUT (PDC: "H")
136	PC7	158	OUTPUT (PDD: "L"), INPUT (PDD: "H")
137	PC7	159	OUTPUT (PDC: "L"), INPUT (PDC: "H")
138	PC7	160	OUTPUT (PDD: "L"), INPUT (PDD: "H")
139	PC7	161	OUTPUT (PDC: "L"), INPUT (PDC: "H")
140	PC7	162	OUTPUT (PDD: "L"), INPUT (PDD: "H")
141	PC7	163	OUTPUT (PDC: "L"), INPUT (PDC: "H")
142	PC7	164	OUTPUT (PDD: "L"), INPUT (PDD: "H")
143	PC7	165	OUTPUT (PDC: "L"), INPUT (PDC: "H")
144	PC7	166	OUTPUT (PDD: "L"), INPUT (PDD: "H")
145	PC7	167	OUTPUT (PDC: "L"), INPUT (PDC: "H")
146	PC7	168	OUTPUT (PDD: "L"), INPUT (PDD: "H")
147	PC7	169	OUTPUT (PDC: "L"), INPUT (PDC: "H")
148	PC7	170	OUTPUT (PDD: "L"), INPUT (PDD: "H")
149	PC7	171	OUTPUT (PDC: "L"), INPUT (PDC: "H")
150	PC7	172	OUTPUT (PDD: "L"), INPUT (PDD: "H")
151	PC7	173	OUTPUT (PDC: "L"), INPUT (PDC: "H")
152	PC7	174	OUTPUT (PDD: "L"), INPUT (PDD: "H")
153	PC7	175	OUTPUT (PDC: "L"), INPUT (PDC: "H")
154	PC7	176	OUTPUT (PDD: "L"), INPUT (PDD: "H")
155	PC7	177	OUTPUT (PDC: "L"), INPUT (PDC: "H")
156	PC7	178	OUTPUT (PDD: "L"), INPUT (PDD: "H")
157	PC7	179	OUTPUT (PDC: "L"), INPUT (PDC: "H")
158	PC7	180	OUTPUT (PDD: "L"), INPUT (PDD: "H")
159	PC7	181	OUTPUT (PDC: "L"), INPUT (PDC: "H")
160	PC7	182	OUTPUT (PDD: "L"), INPUT (PDD: "H")
161	PC7	183	OUTPUT (PDC: "L"), INPUT (PDC: "H")
162	PC7	184	OUTPUT (PDD: "L"), INPUT (PDD: "H")
163	PC7	185	OUTPUT (PDC: "L"), INPUT (PDC: "H")
164	PC7	186	OUTPUT (PDD: "L"), INPUT (PDD: "H")
165	PC7	187	OUTPUT (PDC: "L"), INPUT (PDC: "H")
166	PC7	188	OUTPUT (PDD: "L"), INPUT (PDD: "H")
167	PC7	189	OUTPUT (PDC: "L"), INPUT (PDC: "H")
168	PC7	190	OUTPUT (PDD: "L"), INPUT (PDD: "H")
169	PC7	191	OUTPUT (PDC: "L"), INPUT (PDC: "H")
170	PC7	192	OUTPUT (PDD: "L"), INPUT (PDD: "H")
171	PC7	193	OUTPUT (PDC: "L"), INPUT (PDC: "H")
172	PC7	194	OUTPUT (PDD: "L"), INPUT (PDD: "H")
173	PC7	195	OUTPUT (PDC: "L"), INPUT (PDC: "H")
174	PC7	196	OUTPUT (PDD: "L"), INPUT (PDD: "H")
175	PC7	197	OUTPUT (PDC: "L"), INPUT (PDC: "H")
176	PC7	198	OUTPUT (PDD: "L"), INPUT (PDD: "H")
177	PC7	199	OUTPUT (PDC: "L"), INPUT (PDC: "H")
178	PC7	200	OUTPUT (PDD: "L"), INPUT (PDD: "H")

(VDD = +5V)

PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	-	NC	17	I/O	PC5	33	I/O	DO	49	I/O	MODE
2	I/O	PB0	18	I/O	PC6	34	I/O	D1	50	O	FACH
3	I/O	PB1	19	I/O	PC7	35	I/O	D2	51	O	PBCH
4	I/O	PB2	20	I/O	PC0	36	I/O	D3	52	I	PAL
5	I/O	PB3	21	I/O	PC1	37	I/O	D4	53	I	PBL
6	I/O	PB4	22	I/O	PC2	38	I/O	D5	54	I	PDCL
7	I/O	PB5	23	I/O	PC3	39	I/O	D6	55	I/O	PA0
8	I/O	PB6	24	I/O	PC4	40	I/O	D7	56	I/O	PA1
9	I/O	PB7	25	I/O	PC6	41	-	GND	57	I/O	PA2
10	-	GND	26	-	GND	42	-	VDD	58	-	GND
11	-	VDD	27	-	VDD	43	I	A0	59	-	VDD
12	I/O	PC0	28	I/O	PDE	44	I	A1	60	I/O	PA3
13	I/O	PC1	29	I/O	PD7	45	I	WR	61	I/O	PA4
14	I/O	PC2	30	I	PA0	46	I	RD	62	I/O	PA5
15	I/O	PC3	31	I	PB0	47	I	CS	63	I/O	PA6
16	I/O	PC4	32	I	PDC0	48	I	RST	64	I/O	PA7



CXD8163AQ (SONY)
CMOS SOUND MEMORY CONTROL FOR DAT
- TOP VIEW -



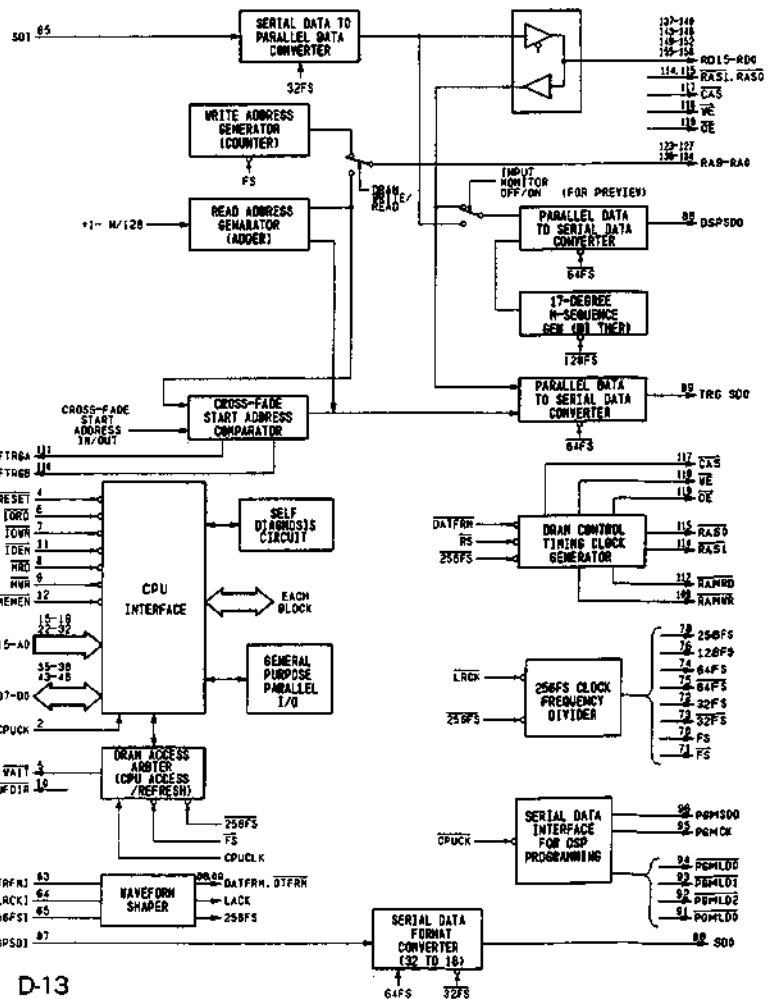
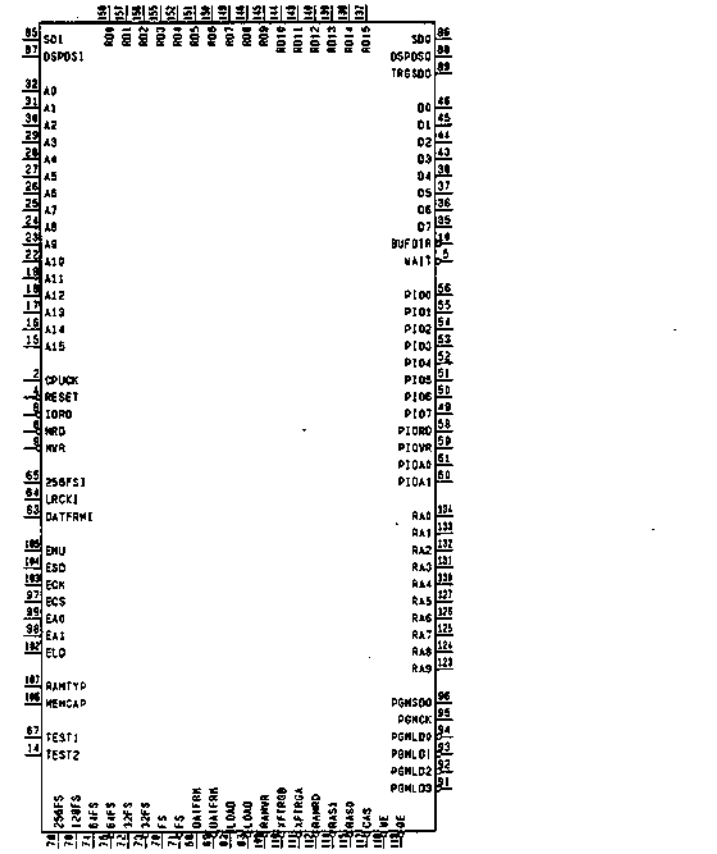
VDD = +5V

Pin No.	I/O	SIGNAL	Pin No.	I/O	SIGNAL	Pin No.	I/O	SIGNAL	Pin No.	I/O	SIGNAL
1	-	VDD	41	-	GND	81	-	VDD	121	-	GND
2	I	CPCLK	42	-	GND	82	O	LOAD	122	-	GND
3	-	GND	43	I/O	D2	83	O	LOAD	123	O	RA9
4	I	RESET	44	I/O	D3	84	-	GND	124	O	RA8
5	O	WAIT	45	I/O	D1	85	I	SDI	125	O	RA7
6	I	IORD	46	I/O	D0	86	O	SDO	126	O	RA6
7	I	IOWR	47	-	VDD	87	I	DSPSD1	127	O	RA5
8	I	MRD	48	-	GND	88	O	DSPSD0	128	-	VDD
9	I	MWR	49	I/O	PI07	89	O	TRGSD0	129	-	GND
10	O	BUFDIR	50	I/O	PI06	90	-	GND	130	O	RA4
11	I	IOEN	51	I/O	PI05	91	O	PGMLO3	131	O	RA3
12	I	MEMEN	52	I/O	PI04	92	O	PGMLO2	132	O	RA2
13	-	GND	53	I/O	PI03	93	O	PGMLO1	133	O	RA1
14	I	TEST2	54	I/O	PI02	94	O	PGMLO0	134	O	RA0
15	I	A15	55	I/O	PI01	95	O	PGMCK	135	-	VDD
16	I	A14	56	I/O	PI00	96	O	PGMSDO	136	-	GND
17	I	A13	57	-	GND	97	I	ECS	137	I/O	RD15
18	I	A12	58	O	FR0D	98	I	EA1	138	I/O	RD14
19	I	A11	59	O	FR0R	99	I	EAD	139	I/O	RD13
20	-	VDD	60	O	FR0A1	100	-	VDD	140	I/O	RD12
21	-	GND	61	O	FR0A0	101	-	GND	141	-	VDD
22	I	A10	62	-	VDD	102	I	ELD	142	-	GND
23	I	A9	63	I	DATFRM1	103	I	ECK	143	I/O	RD11
24	I	A8	64	I	LRC0	104	I	ESD	144	I/O	RD10
25	I	A7	65	I	256FS	105	I	EMU	145	I/O	RD9
26	I	A6	66	-	GND	106	I	MEMCAP	146	I/O	RD8
27	I	A5	67	I	TEST1	107	I	RAMTYP	147	-	VDD
28	I	A4	68	O	DATFRM	108	-	GND	148	-	GND
29	I	A3	69	O	DATFRM	109	O	RAMWR	149	I/O	RD7
30	I	A2	70	O	FS	110	O	XPTRGB	150	I/O	RD6
31	I	A1	71	O	FS	111	O	XPTRGA	151	I/O	RD5
32	I	A0	72	O	32FS	112	O	RAMRD	152	I/O	RD4
33	-	VDD	73	O	32FS	113	-	GND	153	-	VDD
34	-	GND	74	O	64FS	114	O	RAS1	154	-	GND
35	I/O	D7	75	O	64FS	115	O	RAS0	155	I/O	RD3
36	I/O	D6	76	O	128FS	116	-	GND	156	I/O	RD2
37	I/O	D5	77	-	GND	117	O	CAS	157	I/O	RD1
38	I/O	D4	78	O	256FS	118	O	WE	158	I/O	RD0
39	-	GND	79	-	GND	119	O	OE	159	-	GND
40	-	VDD	80	-	GND	120	-	VDD	160	-	GND

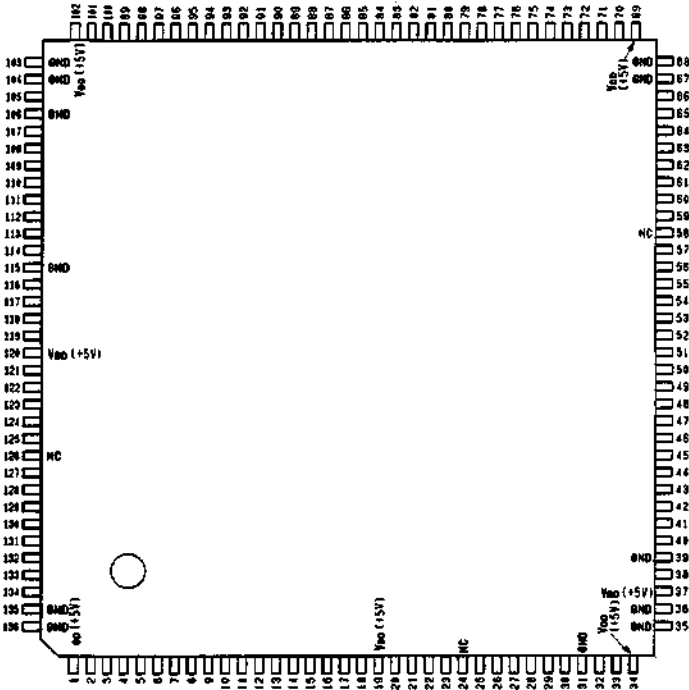
INPUT
 256FS : MASTER CLOCK (256FS)
 A0 - A15 : CPU ADDRESS BUS
 CPCLK : CPU CLOCK
 DATFRM1 : DAT FRAME SIGNAL
 DSPSD1 : SERIAL DATA INPUT FROM DSP
 EAD, I : DSP ADDRESS FROM EMULATOR
 ECK : DSP PROGRAM DATA SHIFT CLOCK INPUT FROM EMULATOR
 ESD : DSP CHIP SELECT SIGNAL INPUT FROM EMULATOR
 ELD : DSP PROGRAM DATA LOAD SIGNAL FROM EMULATOR
 EMU : DSP EMULATION ON/OFF
 ESD : DSP PROGRAM SERIAL DATA INPUT FROM EMULATOR
 IOEN : CHIP ENABLE SIGNAL IN I/O SPACE
 IORD : CPU I/O READ SIGNAL
 IOWR : CPU I/O WRITE SIGNAL
 LRC0 : LRC0 SIGNAL (FS) WHICH BECOMES 'L' WHEN SERIAL DATA LCH. AND 'H' WHEN SERIAL DATA RCH.
 MEMCAP : MEMORY CAPACITY SELECT
 MEMEN : CHIP ENABLE SIGNAL IN MEMORY SPACE
 MRD : CPU MEMORY READ
 MWR : CPU MEMORY WRITE
 RAMTYP : CPU MEMORY TYPE
 RESET : CPU RESET SIGNAL
 SDI : SERIAL DATA INPUT. SERIAL DATA OF MSB FIRST AND 16-BIT/CH
 TEST1, TEST2 : TEST (NORMALLY FIXED TO L)

OUTPUT
 128FS, 64FS, 32FS : VARIOUS FREQUENCY-DIVIDED OUTPUT OF 256FS SIGNAL
 32FS, 32FS, FS, FS : 256FS SIGNAL OUTPUT
 256FS : USED AS DIR SIGNAL WHEN THE BUFFER (TRANCEIVER) IS EXTERNALLY INSTALLED TO THE DATA BUS.
 BUFDIR : DRAM COLUMN ADDRESS STROBE SIGNAL OUTPUT
 CAS : DAT FRAME SIGNAL OUTPUT
 DATFRM, DATFRM : SERIAL DATA OUTPUT TO DSP. MSB FIRST 32 BIT/CH SERIAL DATA.
 LOAD, LOAD : PARALLEL/SERIAL CONVERSION LOAD SIGNAL OUTPUT
 OE : DRAM OUTPUT ENABLE SIGNAL OUTPUT
 PGMCK : SHIFT CLOCK OUTPUT OF DSP PROGRAM DATA
 PGMLO0 - PGMLO3 : DSP PROGRAM DATA LOAD SIGNAL OUTPUT
 PGMSDO : DSP PROGRAM SERIAL DATA OUTPUT MSB FIRST 8 BITS ARE OUTPUT.
 PI0A0, I : PARALLEL I/O ADDRESS SIGNAL (NORMALLY FIXED TO L)
 FR0D : PARALLEL I/O READ SIGNAL (NORMALLY 'H')
 FR0R : PARALLEL I/O WRITE SIGNAL (NORMALLY 'H')
 RA0 - RA9 : DRAM ADDRESS OUTPUT
 RAMRD : DRAM READ MONITOR LED OUTPUT
 RAMWR : DRAM WRITE MONITOR LED OUTPUT
 RAS0, RAS1 : DRAM LOW ADDRESS STROBE SIGNAL OUTPUT
 RD0 - RD15 : DRAM DATA BUS
 READY : CPU READY (WAIT) SIGNAL (NORMALLY 'H')
 SDO : SERIAL DATA OUTPUT
 TRGSD0 : TRIGGER SERIAL DATA OUTPUT TO DSP. MSB FIRST 32 BIT/CH SERIAL DATA.
 WE : DRAM WRITE ENABLE SIGNAL OUTPUT
 XPTRGB, XPTRGA : MONITOR LED OUTPUT OF XFADE TRIGGER OUTPUT

INPUT/OUTPUT
 DO - D7 : CPU DATA BUS
 PI00 - PI07 : 8 BIT DATA BUS OF PARALLEL I/O (NORMALLY 'H-Z')
 RDO - RD15 : DRAM DATA BUS



CXD8184AQ (SONY)
 CMOS R-DAT PERIPHERAL CIRCUIT
 - TOP VIEW -



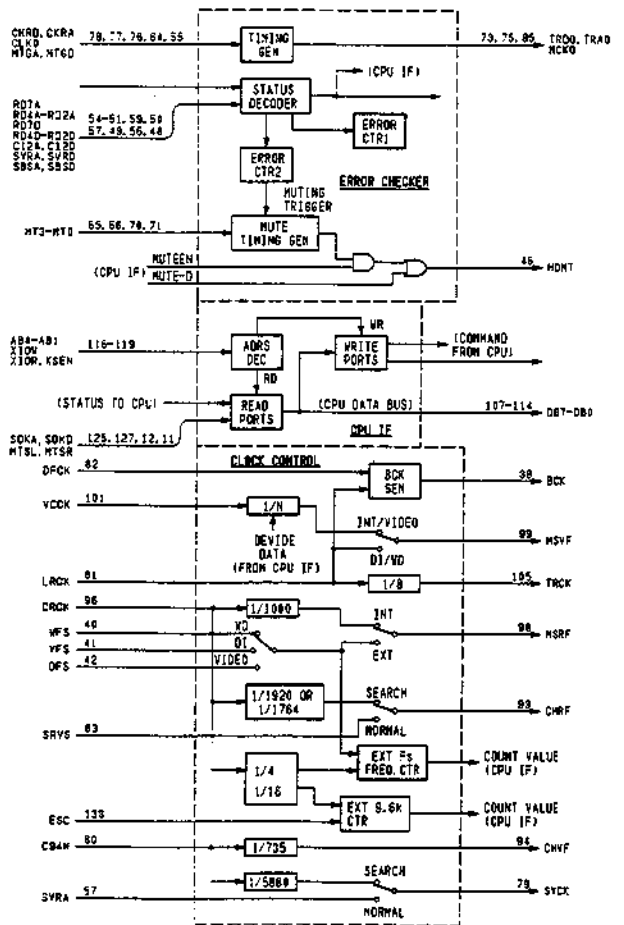
PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	-	Vcc	35	-	GND	69	-	Vcc	103	-	GND
2	O	A1M	36	-	GND	70	I	MT1	104	-	GND
3	O	AMON	37	-	Vcc	71	I	MTO	105	O	TRCK
4	O	BIT1	38	O	BCK	72	I	TRGD	106	-	GND
5	O	BIT2	39	-	GND	73	O	TRDD	107	I/O	DB7
6	O	BIT3	40	I	VFS	74	I	TRGA	108	I/O	DB6
7	O	BIT4	41	I	VFS	75	O	TRAG	109	I/O	DB5
8	O	EDIT	42	I	OFS	76	I	CLK0	110	I/O	DB4
9	O	IMON	43	I	ATD1	77	I	CKRA	111	I/O	DB3
10	O	INWR	44	O	CLED	78	I	CKRD	112	I/O	DB2
11	I	MTSR	45	O	ILED	79	O	SVCK	113	I/O	DB1
12	I	MTSL	46	O	HDMT	80	I	CS4M	114	I/O	DB0
13	O	OTMT	47	O	MUTA	81	I	LRCK	115	-	GND
14	O	OTWR	48	I	SBS0	82	I	DFCK	116	I	AB4
15	O	POST	49	I	SVRD	83	I	SRVS	117	I	AB3
16	O	PCLR	50	I	C120	84	I	MCLK	118	I	AB2
17	O	ROCK	51	I	RD2D	85	O	MCKO	119	I	AB1
18	O	REH	52	I	RD3D	86	I	XTS4	120	-	Vcc
19	-	Vcc	53	I	RD4D	87	I	XTS3	121	I	XWR
20	O	RTS1	54	I	RD7D	88	I	XTS2	122	I	XRD
21	O	RTS2	55	I	MTGD	89	O	FSEL	123	I	XSE
22	O	RTS3	56	I	SBSA	90	O	CRSL	124	I	XTSC
23	O	RTS4	57	I	SVRA	91	O	CRSH	125	I	SOKA
24	-	NC	58	-	NC	92	-	NC	126	-	NC
25	O	RTS5	59	I	CT2A	93	O	CHRF	127	I	SOKD
26	O	RTS6	60	I	RD2A	94	O	CHVF	128	O	REWR
27	O	RTS7	61	I	RD3A	95	I	TSTO	129	O	RERD
28	O	SER	62	I	RD4A	96	I	CRCK	130	O	XREW
29	O	WAR	63	I	RA7A	97	I	XTS1	131	O	KC15
30	O	XRAW	64	I	MTGA	98	O	MSRF	132	O	CFWD
31	-	GND	65	I	MT3	99	O	MSVF	133	I	ESC
32	O	EMP	66	I	MT2	100	-	GND	134	I	XRST
33	O	DEEM	67	-	GND	101	I	VCKK	135	-	GND
34	-	Vcc	68	-	GND	102	-	Vcc	136	-	GND

78	CKRD	TRDD	79
77	CKRA	TRAG	75
76	CLK0	NDCK	85
64	MT6A	BIT4	7
53	MT6D	BIT3	6
		BIT2	5
63	RD7A	BIT1	4
62	RD4A		
61	RD3A	RTS7	27
60	RD2A	RTS6	26
		RTS5	25
34	RD7D	RTS4	23
33	RD4D	RTS3	22
32	RD3D	RTS2	21
31	RD2D	RTS1	20
59	CT2A	A1M	2
50	C120	AMON	3
47	SVRA	EDIT	8
49	SVRD	IMON	9
48	SBSA	INWR	10
48	SBS0		
85	MT3	HDMT	46
86	MT2	OTMT	47
79	MT1	OTWR	48
71	MT0		
		DB7	107
116	AB4	DB6	106
117	AB3	DB5	105
118	AB2	DB4	104
119	AB1	DB3	103
		DB2	102
125	SOKA	DB1	101
127	SOKD	DB0	100
123	MTSL		
111	HTSR		
82	DFCK	BCK	38
101	VCKK	MSVF	67
		TRCK	106
81	LRCK	MSRF	66
96	CRCK	CHRF	65
		CHVF	64
		SVCK	79
49	VFS		
41	VFS		
42	VFS	POST	49
		RCLR	50
		NDCK	85
		REH	52
83	SRVS	REH	52
125	ESC		
99	CS4M	SER	62
		WAR	63
43	ATD1	RAW	64
		EMP	66
74	TRGA	DEEM	67
79	TRGD		
86	MCLK	CLED	44
		ILED	45
86	XTS4	MUTA	47
87	XTS3		
88	XTS2	FSEL	65
87	XTS1	CRSL	61
		CRSH	61
96	TSTO		
		REWR	128
121	WR	RERD	129
122	RD	REN	130
123	SE	C16	131
124	YSC	CFWD	132
124	RS1		

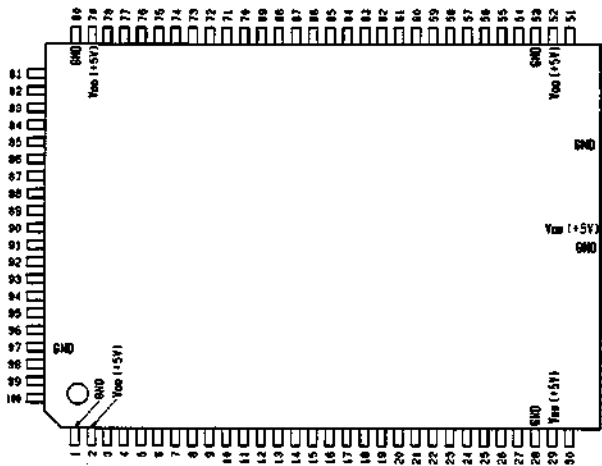
- INPUT**
- AB1 - AB4 : CPU ADDRESS BUS (256 to 558)
 - ATDI : OFF TRACK DETECTION SIGNAL. H: ATF SYNC AND PCM SIGNAL ARE NO GOOD AT REPRODUCTION
 - C12A : C1/C2 DISCRIMINATION SIGNAL USED AS TIMING SIGNAL FOR ERROR CHECKER
 - C12D : C1/C2 DISCRIMINATION SIGNAL USED AS TIMING SIGNAL FOR ERROR CHECKER
 - CS4M : FcH CLOCK SIGNAL (9.408MHz typ.)
 - CKRA : FcH SYSTEM CLOCK SIGNAL OF CXD1008Q AND CXD1009Q (18.816MHz typ.) USED AS CLOCK SIGNAL FOR ERROR CHECKER
 - CKRD : FcH SYSTEM CLOCK SIGNAL OF CXD1008Q AND CXD1009Q (4.704MHz typ.) USED AS CLOCK SIGNAL FOR ERROR CHECKER
 - CLK0 : FcH CLOCK SIGNAL OF CXD1008Q AND CXD1009Q. USED AS CLOCK SIGNAL FOR ERROR CHECKER
 - CRCK : FS CRYSTAL OSCILLATION CLOCK. USED BY CLOCK CONTROL BLOCK
 - DFX : FS CLOCK SIGNAL (256 fs)
 - DFS : FS EXTERNAL SYNC SIGNAL EXTRACTED FROM AES/EBU D - I
 - ESC : EXTERNAL SOURCE (PARALLEL REMOTE) INPUT. (9.6kHz typ.)
 - LRCX : FS CLOCK SIGNAL (fs)
 - MCLK : CLOCK SIGNAL FOR ERROR CHECKER
 - MT0 - MT3 : MUTING TIME SETTING VALUE (MT0 = LSB, MT3 = MSB)
 - MT6A : DURING ERROR MONITOR OUTPUT TO DATA BUS: H. USED AS TIMING SIGNAL FOR ERROR CHECKER
 - MT6D : DURING ERROR MONITOR OUTPUT TO DATA BUS: H. USED AS TIMING SIGNAL FOR ERROR CHECKER
 - MTSL : MUTE STATUS. H: RCH MUTE IS BEING PROCESSED.
 - MTSA : MUTE STATUS. H: LCH MUTE IS BEING PROCESSED.
 - RD2A - 4A, 7A : DATA BUS OF CXD1008Q AND CXD1009Q.
 - RD2D - 4D, 7D : DATA BUS OF CXD1008Q AND CXD1009Q. FROM HERE ERROR STATUS IS EXTRACTED
 - SBSA : CXD1009Q SUBCODE DATA I/O TIMING REFERENCE SIGNAL USED AS TIMING SIGNAL FOR ERROR CHECKER
 - SBSD : CXD1008Q SUBCODE DATA I/O TIMING REFERENCE SIGNAL USED AS TIMING SIGNAL FOR ERROR CHECKER
 - SOKA : H: ADVANCED SBSY OK
 - SOKD : H: DELAYED SBSY OK
 - SRVS : FS CLOCK SIGNAL (12.8kHz typ.)
 - SVRA : DRUM SERVO REFERENCE SIGNAL USED AS TIMING SIGNAL FOR ERROR CHECKER
 - SVRD : DRUM SERVO REFERENCE SIGNAL USED AS TIMING SIGNAL FOR ERROR CHECKER
 - TRGA : TIMING SIGNAL FOR ERROR CHECKER
 - TRGD : TIMING SIGNAL FOR ERROR CHECKER
 - TST0 : TEST PIN, NORMALLY L
 - VCKX : VCO OUTPUT CLOCK SIGNAL OF MASTER PLL USED BY CLOCK CONTROL BLOCK
 - VFS : FS EXTERNAL SYNC SIGNAL EXTRACTED FROM VIDEO REFERENCE
 - XRD : FS EXTERNAL SYNC SIGNAL INPUT FROM WORD SYNC IN.
 - XRS1 : CPU BUS READ ENABLE SIGNAL (LOW ACTIVE)
 - XRS2 : CPU BUS SP BOARD SELECT SIGNAL (LOW ACTIVE)
 - XTS1 - XTS4 : TEST PIN, NORMALLY H
 - XTSC : TEST PIN, NORMALLY H
 - XWR : CPU BUS WRITE ENABLE SIGNAL (LOW ACTIVE)

INPUT/OUTPUT
 DB0 - DB7 : CPU DATA BUS (DB0 = LSB, DB7 = MSB)

- OUTPUT**
- AIN : INPUT SEL SWITCHING. H: ANALOG IN, L: DIGITAL IN
 - AMON : REPRODUCTION SOUND MONITOR SWITCHING. H: ADVANCED REPRODUCTION SOUND MONITOR, L: DELAYED REPRODUCTION SOUND MONITOR, NORMALLY L
 - BCK : 32 CLOCK SIGNAL
 - BIT1 - BIT4 : THRESHOLD VALUE OF ZERO CROSS MUTE (BIT1 = LSB, BIT4 = MSB)
 - CPWD : FOR RF PLL CONTROL. H: TAPE PATH IN FORWARD DIRECTION
 - CHRF : CHANNEL PLL REFERENCE SIGNAL (12.8kHz typ.) CONNECTED TO CHANNEL PLL PHASE COMPARATOR
 - CHVR : CHANNEL PLL COMPARISON SIGNAL (12.8kHz typ.) CONNECTED TO CHANNEL PLL PHASE COMPARATOR
 - CLED : H: WHEN C1 ERROR IS DETECTED DURING REPRODUCTION. USED FOR LIGHTENING LED
 - CRSH : XTAL OSC CONTROL SIGNAL. H: 24.5760MHz XTAL ON CONNECTED TO CRYSTAL OSCILLATION CIRCUIT
 - CRSL : XTAL OSC CONTROL SIGNAL. H: 22.5792MHz XTAL ON
 - DEEM : DA DEEMPHASIS. H: DA 0.5EMPHASIS ON
 - EDIT : RECORD SIGNAL SWITCHING SIGNAL. H: EDIT (SELECTS SIGNAL FROM MEMORY START MEMORY) L: NORMAL (SELECTS D IN/A IN SIGNAL)
 - EMP : CONTROLS AD EMPHASIS. H: AD EMPHASIS ON
 - FSEL : FS SELECT SIGNAL. H: 48kHz, L: 44.1kHz
 - HDMT : MUTES DELAYED 0.8 H: MUTE
 - ILED : H: WHEN POINTER COPY OR ALL POINTER IS DETECTED AT C2 DURING REPRODUCTION
 - INON : MONITOR SELECTION. H: INPUT, L: REPRO
 - INWR : FOR EDIT MEMORY TEST. H: EM TEST MODE, L: NORMAL, NORMALLY L
 - MCK0 : CLOCK SIGNAL FOR ERROR CHECKER
 - MSRF : MASTER PLL REFERENCE SIGNAL CONNECTED TO MASTER PLL PHASE COMPARATOR
 - MSVF : MASTER PLL COMPARISON SIGNAL CONNECTED TO MASTER PLL PHASE COMPARATOR
 - MUTA : MUTES ADVANCED 0.8 H: MUTE
 - OTMT : CONTROLS ZERO CROSS MUTE CIRCUIT OF CXD0185A0. H: MUTE
 - OTWR : FOR MEMORY START MEMORY TEST. H: IM TEST MODE, L: NORMAL
 - POST : SWITCHES THE INPUT MONITOR SIGNAL. H: POST (SELECTS SIGNAL FROM EDIT MEMORY) L: PRE (SELECTS D IN/A IN SIGNAL)
 - ROLR : FOR CXD0185A0 TEST, NORMALLY L
 - ROCK : REC CONTROL SIGNAL. H: RECORDING IS ABLE
 - REN : SWITCHES THE OUTPUT SIGNAL. H: REHEARSAL (SELECTS SIGNAL FROM MEMORY START MEMORY) L: NORMAL (SELECTS SIGNAL FROM EDIT MEMORY)
 - RERD : AUXILIARY READ PORT ENABLE SIGNAL (LOW ACTIVE)
 - REWR : AUXILIARY WRITE PORT ENABLE SIGNAL (LOW ACTIVE)
 - RTS1 : FOR RECORDING TEST. H: REC CON TEST MODE CONNECTED TO RTS1 OF CXD0185A0
 - RTS2 : FOR RECORDING TEST. SELECTS SIGNAL FOR TEST RECORDING. H: EXT (AT THIS TIME RTS3 AND 7 ARE IGNORED), L: INT
 - RTS3 : FOR RECORDING TEST. SELECTS SIGNAL FOR TEST RECORDING TO BE PAIRED WITH 1.57MHz SIGNAL. H: 4.7MHz, L: 130kHz
 - RTS4 : FOR RECORDING TEST. SELECTS HEAD FOR TEST RECORDING. H: DELAYED, L: ADVANCED
 - RTS5 : FOR RECORDING TEST. SELECTS HEAD FOR TEST RECORDING. H: ONE HEAD, L: BOTH HEADS (AT THIS TIME RTS6 IS IGNORED.)
 - RTS6 : FOR RECORDING TEST. SELECTS HEAD FOR TEST RECORDING. H: B HEAD, L: A HEAD
 - RTS7 : FOR RECORDING TEST. SELECTS HEAD FOR RECORDING 1.57MHz SIGNAL. H: B HEAD, L: A HEAD
 - SER : DRP GEN. H: TAPE PATH SEARCH MODE, L: NORMAL
 - SVCK : DRUM SERVO REFERENCE SIGNAL
 - TR40 : TIMING SIGNAL FOR ERROR CHECKER
 - TRCK : LACK 1/8 FREQUENCY-DIVIDED CLOCK, FOR SY TIMER
 - TRD0 : TIMING SIGNAL FOR ERROR CHECKER
 - WAR : CONTROLS EXSY PHASE. H: WAR MODE, L: MODE SPECIFIED BY XRAW
 - XC18 : FOR RF PLL CONTROL. H: TAPE PATH BY x16 AND x8
 - XRAW : CONTROLS EXSY PHASE. L: RAW MODE. H: SUBIN MODE
 - XREW : FOR RF PLL CONTROL. H: TAPE PATH SEARCH MODE



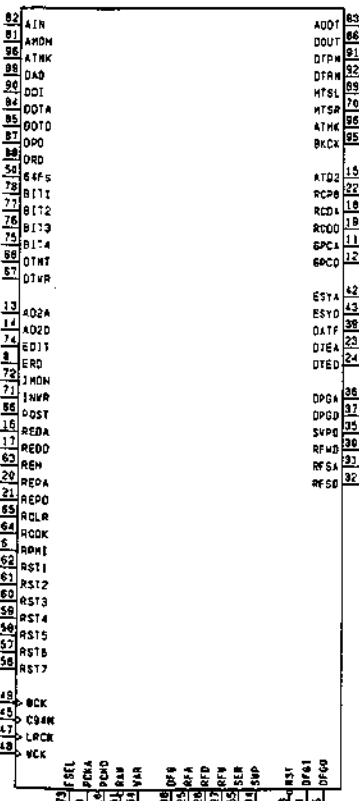
CXD8185A0 (SONY) FLAT PACKAGE
 CMOS R-DAT PERIPHERAL CIRCUIT
 - TOP VIEW -

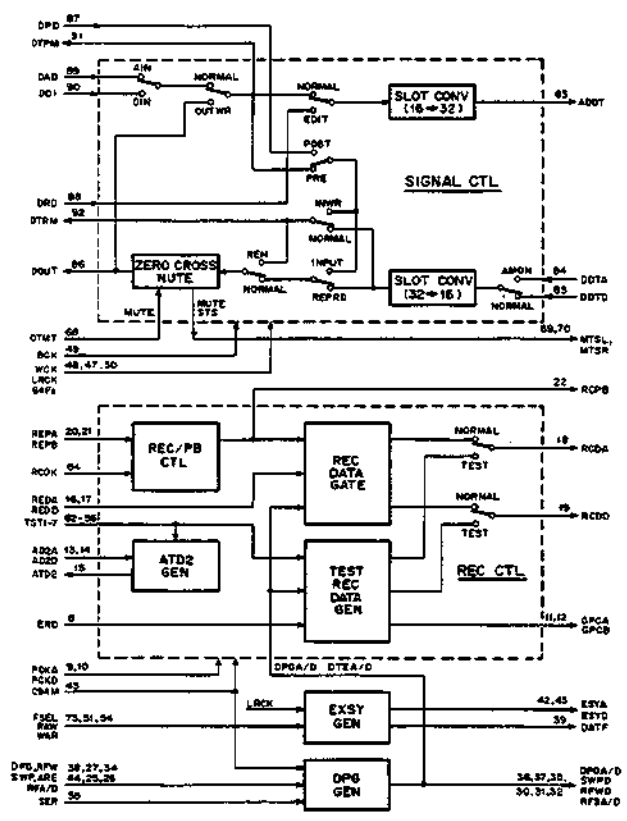


PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	-	GND	25	I	RFD	51	I	RAW	76	I	BT3
2	-	VDD	27	I	RFW	52	-	VDD	77	I	BT2
3	I	RST	28	-	GND	53	-	GND	78	I	BT1
4	I	DFG	29	-	VDD	54	I	WAR	79	-	VDD
5	O	DFGO	30	O	RFWD	55	I	SER	80	-	GND
6	I	RPMI	31	O	RPSA	56	I	RTS7	81	I	AMON
7	I	ATM	32	O	RPSD	57	I	RTS6	82	I	AIN
8	I	ERD	33	I	TST4	58	I	RTS5	83	O	ADDT
9	I	PCKA	34	I	SWP	59	I	RTS4	84	I	DDTA
10	I	PCKD	35	O	SWPD	60	I	RTS3	85	I	DDTD
11	O	GPCA	36	O	DPGA	61	I	RTS2	86	O	DOUT
12	O	GPCB	37	O	DPGD	62	I	RTS1	87	I	DPD
13	I	AD2A	38	I	DFG	63	I	REH	88	I	DRD
14	I	AD2D	39	O	DATF	64	I	RCOK	89	I	DAD
15	O	ATD2	40	-	GND	65	I	RCLR	90	I	DDI
16	I	REDA	41	-	VDD	66	I	POST	91	O	DTPM
17	I	REDD	42	O	ESYA	67	I	OTWR	92	O	DTRM
18	O	RCCA	43	O	ESYD	68	I	OTMT	93	I	DPAS
19	O	RCCD	44	I	ARE	69	O	MTSL	94	I	TST5
20	I	REPA	45	I	C94M	70	O	MTR	95	O	8KCK
21	I	REPD	46	-	GND	71	I	INWR	96	O	ATMK
22	O	RCPB	47	I	LRCK	72	I	IMON	97	-	GND
23	O	DTEA	48	I	WCK	73	I	FSSEL	98	I	TST3
24	O	DTED	49	I	BCK	74	I	EDIT	99	I	TST2
25	I	RFA	50	I	64FS	75	I	BT4	100	I	TST1

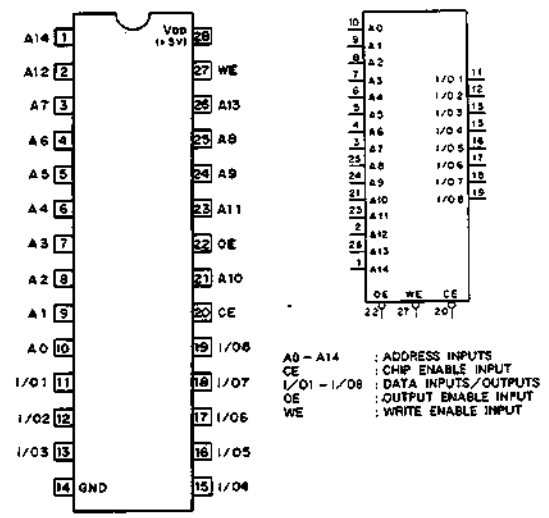
- INPUT**
- 64FS : 64 - Fs
 - AD2A : ATD2-A IN
 - AD2D : ATD2-D IN
 - AIN : ANALOG IN
 - AMON : ADVANCED HEAD PB MONITOR
 - ARE : AREA
 - ATMK : ATF MASK WINDOW IN
 - BCK : BIT CLOCK
 - BT1 - BT4 : ZERO CROSS MUTE LEVEL CONTROL
 - C94M : CLOCK 9.4MHz
 - DAD : A/D CONVERTED AUDIO DATA
 - DDI : DI INPUT AUDIO DATA
 - DDTA : PLAYBACK AUDIO DATA FROM LEADING HEAD SIGNAL PROCESSING IC
 - DDTD : PLAYBACK AUDIO DATA FROM TRAILING HEAD SIGNAL PROCESSING
 - DFG : DRUM FG IN
 - DFGI : DRUM FG IN
 - DPAS : DATA PASS (SKIP ZERO CROSS MUTE)
 - DPD : PLAYBACK AUDIO READ DATA FROM EDIT MEMORY
 - DRD : PLAYBACK AUDIO READ DATA FROM INSTANT MEMORY
 - EDIT : RECORD SIGNAL SWITCHING ("H": EDIT, "L": NORMAL)
 - ERD : EXTERNAL REC DATA IN
 - FSSEL : FS SELECT
 - IMON : MONITOR SELECTION
 - INWR : IN WRITE
 - LRCK : LR CLOCK
 - OTMT : OUT MUTE
 - OTWR : OUT WRITE
 - PCKA : PLCK-A IN
 - PCKD : PLCK-D IN
 - POST : POST
 - RAW : READ AFTER WRITE (ACTIVE LOW)
 - RCLR : RAM CLEAR
 - RCOK : REC OK SIGNAL
 - REDA : RECDATA-A (from CXD1009) IN
 - REDD : RECDATA-D (from CXD1009) IN
 - REH : REHEARSAL
 - REPA : RECPB-A (from CXD1009) IN
 - REPD : RECPB-D (from CXD1009) IN
 - RFA : RF DETECTION-A IN
 - RFD : RF DETECTION-D IN
 - RFW : RF WINDOW IN
 - RPMI : REC/PB MASK WINDOW IN
 - RST : RSET
 - RTS1 - RTS7 : REC TEST
 - SER : SEARCH
 - SWP : SWITCHING PULSE
 - WAR : WRITE AFTER READ
 - WCK : WORD CLOCK

- OUTPUT**
- ADDT : RECORD AUDIO DATA TO SIGNAL PROCESSING IC
 - ATD2 : ATD2 OUT
 - ATMK : REC/PB MASK WINDOW OUT
 - 8KCK : BLOCK CLOCK
 - DATF : DAT FRAME
 - DFGO : DRUM FG OUT
 - DTEA : DATA ENABLE-A OUT
 - DTED : DATA ENABLE-D OUT
 - DOUT : DATA OUT
 - DPGA : DELAYED PG-A
 - DPGD : DELAYED PG-D
 - DTPM : AUDIO WRITE DATA TO EDIT MEMORY
 - DTRM : AUDIO WRITE DATA TO INSTANT MEMORY
 - ESYA : ESX-Y-A
 - ESYD : ESX-Y-D
 - GPCA : GATED PLCK A OUT
 - GPCB : GATED PLCK B OUT
 - MTSL : MUTE STATUS L
 - MTR : MUTE STATUS R
 - RCCA : REC DATA-A OUT
 - RCCD : REC DATA-D OUT
 - RCPB : REC/PB OUT
 - RFWD : RF WINDOW-D OUT
 - RPSA : RF SAFE-A OUT
 - RPSD : RF SAFE-D OUT
 - SWPD : SWITCHING PULSE-D





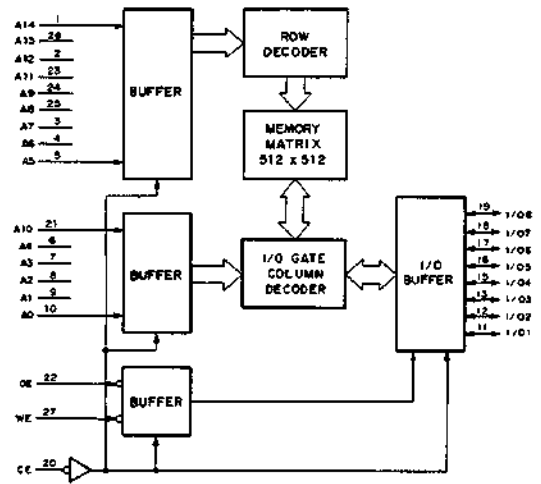
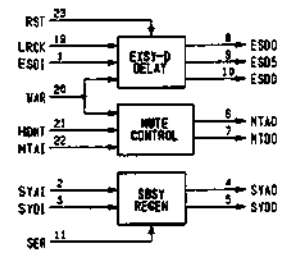
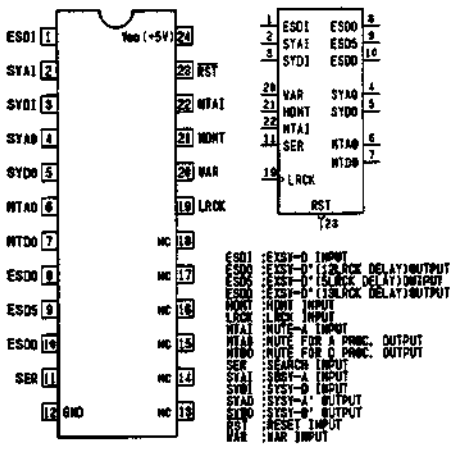
CXK58257AM-10LL (SONY) FLAT PACKAGE
 M562256CLL-10FC (MOSEL) FLAT PACKAGE
 C-MOS 256K (32768x8)-BIT STATIC RAM
 - TOP VIEW -



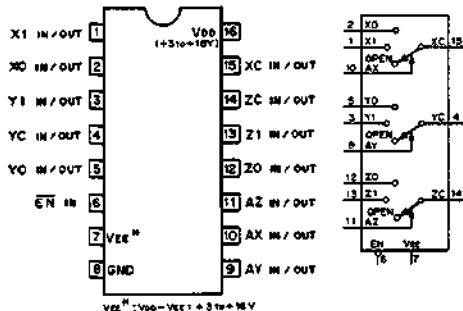
CE	OE	WE	MODE	I/O TERMINAL
1	x	x	NOT SELECT	HIGH IMPEDANCE
0	1	1	OUTPUT DISABLE	HIGH IMPEDANCE
0	0	1	READ	OUTPUT DATA
0	x	0	WRITE	INPUT DATA

0 : LOW LEVEL
 1 : HIGH LEVEL
 x : DONT CARE

CXD8319M (SONY)
 C-MOS R-DAT SYNC REC CIRCUIT
 - TOP VIEW -



HD14053BFP (HITACHI) FLAT PACKAGE
 MC14053BF (MOTOROLA) FLAT PACKAGE
 CMOS TRIPLE 2-CHANNEL ANALOG MULTIPLEXERS/DEMULTIPLEXERS
 - TOP VIEW -

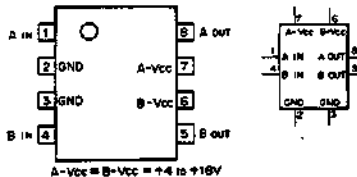


$V_{EE} = V_{DD} - V_{EE} + 0.5V \rightarrow +18V$

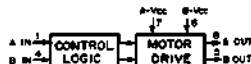
0: LOW LEVEL
 1: HIGH LEVEL
 X: DONT CARE.

CONT. INPUTS	EN	ON CHANNEL
0	0	0
0	1	1
1	X	OPEN

MB3763PF (FUJITSU) FLAT PACKAGE
 BI-DIRECTIONAL MOTOR DRIVER
 - TOP VIEW -



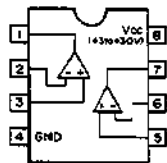
$A-V_{CC} = B-V_{CC} = +4 \text{ to } +18V$



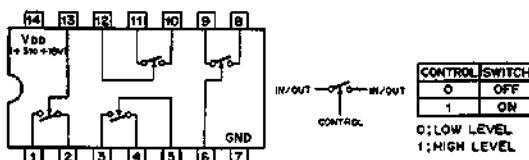
INPUTS		OUTPUTS		OUTPUT MODE
A IN	B IN	A OUT	B OUT	
0	0	H-Z	H-Z	STANDBY
0	1	H	L	OPERATE
1	0	L	H	OPERATE
1	1	L	L	BRAKE

0: Less than 0.4V
 1: More than 2.4V
 L: LOW LEVEL
 H: HIGH LEVEL
 H-Z: HIGH IMPEDANCE

LM358PS (TI) FLAT PACKAGE
 DUAL OPERATIONAL AMPLIFIERS
 - TOP VIEW -

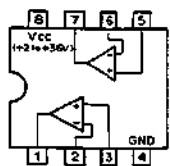


MC14066BF (MOTOROLA) FLAT PACKAGE
 CMOS QUAD BILATERAL ANALOG SWITCH
 - TOP VIEW -

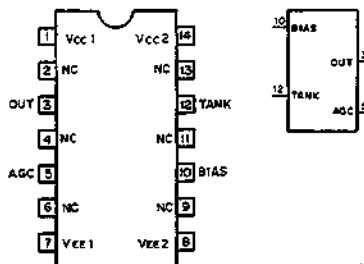


0: LOW LEVEL
 1: HIGH LEVEL

LM393PS (TI) FLAT PACKAGE
 DUAL VOLTAGE COMPARATORS
 - TOP VIEW -

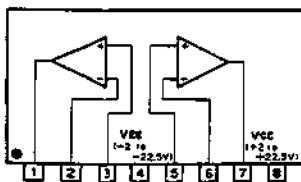


MC1648P (MOTOROLA)
 ECL VOLTAGE CONTROLLED OSCILLATOR
 - TOP VIEW -

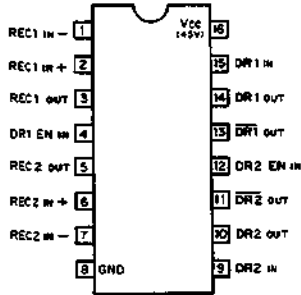


Supply Voltage	Supply Pins	GND Pins
+5.0Vdc	1, 14	7, 8
-5.2Vdc	7, 8	1, 14

M5219L (MITSUBISHI)
 LOW NOISE OPERATIONAL AMPLIFIER
 - SIDE VIEW -



MC34051P (MOTOROLA)
RS-422 DRIVER/RECEIVER
- TOP VIEW -

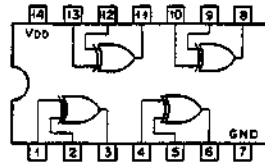


DREN	MODE
0	DISABLE
1	ENABLE

0 : LOW LEVEL
1 : HIGH LEVEL

DR : DRIVER
DR EN : DRIVER ENABLE
REC : RECEIVER

MC74HC86AF (MOTOROLA) FLAT PACKAGE
SN74HC86ANS (TI) FLAT PACKAGE
TC74HC86AF (TOSHIBA) FLAT PACKAGE
CMOS QUAD EXCLUSIVE OR GATES
- TOP VIEW -



$$Y = \bar{A}B + A\bar{B}$$

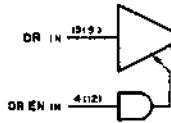
A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

0 : LOW LEVEL
1 : HIGH LEVEL

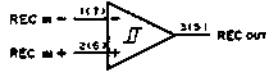
NOTE:

TYPE	V _{DD}
TC74AC86 TYPE	+2 to +5.5V
OTHER TYPES	+2 to +8V

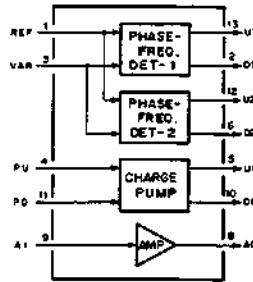
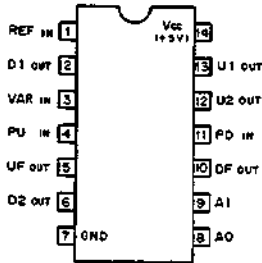
DRIVER CIRCUIT



RECEIVER CIRCUIT



MC4044F (MOTOROLA)
PHASE-FREQUENCY DETECTOR
- TOP VIEW -



REF : REFERENCE IN
VAR : VARIABLE IN
U1 : UP OUT 1
D1 : DOWN OUT 1
U2 : UP OUT 2
D2 : DOWN OUT 2
PU : CHARGE PUMP UP IN
PD : CHARGE PUMP DOWN IN
UF : CHARGE PUMP UP OUT
DF : CHARGE PUMP DOWN OUT
A1 : FILTER AMP IN
A0 : FILTER AMP OUT

PHASE FREQ. DET-1
FALLING EDGE SENSING TYPE

INPUTS	OUTPUTS	
	U1	D1
$f_v = f_r$ $\phi_v \text{ leads } \phi_r$	1	1
$f_v < f_r$ $\phi_v \text{ lags } \phi_r$	0	1
$f_v > f_r$ $\phi_v \text{ leads } \phi_r$	1	0

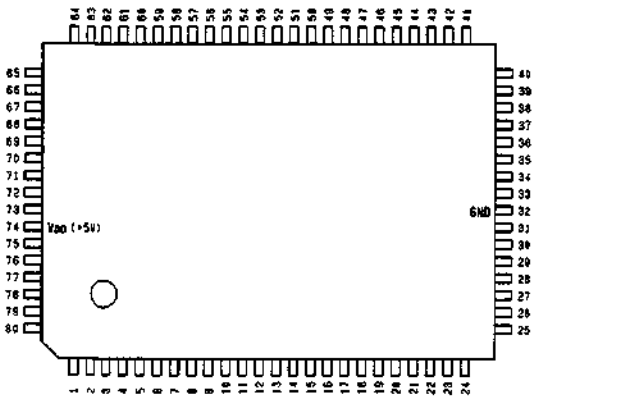
PHASE FREQ. DET-2
FOR 50% DUTY CYCLES

INPUTS	OUTPUTS	
	U2	D2
REF 0 VAR 0	1	1
REF 0 VAR 1	1	1
REF 1 VAR 0	0	1
REF 1 VAR 1	1	0

0 : LOW LEVEL
1 : HIGH LEVEL

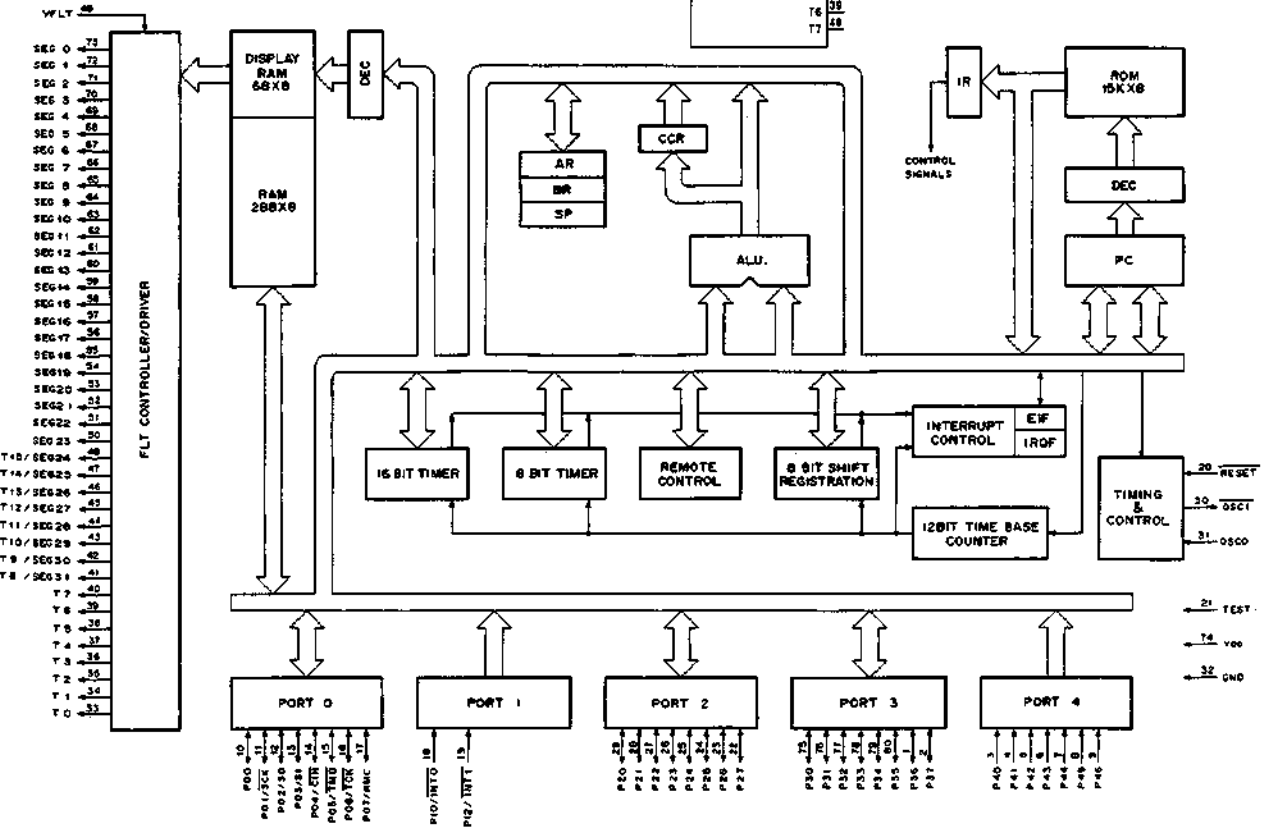
MSC62408 (OKI)

C-MOS SINGLE CHIP MICROCONTROLLER WITH FLT DRIVER
- TOP VIEW -

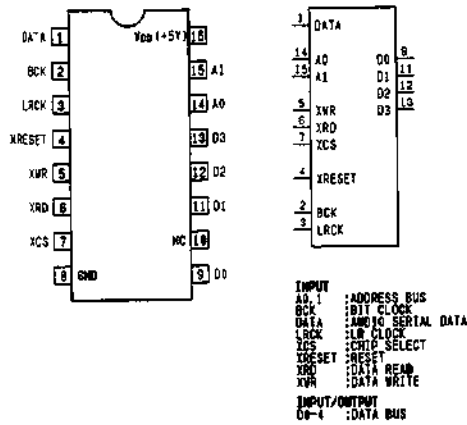


Pin No.	I/O	SIGNAL	Pin No.	I/O	SIGNAL	Pin No.	I/O	SIGNAL	Pin No.	I/O	SIGNAL
1	I/O	P36	21	I	TEST	41	O	T8/SEG31	61	O	SEG12
2	I/O	P37	22	I/O	P27	42	O	T9/SEG30	62	O	SEG11
3	I	P40	23	I/O	P26	43	O	T10/SEG29	63	O	SEG10
4	I	P41	24	I/O	P25	44	O	T11/SEG28	64	O	SEG9
5	I	P42	25	I/O	P24	45	O	T12/SEG27	65	O	SEG8
6	I	P43	26	I/O	P23	46	O	T13/SEG26	66	O	SEG7
7	I	P44	27	I/O	P22	47	O	T14/SEG25	67	O	SEG6
8	I	P45	28	I/O	P21	48	O	T15/SEG24	68	O	SEG5
9	I	P46	29	I/O	P20	49	I	VFLT	69	O	SEG4
10	I/O	P00	30	O	OSCT	50	O	SEG29	70	O	SEG3
11	I/O	P01/SCR	31	I	OSCO	51	O	SEG22	71	O	SEG2
12	I/O	P02/SO	32	-	GND	52	O	SEG21	72	O	SEG1
13	I/O	P03/SI	33	O	T0	53	O	SEG20	73	O	SEGO
14	I/O	P04/CIN	34	O	T1	54	O	SEG19	74	-	VDD
15	I/O	P05/TMO	35	O	T2	55	O	SEG18	75	I/O	P30
16	I/O	P06/TCR	36	O	T3	56	O	SEG17	76	I/O	P31
17	I/O	P07/RMC	37	O	T4	57	O	SEG16	77	I/O	P32
18	I	P10/INT0	38	O	T5	58	O	SEG15	78	I/O	P33
19	I	P12/INT1	39	O	T6	59	O	SEG14	79	I/O	P34
20	I	RESET	40	O	T7	60	O	SEG13	80	I/O	P35

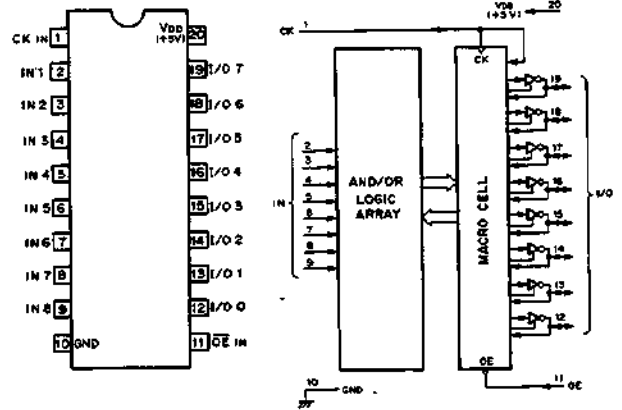
19	P00	P20	21	OSCO, OSCT	: EXTERNAL CRYSTAL
18	P01/SCR	P21	22	OSCO	: SYSTEM CLOCK INPUT
17	P02/SO	P22	23	P00	: I/O PORT0
16	P03/ST	P23	24	P01/SCR	: I/O PORT0/SERIAL CLOCK INPUT
15	P04/CIN	P24	25	P02/SO	: I/O PORT0/SERIAL DATA INPUT
14	P05/TMO	P25	26	P03/SI	: I/O PORT0/SERIAL DATA INPUT
13	P06/TCR	P26	27	P04/CIN	: I/O PORT0/COUNT INPUT
12	P07/RMC	P27	28	P05/TMO	: I/O PORT0/TIMER OUTPUT
11	P10/INT0	P30	29	P06/TCR	: I/O PORT0/TIMER CLOCK INPUT
10	P12/INT1	P31	30	P07/RMC	: I/O PORT0/REMOTE CONTROL INPUT
9	P40	P32	31	P10/INT0	: INPUT PORT0/EXTERNAL INTERRUPT INPUT
8	P41	P33	32	P12/INT1	: INPUT PORT1/EXTERNAL INTERRUPT INPUT
7	P42	P34	33	P20 - P27	: INPUT/OUTPUT PORT2
6	P43	P35	34	P30 - P37	: INPUT/OUTPUT PORT3
5	P44	P36	35	P40 - P47	: INPUT PORT4
4	P45	P37	36	RESET	: SYSTEM RESET INPUT
3	P46	SEG0	37	SEG0 - SEG23	: FLT SEGMENT DRIVE OUTPUT
2	VFLT	SEG1	38	SEG24/T15	: FLT SEGMENT DRIVE OUTPUT/TIMING OUTPUT
1	RESET	SEG2	39	- SEG31/T8	: FLT SEGMENT DRIVE OUTPUT/TIMING OUTPUT
	OSG1	SEG3	40	T0 - T7	: TIMING SPACE OUTPUT
	OSCO	SEG4	41	VFLT	: FLT DRIVING POWER SUPPLY
		SEG5	42		
		SEG6	43		
		SEG7	44		
		SEG8	45		
		SEG9	46		
		SEG10	47		
		SEG11	48		
		SEG12	49		
		SEG13	50		
		SEG14	51		
		SEG15	52		
		SEG16	53		
		SEG17	54		
		SEG18	55		
		SEG19	56		
		SEG20	57		
		SEG21	58		
		SEG22	59		
		SEG23	60		
		SEG24	61		
		SEG25	62		
		SEG26	63		
		SEG27	64		
		SEG28	65		
		SEG29	66		
		SEG30	67		
		SEG31	68		
		T0	69		
		T1	70		
		T2	71		
		T3	72		
		T4	73		
		T5	74		
		T6	75		
		T7	76		
			77		
			78		
			79		
			80		



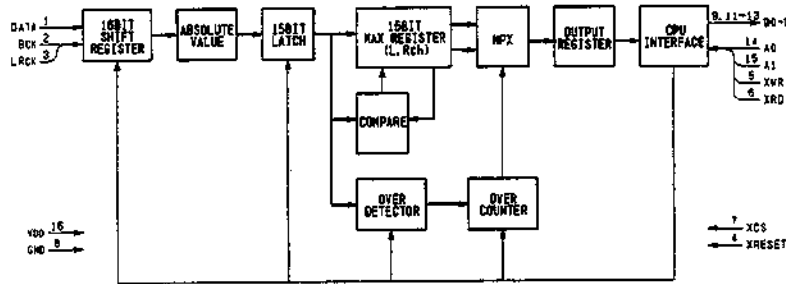
MSM6338MS-K (OKI)
CMOS DIGITAL AUDIO PEAK LEVEL DETECTOR
 - TOP VIEW -



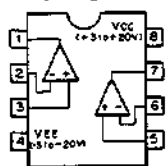
PALCE16V8H-25PC (AMD/MONOLITHIC MEMORIES)
CMOS ELECTRICALLY ERASABLE PROGRAMMABLE LOGIC DEVICE
 - TOP VIEW -



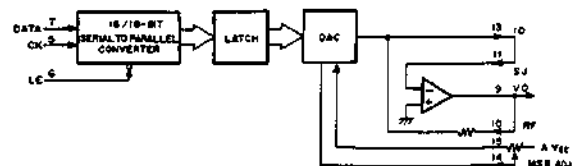
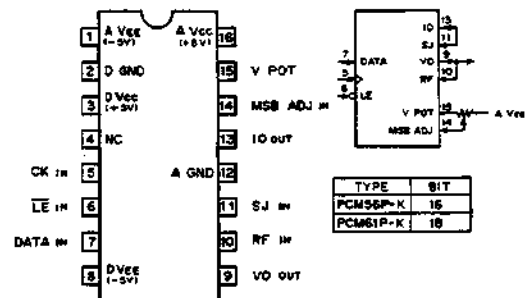
* ABOVE DIAGRAM SHOWS CONDITIONS BEFORE PROGRAMMING.



NESS32P (TI)
LOW NOISE OPERATIONAL AMPLIFIER
 - TOP VIEW -



PCM61P-S-2 (BURR-BROWN)
SERIAL INPUT D/A CONVERTER FOR DIGITAL AUDIO
 - TOP VIEW -

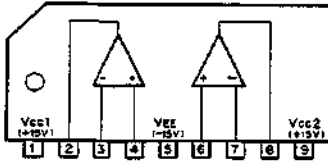


DATA : SERIAL DATA INPUT MSB FIRST
 BINARY 2's COMPLEMENT
CK : CLOCK INPUT, \bar{S}
LE : LATCH ENABLE, \bar{L}
IO : CURRENT OUTPUT
SJ : SUNKING JUNCTION
VO : VOLTAGE OUTPUT
RF : FEEDBACK RESISTOR
VPOT : MSB TRIM POTENTIOMETER
MSB ADJ : MSB ADJUSTMENT

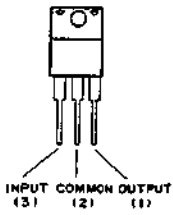
DIGITAL INPUT BTC (HEX)		ANALOG OUTPUTS		
PCM61P-K	PCM61-K	DAC OUTPUT	VO (V)	IO (mA)
7FFF	7FFFF	+FULL SCALE	+2.999908	-0.999970
8000	8000F	-FULL SCALE	-3.000000	+1.000000
9000	9000F	BIPOLAR ZERO	0.000000	0.000000
FFFF	FFFFF	ZERO-1LSB	-0.000092	+0.036500 μ A

BTC : BINARY TWO'S COMPLEMENT

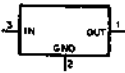
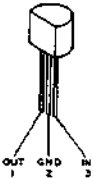
RC4556S (RAYTHEON)
HIGH PERFORMANCE DUAL OPERATIONAL AMPLIFIER
 - SIDE VIEW -



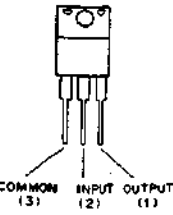
RC7805FA (RAYTHEON) + 5V
RC7815FA (RAYTHEON) + 15V
RC7818FA (RAYTHEON) + 18V
POSITIVE VOLTAGE REGULATOR
 - FRONT VIEW -



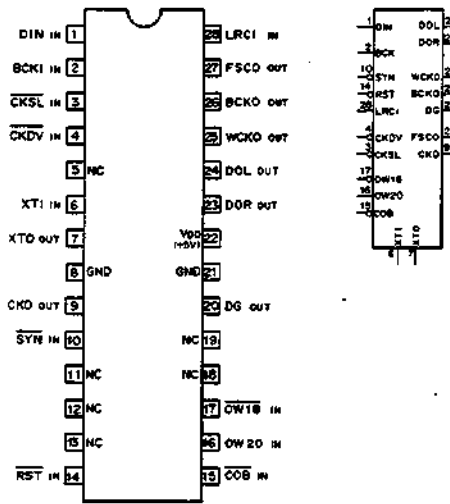
RC78L05A (RAYTHEON) + 5V
POSITIVE VOLTAGE REGULATOR (100mA)



RC7805FA (RAYTHEON) - 5V
RC7815FA (RAYTHEON) - 15V
RC7818FA (RAYTHEON) - 18V
NEGATIVE VOLTAGE REGULATOR
 - FRONT VIEW -



SM5813APS (NPC)
C-MOS AUDIO DIGITAL FILTER
 - TOP VIEW -



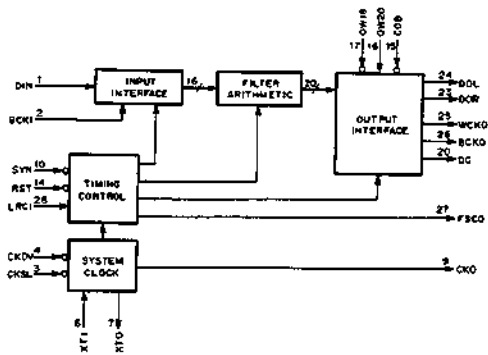
INPUT
 BCKI : INPUT DATA BIT CLOCK
 CKDV, CKSL : SYSTEM CLOCK SELECT
 COB : 2'S COMPLEMENT/COB SELECT (H : 2'S COMPLEMENT, L : COB)
 DIN : INPUT DATA
 LRCI : SYSTEM CLOCK (H : L-CH, L : R-CH)
 OW18, 20 : OUTPUT BIT NUMBER SELECT

OUTPUT BIT	16	18	20
OW18	H	L	H
OW20	H	H	L

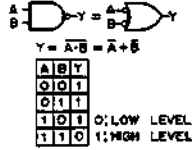
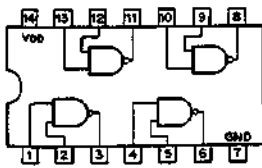
RST : SYSTEM RESET (H : NORMAL, L : SYSTEM RESET)
 SYN : JITTER FREE/FORCED SYNCHRONIZATION SELECT
 (H : JITTER FREE, L : FORCED SYNCHRONIZATION)
 XT1 : OSCILLATOR

XT1	125Hz	250Hz	384Hz	512Hz
CKSL	H	L	H	L
CKDV	H	H	L	L

OUTPUT
 BCKO : OUTPUT DATA BIT CLOCK
 CKO : SYSTEM CLOCK
 DG : DEGLITCH CONTROL CLOCK
 DOL, DOR : L, R DATA
 FSCO : DATA SAMPLING CLOCK
 WCKO : OUTPUT WORD CLOCK
 XTO : OSCILLATOR



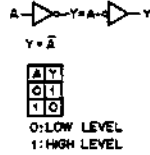
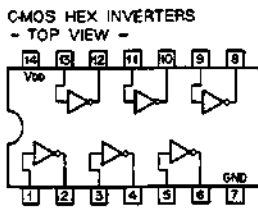
SN74HC00AN (TI)
SN74HC00ANS (TI) FLAT PACKAGE
CMOS QUAD 2-INPUT NAND GATES
 - TOP VIEW -



NOTE:

TYPE	V _{DD}
TC74AC00 TYPE	+2 to +5.5V
MC74HC00AN	+5V
74ACT00 TYPE	+4.5 to +5.5V
OTHER TYPES	+2 to +6V

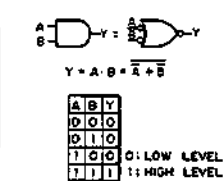
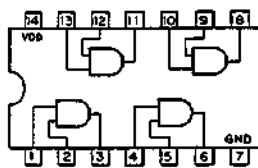
SN74HC04AN (TI)
SN74HC04ANS (TI) FLAT PACKAGE
SN74HC04ANS (TI) FLAT PACKAGE
CMOS HEX INVERTERS
 - TOP VIEW -



NOTE:

TYPE	V _{DD}
74HC04 TYPE	+5V
TC74AC04 TYPE	+2 to +5.5V
74ACT04 TYPE	+4.5 to +5.5V
OTHER TYPES	+2 to +6V

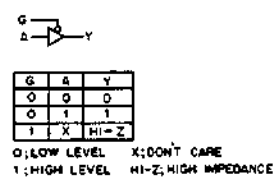
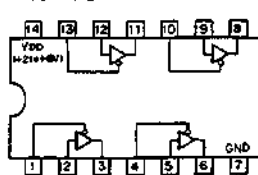
SN74HC08ANS (TI) FLAT PACKAGE
CMOS QUAD 2-INPUT AND GATES
 - TOP VIEW -



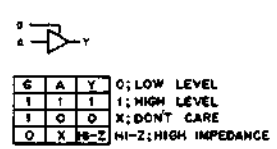
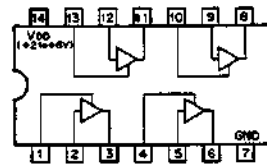
NOTE:

TYPE	V _{DD}
TC74AC08F	+2 to +5.5V
OTHER TYPES	+2 to +6V

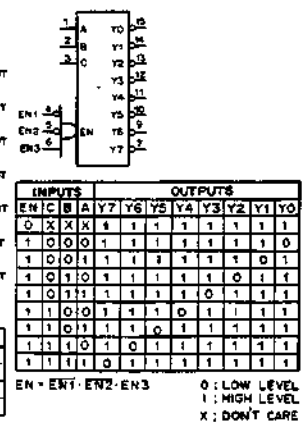
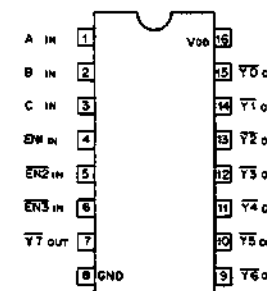
SN74HC125NS (TI) FLAT PACKAGE
CMOS BUS BUFFER GATES WITH 3-STATE OUTPUT
 - TOP VIEW -



SN74HC126NS (TI) FLAT PACKAGE
CMOS BUS BUFFER GATE WITH 3-STATE OUTPUT
 - TOP VIEW -



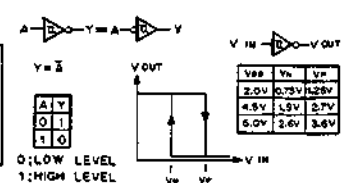
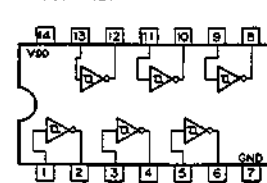
SN74HC138ANS (TI) FLAT PACKAGE
CMOS 3-TO-8 LINE DECODER/DEMULTIPLEXER
 - TOP VIEW -



NOTE:

TYPE	V _{DD}
74HC138 TYPE	+5V
74ACT138 TYPE	+4.5 to +5.5V
TC74AC138 TYPE	+2 to +5.5V
OTHER TYPES	+2 to +6V

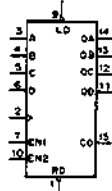
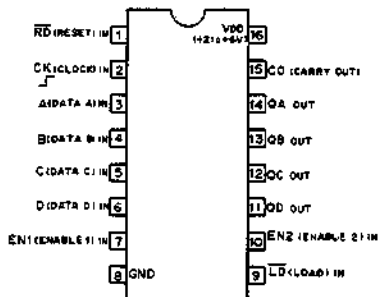
SN74HC14ANS (TI) FLAT PACKAGE
CMOS HEX SCHMITT TRIGGER INVERTERS
 - TOP VIEW -



NOTE:

TYPE	V _{DD}
TC74AC14 TYPE	+2 to +5.5V
OTHER TYPES	+2 to +6V

SN74HC161AN (TI) (V_{DD} = +2 to +6V)
CMOS SYNCHRONOUS PRESETTABLE 4-BIT BINARY COUNTER
 - TOP VIEW -



MODE SELECTION

CONTROL		INPUTS		MODE
RD	LD	EN1	EN2	
0	X	X	X	RESET (ASYNCHRONOUS)
1	0	X	X	PRESET (SYNCHRONOUS)
1	1	0	X	NO COUNT
1	1	X	0	NO COUNT
1	1	1	1	COUNT

COUNT SEQUENCE

COUNT	OUTPUTS			
	QD	QC	QB	QA
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1
10	1	0	1	0
11	1	0	1	1
12	1	1	0	0
13	1	1	0	1
14	1	1	1	0
15	1	1	1	1

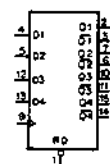
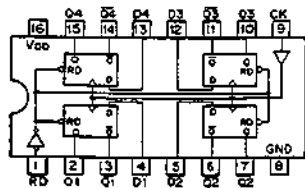
0: LOW LEVEL
 1: HIGH LEVEL
 X: DON'T CARE

CARRY OUTPUT "CO"



CO IS HIGH WHEN EN2 INPUT IS HIGH AND COUNT IS "15".

SN74HC175ANS (TI) FLAT PACKAGE
CMOS QUAD D-TYPE FLIP-FLOPS WITH RESET
 - TOP VIEW -



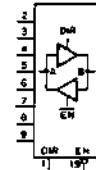
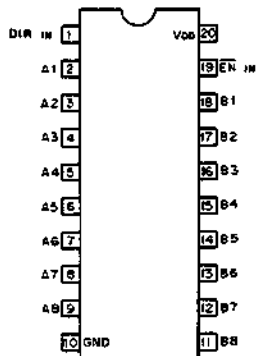
RD	CK	Q	Q	Q	Q
0	X	X	0	1	
1	F	1	1	0	
1	F	0	0	1	
1	0	X	Q ₀	Q ₀	

0: LOW LEVEL
 1: HIGH LEVEL
 X: DON'T CARE
 Q₀: NO CHANGE
 Q₀: NO CHANGE

NOTE:

TYPE	V _{DD}
TCT74AC175F	+2 to +5.5V
74ACT175 TYPE	+4.5 to +5.5V
OTHER TYPES	+2 to +6V

SN74HC245ANS (TI) FLAT PACKAGE
CMOS BILATERAL BUS TRANSCEIVERS WITH 3-STATE OUTPUTS
 - TOP VIEW -



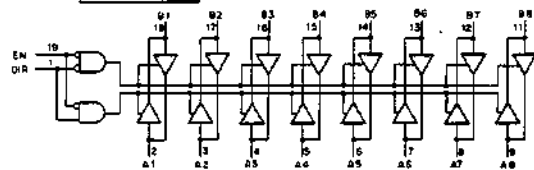
EN DIR OPERATION

EN	DIR	OPERATION
0	0	B to A
0	1	A to B
1	X	HI-Z

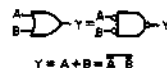
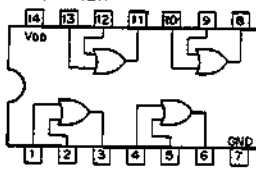
0: LOW LEVEL
 1: HIGH LEVEL
 X: DON'T CARE
 HI-Z: HIGH IMPEDANCE

NOTE:

TYPE	V _{DD}
AC HC	+2 to +6V
ACT HCT	+5V
TCT74AC245F	+2 to +5.5V
TCT74AC245P	+2 to +5.5V



SN74HC32ANS (TI) FLAT PACKAGE
CMOS QUAD 2-INPUT OR GATES
 - TOP VIEW -



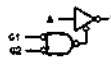
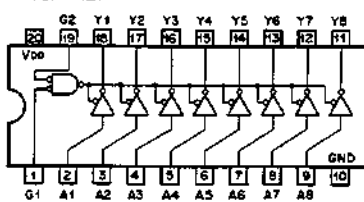
A	B	Y
0	0	0
0	1	1
1	0	1
1	1	1

0: LOW LEVEL
 1: HIGH LEVEL

NOTE:

TYPE	V _{DD}
TCT74AC32 TYPE	+2 to +5.5V
OTHER TYPES	+2 to +6V

SN74HC540ANS (TI) FLAT PACKAGE
CMOS 3-STATE INVERTING BUFFER/LINE DRIVER/LINE RECEIVER
 - TOP VIEW -



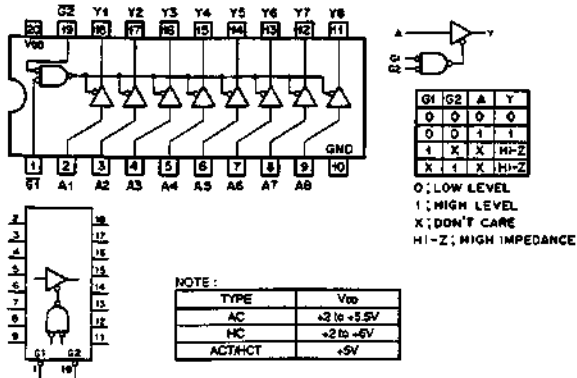
G1	G2	A	Y
0	0	0	1
0	0	1	0
1	X	X	HI-Z
X	1	X	HI-Z

0: LOW LEVEL
 1: HIGH LEVEL
 X: DON'T CARE
 HI-Z: HIGH IMPEDANCE

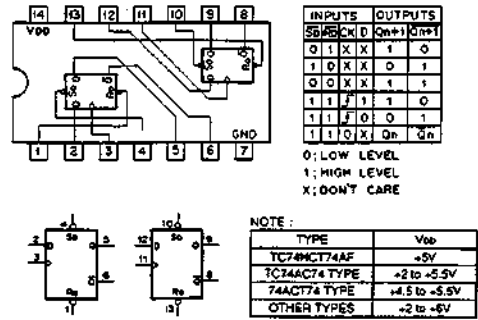
NOTE:

TYPE	V _{DD}
TCT74ACS40F	+5V
TCT74ACS40P	+2 to +6V

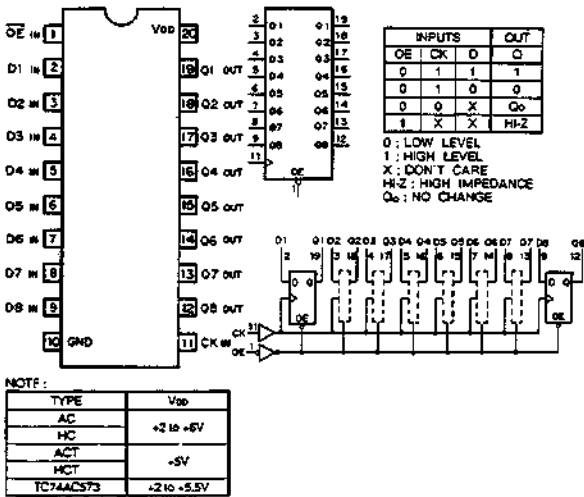
SN74HCS41ANS (TI) FLAT PACKAGE
CMOS BUFFERS AND LINE DRIVERS WITH 3-STATE OUTPUTS
 - TOP VIEW -



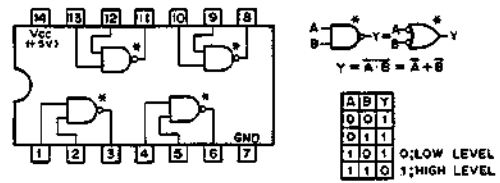
SN74HC74AN (TI)
SN74HC74ANS (TI) FLAT PACKAGE
C-MOS DUAL D-TYPE FLIP-FLOPS WITH DIRECT SET/RESET
 - TOP VIEW -



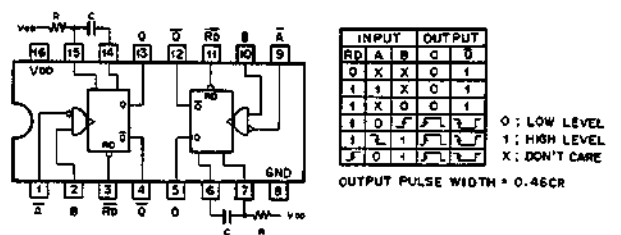
SN74HCS73BNS (TI) FLAT PACKAGE
C-MOS 3-STATE OUTPUTS OCTAL LATCHES
 - TOP VIEW -



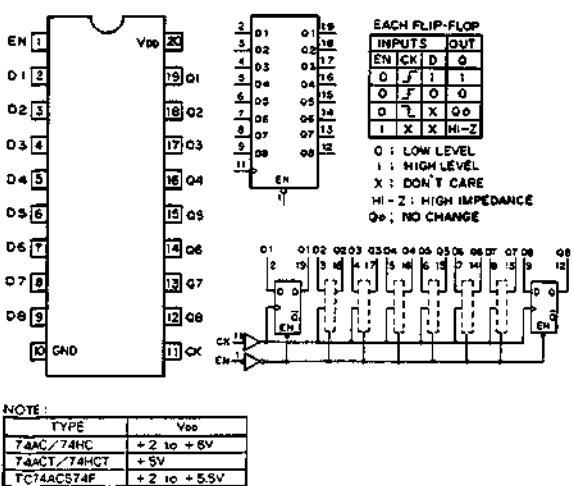
SN74LS03NS (TI) FLAT PACKAGE
TTL 2-INPUT POSITIVE-NAND GATE WITH OPEN-COLLECTOR
 - TOP VIEW -



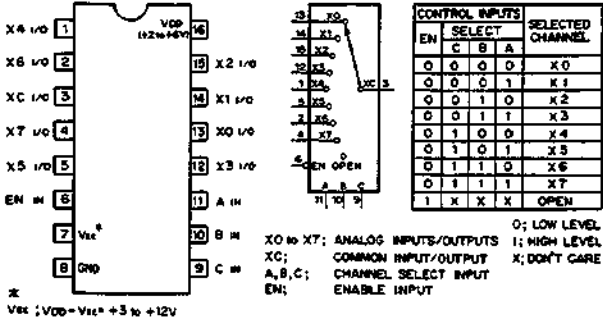
TC74HC123AF (TOSHIBA) FLAT PACKAGE
C-MOS DUAL RETRIGGERABLE MONOSTABLE MULTIVIBRATORS
 - TOP VIEW -



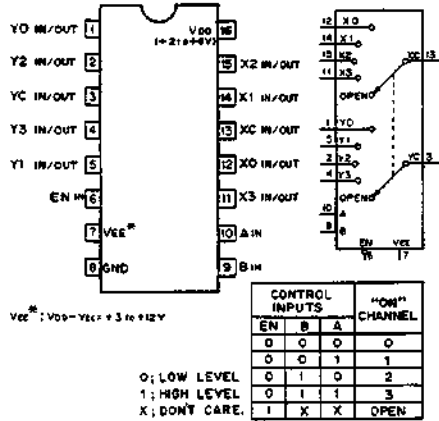
SN74HCS74ANS (TI) FLAT PACKAGE
TC74HC574F (TOSHIBA) FLAT PACKAGE
C-MOS 3-STATE D-TYPE EDGE-TRIGGERED FLIP-FLOP
 - TOP VIEW -



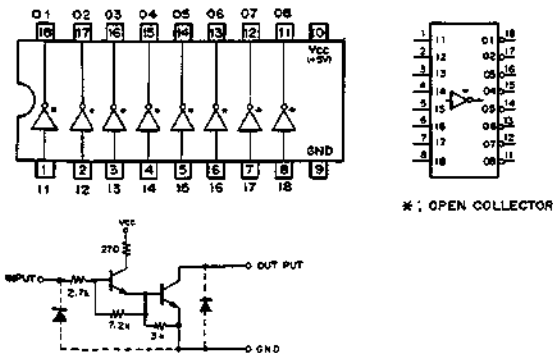
TC74HC4051AF (MOTOROLA) FLAT PACKAGE
 CMOS 8-CHANNEL ANALOG MULTIPLEXER/DEMULTIPLEXER
 - TOP VIEW -



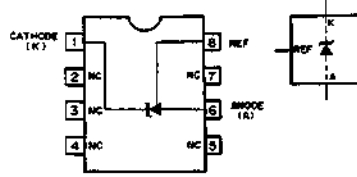
TC74HC4052AF (TOSHIBA) FLAT PACKAGE
 CMOS DUAL 4-CHANNEL ANALOG MULTIPLEXER/DEMULTIPLEXER
 - TOP VIEW -



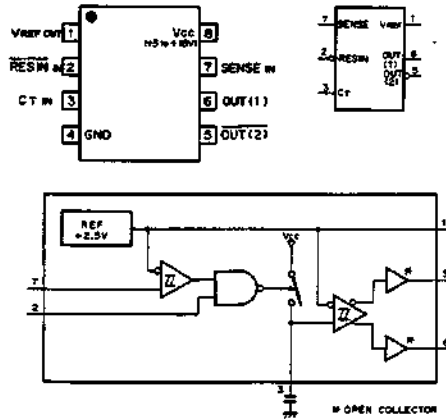
TD62381P (TOSHIBA)
 OCTAL LOW SATURATION DRIVER
 - TOP VIEW -



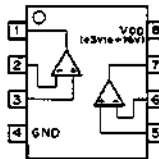
TL431CPS (TI) FLAT PACKAGE
 ADJUSTABLE PRECISION SHUNT REGULATOR
 - TOP VIEW -



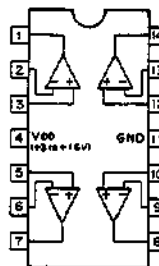
TL7705ACPS (TI) FLAT PACKAGE
 TL7705CPS-B (TI) FLAT PACKAGE
 POWER VOLTAGE SUPERVISOR
 - TOP VIEW -



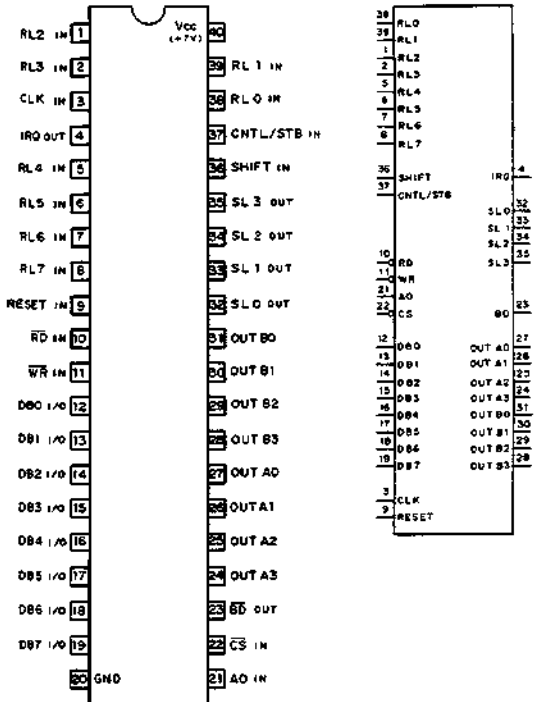
TLC272CPS (TI) FLAT PACKAGE
 OPERATIONAL AMPLIFIER
 - TOP VIEW -



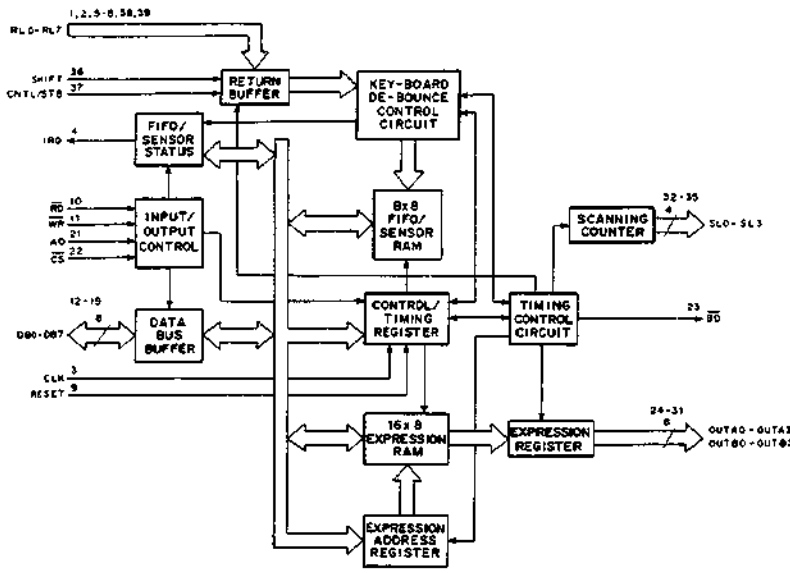
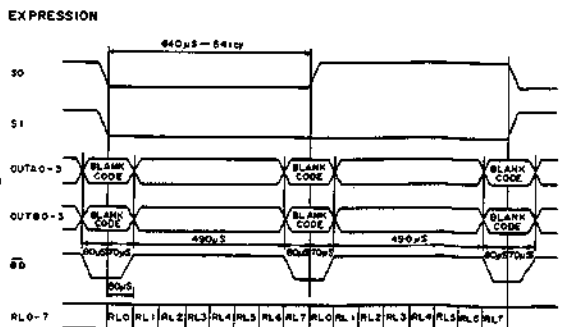
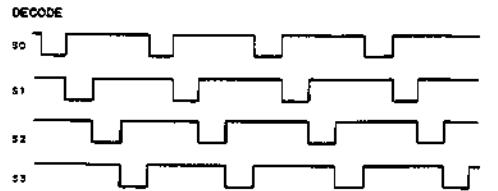
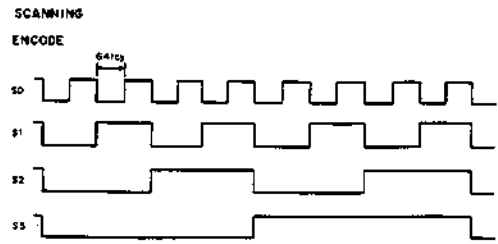
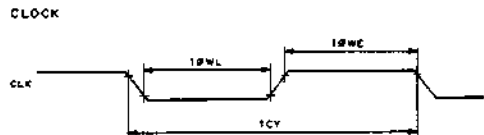
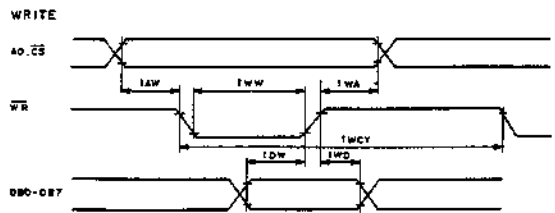
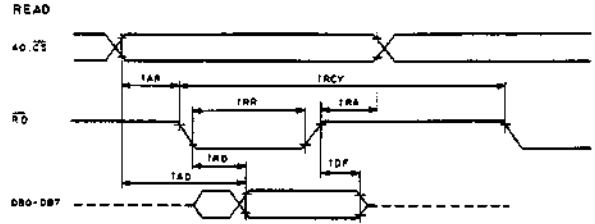
TLC274CNS (TI) FLAT PACKAGE
 CMOS OPERATIONAL AMPLIFIER
 - TOP VIEW -



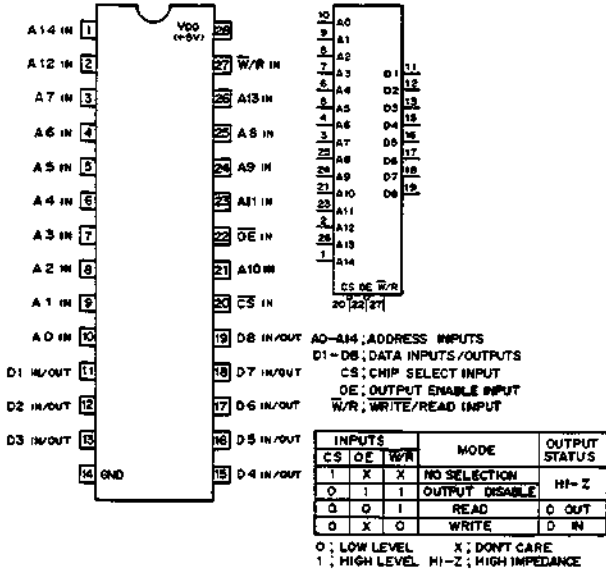
TMP82C79P-2 (TOSHIBA)
CMOS PROGRAMABLE KEY-BOARD/DISPLAY INTERFACE DEVICE
- TOP VIEW -



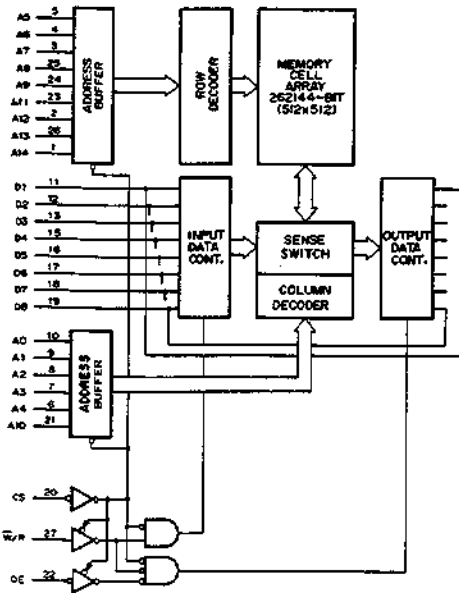
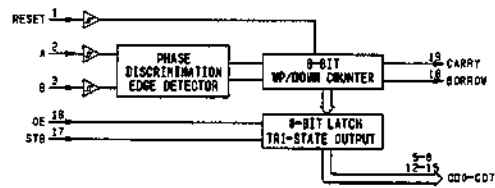
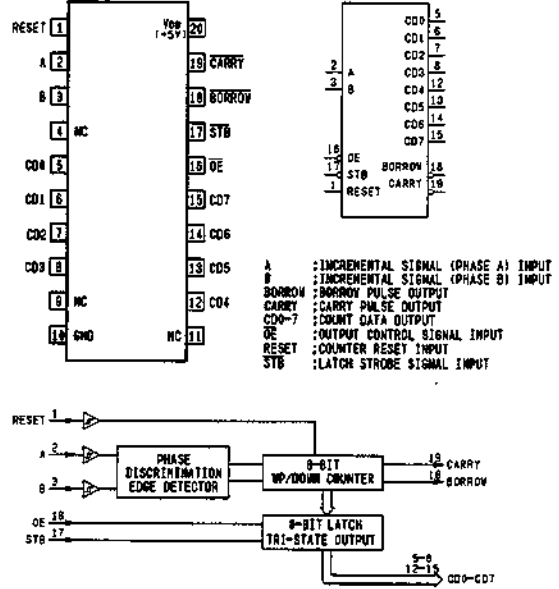
- AO : COMMAND/DATA CONTROL INPUT
- BD : DISPLAY BLANKING OUTPUT
- CLK : CLOCK INPUT
- CNTL/STB : CONTROL/STROBE INPUT
- CS : CHIP SELECT INPUT
- DB0-DB7 : DATA BUS INPUT/OUTPUT
- IRQ : INTERRUPT REQUEST OUTPUT
- OUT A0-A3 : 16x4 BIT EXPRESSION REPRESS REGISTER
- OUT B0-B3 : 16x4 BIT EXPRESSION REPRESS REGISTER
- RD : READ STROBE INPUT
- RESET : RESET INPUT
- RLO-RL7 : RETURN LINE INPUT
- SHIFT : SHIFT INPUT
- SLO-SL3 : SCANNING LINE OUTPUT
- NR : WRITE STROBE INPUT



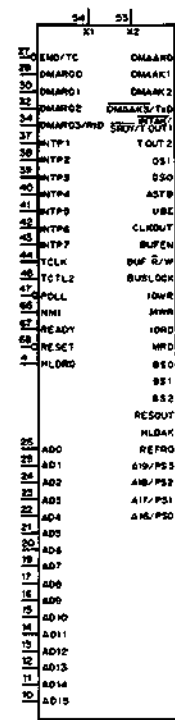
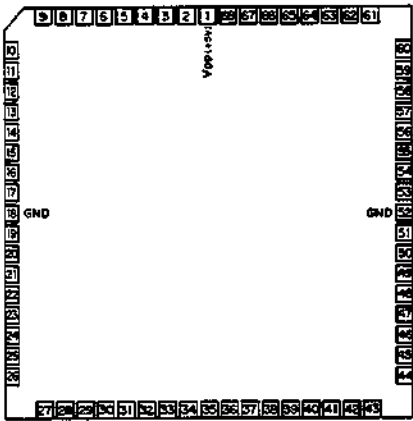
UPD43256AGU-10LL (NEC)
 CMOS 262144-BIT (32768x8) STATIC RAM
 - TOP VIEW -



UPD4702G (NEC)
 CMOS INCREMENTAL ENCODER 8BIT UP DOWN COUNTER
 - TOP VIEW -

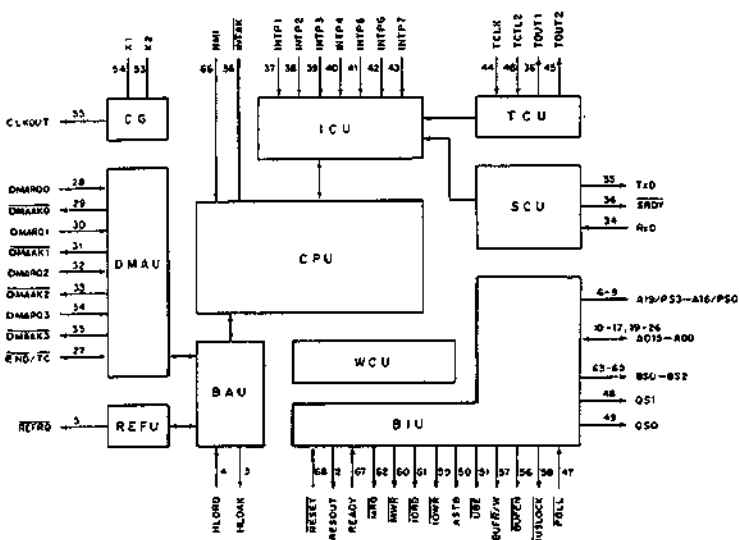


UPD70216L-10 (NEC) (CLOCK FREQUENCY: 10MHz)
 C-MOS 16 BIT MICROPROCESSOR
 - TOP VIEW -

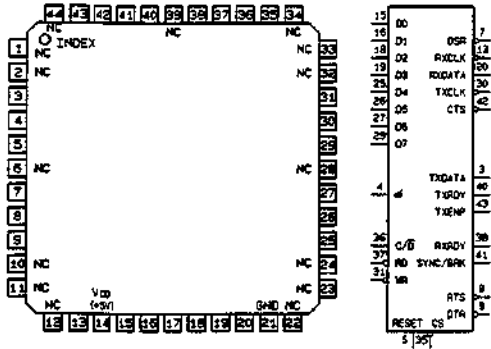


- A16/PS0-A19/PS3 (O) ; ADDRESS/PROCESSOR STATUS
- AD0-AD15 (I/O) ; ADDRESS BUS/DATA BUS
- ASTB (O) ; ADDRESS STROBE
- BS0-BS2 (O) ; BUS STATUS
- BUPEN (O) ; BUFFER ENABLE
- BUP R/W (O) ; BUFFER READ/WRITE
- BUSLOCK (O) ; BUS LOCK
- CLKOUT (O) ; CLOCK OUTPUT
- DMAAK0-2 (O) ; DMA ACKNOWLEDGE 0-2
- DMAAK3/TXD (O) ; DMA ACKNOWLEDGE3/TRANSMIT DATA
- DMAK0-2 (I) ; DMA REQUEST 0-2
- DMAK3/RXD (I) ; DMA REQUEST/RECEIVE DATA
- END/TC (I/O) ; END/TERMINAL COUNT
- HLDK (O) ; BUS HOLD ACKNOWLEDGE
- HLDRO (I) ; BUS HOLD REQUEST
- INTAK/STRT/TOUT1 (O) ; INTERRUPT ACKNOWLEDGE/SERIAL READY/TIMER OUT 1
- INTP0-INTP7 (I) ; INTERRUPT REQUEST FROM PERIPHERAL 0-7
- IORD (O) ; I/O READ STROBE
- IOWR (O) ; I/O WRITE STROBE
- MRD (O) ; MEMORY READ STROBE
- MWR (O) ; MEMORY WRITE STROBE
- NMI (I) ; NON MASKABLE INTERRUPT
- POLL (I) ; POLL
- QSO,QS1 (O) ; QUEUE STATUS
- READY (I) ; READY
- REFRQ (O) ; REFRESH REQUEST
- RESET (I) ; RESET
- RES OUT (O) ; SYSTEM RESET
- TCLK (I) ; TIMER CLOCK
- TCTL2 (I) ; TIMER CONTROL 2
- TOUT2 (O) ; TIMER OUT 2
- UBE (O) ; UPPER BYTE ENABLE
- X1,2 (I) ; CRYSTAL 1,2

PIN NO.	FUNCTION	PIN NO.	FUNCTION	PIN NO.	FUNCTION	PIN NO.	FUNCTION
1	VDD(+5V)	18	GND	35	DMAAK3/TXD	52	GND
2	RES OUT	19	AD7	36	INTAK/STRT/OUT1	53	X 1
3	HLDK	20	AD6	37	INTP 1	54	X 1
4	HLDRO	21	AD5	38	INTP 2	55	CLK OUT
5	REFRQ	22	AD4	39	INTP 3	56	BUPEN
6	A19/PS3	23	AD3	40	INTP 4	57	BUP R/W
7	A18/PS2	24	AD2	41	INTP 5	58	BUSLOCK
8	A17/PS1	25	AD1	42	INTP 6	59	IOWR
9	A16/PS0	26	AD0	43	INTP 7	60	MWR
10	AD15	27	END/TC	44	TCLK	61	IORD
11	AD14	28	DMAK0	45	TOUT2	62	MRD
12	AD13	29	DMAK1	46	TCTL2	63	BS0
13	AD12	30	DMAK2	47	POLL	64	BS1
14	AD11	31	DMAK3	48	QSO	65	BS2
15	AD10	32	DMAK0-2	49	QSO	66	NMI
16	AD9	33	DMAK2	50	ASTB	67	READY
17	AD8	34	DMAK3/RXD	51	UBE	68	RESET



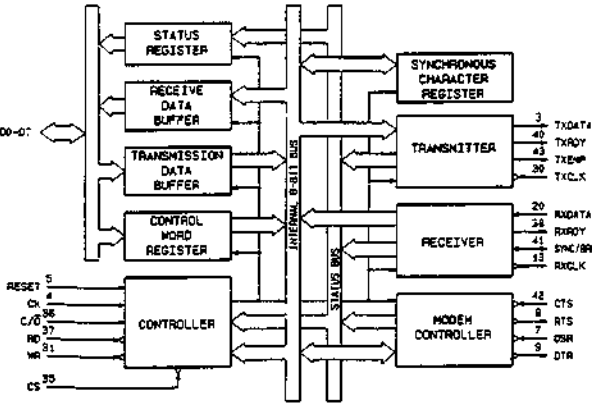
UPD71051GB-10-3B4 (NEC) FLAT PACKAGE
CMOS SERIAL CONTROLLER
- TOP VIEW -



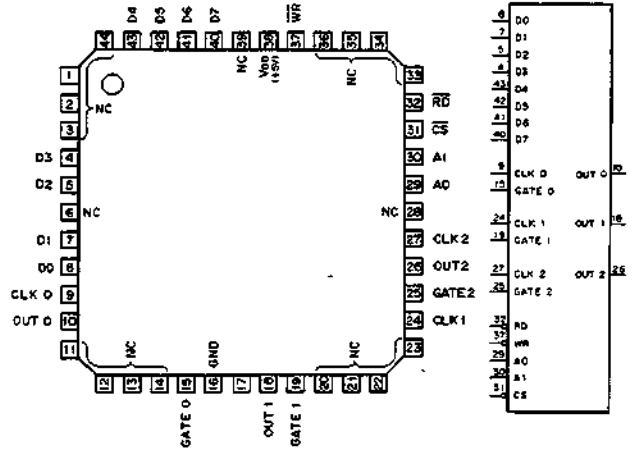
PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL
1	NC		12	NC		23	NC		34	NC	
2	NC		13	I	RXCCLK	24	NC		35	I	CS
3	D	TXDATA	14	VDD	(+5V)	25	L/O	D4	36	I	C/B
4	I	CX	15	I/O	D0	26	L/O	D5	37	I	RD
5	I	RESET	16	I/O	D1	27	L/O	D6	38	O	RXDQY
6	NC		17	NC		28	NC		39	NC	
7	I	DSR	18	I/O	D2	29	I/O	D7	40	O	TXRDY
8	O	RTS	19	I/O	D3	30	I	TXCLK	41	L/O	SYNC/BRK
9	O	DTR	20	I	RXDATA	31	I	NR	42	I	CTS
10	NC		21	NC		32	NC		43	O	TXEMP
11	NC		22	NC		33	NC		44	NC	

CS : CHIP SELECT INPUT
C/B : CLEAR TO SEND OUTPUT
C/D : CONTROL/DATA SELECT INPUT
D0-D7 : DATA INPUTS/OUTPUTS
DSR : DATA SET READY INPUT
DTR : DATA TERMINAL READY OUTPUT
TXCLK : TRANSMITTER CLOCK INPUT
TXDATA : TRANSMIT DATA OUTPUT
TXEMP : TRANSMITTER EMPTY OUTPUT

TXRDY : TRANSMIT READY OUTPUT
ED : READ STROBE INPUT
RESET : RESET INPUT
RTS : REQUEST TO SEND OUTPUT
RXCLK : RECEIVER CLOCK INPUT
RXDATA : RECEIVE DATA INPUT
RDY : RECEIVER READY OUTPUT
SYNC/BRK : SYNCHRONIZATION/BREAK INPUT/OUTPUT
WR : WRITE STROBE INPUT



UPD71054GB-10-3B4 (NEC) FLAT PACKAGE
CMOS PROGRAMMABLE TIMER COUNTER
- TOP VIEW -



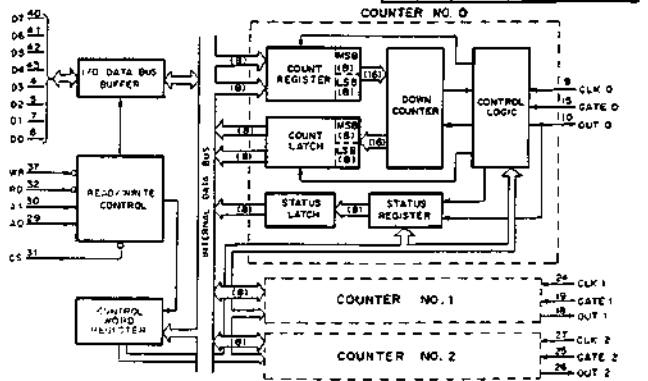
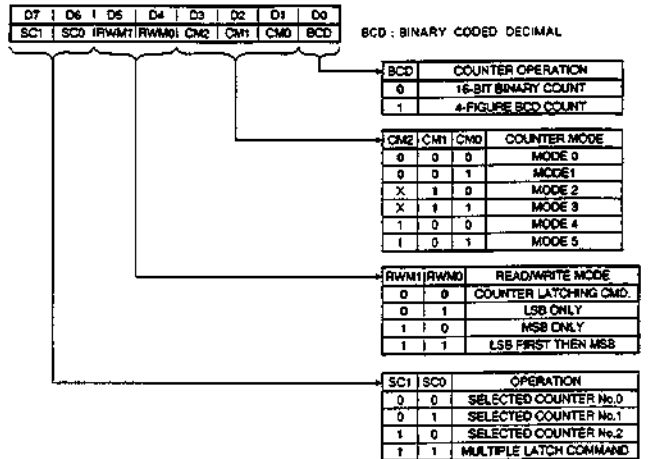
FUNCTION TABLE

CS	RD	WR	A1	A0	FUNCTION
0	1	0	0	0	COUNTER NO. 1 WRITE
0	1	0	0	1	COUNTER NO. 2 WRITE
0	1	0	1	0	COUNTER NO. 3 WRITE
0	1	0	1	1	CONTROL WORD WRITE
0	0	1	0	0	COUNTER NO. 1 READ
0	0	1	0	1	COUNTER NO. 2 READ
0	0	1	1	0	COUNTER NO. 3 READ
0	0	1	1	1	NO-OPERATION (HI-Z)
1	X	X	X	X	DISABLE (HI-Z)
0	1	1	X	X	NO-OPERATION (HI-Z)

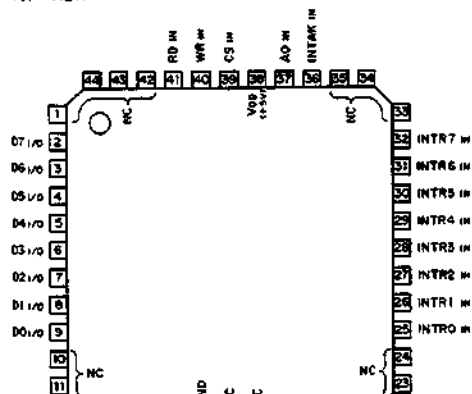
A1, A0 : SELECTED READ/WRITE OPERATION
CLK n : COUNTER CLOCK INPUT n
CS : CHIP SELECT
D7-D0 : 8-BIT DATA I/O
GATE n : COUNTER GATE INPUT n
IC : INTERNALLY CONNECTED
OUT n : COUNTER CLOCK OUTPUT n
RD : READ COUNTER/STATUS
WR : WRITE COMMAND/DATA

O: LOW LEVEL
1: HIGH LEVEL
X: DON'T CARE
HI-Z: HIGH IMPEDANCE

CONTROL WORD FORMAT

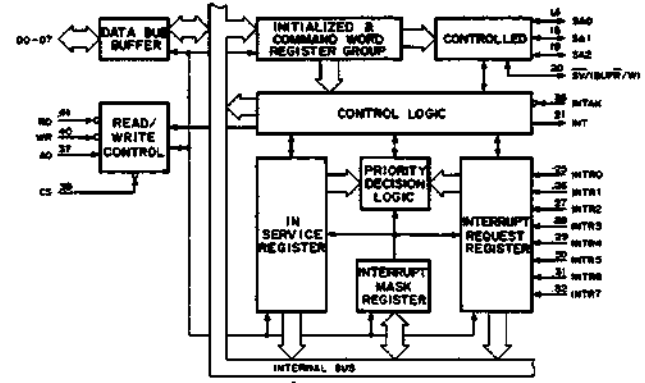


UPD71059GB-10-3B4 (NEC) FLAT PACKAGE
 CMOS INTERRUPT CONTROL UNIT
 - TOP VIEW -



- INTR0-INTR7 : INTERRUPT REQUEST INPUTS
- DO-07 : DATA BUS INPUTS/OUTPUTS
- CS : CHIP SELECT INPUT
- RD : READ STROBE INPUT
- WR : WRITE STROBE INPUT
- AO : ADDRESS INPUT
- INTY : INTERRUPT OUTPUT
- INTAK : INTERRUPT ACKNOWLEDGE INPUT
- SV/BUF R/W : CONTROLLED/BUFFER READ/WRITE INPUT/OUTPUT
- SA0-SA2 : CONTROLLED ADDRESS INPUTS/OUTPUTS

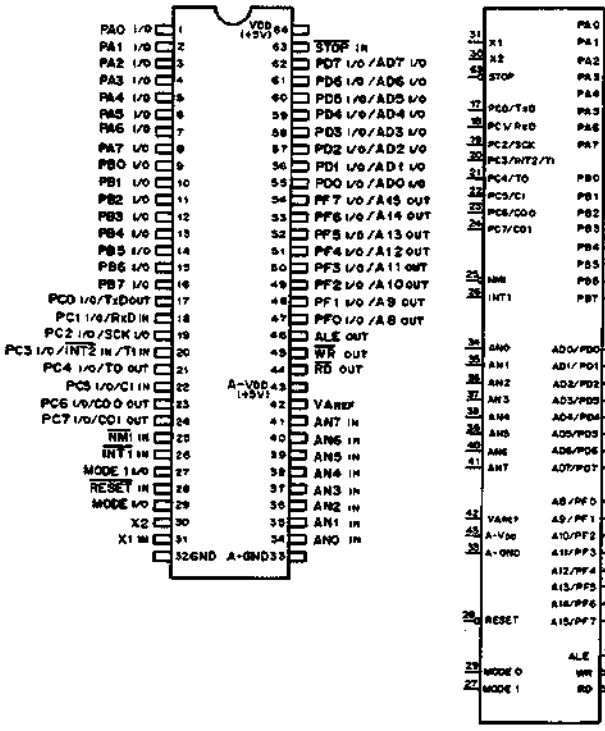
25	INTR0	D0	0
26	INTR1	D1	1
27	INTR2	D2	2
28	INTR3	D3	3
29	INTR4	D4	4
30	INTR5	D5	5
31	INTR6	D6	6
32	INTR7	D7	7
26	INTAK		
30	SV/BUF R/W		
37	SA0	A0	14
38	SA1	A1	15
39	SA2	A2	16
41	RD		21



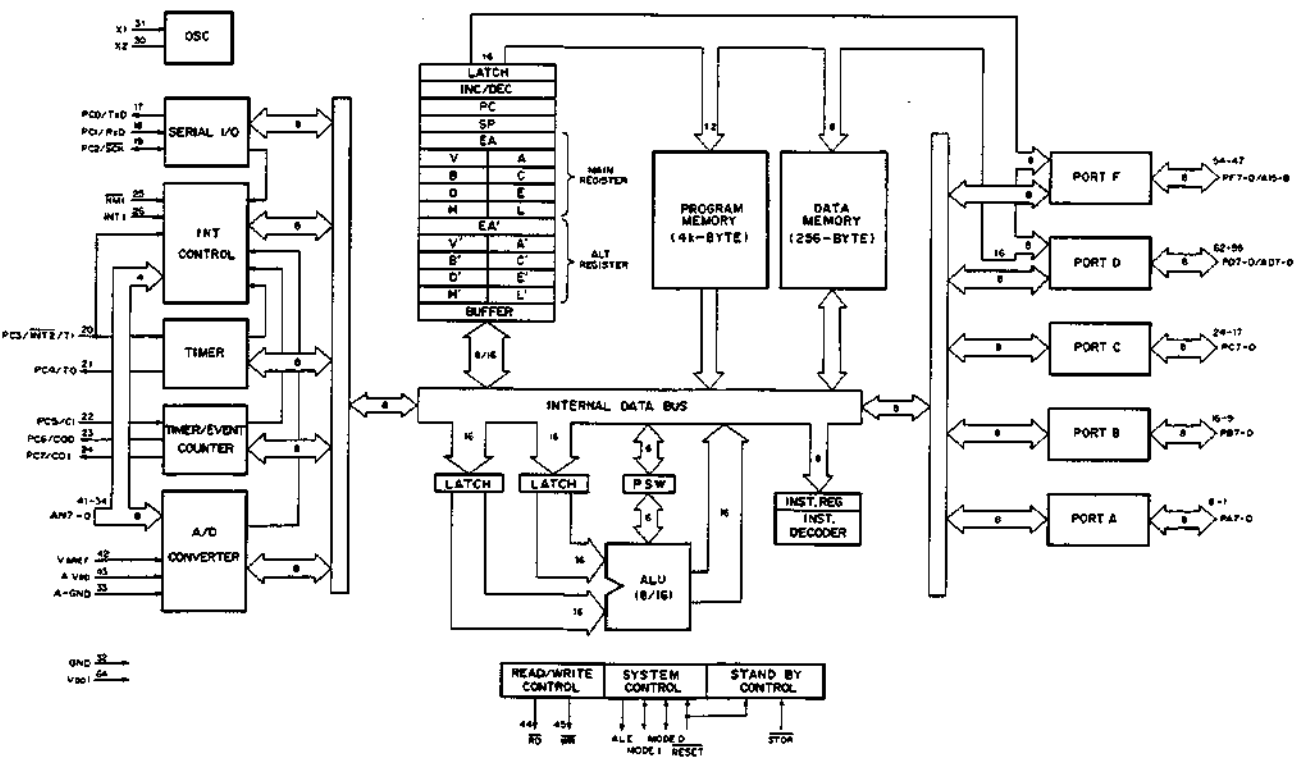
UPD78C11ACW-F08 (NEC)

C-MOS SINGLE CHIP 8-BIT MICROPROCESSOR WITH A/D CONVERTER

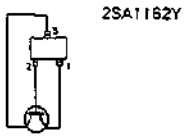
- TOP VIEW -



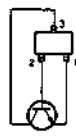
- ALE ADDRESS LATCH ENABLE OUTPUT
- AND-7 ANALOG INPUT
- INT1 MASKABLE INTERRUPT REQUEST 1 INPUT
- MODE 0 MEMORY MODE 0 INPUT/OUTPUT
- MODE 1 MEMORY MODE 1 INPUT/OUTPUT
- NR1 NON-MASKABLE INTERRUPT REQUEST INPUT
- PA0-7 INPUT/OUTPUT PORT A
- PC0-7 INPUT/OUTPUT PORT C
- PC0/TxD / PORT C BIT 0 / SERIAL DATA OUTPUT
- PC1/RxD / PORT C BIT 1 / SERIAL DATA INPUT
- PC2/SCK / PORT C BIT 2 / SERIAL CLOCK I/O
- PC3/INT2/T1 / PORT C BIT 3 / MASKABLE INTERRUPT REQUEST2 IN/TIMER INPUT
- PC4/T0 / PORT C BIT 4 / TIMER OUTPUT
- PC5/C1 / PORT C BIT 5 / COUNTER INPUT
- PC6/C0 / PORT C BIT 6 / COUNTER OUTPUT 0
- PC7/C01 / PORT C BIT 7 / COUNTER OUTPUT 1
- PD0-7/AD0-7 / PORT D / ADDRESS / DATA BUS
- PF0-7/AF-15 / PORT F / ADDRESS BUS
- RESET SYSTEM RESET INPUT
- RD READ STORE OUTPUT
- STOP SYSTEM STOP INPUT
- VREF REFERENCE VOLTAGE
- WD WHITE STROKE OUTPUT
- X1, X2 EXTERNAL CRYSTAL, X1: SYSTEM CLOCK INPUT



TRANSISTOR



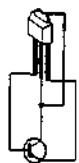
2SA1162Y



2SC2712Y



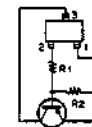
2SK170



2SA1242



2SC2855



DTA114EK (R1 = 10K, R2 = 10K)
DTA143EK (R1 = 4.7K, R2 = 4.7K)
DTA143TK (R1 = 4.7K, R2 = ∞)



2SA985A



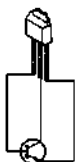
2SD1020



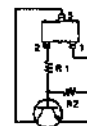
DTA124ES (R1 = 22K, R2 = 22K)



2SB1040A
2SB906



2SD1221



DTC124EK (R1 = 22K, R2 = 22K)
DTC143TK (R1 = 4.7K, R2 = ∞)



2SC2275A



2SD1266



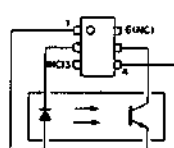
DTC124ES (R1 = 22K, R2 = 22K)
DTC143TS (R1 = 4.7K, R2 = OPEN)



2SC2458



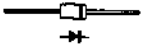
2SD773



PS2604

DIODE

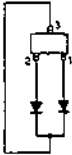
DIODE



10E-2
10E2N
1SS119
PK14
SLR-34PG5



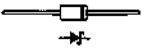
TLY256 : YELLOW



1S2837



BR3432S : RED
EBG3432S : GREEN
EBG5734S : GREEN
PY3432S : YELLOW
PY5734S : YELLOW



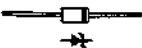
ERA81-004
ERC81-004



FC52M
FC53M



GL-3HY8 : YELLOW
TLG124A : GREEN
TLR124 : RED
TLUG164 : GREEN
TLUR164 : RED
TLUY164 : YELLOW



HZ ? ?A ?
HZS ? ?L
RD ? ?EB ?
RD ? ?ESB ?

SECTION E REPLACEABLE PARTS

E-1. PARTS ORDERING INFORMATION

Standardization of Parts

Repair parts supplied from Sony Parts Center may not be always identical with the part which actually in use due to "accommodating the improved parts and/or engineering changes" or "standardization of genuine parts".

This manual's exploded views and electrical parts list are indicating the parts numbers of the "standardized genuine parts at present".

Parts marked with S in the column of SP

These parts are normally stocked as replaceable parts.

Parts marked with O in the column of SP

Orders for these parts will be processed, but allow for additional delivery time.

Parts without Part No.

These parts are not stocked because they are seldom required for routine service.

The components marked with Δ are critical to safe operation.

These components must be replaced with the same ones as described on the Parts List.

ORNAMENTAL CASE

E-2. EXPLODED VIEWS AND PARTS

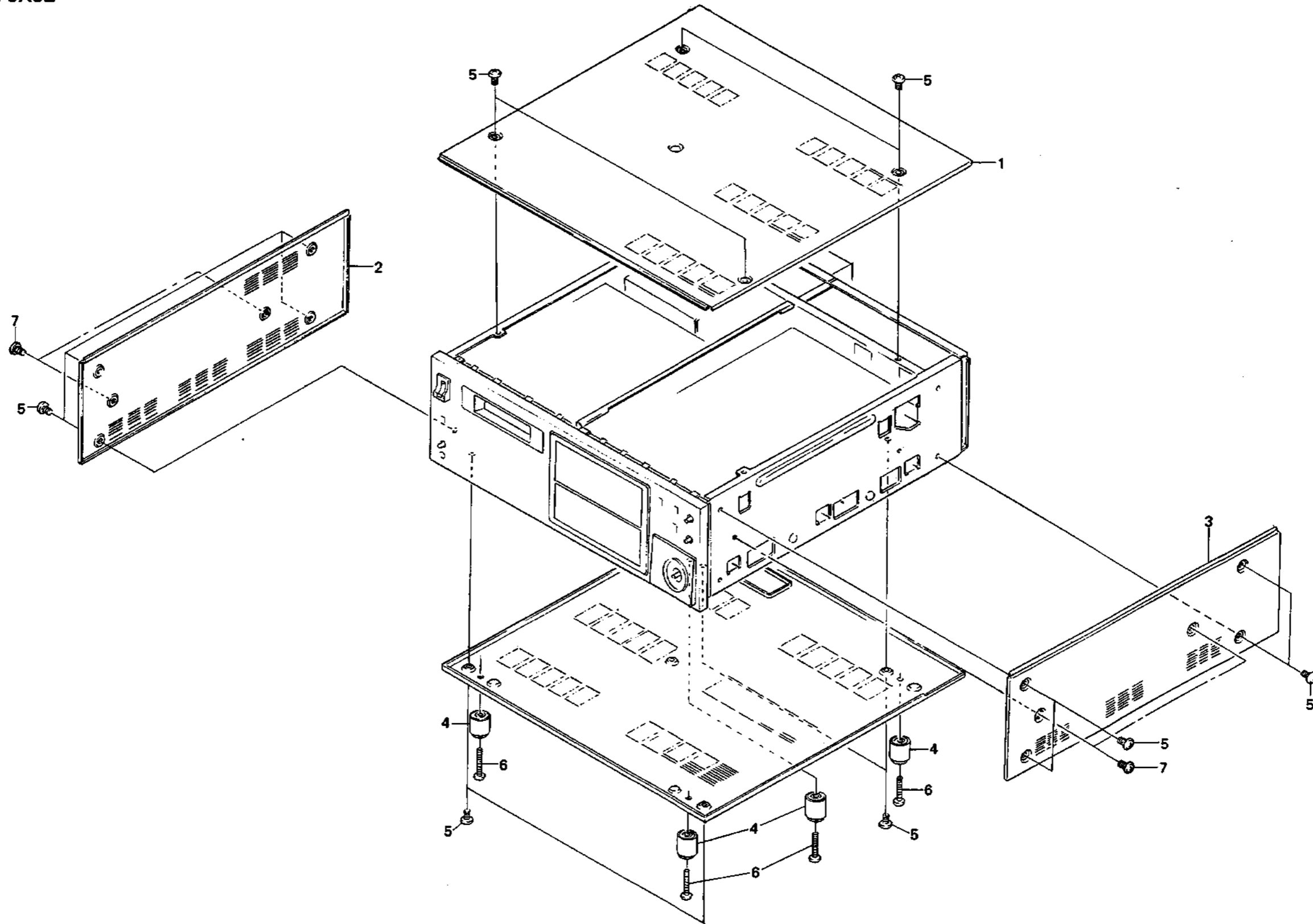
Index

No.	Parts No.	SP	Description
1	X-3167-094-1	O	LID, UPPER ASSY
2	X-3167-096-1	O	PLATE(L), SIDE ASSY
3	X-3167-095-1	O	PLATE(R), SIDE ASSY
4	3-346-656-01	S	FOOT
5	7-682-560-04	S	SCREW +B 4X6
6	7-682-566-04	S	SCREW +B 4X20
7	7-682-562-04	S	SCREW +B 4X10

ORNAMENTAL CASE

ORNAMENTAL CASE

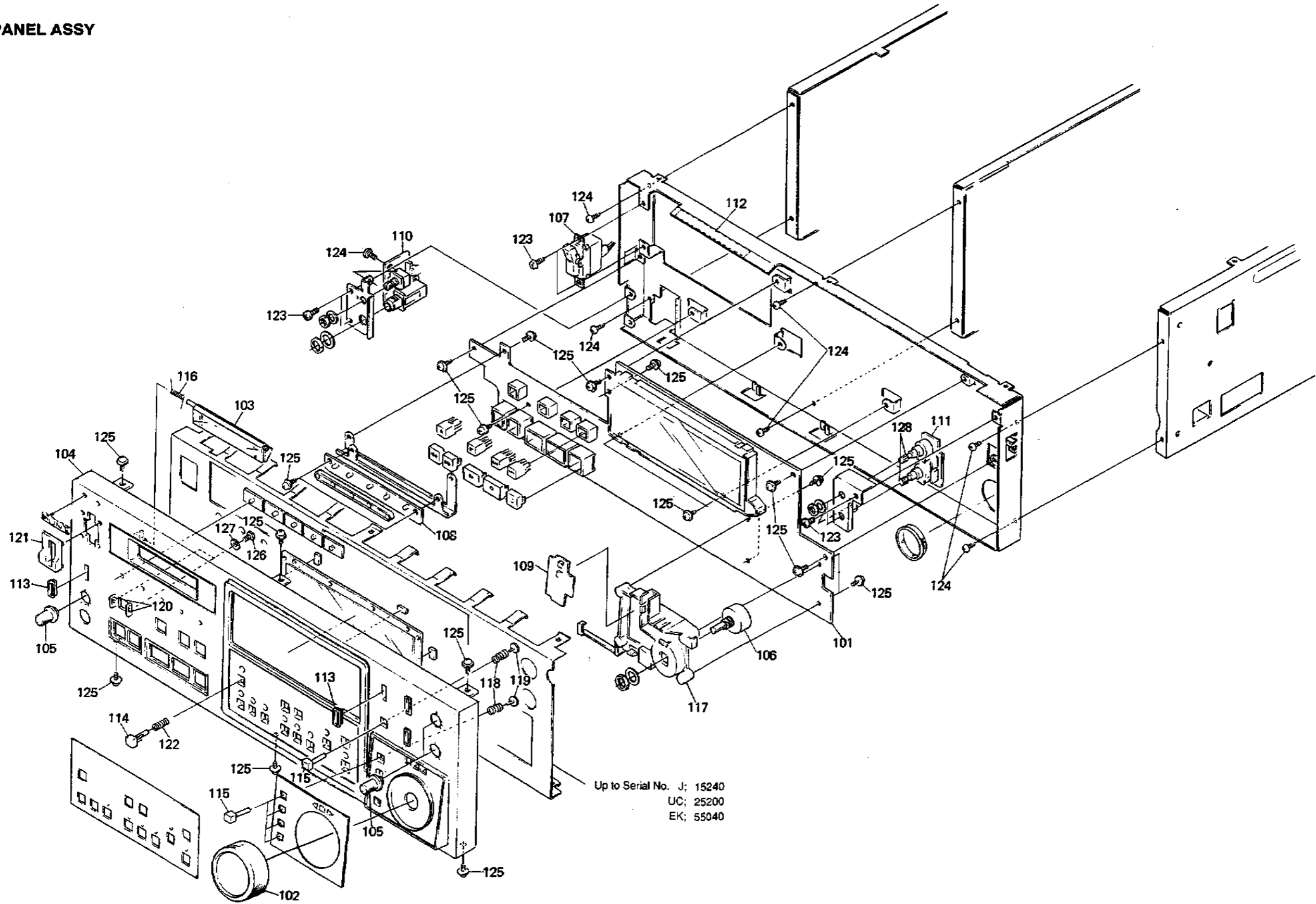
ORNAMENTAL CASE



FRONT PANEL ASSY

FRONT PANEL ASSY

FRONT PANEL ASSY



Index

No.	Parts No.	SP	Description
101	A-7850-797-A	o	COMPLETE PCB, KY-192
102	X-3165-315-3	s	DIAL ASSY
103	X-3165-508-5	o	DOOR ASSY, CASSETTE
104	X-3165-510-3	o	PANEL ASSY, FRONT
105	X-3717-237-1	s	KNOB ASSY, VOL
106	1-466-469-11	s	ROTARY ENCODER (MAGNETIC)
107	1-570-117-21	s	SWITCH, SEESAW (AC POWER)
108	1-637-269-11	o	PC BOARD, LED-104
109	1-637-270-11	o	PC BOARD, SW-420
110	1-637-283-14	o	PC BOARD, HP-48
111	1-637-284-13	o	PC BOARD, VR-109
112	3-166-920-01	o	MIRROR (CHASSIS)
113	3-166-928-02	o	ESCUTCHEON, SW
114	3-166-929-01	o	KEY TOP (LARGE)
115	3-166-930-01	o	KEY TOP (SMALL)
116	3-167-801-01	o	SPRING, TENSION
117	3-167-806-02	o	TABLE, ENCODER
118	3-567-099-00	o	SPRING, COMPRESSION
119	3-668-009-02	s	PIN, PUSH BUTTON
120	3-717-380-11	o	GUARD, REC
121	4-378-341-01	o	COVER, SWITCH
122	4-862-354-00	s	SPRING, COMPRESSION
123	7-682-546-09	s	SCREW +B 3x5 (Up to Serial No. J;15140, UC;25180, EK;55040)
	7-682-903-11	s	SCREW +PWH3x6 (Serial No. J;15141 and higher, UC;25181 and higher, EK;55041 and higher)
124	7-682-547-04	s	SCREW +B 3x6
125	7-682-903-11	s	SCREW +PWH 3x6
126	7-685-105-19	s	TEG +P 2x8
127	7-688-001-01	s	W2, MIDDLE
128	1-241-332-11	s	RES, VAR, CARBON 20K

MAIN ASSY(1)

Index

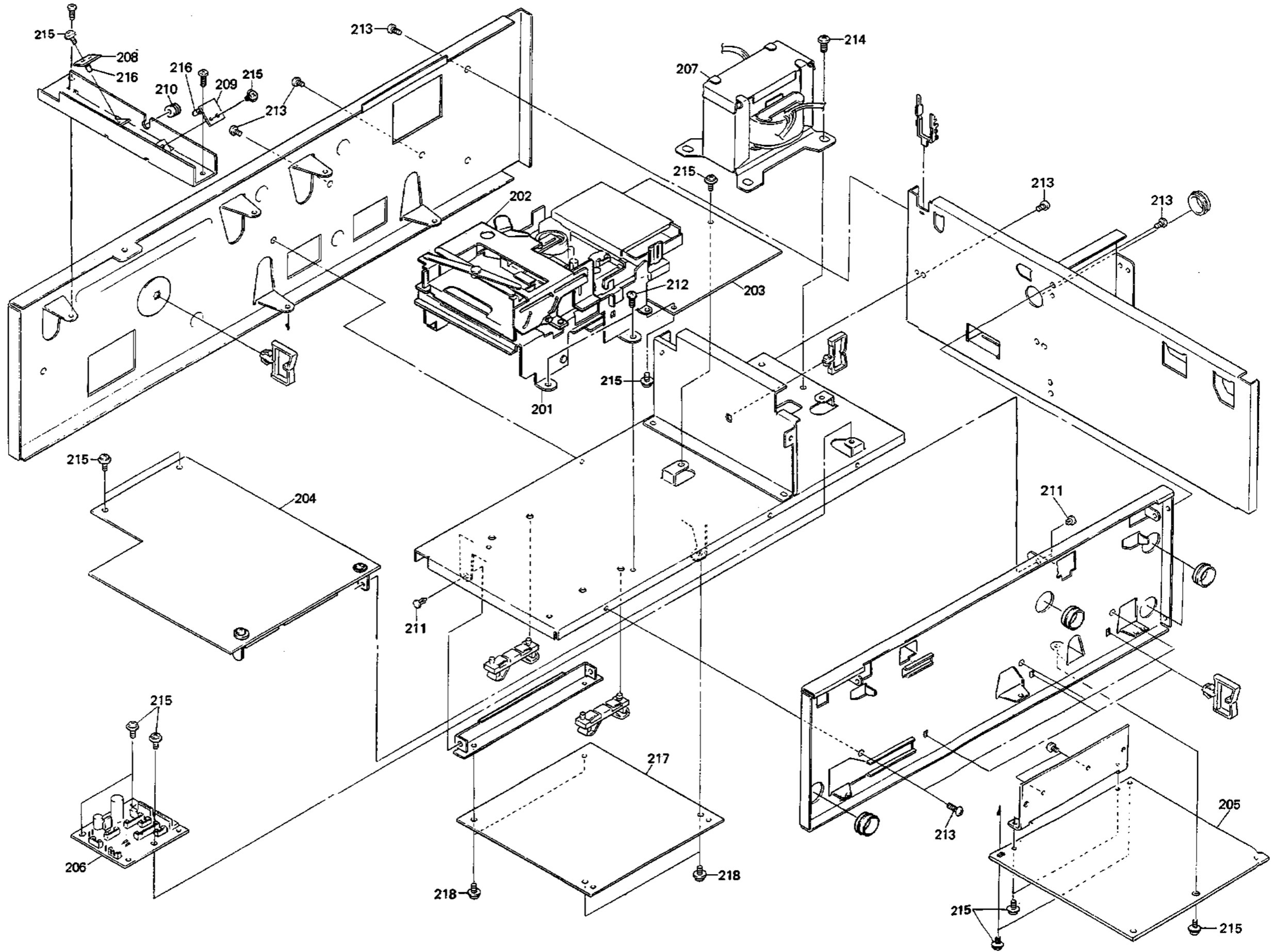
No.	Parts No.	SP	Description
201	A-7806-080-C	s	DATM-06R ASSY
202	A-7810-551-A	s	CASSETTE COMPARTMENT ASSY
203	A-7850-783-A	o	COMPLETE PCB, DR-139
204	A-7850-813-A	o	COMPLETE PCB, SV-123
205	A-7850-815-A	o	COMPLETE PCB, PS-211
206	A-7850-817-A	o	COMPLETE PCB, DC-47
△207	1-450-293-11	s	TRANSFORMER, POWER
208	1-637-285-12	o	PC BOARD, LE-90A
209	1-637-286-12	o	PC BOARD, LE-90B
210	3-570-118-00	s	CUSHION, MOTOR
211	4-818-403-00	s	RIVET, NYLON
212	7-682-546-09	s	SCREW +B 3x5
213	7-682-547-04	s	SCREW +B 3x6
214	7-682-560-04	s	SCREW +B 4x6
215	7-682-903-11	s	SCREW +PWH 3x6
216	8-719-820-27	s	DIODE TLY256
[DAK-7030]			
217	A-7850-764-A	o	COMPLETE PCB, TC-58 (For J,UC)
	A-7850-765-A	o	COMPLETE PCB, TC-58P (For EK)
218	7-682-903-11	s	SCREW, +PWH 3x6

注 意: (201)は、E-19ページの(606)、(619)、(620)、(624)を含んでいません。

NOTE: (201) does not include (606), (619), (620) and (624) on page E-19.

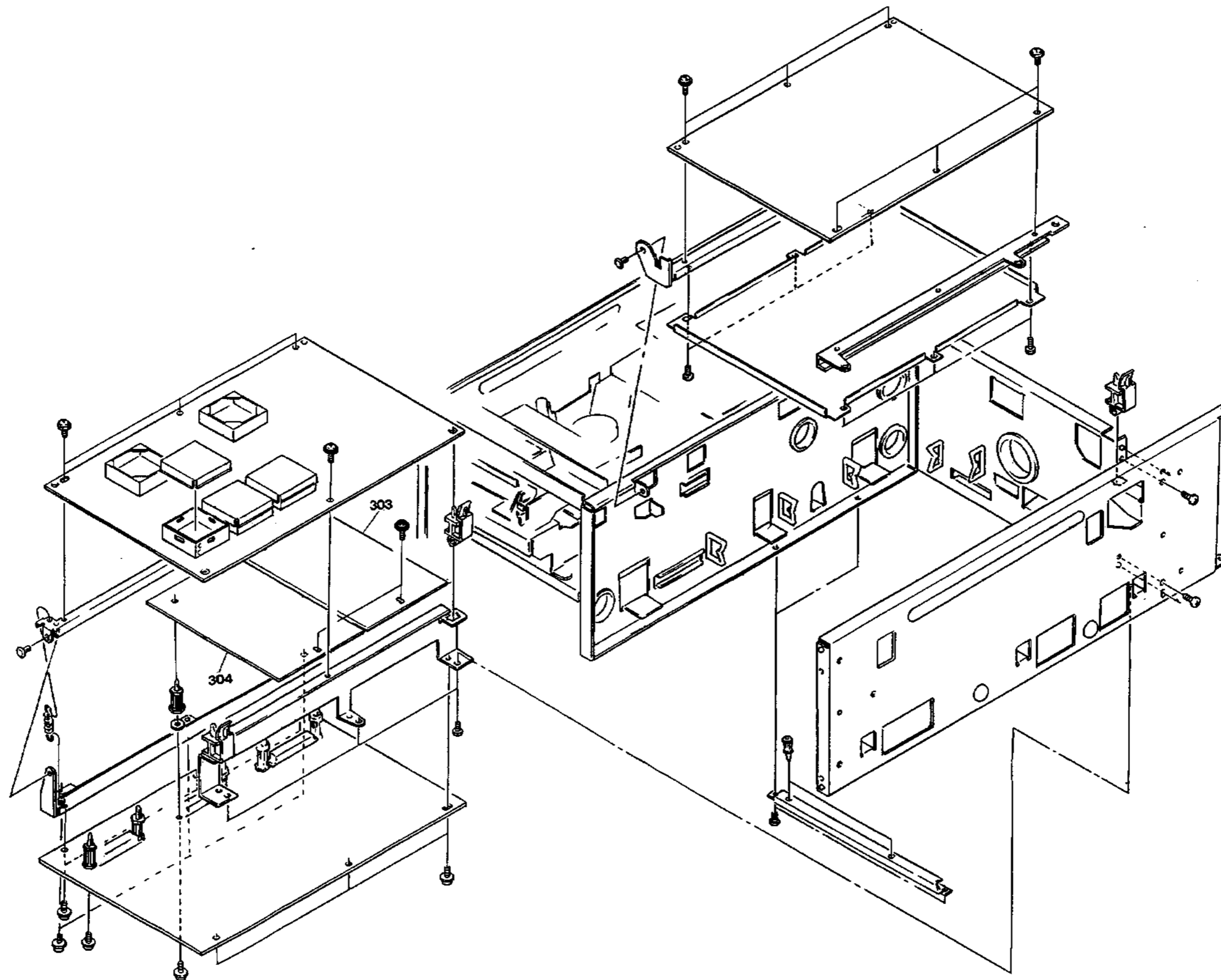
MAIN ASSY(1) MAIN ASSY(1)

MAIN ASSY(1)



MAIN ASSY(2) MAIN ASSY(2)

MAIN ASSY(2)



E-11

E-12

PCM-7030 (J,UC,EK)

Index

No.	Parts No.	SP	Description
301	A-7850-803-B	s	COMPLETE PCB, ADA-18
302	A-7850-805-A	s	COMPLETE PCB, SP-13
303	A-7850-848-A	s	COMPLETE PCB, SY-155B
306	1-590-307-11	s	WIRE, FLEXIBLE CARD (20P)
307	3-437-289-11	s	SPRING, TENSION
308	3-703-141-00	o	HOLDER, PCB
309	4-818-403-00	s	RIVET, NYLON
310	4-861-614-11	s	HOLDER, PC BOARD
311	7-682-546-09	s	SCREW +B 3x5
312	7-682-547-04	s	SCREW +B 3x6
313	7-682-903-11	s	SCREW +PWH 3x6

[DAEK-7031]

304 A-7850-809-A s COMPLETE PCB, DIO-10

[DABK-7032]

305 A-7850-762-A s COMPLETE PCB, MEM-40B

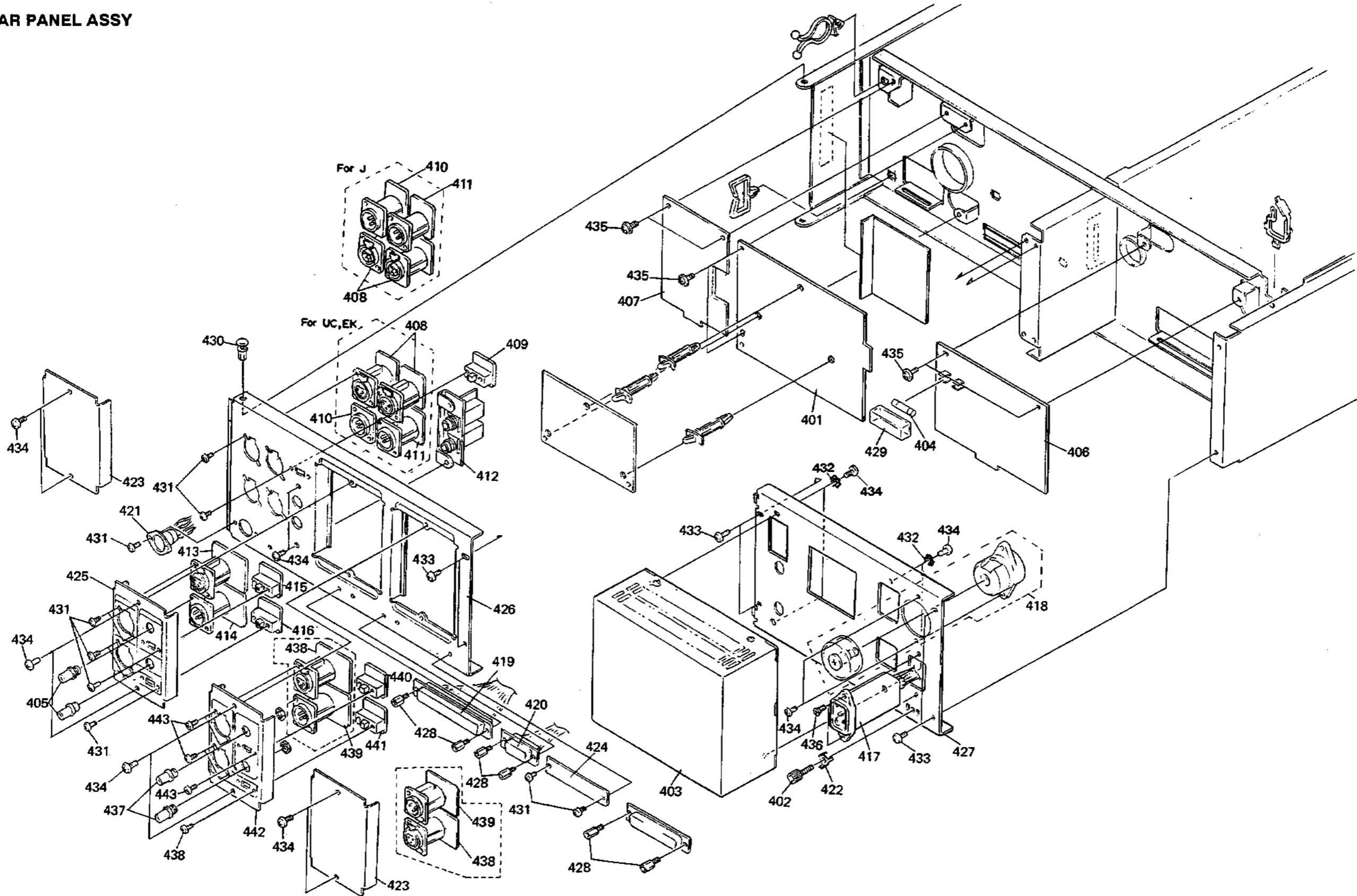
REAR PANEL ASSY

Index		
No.	Parts No.	SP Description
401	A-7850-820-A	o COMPLETE PCB, RM-77
402	X-2068-004-0	s TERMINAL ASSY
403	1-413-612-11	s SWITCHING REGULATOR
Δ404	1-532-825-11	s FUSE, GLASS TUBE (For J, UC)
	1-532-285-00	s FUSE, TIME-LAG (For EK)
406	1-637-275-11	o PC BOARD, AC-104
407	1-637-276-13	o PC BOARD, CP-171
408	1-637-277-11	o PC BOARD, CP-157A
409	1-637-279-11	o PC BOARD, SW-426
410	1-637-280-11	o PC BOARD, CP-172A
411	1-637-281-11	o PC BOARD, CP-172B
412	1-637-282-12	o PC BOARD, CP-158
Δ417	1-946-795-13	S HARNESS, SUB (AC IN)
Δ418	1-946-796-11	S HARNESS, SUB (VS)
419	1-946-959-11	o HARNESS (RM)
420	1-946-960-11	o HARNESS (9P)
421	1-946-961-12	o HARNESS (FS)
422	2-068-008-00	s WASHER
423	3-166-944-01	o PLATE, BLIND
424	3-166-945-01	o PLATE (25P), BLIND, D-SUB
426	3-166-954-02	o PANEL, CONNECTOR
427	3-166-956-03	o PANEL, REAR (For J, UC)
	3-166-956-12	o PANEL, REAR (For EK)
428	3-673-910-00	o SCREW, CONNECTOR
429	4-601-472-00	o COVER, FUSE
430	4-818-403-00	s RIVET, NYLON
431	7-621-775-10	s SCREW +B 2.6x4
432	7-623-422-07	s LW 3, TYPE B
433	7-682-546-09	s SCREW +B 3x5
434	7-682-547-04	s SCREW +B 3x6
435	7-682-903-11	s SCREW +PWH 3x6
436	7-682-248-09	s SCREW +K 3x8
[DABK-7030]		
437	1-561-781-11	s CONNECTOR, BNC
438	1-637-295-11	o PC BOARD, CP-159A
439	1-637-296-11	o PC BOARD, CP-159B
440	1-637-297-11	o PC BOARD, CP-152
441	1-637-298-11	o PC BOARD, SW-455
442	3-166-878-01	o PANEL, TC
443	7-621-775-10	s SCREW +B 2.6x4
[DABK-7031]		
405	1-561-781-11	s CONNECTOR, BNC (RECEPTACLE)
413	1-637-291-12	o PC BOARD, CP-173A
414	1-637-292-12	o PC BOARD, CP-173B
415	1-637-293-12	o PC BOARD, SW-453
416	1-637-294-12	o PC BOARD, SW-454
425	3-166-948-01	o PANEL, DIO
431	7-621-775-10	s SCREW +B 2.6x4

REAR PANEL ASSY

REAR PANEL ASSY

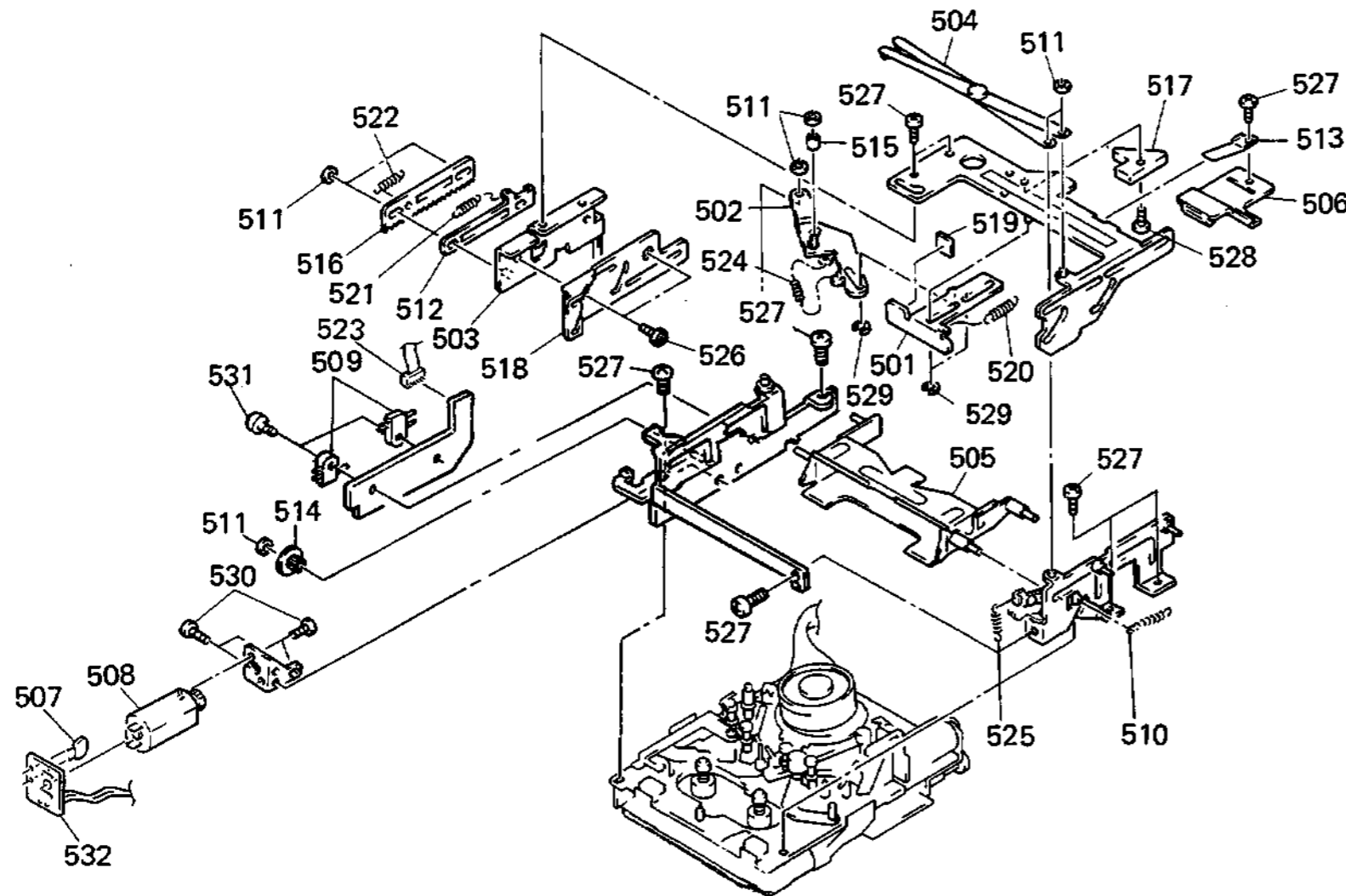
REAR PANEL ASSY



CASSETTE COMPARTMENT

CASSETTE COMPARTMENT

CASSETTE COMPARTMENT



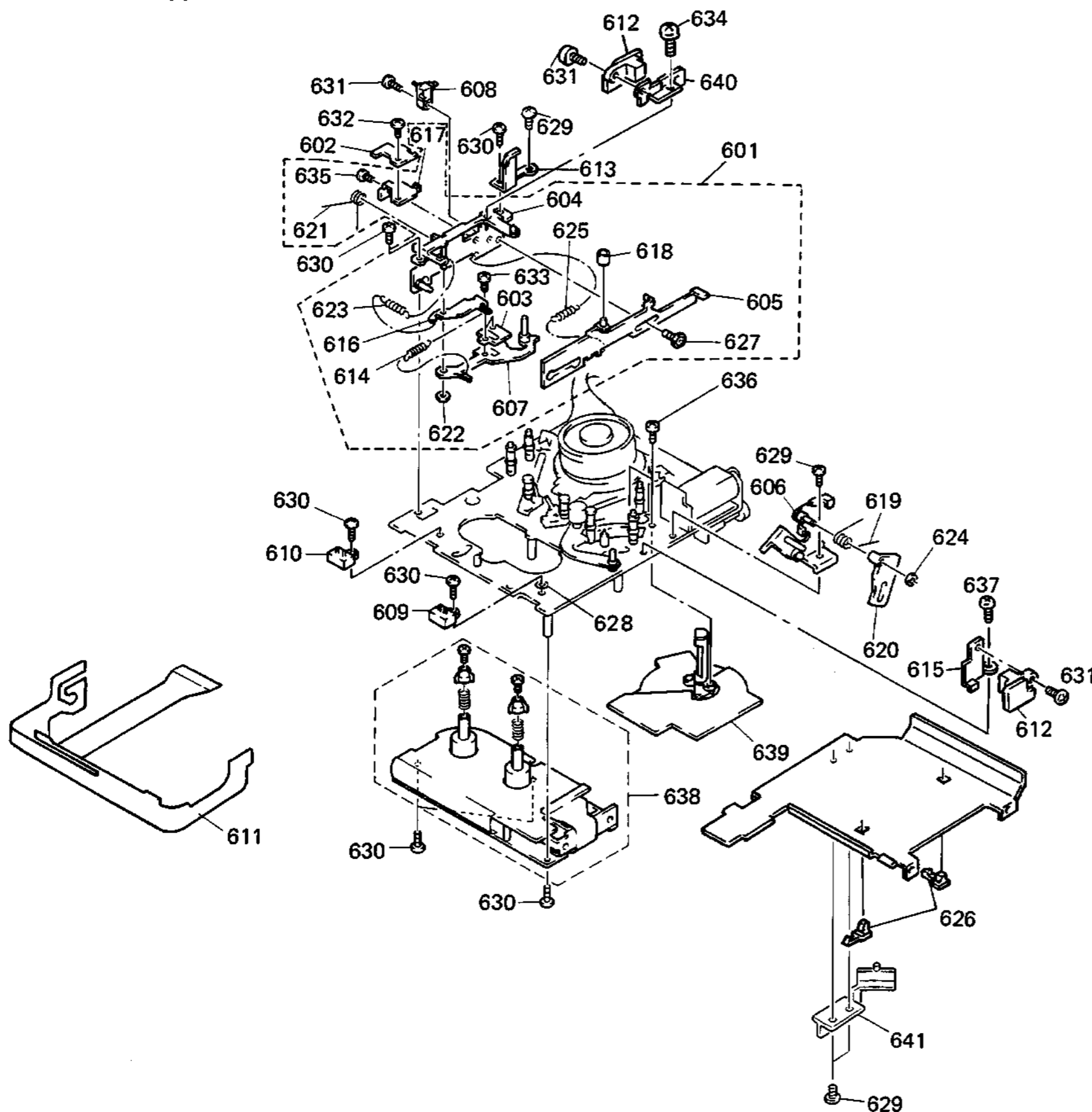
Index

No.	Parts No.	SP Description
501	X-3346-903-1	o SLIDER (EJ) ASSY
502	X-3346-904-1	o LEVER (EJ) ASSY
503	X-3346-905-1	o BRACKET (RODER) ASSY
504	X-3346-906-1	o LEVER (X) ASSY
505	X-3346-913-1	o HOLDER ASSY, CASSETTE
506	X-3346-916-2	o LEVER (LOCK) ASSY
507	1-161-055-00	s CAP, CERAMIC 0.022 20% 25V
508	X-3165-836-1	s MOTOR ASSY
509	1-570-771-11	s SWITCH
510	3-305-523-00	s SPRING, TENSION
511	3-321-813-01	s WASHER, COTTER POLYETHYLENE
512	3-346-912-01	o LIMITER (RACK)
513	3-346-915-01	s SPRING (LOCK)
514	3-346-918-11	s WHEEL, WORM
515	3-346-936-01	s ROLLER
516	3-346-949-01	s RACK
517	3-346-950-01	o PLATE, CAM
518	3-346-955-01	s RODER (SUB)
519	3-346-962-01	o CUSHION (EJ)
520	3-346-963-01	s SPRING, TENSION
521	3-346-964-01	s SPRING, TENSION
522	3-346-965-01	s SPRING, TENSION
523	1-946-957-11	o HARNESS (OCP)
524	3-570-892-00	s SPRING, TENSION
525	4-877-850-00	s SPRING, TENSION
526	7-621-255-15	s SCREW +P 2x3
527	7-621-772-08	s SCREW +B 2x3
528	7-621-772-20	s SCREW +B 2x5
529	7-624-102-04	s STOP RING 1.5, TYPE-E
530	7-627-554-07	s SCREW, PRECISION +P 2x2.2
531	7-627-554-27	s SCREW, PRECISION +P 2x6
532	1-640-230-11	s PC BOARD, MTR

注 意: この頁の部品は、A-7806-080-Cの構成部品です。

NOTE: The parts on this page are component parts of A-7806-080-C.

MECHANISM DECK(1)



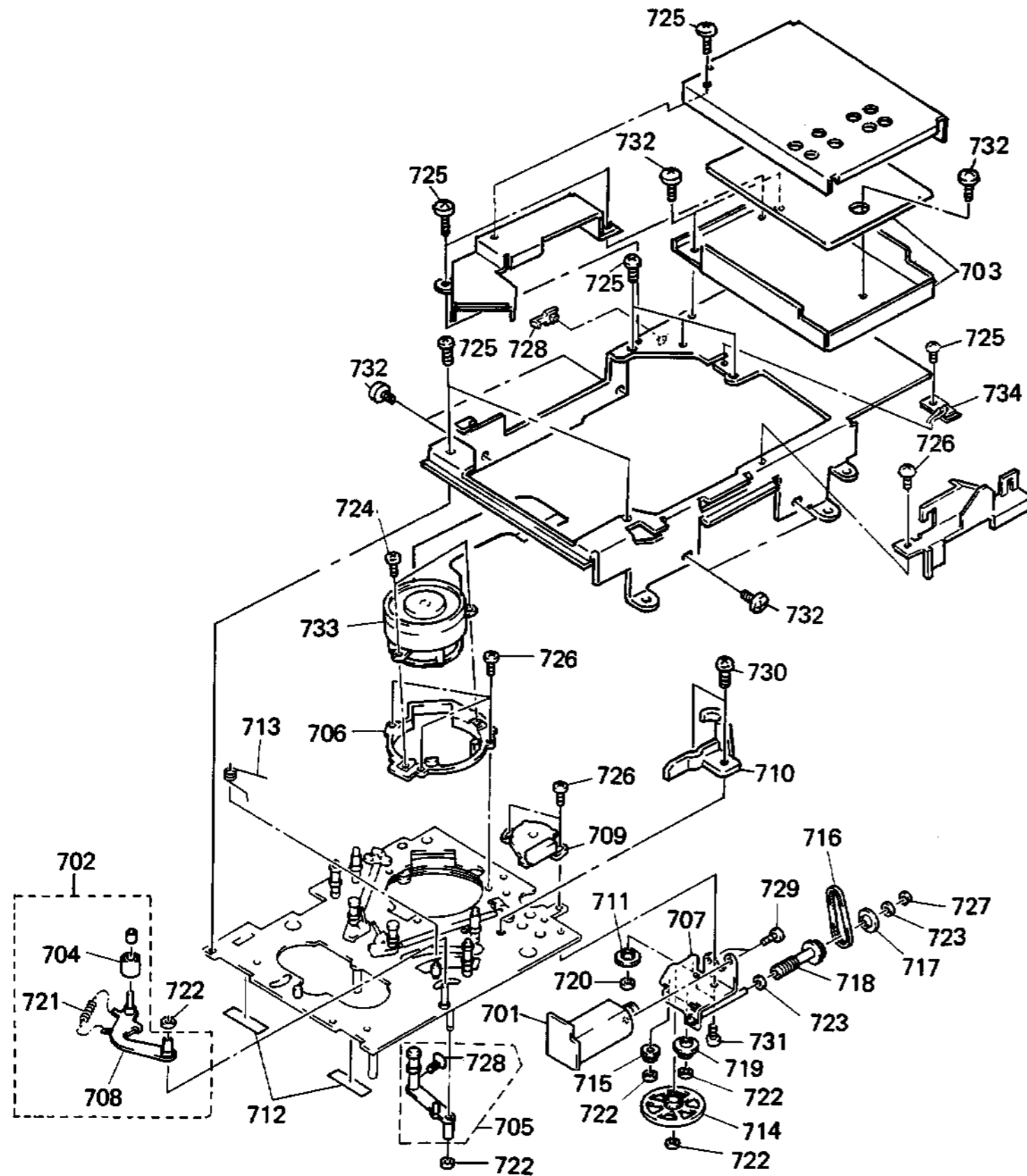
Index

No.	Parts No.	SP	Description
601	A-7810-486-A	s	TENSION REGULATOR ASSY
602	A-7850-780-A	o	MOUNTED PCB, TENSION REGULATOR
603	X-3337-611-1	s	HOLDER ASSY, MAGNET
604	X-3337-619-1	o	CHASSIS ASSY, TENSION REGULATOR
605	X-3337-627-1	s	SLIDER ASSY, MODE
606	X-3362-707-1	o	OPENER (R) ASSY, LID
607	X-3362-045-1	s	LEVER(TENSION REGULATOR) ASSY
608	1-570-771-11	s	SWITCH
609	1-570-883-11	s	SWITCH, PUSH (2 KEY)
610	1-570-883-21	s	SWITCH, PUSH (2 KEY)
611	1-637-288-11	s	PC BOARD, HN-151 FLEXIBLE
612	1-807-698-11	s	PHOTO SENSOR
613	3-167-379-01	o	OPENER (L), LID
614	3-307-377-00	s	SPRING, TENSION
615	3-337-610-01	o	BRACKET(RIGHT), E DETECTION
616	3-337-657-01	o	LEVER, LIMITER
617	3-337-662-01	o	BRACKET, HOLE ELEMENT
618	3-337-664-01	s	ROLLER
619	3-346-911-01	s	SPRING (LO)
620	3-346-954-01	s	LEVER (LO DRIVING)
621	3-352-502-01	s	SPRING
622	3-559-408-11	s	WASHER, POLYETHYLENE, DIA.1.2
623	3-561-626-00	s	SPRING, TENSION
624	3-570-615-00	s	POLY-WASHER
625	3-570-892-00	s	SPRING, TENSION
626	3-671-150-01	o	CLAMP
627	3-703-502-11	s	SCREW
628	4-918-886-01	s	WASHER, THRUST
629	7-621-772-08	s	SCREW +B 2x3
630	7-621-772-18	s	SCREW +B 2x4
631	7-621-772-20	s	SCREW +B 2x5
632	7-627-551-17	s	SCREW, PRECISION +P 1.4x2
633	7-627-551-87	s	SCREW, PRECISION +P 1.4x1.8
634	7-627-552-18	s	SCREW, PRECISION +B 1.7x1.6
635	7-627-552-27	s	SCREW, PRECISION +B 1.7x2
636	7-627-552-47	s	SCREW, PRECISION +P 1.7x4
637	7-627-854-07	s	SCREW, PRECISION +P 2x2.5
638	8-835-205-01	s	MOTOR, DC U-2A
639	8-835-206-01	s	MOTOR, DC BHF-2803A
640	3-166-932-01	o	BRACKET(L), E DETECTION
641	3-171-908-01	o	GUARD, FLEXIBLE

注意: (606)、(619)、(620)、(624)を除くすべての部品は、A-7806-080-Cの構成部品です。

NOTE: Except for (606), (619), (620) and (624) all the parts are component parts of A-7806-080-C.

MECHANISM DECK(2)



E-21

Index

No.	Parts No.	SP	Description
701	X-3337-648-1	s	MOTOR ASSY, CONTROL
702	A-7810-488-A	s	PINCH ROLLER BLOCK ASSY
703	A-7810-495-A	o	RF-31 ASSY
704	X-3337-610-1	s	PINCH ROLLER ASSY
705	A-7810-553-B	s	ARM ASSY, F
706	X-3337-614-1	o	SLANT ASSY
707	X-3337-617-1	o	BRACKET ASSY, CONTROL MOTOR
708	X-3337-660-1	s	ARM (PINCH ROLLER) ASSY
709	1-464-724-11	s	ENCODER, ROTARY
710	3-168-976-01	s	GUARD, TAPE
711	3-337-669-01	s	GEAR, MIDWAY
712	3-337-696-01	o	SHEET, INSULATING
713	3-345-046-01	o	SPRING
714	3-345-181-01	s	GEAR (LOADING A)
715	3-345-182-01	s	GEAR (LOADING B)
716	3-346-908-01	s	BELT
717	3-346-909-01	s	COLLAR (WORM)
718	3-346-910-01	s	PULLEY (WORM)
719	3-352-501-01	s	WHEEL, WORM
720	3-559-408-11	s	WASHER, POLYETHYLENE, DIA.1.2
721	3-547-659-00	s	SPRING, TENSION
722	3-701-436-11	s	WASHER, 1.6 POLYETHYLENE
723	3-701-437-21	s	WASHER
724	7-621-255-25	s	SCREW +P 2x4
725	7-621-772-08	s	SCREW +B 2x3
726	7-621-772-18	s	SCREW +B 2x4
727	7-624-102-04	s	STOP RING 1.5, TYPE -E
728	3-671-150-11	o	CLAMP
729	7-627-553-17	s	SCREW, PRECISION +P 2x2
730	7-627-852-18	s	SCREW, PRECISION +P 1.7x4
731	7-628-253-00	s	SCREW +PS 2x4
732	7-682-547-04	s	SCREW +B 3x6
733	8-848-548-11	s	DRUM ASSY DOH-14A-R
734	1-808-281-52	s	SENSOR

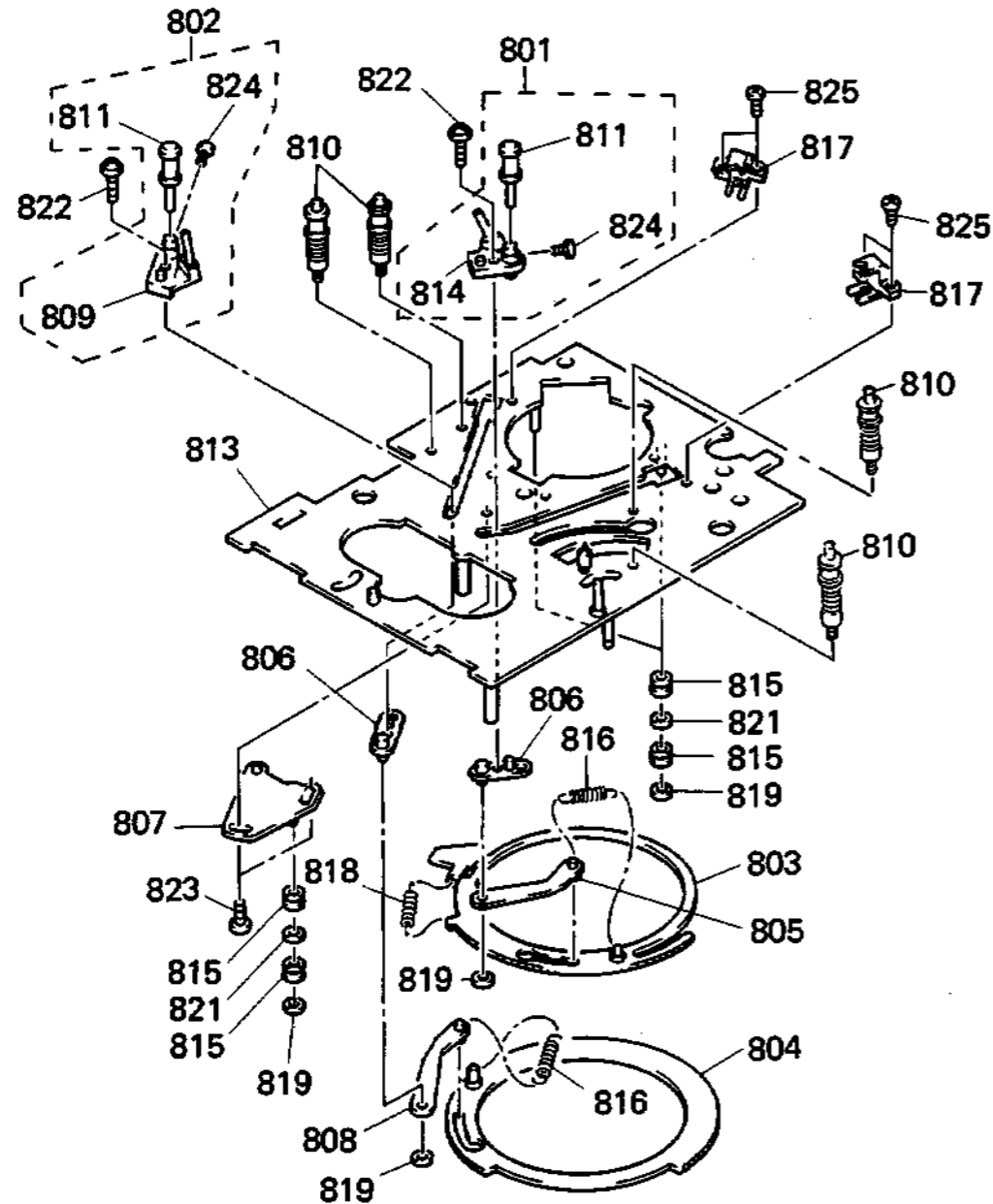
注 意: この頁の部品は、A-7806-080-Cの構成部品です。

NOTE: The parts on this page are component parts of A-7806-080-C.

E-22

PCM-7030 (J,UC,EK)

MECHANISM DECK(3)



Index

No.	Parts No.	SP	Description
801	A-7810-492-C	s	GUIDE (R) ASSY
802	A-7810-493-C	s	GUIDE (L) ASSY
803	X-3337-601-1	s	RING (RIGHT) ASSY, LOADING
804	X-3337-602-1	s	RING (LEFT) ASSY, LOADING
805	X-3337-603-1	s	ARM (RIGHT) ASSY, LOADING
806	X-3337-604-1	s	PLATE ASSY, LOADING
807	X-3337-605-1	o	ARM ASSY, RING ROLLER
808	X-3337-607-1	o	ARM (LEFT) ASSY, LOADING
809	X-3337-615-1	s	SLANT BLOCK (LEFT) ASSY
810	A-7810-552-B	s	AP R.G ASSY
811	X-3362-671-1	s	GUIDE ASSY, ROLLER
813	X-3337-625-1	o	CHASSIS ASSY, MECHANICAL
814	X-3337-647-1	s	SLANT BLOCK (RIGHT) ASSY
815	3-337-622-01	s	ROLLER, RING
816	3-337-653-01	s	SPRING, TENSION
817	3-337-685-01	o	CATCHER
818	3-547-659-00	s	SPRING, TENSION
819	3-559-408-11	s	WASHER, POLYETHYLENE, DIA.1.2
821	3-701-436-11	s	WASHER, 1.6 POLYETHYLENE
822	3-703-502-81	s	SCREW
823	7-621-772-08	s	SCREW +B 2x3
824	7-627-551-17	s	SCREW, PRECISION +P 1.4x2
825	7-627-552-47	s	SCREW, PRECISION +P 1.7x4

注 意: この頁の部品は、A-7806-080-Cの構成部品です。

NOTE: The parts on this page are component parts of A-7806-080-C.

E-3. ELECTRICAL PARTS LIST

STANDARDIZED PARTS LIST

Replacements for capacitors and resistors not given in each board parts lists are shown below. If a capacitor with the desired working voltage is not found, choose one of higher working voltage.

CAPACITOR, CHIP CERAMIC

Part No.	SP Description			
1-163-093-00	s CAP, CHIP CERAMIC	10pF	5%	50V
1-163-101-00	s CAP, CHIP CERAMIC	22pF	5%	50V
1-163-105-00	s CAP, CHIP CERAMIC	33pF	5%	50V
1-163-109-00	s CAP, CHIP CERAMIC	47pF	5%	50V
1-163-117-00	s CAP, CHIP CERAMIC	100pF	5%	50V
1-163-133-00	s CAP, CHIP CERAMIC	470pF	5%	50V
1-163-141-00	s CAP, CHIP CERAMIC	1000pF	5%	50V
1-163-019-00	s CAP, CHIP CERAMIC	6800pF	10%	50V
1-162-970-11	s CAP, CHIP CERAMIC	0.01	10%	20V
1-163-038-00	s CAP, CHIP CERAMIC	0.1		50V

CAPACITOR, ELECTROLYTIC

Part No.	SP Description			
1-123-382-00	s CAP, ELECT	3.3	20%	100V
1-126-059-11	s CAP, ELECT	10	20%	63V
1-124-229-00	s CAP, ELECT	33	20%	10V
1-124-910-11	s CAP, ELECT	47	20%	50V
1-124-584-00	s CAP, ELECT	100	20%	10V
1-126-101-11	s CAP, ELECT	100	20%	16V
1-124-122-11	s CAP, ELECT	100	20%	50V
1-126-335-11	s CAP, ELECT	220	20%	10V
1-124-120-11	s CAP, ELECT	220	20%	25V

RESISTOR, CHIP

Part No.	SP Description			
1-216-295-00	s RES, CHIP	0	5%	1/10W
1-216-001-00	s RES, CHIP	10	5%	1/10W
1-216-009-00	s RES, CHIP	22	5%	1/10W
1-216-017-00	s RES, CHIP	47	5%	1/10W
1-216-021-00	s RES, CHIP	68	5%	1/10W
1-216-025-00	s RES, CHIP	100	5%	1/10W
1-216-029-00	s RES, CHIP	150	5%	1/10W
1-216-031-00	s RES, CHIP	180	5%	1/10W
1-216-033-00	s RES, CHIP	220	5%	1/10W
1-216-037-00	s RES, CHIP	330	5%	1/10W
1-216-041-00	s RES, CHIP	470	5%	1/10W
1-216-045-00	s RES, CHIP	680	5%	1/10W
1-216-049-00	s RES, CHIP	1k	5%	1/10W
1-216-051-00	s RES, CHIP	1.2k	5%	1/10W
1-216-055-00	s RES, CHIP	1.8k	5%	1/10W
1-216-057-00	s RES, CHIP	2.2k	5%	1/10W
1-216-059-00	s RES, CHIP	2.7k	5%	1/10W
1-216-061-00	s RES, CHIP	3.3k	5%	1/10W
1-216-063-00	s RES, CHIP	3.9k	5%	1/10W
1-216-065-00	s RES, CHIP	4.7k	5%	1/10W
1-216-069-00	s RES, CHIP	6.8k	5%	1/10W
1-216-073-00	s RES, CHIP	10k	5%	1/10W
1-216-077-00	s RES, CHIP	15k	5%	1/10W
1-216-081-00	s RES, CHIP	22k	5%	1/10W
1-216-083-00	s RES, CHIP	27k	5%	1/10W
1-216-085-00	s RES, CHIP	33k	5%	1/10W
1-216-089-00	s RES, CHIP	47k	5%	1/10W
1-216-097-00	s RES, CHIP	100k	5%	1/10W
1-216-099-00	s RES, CHIP	120k	5%	1/10W
1-216-101-00	s RES, CHIP	150k	5%	1/10W
1-216-109-00	s RES, CHIP	330k	5%	1/10W
1-216-121-00	s RES, CHIP	1.0M	5%	1/10W
1-216-133-00	s RES, CHIP	3.3M	5%	1/10W

AC-104 BOARD

Ref. No. or Q'ty	Part No.	SP Description
2pcs	1-533-189-11	o HOLDER, FUSE
1pc	1-637-275-11	o PC BOARD, AC-104
CN1	△1-564-104-11	o PIN, CONNECTOR 3P
CN2	△1-564-241-00	o CONNECTOR, 4P, MALE
CN3	△1-564-242-00	o PIN, CONNECTOR 5P
CN4	△1-564-915-11	o PIN, CONNECTOR 7P
CN5	△1-564-905-11	o PIN, CONNECTOR 9P
CN6	△1-564-243-00	o PIN, CONNECTOR 6P

ADA-18 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7850-803-B	o COMPLETE PCB, ADA-18 (This assembly includes the following parts.)
C1	1-164-096-11	s CERAMIC 0.01uF 50V
C2	1-164-096-11	s CERAMIC 0.01uF 50V
C3	1-164-096-11	s CERAMIC 0.01uF 50V
C4	1-164-096-11	s CERAMIC 0.01uF 50V
C9	1-123-345-00	s ELECT 100uF 20% 35WV
C12	1-164-096-11	s CERAMIC 0.01uF 50V
C13	1-164-096-11	s CERAMIC 0.01uF 50V
C14	1-164-096-11	s CERAMIC 0.01uF 50V
C15	1-164-096-11	s CERAMIC 0.01uF 50V
C16	1-164-096-11	s CERAMIC 0.01uF 50V
C17	1-164-096-11	s CERAMIC 0.01uF 50V
C18	1-164-096-11	s CERAMIC 0.01uF 50V
C19	1-126-335-11	s ELECT 220uF 20% 10VW
C20	1-126-335-11	s ELECT 220uF 20% 10VW
C21	1-164-096-11	s CERAMIC 0.01uF 50V
C22	1-164-096-11	s CERAMIC 0.01uF 50V
C23	1-126-096-11	s ELECT 10uF 20% 35V
C24	1-126-059-11	s ELECT 10uF 20% 50VW
C25	1-162-896-11	s CERAMIC 0.01uF 10% 50V
C26	1-126-059-11	s ELECT 10uF 20% 50VW
C27	1-162-896-11	s CERAMIC 0.01uF 10% 50V
C28	1-124-261-00	s ELECT 10uF 20% 50V
C29	1-164-096-11	s CERAMIC 0.01uF 50V
C30	1-164-096-11	s CERAMIC 0.01uF 50V
C31	1-126-059-11	s ELECT 10uF 20% 50VW
C32	1-162-896-11	s CERAMIC 0.01uF 10% 50V
C33	1-164-096-11	s CERAMIC 0.01uF 50V
C35	1-164-096-11	s CERAMIC 0.01uF 50V
C37	1-164-096-11	s CERAMIC 0.01uF 50V
C38	1-164-096-11	s CERAMIC 0.01uF 50V
C39	1-164-096-11	s CERAMIC 0.01uF 50V
C40	1-164-096-11	s CERAMIC 0.01uF 50V
C41	1-164-096-11	s CERAMIC 0.01uF 50V
C101	1-124-657-00	s ELECT, NONPOLAR 10uF 20% 50V
C102	1-124-657-00	s ELECT, NONPOLAR 10uF 20% 50V
C103	1-124-657-00	s ELECT, NONPOLAR 10uF 20% 50V
C105	1-164-096-11	s CERAMIC 0.01uF 50V
C107	1-164-096-11	s CERAMIC 0.01uF 50V
C108	1-130-856-00	s FILM 0.0068uF 3% 100W
C109	1-162-716-11	s CERAMIC 180PF 1% 50V
C110	1-126-529-11	s ELECT 0.47uF 20% 50VW
C111	1-164-127-11	s CERAMIC 510PF 5% 50V
C112	1-164-077-11	s CERAMIC 220PF 10% 50V
C113	1-164-096-11	s CERAMIC 0.01uF 50V
C114	1-164-096-11	s CERAMIC 0.01uF 50V
C115	1-124-499-11	s ELECT, NONPOLAR 1uF 20% 50V
C116	1-124-499-11	s ELECT, NONPOLAR 1uF 20% 50V
C117	1-164-073-11	s CERAMIC 100PF 10% 50V
C118	1-124-282-00	s ELECT, NONPOLAR 22uF 20% 25V
C120	1-164-096-11	s CERAMIC 0.01uF 50V
C121	1-164-096-11	s CERAMIC 0.01uF 50V
50V		
C202	1-124-657-00	s ELECT, NONPOLAR 10uF 20% 50V
C203	1-124-657-00	s ELECT, NONPOLAR 10uF 20% 50V

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

(ADA-18 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
C205	1-164-096-11	s CERAMIC 0.01uF 50V
C207	1-164-096-11	s CERAMIC 0.01uF 50V
C208	1-130-856-00	s FILM 0.0068uF 3% 100W
C209	1-162-716-11	s CERAMIC 180PF 1% 50V
C210	1-126-529-11	s ELECT 0.47uF 20% 50VW
C211	1-164-127-11	s CERAMIC 510PF 5% 50V
C212	1-164-077-11	s CERAMIC 220PF 10% 50V
C213	1-164-096-11	s CERAMIC 0.01uF 50V
C214	1-164-096-11	s CERAMIC 0.01uF 50V
C215	1-124-499-11	s ELECT, NONPOLAR 1uF 20% 50V
C216	1-124-499-11	s ELECT, NONPOLAR 1uF 2
C217	1-164-073-11	s CERAMIC 100PF 10% 50V
C218	1-124-282-00	s ELECT, NONPOLAR 22uF 20% 25V
C220	1-164-096-11	s CERAMIC 0.01uF 50V
C221	1-164-096-11	s CERAMIC 0.01uF 50V
C301	1-164-081-11	s CERAMIC 470PF 10% 50VW
C302	1-126-162-11	s ELECT 3.3uF 20% 50V
C303	1-126-162-11	s ELECT 3.3uF 20% 50V
C306	1-136-230-00	s FILM 0.0022uF 5% 100W
C307	1-136-230-00	s FILM 0.0022uF 5% 100W
C308	1-106-351-00	s MYLAR 0.0022 5% 200V
C309	1-164-096-11	s CERAMIC 0.01uF 50V
C310	1-164-096-11	s CERAMIC 0.01uF 50V
C311	1-164-073-11	s CERAMIC 100PF 10% 50V
C312	1-124-657-00	s ELECT, NONPOLAR 10uF 20% 50V
C313	1-130-856-00	s MYLAR 0.0068uF 3% 100V
C314	1-162-716-11	s CERAMIC 180PF 1% 50V
C315	1-126-529-11	s ELECT 0.47uF 20% 50VW
C316	1-164-073-11	s CERAMIC 100PF 10% 50V
C317	1-124-657-00	s ELECT, NONPOLAR 10uF 20% 50V
C318	1-164-096-11	s CERAMIC 0.01uF 50V
C319	1-164-096-11	s CERAMIC 0.01uF 50V
C320	1-164-096-11	s CERAMIC 0.01uF 50V
C321	1-164-096-11	s CERAMIC 0.01uF 50V
C323	1-164-066-11	s CERAMIC 68PF 5% 50VW
C324	1-164-066-11	s CERAMIC 68PF 5% 50VW
C327	1-130-471-00	s MYLAR 0.001uF 5% 50V
C328	1-123-335-00	s ELECT 330uF 20% 25VW
C329	1-123-335-00	s ELECT 330uF 20% 25VW
C330	1-164-096-11	s CERAMIC 0.01uF 50V
C331	1-164-096-11	s CERAMIC 0.01uF 50V
C334	1-164-096-11	s CERAMIC 0.01uF 50V
C335	1-124-657-00	s ELECT 10uF 20% 50V
C336	1-164-075-11	s CERAMIC 150PF 10% 50VW
C337	1-124-657-00	s ELECT, NONPOLAR 10uF 20% 50V
C338	1-164-096-11	s CERAMIC 0.01uF 50V
C340	1-164-096-11	s CERAMIC 0.01uF 50V
C401	1-164-081-11	s CERAMIC 470PF 10% 50VW
C402	1-126-162-11	s ELECT 3.3uF 20% 50V
C403	1-126-162-11	s ELECT 3.3uF 20% 50V
C406	1-136-230-00	s FILM 0.0022uF 5% 100W
C407	1-136-230-00	s FILM 0.0022uF 5% 100W
C408	1-106-351-00	s MYLAR 0.0022 5% 200V
C409	1-164-096-11	s CERAMIC 0.01uF 50V
C410	1-164-096-11	s CERAMIC 0.01uF 50V
C411	1-164-073-11	s CERAMIC 100PF 10% 50V
C412	1-124-657-00	s ELECT, NONPOLAR 10uF 20% 50V
C413	1-130-856-00	s FILM 0.0068uF 3% 100W
C414	1-162-716-11	s CERAMIC 180PF 1% 50V

(ADA-18 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
C415	1-126-529-11	s ELECT 0.47uF 20% 50VW
C416	1-164-073-11	s CERAMIC 100PF 10% 50V
C417	1-124-657-00	s ELECT, NONPOLAR 10uF 20% 50V
C418	1-164-096-11	s CERAMIC 0.01uF 50V
C419	1-164-096-11	s CERAMIC 0.01uF 50V
C420	1-164-096-11	s CERAMIC 0.01uF 50V
C421	1-164-096-11	s CERAMIC 0.01uF 50V
C423	1-164-066-11	s CERAMIC 68PF 5% 50VW
C424	1-164-066-11	s CERAMIC 68PF 5% 50VW
C427	1-130-471-00	s MYLAR 0.001uF 5% 50V
C428	1-123-335-00	s ELECT 330uF 20% 25VW
C429	1-123-335-00	s ELECT 330uF 20% 25VW
C430	1-164-096-11	s CERAMIC 0.01uF 50V
C431	1-164-096-11	s CERAMIC 0.01uF 50V
C434	1-164-096-11	s CERAMIC 0.01uF 50V
C435	1-124-657-00	s ELECT 10uF 20% 50V
C436	1-164-075-11	s CERAMIC 150PF 10% 50VW
C437	1-124-657-00	s ELECT, NONPOLAR 10uF 20% 50V
C438	1-164-096-11	s CERAMIC 0.01uF 50V
C440	1-164-096-11	s CERAMIC 0.01uF 50V
C501	1-164-073-11	s CERAMIC 100PF 5% 50V
C502	1-164-076-11	s CERAMIC 180PF 10% 50V
C503	1-164-073-11	s CERAMIC 100PF 10% 50V
C504	1-162-901-11	s CERAMIC 0.1 10% 50V
CN1	1-506-468-11	s CONNECTOR, 3P, MALE
CN2	1-506-470-11	s CONNECTOR, 5P, MALE
CN3	1-506-468-11	s CONNECTOR, 3P, MALE
CN4	1-506-470-11	s CONNECTOR, 5P, MALE
CN5	1-506-468-11	s CONNECTOR, 3P, MALE
CN6	1-564-705-11	o PIN HEADER, STRAIGHT 3P
CN7	1-506-468-11	s CONNECTOR, 3P, MALE
CN8	1-564-705-11	o PIN HEADER, STRAIGHT 3P
CN9	1-506-469-11	s CONNECTOR, 4P, MALE
CN10	1-506-475-11	s CONNECTOR, 10P, MALE
CN11	1-564-705-11	o PIN HEADER, STRAIGHT 3P
CN12	1-564-708-11	o PIN HEADER, STRAIGHT 6P
CN13	1-506-478-11	s CONNECTOR, 13P, MALE
D1	8-719-911-19	s DIODE 1SS119
D2	8-719-911-19	s DIODE 1SS119
D3	8-719-200-02	s DIODE 10E2
D4	8-719-911-19	s DIODE 1SS119
D5	8-719-911-19	s DIODE 1SS119
D8	8-719-911-19	s DIODE 1SS119
D9	8-719-911-19	s DIODE 1SS119
D10	8-719-911-19	s DIODE 1SS119
D11	8-719-200-02	s DIODE 10E2
D12	8-719-200-02	s DIODE 10E2
D13	8-719-200-02	s DIODE 10E2
D14	8-719-200-02	s DIODE 10E2
D101	8-719-911-19	s DIODE 1SS119
D102	8-719-911-19	s DIODE 1SS119
D103	8-719-911-19	s DIODE 1SS119
D104	8-719-911-19	s DIODE 1SS119
D105	8-719-911-19	s DIODE 1SS119
D106	8-719-911-19	s DIODE 1SS119
D107	8-719-911-19	s DIODE 1SS119
D108	8-719-911-19	s DIODE 1SS119
D109	8-719-911-19	s DIODE 1SS119

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

(ADA-18 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
D201	8-719-911-19	s DIODE 1SS119
D202	8-719-911-19	s DIODE 1SS119
D203	8-719-911-19	s DIODE 1SS119
D204	8-719-911-19	s DIODE 1SS119
D205	8-719-911-19	s DIODE 1SS119
D206	8-719-911-19	s DIODE 1SS119
D207	8-719-911-19	s DIODE 1SS119
D208	8-719-911-19	s DIODE 1SS119
D209	8-719-911-19	s DIODE 1SS119
D301	8-719-911-19	s DIODE 1SS119
D401	8-719-911-19	s DIODE 1SS119
FB1	1-412-694-11	s INDUCTOR, BEED
FB2	1-412-694-11	s INDUCTOR, BEED
FB3	1-412-694-11	s INDUCTOR, BEED
FB4	1-412-694-11	s INDUCTOR, BEED
FB5	1-412-694-11	s INDUCTOR, BEED
FB6	1-412-694-11	s INDUCTOR, BEED
IC1	8-759-999-09	s IC CS5326-KP
IC2	8-759-996-75	s IC SM5813APS
IC3	8-759-982-05	s IC RC7805FA
IC4	8-759-982-38	s IC RC7905FA
IC5	8-759-916-14	s IC SN74HC04AN
IC6	8-759-916-14	s IC SN74HC04AN
IC7	8-759-921-19	s IC SN74HC161AN
IC8	8-759-916-29	s IC SN74HC74AN
IC9	8-759-981-89	s IC RC4556S
IC10	8-759-981-89	s IC RC4556S
IC11	8-759-916-12	s IC SN74HC00AN
IC12	8-759-916-29	s IC SN74HC74AN
IC13	8-759-916-29	s IC SN74HC74AN
IC101	8-759-900-72	s IC NE5532P
IC102	8-759-900-72	s IC NE5532P
IC103	8-759-900-72	s IC NE5532P
IC201	8-759-900-72	s IC NE5532P
IC202	8-759-900-72	s IC NE5532P
IC203	8-759-900-72	s IC NE5532P
IC301	8-759-998-66	s IC PCM61P-S
IC302	8-759-900-72	s IC NE5532P
IC303	8-759-900-72	s IC NE5532P
IC304	8-759-602-18	s IC M5219L
IC305	8-759-602-18	s IC M5219L
IC401	8-759-998-66	s IC PCM61P-S
IC402	8-759-900-72	s IC NE5532P
IC403	8-759-900-72	s IC NE5532P
IC404	8-759-602-18	s IC M5219L
IC405	8-759-602-18	s IC M5219L
L1	1-412-533-11	s COIL 47uH
L2	1-412-533-11	s COIL 47uH
L3	1-412-533-11	s COIL 47uH
L4	1-412-533-11	s COIL 47uH
L5	1-412-533-11	s COIL 47uH
L6	1-412-533-11	s COIL 47uH
Q1	8-729-900-36	s TRANSISTOR DTC124ES
Q2	8-729-900-63	s TRANSISTOR DTA124ES
Q3	8-729-900-63	s TRANSISTOR DTA124ES
Q4	8-729-900-36	s TRANSISTOR DTC124ES
Q5	8-729-900-63	s TRANSISTOR DTA124ES

(ADA-18 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
Q6	8-729-900-36	s TRANSISTOR DTC124ES
Q7	8-729-900-36	s TRANSISTOR DTC124ES
Q8	8-729-900-63	s TRANSISTOR DTA124ES
Q9	8-729-900-63	s TRANSISTOR DTA124ES
Q10	8-729-140-98	s TRANSISTOR 2SD773-34
Q11	8-729-140-98	s TRANSISTOR 2SD773-34
Q101	8-729-230-86	s TRANSISTOR 2SK170-GRBLV
Q102	8-729-230-86	s TRANSISTOR 2SK170-GRBLV
Q103	8-729-230-86	s TRANSISTOR 2SK170-GRBLV
Q201	8-729-230-86	s TRANSISTOR 2SK170-GRBLV
Q202	8-729-230-86	s TRANSISTOR 2SK170-GRBLV
Q203	8-729-230-86	s TRANSISTOR 2SK170-GRBLV
Q301	8-729-230-86	s TRANSISTOR 2SK170-GRBLV
Q302	8-729-141-58	s TRANSISTOR 2SC2275A-QP
Q303	8-729-230-45	s TRANSISTOR 2SC2458-YGR
Q304	8-729-141-10	s TRANSISTOR 2SA985A-QP
Q305	8-729-141-58	s TRANSISTOR 2SC2275A-QP
Q306	8-729-230-45	s TRANSISTOR 2SC2458-YGR
Q307	8-729-141-10	s TRANSISTOR 2SA985A-QP
Q401	8-729-230-86	s TRANSISTOR 2SK170-GRBLV
Q402	8-729-141-58	s TRANSISTOR 2SC2275A-QP
Q403	8-729-230-45	s TRANSISTOR 2SC2458-YGR
Q404	8-729-141-10	s TRANSISTOR 2SA985A-QP
Q405	8-729-141-58	s TRANSISTOR 2SC2275A-QP
Q406	8-729-230-45	s TRANSISTOR 2SC2458-YGR
Q407	8-729-141-10	s TRANSISTOR 2SA985A-QP
R1	1-212-849-00	s FUSIBLE 4.7 5% 1/4W
R2	1-212-849-00	s FUSIBLE 4.7 5% 1/4W
R3	1-249-437-11	s CARBON 47K 5% 1/4W
R4	1-249-429-11	s CARBON 10K 5% 1/4W
R5	1-249-437-11	s CARBON 47K 5% 1/4W
R6	1-249-437-11	s CARBON 47K 5% 1/4W
R7	1-249-437-11	s CARBON 47K 5% 1/4W
R8	1-249-429-11	s CARBON 10K 5% 1/4W
R9	1-249-405-11	s CARBON 100 5% 1/4W
R10	1-215-449-00	s METAL 15K 1% 1/4W
R11	1-249-393-11	s CARBON 10 5% 1/4W
R12	1-249-397-11	s CARBON 22 5% 1/4W
R13	1-249-437-11	s CARBON 47K 5% 1/4W
R14	1-249-397-11	s CARBON 22 5% 1/4W
R18	1-249-421-11	s CARBON 2.2K 5% 1/4W
R20	1-249-437-11	s CARBON 47K 5% 1/4W
R21	1-249-429-11	s CARBON 10K 5% 1/4W
R22	1-249-429-11	s CARBON 10K 5% 1/4W
R23	1-249-421-11	s CARBON 2.2K 5% 1/4W
R24	1-249-429-11	s CARBON 10K 5% 1/4W
R25	1-249-421-11	s CARBON 2.2K 5% 1/4W
R26	1-249-429-11	s CARBON 10K 5% 1/4W
R101	1-215-471-00	s METAL 120K 1% 1/4W
R102	1-215-471-00	s METAL 120K 1% 1/4W
R103	1-215-437-00	s METAL 4.7K 1% 1/4W
R104	1-215-425-00	s METAL 1.5K 1% 1/4W
R105	1-215-437-00	s METAL 4.7K 1% 1/4W
R106	1-215-485-00	s METAL 470K 1% 1/4W
R107	1-215-485-00	s METAL 470K 1% 1/4W
R108	1-215-449-00	s METAL 15K 1% 1/4W
R109	1-215-453-00	s METAL 22K 1% 1/4W
R110	1-215-405-00	s METAL 220 1% 1/4W

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

(ADA-18 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R111	1-215-429-00	s METAL 2.2K 1X 1/4W
R112	1-215-405-00	s METAL 220 1X 1/4W
R113	1-215-429-00	s METAL 2.2K 1X 1/4W
R114	1-215-449-00	s METAL 15K 1X 1/4W
R115	1-215-453-00	s METAL 22K 1X 1/4W
R116	1-215-469-00	s METAL 100K 1X 1/4W
R117	1-215-421-00	s METAL 1K 1X 1/4W
R118	1-215-477-00	s METAL 220K 1X 1/4W
R119	1-215-421-00	s METAL 1K 1X 1/4W
R120	1-215-428-00	s METAL 2K 1X 1/4W
R121	1-215-445-00	s METAL 10K 1X 1/4W
R122	1-215-475-00	s METAL 180K 1X 1/4W
R123	1-215-445-00	s METAL 10K 1X 1/4W
R124	1-215-429-00	s METAL 2.2K 1X 1/4W
R125	1-215-467-00	s METAL 82K 1X 1/4W
R126	1-215-485-00	s METAL 470K 1X 1/4W
R127	1-249-417-11	s CARBON 1K 5X 1/4W
R128	1-249-441-11	s CARBON 100K 5X 1/4W
R129	1-215-469-00	s METAL 100K 1X 1/4W
R130	1-215-445-00	s METAL 10K 1X 1/4W
R131	1-215-445-00	s METAL 10K 1X 1/4W
R132	1-215-469-00	s METAL 100K 1X 1/4W
R133	1-249-435-11	s CARBON 33K 5X 1/4W
R134	1-249-417-11	s CARBON 1K 5X 1/4W
R135	1-249-441-11	s CARBON 100K 5X 1/4W
R136	1-249-441-11	s CARBON 100K 5X 1/4W
R137	1-215-421-00	s METAL 1K 1X 1/4W
R138	1-215-421-00	s METAL 1K 1X 1/4W
R139	1-215-469-00	s METAL 100K 1X 1/4W
R140	1-215-493-00	s METAL 1M 1X 1/4W
R141	1-215-469-00	s METAL 100K 1X 1/4W
R142	1-215-469-00	s METAL 100K 1X 1/4W
R143	1-215-453-00	s METAL 22K 1X 1/4W
R144	1-215-453-00	s METAL 22K 1X 1/4W
R145	1-215-390-00	s METAL 51 1X 1/4W
R146	1-215-390-00	s METAL 51 1X 1/4W
R147	1-215-493-00	s METAL 1M 1X 1/4W
R201	1-215-471-00	s METAL 120K 1X 1/4W
R202	1-215-471-00	s METAL 120K 1X 1/4W
R203	1-215-437-00	s METAL 4.7K 1X 1/4W
R204	1-215-425-00	s METAL 1.5K 1X 1/4W
R205	1-215-437-00	s METAL 4.7K 1X 1/4W
R206	1-215-485-00	s METAL 470K 1X 1/4W
R207	1-215-485-00	s METAL 470K 1X 1/4W
R208	1-215-449-00	s METAL 15K 1X 1/4W
R209	1-215-453-00	s METAL 22K 1X 1/4W
R210	1-215-405-00	s METAL 220 1X 1/4W
R211	1-215-429-00	s METAL 2.2K 1X 1/4W
R212	1-215-405-00	s METAL 220 1X 1/4W
R213	1-215-429-00	s METAL 2.2K 1X 1/4W
R214	1-215-449-00	s METAL 15K 1X 1/4W
R215	1-215-453-00	s METAL 22K 1X 1/4W
R216	1-215-469-00	s METAL 100K 1X 1/4W
R217	1-215-421-00	s METAL 1K 1X 1/4W
R218	1-215-477-00	s METAL 220K 1X 1/4W
R219	1-215-421-00	s METAL 1K 1X 1/4W
R220	1-215-428-00	s METAL 2K 1X 1/4W
R221	1-215-445-00	s METAL 10K 1X 1/4W
R222	1-215-475-00	s METAL 180K 1X 1/4W

(ADA-18 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R223	1-215-445-00	s METAL 10K 1X 1/4W
R224	1-215-429-00	s METAL 2.2K 1X 1/4W
R225	1-215-467-00	s METAL 82K 1X 1/4W
R226	1-215-485-00	s METAL 470K 1X 1/6W
R227	1-249-417-11	s CARBON 1K 5X 1/4W
R228	1-249-441-11	s CARBON 100K 5X 1/4W
R229	1-215-469-00	s METAL 100K 1X 1/4W
R230	1-215-445-00	s METAL 10K 1X 1/4W
R231	1-215-445-00	s METAL 10K 1X 1/4W
R232	1-215-469-00	s METAL 100K 1X 1/4W
R233	1-249-435-11	s CARBON 33K 5X 1/4W
R234	1-249-417-11	s CARBON 1K 5X 1/4W
R235	1-249-441-11	s CARBON 100K 5X 1/4W
R236	1-249-441-11	s CARBON 100K 5X 1/4W
R237	1-215-421-00	s METAL 1K 1X 1/4W
R238	1-215-421-00	s METAL 1K 1X 1/4W
R239	1-215-469-00	s METAL 100K 1X 1/4W
R240	1-215-493-00	s METAL 1M 1X 1/4W
R241	1-215-469-00	s METAL 100K 1X 1/4W
R242	1-215-469-00	s METAL 100K 1X 1/4W
R243	1-215-453-00	s METAL 22K 1X 1/4W
R244	1-215-453-00	s METAL 22K 1X 1/4W
R245	1-215-390-00	s METAL 51 1X 1/4W
R246	1-215-390-00	s METAL 51 1X 1/4W
R247	1-215-493-00	s METAL 1M 1X 1/4W
R301	1-215-493-00	s METAL 1M 1X 1/4W
R302	1-215-485-00	s METAL 470K 1X 1/4W
R303	1-215-476-00	s METAL 200K 1X 1/4W
R304	1-215-429-00	s METAL 2.2K 1X 1/4W
R305	1-215-426-00	s METAL 1.6K 1X 1/4W
R306	1-215-426-00	s METAL 1.6K 1X 1/4W
R307	1-215-426-00	s METAL 1.6K 1X 1/4W
R308	1-215-445-00	s METAL 10K 1X 1/4W
R309	1-215-445-00	s METAL 10K 1X 1/4W
R310	1-215-469-00	s METAL 100K 1X 1/4W
R311	1-215-445-00	s METAL 10K 1X 1/4W
R312	1-215-445-00	s METAL 10K 1X 1/4W
R313	1-215-429-00	s METAL 2.2K 1X 1/4W
R314	1-215-467-00	s METAL 82K 1X 1/4W
R315	1-215-485-00	s METAL 470K 1X 1/4W
R316	1-249-417-11	s CARBON 1K 5X 1/4W
R317	1-249-441-11	s CARBON 100K 5X 1/4W
R318	1-215-445-00	s METAL 10K 1X 1/6W
R319	1-215-439-00	s METAL 5.6K 1X 1/6W
R320	1-215-469-00	s METAL 100K 1X 1/6W
R321	1-215-425-00	s METAL 1.5K 1X 1/6W
R322	1-215-469-00	s METAL 100K 1X 1/6W
R323	1-215-469-00	s METAL 100K 1X 1/6W
R324	1-215-445-00	s METAL 10K 1X 1/6W
R325	1-215-445-00	s METAL 10K 1X 1/6W
R326	1-215-444-00	s METAL 9.1K 1X 1/6W
R327	1-215-418-00	s METAL 750 1X 1/6W
R328	1-215-445-00	s METAL 10K 1X 1/6W
R329	1-215-445-00	s METAL 10K 1X 1/6W
R330	1-215-453-00	s METAL 22K 1X 1/6W
R331	1-215-425-00	s METAL 1.5K 1X 1/6W
R332	1-215-425-00	s METAL 1.5K 1X 1/6W
R333	1-215-453-00	s METAL 22K 1X 1/6W
R334	1-215-453-00	s METAL 22K 1X 1/6W

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

(ADA-18 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R335	1-215-425-00	s METAL 1.5K 1X 1/6W
R336	1-215-425-00	s METAL 1.5K 1X 1/6W
R337	1-215-453-00	s METAL 22K 1X 1/6W
R338	1-214-810-00	s METAL 5.6 1X 1/2W
R339	1-214-810-00	s METAL 5.6 1X 1/2W
R340	1-214-810-00	s METAL 5.6 1X 1/2W
R341	1-214-810-00	s METAL 5.6 1X 1/2W
R342	1-214-852-00	s METAL 330 1X 1/2W
R343	1-214-824-91	s METAL 22 1X 1/2W
R344	1-214-839-00	s METAL 91 1X 1/2W
R345	1-214-839-00	s METAL 91 1X 1/2W
R346	1-214-824-91	s METAL 22 1X 1/2W
R347	1-214-852-00	s METAL 330 1X 1/2W
R348	1-215-452-00	s METAL 20K 1X 1/6W
R349	1-215-421-00	s METAL 1K 1X 1/6W
R350	1-215-452-00	s METAL 20K 1X 1/6W
R351	1-215-421-00	s METAL 1K 1X 1/6W
R352	1-215-469-00	s METAL 100K 1X 1/6W
R353	1-215-416-00	s METAL 620 1X 1/6W
R354	1-215-438-00	s METAL 5.1K 1X 1/6W
R355	1-215-449-00	s METAL 15K 1X 1/6W
R356	1-215-445-00	s METAL 10K 1X 1/6W
R357	1-215-445-00	s METAL 10K 1X 1/6W
R358	1-215-469-00	s METAL 100K 1X 1/6W
R359	1-214-844-00	s METAL 150 1X 1/2W
R360	1-215-441-00	s METAL 6.8K 1X 1/6W
R361	1-215-485-00	s METAL 470K 1X 1/6W
R362	1-215-421-00	s METAL 1K 1X 1/6W
R363	1-215-423-00	s METAL 1.2K 1X 1/6W
R364	1-215-445-00	s METAL 10K 1X 1/6W
R365	1-215-469-00	s METAL 100K 1X 1/6W
R366	1-214-844-00	s METAL 150 1X 1/2W
R401	1-215-493-00	s METAL 1M 1X 1/6W
R402	1-215-485-00	s METAL 470K 1X 1/6W
R403	1-215-476-00	s METAL 200K 1X 1/6W
R404	1-215-429-00	s METAL 2.2K 1X 1/6W
R405	1-215-426-00	s METAL 1.6K 1X 1/6W
R406	1-215-426-00	s METAL 1.6K 1X 1/6W
R407	1-215-426-00	s METAL 1.6K 1X 1/6W
R408	1-215-445-00	s METAL 10K 1X 1/6W
R409	1-215-445-00	s METAL 10K 1X 1/6W
R410	1-215-469-00	s METAL 100K 1X 1/6W
R411	1-215-445-00	s METAL 10K 1X 1/6W
R412	1-215-445-00	s METAL 10K 1X 1/6W
R413	1-215-429-00	s METAL 2.2K 1X 1/6W
R414	1-215-467-00	s METAL 82K 1X 1/6W
R415	1-215-485-00	s METAL 470K 1X 1/6W
R416	1-249-417-11	s CARBON 1K 5X 1/4W
R417	1-249-441-11	s CARBON 100K 5X 1/4W
R418	1-215-445-00	s METAL 10K 1X 1/6W
R419	1-215-439-00	s METAL 5.6K 1X 1/6W
R420	1-215-469-00	s METAL 100K 1X 1/6W
R421	1-215-425-00	s METAL 1.5K 1X 1/6W
R422	1-215-469-00	s METAL 100K 1X 1/6W
R423	1-215-469-00	s METAL 100K 1X 1/6W
R424	1-215-445-00	s METAL 10K 1X 1/6W
R425	1-215-445-00	s METAL 10K 1X 1/6W
R426	1-215-444-00	s METAL 9.1K 1X 1/6W
R427	1-215-418-00	s METAL 750 1X 1/6W

(ADA-18 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R428	1-215-445-00	s METAL 10K 1X 1/6W
R429	1-215-445-00	s METAL 10K 1X 1/6W
R430	1-215-453-00	s METAL 22K 1X 1/6W
R431	1-215-425-00	s METAL 1.5K 1X 1/6W
R432	1-215-425-00	s METAL 1.5K 1X 1/6W
R433	1-215-453-00	s METAL 22K 1X 1/6W
R434	1-215-453-00	s METAL 22K 1X 1/6W
R435	1-215-425-00	s METAL 1.5K 1X 1/6W
R436	1-215-425-00	s METAL 1.5K 1X 1/6W
R437	1-215-453-00	s METAL 22K 1X 1/6W
R438	1-214-810-00	s METAL 5.6 1X 1/2W
R439	1-214-810-00	s METAL 5.6 1X 1/2W
R440	1-214-810-00	s METAL 5.6 1X 1/2W
R441	1-214-810-00	s METAL 5.6 1X 1/2W
R442	1-214-852-00	s METAL 330 1X 1/2W
R443	1-214-824-91	s METAL 22 1X 1/2W
R444	1-214-839-00	s METAL 91 1X 1/2W
R445	1-214-839-00	s METAL 91 1X 1/2W
R446	1-214-824-91	s METAL 22 1X 1/2W
R447	1-214-852-00	s METAL 330 1X 1/2W
R448	1-215-452-00	s METAL 20K 1X 1/6W
R449	1-215-421-00	s METAL 1K 1X 1/6W
R450	1-215-452-00	s METAL 20K 1X 1/6W
R451	1-215-421-00	s METAL 1K 1X 1/6W
R452	1-215-469-00	s METAL 100K 1X 1/6W
R453	1-215-416-00	s METAL 620 1X 1/6W
R454	1-215-438-00	s METAL 5.1K 1X 1/6W
R455	1-215-449-00	s METAL 15K 1X 1/6W
R456	1-215-445-00	s METAL 10K 1X 1/6W
R457	1-215-445-00	s METAL 10K 1X 1/6W
R458	1-215-469-00	s METAL 100K 1X 1/6W
R459	1-214-844-00	s METAL 150 1X 1/2W
R460	1-215-441-00	s METAL 6.8K 1X 1/6W
R461	1-215-485-00	s METAL 470K 1X 1/6W
R462	1-215-421-00	s METAL 1K 1X 1/6W
R463	1-215-423-00	s METAL 1.2K 1X 1/6W
R464	1-215-445-00	s METAL 10K 1X 1/6W
R465	1-215-469-00	s METAL 100K 1X 1/6W
R466	1-214-844-00	s METAL 150 1X 1/2W
R501	1-249-397-11	s CARBON 22 5X 1/4W
R502	1-249-397-11	s CARBON 22 5X 1/4W
R503	1-249-397-11	s CARBON 22 5X 1/4W
R505	1-215-397-00	s METAL 100 1X 1/6W
R506	1-215-397-00	s METAL 100 1X 1/6W
R507	1-215-397-00	s METAL 100 1X 1/6W
R508	1-215-397-00	s METAL 100 1X 1/6W
R509	1-215-421-00	s METAL 1K 1X 1/6W
R510	1-215-397-00	s METAL 100 1X 1/6W
R511	1-215-421-00	s METAL 1K 1X 1/6W
R512	1-215-397-00	s METAL 100 1X 1/6W
R513	1-215-445-00	s METAL 10K 1X 1/6W
R514	1-215-445-00	s METAL 10K 1X 1/6W
R515	1-215-453-00	s METAL 22K 1X 1/6W
R516	1-215-453-00	s METAL 22K 1X 1/6W
R517	1-215-475-00	s METAL 180 1X 1/6W
EV101	1-238-803-11	s RES, ADJ, CERMET 20K
EV102	1-238-803-11	s RES, ADJ, CERMET 20K
EV201	1-238-803-11	s RES, ADJ, CERMET 20K
EV202	1-238-803-11	s RES, ADJ, CERMET 20K

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

(ADA-18 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
RV301	1-238-805-11	s RES, ADJ, CERMET 100K
RV302	1-238-802-11	s RES, ADJ, CERMET 10K
RV303	1-238-803-11	s RES, ADJ, CERMET 20K
RV401	1-238-805-11	s RES, ADJ, CERMET 100K
RV402	1-238-802-11	s RES, ADJ, CERMET 10K
RV403	1-238-803-11	s RES, ADJ, CERMET 20K
RY1	1-515-677-11	s RELAY
RY2	1-515-677-11	s RELAY
RY301	1-515-677-11	s RELAY
RY401	1-515-677-11	s RELAY
S1	1-553-977-00	s SWITCH, SLIDE
S101	1-552-573-00	s SWITCH, SLIDE
S201	1-552-573-00	s SWITCH, SLIDE
S301	1-552-573-00	s SWITCH, SLIDE
S401	1-552-573-00	s SWITCH, SLIDE

CP-157A/CP-157B BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-637-277-11	o PC BOARD, CP-157A
C1	1-101-004-00	s CERAMIC 0.01uF 50V0%
C2	1-102-973-00	s CERAMIC 100PF 5% 50V
C3	1-102-973-00	s CERAMIC 100PF 5% 50V
CN1	1-565-282-11	o CONNECTOR, KLR 3P, FEMALE

CP-158 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-637-282-12	o PC BOARD, CP-158
1pc	7-682-547-04	s SCREW +B 3X6
C1,C2	1-101-004-00	s CERAMIC 0.01uF 50V0% (Up to Serial No. J:10095, UC:20045, EK:50200)
CN1	1-506-469-11	s CONNECTOR, 4P, MALE
FB1	1-412-694-11	s INDUCTOR, BEAD
FB2	1-412-694-11	s INDUCTOR, BEAD
FB3	1-412-694-11	s INDUCTOR, BEAD
FB4	1-412-694-11	s INDUCTOR, BEAD
J1	1-507-863-51	s JACK, PHONE
J2	1-507-863-51	s JACK, PHONE

CP-171 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-637-276-11	o PC BOARD, CP-171
CN1	1-506-472-11	o CONNECTOR, 7P, MALE
CN2	1-506-472-11	o CONNECTOR, 7P, MALE
CN3	1-506-473-11	s CONNECTOR, 8P, MALE
CN4	1-506-473-11	s CONNECTOR, 8P, MALE
CN5	1-506-469-11	s CONNECTOR, 4P, MALE
CN6	1-506-469-11	s CONNECTOR, 4P, MALE
CN7	1-506-471-11	s CONNECTOR, 6P, MALE
CN8	1-506-471-11	s CONNECTOR, 6P, MALE
CN9	1-506-477-11	s CONNECTOR, 12P, MALE
CN10	1-506-477-11	s CONNECTOR, 12P, MALE
CN11	1-506-478-11	s CONNECTOR, 13P, MALE
CN12	1-506-478-11	s CONNECTOR, 13P, MALE

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

CP-172A/CP-172C BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-637-280-11	o PC BOARD, CP-172A
C1	1-101-004-00	s CERAMIC 0.01uF 50V0X (For CP-172A)
	1-102-973-00	s CERAMIC 100PF 5X 50V (For CP-172C)
C2	1-102-973-00	s CERAMIC 100PF 5X 50V (For CP-172A)
	1-101-004-00	s CERAMIC 0.01uF 50V0X (For CP-172C)
C3	1-102-973-00	s CERAMIC 100PF 5X 50V
CN1	1-565-281-11	o CONNECTOR, XLR 3P, MALE
CN2	1-506-468-11	s CONNECTOR, 3P, MALE

CP-172B/CP-172D BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-637-281-11	o PC BOARD, CP-172B
C1	1-101-004-00	s CERAMIC 0.01uF 50V0X (For CP-172B)
	1-102-973-00	s CERAMIC 100PF 5X 50V (For CP-172D)
C2	1-102-973-00	s CERAMIC 100PF 5X 50V (For CP-172B)
	1-101-004-00	s CERAMIC 0.01uF 50V0X (For CP-172D)
C3	1-102-973-00	s CERAMIC 100PF 5X 50V
CN1	1-565-281-11	o CONNECTOR, XLR 3P, MALE
CN2	1-506-468-11	s CONNECTOR, 3P, MALE

DC-47 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7850-817-A	o COMPLETE PCB, DC-47 (This assembly includes the following parts.)
C1	1-124-921-61	s ELECT 470uF 20% 63VW
C2	1-126-163-11	s ELECT 4.7MF 20% 50V
C3	1-124-911-11	s ELECT 220uF 20% 50V
C4	1-130-495-00	s NYLAR 0.1uF 5X 50V
C5	1-130-495-00	s NYLAR 0.1uF 5X 50V
CN1	1-564-243-00	o PIN, CONNECTOR 6P
CN2	1-564-242-00	o PIN, CONNECTOR 5P
CN3	1-564-706-11	o PIN HEADER, STRAIGHT 4P
CN4	1-564-210-00	o PIN HEADER, STRAIGHT 12P
CN5	1-564-705-11	o PIN HEADER, STRAIGHT 3P
CN6	1-564-209-00	o PIN HEADER, STRAIGHT 10P
CN7	1-564-709-11	o PIN HEADER, STRAIGHT 7P
CN8	1-564-707-11	o CONNECTOR, 5P, MALE
CN9	1-506-469-11	s CONNECTOR, 4P, MALE
D1	8-719-200-02	s DIODE 10E2
D2	8-719-200-02	s DIODE 10E2
D3	8-719-200-02	s DIODE 10E2
D4	8-719-200-02	s DIODE 10E2
D5	8-719-934-25	s DIODE HZS33-1L
D6	8-719-200-02	s DIODE 10E2
D7	8-719-910-61	s DIODE HZ6A1L
Q1	8-729-400-81	s TRANSISTOR 2SD1266-Q
R1	Δ1-212-865-00	s FUSIBLE 22 5X 1/4W
R2	1-249-429-11	s CARBON 10K 5X 1/4W
R3	1-249-433-11	s CARBON 22K 5X 1/4W
R4	1-249-409-11	s CARBON 220 5X 1/4W
R5	1-249-409-11	s CARBON 220 5X 1/4W

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

DR-139 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7850-783-A	o COMPLETE PCB, DR-139 (This assembly includes the following part.)
C102	1-135-177-21	s TANTAL 1uF 20% 25V0W
C103	1-135-177-21	s TANTAL 1uF 20% 25V0W
C104	1-135-177-21	s TANTAL 1uF 20% 25V0W
C106	1-163-024-00	s CERAMIC 0.018uF 10% 50V0W
C107	1-135-177-21	s TANTAL 1uF 20% 25V0W
C108	1-135-177-21	s TANTAL 1uF 20% 25V0W
C109	1-135-177-21	s TANTAL 1uF 20% 25V0W
C110	1-135-177-21	s TANTAL 1uF 20% 25V0W
C112	1-164-232-11	s CERAMIC 0.01uF 10% 50V0W
C113	1-124-589-11	s ELECT 47uF 20% 16V
C114	1-164-232-11	s CERAMIC 0.01uF 10% 50V0W
C115	1-126-103-11	s ELECT 470uF 20% 16V
C117	1-135-177-21	s TANTAL 1uF 20% 25V0W
C121	1-135-177-21	s TANTAL 1uF 20% 25V0W
C122	1-164-232-11	s CERAMIC 0.01uF 10% 50V0W
C123	1-164-232-11	s CERAMIC 0.01uF 10% 50V0W
C124	1-124-589-11	s ELECT 47uF 20% 16V
C125	1-124-589-11	s ELECT 47uF 20% 16V
C126	1-124-589-11	s ELECT 47uF 20% 16V
C132	1-124-589-11	s ELECT 47uF 20% 16V
C133	1-164-232-11	s CERAMIC 0.01uF 10% 50V0W
C134	1-164-232-11	s CERAMIC 0.01uF 10% 50V0W
C136	1-164-232-11	s CERAMIC 0.01uF 10% 50V0W
C137	1-164-232-11	s CERAMIC 0.01uF 10% 50V0W
C201	1-125-675-11	s CAP 0.043PF
C202	1-125-675-11	s CAP 0.043PF
C203	1-164-232-11	s CERAMIC 0.01uF 10% 50V0W
C204	1-164-232-11	s CERAMIC 0.01uF 10% 50V0W
C205	1-124-257-00	s ELECT 2.2uF 20% 50V
C206	1-164-232-11	s CERAMIC 0.01uF 10% 50V0W
C207	1-124-589-11	s ELECT 47uF 20% 16V
C208	1-126-157-11	s ELECT 10uF 20% 16V
C209	1-124-589-11	s ELECT 47uF 20% 16V
C210	1-126-157-11	s ELECT 10uF 20% 16V
C211	1-164-232-11	s CERAMIC 0.01uF 10% 50V0W
C212	1-164-161-11	s CERAMIC, CHIP 0.0022uF 10% 100V
C213	1-164-232-11	s CERAMIC 0.01uF 10% 50V0W
C214	1-164-232-11	s CERAMIC 0.01uF 10% 50V0W
C215	1-164-161-11	s CERAMIC, CHIP 0.0022uF 10% 100V
C216	1-164-232-11	s CERAMIC 0.01uF 10% 50V0W
C217	1-126-176-11	s ELECT 220uF 20% 10V
C218	1-164-232-11	s CERAMIC 0.01uF 10% 50V0W
C219	1-164-232-11	s CERAMIC 0.01uF 10% 50V0W
C220	1-164-232-11	s CERAMIC 0.01uF 10% 50V0W
C221	1-164-232-11	s CERAMIC 0.01uF 10% 50V0W
C222	1-164-232-11	s CERAMIC 0.01uF 10% 50V0W
CN101	1-563-370-11	o CONNECTOR, F.P.C 14P
CN102	1-506-478-11	s CONNECTOR, 13P, MALE
CN103	1-564-515-11	o PLUG, CONNECTOR 12P
CN104	1-563-597-11	s CONNECTOR, FLEXIBLE 20P
CN105	1-565-568-11	o PIN, CONNECTOR (PC BOARD) 2P
CN106	1-506-470-11	s CONNECTOR, 5P, MALE
CN107	1-564-505-11	o PLUG, CONNECTOR 2P
CN108	1-565-189-11	s CONNECTOR, FPC 36P
CN109	1-564-707-11	o CONNECTOR, 5P, MALE

(DR-139 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
D201	8-719-981-00	s DIODE ERC81-004
D202	8-719-400-18	s DIODE MA152WK
D203	8-719-400-18	s DIODE MA152WK
D204	8-719-400-18	s DIODE MA152WK
D205	8-719-400-18	s DIODE MA152WK
D206	8-719-400-18	s DIODE MA152WK
D207	8-719-400-18	s DIODE MA152WK
D208	8-719-200-77	s DIODE 10E2N
D209	8-719-400-18	s DIODE MA152WK
D210	8-719-400-18	s DIODE MA152WK
IC101	8-752-039-31	s IC CXA1418N
IC102	8-752-017-40	s IC CX20174
IC103	8-759-983-69	s IC LM358PS
IC104	8-759-300-71	s IC MD14053BFP
IC105	1-464-940-11	s DRIVE UNIT, MOTOR
IC106	8-759-925-80	s IC SN74HC14ANS
IC107	8-759-239-23	s IC TC74HC86AF
IC201	8-759-908-81	s IC MB3763PF
IC202	8-759-925-76	s IC SN74HC08ANS
IC203	8-759-908-81	s IC MB3763PF
IC204	8-759-989-91	s IC TL7705ACPS
IC205	8-759-008-67	s IC MC14066BF
IC206	8-759-929-26	s IC TL431CPS
IC207	8-759-983-59	s IC LM358PS
IC208	8-759-988-13	s IC LM393PS
IC209	8-759-988-13	s IC LM393PS
L101	1-408-425-00	s INDUCTOR 220uH
L102	1-412-533-11	s COIL 47uH
L103	1-412-533-11	s COIL 47uH
L201	1-408-425-00	s INDUCTOR 220uH
Q101	8-729-901-00	s TRANSISTOR DTC124EK
Q102	8-729-901-00	s TRANSISTOR DTC124EK
Q103	8-729-216-22	s TRANSISTOR 2SA1162
Q104	8-729-208-96	s TRANSISTOR 2SA1242-Y
Q105	8-729-202-62	s TRANSISTOR 2SD1221
Q201	8-729-901-00	s TRANSISTOR DTC124EK
Q202	8-729-901-00	s TRANSISTOR DTC124EK
Q203	8-729-901-00	s TRANSISTOR DTC124EK
Q204	8-729-901-00	s TRANSISTOR DTC124EK
Q205	8-729-901-00	s TRANSISTOR DTC124EK
Q206	8-729-901-00	s TRANSISTOR DTC124EK
Q207	8-729-104-93	s TRANSISTOR 2SB1040A-3
Q208	8-729-202-62	s TRANSISTOR 2SD1221
Q209	8-729-923-54	s TRANSISTOR DTA143TK
Q210	8-729-923-54	s TRANSISTOR DTA143TK
R104	1-216-666-11	s METAL, CHIP 4.3K 0.5% 1/10W
R105	1-216-075-00	s METAL, CHIP 12K 5% 1/10W
R106	1-216-093-00	s METAL, CHIP 68K 5% 1/10W
R121	1-216-687-11	s METAL, CHIP 33K 0.5% 1/10W
R122	1-216-687-11	s METAL, CHIP 33K 0.5% 1/10W
R124	1-216-646-11	s METAL, CHIP 620 0.5% 1/10W
R128	1-216-113-00	s METAL, CHIP 470K 5% 1/10W
R217	1-216-470-00	s METAL 18 5% 3W
R219	1-216-662-11	s METAL, CHIP 3K 0.5% 1/10W
R220	1-216-677-11	s METAL, CHIP 12K 0.5% 1/10W
R239	1-216-666-11	s METAL, CHIP 4.3K 0.5% 1/10W
R240	1-216-047-00	s METAL, CHIP 820 5% 1/10W

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

(DR-139 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R241	1-216-686-11	s METAL, CHIP 30K 0.5% 1/10W
R244	1-216-115-00	s METAL, CHIP 560K 5% 1/10W
RB1	1-231-411-00	s RESISTOR BLOCK 100Kx8
RB2	1-231-557-00	s RESISTOR BLOCK 100Kx4
RV101	1-238-804-21	s RES, ADJ, CERMET 50K
RV102	1-238-804-21	s RES, ADJ, CERMET 50K
RV103	1-238-804-21	s RES, ADJ, CERMET 50K
SW201	1-570-602-11	s SWITCH, DIP 2-CKT
SW202	1-570-602-11	s SWITCH, DIP 2-CKT

HP-48 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-506-847-11	o HOUSING, BOARD IN CONNECTOR 10P
1pc	1-563-184-11	o HOUSING, CONNECTOR 10P
1pc	1-637-283-14	o PC BOARD, HP-48
C1	1-161-379-00	s CERAMIC, 0.01uF 20% 25V
C2	1-161-379-00	s CERAMIC, 0.01uF 20% 25V
FB1	1-412-694-11	s INDUCTOR, BEAD
FB2	1-412-694-11	s INDUCTOR, BEAD
FB3	1-412-694-11	s INDUCTOR, BEAD

KY-192 BOARD

Ref. No.
or Q'ty Part No. SP Description

This board includes the LED-104, SW-420 boards.

1pc A-7850-797-A o COMPLETE PCB, KY-192
(This assembly includes the following parts.)

1pc	1-466-469-11	s ROTARY ENCODER (MAGNETIC)
1pc	3-167-806-01	o TABLE, ENCODER
1pc	7-682-903-11	s SCREW +PWH 3X6
4pcs	7-685-132-19	s SCREW +P 2.6X5 TYPE2 N-S
1pc	7-685-903-11	s SCREW +PTPWH 3X8 (TYPE2)
C4	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C6	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C7	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C8	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C9	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C10	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C11	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C12	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C13	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C14	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C15	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C17	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C18	1-161-379-00	s CERAMIC 0.01uF 20% 25V
CN1	1-506-475-11	s CONNECTOR, 10P, MALE
CN2	1-506-473-11	s CONNECTOR, 8P, MALE
CN3	1-506-473-11	s CONNECTOR, 8P, MALE
CN4	1-506-475-11	s CONNECTOR, 10P, MALE
CN5	1-506-475-11	s CONNECTOR, 10P, MALE
CN6	1-566-982-11	o PIN HEADER, STRAIGHT 9P
CN7	1-506-474-11	s CONNECTOR, 9P, MALE
D1	8-719-911-19	s DIODE 1SS119
D2	8-719-911-19	s DIODE 1SS119
D3	8-719-911-19	s DIODE 1SS119
D4	8-719-911-19	s DIODE 1SS119
D5	8-719-911-19	s DIODE 1SS119
D6	8-719-911-19	s DIODE 1SS119
D7	8-719-911-19	s DIODE 1SS119
D8	8-719-911-19	s DIODE 1SS119
D9	8-719-911-19	s DIODE 1SS119
D10	8-719-911-19	s DIODE 1SS119
D11	8-719-911-19	s DIODE 1SS119
D12	8-719-911-19	s DIODE 1SS119
D13	8-719-911-19	s DIODE 1SS119
D14	8-719-911-19	s DIODE 1SS119
D15	8-719-911-19	s DIODE 1SS119
D16	8-719-911-19	s DIODE 1SS119
D17	8-719-911-19	s DIODE 1SS119
D18	8-719-911-19	s DIODE 1SS119
D19	8-719-911-19	s DIODE 1SS119
D20	8-719-911-19	s DIODE 1SS119
D21	8-719-911-19	s DIODE 1SS119
D22	8-719-911-19	s DIODE 1SS119
D23	8-719-911-19	s DIODE 1SS119
D24	8-719-911-19	s DIODE 1SS119
D25	8-719-911-19	s DIODE 1SS119
D26	8-719-911-19	s DIODE 1SS119
D27	8-719-911-19	s DIODE 1SS119
D28	8-719-911-19	s DIODE 1SS119

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

(KY-192 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
D29	8-719-988-10	s DIODE EBG5734S
D30	8-719-988-10	s DIODE EBG5734S
D31	8-719-988-10	s DIODE EBG5734S
D32	8-719-988-10	s DIODE EBG5734S
D33	8-719-988-10	s DIODE EBG5734S
D34	8-719-988-10	s DIODE EBG5734S
D35	8-719-988-10	s DIODE EBG5734S
D36	8-719-988-10	s DIODE EBG5734S
D37	8-719-988-10	s DIODE EBG5734S
D38	8-719-988-10	s DIODE EBG5734S
D39	8-719-988-09	s DIODE PY5734S
D40	8-719-988-10	s DIODE EBG5734S
D41	8-719-988-10	s DIODE EBG5734S
D53	8-719-911-19	s DIODE 1SS119
D54	8-719-911-19	s DIODE 1SS119
D55	8-719-911-19	s DIODE 1SS119
D56	8-719-911-19	s DIODE 1SS119
FB1	1-535-178-00	s BEAD, FERRITE
FL1	1-519-642-11	s INDICATOR TUBE, FLUORESCENT
IC1	8-759-926-11	s IC SN74HC138ANS
IC2	8-759-926-77	s IC SN74HC541ANS
IC3	8-759-926-77	s IC SN74HC541ANS
IC4	8-759-500-05	s IC MSM6338MS-K
IC5	8-759-927-46	s IC SN74HC00ANS
IC6	8-759-513-50	s IC MSC62408-018GS-V1K
IC7	8-759-205-37	s IC TC74HC574F
IC8	8-759-205-37	s IC TC74HC574F
IC9	8-759-205-37	s IC TC74HC574F
IC10	8-759-205-37	s IC TC74HC574F
JW5	1-217-666-31	s RES, SHORT 0.01 1/6W
JW12	1-217-666-31	s RES, SHORT 0.01 1/6W
JW17	1-217-666-31	s RES, SHORT 0.01 1/6W
JW18	1-217-666-31	s RES, SHORT 0.01 1/6W
L1	1-412-533-11	s COIL 47uH
L2	1-412-533-11	s COIL 47uH
Q1	8-729-900-98	s TRANSISTOR DTC143TK
Q2	8-729-900-98	s TRANSISTOR DTC143TK
Q3	8-729-900-98	s TRANSISTOR DTC143TK
Q4	8-729-900-98	s TRANSISTOR DTC143TK
Q5	8-729-900-98	s TRANSISTOR DTC143TK
Q6	8-729-900-98	s TRANSISTOR DTC143TK
Q7	8-729-900-98	s TRANSISTOR DTC143TK
Q8	8-729-900-98	s TRANSISTOR DTC143TK
Q9	8-729-900-98	s TRANSISTOR DTC143TK
Q10	8-729-901-04	s TRANSISTOR DTA114EK
Q11	8-729-901-47	s TRANSISTOR DTA143EK
Q12	8-729-901-47	s TRANSISTOR DTA143EK
Q13	8-729-901-04	s TRANSISTOR DTA114EK
Q14	8-729-901-47	s TRANSISTOR DTA143EK
Q15	8-729-901-47	s TRANSISTOR DTA143EK
Q16	8-729-901-47	s TRANSISTOR DTA143EK
Q17	8-729-901-04	s TRANSISTOR DTA114EK
Q18	8-729-901-04	s TRANSISTOR DTA114EK
Q19	8-729-901-04	s TRANSISTOR DTA114EK
Q20	8-729-901-04	s TRANSISTOR DTA114EK
Q21	8-729-901-04	s TRANSISTOR DTA114EK

(KY-192 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
Q22	8-729-901-04	s TRANSISTOR DTA114EK
Q23	8-729-901-04	s TRANSISTOR DTA114EK
Q24	8-729-901-04	s TRANSISTOR DTA114EK
Q25	8-729-901-04	s TRANSISTOR DTA114EK
Q26	8-729-901-04	s TRANSISTOR DTA114EK
Q27	8-729-901-04	s TRANSISTOR DTA114EK
Q28	8-729-901-04	s TRANSISTOR DTA114EK
Q29	8-729-901-04	s TRANSISTOR DTA114EK
Q30	8-729-901-04	s TRANSISTOR DTA114EK
Q31	8-729-901-04	s TRANSISTOR DTA114EK
Q32	8-729-901-04	s TRANSISTOR DTA114EK
Q33	8-729-901-04	s TRANSISTOR DTA114EK
Q34	8-729-901-04	s TRANSISTOR DTA114EK
Q35	8-729-901-04	s TRANSISTOR DTA114EK
Q36	8-729-901-04	s TRANSISTOR DTA114EK
R1	1-249-441-11	s CARBON 100K 5% 1/4W
R2	1-249-441-11	s CARBON 100K 5% 1/4W
R3	1-249-441-11	s CARBON 100K 5% 1/4W
R4	1-249-441-11	s CARBON 100K 5% 1/4W
R5	1-249-441-11	s CARBON 100K 5% 1/4W
R6	1-249-441-11	s CARBON 100K 5% 1/4W
R7	1-249-441-11	s CARBON 100K 5% 1/4W
R8	1-249-441-11	s CARBON 100K 5% 1/4W
R9	1-249-441-11	s CARBON 100K 5% 1/4W
R10	1-249-429-11	s CARBON 10K 5% 1/4W
R11	1-249-429-11	s CARBON 10K 5% 1/4W
R12	1-249-429-11	s CARBON 10K 5% 1/4W
R13	1-249-429-11	s CARBON 10K 5% 1/4W
R14	1-249-429-11	s CARBON 10K 5% 1/4W
R15	1-249-429-11	s CARBON 10K 5% 1/4W
R16	1-249-429-11	s CARBON 10K 5% 1/4W
R17	1-249-429-11	s CARBON 10K 5% 1/4W
R18	1-249-397-11	s CARBON 22 5% 1/4W
R19	1-249-403-11	s CARBON 68 5% 1/4W
R20	1-249-403-11	s CARBON 68 5% 1/4W
R21	1-249-397-11	s CARBON 22 5% 1/4W
R22	1-249-399-11	s CARBON 33 5% 1/4W
R23	1-249-399-11	s CARBON 33 5% 1/4W
R24	1-249-409-11	s CARBON 220 5% 1/4W
R25	1-249-408-11	s CARBON 180 5% 1/4W
R26	1-249-409-11	s CARBON 220 5% 1/4W
R27	1-249-409-11	s CARBON 220 5% 1/4W
R28	1-249-408-11	s CARBON 180 5% 1/4W
R29	1-249-408-11	s CARBON 180 5% 1/4W
R30	1-249-408-11	s CARBON 180 5% 1/4W
R31	1-249-397-11	s CARBON 22 5% 1/4W
R32	1-249-397-11	s CARBON 22 5% 1/4W
R33	1-249-408-11	s CARBON 180 5% 1/4W
R34	1-249-408-11	s CARBON 180 5% 1/4W
R35	1-249-408-11	s CARBON 180 5% 1/4W
R36	1-249-408-11	s CARBON 180 5% 1/4W
R37	1-249-408-11	s CARBON 180 5% 1/4W
R38	1-249-408-11	s CARBON 180 5% 1/4W
R39	1-249-408-11	s CARBON 180 5% 1/4W
R40	1-249-408-11	s CARBON 180 5% 1/4W
R41	1-249-408-11	s CARBON 180 5% 1/4W
R42	1-249-408-11	s CARBON 180 5% 1/4W
R43	1-249-408-11	s CARBON 180 5% 1/4W
R44	1-249-408-11	s CARBON 180 5% 1/4W

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

(KY-192 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R45	1-249-405-11	s CARBON 100 5% 1/4W
R46	1-249-397-11	s CARBON 22 5% 1/4W
R47	1-249-397-11	s CARBON 22 5% 1/4W
R48	1-249-397-11	s CARBON 22 5% 1/4W
R49	1-249-405-11	s CARBON 100 5% 1/4W
R50	1-249-405-11	s CARBON 100 5% 1/4W
R51	1-249-405-11	s CARBON 100 5% 1/4W
R52	1-249-425-11	s CARBON 4.7K 5% 1/4W
R53	1-249-425-11	s CARBON 4.7K 5% 1/4W
R54	1-249-425-11	s CARBON 4.7K 5% 1/4W
R55	1-249-425-11	s CARBON 4.7K 5% 1/4W
R56	1-249-425-11	s CARBON 4.7K 5% 1/4W
R57	1-249-425-11	s CARBON 4.7K 5% 1/4W
R58	1-249-437-11	s CARBON 47K 5% 1/4W
R59	1-249-437-11	s CARBON 47K 5% 1/4W
R60	1-249-437-11	s CARBON 47K 5% 1/4W
R61	1-249-437-11	s CARBON 47K 5% 1/4W
R62	1-249-437-11	s CARBON 47K 5% 1/4W
R63	1-249-437-11	s CARBON 47K 5% 1/4W
R64	1-249-437-11	s CARBON 47K 5% 1/4W
R65	1-249-429-11	s CARBON 10K 5% 1/4W
R66	1-249-429-11	s CARBON 10K 5% 1/4W
R67	1-249-429-11	s CARBON 10K 5% 1/4W
R68	1-249-429-11	s CARBON 10K 5% 1/4W
R69	1-249-429-11	s CARBON 10K 5% 1/4W
R70	1-249-437-11	s CARBON 47K 5% 1/4W
R71	1-249-437-11	s CARBON 47K 5% 1/4W
R72	1-249-437-11	s CARBON 47K 5% 1/4W
R73	1-249-437-11	s CARBON 47K 5% 1/4W
R74	1-249-437-11	s CARBON 47K 5% 1/4W
S1	1-571-169-11	s SWITCH, WITH LED, TACTILE [EJECT]
S2	1-571-167-71	s SWITCH, TACTIL [STANDBY]
S3	1-572-609-21	s SWITCH, PUSH (ILLUMINATION) [STOP]
S4	1-572-607-21	s SWITCH, PUSH (ILLUMINATION) [REW]
S5	1-572-607-11	s SWITCH, PUSH (ILLUMINATION) [FF]
S6	1-554-937-11	s SWITCH, KEY BOARD
S7	1-572-609-11	s SWITCH, PUSH (ILLUMINATION) [PLAY]
S8	1-572-608-11	s SWITCH, PUSH (ILLUMINATION) [REC]
S9	1-571-167-81	s SWITCH, TACTIL [PREVIOUS]
S10	1-571-167-91	s SWITCH, TACTIL [NEXT]
S11	1-554-937-11	s SWITCH, KEY BOARD
S12	1-554-937-11	s SWITCH, KEY BOARD
S13	1-554-937-11	s SWITCH, KEY BOARD
S14	1-554-937-11	s SWITCH, KEY BOARD
S15	1-554-937-11	s SWITCH, KEY BOARD
S16	1-554-937-11	s SWITCH, KEY BOARD
S17	1-554-937-11	s SWITCH, KEY BOARD
S18	1-554-937-11	s SWITCH, KEY BOARD
S19	1-554-937-11	s SWITCH, KEY BOARD
S20	1-554-937-11	s SWITCH, KEY BOARD
S21	1-554-937-11	s SWITCH, KEY BOARD
S22	1-554-937-11	s SWITCH, KEY BOARD
S23	1-554-937-11	s SWITCH, KEY BOARD
S24	1-571-156-11	o SWITCH, TOGGLE
S25	1-571-157-11	o SWITCH, TOGGLE
S26	1-571-156-11	o SWITCH, TOGGLE
S27	1-571-156-11	o SWITCH, TOGGLE

LE-90A BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-637-285-12	o PC BOARD, LE-90A
D1	8-719-820-27	s DIODE TLY256

LE-90B BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-637-286-12	o PC BOARD, LE-90B
D1	8-719-820-27	s LED TLY-256, YEL

LED-104 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-637-269-11	o PC BOARD, LED-104
D44	8-719-812-41	s LED TLE124, RED
D45	8-719-812-41	s LED TLE124, RED
D46	8-719-934-33	s DIODE PY3432S
D47	8-719-902-25	s DIODE SLR-34PG5
D48	8-719-934-33	s DIODE PY3432S
JW1	1-535-901-11	o WIRE, JUMPER

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

PS-211 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7850-815-A	o COMPLETE PCB, PS-211
(This assembly includes the following parts.)		
2pcs	7-682-547-09	s SCREW +B 3X6
2pcs	7-682-903-11	s SCREW +PMH 3X6
C1	1-108-626-11	s NYLAR 0.01uF 10% 1000W
C2	1-108-626-11	s NYLAR 0.01uF 10% 1000W
C3	1-108-626-11	s NYLAR 0.01uF 10% 1000W
C4	1-108-626-11	s NYLAR 0.01uF 10% 1000W
C5	1-126-548-11	s ELECT 4700uF 20% 35VOW
C6	1-126-548-11	s ELECT 4700uF 20% 35VOW
C7	1-164-096-11	s CERAMIC 0.01uF 50V
C8	1-164-096-11	s CERAMIC 0.01uF 50V
C10	1-164-096-11	s CERAMIC 0.01uF 50V
C12	1-164-096-11	s CERAMIC 0.01uF 50V
C13	1-136-193-11	s FILM 0.47uF 5% 2500W
C14	1-136-193-11	s FILM 0.47uF 5% 2500W
C15	1-108-626-11	s NYLAR 0.01uF 10% 1000W
C16	1-108-626-11	s NYLAR 0.01uF 10% 1000W
C17	1-108-626-11	s NYLAR 0.01uF 10% 1000W
C18	1-108-626-11	s NYLAR 0.01uF 10% 1000W
C19	1-126-548-11	s ELECT 4700uF 20% 35VOW
C20	1-126-548-11	s ELECT 4700uF 20% 35VOW
C22	1-164-096-11	s CERAMIC 0.01uF 50V
C23	1-162-901-11	s CERAMIC 0.1uF 10% 50VOW
C24	1-164-096-11	s CERAMIC 0.01uF 50V
C27	1-164-096-11	s CERAMIC 0.01uF 50V
C28	1-162-901-11	s CERAMIC 0.1uF 10% 50VOW
C29	1-164-096-11	s CERAMIC 0.01uF 50V
C32	1-164-096-11	s CERAMIC 0.01uF 50V
C33	1-162-901-11	s CERAMIC 0.1uF 10% 50VOW
C34	1-164-096-11	s CERAMIC 0.01uF 50V
C37	1-164-096-11	s CERAMIC 0.01uF 50V
C38	1-162-901-11	s CERAMIC 0.1uF 10% 50VOW
C39	1-164-096-11	s CERAMIC 0.01uF 50V
C43	1-124-903-11	s ELECT 1uF 20% 50VOW
CN1	1-566-313-11	o PIN, CONNECTOR 7P
CN2	1-566-982-11	o PIN HEADER, STRAIGHT 9P
CN3	1-564-705-11	o PIN HEADER, STRAIGHT 3P
D1	8-719-200-02	s DIODE 10E2
D2	8-719-200-02	s DIODE 10E2
D3	8-719-200-02	s DIODE 10E2
D4	8-719-200-02	s DIODE 10E2
D5	8-719-200-02	s DIODE 10E2
D6	8-719-200-02	s DIODE 10E2
D7	8-719-200-02	s DIODE 10E2
D8	8-719-200-02	s DIODE 10E2
D9	8-719-109-81	s DIODE RD4.7ES-B2
D10	8-719-109-81	s DIODE RD4.7ES-B2
D11	8-719-109-81	s DIODE RD4.7ES-B2
D12	8-719-109-81	s DIODE RD4.7ES-B2
D13	8-719-200-02	s DIODE 10E2
D14	8-719-200-02	s DIODE 10E2
D15	8-719-200-02	s DIODE 10E2
D16	8-719-200-02	s DIODE 10E2
D17	8-719-110-41	s DIODE RD15ES-B2

(PS-211 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
D18	8-719-110-41	s DIODE RD15ES-B2
D19	8-719-911-19	s DIODE 1SS119
D20	8-719-110-53	s DIODE RD20ES-B2
D21	8-719-911-19	s DIODE 1SS119
D22	8-719-911-19	s DIODE 1SS119
IC1	8-759-154-55	s PS2601-L
IC2	8-759-982-15	s IC RC7815FA
IC3	8-759-982-41	s IC RC7915FA
IC4	8-759-982-17	s IC RC7818FA
IC5	8-759-982-42	s IC RC7918FA
IC6	8-759-982-17	s IC RC7818FA
IC7	8-759-982-42	s IC RC7918FA
Q1	8-729-202-35	s TRANSISTOR 2SB906-Y
Q2	8-729-202-35	s TRANSISTOR 2SB906-Y
Q3	8-729-202-62	s TRANSISTOR 2SD1221-Y
Q4	8-729-202-62	s TRANSISTOR 2SD1221-Y
Q5	8-729-202-35	s TRANSISTOR 2SB906-Y
Q6	8-729-202-35	s TRANSISTOR 2SB906-Y
Q7	8-729-202-62	s TRANSISTOR 2SD1221-Y
Q8	8-729-202-62	s TRANSISTOR 2SD1221-Y
Q9	8-729-142-25	s TRANSISTOR 2SD1020-HFE
Q10	8-729-142-25	s TRANSISTOR 2SD1020-HFE
Q11	8-729-900-36	s TRANSISTOR DTC124ES
R1	△1-212-934-00	s FUSIBLE 1 5X 1/2W
R2	△1-212-934-00	s FUSIBLE 1 5X 1/2W
R3	1-249-429-11	s CARBON 10K 5% 1/4W
R4	1-249-429-11	s CARBON 10K 5% 1/4W
R5	△1-212-873-11	s RES, FUSIBLE 47 1/4W
R6	1-214-676-00	s METAL 6.2 1% 1/4W
R7	1-207-667-00	s WIREWOUND 220 10% 3W
R8	1-249-429-11	s CARBON 10K 5% 1/4W
R9	1-249-433-11	s CARBON 22K 5% 1/4W
R10	1-249-431-11	s CARBON 15K 5% 1/4W
R11	1-214-676-00	s METAL 6.2 1% 1/4W
R12	1-207-667-00	s WIREWOUND 220 10% 3W
R13	1-249-433-11	s CARBON 22K 5% 1/4W
R14	1-249-429-11	s CARBON 10K 5% 1/4W
R15	1-249-431-11	s CARBON 15K 5% 1/4W
R16	1-214-676-00	s METAL 6.2 1% 1/4W
R17	1-207-667-00	s WIREWOUND 220 10% 3W
R18	1-249-429-11	s CARBON 10K 5% 1/4W
R19	1-249-433-11	s CARBON 22K 5% 1/4W
R20	1-249-431-11	s CARBON 15K 5% 1/4W
R21	1-214-676-00	s METAL 6.2 1% 1/4W
R22	1-207-667-00	s WIREWOUND 220 10% 3W
R23	1-249-433-11	s CARBON 22K 5% 1/4W
R24	1-249-429-11	s CARBON 10K 5% 1/4W
R25	1-249-431-11	s CARBON 15K 5% 1/4W
R26	1-249-427-11	s CARBON 6.8K 5% 1/4W
R27	1-249-427-11	s CARBON 6.8K 5% 1/4W
R28	1-249-427-11	s CARBON 6.8K 5% 1/4W
R29	1-249-435-11	s CARBON 33K 5% 1/4W
R30	1-249-437-11	s CARBON 47K 5% 1/4W
R31	1-249-419-11	s CARBON 1.5K 5% 1/4W
R32	1-249-429-11	s CARBON 10K 5% 1/4W
R33	1-249-429-11	s CARBON 10K 5% 1/4W
R34	1-249-423-11	s CARBON 3.3K 5% 1/4W

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

RF-31 BOARD

Ref. No. or Q'ty	Part No.	SP Description
C3	1-135-125-21	s TANTALUM, CHIP 33uF 20% 10V
C102	1-135-125-21	s TANTALUM, CHIP 33uF 20% 10V
C103	1-162-927-11	s CERAMIC, CHIP 100PF 5% 50V
C104	1-135-155-21	s TANTAL CHIP 4.7uF 10% 16V
C105	1-162-962-11	s CERAMIC 470PF 10% 50V
C107	1-162-957-11	s CERAMIC 220PF 5% 50V
C108	1-162-964-11	s CERAMIC 0.001uF 10% 50V
C112	1-162-957-11	s CERAMIC 220PF 5% 50V
C113	1-162-957-11	s CERAMIC 220PF 5% 50V
C115	1-135-125-21	s TANTALUM, CHIP 33uF 20% 10V
C116	1-162-927-11	s CERAMIC, CHIP 100PF 5% 50V
C117	1-135-073-00	s TANTALUM, CHIP 0.33uF 10% 35V
C118	1-164-492-11	s CERAMIC 0.15uF 10% 16V
C120	1-162-964-11	s CERAMIC 0.001uF 10% 50V
C122	1-135-125-21	s TANTALUM, CHIP 33uF 20% 10V
C124	1-135-125-21	s TANTALUM, CHIP 33uF 20% 10V
C125	1-162-964-11	s CERAMIC 0.001uF 10% 50V
C127	1-164-492-11	s CERAMIC 0.15uF 10% 16V
C128	1-135-073-00	s TANTALUM, CHIP 0.33uF 10% 35V
C129	1-162-927-11	s CERAMIC, CHIP 100PF 5% 50V
C130	1-162-967-11	s CERAMIC 0.0033uF 10% 50V
C132	1-135-125-21	s TANTALUM, CHIP 33uF 20% 10V
C133	1-162-964-11	s CERAMIC 0.001uF 10% 50V
C202	1-135-125-21	s TANTALUM, CHIP 33uF 20% 10V
C203	1-162-927-11	s CERAMIC, CHIP 100PF 5% 50V
C204	1-135-155-21	s TANTAL CHIP 4.7uF 10% 16V
C205	1-162-962-11	s CERAMIC 470PF 10% 50V
C207	1-162-957-11	s CERAMIC 220PF 5% 50V
C212	1-162-957-11	s CERAMIC 220PF 5% 50V
C213	1-162-957-11	s CERAMIC 220PF 5% 50V
C215	1-135-125-21	s TANTALUM, CHIP 33uF 20% 10V
C216	1-162-927-11	s CERAMIC, CHIP 100PF 5% 50V
C217	1-135-073-00	s TANTALUM, CHIP 0.33uF 10% 35V
C218	1-164-492-11	s CERAMIC 0.15uF 10% 16V
C220	1-162-964-11	s CERAMIC 0.001uF 10% 50V
C222	1-135-125-21	s TANTALUM, CHIP 33uF 20% 10V
C224	1-135-125-21	s TANTALUM, CHIP 33uF 20% 10V
C225	1-162-964-11	s CERAMIC 0.001uF 10% 50V
C227	1-164-492-11	s CERAMIC 0.15uF 10% 16V
C228	1-135-073-00	s TANTALUM, CHIP 0.33uF 10% 35V
C229	1-162-927-11	s CERAMIC, CHIP 100PF 5% 50V
C230	1-162-967-11	s CERAMIC 0.0033uF 10% 50V
C232	1-135-125-21	s TANTALUM, CHIP 33uF 20% 10V
C233	1-162-964-11	s CERAMIC 0.001uF 10% 50V
CN1	1-566-838-11	o CONNECTOR, F.P.C 13P
CN2	1-562-883-11	o CONNECTOR, FPC 20P, FEMALE
CN3	1-562-708-11	o CONNECTOR, FPC 13P, FEMALE
IC1	8-752-039-01	s IC CXA1364R
IC2	8-752-039-01	s IC CXA1364R
L1	1-408-785-21	s INDUCTOR CHIP 47UH
L101	1-408-785-21	s INDUCTOR CHIP 47UH
L102	1-408-785-21	s INDUCTOR CHIP 47UH
L103	1-408-785-21	s INDUCTOR CHIP 47UH
L201	1-408-785-21	s INDUCTOR CHIP 47UH
L202	1-408-785-21	s INDUCTOR CHIP 47UH
L203	1-408-785-21	s INDUCTOR CHIP 47UH

(RF-31 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
Q101,	8-729-901-00	s TRANSISTOR DTC124EK
Q201	(Up to Serial No. J:10105, UC:20115, EK:50580)	
R101	1-216-679-11	s METAL, CHIP 15K 0.5% 1/10W
R102	1-216-693-11	s METAL, CHIP 56K 0.5% 1/10W
R103	1-216-687-11	s METAL, CHIP 33K 0.5% 1/10W
R104	1-216-835-11	s METAL, CHIP 15K 5% 1/16W
R105	1-216-835-11	s METAL, CHIP 15K 5% 1/16W
R106	1-216-835-11	s METAL, CHIP 15K 5% 1/16W
R107	1-216-836-11	s METAL, CHIP 18K 5% 1/16W
R108	1-216-834-11	s METAL, CHIP 12K 5% 1/16W
R109	1-216-836-11	s METAL, CHIP 18K 5% 1/16W
R110	1-216-835-11	s METAL, CHIP 15K 5% 1/16W
R111	1-216-835-11	s METAL, CHIP 15K 5% 1/16W
R112	1-216-835-11	s METAL, CHIP 15K 5% 1/16W
R113	1-216-671-11	s METAL, CHIP 6.8K 0.5% 1/10W
R114	1-216-671-11	s METAL, CHIP 6.8K 0.5% 1/10W
R115	1-216-673-11	s METAL, CHIP 8.2K 0.5% 1/10W
R116	1-216-673-11	s METAL, CHIP 8.2K 0.5% 1/10W
R117	1-216-845-11	s METAL, CHIP 100K 5% 1/16W (Up to Serial No. J:10105, UC:20115, EK:50580)
R118	1-216-842-11	s METAL, CHIP 56K 5% 1/16W
R119	1-216-683-11	s METAL, CHIP 22K 0.5% 1/10W
R201	1-216-679-11	s METAL, CHIP 15K 0.5% 1/10W
R202	1-216-693-11	s METAL, CHIP 56K 0.5% 1/10W
R203	1-216-687-11	s METAL, CHIP 33K 0.5% 1/10W
R204	1-216-835-11	s METAL, CHIP 15K 5% 1/16W
R205	1-216-835-11	s METAL, CHIP 15K 5% 1/16W
R206	1-216-835-11	s METAL, CHIP 15K 5% 1/16W
R207	1-216-836-11	s METAL, CHIP 18K 5% 1/16W
R208	1-216-834-11	s METAL, CHIP 12K 5% 1/16W
R209	1-216-836-11	s METAL, CHIP 18K 5% 1/16W
R210	1-216-835-11	s METAL, CHIP 15K 5% 1/16W
R211	1-216-835-11	s METAL, CHIP 15K 5% 1/16W
R212	1-216-835-11	s METAL, CHIP 15K 5% 1/16W
R213	1-216-671-11	s METAL, CHIP 6.8K 0.5% 1/10W
R214	1-216-671-11	s METAL, CHIP 6.8K 0.5% 1/10W
R215	1-216-673-11	s METAL, CHIP 8.2K 0.5% 1/10W
R216	1-216-673-11	s METAL, CHIP 8.2K 0.5% 1/10W
R217	1-216-845-11	s METAL, CHIP 100K 5% 1/16W (Up to Serial No. J:10105, UC:20115, EK:50580)
R218	1-216-842-11	s METAL, CHIP 56K 5% 1/16W
R219	1-216-683-11	s METAL, CHIP 22K 0.5% 1/10W
RV101	1-228-458-00	s RES, ADJ, METAL 5K
RV102	1-228-458-00	s RES, ADJ, METAL 5K
RV103	1-228-461-00	s RES, ADJ, CERMET 50K
RV104	1-228-461-00	s RES, ADJ, CERMET 50K
RV105	1-228-460-00	s RES, ADJ, METAL 20K
RV201	1-228-458-00	s RES, ADJ, METAL 5K
RV202	1-228-458-00	s RES, ADJ, METAL 5K
RV203	1-228-461-00	s RES, ADJ, CERMET 50K
RV204	1-228-461-00	s RES, ADJ, CERMET 50K
RV205	1-228-460-00	s RES, ADJ, METAL 20K

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

EM-77 BOARD

Ref. No.

or Q'ty Part No. SP Description

1pc A-7850-820-A o COMPLETE PCB, EM-77

(This assembly includes the following parts.)

C5	1-164-004-11 s CERAMIC, CHIP 0.1uF 10% 25V
C6	1-164-004-11 s CERAMIC, CHIP 0.1uF 10% 25V
C7	1-164-004-11 s CERAMIC, CHIP 0.1uF 10% 25V
C8	1-164-004-11 s CERAMIC, CHIP 0.1uF 10% 25V
C9	1-164-004-11 s CERAMIC, CHIP 0.1uF 10% 25V
C10	1-164-004-11 s CERAMIC, CHIP 0.1uF 10% 25V
C11	1-164-004-11 s CERAMIC, CHIP 0.1uF 10% 25V
C12	1-164-004-11 s CERAMIC, CHIP 0.1uF 10% 25V
C13	1-164-004-11 s CERAMIC, CHIP 0.1uF 10% 25V
C14	1-164-004-11 s CERAMIC, CHIP 0.1uF 10% 25V
CN1	1-562-993-11 o SOCKET, CONNECTOR 30P
CN2	1-563-335-11 s CONNECTOR, DIN 48P, FEMALE
CN3	1-506-474-11 s CONNECTOR, 9P, MALE
CN4	1-506-473-11 s CONNECTOR, 8P, MALE
CN5	1-506-479-11 s PIN, CONNECTOR 14P
CN6	1-506-473-11 s CONNECTOR, 8P, MALE
CN7	1-506-470-11 s CONNECTOR, 5P, MALE
CN8	1-564-705-11 o PIN HEADER, STRAIGHT 3P
D1	8-719-911-19 s DIODE 1SS119
D2	8-719-911-19 s DIODE 1SS119
IC1	8-759-926-77 s IC SN74HC541ANS
IC2	8-759-926-77 s IC SN74HC541ANS
IC3	8-759-926-49 s IC SN74HC245ANS
IC4	8-759-926-77 s IC SN74HC541ANS
IC5	8-759-716-71 s IC 16V8-EM77V1.0
IC6	8-759-151-38 s IC CXD8141Q
IC7	8-759-151-38 s IC CXD8141Q
IC8	8-759-207-07 s IC TD62381P
IC9	8-759-207-07 s IC TD62381P
L1	1-419-533-11 s COIL 47uH
RB1	1-231-410-00 s RESISTOR BLOCK 10Kx8
RB2	1-231-410-00 s RESISTOR BLOCK 10Kx8
RB3	1-231-410-00 s RESISTOR BLOCK 10Kx8
RB4	1-231-410-00 s RESISTOR BLOCK 10Kx8
RB5	1-231-410-00 s RESISTOR BLOCK 10Kx8
RB6	1-231-410-00 s RESISTOR BLOCK 10Kx8
RB7	1-231-410-00 s RESISTOR BLOCK 10Kx8
RB8	1-231-410-00 s RESISTOR BLOCK 10Kx8
SW1	1-553-977-00 s SWITCH, SLIDE

SP-13 BOARD (Up to Serial No. J: 15240, UC: 25180,
EK: 55040)

Ref. No.

or Q'ty Part No. SP Description

1pc A-7850-805-A o COMPLETE PCB, SP-13

(This assembly includes the following parts.)

1pc	1-639-523-11 o PC BOARD, DUS-316 (KO-16 BOARD) (Up to Serial No. J:10105, UC:20115, EK:50580)
1pc	1-640-801-11 o PC BOARD, DUS-447
2pcs	2-355-254-01 s SPACER (A), LCD
3pcs	3-167-943-01 o CASE (UPPER), SHIELD, SP
3pcs	3-167-944-01 o CASE (LOWER), SHIELD, SP
3pcs	3-167-945-01 o CASE (INNER), SHIELD, SP
3pcs	7-682-903-11 s SCREW +PWH 3x6
C6	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C8	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C10	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C11	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C17	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C19	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C20	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C22	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C25	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C26	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C28	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C29	1-163-251-11 s CERAMIC 100PF 5% 50V
C33,35, 38,44, 49	1-124-229-00 s ELECT 33 20% 10V (Up to Serial No. J:10105, UC:20115, EK:50380)
	1-124-442-00 s ELECT 330 20% 6.3V (Serial No. J:10106 and higher, UC:20116 and higher, EK:50381 and higher)
C36	1-136-165-00 s FILM 0.1uF 5% 50V
C37	1-136-165-00 s FILM 0.1uF 5% 50V
C41	1-164-182-11 s CERAMIC 0.0033uF 10% 50VOW
C47	1-136-163-00 s FILM 0.068uF 5% 50VW
C48	1-136-163-00 s FILM 0.068uF 5% 50VW
C53	1-130-471-00 s NYLAR 0.001uF 5% 50V
C57	1-102-973-00 s CERAMIC 100PF 5% 50V
C63	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C64	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C65	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C67	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C68	1-107-204-00 s MICA 12PF 5% 500V
C69	1-107-157-00 s MICA 27PF 5% 500V (Up to Serial No. J:15040, UC:25020, EK:55040)
C70	1-107-204-00 s MICA 12PF 5% 500V
C71	1-107-207-00 s MICA 16PF 5% 500V
C72	1-107-157-00 s MICA 27PF 5% 500V (Up to Serial No. J:15040, UC:25020, EK:55040)
C73	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C74	1-107-207-00 s MICA 16PF 5% 500V
C75	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C77	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C78	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C81	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C82	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW

NOTE : Please see pages E-27 for the parts that
are not listed in the parts list.

(SP-13 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
C84	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C86	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C88	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C90	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C96	1-102-973-00	s CERAMIC 100PF 5% 50V
C97	1-130-471-00	s NYLAR 0.001uF 5% 50V
C99	1-130-481-00	s NYLAR 0.0068uF 5% 50V
C102	1-136-155-00	s FILM 0.015uF 5% 50V
C106	1-130-471-00	s NYLAR 0.001uF 5% 50V
C107	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C113	1-102-973-00	s CERAMIC 100PF 5% 50V
C114	1-130-471-00	s NYLAR 0.001uF 5% 50V
C116	1-130-481-00	s NYLAR 0.0068uF 5% 50V
C119	1-136-155-00	s FILM 0.015uF 5% 50V
C123	1-130-471-00	s NYLAR 0.001uF 5% 50V
C124	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C125	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C126	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C128	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C129	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C130	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C131	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C133	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C134	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C135	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C136	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C137	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C138	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C139	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C140	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C141	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C142	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C143	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C145	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C147	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C200	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C300	1-126-153-11	s ELECT 22 20% 6.3V (Serial No. J:10106 and higher, UC:20116 and higher, EK:50381 and higher)
C400,401	1-124-604-00	s ELECT 330 20% 10V (Serial No. J:10106 and higher, UC:20116 and higher, EK:50381 and higher)
C500	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
CN1	1-506-475-11	o CONNECTOR, 10P, MALE
CN2	1-564-069-41	o PIN, CONNECTOR 14P
CN3	1-506-478-11	s CONNECTOR, 13P, MALE
CN4	1-506-468-11	s CONNECTOR, 3P, MALE
CN5	1-564-708-11	o PIN HEADER, STRAIGHT 6P
CN6	1-506-477-11	s CONNECTOR, 12P, MALE
CN7	1-506-472-11	s CONNECTOR, 7P, MALE
CN8	1-562-708-11	o CONNECTOR, FPC 13P, FEMALE
CN9	1-562-883-11	o CONNECTOR, FPC 20P, FEMALE
CN10	1-562-883-11	o CONNECTOR, FPC 20P, FEMALE
CN11	1-506-478-11	s CONNECTOR, 13P, MALE
CN12	1-506-478-11	s CONNECTOR, 13P, MALE

(SP-13 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
CT1,2	1-141-227-00	s CERAMIC TRIMMER (Serial No. J:15041 and Higher, UC:25021 and Higher, EK:55041 and Higher)
D1	8-719-800-26	s DIODE TLUG164
D2	8-719-800-26	s DIODE TLUG164
D3	8-719-800-56	s DIODE TLUR164
D4	8-719-938-68	s DIODE 6L3HF8
D5	8-719-907-19	s DIODE, VARICAP FC52N-5
D6	8-719-915-30	s DIODE, VARICAP FC53M
D7	8-719-915-30	s DIODE, VARICAP FC53M
D8	8-719-911-19	s DIODE 1SS119
D9	8-719-911-19	s DIODE 1SS119
D10	8-719-915-30	s DIODE, VARICAP FC53M
D11	8-719-911-19	s DIODE 1SS119
D12	8-719-911-19	s DIODE 1SS119
FB1	1-543-256-11	s BEAD, FERRITE
FB2	1-543-256-11	s BEAD, FERRITE
FB3	1-543-256-11	s BEAD, FERRITE
FB4	1-543-256-11	s BEAD, FERRITE
FB5	1-543-256-11	s BEAD, FERRITE
FB6	1-543-256-11	s BEAD, FERRITE
FB7	1-543-256-11	s BEAD, FERRITE
FB8	1-543-256-11	s BEAD, FERRITE
FB9	1-543-256-11	s BEAD, FERRITE
FB10	1-543-256-11	s BEAD, FERRITE
FB11	1-543-256-11	s BEAD, FERRITE
FB12	1-543-256-11	s BEAD, FERRITE
FB13	1-543-256-11	s BEAD, FERRITE
FB14	1-543-256-11	s BEAD, FERRITE
FB15	1-543-256-11	s BEAD, FERRITE
FB16	1-543-256-11	s BEAD, FERRITE
FB17	1-543-256-11	s BEAD, FERRITE
FB18	1-543-256-11	s BEAD, FERRITE
FB19	1-543-256-11	s BEAD, FERRITE
FB20	1-543-256-11	s BEAD, FERRITE
FB21	1-543-256-11	s BEAD, FERRITE
FB22	1-543-256-11	s BEAD, FERRITE
FB23	1-543-256-11	s BEAD, FERRITE
FB24	1-543-256-11	s BEAD, FERRITE
FB25	1-543-256-11	s BEAD, FERRITE
FB26	1-543-256-11	s BEAD, FERRITE
FB27	1-543-256-11	s BEAD, FERRITE
FB28	1-543-256-11	s BEAD, FERRITE
FB29	1-543-256-11	s BEAD, FERRITE
FB30	1-543-256-11	s BEAD, FERRITE
FB31	1-543-256-11	s BEAD, FERRITE
FB32	1-543-256-11	s BEAD, FERRITE
FB600, 601	1-535-178-00	s BEAD, FERRITE (Up to Serial No. J:10105, UC:20115, EK:50380)
ICB2	8-759-926-77	s IC SN74HC541ANS
ICB4	8-759-926-77	s IC SN74HC541ANS
ICB8	8-759-926-76	s IC SN74HC540ANS
ICB9	8-759-926-05	s IC SN74HC125ANS
ICC3	8-759-152-36	s IC CXD8185AQ
ICC5	8-759-926-05	s IC SN74HC125ANS
ICC6	8-759-926-77	s IC SN74HC541ANS
ICC9	8-759-933-84	s IC CXD1008Q

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

(SP-13 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
ICD3	8-759-152-05	s IC CXD8184AQ
ICD5	8-759-008-52	s IC MC74HC123AF
ICD7	8-752-337-79	s IC CXX58257AM-10LL
ICD9	8-759-933-85	s IC CXD1009Q
ICE10	8-759-239-23	s IC TC74HC86AF (Serial No. J:10106 and Higher, UC:20116 and Higher, EK:50581 and Higher)
ICF1	8-759-926-77	s IC SN74HC541ANS
ICF2	8-759-926-05	s IC SN74HC125ANS
ICF3	8-759-927-29	s IC SN74HC004ANS
ICF4	8-759-926-77	s IC SN74HC541ANS
ICF5	8-759-239-23	s IC TC74HC86AF
ICF6	8-759-044-72	s IC CXD8319M
ICF9	8-759-970-59	s IC TLC272CPS
ICG3	8-759-030-59	s IC MC1648P-1
ICG7	8-759-239-23	s IC TC74HC86AF (Up to Serial No. J:10105, UC:20115, EK:50580)
ICG9	8-759-970-59	s IC TLC272CPS
ICG10	8-759-926-77	s IC SN74HC541ANS
ICH2	8-759-040-44	s IC MC4044P
ICH9	8-759-933-84	s IC CXD1008Q
ICH10	8-759-926-05	s IC SN74HC125ANS
ICH6A	8-759-230-98	s IC TC74HC4052AF
ICH6B	8-759-230-98	s IC TC74HC4052AF
ICJ2	8-759-927-29	s IC SN74HC004ANS
ICJ3	8-752-306-51	s IC CX23065
ICJ5	8-759-231-93	s IC TC74HC4051AF
ICJ6	8-759-231-93	s IC TC74HC4051AF
ICJ7	8-752-337-79	s IC CXX58257AM-10LL
ICJ9	8-759-933-85	s IC CXD1009Q
ICK2	8-759-970-59	s IC TLC272CPS
ICK5	8-759-983-69	s IC LM358PS
ICL2	8-759-925-74	s IC SN74HC04ANS
ICL3	8-759-925-85	s IC SN74HC32ANS
ICL5	8-759-926-77	s IC SN74HC541ANS
ICL6	8-759-926-77	s IC SN74HC541ANS
ICL9	8-759-970-59	s IC TLC272CPS
ICM2	8-759-927-46	s IC SN74HC00ANS
ICM8	8-759-511-14	s IC TLC274CNS
ICM9A	8-759-970-59	s IC TLC272CPS
ICM9B	8-759-511-14	s IC TLC274CNS
ICM3A	8-759-927-46	s IC SN74HC00ANS
ICM3B	8-759-927-46	s IC SN74HC00ANS
J1	1-564-947-11	s CONNECTOR, 2P, MALE
J2	1-564-947-11	s CONNECTOR, 2P, MALE
L1	1-412-533-11	s COIL 47uH
L2	1-412-533-11	s COIL 47uH
L3 to 5	1-459-155-00	s COIL 45uH (Up to Serial No. J:10105, UC:20115, EK:50380)

(SP-13 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
	1-410-482-31	s COIL 100uH (Serial No. J:10106 and higher, UC:20116 and higher, EK:50381 and higher)
L6,8	1-408-429-00	s COIL 470uH (Serial No. J:10106 and higher, UC:20116 and higher, EK:50381 and higher)
L7	1-426-259-11	s COIL, RF
L9 to 16	1-459-155-00	s COIL 45uH (Up to Serial No. J:10105, UC:20116, EK:50380)
	1-410-482-31	s COIL 100uH (Serial No. J:10106 and higher, UC:20116 and higher, EK:50381 and higher)
LV1	1-406-406-11	s COIL (OSC)
LV2	1-406-406-11	s COIL (OSC)
LV3	1-406-406-11	s COIL (OSC)
Q1	8-729-385-52	s TRANSISTOR 2SC2855-E
R51	1-216-056-00	s METAL 2K 5% 1/10W
R53	1-216-067-00	s METAL, CHIP 5.6K 5% 1/10W
R506	1-216-079-00	s METAL, CHIP 18K 5% 1/10W
R514	1-216-079-00	s METAL, CHIP 18K 5% 1/10W
R608	1-249-408-11	s CARBON 180 5% 1/4W (Up to Serial No. J:10095, UC:20045, EK:50200)
R700	1-249-397-11	s CARBON 22 5% 1/4W (Up to Serial No. J:10095, UC:20045, EK:50200)
R701	1-249-403-11	s CARBON 68 5% 1/4W (Up to Serial No. J:10095, UC:20045, EK:50200)
R702	1-249-403-11	s CARBON 68 5% 1/4W (Up to Serial No. J:10105, UC:20115, EK:50380)
	1-216-033-00	s CHIP 220 5% 1/10W (Serial No. J:10106 and higher, UC:20116 and higher, EK:50381 and higher)
R800	1-249-417-11	s CARBON 1K 5% 1/4W (Serial No. J:10036 to 10105, UC:20026 to 20115, EK:50061 to 50580)
R801	1-249-417-11	s CARBON 1K 5% 1/4W (Serial No. J:10036 to 10105, UC:20026 to 20115, EK:50061 to 50580)
R514	1-216-079-00	s METAL, CHIP 18K 5% 1/10W
RB1	1-231-533-00	s RESISTOR BLOCK 10Kx4
RB2	1-231-533-00	s RESISTOR BLOCK 10Kx4
RB3	1-231-410-00	s RESISTOR BLOCK 10Kx8
RB4	1-231-410-00	s RESISTOR BLOCK 10Kx8
RB6	1-231-410-00	s RESISTOR BLOCK 10Kx8
RB7	1-231-533-00	s RESISTOR BLOCK 10Kx4
RB8	1-231-410-00	s RESISTOR BLOCK 10Kx8
RB9	1-231-533-00	s RESISTOR BLOCK 10Kx4

NOTE : Please see pages E-27 for the parts that are not listed in the parts list

(SP-13 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
RV1	1-237-518-21	s RES, ADJ, METAL 10K
RV2	1-237-516-21	s RES, ADJ, METAL 2K
RV3	1-237-520-21	s RES, ADJ, METAL 50K
RV4	1-237-516-21	s RES, ADJ, METAL 2K
RV5	1-237-520-21	s RES, ADJ, METAL 50K
RV6	1-237-516-21	s RES, ADJ, METAL 2K
K1	1-567-698-11	s OSCILLATOR, CRYSTAL
K2	1-579-219-11	s OSCILLATOR, CRYSTAL

SP-13 BOARD (Serial No. J: 15241 and higher,
UC: 25181 and higher, EK: 55041 and higher)

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7850-805-A	o COMPLETE PCB, SP-13 (This assembly includes the following parts.)
3pcs	3-167-945-02	o CASE (INNER), SHIELD, SP
3pcs	3-167-944-02	o CASE (LOWER), SHIELD, SP
3pcs	4-925-756-21	o HOLDER, LED
2pcs	2-355-254-01	s SPACER (A), LCD
3pcs	3-167-943-01	o CASE (UPPER), SHIELD, SP
1pc	4-925-756-21	o HOLDER, LED
C1	1-124-442-00	s ELECT 330uF 20% 6.3V
C2	1-124-442-00	s ELECT 330uF 20% 6.3V
C3	1-124-442-00	s ELECT 330uF 20% 6.3V
C4	1-124-442-00	s ELECT 330uF 20% 6.3V
C6	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C7	1-124-442-00	s ELECT 330uF 20% 6.3V
C8	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C9	1-124-442-00	s ELECT 330uF 20% 6.3V
C10	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C11	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C12	1-124-442-00	s ELECT 330uF 20% 6.3V
C17	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C18	1-124-442-00	s ELECT 330uF 20% 6.3V
C19	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C20	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C21	1-124-442-00	s ELECT 330uF 20% 6.3V
C22	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C23	1-124-442-00	s ELECT 330uF 20% 6.3V
C24	1-124-442-00	s ELECT 330uF 20% 6.3V
C25	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C26	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C27	1-124-442-00	s ELECT 330uF 20% 6.3V
C28	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C29	1-163-251-11	s CERAMIC, CHIP 100PF 5% 50V
C33	1-124-442-00	s ELECT 330uF 20% 6.3V
C35	1-124-442-00	s ELECT 330uF 20% 6.3V
C36	1-136-165-00	s FILM 0.1uF 5% 50V
C37	1-136-165-00	s FILM 0.1uF 5% 50V
C38	1-124-442-00	s ELECT 330uF 20% 6.3V
C39	1-124-442-00	s ELECT 330uF 20% 6.3V
C41	1-164-182-11	s CERAMIC CHIP 3300PF 10% 100V
C44	1-124-442-00	s ELECT 330uF 20% 6.3V
C47	1-136-163-00	s NYLAR 0.068uF 10% 50V
C48	1-136-163-00	s NYLAR 0.068uF 10% 50V
C49	1-124-442-00	s ELECT 330uF 20% 6.3V
C53	1-130-471-00	s NYLAR 0.001uF 5% 50V
C57	1-102-973-00	s CERAMIC 100PF 5% 50V
C58	1-124-442-00	s ELECT 330uF 20% 6.3V
C63	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C64	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C65	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C66	1-124-442-00	s ELECT 330uF 20% 6.3V
C67	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C68	1-107-204-00	s MICA 12PF 5% 500V
C70	1-107-204-00	s MICA 12PF 5% 500V
C71	1-107-207-00	s MICA 16PF 5% 500V
C73	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C74	1-107-207-00	s MICA 16PF 5% 500V
C75	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C76	1-124-442-00	s ELECT 330uF 20% 6.3V

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

(SP-13 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
C77	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C78	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C79	1-124-442-00	s ELECT 330uF 20% 6.3V
C80	1-124-442-00	s ELECT 330uF 20% 6.3V
C81	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C82	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C83	1-124-442-00	s ELECT 330uF 20% 6.3V
C84	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C85	1-124-442-00	s ELECT 330uF 20% 6.3V
C86	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C87	1-124-442-00	s ELECT 330uF 20% 6.3V
C88	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C89	1-124-442-00	s ELECT 330uF 20% 6.3V
C90	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C91	1-124-442-00	s ELECT 330uF 20% 6.3V
C92	1-124-442-00	s ELECT 330uF 20% 6.3V
C93	1-124-442-00	s ELECT 330uF 20% 6.3V
C94	1-124-442-00	s ELECT 330uF 20% 6.3V
C96	1-102-973-00	s CERAMIC 100PF 5% 50V
C97	1-130-471-00	s MYLAR 0.001uF 5% 50V
C98	1-124-442-00	s ELECT 330uF 20% 6.3V
C99	1-130-481-00	s MYLAR 0.0068uF 5% 50V
C102	1-136-155-00	s FILM 0.015uF 5% 50V
C106	1-130-471-00	s MYLAR 0.001uF 5% 50V
C107	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C108	1-124-442-00	s ELECT 330uF 20% 6.3V
C109	1-124-442-00	s ELECT 330uF 20% 6.3V
C110	1-124-442-00	s ELECT 330uF 20% 6.3V
C111	1-124-442-00	s ELECT 330uF 20% 6.3V
C113	1-102-973-00	s CERAMIC 100PF 5% 50V
C114	1-130-471-00	s MYLAR 0.001uF 5% 50V
C115	1-124-442-00	s ELECT 330uF 20% 6.3V
C116	1-130-481-00	s MYLAR 0.0068uF 5% 50V
C119	1-136-155-00	s FILM 0.015uF 5% 50V
C123	1-130-471-00	s MYLAR 0.001uF 5% 50V
C124	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C125	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C126	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C128	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C129	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C130	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C131	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C133	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C134	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C135	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C136	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C137	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C138	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C139	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C140	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C141	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C142	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C143	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C144	1-124-442-00	s ELECT 330uF 20% 6.3V
C145	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C146	1-124-442-00	s ELECT 330uF 20% 6.3V
C147	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C148	1-124-442-00	s ELECT 330uF 20% 6.3V
C200	1-164-232-11	s CERAMIC 0.01uF 10% 100V

(SP-13 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
C300	1-126-153-11	s ELECT 22uF 20% 6.3V
C500	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C505	1-164-232-11	s CERAMIC 0.01uF 10% 100V
CN1	1-506-475-11	o CONNECTOR, 10P, MALE
CN2	1-564-069-41	o PIN, CONNECTOR 14P
CN3	1-506-478-11	s CONNECTOR, 13P, MALE
CN4	1-506-468-11	s CONNECTOR, 3P, MALE
CN5	1-564-708-11	o PIN HEADER, STRAIGHT 6P
CN6	1-506-477-11	s CONNECTOR, 12P, MALE
CN7	1-506-472-11	s CONNECTOR, 7P, MALE
CN8	1-562-708-11	o CONNECTOR, FPC 13P, FEMALE
CN9	1-562-883-11	o CONNECTOR, FPC 20P, FEMALE
CN10	1-562-883-11	o CONNECTOR, FPC 20P, FEMALE
CN11	1-506-478-11	s CONNECTOR, 13P, MALE
CN12	1-506-478-11	s CONNECTOR, 13P, MALE
CT1	1-141-227-00	s CAP, TRIMMER 20PF
CT2	1-141-227-00	s CAP, TRIMMER 20PF
D1	8-719-800-26	s DIODE TL0G164
D2	8-719-800-26	s DIODE TL0G164
D3	8-719-800-56	s LED TL0R164, RED
D4	8-719-938-68	s DIODE GL3HY8
D5	8-719-907-19	s DIODE, VARICAP FC52M-5
D6	8-719-915-30	s DIODE, VARICAP FC53M
D7	8-719-915-30	s DIODE, VARICAP FC53M
D8	8-719-911-19	s DIODE 1SS119
D9	8-719-911-19	s DIODE 1SS119
D10	8-719-915-30	s DIODE, VARICAP FC53M
D11	8-719-911-19	s DIODE 1SS119
D12	8-719-911-19	s DIODE 1SS119
D101	8-719-911-19	s DIODE 1SS119
D102	8-719-911-19	s DIODE 1SS119
FB1	1-543-256-11	s BEAD, FERRITE
FB2	1-543-256-11	s BEAD, FERRITE
FB3	1-543-256-11	s BEAD, FERRITE
FB4	1-543-256-11	s BEAD, FERRITE
FB5	1-543-256-11	s BEAD, FERRITE
FB6	1-543-256-11	s BEAD, FERRITE
FB7	1-543-256-11	s BEAD, FERRITE
FB8	1-543-256-11	s BEAD, FERRITE
FB9	1-543-256-11	s BEAD, FERRITE
FB10	1-543-256-11	s BEAD, FERRITE
FB11	1-543-256-11	s BEAD, FERRITE
FB12	1-543-256-11	s BEAD, FERRITE
FB13	1-543-256-11	s BEAD, FERRITE
FB14	1-543-256-11	s BEAD, FERRITE
FB15	1-543-256-11	s BEAD, FERRITE
FB16	1-543-256-11	s BEAD, FERRITE
FB17	1-543-256-11	s BEAD, FERRITE
FB18	1-543-256-11	s BEAD, FERRITE
FB19	1-543-256-11	s BEAD, FERRITE
FB20	1-543-256-11	s BEAD, FERRITE
FB21	1-543-256-11	s BEAD, FERRITE
FB22	1-543-256-11	s BEAD, FERRITE
FB23	1-543-256-11	s BEAD, FERRITE
FB24	1-543-256-11	s BEAD, FERRITE
FB25	1-543-256-11	s BEAD, FERRITE
FB26	1-543-256-11	s BEAD, FERRITE

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

(SP-13 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
FB27	1-543-256-11	s BEAD, FERRITE
FB28	1-543-256-11	s BEAD, FERRITE
FB29	1-543-256-11	s BEAD, FERRITE
FB30	1-543-256-11	s BEAD, FERRITE
FB31	1-543-256-11	s BEAD, FERRITE
FB32	1-543-256-11	s BEAD, FERRITE
ICB2	8-759-926-77	s IC SN74HC541NS
ICB4	8-759-926-77	s IC SN74HC541NS
ICB8	8-759-926-76	s IC SN74HC540ANS
ICB9	8-759-926-05	s IC SN74HC125ANS
ICC3	8-759-152-36	s IC CXD8185AQ
ICC5	8-759-926-05	s IC SN74HC125ANS
ICC6	8-759-926-77	s IC SN74HC541NS
ICC9	8-759-933-84	s IC CKD1008Q
ICD3	8-759-152-05	s IC CXD8184AQ
ICD5	8-759-239-55	s IC MC74HC123AF
ICD7	8-759-507-85	s IC MS62256CLL-10FC
ICD9	8-759-933-85	s IC CXD1009Q
ICF1	8-759-926-77	s IC SN74HC541NS
ICF2	8-759-926-05	s IC SN74HC125ANS
ICF3	8-759-927-29	s IC SN74HC004NS
ICF4	8-759-926-77	s IC SN74HC541NS
ICF5	8-759-239-23	s IC TC74HC86AF
ICF9	8-759-970-59	s IC TLC272CPS
ICG3	8-759-030-59	s IC MC1648P-1
ICG9	8-759-970-59	s IC TLC272CPS
ICG10	8-759-926-77	s IC SN74HC541NS
ICH2	8-759-040-44	s IC MC4044P
ICH9	8-759-933-84	s IC CXD1008Q
ICH10	8-759-926-05	s IC SN74HC125ANS
ICH6A	8-759-230-98	s IC TC74HC4052AF
ICH6B	8-759-230-98	s IC TC74HC4052AF
ICJ2	8-759-927-29	s IC SN74HC004NS
ICJ3	8-752-306-51	s IC CK23065A
ICJ5	8-759-231-93	s IC TC74HC4051AF
ICJ6	8-759-231-93	s IC TC74HC4051AF
ICJ7	8-759-507-85	s IC MS62256CLL-10FC
ICJ9	8-759-933-85	s IC CXD1009Q
ICK2	8-759-970-59	s IC TLC272CPS
ICK5	8-759-983-59	s IC LM358PS
ICK10	8-759-044-72	s IC CXD8319M
ICL2	8-759-926-74	s IC TC74HC04NS
ICL3	8-759-926-85	s IC SN74HC32NS
ICL5	8-759-926-77	s IC SN74HC541NS
ICL6	8-759-926-77	s IC SN74HC541NS
ICL9	8-759-970-59	s IC TLC272CPS
ICM2	8-759-927-46	s IC SN74HC00NS
ICM8	8-759-511-14	s IC TLC274CNS
ICM3A	8-759-927-46	s IC SN74HC00NS
ICM3B	8-759-927-46	s IC SN74HC00NS
ICM9A	8-759-970-59	s IC TLC272CPS
ICM9B	8-759-511-14	s IC TLC274CNS
J1	1-564-947-11	s CONNECTOR, 2P, MALE
J2	1-564-947-11	s CONNECTOR, 2P, MALE

(SP-13 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
L1	1-412-533-11	s INDUCTOR 470H
L2	1-412-533-11	s INDUCTOR 470H
L3	1-410-482-31	s INDUCTOR 100uH
L4	1-410-482-31	s INDUCTOR 100uH
L5	1-410-482-31	s INDUCTOR 100uH
L6	1-408-429-00	s INDUCTOR 470uH
L7	1-426-259-11	s COIL, RF
L8	1-408-429-00	s INDUCTOR 470uH
L9	1-410-482-31	s INDUCTOR 100uH
L10	1-410-482-31	s INDUCTOR 100uH
L11	1-410-482-31	s INDUCTOR 100uH
L12	1-410-482-31	s INDUCTOR 100uH
L13	1-410-482-31	s INDUCTOR 100uH
L14	1-410-482-31	s INDUCTOR 100uH
L15	1-410-482-31	s INDUCTOR 100uH
L16	1-410-482-31	s INDUCTOR 100uH
LV1	1-406-406-11	s COIL (OSC)
LV2	1-406-406-11	s COIL (OSC)
LV3	1-406-406-11	s COIL (OSC)
Q1	8-729-385-52	s TRANSISTOR 2SC2855-E
Q2	8-729-900-74	s TRANSISTOR DTC143TS (Serial No. J:15301 and higer, UC:25471 and higer, EK:55501 and higer)
R51	1-216-056-00	s METAL, CHIP 2K 5% 1/10W
R53	1-216-067-00	s METAL, CHIP 5.6K 5% 1/10W
R505	1-216-047-00	s METAL, CHIP 820 5% 1/10W
R506	1-216-079-00	s METAL, CHIP 18K 5% 1/10W
RB1	1-231-533-00	s RESISTOR BLOCK 10Kx4
RB2	1-231-533-00	s RESISTOR BLOCK 10Kx4
RB3	1-231-410-00	s RESISTOR BLOCK 10Kx8
RB4	1-231-410-00	s RESISTOR BLOCK 10Kx8
RB6	1-231-410-00	s RESISTOR BLOCK 10Kx8
RB7	1-231-533-00	s RESISTOR BLOCK 10Kx4
RB8	1-231-410-00	s RESISTOR BLOCK 10Kx8
RB9	1-231-533-00	s RESISTOR BLOCK 10Kx4
RV1	1-237-518-21	s RES, ADJ, METAL 10K
RV2	1-237-516-21	s RES, ADJ, METAL 2K
RV3	1-237-520-21	s RES, ADJ, METAL 50K
RV4	1-237-516-21	s RES, ADJ, METAL 2K
RV5	1-237-520-21	s RES, ADJ, METAL 50K
RV6	1-237-516-21	s RES, ADJ, METAL 2K
X1	1-567-698-11	s OSCILLATOR, CRYSTAL
X2	1-579-219-11	s OSCILLATOR, CRYSTAL

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

SP-17B BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7850-890-A	o COMPLETE PCB, SP-17B (This assembly includes the following parts.)
2pcs	7-621-284-30	s SCREW +P 2.6X8
2pcs	7-622-207-05	s N 2.6, TYPE 2
C3	1-126-177-11	s ELECT 100uF 20% 10V
CN1	1-506-750-11	o CONNECTOR, DIN 48P, MALE
D1	8-719-938-68	s DIODE GL3HY8
D2	8-719-800-26	s DIODE TL0G164
D3	8-719-800-26	s DIODE TL0G164
D4	8-719-800-56	s LED TL0R164, RED
IC1	8-759-152-60	s IC CXD8163AQ
IC10	8-752-331-87	s IC CXD1160AP
IC11	8-752-331-87	s IC CXD1160AP
L1	1-412-533-11	s COIL 47uH

SP-17C BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7850-892-A	o COMPLETE PCB, SP-17C (This assembly includes the following parts.)
2pcs	7-621-284-30	s SCREW +P 2.6X8
2pcs	7-622-207-05	s N 2.6, TYPE 2
C3	1-126-177-11	s ELECT 100uF 20% 10V
CN1	1-506-750-11	o CONNECTOR, DIN 48P, MALE
D1	8-719-938-68	s DIODE GL3HY8
D2	8-719-800-26	s DIODE TL0G164
D3	8-719-800-26	s DIODE TL0G164
D4	8-719-800-56	s LED TL0R164, RED
IC1	8-759-152-60	s IC CXD8163AQ
IC10	8-752-331-87	s IC CXD1160AP
L1	1-412-533-11	s COIL 47uH

SV-123 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7850-813-A	o COMPLETE PCB, SV-123 (This assembly includes the following parts.)
2pcs	7-682-903-11	s SCREW +PMH 3X6
C101	1-162-201-31	s CERAMIC 12PF 5% 50V
C102	1-162-201-31	s CERAMIC 12PF 5% 50V
C103	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C105	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C106	1-126-157-11	s ELECT 10uF 20% 16V
C107	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C109	1-136-160-00	s FILM 0.039uF 5% 50VOW
C110	1-136-169-00	s MYLAR 0.22uF 5% 50V
C111	1-136-172-00	s FILM 0.39uF 5% 50VOW
C112	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C113	1-136-153-00	s FILM 0.01uF 5% 50V
C114	1-126-157-11	s ELECT 10uF 20% 16V
C115	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C116	1-126-157-11	s ELECT 10uF 20% 16V
C117	1-136-153-00	s FILM 0.01uF 5% 50V
C118	1-136-158-00	s FILM 0.027uF 5% 50VOW
C119	1-130-473-00	s MYLAR 0.0015uF 5% 50V
C120	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C122	1-126-157-11	s ELECT 10uF 20% 16V
C124	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C125	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C127	1-163-017-00	s CERAMIC, CHIP 0.0047uF 5% 50V
C128	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C133	1-136-153-00	s FILM 0.01uF 5% 50V
C134	1-136-153-00	s FILM 0.01uF 5% 50V
C136	1-126-157-11	s ELECT 10uF 20% 16V
C138	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C141	1-136-153-00	s FILM 0.01uF 5% 50V
C142	1-136-153-00	s FILM 0.01uF 5% 50V
C143	1-136-153-00	s FILM 0.01uF 5% 50V
C144	1-136-158-00	s FILM 0.027uF 5% 50VOW
C145	1-130-473-00	s MYLAR 0.0015uF 5% 50V
C146	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C147	1-136-153-00	s FILM 0.01uF 5% 50V
C148	1-136-158-00	s FILM 0.027uF 5% 50VOW
C149	1-130-473-00	s MYLAR 0.0015uF 5% 50V
C150	1-136-153-00	s FILM 0.01uF 5% 50V
C151	1-136-154-00	s FILM 0.012uF 5% 50VOW
C152	1-136-159-00	s FILM 0.033uF 5% 50V
C153	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C154	1-136-153-00	s FILM 0.01uF 5% 50V
C155	1-136-154-00	s FILM 0.012uF 5% 50VOW
C156	1-136-159-00	s FILM 0.033uF 5% 50V
C158	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C159	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C160	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C161	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C162	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C163	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C164	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C165	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C166	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C167	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

(SV-123 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
C168	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C169	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
CN101	1-565-189-11	s CONNECTOR, FPC 36P
CN102	1-506-477-11	s CONNECTOR, 12P, MALE
CN103	1-506-473-11	s CONNECTOR, 8P, MALE
CN104	1-506-472-11	s CONNECTOR, 7P, MALE
CN105	1-562-883-11	o CONNECTOR, FPC 20P, FEMALE
CN106	1-564-706-11	o PIN HEADER, STRAIGHT 4P
D101	8-719-400-18	s DIODE MA152WK
D102	8-719-812-43	s LED TLG124A, GRN
D103	8-719-812-43	s LED TLG124A, GRN
D104	8-719-812-43	s LED TLG124A, GRN
D105	8-719-812-43	s LED TLG124A, GRN
D106	8-719-812-41	s LED TLR124, RED
D107	8-719-812-43	s LED TLG124A, GRN
FB1	1-543-256-11	s BEAD, FERRITE
FB2	1-543-256-11	s BEAD, FERRITE
FB3	1-543-256-11	s BEAD, FERRITE
IC101	8-752-835-62	s IC CXP80524-053Q
IC102	8-759-946-81	s IC CXD1052Q-Z
IC103	8-759-983-69	s IC LM358PS
IC104	8-759-929-26	s IC TL431CPS
IC105	8-759-983-69	s IC LM358PS
IC106	8-759-983-69	s IC LM358PS
IC107	8-752-030-63	s IC CXA1046M
IC108	8-752-030-63	s IC CXA1046M
IC109	8-759-983-69	s IC LM358PS
IC110	8-759-983-69	s IC LM358PS
IC111	8-759-925-80	s IC SN74HC14ANS
IC112	8-759-925-76	s IC SN74HC08ANS
IC113	8-759-239-23	s IC TC74HC86AF
IC114	8-759-008-67	s IC MCL4066BF
IC115	8-759-925-90	s IC SN74HC74ANS
IC116	8-759-926-77	s IC SN74HC541ANS
IC117	8-759-927-46	s IC SN74HC00ANS
L101	1-408-425-00	s INDUCTOR 220uH
L102	1-408-425-00	s INDUCTOR 220uH
L103	1-412-533-11	s COIL 47uH
L104	1-412-533-11	s COIL 47uH
Q101	8-729-216-22	s TRANSISTOR 2SA1162-G
Q102	8-729-230-49	s TRANSISTOR 2SC2712-YG
Q103	8-729-216-22	s TRANSISTOR 2SA1162-G
Q104	8-729-230-49	s TRANSISTOR 2SC2712-YG
Q105	8-729-216-22	s TRANSISTOR 2SA1162-G
Q106	8-729-230-49	s TRANSISTOR 2SC2712-YG
Q107	8-729-216-22	s TRANSISTOR 2SA1162-G
Q108	8-729-230-49	s TRANSISTOR 2SC2712-YG
Q109	8-729-230-49	s TRANSISTOR 2SC2712-YG
Q110	8-729-230-49	s TRANSISTOR 2SC2712-YG
Q111	8-729-230-49	s TRANSISTOR 2SC2712-YG
Q112	8-729-230-49	s TRANSISTOR 2SC2712-YG
Q113	8-729-230-49	s TRANSISTOR 2SC2712-YG
Q114	8-729-901-00	s TRANSISTOR DTC124EK
Q115	8-729-901-00	s TRANSISTOR DTC124EK
Q116	8-729-901-00	s TRANSISTOR DTC124EK
Q117	8-729-901-00	s TRANSISTOR DTC124EK

(SV-123 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
Q118	8-729-901-00	s TRANSISTOR DTC124EK
Q119	8-729-901-00	s TRANSISTOR DTC124EK
R104	1-216-683-11	s METAL, CHIP 22K 0.5% 1/10W
R107	1-216-687-11	s METAL, CHIP 33K 0.5% 1/10W
R108	1-216-687-11	s METAL, CHIP 33K 0.5% 1/10W
R111	1-216-695-11	s METAL, CHIP 68K 0.5% 1/10W
R112	1-216-683-11	s METAL, CHIP 22K 0.5% 1/10W
R113	1-216-692-11	s METAL, CHIP 51K 0.5% 1/10W
R116	1-216-687-11	s METAL, CHIP 33K 0.5% 1/10W
R117	1-216-673-11	s METAL, CHIP 8.2K 0.5% 1/10W
R119	1-216-679-11	s METAL, CHIP 15K 0.5% 1/10W
R122	1-216-043-00	s METAL, CHIP 560 5% 1/10W
R123	1-216-691-11	s METAL, CHIP 47K 0.5% 1/10W
R124	1-216-696-11	s METAL, CHIP 75K 0.5% 1/10W
R131	1-216-651-11	s METAL, CHIP 1K 0.5% 1/10W
R134	1-216-662-11	s METAL, CHIP 3K 0.5% 1/10W
R146	1-216-651-11	s METAL, CHIP 1K 0.5% 1/10W
R149	1-216-662-11	s METAL, CHIP 3K 0.5% 1/10W
RV101	1-241-632-11	s RES, ADJ, CARBON 47K
RV102	1-241-632-11	s RES, ADJ, CARBON 47K
RV103	1-238-017-11	s RES, ADJ, CARBON 22K
RV104	1-238-017-11	s RES, ADJ, CARBON 22K
SW101	1-570-602-11	s SWITCH, DIP 2-CKT
X101	1-579-064-11	s VIBRATOR, CRYSTAL

SW-420 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-637-270-11	o PC BOARD, SW-420
CN8	1-946-966-11	o HARNESS (SW)
CN9	1-506-469-11	s PIN, CONNECTOR 4P
D49	8-719-911-19	s DIODE 1SS119
D50	8-719-911-19	s DIODE 1SS119
D51	8-719-911-19	s DIODE 1SS119
D52	8-719-911-19	s DIODE 1SS119
S28	1-554-937-11	s SWITCH, KEY BOARD
S29	1-554-937-11	s SWITCH, KEY BOARD
S30	1-554-937-11	s SWITCH, KEY BOARD
S31	1-554-937-11	s SWITCH, KEY BOARD

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

SW-426 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-637-279-11	o PC BOARD, SW-426
CN1	1-506-471-11	s CONNECTOR, 6P, MALE
R1	1-249-418-11	s CARBON 1.2K 5% 1/4W
R2	1-249-418-11	s CARBON 1.2K 5% 1/4W
R3	1-249-418-11	s CARBON 1.2K 5% 1/4W
R4	1-249-418-11	s CARBON 1.2K 5% 1/4W
S1	1-554-970-11	s SWITCH, SLIDE

SY-155B BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7850-848-A	o COMPLETE PCB, SY-155B

(This assembly includes the following parts.)

2pcs	1-526-660-21	s SOCKET, IC (DP) 32P
1pc	1-526-950-11	o SOCKET, IC 64P
1pc	1-540-080-11	s SOCKET, IC (IC113) 68P
1pc	2-355-254-01	s SPACER (A), LCD
6pcs	3-330-034-01	s WASHER
6pcs	4-861-614-61	o HOLDER, PC BOARD
1pc	4-924-029-11	s WASHER
6pcs	4-928-330-01	o NUT (M2.6) (JIS 3), HEXAGON
6pcs	7-621-773-95	s SCREW +B 2.6X6
6pcs	7-682-903-11	s SCREW +PMW 3X6
BT1	1-528-229-11	o BATTERY, LITHIUM CR-2450
C3	1-163-127-00	s CERAMIC, CHIP 270PF 5% 50V
C7	1-126-157-11	s ELECT 10uF 20% 16V
C8	1-130-495-00	s MYLAR 0.1uF 5% 50V
C12	1-125-447-11	s DOUBLE LAYERS 1FARAD 5.5V
C13	1-125-447-11	s DOUBLE LAYERS 1FARAD 5.5V
C19	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C20	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C21	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C22	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C23	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C24	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C25	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C26	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C27	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C28	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C29	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C30	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C31	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C32	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C33	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C34	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C35	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C36	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C37	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C38	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C39	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C40	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C41	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C42	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C43	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C44	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C45	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C46	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C47	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C48	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C49	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C50	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C51	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C52	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C53	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C54	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C55	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C57	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

(SY-155B BOARD)

Ref. No. or Q'ty	Part No.	SP Description
C58	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
C59	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
C60	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
C61	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
C62	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
C63	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
C64	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
C65	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
C66	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
C67	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
C68	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
C69	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
C70	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
C71	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
C72	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
C74	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
C75	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
C76	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
CN1	1-564-706-11 o	PIN HEADER, STRAIGHT 4P
CN2	1-506-475-11 s	CONNECTOR, 10P, MALE
CN3	1-506-473-11 s	CONNECTOR, 8P, MALE
CN4	1-506-473-11 s	CONNECTOR, 8P, MALE
CN5	1-506-473-11 s	CONNECTOR, 8P, MALE
CN6	1-506-471-11 s	CONNECTOR, 6P, MALE
CN7	1-506-479-11 s	PIN, CONNECTOR 14P
CN8	1-506-475-11 s	CONNECTOR, 10P, MALE
CN9	1-562-883-11 o	CONNECTOR, FPC 20P, FEMALE
CN10	1-562-883-11 o	CONNECTOR, FPC 20P, FEMALE
CN11	1-562-993-11 o	SOCKET, CONNECTOR 30P
CN12	1-562-993-11 o	SOCKET, CONNECTOR 30P
CN13	1-563-335-11 s	CONNECTOR, DIN 48P, FEMALE
CN14	1-563-335-11 s	CONNECTOR, DIN 48P, FEMALE
CN15	1-563-335-11 s	CONNECTOR, DIN 48P, FEMALE
D1	8-719-981-01 s	DIODE ERA81-004
D2	8-719-981-01 s	DIODE ERA81-004
D3	8-719-981-01 s	DIODE ERA81-004
D4	8-719-981-01 s	DIODE ERA81-004
D5	8-719-800-56 s	DIODE TL0R164
D6	8-719-800-56 s	DIODE TL0R164
D7	8-719-800-26 s	DIODE TL0G164
D8	8-719-938-68 s	DIODE 6L3HY8
D9	8-719-938-68 s	DIODE 6L3HY8
D10	8-719-938-68 s	DIODE 6L3HY8
D11	8-719-800-26 s	DIODE TL0G164
D12	8-719-800-56 s	DIODE TL0R164
D13	8-719-800-56 s	DIODE TL0R164
D14	8-719-800-56 s	DIODE TL0R164
D15	8-719-800-26 s	DIODE TL0G164
D16	8-719-981-01 s	DIODE ERA81-004
FB1	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB2	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB3	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB4	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB5	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB6	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB7	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB8	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB9	1-543-622-11 s	BEAD, FERRITE (CHIP)

(SY-155B BOARD)

Ref. No. or Q'ty	Part No.	SP Description
FB10	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB11	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB12	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB13	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB14	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB15	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB16	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB17	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB18	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB19	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB20	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB21	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB22	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB23	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB24	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB25	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB26	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB27	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB28	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB29	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB30	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB31	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB32	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB33	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB34	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB35	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB36	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB37	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB38	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB39	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB40	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB41	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB42	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB43	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB44	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB45	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB46	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB47	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB48	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB49	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB50	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB51	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB52	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB53	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB54	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB55	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB56	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB57	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB58	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB59	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB60	1-543-622-11 s	BEAD, FERRITE (CHIP)
ICA4	8-759-209-05 s	IC TMP82C79P-2
ICA5	8-759-926-77 s	IC SN74HC541ANS
ICA6	8-759-926-49 s	IC SN74HC245ANS
ICB5	8-759-926-77 s	IC SN74HC541ANS
ICB6	8-759-926-49 s	IC SN74HC245ANS
ICC1	8-759-151-04 s	IC UPD43256AGD-10LL

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

(SY-155B BOARD)

Ref. No. or Q'ty	Part No.	SP Description
ICC2	8-759-151-04	s IC UPD43256AGU-10LL
ICC3	8-759-183-93	s IC 27C010-IFC3V4.1
ICC4	8-759-183-94	s IC 27C010-IFC4V4.1
ICC6	8-759-926-77	s IC SN74HC541ANS
ICD3	8-759-929-77	s IC SN74LS03NS
ICD6	8-759-926-77	s IC SN74HC541ANS
ICD1A	8-759-927-46	s IC SN74HC00ANS
ICD1B	8-759-927-46	s IC SN74HC00ANS
ICE6	8-759-926-77	s IC SN74HC541ANS
ICF2	8-759-151-34	s IC UPD70216L-10
ICF4	8-759-505-42	s IC CXD8139AQ
ICF5	8-759-149-10	s IC UPD4702G
ICF6	8-759-926-77	s IC SN74HC541ANS
ICG1	8-759-149-09	s IC UPD71059GB-10-3B4
ICG3	8-759-205-37	s IC TC74HC574F
ICG4	8-759-925-85	s IC SN74HC32ANS
ICG5	8-759-926-77	s IC SN74HC541ANS
ICG6	8-759-926-76	s IC SN74HC540ANS
ICH1	8-759-149-09	s IC UPD71059GB-10-3B4
ICH2	8-759-926-06	s IC SN74HC126NS
ICH3A	8-759-205-37	s IC TC74HC574F
ICH3B	8-759-926-77	s IC SN74HC541ANS
ICH4A	8-759-925-76	s IC SN74HC08ANS
ICH4B	8-759-925-90	s IC SN74HC74ANS
ICH5A	8-759-925-74	s IC SN74HC04ANS
ICH5B	8-759-008-57	s IC MC34051P
ICJ2	8-759-926-29	s IC SN74HC175ANS
ICJ5	8-759-183-87	s IC 27C256A-SCCKV1.0
ICJ6	8-759-151-35	s IC CXD8130Q
ICJ1A	8-759-149-07	s IC UPD71054GB-10-3B4
ICJ1B	8-759-149-07	s IC UPD71054GB-10-3B4
ICJ4A	8-759-926-11	s IC SN74HC138ANS
ICJ4B	8-759-925-85	s IC SN74HC32ANS
ICK2	8-759-973-71	s IC TL7705CPS-B
ICK3	8-759-153-31	s IC UPD78C11ACW-F08
ICK4	8-759-149-05	s IC UPD71051GB-10-3B4
ICK5	8-759-183-87	s IC 27C256A-SCCKV1.0
ICK6	8-759-151-35	s IC CXD8130Q
ICL4A	8-759-926-49	s IC SN74HC245ANS
ICL4B	8-759-926-80	s IC SN74HC573ANS
L1	1-412-533-11	s COIL 47uH
L2	1-412-533-11	s COIL 47uH
L3	1-412-533-11	s COIL 47uH
R9	1-249-390-11	s CARBON 5.6 5% 1/4W
RB1	1-231-410-00	s RESISTOR BLOCK 10Kx8
RB2	1-231-410-00	s RESISTOR BLOCK 10Kx8
RB3	1-231-410-00	s RESISTOR BLOCK 10Kx8
RB4	1-231-405-00	s RESISTOR BLOCK 1K
RB6	1-231-410-00	s RESISTOR BLOCK 10Kx8
RB8	1-231-410-00	s RESISTOR BLOCK 10Kx8
RB9	1-231-410-00	s RESISTOR BLOCK 10Kx8
RB10	1-231-410-00	s RESISTOR BLOCK 10Kx8
RB11	1-231-410-00	s RESISTOR BLOCK 10Kx8
RB12	1-231-410-00	s RESISTOR BLOCK 10Kx8
RB13	1-231-410-00	s RESISTOR BLOCK 10Kx8

NOTE : Please see pages E-27 for the parts that
are not listed in the parts list.

PCM-7030 (JUC,EK)

(SY-155B BOARD)

Ref. No. or Q'ty	Part No.	SP Description
RB14	1-231-410-00	s RESISTOR BLOCK 10Kx8
RB15	1-231-410-00	s RESISTOR BLOCK 10Kx8
RB16	1-231-410-00	s RESISTOR BLOCK 10Kx8
SW1	1-552-539-00	s SWITCH, TACTILE
SW3	1-570-728-11	s SWITCH, DIP
SW5	1-570-728-11	s SWITCH, DIP
SW6	1-570-602-11	s SWITCH, DIP 2-CKT
X1	1-577-110-11	s VIBRATOR, CRYSTAL
X2	1-567-862-11	s CRYSTAL, 4.9152MHZ
X3	1-527-848-00	s OSCILLATOR, CRYSTAL
X4	1-567-867-11	s CRYSTAL, 14.500MHZ

VR-109 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-637-284-13	o PC BOARD, VR-109
CN1	1-506-470-11	s CONNECTOR, 5P, MALE
CN2	1-506-470-11	s CONNECTOR, 5P, MALE

FRAME

Ref. No.
or Q'ty Part No. SP Description

MAIN OVERALL ASSY

- Δ 1-450-293-11 s TRANSFORMER, POWER
- Δ 1-532-285-11 s FUSE, TIME LAG (For EK)
- Δ 1-532-825-11 s FUSE, GLASS TUBE (For J, UC)
- 1-590-305-11 s WIRE, FLEXIBLE CARD (30P)
- Δ 1-946-797-11 s HARNESS, SUB (PS)
- 1-562-286-11 o HOUSING, CONNECTOR 5P
- 1-570-117-21 s SWITCH, SEESAW (AC POWER)
- 1-562-169-11 o RECEPTACLE
- 1-562-253-00 o HOUSING, 3P
- 1-562-254-00 o HOUSING, 4P
- 1-562-255-00 o HOUSING, 5P
- 1-562-256-00 o HOUSING, 6P
- 1-562-258-00 o HOUSING, CONNECTOR 10P
- 1-562-259-00 o HOUSING, CONNECTOR 12P
- 1-562-260-11 o CONTACT, SOCKET
- 1-569-191-11 o TERMINAL, SOLDERLESS
- 1-569-193-11 o TERMINAL, SOLDERLESS
- 1-569-196-11 o HOUSING, CONNECTOR 3P
- 1-569-196-41 o HOUSING, CONNECTOR 3P
- 1-569-197-11 o HOUSING, CONNECTOR 4P
- 1-569-198-11 o HOUSING, CONNECTOR 5P
- 1-569-198-21 o HOUSING, CONNECTOR 5P
- 1-569-199-11 o HOUSING, CONNECTOR 6P
- 1-569-199-21 o HOUSING, CONNECTOR 6P
- 1-569-199-31 o HOUSING, CONNECTOR 6P
- 1-569-199-41 o HOUSING, CONNECTOR 6P
- 1-569-200-11 o HOUSING, CONNECTOR 7P
- 1-569-200-31 o HOUSING, CONNECTOR 7P
- 1-569-200-41 o HOUSING, CONNECTOR 7P
- 1-569-201-11 o HOUSING, CONNECTOR 8P
- 1-569-201-31 o HOUSING, CONNECTOR 8P
- 1-569-201-41 o HOUSING, CONNECTOR 8P
- 1-569-203-11 o HOUSING, CONNECTOR 10P
- 1-569-203-21 o HOUSING, CONNECTOR 10P
- 1-569-203-31 o HOUSING, CONNECTOR 10P
- 1-569-203-41 o HOUSING, CONNECTOR 10P
- 1-569-205-11 o HOUSING, CONNECTOR 12P
- 1-569-205-31 o HOUSING, CONNECTOR 12P
- 1-569-205-41 o HOUSING, CONNECTOR 12P
- 1-569-206-31 o HOUSING, CONNECTOR 13P
- 1-569-206-41 o HOUSING, CONNECTOR 13P
- 1-569-207-11 o HOUSING, CONNECTOR 14P
- 1-569-207-41 o HOUSING, CONNECTOR 14P
- 8-835-205-01 o MOTOR, DC U-2A
- 8-835-206-01 s MOTOR, DC BHF-2803A
- 8-848-548-11 s DRUM ASSY DQH-14A.

MD ASSY

- 1-590-303-11 s WIRE, FLEXIBLE CARD (13P)
- 1-590-305-11 s WIRE, FLEXIBLE CARD (36P)
- 1-590-308-11 s WIRE, FLEXIBLE CARD (20P)
- 1-808-281-52 s SENSOR
- 1-946-958-11 o HARNESS (CAP)

CONTROL MOTOR ASSY

- 1-464-724-11 s ENCODER, ROTARY

GUIDE (L) BLOCK ASSY

(FRAME)

Ref. No.
or Q'ty Part No. SP Description

- 1-161-055-00 s CERAMIC 0.022uF 10% 50V
- 1-541-560-11 s MOTOR, DC
- 1-570-771-11 s SWITCH
- 1-569-193-11 o TERMINAL, SOLDERLESS
- 1-569-198-11 o HOUSING, CONNECTOR 5

CONNECTOR PANEL SUB ASSY

- 1-946-959-11 o HARNESS (RM)
- 1-946-960-11 o HARNESS (9P)
- 1-946-961-12 o HARNESS (FS)
- 1-569-193-11 o TERMINAL, SOLDERLESS
- 1-569-196-11 o HOUSING, CONNECTOR 3P
- 1-569-197-11 o HOUSING, CONNECTOR 4P
- 1-569-197-21 o HOUSING, CONNECTOR 4P
- 1-569-199-11 o HOUSING, CONNECTOR 6P
- 1-569-200-11 o HOUSING, CONNECTOR 7P
- 1-569-201-11 o HOUSING, CONNECTOR 8P

REAR PANEL ASSY

- 1-413-612-11 s SWITCHING REGULATOR
- Δ 1-946-795-13 s HARNESS, SUB (AC IN)
- Δ 1-946-796-11 s HARNESS, SUB (VS)
- Δ 1-562-210-11 s CONTACT, CONNECTOR
- 1-562-211-11 o HOUSING, CONNECTOR 3P
- Δ 1-562-285-11 o HOUSING, CONNECTOR 4P
- Δ 1-562-833-11 o HOUSING, CONNECTOR 7P
- 1-562-210-11 s CONTACT, CONNECTOR
- 1-562-287-11 o HOUSING, CONNECTOR 6P

VR-109 ASSY

- 1-241-332-11 s RES, VAR, CARBON 20K

HP-48 ASSY

- 1-241-331-11 s RES, VAR, CARBON 10K/10K
- 1-507-863-51 s JACK, PHONE

SP,SY-A ASSY

- 1-590-307-11 s WIRE, FLEXIBLE CARD (20P)

CASSETTE ILLUMINATION ASSY

- 1-569-193-11 o TERMINAL, SOLDERLESS
- 1-569-197-11 o HOUSING, CONNECTOR 4P
- 8-719-820-27 s LED TLY-256, YEL11.

ENCORDER ASSY

- 1-466-469-11 s ROTARY ENCORDER

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

ACCESSORIES SUPPLIED

Ref. No.
or Q'ty Part No. SP Description

- A1-534-754-00 s CORD, POWER (For J)
- A1-590-910-11 s CORD, POWER (For EK)
- A1-557-377-11 s CORD, POWER (For UC)

NOTE : Please see pages E-27 for the parts that
are not listed in the parts list.

PCM-7030 (J,UC,EK)

E-53