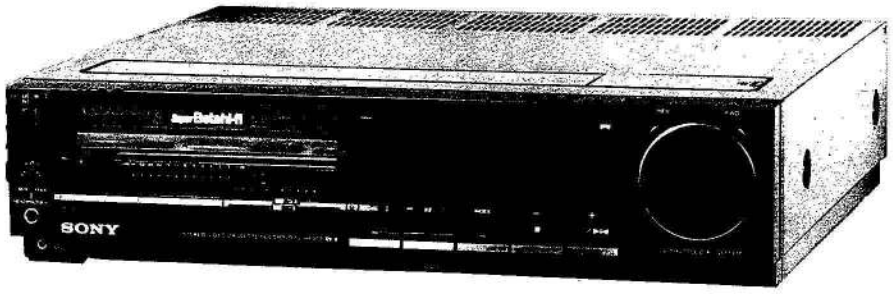
SL-HF900
RMT-12

SERVICE MANUAL

US Model
Canadian Model



SuperBeta

711B2 CHASSIS

This manual contains the Adjustment method.

SPECIFICATIONS

System

Video recording system
Rotary two-head helical scanning
Audio recording system
Beta hi-fi system (2 channels)
(Recording on the conventional audio track is monaural)
Video signal — EIA standard, NTSC color
Usable cassettes — Cassettes having the mark ß
ßIII: 1.33 cm/sec.
ßII: 2.0 cm/sec.
ßI : 4.0 cm/sec. (only for playback)
Maximum recording time
ßIII: 5 hours
ßII: 3 hours 20 min.
(with Sony L-830 cassette)
Fast-forward and rewind time
Approx. 3½ min. (L-500)
Audio frequency response
Beta hi-fi MPX FILTER OFF
ßII, ßIII : 20–20,000 Hz
Wow and flutter — Beta hi-fi ON
Less than 0.005% WRMS
Dynamic range — Beta hi-fi ON
More than 80 dB

Tuner section

Channel coverage
VHF channels 2 to 13
UHF channels 14 to 69
CATV channels 1–125
VHF output signal
Channel 3 or 4 (selected)
75 ohms, unbalanced
Antenna — 75-ohm antenna terminal for RF IN ANT/CABLE, TO CONV, and AUX

Inputs and outputs

Video input — LINE IN VIDEO/PCM (phono jack)
1 V p-p ±0.5 V p-p, 75 ohms, unbalanced, sync negative
Video outputs — LINE OUT 1, 2 VIDEO/PCM (phono jacks)
1 V p-p ±0.5 V p-p, 75 ohms, unbalanced, sync negative
Audio inputs — LINE IN R-AUDIO-L (phono jacks)
−10 dBs (0 dBs = 0.775 V rms), more than 47 k ohms

— Continued on page 2 —

Beta
ß VIDEO CASSETTE RECORDER

SONY®

MICROFILM

Consumer VIDEO

Audio outputs	LINE OUT 1, 2 R-AUDIO-L (phono jacks) −10 dBs (at load impedance 47k ohms) more than 10 k ohms
CONTROL S IN	Minijack
CONTROL S OUT (EDIT)	Minijack
CANERA REMOTE	Special minijack
CAMERA REMOTE OUT (EDIT)	Special minijack
Microphone input	Minijack −60 dBs, for low-impedance microphone
HEADPHONES jack	Stereo phone jack −26 dBs, 8 ohms

Timer section

Clock	Synchronized with the power frequency
Time indication	12-hour cycle
Timer setting	Only for recording 8 programs 21 days at max.
Power back up	Self-charging battery incorporated Back-up duration: up to 10 minutes at one time (after the battery has been charged at least 40 hours.)

General

Power requirements	120 V ac ±10%, 50/60 Hz ±0.5%
Power consumption	50 W
AC outlet	Unswitched max. 400 W
Operating temperature	5°C to 40°C (41°F to 104°F)
Storage temperature	−20°C to +60°C (−4°F to + 140°F)
Dimensions	Approx. 430 × 105 × 382 mm (w/h/d) (17 × 4¼ × 15⅛ inches) incl. projecting parts and controls
Weight	Approx. 11.5 kg (26 lb) net

Accessories supplied

Betamax video cassette tape.....1
75-ohm coaxial cable with F-type connectors (2 m, 6 feet).....1
Antenna connector EAC-25.....1
Connecting cord RK-74A.....1
Remote Commander RMT-125 with two size AA batteries.....1

Design and specifications subject to change without notice.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS 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. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÉS PAR UN TRAMÉ ET UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES, LES VUES EXPLOSÉES 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 DES SUPPLÉMENTS PUBLIÉS PAR SONY. LES RÉGLAGES DU CIRCUIT QUI SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT SONT IDENTIFIÉS DANS CE MANUEL. SUIVRE LES PROCÉDURES QUAND LES COMPOSANTS CRITIQUES SONT REMPLACÉS OU LE FONCTIONNEMENT IMPROPRE EST SUSPECTÉ.

SAFETY CHECK-OUT

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

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
6. Check the B+ voltage to see it is at the values specified.
7. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

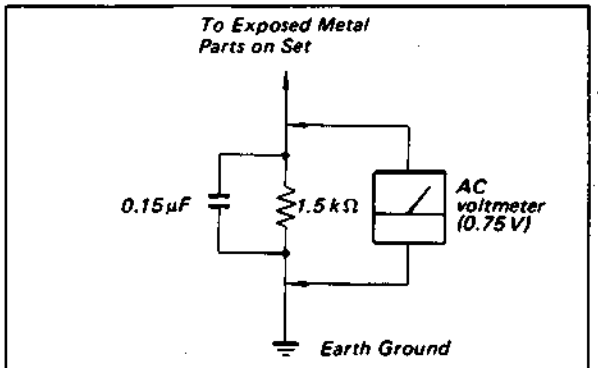


Fig. A. Using an AC voltmeter to check AC leakage.

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 0.5 mA (500 microampers). 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 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)

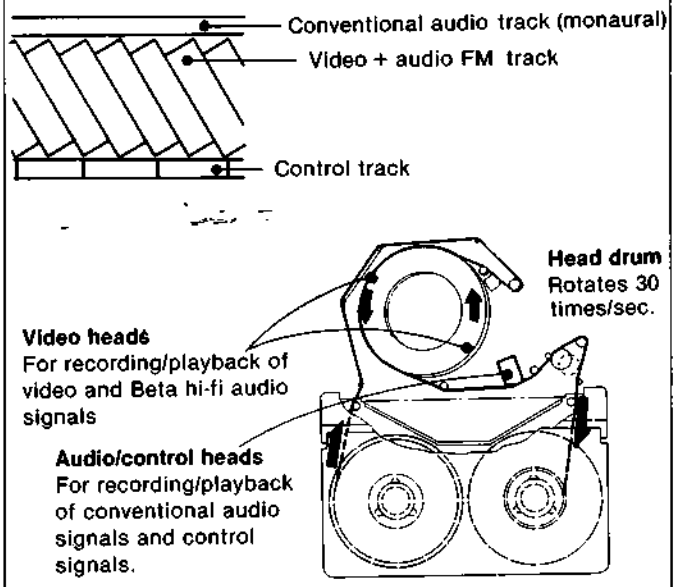
TABLE OF CONTENTS

SECTION 1
GENERAL

WHAT IS BETA HI-FI RECORDING?

In conventional recording, audio signals are recorded on the audio track and video signals on the video track. In Beta hi-fi recording, audio signals are recorded on the video track together with the video signals using 2 rotary video heads.
The Beta hi-fi audio signals are frequency-modulated and recorded on 2 channels, so that you can record a stereo program with sound quality far superior to that of the conventional audio recording.

Beta hi-fi recording pattern on the video tape



When the BETA HI-FI switch is set to ON, this recorder records audio signals on the video track (Beta hi-fi recording) and on the conventional audio track at the same time, so that these tapes can also be played back on any ordinary video cassette recorder without a Beta hi-fi system.

1-1. FEATURES

Beautiful pictures, outstanding sound, sophisticated, easy operation—the SL-HF900 incorporates the best of Sony video and audio technologies in an advanced Beta hi-fi VCR. It will bring years of enjoyment to any audio-visual system.

SHARP, CLEAR PICTURES

- **Dramatically sharp and accurate picture of high resolution and contrast**—especially as the result of Sony's totally new technology, this VCR assures beautiful, professional quality home video recordings and reproduction.
- **Crystal clear freeze frame** provides sharp, clear pictures for precise viewing of any selected frame on the tape.
- **EDIT switch** ensures optimum picture quality of edited tapes.

OUTSTANDING SOUND QUALITY

- **Beta hi-fi recording** provides beautiful, audiophile-quality sound reproduction.
- **Independent left and right channel sound level slide controls**
- **Simulcast recordings can be enjoyed,** using the built in TV tuner for the picture and a separate audio system for the sound.

SOPHISTICATED ARRAY OF FUNCTIONS, EASY OPERATION

Versatile JOG Dial/SHUTTLE Ring
- **Triple-function JOG dial**—special effects playback, channel selection, timer setting.
  - Slow motion in both the forward and reverse directions.
  - High-speed tuning ideal for CATV systems.
  - Quick setting of hours and days for easy timer setup.
- **SHUTTLE ring** allows forward or reverse playback at the desired (X1/5, x1 or x2) speed and "Betascan" of the tape.

Editing Functions
- **Easy audio or video insert editing function** allows insertion of pictures and sound from a camera or other source on previously recorded tapes.
- **Automatic assemble editing function** enables the start and stop of recording of another connected Sony VCR simultaneously with the playback of this VCR within the preset start and stop points on the tape.

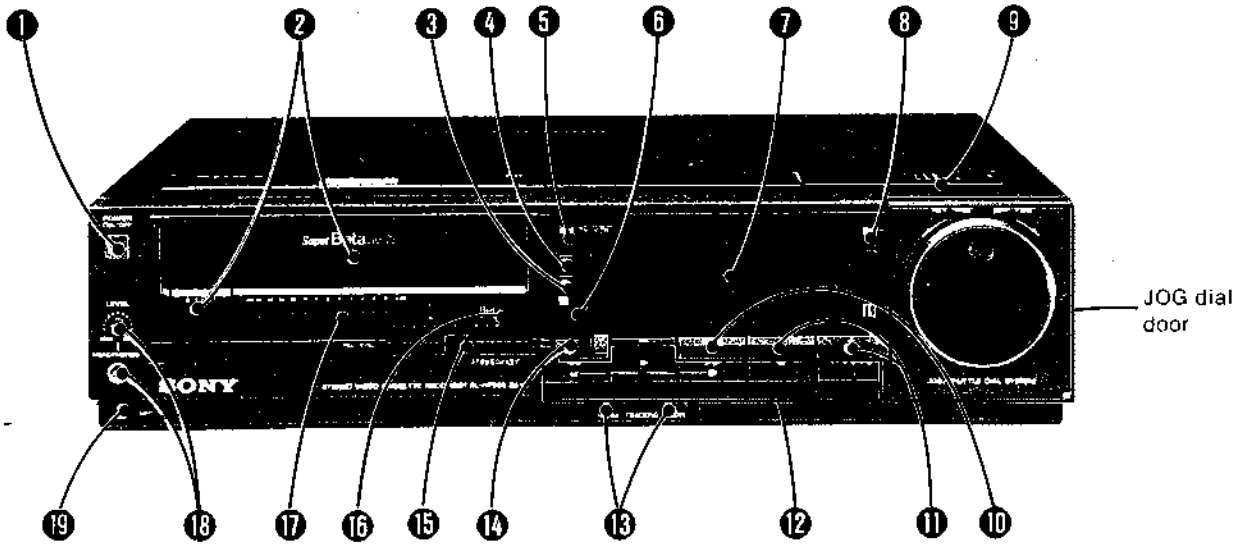
Convenience Functions
- **Automatic 8-program timer for unattended recording,** for this week, next week and the week after next.
- **Quick timer** allows you to record on a single channel up to 5 hours automatically (each push of button equals 30 minute increments).
- **Quick location of index signals** allows easy program confirmation.
- **Multi-function video/TV Remote Commander** can also be used with Sony remote control TVs (bearing the [R] mark).

Versatile auto functions
- **Auto play function** starts playback automatically after tape is fully rewound.
- **Tape return/Tape return play function** allows automatic playback or tape stop when the tape is wound to the 0H00M00S position on the counter.
- **Auto rewind** automatically rewinds the tape when the end of the tape is reached during recording or playback.
- **Auto eject** automatically ejects the tape if the tab on the cassette has been removed and the VCR has been engaged in the record mode.
- Power turns on automatically when a cassette is loaded with the power off.
- If the eject button is pressed when the VCR's power is off, the power will automatically be turned on for the cassette to be ejected, and then turn back off again.

Various Connection Arrangements
A variety of terminals are provided for connection to an optional video editing controller, and several video and audio components, making the SL-HF900 a central part of an audio-visual system.

GENERAL

1-2. LOCATION AND FUNCTION OF PARTS AND CONTROLS



❶ POWER switch and lamp
Press to turn the power on. The lamp will light up. To turn the unit off, press this switch again.
The timer section will continue to operate and the current time will be displayed even when the POWER switch is off, as long as the ac power cord is plugged into a working outlet.

❷ Cassette compartment and ⏏ EJECT button
Insert a cassette here. To eject the cassette, press ⏏ EJECT button. When ⏏ EJECT button is pressed during playback, rewind or fast-forward operations, the tape transportation will stop and the cassette will be ejected.

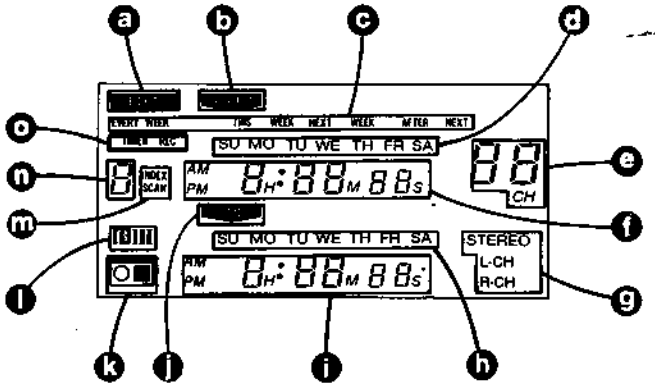
❸ TAPE RETURN buttons
Press, when the tape is in the stop mode, to wind the tape to the point where the time counter reads "0H00M00S" point.

❹ RESET button
Press to reset the time counter to "0H00M00S".

❺ TV/VTR button
To view the TV program of the channel selected on this VTR, or to monitor the picture being recorded, press this button so that the button lights up. The recorder will be automatically set in this mode when the ▶ (play) button is pressed.
To view the TV program of the channel selected by the channel selectors of the TV, press this button again so that the light goes off. The lamp of this button will always be off when the power of this VTR is turned on newly.

❻ Remote sensor
Detects the infrared transmitting signal from the supplied Remote Commander.

❼ Display window

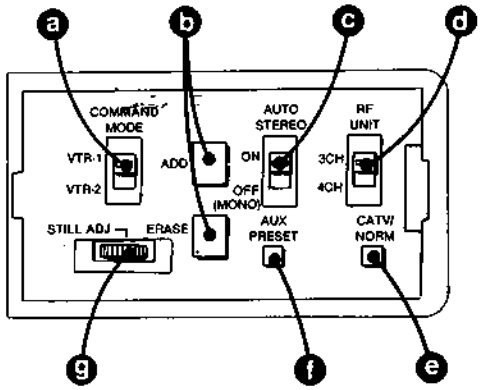


ⓐ Lights up when the EDIT PLAY button is pressed for the automatic assemble editing operation.
ⓑ Indicates that the starting time of a timer recording or the playback starting point on the tape for the automatic assemble editing operation is being displayed.
ⓒ Selected week for the timer recording
ⓓ Selected day of the week for the timer recording
ⓔ Selected channel number
ⓕ Time counter which indicates the approximate tape running time by the hour (H), minute (M) and second (S).
The starting time of timer recordings and the playback starting point for the automatic assemble editing operation will also be displayed here.
ⓖ Selected channel of stereo TV programs being played back.
ⓗ Present day of the week
ⓘ Current time display.
The ending time of timer recordings and the playback ending point on the tape for the automatic assemble editing operation will also be displayed here.

❶ Indicates that the ending time of a timer recording or the playback ending point for the automatic assemble editing operation is being displayed.
❷ Lights up when a cassette is inserted.
❸ Recording tape mode (speed)
❹ Flashes during the index search and index scan operation
❺ Index number for indexed programs to be searched or scanned/Program number of timer recordings
❻ Lights up when the TIMER REC ON/OFF or QUICK TIMER key is pressed for timer recordings. Only "TIMER" will appear while presetting the timer.

❼ **OPEN button**
Press to open the JOG dial door.

❽ **Tuning compartment**



ⓐ COMMAND MODE selector
To remotely control this VTR with the supplied Remote Commander, set this switch to the same position as that of the corresponding selector on the back of the Remote Commander.
ⓑ ADD button, ERASE button
Adds or erases channels that can be selected with the +/– channel buttons.
ⓒ AUTO STEREO ON/OFF selector
Normally keep this switch to ON so that MTS (Multichannel TV Sound) broadcasts can be received.
Only when there seems to be much noise interference in the stereo broadcasts, set this switch to OFF in which case all the TV programs will be received monaural.
ⓓ RF UNIT selector
Set this selector to 3CH (channel 3) or 4CH (channel 4) whichever is not active in your area. This selector converts the VHF output of the VCR to either channel 3 or 4 so that you will be able to view the picture of the VCR by selecting either of these channels on the TV.
ⓔ CATV/NORMAL button
If you have connected this VCR to a cable antenna (CATV) system to view cable TV programs, press this button so that the "CATV" indicator in the display window lights up. To view regular "off-the-air" broadcasts, press again so that the indicator turns off.
ⓕ AUX PRESET button
Press this button to preset the output channel of a decoder (converter) that is required for certain cable TV systems.
ⓖ STILL ADJ (adjustment) control
If the still playback picture stopped with the ❚❚ pause button seems to shake, turn this control until it stabilizes.

ⓗ **INDEX button**
Press before pressing ◀◀ (rewind) or ▶▶ (fast-forward) for the index-search or index-scan operation.

ⓘ **Channel +/– buttons**
Press + to select higher numbered channels or – to select lower numbered channels.
The channels will change consecutively when these buttons are held down.

ⓙ **Tape transport button**
◀◀ (rewind) button: Press to rewind the tape. A fast reverse picture can be viewed when double-pressed or when pressed during normal playback. (Betascan, Beta SkipScan operations)
▶ (play) button: Press to play back the tape.
▶▶ (fast-forward) button: press to advance the tape rapidly. A fast picture can be viewed when double-pressed or when pressed during normal playback. (Betascan, Beta SkipScan operations)
■ (stop) button: Press to stop the tape.
❚❚ (pause) button: Press to stop the tape momentarily during recording or playback. A still picture will be displayed when pressed during playback. Press again to release the pause mode.
x2 button: Press this button after presesing ▶ button for double speed playback. (Not functional for tapes recorded in the [E] mode).

ⓚ **TRACKING NORM (normal)/SLOW controls**
Normally keep these controls at the center detent position. Turning either of these controls may help clear possible streaks on the screen especially for cassettes recorded on other recorders. Turn **NORM control** when playing back the tape at the normal speed or at double speed. Turn **SLOW control** when playing back the tape at a slow speed by turning the JOG dial or the SHUTTLE ring or by pressing the 1/5 button on the Remote Commander.

ⓛ **REC (record) switch**
Slide to the right to start recording. The red lamp on the button will light up.

ⓜ **REC (recording) LEVEL controls**
Adjust the recording sound volume of the L (left) and R (right) channels of Beta hi-fi recordings. Normally keep these controls at the center detent position "5".

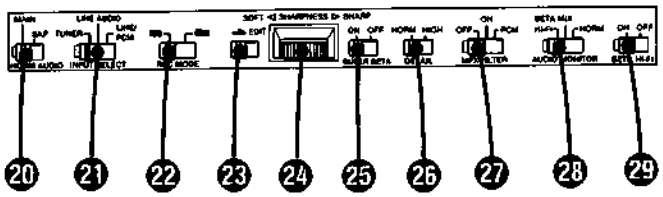
ⓝ **Beta hi-fi indicator**
Lights up when a recording is being made in the Beta hi-fi system with the BETA HI-FI switch set to ON, or when a tape that has been recorded in the Beta hi-fi system is being played back.

ⓞ **PEAK LEVEL METER**
Indicates the peak volume level of the Beta hi-fi recording being made or being played back.

ⓟ **HEADPHONES jack (stereo phone) and LEVEL control**
Connect headphones here to monitor the sound. The sound volume can be adjusted with the LEVEL control.

ⓠ **MIC (microphone) jack**
By connecting a microphone here, you will be able to record the sound from the microphone on the conventional audio track.

Inside the front panel



⑳ NORM (normal) AUDIO MAIN/SAP selector
If you desire to listen to (and record) the SAP (Second Audio Program) of TV broadcasts, set this selector to "SAP".
Keep this selector to "MAIN" if you do not listen to or do not desire to record the sound of Second Audio Programs.

㉑ INPUT SELECT switch
Select the input signal to be recorded.
Tuner: for TV programs
LINE AUDIO: for recording simultaneously the video (picture) of TV programs received through the ㊾ RF IN terminals and the audio (sound) of the audio source (such as an FM tuner) connected to the ㊿ LINE IN AUDIO (input) jacks
LINE/PCM: for the video and/or signal received through the ㊾ LINE IN VIDEO/PCM (input) jack

㉒ REC (recording) MODE selector
Selects the recording tape speed Ⅱ or Ⅲ.
The playback speed will be set automatically regardless of the position of this switch.

㉓ EDIT switch
Normally keep this switch at the left position.
When editing a tape by connecting another VCR, set to the right "EDIT" position.

㉔ SHARPNESS control
Adjust the sharpness of the picture if necessary. Normally, set this control at the center detent position.

㉕ SUPER BETA switch
Normally, keep this switch at "ON" to obtain high-quality recording/playback picture.
Only if by setting this switch to "OFF", noise in the playback of tapes recorded or played back on other VCRs seem to be eliminated, set this switch to "OFF".

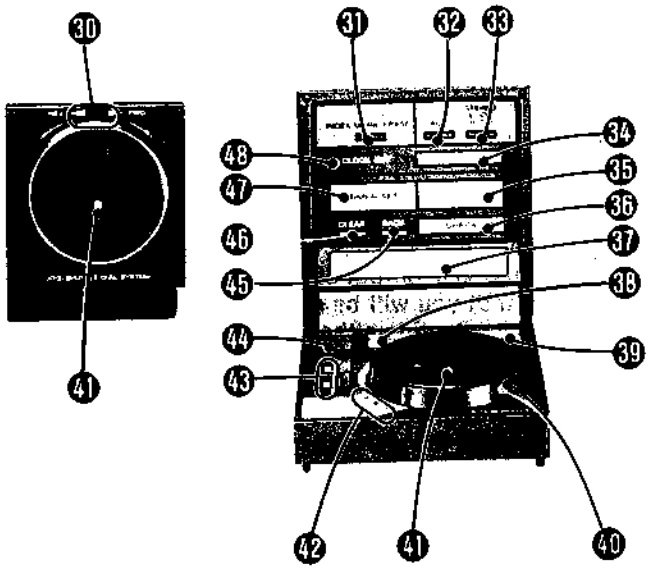
㉖ DETAIL NORM (normal)/HIGH switch
Normally, keep this switch at NORM.
When a tape of good quality, such as the Sony HG or PRO-X type, is being used, a sharper picture will be obtained by setting this switch to "HIGH" during playback.

㉗ MPX (ON/OFF)/PCM selector
When making a recording other than regular TV recordings, set as follows.
OFF: For recording the sound from a record player or a compact disk player
ON: For recording FM radio broadcast programs (If your FM tuner is equipped with an MPX filter, set this selector to OFF).
PCM: For PCM recording and playback.
(Regardless of the setting of this selector, TV programs are automatically recorded in the "ON" mode so that the internal MPX filter cuts off the unpleasant sound of high frequency.)

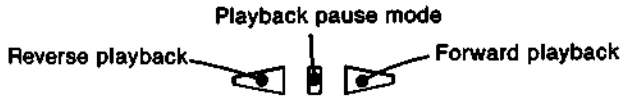
㉘ AUDIO MONITOR selector
Selects the sound (audio track on the tape) to be played back and monitored.
BETA HI-FI: The Beta hi-fi sound recorded on the Beta hi-fi audio track will be heard.
MIX: The sound recorded on both the Beta hi-fi audio track and on the conventional audio track will be heard.
NORM: Only the sound recorded on the conventional audio track will be heard.

㉙ BETA HI-FI switch
ON: Normally, keep this switch in this position.
Recording and playback will be made in the Beta hi-fi system that produces the sound of high fidelity. (Recording in the conventional monaural system will be made together so that tapes recorded on this VCR can be played back on VCRs that are not Beta hi-fi.)
Tapes not recorded in the Beta hi-fi system will be played back in the conventional system automatically.
OFF: Set this selector in this position if you desire to record and playback the sound only in the conventional (not Beta hi-fi) system.

Inside the JOG dial door



㉚ Playback indicators
Indicate the forward or reverse movement or the pause mode of the tape during playback.



㉛ INDEX MARK/ERASE key
Press during playback or recording to record index signals on the tape. Erasing the index signals can also be done by pressing this key after pressing ㉚ INDEX button.

㉜ AUX key
Press to select the channel received through the decoder (converter) that is connected to the TO CONV and AUX terminals. To return to the regular channel received from the ANT/CABLE terminal, press again.

㉝ STEREO (L-CH/R-CH) key
Selects the R (right) or L (left) channel of stereo recorded tapes to be played back. Observe ⑨ of the display window as you select the desired channel. Each time you press this key, the indicator for the selected channel will change.
STEREO: You will hear the stereo of stereo broadcasts or of the playback of stereo tapes.
This indicator wil light up automatically when a stereo program is received.
L-CH: Only the sound of the left channel will be heard.
R-CH: Only the sound of the right channel will be heard.

Note that even with Beta hi-fi recorded tapes, the sound will be monaural when the ㉕ AUDIO MONITOR selector is set to "NORM".

㉞ QUICK TIMER key
Press consecutively to start a quick timer recording and then to set the duration of the recording. The duration can be set in 30-minute intervals up to 5 hours so that the power will turn off. To stop a quick timer recording, press TIMER REC ON/OFF key.

㉟ TIMER REC ON/OFF key
Press after programming VCR for timer recordings so that the timer activates. To deactivate the timer, press again.

㊱ CHECK key
Press to check the contents of the timer presettings.

㊲ NEXT button
Press to advance to the next item to be set while setting the timer or the clock.

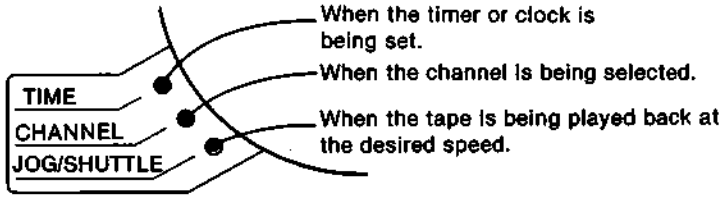
㊳ MARK button
Press to preset the starting and ending point of the automatic assemble editing operation.

㊴ EDIT START button
Press to start the playback (and the recording of the connected VCR) for the automatic assemble editing operation.

㊵ SHUTTLE ring
When this ring is turned and held during the playback pause mode, you will be able to play back the tape at double, normal or one-fifth of normal speed. The more it is turned, the faster the playback will be and when fully turned, you will be able to "Betascan (See page 24.)" the picture. Turn to the right or left for forward or reverse playback.

㊶ JOG dial
Turn to the right to select higher numbered channels or to the left to select lower numbered channels.
When this dial is turned during the playback pause mode, the picture will be played back at a speed according to the speed you are turning the dial. Turn to the right or left for forward or backward playback.
This dial is also used to preset timer recordings.

㊷ JOG dial function indicators
Light up to indicate for what purpose the JOG dial is being turned.



㊸ VIDEO INSERT/AUDIO INSERT button
Press to "insert" a new recording onto a part of a recorded tape.

㊹ EDIT PLAY button
Press as the first step of the automatic assemble editing operation.

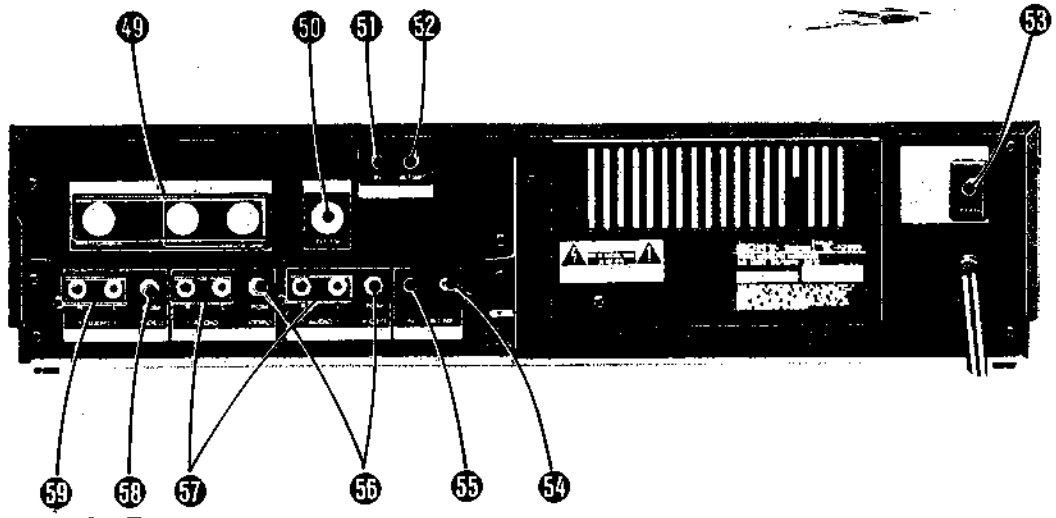
㊺ BACK key
Press to go back to the previous step during clock or timer setting.

㊻ CLEAR key
Press to cancel a timer setting.

㊼ TIMER SET key
Press as the first step to preset the timer.

㊽ CLOCK SET button
Press this button as the first step to set the clock.

Rear



49 RF IN terminals
ANT/CABLE: Connect a VHF and/or UHF TV antenna or CATV cable here.
TO CONV, AUX: If you desire to watch cable TV programs that require a decoder (converter), connect the decoder (converter) here.
Connect the input of the decoder (converter) to the TO CONV terminal and the output of the decoder (converter) to the AUX terminal.

50 RF OUT (TO TV) terminal
Connect to the VHF and/or UHF antenna terminal(s) of the TV receiver. The output of this VCR converted to channel 3 or 4 and the VHF/UHF TV signals received by this VCR will be supplied to the TV receiver by this connection.

51 CONTROL S IN (input) jack (mini jack)
Connect to the CONTROL S OUT (output) jack of other Sony products for various systematic operations.

52 CONTROL S OUT (EDIT) jack (mini jack)
Connect to the CONTROL IN (input), or CONTROL S IN (input) of another Sony VCR for the automatic editing operation.

53 AC OUTLET (unswitched)
Supplies ac power to video or audio equipment with power consumption of under 400 watts.

54 CAMERA REMOTE OUT (EDIT) jack (special mini jack)
Connect to the CAMERA PAUSE or CAMERA PAUSE IN (input) jack of another Sony VCR for the automatic assemble editing operation.

55 CAMERA REMOTE IN (input) jack (special mini jack)
When recording with a video camera, connect the Sony HVA-220 ac adaptor to this jack.

56 LINE OUT (output) 1, 2 VIDEO/PCM jacks (phono jacks)
Connect to the video input of a color monitor, TV or another VCR. For PCM playback, connect a PCM diginal audio processor.

57 LINE OUT (output) 1, 2 R-AUDIO-L jacks (phono jacks)
Connect to the audio input of a color monitor, TV, or another VCR, or to a stereo system.

58 LINE IN (input) VIDEO/PCM jack (phono jack)
Connect to the video output of another VCR, camera adaptor, video disc player etc., for recording. For PCM recording, connect a PCM digital audio processor.

59 LINE IN (input) R-AUDIO-L jacks (phono jacks)
Connect to the line output of a sound source such as a tape recorder, an amplifier, a radio, or the audio output of another VCR. For FM simulcast recording, connect an FM tuner here.

CONNECTIONS

Before making connections

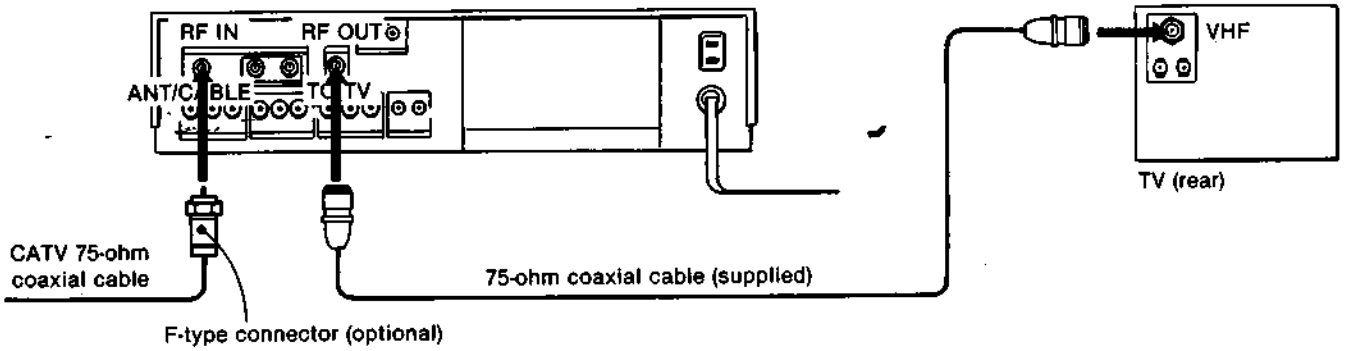
- Turn off the TV.
- Connect the ac power cord after all the connections of the video cassette recorder and the TV have been completed.
- Make connections firmly. A loose connection may cause a distorted picture.

1-3. ANTENNA/CABLE AND TV CONNECTION

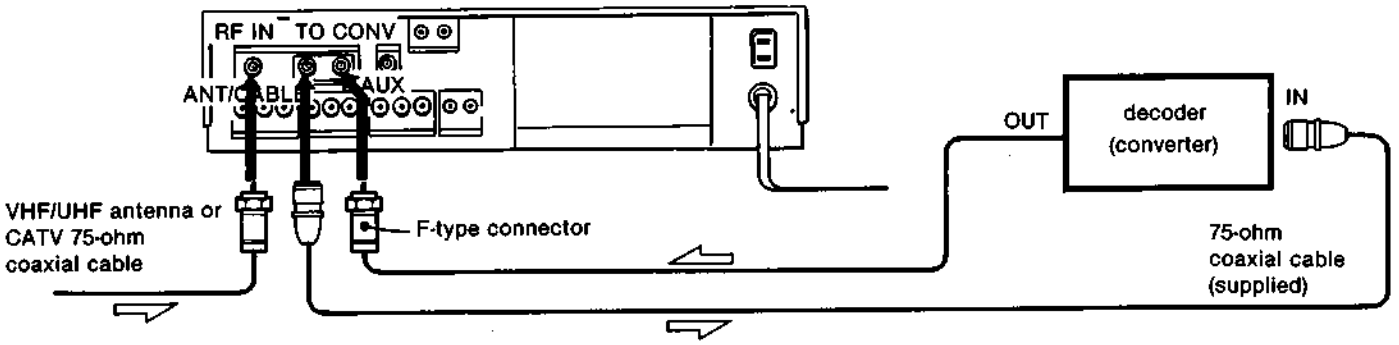
Disconnect the TV antenna cables from the TV receiver and connect them to the recorder, then connect the recorder and the TV. See page 12 on how to attach the optional/supplied connectors and separators, if necessary.

CATV (Cable TV) cable

We recommend that you consult your cable company to make sure that the cable is properly connected.

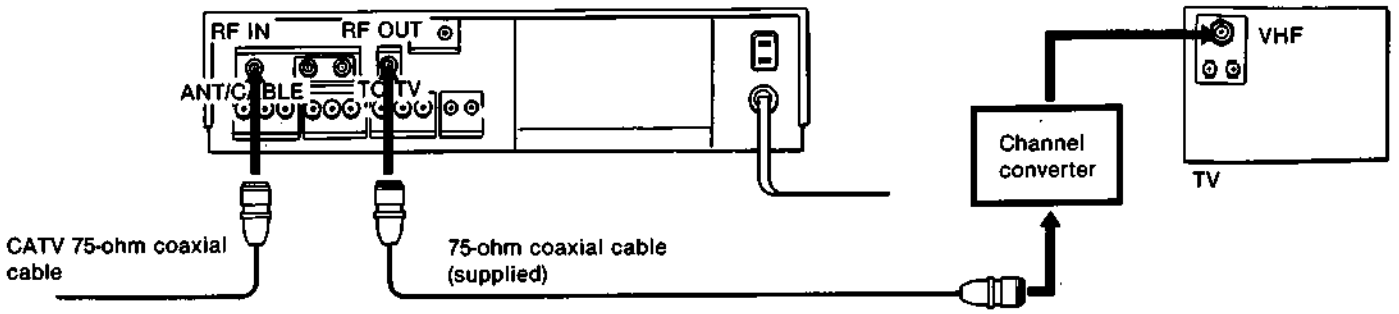


Connecting a decoder (converter)



When your TV is not a Cable TV compatible type

Connect the Cable TV channel converter between the recorder and the TV so that you will be able to watch another CATV program while recording one Cable TV program.



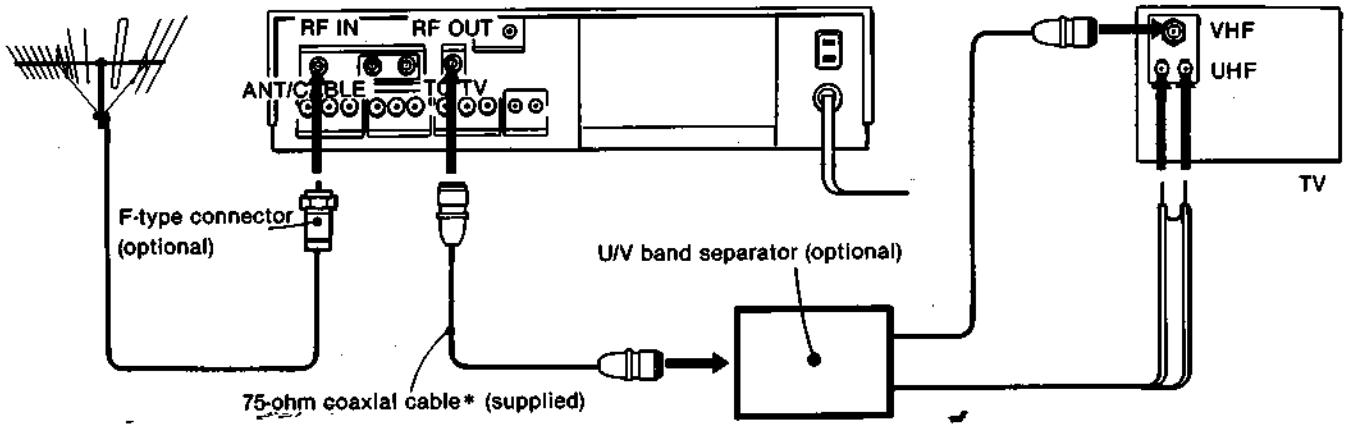
Note to CATV system installer in the U.S.A.:

This reminder is provided to call the CATV system installer's attention to Article 820-22 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

Combination VHF/UHF antenna

Most combination antennas are equipped with a U/V band separator (signal splitter). Take off the separator and connect the cable directly to the recorder.

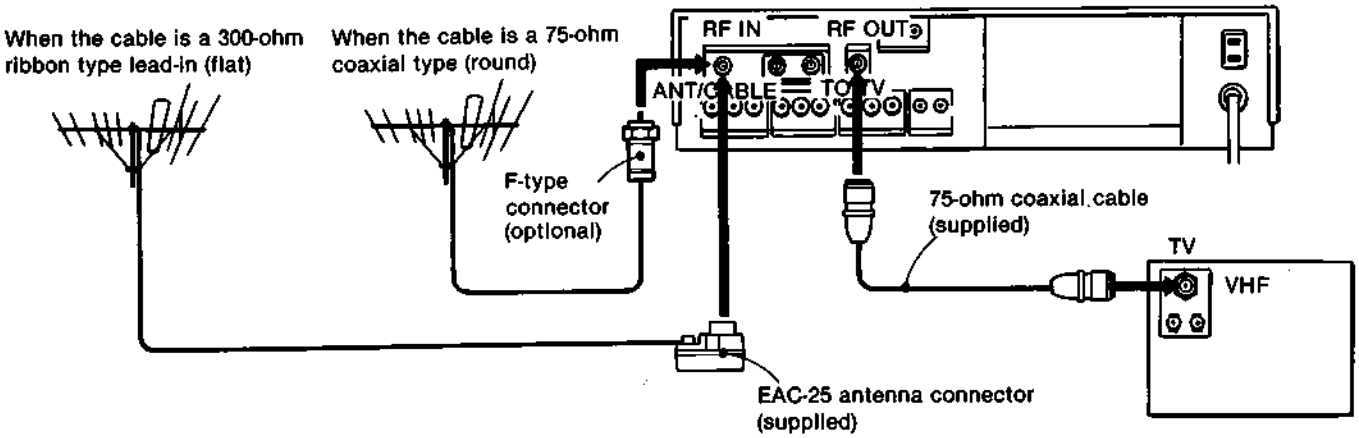
Use the removed separator to connect the recorder and the TV.



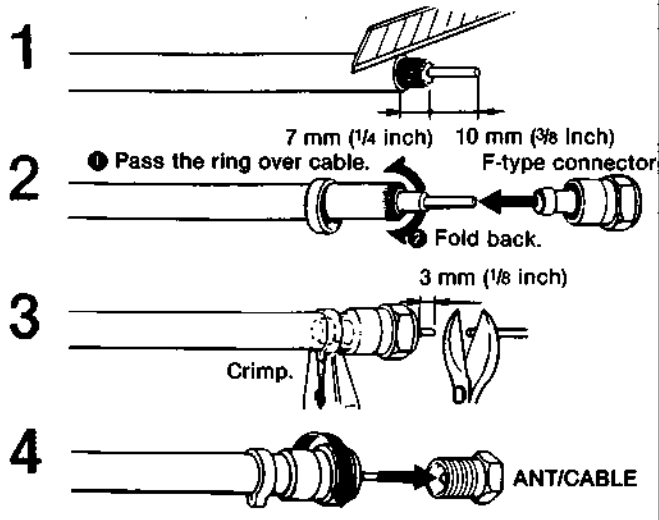
If you need a separator or a complete antenna system, consult your Sony dealer or a qualified technician.

*Use an optional RFC-8 extension cable (available in the U.S.A. and Canada), 8 m (25 ft) long, if the supplied 75-ohm coaxial cable is not long enough.

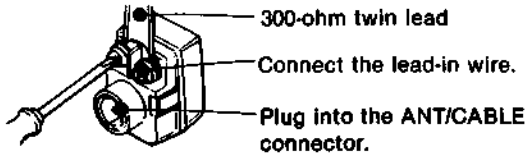
VHF antenna



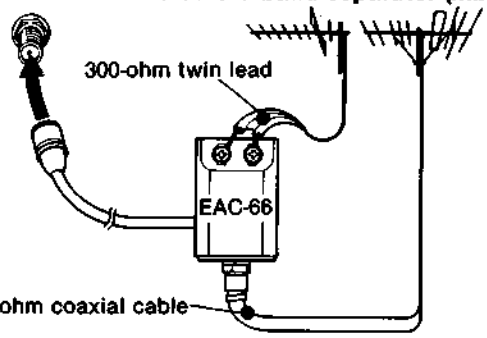
How to attach an F-type connector



How to attach an EAC-25 external antenna connector

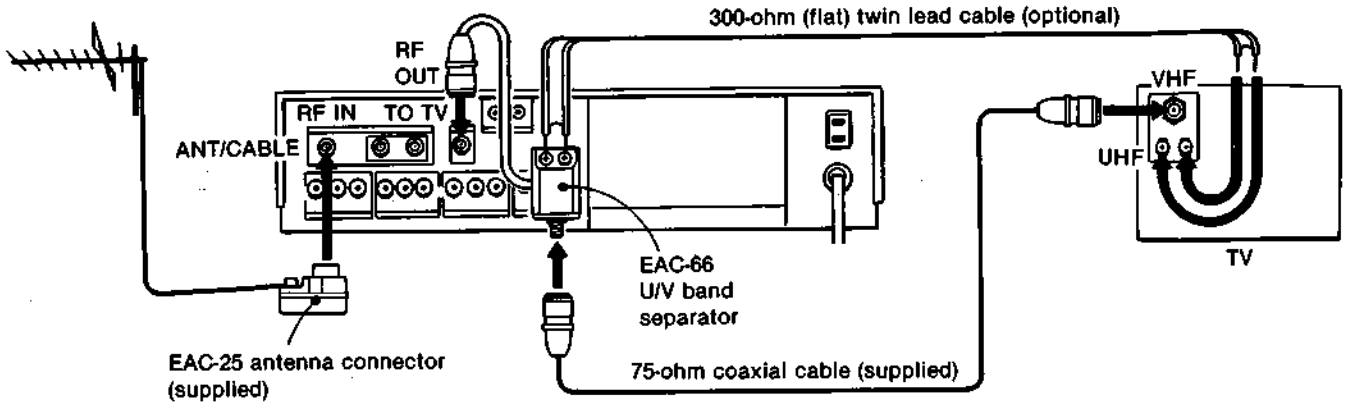


How to attach an EAC-66 U/V band separator (mixer)



UHF antenna

Attach an optional EAC-66 U/V band separator to the RF OUT connector of the recorder, and connect to the VHF and UHF antenna terminals of the TV.

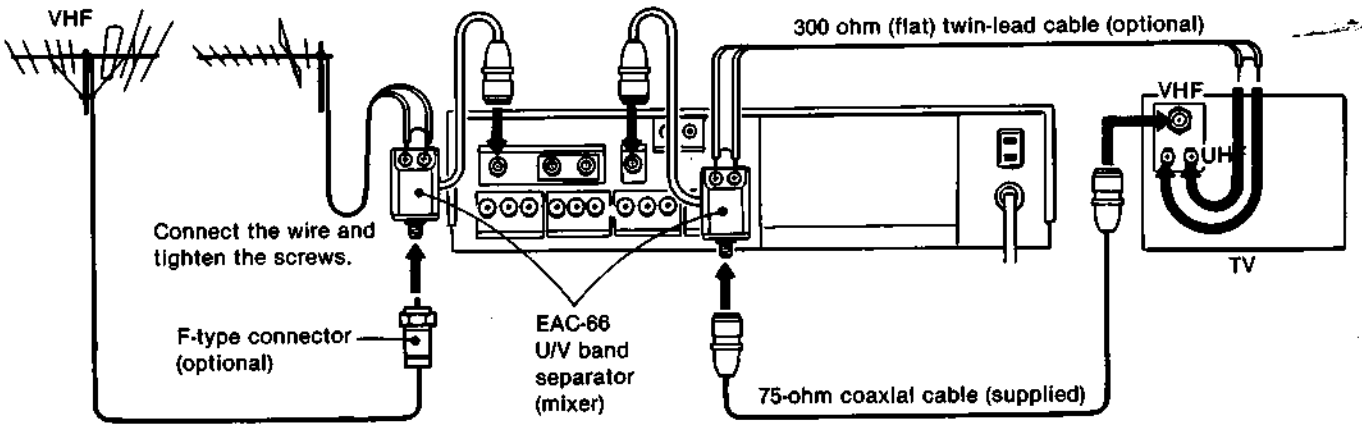


When both VHF and UHF antennas are connected

Attach an optional EAC-66 U/V band separator (mixer) to the ANT/CABLE (RF IN) connector of the recorder, and connect the antennas to the U/V band separator.
Then attach another optional U/V band separator to the RF OUT connector of the recorder, and connect to the VHF and UHF antenna terminals of the TV.

When your TV has a 75-ohm UHF/VHF antenna terminal

Easy connection of the recorder to the TV can be made with the supplied 75-ohm coaxial cable regardless of the types of antenna.

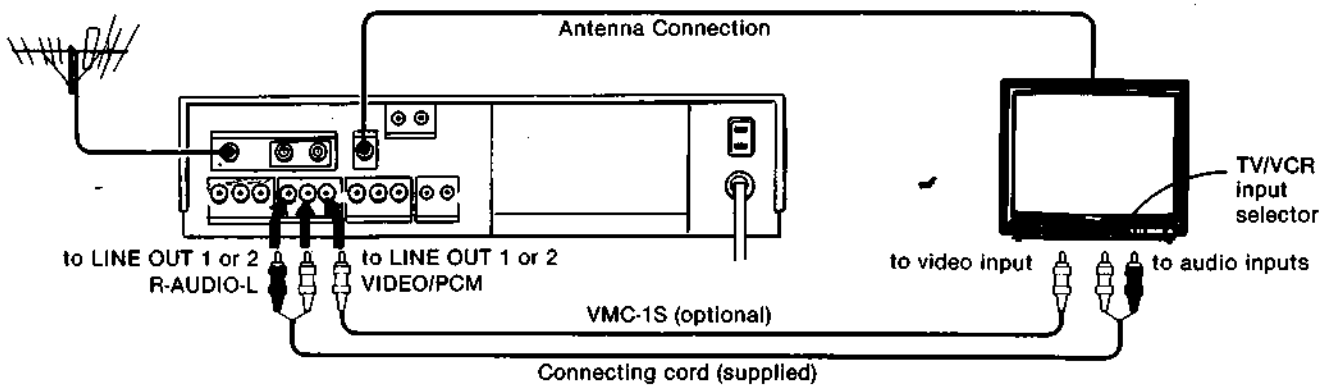


Caution
Connections between the recorder's RF OUT connector and the antenna terminals of a TV receiver should be made only as shown in these instructions. Failure to do so may result in operation that violates the regulations of the Federal Communications Commission regarding the use and operation of rf devices. Never connect the output of the recorder to an antenna or make simultaneous (parallel) antenna and recorder connections at the antenna terminals of your receiver.

- Once the connections explained above have been made, the antenna TV signals, as well as the signal from the recorder, will be fed to the TV and you can view TV programs in the usual way.

CONNECTION TO A TV SET EQUIPPED WITH VIDEO AND AUDIO INPUT JACKS

If your TV set is equipped with video and audio input jacks, connect the LINE OUT 1 or 2 jacks of this VCR to the input jacks of the TV in addition to the antenna connection you have made to the TV as described on pages 11–13.
Better picture and sound from the VCR will be obtained than if the TV is connected only to the antenna (RF OUT) terminal of this VCR.

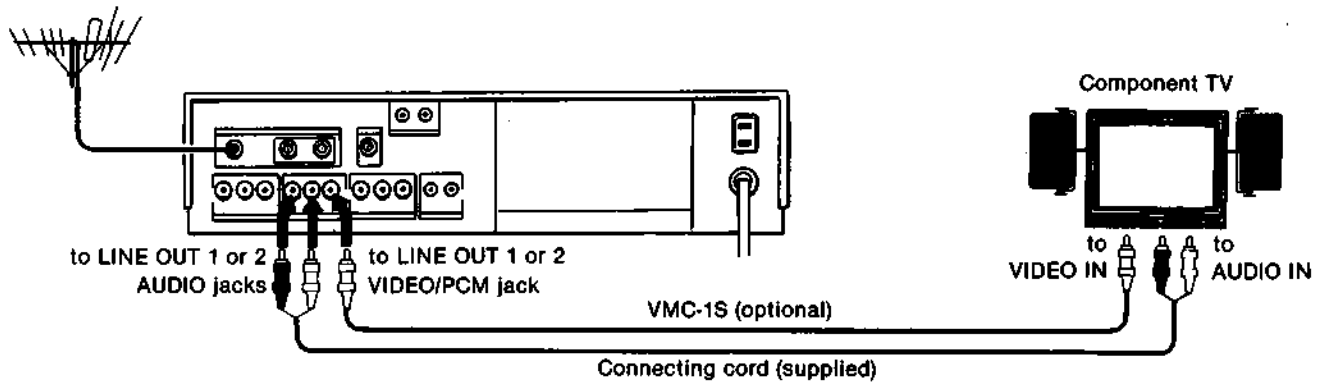


Such TV sets should have a TV/VCR input selector (often named TV/VIDEO button). By pressing or switching the position of this selector you will be able to view the picture of the connected VCR on the TV screen instead of by selecting channel 3 or 4 on the TV. "ADJUSTING THE TV" on page 17 is not necessary if the above connection is made.

CONNECTING A COLOR MONITOR

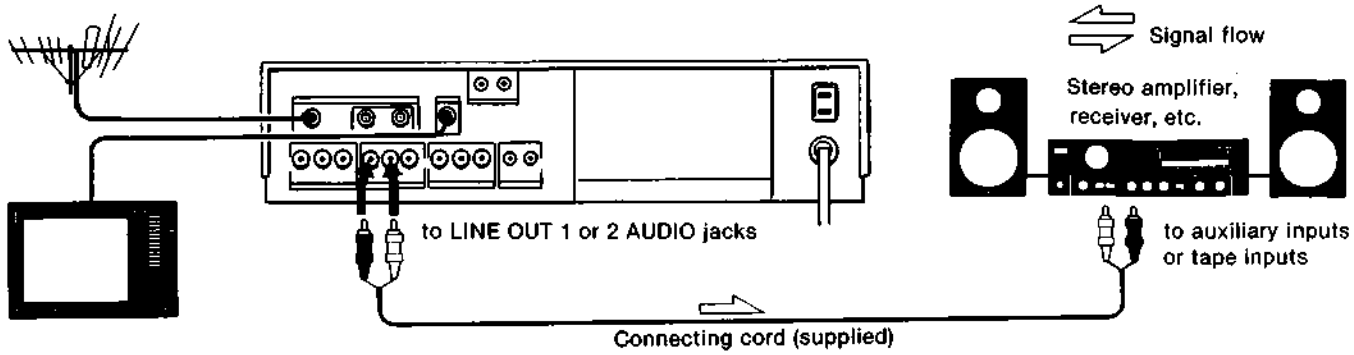
To obtain better-quality picture, connect a color monitor, such as the Sony Profeel Trinitron Component TV, instead of a conventional TV receiver.
If a component TV is combined with a speaker system as illustrated, you will be able to enjoy the stereo sound of tapes recorded in the Beta hi-fi system through the speaker system.

If you use a component TV tuner together with the monitor, connect the recorder and the TV tuner in the same way as in the case of the recorder and the conventional TV receiver as described on pages 11 and 12. For details on the connection of the TV tuner and the monitor, refer to the instruction manual of the TV tuner.



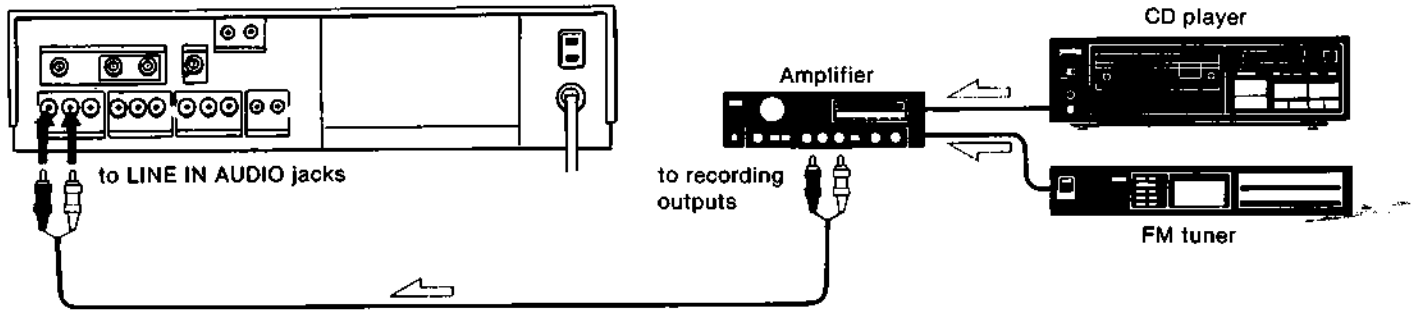
1-4. CONNECTION TO AN AUDIO SYSTEM

You can experience a more dynamic sound of tapes recorded in Beta hi-fi when the recorder is connected to an audio system.

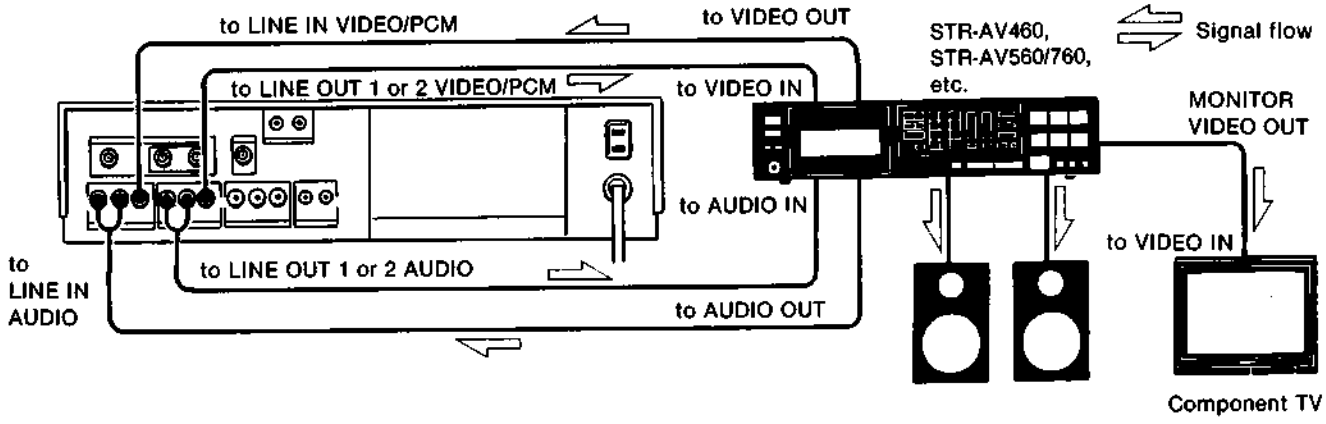


To record audio signals from your audio system

You can record only, or together with video, the audio (sound) of an audio source, such as an FM tuner or a CD player, in the Beta hi-fi system with the following connection.



Connection to a receiver equipped with VIDEO connectors

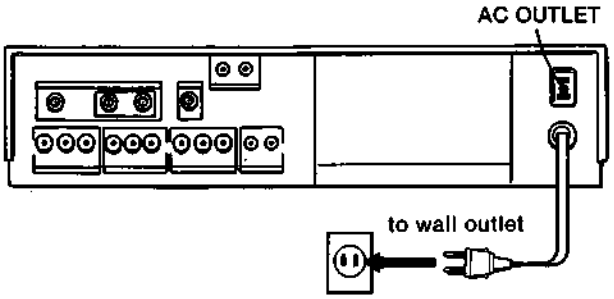


For details, see the Instruction manual of the receiver.

Notes

- If the VCR is installed near a tuner or a radio, noise may be heard in AM reception. In this case, keep the VCR away from the tuner or the radio, adjust the AM bar antenna for minimum noise, or connect an external AM antenna to the tuner.
- Before connecting or disconnecting the power cord of the VCR, be sure to turn the connected amplifier off.

POWER CONNECTION



AC OUTLET

This socket provides a convenient ac power source for other video or audio equipment whose power consumption is under 400 watts. Power will be supplied to the connected equipment even when the recorder is turned off.

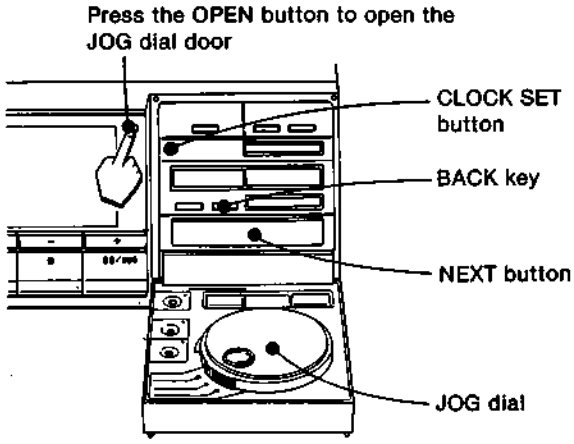
- Do not connect here any electrical home appliances whose power consumption exceeds 400 watts, such as an electric iron or fan.

When disconnecting the power cord from the wall outlet be sure that the POWER switch of this unit is turned off.

Occasionally, when the POWER switch is turned on and off immediately after plugging the set to a wall outlet, the VCR becomes unoperational. If this occurs, press the CLOCK SET button inside the JOG dial door, set the clock and then operate the set.

1-5. SETTING THE CLOCK

When you connect the ac power cord to a wall outlet, the clock shows "SU AM12:00" indicating that it must be set.

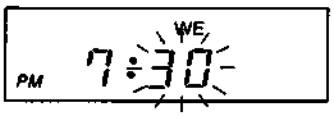


Example: To set for Wednesday afternoon at 7:30
Turn the JOG dial clockwise for advancing the number and counterclockwise for reverse.

1 Press CLOCK SET.
The day of the week indicator will blink.
2 Set the day by turning the JOG dial until "WE" (for Wednesday) appears.

3 Press NEXT.
Set the hour by turning the JOG dial.
Make sure that "AM" or "PM" is correctly set.

4 Press NEXT.
Set the minute by turning the JOG dial.



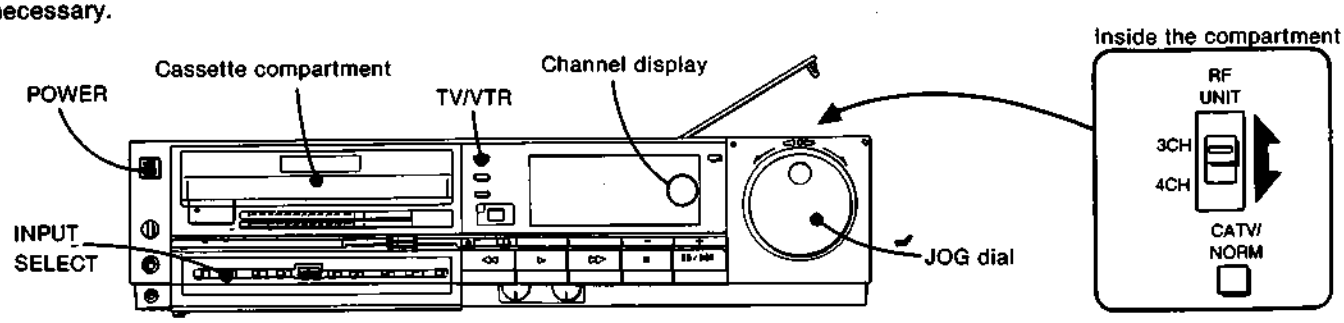
5 For accurate setting, press NEXT at the same time as an announced time signal. The clock will start.

The dots of the colon (:) alternately blink every 30 seconds.

ADJUSTMENT

1-6. ADJUSTING THE TV

Your TV must be adjusted to receive the signal transmitted by your VCR. The VCR transmits its signal on either channel 3 or 4 and this is why you will be selecting channel 3 or 4 on the TV whenever viewing the VCR picture. If you have connected a color monitor or a TV set equipped with video and audio input jacks, this adjustment is not necessary.



❶ Set the RF UNIT selector located in the tuning comparment to "3 CH" or "4 CH"whichever channel is not active in your area.
❷ Press POWER switch to turn on the power.

If you do not have a recorded cassette tape

❸ Press TV/VTR button so that the button lights up.
❹ Check that the INPUT SELECT switch is set to TUNER, then select an active channel (Observe the channel display) in your area by turning the JOG dial.
For cable TV channels, the "CATV" indicator should be displayed above the channel display.
For off-the-air channels the "CATV" indicator should be off. To turn on/off the indicator, press CATV/NORMAL button.

If you have a recorded cassette tape

❸ Insert the cassette into the cassette compartment.
❹ Press ▶ (play) button.

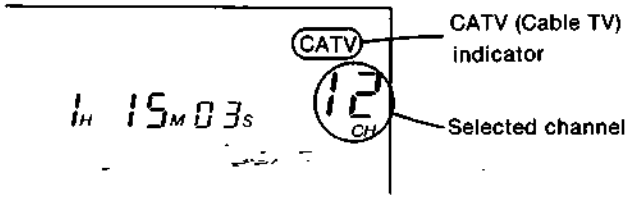
❺ Turn on the TV.
❻ Select either VHF channel 3 or 4 on your TV to agree with the setting of the RF UNIT selector of the VCR.
The TV program selected on the VCR or the playback of the inserted cassette tape will be displayed on the TV screen.
If a picture does not appear or is not clear, fine tune the selected channel 3 or 4 with the controls of the TV. For fine tuning the channel, read the instruction manual of the TV.

Now your TV receiver is tuned to the VCR. Whenever using the VCR, you should set the TV to the channel 3 or 4 (whichever you selected).

BASICS

1-7. SELECTING CHANNELS

Receivable channels of your VCR are:
VHF: 2–13
UHF: 14–69
Cable TV: 1–125 (See Cable TV channel chart.)
The channel selected on this VCR will be displayed in the display window.

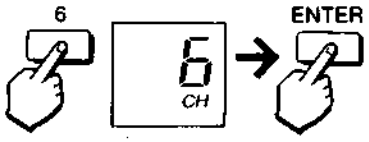


For Cable TV broadcasts, the "CATV" indicator should be displayed. For off-the-air broadcasts, the indicator should be off. If necessary, turn on (or off) the indicator by pressing the NORMAL/CATV selector button in the tuning compartment.

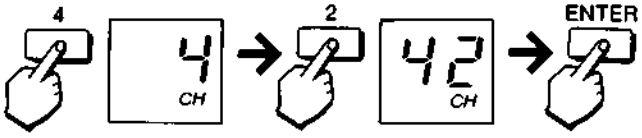
There are 3 ways to select the channels on your VCR.

- **By turning the JOG dial**

- **By pressing the channel number buttons and the ENTER button of the Remote Commander**
  Press the numeral(s) of the channel and then press ENTER button.
  Ex. To select channel 6, press 6 and then ENTER.



To select channel 42, press 4, 2 and then ENTER.



The channel will not be selected if the ENTER button is not pressed and the previously selected channel number will be displayed again after a few seconds.

- **By pressing the channel +/– buttons**

The channels will change consecutively if you hold the button down.
By adding and erasing channels, you can preset your VCR so that only the desired channels appear in sequence when the channel +/– button is pressed. (See next page.)

Cable TV channel chart*
Cable TV systems use letters or numbers to designate channels. To tune in a channel, refer to this chart.

Number on this VCR	1	5	6	14	15	16	17
Corresponding Cable TV channel	A–8	A–7	A–6	A	B	C	D

18	19	20	21	22	23	24	25	26	27	28	29	30
E	F	G	H	I	J	K	L	M	N	O	P	Q

31	32	33	34	35	36	37	38	39	.....	.....	93	94
R	S	T	U	V	W	W+1	W+2	W+3	.....	.....	W+57	W+58

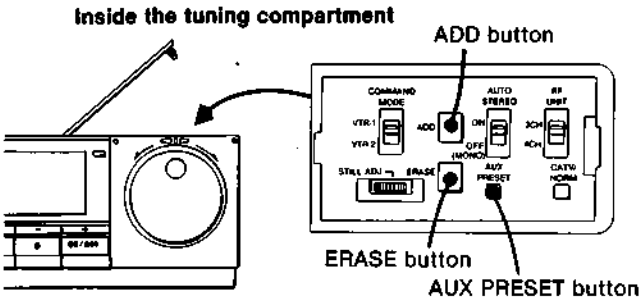
95	96	97	98	99	100	101	102	.....	.....	123	124	125
A–5	A–4	A–3	A–2	A–1	W+59	W+60	W+61	.....	.....	W+82	W+83	W+84

Check with your local cable TV company for more complete information on the available channels.

*The designation of the cable TV channels conforms to the EIA/NCTA recommended standards.

PRESETTING CHANNELS

PRESETTING CHANNELS TO BE SELECTED WITH THE CHANNEL +/– BUTTONS



Adding channels

1 Select the channel to be added with the JOG dial or the Remote Commander.
2 Press ADD button.
A "––" will appear for an instant in the channel display, indicating that the channel will appear in the proper numerical sequence when you press the channel +/– button.

Repeat steps **1** and **2** for other channels to be added.

Erasing channels

1 Select the channel to be erased.
2 Press ERASE button.
A "––" will appear for an instant in the channel display, indicating that the channel has been erased. When channel +/– button is pressed, you will see that the channel is skipped over in the numerical sequence.

Repeat steps **1** and **2** for other channels to be erased. To add erased channels again, follow the steps in "Adding channels".

Non-existent channels (channels other than those listed on the previous page) cannot be preset and the "––" indicator will not appear when the ADD or ERASE button is pressed.

TO PRESET THE OUTPUT CHANNEL OF THE DECODER CONNECTED TO THE AUX TERMINAL

You can preset your VCR so that the channel received through the decoder connected to the AUX terminal can be selected simply by pressing the AUX key on the VCR or on the Remote Commander.

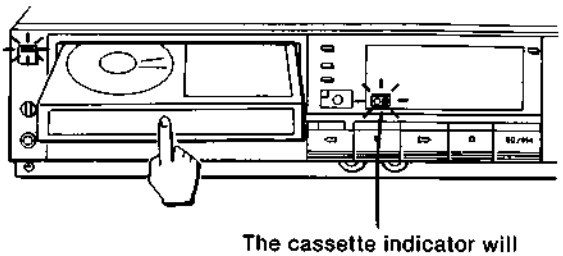
1 Select the output channel of the decoder (generally 3 or 4) by turning the JOG dial.
2 Press AUX PRESET button.
A "––" will appear for an instant and then "PP (preset program)" will appear in the channel display.
The output channel that you have selected in step **1** is preset.
By pressing the AUX key inside the JOG dial door or on the Remote Commander you will be able to view the programs received through the decoder. "PP" will be displayed whenever this channel is selected.

To return to viewing regular channels, simply select another channel or press the AUX key again. (Selection will start from 103 or 199 when the JOG dial is turned.)

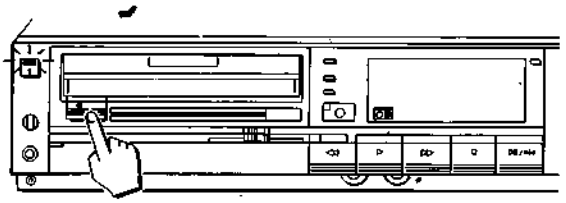
If you desire to select the decoder's channel with the TV's channel selectors without using the VCR, simply press the AUX key so that "PP" is lit (it will light up even without the power turned on), then select the channel.

1-8. INSERTING/EJECTING CASSETTES

Insert cassettes gently into the compartment until it starts sliding in. There should be a direction on the cassette showing in which way the cassette should be inserted.



The power of this VCR will turn on automatically whenever a cassette is newly inserted.



To eject the cassette, press the EJECT button.
The cassette indicator will turn off.

If the EJECT button is pressed when the power is turned off, the power will turn on for the cassette to be ejected and then turn off again automatically.

USE OF THE SAFETY TAB

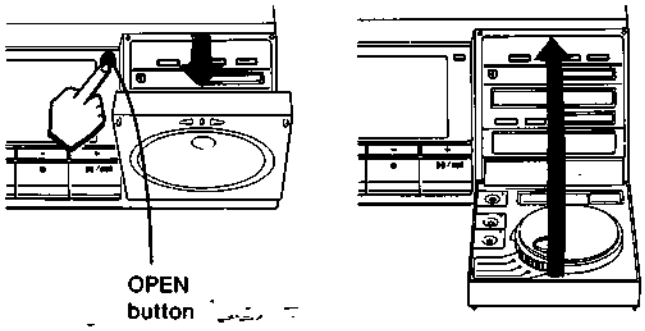
When a new recording is made on a previously recorded cassette, the previous recording will be automatically erased.

To avoid erasing the recording
Break off the safety tab using a screwdriver or similar object. The cassette will be ejected automatically when you slide the REC (recording) switch to the right.

To re-record on a cassette which has had its safety tab removed
Cover the hole with a piece of plastic tape.

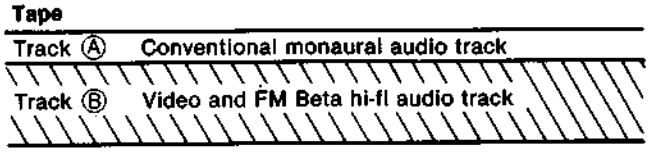
OPENING AND CLOSING THE JOG DIAL DOOR

To open the JOG dial door, press OPEN button.
To close the door, gently push the door up.



ABOUT THE CONVENTIONAL AND BETA HI-FI AUDIO TRACK

In the Beta hi-fi recording system, sound is recorded simultaneously on 2 tracks on the tape as illustrated below.



On track Ⓐ, a monaural recording is made so that tapes recorded on this VCR can also be played back on VCRs that are not Beta hi-fi.
It is on track Ⓑ that the Beta hi-fi recording of high-fidelity stereo sound is made. The Beta hi-fi recordings can only be played back on Beta hi-fi VCRs.

The BETA HI-FI switch should be set to ON to make Beta hi-fi recordings. When it is set to OFF, sound recordings will be made only on the conventional audio track.
In the illustrations of the tape in this instruction manual, Track Ⓐ is referred to the conventional audio track and Track Ⓑ to the Beta hi-fi audio track.

Selecting the audio track to be monitored
You can listen to the sound of each track separately or together by setting the AUDIO MONITOR selector as follows during recording or playback.

Position	Selected sound
BETA HI-FI	Beta hi-fi recording sound (Track Ⓑ)
MIX	Mixed sound of Beta hi-fi and conventionally recorded sound (Track Ⓐ and Ⓑ)
NORM	Conventionally recorded sound (Track Ⓐ)

When tapes recorded on other non-Beta hi-fi VCRs are played back, the conventional audio track of such tapes will be automatically selected and played back regardless of the switch position.

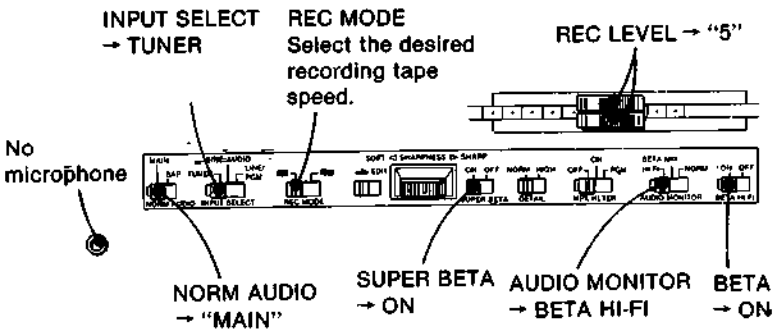
OPERATIONS

1-9. RECORDING TV PROGRAMS

Caution

Television programs, films, video tapes and other materials may be copyrighted. Unauthorized recording of such material may be contrary to the provisions of the copyright laws.
Also, use of this recorder with cable television transmission may require authorization from the cable television transmitter and/or program owner.

Before recording



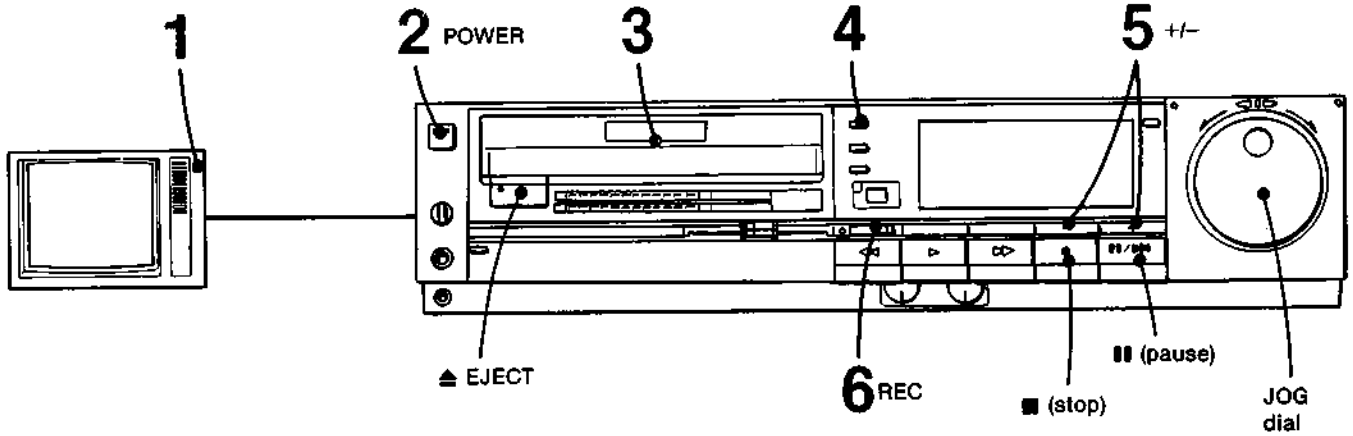
Recording time available in each mode

Cassette used	ⅡⅡ	ⅢⅢ
L-125	30 min.	45 min.
L-250	1 hr.	1 hr. 30 min.
L-500	2 hr.	3 hr.
L-750	3 hr.	4 hr. 30 min.
L-830	3 hr. 20 min.	5 hr.

The ⅢⅢ mode is recommended for higher quality of sound and picture.

Recording

Numbers in the illustration show the sequence of operation.



1 Turn on the TV and select the channel for the video recorder 3 or 4*.
2 Press POWER on the recorder to turn the power on.
3 Insert a cassette.
4 Press TV/VTR to select the VTR mode.
5 Select the channel to be recorded with the JOG dial, channel + or − button, or the Remote Commander.
6 Slide REC to the right. The red lamp by the switch will light up and recording will start.
If the tape reaches the end during recording, the tape will be rewound to the beginning automatically.

*If your TV has a TV/VCR input selector (TV/VIDEO button) select the "VCR input" with the selector.

To stop recording, press ■ STOP.
To eject the cassette, press ■ STOP, then ▲ EJECT.
To stop the tape momentarily, press II PAUSE.
To resume recording, press the button again. If you do not resume recording for more than about 8 minutes, the pause mode will be automatically released and the tape will stop.

For tapes to be recorded on other VCRs

On some VCRs, if the tape is fully rewound, a part at the very beginning of the tape will not be played back. We recommend that you run the tape for about 15 seconds before starting your actual recording.

TO VIEW ONE TV PROGRAM WHILE RECORDING ANOTHER

Press the TV/VTR button so that the lamp of the button turns off, then select the channel you want to view with the channel selectors on the TV.*

*If your TV has a TV/VCR input selector, simply select "TV" with the selector and then choose the desired channel.

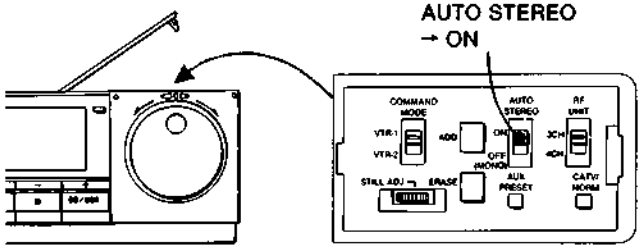
TO START RECORDING IN THE MIDDLE OF A RECORDED TAPE

1 Play back the recorded tape by pressing the ▶ (play) button.
2 At the point where you wish to start a new recording, press ❚❚ (pause) button.
3 Slide the REC switch to the right.
The VCR will be in the recording pause mode and the picture selected by the INPUT SELECT switch (if it is set to "TUNER", the TV program) will appear on the monitor screen.
4 Press ❚❚ (pause) to release the pause mode.
Recording will begin.

The picture may be a little distorted in between the recordings, which is due to the stopping and starting of the tape.

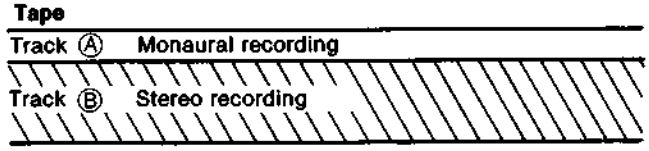
RECEIVING/RECORDING MULTICHANNEL TV SOUND (MTS) BROADCASTS (STEREOCASTS)

In the years to come, an increasing number of programs will be broadcast in stereo. Called Multichannel TV Sound or MTS, the new technology will greatly enhance TV viewing by bringing you programs with high fidelity stereo sound.
MTS also provides for an extra channel called the Second Audio Program or SAP which broadcasters can use to transmit a second language for bilingual transmissions or some other sound track.



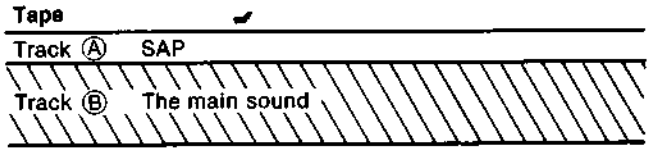
The MTS programs can be received with the AUTO STEREO switch set to ON.

To receive and record a stereo program
With the BETA HI-FI switch and the AUTO STEREO switch in the tuning compartment both set to ON, you will be able to receive, and record the stereo programs in the Beta hi-fi system. Whenever an MTS broadcast is being received, the "STEREO" indicator in the display window will light up.
On the conventional audio track of the tape, a monaural recording will be made.

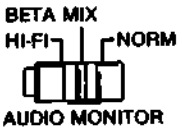


To receive and record SAP (Second Audio Program) broadcasts
If you desire to receive and record the SAP broadcasts, set the NORM (normal) AUDIO selector to SAP.
To listen to the SAP being received or recorded, set the AUDIO MONITOR selector to "NORM (normal)" (also making sure that the AUTO STEREO switch in the tuning compartment is set to ON).

The SAP will be recorded on the conventional audio track of the tape. The main sound (stereo or monaural) of the program will also be recorded on the Beta hi-fi audio track as long as the BETA HI-FI switch is set to ON.



To listen to the SAP and the main sound at the same time, set the AUDIO MONITOR selector to "MIX".



If during recording, there is no SAP being broadcast and the NORM AUDIO selector is set to "SAP", nothing will be recorded on the conventional audio track.

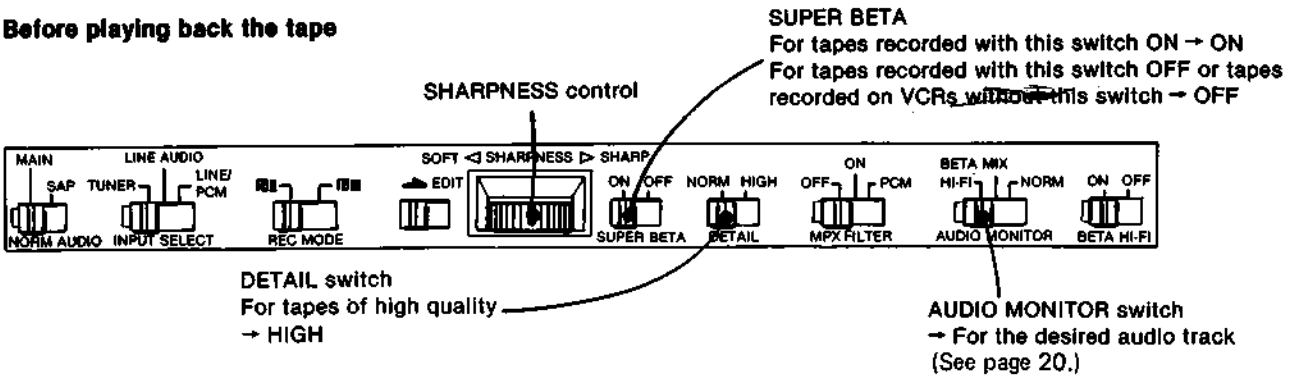
Only when there seems to be much noise interference in the MTS broadcasts, set the AUTO STEREO switch to OFF, in which case all the TV programs will be received with the monaural main sound.

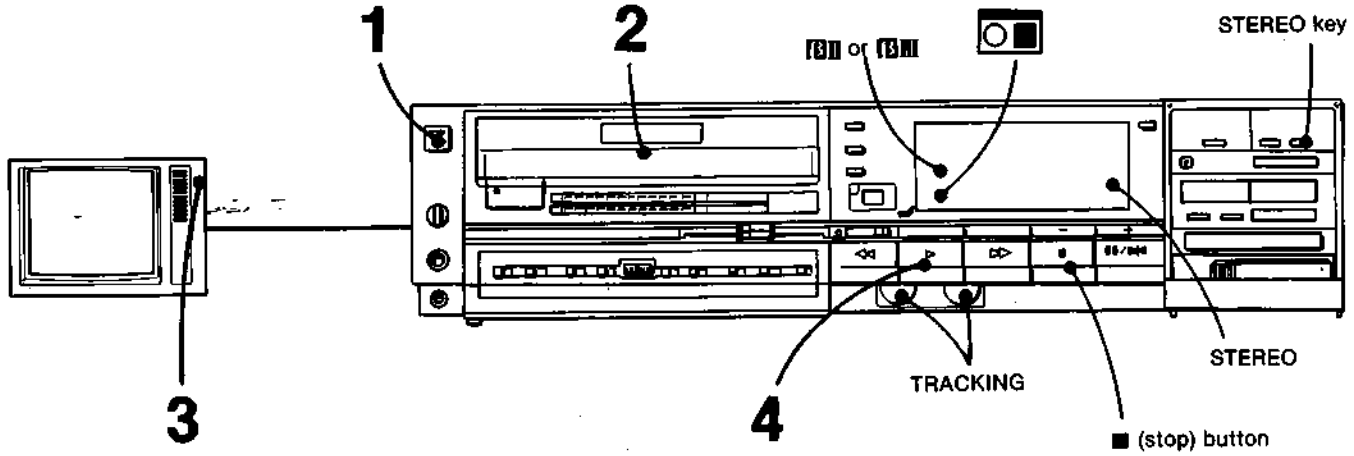
NOTE

ABOUT THE SUPER BETA SWITCH
Normally keep this switch in the "ON" position to obtain high picture quality recordings and playback.
Tapes recorded in other non-SuperBeta VCRs can be played on SuperBeta VCRs.
Tapes recorded in SuperBeta can be played on other non-SuperBeta VCRs: However, some over-modulation noise may appear in the picture during playback. If you intend to play back on other non-SuperBeta VCRs, then set the SuperBeta switch to "OFF" position when making your recordings.

1-10. PLAYBACK

Before playing back the tape





1 Turn on POWER switch.
2 Insert a cassette.
3 Turn on the TV and select the channel for the VCR channel 3 or 4*.
4 Press ▶ (play) button. Playback will start.

To stop the playback, press ■ (stop) button.
If the tape reaches the end during playback, the tape will be automatically rewound to the beginning.

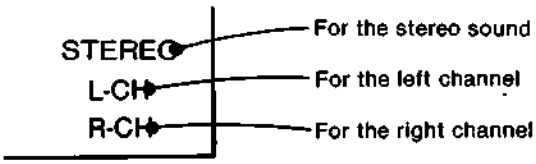
*If your TV has a TV/VCR input selector (TV/VIDEO button) select the "VCR input" with the selector.

When changing the channel on your TV from channel 3 or 4 on which you have been viewing the picture of the VCR to another channel, first press TV/VTR button and then select the desired channel. If you change the channel first and then press TV/VTR button, a picture may sometimes not appear at all. If this happens, select another different channel on the TV, and then select the desired channel again.

Playback of Beta hi-fi stereo sound recordings
If the VCR's LINE OUT 1 or 2 AUDIO jacks are connected to the stereo audio (L, R) input jacks of a TV that is stereo broadcast ready or to a stereo system, or if you have stereo headphones connected to the HEADPHONES jacks, you will be able to enjoy the stereo sound reproduction of stereo programs recorded in the Beta hi-fi system.

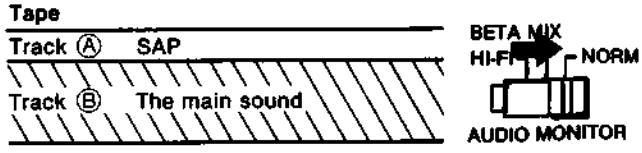
Be sure that the AUDIO MONITOR selector is set at BETA HI-FI (or at MIX) when playing back stereo programs. Only the monaural sound recorded on the conventional audio track will be heard if it is set to NORM.

If you desire to listen only to the left or right channel of the stereo program, select the desired channel with the STEREO L-CH/R-CH (left channel/right channel) key behind the JOG dial door.
Each time you press the key, the indicator for the selected channel will appear in the display window.



If the connected TV is a monaural TV or (even when the TV is stereo broadcast ready) if this VCR is connected only to the antenna terminal of the TV, the left and right channels of stereo will be mixed and reproduced monaural.

Playback of SAP (Second Audio Program) recordings
When playing back the SAP recorded on the conventional audio track of the tape, be sure to set the AUDIO MONITOR selector to NORM (for listening only to the SAP) or to MIX (for listening to both the SAP and the main sound of the program recorded on the Beta hi-fi audio track).



PICTURE ADJUSTMENTS

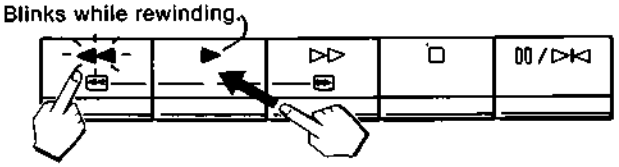
- To adjust the sharpness of the playback picture, turn the SHARPNESS control.
- If the picture of a tape played back at the normal or double speed seems distorted or snowy, turn the TRACKING NORMAL control for the best possible picture.
  Be sure to return the control to the center detent position after viewing that particular tape.

Note
The playback picture may blank out for an instant at a spot on the tape where the switching of the recording mode from [B] to [B] had been made.

AUTO PLAY

To have the tape automatically be played back after the tape has fully rewound itself.

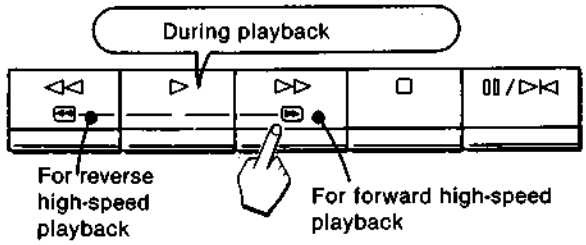
Press ◀◀ (rewind) button and while holding it down, press ▶ (play) button.



The tape will be rewound and playback will begin.

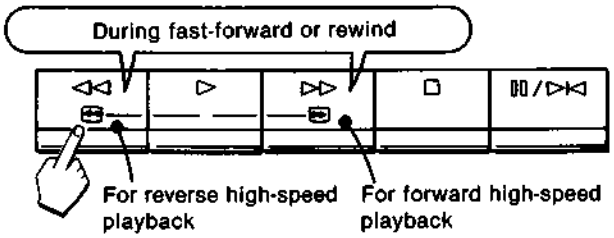
BETASCAN

Viewing the picture at a fast speed to find a particular scene
Press ▶▶ or ◀◀ during playback. When you release the button, the normal playack will resume.



BETA SKIPSCAN

Viewing the picture momentarily during fast-forward or rewind
Press ▶▶ or ◀◀ during fast-forward or rewind mode. When you release the button, the fast-forward or rewind mode will resume.

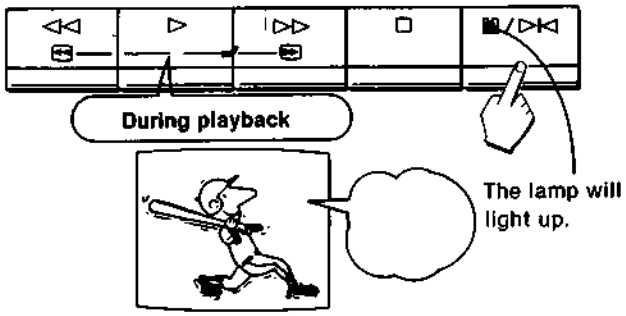


Streaks will appear and sound will be muted in the Betascan and Beta SkipScan pictures.

During Betascan, the Beta hi-fi indicator may sometimes not light even when a Beta hi-fi recorded tape is played back.

VARIOUS PLAYBACK MODES

FREEZE PICTURE
Press ❚❚ PAUSE during playback.



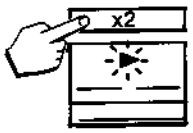
The sound will be muted.

To resume playback press ❚❚ (pause) again.

- If the displayed still picture seems to shake, turn the STILL ADJ (adjustment) control in the tuning compartment until the picture stabilizes. As long as the same TV is used with this VCR, it should not be necessary to make this adjustment so frequently.
  This control may not work for particular tapes recorded in the [B] mode.
- If streaks or noise appear, play back the tape at slow speed (see next page), adjust the TRACKING SLOW control and then freeze the picture with the ■ (pause) button again.
- To protect the video heads and the tape, the pause mode will be automatically released after about 8 minutes and playback will resume.

DOUBLE-SPEED PLAYBACK
(for tapes recorded in the [B] or [B] mode)

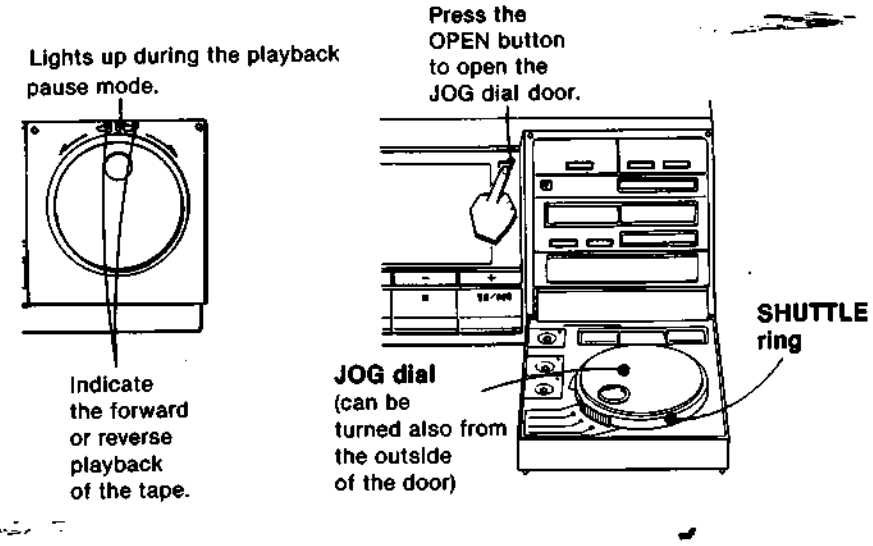
Press the x2 button during normal playback.



The tape will be played back at double speed and if the tape was recorded in the Beta hi-fi system the sound will be played back at double speed also. (Adjust TRACKING NORMAL control if necessary.)
This button will not function for tapes recorded in the [B] mode.

To return to normal playback, press the ▶ (play) button.

PLAYBACK USING THE JOG DIAL AND THE SHUTTLE RING



Using the JOG dial

1 Play back a tape and stop the playback with the ▮▮ (pause) button.
2 Turn the JOG dial.

The tape will be played back at the speed you are turning the dial.
Turn it clockwise for forward playback or counterclockwise for reverse playback.

Using the SHUTTLE ring

1 Play back a tape and stop the playback with the ▮▮ (pause) button.
2 Turn and hold the SHUTTLE ring.

Turn it as much as desired for the playback at one-fifth the normal speed, normal speed, or at double speed.

When it is fully turned you will be able to "Betascan" the picture.
Turn it clockwise for forward playback or counterclockwise for reverse playback.

When the SHUTTLE ring is released, the picture will freeze again.

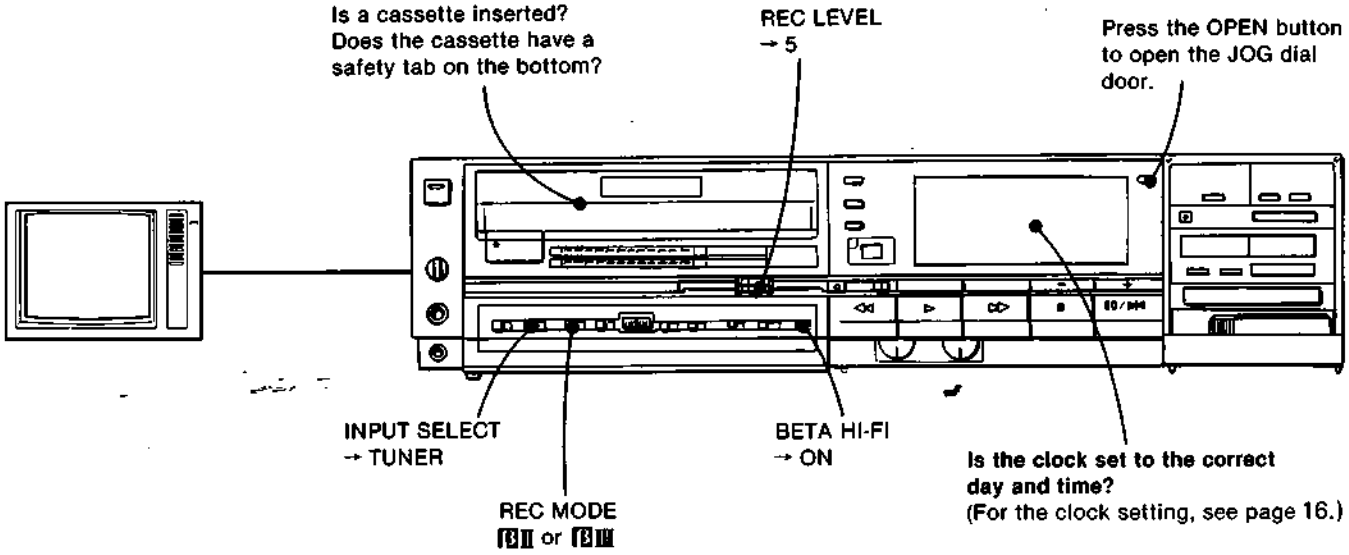
Streaks will appear in the playback at a speed other than the normal speed. The sound will be muted.

If the picture of a tape played back at a speed slower than the normal speed seems distorted or snowy, turn the TRACKING SLOW control for the best possible picture. (By this picture adjustment of slow playback, the still picture of that recording will be adjusted as well.)
Be sure to return the control to the center detent position after viewing that particular tape.

1-11. TIMER-ACTIVATED RECORDING

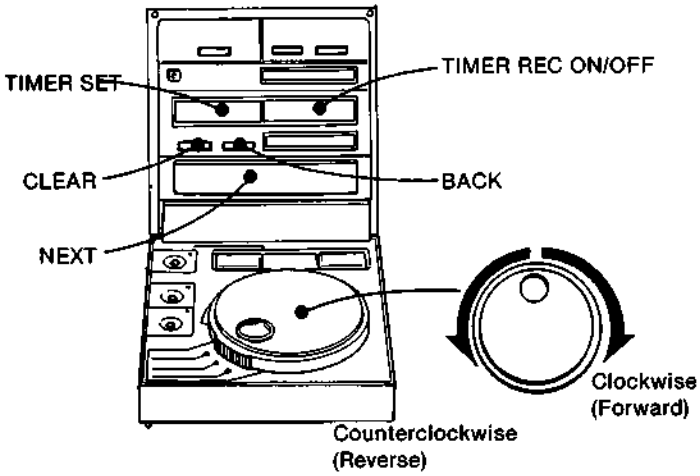
The timer of this VCR can be preset to record up to 8 programs within this week, the next week and the week after next.

Before setting the timer



SETTING THE TIMER

Buttons and keys to be used

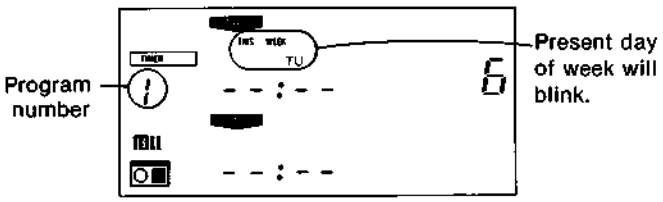


Suppose you want to make a recording of channel 10 from 8:15 p.m. to 10:00 p.m. on Saturday next week.

You will be using the JOG dial and the NEXT button. Every time the NEXT button is pressed, the item to be preset will blink and you will be setting the item by turning the JOG dial.
Press the BACK key if you desire to go back a step and change the setting of a particular item.

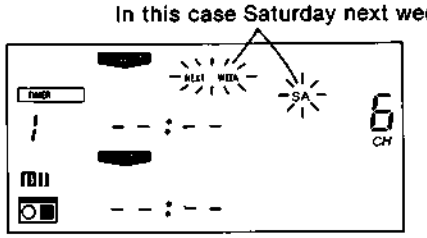
1 Press TIMER SET.
The program number (up to 8) will appear. " 1 " indicates that you are making the first timer setting.

Display window

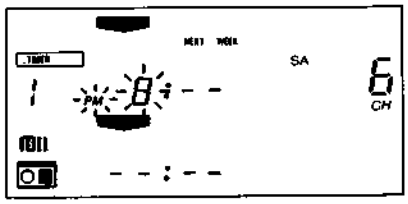


2 Set the day and week for recording by turning the JOG dial.
(By turning the dial clockwise, the day and week will advance.)

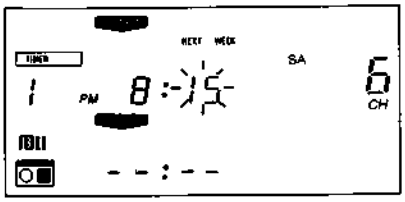
In this case Saturday next week.



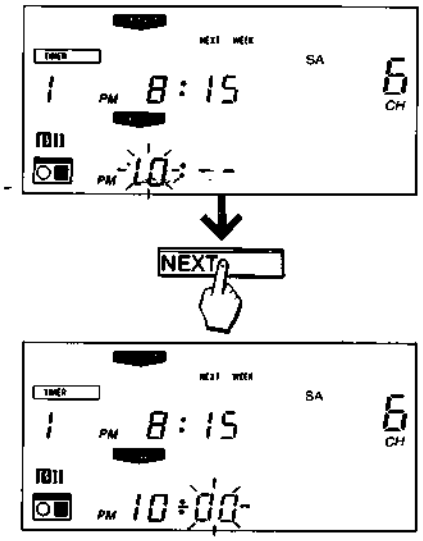
3 Press NEXT.
Set the turn-on hour by turning the JOG dial.
Make sure that A.M. or P.M. is properly set.



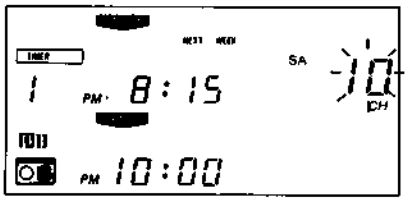
4 Press NEXT.
Set the minute by turning the JOG dial.



5 Press NEXT.
Set the turn-off time (hour and minute) as in steps **3**–**4**.



6 Set the channel to be recorded by turning the JOG dial or by pressing the channel +/–.



7 Press NEXT.
The memorized turn-on and turn-off times will be displayed for about 3 seconds, and then the time counter and the present time will reappear.

To preset another program, press TIMER SET again and repeat steps **2**–**7**.
When eight programs have been preset, you cannot set any more programs.

8 Press TIMER REC ON/OFF.
The power will be turned off and the VCR will be in the standby mode.

"TIMER REC" will light up and the present time will be displayed.

Recording will start at the preset time and will automatically stop when the recording is completed.
The succeeding program numbers of other preset programs will shift automatically by the number of completed recordings.

- If the cassette's safety tab is removed, the cassette will be ejected automatically when TIMER REC ON/OFF is pressed.
- "TIMER REC" will not light up if the preset turn-on time is earlier than the present time.

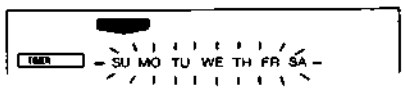
NOTICE:
ONCE THE "TIMER REC" INDICATOR HAS LIT UP, only the functions of CHECK, AUX, and TIMER REC ON/OFF on the recorder can be activated. To turn on the power again for the usual manual operations, press TIMER REC ON/OFF again so that the indicator turns off. This does "not" affect the memory of the timer. As long as you press it again, timer recording will be made exactly as preset.

To record up to the very end of the tape
Figure out how long a recording can be made with the remaining tape and then set the turn-off time so that it will be after the tape reaches its end.

To set the channel received through the AUX terminal
Press AUX key so that "PP" lights up for the channel display in step **6**.

EVERY WEEK/EVERY DAY TIMER RECORDINGS

To record at the same time every day
When setting the day of the week, turn the JOG dial counterclockwise one notch so that all the day-of-the-week indicators are lit.



Recording will be made every day at the preset time until the end of the tape.

To record at the same time and day every week
When setting the day of the week turn the JOG dial counterclockwise until the "EVERY WEEK" and the desired day-of-the-week indicator lights up.

Recording will be made every week at the preset time until the end of the tape.

To temporarily cancel out every week/every day recordings
Press TIMER REC ON/OFF key so that the "TIMER REC" indicator disappears.
The recordings will not be made.
When TIMER REC ON/OFF key is pressed again and the "TIMER REC" is lit, every week/every day recordngs will be made just as preset.

BEFORE THE TIMER-ACTIVATED RECORDING STARTS...

To check the timer settings
Press the CHECK key. Every time you press CHECK, each preset time will be displayed.

To change the settings
1 Press TIMER REC ON/OFF.
2 Press CHECK to select the program to be changed.
3 Press TIMER SET.
4 Press NEXT consecutively until the item to be changed blinks.
5 Change the setting with the JOG dial.
6 Press NEXT so that the current time appears.
7 Press TIMER REC ON/OFF again to reactivate the timer.

To erase the memory of a particular program
1 Press TIMER REC ON/OFF.
2 Press CHECK to select the program to be erased.
3 Press CLEAR. The memory of the program will be eliminated.
4 If other programs have been preset for recording, press TIMER REC ON/OFF again to reactivate the timer.

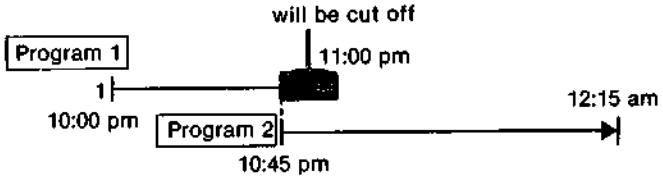
AFTER A TIMER RECORDING HAS STARTED...

To stop the recording momentarily.
Press ❚❚ (pause) button.
To resume the recording press ❚❚ again. (Recording will automatically resume if this is not done for more than about 8 minutes.)

To stop a timer recording completely
Press the TIMER REC ON/OFF key.
The recording will stop and the power will be turned off.

SPECIFIC NOTES ON TIMER-ACTIVATED RECORDINGS

When the presettings of your timer-activated recordings overlap
There will be no error indication to inform you of the overlap. Even if there is an overlap, a recording will be made.



In this case, the recording of program 2 will begin before the first reocording is completely finished. Consequently, program 1 will be cut off in the middle of its recording.

If the power should be interrupted before a timer recording

If a power interruption occurs, the clock will stop and the time indication will be "AM12:00". This means that the memory of the timer has been completely erased. Set the clock and the timer again.

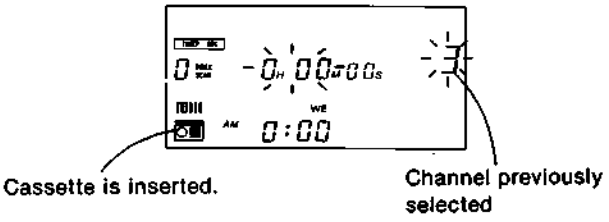
A short power interruption of less than approx. 10 minutes will not affect the memory of the timer.
The timer programs will be retained and performed and the clock will show the correct time.

If the power was interrupted during a timer or quick timer recording
Recording will stop and the power will be turned off.
If the interruption was less than approximately 10 minutes, the recording will resume.

QUICK TIMER RECORDING

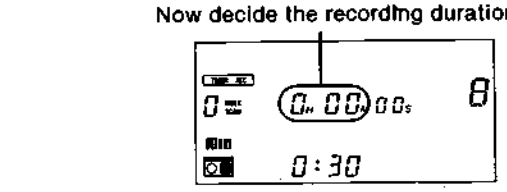
You can immediately start a recording and set the duration as well simply by pressing the QUICK TIMER key. The duration can be set for up to 5 hours by 30 minute intervals so that the power will turn off automatically.

1 Press QUICK TIMER.
The power will be turned on had it not been turned on already.



2 Choose the channel to be recorded.
If you do not advance to the next step within 30 seconds, power will turn off.

3 Press QUICK TIMER again so that the recording starts.



Every time you press QUICK TIMER, the recording duration indication will change as follows:
0:30 → 1:00 → 1:30.....5:00 → 0:00
30 minutes one hour one and a half hour five hours zero hours

When the recording starts, the displayed duration will decrease minute by minute to 0:00. The recorder will turn off automatically after the recording is finished.

To stop a quick timer recording
Press TIMER REC ON/OFF. The power will be turned off as well.

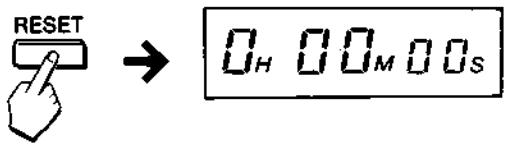
Once the quick timer recording has started

No function button except for the following will activate:
QUICK TIMER.....to change the recording duration
TIMER REC ON/OFF.....to interrupt the quick timer recording
PAUSE.....to stop the quick timer recording momentarily
CHECK.....to check the timer programs preset

During regular non-timer recording
You can set the recording duration during regular non-timer recording as well by consecutively pressing the QUICK TIMER key just as in step 3.
The power will turn off automatically after the recording is over.

USE OF THE TIME COUNTER

The time counter indicates the approximate running time of the tape and the relative position of programs on the tape.



Before starting recording or playback, press RESET button to set the counter to "0H00M00S".
By noting the counter reading at the desired point, you can easily find that point later by referring to the counter.

Use the label on the cassette to list the programs and their counter readings.

Notes
- The counter reading is automatically reset to zero when a cassette is newly inserted.
- The counter reading will be retained in the memory even after the power is turned off, as long as the cassette is kept inserted in the cassette compartment.
- The counter will not operate when a blank, unrecorded tape is being used. Therefore, you can easily find a blank part of the tape by observing where the counter stops.

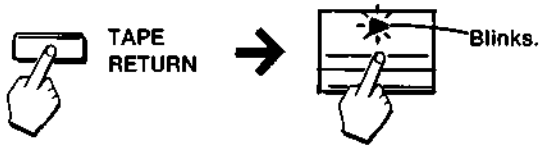
TAPE RETURN/TAPE RETURN PLAY

By using the TAPE RETURN button, you can easily find and review the desired section of the tape after recording or playback.

1 During recording or playback, press the RESET button at the point you later want to return to.
2 When the recording or playback is finished, stop the tape by pressing the ■ (stop) button.
3 Press TAPE RETURN.

The tape will be rewound or (had it been rewound already) advanced close to the point where the counter reads "0H00M00S".
Depending on the movement of the tape, the lamp on either the ◄◄ or ►► button will light up.

If you desire to have the tape play back automatically from the "0H00M00S" point
Press the ► (play) button after pressing the TAPE RETURN button.

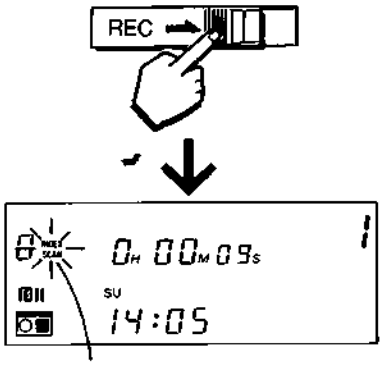


INDEX FUNCTION

Easy location (and playback) of the desired program can be done with the index function of this VCR. Programs will be located by their index signals recorded on the tape.
The length of the index signal recorded with this VCR varies according to the setting of the REC MODE selector:

I : approx. 4 seconds
II : approx. 8 seconds
III : approx. 12 seconds

An index signal is automatically recorded on the tape when the REC switch is slid to the right or when timer recording starts.

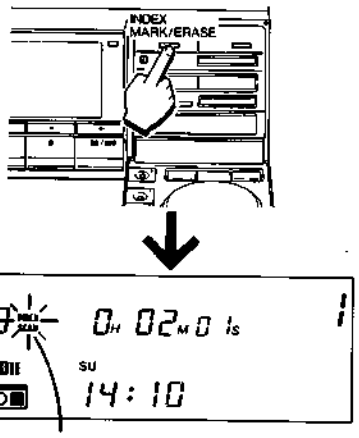


"INDEX" blinks while the index signal is being recorded.

Notes
- Index signals will not be recorded on the tape when the recording is started by releasing the recording pause mode.
- The index function operates also with index signals recorded on other VCRs with an index function, such as the Sony SL-2700/2700B or SL-2500.

Index signals can be recorded at any desired point on the tape during recording or playback.

At the point where an index signal is to be recorded, press the INDEX MARK/ERASE key inside the JOG dial door.



"INDEX" blinks while the index signal is being recorded.

Notes

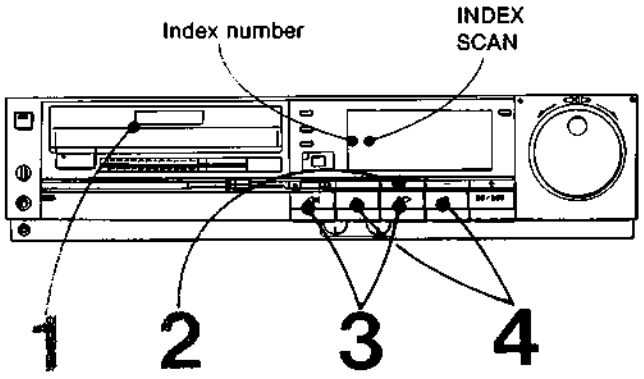
- During playback, the sound recorded on the conventional audio track will be muted while the index signal is being recorded, but the recording will not be affected.
- Do not attempt to insert an index signal immediately before a point on the tape where the recording tape speed (SP or EP) changes. In such a case, the index signal may not be registered.
- Index signals can be recorded on cassette tapes without the safety tab (including commercially available pre-recorded video tapes).

HOW TO ACTUATE THE INDEX FUNCTION

—There are two ways.

Index scan

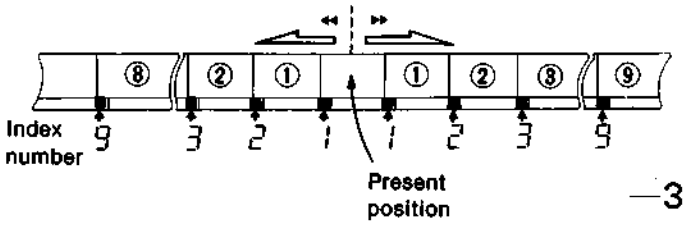
This function allows you to play back the beginning of each program on the tape.

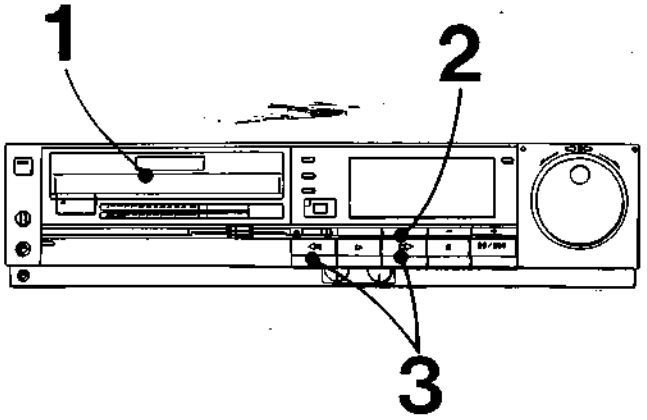


1 Insert a cassette that has index signals recorded.
2 Press the INDEX button once. The "INDEX" and "SCAN" indications will flash alternately.
3 When scanning the previous programs, press the ◀◀ (rewind) button. When scanning the programs ahead, press the ▶▶ (fast forward) button. The "INDEX" and "SCAN" indications will light steadily and the tape will be rewound or advanced rapidly to the next index signal recorded.
Whenever an index signal is detected, the tape will be played back for approx. 10 seconds, and then rewound or advanced rapidly again to the next index signal.
4 At the desired program, press the ▶ (play) button. Playback of that program will begin.

Index search

You can have the desired program located and then played back automatically by designating the number of its index signal.
Up to the ninth index signal away from the present position on the tape can be located.





1 Insert a cassette that has index signals recorded.
2 Press the INDEX button several times until the number of the desired program is displayed.
For instance, to locate the second program ahead, two index signals will have to be detected, so press the button until "2" is displayed. On the other hand, to locate the second program behind, three signals will have to be detected, so press the button until "3" is displayed.
3 When locating a previous program on the tape, press the ◀◀ (rewind) button. When locating a program ahead, press the ▶▶ (fast forward) button.

The tape will be rewound or advanced rapidly. Every time an index signal is detected, the displayed number will decrease. When the number reaches 0 , playback of your desired program will start.

Notes

- The index function can be activated during playback, as well as from the stop mode.
- While the index signals are being scanned or searched for, there will be no picture or sound.
- If the tape is rewound to the beginning during index scan, playback will begin automatically.

When the desired program cannot be played back with the index function, check the following:

- Is there a program of less than one minute? Such a program will not be counted.
- The nearest index signal may not have been counted. If the point where you pressed the ◀◀ or ▶▶ button is fairly close (within one minute of the normal tape-run) to the nearest index signal, the nearest index signal will not be counted. In such a case, designate one number less than the actual number.
- Is there a space of more than 2 minutes between each index signal? If there is more than one index signal recorded within a space of two minutes of the normal tape-run, the mechanism may not function properly.

TO ERASE INDEX SIGNALS

Note
Index signals that were recorded by sliding the REC switch to the right from an unrecorded portion of the tape cannot be erased.

Scan-erasing —erasing all the index signals

1 Stop the tape with the ■ (stop) button.
2 Press the INDEX button. The "INDEX" and "SCAN" indications will blink alternately.
3 Press the INDEX MARK/ERASE key.
"SCAN" stops blinking.
4 To scan-erase the previous index signals on the tape, press the ◄◄ (rewind) button. To scan-erase index signals ahead, press the ►► (fast forward) button.
The tape will be rewound or advanced rapidly to the nearest index signal.
At each index signal found, the tape will be played back for approx. 10 seconds during which index signals will be erased.
During the erasure, the sound recorded on the conventional audio track will be muted but the recording will not be affected.

To stop the scan erasing, press the ■ (stop) button.

Search erasing —designating the index signal to be erased

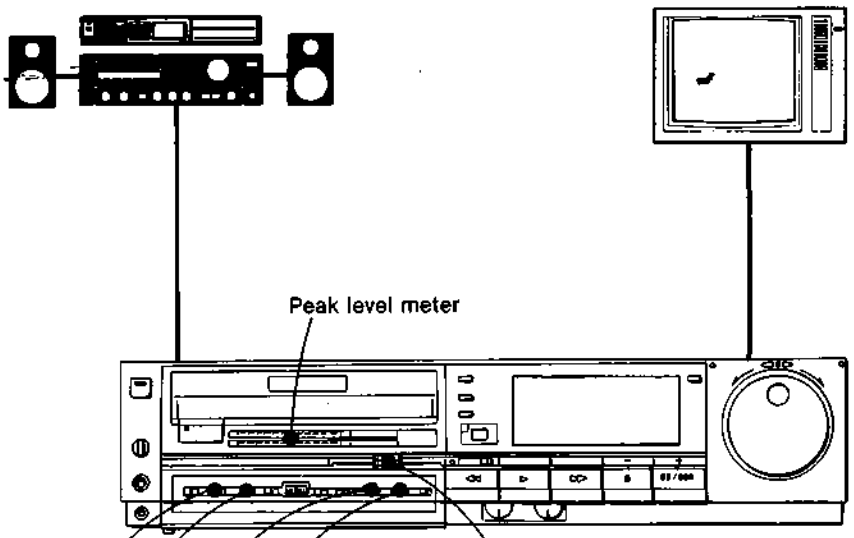
1 Stop the tape with the ■ (stop) button.
2 Count the number of the index signals from the present position of the tape to the signal you want to erase and set the number (on the left of the time counter) with the INDEX button.
3 Press the INDEX MARK/ERASE key. The "INDEX" indication will flash.
4 To search and erase a previous index signal, press the ◄◄ button. To search and erase an index signal ahead, press the ►► button.
The designated index signal will be searched for and when detected, playback will begin and the signal will be erased at the same time.
Every time an index signal is detected, the displayed number will decrease until it reaches 1, which indicates that the designated index signal has been found. At this point a slight automatic adjustment of the tape position will be made and then playback/erasing will begin.
When the erasing of the index signal ends, the displayed number will become 0.

ADVANCED OPERATIONS

1-12. BETA HI-FI AUDIO RECORDING

RECORDING FROM YOUR AUDIO SYSTEM

To connect the VCR to your audio system, see page 15.
Set the switches as shown below.
To start recording, insert a cassette and slide the REC switch to the right.



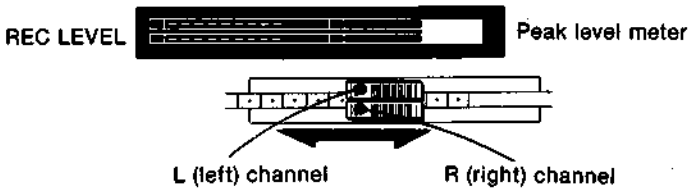
Manually adjust the recording level. Set REC LEVEL so that the first red element lights up only at the highest signal level.

AUDIO MONITOR → BETA HI-FI

MPX/PCM * → OFF

REC MODE
Ⅱ mode is recommended for audio recording.

INPUT SELECT → LINE/PCM

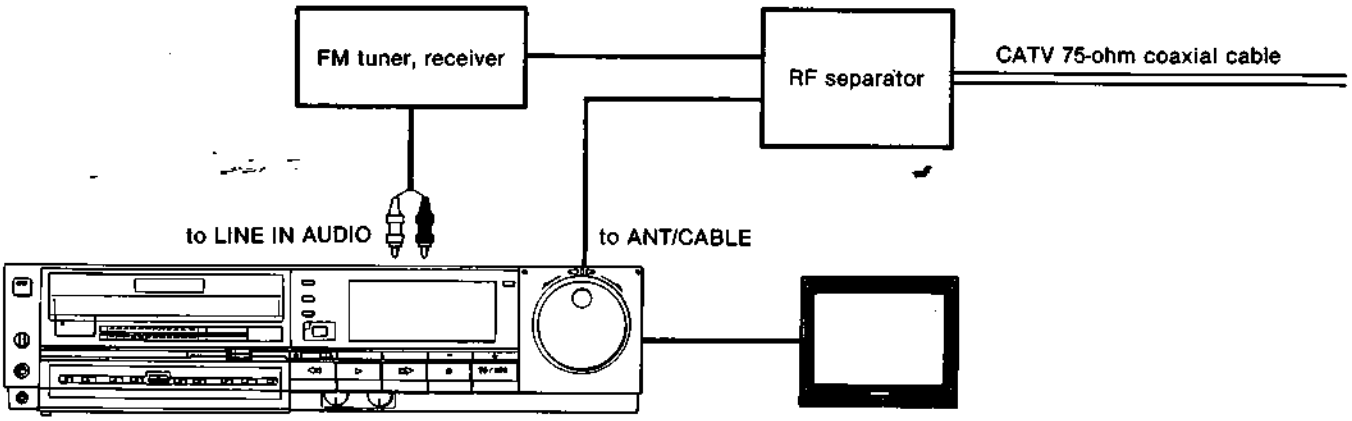


After the recording is finished, slide the switch to the minimum position to prevent the speakers from being damaged by the noise when the playback is stopped.

*When recording from an FM tuner without an MPX filter, set the MPX/PCM switch to ON.

FM SIMULCAST RECORDING

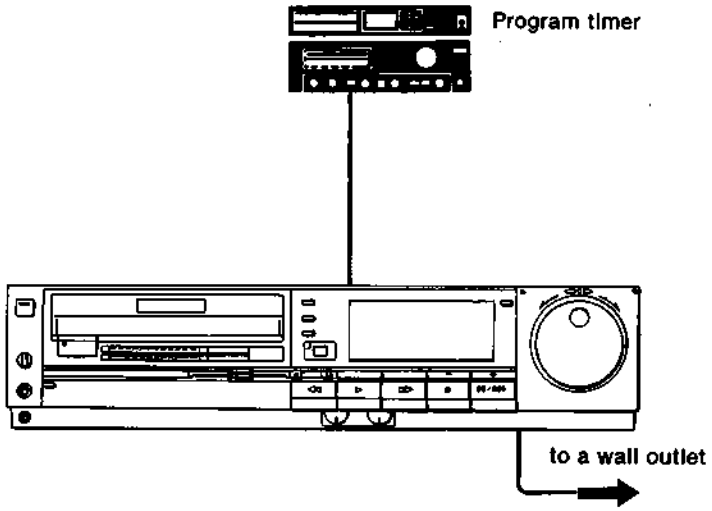
By connecting an FM tuner to the LINE IN AUDIO jacks in addition to the CATV cable connection, you can record a CATV program with stereo sound, such as MTV (music TV), whose audio signals are divided into the FM tuner from the cable. For FM simulcast recording, set the INPUT SELECT switch to LINE AUDIO. The sound from the FM tuner is recorded on the video track (Beta hi-fi recording) together with the picture, while the normal TV sound is recorded on the conventional audio track.



Note
If there has been a switching of the broadcasting source during FM simulcast recording, the sound may be distorted when that part of tape is played back.

TIMER-ACTIVATED FM RECORDING

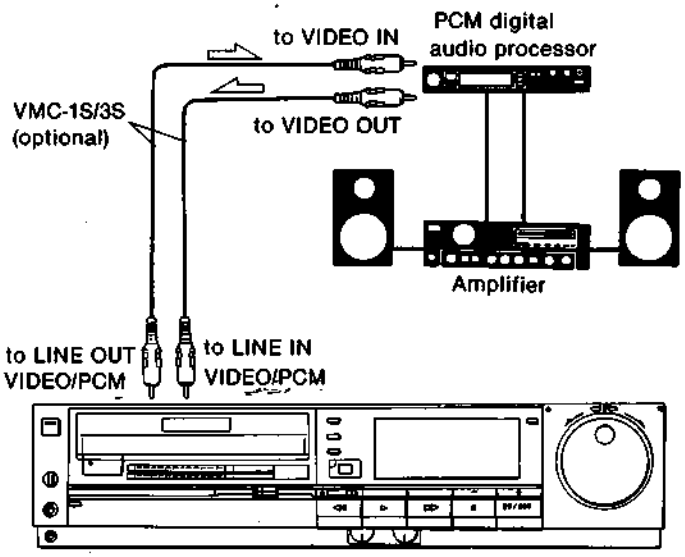
Use an optional program timer to turn the audio system on and off.



The setting of the controls is the same as in "RECORDING FROM YOUR AUDIO SYSTEM".
Set the VCR's timer and the program timer to the same turn-on and turn-off times. The setting of the VCR's timer is the same as in "TIMER-ACTIVATED RECORDING" on page 26.

1-13. PCM RECORDING AND PLAYBACK

Connect a PCM digital audio processor as shown below.



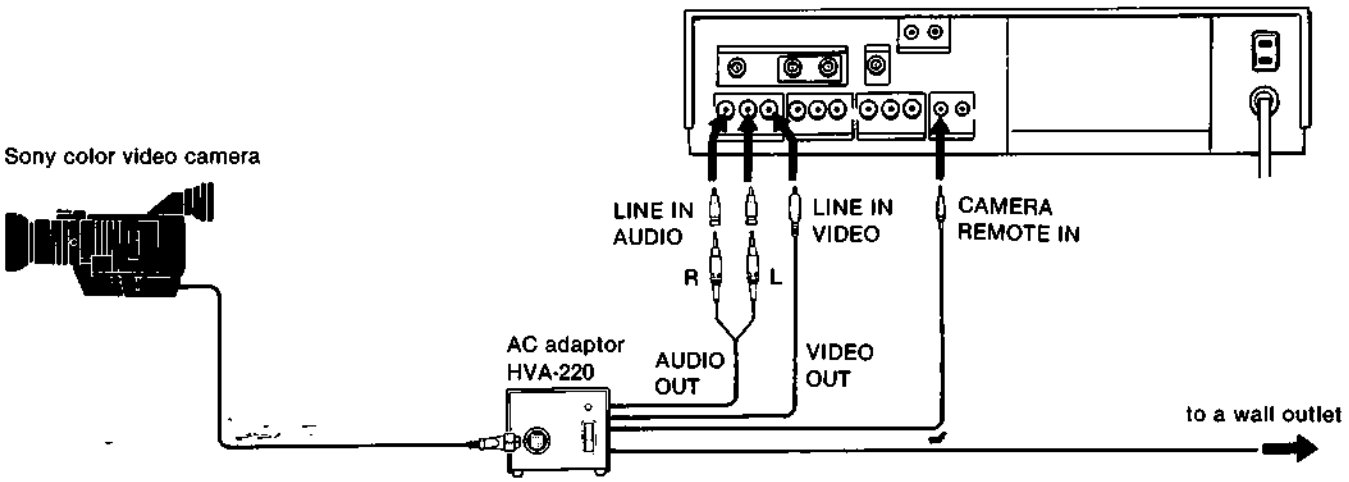
For PCM recording, set the INPUT SELECT switch to LINE/PCM and MPX/PCM switch to PCM.
For optimum performance, use a video cassette with a model number of L-500 or under, (L-250, L-125, etc.), and select the tape speed SP.
After the PCM recording or playback is finished, be sure to set the MPX/PCM switch to OFF. Otherwise, the still picture of regular video tapes may be distorted.

For details, refer to the Instruction manual supplied with the digital audio processor.

1-14. CAMERA RECORDING

CONNECTIONS

- The camera must conform to American TV (EIA) standards.
- The use of a Sony HVA-220 ac adaptor is required.



OPERATION

Set the INPUT SELECT switch to LINE/PCM.
To start recording, slide the REC switch to the right. Once the recording is started, you can stop (pause) and start the recording with the tape run/stop button on your camera as well as with the ⏸ (pause) button on the VCR or on the Remote Commander.
To stop the recording completely, press the ■ (stop) button on the VCR or the camera.

FRAME-BY-FRAME SHOOTING

To tape an animated program of your own, follow the steps below.

1 Shoot an object, a doll for example, with your camera for several seconds, then set the VCR in the recording pause mode with the ⏸ button.
2 Move the object a little and slide the REC switch of the VCR to the right or press the record switch of the Remote Commander.
A very short recording of approximately seven frames will be made and then the VCR will automatically go into the pause mode again.

Repeat Step 2 as many times as you like.

When such recordings are played back continuously, the object will seem as if it is moving.

Notes
- This function can also be used when recording from the TV.
- The picture may be a little distorted when the frame-by-frame recordings are played back.
- If the VCR is kept in the pause mode for more than about 8 minutes, the pause mode will be automatically released and the tape will stop.

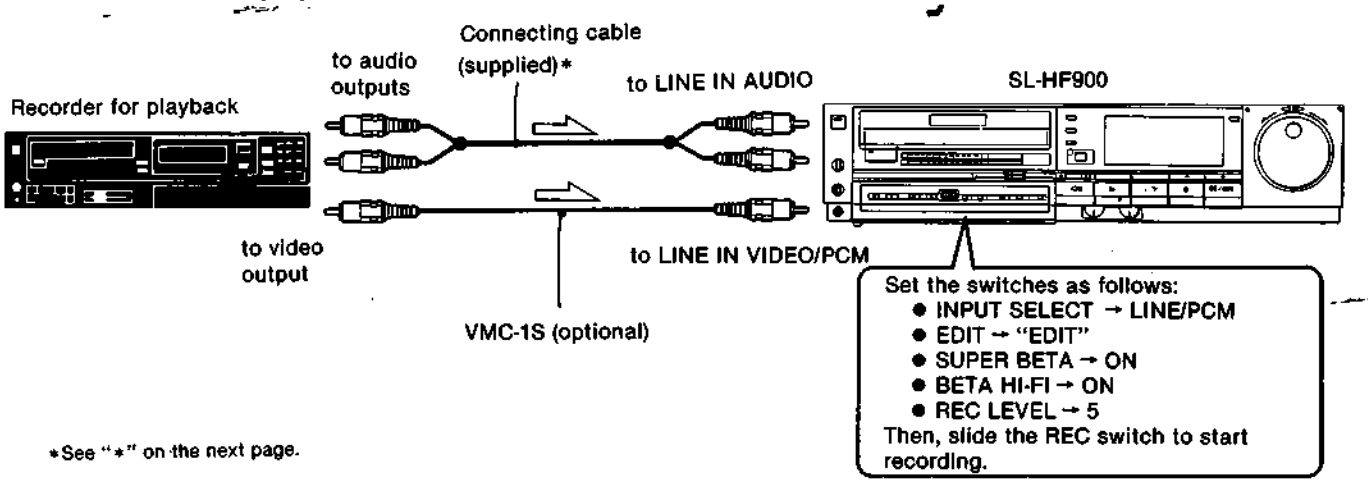
1-15. EDITING TAPES

To edit a tape, you will need two VCRs: one is to play back the original tape and the other is to record.

As illustrated below, by setting the EDIT switch at the "EDIT" position, the quality of the edited picture can be improved. Be sure to return the switch to the left position when you have finished editing.

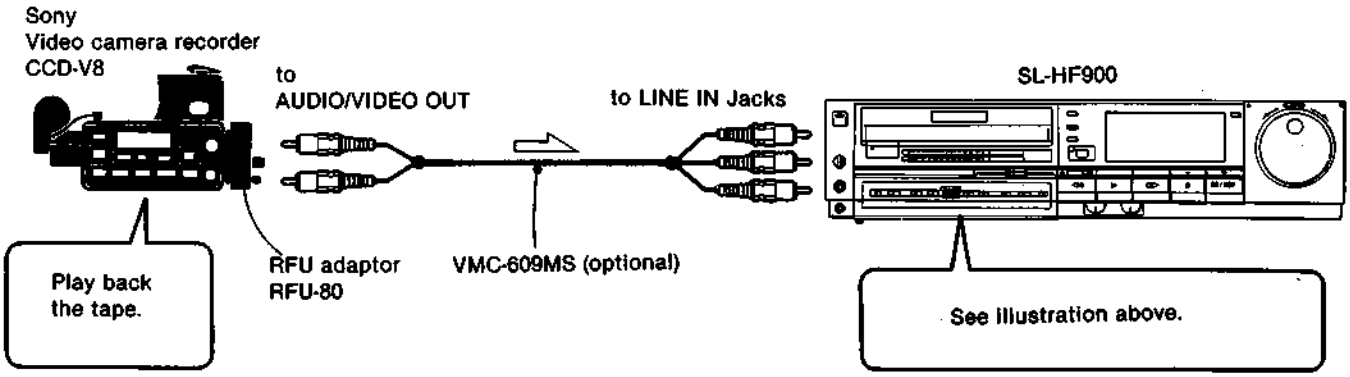
If your other VCR is a Sony remote control VCR, see also pages 44–46 for further systematic operations.

To record the playback of another VCR

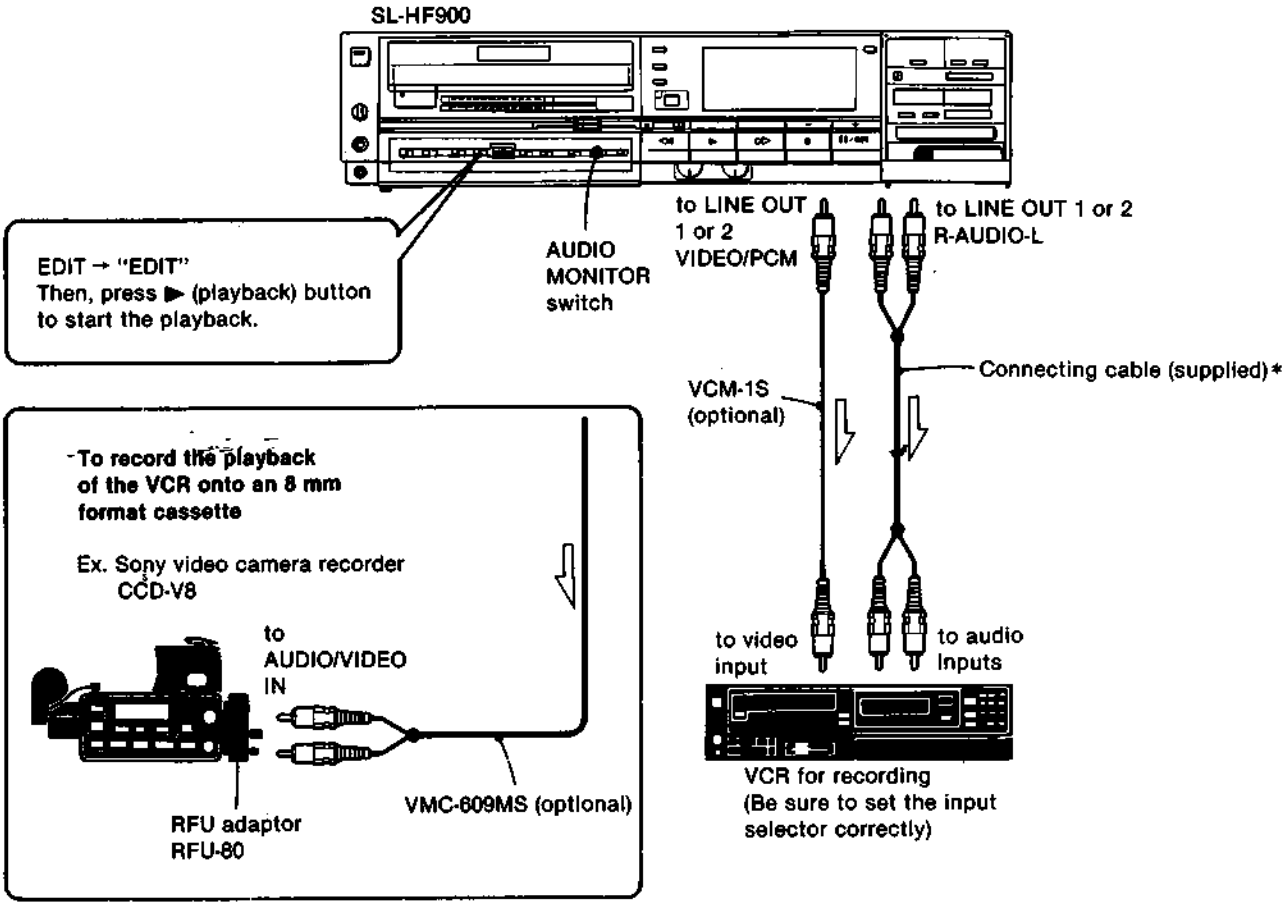


See "" on the next page.

Video camera recorders, such as the Sony CCD-V8, that use 8 mm cassettes can also be connected so that you can edit and transfer what you have filmed on an 8 mm format cassette to a Ⓑ Beta format cassette.



To record the playback of this VCR on another VCR



*If your other VCR is a monaural VCR, use the optional RK-105A (and, if the audio input jack is a phono-type jack, the optional PC-5A plug adaptor).

When recording the playback of this VCR on a VCR that is not of the Beta hi-fi system

If the sound on the Beta hi-fi audio track and on the conventional audio track of the tape were originally recorded separately (such as when the SAP of a TV program is recorded on the conventional audio track and the main sound is recorded on the Beta hi-fi audio track), be sure to select the audio track to be played back with the AUDIO MONITOR selector. The selected (and only the selected) sound will be recorded by the other VCR.
Note that if the switch is set to "MIX", the sound of the two audio tracks will be mixed and with VCRs that are not of the Beta hi-fi system, they will be reproduced mixed as well.

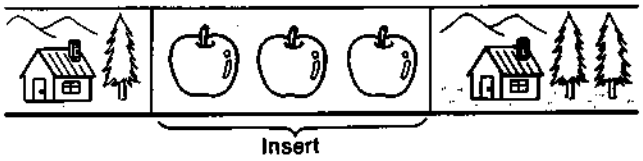
CAUTION

Television programs, films, video tapes and other materials may be copyrighted.
Unauthorized duplication of such material may be contary to the provisions of the copyright laws.

1-16. AUDIO AND VIDEO INSERT

(Continued on next page.)

By using the INSERT buttons inside the JOG dial door, you can easily " insert" (re-record) new sound or picture onto a recorded tape.



Audio insert —Inserting new sound (monaural) without erasing the original picture of the tape
If the original tape was recorded in the Beta hi-fi system, the original sound of the Beta hi-fi audio track will remain also.

Video insert —Inserting new picture and Beta hi-fi sound, without erasing the original sound on the conventional audio track

Audio and video insert —Inserting new sound and picture onto a part of the tape

The recording on the tape after audio, video or audio/video insertion

	Tape
Audio insert	Track Ⓐ newly inserted monaural sound Track Ⓑ Original picture*
Video insert	Track Ⓐ Original sound of the conventional audio track Track Ⓑ Newly inserted picture and or Beta hi-fi sound
Audio/Video insert	Track Ⓐ newly inserted monaural sound Track Ⓑ Newly inserted picture and Beta hi-fi sound

* "and Beta hi-fi sound," if the tape was originally recorded in the Beta hi-fi system.

When playing back the tape (or also while the insertion is being made), you can select the sound on Track Ⓐ or on Track Ⓑ to listen to by setting the AUDIO MONITOR selector to the desired position. (See page 20.)

PREPARATION

Select the desired audio and/or video source for the insertion and connect the source to the VCR
Examples are shown below.

A video camera

See page 36 for the connection.

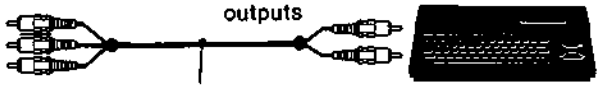
Another VCR

See page 37 for the connection.

A microcomputer

To LINE IN of VCR

To audio and video outputs

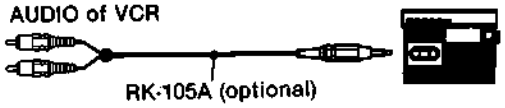


VMC-609MS (optional)

A monaural radio, tape recorder etc.

To (audio output) LINE OUT, Ⓜ, or, MONITOR jack

To LINE IN AUDIO of VCR

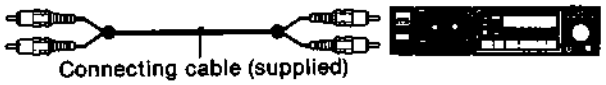


RK-105A (optional)

A stereo tape recorder, amplifier etc.

To LINE IN AUDIO of VCR

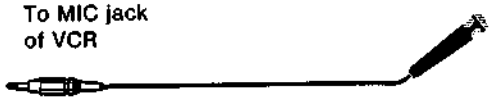
To LINE OUT (outputs)



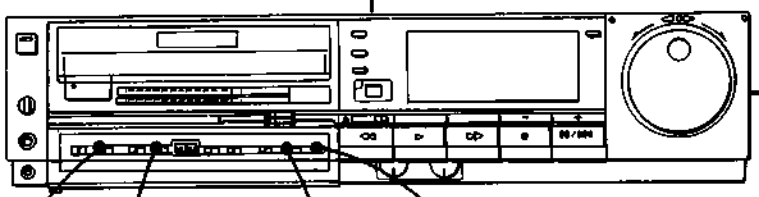
Connecting cable (supplied)

A microphone

To MIC jack of VCR



After the connection is made, set the switches on the VCR as follows:



TV or color monitor

EDIT →"EDIT"

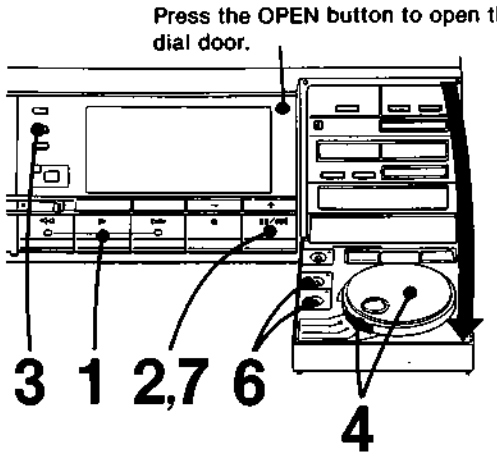
AUDIO MONITOR → "MIX"

BETA HI-FI → ON

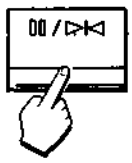
INPUT SELECT

- For inserting TV programs → **TUNER**
- For inserting the picture of TV programs with the sound of the audio source connected to the LINE IN AUDIO jacks → **LINE AUDIO**
- For inserting the sound of the microphone → Any position
- For other insertion → **LINE/PCM**

STEPS



1 Play back the original tape that you like to record on.
2 At the point where you want to stop the insertion to be made, press the ❚❚ (pause) button.




(If necessary, turn the JOG dial or the SHUTTLE ring for deciding on the point more accurately.)

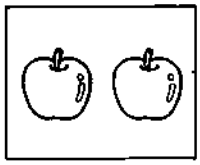
3 Press RESET button.
The time counter will be reset to "0H00M00S".
4 Turn the JOG dial or the SHUTTLE ring counterclockwise or press the ◀◀ (rewind) button and at the point where you desire to start the insertion, release the dial, ring or the button.


5 Turn on the audio and/or video source that you have connected.
6 For "Audio insert", press AUDIO INSERT button.
For "Video insert", press VIDEO INSERT button.
For "Audio and Video insert", press VIDEO INSERT button and then the AUDIO INSERT button.

When these buttons are pressed, you will be able to monitor the sound and/or picture of the connected source.

7 Press the ❚❚ (pause) button.
The video and/or audio insertion will start.
Had the original tape been recorded in the Beta hi-fi system, and you are inserting new sound onto the tape, you will be able to hear both the original audio recordings and the new sound being inserted.

At the point where you have pressed the RESET button in step 3, the recording will stop.



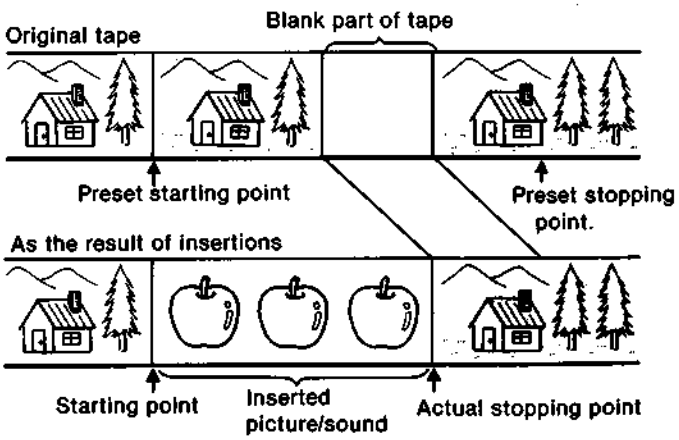
The picture of the connected video source will still be displayed even after the insertion is stopped.

Audio and/or video insertion can be made simply by stopping the playback with the ❚❚ (pause) button and then going through steps 6 and 7, however , remember that the recording will stop at the point where the counter reads "0H00M00S".

To stop the insertion that has started,
press the ■ (stop) button.

Notes

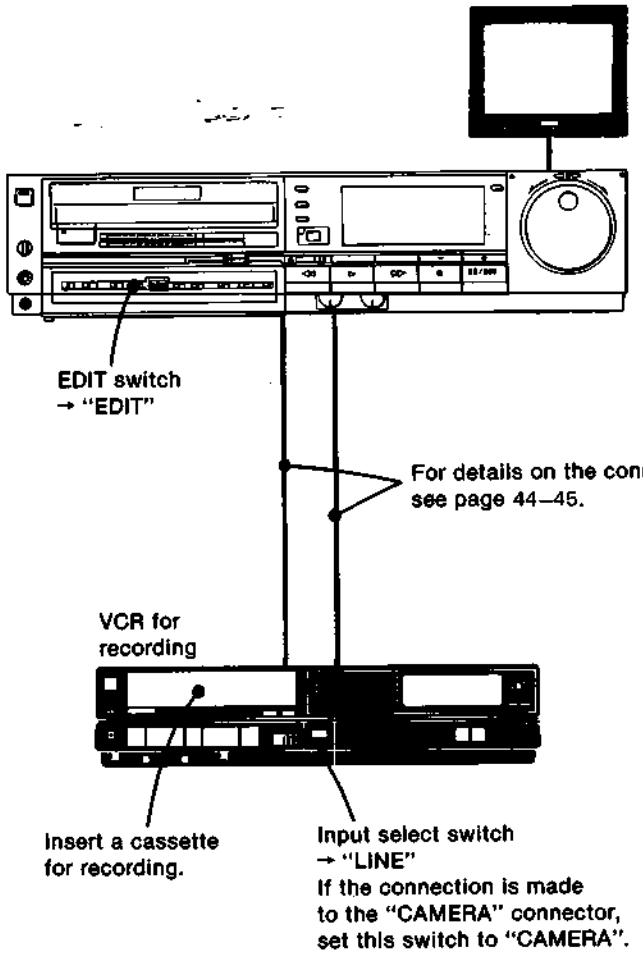
- During the insertion, the ▶ (play), ◀◀ (rewind) and ▶▶ (fast-forward) buttons will not function.
- If a microphone is connected to the MIC jack, the sound from the microphone will always be recorded on the conventional audio track.
- Insertions can be made just as described above without setting the AUDIO MONITOR selector to "MIX", but you will only be able to hear either the new sound being recorded or the originally recorded sound.
- If the safety tab of the tape is removed, the cassette indicator in the display window will blink when the INSERT buttons are pressed and insertion will not be made.
- As the time counter does not work with blank tapes, if there is a part that is unrecorded in between the starting and stopping points, the video and/or audio insertions will stop earlier than the preset stopping point by the amount of the unrecorded part.



1-17. AUTOMATIC ASSEMBLE EDITING

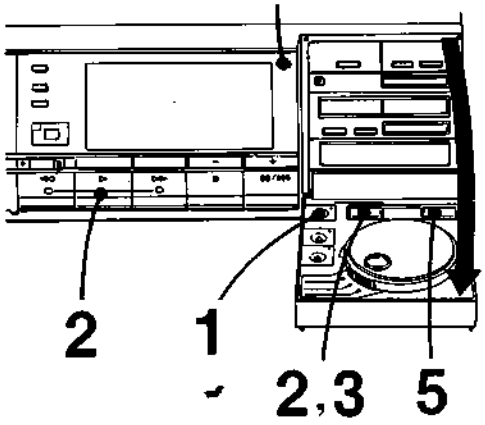
If you have another Sony VCR as designated on page 44, you can preset the VCR so that, with a push of a button, the desired (and only the desired) part of the tape will be played back while the connected VCR records the playback simultaneously.
You can easily "assemble" parts of the recording of one or of many tapes onto a single cassette using this function.

PREPARATION

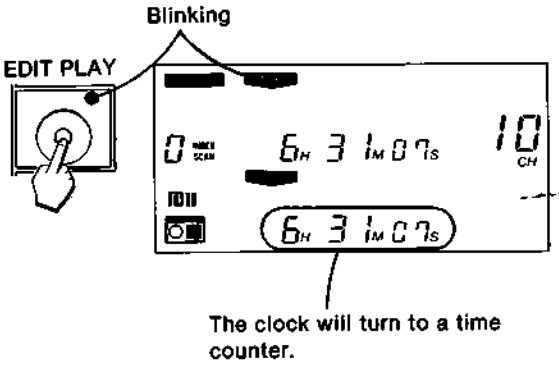


STEPS

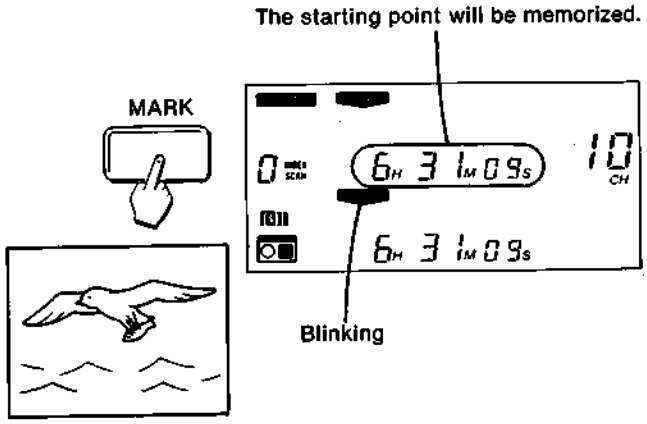
Press the OPEN button to open the JOG dial door.



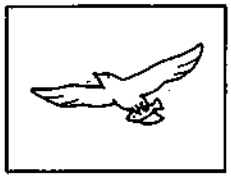
Press EDIT PLAY button

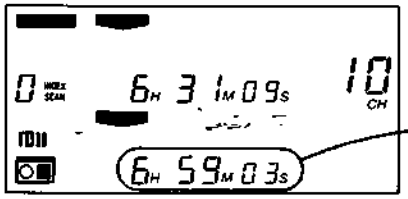


2 Play back the original tape and at the start of the scene to be recorded on the connected VCR, press MARK button.



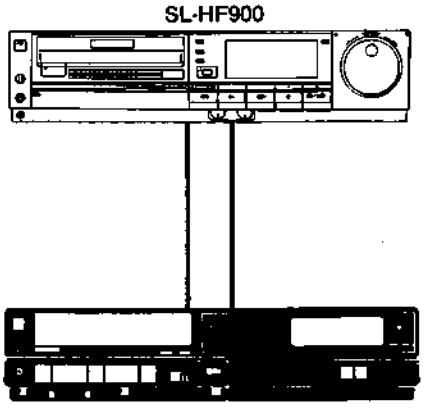
3 Continue the playback and at the end of the scene to be recorded, press MARK button again.
Use the Betascan or Beta SkipScan function for quick searching of the ending point.





The ending point will be memorized.

4 Set the connected VCR to the recording pause mode. (For details, read the Instruction manual of the other VCR.)
5 Press EDIT START button.
The tape on this VCR will be rewound to the starting point you chose in step 2 and playback will begin, and at the same time, the connected VCR will start recording.



Automatic start and stop (pause) of playback

Automatic start and stop (pause) of recording

Connected VCR

At the stopping point you chose in step 3, this VCR will be in the playback pause mode and the connected VCR will be in the recording pause mode.
The lamp on the EDIT PLAY button will blink.

To repeat the same recording again, press the EDIT START button again.
The preset starting and ending points may shift by a small amount if you repeat this several times.

The tape transport buttons, ■, ▶, ◀◀ and ▶▶, can be used as usual after presetting the starting and ending points. When the EDIT START buttton is pressed, the playback and recording will be made as preset.

To preset another scene of the same tape
By "Betascan" or by turning the JOG dial/SHUTTLE ring or simply by releasing the pause mode with the ❚❚ (pause) button, play back the tape and repeat steps 2–5.

To stop the tape during the automatic assemble editing,
Press the ■ (stop) button.

To put the VCR back to the normal recording/playback mode
Press the EDIT PLAY button so that the lamp of the button turns off.
The current time will be displayed again.

To change the preset starting or ending point before pressing the EDIT START button
Press the EDIT PLAY button once so that the lamp of the button turns off, then repeat steps 1–3.

Notes
- The ❚❚ (pause), ▶▶ (fast-forward) and ◀◀ (rewind) buttons will not function while the automatic assemble editing is being carried out.
- The preset starting and ending points will be erased if you turn off the power or eject the cassette.
- You cannot set the ending point at a point on the tape that comes before the starting point.
- With certain other VCRs, the starting and ending points of the recording will be shifted a little behind the preset points.

The starting/ending points can be selected more accurately using the JOG dial or the SHUTTLE ring

Before pressing the MARK button in steps 2 and/or 3, press the ❚❚ (pause) button. Then turn the JOG dial or SHUTTLE ring to playback the desired starting/ending point. The playback pause mode need not be released to press the MARK button or the EDIT START button.

1-18. USING THE SONY CONTROL SYSTEM

- **When two VCRs are connected for editing tapes, isn't there an easy way to operate both recorders?**
- **When more than one remote control video/audio component is used, shouldn't it be possible to operate both with the same Remote Commander or remote sensor?**

Many owners want to incorporate their various audio and video components into a single audio-video entertainment system. To make this wish a reality, Sony audio and video components are equipped with various terminals that make intercomponent control possible.

The SL-HF900 is fully capable of operating as the part of the most advanced control systems. By connecting various components you can discover the exciting possibilities of the AV (Audio/Video) age for yourself.

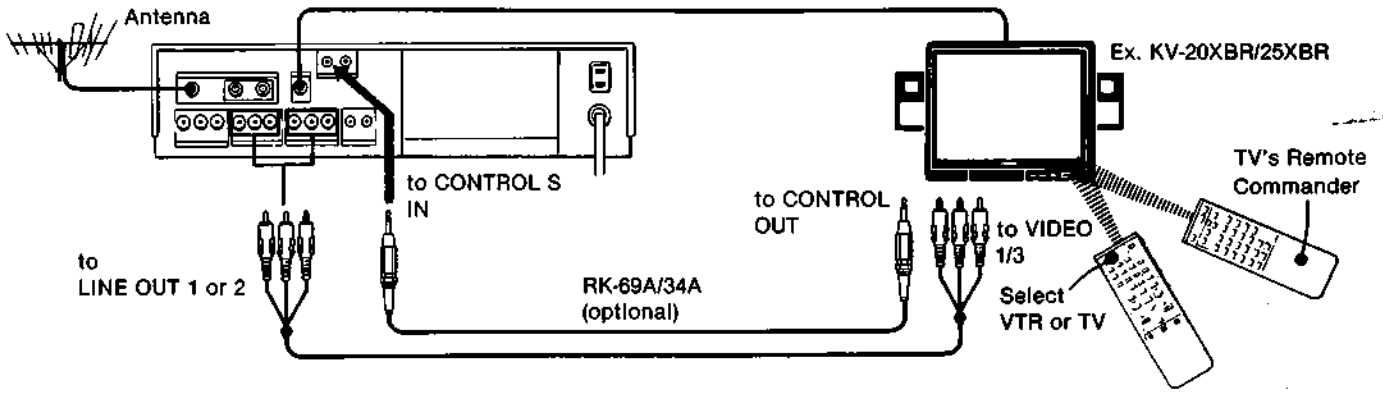
Operating by remote control through a TV set or component TV tuner

If your Sony TV set or component TV tuner is equipped with a CONTROL OUT (outptut) jack, you can operate the SL-HF900 by remote control through the TV or TV tuner. This is especially handy for oeprating the VCR by remote control while watching TV when the two are located apart from each other.

If your TV is a Sony model KV-25DXR

If connected as shown at right, automatic timer playback for the VCR is possible whithin the time limits set on the TV's timer, and the start and stop times for automatic preset recording can be set on the TV.
For details, please refer to the KV-25DXR's instruction manual.

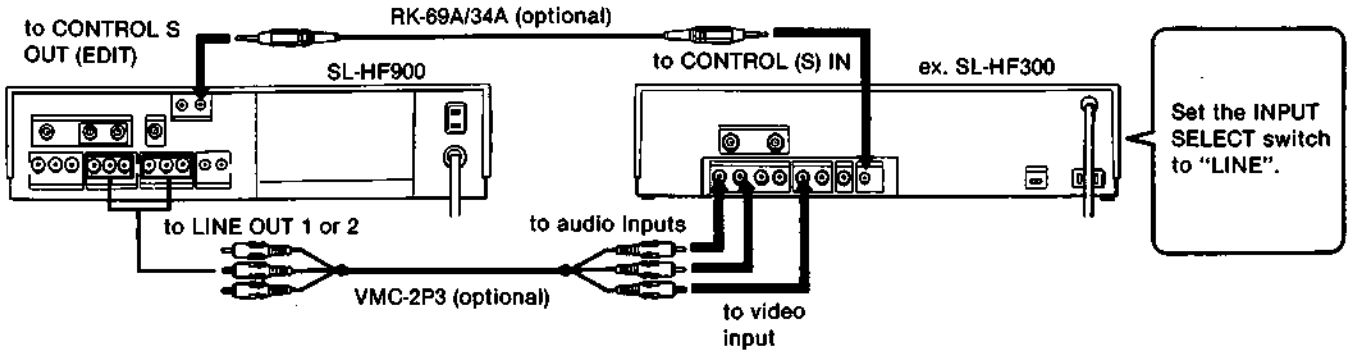
*If a VTX-1000R/1100R component TV tuner is used, connect to the CONTROL jack of the MONITOR OUTPUT.



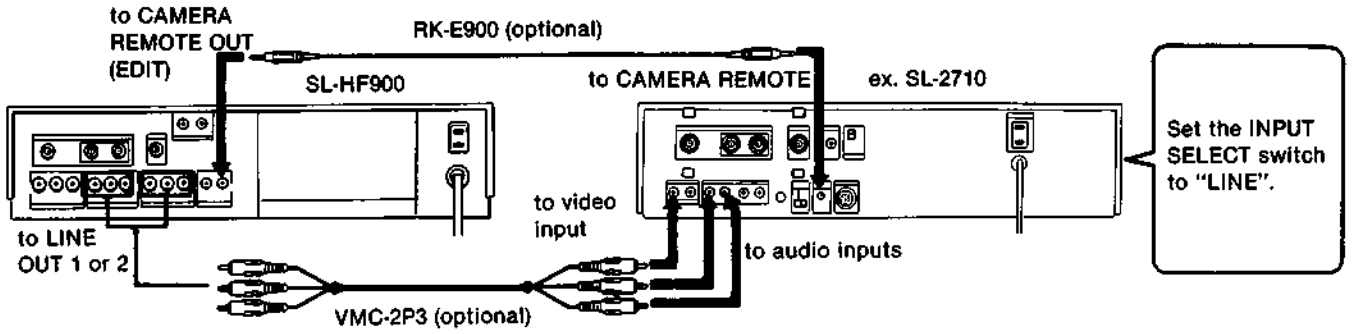
Assemble editing using one more VCR

One of the biggest problems that goes with tape editing using two VCRs is getting the timing right when starting and stopping recording on the recording VCR while the playback VCR is playing. However, connecting the SL-HF900 and another Sony (infrared remote control) VCR as shown in the diagram below, you can avoid this problem. First set the scene you want to record in the SL-HF900's automatic assemble editing function for the start and stop playback on the SL-HF900 and the start and stop of recording on the second VCR at the same time. Connections on the second Sony VCR are made as follows.

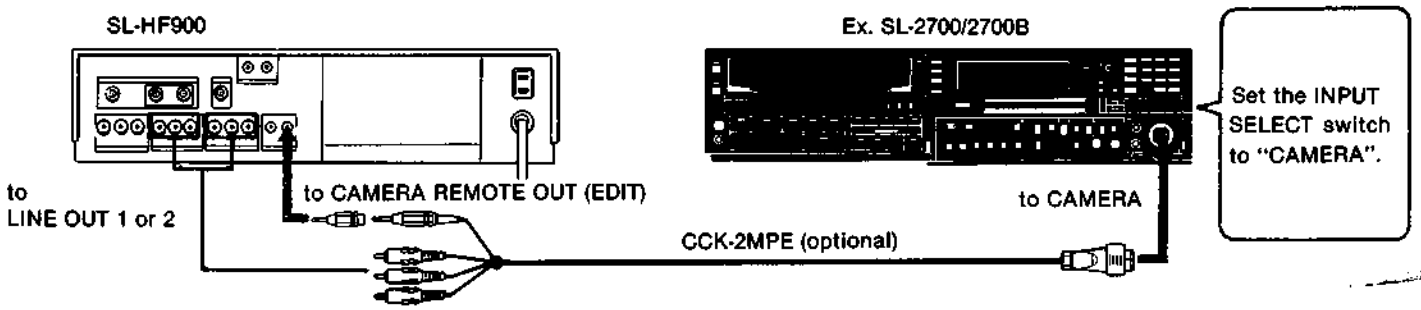
❶ Connection to VCR with CONTROL IN or CONTROL S IN (Input) minijack



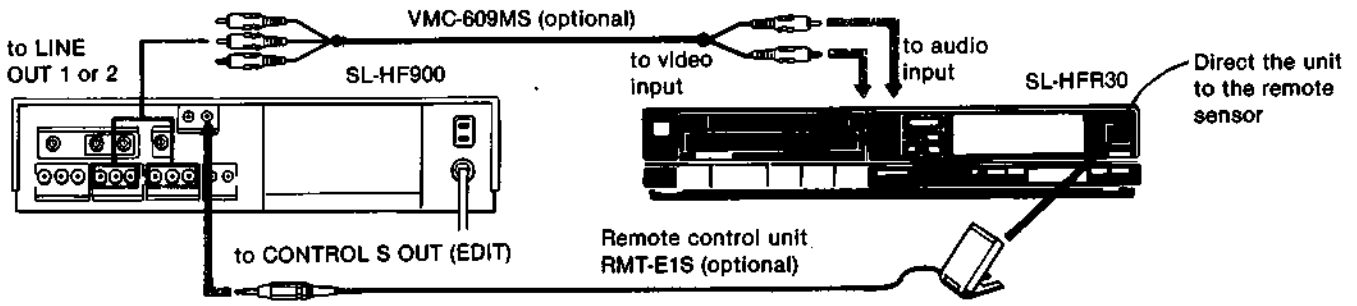
❷ Connection to VCR with CAMERA PAUSE (input) special mini jack



❸ Connection to VCR with CAMERA 14-Pin, K type connector



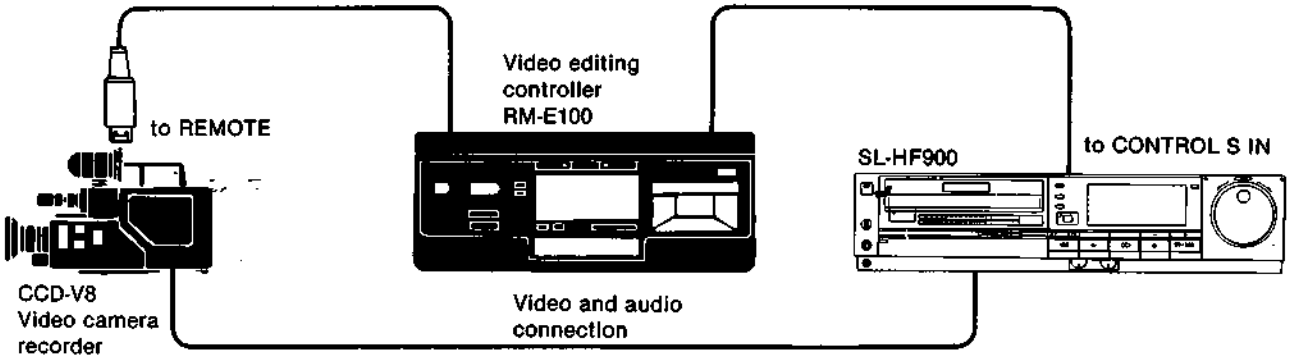
❹ Connection to Sony infrared remote control VCR other than ❶, ❷ or ❸ above



EDITING THE RECORDING ON 8MM FORMAT TAPES ONTO Ⓑ BETA TAPES WITH THE RM-E100 VIDEO EDITING CONTROLLER

If you own an 8 mm video camera recorder (such as the Sony CCD-V8) equipped with a 5-pin REMOTE connector, you can connect the RM-E100 video editing controller between the camera recorder and this VCR for easier and much faster tape editing, i.e., editing 8 mm tapes onto Ⓑ Beta format tapes.

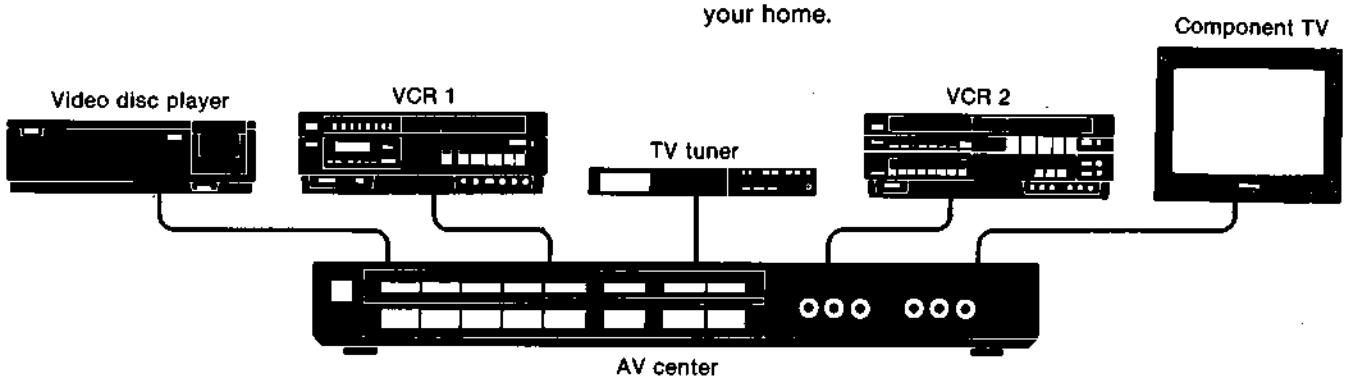
With this controller, you will be able to preset the locations of the scenes you want to record (up to 8) in the controller and with a press of a button, these scenes will be recorded by this VCR automatically in the order preset.
For details, refer to the instruction manual of the RM-E100.



BUILD YOUR OWN AV HOME ENTERTAINMENT SYSTEM!

As the number of AV (audio/video) components grows, so does the enjoyment of using them as part of a home entertainment system. Unfortunately, the complexity of connecting all these components and using them effectively also grows. To solve this problem, you need a home AV center.

With all your AV components connected to a system center, you can be the director of your own home entertainment programming at the flip of a switch. Watch TV, listen to the stereo, have programs recorded, edited, or played for your enjoyment—an AV center serves as the focal point for a whole wide world of entertainment in your home.



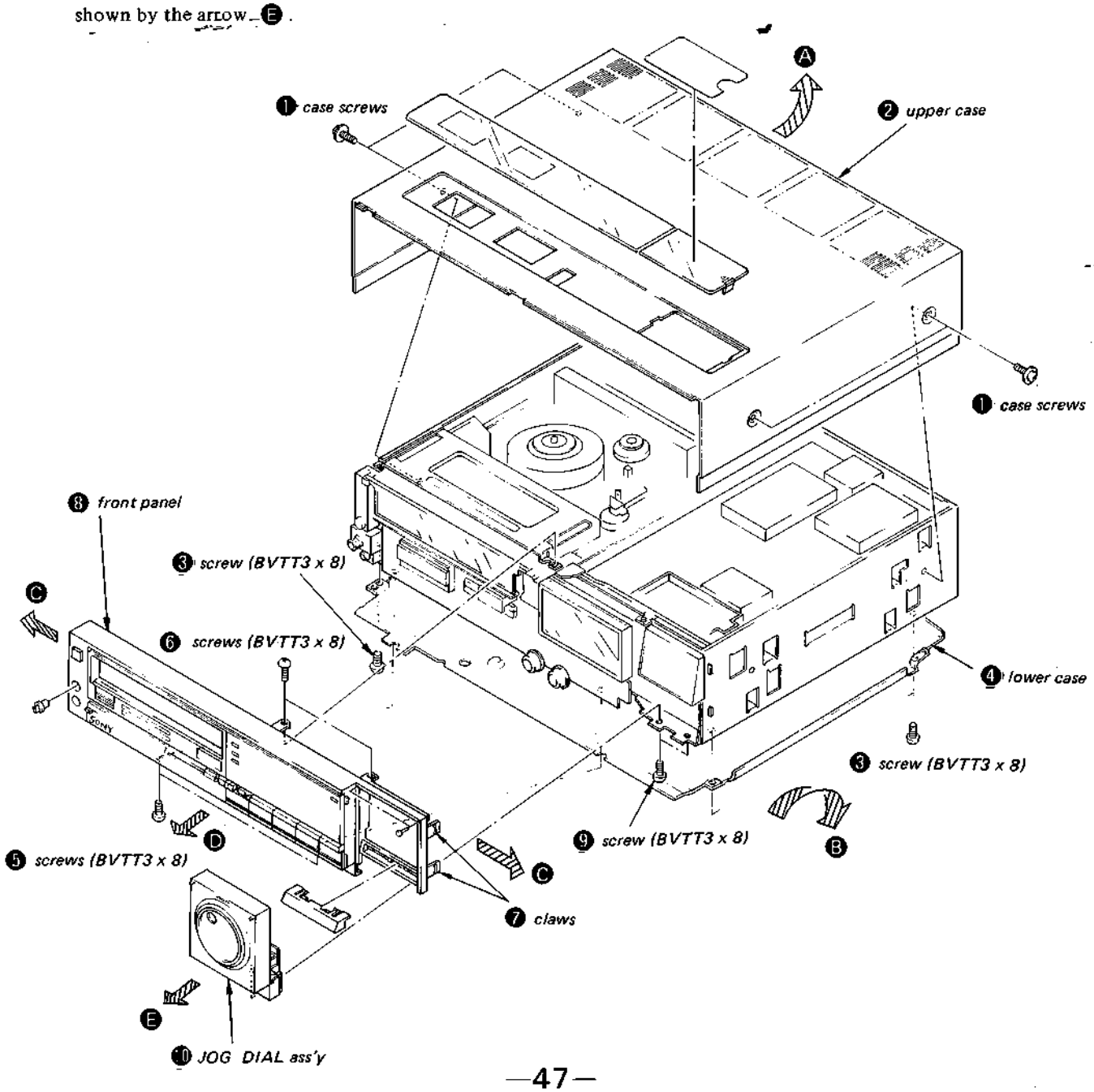
SB-V5W Audio/Video Selector
Equipped with five line inputs and three line outputs, and EDIT buttons for easy tape editing control of two components

AVH-555ES Hi-fi Audio/Video selector (soon to be on sale)
Besides five audio and five video components, a component TV, a graphic equalizer, and a PCM processor can be connected.
Remote controllable.

SECTION 2
DISASSEMBLY

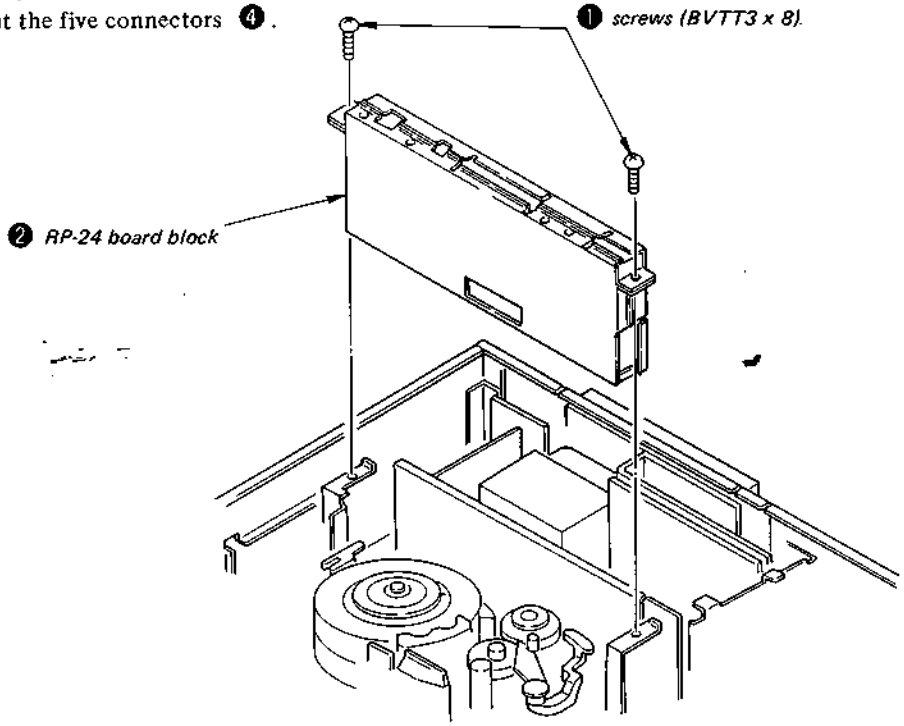
2-1. DISASSEMBLY OF CABINET

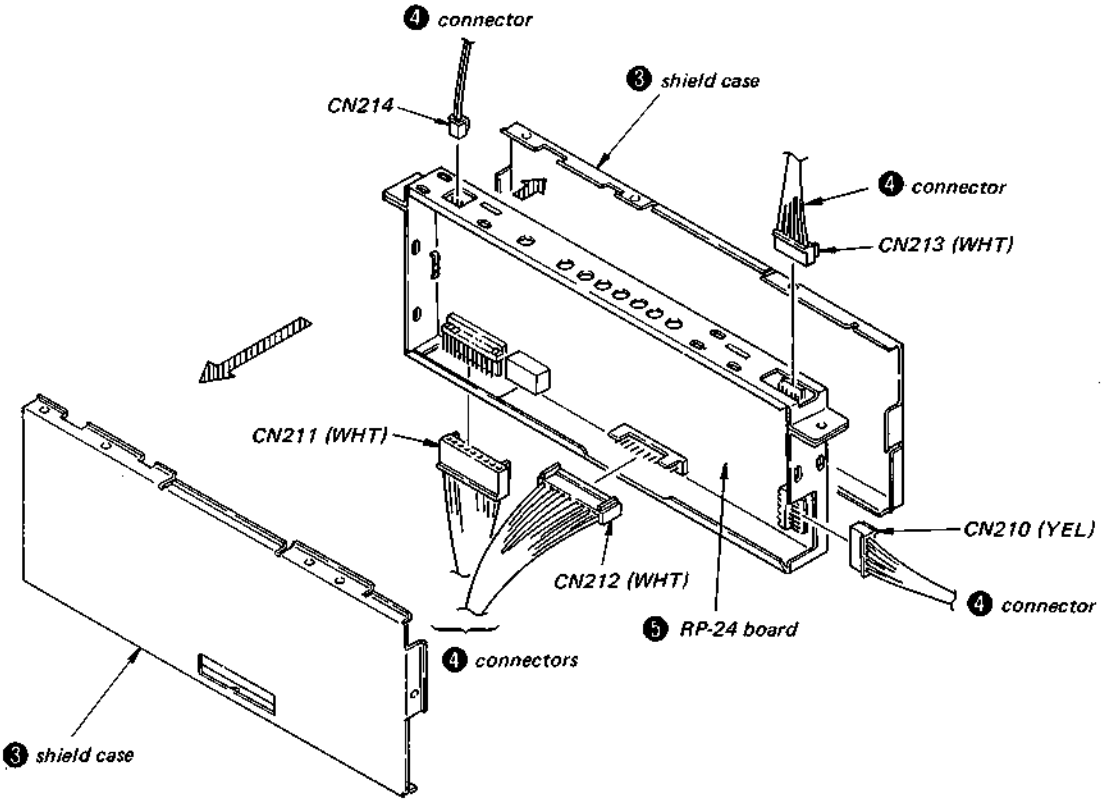
1) Remove the four case screws ❶ .
2) Remove the upper case ❷ in the direction shown by the arrow Ⓐ .
3) Remove the six screws ❸ (BVTT3 x 8), then loosen the two screws ❺ (BVTT3 x 8).
4) Remove the lower case ❹ in the direction shown by the arrow Ⓑ .
5) Remove the four screws ❺ , ❻ .
6) Remove the four right and left claws of the front panel in the direction shown by the arrow Ⓒ , then remove the front panel in the direction shown by the arrow Ⓓ .
7) Remove the two screws ❾ (BVTT3 x 8).
8) Remove the JOG DIAL assembly ❿ in the direction shown by the arrow Ⓔ .



2-2. REMOVAL OF RP-24 BOARD

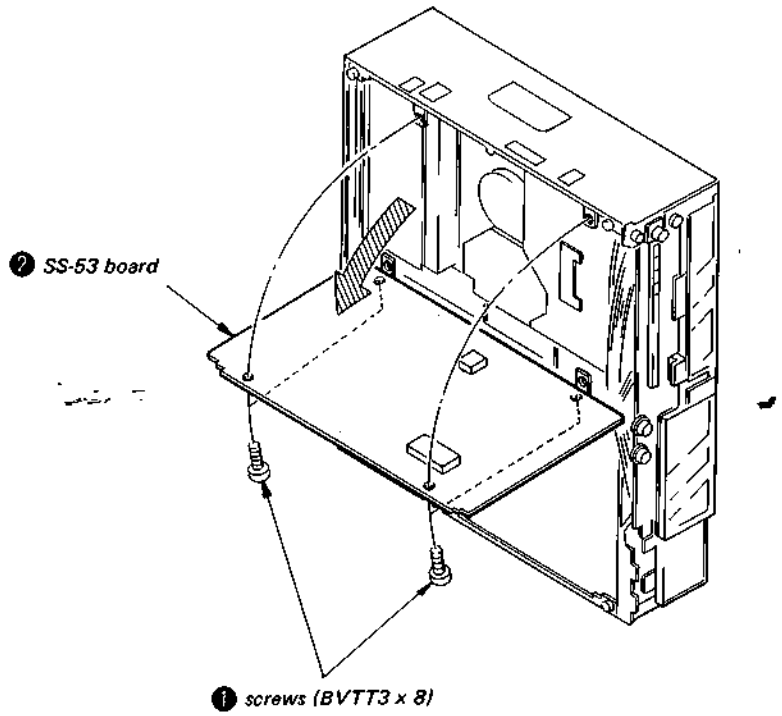
1) Remove the two screws ❶ (BVTT3 x 8).
2) Remove the RP-24 board block.
3) Remove the two shield cases ❸ in the direction shown by the arrow.
4) Pull out the five connectors ❹.





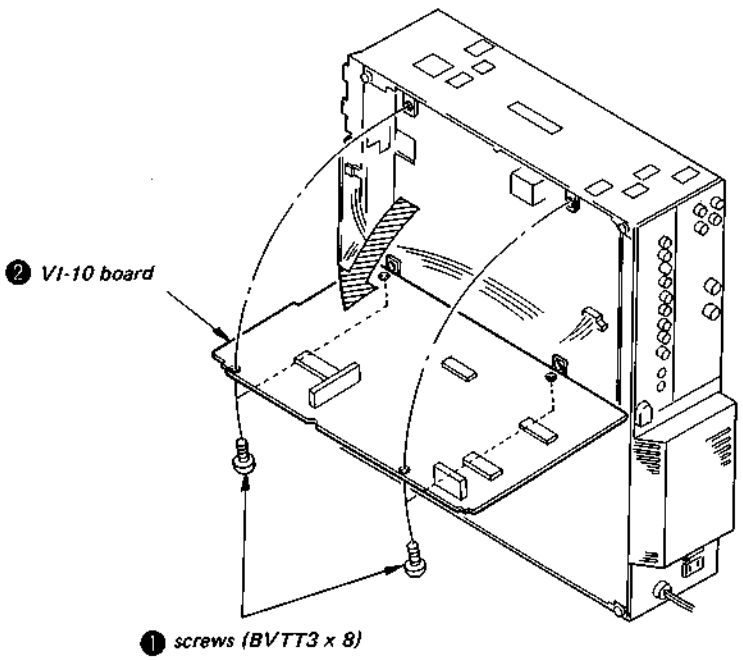
2-3. REMOVAL OF THE SS-53 BOARD

1) Remove the four screws ❶ (BVTT3 x 8).
2) Remove the SS-53 board in the direction shown by the arrow.



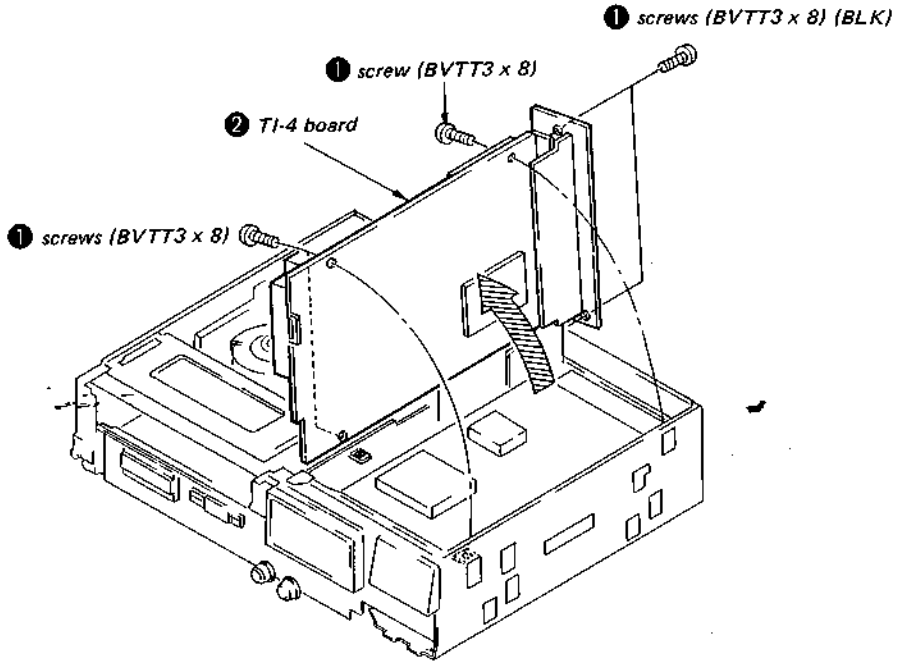
2-4. REMOVAL OF THE VI-10 BOARD

1) Remove the four screws ❶ (BVTT3x8).
2) Remove the VI-10 board in the direction shown by the arrow.



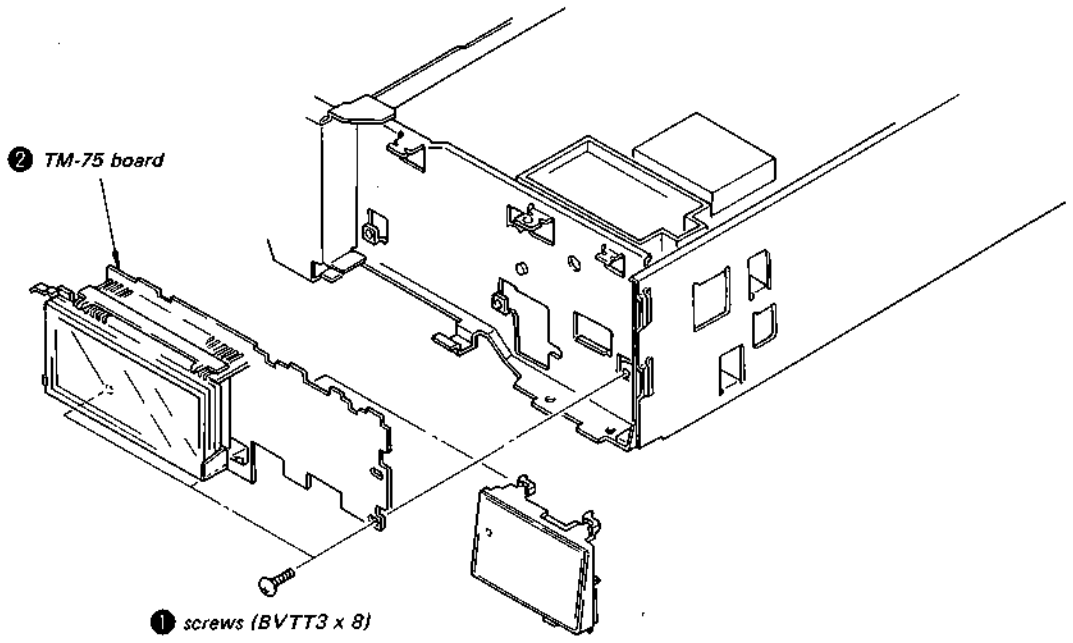
2-5. REMOVAL OF THE TI-4 BOARD

1) Remove the five screws ❶ (BVTT3 x 8).
2) Remove the TI-4 board in the direction shown by the arrow.



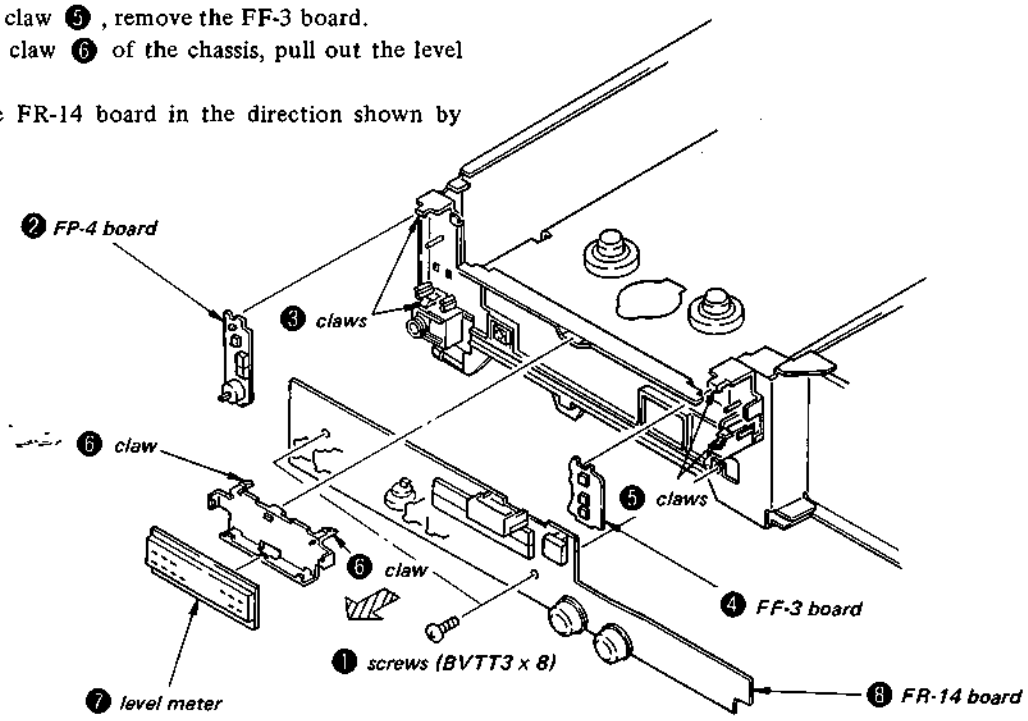
2-6. REMOVAL OF THE TIMER BLOCK

1) Remove the three screws ❶ (BVTT3 x 8).
2) Remove the TM-75 board.



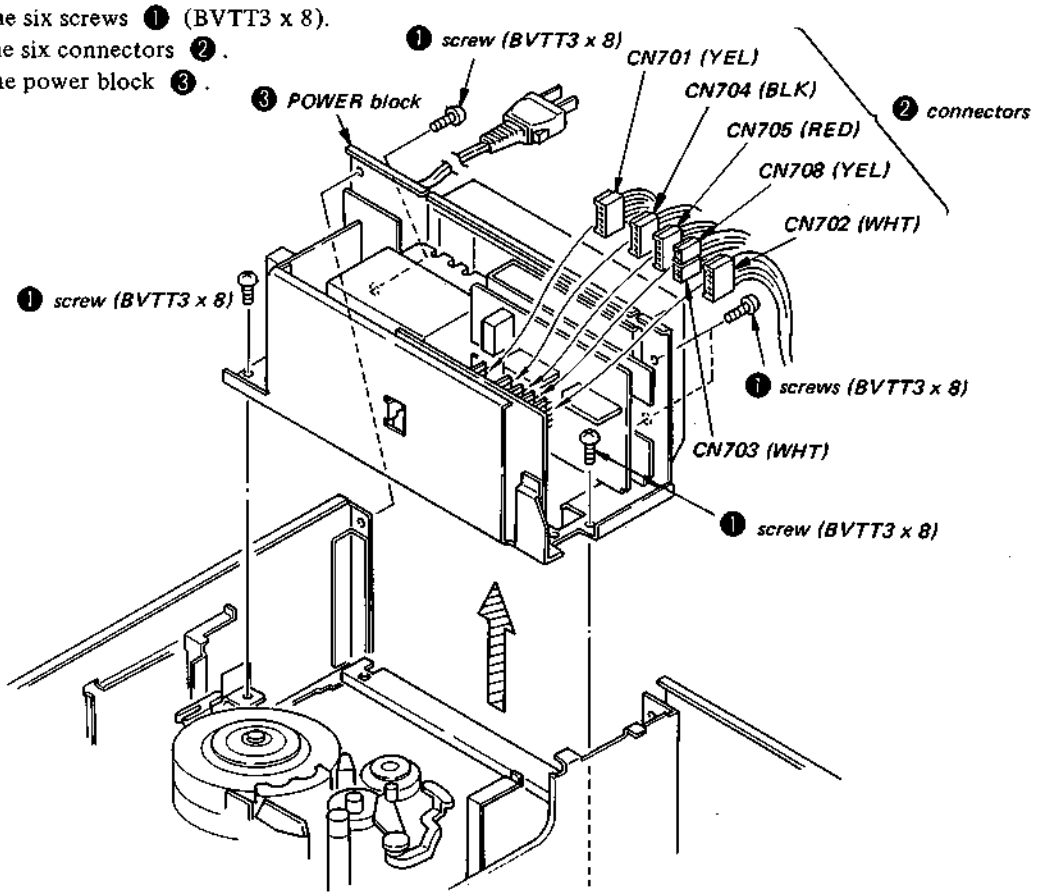
2-7. REMOVAL OF THE FR-14 BOARD

1) Remove the two screws ❶ (BVTT3 x 8).
2) Remove the claw ❸ , remove the FP-4 board.
3) Remove the claw ❺ , remove the FF-3 board.
4) Remove the claw ❻ of the chassis, pull out the level meter ❼ .
5) Remove the FR-14 board in the direction shown by the arrow.



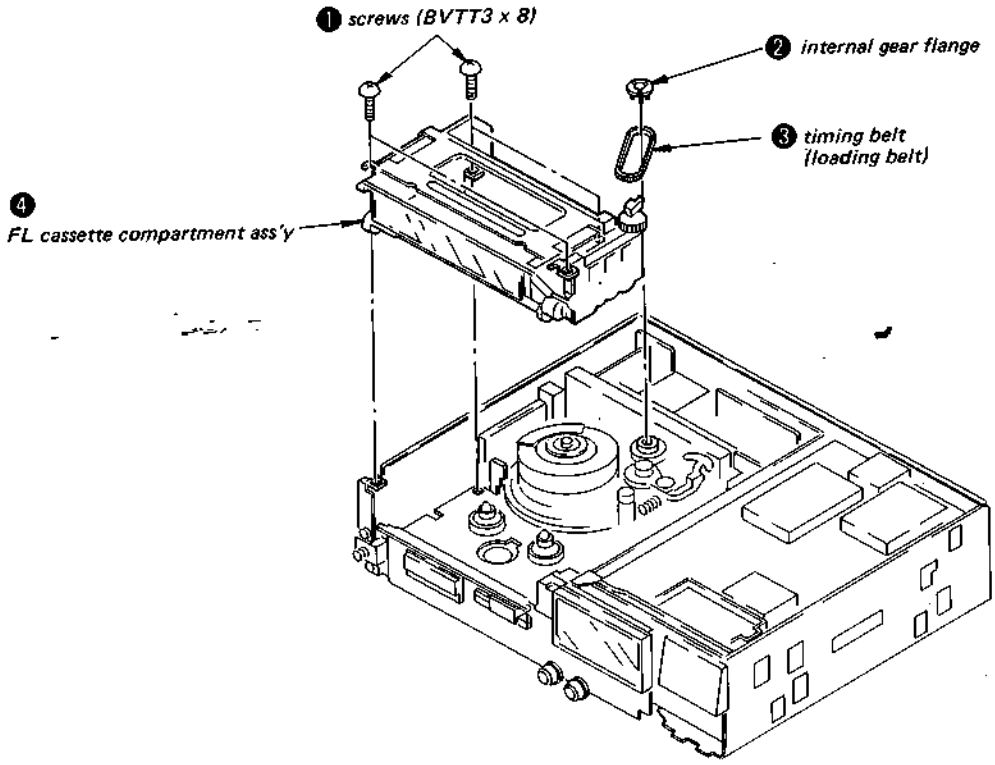
2-8. REMOVAL OF THE POWER BLOCK

1) Remove the six screws ❶ (BVTT3 x 8).
2) Pull out the six connectors ❷ .
3) Remove the power block ❸ .



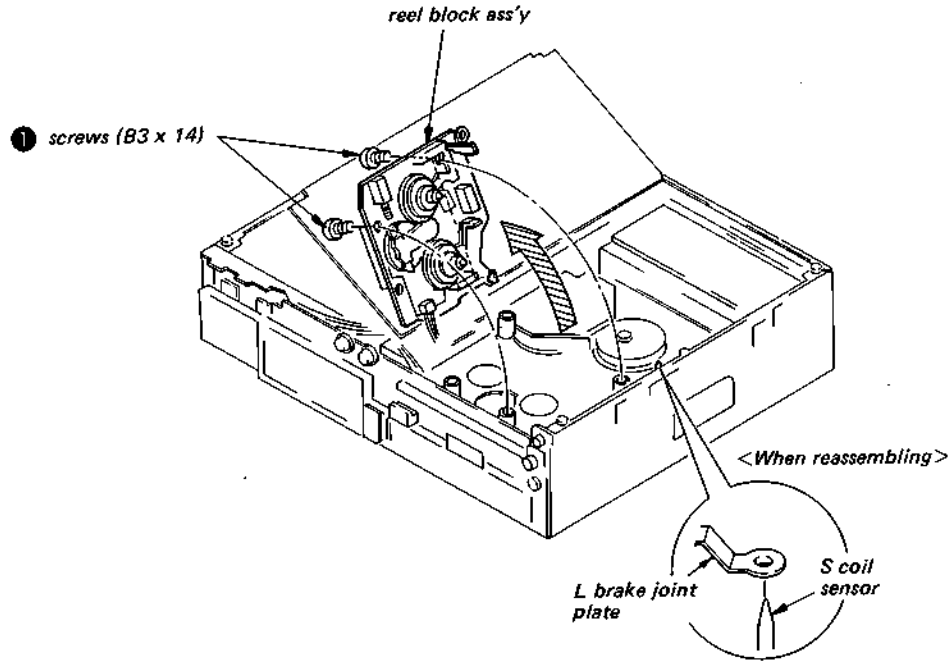
2-9. REMOVAL OF THE FL CASSETTE COMPARTMENT ASSEMBLY

1) Remove the four screws ❶ (BVTT3 x 8).
2) Remove the internal gear flange ❷.
3) Remove the timing belt ❸.
4) Remove the FL cassette compantment assembly ❹.



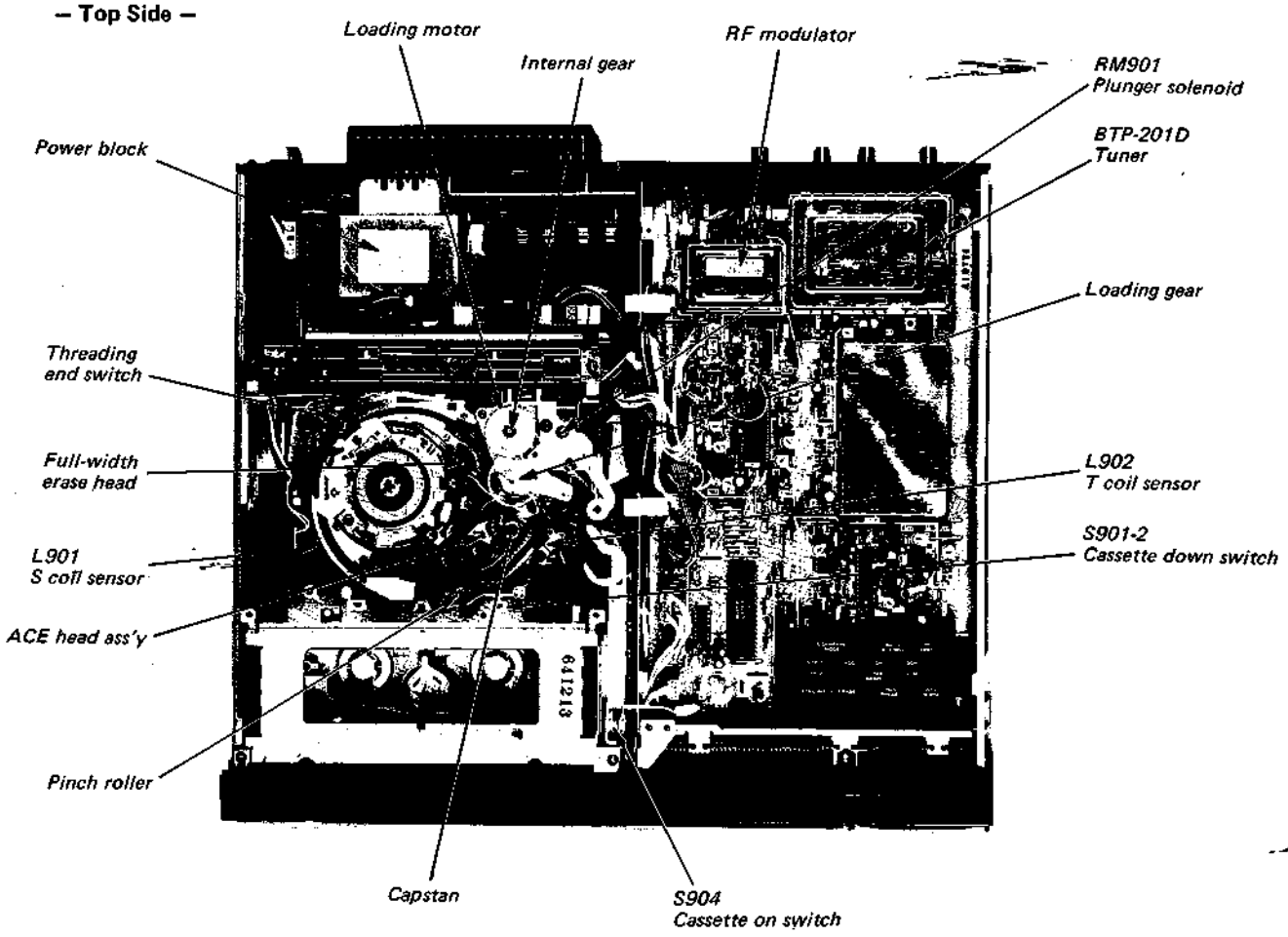
2-10. REMOVAL OF THE REEL BLOCK ASSEMBLY

1) Remove the four screws ❶ (B3 x 14).
2) Remove the reel block assembly ❷ in the direction indicated by the arrow.

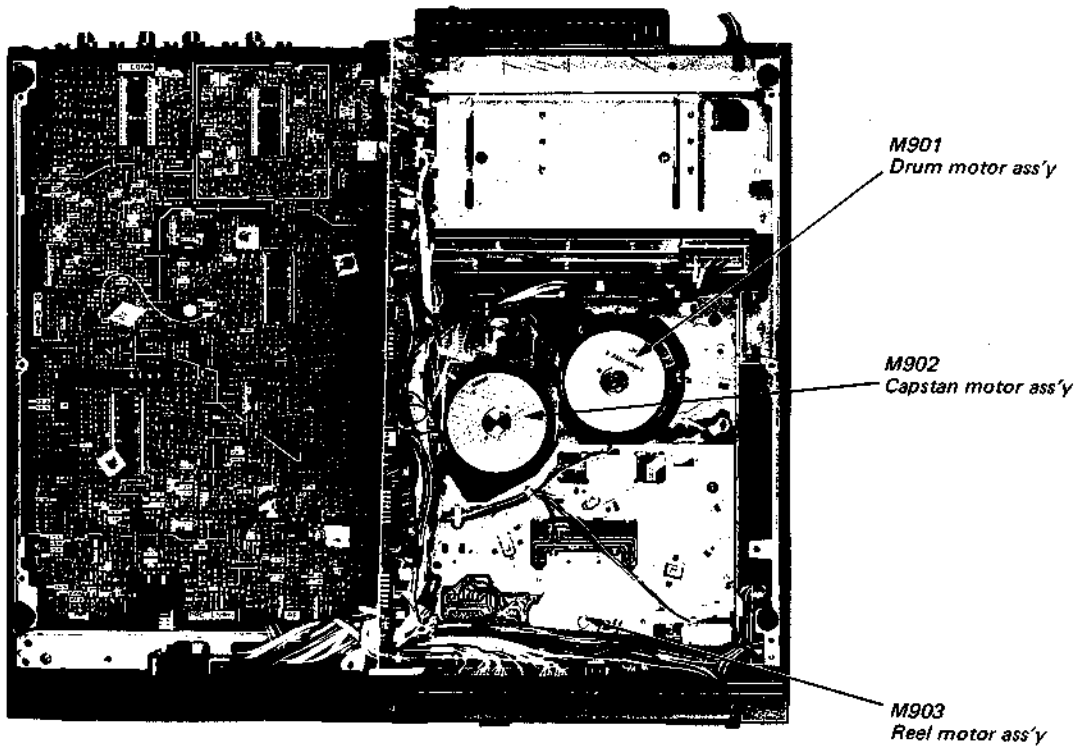


2-11. INTERNAL VIEWS

– Top Side –

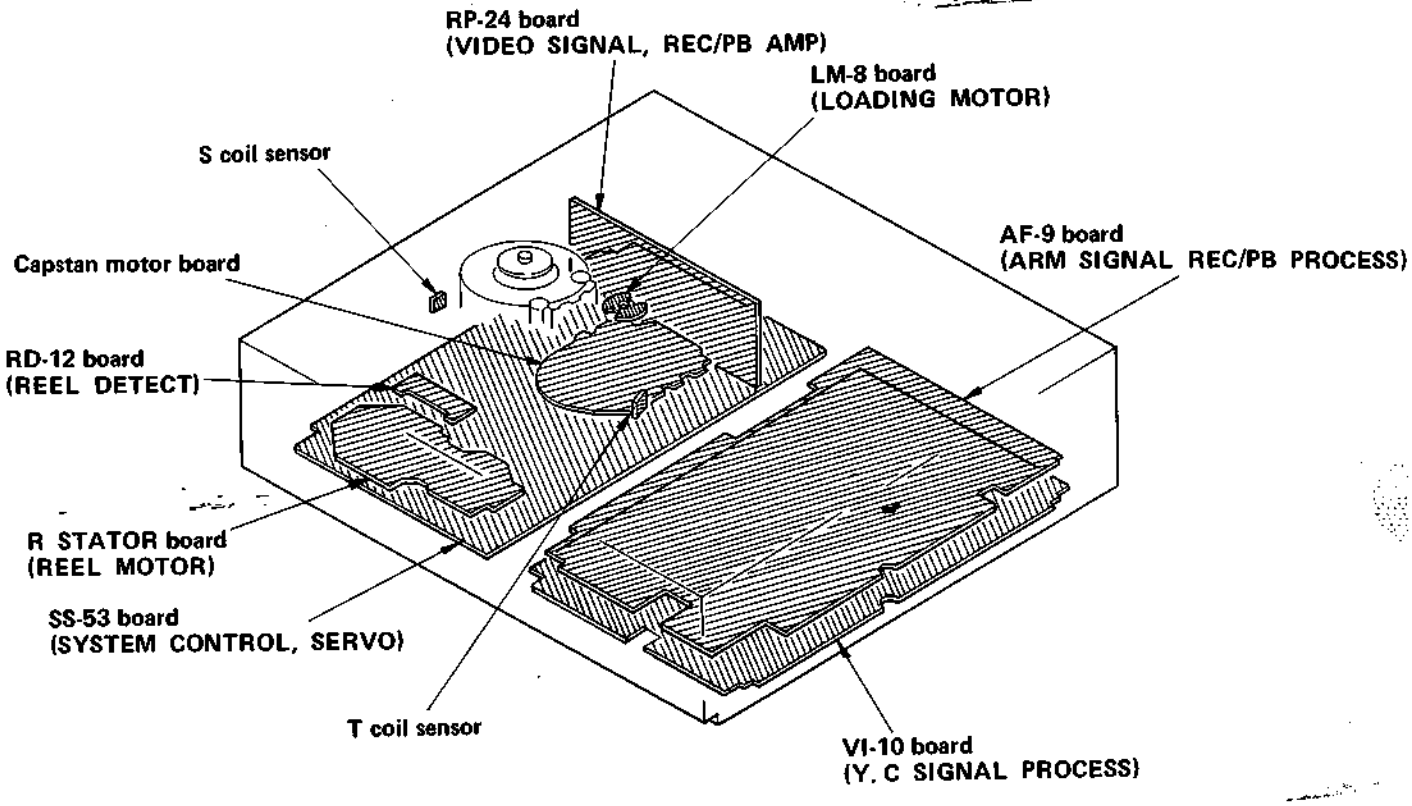


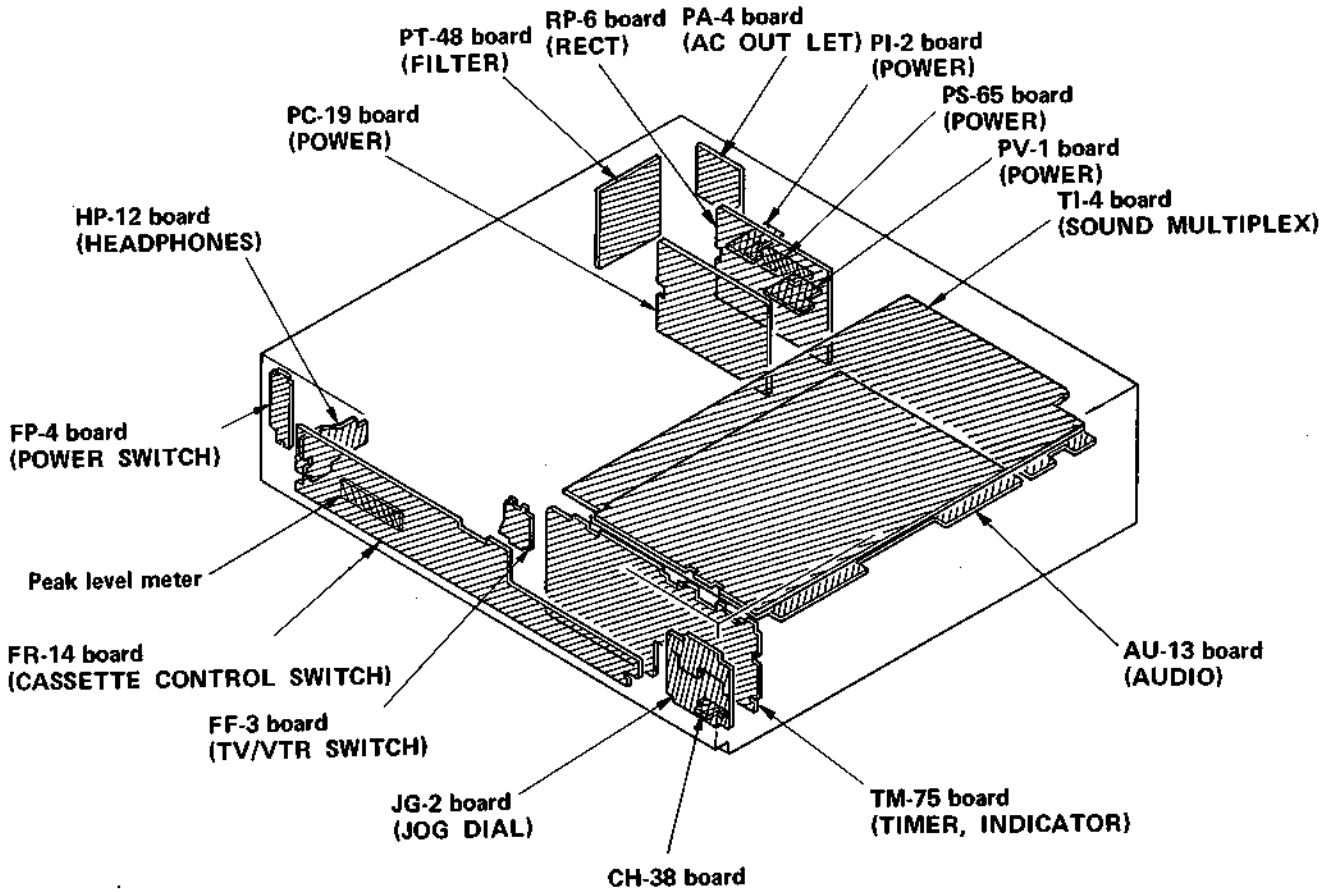
– Bottom Side –



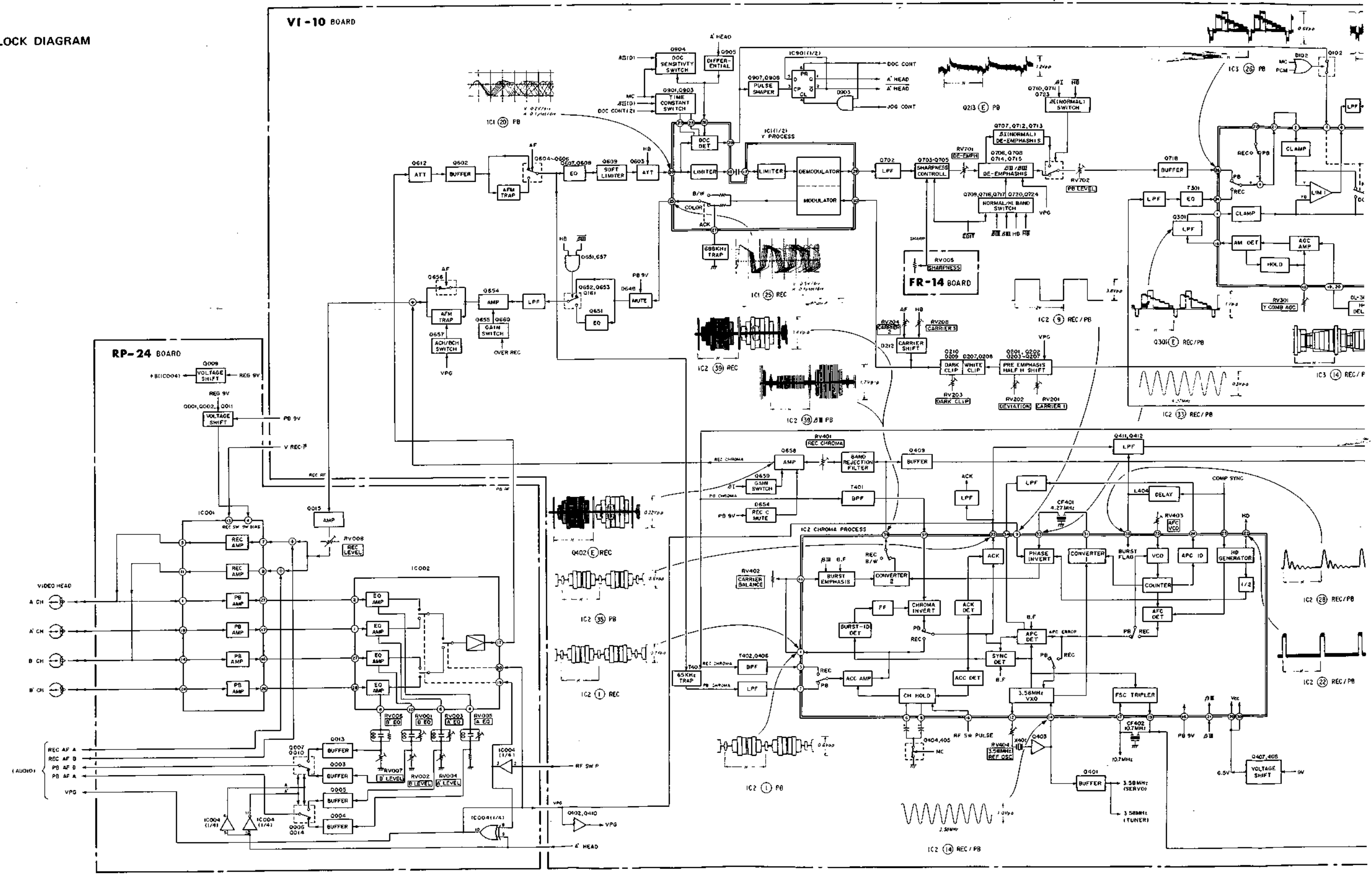
SECTION 3
BLOCK DIAGRAMS

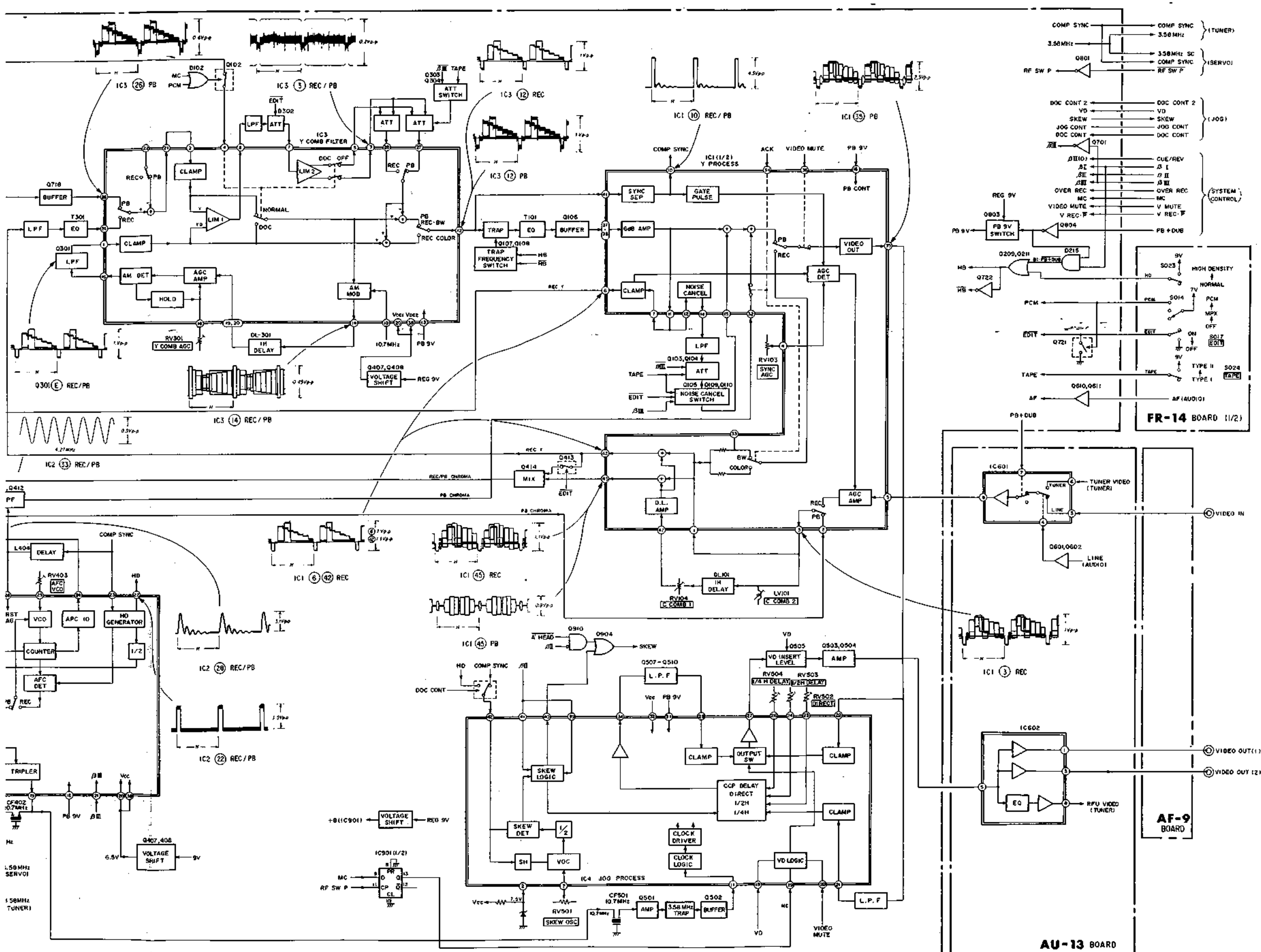
3-1. CIRCUIT BOARDS LOCATION

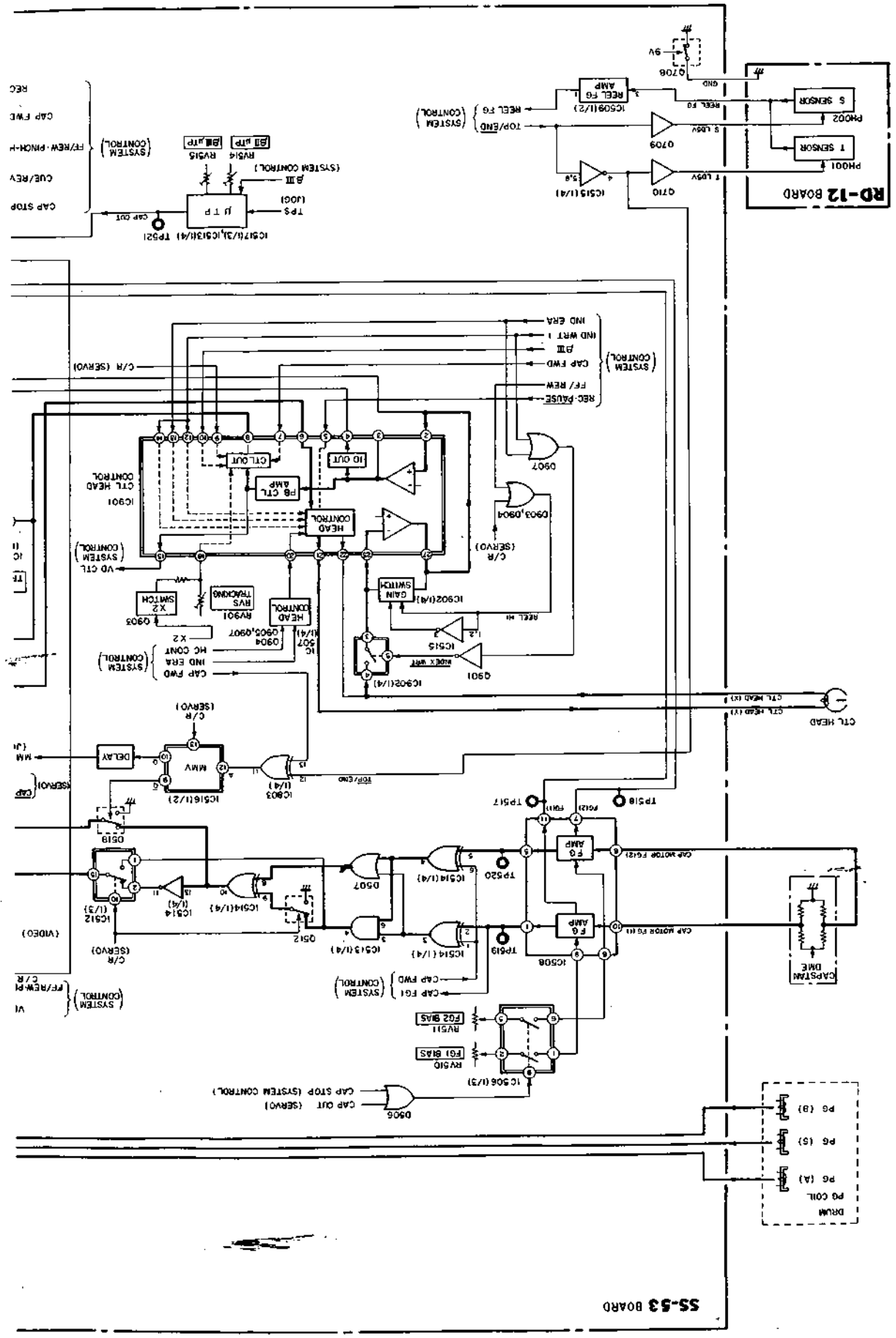




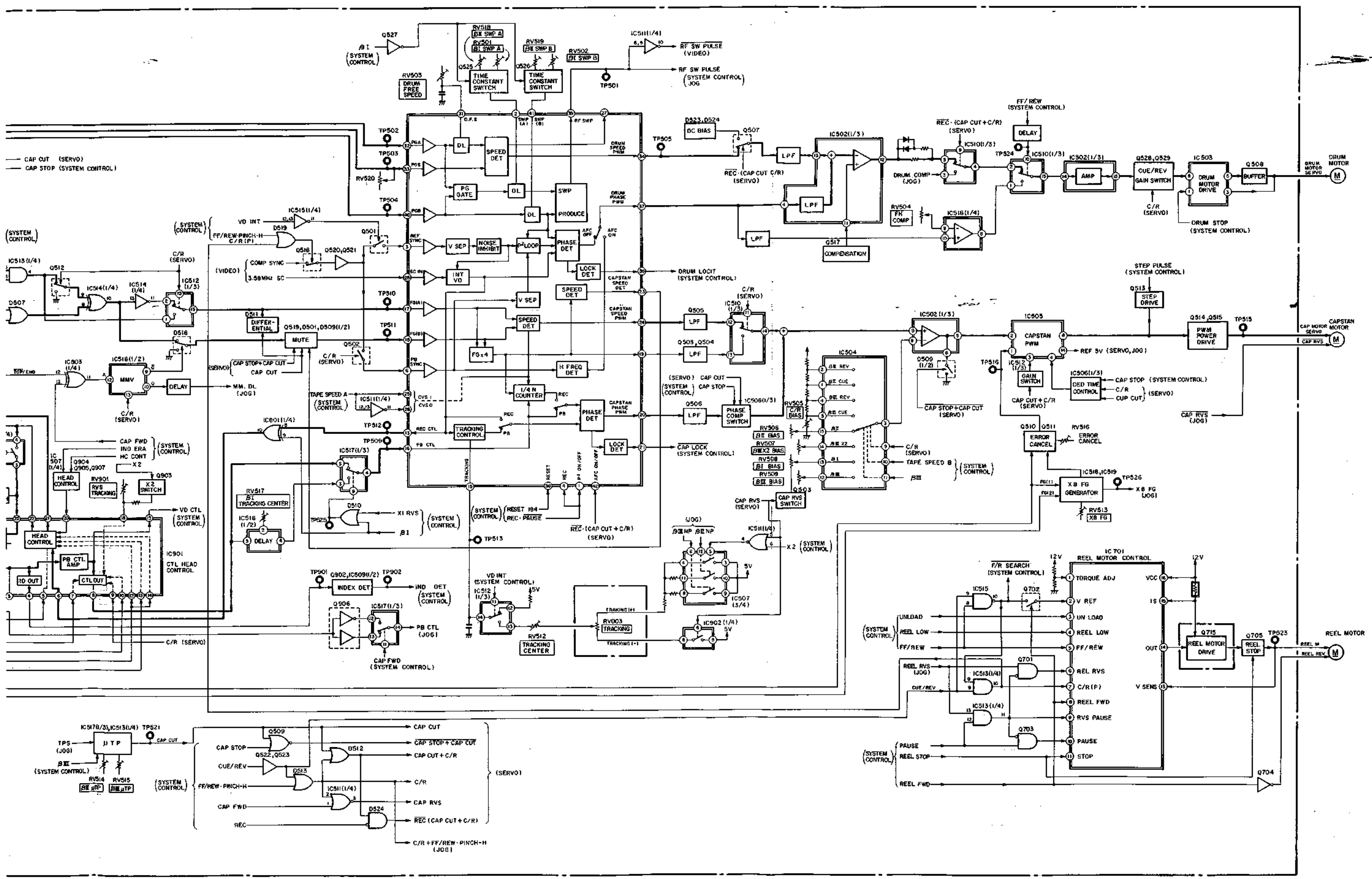
3-2. VIDEO BLOCK DIAGRAM




IC3 (26) PB
IC3 (3) REC/PB
IC3 (12) REC
IC3 (12) PB
IC1 (10) REC/PB
IC1 (35) PB
IC1(1/2) Y PROCESS
IC3 (14) REC/PB
IC2 (33) REC/PB
IC1 (6)(42) REC
IC1 (45) REC
IC1 (45) PB
IC2 (28) REC/PB
IC2 (22) REC/PB
IC1 (3) REC
IC4 JOG PROCESS
FR-14 BOARD (1/2)
AU-13 BOARD
AF-9 BOARD
VIDEO IN
VIDEO OUT(1)
VIDEO OUT (2)



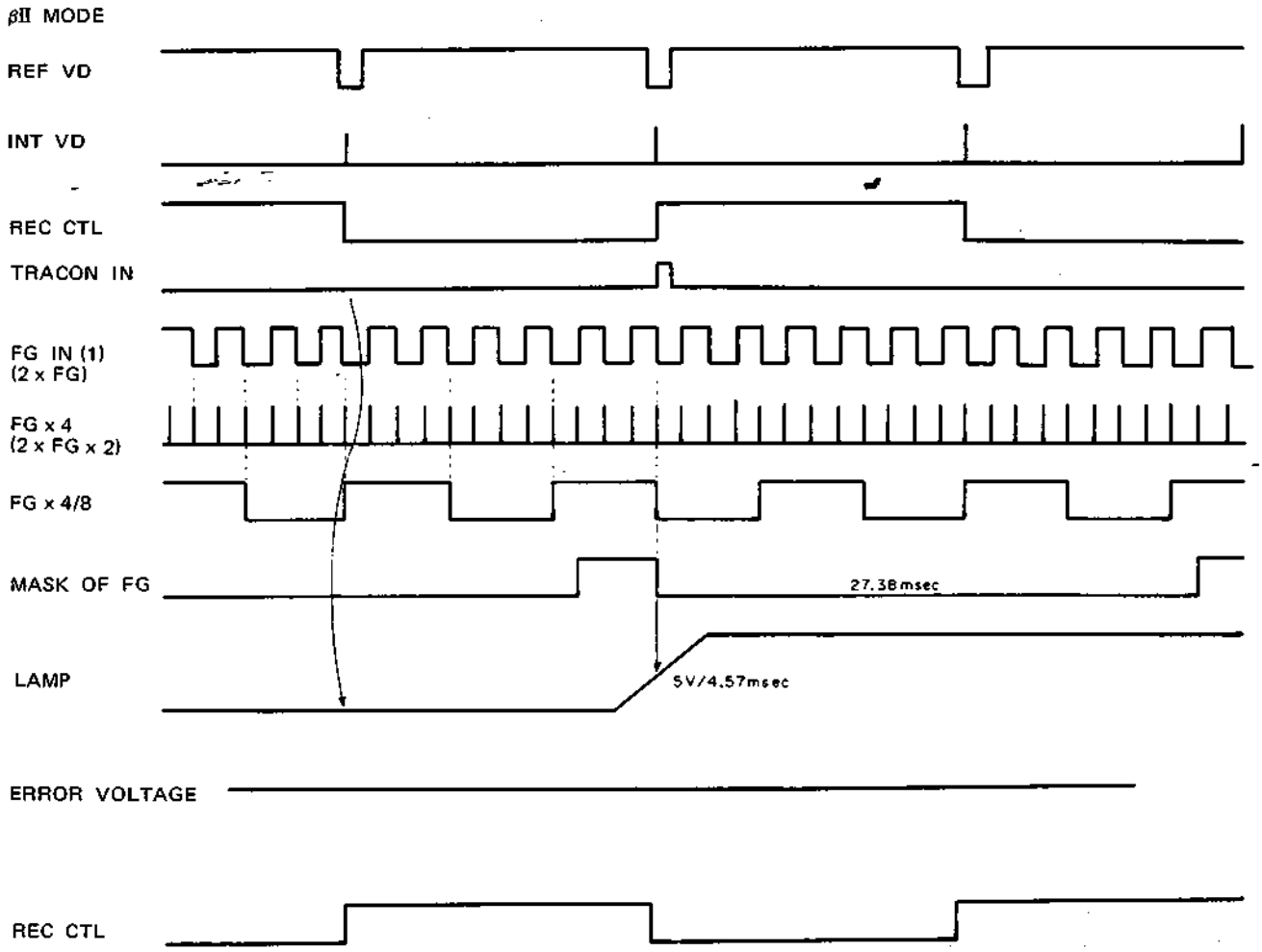
3-3. SERVO BLOCK DIAGRAM


CAP OUT (SERVO)
CAP STOP (SYSTEM CONTROL)
DRUM FREE SPEED
TIME CONSTANT SWITCH
SPEED DET
PG GATE
SWP PRODUCE
V SEP
NOISE INHIBIT
PHASE DET
LOCK DET
INT VD
FG x 4
H FREQ DET
1/4 N COUNTER
TRACKING CONTROL
RF SW PULSE (VIDEO)
RF SW PULSE (SYSTEM CONTROL) (JOG)
DC BIAS
LPF
COMPENSATION
DRUM COMP (JOG)
FH COMP
DELAY
AMP
CUE/REV GAIN SWITCH
DRUM MOTOR DRIVE
BUFFER
DRUM MOTOR
DRUM STOP (SYSTEM CONTROL)
DRUM LOCK (SYSTEM CONTROL)
STEP PULSE (SYSTEM CONTROL)
STEP DRIVE
CAPSTAN PWM
PWM POWER DRIVE
CAPSTAN MOTOR
REF 5V (SERVO, JOG)
GAIN SWITCH
DED TIME CONTROL
ERROR CANCEL
X 8 FG GENERATOR
PHASE COMP SWITCH
CAP LOCK (SYSTEM CONTROL)
CAP RVS SWITCH
MUTE
DIFFER-ENTIAL
MMV
HEAD CONTROL
PB CTL AMP
CTL OUT
ID OUT
X2 SWITCH
RVS TRACKING
IC901 CTL HEAD CONTROL
INDEX DET
IND DET (SYSTEM CONTROL)
PB CTL (JOG)
TRACKING CENTER
RV003 TRACKING
μ T P
IC701 REEL MOTOR CONTROL
TORQUE ADJ
V REF
UN LOAD
REEL LOW
FF/REW
REL RVS
C/R (P)
REEL FWD
RVS PAUSE
PAUSE
STOP
VCC
V SENS
REEL MOTOR DRIVE
REEL STOP
REEL MOTOR
F/R SEARCH (SYSTEM CONTROL)
CAP CUT
CAP STOP + CAP CUT
CAP CUT + C/R
C/R
CAP RVS
REC (CAP CUT + C/R)
C/R + FF/REW · PINCH-H (JOG)

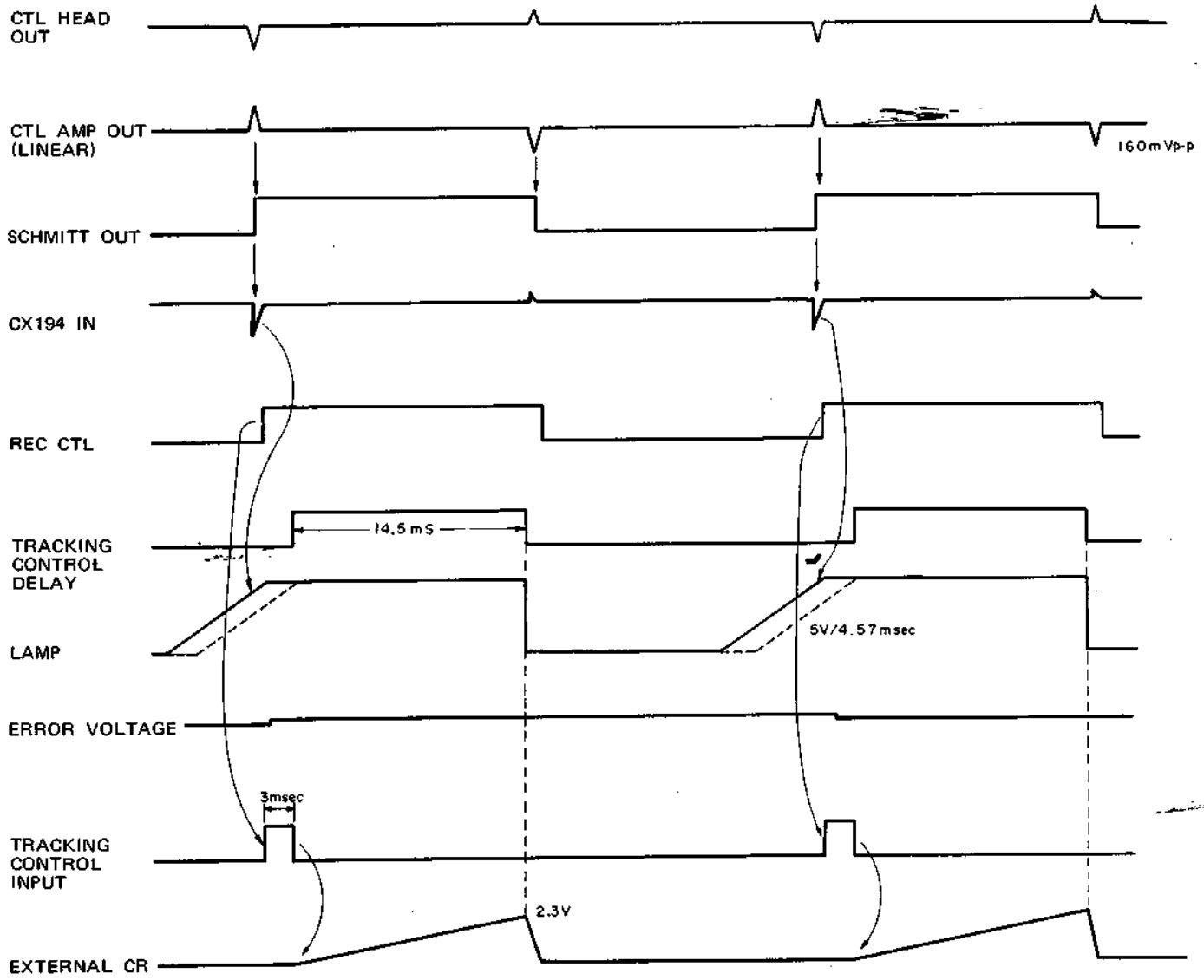
3-4. TIMING CHART

[CAPSTAN. PHASE SYSTEM (REC) TIMING CHART]

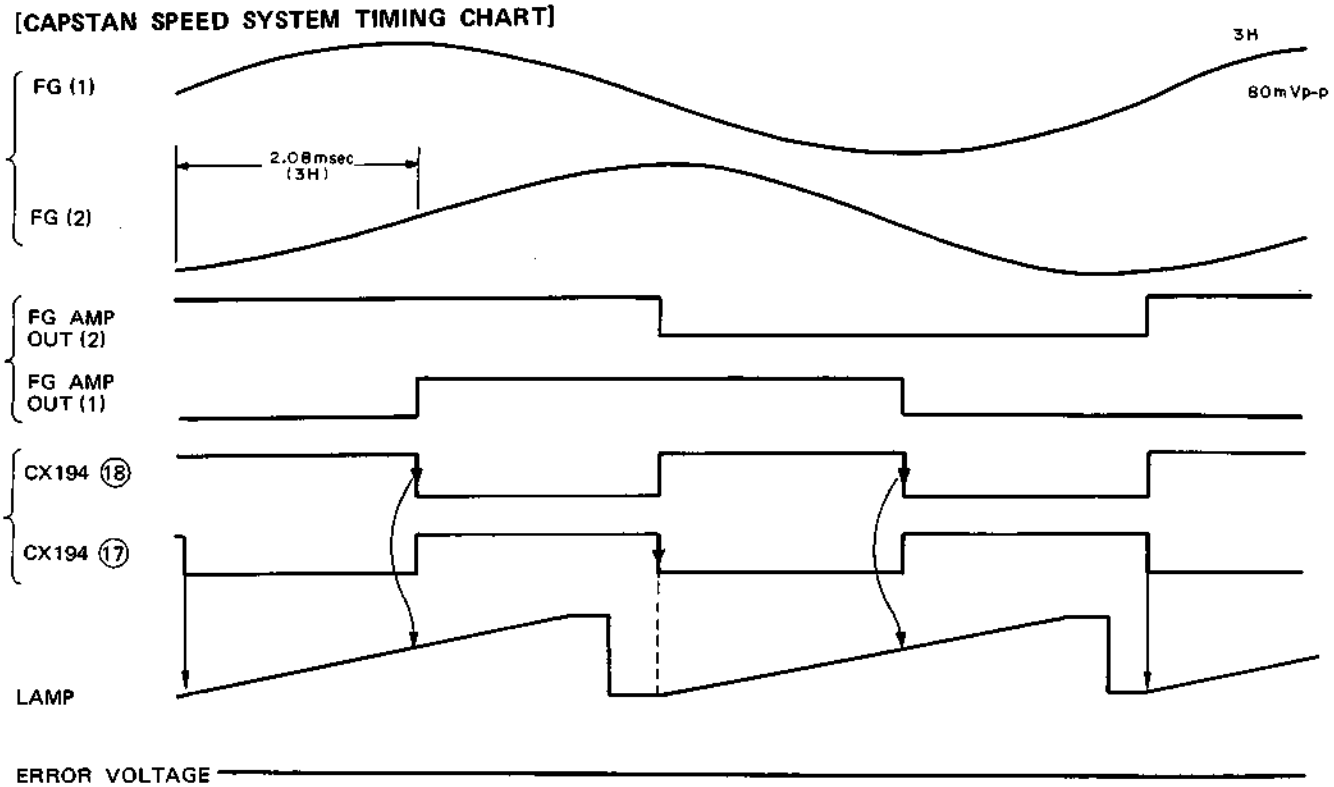
	2FG	4FG
βI 360	βI 720	1440→1/16→90Hz
βII 180	βII 360	720→1/8 →90Hz
βIII 120	βIII 240	480→1/8 →60Hz



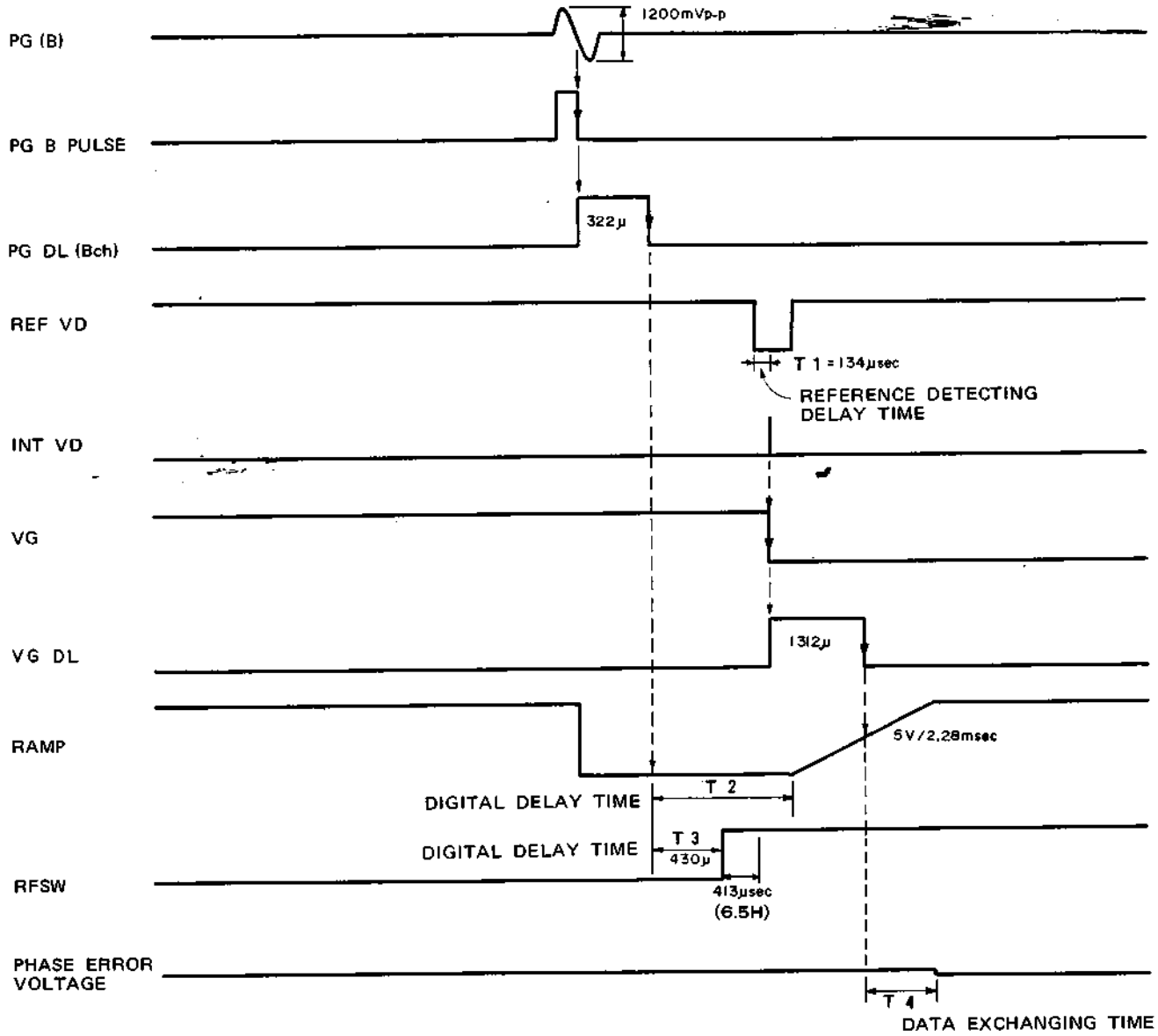
[CAPSTAN PHASE SYSTEM (PB) TIMING CHART]



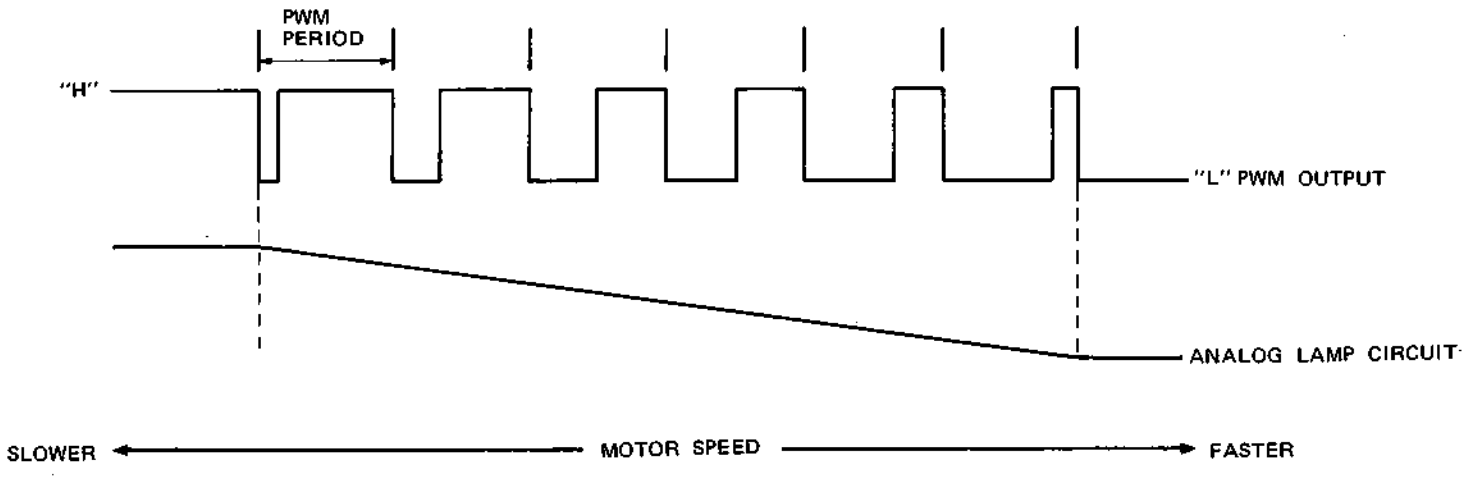
[CAPSTAN SPEED SYSTEM TIMING CHART]



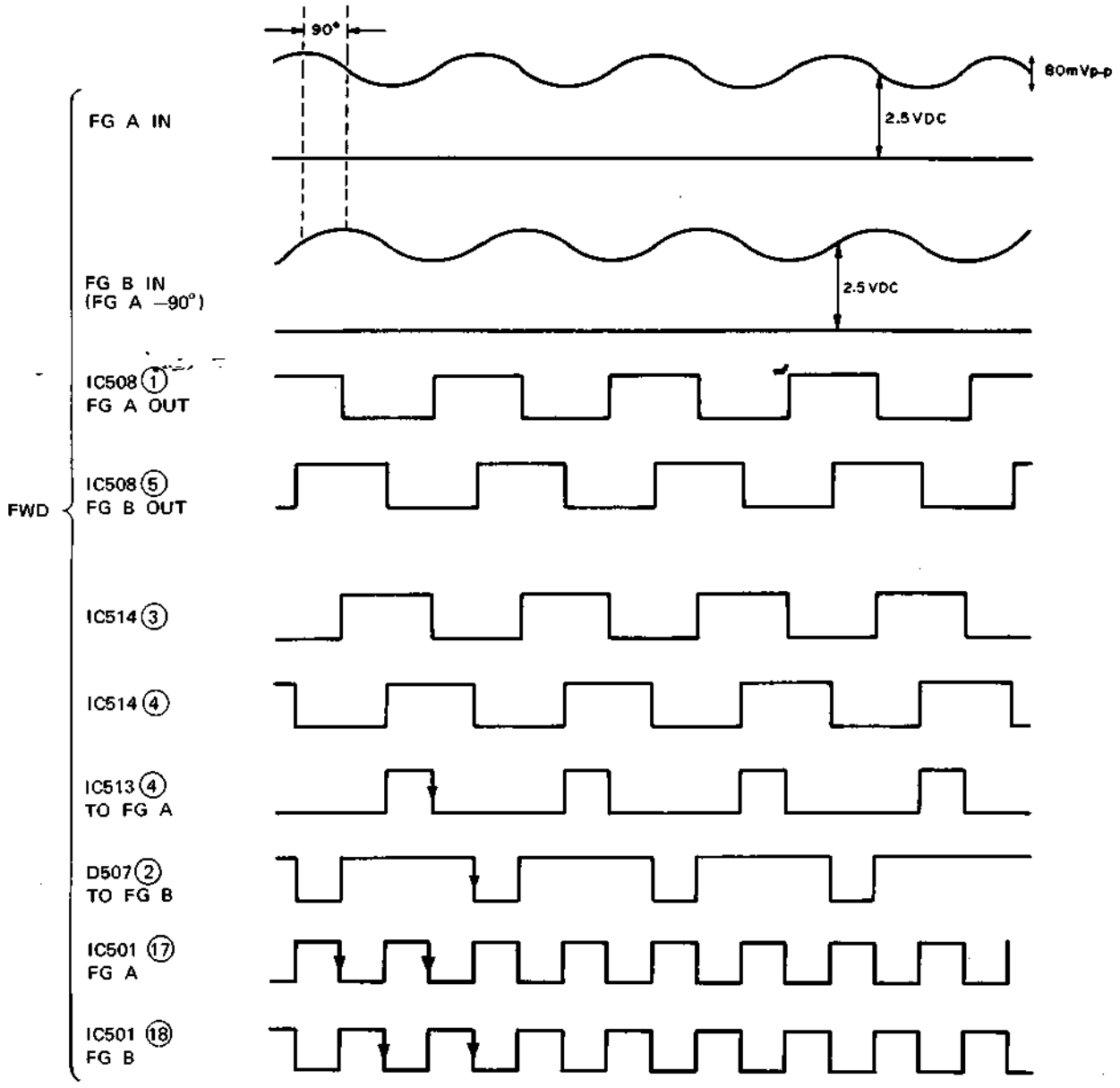
[DRUM PHASE SYSTEM TIMING CHART]



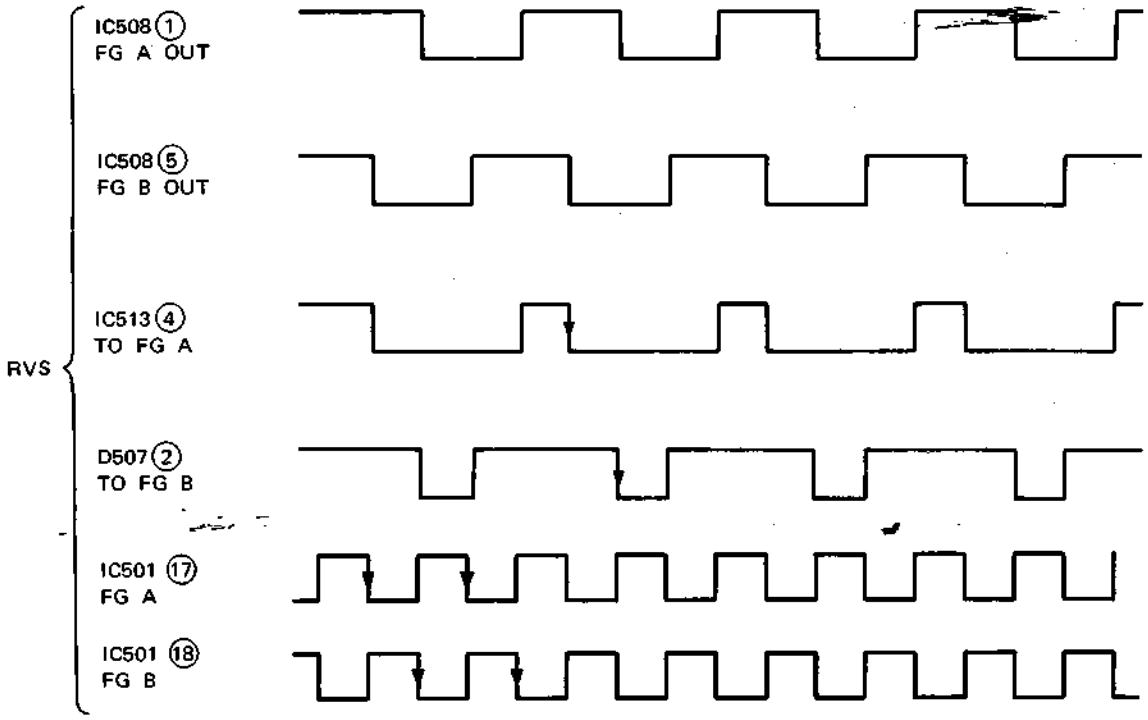
[INSTRUMENTATION COUNTER TIMING CHART]



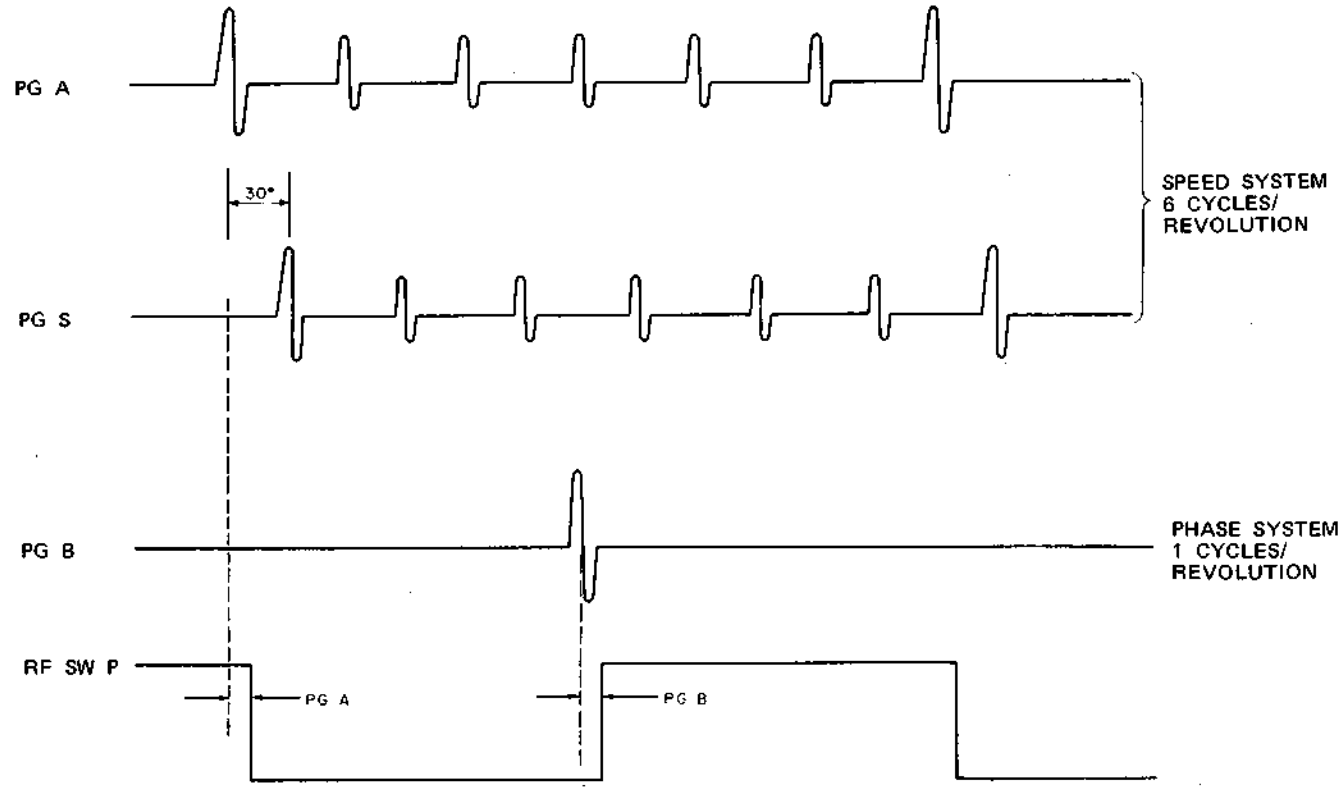
[FG CIRCUIT TIMING CHART I]



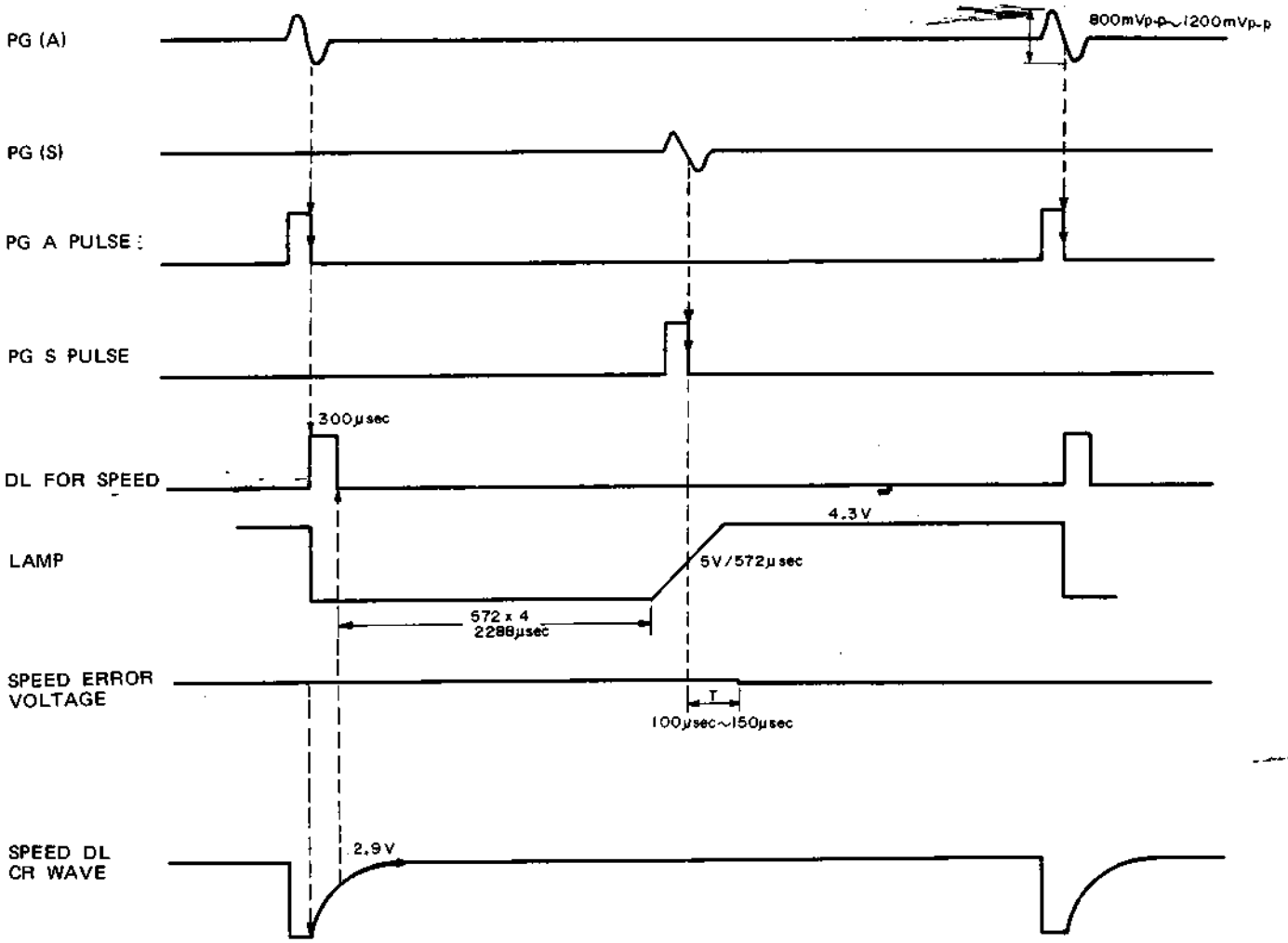
[FG CIRCUIT TIMING CHART II]



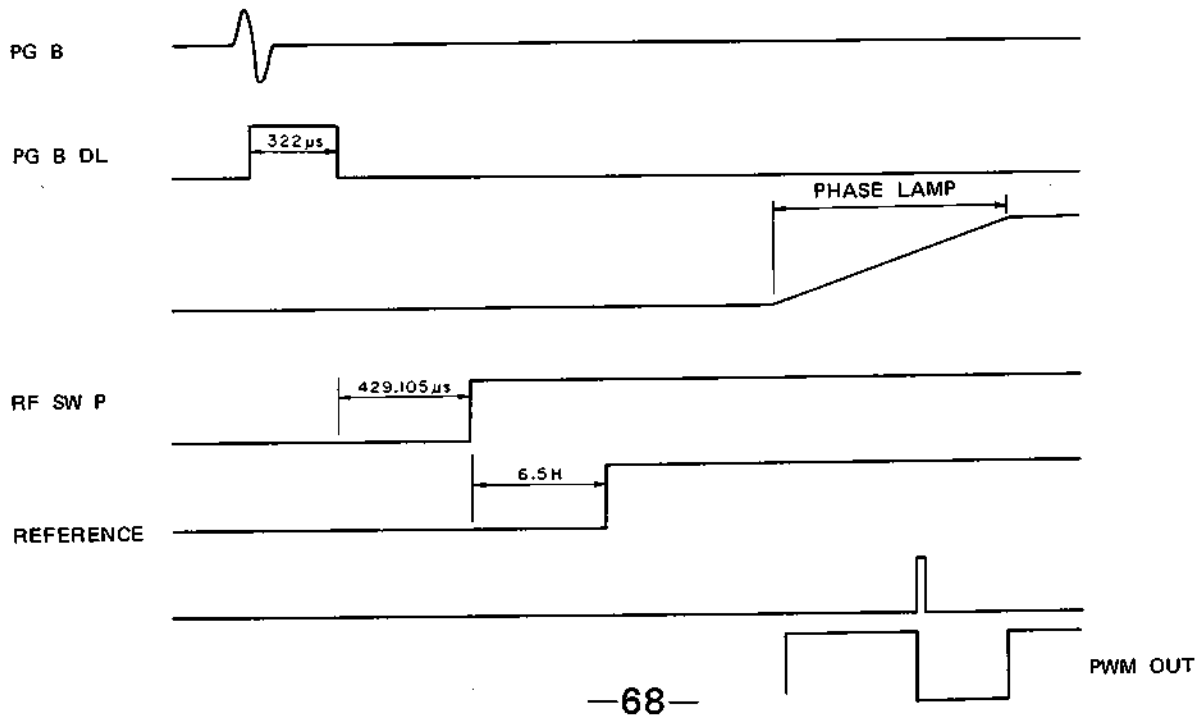
[PG-A, B, S TIMING CHART]



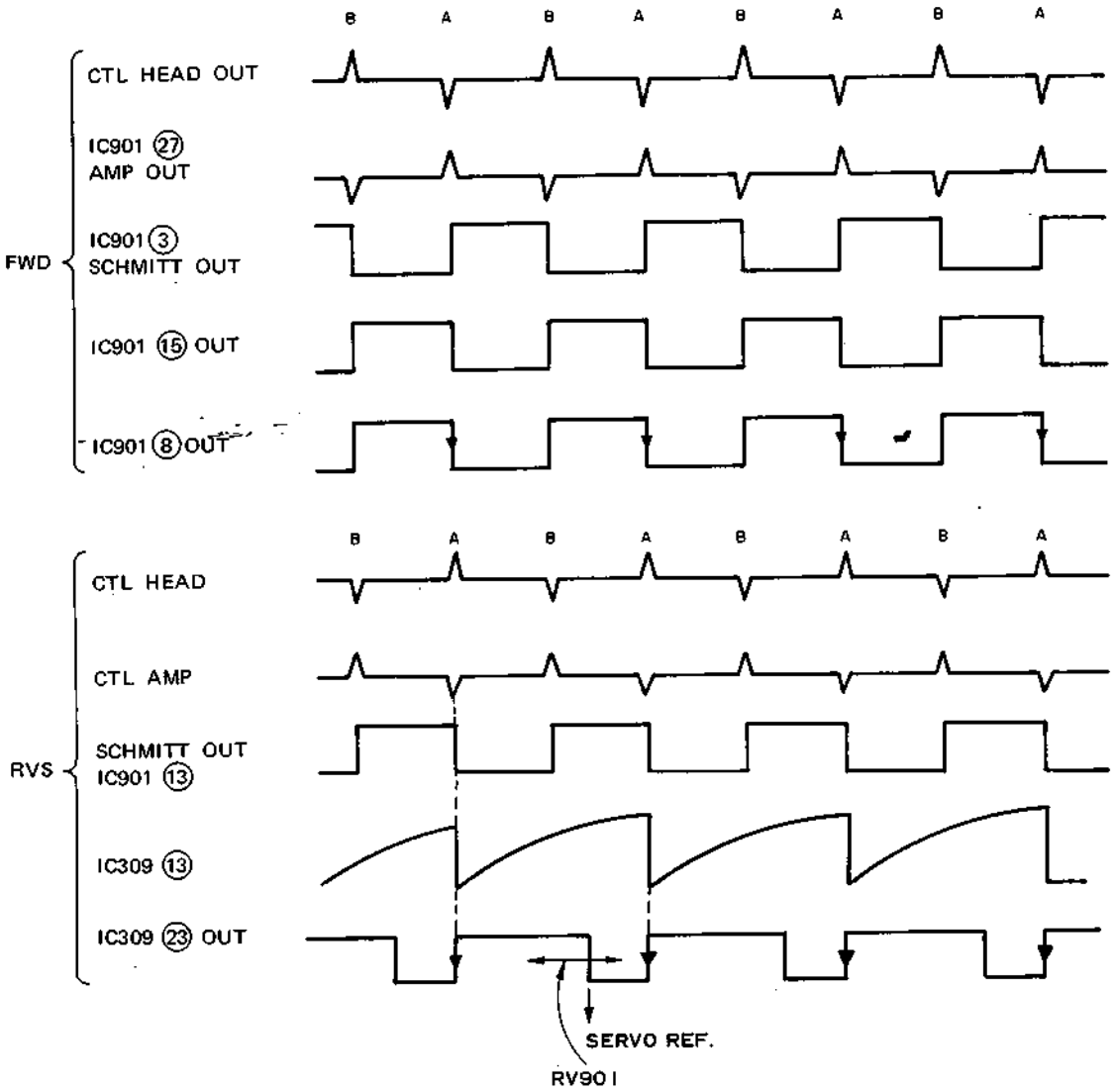
[DRUM SPEED SYSTEM TIMING CHART]

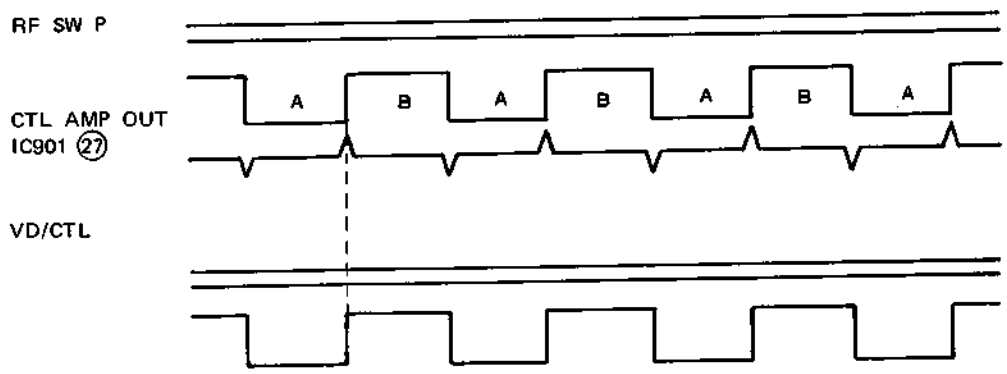


[PG-B, (REC/PB) TIMING CHART]

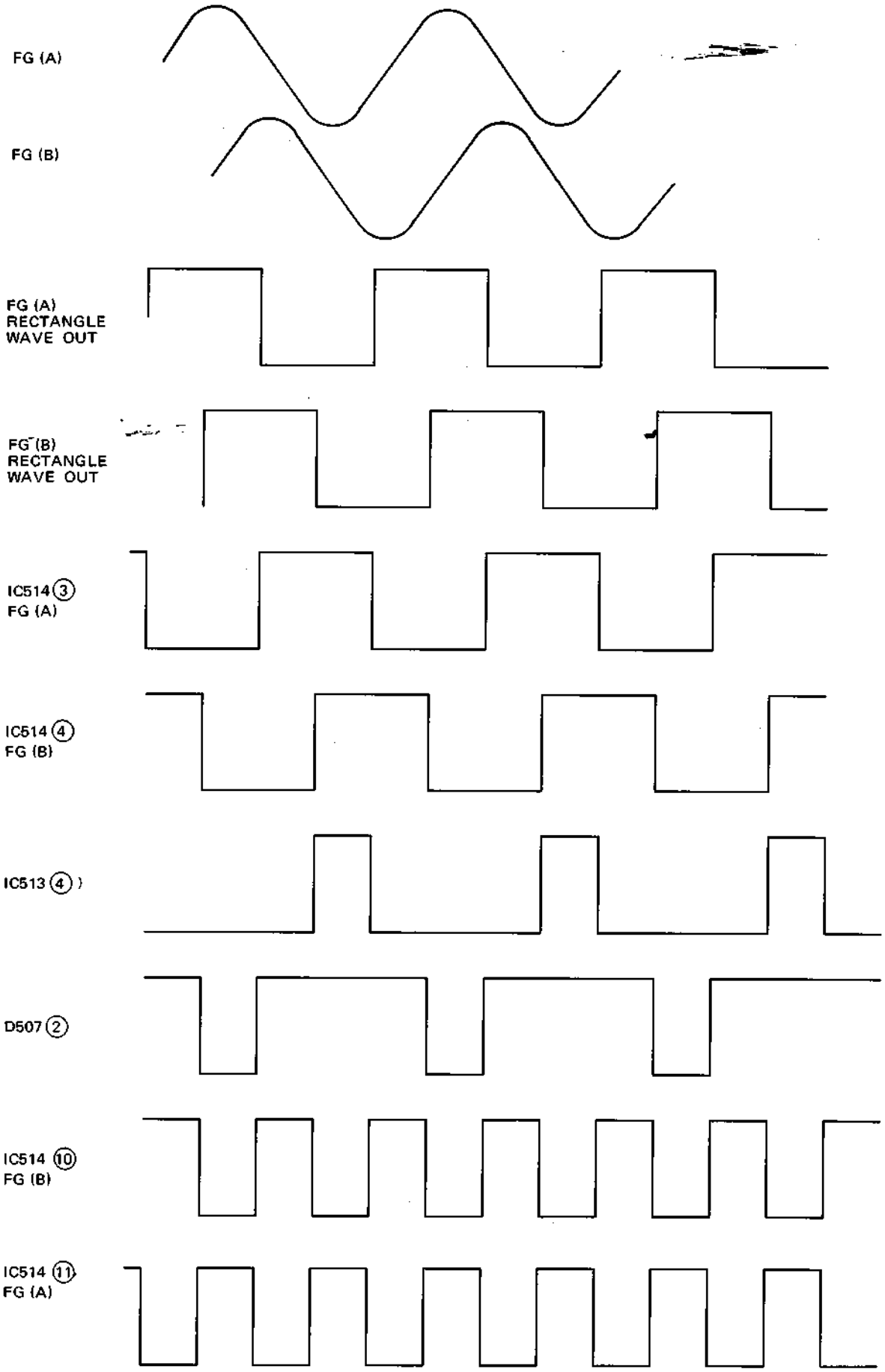


[CTL CIRCUIT TIMING CHART]

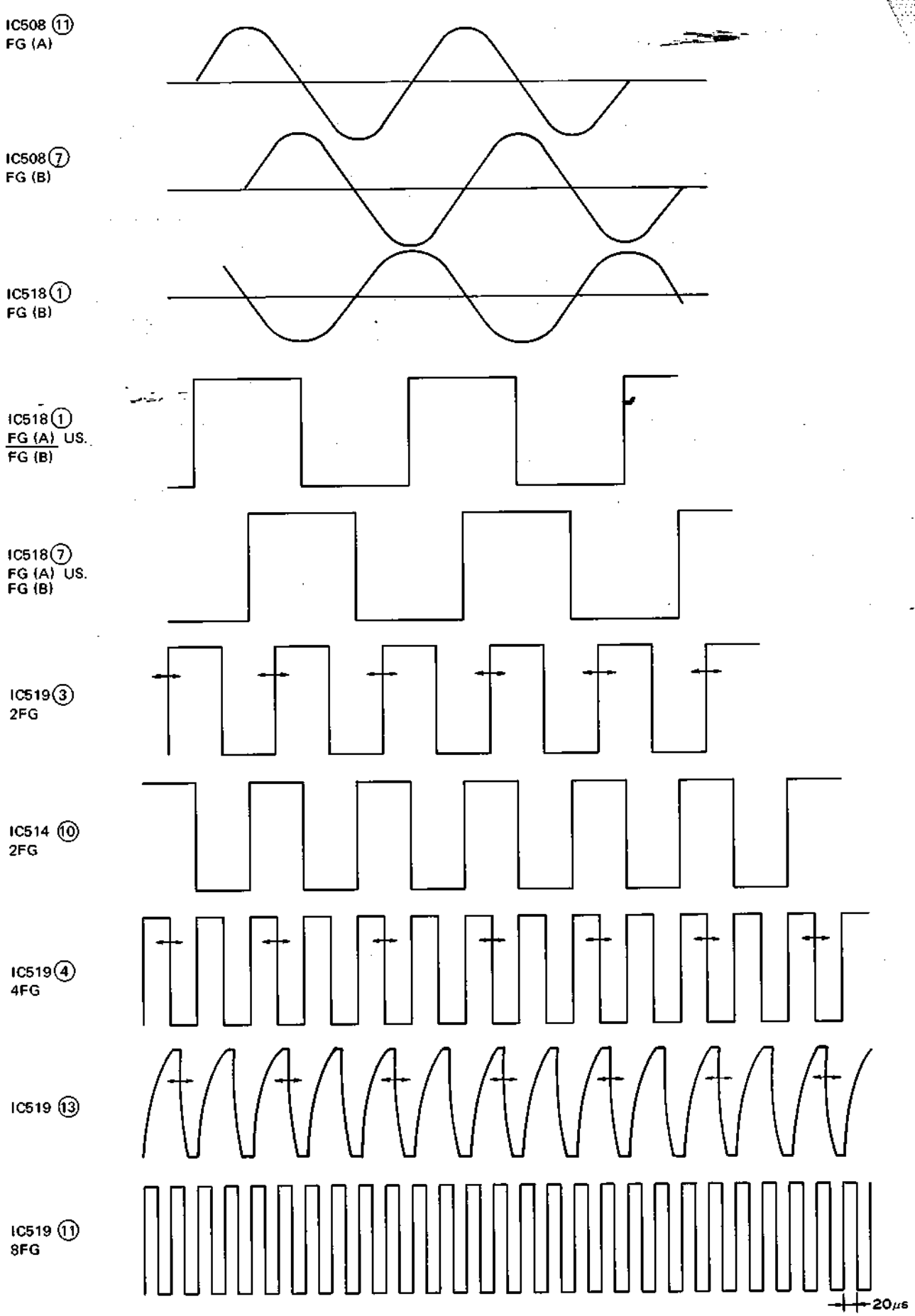




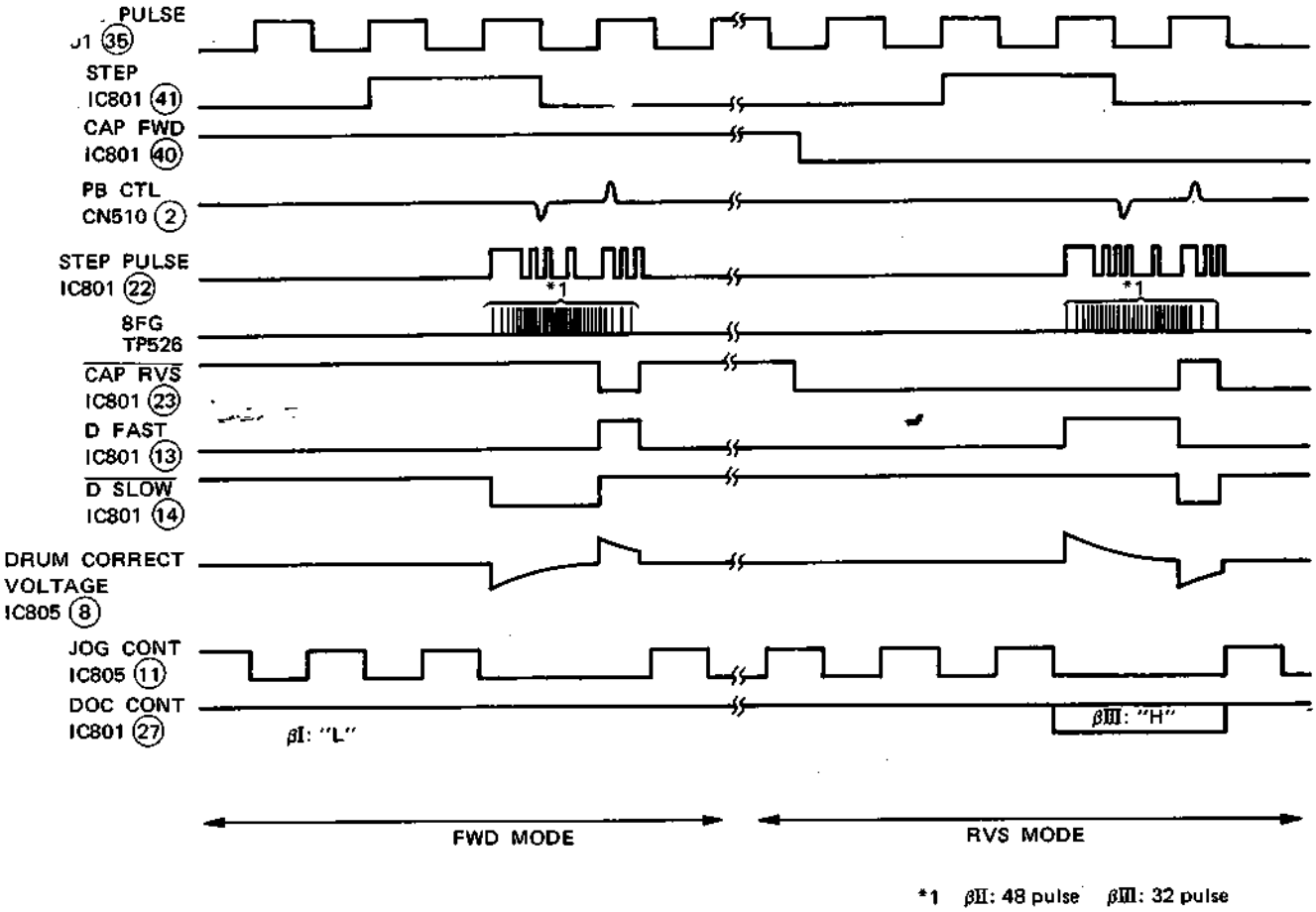
[2FG SIGNAL GENERATOR TIMING CHART]



[8FG SIGNAL GENERATOR TIMING CHART]

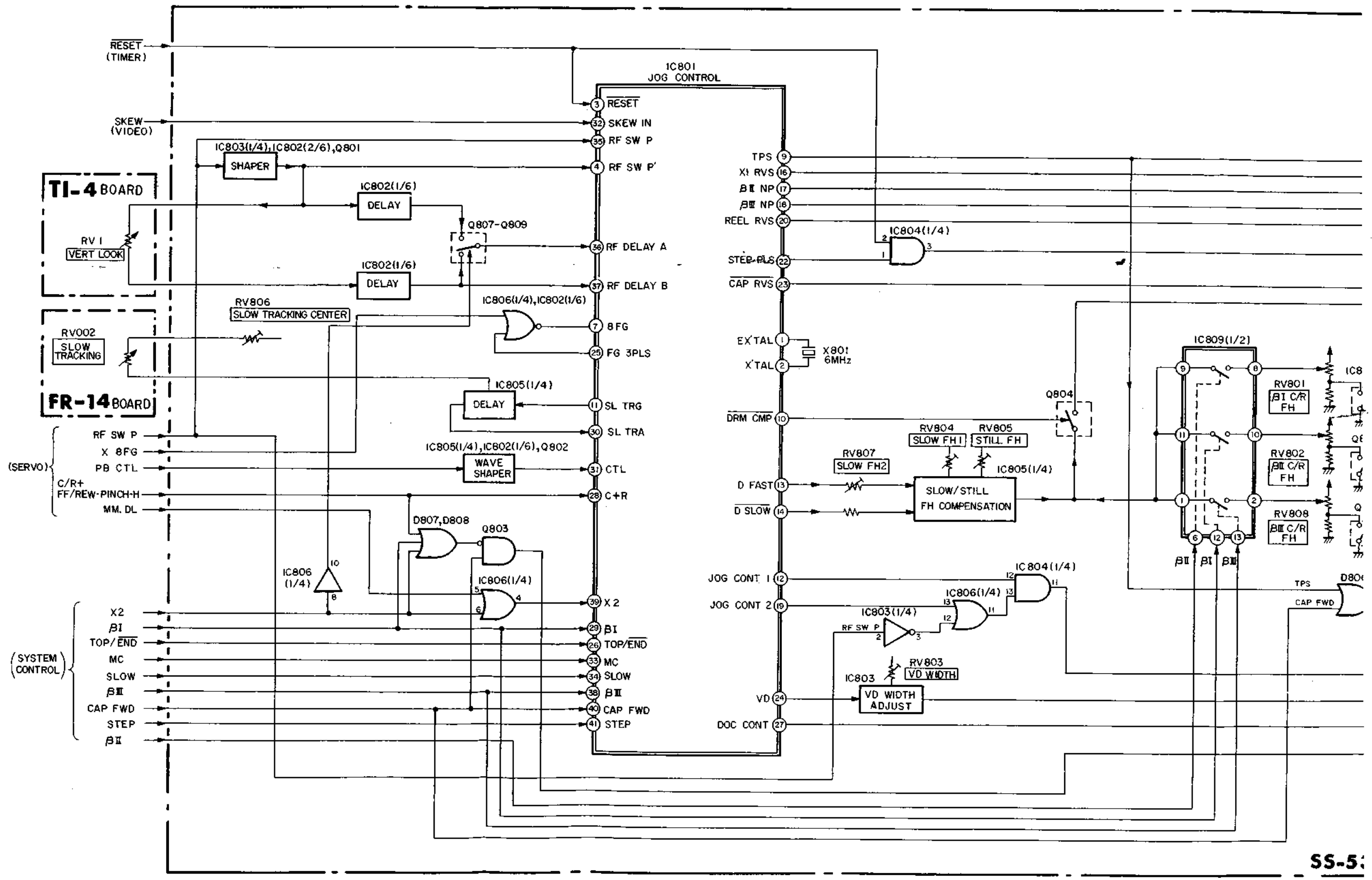


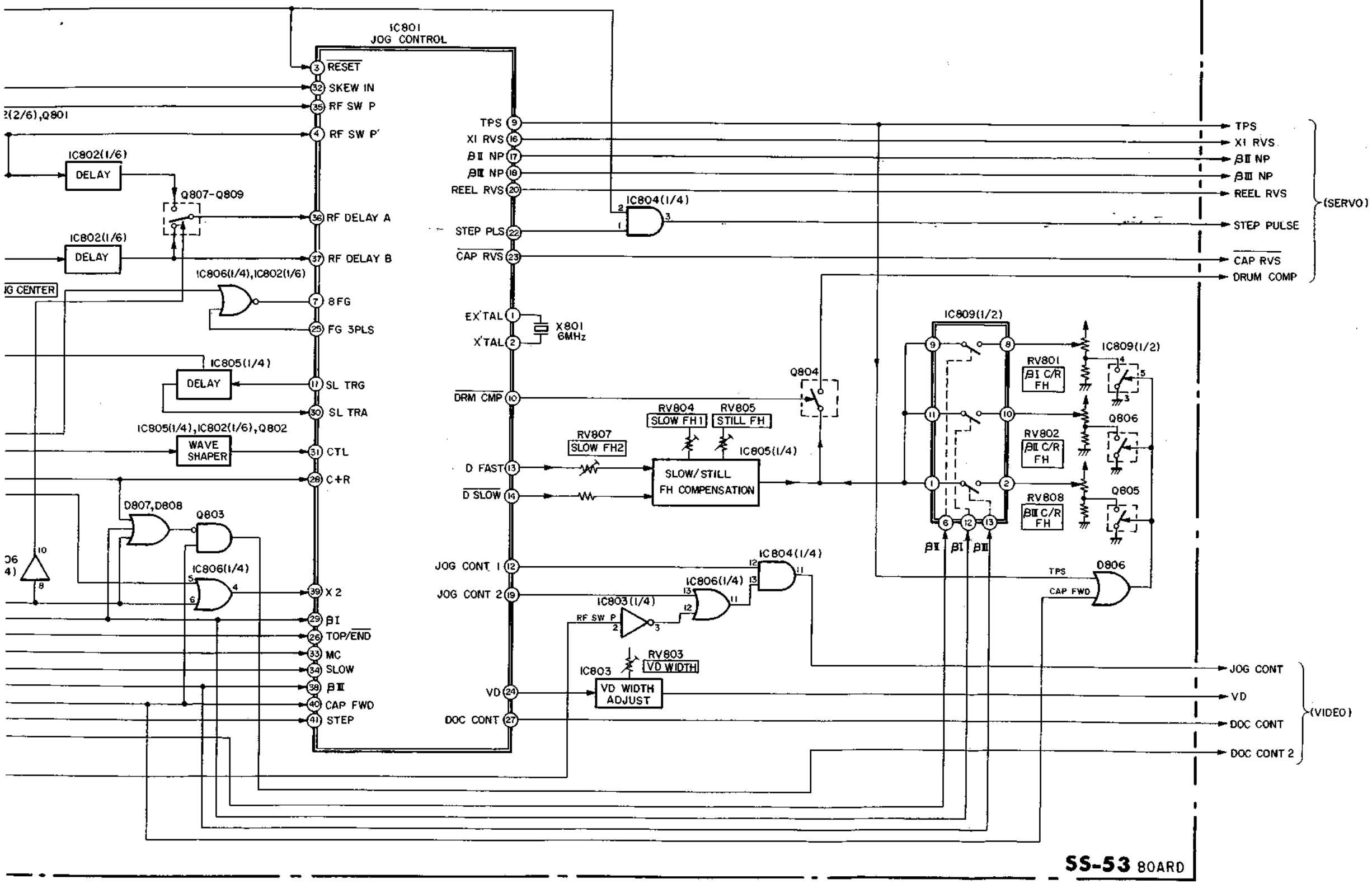
[HEAD CONTROL TIMING CHART]



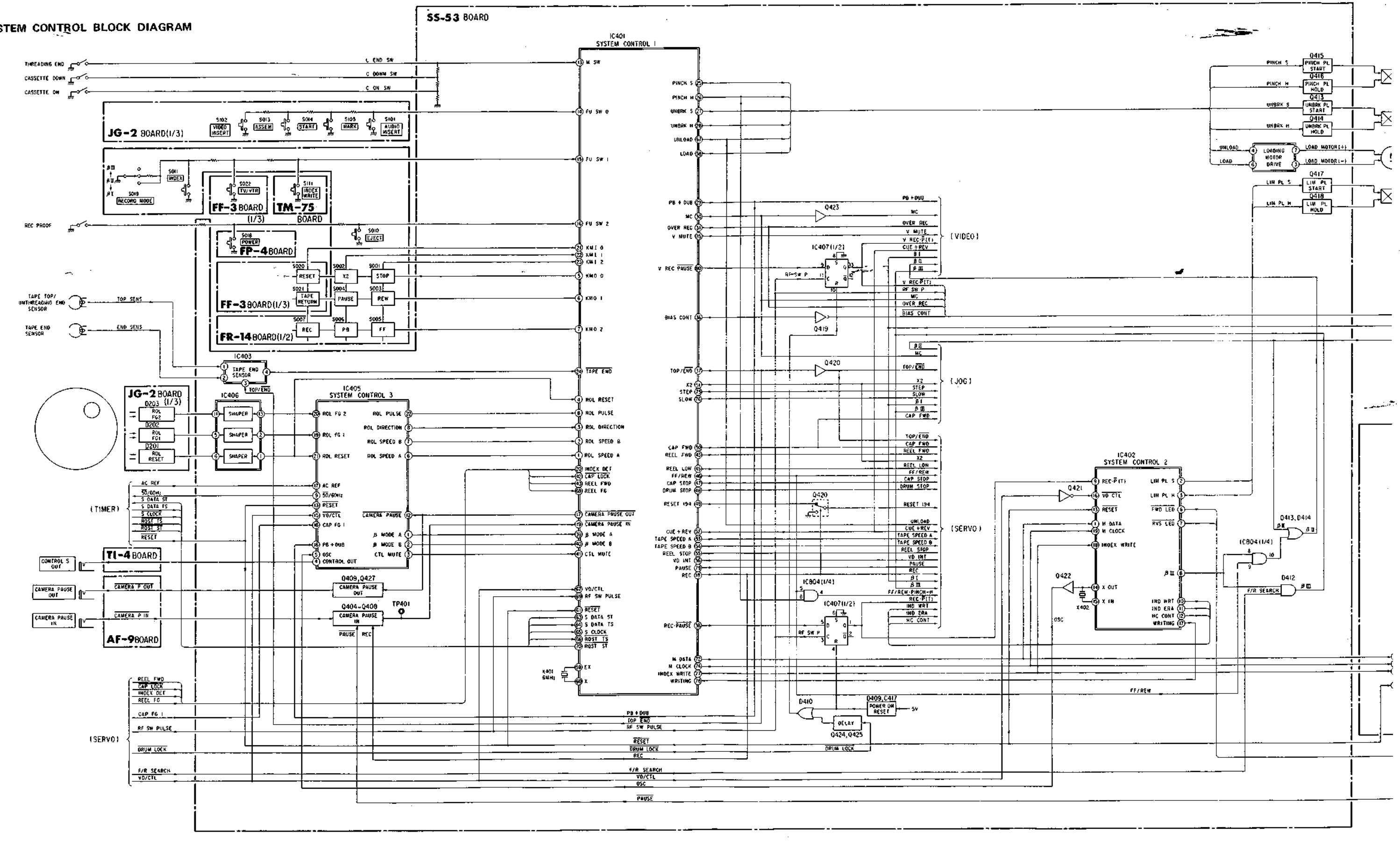
*1 βII: 48 pulse βIII: 32 pulse

3-5. JOG BLOCK DIAGRAM

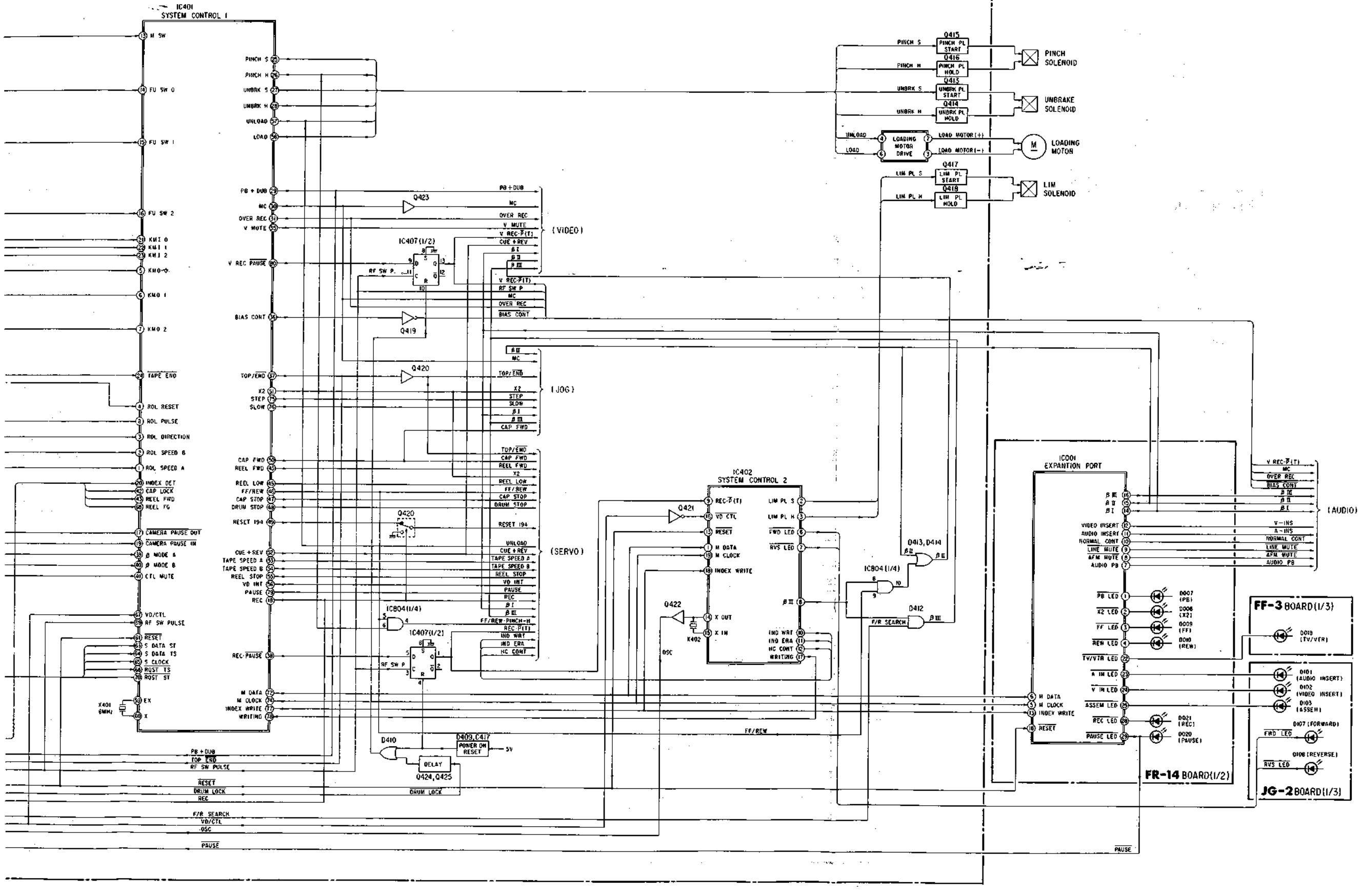



IC801
JOG CONTROL
RESET
SKEW IN
RF SW P
RF SW P'
IC802(1/6)
DELAY
Q807-Q809
RF DELAY A
RF DELAY B
IC806(1/4),IC802(1/6)
8FG
FG 3PLS
IC805(1/4)
DELAY
SL TRG
SL TRA
IC805(1/4),IC802(1/6),Q802
WAVE SHAPER
CTL
C+R
D807,D808
Q803
IC806(1/4)
X2
βI
TOP/END
MC
SLOW
βII
CAP FWD
STEP
TPS
XI RVS
βII NP
βIII NP
REEL RVS
STEP PLS
CAP RVS
EX'TAL
X'TAL
X801
6MHz
DRM CMP
D FAST
D SLOW
RV807
SLOW FH2
RV804
SLOW FH1
RV805
STILL FH
IC805(1/4)
SLOW/STILL FH COMPENSATION
IC804(1/4)
JOG CONT 1
JOG CONT 2
IC806(1/4)
IC803(1/4)
RF SW P
IC803
RV803
VD WIDTH
VD WIDTH ADJUST
VD
DOC CONT
Q804
IC809(1/2)
RV801
βI C/R FH
RV802
βII C/R FH
RV808
βIII C/R FH
IC809(1/2)
Q806
Q805
βI
βI
βII
TPS
CAP FWD
D806
TPS
XI RVS
βII NP
βIII NP
REEL RVS
STEP PULSE
CAP RVS
DRUM COMP
(SERVO)
JOG CONT
VD
DOC CONT
DOC CONT 2
(VIDEO)
SS-53 BOARD

3-6. SYSTEM CONTROL BLOCK DIAGRAM



3 BOARD


IC401
SYSTEM CONTROL 1
M SW
FU SW 0
FU SW 1
FU SW 2
KWI 0
KWI 1
KWI 2
KWO 0
KWO 1
KWO 2
TAPE END
ROL RESET
ROL PULSE
ROL DIRECTION
ROL SPEED B
ROL SPEED A
INDEX DET
CAP LOCK
REEL FWD
REEL FG
CAMERA PAUSE OUT
CAMERA PAUSE IN
β MODE A
β MODE B
CTL MUTE
VD/CTL
RF SW PULSE
RESET
S DATA ST
S DATA TS
S CLOCK
RQST TS
RQST ST
EX
X
X401
6MHz
PINCH S
PINCH H
UNBRK S
UNBRK H
UNLOAD
LOAD
PB + DUB
MC
OVER REC
V MUTE
V REC PAUSE
BIAS CONT
TOP/END
X2
STEP
SLOW
CAP FWD
REEL FWD
REEL LOW
FF/REW
CAP STOP
DRUM STOP
RESET 194
CUE + REV
TAPE SPEED A
TAPE SPEED B
REEL STOP
VD INT
PAUSE
REC
REC PAUSE
M DATA
M CLOCK
INDEX WRITE
WRITING
Q423
Q419
Q420
Q420
IC407(1/2)
IC407(1/2)
IC804(1/4)
IC804(1/4)
RF SW P.
(VIDEO)
(JOG)
(SERVO)
IC402
SYSTEM CONTROL 2
REC-P(T)
VD CTL
RESET
M DATA
M CLOCK
INDEX WRITE
X OUT
X IN
LIM PL S
LIM PL H
FWD LED
RVS LED
IND WRT
IND ERA
HC CONT
WRITING
Q421
Q422
X402
OSC
D410
D409,C417
POWER ON RESET
5V
DELAY
Q424,Q425
DRUM LOCK
PB+DUB
TOP/END
RF SW PULSE
RESET
DRUM LOCK
REC
F/R SEARCH
VD/CTL
OSC
PAUSE
FF/REW
Q415
PINCH PL START
Q416
PINCH PL HOLD
Q415
UNBRK PL START
Q414
UNBRK PL HOLD
LOADING MOTOR DRIVE
LOAD MOTOR(+)
LOAD MOTOR(−)
Q417
LIM PL START
Q418
LIM PL HOLD
PINCH SOLENOID
UNBRAKE SOLENOID
LOADING MOTOR
LIM SOLENOID
D413,D414
D412
IC001
EXPANTION PORT
V REC-P(T)
MC
OVER REC
BIAS CONT
(AUDIO)
V-INS
A-INS
NORMAL CONT
LINE MUTE
AFM MUTE
AUDIO PB
PB LED
X2 LED
FF LED
REW LED
TV/VTR LED
A IN LED
V IN LED
ASSEM LED
REC LED
PAUSE LED
D007 (PB)
D008 (X2)
D009 (FF)
D010 (REW)
D019 (TV/VTR)
D101 (AUDIO INSERT)
D102 (VIDEO INSERT)
D103 (ASSEM)
D021 (REC)
D020 (PAUSE)
D107 (FORWARD)
D108 (REVERSE)
FWD LED
RVS LED
FR-14 BOARD(1/2)
FF-3 BOARD(1/3)
JG-2 BOARD(1/3)

3-7. SYSTEM CONTROL INTERFACE

[SERVO SYSTEM CONTROL CIRCUIT AND VIDEO BLOCK INTERFACE]

SIGNAL \ MODE	I/O	PIN No.	STOP	FF	REW	FR SEARCH CUE	FR SEARCH REV	PB	PICTURE SEARCH CUE	PICTURE SEARCH REV	PB-P	×2	REC	REC-P	A-IN	A-IN-P	V-IN	V-IN-P	AV-IN	AV-IN-P	JOG/SHUTTLE ×1/5	×1	×2	×-1/5	×-1
PB+DUB	O	CN414-⑧	L	L	L	H	H	H	H	H	H	H	L	L	H	H	L	L	L	L	H	H	H	H	H
V REC.$\overline{P}$	O	CN414-⑨	L	L	L	L	L	L	L	L	L	L	H	L	L	L	H	L	H	L	L	L	L	L	L
OVER REC	O	CN414-⑥	L	L	L	L	L	L	L	L	L	L	※1	L	L	L	H	L	H	L	L	L	L	L	L
V. MUTE	O	CN414-②	L	L	L	L	L	※2	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
MC	O	CN414-⑦	L	L	L	H	H	L	H	H	H	H	L	L	L	L	L	L	L	L	H	H	H	H	H
βI	O	CN402-③	※3	※3	※3	※4	※4	※5	※5	※5	※5	※5	※3	※3	※5	※5	※5	※5	※5	※5	※4	※5	※5	※4	※5
βII	O	CN402-④	※3	※3	※3	※4	※4	※5	※5	※5	※5	※5	※3	※3	※5	※5	※5	※5	※5	※5	※4	※5	※5	※4	※5
βIII	O	IC402-⑧	※3	※3	※3	※4	※4	※5	※5	※5	※5	※5	※3	※3	※5	※5	※5	※5	※5	※5	※4	※5	※5	※4	※5
βII(D)	O	IC414-⑩	※3	※3	※3	※4	※4	※5	※5	※5	※5	※5	※3	※3	※5	※5	※5	※5	※5	※5	※4	※5	※5	※4	※5
VD	O	IC803-⑱	L	L	L	V D	V D	L	V D	V D	V D	V D	L	L	L	L	L	L	L	L	V D	V D	V D	V D	V D
DOC CONT	O	IC801-㉗	H	H	H	L	L	H	βI/II : L βIII : H	βI/II : L βIII : H	H	H	H	H	H	H	H	H	H	H	H	H	H	※6	βI : L βII/III : H
DOC CONT2	O	Q803-⑥	——	——	——	L	L	βI : L βII/III : H	L	L	βI : L βII/III : H	L	βI : L βII/III : H	βI : L βII/III : H	βI : L βII/III : H	βI : L βII/III : H	βI : L βII/III : H	βI : L βII/III : H	βI : L βII/III : H	βI : L βII/III : H	βI : L βII/III : H	βI : L βII/III : H	L	L	L
JOG CONT	O	IC804-⑪	——	——	——	βI : L βII/III : H	L	L	$\overline{RF\ SWP}$	$\overline{RF\ SWP}$	βI : L βII/III : H	$\overline{RF\ SWP}$	βI : L βII :	$\overline{RF\ SWP}$	βI : L βII/III : H	$\overline{RF\ SWP}$	βI : L βII/III : H	$\overline{RF\ SWP}$	βI : L βII/III : H	$\overline{RF\ SWP}$	※7	βI : L βII/III : H	$\overline{RF\ SWP}$	※7	L

[SYSTEM CONTROL AUDIO BLOCK INTERFACE]

SIGNAL \ MODE	I/O	PIN No.	STOP	FF	REW	FR SEARCH CUE	FR SEARCH REW	PB	PICTURE SEARCH CUE	PICTURE SEARCH REW	PB-P	×2	REC	REC-P	A-IN	A-IN-P	V-IN	V-IN-P	AV-IN	AV-IN-P	JOG/SHUTTLE ×1/5	×1	×2	×-1/5	×-1
$\overline{BIAS\ CONT}$	O	CN412-②	H	H	H	H	H	H	H	H	H	H	L	H	L	H	L	H	L	H	H	H	H	H	H
SLOW	O	CN412-③	L	L	L	L	L	L	L	L	H	L	L	H	L	H	L	H	L	H	H	L	L	H	L
AUDIO PB	O	FR-14 BOARD IC001-⑦	L	L	L	H	H	H	H	H	H	H	L	L	L	L	H	H	L	L	H	H	H	H	H
$\overline{AFM\ MUTE}$	O	FR-14 BOARD IC001-⑧	H	H	H	L	L	H	L	L	L	H	H	H	H	L	H	H	H	H	L	L	L	L	L
$\overline{LINE\ MUTE}$	O	FR-14 BOARD IC001-⑨	H	H	H	L	L	H	L	L	L	H	H	H	H	H	H	H	H	H	L	L	L	L	L
NORMAL CONT	O	FR-14 BOARD IC001-⑩	H	H	H	H	H	L	H	H	H	H	L	H	L	H	L	H	L	H	H	H	H	H	H
A-IN	O	FR-14 BOARD IC001-⑪	L	L	L	L	L	L	L	L	L	L	L	L	H	H	L	L	H	H	L	L	L	L	L
V-IN	O	FR-14 BOARD IC001-⑫	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	L	L	L	L	L

PB	PICTURE SEARCH		PB·P	×2	REC	REC·P	A-IN	A-IN·P	V-IN	V-IN·P	AV-IN	AV-IN·P	JOG/SHUTTLE						LOADING	UNLOADING
	CUE	REV											×1/5	×1	×2	×-1/5	×-1	×-2		
H	H	H	H	H	L	L	H	H	L	L	L	L	H	H	H	H	H	H	L	L
L	L	L	L	L	H	L	L	L	H	L	H	L	L	L	L	L	L	L	L	L
L	L	L	L	L	※1	L	L	L	H	L	H	L	L	L	L	L	L	L	L	L
※2	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
L	H	H	H	H	L	L	L	L	L	L	L	L	H	H	H	H	H	H	L	L
※5	※5	※5	※5	※5	※3	※3	※5	※5	※5	※5	※5	※5	※4	※5	※5	※4	※5	※5	※3	※3
※5	※5	※5	※5	※5	※3	※3	※5	※5	※5	※5	※5	※5	※4	※5	※5	※4	※5	※5	※3	※3
※5	※5	※5	※5	※5	※3	※3	※5	※5	※5	※5	※5	※5	※4	※5	※5	※4	※5	※5	※3	※3
※5	※5	※5	※5	※5	※3	※3	※5	※5	※5	※5	※5	※5	※4	※5	※5	※4	※5	※5	※3	※3
L	V D	V D	V D	V D	L	L	L	L	L	L	L	L	V D	V D	V D	V D	V D	V D	L	L
H	βI/II : L βIII : H	βI/II : L βIII : H	H	H	H	H	H	H	H	H	H	H	H	H	H	※6	βI : L βII/III : H	βI/II : L βIII : H	H	H
: L III : H	L	L	βI : L βII/III : H	L	βI : L βII/III : H	βI : L βII/III : H	βI : L βII/III : H	βI : L βII/III : H	βI : L βII/III : H	βI : L βII/III : H	βI : L βII/III : H	βI : L βII/III : H	βI : L βII/III : H	βI : L βII/III : H	L	L	L	L	——	——
L	$\overline{\text{RF SWP}}$	$\overline{\text{RF SWP}}$	βI : L βII/III : H	$\overline{\text{RF SWP}}$	βI : L βII/III :	$\overline{\text{RF SWP}}$	βI : L βII/III : H	$\overline{\text{RF SWP}}$	βI : L βII/III : H	$\overline{\text{RF SWP}}$	βI : L βII/III : H	$\overline{\text{RF SWP}}$	※7	βI : L βII/III : H	$\overline{\text{RF SWP}}$	※7	L	$\overline{\text{RF SWP}}$	——	——

※1 "H" for 12 seconds only at REC start.
※2 "H" when there is no CTL.
※3 Depends on front β switch.
※4 Outputs Beta mode identified last time.
※5 Outputs Beta mode currently being played back.
※6 βI: "L", βII: "L" only when tape is moving, βIII: "H"
※7 $\overline{\text{RF SWP}}$ when tape is stopped, "L" when tape is moving.
} Refer to Timing Chart.

B	PICTURE SEARCH		PB·P	×2	REC	REC·P	A-IN	A-IN·P	V-IN	V-IN·P	AV-IN	AV-IN·P	JOG/SHUTTLE						LOADING	UNLOADING
	CUE	REW											×1/5	×1	×2	×-1/5	×-1	×-2		
H	H	H	H	H	L	H	L	H	L	H	L	H	H	H	H	H	H	H	H	H
L	L	L	H	L	L	H	L	H	L	H	L	H	H	L	L	H	L	L	L	L
H	H	H	H	H	L	L	L	L	H	H	L	L	H	H	H	H	H	H	L	L
H	L	L	L	H	H	H	H	L	H	H	H	H	L	L	L	L	L	L	H	H
H	L	L	L	H	H	H	H	H	H	H	H	H	L	L	L	L	L	L	H	H
L	H	H	H	H	L	H	L	H	L	H	L	H	H	H	H	H	H	H	H	H
L	L	L	L	L	L	L	H	H	L	L	H	H	L	L	L	L	L	L	L	L
L	L	L	L	L	L	L	L	L	H	H	H	H	L	L	L	L	L	L	L	L

[SYSTEM CONTROL AND SLOW MICRO COMPUTER BLOCK INTERFACE]

SIGNAL \ MODE	I/O	PIN No.	STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB-P	×2	REC	REC-P	A-IN	A-IN-P	V-IN	V-IN-P	AV-IN	AV-IN-P	JOG/SHUTTLE				
						CUE	REV		CUE	REV											×1/5	×1	×2	×-1/5	×-1
SLOW	O	IC801-㉔	L	L	L	L	L	L	L	L	H	L	L	H	L	H	L	H	L	H	H	L	L	H	L
CAP FWD	O	IC801-㊵	H	H	H	H	H	H	H	L	——	H	H	H	H	H	H	H	H	H	H	H	H	L	L
×2	O	IC801-㉓	L	L	L	L	L	L	L	L	L	H	L	L	L	L	L	L	L	L	L	L	H	L	L
TOP/$\overline{\text{END}}$	O	IC801-㉖	L	L	H	L	H	L	L	H	——	L	L	——	L	——	L	——	L	——	L	L	L	H	H
STEP	O	IC801-㊶	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	※1	L	L	※1	L
MC	O	IC801-㉝	L	L	L	H	H	L	H	H	H	H	L	L	L	H	L	L	L	L	H	H	H	H	H
βI	O	IC801-㉙	※2	※2	※2	※3	※3	※4	※4	※4	※4	※4	※2	※2	※4	※4	※4	※4	※4	※4	※3	※4	※4	※3	※4
βIII	O	IC801-㊱	※2	※2	※2	※3	※3	※4	※4	※4	※4	※4	※2	※2	※4	※4	※4	※4	※4	※4	※3	※4	※4	※3	※4

※ 1 Refer to Slow Servo Timing Chart.
※ 2 Depends on front Beta mode switch.
※ 3 Outputs Beta mode identified the previous time.
※ 4 Outputs Beta mode of tape presently running.

[JOG AND SERVO BLOCK INTERFACE]

SIGNAL \ MODE	I/O	PIN No.	STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB-P	×2	REC	REC-P	A-IN	A-IN-P	V-IN	V-IN-P	AV-IN	AV-IN-P	JOG/SHUTTLE				
						CUE	REV		CUE	REV											×1/5	×1	×2	×-1/5	×-1
TPS	O	IC801-⑨	L	L	L	L	L	L	L	L	H	L	L	H	L	H	L	H	L	H	H	L	L	H	L
$\overline{\text{DRUM CMP}}$	O	IC801-⑩	H	H	H	H	H	H	H	H	L	H	H	L	H	L	H	L	H	L	L	H	H	L	H
D FAST	O	IC801-⑬	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	※1	L	L	※1	L
$\overline{\text{D SLOW}}$	O	IC801-⑭	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	※1	H	H	※1	H
XI RVS	O	IC801-⑯	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H
βII NP	O	IC801-⑰	βII MODE: "H"							L	——	βII MODE: "H"									L	L			
βIII NP	O	IC801-⑱	βIII MODE: "H"							L	——	βIII MODE: "H"									L	L			
REEL RVS	O	IC801-⑳	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H
STEP PLS	O	IC801-㉒	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	※1	L	L	※1	L
$\overline{\text{CAP RVS}}$	O	IC801-㉘	H	H	H	H	H	H	H	L	——	H	H	H	H	H	H	H	H	H	H	H	H	L	L

※ 1 Refer to Slow Servo Timing Chart.

PB	PICTURE SEARCH		PB-P	×2	REC	REC-P	A-IN	A-IN-P	V-IN	V-IN-P	AV-IN	AV-IN-P	JOG/SHUTTLE						LOADING	UNLOADING
	CUE	REV											×1/5	×1	×2	×-1/5	×-1	×-2		
L	L	L	H	L	L	H	L	H	L	H	L	H	H	L	L	H	L	L	L	L
H	H	L	——	H	H	H	H	H	H	H	H	H	H	H	H	L	L	L	H	H
L	L	L	L	H	L	L	L	L	L	L	L	L	L	L	H	L	L	H	L	L
L	L	H	——	L	L	——	L	——	L	——	L	——	L	L	L	H	H	H	——	——
L	L	L	L	L	L	L	L	L	L	L	L	L	※1	L	L	※1	L	L	L	L
L	H	H	H	H	L	L	L	H	L	L	L	L	H	H	H	H	H	H	L	L
※4	※4	※4	※4	※4	※2	※2	※4	※4	※4	※4	※4	※4	※3	※4	※4	※3	※4	※4	※2	※2
※4	※4	※4	※4	※4	※2	※2	※4	※4	※4	※4	※4	※4	※3	※4	※4	※3	※4	※4	※2	※2

PB	PICTURE SEARCH		PB-P	×2	REC	REC-P	A-IN	A-IN-P	V-IN	V-IN-P	AV-IN	AV-IN-P	JOG/SHUTTLE						LOADING	UNLOADING
	CUE	REV											×1/5	×1	×2	×-1/5	×-1	×-2		
L	L	L	H	L	L	H	L	H	L	H	L	H	H	L	L	H	L	L	L	L
H	H	H	L	H	H	L	H	L	H	L	H	L	L	H	H	L	H	H	H	H
L	L	L	L	L	L	L	L	L	L	L	L	L	※1	L	L	※1	L	L	L	L
H	H	H	H	H	H	H	H	H	H	H	H	H	※1	H	H	※1	H	H	H	H
L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	L	L	L
→	L	——	← βIII MODE: "H" →										L	L	L	——	——			
→	L	——	← βIII MODE: "H" →										L	L	L	——	——			
L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	L	L
L	L	L	L	L	L	L	L	L	L	L	L	L	※1	L	L	※1	L	L	L	L
H	H	L	——	H	H	H	H	H	H	H	H	H	H	H	H	L	L	L	——	——

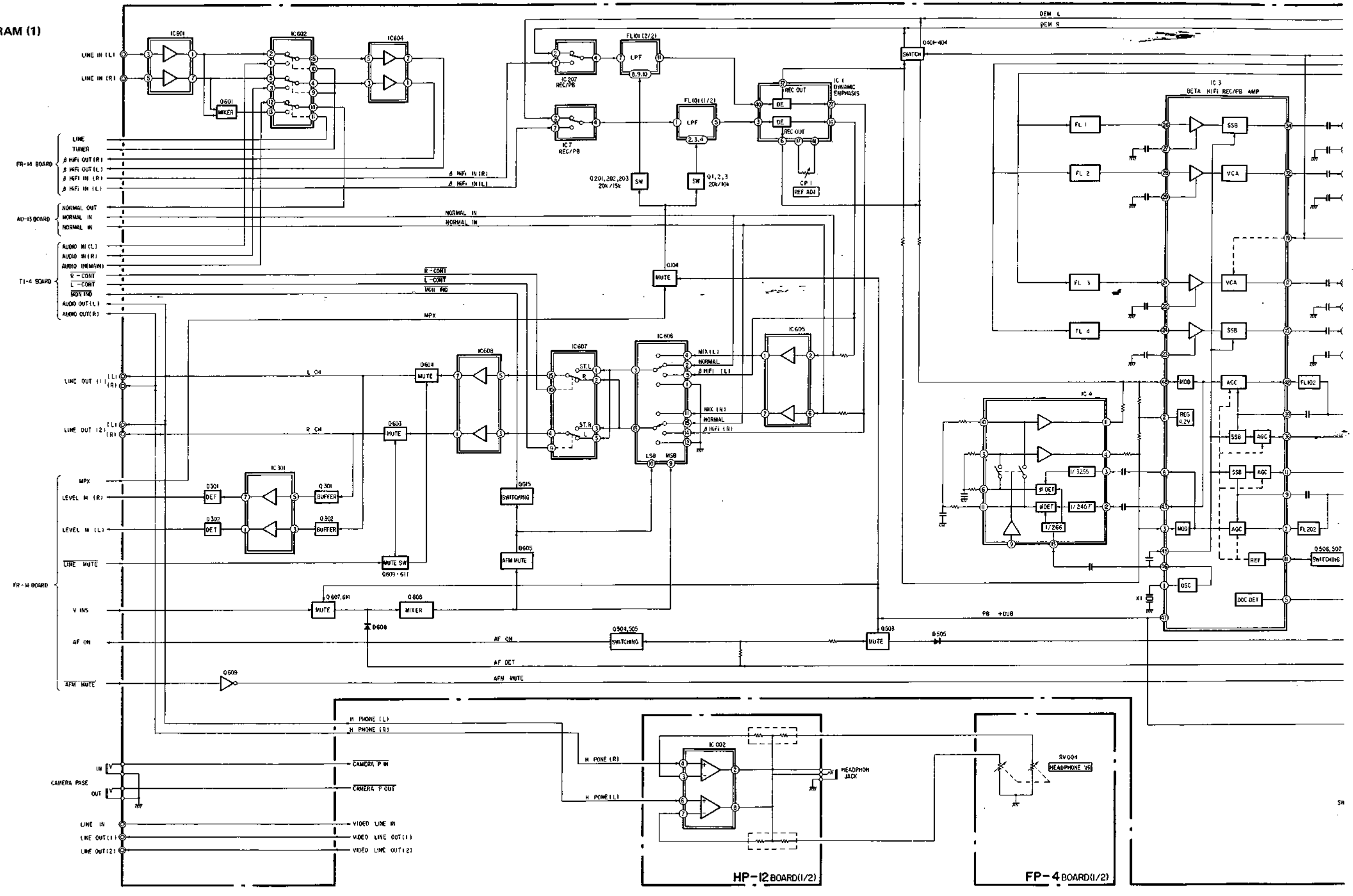
[SYSTEM CONTROL CIRCUIT AND SERVO BLOCK INTERFACE]

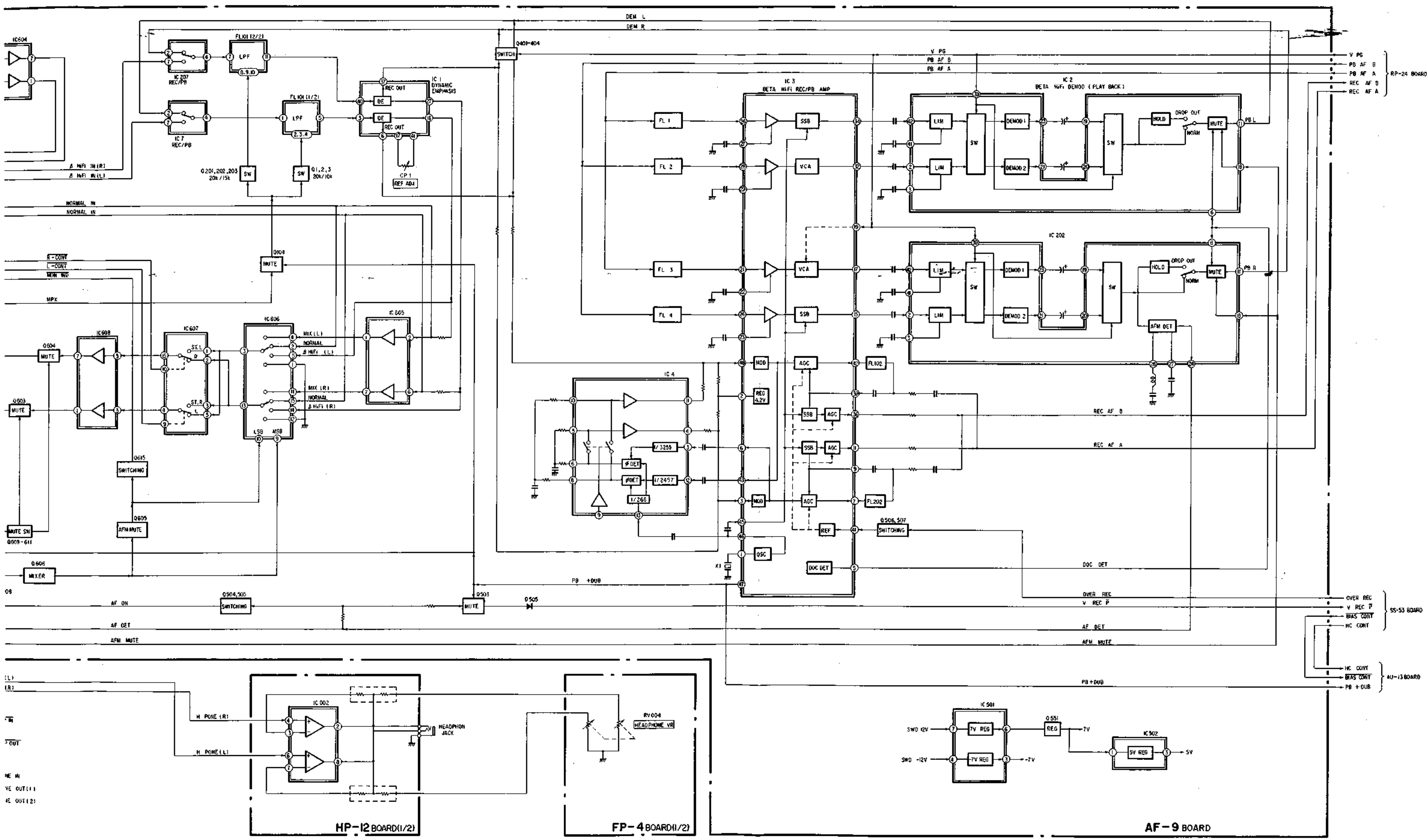
SIGNAL \ MODE	I/O	Pin No.	PB	REC	FF	REW	CUE	REV	PB PAUSE	REC PAUSE	LOADING	EJECT	A.INSERT	A.INSERT	コマ送り	逆コマ送り	AV INSERT	AV INSERT PAUSE	V INSEPT	V INSERT PAUSE	JOG × 2	JOG ÷ 2	JOG 1/5	JOG—×2	JOG—>
VD/CTL	I'	IC405-⑮ IC401-㊼	——	$\overline{CTL}$	$\overline{VD}$	$\overline{CTL}$	$\overline{CTL}$	$\overline{CTL}$	$\overline{CTL}$	——	TAPE RUNS $\overline{CTL}$	——	——	$\overline{CTL}$	——	$\overline{CTL}$	$\overline{CTL}$ ※12	——	$\overline{CTL}$ ※12	——	$\overline{CTL}$	$\overline{CTL}$	$\overline{CTL}$	$\overline{CTL}$	$\overline{CTL}$
$\overline{HC\ CONT.}$	O	IC401-⑫	L ※8	L	H	L	L	L	L	L	L	L	L	L	L	L	L ※13	L	H ※13	L	L	L	L	L	L
REC	O	IC401-⑲	L	L	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
$\overline{CAP\ LOCK}$	I'	IC401-㊷	H	L ※1	L ※1	H	H	L ※1	L ※1	H	H	H	H	L ※1	H	H	L ※1	H	L ※1	H	L ※1	L ※1	H	L ※1	L ※1
RF SW PLS ※2	I'	IC401-㊾	disappear	appear	appear	appear	appear	appear	appear	appear	appear	disappear	disappear	appear	appear	appear	appear	appear	appear	appear	appear	appear	appear	appear	appea
TAPE SPEED (A) ※3	O	IC401-㊸																							
TAPE SPEED (B) ※3	O	IC401-㊹																							
TOP/$\overline{END}$	O	IC401-㊲	L	L	L	L	H	L	H	PB → PAUSE ×1 1/5 L ×2 ※10	※9	H	H	L	L	L	L	※9	L	※9	L	L	L	H	H
DRM STOP	O	IC401-㊽	H	L	L	L	L	L	L	L	L	H	H	L	L	L	L	L	L	L	L	L	L	L	L
CAP STOP	O	IC401-㊼	H	L	L	H	H	L	L			H	H	L		L	L		L		L	L	L	L	L
VD INT	O	IC401-㊻	L	H	L	L	L	H	H	H	L	L	L	H	H	H	L	L	L	L	H	H	H	H	H
REC-$\overline{PAUSE}$ ※4	O	IC401-㊱	L	L	H ※7	L	L	L	L	L	L	L	L	L	L	L	L ※11	L	L ※11	L	L	L	L	L	L
CUE+REV	O	IC401-㊷	L	L	L	L	L	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
CAP FWD	O	IC401-㊸	H ※5	"H"	H	H	L	H	L	※6	※6	※5	※5	H	H	H	H	※6	H	※6	H	H	H	L	L
$\overline{VD\ CTL}$	I	IC401-⑯	——	$\overline{CTL}$	$\overline{VD}$	$\overline{CTL}$	$\overline{CTL}$	$\overline{CTL}$	$\overline{CTL}$	——	TAPE RUNS $\overline{CTL}$	——	——	$\overline{CTL}$	——	$\overline{CTL}$	$\overline{CTL}$ ※12	$\overline{CTL}$	$\overline{CTL}$ ※12	$\overline{CTL}$	$\overline{CTL}$	$\overline{CTL}$	$\overline{CTL}$	$\overline{CTL}$	$\overline{CTL}$
IND WRT	O	IC401-⑩	L	INDEX REC: H L	INDEX REC: H L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
IND ERA	O	IC401-⑪	L	INDEX ERASE: H L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
×2	O	IC401-㊶	L	X2: "H" L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L

	REV	PB PAUSE	REC PAUSE	LOADING	EJECT	A.INSERT	A.INSERT	コマ送り	逆コマ送り	AV INSERT	AV INSERT PAUSE	V INSEPT	V INSERT PAUSE	JOG × 2	JOG × 1	JOG 1/5	JOG −×2	JOG −×1	JOG −1/5	F/R SEARCH
	$\overline{CTL}$	$\overline{CTL}$	—	TAPE RUNS $\overline{CTL}$	—	—	$\overline{CTL}$	—	$\overline{CTL}$	$\overline{CTL}$※12	—	$\overline{CTL}$※12	—	$\overline{CTL}$	$\overline{CTL}$	$\overline{CTL}$	$\overline{CTL}$	$\overline{CTL}$	$\overline{CTL}$	$\overline{CTL}$
	L	L	L	L	L	L	L	L	L	L※13	L	H※13	L	L	L	L	L	L	L	L
	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	L※1	L※1	H	H	H	H	L※1	H	H	L※1	H	L※1	H	L※1	L※1	H	L※1	L※1	H	H
ir	appear	appear	appear	appear	disappear	disappear	appear	appear	appear	appear	appear	appear	appear	appear	appear	appear	appear	appear	appear	appear
	L	H	PB → PAUSE ×1 L 1/5 ×2 ※10	※9	H	H	L	L	L	L	※9	L	※9	L	L	L	H	H	H	FWD: "L" RVS: "H"
	L	L	L	L	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	L	L			H	H	L		L	L		L		L	L	L	L	L	L	H
	H	H	H	L	L	L	H	H	H	L	L	L	L	H	H	H	H	H	H	H
	L	L	L	L	L	L	L	L	L	L※11	L	L※11	L	L	L	L	L	L	L	L
	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H
	H	L	※6	※5	※5	※5	H	H	H	H	※6	H	※6	H	H	H	L	L	L	FWD: "H" RVS: "L"
	$\overline{CTL}$	$\overline{CTL}$	—	TAPE RUNS $\overline{CTL}$	—	—	$\overline{CTL}$	—	$\overline{CTL}$	$\overline{CTL}$※12	$\overline{CTL}$	$\overline{CTL}$※12	$\overline{CTL}$	$\overline{CTL}$	$\overline{CTL}$	$\overline{CTL}$	$\overline{CTL}$	$\overline{CTL}$	$\overline{CTL}$	$\overline{CTL}$
	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L

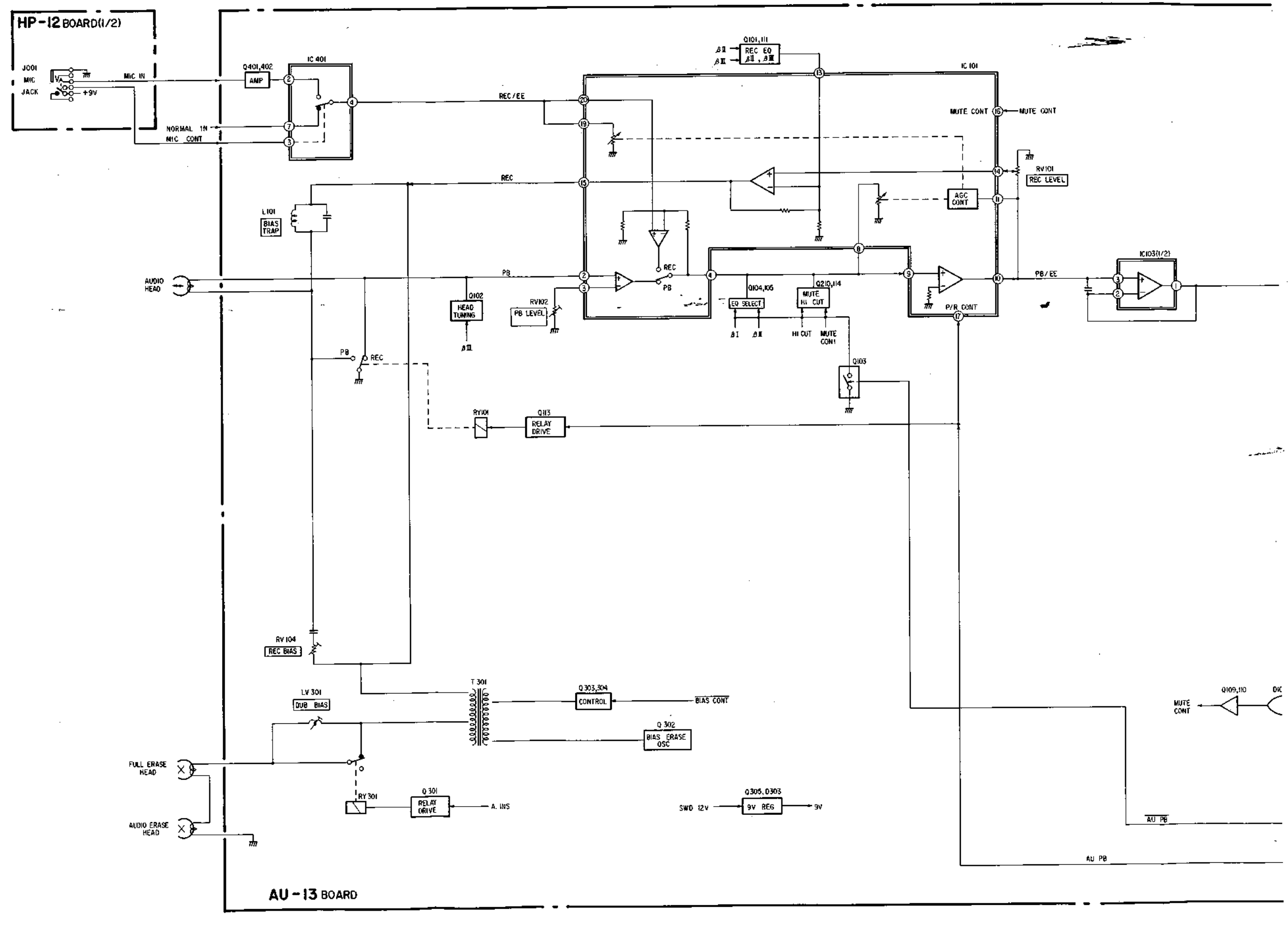
※ 1 "H" during capstan servo unfocked, "L" locked.
※ 2 30 Hz, 50% duty ratio pulse.
※ 3 3 bit binary coded tape speed.
※ 4 latched output by flip-flop, clock pulses for the flip-flop are RF SW PLS.
※ 5 No use is this mode.
※ 6 "H" when tape runs forward, "L" when tape runs reverse, holds the previous level is stop mode.
※ 7 "L" while counting 15 CTL after record review mode and reverse playback mode, since then "H".
※ 8 INDEX MARK/ERASE when "pulse".
※ 9 "L" during Forward running, "H" during Reverse.
※10 "H" during switching between PB and PAUSE, due to (−X1, −X 1/5, −X2).
※11 Goes to "H" in sync with RF SWP when PB CTL ceases after VIDEO REC start, and after time equivalent to 10 CTL has elapsed.
※12 Switches to VD when PB CTL ceases after VIDEO REC start, and after time equivalent to 10 CTL has elapsed.
※13 Goes to "H" in sync with the fall of the first CTL IN, when PB CTL ceases after VIDEO REC start, and after time equivalent to 10 CTL has elapsed.

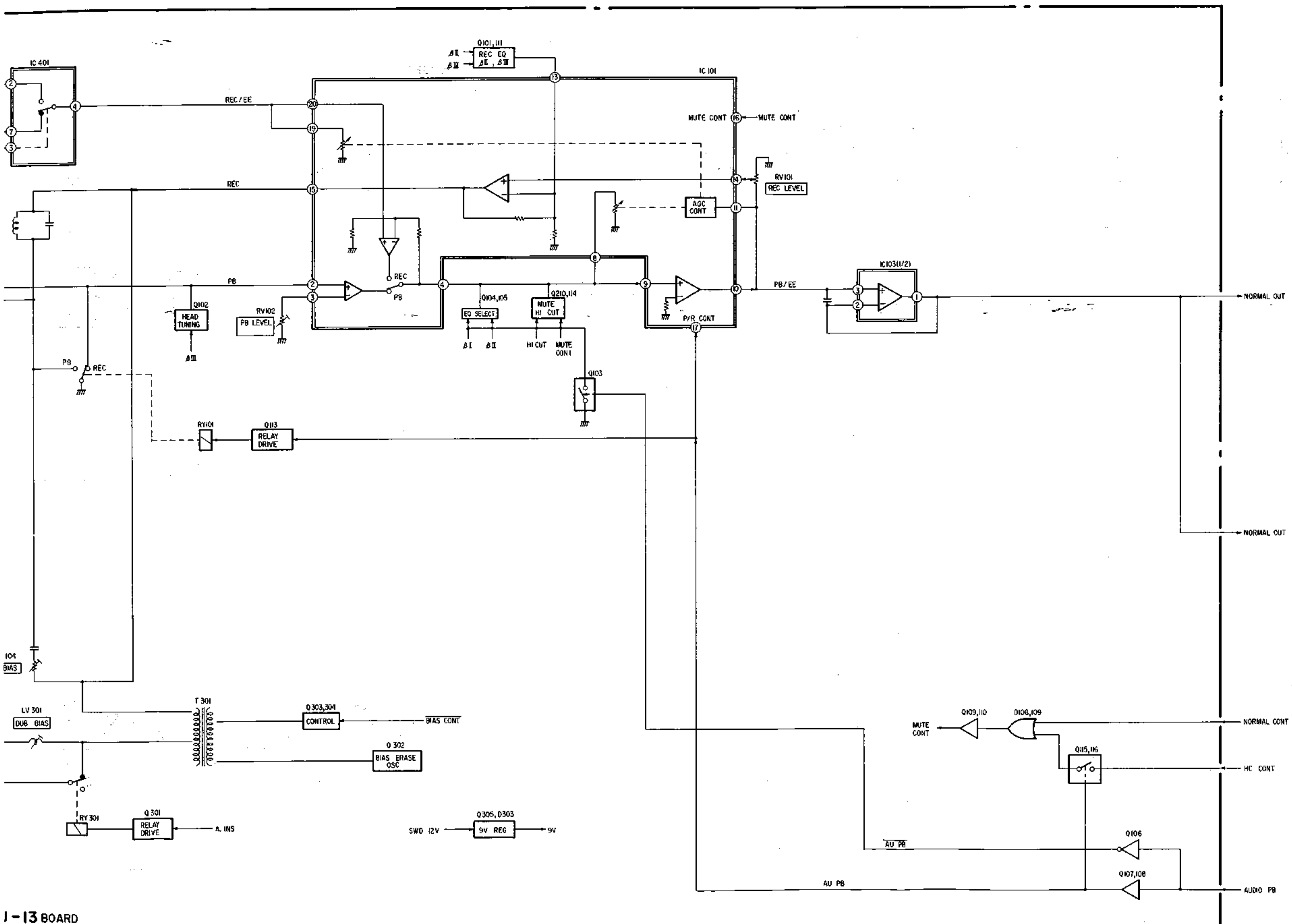
3-8. AUDIO BLOCK DIAGRAM (1)




HP-12 BOARD(1/2)
FP-4 BOARD(1/2)
AF-9 BOARD
IC 002
HEADPHONE JACK
RV004 HEADPHONE VR
IC 501
7V REG
-7V REG
Q551 REG
IC 502
5V REG
IC 3 BETA HiFi REC/PB AMP
IC 2 BETA HiFi DEMOD (PLAY BACK)
IC 202
IC 4
IC 1 DYNAMIC EMPHASIS
IC 7 REC/PB
IC 207 REC/PB
IC 604
IC 605
IC 606
IC 607
IC 608
FL 1
FL 2
FL 3
FL 4
FL101 (1/2)
FL101 (2/2)
LPF
SW
Q1,2,3 20k/10k
Q201,202,203 20k/15k
REC OUT
DE
CP 1 REF ADJ
SWITCH
Q401-404
MUTE
Q609 MUTE
Q603
Q604
MUTE SW Q609-611
MIXER Q606
AFM MUTE Q605
SWITCHING Q615
SWITCHING Q504,505
Q503
D505
SWITCHING Q506,507
OSC
MOD
REG 4.2V
AGC
SSB
VCA
REF
DOC DET
FL202
FL102
LIM
DEMOD 1
DEMOD 2
HOLD
AFM DET
DROP OUT
NORM
PB R
PB L
1/266
φ DET
1/2457
1/3255
MPX
R-CONT
L-CONT
NORMAL IN
β HiFi IN (R)
β HiFi IN (L)
MIX (L)
MIX (R)
NORMAL
β HiFi (R)
β HiFi (L)
H PONE (L)
H PONE (R)
AF ON
AF DET
AFM MUTE
PB +DUB
OVER REC
V REC P
DOC DET
REC AF A
REC AF B
DEM L
DEM R
V PG
PB AF B
PB AF A
SWD 12V
SWD -12V
-7V
7V
5V
HC CONT
BIAS CONT
AU-13 BOARD
SS-53 BOARD
RP-24 BOARD

3-9. AUDIO BLOCK DIAGRAM (2)

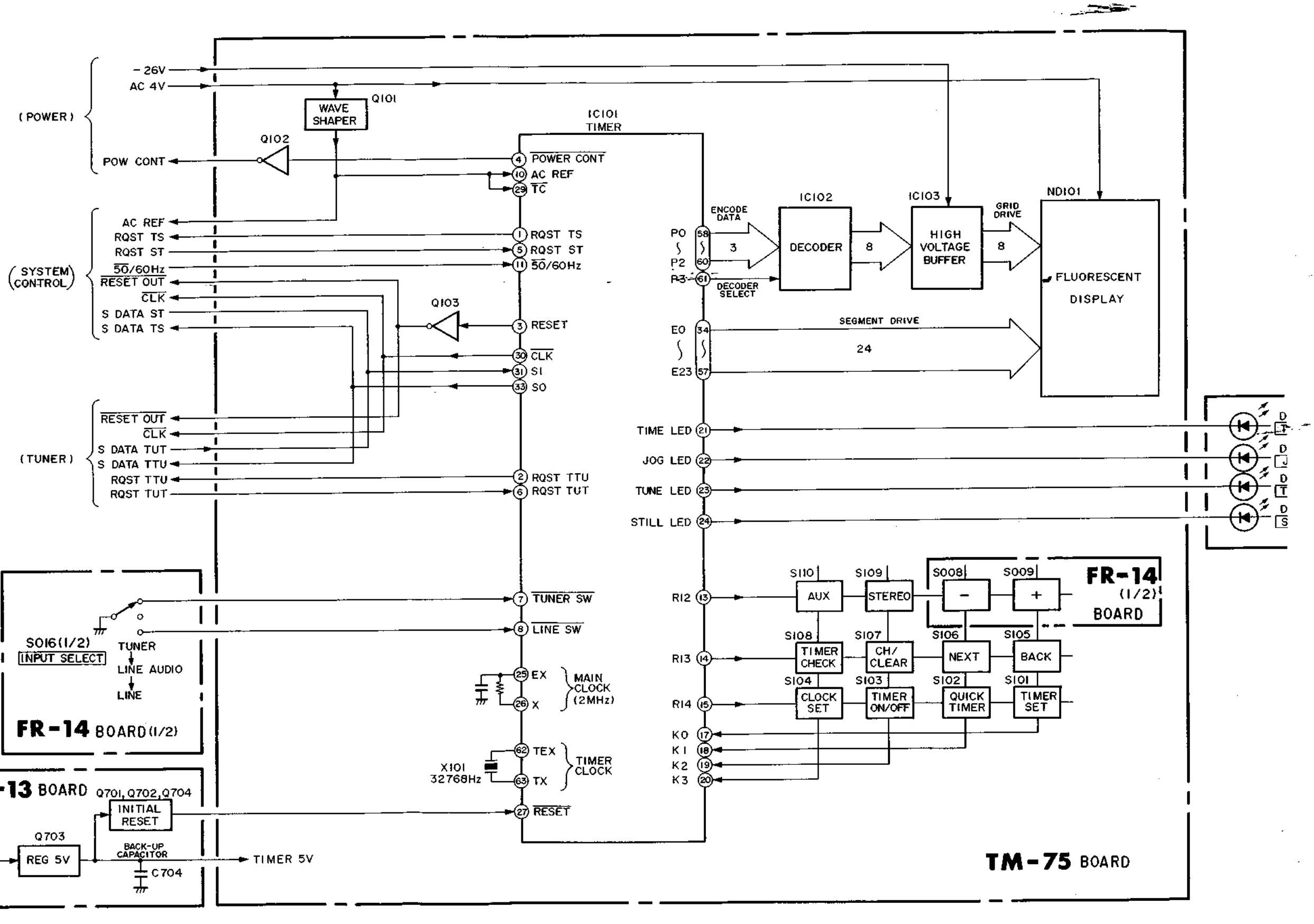


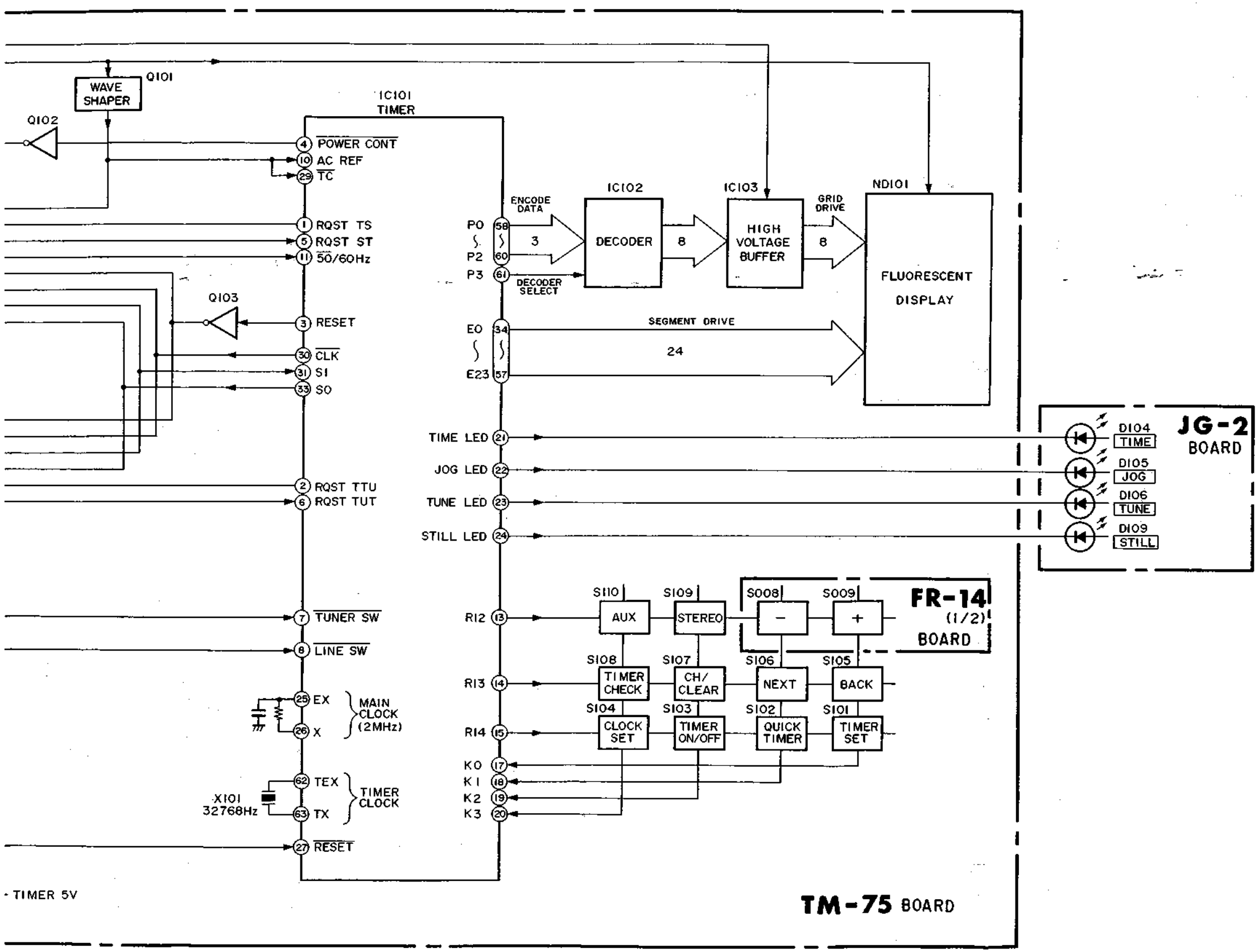


IC 401
REC/EE
REC
PB
Q101,111
REC EQ
IC 101
MUTE CONT
RV101
REC LEVEL
AGC CONT
Q102
HEAD TUNING
RV102
PB LEVEL
Q104,105
EQ SELECT
Q210,114
MUTE HI CUT
HI CUT
MUTE CONT
P/R CONT
PB/EE
IC103(1/2)
NORMAL OUT
Q103
RY101
Q113
RELAY DRIVE
104
BIAS
LV 301
DUB BIAS
T 301
Q303,304
CONTROL
BIAS CONT
Q 302
BIAS ERASE OSC
RY301
Q 301
A. INS
Q305, D303
SWD 12V
9V REG
9V
Q109,110
D108,109
Q115,116
NORMAL CONT
HC CONT
Q106
AU PB
Q107,108
AUDIO PB

J-13 BOARD

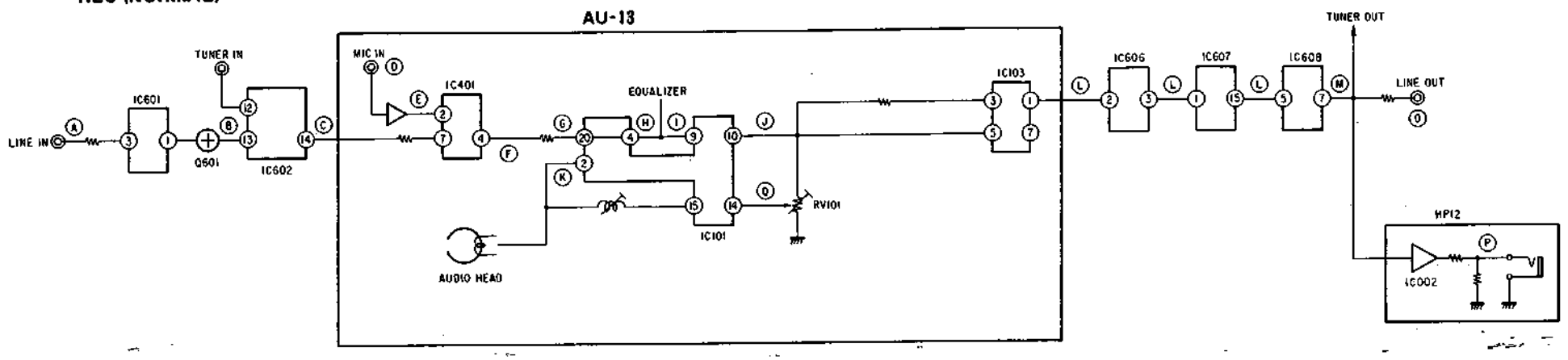
3-11. TIMER BLOCK DIAGRAM

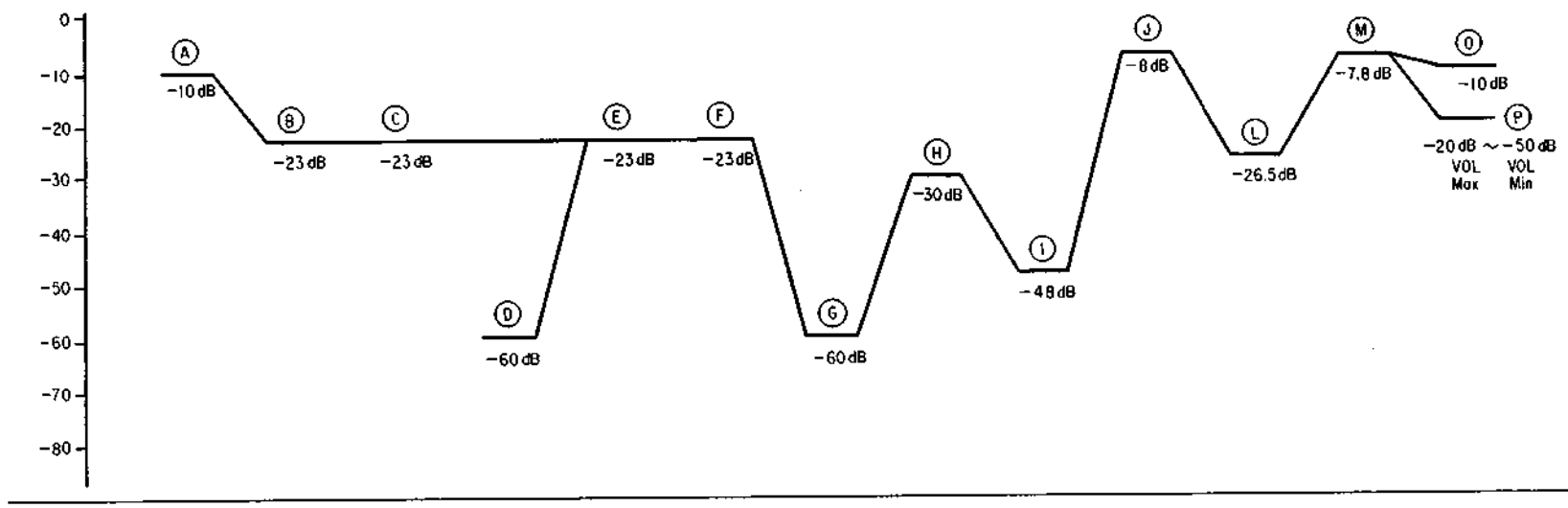



WAVE SHAPER
Q101
Q102
IC101
TIMER
4 POWER CONT
10 AC REF
29 TC
1 RQST TS
5 RQST ST
11 50/60Hz
Q103
3 RESET
30 CLK
31 SI
33 SO
2 RQST TTU
6 RQST TUT
7 TUNER SW
8 LINE SW
25 EX
26 X
MAIN CLOCK (2MHz)
62 TEX
63 TX
X101 32768Hz
TIMER CLOCK
27 RESET
- TIMER 5V
ENCODE DATA
P0 58
P2 60
P3 61
3
DECODER SELECT
IC102
DECODER
8
IC103
HIGH VOLTAGE BUFFER
GRID DRIVE
8
ND101
FLUORESCENT DISPLAY
SEGMENT DRIVE
E0 34
E23 57
24
TIME LED 21
JOG LED 22
TUNE LED 23
STILL LED 24
D104 TIME
D105 JOG
D106 TUNE
D109 STILL
JG-2 BOARD
RI2 13
RI3 14
RI4 15
K0 17
K1 18
K2 19
K3 20
S110 AUX
S109 STEREO
S008 -
S009 +
S108 TIMER CHECK
S107 CH/ CLEAR
S106 NEXT
S105 BACK
S104 CLOCK SET
S103 TIMER ON/OFF
S102 QUICK TIMER
S101 TIMER SET
FR-14 (1/2) BOARD
TM-75 BOARD

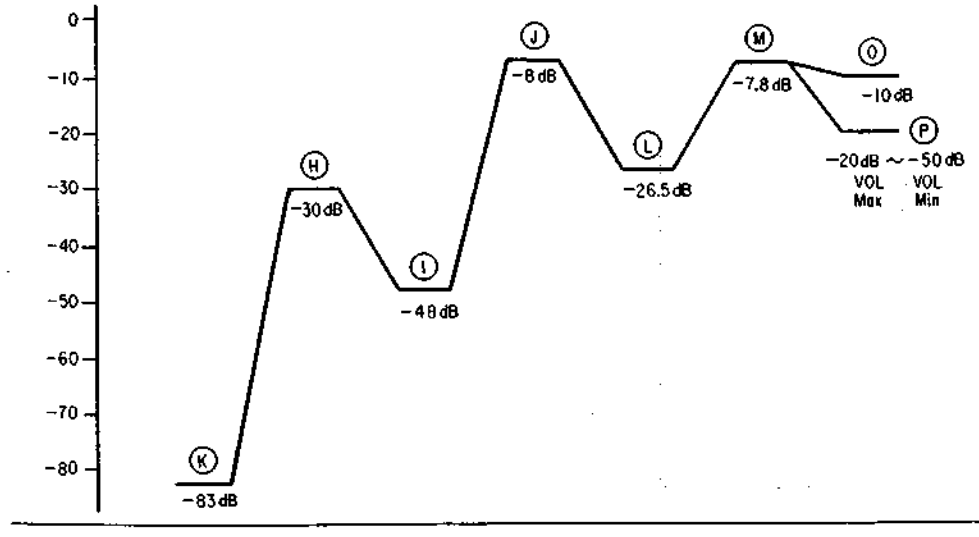
3-10. AUDIO LEVEL DIAGRAM

– REC (NORMAL) –

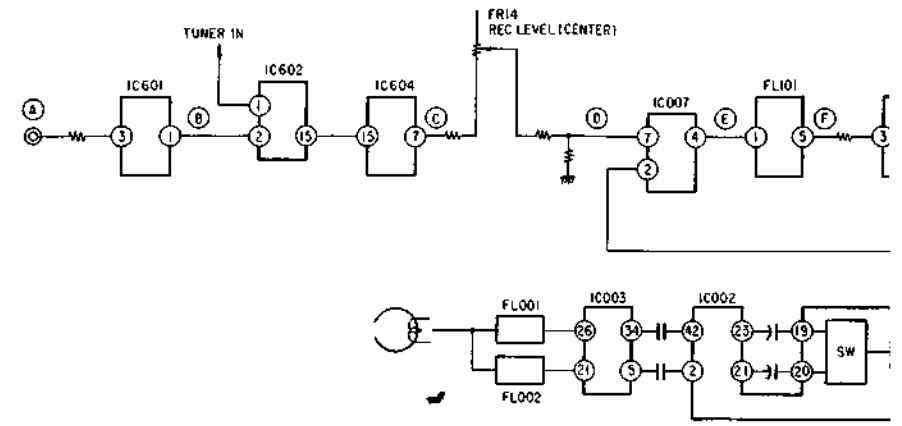


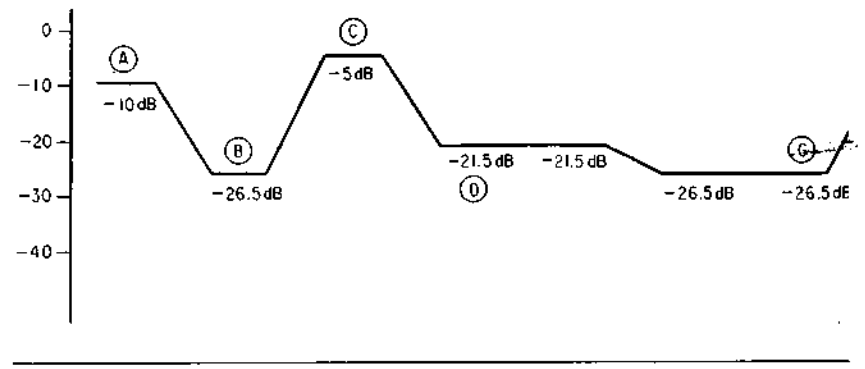


– PB (NORMAL) –

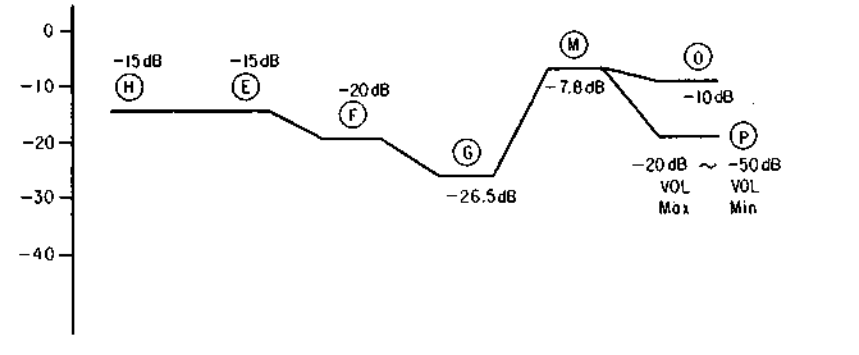


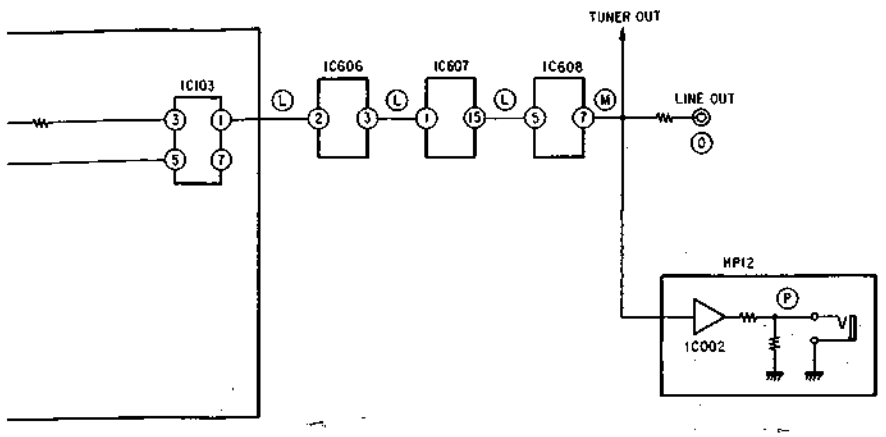
– REC (BETA Hi-Fi) –

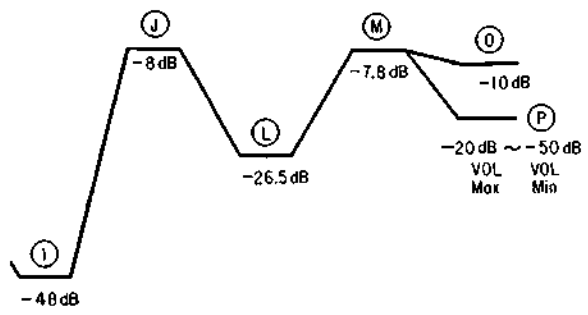




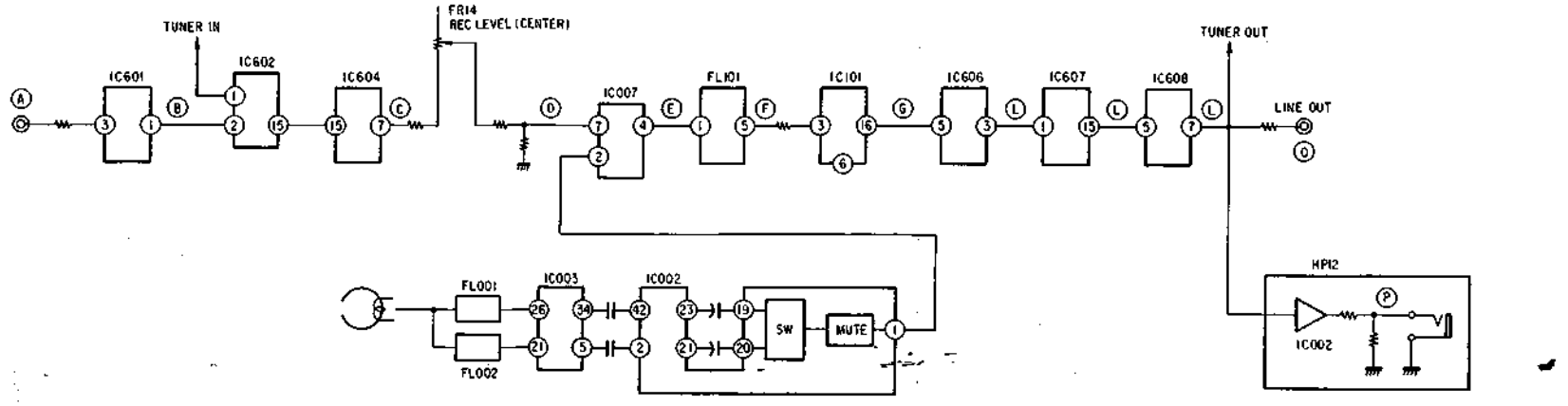
– PB (BETA Hi-Fi) –

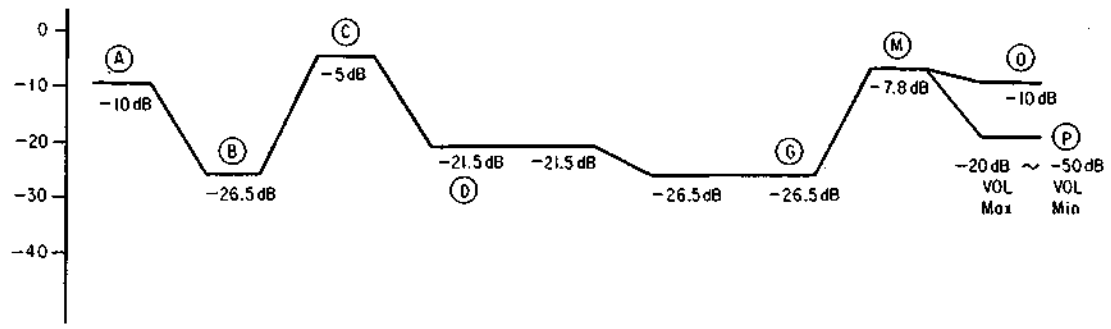




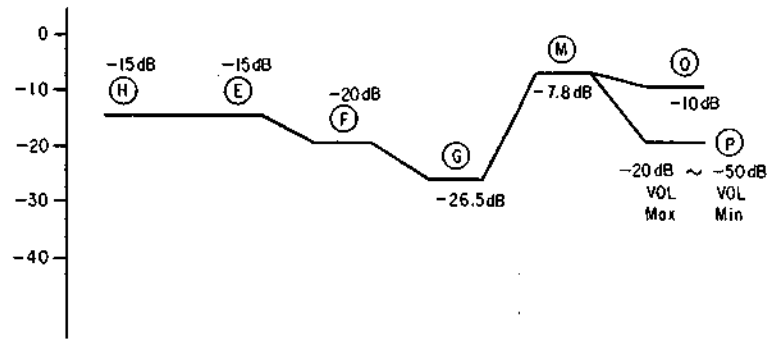


– REC (BETA Hi-Fi) –

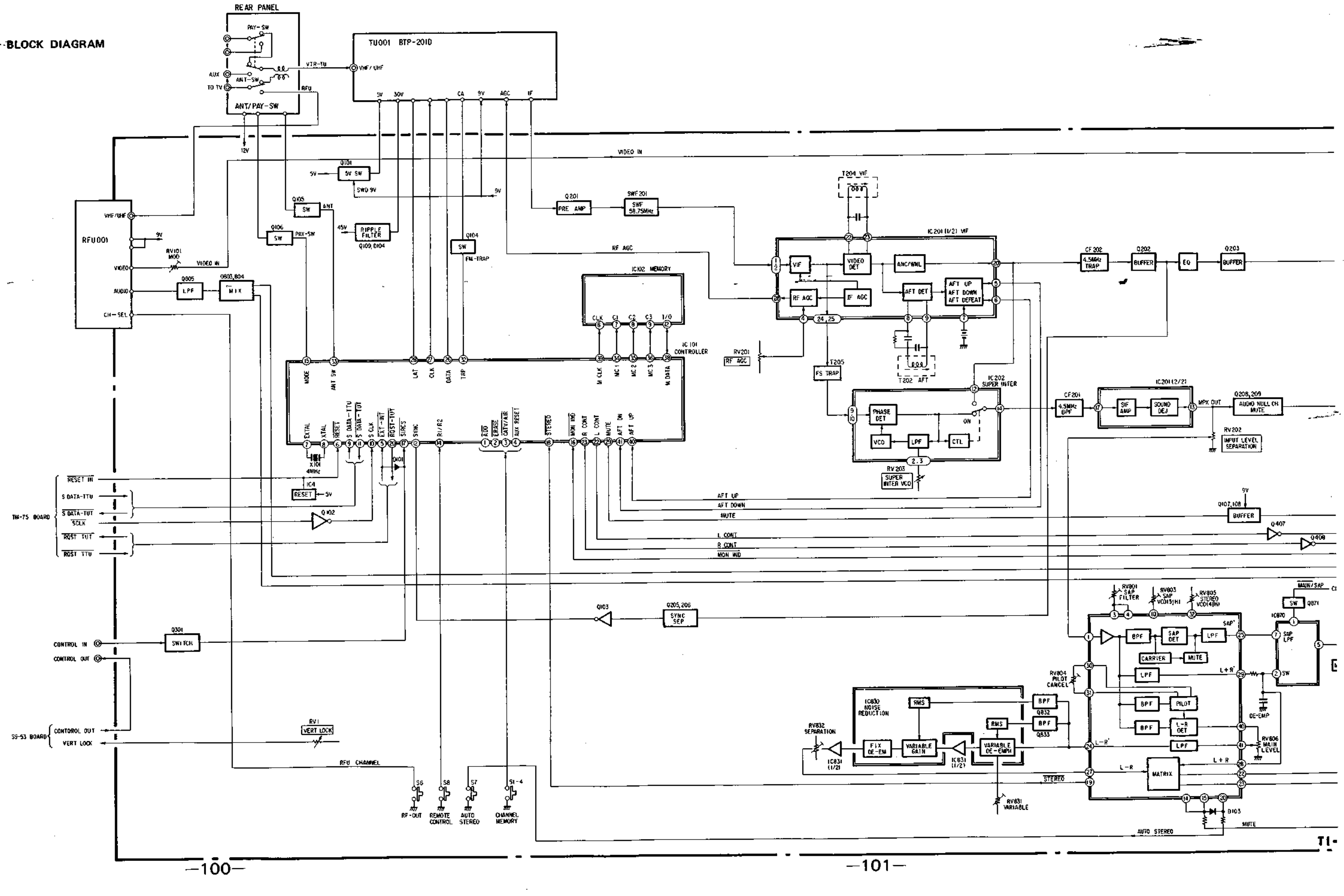


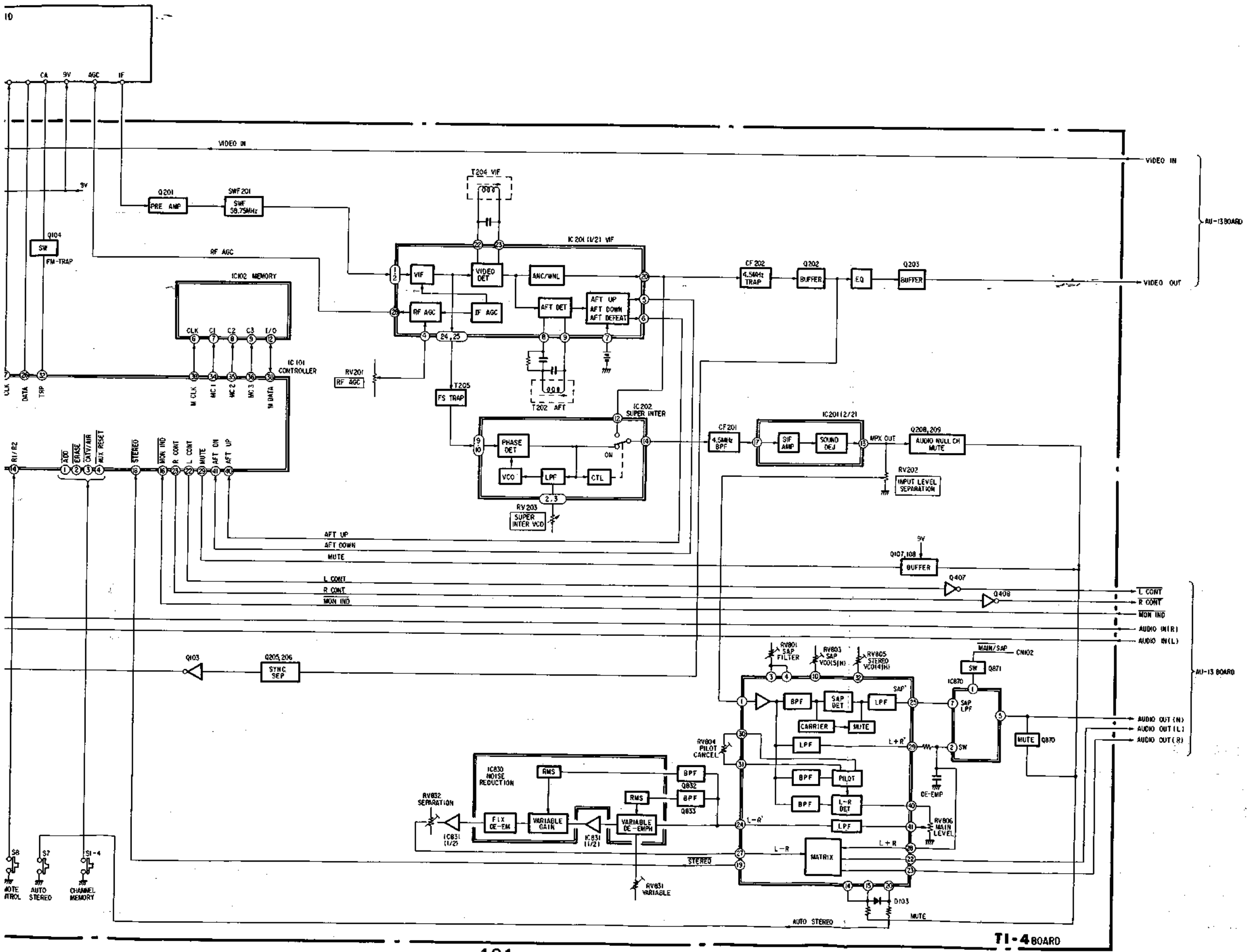


– PB (BETA Hi-Fi) –

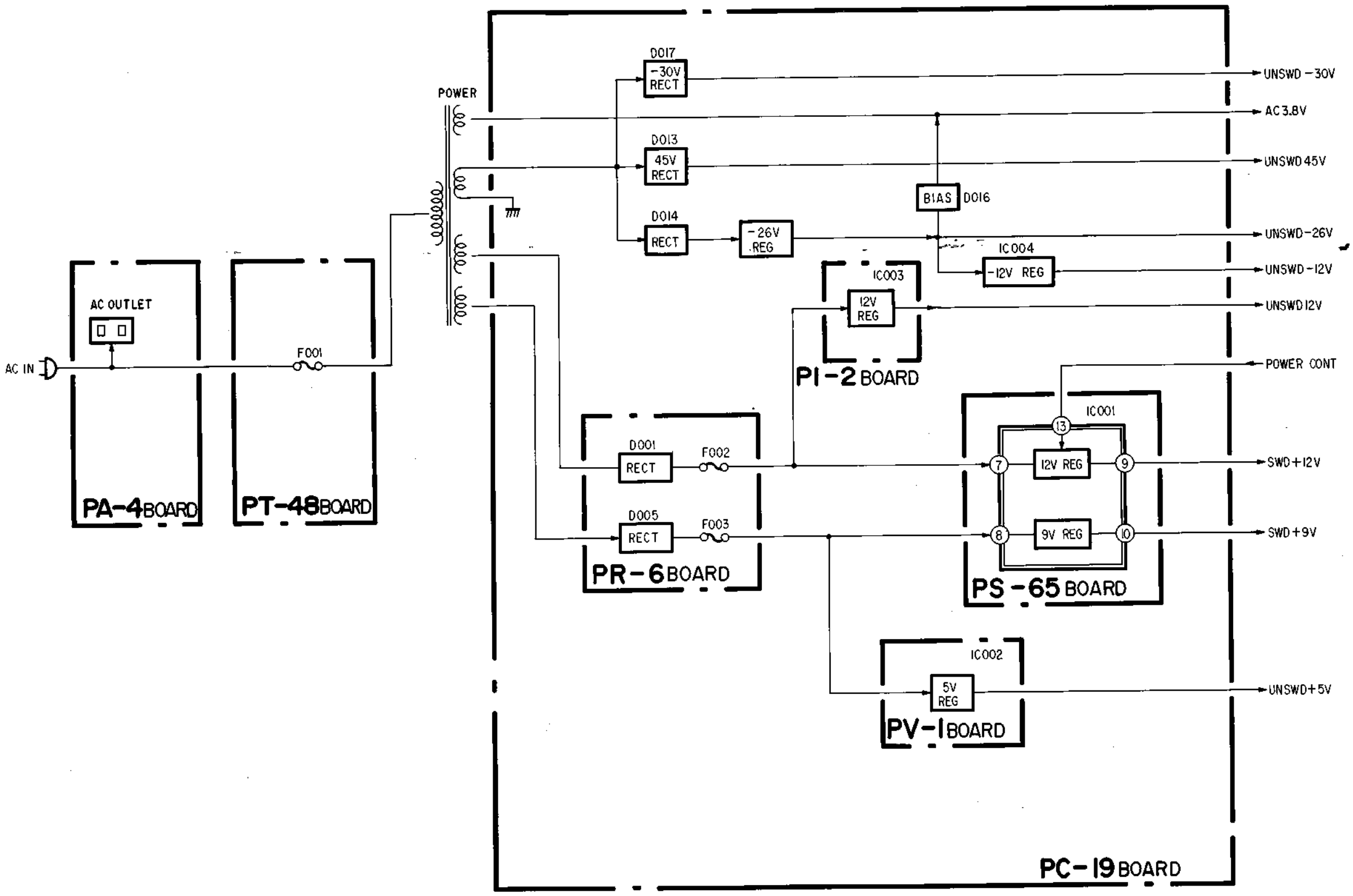


3-12. TUNER BLOCK DIAGRAM

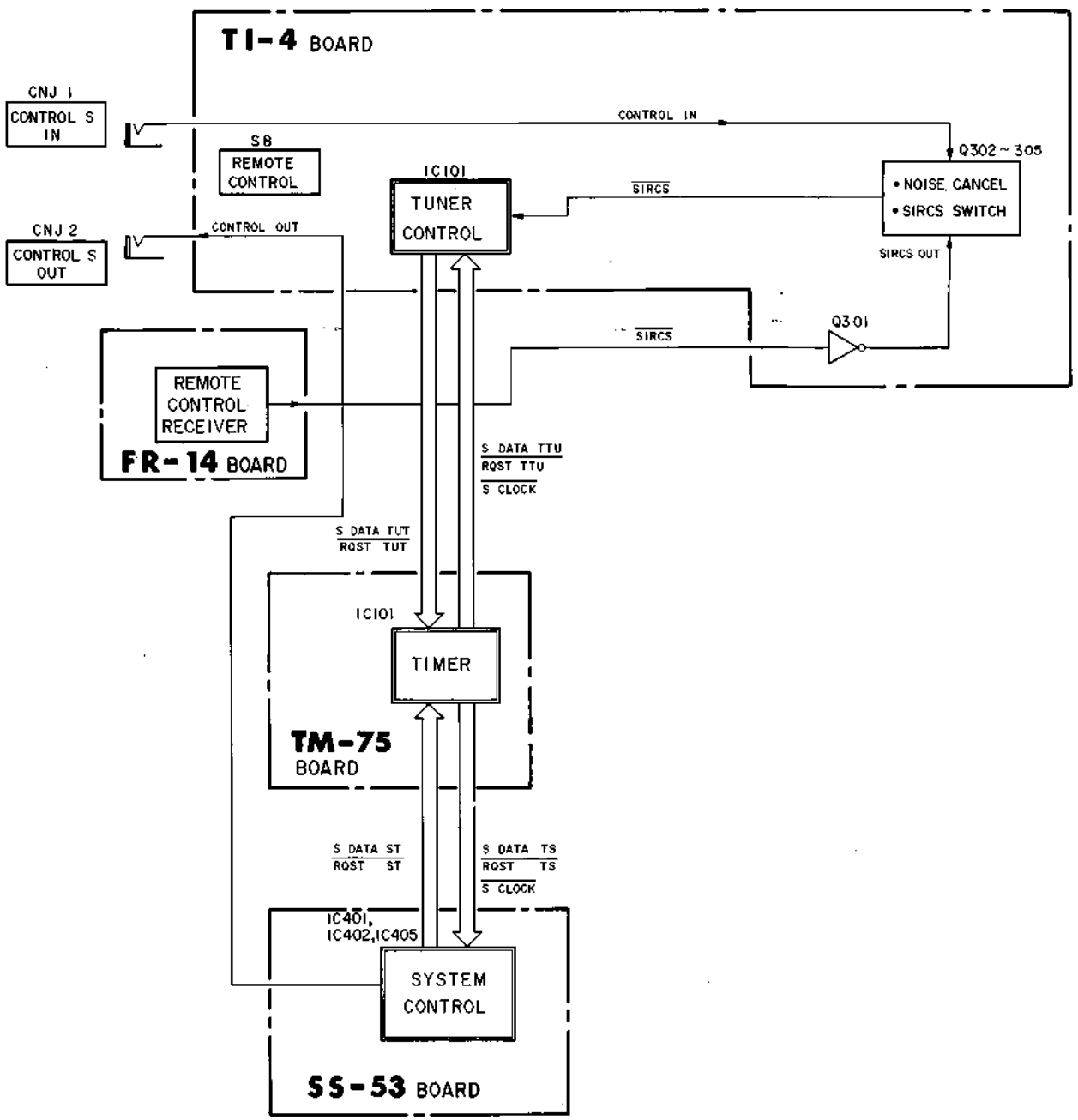



CA
9V
AGC
IF
VIDEO IN
9V
Q201
PRE AMP
SWF201
SWF
58.75MHz
Q104
SW
FM-TRAP
RF AGC
IC102 MEMORY
CLK
CI
C2
C3
I/O
IC101
CONTROLLER
RV201
RF AGC
T205
FS TRAP
T204 VIF
T202 AFT
IC201(1/2) VIF
VIF
VIDEO DET
ANC/WNL
RF AGC
IF AGC
AFT DET
AFT UP
AFT DOWN
AFT DEFEAT
CF202
4.5MHz TRAP
Q202
BUFFER
EQ
Q203
BUFFER
VIDEO OUT
VIDEO IN
AU-13 BOARD
IC202
SUPER INTER
PHASE DET
VCO
LPF
CTL
ON
RV203
SUPER INTER VCO
CF201
4.5MHz BPF
IC201(2/2)
SIF AMP
SOUND DEI
MPX OUT
Q208,209
AUDIO NULL CH MUTE
RV202
INPUT LEVEL SEPARATION
M CLK
M DATA
DATA
TRP
RI/R2
ADD
ERASE
CAR/VANR
MUX RESET
STEREO
MON IND
R CONT
L CONT
MUTE
AFT ON
AFT UP
AFT UP
AFT DOWN
MUTE
L CONT
R CONT
MON IND
9V
Q107,108
BUFFER
Q407
Q408
L CONT
R CONT
MON IND
AUDIO IN(R)
AUDIO IN(L)
Q103
Q205,206
SYNC SEP
RV801
SAP FILTER
RV803
SAP VCO(S/N)
RV805
STEREO VCO(H)
MAIN/SAP
CN102
SW
Q871
IC870
SAP LPF
MUTE Q870
AUDIO OUT(N)
AUDIO OUT(L)
AUDIO OUT(R)
BPF
SAP DET
LPF
SAP'
CARRIER
MUTE
RV804
PILOT CANCEL
L+R'
BPF
PILOT
BPF
L-R DET
LPF
DE-EMP
RV806
MAIN LEVEL
L+R
L-R
MATRIX
STEREO
IC830
NOISE REDUCTION
RMS
BPF
Q832
BPF
Q833
RV832
SEPARATION
FIX DE-EM
VARIABLE GAIN
IC831 (1/2)
RMS
VARIABLE DE-EMPH
IC831 (1/2)
L-R'
RV831
VARIABLE
D103
MUTE
AUTO STEREO
S8
S7
S1-4
MOTE TROL
AUTO STEREO
CHANNEL MEMORY
TI-4 BOARD

-13. POWER BLOCK DIAGRAM

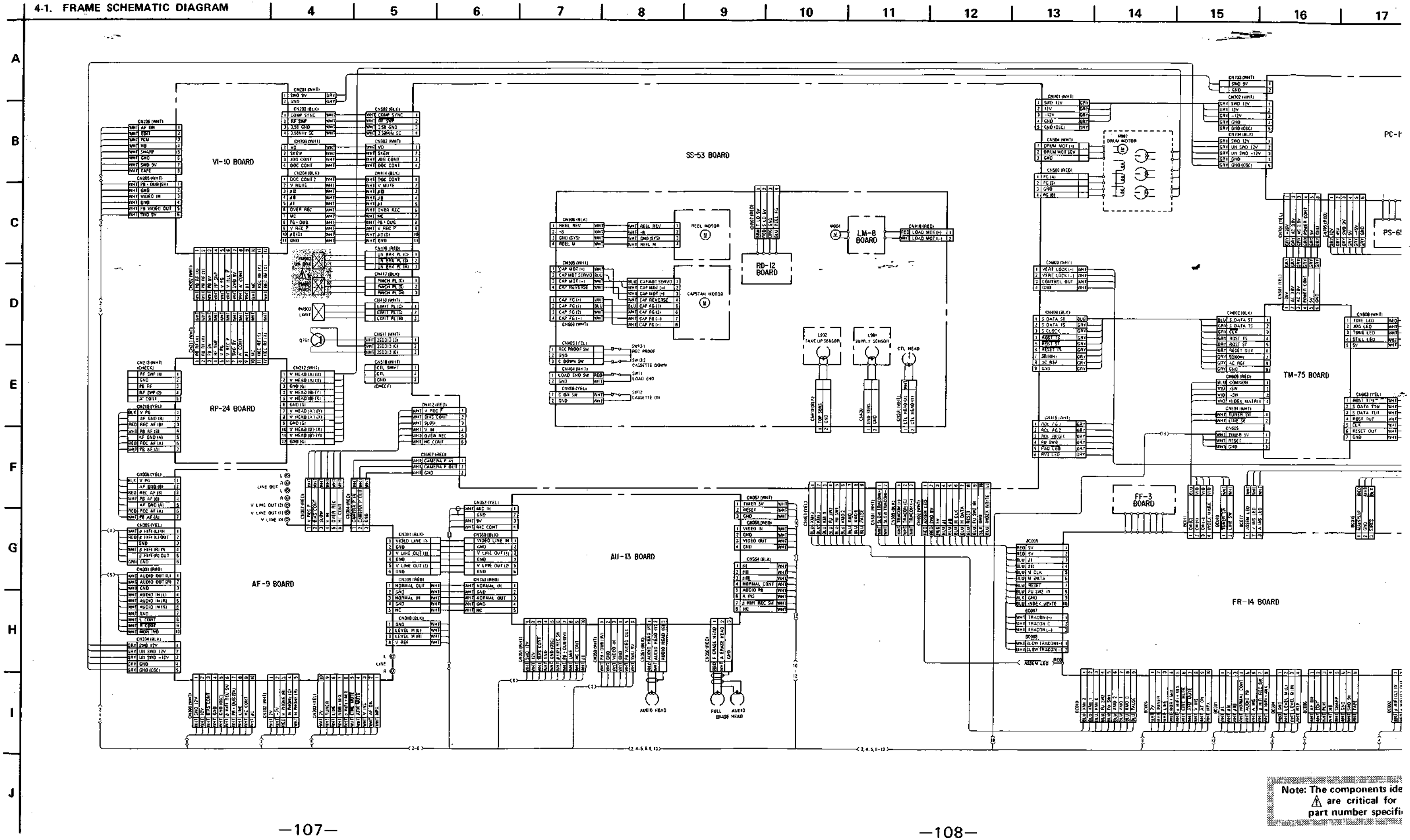


3-14. REMOTE CONTROL BLOCK DIAGRAM



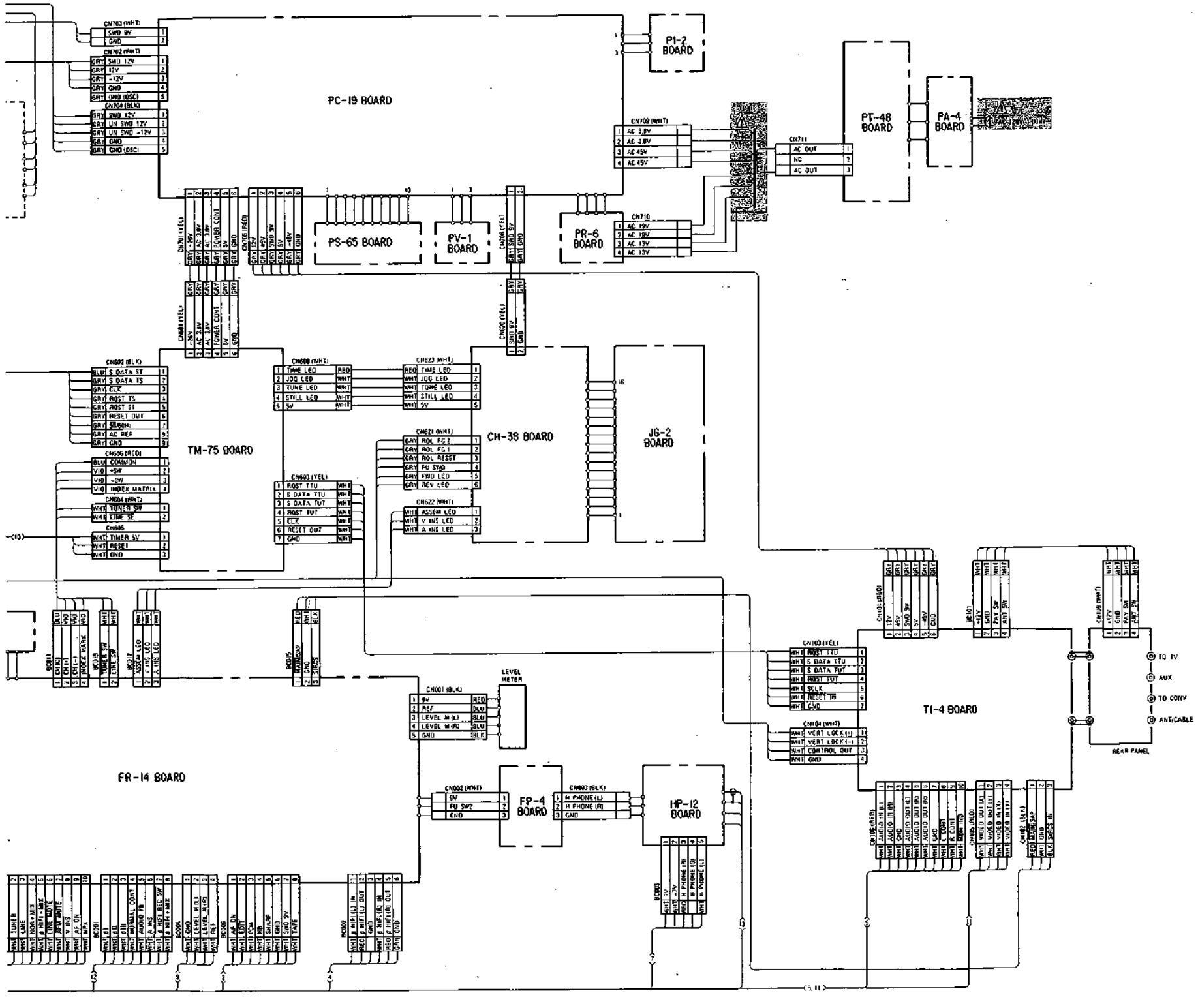
FRAME FRAME

4-1. FRAME SCHEMATIC DIAGRAM



Note: The components ide
⚠ are critical for
part number specifi

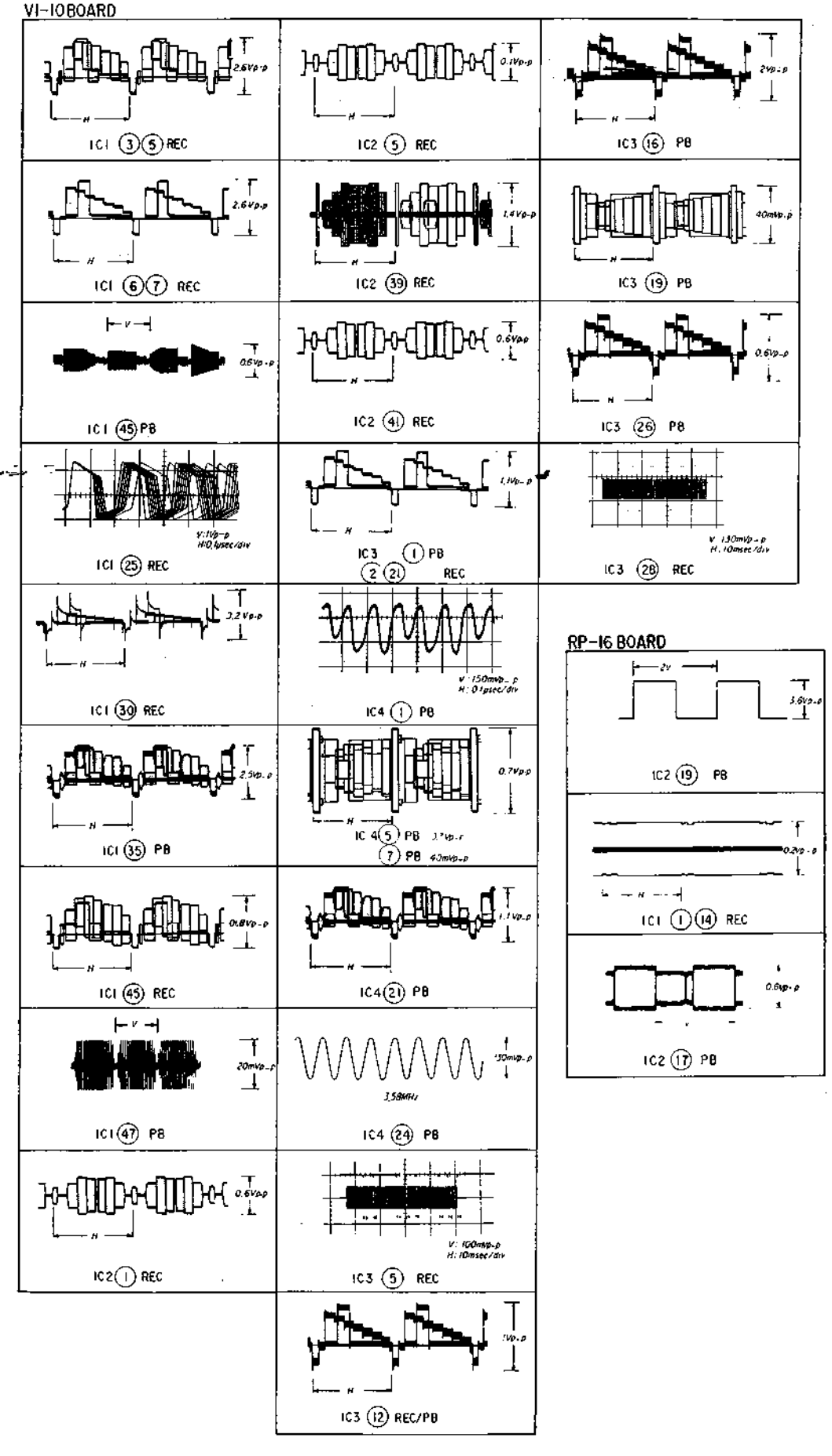
15 16 17 18 19 20 21 22 23 24



Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

VI-10 BOARD



RP-16 BOARD

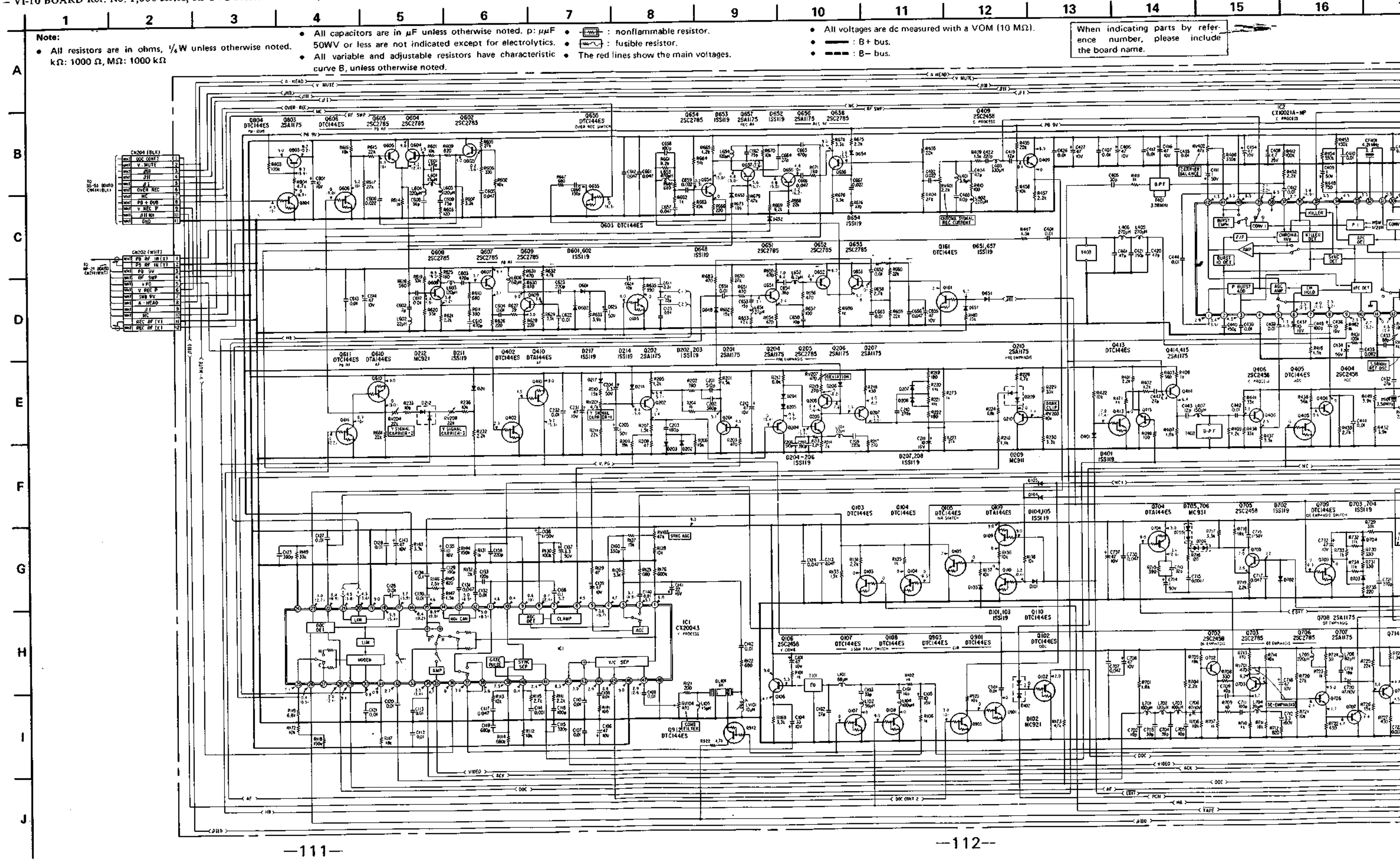
4-2. VI-10 (Y.C SIGNAL PROCESS)/RP-24 (VIDEO SIGNAL, REC/PB AMP) SCHEMATIC DIAGRAMS

– VI-10 BOARD Ref. No. 1,000 series, RP-24 BOARD Ref. No. 8,100 series –

Note:

- All resistors are in ohms, 1/6W unless otherwise noted. kΩ: 1000 Ω, MΩ: 1000 kΩ
- All capacitors are in μF unless otherwise noted. p: μμF 50WV or less are not indicated except for electrolytics.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- [symbol] : nonflammable resistor.
- [symbol] : fusible resistor.
- The red lines show the main voltages.
- All voltages are dc measured with a VOM (10 MΩ).
- ━━ : B+ bus.
- ━ ━ : B– bus.

When indicating parts by reference number, please include the board name.



15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

A B C D E F G H I J

refer- include

IC2 CX10021A-HP C PROCESS

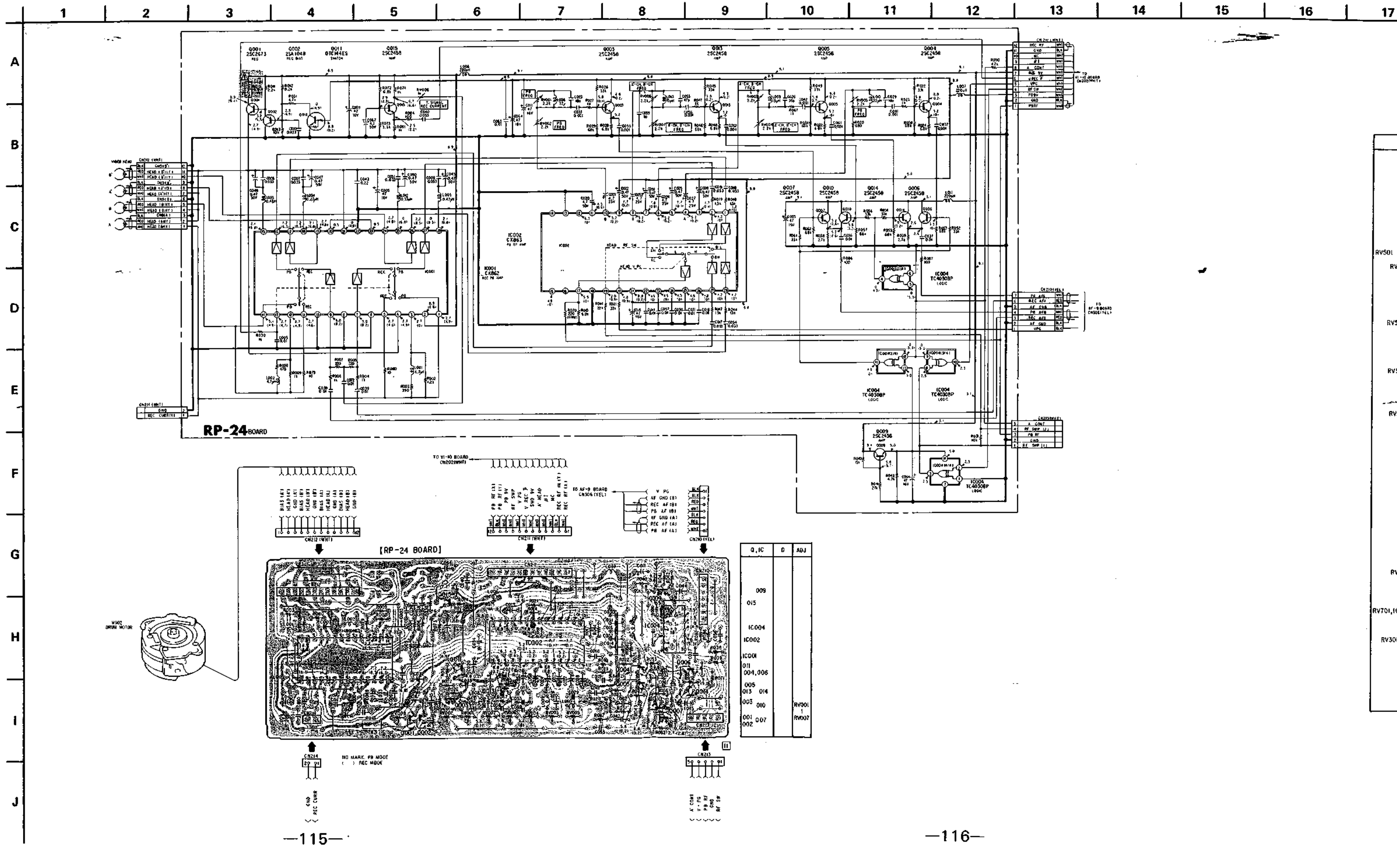
VJ-2 BOARD

IC4 CX7989A

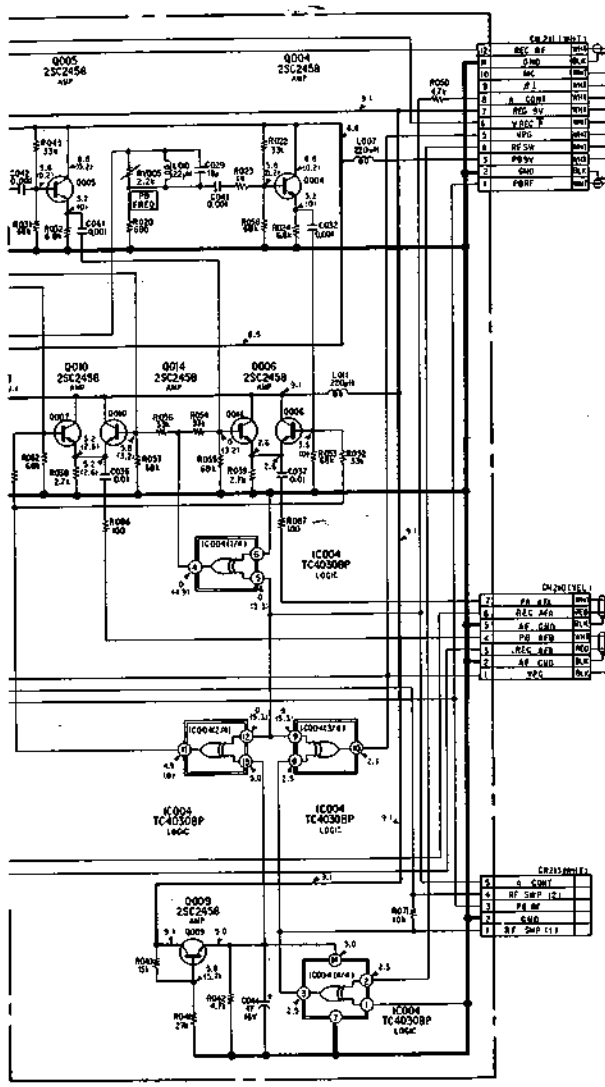
IC901 TC40138P

IC3 CX8668 Y COMB

VI-10 BOARD

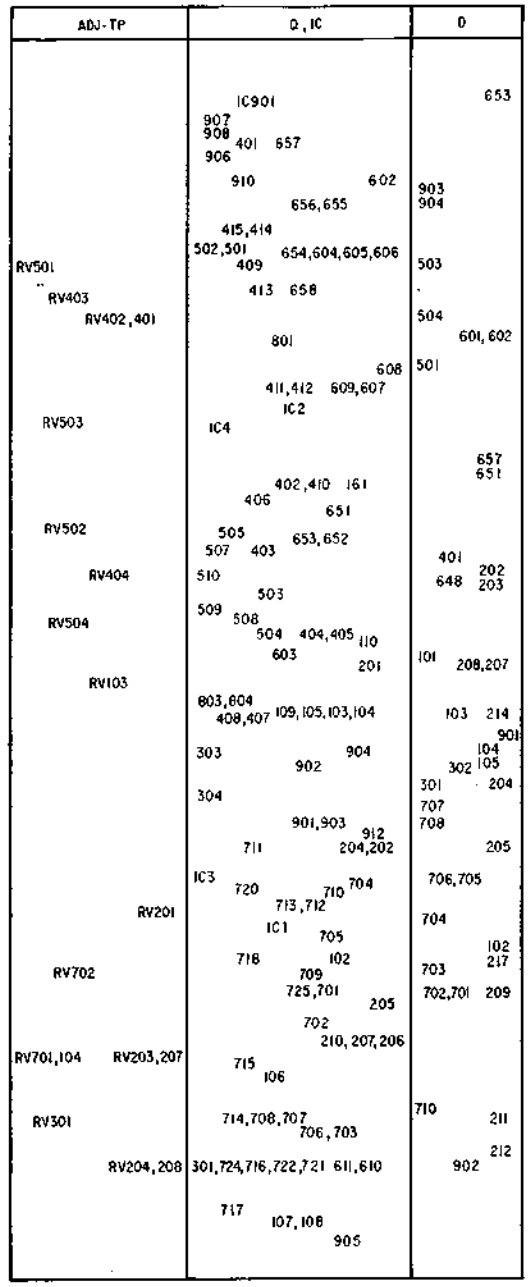

RP-24 BOARD
[RP-24 BOARD]
Q,IC
D
ADJ
RV501
RV403
RV503
RV502
RV504
RV702
RV701,104
RV301

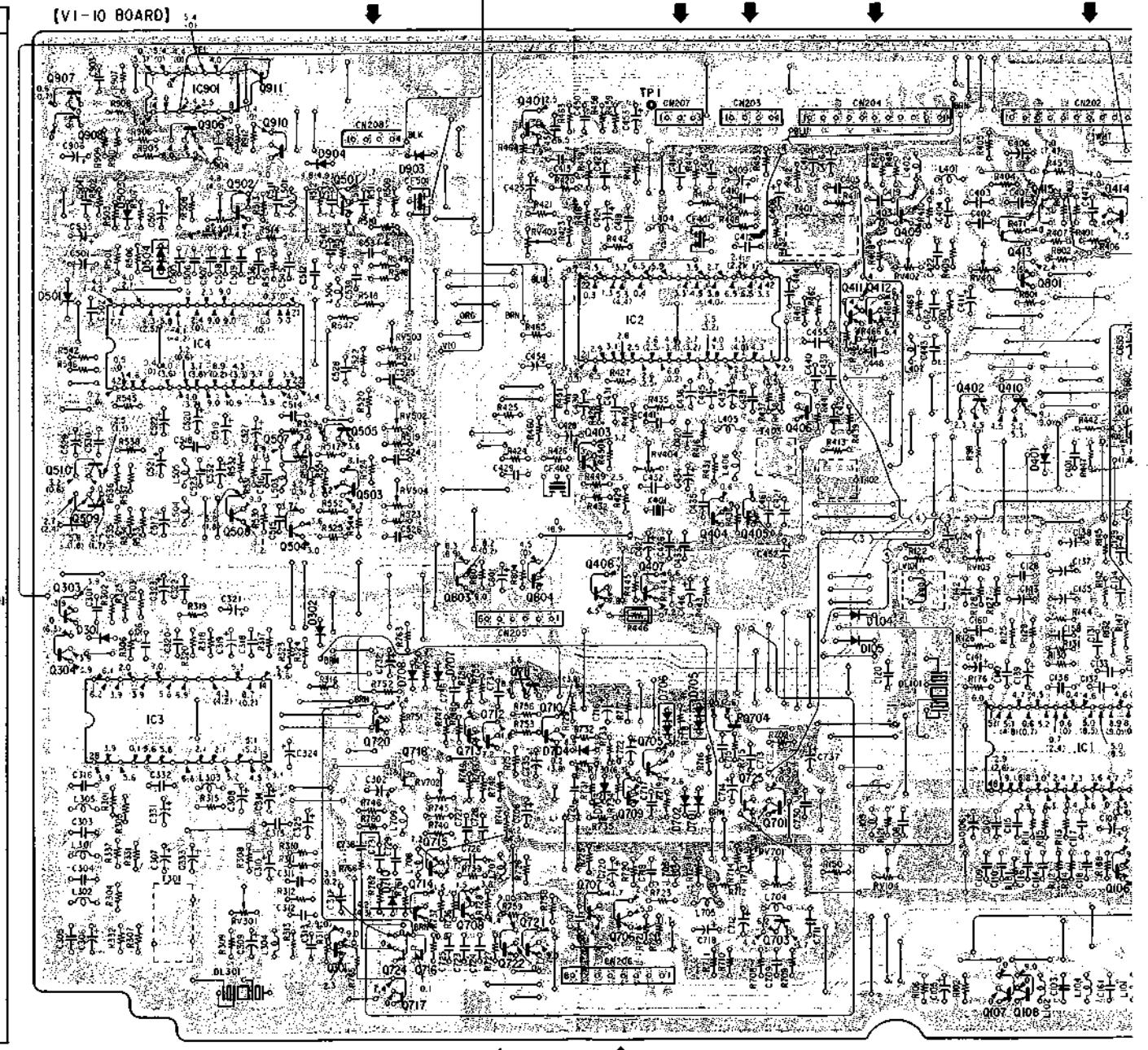
10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27



ADJ

RV001 ~ RV007

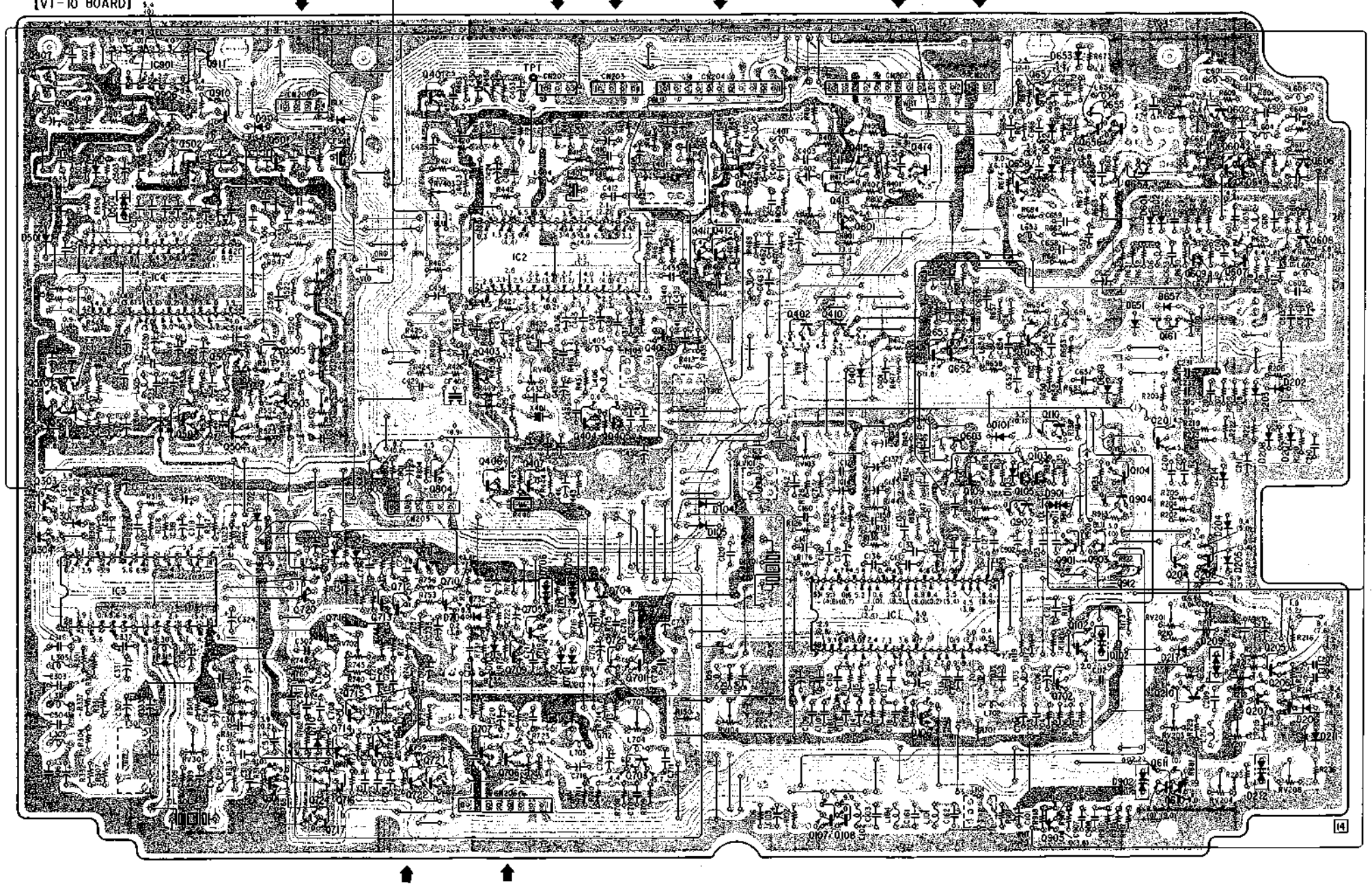




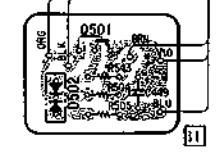
17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33

A B C D E F G H I J

【VI-10 BOARD】



【VJ-2 BOARD】



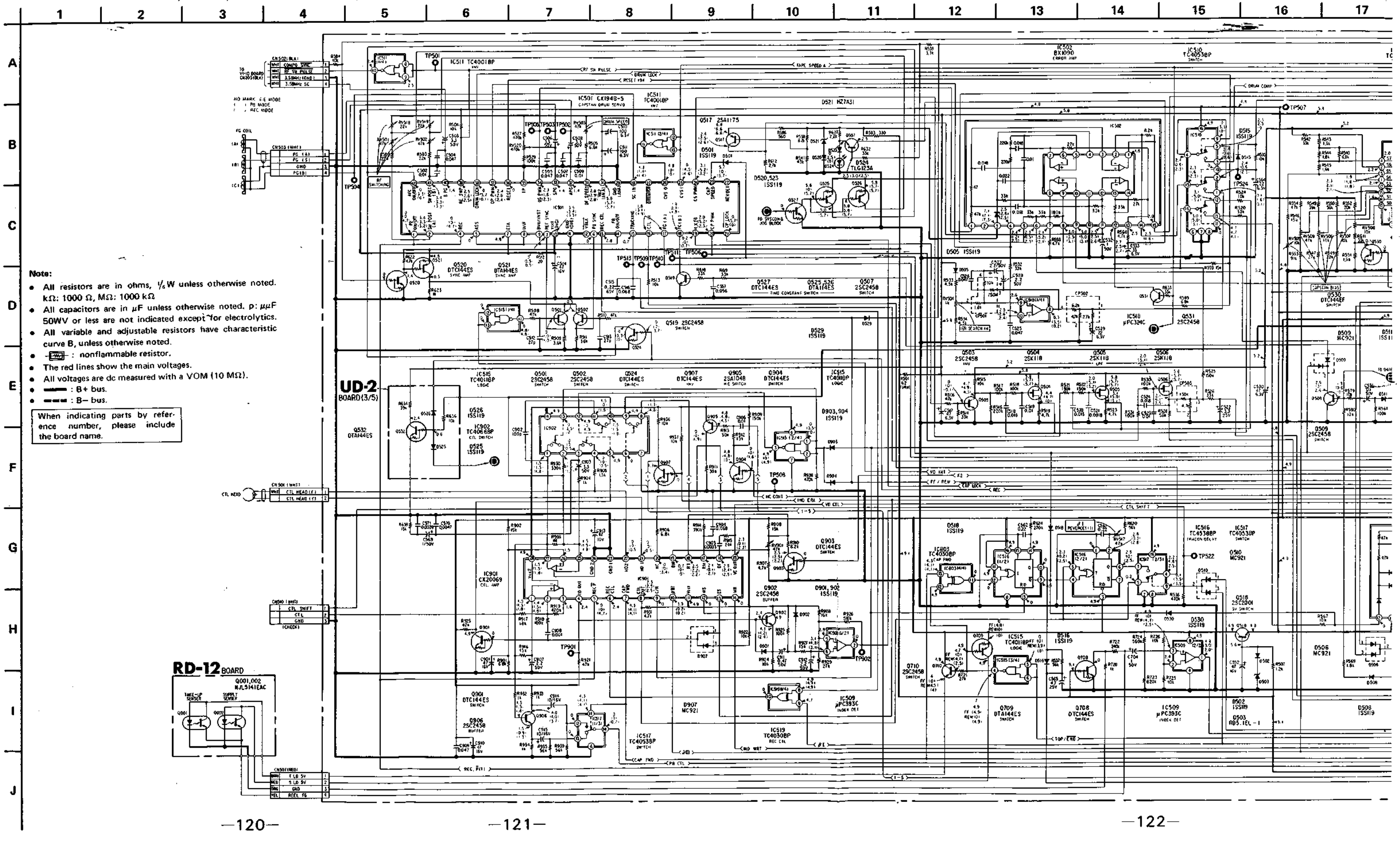
ADJ-TP	Q, IC	D
	IC901	653
	907 908 401 657 906	
	910 602	903 904
	656,655	
	415,414	
/501	502,501 654,604,605,606 409	503
RV403	413 658	
RV402,401		504
	601	601,602
	608	501
	411,412 609,607	
RV503	IC2 IC4	
	402,410 161	657 651
	406 651	
RV502	505 653,652	
	507 403	401
RV404	510	648 202 203
	503	
RV504	509 508 504 404,405 110	
	603	201 101 208,207
RV103		
	803,804 408,407 109,105,103,104	103 214
	303 902 904	901 104 302 105
	304	301 204
	901,903 912	707 708
	711 204,202	205
	IC3 720 710 704	706,705
RV201	713,712	
	IC1 705	704
	718 102	102
RV702	709	703 217
	725,701 205	702,701 209
	702	
	210,207,206	
701,104 RV203,207	715 106	
		710 211
RV301	714,708,707 706,703	
		212
RV204,208	301,724,716,722,721 611,610	902
	717 107,108 905	

Note:

- o—— : Indicates a leadwire mounted on the component side.
- •—— : Indicates a leadwire mounted on the printed side.
- ▒▒▒ : soldering side.
- ▒▒▒ : B + pattern

4-3. SS-53 (SYSTEM CONTROL, SERVO)/RD-12 (REEL DETECT)/UD-2 (CHANNEL UP/DOWN COMP) SCHEMATIC DIAGRAMS

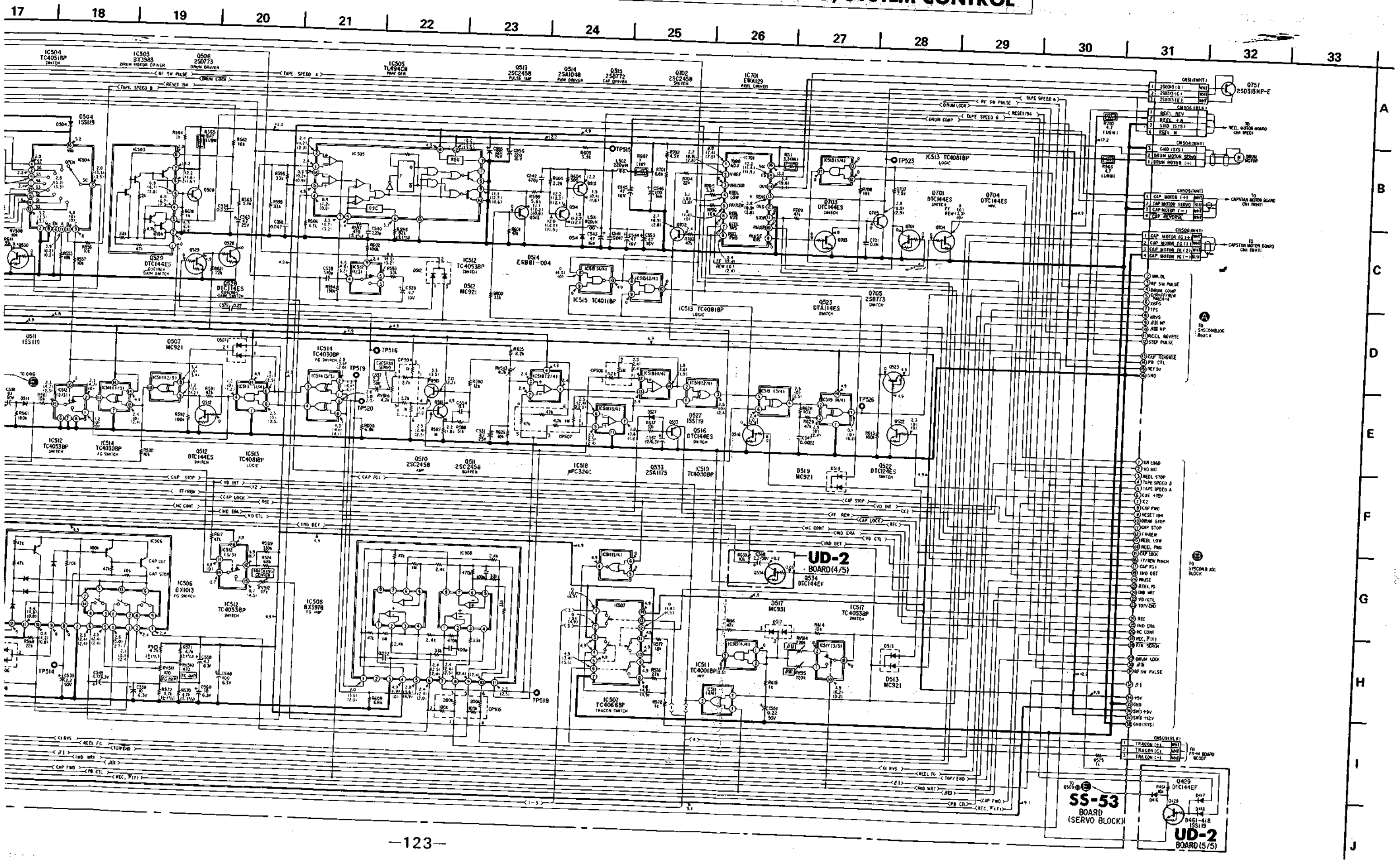
– SS-53 BOARD Ref. No. 2,000 series, RD-12 BOARD Ref. No. 2,100 series, UD-2 BOARD Ref. No. 2,200 series –



11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27

IC502 BX1090 ERROR AMP
IC510 TC4053BP SWITCH
IC504 TC4051BP SWITCH
IC503 BX3983 DRUM MOTOR DRIVER
Q508 2SD773 DRUM DRIVER
IC505 TL494CN PWM GEN
Q513 2SC2458 PULSE AMP
Q514 2SA1048 PWM DRIVER
Q515 2SB772 CAP DRIVER
Q7D2 2SC2458 SWITCH
IC701 EWA129 REEL DRIVER
Q703 DTC144ES SWITCH
Q705 2SD773 SWITCH
Q523 DTA114ES SWITCH
IC513 TC4081BP LOGIC
IC515 TC4011BP LOGIC
D514 ERA81-004
D512 MC921
IC512 TC4053BP SWITCH
Q529 DTC144ES CHROMA GAIN SWITCH
Q528 DTC114ES CHROMA GAIN SWITCH
Q530 DTC144EF SWITCH
IC518 μPC324C
Q531 2SC2458
Q507 2SC2458 SWITCH
IC515 TC4011BP LOGIC
Q503 2SC2458 VCO
Q504 2SK118 LPF
Q505 2SK118 LPF
Q506 2SK118
D505, 1SS119
D504 1SS119
TP507
TP524
TP525
TP515
D509 MC921
D511 1SS119
D507 MC921
IC514 TC4030BP PG SWITCH
TP519
TP516
TP520
IC512 TC4053BP SWITCH
IC514 TC4030BP PG SWITCH
Q512 DTC144ES SWITCH
IC513 TC4081BP LOGIC
Q509 2SC2458 SWITCH
Q510 2SC2458 AMP
Q511 2SC2458 BUFFER
IC518 μPC324C
Q533 2SA1175
IC519 TC4030BP
D519 MC921
D527 1SS119
Q516 DTC144ES SWITCH
IC513 (3/4)
Q534 DTC144EF
D517 MC931
IC517 TC4053BP SWITCH
IC511 TC4001BP (2/3)
IC507 TC4066BP TRACON SWITCH
UD-2 BOARD (4/5)
D521 MZ7A31
D524 TLG123A
D903, 904 1SS119
D901, 902 1SS119
D518 1SS119
IC803 TC4030BP CAP END
IC516 TC4538BP TRACON DELAY
IC517 TC4053BP SWITCH
D510 MC921
Q518 2SC2001 SW SWITCH
Q530 1SS119
D516 1SS119
IC515 TC4011BP LOGIC
Q710 2SC2458 SWITCH
Q709 DTA144ES SWITCH
Q708 DTC144ES SWITCH
IC509 μPC393C INDEX DET
D502 1SS119
D503 RDS, TEL - I
TP522
TP514
TP518
TP526
D506 MC921
D508 1SS119
IC506 BX1093 PG SWITCH
IC508 BX3978 PG AMP
IC507 TC4066BP TRACON SWITCH
IC511 TC4001BP (2/3)
IC509 μPC393C INDEX DET

SERVO, SYSTEM CONTROL



SS-53 (SYSTEM CONTROL, SERVO)/RD-12 (REEL DETECT)/UD-2 (CHANNEL UP/DOWN COMP)/REEL MOTOR/CAPSTAN MOTOR/LM-8 (LOADING MOTOR) PRINTED WIRING BOARDS

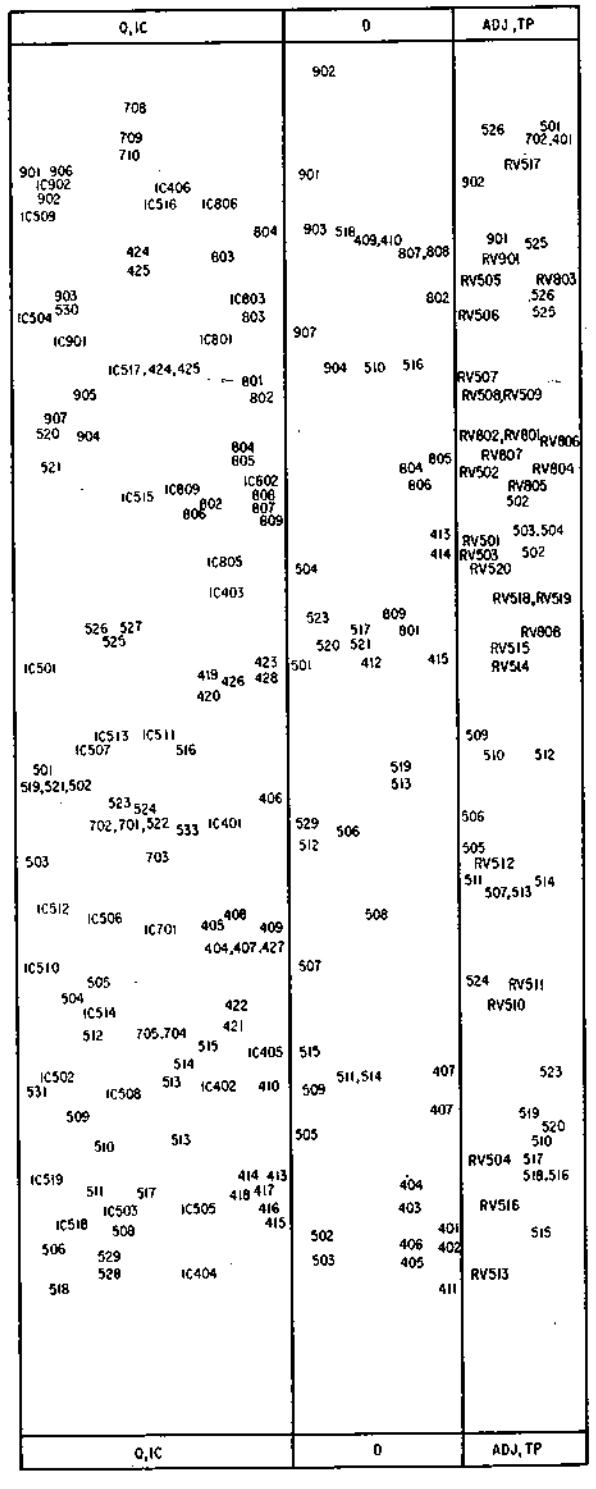
– SS-53 BOARD Ref. No. 2,000 series, RD-12 BOARD Ref. No. 2,100 series, UD-2 BOARD Ref. No. 2,200 series, REEL MOTOR BOARD Ref. No. 8,200 series, CAPSTAN MOTOR BOARD Ref. No. 9,000 series, LM-8 BOARD Ref. No. 9,100 series –

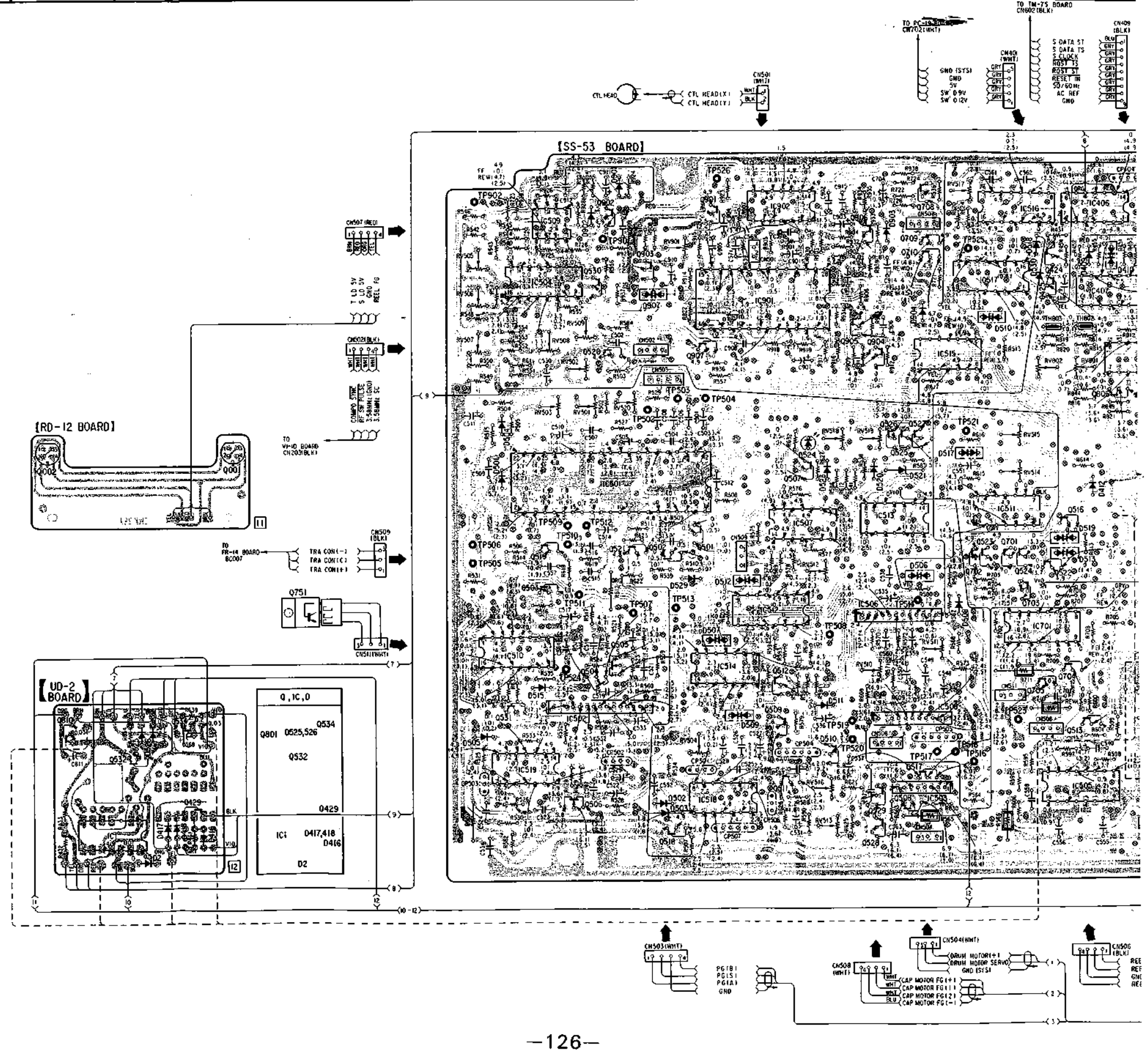
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

A B C D E F G H I J

Note:

- o—— : Indicates a leadwire mounted on the component side.
- ●—— : Indicates a leadwire mounted on the printed side.
- ▒▒▒ : soldering side.
- ▒▒▒ : B+ pattern
- ▒▒▒ : component-side.

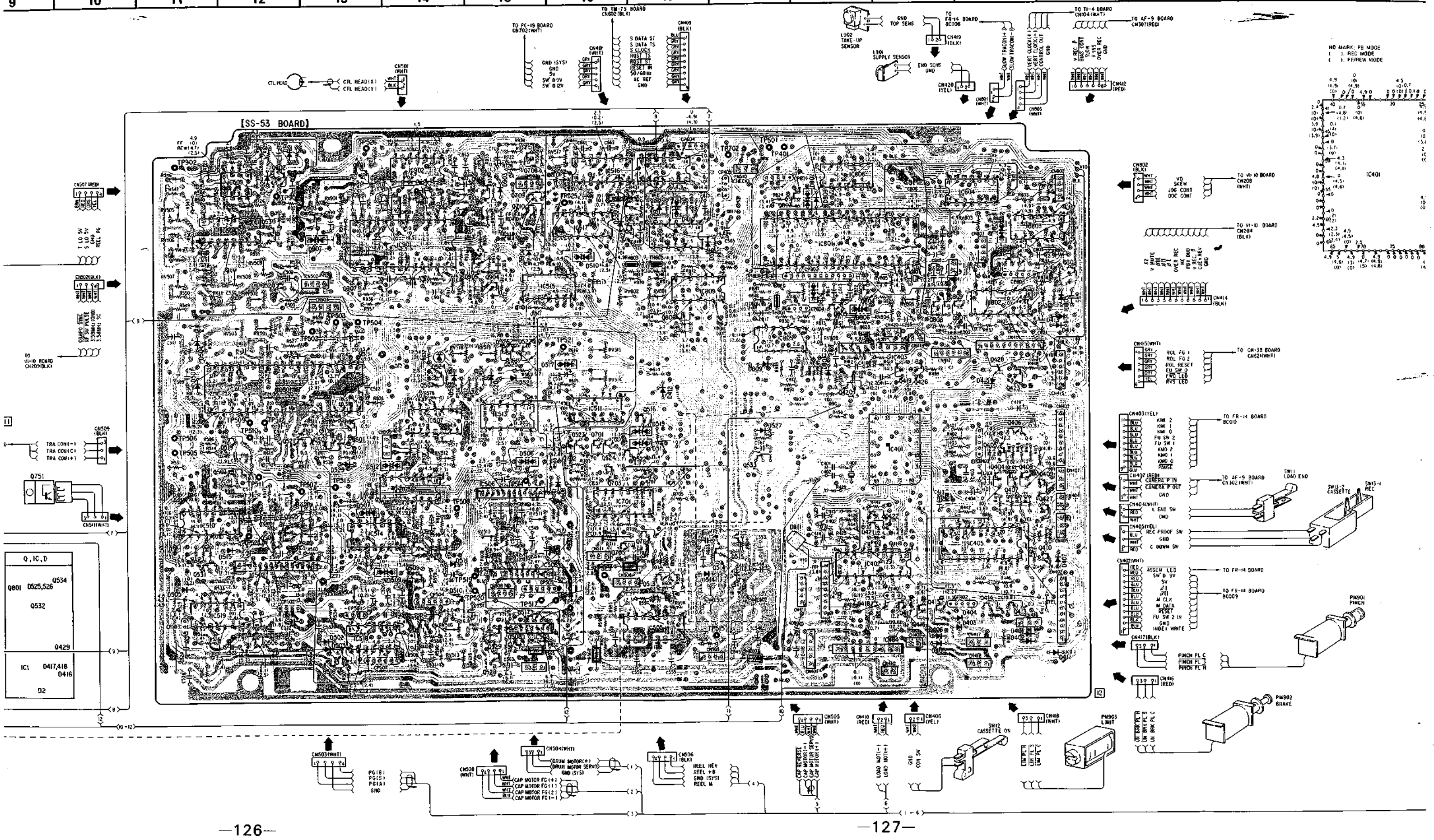




(LOADING MOTOR) PRINTED WIRING BOARDS

,200 series, CAPSTAN MOTOR BOARD Ref. No. 9,000 series, LM-8 BOARD Ref. No. 9,100 series –

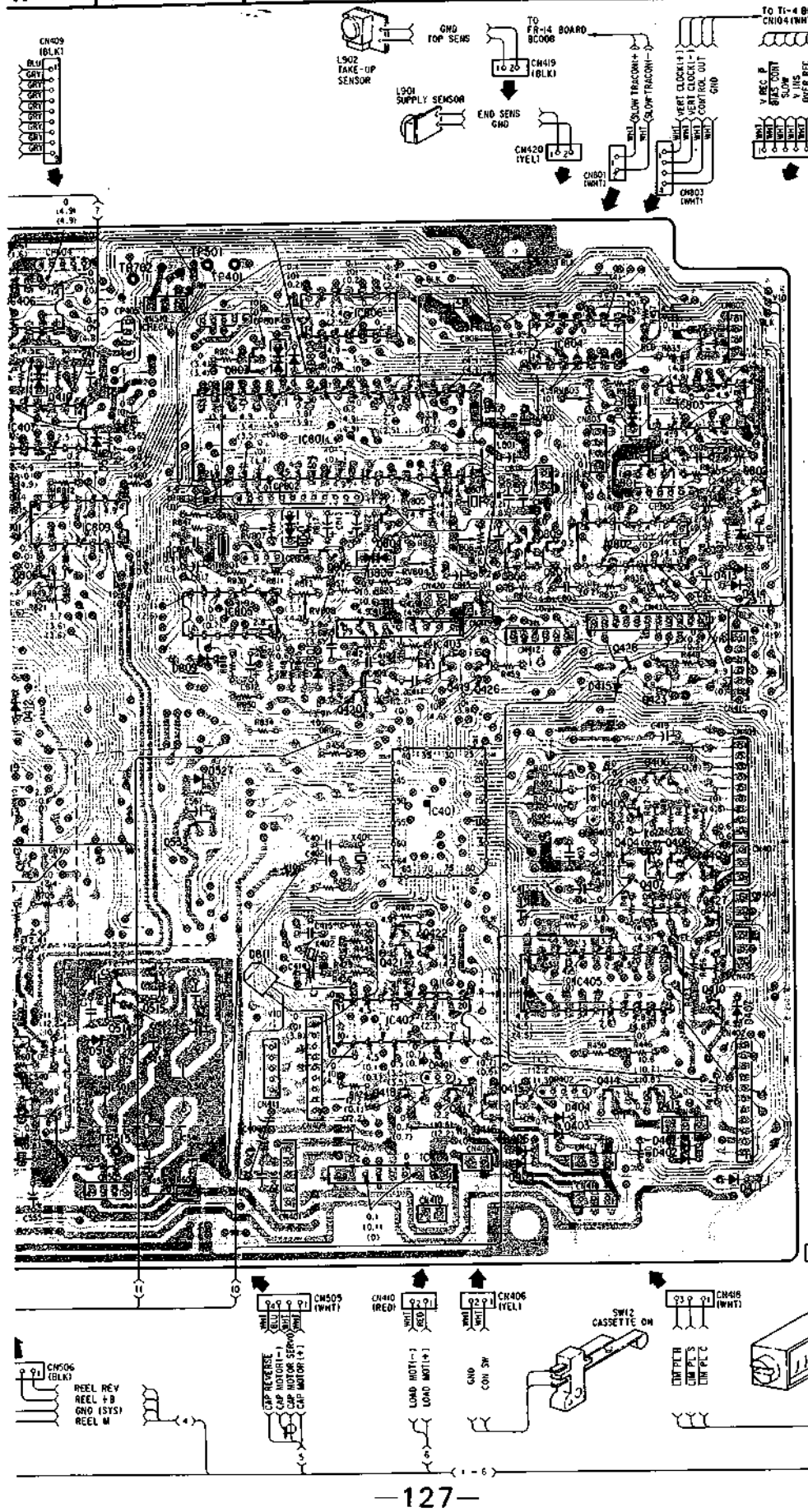
9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26

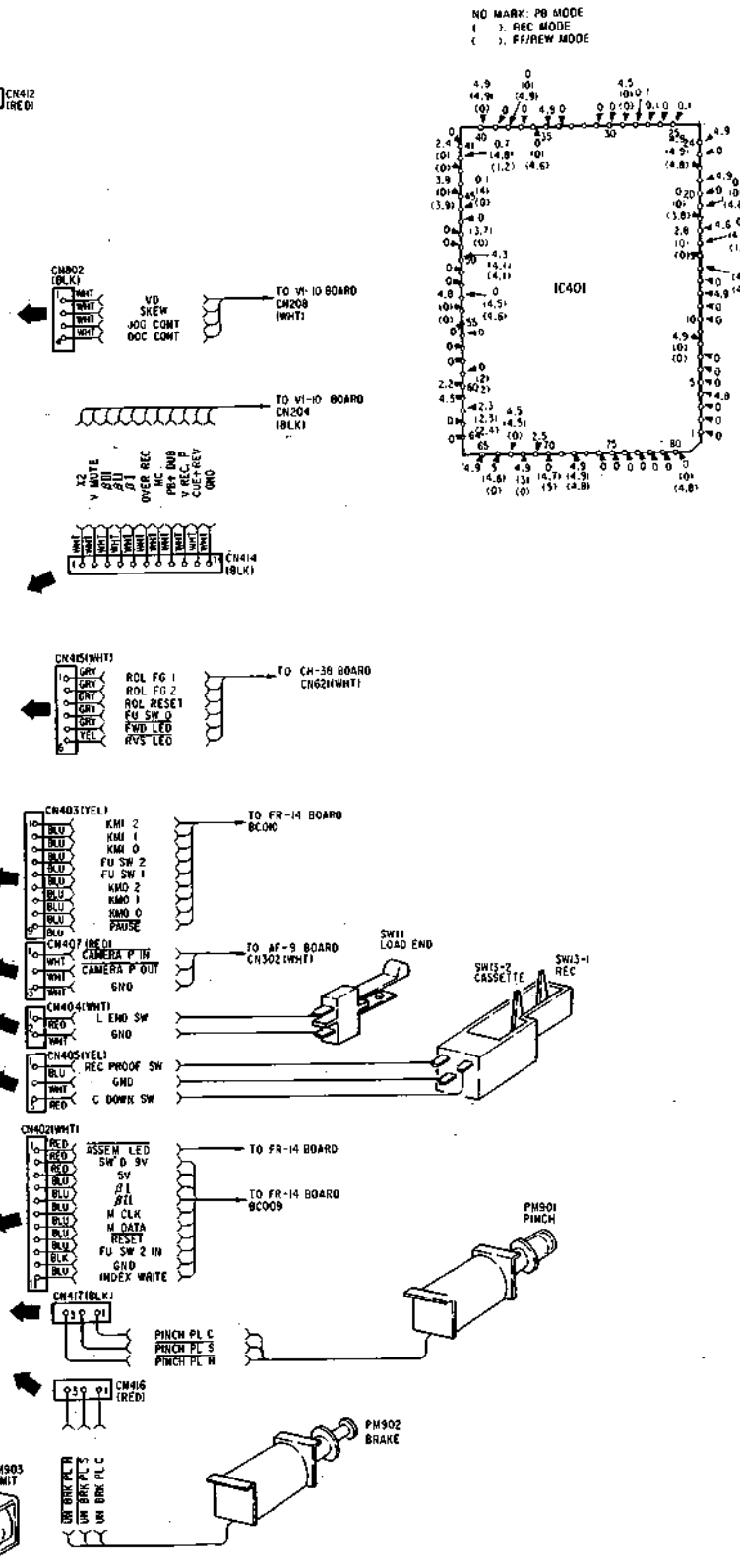


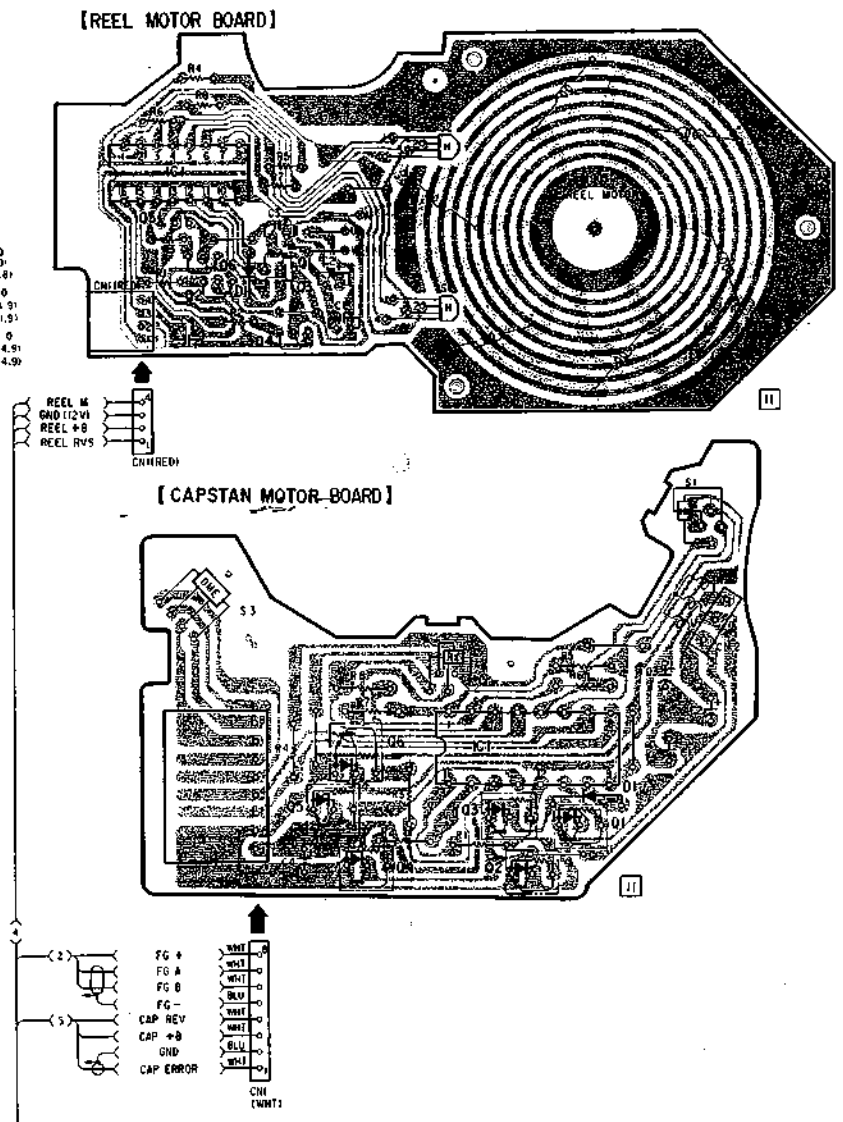
SERVO, SYSTEM CONTROL

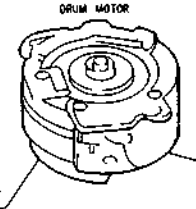
17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33

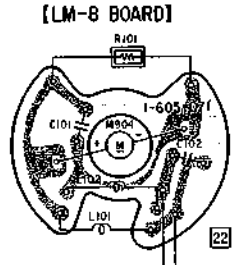
A B C D E F G H I J











SS-53 (SYSTEM CONTROL, SERVO)/RD-12 (REEL DETECT)/UD-2 (CHANNEL UP/DOWN COMP)/LM-8 (LOADING MOTOR) SCHEMATIC DIAGRAMS

– SS-53 BOARD Ref. No. 2,000 series, RD-12 BOARD Ref. No. 2,100 series, UD-2 BOARD Ref. No. 2,200 series, LM-8 BOARD Ref. No. 9,100 series –

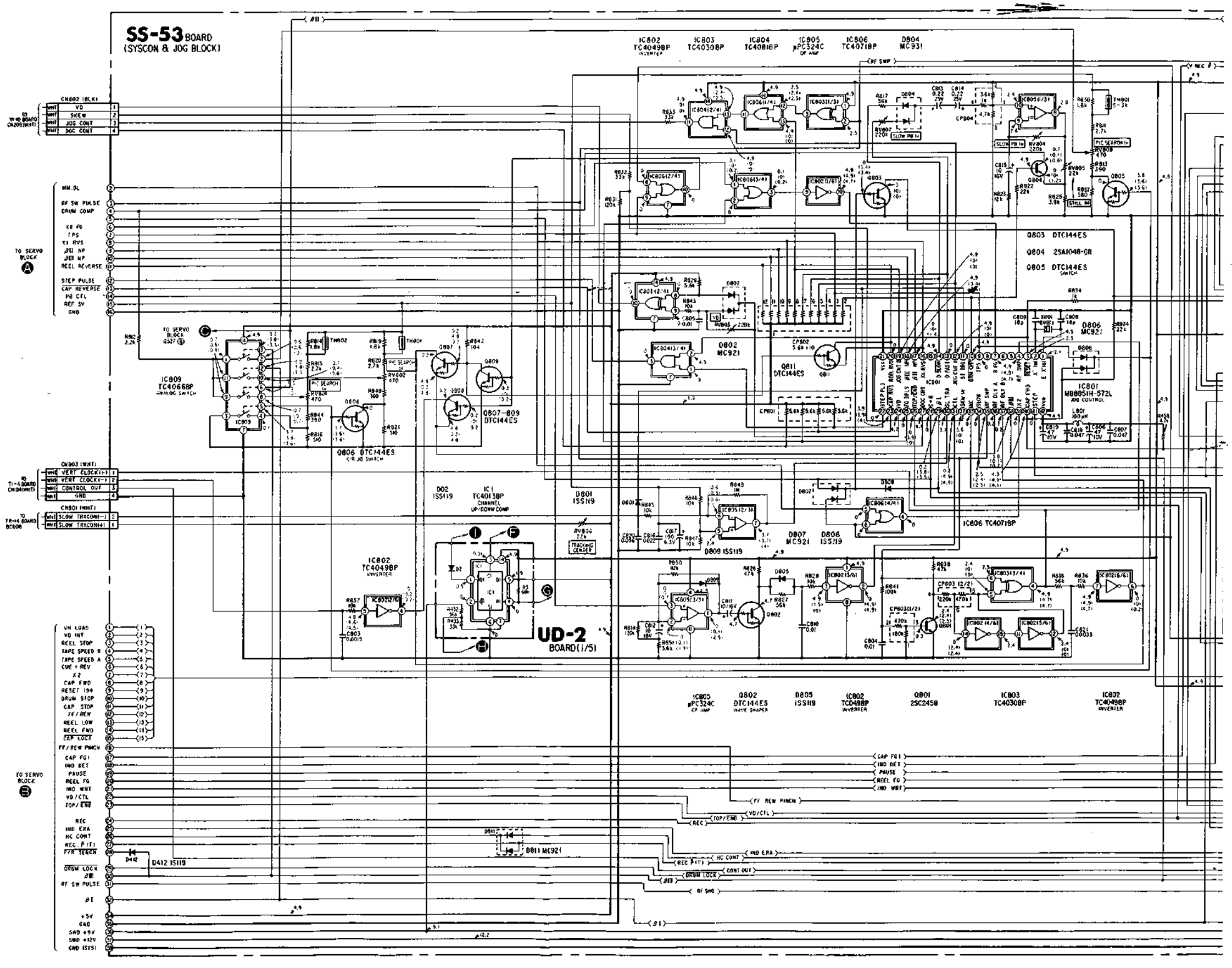
Note:

- All resistors are in ohms, 1/4W unless otherwise noted. kΩ: 1000 Ω, MΩ: 1000 kΩ
- All capacitors are in μF unless otherwise noted. p: μμF 50WV or less are not indicated except for electrolytics.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- FNR : nonflammable resistor.
- The red lines show the main voltages.
- All voltages are dc measured with a VOM (10 MΩ).
- ▬▬ : B+ bus.
- ▬▬ : B– bus.

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

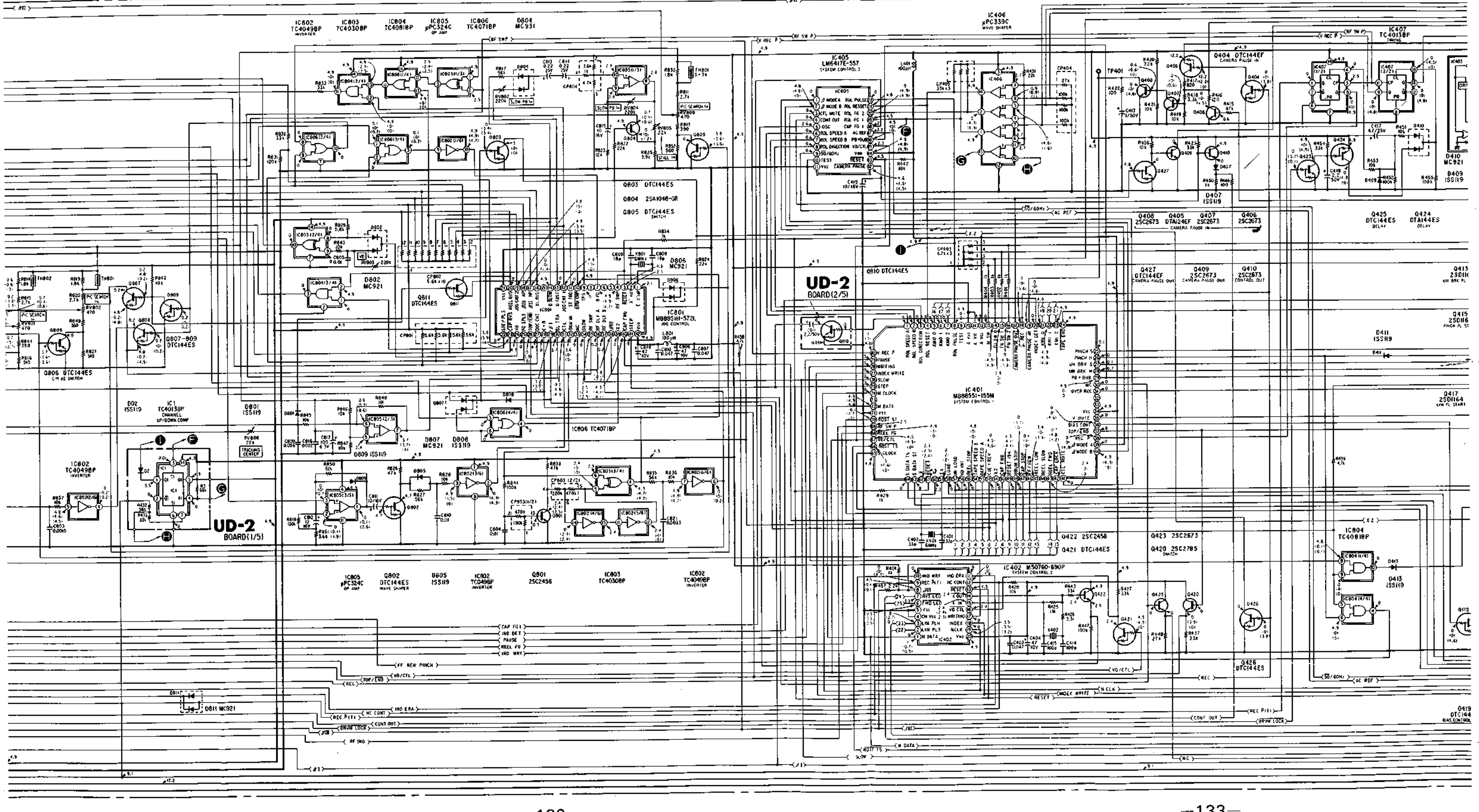
When indicating parts by reference number, please include the board name.

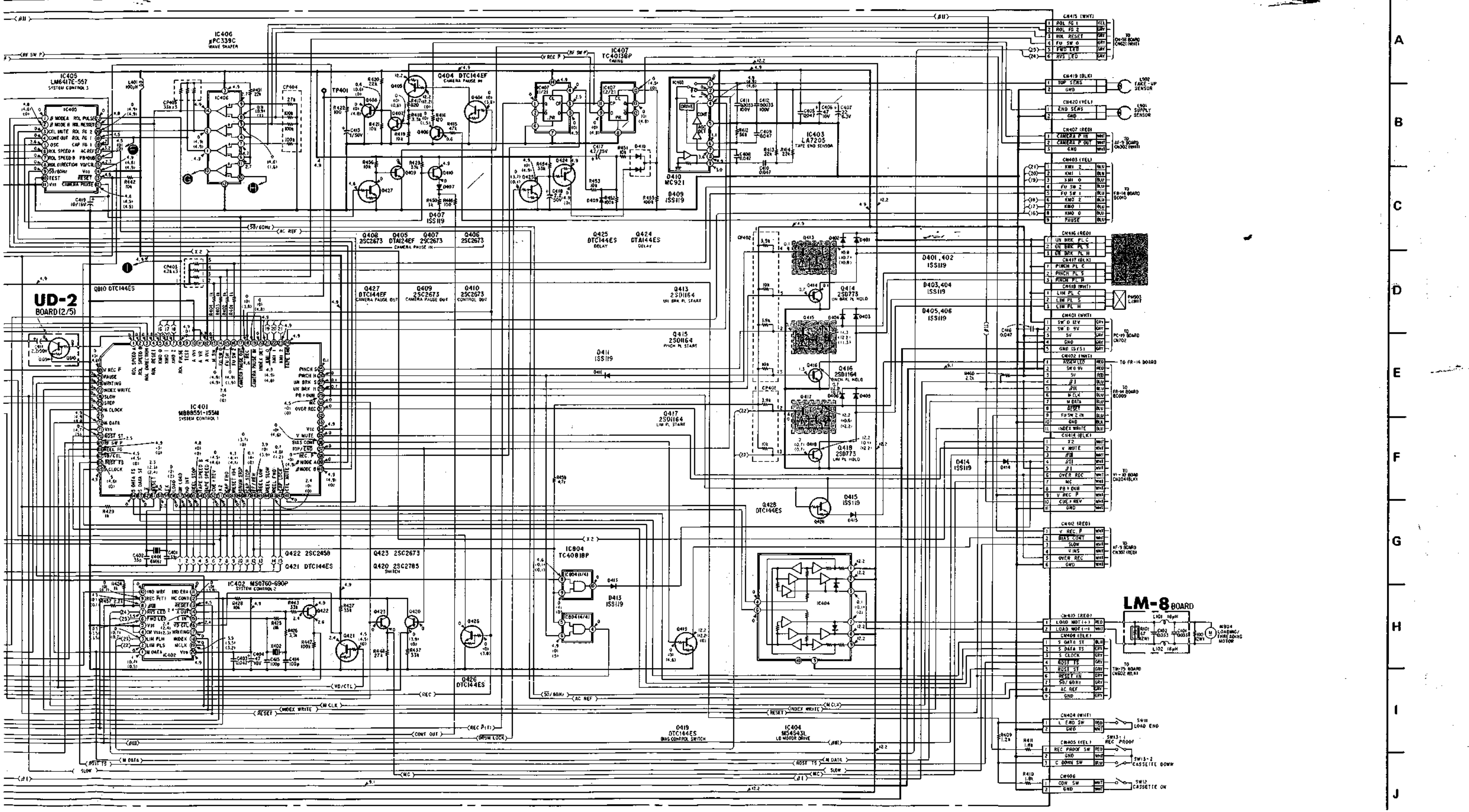


SERVO, SYSTEM CONTROL

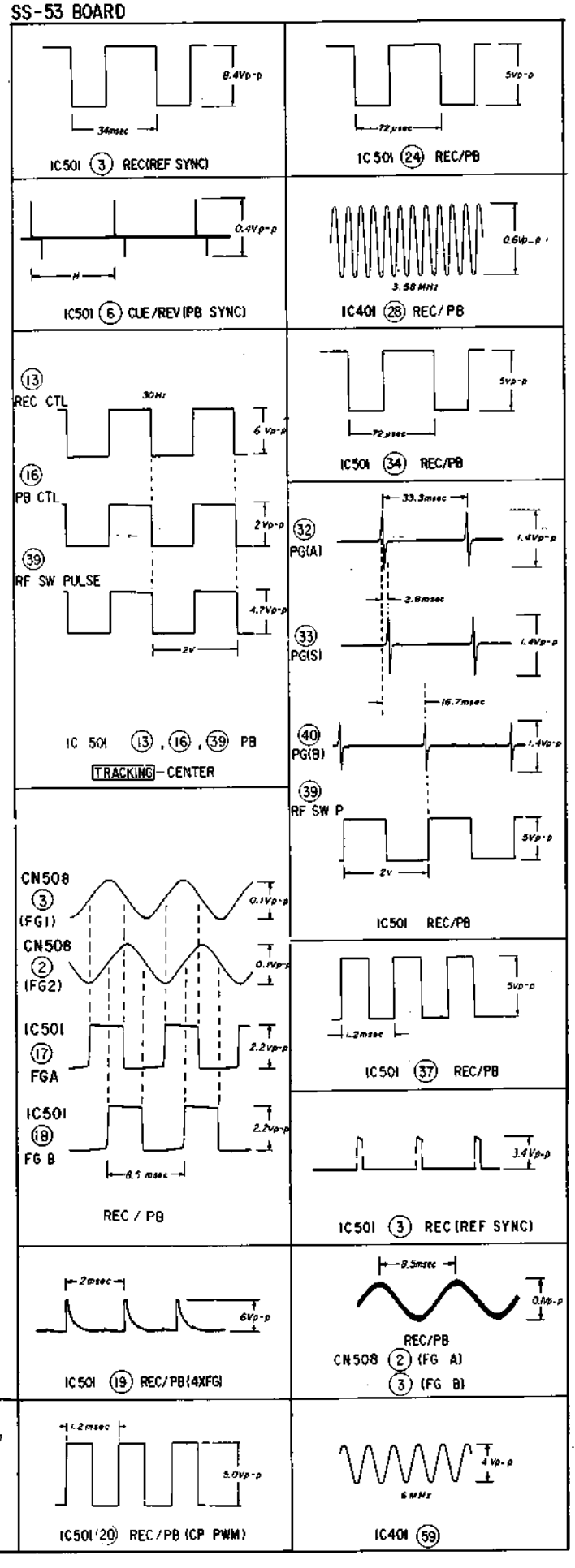
SERVO, SYSTEM CONTR

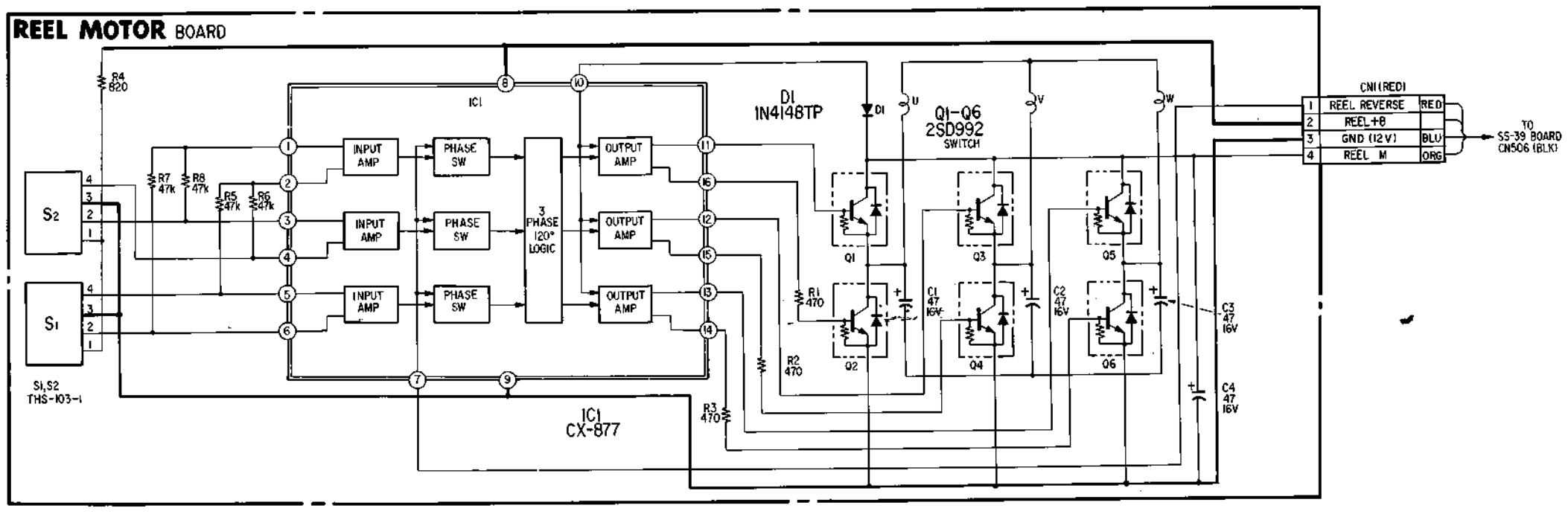
9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

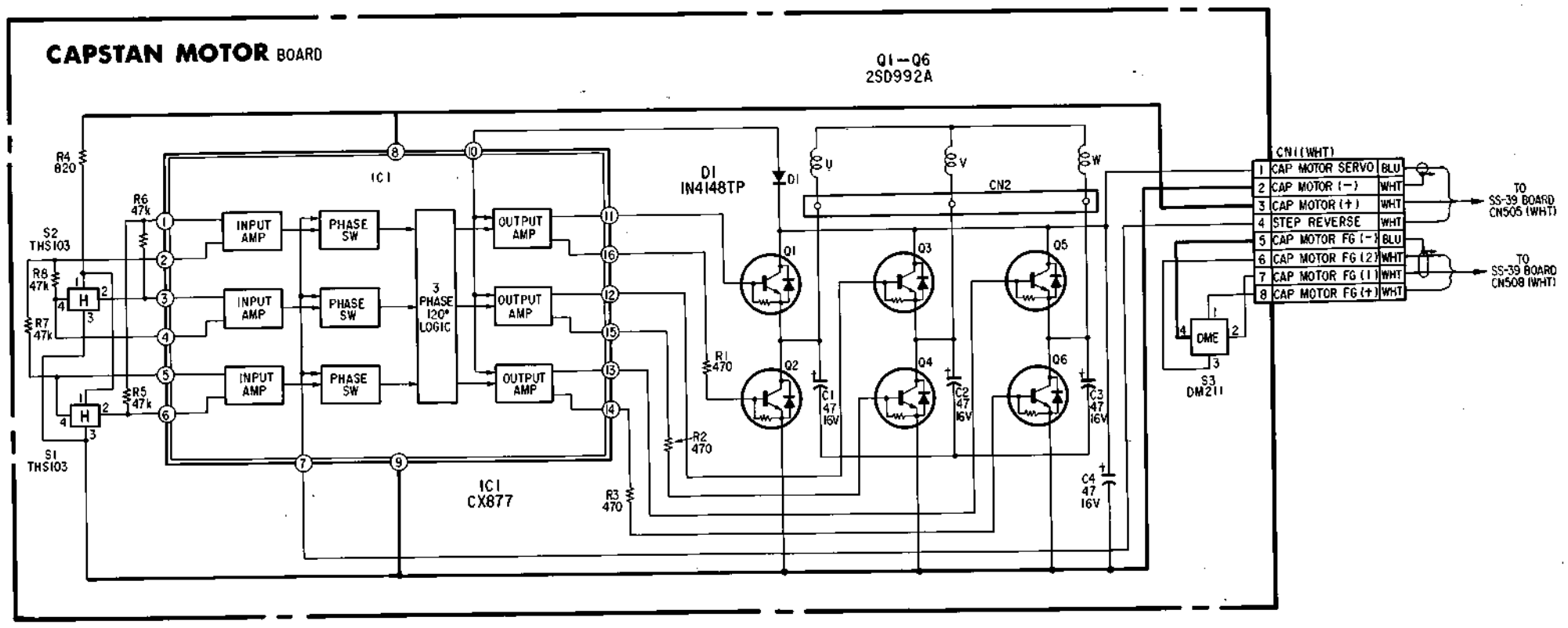



UD-2
BOARD (2/5)
IC405
LM6641TE-557
SYSTEM CONTROL 3
IC406
μPC339C
WAVE SHAPER
IC407
TC40136P
TIMING
IC401
MBB551-1554
SYSTEM CONTROL 1
IC402 MSO760-690P
SYSTEM CONTROL 2
IC403
LA7205
TAPE END SENSOR
IC404
M54643L
LD MOTOR DRIVE
IC804
TC4081BP
Q404 DTC144EF
CAMERA PAUSE IN
Q407 ISS119
Q408 2SC2673
Q405 DTA124EF
Q407 2SC2673
Q406 2SC2673
CAMERA PAUSE IN
Q425 DTC144ES
DELAY
Q424 DTA144ES
DELAY
Q427 DTC144EF
CAMERA PAUSE OUT
Q409 2SC2673
CAMERA PAUSE OUT
Q410 2SC2673
CONTROL OUT
Q410 MC921
Q409 ISS119
Q411 ISS119
Q412 2SD1664
UN BRK PL SEORE
Q413 2SD1664
UN BRK PL SEORE
Q414 2SD773
UN BRK PL HOLD
Q415 2SD1664
PINCH PL START
Q416 2SD1164
PINCH PL HOLD
Q417 2SD1164
LIM PL START
Q418 2SD773
LIM PL HOLD
Q419 DTC144ES
BIAS CONTROL SWITCH
Q420 2SC2785
SWITCH
Q421 DTC144ES
Q422 2SC2458
Q423 2SC2673
Q426 DTC144ES
Q428 DTC144ES
D401,402 ISS119
D403,404 ISS119
D405,406 ISS119
D407 ISS119
D409 ISS119
D410 MC921
D411 ISS119
D412 ISS119
D413 ISS119
D414 ISS119
D415 ISS119
LM-8 BOARD
CN415 (WHT)
CN419 (BLK)
CN420 (YEL)
CN407 (RED)
CN403 (YEL)
CN416 (RED)
CN417 (BLK)
CN418 (WHT)
CN401 (WHT)
CN402 (WHT)
CN414 (BLK)
CN412 (RED)
CN410 (RED)
CN408 (BLK)
CN404 (WHT)
CN405 (YEL)
CN406
TO FR-16 BOARD BC009
TO PC-99 BOARD CN702
TO FR-14 BOARD BC009
TO VI-30 BOARD CN2048(BLK)
TO RF-19 BOARD CN307(RED)
TO TM-79 BOARD CN602(RED)
SW11 LOAD END
SW13-1 REC PROOF
SW13-2 CASSETTE DOWN
SW12 CASSETTE ON
M802 LOADING/THREADING MOTOR
L901 SUPPLY SENSOR
L902 ACE-UP SENSOR
PW901 LIGHT

SS-53 BOARD


8.4Vp-p
34msec
IC501 (3) REC(REF SYNC)
5Vp-p
72μsec
IC501 (24) REC/PB
0.4Vp-p
H
IC501 (6) CUE/REV(PB SYNC)
0.6Vp-p
3.58MHz
IC401 (28) REC/PB
(13) REC CTL
30Hz
6 Vp-p
(16) PB CTL
2Vp-p
(39) RF SW PULSE
4.7Vp-p
2V
IC 501 (13), (16), (39) PB
TRACKING-CENTER
5Vp-p
72μsec
IC501 (34) REC/PB
33.3msec
(32) PG(A)
1.4Vp-p
2.8msec
(33) PG(S)
1.4Vp-p
16.7msec
(40) PG(B)
1.4Vp-p
(39) RF SW P
5Vp-p
2V
IC501 REC/PB
CN508 (3) (FG1)
0.1Vp-p
CN508 (2) (FG2)
0.1Vp-p
IC501 (17) FGA
2.2Vp-p
IC501 (18) FG B
2.2Vp-p
8.5 msec
REC / PB
5Vp-p
1.2msec
IC501 (37) REC/PB
3.4Vp-p
IC501 (3) REC (REF SYNC)
2msec
6Vp-p
IC501 (19) REC/PB(4XFG)
8.5msec
0.1Vp-p
REC/PB
CN508 (2) (FG A)
(3) (FG B)
4Vp-p
IC501 (6) CUE/REV(PB SYNC)
1.2msec
5.0Vp-p
IC501 (20) REC/PB (CP PWM)
4 Vp-p
6MHz
IC401 (59)


REEL MOTOR BOARD
R4 820
IC1
D1 IN4148TP
Q1-Q6 2SD992 SWITCH
INPUT AMP
PHASE SW
3 PHASE 120° LOGIC
OUTPUT AMP
R7 47k
R8 47k
R5 47k
R6 47k
S2
S1
S1,S2 THS-103-1
R1 470
R2 470
R3 470
C1 47 16V
C2 47 16V
C3 47 16V
C4 47 16V
IC1 CX-877
CN1(RED)
1 REEL REVERSE RED
2 REEL+B
3 GND (12V) BLU
4 REEL M ORG
TO SS-39 BOARD CN506 (BLK)

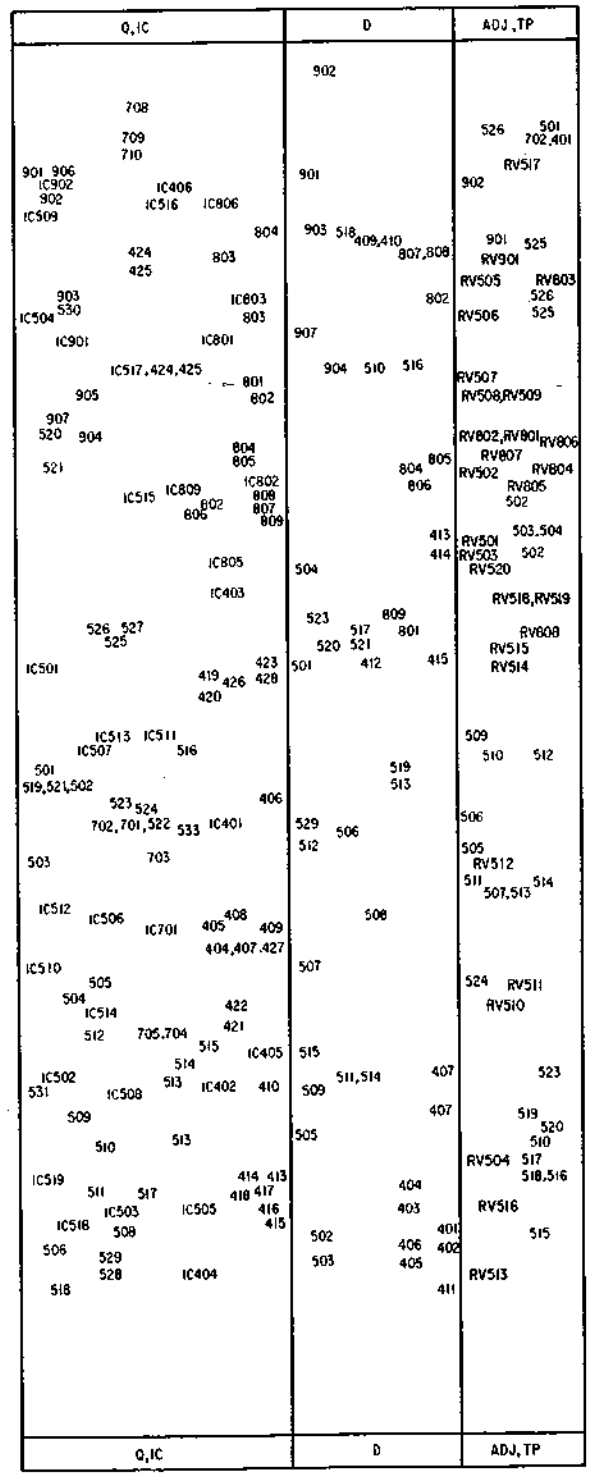

CAPSTAN MOTOR BOARD
Q1-Q6 2SD992A
R4 820
IC1
D1 IN4148TP
CN2
U
V
W
R6 47k
INPUT AMP
PHASE SW
3 PHASE 120° LOGIC
OUTPUT AMP
S2 THS103
R8 47k
R7 47k
R5 47k
S1 THS103
R1 470
R2 470
R3 470
C1 47 16V
C2 47 16V
C3 47 16V
C4 47 16V
IC1 CX877
DME
S3 DM211
CN1(WHT)
1 CAP MOTOR SERVO BLU
2 CAP MOTOR (-) WHT
3 CAP MOTOR (+) WHT
4 STEP REVERSE WHT
5 CAP MOTOR FG (-) BLU
6 CAP MOTOR FG (2) WHT
7 CAP MOTOR FG (1) WHT
8 CAP MOTOR FG (+) WHT
TO SS-39 BOARD CN505 (WHT)
TO SS-39 BOARD CN508 (WHT)

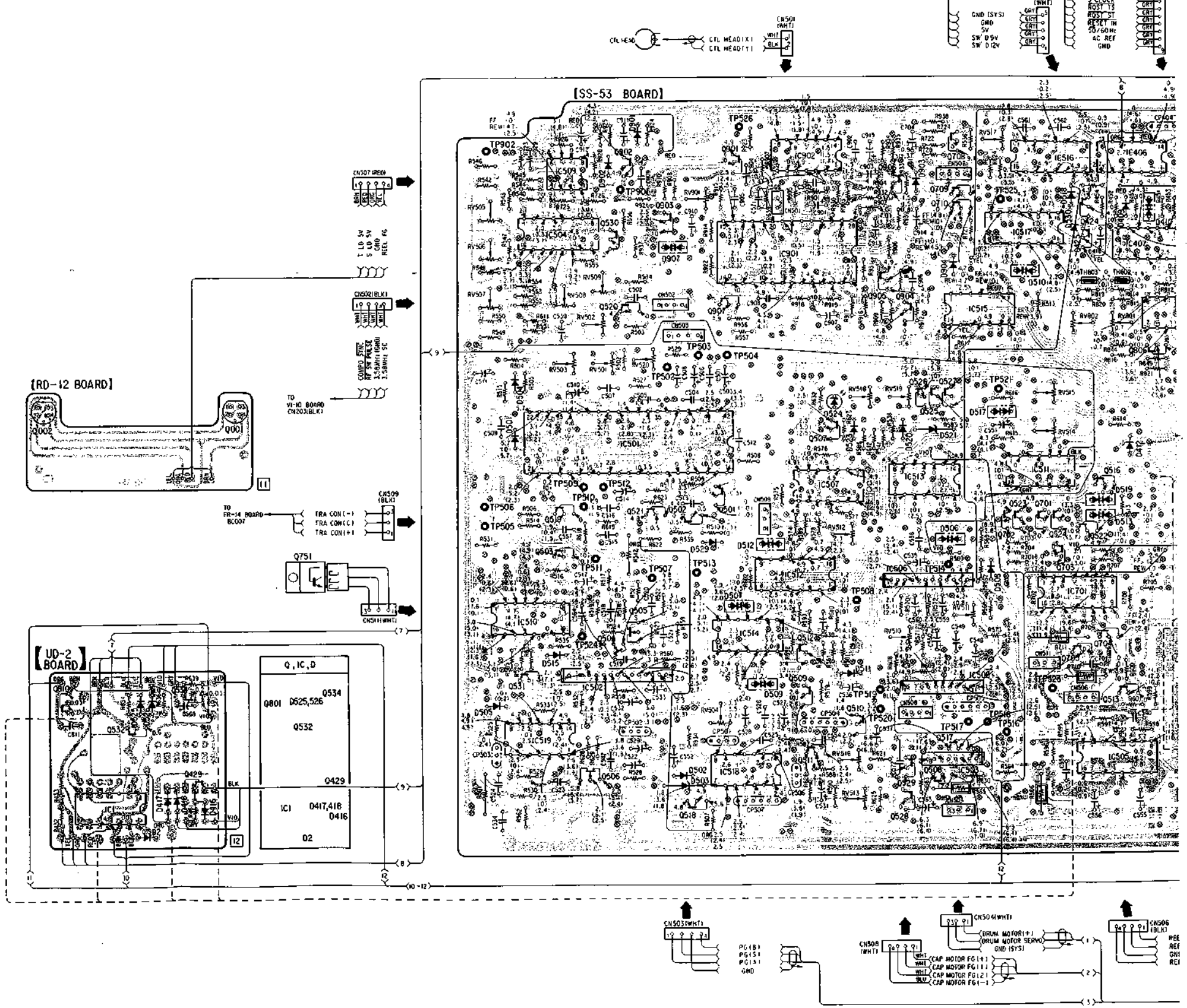
SS-53 (SYSTEM CONTROL, SERVO)/RD-12 (REEL DETECT)/UD-2 (CHANNEL UP/DOWN COMP)/REEL MOTOR/CAPSTAN MOTOR/LM-8 (LOADING MOTOR) PRINTED WIRING BOARDS

– SS-53 BOARD Ref. No. 2,000 series, RD-12 BOARD Ref. No. 2,100 series, UD-2 BOARD Ref. No. 2,200 series, REEL MOTOR BOARD Ref. No. 8,200 series, CAPSTAN MOTOR BOARD Ref. No. 9,000 series, LM-8 BOARD Ref. No. 9,100 series –

Note:

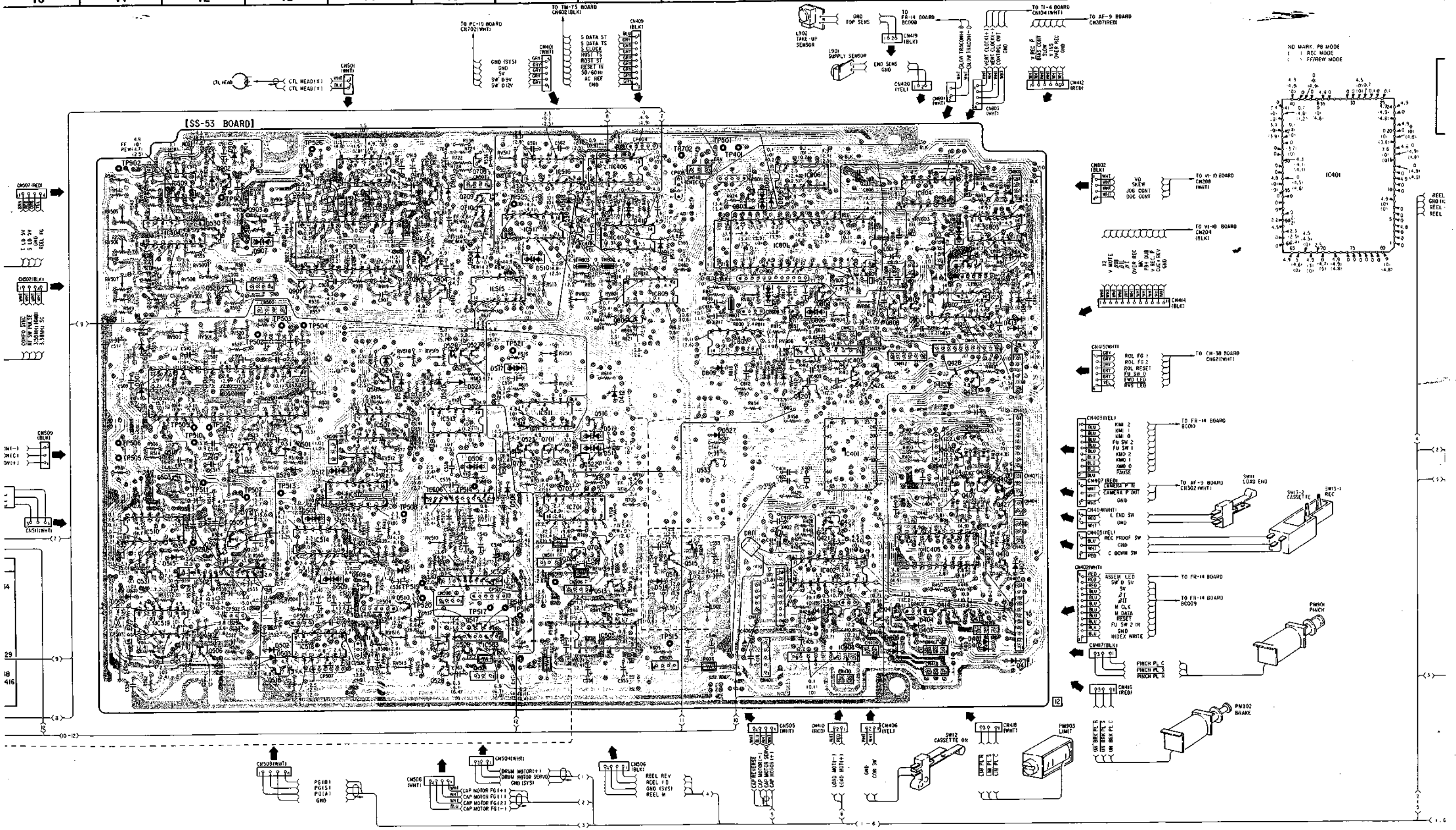
- ○—: Indicates a leadwire mounted on the component side.
- ●—: Indicates a leadwire mounted on the printed side.
- ▒▒: soldering side.
- ▒▒: B+ pattern
- ▒▒: component-side.





G MOTOR) PRINTED WIRING BOARDS

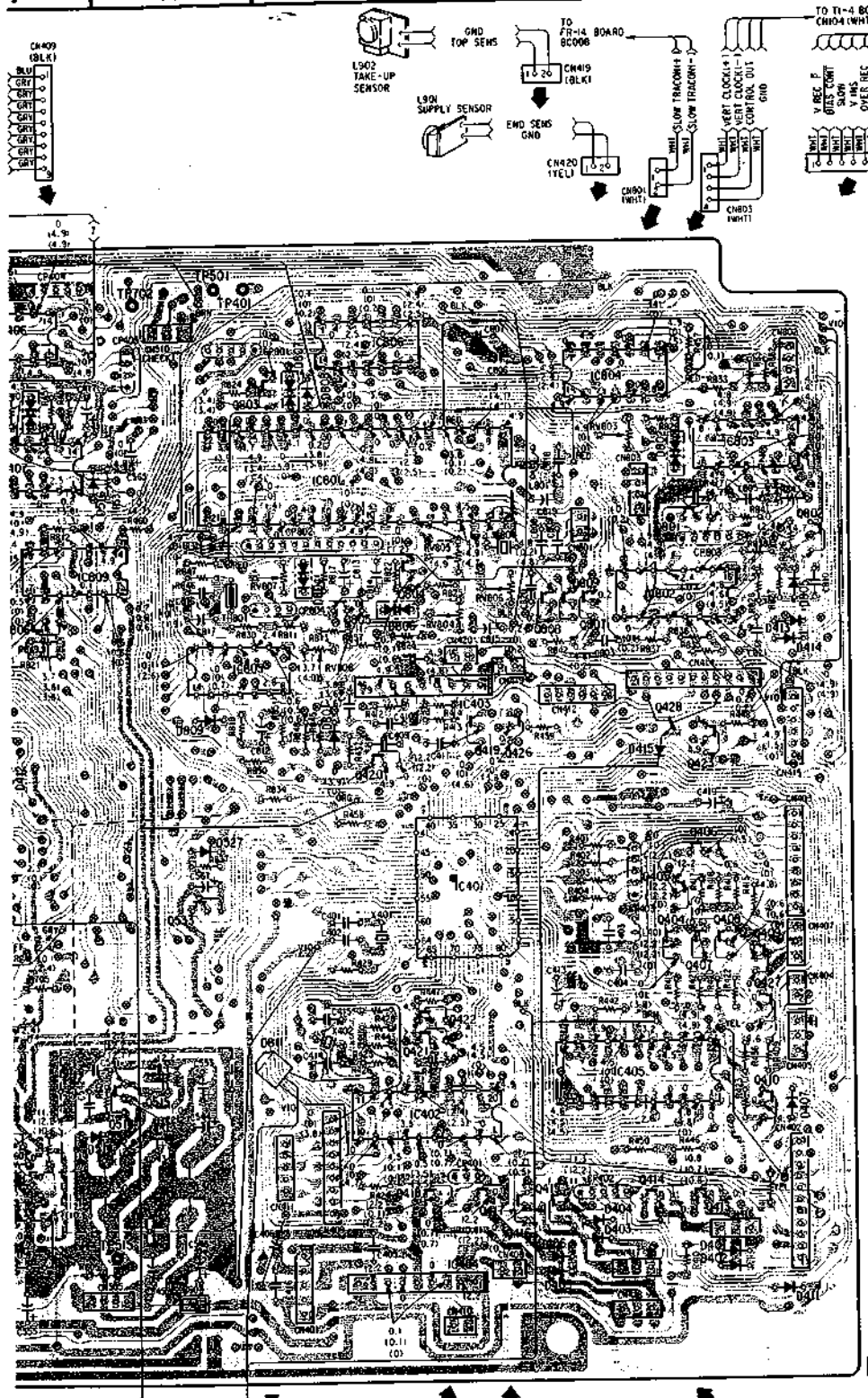
CAPSTAN MOTOR BOARD Ref. No. 9,000 series, LM-8 BOARD Ref. No. 9,100 series –

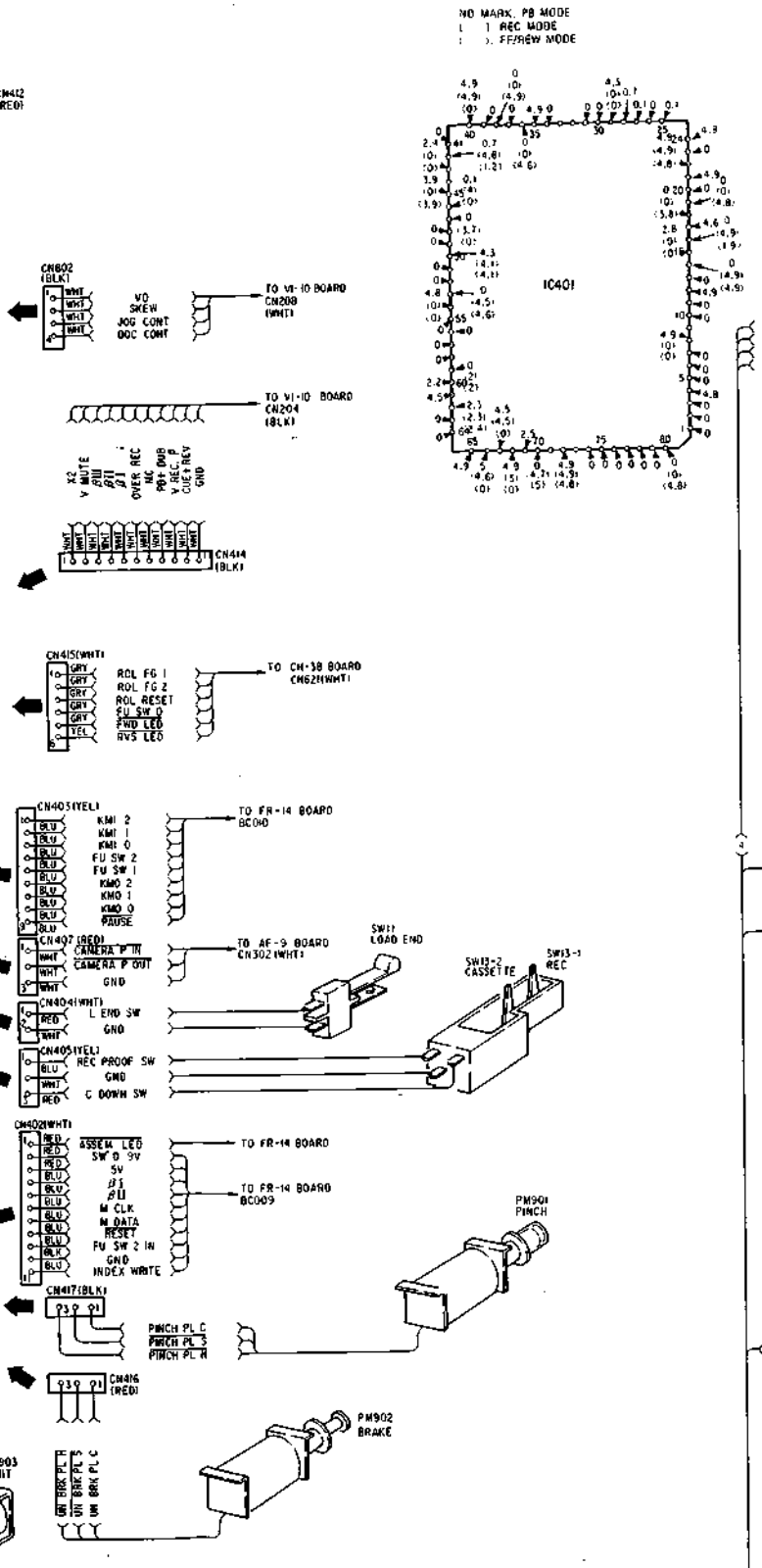


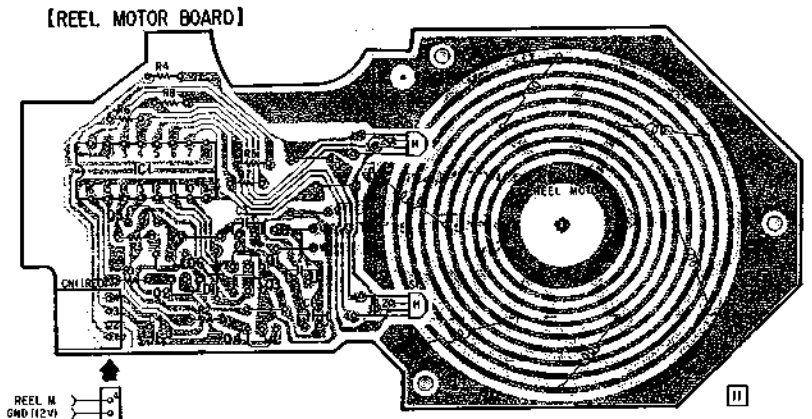
SERVO, SYSTEM CONTROL

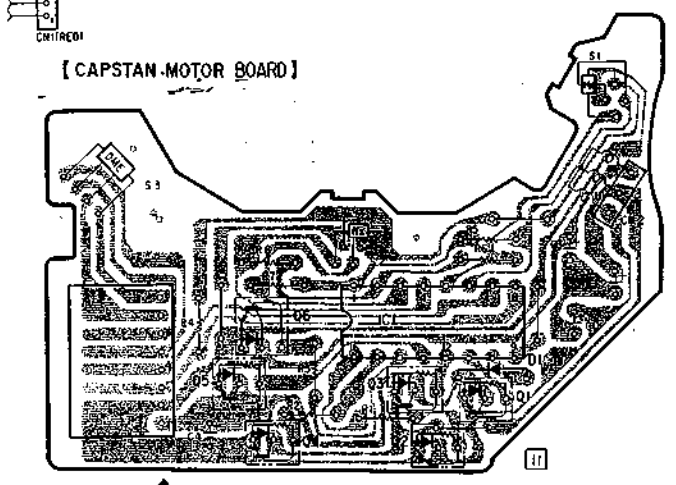
7 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33

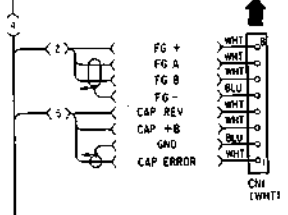
A B C D E F G H I J

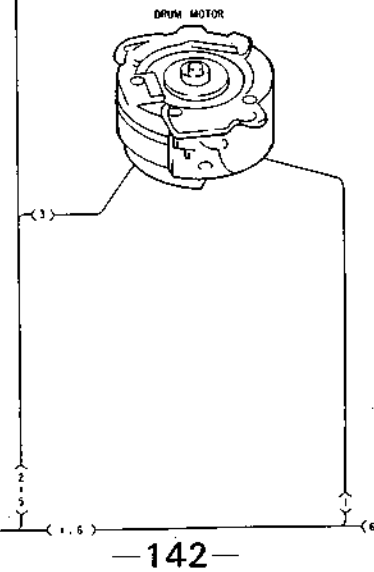


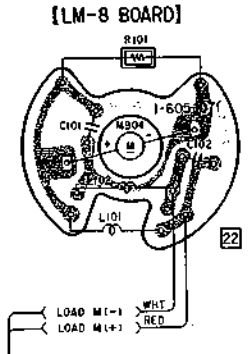












4-4. AU-13 (AUDIO)/TI-4 (SOUND MULTIPLEX) SCHEMATIC DIAGRAMS

– AU-13 BOARD Ref. No. 3,000 series, TI-4 BOARD Ref. No. 4,000 series –

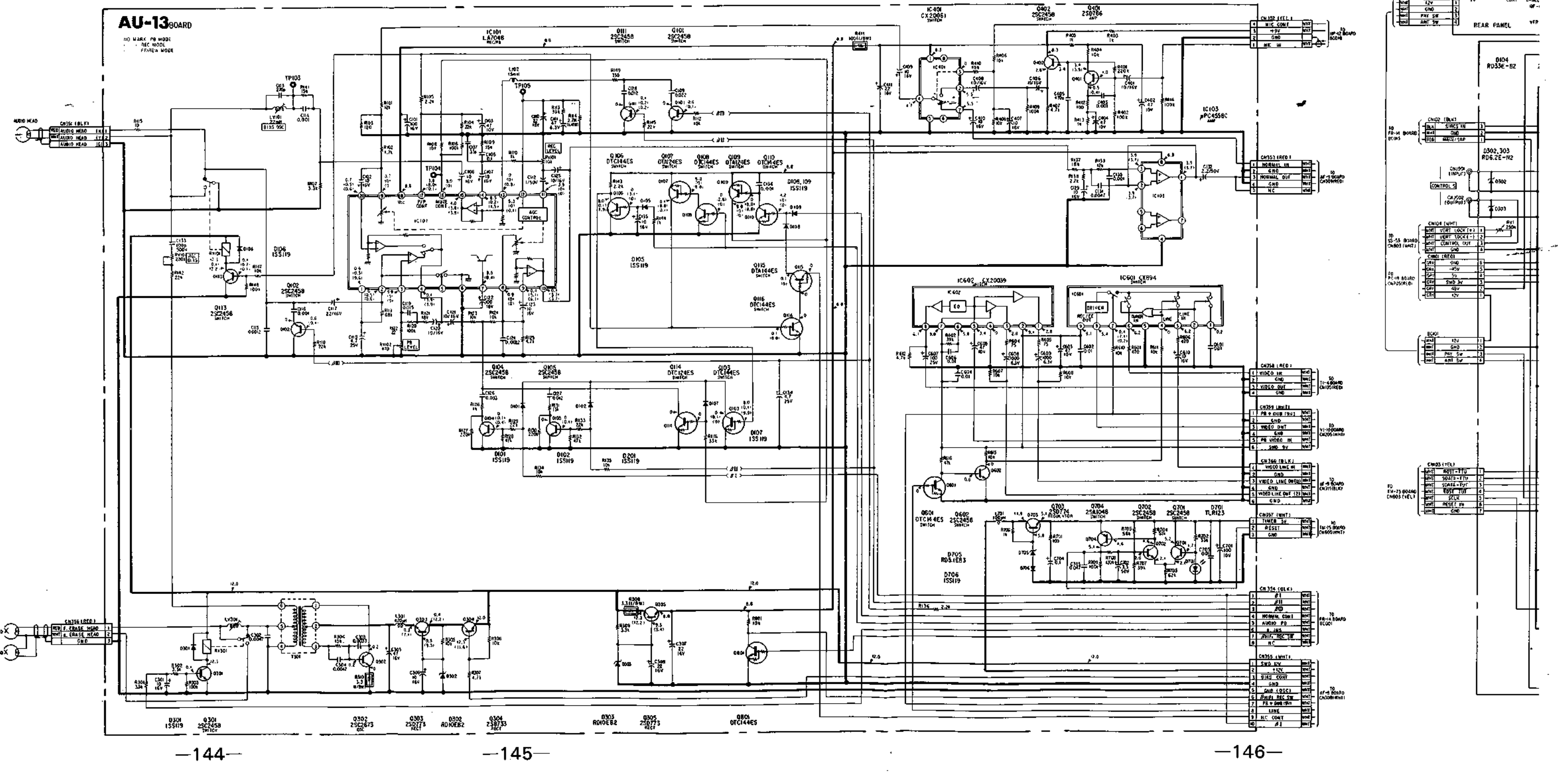
Note:

- All resistors are in ohms, 1/6W unless otherwise noted. kΩ: 1000 Ω, MΩ: 1000 kΩ
- All capacitors are in μF unless otherwise noted. p: μμF 50WV or less are not indicated except for electrolytics.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : nonflammable resistor.
- The red lines show the main voltages.
- All voltages are dc measured with a VOM (10 MΩ).
- ——— : B+ bus.
- ▬▬ : B– bus.

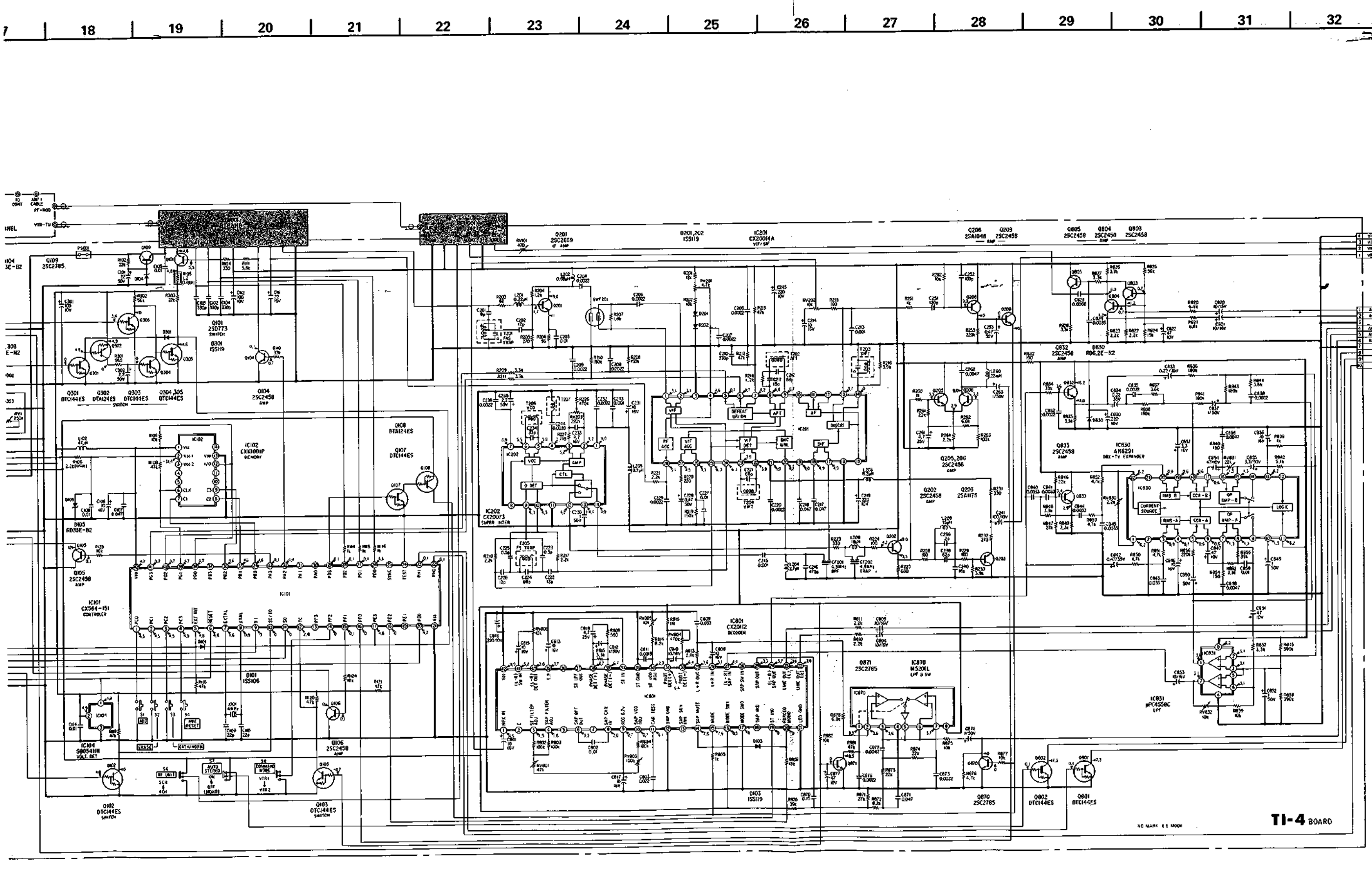
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.



AUDIO, TUNER


17
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29
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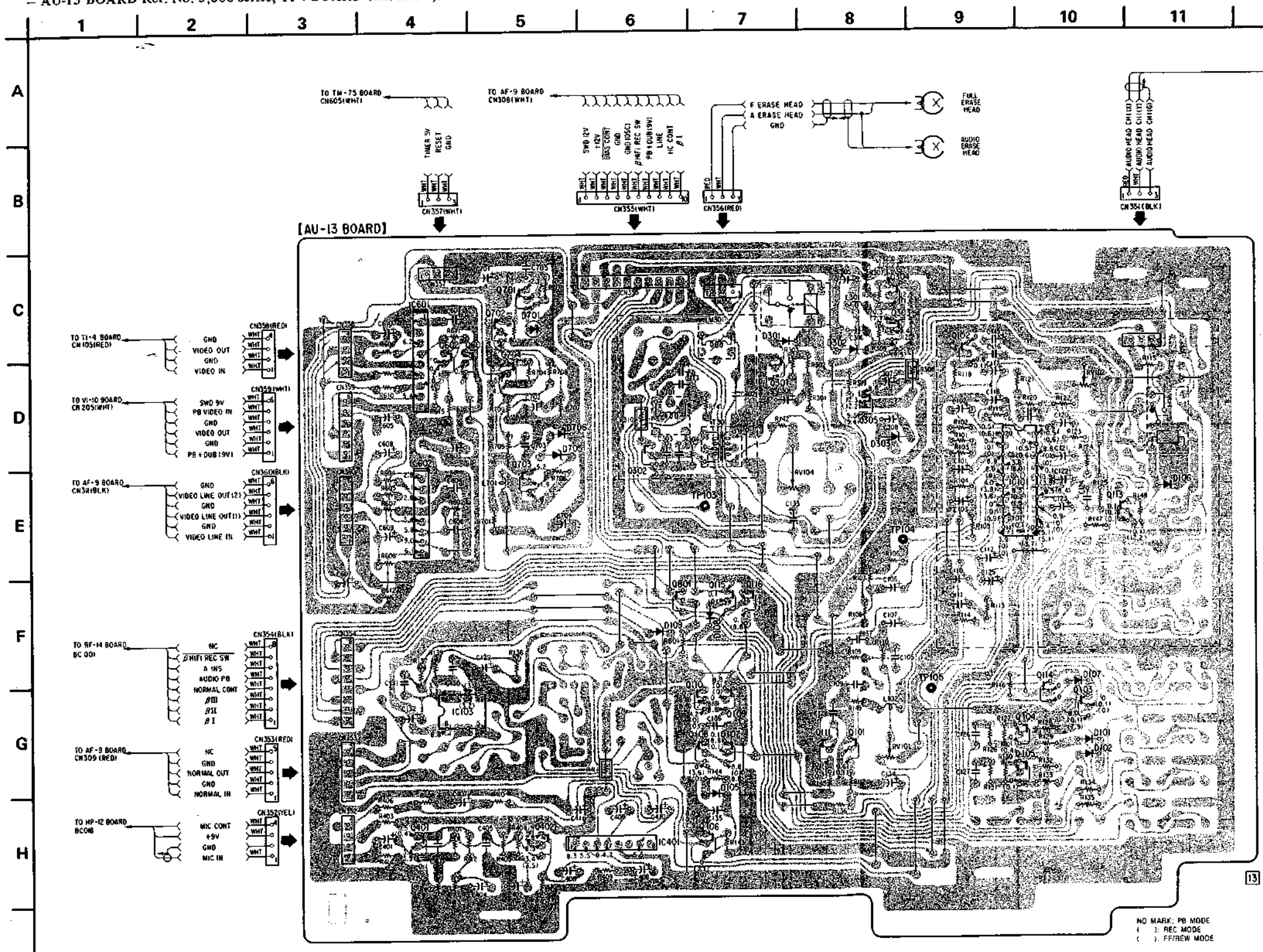
31
32
33
A
B
C
D
E
F
G
H
I
J
Q109 2SC2785
Q101 2SD773
Q301 DTC144ES
Q302 DTA124ES
Q303 DTC144ES
Q304,305 DTC144ES
Q104 2SC2458
Q108 DTA124ES
Q107 DTC144ES
Q106 2SC2458
Q105 2SC2458
Q102 DTC144ES
Q103 DTC144ES
IC102 CXK1008P
IC107 CX584-151
IC104 S8054HN
IC101
Q201 2SC2669
Q201,202 1SS119
IC201 CX20014A
IC202 CX20073
Q206 2SA1048
Q209 2SC2458
Q205,206 2SC2456
Q202 2SC2458
Q203 2SA1175
Q805 2SC2458
Q804 2SC2458
Q803 2SC2458
Q832 2SC2458
Q830 RD6.2E-B2
Q833 2SC2458
IC830 AN6291
IC831 μPC4558C
Q871 2SC2785
IC870 NJU201L
Q870 2SC2785
Q902 DTC144ES
Q901 DTC144ES
Q103 1SS119
IC801 CX20012
CN105 (RED)
CN106 (RED)
TO AF-5 BOARD CN304 (RED)
TO SU-13 BOARD CN108 (RED)
TI-4 BOARD

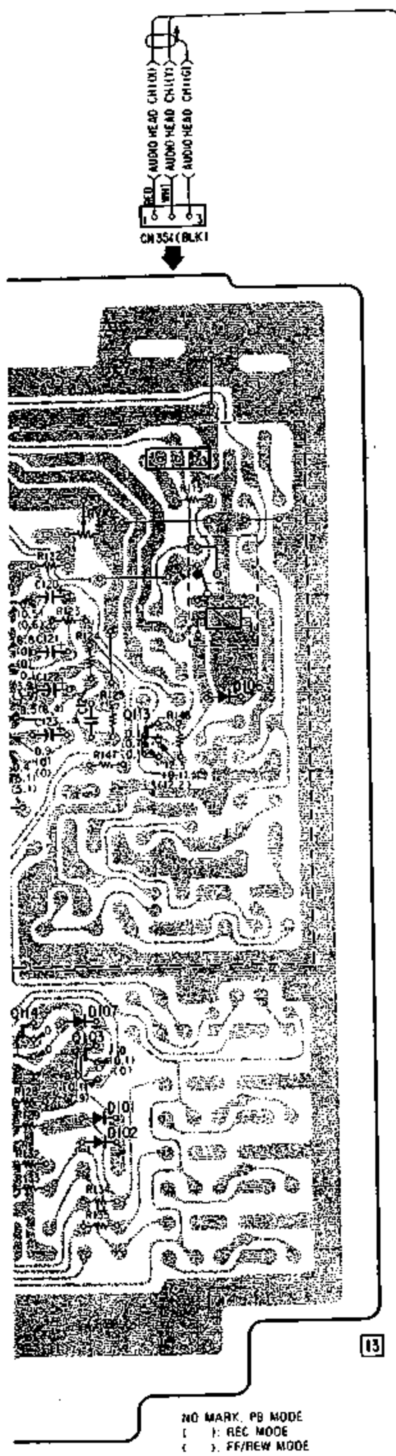
AU-13 (AUDIO)/TI-4 (SOUND MULTIPLEX) PRINTED WIRING BOARDS

– AU-13 BOARD Ref. No. 3,000 series, TI-4 BOARD Ref. No. 4,000 series –

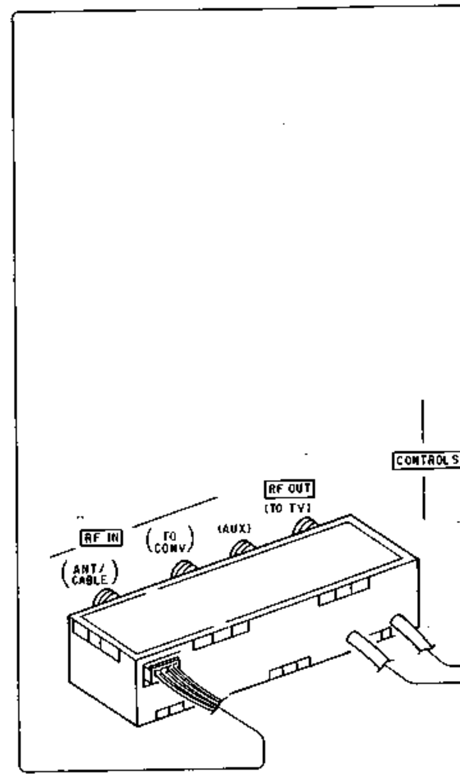


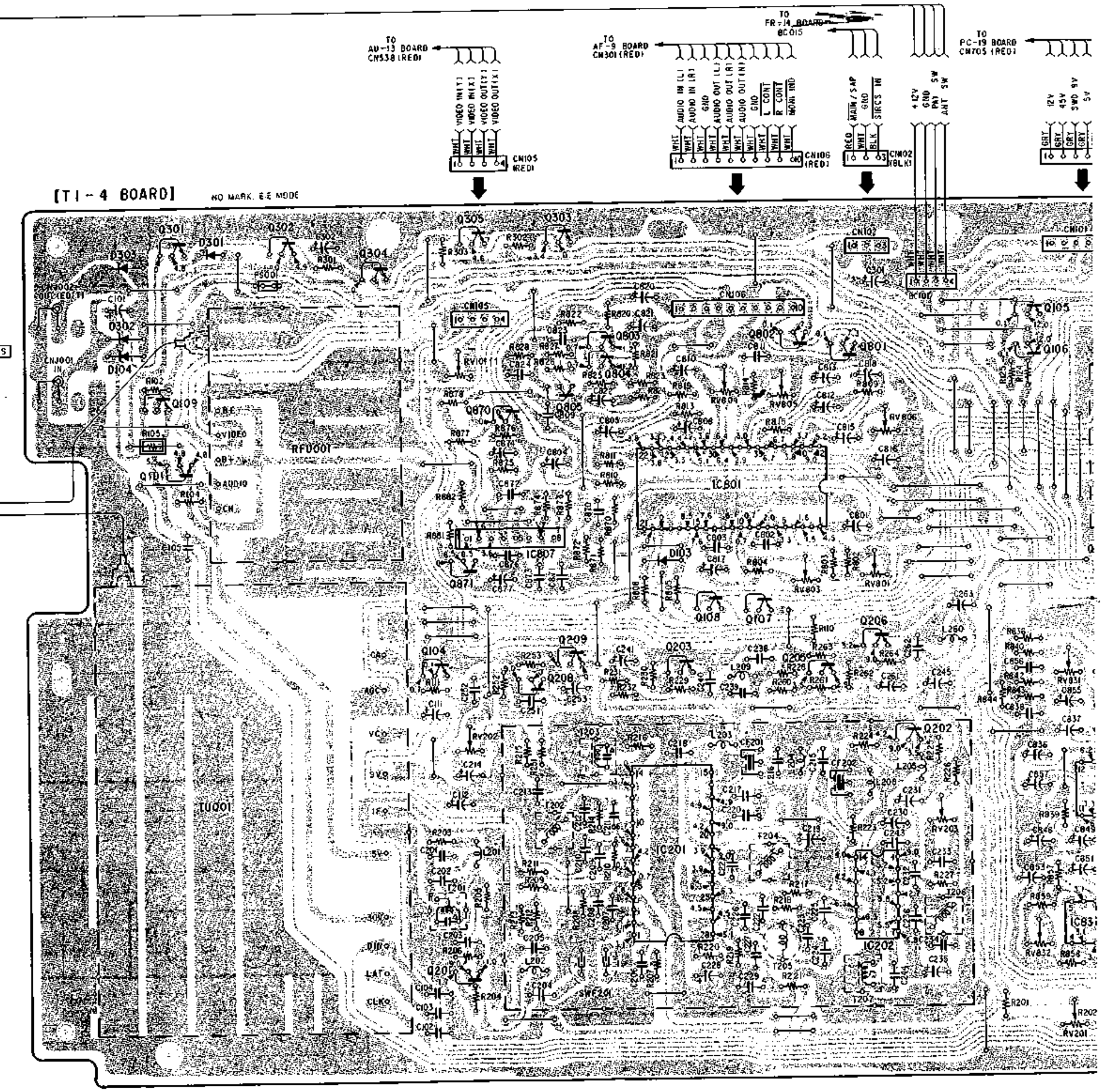
Q, IC	D	ADJ, TP
701 304 702 303 704 102 IC601 602 601 301 305	701 301 302	RV102
706 303 705 IC101 703 113 IC602	106	RV104 103 104
801,115,116	108 109	
107		105
110,109 114 IC103 103 104 111,101 108,107 105	101 102 105	RV106
401, 402, IC401 106		
Q, IC	D	ADJ, TP

10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27

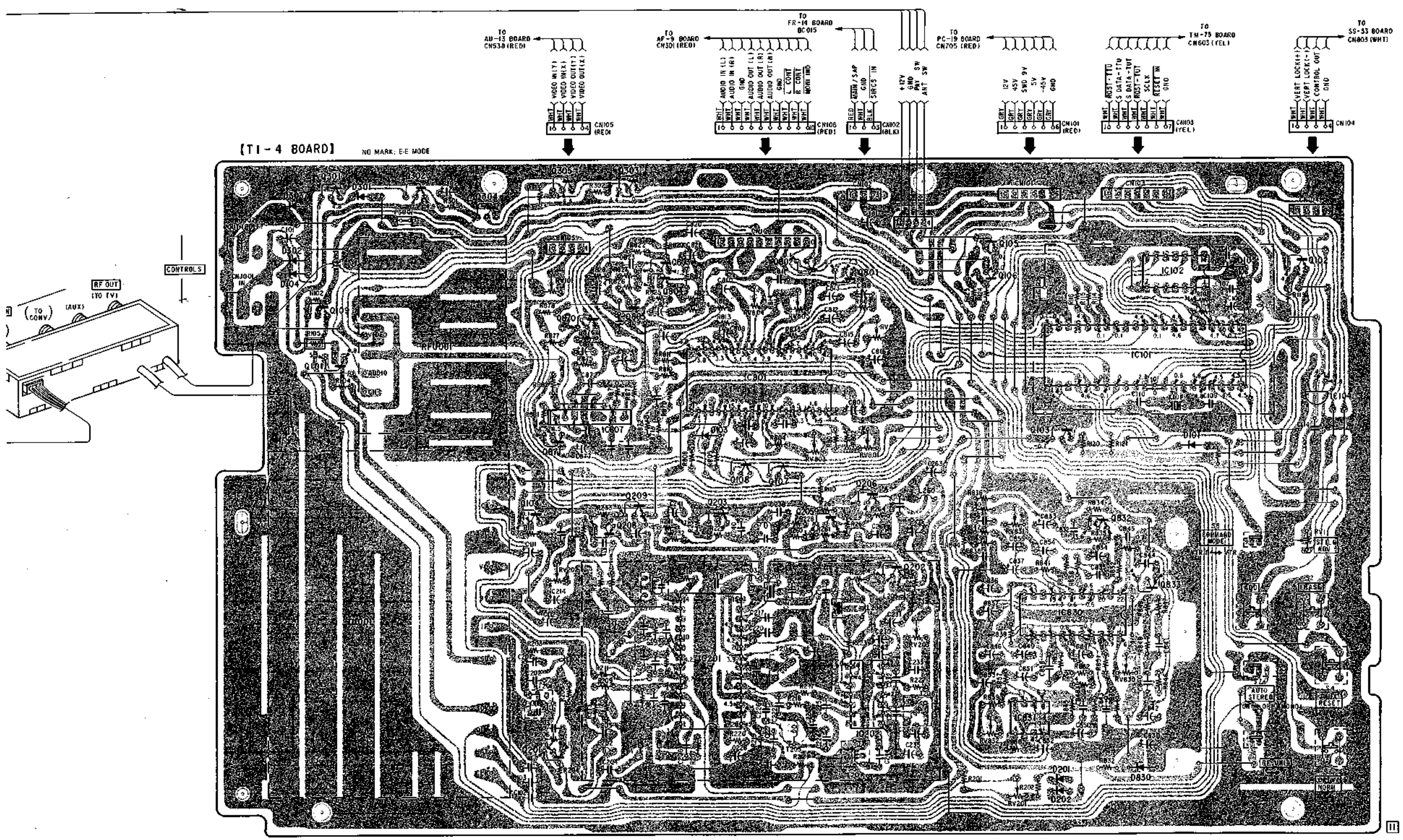


Q, IC	D	ADJ, TP
701, 304, 702, 303, 704, 102, IC601, 602, 601, 301, 305, 703, IC101, 113, IC602, 801,115,116, IC103, 110,109, 114, 103, 104, 111,101, 108,107, 105, 401, 402, IC401, 106	701, 301, 302, 706, 303, 705, 106, 108, 109, 107, 101, 102, 105	RV102, RV104, 103, 104, 105, RV101





Q, IC	D	ADJ
109, 301, 101, 302, 304, 104, 305, 871, 870, IC870, 201, 208, 303, 805, 209, 803, 804, 203, IC201, 108, IC801, 107, 602, 801, 205, 206, IC202, 202, 105, 106, IC83	303, 302, 104, 301, 103	RV101, RV202, RV804, RV805, RV803, RV806, RV801, RV831, RV832, RV201



Note:

- ○—: Indicates a leadwire mounted on the component side.
- ●—: Indicates a leadwire mounted on the printed side.
- : soldering side.
- : B+ pattern
- : B– pattern

	18	19	20	21	22	23	24	25	26	27	28	29	30
Q IC			301 109 101	302	304 305 104 871 201	870 IC870 208 303 805 209 803 804	203 IC201 IC801 108	107 802 205 601 206 IC202	202	105 106 103 IC831 IC830	832 IC101 833 IC102		102 IC104
D			303 302 104 301				103			201 202	830	101 105	
ADJ					RV101 RV202		RV804	RV805 RV803	RV806 RV801	RV831 RV832, RV201	RV830		RV1

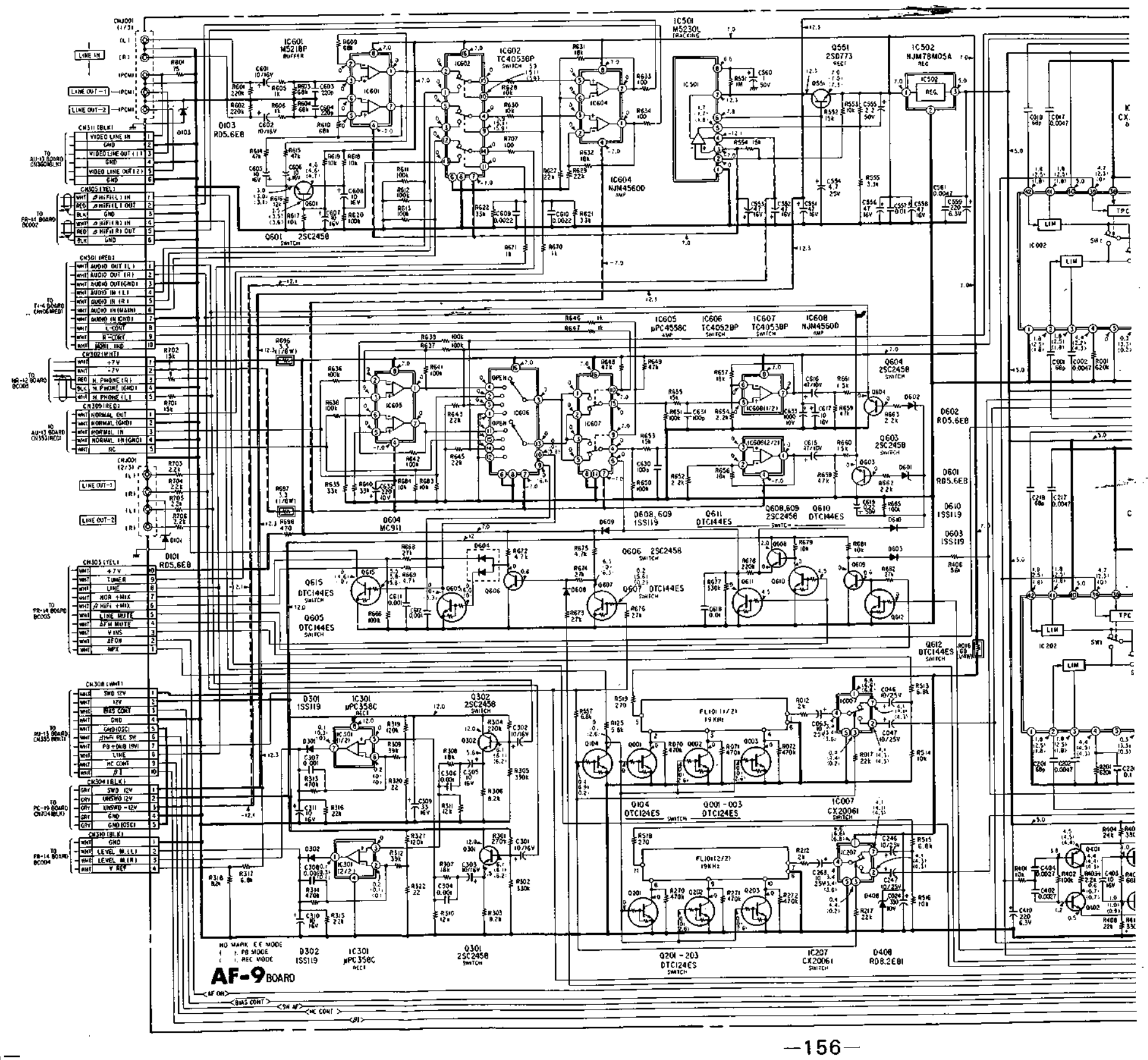
4-5. AF-9 (AFM SIGNAL REC/PB PROCESS) SCHEMATIC DIAGRAMS

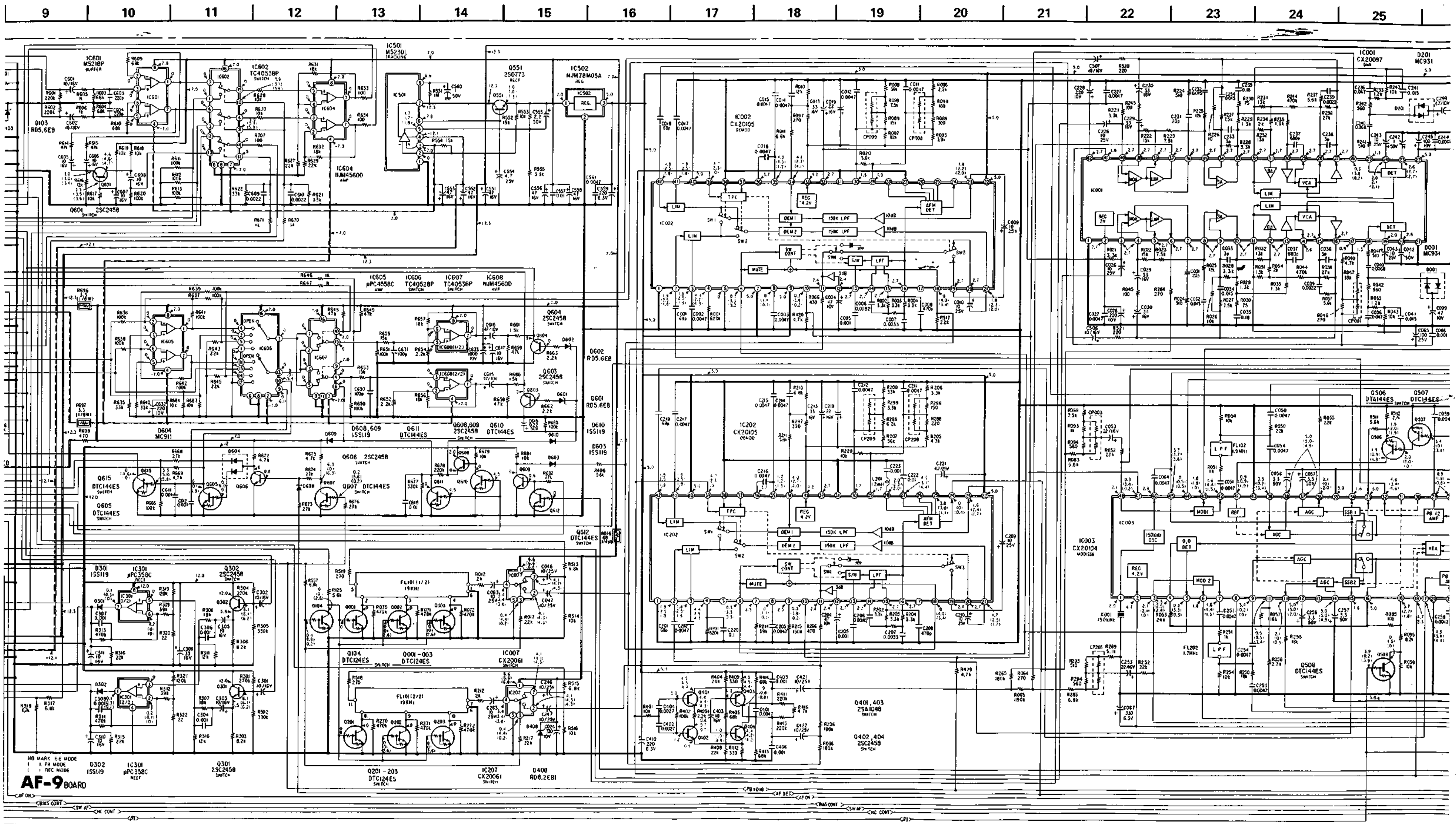
– AF-9 BOARD Ref. No. 8,000 series –

Note:

- All resistors are in ohms, 1/6 W unless otherwise noted. kΩ: 1000 Ω, MΩ: 1000 kΩ
- All capacitors are in μF unless otherwise noted. p: μμF 50WV or less are not indicated except for electrolytics.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- The red lines show the main voltages.
- All voltages are dc measured with a VOM (10 MΩ).
- : B+ bus.
- : B– bus.

When indicating parts by reference number, please include the board name.

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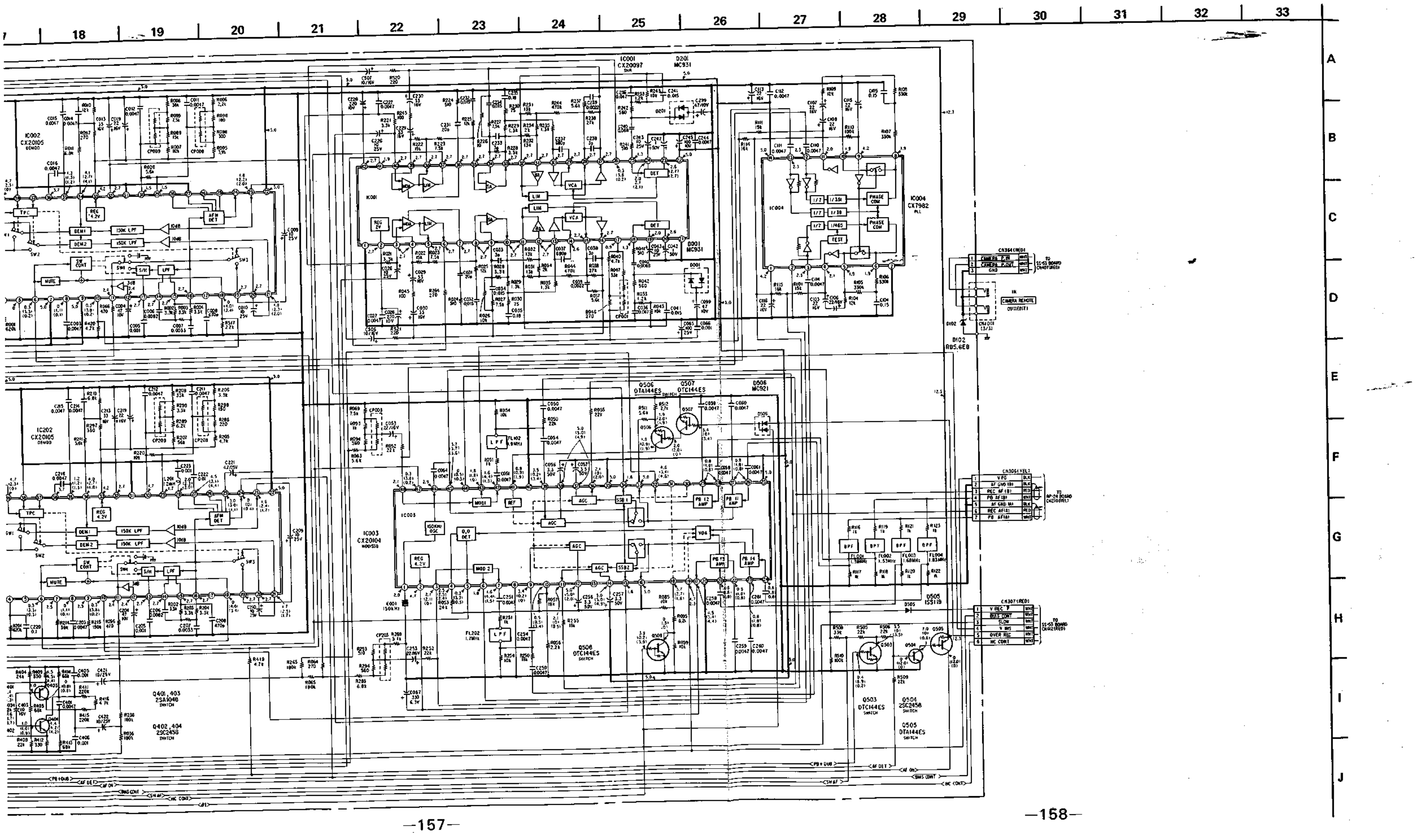
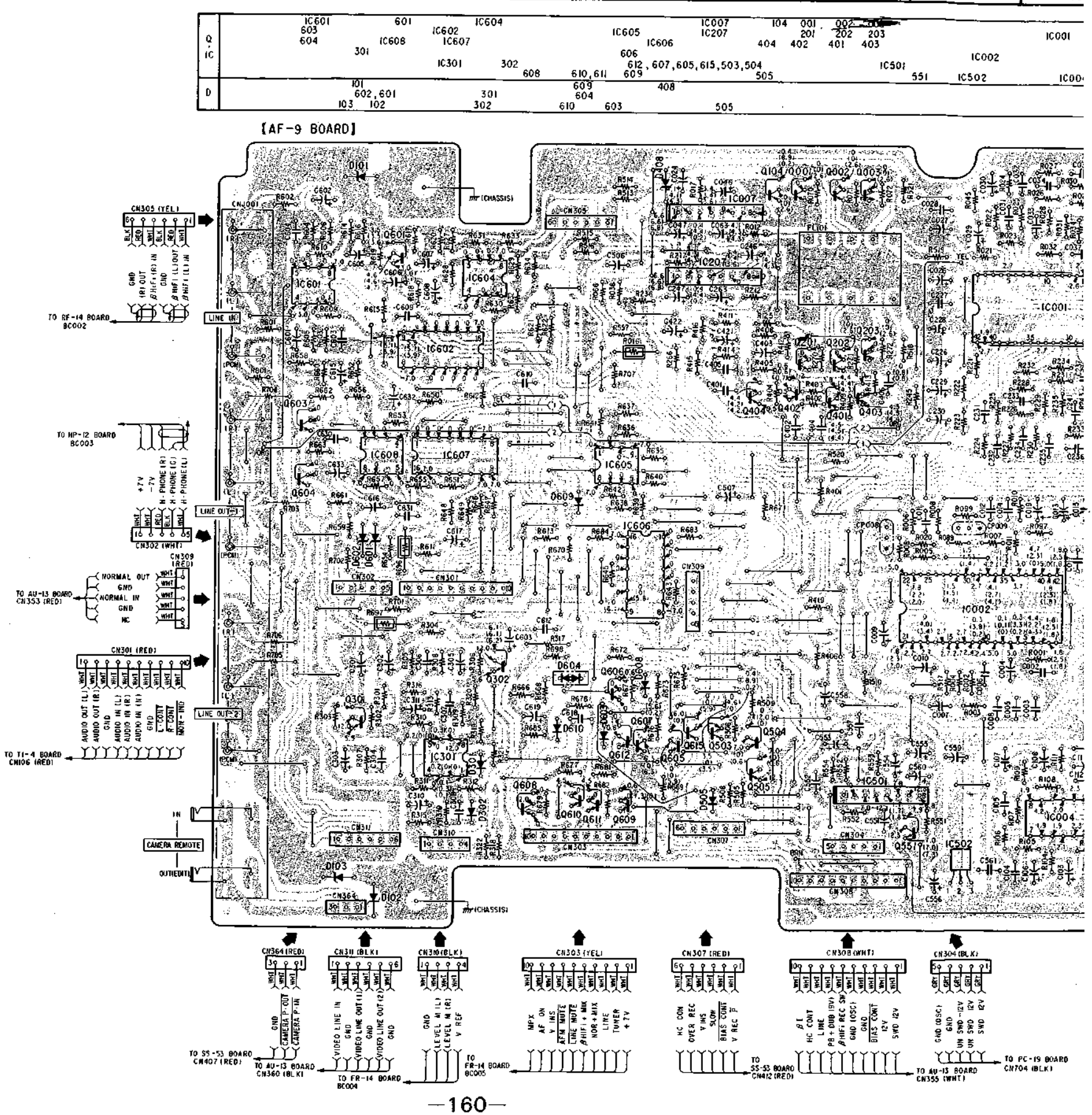
25
AF-9 BOARD
NO MARK E-E MODE
( ) PB MODE
( ) REC MODE
IC601 M5218P BUFFER
IC602 TC4053BP SWITCH
IC501 M5230L TRACKING
Q551 2SD773 REG
IC502 NJM78M05A REG
IC604 NJM4560D AMP
IC605 μPC4558C AMP
IC606 TC4052BP SWITCH
IC607 TC4053BP SWITCH
IC608 NJM4560D AMP
IC002 CX20105 DEMOD
IC202 CX20105 DEMOD
IC001 CX20097
IC003 CX20104 MOD/SSB
D201 MC931
D001 MC931
D301 1SS119
IC301 μPC358C RECT
Q302 2SC2458 SWITCH
Q301 2SC2458
D302 1SS119
Q104 DTC124ES
Q001-003 DTC124ES
IC007 CX20061
IC207 CX20061 SWITCH
Q201-203 DTC124ES SWITCH
D408 RD8.2EB1
Q401, 403 2SA1048 SWITCH
Q402, 404 2SC2458 SWITCH
Q506 DTA144ES SWITCH
Q507 DTC144ES
Q508 DTC144ES SWITCH
Q601 2SC2458 SWITCH
D103 RD5.6EB
Q615 DTC144ES SWITCH
Q605 DTC144ES SWITCH
Q606 2SC2458
Q607 DTC144ES SWITCH
D604 MC911
D608, 609 1SS119
Q611 DTC144ES
Q608, 609 2SC2458 SWITCH
Q610 DTC144ES
Q604 2SC2458 SWITCH
Q603 2SC2458 SWITCH
D602 RD5.6EB
D601 RD5.6EB
D610 1SS119
D603 1SS119
Q612 DTC144ES SWITCH
FL101 (1/2) 19KHz
FL101 (2/2) 19KHz
FL102 1.9MHz
FL202 1.7MHz
X001 150kHz


IC002 CX20105 DEMOD
IC001 CX20097 SNR
D201 MC931
IC004 CX7982 PLL
IC202 CX20105 DEMOD
IC003 CX20104 MODESB
D001 MC931
D506 MC921
Q401,403 2SA1048 SWITCH
Q402,404 2SC2458 SWITCH
Q506 DTA144ES SWITCH
Q507 DTC144ES SWITCH
Q503 DTC144ES SWITCH
Q504 2SC2458 SWITCH
Q505 DTA144ES SWITCH
Q508 DTC144ES SWITCH
D505 1SS119
D102 RD5.6E8
CN3064(RED)
CN3061(YEL)
CN3071(RED)
CN001
TO SS-93 BOARD CN402(RED)
TO AP-24 BOARD CN210(YEL)
TO SS-93 BOARD CN402(RED)
CAMERA P.IN
CAMERA P.OUT
GND
CAMERA REMOTE
V REC
REC CONT
SLOW
V RVS
OVER REC
MC CONT
V PO
AF GND (B)
REC AF(B)
PB AF(B)
AF GND (A)
REC AF(A)
PB AF(A)
REG 4.2V
REG 2V
TPC
AFM DET
DEM1
DEM2
150K LPF
SW CONT
S/H
LPF
MUTE
PHASE COMP
TEST
VCO
LIM
AGC
SSB1
SSB2
MOD1
MOD2
REF
VOX
DET
PB 12 AMP
PB 13 AMP
PB 14 AMP
BPF
FL001 1.58MHz
FL002 1.53MHz
FL003 1.68MHz
FL004 1.83MHz
FL201 9.8MHz
FL202 1.7MHz
150KHz OSC
+12.3
+5.0
+3.0
PB+DUB
AF DET
AF ON
BIAS CONT
SW AF
MC CONT
MI

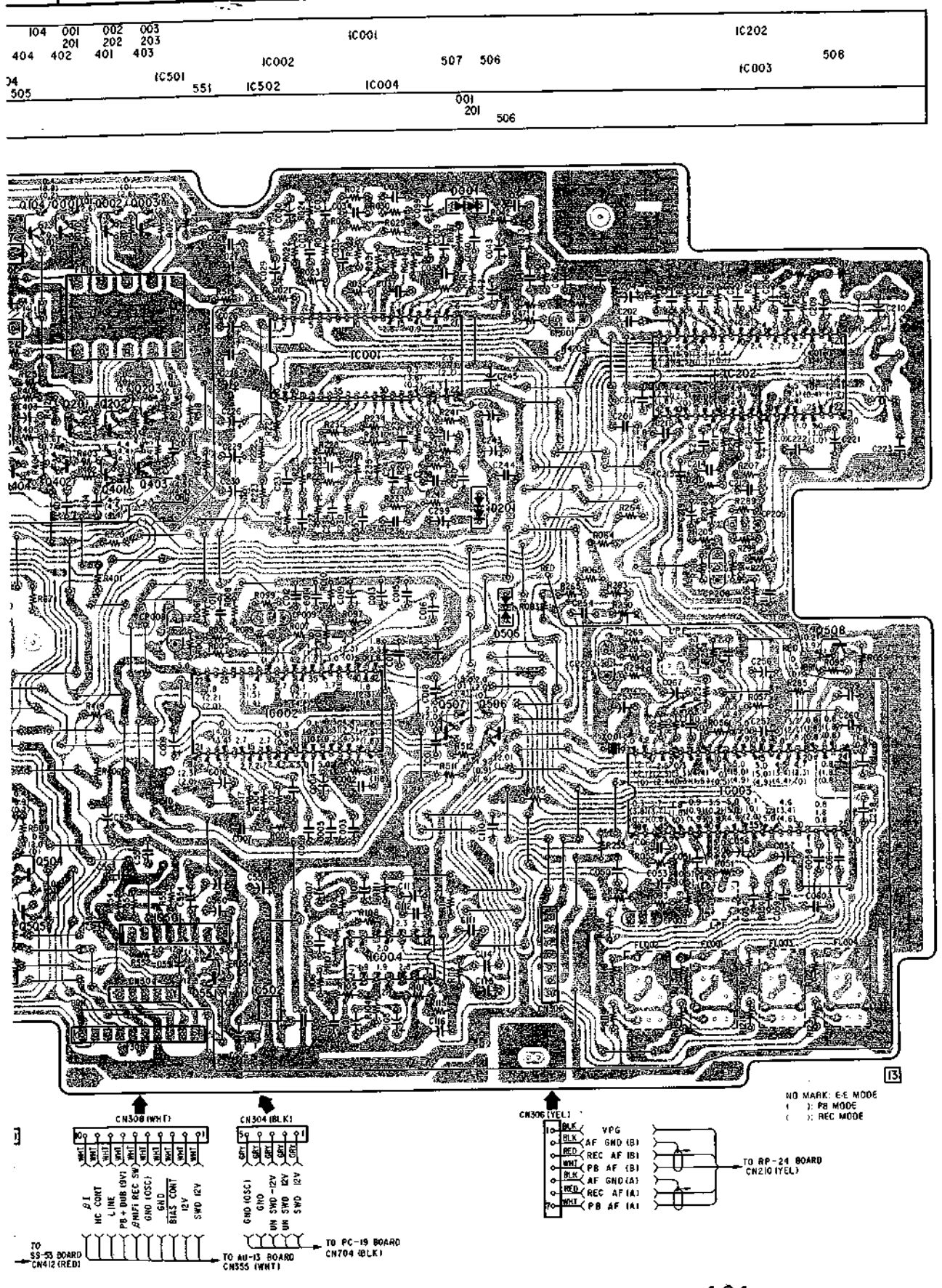
AF-9 (AFM SIGNAL REC/PB PROCESS) PRINTED WIRING BOARDS

– AF-9 BOARD Ref. No. 8,000 series –

【AF-9 BOARD】



15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30



Note:
- ○—— : Indicates a leadwire mounted on the component side.
- ●—— : Indicates a leadwire mounted on the printed side.
- : soldering side.
- : B+ pattern
- : B— pattern

A B C D E F G H I J

4-6. TM-75 (TIMER, INDICATOR)/FP-4 (POWER SWITCH)/FF-3 (TV/VTR SWITCH)/FR-14 (CASSETTE CONTROL SWITCH)/HP-12 (HEADPHONES)/JG-2 (JOG DIAL)/CH-38 SCHEMATIC DIAGRAMS

– TM-75 BOARD Ref. No. 7,000 series, FP-4 BOARD Ref. No. 5,400 series, FF-3 BOARD Ref. No. 5,300 series, FR-14 BOARD Ref. No. 5,100 series, HP-12 BOARD Ref. No. 5,200 series, JG-2 BOARD Ref. No. 5,000 series, CH-3 BOARD Ref. No. 5,600 series –

Note:

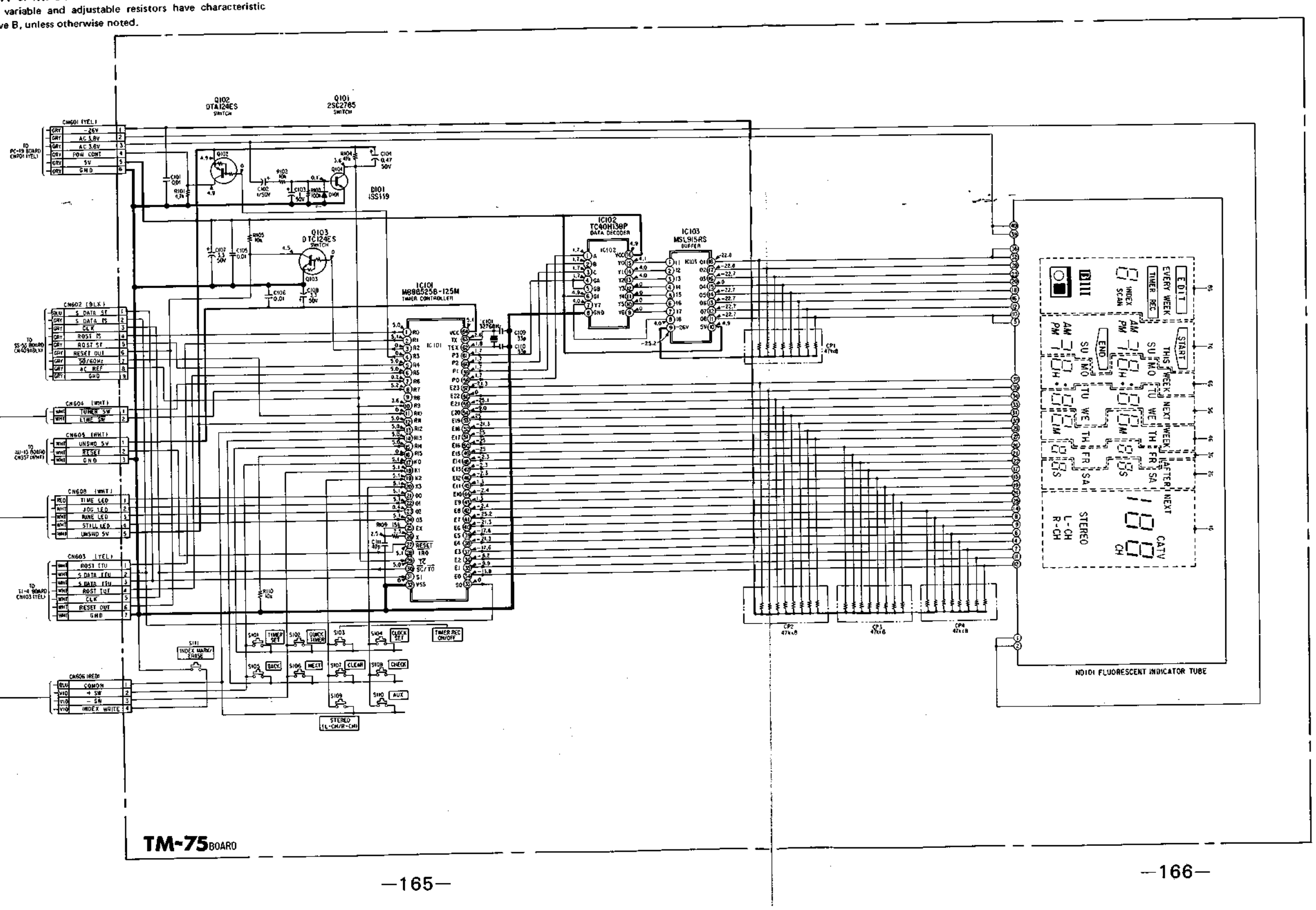
- All resistors are in ohms, ¼W unl
  kΩ: 1000 Ω, MΩ: 1000 kΩ
- All capacitors are in μF unless othe
  50WV or less are not indicated exc
- All variable and adjustable resistors
  curve B, unless otherwise noted.

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

When indicating parts by reference number, please include the board name.

Note:

- All resistors are in ohms, 1/6 W unless otherwise noted. kΩ: 1000 Ω, MΩ: 1000 kΩ
- All capacitors are in μF unless otherwise noted. p: μμF 50WV or less are not indicated except for electrolytics.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- The red lines show the main voltages.
- All voltages are dc measured with a VOM (10 MΩ).
- ▬▬ : B+ bus.
- ▬▬ : B– bus.

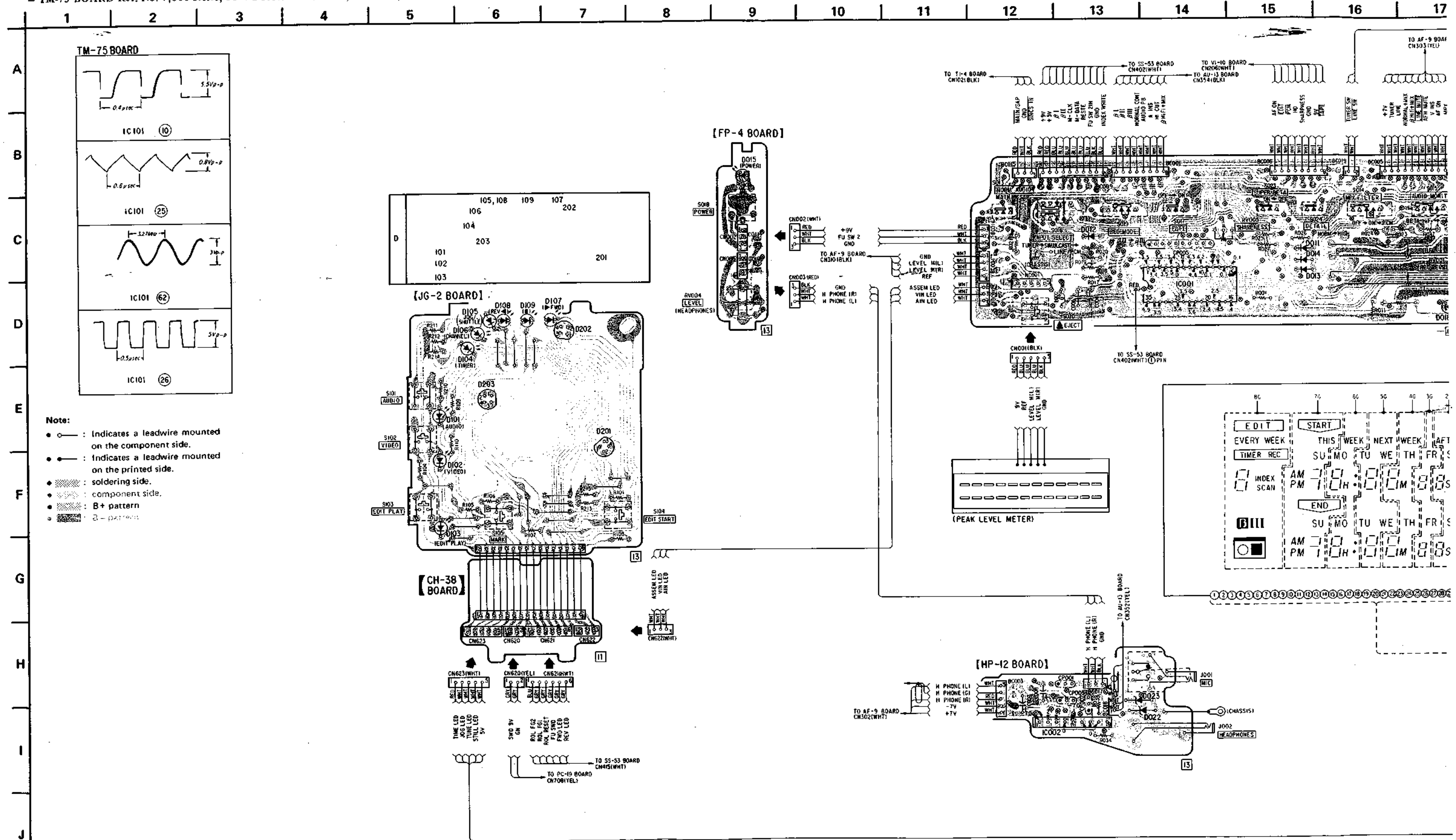


TM-75 BOARD

A B C D E F G H I J

TM-75 (TIMER, INDICATOR)/FP-4 (POWER SWITCH)/FF-3 (TV/VTR SWITCH)/FR-14 (CASSETTE CONTROL SWITCH)/HP-12 (HEADPHONES)/JG-2 (JOG DIAL)/CH-38 PRINTED WIRING BOARDS

– TM-75 BOARD Ref. No. 7,000 series, FP-4 BOARD Ref. No. 5,400 series, FF-3 BOARD Ref. No. 5,300 series, FR-14 BOARD Ref. No. 5,100 series, HP-12 BOARD Ref. No. 5,200 series, JG-2 BOARD Ref. No. 5,000 series, CH-3 BOARD Ref. No. 5,600 series –



Note:

- ○— : Indicates a leadwire mounted on the component side.
- ●— : Indicates a leadwire mounted on the printed side.
- : soldering side.
- : component side.
- : B+ pattern

Ref. No. 5,600 series –

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

A B C D E F G H I J

TO AF-9 BOARD CN303(YEL)

TO AF-9 BOARD CN305(YEL)

VI-40 BOARD 206(WHT) J-15 BOARD 4(BLK)

TO SS-53 BOARD CN501(WHT)

TO SS-53 BOARD CN509 (BLK)

TO SS-53 BOARD CN403(YEL)

AF ON/OFF PCM MID SHARPNESS GND SW TAPE

TUNER SW LINE SW

+7V TUNER LINE NORMAL+MIX CHAR MIX AFM MUTE V VIS AF OK MPX

REC LEVEL/LIGHT REC LEVEL/LIN GND REC LEVEL/PIOT REC LEVEL/RIN GND

SLOW TRACON(+) SLOW TRACON(-) TRACON(+) TRACON C TRACON(-)

KMI 2 KMI 1 KMI 0 FUSW 1 FUSW 2 KMO 2 KMO 1 KMO 0 PAUSE

【FR-14 BOARD】

RV003 (NORM)

D008 D007 (X2) D009

S002 X2

S011 INDEX

S008 (CHANNEL)

D020 (IR)

S009 (CHANNEL)

CHC CHB CHA INDEX MARK

D008 D007 D016

Gate-Hi/L

RP001 REMOTE SENSOR UNIT

【FF-3 BOARD】

S022 TV/VTR

D019 (VTR)

S020 RESET

S021 TAPE RETURN

IC	D
IC001	008 012 010,007,009,020 011 014 013 021 018,017,016

NO MARK: E-E MODE

Q, IC, D

IC103 D101 Q104 IC101 IC102 Q102 Q103

【TM-75 BOARD】

S109 STEREO/CH/R-CH

S110 AUX

S111 INDEX MARK/ ERASE

S104 QUICK TIMER

S105 CLOCK SET

S103 TIMER SET

S102 TIMER REC ON/OFF

S101 CHECK

S106 BACK

S107 CLEAR

S108 NEXT

ND101

IC103 IC102 IC101 Q102

CN608(WHT)

5V STBY LED TUNE LED JOG LED TIME LED

CN603(YEL) CN602(BLK) CN606(RED) CN605(WHT) CN604(WHT) CN601(YEL)

GND RESET OUT SCL/K RST/ TUT SDA/ TTU RST/ TTO

GND AC REF 4.096MHz RESET OUT RST SI RST TS CLK DATA TS SDATA ST

MODE WRITE -5V +5V COMMON

GND RESET IN +5 V/+8.5V

LINE SW TUNER SW

GND 5V PWR DOWN AC4V AC4V -26V

TO TI-4 BOARD CN103(YEL)

TO SS-53 BOARD CN409(BLK)

TO AU-13 BOARD CN357(WHT)

TO PC-19 BOARD CN701(YEL)

NO MARK: E-E MODE

8G 7G 6G 5G 4G 3G 2G 1G

EDIT START EVERY WEEK TIMER REC INDEX SCAN END

THIS WEEK NEXT WEEK AFTER NEXT

SU MO TU WE TH FR SA

AM PM 7 10H 10 11M 88S

CATV 189 CH

STEREO L-CH R-CH

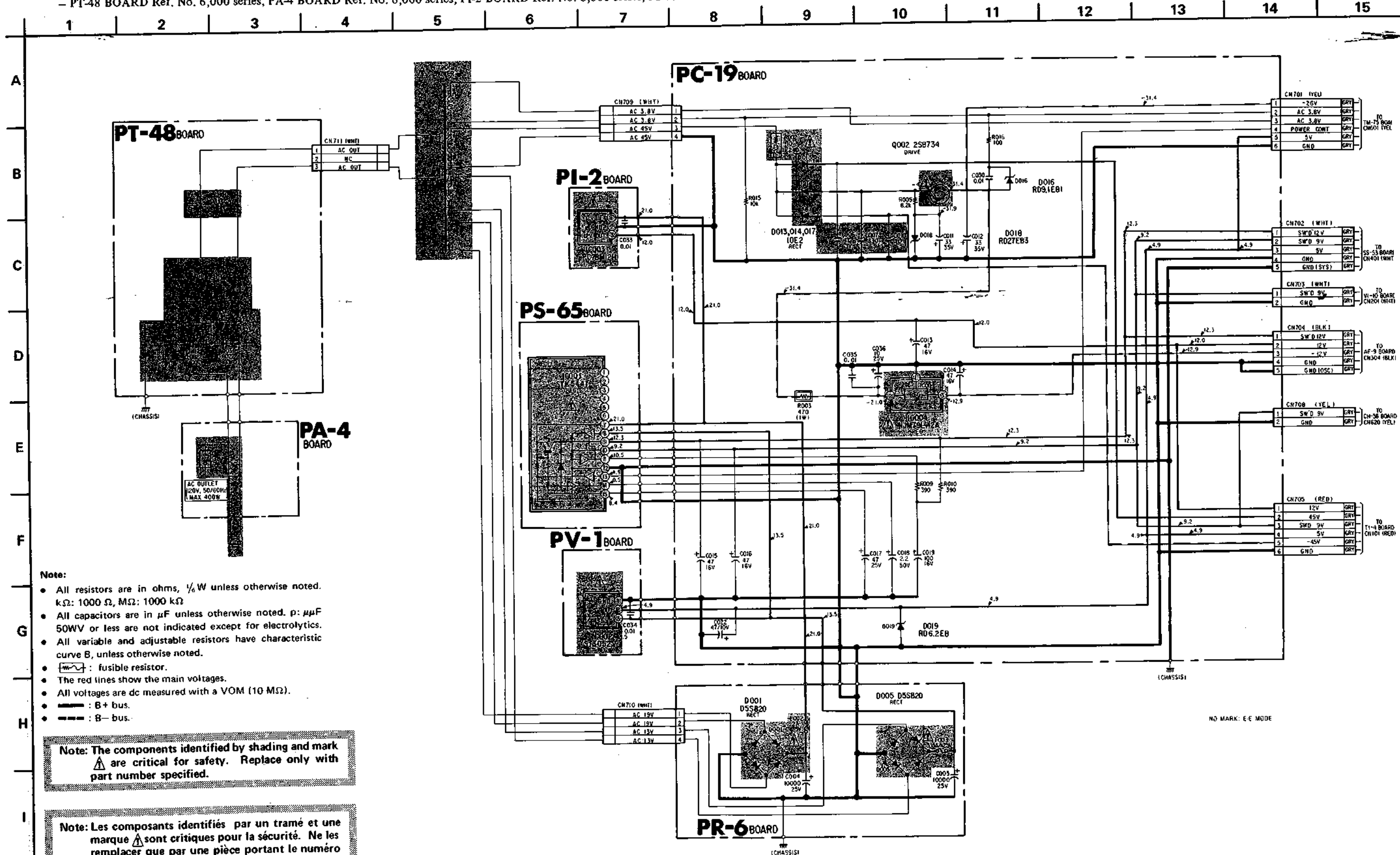
BIII

(CHASSIS)

J002 HEADPHONES

4-7. PT-48 (FILTER)/PA-4 (AC OUTLET)/PI-2 (POWER)/PS-65 (POWER)/PV-1 (POWER)/PR-6 (RECT)/PC-19 (POWER) SCHEMATIC DIAGRAMS AND PRINTED WIRING BOARDS

– PT-48 BOARD Ref. No. 6,000 series, PA-4 BOARD Ref. No. 6,000 series, PI-2 BOARD Ref. No. 6,000 series, PS-65 BOARD Ref. No. 6,000 series, PV-1 BOARD Ref. No. 6,000 series, PR-6 BOARD Ref. No. 6,000 series, PC-19 BOARD Ref. No. 6,000 series –



Note:

- All resistors are in ohms, 1/6 W unless otherwise noted. kΩ: 1000 Ω, MΩ: 1000 kΩ
- All capacitors are in μF unless otherwise noted. p: μμF 50WV or less are not indicated except for electrolytics.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : fusible resistor.
- The red lines show the main voltages.
- All voltages are dc measured with a VOM (10 MΩ).
- ▬▬ : B+ bus.
- ▬ ▬ : B– bus.

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

ARD Ref. No. 6,000 series –

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

A B C D E F G H I J

Q, IC	D
Q002	
	D016, D018 D005, D001 D017
	D014
	D013
IC004	
	D019
IC001	
IC002, IC003,	
Q, IC	D

N701 (YEL)
-26V
AC 3.8V
AC 3.8V
POWER CONT
5V
GND
→ TO TM-75 BOARD CN601 (YEL)

N702 (WHT)
SW'D 12V
SW'D 9V
5V
GND
GND (SYS)
→ TO SS-53 BOARD CN401 (WHT)

N703 (WHT)
SW'D 9V
GND
→ TO VI-10 BOARD CN201 (WHT)

N704 (BLK)
SW'D 12V
12V
– 12V
GND
GND (OSC)
→ TO AF-9 BOARD CN304 (BLK)

N708 (YEL)
SW'D 9V
GND
→ TO CH-38 BOARD CN620 (YEL)

N705 (RED)
12V
45V
SW'D 9V
5V
–45V
GND
→ TO TI-4 BOARD CN101 (RED)

NO MARK: E-E MODE

TO TM-75 BOARD CN601(YEL)
GND
5V
POWER CONT
AC 3.8V
AC 3.8V
–26V

TO AF-9 BOARD CN304 (BLK)
GND (OSC)
GND
+12V
12V
SW'D12V

TO TI-4 BOARD CN101(RED)
GND
–45V
5V
SW'D 9V
45V
RY-COM

CN709 (WHT)
AC3.8V
AC3.8V
AC45V
AC45V

[PC-19 BOARD]

CN702(WHT)
GND (SYS)
GND
5V
SW'D 9V
SW'D 12V
→ TO SS-53 BOARD CN401(WHT)

CN708(YEL)
GND
SW'D 9V
→ TO CH-38 BOARD CN620(YEL)

CN703(WHT)
GND
SW'D 9V
→ TO VI-10 BOARD CN201(WHT)

[PR-6 BOARD]

[PS-65 BOARD]

[PV-1 BOARD]

[PI-2BOARD]

CN711 (WHT)
AC 19V
AC 19V
AC 19V
AC 19V

T901 POWER

CN710 (WHT)
AC OUT
AC OUT

[PT-48 BOARD]

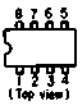
[PA-4 BOARD]
AC IN

Note:

- ◆ o— : Indicates a leadwire mounted on the component side.
- ● •— : Indicates a leadwire mounted on the printed side.
- ● ▒▒ : soldering side.
- ● ▒▒ : B+ pattern
- ● ▒▒ : B– pattern

8. SEMICONDUCTORS

A4558
5218P
JM4558D
JM4560D
PC358C
PC393C
PC4558C

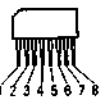


X1013
X1090
X3978
X3983

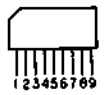
X194B-0
X194B-5
X10021B-NP
X20097
X20097A
X20105
X564-151
X7989A

X20014A
X20043
X20069
X20104
X862
X863
X866B

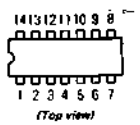
X20061
M5201L
M5230L



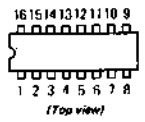
CX20039
CX894
LA7205
NJM4560S



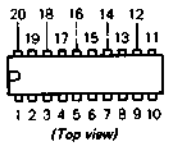
CX20073
CX7982
CX7982A
CXK1001P
HD14066BP
NJM2901N
TC4001BP
TC4011BP
TC4013BP
TC4030BP
TC4066BP
TC4071BP
TC4081BP
μPC324C
μPC339C
μPD4011BC



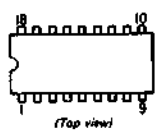
EWA129
HD14053BP
MB3759
MB84052B
MB84053B
SN74LS138N
TC40H138P
TC4049BP
TC4051BP
TC4052BP
TC4053BP
TC4538BP
TL494CN
μPD4051BC
μPD4051BP
μP54053BC



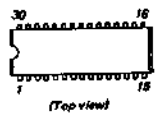
LA7048
M6076-690P



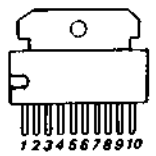
MSL915RS



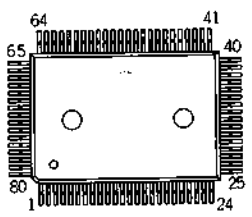
M50763-632SP



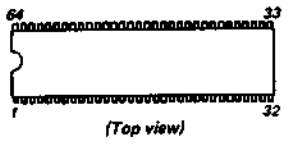
M54543L



MB88551-155M

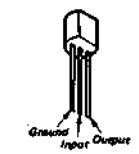


MB8851H-572L
MB88525B-125M

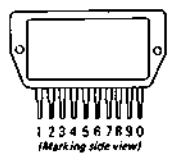


NJM78M05A

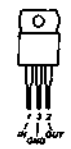
NJM79L12A



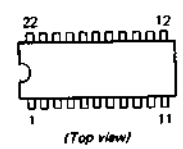
STK5441A



μPC78M12H



LM6417E-577



SI3052V

2SA1048GR
2SA1115
2SC2458
2SC2603
2SC2669
DTA114ES
DTA124ES
DTA144ES
DTC124ES
DTC144EF
DTC144ES

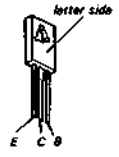
2SA1175
2SC2785
2SC2785-F

2SA933S
2SC1740S
2SC2001
2SD786

2SB733
2SD734
2SD773
2SD774

2SB740
2SD788

2SB772



2SC2673

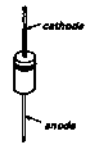
2SD1146

2SD1164

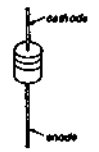
2SK381

2SK118

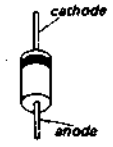
10E2
11E2



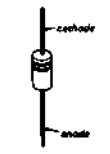
1SS119
1SS133
1SS148



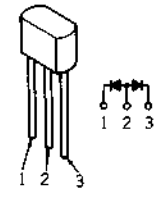
1SS106
EQA02-05F
EQA02-06A
EQA02-06B
EQA02-06D5
EQA02-08B
EQA02-09A
EQA02-10A
HZ10E-B2
HZ33E-B2
HZ5.6EB1
HZ5.6EB2
HZ5.6EB3
HZ6C2
HZ7A3L
HZ8.2EB1
HZ9.1EB1
RD13E-B
RD33E-B2
RD33E-B3
RD5.1E-B3
RD5.1E-L1
RD5.6E-B
RD6.2E-B
RD7.5E-B
RD8.2EB1
RD9.1E-B1



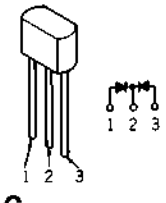
ERB81-004



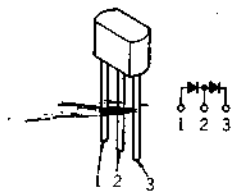
MC911



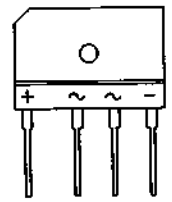
MC921



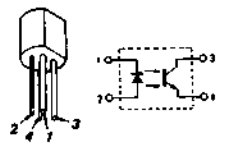
MC931



D5SB10
D5SB20



GP2S02B
NJL5141E

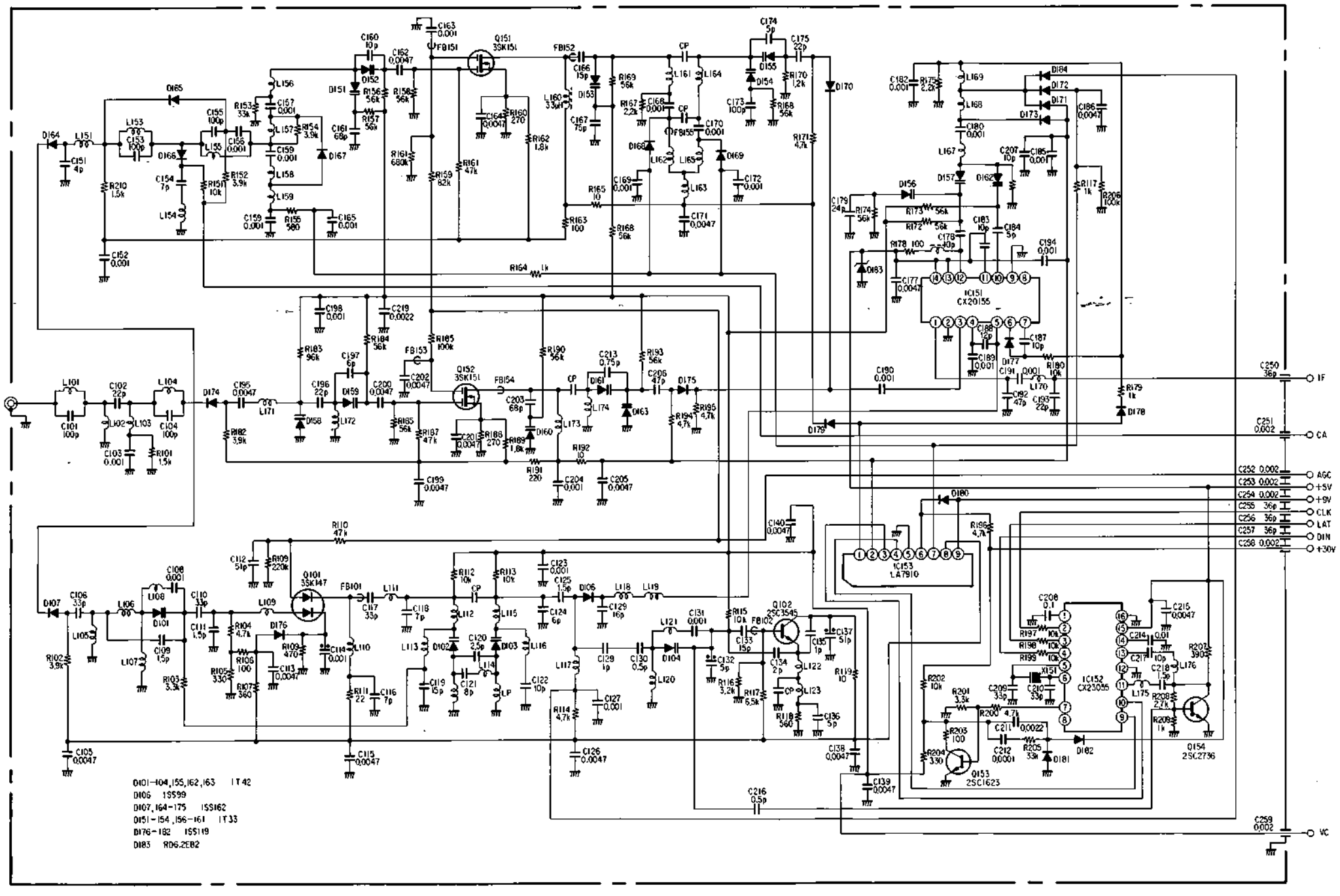


SG206D
SR506D
SY406D

TLG123A
TLR123
TLY123

SEL1413E

4-9. UHF/VHF TUNER SCHEMATIC DIAGRAM
– BT-893 –



SECTION 5

EXPLODED VIEWS

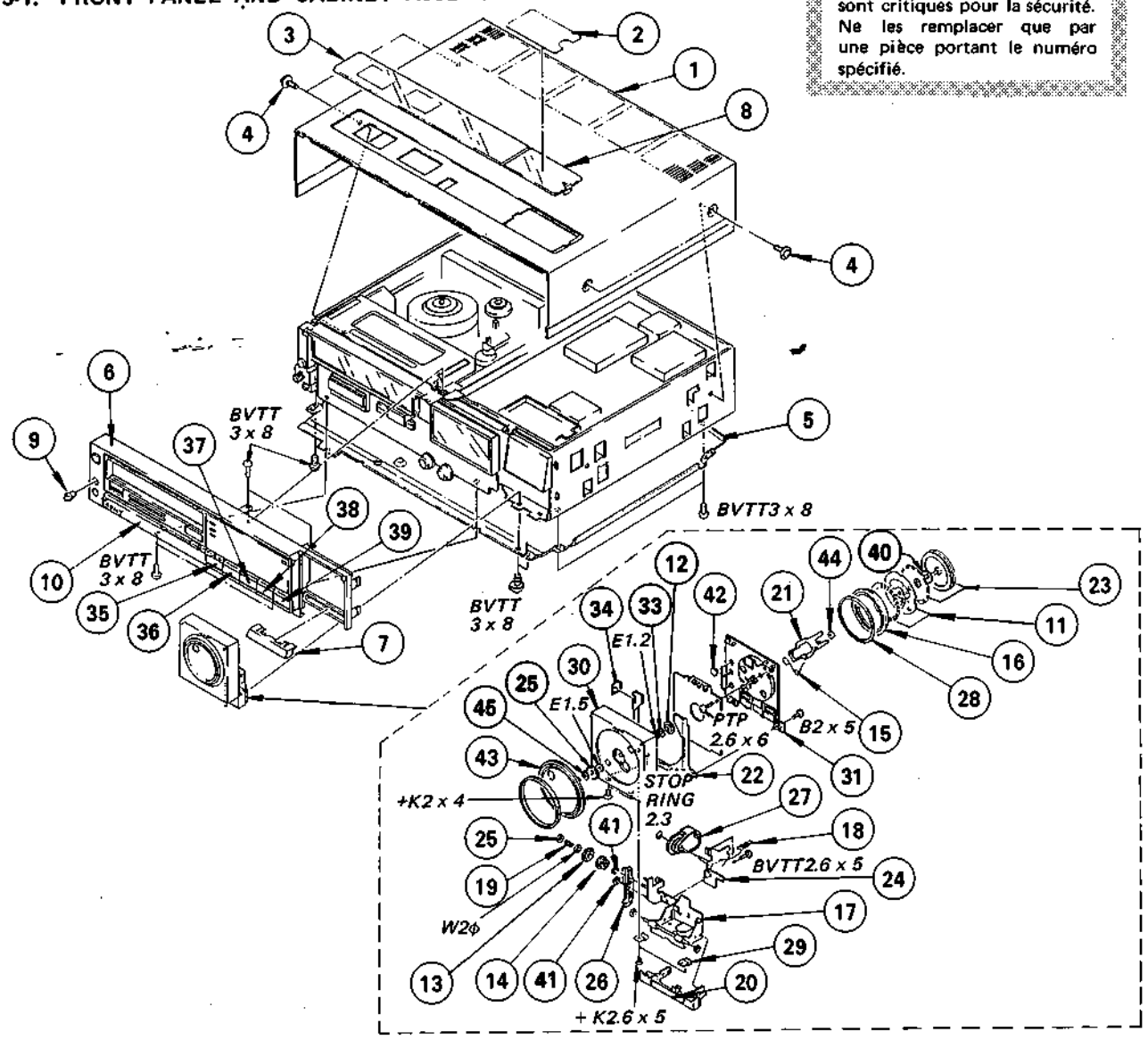
NOTE:

- Itmes with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part numer specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

5-1. FRONT PANEL AND CABINET ASSEMBLES

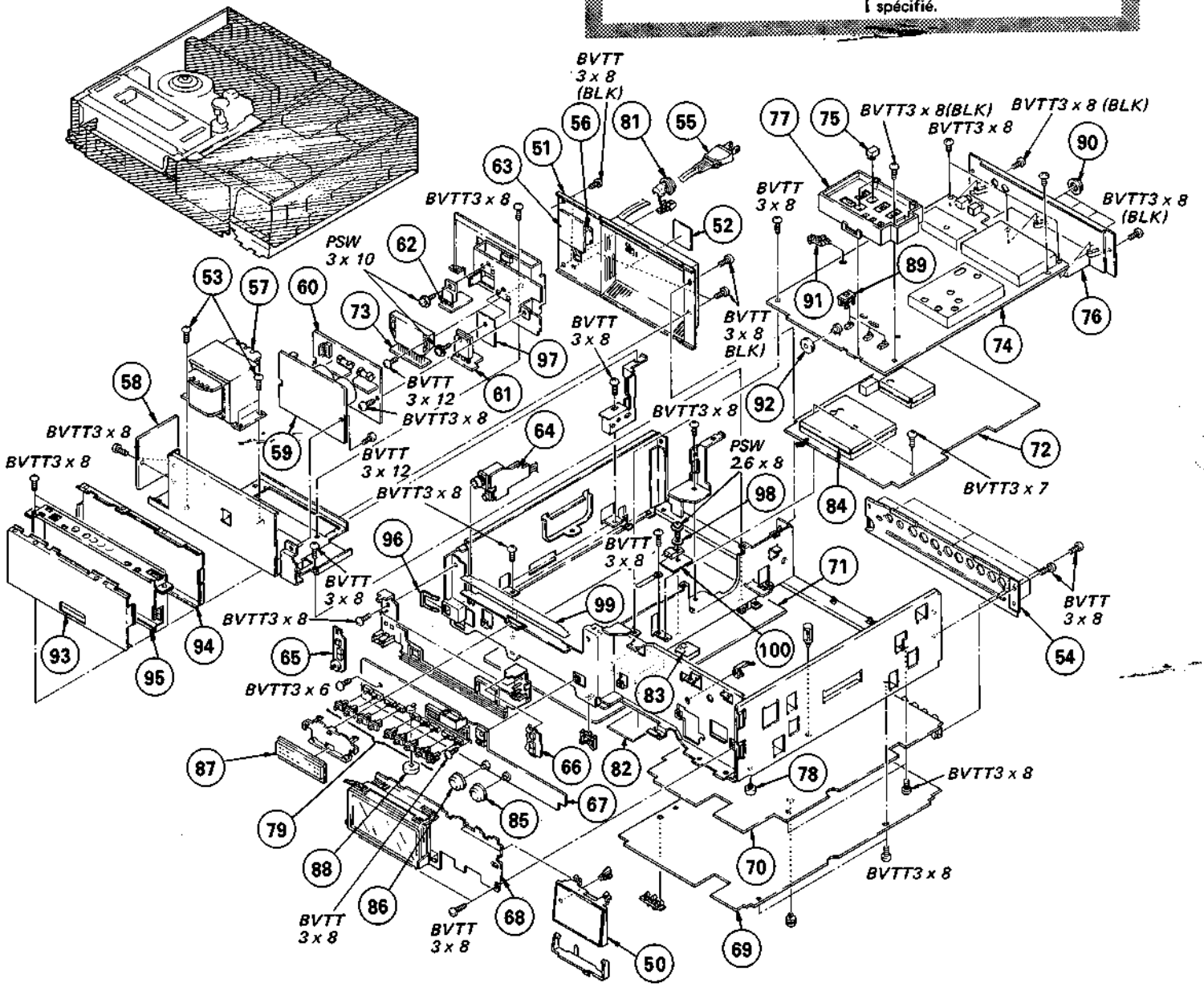


No.	Part No.	Description	Remark
1	3-691-733-01	CASE, UPPER	
2	3-703-713-41	STICKER, SONY SYMBOL (10)	
3	3-684-184-31	PLATE, TRANSPARENT	
4	4-886-821-01	SCREW, M3 CASE	
5	*3-691-734-01	PLATE, BOTTOM	
6	X-3691-656-1	PANEL ASSE, FRONT	
7	3-691-701-01	BUTTON, NEXT	
8	X-3684-146-2	LID ASSY, PRESET (CANADIAN MODEL ONLY)	
9	3-684-339-11	KNOB, HP	
10	X-3691-650-1	DOOR ASSY, FRONT	
11	X-3691-615-1	PLATE ASSY, DIAL, SHUTTLE	
12	3-691-640-01	GEAR (R), JOG	
13	3-691-642-01	GEAR (A), LIMITER	
14	3-691-664-01	GEAR (B), LIMITER	
15	3-691-634-01	SPRING, TORSION	
16	3-691-632-02	DIAL, SHUTTLE	
17	X-3691-607-1	HINGE (R) ASSY	
18	3-576-098-00	SPRING, COMPRESSION	
19	4-812-499-XX	SPRING	
20	X-3691-609-1	PANEL ASSY, SUB FRONT	
21	X-3691-605-1	PLATE ASSY, SLIDE	
22	3-691-699-01	HINGE (F)	
23	X-3691-623-3	DIAL (R) ASSY, JOG	
24	*X-3691-608-1	HOLDER ASSY, DAMPER	
25	3-701-437-21	WASHER	
26	3-691-641-01	GEAR, DAMPER	
27	3-676-638-00	DAMPER, CASSETTE COMPARTMENT	
28	3-691-635-01	SPACER, SHUTTLE	
29	3-691-647-01	BRACKET	
30	X-3691-621-1	PANEL (F) ASSY, JOG	
31	X-3691-622-1	PANEL (R) ASSY, JOG	
33	3-320-412-01	WASHER (1.4), SPECIAL	
34	*3-691-657-01	PLATE, LOCK	
35	X-3691-610-1	BUTTON ASSY, REW	
36	X-3691-611-1	BUTTON ASSY, PLAY	
37	X-3691-612-1	BUTTON ASSY, FF	
38	3-691-670-01	BUTTON, STOP	
39	X-3691-613-1	BUTTON ASSY, PAUSE	
40	3-701-439-21	WASHER (3)	
41	3-669-465-01	WASHER (1.5), STOPPER	
42	3-691-690-01	PUSH BUTTON	
43	X-3691-604-1	DIAL (F) ASSY, JOG	
44	3-691-648-01	ROLLER	
45	3-701-437-11	WASHER	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part numer specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

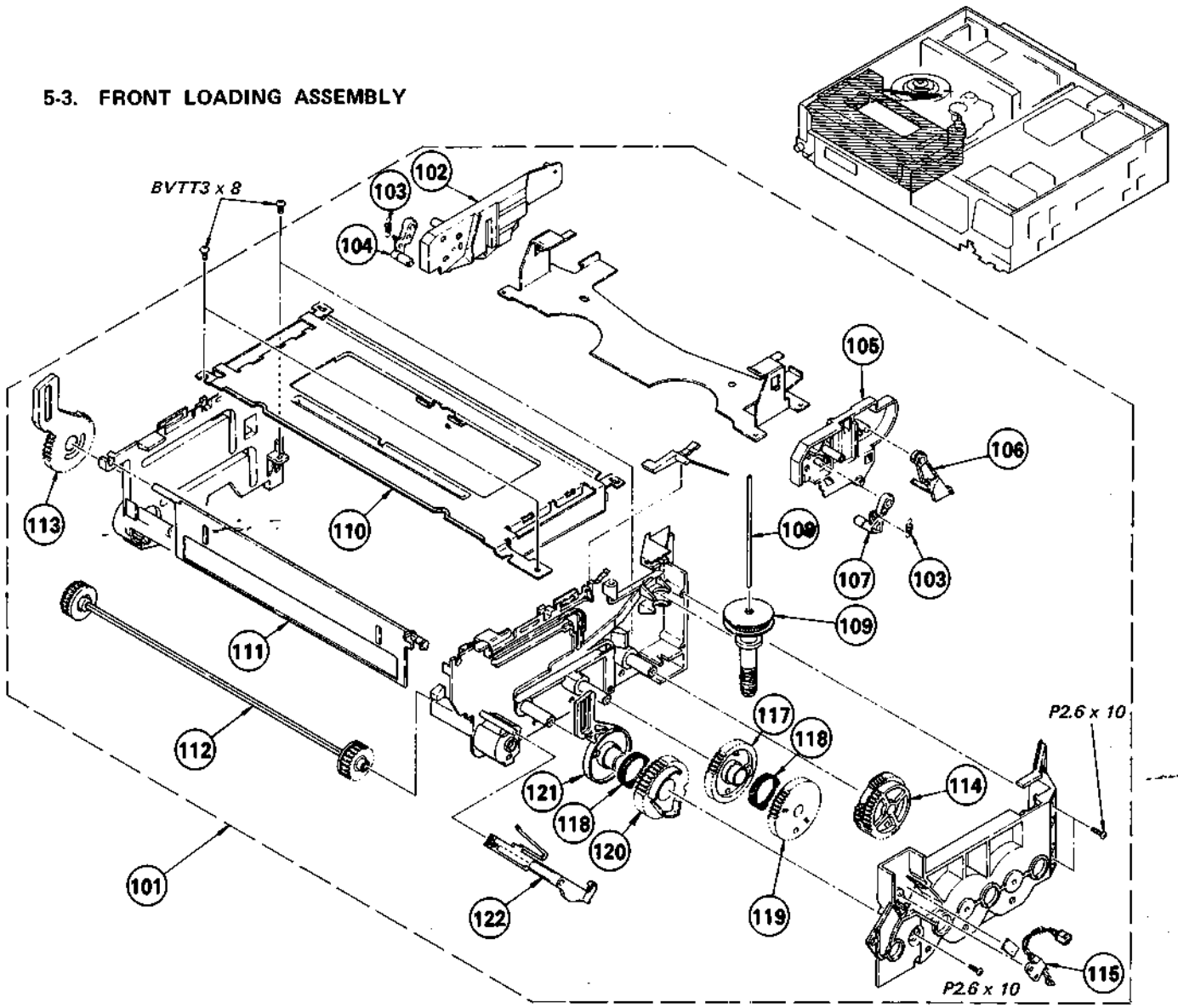
5-2. TUNER, TIMER AND POWER ASSEMBLES



No.	Part No.	Description	Remark
50	X-3691-651-1	KEY ASSY, SHEET	
51	*3-691-724-11	PANEL, POWER	
52	*3-691-779-01	LABEL, MODEL NUMBER (US MODEL)	
	*3-691-780-01	LABEL, MODEL NUMBER (CANADIAN MODEL)	
53	3-684-366-11	SCREW (M3X6) (G), WH TAPPING	
54	3-691-730-11	PANEL (LOWER), REAR	
55	⚠ 1-556-905-00	CORD, POWER	
56	⚠ 1-526-882-00	OUTLET, AC	
57	⚠ 1-448-225-11	TRANSFORMER, POWER (T901)	
58	*1-614-951-13	PT-48 BOARD	
59	*A-6722-270-A	PC-19 BOARD, COMPLETE	
60	*1-614-950-13	PR-6 BOARD	
61	*1-614-954-13	PV-1 BOARD	
62	*1-614-948-13	PI-2 BOARD	
63	*1-614-952-13	PA-4 BOARD	
64	*1-614-952-13	HP-12 BOARD	
65	*1-614-946-13	FP-4 BOARD	
66	*1-614-947-13	FF-3 BOARD	
67	*A-6717-398-A	FR-14 BOARD, COMPLETE	
68	*A-6724-440-A	TM-75 BOARD, COMPLETE	
69	*A-6711-614-A	VI-10 BOARD, COMPLETE	
70	*A-6725-402-A	AF-9 BOARD, COMPLETE	
71	*A-6715-264-A	SS-53 BOARD, COMPLETE	
72	*A-6713-226-A	AU-13 BOARD, COMPLETE	
73	*A-6722-256-A	PS-65 BOARD	
74	*A-6721-234-A	COMPLETE PCB, TI-4	

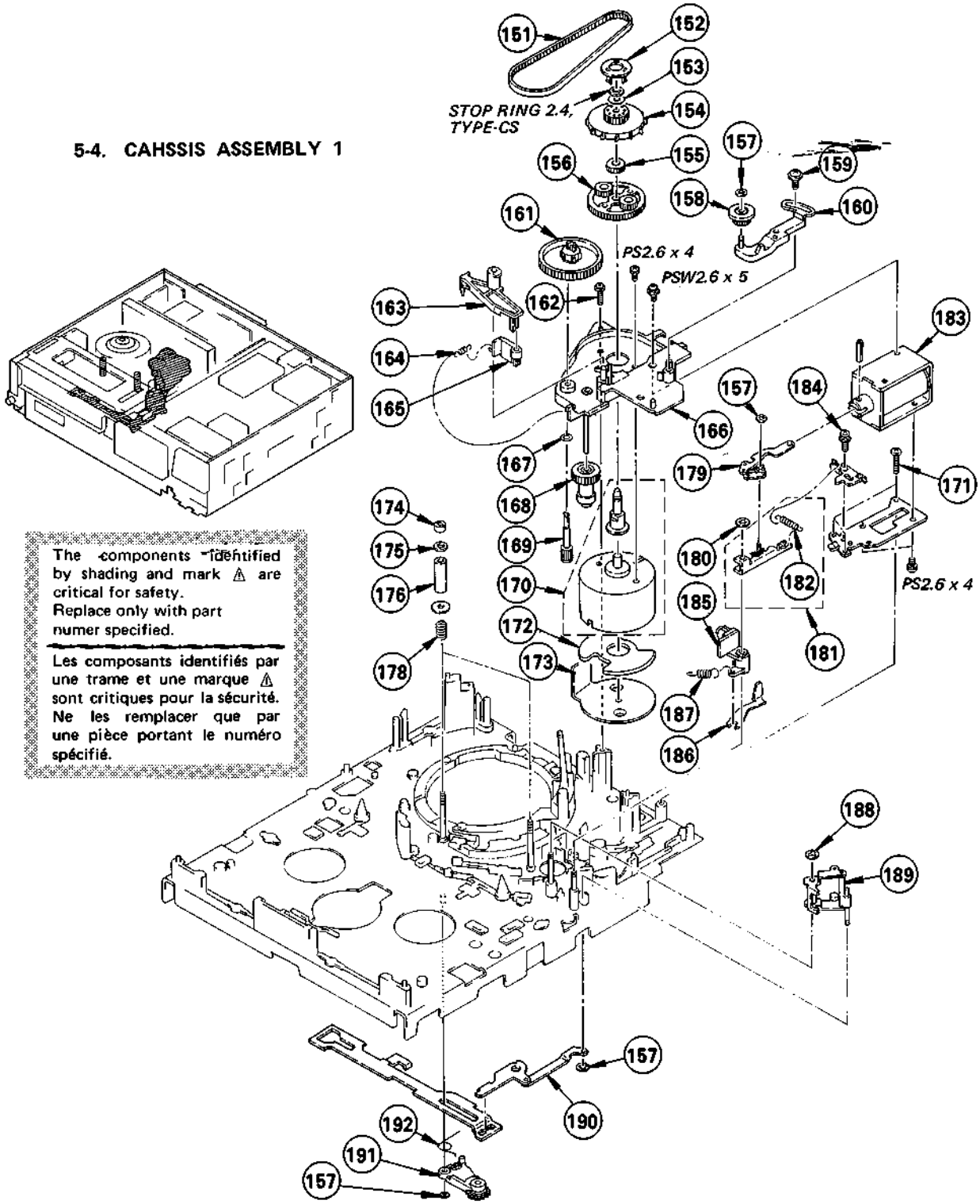
No.	Part No.	Description	Remark
75	2-291-041-00	BUTTON (A), PRESET	
76	1-507-242-11	UV-ANT/PAR-SS	
77	*3-691-783-01	PANAL ASSY, PRESET	
78	3-670-155-11	LEG	
79	3-691-764-01	KNOB (B), SELECTION SWITCH	
81	⚠ 2-231-019-01	CLAMPER, CORD	
82	*X-3676-444-0	LID ASSY, REAR, SHIELD CASE, MA	
83	*X-3676-443-0	CASE ASSY, SHIELD, MA	
84	*3-691-759-01	LID, SHIELD CASE (1), AU	
85	3-691-611-01	KNOB (S), CONTROL	
86	3-691-696-01	KNOB (L), CONTROL	
87	1-520-478-11	METER, LEVEL (LED)	
88	3-691-784-01	COLLAR, KNOB, CONTROL	
89	3-670-148-11	KEY (P), SLIDE	
90	3-682-691-00	NUT, WASHER HEXAGON	
91	*3-684-367-01	HINGE, PCB	
92	3-684-413-11	KNOB, CONTROL	
93	*3-691-753-02	LID, SHIELD CASE, RP	
94	*3-691-754-02	LID, REAR, SHIELD CASE, RP	
95	*A-6711-644-A	RP-24 BOARD, COMPLETE	
96	*3-684-436-01	PLATE, MOUNT	
97	3-691-771-01	SHEET, INSULATING	
98	2-832-007-00	BUSHING (K), INSULATING	
99	*3-684-363-01	PLATE, BLIND	
100	*3-682-024-00	SHEET (A), INSULATING	

5-3. FRONT LOADING ASSEMBLY



No.	Part No.	Description	Remark
101	*A-6751-253-A	THREADING BLOCK ASSY, FRONT	
102	*X-3684-117-1	PLATE ASSY, SIDE, BASE (LEFT)	
103	3-684-258-01	SPRING, TENSION	
104	X-3684-125-1	RETAINER (LEFT) ASSY, CASSETTE	
105	*X-3684-118-1	PLATE ASSY, SIDE, RIGHT	
106	*3-684-108-01	ARM, LID OPEN	
107	X-3684-124-1	RETAINER (RIGHT) ASSY, CASSETTE	
108	3-679-123-00	SHAFT, GEAR, WORM	
109	3-684-164-01	GEAR, WORM	
110	*3-684-195-11	PLATE, TOP	
111	X-3691-652-1	DOOR ASSY	
112	X-3684-116-1	SHAFT ASSY, MIDWAY GEAR	
113	*3-684-166-01	ARM (LEFT), DRIVING	
114	X-3684-123-1	GEAR ASSY, DRIVING	
115	1-554-840-11	SWITCH, LEAF (S904)	
117	3-684-111-01	GEAR (B), LIMITER	
118	3-684-115-01	SPRING	
119	3-684-109-01	GEAR (A), LIMITER	
120	3-684-163-01	GEAR, DRIVING ARM	
121	3-684-165-01	ARM (RIGHT), DRIVING	
122	3-684-162-01	ARM, SWITCHING, DOOR	

5-4. CAHSSIS ASSEMBLY 1

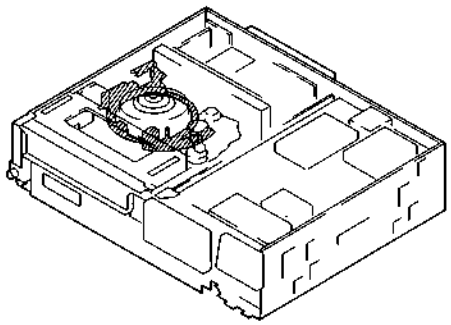


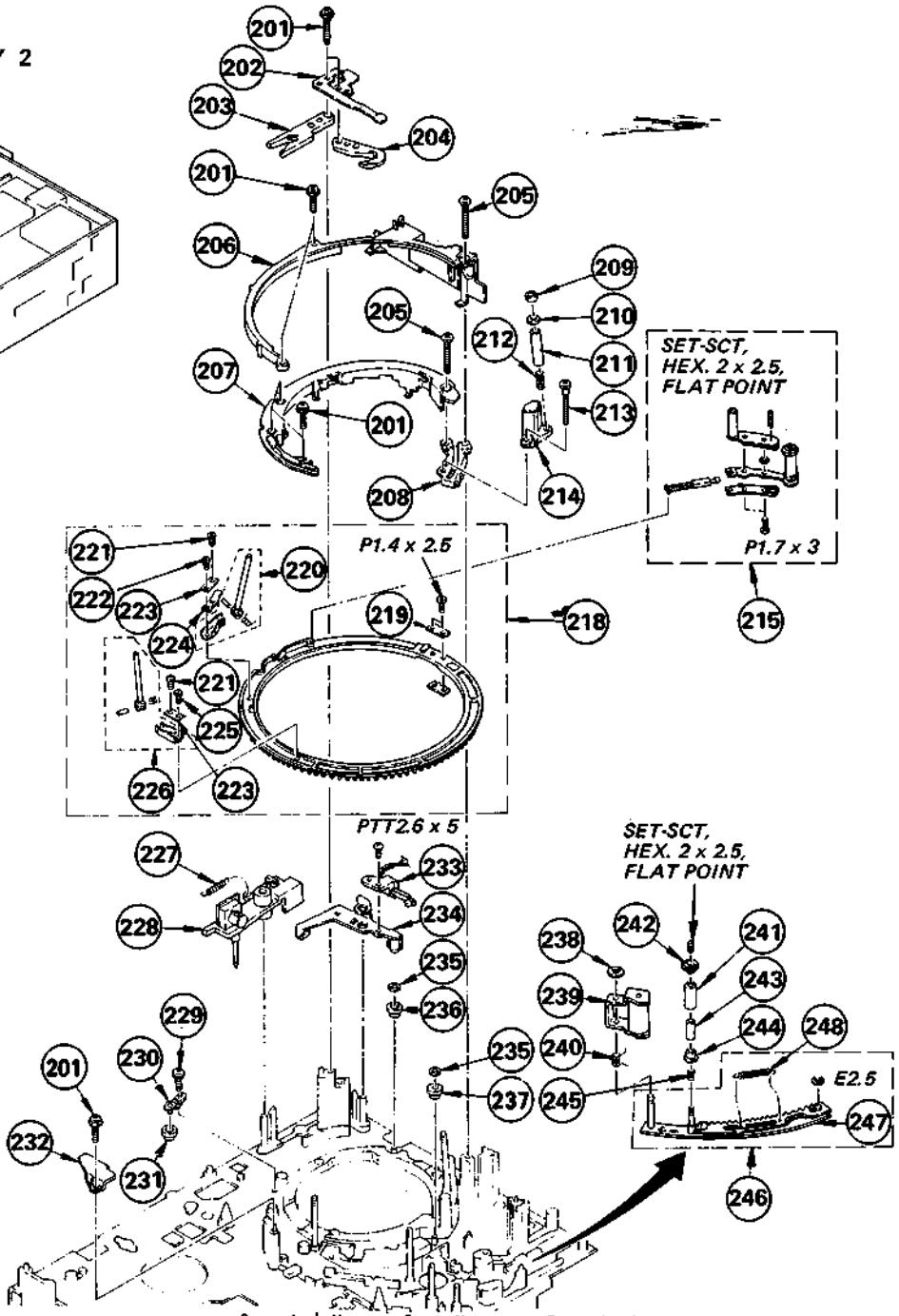
The components identified by shading and mark ⚠ are critical for safety.
Replace only with part numer specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

No.	Part No.	Description	Remark
151	3-684-264-01	BELT, TIMING	
152	3-684-152-01	FLANGE, INTERNAL GEAR	
153	3-683-454-01	WASHER, POLYETHYLENE	
154	3-684-178-01	GEAR, INTERNAL	
155	3-679-104-05	GEAR	
156	X-3679-111-0	CARRIER ASSY	
157	3-669-465-00	WASHER (1.5), STOPPER	
158	A-6740-083-B	GEAR ASSY	
159	3-681-231-00	SCREW (+PW 2.6X8), TAPPING	
161	3-679-115-00	GEAR (LARGE), LOADING	
162	3-669-480-11	+ PTPWH 2	
163	3-684-167-01	ARM, STOPPER	
164	3-684-227-01	SPRING, TENSION	
165	3-684-116-01	LIMITER, STOPPER	
166	X-3684-129-1	CHASSIS ASSY, PLANET GEAR	
168	X-3669-321-0	GEAR (C) ASSY	
169	3-679-114-00	GEAR (SMALL), LOADING	
170	X-3679-268-1	MOTOR ASSY, L (M904)	
172	*1-605-071-00	LM-8 BOARD	
173	*3-669-613-00	INSULATOR, L MOTOR	
174	3-669-318-00	NUT, ADJUSTMENT, GUIDE	
175	3-684-135-01	WASHER (UPPER), GUIDE, #7.8	
176	3-684-133-01	SLEEVE, GUIDE, #7.8	
178	3-669-317-00	SPRING, COMPRESSION	
179	X-3684-109-1	ARM ASSY, PINCH SOLENOID	
180	3-669-595-00	WASHER (2), STOPPER	
181	*X-3684-112-1	ARM ASSY, PINCH LIMITER	
182	3-515-170-00	SPRING, TENSION	
183	⚠1-454-393-11	SOLENOID, PLUNGER (PM901)	
184	3-669-607-31	+PSW (SMALL ROUND) (2.6)	
185	1-464-329-21	SENSOR, T COIL (L902)	
186	*3-684-119-01	LINK, TAKE-UP SENSOR	
187	3-684-157-04	SPRING (T SENSOR), TENSION	
188	3-669-596-00	WASHER (2.3), STOPPER	
189	X-3684-113-1	ARM ASSY, PINCH PRESS	
190	*X-3691-602-1	LEVER ASSY (M), COMMUNICATION	
191	X-3691-648-1	ARM ASSY (B), REVIEW BRAKE	
192	3-681-154-00	SPRING, TORSION	

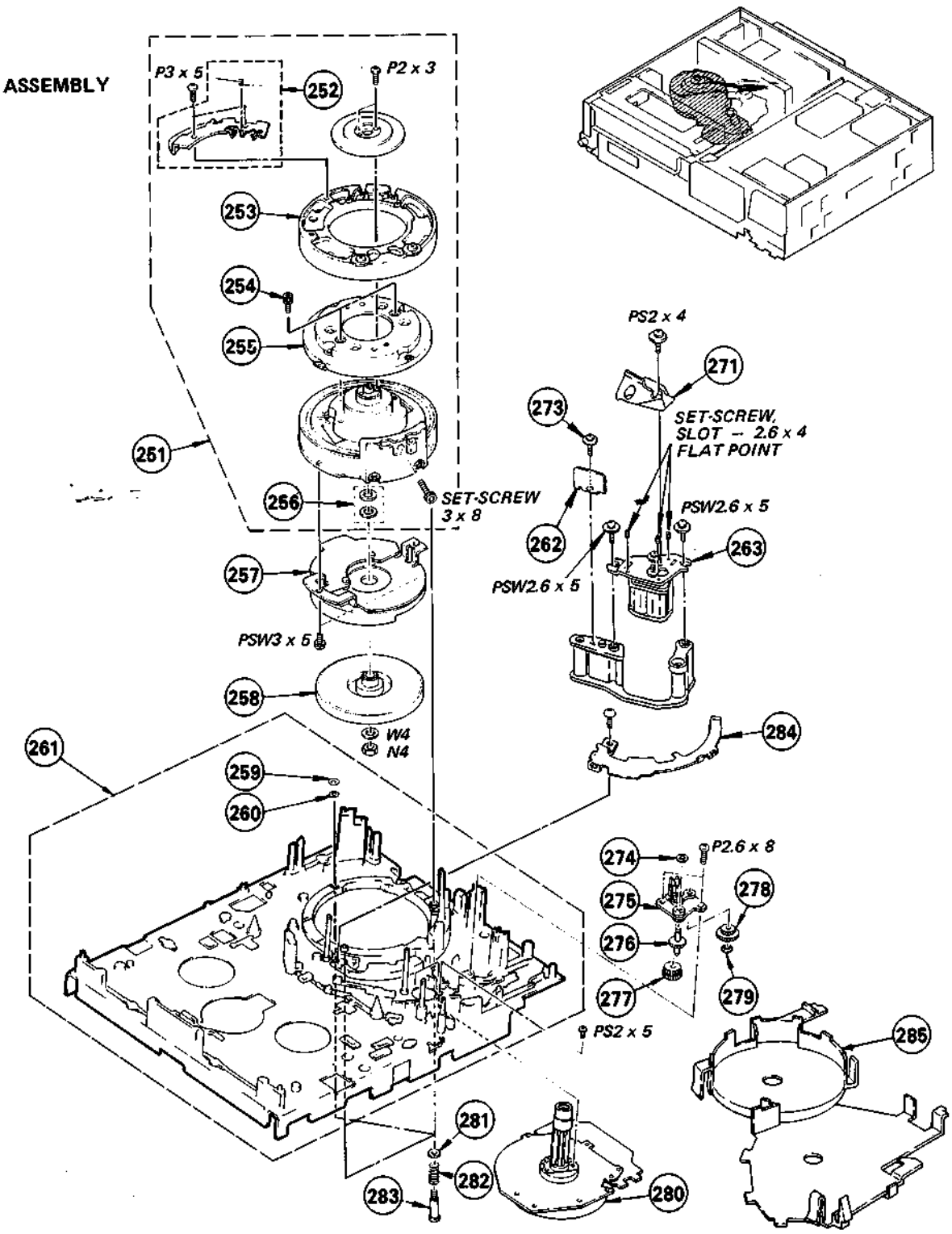
5-5. CHASSIS ASSEMBLY 2





No.	Part No.	Description	Remark
201	3-669-480-11	+ PTPWH 2	
202	*3-684-158-01	PLATE, GROUND, TAPE GUIDE	
203	*3-669-618-00	PLATE (2), ADJUST	
204	*3-672-507-00	PLATE (3-1), ADJUSTMENT	
205	3-669-466-21	SCREW (M 2.6)	
206	3-684-217-04	GUIDE (2), SHUTTLE	
207	*3-679-290-00	GUIDE (1-YA), SHUTTLE	
208	*X-3679-263-1	BASE ASSY, SLANT	
209	3-669-446-00	NUT, GUIDE, NO. 6	
210	3-679-910-00	FLANGE (S), GUIDE, NUMBER 6	
211	3-669-445-00	SPACER, GUIDE, NO. 6	
212	3-669-615-00	SPRING, COMPRESSION	
213	3-669-606-00	SCREW (2.6)	
214	8-825-508-11	HEAD, FE	
215	A-6750-158-B	SHUTTLE (2) BLOCK ASSY	
218	X-3679-150-0	RING (YA) ASSY, S LOADING	
219	*3-669-616-00	RETAINER	
220	*X-3669-430-0	HOLDER BLOCK ASSY, #3 GUIDE	
221	3-669-478-00	SCREW (1X3), TAPPING	
222	3-669-479-11	SCREW (1.4X3.5), TAPPING	
223	*3-669-472-02	RETAINER, SPRING, LEAF	
224	3-672-583-00	SPRING	
225	3-672-586-00	SCREW (1.4X3), TAPPING	
226	*X-3669-429-0	HOLDER BLOCK ASSY, #2 GUIDE	
227	3-684-161-01	SPRING (S SENSOR), TENSION	
228	1-464-330-21	SENSOR, S COIL	
229	3-669-607-00	+PSW (SMALL ROUND) 2.6	
230	*X-3669-329-0	PLATE ASSY, ADJUSTMENT	
231	3-669-360-00	ROLLER, RING	
232	3-669-476-04	PLATE, GUIDE	
233	1-554-840-11	SWITCH, LEAF (S903)	
234	*X-3684-130-1	ARM ASSY, LOCK	
235	3-669-465-00	WASHER (1.5), STOPPER	
236	3-669-630-00	ROLLER (C), RING	
237	3-669-597-00	ROLLER (B), RING	
238	3-669-596-00	WASHER (2.3), STOPPER	
239	X-3691-646-1	ARM ASSY, PINCH ROLLER	
240	3-683-441-01	SPRING	
241	3-676-649-11	ROLLER (#9), GUIDE	
242	3-676-650-00	FLANGE (UPPER) (#9), GUIDE	
243	3-672-559-00	SLEEVE, GUIDE	
244	3-672-558-00	FLANGE (LOWER) (#9), GUIDE	
245	3-669-452-00	SPRING, COMPRESSION	
246	A-6750-165-A	GEAR ASSY, SLIDER	
247	*X-3679-265-1	SLIDER ASSY (2), T	
248	3-549-014-00	SPRING, TENSION	

5-6. DRUM ASSEMBLY



No.	Part No.	Description	Remark
251	A-6050-320-A	DRUM ASSY (DSH-57A-R)	
252	A-6760-066-B	SPRING ASSY, TAPE RETAINER	
253	A-6060-138-A	DRUM ASSY, UPPER	
254	3-669-157-00	BOLT (WASHER)(2.6X8)	
255	A-6762-208-A	DISK ASSY (DSR-57-R)	
256	X-3669-105-0	SPACER BLOCK ASSY	
257	X-2621-204-3	STATOR ASSY, D	
258	X-2621-202-2	ROTOR ASSY, D	
259	3-669-646-00	SPACER, DRUM	
260	3-669-646-11	SPACER, DRUM	
261	*X-3691-620-1	CHASSIS ASSY, MECHANICAL	
262	3-683-483-01	PROTECTOR (M)	
263	A-6761-083-A	ACE ASSY	
271	*3-669-541-00	SLOPE (RIGHT)	
273	3-679-362-00	SCREW (M2X4), PAN	
274	3-669-595-00	WASHER (2), STOPPER	
275	X-3679-147-0	CHASSIS (B) ASSY, DRIVE GEAR	
276	X-3679-148-0	GEAR (F) ASSY (D)	
277	3-669-338-00	GEAR (E)	
278	3-669-337-00	GEAR (D)	
279	3-669-465-00	WASHER (1.5), STOPPER	
280	8-838-068-01	MOTOR, DC (BHF-1909B) (M902)	
281	3-669-600-11	WASHER, FLAT (3.5)	
282	3-429-123-00	SPRING	
283	3-669-302-00	SCREW, FITTING	
284	*3-669-477-00	LINER, LINK, PIN	
285	3-684-382-01	PROTECTOR (B)	

5-7. REEL BLOCK ASSEMBLY

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part numer specified.

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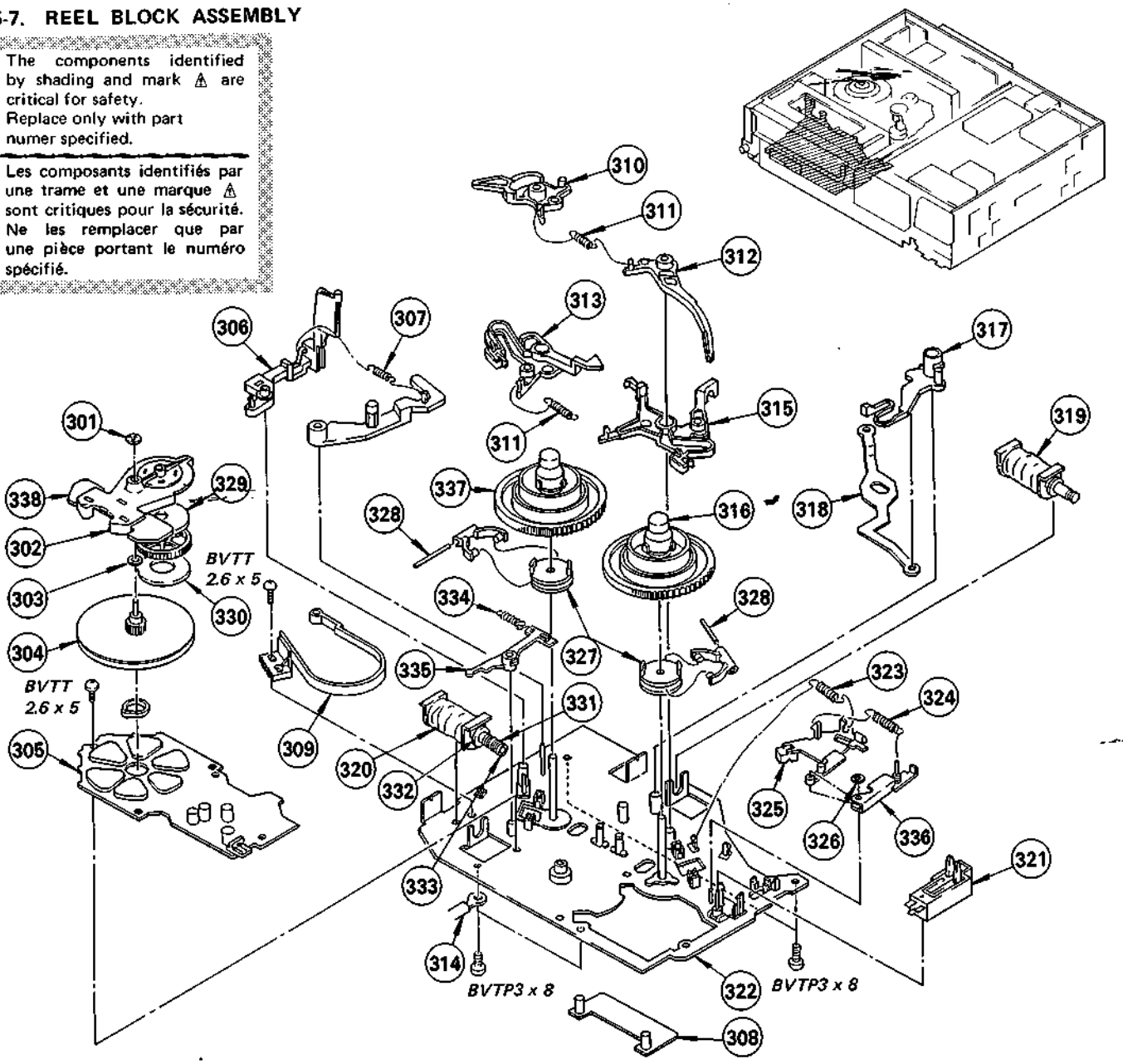

No.	Part No.	Description	Remark
301	3-669-596-00	WASHER (2.3), STOPPER	
302	A-6759-074-A	ARM BLOCK ASSY, PENDULUM	
303	3-679-318-00	WASHER, PENDULUM ARM	
304	X-2622-201-0	ROTOR ASSY, R	
305	*A-4910-049-A	R STATOR(REEL MOTOR)BOARD, COMPLETE(M903)	
306	X-3684-121-1	LEVER ASSY, TENSION REGULATOR	
307	3-679-151-00	SPRING	
308	*1-614-964-11	RD-12 BOARD	
309	X-3691-642-1	BAND ASSY, TENSION REGULATOR	
310	3-684-192-01	ARM, BRAKE, SUPPLY SOFT	
311	3-684-235-01	SPRING, TENSION	
312	X-3684-137-1	BRAKE ASSY, T SOFT	
313	X-3691-649-1	BRAKE ASSY (B), SUPPLY	
314	3-701-748-00	CLAMP	
315	X-3684-108-1	BRAKE ASSY, TAKE-UP	
316	X-3691-626-1	TABLE ASSY, REEL, TAKE-UP	
317	3-684-193-01	ARM, PENDULUM STOPPER	
318	*3-684-183-01	LINK, L	
319	⚠1-454-396-11	SOLENOID, PLUNGER (PM902)	
320	⚠1-454-397-11	SOLENOID, PLUNGER	
321	1-554-839-11	SWITCH, LEAF (2 GANG) (S901)	
322	*X-3691-643-1	CHASSIS ASSY, SUB	
323	3-691-775-01	SPRING, TENSION	
324	3-691-776-01	SPRING, TENSION	
325	*3-691-728-01	LEVER, RD	
326	3-691-680-01	WASHER, STOPPER	
327	3-691-606-01	RING, UD	
328	*3-691-681-01	SHAFT, ARM, UD	
329	3-679-379-11	SPACER, PENDULUM	
330	3-307-313-00	PLATE, YOKE	
331	3-691-787-01	SPRING, COMPRESSION	
332	*3-691-608-01	LIMITER, PL	
333	*3-691-607-01	FLANGE, PL	
334	3-691-786-01	SPRING, TENSION	
335	*3-691-694-01	LEVER, LIMITER	
336	*X-3691-601-3	ARM ASSY, RD	
337	X-3691-627-1	TABLE ASSY, REEL, SUPPLY	
338	3-682-683-00	BALANCER, PENDULUM	

5-8. HARDWARE LIST

SCREW

7-621-770-87 SCREW +P 2.6X5
7-621-559-30 SCREW +K 2.6X5
7-621-591-00 SCREW +K 2X4
7-621-772-20 SCREW +B 2X5
7-627-551-08 SCREW, PRECISION +P 1.4X1.6

7-627-551-28 SCREW, PRECISION +P 1.4X2.5
7-627-552-38 SCREW, PRECISION +P 1.7X3
7-628-253-15 SCREW +PS 2X5
7-628-253-95 SCREW +PS 2.6X4
7-682-549-04 SCREW +P 3X10

7-682-949-01 SCREW +PSW 3X10
7-685-133-14 SCREW +P 2.6X6 TYPE1
7-685-134-14 SCREW +P 2.6X8 TYPE2 NON-SLIT
7-685-135-14 SCREW +P 2.6X10 TYPE2 NON-SLIT
7-685-645-71 SCREW +BVTP 3X6 TYPE2 IT-3

7-685-645-81 SCREW +BVTP 3X6 TYPE2
7-685-646-71 SCREW +BVTP 3X8 TYPE2 IT-3
7-685-646-79 SCREW +BVTP 3X8 TYPE2 IT-3
7-685-646-81 SCREW +BVTP 3X8 TYPE2
7-685-646-89 SCREW +BVTP 3X8 TYPE2

7-685-649-71 SCREW +BVTP 3X14 TYPE2 IT-3
7-685-649-81 SCREW +BVTP 3X14 TYPE2
7-685-791-04 SCREW +PTT 2.6X5 (S)
7-685-791-04 SCREW +BVTT 2.6X5 (S)
7-685-862-01 SCREW +BVTT 2.6X6 (S)

SET-SCREW

7-621-712-26 SET-SCREW, SLOT 2.6X3FLAT POINT
7-621-712-35 SET-SCREW, SLOT 2.6X4CONE POINT
7-621-712-46 SET-SCREW, SLOT 2.6X5FLAT POINT
7-621-731-08 SET-SCT, HEX. 2X2.5, FLAT POINT
7-621-732-08 SET-SCT, HEX. 2X3 FLAT POINT

+PSW

7-621-759-35 +PSW, 2.6X5
7-621-759-45 +PSW, 2.6X6
7-621-759-65 +PSW, 2.6X8

NUT

7-622-205-05 NUT M2 TYPE2

RING

7-624-101-01 RING, RETAINING E-1.2
7-624-102-04 STOP RING 1.5, TYPE -E
7-624-105-04 STOP RING 2.3, TYPE -E
7-624-118-01 RING, RETAINING E-2.5
7-624-190-61 STOP RING 2.4, TYPE-CS

TAPPING

7-685-105-14 TPG +P 2X8, TYPE 2, NON-SLIT

WASHER

7-688-001-01 W 2, SMALL
7-688-002-11 W 2.6, MIDDLE
7-688-004-02 W 4, SMALL

SECTION 6
ELECTRICAL PARTS LIST R STATOR VI-10

NOTE:

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part numer specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- **Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.**
- **All variable and adjustable resistors have characteristic curve B, unless otherwise noted.**

RESISTORS
- **All resistors are in ohms**
- **F : nonflammable**

- **Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.**

CAPACITORS
- **MF : μF, PF : μμF**

COILS
- **MMH : mH, UH : μH**

Ref.No	Part No.	Description				Remark
	*A-4910-049-A	R STATOR (REEL MOTOR) BOARD, COMPLETE				
		**********				
	*1-560-460-00	PIN, CONNECTOR 4P				
		CAPACITOR				
C1	1-123-821-00	ELECT	47MF	20%	16V	
C2	1-123-821-00	ELECT	47MF	20%	16V	
C3	1-123-821-00	ELECT	47MF	20%	16V	
C4	1-123-821-00	ELECT	47MF	20%	16V	
		DIODE				
D1	8-719-941-48	DIODE 1N4148TP				
		IC				
IC1	8-759-108-77	IC CX-877				
		TRANSISTOR				
Q1	8-729-100-01	TRANSISTOR 2SD992-N				
Q2	8-729-100-01	TRANSISTOR 2SD992-N				
Q3	8-729-100-01	TRANSISTOR 2SD992-N				
Q4	8-729-100-01	TRANSISTOR 2SD992-N				
Q5	8-729-100-01	TRANSISTOR 2SD992-N				
Q6	8-729-100-01	TRANSISTOR 2SD992-N				
		RESISTOR				
R1	1-247-823-00	CARBON	470	5%	1/6W	
R2	1-247-823-00	CARBON	470	5%	1/6W	
R3	1-247-823-00	CARBON	470	5%	1/6W	
R4	1-247-829-00	CARBON	820	5%	1/6W	
R5	1-247-871-00	CARBON	47K	5%	1/6W	
R6	1-247-871-00	CARBON	47K	5%	1/6W	
R7	1-247-871-00	CARBON	47K	5%	1/6W	
R8	1-247-871-00	CARBON	47K	5%	1/6W	
		DIODE				
S1	8-719-810-31	DIODE THS103-1				
S2	8-719-810-31	DIODE THS103-1				
	*A-6711-614-A	VI-10 BOARD, COMPLETE				
		**********				
		CAPACITOR				
C101	1-123-306-00	ELECT	47MF	20%	10V	
C103	1-102-963-00	CERAMIC	33PF	5%	50V	
C104	1-123-318-00	ELECT	33MF	20%	10V	
C105	1-123-356-00	ELECT	10MF	20%	16V	
C106	1-123-306-00	ELECT	47MF	20%	10V	
C107	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C108	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C109	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C110	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C111	1-102-959-00	CERAMIC	22PF	5%	50V	
C112	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C113	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C114	1-161-039-00	CERAMIC	0.001MF	10%	25V	
C115	1-102-820-00	CERAMIC	330PF	5%	50V	
C116	1-102-973-00	CERAMIC	100PF	5%	50V	
C117	1-161-059-00	CERAMIC	0.047MF	10%	25V	
C118	1-102-116-00	CERAMIC	680PF	10%	50V	
C120	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C121	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C123	1-102-822-00	CERAMIC	390PF	5%	50V	
C124	1-161-059-00	CERAMIC	0.047MF	10%	25V	
C125	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C126	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C127	1-161-059-00	CERAMIC	0.047MF	10%	25V	
C128	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C129	1-102-973-00	CERAMIC	100PF	5%	50V	
C130	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C131	1-161-059-00	CERAMIC	0.047MF	10%	25V	
C132	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C133	1-102-816-00	CERAMIC	120PF	5%	50V	
C134	1-161-025-00	CERAMIC	0.1MF	10%	25V	
C135	1-123-356-00	ELECT	10MF	20%	16V	
C136	1-136-165-00	MYLAR	0.1MF	10%	50V	
C137	1-123-382-00	ELECT	3.3MF	20%	50V	
C138	1-123-380-00	ELECT	1MF	20%	50V	
C139	1-123-306-00	ELECT	47MF	20%	10V	
C140	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C141	1-123-330-00	ELECT	22MF	20%	16V	
C142	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C143	1-123-306-00	ELECT	47MF	20%	10V	
C158	1-102-978-00	CERAMIC	220PF	5%	50V	
C160	1-102-820-00	CERAMIC	330PF	5%	50V	
C161	1-102-952-00	CERAMIC	16PF	5%	50V	
C162	1-102-961-00	CERAMIC	27PF	5%	50V	
C201	1-101-059-00	CERAMIC	510PF	5%	50V	
C202	1-102-821-00	CERAMIC	360PF	5%	50V	
C203	1-102-976-00	CERAMIC	180PF	5%	50V	
C204	1-123-382-00	ELECT	3.3MF	20%	50V	
C205	1-123-380-00	ELECT	1MF	20%	50V	
C206	1-101-059-00	CERAMIC	510PF	5%	50V	
C207	1-102-822-00	CERAMIC	390PF	5%	50V	
C209	1-102-978-00	CERAMIC	220PF	5%	50V	
C210	1-102-980-00	CERAMIC	270PF	5%	50V	
C211	1-123-356-00	ELECT	10MF	20%	16V	
C212	1-123-306-00	ELECT	47MF	20%	10V	
C213	1-161-059-00	CERAMIC	0.047MF	10%	25V	
C231	1-123-306-00	ELECT	47MF	20%	10V	
C232	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C301	1-101-880-00	CERAMIC	47PF	5%	50V	
C302	1-123-381-00	ELECT	2.2MF	20%	50V	
C303	1-102-963-00	CERAMIC	33PF	5%	50V	

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Ref.No	Part No.	Description			Remark
C304	1-101-888-00	CERAMIC	68PF	5%	50V
C305	1-101-880-00	CERAMIC	47PF	5%	50V
C306	1-123-622-00	ELECT	22MF	20%	16V
C307	1-123-330-00	ELECT	22MF	20%	16V
C308	1-123-369-00	ELECT	4.7MF	20%	25V
C309	1-123-330-00	ELECT	22MF	20%	16V
C310	1-123-330-00	ELECT	22MF	20%	16V
C311	1-101-884-00	CERAMIC	56PF	5%	50V
C312	1-101-888-00	CERAMIC	68PF	5%	50V
C313	1-102-936-00	CERAMIC	3PF	0.25PF	50V
C314	1-123-306-00	ELECT	47MF	20%	10V
C315	1-161-013-00	CERAMIC	0.01MF	10%	25V
C316	1-102-965-00	CERAMIC	39PF	5%	50V
C317	1-161-039-00	CERAMIC	0.001MF	10%	25V
C318	1-161-013-00	CERAMIC	0.01MF	10%	25V
C319	1-123-356-00	ELECT	10MF	20%	16V
C320	1-102-820-00	CERAMIC	330PF	5%	50V
C321	1-123-356-00	ELECT	10MF	20%	16V
C322	1-161-013-00	CERAMIC	0.01MF	10%	25V
C323	1-123-306-00	ELECT	47MF	20%	10V
C324	1-123-381-00	ELECT	2.2MF	20%	50V
C325	1-123-381-00	ELECT	2.2MF	20%	50V
C326	1-102-980-00	CERAMIC	270PF	5%	50V
C331	1-123-356-00	ELECT	10MF	20%	16V
C332	1-102-947-00	CERAMIC	10PF	5%	50V
C333	1-123-306-00	ELECT	47MF	20%	10V
C401	1-161-013-00	CERAMIC	0.01MF	10%	25V
C402	1-161-055-00	CERAMIC	0.022MF	10%	25V
C403	1-102-815-00	CERAMIC	110PF	5%	50V
C404	1-101-880-00	CERAMIC	47PF	5%	50V
C405	1-102-962-00	CERAMIC	30PF	5%	50V
C406	1-123-306-00	ELECT	47MF	20%	10V
C407	1-161-013-00	CERAMIC	0.01MF	10%	25V
C408	1-123-369-00	ELECT	4.7MF	20%	25V
C409	1-123-380-00	ELECT	1MF	20%	50V
C410	1-161-013-00	CERAMIC	0.01MF	10%	25V
C411	1-123-380-00	ELECT	1MF	20%	50V
C412	1-161-013-00	CERAMIC	0.01MF	10%	25V
C413	1-161-013-00	CERAMIC	0.01MF	10%	25V
C414	1-161-003-00	CERAMIC	0.0015MF	10%	25V
C415	1-161-003-00	CERAMIC	0.0015MF	10%	25V
C416	1-123-306-00	ELECT	47MF	20%	10V
C417	1-161-013-00	CERAMIC	0.01MF	10%	25V
C418	1-102-521-00	CERAMIC	43PF	5%	50V
C419	1-102-949-00	CERAMIC	12PF	5%	50V
C420	1-101-880-00	CERAMIC	47PF	5%	50V
C421	1-101-361-00	CERAMIC	150PF	5%	50V
C422	1-102-978-00	CERAMIC	220PF	5%	50V
C423	1-161-047-00	CERAMIC	0.0047MF	10%	25V
C424	1-123-380-00	ELECT	1MF	20%	50V
C425	1-123-380-00	ELECT	1MF	20%	50V
C426	1-161-013-00	CERAMIC	0.01MF	10%	25V
C427	1-123-306-00	ELECT	47MF	20%	10V

Ref.No	Part No.	Description			Remark
C428	1-123-369-00	ELECT	4.7MF	20%	25V
C429	1-161-013-00	CERAMIC	0.01MF	10%	25V
C430	1-102-971-00	CERAMIC	82PF	5%	50V
C431	1-161-013-00	CERAMIC	0.01MF	10%	25V
C432	1-102-516-00	CERAMIC	27PF	5%	50V
C433	1-101-888-00	CERAMIC	68PF	5%	50V
C434	1-123-380-00	ELECT	1MF	20%	50V
C435	1-161-024-00	CERAMIC	0.082MF	10%	25V
C436	1-123-356-00	ELECT	10MF	20%	16V
C437	1-123-356-00	ELECT	10MF	20%	16V
C438	1-161-013-00	CERAMIC	0.01MF	10%	25V
C439	1-161-013-00	CERAMIC	0.01MF	10%	25V
C440	1-101-361-00	CERAMIC	150PF	5%	50V
C441	1-161-013-00	CERAMIC	0.01MF	10%	25V
C442	1-161-013-00	CERAMIC	0.01MF	10%	25V
C443	1-102-949-00	CERAMIC	12PF	5%	50V
C444	1-161-013-00	CERAMIC	0.01MF	10%	25V
C445	1-102-973-00	CERAMIC	100PF	5%	50V
C446	1-123-306-00	ELECT	47MF	20%	10V
C447	1-102-961-00	CERAMIC	27PF	5%	50V
C448	1-161-013-00	CERAMIC	0.01F	10%	25V
C449	1-102-978-00	CERAMIC	220PF	5%	50V
C450	1-161-013-00	CERAMIC	0.01MF	10%	25V
C451	1-161-013-00	CERAMIC	0.01MF	10%	25V
C452	1-123-306-00	ELECT	47MF	20%	10V
C453	1-123-356-00	ELECT	10MF	20%	16V
C454	1-123-306-00	CERAMIC	47MF	20%	10V
C455	1-161-013-00	CERAMIC	0.01MF	10%	25V
C461	1-101-880-00	CERAMIC	47PF	5%	50V
C462	1-102-963-00	CERAMIC	33PF	5%	50V
C501	1-123-822-00	ELECT	47MF	20%	10V
C502	1-161-013-00	CERAMIC	0.01MF	10%	25V
C503	1-123-379-00	ELECT	0.47MF	20%	50V
C504	1-161-013-00	CERAMIC	0.01MF	10%	25V
C505	1-161-013-00	CERAMIC	0.01MF	10%	25V
C506	1-161-025-00	CERAMIC	0.1MF	10%	25V
C507	1-161-039-00	CERAMIC	0.001MF	10%	25V
C508	1-161-025-00	CERAMIC	0.1MF	10%	25V
C509	1-161-013-00	CERAMIC	0.01MF	10%	25V
C510	1-161-013-00	CERAMIC	0.01MF	10%	25V
C511	1-101-888-00	CERAMIC	68PF	5%	50V
C512	1-161-059-00	CERAMIC	0.047MF	10%	25V
C514	1-161-043-00	CERAMIC	0.0022MF	10%	25V
C515	1-102-980-00	CERAMIC	270PF	5%	50V
C516	1-101-081-00	CERAMIC	130PF	5%	50V
C517	1-123-369-00	ELECT	4.7MF	20%	25V
C518	1-161-013-00	CERAMIC	0.01MF	10%	25V
C519	1-123-306-00	ELECT	47MF	20%	10V
C520	1-127-460-00	ELECT(SOLID)	1MF	20%	25V
C521	1-127-460-00	ELECT(SOLID)	1MF	20%	25V
C522	1-127-460-00	ELECT(SOLID)	1MF	20%	25V
C523	1-161-013-00	CERAMIC	0.01MF	10%	25V
C524	1-161-013-00	CERAMIC	0.01MF	10%	25V

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
C525	1-161-013-00	CERAMIC	0.01MF	10%	25V
C526	1-161-013-00	CERAMIC	0.01MF	10%	25V
C527	1-123-369-00	ELECT	4.7MF	20%	25V
C528	1-161-059-00	CERAMIC	0.047MF	10%	25V
C529	1-123-822-00	ELECT	47MF	20%	10V
C530	1-161-013-00	CERAMIC	0.01MF	10%	25V
C531	1-161-013-00	CERAMIC	0.01MF	10%	25V
C532	1-123-306-00	ELECT	47MF	20%	10V
C535	1-123-612-00	ELECT	2.2MF	20%	50V
C536	1-161-013-00	CERAMIC	0.01MF	10%	25V
C537	1-102-961-00	CERAMIC	27PF	5%	50V
C539	1-102-961-00	CERAMIC	27PF	5%	50V
C540	1-102-961-00	CERAMIC	27PF	5%	50V
C545	1-161-013-00	CERAMIC	0.01MF	10%	25V
C601	1-102-824-00	CERAMIC	470PF	5%	50V
C602	1-102-944-00	CERAMIC	7PF	1PF	50V
C603	1-102-824-00	CERAMIC	470PF	5%	50V
C604	1-161-013-00	CERAMIC	0.01MF	10%	25V
C605	1-161-059-00	CERAMIC	0.047MF	10%	25V
C606	1-161-055-00	CERAMIC	0.022MF	10%	25V
C608	1-101-884-00	CERAMIC	56PF	5%	50V
C609	1-101-890-00	CERAMIC	75PF	5%	50V
C610	1-102-824-00	CERAMIC	470PF	5%	50V
C612	1-161-059-00	CERAMIC	0.047MF	10%	25V
C613	1-161-013-00	CERAMIC	0.01MF	10%	25V
C614	1-123-306-00	ELECT	47MF	20%	10V
C617	1-161-013-00	CERAMIC	0.01MF	10%	25V
C622	1-161-013-00	CERAMIC	0.01MF	10%	25V
C623	1-102-978-00	CERAMIC	220PF	5%	50V
C625	1-123-380-00	ELECT	1MF	20%	50V
C650	1-102-947-00	CERAMIC	10PF	5%	50V
C651	1-161-013-00	CERAMIC	0.01MF	10%	25V
C652	1-161-013-00	CERAMIC	0.01MF	10%	25V
C653	1-102-951-00	CERAMIC	15PF	5%	50V
C654	1-102-964-00	CERAMIC	36PF	5%	50V
C655	1-123-306-00	ELECT	47MF	20%	10V
C656	1-161-059-00	CERAMIC	0.047MF	10%	25V
C657	1-161-059-00	CERAMIC	0.047MF	10%	25V
C658	1-102-973-00	CERAMIC	100PF	5%	50V
C659	1-161-055-00	CERAMIC	0.022MF	10%	25V
C660	1-101-361-00	CERAMIC	150PF	5%	50V
C661	1-161-059-00	CERAMIC	0.047MF	10%	25V
C662	1-101-890-00	CERAMIC	75PF	5%	50V
C663	1-161-013-00	CERAMIC	0.01MF	10%	25V
C664	1-102-961-00	CERAMIC	27PF	5%	50V
C665	1-102-824-00	CERAMIC	470PF	5%	50V
C666	1-161-059-00	CERAMIC	0.047MF	10%	25V
C667	1-161-055-00	CERAMIC	0.022MF	10%	25V
C702	1-102-953-00	CERAMIC	18PF	5%	50V
C703	1-102-965-00	CERAMIC	39PF	5%	50V
C704	1-102-965-00	CERAMIC	39PF	5%	50V
C705	1-102-947-00	CERAMIC	10PF	5%	50V
C706	1-123-306-00	ELECT	47MF	20%	10V
C707	1-161-059-00	CERAMIC	0.047MF	10%	25V
C708	1-123-306-00	ELECT	47MF	20%	10V
C709	1-102-947-00	CERAMIC	10PF	5%	50V
C711	1-102-973-00	CERAMIC	100PF	5%	50V
C712	1-123-613-00	ELECT	3.3MF	20%	50V
C713	1-102-971-00	CERAMIC	82PF	5%	50V
C714	1-123-380-00	ELECT	1MF	20%	50V
C715	1-161-047-00	CERAMIC	0.0047MF	10%	25V
C716	1-123-380-00	ELECT	1MF	20%	50V
C717	1-161-059-00	CERAMIC	0.047MF	10%	25V
C718	1-123-822-00	ELECT	47MF	20%	10V
C719	1-102-953-00	CERAMIC	18PF	5%	50V
C720	1-123-306-00	ELECT	47MF	20%	10V
C721	1-102-980-00	CERAMIC	270PF	5%	50V
C722	1-123-306-00	ELECT	47MF	20%	10V
C723	1-130-478-00	MYLAR	0.0039MF	5%	50V
C724	1-102-820-00	CERAMIC	330PF	5%	50V
C725	1-101-880-00	CERAMIC	47PF	5%	50V
C726	1-102-980-00	CERAMIC	270PF	5%	50V
C727	1-130-471-00	MYLAR	0.001MF	5%	50V
C728	1-102-976-00	CERAMIC	180PF	5%	50V
C729	1-101-880-00	CERAMIC	47PF	5%	50V
C730	1-161-059-00	CERAMIC	0.047MF	10%	25V
C731	1-102-973-00	CERAMIC	100PF	5%	50V
C732	1-123-380-00	ELECT	1MF	20%	50V
C734	1-101-059-00	CERAMIC	510PF	5%	50V
C735	1-123-318-00	ELECT	33MF	20%	10V
C736	1-102-976-00	CERAMIC	180PF	5%	50V
C737	1-123-306-00	ELECT	47MF	20%	10V
C738	1-101-884-00	CERAMIC	56PF	5%	50V
C801	1-123-356-00	ELECT	10MF	20%	16V
C901	1-161-013-00	CERAMIC	0.01MF	10%	25V
C902	1-123-369-00	ELECT	4.7MF	20%	25V
C903	1-161-039-00	CERAMIC	0.001MF	10%	25V
C904	1-123-356-00	ELECT	10MF	20%	16V
C906	1-123-613-00	ELECT	3.3MF	20%	50V
C907	1-161-013-00	CERAMIC	0.01MF	10%	25V
C908	1-161-013-00	CERAMIC	0.01MF	10%	25V

FILTER

CF401	1-231-302-00	CERAMIC FILTER (4.27MHZ)
CF402	1-527-823-00	FILTER, CERAMIC
CF501	1-527-823-00	FILTER, CERAMIC

CONNECTOR

CN201	*1-560-890-00	PIN, CONNECTOR 2P
CN202	*1-564-037-11	PIN, CONNECTOR 12P
CN203	*1-564-029-21	PIN, CONNECTOR 4P
CN204	*1-564-036-21	PIN, CONNECTOR 11P
CN205	*1-560-894-00	PIN, CONNECTOR 6P
CN206	*1-560-896-00	PIN, CONNECTOR 8P
CN207	*1-564-028-00	PIN, CONNECTOR 3P
CN208	*1-560-892-00	PIN, CONNECTOR 4P

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description	Remark
		DIODE	
D101	8-719-911-19	DIODE 1SS119	
D102	8-719-000-06	DIODE MC921	
D103	8-719-911-19	DIODE 1SS119	
D104	8-719-911-19	DIODE 1SS119	
D105	8-719-911-19	DIODE 1SS119	
D202	8-719-911-19	DIODE 1SS119	
D203	8-719-911-19	DIODE 1SS119	
D204	8-719-911-19	DIODE 1SS119	
D205	8-719-911-19	DIODE 1SS119	
D206	8-719-911-19	DIODE 1SS119	
D207	8-719-911-19	DIODE 1SS119	
D208	8-719-911-19	DIODE 1SS119	
D209	8-719-000-04	DIODE MC911	
D211	8-719-911-19	DIODE 1SS119	
D212	8-719-000-06	DIODE MC921	
D214	8-719-911-19	DIODE 1SS119	
D217	8-719-911-19	DIODE 1SS119	
D301	8-719-911-19	DIODE 1SS119	
D302	8-719-911-19	DIODE 1SS119	
D401	8-719-911-19	DIODE 1SS119	
D501	8-719-175-07	DIODE RD7.5E-B	
D502	8-719-000-06	DIODE MC921	
D503	8-719-911-19	DIODE 1SS119	
D504	8-719-000-12	DIODE MC931	
D601	8-719-911-19	DIODE 1SS119	
D602	8-719-911-19	DIODE 1SS119	
D648	8-719-911-19	DIODE 1SS119	
D651	8-719-911-19	DIODE 1SS119	
D652	8-719-911-19	DIODE 1SS119	
D653	8-719-911-19	DIODE 1SS119	
D654	8-719-911-19	DIODE 1SS119	
D657	8-719-911-19	DIODE 1SS119	
D701	8-719-911-19	DIODE 1SS119	
D702	8-719-911-19	DIODE 1SS119	
D703	8-719-911-19	DIODE 1SS119	
D704	8-719-911-19	DIODE 1SS119	
D705	8-719-000-12	DIODE MC931	
D706	8-719-000-12	DIODE MC931	
D707	8-719-911-19	DIODE 1SS119	
D708	8-719-911-19	DIODE 1SS119	
D710	8-719-911-19	DIODE 1SS119	
D901	8-719-911-19	DIODE 1SS119	
D902	8-719-000-06	DIODE MC921	
D903	8-719-911-19	DIODE 1SS119	
D904	8-719-911-19	DIODE 1SS119	
D905	8-719-911-19	DIODE 1SS119	
		DELAY LINE	
DL101	1-415-107-31	DELAY LINE, 1H	
DL301	1-415-285-00	DELAY LINE (1H)	

Ref.No	Part No.	Description	Remark
		IC	
IC001	8-759-101-62	IC CX20043	
IC002	8-759-203-99	IC CX10021B-NP	
IC003	8-758-662-00	IC CX-866B	
IC004	8-759-204-43	IC CX-7989A	
IC901	8-759-240-13	IC TC4013BP	
		COIL	
L101	1-408-419-00	MICRO INDUCTOR 68UH	
L102	1-408-418-00	MICRO INDUCTOR 56UH	
L104	1-408-421-00	MICRO INDUCTOR 100UH	
L105	1-408-605-00	MICRO INDUCTOR 15UH	
L201	1-408-413-00	MICRO INDUCTOR 22UH	
L301	1-408-418-00	MICRO INDUCTOR 56UH	
L302	1-408-419-00	MICRO INDUCTOR 68UH	
L303	1-408-399-00	MICRO INDUCTOR 1.5UH	
L304	1-408-399-00	MICRO INDUCTOR 1.5UH	
L305	1-408-418-00	MICRO INDUCTOR 56UH	
L401	1-408-404-00	MICRO INDUCTOR 3.9UH	
L402	1-408-425-00	MICRO INDUCTOR 220UH	
L403	1-408-427-00	MICRO INDUCTOR 330UH	
L404	1-408-498-31	MICRO INDUCTOR 3.3MMH	
L405	1-408-426-00	MICRO INDUCTOR 270UH	
L406	1-408-426-00	MICRO INDUCTOR 270UH	
L407	1-408-423-00	MICRO INDUCTOR 150UH	
L501	1-408-414-00	MICRO INDUCTOR 27UH	
L503	1-408-409-00	MICRO INDUCTOR 10UH	
L504	1-408-421-00	MICRO INDUCTOR 100UH	
L505	1-408-421-00	MICRO INDUCTOR 100UH	
L506	1-408-418-00	MICRO INDUCTOR 56UH	
L601	1-408-605-00	MICRO INDUCTOR 15UH	
L602	1-408-413-00	MICRO INDUCTOR 22UH	
L603	1-408-422-00	MICRO INDUCTOR 120UH	
L604	1-408-425-00	MICRO INDUCTOR 220UH	
L605	1-408-422-00	MICRO INDUCTOR 120UH	
L606	1-408-419-00	MICRO INDUCTOR 68UH	
L651	1-408-414-00	MICRO INDUCTOR 27UH	
L652	1-408-408-00	MICRO INDUCTOR 8.2UH	
L653	1-408-623-00	MICRO INDUCTOR 470UH	
L654	1-408-422-00	MICRO INDUCTOR 120UH	
L701	1-408-421-00	MICRO INDUCTOR 100UH	
L702	1-408-422-00	MICRO INDUCTOR 120UH	
L703	1-408-421-00	MICRO INDUCTOR 100UH	
L704	1-408-416-00	MICRO INDUCTOR 39UH	
L705	1-408-425-00	MICRO INDUCTOR 220UH	
L706	1-408-420-00	MICRO INDUCTOR 82UH	
L707	1-408-413-00	MICRO INDUCTOR 22UH	
L708	1-408-418-00	MICRO INDUCTOR 56UH	
L709	1-408-419-00	MICRO INDUCTOR 68UH	
		VARIABLE COIL	
LV101	1-408-512-00	COIL (VARIABLE)	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
		TRANSISTOR	
Q102	8-729-900-89	TRANSISTOR DTC144ES	
Q103	8-729-900-89	TRANSISTOR DTC144ES	
Q104	8-729-900-89	TRANSISTOR DTC144ES	
Q105	8-729-900-89	TRANSISTOR DTC144ES	
Q106	8-729-245-83	TRANSISTOR 2SC2458	
Q107	8-729-900-89	TRANSISTOR DTC144ES	
Q108	8-729-900-89	TRANSISTOR DTC144ES	
Q109	8-729-900-65	TRANSISTOR DTA144ES	
Q110	8-729-900-89	TRANSISTOR DTC144ES	
Q161	8-729-900-89	TRANSISTOR DTC144ES	
Q201	8-729-117-54	TRANSISTOR 2SA1175	
Q202	8-729-117-54	TRANSISTOR 2SA1175	
Q204	8-729-117-54	TRANSISTOR 2SA1175	
Q205	8-729-178-55	TRANSISTOR 2SC2785-E	
Q206	8-729-117-54	TRANSISTOR 2SA1175	
Q207	8-729-117-54	TRANSISTOR 2SA1175	
Q210	8-729-117-54	TRANSISTOR 2SA1175	
Q301	8-729-245-83	TRANSISTOR 2SC2458	
Q303	8-729-900-89	TRANSISTOR DTC144ES	
Q304	8-729-900-89	TRANSISTOR DTC144ES	
Q401	8-729-245-83	TRANSISTOR 2SC2458	
Q402	8-729-900-89	TRANSISTOR DTC144ES	
Q403	8-729-245-83	TRANSISTOR 2SC2458	
Q404	8-729-245-83	TRANSISTOR 2SC2458	
Q405	8-729-900-89	TRANSISTOR DTC144ES	
Q406	8-729-245-83	TRANSISTOR 2SC2458	
Q407	8-729-117-54	TRANSISTOR 2SA1175	
Q408	8-729-245-83	TRANSISTOR 2SC2458	
Q409	8-729-245-83	TRANSISTOR 2SC2458	
Q410	8-729-900-65	TRANSISTOR DTA144ES	
Q411	8-729-245-83	TRANSISTOR 2SC2458	
Q412	8-729-117-54	TRANSISTOR 2SA1175	
Q413	8-729-900-89	TRANSISTOR DTC144ES	
Q414	8-729-117-54	TRANSISTOR 2SA1175	
Q415	8-729-117-54	TRANSISTOR 2SA1175	
Q501	8-729-245-83	TRANSISTOR 2SC2458	
Q502	8-729-245-83	TRANSISTOR 2SC2458	
Q503	8-729-117-54	TRANSISTOR 2SA1175	
Q504	8-729-245-83	TRANSISTOR 2SC2458	
Q505	8-729-900-89	TRANSISTOR DTC144ES	
Q507	8-729-245-83	TRANSISTOR 2SC2458	
Q508	8-729-245-83	TRANSISTOR 2SC2458	
Q509	8-729-245-83	TRANSISTOR 2SC2458	
Q510	8-729-245-83	TRANSISTOR 2SC2458	
Q602	8-729-178-54	TRANSISTOR 2SC2785	
Q604	8-729-178-54	TRANSISTOR 2SC2785	
Q605	8-729-178-54	TRANSISTOR 2SC2785	
Q606	8-729-900-89	TRANSISTOR DTC144ES	
Q607	8-729-178-54	TRANSISTOR 2SC2785	
Q608	8-729-178-54	TRANSISTOR 2SC2785	
Q609	8-729-178-54	TRANSISTOR 2SC2785	
Q610	8-729-900-65	TRANSISTOR DTA144ES	
Q611	8-729-900-89	TRANSISTOR DTC144ES	
Q651	8-729-178-54	TRANSISTOR 2SC2785	
Q652	8-729-178-54	TRANSISTOR 2SC2785	
Q653	8-729-178-54	TRANSISTOR 2SC2785	
Q654	8-729-178-54	TRANSISTOR 2SC2785	
Q655	8-729-900-89	TRANSISTOR DTC144ES	
Q656	8-729-117-54	TRANSISTOR 2SA1175	
Q657	8-729-117-54	TRANSISTOR 2SA1175	
Q658	8-729-178-54	TRANSISTOR 2SC2785	
Q701	8-729-900-89	TRANSISTOR DTC144ES	
Q702	8-729-245-83	TRANSISTOR 2SC2458	
Q703	8-729-178-55	TRANSISTOR 2SC2785-E	
Q704	8-729-900-61	TRANSISTOR DTA114ES	
Q705	8-729-245-83	TRANSISTOR 2SC2458	
Q706	8-729-178-55	TRANSISTOR 2SC2785-E	
Q707	8-729-117-54	TRANSISTOR 2SA1175	
Q708	8-729-117-54	TRANSISTOR 2SA1175	
Q709	8-729-900-89	TRANSISTOR DTC144ES	
Q710	8-729-900-89	TRANSISTOR DTC144ES	
Q711	8-729-900-65	TRANSISTOR DTA144ES	
Q712	8-729-245-83	TRANSISTOR 2SC2458	
Q713	8-729-117-54	TRANSISTOR 2SA1175	
Q714	8-729-178-55	TRANSISTOR 2SC2785-E	
Q715	8-729-178-55	TRANSISTOR 2SC2785-E	
Q716	8-729-900-89	TRANSISTOR DTC144ES	
Q717	8-729-900-89	TRANSISTOR DTC144ES	
Q718	8-729-245-83	TRANSISTOR 2SC2458	
Q720	8-729-900-89	TRANSISTOR DTC144ES	
Q721	8-729-900-89	TRANSISTOR DTC144ES	
Q722	8-729-900-89	TRANSISTOR DTC144ES	
Q724	8-729-900-89	TRANSISTOR DTC144ES	
Q725	8-729-900-89	TRANSISTOR DTC144ES	
Q801	8-729-900-89	TRANSISTOR DTC144ES	
Q803	8-729-117-54	TRANSISTOR 2SA1175	
Q804	8-729-900-89	TRANSISTOR DTC144ES	
Q901	8-729-900-89	TRANSISTOR DTC144ES	
Q902	8-729-900-89	TRANSISTOR DTC144ES	
Q903	8-729-900-89	TRANSISTOR DTC144ES	
Q904	8-729-900-89	TRANSISTOR DTC144ES	
Q905	8-729-245-83	TRANSISTOR 2SC2458	
Q906	8-729-245-83	TRANSISTOR 2SC2458	
Q907	8-729-245-83	TRANSISTOR 2SC2458	
Q908	8-729-245-83	TRANSISTOR 2SC2458	
Q910	8-729-900-89	TRANSISTOR DTC144ES	
Q911	8-729-900-89	TRANSISTOR DTC144ES	
Q912	8-729-900-89	TRANSISTOR DTC144ES	
		RESISTOR	
R098	1-247-807-00	CARBON 100 5% 1/6W	
R101	1-247-831-00	CARBON 1K 5% 1/6W	
R102	1-247-831-00	CARBON 1K 5% 1/6W	
R106	1-247-831-00	CARBON 1K 5% 1/6W	

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description				Remark
R111	1-247-839-00	CARBON	2.2K	5%	1/6W	
R112	1-247-861-00	CARBON	18K	5%	1/6W	
R113	1-247-857-00	CARBON	12K	5%	1/6W	
R114	1-247-899-00	CARBON	680K	5%	1/6W	
R115	1-247-841-00	CARBON	2.7K	5%	1/6W	
R117	1-247-861-00	CARBON	18K	5%	1/6W	
R118	1-247-883-00	CARBON	150K	5%	1/6W	
R119	1-247-851-00	CARBON	6.8K	5%	1/6W	
R121	1-247-814-00	CARBON	200	5%	1/6W	
R122	1-247-827-00	CARBON	680	5%	1/6W	
R125	1-247-827-00	CARBON	680	5%	1/6W	
R126	1-247-843-00	CARBON	3.3K	5%	1/6W	
R127	1-247-859-00	CARBON	15K	5%	1/6W	
R128	1-247-855-00	CARBON	10K	5%	1/6W	
R129	1-247-799-00	CARBON	47	5%	1/6W	
R130	1-247-879-00	CARBON	100K	5%	1/6W	
R131	1-247-831-00	CARBON	1K	5%	1/6W	
R132	1-247-838-00	CARBON	2K	5%	1/6W	
R133	1-247-835-00	CARBON	1.5K	5%	1/6W	
R134	1-247-839-00	CARBON	2.2K	5%	1/6W	
R135	1-247-831-00	CARBON	1K	5%	1/6W	
R136	1-247-855-00	CARBON	10K	5%	1/6W	
R137	1-247-855-00	CARBON	10K	5%	1/6W	
R138	1-247-855-00	CARBON	10K	5%	1/6W	
R143	1-247-843-00	CARBON	3.3K	5%	1/6W	
R144	1-247-883-00	CARBON	150K	5%	1/6W	
R145	1-247-829-00	CARBON	820	5%	1/6W	
R146	1-247-852-00	CARBON	7.5K	5%	1/6W	
R147	1-247-835-00	CARBON	1.5K	5%	1/6W	
R149	1-247-867-00	CARBON	33K	5%	1/6W	
R150	1-247-855-00	CARBON	10K	5%	1/6W	
R168	1-247-843-00	CARBON	3.3K	5%	1/6W	
R172	1-247-855-00	CARBON	10K	5%	1/6W	
R173	1-247-847-00	CARBON	4.7K	5%	1/6W	
R176	1-247-899-00	CARBON	680K	5%	1/6W	
R180	1-247-855-00	CARBON	10K	5%	1/6W	
R181	1-247-807-00	CARBON	100	5%	1/6W	
R201	1-247-835-00	CARBON	1.5K	5%	1/6W	
R202	1-247-821-00	CARBON	390	5%	1/6W	
R203	1-247-823-00	CARBON	470	5%	1/6W	
R204	1-247-831-00	CARBON	1K	5%	1/6W	
R205	1-247-833-00	CARBON	1.2K	5%	1/6W	
R206	1-247-859-00	CARBON	15K	5%	1/6W	
R207	1-247-835-00	CARBON	1.5K	5%	1/6W	
R208	1-247-799-00	CARBON	47	5%	1/6W	
R209	1-247-869-00	CARBON	39K	5%	1/6W	
R210	1-247-859-00	CARBON	15K	5%	1/6W	
R211	1-247-863-00	CARBON	22K	5%	1/6W	
R212	1-247-851-00	CARBON	6.8K	5%	1/6W	
R213	1-247-839-00	CARBON	2.2K	5%	1/6W	
R214	1-247-838-00	CARBON	2K	5%	1/6W	
R215	1-247-817-00	CARBON	270	5%	1/6W	
R216	1-247-832-00	CARBON	1.1K	5%	1/6W	

Ref.No	Part No.	Description				Remark
R217	1-247-817-00	CARBON	270	5%	1/6W	
R218	1-247-822-00	CARBON	430	5%	1/6W	
R219	1-247-813-00	CARBON	180	5%	1/6W	
R220	1-247-856-00	CARBON	11K	5%	1/6W	
R221	1-247-856-00	CARBON	11K	5%	1/6W	
R222	1-247-813-00	CARBON	180	5%	1/6W	
R223	1-247-865-00	CARBON	27K	5%	1/6W	
R224	1-247-851-00	CARBON	6.8K	5%	1/6W	
R228	1-247-847-00	CARBON	4.7K	5%	1/6W	
R229	1-247-867-00	CARBON	33K	5%	1/6W	
R230	1-247-843-00	CARBON	3.3K	5%	1/6W	
R232	1-247-839-00	CARBON	2.2K	5%	1/6W	
R233	1-247-855-00	CARBON	10K	5%	1/6W	
R236	1-247-855-00	CARBON	10K	5%	1/6W	
R273	1-247-831-00	CARBON	1K	5%	1/6W	
R301	1-247-821-00	CARBON	390	5%	1/6W	
R302	1-247-847-00	CARBON	4.7K	5%	1/6W	
R303	1-247-847-00	CARBON	4.7K	5%	1/6W	
R304	1-247-821-00	CARBON	390	5%	1/6W	
R305	1-247-827-00	CARBON	680	5%	1/6W	
R306	1-247-828-00	CARBON	750	5%	1/6W	
R307	1-247-833-00	CARBON	1.2K	5%	1/6W	
R308	1-247-865-00	CARBON	27K	5%	1/6W	
R309	1-247-872-00	CARBON	51K	5%	1/6W	
R310	1-247-841-00	CARBON	2.7K	5%	1/6W	
R311	1-247-835-00	CARBON	1.5K	5%	1/6W	
R312	1-247-832-00	CARBON	1.1K	5%	1/6W	
R313	1-247-831-00	CARBON	1K	5%	1/6W	
R314	1-247-849-00	CARBON	5.6K	5%	1/6W	
R315	1-247-812-00	CARBON	160	5%	1/6W	
R316	1-247-812-00	CARBON	160	5%	1/6W	
R317	1-247-819-00	CARBON	330	5%	1/6W	
R318	1-247-847-00	CARBON	4.7K	5%	1/6W	
R319	1-247-813-00	CARBON	180	5%	1/6W	
R320	1-247-831-00	CARBON	1K	5%	1/6W	
R323	1-247-855-00	CARBON	10K	5%	1/6W	
R324	1-247-855-00	CARBON	10K	5%	1/6W	
R325	1-247-830-00	CARBON	910	5%	1/6W	
R331	1-247-827-00	CARBON	680	5%	1/6W	
R332	1-247-857-00	CARBON	12K	5%	1/6W	
R337	1-247-822-00	CARBON	430	5%	1/6W	
R401	1-247-839-00	CARBON	2.2K	5%	1/6W	
R403	1-247-843-00	CARBON	3.3K	5%	1/6W	
R404	1-247-865-00	CARBON	27K	5%	1/6W	
R405	1-247-863-00	CARBON	22K	5%	1/6W	
R406	1-247-833-00	CARBON	1.2K	5%	1/6W	
R407	1-247-837-00	CARBON	1.8K	5%	1/6W	
R408	1-247-891-00	CARBON	330K	5%	1/6W	
R409	1-247-835-00	CARBON	1.5K	5%	1/6W	
R410	1-247-807-00	CARBON	100	5%	1/6W	
R411	1-247-831-00	CARBON	1K	5%	1/6W	
R412	1-247-879-00	CARBON	100K	5%	1/6W	
R413	1-247-855-00	CARBON	10K	5%	1/6W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
R414	1-247-861-00	CARBON	18K	5%	1/6W	
R415	1-247-839-00	CARBON	2.2K	5%	1/6W	
R416	1-247-835-00	CARBON	1.5K	5%	1/6W	
R417	1-247-843-00	CARBON	3.3K	5%	1/6W	
R418	1-247-881-00	CARBON	120K	5%	1/6W	
R419	1-247-887-00	CARBON	220K	5%	1/6W	
R420	1-247-849-00	CARBON	5.6K	5%	1/6W	
R421	1-247-831-00	CARBON	1K	5%	1/6W	
R422	1-247-855-00	CARBON	10K	5%	1/6W	
R423	1-247-835-00	CARBON	1.5K	5%	1/6W	
R424	1-247-819-00	CARBON	330	5%	1/6W	
R425	1-247-855-00	CARBON	10K	5%	1/6W	
R426	1-247-819-00	CARBON	330	5%	1/6W	
R427	1-247-824-00	CARBON	510	5%	1/6W	
R428	1-247-831-00	CARBON	1K	5%	1/6W	
R429	1-247-863-00	CARBON	22K	5%	1/6W	
R430	1-247-813-00	CARBON	180	5%	1/6W	
R431	1-247-879-00	CARBON	100K	5%	1/6W	
R432	1-247-845-00	CARBON	3.9K	5%	1/6W	
R435	1-247-841-00	CARBON	2.7K	5%	1/6W	
R436	1-247-873-00	CARBON	56K	5%	1/6W	
R437	1-247-843-00	CARBON	3.3K	5%	1/6W	
R438	1-247-867-00	CARBON	33K	5%	1/6W	
R439	1-247-833-00	CARBON	1.2K	5%	1/6W	
R441	1-247-867-00	CARBON	33K	5%	1/6W	
R442	1-247-855-00	CARBON	10K	5%	1/6W	
R443	1-247-855-00	CARBON	10K	5%	1/6W	
R444	1-247-844-00	CARBON	3.6K	5%	1/6W	
R445	1-247-835-00	CARBON	1.5K	5%	1/6W	
R446 ⚠	1-247-030-11	CARBON	18	5%	1/8W	F
R447	1-247-835-00	CARBON	1.5K	5%	1/6W	
R448	1-247-828-00	CARBON	750	5%	1/6W	
R449	1-247-845-00	CARBON	3.9K	5%	1/6W	
R450	1-247-839-00	CARBON	2.2K	5%	1/6W	
R451	1-247-820-00	CARBON	360	5%	1/6W	
R452	1-247-839-00	CARBON	2.2K	5%	1/6W	
R453	1-247-883-00	CARBON	150K	5%	1/6W	
R454	1-247-891-00	CARBON	330K	5%	1/6W	
R455	1-247-863-00	CARBON	22K	5%	1/6W	
R456	1-247-855-00	CARBON	10K	5%	1/6W	
R457	1-247-839-00	CARBON	2.2K	5%	1/6W	
R458	1-247-831-00	CARBON	1K	5%	1/6W	
R459	1-247-819-00	CARBON	330	5%	1/6W	
R460	1-247-843-00	CARBON	3.3K	5%	1/6W	
R461	1-247-831-00	CARBON	1K	5%	1/6W	
R462	1-247-831-00	CARBON	1K	5%	1/6W	
R463	1-247-831-00	CARBON	1K	5%	1/6W	
R464	1-247-831-00	CARBON	1K	5%	1/6W	
R465	1-247-855-00	CARBON	10K	5%	1/6W	
R466	1-247-855-00	CARBON	10K	5%	1/6W	
R467	1-247-871-00	CARBON	47K	5%	1/6W	
R468	1-247-855-00	CARBON	10K	5%	1/6W	
R469	1-247-855-00	CARBON	10K	5%	1/6W	

Ref.No	Part No.	Description				Remark
R470	1-247-823-00	CARBON	470	5%	1/6W	
R471	1-247-831-00	CARBON	1K	5%	1/6W	
R501	1-247-803-00	CARBON	68	5%	1/6W	
R502	1-247-881-00	CARBON	120K	5%	1/6W	
R503	1-247-901-00	CARBON	820K	5%	1/6W	
R504	1-247-887-00	CARBON	220K	5%	1/6W	
R505	1-247-863-00	CARBON	22K	5%	1/6W	
R506	1-247-855-00	CARBON	10K	5%	1/6W	
R507	1-247-839-00	CARBON	2.2K	5%	1/6W	
R508	1-247-857-00	CARBON	12K	5%	1/6W	
R509	1-247-819-00	CARBON	330	5%	1/6W	
R510	1-247-867-00	CARBON	33K	5%	1/6W	
R511	1-247-853-00	CARBON	8.2K	5%	1/6W	
R512	1-247-825-00	CARBON	560	5%	1/6W	
R513	1-247-839-00	CARBON	2.2K	5%	1/6W	
R514	1-247-835-00	CARBON	1.5K	5%	1/6W	
R515	1-247-871-00	CARBON	47K	5%	1/6W	
R516	1-247-831-00	CARBON	1K	5%	1/6W	
R517	1-247-871-00	CARBON	47K	5%	1/6W	
R518	1-247-831-00	CARBON	1K	5%	1/6W	
R519	1-247-841-00	CARBON	2.7K	5%	1/6W	
R520	1-247-855-00	CARBON	10K	5%	1/6W	
R521	1-247-841-00	CARBON	2.7K	5%	1/6W	
R522	1-247-855-00	CARBON	10K	5%	1/6W	
R523	1-247-841-00	CARBON	2.7K	5%	1/6W	
R524	1-247-855-00	CARBON	10K	5%	1/6W	
R525	1-247-829-00	CARBON	820	5%	1/6W	
R529	1-247-835-00	CARBON	1.5K	5%	1/6W	
R530	1-247-838-00	CARBON	2K	5%	1/6W	
R531	1-247-809-00	CARBON	120	5%	1/6W	
R532	1-247-837-00	CARBON	1.8K	5%	1/6W	
R533	1-247-861-00	CARBON	18K	5%	1/6W	
R534	1-247-853-00	CARBON	8.2K	5%	1/6W	
R535	1-247-831-00	CARBON	1K	5%	1/6W	
R536	1-247-815-00	CARBON	220	5%	1/6W	
R537	1-247-821-00	CARBON	390	5%	1/6W	
R538	1-247-821-00	CARBON	390	5%	1/6W	
R542	1-247-871-00	CARBON	47K	5%	1/6W	
R544	1-247-807-00	CARBON	100	5%	1/6W	
R545	1-247-831-00	CARBON	1K	5%	1/6W	
R546	1-247-831-00	CARBON	1K	5%	1/6W	
R547	1-247-863-00	CARBON	22K	5%	1/6W	
R548	1-247-863-00	CARBON	22K	5%	1/6W	
R549	1-247-863-00	CARBON	22K	5%	1/6W	
R550	1-247-831-00	CARBON	1K	5%	1/6W	
R551	1-247-807-00	CARBON	100	5%	1/6W	
R552	1-247-801-00	CARBON	56	5%	1/6W	
R601	1-247-855-00	CARBON	10K	5%	1/6W	
R602	1-247-861-00	CARBON	18K	5%	1/6W	
R603	1-247-809-00	CARBON	120	5%	1/6W	
R605	1-247-865-00	CARBON	27K	5%	1/6W	
R606	1-247-819-00	CARBON	330	5%	1/6W	
R607	1-247-843-00	CARBON	3.3K	5%	1/6W	

When indicating parts by reference number, please include the board name.

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part numer specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

VI-10

Ref.No	Part No.	Description				Remark
R609	1-247-829-00	CARBON	820	5%	1/6W	
R610	1-247-827-00	CARBON	680	5%	1/6W	
R611	1-247-821-00	CARBON	390	5%	1/6W	
R614	1-247-831-00	CARBON	1K	5%	1/6W	
R615	1-247-863-00	CARBON	22K	5%	1/6W	
R616	1-247-861-00	CARBON	18K	5%	1/6W	
R617	1-247-865-00	CARBON	27K	5%	1/6W	
R618	1-247-825-00	CARBON	560	5%	1/6W	
R619	1-247-867-00	CARBON	33K	5%	1/6W	
R620	1-247-867-00	CARBON	33K	5%	1/6W	
R621	1-247-839-00	CARBON	2.2K	5%	1/6W	
R625	1-247-812-00	CARBON	160	5%	1/6W	
R626	1-247-815-00	CARBON	220	5%	1/6W	
R627	1-247-797-00	CARBON	39	5%	1/6W	
R628	1-247-815-00	CARBON	220	5%	1/6W	
R629	1-247-843-00	CARBON	3.3K	5%	1/6W	
R630	1-247-823-00	CARBON	470	5%	1/6W	
R631	1-247-823-00	CARBON	470	5%	1/6W	
R632	1-247-847-00	CARBON	4.7K	5%	1/6W	
R633	1-247-845-00	CARBON	3.9K	5%	1/6W	
R650	1-247-865-00	CARBON	27K	5%	1/6W	
R651	1-247-823-00	CARBON	470	5%	1/6W	
R652	1-247-859-00	CARBON	15K	5%	1/6W	
R653	1-247-833-00	CARBON	1.2K	5%	1/6W	
R654	1-247-823-00	CARBON	470	5%	1/6W	
R655	1-247-823-00	CARBON	470	5%	1/6W	
R656	1-247-823-00	CARBON	470	5%	1/6W	
R657	1-247-807-00	CARBON	100	5%	1/6W	
R658	1-247-841-00	CARBON	2.7K	5%	1/6W	
R659	1-247-863-00	CARBON	22K	5%	1/6W	
R660	1-247-863-00	CARBON	22K	5%	1/6W	
R661	1-247-853-00	CARBON	8.2K	5%	1/6W	
R662	1-247-831-00	CARBON	1K	5%	1/6W	
R663	1-247-855-00	CARBON	10K	5%	1/6W	
R664	1-247-872-00	CARBON	51K	5%	1/6W	
R665	1-247-833-00	CARBON	1.2K	5%	1/6W	
R666	1-247-815-00	CARBON	220	5%	1/6W	
R667	1-247-827-00	CARBON	680	5%	1/6W	
R668	1-247-863-00	CARBON	22K	5%	1/6W	
R669	1-247-853-00	CARBON	8.2K	5%	1/6W	
R670	1-247-855-00	CARBON	10K	5%	1/6W	
R671	1-247-813-00	CARBON	180	5%	1/6W	
R673	1-247-855-00	CARBON	10K	5%	1/6W	
R674	1-247-843-00	CARBON	3.3K	5%	1/6W	
R675	1-247-839-00	CARBON	2.2K	5%	1/6W	
R676	1-247-823-00	CARBON	470	5%	1/6W	
R678	1-247-843-00	CARBON	3.3K	5%	1/6W	
R679	1-247-871-00	CARBON	47K	5%	1/6W	
R680	1-247-831-00	CARBON	1K	5%	1/6W	
R681	1-247-863-00	CARBON	22K	5%	1/6W	
R683	1-247-823-00	CARBON	470	5%	1/6W	
R684	1-247-827-00	CARBON	680	5%	1/6W	
R701	1-247-837-00	CARBON	1.8K	5%	1/6W	

Ref.No	Part No.	Description				Remark
R702	1-247-855-00	CARBON	10K	5%	1/6W	
R704	1-247-839-00	CARBON	2.2K	5%	1/6W	
R705	1-247-861-00	CARBON	18K	5%	1/6W	
R706	1-247-861-00	CARBON	18K	5%	1/6W	
R707	1-247-831-00	CARBON	1K	5%	1/6W	
R708	1-247-819-00	CARBON	330	5%	1/6W	
R709	1-247-783-00	CARBON	10	5%	1/6W	
R710	1-247-831-00	CARBON	1K	5%	1/6W	
R711	1-247-861-00	CARBON	18K	5%	1/6W	
R712	1-247-829-00	CARBON	820	5%	1/6W	
R713	1-247-823-00	CARBON	470	5%	1/6W	
R714	1-247-861-00	CARBON	18K	5%	1/6W	
R715	1-247-821-00	CARBON	390	5%	1/6W	
R716	1-247-809-00	CARBON	120	5%	1/6W	
R717	1-247-843-00	CARBON	3.3K	5%	1/6W	
R718	1-247-861-00	CARBON	18K	5%	1/6W	
R719	1-247-839-00	CARBON	2.2K	5%	1/6W	
R720	1-247-865-00	CARBON	27K	5%	1/6W	
R721	1-247-855-00	CARBON	10K	5%	1/6W	
R722	1-247-822-00	CARBON	430	5%	1/6W	
R723	1-247-831-00	CARBON	1K	5%	1/6W	
R724	1-247-797-00	CARBON	39	5%	1/6W	
R725	1-247-863-00	CARBON	22K	5%	1/6W	
R726	1-247-859-00	CARBON	15K	5%	1/6W	
R727	1-247-822-00	CARBON	430	5%	1/6W	
R728	1-247-834-00	CARBON	1.3K	5%	1/6W	
R729	1-247-867-00	CARBON	33K	5%	1/6W	
R730	1-247-819-00	CARBON	330	5%	1/6W	
R731	1-247-819-00	CARBON	330	5%	1/6W	
R732	1-247-856-00	CARBON	11K	5%	1/6W	
R733	1-247-831-00	CARBON	1K	5%	1/6W	
R734	1-247-856-00	CARBON	11K	5%	1/6W	
R735	1-247-815-00	CARBON	220	5%	1/6W	
R736	1-247-823-00	CARBON	470	5%	1/6W	
R738	1-247-813-00	CARBON	180	5%	1/6W	
R739	1-247-815-00	CARBON	220	5%	1/6W	
R740	1-247-829-00	CARBON	820	5%	1/6W	
R741	1-247-813-00	CARBON	180	5%	1/6W	
R742	1-247-885-00	CARBON	180K	5%	1/6W	
R743	1-247-817-00	CARBON	270	5%	1/6W	
R744	1-247-803-00	CARBON	68	5%	1/6W	
R745	1-247-831-00	CARBON	1K	5%	1/6W	
R746	1-247-835-00	CARBON	1.5K	5%	1/6W	
R747	1-247-827-00	CARBON	680	5%	1/6W	
R748	1-247-823-00	CARBON	470	5%	1/6W	
R750	1-247-839-00	CARBON	2.2K	5%	1/6W	
R751	1-247-867-00	CARBON	33K	5%	1/6W	
R752	1-247-855-00	CARBON	10K	5%	1/6W	
R753	1-247-825-00	CARBON	560	5%	1/6W	
R754	1-247-831-00	CARBON	1K	5%	1/6W	
R755	1-247-811-00	CARBON	150	5%	1/6W	
R756	1-247-863-00	CARBON	22K	5%	1/6W	
R757	1-247-863-00	CARBON	22K	5%	1/6W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
R758	1-247-855-00	CARBON	10K	5%	1/6W	
R759	1-247-855-00	CARBON	10K	5%	1/6W	
R760	1-247-839-00	CARBON	2.2K	5%	1/6W	
R761	1-247-831-00	CARBON	1K	5%	1/6W	
R762	1-247-827-00	CARBON	680	5%	1/6W	
R763	1-247-855-00	CARBON	10K	5%	1/6W	
R765	1-247-855-00	CARBON	10K	5%	1/6W	
R766	1-247-839-00	CARBON	2.2K	5%	1/6W	
R801	1-247-851-00	CARBON	6.8K	5%	1/6W	
R802	1-247-847-00	CARBON	4.7K	5%	1/6W	
R803	1-247-879-00	CARBON	100K	5%	1/6W	
R804	1-247-847-00	CARBON	4.7K	5%	1/6W	
R901	1-247-883-00	CARBON	150K	5%	1/6W	
R903	1-247-879-00	CARBON	100K	5%	1/6W	
R905	1-247-861-00	CARBON	18K	5%	1/6W	
R906	1-247-869-00	CARBON	39K	5%	1/6W	
R907	1-247-847-00	CARBON	4.7K	5%	1/6W	
R908	1-247-855-00	CARBON	10K	5%	1/6W	
R909	1-247-839-00	CARBON	2.2K	5%	1/6W	
R910	1-247-871-00	CARBON	47K	5%	1/6W	
R912	1-247-855-00	CARBON	10K	5%	1/6W	
R913	1-247-849-00	CARBON	5.6K	5%	1/6W	
R915	1-247-867-00	CARBON	33K	5%	1/6W	
R916	1-247-867-00	CARBON	33K	5%	1/6W	
R917	1-247-843-00	CARBON	3.3K	5%	1/6W	
R918	1-247-855-00	CARBON	10K	5%	1/6W	
R919	1-247-849-00	CARBON	5.6K	5%	1/6W	
R920	1-247-855-00	CARBON	10K	5%	1/6W	
R921	1-247-855-00	CARBON	10K	5%	1/6W	
R922	1-247-847-00	CARBON	4.7K	5%	1/6W	

VARIABLE RESISTOR

RV103	1-228-996-00	RES, ADJ, CARBON	47K
RV104	1-228-989-00	RES, ADJ, CARBON	470
RV201	1-228-993-00	RES, ADJ, CARBON	4.7K
RV203	1-228-994-00	RES, ADJ, CARBON	10K
RV204	1-228-995-00	RES, ADJ, CARBON	22K
RV207	1-228-989-00	RES, ADJ, CARBON	470
RV208	1-228-995-00	RES, ADJ, CARBON	22K
RV301	1-228-993-00	RES, ADJ, CARBON	4.7K
RV401	1-228-991-00	RES, ADJ, CARBON	2.2K
RV402	1-228-996-00	RES, ADJ, CARBON	47K
RV403	1-228-994-00	RES, ADJ, CARBON	10K
RV404	1-228-990-00	RES, ADJ, CARBON	1K
RV501	1-228-995-00	RES, ADJ, CARBON	22K
RV502	1-228-995-00	RES, ADJ, CARBON	22K
RV503	1-228-995-00	RES, ADJ, CARBON	22K
RV504	1-228-995-00	RES, ADJ, CARBON	22K
RV701	1-228-989-00	RES, ADJ, CARBON	470
RV702	1-228-991-00	RES, ADJ, CARBON	2.2K

TRANSFORMER

T101	1-426-141-00	COIL (EQT)
T301	1-426-070-00	COIL (EQT)
T401	1-235-216-00	FILTER, BAND PASS
T402	1-235-220-00	B.P.F
T403	1-404-410-00	COIL, TRAP

CRYSTAL

X401	1-527-396-00	CRYSTAL, OSC

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*1-615-666-11	VJ-2 BOARD	
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CAPACITOR

C449	1-102-978-00	CERAMIC	220PF	5%	50V

DIODE

D502	8-719-000-06	DIODE MC921

TRANSISTOR

Q501	8-729-900-89	TRANSISTOR DTC144ES

RESISTOR

R504	1-247-887-00	CARBON	220K	5%	1/6W
R505	1-247-863-00	CARBON	22K	5%	1/6W
R543	1-247-863-00	CARBON	22K	5%	1/6W

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*A-6711-644-A	RP-24 BOARD, COMPLETE	
	**********	
*3-691-752-01	CASE (MAIN), SHIELD, RP	
*3-691-753-02	LID, SHIELD CASE, RP	
*3-691-754-02	LID, REAR, SHIELD CASE, RP	

CAPACITOR

C003	1-123-821-00	ELECT	47MF	20%	16V
C005	1-161-013-00	CERAMIC	0.01MF	10%	25V
C006	1-161-057-00	CERAMIC	0.033MF	10%	25V
C007	1-161-057-00	CERAMIC	0.033MF	10%	25V
C008	1-161-057-00	CERAMIC	0.033MF	10%	25V
C009	1-123-821-00	ELECT	47MF	20%	16V
C010	1-161-057-00	CERAMIC	0.033MF	10%	25V
C011	1-123-821-00	ELECT	47MF	20%	16V
C014	1-161-013-00	CERAMIC	0.01MF	10%	25V
C015	1-123-821-00	ELECT	47MF	20%	16V
C016	1-161-013-00	CERAMIC	0.01MF	10%	25V
C017	1-161-057-00	CERAMIC	0.033MF	10%	25V
C018	1-161-057-00	CERAMIC	0.033MF	10%	25V
C019	1-161-057-00	CERAMIC	0.033MF	10%	25V
C020	1-123-619-00	ELECT	4.7MF	20%	50V
C021	1-123-616-00	ELECT	4.7MF	20%	25V
C022	1-123-610-00	ELECT	0.47MF	20%	50V

When indicating parts by reference number, please include the board name.

RP-24

Ref.No	Part No.	Description				Remark
C023	1-102-953-00	CERAMIC	18PF	5%	50V	
C024	1-123-616-00	ELECT	4.7MF	20%	25V	
C025	1-123-610-00	ELECT	0.47MF	20%	50V	
C026	1-102-965-00	CERAMIC	39PF	5%	50V	
C027	1-123-616-00	ELECT	4.7MF	20%	25V	
C028	1-123-610-00	ELECT	0.47MF	20%	50V	
C029	1-102-953-00	CERAMIC	18PF	5%	50V	
C030	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C031	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C032	1-161-039-00	CERAMIC	0.001MF	10%	25V	
C033	1-161-039-00	CERAMIC	0.001MF	10%	25V	
C035	1-123-821-00	ELECT	47MF	20%	16V	
C036	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C037	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C038	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C039	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C040	1-161-057-00	CERAMIC	0.033MF	10%	25V	
C041	1-161-039-00	CERAMIC	0.001MF	10%	25V	
C042	1-161-039-00	CERAMIC	0.001MF	10%	25V	
C043	1-130-499-51	MYLAR	0.22MF	5%	50V	
C044	1-123-821-00	ELECT	47MF	20%	16V	
C045	1-123-610-00	ELECT	0.47MF	20%	50V	
C047	1-123-610-00	ELECT	0.47MF	20%	50V	
C048	1-123-610-00	ELECT	0.47MF	20%	50V	
C050	1-123-610-00	ELECT	0.47MF	20%	50V	
C051	1-161-057-00	CERAMIC	0.033MF	10%	25V	
C052	1-123-616-00	ELECT	4.7MF	20%	25V	
C053	1-101-880-00	CERAMIC	47PF	5%	50V	
C054	1-161-057-00	CERAMIC	0.033MF	10%	25V	
C055	1-161-039-00	CERAMIC	0.001MF	10%	25V	
C056	1-161-039-00	CERAMIC	0.001MF	10%	25V	
C057	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C058	1-123-610-00	ELECT	0.47MF	20%	50V	
C059	1-102-945-00	CERAMIC	8PF	0.5PF	50V	
C061	1-161-039-00	CERAMIC	0.001MF	10%	25V	
C062	1-161-039-00	CERAMIC	0.001MF	10%	25V	
C063	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C064	1-123-821-00	ELECT	47MF	20%	16V	
C067	1-123-619-00	ELECT	4.7MF	20%	50V	
C072	1-101-004-00	CERAMIC	0.01MF		50V	

CONNECTOR

CN210	*1-564-032-41	PIN, CONNECTOR 7P
CN211	*1-560-900-00	PIN, CONNECTOR 12P
CN212	*1-508-850-00	PIN, CONNECTOR 12P
CN213	*1-564-030-00	PIN, CONNECTOR 5P
CN214	*1-564-027-00	PIN, CONNECTOR 2P

IC

IC001	8-758-620-00	IC CX-862
IC002	8-759-906-30	IC CX-863
IC004	8-759-240-30	IC TC4030BP

Ref.No	Part No.	Description				Remark
		COIL				
L001	1-408-405-00	MICRO INDUCTOR	4.7UH			
L002	1-408-405-00	MICRO INDUCTOR	4.7UH			
L003	1-410-293-11	MICRO INDUCTOR	0.47UH			
L004	1-410-074-51	MICRO INDUCTOR	0.27UH			
L005	1-410-293-11	MICRO INDUCTOR	0.47UH			
L006	1-408-425-00	MICRO INDUCTOR	220UH			
L007	1-408-425-00	MICRO INDUCTOR	220UH			
L008	1-408-413-00	MICRO INDUCTOR	22UH			
L009	1-408-605-00	MICRO INDUCTOR	15UH			
L010	1-408-413-00	MICRO INDUCTOR	22UH			
L011	1-408-425-00	MICRO INDUCTOR	220UH			
L012	1-408-878-00	MICRO INDUCTOR	0.33UH			
L013	1-408-411-00	MICRO INDUCTOR	15UH			
		TRANSISTOR				
Q001	8-729-967-32	TRANSISTOR 2SC2673				
Q002	8-729-204-83	TRANSISTOR 2SA1048-GR				
Q003	8-729-245-83	TRANSISTOR 2SC2458				
Q004	8-729-245-83	TRANSISTOR 2SC2458				
Q005	8-729-245-83	TRANSISTOR 2SC2458				
Q006	8-729-245-83	TRANSISTOR 2SC2458				
Q007	8-729-245-83	TRANSISTOR 2SC2458				
Q009	8-729-245-83	TRANSISTOR 2SC2458				
Q010	8-729-245-83	TRANSISTOR 2SC2458				
Q011	8-729-900-33	TRANSISTOR DTC144EF				
Q013	8-729-245-83	TRANSISTOR 2SC2458				
Q014	8-729-245-83	TRANSISTOR 2SC2458				
Q015	8-729-245-83	TRANSISTOR 2SC2458				
		RESISTOR				
R002	1-247-833-00	CARBON	1.2K	5%	1/6W	
R003	1-247-821-00	CARBON	390	5%	1/6W	
R004	1-247-831-00	CARBON	1K	5%	1/6W	
R005	1-247-815-00	CARBON	220	5%	1/6W	
R006	1-247-831-00	CARBON	1K	5%	1/6W	
R007	1-247-815-00	CARBON	220	5%	1/6W	
R008	1-247-823-00	CARBON	470	5%	1/6W	
R009	1-247-831-00	CARBON	1K	5%	1/6W	
R010 ⚠	1-212-853-81	FUSIBLE	6.8	5%	1/4W	F
R011	1-247-839-00	CARBON	2.2K	5%	1/6W	
R012	1-247-853-00	CARBON	8.2K	5%	1/6W	
R013	1-247-855-00	CARBON	10K	5%	1/6W	
R014	1-247-863-00	CARBON	22K	5%	1/6W	
R015	1-247-851-00	CARBON	6.8K	5%	1/6W	
R017	1-247-835-00	CARBON	1.5K	5%	1/6W	
R018	1-247-835-00	CARBON	1.5K	5%	1/6W	
R019	1-247-835-00	CARBON	1.5K	5%	1/6W	
R020	1-247-827-00	CARBON	680	5%	1/6W	
R021	1-247-867-00	CARBON	33K	5%	1/6W	
R022	1-247-867-00	CARBON	33K	5%	1/6W	
R023	1-247-831-00	CARBON	1K	5%	1/6W	

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part numer specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
R024	1-247-851-00	CARBON	6.8K	5%	1/6W	
R026	1-247-867-00	CARBON	33K	5%	1/6W	
R027	1-247-831-00	CARBON	1K	5%	1/6W	
R028	1-247-851-00	CARBON	6.8K	5%	1/6W	
R029	1-247-875-00	CARBON	68K	5%	1/6W	
R030	1-247-831-00	CARBON	1K	5%	1/6W	
R031	1-247-875-00	CARBON	68K	5%	1/6W	
R032	1-247-851-00	CARBON	6.8K	5%	1/6W	
R038	1-247-841-00	CARBON	2.7K	5%	1/6W	
R039	1-247-841-00	CARBON	2.7K	5%	1/6W	
R040	1-247-859-00	CARBON	15K	5%	1/6W	
R041	1-247-865-00	CARBON	27K	5%	1/6W	
R042	1-247-847-00	CARBON	4.7K	5%	1/6W	
R043	1-247-867-00	CARBON	33K	5%	1/6W	
R044	1-247-835-00	CARBON	1.5K	5%	1/6W	
R045	1-247-867-00	CARBON	33K	5%	1/6W	
R046	1-247-875-00	CARBON	68K	5%	1/6W	
R047	1-247-831-00	CARBON	1K	5%	1/6W	
R048	1-247-851-00	CARBON	6.8K	5%	1/6W	
R050	1-247-847-00	CARBON	4.7K	5%	1/6W	
R051	1-247-847-00	CARBON	4.7K	5%	1/6W	
R052	1-247-867-00	CARBON	33K	5%	1/6W	
R053	1-247-875-00	CARBON	68K	5%	1/6W	
R054	1-247-867-00	CARBON	33K	5%	1/6W	
R055	1-247-875-00	CARBON	68K	5%	1/6W	
R056	1-247-867-00	CARBON	33K	5%	1/6W	
R057	1-247-875-00	CARBON	68K	5%	1/6W	
R058	1-247-875-00	CARBON	68K	5%	1/6W	
R061	1-247-867-00	CARBON	33K	5%	1/6W	
R062	1-247-875-00	CARBON	68K	5%	1/6W	
R067	1-247-831-00	CARBON	1K	5%	1/6W	
R070	1-247-115-00	CARBON	220	5%	1/4W	
R071	1-247-855-00	CARBON	10K	5%	1/6W	
R072	1-247-851-00	CARBON	6.8K	5%	1/6W	
R073	1-247-843-00	CARBON	3.3K	5%	1/6W	
R074	1-247-831-00	CARBON	1K	5%	1/6W	
R079	1-247-783-00	CARBON	10	5%	1/6W	
R080	1-247-783-00	CARBON	10	5%	1/6W	
R081	1-247-831-00	CARBON	1K	5%	1/6W	
R084	1-247-807-00	CARBON	100	5%	1/6W	
R086	1-247-807-00	CARBON	100	5%	1/6W	
R087	1-247-807-00	CARBON	100	5%	1/6W	

VARIABLE RESISTOR

RV001	1-228-920-00	RES, ADJ, CARBON	2.2K
RV002	1-228-920-00	RES, ADJ, CARBON	2.2K
RV003	1-228-920-00	RES, ADJ, CARBON	2.2K
RV004	1-228-920-00	RES, ADJ, CARBON	2.2K
RV005	1-228-920-00	RES, ADJ, CARBON	2.2K
RV006	1-228-920-00	RES, ADJ, CARBON	2.2K
RV007	1-228-920-00	RES, ADJ, CARBON	2.2K
RV008	1-228-919-00	RES, ADJ, CARBON	1K

Ref.No	Part No.	Description				Remark
	*A-6713-226-A	AU-13 BOARD, COMPLETE				
		**********				
	*3-691-760-01	LID, REAR, SHIELD CASE (1), AU				
	*3-691-762-01	LID, SHIELD CASE (2), AU				
	*3-691-763-01	LID, REAR, SHIELD CASE (2), AU				

CAPACITOR

C101	1-123-333-00	ELECT	100MF	20%	16V
C102	1-123-356-00	ELECT	10MF	20%	16V
C103	1-123-306-00	ELECT	47MF	20%	10V
C105	1-130-495-00	MYLAR	0.1MF	5%	50V
C106	1-123-356-00	ELECT	10MF	20%	16V
C107	1-123-356-00	ELECT	10MF	20%	16V
C109	1-130-487-00	MYLAR	0.022MF	5%	50V
C110	1-123-330-00	ELECT	22MF	20%	16V
C111	1-123-306-00	ELECT	47MF	20%	6.3V
C112	1-123-380-00	ELECT	1MF	20%	50V
C113	1-102-980-00	CERAMIC	270PF	5%	50V
C114	1-130-471-00	MYLAR	0.001MF	5%	50V
C115	1-130-472-00	MYLAR	0.0012MF	5%	50V
C116	1-130-471-00	MYLAR	0.001MF	5%	50V
C117	1-123-330-00	ELECT	22MF	20%	16V
C118	1-123-369-00	ELECT	4.7MF	20%	25V
C119	1-130-485-00	MYLAR	0.015MF	5%	50V
C120	1-123-356-00	ELECT	10MF	20%	16V
C121	1-123-356-00	ELECT	10MF	20%	16V
C122	1-123-333-00	ELECT	100MF	20%	16V
C123	1-123-356-00	ELECT	10MF	20%	16V
C124	1-130-475-00	MYLAR	0.0022MF	5%	50V
C125	1-123-356-00	ELECT	10MF	20%	16V
C126	1-130-489-00	MYLAR	0.033MF	5%	50V
C127	1-130-484-00	MYLAR	0.012MF	5%	50V
C128	1-130-484-00	MYLAR	0.012MF	5%	50V
C129	1-123-356-00	ELECT	10MF	20%	16V
C130	1-130-471-00	MYLAR	0.001MF	5%	50V
C131	1-130-479-00	MYLAR	0.0047MF	5%	50V
C132	1-123-381-00	ELECT	2.2MF	20%	50V
C133	1-107-169-00	MICA	100PF	5%	500V
C134	1-123-369-00	ELECT	4.7MF	20%	25V
C135	1-123-356-00	ELECT	10MF	20%	16V
C136	1-102-074-00	CERAMIC	0.001MF	10%	50V
C137	1-102-963-00	CERAMIC	33PF	5%	50V
C301	1-123-356-00	ELECT	10MF	20%	16V
C302	1-136-049-11	FILM	0.0047MF	10%	630V
C303	1-130-477-00	MYLAR	0.0033MF	5%	50V
C304	1-130-479-00	MYLAR	0.0047MF	5%	50V
C305	1-123-332-00	ELECT	47MF	20%	16V
C306	1-123-356-00	ELECT	10MF	20%	16V
C307	1-123-330-00	ELECT	22MF	20%	16V
C308	1-123-330-00	ELECT	22MF	20%	16V
C401	1-123-356-00	ELECT	10MF	20%	16V
C402	1-123-306-00	ELECT	47MF	20%	10V

When indicating parts by reference number, please include the board name.

AU-13

Ref.No	Part No.	Description			Remark
C403	1-130-471-00	MYLAR	0.001MF	5%	50V
C404	1-123-306-00	ELECT	47MF	20%	10V
C405	1-102-824-00	CERAMIC	470PF	5%	50V
C406	1-123-356-00	ELECT	10MF	20%	16V
C407	1-123-356-00	ELECT	10MF	20%	16V
C408	1-123-356-00	ELECT	10MF	20%	16V
C409	1-123-356-00	ELECT	10MF	20%	16V
C410	1-123-356-00	ELECT	10MF	20%	16V
C411	1-123-330-00	ELECT	22MF	20%	16V
C601	1-161-013-00	CERAMIC	0.01MF	10%	25V
C602	1-161-013-00	CERAMIC	0.01MF	10%	25V
C603	1-123-306-00	ELECT	47MF	20%	10V
C604	1-161-013-00	CERAMIC	0.01MF	10%	25V
C605	1-123-306-00	ELECT	47MF	20%	10V
C606	1-161-013-00	CERAMIC	0.01MF	10%	25V
C607	1-123-333-00	ELECT	100MF	20%	25V
C608	1-124-471-00	ELECT	1000MF	20%	6.3V
C609	1-124-471-00	ELECT	1000MF	20%	6.3V
C610	1-123-356-00	ELECT	10MF	20%	16V
C701	1-123-307-00	ELECT	100MF	20%	10V
C702	1-123-382-00	ELECT	3.3MF	20%	50V
C703	1-161-059-00	CERAMIC	0.047MF	10%	50V
C704	1-125-388-11	DOUBLE LAYERS	0.1F		
C705	1-161-013-00	CERAMIC	0.01MF	10%	25V

CONNECTOR

CN351	*1-560-891-00	PIN, CONNECTOR 3P
CN352	*1-560-892-00	PIN, CONNECTOR 4P
CN353	*1-560-893-00	PIN, CONNECTOR 5P
CN354	*1-560-896-00	PIN, CONNECTOR 8P
CN355	*1-560-898-00	PIN, CONNECTOR 10P
CN356	*1-560-891-00	PIN, CONNECTOR 3P
CN357	*1-560-891-00	PIN, CONNECTOR 3P
CN358	*1-560-892-00	PIN, CONNECTOR 4P
CN359	*1-560-894-00	PIN, CONNECTOR 6P
CN360	*1-560-894-00	PIN, CONNECTOR 6P

DIODE

D101	8-719-911-19	DIODE 1SS119
D102	8-719-911-19	DIODE 1SS119
D105	8-719-911-19	DIODE 1SS119
D106	8-719-911-19	DIODE 1SS119
D107	8-719-911-19	DIODE 1SS119
D108	8-719-911-19	DIODE 1SS119
D109	8-719-911-19	DIODE 1SS119
D301	8-719-911-19	DIODE 1SS119
D302	8-719-100-57	DIODE RD10EB2
D303	8-719-100-57	DIODE RD10EB2
D701	8-719-812-31	DIODE TLR123
D705	8-719-100-31	DIODE RD5.1EB3
D706	8-719-911-19	DIODE 1SS119

Ref.No	Part No.	Description	Remark

IC

IC101	8-759-800-79	IC LA7048
IC103	8-759-145-58	IC UPC4558C
IC401	8-752-006-10	IC CX20061
IC601	8-759-208-94	IC CX-894
IC602	8-752-003-90	IC CX20039

COIL

L101	1-407-508-00	MICRO INDUCTOR 22MMH
L102	1-407-506-00	MICRO INDUCTOR 15MMH
L301	1-408-429-00	MICRO INDUCTOR 470UH
L701	1-408-421-00	MICRO INDUCTOR 100UH

INDUCTOR

LV301	1-408-713-00	VARIABLE INDUCTOR

TRANSISTOR

Q101	8-729-245-83	TRANSISTOR 2SC2458
Q102	8-729-245-83	TRANSISTOR 2SC2458
Q103	8-729-900-89	TRANSISTOR DTC144ES
Q104	8-729-245-83	TRANSISTOR 2SC2458
Q105	8-729-245-83	TRANSISTOR 2SC2458
Q106	8-729-900-89	TRANSISTOR DTC144ES
Q107	8-729-900-63	TRANSISTOR DTA124ES
Q108	8-729-900-89	TRANSISTOR DTC144ES
Q109	8-729-900-63	TRANSISTOR DTA124ES
Q110	8-729-900-89	TRANSISTOR DTC144ES
Q111	8-729-245-83	TRANSISTOR 2SC2458
Q113	8-729-245-83	TRANSISTOR 2SC2458
Q114	8-729-900-36	TRANSISTOR DTC124ES
Q115	8-729-900-65	TRANSISTOR DTA144ES
Q116	8-729-900-89	TRANSISTOR DTC144ES
Q301	8-729-245-83	TRANSISTOR 2SC2458
Q302	8-729-967-32	TRANSISTOR 2SC2673
Q303	8-729-177-32	TRANSISTOR 2SD773
Q304	8-729-113-33	TRANSISTOR 2SB733-4
Q305	8-729-177-32	TRANSISTOR 2SD773
Q401	8-729-908-62	TRANSISTOR 2SD786
Q402	8-729-245-83	TRANSISTOR 2SC2458
Q601	8-729-900-89	TRANSISTOR DTC144ES
Q602	8-729-245-83	TRANSISTOR 2SC2458
Q701	8-729-245-83	TRANSISTOR 2SC2458
Q702	8-729-245-83	TRANSISTOR 2SC2458
Q703	8-729-177-43	TRANSISTOR 2SD774
Q704	8-729-204-83	TRANSISTOR 2SA1048-GR
Q801	8-729-900-89	TRANSISTOR DTC144ES

RESISTOR

R101	1-247-857-00	CARBON	12K	5%	1/6W
R102	1-247-847-00	CARBON	4.7K	5%	1/6W
R103	1-247-809-00	CARBON	120	5%	1/6W
R104	1-247-863-00	CARBON	22K	5%	1/6W
R105	1-247-839-00	CARBON	2.2K	5%	1/6W

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
R106	1-247-879-00	CARBON	100K	5%	1/6W	
R107	1-247-843-00	CARBON	3.3K	5%	1/6W	
R108	1-247-855-00	CARBON	10K	5%	1/6W	
R109	1-247-859-00	CARBON	15K	5%	1/6W	
R110	1-247-831-00	CARBON	1K	5%	1/6W	
R112	1-247-855-00	CARBON	10K	5%	1/6W	
R113	1-247-867-00	CARBON	33K	5%	1/6W	
R114	1-202-465-00	SOLID	2.7M	5%	1/4W	
R115	1-247-783-00	CARBON	10	5%	1/6W	
R116	1-247-867-00	CARBON	33K	5%	1/6W	
R118	1-247-863-00	CARBON	22K	5%	1/6W	
R119	1-247-875-00	CARBON	68K	5%	1/6W	
R120	1-247-879-00	CARBON	100K	5%	1/6W	
R121	1-247-861-00	CARBON	18K	5%	1/6W	
R122	1-247-791-00	CARBON	22	5%	1/6W	
R123	1-247-855-00	CARBON	10K	5%	1/6W	
R124	1-247-855-00	CARBON	10K	5%	1/6W	
R125	1-247-847-00	CARBON	4.7K	5%	1/6W	
R126	1-247-831-00	CARBON	1K	5%	1/6W	
R127	1-247-887-00	CARBON	220K	5%	1/6W	
R128	1-247-871-00	CARBON	47K	5%	1/6W	
R129	1-247-863-00	CARBON	22K	5%	1/6W	
R130	1-247-887-00	CARBON	220K	5%	1/6W	
R131	1-247-859-00	CARBON	15K	5%	1/6W	
R132	1-247-871-00	CARBON	47K	5%	1/6W	
R133	1-247-863-00	CARBON	22K	5%	1/6W	
R134	1-247-855-00	CARBON	10K	5%	1/6W	
R135	1-247-855-00	CARBON	10K	5%	1/6W	
R136	1-247-839-00	CARBON	2.2K	5%	1/6W	
R137	1-247-861-00	CARBON	18K	5%	1/6W	
R138	1-247-841-00	CARBON	2.7K	5%	1/6W	
R139	1-247-857-00	CARBON	12K	5%	1/6W	
R141	1-247-859-00	CARBON	15K	5%	1/6W	
R142	1-247-863-00	CARBON	22K	5%	1/6W	
R143	1-247-839-00	CARBON	2.2K	5%	1/6W	
R144	1-247-831-00	CARBON	1K	5%	1/6W	
R145	1-247-863-00	CARBON	22K	5%	1/6W	
R147	1-247-855-00	CARBON	10K	5%	1/6W	
R148	1-247-879-00	CARBON	100K	5%	1/6W	
R149	1-247-819-00	CARBON	330	5%	1/6W	
R301	1-247-843-00	CARBON	3.3K	5%	1/6W	
R302	1-247-843-00	CARBON	3.3K	5%	1/6W	
R303	1-247-879-00	CARBON	100K	5%	1/6W	
R304	1-247-859-00	CARBON	15K	5%	1/6W	
R305	1-247-855-00	CARBON	10K	5%	1/6W	
R306	1-247-855-00	CARBON	10K	5%	1/6W	
R307	1-247-847-00	CARBON	4.7K	5%	1/6W	
R308	1-247-771-00	CARBON	3.3	5%	1/8W	F
R309	1-247-843-00	CARBON	3.3K	5%	1/6W	
R310	1-247-771-00	CARBON	3.3	5%	1/8W	F
R401	1-247-887-00	CARBON	220K	5%	1/6W	
R402	1-247-879-00	CARBON	100K	5%	1/6W	
R403	1-247-831-00	CARBON	1K	5%	1/6W	
R404	1-247-855-00	CARBON	10K	5%	1/6W	
R405	1-247-831-00	CARBON	1K	5%	1/6W	
R406	1-247-855-00	CARBON	10K	5%	1/6W	
R407	1-247-847-00	CARBON	4.7K	5%	1/6W	
R408	1-247-855-00	CARBON	10K	5%	1/6W	
R409	1-247-879-00	CARBON	100K	5%	1/6W	
R410	1-247-855-00	CARBON	10K	5%	1/6W	
R411	1-247-807-00	CARBON	100	5%	1/8W	F
R412	1-247-807-00	CARBON	100	5%	1/6W	
R413	1-247-831-00	CARBON	1K	5%	1/6W	
R414	1-247-879-00	CARBON	100K	5%	1/6W	
R601	1-247-823-00	CARBON	470	5%	1/6W	
R602	1-247-869-00	CARBON	39K	5%	1/6W	
R604	1-247-804-00	CARBON	75	5%	1/6W	
R605	1-247-804-00	CARBON	75	5%	1/6W	
R606	1-247-823-00	CARBON	470	5%	1/6W	
R607	1-247-855-00	CARBON	10K	5%	1/6W	
R608	1-247-855-00	CARBON	10K	5%	1/6W	
R610	1-247-855-00	CARBON	10K	5%	1/6W	
R611	1-247-855-00	CARBON	10K	5%	1/6W	
R612	1-247-847-00	CARBON	4.7K	5%	1/6W	
R615	1-247-855-00	CARBON	10K	5%	1/6W	
R616	1-247-871-00	CARBON	47K	5%	1/6W	
R701	1-247-807-00	CARBON	100	5%	1/6W	
R702	1-247-867-00	CARBON	33K	5%	1/6W	
R703	1-247-874-00	CARBON	62K	5%	1/6W	
R704	1-247-872-00	CARBON	51K	5%	1/6W	
R705	1-247-873-00	CARBON	56K	5%	1/6W	
R706	1-247-831-00	CARBON	1K	5%	1/6W	
R707	1-247-869-00	CARBON	39K	5%	1/6W	
R708	1-247-881-00	CARBON	120K	5%	1/6W	
R709	1-247-879-00	CARBON	100K	5%	1/6W	
R801	1-247-855-00	CARBON	10K	5%	1/6W	

VARIABLE RESISTOR

RV101	1-228-994-00	RES, ADJ, CARBON 10K
RV102	1-228-989-00	RES, ADJ, CARBON 470
RV104	1-228-635-00	RES, ADJ, METAL GLAZE 220K

RELAY

RY101	1-515-418-00	RELAY
RY301	1-515-513-00	RELAY

TRANSFORMER

T301	1-433-236-00	TRANSFORMER, OSCILLATOR

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*A-6715-264-A SS-53 BOARD, COMPLETE
****

CAPACITOR

C401	1-102-518-00	CERAMIC	33PF	5%	50V

When indicating parts by reference number, please include the board name.

SS-53

Ref.No	Part No.	Description			Remark
C402	1-102-518-00	CERAMIC	33PF	5%	50V
C403	1-161-059-00	CERAMIC	0.047MF	10%	25V
C404	1-123-822-00	ELECT	47MF	20%	10V
C405	1-161-059-00	CERAMIC	0.047MF	10%	25V
C406	1-123-306-00	ELECT	47MF	20%	10V
C407	1-123-618-00	ELECT	22MF	20%	6.3V
C408	1-161-059-00	CERAMIC	0.047MF	10%	25V
C409	1-161-059-00	CERAMIC	0.047MF	10%	25V
C410	1-161-059-00	CERAMIC	0.047MF	10%	25V
C411	1-129-794-00	FILM	0.0033MF	5%	100V
C412	1-129-794-00	FILM	0.0033MF	5%	100V
C413	1-123-611-00	ELECT	1MF	20%	50V
C414	1-102-529-00	CERAMIC	100PF	5%	50V
C415	1-102-529-00	CERAMIC	100PF	5%	50V
C416	1-161-059-00	CERAMIC	0.047MF	10%	25V
C417	1-123-616-00	ELECT	4.7MF	20%	25V
C418	1-123-612-00	ELECT	2.2MF	20%	50V
C419	1-123-617-00	ELECT	10MF	20%	16V
C501	1-130-483-00	MYLAR	0.01MF	5%	50V
C502	1-130-483-00	MYLAR	0.01MF	5%	50V
C503	1-123-613-00	ELECT	3.3MF	20%	50V
C504	1-130-491-00	MYLAR	0.047MF	5%	50V
C505	1-130-491-00	MYLAR	0.047MF	5%	50V
C506	1-123-613-00	ELECT	3.3MF	20%	50V
C507	1-130-491-00	MYLAR	0.047MF	5%	50V
C508	1-123-613-00	ELECT	3.3MF	20%	50V
C509	1-130-483-00	MYLAR	0.01MF	5%	50V
C510	1-123-661-00	ELECT	100MF	20%	6.3V
C511	1-123-661-00	ELECT	100MF	20%	6.3V
C512	1-102-961-00	CERAMIC	27PF	5%	50V
C513	1-102-961-00	CERAMIC	27PF	5%	50V
C514	1-123-821-00	ELECT	47MF	20%	16V
C515	1-130-772-00	FILM	0.22MF	5%	63V
C516	1-130-493-00	MYLAR	0.068MF	5%	50V
C517	1-123-647-00	ELECT	47MF	20%	6.3V
C518	1-161-054-00	CERAMIC	0.018MF	10%	25V
C519	1-161-013-00	CERAMIC	0.01MF	10%	25V
C520	1-108-582-00	MYLAR	0.013MF	5%	50V
C521	1-161-042-00	CERAMIC	0.0018MF	10%	25V
C522	1-131-356-00	TANTALUM	3.3MF	10%	25V
C523	1-161-013-00	CERAMIC	0.01MF	10%	25V
C524	1-161-054-00	CERAMIC	0.018MF	10%	25V
C525	1-161-059-00	CERAMIC	0.047MF	10%	25V
C526	1-161-059-00	CERAMIC	0.047MF	10%	25V
C527	1-123-612-00	ELECT	2.2MF	20%	50V
C528	1-123-612-00	ELECT	2.2MF	20%	50V
C529	1-123-618-00	ELECT	22MF	20%	6.3V
C530	1-123-647-00	ELECT	47MF	20%	6.3V
C531	1-123-616-00	ELECT	4.7MF	20%	25V
C532	1-123-611-00	ELECT	1MF	20%	50V
C533	1-123-646-00	ELECT	33MF	20%	6.3V
C534	1-161-055-00	CERAMIC	0.022MF	20%	25V
C535	1-123-612-00	ELECT	2.2MF	20%	50V
C536	1-123-607-00	ELECT	0.1MF	20%	50V
C537	1-123-612-00	ELECT	2.2MF	20%	50V
C538	1-101-059-00	CERAMIC	510PF	5%	50V
C539	1-131-375-00	TANTALUM	4.7MF	10%	10V
C540	1-102-978-00	CERAMIC	220PF	5%	50V
C541	1-161-059-00	CERAMIC	0.047MF	10%	25V
C542	1-102-114-00	CERAMIC	470PF	10%	50V
C543	1-123-821-00	ELECT	47MF	20%	16V
C544	1-123-821-00	ELECT	47MF	20%	16V
C545	1-123-821-00	ELECT	47MF	20%	16V
C546	1-123-333-00	ELECT	100MF	20%	16V
C547	1-130-475-00	MYLAR	0.0022MF	5%	50V
C548	1-123-661-00	ELECT	100MF	20%	6.3V
C549	1-131-502-61	TANTALUM	4.7MF	10%	6.3V
C550	1-131-502-61	TANTALUM	4.7MF	10%	6.3V
C551	1-123-608-00	ELECT	0.22MF	20%	50V
C552	1-123-821-00	ELECT	47MF	20%	16V
C553	1-123-821-00	ELECT	47MF	20%	16V
C554	1-130-495-00	MYLAR	0.1MF	5%	50V
C556	1-124-475-11	ELECT	470MF	20%	16V
C557	1-136-162-00	MYLAR	0.056MF	5%	50V
C558	1-161-059-00	CERAMIC	0.047MF	10%	25V
C559	1-131-383-00	TANTALUM	10MF	10%	6.3V
C560	1-131-383-00	TANTALUM	10MF	10%	6.3V
C561	1-130-772-00	FILM	0.22MF	5%	63V
C562	1-130-772-00	FILM	0.22MF	5%	63V
C563	1-123-616-00	ELECT	4.7MF	20%	25V
C564	1-123-618-00	ELECT	22MF	20%	6.3V
C565	1-123-616-00	ELECT	4.7MF	20%	25V
C567	1-123-618-00	ELECT	22MF	20%	6.3V
C569	1-123-611-00	ELECT	1MF	20%	50V
C570	1-130-479-00	MYLAR	0.0047MF	5%	50V
C571	1-130-478-00	MYLAR	0.0039MF	5%	50V
C572	1-130-772-11	FILM	0.22MF	5%	63V
C701	1-161-013-00	CERAMIC	0.01MF	10%	25V
C704	1-123-611-00	ELECT	1MF	20%	50V
C803	1-130-473-00	MYLAR	0.0015MF	5%	50V
C804	1-130-483-00	MYLAR	0.01MF	5%	50V
C805	1-130-483-00	MYLAR	0.01MF	5%	50V
C806	1-123-822-00	ELECT	47MF	20%	10V
C807	1-161-059-00	CERAMIC	0.047MF	10%	25V
C808	1-102-513-00	CERAMIC	18PF	5%	50V
C809	1-102-513-00	CERAMIC	18PF	5%	50V
C810	1-130-483-00	MYLAR	0.01MF	5%	50V
C812	1-123-616-00	ELECT	4.7MF	20%	25V
C813	1-131-404-00	ELECT(SOLID)	0.22MF	10%	25V
C814	1-131-404-00	ELECT(SOLID)	0.22MF	10%	25V
C815	1-123-617-00	ELECT	10MF	20%	16V
C816	1-161-055-00	CERAMIC	0.022MF	20%	25V
C817	1-123-661-00	ELECT	100MF	20%	6.3V
C818	1-161-059-00	CERAMIC	0.047MF	10%	25V
C819	1-123-822-00	ELECT	47MF	20%	10V
C820	1-136-162-00	MYLAR	0.056MF	5%	50V

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
C821	1-130-477-00	MYLAR	0.0033MF	5%	50V
C901	1-123-821-00	ELECT	47MF	20%	16V
C902	1-102-529-00	CERAMIC	100PF	5%	50V
C903	1-123-613-00	ELECT	3.3MF	20%	50V
C904	1-130-493-00	MYLAR	0.068MF	5%	50V
C905	1-161-045-00	CERAMIC	0.0033MF	10%	50V
C906	1-130-483-00	MYLAR	0.01MF	5%	50V
C907	1-123-612-00	ELECT	2.2MF	20%	50V
C908	1-161-039-00	CERAMIC	0.001MF	10%	25V
C909	1-161-059-00	CERAMIC	0.047MF	10%	25V
C910	1-123-821-00	ELECT	47MF	20%	16V
C911	1-123-610-00	ELECT	0.47MF	20%	50V
C912	1-123-612-00	ELECT	2.2MF	20%	50V
C913	1-123-822-00	ELECT	47MF	20%	10V
C914	1-123-617-00	ELECT	10MF	20%	16V
C915	1-123-617-00	ELECT	10MF	20%	16V

CONNECTOR

CN401	*1-560-893-00	PIN, CONNECTOR 5P
CN402	*1-564-010-11	PIN, CONNECTOR 11P
CN403	*1-564-008-41	PIN, CONNECTOR 9P
CN404	*1-560-890-00	PIN, CONNECTOR 2P
CN405	*1-560-891-00	PIN, CONNECTOR 3P
CN406	*1-560-890-00	PIN, CONNECTOR 2P
CN407	*1-560-891-00	PIN, CONNECTOR 3P
CN409	*1-564-008-21	PIN, CONNECTOR 9P
CN410	*1-560-890-00	PIN, CONNECTOR 2P
CN412	*1-564-005-00	PIN, CONNECTOR 6P
CN414	*1-564-010-21	PIN, CONNECTOR 11P
CN415	*1-564-005-00	PIN, CONNECTOR 6P
CN416	*1-564-028-00	PIN, CONNECTOR 3P
CN417	*1-560-891-00	PIN, CONNECTOR 3P
CN418	*1-560-891-00	PIN, CONNECTOR 3P
CN419	*1-560-890-00	PIN, CONNECTOR 2P
CN420	*1-560-890-00	PIN, CONNECTOR 2P
CN501	*1-560-890-00	PIN, CONNECTOR 2P
CN502	*1-564-003-00	PIN, CONNECTOR 4P
CN503	*1-560-892-00	PIN, CONNECTOR 4P
CN504	*1-560-466-00	PIN, CONNECTOR 3P
CN505	*1-564-003-00	PIN, CONNECTOR 4P
CN506	*1-564-003-00	PIN, CONNECTOR 4P
CN507	*1-564-003-00	PIN, CONNECTOR 4P
CN508	*1-564-003-00	PIN, CONNECTOR 4P
CN509	*1-560-891-00	PIN, CONNECTOR 3P
CN510	*1-564-028-00	PIN, CONNECTOR 3P
CN511	*1-560-891-00	PIN, CONNECTOR 3P
CN801	*1-560-890-00	PIN, CONNECTOR 2P
CN802	*1-564-003-00	PIN, CONNECTOR 4P
CN803	*1-564-003-00	PIN, CONNECTOR 4P

COMPOSITION CIRCUIT BLOCK

CP804	1-232-761-11	COMPOSITION CIRCUIT BLOCK

Ref.No	Part No.	Description	Remark

DIODE

D401	8-719-911-19	DIODE 1SS119
D402	8-719-911-19	DIODE 1SS119
D403	8-719-911-19	DIODE 1SS119
D404	8-719-911-19	DIODE 1SS119
D405	8-719-911-19	DIODE 1SS119
D406	8-719-911-19	DIODE 1SS119
D407	8-719-911-19	DIODE 1SS119
D409	8-719-911-19	DIODE 1SS119
D410	8-719-000-06	DIODE MC921
D411	8-719-911-19	DIODE 1SS119
D412	8-719-911-19	DIODE 1SS119
D413	8-719-911-19	DIODE 1SS119
D414	8-719-911-19	DIODE 1SS119
D415	8-719-911-19	DIODE 1SS119
D501	8-719-911-19	DIODE 1SS119
D502	8-719-911-19	DIODE 1SS119
D503	8-719-101-49	DIODE RD5.1EL1
D504	8-719-911-19	DIODE 1SS119
D505	8-719-911-19	DIODE 1SS119
D506	8-719-000-06	DIODE MC921
D507	8-719-000-06	DIODE MC921
D508	8-719-911-19	DIODE 1SS119
D509	8-719-000-06	DIODE MC921
D510	8-719-000-06	DIODE MC921
D511	8-719-911-19	DIODE 1SS119
D512	8-719-000-06	DIODE MC921
D513	8-719-000-06	DIODE MC921
D514	8-719-982-04	DIODE ERB81-004
D515	8-719-911-19	DIODE 1SS119
D516	8-719-911-19	DIODE 1SS119
D517	8-719-000-12	DIODE MC931
D518	8-719-911-19	DIODE 1SS119
D519	8-719-000-06	DIODE MC921
D520	8-719-911-19	DIODE 1SS119
D521	8-719-910-73	DIODE HZ7A3L
D523	8-719-911-19	DIODE 1SS119
D524	8-719-812-33	DIODE TLG123A
D527	8-719-911-19	DIODE 1SS119
D529	8-719-911-19	DIODE 1SS119
D530	8-719-911-19	DIODE 1SS119
D801	8-719-911-19	DIODE 1SS119
D802	8-719-000-06	DIODE MC921
D804	8-719-000-12	DIODE MC931
D805	8-719-911-19	DIODE 1SS119
D806	8-719-000-06	DIODE MC921
D807	8-719-000-06	DIODE MC921
D808	8-719-911-19	DIODE 1SS119
D809	8-719-911-19	DIODE 1SS119
D811	8-719-000-06	DIODE MC921
D901	8-719-911-19	DIODE 1SS119
D902	8-719-911-19	DIODE 1SS119

When indicating parts by reference number, please include the board name.

SS-53

Ref.No	Part No.	Description	Remark
D903	8-719-911-19	DIODE 1SS119	
D904	8-719-911-19	DIODE 1SS119	
D907	8-719-000-06	DIODE MC921	
		IC	
IC401	8-759-913-28	IC MB88551-155M	
IC402	8-759-602-21	IC M50760-690P	
IC403	8-759-800-72	IC LA7205	
IC404	8-759-600-24	IC M54543L	
IC405	8-759-801-75	IC LM6417E-577	
IC406	8-759-133-90	IC UPC339C	
IC407	8-759-240-13	IC TC4013BP	
IC501	8-751-941-05	IC CX-194B-5	
IC502	8-741-109-00	IC BX-1090	
IC503	8-743-983-00	IC BX-3983	
IC504	8-759-240-51	IC TC4051BP	
IC505	8-759-904-94	IC TL494CN	
IC506	8-741-013-00	IC BX-1013	
IC507	8-759-240-66	IC TC4066BP	
IC508	8-743-978-00	IC BX-3978	
IC509	8-759-103-93	IC UPC393C	
IC510	8-759-240-53	IC TC4053BP	
IC511	8-759-240-01	IC TC4001BP	
IC512	8-759-240-53	IC TC4053BP	
IC513	8-759-240-81	IC TC4081BP	
IC514	8-759-240-30	IC TC4030BP	
IC515	8-759-240-11	IC TC4011BP	
IC516	8-759-345-38	IC HD14538BP	
IC517	8-759-240-53	IC TC4053BP	
IC518	8-759-132-40	IC UPC324C	
IC519	8-759-240-30	IC TC4030BP	
IC701	8-759-915-74	IC EWA129	
IC801	8-759-913-29	IC MB8851H-572L	
IC802	8-759-240-49	IC TC4049BP	
IC803	8-759-240-30	IC TC4030BP	
IC804	8-759-240-81	IC TC4081BP	
IC805	8-759-132-40	IC UPC324C	
IC806	8-759-240-71	IC TC4071BP	
IC809	8-759-240-66	IC TC4066BP	
IC901	8-752-006-90	IC CX20069	
IC902	8-759-240-66	IC TC4066BP	
		COIL	
L401	1-408-421-00	MICRO INDUCTOR 100UH	
L501	1-408-857-00	COIL, CHOKE 820UH	
L502	1-408-859-00	COIL, CHOKE 220UH	
L801	1-408-421-00	MICRO INDUCTOR 100UH	
		TRANSISTOR	
Q404	8-729-900-33	TRANSISTOR DTC144EF	
Q405	8-729-900-39	TRANSISTOR DTA124EF	
Q406	8-729-967-32	TRANSISTOR 2SC2673	
Q407	8-729-967-32	TRANSISTOR 2SC2673	
Q408	8-729-967-32	TRANSISTOR 2SC2673	
Q409	8-729-967-32	TRANSISTOR 2SC2673	
Q410	8-729-967-32	TRANSISTOR 2SC2673	
Q413	8-729-116-42	TRANSISTOR 2SD1164	
Q414	8-729-177-32	TRANSISTOR 2SD773	
Q415	8-729-116-42	TRANSISTOR 2SD1164	
Q416	8-729-116-42	TRANSISTOR 2SD1164	
Q417	8-729-116-42	TRANSISTOR 2SD1164	
Q418	8-729-177-32	TRANSISTOR 2SD773	
Q419	8-729-900-89	TRANSISTOR DTC144ES	
Q420	8-729-245-83	TRANSISTOR 2SC2458	
Q421	8-729-900-89	TRANSISTOR DTC144ES	
Q422	8-729-245-83	TRANSISTOR 2SC2458	
Q423	8-729-967-32	TRANSISTOR 2SC2673	
Q424	8-729-900-65	TRANSISTOR DTA144ES	
Q425	8-729-900-89	TRANSISTOR DTC144ES	
Q426	8-729-900-89	TRANSISTOR DTC144ES	
Q427	8-729-900-33	TRANSISTOR DTC144EF	
Q428	8-729-900-89	TRANSISTOR DTC144ES	
Q501	8-729-178-54	TRANSISTOR 2SC2785-F	
Q502	8-729-178-54	TRANSISTOR 2SC2785-F	
Q503	8-729-245-83	TRANSISTOR 2SC2458	
Q504	8-729-211-81	TRANSISTOR 2SK118	
Q505	8-729-211-81	TRANSISTOR 2SK118	
Q506	8-729-211-81	TRANSISTOR 2SK118	
Q507	8-729-245-83	TRANSISTOR 2SC2458	
Q508	8-729-177-32	TRANSISTOR 2SD773	
Q509	8-729-245-83	TRANSISTOR 2SC2458	
Q510	8-729-245-83	TRANSISTOR 2SC2458	
Q511	8-729-245-83	TRANSISTOR 2SC2458	
Q512	8-729-900-89	TRANSISTOR DTC144ES	
Q513	8-729-245-83	TRANSISTOR 2SC2458	
Q514	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q515	8-729-177-23	TRANSISTOR 2SB772	
Q516	8-729-900-89	TRANSISTOR DTC144ES	
Q517	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q518	8-729-100-13	TRANSISTOR 2SC2001	
Q519	8-729-245-83	TRANSISTOR 2SC2458	
Q520	8-729-900-80	TRANSISTOR DTC114ES	
Q521	8-729-900-65	TRANSISTOR DTA144ES	
Q522	8-729-900-36	TRANSISTOR DTC124ES	
Q523	8-729-900-61	TRANSISTOR DTA114ES	
Q524	8-729-900-89	TRANSISTOR DTC144ES	
Q525	8-729-900-61	TRANSISTOR DTA114ES	
Q526	8-729-900-61	TRANSISTOR DTA114ES	
Q527	8-729-900-89	TRANSISTOR DTC144ES	
Q528	8-729-900-80	TRANSISTOR DTC114ES	
Q529	8-729-900-89	TRANSISTOR DTC144ES	
Q530	8-729-900-33	TRANSISTOR DTC144EF	
Q531	8-729-245-83	TRANSISTOR 2SC2458	
Q533	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q701	8-729-900-89	TRANSISTOR DTC144ES	
Q702	8-729-245-83	TRANSISTOR 2SC2458	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
Q703	8-729-900-89	TRANSISTOR DTC144ES	
Q704	8-729-900-89	TRANSISTOR DTC144ES	
Q705	8-729-177-32	TRANSISTOR 2SD773	
Q708	8-729-900-89	TRANSISTOR DTC144ES	
Q709	8-729-900-65	TRANSISTOR DTA144ES	
Q710	8-729-245-83	TRANSISTOR 2SC2458	
Q801	8-729-245-83	TRANSISTOR 2SC2458	
Q802	8-729-900-89	TRANSISTOR DTC144ES	
Q803	8-729-900-89	TRANSISTOR DTC144ES	
Q804	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q805	8-729-900-89	TRANSISTOR DTC144ES	
Q806	8-729-900-89	TRANSISTOR DTC144ES	
Q807	8-729-900-89	TRANSISTOR DTC144ES	
Q808	8-729-900-89	TRANSISTOR DTC144ES	
Q809	8-729-900-89	TRANSISTOR DTC144ES	
Q811	8-729-900-89	TRANSISTOR DTC144ES	
Q901	8-729-900-89	TRANSISTOR DTC144ES	
Q902	8-729-245-83	TRANSISTOR 2SC2458	
Q903	8-729-900-89	TRANSISTOR DTC144ES	
Q904	8-729-900-80	TRANSISTOR DTC114ES	
Q905	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q906	8-729-245-83	TRANSISTOR 2SC2458	
Q907	8-729-900-89	TRANSISTOR DTC144ES	

RESISTOR

Ref.No	Part No.	Description				Remark
R401	1-247-831-00	CARBON	1K	5%	1/6W	
R402	1-247-831-00	CARBON	1K	5%	1/6W	
R403	1-247-831-00	CARBON	1K	5%	1/6W	
R404	1-247-831-00	CARBON	1K	5%	1/6W	
R409	1-247-833-00	CARBON	1.2K	5%	1/6W	
R410	1-247-837-00	CARBON	1.8K	5%	1/6W	
R411	1-247-837-00	CARBON	1.8K	5%	1/6W	
R412	1-247-873-00	CARBON	56K	5%	1/6W	
R413	1-247-863-00	CARBON	22K	5%	1/6W	
R414	1-247-863-00	CARBON	22K	5%	1/6W	
R415	1-247-871-00	CARBON	47K	5%	1/6W	
R416	1-247-809-00	CARBON	120	5%	1/6W	
R417	1-247-829-00	CARBON	820	5%	1/6W	
R418	1-247-843-00	CARBON	3.3K	5%	1/6W	
R419	1-247-855-00	CARBON	10K	5%	1/6W	
R420	1-247-863-00	CARBON	22K	5%	1/6W	
R421	1-247-855-00	CARBON	10K	5%	1/6W	
R422	1-247-807-00	CARBON	100	5%	1/6W	
R423	1-247-867-00	CARBON	33K	5%	1/6W	
R424	1-247-831-00	CARBON	1K	5%	1/6W	
R425	1-247-903-00	CARBON	1M	5%	1/6W	
R426	1-247-843-00	CARBON	3.3K	5%	1/6W	
R427	1-247-867-00	CARBON	33K	5%	1/6W	
R428	1-247-855-00	CARBON	10K	5%	1/6W	
R429	1-247-831-00	CARBON	1K	5%	1/6W	
R431	1-247-863-00	CARBON	22K	5%	1/6W	
R437	1-247-867-00	CARBON	33K	5%	1/6W	
R442	1-247-855-00	CARBON	10K	5%	1/6W	
R443	1-247-867-00	CARBON	33K	5%	1/6W	
R446	1-247-807-00	CARBON	100	5%	1/6W	
R447	1-247-879-00	CARBON	100K	5%	1/6W	
R448	1-247-865-00	CARBON	27K	5%	1/6W	
R450	1-247-831-00	CARBON	1K	5%	1/6W	
R451	1-247-855-00	CARBON	10K	5%	1/6W	
R452	1-247-879-00	CARBON	100K	5%	1/6W	
R453	1-247-855-00	CARBON	10K	5%	1/6W	
R454	1-247-867-00	CARBON	33K	5%	1/6W	
R455	1-247-879-00	CARBON	100K	5%	1/6W	
R456	1-247-855-00	CARBON	10K	5%	1/6W	
R457	1-247-839-00	CARBON	2.2K	5%	1/6W	
R458	1-247-847-00	CARBON	4.7K	5%	1/6W	
R459	1-247-847-00	CARBON	4.7K	5%	1/6W	
R460	1-247-839-00	CARBON	2.2K	5%	1/6W	
R501	1-247-102-00	CARBON	62	5%	1/4W	
R502	1-247-863-00	CARBON	22K	5%	1/6W	
R503	1-247-863-00	CARBON	22K	5%	1/6W	
R504	1-247-855-00	CARBON	10K	5%	1/6W	
R505	1-247-851-00	CARBON	6.8K	5%	1/6W	
R506	1-247-871-00	CARBON	47K	5%	1/6W	
R507	1-247-833-00	CARBON	1.2K	5%	1/6W	
R508	1-247-871-00	CARBON	47K	5%	1/6W	
R509	1-247-844-00	CARBON	3.6K	5%	1/6W	
R510	1-247-871-00	CARBON	47K	5%	1/6W	
R511	1-247-844-00	CARBON	3.6K	5%	1/6W	
R512	1-247-090-00	CARBON	20	5%	1/4W	
R513	1-247-855-00	CARBON	10K	5%	1/6W	
R514	1-247-867-00	CARBON	33K	5%	1/6W	
R515	1-247-855-00	CARBON	10K	5%	1/6W	
R516	1-247-887-00	CARBON	220K	5%	1/6W	
R517	1-247-879-00	CARBON	100K	5%	1/6W	
R518	1-247-879-00	CARBON	100K	5%	1/6W	
R519	1-247-847-00	CARBON	4.7K	5%	1/6W	
R520	1-247-867-00	CARBON	33K	5%	1/6W	
R521	1-247-883-00	CARBON	150K	5%	1/6W	
R522	1-247-883-00	CARBON	150K	5%	1/6W	
R523	1-247-847-00	CARBON	4.7K	5%	1/6W	
R524	1-247-855-00	CARBON	10K	5%	1/6W	
R525	1-247-883-00	CARBON	150K	5%	1/6W	
R526	1-247-867-00	CARBON	33K	5%	1/6W	
R527	1-247-895-00	CARBON	470K	5%	1/6W	
R528	1-247-849-00	CARBON	5.6K	5%	1/6W	
R529	1-247-879-00	CARBON	100K	5%	1/6W	
R530	1-247-879-00	CARBON	100K	5%	1/6W	
R531	1-247-879-00	CARBON	100K	5%	1/6W	
R532	1-247-867-00	CARBON	33K	5%	1/6W	
R533	1-247-846-00	CARBON	4.3K	5%	1/6W	
R534	1-247-846-00	CARBON	4.3K	5%	1/6W	
R535	1-247-855-00	CARBON	10K	5%	1/6W	
R536	1-247-895-00	CARBON	470K	5%	1/6W	
R537	1-247-873-00	CARBON	56K	5%	1/6W	
R538	1-247-853-00	CARBON	8.2K	5%	1/6W	

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description				Remark
R539	1-247-843-00	CARBON	3.3K	5%	1/6W	
R540	1-247-851-00	CARBON	6.8K	5%	1/6W	
R541	1-247-870-00	CARBON	43K	5%	1/6W	
R542	1-247-867-00	CARBON	33K	5%	1/6W	
R543	1-247-834-00	CARBON	1.3K	5%	1/6W	
R544	1-247-837-00	CARBON	1.8K	5%	1/6W	
R545	1-247-836-00	CARBON	1.6K	5%	1/6W	
R546	1-247-859-00	CARBON	15K	5%	1/6W	
R547	1-247-865-00	CARBON	27K	5%	1/6W	
R548	1-247-869-00	CARBON	39K	5%	1/6W	
R549	1-247-863-00	CARBON	22K	5%	1/6W	
R550	1-247-873-00	CARBON	56K	5%	1/6W	
R551	1-247-835-00	CARBON	1.5K	5%	1/6W	
R552	1-247-862-00	CARBON	20K	5%	1/6W	
R553	1-247-878-00	CARBON	91K	5%	1/6W	
R554	1-247-871-00	CARBON	47K	5%	1/6W	
R555	1-247-855-00	CARBON	10K	5%	1/6W	
R556	1-247-855-00	CARBON	10K	5%	1/6W	
R557	1-247-855-00	CARBON	10K	5%	1/6W	
R558	1-247-847-00	CARBON	4.7K	5%	1/6W	
R559	1-247-859-00	CARBON	15K	5%	1/6W	
R560	1-247-847-00	CARBON	4.7K	5%	1/6W	
R561	1-247-879-00	CARBON	100K	5%	1/6W	
R562	1-247-861-00	CARBON	18K	5%	1/6W	
R563	1-247-848-00	CARBON	5.1K	5%	1/6W	
R564	1-247-831-00	CARBON	1K	5%	1/6W	
R565	1-212-356-00	METAL OXIDE	0.47	5%	1W	F
R566	1-246-981-00	CARBON	4.7	5%	1/8W	F
R567	1-247-855-00	CARBON	10K	5%	1/6W	
R568	1-247-863-00	CARBON	22K	5%	1/6W	
R569	1-247-837-00	CARBON	1.8K	5%	1/6W	
R570	1-215-437-00	METAL	4.7K	1%	1/6W	
R571	1-215-437-00	METAL	4.7K	1%	1/6W	
R572	1-215-437-00	METAL	4.7K	1%	1/6W	
R573	1-215-437-00	METAL	4.7K	1%	1/6W	
R574	1-247-875-00	CARBON	68K	5%	1/6W	
R575	1-247-831-00	CARBON	1K	5%	1/6W	
R576	1-247-865-00	CARBON	27K	5%	1/6W	
R577	1-247-861-00	CARBON	18K	5%	1/6W	
R578	1-247-831-00	CARBON	1K	5%	1/6W	
R579	1-247-855-00	CARBON	10K	5%	1/6W	
R580	1-247-855-00	CARBON	10K	5%	1/6W	
R581	1-247-855-00	CARBON	10K	5%	1/6W	
R582	1-247-855-00	CARBON	10K	5%	1/6W	
R583	1-247-819-00	CARBON	330	5%	1/6W	
R584	1-247-855-00	CARBON	10K	5%	1/6W	
R585	1-247-851-00	CARBON	6.8K	5%	1/6W	
R586	1-247-825-00	CARBON	560	5%	1/6W	
R587	1-247-831-00	CARBON	1K	5%	1/6W	
R588	1-247-872-00	CARBON	51K	5%	1/6W	
R589	1-247-893-00	CARBON	390K	5%	1/6W	
R590	1-247-857-00	CARBON	12K	5%	1/6W	
R591	1-247-871-00	CARBON	47K	5%	1/6W	
R592	1-247-879-00	CARBON	100K	5%	1/6W	
R593	1-247-867-00	CARBON	33K	5%	1/6W	
R594	1-247-883-00	CARBON	150K	5%	1/6W	
R595	1-247-867-00	CARBON	33K	5%	1/6W	
R596	1-247-867-00	CARBON	33K	5%	1/6W	
R597	1-215-413-00	METAL	470	1%	1/6W	
R598	1-215-467-00	METAL	82K	1%	1/6W	
R599	1-247-849-00	CARBON	5.6K	5%	1/6W	
R600	1-247-867-00	CARBON	33K	5%	1/6W	
R601	1-247-871-00	CARBON	47K	5%	1/6W	
R602	1-247-879-00	CARBON	100K	5%	1/6W	
R603	1-247-839-00	CARBON	2.2K	5%	1/6W	
R604	1-247-818-00	CARBON	300	5%	1/6W	
R605	1-247-845-00	CARBON	3.9K	5%	1/6W	
R606	1-247-847-00	CARBON	4.7K	5%	1/6W	
R607	1-212-360-00	METAL OXIDE	1	5%	1W	F
R608	1-247-851-00	CARBON	6.8K	5%	1/6W	
R609	1-247-851-00	CARBON	6.8K	5%	1/6W	
R611	1-247-867-00	CARBON	33K	5%	1/6W	
R612	1-247-841-00	CARBON	2.7K	5%	1/6W	
R613	1-247-879-00	CARBON	100K	5%	1/6W	
R614	1-247-855-00	CARBON	10K	5%	1/6W	
R615	1-247-831-00	CARBON	1K	5%	1/6W	
R616	1-247-871-00	CARBON	47K	5%	1/6W	
R617	1-247-871-00	CARBON	47K	5%	1/6W	
R618	1-247-867-00	CARBON	33K	5%	1/6W	
R619	1-247-867-00	CARBON	33K	5%	1/6W	
R620	1-247-873-00	CARBON	56K	5%	1/6W	
R621	1-247-863-00	CARBON	22K	5%	1/6W	
R622	1-247-847-00	CARBON	4.7K	5%	1/6W	
R623	1-247-831-00	CARBON	1K	5%	1/6W	
R624	1-247-889-00	CARBON	270K	5%	1/6W	
R625	1-215-443-00	METAL	8.2K	1%	1/6W	
R626	1-215-445-00	METAL	10K	1%	1/6W	
R627	1-247-839-00	CARBON	2.2K	5%	1/6W	
R628	1-247-855-00	CARBON	10K	5%	1/6W	
R629	1-247-871-00	CARBON	47K	5%	1/6W	
R632	1-247-867-00	CARBON	33K	5%	1/6W	
R633	1-247-867-00	CARBON	33K	5%	1/6W	
R637	1-247-867-00	CARBON	33K	5%	1/6W	
R701	1-247-851-00	CARBON	6.8K	5%	1/6W	
R702	1-247-846-00	CARBON	4.3K	5%	1/6W	
R703	1-247-871-00	CARBON	47K	5%	1/6W	
R704	1-247-863-00	CARBON	22K	5%	1/6W	
R705	1-247-843-00	CARBON	3.3K	5%	1/6W	
R706	1-247-860-00	CARBON	16K	5%	1/6W	
R707	1-247-852-00	CARBON	7.5K	5%	1/6W	
R708	1-247-861-00	CARBON	18K	5%	1/6W	
R709	1-247-871-00	CARBON	47K	5%	1/6W	
R710	1-246-981-00	CARBON	4.7	5%	1/8W	F
R711	1-212-366-00	METAL OXIDE	3.3	5%	1W	F
R721	1-247-865-00	CARBON	27K	5%	1/6W	
R722	1-247-888-00	CARBON	240K	5%	1/6W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
R723	1-247-901-00	CARBON	820K	5%	1/6W	
R724	1-247-897-00	CARBON	560K	5%	1/6W	
R725	1-247-855-00	CARBON	10K	5%	1/6W	
R726	1-247-855-00	CARBON	10K	5%	1/6W	
R728	1-247-831-00	CARBON	1K	5%	1/6W	
R811	1-247-841-00	CARBON	2.7K	5%	1/6W	
R812	1-247-839-00	CARBON	2.2K	5%	1/6W	
R813	1-247-821-00	CARBON	390	5%	1/6W	
R814	1-247-837-00	CARBON	1.8K	5%	1/6W	
R815	1-247-841-00	CARBON	2.7K	5%	1/6W	
R816	1-247-826-00	CARBON	620	5%	1/6W	
R817	1-247-873-00	CARBON	56K	5%	1/6W	
R818	1-247-881-00	CARBON	120K	5%	1/6W	
R819	1-247-837-00	CARBON	1.8K	5%	1/6W	
R820	1-247-841-00	CARBON	2.7K	5%	1/6W	
R821	1-247-825-00	CARBON	560	5%	1/6W	
R822	1-247-863-00	CARBON	22K	5%	1/6W	
R823	1-247-857-00	CARBON	12K	5%	1/6W	
R824	1-247-863-00	CARBON	22K	5%	1/6W	
R825	1-247-845-00	CARBON	3.9K	5%	1/6W	
R826	1-247-871-00	CARBON	47K	5%	1/6W	
R827	1-247-873-00	CARBON	56K	5%	1/6W	
R828	1-247-855-00	CARBON	10K	5%	1/6W	
R829	1-247-849-00	CARBON	5.6K	5%	1/6W	
R830	1-247-837-00	CARBON	1.8K	5%	1/6W	
R831	1-247-881-00	CARBON	120K	5%	1/6W	
R832	1-247-867-00	CARBON	33K	5%	1/6W	
R833	1-247-867-00	CARBON	33K	5%	1/6W	
R834	1-247-831-00	CARBON	1K	5%	1/6W	
R835	1-247-873-00	CARBON	56K	5%	1/6W	
R836	1-247-855-00	CARBON	10K	5%	1/6W	
R837	1-247-855-00	CARBON	10K	5%	1/6W	
R838	1-247-871-00	CARBON	47K	5%	1/6W	
R841	1-247-879-00	CARBON	100K	5%	1/6W	
R842	1-247-855-00	CARBON	10K	5%	1/6W	
R843	1-247-855-00	CARBON	10K	5%	1/6W	
R844	1-247-821-00	CARBON	390	5%	1/6W	
R845	1-247-855-00	CARBON	10K	5%	1/6W	
R846	1-215-445-00	METAL	10K	1%	1/6W	
R847	1-215-445-00	METAL	10K	1%	1/6W	
R848	1-247-903-00	CARBON	1M	5%	1/6W	
R849	1-247-821-00	CARBON	390	5%	1/6W	
R850	1-247-877-00	CARBON	82K	5%	1/6W	
R851	1-247-844-00	CARBON	3.6K	5%	1/6W	
R857	1-247-826-00	CARBON	620	5%	1/6W	
R901	1-247-851-00	CARBON	6.8K	5%	1/6W	
R902	1-247-859-00	CARBON	15K	5%	1/6W	
R903	1-247-903-00	CARBON	1M	5%	1/6W	
R904	1-247-831-00	CARBON	1K	5%	1/6W	
R905	1-247-835-00	CARBON	1.5K	5%	1/6W	
R906	1-247-851-00	CARBON	6.8K	5%	1/6W	
R907	1-247-847-00	CARBON	4.7K	5%	1/6W	
R908	1-247-859-00	CARBON	15K	5%	1/6W	

Ref.No	Part No.	Description				Remark
R909	1-247-883-00	CARBON	150K	5%	1/6W	
R910	1-247-853-00	CARBON	8.2K	5%	1/6W	
R911	1-247-866-00	CARBON	30K	5%	1/6W	
R912	1-247-859-00	CARBON	15K	5%	1/6W	
R913	1-247-866-00	CARBON	30K	5%	1/6W	
R914	1-247-893-00	CARBON	390K	5%	1/6W	
R915	1-247-864-00	CARBON	24K	5%	1/6W	
R916	1-247-859-00	CARBON	15K	5%	1/6W	
R917	1-247-861-00	CARBON	18K	5%	1/6W	
R918	1-247-879-00	CARBON	100K	5%	1/6W	
R919	1-247-895-00	CARBON	470K	5%	1/6W	
R921	1-247-871-00	CARBON	47K	5%	1/6W	
R922	1-247-855-00	CARBON	10K	5%	1/6W	
R923	1-247-871-00	CARBON	47K	5%	1/6W	
R924	1-247-855-00	CARBON	10K	5%	1/6W	
R925	1-247-879-00	CARBON	100K	5%	1/6W	
R926	1-247-896-00	CARBON	510K	5%	1/6W	
R927	1-247-859-00	CARBON	15K	5%	1/6W	
R928	1-247-861-00	CARBON	18K	5%	1/6W	
R929	1-247-865-00	CARBON	27K	5%	1/6W	
R930	1-247-891-00	CARBON	330K	5%	1/6W	
R932	1-247-831-00	CARBON	1K	5%	1/6W	
R933	1-247-831-00	CARBON	1K	5%	1/6W	
R934	1-247-831-00	CARBON	1K	5%	1/6W	
R935	1-247-873-00	CARBON	56K	5%	1/6W	
R936	1-247-855-00	CARBON	10K	5%	1/6W	
R937	1-247-855-00	CARBON	10K	5%	1/6W	
R938	1-247-871-00	CARBON	47K	5%	1/6W	
R939	1-247-873-00	CARBON	56K	5%	1/6W	

VARIABLE RESISTOR

RV501	1-228-996-00	RES, ADJ, CARBON 47K
RV502	1-228-996-00	RES, ADJ, CARBON 47K
RV503	1-228-996-00	RES, ADJ, METAL GLAZE 47K
RV504	1-228-990-00	RES, ADJ, METAL GLAZE 1K
RV505	1-228-994-00	RES, ADJ, METAL GLAZE 10K
RV506	1-228-994-00	RES, ADJ, METAL GLAZE 10K
RV507	1-228-994-00	RES, ADJ, METAL GLAZE 10K
RV508	1-228-994-00	RES, ADJ, METAL GLAZE 10K
RV509	1-228-996-00	RES, ADJ, METAL GLAZE 47K
RV510	1-228-989-00	RES, ADJ, METAL GLAZE 470
RV511	1-228-989-00	RES, ADJ, METAL GLAZE 470
RV512	1-228-996-00	RES, ADJ, METAL GLAZE 47K
RV513	1-228-993-00	RES, ADJ, METAL GLAZE 4.7K
RV514	1-228-998-00	RES, ADJ, METAL GLAZE 220K
RV515	1-228-998-00	RES, ADJ, METAL GLAZE 220K
RV516	1-228-993-00	RES, ADJ, METAL GLAZE 4.7K
RV517	1-228-996-00	RES, ADJ, METAL GLAZE 47K
RV518	1-228-995-00	RES, ADJ, CARBON 22K
RV519	1-228-995-00	RES, ADJ, CARBON 22K
RV520	1-228-999-00	RES, ADJ, METAL GLAZE 470K
RV801	1-228-989-00	RES, ADJ, METAL GLAZE 470
RV802	1-228-989-00	RES, ADJ, METAL GLAZE 470

When indicating parts by reference number, please include the board name.

SS-53 UD-2 JG-2 CH-38

Ref.No	Part No.	Description	Remark
RV803	1-228-998-00	RES, ADJ, METAL GLAZE 220K	
RV804	1-228-998-00	RES, ADJ, METAL GLAZE 220K	
RV805	1-228-995-00	RES, ADJ, METAL GLAZE 22K	
RV806	1-228-995-00	RES, ADJ, CARBON 22K	
RV807	1-228-998-00	RES, ADJ, CARBON 220K	
RV808	1-228-989-00	RES, ADJ, METAL GLAZE 470	
RV901	1-228-996-00	RES, ADJ, METAL GLAZE 47K	
		THERMISTOR	
TH801	1-800-200-00	THERMISTOR S-3K	
TH802	1-800-200-00	THERMISTOR S-3K	
TH803	1-800-200-00	THERMISTOR S-3K	
		CRYSTAL	
X401	1-527-992-11	OSCILLATOR, CERAMIC	
X402	1-527-965-00	OSCILLATOR, CERAMIC	
X801	1-527-992-11	OSCILLATOR, CERAMIC	

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*1-615-762-11 UD-2 BOARD
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CAPACITOR

C568	1-123-612-00	ELECT	2.2MF	20%	50V
C810	1-123-612-00	ELECT	2.2MF	20%	50V

DIODE

D002	8-719-911-19	DIODE 1SS119
D416	8-719-911-19	DIODE 1SS119
D417	8-719-911-19	DIODE 1SS119
D418	8-719-911-19	DIODE 1SS119
D525	8-719-911-19	DIODE 1SS119
D526	8-719-911-19	DIODE 1SS119

IC

IC001	8-759-240-13	IC TC4013BP

TRANSISTOR

Q429	8-729-900-33	TRANSISTOR DTC144EF
Q532	8-729-900-33	TRANSISTOR DTC144EF
Q534	8-729-900-33	TRANSISTOR DTC144EF
Q810	8-729-900-33	TRANSISTOR DTC144EF

RESISTOR

R003	1-247-875-00	CARBON	68K	5%	1/6W
R432	1-247-873-00	CARBON	56K	5%	1/6W
R433	1-247-867-00	CARBON	33K	5%	1/6W
R461	1-247-855-00	CARBON	10K	5%	1/6W
R634	1-247-869-00	CARBON	39K	5%	1/6W
R636	1-247-855-00	CARBON	10K	5%	1/6W
R639	1-247-855-00	CARBON	10K	5%	1/6W

Ref.No	Part No.	Description	Remark
	*1-614-961-13	JG-2 BOARD	
		**********	
		DIODE	
D101	8-719-104-37	DIODE SR506D	
D102	8-719-104-37	DIODE SR506D	
D103	8-719-102-06	DIODE SG206D	
D104	8-719-104-37	DIODE SR506D	
D105	8-719-102-06	DIODE SG206D	
D106	8-719-114-06	DIODE SY406D	
D107	8-719-812-33	DIODE TLG123A	
D108	8-719-812-33	DIODE TLG123A	
D109	8-719-812-32	DIODE TLY123	
D201	8-719-921-03	DIODE GP-2S02B	
D202	8-719-921-03	DIODE GP-2S02B	
D203	8-719-921-03	DIODE GP-2S02B	
		RESISTOR	
R101	1-247-824-00	CARBON 510 5% 1/6W	
R104	1-247-854-00	CARBON 9.1K 5% 1/6W	
R105	1-247-843-00	CARBON 3.3K 5% 1/6W	
R106	1-247-837-00	CARBON 1.8K 5% 1/6W	
R107	1-247-833-00	CARBON 1.2K 5% 1/6W	
R108	1-247-817-00	CARBON 270 5% 1/6W	
R109	1-247-817-00	CARBON 270 5% 1/6W	
R110	1-247-811-00	CARBON 150 5% 1/6W	
R210	1-247-817-00	CARBON 270 5% 1/6W	
R211	1-247-811-00	CARBON 150 5% 1/6W	
R212	1-247-817-00	CARBON 270 5% 1/6W	
R213	1-247-811-00	CARBON 150 5% 1/6W	
R214	1-247-811-00	CARBON 150 5% 1/6W	
R215	1-247-817-00	CARBON 270 5% 1/6W	
		SWITCH	
S101	1-553-856-00	SWITCH, KEY BOARD	
S102	1-553-856-00	SWITCH, KEY BOARD	
S103	1-553-856-00	SWITCH, KEY BOARD	
S104	1-553-856-00	SWITCH, KEY BOARD	
S105	1-553-856-00	SWITCH, KEY BOARD	

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*1-614-960-13 CH-38 BOARD
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CONNECTOR

CN620	*1-564-001-11	PIN, CONNECTOR 2P
CN621	*1-564-005-00	PIN, CONNECTOR 6P
CN622	*1-564-002-00	PIN, CONNECTOR 3P
CN623	*1-564-004-00	PIN, CONNECTOR 5P

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When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
	*A-6717-398-A	FR-14 BOARD, COMPLETE				
		**********				
	3-691-610-01	KNOB (A), SELECTION SWITCH				
	8-741-131-70	IC BX-1317				
		CAPACITOR				
C001	1-102-114-00	CERAMIC	470PF	10%	50V	
C002	1-102-114-00	CERAMIC	470PF	10%	50V	
C003	1-102-114-00	CERAMIC	470PF	10%	50V	
C004	1-123-822-00	ELECT	47MF	20%	10V	
C005	1-162-306-31	CERAMIC	0.01MF	20%	16V	
		CONNECTOR				
CN001	*1-564-004-00	PIN, CONNECTOR 5P				
		COMPOSITION CIRCUIT BLOCK				
CP005	1-232-762-11	COMPOSITION CIRCUIT BLOCK				
		DIODE				
D007	8-719-812-33	DIODE TLG123A				
D008	8-719-812-33	DIODE TLG123A				
D009	8-719-812-32	DIODE TLY123				
D010	8-719-812-32	DIODE TLY123				
D011	8-719-911-19	DIODE 1SS119				
D012	8-719-911-06	DIODE 1SS106				
D013	8-719-911-19	DIODE 1SS119				
D014	8-719-911-06	DIODE 1SS106				
D016	8-719-300-77	DIODE SEL1413E				
D017	8-719-300-77	DIODE SEL1413E				
D018	8-719-300-77	DIODE SEL1413E				
D020	8-719-812-32	DIODE TLY123				
D021	8-719-812-31	DIODE TLR123				
		IC				
IC001	8-759-602-20	IC M50763-632SP				
		COIL				
L002	1-408-421-00	MICRO INDUCTOR 100UH				
		HOLDER				
LH002	*3-691-612-01	HOLDER (B), LED				
LH003	*3-691-613-01	HOLDER (C), LED				
LH004	*3-674-372-00	HOLDER (A), LED				
LH005	*3-674-372-00	HOLDER (A), LED				
LH006	*3-674-372-00	HOLDER (A), LED				
LH007	*3-674-372-00	HOLDER (A), LED				
LH008	3-655-122-00	TIRE, S BRAKE				
		RESISTOR				
R001	1-247-879-00	CARBON	100K	5%	1/6W	
R011	1-247-815-00	CARBON	220	5%	1/6W	
R012	1-247-815-00	CARBON	220	5%	1/6W	
R013	1-247-811-00	CARBON	150	5%	1/6W	
R014	1-247-811-00	CARBON	150	5%	1/6W	
R015	1-247-815-00	CARBON	220	5%	1/6W	
R016	1-247-815-00	CARBON	220	5%	1/6W	
R017	1-247-833-00	CARBON	1.2K	5%	1/6W	
R018	1-247-837-00	CARBON	1.8K	5%	1/6W	
R019	1-247-843-00	CARBON	3.3K	5%	1/6W	
R020	1-247-854-00	CARBON	9.1K	5%	1/6W	
R021	1-247-833-00	CARBON	1.2K	5%	1/6W	
R023	1-247-831-00	CARBON	1K	5%	1/6W	
R024	1-247-831-00	CARBON	1K	5%	1/6W	
R025	1-247-855-00	CARBON	10K	5%	1/6W	
R026	1-247-831-00	CARBON	1K	5%	1/6W	
R027	1-247-847-00	CARBON	4.7K	5%	1/6W	
R041	1-247-119-00	CARBON	330	5%	1/4W	
R045	1-247-853-00	CARBON	8.2K	5%	1/6W	
R046	1-247-853-00	CARBON	8.2K	5%	1/6W	
R047	1-247-831-00	CARBON	1K	5%	1/6W	
		REMOCON RECIVER				
RP001	8-741-131-70	REMOCON RECIVER BX1317				
		VARIABLE RESISTOR				
RV001	1-230-695-11	RES, VAR, SLIDE 20K/20K				
RV002	1-230-122-00	RES, VAR, CARBON 100K				
RV003	1-230-122-00	RES, VAR, CARBON 100K				
RV005	1-230-613-11	RES, VAR, CARBON 5K				
		SWITCH				
S001	1-554-174-00	SWITCH, KEY BOARD				
S002	1-554-174-00	SWITCH, KEY BOARD				
S003	1-554-174-00	SWITCH, KEY BOARD				
S004	1-554-174-00	SWITCH, KEY BOARD				
S005	1-554-174-00	SWITCH, KEY BOARD				
S006	1-554-174-00	SWITCH, KEY BOARD				
S007	1-554-378-00	SWITCH, SLIDE				
S008	1-554-174-00	SWITCH, KEY BOARD				
S009	1-554-174-00	SWITCH, KEY BOARD				
S010	1-554-174-00	SWITCH, KEY BOARD				
S011	1-554-174-00	SWITCH, KEY BOARD				
S012	1-553-716-00	SWITCH, SLIDE				
S013	1-553-716-00	SWITCH, SLIDE				
S014	1-553-754-00	SWITCH, SLIDE				
S015	1-553-754-00	SWITCH, SLIDE				
S016	1-553-751-00	SWITCH, SLIDE				
S017	1-553-716-00	SWITCH, SLIDE				
S019	1-553-754-00	SWITCH, SLIDE				
S023	1-553-716-00	SWITCH, SLIDE				
S024	1-553-716-00	SWITCH, SLIDE				

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When indicating parts by reference number, please include the board name.

TI-4

Ref.No	Part No.	Description			Remark
	*A-6721-234-A	TI-4 BOARD, COMPLETE **********			
		CAPACITOR			
C101	1-123-357-00	ELECT	22MF	20%	50V
C102	1-102-112-00	CERAMIC	330PF	10%	50V
C103	1-102-112-00	CERAMIC	330PF	10%	50V
C104	1-102-112-00	CERAMIC	330PF	10%	50V
C105	1-101-004-00	CERAMIC	0.01MF		50V
C106	1-123-356-00	ELECT	10MF	20%	16V
C107	1-161-059-00	CERAMIC	0.047MF	10%	25V
C108	1-101-004-00	CERAMIC	0.01MF		50V
C109	1-102-959-00	CERAMIC	22PF	5%	50V
C110	1-102-959-00	CERAMIC	22PF	5%	50V
C111	1-123-330-00	ELECT	22MF	20%	16V
C112	1-123-307-00	ELECT	100MF	20%	10V
C114	1-101-004-00	CERAMIC	0.01MF		50V
C201	1-102-634-11	CERAMIC	8PF	0.5PF	50V
C202	1-102-637-00	CERAMIC	12PF	5%	50V
C203	1-101-004-00	CERAMIC	0.01MF		50V
C204	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C205	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C206	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C207	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C208	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C209	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C210	1-102-112-00	CERAMIC	330PF	10%	50V
C211	1-102-851-00	CERAMIC	15PF	5%	50V
C212	1-102-525-00	CERAMIC	68PF	5%	50V
C213	1-102-074-00	CERAMIC	0.001MF	10%	50V
C214	1-123-356-00	ELECT	10MF	20%	16V
C215	1-102-074-00	CERAMIC	0.001MF	10%	50V
C216	1-102-114-00	CERAMIC	470PF	10%	50V
C217	1-161-059-00	CERAMIC	0.047MF	10%	25V
C218	1-161-059-00	CERAMIC	0.047MF	10%	25V
C219	1-123-308-00	ELECT	220MF	20%	10V
C220	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C221	1-102-525-00	CERAMIC	68PF	5%	50V
C222	1-102-510-00	CERAMIC	12PF	5%	50V
C223	1-101-837-00	CERAMIC	0.5PF	0.25PF	50V
C224	1-102-525-00	CERAMIC	68PF	5%	50V
C225	1-101-837-00	CERAMIC	0.5PF	0.25PF	50V
C226	1-102-510-00	CERAMIC	12PF	5%	50V
C227	1-161-013-00	CERAMIC	0.01MF	10%	25V
C228	1-123-379-00	ELECT	0.47MF	20%	50V
C229	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C230	1-123-380-00	ELECT	1MF	20%	50V
C231	1-123-356-00	ELECT	10MF	20%	16V
C232	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C233	1-121-257-00	ELECT	4.7MF		16V
C234	1-102-884-00	CERAMIC	33PF	5%	50V
C235	1-123-381-00	ELECT	2.2MF	20%	50V
C236	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C238	1-102-759-00	CERAMIC	62PF	5%	50V
C239	1-102-939-61	CERAMIC	2PF -	0.5PF	50V
C240	1-102-953-00	CERAMIC	18PF	5%	50V
C241	1-123-307-00	ELECT	100MF	20%	10V
C243	1-102-074-00	CERAMIC	0.001MF	10%	50V
C244	1-130-478-00	MYLAR	0.0039MF	5%	50V
C245	1-123-308-00	ELECT	220MF	20%	10V
C251	1-102-816-00	CERAMIC	120PF	5%	50V
C252	1-102-973-00	CERAMIC	100PF	5%	50V
C253	1-123-379-00	ELECT	0.47MF	20%	50V
C261	1-123-369-00	ELECT	4.7MF	20%	25V
C262	1-161-047-00	CERAMIC	0.0047MF	10%	25V
C263	1-123-380-00	ELECT	1MF	20%	50V
C301	1-123-307-00	ELECT	100MF	20%	10V
C302	1-123-381-00	ELECT	2.2MF	20%	50V
C801	1-123-356-00	ELECT	10MF	20%	16V
C802	1-101-004-00	CERAMIC	0.01MF		50V
C803	1-136-157-00	MYLAR	0.022MF	10%	50V
C804	1-123-356-00	ELECT	10MF	20%	16V
C805	1-123-356-00	ELECT	10MF	20%	16V
C808	1-123-356-00	ELECT	10MF	20%	16V
C809	1-130-489-00	MYLAR	0.033MF	5%	50V
C810	1-123-356-00	ELECT	10MF	20%	16V
C811	1-130-021-00	FILM	0.0018MF	5%	50V
C812	1-123-380-00	ELECT	1MF	20%	50V
C813	1-123-356-00	ELECT	10MF	20%	16V
C815	1-123-356-00	ELECT	10MF	20%	16V
C816	1-123-308-00	ELECT	220MF	20%	10V
C817	1-123-356-00	ELECT	10MF	20%	16V
C818	1-123-369-00	ELECT	4.7MF	20%	25V
C820	1-123-356-00	ELECT	10MF	20%	16V
C821	1-123-356-00	ELECT	10MF	20%	16V
C822	1-123-306-00	ELECT	47MF	20%	10V
C823	1-130-481-00	MYLAR	0.0068MF	5%	50V
C824	1-130-477-00	MYLAR	0.0033MF	5%	50V
C830	1-123-308-00	ELECT	220MF	20%	10V
C832	1-130-022-00	FILM	0.0022MF	10%	50V
C833	1-131-343-00	TANTALUM	0.22MF	10%	35V
C834	1-131-343-00	TANTALUM	0.22MF	10%	35V
C835	1-130-022-00	FILM	0.0022MF	10%	50V
C836	1-123-356-00	ELECT	10MF	20%	16V
C837	1-123-380-00	ELECT	1MF	20%	50V
C838	1-130-022-00	FILM	0.0022MF	10%	50V
C840	1-130-024-00	FILM	0.0033MF	10%	50V
C841	1-130-024-00	FILM	0.0033MF	10%	50V
C842	1-131-345-00	TANTALUM	0.47MF	10%	35V
C843	1-130-994-11	FILM	0.033MF	10%	50V
C844	1-130-024-00	FILM	0.0033MF	10%	50V
C845	1-130-024-00	FILM	0.0033MF	10%	50V
C846	1-131-371-00	TANTALUM	10MF	10%	16V
C847	1-123-306-00	ELECT	47MF	20%	10V
C848	1-102-125-00	CERAMIC	0.0047MF	10%	50V
C849	1-123-380-00	ELECT	1MF	20%	50V

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
C850	1-123-380-00	ELECT	1MF	20%	50V	
C851	1-123-306-00	ELECT	47MF	20%	10V	
C852	1-123-380-00	ELECT	1MF	20%	50V	
C853	1-123-356-00	ELECT	10MF	20%	16V	
C854	1-123-306-00	ELECT	47MF	20%	10V	
C855	1-123-382-00	ELECT	3.3MF	20%	50V	
C856	1-102-125-00	CERAMIC	0.0047MF	10%	50V	
C857	1-131-368-00	TANTALUM	3.3MF	10%	16V	
C858	1-130-030-00	FILM	0.01MF	10%	50V	
C870	1-130-497-00	MYLAR	0.15MF	10%	50V	
C871	1-130-491-00	MYLAR	0.047MF	5%	50V	
C872	1-130-479-00	MYLAR	0.0047MF	5%	50V	
C873	1-130-475-00	MYLAR	0.0022MF	5%	50V	
C874	1-123-380-00	ELECT	1MF	20%	50V	
C876	1-102-121-00	CERAMIC	0.0022MF	10%	50V	
C877	1-123-306-00	ELECT	47MF	20%	10V	
		FILTER				
CF201	1-527-943-00	FILTER, CERAMIC				
CF202	1-409-332-00	CERAMIC TRAP				
		CONNECTOR				
CN101	*1-560-894-00	PIN, CONNECTOR 6P				
CN102	*1-560-891-00	PIN, CONNECTOR 3P				
CN103	*1-560-895-00	PIN, CONNECTOR 7P				
CN104	*1-560-892-00	PIN, CONNECTOR 4P				
CN105	*1-560-892-00	PIN, CONNECTOR 4P				
CN106	*1-560-898-00	PIN, CONNECTOR 10P				
		JACK				
CNJ001	1-507-678-21	JACK				
CNJ002	1-507-678-21	JACK				
		DIODE				
D101	8-719-911-06	DIODE 1SS106				
D104	8-719-101-04	DIODE RD33EB2				
D105	8-719-101-04	DIODE RD33EB2				
D201	8-719-911-19	DIODE 1SS119				
D202	8-719-911-19	DIODE 1SS119				
D301	8-719-911-19	DIODE 1SS119				
D302	8-719-102-74	DIODE RD6.2EN2				
D303	8-719-102-74	DIODE RD6.2EN2				
D830	8-719-102-74	DIODE RD6.2EN2				
		IC				
IC101	8-755-641-51	IC CX564-151				
IC102	8-752-320-11	IC CXK10001P				
IC104	8-759-920-28	IC S-8054HN				
IC201	8-752-001-41	IC CX20014A				
IC202	8-752-007-30	IC CX20073				
IC801	8-752-011-20	IC CX20112				
IC830	8-759-400-88	IC AN6291				

Ref.No	Part No.	Description	Remark
IC831	8-759-145-58	IC UPC4558C	
IC870	8-759-602-48	IC M5201L	
		COIL	
L102	1-408-417-00	MICRO INDUCTOR 47UH	
L201	1-410-073-11	MICRO INDUCTOR 0.22UH	
L202	1-408-709-00	MICRO INDUCTOR 0.68UH	
L203	1-408-602-00	MICRO INDUCTOR 8.2UH	
L204	1-408-596-00	MICRO INDUCTOR 2.7UH	
L205	1-408-602-00	MICRO INDUCTOR 8.2UH	
L208	1-408-606-00	MICRO INDUCTOR 18UH	
L209	1-408-411-00	MICRO INDUCTOR 15UH	
L260	1-410-091-31	MICRO INDUCTOR 22MMH	
		IC LINK	
PS001	1-532-727-11	LINK, IC	
		TRANSISTOR	
Q101	8-729-177-32	TRANSISTOR 2SD773	
Q102	8-729-900-89	TRANSISTOR DTC144ES	
Q103	8-729-900-89	TRANSISTOR DTC144ES	
Q104	8-729-245-83	TRANSISTOR 2SC2458	
Q105	8-729-245-83	TRANSISTOR 2SC2458	
Q106	8-729-245-83	TRANSISTOR 2SC2458	
Q107	8-729-900-89	TRANSISTOR DTC144ES	
Q108	8-729-900-63	TRANSISTOR DTA124ES	
Q109	8-729-178-54	TRANSISTOR 2SC2785-F	
Q201	8-729-266-93	TRANSISTOR 2SC2669	
Q202	8-729-245-83	TRANSISTOR 2SC2458	
Q203	8-729-117-54	TRANSISTOR 2SA1175-F	
Q205	8-729-245-83	TRANSISTOR 2SC2458	
Q206	8-729-245-83	TRANSISTOR 2SC2458	
Q208	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q209	8-729-245-83	TRANSISTOR 2SC2458	
Q301	8-729-900-89	TRANSISTOR DTC144ES	
Q302	8-729-900-63	TRANSISTOR DTA124ES	
Q303	8-729-900-89	TRANSISTOR DTC144ES	
Q304	8-729-900-89	TRANSISTOR DTC144ES	
Q305	8-729-900-89	TRANSISTOR DRC144ES	
Q801	8-729-900-89	TRANSISTOR DTC144ES	
Q802	8-729-900-89	TRANSISTOR DTC144ES	
Q803	8-729-245-83	TRANSISTOR 2SC2458	
Q804	8-729-245-83	TRANSISTOR 2SC2458	
Q805	8-729-178-54	TRANSISTOR 2SC2785-F	
Q832	8-729-245-83	TRANSISTOR 2SC2458	
Q833	8-729-245-83	TRANSISTOR 2SC2458	
Q870	8-729-245-83	TRANSISTOR 2SC2458	
Q871	8-729-245-83	TRANSISTOR 2SC2458	
		RESISTOR	
R102	1-247-863-00	CARBON 22K 5% 1/6W	
R104	1-247-819-00	CARBON 330 5% 1/6W	
R105	1-210-859-00	CARBON 1.2 5% 1/8W	F

When indicating parts by reference number, please include the board name.

TI-4

Ref.No	Part No.	Description				Remark
R106	1-247-717-11	CARBON	2.2K	5%	1/4W	
R108	1-247-871-00	CARBON	47K	5%	1/6W	
R109	1-247-855-00	CARBON	10K	5%	1/6W	
R110	1-247-867-00	CARBON	33K	5%	1/6W	
R111	1-247-849-00	CARBON	5.6K	5%	1/6W	
R114	1-247-831-00	CARBON	1K	5%	1/6W	
R115	1-247-831-00	CARBON	1K	5%	1/6W	
R116	1-247-831-00	CARBON	1K	5%	1/6W	
R118	1-247-871-00	CARBON	47K	5%	1/6W	
R119	1-247-871-00	CARBON	47K	5%	1/6W	
R120	1-247-871-00	CARBON	47K	5%	1/6W	
R121	1-247-871-00	CARBON	47K	5%	1/6W	
R124	1-247-855-00	CARBON	10K	5%	1/6W	
R125	1-247-855-00	CARBON	10K	5%	1/6W	
R201	1-247-857-00	CARBON	12K	5%	1/6W	
R202	1-247-855-00	CARBON	10K	5%	1/6W	
R203	1-247-803-00	CARBON	68	5%	1/6W	
R204	1-247-833-00	CARBON	1.2K	5%	1/6W	
R205	1-247-817-00	CARBON	270	5%	1/6W	
R206	1-247-801-00	CARBON	56	5%	1/6W	
R207	1-247-837-00	CARBON	1.8K	5%	1/6W	
R208	1-247-883-00	CARBON	150K	5%	1/6W	
R209	1-247-843-00	CARBON	3.3K	5%	1/6W	
R210	1-247-883-00	CARBON	150K	5%	1/6W	
R211	1-247-843-00	CARBON	3.3K	5%	1/6W	
R212	1-247-871-00	CARBON	47K	5%	1/6W	
R213	1-247-871-00	CARBON	47K	5%	1/6W	
R214	1-247-833-00	CARBON	1.2K	5%	1/6W	
R215	1-247-807-00	CARBON	100	5%	1/6W	
R216	1-247-845-00	CARBON	3.9K	5%	1/6W	
R217	1-247-839-00	CARBON	2.2K	5%	1/6W	
R218	1-247-839-00	CARBON	2.2K	5%	1/6W	
R219	1-247-883-00	CARBON	150K	5%	1/6W	
R220	1-247-815-00	CARBON	220	5%	1/6W	
R221	1-247-839-00	CARBON	2.2K	5%	1/6W	
R223	1-247-819-00	CARBON	330	5%	1/6W	
R224	1-247-807-00	CARBON	100	5%	1/6W	
R226	1-247-895-00	CARBON	470K	5%	1/6W	
R227	1-247-787-00	CARBON	15	5%	1/6W	
R228	1-247-807-00	CARBON	100	5%	1/6W	
R229	1-247-807-00	CARBON	100	5%	1/6W	
R230	1-247-845-00	CARBON	3.9K	5%	1/6W	
R231	1-247-819-00	CARBON	330	5%	1/6W	
R232	1-247-817-00	CARBON	270	5%	1/6W	
R251	1-247-831-00	CARBON	1K	5%	1/6W	
R252	1-247-855-00	CARBON	10K	5%	1/6W	
R253	1-247-887-00	CARBON	220K	5%	1/6W	
R260	1-247-831-00	CARBON	1K	5%	1/6W	
R261	1-247-839-00	CARBON	2.2K	5%	1/6W	
R262	1-247-851-00	CARBON	6.8K	5%	1/6W	
R263	1-247-879-00	CARBON	100K	5%	1/6W	
R264	1-247-839-00	CARBON	2.2K	5%	1/6W	
R301	1-247-825-00	CARBON	560	5%	1/6W	

Ref.No	Part No.	Description				Remark
R302	1-247-873-00	CARBON	56K	5%	1/6W	
R303	1-247-863-00	CARBON	22K	5%	1/6W	
R802	1-215-469-00	METAL	100K	1%	1/6W	
R803	1-215-469-00	METAL	100K	1%	1/6W	
R804	1-247-879-00	CARBON	100K	5%	1/6W	
R805	1-247-831-00	CARBON	1K	5%	1/6W	
R808	1-247-859-00	CARBON	15K	5%	1/6W	
R809	1-247-825-00	CARBON	560	5%	1/6W	
R810	1-247-839-00	CARBON	2.2K	5%	1/6W	
R811	1-247-839-00	CARBON	2.2K	5%	1/6W	
R813	1-215-430-00	METAL	2.4K	1%	1/6W	
R814	1-247-853-00	CARBON	8.2K	5%	1/6W	
R815	1-247-843-00	CARBON	3.3K	5%	1/6W	
R819	1-247-903-00	CARBON	1M	5%	1/6W	
R820	1-247-851-00	CARBON	6.8K	5%	1/6W	
R821	1-247-851-00	CARBON	6.8K	5%	1/6W	
R822	1-247-839-00	CARBON	2.2K	5%	1/6W	
R823	1-247-839-00	CARBON	2.2K	5%	1/6W	
R824	1-247-859-00	CARBON	15K	5%	1/6W	
R825	1-247-873-00	CARBON	56K	5%	1/6W	
R826	1-247-843-00	CARBON	3.3K	5%	1/6W	
R827	1-247-843-00	CARBON	3.3K	5%	1/6W	
R828	1-247-843-00	CARBON	3.3K	5%	1/6W	
R832	1-247-811-00	CARBON	150	5%	1/6W	
R834	1-247-867-00	CARBON	33K	5%	1/6W	
R835	1-247-843-00	CARBON	3.3K	5%	1/6W	
R836	1-247-885-00	CARBON	180K	5%	1/6W	
R837	1-247-844-00	CARBON	3.6K	5%	1/6W	
R838	1-247-885-00	CARBON	180K	5%	1/6W	
R839	1-215-421-00	METAL	1K	1%	1/6W	
R840	1-247-811-00	CARBON	150	5%	1/6W	
R841	1-247-885-00	CARBON	180K	5%	1/6W	
R842	1-247-848-00	CARBON	5.1K	5%	1/6W	
R843	1-247-885-00	CARBON	180K	5%	1/6W	
R844	1-247-844-00	CARBON	3.6K	5%	1/6W	
R845	1-247-893-00	CARBON	390K	5%	1/6W	
R846	1-247-863-00	CARBON	22K	5%	1/6W	
R847	1-247-865-00	CARBON	27K	5%	1/6W	
R848	1-247-843-00	CARBON	3.3K	5%	1/6W	
R849	1-247-843-00	CARBON	3.3K	5%	1/6W	
R850	1-247-847-00	CARBON	4.7K	5%	1/6W	
R851	1-247-847-00	CARBON	4.7K	5%	1/6W	
R852	1-247-847-00	CARBON	4.7K	5%	1/6W	
R853	1-247-847-00	CARBON	4.7K	5%	1/6W	
R854	1-247-811-00	CARBON	150	5%	1/6W	
R855	1-247-869-00	CARBON	39K	5%	1/6W	
R856	1-247-887-00	CARBON	220K	5%	1/6W	
R857	1-247-843-00	CARBON	3.3K	5%	1/6W	
R858	1-247-893-00	CARBON	390K	5%	1/6W	
R859	1-247-855-00	CARBON	10K	5%	1/6W	
R862	1-247-843-00	CARBON	3.3K	5%	1/6W	
R870	1-247-869-00	CARBON	39K	5%	1/6W	
R871	1-247-865-00	CARBON	27K	5%	1/6W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
R872	1-247-853-00	CARBON	8.2K	5%	1/6W	
R873	1-247-863-00	CARBON	22K	5%	1/6W	
R874	1-247-863-00	CARBON	22K	5%	1/6W	
R875	1-247-855-00	CARBON	10K	5%	1/6W	
R876	1-247-847-00	CARBON	4.7K	5%	1/6W	
R877	1-247-855-00	CARBON	10K	5%	1/6W	
R878	1-247-851-00	CARBON	6.8K	5%	1/6W	
R881	1-247-871-00	CARBON	47K	5%	1/6W	
R882	1-247-855-00	CARBON	10K	5%	1/6W	
		MODULATOR				
⚠RFU001	1-464-447-11	MODULATOR, RF (RFU-742)				
		VARIABLE RESISTOR				
RV001	1-230-694-11	RES, VAR, CARBON 250K				
RV101	1-228-989-00	RES, ADJ, CARBON 470				
RV201	1-228-993-00	RES, ADJ, CARBON 4.7K				
RV202	1-228-994-00	RES, ADJ, CARBON 10K				
RV203	1-228-998-00	RES, ADJ, CARBON 220K				
RV801	1-228-996-00	RES, ADJ, CARBON 47K				
RV803	1-228-997-00	RES, ADJ, CARBON 100K				
RV804	1-228-999-00	RES, ADJ, CARBON 470K				
RV805	1-228-994-00	RES, ADJ, CARBON 10K				
RV806	1-228-994-00	RES, ADJ, CARBON 10K				
RV830	1-228-991-00	RES, ADJ, CARBON 2.2K				
RV831	1-228-995-00	RES, ADJ, CARBON 22K				
RV832	1-228-994-00	RES, ADJ, CARBON 10K				
		SWITCH				
S001	1-554-174-00	SWITCH, KEY BOARD				
S002	1-554-174-00	SWITCH, KEY BOARD				
S003	1-554-174-00	SWITCH, KEY BOARD				
S004	1-554-174-00	SWITCH, KEY BOARD				
S006	1-553-716-00	SWITCH, SLIDE				
S007	1-553-716-00	SWITCH, SLIDE				
S008	1-553-716-00	SWITCH, SLIDE				
		SHIELD CASE				
SC001	*3-682-155-00	CASE, SHIELD, VIF				
SC002	*3-682-156-00	LID, UPPER, SHIELD CASE, VIF				
SC003	*3-682-157-00	LID, REAR, SHIELD CASE, VIF				
		FILTER				
SWF201	1-404-479-00	SAWF				
		TRANSFORMER				
T201	1-404-541-11					
T202	1-404-467-00	COIL, VIF				
T203	1-404-505-00	COIL				
T204	1-404-467-00	COIL, VIF				
T205	1-404-012-00	COIL				
T206	1-404-489-00	COIL				
T207	1-405-873-00	COIL, OSCILLATOR				
		TUNER				
TU001⚠	1-463-603-21	TUNER, ET (BTP-201D)				
		CRYSTAL				
X101	1-567-192-11	OSCILLATOR, CERAMIC				
		**********				
	*1-614-953-13	PS-65 BOARD				
		**********				
		IC				
IC001⚠	8-749-954-41	IC STK5441				
		**********				
	*1-614-954-13	PV-1 BOARD				
		**********				
		CAPACITOR				
C034	1-161-379-00	CERAMIC	0.01MF	20%	25V	
		IC				
IC002⚠	8-749-930-52	IC SI-3052V				
		**********				
	*1-614-952-13	PA-4 BOARD				
		**********				
		**********				
	*1-614-948-13	PI-2 BOARD				
		**********				
		CAPACITOR				
C033	1-161-013-00	CERAMIC	0.01MF	20%	25V	
		IC				
IC003⚠	8-759-170-12	IC UPC78M12H				
		**********				
	*A-6722-270-A	PC-19 BOARD, COMPLETE				
		**********				
		CAPACITOR				
C006⚠	1-123-373-00	ELECT	47MF	20%	63V	
C007⚠	1-123-376-00	ELECT	330MF	20%	63V	
C010⚠	1-123-370-00	ELECT	10MF	20%	63V	
C011	1-123-343-00	ELECT	33MF	20%	35V	
C012	1-123-343-00	ELECT	33MF	20%	35V	

When indicating parts by reference number, please include the board name.

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part numer specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

PC-19 PR-6 PT-48 TM-75

Ref.No	Part No.	Description				Remark
C013	1-123-332-00	ELECT	47MF	20%	16V	
C014	1-123-332-00	ELECT	47MF	20%	16V	
C015	1-123-332-00	ELECT	47MF	20%	16V	
C016	1-123-332-00	ELECT	47MF	20%	16V	
C017	1-123-332-00	ELECT	47MF	20%	25V	
C018	1-123-381-00	ELECT	2.2MF	20%	50V	
C019	1-123-333-00	ELECT	100MF	20%	16V	
C022	1-123-306-00	ELECT	47MF	20%	10V	
C030	1-161-070-00	CERAMIC	0.01MF	20%	50V	
C035	1-161-070-00	CERAMIC	0.01MF	20%	50V	
C036	1-123-356-00	ELECT	10MF	20%	25V	
		CONNECTOR				
CN701	*1-560-894-00	PIN, CONNECTOR 6P				
CN702	*1-560-893-00	PIN, CONNECTOR 5P				
CN703	*1-560-890-00	PIN, CONNECTOR 2P				
CN704	*1-560-893-00	PIN, CONNECTOR 5P				
CN705	*1-560-894-00	PIN, CONNECTOR 6P				
CN708	*1-560-890-00	PIN, CONNECTOR 2P				
CN709	*1-560-892-00	PIN, CONNECTOR 4P				
		DIODE				
D013	⚠ 8-719-200-02	DIODE 10E-2				
D014	⚠ 8-719-200-02	DIODE 10E-2				
D016	8-719-100-50	DIODE RD9.1EB1				
D017	⚠ 8-719-200-02	DIODE 10E-2				
D018	8-719-107-07	DIODE RD33EB3				
D019	8-719-162-07	DIODE RD6.2E-B				
		IC				
IC004	⚠ 8-759-700-69	IC KIA79L12A				
		TRANSISTOR				
Q002	⚠ 8-729-103-43	TRANSISTOR 2SB734				
		RESISTOR				
R002	⚠ 1-217-434-00	FUSIBLE	10	5%	1/2W	F
R003	1-213-135-00	METAL OXIDE	220	5%	1W	F
R005	1-247-853-00	CARBON	8.2K	5%	1/6W	
R009	1-247-821-00	CARBON	390	5%	1/6W	
R010	1-247-821-00	CARBON	390	5%	1/6W	
R015	1-247-855-00	CARBON	10K	5%	1/6W	
R016	1-247-807-00	CARBON	100	5%	1/6W	

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*1-614-950-13 PR-6 BOARD
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CAPACITOR

C004	⚠ 1-125-298-11	ELECT(BLOCK)	10000MF	20%	25V
C005	⚠ 1-125-298-11	ELECT(BLOCK)	10000MF	20%	25V

Ref.No	Part No.	Description				Remark
		CONNECTOR				
CN710	*1-564-241-00	PIN, CONNECTOR 4P				
		DIODE				
D001	⚠ 8-719-500-18	DIODE D5SB20				
D005	⚠ 8-719-500-18	DIODE D5SB20				
		FUSE				
F002	⚠ 1-532-578-00	FUSE, GLASS TUBE (2A/125V)				
F003	⚠ 1-532-567-00	FUSE, GLASS TUBE (3.15A/125V)				
		FUSE HOLDER				
FH001	1-533-162-00	HOLDER, FUSE				
FH002	1-533-162-00	HOLDER, FUSE				
FH003	1-533-162-00	HOLDER, FUSE				
FH004	1-533-162-00	HOLDER, FUSE				

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*1-614-951-13 PT-48 BOARD
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CAPACITOR

C001	⚠ 1-130-680-11	FILM	0.1MF	20%	125V
C002	⚠ 1-161-742-12	CERAMIC	0.0022MF	20%	400V
C003	⚠ 1-161-742-12	CERAMIC	0.0022MF	20%	400V
		CONNECTOR			
CN711	*1-560-436-00	HORIZONTAL PIN ASSY 3P			
		FUSE			
F001	⚠ 1-532-593-11	FUSE, GLASS (8A)			
		RESISTOR			
R001	⚠ 1-202-723-11	SOLID	2.2	10%	1/2W
		TRANSFORMER			
T001	⚠ 1-421-357-31	TRANSFORMER, LINE FILTER			

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*A-6724-440-A TM-75 BOARD, COMPLETE
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CAPACITOR

C101	1-161-013-00	CERAMIC	0.01MF	10%	25V
C102	1-123-380-00	ELECT	1MF	20%	50V
C103	1-123-380-00	ELECT	1MF	20%	50V
C104	1-123-379-00	ELECT	0.47MF	20%	50V
C105	1-161-013-00	CERAMIC	0.01MF	10%	25V
C106	1-161-013-00	CERAMIC	0.01MF	10%	25V
C107	1-123-369-00	ELECT	4.7MF	20%	25V

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part numer specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
C108	1-123-616-00	ELECT	4.7MF	20%	25V	
C109	1-102-518-00	CERAMIC	33PF	5%	50V	
C110	1-102-518-00	CERAMIC	33PF	5%	50V	
C111	1-102-852-00	CERAMIC	47PF	5%	50V	
		CONNECTOR				
CN601	*1-564-005-00	PIN, CONNECTOR 6P				
CN602	*1-564-008-21	PIN, CONNECTOR 9P				
CN603	*1-564-006-11	PIN, CONNECTOR 7P				
CN604	*1-564-001-11	PIN, CONNECTOR 2P				
CN605	*1-564-002-00	PIN, CONNECTOR 3P				
CN606	*1-564-003-00	PIN, CONNECTOR 4P				
		CONPOSITION CIRCUIT BLOCK				
CP001	1-235-339-11	RES BLOCK 47KX8				
CP002	1-235-339-11	RES BLOCK 47KX8				
CP003	1-235-339-11	RES BLOCK 47KX8				
CP004	1-235-339-11	RES BLOCK 47KX8				
		DIODE				
D101	8-719-911-19	DIODE 1SS119				
		IC				
IC101	8-759-913-30	IC MB88525B-125M				
IC102	8-759-200-22	IC TC40H138P				
IC103	8-759-909-15	IC MSL915RS				
		INDICATOR				
ND101	1-519-360-11	INDICATOR TUBE, FLUORESCENT				
		TRANSISTOR				
Q101	8-729-245-83	TRANSISTOR 2SC2458				
Q102	8-729-900-63	TRANSISTOR DTA124ES				
Q103	8-729-900-36	TRANSISTOR DTC124ES				
		RESISTOR				
R101	1-247-847-00	CARBON	4.7K	5%	1/6W	
R102	1-247-855-00	CARBON	10K	5%	1/6W	
R103	1-247-879-00	CARBON	100K	5%	1/6W	
R104	1-247-871-00	CARBON	47K	5%	1/6W	
R105	1-247-855-00	CARBON	10K	5%	1/6W	
R109	1-247-859-00	CARBON	15K	5%	1/6W	
R110	1-247-855-00	CARBON	10K	5%	1/6W	
		SWITCH				
S101	1-554-174-00	SWITCH, KEY BOARD				
S102	1-554-174-00	SWITCH, KEY BOARD				
S103	1-554-174-00	SWITCH, KEY BOARD				
S104	1-554-174-00	SWITCH, KEY BOARD				
S105	1-554-174-00	SWITCH, KEY BOARD				
S106	1-554-174-00	SWITCH, KEY BOARD				
S107	1-554-174-00	SWITCH, KEY BOARD				
S108	1-554-174-00	SWITCH, KEY BOARD				
S109	1-554-174-00	SWITCH, KEY BOARD				
S110	1-554-174-00	SWITCH, KEY BOARD				
S111	1-554-174-00	SWITCH, KEY BOARD				
		CRYSTAL				
X101	1-527-997-00	VIBRATOR, CRYSTAL				

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*A-6725-402-A	AF-9 BOARD, COMPLETE				
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1-123-306-00	ELECT	47MF	20%	10V	
1-124-069-11	ELECT	100MF	20%	10V	
1-123-308-00	ELECT	220MF	20%	10V	
*3-669-610-00	SPACER				
	CAPACITOR				
C001	1-101-888-00	CERAMIC	68PF	5%	50V
C002	1-101-003-00	CERAMIC	0.0047MF		50V
C003	1-101-003-00	CERAMIC	0.0047MF		50V
C004	1-123-306-00	ELECT	47MF	20%	10V
C005	1-130-471-00	MYLAR	0.001MF	5%	50V
C006	1-130-482-00	MYLAR	0.0082MF	5%	50V
C007	1-130-477-00	MYLAR	0.0033MF	5%	50V
C008	1-102-824-00	CERAMIC	470PF	5%	50V
C009	1-123-356-00	ELECT	10MF	20%	25V
C010	1-123-356-00	ELECT	10MF	20%	25V
C011	1-101-003-00	CERAMIC	0.0047MF		50V
C012	1-101-003-00	CERAMIC	0.0047MF		50V
C013	1-123-318-00	ELECT	33MF	20%	16V
C014	1-101-003-00	CERAMIC	0.0047MF		50V
C015	1-101-003-00	CERAMIC	0.0047MF		50V
C016	1-101-003-00	CERAMIC	0.0047MF		50V
C017	1-101-003-00	CERAMIC	0.0047MF		50V
C018	1-101-888-00	CERAMIC	68PF	5%	50V
C019	1-123-330-00	ELECT	22MF	20%	16V
C024	1-123-309-00	ELECT	330MF	20%	10V
C026	1-123-620-00	ELECT	10MF	20%	25V
C027	1-101-003-00	CERAMIC	0.0047MF		50V
C028	1-123-308-00	ELECT	220MF	20%	10V
C029	1-123-820-00	ELECT	33MF	20%	16V
C030	1-123-318-00	ELECT	33MF	20%	16V
C031	1-102-958-00	CERAMIC	20PF	5%	50V
C032	1-136-155-00	MYLAR	0.015MF	10%	50V
C033	1-102-936-00	CERAMIC	3PF	0.5PF	50V
C034	1-136-155-00	MYLAR	0.015MF	10%	50V
C035	1-130-498-00	MYLAR	0.18MF	5%	50V
C036	1-136-161-00	MYLAR	0.047MF	10%	50V
C037	1-130-469-00	MYLAR	680PF	5%	50V
C038	1-102-936-00	CERAMIC	3PF	0.5PF	50V
C039	1-130-475-00	MYLAR	0.0022MF	5%	50V
C040	1-130-493-00	MYLAR	0.068MF	5%	50V

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description			Remark
C041	1-130-485-00	MYLAR	0.015MF	5%	50V
C042	1-123-380-00	ELECT	1MF	20%	50V
C043	1-123-356-00	ELECT	10MF	20%	25V
C046	1-123-356-00	ELECT	10MF	20%	25V
C047	1-123-356-00	ELECT	10MF	20%	25V
C050	1-101-003-00	CERAMIC	0.0047MF		50V
C051	1-101-003-00	CERAMIC	0.0047MF		50V
C053	1-123-330-00	ELECT	22MF	20%	16V
C054	1-101-003-00	CERAMIC	0.0047MF		50V
C056	1-123-382-00	ELECT	3.3MF	20%	50V
C057	1-123-382-00	ELECT	3.3MF	20%	50V
C058	1-101-003-00	CERAMIC	0.0047MF		50V
C059	1-101-003-00	CERAMIC	0.0047MF		50V
C060	1-101-003-00	CERAMIC	0.0047MF		50V
C061	1-101-003-00	CERAMIC	0.0047MF		50V
C063	1-123-306-00	ELECT	47MF	20%	10V
C064	1-101-003-00	CERAMIC	0.0047MF		50V
C065	1-123-333-00	ELECT	100MF	20%	25V
C066	1-101-001-00	CERAMIC	0.001MF		50V
C067	1-123-309-00	ELECT	330MF	20%	6.3V
C099	1-123-306-00	ELECT	47MF	20%	10V
C103	1-123-330-00	ELECT	22MF	20%	16V
C104	1-130-497-00	MYLAR	0.15MF	10%	50V
C105	1-130-497-00	MYLAR	0.15MF	10%	50V
C106	1-123-330-00	ELECT	22MF	20%	16V
C107	1-123-330-00	ELECT	22MF	20%	16V
C108	1-123-330-00	ELECT	22MF	20%	16V
C110	1-101-003-00	CERAMIC	0.0047MF		50V
C111	1-101-003-00	CERAMIC	0.0047MF		50V
C112	1-101-003-00	CERAMIC	0.0047MF		50V
C113	1-123-330-00	ELECT	22MF	20%	16V
C114	1-101-003-00	CERAMIC	0.0047MF		50V
C115	1-123-330-00	ELECT	22MF	20%	16V
C116	1-123-330-00	ELECT	22MF	20%	16V
C201	1-101-888-00	CERAMIC	68PF	5%	50V
C202	1-101-003-00	CERAMIC	0.0047MF		50V
C203	1-101-003-00	CERAMIC	0.0047MF		50V
C204	1-123-306-00	ELECT	47MF	20%	10V
C205	1-130-471-00	MYLAR	0.001MF	5%	50V
C206	1-130-482-00	MYLAR	0.0082MF	5%	50V
C207	1-130-477-00	MYLAR	0.0033MF	5%	50V
C208	1-102-824-00	CERAMIC	470PF	5%	50V
C209	1-123-356-00	ELECT	10MF	20%	25V
C210	1-123-356-00	ELECT	10MF	20%	25V
C211	1-101-003-00	CERAMIC	0.0047MF		50V
C212	1-101-003-00	CERAMIC	0.0047MF		50V
C213	1-123-318-00	ELECT	33MF	20%	16V
C214	1-101-003-00	CERAMIC	0.0047MF		50V
C215	1-101-003-00	CERAMIC	0.0047MF		50V
C216	1-101-003-00	CERAMIC	0.0047MF		50V
C217	1-101-003-00	CERAMIC	0.0047MF		50V
C218	1-101-888-00	CERAMIC	68PF	5%	50V
C219	1-123-330-00	ELECT	22MF	20%	16V

Ref.No	Part No.	Description			Remark
C220	1-136-166-00	MYLAR	0.1MF	10%	50V
C221	1-123-369-00	ELECT	4.7MF	20%	25V
C222	1-130-483-00	MYLAR	0.01MF	5%	50V
C223	1-130-471-00	MYLAR	0.001MF	5%	50V
C226	1-123-620-00	ELECT	10MF	20%	25V
C227	1-101-003-00	CERAMIC	0.0047MF		50V
C228	1-123-308-00	ELECT	220MF	20%	10V
C229	1-123-820-00	ELECT	33MF	20%	16V
C230	1-123-820-00	ELECT	33MF	20%	16V
C231	1-102-958-00	CERAMIC	20PF	5%	50V
C232	1-136-155-00	MYLAR	0.015MF	10%	50V
C233	1-102-936-00	CERAMIC	3PF	0.5PF	50V
C234	1-136-155-00	MYLAR	0.015MF	10%	50V
C235	1-130-498-00	MYLAR	0.18MF	5%	50V
C236	1-136-161-00	MYLAR	0.047MF	10%	50V
C237	1-130-469-00	MYLAR	680PF	5%	50V
C238	1-102-936-00	CERAMIC	3PF	0.5PF	50V
C239	1-130-475-00	MYLAR	0.0022MF	5%	50V
C240	1-130-493-00	MYLAR	0.068MF	5%	50V
C241	1-130-485-00	MYLAR	0.015MF	5%	50V
C242	1-123-380-00	ELECT	1MF	20%	50V
C243	1-123-356-00	ELECT	10MF	20%	25V
C244	1-101-003-00	CERAMIC	0.0047MF		50V
C245	1-124-069-11	ELECT	100MF	20%	10V
C246	1-123-356-00	ELECT	10MF	20%	25V
C247	1-123-356-00	ELECT	10MF	20%	25V
C250	1-101-003-00	CERAMIC	0.0047MF		50V
C251	1-101-003-00	CERAMIC	0.0047MF		50V
C253	1-123-330-00	ELECT	22MF	20%	16V
C254	1-101-003-00	CERAMIC	0.0047MF		50V
C256	1-123-382-00	ELECT	3.3MF	20%	50V
C257	1-123-382-00	ELECT	3.3MF	20%	50V
C258	1-101-003-00	CERAMIC	0.0047MF		50V
C259	1-101-003-00	CERAMIC	0.0047MF		50V
C260	1-101-003-00	CERAMIC	0.0047MF		50V
C261	1-101-003-00	CERAMIC	0.0047MF		50V
C263	1-123-306-00	ELECT	47MF	20%	10V
C299	1-123-306-00	ELECT	47MF	20%	10V
C301	1-123-356-00	ELECT	10MF	20%	16V
C302	1-123-356-00	ELECT	10MF	20%	16V
C303	1-123-356-00	ELECT	10MF	20%	16V
C304	1-102-074-00	CERAMIC	0.001MF	10%	50V
C305	1-123-356-00	ELECT	10MF	20%	16V
C306	1-102-074-00	CERAMIC	0.001MF	10%	50V
C307	1-161-039-00	CERAMIC	0.001MF	10%	25V
C308	1-161-039-00	CERAMIC	0.001MF	10%	25V
C309	1-123-318-00	ELECT	33MF	20%	16V
C310	1-123-356-00	ELECT	10MF	20%	16V
C311	1-123-356-00	ELECT	10MF	20%	16V
C401	1-130-479-00	MYLAR	0.0047MF	5%	50V
C402	1-130-476-00	MYLAR	0.0027MF	5%	50V
C403	1-123-356-00	ELECT	10MF	20%	16V
C404	1-130-476-00	MYLAR	0.0027MF	5%	50V

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
C405	1-130-471-00	MYLAR	0.001MF	5%	50V
C406	1-130-471-00	MYLAR	0.001MF	5%	50V
C410	1-123-308-00	ELECT	220MF	20%	6.3V
C421	1-123-356-00	ELECT	10MF	20%	25V
C422	1-123-356-00	ELECT	10MF	20%	25V
C506	1-123-356-00	ELECT	10MF	20%	16V
C507	1-123-356-00	ELECT	10MF	20%	16V
C551	1-123-332-00	ELECT	47MF	20%	16V
C552	1-123-332-00	ELECT	47MF	20%	16V
C553	1-123-306-00	ELECT	47MF	20%	10V
C554	1-123-369-00	ELECT	4.7MF	20%	25V
C555	1-123-381-00	ELECT	2.2MF	20%	50V
C556	1-123-306-00	ELECT	47MF	20%	10V
C557	1-161-051-00	CERAMIC	0.01MF	10%	50V
C558	1-123-332-00	ELECT	47MF	20%	16V
C559	1-123-308-00	ELECT	220MF	20%	6.3V
C560	1-123-380-00	ELECT	1MF	20%	50V
C561	1-101-003-00	CERAMIC	0.0047MF		50V
C601	1-123-356-00	ELECT	10MF	20%	16V
C602	1-123-356-00	ELECT	10MF	20%	16V
C603	1-102-978-00	CERAMIC	220PF	5%	50V
C604	1-102-978-00	CERAMIC	220PF	5%	50V
C605	1-123-356-00	ELECT	10MF	20%	16V
C606	1-123-356-00	ELECT	10MF	20%	16V
C607	1-123-356-00	ELECT	10MF	20%	16V
C608	1-123-356-00	ELECT	10MF	20%	16V
C609	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C610	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C611	1-101-001-00	CERAMIC	0.001MF		50V
C612	1-101-001-00	CERAMIC	0.001MF		50V
C615	1-123-306-00	ELECT	47MF	20%	10V
C616	1-123-306-00	ELECT	47MF	20%	10V
C617	1-123-356-00	ELECT	10MF	20%	16V
C618	1-130-483-00	MYLAR	0.01MF	5%	50V
C619	1-123-608-00	ELECT	0.22MF	20%	50V
C630	1-102-973-00	CERAMIC	100PF	5%	50V
C631	1-102-973-00	CERAMIC	100PF	5%	50V
C632	1-123-308-00	ELECT	220MF	20%	10V
C633	1-123-675-12	ELECT	1000MF	20%	10V

CONNECTOR

CN301	*1-560-898-00	PIN, CONNECTOR 10P
CN302	*1-560-893-00	PIN, CONNECTOR 5P
CN303	*1-560-898-00	PIN, CONNECTOR 10P
CN304	*1-560-893-00	PIN, CONNECTOR 5P
CN305	*1-560-894-00	PIN, CONNECTOR 6P
CN306	*1-560-895-00	PIN, CONNECTOR 7P
CN307	*1-560-894-00	PIN, CONNECTOR 6P
CN308	*1-560-898-00	PIN, CONNECTOR 10P
CN309	*1-560-893-00	PIN, CONNECTOR 5P
CN310	*1-560-892-00	PIN, CONNECTOR 4P
CN311	*1-560-894-00	PIN, CONNECTOR 6P
CN364	*1-560-891-00	PIN, CONNECTOR 3P

Ref.No	Part No.	Description	Remark
		JACK	
CNJ001	1-536-893-11	TERMINAL BOARD	
		DIODE	
D001	8-719-000-12	DIODE MC931	
D101	8-719-156-07	DIODE RD5.6E-B	
D102	8-719-156-07	DIODE RD5.6E-B	
D103	8-719-156-07	DIODE RD5.6E-B	
D201	8-719-000-12	DIODE MC931	
D301	8-719-911-19	DIODE 1SS119	
D302	8-719-911-19	DIODE 1SS119	
D408	8-719-100-47	DIODE RD8.2EB1	
D505	8-719-911-19	DIODE 1SS119	
D506	8-719-000-06	DIODE MC921	
D601	8-719-156-07	DIODE RD5.6E-B	
D602	8-719-156-07	DIODE RD5.6E-B	
D603	8-719-911-19	DIODE 1SS119	
D604	8-719-000-04	DIODE MC911	
D608	8-719-911-19	DIODE 1SS119	
D609	8-719-911-19	DIODE 1SS119	
D610	8-719-911-19	DIODE 1SS119	
		FILTER	
FL001	1-235-372-11	FILTER, BAND PASS	
FL002	1-235-373-11	FILTER, BAND PASS	
FL003	1-235-374-11	FILTER, BAND PASS	
FL004	1-235-375-11	FILTER, BAND PASS	
FL101	1-464-400-11	L.P.F UNIT	
FL102	1-235-370-11	FILTER (LPF)	
FL202	1-235-369-11	FILTER (LPF)	
		IC	
IC001	8-752-009-70	IC CX20097	
IC002	8-752-010-50	IC CX20105	
IC003	8-752-010-40	IC CX20104	
IC004	8-757-982-00	IC CX-7982	
IC007	8-752-006-10	IC CX20061	
IC202	8-752-010-50	IC CX20105	
IC207	8-752-006-10	IC CX20061	
IC301	8-759-135-80	IC UPC358C	
IC501	8-759-602-66	IC M5230L	
IC502	8-759-700-11	IC NJM78M05A	
IC601	8-759-601-02	IC M5218P	
IC602	8-759-240-53	IC TC4053BP	
IC604	8-759-745-60	IC NJM4560D	
IC605	8-759-145-58	IC UPC4558C	
IC606	8-759-240-52	IC TC4052BP	
IC607	8-759-240-53	IC TC4053BP	
IC608	8-759-745-60	IC NJM4560D	

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description	Remark
		COIL	
L201	1-410-120-11	MICRO INDUCTOR 1.2MMH	
		TRANSISTOR	
Q001	8-729-900-36	TRANSISTOR DTC124ES	
Q002	8-729-900-36	TRANSISTOR DTC124ES	
Q003	8-729-900-36	TRANSISTOR DTC124ES	
Q104	8-729-900-36	TRANSISTOR DTC124ES	
Q201	8-729-900-36	TRANSISTOR DTC124ES	
Q202	8-729-900-36	TRANSISTOR DTC124ES	
Q203	8-729-900-36	TRANSISTOR DTC124ES	
Q301	8-729-245-83	TRANSISTOR 2SC2458	
Q302	8-729-245-83	TRANSISTOR 2SC2458	
Q401	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q402	8-729-245-83	TRANSISTOR 2SC2458	
Q403	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q404	8-729-245-83	TRANSISTOR 2SC2458	
Q503	8-729-900-89	TRANSISTOR DTC144ES	
Q504	8-729-245-83	TRANSISTOR 2SC2458	
Q505	8-729-900-65	TRANSISTOR DTA144ES	
Q506	8-729-900-65	TRANSISTOR DTA144ES	
Q507	8-729-900-89	TRANSISTOR DTC144ES	
Q508	8-729-900-89	TRANSISTOR DTC144ES	
Q551	8-729-177-32	TRANSISTOR 2SD773	
Q601	8-729-245-83	TRANSISTOR 2SC2458	
Q603	8-729-245-83	TRANSISTOR 2SC2458	
Q604	8-729-245-83	TRANSISTOR 2SC2458	
Q605	8-729-900-89	TRANSISTOR DTC144ES	
Q606	8-729-245-83	TRANSISTOR 2SC2458	
Q607	8-729-900-89	TRANSISTOR DTC144ES	
Q608	8-729-245-83	TRANSISTOR 2SC2458	
Q609	8-729-245-83	TRANSISTOR 2SC2458	
Q610	8-729-900-89	TRANSISTOR DTC144ES	
Q611	8-729-900-89	TRANSISTOR DTC144ES	
Q612	8-729-900-89	TRANSISTOR DTC144ES	
Q615	8-729-900-89	TRANSISTOR DTC144ES	
		RESISTOR	
R001	1-247-898-00	CARBON 620K 5% 1/6W	
R002	1-247-843-00	CARBON 3.3K 5% 1/6W	
R003	1-247-843-00	CARBON 3.3K 5% 1/6W	
R004	1-247-843-00	CARBON 3.3K 5% 1/6W	
R005	1-247-845-00	CARBON 3.9K 5% 1/6W	
R006	1-215-429-00	METAL 2.2K 1% 1/6W	
R007	1-247-877-00	CARBON 82K 5% 1/6W	
R008	1-215-458-00	METAL 36K 1% 1/6W	
R010	1-247-857-00	CARBON 12K 5% 1/6W	
R011	1-215-441-00	METAL 6.8K 1% 1/6W	
R012	1-247-838-00	CARBON 2K 5% 1/6W	
R016	1-247-698-11	CARBON 68 5% 1/4W	F
R017	1-247-863-00	CARBON 22K 5% 1/6W	
R020	1-247-849-00	CARBON 5.6K 5% 1/6W	

Ref.No	Part No.	Description	Remark
R021	1-247-843-00	CARBON 3.3K 5% 1/6W	
R022	1-247-859-00	CARBON 15K 5% 1/6W	
R023	1-247-852-00	CARBON 7.5K 5% 1/6W	
R024	1-247-824-00	CARBON 510 5% 1/6W	
R025	1-247-857-00	CARBON 12K 5% 1/6W	
R026	1-247-855-00	CARBON 10K 5% 1/6W	
R027	1-247-852-00	CARBON 7.5K 5% 1/6W	
R028	1-247-843-00	CARBON 3.3K 5% 1/6W	
R029	1-247-834-00	CARBON 1.3K 5% 1/6W	
R030	1-247-804-00	CARBON 75 5% 1/6W	
R031	1-247-858-00	CARBON 13K 5% 1/6W	
R032	1-247-858-00	CARBON 13K 5% 1/6W	
R033	1-247-833-00	CARBON 1.2K 5% 1/6W	
R034	1-247-838-00	CARBON 2K 5% 1/6W	
R035	1-247-834-00	CARBON 1.3K 5% 1/6W	
R036	1-247-885-00	CARBON 180K 5% 1/6W	
R037	1-247-849-00	CARBON 5.6K 5% 1/6W	
R038	1-247-865-00	CARBON 27K 5% 1/6W	
R040	1-215-437-00	METAL 4.7K 1% 1/6W	
R041	1-247-824-00	CARBON 510 5% 1/6W	
R042	1-247-825-00	CARBON 560 5% 1/6W	
R043	1-247-855-00	CARBON 10K 5% 1/6W	
R044	1-247-895-00	CARBON 470K 5% 1/6W	
R045	1-247-807-00	CARBON 100 5% 1/6W	
R046	1-247-817-00	CARBON 270 5% 1/6W	
R047	1-247-867-00	CARBON 33K 5% 1/6W	
R050	1-247-863-00	CARBON 22K 5% 1/6W	
R051	1-247-831-00	CARBON 1K 5% 1/6W	
R052	1-215-453-00	METAL 22K 1% 1/6W	
R053	1-247-864-00	CARBON 24K 5% 1/6W	
R054	1-247-855-00	CARBON 10K 5% 1/6W	
R055	1-247-863-00	CARBON 22K 5% 1/6W	
R056	1-247-839-00	CARBON 2.2K 5% 1/6W	
R057	1-247-861-00	CARBON 18K 5% 1/6W	
R059	1-247-855-00	CARBON 10K 5% 1/6W	
R064	1-247-817-00	CARBON 270 5% 1/6W	
R065	1-247-885-00	CARBON 180K 5% 1/6W	
R066	1-247-823-00	CARBON 470 5% 1/6W	
R069	1-215-442-00	METAL 7.5K 1% 1/6W	
R070	1-247-895-00	CARBON 470K 5% 1/6W	
R071	1-247-895-00	CARBON 470K 5% 1/6W	
R072	1-247-895-00	CARBON 470K 5% 1/6W	
R083	1-215-439-00	METAL 5.6K 1% 1/6W	
R085	1-247-860-00	CARBON 16K 5% 1/6W	
R088	1-247-818-00	CARBON 300 5% 1/6W	
R089	1-247-859-00	CARBON 15K 5% 1/6W	
R093	1-247-831-00	CARBON 1K 5% 1/6W	
R094	1-247-825-00	CARBON 560 5% 1/6W	
R095	1-247-853-00	CARBON 8.2K 5% 1/6W	
R097	1-247-817-00	CARBON 270 5% 1/6W	
R098	1-247-813-00	CARBON 180 5% 1/6W	
R099	1-247-852-00	CARBON 7.5K 5% 1/6W	
R101	1-247-859-00	CARBON 15K 5% 1/6W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
R104	1-247-857-00	CARBON	12K	5%	1/6W	
R105	1-247-891-00	CARBON	330K	5%	1/6W	
R106	1-247-891-00	CARBON	330K	5%	1/6W	
R107	1-247-891-00	CARBON	330K	5%	1/6W	
R108	1-247-891-00	CARBON	330K	5%	1/6W	
R109	1-247-857-00	CARBON	12K	5%	1/6W	
R111	1-247-859-00	CARBON	15K	5%	1/6W	
R113	1-247-879-00	CARBON	100K	5%	1/6W	
R114	1-247-860-00	CARBON	16K	5%	1/6W	
R115	1-247-860-00	CARBON	16K	5%	1/6W	
R116	1-247-831-00	CARBON	1K	5%	1/6W	
R117	1-247-831-00	CARBON	1K	5%	1/6W	
R118	1-247-831-00	CARBON	1K	5%	1/6W	
R119	1-247-831-00	CARBON	1K	5%	1/6W	
R120	1-247-831-00	CARBON	1K	5%	1/6W	
R121	1-247-831-00	CARBON	1K	5%	1/6W	
R122	1-247-831-00	CARBON	1K	5%	1/6W	
R123	1-247-831-00	CARBON	1K	5%	1/6W	
R125	1-247-849-00	CARBON	5.6K	5%	1/6W	
R201	1-247-898-00	CARBON	620K	5%	1/6W	
R202	1-247-843-00	CARBON	3.3K	5%	1/6W	
R203	1-247-843-00	CARBON	3.3K	5%	1/6W	
R204	1-247-843-00	CARBON	3.3K	5%	1/6W	
R205	1-215-437-00	METAL	4.7K	1%	1/6W	
R206	1-215-433-00	METAL	3.3K	1%	1/6W	
R207	1-247-873-00	CARBON	56K	5%	1/6W	
R208	1-215-457-00	METAL	33K	1%	1/6W	
R210	1-247-851-00	CARBON	6.8K	5%	1/6W	
R211	1-215-439-00	METAL	5.6K	1%	1/6W	
R212	1-247-838-00	CARBON	2K	5%	1/6W	
R214	1-247-869-00	CARBON	39K	5%	1/6W	
R215	1-247-883-00	CARBON	150K	5%	1/6W	
R217	1-247-863-00	CARBON	22K	5%	1/6W	
R220	1-247-855-00	CARBON	10K	5%	1/6W	
R221	1-247-843-00	CARBON	3.3K	5%	1/6W	
R222	1-247-859-00	CARBON	15K	5%	1/6W	
R223	1-247-852-00	CARBON	7.5K	5%	1/6W	
R224	1-247-824-00	CARBON	510	5%	1/6W	
R225	1-247-857-00	CARBON	12K	5%	1/6W	
R226	1-247-855-00	CARBON	10K	5%	1/6W	
R227	1-247-852-00	CARBON	7.5K	5%	1/6W	
R228	1-247-843-00	CARBON	3.3K	5%	1/6W	
R229	1-247-834-00	CARBON	1.3K	5%	1/6W	
R230	1-247-804-00	CARBON	75	5%	1/6W	
R231	1-247-858-00	CARBON	13K	5%	1/6W	
R232	1-247-858-00	CARBON	13K	5%	1/6W	
R233	1-247-833-00	CARBON	1.2K	5%	1/6W	
R234	1-247-838-00	CARBON	2K	5%	1/6W	
R235	1-247-834-00	CARBON	1.3K	5%	1/6W	
R236	1-247-885-00	CARBON	180K	5%	1/6W	
R237	1-247-849-00	CARBON	5.6K	5%	1/6W	
R238	1-247-865-00	CARBON	27K	5%	1/6W	
R241	1-247-824-00	CARBON	510	5%	1/6W	

Ref.No	Part No.	Description				Remark
R242	1-247-825-00	CARBON	560	5%	1/6W	
R243	1-247-855-00	CARBON	10K	5%	1/6W	
R244	1-247-895-00	CARBON	470K	5%	1/6W	
R245	1-247-807-00	CARBON	100	5%	1/6W	
R250	1-247-861-00	CARBON	18K	5%	1/6W	
R251	1-247-831-00	CARBON	1K	5%	1/6W	
R252	1-215-453-00	METAL	22K	1%	1/6W	
R254	1-247-855-00	CARBON	10K	5%	1/6W	
R255	1-247-861-00	CARBON	18K	5%	1/6W	
R264	1-247-817-00	CARBON	270	5%	1/6W	
R265	1-247-885-00	CARBON	180K	5%	1/6W	
R266	1-247-823-00	CARBON	470	5%	1/6W	
R269	1-215-438-00	METAL	5.1K	1%	1/6W	
R270	1-247-895-00	CARBON	470K	5%	1/6W	
R271	1-247-895-00	CARBON	470K	5%	1/6W	
R272	1-247-895-00	CARBON	470K	5%	1/6W	
R283	1-215-441-00	METAL	6.8K	1%	1/6W	
R288	1-247-815-00	CARBON	220	5%	1/6W	
R289	1-247-850-00	CARBON	6.2K	5%	1/6W	
R293	1-247-824-00	CARBON	510	5%	1/6W	
R294	1-247-825-00	CARBON	560	5%	1/6W	
R297	1-247-819-00	CARBON	330	5%	1/6W	
R298	1-247-811-00	CARBON	150	5%	1/6W	
R299	1-247-843-00	CARBON	3.3K	5%	1/6W	
R301	1-247-889-00	CARBON	270K	5%	1/6W	
R302	1-247-891-00	CARBON	330K	5%	1/6W	
R303	1-247-853-00	CARBON	8.2K	5%	1/6W	
R304	1-247-889-00	CARBON	270K	5%	1/6W	
R305	1-247-891-00	CARBON	330K	5%	1/6W	
R306	1-247-853-00	CARBON	8.2K	5%	1/6W	
R307	1-247-861-00	CARBON	18K	5%	1/6W	
R308	1-247-861-00	CARBON	18K	5%	1/6W	
R309	1-247-869-00	CARBON	39K	5%	1/6W	
R310	1-247-857-00	CARBON	12K	5%	1/6W	
R311	1-247-857-00	CARBON	12K	5%	1/6W	
R312	1-247-869-00	CARBON	39K	5%	1/6W	
R313	1-247-895-00	CARBON	470K	5%	1/6W	
R314	1-247-895-00	CARBON	470K	5%	1/6W	
R315	1-247-863-00	CARBON	22K	5%	1/6W	
R316	1-247-863-00	CARBON	22K	5%	1/6W	
R317	1-247-151-00	CARBON	6.8K	5%	1/4W	
R318	1-247-853-00	CARBON	8.2K	5%	1/6W	
R319	1-247-881-00	CARBON	120K	5%	1/6W	
R320	1-247-791-00	CARBON	22	5%	1/6W	
R321	1-247-881-00	CARBON	120K	5%	1/6W	
R322	1-247-791-00	CARBON	22	5%	1/6W	
R401	1-247-855-00	CARBON	10K	5%	1/6W	
R402	1-247-879-00	CARBON	100K	5%	1/6W	
R403	1-247-839-00	CARBON	2.2K	5%	1/6W	
R404	1-247-864-00	CARBON	24K	5%	1/6W	
R405	1-247-875-00	CARBON	68K	5%	1/6W	
R406	1-247-849-00	CARBON	5.6K	5%	1/6W	
R408	1-247-863-00	CARBON	22K	5%	1/6W	

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description				Remark
R409	1-247-819-00	CARBON	330	5%	1/6W	
R411	1-247-887-00	CARBON	220K	5%	1/6W	
R412	1-247-819-00	CARBON	330	5%	1/6W	
R413	1-247-875-00	CARBON	68K	5%	1/6W	
R414	1-247-875-00	CARBON	68K	5%	1/6W	
R415	1-247-887-00	CARBON	220K	5%	1/6W	
R416	1-247-847-00	CARBON	4.7K	5%	1/6W	
R419	1-247-847-00	CARBON	4.7K	5%	1/6W	
R420	1-247-847-00	CARBON	4.7K	5%	1/6W	
R505	1-247-863-00	CARBON	22K	5%	1/6W	
R506	1-247-863-00	CARBON	22K	5%	1/6W	
R508	1-247-867-00	CARBON	33K	5%	1/6W	
R509	1-247-863-00	CARBON	22K	5%	1/6W	
R510	1-247-879-00	CARBON	100K	5%	1/6W	
R511	1-247-849-00	CARBON	5.6K	5%	1/6W	
R512	1-247-841-00	CARBON	2.7K	5%	1/6W	
R513	1-247-851-00	CARBON	6.8K	5%	1/6W	
R514	1-247-855-00	CARBON	10K	5%	1/6W	
R515	1-247-851-00	CARBON	6.8K	5%	1/6W	
R516	1-247-855-00	CARBON	10K	5%	1/6W	
R517	1-247-863-00	CARBON	22K	5%	1/6W	
R518	1-247-817-00	CARBON	270	5%	1/6W	
R519	1-247-817-00	CARBON	270	5%	1/6W	
R520	1-247-815-00	CARBON	220	5%	1/6W	
R521	1-247-815-00	CARBON	220	5%	1/6W	
R551	1-247-903-00	CARBON	1M	5%	1/6W	
R552	1-215-449-00	METAL	15K	1%	1/6W	
R553	1-215-445-00	METAL	10K	1%	1/6W	
R554	1-215-449-00	METAL	15K	1%	1/6W	
R555	1-215-433-00	METAL	3.3K	1%	1/6W	
R557	1-247-851-00	CARBON	6.8K	5%	1/6W	
R601	1-247-887-00	CARBON	220K	5%	1/6W	
R602	1-247-887-00	CARBON	220K	5%	1/6W	
R603	1-247-875-00	CARBON	68K	5%	1/6W	
R604	1-247-875-00	CARBON	68K	5%	1/6W	
R605	1-247-831-00	CARBON	1K	5%	1/6W	
R606	1-247-831-00	CARBON	1K	5%	1/6W	
R609	1-247-875-00	CARBON	68K	5%	1/6W	
R610	1-247-875-00	CARBON	68K	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	1-247-871-00	CARBON	47K	5%	1/6W	
R615	1-247-871-00	CARBON	47K	5%	1/6W	
R616	1-247-857-00	CARBON	12K	5%	1/6W	
R617	1-247-855-00	CARBON	10K	5%	1/6W	
R618	1-247-855-00	CARBON	10K	5%	1/6W	
R619	1-247-855-00	CARBON	10K	5%	1/6W	
R620	1-247-879-00	CARBON	100K	5%	1/6W	
R621	1-247-867-00	CARBON	33K	5%	1/6W	
R622	1-247-867-00	CARBON	33K	5%	1/6W	
R627	1-247-863-00	CARBON	22K	5%	1/6W	
R628	1-247-855-00	CARBON	10K	5%	1/6W	

Ref.No	Part No.	Description				Remark
R629	1-247-863-00	CARBON	22K	5%	1/6W	
R630	1-247-855-00	CARBON	10K	5%	1/6W	
R631	1-247-861-00	CARBON	18K	5%	1/6W	
R632	1-247-861-00	CARBON	18K	5%	1/6W	
R633	1-247-807-00	CARBON	100	5%	1/6W	
R634	1-247-807-00	CARBON	100	5%	1/6W	
R635	1-247-867-00	CARBON	33K	5%	1/6W	
R636	1-247-879-00	CARBON	100K	5%	1/6W	
R637	1-247-879-00	CARBON	100K	5%	1/6W	
R638	1-247-879-00	CARBON	100K	5%	1/6W	
R639	1-247-879-00	CARBON	100K	5%	1/6W	
R640	1-247-867-00	CARBON	33K	5%	1/6W	
R641	1-247-879-00	CARBON	100K	5%	1/6W	
R642	1-247-879-00	CARBON	100K	5%	1/6W	
R643	1-247-863-00	CARBON	22K	5%	1/6W	
R645	1-247-863-00	CARBON	22K	5%	1/6W	
R646	1-247-831-00	CARBON	1K	5%	1/6W	
R647	1-247-831-00	CARBON	1K	5%	1/6W	
R648	1-247-871-00	CARBON	47K	5%	1/6W	
R649	1-247-871-00	CARBON	47K	5%	1/6W	
R650	1-247-879-00	CARBON	100K	5%	1/6W	
R651	1-247-879-00	CARBON	100K	5%	1/6W	
R652	1-247-839-00	CARBON	2.2K	5%	1/6W	
R653	1-247-859-00	CARBON	15K	5%	1/6W	
R654	1-247-839-00	CARBON	2.2K	5%	1/6W	
R655	1-247-859-00	CARBON	15K	5%	1/6W	
R656	1-247-861-00	CARBON	18K	5%	1/6W	
R657	1-247-861-00	CARBON	18K	5%	1/6W	
R658	1-247-871-00	CARBON	47K	5%	1/6W	
R659	1-247-871-00	CARBON	47K	5%	1/6W	
R660	1-247-835-00	CARBON	1.5K	5%	1/6W	
R661	1-247-835-00	CARBON	1.5K	5%	1/6W	
R662	1-247-839-00	CARBON	2.2K	5%	1/6W	
R663	1-247-839-00	CARBON	2.2K	5%	1/6W	
R666	1-247-879-00	CARBON	100K	5%	1/6W	
R668	1-247-865-00	CARBON	27K	5%	1/6W	
R669	1-247-847-00	CARBON	4.7K	5%	1/6W	
R670	1-247-831-00	CARBON	1K	5%	1/6W	
R671	1-247-831-00	CARBON	1K	5%	1/6W	
R672	1-247-847-00	CARBON	4.7K	5%	1/6W	
R673	1-247-865-00	CARBON	27K	5%	1/6W	
R674	1-247-865-00	CARBON	27K	5%	1/6W	
R675	1-247-847-00	CARBON	4.7K	5%	1/6W	
R676	1-247-865-00	CARBON	27K	5%	1/6W	
R677	1-247-891-00	CARBON	330K	5%	1/6W	
R678	1-247-887-00	CARBON	220K	5%	1/6W	
R679	1-247-855-00	CARBON	10K	5%	1/6W	
R681	1-247-855-00	CARBON	10K	5%	1/6W	
R682	1-247-865-00	CARBON	27K	5%	1/6W	
R683	1-247-855-00	CARBON	10K	5%	1/6W	
R684	1-247-855-00	CARBON	10K	5%	1/6W	
R685	1-247-879-00	CARBON	100K	5%	1/6W	
R696	1-247-771-00	CARBON	3.3	5%	1/8W	F

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Ref.No	Part No.	Description				Remark
R697	1-247-771-00	CARBON	3.3	5%	1/8W	F
R698	1-247-823-00	CARBON	470	5%	1/6W	
R701	1-247-859-00	CARBON	15K	5%	1/6W	
R702	1-247-859-00	CARBON	15K	5%	1/6W	
R703	1-247-717-11	CARBON	2.2K	5%	1/4W	
R704	1-247-717-11	CARBON	2.2K	5%	1/4W	
R705	1-247-717-11	CARBON	2.2K	5%	1/4W	
R706	1-247-717-11	CARBON	2.2K	5%	1/4W	
R707	1-247-807-00	CARBON	100	5%	1/6W	
R801	1-247-804-00	CARBON	75	5%	1/6W	
		CRYSTAL				
X001	1-567-262-11	VIBRATOR, CRYSTAL				

****

*1-605-071-00 LM-8 BOARD
****

		CAPACITOR				
C101	1-162-449-11	CERAMIC	0.033MF	20%	25V	
C102	1-162-449-11	CERAMIC	0.033MF	20%	25V	
		COIL				
L101	1-408-120-00	MICRO INDUCTOR 18UH				
L102	1-408-120-00	MICRO INDUCTOR 18UH				
		RESISTOR				
R101	1-206-479-00	METAL OXIDE	47	5%	2W	F

****

*1-614-964-11 RD-12 BOARD
****

*3-691-653-01 HOLDER, SENSOR

		DIODE				
D001	8-719-751-42	DIODE NJL5141E				
D002	8-719-751-42	DIODE NJL5141E				

****

*1-614-965-13 HP-12 BOARD
****

		CAPACITOR				
C007	1-123-822-00	ELECT	47MF	20%	10V	
C008	1-123-822-00	ELECT	47MF	20%	10V	
		DIODE				
D022	8-719-113-07	DIODE RD13E-B				
D023	8-719-113-07	DIODE RD13E-B				

Ref.No	Part No.	Description				Remark
		IC				
IC002	8-759-700-40	IC NJM4560S				
		JACK				
J001	1-507-995-11	JACK, MICROPHONE				
J002	1-507-796-21	JACK				
		RESISTOR				
R034	1-247-803-00	CARBON	68	5%	1/6W	
R036	1-247-803-00	CARBON	68	5%	1/6W	

****

*1-614-947-13 FF-3 BOARD
****

		CONNECTOR				
CN004	*1-564-006-11	PIN, CONNECTOR 7P				
		DIODE				
D019	8-719-114-06	DIODE SY406D				
		RESISTOR				
R042	1-247-815-00	CARBON	220	5%	1/6W	
		SWITCH				
S020	1-554-174-00	SWITCH, KEY BOARD				
S021	1-554-174-00	SWITCH, KEY BOARD				
S022	1-554-174-00	SWITCH, KEY BOARD				

****

*1-614-946-13 FP-4 BOARD
****

		CAPACITOR				
C010	1-123-306-00	ELECT	47MF	20%	6.3V	
C011	1-123-306-00	ELECT	47MF	20%	6.3V	
		CONNECTOR				
CN002	*1-564-013-00	PIN, CONNECTOR 3P				
CN003	*1-564-013-00	PIN, CONNECTOR 3P				
		DIODE				
D015	8-719-812-33	DIODE TLG123A				
		HOLDER				
LH001	*3-674-372-00	HOLDER (A), LED				
		RESISTOR				
R040	1-247-825-00	CARBON	560	5%	1/6W	

When indicating parts by reference number, please include the board name.

FP-4

Ref.No	Part No.	Description	Remark
		VARIABLE RESISTOR	
RV004	1-228-988-21	RES, VAR, CARBON 10K/10K	
		SWITCH	
S018	1-554-174-00	SWITCH, KEY BOARD	

****

MISCELLANEOUS
****

⚠	1-464-397-11	SOLENOID, PLUNGER	
	1-464-330-21	SENSOR, S COIL	
⚠	1-526-882-00	OUTLET, AC	
⚠	1-696-965-00	CORD, POWER (AC)	
⚠	2-231-019-00	CLAMPER, CORD	
L902	1-464-329-21	SENSOR, T COIL	
M903	*A-4910-049-A	R STATOR (REEL MOTOR) BOARD, COMPLETE	
M904	X-3679-268-1	MOTOR ASSY, L	
PM901	1-464-396-11	SOLENOID, PLUNGER	
PM902	1-464-396-11	SOLENOID, PLUNGER	
S901	1-554-839-11	SWITCH, LEAF (2 GANG)	
S903	1-554-840-11	SWITCH, LEAF	
S904	1-554-840-11	SWITCH, LEAF	
T901	⚠ 1-448-225-11	TRANSFORMER, POWER	

****

ACCESSORIES AND PACKING MATERIALS
****

Part No.	Description	Remark
A-6765-731-A	COMMANDER ASSY	
1-513-379-00	CONVERTER (EAC-25)	
1-551-644-41	CORD, CONNECTION	
1-551-734-11	CORD, CONNECTION (RK-74A)	
3-795-581-21	INSTRUCTION	

****

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part numer specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

ADJUSTMENT

TABLE OF CONTENTS

SECTION 1
PREPARATION FOR MECHANICAL SECTION CHECK, ADJUSTMENT AND REPLACEMENT

1-1. DISASSEMBLY OF CABINET

1) Remove the four case screws ❶ .
2) Remove the upper case ❷ in the direction shown by the arrow Ⓐ .
3) Remove the six screws ❸ (BVTT3 x 8), then loosen the two screws ❺ (BVTT3 x 8).
4) Remove the lower case ❹ in the direction shown by the arrow Ⓑ .
5) Remove the four screws ❺ , ❻ .
6) Remove the four right and left claws of the front panel in the direction shown by the arrow Ⓒ , then remove the front panel in the direction shown by the arrow Ⓓ .
7) Remove the two screws ❾ (BVTT3 x 8).
8) Remove the JOG DIAL assembly ❿ in the direction shown by the arrow Ⓔ .

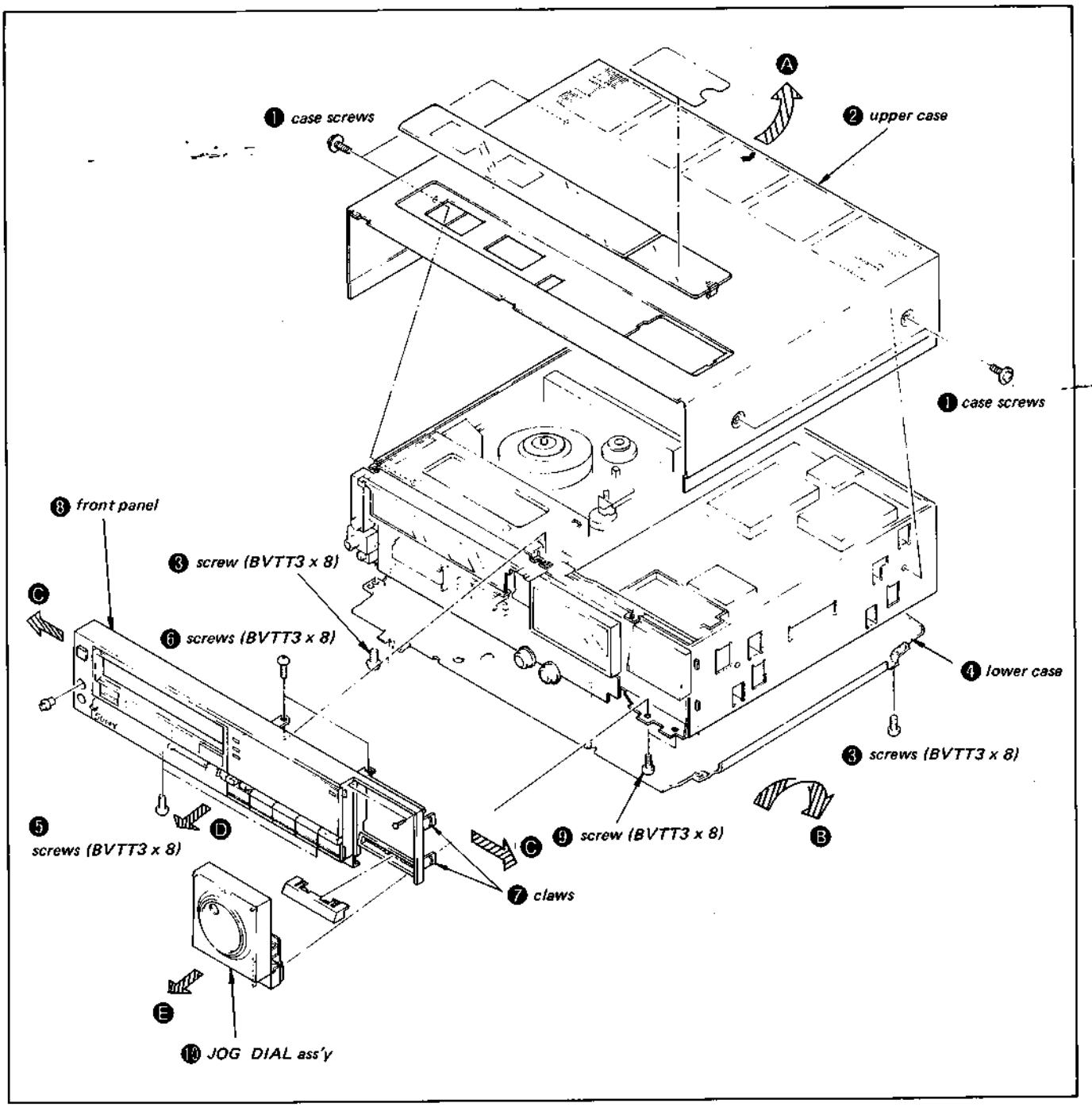


Fig. 1-1. Disassembly of cabinet

1-2. REMOVAL OF RP-24 BOARD

1) Remove the two screws ❶ (BVTT3 x 8).
2) Remove the RP-24 board block.
3) Remove the two shield cases ❸ in the direction shown by the arrow.
4) Pull out the five connectors ❹ .

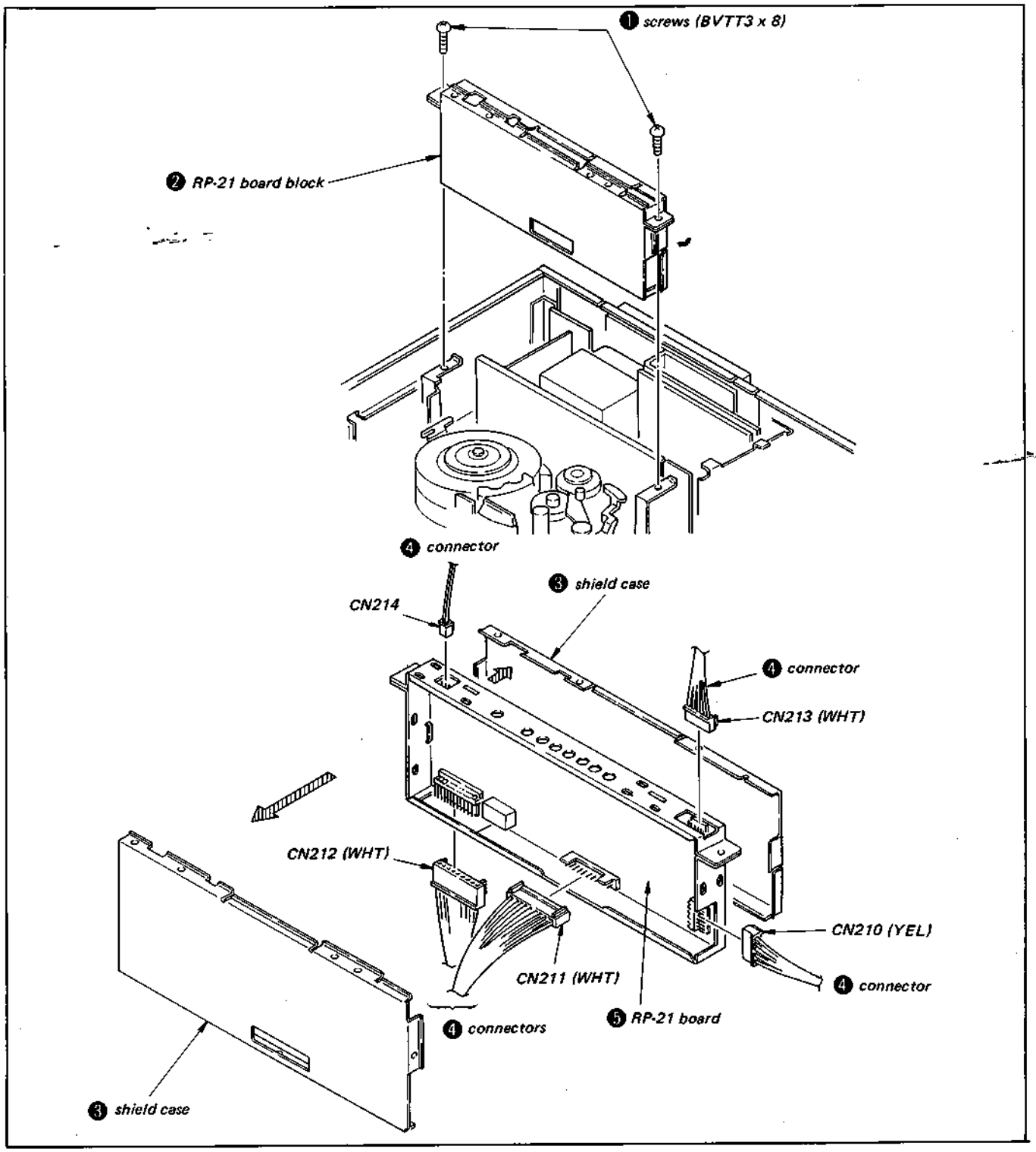


Fig. 1-2. Removal of RP-24 board

1-3. REMOVAL OF THE SS-53 BOARD

1) Remove the four screws ❶ (BVTT3 x 8).
2) Remove the SS-53 board in the direction shown by the arrow.

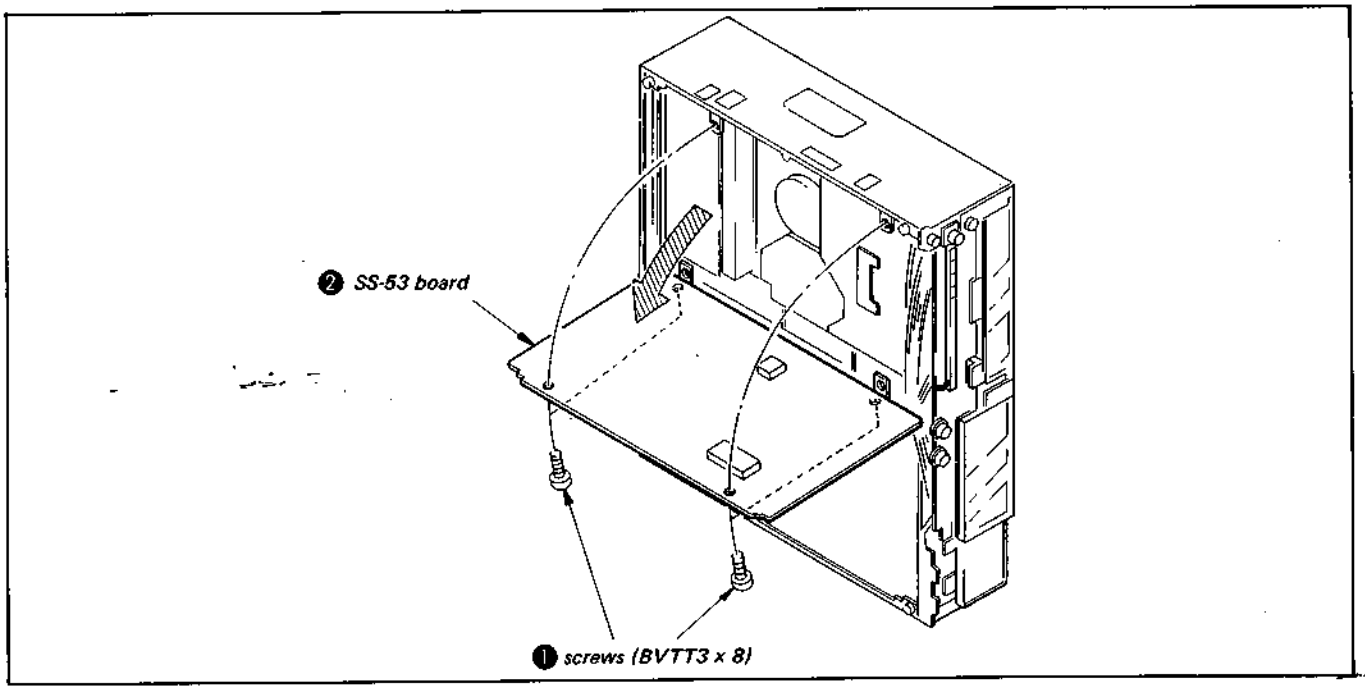


Fig. 1-3. Removal of the SS-53 board

1-4. REMOVAL OF THE VI-10 BOARD

1) Remove the four screws ❶ (BVTT3x8).
2) Remove the VI-10 board in the direction shown by the arrow.

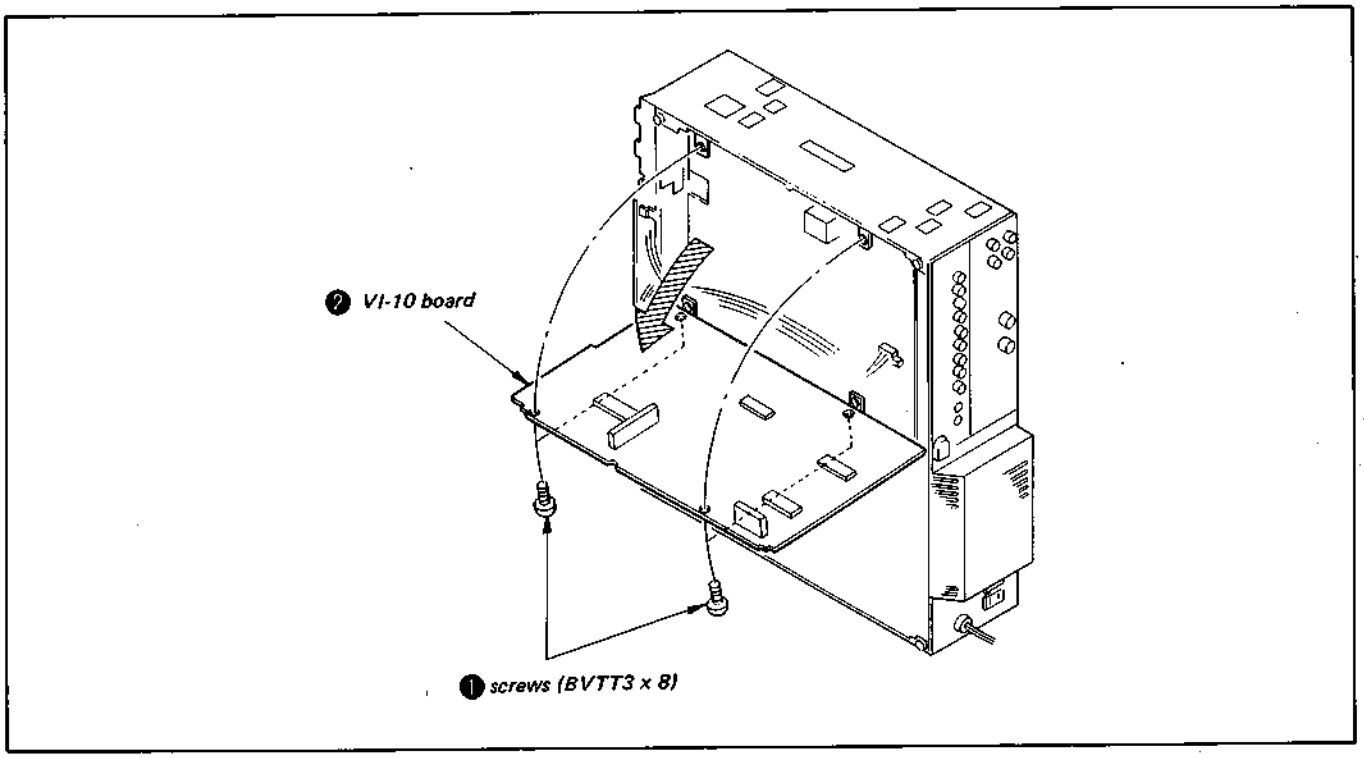


Fig. 1-4. Removal of the VI-10 board

1-5. REMOVAL OF THE TI-4 BOARD

1) Remove the five screws ❶ (BVTT3 x 8).
2) Remove the TI-4 board in the direction shown by the arrow.

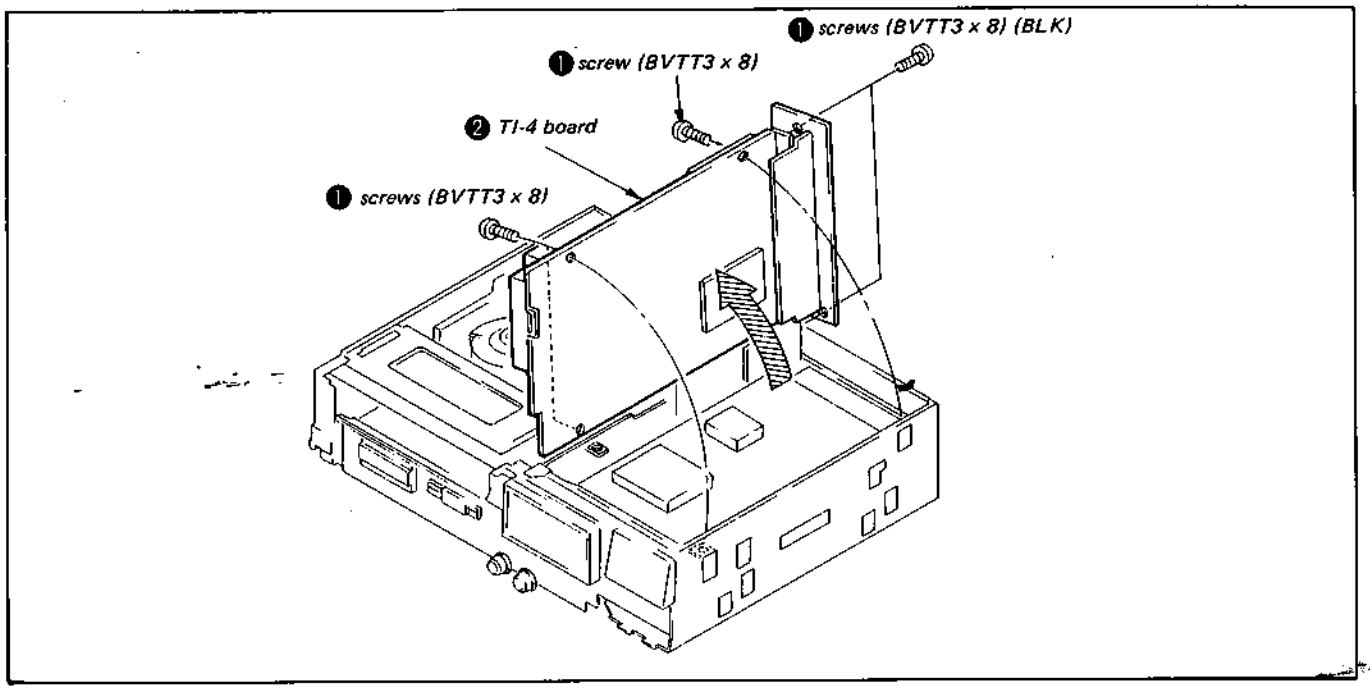


Fig. 1-5. Remal of the TI-4 board

1-6. REMOVAL OF THE TIMER BLOCK

1) Remove the three screws ❶ (BVTT3 x 8).
2) Remove the TM-75 board.

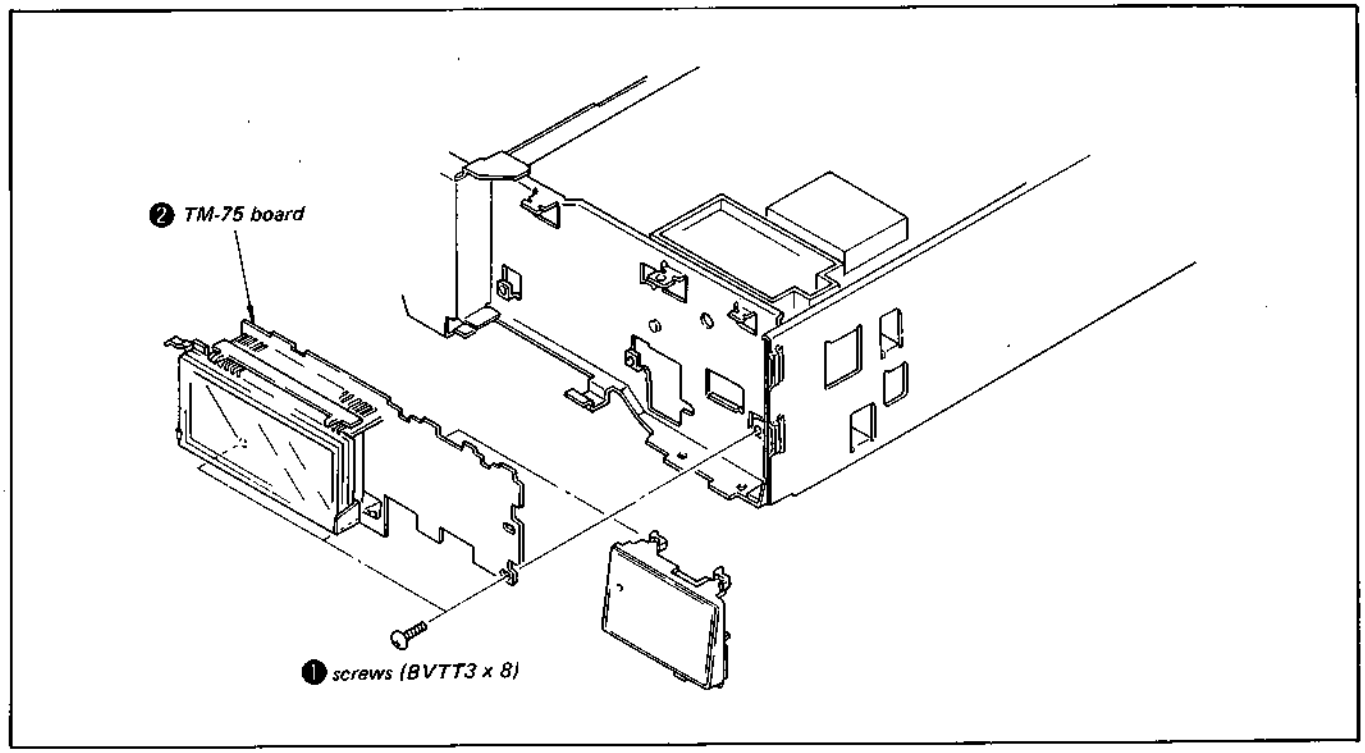


Fig. 1-6. Removal of the timer block

1-7. REMOVAL OF THE FR-14 BOARD

1) Remove the two screws ❶ (BVTT3 x 8).
2) Remove the claw ❸, remove the FP-4 board.
3) Remove the claw ❺, remove the FF-3 board.
4) Remove the claw ❻ of the chassis, pull out the level meter ❼.
5) Remove the FR-14 board in the direction shown by the arrow.

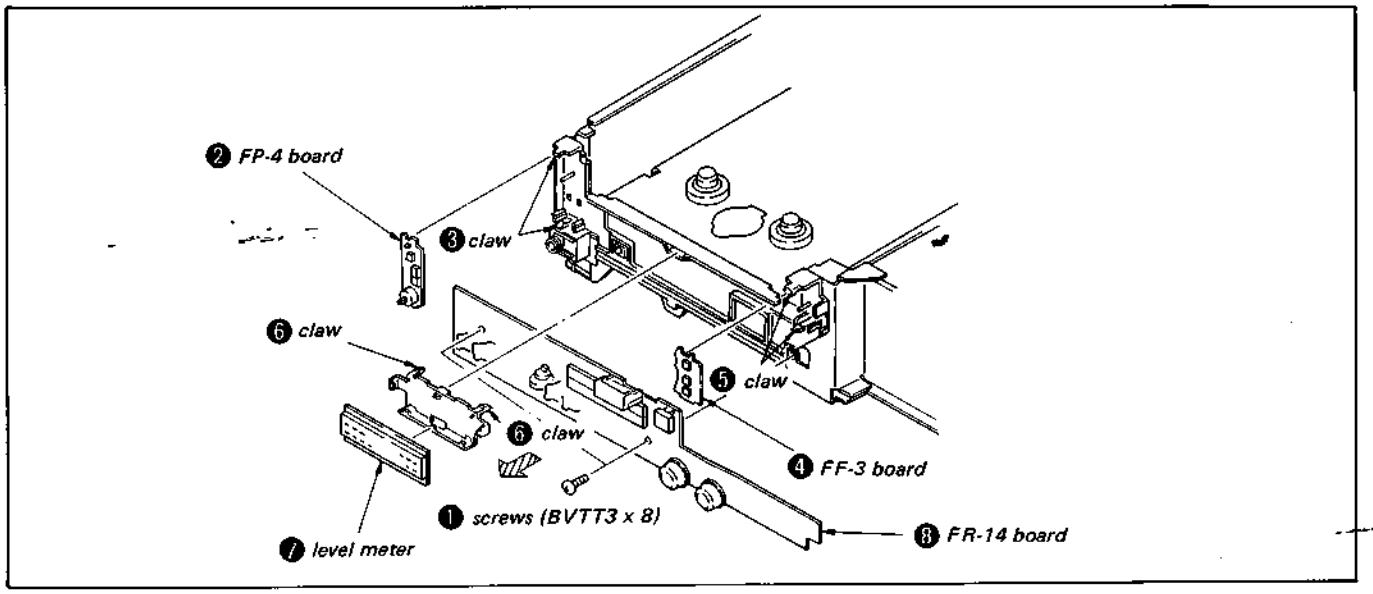


Fig. 1-7. Removal of the FR-14 board

1-8. REMOVAL OF THE POWER BLOCK

1) Remove the six screws ❶ (BVTT3 x 8).
2) Pull out the six connectors ❷.
3) Remove the POWER block ❸.

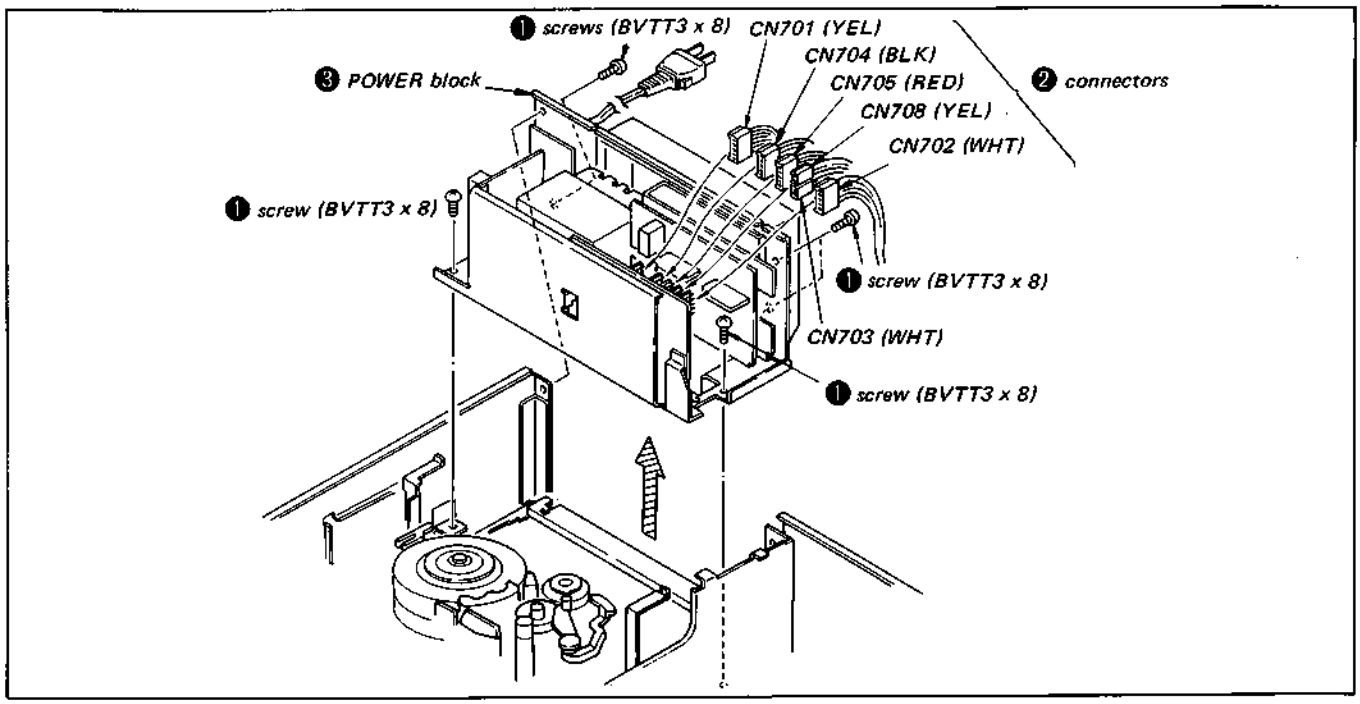


Fig. 1-8. Removal of the power block

1-9. REMOVAL OF THE FL CASSETTE COMPARTMENT ASSEMBLY

1) Remove the four screws ❶ (BVTT3 x 8).
2) Remove the internal gear flange ❷.
3) Remove the timing belt ❸.
4) Remove the FL cassette compantment assembly ❹.

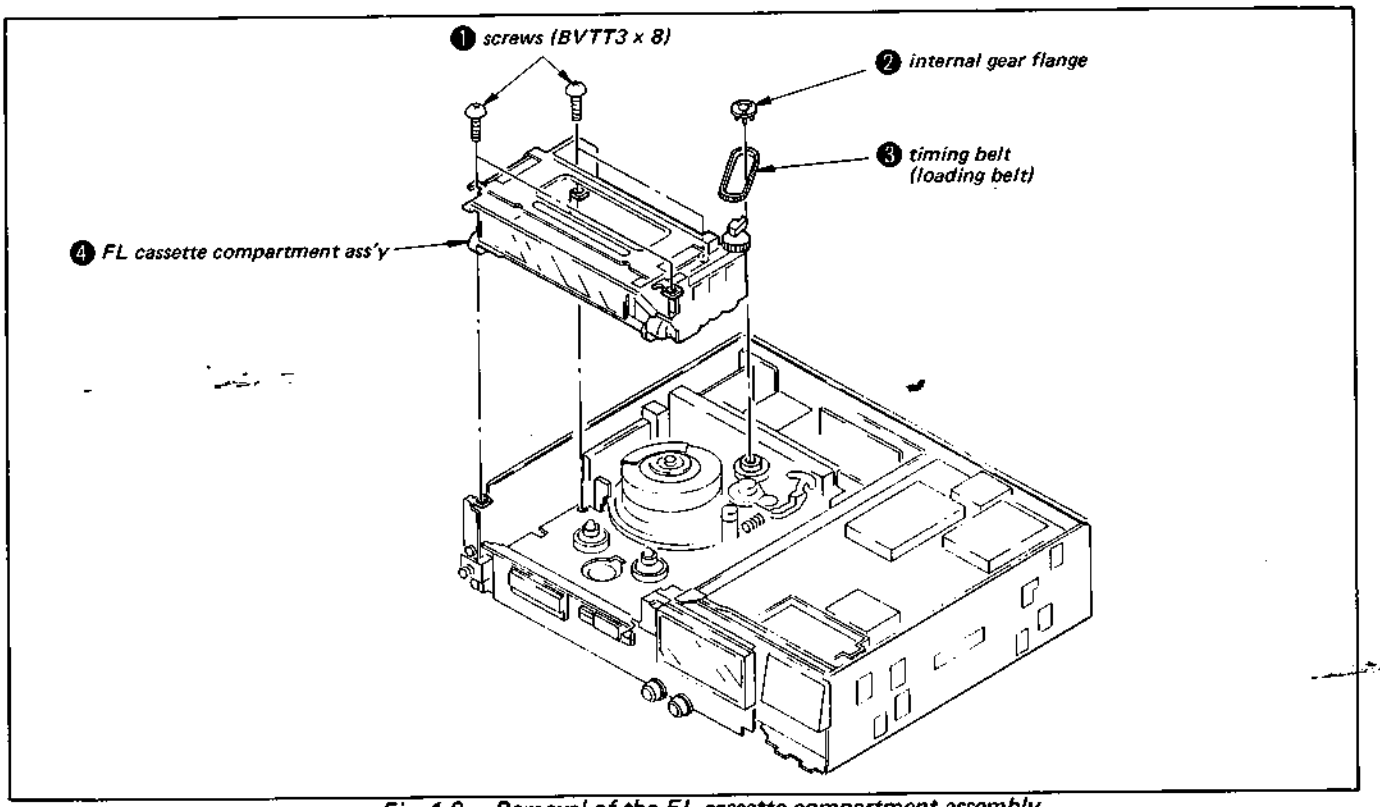


Fig. 1-9. Removal of the FL cassette compartment assembly

1-10. REMOVAL OF THE REEL BLOCK ASSEMBLY

1) Remove the four screws ❶ (B3 x 14).
2) Remove the reel block assembly ❷ in the direction indicated by the arrow.

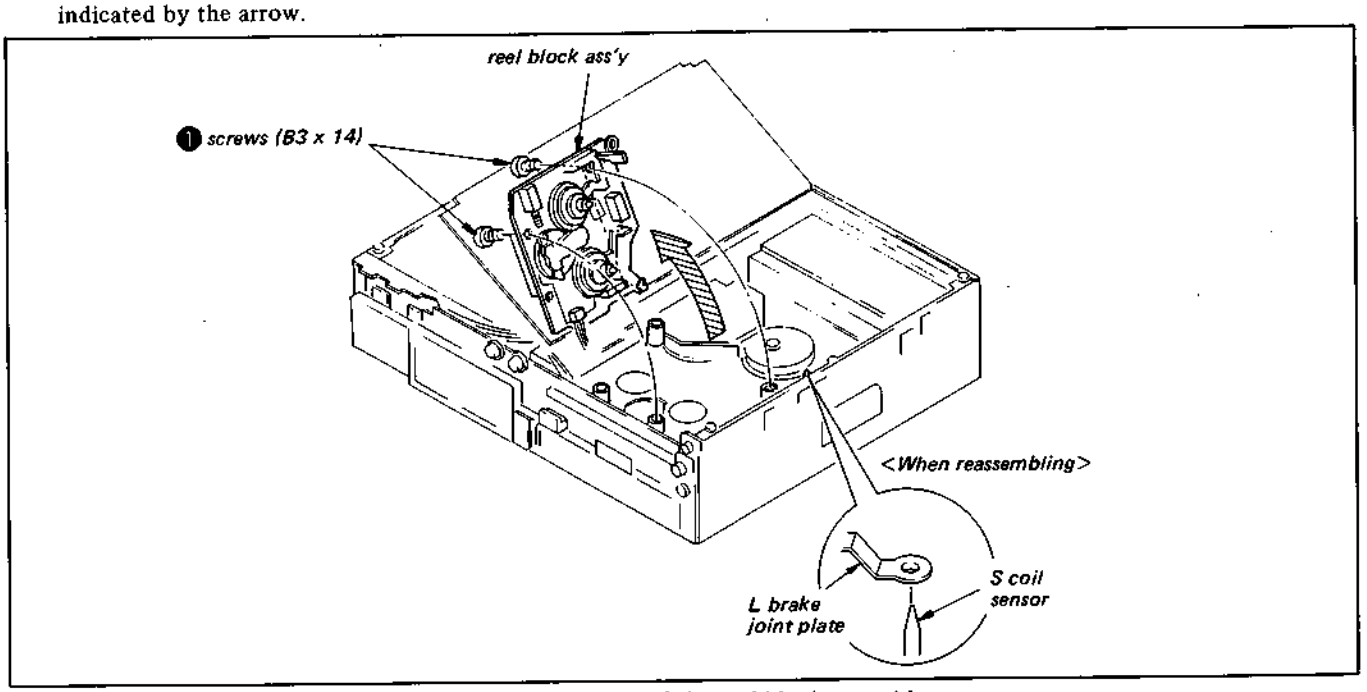


Fig. 1-10. Removal of the reel block assembly

1-11. OPERATION OF THE UNIT WITH THE FL CASSETTE COMPARTMENT REMOVED

1-11-1. How to Put the Unit into Threading Completed Mode when the FL Cassette Compartment is Removed

1) Connect ordinary screwdriver to short the leaf switch (cassette-on switch).

Note:

Be careful that the ordinary screwdriver do not touch any other parts (use tape or other insulation).

2) Press the cassette-down switch and leave it pressed in. When the power button is turned ON threading starts.
   * Refer to section 3-6 for instructions on how to remove the FL cassette compartment.

[How to EJECT in this condition]

- Press the EHECT button. When unthreading is completed and the internal gear starts to turn, turn the power OFF.

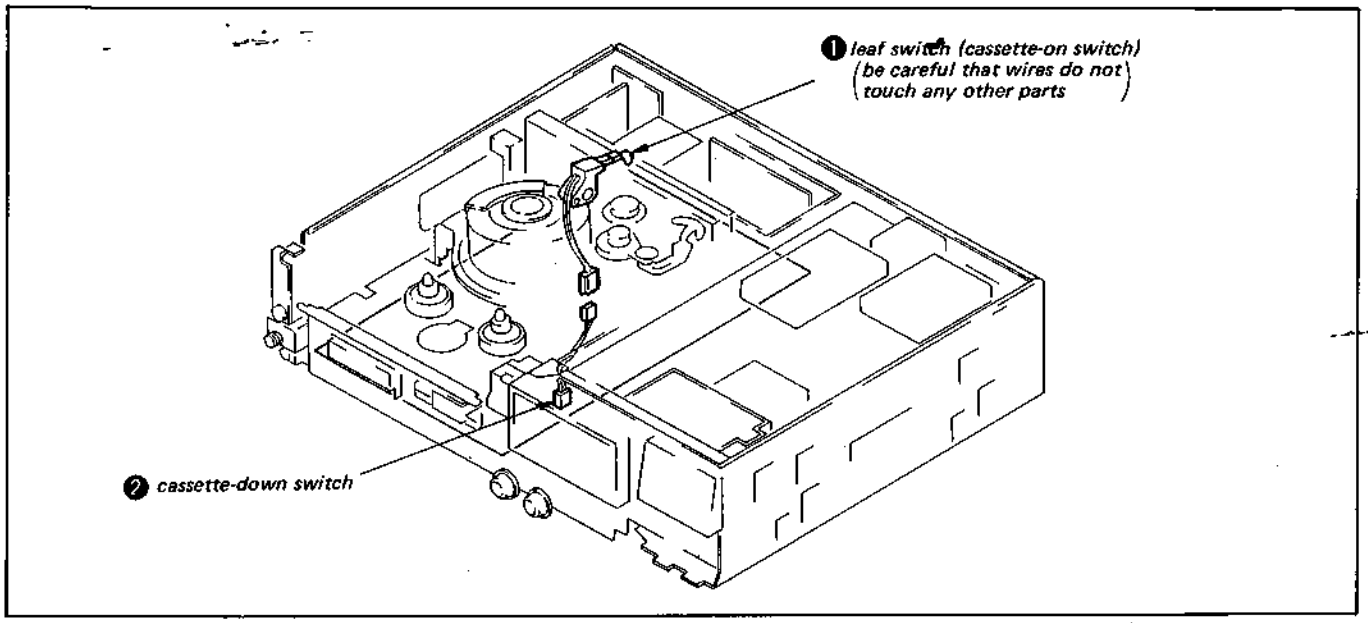


Fig. 1-11. How to thread the tape when the FL cassette compartment has been removed

1-11-2. Playback Without Cassette Installed

Complete threading by the procedure described in 1-12-1, then press the playback button.

1-11-3. How to Put in Recording Mode Without Cassette Installed

1) Thread by the procedure in 1-11-1, then ress the accidental erasure prevention switch shown in Fig. 1-12.
2) With the accidental erasure prevention switch pressed down, press the recording button.

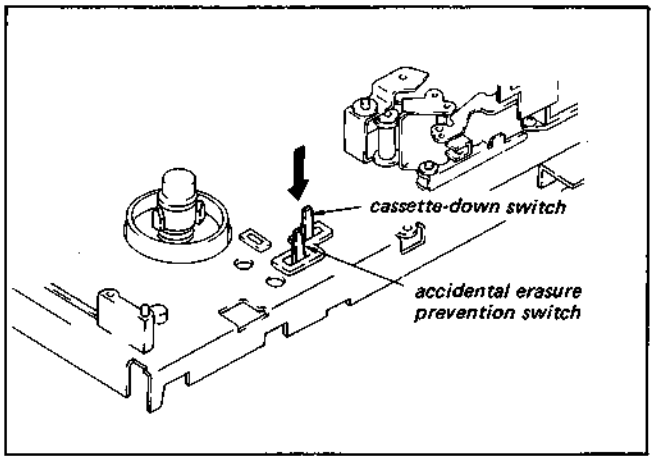


Fig. 1-12. How to put the recorder in recording mode with the FL cassette compartment removed

1-12. HOW TO LOAD, THREAD, UNLOAD AND UNTHREAD WITH THE POWER OFF

1-12-1. Manual Loading and Unloading

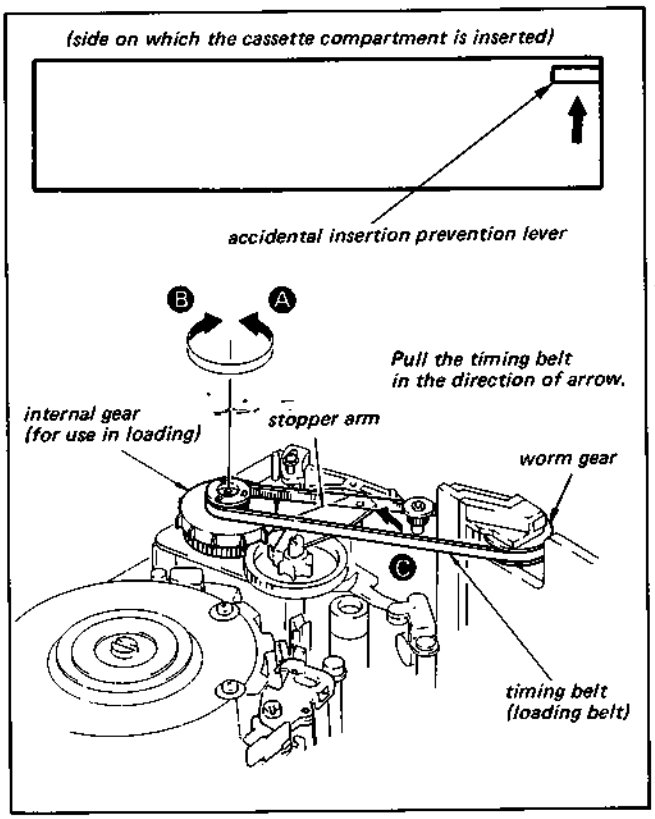


Fig. 1-13. Manual loading and unloading

1) Release the right accidental insertion prevention lever inside the cassette compartment, then press the stopper arm in the direction of arrow Ⓒ and release the internal gear stop.
2) Turn the internal gear manually in the direction of arrow Ⓐ until loading is completed.
3) To unload, turn the internal gear in the direction of arrow Ⓑ.

Note:

When the loading belt has been removed, load and unload by turning the worm gear manually.

1-12-2. Manual Threading and Unthreading

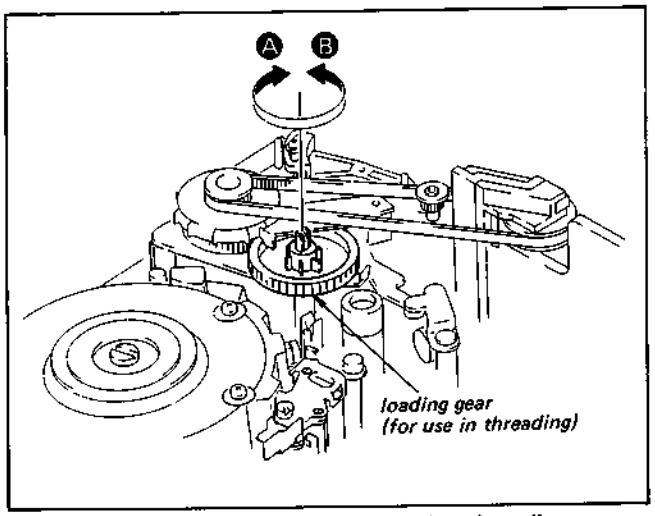


Fig. 1-14. Manual threading and unthreading

1) Turn the loading gear in the direction of arrow Ⓐ until loading is completed.
2) To unthread, turn the loading gear in the direction of arrow Ⓑ.

Note:

Always turn the loading gear sideways by hand.

Never use a screwdriver or other tool.

1-13. TOOLS AND FIXTURES REQUIRED FOR SERVICING

Ref. No.	Name	Part Code	Carved Jig No.	Use and Remarks
J-1	Torque Measurement Tape	J-6080-003-C	SL-0003C	forward torque and back tension measurement
J-2	Parallel Plate	J-6086-750-A	SL-0657	audio/CTL head lateral adjustment capstan shaft vertical adjustment
J-3	Dental Mirror (handle) Dental Mirror (mirror)	J-6080-029-A J-6080-030-1	SL-5052	tape path and tape traveling adjustment check
J-4	Alignment Tape (KR5-1V) Alignment Tape (KP5-1G)	8-969-995-92 8-969-995-61	———	tracking, overall adjustment of picture quality, etc.
J-5	Cleaning Fluid	Y-2031-001-0	———	
J-6	Thickness Gauge	9-911-053-00	———	
J-7	Chamois Cloth	2-034-697-00	———	cleaning
J-8	Head Demagnetizer	widely available	———	demagnetization of video head and audio head
J-9	Cleaning Cassette Tape	8-888-004-00	———	video head cleaning
J-10	Dihedral Adjustment Screw	J-6080-013-A	SL-0013	video dihedral adjustment
J-11	Video Head Checker	7-732-080-01	SL-5151	video head check

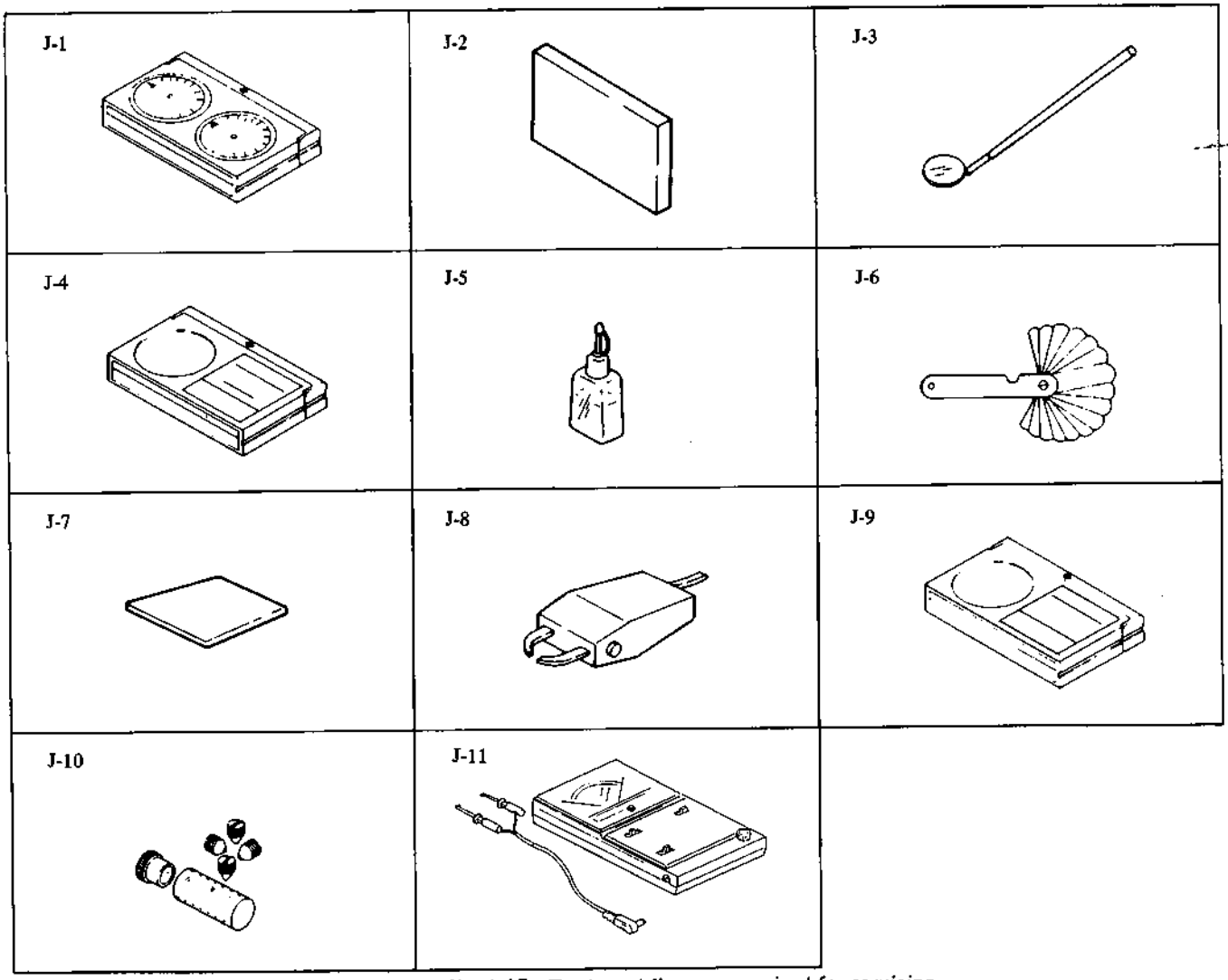


Fig. 1-15. Tools and fixtures required for servicing

SECTION 2
PERIODIC CHECK AND MAINTENANCE

In order to obtain the best performance from this unit and make full use of its capabilities, and to extend the life of the unit and tapes, it is recommended that the following periodec checks and maintenance be performed.

2-1. POST-REPAIR MAINTENANCE

The following must be done after every repair regardless of how many hours the user has operated the machine.

2-1-1. Cleaning of Rotating Head Disk Assembly

1) Press a chamois cloth (Jig Ref. No. J-7) which has been dipped in cleaning fluid (Jig Ref. No. J-5) lightly against the rotating drum assembly, then do the cleaning by slowly rotating the rotating head disk by hand. (Never try to clean by using the motor to turn it.)
2) Never try to clean by moving the chamois cloth at a right angle to the head tip. There is a very great danger of damaging the head tip if this is done.

2-1-2. Cleaning of the Tape Movement System

1) Clean the surfaces which the tape contacts during its movement (tape guide, drum assembly surface, capstan, pinch roller, etc.) with a chamois cloth that has been dipped in cleaning fluid.

2-1-3. Cleaning the Drive System

1) Clean the driving parts with a cloth that has been dipped in cleaning fluid.

parts requiring cleaning

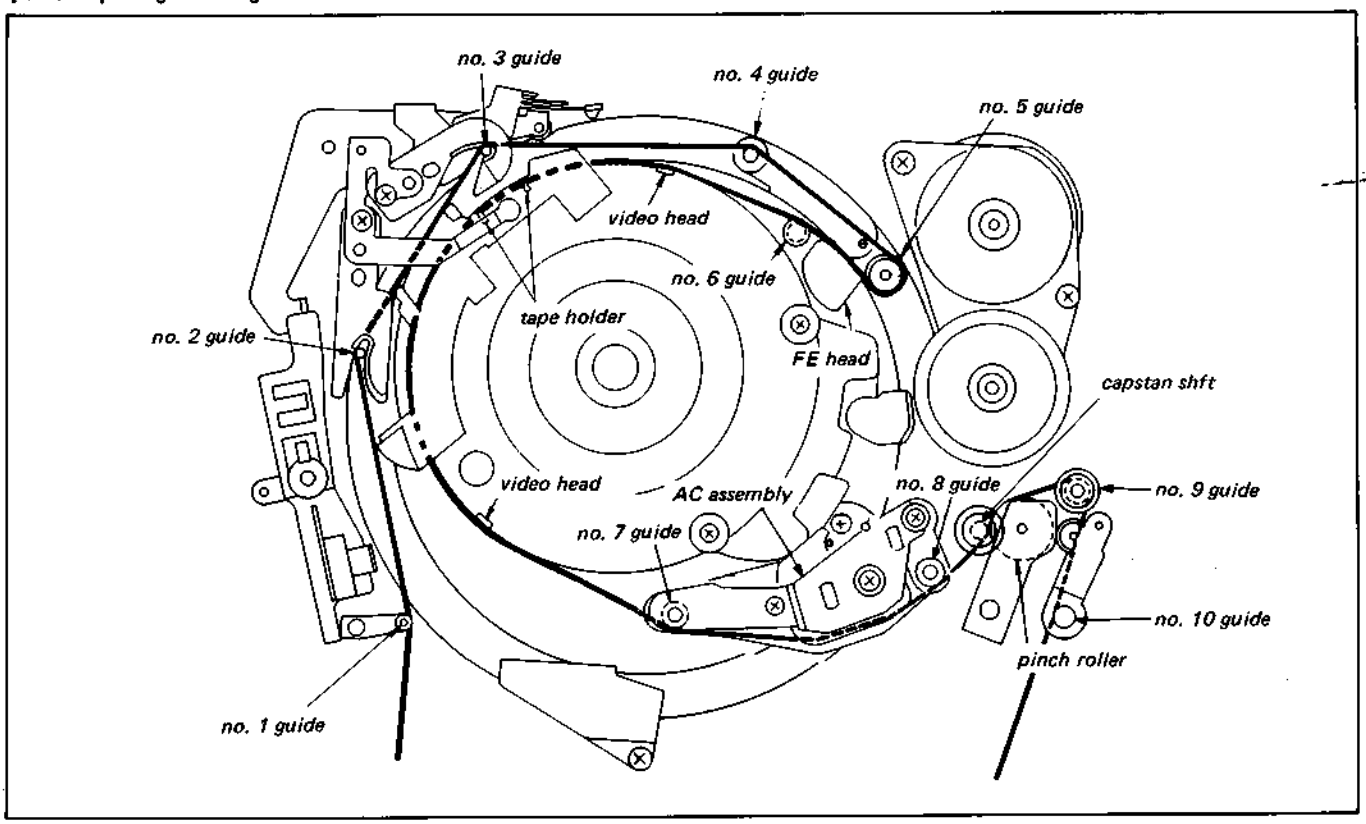


Fig. 2-1. Parts requiring cleaning

2-2. PERIODIC CHECK ITEMS

Perform the maintenance and check listed on the table below, according to users operating hours.

	Maintenance & Check	Replacement Part No.	500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	Remarks
Tape Trans Portation System	Cleaning of tape transportation system		○	○	○	○	○	○	○	○	○	○	This cleaning must be done whenever a repair is made.
	Cleaning and degaussing of ACE ass'y		○	○	○	○	○	○	○	○	○	○	
	Cleaning & degaussing of video disk ass'y		○	○	○	○	○	○	○	○	○	○	The life of the head varies, depending on operational conditions and method.
Driving System	Loading belt (synchro belt)	3-684-264-00	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	• This cleaning must be done whenever a repair is made.
	Cleaning of iron core and opening of solenoid	–	–	–	–	○	–	–	–	○	–	–	Wipe iron core and opening of solenoid with dry cloth.
Performance Confirmation	Abnormal sound		☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Adjust or replace the section which causes abnormal sound.
	Measurement of FWD back tension		–	☆	–	☆	–	☆	–	☆	–	☆	Confirmation must be made according to section 3-13. Specified value: adjust to 44 ±4 g·cm (When measured with torque cassette tape)
	Confirmation of brake system		–	☆	–	☆	–	☆	–	☆	–	☆	Confirmation must be made according to section
	Confirmation of record & playback functions		☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Perform the confirmation whenever repair is made.
	Measurement of forward torque		☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Adjust to 45 ~ 90 g·cm (SL-0003C)

○ Cleaning ★ Replacement ☆ Confirmation

Note:

On overhaul

When overhauling the unit, replace parts as indicated in the above table.

SECTION 3
CHECK, ADJUSTMENT AND REPLACEMENT PROCEDURES

3-1. STATE OF WEAR OF VIDEO HEADS CHECK

As the accuracy of the check depends on the state of the heads and precision of the checker, the results should be taken only as an indication of the state of wear.

[Adjustment of video head checker]

1) Mechanical zero
   Verify that the pointer of the video head checker is at the mechanical zero position. If it is not at this position, adjust the mechanical zero control.
2) Battery voltage check
   Set the MODE switch to "BATT" and set the POWER switch to "ON". The deflection of the pointer should be within the range marked "BATT". If not, replace the battery (use a 6F22 battery) as follows.
3) Calibration check
   Set the POWER switch to "ON" and the MODE switch to "CAL", then adjust the CAL control so that the pointer is on the CAL mark.
   Note 1: Be sure to carry out this adjustment whenever the RANGE switch is changed.
   Note 2: Be sure to check CAL before measuring the head and proceed the measurement after adjusting CAL, if CAL is not properly set.

[Method of measurement]

1) Remove the two screws that hold the damper assembly in place, then remove the damper assembly.
2) Detach the lead wires on the 4 video heads.
3) Attach the measuring clips to the head leads.
   Be sure to separate the leads by at least 1.5 cm.
4) Set RANGE switch to "B" and MODE switch to "MEAS". The pointer will deflect to indicate the state of wear of the heads.
   Note: The deflection for the 4 video heads may be different so be sure to measure both.

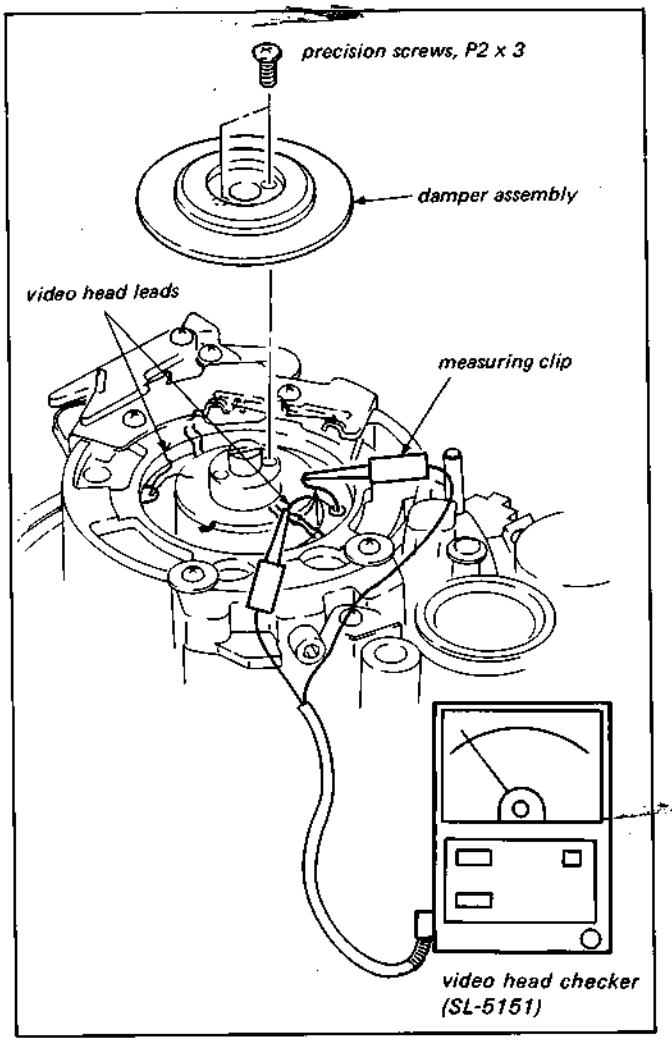


Fig. 3-1.

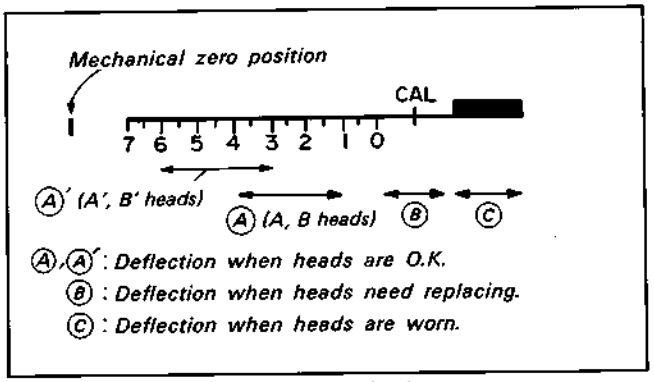


Fig. 3-2. Measured value

3-2. REPLACEMENT OF ROTATING HEAD DISK ASSEMBLY

3-2-1. Removal of the Rotating Head Disk Assembly (Fig. 3-3)

❶ Remove the two screws that hold the damper assembly in place, then remove the damper assembly.

❷ Use a hexagonal wrench to remove the hexagonal socket bolt that holds the upper drum assembly in place, then remove the upper drum assembly.

Note:

Turn the upper drum to remove, being careful not to move the adjusting plate. Movement of the adjusting plate will have a great effect on the tape path, so caution is required.

❸ Unsolder the rotating head disk relay plate (4 red and white leads).

❹ Remove the two hexagonal socket bolts holding rotating head disk assembly ❺ in place, then remove the rotating head disk assembly.

Note:

Be careful not to touch the head tip with the hand or bang anything against it.

3-2-2. Mounting of the Rotating Head Disk Assembly (Fig. 3-3)

1) Insert rotating head disk ❺ in place, being careful of the direction so that the red and white leads are in the right places.

2) Tighten hexagonal socket bolt ❹ and solder the lead wires.

Note:

Be careful to solder the lead wires correctly and not to break any wires.

3) Attach the upper drum, being careful (as during removal) not to move the adjusting plate. While pressing the two points that determine the height, tighten hexagonal socket bolt ❷.

Note:

When inserting the upper drum, be careful that it does not touch the head tip.

Note:

When replacing the rotating drum head, it can happen that the rotating head disk assembly will be hard to remove. In such a case, remove it using the method explained below (Fig. 3-4).

❶ Remove the hexagonal socket holts that hold the rotating head disk assembly in place.

❷ When the head disk is jammed on tight and is hard to remove, screw the hexagonal socket bolts removed in step ❶ into the threaded holes removed from the original holes by 90°. Tighten them a little at a time. The head disk will be lifted up by the two screws and will come off easily.

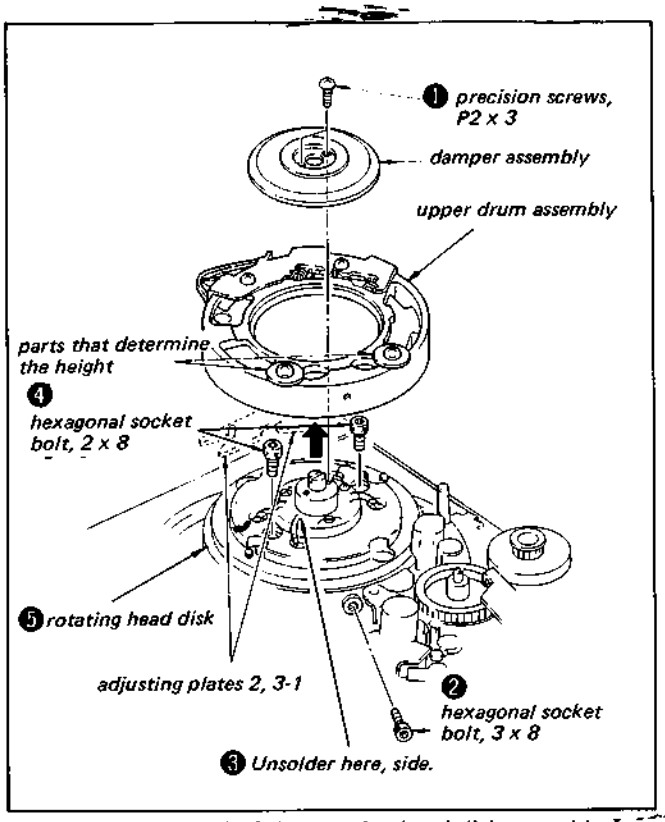


Fig. 3-3 Removal of the rotating head disk assembly I

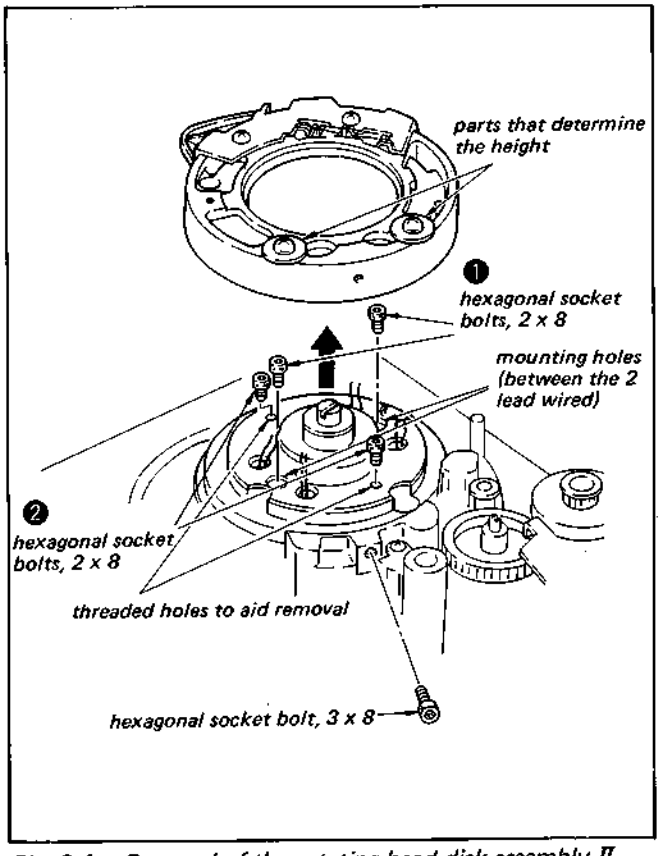


Fig. 3-4. Removal of the rotating head disk assembly II

3-3. VIDEO HEAD DIHEDRAL CHECK AND ADJUSTMENT

This adjustment is generally unnecessary, but it is sometimes necessary when the video head disk is replaced. (The video head disk used for maintenance has been precision adjusted at the factory using a microscope and almost never needs to be readjusted.)

When judging whether the video, head dihedral angle is correct, the alignment tape is played back. When this is done the tracking control knob must be in the centering position. If the check is done with this knob in other than the center click position (if the tracking is off-center), even if the dihedral angle is correct the picture will be reproduced as if it were off.

Before this adjustment is performed, the AC assembly position adjustment (refer to the section where the tape path adjustment is described) must be completed.

[Method of checking]

With the tracking control knob set to the center click position, play back the βII monoscope section of the alignment tape. Check to see if any of the vertical monoscope lines immediately below the switching pulse are reproduced double. If not, the dihedral angle is correct and does not have to be adjustment. If so, perform the adjustment as explained below.

[Method of adjustment]

1) As shown in Fig. 3-5. screw two dihedral angle adjustment screws (Jig Ref. No. J-10) into the adjustment screw holes on the side on which the red lead wires from the video head are connected, until the top of the screw is level with the video head disk. (If they are not screwed in far enough, the video head disk will not turn past the point where the top of the adjustment screw strikes the upper drum. Conversely, if it is screwed in too far, the head base will be moved, throwing the video head dihedral angle way off.)

   Note:

   The side on which the white lead wires are connected is the reference side and must not be moved.

2) Screw one of the two adjustment screws in a little bit farther until resistance is felt. Beyond this point, turning the screw still farther will move the video head, adjusting the dihedral angle.
3) With the adjustment screws in place, play the βII monoscope signal section of the alignment tape and see how the lines are reproduced. If the vertical lines are split apart more than before, turn the screw which was screwed in more tightly counterclockwise to loosen it, then adjust by tightening the other screw.
4) After the adjustment is completed, remove the adjustment screws and play the tape again to reconfirm that the adjustment is corredt.

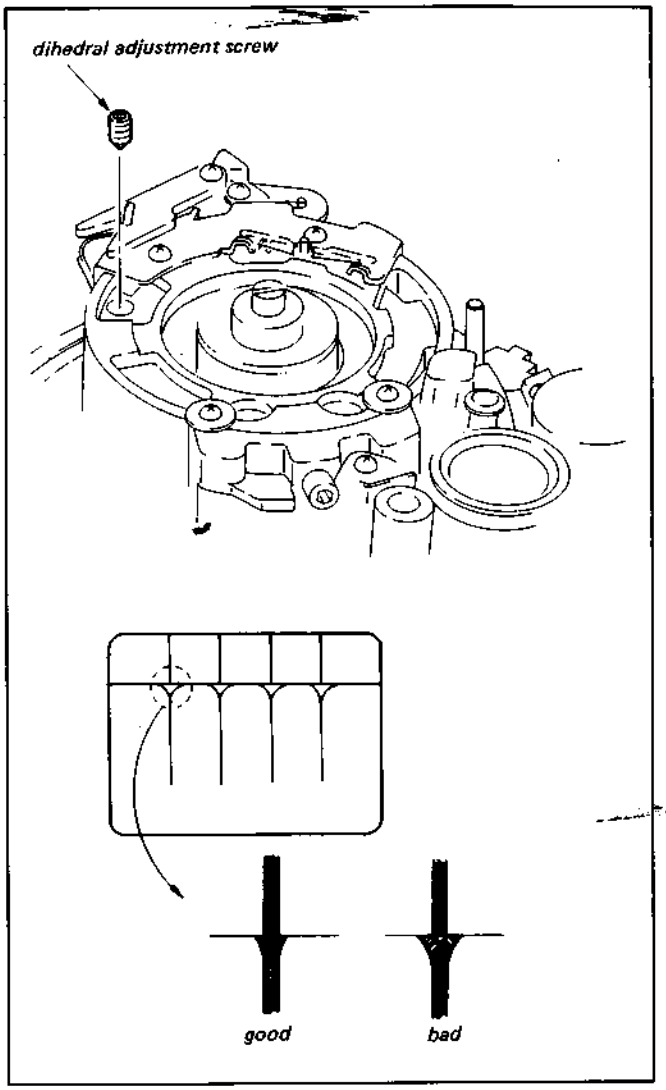


Fig. 3-5. Video head dihedral adjustment

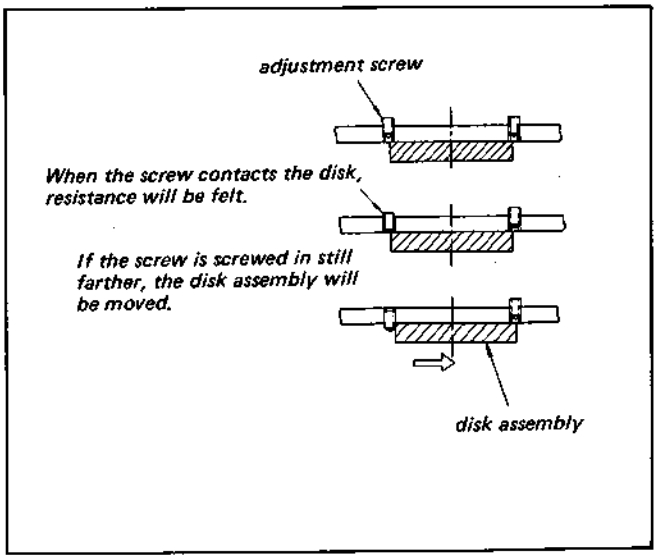


Fig. 3-6.

3-4. REPLACEMENT AND ADJUSTMENT OF THE DRUM ASSEMBLY

3-4-1. Replacement of the Drum Assembly

❶ Measure gap Ⓐ between adjusting plate 2 and the upper drum holder section, and record the measurement.

Note:

The position where the adjusting plate is mounted has a large effect on the tape path, so this measurement must be performed.

❷ Measure gap Ⓑ between adjusting plate 3-1 and the upper drum holder scetion, and record the measurement.

Note:

The position where the adjusting palte is mounted has a large effect on the tape path, so this measurement must be performed.

❸ Remove the screws shown in Fig. 3-7, then remove the tape guide ground plate and adjusting plates 1 and 2.

❹ Remove the 3 connectors from the rear of the chassis as shown in Fig. 3-8.

❺ Remove the 3 drum mounting screws from the rear of the chassis, then remove the main body of the drum assembly. After the replacement has been completed, adjust the drum path.

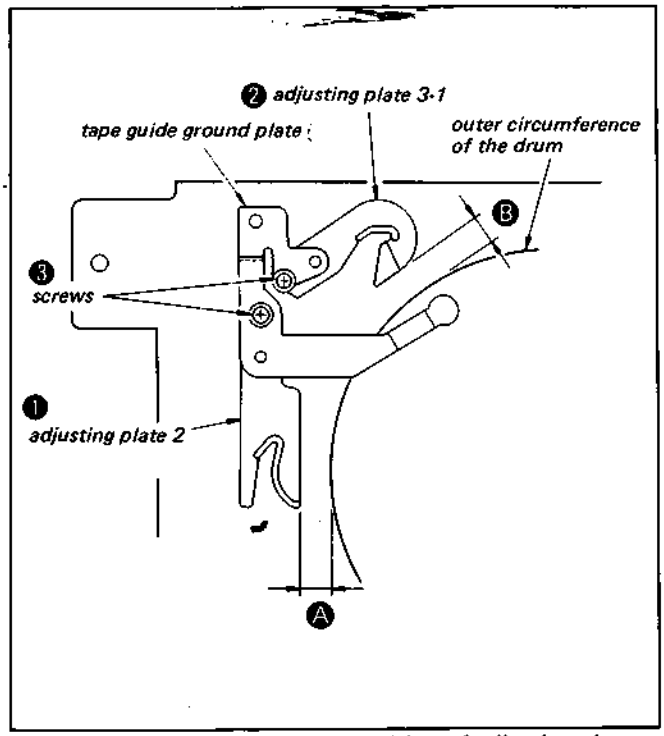


Fig. 3-7. Measurement of the position of adjusting plates 2 and 3-1

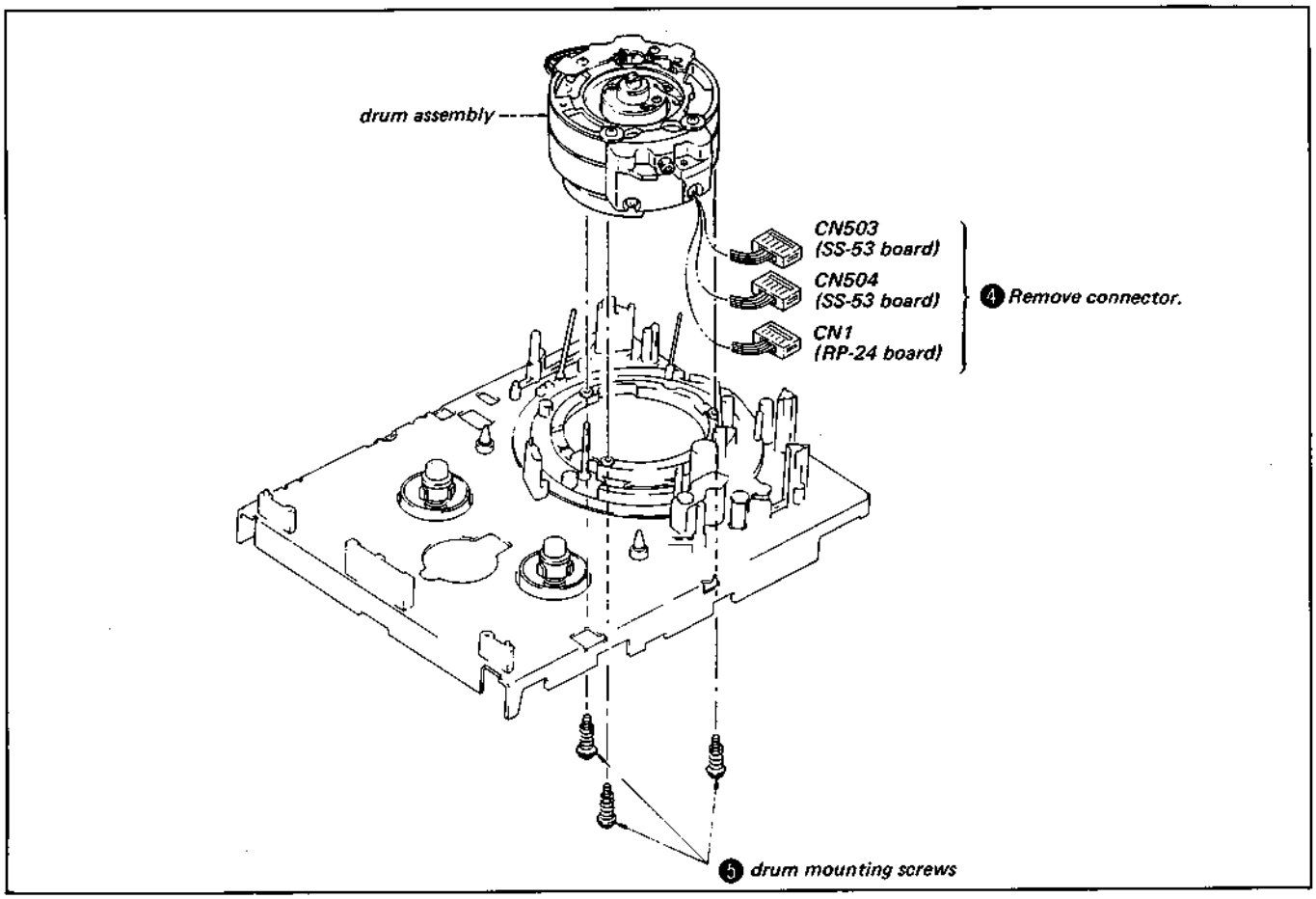


Fig. 3-8. Removal of the drum assembly

3-4-2. Adjustment of the Motor Gap when Repalcing the Drum Assembly

After replacing the drum assembly, adjust the gap between the motor rotor and the coil to 0.3 mm to 0.6 mm (Fig. 3-9).

[Procedure]

1) When re-assembling the drum, use the spacers which were removed to produce a gap of between 0.3 mm and 0.6 mm. Measure the gap using the gauge that comes with the drum for assembly and maintenance use. One side of the gauge is 0.3 mm and the other side is 0.6 mm. If the gap is adjusted correctly, the 0.3 mm side should fit in and the 0.6 mm side should not.
2) If this fails to give the correct gap width, do not usw the spacers which were removed; instead, use a combination of the 40.3 mm accessory spacers to obtain the correct width.

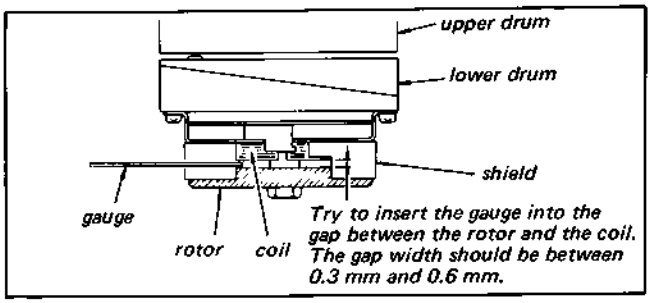


Fig. 3-9. Checking the motor gap width after replacing the drum assembly

Removal of the stator and rotor when replacing the drum

❶ Remove the nut and washer.
❷ Remove the rotor from the stator.
❸ Remove the 2 screws, then remove the stator from the main body of the drum.

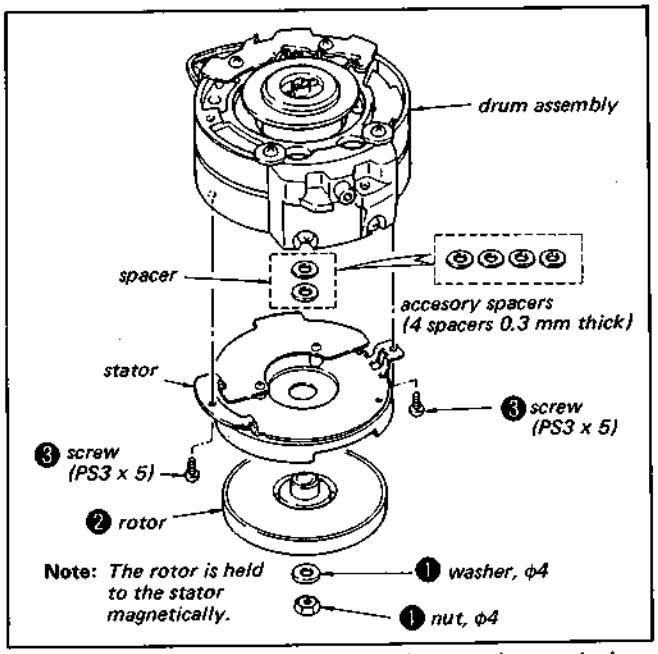


Fig. 3-10. Removal of the stator and rotor when replacing the drum

3-5. REPLACEMENT OF THE CAPSTAN MOTOR

3-5-1. Removal of the Capstan Motor (Fig. 3-11)

- Remove screw ❶, then remove the capstan motor from the rear of the mechanical chassis.

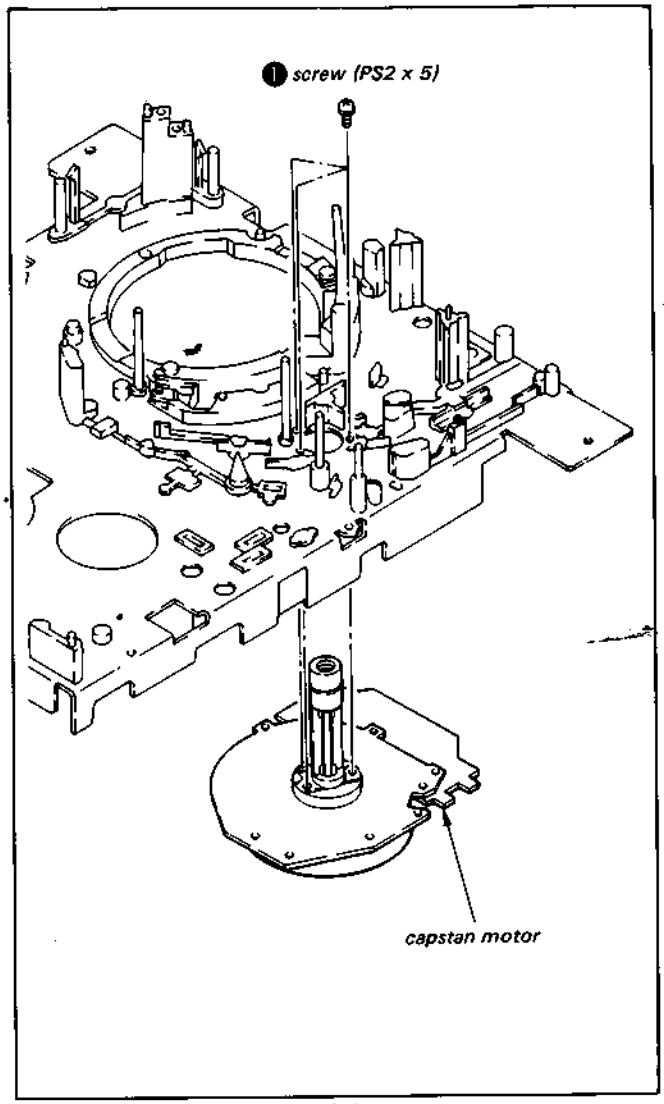


Fig. 3-11. Removal of the capstan motor

3-6. REMOVAL OF THE S COIL SENSOR (Fig. 3-12)

1. Remove the spring.
2. Remove the claw in the direction of arrow Ⓐ, then pull the S coil sensor out.
3. Unplug the connector from CN420 on SS-53 board.

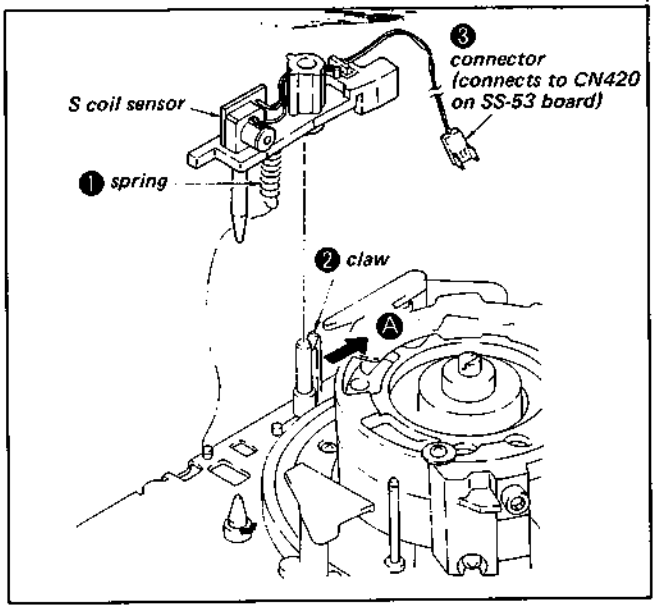


Fig. 3-12. Removal of the S coil sensor

3-7. REMOVAL OF THE FL CASSETTE COMPARTMENT ASSEMBLY (Fig. 3-13)

1. Remove the screws (BVTP3 x 8).
2. Remove the internal gear flange.
3. Remove the timing belt.
4. Pull connector CN406 (yellow) out.
5. Remove the FL cassette compartment section in the direction of arrow Ⓐ.

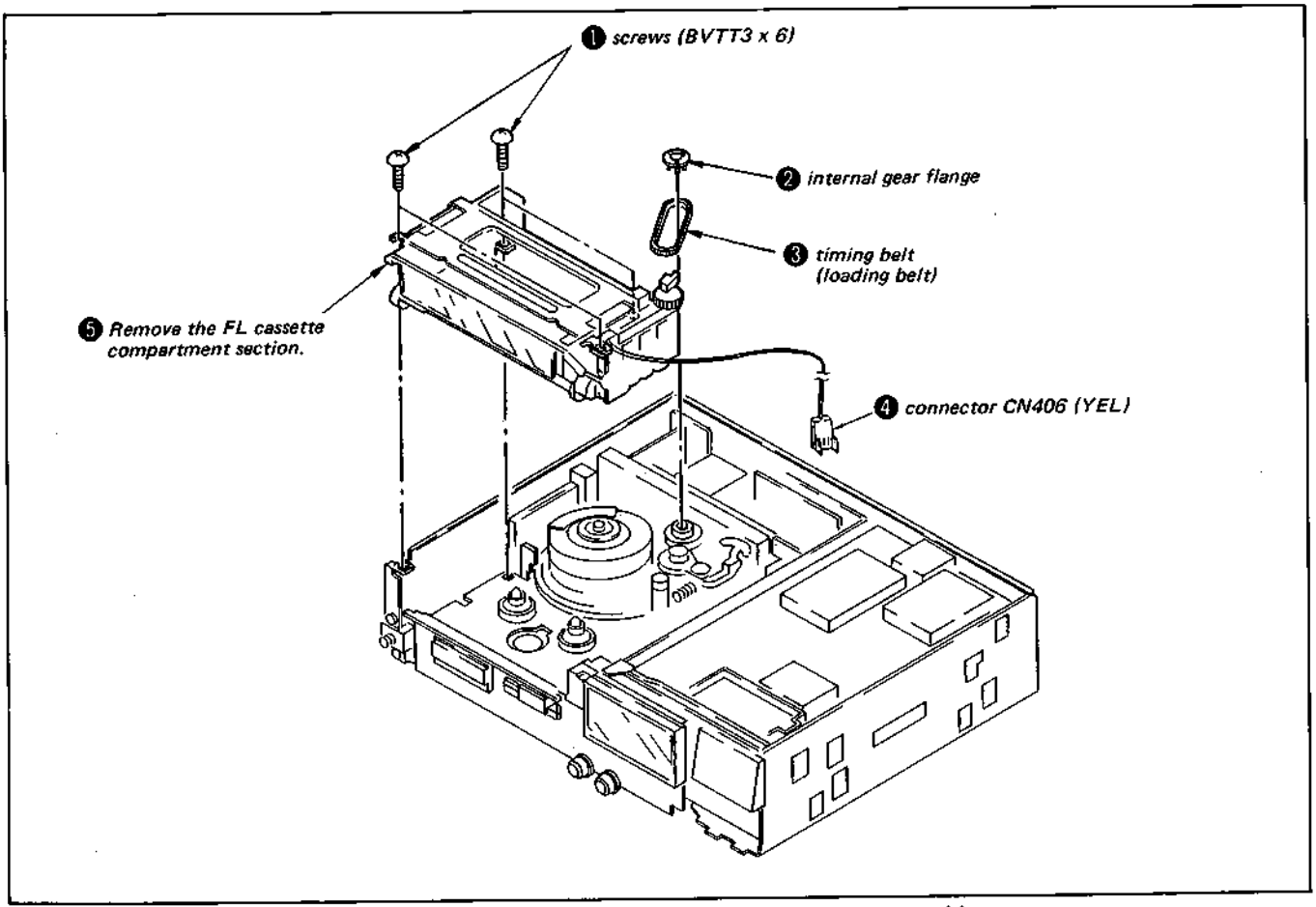


Fig. 3-13. Removal of the FL cassette compartment assembly

3-8. ADJUSTMENT OF THE FL CASSETTE COMPARTMENT

3-8-1. Adjustment of the Position of the Right Gear of the FL Cassette Compartment Assembly

In the FL cassette compartment assembly, the cassette holder must always move parallel to the mechanical chassis. The gear system is used to control the amount by which the cassette holder advances so that this will be the case. Consequently, if the gears in this section slip out of mesh, the next time the unit is assembled the gear mesh must be adjusted to the correct position, otherwise the cassette will not feed properly.

[Adjustment of the gear positions]

1. Get a positioning rod about 200 mm long and 1.5 mm in diameter ready.
2. While passing the positioning rod through the combination of the drive arm right and cassette ON cam, fit the latter on the right side plate. Similarly, fit the drive arm left onto the left side plate.
3. Similarly, while passing the positioning rod through the worm wheel, fit the latter onto the right side plate.
4. Similarly, while passing the positioning rod through the combination of the limiter gear and cassette OFF cam, fit the latter onto the right side plate.

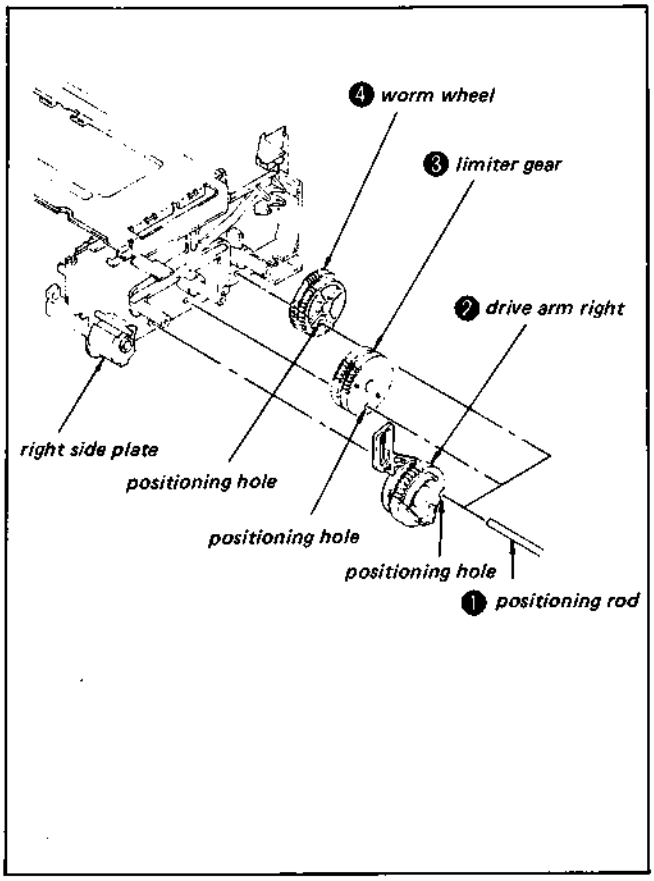


Fig. 3-14. Positioning of the FL cassette compartment gears

3-8-2. Cassette ON Switch Operation Check and Adjustment

[Method of checking]

When inserting a cassette into the FL cassette compartment assembly, confirm that, as the cassette is inserted, the microswitch comes ON when the center of the drive roller is 10 to 13 mm from the end of the guide groove, as shwon in Fig. 3-15. (A clicking sound can be heard after the switch is pressed.)

[Methode of adjustment]

Bend the tip of the cassette ON switch in the direction of the arrow.

Adjust so that the cassette ON switch comes ON when the above distance is 10 to 13 mm, and finally tighten the screw.

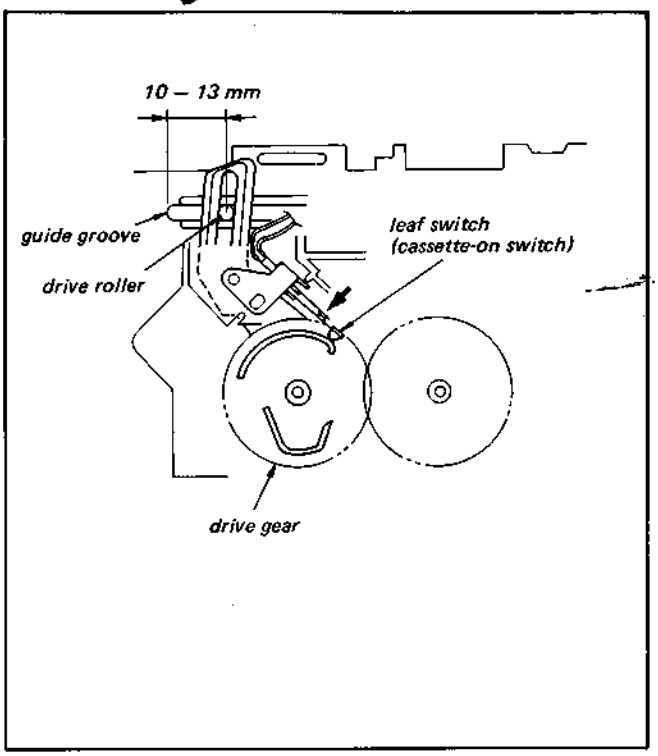


Fig. 3-15. Cassette ON switch operation check and adjustment

3-8-3. Checking and Adjustment of the Cassette Door Assembly

[Method of checking]

With the door opening and closing arm returned all the way in the direction of arrow Ⓐ , check to make sure that the upper and lower doors are vertical.

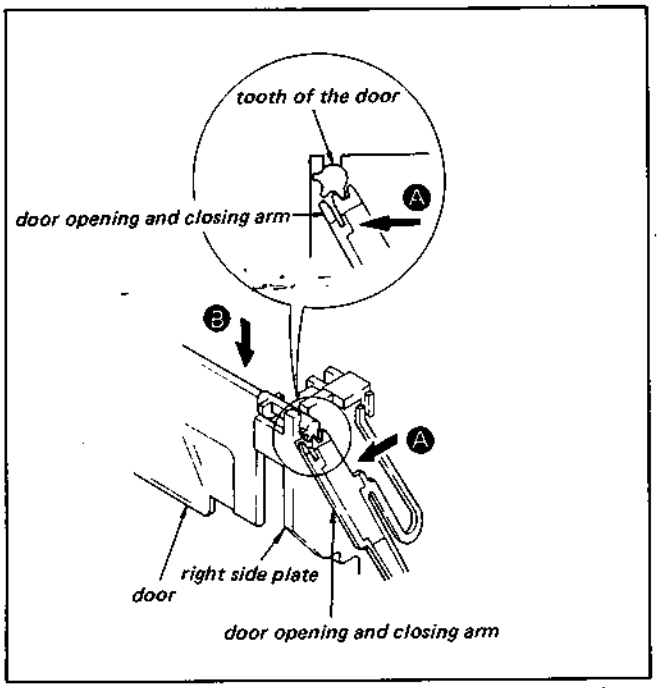


Fig. 3-16. Adjustment of the position of the cassette door assembly

[Method of adjustment]

Check to make sure that the door opening and closing rack plate has returned all the way. Then, close the upper door together in the drection of arrow Ⓑ so that it is vertical, and mesh the gears.

3-8-4. Mounting the FL Cassette Compartment Assembly (Fig. 3-17)

❶ Hook the two holes of the FL cassette compartment assembly onto the mechanical chassis, then place the compartment in the specified position on the chassis.

❷ Loosely tighten the 4 mounting screws of the FL cassette compartment assembly. Move the FL cassette compartment assembly forward and backward with respect to the mechanical chassis, set it in the correct position, then tighten the mounting screws all the way.

❸ Connect the timing belt (loading belt) between the threading motor and the worm gear, then hold it in place with the internal gear flange.

❹ Press the tension roller arm in the direction of the arrow to adjust the tension of the timing belt (loading belt), then fix it in place with the arm fixing screw.

❺ Insert the harness sticking out from the FL cassette compartment into connector CN406 on SS-53 board.

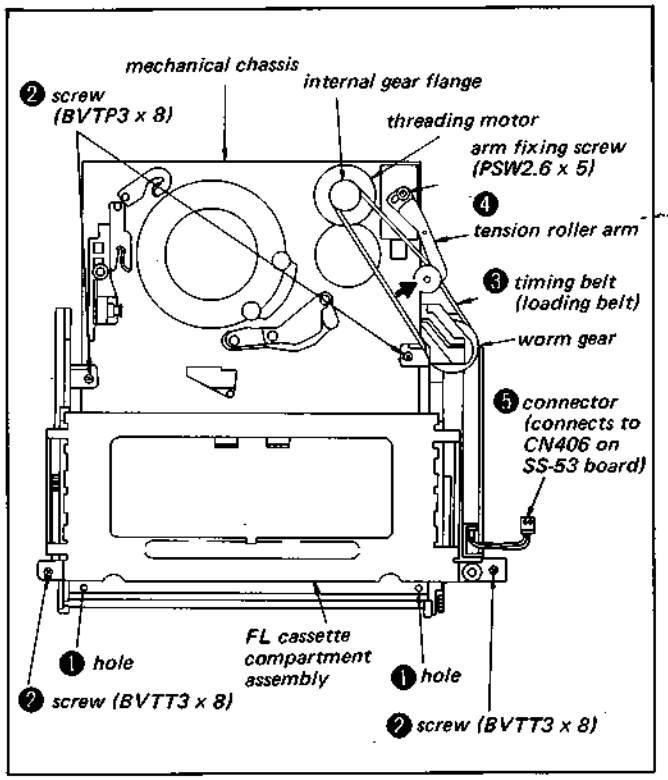
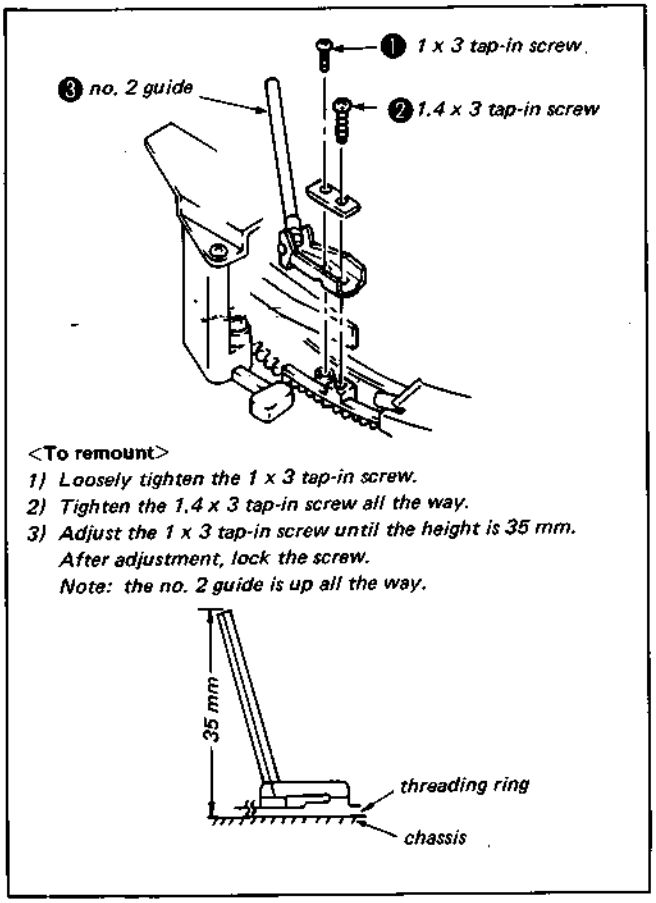


Fig. 3-17. Mounting the FL cassette compartment assembly

3-9. REMOVAL OF THE No. 2 AND No. 3 GUIDES

3-9-1. Removal of the No. 2 Guide

❶ Remove the 1 x 3 tap-in screw.
❷ Remove the 1.4 x 3 tap-in screw.
❸ Remove the No. 2 guide assembly.

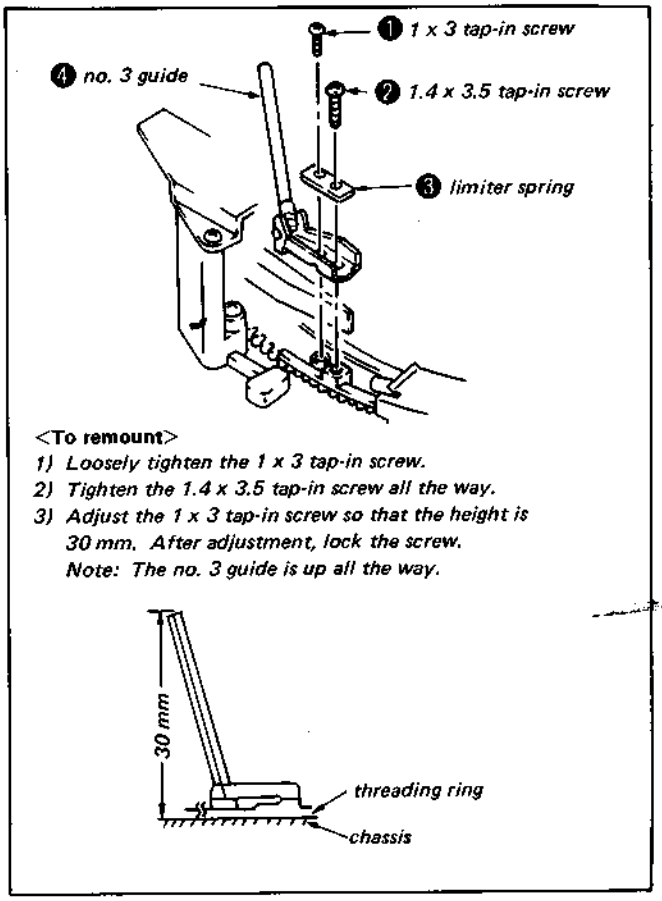


<To remount>
1) Loosely tighten the 1 x 3 tap-in screw.
2) Tighten the 1.4 x 3 tap-in screw all the way.
3) Adjust the 1 x 3 tap-in screw until the height is 35 mm. After adjustment, lock the screw.
Note: the no. 2 guide is up all the way.

Fig. 3-18. Removal of the no. 2 guide

3-9-2. Removal of the No. 3 Guide

❶ Remove the 1 x 3 tap-in screw.
❷ Remove the 1.4 x 3.5 tap-in screw.
❸ Remove the limiter spring.
❹ Remove the No. 3 guide assembly.



<To remount>
1) Loosely tighten the 1 x 3 tap-in screw.
2) Tighten the 1.4 x 3.5 tap-in screw all the way.
3) Adjust the 1 x 3 tap-in screw so that the height is 30 mm. After adjustment, lock the screw.
Note: The no. 3 guide is up all the way.

Fig. 3-19. Removal of the no. 3 guide

3-10. REPLACEMENT AND ADJUSTMENT OF THE S THREADING RING

3-10-1. Prepartation to Remove the S Threading Ring Removal of the ACE Assembly, FE Head and Threading Motor (Fig. 3-20)

❶ Remove the cross-recessed head screw.
❷ Remove the No. 6 guide nut.
❸ Remove the No. 6 washer.
❹ Remove the No. 6 guide spacer.
❺ Remove the compression coil spring.
❻ Remove the 2 screws and ACE bush, then remove the ACE assembly and the FE head.

Note:
Since the ACE assembly and the FE head are connected by a lead wire, be careful when removing them. It is not necessary to remove the compression coil spring below the ACE assembly, but be careful not to use it.

❼ Remove the 3 screws, then remove the threading motor assembly by pulling it up and out.

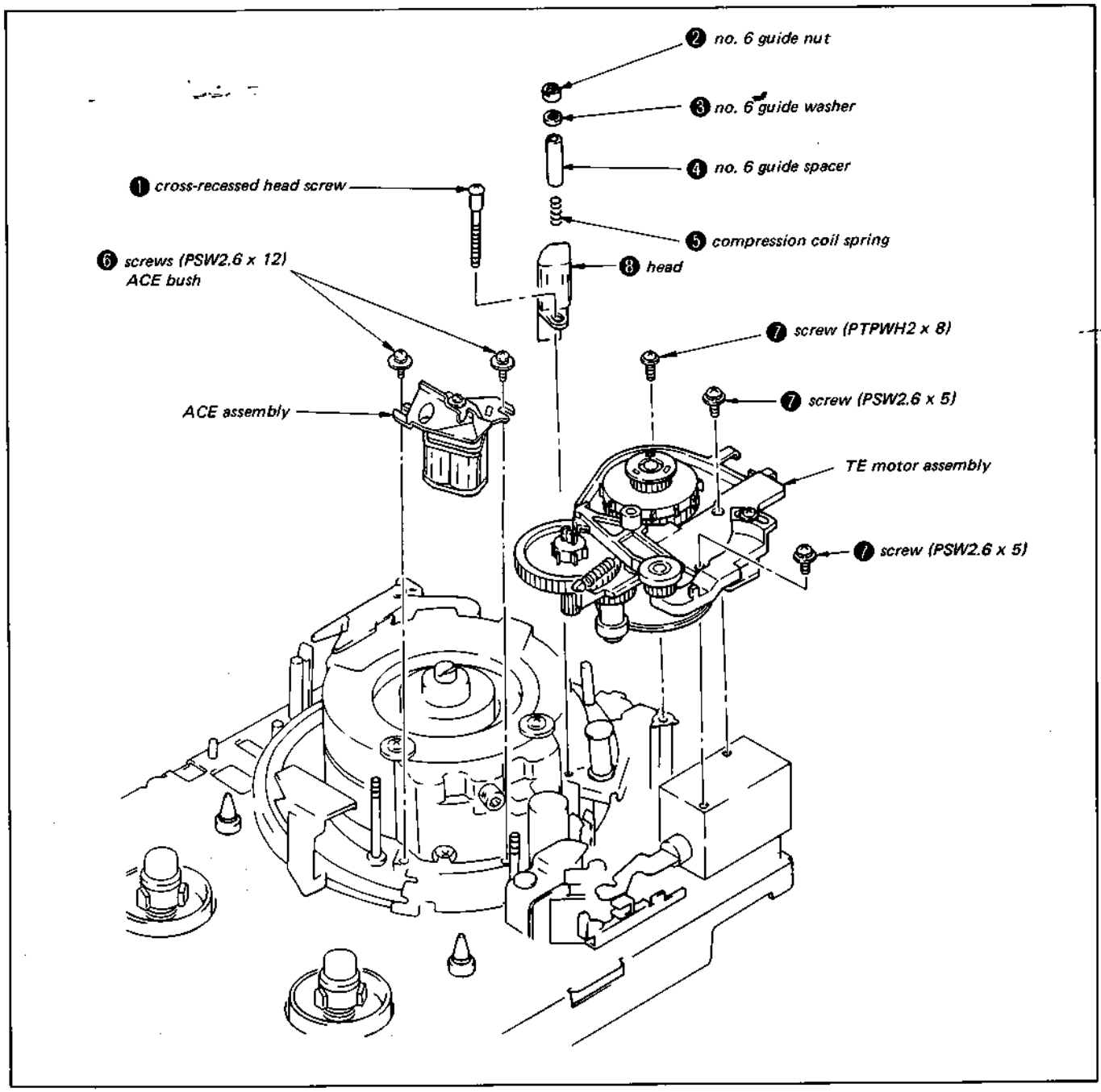


Fig. 3-20. Removal of the ACE assembly, FE head and TE motor assembly

Removal of Miscellaneous Parts (Fig. 3-21)

Proceeding in the same manner as in replacement of the drum assembly, measure the width of the gap between the upper drum and the adjusting plates (Fig. 3-7).

1. Remove the screw, then remove the tape guide ground plate and adjusting plates 1 and 2.
2. Remove the two screws, then remove the tape holder assembly.
3. Remove the screw, then remove the guide plate.
4. Remove the 2 PTPWH2 x 8 screws and the 2.6 x 24 screw, then remove shuttle guide 2.
5. Remove the 3 PTPWH2 x 8 screws and the 2.6 x 24 screw. Then remove the 2 claws holding shuttle guide 1-YA in place, and finally remove shuttle guide 1-YA.
6. Remove the slant base assembly.
7. Remove the BVTT2.6 x 6 screw, then remove the pinch liner link.

Note:

After removing the guide plate, do not thread or unthread a tape with the shuttle guide mounted.

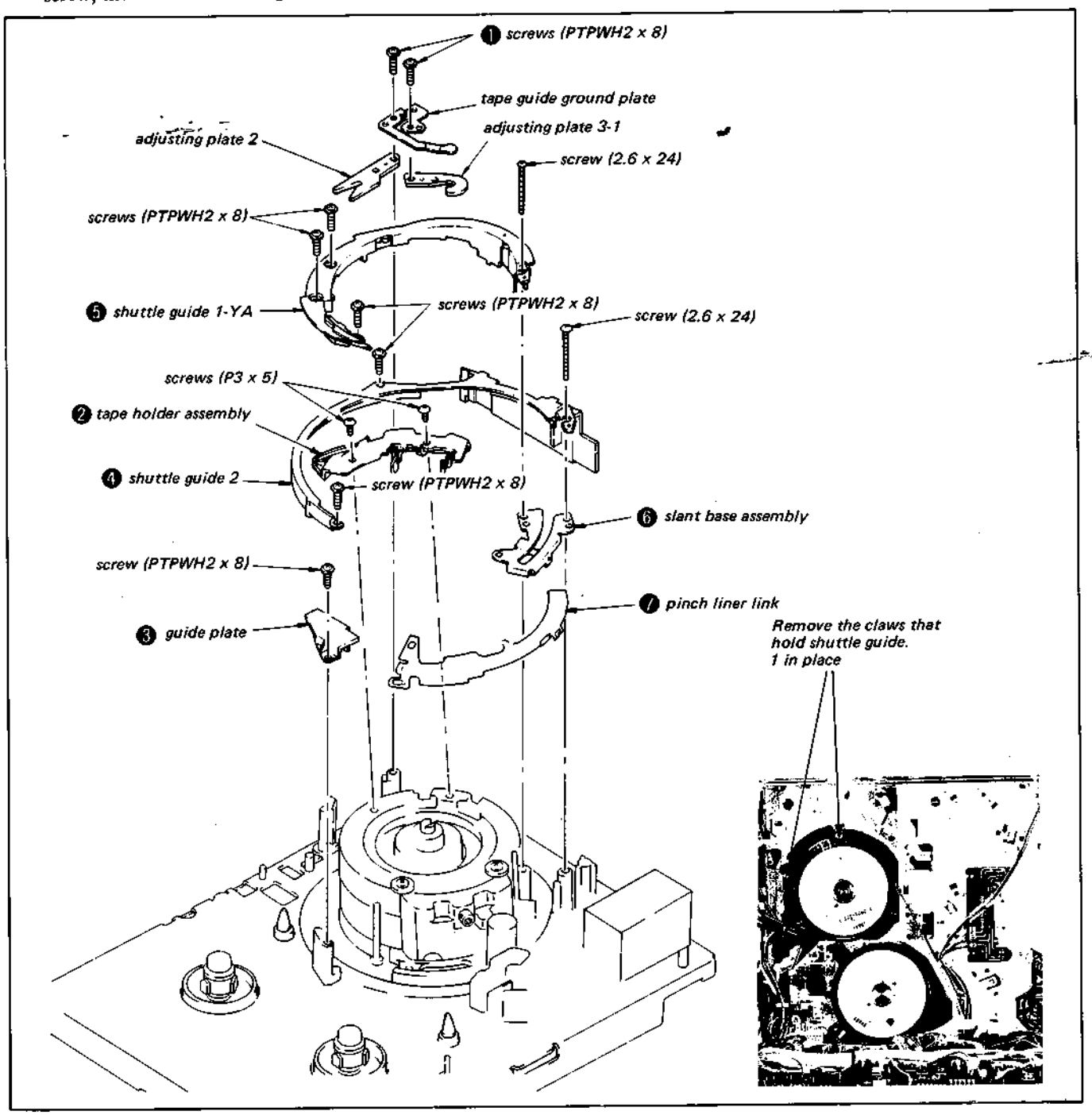


Fig. 3-21 Removal of miscellaneous parts

3-10-2. Removal of the S Threading Ring (Fig. 3-22)

❶ Turn the stop washer and remove the ring roller (B) and (C).

❷ Remove the screw, then remove the ring roller adjustment plate.

❸ Remove the S threading ring.

Note:

Once a stop washer has been removed, do not use it again.

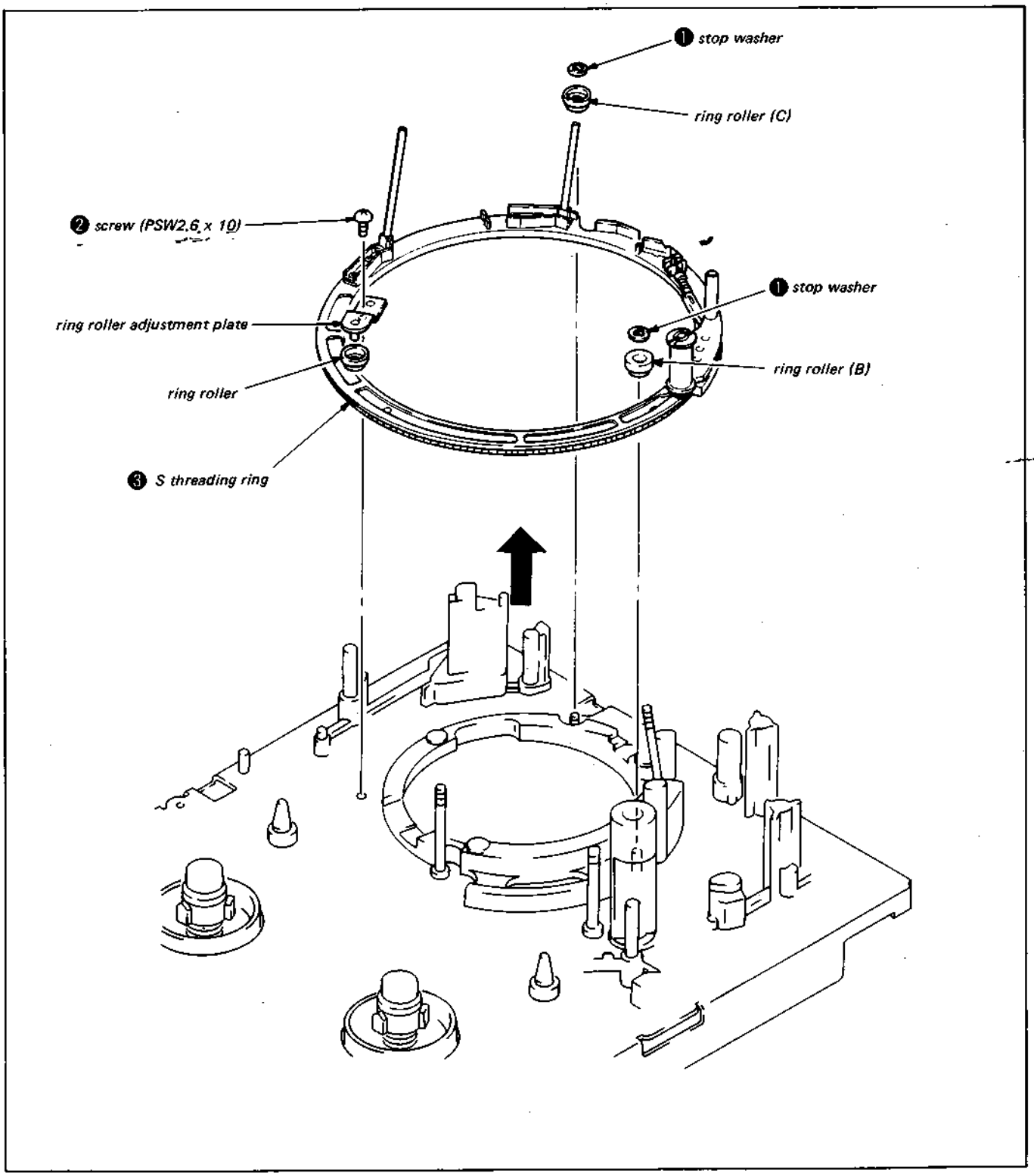


Fig. 3-22. Removal of the S threading ring

3-10-3. S Threading Ring Mounting and Position Adjustment (Fig. 3-23)

❶ Set the slider gear assembly in the unthreading completed position.
(Slider gear assembly set so that it is up against part T slider stop mold.)

❷ In this condition, fit the threading ring into place, match the chassis hole (ϕ3) of part Ⓐ with the S threading ring hole (ϕ1.5), and mesh with the drive gear teeth.

❸ Attach ring roller (B) and fix in place with a stop washer.

❹ Attach the ring roller, and fix in place with the adjustment plate.

Note:
After replacement and mounting are completed, adjust the AC assembly as explained in the section on tape path adjustment.

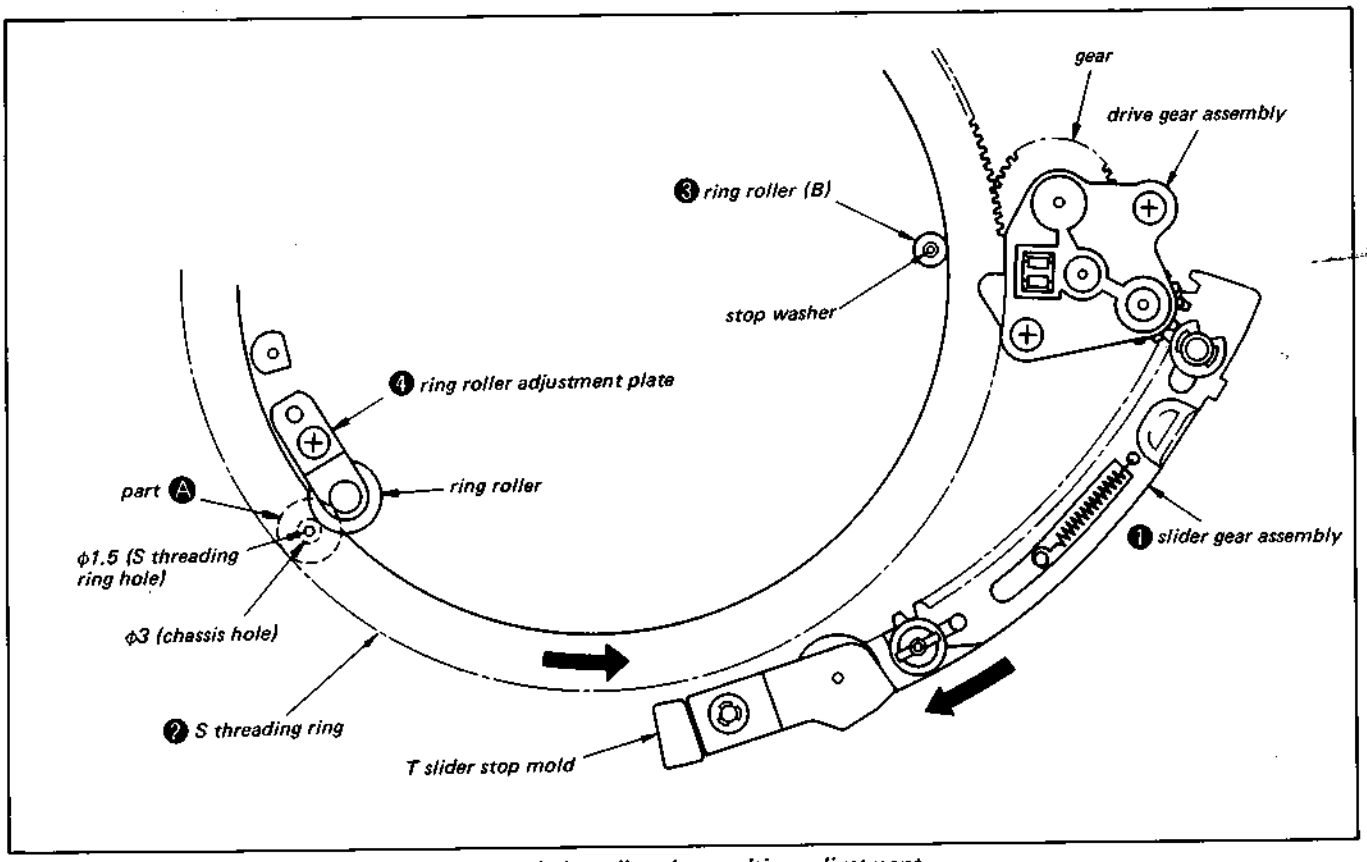


Fig. 3-23. S threading ring position adjustment

3-11. PINCH SNAP-FIT LIMITER GAP CHECK AND ADJUSTMENT

[Method of checking]

1) Set in the threading completed condition.
2) With the plunger pushed in all the way, confirm that the thickness of the pinch sanp-fit limiter gap is 0.4 mm to 0.6 mm. If it is not, adjust as explained under [method of adjustment] below.

[Method of adjustment]

❶ With the pinch solenoid in the absorbed condition (when the plunger is pushed in all the way), loosen the adjustment screw.

❷ Press the pinch limiter adjustment plate in the direction of arrow ❸ with an ordinary screwdriver, as in section Ⓐ in the diagram, and adjust until the thickness of the gap in 0.4 mm to 0.6 mm.
Tighten the adjustment screw and then lock it to fix everything in place.

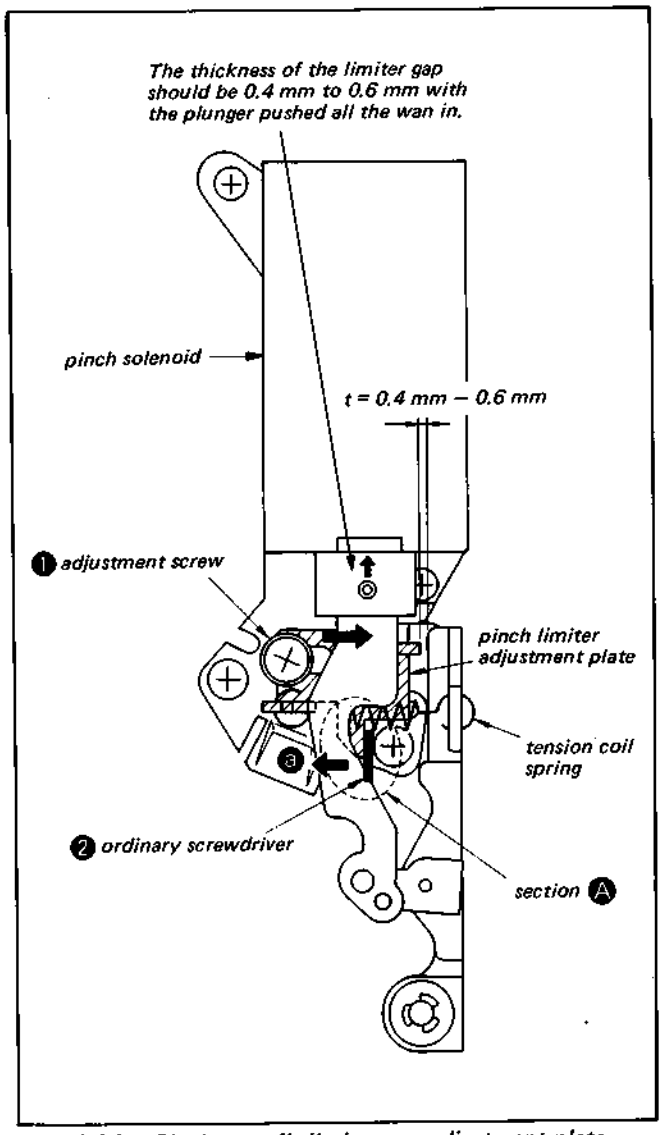


Fig. 3-24. Pinch snap-fit limiter gap adjustment plate

3-12. THREADING END SWITCH AND T COIL SENSOR

3-12-1. Threading End Switch (TE Switch) Position Check and Adjustment

[Method of checking]

Turn the S threading ring manually. Check to make sure that, when the lock roller moves from above the straight line part of the notch in the ring (Fig. 3-25 section Ⓐ) to 1/3 of the way down it and back, the TE switch turns ON and OFF. This can be confirmed from the clicking sound. If the lock roller has to move outside of this range before the switch will turn ON and OFF, adjust as explained below.

[Method of adjustment]

1) Set the lock roller between the top of the notch in the S threading ring and 1/3 of the way down it, turn the TE switch in the direction of the arrow and, when the switch turns ON (with a clicking sound), fix the TE switch in place.
2) When the adjustment is completed, repeat the check as described under [method of checking].

[Removal]

1 Remove the tension coil spring that is attached to the S coil sensor assembly, then remove the S coil sensor.
2 Remove the lock arm assembly in the direction of arrow Ⓐ.

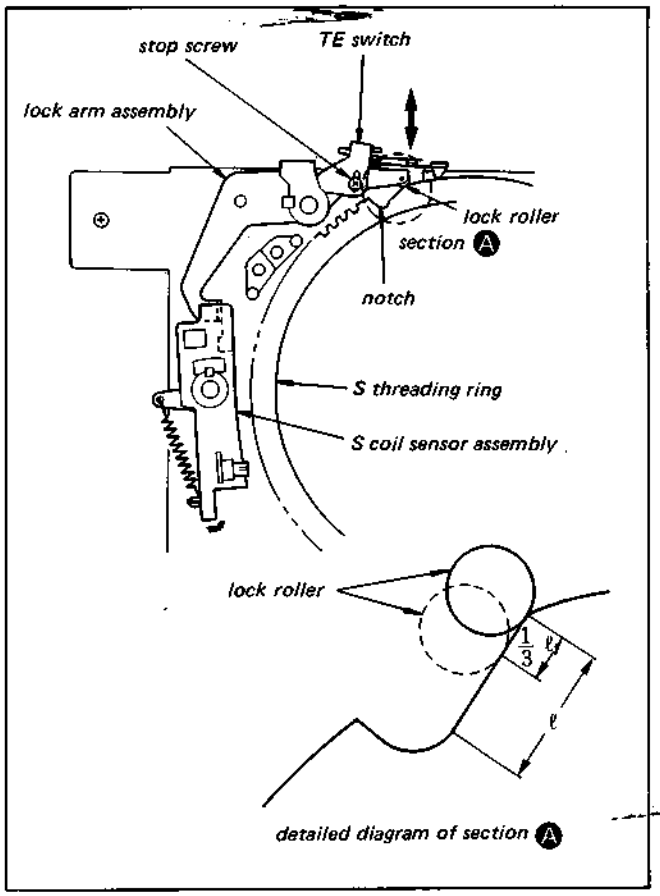


Fig. 3-25. TE switch position adjustment

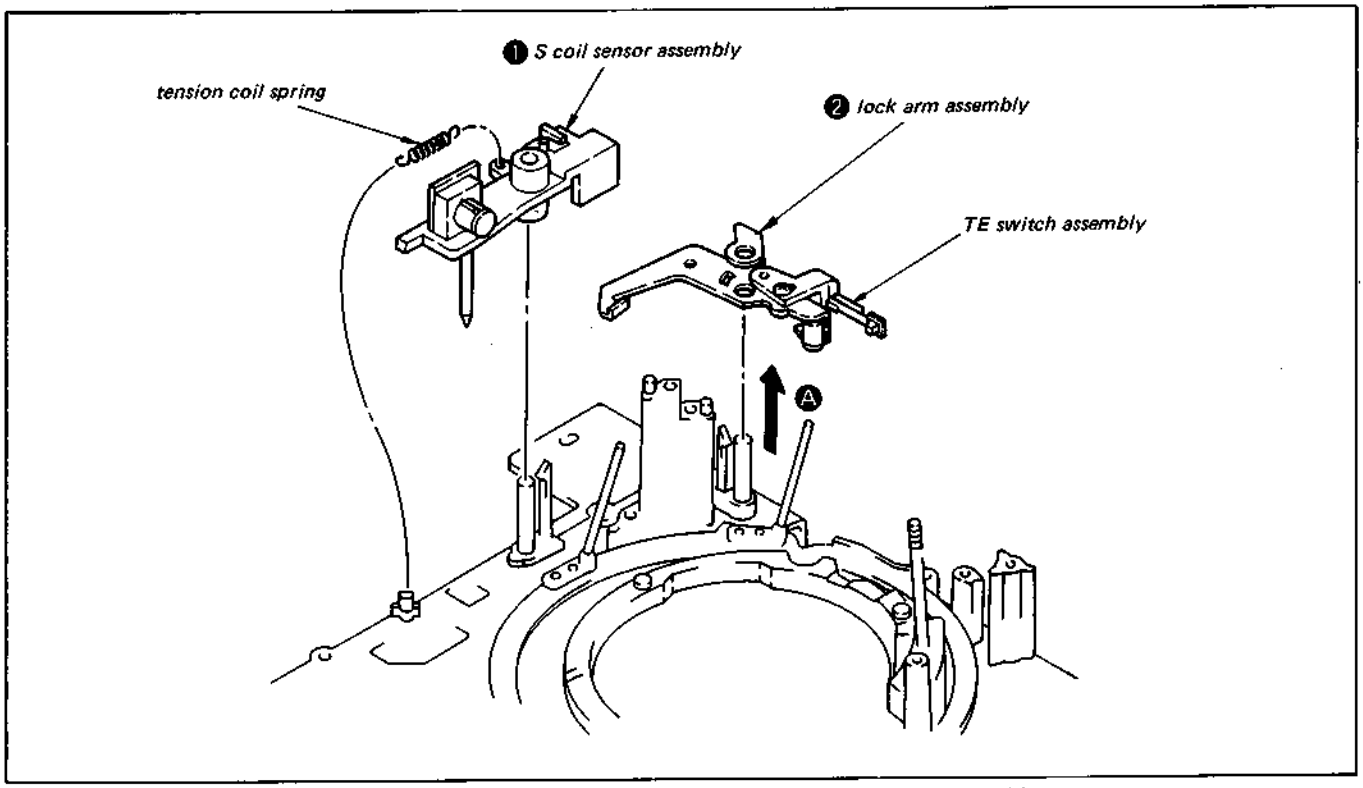


Fig. 3-26. Removal of the TE switch assembly and lock arm assembly

3-12-2. T Coil Sensor Mounting and Operation Check

[Method of checking]

Confirm that T coil sensor link ❶ is pressed and T coil sensor ❷ moves in the direction of arrow Ⓑ when the T slider gear assembly is moved in the direction of arrow Ⓐ.

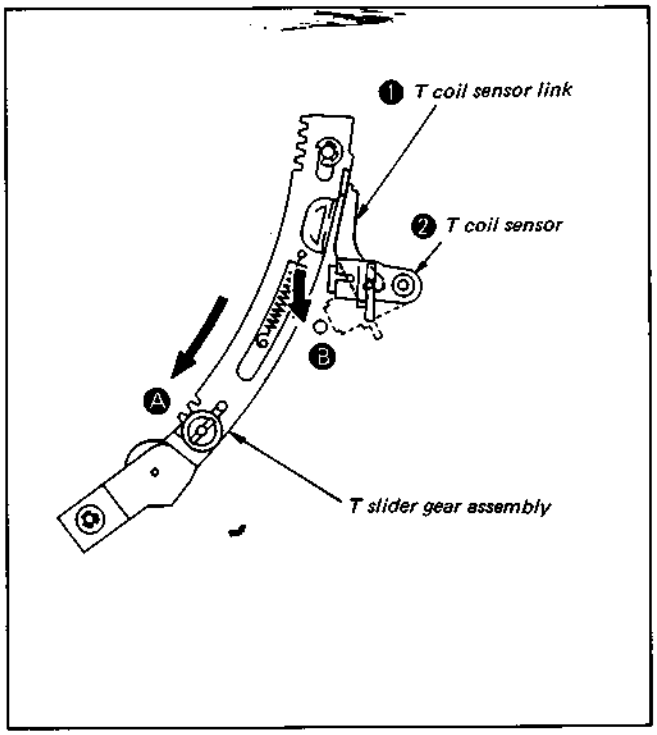


Fig. 3-27. T coil sensor operation check

[Method of mounting]

❶ Place T coil sensor link in the prescribed position.
❷ Match up the T coil sensor hole with the chassis shaft Ⓐ and insert. Place so that it engages with T coil sensor link.
❸ Hook the tension coil spring on the T coil sensor and chassis claw.

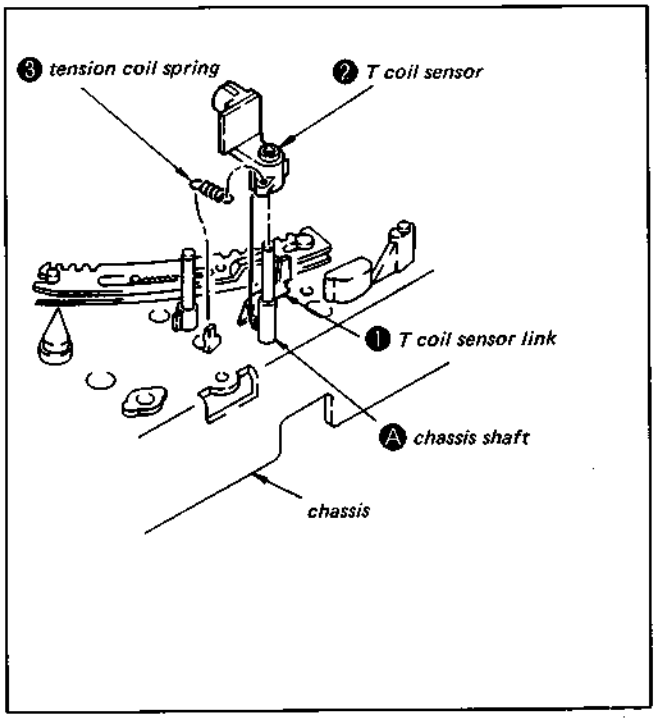


Fig. 3-28. T coil sensor link and T coil sensor mounting

3-13. REMOVAL AND ADJUSTMENT OF THE REEL BASE ASSEMBLY

3-13-1. Removal of the Reel Base Assembly

❶ Turn the unit so that the top surface of the main body faces down.
❷ Remove the 4 BVTP3 x 8 tap-in screws.
❸ Remove the reel base assembly.

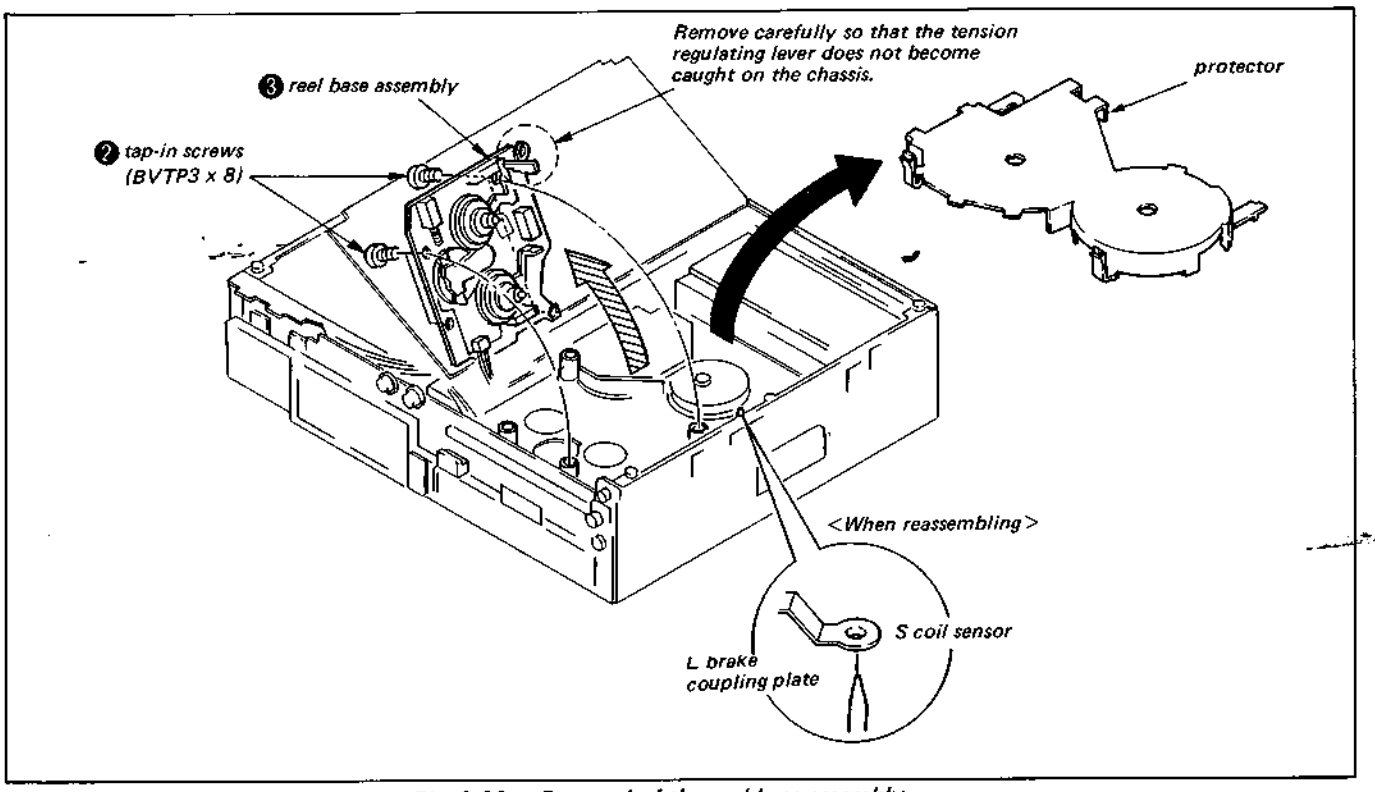


Fig. 3-29. Removal of the reel base assembly

3-13-2. Adjustment of the Position of the Tension Regulating Lever

[Method of adjustment]

1) Put the unit in playback mode.
2) Loosen the adjustment spring until the tape guide pin of the tension regulating lever assembly is positioned to the outside of the outer circumference of shuttle guide 1-YA, as shown in Fig. 3-30. Then adjust by moving the tension regulating band assembly in the direction of arrow Ⓐ.
3) After adjustment, tighten the adjustment screw, being careful that the tension regulating band assembly does not move.

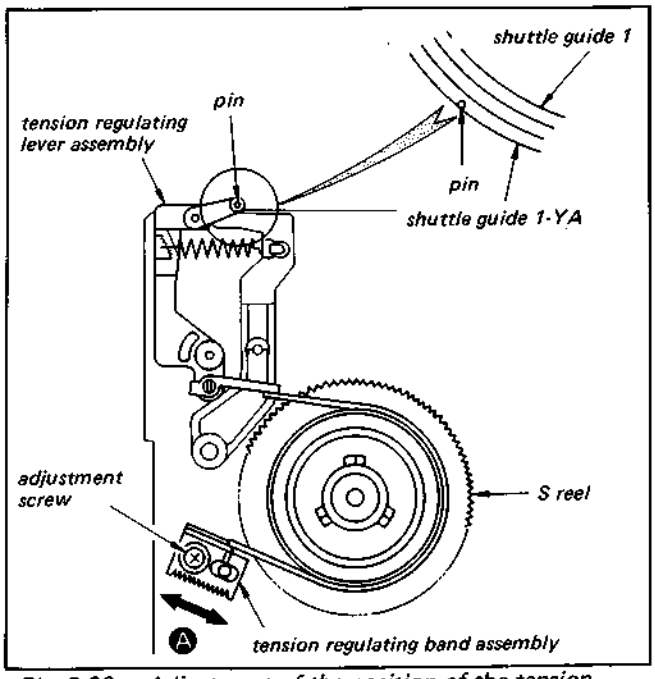


Fig. 3-30. Adjustment of the position of the tension regulating lever

3-14. ADJUSTMENT OF THE FORWARD AND BACK TENSION

[Method of measurement]

1) Insert the torque cassette (SL-0003C) and put the unit in playback mode.
2) Read the value on the meter on the S reel side after the needle has gone around about once.
   The correct value is 44 g·cm ±4 g·cm.

Notes:

i) The set must be perfectly level during this measurement.

ii) After the measurement, the tape can become slack when the stop button is pressed. If this happens set the unit is forward mode to take up the slack before removing the tape.

[Method of adjustment]

Move the position of the tension coil spring that is hooked on the tension regulating lever assembly in the direction of arrow Ⓐ until the measured value falls within the correct range.

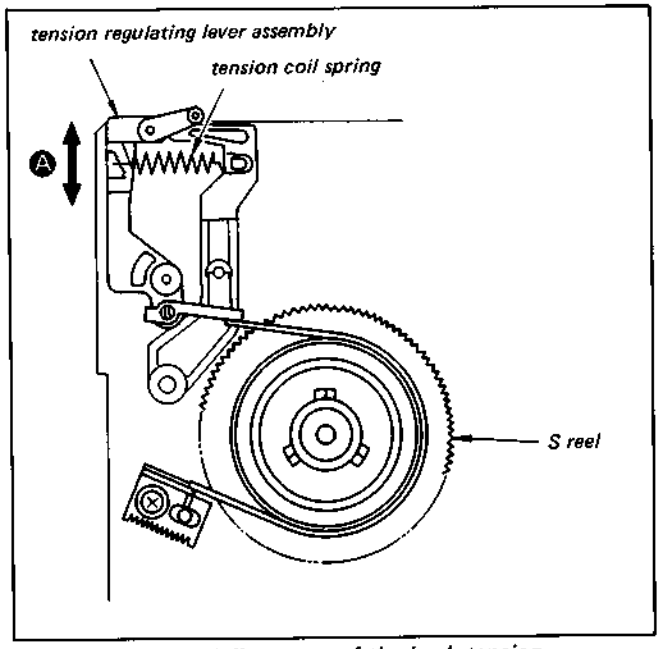


Fig. 3-31. Adjustment of the back tension

3-15. ADJUSTMENT OF THE REVERSE TORQUE

[Method of measurement]

1) Insert a recorded torque cassette (SL-0003C in βII mode and set for X1 reverse mode.
2) Read the S reel meter valud after the needle has made about one cycle. The specified value is 90 – 160 g/cm (the torque cassette scale does not go above 150 g/cm, so read from the scale). If the specifications are not met, replace the S reel table assembly with a new one.

3-16. ADJUSTMENT OF THE FORWARD TORQUE

[Method of measurement]

1) Insert the torque cassette (SL-0003C) and start to record a telecast in βII mode.
2) Read the value on the meter on the T reel side after the needle has gone around about once. The correct range is 45 g·cm – 90 g·cm.
   When the specifications are not met, replace the T reel table assembly with a new one.

SECTION 4
TAPE PATH ADJUSTMENT

4-1. TRACKING ADJUSTMENT

The adjustment has a large effect on the picture quality in each mode and on the interchangeability of tapes, so it should be done carefully.

4-1-1. Preparation for adjustment
4-1-2. Entrance side adjustment
4-1-3. Exit side adjustment

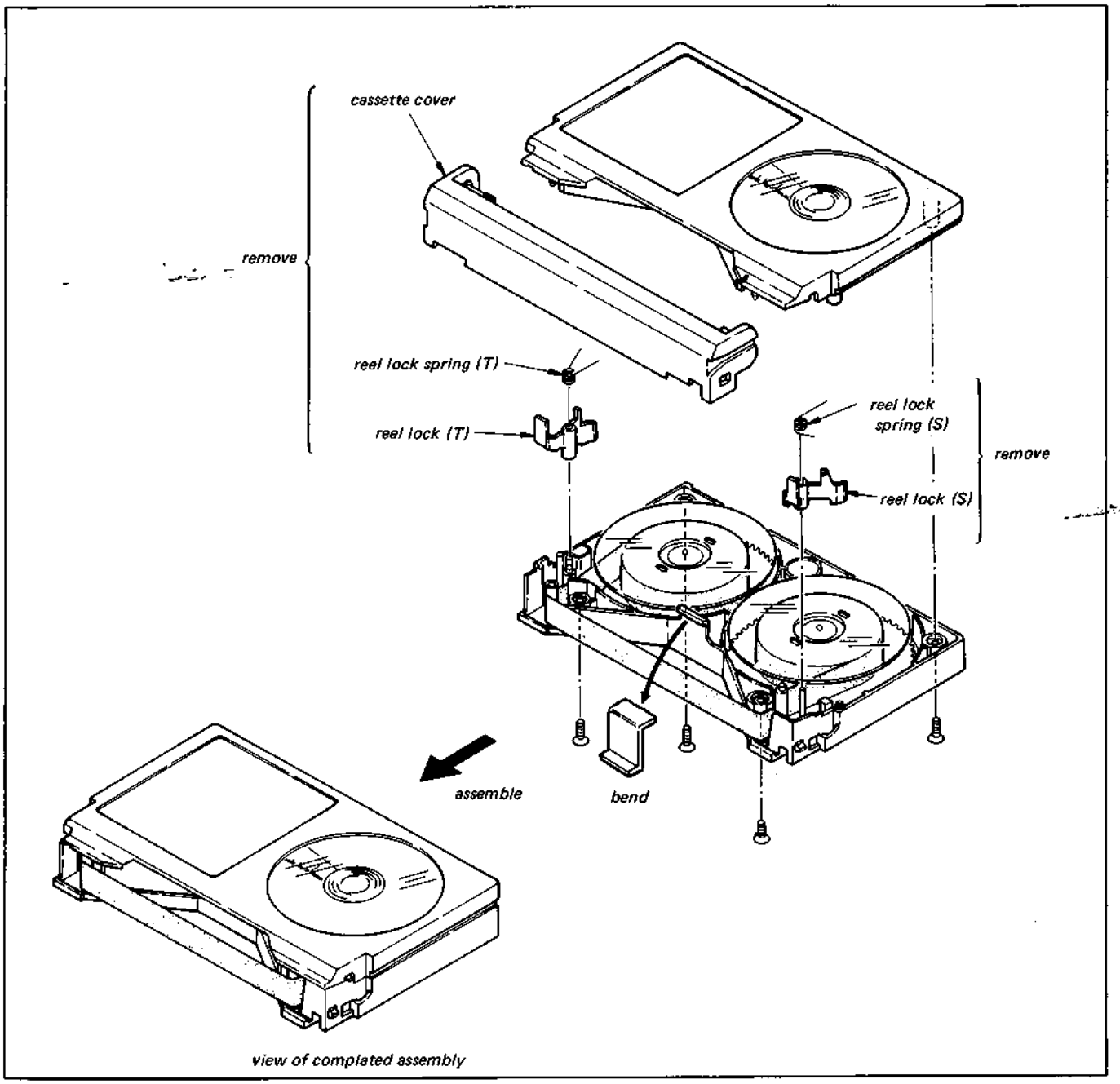


Fig. 4-1.

4-1-1. Preparation for Adjustment

1) Remove the cassette cover of the alignment tape in accordance with Fig. 4-1.
2) Clean the surface contacted by traveling tape (tape guide, drum tape trailing surface, capstan shaft, pich roller, ACE·FE head surface) with a chamois cloth dipped in methanol.
3) Connect the oscilloscope as follows:
channel 1: CN213-pin ③ (RP-24 board)
external trigger: CN213-pin ① (RP-24 board)
4) Play back the 1 kHz signal on the traking section of the alignment tape.
5) Confirm that the oscilloscope RF output waveform is flat, and that the amplitude is maximum. (It should increase and decrease, remaining flat, when the tracking knob is turned back and forth.) Also, when it is 2/3 of the maximum level of Fig. 4-2. A waveform, the minimum level (relative to whole area from entrance to exit) D and fluctuation amount should be within the specifications in Fig. 4-2.
6) If the entrance waveform cannot be made flat, as shown in Fig. 4-3 (a), by turning the tracking knob, go through the "entrance side adjustment" described in 4-1-2; if the exit waveform shown in Fig. 4-3 (b) cannot be made flat, go through the "exil side adjustment" in 4-1-3.

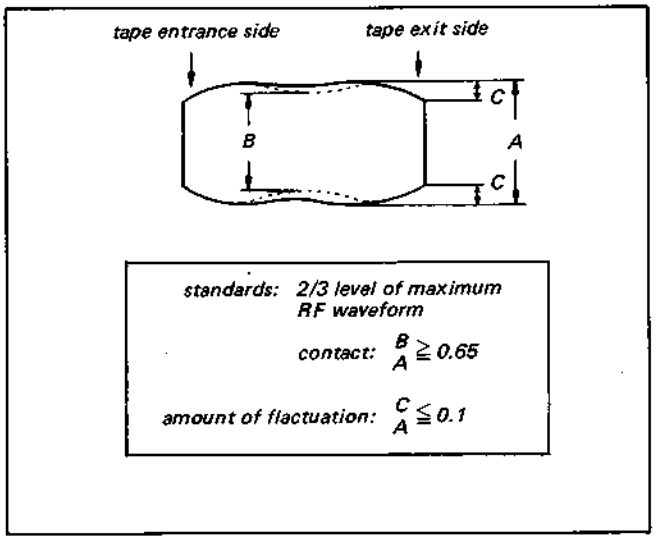
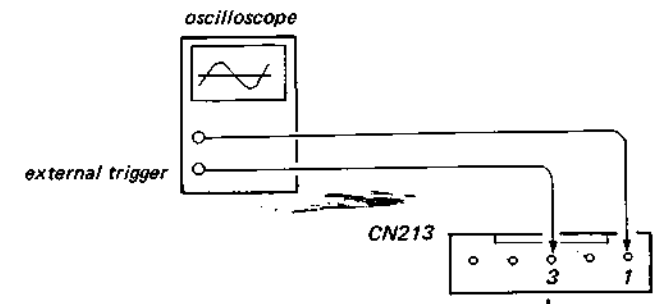
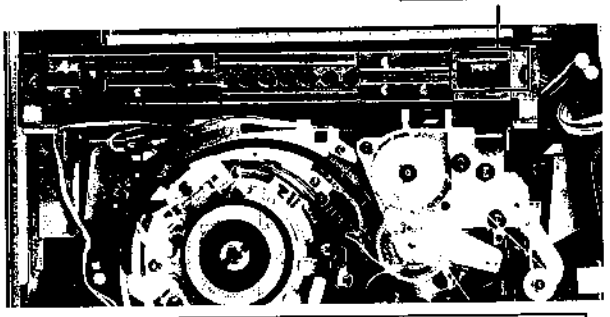


Fig. 4-2.





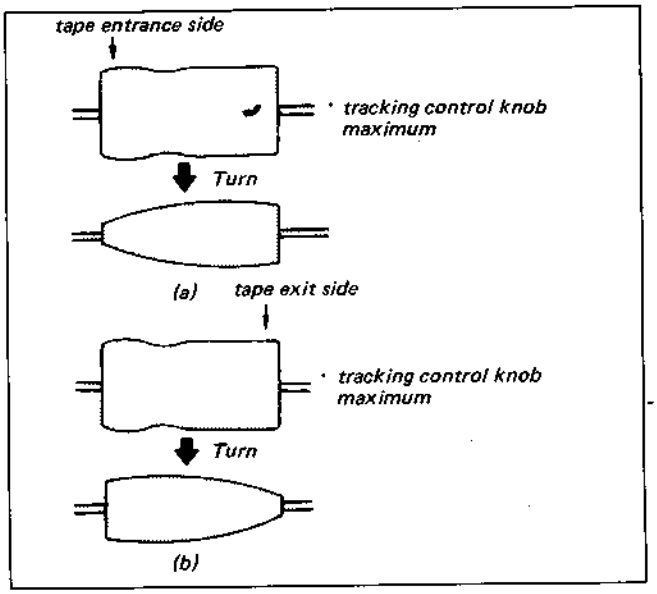


Fig. 4-3.

4-1-2. Entrance Side Adjustment

Whenever the entrance side adjustment is performed, the exit side adjustment must also be performed. The various tape guides and adjustment positions are shown in Fig. 4-5.

1) Turn the No. 6 guide counterclockwise to free the movement of the tape as it enters the drum.
2) Turn the tracking control knob until the amplitude of the waveform is about 60% of its maximum.
3) Loosen No. 5 guide lock screw ❶ and turn the No. 5 guide until the entrance waveform sticks up a little above falt, as shown in the figure below. Then tighten the No. 5 guide lock screw (Fig. 4-6).

Note:
After tightening No. 5 guide lock screw ❶, confirm that it is as in the figure below.

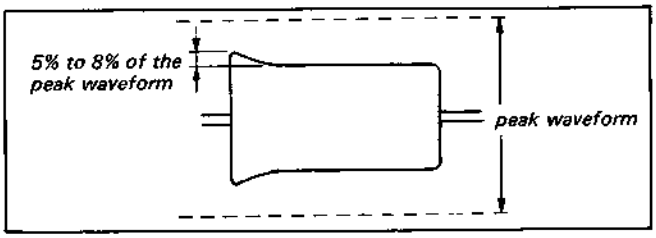


Fig. 4-4.

4) Next, lower the No. 6 guide until the waveform is flat.
5) Press the tape down between the No. 4 and No. 5 guide with a finger to lower the entrance side radio frequency waveform, then let go and confirm that the waveform returns to what it was before.
6) In this condition, check the clearance and curl of the No. 5 guide. If there are clearance and curl, adjust as explained in subsequent sections.

Note:

The tape tension between the No. 3, No. 4 and No. 5 guides must be balanced. If it is not, adjust the tilt of the No. 3 and No. 5 guides.

If the waveform cannot be made to look as shown in Fig. 4-4, or if when the tape is pressed and released on the entrance side it takes time for the waveform to return to what it was before, or if it does not return to what it was before, adjust according to the instructions given below.

[What to do when the waveform entrance output will not rise]

1) Check to see if the up-down tension between the No. 3, No. 4 and No. 5 guides is uniform. If it is not, adjust the tilt of the No. 3 and No. 5 guides.

   Note:

   The lower flange of the No. 4 guide must not protrude.

2) Raise the lower flange of the No. 4 guide to raise the entrance output.

   Note:

   It is sufficient to raise the lower flange of the No. 4 guide to 0.4 mm from its lowest position (within a rotation angle of 360°).

3) If the operation performed in step 2) fails to raise the waveform output, turn the No. 5 guide tilt adjustment screw slightly to the left, and the entrance output should rise.

[What to do when the waveform entrance output will not drop]

1) Remove the adjusting plate 3-1 of the No. 3 guide from the drum. Just before the lower tension of the tape becomes slack, tighten screw ❷ .
2) If the tape is in contact with the lower flange of the No. 4 guide, lower the flange. If the tape is sticking up from the lower flange, adjust the tilt of the No. 5 guide so that the tape does not stick up from the lower flange of the No. 4 guide.

[What to do when there is a clearance in the No. 5 guide]

Turn the No. 4 guide counterclockwise to run the tape upward and eleminate the clearance in the No. 5 guide.

Note:

At this time make sure that a large curl is not produced below the No. 4 guide.

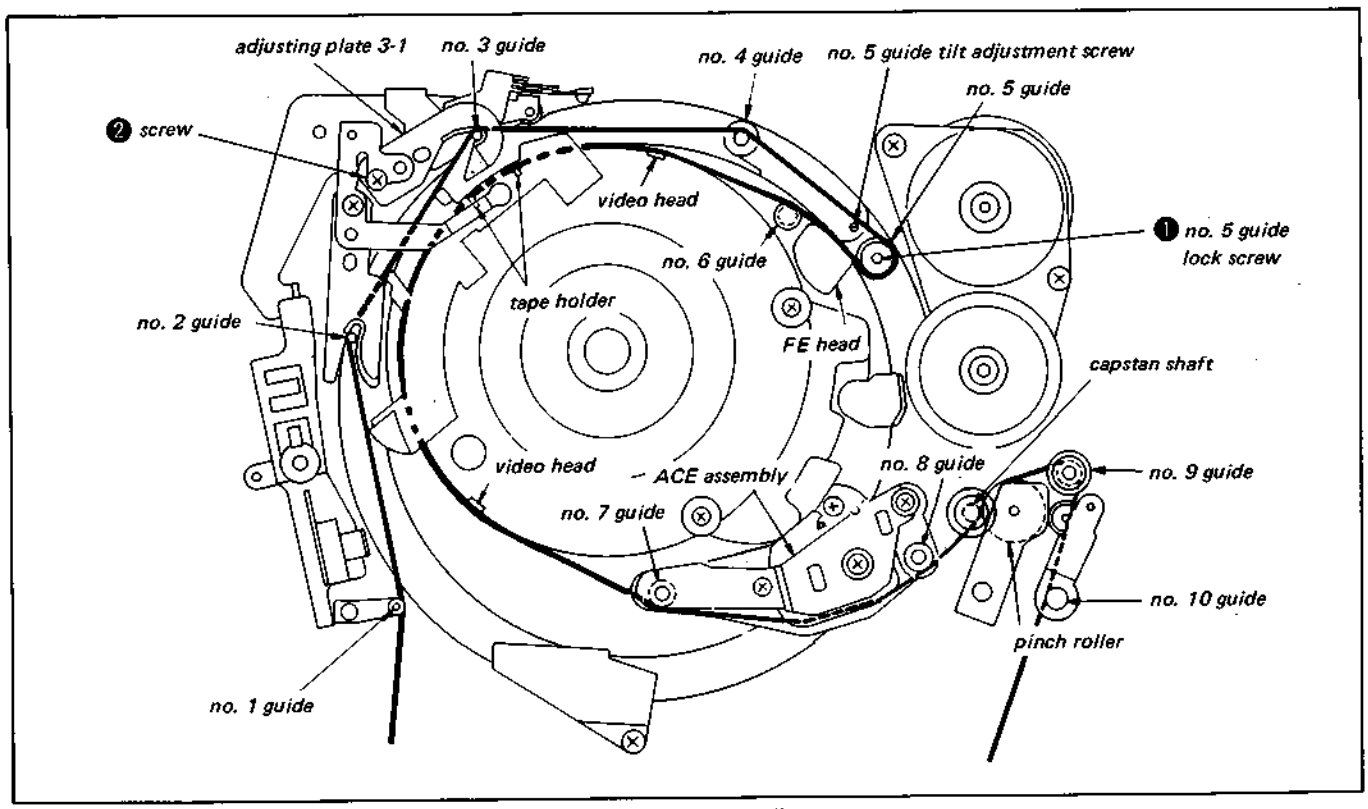


Fig. 4-5. Tape guide layout diagram

[What to do when there is a curl]

1) When there is a gap below the No. 4 guide. Just before the lower tension on the tape becomes slack, move adjusting plate 3-1 of the No. 3 guide to the outside.
2) When there is not a gap below the No. 4 guide (when there is a curl balow the No. 4 guide):
   i) Check to see if the No. 4 guide has been raised up too high. If it has been raised up too high, turn the adjusting plate clockwise to lower the No. 4 guide.
   ii) If the curl still has not been removed after i), tighten the No. 5 guide tilt adjustment screw in the clockwise direction until the curl is removed.

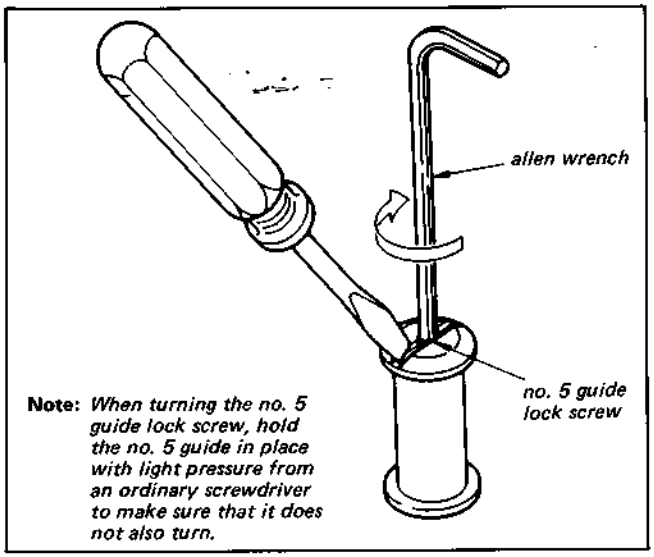


Fig. 4-6.

4-1-3. Exit Side Adjustment

1) Connect the oscilloscope to the No. ❸ terminal on connector CN213 (on RP-24 board). Connect the external trigger to the No. ❶ terminal on CN213.
2) Play the tracking section of the alignment tape. Adjust the tracking knob to reduce the amplitude of the radio trquency output waveform to 60% of its maximum level.
3) Watch the radio frequency output waveform when the No. 7 and No. 8 guides are raised (by turning the respective guide nuts counterclockwise) to let the tape run free. This waveform is called to exit free waveform.

Note:

Be careful not to raise the guides too far. They should be raised only about 0.3 to 0.5 mm, and the tape should not contact the lower flange of the AC head.

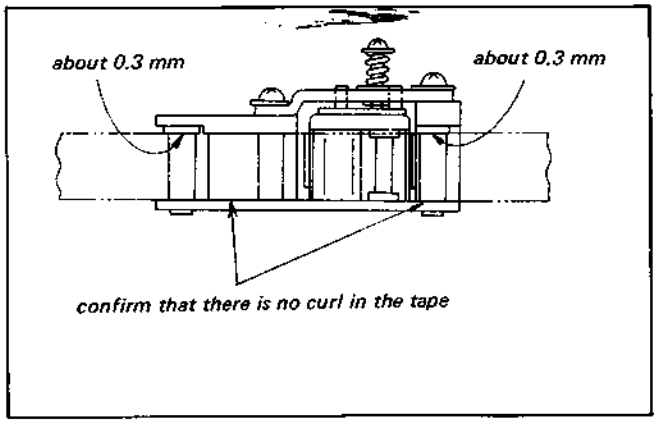


Fig. 4-7.

4) At this time, confirm that the exit free waveform is within the range shown in Fig. 4-8 (a) and (b).
   • If it is outside of this range, adjust according to the procedure in 4-3.

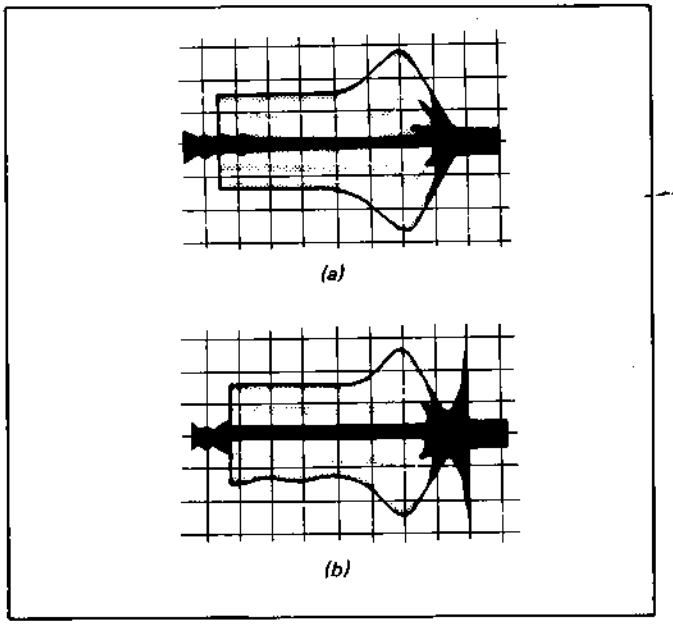


Fig. 4-8.

5) Flatten the waveform with No. 7 guide, and line No. 8 guide up to the tape. (Lower the guide until just before the waveform changes and there is no curl.)
   At this time the exit waveform may float slightly, so lower it again with No. 7 guide, flatten the waveform, and line No. 8 guide up to the tape.
6) Confirm that there is no curl at No. 7 and No. 8 guides in forward mode.
7) Confirm that there is no space or curl at No. 8 guide in reverse mode. If there is, adjust with No. 9 guide.

4-2 ADJUSTMENTS AFTER REPLACEMENT OF THE ACE ASSEMBLY

After removal or replacement of the ACE assembly perform the adjustments listed below.

4-2-1. Exit side tracking adjustment
4-2-2. Audio head (ACE assembly) azimuth adjustment
4-2-3. CTL head (ACE assembly) position adjustment
4-2-4. Audio head (ACE assembly) height adjustment

4-2-1. Exit Side Tracking Adjustment

1) Set the parallel plate (SL-0657 in the list of fixtures and tools) up against the unit as shown in Fig. 4-9, and turn the tilt adjustment screw to adjust the audio head vertically.

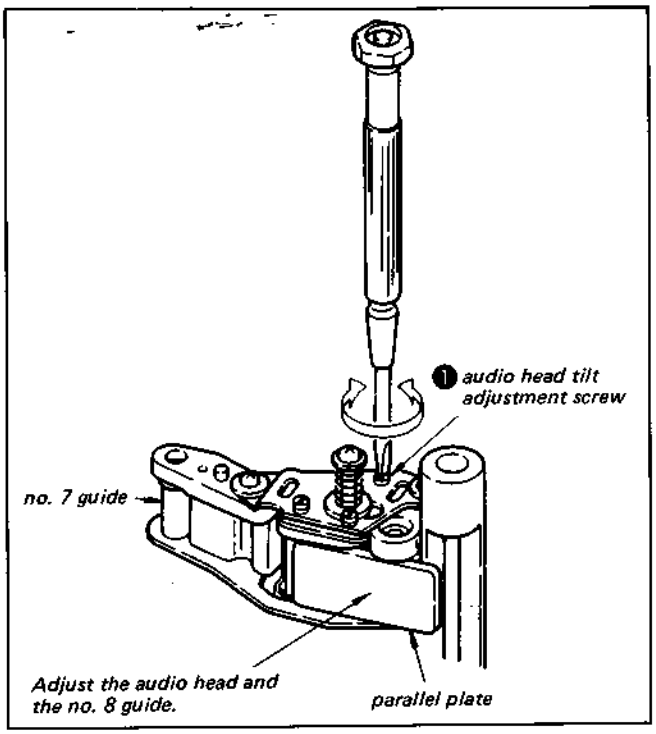


Fig. 4-9.

2) Connect the oscilloscope to terminal (3) of connector CN213 (on RP-24 board). Connect the external trigger to terminal (1) of CN213.
3) Play the tracking section of the alignment tape. Adjust the tracking knob until the radio frequency output waveform amplitude is reduced to about 60% of its maximum level.
4) Raise the No. 7 and No. 8 guides (turn the respective guide nuts counterclockwise) and observe the radio frequency exit free waveform then the tape runs free.

Note:

Be careful not to raise the guide too far. Raise it about 0.3 to 0.5 mm, and be careful that the tape does not contact the lower flange of the ACE head.

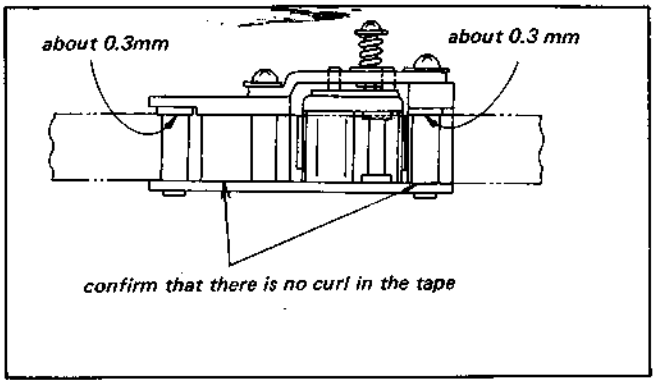


Fig. 4-10.

5) At this time, confirm that the exit free waveform is within the range shown in Fig. 4-11 (a) and (b).

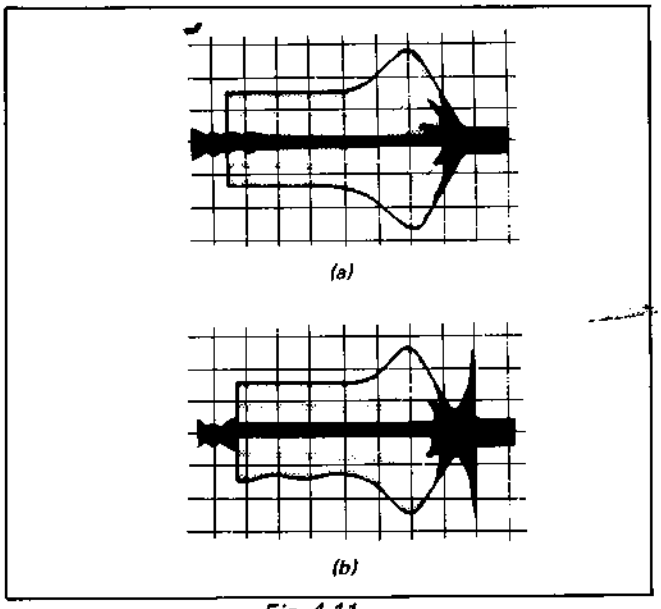


Fig. 4-11.

[Wehn the waveform is outside this range]

- When the waveform is outside this range and has the form shown in Fig. 4-12, turn the tilt adjustment screw clokwise to adjust until the waveform is within the required range.

Note:

Complete the adjustment by turning the adjustment screw in the direction of tightening (clockwise).

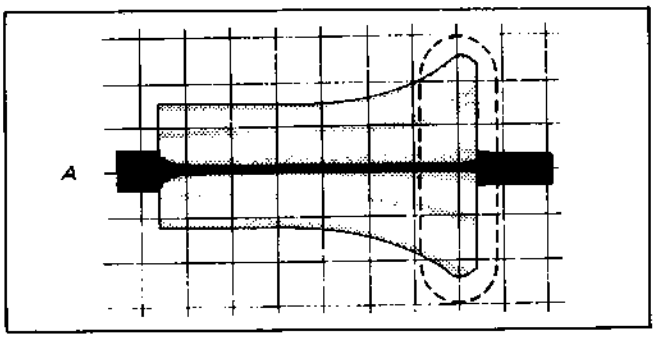


Fig. 4-12.

- When the exit free waveform is outside of the required range and has the form shown in Fig. 4-13, turn the tilt adjustment screw counterclockwise to produce waveform A (Fig. 4-12), then turn it clockwise to bring the waveform within the required range.

Note:

Finish the adjustment by turning the adjustment screw in the direction of tightening (clockwise).

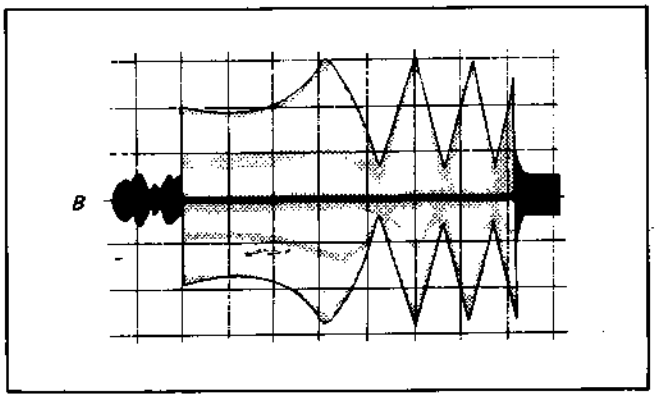
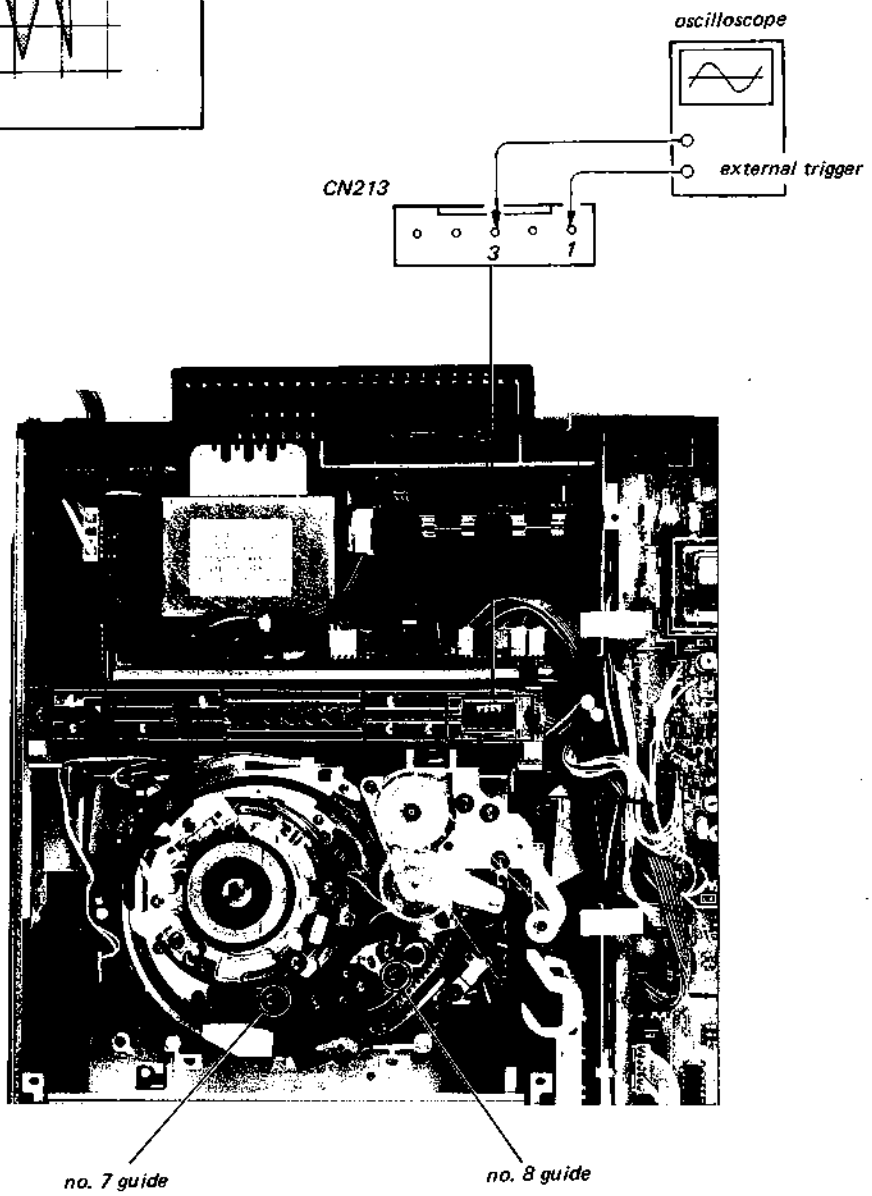


Fig. 4-13.

[Adjustment point]

6) Turn No. 7 guide and flatten the waveform, and line No. 8 guide up to the tape. (Lower the guide until just before curl appears at No. 8 guide flange.)
7) If RF output waveform exit side floats up, lower No. 7 and No. 8 guides again to flatten it.



4-2-2. Audio Head (ACE Assembly) Azimuth Adjustment

[Connections]

1) Playback

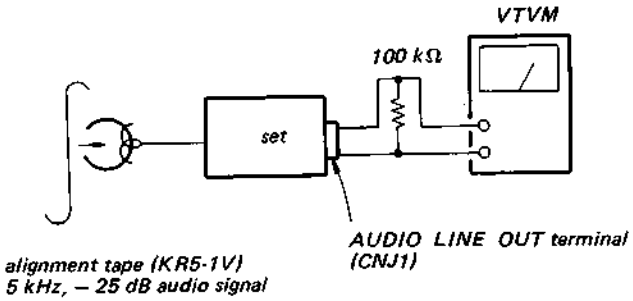


Fig. 4-14.

[Method of adjustment]

1) Play the 5 kHz –25 dB audio signal section (RF sweep section) of the alignment tape.
2) Adjust the azimuth adjustment screw until the output level (VTVM indication) is a maximum.

   Note:

   Complete the adjustment by turning the adjustment screw in the direction of tightening (clockwise).
3) After adjustment, lock the adjustment screw.

[Adjustment point]

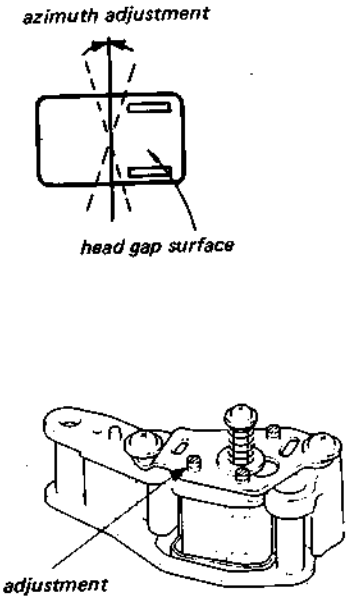


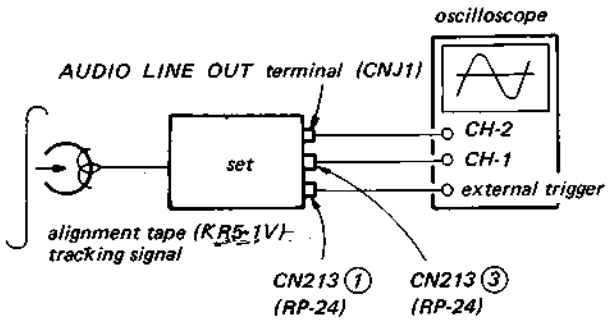
Fig. 4-15.

4-2-3. CTL Head (ACE Assembly) Position Adjustment

This adjustment includes the mechanical CTL head mounting position adjustment and the electrical tracking control center adjustment. The tracking control center adjustment is to be performed first, followed by the mechanical adjustment of the head mounting position.

[Connections]

1) Playback



[Method of adjustment] *Fig. 4-16.*

1) Play the tracking signal section of the alignment tape.
2) Turn the tracking control knob clockwise or counterclockwise to the center click position. Confirm that the amplitude of the radio frequency output signal is at its maximum level. Also confirm that the audio signal 0 level position occurs at the location of the channel B waveform. If the necessary standards are not met follow the procedure in 3).

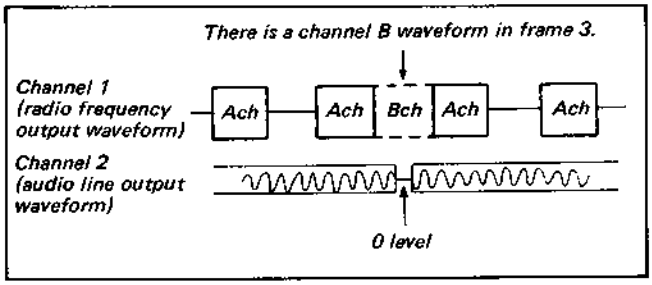


Fig. 4-17.

3) Tracking center adjustment
   Refer to electrical adjustment 4 in section 5-3-3.
4) CTL head position adjustment
   a. Set the tracking control knob at the center click position.
   b. Loosen the 2 ACE assembly position adjustment screws, then use a tool such as an ordinary screwdriver to slide the ACE assembly to where the radio frequency output waveform amplitude becomes a maximum (Fig. 4-18).
   c. Play the color bar signal on the alignment tape and check the picture quality.
   d. Tighten the position adjustment screws, then lock them.

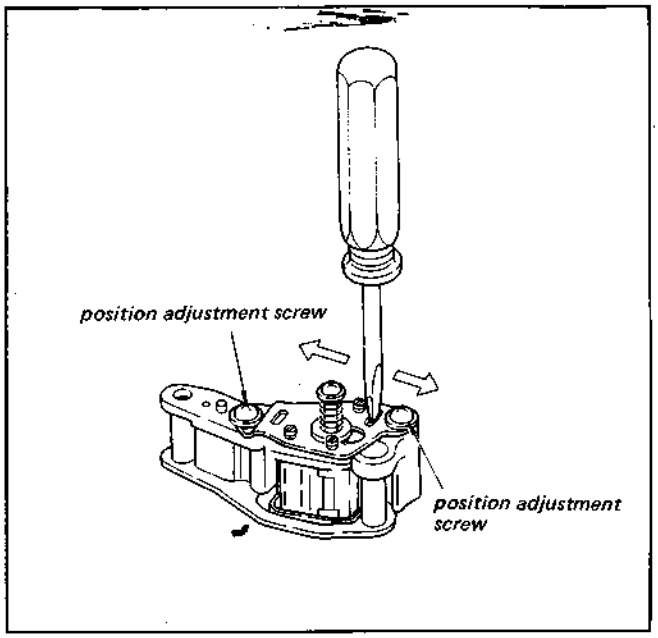
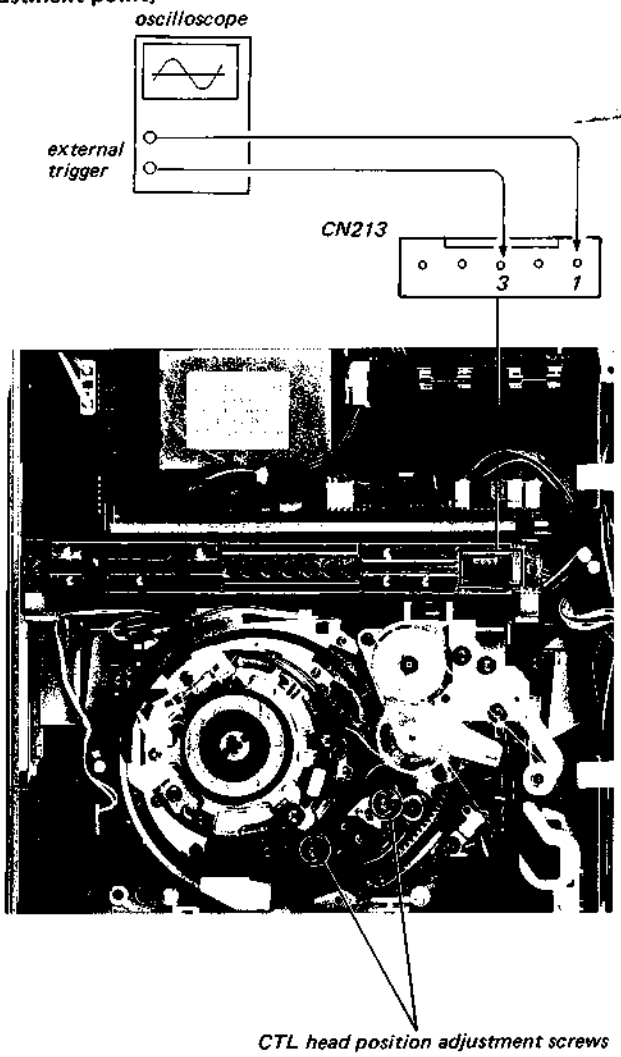


Fig. 4-18.

[Adjustment point]



4-2-4. Audio Head (ACE Assembly) Height Adjustment

- Height adjustment is not required when replacing the ACE assembly, as the core postion relative to the tape guide flange is precisely adjusted during assembly, but height adjustment may have to be performed when the channel level difference is noticeable and cannot be adjusted with the circuit system.

1) Perform exit side tracking adjustment.
2) Perform audio head (ACE assembly) azimuth adjustment.
3) Mark the positions of the audio height adjustment screw and lateral adjustment screw in Fig. 4-19 and the azimuth adjustment screw in Fig. 4-15.

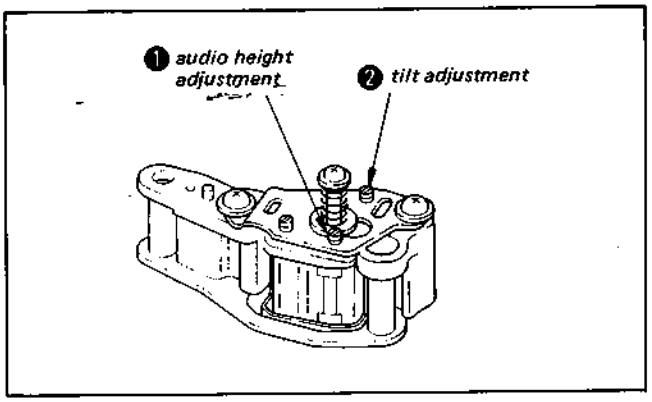


Fig. 4-19.

4) Rotate the audio height adjustment screw and lateral adjustment screw counterclockwise 90° each.
   Note:
   Turn slightly past the 90° position, then return to it.
5) Turn the azimuth adjustment screw 90° counterclockwise.
6) Play back the 333 Hz portion of the alignment tape (KR5-1V) and perform Playback Amplitude 1 Adjustment (AU-13 board RV102) so that CH-1 output (CH1 OUT) is −25 dB.
7) Turn the audio head height adjustment screw and lateral adjustment screw 180° clockwise each (90° clockwise past the marked position), and turn the azimuth adjustment screw 180° counterclockwise (90° counterclockwise past the marked position).
   Note:
   The same as in step 4), first loosen, then tighten.
8) Play back the 333 Hz portion of the alignment tape (KR5-1V) and perform Playback Amplitude 2 Adjustment (AU-13 board RV202) so that CH-2 output (CH2 OUT) is −25 dB.
9) Return all three screws to the marked positions.
10) Perform audio head (ACE assembly) azimuth adjustment.
11) Play back the tracking portion of the alignment tape (KR5-1V) and confirm that the level difference between the two channels is within 2 dB.
    If not, adjust according to the following procedure.
    (i) When CH-1 is larger
    Turn the audio head height adjustment screw and lateral adjustment screw and azimuth adjustment screw counterclockwise to the same angle, so that the specifications are satisfied.
    The specification is channel level difference within 1.5 dB for this adjustment.
    Note:
    Turn the screws 30° each, check, then turn 30° again after adjusting. Finish the adjustment by turning to the right.
    (ii) When CH-2 is larger
    Perform the same as in step (i), but rotate in the reverse direction.
    (iii) In either case, perform audio head (ACE assembly) azimuth adjustment after the adjustment.

4-3. ADJUSTMENT FOR REMOVAL OR REPLACEMENT OF THE CAPSTAN MOTOR

1) Remove and replace the capstan motor according to 3-5 Removal of Capstan Motor.
2) Play back the tracking portion of the alignment tape (KR5-1V). Connect the oscilloscope as follows:
   1ch: CN213 . . . . . 3 pin (RP-24 board)
   2ch: CN213 . . . . . 1 pin (RP-24 board)
3) Turn the tracking control knob clockwise to lower the RF output waveform to about 60% of the maximum.
4) Raise No. 7, 8 guides a little, and check the exit free waveform.
   i) If the exit free waveform is within the range indicated in Fig. 4-20 (a), (b), proceed from ste 5).

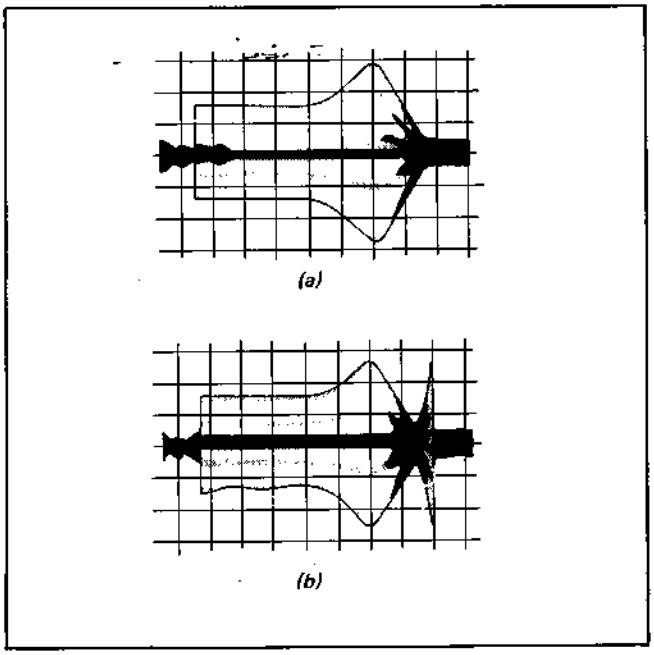


Fig. 4-20.

   ii) If the peak of the exit free waveform is samller than that illustrated in Fig. 4-20 (a) (e.g. Fig. 4-21), loosen the lock screw, then turn the capstan adjustment screw until the waveform is within the specified range.

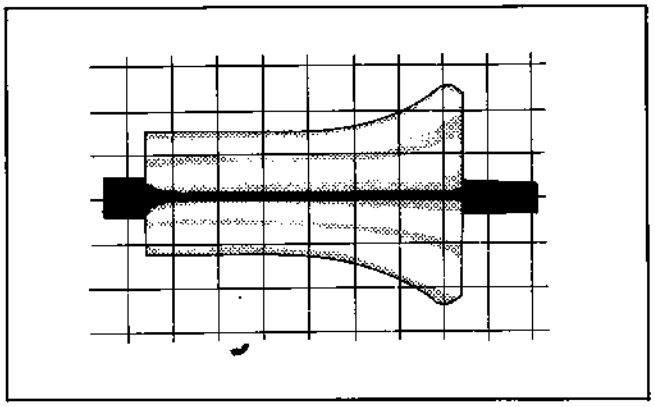


Fig. 4-21.

   iii) If the peak shape of the exit free waveform differs from that shown in Fig. 4-20 (b) (e.g. Fig. 4-22), loosen the lock screw, then turn the capstan adjustment screw clockwise until the waveform is within the specified range.

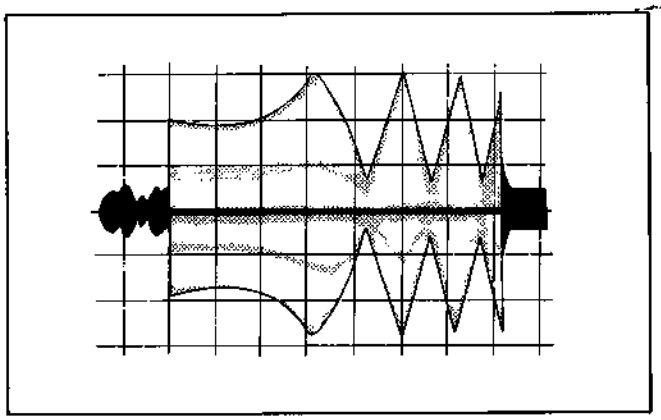


Fig. 4-22.

Note:
After turning the capstan adjustment screw, wait until the waveform stabilizes (about 10 – 15 seconds) before continuing with the adjustment.

5) Lock the capstan lock screw. (Turn clockwise until it stops, then turn about 30° more. At this point, the exit free waveform will change slightly, and if it goes out of the range shown in Fig. 4-20 (a), (b) return to ste 4) and re-adjust.
6) Flatten the waveform with No. 7 guide, and match No. 8 guide to the tape. If the exit waveform rises, flatten it again with No. 7 guide and match No. 8 guide to the tape again.
7) Confirm and adjust according to 4-1-3, exit side adjustment procedure items 4), 5).

SECTION 5
ELECTRICAL ALIGNMENT

This scetion provides all necessary information and instructions for complete alignment of the electronic circuits in this machine.

EQUIPMENT REQUIRED

(1) Color TV receiver
(2) Oscilloscope Dual-trace, Bandwidth more than 15 MHz with delay mode
(3) Frequency counter (more than four digits)
(4) NTSC pattern generator
(5) Digital voltmeter (10 MΩ/V)
(6) VOM (20 kΩ/V)
(7) Audio generator
(8) Level meter
(9) Distortion meter
(10) Spectrum analyzer
(11) Alignment tape
Type KR5-1V Code No. 8-969-995-92
(12) Alignment tool
(adjusting screwdriver for semi-fixed resistor coil) Code No. 7-700-733-01

[Preparatory Set-up for Alignment]

For these alignment procedures involving use of a video input signal the NTSC pattern generator is to be connected to the VHF antenna terminals of the SL-HF900. This RF signal is processed by the tuner and I.F. circuits within the VTR. It is important that the video out signal from the I.F. circuit satisfies the specifications. The video signal must be checked with an oscilloscope connected to pin 3 of CN205 on the VI-10 board. Check that the video signals are flat when the amplitude of the horizontal sync signal is about 0.3 V, the amplitude of the video portion is about 0.7 V, and the amplitude of the burst signal is about 0.3 V. The video signal (clor-bar signal) used in this alignment is shown in Fig. 5-1.

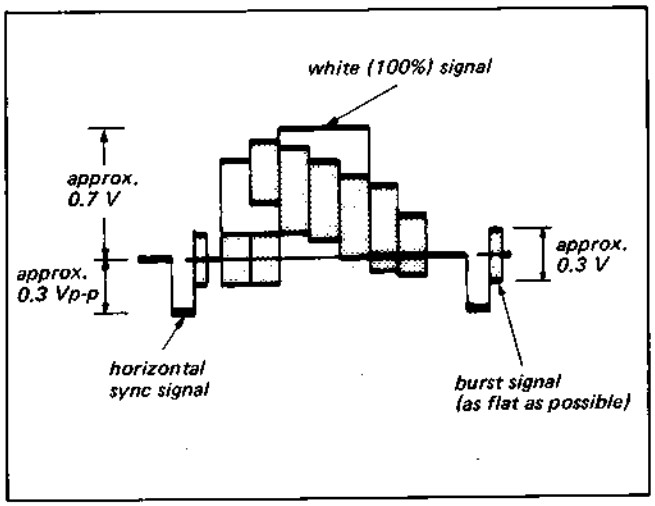


Fig. 5-1 Color-bar signal of pattern generator

[Alignment Tape]

KR5-1V

Tape speed	Video signal	Audio signal	Playing time
20.0 mm/sec. (βII)	Color-bars	3 kHz –5 dB	4 min. for each segment
	Monoscope	333 Hz –30 dB	
	RF sweep	5 kHz –30 dB	
	Tracking	1 kHz –10 dB	
	Color-bars	Beta hi-fi 400 Hz ±25 kHz DEV	
13.3 mm/sec. (βIII)	Monoscope	5 kHz –30 dB	
	Color-bars	3 kHz –10 dB	

[Color-Bar Signal]

The 75% color-bar signal recorded on the alignment tape is shown in Fig. 5-2.

Note:
Measure at CN205 (3) on the VI-10 board.

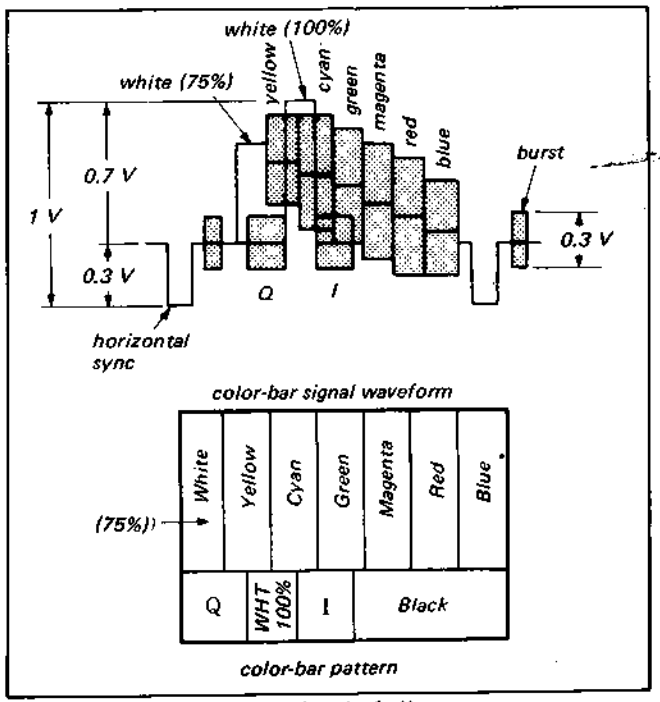


Fig. 5-2. Color-bar signal of alignment tape

[VR Alignment Tool Screwdriver]

Use the tool screwdriver supplied for alignment of semi-fixed VRs and inductances on each printed circuit board. An ordinary screwdriver is too large and is difficult to use when adjusting VRs from the print pattern side of a board. The special alignment tool screwdriver is shown in Fig. 5-3.

The metal blade of the screwdriver is used for variable resistors and trimmer capacitors.

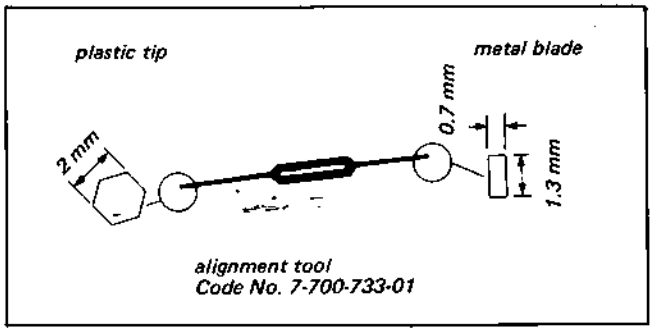


Fig. 5-3. Alignment tool screwdriver

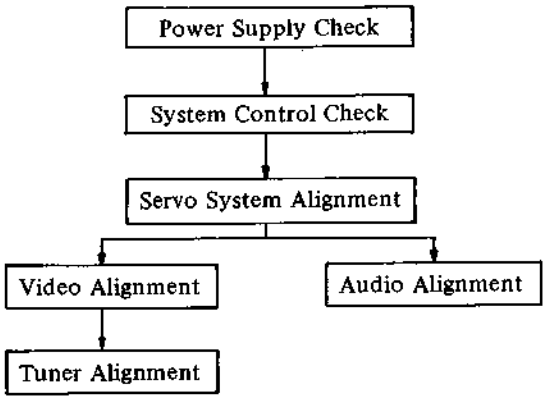
[Required Levels and Impedances of Input and Output]

Inputs and outputs

Video input	LINE IN VIDEO/PCM (phono jack) 1 Vp-p ±0.5 Vp-p, 75 ohms, unbalanced, sync negative
Video outputs	LINE OUT 1, 2 VIDEO/PCM (phono jacks) 1 Vp-p ±0.5 Vp-p, 75 ohms, unbalanced, sync negative
Audio inputs	LINE IN R-AUDIO-L (phono jacks) −10 dBs (0 dBs = 0.775 V rms), more than 47 k ohms
Audio outputs	LINE OUT1, 2 R-AUDIO-L (phono jacks) −10 dBs (at load impedance 47 k ohms) more than 10 k ohms

[Alignment Sequence]

The alignment should be performed following the sequence below.



5-1. POWER SUPPLY CHECK (PC-19 board)

Measure in E-E mode (power supply switch ON).

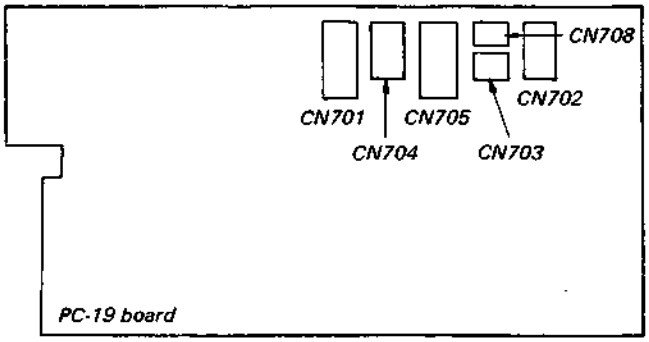


Fig. 5-4.

1. SWD +12 V Check
   Pin (1) of CN702 shall be 12.0 ±0.3 V.
2. SWD +9 V Check
   Pin (2) of CN702 shall be 9.0 ±0.2 V.
3. UNSWD +5 V Check
   Pin (3) of CN702 shall be 5 ±0.2 V.
4. UNSWD +45 V Check
   Pin (2) of CN702 shall be 45 ±5 V.
5. UNSWD −26 V Check
   Pin (1) of CN701 shall be −26 ±3 V.
6. UNSWD −30 V Check
   Pin (5) of CN705 shall be −30 ±2.8 V.
7. AC3.8 V Check
   Pin (2), (3) of CN701 shall be AC3.8 ±0.3 V.

5-2. SYSTEM CONTROL CHECK (SS-53 board)

1. Clock Frequency Check

Mode: E-E
Signal: None
Frequency counter: Pin (59) of IC401
Check: Within 6.0 MHz ±0.1 MHz

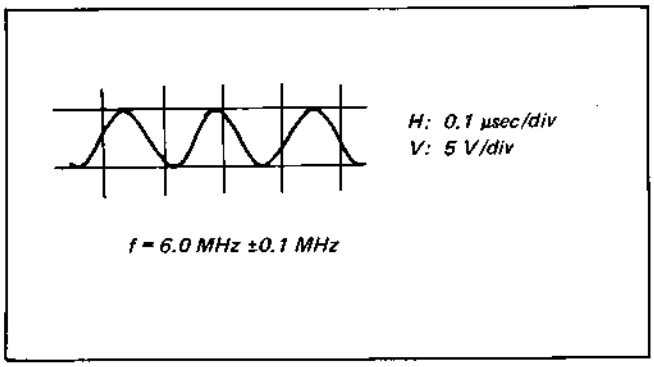


Fig. 5-5. Clock frequency

5-3. SERVO SYSTEM ALIGNMENT

Alignment Sequence

5-3-1. Reel servo system alignment
5-3-2. Drum servo system alignment
5-3-3. Capstan servo system alignment
5-3-4. Swing search servo system alignment

5-3-1. Reel Servo System Alignment

1. Reel Voltage Check

(1) Pin ④ of CN506 (TP523) shall be $6^{+0.2}_{-0.1}$ V when REV.
(2) Pin ④ of CN506 (TP523) shall be 8.8 ±0.2 V when FF or REW.
(3) Pin ④ of CN506 (TP523) shall be 2.7 ±0.2 V when PB.

5-3-2. Drum Servo System Alignment

1. Voltage Check

(1) Pin ㉚ of IC501 shall be 5.6 ±0.3 V.
(2) Pin ⑩ of IC501 shall be 3.5 ±0.2 V or 5 ±0.2 V.

2. Clock Check

(1) Pin ㉘ of IC501 shall be above 0.4 Vp-p.

3. Drum Free Speed Adjustment (SS-53 board)

Mode: Playback
Signal: Alignment tape βII color-bar, or monoscope
Oscilloscope: CH-1 Pin ⑬ of IC501 (TP512)
CH-2 Pin ㊴ of IC501 (TP501)
Alignment method:
Adjust to 547 μsec ±10 μsec with RV503
(See Fig. 5-6)

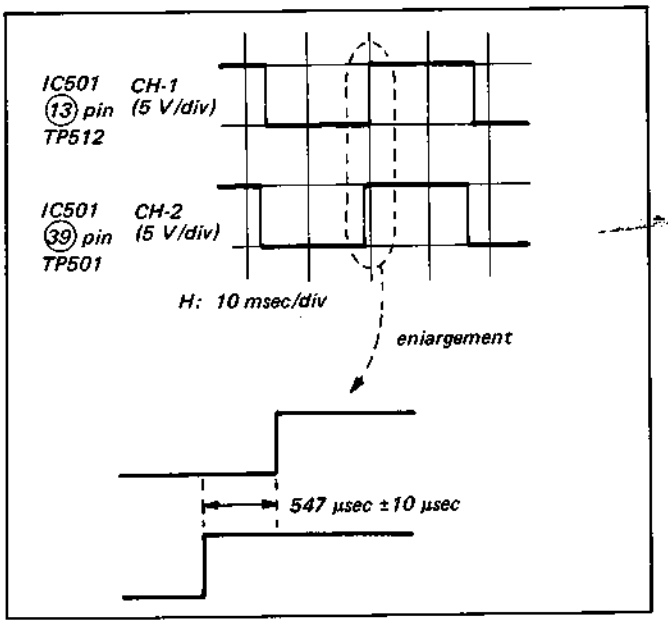


Fig. 5-6. Drum free speed adjustment

4. RF Swtiching Position Adjustment I (SS-53 board)

Mode: Record (βI)
Signal: None
Oscilloscope: CH-1 TP501 (pin ㊴ of IC501)
CH-2 {TP502 (pin ㉜ of IC501) / TP504 (pin ㊵ of IC501)}
Adjustment method:
(1) Connect CH-2 to IC501 pin ㉜ (TP502) and adjust to 670 μsec ±20 μsec with RV501. (βI switching pulse A) (Refer to Fig. 5-7)
(2) Change the CH-2 connection to IC501 pin ㊵ (TP504) and adjust to 670 μsec ±20 μsec with RV502. (βI switching pulse B) (See Fig. 5-8)
(3) Be sure to perform "RF Switching Position Adjustment II", which follows, after performing this adjustment.

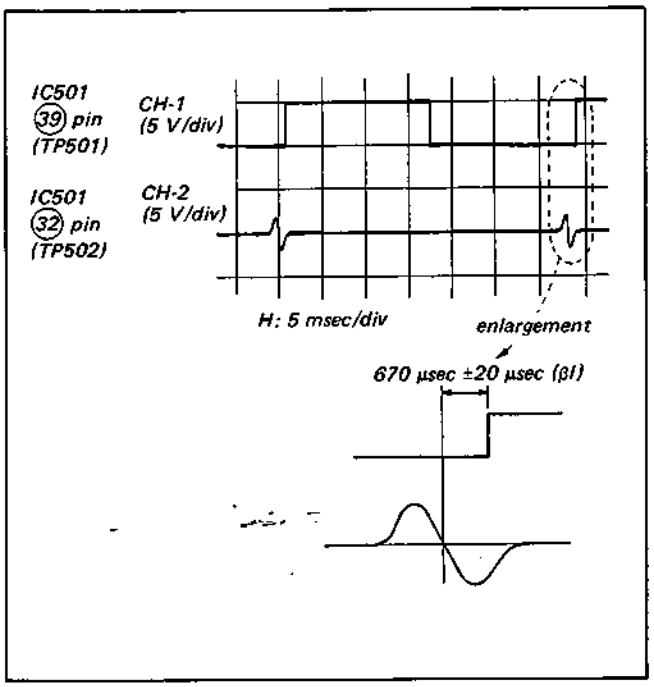


Fig. 5-7. RF switching position adjustment (1)

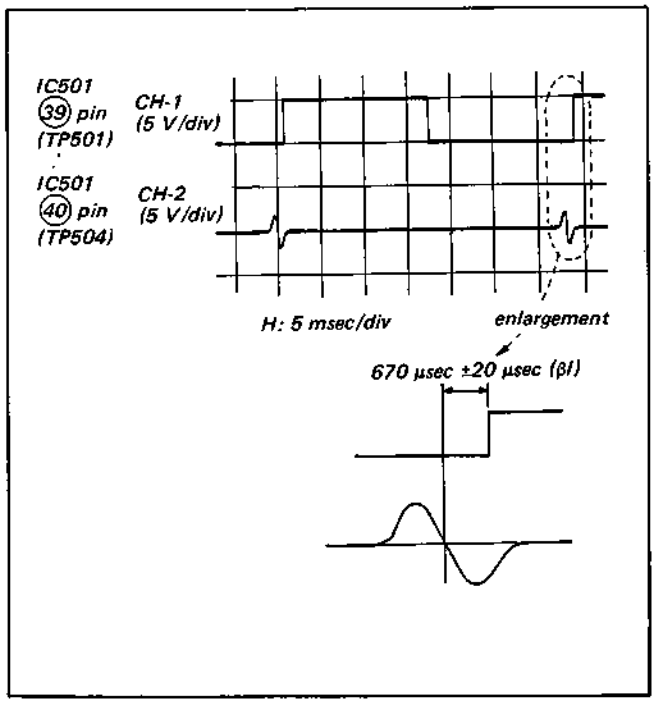


Fig. 5-8. RF switching opsition ajdustment (2)

5. RF Switching Position Adjustment II (SS-53 board)

Mode: Playback (βII)
Signal: Alignment tape βII color-bar or monoscope
Oscilloscope: CH-1 TP501 (pin 39 of IC501)
CH-2 { TP502 (pin 32 of IC501)
TP504 (pin 40 of IC501)

Adjustment method:

(1) Connect CH-2 with pin 32 of IC501 (TP502), and then adjust to 750 µsec ±30 µsec with RV518. (βI switching pulse A) (See Fig. 5-9)

(2) Change connection of CH-2 only to pin 40 of IC501 (TP504), and then adjust to 750 µsec ±30 µsec with RV519. (βI switching pulse B) (See Fig. 5-10)

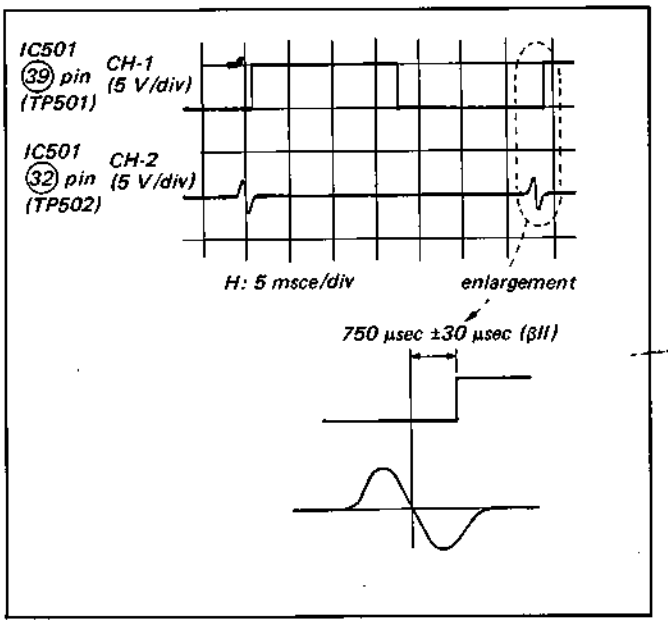


Fig. 5-9. RF switching position adjustment (1)

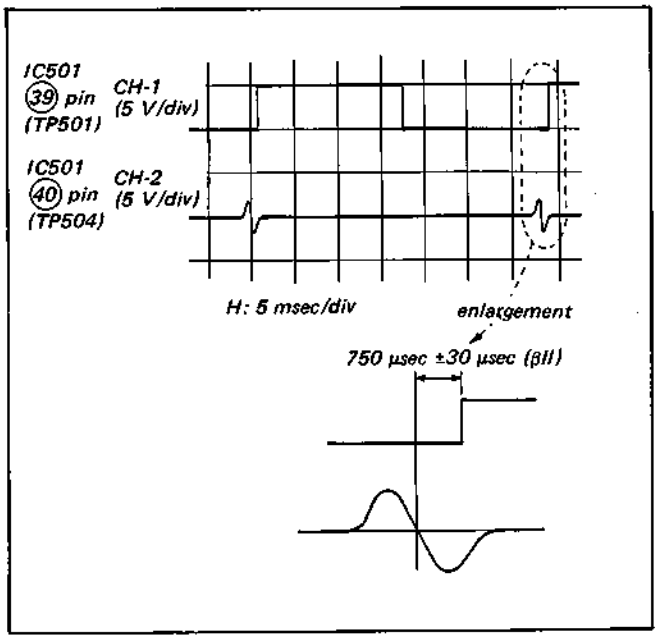


Fig. 5-10. RF switching position adjustment (2)

6. Picture Search Drum Free Speed Adjustment (SS-53 board)

Mode: Picture search (CUE)

Signal: For βI, record and playback any tape. For βII and βIII, playback the alignment tape color-bar or monoscope portion.

Oscilloscope: Pin ① of CN502

Adjustment method:

(1) Record and playback any signal in βI mode, and then in CUE mode adjust to 63.89 μsec ±0.07 μsec with SS-53 board RV802.

(2) Playback in βII, and in CUE mode, adjust to 64.22 μsec ±0.07 μsec with SS-53 board RV801.

(3) Playback in βIII, and in CUE mode, adjust to 63.89 μsec ±0.07 μsec with SS-53 board RV808. (See Fig. 5-11)

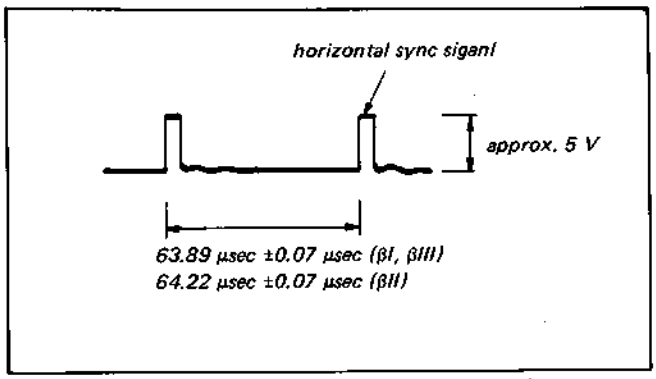


Fig. 5-11. Picture search drum free speed adjustment

7. F/R Search f_H Adjustment (SS-53 board)

Mode: REW search

Signal: Alignment tape βIII color-bar, or monoscope

Oscilloscope: Collector of Q521

Adjustment method:

Adjust 63.45 μsec $^{+0.06}_{-0.1}$ μsec. (See Fig. 5-12)

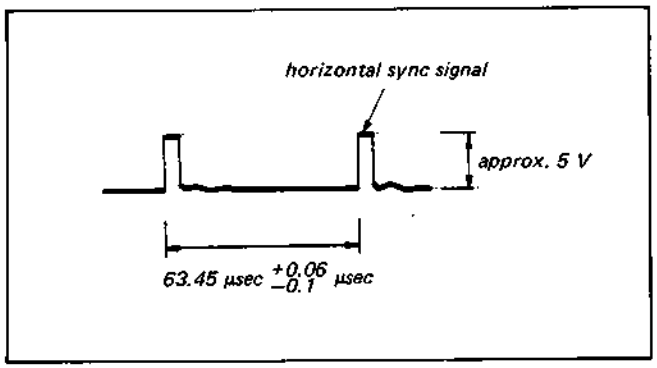


Fig. 5-12. F/R search f_H adjustment

5-3-3. Capstan Servo System Alignment

1. Capstan Error Cancel Adjustment (SS-53 board)

Mode: βIII record
Signal: Arbitrary signal
Oscilloscope: Pin ② of CN505 (TP515)
Adjustment method:
(1) Decrease the wave form level A to minimum with RV516.

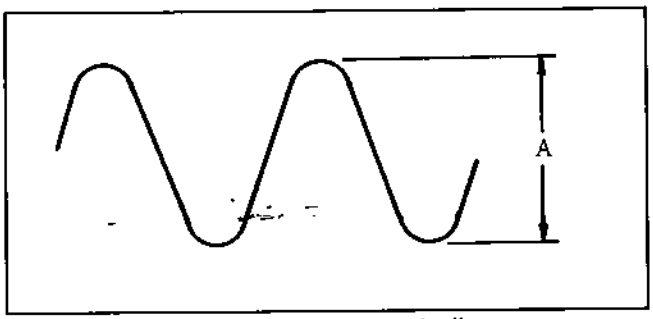


Fig. 5-13. Capstan error cancel adjustment

2. Capstan DC Bias Adjustment (SS-53 board)

Mode: Playback
Signal: Alignment tape βII and βIII color-bar or monoscope
Oscilloscope: Pin ⑳ of IC501 (TP506)
Adjustment method:
Adjustment to the relevant duty (ratio for A and B) in the playback mode with the RV as shown in Table 1.

Playback Mode	Adjustment	DUTY
βIII	RV509	50% ±3%
βII	RV506	50% ±3%
βII x 2	RV508	50% ±3%
βIII x 2	RV507	50% ±3%
βIII REV	RV505	50% ±3%

Table 1.

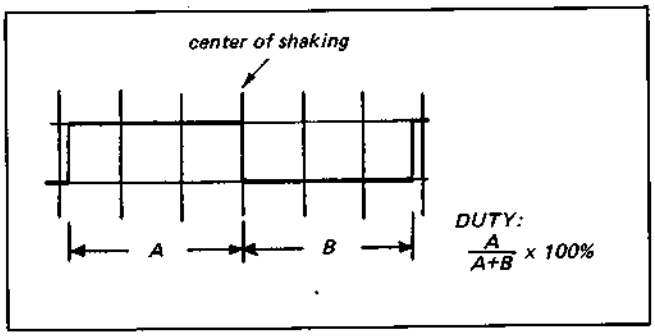


Fig. 5-14. Capstan DC bias adjustment

3. FG Amp DC Bias Adjustment (SS-53 board)

Mode: REC
Signal: Alignment tape βII color-bar or monoscope
Oscilloscope: CH-1 Pin (1) of IC508
CH-2 Pin (5) of IC508
Adjustment method:

(1) Short pin (8) of IC506 (TP514) and TP507 (5 V) and adjust the duty ratio (between A and B) to about 50% with RV510 and RV511. (See Fig. 5-15)

Note:
When the waveform does not lock and the playback picture is disturbed during adjustment, the video cassette recorder stops automatically. Set up the playback mode and adjust again.

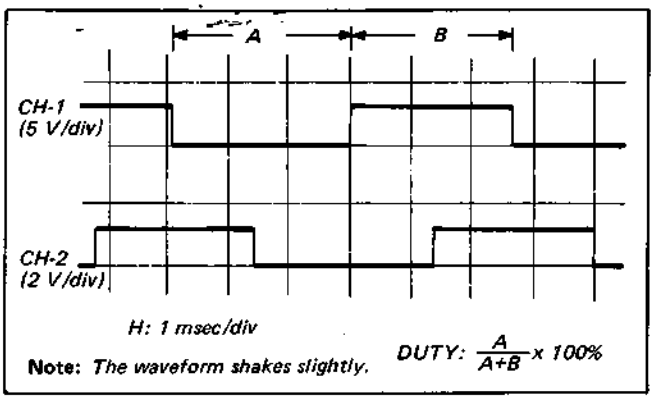


Fig. 5-15. FG amp DC bias adjustment (1)

(2) Repeat shorting and opening pin (8) of IC506 (TP514) and TP507 (5 V) successively and adjust so that the duty ratio (between A and B) of CH-1 waveform does not change, with RV511. (See Fig. 5-16)

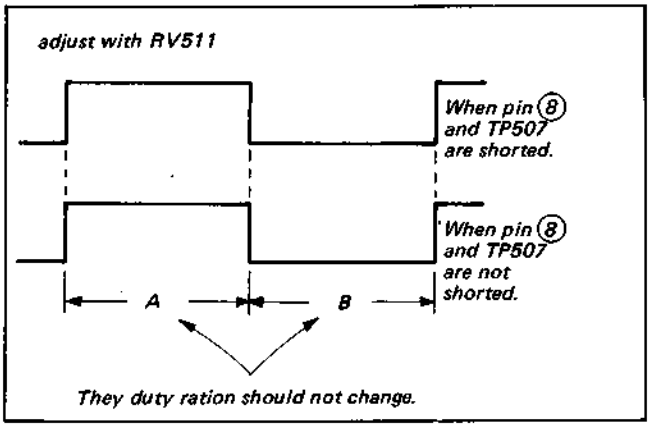


Fig. 5-16. FG amp DC bias adjustment (2)

(3) Connect CH-2 of the oscilloscope to pin (20) of IC501 (TP506).

(4) Short pin (8) of IC506 (TP514) and TP507 (5 V) and adjust with RV510 so that the duty ratio of CH-2 waveform becomes 45%. (See Fig. 5-17)

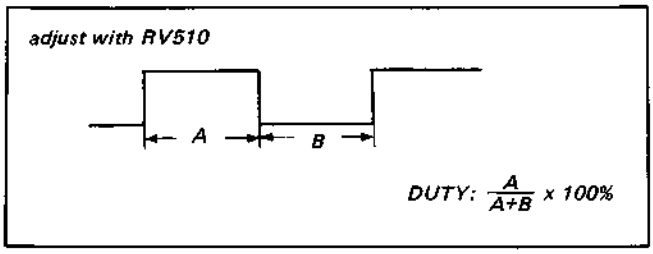


Fig. 5-17. FG amp DC bias adjustment (3)

4. Tracking Center Adjustment (SS-53 board)

Mode: Playback
Signal: Alignment tape βII or βIII color-bar or monoscope
Oscilloscope: CH-1 Pin (13) of IC501 (TP512)
CH-2 Pin (15) of IC501 (TP513)
Adjustment method:

(1) Set the TRACKING knob to the center click position.

(2) Adjust to860 μsec ±20 μsec with RV512. (See Fig. 5-18)

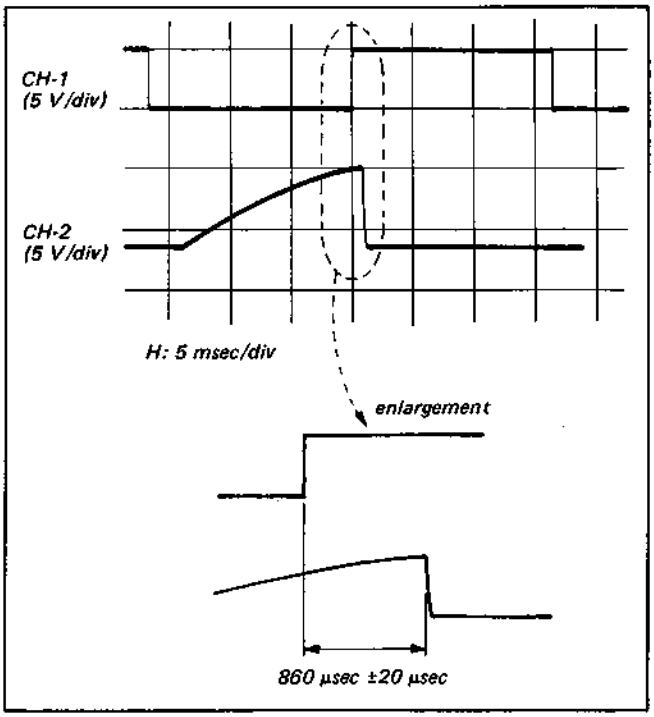


Fig. 5-18. Tracking center adjustment

5. Edit Tracking Center Adjustment (SS-53 board)

Mode: Recording
Signal: Alignment tape βII or βIII color bar
Oscilloscope: CH-1 Pin (13) of IC501 (TP512)
CH-2 Pin (15) of IC501 (TP513)
Adjustment method:
(1) Set the TRACKING knob to the center click position. (See Fig. 5-19)

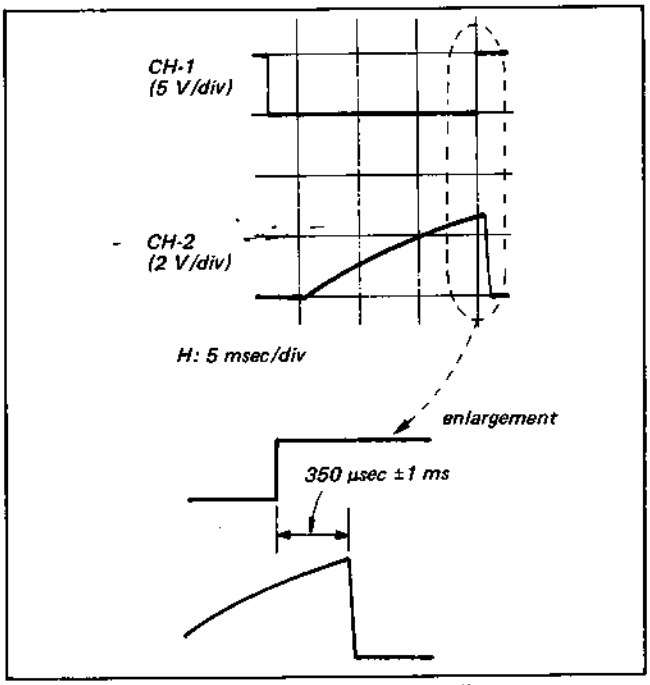


Fig. 5-19. Edit tracking center adjustment

6. CTL Delay Adjustment (SS-53 board)

Mode: X1 RVS (BETA Scan)
Signal: Color-bar signals recorded in βII mode.
Adjustment method:
(1) Set the TRACKING knob to the center click position.
(2) Adjust RV901 so that noise bars on the TV monitor screen disappear from the screen top or bottom (or are kept to a minimum).
(See Fig. 5-20)

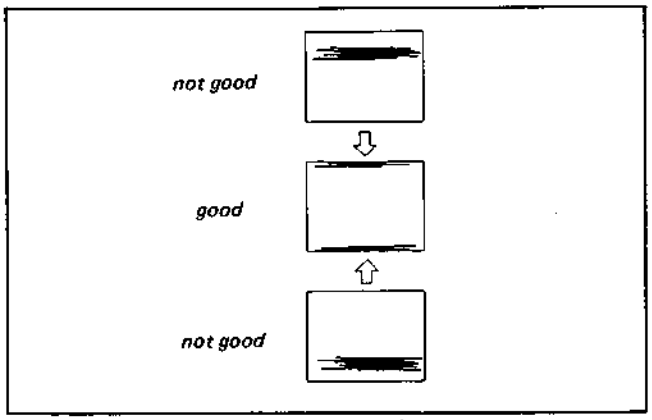


Fig. 5-20. CTL delay adjustment

5-3-4. Swing Search Servo System Alignment

1. βI RVS (X1) Tracking Shift Adjustment

Mode: βII playback (βI reverse tracking control shift is adjusted with a βII tape.)
Signal: Arbitrary signal
Oscilloscope: CH-1 Pin (5) of IC516
CH-2 Pin (6) of IC516
Adjustment method:
(1) Adjust to T=16.7 msec ±0.5 msec with RV517.

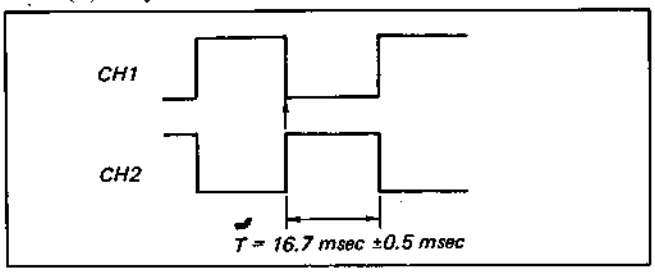


Fig. 5-21. βI RVS (X1) tracking shift adjustment

2. Edit Adjustment (SS-53 board)

- Adjust in both βII and βIII modes.

Mode: Record
Signal: Arbitrary signal
Oscilloscope: Pin (21) of IC501
External trigger: Pin (9) of IC801
Trigger slope: –
Input: DC range
Sweep mode: NORMAL
Adjustment method:
(1) Set up the PAUSE mode. (more than 3 seconds)
(2) Press the pause button again, and adjust RV514 (βII) and RV515 (βIII) so that the time T, between release of pause (at this time adjust trigger level before oscilloscope trigger is applied) and fall of the waveform, is minimum.
(See Fig. 5-22)

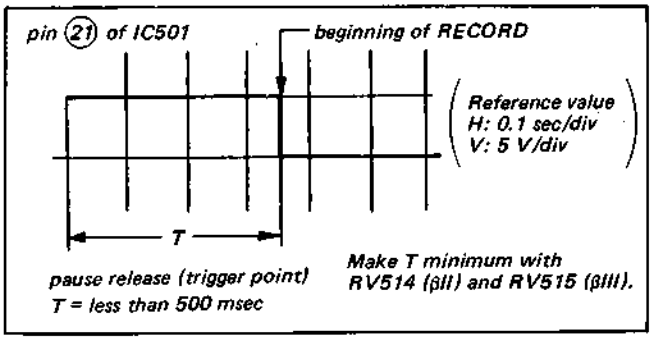


Fig. 5-22. Edit adjustment

(3) Repeat; PAUSE . . . . . release of PAUSE two or three times, and check that the result meets Paragraph (2).
(4) Make self-recording the playback and check that edits are free of noise.

3. VD Adjustment

Mode: STILL
Signal: Alignment tape βIII color-bar signal or monoscope signal.
Oscilloscope: CH-1 TP501
CH-2 Pin (1) of CN802
Adjustment method:
(1) Adjust as shown in Fig. 5-23 with RV803.

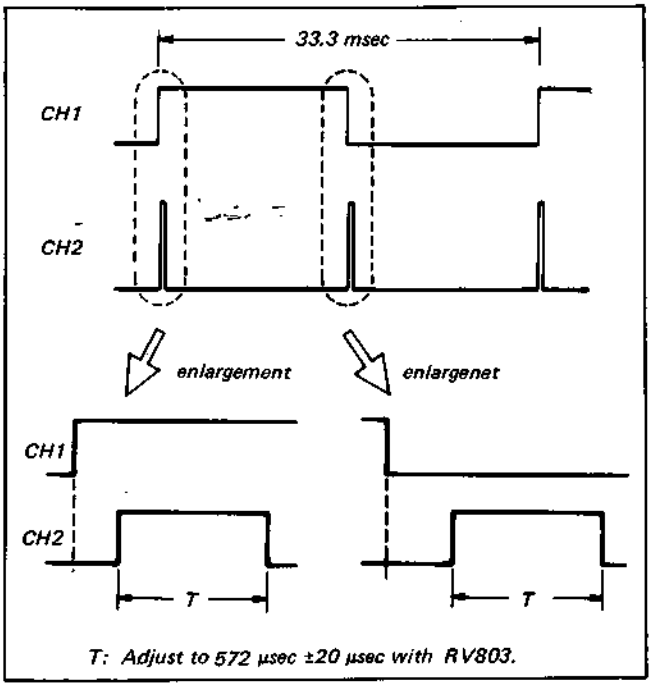


Fig. 5-23. VD adjustment

4. Slow Motion Adjustment

[Tracking Center Adjustment]
- Adjust in the βII mode.
- Record an arbitrary signal in βII mode.

Mode: 1/5 FWD slow motion
Oscilloscope: CH-1 Pin (3) of CN213 on RP-24 board
CH-2 Pin (1) of CN213 on RP-24 board
Adjustment method:
(1) Set the slow motion tracking knob at the center click position.
(2) Adjust the waveform peak to be in center of A-CH with RV806. (See Fig. 5-24)

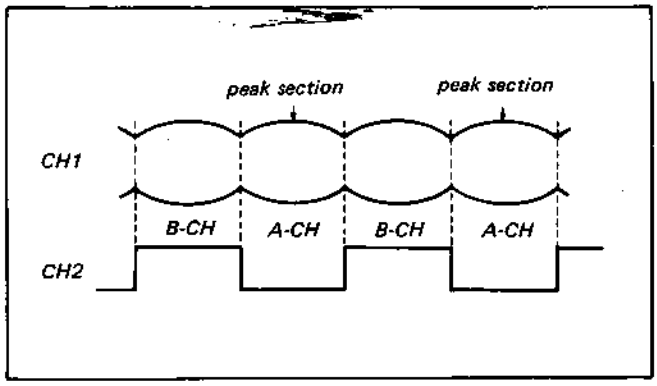


Fig. 5-24. Tracking center adjustment

5. Drum Shift Adjustment

[STILL f_H Adjustment]
Mode: STILL
Signal: Alignment tape βII color-bar signal, or monoscope signal.
Oscilloscope: Pin (22) of IC2 in VI-10 board
Adjustment method:
(1) Adjust f_H during the STILL mode with RV805 to be equal to f_H in the E-E mode. (See Fig. 5-25)

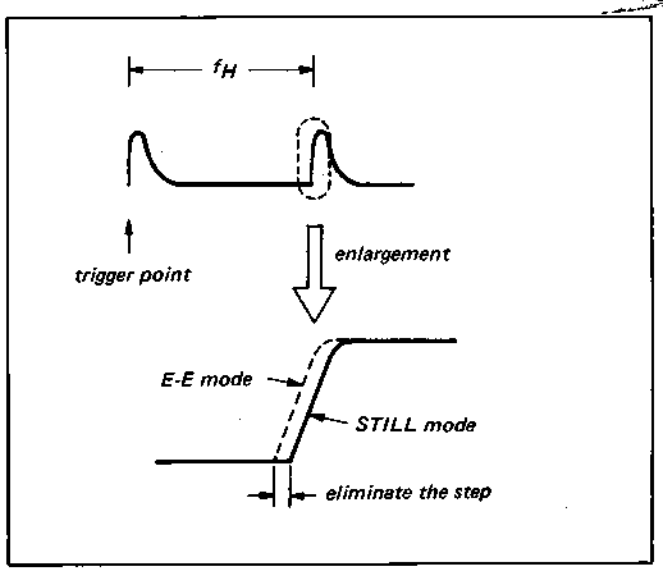


Fig. 5-25. STILL f_H adjustment

[SLOW f_H Adjustment]

Mode: 1/5 FWD slow motion and 1/5 RVS slow motion.

Signal: Alignment tape βII color-bar signal, or monoscope signal.

Oscilloscope: Pin (22) of IC2 in VI-10 board

Adjustment method:

(1) Reduce the shaking width of f_H with RV804 during 1/5 FWD slow motion to a minimum. (See Fig. 5-26)

(2) Reduce the shaking width of f_H during the 1/5 RVS slow motion by using RV807 to a minimum.

(3) Repeat Steps (1) and (2) alternately to reduce the shaking width for both FWD and RVS to a minimum. (See Fig. 5-26)

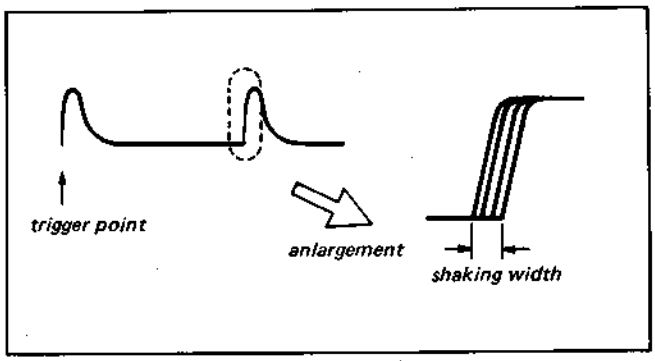


Fig. 5-26. SLOW f_H adjustment

5-4. VIDEO SYSTEM ALIGNMENT

As tule, first the playback system is aligned with an alignment tape to check that it operates normally, then the recording system is aligned.

The alignment sequence is shown below. The Y signal and chroma signal systems are aligned for both playback and recording systems.

Color video signals supplied by the pattern generator is used for video system alignment in the record mode. Check that the sync and color burst signals conform to the specifications designated in "Preparatory Set-up for Alignment" in Fig. 5-1.

[Playback system alignment]
1. Playback amplifier frequency response adjustment
2. Playback Y, A'-ch and B'-ch frequency response adjustment
3. De-emphases level adjustemnt
4. Playback Y signal level adjustment

[Record system alignment]
1. VCO frequency alignment and VCO lock check
2. Comb filter adjustment
3. Comb AGC adjustment
4. Sync AGC adjustment
5. Y-FM carrier 1 adjustment
6. FM modulator deviation adjustment
7. Y-FM carrier 3 adjustment
8. Y-FM carrier 2 adjustment
9. Dark clip adjustment
10. Y-FM record current adjustment
11. fsc adjustment
12. Carrier balance adjustment
13. Chroma record current adjustment

[Slow motion playback system alignment]
1. Skew frequency adjustment
2. Slow AGC adjustment
3. Adjustment of output level during pause

5-4-1. Playback System Alignment

1. Playback Amplifier Frequency Response Adjustment (RP-24 board)

- Adjust both A-ch and B-ch.
- B-ch is indicated by ( ).

Mode: Playback
Signal: Alignment tape βII RF sweep
Oscilloscope: Pin ③ of CN213
External trigger: Pin ① of CN213

Adjustment method:
(1) Adjust output level to maximum with the tracking knob.
(2) Set the trigger slope to – (+).
(3) Adjust so that the 5.1 MHz level about 75% of 3.58 MHz level with RP-24 board RV005 (RV001). (See Fig. 5-27)
(4) Adjust RV002 so that BCH level and ACH level are equal.

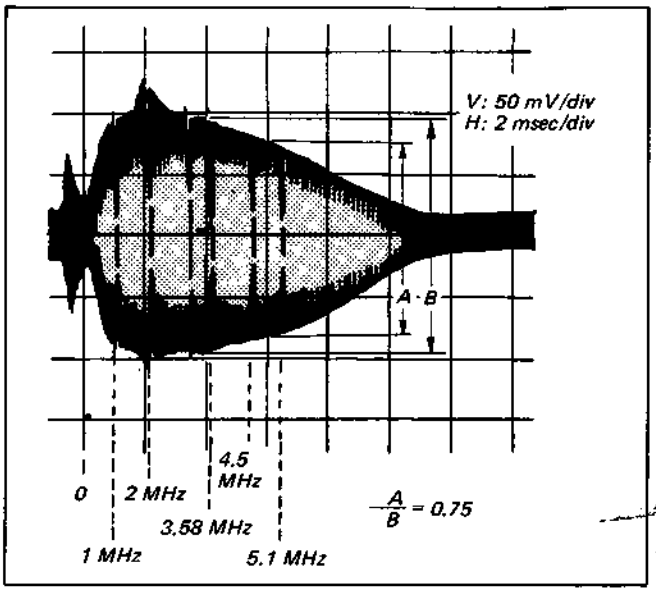


Fig. 5-27. Playback amplifier frequency response adjustment

2. A'-ch, B'-ch Playback Frequency Response Adjustment

- B'-ch is indicated by ( ).

Mode: Playback
Signal: Alignment tape βII RF sweep
Oscilloscope: Pin ③ of CN213
External trigger: Pin ① of CN213 (RF SWP)

Adjustment method:
(1) Adjust output level to maximum with the tracking knob.
(2) Set trigger slope to – (+).
(3) Connect SS-53 board IC517 pins ⑨ and ⑯.
(4) Connect RP-24 board IC004 pins ⑫ and ⑬.
(5) Adjust so that 5.1 MHz level is 75% of 3.5 MHz level. (See Fig. 5-27)
(6) Adjust RV004 (RV007) so that A'-ch and B'-ch levels are the same as A-ch.
(7) Remove the connection between SS-53 board IC517 pins ⑨ and ⑯.
(8) Remove the connection between RP-24 board IC004 pins ⑫ and ⑬.

3. De-emphases Level Adjustment (VI-10 board)

Mode: Playback
Signal: Alignment tape βII color-bar
Oscilloscope: Emitter of Q715
Adjustment method:
Adjust to 1.3 V ± 0.05 Vp-p with RV701.
(See Fig. 5-28)

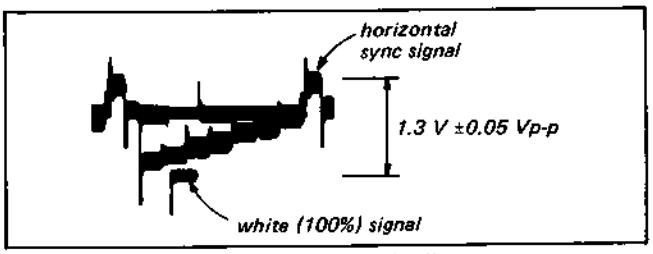


Fig. 5-28. De-emphases level adjustment

4. Playback Y Signal Level Adjustment (VI-10 board)

Mode: Playback
Signal: Alignment tape βII color-bar
Oscilloscope: Pin (5) of CN205
Adjustment method:
Adjust to 2.0 V ±0.1 Vp-p with RV702.
(See Fig. 5-29)

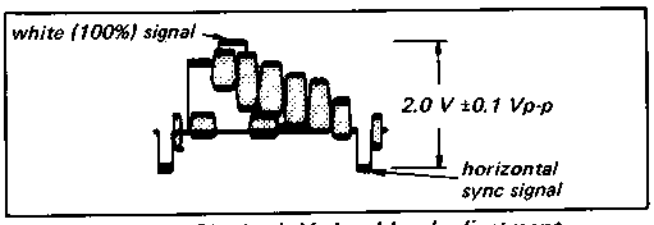


Fig. 5-29. Playback Y signal level adjustment

5-4-2. Record System Alignment

1. VCO Frequency Alignment and VCO Lock Check (VI-10 board)

Mode: Record or E-E
Signal: Color-bar
Frequency counter: Pin (33) of IC2
Digital voltmeter: Pin (26) of IC2
Adjustment method:
Adjust to 3.4 V ±0.1 V dc with RV403.

Note:
The frequency also changes when RV403 is turned.
Verify that the frequency is locked to f=4.27 MHz.
Be sure to use digital voltmeter to measure voltage.

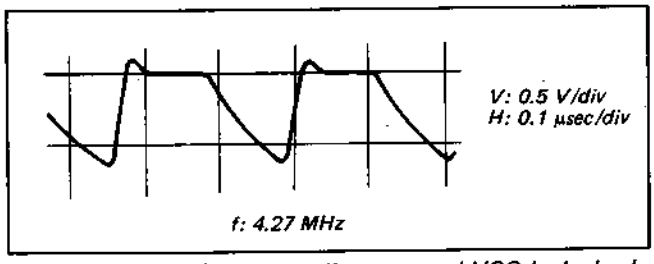


Fig. 5-30. VCO frequency alignment and VCO lock check

2. Comb Filter Adjustment (VI-10 board)

Mode: Record or E-E
Signal: Color-bar
Oscilloscope: Pin (42) of IC1
Adjustment method:
Minimize the residual chroma component by alternately adjusting RV104 and LV101. (See Fig. 5-31)

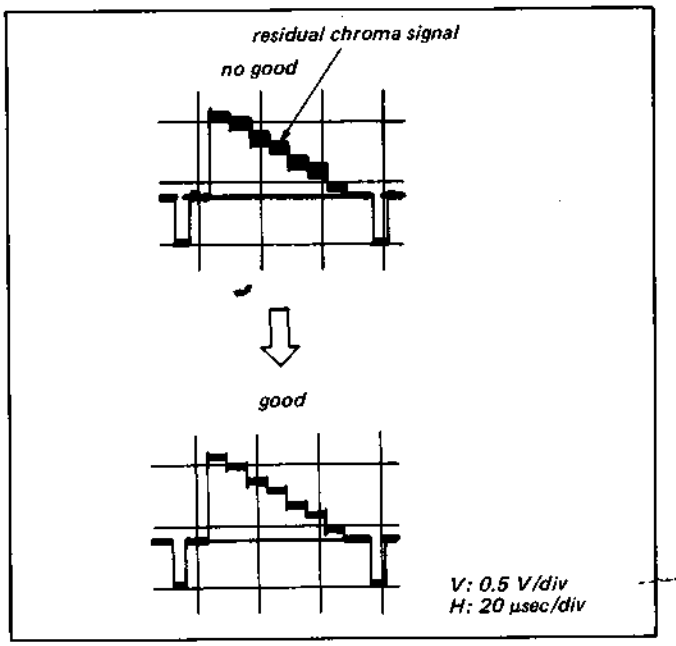


Fig. 5-31. Comb filter adjustment

3. Comb AGC Adjustment (VI-10 board)

Mode: Playback
Signal: Monoscope or prerecorded tape
Oscilloscope: Pin (5) of CN205
Adjustment method:
Adjust with RV301 so that the dropout corrected portion level is the same as the value before dropout.
(See Fig. 5-32)

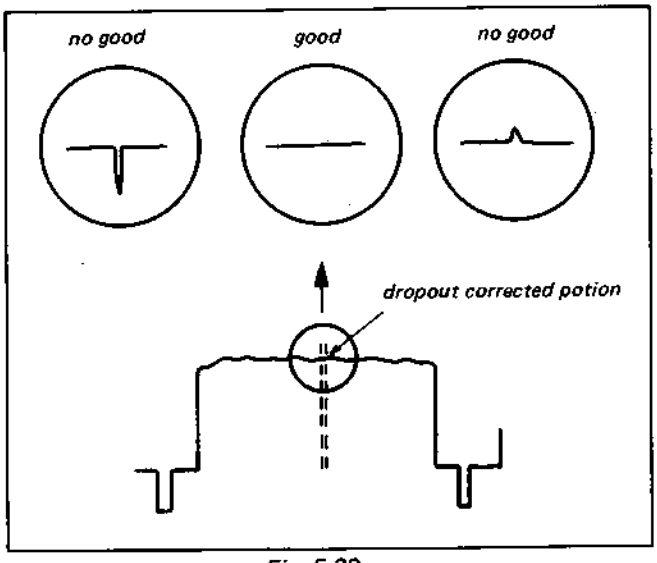


Fig. 5-32.

4. Sync AGC Adjustment (VI-10 board)

Mode: Record or E-E
Signal: Color-bar
Oscilloscope: Pin (5) of CN205
Adjustment method:
Adjust to 2.0 Vp-p ±0.1 Vp-p with RV103.
(See Fig. 5-33)

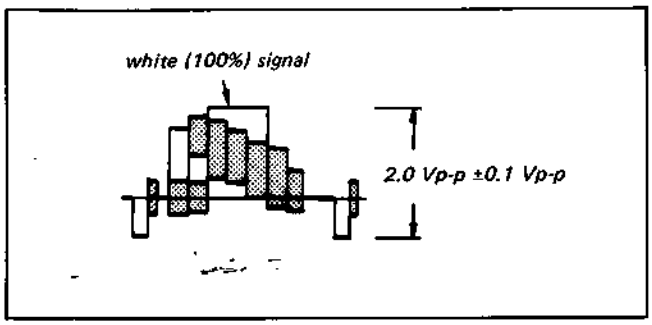


Fig. 5-33. Sync AGC adjustment

5. Y-FM Carrier 1 Adjustment (VI-10 board)

BETA HI-FI selector switch: OFF,
HI-BAND switch: PFF
Mode: Record or E-E
Signal: None
Frequency counter: Pin (25) of IC1
Adjustment method:
(1) Set to NORMAL recording mode.
(2) Adjust to 3.7 MHz ±0.05 MHz with RV201.
(See Fig. 5-34)

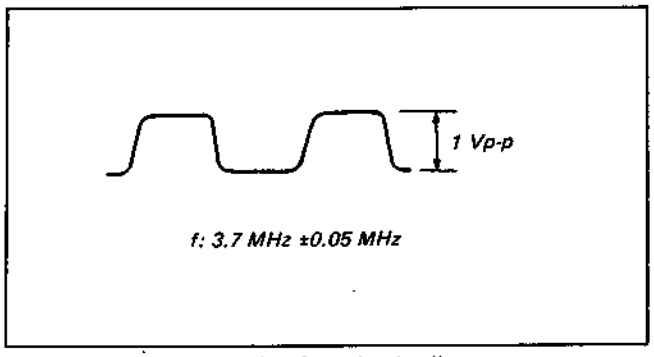


Fig. 5-34. Y-FM carrier 1 adjustment

6. FM Modulator Deviation Adjustment (VI-10 board)

Mode: Record or E-E
Signal: Color-bar
Spectrum analyzer: Pin (11) of CN202
Adjustment method:
(1) Adjust the spacing between f2 and f1 to 1.27 MHz ±0.05 MHz with RV207. (See Fig. 5-35)
(2) Adjust according to step 5 and 6 (1) repeatedly so that Y signal carrier and deviation adjustments are both satisfied.

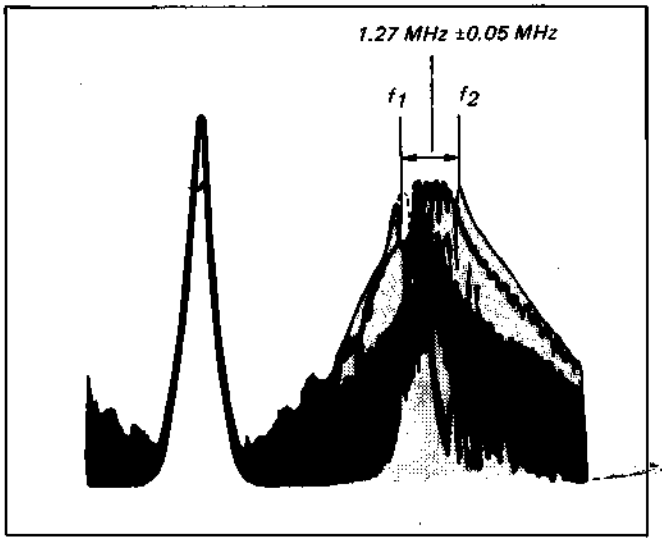


Fig. 5-35. FM modulator deviation adjustment

7. Y-FM Carrier 3 Adjustment (VI-10 board)

HI-BAND switch: ON
Mode: Record or E-E
Signal: None
Frequency counter: Pin (25) of IC1
Adjustment method:
Set to HI-BAND mode
Adjust to 4.4 MHz ±0.05 MHz with RV208.

8. Y-FM Carrier 2 Adjustment (VI-10 board)

BETA HI-FI selector switch: ON
HI-BAND switch: OFF
Mode: Record or E-E
Signal: None
Adjustment method:
(1) Set to BETA HI-FI recording mode
(BETA HI-FI selector switch: ON)
(2) Adjust to 4.1 MHz ±0.05 MHz with RV204.
(See Fig. 5-36)

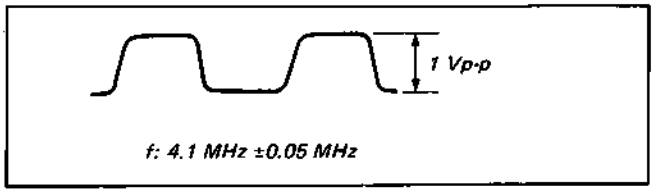


Fig. 5-36. Y-FM carrier 2 adjustment

9. Dark Clip Adjustment (VI-10 board)

Mode: Record
Signal: None
Digital voltmeter: See Fig. 5-37
Adjustment method:
Adjust to 0 V ±0.05 V potential difference with RV203.

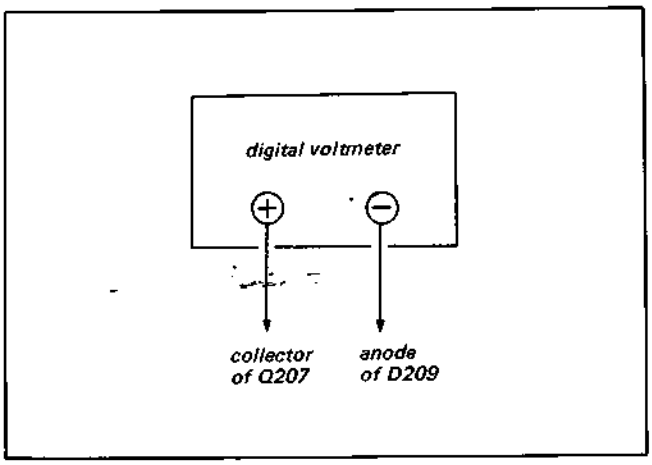


Fig. 5-37.

10. Y-FM Record Current Adjustment (RP-24 board)

Mode: βII record (BETA HI-FI selector switch: ON)
Signal: None
Oscilloscope: Pin ① of CN214
Adjustment method:
Adjust RV008 to obtain the level listed below.
(See Fig. 5-38)

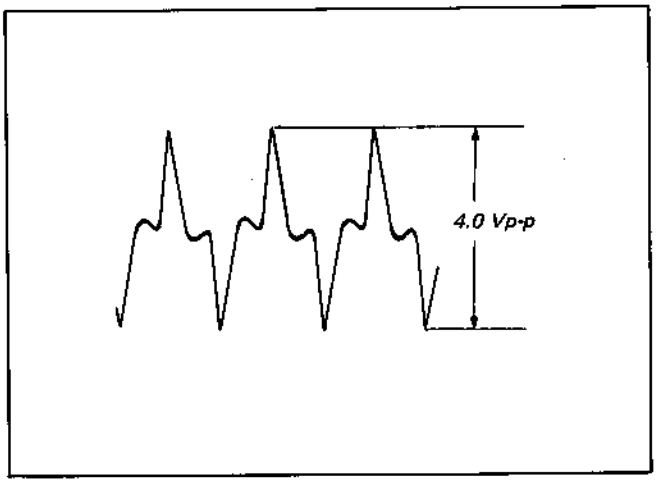


Fig. 5-38. Y-FM record current adjustment

11. fsc Adjustment (VI-10 board)

Mode: Playback
Signal: Color-bar
Frequency counter: Pin ④ of CN203
Adjustment method:
(1) Set to playback mode.
(2) Adjust to 3.579545 Hz ±10 Hz with RV404.

12. Carrier Balance Adjustment (VI-10 board)

Mode: Playback
Signal: Alignment tape βII color-bar
Spectrum analyzer: Pin ㊴ of IC2
Adjustment method:
Adjust 4.27 MHz component with RV402 to a level lower than the 3.58 MHz component by −30 dB.
(See Fig. 5-39)

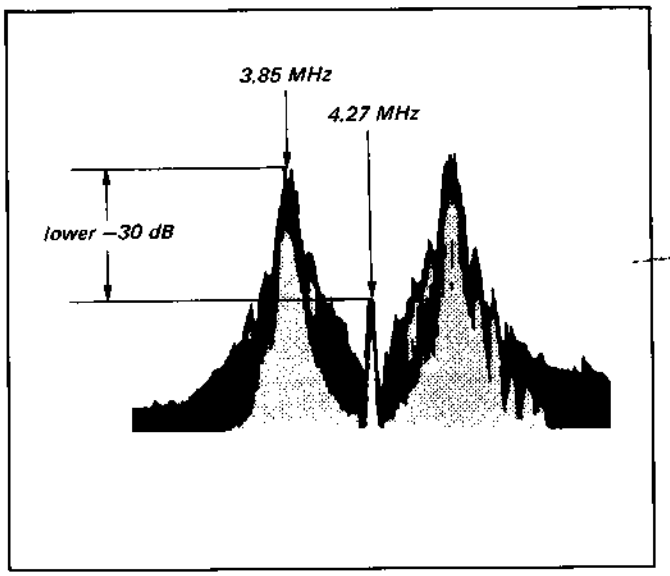


Fig. 5-39. Carrier balance adjustment

13. Chroma Record Current Adjustment (VI-10 board)

Mode: Record
Signal: Color-bar
Oscilloscope: Emitter of Q658 (See Fig. 5-40)

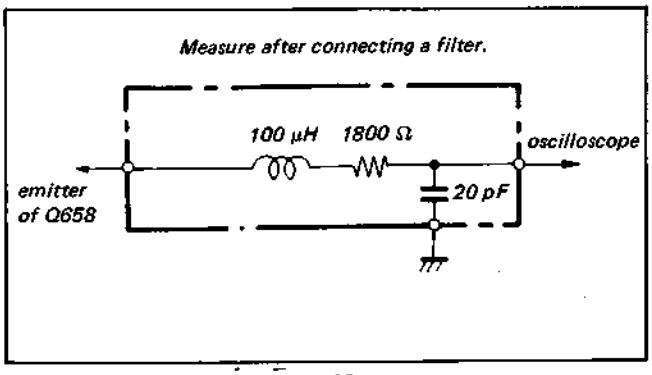


Fig. 5-40.

Adjustment method:
Adjust the level of the color-bar "cyan" to 160 mV ±10 mVp-p with RV401. (See Fig. 5-41)

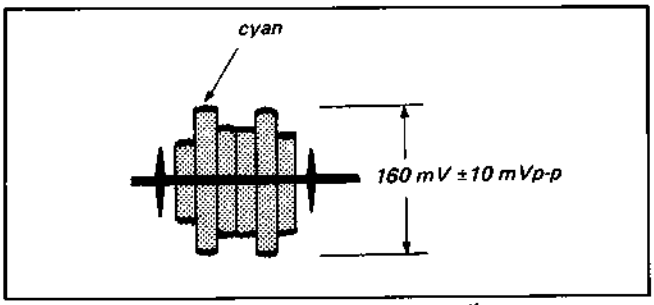


Fig. 5-41. Chroma record current adjustment

5-4-3. Slow Motion Playback System Alignment

1. Skew Frequency Adjustment (VI-10 board)

Mode: Playback + Pause
Signal: Alignment tape βII color-bar
Adjustment method:
Adjust RV501 to remove skew. (Adjust after more than 2 minutes have elapsed in playback mode.)

2. Slow AGC Adjustment (VI-10 board)

Mode: Playback + Pause
Signal: Alignment tape βII or βIII color-bar
Oscilloscope: Pin (5) of CN205
Adjustment method:
Set for identical output levels during both playback and pause with RV502, 503. (See Fig. 5-42)

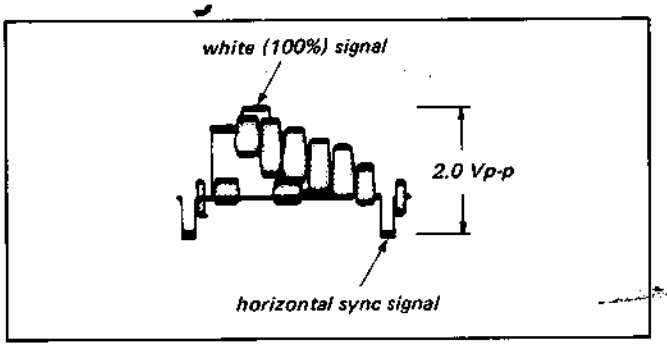


Fig. 5-42. Slow AGC adjustment

3. Adjustment of Output Level During Pause (VI-10 board)

Mode: Playback + Pause
Signal: Alignment tape βIII color-bar
Oscilloscope: Pin (5) of CN205
Adjustment method:
Adjust with RV504 so that the output level during pause is the same as that during playback.

5-5. AUDIO SYSTEM ADJUSTMENT (AU-13 board)

- Adjustments of the audio system shall be made in the βIII mode, otherwise note. Use a Dynamicron tape (normal type, L125 – L500) for adjustments.

[Connection of Related Equipment]

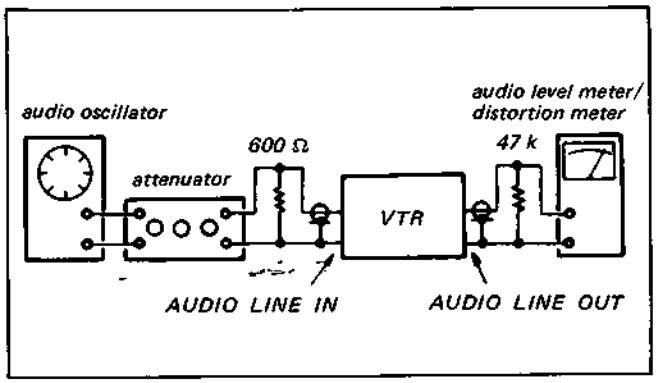


Fig. 5-43.

[Adjustment Sequence]

1. ACE head adjustment ... See "Mechanical Adjustment"
2. Playback frequency characteristic adjustment
3. Playback output level adjustment
4. E-E output level check
5. Bias oscillator and bias trap check
6. Record bias adjustment
7. Record level adjustment
8. Overall frequency characteristic check (NORMAL)
9. Overall S/N check (NORMAL)
10. Overall S/N check (BETA HI-FI)
11. Overall distortion check (NORMAL)
12. Overall distortion check (BETA HI-FI)
13. BETA FI-FI recording carrier wave level check
14. Dynamic emphasis decorder gain and playback L-CH (R-CH) adjustment
15. BETA HI-FI deviation adjustment

1. ACE Head Adjustment

Refor to "Mechanical Adjustment"

2. Playback Frequency Characteristic Check

Mode: Playback
Signal: Alignment tape βII 333 Hz (monoscope) and 7 kHz (RF sweep) portions
Check method:
(1) Playback 333 Hz and 7 kHz from the alignment tape and confirm that the level difference between 333 Hz and 7 kHz 0 dB ±3 dB.

3. Playback Output Level Adjustment

Mode: Playbck
Signal: Alignment tape βII 333 Hz (monoscope) portion
Adjustment method:
(1) Playback 333 Hz from the alignment tape and adjust so that the output level is −30 dB ±1 dB with RV102.

4. E-E Output Level Check

(1) Input a 333 Hz, −30 dBs signal on L-CH and R-CH simultaneously so audio line input.
(2) Confirm that the audio line output level is −30 dBs ±3 dBs.

5. Bias Oscillator Frequency and Bias Trap Check

Input is "AUDIO LINE IN", inputs pins for both L-CH and R-CH are shorted.
(1) Input is no-signal, in recording mode.
(2) Bring the oscilloscope probe close to T301 inside the shield case, via the frequency counter. Confirm that the oscillation frequency is 65 kHz ±6.5 kHz.
(3) Connect the oscilloscope to TP103 and check that bias leak is minimum (less than 4 Vp-p).

6. Record Bias Adjustment

Tape path adjustment should be completed.

(1) Supply a 333 Hz signal.
(2) Terminate the audio line output pin with a 47 kΩ resistor and connect a level meter.
(3) Turn the attenuator and adjust the input signal so that the level meter indication is −30 dBs.
(4) Set to βIII recording mode.
(5) Record in this state for 10 seconds.
(6) Supply a 5 kHz signal, and record for 10 seconds.
(7) Playback the recorded section of the tape and check that the output level at 333 Hz and 5 kHz.
(8) Confirm that the output level at 5 kHz is 0 dB ±1 dB relative to the output level at 333 Hz.
(9) When the specifications are not met, adjust RV104 and repeat items (1) – (8).

7. Record Level Adjustment

(1) (2) and (4) are the same as in 6. Recording Bias Adjustment.
(3) Playback the recorded portion, and confirm that the output level is −9 ±2 dBs.
(6) If not within the specifications, adjust RV101 and repeat staps (1) – (6).

8. Overall Frequency Characteristic Check

REC LVEVL control: Center
REC mode selector switch: βII
REC BALANCE control: Center

(1) Apply a 333 Hz signal simultaneously to L-CH and R-CH audio line input.
(2) Set up the E-E mode and adjust the attenuator output level so that the level meter reading is −30 dB.
(3) Record signals.
(4) Change the frequency to 50 Hz, 100 Hz, 333 Hz, 7 kHz, and 10 kHz and repeat Steps (2) and (3).
(5) Playback the recorded section of the tape and verify that the level is within the specification. (See Fig. 5-44)

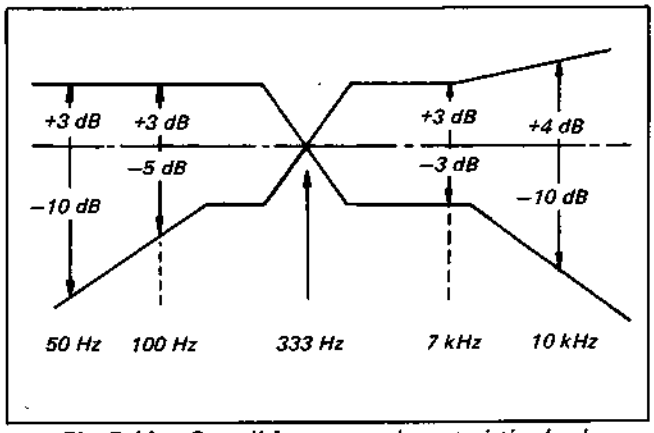


Fig. 5-44. Overall frequency characteristic check

(6) Turn the AUDIO SELECT switch to ON, the MPX FILTER/PCM switch to OFF, and apply a 400 Hz signal to audio line input pin.
(7) Adjust the attenuator output level so that the level meter reading is −20 dB.
(8) Record signals for 5 seconds by the tape counter.
(9) Change the frequency to 20 Hz, 100 Hz, 400 Hz, 10 kHz and 20 kHz and repeat Step (8).
(10) Playback the recorded section of the tape and verify that the level is within the specification. (See Fig. 5-45)
(11) Turn the MPX FILTER/PCM switch ON, and repeat item (8) with input signal frequency of 16 kHz.
(12) Confirm that the output level at 16 kHz is −20 dB or less relative to the output level at 400 Hz.

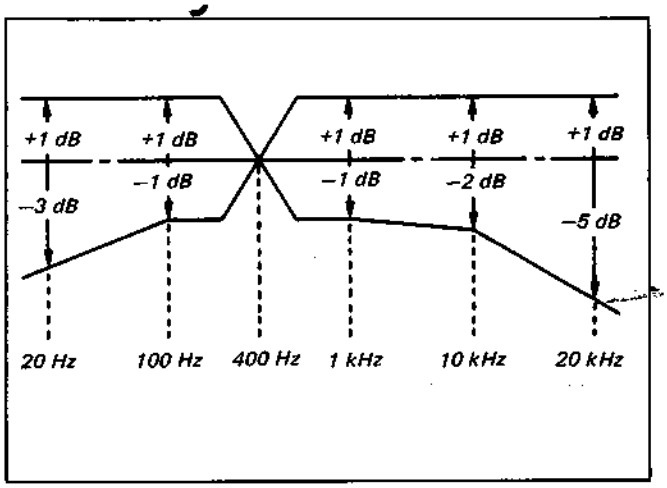


Fig. 5-45.

9. Overall S/N Check (NORMAL)

AUDIO SELECT switch: OFF
REC mode selector switch: βII

(1) Apply a 333 Hz signal simultaneously to L-CH and R-CH audio line input and adjust so that audio line input level is −10 dB.
(2) Record signals.
(3) Switch to no-signal input while continuing in record mode. (Ground-input for both L-CH and R-CH.)
(4) Playback the recorded potion, and confirm that the level difference between the 333 Hz signal and no-signal portion (the portion immediately after the 333 Hz signal) is more than 33 dB.

10. Overall S/N Check (BETA HI-FI)

AUDIO SELECT switch: ON
REC mode selector switch: βII

(1) Terminate the audio line output pin with a 47 kΩ resistor and connect a level meter.
(2) Apply a 400 Hz signal simultaneously to L-CH and R-CH audio line input and adjust so that audio line input level is −10 dB.
(3) Record signals for 5 seconds by the tape counter.
(4) Ground the audio line input, and record for 5 seconds by the tape counter.
(5) Playback the recorded portion, and confirm that the level difference between the 400 Hz signal and no-signal portion is more than 65 dB.
Apply IHF-A curve when reading the level in item (3).

11. Overall Distortion Check (NORMAL)

AUDIO SELECT switch: OFF
REC mode selector switch: βII

(1) Apply a 333 Hz signal simultaneously to L-CH and R-CH audio line input and adjust the attenuator output level so that R-CH level is −10 dB.
(2) Record signals.
(3) Playback the recorded section of the tape and verify that the distortion is below 4%.

12. Overall Distortion Check (BETA HI-FI)

AUDIO SELECT switch: ON
REC mode selector switch: βII

(1) Apply a 400 Hz signal simultaneously to L-CH and R-CH audio line input and adjust so that R-CH level is −10 dB.
(2) Record signals.
(3) Playback the recorded section of the tape and verify that the distortion is below 0.5%.

13. BETA HI-FI Recording Carrier Wave Level Check (AF-9 board)

AUDIO SELECT switch: ON
Signal: None

(1) Carrier wave 1 (1.38 MHz) level check
1. Connect the oscilloscope to pin ㊴ of IC3.
2. Confirm that peak value is 0.8 Vp-p ±0.1 Vp-p.
(2) Carrier wave 2 (1.53 MHz) level check
1. Connect the oscilloscope pin ㊱ of IC3.
2. Confirm that peak value is 0.8 Vp-p ±0.1 Vp-p.
(3) Carrier wave 3 (1.68 MHz) level check
1. Connect the oscilloscope pin ⑪ of IC3.
2. Confirm that peak value is 0.8 Vp-p ±0.1 Vp-p.
(4) Carrier wave 4 (1.83 MHz) level check
1. Connect the oscilloscope to pin ⑨ of IC3.
2. Confirm that peak value is 0.8 Vp-p ±0.1 Vp-p.

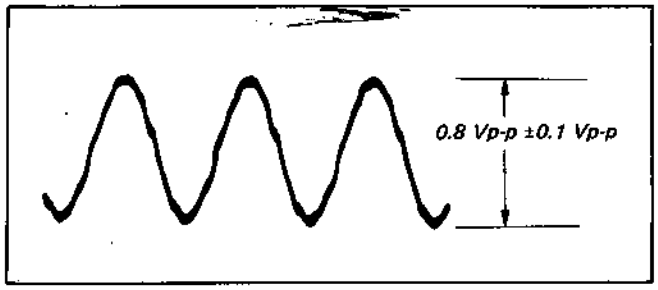


Fig. 5-46. Recording carrier wave level adjustment

* Interchangeability Check
Low level noise should not be noticeably large on a commercially sold soft tape BETA HI-FI signal potion.

14. Dynamic Emphasis Decoder Gain and Playback L-CH (R-CH) Check

AUDIO SELECT switch: ON

(1) Playback alignment tape in the BETA HI-FI mode.
(2) Confirm that the level meter to pin ⑤ and ⑪ of FL101 becomes −20 dB ±3 dB.
(3) Connect the level meter to audio line output pin.
(4) BETA HI-FI mode and confirm that level meter is −10 dB ±3 dB.

15. BETA HI-FI Deviation Check

BETA HI-FI selector switch: ON

(1) Terminate the audio line output pin with a 47 kΩ resistor and connect a level meter.
(2) Apply a 400 Hz signal simultaneously to audio line input and adjust so that audio line input level is −10 dB.
(3) Confirm that E-E mode audio line output and output when self-recording is played back are the same.

5-6. TUNER SYSTEM ADJUSTMENT (TI-4 board)

1. AFT Adjustment

(1) Receive a TV broadcast signal.
(2) Turn the AFT switch off.
(3) Press the tuning button and set for the optimum state while observing the monitor TV screen. (There should be no beat.)
(4) Connect the digital voltmeter to pin ⑦ of IC201.
(5) Adjust T202 so that the level is 4.6 V dc.
(6) Turn the AFT switch on, receive each channel, and check to make sure that there is no beat or picture disturbance.

2. RF AGC Adjustment

(1) Adjust the monitor TV for best contrast and receive a broadcast signal.
(2) Adjust RV201 so that snow noise is visible.
(3) Turn RV201 in the opposite direction to that in (2) and set at the point where snow noise disappears.
(4) Receive each channel and confirm that there is no beat, picturbance or snow noise.

3. Audio Carrier Lock SIF Adjustment

- Set the audio carrier lock switch to ON before adjusting.

3-1. VCO voltage adjustment

(1) Short IC202 pin ⑨ and pin ⑩ across the shortest distance.
(2) Connect a digital voltmeter to IC202 pin ④.
(3) Adjust to 2.7 V ±0.05 V DC with RV203.
(4) Return IC202 pins ⑨ and ⑩ to normal.

3-2. T206 adjustment

(1) Receive a TV broadcast signal.
(2) Connect a digital voltmeter to IC202 pin ④.
(3) Adjust the 2.7 V ±0.05 V DC with T206. Audio should be output normally at this time.

Note:
2.7 V voltage is generated at several points, not just one, so find the point that varies between 1 V – 4 V.

3-3. SIF discriminator adjustment

(1) Receive a TV broadeast signal.
(2) Connect a digital voltmeter to IC201 pin ⑬.
(3) Adjust to 3.9 V ±0.2 V DC with T203.

4. Multiplex Decorder Adjustment

4-1. SAP-BPF adjustment

(1) Remove the solder between IC801 pin ① and RV203 to open the pattern and input a 62.94 kHz 0.42 Vp-p sine wave to IC810 pin ①.
(2) Adjust RV801 so that IC801 pin ⑥ output is minimum.
(3) Set the frequency to 78.67 kHz and confirm that IC801 pin ㊲ output is less than 30 mVp-p.

4-2. Stereo VCO adjustment

(1) Remove the solder between IC801 pin ① and RV203 to open the pattern and short IC801 pin ① to ground with a chemical capacitor.
(2) Connect a frequency counter to IC801 pin ㉜ and adjust RV805 so that the frequency is 62.94 ±0.1 kHz.

4-3. SAP VCO adjustment

(1) Select an illegal channel (channel 0, etc.) to make MUTE high and read IC801 pin ㉕ DC voltage VM.
(2) Remove the solder between IC801 pin ① and RV203 to open the pattern and input 78.67 kHz 0.42 Vp-p to IC801 pin ① and adjust RV803 so that IC801 pin ㉕ DC voltage is VM ±0.1 V.

4-4. Pilot cancel adjustment

(1) Remove the solder between IC801 pin ① and RV203 to open the pattern and input 15.75 kHz 0.14 Vp-p to IC801 pin ①.
(2) Adjust RV804 so that IC801 pin ㊵ output 15.75 kHz output is minimum. (If it is turned too much, output will become zero and operation will be mono.)

4-5. Output level check

Remove the solder between IC801 pin ① and RV203 to open the pattern and input 300 Hz 0.7 Vp-p to IC801 pin ①. Check CN106 pin ① output V_L and ② output V_R. V_L = 447 ±45 mVrms. $V_R = V_L$ ±25 mVrms.

5. Noise Reduction Adjustment

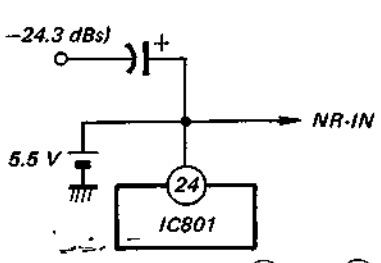
5-1. Time constant adjustment

Adjust RV830 so that the voltage drop at both sides of R839 is 15 ±1 mVp-p.

5-2. Variable de-emphasis adjustment

(1) Set RV832 to mechanical center.

(2) Apply 5.5 V bias to IC801 pin ㉔, cut DC with a capacitor and input 300 Hz −24.3 dBs.



(3) Adjust RV831 so that CN106 ① and ② output is $V_L/7$ ±5 mV, and read IC830 pin ⑦ output Va.

(4) In the same way, input 8 kHz −17.2 dBs and adjust RV831 so that IC830 pin ⑦ output is Va −11.3 dBs.

6. Separation Check

6-1. Indicator check

Receive am MTS signal channel and check that the stereo indicator lights up. (AUTO STEREO SW should be ON)

6-2. Main level, L-R adjustment

Receive an MTS signal and adjust RV202 and RV806 (L-R) so that separation is maximum.
(RV202 should be near MAX and RV806 near center)

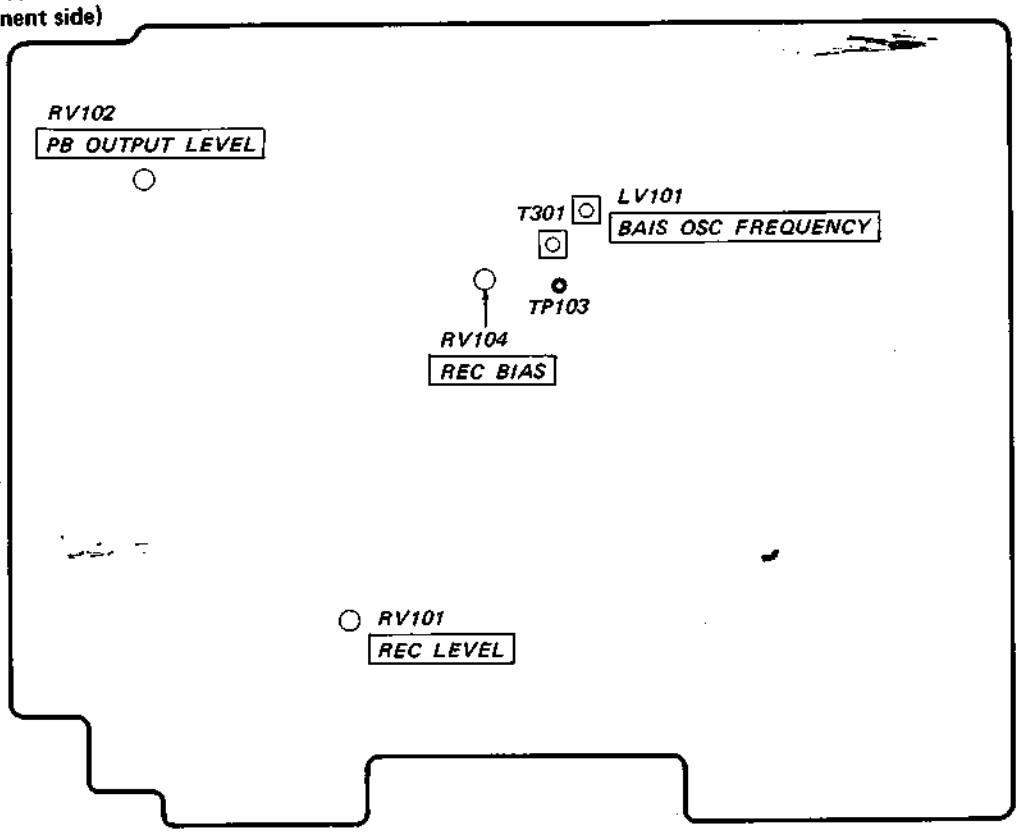
1. "H" for 12 seconds only when REC starts.
2. "H" when there is no CTL.
3. Depends on front panel β switch.
4. Outputs Beta mode set the time before.
5. Outputs Beta mode of the tape currently being played back.
6. βI: "L", βII: "L" only when tape moves, βIII: "H".
7. $\overline{\text{(RF SWP)}}$ when tape is stopped, "L" when tape is moveing.

} Refer to Timing Chart.

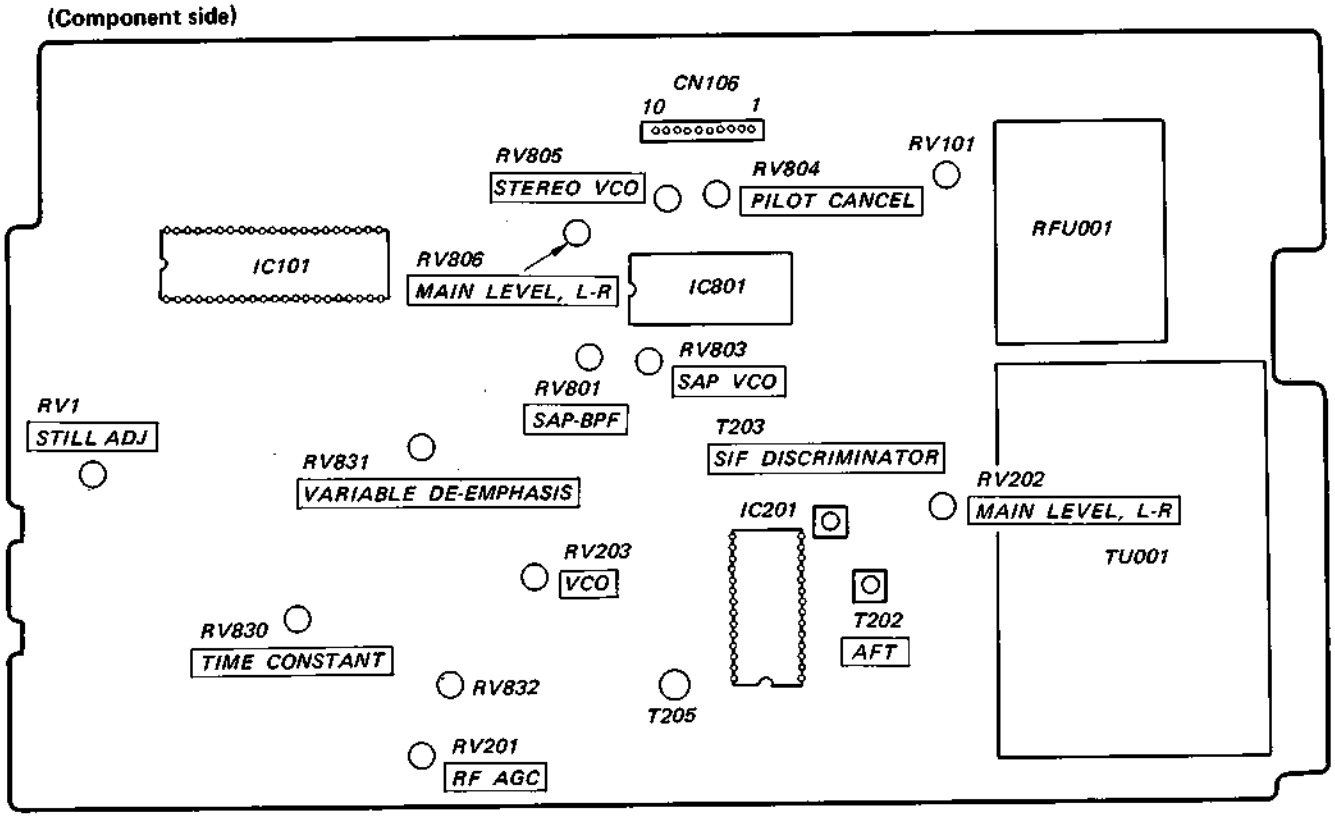
7. Video Modulation Adjustment

- Receive VTR RF modulator output on a TV.
  Observe the TV video output in level on an oscilloscope, and select the same channel with the VTR. Receive RF modulator output on that TV, and adjust RV101 so that the video output level is about 91% ±3% relative to the previous level. In other words, the same picutre will be a little darker when seen on the VTR.

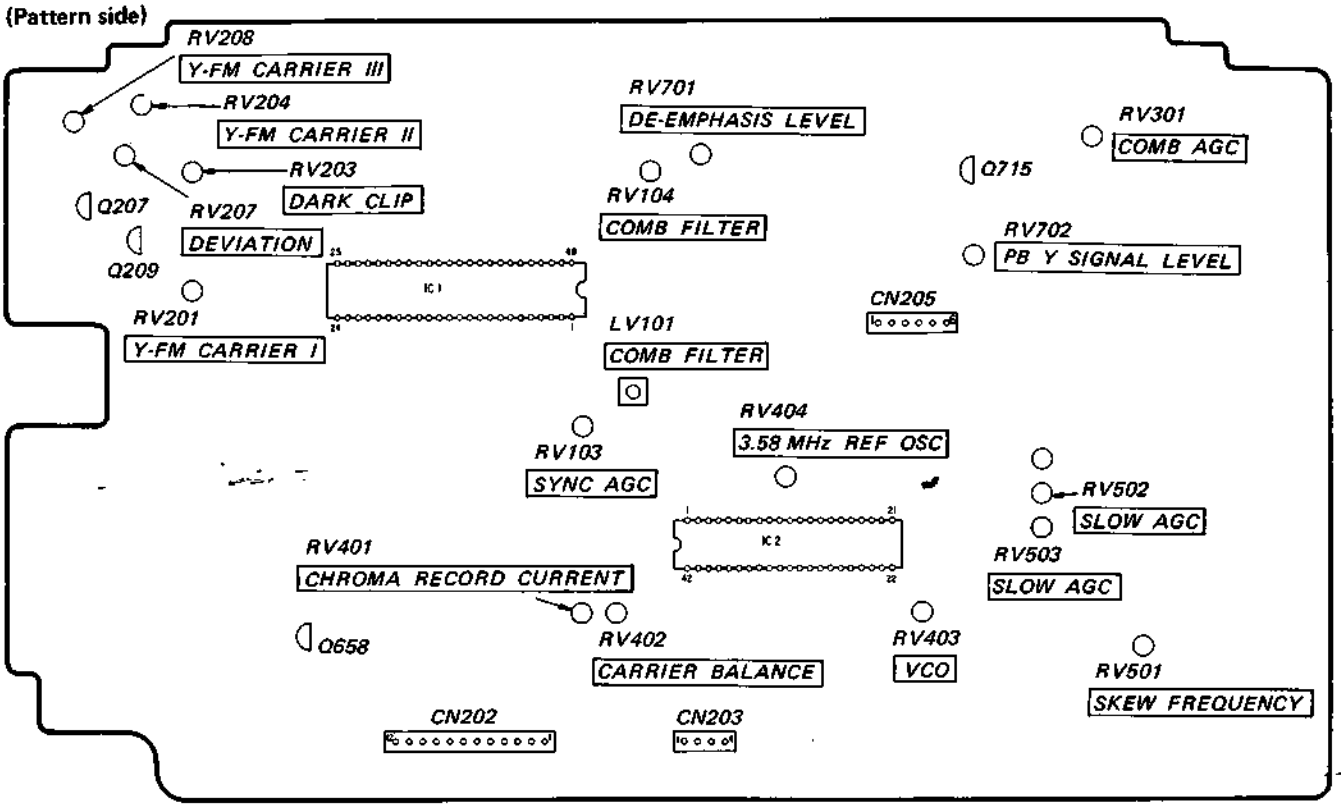
AU-13 board
(Component side)



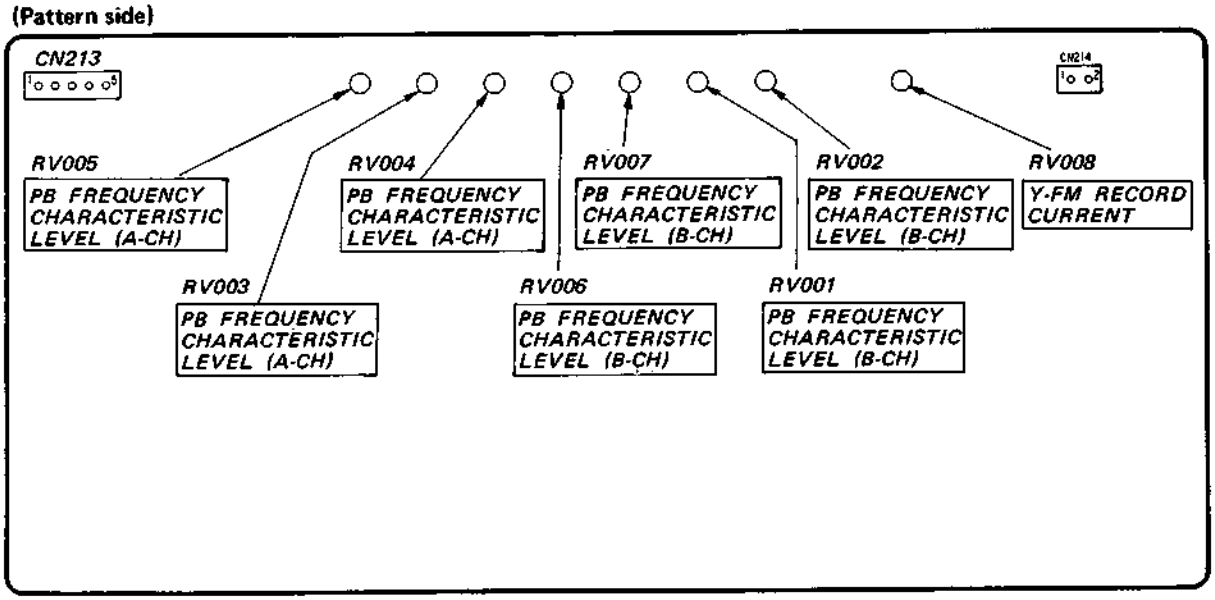
TI-4 board
(Component side)



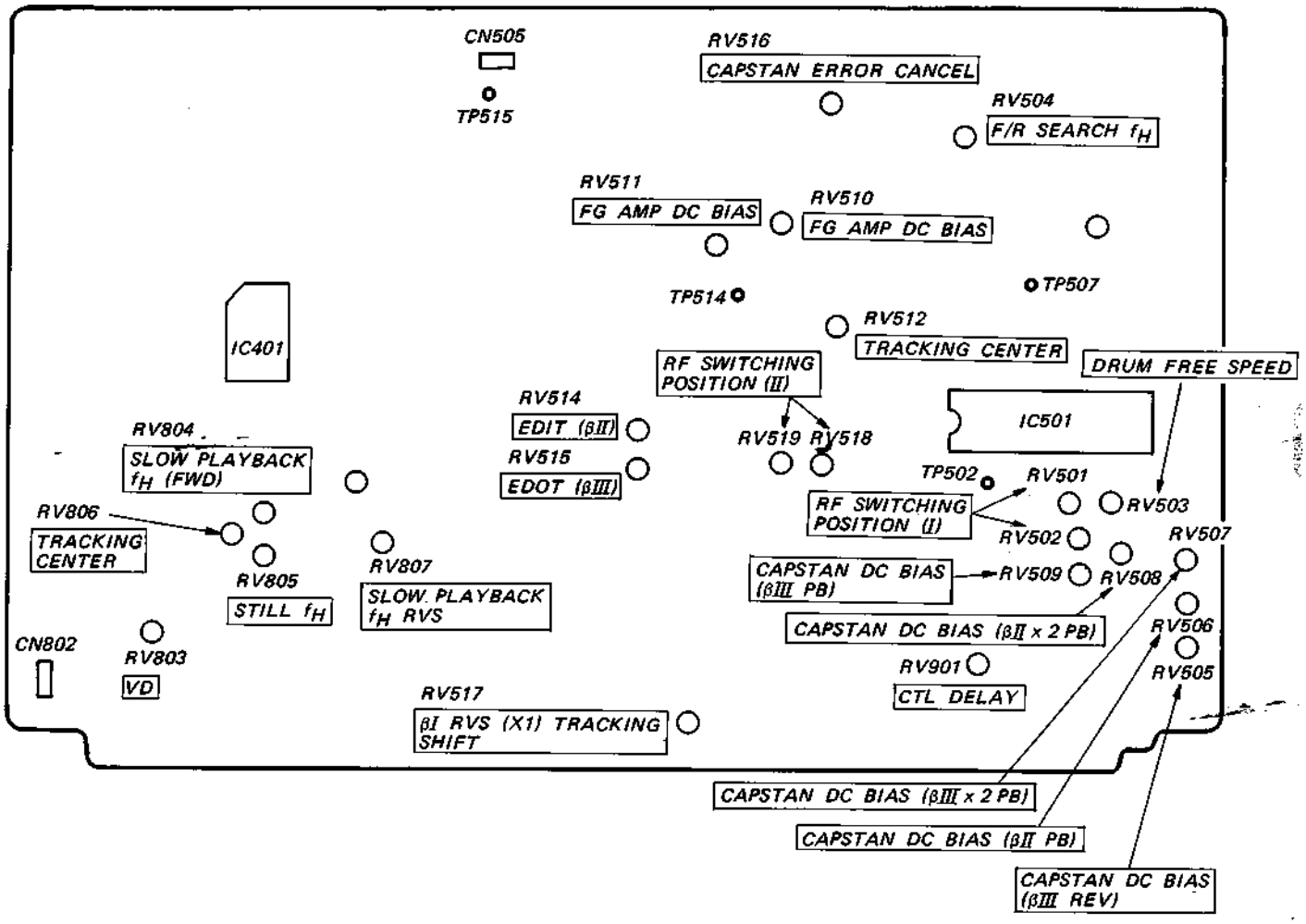
VI-10 board
(Pattern side)



RP-24 board
(Pattern side)



SS-53 board
(Pattern side)



RMT-125

SERVICE MANUAL

SPECIFICATIONS

Remote control system	Infrared control
Power requirements	3 V dc, 2 size AA batteries (IEC designation R6)
Dimensions	Approx. 57 × 20 × 175 mm (w/h/d) (2 1/4 × 7/8 × 7 inches) incl. projecting parts and controls
Weight	Approx. 98 g (3.6 oz) without batteries

REMOTE COMMANDER

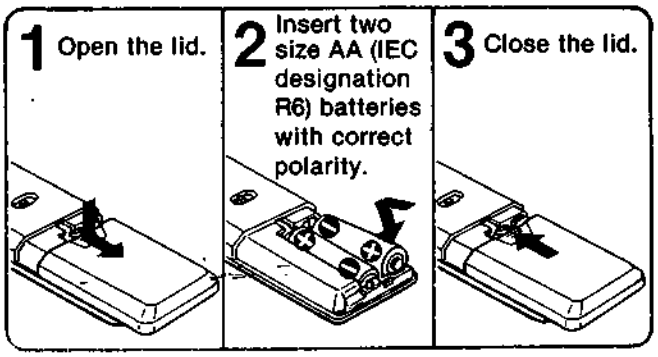
SONY®

1. REMOTE CONTROL OPERATION

(Continued on next page)

You can control almost all the functions of this video cassette recorder from your armchair using the supplied Remote Commander.

BATTERY INSERTION



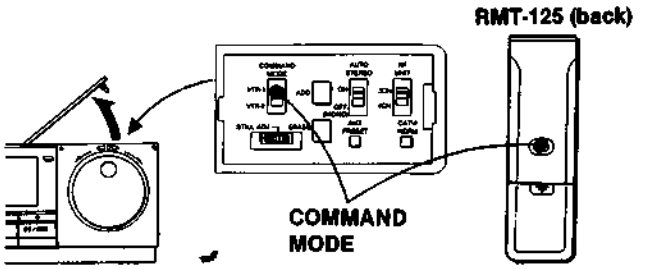
Battery life

In normal operation, batteries will last for about six months. If the range of the Remote Commander becomes noticeably shorter, replace the batteries with new ones. When the batteries are exhausted, the indicator will not light when the buttons on the Commander are pressed.

If the Remote Commander is not to be used for a long period of time, remove the batteries to avoid possible damage from battery leakage.

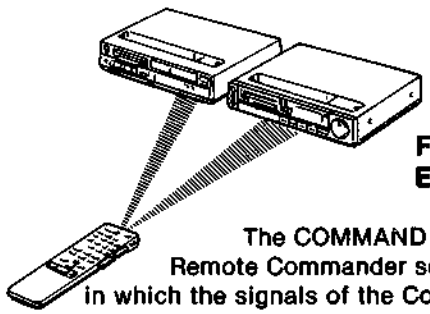
SETTING THE COMMAND MODE SELECTOR

For remote control of this VCR, set the COMMAND MODE selector inside the tuning compartment and on the back of the Remote Commander to the same "VTR-1" or "VTR-2" position as illustrated below.



Ex.1	VTR-1 VTR-2	VTR-1 — VTR-2
Ex.2	VTR-1 VTR-2	VTR-1 — VTR-2

For details on the difference between the "VTR-1" and "VTR-2" remote control mode, read "FOR OWNERS OF ANOTHER SONY VIDEO EQUIPMENT" below.



FOR OWNERS OF ANOTHER SONY VIDEO EQUIPMENT

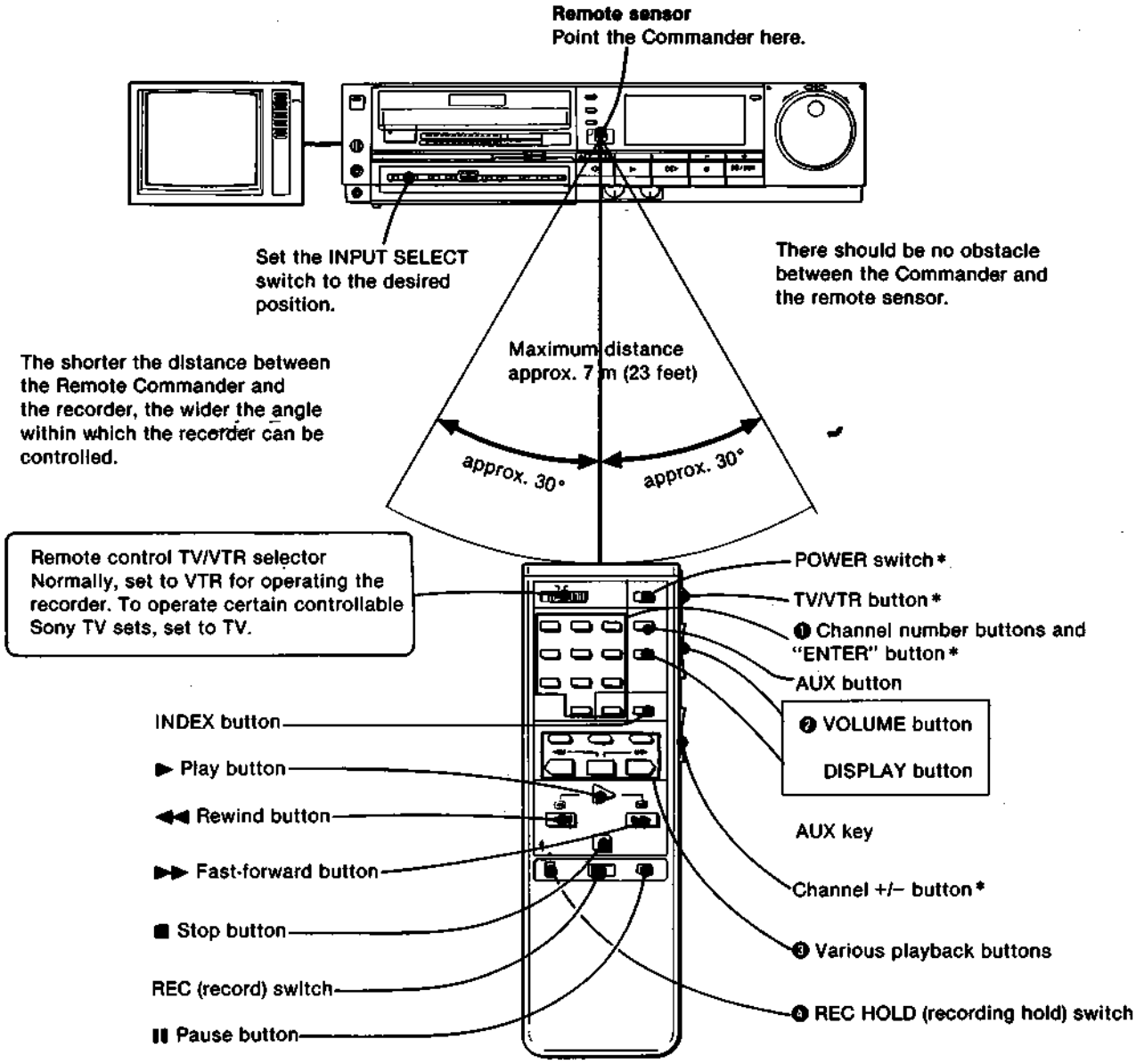
The COMMAND MODE selector on the Remote Commander selects the mode (code) in which the signals of the Commander will be sent. On the other hand, the corresponding selector on the VCR selects the mode in which the VCR detects the signals. This VCR will accept only signals in the mode (VTR-1 or VTR-2) selected by this selector. Most Sony Betamax infrared remote control VCRs detect signals in the VTR-1 mode and therefore, can be controlled by the supplied RMT-125 Remote Commmander when the COMMAND MODE selector of the Commander is set to "VTR-1". If you desire to avoid having this VCR and the other VCR to function simultaneously, set the COMMAND MODE selector in the tuning compartment of this VCR to "VTR-2". (If, such as the Sony TT-V8 tuner timer unit, the other Sony video equipment detects VTR-2 mode signals, set the selector to "VTR-1".) Then, by simply switching the position of the selector on the back of the Remote Commander, you will be able to remote control this VCR and the other video equipment separately.

The buttons on the Remote Commander that can be used to control other video equipment are limited by the functions of the other equipment.

If you have set the VCR's COMMAND MODE selector at "VTR-2"

As the remote control mode will automatically be VTR-1 when the remote control TV/VTR selector is set to "TV", always set the Remote control TV/VTR selector to "VTR" whenever controlling the VCR.

USE AND FUNCTIONS OF THE BUTTONS



The buttons other than buttons ❶, ❷, ❸ and ❹ will function the same as the buttons on the recorder with the similar name or mark. (The auto play cannot be operated.)

The buttons marked with an "" are buttons that can be used also on certain Sony remote control TV sets. To use these buttons on the TV, set the **remote control TV/VTR selector** to "TV" and then direct the Commander to the Remote control detector of the TV. The buttons that can be used on the TV are limited by the functions of your TV.

❶ Channel number buttons and "ENTER" button
Select channels. After pressing the digits of the desired channel one by one, press "ENTER" button (See page 18).

Note
Channel selection on certain Sony TV sets can also be made with these buttons in the similar way by setting the remote control TV/VTR selector to "TV". With some TV models that have only 14 channel (program) positions, channel positions 1 through 9 will be selected simply by pressing buttons "1" through "9", channel position 10 by pressing "0" button, and channel position 12 by pressing the "ENTER" button. For such models, use the channel +/– button to select channel positions 11, 13 and 14.

❷ **These are buttons for use with Sony remote control TV sets only.**

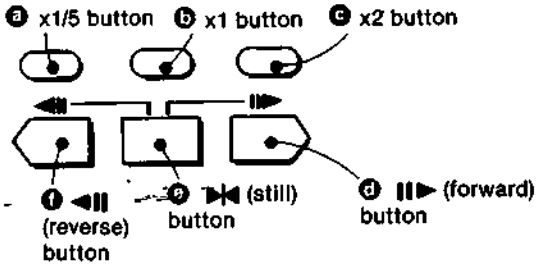
VOL (volume) button

Press the + side to increase the volume of the TV and the − side to decrease it.

DISPLAY button

The on-screen displays of certain TV models can be kept turned on or off with this button.

❸ **Various playback buttons**



ⓐ, ⓑ, ⓒ **x1/5, x1, x2 buttons**

By pressing these buttons during playbck or while a still picture is displayed with the II or ▶I button, you will be able to switch the playback speeds to slow (one-fifth the normal speed), normal, or double speed.

To view the reverse playback at the same speed, press ◀II (reverse) button.

❸ **II▶ (forward) button**

Press during reverse playback for forward playback. When this button is pressed while a still picture is being displayed with the II or ▶I button, you will be able to view the picture one action at a time (stop-action advance operation).

❷ **▶I (still) button**

Press while the tape is being played back with the ▶ (playback), x1/5, x1, or x2 button for a still picture. To start playback again, press x1, ▶ (playback) or II (pause) button.

❶ **◀II (reverse) button**

Press during playback for reverse playback at the same playback speed.

To return to the forward playback, press II▶ (forward) button.

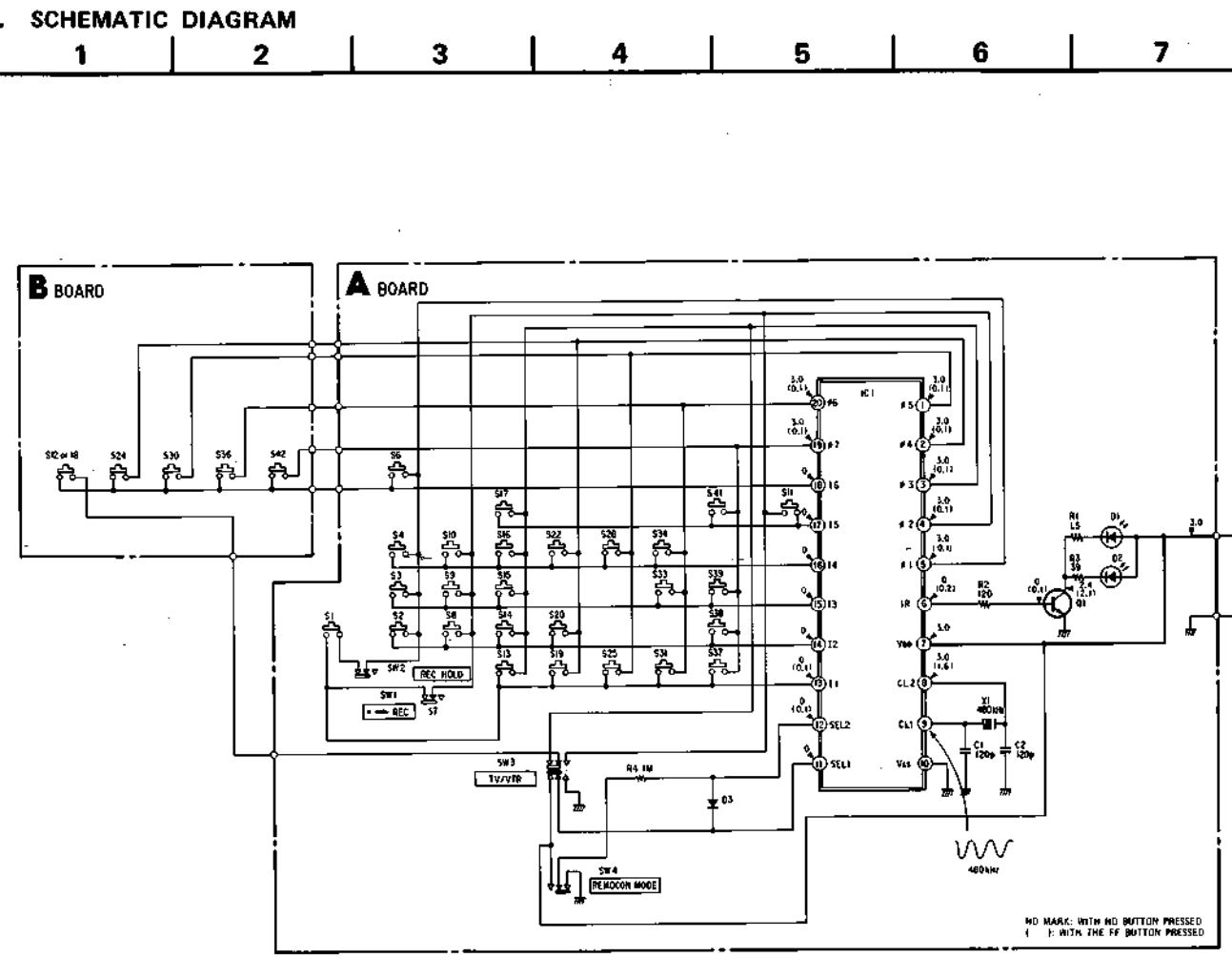
When this button is pressed while a still picture is being displayed with the II or ▶I button, you will be able to view the reverse picture one action at a time (stop-action advance operation).

Normal playback will resume whenever the ▶ (playback) button is pressed.

❹ **REC HOLD (recording hold) switch**

When this switch is set at the lower position, the ■ (stop) button of this Commander will not function. It can be used to prevent accidental stopping the unit during a recording.

2. SCHEMATIC DIAGRAM

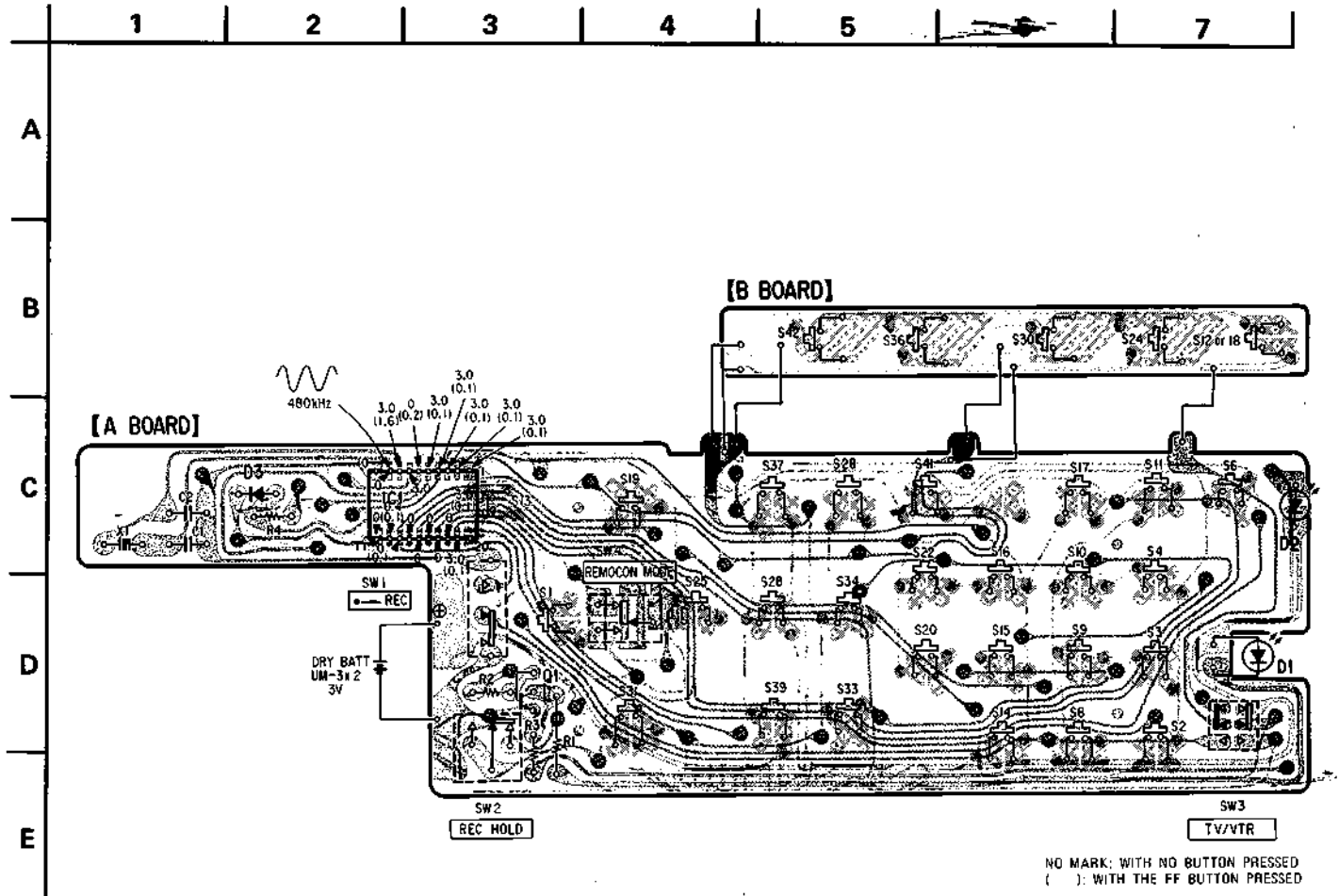


T \ φ	φ1	φ2	φ3	φ4	φ5	φ6	φ7
T1	S1 STOP	S7 ●REC	S13 PAUSE	S19 FF	S25 PLAY	S31 REW	S37 ◁
T2	S2 1	S8 4	S14 7	S20 0			S38 ▷▷
T3	S3 2	S9 5	S15 8			S33 IR	S39 ▷
T4	S4 3	S10 6	S16 9	S22 ENTER	S28 ∧ CH	S34 ∨ CH	
T5		S11 AUX	S17 DISPLAY				S40 INDEX
T6	S6 POWER	S12 TV/VTR	S18 A/B	S24 CHANNEL ∧	S30 VOLUME −	S36 VOLUME +	S42 CHANNEL ∨

Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼W or less unless otherwise specified.
- ▭ : adjustment for repair.
- ▬ : B+ bus.

3. PRINTED WIRING BOARD

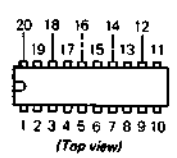


Note:

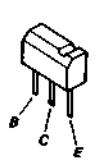
- ○—: parts extracted from the component side.
- ▭ : carbon pattern
- ▨ : soldering side
- ▨ : component-side pattern.
- ▨ : B + pattern

4. SEMICONDUCTORS

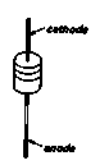
CX23094



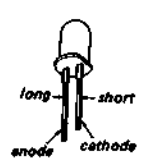
2SC2673



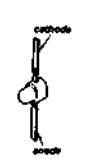
1SS119



SLR-932A



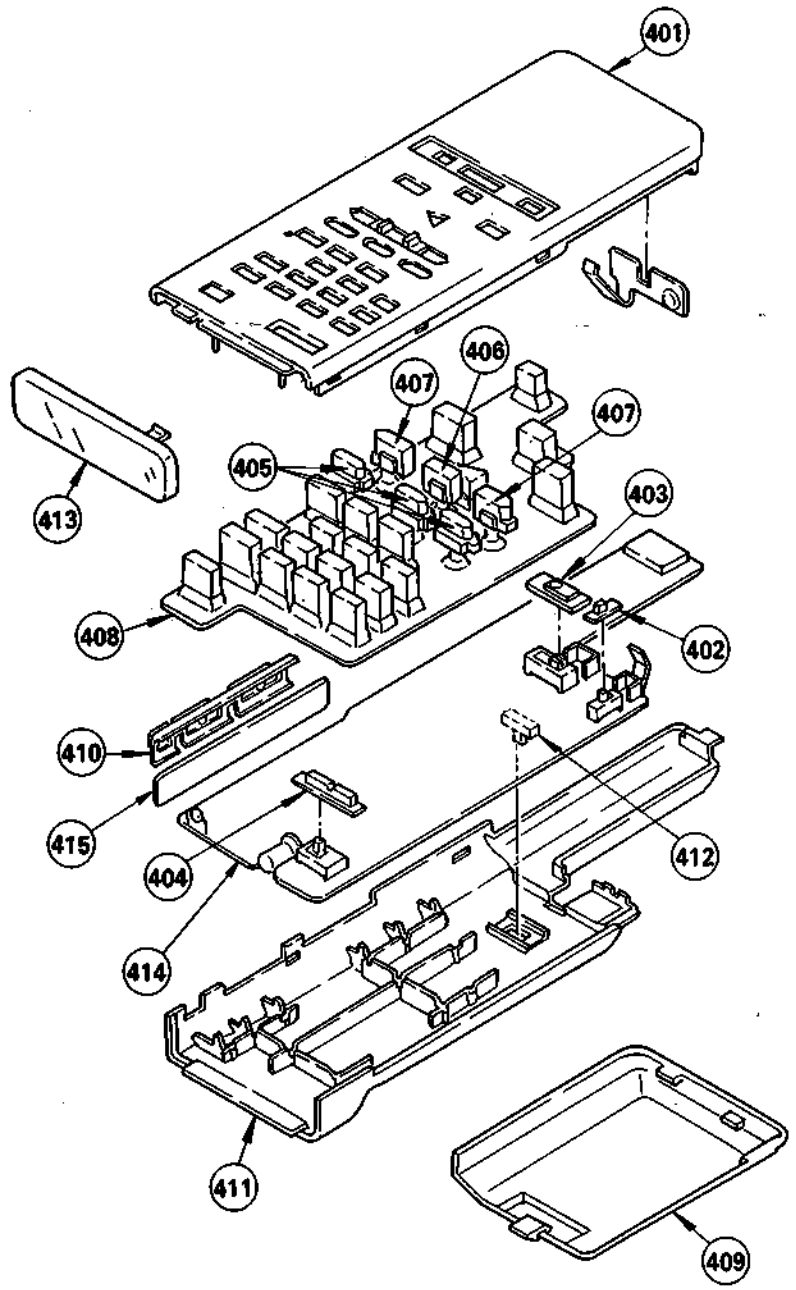
SR106C



5. EXPLODED VIEW

NOTE:

- Itmes with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.



No.	Part No.	Description	Remark
401	X-2387-102-1	CASE ASSY, UPPER	
402	2-383-127-11	BUTTON, SLIDE	
403	2-387-101-11	BUTTON, RECORDING	
404	2-387-102-11	BUTTON, SLIDE	
405	2-387-128-01	KEY TOP (A)	
406	2-387-129-01	KEY TOP (B)	
407	2-387-130-01	KEY TOP (C)	
408	2-387-132-01	RUBBER, CONTACT	
409	2-387-134-01	COVER, BATTERY	
410	2-387-135-11	RUBBER (A), CONTACT	
411	2-387-138-11	CASE, LOWER	
412	2-387-118-11	BUTTON, SLIDE	
413	2-387-133-01	PLATE, FROSTED	
414	*1-614-838-11	A-200 BOARD	
415	*1-614-843-11	B-200 BOARD	

6. ELECTRICAL PARTS LIST

NOTE:

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS
- All resistors are in ohms
- F : nonflammable

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

CAPACITORS
- MF : μF, PF : μμF

COILS
- MMH : mH, UH : μH

Ref.No	Part No.	Description			Remark
	*1-614-838-11	A-200 BOARD **********			
	2-387-103-01	TERMINAL (A), BATTERY			
	2-387-104-01	TERMINAL (B), BATTERY			
	8-759-918-ZD	IC CX23094-01			
		CAPACITOR			
C1	1-102-107-00	CERAMIC	120PF	10% 50V	
C2	1-102-107-00	CERAMIC	120PF	10% 50V	
		DIODE			
D1	8-719-912-39	DIODE SLR-932A			
D2	8-719-107-95	DIODE SR106C-4			
D3	8-719-911-19	DIODE 1SS119			
		TRANSISTOR			
Q1	8-729-967-32	TRANSISTOR 2SC2673-Q			
		RESISTOR			
R1	1-246-405-25	CARBON	1.5	5% 1/4W	
R2	1-247-809-00	CARBON	120	5% 1/6W	
R3	1-247-797-00	CARBON	39	5% 1/6W	
R4	1-247-903-00	CARBON	1M	5% 1/6W	
		SWITCH			
S1	1-554-364-00	SWITCH, SLIDE			
S2	1-553-977-00	SWITCH, SLIDE			
S3	1-554-663-00	SWITCH, SLIDE			
S4	1-553-977-31	SWITCH, SLIDE			
		CRYSTAL			
X1	1-527-476-41	OSCILLATOR, CERAMIC			
**********					
	*1-614-843-11	B-200 BOARD **********			
**********					