

PCM-701ES

SERVICE MANUAL

SH-03, as V-031 : zoom, do

US Model

Canadian Model

AEP Model

UK Model



SPECIFICATIONS

Signal system	Conforms to CCIR television standard, PAL, SECAM color (PAL/SECAM system) or Conforms to EIA television standard, NTSC color (NTSC system)
Code format	Conforms to the technical specifications of the EIAJ (standard format using 14-bit quantization), or 16-bit quantization format
Number of audio channels	2 channels
Sampling frequency	44.1 kHz (PAL/SECAM system) 44.056 kHz (NTSC system)
Quantization	14-bit linear quantizing, or 16-bit linear quantizing
Frequency response	10 - 20,000 Hz ± 0.5 dB
Harmonic distortion	Less than 0.007% (14-bit format) Less than 0.005% (16-bit format)
Dynamic range	More than 86 dB (14-bit format) More than 90 dB (16-bit format)
Channel separation	More than 80 dB
Wow and flutter	Below measurable limit
Error correction	Error correction and concealment using CRCC and parity
Emphasis	Pre-emphasis (on recording) : fixed at ON De-emphasis (on playback) : automatically switched ON or OFF (by detecting pre-emphasis identification code) Time-constant : 50 μ sec, 15 μ sec

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE TRAME ET UNE MARQUE SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

Inputs

	Type	Reference input level	Impedance	Minimum input level
LINE IN	Phono	-10 dB*	50 kilohms	77.5 mV (-20 dB)
VIDEO IN	Phono	1 Vp-p	75 ohms	—

Outputs

	Type	Reference output level	Load impedance
LINE OUT	Phono	-10 dB	More than 10 kilohms
MONITOR OUT	Phono	1 Vp-p	75 ohms
VIDEO OUT	Phono	1 Vp-p	75 ohms
COPY OUT	Phono	1 Vp-p	75 ohms
HEADPHONES	Stereo phone	-24 to -48 dB Attenuation : 5 steps (24, 18, 12, 6 and 0 dB)	Accepts low impedance headphones.

— Continued on page 2 —

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK

ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

DIGITAL AUDIO PROCESSOR
SONY[®]



General

Power requirements	AEP model: 220 V ac (240 V ac adjustable by authorized Sony personnel, 50/60 Hz) UK model: 240 V ac (220 V ac adjustable by authorized Sony personnel, 50 Hz) US, Canadian model: 120 V ac, 60 Hz	Weight	8.5 kg. (net) (18 lb. 12 oz.) 9.5 kg. (in shipping carton) (21 lb.)
Power consumption	40 W		
Dimensions	Approx. 430 x 80 x 375 mm (w/h/d) (17 x 3 1/4 x 14 7/8 inches) including projecting parts and controls		

0 dB = 0.775 V

FEATURES

In conventional analog recording systems, the quality of sound reproduction depends upon the properties of magnetic tape and heads. Even with the latest metal tape it is virtually impossible to bypass the inherent limitations of conventional analog recording, including its limited dynamic range and frequency response, and its associated distortion.

The Pulse Code Modulation (PCM) system ushers in a new era of sound reproduction and offers performance and fidelity far superior to analog systems. In the PCM system, sound levels are converted to a series of binary codes. This information is recorded as digital pulses of equal amplitude. In playback, all that has to be done is to discriminate between the presence and absence of a pulse. The quality of recording and playback is thus not dependent on the characteristics of tape and heads.

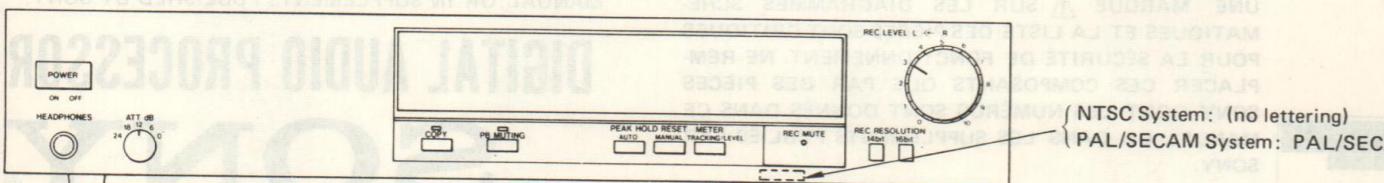
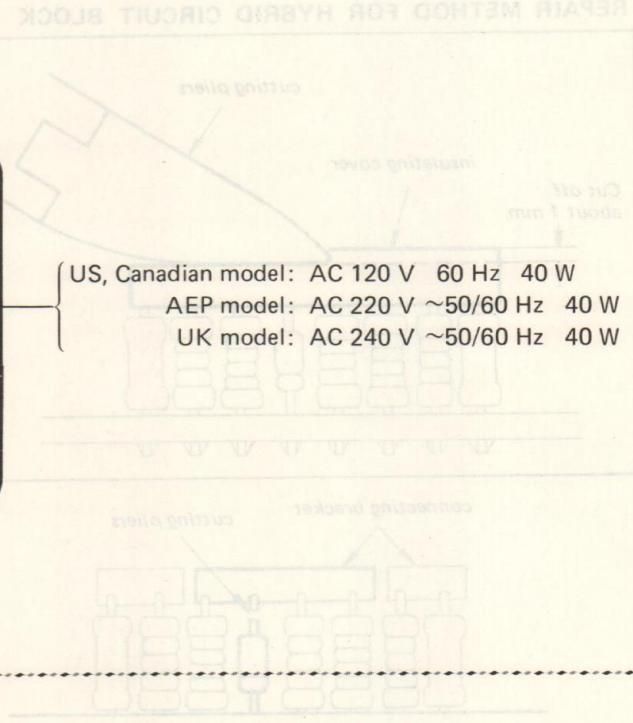
The PCM-701ES is the latest and most sophisticated Sony PCM digital audio processor for general audio use. It offers its own built-in power source for convenient operation, and the host of other features outlined below for the ultimate in audio listening pleasure. The PCM-701ES gives you stereo sound reproduction with a wide dynamic range, minimal distortion, low wow and flutter (even lower than the measurable limit), and a flat frequency response. Listening to digital audio sound tapes on your PCM-701ES is just like being in a concert hall.

Compact PCM digital audio processor with modern component design

While several hundred ICs are employed in the digital processing circuitry of conventional digital audio processors, 3 new LSIs help make the PCM-701ES as compact and modern in design as your other audio equipment. The unit also incorporates A/D (analog-to-digital) and D/A (digital-to-analog) converters which are newly developed monolithics. All function to make the PCM-701ES unequalled in performance and reliability.

Resolution selector for recording and playback with wider dynamic range and less distortion

The PCM-701ES was developed in accordance with the technical specifications of the Electronic Industries Association of Japan (EIAJ), which has adopted the 14-bit linear quantization format. In addition, the unit has the capability of recording and playback in accordance with the 16-bit linear quantization format which offers a wider dynamic range and less distortion than the 14-bit format. The 14-bit and 16-bit formats can be selected with the REC RESOLUTION (record resolution) selector.

SIGNAL SYSTEM IDENTIFICATION**Front panel****MODEL IDENTIFICATION****Specification Label**

- Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 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 2V AC range are suitable. (See Fig. A.)

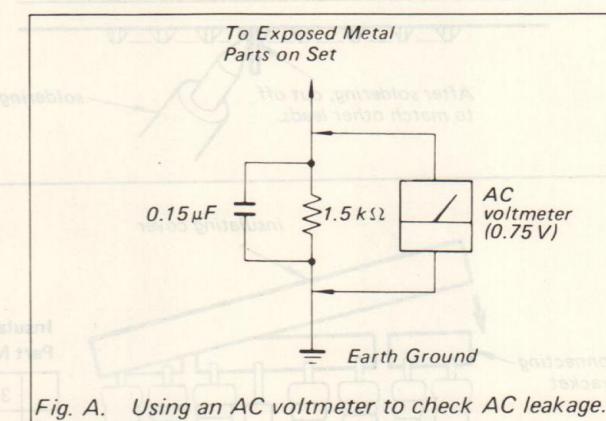
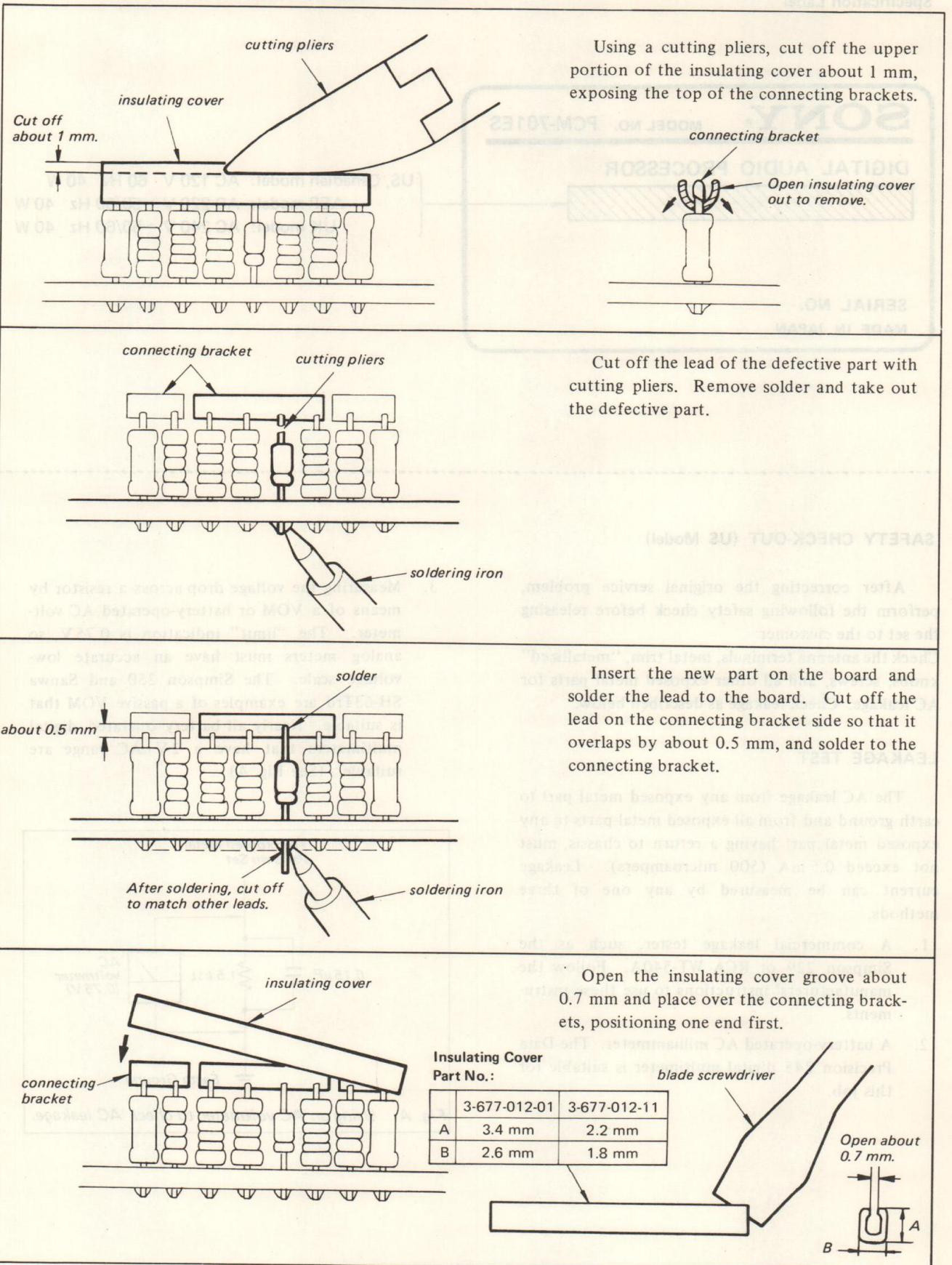
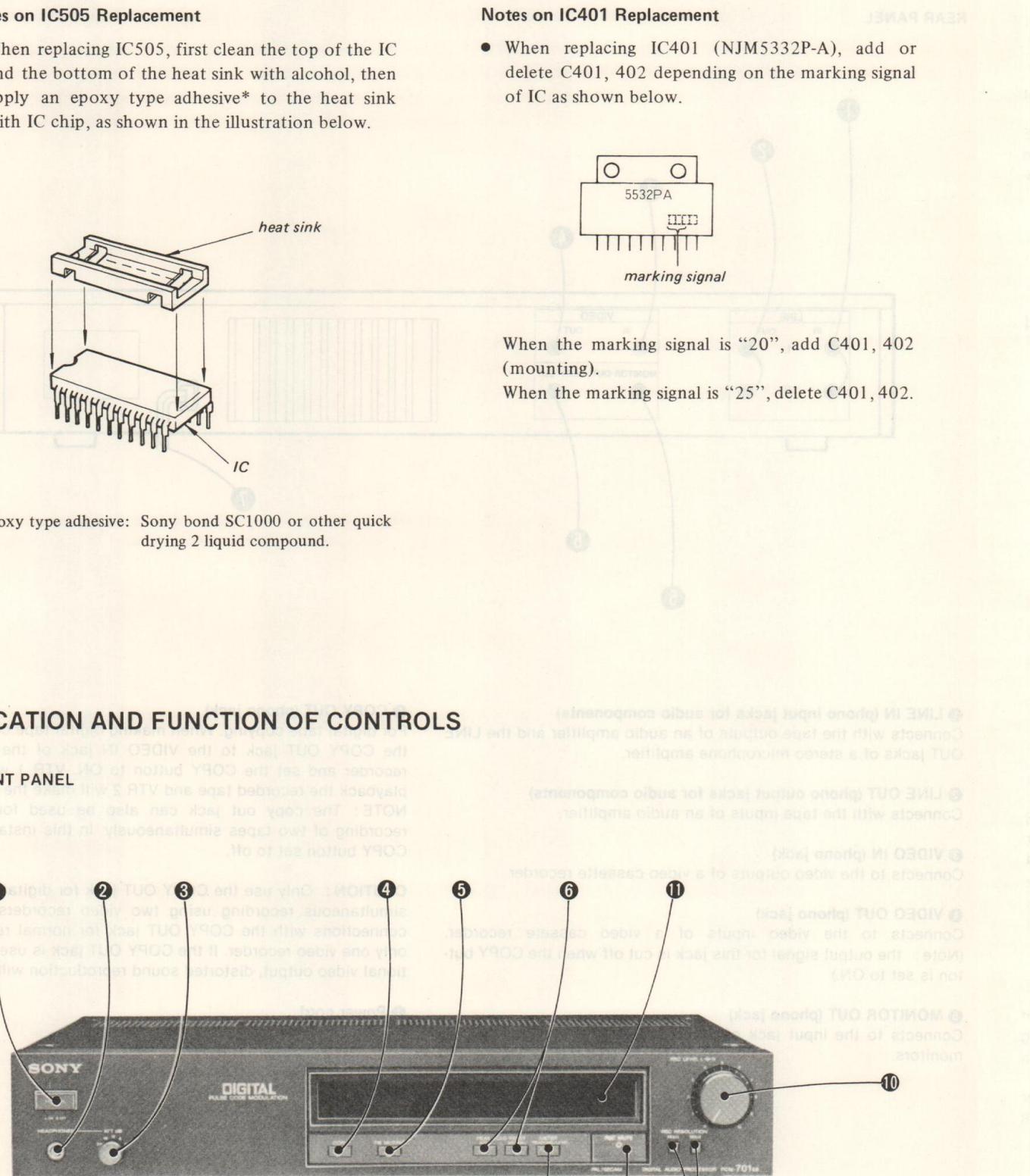


Fig. A. Using an AC voltmeter to check AC leakage.

REPAIR METHOD FOR HYBRID CIRCUIT BLOCK



LOCATION AND FUNCTION OF CONTROLS



① POWER switch

Press to turn on the power. The peak program meter indicators will illuminate; to turn the power off press the switch again.

② HEADPHONES jack (stereo phone jack)

Insert the headphones to monitor recording input levels, or to listen to a recording in the playback mode.

③ ATT (headphone attenuation) control

5-step volume adjustment for headphone listening.

④ COPY (digital tape copy) button

Set this button to ON for digital-to-digital tape copying using a pair of video recorders and the COPY OUT jack at the rear. An indicator illuminates above the button when the copy switching is activated.

- Be sure to set the copy button to OFF except for digital tape copy. With the button set to ON, signals are not transmitted through the VIDEO OUT jack (see "Digital Tape Copy", page 14).

⑤ PB MUTING (playback muting) button

The playback muting circuit activates automatically when you turn on the unit, and an indicator lights above the button when the muting circuit is functioning. You only need to press the playback muting button when you want the muting function turned off. The playback muting circuit cuts out sound reproduction when frequent dropouts occur due to mistracking of the heads of the video recorder, or scratches and dust on the magnetic tape. If you do not want the sound reproduction cut off, such as with low quality tapes, set the PB Muting button to OFF (see "Using the PB MUTING button", page 13).

⑥ PEAK HOLD RESET buttons

The PCM-701ES peak program meters feature two types of peak level indications.

When the AUTO button is pressed: successive peaks are held for approximately 1.7 seconds, except when a higher peak occurs before 1.7 seconds have elapsed, in which case the peak is immediately indicated. This mode of peak level indication is activated automatically when the power is turned on.

When the MANUAL button is pressed: the peak level will be held on the scale until a higher peak occurs, in which case the latter peak is held. To reset the peak held on the meter, just press the manual button. This method of peak input is useful when you want to know both the highest peak on a tape or disc, or when you want to know both the highest peak as well as intermittent peak input levels for live recording.

⑦ METER selector button

Press this button to convert the peak program meters into a tracking meter. Each time the selector is pressed, the function of the meter changes. When the power is turned on initially, the peak program meters function automatically.

⑧ REC MUTE (record muting) button and indicator

Keep this button depressed to eliminate unwanted material and to create blank spacing between selections when recording. The REC MUTE indicator illuminates while the button is held depressed, and the level of the recorded signal is reduced to "Zero". While the record muting is operating, the video control signal of the video recorder is still transmitted to permit proper playback.

⑨ REC RESOLUTION (record resolution) selectors

These buttons select the resolution for recording.

14-BIT: for recording in accordance with the technical specifications of the Electronic Industries Association of Japan (EIAJ) which has adopted the 14-bit linear quantization format.

Press this button when the tape recorded with this unit is to be played back using another PCM digital audio processor which conforms to the 14-bit quantization format of the EIAJ.

16-BIT: for recording and playing back in the 16-bit quantization format. As the 16-bit format offers a wider dynamic range and less distortion than the 14-bit format, normally use the 16-BIT selector setting (see page 22 for details on 14-bit and 16-bit formats).

During playback, the proper quantization format is automatically selected for the tape being played.

⑩ REC LEVEL (recording level) controls

These controls adjust the recording level. The outer control is for the left channel, and the inner control is for the right channel.

① Display indications

② REC RESOLUTION indicator

③ RES (resolution) indicator

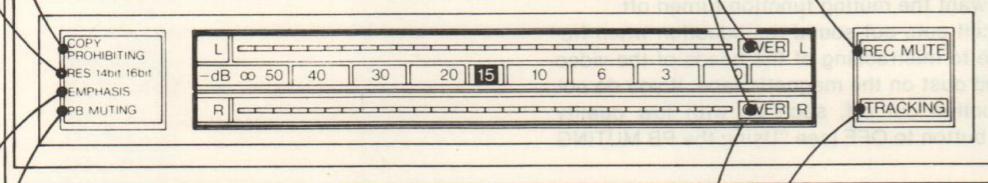
④ COPY PROHIBITING indicator

⑤ PB MUTING (playback muting) indicator

⑥ EMPHASIS indicator

COPY PROHIBITING indicator

When a tape with a tape copy prohibiting code is played back, this indicator will light up to show that a digital tape copy cannot be made.



PB MUTING (playback muting) indicator

When the video cassette recorder is not transporting the tape at the proper speed, such as at the beginning of tape playback, or when frequent dropouts occur, the PB MUTING indicator lights. Note that as this indicator merely indicates that the muting circuit is investigating dropouts, it lights also when the PB MUTING button is set to OFF (although muting isn't effected in this instance).

EMPHASIS indicator

This model PCM digital processor features an emphasis circuit that automatically activates to improve the signal-to-noise ratio of digital tapes. All tapes which are recorded and later played back on this unit are "emphasized", as are prerecorded tapes featuring emphasis, and tapes recorded on other PCM digital processors using emphasis.

When tapes recorded without emphasis on other digital processors are played on this unit, the EMPHASIS indicator will not illuminate.

Peak program meter indicators

These fluorescent indicators illuminate to indicate the input level of each channel during recording, and the recorded level during playback. For easy reading, they hold the level of the highest peak while also following the level of transient peaks below the peak. When the meter selector is pressed, the lower (R) channel meter converts to a tracking meter that gives the tracking condition of the video recorder.

⑦ REC MUTE (record muting) indicator

Light up when recording level signals exceed +0.0 dB to warn that the recording level is too high.

NOTE: This indicator lights primarily as indication that the LINE IN signal exceeds +0.0 dB and it will also light during playback when the LINE IN signal exceeds +0.0 dB. Disregard the "OVER" indication during playback while other equipment is operating.

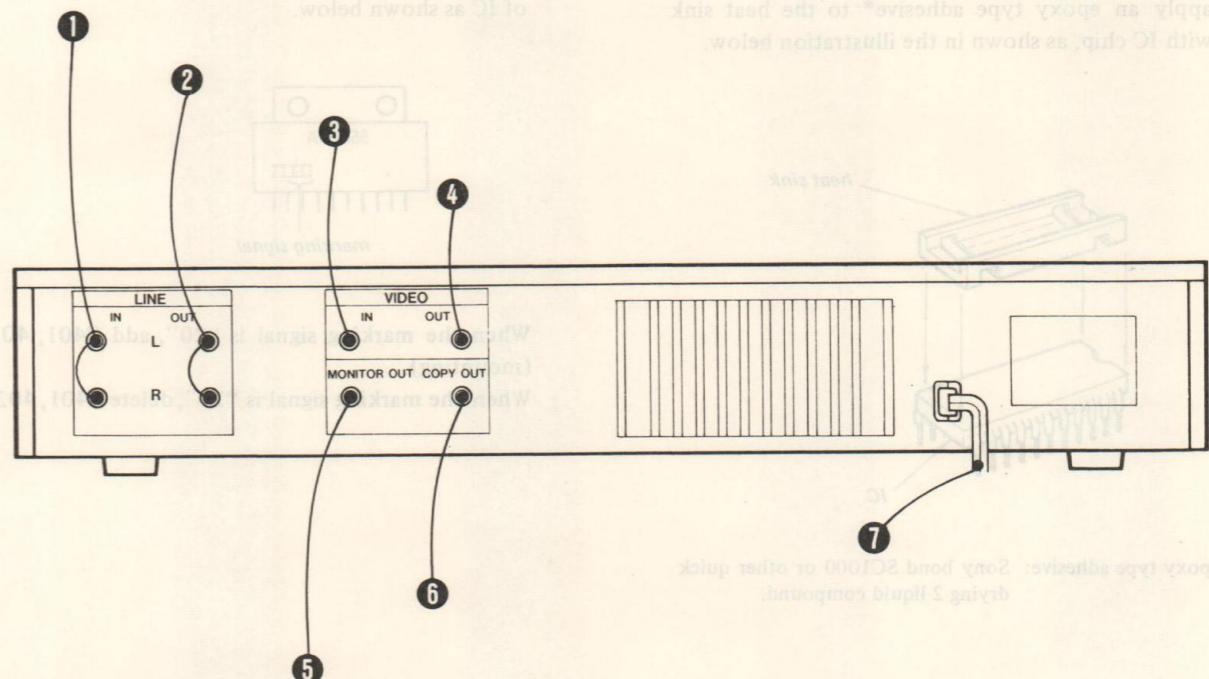
REC MUTE (record muting) indicator

Illuminates while the REC MUTE button is depressed.

TRACKING indicator

This indicator illuminates when you press the METER selector to readjust the tracking of the video recorder and indicates that the tracking meter is being displayed in place of the peak program meters. The meter indication moves further to the right as tracking improves.

REAR PANEL



① LINE IN (phono input jacks for audio components)

Connects with the tape outputs of an audio amplifier and the LINE OUT jacks of a stereo microphone amplifier.

② LINE OUT (phono output jacks for audio components)

Connects with the tape inputs of an audio amplifier.

③ VIDEO IN (phono jack)

Connects to the video outputs of a video cassette recorder.

④ VIDEO OUT (phono jack)

Connects to the video inputs of a video cassette recorder. (Note: the output signal for this jack is cut off when the COPY button is set to ON.)

⑤ MONITOR OUT (phono jack)

Connects to the input jack of Sony Profeel type and other video monitors.

⑥ COPY OUT (phono jack)

For digital tape copying. When making digital tape copies, connect the COPY OUT jack to the VIDEO IN jack of the second video recorder and set the COPY button to ON. VTR 1 will be used to playback the recorded tape and VTR 2 will make the copy.

NOTE: The copy out jack can also be used for conventional recording of two tapes simultaneously. In this instance, leave the COPY button set to off.

CAUTION: Only use the COPY OUT jack for digital copying or for simultaneous recording using two video recorders. Never make connections with the COPY OUT jack for normal recording using only one video recorder. If the COPY OUT jack is used as a conventional video output, distorted sound reproduction will result.

⑦ Power cord

PCM DIGITAL RECORDING

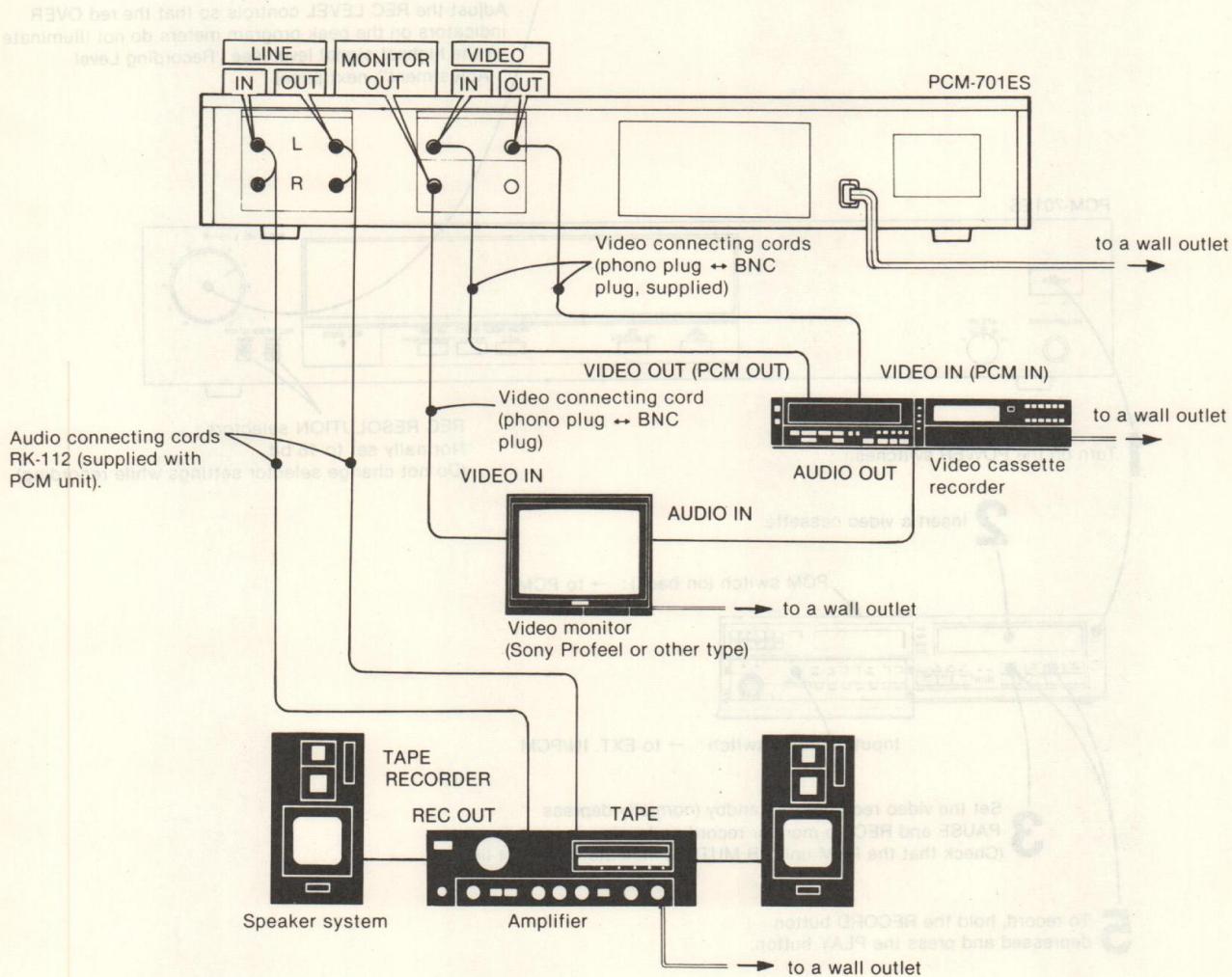
CONNECTIONS FOR USING A VIDEO CASSETTE RECORDER FOR VIDEO MONITORING WITHOUT DISCONNECTING THE PCM UNIT

One video cassette recorder can be used for both PCM digital sound reproduction and television or video tape monitoring without requiring that the PCM-701ES digital processor be disconnected or that a separate switch box be used.

Make the connections as diagrammed below.

When using this set up for PCM applications only: Set the POWER switch of the monitor unit to OFF.

For video tape/T.V. monitoring: Set the POWER switch of the PCM unit to OFF.



The AUDIO OUT connector of the video recorder can also be connected to the AUX inputs of the amplifier.

PCM DIGITAL RECORDING

The basic procedure for PCM digital recording is described below. Follow the numbered sequence. Be sure to refer to the instruction manual supplied with the respective components to ensure quality recording.

- 1** Turn on the POWER switches.
- 2** Insert a video cassette.
- 3** Set the video recorder to standby (normally depress PAUSE and REC) to monitor recording levels.
(Check that the PCM unit PB MUTING indicator does not light*)
- 4** Adjust the sound level for the tape to be recorded.
- 5** To record, hold the RECORD button depressed and press the PLAY button.

When the recording is completed, press the STOP button.

Video cassettes for PCM digital audio recording :

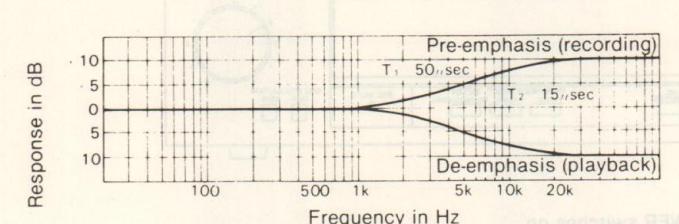
For digital audio recording, use L-type video cassette tapes numbered "L-500" or below (i.e., L-500, L-250, L-125, etc.).

* This could indicate that the tape is damaged.
If the PB MUTING indicator lights, replace the tape to ensure quality recording.

RECORDING LEVEL ADJUSTMENT

The PCM recording system has no reference level, but an absolute maximum value of 0 dB. If all the input signals are recorded under 0 dB, the PCM-701ES assures equal characteristics at any input level. This is why the peak program meters of this unit have no plus indications.

Note that the peak program meters show the pre-emphasized input signal levels (see the diagram below). For this reason, it is important to adjust the recording level so that there will be no clipping over 0 dB.



Adjust the recording level with the REC LEVEL controls so that the peak program meters do not deflect over 0 dB.

The red illumination of the OVER indicators warns of an overload during recording. If the indicators illuminate frequently, the recording level is set too high (this will result in overload and distorted recording). As the peak program meters used in this unit are far more sensitive than conventional VU meters, also be careful not to set the recording level too low, as the signal-to-noise ratio will deteriorate. The correct recording level settings vary with the program source you are recording. Generally, adjust the level to about -15 dB.

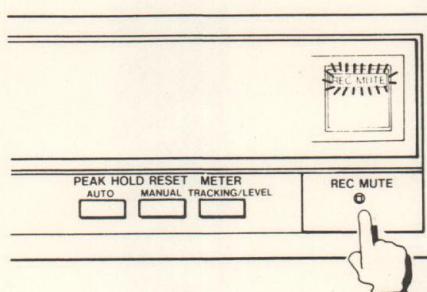
RECORD MUTING

By using the REC MUTE button during recording, you can provide an interspacing in the recording, eliminating unwanted material such as talk and commercials.

To insert a blank

Depress the REC MUTE button for as many seconds as you want the blank segment on the tape to be. The REC MUTE indicator will light. When you release the button, recording will resume.

NOTE : Although the incoming signal is not recorded on the tape while the record muting function is operating, the signal levels continue to register on the peak program meters and you can monitor the program source through the speakers or headphones.



Hold the button depressed for as long as you want the blank segment on the tape to be.

Normally Set the COPY Button to OFF :

The COPY button should be set to ON only for digital tape copying. Always set the button to OFF for conventional recording and playback (conventional recordings cannot be made with the COPY button set to ON).

Avoid excessive use of the "PAUSE" button of video cassette recorders

The PAUSE button of a video cassette recorder is highly convenient for video recording and playback. For digital audio tapes, however, extended use of the PAUSE button could damage the tape. When recording or playing digital audio tapes, use the PAUSE button only when needed, and do not leave it ON for extended periods of time. Also note that with certain video cassette recorders the playback muting function does not operate efficiently while the PAUSE button is depressed and noise will be heard.

If the peak program meters do not respond when monitoring a recording :

Check that the VIDEO IN jack of the PCM unit and the VIDEO OUT jack of the video recorder are firmly connected. Although recording is possible if these connections aren't made, you cannot monitor the recording, and the peak program meters will not deflect.

If the record button of the video cassette recorder doesn't operate :

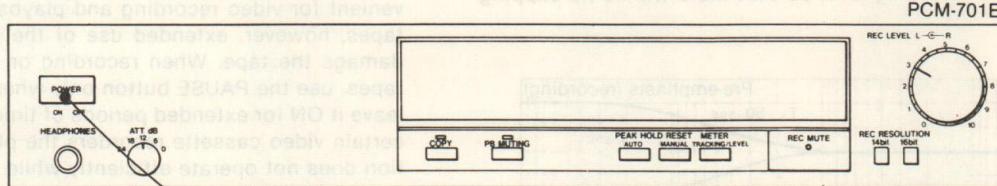
Video cassettes incorporate safety tabs just as do audio cassettes and chances are the tabs have been removed. If so, simply cover the slot with a piece of plastic tape (refer to the instruction manual of your video recorder for details).

How to make connections for recording two digital tapes simultaneously :

Connect the second video cassette recorder to the COPY OUT jack of the PCM unit.

PCM DIGITAL TAPE PLAYBACK

The basic procedure for playback of digital audio tapes with your PCM digital processor and a video cassette recorder are described below; follow the numbered sequence. Refer to the instruction manuals of the respective components to ensure quality playback.



- 1** Turn the POWER switches on.

PCM switch (on back):
→ to PCM

Video cassette recorder

Input selector switch: → to PCM

2 Insert a recorded video cassette.

3 Turn down the amplifier volume.

5 Press the video recorder PLAY button to begin playback.

6 Adjust the volume to suit your preferences.

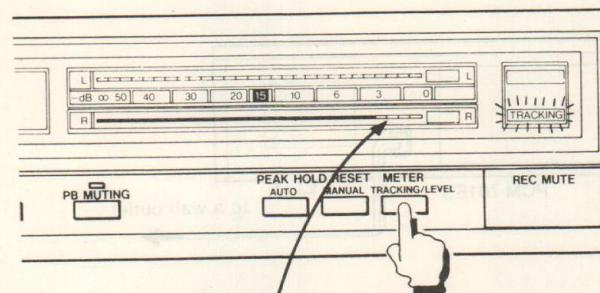
Set the amplifier volume relatively low:

In the PCM system, a wider dynamic range is achieved than with the conventional analog system, and the peaks of high level inputs are recorded with high-fidelity. Also, the noise level is generally very low. If you turn up the volume inadvertently while listening to parts of the tape where no audio signals are present, or while low level inputs are being recorded, the speakers could be damaged when these portions of the tape are played. Take extra care not to inadvertently turn the volume up in the above situations.

ADJUSTING THE TRACKING OF THE VIDEO CASSETTE RECORDER

When a video tape recorded on another video cassette recorder is played back, dropouts occasionally occur due to mistracking of the video heads. To obtain optimum sound reproduction, adjust the tracking of the video recorder as follows.

- 1 Press the METER selector. The TRACKING indicator will illuminate, and the lower peak level meter will convert to a tracking meter.
 - 2 Insert the video cassette and set the video cassette recorder to the playback mode. After the PB MUTING indicator goes off, adjust the tracking control of the video recorder while observing the tracking meter scale on the PCM unit. Adjust the control so that the rightmost indicators illuminate within the permissible range of the tracking meter.



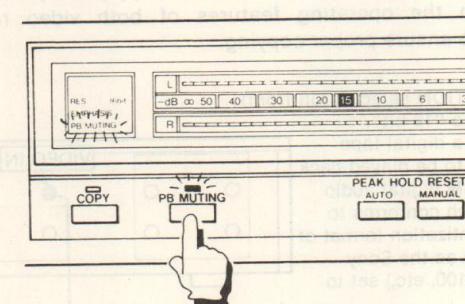
Rightmost indicator within the permissible tracking adjustment range

For details on setting the correct tracking adjustment, refer to the instruction manual furnished with your video recorder.

USING THE PB MUTING BUTTON

The playback muting circuit activates automatically when you turn on the PCM unit. It serves to cut out the faulty sound reproduction that results when frequent dropouts arise due to scratches and dust on the tape, or the sound distortion that occurs when the tape speed varies such as at the beginning of tape playback, during accelerated tape advance, or when you press the pause button.

If the muting circuit activates so often as to make listening unpleasant, adjust the tracking control of the video recorder, then set the PB MUTING button to OFF. This will permit you to continue listening without interruption, although a certain amount of noise will be reproduced.



Note: With very poor quality or damaged tapes, sound may still be somewhat muted, even if the PM MUTING button is set to OFF. Note that the PB MUTING indicator will also light when the PB MUTING button is set to OFF, although in this instance muting is not effected.

IMPORTANT

Be extremely careful that you do not mistakenly play a recorded video cassette tape in place of a digital sound tape while using the PCM unit. If you do this and the PB MUTING button is set to OFF, the video data could be misread for PCM data and clicking noise might occur which could damage your speakers. Also, be careful not to mistake a brand new, unrecorded tape for a recorded tape and play it. This could also produce noise detrimental to your speakers.

MAKING DIGITAL TAPE COPIES

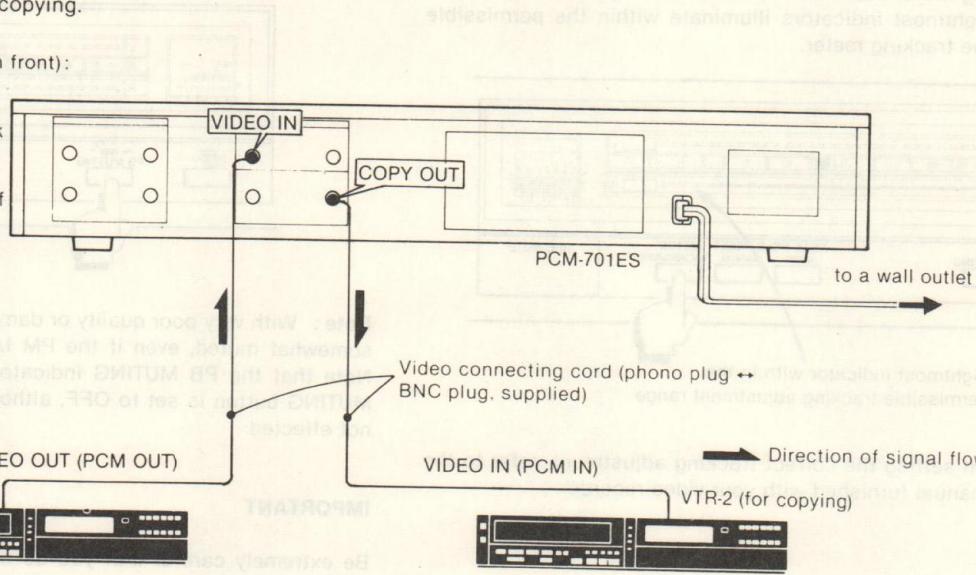
Digital tape copies can be made with your PCM digital processor using a pair of video cassette recorders and the COPY OUT jack on the back of the PCM unit.

The high-quality recording characteristics of PCM digital processing, aided by extremely efficient error detection and correction circuits, ensures absolutely no deterioration in sound quality for digital-to-digital copying.

Make the connections as diagrammed below. Be sure that the COPY OUT jack of the PCM unit is connected to the video input of the video recorder being used to make the copy (VTR-2). Familiarize yourself with the operating features of both video recorders beforehand to ensure proper copying.

REC RESOLUTION selector (on front):
normally set to "16 bit".

When making a digital tape copy which is to be played back on another PCM digital audio processor which conforms to the 14-bit quantization format of the EIAJ (such as the Sony PCM-10, PCM-100, etc.) set to "14 bit".



COPYING PROCEDURE

- 1 Turn on the power for all units.
- 2 Insert the recorded tape into the video recorder you are using for playback (VTR-1), and a blank tape into the video recorder you are using to make the copy (VTR-2).
- 3 Set the PCM-701ES COPY button to ON (the COPY indicator will light).
- 4 Start playback for VTR-1, and set VTR-2 to record. Copying will begin.

- Noise interference may result if you press the COPY button while the volume is turned up. Keep the amplifier volume turned down when you press the COPY button.
- When the COPY PROHIBITING indicator is lit on the display panel of the PCM unit, copies cannot be made, even though the COPY button is set to ON.
- Always set the COPY button to OFF when tape copy has been completed.

ADJUSTING THE TRACKING OF THE VIDEO CASSETTE RECORDER

With a video tape recorder no longer able to detect the tracking of the video signal, it is necessary to adjust the tracking of the video signal. To do this, turn the tracking adjustment dial until the video signal is clear.

Please set the METER selector to DYNAMIC mode. If a tracking adjustment is made, the level will change. After the tracking adjustment is made, turn the METER selector to LINE mode. Then, turn the volume control to the center position. If the tracking adjustment is correct, the volume will increase.

Do not worry about the presence of distortion when monitoring digital tape copies :

When digital tape copies are monitored the COPY button is set to ON, and sound reproduction through the headphones or speakers may be somewhat distorted. However, the tapes will be copied with no deterioration in signal quality and the distortion will be corrected during normal playback with the COPY button set to OFF.

You do not need to adjust the recording level for digital tape copying :

Digital-to-digital tape copies are made at the signal level reaching the COPY OUT jack of the PCM unit during copying. Recording level adjustment isn't necessary.

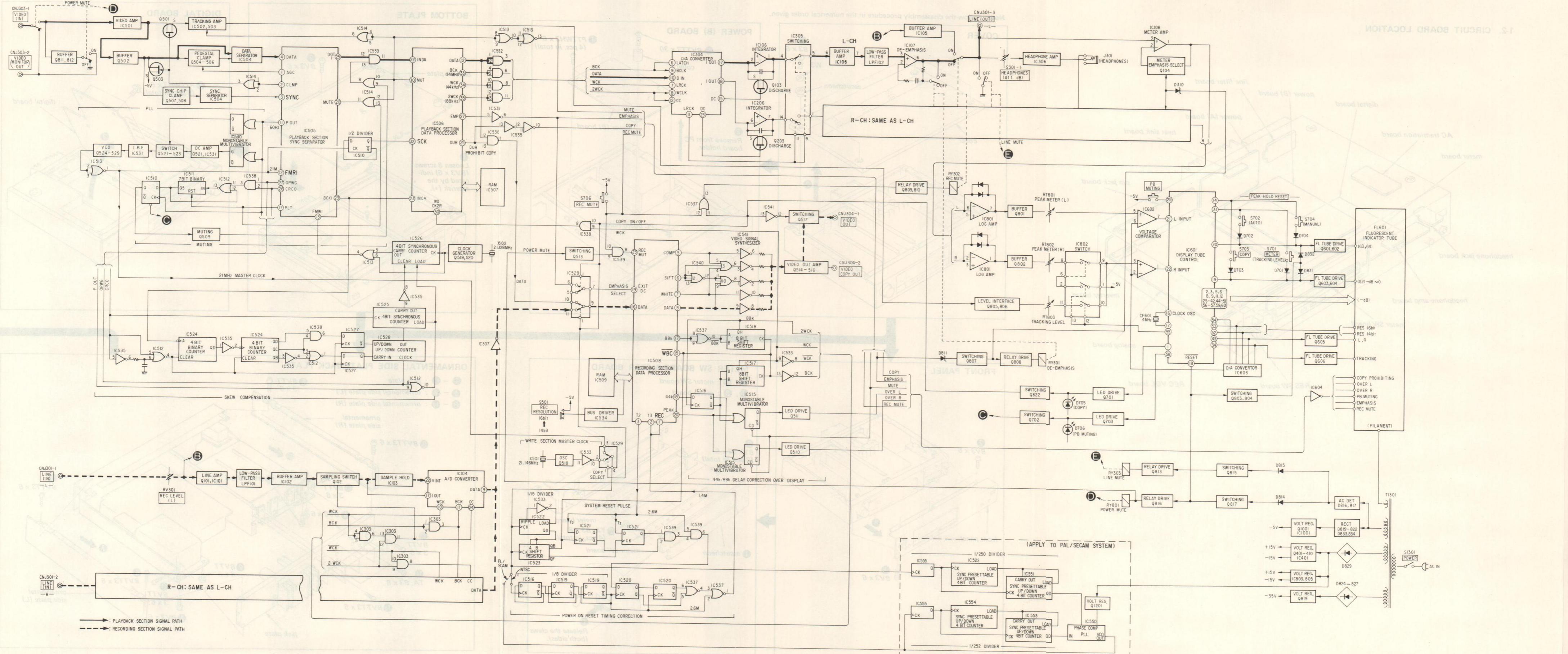
Digital tapes with a COPY PROHIBITING code cannot be copied :

When tapes with a "copy prohibiting" code are played, the COPY PROHIBITING indicator lights on the display of the PCM unit and copies cannot be made.

Digital tape copies cannot be made with the COPY button set to OFF :

Always set the COPY button to ON when making digital tape copies and set the button to OFF after the copies have been made. Do not change the setting of the button during tape copy or during normal recording and playback. Digital-to-digital tape copies cannot be made with the COPY button set to OFF.

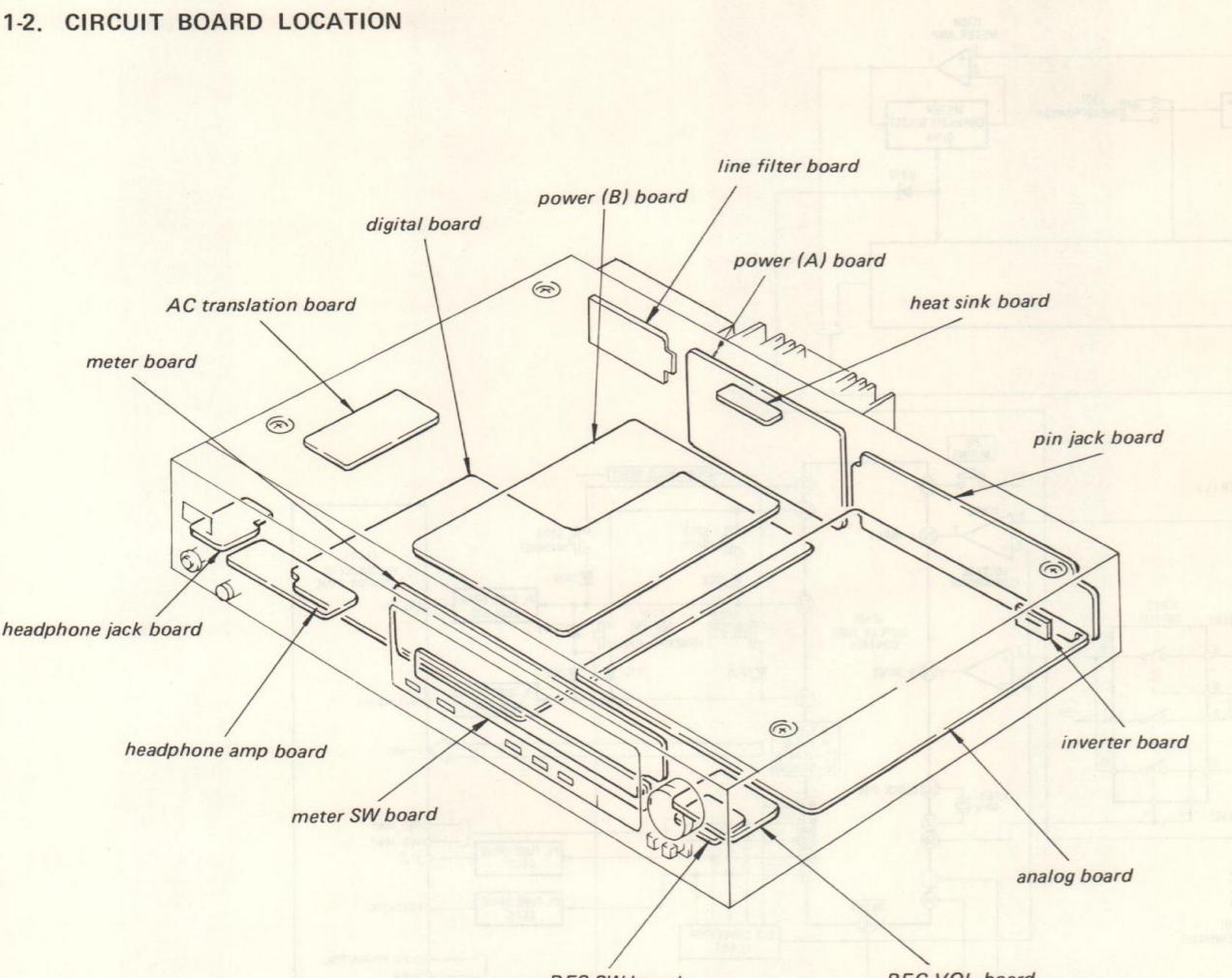
SECTION 1 OUTLINE



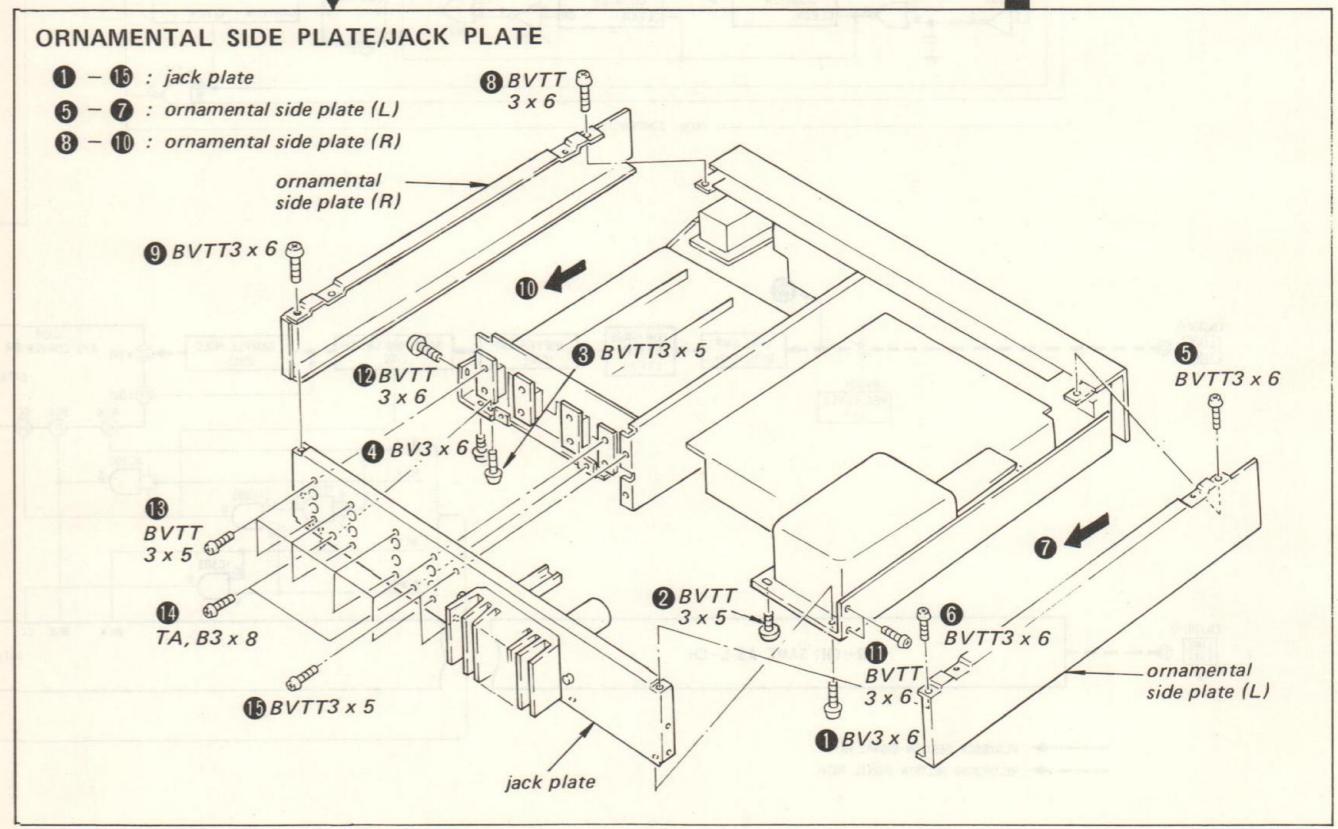
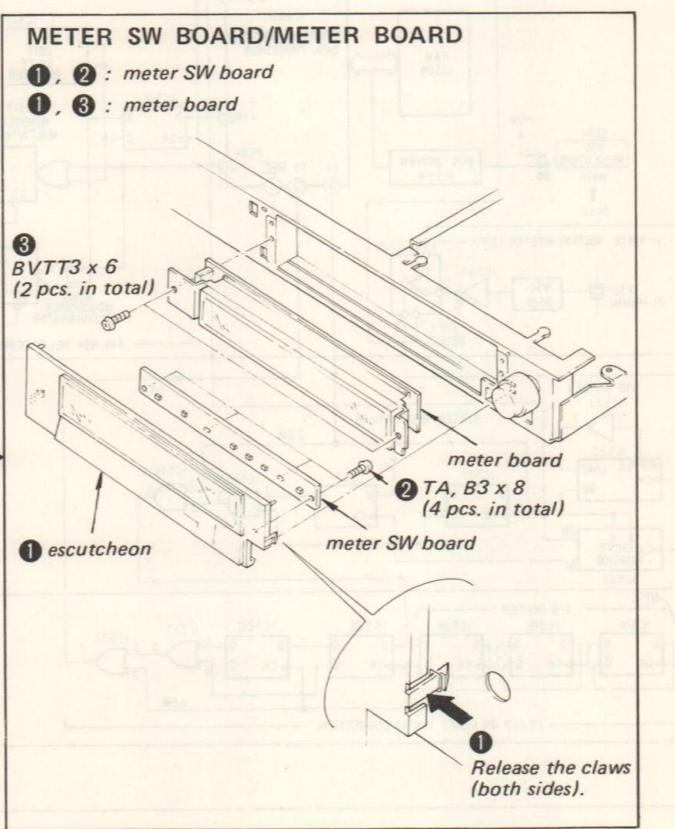
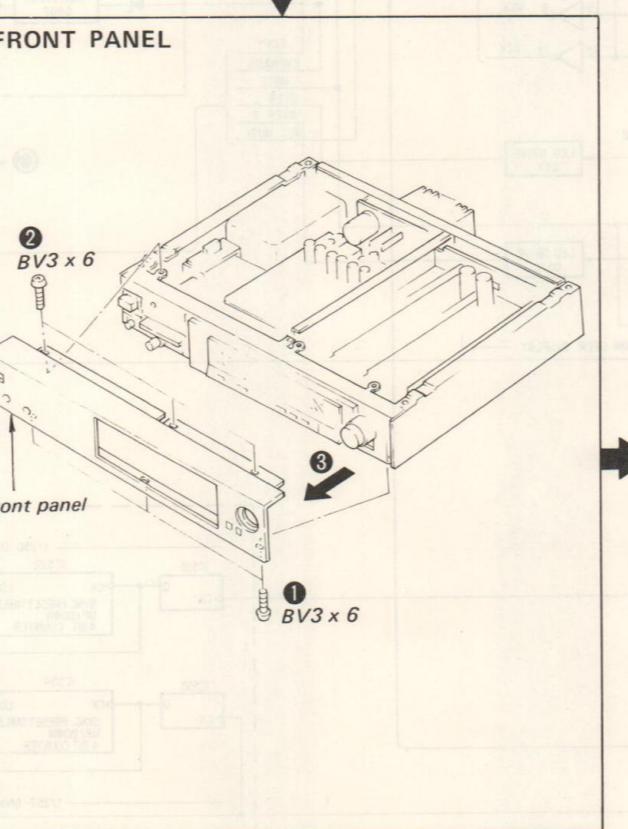
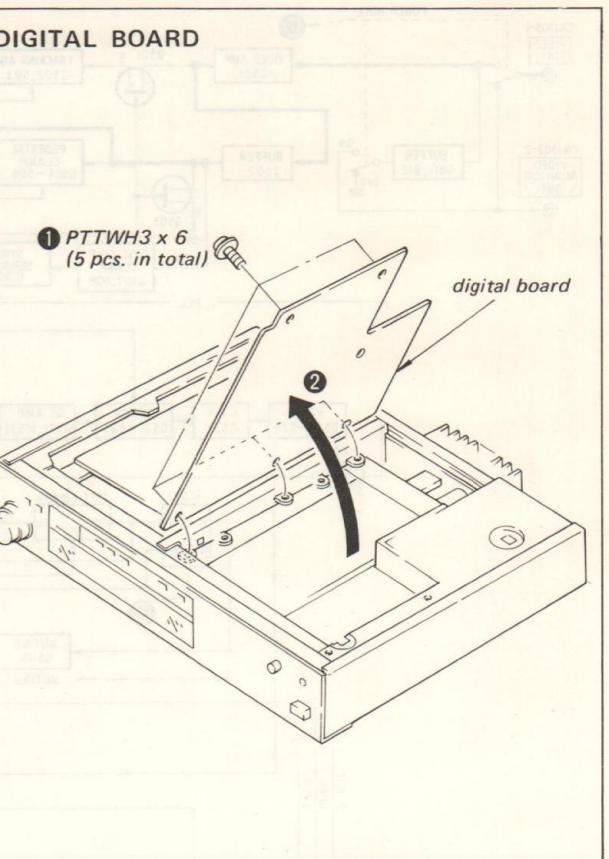
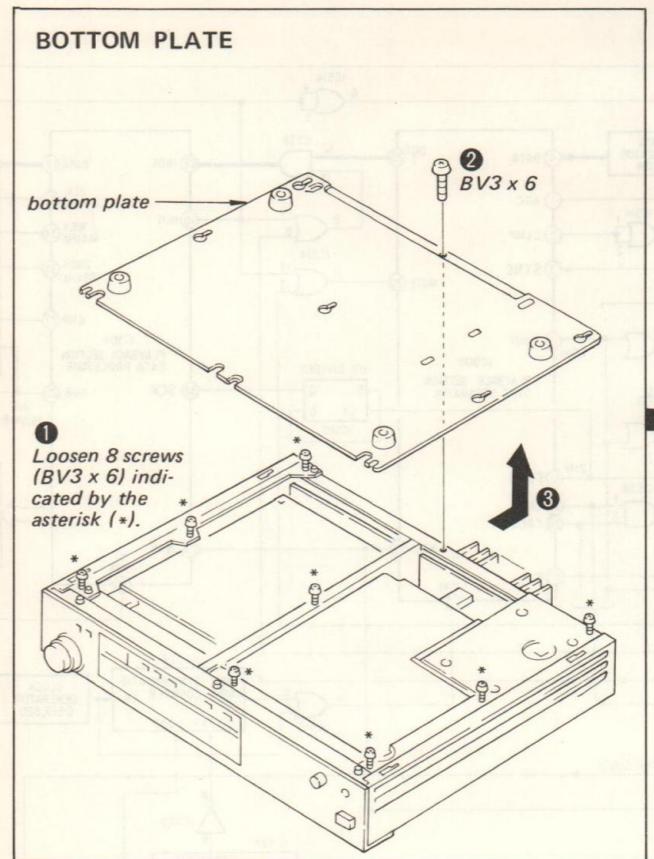
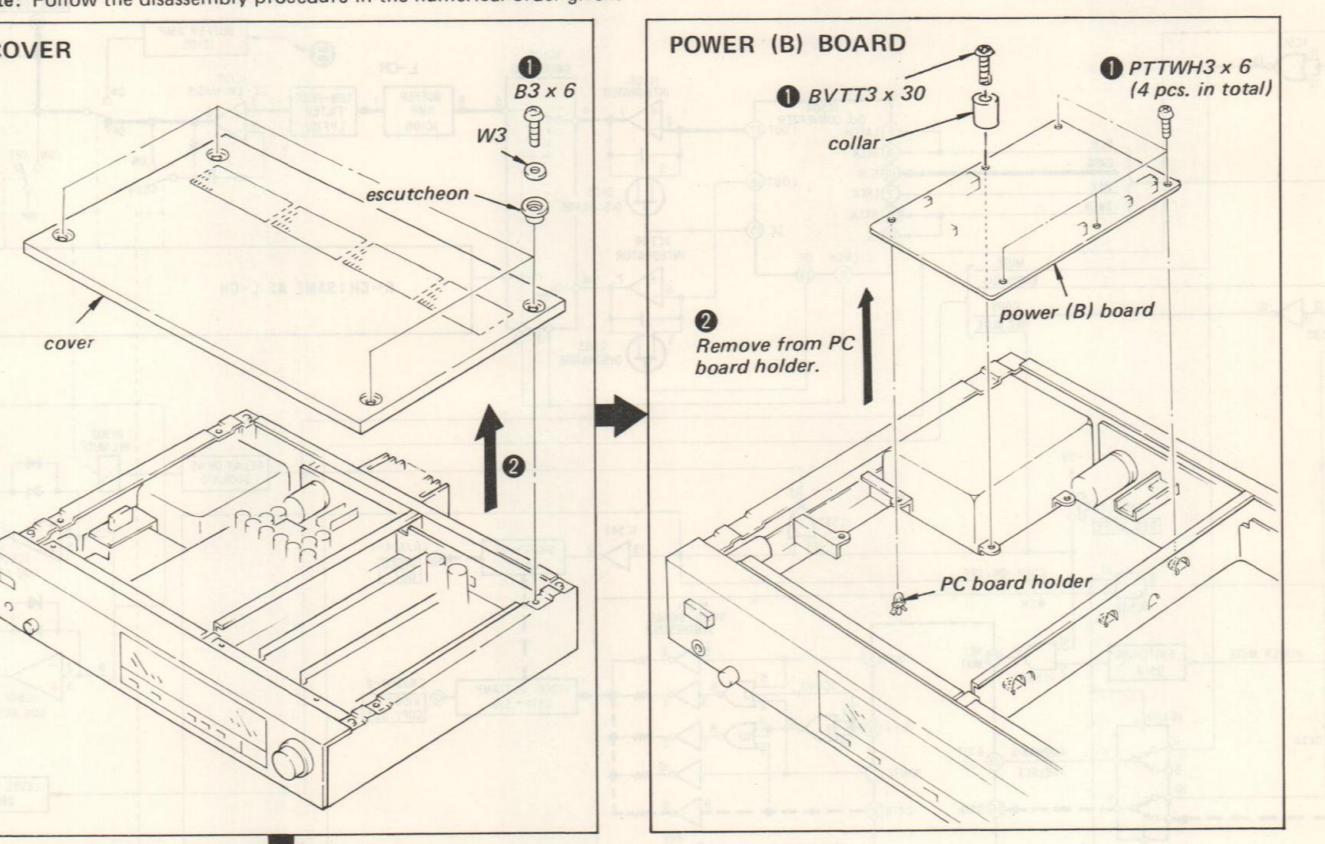
SECTION 2

DISASSEMBLY

2. CIRCUIT BOARD LOCATION



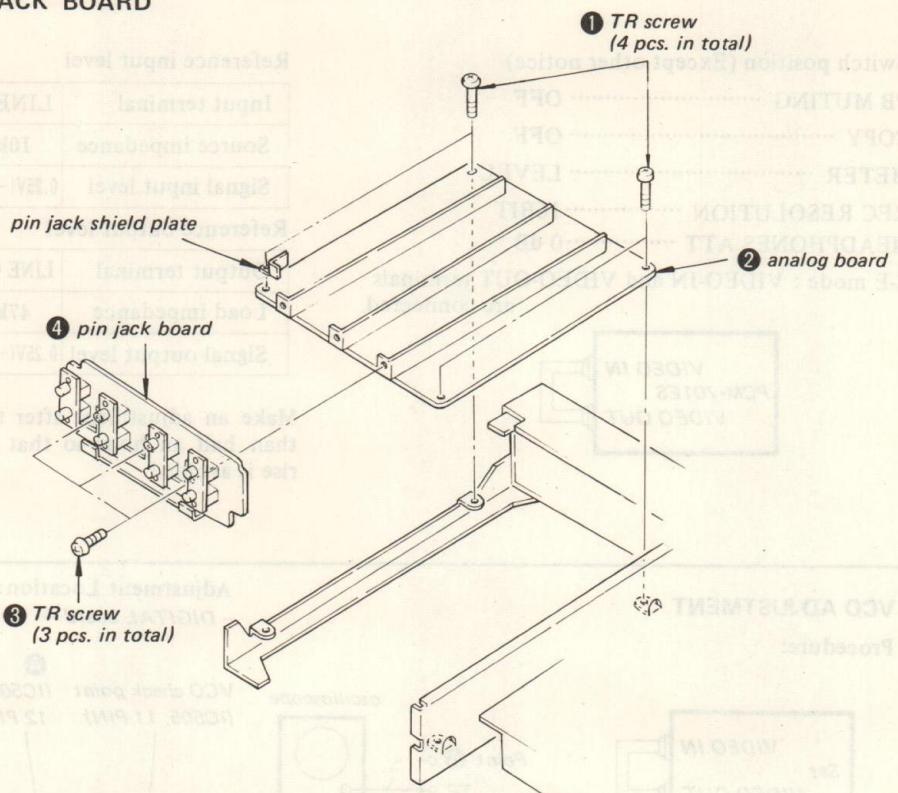
Note: Follow the disassembly procedure in the numerical order given.



SECTION 3
ELECTRICAL ADJUSTMENTS

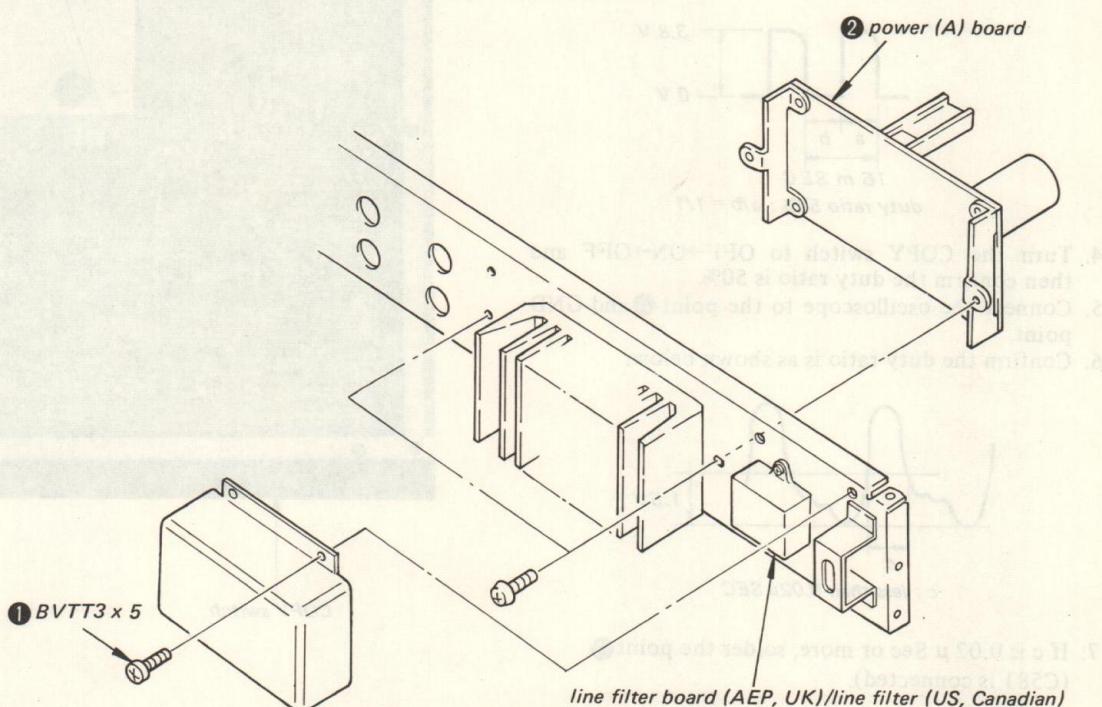
ANALOG BOARD/PIN JACK BOARD

①, ② : analog board
③, ④ : pin jack board



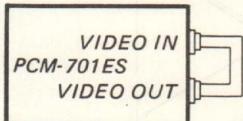
POWER (A) BOARD

LINE FILTER BOARD (AEP, UK)/LINE FILTER (US, Canadian)



SECTION 3 ELECTRICAL ADJUSTMENTS

- Switch position (Except other notice)
 - PB MUTING OFF
 - COPY OFF
 - METER LEVEL
 - REC RESOLUTION 16BIT
 - HEADPHONES ATT 0 dB
- E-E mode : VIDEO-IN and VIDEO-OUT terminals are connected.



Reference input level

Input terminal	LINE IN	VIDEO IN
Source impedance	10kΩ	75Ω
Signal input level	0.25V(-10dB)	1 V

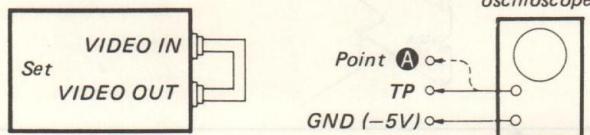
Reference output level

Output terminal	LINE OUT	VIDEO OUT
Load impedance	47kΩ	75Ω
Signal output level	0.25V(-10dB)	1 V

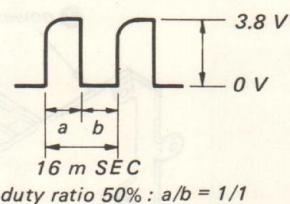
Make an adjustment after turning POWER ON more than half an hour so that the drift by temperature rise is avoided.

VCO ADJUSTMENT

Procedure:



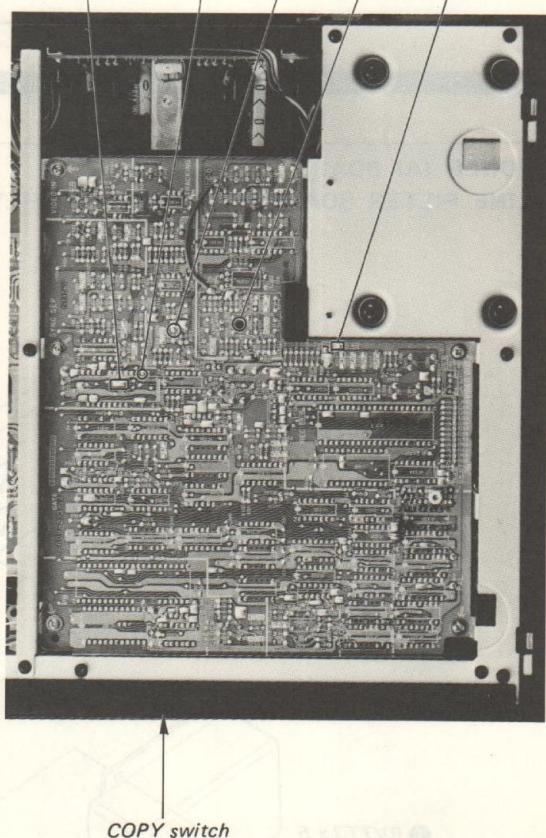
1. Connect VIDEO IN and VIDEO terminals (E-E mode).
2. Connect the oscilloscope to the VCO check point and GND point.
3. Adjust L505 so that duty ratio is 50%.



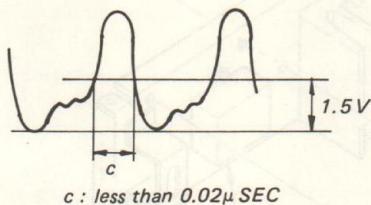
Adjustment Location:

— DIGITAL board —

Point A: VCO check point (IC505, 11 PIN)
 Point B: (C581) (IC505 12 PIN)
 L505
 GND point (-5 V)



4. Turn the COPY switch to OFF→ON→OFF and then confirm the duty ratio is 50%.
5. Connect the oscilloscope to the point A and GND point.
6. Confirm the duty ratio is as shown below.



7. If c is 0.02 μ Sec or more, solder the point B (C581 is connected).

PAL CLOCK ADJUSTMENT (Only PAL/SECAM system)

Procedure :

1. Connect VIDEO IN and VIDEO OUT terminals (E-E mode).
2. Solder the point **A** (R951 is connected).
3. Connect the oscilloscope to the point **B** (IC550, 6 pin) and point **C** (IC550, 3 pin).
4. Adjust CT589 so that the phase difference is 90°.

Adjustment Location :
- ANALOG board -

5. Unsolder the point **A** (R951)

Adjustment Location :
- DIGITAL board -

D/A OFFSET ADJUSTMENT

Procedure :

1. Connect VIDEO-IN and VIDEO-OUT terminals (E-E MODE).
2. Connect the oscilloscope or VTVM (DC Range) to the test point TP-1 (L-CH)/TP-2 (R-CH) and the bus bar (earth point).
3. Adjust RV104 (L-CH)/RV204 (R-CH) with pressing the REC MUTE button for 0 ± 10 mV (DC) reading on oscilloscope or VTVM.

Adjustment Location :
- ANALOG board -

A/D OFFSET ADJUSTMENT

A/D OFFSET ADJUSTMENT should be made later than that of D/A OFFSET

Procedure:

1. Connect VIDEO-IN and VIDEO-OUT TERMINALS (E-E MODE).
2. Connect the oscilloscope or VTVM (DC Range) to the test point TP-1 (L-CH), TP-2 (R-CH), and the bus bar (earth point).
3. Turn the REC LEVEL knobs to the minimum (0).
4. Adjust RV101 (L-CH)/RV201 (R-CH) for -10 ± 5 mV (DC) reading on oscilloscope or VTVM.

Adjustment Location:
- ANALOG board -

A/D DISTORTION ADJUSTMENT

The low distortion AF OSC and the low distortion measurement equipment are needed to make this adjustment.

Procedure:

1. Connect VIDEO-IN and VIDEO-OUT terminals (E-E mode).
2. Apply a 1kHz, 0 dB (0.775V) to the LINE IN terminals.
3. Adjust the REC LEVEL knobs so that OVER of the level meters just light up.
4. Decrease the input signal level from 0.5 to 1 dB with the attenuator, and confirm OVER of that goes out.
5. Adjust RV102, 103 (L-CH)/RV202, 203 (R-CH) for minimum reading on distortion meter.

- reference data
distortion less than -85 dB

Adjustment Location:
- ANALOG board -

PEAK METER ADJUSTMENT

Procedure:

1. Connect VIDEO IN and VIDEO OUT terminals (E-E mode).
2. Press the METER selector button.
3. Confirm the TRACKING indicator illuminates and the level meter illuminates only R-CH.
4. Adjust RT803 so that the level meter illuminates as shown below.

Adjustment Location:
- POWER SUPPLY board -

TRACKING LEVEL ADJUSTMENT

Procedure:

1. Connect VIDEO IN and VIDEO OUT terminal (E-E mode).
2. Press the METER selector button.
3. Confirm the TRACKING indicator illuminates and the level meter illuminates only R-CH.
4. Adjust RT803 so that the level meter illuminates as shown below.

Adjustment Location :
- POWER (B) board -

SECTION 4 DIAGRAMS

4-1. MOUNTING DIAGRAM

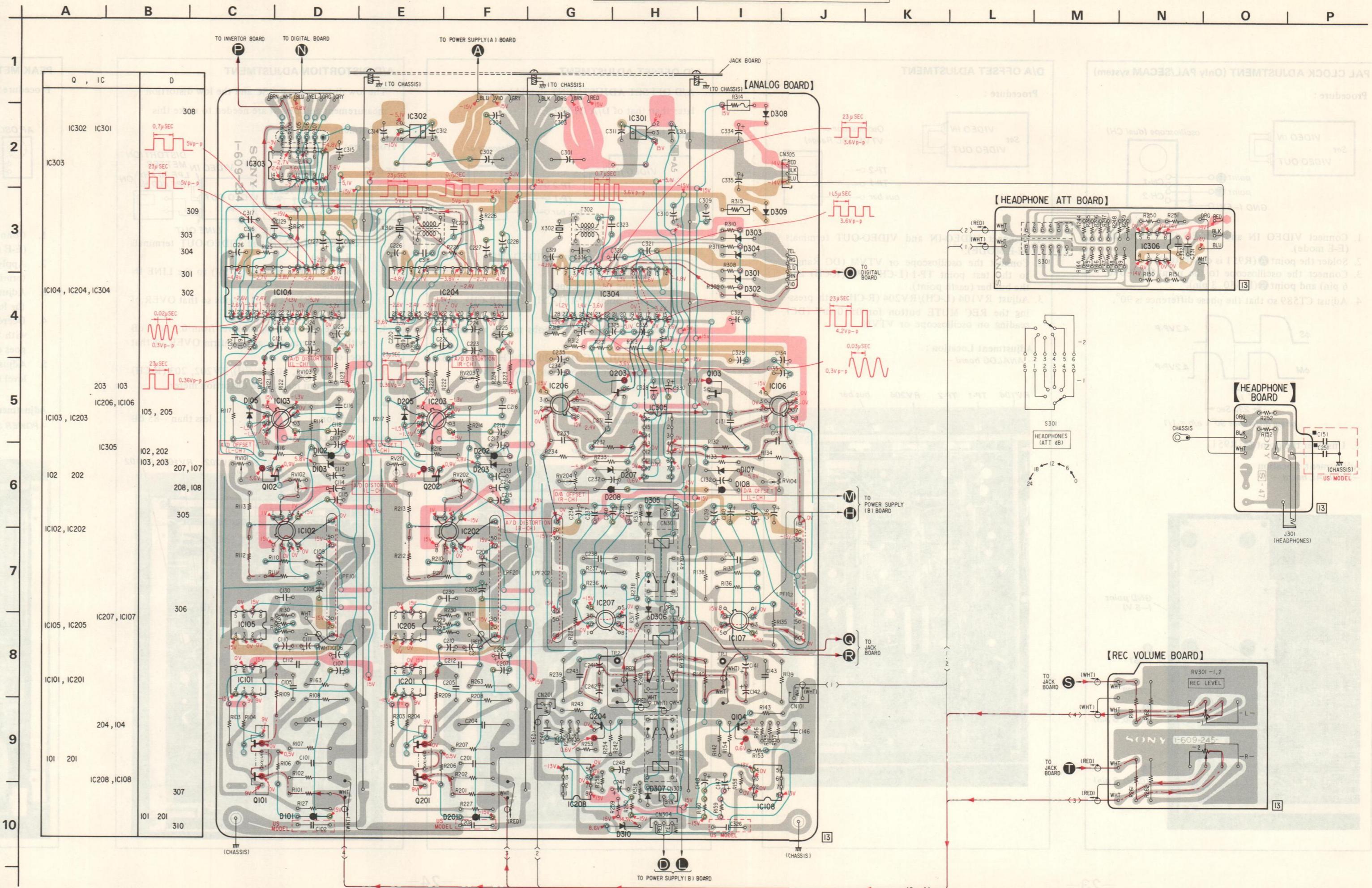
- ANALOG SECTION -
 - Semiconductor Lead Layouts: See page 42.
 - Circuit Board Location: See page 18.

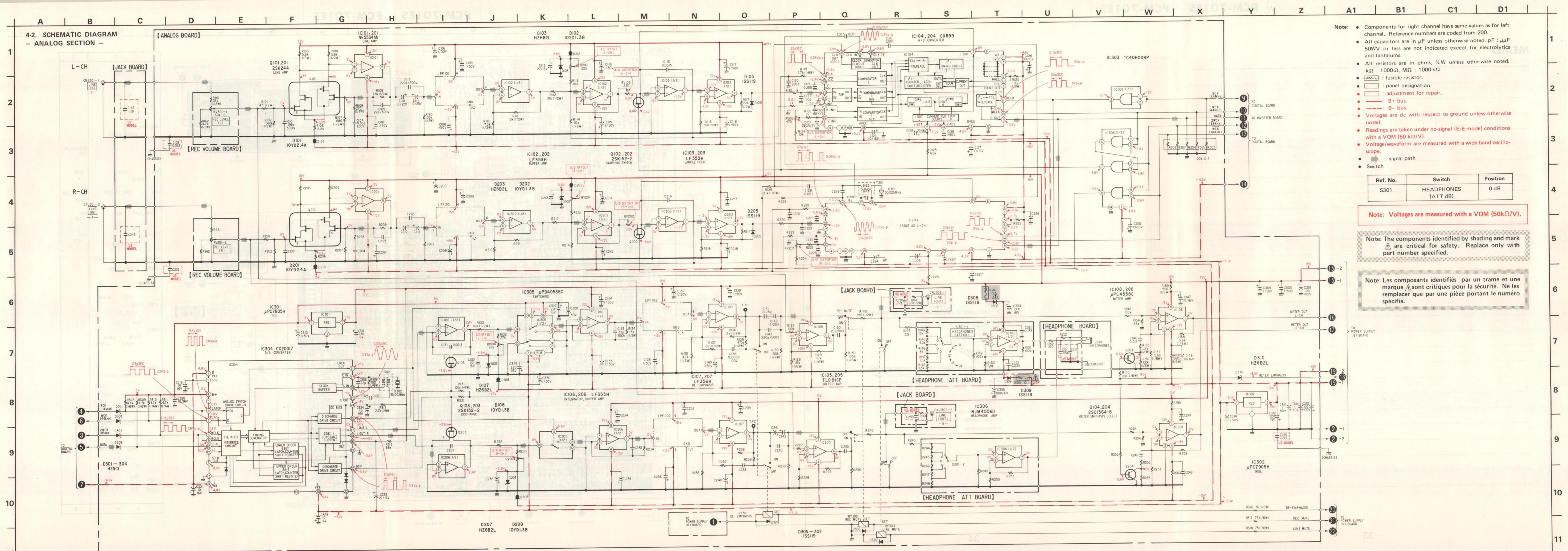
Note:

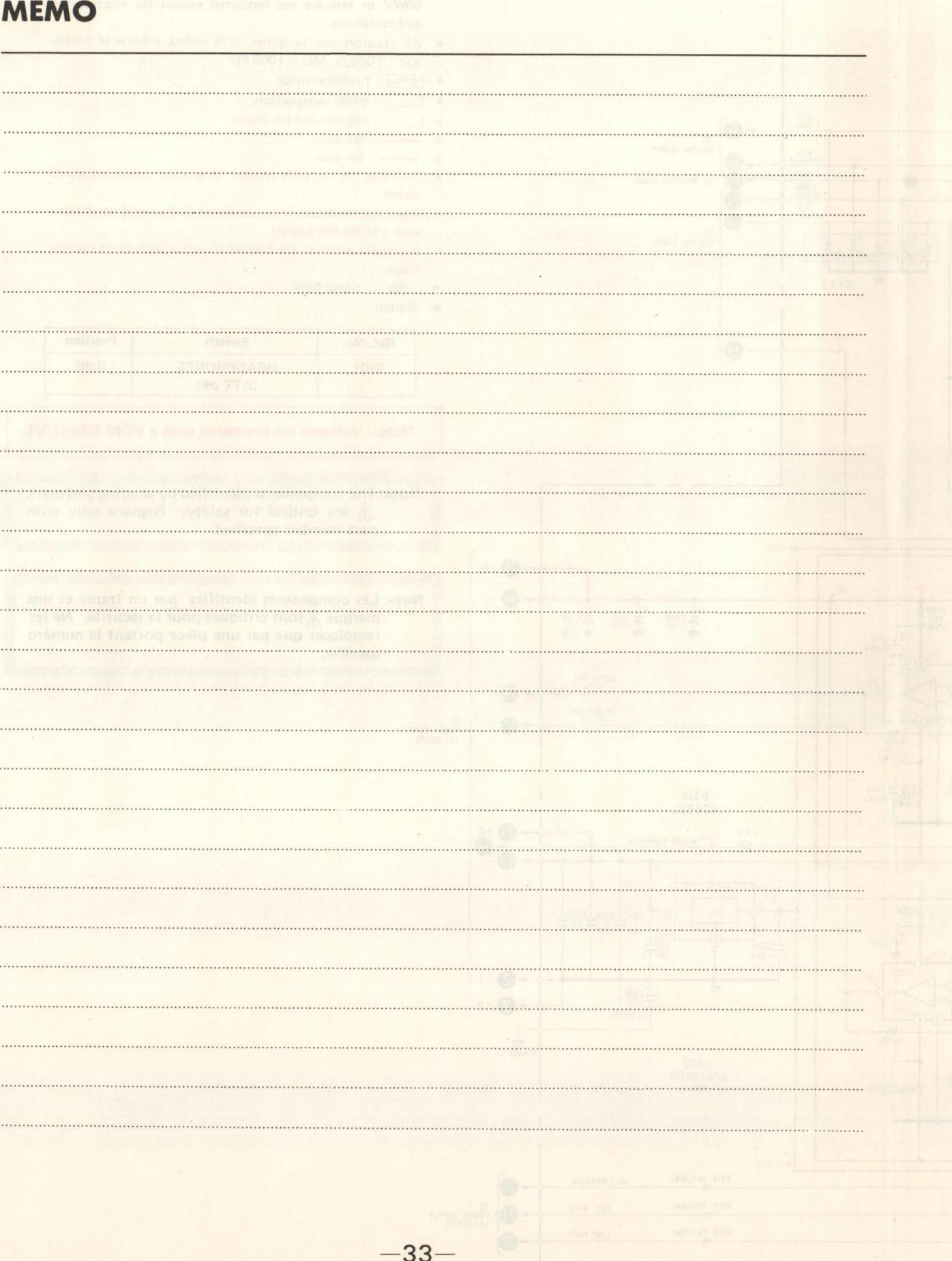
- Color code of sleeveing over the end of the jacket.

Legend:

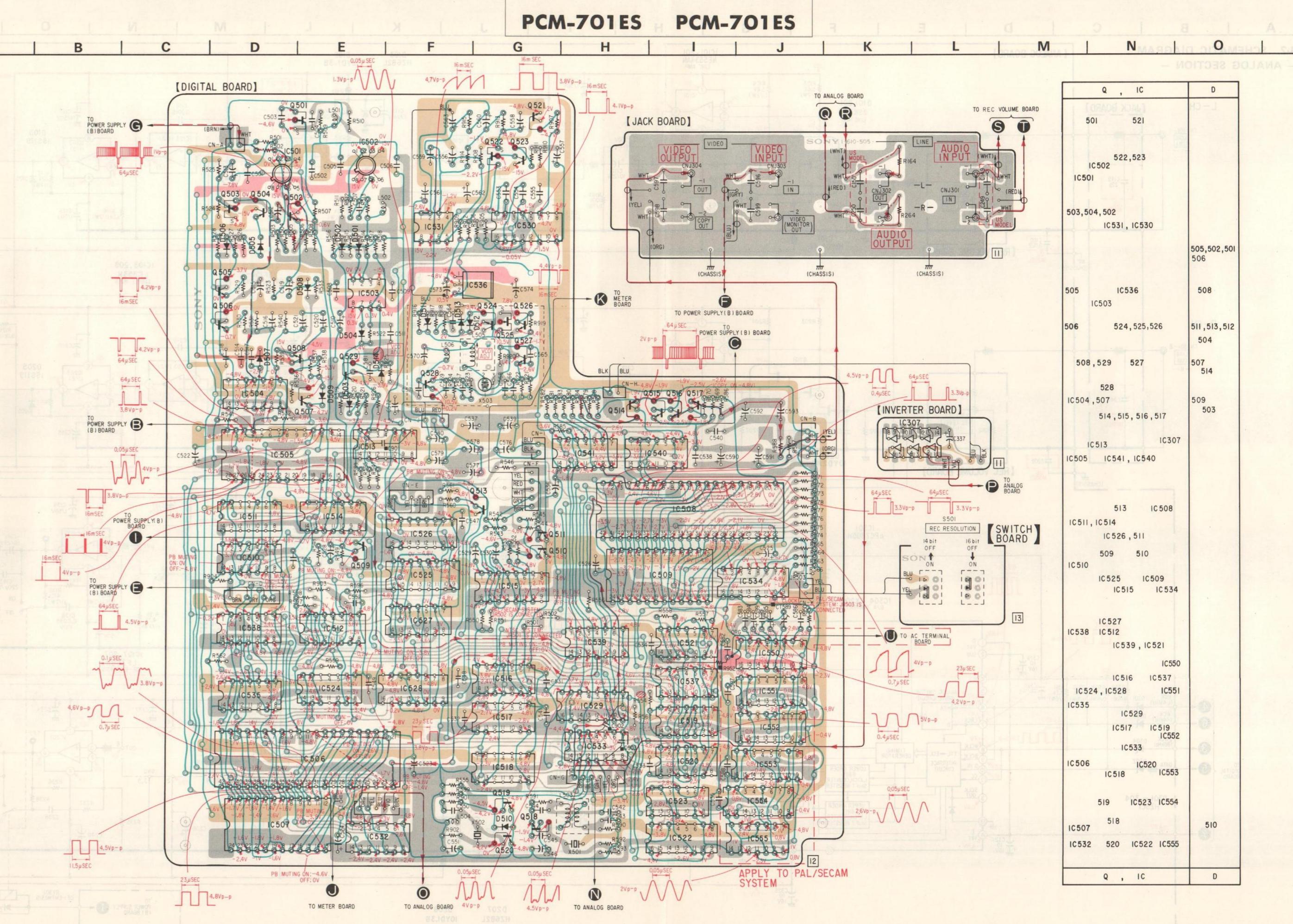
 - : parts extracted from the component side.
 - : parts extracted from the conductor side.
 - : part mounted on the conductor side.
 - : pattern connection on the component side.
 - : B + pattern
 - : B - pattern
 - → : signal path
 - → : L-CH signal path
 - → : R-CH signal path

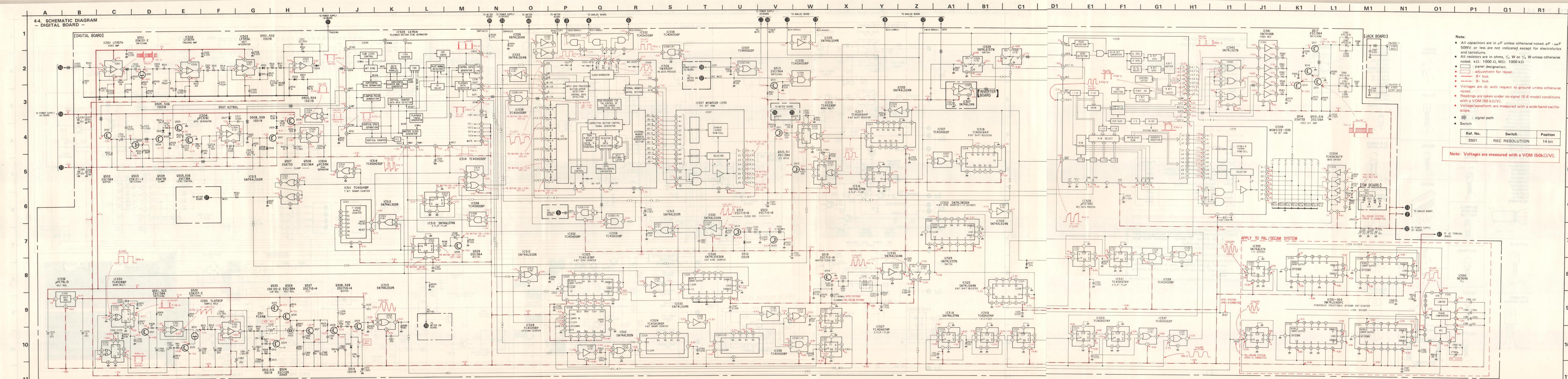


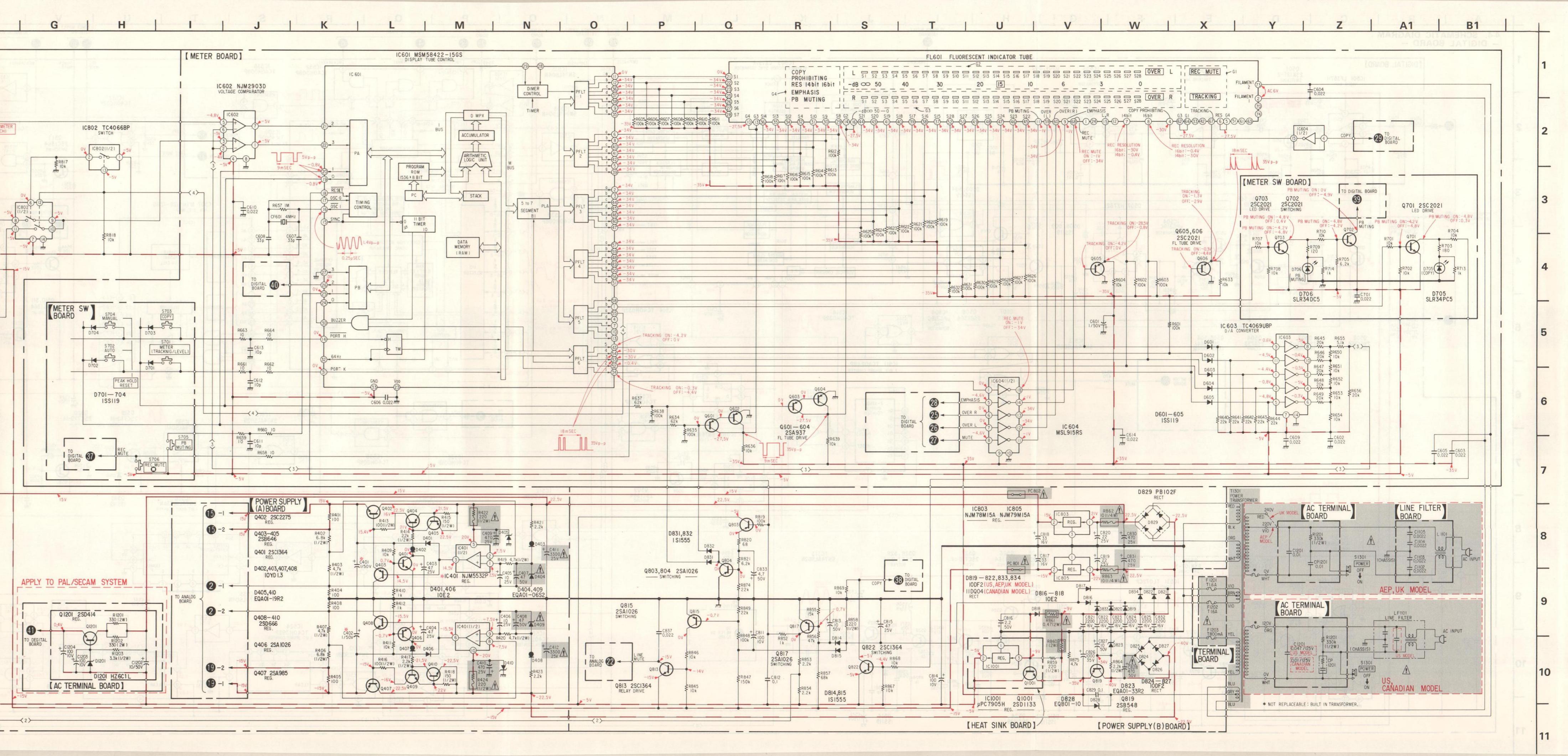
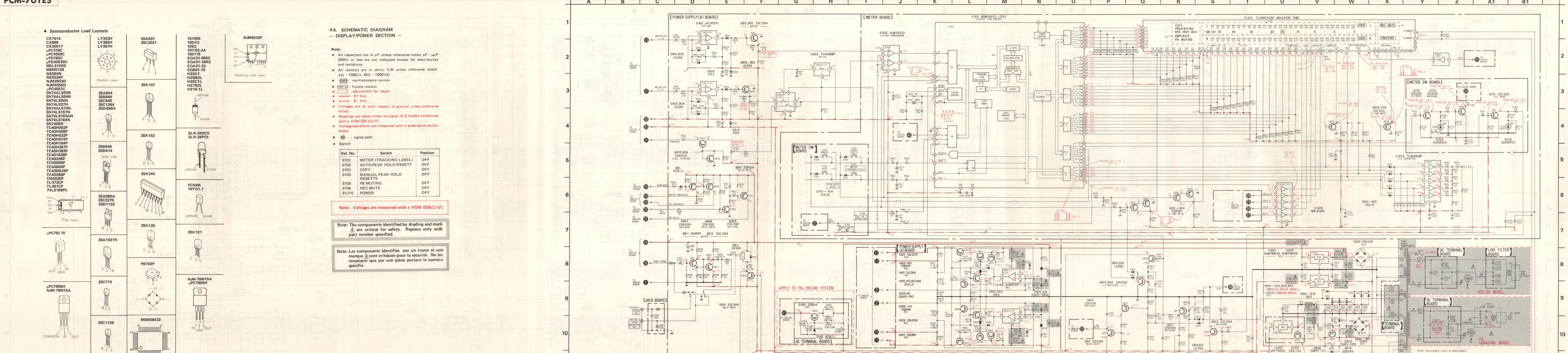


MEMO**4-3. MOUNTING DIAGRAM****- DIGITAL BOARD -**

- Semiconductor Lead Layouts: See page 42.
- Circuit Board Location: See page 18.

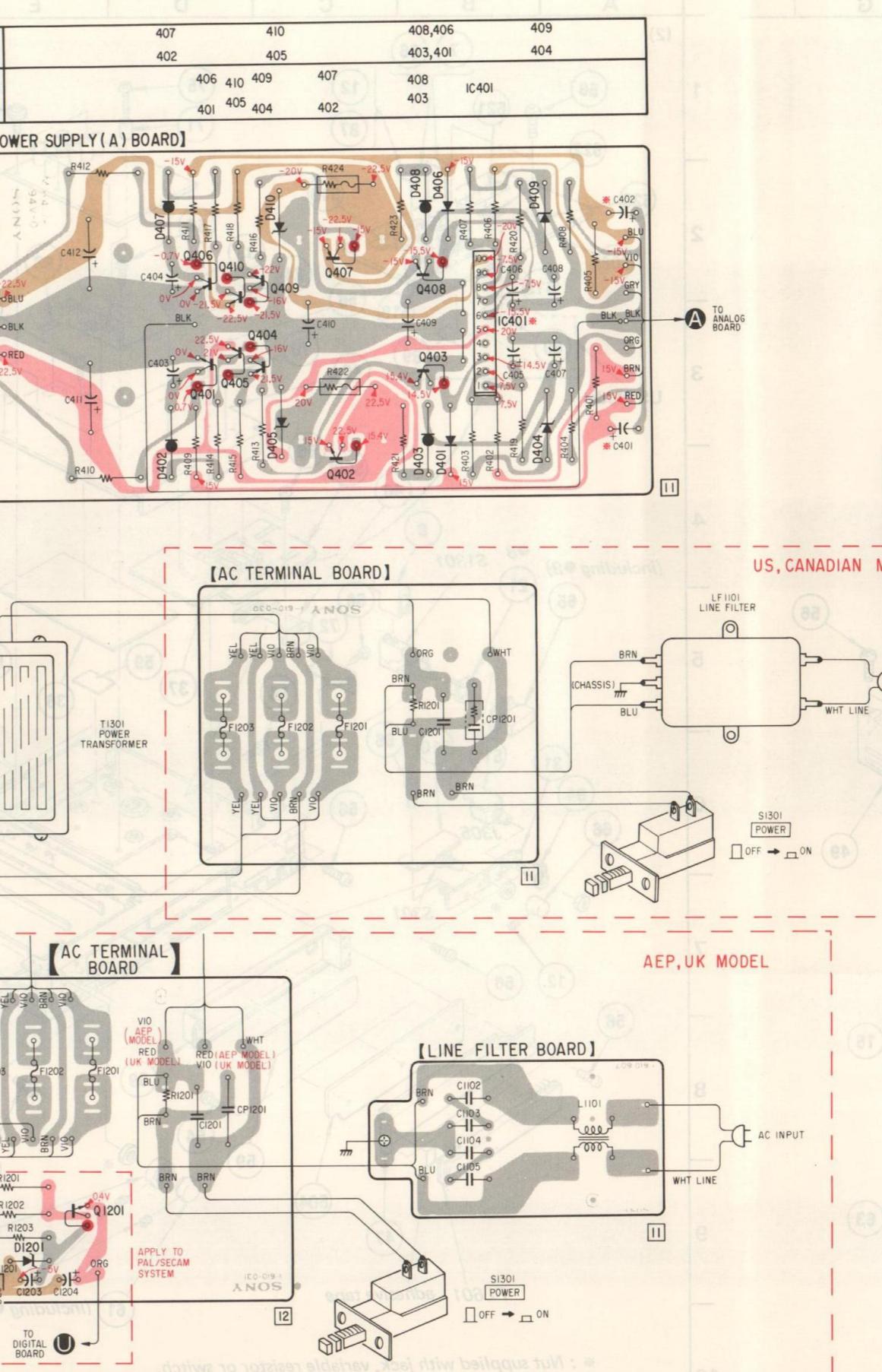
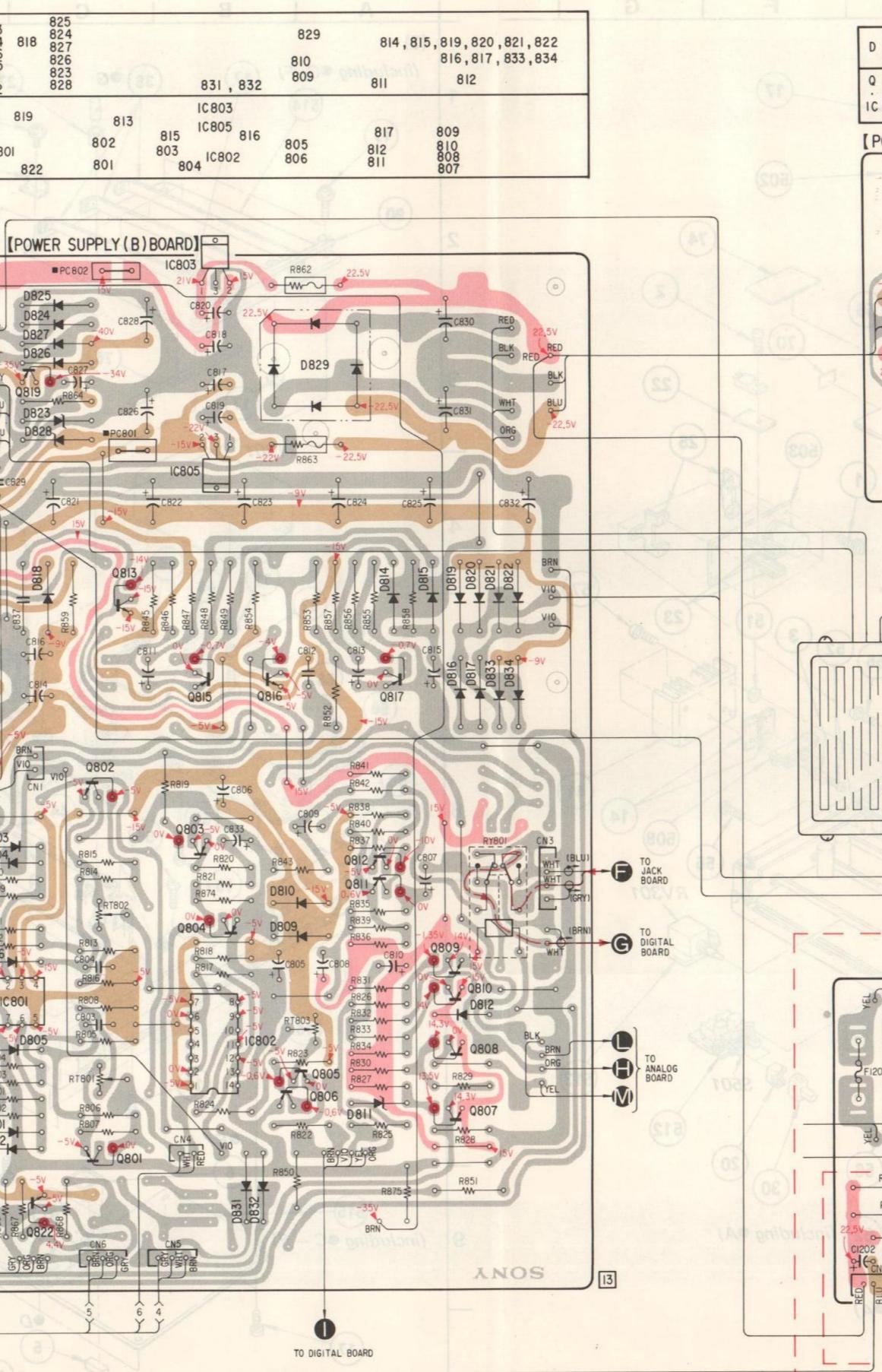
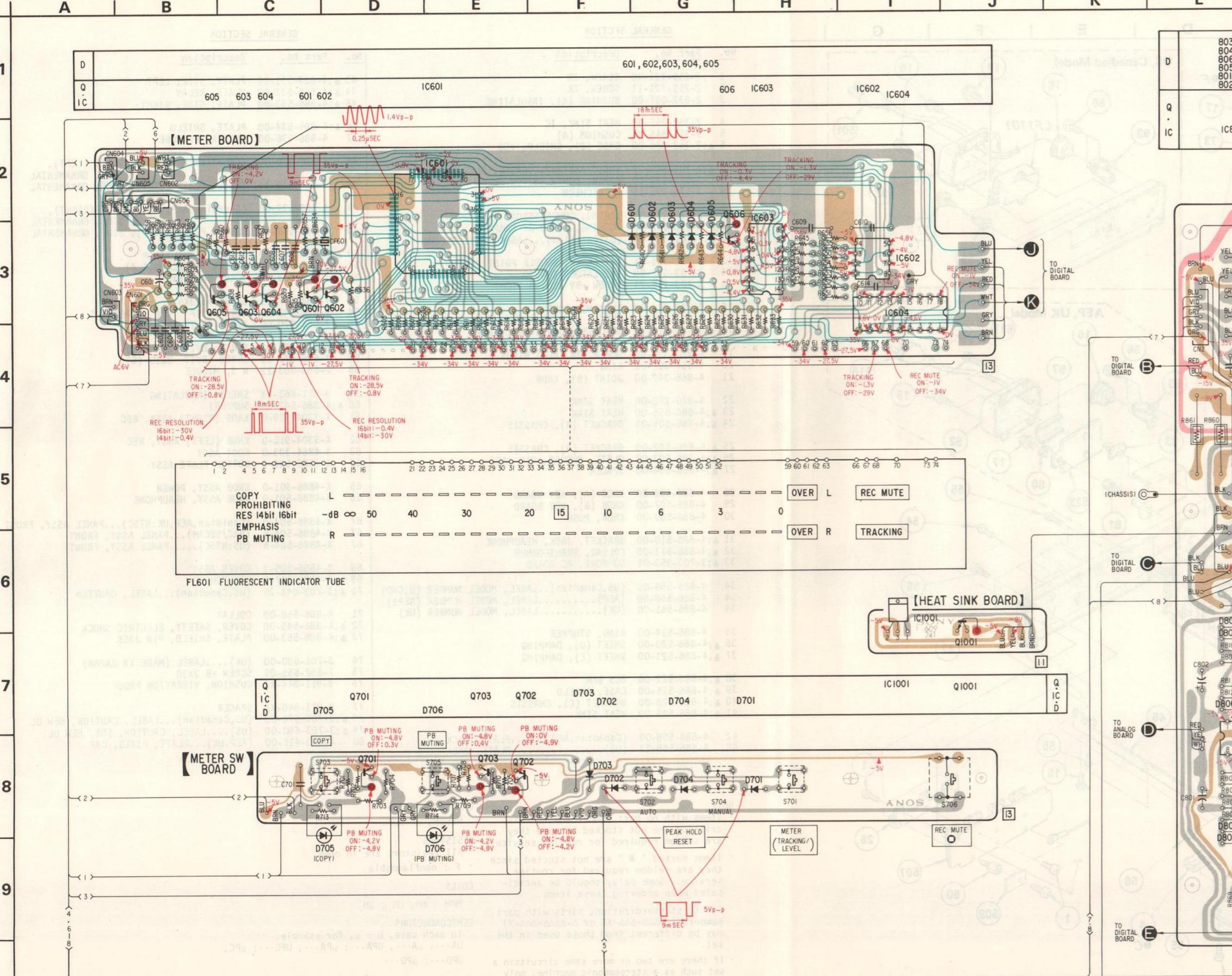




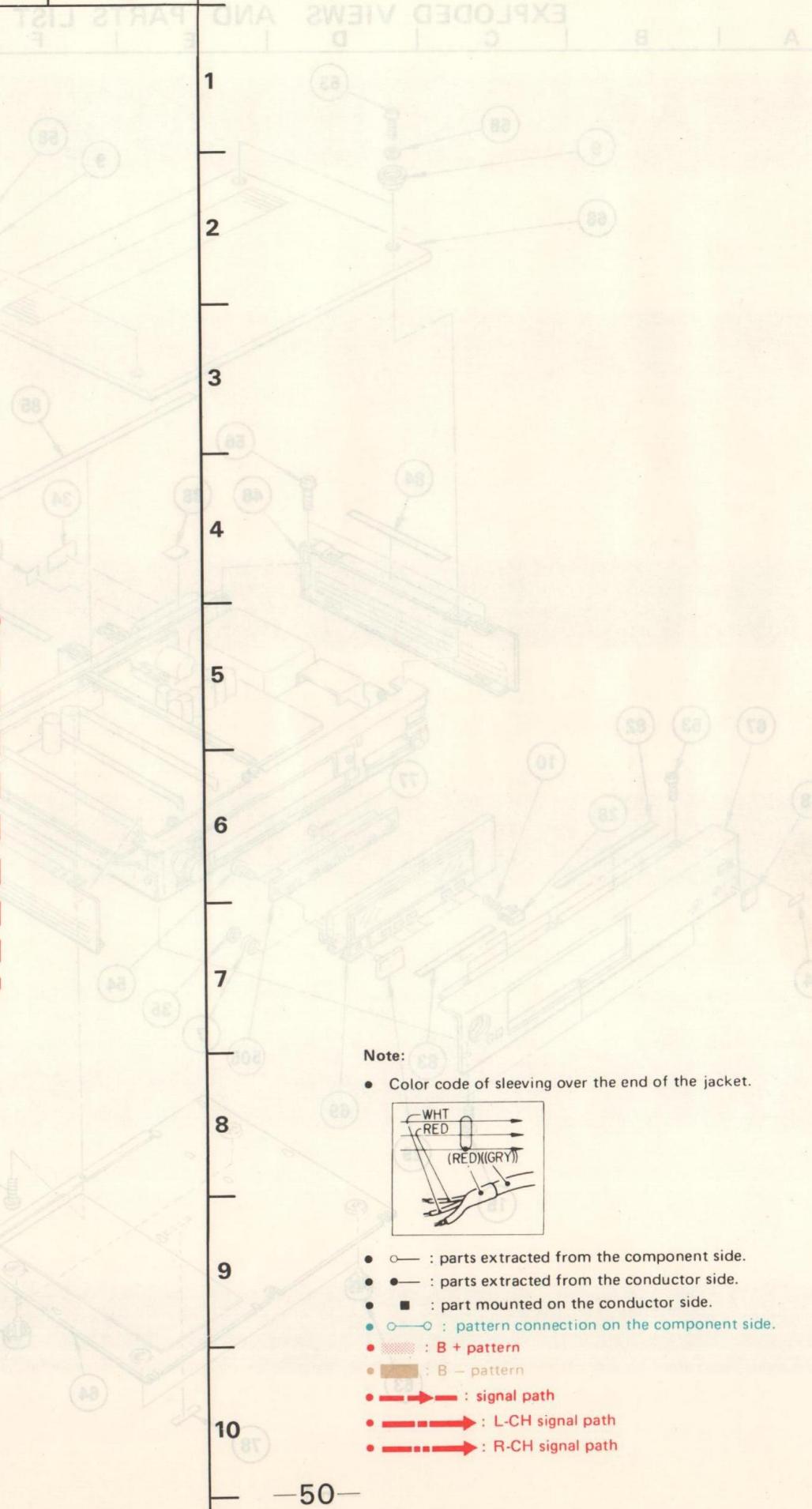


PCM-701ES

4-6. MOUNTING DIAGRAM — DISPLAY/POWER SECTION —



PCM-701ES

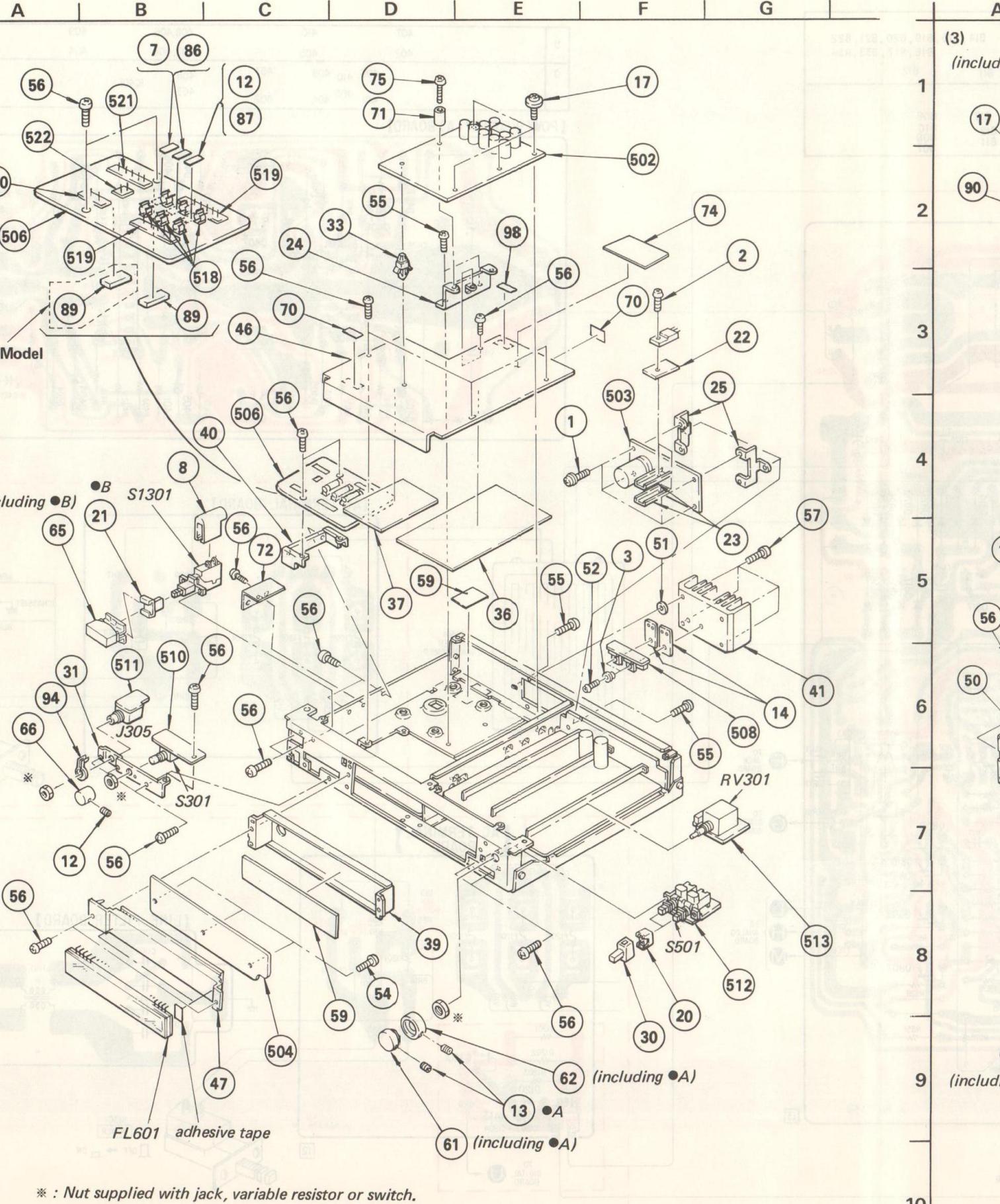
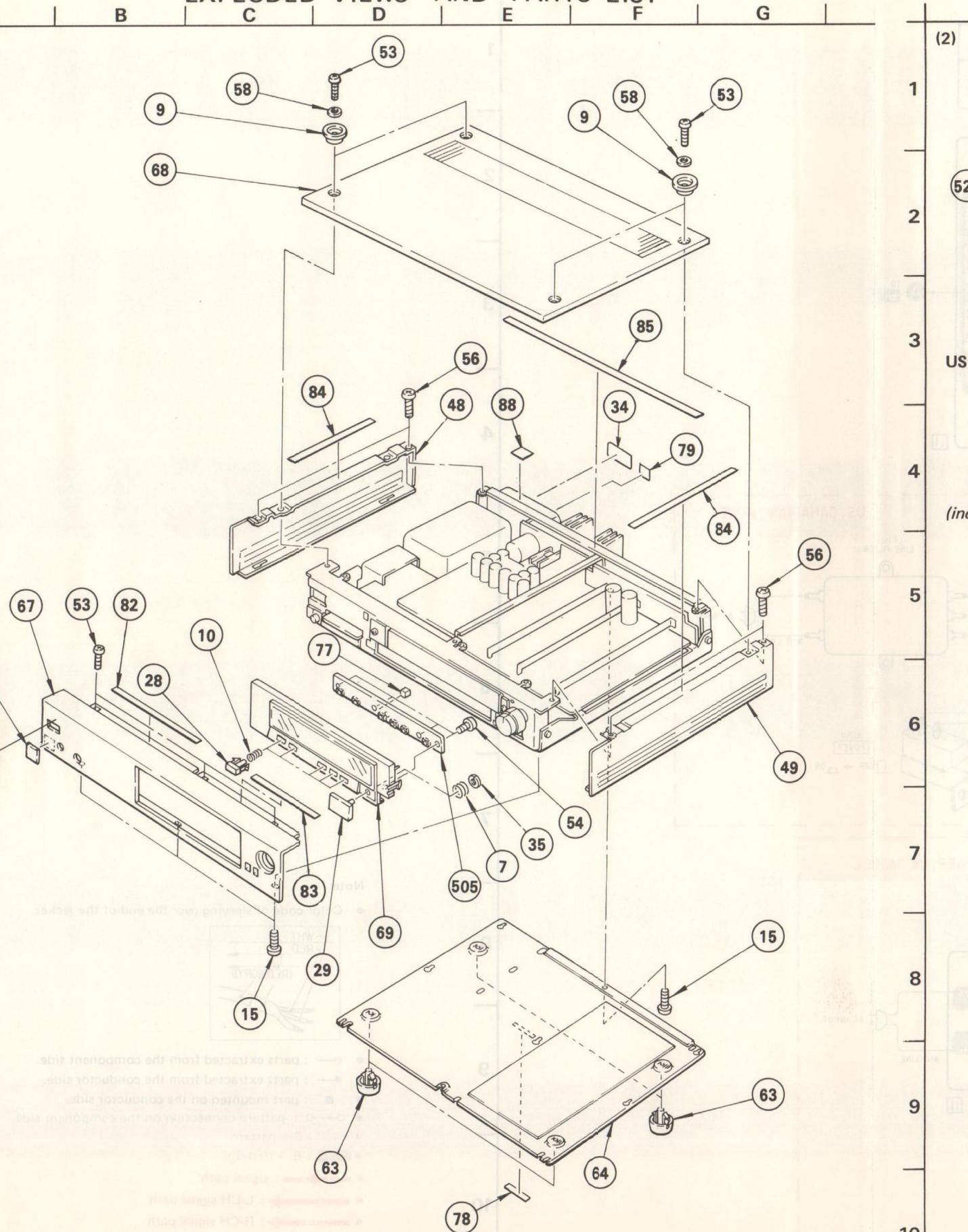


Note:

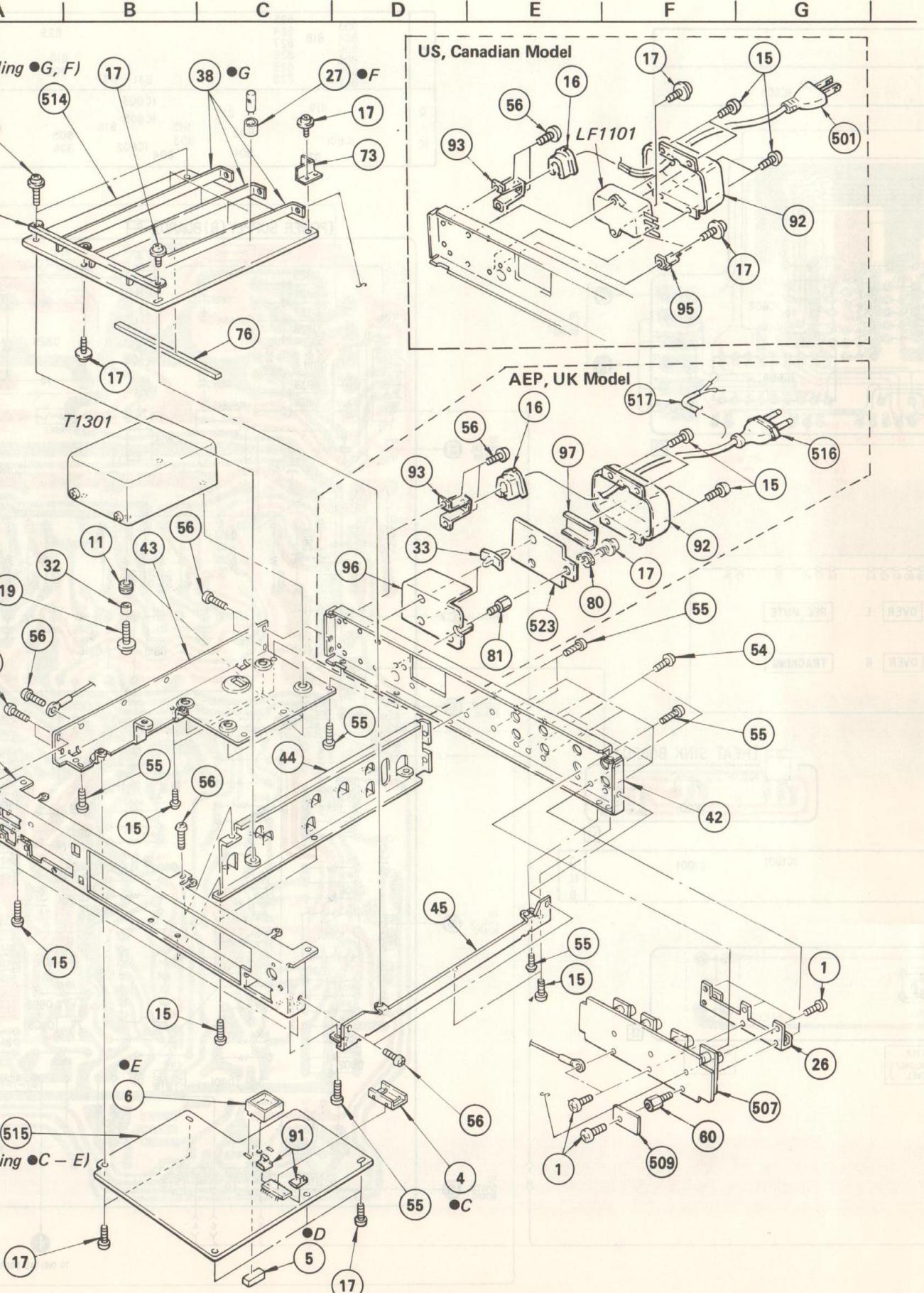
- Color code of sleeves over the end of the jacket.
 - : parts extracted from the component side.
 - : parts extracted from the conductor side.
 - : part mounted on the conductor side.
 - : pattern connection on the component side.
 - : B + pattern
 - : B - pattern
 - : signal path
 - : L-CH signal path
 - : R-CH signal path

SECTION 5

EXPLODED VIEWS AND PARTS LIST



* : Nut supplied with jack, variable resistor or switch.



No.	Part No.	Description
1	2-259-121-00	SCREW, TR
2	2-259-121-11	SCREW, TR
3	2-832-007-00	BUSHING (K), INSULATING
4	2-362-355-00	HEAT SINK, IC
5	9-911-846-XX	CUSHION (A)
6	2-362-376-00	CASE (2) SHIELD, VCO
7	3-701-946-22	(US,Canadian)...LABEL, FUSE
8	3-575-524-00	COVER, POWER SWITCH
9	3-576-298-11	ESCUTCHEON
10	3-578-221-00	SPRING, COMPRESSION
11	3-630-837-00	BUSHING, STAND BY LAMP
12	3-701-946-34	(US,Canadian)...LABEL, FUSE RATING
13	3-701-506-01	SET SCREW, DOUBLE POINT 3X4
14	3-703-037-00	INSULATOR, TO-220
15	3-703-108-21	SCREW +BV 3X6, S TIGHT
16	3-703-244-00	BUSHING, CORD
17	3-703-249-01	SCREW, S TIGHT, +PTTWH 3X6
18	3-703-710-41	STICKER, SONY SYMBOL (12)
19	4-820-330-00	SCREW, BW, PLUS MINUS
20	4-864-307-00	RING
21	4-866-342-00	JOINT (B), KNOB
22	4-870-272-00	HEAT SINK
23	4-886-555-00	HEAT SINK
24	4-886-501-00	BRACKET (A), CHASSIS
25	4-886-502-00	BRACKET (B), CHASSIS
26	4-886-503-00	PLATE, GROUND, PIN JACK
27	4-886-504-00	SPACER
28	4-886-506-00	KNOB (A), KEY BOARD
29	4-886-507-00	KNOB (B), KEY BOARD
30	4-886-509-00	KNOB, PUSH
31	4-886-510-00	BRACKET, JACK, HEADPHONE
32	4-886-511-00	COLLAR, TRANSFORMER
33	3-703-353-01	SUPPORT, PC BOARD
34	4-886-559-00	(US,Canadian)...LABEL, MODEL NUMBER (U,CND)
34	4-886-560-00	(AEP)...LABEL, MODEL NUMBER (AEP1)
34	4-886-561-00	(UK)...LABEL, MODEL NUMBER (UK)
35	4-886-514-00	RING, STOPPER
36	4-886-520-00	SHOOT (D), DAMPING
37	4-886-521-00	SHOOT (E), DAMPING
38	4-886-522-00	BUS BAR
39	4-886-525-00	CASE, SHIELD
40	4-886-528-00	BRACKET (C), CHASSIS
41	4-886-529-00	HEAT SINK
42	4-886-568-00	(Canadian,AEP,UK)...PLATE, JACK
42	4-886-568-11	(US)...PLATE, JACK

NOTE:
 - Items with no part number and no description are not stocked because they are seldom required for routine service.
 - Items marked "●" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
 - Due to standardization, parts with part numbers ($\Delta\Delta\Delta-\Delta\Delta\Delta-XX$ or $\Delta-\Delta\Delta\Delta-\Delta\Delta-X$) may be different from those used in the set.
 - If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:

MF: μ F, PF: μ F.

RESISTORS:

All resistors are in ohms.

F : nonflammable

COILS:

MMH : mH, UH : μ H

SEMICONDUCTORS:

In each case, U : μ , for example:UA... : μ A..., UPA... : μ PA..., UPC... : μ PC,UPD... : μ PD...

No.	Part No.	Description
43	4-886-531-00	PLATE, SIDE, LEFT
44	4-886-532-00	PLATE, RELAY
45	4-886-533-00	PLATE, SIDE, RIGHT
46	4-886-534-00	PLATE, SHIELD
47	4-886-536-00	HOLDER, FL TUBE
48	4-886-538-00	(Canadian,AEP,UK)...PLATE (LEFT), SIDE, ORNAMENTAL
48	4-886-538-11	(US)...PLATE (LEFT), SIDE, ORNAMENTAL
49	4-886-539-00	(Canadian,AEP,UK)...PLATE(RIGHT), SIDE, ORNAMENTAL
49	4-886-539-11	(US)...PLATE(RIGHT), SIDE, ORNAMENTAL
50	4-886-540-00	CHASSIS, AMPLIFIER
51	2-045-013-31	WASHER, PANEL (DIA.4)
52	7-621-773-95	SCREW +B 2.6x6
53	7-682-547-09	SCREW +B 3X6
54	7-685-546-19	SCREW +BTP 3X8 TYPE N-S
55	7-685-870-09	SCREW +BTT 3X5 (S)
56	7-685-871-01	SCREW +BTT 3X6 (S)
57	7-685-873-09	SCREW +BTT 3X10 (S)
58	7-688-003-12	W 3, MIDDLE
59	9-911-863-XX	SHOOT, INSULATING
60	4-886-542-00	SUPPORT
61	X-3304-909-00	KNOB (RIGHT) ASSY, REC
62	X-3304-910-00	KNOB (LEFT) ASSY, REC
63	X-4884-303-00	FOOT ASSY
64	X-4885-506-1	BOTTOM PLATE ASSY
65	X-4885-901-00	KNOB ASSY, POWER
66	X-4886-501-00	KNOB ASSY, HEADPHONE
67	X-4886-504-00	(Canadian,AEP,UK:NTSC)...PANEL ASSY, FRONT
67	X-4886-504-5	(PAC/SECAM)...PANEL ASSY, FRONT
67	X-4886-504-6	(US:NTSC)...PANEL ASSY, FRONT
68	X-4886-505-1	COVER ASSY
69	X-4886-507-1	ESCUUTCHEON
70	3-703-044-26	(US,Canadian)...LABEL, CAUTION
71	4-886-558-00	COLLAR
72	4-886-545-00	COVER, SAFETY, ELECTRIC SHOCK
73	4-886-553-00	PLATE, SHIELD, PIN JACK
74	3-701-690-00	(UK)...LABEL (MADE IN JAPAN)
75	7-682-555-09	SCREW +B 3X30
76	9-911-844-XX	CUSHION, VIBRATION PROOF
77	9-911-840-XX	SPACER
78	3-703-678-00	(US,Canadian)...LABEL, CAUTION, NEW UL
79	3-703-680-00	(US)...LABEL, CAUTION, SUB, NEW UL
80	4-843-416-00	(AEP,UK)...PLATE, FIXED, CAP

SECTION 5
EXPLODED VIEWS AND PARTS LIST

PCM-701ES PCM-701ES

GENERAL SECTION			ELECTRICAL PARTS			ELECTRICAL PARTS			ELECTRICAL PARTS		
No.	Part No.	Description	Ref.No.	Part No.	Description	Ref.No.	Part No.	Description	Ref.No.	Part No.	Description
81	4-861-433-00	(AEP,UK)....SUPPORT (A)	501	A-1-555-701-00	(US,Canadian)...CORD, POWER	C120	1-102-978-00	CERAMIC	C217	1-131-450-00	TANTALUM
82	4-886-576-00	(US)....FELT (A), CONDUCTIVE	502	A-4394-298-A	MAINTAINED PCB, POWER (B)	C121	1-102-529-00	CERAMIC	C218	1-131-450-00	TANTALUM
83	4-886-577-00	(US)....FELT (B), CONDUCTIVE	503	A-4394-297-A	MAINTAINED PCB, POWER (A)	C122	1-102-514-00	CERAMIC	C219	1-161-039-00	CERAMIC
84	4-886-578-00	(US)....SPACER (A), CONDUCTIVE	504	A-1-4380-046-A	MAINTAINED PCB, METER	C123	1-131-427-00	TANTALUM	C220	1-102-978-00	CERAMIC
85	4-886-579-00	(US)....SPACER (B), CONDUCTIVE	505	A-1-609-238-00	PC BOARD, METER SWITCH	C124	1-131-371-00	TANTALUM	C221	1-102-529-00	CERAMIC
86	3-701-948-16	(AEP,UK)....LABEL, FUSE	506	A-1-610-030-00	(US,Canadian)...PC BOARD, AC TRANSLATION	C125	1-131-520-00	TANTALUM	C222	1-102-514-00	CERAMIC
87	3-701-948-13	(AEP,UK)....LABEL, FUSE	506	A-1-610-031-00	(AEP,UK).....PC BOARD, AC TRANSLATION	C126	1-131-371-00	TANTALUM	C223	1-131-427-00	TANTALUM
88	3-703-082-21	(UK)....LABEL, CAUTION	507	A-1-610-505-00	PC BOARD, PIN JACK	C127	1-131-371-00	TANTALUM	C224	1-131-371-00	TANTALUM
89	9-911-842-XX	CUSHION, AC	508	A-1-609-241-00	PC BOARD, HEAT SINK	C128	1-131-450-00	TANTALUM	C225	1-131-520-00	TANTALUM
90	A-4-886-556-00	REINFORCEMENT	509	A-1-609-433-00	PC BOARD, INVERTER	C129	1-161-039-00	CERAMIC	C226	1-131-371-00	TANTALUM
91	4-886-557-00	CLIP (B), IC	510	A-1-609-242-00	PC BOARD, HEADPHONE AMP	C130	1-123-829-00	ELECT	C227	1-131-371-00	TANTALUM
92	A-4-886-566-00	CASE, FILTER	511	A-1-609-243-00	PC BOARD, HEADPHONE JACK	C131	1-104-230-00	POLYSTYRENE	C228	1-131-450-00	TANTALUM
93	A-4-886-567-00	BRACKET, POWER CORD	512	A-1-609-244-00	PC BOARD, RES SWITCH	C132	1-131-520-00	TANTALUM	C229	1-161-039-00	CERAMIC
94	A-4-886-571-00	(US).....LUG, JACK	513	A-1-609-245-00	PC BOARD, REC VOL	C133	1-107-317-00	MICA	C230	1-123-829-00	ELECT
95	A-4-886-572-00	(US,Canadian)...PLATE, GROUND, FILTER	514	A-1-4334-009-A	(Canadian,AEP,UK)...MAINTAINED PCB, ANALOG	C134	1-131-450-00	TANTALUM	C231	1-104-230-00	POLYSTYRENE
96	4-886-563-00	(AEP,UK)....INSULATOR (A), FILTER	514	A-1-4334-010-A	(US).....MAINTAINED PCB, ANALOG	C135	1-131-450-00	TANTALUM	C232	1-131-520-00	TANTALUM
97	4-886-564-00	(AEP,UK)....INSULATOR (B), FILTER	515	A-1-4335-266-A	(PAL/SECAM)...MAINTAINED PCB, DIGITAL	C136	1-131-450-00	TANTALUM	C233	1-107-317-00	MICA
98	4-886-565-00	(AEP,UK)....SHEET (D), INSULATING	515	A-1-4335-274-A	(NTSC).....MAINTAINED PCB, DIGITAL	C137	1-131-450-00	TANTALUM	C234	1-131-450-00	TANTALUM
V03	Z05	Y01	516	A-1-555-795-00	(AEP)...CORD, POWER	C138	1-107-324-00	MICA	C235	1-131-450-00	TANTALUM
V01	Z05	Y01	517	A-1-551-884-32	(UK)....CORD, POWER	C139	1-131-450-00	TANTALUM	C236	1-131-450-00	TANTALUM
V02	Z05	Y01	518	1-533-131-00	HOLDER, FUSE	C140	1-131-450-00	TANTALUM	C237	1-131-450-00	TANTALUM
V02	Z05	Y01	519	A-1-535-118-00	TERMINAL	C141	1-131-522-00	TANTALUM	C238	1-107-324-00	MICA
V01	Z05	Y01	520	A-1-535-135-00	BASE POST 14MM (10MM PITCH)	C142	1-131-522-00	TANTALUM	C239	1-131-450-00	TANTALUM
V25	Z05	Y01	521	A-1-535-136-00	BASE POST 14MM (10MM PITCH) 3P	C143	1-107-310-00	MICA	C240	1-131-450-00	TANTALUM
ACCESSORY & PACKING MATERIAL			522	A-1-535-139-00	(US,Canadian)...BASE POST 19MM (10MM PITCH)	C146	1-130-621-00	FILM	C241	1-131-522-00	TANTALUM
No.	Part No.	Description	523	A-1-610-607-00	(AEP,UK)....PC BOARD, LINE FILTER	C147	1-123-356-00	ELECT	C242	1-131-522-00	TANTALUM
101	1-551-315-00	CORD, CONNECTION (RK-112)	C101	1-107-165-00	MICA	C148	1-123-356-00	ELECT	C243	1-107-310-00	MICA
102	1-556-464-00	(AEP,UK).....CORD, CONNECTION	C102	1-161-494-00	(US)....CERAMIC	C149	1-161-263-00	(US)...CERAMIC	C244	1-130-621-00	FILM
102	1-551-086-81	(US,Canadian)...CORD, CONNECTION	C104	1-130-922-00	FILM	C150	1-161-263-00	(US)...CERAMIC	C245	1-123-356-00	ELECT
103	3-701-630-00	BAG, POLYETHYLENE	C105	1-107-322-00	MICA	C201	1-107-165-00	MICA	C246	1-161-263-00	(US)...CERAMIC
104	3-773-274-21	MANUAL, INSTRUCTION	C106	1-131-450-00	TANTALUM	C202	1-161-494-00	(US)...CERAMIC	C247	1-123-356-00	ELECT
104	3-773-274-31	(Canadian).....MANUAL, INSTRUCTION	C107	1-131-450-00	TANTALUM	C204	1-130-922-00	FILM	C248	1-123-356-00	ELECT
104	3-773-274-11	(PAL/SECAM:AEP,UK)...MANUAL, INSTRUCTION	C108	1-131-450-00	TANTALUM	C205	1-107-322-00	MICA	C249	1-161-263-00	(US)...CERAMIC
105	3-536-825-00	BAG, PROTECTING	C109	1-131-450-00	TANTALUM	C206	1-131-450-00	TANTALUM	C250	1-161-263-00	(US)...CERAMIC
106	3-703-507-00	(UK)....LABEL	C110	1-131-522-00	TANTALUM	C207	1-131-450-00	TANTALUM	C251	1-161-271-00	(US)...CERAMIC
107	3-701-360-00	(AEP)....LABEL	C111	1-131-522-00	TANTALUM	C208	1-131-450-00	TANTALUM	C301	1-125-288-00	ELECT(BLOCK)
107	3-703-157-00	(US)....LABEL	C112	1-107-310-00	MICA	C209	1-131-450-00	TANTALUM	C302	1-125-288-00	ELECT(BLOCK)
107	3-703-160-00	(Canadian)....LABEL	C113	1-131-520-00	TANTALUM	C210	1-131-522-00	TANTALUM	C303	1-131-450-00	TANTALUM
107	3-703-165-00	(UK)....LABEL	C114	1-131-450-00	TANTALUM	C211	1-131-522-00	TANTALUM	C304	1-131-450-00	TANTALUM
108	4-886-573-00	CUSHION	C115	1-131-450-00	TANTALUM	C212	1-107-310-00	MICA	C309	1-131-450-00	TANTALUM
109	4-886-574-00	CUSHION	C116	1-104-230-00	POLYSTYRENE	C213	1-131-520-00	TANTALUM	C310	1-131-450-00	TANTALUM
110	4-886-575-00	INDIVIDUAL CARTON	C117	1-131-450-00	TANTALUM	C214	1-131-450-00	TANTALUM	C311	1-123-683-00	ELECT
			C118	1-131-450-00	TANTALUM	C215	1-131-450-00	TANTALUM	C312	1-123-683-00	ELECT
			C119	1-161-039-00	CERAMIC	C216	1-104-230-00	POLYSTYRENE	C313	1-131-450-00	TANTALUM

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 · If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
 MF:μF, PF:μμF.

RESISTORS:
 · All resistors are in ohms.
 · F : nonflammable

COILS:
 · MMH : mH, UH : μH

SEMICONDUCTORS
 In each case, U : μ, for example:
 UA...: μA..., UPA...: μPA..., UPC...: μPC,
 UPD...: μPD...

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ELECTRICAL PARTS

Ref. No.	Part No.	Description	Value	Tolerance	Voltage
C317	1-161-039-00	CERAMIC	0.001MF	10%	25V
C318	1-102-865-00	CERAMIC	8PF	0.5PF	50V
C319	1-131-371-00	TANTALUM	10MF	20%	16V

ELECTRICAL PARTS

Ref. No.	Part No.	Description	Value	Tolerance	Voltage
C515	1-131-343-00	TANTALUM	0.22MF	20%	35V
C516	1-123-356-00	ELECT	10MF	20%	50V
C517	1-161-019-00	CERAMIC	0.033MF	10%	25V

ELECTRICAL PARTS

Ref. No.	Part No.	Description	Value	Tolerance	Voltage
C560	1-131-350-00	TANTALUM	3.3MF	10%	35V
C561	1-131-347-00	TANTALUM	1MF	20%	35V
C562	1-131-347-00	TANTALUM	1MF	20%	35V

ELECTRICAL PARTS

Ref. No.	Part No.	Description	Value	Tolerance	Voltage
C607	1-161-285-00	CERAMIC	33PF	5%	50V
C608	1-161-285-00	CERAMIC	33PF	5%	50V
C609	1-161-494-00	CERAMIC	0.022MF	30%	25V

C320	1-131-371-00	TANTALUM	10MF	20%	16V
C321	1-131-371-00	TANTALUM	10MF	20%	16V
C323	1-161-039-00	CERAMIC	0.001MF	10%	25V

C518	1-161-019-00	CERAMIC	0.033MF	10%	25V
C519	1-131-343-00	TANTALUM	0.22MF	20%	35V
C520	1-123-380-00	ELECT	1MF	20%	50V

C563	1-131-520-00	TANTALUM	22MF	20%	16V
C564	1-161-019-00	CERAMIC	0.033MF	10%	25V
C565	1-101-361-00	CERAMIC	150PF	5%	50V

C610	1-161-494-00	CERAMIC	0.022MF	30%	25V
C611	1-161-279-00	CERAMIC	10PF	5%	50V
C612	1-161-279-00	CERAMIC	10PF	5%	50V

C324	1-131-371-00	TANTALUM	10MF	20%	16V
C325	1-131-371-00	TANTALUM	10MF	20%	16V
C326	1-161-494-00	(US).CERAMIC	0.022MF	30%	25V

C521	1-123-380-00	ELECT	1MF	20%	50V
C522	1-131-450-00	TANTALUM	1MF	20%	50V
C523	1-131-450-00	TANTALUM	1MF	20%	50V

C566	1-102-963-00	CERAMIC	33PF	5%	50V
C567	1-102-950-00	CERAMIC	13PF	5%	50V
C568	1-161-019-00	CERAMIC	0.033MF	10%	25V

C801	1-123-330-00	ELECT	22MF	20%	25V
C802	1-123-330-00	ELECT	22MF	20%	25V
C803	1-130-634-00	FILM	0.15MF	5%	50V

C327	1-123-683-00	ELECT	220MF	20%	16V
C328	1-131-450-00	TANTALUM	1MF	20%	50V
C329	1-123-683-00	ELECT	220MF	20%	16V

C524	1-131-450-00	TANTALUM	1MF	20%	50V
C525	1-131-450-00	TANTALUM	1MF	20%	50V
C526	1-131-450-00	TANTALUM	1MF	20%	50V

C569	1-161-019-00	CERAMIC	0.033MF	10%	25V
C570	1-131-450-00	TANTALUM	1MF	20%	50V
C571	1-102-937-00	CERAMIC	100PF	5%	50V

C804	1-130-634-00	FILM	0.15MF	5%	50V
C805	1-123-307-00	ELECT	100MF	20%	10V
C806	1-123-307-00	ELECT	100MF	20%	10V

C330	1-131-450-00	TANTALUM	1MF	20%	50V
C331	1-161-019-00	CERAMIC	0.033MF	10%	25V
C332	1-161-019-00	CERAMIC	0.033MF	10%	25V

C527	1-161-019-00	CERAMIC	0.033MF	10%	25V
C528	1-123-356-00	ELECT	10MF	20%	50V
C529	1-123-380-00	ELECT	1MF	20%	50V

C572	1-131-450-00	TANTALUM	1MF	20%	50V
C573	1-131-522-00	TANTALUM	10MF	20%	25V
C574	1-131-522-00	TANTALUM	10MF</td		

ELECTRICAL PARTS

Ref.No.	Part No.	Description
C902	1-102-514-00	CERAMIC 22PF 5% 50V
C903	1-102-514-00	CERAMIC 22PF 5% 50V
C1102	1-161-734-00	(AEP,UK)...CERAMIC 2200PF 20% 400V
C1103	1-161-734-00	(AEP,UK)...CERAMIC 2200PF 20% 400V
C1104	1-161-734-00	(AEP,UK)...CERAMIC 2200PF 20% 400V
C1105	1-161-734-00	(AEP,UK)...CERAMIC 2200PF 20% 400V
C1201 _A	1-130-234-00	(US)...FILM 0.047MF 20% 125V
C1201 _A	1-161-744-00	(AEP,UK)...CERAMIC 10000PF 400V
C1201 _A	1-161-749-00	(Canadian)...CERAMIC 10000PF 125V
CF601	1-527-822-21	OSCILLATOR, CERAMIC
CN1	1-1560-708-00	PIN, CONNECTOR 2P
CN2	1-1560-604-00	PIN, CONNECTOR 5P
CN3	1-1560-603-00	PIN, CONNECTOR 4P
CN4	1-1560-708-00	PIN, CONNECTOR 2P
CN5	1-1560-602-00	PIN, CONNECTOR 3P
CN6	1-1560-602-00	PIN, CONNECTOR 3P
CNP101	1-1560-708-00	PIN, CONNECTOR 2P
CNP201	1-1560-708-00	PIN, CONNECTOR 2P
CNP301	1-1560-708-00	PIN, CONNECTOR 2P
CNP302	1-1560-708-00	PIN, CONNECTOR 2P
CNP303	1-1560-708-00	PIN, CONNECTOR 2P
CNP304	1-1560-602-00	PIN, CONNECTOR 3P
CNP305	1-1560-602-00	PIN, CONNECTOR 3P
CNP604	1-1560-708-00	PIN, CONNECTOR 2P
CNP605	1-1560-708-00	PIN, CONNECTOR 2P
CNP606	1-1560-605-00	PIN, CONNECTOR 6P
ACP1201.1-231-326-11	(US).....ENCAPSULATED COMPONENT	
ACP1201.1-231-341-00	(Canadian)...SPARK KILLER	
ACP1201.1-161-744-00	(AEP,UK)...CERAMIC 10000PF 400V	
CT589	1-141-232-00	CAP, TRIMAR 11PF
D101	8-719-224-11	DIODE 10YD2.4A
D102	8-719-201-11	DIODE 10YG1.1
D103	8-719-910-65	DIODE HZ6B2L
D105	8-719-911-19	DIODE ISS119
D107	8-719-910-65	DIODE HZ6B2L
D108	8-719-201-11	DIODE 10YG1.1
D201	8-719-224-11	DIODE 10YD2.4A
D202	8-719-201-11	DIODE 10YG1.1
D203	8-719-910-65	DIODE HZ6B2L
D205	8-719-911-19	DIODE ISS119
D207	8-719-910-65	DIODE HZ6B2L
D208	8-719-201-11	DIODE 10YG1.1
D301	8-719-911-50	DIODE HZ5C1
D302	8-719-911-50	DIODE HZ5C1
D303	8-719-911-50	DIODE HZ5C1

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Ref.No.	Part No.	Description
C902	1-102-514-00	CERAMIC 22PF 5% 50V
C903	1-102-514-00	CERAMIC 22PF 5% 50V
C1102	1-161-734-00	(AEP,UK)...CERAMIC 2200PF 20% 400V
C1103	1-161-734-00	(AEP,UK)...CERAMIC 2200PF 20% 400V
C1104	1-161-734-00	(AEP,UK)...CERAMIC 2200PF 20% 400V
C1105	1-161-734-00	(AEP,UK)...CERAMIC 2200PF 20% 400V
C1201 _A	1-130-234-00	(US)...FILM 0.047MF 20% 125V
C1201 _A	1-161-744-00	(AEP,UK)...CERAMIC 10000PF 400V
C1201 _A	1-161-749-00	(Canadian)...CERAMIC 10000PF 125V
CF601	1-527-822-21	OSCILLATOR, CERAMIC
CN1	1-1560-708-00	PIN, CONNECTOR 2P
CN2	1-1560-604-00	PIN, CONNECTOR 5P
CN3	1-1560-603-00	PIN, CONNECTOR 4P
CN4	1-1560-708-00	PIN, CONNECTOR 2P
CN5	1-1560-602-00	PIN, CONNECTOR 3P
CN6	1-1560-602-00	PIN, CONNECTOR 3P
CNP101	1-1560-708-00	PIN, CONNECTOR 2P
CNP201	1-1560-708-00	PIN, CONNECTOR 2P
CNP301	1-1560-708-00	PIN, CONNECTOR 2P
CNP302	1-1560-708-00	PIN, CONNECTOR 2P
CNP303	1-1560-708-00	PIN, CONNECTOR 2P
CNP304	1-1560-602-00	PIN, CONNECTOR 3P
CNP305	1-1560-602-00	PIN, CONNECTOR 3P
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CNP605	1-1560-708-00	PIN, CONNECTOR 2P
CNP606	1-1560-605-00	PIN, CONNECTOR 6P
ACP1201.1-231-326-11	(US).....ENCAPSULATED COMPONENT	
ACP1201.1-231-341-00	(Canadian)...SPARK KILLER	
ACP1201.1-161-744-00	(AEP,UK)...CERAMIC 10000PF 400V	
CT589	1-141-232-00	CAP, TRIMAR 11PF
D101	8-719-224-11	DIODE 10YD2.4A
D102	8-719-201-11	DIODE 10YG1.1
D103	8-719-910-65	DIODE HZ6B2L
D105	8-719-911-19	DIODE ISS119
D107	8-719-910-65	DIODE HZ6B2L
D108	8-719-201-11	DIODE 10YG1.1
D201	8-719-224-11	DIODE 10YD2.4A
D202	8-719-201-11	DIODE 10YG1.1
D203	8-719-910-65	DIODE HZ6B2L
D205	8-719-911-19	DIODE ISS119
D207	8-719-910-65	DIODE HZ6B2L
D208	8-719-201-11	DIODE 10YG1.1
D301	8-719-911-50	DIODE HZ5C1
D302	8-719-911-50	DIODE HZ5C1
D303	8-719-911-50	DIODE HZ5C1

ELECTRICAL PARTS

Ref.No.	

ELECTRICAL PARTS		
Ref. No.	Part No.	Description
Q520	8-729-671-14	TRANSISTOR 2SC710-14
Q521	8-729-194-57	TRANSISTOR 2SC945-P
Q522	8-769-200-30	TRANSISTOR 2SK107-3
Q523	8-729-194-57	TRANSISTOR 2SC945-P
Q524	8-729-923-00	TRANSISTOR 2SC1129
Q525	8-769-112-00	TRANSISTOR 2SK120-2
Q526	8-729-194-57	TRANSISTOR 2SC945-P
Q527	8-729-671-14	TRANSISTOR 2SC710-14
Q528	8-729-671-14	TRANSISTOR 2SC710-14
Q529	8-729-671-14	TRANSISTOR 2SC710-14
Q601	8-729-993-72	TRANSISTOR 2SA937
Q602	8-729-993-72	TRANSISTOR 2SA937
Q603	8-729-993-72	TRANSISTOR 2SA937
Q604	8-729-993-72	TRANSISTOR 2SA937
Q605	8-729-902-11	TRANSISTOR 2SC2021
Q606	8-729-902-11	TRANSISTOR 2SC2021
Q701	8-729-902-11	TRANSISTOR 2SC2021
Q702	8-729-902-11	TRANSISTOR 2SC2021
Q703	8-729-902-11	TRANSISTOR 2SC2021
Q801	8-729-194-56	TRANSISTOR 2SC1364
Q802	8-729-194-56	TRANSISTOR 2SC1364
Q803	8-729-612-77	TRANSISTOR 2SA1027R
Q804	8-729-612-77	TRANSISTOR 2SA1027R
Q805	8-729-612-77	TRANSISTOR 2SA1027R
Q806	8-729-612-77	TRANSISTOR 2SA1027R
Q807	8-729-612-77	TRANSISTOR 2SA1027R
Q808	8-729-612-77	TRANSISTOR 2SA1027R
Q809	8-729-663-47	TRANSISTOR 2SC1364
Q810	8-729-612-77	TRANSISTOR 2SA1027R
Q811	8-729-384-46	TRANSISTOR 2SA844
Q812	8-729-663-47	TRANSISTOR 2SC1364
Q813	8-729-663-47	TRANSISTOR 2SC1364
Q815	8-729-612-77	TRANSISTOR 2SA1027R
Q816	8-729-663-47	TRANSISTOR 2SC1364
Q817	8-729-612-77	TRANSISTOR 2SA1027R
Q819	8-729-154-83	TRANSISTOR 2SB548
Q822	8-729-663-47	TRANSISTOR 2SC1364
Q1001	8-729-313-32	TRANSISTOR 2SD1133
Q1201	8-729-141-43	TRANSISTOR 2SD414
R101	1-214-832-00	METAL 47 1% 1/2W
R102	1-214-931-00	METAL 560K 1% 1/2W
R103	1-214-882-00	METAL 5.6K 1% 1/2W
R104	1-214-882-00	METAL 5.6K 1% 1/2W
R105	1-214-737-00	METAL 2.2K 1% 1/4W
R107	1-214-860-00	METAL 680 1% 1/2W

CAPACITORS:

MF: μ F, PF: μ F.

RESISTORS

All resistors are in ohms.
• F : nonflammable

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In each case, U : μ , for example:
UA... : μ A..., UPA... : μ PA..., UPC... : μ PC,
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ELECTRICAL PARTS		
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R108	1-214-850-00	METAL 270 1% 1/2W
R109	1-214-885-00	METAL 7.5K 1% 1/2W
R110	1-214-885-00	METAL 7.5K 1% 1/2W
R111	1-214-888-00	METAL 10K 1% 1/2W
R112	1-214-888-00	METAL 10K 1% 1/2W
R113	1-214-753-00	METAL 10K 1% 1/4W
R114	1-214-888-00	METAL 10K 1% 1/2W
R116	1-214-868-00	METAL 1.5K 1% 1/2W
R117	1-214-897-00	METAL 22K 1% 1/2W
R119	1-247-841-00	CARBON 2.7K 5% 1/6W
R120	1-214-729-00	METAL 1K 1% 1/4W
R121	1-214-729-00	METAL 1K 1% 1/4W
R122	1-214-729-00	METAL 1K 1% 1/4W
R123	1-214-773-00	METAL 68K 1% 1/4W
R124	1-214-753-00	METAL 10K 1% 1/4W
R125	1-247-807-00	CARBON 100 5% 1/6W
R126	1-247-854-00	CARBON 9.1K 5% 1/6W
R127	1-214-777-00	METAL 100K 1% 1/4W
R128	1-247-835-00	CARBON 1.5K 5% 1/6W
R129	1-247-855-00	CARBON 10K 5% 1/6W
R130	1-247-879-00	CARBON 100K 5% 1/6W
R131	1-247-857-00	CARBON 12K 5% 1/6W
R132	1-214-893-00	METAL 16K 1% 1/2W
R133	1-214-763-00	METAL 27K 1% 1/4W
R134	1-214-892-00	METAL 15K 1% 1/2W
R135	1-214-880-00	METAL 4.7K 1% 1/2W
R136	1-214-890-00	METAL 12K 1% 1/2W
R137	1-214-862-00	METAL 820 1% 1/2W
R138	1-214-929-00	METAL 470K 1% 1/2W
R139	1-214-913-00	METAL 100K 1% 1/2W
R140	1-214-844-00	METAL 150 1% 1/2W
R142	1-214-777-00	METAL 100K 1% 1/4W
R143	1-214-765-00	METAL 33K 1% 1/4W
R144	1-214-158-00	METAL 12K 1% 1/4W
R145	1-214-151-00	METAL 6.2K 1% 1/4W
R146	1-214-143-00	METAL 3K 1% 1/4W
R147	1-214-136-00	METAL 1.5K 1% 1/4W
R148	1-214-136-00	METAL 1.5K 1% 1/4W
R149	1-214-180-00	METAL 100K 1% 1/4W
R150	1-214-152-00	METAL 6.8K 1% 1/4W
R151	1-214-180-00	METAL 100K 1% 1/4W
R152	1-214-116-00	METAL 220 1% 1/4W
R153	1-247-863-00	CARBON 22K 5% 1/6W
R154	1-214-773-00	METAL 68K 1% 1/4W
R155	1-247-833-00	CARBON 1.2K 5% 1/6W

ELECTRICAL PARTS		
Ref. No.	Part No.	Description
R156	1-247-879-00	CARBON 100K 5% 1/6W
R157	1-247-849-00	CARBON 5.6K 5% 1/6W
R158	1-247-849-00	CARBON 5.6K 5% 1/6W
R159	1-247-825-00	CARBON 560 5% 1/6W
R160	1-247-825-00	CARBON 560 5% 1/6W
R161	1-214-901-00	METAL 33K 1% 1/2W
R162	1-214-880-00	METAL 4.7K 1% 1/2W
R163	1-214-913-00	METAL 100K 1% 1/2W
R164	1-214-848-00	METAL 220 1% 1/2W
R201	1-214-832-00	METAL 47 1% 1/2W
R202	1-214-931-00	METAL 560K 1% 1/2W
R203	1-214-882-00	METAL 5.6K 1% 1/2W
R204	1-214-882-00	METAL 5.6K 1% 1/2W
R206	1-214-737-00	METAL 2.2K 1% 1/4W
R207	1-214-860-00	METAL 680 1% 1/2W
R208	1-214-850-00	METAL 270 1% 1/2W
R209	1-214-885-00	METAL 7.5K 1% 1/2W
R210	1-214-885-00	METAL 7.5K 1% 1/2W
R211	1-214-888-00	METAL 10K 1% 1/2W
R212	1-214-888-00	METAL 10K 1% 1/2W
R213	1-214-753-00	METAL 10K 1% 1/4W
R214	1-214-888-00	METAL 10K 1% 1/2W
R216	1-214-868-00	METAL 1.5K 1% 1/2W
R217	1-214-897-00	METAL 22K 1% 1/2W
R219	1-247-841-00	CARBON 2.7K 5% 1/6W
R220	1-214-729-00	METAL 1K 1% 1/4W
R221	1-214-729-00	METAL 1K 1% 1/4W
R222	1-214-729-00	METAL 1K 1% 1/4W
R223	1-214-773-00	METAL 68K 1% 1/4W
R224	1-214-753-00	METAL 10K 1% 1/4W
R225	1-247-807-00	CARBON 100 5% 1/6W
R226	1-247-854-00	CARBON 9.1K 5% 1/6W
R227	1-214-777-00	METAL 100K 1% 1/4W
R228	1-247-835-00	CARBON 1.5K 5% 1/6W
R229	1-247-855-00	CARBON 10K 5% 1/6W
R230	1-247-879-00	CARBON 100K 5% 1/6W
R231	1-247-857-00	CARBON 12K 5% 1/6W
R232	1-214-893-00	METAL 16K 1% 1/2W
R233	1-214-763-00	METAL 27K 1% 1/4W
R234	1-214-892-00	METAL 15K 1% 1/2W
R235	1-214-880-00	METAL 4.7K 1% 1/2W
R236	1-214-89	

ELECTRICAL PARTS

Ref.No.	Part No.	Description
R578	1-247-853-00	CARBON 8.2K 5% 1/6W
R579	1-247-848-00	CARBON 5.1K 5% 1/6W
R580	1-247-813-00	CARBON 180 5% 1/6W

R581	1-247-819-00	CARBON 330 5% 1/6W
R582	1-247-821-00	CARBON 390 5% 1/6W
R583	1-247-833-00	CARBON 1.2K 5% 1/6W

R584	1-247-827-00	CARBON 680 5% 1/6W
R585	1-247-831-00	CARBON 1K 5% 1/6W
R586	1-247-807-00	CARBON 100 5% 1/6W

R587	1-247-803-00	CARBON 68 5% 1/6W
R588	1-247-803-00	CARBON 68 5% 1/6W
R589	1-214-128-00	METAL 680 1% 1/4W

R590	1-247-815-00	CARBON 220 5% 1/6W
R591	1-247-815-00	CARBON 220 5% 1/6W
R592	1-247-855-00	CARBON 10K 5% 1/6W

R593	1-247-843-00	CARBON 3.3K 5% 1/6W
R594	1-247-813-00	CARBON 180 5% 1/6W
R595	1-247-833-00	CARBON 1.2K 5% 1/6W

R596	1-247-863-00	CARBON 22K 5% 1/6W
R597	1-247-863-00	CARBON 22K 5% 1/6W
R598	1-247-863-00	CARBON 22K 5% 1/6W

R599	1-247-823-00	CARBON 470 5% 1/6W
R601	1-247-879-00	CARBON 100K 5% 1/6W
R602	1-247-879-00	CARBON 100K 5% 1/6W

R603	1-247-879-00	CARBON 100K 5% 1/6W
R604	1-247-855-00	CARBON 10K 5% 1/6W
R605	1-247-879-00	CARBON 100K 5% 1/6W

R606	1-247-879-00	CARBON 100K 5% 1/6W
R607	1-247-879-00	CARBON 100K 5% 1/6W
R608	1-247-879-00	CARBON 100K 5% 1/6W

R609	1-247-879-00	CARBON 100K 5% 1/6W
R610	1-247-879-00	CARBON 100K 5% 1/6W
R611	1-247-879-00	CARBON 100K 5% 1/6W

R612	1-247-879-00	CARBON 100K 5% 1/6W
R613	1-247-879-00	CARBON 100K 5% 1/6W
R614	1-247-879-00	CARBON 100K 5% 1/6W

R615	1-247-879-00	CARBON 100K 5% 1/6W
R616	1-247-879-00	CARBON 100K 5% 1/6W
R617	1-247-879-00	CARBON 100K 5% 1/6W

R618	1-247-879-00	CARBON 100K 5% 1/6W
R619	1-247-879-00	CARBON 100K 5% 1/6W
R620	1-247-879-00	CARBON 100K 5% 1/6W

R621	1-247-879-00	CARBON 100K 5% 1/6W
R622	1-247-879-00	CARBON 100K 5% 1/6W
R623	1-247-879-00	CARBON 100K 5% 1/6W

ELECTRICAL PARTS

Ref.No.	Part No.	Description
R624	1-247-879-00	CARBON 100K 5% 1/6W
R625	1-247-879-00	CARBON 100K 5% 1/6W

R626	1-247-879-00	CARBON 100K 5% 1/6W
R627	1-247-879-00	CARBON 100K 5% 1/6W
R628	1-247-879-00	CARBON 100K 5% 1/6W

R629	1-247-879-00	CARBON 100K 5% 1/6W
R630	1-247-879-00	CARBON 100K 5% 1/6W
R631	1-247-879-00	CARBON 100K 5% 1/6W

R632	1-247-879-00	CARBON 100K 5% 1/6W
R633	1-247-855-00	CARBON 10K 5% 1/6W
R634	1-247-874-00	CARBON 62K 5% 1/6W

R635	1-247-879-00	CARBON 100K 5% 1/6W
R636	1-247-855-00	CARBON 10K 5% 1/6W
R637	1-247-874-00	CARBON 62K 5% 1/6W

R638	1-247-879-00	CARBON 100K 5% 1/6W
R639	1-247-855-00	CARBON 10K 5% 1/6W
R640	1-247-863-00	CARBON 22K 5% 1/6W

R641	1-247-863-00	CARBON 22K 5% 1/6W
R642	1-247-863-00	CARBON 22K 5% 1/6W
R643	1-247-863-00	CARBON 22K 5% 1/6W

PCM-701ES PCM-701ES

ELECTRICAL PARTS

Ref. No.	Part No.	Description	Q'ty	Part No.	Description	Q'ty
R915	1-214-144-00	METAL	100K	3.3K	1%	1/4W
R916	1-214-174-00	METAL	100K	56K	1%	1/4W
R917	1-214-177-00	METAL	100K	75K	1%	1/4W
R918	1-214-163-00	METAL	100K	20K	1%	1/4W
R919	1-247-831-00	CARBON	100K	1K	5%	1/6W
R920	1-247-862-00	CARBON	100K	20K	5%	1/6W
R921	1-247-862-00	CARBON	100K	20K	5%	1/6W
R922	1-247-831-00	CARBON	100K	1K	5%	1/6W
R923	1-247-871-00	CARBON	100K	47K	5%	1/6W
R924	1-247-831-00	CARBON	100K	1K	5%	1/6W
R925	1-214-134-00	METAL	100K	1.2K	1%	1/4W
R926	1-214-124-00	METAL	100K	470	1%	1/4W
R950	1-214-112-00	METAL	100K	150	1%	1/4W
R951	1-247-839-00	CARBON	100K	2.2K	5%	1/6W
R952	1-244-839-00	CARBON	100K	39	5%	1/2W
R1201A	1-244-933-00	CARBON	100K	330K	5%	1/2W
RT801	1-224-251-XX	RES, ADJ, METAL GLAZE	100K	4.7K		
RT802	1-224-251-XX	RES, ADJ, METAL GLAZE	100K	4.7K		
RT803	1-224-251-XX	RES, ADJ, METAL GLAZE	100K	4.7K		
RV101	1-224-253-31	RES, ADJ, METAL GLAZE	100K	22K		
RV102	1-224-550-31	RES, ADJ, METAL GLAZE	100K	220		
RV103	1-224-248-31	RES, ADJ, METAL GLAZE	100K	470		
RV104	1-224-253-31	RES, ADJ, METAL GLAZE	100K	22K		
RV201	1-224-253-31	RES, ADJ, METAL GLAZE	100K	22K		
RV202	1-224-550-31	RES, ADJ, METAL GLAZE	100K	220		
RV203	1-224-248-31	RES, ADJ, METAL GLAZE	100K	470		
RV204	1-224-253-31	RES, ADJ, METAL GLAZE	100K	22K		
RV301	1-228-924-00	RES, VAR, CARBON	100K	50K/50K		
RY301	1-515-323-00	RELAY	100K	00-100-000-1		
RY302	1-515-323-00	RELAY	100K	00-100-000-1		
RY303	1-515-323-00	RELAY	100K	00-100-000-1		
RY801	1-515-473-00	RELAY	100K	00-080-000-1		
RY802	1-515-473-00	RELAY	100K	00-080-000-1		
RY803	1-515-473-00	RELAY	100K	00-080-000-1		
RY804	1-515-473-00	RELAY	100K	00-080-000-1		
RY805	1-515-473-00	RELAY	100K	00-080-000-1		
RY806	1-515-473-00	RELAY	100K	00-080-000-1		
RY807	1-515-473-00	RELAY	100K	00-080-000-1		
RY808	1-515-473-00	RELAY	100K	00-080-000-1		
RY809	1-515-473-00	RELAY	100K	00-080-000-1		
RY810	1-515-473-00	RELAY	100K	00-080-000-1		
RY811	1-515-473-00	RELAY	100K	00-080-000-1		
RY812	1-515-473-00	RELAY	100K	00-080-000-1		
RY813	1-515-473-00	RELAY	100K	00-080-000-1		
RY814	1-515-473-00	RELAY	100K	00-080-000-1		
RY815	1-515-473-00	RELAY	100K	00-080-000-1		
RY816	1-515-473-00	RELAY	100K	00-080-000-1		
RY817	1-515-473-00	RELAY	100K	00-080-000-1		
RY818	1-515-473-00	RELAY	100K	00-080-000-1		
RY819	1-515-473-00	RELAY	100K	00-080-000-1		
RY820	1-515-473-00	RELAY	100K	00-080-000-1		
RY821	1-515-473-00	RELAY	100K	00-080-000-1		
RY822	1-515-473-00	RELAY	100K	00-080-000-1		
RY823	1-515-473-00	RELAY	100K	00-080-000-1		
RY824	1-515-473-00	RELAY	100K	00-080-000-1		
RY825	1-515-473-00	RELAY	100K	00-080-000-1		
RY826	1-515-473-00	RELAY	100K	00-080-000-1		
RY827	1-515-473-00	RELAY	100K	00-080-000-1		
RY828	1-515-473-00	RELAY	100K	00-080-000-1		
RY829	1-515-473-00	RELAY	100K	00-080-000-1		
RY830	1-515-473-00	RELAY	100K	00-080-000-1		
RY831	1-515-473-00	RELAY	100K	00-080-000-1		
RY832	1-515-473-00	RELAY	100K	00-080-000-1		
RY833	1-515-473-00	RELAY	100K	00-080-000-1		
RY834	1-515-473-00	RELAY	100K	00-080-000-1		
RY835	1-515-473-00	RELAY	100K	00-080-000-1		
RY836	1-515-473-00	RELAY	100K	00-080-000-1		
RY837	1-515-473-00	RELAY	100K	00-080-000-1		
RY838	1-515-473-00	RELAY	100K	00-080-000-1		
RY839	1-515-473-00	RELAY	100K	00-080-000-1		
RY840	1-515-473-00	RELAY	100K	00-080-000-1		
RY841	1-515-473-00	RELAY	100K	00-080-000-1		
RY842	1-515-473-00	RELAY	100K	00-080-000-1		
RY843	1-515-473-00	RELAY	100K	00-080-000-1		
RY844	1-515-473-00	RELAY	100K	00-080-000-1		
RY845	1-515-473-00	RELAY	100K	00-080-000-1		
RY846	1-515-473-00	RELAY	100K	00-080-000-1		
RY847	1-515-473-00	RELAY	100K	00-080-000-1		
RY848	1-515-473-00	RELAY	100K	00-080-000-1		
RY849	1-515-473-00	RELAY	100K	00-080-000-1		
RY850	1-515-473-00	RELAY	100K	00-080-000-1		
RY851	1-515-473-00	RELAY	100K	00-080-000-1		
RY852	1-515-473-00	RELAY	100K	00-080-000-1		
RY853	1-515-473-00	RELAY	100K	00-080-000-1		
RY854	1-515-473-00	RELAY	100K	00-080-000-1		
RY855	1-515-473-00	RELAY	100K	00-080-000-1		
RY856	1-515-473-00	RELAY	100K	00-080-000-1		
RY857	1-515-473-00	RELAY	100K	00-080-000-1		
RY858	1-515-473-00	RELAY	100K	00-080-000-1		
RY859	1-515-473-00	RELAY	100K	00-080-000-1		
RY860	1-515-473-00	RELAY	100K	00-080-000-1		
RY861	1-515-473-00	RELAY	100K	00-080-000-1		
RY862	1-515-473-00	RELAY	100K	00-080-000-1		
RY863	1-515-473-00	RELAY	100K	00-080-000-1		
RY864	1-515-473-00	RELAY	100K	00-080-000-1		
RY865	1-515-473-00	RELAY	100K	00-080-000-1		
RY866	1-515-473-00	RELAY	100K	00-080-000-1		
RY867	1-515-473-00	RELAY	100K	00-080-000-1		
RY868	1-515-473-00	RELAY	100K	00-080-000-1		
RY869	1-515-473-00	RELAY	100K	00-080-000-1		
RY870	1-515-473-00	RELAY	100K	00-080-000-1		
RY871	1-515-473-00	RELAY	100K	00-080-000-1		
RY872	1-515-473-00	RELAY	100K	00-080-000-1		
RY873	1-515-473-00	RELAY	100K	00-080-000-1		
RY874	1-515-473-00	RELAY	100K	00-080-000-1		
RY875	1-515-473-00	RELAY	100K	00-080-000-1		
RY876	1-515-473-00	RELAY	100K	00-080-000-1		</td