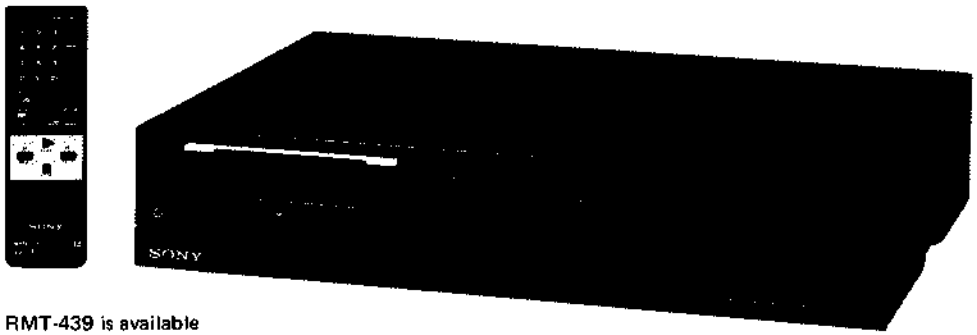
EV-S650PS
RMT-439

SERVICE MANUAL

West Germany Model



Remote commander RMT-439 is available as a unit, but as individual parts the battery case lied of commander is only available.

Video 8

SPECIFICATIONS

System

Video recording system	
	Rotary two-head helical scanning
	Helical scanning FM system
Audio recording system	
Normal recording	Standard: Rotary head FM system (monaural)
	PCM: PCM system (2 channels)
Digital multi audio recording	
	PCM system (2 channels, 6 tracks)
Colour system	CCIR system B,G and H, PAL colour
	DDR SECAM to PAL colour, convertible
Usable cassettes	8 mm video format cassette
Tape speed	SP: Approx. 20.051 mm/sec.
	LP: Approx. 10.058 mm/sec.
Recording or playback time	
	SP: 1 hr. 30 min.
	LP: 3 hr.
	(P5-90)
Fast forward time	Approx. 2 min. 30 sec. (P5-90)

PCM, Digital multi audio system

Sampling frequency	31.25 kHz
Audio frequency	20 Hz–15 kHz
Dynamic range	More than 90 dB
Wow and flutter	Less than 0.005 % RMS

Tuner section

Channel coverage	VHF E2–S20
	UHF E21–E69
Programming system	30 programme-memories
RF output signal	UHF channels E30 to E39 (variable), 75 ohms, unbalanced
Aerial input	75-ohm, asymmetrical aerial socket

Inputs and outputs

Video input	
VIDEO IN	phono jack
	1 Vp-p, 75 ohms, unbalanced, sync negative
Video output	
EURO-AV	21-pin (pin 19)
	1 Vp-p, 75 ohms, unbalanced, sync negative
Audio inputs	
AUDIO IN	Phono jack
	47 kilohms, −10 dBs (0 dBs = 0.775 V rms)
Audio outputs	
EURO-AV	21-pin (pins 1 and 3)
	Output impedance less than 1 kilohm −6 dBs with 10 kilohms load, unbalanced

—Continued on next page—

8 STEREO VIDEO CASSETTE RECORDER

SONY®

MICROFILM

VIDEO

AUDIO OUT	Phono jack Output impedance less than 1 kilohm −10 dBs with 47 kilohms load, unbalanced
CONTROL S IN	Minijack
Microphone input	Minijack −60 dBs, for low-impedance microphone
HEADPHONES jack	Stereo minijack −20 dBs, 8 ohms

Timer

Clock	Crystal lock
Time indication	24-hour cycle
Timer setting	Only for recording 6 events (3 weeks max. adjustable for any day or for all 7 days of the week)

Remote Commander RMT-439

Remote control system	Infrared control
Power requirements	3 V DC, 2 R6 (size AA) batteries
Dimensions	Approx. 52 × 20 × 175 mm (w/h/d) incl. projecting parts and controls
Weight	Approx. 120 g incl. batteries

General

Power requirements	220 V AC, 50 Hz
Power consumption	34 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 × 89 × 328 mm incl. projecting parts and controls
Weight	Approx. 7.1 kg
Accessories supplied	75-ohm coaxial cable for TV connection (1) Connecting cord RK-74H (1) Screwdriver (1) Remote Commander RMT-439 (1) Sony battery SUM-3 (NS) (2)

Design and specifications subject to change without notice.

Note

This appliance conforms with EEC Directives 76/889 and 82/499 regarding interference suppression.

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 B+ voltage to see it is at the values specified.

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.

TABLE OF CONTENTS

SECTION 1
GENERAL

1-1. PRECAUTIONS

On safety

- Before operating, check that the operating power voltage and frequency of the unit are identical with those of your local power supply.
- Should any solid object or liquid fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the mains outlet if it is not to be used for an extended period of time. To disconnect the lead, pull it out by the plug. Never pull the lead itself.
- The unit is not disconnected from the mains (AC power source) as long as it is connected to the mains outlet, even if the unit itself has been turned off.

On installation

- Allow adequate air circulation to prevent internal heat build-up. Do not cover the holes on the top panel.
- Do not place the unit on surfaces (rugs, blankets, etc.) or near materials (curtains, draperies) that may block the ventilation slots.
- Do not install the unit near heat sources such as radiators or air ducts or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- The unit is designed for operation in a horizontal position. Do not install it in an inclined position.
- Keep the unit and cassette tapes away from equipment with strong magnets, as for example a microwave oven or a large loudspeaker.
- Do not place any heavy object (over 13 kg or 28 lbs 10 oz) on the unit.
  Never place any object on the tuning compartment nor on the top of the front panel.

On operation

- When the unit is not in use, turn the power off to conserve energy and to extend its useful life.
- Remove and store video cassettes after recording or playback.

On cleaning

Clean the cabinet, panel and controls with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution.
Do not use any type of solvent, such as alcohol or benzine which might damage the finish.

On repacking

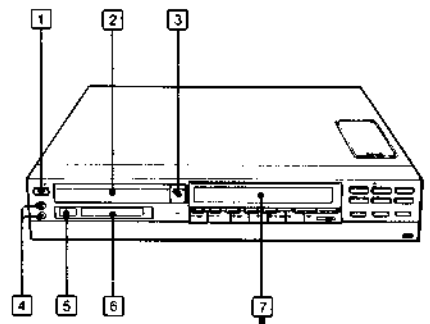
Do not throw away the carton and packing materials. They make an ideal container in which to transport the unit. When shipping the unit to another location, repack it as illustrated on the carton.

On cassette care

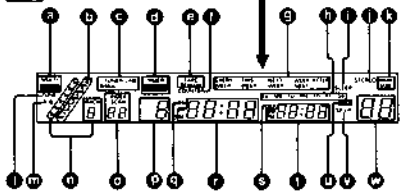
Store cassettes in their cases and keep them in an upright position to prevent intrusion of dust and uneven winding.

If you have any questions about this unit, contact your Sony dealer.

A-1



A-2



1-2. LOCATION AND FUNCTION OF CONTROLS

Refer to the pages indicated in ● for details.

A-1

1 ON/STANDBY switch and lamp

2 Cassette holder ●

3 OPEN/CLOSE button ●
Press to slide out the cassette holder. Press again to slide it in.

4 HEADPHONES jack (stereo mini type) and PHONE LEVEL control
Connect stereo headphones (with stereo mini jack) here. Adjust the volume with the PHONE LEVEL control.

5 REMOTE SENSOR

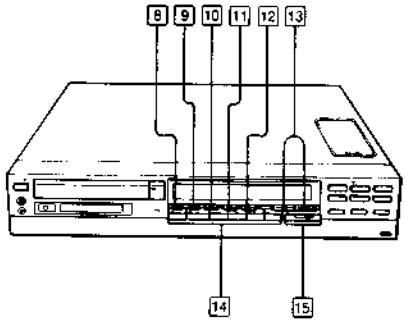
6 PEAK PROGRAM METER ●
Shows the peak input levels of the right and left channels during recording and recorded levels during playback.

7 Display window

A-2

- a MULTI PCM or PCM indicator
- b Digital multi audio tracks indicator
- c Input signal indicator
- d TIMER REC indicator
- e TAPE REMAIN indicator
- f COUNTER indicator
- g Week indicator
- h Day of the week indicator
- i SLEEP indicator
- j STEREO indicator
- k Bilingual indicator
- l TUNE (tuning) indicator
- m P (Parallel) or S (Series) digital multi audio timer recording indicator
- n Digital multi audio track number and indicator
- o INDEX indicators
- p Timer programme position
- q Turn-on time setting indicator
- r Turn-on time of a timer recording/Tape counter/Tape remain indicator
- s Turn-off time setting indicator
- t Turn-off time of a timer recording/clock display
- u VTR indicator
- v Recording speed indicator
- w Programme number

A-3



A-3

8 COUNTER/REMAIN button ●
Each time the button is pressed, the COUNTER and the TAPE REMAIN indicators are displayed alternately.

9 COUNTER RESET button ●
Press to reset the tape counter to "0000".

10 GO TO ZERO button ●
In stop mode, press to advance or rewind the tape approximately to the counter "0000".

11 SLEEP button ●
Press to preset the turn-off time of this VTR. Playback or recording can be stopped with this timer.

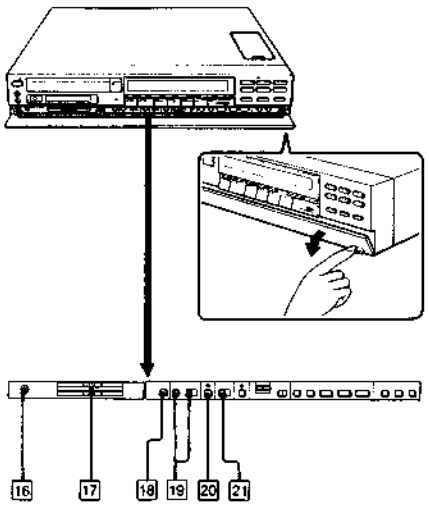
12 ANT TV/VTR button
Press to view the programme selected on the recorder. The VTR indicator appears in the display window (VTR mode).
To view a TV programme while recording another, press this button again.
The VTR indicator disappears. (TV mode)

13 PROGRAM/TRACK/TIMER/INDEX buttons
Press to: —change the programme
—change the track for digital multi audio recording/playback
—set the clock or timer
—change the index number

14 Tape transport buttons and indicators
◀◀ REW (rewind)
▶ PLAY (playback)
▶▶ FF (fast forward)
■ STOP (stop)
❚❚ PAUSE (pause)/▶◀ STILL (still)
x2 (double speed playback)

15 ● REC (recording) switch
Slide to the right to start recording.

A-4



Inside the front panel

A-4

16 MIC (microphone) jack (mini type) ●
To record from this jack, display LINE by pressing INPUT SELECT.

17 REC LEVEL controls ●
Slide to adjust the level of the PCM audio recording.

18 EDIT button and lamp ●
Normally keep the lamp off.
When editing a tape onto another recorder (or vice versa), press the button so that the lamp lights up.

19 AUDIO MONITOR selectors ●
During playback or recording, set to the appropriate position to monitor the desired sound.

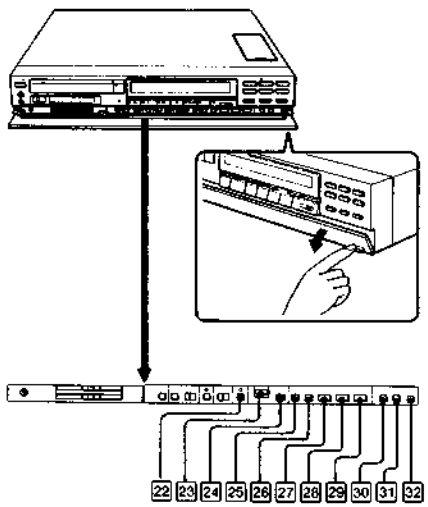
MAIN/SUB/M.S selector
When monitoring bilingual programmes or playing back a bilingual tape, press to display:
MAIN: to listen to the main language
SUB: to listen to the sub language
M.S: to listen to the main language from the left speaker and the sub language from the right speaker.
A stereo tape with a pilot signal (the STEREO indicator appears) is played back in the stereo mode regardless of the position of this selector.

PCM/MIX/STD selector
PCM: to play back the sound on the PCM track. When nothing is recorded on the PCM track, the sound recorded on the standard track is played back regardless of the position of this selector.
MIX: to play back the sound on the PCM and standard tracks simultaneously.
STD: to play back the sound on the standard track.

20 AUDIO DUB button ●
Press to start recording on the PCM track of any recorded video tape.
Set PCM MODE 21 to NORM.

21 PCM MODE selector ●
Select the method of PCM audio recording.
Set to: **NORM** for normal recording on the PCM track.
DIGITAL MULTI P (parallel) for timer recording from the beginning of each track.
DIGITAL MULTI S (series) for continuous timer recording in one of six tracks.

A-5



A-5

22 PFS (Picture Fine Select) button and lamp
Normally, keep the lamp off.
If the playback picture of a tape recorded on other VTRs (which do not use the four-video heads system) is distorted or has streaks, press so that the lamp lights up.

23 SHARPNESS control
Use to adjust the sharpness of the picture if necessary. Normally set the control at the center detent position.

24 VPS (Video Programme System) switch ●
Set to ON to activate the VPS in the timer recording.

25 CLEAR button ●
Press to cancel a timer setting.

26 CHECK button ●
Press to check the contents of the timer presettings.

27 TIMER SET button ●●
Press to start the setting or resetting of timer programmes.

28 NEXT button ●
Press to advance to the next item to be set when setting the timer or the clock.

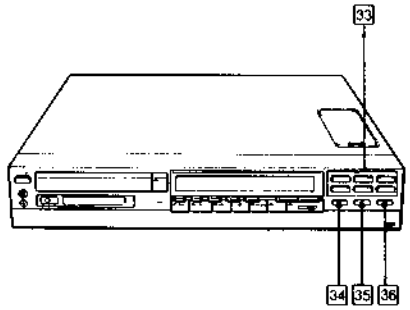
29 TIMER REC button ●
Press after programming VTR for timer recordings so that the timer activates. To deactivate the timer, press again.

30 INPUT SELECT button
Press to display the desired input signal indication in the window.
TUNER: to record TV programmes
SIMUL: to record TV programmes and signals from the AUDIO IN jacks.
LINE: to record audio/video signals from the AUDIO IN/VIDEO IN jacks on the rear panel or to dub only audio signals from AUDIO IN or MIC jacks.

31 REC MODE (record mode) selector
This selects the recording speed, SP or LP. The recording time of any given cassette in the LP mode is 2 times that in the SP mode.
The playback speed is automatically set regardless of the setting of this selector.

32 CLOCK SET button ●
Press as the first step to set the internal clock.

A-6



On the front panel

A-6

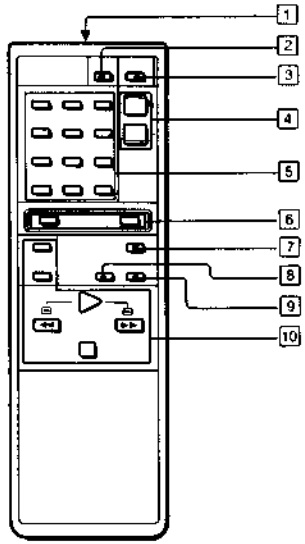
33 DIGITAL MULTI AUDIO buttons and indicator
Press the number button (1–6) of the track to be recorded or played back for digital multi audio recording and playback.
These buttons are effective only when the DIGITAL MULTI AUDIO indicator is lit.

34 INDEX button
Press to activate the index function.
For index scan, press ▶▶ or ◀◀ while flashing INDEX and SCAN indicators.
For index search, press ▶▶ or ◀◀ while the index number is lit.
To release index function, press ■ (stop).

35 INDEX MARK button ●
Press to mark an index signal at the desired point during recording or playback.

36 INDEX ERASE button ●
To erase a pre-recorded index signal, locate the index signal and press this button.

REMOTE COMMANDER



1 Transmitter

2 ANT TV/VTR button

3 ON switch

4 PROG (programme) buttons
Each time the button (+ or –) is pressed, the preset programme is selected in order.
Press + to select a higher channel programme.
Press – to select a lower channel programme.

5 Number buttons
Press the desired progrmme number button.
For 10 through 19, press "1–" for tens-digit and then ones-digit.
For 20 through 29, press "2–" and then ones-digit.

6 REC (record) buttons
For recording, press the both buttons (red and black) simultaneously.

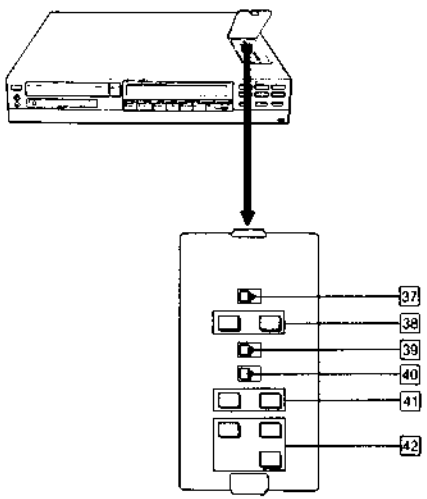
7 MAIN/SUB button
Each pressing selects MAIN, SUB or M.S (both main and sub) language of the bilingual programme or the played back bilingual tape.

8 TAPE REMAIN button
Press this button during recording or playback or display the remaining time on the display window.

9 INDEX button
Used for index scan to index search operation.

10 Tape transport buttons
▶ PLAY
◀◀ REW
▶▶ FF
■ STOP
II PAUSE
x2 (double speed playback)

A-7



Upper compartment

A-7

37 **AUTO COLOUR SYSTEM switch**
Normally set to AUTO. According to the TV programme, colour system will be switched automatically to PAL or DDR SECAM.
When editing a tape from another VTR based on PAL system, set the switch to PAL. (DDR SECAM programmes will be displayed in black and white.)

38 **STILL ADJ (adjust) buttons** ●
Adjust the still picture if necessary.

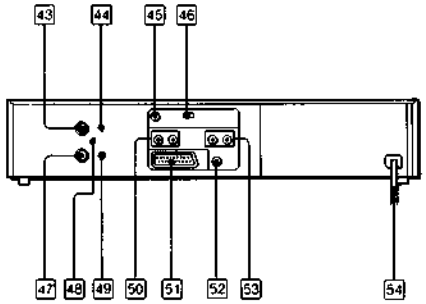
39 **AUTO STEREO switch**
Normally set to ON. During a stereo broadcast, the mode is automatically set to stereo. If there is too much interference, set the switch to OFF in which case all the TV programmes will be received in monaural.

40 **AFT switch**
Normally set to ON. The automatic fine tuning circuit locks in and maintains a sharp picture.

41 **FINE buttons** ●
When the AFT switch is set to OFF, press to fine tune the station.

42 **SEARCH buttons** ●
Press RESET to clear the programmed station. Press UHF or VHF to tune in a station of higher frequency.

A-8



Rear

A-8

43 **AERIAL IN socket**
Connect the aerial cable.

44 **TEST SIGNAL switch** ●
Set to ON to obtain a test pattern.

45 **CONTROL S IN jack (mini type)** ●
Connect to the CONTROL S output jack of other Sony products.

46 **DIGITAL MULTI PLAY selector**
Normally set to AUTO.
The playback mode will be automatically set to the digital multi audio mode. If no sound is heard when playing back a tape recorded on another VTR, set to MULTI.

47 **AERIAL OUT socket**
Connect the aerial input of the TV receiver.

48 **LOCAL/DX switch**
Normally set to DX. If the TV signal is very strong, set the switch to LOCAL.

49 **RF CHANNEL screw** ●
If there is interference on the factory-preset channel for RF output and the output signal from this unit cannot be displayed clearly on the TV screen, adjust the screw with the supplied screwdriver.

50 **AUDIO LINE IN (L,R) (input) jacks (phono type)**

51 **EURO-AV connector (21-pin)**
Connect to the 21-pin connector of a VTR or a TV/ monitor, or to the audio/video input of these units with an appropriate connecting cable.

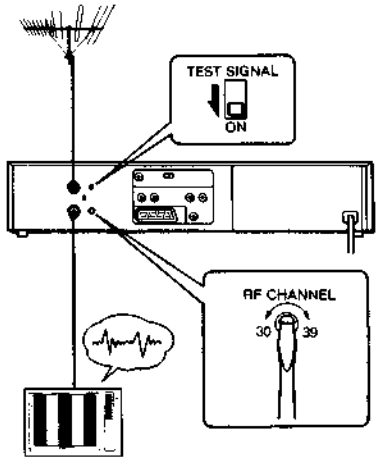
52 **VIDEO IN (input) jack (phono type)**

53 **AUDIO LINE OUT (L,R) (output) jacks (phono type)**

54 **AC power cord (mains lead)**
Connect to an AC (mains) outlet.

1-3. ADJUSTMENTS

D-1



ADJUSTING THE TV D-1

One of the television programme positions must be adjusted to receive the signal from the recorder.
Note that the adjustment is not necessary, however, when the VTR is connected to the AUDIO/VIDEO inputs on the TV/monitor.

1 After making the connections, press ON/STANDBY.
2 Make sure that the recorder is in the stop mode and the TV is in TV mode.
3 Set TEST SIGNAL at the rear of the recorder to ON. The test signal is transmitted on a channel between UHF channels 30 and 39.
4 Turn on the TV and select a programme position which is not being used to receive a TV station. Tune the channel until you see a clear black and white pattern on the TV screen and you hear a continuous tone. This is the recorder's test signal.

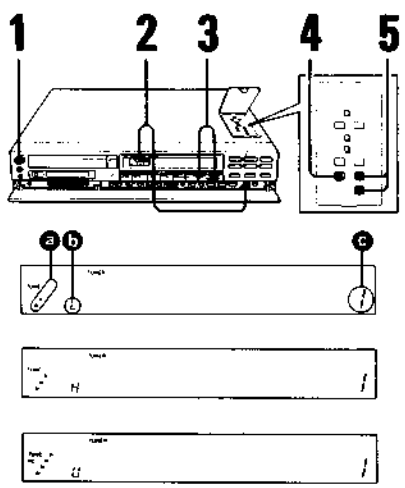
If the test picture is free of disturbance, the TV adjustment is complete. Set TEST SIGNAL to OFF.

If the test picture is not free of disturbance,

1 Reset TEST SIGNAL to OFF.
2 Adjust the channel of the TV to a channel between UHF channels 30 and 39 with the tuning control or the fine tuning control on the TV, so that the TV screen shows no picture and so that a steady rustling sound or no sound heard.
3 Set TEST SIGNAL to ON again.
4 Slowly turn RF CHANNEL on the rear of the recorder with the supplied screwdriver, until you see an undistorted test pattern on the TV screen.
5 Now the TV adjustment is complete. Reset TEST SIGNAL to OFF.

If you are not sure how to adjust your TV, refer to the TV's instruction manual or consult your dealer.

D-2



PROGRAMMING TV STATIONS D-2

Up to 30 programmes receivable in your area can be preset on this unit.
Once preset, you can select TV programmes with the +/– PROGRAM/TRACK/TIMER/INDEX buttons or the +/– PROG buttons on the Remote Commander.

1 Turn on the unit.
2 Display "TUNER" with INPUT SELECT.
3 Press the number button on the Remote Commander to select the programme position (0 to 29) on which the desired TV programme should be tuned in. C
4 Press RESET in the upper compartment to clear the factory preset programmes.
5 Press UHF or VHF to search stations.
The tuning indicators in the window show the approximate location of the current channel. D
(C = Band indicator)
Each time a station is received, the search stops.
Press UHF or VHF again until the desired station is tuned in.

Repeat steps 3 to 5 for all the desired stations.

To cancel an unused programme

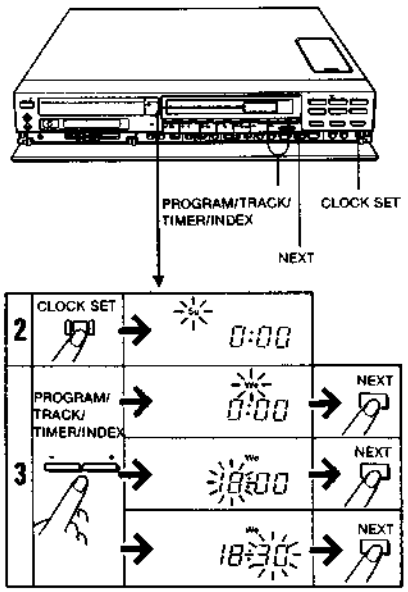
1 Select the programme to be cancelled with + or – PROGRAM/TRACK/TIMER/INDEX.
2 Press RESET.

The cancelled programme will be skipped when + or – PROGRAM/TRACK/TIMER/INDEX is pressed.
When the corresponding programme number button on the Commander is pressed, the sound of the cancelled programme will be cut out and no picture will be displayed.

To fine tune a station

If the picture of a particular station is not acceptable, set AFT in the upper compartment to OFF and keep + or – FINE pressed until the picture becomes clear. To view this particular station, set AFT to OFF.

D-3



SETTING THE CLOCK D-3

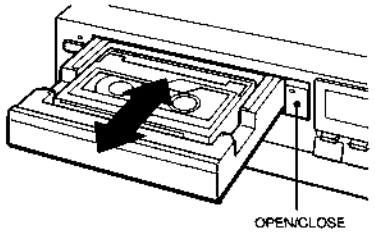
1 When you connect the unit to a mains outlet, the clock shows "Su 0:00".
2 Press CLOCK SET.
This turns the unit on.
3 Set day, hour and minute in sequence.
First adjust the blinking item by pressing the +/- PROGRAM/TRACK/TIMER/INDEX button, and then press NEXT.
(ex. To set for Wednesday evening at 6:30)
For accurate setting, after adjusting the minute digit, press NEXT at the same time as an announced time signal.
The clock will now start and the dots of the colon will alternately blink every 30 seconds.
4 Press ON/STANDBY to turn off the unit.

PROGRAM/TRACK/TIMER/INDEX button
Press + button to advance the digits, and – button to reduce the digits.

To readjust the previously set item during clock setting
Press CLOCK SET again for a few seconds. Press NEXT until the item to be changed blinks and reset it. Then, terminate the setting by pressing NEXT enough times until the dots of the colon blinks.

If a power interruption occurs,
"Su 0:00" will lights up in the window.

E-1



E-2

1-4. ABOUT CASSETTES

INSERTION E-1

1 Press OPEN/CLOSE to open the cassette holder.
Power will be supplied automatically with this step.
2 Place the cassette with the window side up.
3 Press OPEN/CLOSE to close the cassette holder.

EJECTION

1 Press OPEN/CLOSE.
2 Remove the cassette and press OPEN/CLOSE.

Notes

- Always insert a cassette in the correct direction.
- The cassette holder can be closed by pressing itself manually.
Never press it forcibly or the cassette may be ejected.
- Once the cassette is placed, you can close the holder by pressing ▶, ◀◀, ▶▶ or ● (REC).

TO PREVENT ACCIDENTAL ERASURE E-2

When a new recording is made on a previously recorded cassette, the previous recording will be automatically erased. To protect a recording, slide the tab out to cover the opening.
When the tab is out, a recording cannot be made. To re-record on a cassette, slide the tab in.

RECORDING TIME, PLAYBACK TIME

The LP mode is twice as long as the SP mode. For better picture and sound, recording in the SP mode is recommended.
During playback, the mode in which the tape was recorded is selected automatically.

Cassette used	SP mode	LP mode
P5-30	30 min.	1 hr.
P5-60	60 min.	2 hr.
P5-90	90 min.	3 hr.

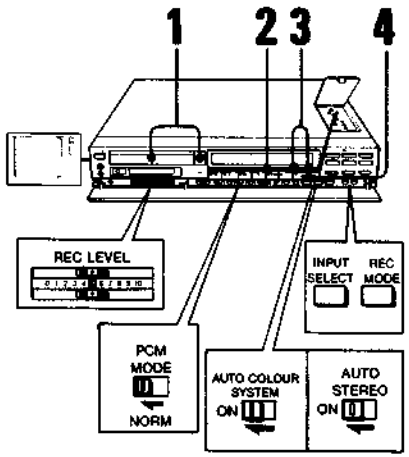
Note

Never insert anything in the small holes on the rear of the cassette.

1-5. TV PROGRAMME RECORDING

Make sure that you have finished all the connections and adjustments on pages 28 through 36.

F-1



OPERATION F-1

Before recording

- Turn on the TV and select the channel for the recorder or select the input for the recorder.*
- Check the position of the selectors:

Press	to display
INPUT SELECT	TUNER
REC MODE	SP or LP

Set	to
PCM MODE	NORM
AUTO STEREO	ON
AUTO COLOUR SYSTEM	ON

- Set REC LEVEL to "5".

1 Insert a cassette.
2 Press ANT TV/VTR so that the "VTR" indicator is displayed.
3 Select the programme to be recorded with +/- PROGRAM/TRACK/TIMER/INDEX.
4 Slide ● REC to the right.

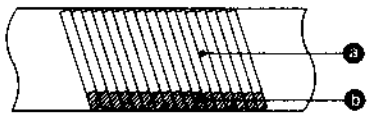
To stop recording
Press ■ STOP.

To stop recording for a moment
Press ❚❚/▶◀ PAUSE/STILL. The TV programme can still be seen on the TV, but the picture is not recorded.
To resume recording, press ❚❚/▶◀ PAUSE/STILL again.
To protect the video heads and the tape, the pause mode will be automatically released after about 7 minutes and recording will stop. Smooth recordings can be made by using ❚❚/▶◀ PAUSE/STILL.

When the recording is made to the end of the tape,
the tape will be automatically rewound to the beginning and the unit will enter the stop mode. The power remains on.

* • **If your TV/monitor is equipped with audio/video inputs or a multiconnector,** select the correct input on your TV/monitor.
  • **If your TV/monitor is equipped with SCART (CENELEC) or PERI-TV connector,** the input signal is selected automatically when you display "VTR" with the recorder.

F-2



During recording...

If stereo programmes are received,
"STEREO" indicator will be displayed in the window.

If bilingual programmes are received,
select the sound to be monitored with AUDIO MONITOR MAIN/SUB/M.S.

Recording is made as follows: F-2

ⓐ **Standard track**
Video/audio signals of the TV programme and the main sound of a bilingual programme are recorded here.
Recorded sounds are monaural.

ⓑ **PCM track**
Audio signals from the connected equipment or from TV are recorded in digital PCM sound. Sound can either be in monaural (when sounds for left and right channel are the same) or in stereo (each sound for left and right channels).

FOR SMOOTH RECORDING

Recording should always be started from the recording pause mode for smooth transitions between scenes. Proceed as follows if the recording was stopped or if you want to record on a pre-recorded tape from a desired point.

To start recording from a particular point
You can decide the starting point for recording while watching the picture.

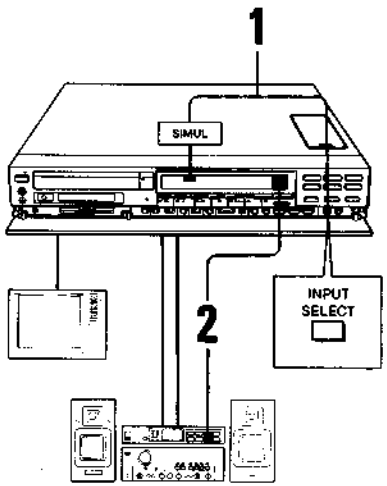
1 Play back the tape and locate the point for recording while watching the picture.
2 Press ❚❚/▶◀ PAUSE/STILL to stop the tape where you wish to start recording.
3 Slide ● REC to the right. The recorder will enter the recording pause mode.
4 Press ❚❚/▶◀ PAUSE/STILL at the desired point to release the pause mode.
Recording starts.

Note

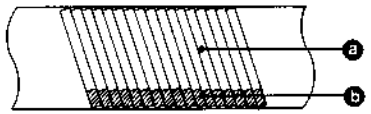
Be sure not to change the position of REC MODE (SP/LP) between different scenes. Particularly, if you change the switch from LP to SP, a short blank will be recorded.

Frame-by-frame recording
If ● REC is slid to the right while the unit is in the recording pause mode, a short recording of approx. 8 frames will be made, and then the unit enters the recording pause mode again.
Repeat this operation as many times as you like.

F-3



F-4



TO VIEW ONE TV PROGRAMME WHILE RECORDING ANOTHER

1 Press TV/VTR so that the "VTR" indicator disappers from the window.
2 Select the programme you want to view on the TV.

If your TV is equipped with a TV/VTR input selector, simply set the selector to "TV" and select the programme on the TV.

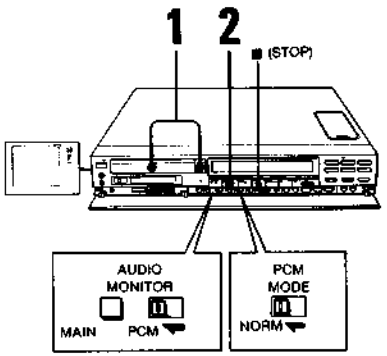
TO RECORD A TV PROGRAMME WHILE RECORDING AN FM BROADCAST AT THE SAME TIME — FM simulcast recording F-3

Sometimes a TV station and an FM radio station will broadcast a programme simultaneously so that you can record a TV programme in high-fidelity stereo. The TV programme (video and monaural audio) is recorded normally on the standard track and the stereo audio portion is recorded on the PCM track from your FM tuner.

Operation
Operate as described in "TV programme recording" on page 40 except the following points:
1 Press INPUT SELECT so that the "SIMUL" indication appears in the window.
2 Select the programme both on the VTR and the FM tuner.

Recording will be made as follows: F-4
ⓐ Standard track
Video and audio signals of the TV programme will be recorded here.
ⓑ PCM track
FM broadcast programme from the FM tuner will be recorded in stereo.

G-1



1-6. PLAYBACK

G-1

Before playing back
- Turn on the TV and select the channel for the recorder or select the input for the recorder.*
- Check the position of the selectors:

Set		to
PCM MODE		NORM
AUDIO MONITOR	MAIN/SUB/M.S	MAIN
	PCM/MIX/STD	PCM

— Set as above, you can listen to the MAIN language of the bilingual programme and the stereo sound recorded on the PCM track of the tape.
— When nothing is recorded on the PCM track, you will automatically hear the sound recorded on the STD track.

To monitor other kinds of sound, change these settings. See "To select the monitor sound" below.

Note

If the picture is not displayed and/or the sound is not heard or heard only intermittently when a tape which has been recorded on a video camera recorder or a video cassette recorder without the PCM function is played back on this unit, set AUDIO MONITOR on this unit to STD. (Although AUDIO MONITOR is set to STD, the "PCM" indicator may occasionally light up.)

OPERATION

1 Insert a cassette.
2 Press ▶ PLAY.

To stop playing back
Press ■ STOP.

To select the monitor sound

Kind of the tape (conditions of recorded signals)	Track to be played back	Position of the selector	
		MAIN/ SUB/M.S	PCM/MIX/ STD
Stereo	PCM	—	PCM
FM simulcast	PCM	—	PCM
Bilingual	PCM	MAIN, SUB or M.S	PCM
Audio dubbed (page 24)	PCM and STD	—	MIX

"—" means that the selector can be set to any of its position

* • If your TV/monitor is equipped with audio/video inputs or a multi-connector, select the correct input on your TV/monitor.
  • If your TV/monitor is equipped with SCART (CENELEC) or PERI-TV connector, the input signal is selected automatically when you display "VTR" with the recorder.

To advance or rewind the tape rapidly
Press ▶▶ FF or ◀◀ REW respectively in the stop mode.
To stop the tape, press ■ STOP.

Auto play — To play back a tape from the beginning of the tape after rewinding
Press ▶ PLAY keeping ◀◀ REW depressed.
After the tape is completely rewound, it will automatically be played back.

VARIOUS PLAYBACK MODES

Use the buttons on the recorder or on the Remote Commander.

Picture search — viewing the picture at a fast speed to find a particular scene
Keep pressing ▶▶ FF or ◀◀ REW during playback.
When you release the button, the normal playback will be resumed.

Streaks appear and the sound is muted during "Picture search" and "Still picture". G-2

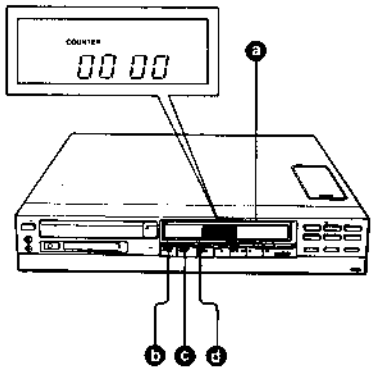
G-2

Still picture (playback pause)
Press ❚❚/▶◀ PAUSE/STILL during playback. The sound is muted.
To resume normal playback, press ❚❚/▶◀ PAUSE/STILL again or press ▶ PLAY.

To protect the video heads and the tape, the pause mode will be automatically released after about 7 minutes and playback will be resumed.

To obtain better playback picture in variable playback modes
- **If the still picture seems to shake,** press + or − STILL ADJ in the upper compartment until the picture stabilizes.
- **If streaks or noise bands appear in still, or normal picture or double** (x2) **speed picture,** press + or − STILL ADJ.

G-3



USE OF THE TAPE COUNTER

The tape counter indicates the relative position of programmes on the tape.

G-3

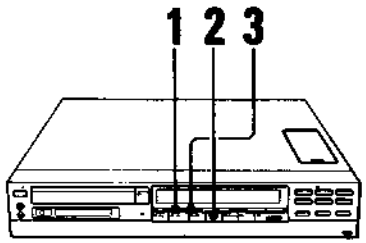
ⓐ Display window
ⓑ COUNTER/REMAIN
ⓒ COUNTER RESET
ⓓ GO TO ZERO

To index the tape contents
Before starting recording or playback, press COUNTER RESET to set the counter to 0000. By noting the counter reading at the desired point, you can easily find that point later by referring to the counter.
Note to list the programmes and their counter readings.

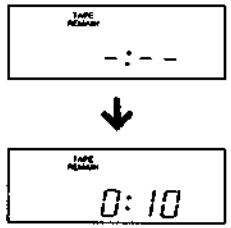
Notes

- 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 holder.
- The counter reading will not exactly correspond to the position of the tape after the tape has been stopped or run repeatedly in fast-forward or rewind modes.

G-4



G-5



GO TO ZERO — To stop the tape at a particular point G-4

1 During recording or playback, press COUNTER RESET at the point you want to locate later.
2 When recording or playback is finished, stop the tape.
3 Press GO TO ZERO.
The tape will be rewound or advanced close to the counter 0000 point.

GO TO ZERO play — To start playback automatically from the counter zero point

Press ▶ PLAY after pressing GO TO ZERO.
The indicator on ▶ PLAY will blink.

To check the remaining recording or playback time G-5

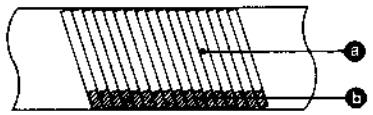
During recording or playback, press COUNTER/REMAIN or TAPE REMAIN on the Commander.

The displayed remaining time will decrease as the recording or playback goes on.
To display the tape counter, press COUNTER/REMAIN or TAPE REMAIN on the Commander again.

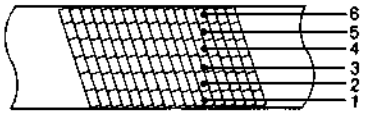
Notes

- The remaining time appears only after the "-:--" indication has been displayed for several seconds.
- If you want to display the remaining time during x2, first display the remaining time in the normal playback mode. Then, set in the above speed.
- On the accuracy of the remaining time counter:
  —For commercially available recorded tapes, the counter will not indicate the exactly same time as the recorded time labeled on the tape.
  —For damaged tapes and nonstandard tapes, the accuracy will be degraded.
  —At the beginning of a tape, especially when the tape has just been rewound, the remaining time will be calculated greater than the actual time (by several minutes max.).

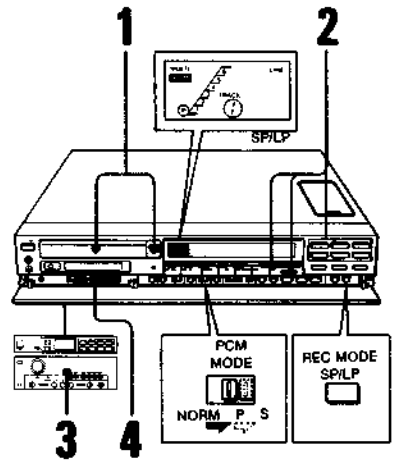
H-1



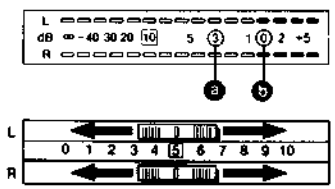
H-2



H-3



H-4



1-7. DIGITAL MULTI AUDIO RECORDING AND PLAYBACK

Normally, both the video and audio signals can be recorded on your video tape.

H-1

Ⓐ Video + audio
Ⓑ Audio

However, you can record up to 6 tracks of only the audio signals in the digital mode, using the full width of the tape. This is called digital multi audio recording, providing a high-fidelity stereo sound. H-2

To connect the VTR to your audio system, see page 30.

RECORDING H-3

Before recording
Check the position of the selectors:

Set	to
REC MODE	SP or LP
PCM MODE	P or S*

*Set to either of two positions. They activate in the same way.

Operation

1 Insert a cassette.
2 Press the desired DIGITAL MULTI AUDIO button or +/– PROGRAM/TRACK/TIMER/INDEX to select the digital multi audio track on which recording should be made.
—Adjust "▶" (red indication) to the desired track.
3 Turn on the power on the audio equipment and set to the playback mode.
4 Adjust REC LEVEL.
Verify the adjustment with the peak level meter of the recorder.

Recording level adjustment H-4

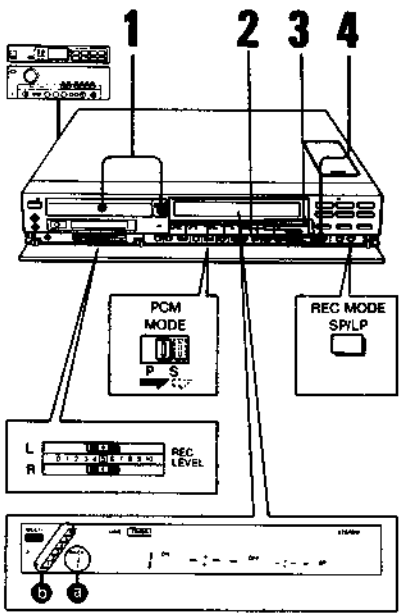
Referring the peak level meter, manually adjust the recording level with REC LEVEL.

Select the best recording level for each source as follows:
When recording sources with many high frequency signals (ex: trampets etc) set so that the peak programme meters deflect –3 dB. Ⓐ
When recording sources with medium or lower frequency signals (ex: vocals) set so that the peak programme meters deflect 0 dB. Ⓑ

During playback, you can read the recorded level on the peak level meter.

For PCM recording using a PCM digital audio processor which is not based on the 8 mm PCM format
Set SHARPNESS to the position between the top center and SHARP, and set REC MODE to SP.

H-5



TIMER RECORDING

If you connect any audio tuner with timer presetting functions, you can record up to 6 radio programmes in the digital PCM sound.

6 programmes can be recorded either on 6 separate audio tracks (for parallel recording) or they can be recorded successively on one track (for series recording).

Before presetting H-5
- Turn on the audio tuner.
- Check if the clock is set correctly. (Page 10.)
- Check the position of selectors:

Press	to display
REC MODE	SP or LP

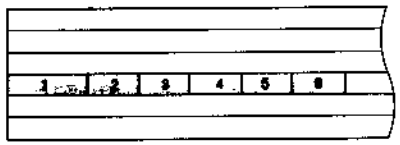
Set	to
PCM MODE	P (parallel) or S (series)
REC LEVEL	"5"

Presetting
1 Insert a cassette.
2 Press TIMER SET.
3 Set the following items by pressing +/– PROGRAM/TRACK/TIMER/INDEX and pressing NEXT.
— audio track (Set the track number displayed in numeral.) ⓐ DIGITAL MULTI AUDIO buttons cannot be used.
— day of the week
— recording starting time
— ending time
(Refer to "Timer-activated recording" on page 19.)
4 Press TIMER REC.

Notes
- After having set the timer, do not change the position of PCM MODE because the timer recording will not be made correctly.
- Timer presettings of TV programme recordings and digital multi audio recordings can be made on one tape. However, such presettings are not recommended because you must verify the position of the PCM MODE switch before each timer recordings.
- **To preset or check the digital multi audio track while you are using this unit**
  1) When the unit is in digital multi audio playback/recording
     ⓐ The track for presetting
     ⓑ The track on which playback or recording is being made.
  2) When the unit is in normal playback/recording
     ⓐ + ⓑ The track for presetting.
     Even if PROGRAM/TRACK/TIMER/INDEX button is pressed while recording or playing back, it does not have effect on the track.

H-6

H-7



Parallel and series recordings

Parallel recording — stereo recording of one programme on each track
- After a programme is recorded on one track, then, another recording will begin on another track from the beginning of the tape.
- You can select the track in any order for any programme. H-6

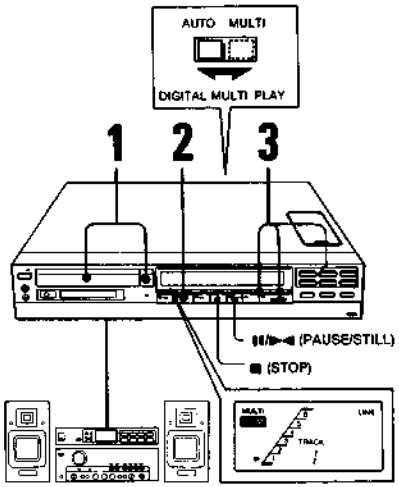
Series recording — Stereo recording in series on only a single track
- After one programme is recorded, another one is recorded successively on the same track. H-7

Notes

On parallel recording
- If a programme is already preset on a track, you cannot preset another programme on the same track.
- For the first timer-recording programme, the tape will not be rewound automatically to the beginning. The recording will start from the current position of the tape.
- If the next programme starts before the tape has been rewound completely, the beginning of the programme will not be recorded.

On series recording
- The track on which timer recordings are made, is the track that is selected in the last timer programme setting.
- After all the preset programmes are recorded, the tape will not be rewound to the beginning.

H-8



PLAYBACK H-8

Before playback

- Turn on the audio system so that sound is heard from speakers.
- Set DIGITAL MULTI PLAY on the rear to:
  AUTO for playing back tapes recorded by this VTR.
  MULTI for playing back tapes recorded by other VTRs (when their sound cannot be heard with the switch set to AUTO).

Playback

1 Insert a cassette.
2 Press ▶ PLAY.
3 Press the desired DIGITAL MULTI AUDIO button or +/– PROGRAM/TRACK/TIMER/INDEX to select the track to be monitored. The red "▶" indicates the selected track. Only the track marked with red bar on the right side has certain recorded signals. Recordings are not made on the tracks without this indication.

To stop playing back
Press ■ STOP.

To stop the tape for a moment
Press II/▶◀ PAUSE/STILL.

Notes

- When DIGITAL MULTI PLAY is set to MULTI, all bars light up even if nothing has been recorded on the tracks.
- While playback, we recommend that you set REC LEVEL to the "0" position. If not noise which appears when you stop the tape, may damage the speakers.

1-8. INDEX FUNCTION

The desired programme can be easily located by the index signal marked on the tape.
This function is effective either to normal video-audio recorded tapes and to digital multi audio recorded tapes.

TO MARK INDEX SIGNALS

Index signals can be marked at any desired point on the tape during recording, timer recording or normal playback.

I-1

Press INDEX MARK at the point where an index signal is to be marked.
The "INDEX" indication blinks while the index signal is being marked.

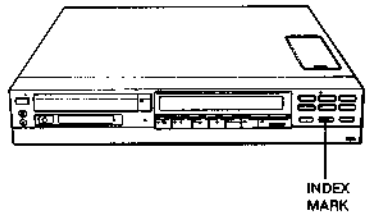
An index signal is automatically marked on the tape when ● REC is slid to the right or when a timer recording starts. I-2

The "INDEX" indication blinks in the window while the index signal is being marked.

Notes

- Index signals will not be marked on the tape when the recording is started by releasing the recording pause mode.
- The index function operates also with the index signals marked using the index function (same format) of other recorders.
- The sound will decrease and be kept at this volume while the index signal is being marked in the playback mode. In addition, a black bar noise will appear at the bottom of the playback picture during marking. I-3 However, the recorded signals are not affected.
- During playback, index signals can be marked on cassette tapes whose safety tab is slid out (including commercially available prerecorded video tapes).
- An index signal may not be registered immediately before a point on the tape where the recording tape speed changes.
- You cannot mark nor erase index signals if no video/audio signals is recorded on the PCM track of the tape.
- Between each index signal, there must be a minimum space of 2 minutes for LP mode and 1 minute for SP mode.
  If index signals are marked at shorter intervals, index scan or search functions may not be operated correctly.
- Index marking and erasing cannot be made during tape editing. (When the EDIT lamp is lit.)

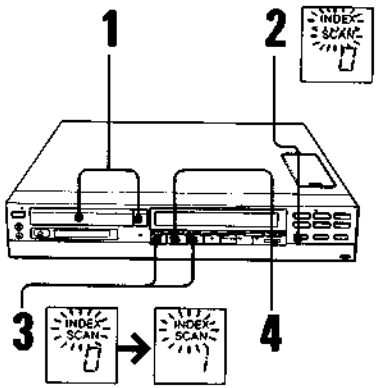
I-1



I-2

I-3

I-4

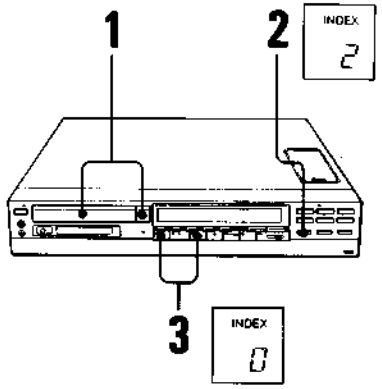


INDEX SCAN
— To play back the beginning of each programme in sequence I-4

Before operating
Set PCM MODE to NORM, or P (or S).
If you have set to P (or S), select the digital multi audio track.

1 Insert a cassette that has index signals recorded.
2 Press INDEX once.
The "INDEX" and "SCAN" indications blink alternately.
3 To scan the previous programmes, press ◀◀ REW.
To scan the programmes ahead, press ▶▶ FF.
The tape will be rewound or rapidly advanced to the next index signal marked.
While scanning, the "INDEX" and "SCAN" indicators blink, simultaneously. The tape will be played back for approximately 10 seconds, and then, rewound or advanced to the next index signal.
Everytime an index signal is detected and playback begins, the displayed index number increases.
4 At the desired programme, press ▶ PLAY.
Normal playback of that programme will begin.

I-5



INDEX SEARCH I-5
— To locate the desired programme

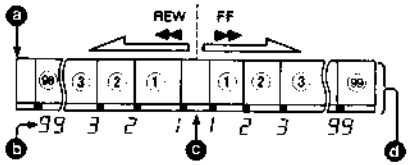
You can locate the desired programme and play it back automatically by designating the number of its index signal. Up to 99th index signal from the present position on the tape can be located.

Before operating
Set PCM MODE to NORM or P (or S).
If you have set to P (or S), select the digital multi audio track.

1 Insert a cassette that has index signals marked.
2 Press INDEX several times until the index number of the desired programme is displayed.
For instance, to locate the second programme ahead, two index signals should be detected, so press INDEX until "2" is displayed. On the other hand, to locate the second programme behind, three signals should be detected, so press the button until "3" is displayed.

I-6 ⓐ Beginning of the programme
ⓑ Index number
ⓒ Present position
ⓓ Video tape (or one of the 6 digital multi audio tracks)

I-6



Notes

- To designate higher index number, first press INDEX several times, then continue with +/– PROGRAM/TRACK/TIMER/INDEX so that the desired index number display appears.
- If you enter an incorrect index number, press ■ STOP to reset the display.

3 To locate a previous programme on the tape, press ◀◀ REW.
To locate a programme ahead, press ▶▶ FF.

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

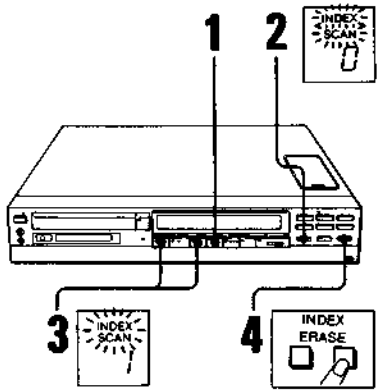
Notes

- If, on a tape, there are portions on which index signals are marked on the first PCM audio track in the digital multi audio mode, and portions on which index signals are marked in the normal mode, the index scan and search in the normal mode cannot be made correctly.
- For index scan or search in digital multi audio mode, set AUDIO MONITOR to PCM or MIX.
- Index scan and search can be activated during playback mode. (In the mode which was being selected when the playback started.)
- While the index signals are being scanned or located, nothing is displayed on the monitor and sound is cut off.
- If the tape is rewound to the beginning during index scan or index search, playback will begin automatically.
- If the tape reaches the end during index scan or index search, the tape will not be rewound automatically.

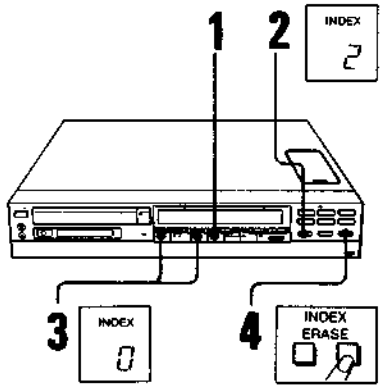
When the desired programme cannot be played back with the index function, check the following:

- The nearest index signal may not have been counted.
  If the point where you pressed ◀◀ REW or ▶▶ FF is fairly close within 2 minutes of the normal tape-run to the nearest index signal, that signal will not be counted.
- Is there a space of more than 2 minutes between two index signals?
  If there is more than one index signal marked within an interval of 2 minutes of the normal tape-run, the mechanism may not function properly.

I-7



I-8



TO ERASE INDEX SIGNALS I-7

Before operating

Set PCM MODE to NORM or P (or S).
If you have set to P (or S), select the digital multi audio track.

Erasing while index scanning — To erase the index signals in sequence

1 Stop the tape with ■ STOP.
2 Press INDEX once.
3 Press ◀◀ REW or ▶▶ FF.
  The tape will be rewound or rapidly advanced to the next index signal and playback will begin.
4 Within approx. 10 seconds, while the tape is being played back, press INDEX ERASE.
  The "INDEX" indication blinks and the "SCAN" indication lights steadily while the index signal's erasure.

After the erasure, index scan will resume. At each index signal located, press INDEX ERASE.
To stop index scanning, press ■ STOP.

Notes

- Press INDEX ERASE more than 2 seconds after the playback starts.
- The index signals recorded immediately after an unrecorded portion on a tape, or on a portion where the recording tape speed has been changed or two recordings have been made continuously will not be erased.
  During index erasing, a black bar noise will appear at the bottom of the playback picture.

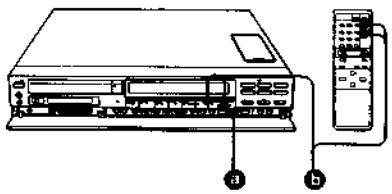
Erasing while index searching — To erase a particular index signal I-8

1 Stop the tape with ■ STOP.
2 Press INDEX button several times until the number of the index signal to be erased is displayed.
3 Press ◀◀ REW or ▶▶ FF.
4 Within approx. 10 seconds, while the tape is being played back, press INDEX ERASE.
  The "INDEX" indication blinks while the index signal is being erased.

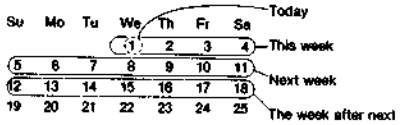
After the erasure, the unit returns to the normal playback.

1-9. TIMER-ACTIVATED RECORDING

J-1



Six recordings can be preset to be made between today and Saturday of the week after next.



Before setting the timer

- The clock must be set correctly.
  For the setting, see page 10.
- Make sure the cassette tape is long enough to record all the programmes.
- Be sure the safety tab of the cassette has not been slid out.
- Set the selectors as in "Before recording" on page 11.

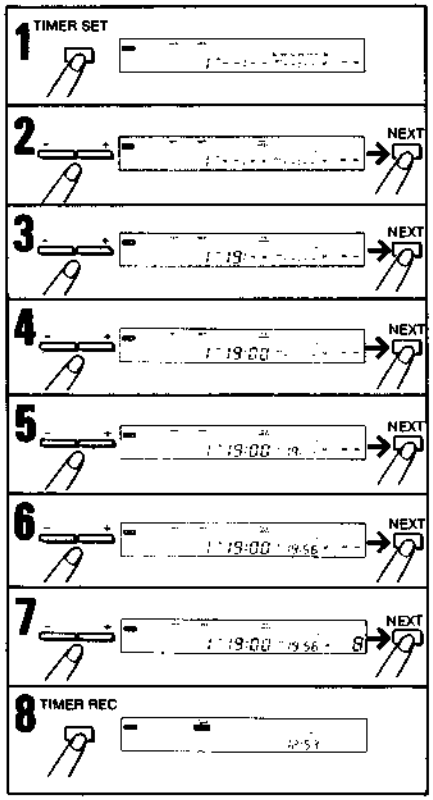
J-1

Buttons for timer setting

a NEXT button
Every time you press the NEXT button, the item to be set will blink.

b +/– PROGRAM/TRACK/TIMER/INDEX buttons
To set the week and day, the turn-on and turn-off times and the channel, press + button to advance and – button to reverse.

J-2



Operation J-2

Suppose you want to make a recording of channel 8 from 7:00 PM to 7:56 PM Friday.

1 Press TIMER SET.
2 Set the week and day with +/– PROGRAM/TRACK/TIMER/INDEX.
  Then, press NEXT.
3 Set the turn-on hour with +/– PROGRAM/TRACK/TIMER/INDEX.
  Press NEXT.
4 Set the minute with +/– PROGRAM/TRACK/TIMER/INDEX.
  Press NEXT.
5 Set the turn-off hour with +/– PROGRAM/TRACK/TIMER/INDEX.
  Press NEXT.
6 Set the minute with +/– PROGRAM/TRACK/TIMER/INDEX.
  Press NEXT.
7 Set the TV programme number to be recorded with +/– PROGRAM/TRACK/TIMER/INDEX.
  Press NEXT.
  To preset other programmes, repeat steps 1 to 7.
8 Press TIMER REC.

The power will be turned off and the recorder will enter the standby mode. (The current time is displayed.)

Recording will start at the preset time and will automatically stop when the recording is completed.
The memory of the timer programme will be erased if it is for only one day and the timer programme numbers will advance one by one.

Notes

- Once the TIMER REC indicator has been displayed, only the functions of CHECK and TIMER REC can be activated. For the usual manual operations, press TIMER REC again so that the indicator goes off, and then, turn on the power.
- Timer recordings of the signals from the AUDIO LINE IN jacks in the digital multi audio mode can also be made. See page 56.

If you select an incorrect digit for the turn-on/off time setting, press CLEAR. The programme which is currently being set will be cancelled but the other programmes previously set will remain.

To set the week and day
The week and day indications change in the direction of the arrow, starting from today, when you press + PROGRAM/TRACK/TIMER/INDEX and in the reverse direction when you press – PROGRAM/TRACK/TIMER/INDEX.

The day(s) you want the recording(s) made	Display
At the same time every day	Su Mo Tu We Th Fr Sa
Only one day	THIS WEEK We (Today) → Th → ····· → Sa NEXT WEEK Su → ····· → Sa WEEK AFTER NEXT Su → · · · → Sa
At the same time on the same day every week	EVERY WEEK Su → ····· → Fr → Sa
At the same time every day from Monday to Friday	Mo Tu We Th Fr
At the same time every day from Monday to Saturday	Mo Tu We Th Fr Sa

BEFORE THE TIMER-ACTIVATED RECORDING STARTS

To check the timer settings
Press CHECK.
Every time you press CHECK, each programme will be displayed in the window.

To change the settings
1 Press TIMER REC. The TIMER REC indicator goes off.
2 Press CHECK to select the programme to be changed.
3 Press TIMER SET.
4 Press NEXT until the item to be changed blinks.
5 Change the setting with +/– PROGRAM/TRACK/TIMER/INDEX.
6 Press NEXT so that the tape counter and the current time appear in the window.
7 Press TIMER REC again to reactivate the timer.

To erase the memory of a particular programme
1 Press TIMER REC. The TIMER REC indicator goes off.
2 Press CHECK to select the programme to be erased.
3 Press CLEAR. The memory of the programme will be eliminated.
4 If other programmes have been preset for recording, press TIMER REC again to reactivate the timer.

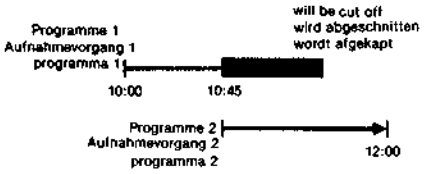
DURING RECORDING

To stop the timer recording
Press TIMER REC. The recording will stop and the power will be turned off.

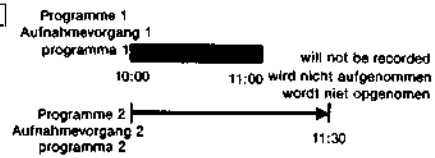
When the tape ends during timer recording
The tape stops but the tape will not be rewound.

The ■ STOP and ▮▮/▶◀ PAUSE/STILL buttons do not function during a timer recording.

J-3



J-4



NOTES ON TIMER-ACTIVATED RECORDINGS

Troubles when TIMER REC is pressed

The cassette will be ejected automatically →
- The cassette inserted has the safety tab slid out.
- No cassette is inserted.
- The tape is at its end

The "TIMER-REC" indicator disappears →
- The turn-on time has been set before the current time.

When the presettings of your timer-activated recordings overlap J-3
The recording of programme 2 will begin before the programme 1 is finished.
In the illust.: (The coloured portion will not be recorded.)

If the turn-on time of two programmes are the same J-4
The recording of the programme having the higher programme number will be made. The memory of the programme having the lower number will be cleared.
In the illust.: (The coloured portion will not be recorded.)

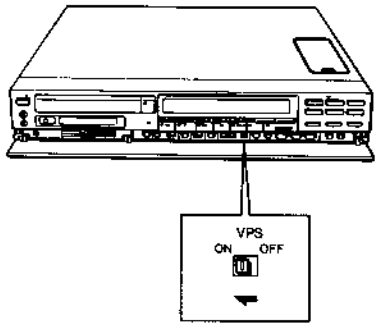
If the turn-on time of one programme is the same as the turn-off time of another programme
When a timer recording starts, the unit is set to recording pause mode 6 seconds before the preset turn-on time. The pause mode is released exactly at the preset turn-on time and recording starts approximately 1 second later. Therefore, the end of the first programme will not be recorded for 6 seconds. Both recordings, however, will not be made smoothly.

If a power interruption occurs before a timer recording
The clock will stop and "Su 0:00" will light up. This means that the memory of the timer programmes has been completely erased. Reset the clock and timer programmes.

A short power interruption of less than approximately 4 seconds will not affect the memory. The clock will show the correct time and the timer programmes will be performed.

If the power was interrupted during a timer recording
Recording will stop and the power will be turned off. If the interruption was less than approximately 4 seconds, the recording will resume.

K-1



1-10. ABOUT THE VPS SWITCH

To avoid missing a timer-activated recording because of a delay in the transmission sequence or a change in the programme schedule, the West German broadcasting stations have agreed to transmit a special code, called the VPS (Video Program System) code, together with the TV programme. The VPS switch allows you to preset recording times and insures that your programmes will be recorded regardless of delays.

1 **Set the VPS switch to ON.**
The VPS indication appears in the display window.
2 **Set the timer to the time listed in the VPS programme guide which corresponds to the programme you want to record.**

The unit will be turned on 10 minutes before the preset time, but recording will start when the preset programme begins.

Notes

- If the station you want to record fails to transmit the VPS code signal with the programme, or the VPS code cannot be detected for some reason, recording will begin at the time you preset.
- Be sure to set the timer according to the VPS programme guide, otherwise programme will not be recorded.
- Even if the preset programme does not begin, the unit will remain prepared for recording until 4:00 AM of next day. Or the unit will be prepared to record for 23 hours 50 minutes when the preset time is between 0:00 AM to 4:00 AM.
- When the unit receives a VPS programme interruption code during recording (for example, when urgent news is inserted), it will stop recording. As soon as the interrupted programme resumes, recording will continue.

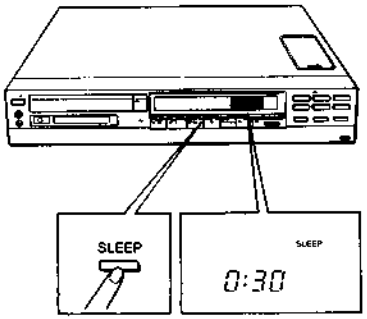
Multi-programme and multi-channel recording
The VPS function allows you to record several successive programmes.
Occasionally, these programmes may overlap or conflict with one another. In these cases the following rules apply.

- If you are recording two successive programmes, on the same channel and the first is delayed past the starting time of the second, the first setting is cancelled and the second programme is recorded.
- If you are recording two successive programmes, each on a different channel, and the first is delayed past the starting time of the second, the first will be cancelled, and the VPS function will not be activated for the second programme and the second programme will be recorded beginning at the preset time even if the second programme is delayed.
- If the first programme is delayed so that it is not finished before the second is scheduled to begin, the unit will automatically switch to the second programme at the preset time and the second programme will be recorded.

1-11. USE OF THE SLEEP TIMER

—To preset the turn-off time of the unit L-1

L-1



When recording or playback is being made, preset the turn-off time of the unit.
The recording or playback duration can be set for up to 5 hours by 30 minutes.

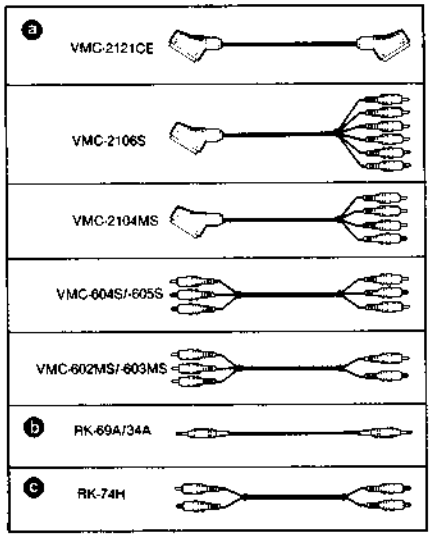
Press SLEEP.
Every time you press on SLEEP, the recording/playback duration indication changes as follows:

0:30 → 1:00 → 1:30 → 2:00 → ···· → 5:00 → Current time display

30 min. One hr. One and a half hr. 2 hrs. 5 hrs. Zero hr.

The duration decreases minute by minute as the recording or playback advances. The power will be turned off automatically about 30 seconds after the duration time has elaseped.

M-1



1-12. TAPE EDITING

Various methods for easy and highly accurate tape editing are available with this VTR.
Select the best method according to your purpose and to the video/audio equipment you own. See the below chart.
M-1

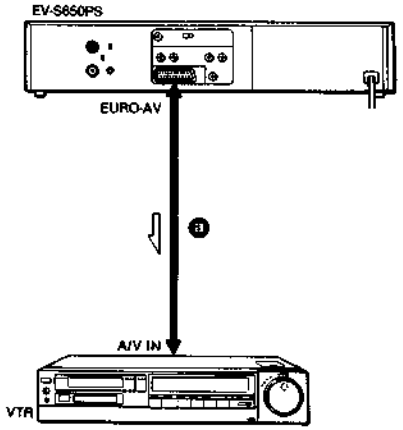
Editing method	Connection diagram	Page
Editing a home movie tape from this unit to another VTR	M-2	23
Editing a home movie tape from another VTR to this unit	• Basic editing M-3 • Editing from a VTR having a CONTROL S OUT jack M-4 • Editing with the RM-E100V editing controller M-5	23 23 23
Audio dubbing	M-6	24

In the connection diagrams, Ⓐ – Ⓒ indicate the followings:
Ⓐ Audio and video connection
Ⓑ Control S connection
Ⓒ Audio connection

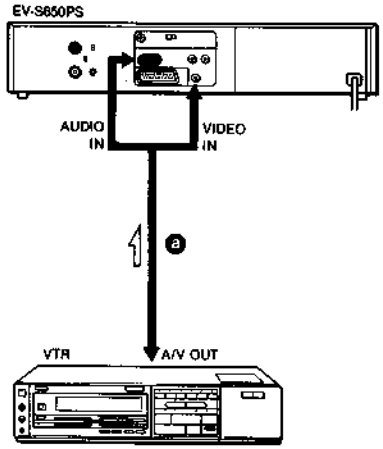
Function of the EDIT button
To reduce signal loss that results from the tape-to-tape transfer when tape editing is performed with another VTR, press EDIT. The EDIT lamp lights up.
For normal playback, press the EDIT button to keep the lamp off.
During audio dubbing, this button does not activate.

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

M-2



M-3



EDITING A HOME MOVIE TAPE FROM THIS UNIT TO ANOTHER VTR

Connection

M-2

Preparation
On this unit = player
• Set AUDIO MONITOR to the appropriate position.

Sound to be recorded	PCM/MIX/STD Set to	MAIN/SUB/M.S Press to display
Sound of PCM track	PCM	•
Sound of PCM and STD tracks	MIX	•
Sound of STD track	STD	•
MAIN, SUB or MAIN + SUB sound of bilingual tape	PCM	MAIN, SUB or MAIN/SUB

"•" means that the selector can be set to any of its position.

• Press EDIT so that the EDIT lamp lights up.

On another VTR = recorder
Set the input select switch to LINE.

If another VTR provides the EDIT mode button, set it in edit mode.

EDITING A HOME MOVIE TAPE FROM ANOTHER VTR TO THIS UNIT

We recommend using this unit for editing and another VTR for playback because the flying erase head of this unit allows you continuous recordings without disturbance.

Basic editing

Connection

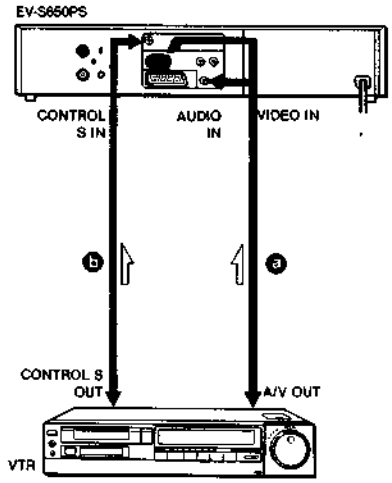
M-3

Preparation
On another VTR = player
Select the sound to be recorded.

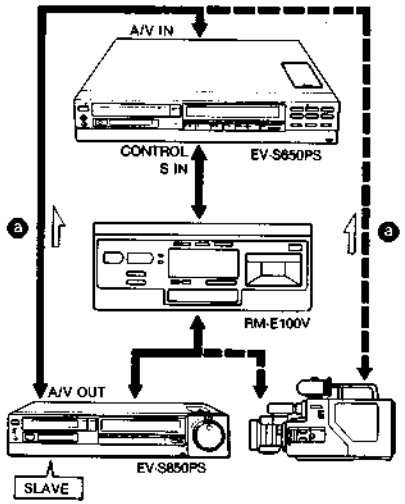
If another VTR provides the EDIT mode button, set it in edit mode.

On this unit = recorder
Select the LINE input with INPUT SELECT.
Adjust the recording level with REC LEVEL.

M-4



M-5



Editing from a VTR having a CONTROL S OUT jack
If another Sony VTR with intercomponent control terminals are used with this unit, use of the supplied Remote Commander brings you much more convenience in editing operations.

Connection
Connect the CONTROL S IN jack of this unit to the CONTROL S OUT jack of another VTR. M-4

Preparation
Select the LINE input with INPUT SELECT.

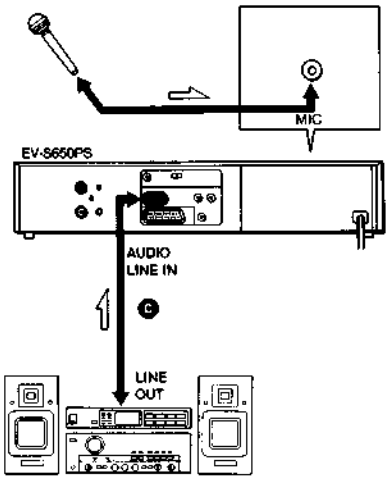
Operation
"Assemble editing" can be made.
The scenes to be assembled are designated on the original tape on the connected VTR.
They can be "assembled" (recorded) onto the tape of this unit.

Editing with the RM-E100V editing controller
Connect the RM-E100V editing controller between the VTR or video camera recorder and this unit. 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 unit automatically in the order preset.
If an edit mode button is provided on another VTR, set it in edit mode. M-5

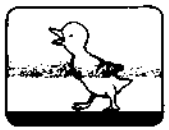
Note

M-5 indicates the example of the connection with Sony EV-S850PS stereo video cassette recorder.
Set MASTER/SLAVE to SLAVE.

M-6



M-7



AUDIO DUBBING

Connection M-6
To dub signals from the audio system
Connect AUDIO LINE IN of this unit to the LINE OUT jacks of the audio system.
To dub signals from the microphone
Connect microphone to MIC.
To dub signals of TV programmes
You can record audio signals from the built-in tuner.

Audio signals are dubbed as follows:

INPUT SELECT	Input	PCM track	
		L channel	R-channel
LINE	Microphone	Microphone sound	Microphone sound
	LINE IN (AUDIO)	L-channel sound	R-channel sound
	Microphone and LINE IN (AUDIO)	Microphone sound	Microphone sound
TUNER	—	TV sound	TV sound

Operation
1 Set PCM MODE to NORM.
2 Press INPUT SELECT and display:
LINE to dub audio signals from the audio system or microphone.
TUNER to dub signals of TV programmes.
3 Press ▶.
4 Decide the starting point of audio dubbing, and press II/▶◀.
5 Press AUDIO DUB.
6 Press II/▶◀ to release the pause mode, and at the same time start the audio source—such as talking into the microphone, playing back a tape recorder, etc.

Notes

- During dubbing, the black band appears in the center and lower positions of the screen. M-7
  But the recorded picture will not be affected.
- When the tape which is recorded in the different recording times is used for dubbing, noise will be heard at the point where the recording time is changed.
- Index signals will be erased after completing audio dubbing.

1-13. TROUBLE SHOOTING

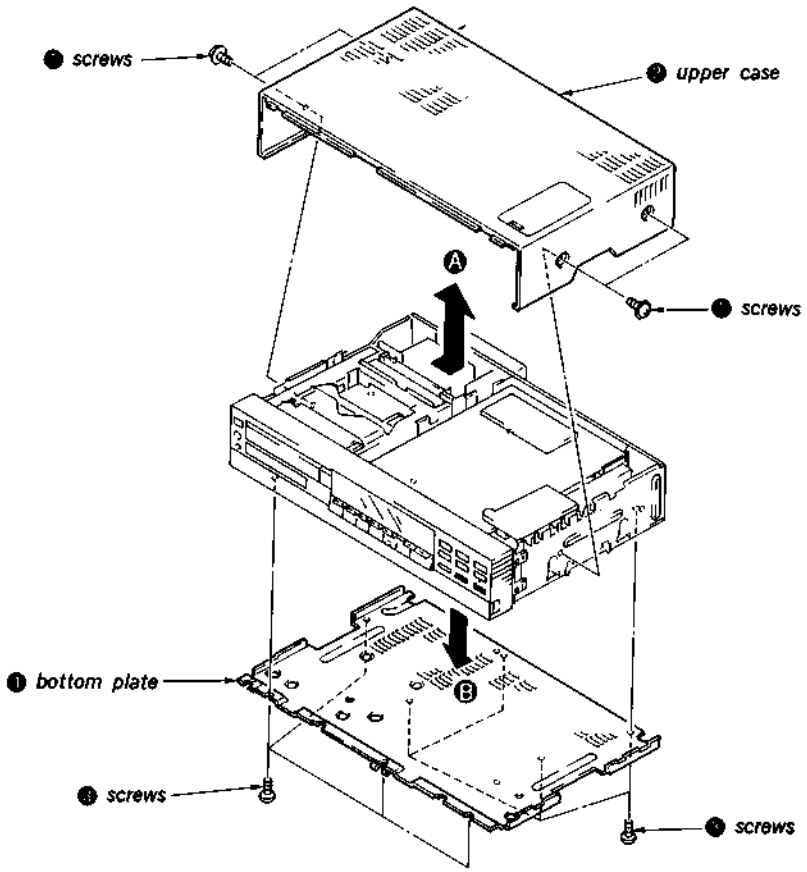
If any difficulty should arise during operation, first check the power cord (mains lead) connection, then go through the following list. Should the difficulty persist, unplug the unit and contact your Sony dealer or local authorized Sony service facility.

	Symptom	Possible causes and corrections
POWER	ON/STANDBY switch does not function.	• The mains lead is disconnected. • The recorder is in the timer standby mode. Press TIMER REC.
CLOCK	The clock has stopped at "Su 0:00".	There has been a power interruption. Reset the clock time and timer settings.
RECORDING AND PLAYBACK	TV programme is not clearly displayed on the TV screen or no picture is displayed on the screen.	• "VTR" is not displayed. Press TV/VTR. • The programme for the video recorder on the TV tuner is not correctly tuned or the video input is not selected on the TV tuner. • AUTO COLOUR SYSTEM not set correctly.
	Recording cannot be done correctly.	• The input is not selected correctly. • The tab on the cassette is out (red).
	When REC is slid to the right, the cassette holder opens.	The tape is at its end.
	Playback picture is not clearly displayed on the TV screen.	• The programme for video recorder on the TV tuner is not correctly tuned or the video input is not selected on the TV tuner. • The video heads may be contaminated. Clean the heads using the Sony V8-25CL video head cleaning cassette. For details on cleaning, refer to the instructions furnished with the cleaning cassette. If the V8-25CL cleaning cassette is not available in your area, have the heads cleaned at the nearest Sony service facility. • Adjust SHARPNESS.
	Picture being recorded cannot be monitored on the TV screen.	Press TV/VTR so that "VTR" is displayed in the window.
	The picture rolls vertically.	Adjust the vertical control on the TV receiver.
	Noise band in the still picture.	Adjust STILL ADJ to move it.
	Distorted or noisy sound.	Recording level was not correctly adjusted.
	Audio recording cannot be done.	When recording, adjust the recording level controls properly.
TIMER RECORDING	Timer setting cannot be made.	The clock is not set.
	Timer recording cannot be made properly.	• The clock is not set correctly. • No cassette is inserted. • The tape is at its end. • The tab on the cassette is out. • The turn-on/turn-off day and time have not been set correctly. • There has been a power interruption. • TIMER REC has not been pressed.
OTHERS	The VTR cannot be remotely controlled.	• The remote control ANT TV/VTR selector on the Commander is set to TV. • The batteries are exhausted.
	Cassette cannot be ejected.	• Recording is being done. • When inserting, you inserted it forcibly Turn the power off and turn on again, then press OPEN/CLOSE.

SECTION 2
DISASSEMBLY

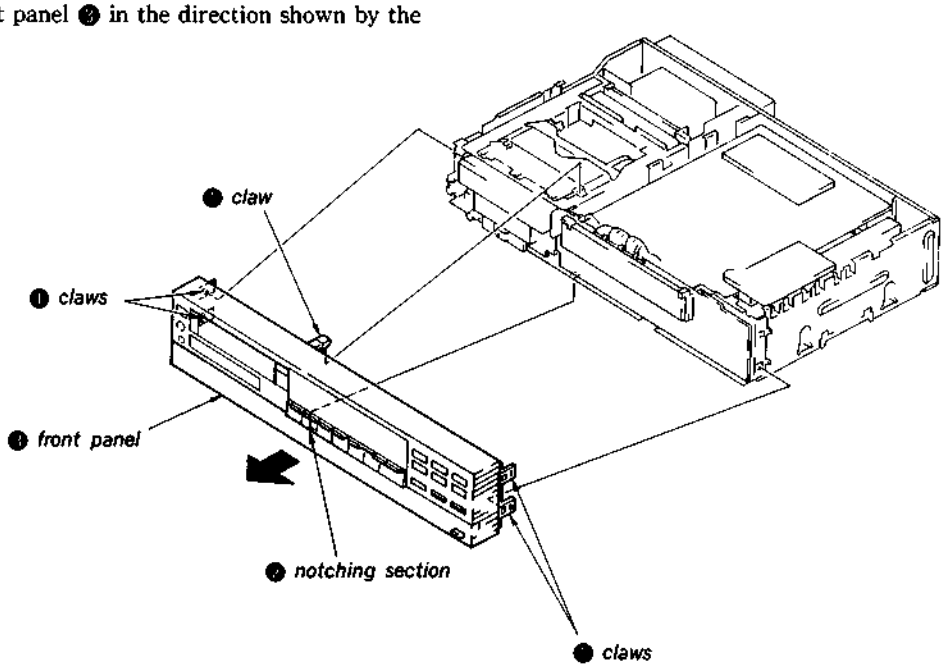
2-1. REMOVAL OF CABINET CASE

1) Remove the four screws ❶ .
2) Remove the upper case ❷ in the direction shown by the arrow Ⓐ .
3) Remove the eight screws ❸ .
4) Remove the bottom plate ❶ in the direction shown by the arrow Ⓑ .



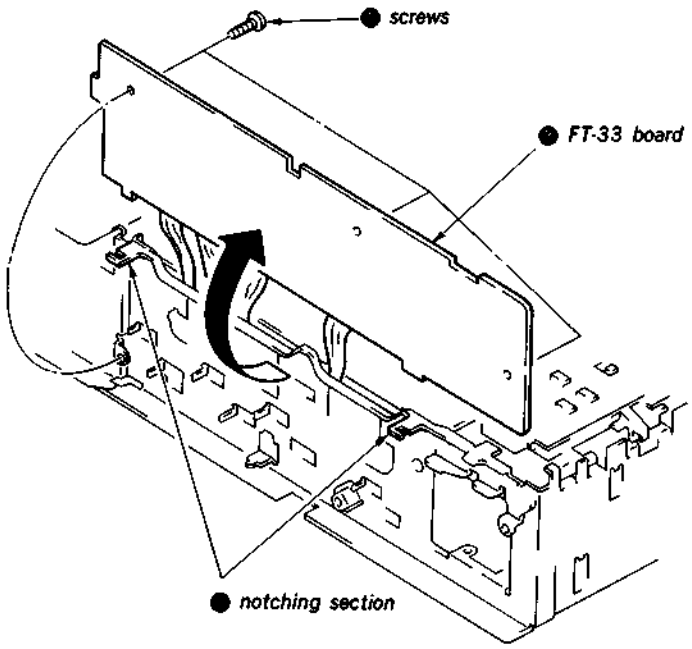
2-2. REMOVAL OF FRONT PANEL

1) Remove the five claws ❶ and the notching section ❷ .
2) Remove the front panel ❸ in the direction shown by the arrow.



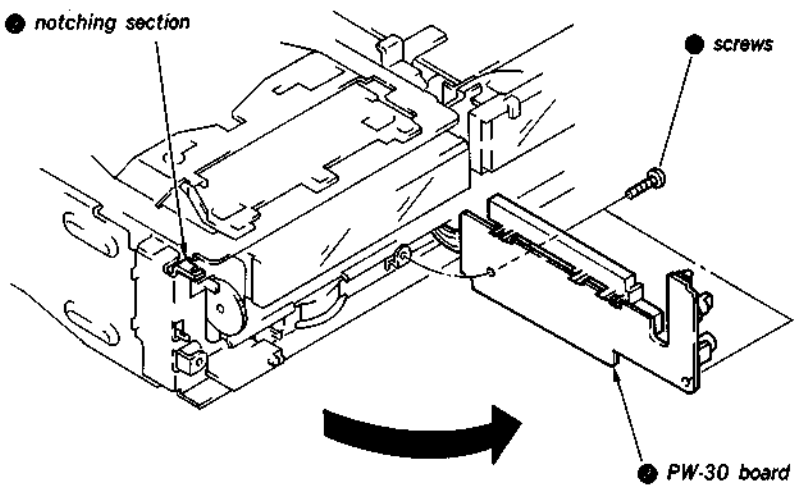
2-3. OPENING OF FT-33 BOARD

1) Remove the three screws ● .
2) Remove the FT-33 board ● from the two notching section ● .
3) Open the FT-33 board in the direction shown by the arrow.



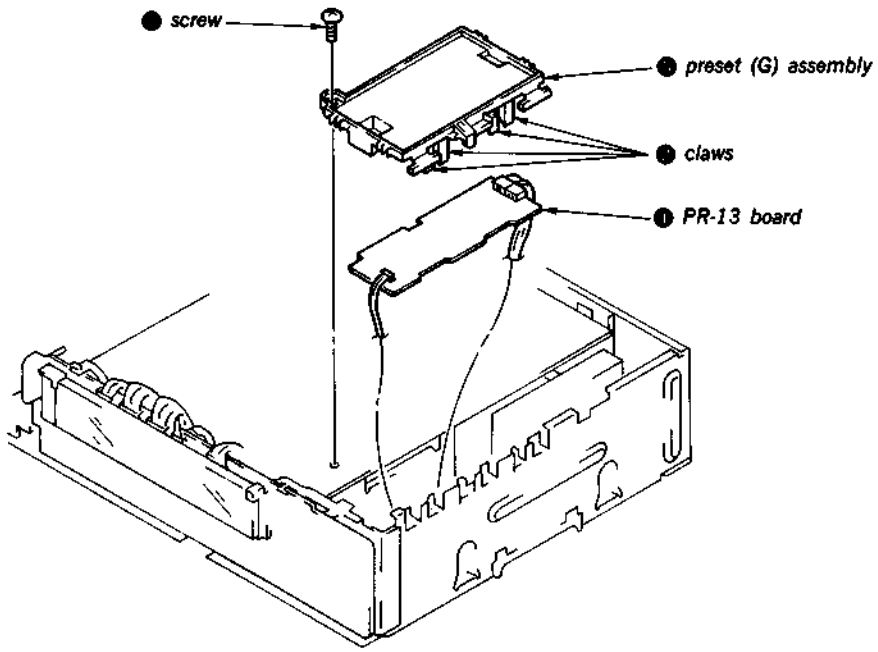
2-4. OPENING OF PW-30 BOARD

1) Remove the two screws ● .
2) Remove the PW-30 board ● from the notching section ● .
3) Open the PW-30 board ● in the direction shown by the arrow.



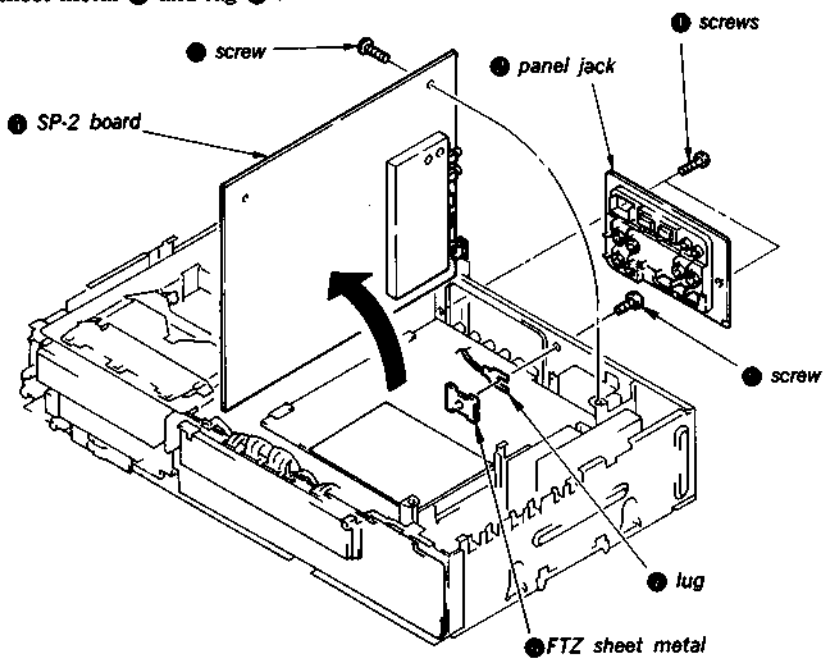
2-5. REMOVAL OF PR-13 BOARD

1) Remove the screw ❶ .
2) Take off the four claws ❷ .
3) Remove the preset (G) assembly ❸ .
4) Remove the PR-13 board ❹ .



2-6. OPENING OF SP-2 BOARD

1) Refer to the "REMOVAL OF PR-13 BOARD", and remove the preset (G) assembly.
2) Remove the two screws ❶ .
3) Remove the panel jack ❷ .
4) Remove the screw ❸ , and remove the SP-2 board ❹ in the direction shown by the arrow.
5) Remove the screw ❶ , FTZ sheet metal ❷ and lug ❸ .

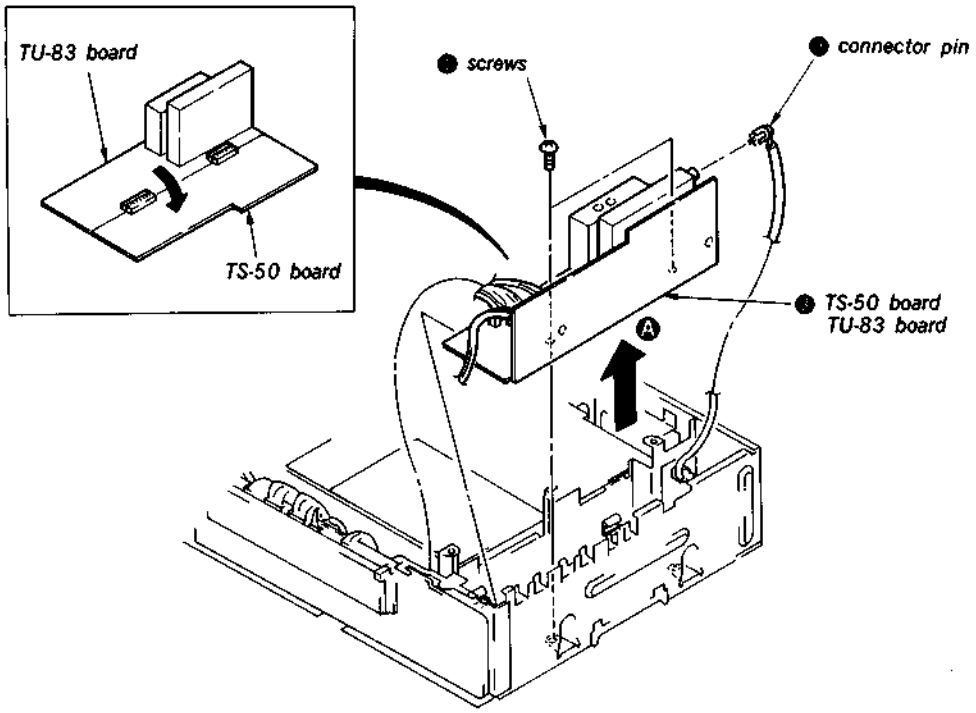


2-7. REMOVAL OF TS-50, TU-83 BOARD

1) Refer to "REMOVAL OF SP-2 BOARD", and open the SP-2 board.
2) Remove the two screws ❶ .
3) Pull out the connector pin ❷ .
4) Remove TS-50, and TU-83 board ❸ in the direction shown by the arrow Ⓐ .

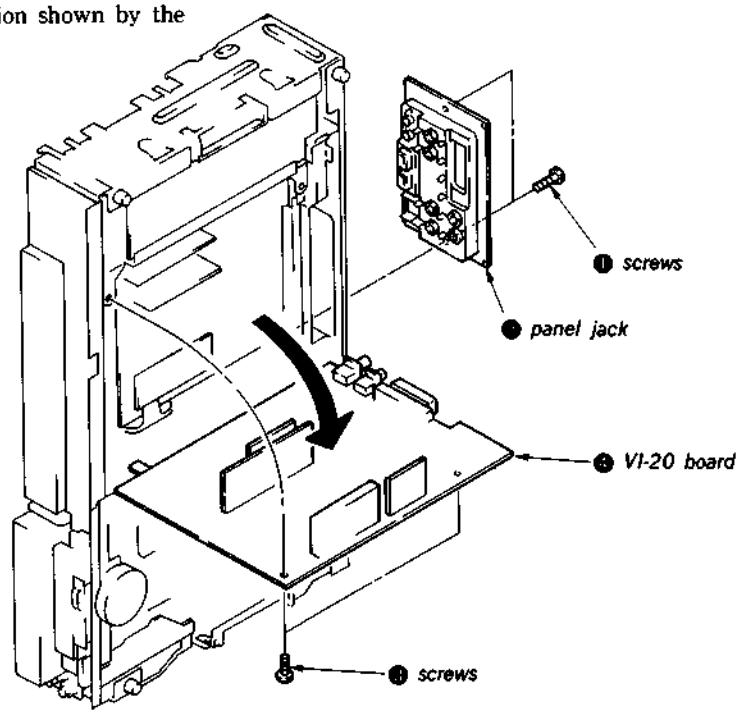
Note: At this time, take care not to injure the board by scratching it.

5) Open the TS-50 board in the direction shown by the arrow Ⓑ .



2-8. OPENING OF VI-20 BOARD

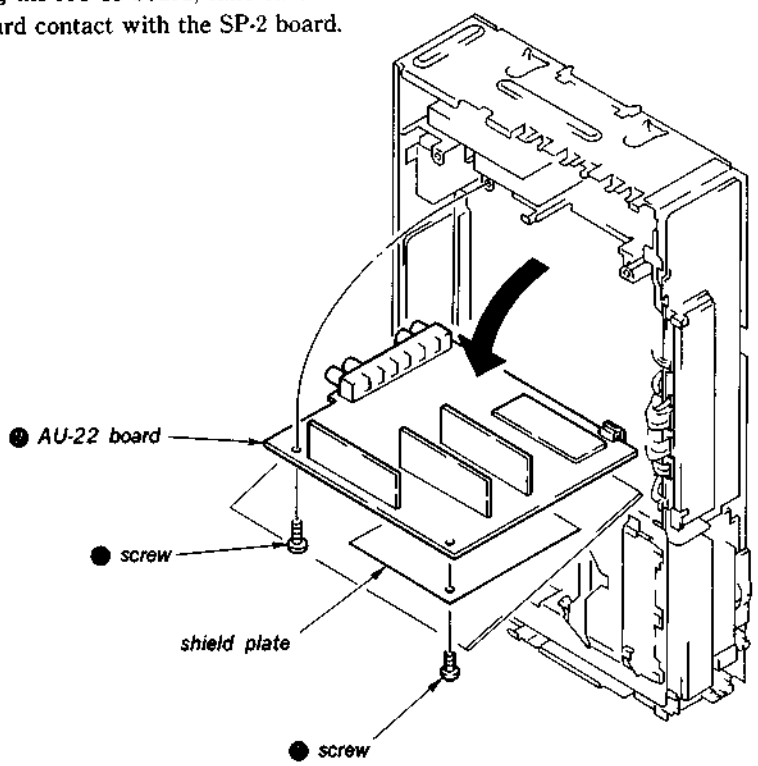
1) Remove the two screws ❶ .
2) Remove the panel jack ❷ .
3) Remove the two screws ❸ .
4) Open the VI-20 board ❹ in the direction shown by the arrow.



2-9. OPENING OF AU-22 BOARD

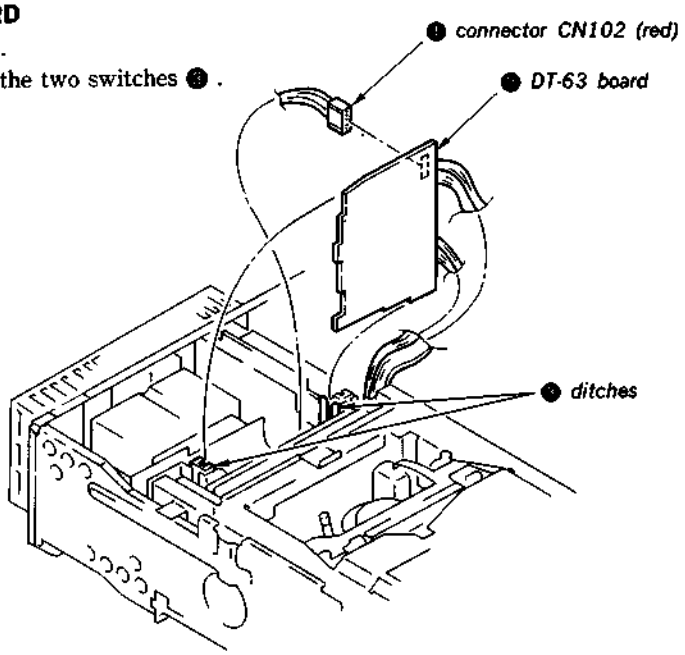
1) Refer to "REMOVAL OF SP-2 BOARD", and open the SP-2 board.
2) Remove the two screws ❶ .
3) Open the AU-22 board ❷ in the direction shown by the arrow.

Note: When opening the AU-22 board, take care not to let the AU-22 board contact with the SP-2 board.



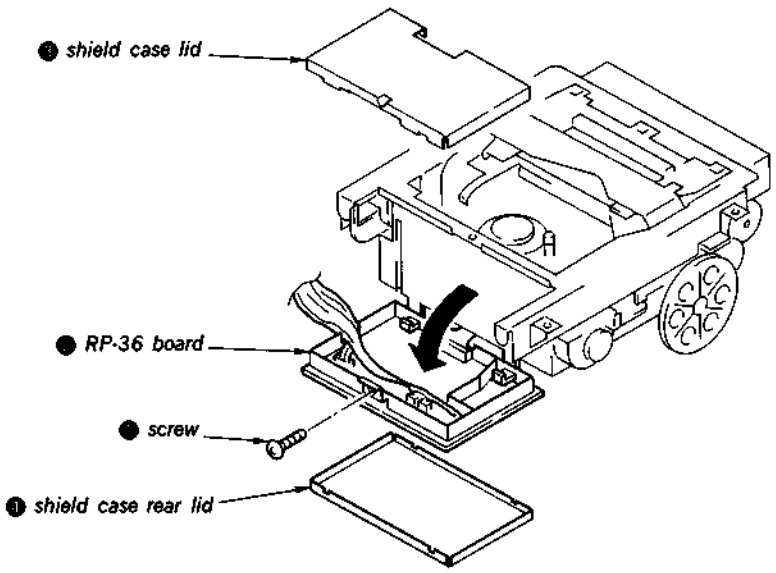
2-10. REMOVAL OF DT-63 BOARD

1) Pull out the connector (CN102) ❶ .
2) Remove the DT-63 board ❷ from the two switches ❸ .



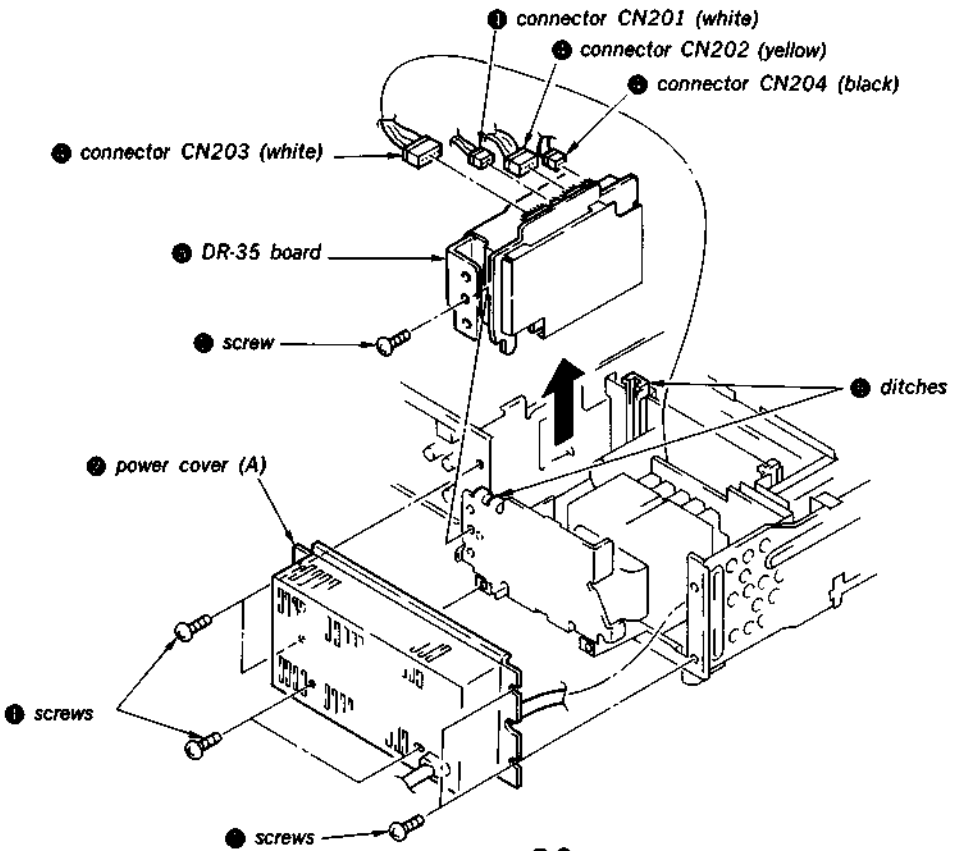
2-11. REMOVAL OF RP-36 BOARD

1) Refer to the "REMOVAL OF MECHANICAL BLOCK", and remove the mechanical block.
2) Remove the screw ❶ .
3) Open the RP-36 board ❷ in the direction shown by the arrow.
4) Remove the shield case lid ❸ and shield case rear lid ❹.



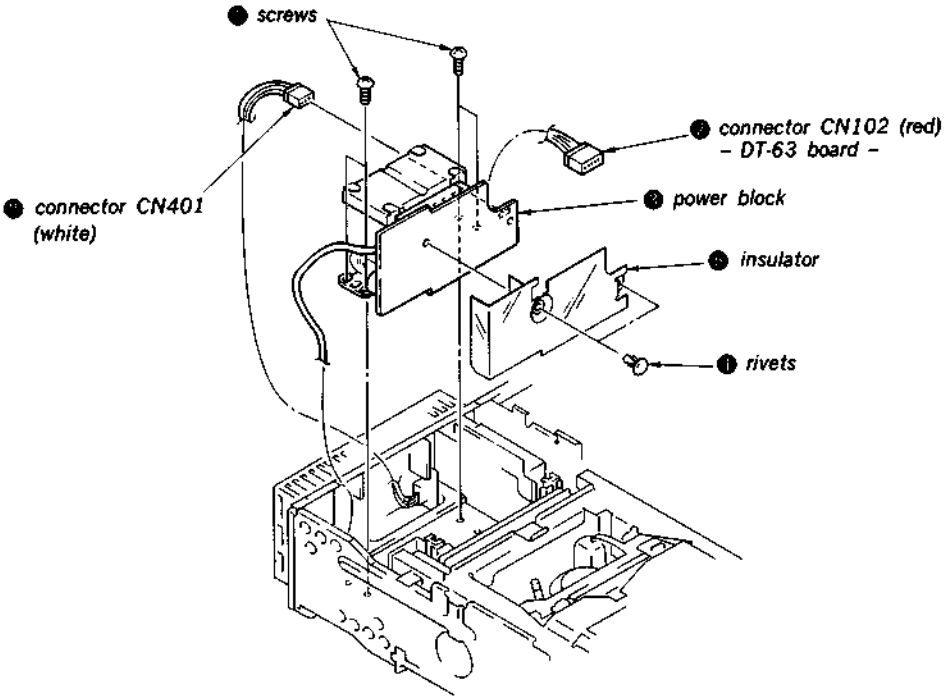
2-12. REMOVAL OF DR-35 BOARD

1) Remove the six screws ❶ .
2) Remove the power cover (A) ❷ .
3) Remove the screw ❸ .
4) Pull out the four connectors (CN201, CN202, CN203, CN204) ❹ .
5) Remove the DR-35 board ❺ from the two ditches ❻ .



2-13. REMOVAL OF POWER BLOCK (DS-16 BOARD)

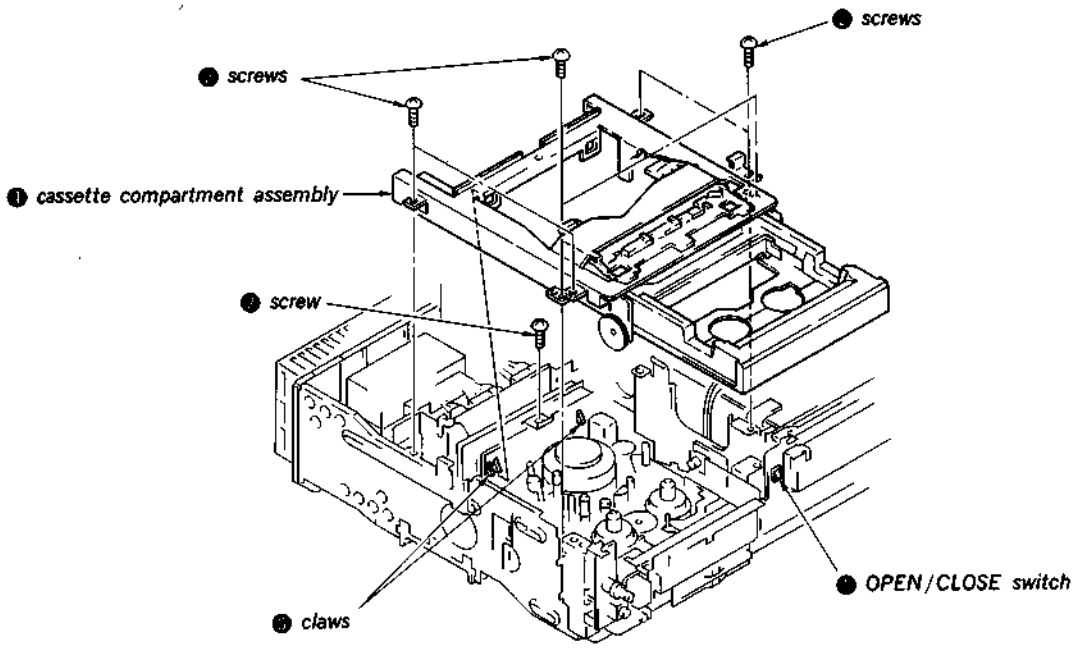
1) Refer to the "REMOVAL OF DT-63", and remove the DT-63 board.
2) Remove the four screws ❶ .
3) Pull out the two connectors (CN102, CN401) ❷ .
4) Remove the power block (DS-16 board) ❸ .
5) Remove the two rivets ❹ .
6) Remove the insulator ❺ .



2-14. REMOVAL OF CASSETTE COMPARTMENT ASSEMBLY

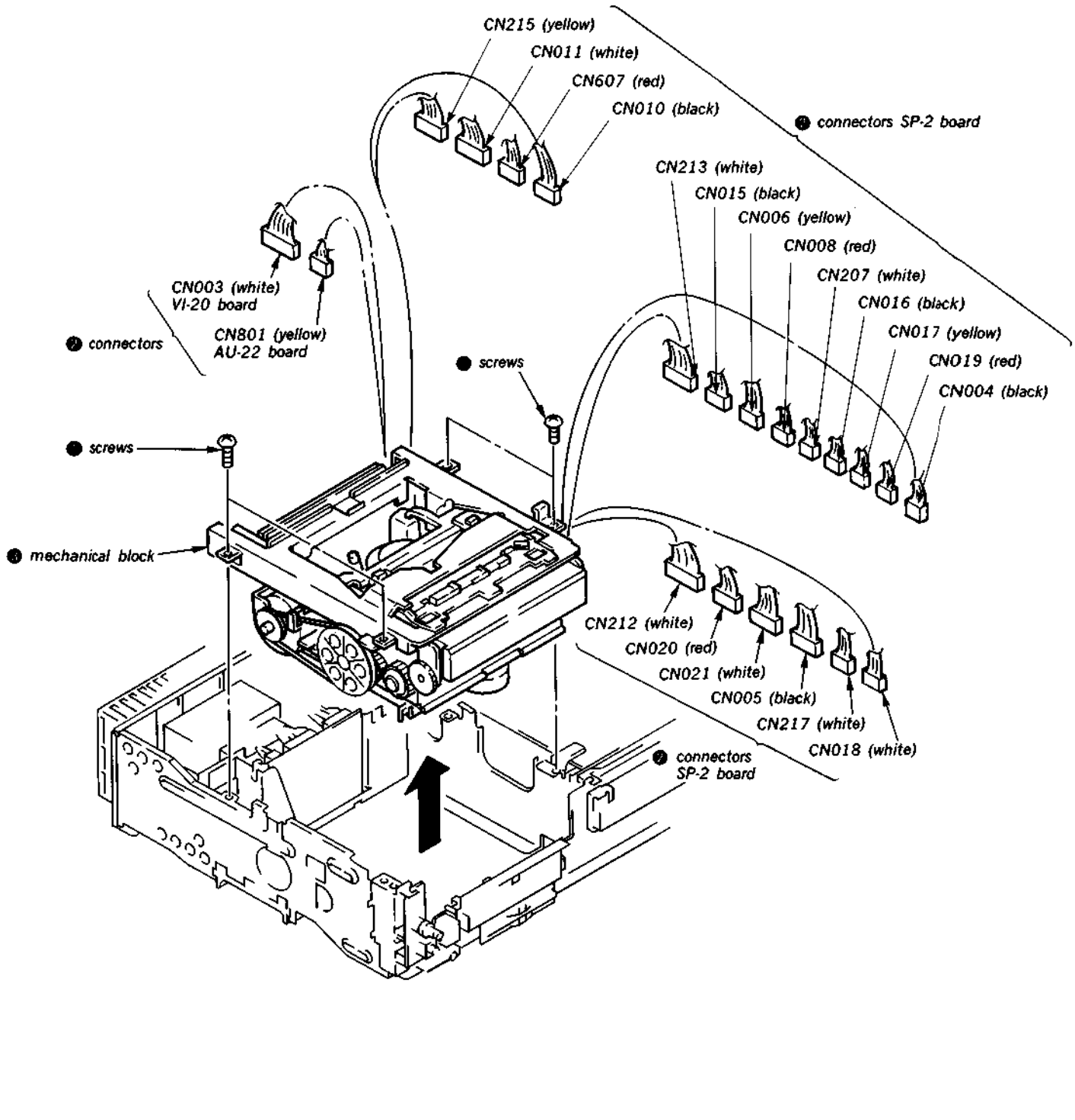
1) Turn on the power and push the OPEN/CLOSE switch ❶ then put the cassette compartment assembly ❷ in the OPEN state.
2) Remove the seven screws ❸ .
3) Take off the two claws ❹ and remove the cassette compartment assembly ❷ .

Note: After performing OPEN state, be sure to turn off the power before separating the assembly



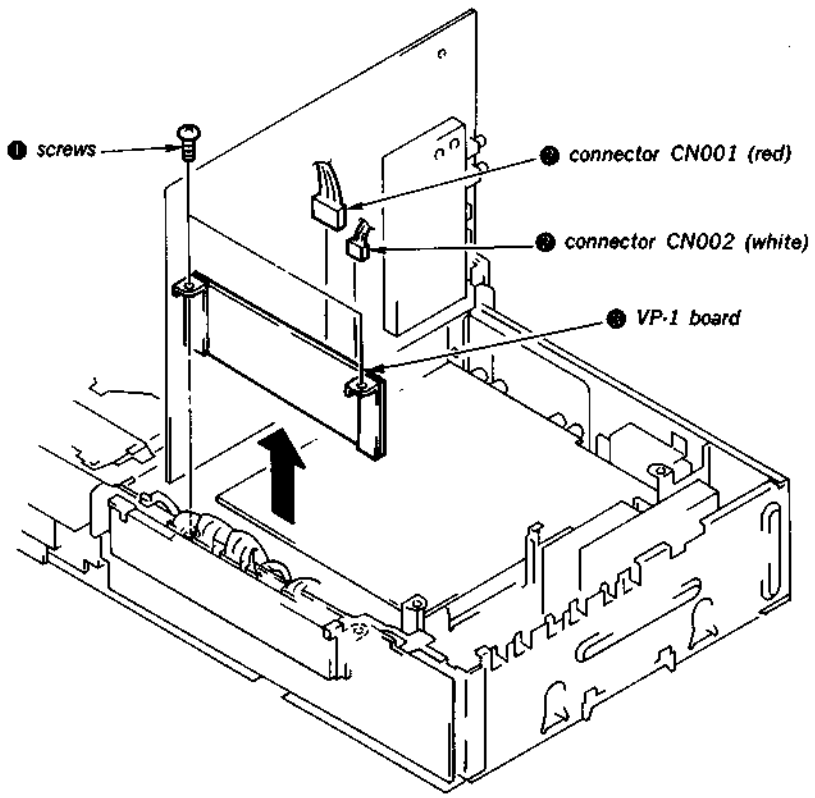
2-15. REMOVAL OF MECHANICAL BLOCK

1) Remove the four screws ❶ .
2) Pull out the twenty one connectors (CN212, CN020, CN021, CN005, CN217, CN018, CN213, CN015, CN006, CN008, CN207, CN016, CN017, CN019, CN004, CN215, CN011, CN607, CN010, CN003, CN801) ❷ .
3) Remove the mechanical block ❸ in the direction shown by the arrow.



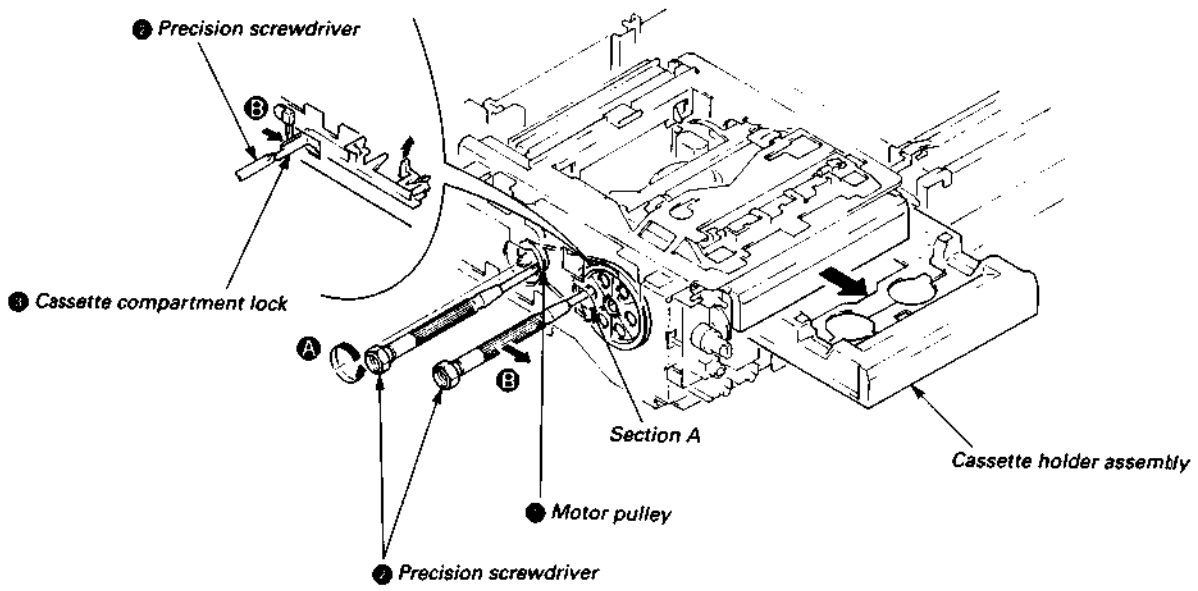
2-16. REMOVAL OF VP-1 BOARD

1) Refer to the "REMOVAL OF SP-2 BOARD", and open the SP-2 board.
2) Remove the two screws ❶ .
3) Pull out the two connectors (CN001, CN002) ❷ .
4) Remove the VP-1 board ❸ in the direction shown by the arrow.



2-17. METHOD OF EJECTING A CASSETTE TAPE WITHOUT TURNING THE POWER ON

1) Remove the upper case. (Refer to 2-1. Disassembly)
2) Insert the precision screwdriver ❷ into the motor pulley ● , and rotate it about half turn in the direction of arrow Ⓐ . (The motor pulley may not turn since the cassette compartment assembly is locked. But, never try to rotate it forcibly.)
3) With the precision screwdriver ❷ etc. placed into Section A, press the cassette compartment lock ❸ in the direction of arrow Ⓑ to unlock it.
4) Place the precision screwdriver ● again to the motor pulley ● , and rotate it in the direction of arrow Ⓐ until the cassette tape has been ejected.



2-18. METHOD FOR REPLACEMENT OF CASSETTE HOLDER ASSEMBLY

1. Removal

1) Remove the cassette compartment assembly in accordance with procedures desribed in Section 2, 2-14. (Subsequent works should be performed with the cassette compartment assembly upside down.)
2) While rotating the drive gear ❶ in the direction reverse to arrow Ⓐ, remove the main gear assembly ❷ from a slot of Section A.
3) Pull up the cassette holder assembly ❸ .

2. Re-assembly

1) Mount the cassette holder assembly ❸ on the synchronizing gear assembly ❹ while keeping them in parallel. (For detailed re-assembly procedures, refer to Paragraphs ① to ③ given below.)
   ① Engage about half gears of Rack A of the cassette holder assembly ❸ with either left or right synchronizing gear assembly ❹ .

Note: Front and rear Rack A should be simultaneously engaged with the synchronizing gears, and numbers of the engaging teeth should be identical.

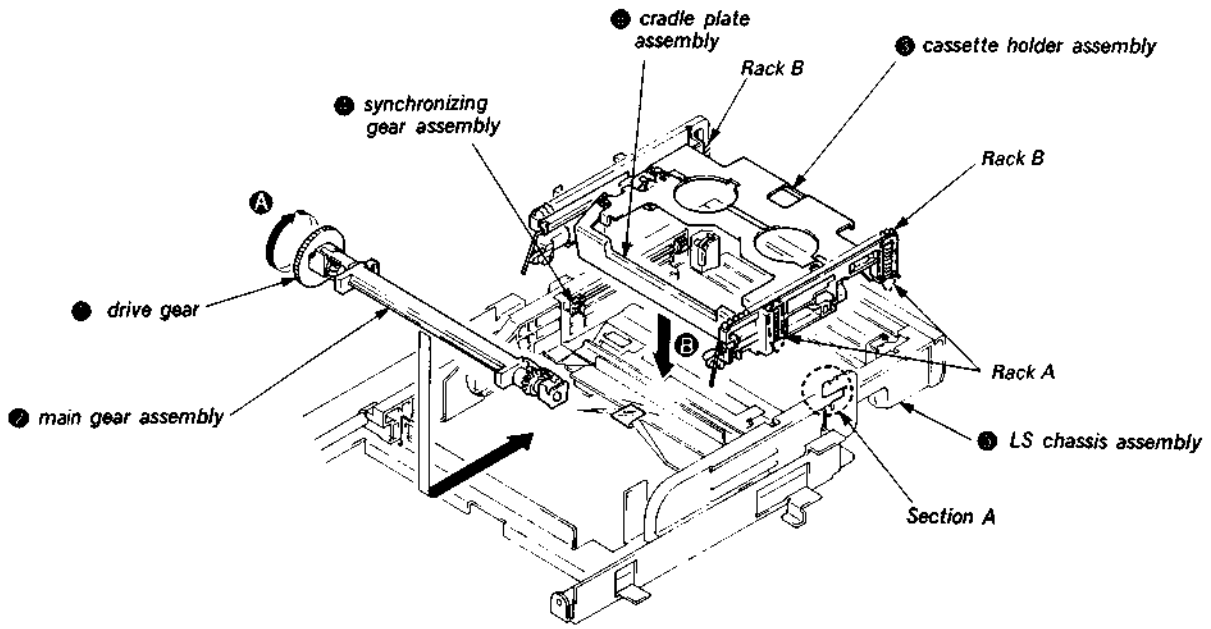
   ② Similarily, engage a remaining synchronizing gear assembly ❹ with Rack A.
   ③ Make sure that numbers of the engaging teeth of 4 Rack A and synchronizing gear assembly ❹ are identical. Then, press the cassettte holder assembly ❸ in the direction of arrow Ⓑ .

Note: Make sure that Rack B of the cassette holder assembly ❸ and a top of the LS chassis assembly are levelled (as viewed from the reverse side). If not levelled, repeat steps ① to ③.

2) Pull out the LS chassis assembly ❺ to the front side, and mount the main gear assembly ❷ in a slot of Section A.
3) Rotating the drive gear ❶ in the direction of arrow Ⓐ, engage Rack B of the cassette holder assembly ❸ with left and right main gears simultaneously.
4) Rotating the drive gear ❶ in the direction of arrow Ⓐ, make sure that the cassette holder assembly ❸ moves up smoothly (as viewed from the reverse side).

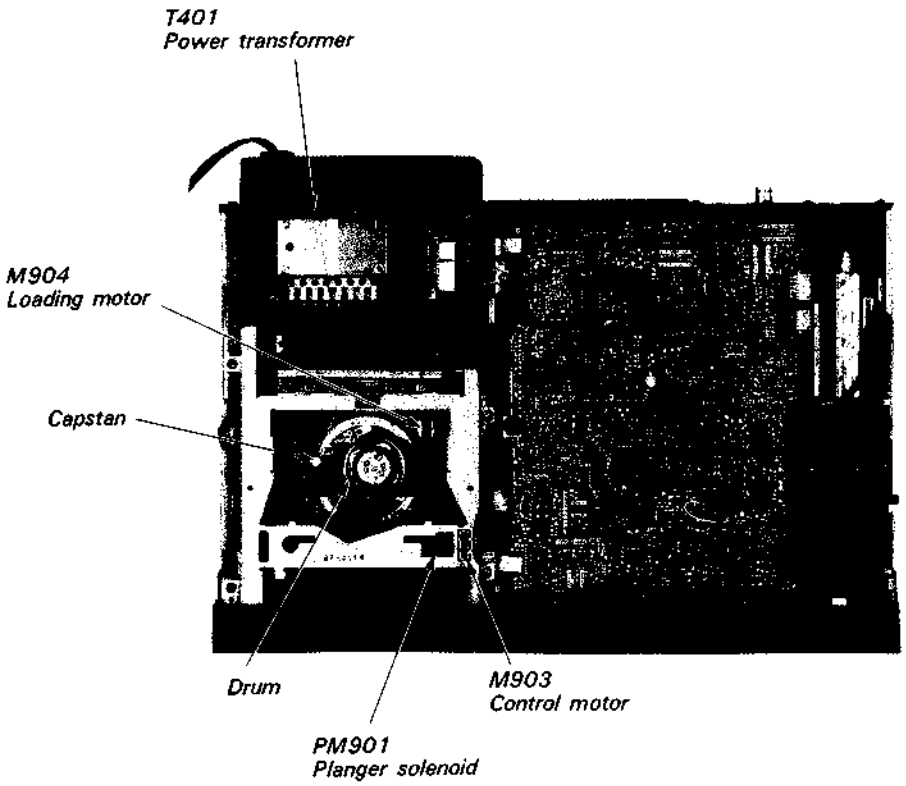
Note: Care should be taken so that the cassette holder assembly ❸ is not detached. The cradle plate assembly ❻ is likely to be caught by the chassis when the driver gear ❶ is rotated with the cassette compartment assembly upside down.

5) Mount the cassette compartment assembly in the procedures reverse to those described in 2-14.

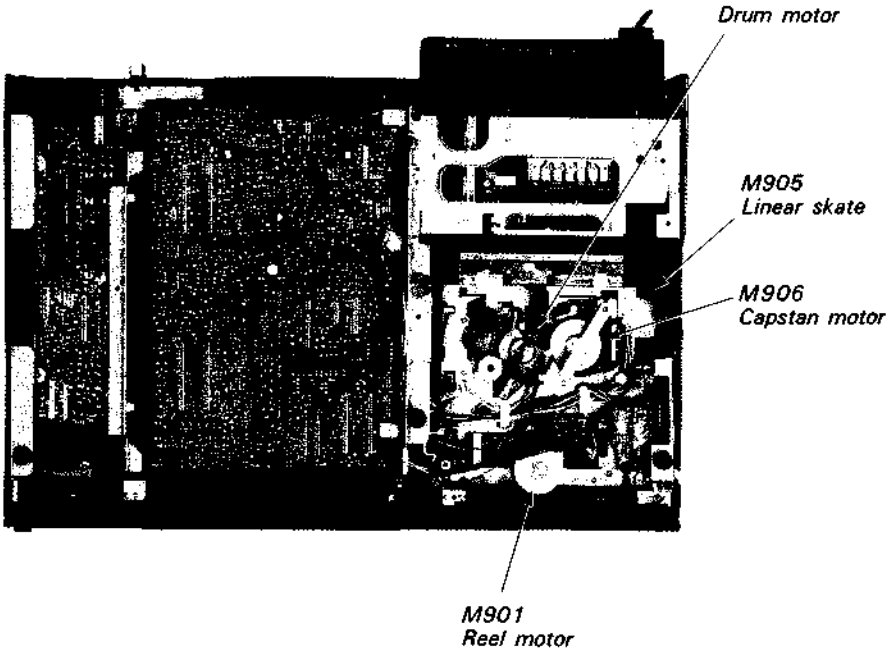


2-19. INTERNAL VIEWS

—Top side—

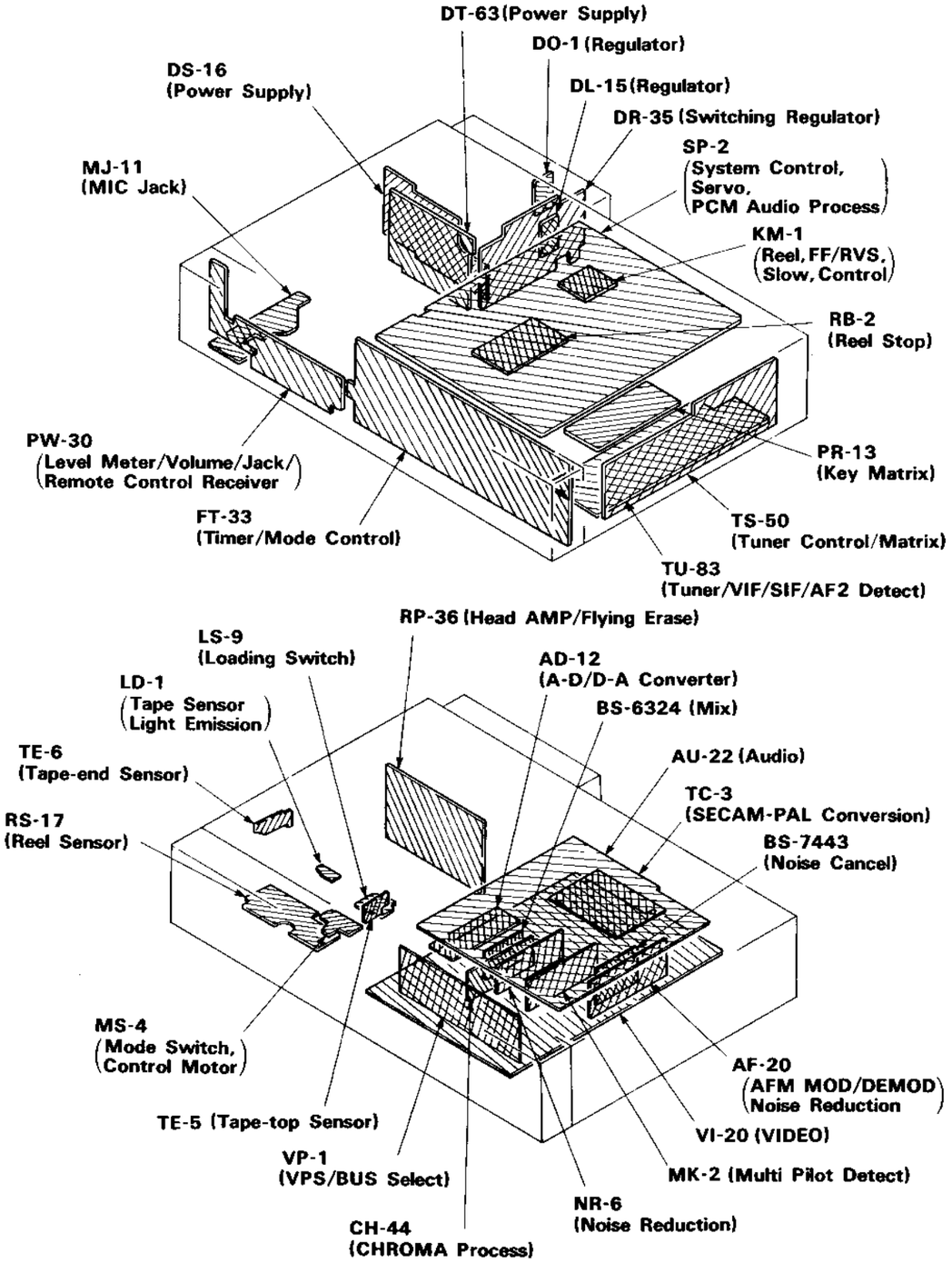


—Bottom side—

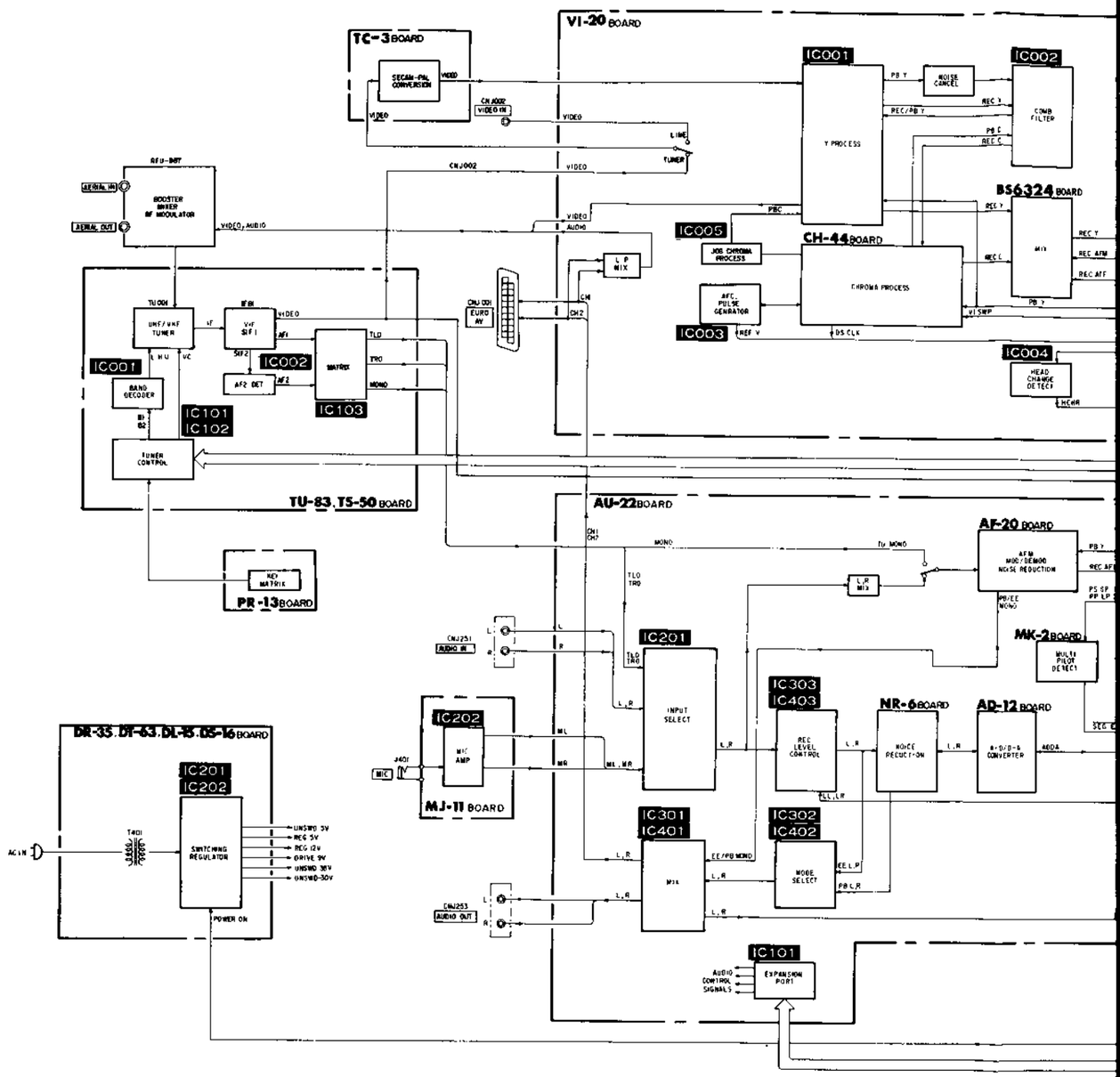


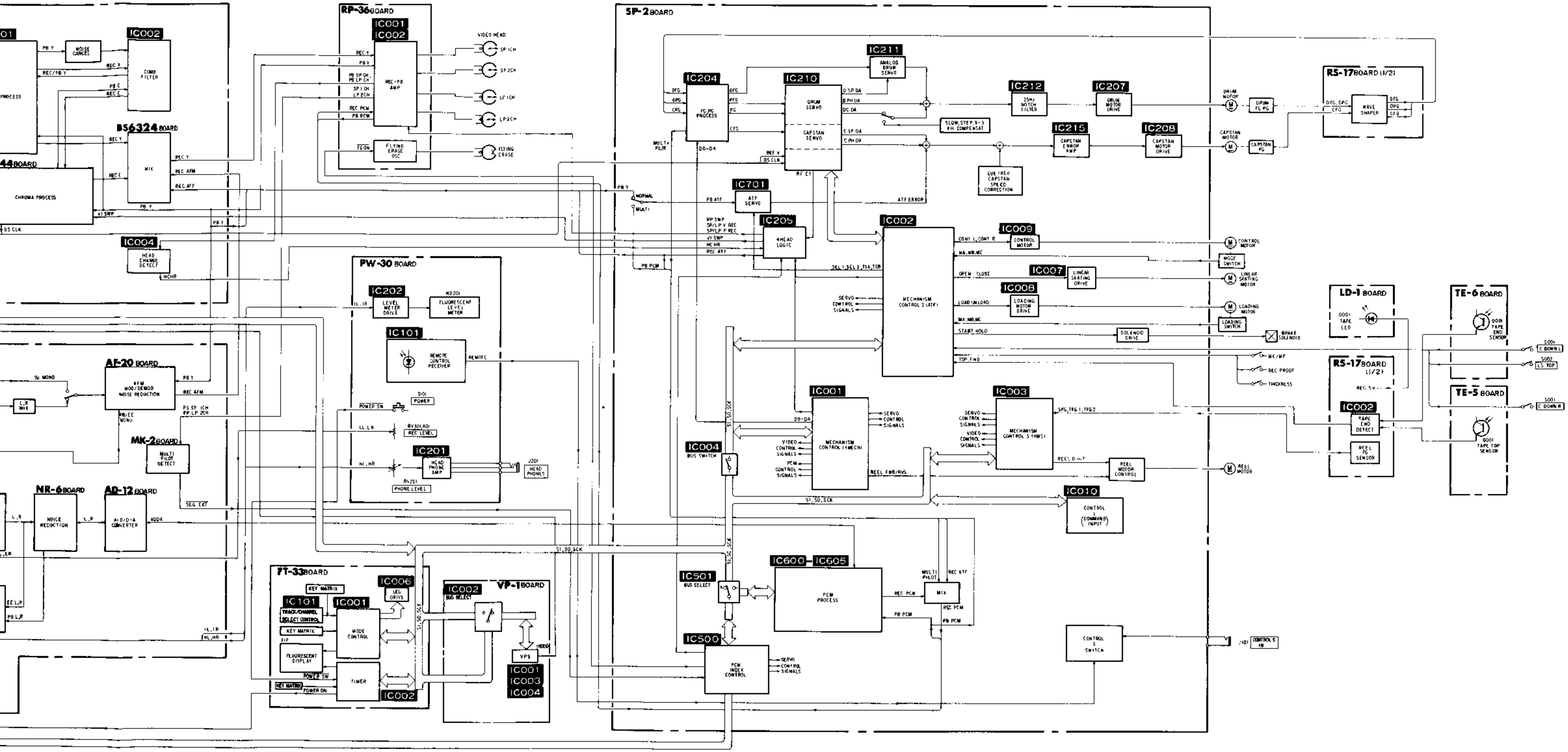
SECTION 3
DIAGRAM

3-1. CIRCUIT BOARDS LOCATION

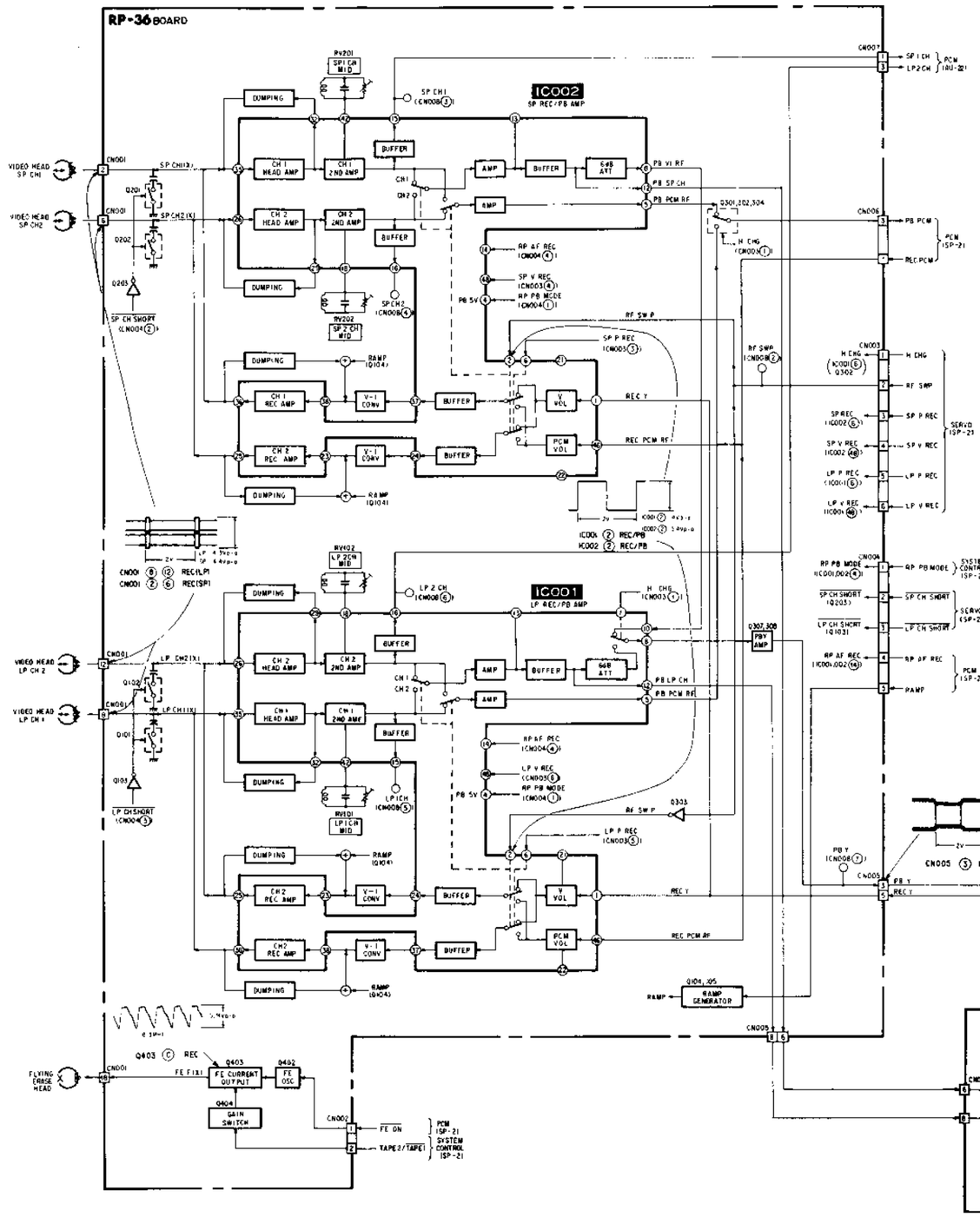


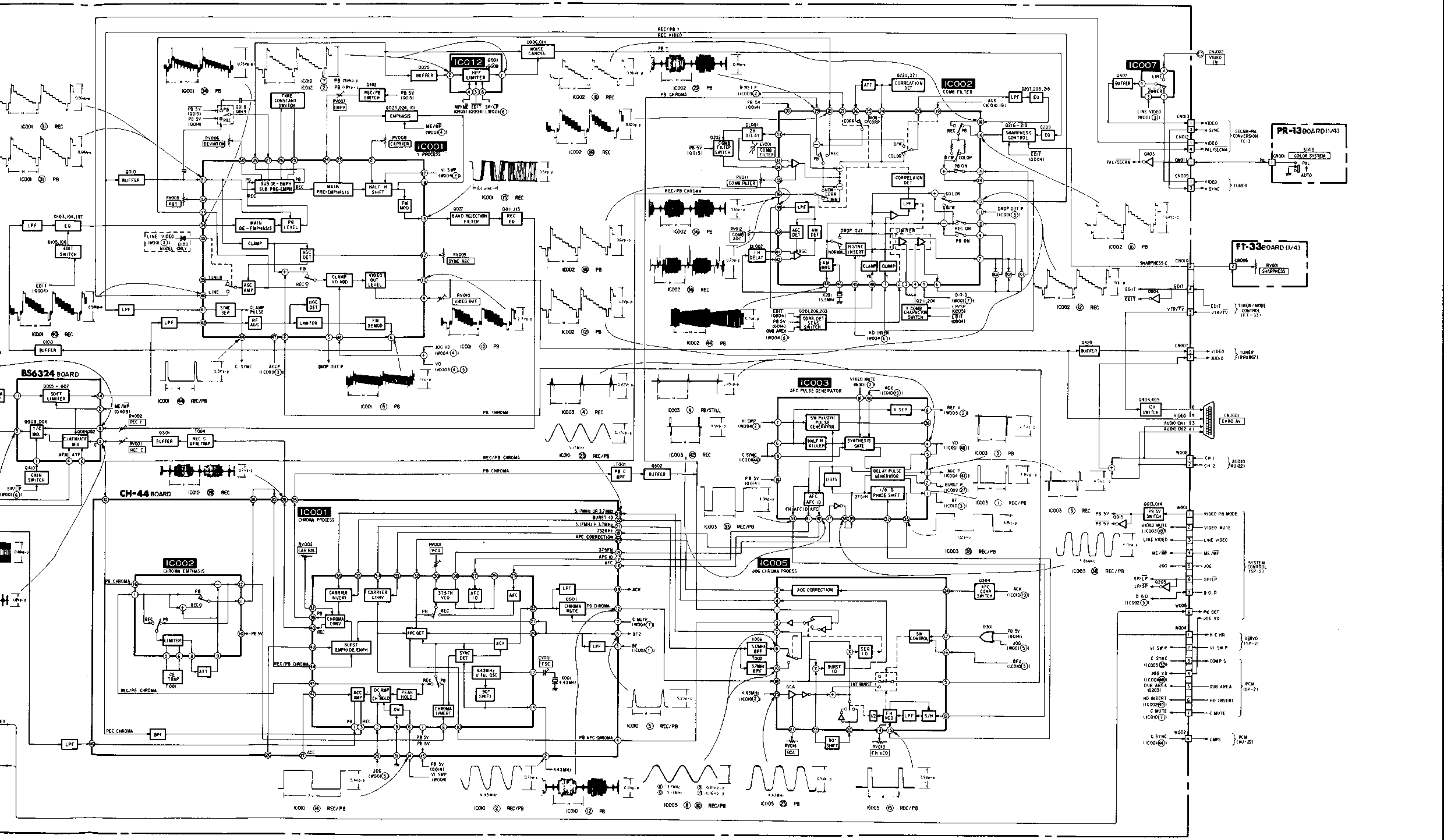
3-2. OVERALL BLOCK DIAGRAM



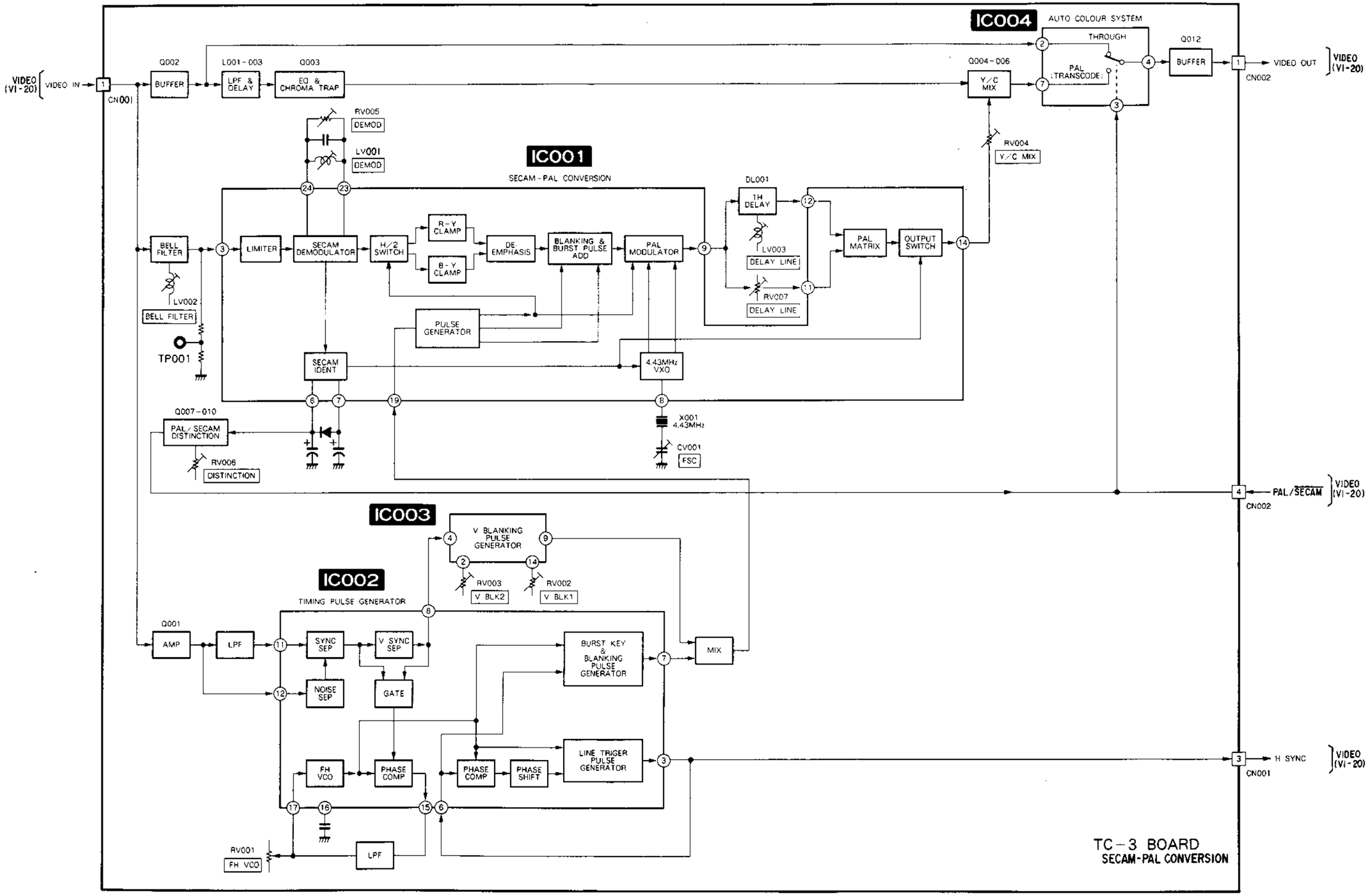

RP-36 BOARD
IC001
IC002
REC/PB AMP
VIDEO HEAD
FLYING ERASE OSC
FLYING ERASE
BS6324 BOARD
MIX
IC002
COMB FILTER
NOISE CANCEL
CHROMA PROCESS
IC004
HEAD CHANGE DETECT
PW-30 BOARD
IC202
LEVEL METER DRIVE
FLUORESCENT LEVEL METER
IC101
REMOTE CONTROL RECEIVER
POWER SW
REC LEVEL
IC201
HEAD PHONE AMP
HEAD PHONES
PHONE LEVEL
AF-20 BOARD
AFM MOD/DEMOD NOISE REDUCTION
MK-2 BOARD
MULTI PILOT DETECT
NR-6 BOARD
NOISE REDUCTION
AD-12 BOARD
A-D/D-A CONVERTER
FT-33 BOARD
KEY MATRIX
IC006
LED DRIVE
IC101
TRACK/CHANNEL SELECT CONTROL
IC001
MODE CONTROL
FLUORESCENT DISPLAY
TIMER
IC002
VP-1 BOARD
IC002
BUS SELECT
VPS
IC001
IC003
IC004
SP-2 BOARD
IC204
FG PG PROCESS
IC210
DRUM SERVO
CAPSTAN SERVO
IC211
ANALOG DRUM SERVO
IC212
25Hz NOTCH FILTER
IC207
DRUM MOTOR DRIVE
IC215
CAPSTAN ERROR AMP
IC208
CAPSTAN MOTOR DRIVE
SLOW,STEP,X-3 FH COMPENSAT
CUE/REV CAPSTAN SPEED CORRECTION
IC701
ATF SERVO
IC205
4HEAD LOGIC
IC002
MECHANISM CONTROL 2 (ATF)
IC009
CONTROL MOTOR
IC007
LINEAR SKATING DRIVE
IC008
LOADING MOTOR DRIVE
SOLENOID DRIVE
BRAKE SOLENOID
MODE SWITCH
LOADING SWITCH
IC001
MECHANISM CONTROL 1 (MECH)
IC003
MECHANISM CONTROL 3 (RMS)
REEL MOTOR CONTROL
REEL MOTOR
IC004
BUS SWITCH
IC010
CONTROL 1 (COMMAND) INPUT
IC501
BUS SELECT
IC600-IC605
PCM PROCESS
MIX
IC500
PCM INDEX CONTROL
CONTROL S SWITCH
CONTROL S IN
RS-17 BOARD (1/2)
WAVE SHAPER
DRUM MOTOR
CAPSTAN MOTOR
CONTROL MOTOR
LINEAR SKATING MOTOR
LOADING MOTOR
LD-1 BOARD
TAPE LED
RS-17 BOARD (1/2)
IC002
TAPE END DETECT
REEL FG SENSOR
TE-6 BOARD
TAPE END SENSOR
TE-5 BOARD
TAPE TOP SENSOR
REC PROOF
THICKNESS

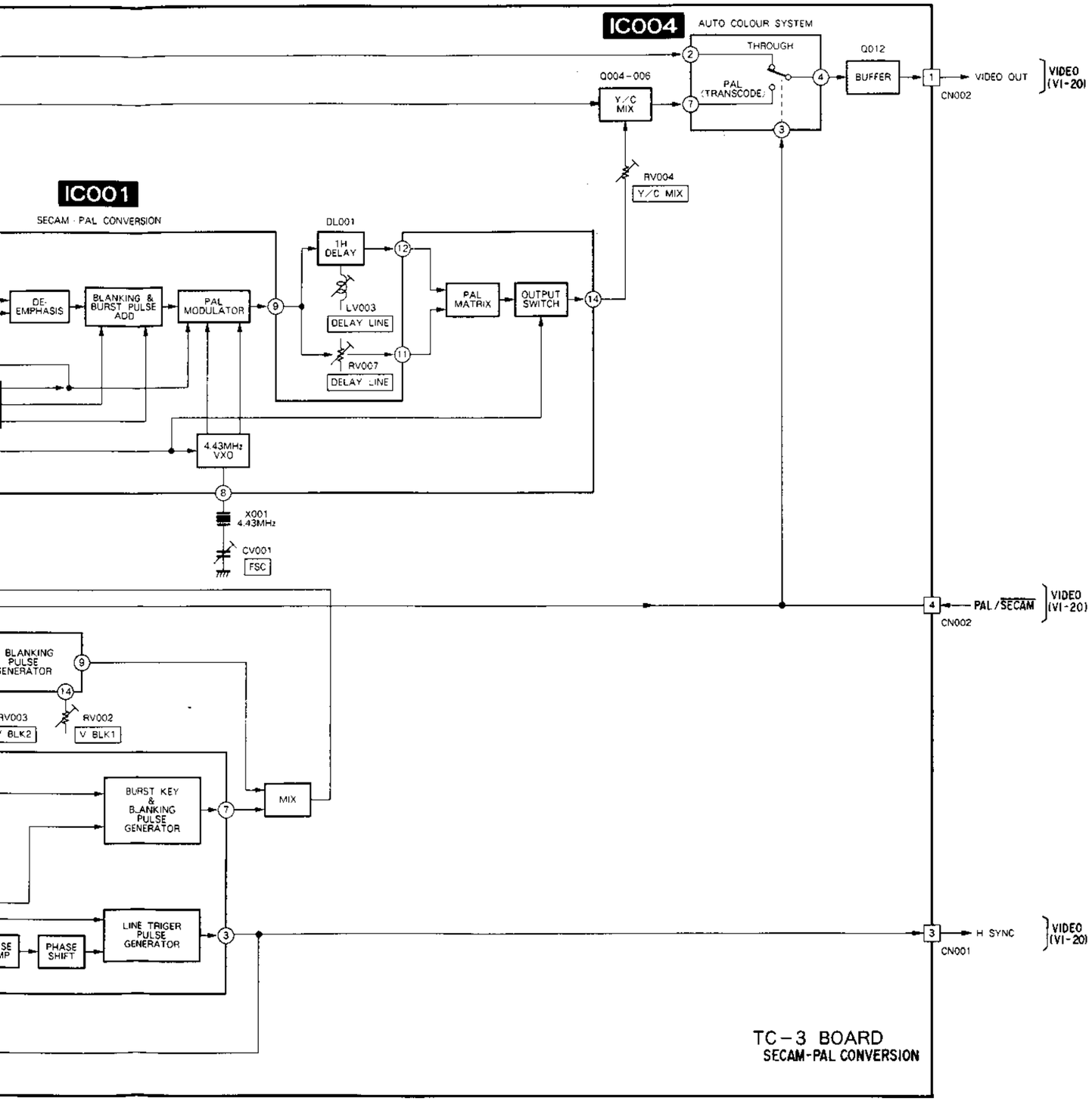
3-3. VIDEO BLOCK DIAGRAM



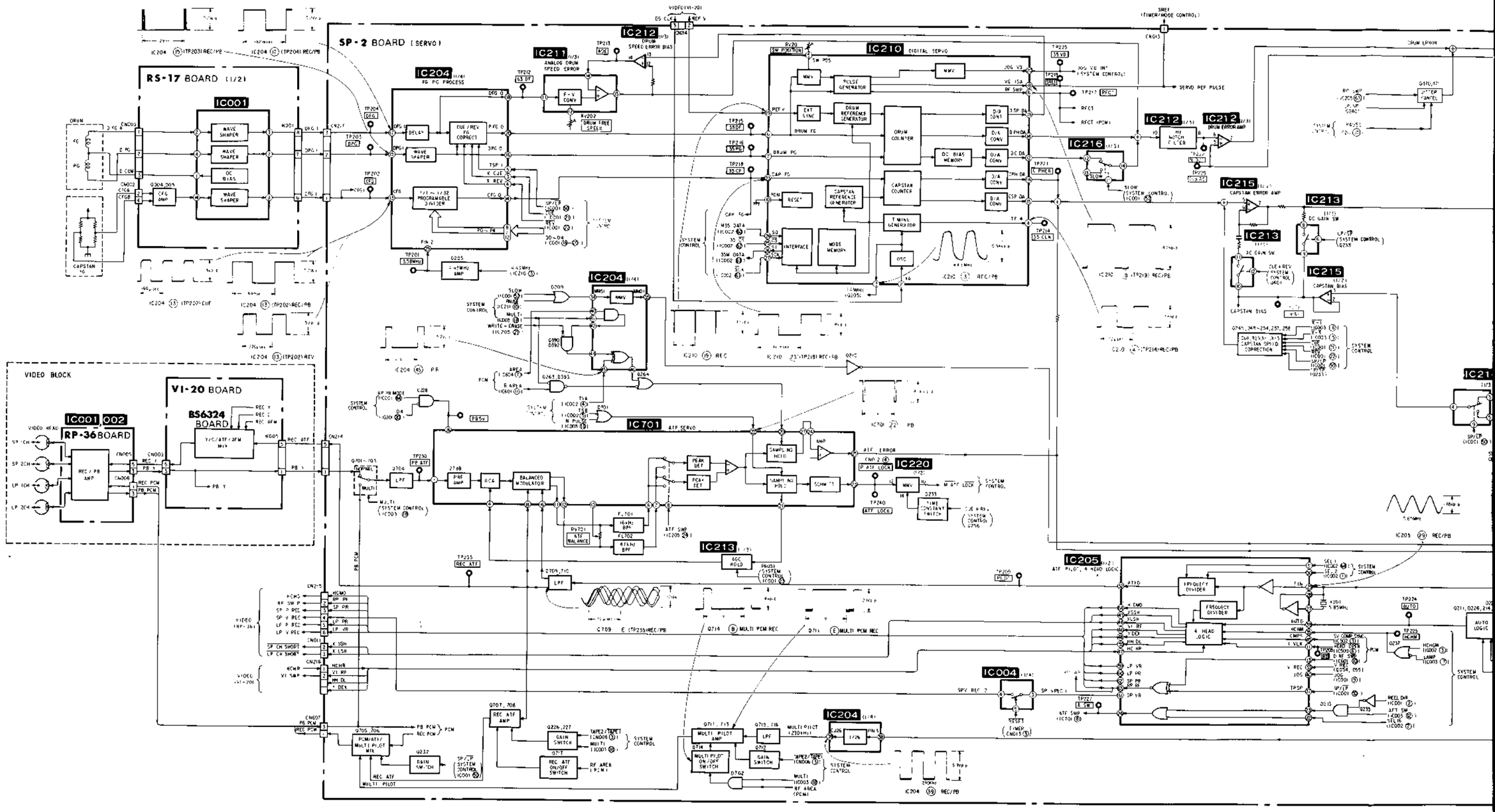

IC001
Y PROCESS
IC012
IC002
COMB FILTER
IC007
PR-13 BOARD (1/4)
FT-33 BOARD (1/4)
BS6324 BOARD
CH-44 BOARD
IC001
CHROMA PROCESS
IC002
CHROMA EMPHASIS
IC003
AFC PULSE GENERATOR
IC005
JOG CHROMA PROCESS

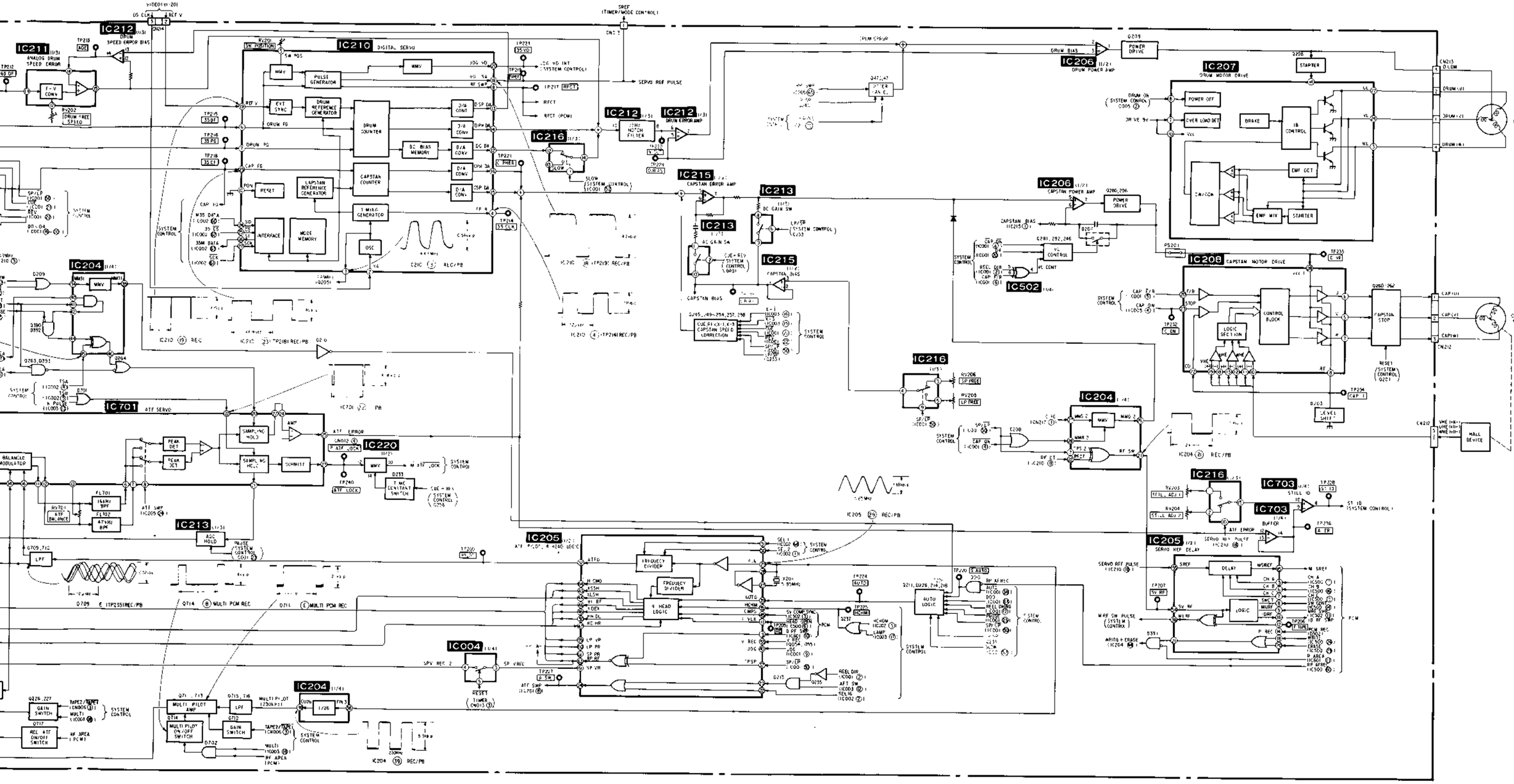
3-4. SECAM/PAL CONVERSION BLOCK DIAGRAM



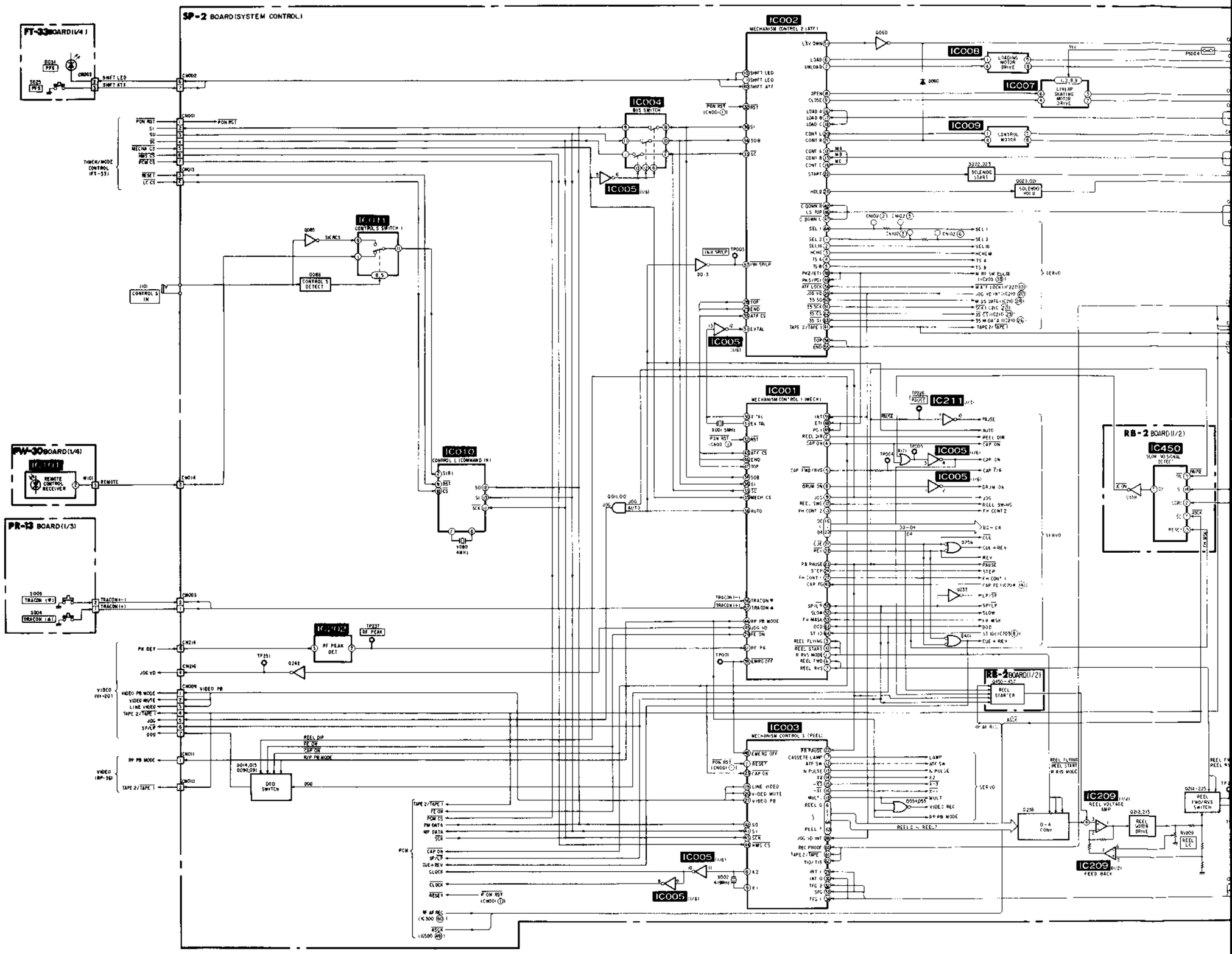

IC004
AUTO COLOUR SYSTEM
THROUGH
PAL (TRANSCODE)
Q012
BUFFER
Q004-006
Y/C MIX
VIDEO OUT
CN002
VIDEO (VI-20)
RV004
Y/C MIX
IC001
SECAM - PAL CONVERSION
DL001
1H DELAY
LV003
DELAY LINE
RV007
DELAY LINE
DE-EMPHASIS
BLANKING & BURST PULSE ADD
PAL MODULATOR
PAL MATRIX
OUTPUT SWITCH
4.43MHz VXO
X001 4.43MHz
CV001 FSC
PAL/SECAM
CN002
VIDEO (VI-20)
BLANKING PULSE GENERATOR
RV003
V BLK2
RV002
V BLK1
BURST KEY & BLANKING PULSE GENERATOR
MIX
LINE TRIGER PULSE GENERATOR
PHASE SHIFT
H SYNC
CN001
VIDEO (VI-20)
TC-3 BOARD
SECAM-PAL CONVERSION

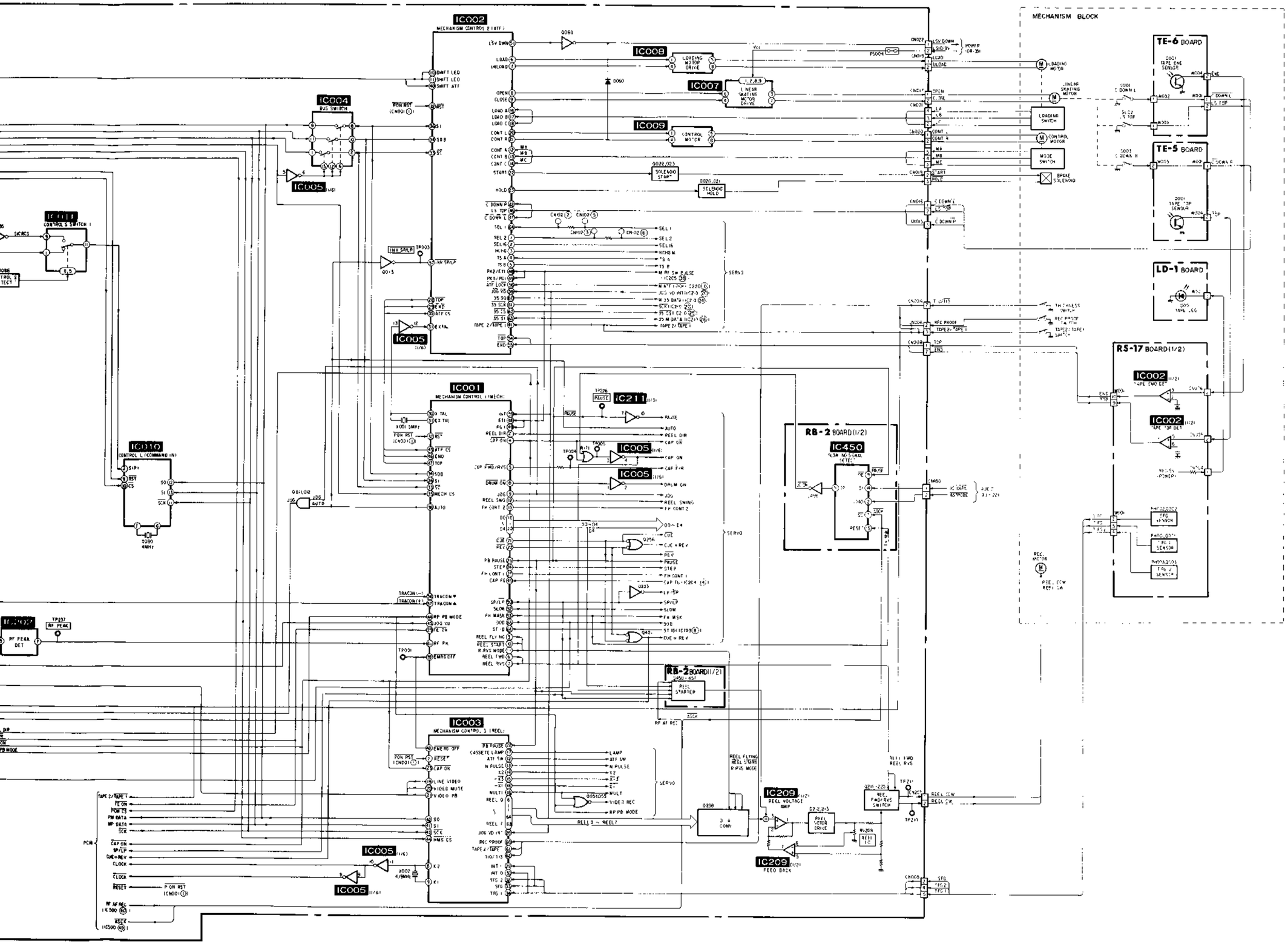
3-5. SERVO BLOCK DIAGRAM




IC212
DRUM SPEED ERROR BIAS
IC211
ANALOG DRUM SPEED ERROR
IC210
DIGITAL SERVO
PULSE GENERATOR
DRUM REFERENCE GENERATOR
DRUM COUNTER
CAPSTAN COUNTER
CAPSTAN REFERENCE GENERATOR
DC BIAS MEMORY
INTERFACE
MODE MEMORY
RESET
OSC
EXT SYNC
3 MHz GENERATOR
D/A CONV
IC216
IC212
DRUM ERROR AMP
IC215
CAPSTAN ERROR AMP
IC213
IC206
DRUM POWER AMP
CAPSTAN POWER AMP
IC207
DRUM MOTOR DRIVE
IC208
CAPSTAN MOTOR DRIVE
IC502
IC204
IC701
ATF SERVO
IC220
IC205
IC004
IC703
POWER OFF
OVER LOAD DET
BRAKE
IB CONTROL
EMF DET
EMF MIX
STARTER
LOGIC SECTION
CONTROL BLOCK
FG/PG STOP
HALL DEVICE
SAMPLING HOLD
PEAK DET
SCHMITT
AGC HOLD
LPF
FREQUENCY DIVIDER
9 HEAD LOGIC
AUTO LOGIC
DELAY
LOGIC
BUFFER
SERVO REF DELAY
SERVO REF PULSE
SYSTEM CONTROL
DRUM MOTOR
CAPSTAN MOTOR
PCM

3-6. SYSTEM CONTROL BLOCK DIAGRAM




IC002
MECHANISM CONTROL 2 (MTF)
IC004
BUS SWITCH
IC005
IC008
LOADING MOTOR DRIVE
IC007
LINEAR SKATING MOTOR DRIVE
IC009
CONTROL MOTOR
SOLENOID STOP
SOLENOID HOLD
IC011
CONTROL S SWITCH
IC010
CONTROL L (COMMAND IN)
IC001
MECHANISM CONTROL 1 (MECH)
IC211
IC450
SLOW NO SIGNAL DETECT
IC003
MECHANISM CONTROL 3 (REEL)
IC209
REEL VOLTAGE AMP
REEL VOLTAGE DRIVE
FEED BACK
MECHANISM BLOCK
LOADING MOTOR
LINEAR SKATING MOTOR
LOADING SWITCH
CONTROL MOTOR
MODE SWITCH
BRAKE SOLENOID
TE-6 BOARD
TE-5 BOARD
LD-1 BOARD
RS-17 BOARD (1/2)
RB-2 BOARD (1/2)
RB-2 BOARD (2/2)
REEL STARTER
REEL MOTOR
REEL CW
REEL CCW
TAPE END SENSOR
TAPE TOP SENSOR
FG 1 SENSOR
FG 2 SENSOR
REEL FWD/RVS SWITCH
REEL VOLTAGE SWITCH
PAUSE
AUTO
REEL DIR
CAP ON
CAP FWD
DRUM ON
JOG
REEL SWING
FF CONT 2
CUE
CUE + REV
REV
PB PAUSE
STEP
FF CONT 1
SP/LP
SLOW
FF MSK
90D
REEL FLY NG
REEL START
R/FWD MODE
REEL FWD
REEL RVS
RF PB MODE
VIDEO REC
REEL 0 ~ REEL 7
REEL FLYING
REEL START
R/FWD MODE
SERVO
TAPE 2/TAPE 1
FE ON
PCM CS
PCM DATA
MP DATA
SCK
CAP ON
SP/LP
CUE+REV
CLOCK
RESET
RF AF REC
RSCK
PCM
P ON RST
INK SW/LP
TRACON
RP PB MODE
JOG VD
FE ON
RF PK
EMRG OFF
LINE VIDEO
VIDEO MUTE
VIDEO PB
SO
SI
SCK
MMS CS
X TAL
RS
ATF CS
END
TOP
SDB
SI
SO
SCK
MECH CS
AUTO
INT
ET1
PG1
REEL DIR
CAP ON
CAP FWD/RVS
DRUM ON
JOG
REEL SWG
FF CONT 2
D0~D4
CUE
CUE + REV
REV
PB PAUSE
STEP
FF CONT 1
CAP FG
SP/LP
SLOW
FF MASK
90D
ST D
REEL FLY NG
REEL START
R/FWD MODE
REEL FWD
REEL RVS
EMRG OFF
POWER OFF
LOAD
UNLOAD
OPEN
CLOSE
LOAD A
LOAD B
LOAD C
CONT L
CONT R
CONT A
CONT B
CONT C
START
HOLD
C DOWN P
LS TOP
C DOWN L
SEL 1
SEL 2
SEL16
MCHNSM
TS A
TS B
PG2/ET1
PG3/PG1
ATF LOCK
JOG VD
35.5CD
35.5CK
35.5TS
35.5SI
TAPE 2/TAPE 1
TOP
END
INK SW/LP
ATF CS
EXT
SDB
SI
SCK
MECH CS
AUTO
TRACON
RP PB MODE
JOG VD
FE ON
RF PK
EMRG OFF
PAUSE
AUTO
REEL DIR
CAP ON
CAP FWD
DRUM ON
JOG
REEL SWING
FF CONT 2
CUE
CUE + REV
REV
PB PAUSE
STEP
FF CONT 1
CAP FG
SP/LP
SLOW
FF MSK
90D
REEL FWD
REEL RVS
REEL 0 ~ REEL 7
REEL FLYING
REEL START
R/FWD MODE
RF AF REC
RSCR
P ON RST
TAPE 2/TAPE 1
FE ON
PCM CS
PCM DATA
MP DATA
SCK
CAP ON
SP/LP
CUE+REV
CLOCK
RESET
RF AF REC
RSCR
LSV DOWN
LOAD
UNLOAD
OPEN
CLOSE
LOAD A
LOAD B
LOAD C
CONT L
CONT R
CONT A
CONT B
CONT C
START
HOLD
C DOWN P
LS TOP
C DOWN L
SEL 1
SEL 2
SEL16
MCHNSM
TS A
TS B
PG2/ET1
PG3/PG1
ATF LOCK
JOG VD
35.5CD
35.5CK
35.5TS
35.5SI
TAPE 2/TAPE 1
TOP
END
ATF CS
EXT
SDB
SI
SCK
MECH CS
AUTO
TRACON
RP PB MODE
JOG VD
FE ON
RF PK
EMRG OFF
PAUSE
AUTO
REEL DIR
CAP ON
CAP FWD/RVS
DRUM ON
JOG
REEL SWG
FF CONT 2
CUE
CUE + REV
REV
PB PAUSE
STEP
FF CONT 1
CAP FG
SP/LP
SLOW
FF MASK
90D
ST D
REEL FLY NG
REEL START
R/FWD MODE
REEL FWD
REEL RVS
REEL 0 ~ REEL 7
REEL FLYING
REEL START
R/FWD MODE
RF AF REC
RSCR
P ON RST
TAPE 2/TAPE 1
FE ON
PCM CS
PCM DATA
MP DATA
SCK
CAP ON
SP/LP
CUE+REV
CLOCK
RESET
RF AF REC
RSCR
LSV DOWN
LOAD
UNLOAD
OPEN
CLOSE
LOAD A
LOAD B
LOAD C
CONT L
CONT R
CONT A
CONT B
CONT C
START
HOLD
C DOWN P
LS TOP
C DOWN L
SEL 1
SEL 2
SEL16
MCHNSM
TS A
TS B
PG2/ET1
PG3/PG1
ATF LOCK
JOG VD
35.5CD
35.5CK
35.5TS
35.5SI
TAPE 2/TAPE 1
TOP
END
ATF CS
EXT
SDB
SI
SCK
MECH CS
AUTO
TRACON
RP PB MODE
JOG VD
FE ON
RF PK
EMRG OFF
PAUSE
AUTO
REEL DIR
CAP ON
CAP FWD/RVS
DRUM ON
JOG
REEL SWG
FF CONT 2
CUE
CUE + REV
REV
PB PAUSE
STEP
FF CONT 1
CAP FG
SP/LP
SLOW
FF MASK
90D
ST D
REEL FLY NG
REEL START
R/FWD MODE
REEL FWD
REEL RVS
REEL 0 ~ REEL 7
REEL FLYING
REEL START
R/FWD MODE
RF AF REC
RSCR
P ON RST
TAPE 2/TAPE 1
FE ON
PCM CS
PCM DATA
MP DATA
SCK
CAP ON
SP/LP
CUE+REV
CLOCK
RESET
RF AF REC
RSCR

3-7. SYSTEM CONTROL — REC PAUSE BLOCK INTERFACE

SIGNAL \ MODE	I/O	Pin No.	STOP	FF	REW	SEARCH	–SEARCH	REC	REC PAUSE	AF REC	AF REC PAUSE	PB	PB PAUSE
RP PB MODE	O	IC001㊹Pin	H	H	H	H	H	L	L	H	H	H	H
VIDEO REC	O	Q054 collector	L	L	L	L	L	H	L	L	L	L	L
RP AF REC	O	IC500㊿Pin	L	L	L	L	L	L	L	H	H	L	L
H CHG	O	IC002③Pin	*1	*1	*1	*1	*1	*1	*1	*1	*2	*1	*2
$\overline{\text{M FE ON}}$	O	IC500①Pin	H	H	H	H	H	*3	H	*2	H	H	H

*1 Be caused by Tape speed select
*2 Output pulse
*3 At "L" during the NORMAL or at output pulse during MULTI

3-8. SYSTEM CONTROL — VIDEO BLOCK INTERFACE

SIGNAL \ MODE	I/O	Pin No.	STOP	FF	REW	SEARCH	–SEARCH	REC	REC PAUSE	AF REC	AF REC PAUSE	PB	PB PAUSE
VIDEO PB	O	IC003㉑Pin	L	L	L	L	L	L	L	H	H	H	H
VIDEO MUTE	O	IC003⑳Pin	L	L	L	H	H	L	L	L	L	L	L
LINE VIDEO	O	IC003⑲Pin	Be cause by input s										
JOG	O	IC001⑨Pin	L	L	L	L	L	L	L	H	H	L	H
DOD	O	IC001㊸Pin	L	L	L	L	L	L	L			L	
TAPE 2/$\overline{\text{TAPE 1}}$	O	CN009④Pin	Be caused by cass										
SP/$\overline{\text{LP}}$	O	IC001㊿Pin	Be caused by Tape Spe										
JOG VD	O	IC001㊺Pin	NON						YES		NON		

3-9. SYSTEM CONTROL — CAPSTAN MOTOR BLOCK INTERFACE

SIGNAL \ MODE	I/O	Pin No.	STOP	FF	REW	SEARCH	–SEARCH	REC	REC PAUSE	AF REC	AF REC PAUSE	PB	PB PAUSE
$\overline{\text{CAP ON}}$	O	IC001④Pin	H	H	H	L	L	L	H	L	H	L	H
CAP ON	O	IC005④Pin	L	L	L	H	H	H	L	H	L	H	L
CAP $\overline{\text{FWD}}$/RVS	O	IC001⑤Pin	L	L	L	L	H	L	L	L	L	L	L
D0–D4	O	IC001⑯~⑳Pin	"1"	"1"	"1"	*2	*2	"1"	"1"	"1"	"1"	"1"	"1"
$\overline{\text{CUE}}$	O	IC001㉑Pin	H	H	H	H	H	H	H	H	H	H	H
$\overline{\text{REV}}$	O	IC00㉒Pin	H	H	H	H	H	H	H	H	H	H	H
$\overline{\text{PB PAUSE}}$	O	IC001㉓Pin	H	H	H	H	H	H	H	H	L	H	L
$\overline{-\text{x}1}$	O	IC003⑯Pin	H	H	H	H	H	H	H	H	H	H	H
$\overline{-\text{x}3}$	O	IC003⑮Pin	H	H	H	H	H	H	H	H	H	H	H

*1 Output pulse
*2 PAL "18" — "17" NTSC "25" — "24"

3-7. SYSTEM CONTROL — REC PAUSE BLOCK INTERFACE

SIGNAL \ MODE	I/O	Pin No.	STOP	FF	REW	SEARCH	–SEARCH	REC	REC PAUSE	AF REC	AF REC PAUSE	PB	PB PAUSE	x 1	– x 1	x 2	– x 2	x 9	– x 9	SLOW (1/5, 1/10)	SLOW (–1/5, –1/10)	CUE	REV
RP PB MODE	O	IC001㊹Pin	H	H	H	H	H	L	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H
VIDEO REC	O	Q054 collector	L	L	L	L	L	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
RP AF REC	O	IC500⑥Pin	L	L	L	L	L	L	L	H	H	L	L	L	L	L	L	L	L	L	L	L	L
H CHG	O	IC002③Pin	*1	*1	*1	*1	*1	*1	*1	*1	*2	*1	*2	*1	*2	*2	*2	*2	*2	*2	*2	*2	*2
$\overline{\text{M FE ON}}$	O	IC500①Pin	H	H	H	H	H	*3	H	*2	H	H	H	H	H	H	H	H	H	H	H	H	H

*1 Be caused by Tape speed select
*2 Output pulse
*3 At "L" during the NORMAL or at output pulse during MULTI

3-8. SYSTEM CONTROL — VIDEO BLOCK INTERFACE

SIGNAL \ MODE	I/O	Pin No.	STOP	FF	REW	SEARCH	–SEARCH	REC	REC PAUSE	AF REC	AF REC PAUSE	PB	PB PAUSE	x 1	– x 1	x 2	– x 2	x 9	– x 9	SLOW (1/5, 1/10)	SLOW (–1/5, –1/10)	CUE	REV
VIDEO PB	O	IC003㉑Pin	L	L	L	L	L	L	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H
VIDEO MUTE	O	IC003⑳Pin	L	L	L	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
LINE VIDEO	O	IC003⑲Pin	Be cause by input select																				
JOG	O	IC001⑨Pin	L	L	L	L	L	L	L	H	H	L	H	H	H	H	H	H	H	H	H	H	H
DOD	O	IC001⑧Pin	L	L	L	L	L	L	L			L											
TAPE 2/$\overline{\text{TAPE 1}}$	O	CN009④Pin	Be caused by cassette																				
SP/$\overline{\text{LP}}$	O	IC001⑩Pin	Be caused by Tape Speed Select																				
JOG VD	O	IC001⑮Pin	NON							YES		NON	YES										

3-9. SYSTEM CONTROL — CAPSTAN MOTOR BLOCK INTERFACE

SIGNAL \ MODE	I/O	Pin No.	STOP	FF	REW	SEARCH	–SEARCH	REC	REC PAUSE	AF REC	AF REC PAUSE	PB	PB PAUSE	x 1	– x 1	x 2	– x 2	x 9	– x 9	SLOW (1/5, 1/10)	SLOW (–1/5, –1/10)	CUE	REV
$\overline{\text{CAP ON}}$	O	IC001④Pin	H	H	H	L	L	L	H	L	H	L	H	L	L	L	L	L	L	*1	*1	L	L
CAP ON	O	IC005④Pin	L	L	L	H	H	H	L	H	L	H	L	H	H	H	H	H	H	*1	*1	H	H
CAP $\overline{\text{FWD}}$/RVS	O	IC001⑤Pin	L	L	L	L	H	L	L	L	L	L	L	L	H	L	H	L	H	*1	*1	L	H
D0–D4	O	IC001⑯~⑳Pin	"1"	"1"	"1"	*2	*2	"1"	"1"	"1"	"1"	"1"	"1"	"1"	"1"	"2"	"2"	"9"	"7"	"1"	"1"	"9"	"7"
$\overline{\text{CUE}}$	O	IC001㉑Pin	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H
$\overline{\text{REV}}$	O	IC00㉒Pin	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L
$\overline{\text{PB PAUSE}}$	O	IC001㉓Pin	H	H	H	H	H	H	H	H	L	H	L	H	H	H	H	H	H	L	L	H	H
$\overline{-\text{x 1}}$	O	IC003⑯Pin	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	H	H	H	H	H	H
$\overline{-\text{x 3}}$	O	IC003⑮Pin	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	H	H	H	H

D4 MSB
D0 LSB
(decimal notation)

*1 Output pulse
*2 PAL "18" — "17" NTSC "25" — "24"

3-10. SYSTEM CONTROL–DRUM MOTOR INTERFACE

SIGNAL \ MODE	I/O	Pin No.	STOP	FF	REW	SEARCH	–SEARCH	REC	REC PAUSE	AF REC	AF REC PAUSE	PB	PB PAUSE	×2	CUE	REV
$\overline{\text{DRUM ON}}$	O	IC001⑧Pin	H	L	L	L	L	L	L	L	L	L	L	L	L	L
STEP	O	IC001㉔Pin	L	L	L	L	L	L	L	L	L	L	L	L	L	L
FH CONT1	O	IC001㉒Pin	L	L	L	L	L	L	L	L	L	L	L	L	L	L
FH CONT2	O	IC001⑬Pin	L	L	L	L	L	L	L	L	L	L	L	L	L	L
(SLOW)	O	IC001㊷Pin	L	L	L	L	L	L	L	L	L	L	L	L	L	L
FH MASK	O	IC001㊸Pin	H	H	H	H	H	H	H	H	H	H	H	H	H	H

3-11. SYSTEM CONTROL–REEL MOTOR INTERFACE

SIGNAL \ MODE	I/O	Pin No.	STOP	FF	REW	SEARCH	–SEARCH	REC	REC PAUSE	AF REC	AF REC PAUSE	PB	PB PAUSE	×2	CUE	REV	
REEL FWD	O	IC001⑥Pin	L	H	L	H	L	H	L	H	L	H	L	H	H	L	
REEL RVS	O	IC001⑦Pin	L	L	H	L	H	L	L	L	L	L	L	L	L	H	
DOD	O	IC001㊸Pin	H/L	L	H	L	H	L	H	H	L	L	H/L	L	H	H	
REEL DIR	O	IC001②Pin	H/L	L	H	L	H	L	H	L	L	L	H/L	L	L	H	
REEL FLYING	O	IC001③Pin	L	L	L	L	L	L	L	L	L	L	L	L	L	L	
$\overline{\text{REEL START}}$	O	IC001⑩Pin	H	H	H	H	H	H	H	H	H	H	H	H	H	H	
R RVS MODE	O	IC001⑪Pin	L	L	L	L	L	L	L	L	L	L	L	L	L	L	
REEL SWG	O	IC001⑫Pin	L	L	L	L	L	L	L	L	L	L	L	L	L	L	
REEL 0 ~ 7	O	IC003①~⑥, ⑧,⑨Pin	"70"	"96"	"96" "89"＊5	"A6"	"9C"	"54"	"54"	"54"	"54"	"54"	"70"	"70"	＊3	＊3	{ REEL 7 MSB REEL 0 LSB (BCD Code)
＊5 $\overline{\text{FWD}}$	O	IC003⑩Pin	H	H	H	L	H	L	H	L	H	L	H	L	L	H	

＊3 Be caused by NTSC/PAL, SP/LP
＊5 After the digit – 15 (101001 ~)

3-12. SYSTEM CONTROL–ATF SERVO BLOCK INTERFACE

SIGNAL \ MODE	I/O	Pin No.	STOP	FF	REW	SEARCH	–SEARCH	REC	REC PAUSE	AF REC	AF REC PAUSE	PB	PB PAUSE	×2	CUE	REV
ATF SW	O	IC003⑫Pin	L	L	L	L	L	L	L	L	＊1	L	＊1	L	L	L
SEL16	O	IC002②Pin	L	L	L	L	L	＊2	L	＊2	L	＊2	L	＊2	＊2	＊2
TSA	O	IC002④Pin	L	L	L	H	H	L	L	＊2	L	＊2	L	＊2	L	L
TSB	O	IC002⑤Pin	L	L	L	H	H	L	L	＊2	L	＊2	L	＊2	L	L
MULTI	O	IC003⑱Pin	Be caused by NORMAL/MULTI select switch and Tape state													
N PULSE	O	IC003⑬Pin	L	L	L	L	L	L	L	L	＊1	L	＊1	L	L	L
TAPE 2/$\overline{\text{TAPE 1}}$	O	Q227Ⓑ	Be caused by CASSETTE													
RP PB MODE	O	IC001㊹Pin	H	H	H	H	H	L	L	H	H	H	H	H		
SEL 1	O	IC002㊹Pin	H	H	H	H	H	＊2	＊2	＊2	＊2	＊2	＊2	＊2	＊2	＊2
SEL 2	O	IC002①Pin	H	H	H	H	H	＊2	＊2	＊2	＊2	＊2	＊2	＊2	＊2	＊2
M RF SW PULSE	I	IC002㊽,㊾Pin	H/L	FIELD synchronized pulse												
JOG VD INT	I	IC001,002㊺Pin	L	Input pulse												

＊1 Output pulse
＊2 Be caused by ATF sequence

3-13. SYSTEM CONTROL–STILL BLOCK INTERFACE

SIGNAL \ MODE	I/O	Pin No.	STOP	FF	REW	SEARCH	–SEARCH	REC	REC PAUSE	AF REC	AF REC PAUSE	PB	PB PAUSE	×2	CUE	REV
RF PK	I	IC001㊶Pin	Unsettled													
STID	I	IC001㊹Pin	Unsettled													

3-14. SYSTEM CONTROL–HEAD CHANGE BLOCK INTERFACE

SIGNAL \ MODE	I/O	Pin No.	STOP	FF	REW	SEARCH	–SEARCH	REC	REC PAUSE	AF REC	AF REC PAUSE	PB	PB PAUSE	×2	CUE	REV
AUTO	O	IC001㊳Pin	L	L	L	L	L	L	L	L	L	L	L	L	L	L
LAMP	O	IC003⑰Pin	H	H	H	H	H	H	H	H	H	H	H	H	H	H
SP/$\overline{LP}$	O	IC001㊿Pin	Becaused by speed select													

3-15. SYSTEM CONTROL–AND OTHER$ BLOCK INTERFACE

SIGNAL \ MODE	I/O	Pin No.	STOP	FF	REW	SEARCH	–SEARCH	REC	REC PAUSE	AF REC	AF REC PAUSE	PB	PB PAUSE	×2	CUE	REV
$\overline{M\ ATF\ LOCK}$	O	IIC002㊺Pin	Unsettled													
CAP FG	I	IC001㊵Pin	Unsettled			＊1	＊1	＊1	Unsettled	＊1	Unsettled	＊1	Unsettled	＊1	＊1	＊1
JOG	O	IC001⑨Pin	L	L	L	L	L	L	L	H	H	L	H	H	H	H

＊1 Input pulse

3-16. SYSTEM CONTROL–AFM AUDIO BLOCK INTERFACE

SIGNAL \ MODE	I/O	Pin No.	STOP	FF	REW	SEARCH	–SEARCH	REC	REC PAUSE	AF REC	AF REC PAUSE	PB	PB PAUSE	×2	CUE	REV
IN SEL A	O	IC101⑤Pin	Be caused by input select (TUNER/LINE/SIMUL and yes or no of microphone input)													
IN SEL B	O	IC101⑥Pin														
AF SEL	O	IC101㉘Pin														
$\overline{MUTE\ R}$	O	IC101③Pin	Be caused by output select (receive a signal or STEREO/MONO/BILINGAL of playback ID and monitor switch)													
$\overline{MUTE\ L}$	O	IC101②Pin														
$\overline{PB/EE}$	O	IC101①Pin														
SP/$\overline{LP}$	O	IC101㉗Pin	Be caused by speed select													
$\overline{AUDIO\ MUTE}$	O	IC101④Pin	H	H	H	L	L	H	H	H	H	H	L	H	H	H
AF PB/REC	O	IC101㉕Pin	L	L	L	H	H	L	L		L	H	H	H	H	H
REC MUTE	O	IC101㉔Pin	H	H	H	H	H	L	H	L	H	H	H	H	H	H
AFM MUTE 1	O	IC101㉒Pin	＊1	＊1	＊1	H	H	＊1	＊1	H	H	＊2	H	＊2	H	H
×2	O	IC101⑳Pin	L	L	L	L	L	L	L	L	L	L	L	H	L	L

＊1 Be caused by the air classify of STEREO/MONO/BILINGUAL and monitor switch
＊2 Be caused by Tape ID and monitor switch

3-17. SYSTEM CONTROL–PCM AUDIO BLOCK INTERFACE

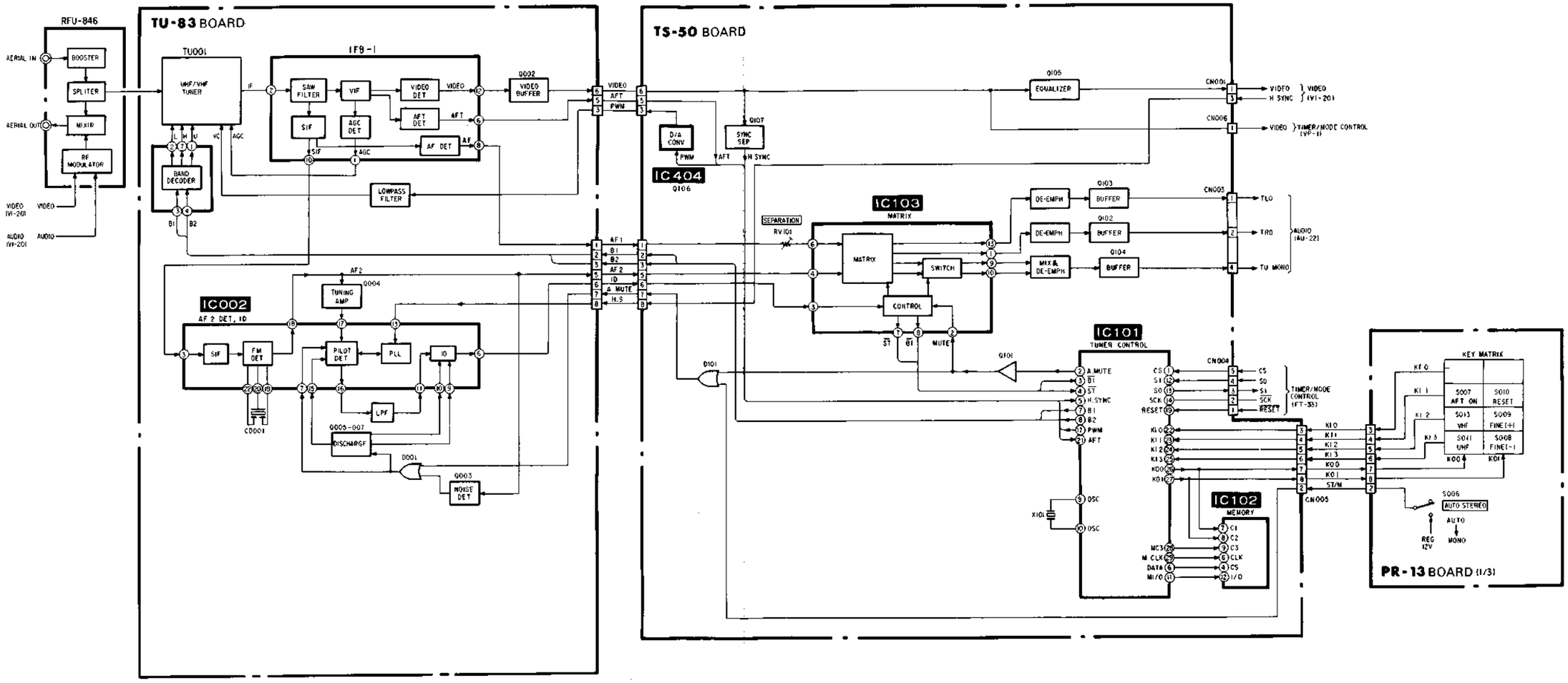
SIGNAL \ MODE	I/O	Pin No.	STOP	FF	REW	SEARCH	–SEARCH	REC	REC PAUSE	AF REC	AF REC PAUSE	PB	PB PAUSE	×2	CUE	REV
PCM ACT	I	IC500㊻Pin	L	L	L	Unsettled		H	L	H	L	Unsettled				
AF REC	O	IC500㊾Pin	L	L	L	L	L	L	L	H	L	L	L	L	L	L
PCM PB/$\overline{REC}$	O	IC500㊿Pin	H	H	H	H	H	L	H	L	H	H	H	H	H	H
LOCK	O	IC500㉒Pin	L	L	L	H	H	H	L	H	H	H	H	H	H	H
$\overline{FOH}$	O	IC500㊸Pin	H	H	H	L	H	H	H	H	H	H	H	H	H	H
FOL	O	IC500㊹Pin	L	L	L	L	H	L	L	L	L	L	L	L	L	L

3-18. SYSTEM CONTROL–MD BLOCK INTERFACE

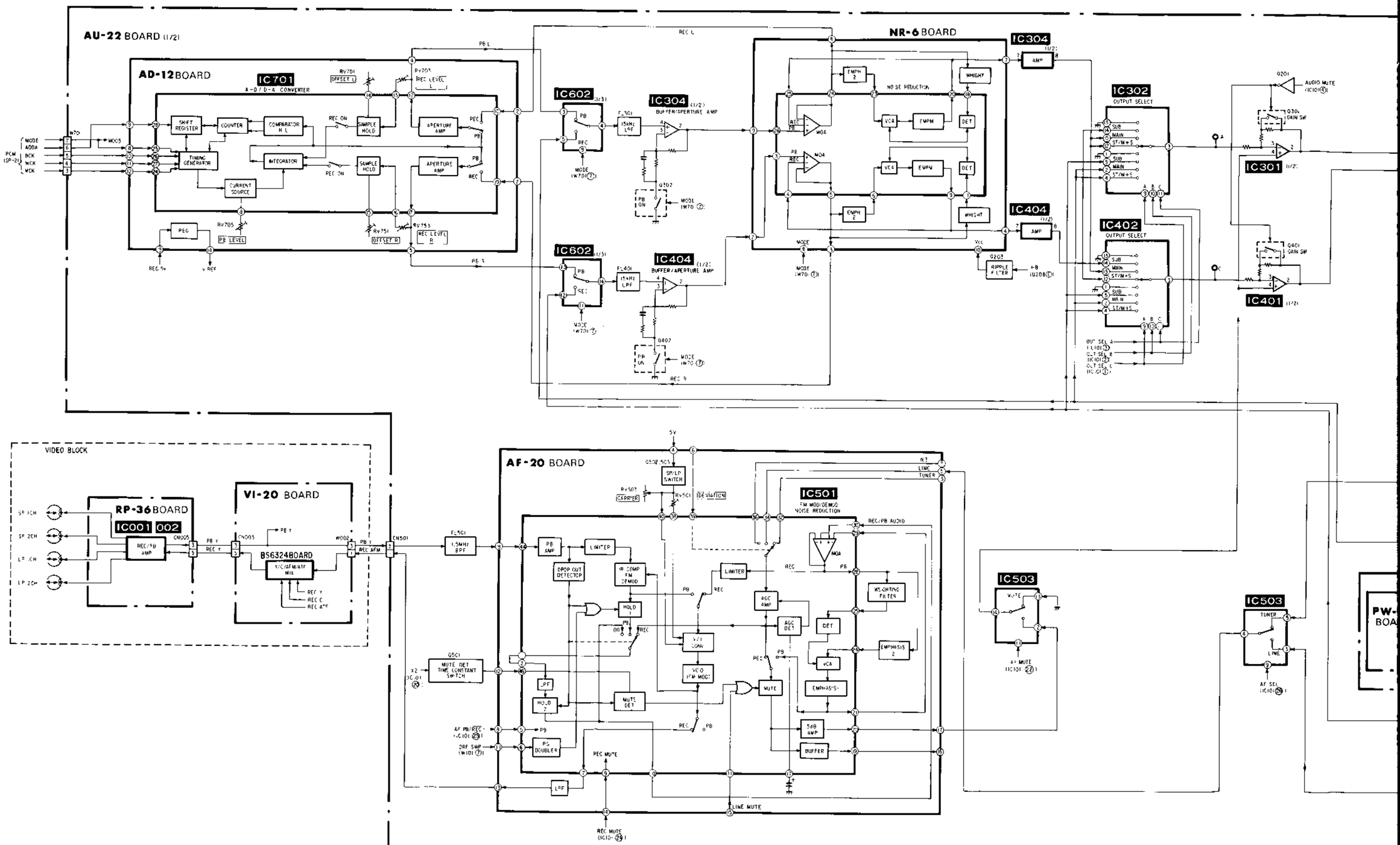
SIGNAL \ MODE	I/O	Pin No.	STOP	FF	REW	SEARCH	–SEARCH	REC	REC PAUSE	AF REC	AF REC PAUSE	PB	PB PAUSE	×2	CUE	REV
LAMP	O	IC003⑰Pin	H	H	H	H	H	H	H	H	H	H	H	H	H	H
$\overline{CDOWNL}$	I	IC002㊼Pin	L	L	L	L	L	L	L	L	L	L	L	L	L	L
$\overline{CDOWNR}$	I	IC002㊷Pin	L	L	L	L	L	L	L	L	L	L	L	L	L	L
$\overline{LSTOP}$	I	IC002㊻Pin	H	H	H	H	H	H	H	H	H	H	H	H	H	H
OPEN	O	IC003⑧Pin	L	L	L	L	L	L	L	L	L	L	L	L	L	L
CLOSE	O	IC002⑨Pin	L	L	L	L	L	L	L	L	L	L	L	L	L	L
LOAD	O	IC002⑥Pin	L	L	L	L	L	L	L	L	L	L	L	L	L	L
UNLOAD	O	IC002⑦Pin	L	L	L	L	L	L	L	L	L	L	L	L	L	L
LA ~ LC	I	IC003⑯⑰⑱Pin	"3"	"3"	"3"	"3"	"3"	"3"	"3"	"3"	"3"	"3"	"3"	"3"	"3"	"3"
CONTL	O	IC002⑳Pin	L	L	L	L	L	L	L	L	L	L	L	L	L	L
CONTR	O	IC002㉑Pin	L	L	L	L	L	L	L	L	L	L	L	L	L	L
MA ~ MC	I	IC002㉜㉝㉞Pin	"3"	"6"	"6"	"1"	"1"	"1"	"1"	"1"	"1"	"1"	"1"	"1"	"1"	"1"
$\overline{START}$	O	IC002㉒Pin	H	H	H	H	H	H	H	H	H	H	H	H	H	H
$\overline{HOLD}$	O	IC002㉓Pin	H	L	L	H	H	H	H	H	H	H	H	H	H	H
RECPROOF	I	IC003⑩Pin														
TAPE 2/$\overline{TAPE\ 2}$	I	IC003⑪Pin	Be caused be Tape state													
T10/$\overline{T13}$	I	IC003⑫Pin														
TFG1	I	IC003㉚㉛Pin	Unsettled	∗1	∗1	∗1	∗1	∗1	Unsettled	∗1	Unsettled	∗1	Unsettled	∗1	∗1	∗1
TFG2	I	IC003㉜Pin	Unsettled	∗1	∗1	∗1	∗1	∗1	Unsettled	∗1	Unsettled	∗1	Unsettled	∗1	∗1	∗1
$\overline{TOP}$	I	IC002㊹Pin	H	H	H	H	H	H	H	H	H	H	H	H	H	H
$\overline{END}$	I	IC002㊺Pin	∗2	L	L	L	L	L	L	L	L	L	L	L	L	L
SFG	I	IC003㉙㉘Pin	Unsettled	∗1	∗1	∗1	∗1	∗1	Unsettled	∗1	Unsettled	∗1	Unsettled	∗1	∗1	∗1

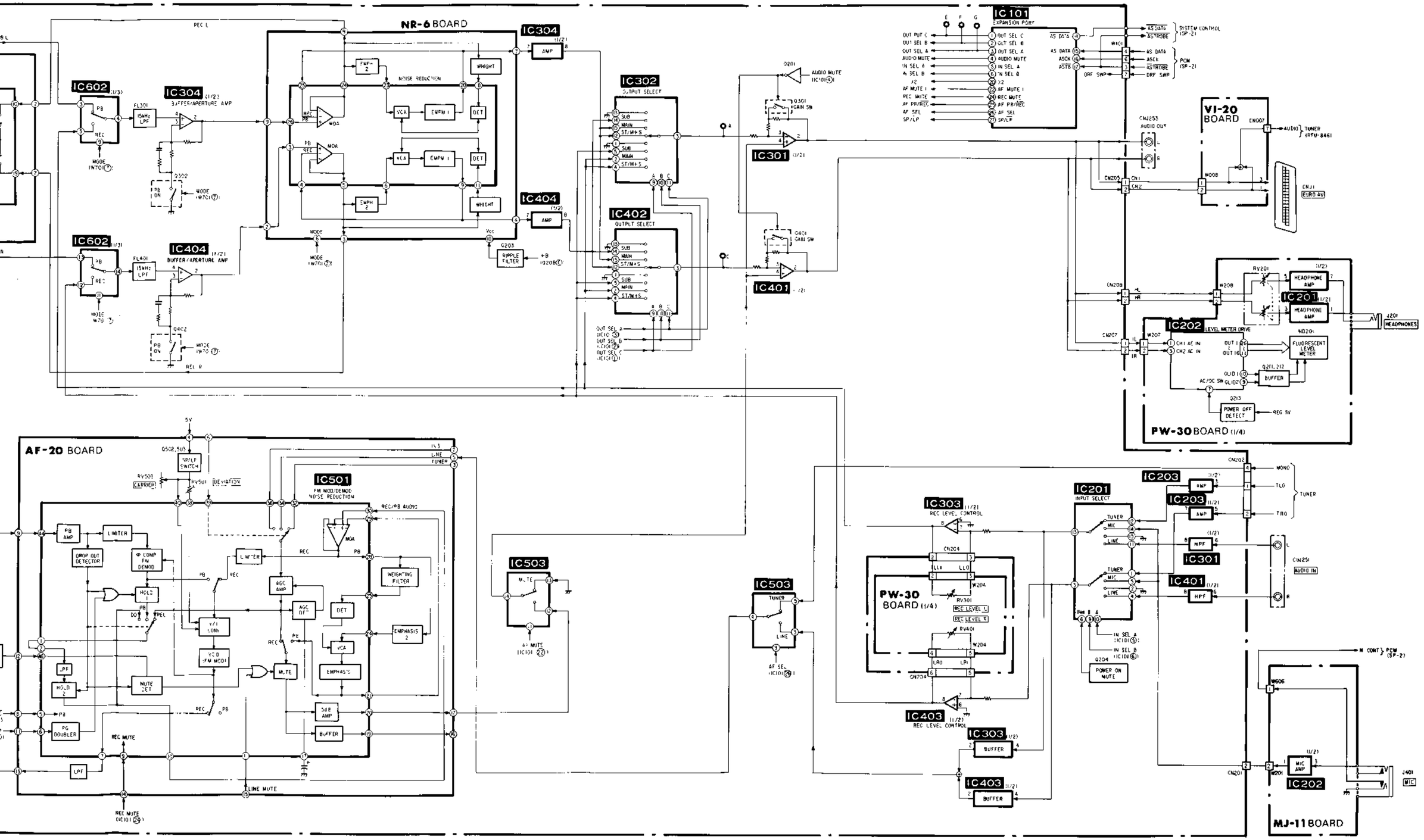
∗1 The pulse is perticipate of reel rotations
∗2 Normal...at "H", but at "L" during the Tape end

3-19. TUNER BLOCK DIAGRAM

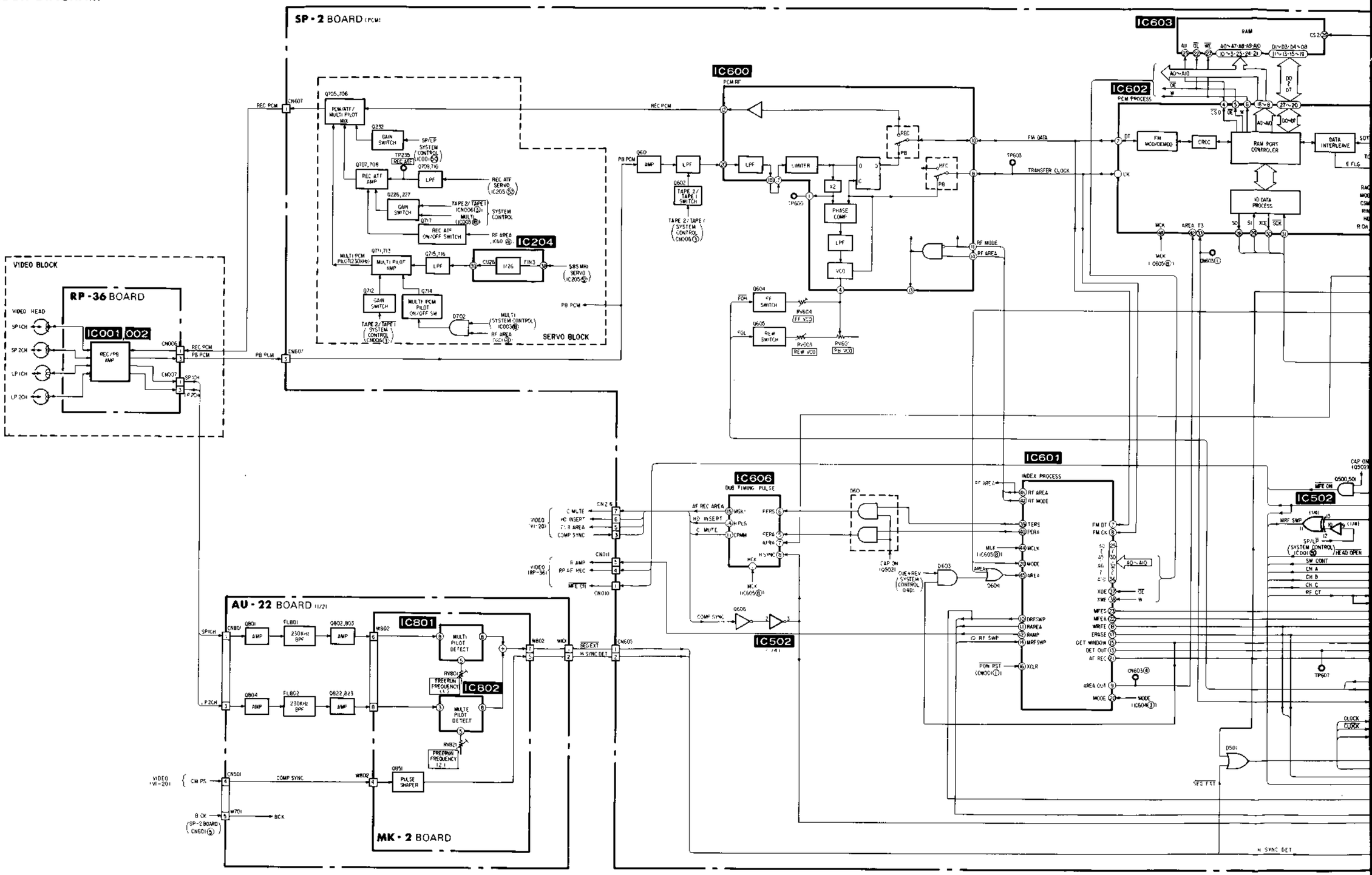


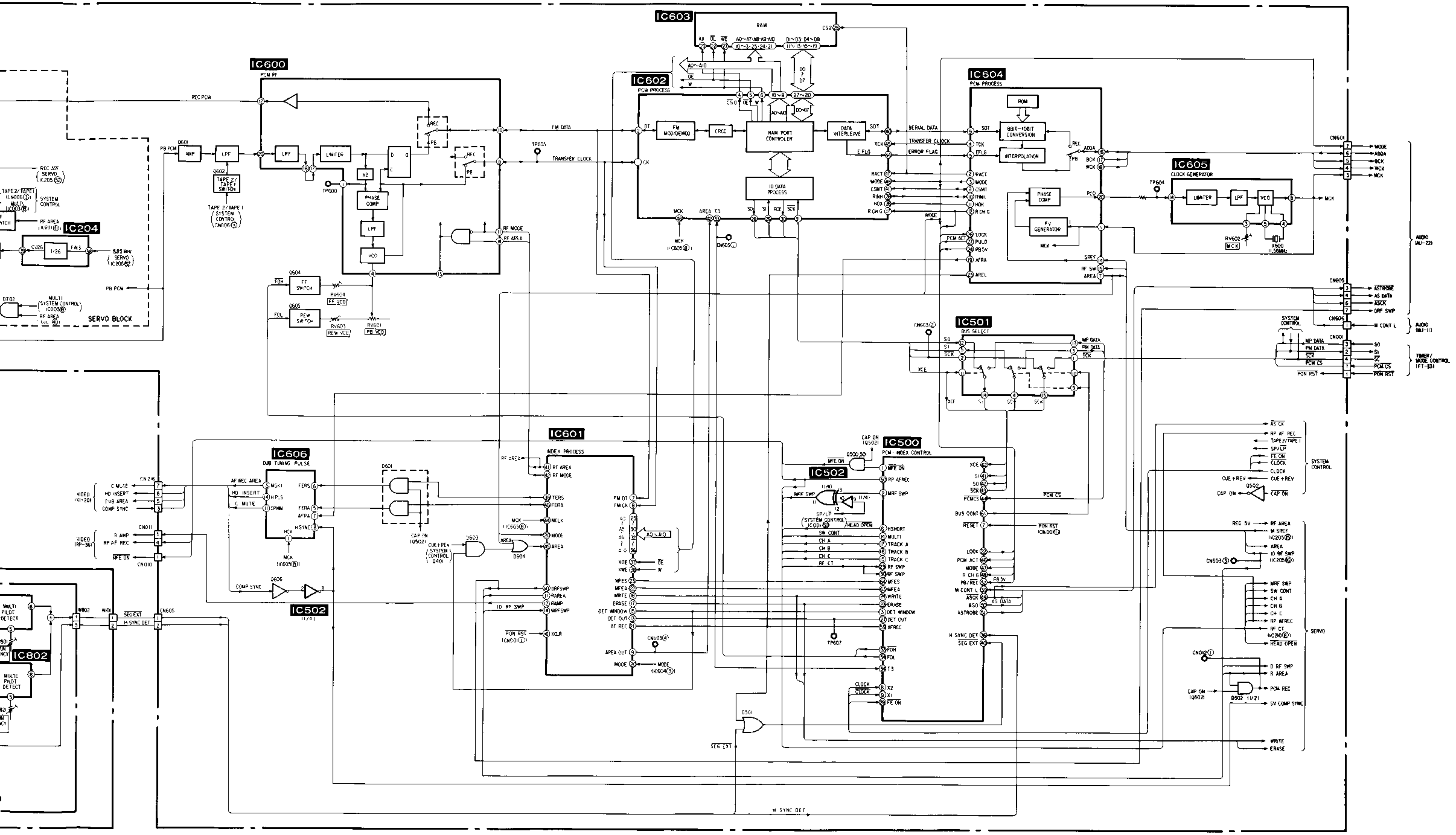
3-20. AUDIO BLOCK DIAGRAM



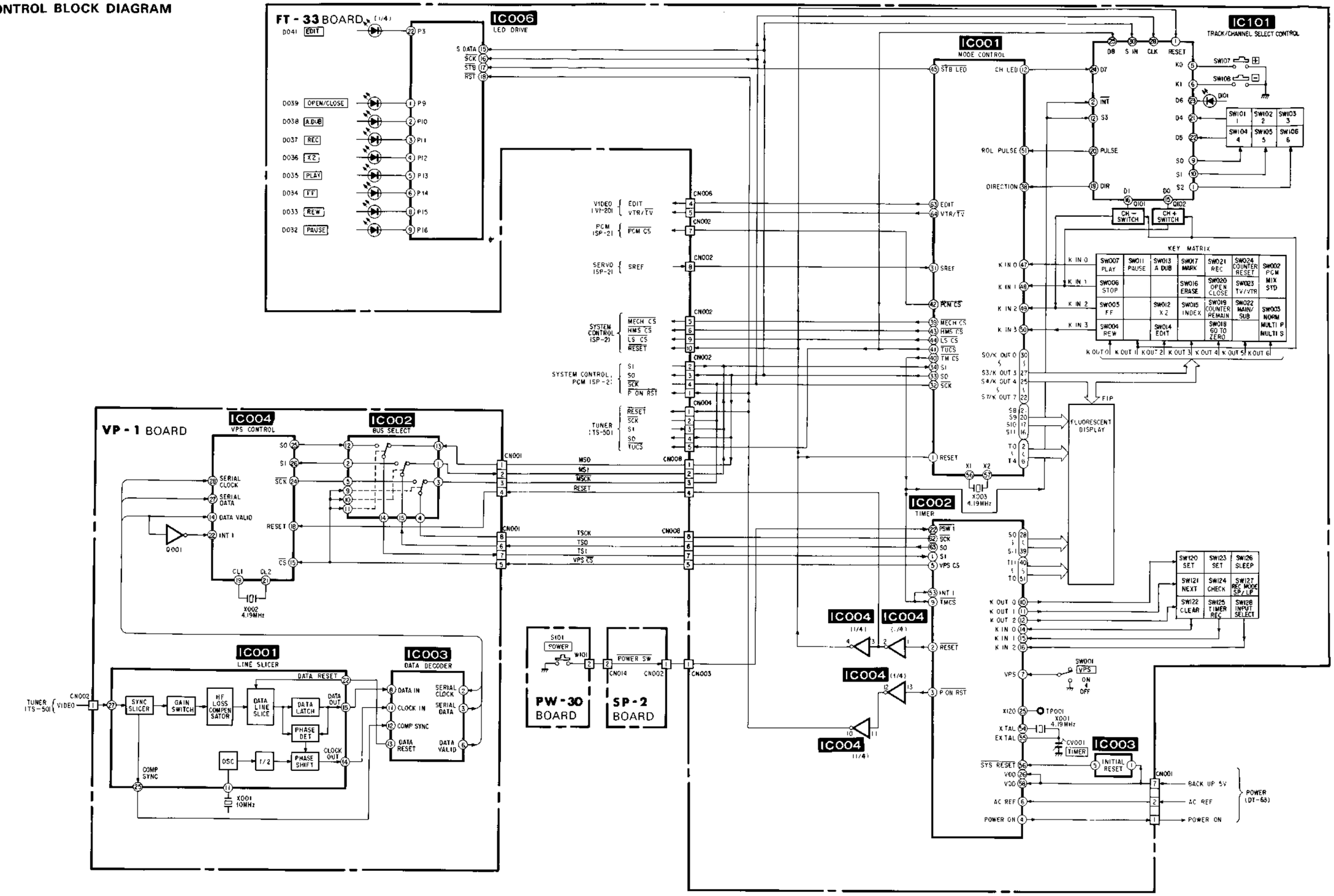

NR-6 BOARD
IC304 (1/2) BUFFER/APERTURE AMP
IC602 (1/3)
IC404 (1/2) BUFFER/APERTURE AMP
IC602 (1/3)
IC304 (1/2) AMP
IC404 (1/2) AMP
IC302 OUTPUT SELECT
IC402 OUTPUT SELECT
IC301 (1/2)
IC401 (1/2)
Q201 AUDIO MUTE IC101(4)
Q301 GAIN SW
Q401 GAIN SW
Q203 RIPPLE FILTER
+B IQ208(E)
IC101 EXPANSION PORT
SYSTEM CONTROL ISP-21
PCM ISP-21
VI-20 BOARD
CNJ53 AUDIO OUT
CNJ1 EURO AV
TUNER (RFU-8461)
PW-30 BOARD (1/4)
IC201 (1/2) HEADPHONE AMP
IC202 LEVEL METER DRIVE
RV201
J201 HEADPHONES
FLUORESCENT LEVEL METER
BUFFER
POWER OFF DETECT
REG 5V
AF-20 BOARD
IC501 FM MOD/DEMOD NOISE REDUCTION
IC503
IC303 (1/2) REC LEVEL CONTROL
IC403 (1/2) REC LEVEL CONTROL
IC201 INPUT SELECT
IC203 (1/2) AMP
IC301 (1/2) HPF
IC401 (1/2) HPF
CNJ51 AUDIO IN
MJ-11 BOARD
IC202 (1/2) MIC AMP
J401 MIC

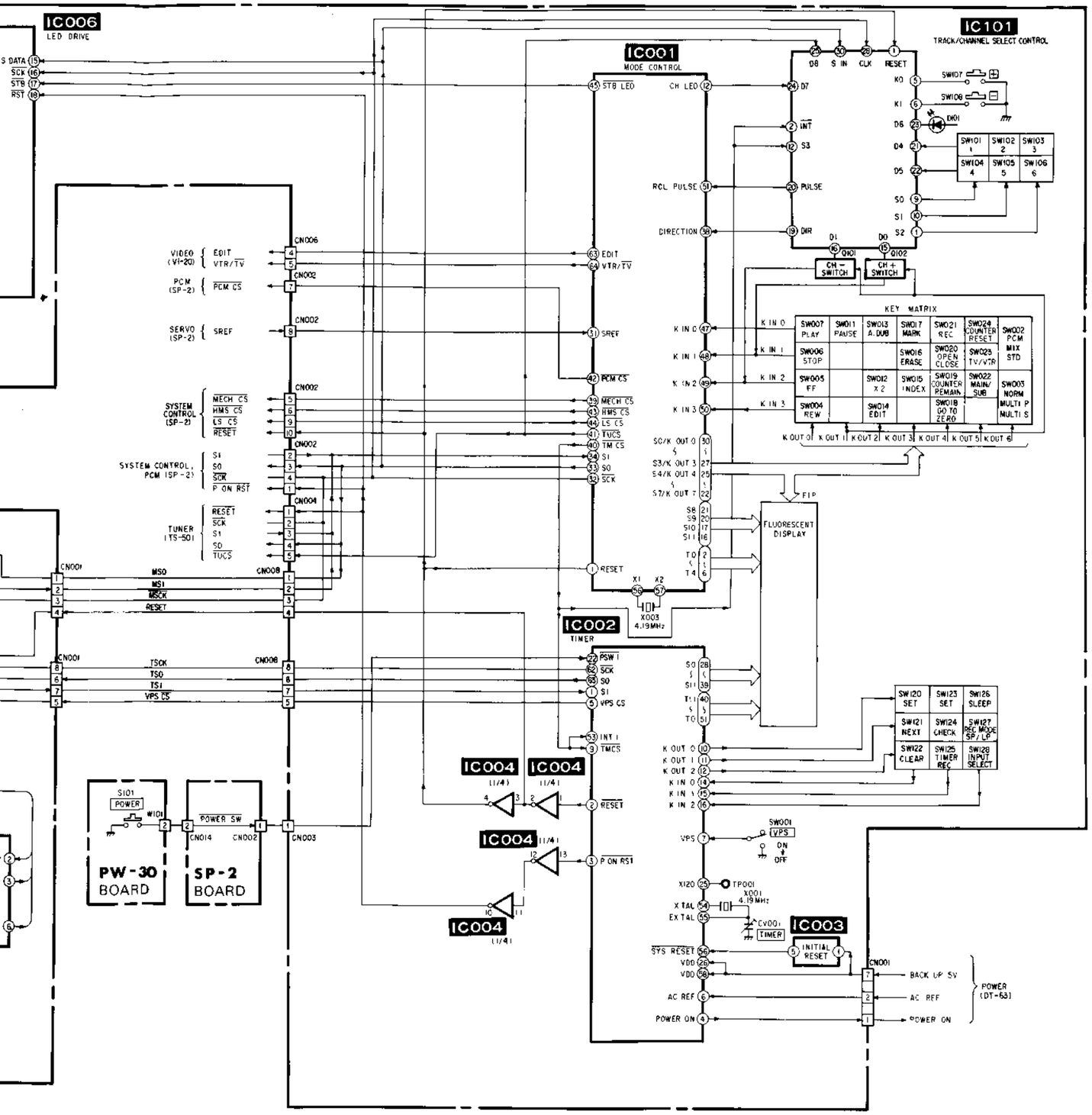
3-21. PCM AUDIO BLOCK DIAGRAM



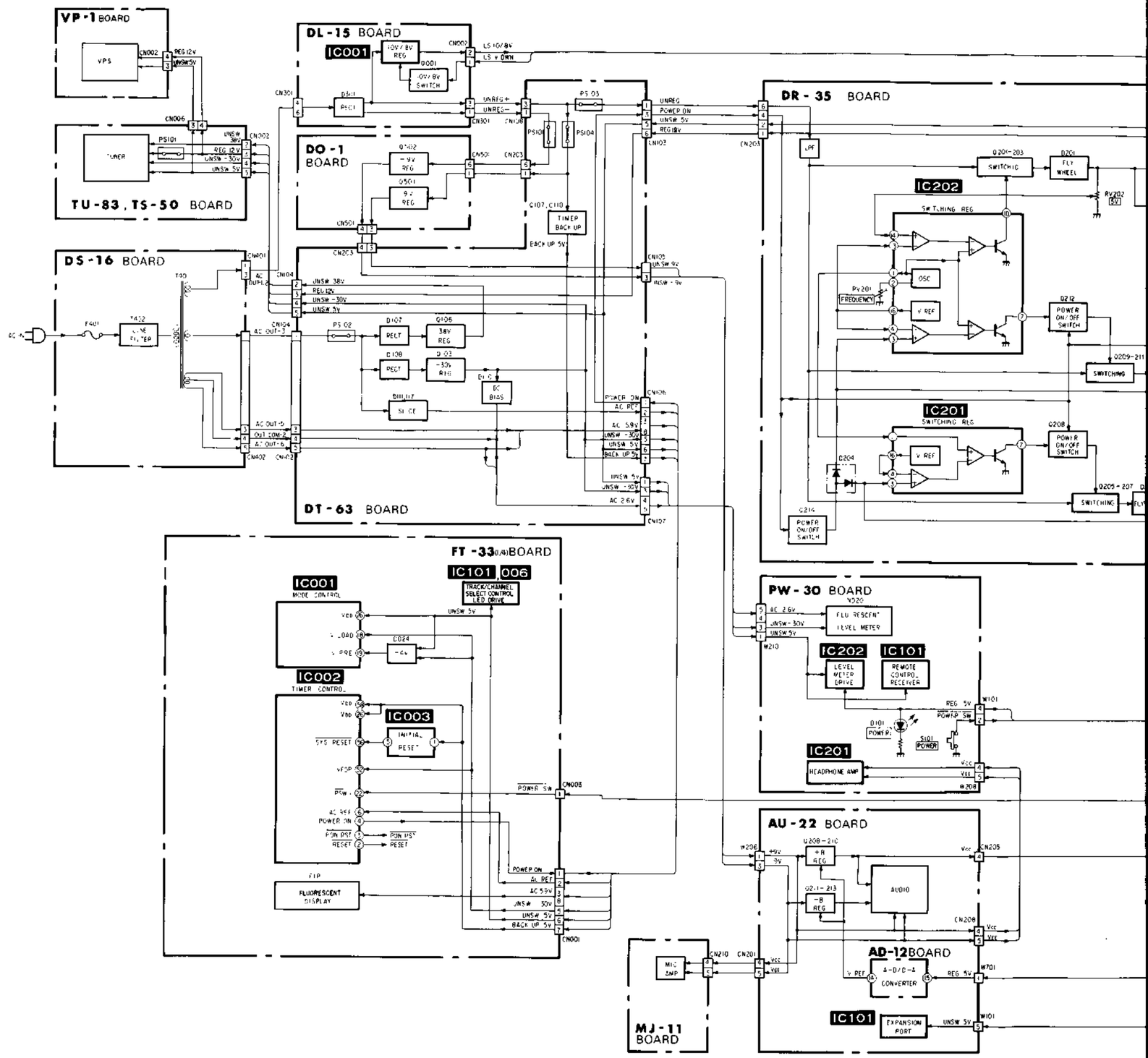

IC600
PCM RF
IC601
INDEX PROCESS
IC602
PCM PROCESS
IC603
RAM
IC604
PCM PROCESS
IC605
CLOCK GENERATOR
IC606
DUB TIMING PULSE
IC500
PCM · INDEX CONTROL
IC501
BUS SELECT
IC502
IC204
IC802
SERVO BLOCK
FM DATA
TRANSFER CLOCK
SERIAL DATA
ERROR FLAG
RAM PORT CONTROLER
ID DATA PROCESS
DATA INTERLEAVE
8BIT→10BIT CONVERSION
INTERPOLATION
PHASE COMP
LIMITER
LPF
VCO
AUDIO (AU-22)
AUDIO (MB-11)
TIMER/MODE CONTROL (FT-53)
SYSTEM CONTROL
SERVO
VIDEO (VI-20)
VIDEO (RP-36)
H SYNC DET

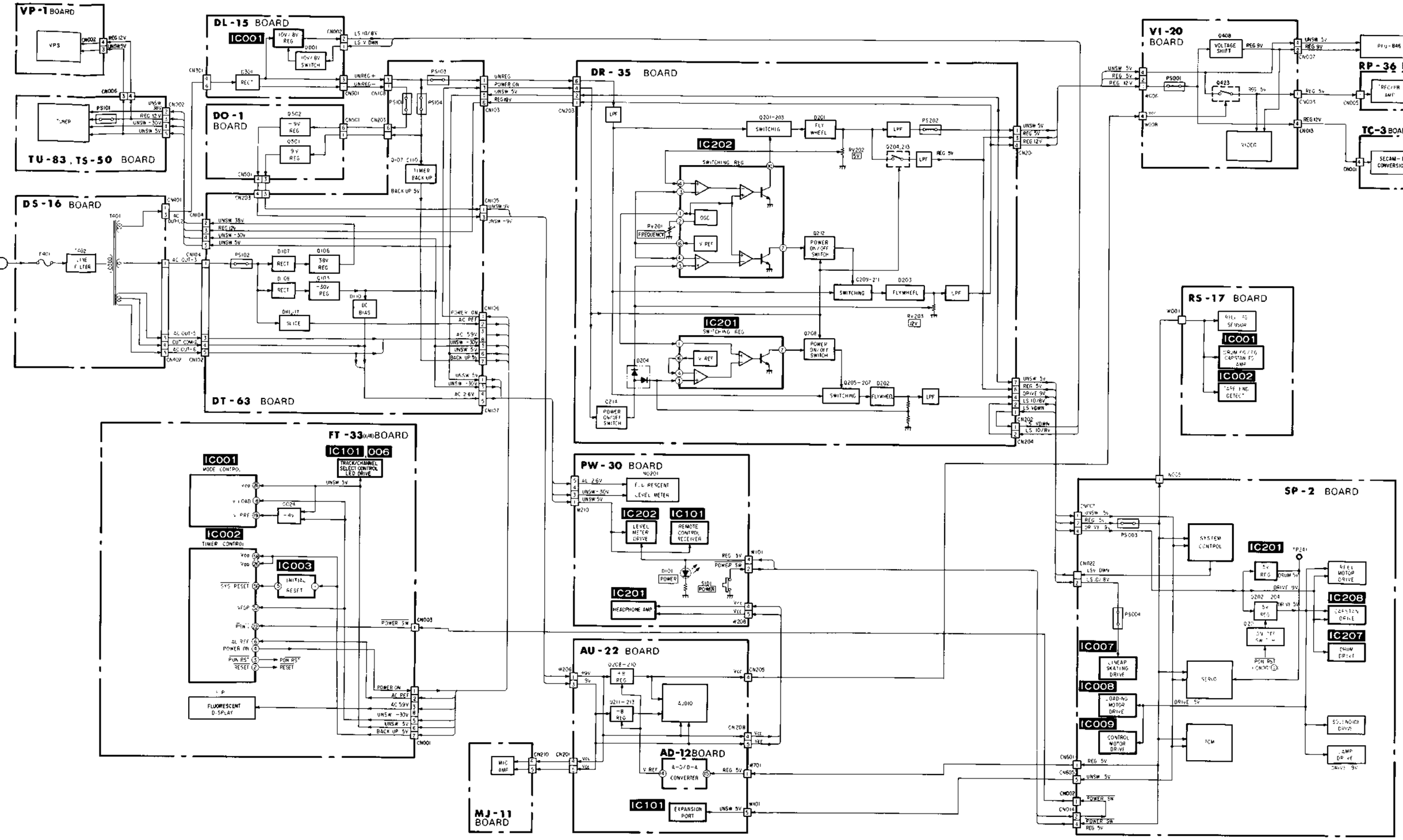
3-22. TIMER/MODE CONTROL BLOCK DIAGRAM




IC006
LED DRIVE
IC001
MODE CONTROL
IC101
TRACK/CHANNEL SELECT CONTROL
IC002
TIMER
IC003
IC004
S DATA
SCK
STB
RST
STB LED
CH LED
RCL PULSE
DIRECTION
D8
S IN
CLK
RESET
D7
INT
S3
PULSE
DIR
D1
D0
Q102
CH − SWITCH
CH + SWITCH
KEY MATRIX
K IN 0
K IN 1
K IN 2
K IN 3
K OUT 0
K OUT 1
K OUT 2
K OUT 3
K OUT 4
K OUT 5
K OUT 6
SW007 PLAY
SW011 PAUSE
SW013 A.DUB
SW017 MARK
SW021 REC
SW024 COUNTER RESET
SW002 PCM
SW006 STOP
SW016 ERASE
SW020 OPEN CLOSE
SW023 TV/VTR
MIX STD
SW005 FF
SW012 X2
SW015 INDEX
SW019 COUNTER REMAIN
SW022 MAIN/SUB
SW003 NORM
SW004 REW
SW014 EDIT
SW018 GO TO ZERO
MULTI P
MULTI S
SW101 1
SW102 2
SW103 3
SW104 4
SW105 5
SW106 6
SW107
SW108
D101
SG/K OUT 0
S3/K OUT 3
S4/K OUT 4
S7/K OUT 7
S8
S9
S10
S11
T0
T4
FIP
FLUORESCENT DISPLAY
SW120 SET
SW123 SET
SW126 SLEEP
SW121 NEXT
SW124 CHECK
SW127 REC MODE SP/LP
SW122 CLEAR
SW125 TIMER REC
SW128 INPUT SELECT
SW001 VPS
ON
OFF
VIDEO (VI-20)
EDIT
VTR/TV
PCM (SP-2)
PCM CS
SERVO (SP-2)
SREF
SYSTEM CONTROL (SP-2)
MECH CS
HMS CS
LS CS
RESET
SYSTEM CONTROL, PCM (SP-2)
SI
SO
SCK
P ON RST
TUNER (TS-501)
RESET
SCK
SI
SO
TUCS
MSO
MSI
MSCK
RESET
TSCK
TSO
TSI
VPS CS
INT
TMCS
PSW
SCK
SO
SI
VPS CS
RESET
P ON RST
TM CS
TUCS
LS CS
HMS CS
MECH CS
SREF
PCM CS
X1
X2
X003 4.19MHz
X001 4.19MHz
TP001
CV001 TIMER
SYS RESET
VDD
AC REF
POWER ON
BACK UP 5V
POWER (DT-63)
S101 POWER
W101
POWER SW
PW-30 BOARD
SP-2 BOARD
CN001
CN002
CN003
CN004
CN006
CN008
CN014

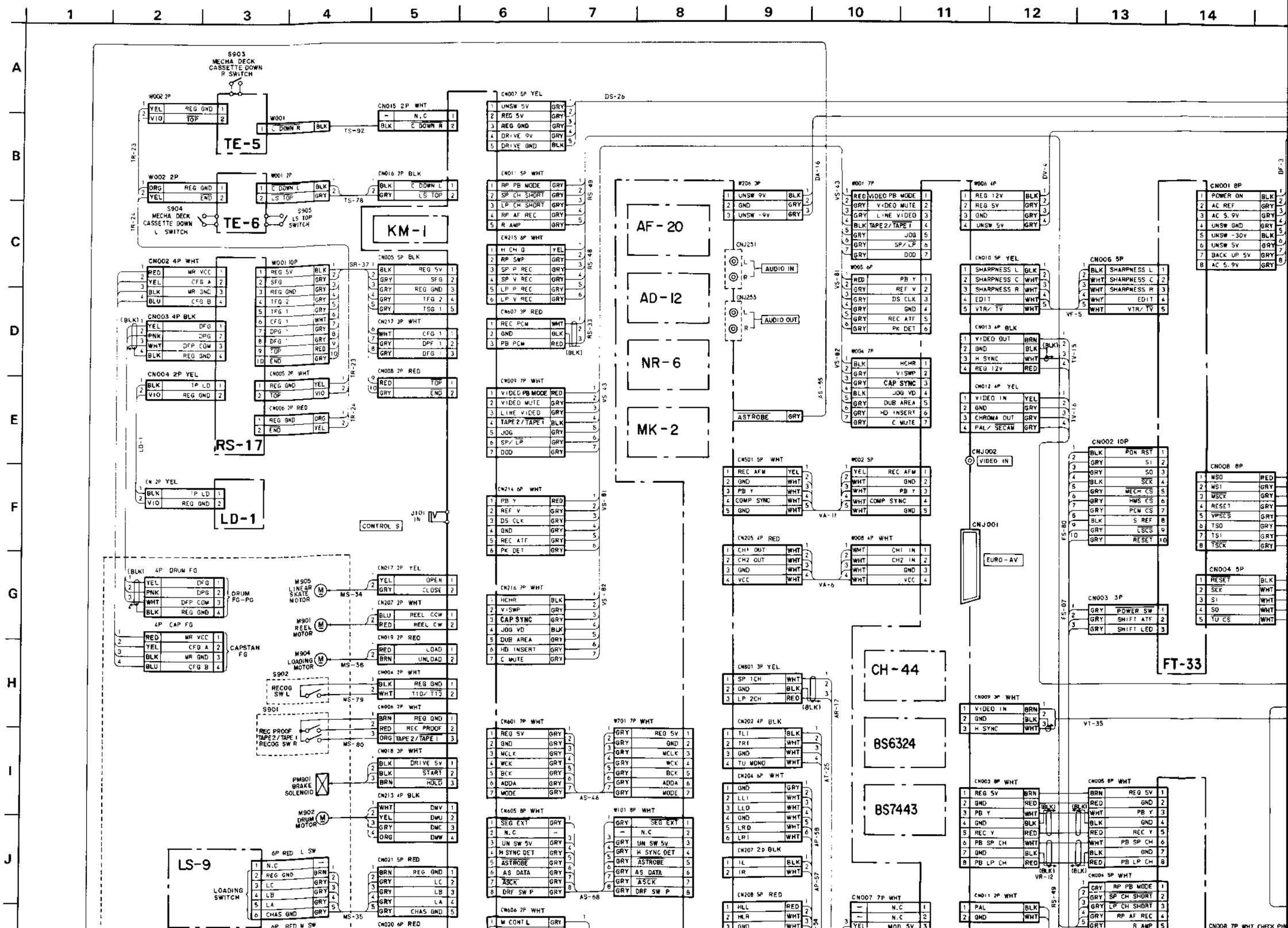
3-23. POWER BLOCK DIAGRAM




VP-1 BOARD
VPS
TU-83, TS-50 BOARD
TUNER
DL-15 BOARD
IC001
DO-1 BOARD
DS-16 BOARD
DT-63 BOARD
DR-35 BOARD
IC202
IC201
VI-20 BOARD
RP-36 BOARD
TC-3 BOARD
RS-17 BOARD
FT-33(K/A)BOARD
IC101, 006
IC002
IC003
PW-30 BOARD
AU-22 BOARD
AD-12BOARD
MJ-11 BOARD
SP-2 BOARD
IC007
IC008
IC009
IC208
IC207

SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAM

4-1. FRAME SCHEMATIC DIAGRAM



13 14 15 16 17 18 19 20 21 22 23 24 25

A B C D E F G H I J

CN202 5P WHT

GRY	UNSW 5V	7
GRY	REG 5V	6
GRY	REG GND	5
GRY	DRIVE 9V	4
BLK	DRIVE GND	3
GRY	10/8V LS	2
BLK	LS VDWN	1

CN204 2P BLK

LS VDWN	BLK	1
LS 10/8V	GRY	2

CN203 6P BLK

UNREG	BLK	1
UNREG GND	GRY	2
POWER ON	GRY	3
REG GND	GRY	4
UNSW 5V	GRY	5
REG 12V	GRY	6

DR-35

DS-26

CN201 4P WHT

BLK	REG 12V	4
GRY	REG 5V	3
GRY	GND	2
GRY	UNSW 5V	1

TU001 TUNER

J201 HEADPHONES

CN005 8P WHT

GRY	MONO/ST	1
GRY	REG 12V	2
GRY	K 0	3
GRY	K 1	4
GRY	K 2	5
GRY	K 3	6
GRY	KO 0	7
GRY	KO 1	8

CN105 3P BLK

BLK	UNSW 9V	1
GRY	GND	2
GRY	UNSW -9V	3

W103 6P

UNREG	BLK	1
UNREG GND	GRY	2
POWER ON	GRY	3
REG GND	GRY	4
UNSW 5V	GRY	5
REG 12V	GRY	6

CN108 3P YEL

UNREG-	YEL	1
OUT COM-1	GRY	2
UNREG+	GRY	3

W210 5P

UNSW 5V	BLK	1
UNSW -30V	GRY	2
AC 2.6V	GRY	3
AC 2.6V	GRY	4

CN104 5P BLK

RESET	BLK	1
SCK	WHT	2
SI	WHT	3
SO	WHT	4
TU CS	WHT	5

CN106 9P WHT

BLK	POWER ON	1
GRY	AC REF	2
GRY	AC 5.9V	3
GRY	UNSW GND	4
BLK	UNSW -30V	5
GRY	UNSW 5V	6
GRY	BACK UP 5V	7
GRY	AC 5.9V	8

CN110 6P WHT

Q1-C	BLK	1
Q1-B	GRY	2
Q1-E	GRY	3
Q2-E	GRY	4
Q2-B	GRY	5
Q2-C	GRY	6

W204 6P L 2.0 TSB

GND	GRY	1
LL 0	WHT	2
LL 1	WHT	3
GND	WHT	4
LRI	WHT	5
LRO	WHT	6

TS-50

CN101 2P WHY

GRN	VIDEO OUT	1
BLK	GND	2
WHT	H SYNC	3

CN102 5P WHT

N.C	—	1
UNSW 38V	BLK	2
REG 12V	GRY	3
UNSW -30V	GRY	4
UNSW 5V	GRY	5

CN104 5P WHT

—	N.C	1
BLK	UNSW 38V	2
GRY	REG 12V	3
GRY	UNSW -30V	4
GRY	UNSW 5V	5

CN102 5P RED

AC IN -3	BLK	1
AC IN -4	GRY	2
AC IN -5	GRY	3
OUT COM2	GRY	4
AC IN -6	GRY	5

W207 3P

IL	BLK	1
IR	WHT	2

W208 5P

HLL	RED	1
HLR	WHT	2
GND	WHT	3
VCC	WHT	4
VEE	WHT	5

CN103 4P BLK

TLO	BLK	1
TRO	WHT	2
GND	WHT	3
TU MOND	WHT	4

CN106 4P

BLK	VIDEO OUT	1
WHT	GND	2
WHT	UNSW 5V	3
WHT	REG 12V	4

CN107 5P BLK

BLK	UNSW 5V	1
—	N.C	2
GRY	UNSW -30V	3
GRY	AC 2.6V	4
GRY	AC 2.6V	5

DT-63

CN001 8P

POWER ON	BLK	1
AC REF	GRY	2
AC 5.9V	GRY	3
UNSW GND	GRY	4
UNSW -30V	BLK	5
UNSW 5V	GRY	6
BACK UP 5V	GRY	7
AC 5.9V	GRY	8

CN006 5P

BLK	SHARPNESS L	1
WHT	SHARPNESS C	2
WHT	SHARPNESS R	3
WHT	EDIT	4
WHT	VTR/TV	5

CN002 10P

BLK	PON RST	1
GRY	SI	2
GRY	SO	3
BLK	SCK	4
GRY	MECHA CS	5
GRY	HWS CS	6
GRY	PCM CS	7
BLK	S REF	8
GRY	LSCS	9
GRY	RESET	10

CN008 8P

MSO	RED	1
MSI	GRY	2
MSCK	GRY	3
RESET	GRY	4
VPSCS	GRY	5
TSO	GRY	6
TSI	GRY	7
TSCK	GRY	8

CN004 5P

RESET	BLK	1
SCK	WHT	2
SI	WHT	3
SO	WHT	4
TU CS	WHT	5

CN003 3P

GRY	POWER SW	1
GRY	SHIFT ATF	2
GRY	SHIFT LED	3

FT-33

W101 4P

YEL	GND	1
GRY	POWER SW	2
GRY	REMOTE	3
GRY	REG 5V	4

PW-30

CN003 6P WHT

MONO / ST	GRY	1
REG 12V	GRY	2
KI 0	GRY	3
KI 1	GRY	4
KI 2	GRY	5
KI 3	GRY	6
KO 0	GRY	7
KO 1	GRY	8

CN006 2P WHT

PAL	BLK	1
GND	WHT	2

W002 4P

YEL	TRACON (+)	1
GRY	TRACON (-)	2
GRY	UN SW GND	3

PR-13

CN001 8P WHT

RED	MSO	1
GRY	MSI	2
GRY	MSCK	3
GRY	RESET	4
GRY	VPSCS	5
GRY	TSO	6
GRY	TSI	7
GRY	TSCK	8

CN005 8P WHT

BRN	REG 5V	1
RED	GND	2
WHT	PB Y	3
BLK	GND	4
RED	REC Y	5
WHT	PB SP CH	6
BLK	GND	7
RED	PB LP CH	8

CN004 5P WHT

GRY	RP PB MODE	1
GRY	SP CH SHORT	2
GRY	LP CH SHORT	3
GRY	RP AF REC	4
GRY	R AMP	5

CN008 7P WHT CHECK PIN

CN401 2P WHT

WHT	AC OUT-1	1
GRY	OUT COM-1	2
GRY	AC OUT-2	3

CN402 5P WHT

AC OUT-3	BLK	1
AC OUT-4	GRY	2
AC OUT-5	GRY	3
OUT COM2	GRY	4
AC OUT-6	GRY	5

AC IN

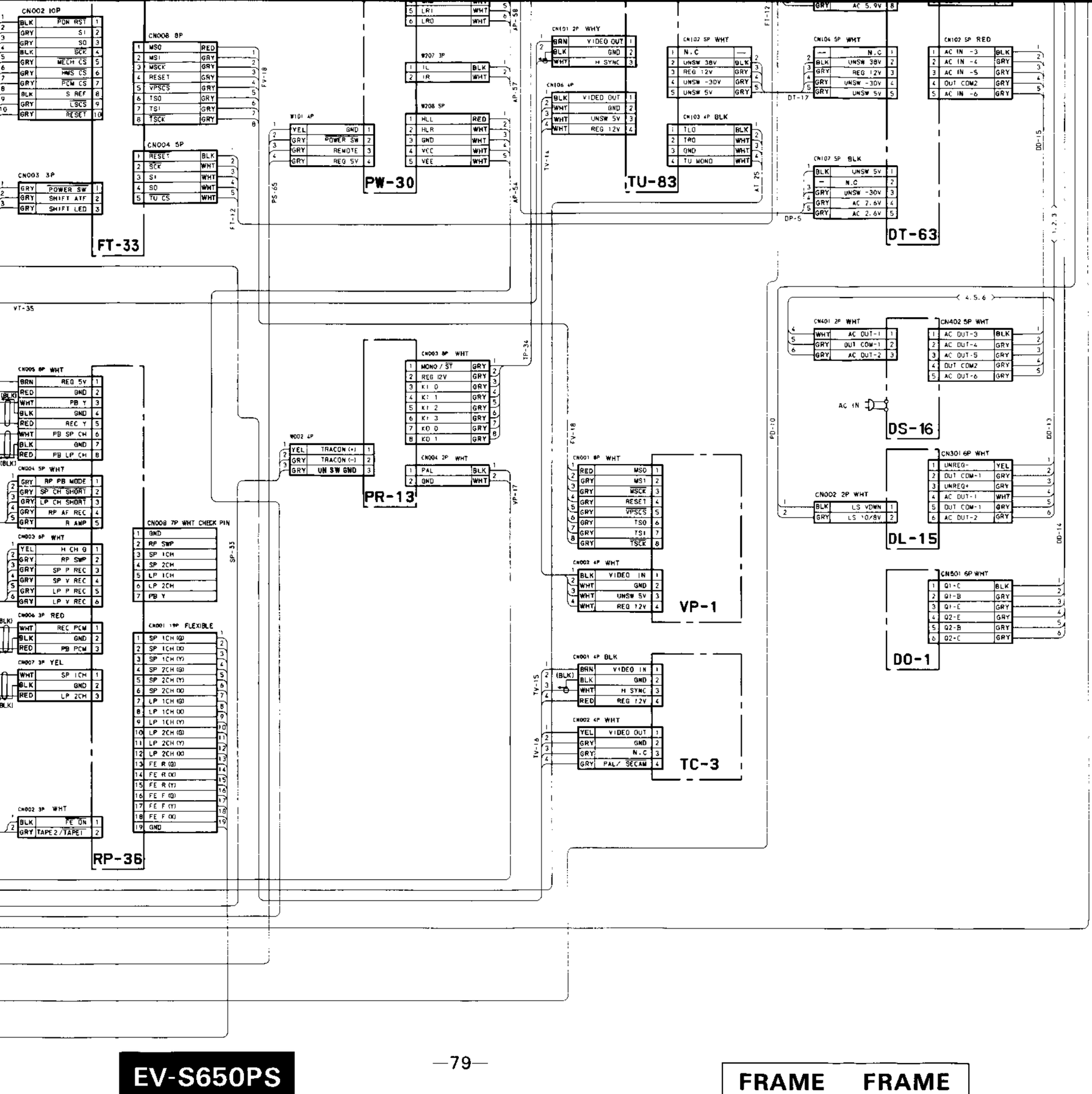
DS-16

CN301 6P WHT

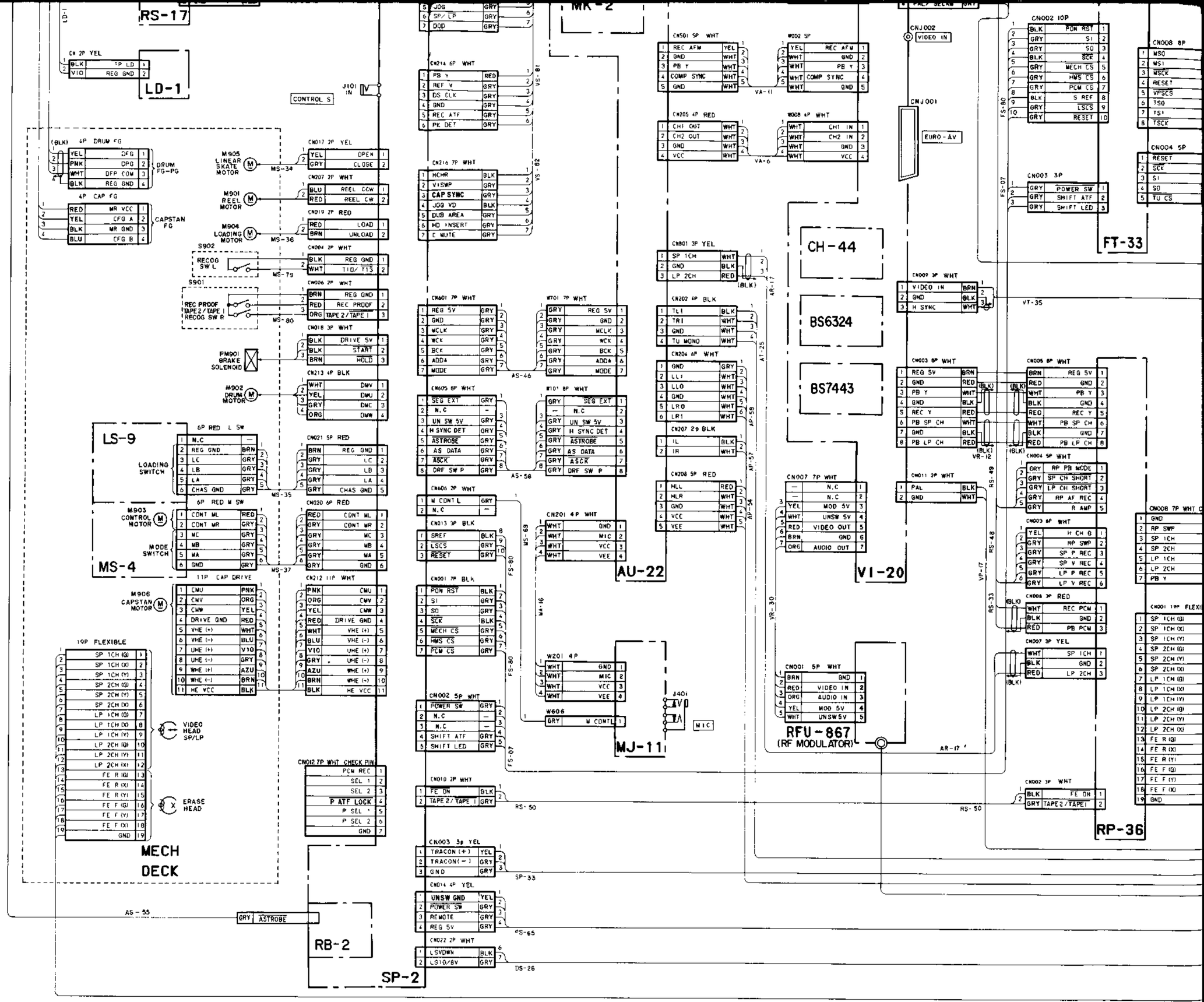
UNREG-	YEL	1
OUT COM-1	GRY	2
UNREG+	GRY	3
AC OUT-1	WHT	4
OUT COM-1	GRY	5
AC OUT-2	GRY	6

CN002 2P WHT

BLK	LS VDWN	1
GRY	LS 10/8V	2



F G H I J K L M N O P


RS-17
LD-1
LD-1
CH 2P YEL
TP LD
REG GND
CONTROL S
J101
4P DRUM FG
DRUM FG-PG
4P CAP FG
CAPSTAN FG
M905 LINEAR SKATE MOTOR
MS-34
CN017 2P YEL
OPEN
CLOSE
M901 REEL MOTOR
CN207 2P WHT
REEL CCW
REEL CW
M904 LOADING MOTOR
MS-36
CN019 2P RED
LOAD
UNLOAD
S902
RECOG SW L
MS-79
CN004 2P WHT
REG GND
T10/T13
S901
REC PROOF TAPE 2/TAPE 1 RECOG SW R
MS-80
CN006 2P WHT
REG GND
REC PROOF
TAPE 2/TAPE 1
PM901 BRAKE SOLENOID
CN018 3P WHT
DRIVE 5V
START
HOLD
M902 DRUM MOTOR
CN213 4P BLK
DMV
DMU
DMC
DMW
LS-9
6P RED L SW
LOADING SWITCH
N.C
REG GND
LC
LB
LA
CHAS GND
MS-35
CN021 5P RED
M903 CONTROL MOTOR
6P RED M SW
MODE SWITCH
CONT ML
CONT MR
MC
MB
MA
GND
MS-4
MS-37
CN020 6P RED
11P CAP DRIVE
M906 CAPSTAN MOTOR
CN212 11P WHT
CMU
CMV
CMW
DRIVE GND
VHE (+)
VHE (-)
UHE (+)
UHE (-)
WHE (+)
WHE (-)
HE VCC
19P FLEXIBLE
SP 1CH (Q)
SP 1CH (X)
SP 1CH (Y)
SP 2CH (Q)
SP 2CH (Y)
SP 2CH (X)
LP 1CH (Q)
LP 1CH (X)
LP 1CH (Y)
LP 2CH (Q)
LP 2CH (Y)
LP 2CH (X)
FE R (Q)
FE R (X)
FE R (Y)
FE F (Q)
FE F (Y)
FE F (X)
GND
VIDEO HEAD SP/LP
ERASE HEAD
MECH DECK
CN012 7P WHT CHECK PIN
PCM REC
SEL 1
SEL 2
P ATF LOCK
P SEL 1
P SEL 2
GND
AS-55
GRY ASTROBE
RB-2
SP-2
MK-2
CN215 7P WHT
JOG
SP/LP
DOD
VS-81
CN214 6P WHT
PB Y
REF V
DS CLK
GND
REC ATF
PK DET
VS-82
CN216 7P WHT
HCHR
VSWP
CAP SYNC
JOG VD
DUB AREA
HD INSERT
C MUTE
CN601 7P WHT
REG 5V
GND
WCLK
WCK
BCK
ADD4
MODE
AS-46
W701 7P WHT
CN605 6P WHT
SEG EXT
N.C
UN SW 5V
H SYNC DET
ASTROBE
AS DATA
ASCK
DRF SW P
AS-58
W101 8P WHT
CN606 2P WHT
M CONT L
N.C
CN013 3P BLK
SREF
LSCS
RESET
MS-69
FS-80
CN201 4P WHT
MIC
VCC
VEE
AU-22
CN001 7P BLK
PON RST
SI
SO
SCK
MECH CS
HWS CS
PCM CS
MA-16
W201 4P
W606
M CONTL
MJ-11
J401
VP
A
MIC
CN002 5P WHT
POWER SW
N.C
SHIFT ATF
SHIFT LED
FS-07
CN010 2P WHT
FE ON
TAPE 2/TAPE 1
RS-50
CN003 3P YEL
TRACON (+)
TRACON (-)
SP-33
CN014 4P YEL
UNSW GND
REMOTE
REG 5V
PS-65
CN022 2P WHT
LSVDWN
LS10/8V
DS-26
CN501 5P WHT
REC AFM
COMP SYNC
VA-11
W002 5P
CN205 4P RED
CH1 OUT
CH2 OUT
VA-6
W008 4P WHT
CH1 IN
CH2 IN
CN801 3P YEL
SP 1CH
LP 2CH
AR-17
CN202 6P BLK
TL1
TR1
TU MONO
CN204 6P WHT
LL1
LLO
LRO
LR1
AP-59
CN207 2P BLK
IL
IR
AP-57
CN208 5P RED
HLL
HLR
VEE
AP-54
CN007 7P WHT
MOD 5V
UNSW 5V
VIDEO OUT
AUDIO OUT
VI-20
CN001 5P WHT
VIDEO IN
AUDIO IN
RFU-867
(RF MODULATOR)
AR-17'
CH-44
BS6324
BS7443
CNJ002
VIDEO IN
CNJ001
EURO-AV
CN002 10P
PON RST
SI
SO
SCK
MECH CS
HWS CS
PCM CS
S REF
LSCS
RESET
FS-80
CN008 8P
MSO
MSI
MSCK
RESET
VPSCS
TSO
TSI
TSCK
CN004 5P
RESET
SCK
SI
SO
TU CS
CN003 3P
POWER SW
SHIFT ATF
SHIFT LED
FS-07
FT-33
CN009 3P WHT
VIDEO IN
GND
H SYNC
VT-35
CN003 8P WHT
REG 5V
PB Y
PB SP CH
PB LP CH
VR-12
CN005 8P WHT
REC Y
CN004 5P WHT
RP PB MODE
SP CH SHORT
LP CH SHORT
RP AF REC
R AMP
RS-49
CN011 2P WHT
PAL
CN003 6P WHT
H CH G
RP SWP
SP P REC
SP V REC
LP P REC
LP V REC
RS-48
CN008 3P RED
REC PCM
PB PCM
CN007 3P YEL
SP 1CH
LP 2CH
VP-17
RS-33
YR-30
CN002 3P WHT
FE ON
TAPE 2/TAPE 1
RP-36
CN008 7P WHT
GND
RP SWP
SP 1CH
SP 2CH
LP 1CH
LP 2CH
PB Y
CN001 19P FLEXI
SP 1CH (Q)
SP 1CH (X)
SP 1CH (Y)
SP 2CH (Q)
SP 2CH (X)
LP 1CH (Q)
LP 1CH (X)
LP 1CH (Y)
LP 2CH (Q)
LP 2CH (Y)
LP 2CH (X)
FE R (Q)
FE R (X)
FE R (Y)
FE F (Q)
FE F (Y)
FE F (X)
GND

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAM

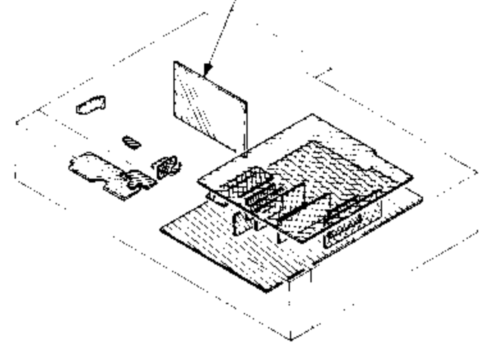
Note:

- ◦ : indicates a lead wire mounted on the component side.
- ● : indicates a lead wire mounted on the printed side.
- ※ : Through hole.
- : Pattern from the side which enables seeing.
- : Pattern of the rear side.
- Digital transistor (RP-36:Q103,Q105,Q203,Q302,Q303) transistor with resistors.
  Refer to the RP-36 board schematic diagram for digital transistor

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

Caution:	
Pattern face side (Solder Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side (Component Side)	Parts on the parts face side seen from the parts face are indicated.

RP-36
(Head AMP/Flying Erase)

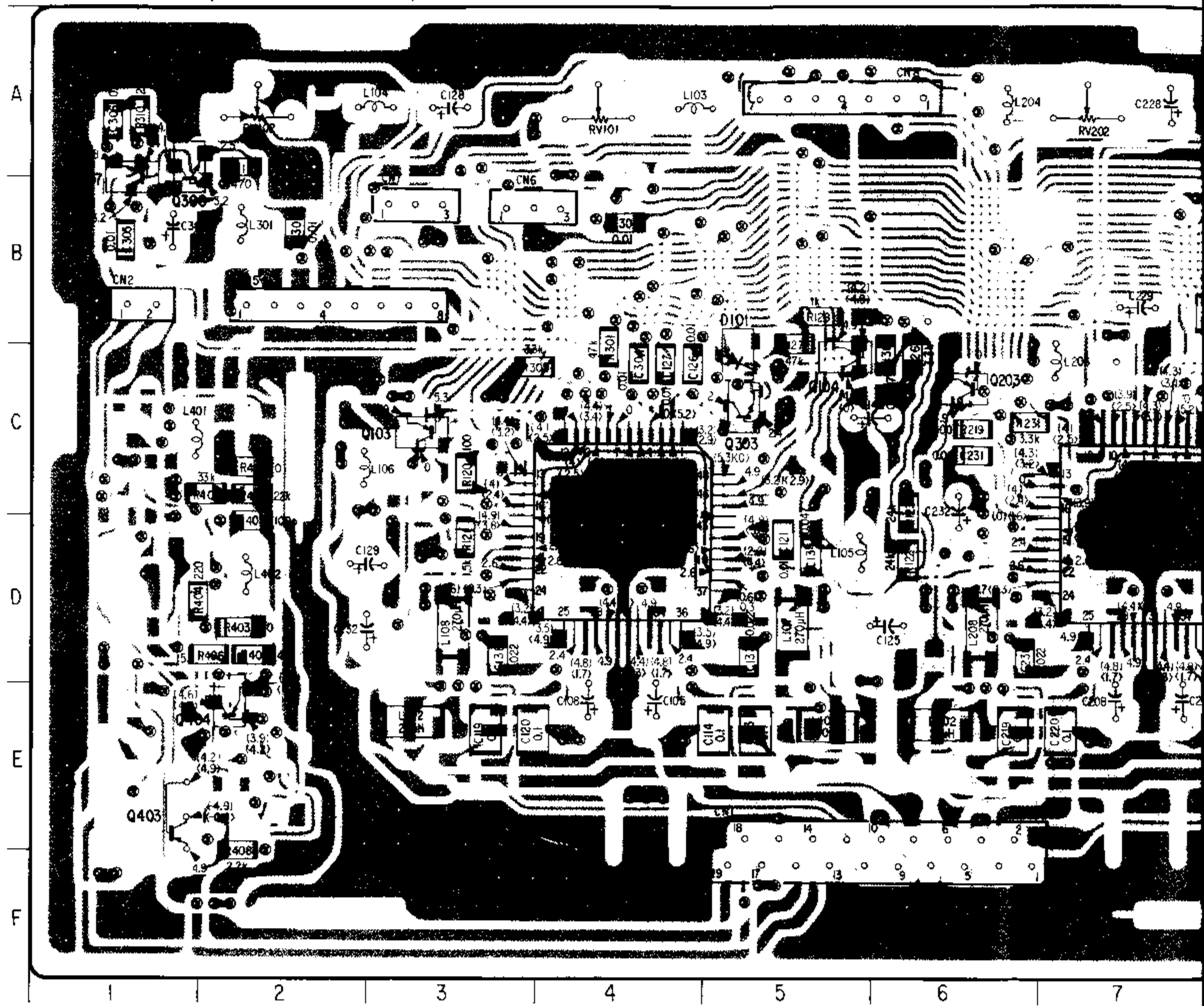


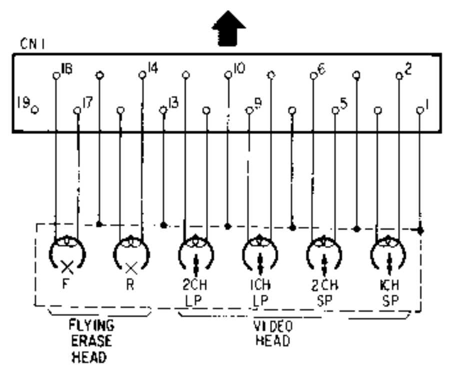
D101	C-5
IC001	C-4
IC002	C-7
Q101	E-15
Q102	E-17
Q103	C-3
Q104	C-5
Q105	C-15
Q201	E-11
Q202	E-14
Q203	C-6
Q301	C-11
Q302	B-8
Q303	C-5
Q304	C-8
Q307	A-1
Q308	A-1
Q402	D-18
Q403	E-1
Q404	E-2
RV101	A-4
RV102	A-2
RV201	A-8
RV202	A-7

RP-36 (HEAD AMP/FLYING ERASE) PRINTED WIRING BOARD

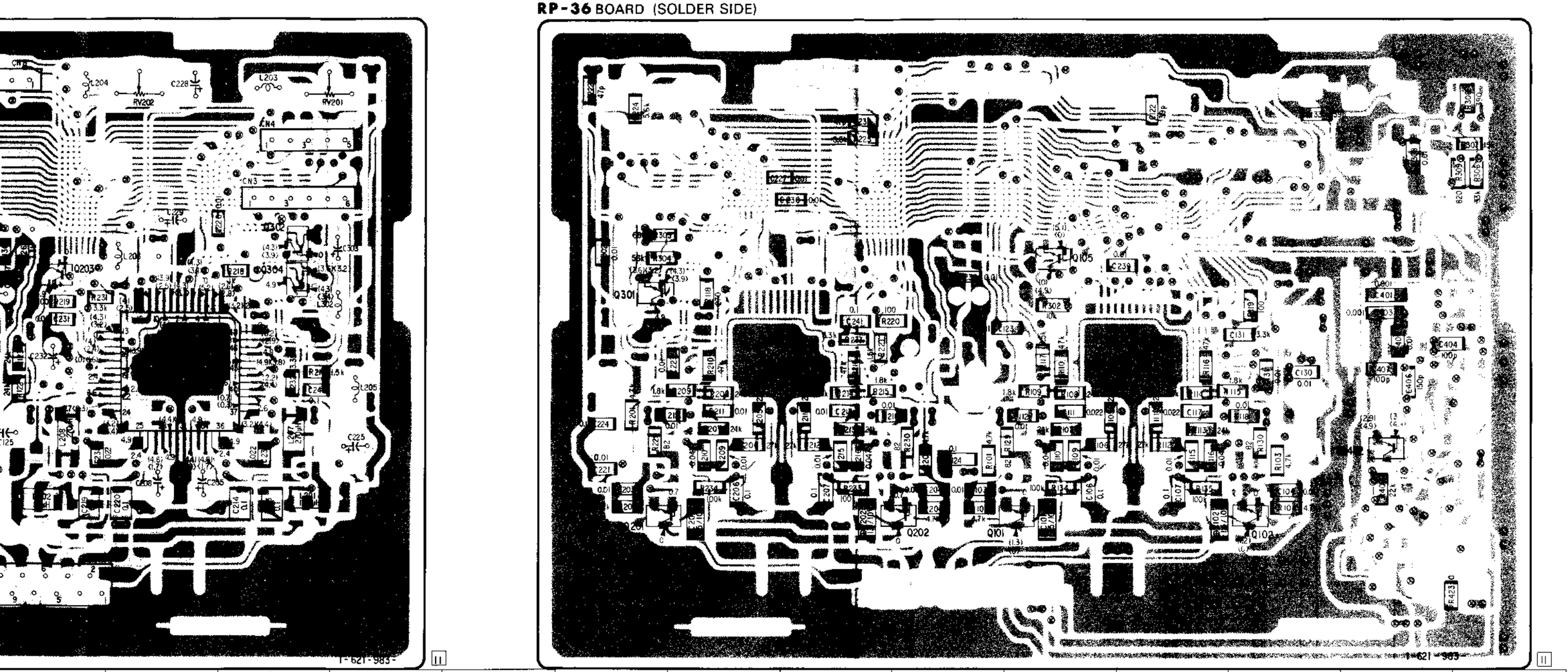
—Ref. No. RP-36 BOARD : 1,000 series—

RP-36 BOARD (COMPONENT SIDE)

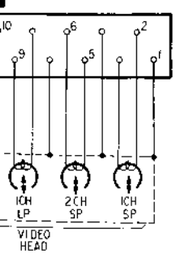




RP-36 BOARD (SOLDER SIDE)

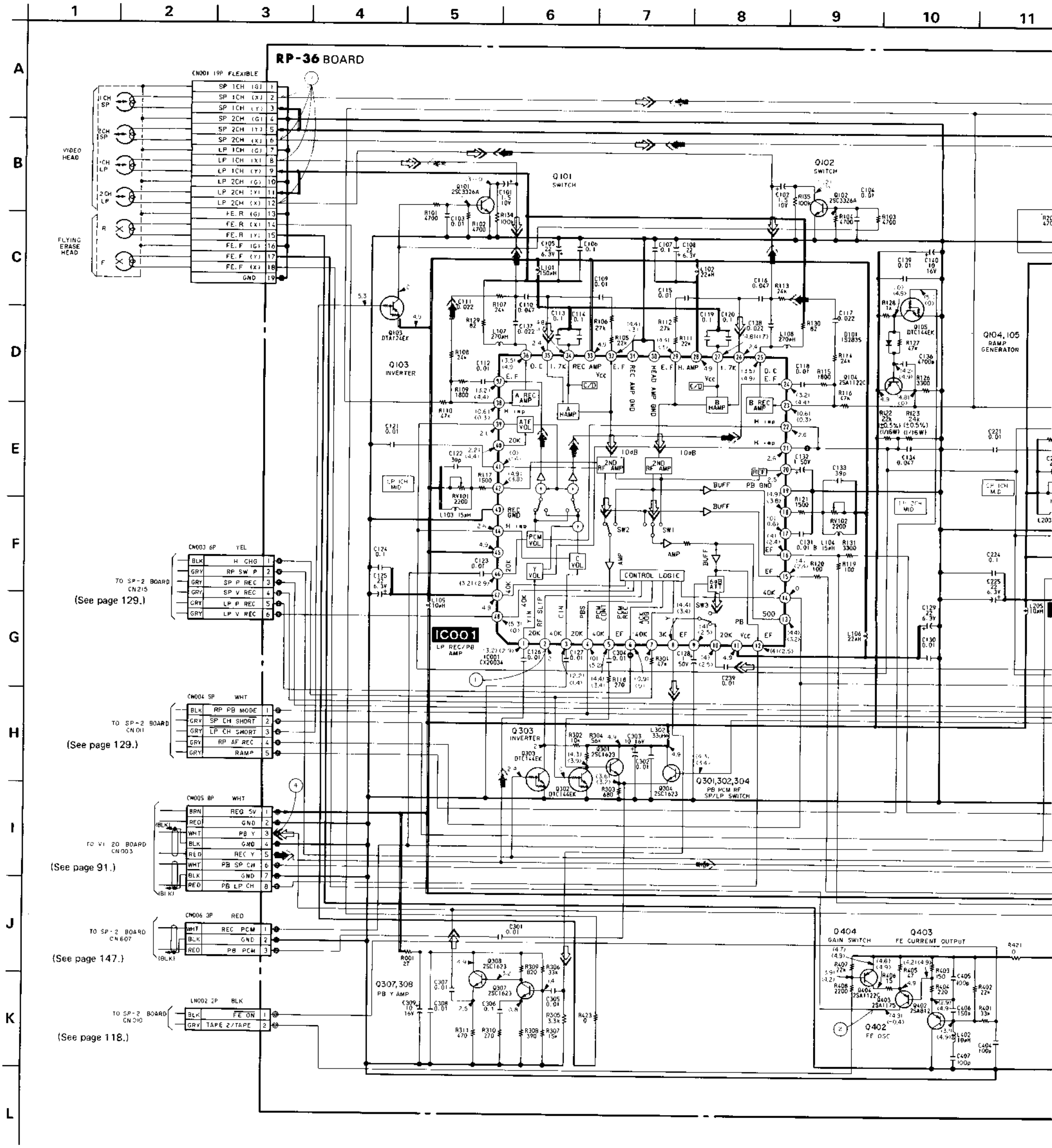


6 7 8 9 10 11 12 13 14 15 16 17 18 19

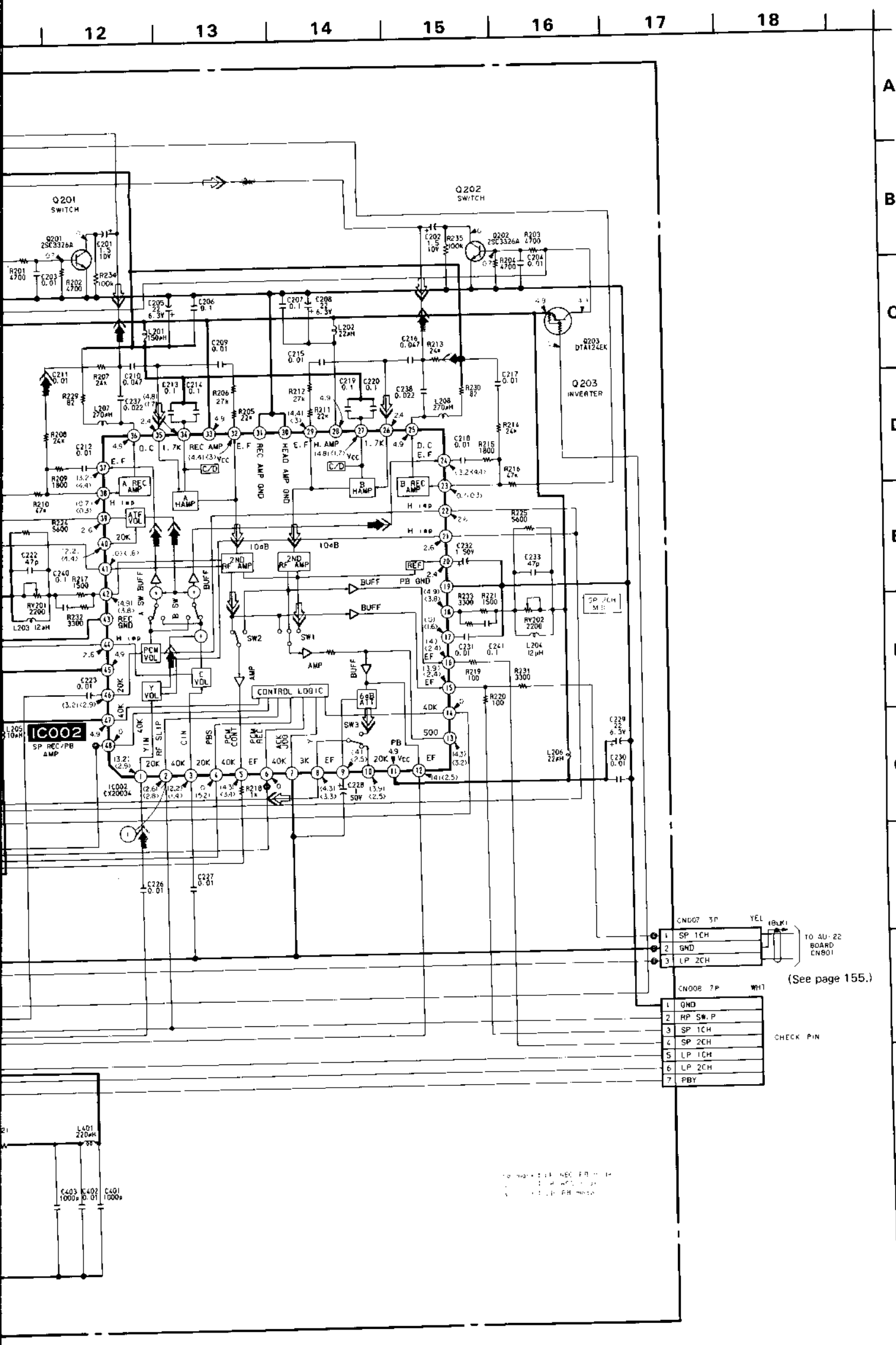


RP-36 (HEAD AMP/FLYING ERASE) SCHEMATIC DIAGRAM

—Ref. No. RP-36 BOARD : 1, 000 series—



VIDEO (1) **VIDEO (1)**



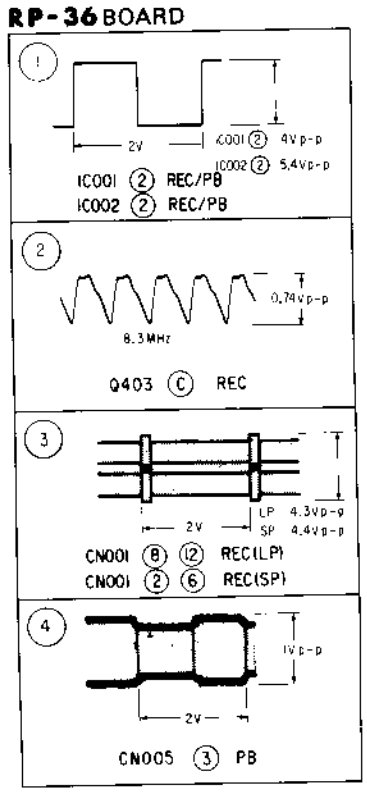
Note:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/10W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF.
  50V or less are not indicated except for electrolytice. and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- [ ] : adjustment for repair.
- ——— B + bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a colour-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

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

- **Signal path**
  - REC Y/CHROMA Signal
  - PB Y/CHROMA Signal

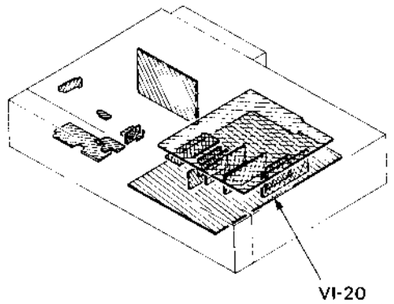
RP-36 BOARD



Note:

- ○— : indicates a lead wire mounted on the component side.
- ●— : indicates a lead wire mounted on the printed side.
- ⋯ : soldering side.
- Digital transistor (VI-20: Q002, Q004, Q013, Q015, Q025, Q026, Q101, Q102, Q106, Q201, Q202, Q203, Q204, Q205, Q206, Q211, Q219, Q304, Q403, Q404, Q405, Q409, Q410) transistor with resistors.
  Refer to the VI-20 board schematic diagram for digital transistor.

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



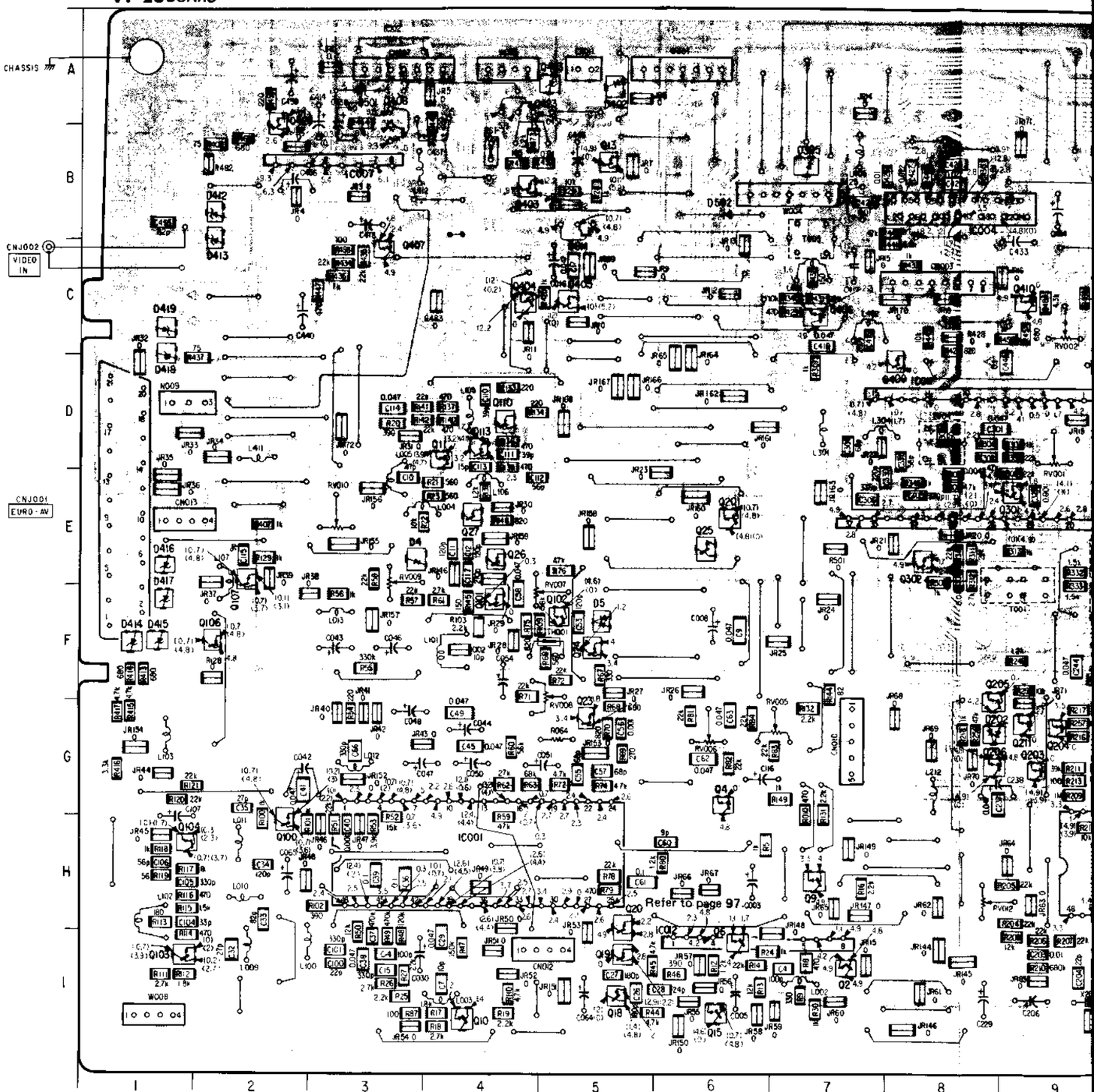
VI-20
(VIDEO)

D004	E-3	Q101	F-4		
D005	F-5	Q102	F-5		
D202	G-8	Q103	I-1		
D204	F-13	Q104	H-1		
D205	G-13	Q106	F-2		
D206	H-13	Q107	E-2		
D301	F-12	Q110	D-4		
D302	E-13	Q113	D-4		
D303	D-13	Q201	E-6		
D304	C-12	Q202	H-11		
D305	B-7	Q203	G-9		
D402	A-5	Q204	G-9		
D403	A-5	Q205	F-8		
D410	A-2	Q206	G-8		
D411	A-2	Q207	F-11		
D412	B-2	Q208	F-12		
D413	C-1	Q209	F-10		
D414	F-1	Q211	G-9		
D415	F-1	Q215	G-11		
D416	E-1	Q216	G-10		
D417	F-1	Q217	F-13		
D418	D-1	Q218	G-13		
D419	C-1	Q219	F-13		
D501	A-3	Q220	G-13		
D502	D-6	Q221	H-13		
		Q222	H-13		
IC001	H-4	Q301	E-9		
IC002	H-10	Q302	E-8		
IC003	B-12	Q304	D-11		
IC004	B-8	Q403	B-4		
IC005	D-12	Q404	C-4		
IC007	B-3	Q405	C-5		
IC010	E-10	Q406	C-7		
IC011	D-8	Q407	C-3		
IC012	I-6	Q408	A-3		
		Q409	D-8		
LV201	I-12	Q410	C-9		
		Q420	A-2		
Q002	I-7	Q423	A-4		
Q004	G-6				
Q006	I-6	RV001	D-9		
Q009	H-7	RV002	C-9		
Q010	I-4	RV005	G-7		
Q011	D-4	RV006	G-6		
Q013	B-5	RV007	F-4		
Q014	B-5	RV008	F-5		
Q015	I-6	RV009	E-3		
Q018	I-5	RV010	E-3		
Q019	I-5	RV011	I-10		
Q020	H-5	RV012	H-8		
Q023	G-5	RV013	E-11		
Q024	F-5	RV014	D-11		
Q025	E-6				
Q026	E-4				
Q027	E-4				
Q100	H-2				

VI-20 (VIDEO) PRINTED WIRING BOARD

—Ref. No. VI-20 BOARD : 2,000 series—

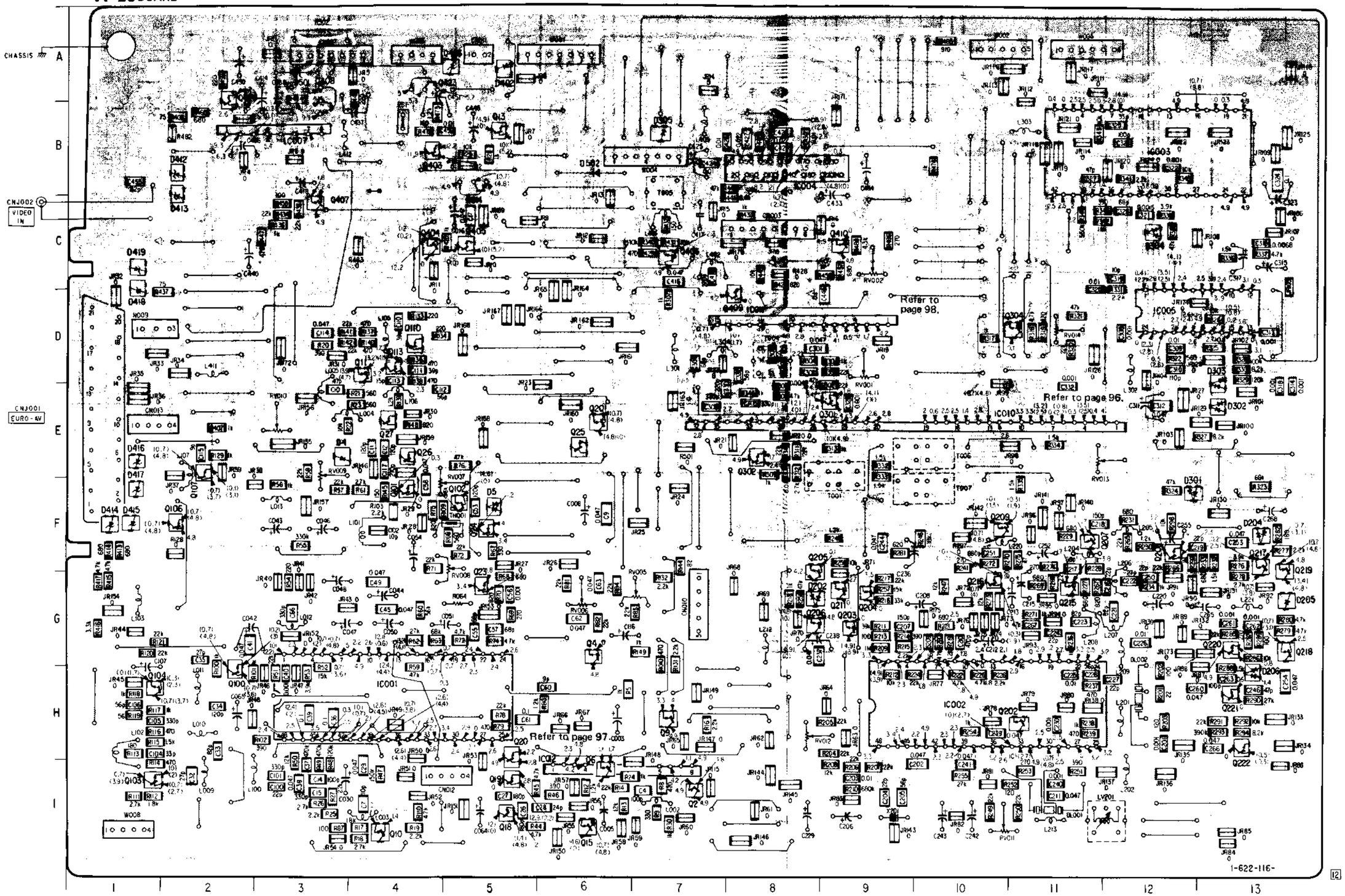
VI-20 BOARD



VI-20 (VIDEO) PRINTED WIRING BOARD

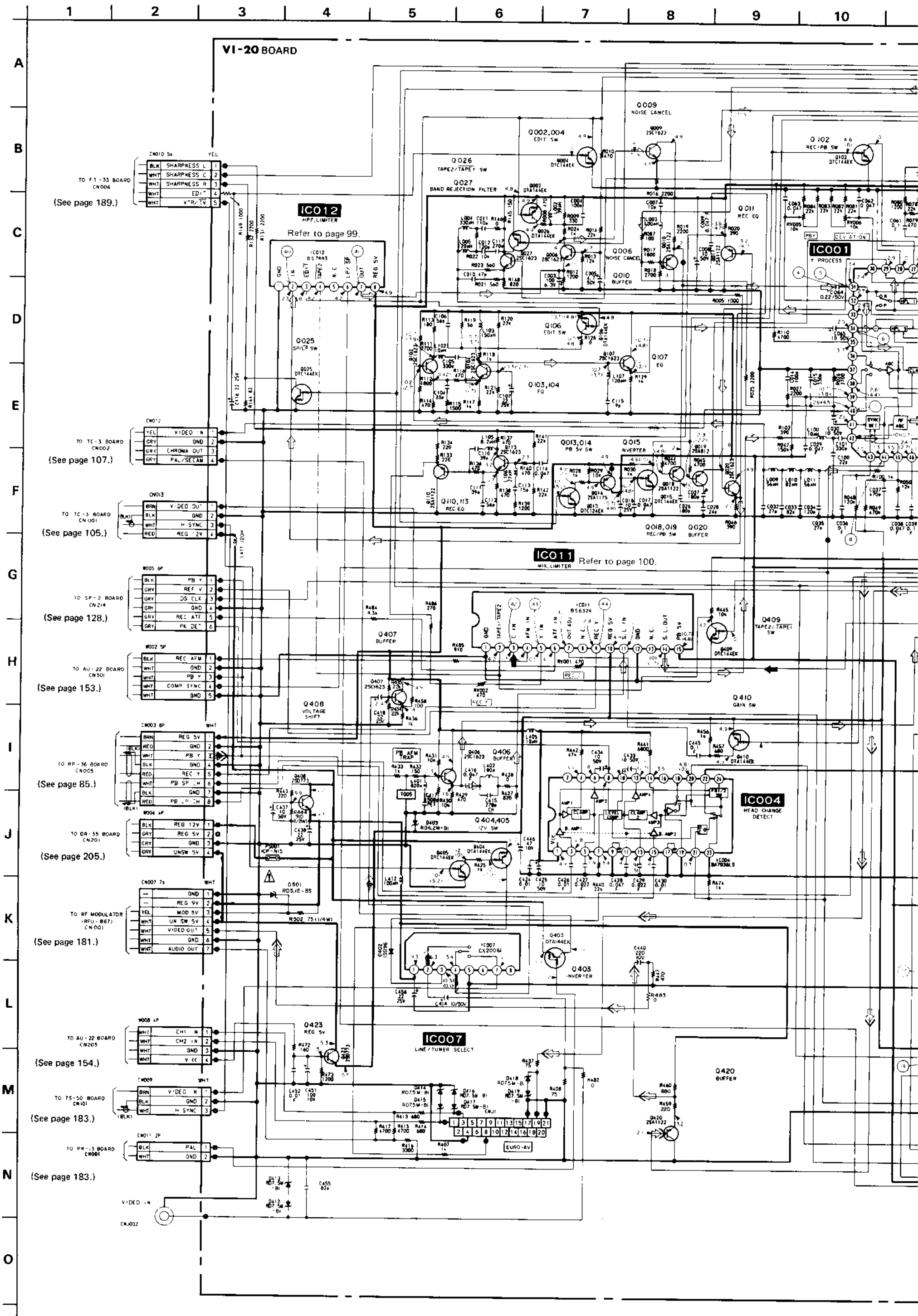
—Ref. No. VI-20 BOARD : 2, 000 series—

VI-20 BOARD

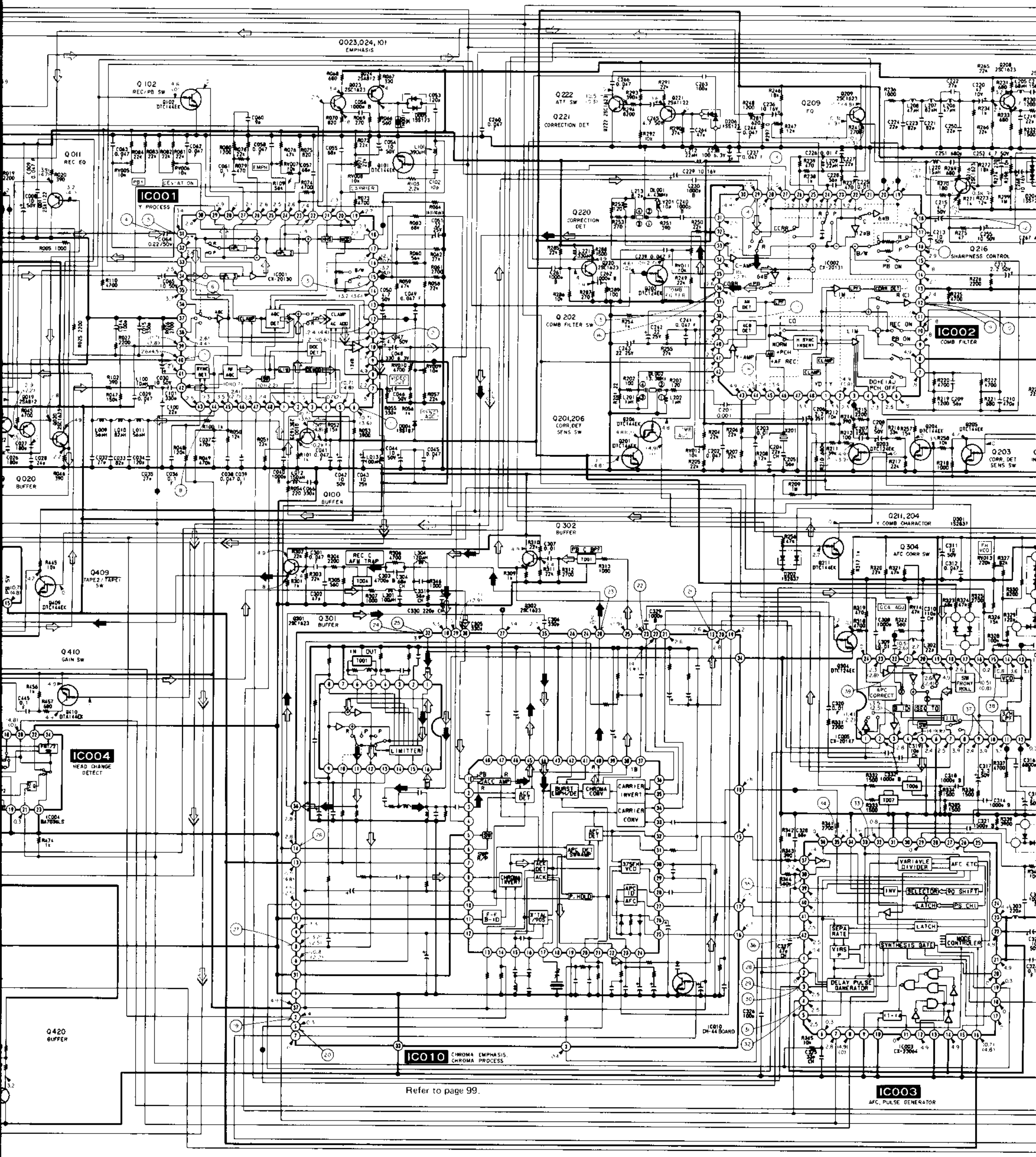


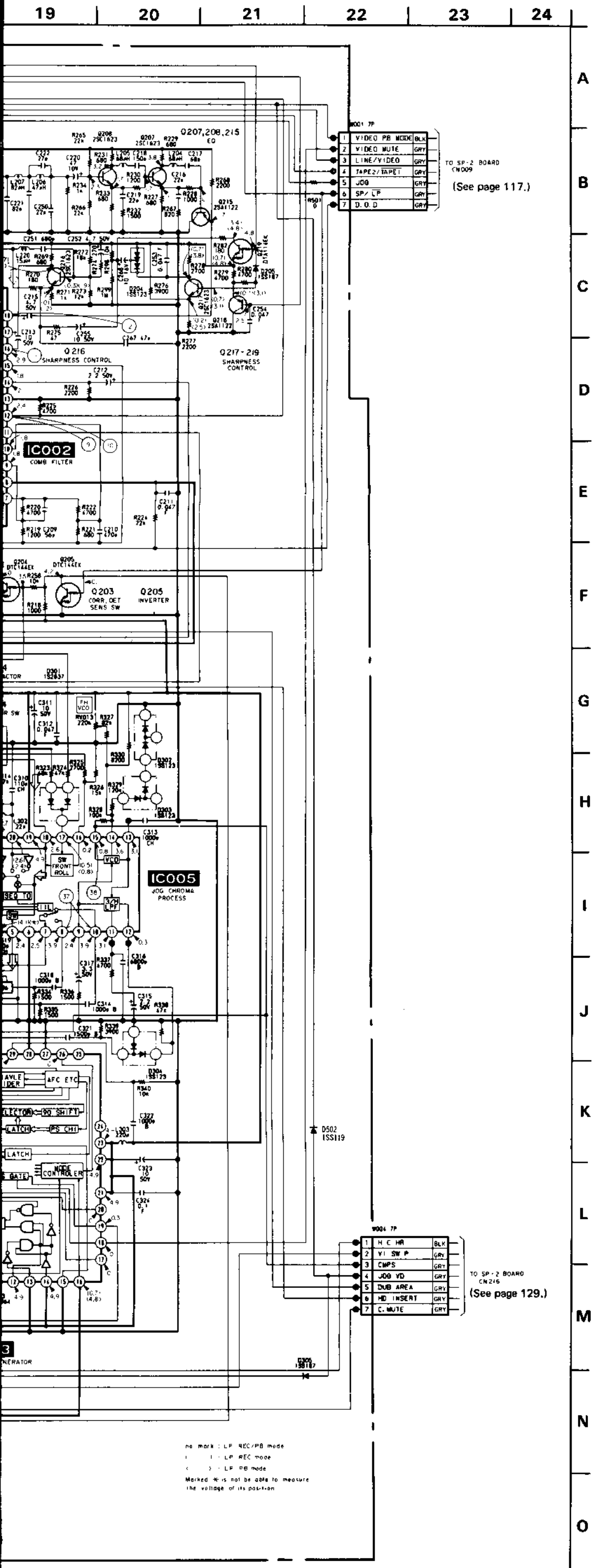
VI-20 (VIDEO) SCHEMATIC DIAGRAM

—Ref. No. VI-20 BOARD : 2,000 series—



VIDEO (2) **VIDEO (2)**


Q023,024,101
EMPHASIS
Q 102
REC/PB SW
Q 011
REC EQ
IC001
Y PROCESS
IC001
CX-20130
Q 222
ATF SW
Q221
CORRECTION DET
Q220
CORRECTION DET
Q209
EQ
Q216
SHARPNESS CONTROL
IC002
CX-20131
IC002
COMB FILTER
Q 202
COMB FILTER SW
Q201,206
CORR, DET SENS SW
Q203
CORR, DET SENS SW
Q211,204
Y COMB CHARACTOR
Q 304
AFC CORR SW
Q 302
BUFFER
Q 301
BUFFER
Q409
TAPE2 / TAPE1 SW
Q410
GAIN SW
Q420
BUFFER
Q020
BUFFER
Q100
BUFFER
IC004
HEAD CHANGE DETECT
IC004
IC010
CHROMA EMPHASIS, CHROMA PROCESS
IC010
DH-44 BOARD
IC003
AFC, PULSE GENERATOR
IC003
CX-23064
REC C AFM TRAP
PB C BPF
LIMITTER
ACC AMP
BURST BLANKING
CHROMA CONV
CARRIER INVERT
CARRIER CONV
ACC DET
ACK DET
ACK
APC ID
AFC
F-F B-ID
P. HOLD
APC CORRECT
VARIABLE DIVIDER
AFC ETC
INV
SELECTION
90 SHIFT
LATCH
PS CHU
SEPARATE
VIBS P
SYNTHESIS GATE
MODE CONTROLLER
DELAY PULSE GENERATOR
SW FRONT ROLL
VCO
REC ON
PB ON
COMB
NORM
H SYNC INSERT
+PCH
+AF REC
DO+EIAJ PCH OFF
Y-AMP
C-AMP
AM DET
ACC DET
CLAMP
SYNC SEP AGC
VIDEO OUT
EMPH
DEVIATION
LIMITER
DOC DET
SYNC DET
RF AGC
ABC
AGC DET
CLAMP
AGC ADJ
PB
REC
SW
LPF
BPF
TRAP
Refer to page 99.



Note:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/10W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF.
  50V or less are not indicated except for electrolytics. and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- : panel designation.
- : adjustment for repair.
- : B + bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a colour-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

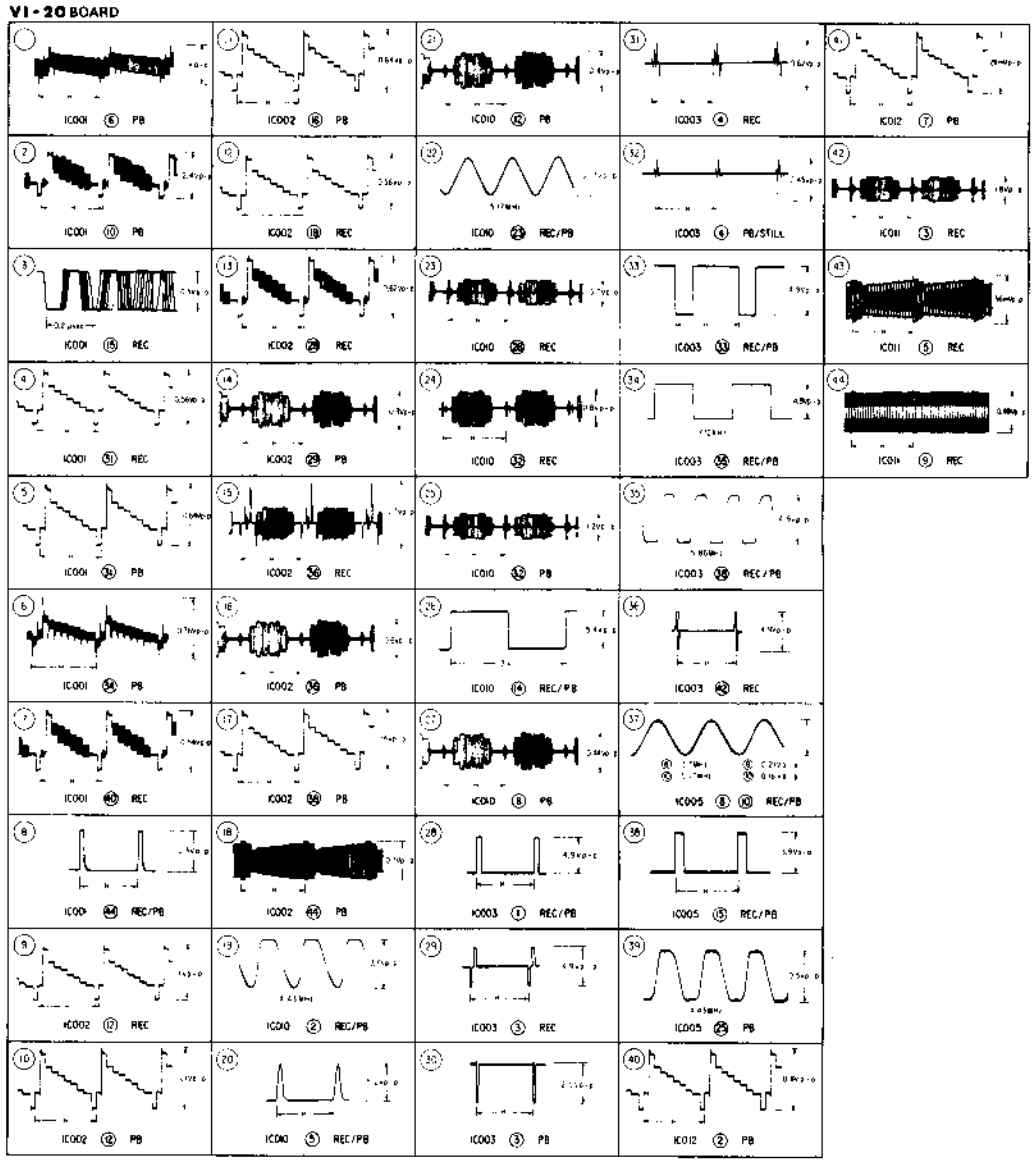
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

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

- **Signal path**

➡ : REC CHROMA Signal
⇨ : PB CHROMA Signal

VI-20 BOARD



CH-44 (CHROMA PROCESS), BS6324(MIX), BS7443(NOISE CANCEL) PRINTED WIRING BOARDS

—Ref. No. CH-44 BOARD : 3,000 series, BS6324 BOARD : 3,100 series, BS7443 BOARD : 3,200 series—

Note:

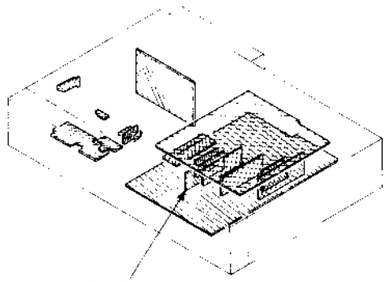
- ・ : indicates a lead wire mounted on the component side.
- ● : indicates a lead wire mounted on the printed side.
- ※ : Through hole.
- : Pattern from the side which enables seeing.

- Digital transistor (BS7443:DT001,DT002,DT003,DT004,DT005 DT006, BS6324:DT001) transistor with resistors.
  Refer to the BS7443,BS6324 boards schematic diagram for digital transistor.

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

Caution:

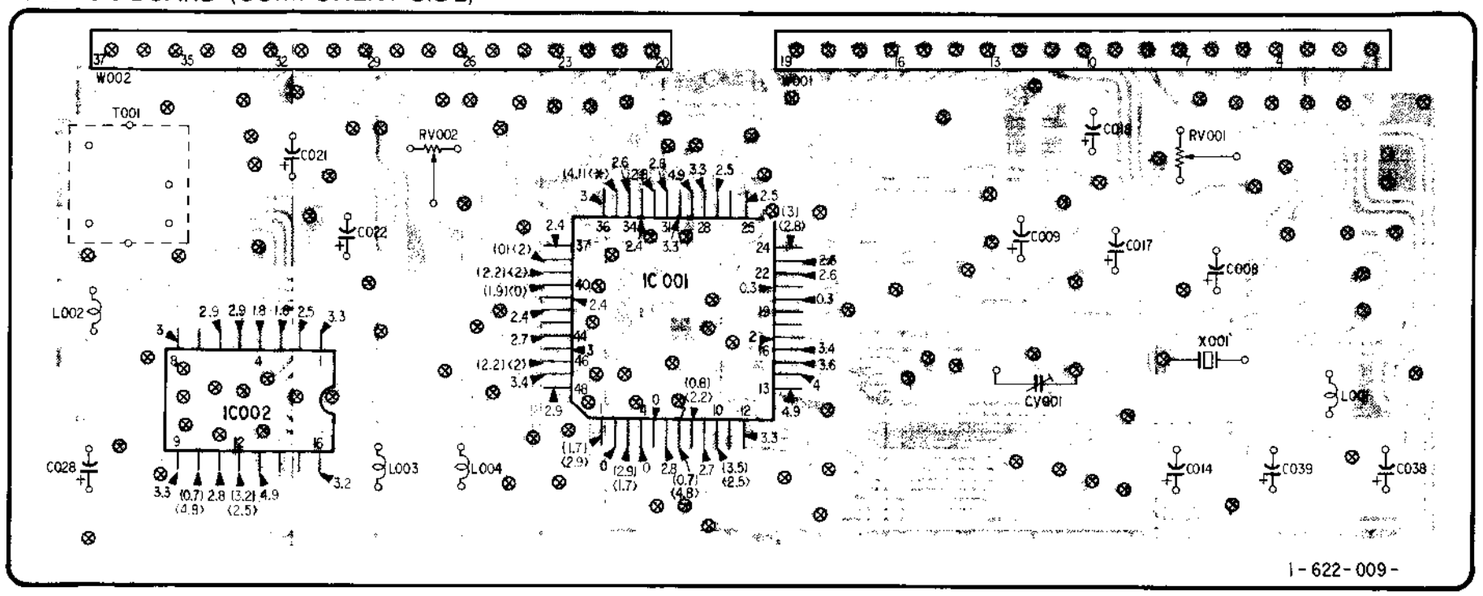
Pattern face side (Solder Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side (Component Side)	Parts on the parts face side seen from the parts face are indicated.



CH-44
(CHROMA Process)

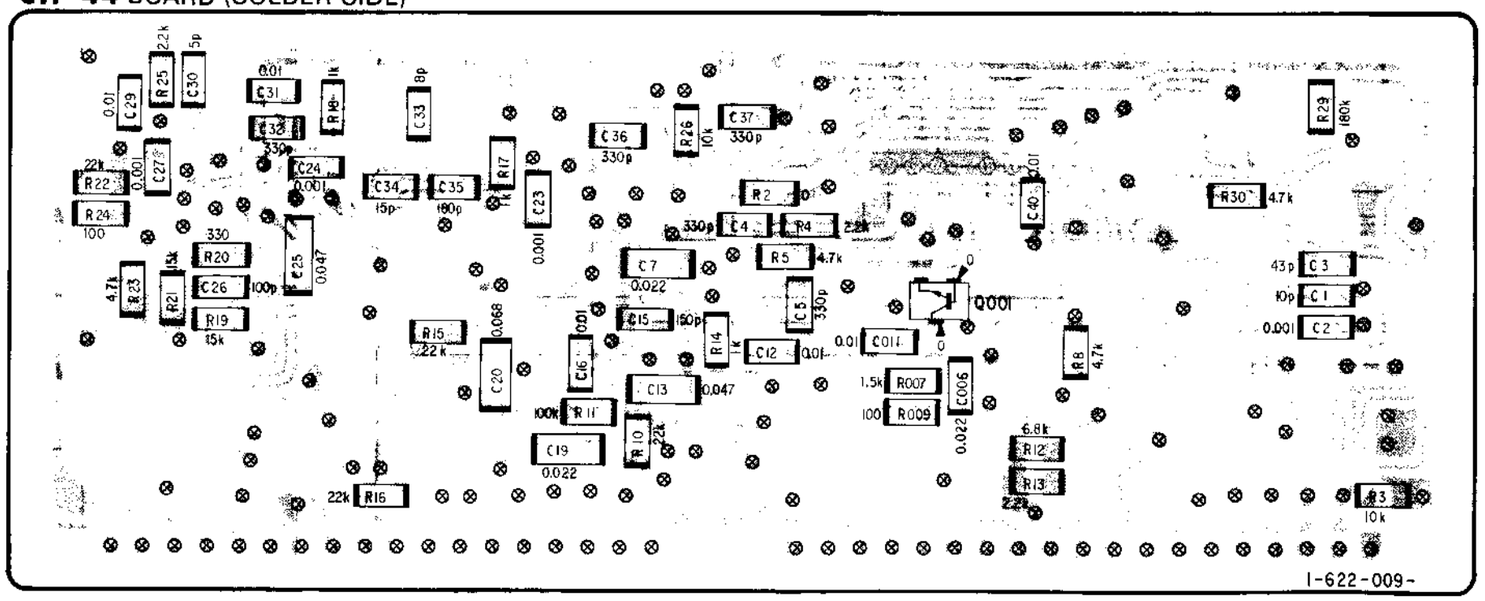
IC010

CH-44 BOARD (COMPONENT SIDE)

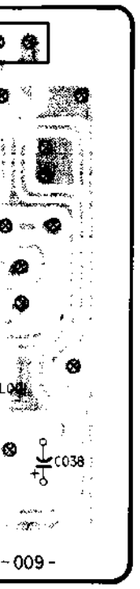


IC010

CH-44 BOARD (SOLDER SIDE)

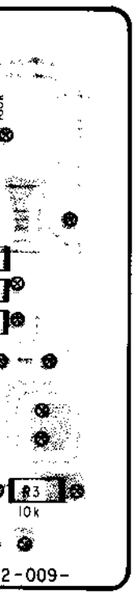


no mark : LP REC/PB mode
( ) : LP REC mode
< > : LP PB mode
Marked * s not able to measure the voltage at its position



II

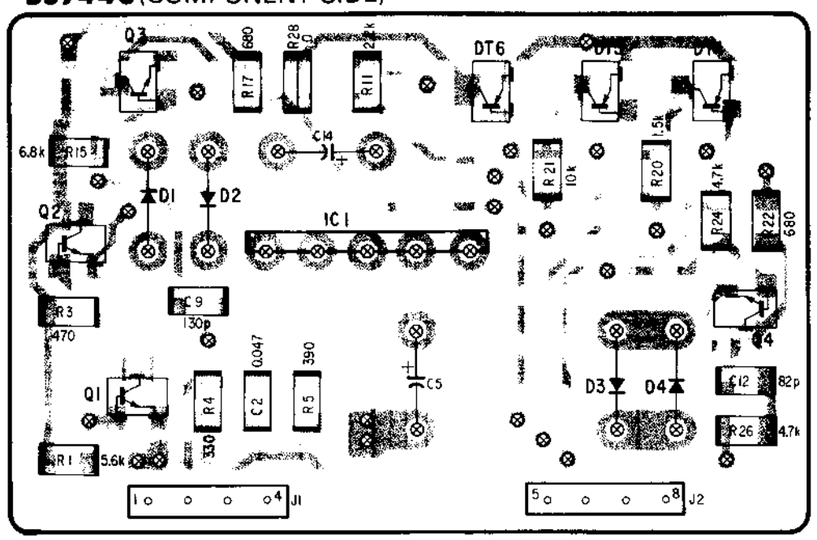
LP REC/PB mode
LP REC mode
LP PB mode
s not able to measure
e of its position



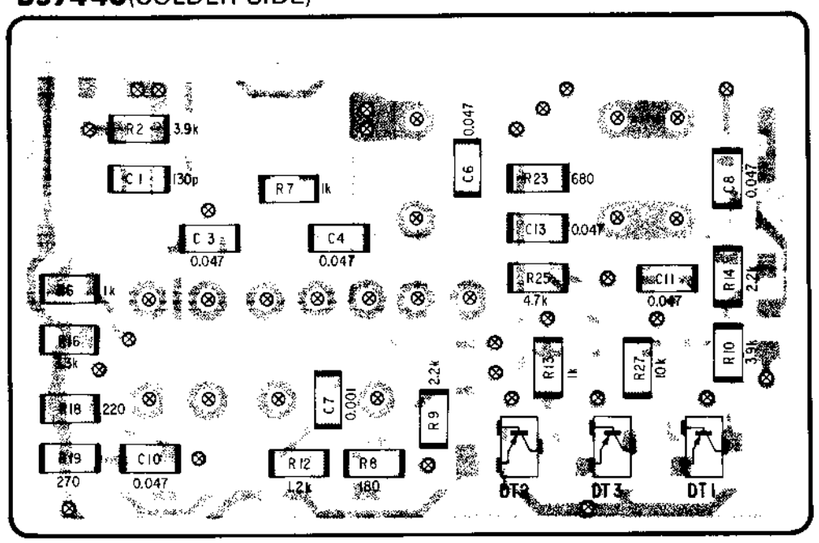
II

650PS

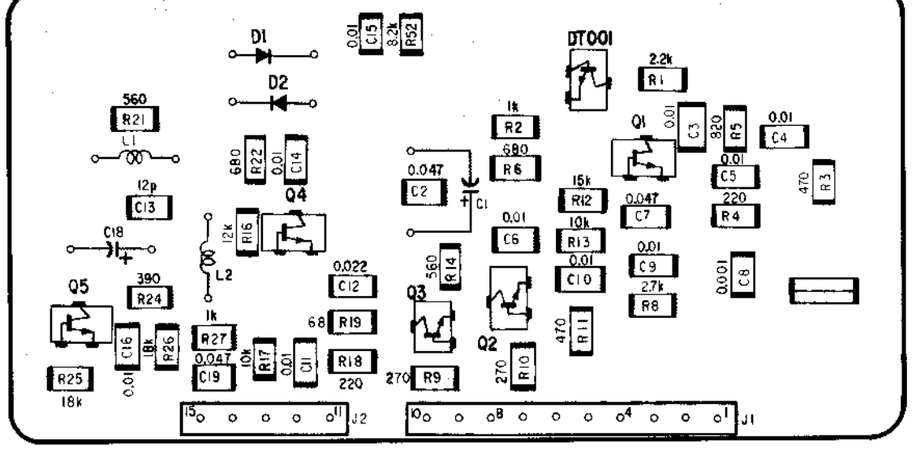
IC012
BS7443(COMPONENT SIDE)



IC012
BS7443(SOLDER SIDE)

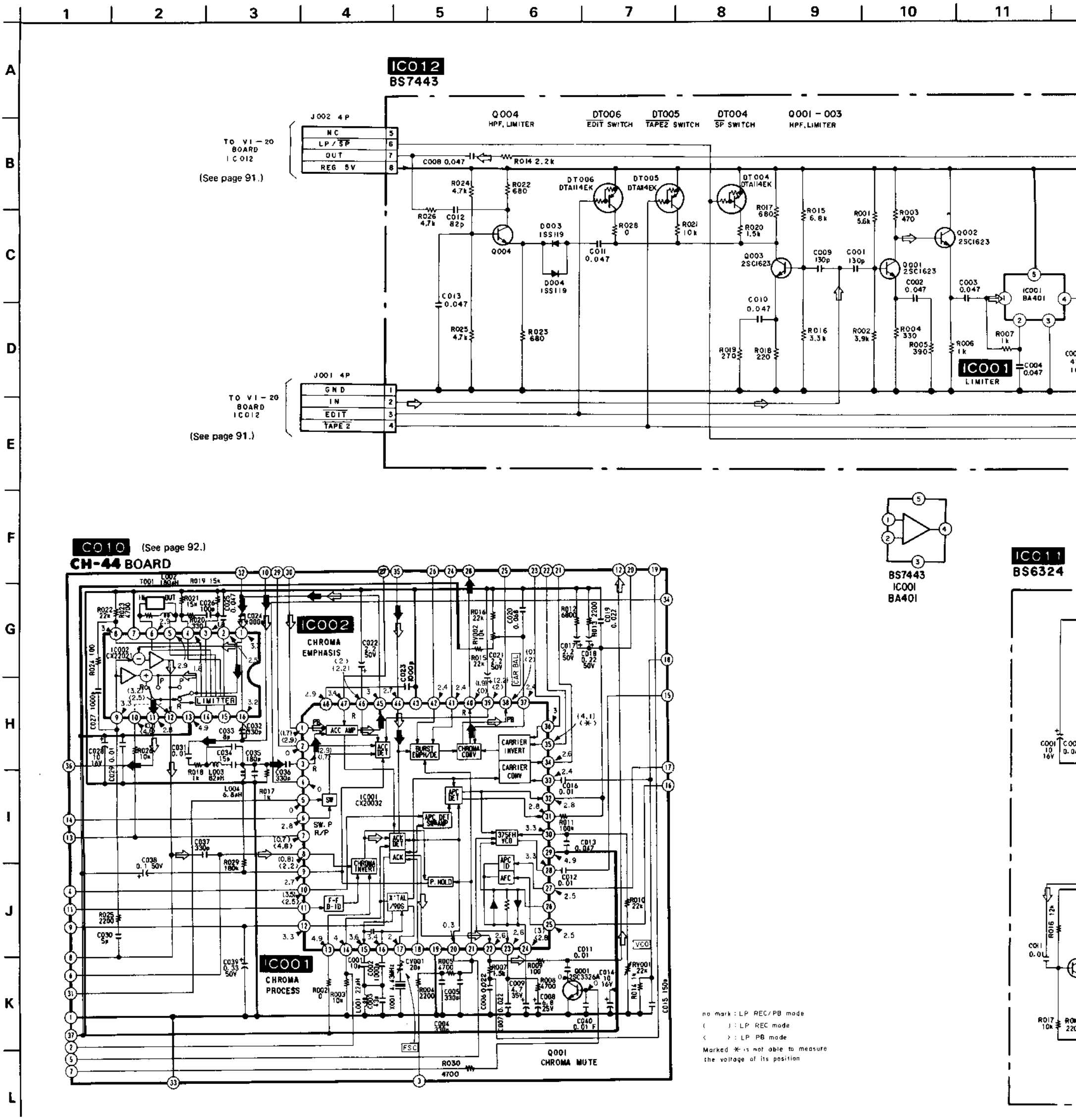


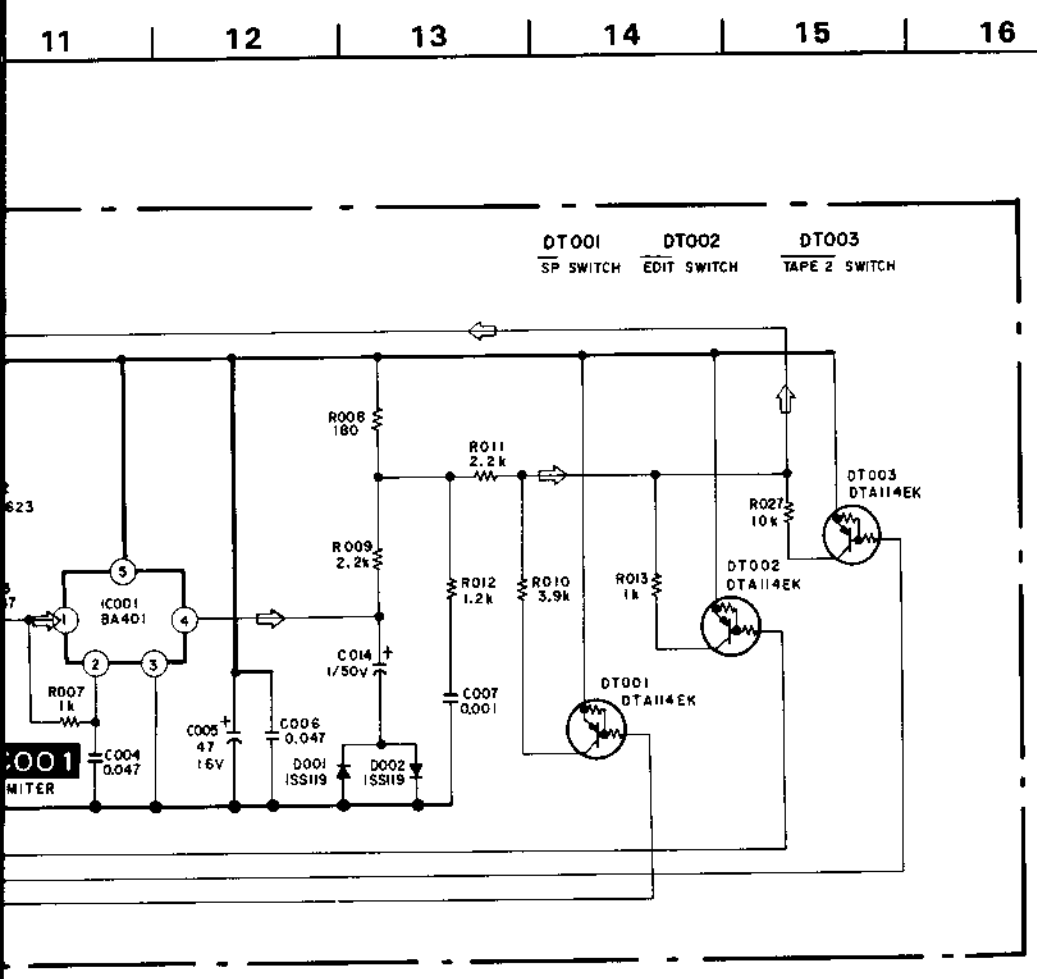
IC011
BS6324

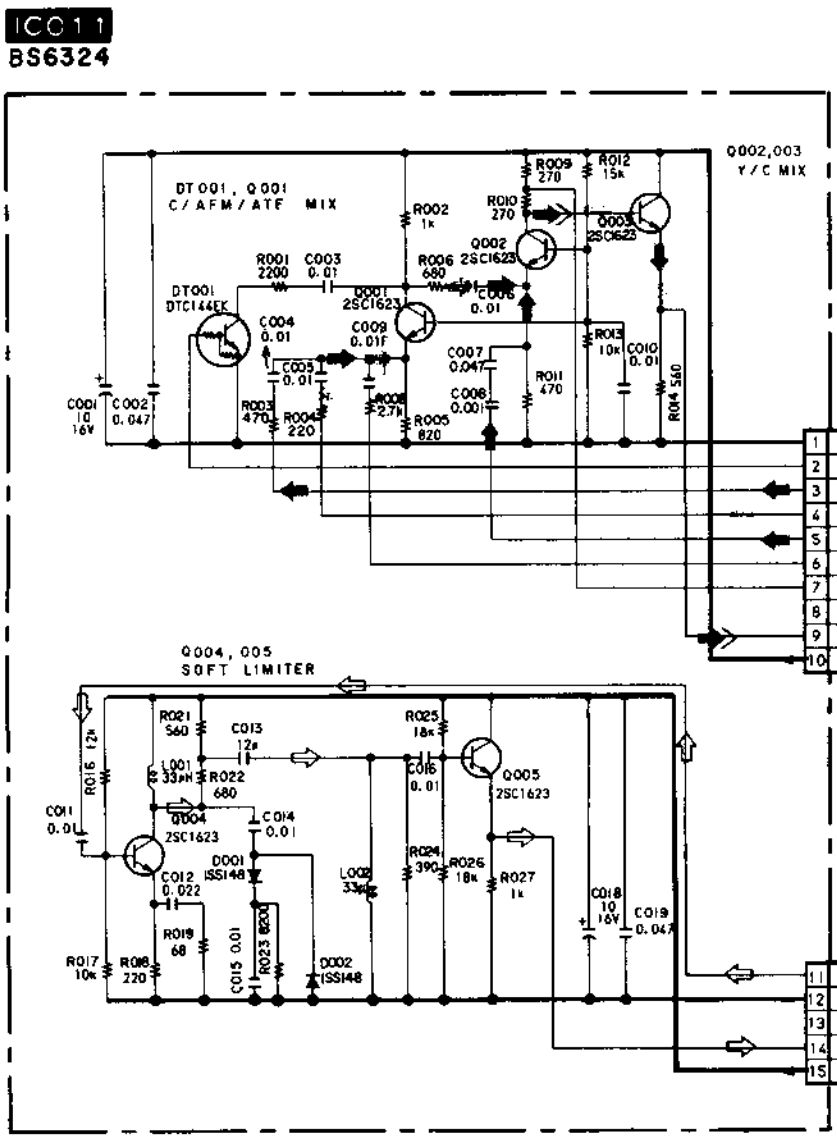


CH-44 (CHROMA PROCESS), BS6324(MIX), BS7443(NOISE CANCEL) SCHEMATIC DIAGRAM

—Ref. No. CH-44 BOARD : 3, 000 series, BS6324 BOARD : 3, 100 series, BS7443 BOARD : 3, 200 series—







Note:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/10W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF.
  50V or less are not indicated except for electrolytice, and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : adjustment for repair.
- ▬ : B + bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a colour-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

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

- **Signal path**
  - ➡ : REC Y Signal
  - ⇨ : PB Y Signal
  - ➡ : REC CHROMA Signal
  - ⇨ : PB CHROMA Signal
  - ➡ : REC Y/CHROMA Signal

A B C D E F G H I J K L

Note:

- ⋯ : indicates a lead wire mounted on the component side.
- ● : indicates a lead wire mounted on the printed side.
- ⊗ : Through hole.
- : Pattern from the side which enables seeing.
- : Parts mounted on the component side.
- : B+ pattern from the side which enables seeing.
- Digital transistor (TC-3:Q007) transistor with resistors.
  Refer to the TC-3 board schematic diagram for digital transistor.

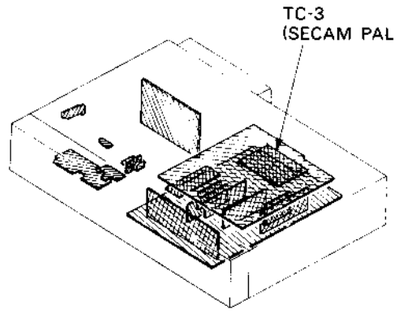
When indicating parts by reference number, please include the board name.

Caution:

Pattern face side: (Solder Side) Parts on the pattern face side seen from the pattern face are indicated.

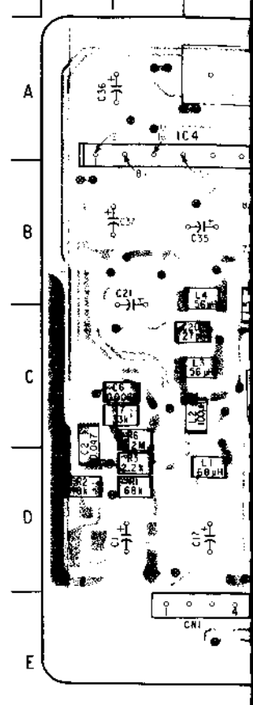
Parts face side: (Component Side) Parts on the parts face are indicated.

CV1	C-3
D1	D-7
D2	C-4
IC1	D-3
IC2	B-6
IC3	C-6
IC4	A-2
LV1	D-5
LV2	B-4
LV3	B-3
Q1	G-1
Q2	G-1
Q3	H-2
Q4	B-2
Q5	B-2
Q6	C-3
Q7	C-7
Q8	B-8
Q9	B-8
Q10	A-7
Q12	D-2
RV1	B-5
RV2	C-5
RV3	E-6
RV4	C-2
RV5	E-5
RV6	C-8
RV7	C-3
TP1	B-4,I-4

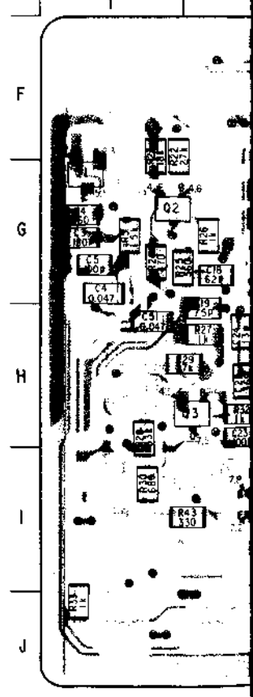


TC-3(SECAM-PAL
—Ref. No. TC-3 BOARD

【TC-3 BOARD】(COMPON



【TC-3 BOARD】(SOLDE



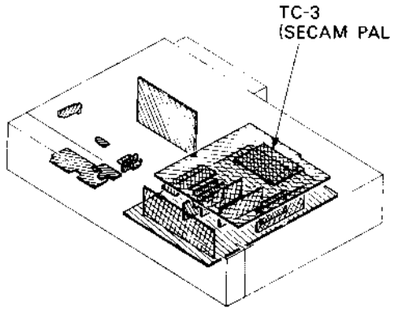
Note:

- ○– : indicates a lead wire mounted on the component side.
- ● : indicates a lead wire mounted on the printed side.
- ⊗ : Through hole.
- : Pattern from the side which enables seeing.
- : Pattern from the side which enables seeing.
- : B1 pattern from the side which enables seeing.
- Digital transistor (TC-3:Q007) transistor with resistors.
  Refer to the TC-3 board schematic diagram for digital transistor.

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

Caution:

Pattern face side (Solder Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side. (Component Side)	Parts on the parts face side seen from the parts face are indicated.

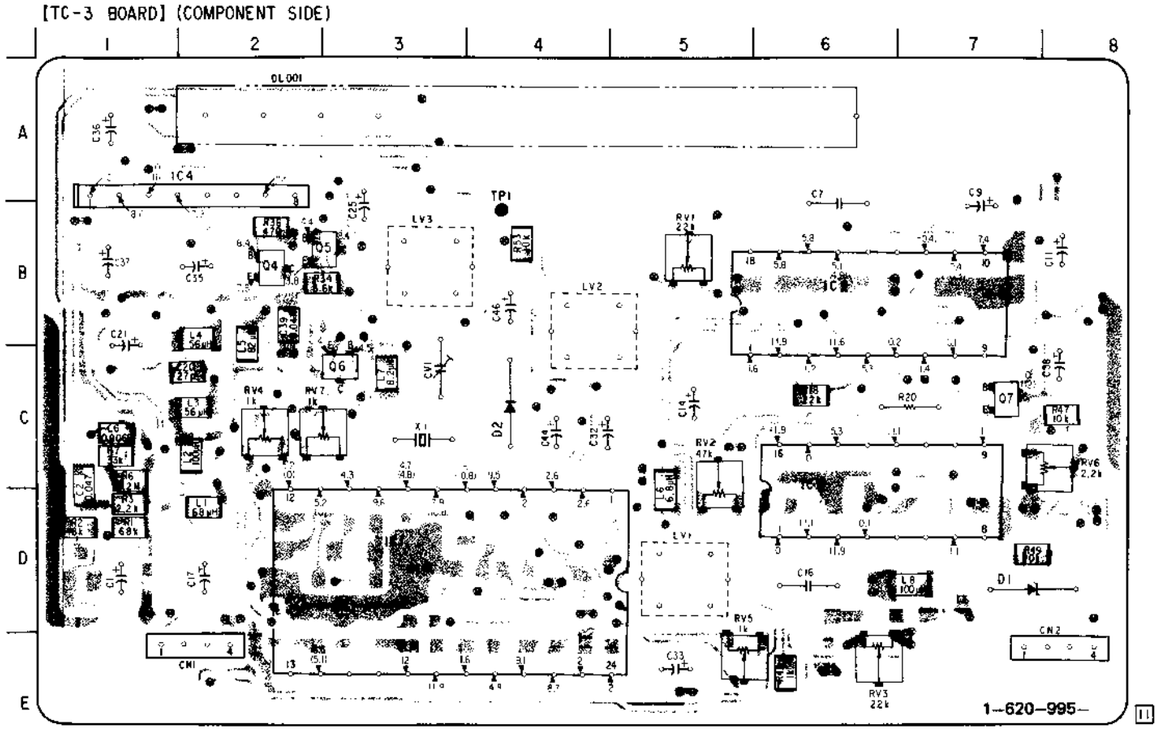


CV1	C-3
D1	D-7
D2	C-4
IC1	D-3
IC2	B-6
IC3	C-6
IC4	A-2
LV1	D-5
LV2	B-4
LV3	B-3
Q1	G-1
Q2	G-1
Q3	H-2
Q4	B-2
Q5	B-2
Q6	C-3
Q7	C-7
Q8	B-8
Q9	B-8
Q10	A-7
Q12	D-2
RV1	B-5
RV2	C-5
RV3	E-6
RV4	C-2
RV5	E-5
RV6	C-8
RV7	C-3
TP1	B-4,I-4

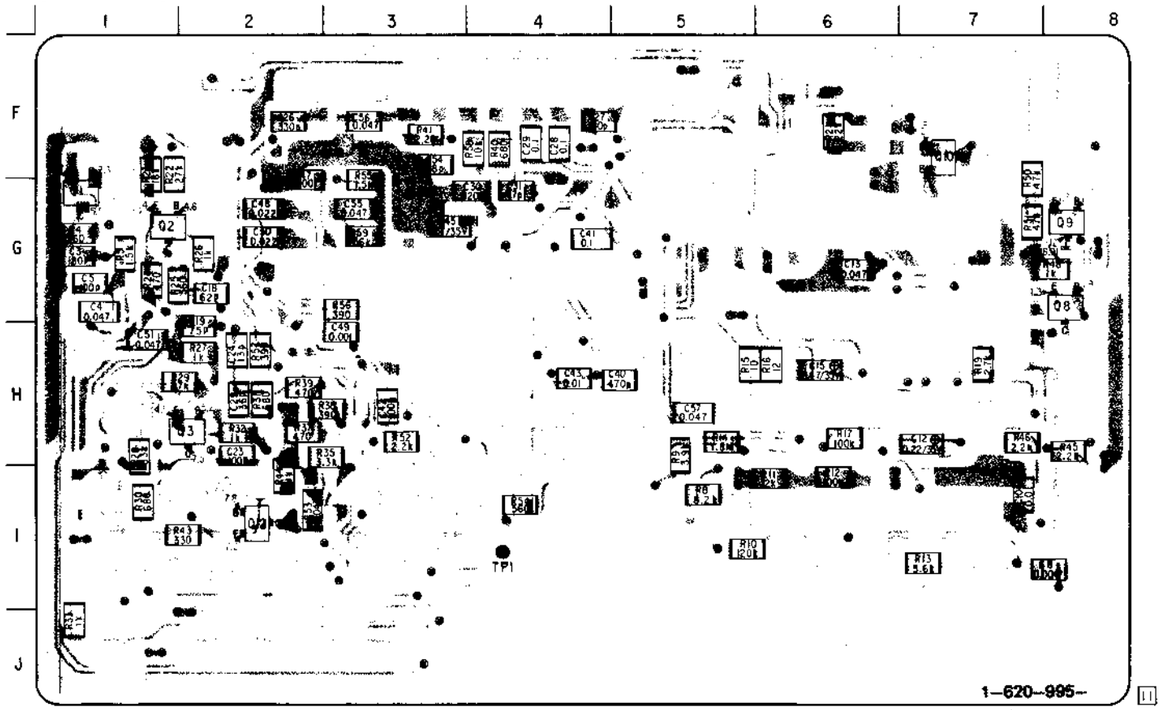
TC-3(SECAM-PAL CONVERSION) PRINTED WIRING BOARD

–Ref. No. TC-3 BOARD : 3,500 series–

[TC-3 BOARD] (COMPONENT SIDE)



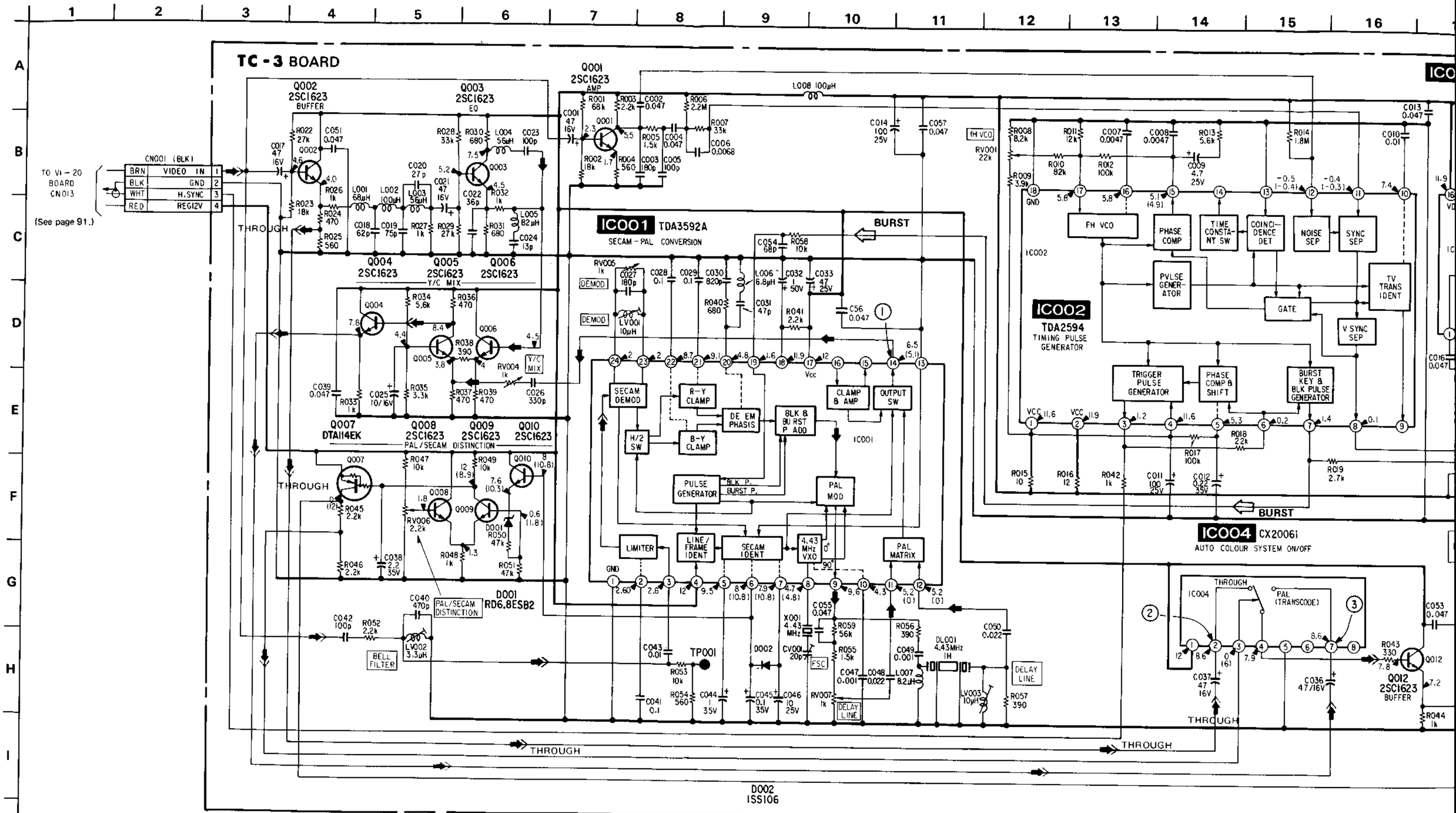
[TC-3 BOARD] (SOLDER SIDE)

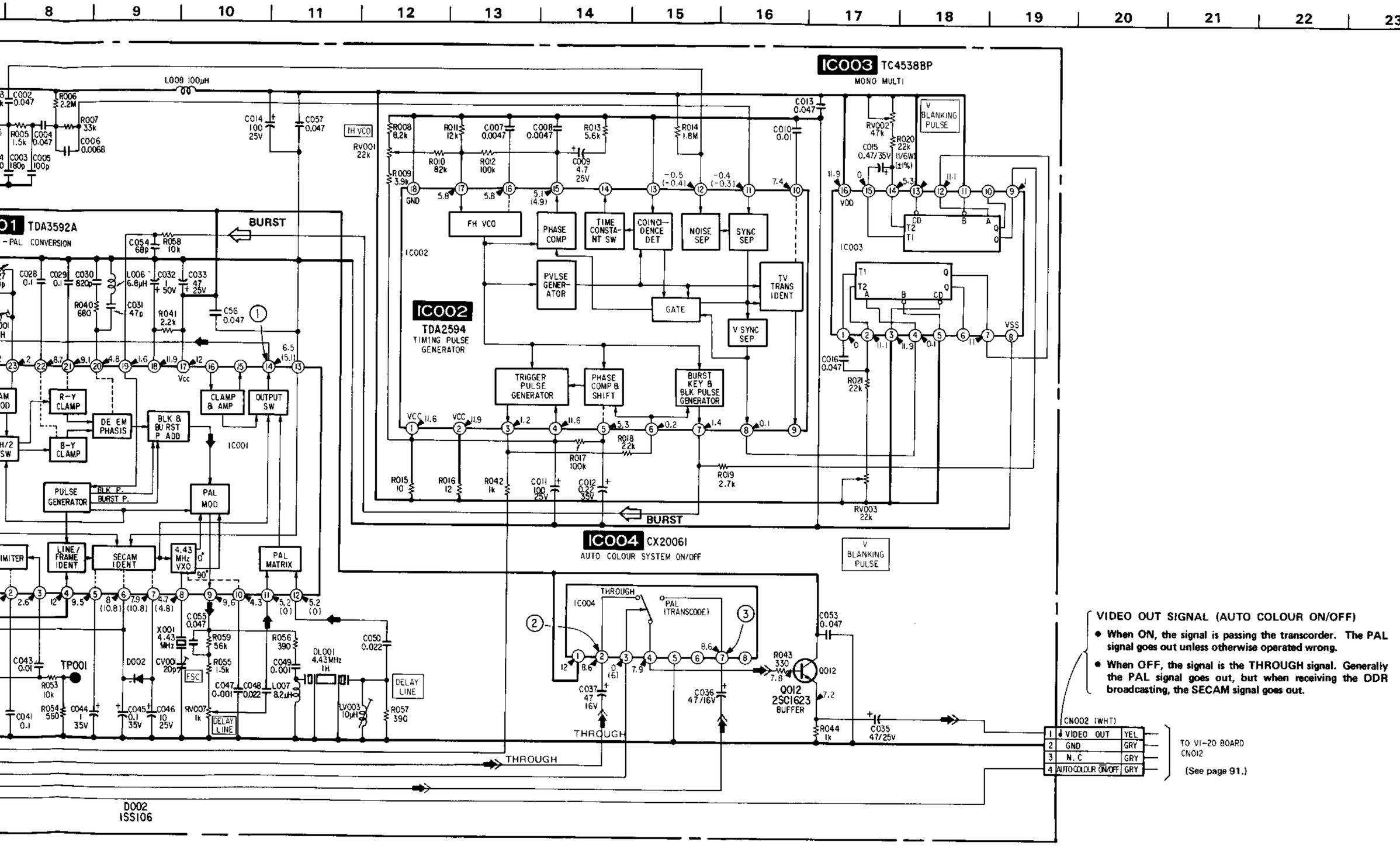


no mark : SECAM in
( ) : PAL in

TC-3 (SECAM-PAL CONVERSION) SCHEMATIC DIAGRAM

—Ref. No. TC-3 BOARD : 3, 500 series—




IC003 TC4538BP
MONO MULTI
V BLANKING PULSE
RV002 47k
R020 22k (1/6W) (±1%)
C015 0.47/35V
VDD
VSS
IC003
C016 0.047
R021 22k
L008 100μH
C014 100 25V
C057 0.047
fH VCO
RV001 22k
R008 8.2k
R011 12k
C007 0.0047
C008 0.0047
R013 5.6k
R014 1.8M
C010 0.01
C013 0.047
R010 82k
R012 100k
C009 4.7 25V
R009 3.9k
GND
IC002
IC002
TDA2594
TIMING PULSE GENERATOR
FH VCO
PHASE COMP
TIME CONSTANT SW
COINCIDENCE DET
NOISE SEP
SYNC SEP
PULSE GENERATOR
GATE
TV TRANS IDENT
V SYNC SEP
TRIGGER PULSE GENERATOR
PHASE COMP & SHIFT
BURST KEY & BLK PULSE GENERATOR
R018 22k
R017 100k
R019 2.7k
RV003 22k
R015 10
R016 12
R042 1k
C011 100 25V
C012 0.22 35V
BURST
IC004 CX20061
AUTO COLOUR SYSTEM ON/OFF
V BLANKING PULSE
IC001 TDA3592A
PAL - PAL CONVERSION
BURST
C054 68p
R058 10k
C028 0.1
C029 0.1
C030 820p
L006 6.8μH
C032 1 50V
C033 47 25V
R040 680
C031 47p
R041 2.2k
C56 0.047
Vcc
R-Y CLAMP
B-Y CLAMP
DE EM PHASIS
BLK & BURST P ADD
CLAMP & AMP
OUTPUT SW
IC001
PULSE GENERATOR
BLK P.
BURST P.
PAL MOD
LIMITER
LINE/ FRAME IDENT
SECAM IDENT
4.43 MHz VXO
0°
90°
PAL MATRIX
C055 0.047
X001 4.43 MHz
R059 56k
R055 1.5k
FSC
CV001 20p
RV007 1k
DELAY LINE
C047 0.001
C048 0.022
L007 8.2μH
R056 390
C049 0.001
DL001 4.43MHz 1H
LV003 10μH
C050 0.022
R057 390
DELAY LINE
C043 0.01
TP001
R053 10k
R054 560
C044 1 35V
D002
C045 0.1 35V
C046 10 25V
C041 0.1
THROUGH
IC004
PAL (TRANSCODE)
C037 47 16V
C036 47/16V
THROUGH
R043 330
Q012
Q012 2SC1623 BUFFER
C053 0.047
C035 47/25V
R044 1k
D002 ISS106
VIDEO OUT SIGNAL (AUTO COLOUR ON/OFF)
• When ON, the signal is passing the transcorder. The PAL signal goes out unless otherwise operated wrong.
• When OFF, the signal is the THROUGH signal. Generally the PAL signal goes out, but when receiving the DDR broadcasting, the SECAM signal goes out.
CN002 (WHT)
1 VIDEO OUT YEL
2 GND GRY
3 N.C GRY
4 AUTO COLOUR ON/OFF GRY
TO VI-20 BOARD CN012
(See page 91.)

A B C D E F G H I J

VIDEO OUT SIGNAL (AUTO COLOUR ON/OFF)

- **When ON, the signal is passing the transcorder. The PAL signal goes out unless otherwise operated wrong.**
- **When OFF, the signal is the THROUGH signal. Generally the PAL signal goes out, but when receiving the DDR broadcasting, the SECAM signal goes out.**

CN002 (WHT)

1	VIDEO OUT	YEL
2	GND	GRY
3	N. C	GRY
4	AUTOCOLOUR ON/OFF	GRY

TO VI-20 BOARD CN012

(See page 91.)

Note:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/10W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF.
  50V or less are not indicated except for electrolytice. and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : adjustment for repair.
- ▬ : B + bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a colour-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

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

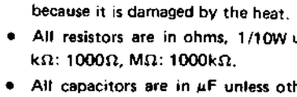
- **Signal path**
  - ➡ : REC Y Signal
  - ➡ : REC CHROMA Signal
  - ➡» : REC Y/CHROMA Signal

TC-3 BOARD

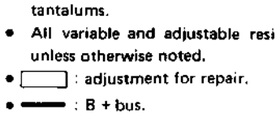
PAL

① IC 4 ⑭ E-E

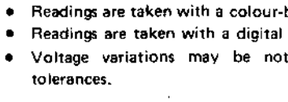
PAL



② IC4 ② E-E



② IC4 ② E-E



③ IC4 ⑦ E-E

EV-S650PS

Note:

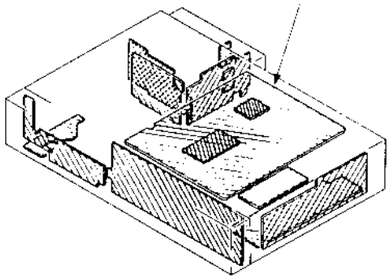
- ・ : indicates a lead wire mounted on the component side.
- ● : indicates a lead wire mounted on the printed side.
- ℕ : Through hole.
- : Pattern from the side which enables seeing.

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

Caution:

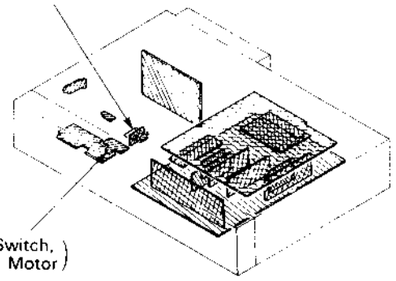
Pattern face side (Solder Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side (Component Side)	Parts on the parts face side seen from the parts face are indicated.

SP-2
(System Control)



LS-9
(Loading Switch)

MS-4
(Mode Switch,
Control Motor)

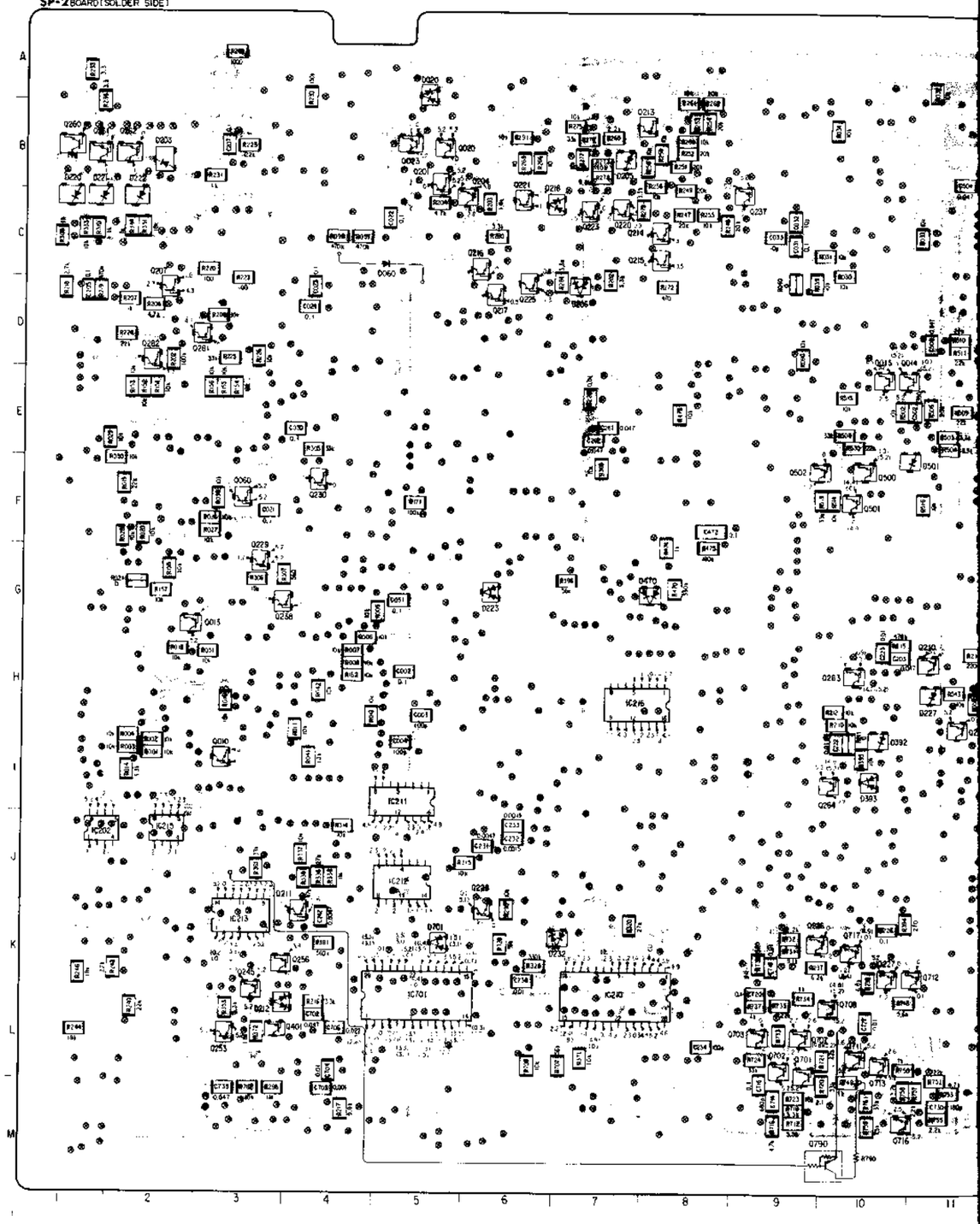


CN001	D-27	IC210	K-7	Q390	J-14	TP603	G-20
CN002	K-19	IC211	I-5	Q401	L-4	TP604	D-18
CN003	M-32	IC212	J-5	Q480	G-25	TP607	G-22
CN004	A-27	IC213	K-3	Q481	G-25	TP608	C-21
CN005	A-22	IC215	J-2	Q482	F-25	TP609	E-18
CN006	A-23	IC218	F-6	Q500	F-10		
CN007	A-28	IC220	F-27	Q501	F-10		
CN008	G-32	IC500	E-23	Q502	F-9		
CN009	A-24	IC501	C-22	Q601	C-13		
CN010	E-28	IC502	J-15	Q602	C-14		
CN011	L-20	IC600	B-19	Q604	B-14		
CN012	M-14	IC601	H-20	Q605	B-21		
CN013	L-22	IC602	E-20	Q606	J-18		
CN014	K-20	IC603	F-20	Q701	L-9		
CN015	A-24	IC604	D-14	Q702	L-9		
CN016	H-32	IC605	E-18	Q703	L-9		
CN017	C-29	IC606	H-18	Q704	M-24		
CN018	A-28	IC701	K-5	Q705	K-23		
CN019	C-30	IC703	L-30	Q706	K-24		
CN020	E-32			Q707	L-9		
CN021	E-31	Q010	I-3	Q708	L-10		
CN022	C-28	Q011	H-31	Q709	L-25		
CN207	A-26	Q012	H-31	Q710	M-21		
CN212	B-31	Q013	G-3	Q711	L-10		
CN213	A-29	Q014	D-10	Q712	K-11		
CN214	L-25	Q015	D-10	Q713	L-10		
CN215	J-22	Q020	B-5	Q714	L-23		
CN216	L-21	Q021	B-28	Q715	L-22		
CN217	G-23	Q022	B-28	Q716	M-10		
CN601	B-22	Q023	B-5	Q717	K-10		
CN603	M-12	Q054	I-22	Q777	J-29		
CN605	F-22	Q055	I-22				
CN606	F-23	Q060	F-3	RV201	J-26		
CN607	B-22	Q085	G-16	RV202	J-26		
		Q086	H-16	RV203	J-26		
D025	A-5	Q090	D-23	RV204	J-26		
D021	A-28	Q091	D-24	RV206	K-25		
D060	C-4	Q201	B-5	RV208	K-25		
D082	G-16	Q202	B-28	RV209	D-25		
D203	B-2	Q203	B-27	RV210	M-29		
D205	B-7	Q204	B-6	RV601	B-20		
D206	D-7	Q205	K-26	RV602	F-18		
D208	H-24	Q206	C-30	RV603	C-21		
D209	I-26	Q207	C-2	RV604	B-21		
D211	K-27	Q208	D-32	RV701	M-27		
D212	L-3	Q209	D-30				
D213	I-22	Q210	H-11	TP001	G-29		
D214	J-30	Q211	K-4	TP002	I-30		
D215	D-27	Q212	A-26	TP003	E-32		
D216	C-6	Q213	B-7	TP004	G-29		
D217	I-24	Q214	C-7	TP005	G-29		
D218	K-30	Q215	C-7	TP201	I-23		
D220	B-1	Q216	C-6	TP202	G-24		
D221	B-1	Q217	D-6	TP203	G-22		
D222	B-2	Q218	C-26	TP204	G-22		
D223	G-6	Q219	C-27	TP205	G-22		
D226	K-30	Q220	C-7	TP206	J-21		
D227	H-11	Q221	B-6	TP207	G-24		
D230	D-31	Q222	C-26	TP208	K-29		
D232	K-7	Q223	C-7	TP209	L-22		
D233	E-27	Q224	C-27	TP210	B-27		
D390	F-27	Q225	D-6	TP211	B-27		
D391	J-14	Q226	K-9	TP212	J-27		
D392	I-10	Q227	K-10	TP213	K-28		
D393	I-10	Q228	J-6	TP214	K-25		
D501	F-11	Q229	F-3	TP215	J-24		
D502	H-13	Q230	F-4	TP216	K-26		
D600	B-13	Q232	K-23	TP217	K-26		
D601	H-14	Q233	K-30	TP219	M-26		
D603	I-14	Q235	H-11	TP220	I-30		
D604	H-14	Q237	C-9	TP221	L-27		
D701	K-5	Q238	G-3	TP222	J-29		
D702	K-23	Q240	E-26	TP223	L-26		
		Q242	K-12	TP224	J-23		
IC001	H-30	Q245	K-3	TP225	E-27		
IC002	F-31	Q246	H-28	TP226	G-24		
IC003	C-23	Q248	I-31	TP227	L-27		
IC004	F-29	Q249	K-31	TP228	I-30		
IC005	F-28	Q250	K-31	TP229	G-28		
IC007	C-29	Q251	L-31	TP230	M-26		
IC008	D-29	Q252	L-30	TP231	L-21		
IC009	D-30	Q253	L-3	TP232	C-32		
IC010	L-18	Q254	K-31	TP233	C-31		
IC011	H-17	Q256	K-4	TP234	C-31		
IC201	E-26	Q260	B-1	TP235	L-25		
IC202	J-1	Q261	B-1	TP236	M-30		
IC204	H-23	Q262	B-2	TP237	I-32		
IC205	K-21	Q263	H-10	TP238	E-25		
IC206	D-32	Q264	I-10	TP239	J-31		
IC207	B-30	Q280	C-31	TP240	E-26		
IC208	B-32	Q281	D-2	TP241	E-26		
IC209	B-26	Q282	D-2	TP242	E-26		

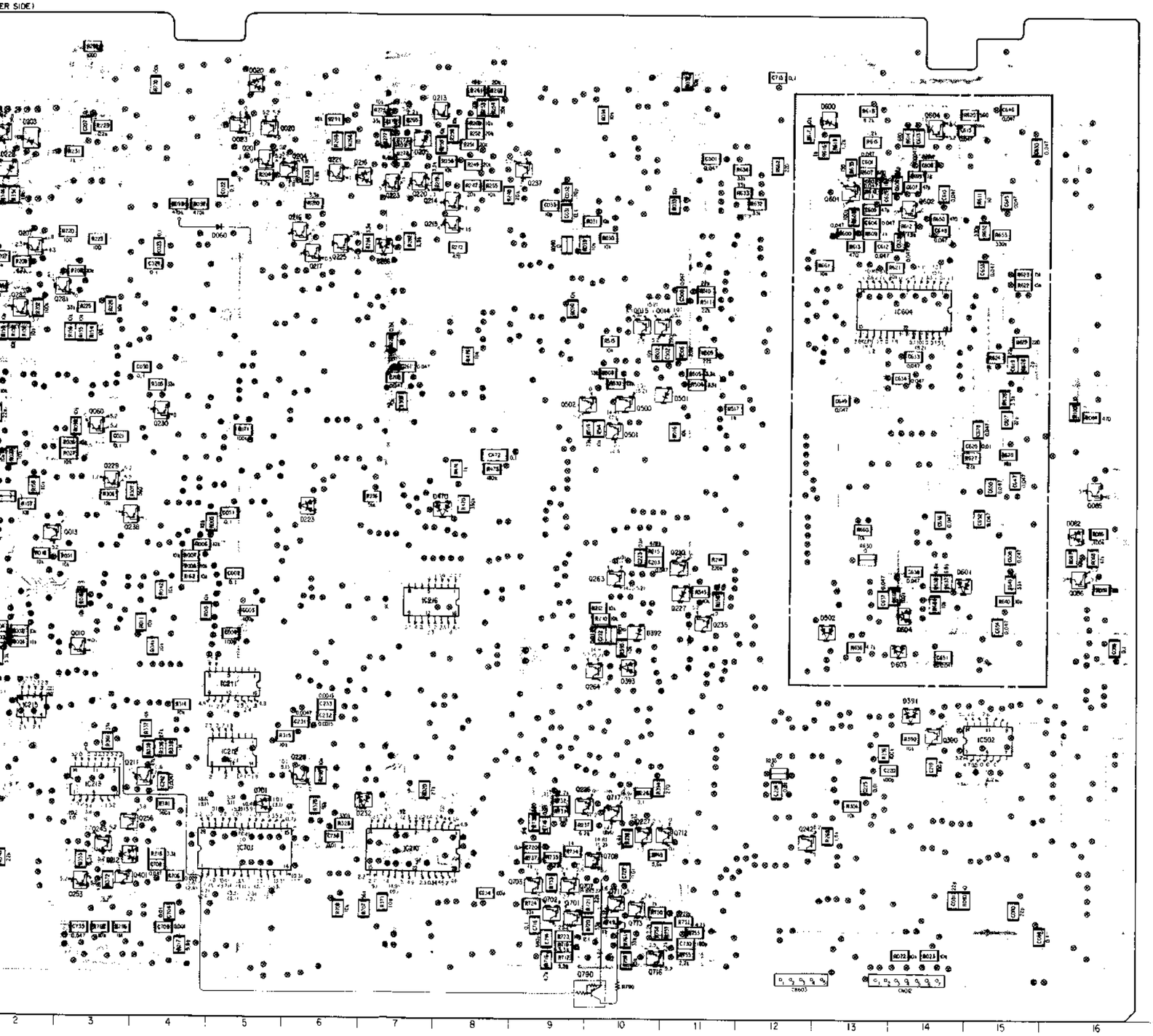
SP-2 (SYSTEM CONTROL), LS-9 (LOADING SWITCH), MS-4 (MODE SWITCH, CONTROL MOTOR) PRINTE

—Ref. No. SP-2 BOARD : 4,000 series, LS-9 BOARD : 5,000 series, MS-4 BOARD : 6,000 series—

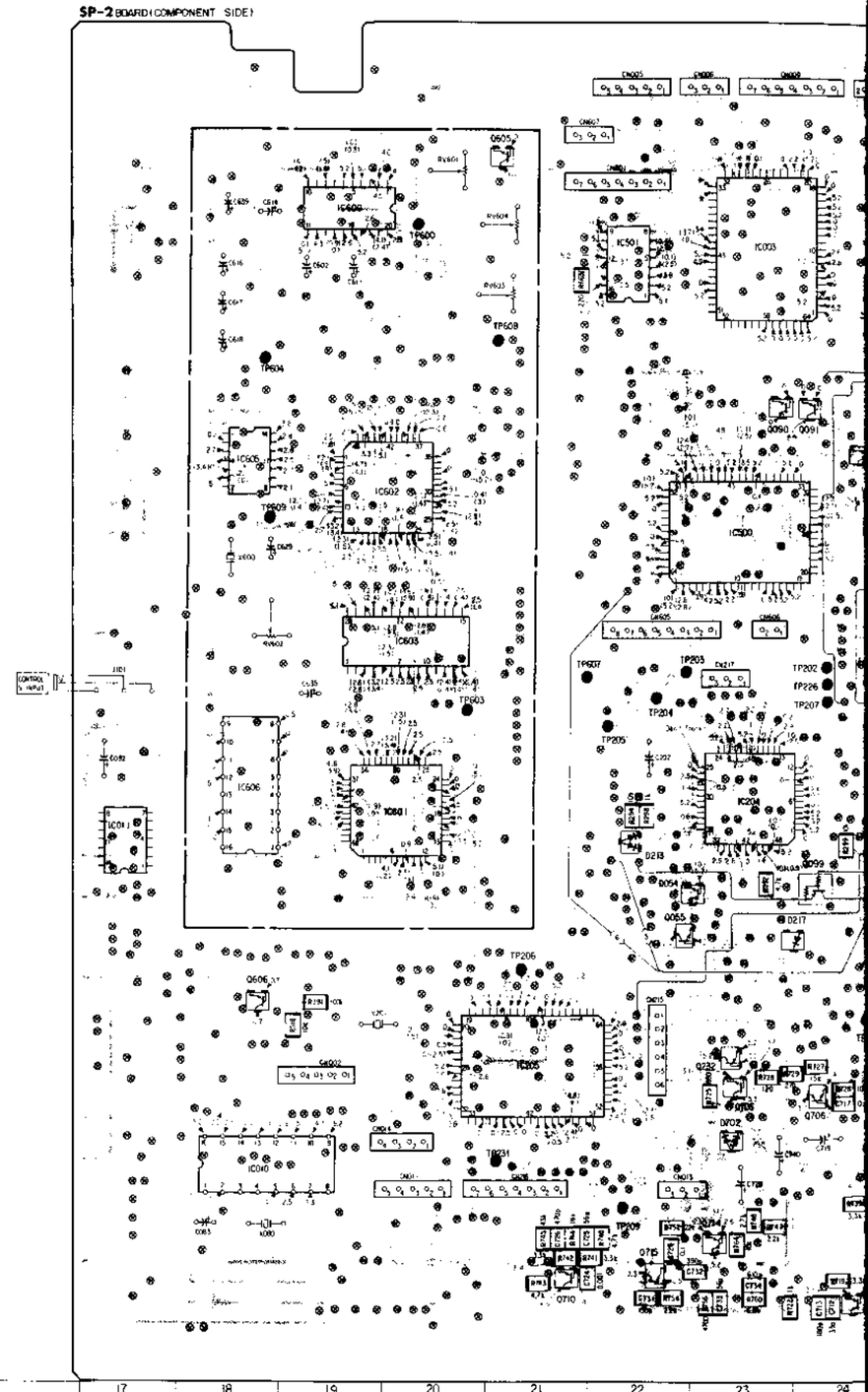
SP-2 BOARD (SOLDER SIDE)



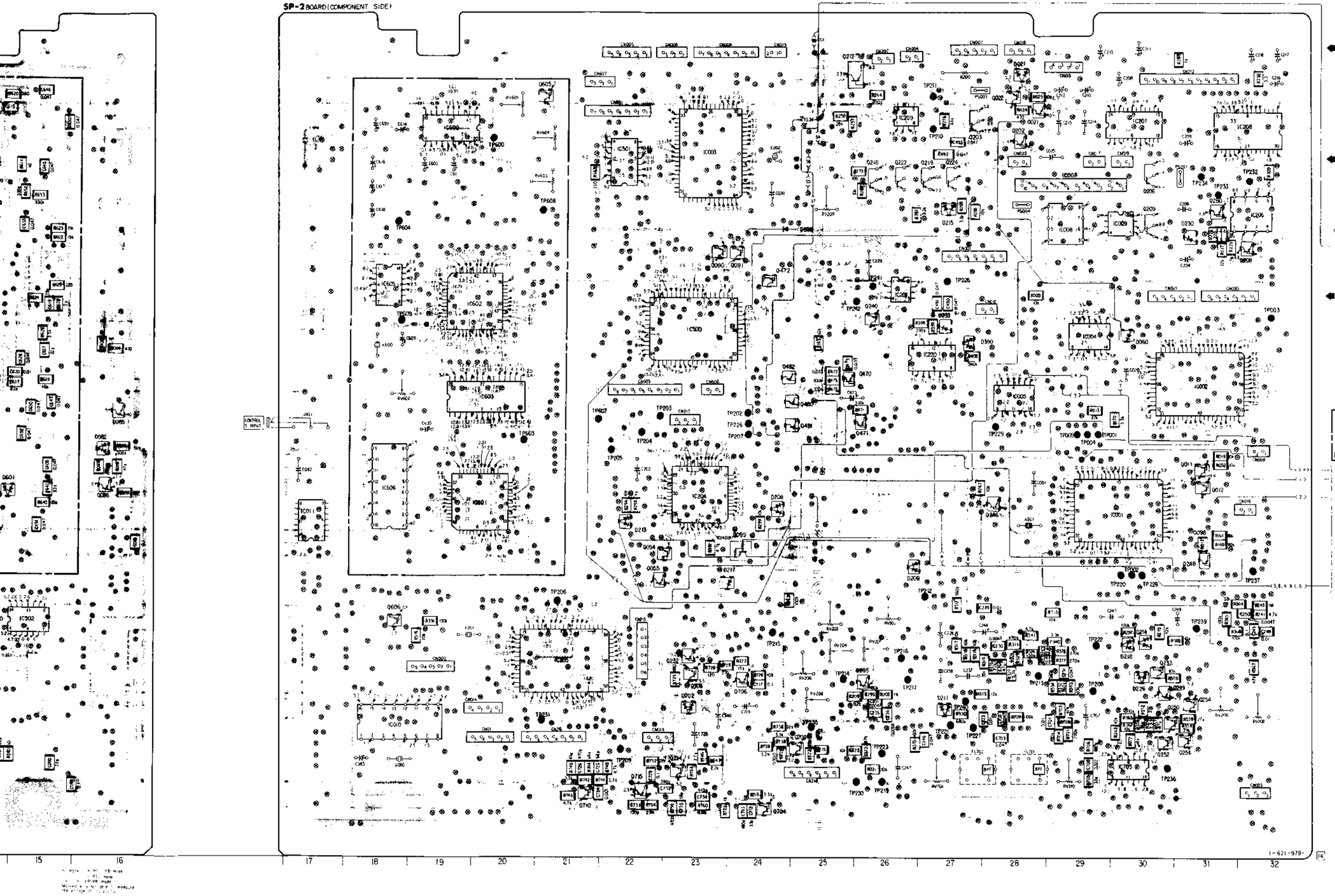
ER SIDE)



SP-2 BOARD (COMPONENT SIDE)



SP-2 BOARD (COMPONENT SIDE)



TO KM-1 BOARD

LS-9 BOARD

MS-4 BOARD

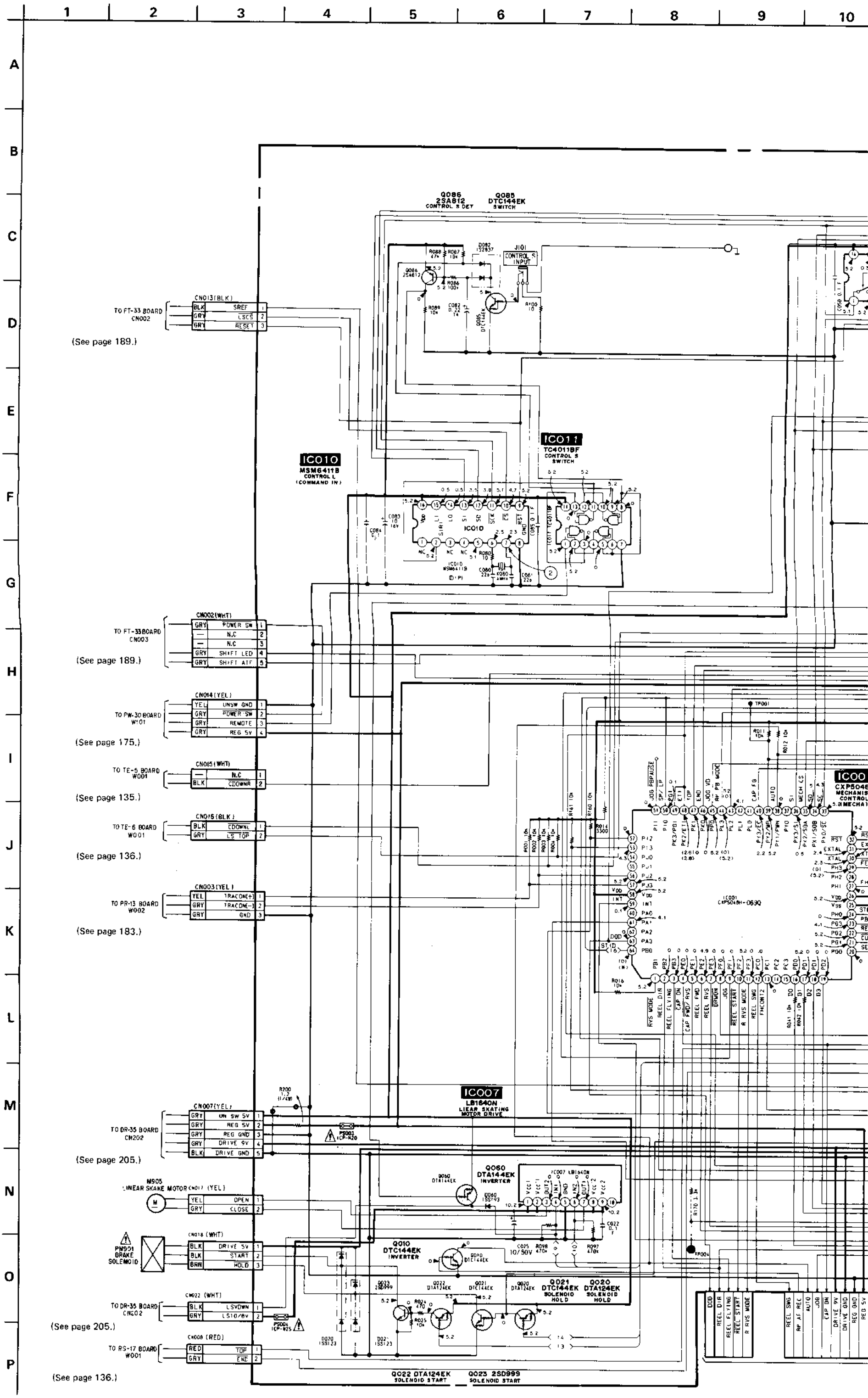
TO RB-2 BOARD

1-621-979-

SYSTEM CONTROL SYSTEM CONTROL

SP-2 (SYSTEM CONTROL), LS-9 (LOADING SWITCH), MS-4 (MODE SWITCH, CONTROL MOTOR) SCHEMATIC DIAGRAM

—Ref. No. SP-2 BOARD : 4,000 series, LS-9 BOARD : 5,000 series, MS-4 BOARD : 6,000 series—



8 9 10 11 12 13 14 15 16 17 18

(See page 189.)

TO FT-33 BOARD CN002

CN001 (BLK)

CHECK PINS

CN012 (WHT)

IC004
TC4066BF
BUS SWITCH

IC001
CXP5048H
MECHANISM CONTROL (MECHA)

IC002
CXP5048H-070
MECHANISM CONTROL 2 (ATF)

IC003
μPD75104
MECHANISM CONTROL 3 (HMS)

IC005
TC40H004F
INVERTER

Q013
DTC144EK
INVERTER

Q054,055
DTC144EK
NOR GATE

Q099
DTA144ES

Q020
DTA124EK
SOLENOID HOLD

TO SP-2 BOARD (1/3)
SERVO

(See page 128.)

(See page 94.)

TO VI-20 BOARD W001

CN009(WHT)

1	VIDEO/PB MODE	RED
2	V DEO MUTE	GRY
3	LINE VIDEO	GRY
4	TAPE2/TAPE1	BLK
5	JOG	GRY
6	SP/LP	GRY
7	DOD	GRY

CHECK PINS

CN012(WHT)

1	PCM REC	
2	SEL 1	
3	SEL 2	
4	P ATF LOCK	
5	P SEL 1	
6	P SEL 2	
7	GND	

R022 10k
R023 10k
32
33

Q015 DTA144EK DOD SWITCH
Q014 DTC144EK
R013 22k

Q014,090,091 DTC144EK DOD SWITCH

Q090 DTC144EK
R090 10k
Q091 DTC144EK

CN010(WHT)

1	FE ON	BLK
2	TAPE2/TAPE1	GRY

TO RP-36 BOARD CN002

(See page 85.)

CAPDN
PCM REC
M FEDN
FEDN
MPDATA
PMDATA
SCK
PCM CS
CLOCK
CLOCK
RESET
GND
REG 5V
UN SW 5V
TAPE2/TAPE1

TO SP-2 BOARD(1/3) PCM

(See pages 145, 147.)

R033 10k
C031 0.1 F
C030 16V

IC003
μPD75104 MECHANISM CONTROL 3 (MMS)

IC003 μPD75104G-519

P130 P143 P142 P141 P140 N.C VDD P33 NTSC/PAL P32 REC PROOF P31 TAPE2/TAPE1 P30 T10/T13 P43 P42

P131 P132 P133 P120 P121 P122 P123 P00/INT4 P01/SCK P02/SO P03/SI P20/P100 P21/P101 P22/PCL P23 T11 T10 P100 P101

P10/INT0 P11/INT1 P12/INT2 P13/INT3 Vss P90 P91 CAPON P92 PB PAUSE P93 VIDEO PB P80 VIDEO MUTE P81

P41 REEL 5 P40 REEL 4 P53 REEL 3 P52 REEL 2 P51 REEL 1 P50 REEL 0 RESET P63 P62 REEL EMGOUT P61 ATF SW P60 N PULSE P73 P72 P71 REEL EMGOUT P70 CASSTE LAMP P83 P82 VIDEO LINE V-DED

R039 10k
R040 0
R030 10k
R031 10k
C032 10p
C033 10p
X003 4.19MHz
D099 1SS119
R034 10k
R032 10k

IC002
CXP5048N-070
MECHANISM CONTROL 2 (ATF)

R156 10k R155 10k R154 10k R153 10k R152 10k R151 10k

R019 10k
R052 10k
R018 10k
R051 10k
Q011 DTC144EK
Q012 DTC144EK

Q011,012 DTC144EK AND GATE

S901 RECOG SWITCH

CN006(WHT)

1	REG GND	BRN
2	REC PROOF	RED
3	TAPE2/TAPE1	ORG

REC PROOF
TAPE2/TAPE1

S902 RECOG SWITCH L

CN004(WHT)

1	REG GND	BLK
2	T10/T13	WHT

IC005 TC40H004F

IC008 MB3763P LOADING MOTOR DRIVE

IC009 MB3763PF CONTROL MOTOR DRIVE

CN005(BLK)

5	TFG 1	GRY
4	TFG 2	GRY
3	REG GND	GRY
2	SFG	GRY
1	REG 5V	BLK

TO RS-17 BOARD W001

(See page 136.)

TP005
R171 100k

C023 0.1 F
C024 0.1 F

M904 LOADING MOTOR

CN019(RED)

1	LOAD	RED
2	UNLOAD	BRN

CN020(RED)

1	CONT ML	RED
2	CONT MR	GRY
3	MC	GRY
4	MB	GRY
5	MA	GRY
6	REG GND	GRY

(RED)

RED	CONT ML	1
GRY	CONT MR	2
GRY	MC	3
GRY	MB	4
GRY	MA	5
GRY	REG GND	6

MS-4 BOARD
M903 CONTROL MOTOR
C902 0.1
MODE SWITCH

CN021(RED)

1	REG GND	BRN
2	LC	GRY
3	LB	GRY
4	LA	GRY
5	CHAS GND	GRY

(RED)

	NC	1
BRN	REG GND	2
GRY	LC	3
GRY	LB	4
GRY	LA	5
GRY	CHAS GND	6

LOADING SWITCH
LS-9 BOARD

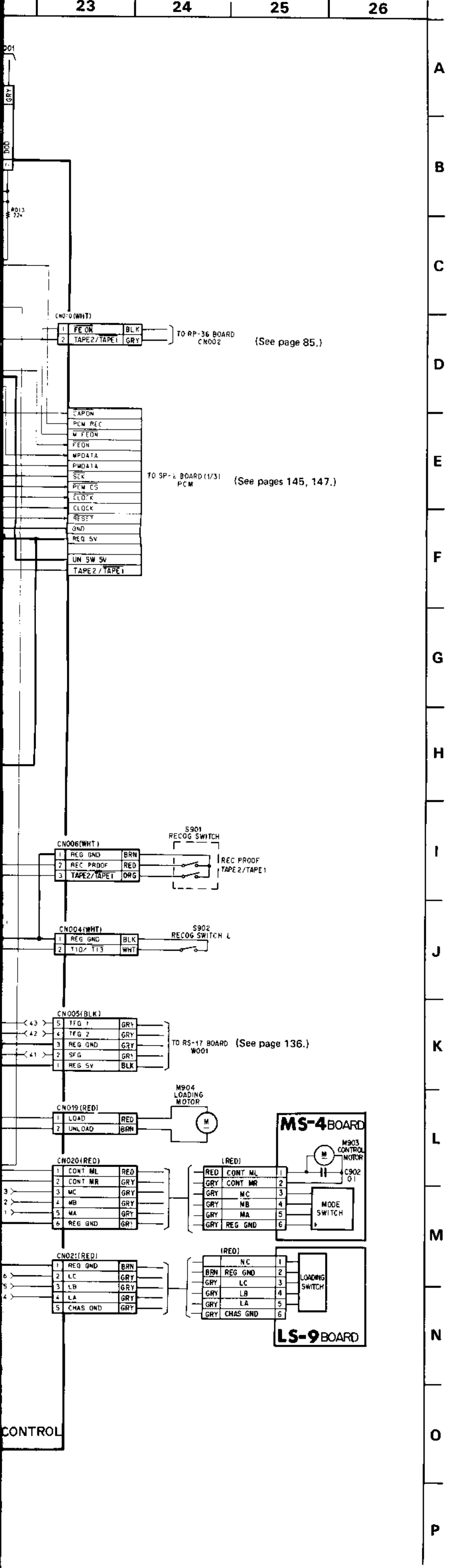
no mark : LP REC/PB mode
( ) : LP REC mode
< > : LP PB mode

marked * is not able to measure the voltage of is position

ISB
P ATF LOCK
HCMG M
CAP FG
M ATF LOCK
35 CS
SCK
M35 DATA
35M DATA
SP/LP
M RF SW PLS
SERVO REF PLS
REEL 7
REEL 6
REEL 5
REEL 4
REEL 3
REEL 2
REEL 1
REEL 0
MULTI
N PULSE
TAPE2/TAPE1
RP PB MODE
JOG VD
VIDEO REC
SEL 1
SEL 2
DRIVE 5V

X3
X1

SP-2 BOARD(1/3) SYSTEM CONTROL



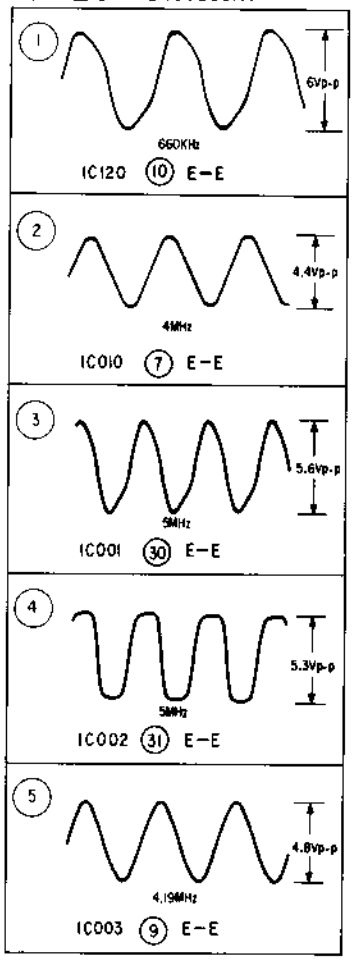
Note:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/10W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF.
  50V or less are not indicated except for electrolytice. and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- [ ] : panel designation.
- △ : internal component.
- [ ] : adjustment for repair.
- ——— : B + bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a colour-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

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

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

SP-2 BOARD (SYSCON)



Note:

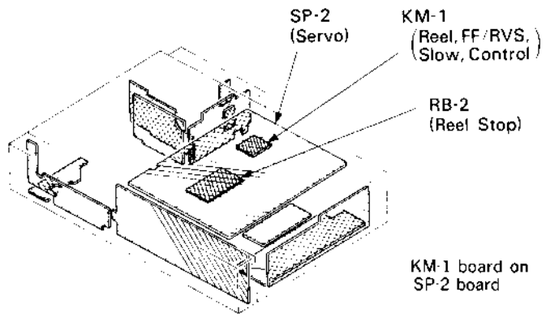
- ⋯ : indicates a lead wire mounted on the component side.
- ● ● : indicates a lead wire mounted on the printed side.
- ⊗ : Through hole.
- ▪ : Pattern from the side which enables seeing.
- ▪ ⋯⋯⋯⋯⋯⋯

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

Caution:

Pattern face side: (Solder Side) Parts on the pattern face side seen from the pattern face are indicated.

Parts face side: (Component Side) Parts on the parts face side seen from the parts face are indicated.



Note:

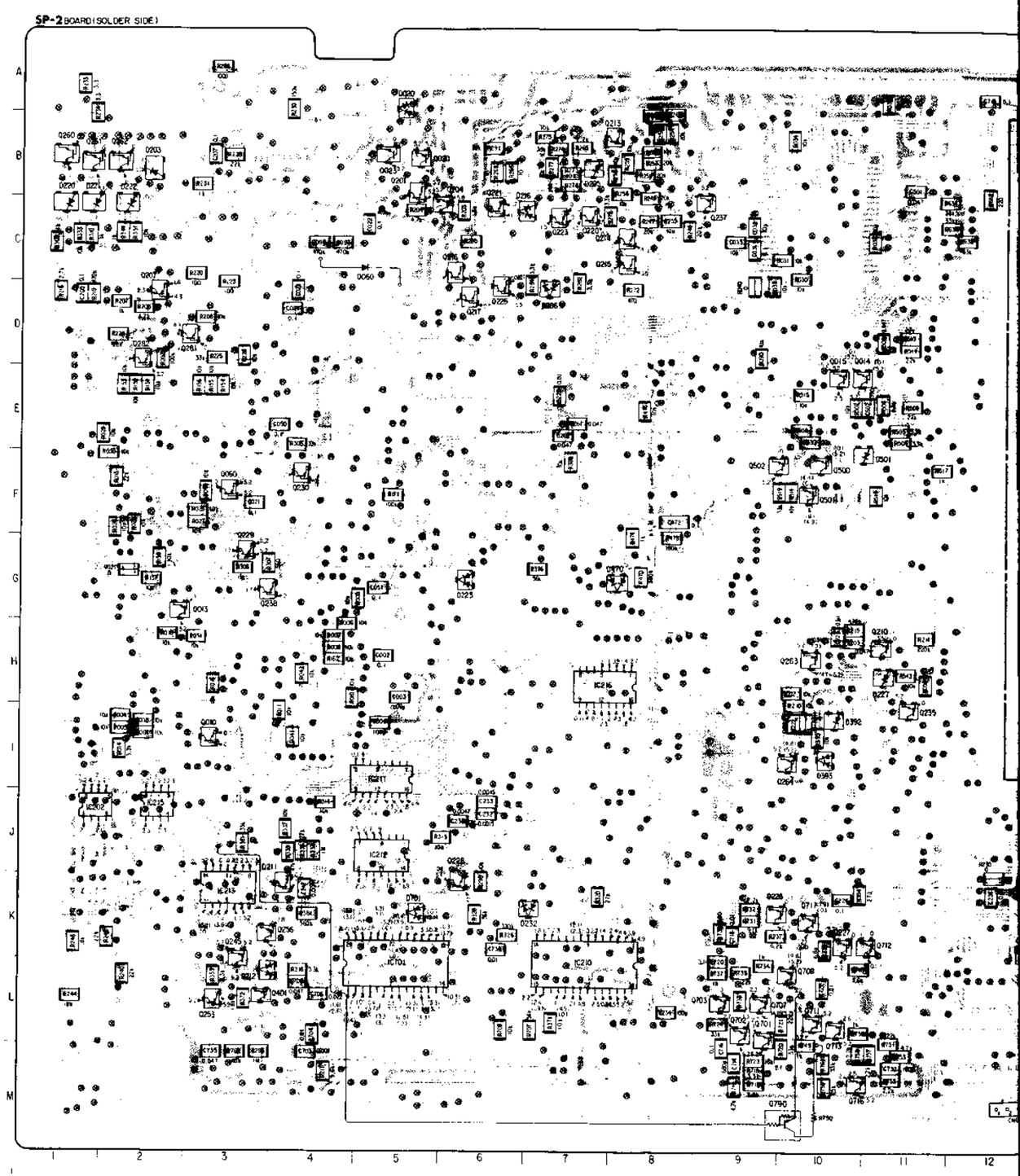
- All resistors are in ohms, 1/6W unless otherwise noted. kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF. 50WV or less are not indicated except for electrolytics, and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ⊟ : nonflammable resistor.
- ⊟ : fusible resistor.
- ▭ : panel designation.
- △ : internal component.
- ▭ : adjustment for repair.
- ▬ : B + bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

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

CN001	D-27	IC210	K-7	Q390	J-14	TP603	G-20
CN002	K-19	IC211	I-5	Q401	L-4	TP604	D-18
CN003	M-32	IC212	J-5	Q480	G-25	TP607	G-22
CN004	A-27	IC213	K-3	Q481	G-25	TP608	C-21
CN005	A-22	IC215	J-2	Q482	F-25	TP609	E-18
CN006	A-23	IC218	F-6	Q500	F-10		
CN007	A-28	IC220	F-27	Q501	F-10		
CN008	G-32	IC500	E-23	Q502	F-9		
CN009	A-24	IC501	C-22	Q601	C-13		
CN010	E-28	IC502	J-15	Q602	C-14		
CN011	L-20	IC600	B-19	Q604	B-14		
CN012	M-14	IC601	H-20	Q605	B-21		
CN013	L-22	IC602	E-20	Q606	J-18		
CN014	K-20	IC603	F-20	Q701	L-9		
CN015	A-24	IC604	D-14	Q702	L-9		
CN016	H-32	IC605	E-18	Q703	L-9		
CN017	C-29	IC606	H-18	Q704	M-24		
CN018	A-28	IC701	K-5	Q705	K-23		
CN019	C-30	IC703	L-30	Q706	K-24		
CN020	E-32			Q707	L-9		
CN021	E-31	Q010	I-3	Q708	L-10		
CN022	C-28	Q011	H-31	Q709	L-25		
CN207	A-26	Q012	H-31	Q710	M-21		
CN212	B-31	Q013	G-3	Q711	L-10		
CN213	A-29	Q014	D-10	Q712	K-11		
CN214	L-25	Q015	D-10	Q713	L-10		
CN215	J-22	Q020	B-5	Q714	L-23		
CN216	L-21	Q021	B-28	Q715	L-22		
CN217	G-23	Q022	B-28	Q716	M-10		
CN601	B-22	Q023	B-5	Q717	K-10		
CN603	M-12	Q054	I-22	Q777	J-29		
CN605	F-22	Q055	I-22				
CN606	F-23	Q060	F-3	RV201	J-26		
CN607	B-22	Q085	G-16	RV202	J-26		
		Q086	H-16	RV203	J-26		
D025	A-5	Q090	D-23	RV204	J-26		
D021	A-28	Q091	D-24	RV206	K-25		
D060	C-4	Q201	B-5	RV208	K-25		
D082	G-16	Q202	B-28	RV209	D-25		
D203	B-2	Q203	B-27	RV210	M-29		
D205	B-7	Q204	B-6	RV601	B-20		
D206	D-7	Q205	K-26	RV602	F-18		
D208	H-24	Q206	C-30	RV603	C-21		
D209	I-26	Q207	C-2	RV604	B-21		
D211	K-27	Q208	D-32	RV701	M-27		
D212	L-3	Q209	D-30				
D213	I-22	Q210	H-11	TP001	G-29		
D214	J-30	Q211	K-4	TP002	I-30		
D215	D-27	Q212	A-26	TP003	E-32		
D216	C-6	Q213	B-7	TP004	G-29		
D217	I-24	Q214	C-7	TP005	G-29		
D218	K-30	Q215	C-7	TP201	I-23		
D220	B-1	Q216	C-6	TP202	G-24		
D221	B-1	Q217	D-6	TP203	G-22		
D222	B-2	Q218	C-26	TP204	G-22		
D223	G-6	Q219	C-27	TP205	G-22		
D226	K-30	Q220	C-7	TP206	J-21		
D227	H-11	Q221	B-6	TP207	G-24		
D230	D-31	Q222	C-26	TP208	K-29		
D232	K-7	Q223	C-7	TP209	L-22		
D233	E-27	Q224	C-27	TP210	B-27		
D390	F-27	Q225	D-6	TP211	B-27		
D391	J-14	Q226	K-9	TP212	J-27		
D392	I-10	Q227	K-10	TP213	K-28		
D393	I-10	Q228	J-6	TP214	K-25		
D501	F-11	Q229	F-3	TP215	J-24		
D502	H-13	Q230	F-4	TP216	K-26		
D600	B-13	Q232	K-23	TP217	K-26		
D601	H-14	Q233	K-30	TP219	M-26		
D603	I-14	Q235	H-11	TP220	I-30		
D604	H-14	Q237	C-9	TP221	L-27		
D701	K-5	Q238	G-3	TP222	J-29		
D702	K-23	Q240	E-26	TP223	L-26		
		Q242	K-12	TP224	J-23		
IC001	H-30	Q245	K-3	TP225	E-27		
IC002	F-31	Q246	H-28	TP226	G-24		
IC003	C-23	Q248	I-31	TP227	L-27		
IC004	F-29	Q249	K-31	TP228	I-30		
IC005	F-28	Q250	K-31	TP229	G-28		
IC007	C-29	Q251	L-31	TP230	M-26		
IC008	D-29	Q252	L-30	TP231	L-21		
IC009	D-30	Q253	L-3	TP232	C-32		
IC010	L-18	Q254	K-31	TP233	C-31		
IC011	H-17	Q256	K-4	TP234	C-31		
IC201	E-26	Q260	B-1	TP235	L-25		
IC202	J-1	Q261	B-1	TP236	M-30		
IC204	H-23	Q262	B-2	TP237	I-32		
IC205	K-21	Q263	H-10	TP238	E-25		
IC206	D-32	Q264	I-10	TP239	J-31		
IC207	B-30	Q280	C-31	TP240	E-26		
IC208	B-32	Q281	D-2	TP241	E-26		
IC209	B-26	Q282	D-2	TP242	E-26		

SP-2 (SERVO), RB-2 (REEL STOP), KM-1 PRINTED WIRING BOARDS

—Ref. No. SP-2 and KM-1 BOARDS : 4,000 series, RB-2 BOARD : 14,000 series—



SP-2 (SERVO), RB-2 (REEL STOP), KM-1 PRINTED WIRING BOARDS

--Ref. No. SP-2 and KM-1 BOARDS : 4,000 series, RB-2 BOARD : 14,000 series—

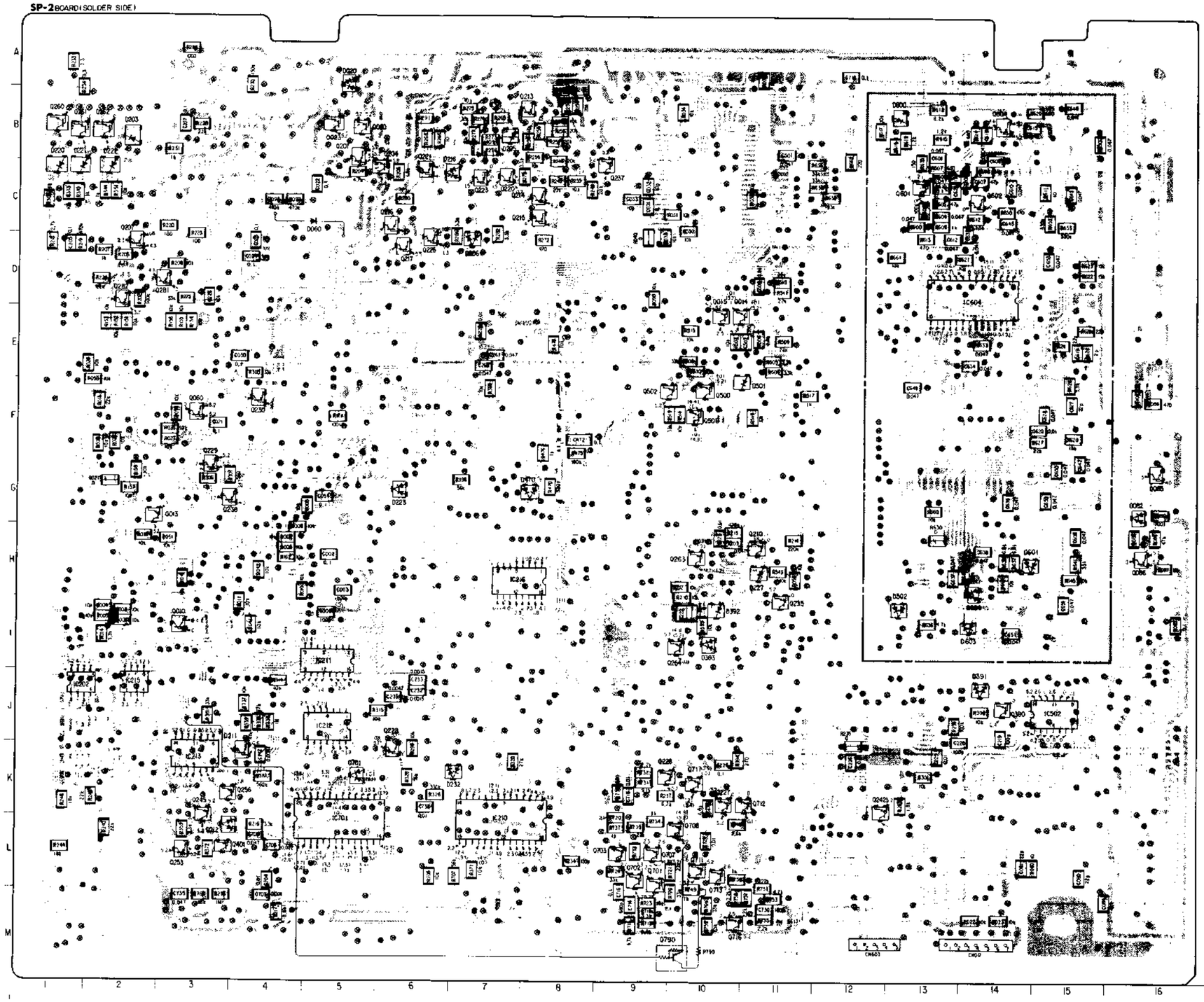
J-14
L-4
G-25
G-25
F-25
F-10
F-10
F-9
C-13
C-14
B-14
B-21
J-18
L-9
L-9
L-9
M-24
K-23
K-24
L-9
L-10
L-25
M-21
L-10
K-11
L-10
L-23
L-22
M-10
K-10
J-29

J-26
J-26
J-26
J-26
K-25
K-25
D-25
M-29
B-20
F-18
C-21
B-21
M-27

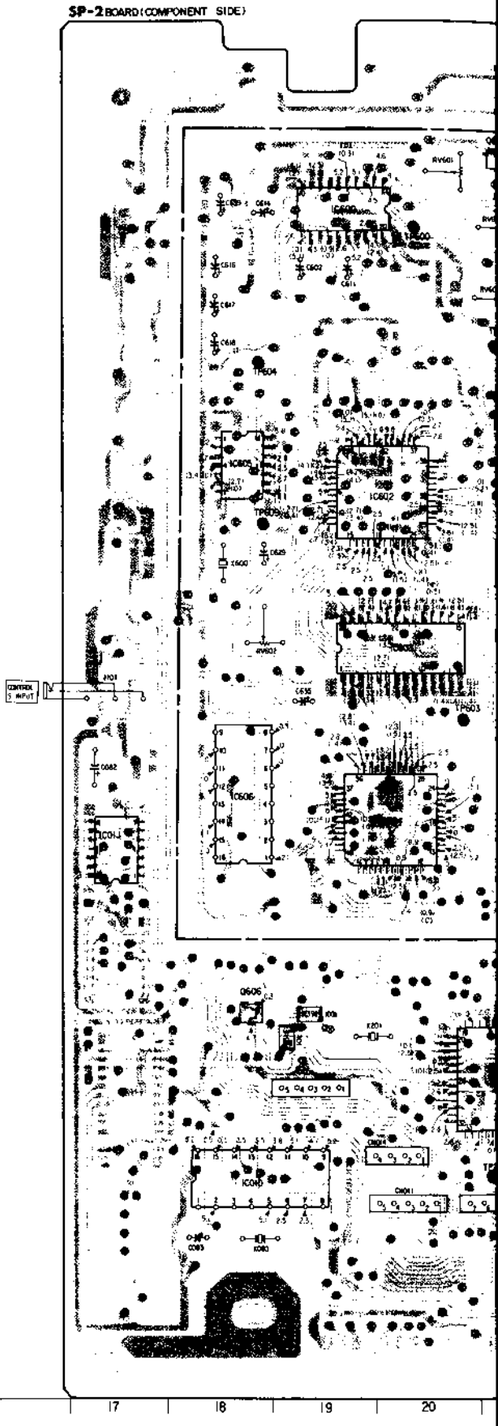
G-29
I-30
E-32
G-29
G-29
I-23
G-24
G-22
G-22
G-22
J-21
G-24
K-29
L-22
B-27
B-27
J-27
K-28
K-25
J-24
K-26
K-26
M-26
I-30
L-27
J-29
L-26
J-23
E-27
G-24
L-27
I-30
G-28
M-26
L-21
C-32
C-31
C-31
L-25
M-30
I-32
E-25
J-31
E-26
E-26
E-26

TP603 G-20
TP604 D-18
TP607 G-22
TP608 C-21
TP609 E-18

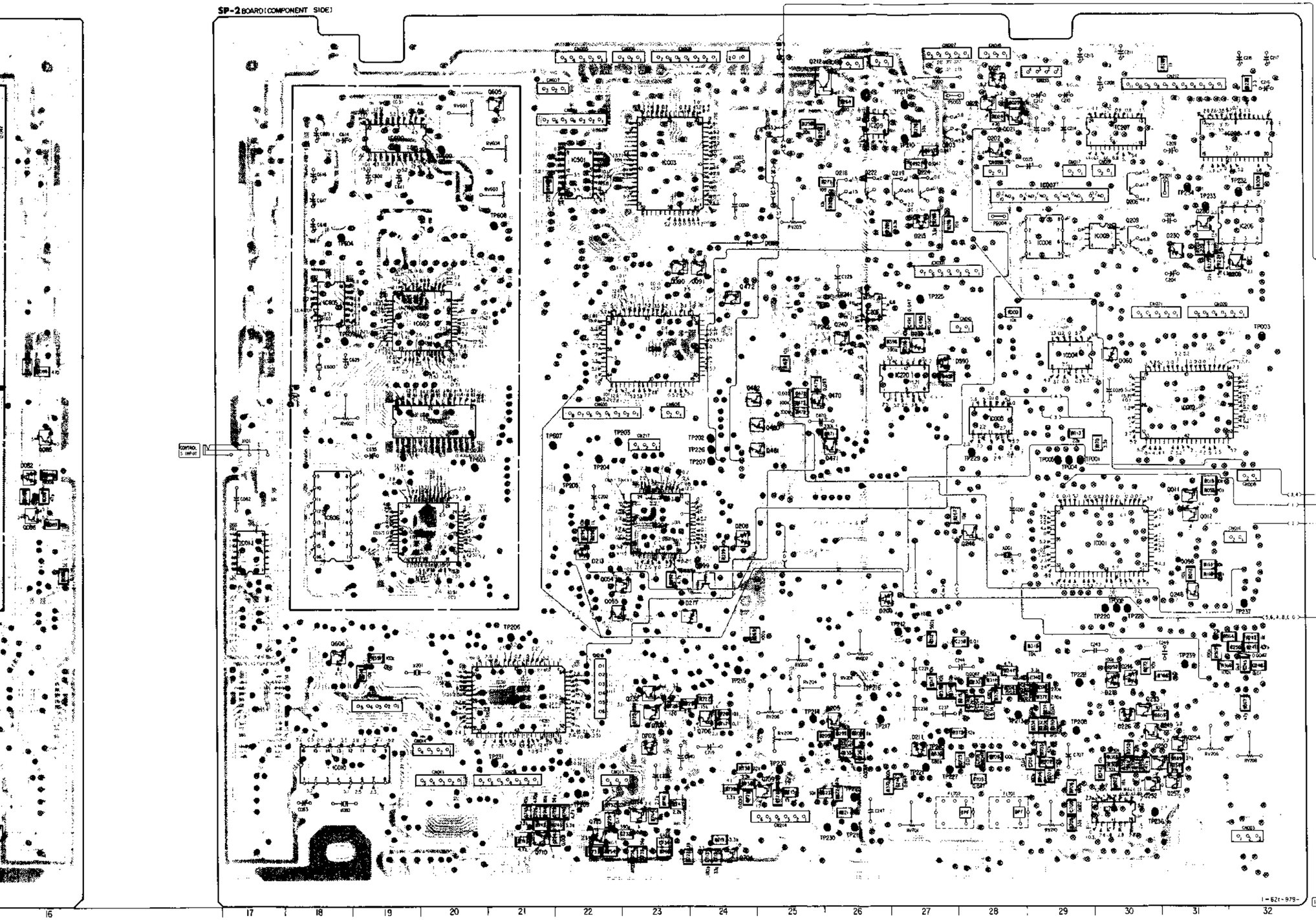
SP-2 BOARD (SOLDER SIDE)



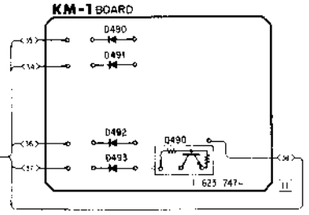
SP-2 BOARD (COMPONENT SIDE)



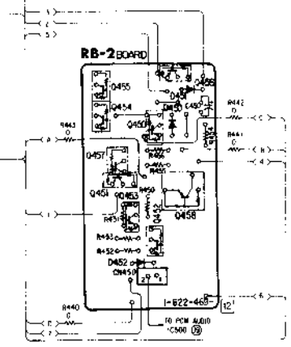
SP-2 BOARD (COMPONENT SIDE)



KM-1 BOARD



RB-2 BOARD



SERVO (1) SERVO (1)

SP-2 (SERVO), RB-2 (REEL STOP) PRINTED WIRING BOARDS

—Ref. No. SP-2 BOARD : 4,000 series, RB-2 BOARD : 14,000 series—

Note:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/10W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF.
  50V or less are not indicated except for electrolytice, and tantaiums.
- [ ] : panel designation.
- △ : internal component.
- [ ] : adjustment for repair.
- ——— : B + bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a colour-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

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

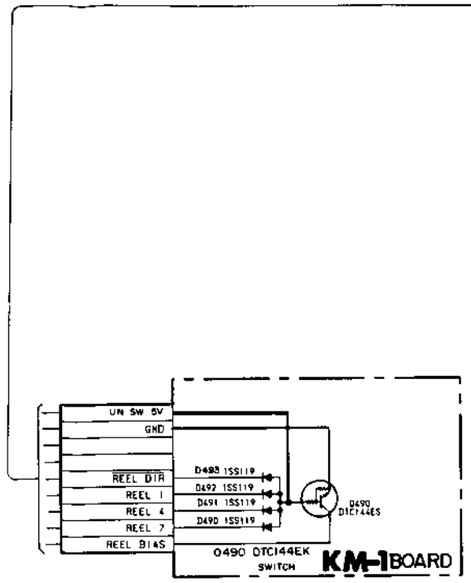
When indicating parts by reference number, please include the board name.

Signal path

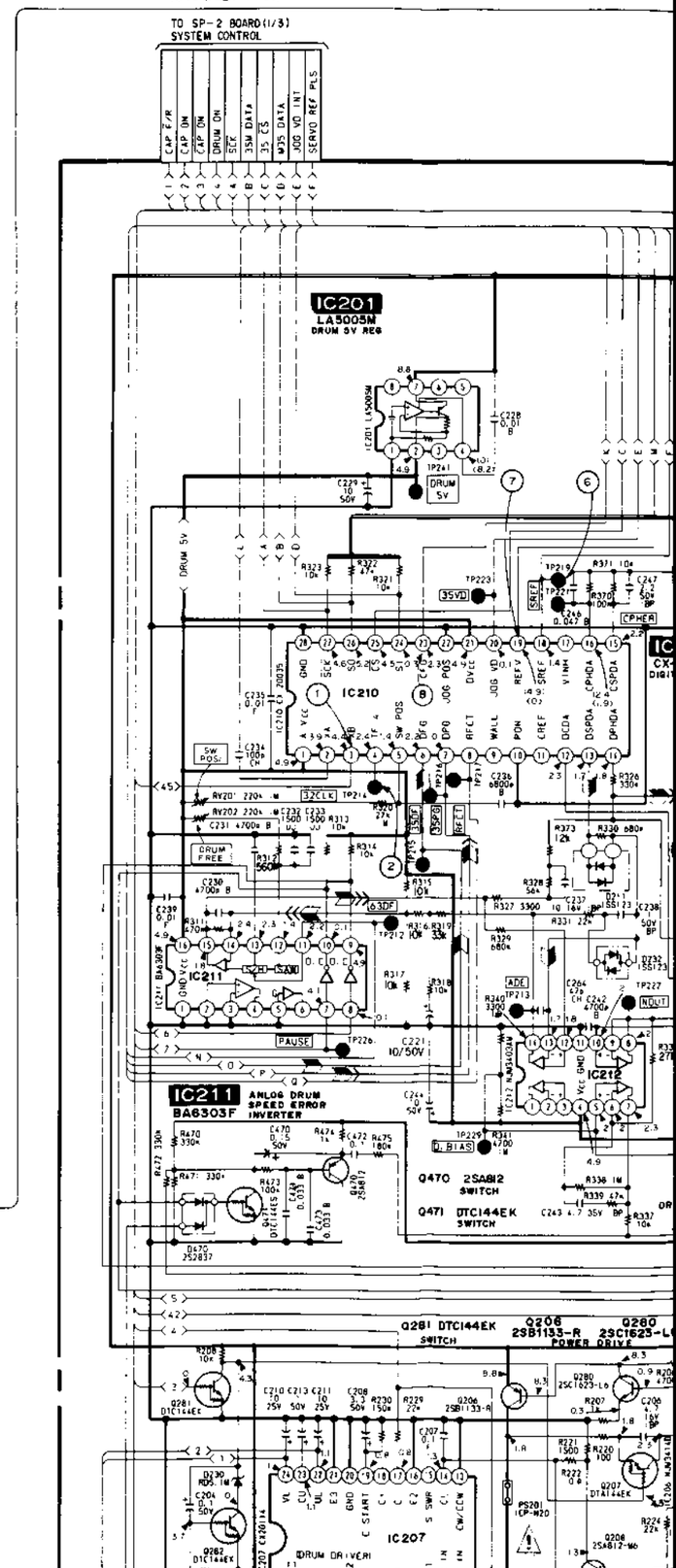
	REC	REC/PB	PB
Drum speed servo		➖	
Drum phase servo		➖	
Drum servo (speed and phase)		➖	
Capstan speed servo		➖	
Capstan phase servo	➖		➖
Capstan servo (speed and phase)		➖	

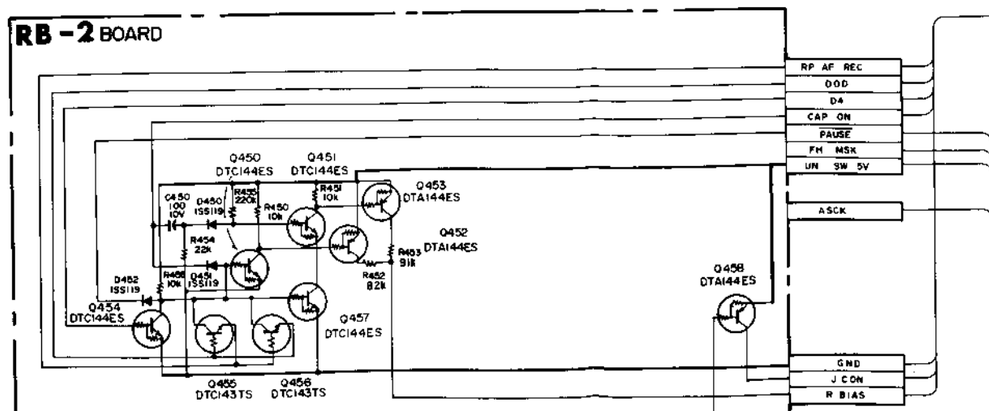
SP-2 BOARD (SERVO)

① 0.54Vp-p, 4.5 MHz — IC210 ③ REC/PB	⑨ 5.2Vp-p, 144msec — IC204 ⑬ (TP202) REC/PB
② 3.8Vp-p, 72μsec — IC210 ④ (TP214) REC/PB	⑩ 5Vp-p, 160μsec — IC204 ⑬ (TP202) CUE
③ 5.2Vp-p, 162 msec — IC204 ⑰ (TP204) REC/PB	⑪ 5Vp-p, 220μsec — IC204 ⑬ (TP202) REV
④ 5.2Vp-p, 2V —	⑫ 0.52Vpp, 10μsec —



{See page 116.}





(See page 116.)

(See page 116.)

TO SP-2 BOARD(1/3) SYSTEM CONTROL

CAP F/R
CAP DN
CAP ON
DRUM ON
SEC
3SW DATA
3S CS
W3S DATA
JOG VD IN1
SERVO REF PLS

TO SP-2 BOARD(1/3) SYSTEM CONTROL

RESET
DRIVE 5V
DRIVE GND
DRIVE 9V
REG GND
REG 5V
UNS 5V
STEP
FH CONT1
FH CONT2
FH MSK

UNSW 5V
GND
REG 5V
CAP ON
REEL DIR
REEL 4
REEL 7
REEL BPAS

REEL DIR
SLOW
PAUSE
X2
X-1
X-3
CAP FG
D4
D3
D2
D1
D0
REV
CUE
JCON
SRO

M AFF LOCK
RFPK

Q245,249,254
DTA144EK
CUE,REV,X-1,X-3 CAPSTAN SPEED CORRECTION

IC201
LA5005M
DRUM 5V REG

Q201
DTA114EK
RESET

Q202
DTC114EK
RESET

Q204
2SC1623-L6
RESET

Q203
2SD1406Y
RESET

IC210
CX-20035
DIGITAL SERVO

IC213
TC4066BF
③④⑤ AGC HOLD
⑧⑨⑩ DC GAIN SWITCH
⑪⑫⑬ AC GAIN SWITCH

IC215
μPC358G2
①②③ CAPSTAN BIAS
⑤⑥⑦ CAPSTAN ERROR AMP

Q480
DTC144ES
SLOW

Q482
DTC144ES
DIR

IC211
8A6303F
ANLOG DRUM SPEED ERROR INVERTER

IC212
NJM3403AM
⑤⑥⑦ DRUM ERROR AMP
⑧⑨⑩ 25Hz NOTCH FILTER
⑪⑫⑬ DRUM SPEED ERROR BIAS

Q470 2SA812 SWITCH

Q471 DTC144EK SWITCH

IC206
NJM3414D
DRUM,CAPSTAN POWER AMP

Q264
DTA114EK
INVERTER

Q252,253
2SA812-M6
CUE,REV,X-1,X-3 CAPSTAN SPEED CORRECTION

IC204
M64428
FG,PG PROCESS

Q250,251
2SC1623-L6
CUE,REV,X-1,X-3 CAPSTAN SPEED CORRECTION

IC204
FG PG PROCESS

Q481
DTC144EK

Q228
DTC144EK
SWITCH

IC701
CXA1042M
ATF SERVO

Q472 DTC144EK SWITCH

IC216
TC4053BF
SWITCH

Q207
DTA144EK
SWITCH

Q246
DTC144ES
DIR

Q701,702
2SC1623-L6
NORMAL/MULT

Q703
DTC144EK

Q281 DTC144EK SWITCH

Q206
2SB1133-R
POWER DRIVE

Q280
2SC1623-L6

IC207
DRUM DRIVER

Q458
DTA144ES

Q490
DTC144ES

Q490 DTC144EK SWITCH

KM-1 BOARD

D493 1SS119
D492 1SS119
D491 1SS119
D490 1SS119

RP AF REC
DOD
D4
CAP ON
PAUSE
FH MSK
UN SW 5V
ASCK
GND
J CON
R BIAS

16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

A B C D E F G H I J K

TO SP-2 BOARD(1/3) SYSTEM CONTROL (See page 116.)

Q245,249,254
DTA144EK
CUE,REV,X-1,X-3 CAPSTAN SPEED CORRECTION

Q264
DTA114EK
INVERTER

Q252,253
2SA812-M6
CUE,REV,X-1,X-3 CAPSTAN SPEED CORRECTION

IC204
M64H428
FG,PG PROCESS

Q263
DTA114EK
INVERTER

Q390
DTC114EK
INVERTER

Q210
DTC144EK
INVERTER

Q250,251
2SC1623-L6
CUE,REV,X-1,X-3 CAPSTAN SPEED CORRECTION

IC204
FG PG PROCESS

Q205
2SC1623-L5
4.43MHz AMP

IC215

Q230,258
DTC144EK
D.A CONV

Q213
2SC1623-L6
REEL MOTOR DRIVE

Q223,225
2SC1623
REEL FWD/RVS SWITCH

Q222,224
2SD773

Q212
2SA1385-ZL
REEL MOTOR DRIVE

Q214~217 Q220,221 Q218,219
DTC144EK 2SA812 2SB733
REEL FWD/RVS SWITCH

IC209
μPC358G2
REEL LTAGE AMP FEED BACK

Q229
DTA144EK
D.A CONV

Q401,256 DTC144EK
CUE + REV SWITCH

Q233
DTC144EK
INVERTER

Q242
DTC144EK
INVERTER

Q237
DTA144EK
SWITCH

Q211,235
DTC144EK
SWITCH

IC701
CXA1042M
ATF SERVO

Q709
2SA812-M6
LPF

Q710
2SC1623-L6
LPF

Q248
DTC144EK
SW(1/6)

Q481
DTC144EK

Q228
DTC144EK
SWITCH

IC205
M66741O1
ATF PILOT, 4 HEAD LOGIC

IC216
TC4053BF
SWITCH

Q472 DTC144EK
SWITCH

IC202
μPC358G2
AMP

Q790 DTA114ES

Q701,702 Q703
2SC1623-L6 DTC144EK
NORMAL/MULT 1

M901
REEL MOTOR

TO RS-17 BOARD W001
(See page 136.)

TO VI-20 BOARD W004
(See page 94.)

TO RP-36 BOARD CN004
(See page 85.)

TO RF-36 BOARD CN003
(See page 85.)

IC701 CXA1042M AFF SERVO

IC216 TC4053BF SWITCH

IC202 μPC3582 AMP

IC205 MB674101 ATF PILOT, 4 HEAD LOGIC

IC703 μPC32402 ① ② ③ BUFFER ⑤ ⑥ ⑦ SLOW BIAS ⑧ ⑨ ⑩ ⑫ ⑬ ⑭ BUFFER

Q205 2SC1623-L5 4.45MHz AMP

Q709 2SA812-M6 LPF

Q710 2SC1623-L6 LPF

Q211, 235 DTC144EK SWITCH

Q242 DTC144EK INVERTER

Q237 DTA144EK SWITCH

Q248 DTC144EK SWITCH

Q481 DTC144EK

Q228 DTC144EK SWITCH

Q472 DTC144EK SWITCH

Q790 DTA114ES

Q232 DTA144EK SP/LP GAIN SW

Q711, 713 2SC1623-L6 MULTI PILOT AMP

Q705, 706 2SC1623-L6 PCM/ATF/MULTI PILOT MIX

Q707, 708 2SC1623-L6 REC ATF AMP

Q227 DTA144EK TAPE2/TAPE1 MULTI GAIN SWITCH

Q701, 702 Q703 2SC1623-L6 DTC144EK NORMAL/MULTI SWITCH

Q712 DTC144EK TAPE 2/TAPE 1 GAIN SWITCH

Q714 DTC144EK MULTI PILOT SWITCH

Q715 2SA812-M6 LPF

Q716 2SC1623-L6 LPF

Q717 DTC144EK REC ATF ON/OFF SWITCH

Q226 DTC144EK TAPE2/TAPE1 MULTI GAIN SWITCH

Q704 2SA812-M6 LPF

DTC144EK INVERTER

CN216 (WHT)

7	C MUTE	GRY
6	HD INSERT	GRY
5	DUB AREA	GRY
4	JOG VD	BLK
3	COMP SYNC	GRY
2	V SW P	GRY
1	HCHR	BLK

TO V8-20 BOARD W004

(See page 94.)

CN011 (WHT)

5	R AMP	GRY
4	RP AF REC	GRY
3	SP CH SHORT	GRY
2	SP CH SHORT	GRY
1	RP PB MODE	GRY

TO RP-36 BOARD CN004

(See page 85.)

CN215 (WHT)

6	LP V REC	GRY
5	LP P REC	GRY
4	SP V REC	GRY
3	SP P REC	GRY
2	RP SW P	GRY
1	HCHG	BLK

TO RF-36 BOARD CN003

(See page 85.)

REG 5V	
SEL 1	
SEL 2	
FS IN	
FS OUT	
GND	

ASCK	
LOAD REV	
REEL D R	
AF REC	
SV COMP SYNC	
RF C	
HEAD OPEN	
R AMP	
RP AF REC	
C MUTE	
HD INSERT	
AF REC AREA	
COMP SYNC	
AREA	
SP/LP	
SW CONT	
MRF SWP	
CH A	
CH B	
CH C	
D RF SWP	
PCM REC	
M SREF	
TU RF SWP	
ERASE	
RAREA	
VCONT	
CAP F/R	
RF AREA	
WRITE	
MIX PCM	
PB PCM	
REC PCM	

TO SP-2 BOARD (1/3) PCM

(See page 147.)

PK DET	
REC ATF	
GND	
DS CLK	
REF V	
PB V	

CN214 (WHT)

TO V1-20 BOARD W005

(See page 91.)

ASCK	
UNSW 5V	
PAUSE	
FM MSK	
J CON	

SP-2 BOARD(1/3) SERVO

RP AF REC
DOD
D4
CAP ON
PAUSE
FM MSK
UN SW 5V
ASCK
Q458 DTAI44ES
GND
J CON
R BIAS
AS TROBE
TO PCM AUDIO IC500 (17)
(See page 156.)
RUM FG
RUM FG
M FG COM
REG
FG PG
M802 DRUM MOTOR
1 2 3 4
DMV
DMU
DMC
DMW
32CLK
DRUM FREE
PAUSE
D. BIAS
IC211 BA6303F ANLOG DRUM SPEED ERROR INVERTER
IC212 NJM3403AM DRUM ERROR AMP, 25Hz NOTCH FILTER, DRUM SPEED ERROR BIAS
IC206 NJM3414D DRUM,CAPSTAN POWER AMP
Q470 2SA812 SWITCH
Q471 DTC144EK SWITCH
Q281 DTC144EK SWITCH
Q206 2SB1133-R POWER DRIVE
Q280 2SC1623-L6 POWER DRIVE
IC207 CX20114 DRUM DRIVER
Q282 DTC144EK SWITCH
Q208 2SA12-M6 STARTER
Q209 2SD1406-Y POWER DRIVE
IC208 LB1616M CAPSTAN MOTOR DRIVE
Q260–262 2SD999 CAPSTAN STOP
IC220 TC4053BF MMV
CN213 (BLK)
WHT
YEL
GRY
ORG
CN212 (WHT)
PNK
ORG
GRY
YEL
RED
WHT
BLU
VIO
GRY
AZU
BRN
BLK
CAPSTAN BIAS
CAPSTAN ERROR AMP
Q480 DTC144ES SLOW
Q482 DTC144ES DIR
Q481 DTC144EK
Q228 DTC144EK SWITCH
IC215
C BIAS
CFG
DFG
PBSV
IC701 TC4053BF
IC216 TC4053BF SWITCH
Q472 DTC144EK SWITCH
LP FREE
SP FREE
Q207 DTA144EK SWITCH
Q246 DTC144ES DIR
STILL ADJ 1
STILL ADJ 2
DTC144EK INVERTER
Q704 2SA812-M6 LPF
Q701, 702 2SC1623-L6 NORMAL
BPF
TRACK
FL701 15k
PB AFF

Drum phase servo		➘	
Drum servo (speed and phase)		➘➘	
Capstan speed servo		➘	
Capstan phase servo	➘		➘
Capstan servo (speed and phase)		➘➘	

SP-2 BOARD (SERVO)

(1) 0.54Vp-p, 4.43 MHz — IC210 (3) REC/PB

(9) 5.2Vp-p, 44msec — IC204 (13) (TP202) REC/PB

(2) 3.8Vp-p, 72μsec — IC210 (4) (TP214) REC/PB

(10) 5Vp-p, 160μsec — IC204 (13) (TP202) CUE

(3) 5.2Vp-p, 62msec — IC204 (17) (TP204) REC/PB

(11) 5Vp-p, 220μsec — IC204 (13) (TP202) REV

(4) 5.2Vp-p, 2V — IC204 (15) (TP203) REC/PB

(12) 0.52Vp-p, 10μsec — Q709 E (TP235) REC/PB

(5) 5.4Vp-p, 2V — IC204 (21) REC/PB

(13) 5.2Vp-p, V — IC204 (45) PB

(6) 4.2Vp-p, V — IC210 (18) (TP219) REC/PB

(14) 4.8Vp-p, V — IC701 (22) PB

(7) 4.8Vp-p, V — IC210 (19) REC

(15) 1.65Vp-p, 5.94MHz — IC205 (29) REC/PB

(8) 4Vp-p, 46msec — IC210 (23) (TP218) REC/PB

(16) 5.3Vp-p, 230KHz — IC204 (39) REC/PB

(17) 4Vp-p, V — Q714 (B) MULTI PCM REC

(18) 2.1Vp-p, V — Q711 (E) MULTI PCM REC

RB-2 BOARD

Q450 DTC144ES, Q451 DTC144ES, Q453 DTA144ES, Q452 DTA144ES, Q454 DTC144ES, Q455 DTC143TS, Q456 DTC143TS, Q457 DTC144ES, Q456 DTA144ES

RP AF REC
DOD
D4
CAP ON
PAUSE
FH MSK
UN SW 5V
ASCK
GND
J CON
R BIAS
AS TRDBE

TO PCM AUDIO IC500 (17)

(See page 156.)

TO RS-17 BOARD CN002: MR Vcc, CAP FG(A), MR GND, CAP FG(B) → CAPSTAN FG → M906 CAPSTAN MOTOR (CMU, CMV, CMW, DRIVE GND, VHE(+), VHE(−), UHE+, UHE−, VHE+, VHE(−), HE Vcc)

(See page 135.)

TO RS-17 BOARD CN003: DRUM FG, DRUM FG, DRUM FG COM, REG → FG PG → M902 DRUM MOTOR (DMV, DMU, DMC, DMW)

(See page 135.)

IC211 BA6303F ANLOG DRUM SPEED ERROR INVERTER

Q470 2SA812 SWITCH

Q471 DTC144EK SWITCH

Q281 DTC144EK SWITCH

Q205 2SB1133-R POWER DRIVE

Q208 2SA12-M6 STARTER

IC207 (DRUM DRIVER)

IC207 CX20114 DRUM DRIVER

Q282 DTC144EK SWITCH

IC208

IC208 LB1616M CAPSTAN MOTOR DRIVE

CN213 (BLK): DMV, DMU, DMC, DMW — WHT, YEL, GRY, ORG

CN212 (WHT): CMU, CMV, CMW, DRIVE GND, VHE(+), VHE(−), UHE(+), UHE(−) — PNK, OPS, YEL, RED, WHT, BLU, VIO

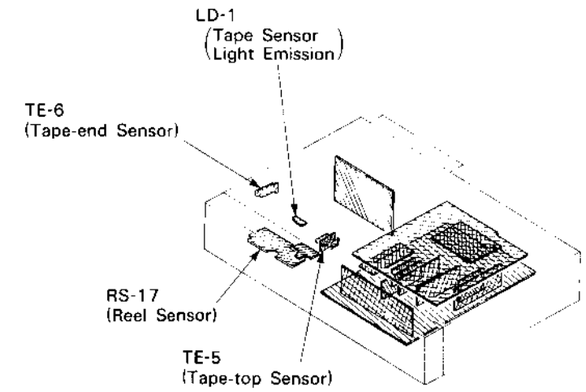
Note:

- ○ : indicates a lead wire mounted on the component side.
- ● : indicates a lead wire mounted on the printed side.
- ⊗ : Through hole.
- : Pattern from the side which enables seeing.
- : Pattern at the rear side.
- Digital transistor (RS-17:Q001,002,003) transistor with resistors. Refer to the RS-17 board schematic diagram for digital transistor.

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

Caution:

Pattern face side: (Solder Side)	Parts on the pattern face side seen from the pattern face are indicated
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.



Note:

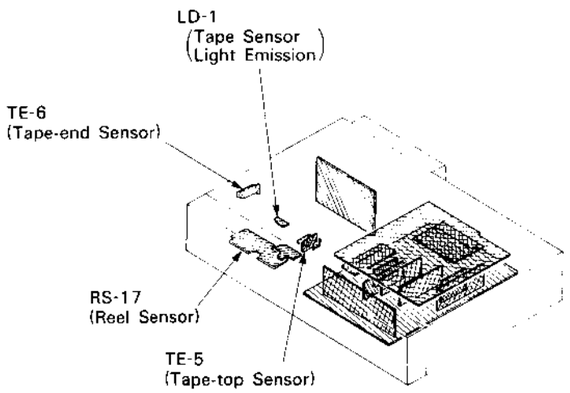
- ● · : indicates a lead wire mounted on the component side.
- ● ● · : indicates a lead wire mounted on the printed side.
- ● ⊗ : Through hole.
- ● : Pattern from the side which enables seeing.
- ● : Pattern from the reverse side
- ● Digital transistor (RS-17:Q001,002,003) transistor with resistors. Refer to the RS-17 board schematic diagram for digital transistor.

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

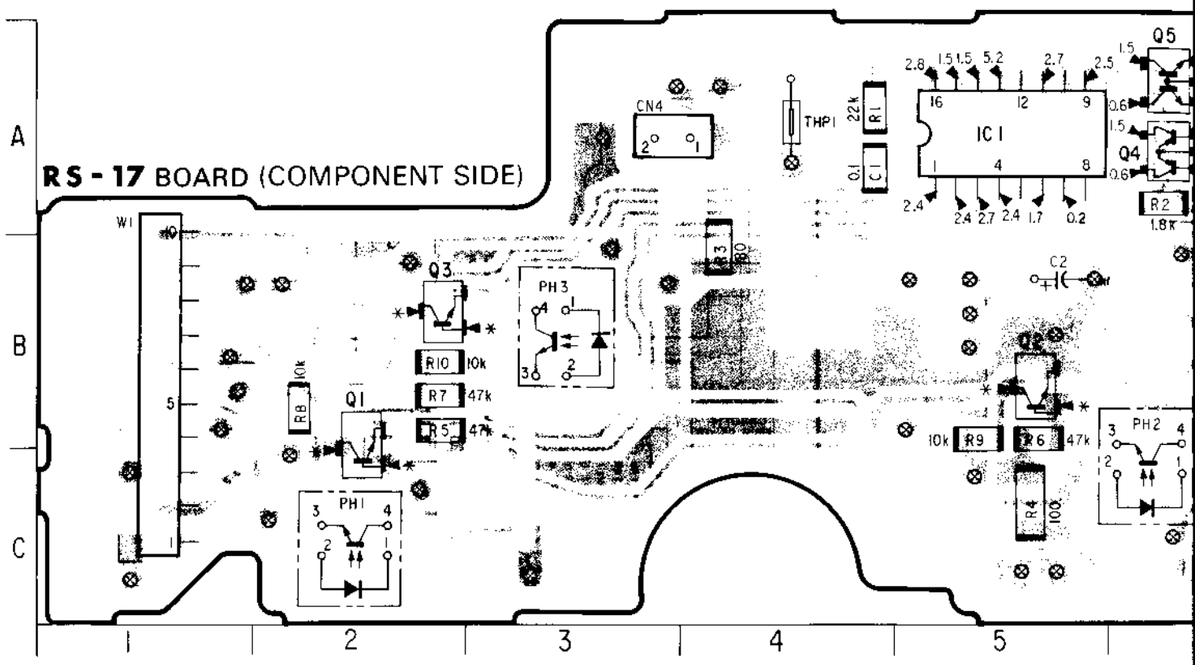
Caution:

Pattern face side. (Solder Side) Parts on the pattern face side seen from the pattern face are indicated.

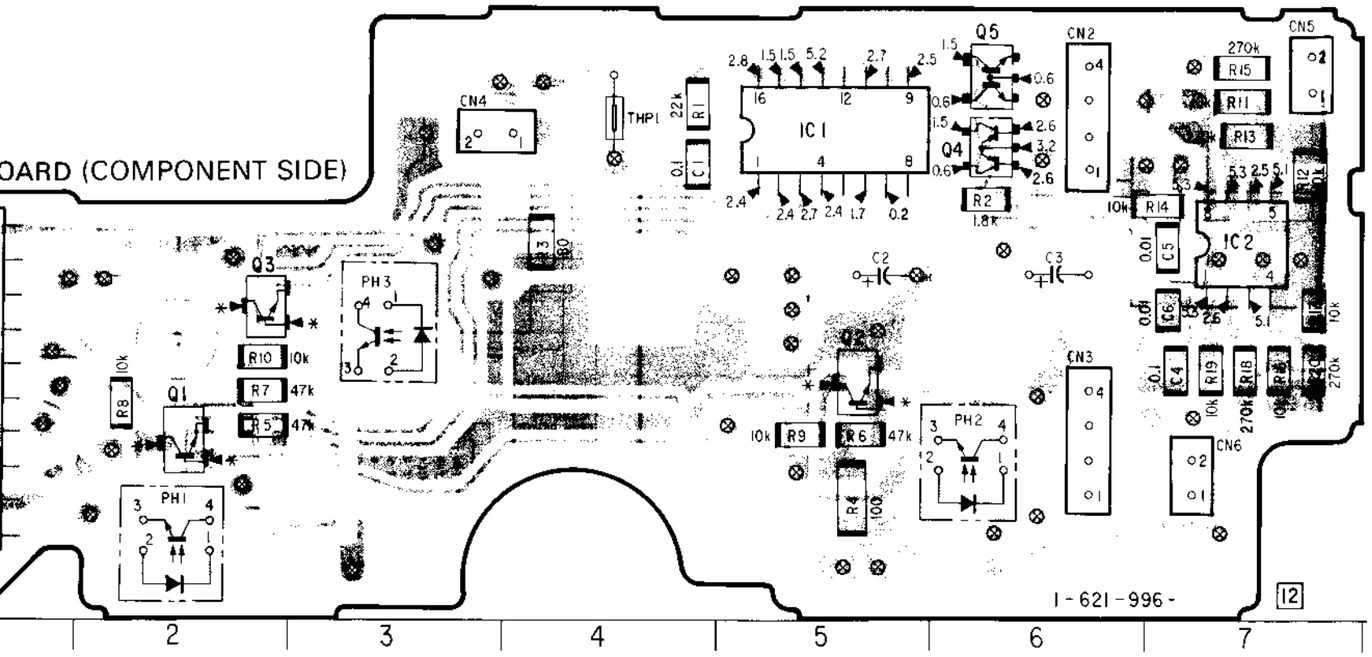
Parts face side: (Component Side) Parts on the parts face side seen from the parts face are indicated.

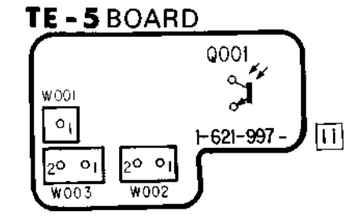


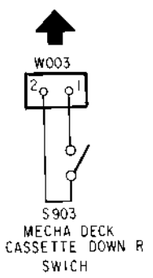
IC001	A-5
IC002	B-7
PH001	C-1
PH002	C-6
PH003	B-3
Q001	B-2
Q002	B-5
Q003	B-2
Q004	A-6
Q005	A-6

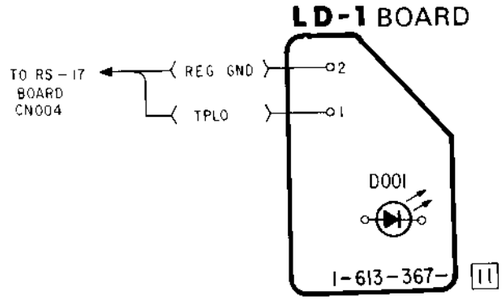


OARD (COMPONENT SIDE)

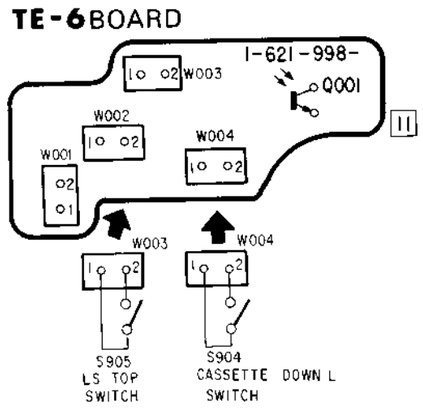






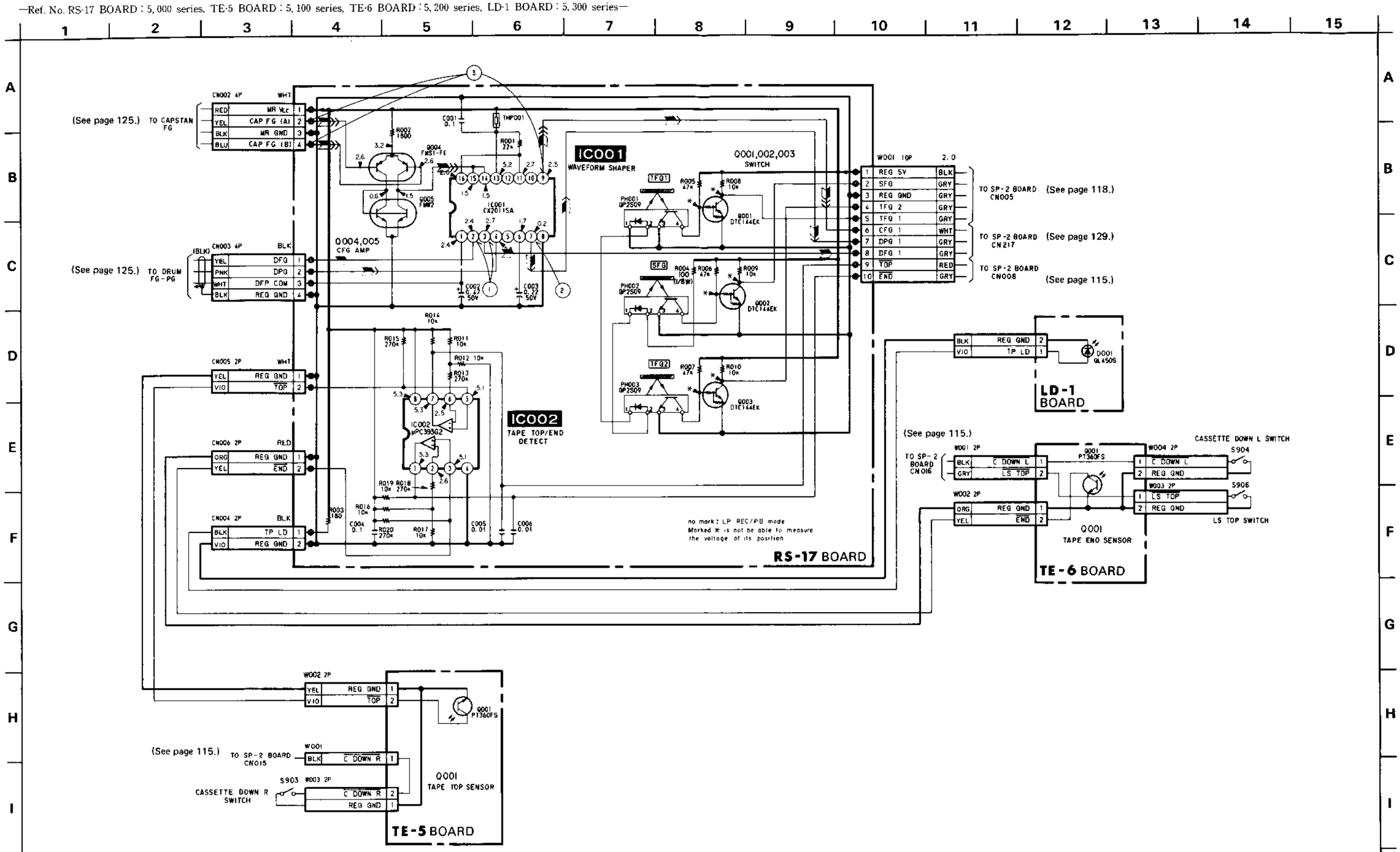


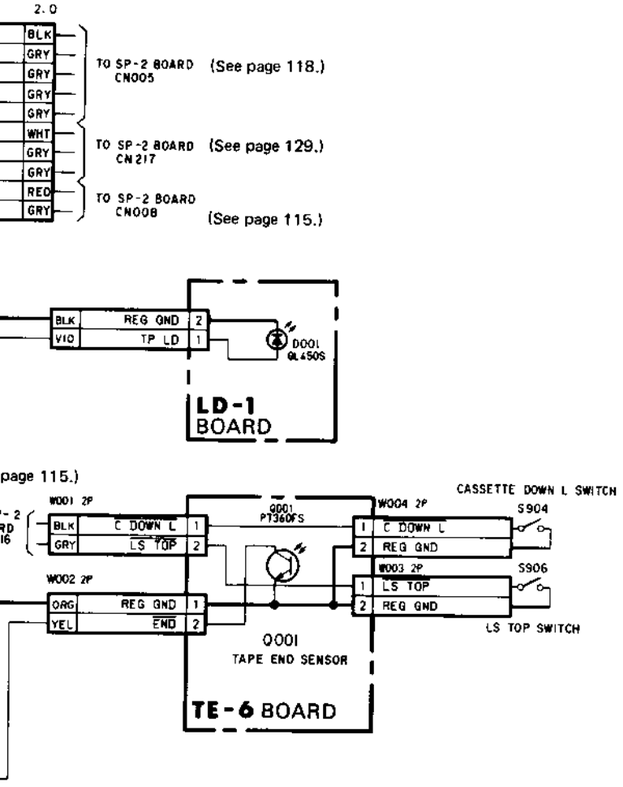
as marked ★ REC/PB mode
Marked ★ is not be able to measure
the voltage of its position



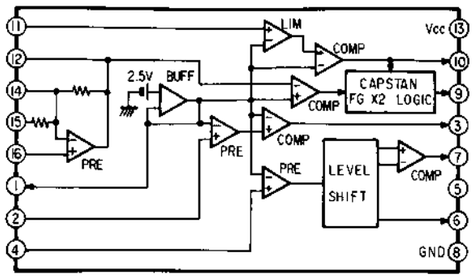
RS-17 (REEL SENSOR), TE-5 (TAPE-TOP SENSOR), TE-6 (TAPE-END SENSOR), LD-1 (TAPE SENSOR LIGHT EMISSION) SCHEMATIC DIAGRAM

—Ref. No. RS-17 BOARD : 5,000 series, TE-5 BOARD : 5,100 series, TE-6 BOARD : 5,200 series, LD-1 BOARD : 5,300 series—

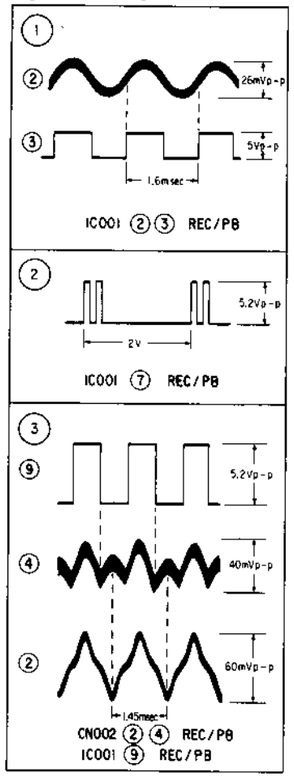




IC001 CX20115A



RS-17 BOARD



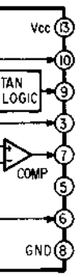
Note:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/10W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF.
  50V or less are not indicated except for electrolytice. and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▬▬ : B + bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a colour-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

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

- **Signal path**

	REC	REC/PB	PB
Drum speed servo		▬	
Drum phase servo		▬»	
Capstan servo (speed and phase)		▬»»	



Note:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/10W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF.
  50V or less are not indicated except for electrolytice. and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ——— : B + bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a colour-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

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

- **Signal path**

	REC	REC/PB	PB
Drum speed servo		➢	
Drum phase servo		➢›	
Capstan servo (speed and phase)		➢››	

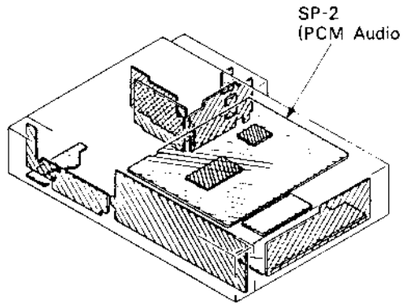
Note:

- ・ : indicates a lead wire mounted on the component side.
- ● : indicates a lead wire mounted on the printed side.
- ⊗ : Through hole.
- : Pattern from the side which enables seeing.

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

Caution:

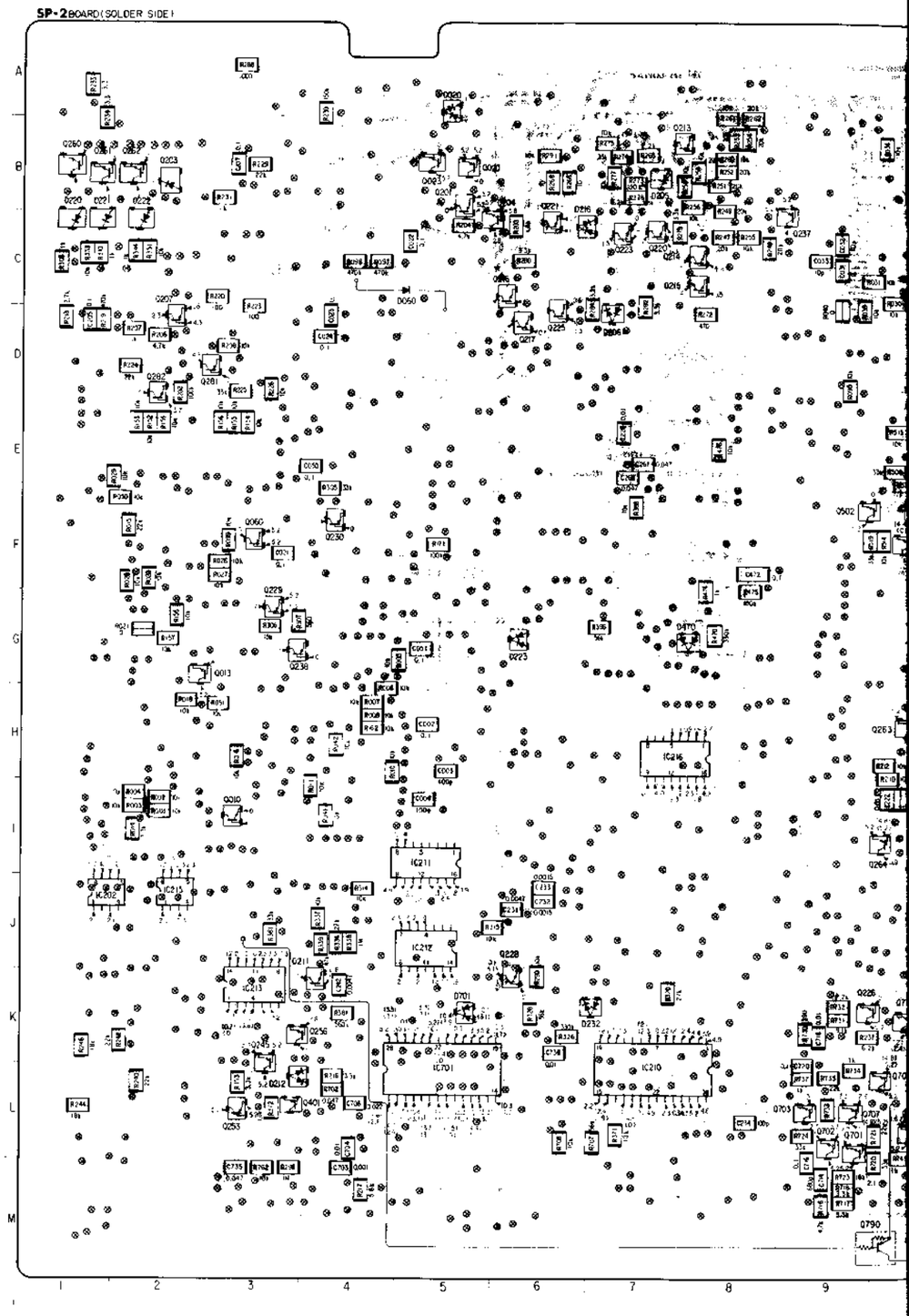
Pattern face side (Solder Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side (Component Side)	Parts on the parts face side seen from the parts face are indicated.



CN001	D-27	IC210	K-7	Q390	J-14	TP603	G-20
CN002	K-19	IC211	I-5	Q401	L-4	TP604	D-18
CN003	M-32	IC212	J-5	Q480	G-25	TP607	G-22
CN004	A-27	IC213	K-3	Q481	G-25	TP608	C-21
CN005	A-22	IC215	J-2	Q482	F-25	TP609	E-18
CN006	A-23	IC218	F-6	Q500	F-10		
CN007	A-28	IC220	F-27	Q501	F-10		
CN008	G-32	IC500	E-23	Q502	F-9		
CN009	A-24	IC501	C-22	Q601	C-13		
CN010	E-28	IC502	J-15	Q602	C-14		
CN011	L-20	IC600	B-19	Q604	B-14		
CN012	M-14	IC601	H-20	Q605	B-21		
CN013	L-22	IC602	E-20	Q606	J-18		
CN014	K-20	IC603	F-20	Q701	L-9		
CN015	A-24	IC604	D-14	Q702	L-9		
CN016	H-32	IC605	E-18	Q703	L-9		
CN017	C-29	IC606	H-18	Q704	M-24		
CN018	A-28	IC701	K-5	Q705	K-23		
CN019	C-30	IC703	L-30	Q706	K-24		
CN020	E-32			Q707	L-9		
CN021	E-31	Q010	I-3	Q708	L-10		
CN022	C-28	Q011	H-31	Q709	L-25		
CN207	A-26	Q012	H-31	Q710	M-21		
CN212	B-31	Q013	G-3	Q711	L-10		
CN213	A-29	Q014	D-10	Q712	K-11		
CN214	L-25	Q015	D-10	Q713	L-10		
CN215	J-22	Q020	B-5	Q714	L-23		
CN216	L-21	Q021	B-28	Q715	L-22		
CN217	G-23	Q022	B-28	Q716	M-10		
CN601	B-22	Q023	B-5	Q717	K-10		
CN603	M-12	Q054	I-22	Q777	J-29		
CN605	F-22	Q055	I-22				
CN606	F-23	Q060	F-3	RV201	J-26		
CN607	B-22	Q085	G-16	RV202	J-26		
		Q086	H-16	RV203	J-26		
D025	A-5	Q090	D-23	RV204	J-26		
D021	A-28	Q091	D-24	RV206	K-25		
D060	C-4	Q201	B-5	RV208	K-25		
D082	G-16	Q202	B-28	RV209	D-25		
D203	B-2	Q203	B-27	RV210	M-29		
D205	B-7	Q204	B-6	RV601	B-20		
D206	D-7	Q205	K-26	RV602	F-18		
D208	H-24	Q206	C-30	RV603	C-21		
D209	I-26	Q207	C-2	RV604	B-21		
D211	K-27	Q208	D-32	RV701	M-27		
D212	L-3	Q209	D-30				
D213	I-22	Q210	H-11	TP001	G-29		
D214	J-30	Q211	K-4	TP002	I-30		
D215	D-27	Q212	A-26	TP003	E-32		
D216	C-6	Q213	B-7	TP004	G-29		
D217	I-24	Q214	C-7	TP005	G-29		
D218	K-30	Q215	C-7	TP201	I-23		
D220	B-1	Q216	C-6	TP202	G-24		
D221	B-1	Q217	D-6	TP203	G-22		
D222	B-2	Q218	C-26	TP204	G-22		
D223	G-6	Q219	C-27	TP205	G-22		
D226	K-30	Q220	C-7	TP206	J-21		
D227	H-11	Q221	B-6	TP207	G-24		
D230	D-31	Q222	C-26	TP208	K-29		
D232	K-7	Q223	C-7	TP209	L-22		
D233	E-27	Q224	C-27	TP210	B-27		
D390	F-27	Q225	D-6	TP211	B-27		
D391	J-14	Q226	K-9	TP212	J-27		
D392	I-10	Q227	K-10	TP213	K-28		
D393	I-10	Q228	J-6	TP214	K-25		
D501	F-11	Q229	F-3	TP215	J-24		
D502	H-13	Q230	F-4	TP216	K-26		
D600	B-13	Q232	K-23	TP217	K-26		
D601	H-14	Q233	K-30	TP219	M-26		
D603	I-14	Q235	H-11	TP220	I-30		
D604	H-14	Q237	C-9	TP221	L-27		
D701	K-5	Q238	G-3	TP222	J-29		
D702	K-23	Q240	E-26	TP223	L-26		
		Q242	K-12	TP224	J-23		
IC001	H-30	Q245	K-3	TP225	E-27		
IC002	F-31	Q246	H-28	TP226	G-24		
IC003	C-23	Q248	I-31	TP227	L-27		
IC004	F-29	Q249	K-31	TP228	I-30		
IC005	F-28	Q250	K-31	TP229	G-28		
IC007	C-29	Q251	L-31	TP230	M-26		
IC008	D-29	Q252	L-30	TP231	L-21		
IC009	D-30	Q253	L-3	TP232	C-32		
IC010	L-18	Q254	K-31	TP233	C-31		
IC011	H-17	Q256	K-4	TP234	C-31		
IC201	E-26	Q260	B-1	TP235	L-25		
IC202	J-1	Q261	B-1	TP236	M-30		
IC204	H-23	Q262	B-2	TP237	I-32		
IC205	K-21	Q263	H-10	TP238	E-25		
IC206	D-32	Q264	I-10	TP239	J-31		
IC207	B-30	Q280	C-31	TP240	E-26		
IC208	B-32	Q281	D-2	TP241	E-26		
IC209	B-26	Q282	D-2	TP242	E-26		

SP-2 (PCM AUDIO PROCESS) PRINTED WIRING BOARD

—Ref. No. SP-2 BOARD : 4,000 series—

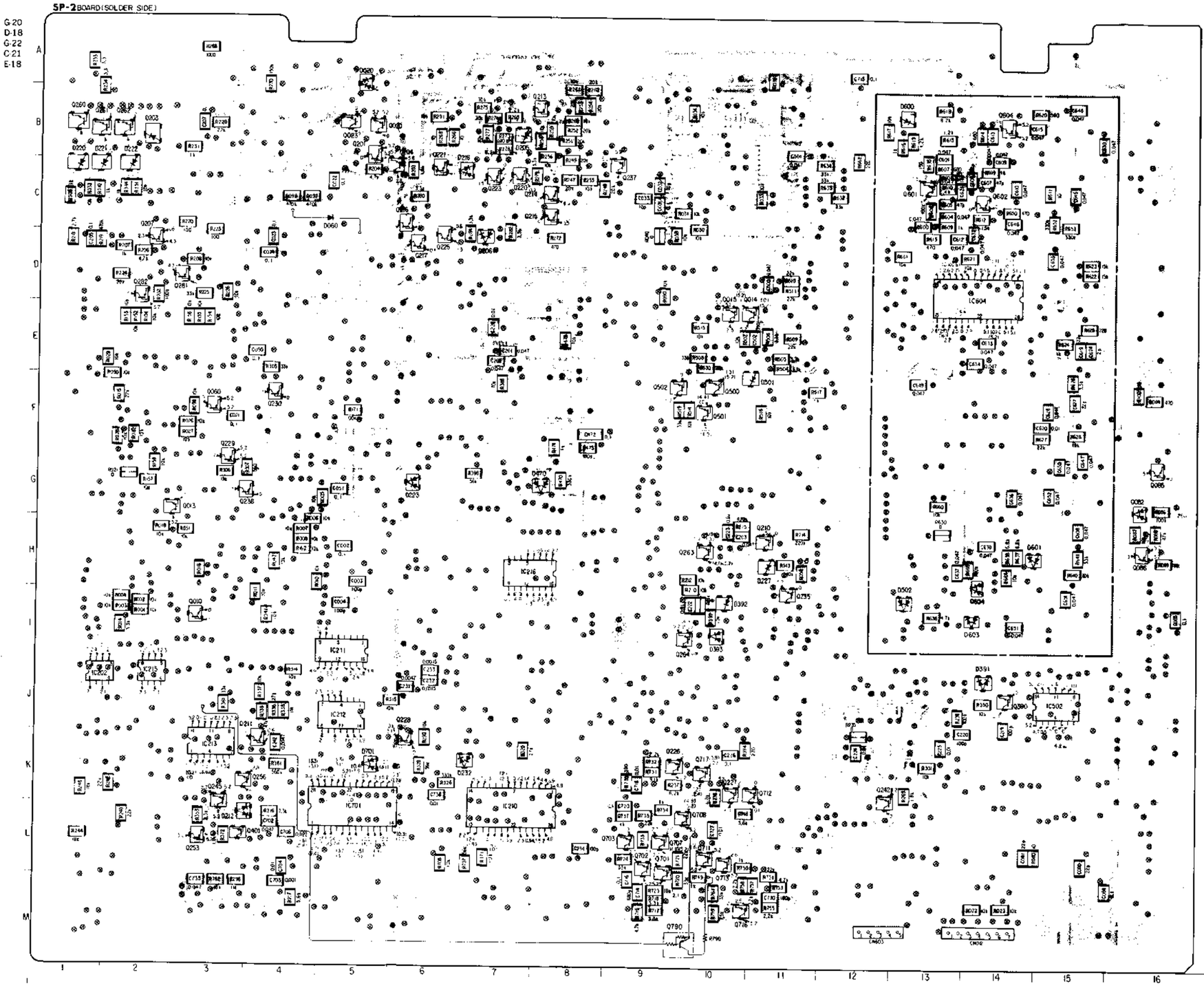


SP-2 (PCM AUDIO PROCESS) PRINTED WIRING BOARD

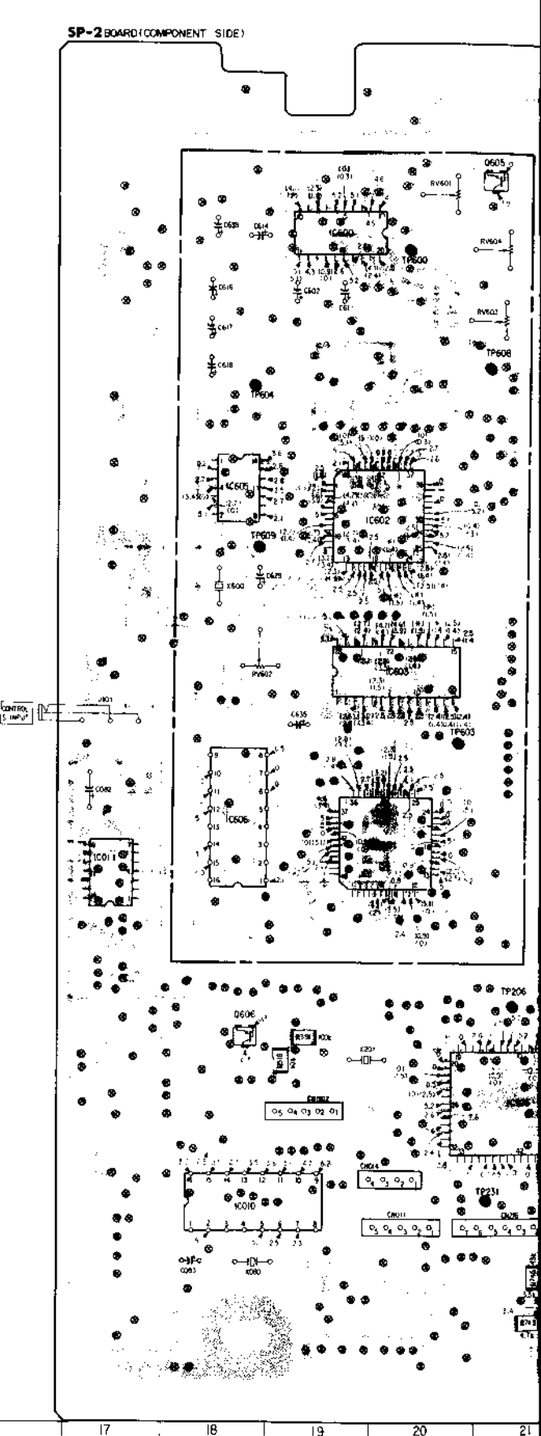
– Ref. No. SP-2 BOARD : 4,000 series–

TP603	G-20
TP604	D-18
TP607	G-22
TP608	C-21
TP609	E-18

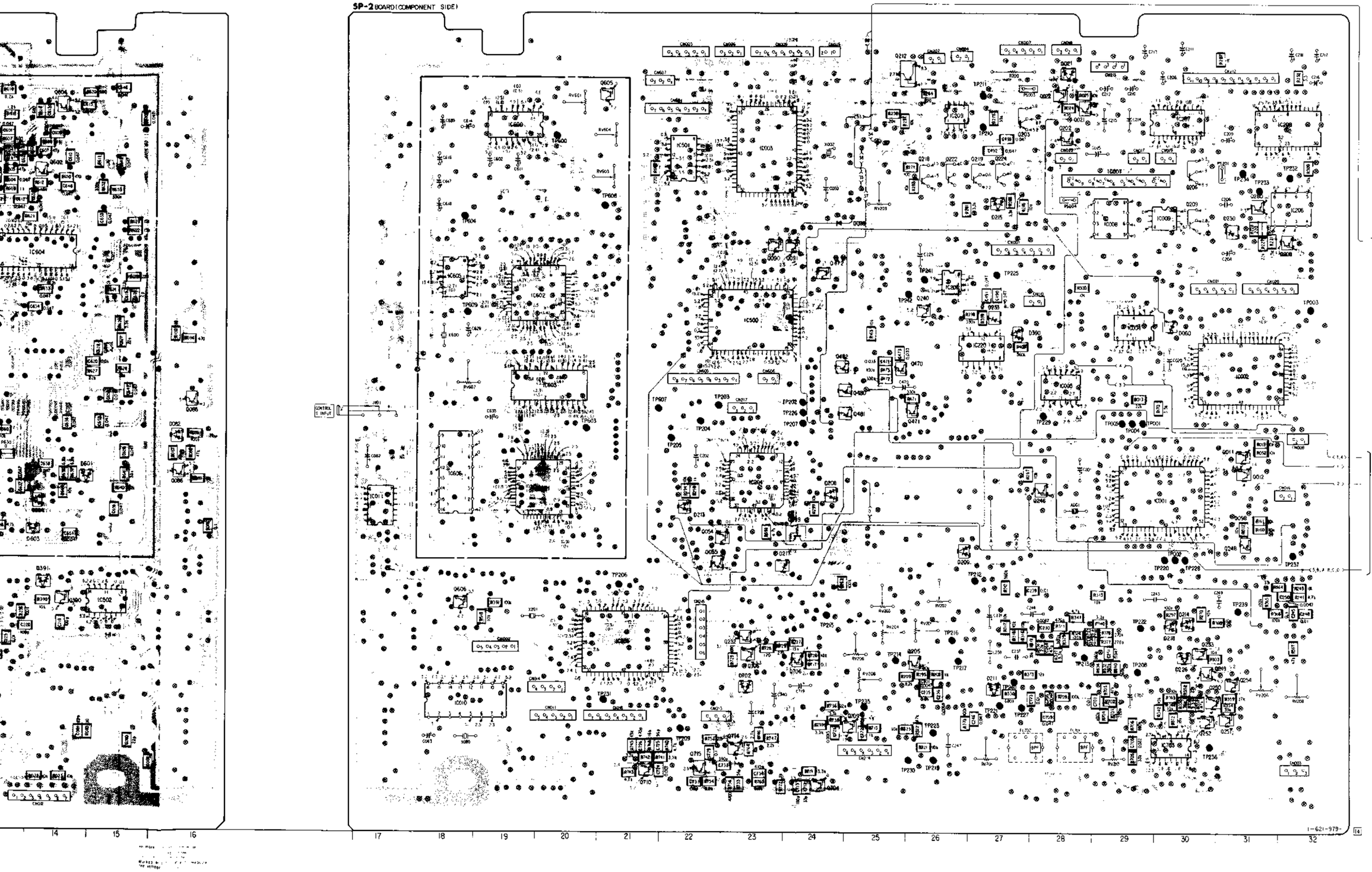
SP-2 BOARD (SOLDER SIDE)



SP-2 BOARD (COMPONENT SIDE)



SP-2 BOARD (COMPONENT SIDE)



TO KM-1 BOARD

TO RB-2 BOARD

SP-2 BOARD (1/3) PCM

IC602 CX23011 PCM PROCESS

IC601 CXD1066Q MULTI/INDEX PROCESS

IC603 MB8464 RAM

IC500 μPD75106 PCM/INDEX CONTROL

Q502 DTC144EK INVERTER

Q500,501 DTC144EK AND GATE

(See page 165.)

TO MJ-11 BOARD W606

CN606 (WHT)

GRY	MCONT L	1
—	N.C.	2

(See page 155.)

TO AU-22 BOARD W101

CN605 (WHT)

GRY	SEG EXT	1
—	N.C.	2
GRY	UN SW 5V	3
GRY	H. SYNC DET	4
GRY	ASTROBE	5
GRY	AS DATA	6
GRY	ASCK	7
GRY	DRF SW P	8

CUE+REV, WRITE, ERASE, RAREA, PCM REC, RAMP, RP AF REC, RF CT

UN SW 5V, REG 5V, GND, PCM CS, SCK, PM DATA, MP DATA, FF ON, MFE ON, PCM REC AREA, CLOCK, CLOCK, RESET, CAP ON

TO SP-2 BOARD (1/3) SYSTEM CONTROL

(See page 118.)

CN603 SP (WHT)

5	GND
4	PCM AREA
3	DRF SW P
2	X SCK
1	T3

CHECK PINS

8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19

IC602 CX23011 PCM PROCESS

IC603 M66464 RAM

IC604 CX23012 PCM PROCESS

IC605 CX20103 CLOCK GENERATOR

IC606 CX23078 DUB TIMING PULSE

IC501 TC4053BF BUS SELECT

IC502 TC4030BF EX OR GATE

Q606 DTC144EK INVERTER

Q500,501 DTC144EK AND GATE

IC500 μPD75106 INDEX MICON

CHECK PINS

TO SYSTEM CONTROL

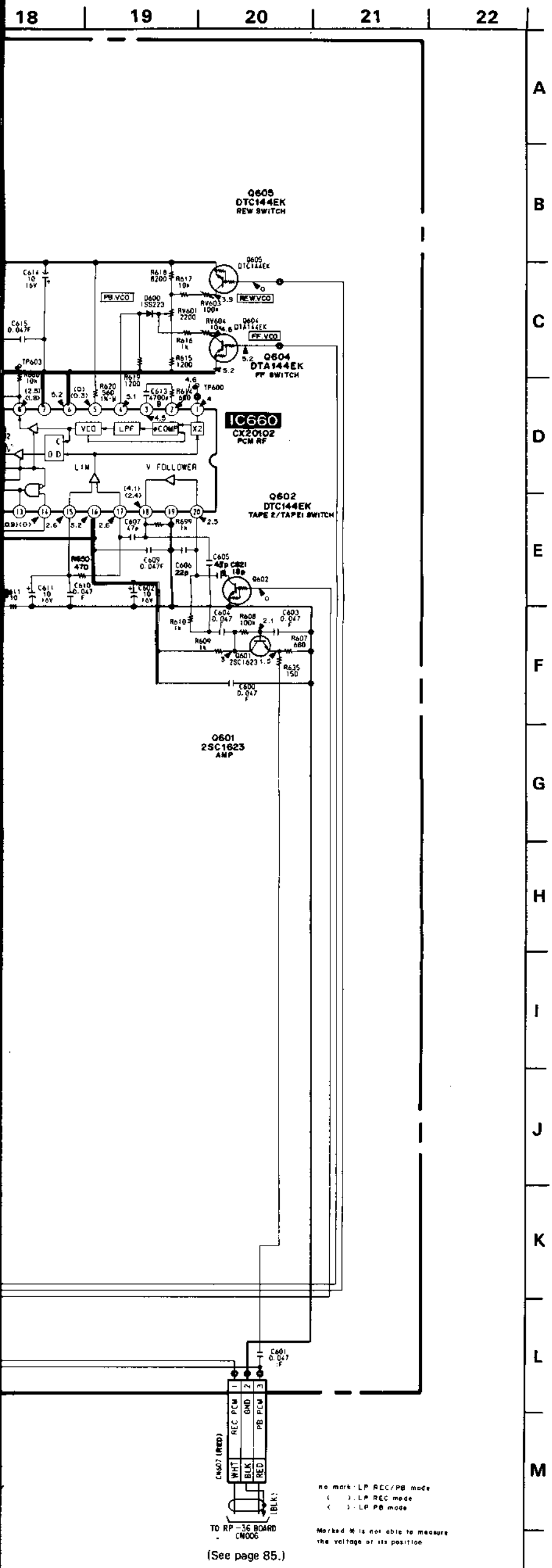
(See page 118.)

TO AU-22 BOARD W701

(See page 155.)

TO SP-2 BOARD(1/3) SERVO

(See page 129.)



Note:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/10W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF, 50V or less are not indicated except for electrolytice. and tantalums.
- ▭ : panel designation.
- △ : internal component.
- ▭ : adjustment for repair.
- ——— : B + bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a colour-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

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

- **Signal path**

SP-2 BOARD(PCM)

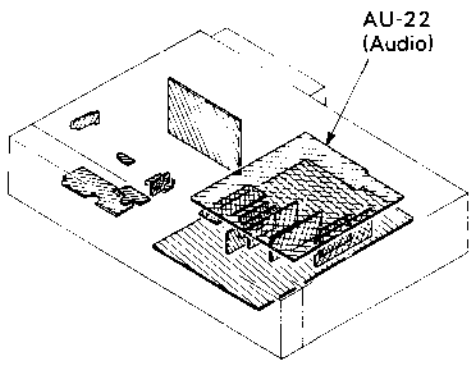
① 4.1Vp-p, 11.6MHz
IC605 (8) E-E

② 4.2Vp-p, 11.58MHz
IC602 (1) REC

Note:

- ○ : indicates a lead wire mounted on the component side.
- ● : indicates a lead wire mounted on the printed side.
- . . : soldering side.
- Digital transistor (AU-22:Q201,Q204,Q502) transistor with resistors.
  Refer to the AU-22 board schematic diagram for digital transistor.

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

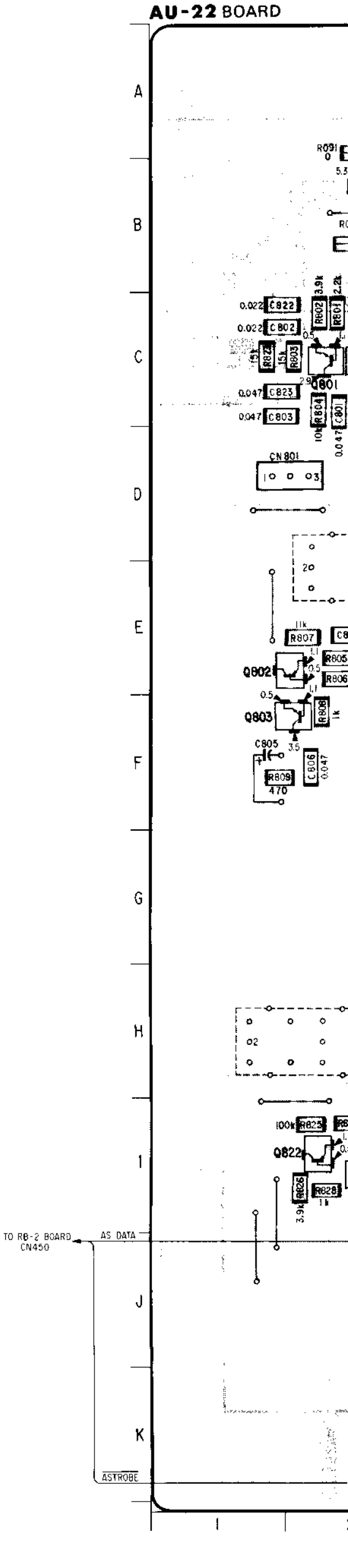


D201	G-13
D203	A-12
D701	B-4
IC101	J-5
IC201	F-8
IC203	C-7
IC301	D-10
IC302	C-10
IC303	E-7
IC304	F-3
IC401	G-10
IC402	E-11
IC403	H-8
IC404	G-4
IC501	K-8
IC503	I-9
IC601	G-4
IC602	F-5
IC701	B-3
Q201	G-11
Q203	G-2
Q204	G-7
Q208	J-13
Q209	J-13
Q210	J-13
Q211	I-13
Q212	I-13
Q213	H-13
Q301	D-11
Q302	F-4
Q401	F-11
Q402	G-6
Q502	I-7
Q801	C-2
Q802	E-2
Q803	F-2
Q821	C-2
Q822	I-2
Q823	I-2

AU-22(AUDIO) PRINTED W

—Ref. No. AU-22 BOARD : 7, 000

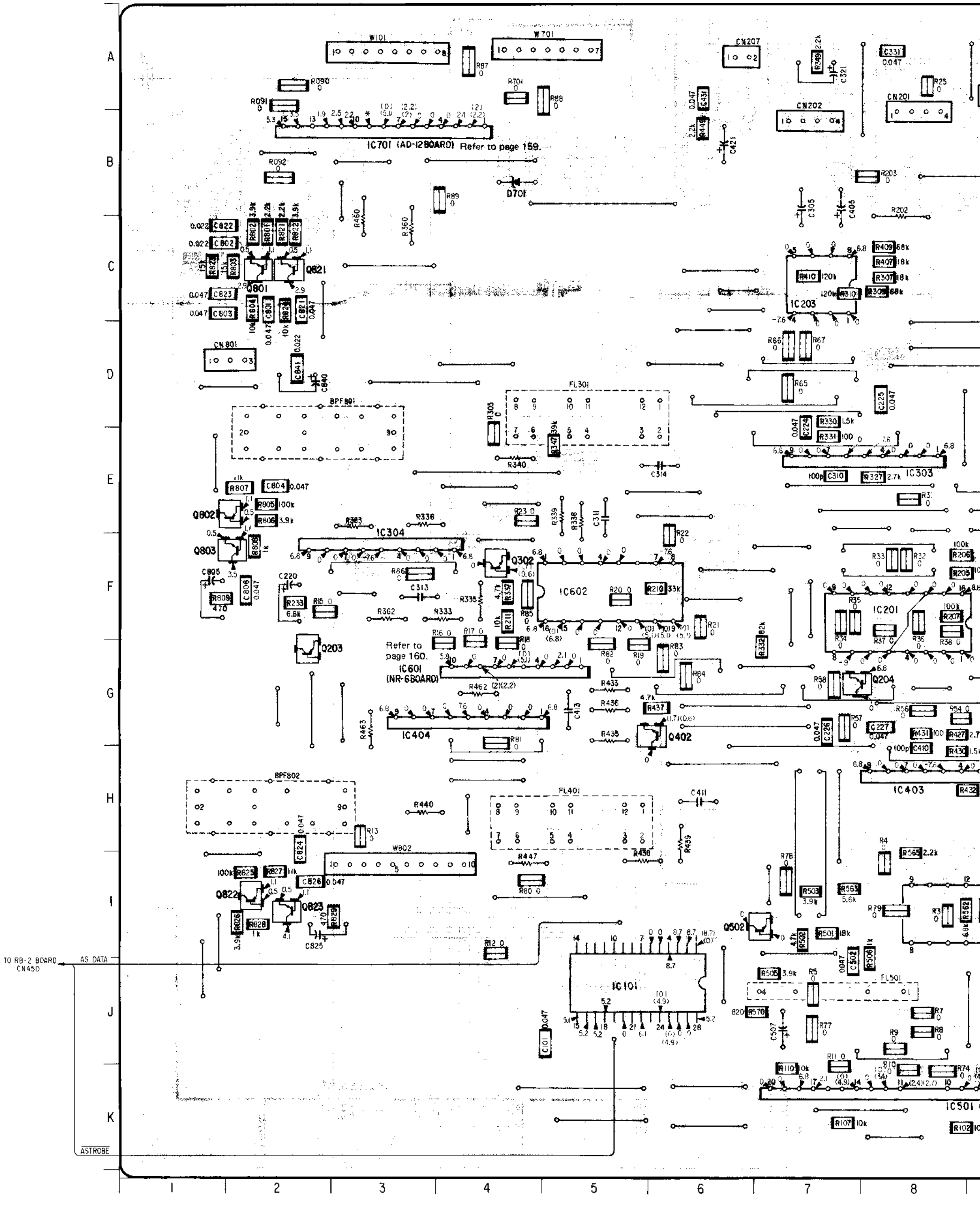
AU-22 BOARD

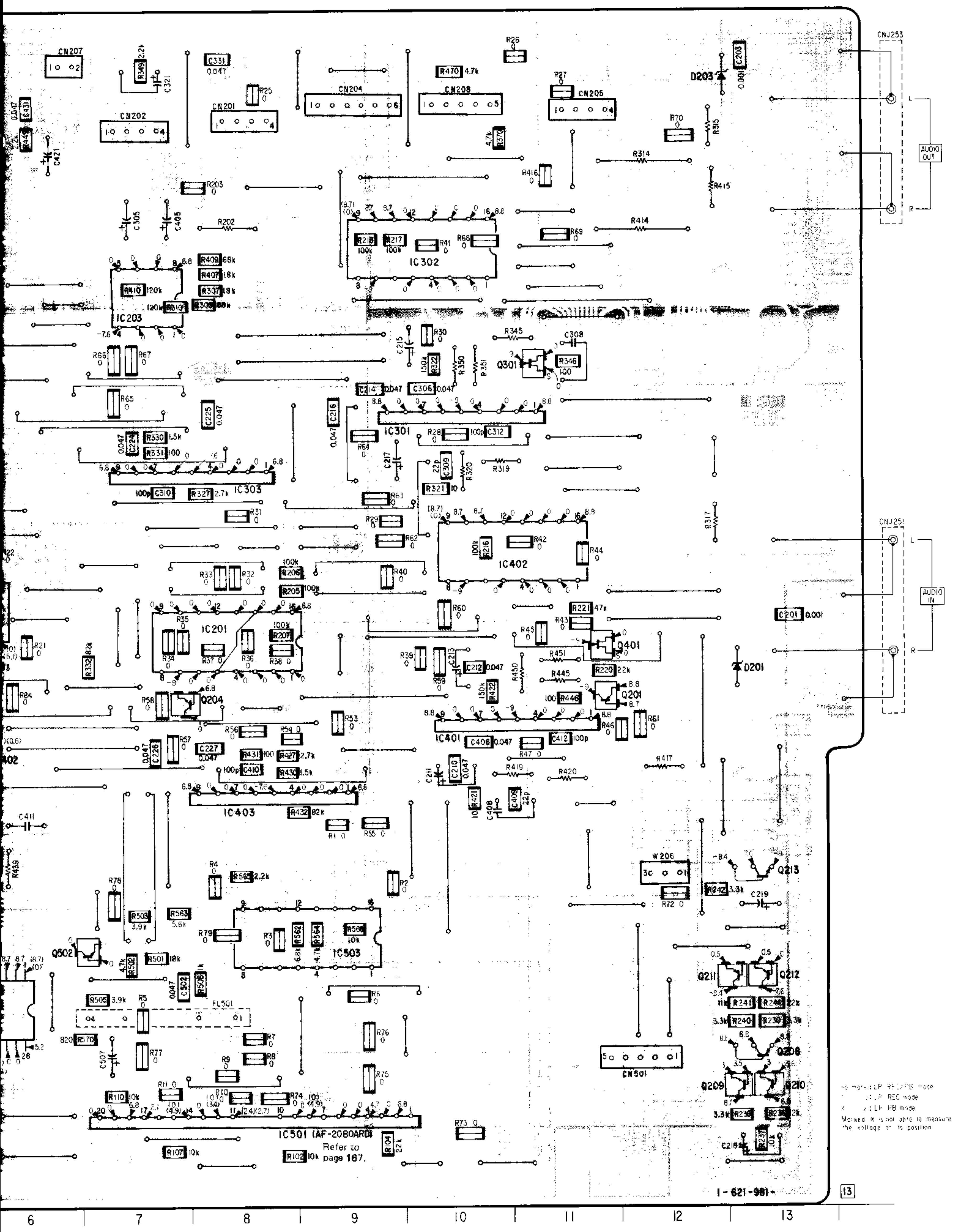


AU-22(AUDIO) PRINTED WIRING BOARD

– Ref. No. AU-22 BOARD : 7,000 series–

AU-22 BOARD

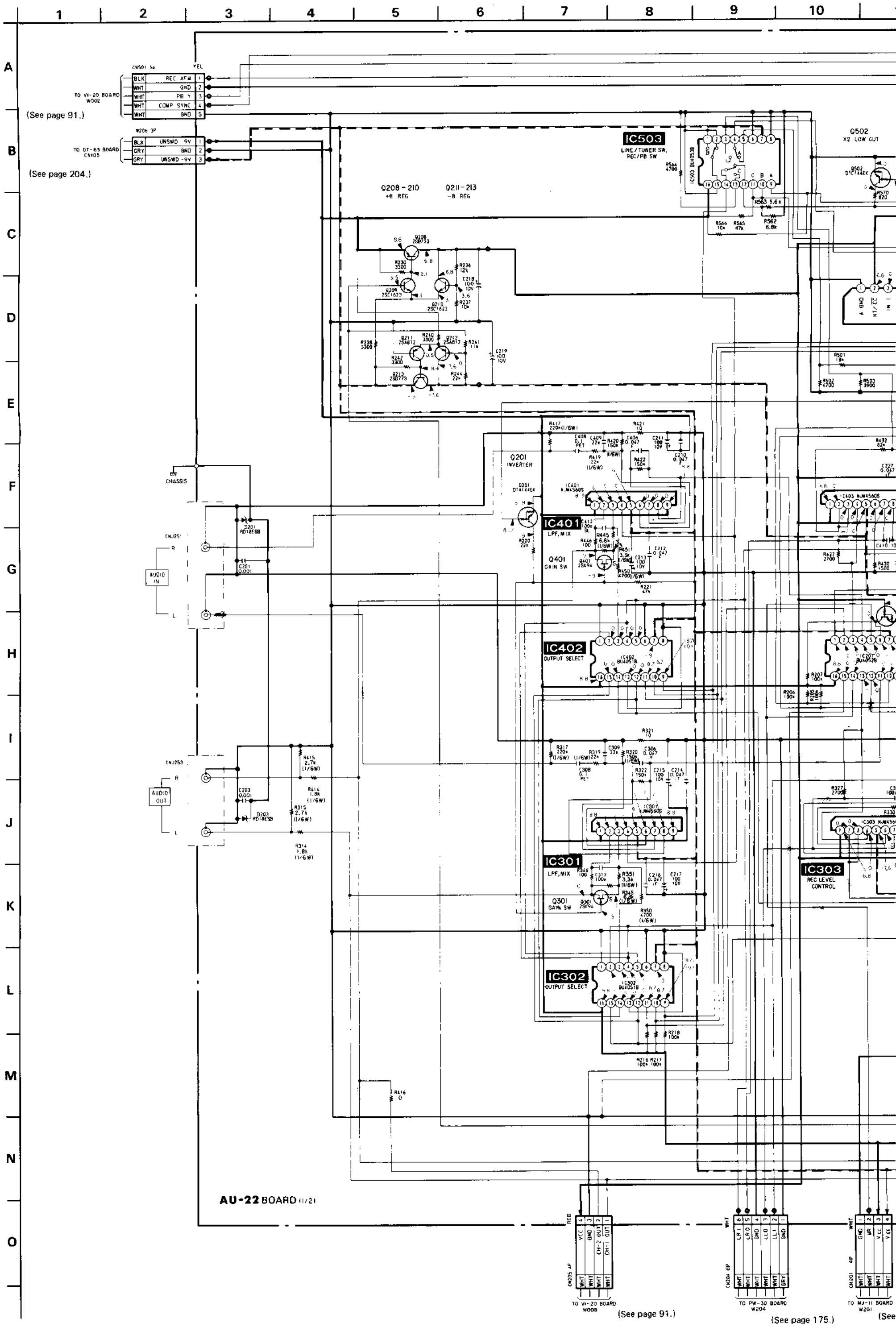




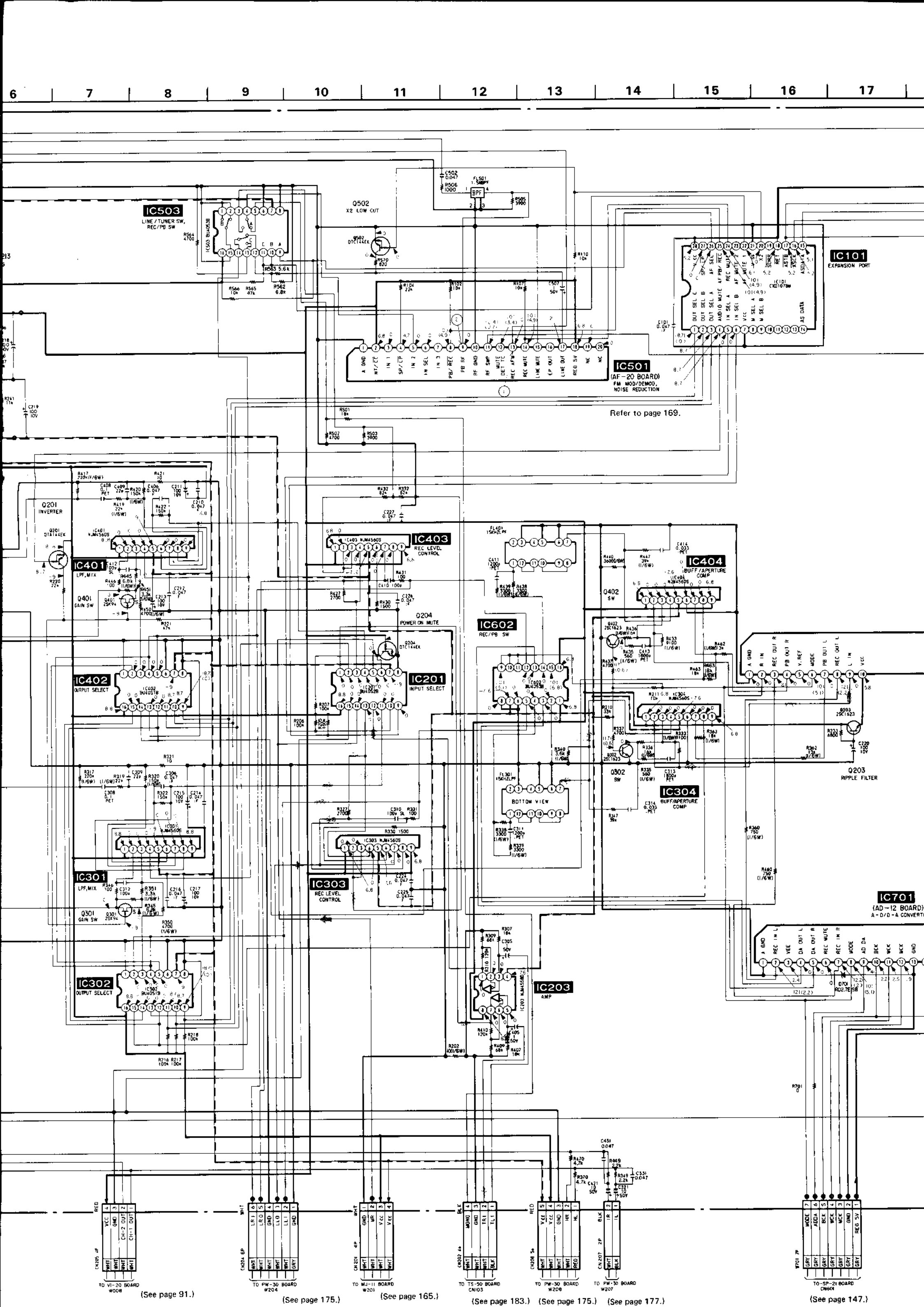
No mark : LP REC/PB mode
( ) : LP REC mode
( ) : LP PB mode
Marked ✻ is not able to measure the voltage on its position.

AU-22(AUDIO) SCHEMATIC DIAGRAM

—Ref. No. AU-22 BOARD : 7,000 series—



AUDIO (1) **AUDIO (1)**


6
7
8
9
10
11
12
13
14
15
16
17
IC503
LINE / TUNER SW, REC/PB SW
IC503 BU4053B
R564 4700
R563 5.6k
R566 10k
R565 47k
R562 6.8k
Q502
X2 LOW CUT
Q502 DTC144EK
R570 820
C502 0.047
R506 1000
FLSQ1 15KHZLPF
BPF
R505 3900
R110 10k
IC101
EXPANSION PORT
CXD1078M
C101 0.047
R104 22k
R102 10k
R107 10k
C507 50V
IC501
(AF-20 BOARD)
FM MOD/DEMOD, NOISE REDUCTION
A GND
MT/CC
IN 1
SP/CP
IN 2
IN SEL
IN 3
PB/REC
PB RF
RF GND
RF SWP
MUTE DET TC
REC AFM
REC MUTE
LINE MUTE
EP OUT
LINE OUT
REG 5V
NC
NC
Refer to page 169.
R501 18k
R502 4700
R503 3900
Q201
INVERTER
Q201 DTA144EK
IC401
LPF, MTX
IC401 NJM4560S
R412 220k(1/6W)
R421 10
C408 0.1 PET
C409 27p
R420 150k
C406 0.047
C211 100 10V
C210 0.047
R419 22k (1/6W)
R427 150k
R446 6.8k (1/6W)
R445 100
R451 3.3k (1/6W)
C213 100 10V
C212 100p SL
C217 0.047
R450 470k(1/6W)
R221 47k
Q401
GAIN SW
Q401 2SK94
R220 22k
IC402
OUTPUT SELECT
IC402 BU4051B
R321 10
R317 220k (1/6W)
R319 22k (1/6W)
C309 22p
R320 150k (1/6W)
C306 0.047
C308 0.1 PET
R322 150k
C215 100 10V
C214 0.047
IC301
LPF, MTX
IC301 NJM4560S
R346 100
C312 100p
R351 3.3k (1/6W)
C216 0.047
C217 100 10V
Q301
GAIN SW
Q301 2SK94
R345 6.8k (1/6W)
R350 4700 (1/6W)
IC302
OUTPUT SELECT
IC302 BU4051B
R216 100k
R216 R217 100k 100k
IC403
REC LEVEL CONTROL
IC403 NJM4560S
R432 82k
R332 82k
C227 0.047
R431 100
C410 100p
R427 2700
R430 1500
C226 0.047
Q204
POWER ON MUTE
Q204 DTC144EK
IC201
INPUT SELECT
IC201 BU4052B
R207 100k
R206 100k
R104 22k
IC303
REC LEVEL CONTROL
IC303 NJM4560S
R327 2700
C310 100p SL
R331 100
R330 1500
C224 0.047
C225 0.047
FL401 15KHZLPF
C411 1200p PET
R439 3300 (1/6W)
R438 3300 (1/6W)
IC602
REC/PB SW
IC602 BU4053B
R307 10k
R309 68k
C305 50V
R310 120k
IC203
AMP
IC203 NJM4558D
R410 120k
C405 1 50V
R409 68k
R407 10k
R202 10k(1/6W)
IC404
BUFF/APERTURE COMP
IC404 NJM4560S
C416 0.033 PET
R440 36000(1/6W)
R447 39k (1/6W)
Q402
SW
Q402 2SC1623
R436 (1/6W)
R433 9100 (1/6W)
R435 560 (1/6W)
C413 1600p PET
R434 4700
R462 (1/6W)
R463 18k (1/6W)
IC304
BUFF/APERTURE COMP
IC304 NJM4560S
R210 10k
R211 6.8
R337 4700
R333 (1/6W)
R336 (1/6W)
R340 3.6k (1/6W)
Q302
SW
Q302 2SC1623
R335 560 (1/6W)
C313 1800p PET
C314 0.033 PET
R347 39k
FL301 15KHZLPF
BOTTOM VIEW
R338 3300 (1/6W)
C311 1200p PET
R339 3300 (1/6W)
R360 750 (1/6W)
R460 750 (1/6W)
Q203
RIPPLE FILTER
Q203 2SC1623
R233 6800
R362 (1/6W)
C220 100 10V
A GND
R IN
REC OUT R
PB OUT R
V. REF
MODE
PB OUT L
REC OUT L
L IN
VCC
IC701
(AD-12 BOARD)
A-D/D-A CONVERTER
A GND
REC IN L
VEE
DA OUT L
DA OUT R
REC MUTE
REC IN R
MODE
AD DA
BCK
WCK
WCK
GND
D701 RD2.7ESB
R701 0
C431 0.047
R470 4.7k
R469 2.2k
C331 0.047
R370 4.7k
C421 10 50V
R349 2.2k
C332 10 50V
RED
VCC
GND
CH-2 OUT
CH-1 OUT
CN205 4P
WHT
TO VI-20 BOARD W008
(See page 91.)
WHT
LR I
LR O
GND
LL O
LL I
GND
CN204 6P
TO PW-30 BOARD W204
(See page 175.)
WHT
GND
MR
VCC
VEE
CN201 4P
TO MJ-11 BOARD W201
(See page 165.)
BLK
MONO
GND
TR1
TL1
CN202 4P
TO TS-50 BOARD CN103
(See page 183.)
RED
VEE
VCC
GND
HR
HL
CN206 5P
TO PW-30 BOARD W206
(See page 175.)
BLK
IR
IL
CN207 2P
TO PW-30 BOARD W207
(See page 177.)
MODE
ADDA
BCK
WCK
WCK
GND
REG 5V
W701 7P
TO SP-21 BOARD CN601
(See page 147.)

W101 BP

1	SEG EXT	GRY
2	BL WRITE	GRY
3	VM SW 5V	GRY
4	H SYNC DET	GRY
5	ASTROBE	GRY
6	AS DATA	GRY
7	ASCK	GRY
8	DRFSW P	GRY

TO SP-2 BOARD CN605 (See page 145.)

ASTROBE GRY — TO RB-2 BOARD (See page 126.)

COMP SYNC	A
H SYNC DET	B
SEG EXT	C
REG 5V	D
B CK	E

IC101 EXPANSION PORT

IC101 CXD1076M

IC501 (AF-20 BOARD) FM MOD/DEMOD, NOISE REDUCTION

Refer to page 169.

IC404 BUFF/APERTURE COMP

IC601 (NR-6 BOARD) NOISE REDUCTION

Refer to page 163.

Q203 RIPPLE FILTER

IC304 BUFF/APERTURE COMP

IC701 (AD-12 BOARD) A-D/D-A CONVERTER

Refer to page 163.

R701 0

* mark : LP REC/PB mode
: LP REC mode
: LP PB mode
Marked * is not able to measure the voltage of its position

WHT	IR	1
BLK	IL	2

CN207 2P — TO PW-58 BOARD W207

P701 JP

7	MODE	GRY
6	ADDA	GRY
5	BCK	GRY
4	WCK	GRY
3	MCK	GRY
2	GND	GRY
1	REG 5V	GRY

TO SP-21 BOARD CN601 (See page 147.)

175.) (See page 177.)

Q801-803 AMP

CN801 3P

WHT	BP SPICH	1
BLK	GND	2
RED	PB LP2CH	3

TO RP-36 BOARD CN607 (See page 87.)

E	B CK
A	COMP SYNC
B	H SYNC DET
C	SEG EXT
D	REG5V

AU-22 BOARD (1/2)

45.)

26.)

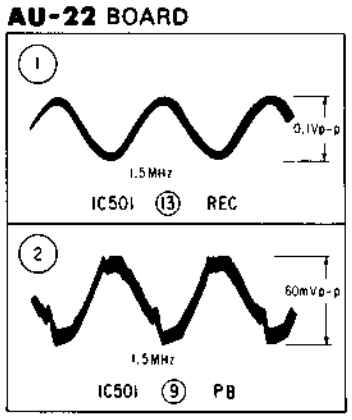
Note:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/10W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF.
  50V or less are not indicated except for electrolytice, and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : panel designation.
- △ : internal component.
- ——— : B + bus.
- - - - : B − bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a colour-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

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

- **Signal path**

AU-22 BOARD



(See page 164.)

Note:

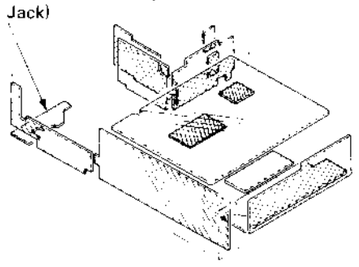
- ——— : indicates a lead wire mounted on the component side.
- ● ● : indicates a lead wire mounted on the printed side.
- ● ※ : Through hole.
- ● : Pattern from the side which enables seeing.
- ● : Pattern of the reverse side.

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

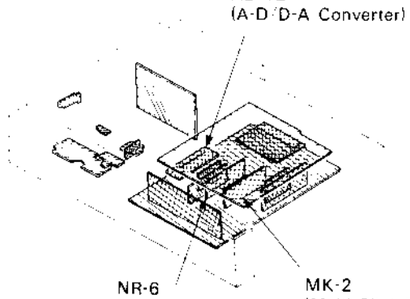
Caution:

Pattern face side: (Solder Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.

MJ-11
(MIC Jack)



AD-12
(A-D/D-A Converter)

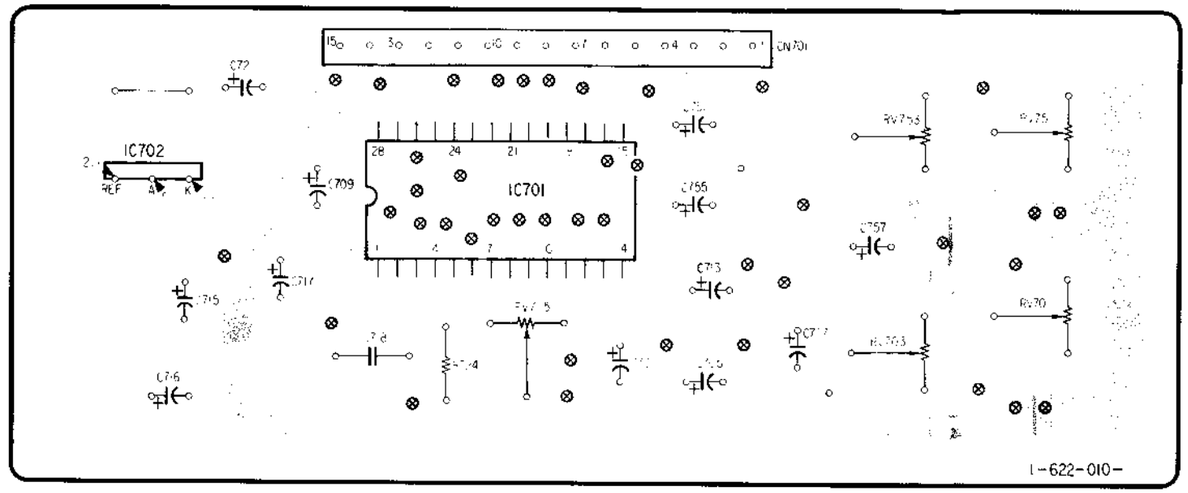


AD-12 (A-D/D-A CONVERTER), NR-6 (NOISE REDUCTION), MK-2 (MULTI PILOT DETECT), MJ-11 (MIC JACK) PRINTED WIRING

—Ref. No. AD-12, NR-6, MK-2 and MJ-11 BOARDS : 8,000 series

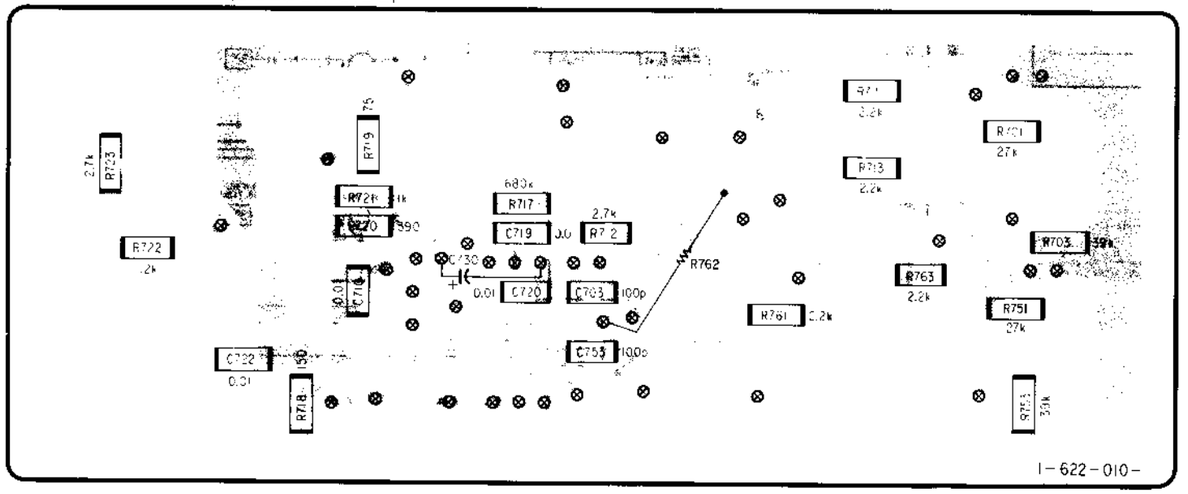
IC701

AD-12 BOARD (COMPONENT SIDE)



IC701

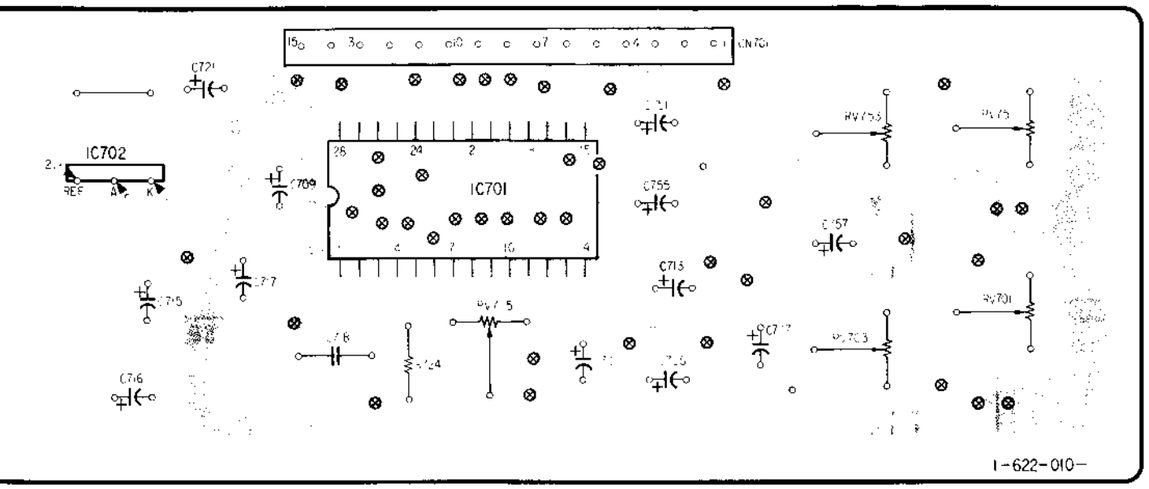
AD-12 BOARD (SOLDER SIDE)



ef. No. AD-12, NR-6, MK-2 and MJ-11 BOARDS : 8,000 series--

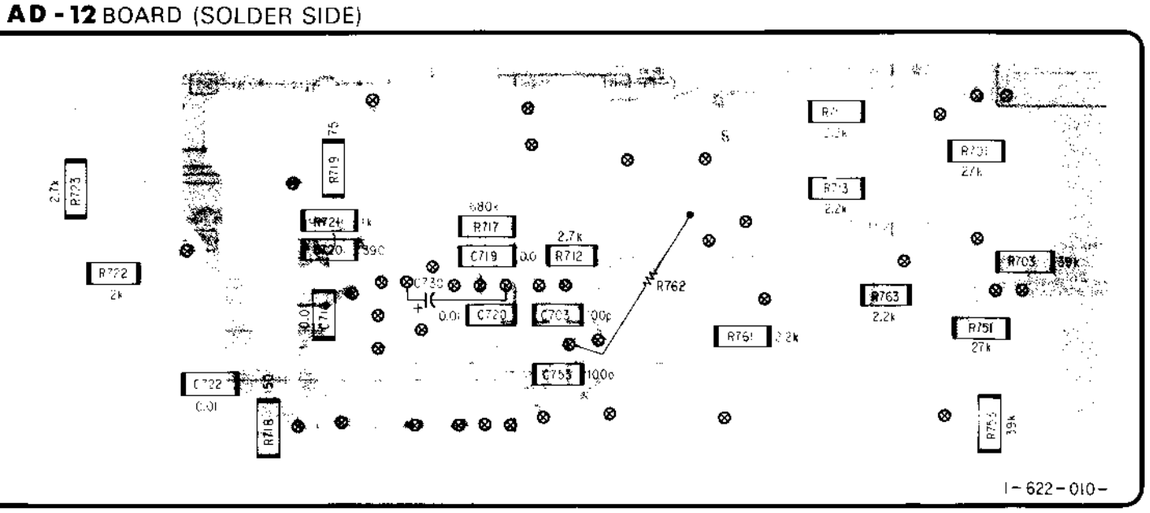
IC701

AD-12 BOARD (COMPONENT SIDE)



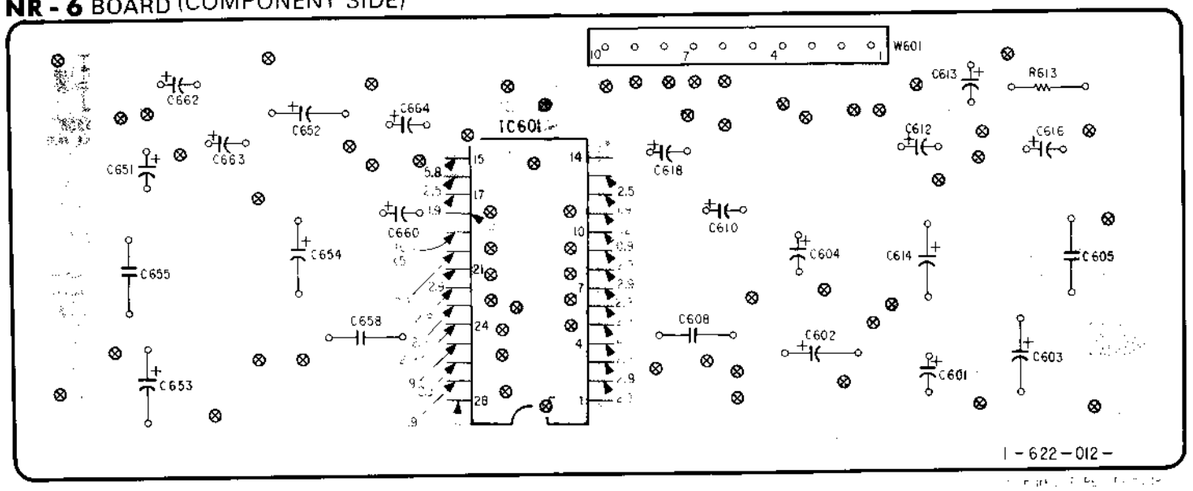
IC701

AD-12 BOARD (SOLDER SIDE)



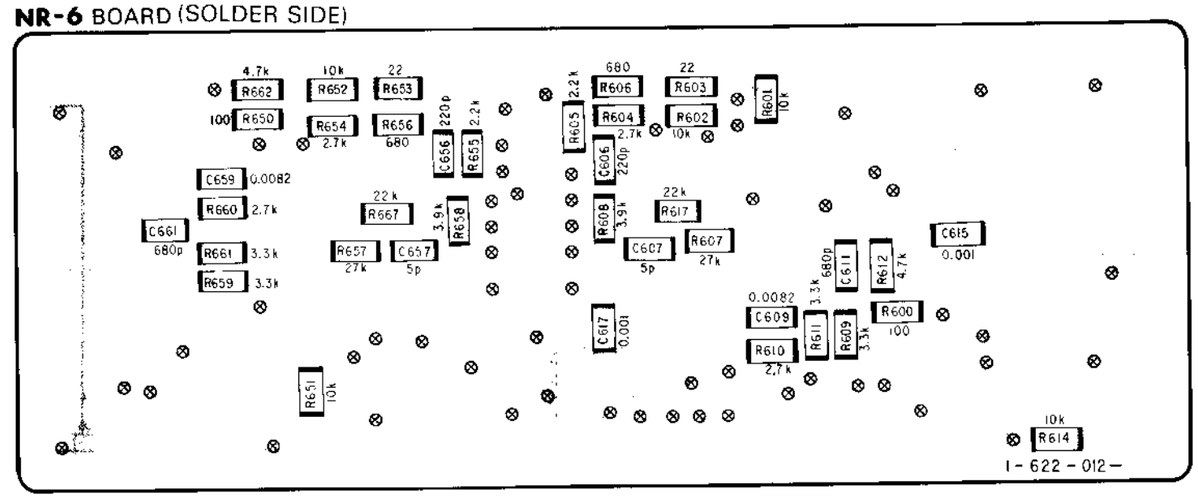
IC601

NR-6 BOARD (COMPONENT SIDE)

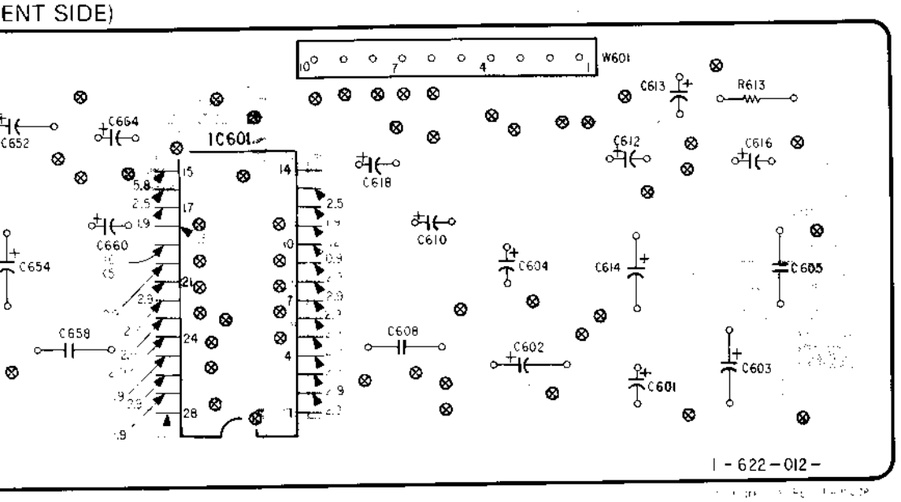


IC601

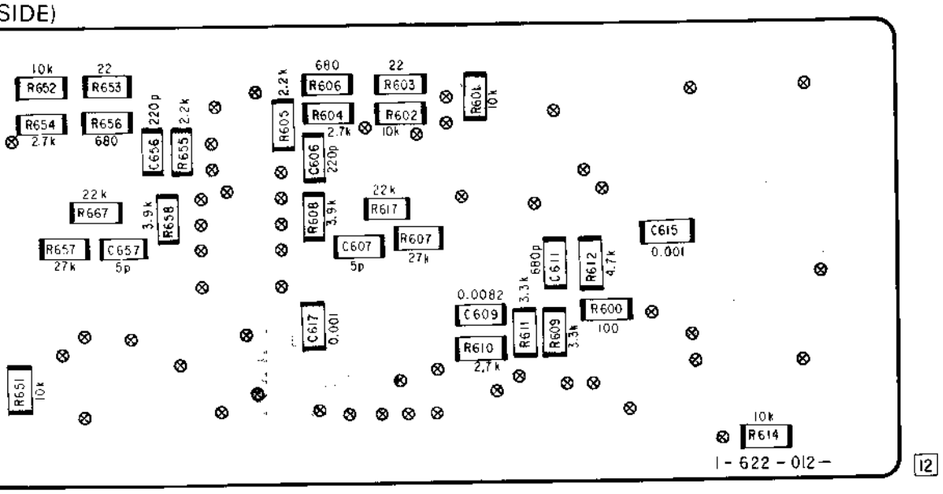
NR-6 BOARD (SOLDER SIDE)



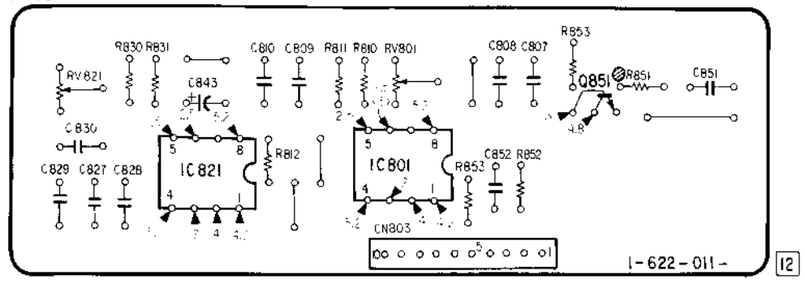
ENT SIDE)



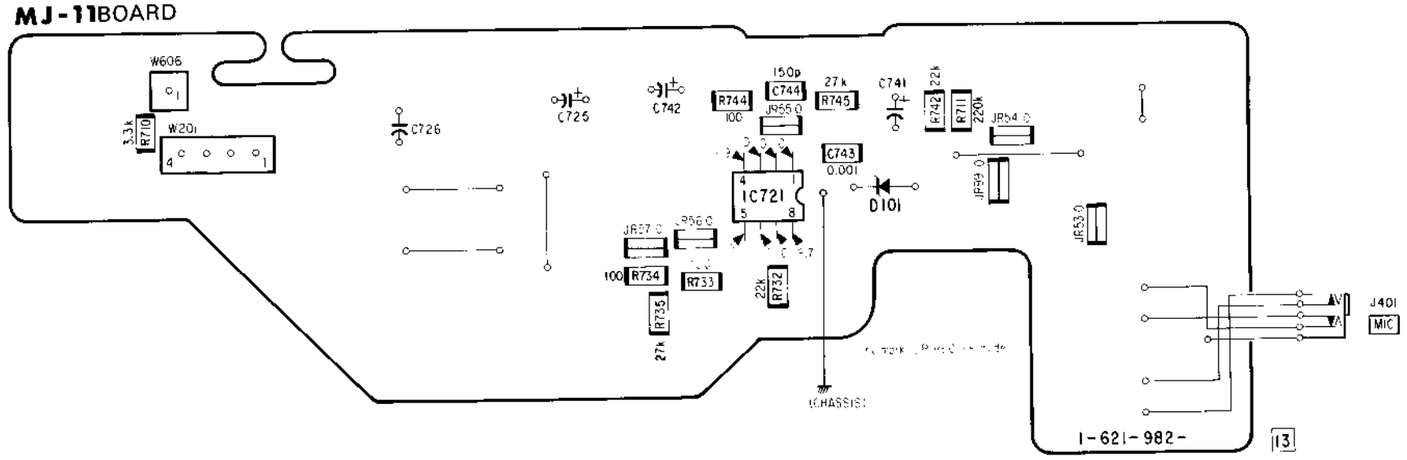
SIDE)



MK-2 BOARD

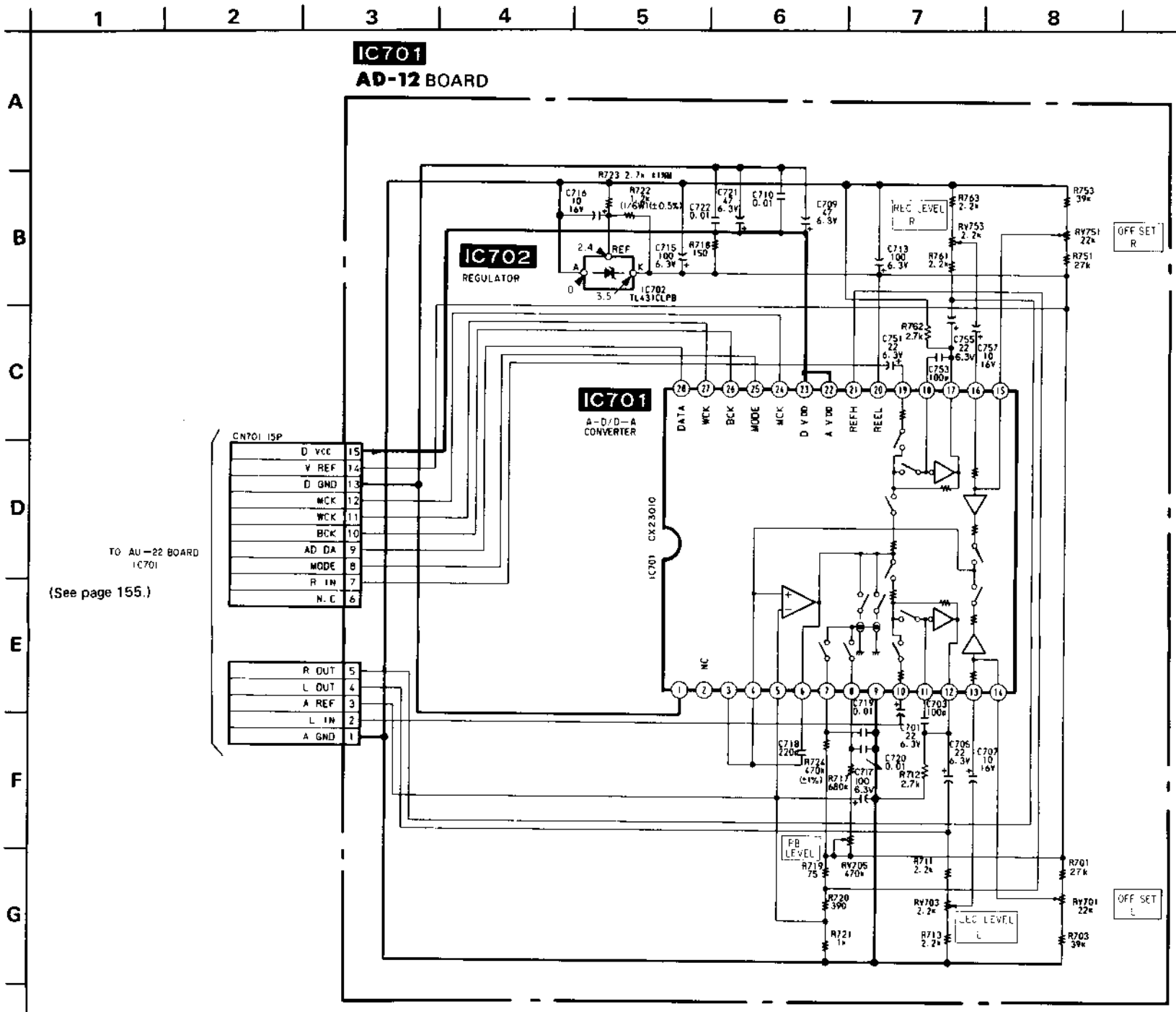


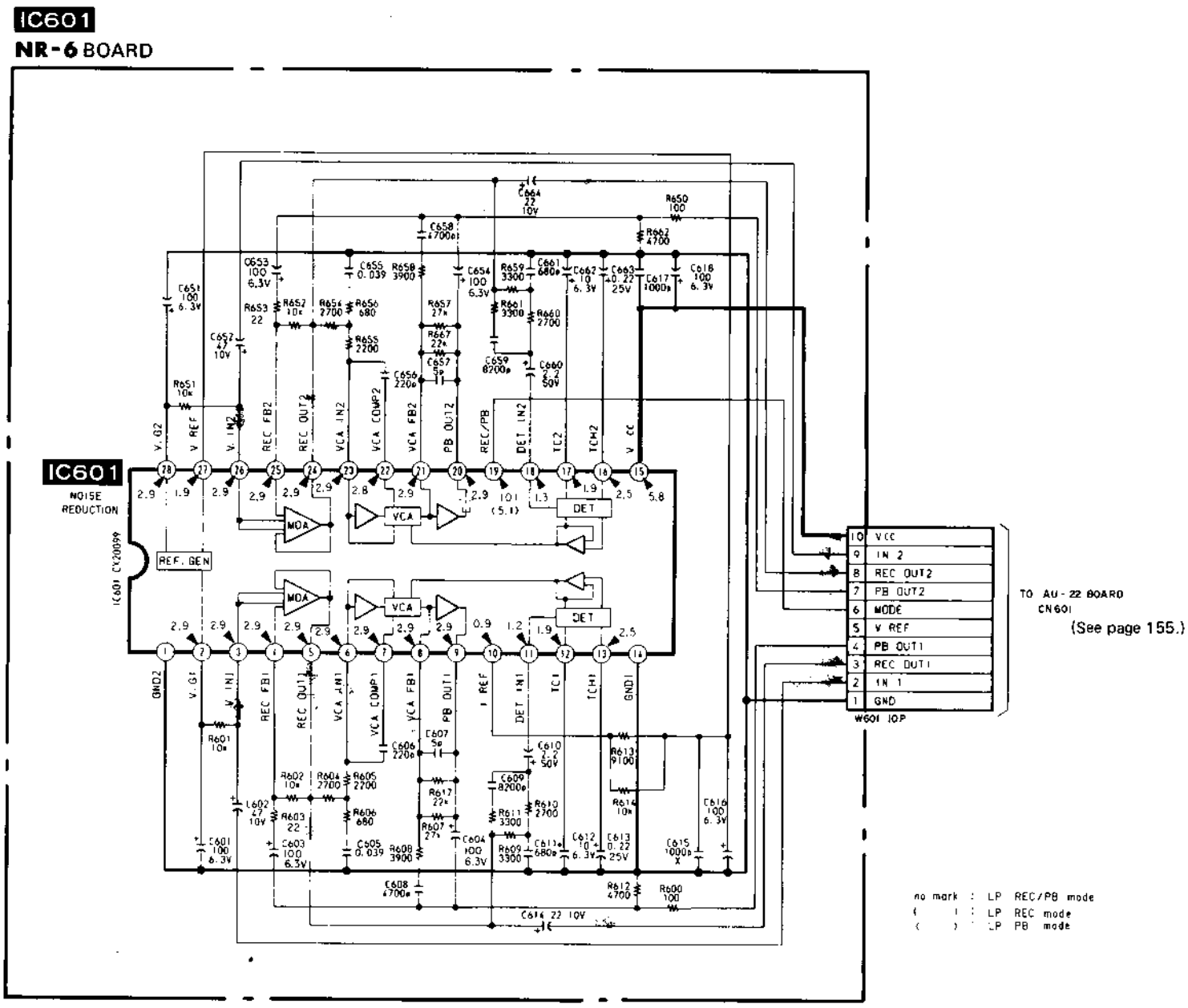
MJ-11BOARD

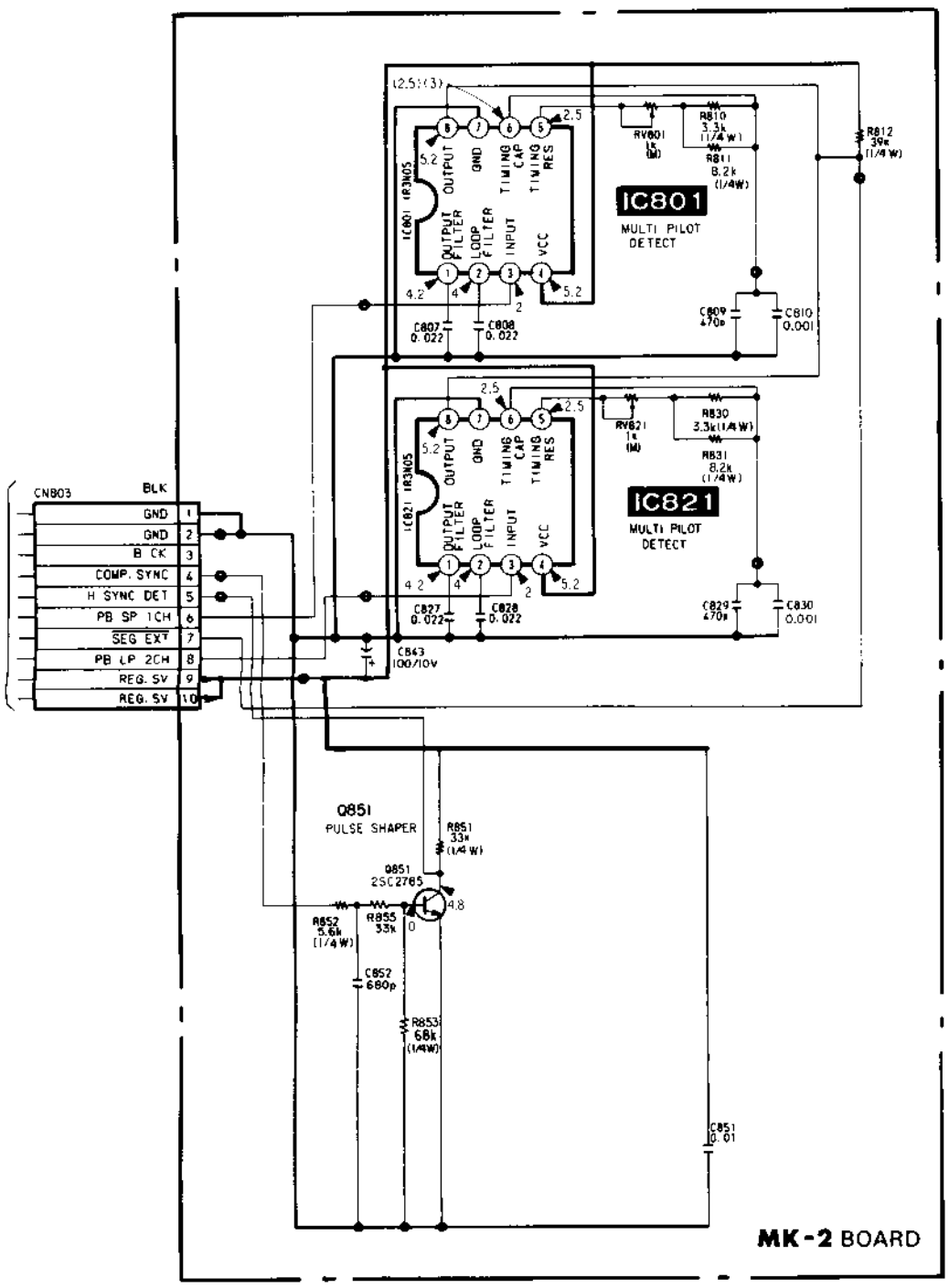


AD-12(A-D/D-A CONVERTER), NR-6(NOISE REDUCTION), MK-2(MULTI PILOT DETECT), MJ-11(MIC JACK) SCHEMATIC DIAGRAM

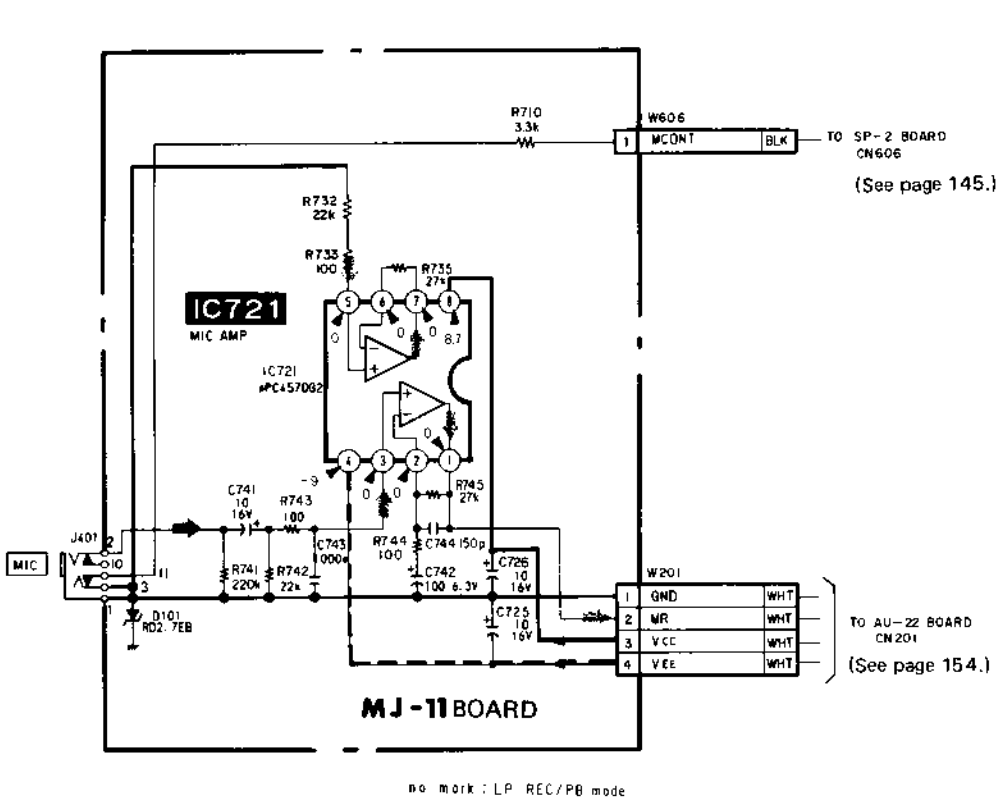
—Ref. No. AD-12, NR-6, MK-2 and MJ-11 BOARDS : 8,000 series—







no mark : LP REC/PB mode
( ) : LP REC mode
< > : LP PB mode



no mark : LP REC/PB mode

Note:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/10W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF.
  50V or less are not indicated except for electrolytice. and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- [ ] : panel designation.
- [ ] : adjustment for repair.
- ——— : B + bus.
- – – – : B – bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a colour-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

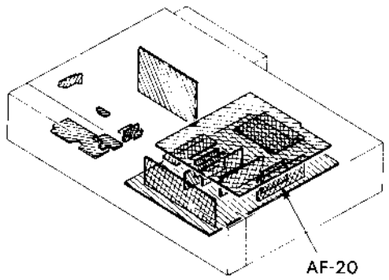
When indicating parts by reference number, please include the board name.

- **Signal path**

Note:

- ○– : indicates a lead wire mounted on the component side.
- ● · : indicates a lead wire mounted on the printed side.
- · · : soldering side.
- Digital transistor (AF-20 : Q501, Q503) transistor with resistor refer to the AF-20 board schematic diagram for digital transistor.

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



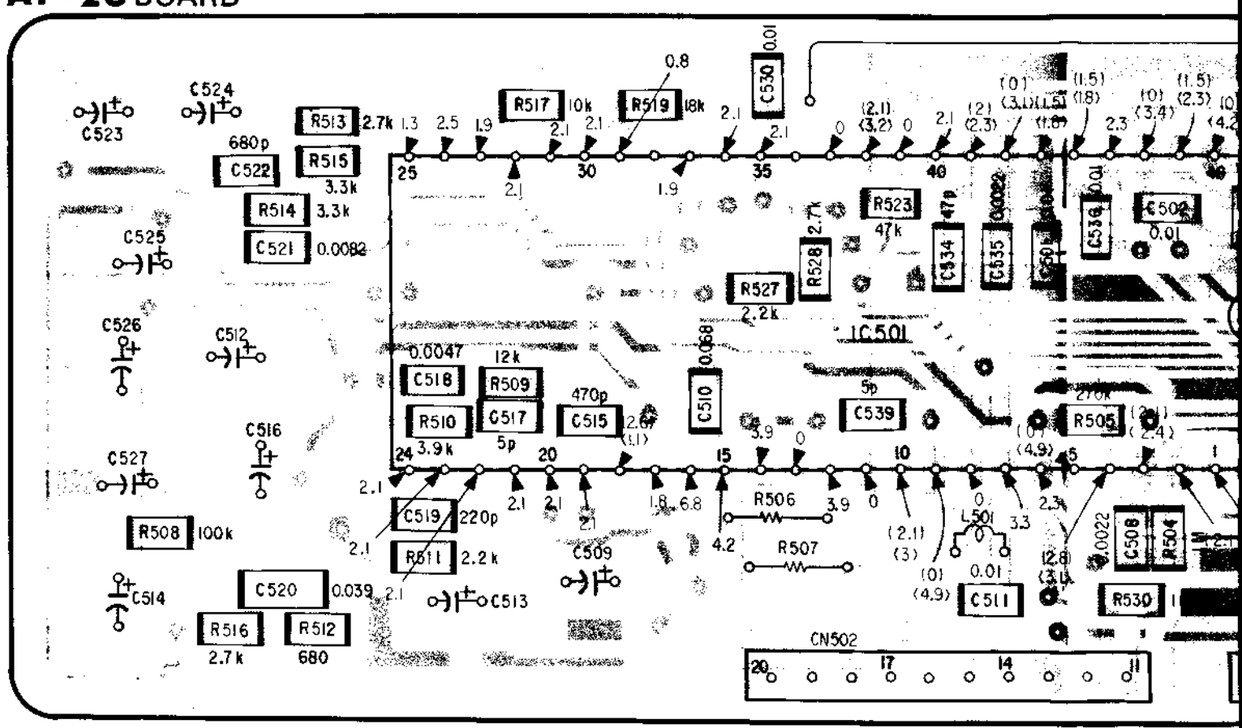
AF-20
(AFM MOD/DEMOD
Noise Reduction

AF-20 (AFM MOD/DEMOD NOISE REDUCTION) PRINTED WIRING BOARD

—Ref. No. AF-20 BOARD : 8,000 series—

IC501

AF-20 BOARD

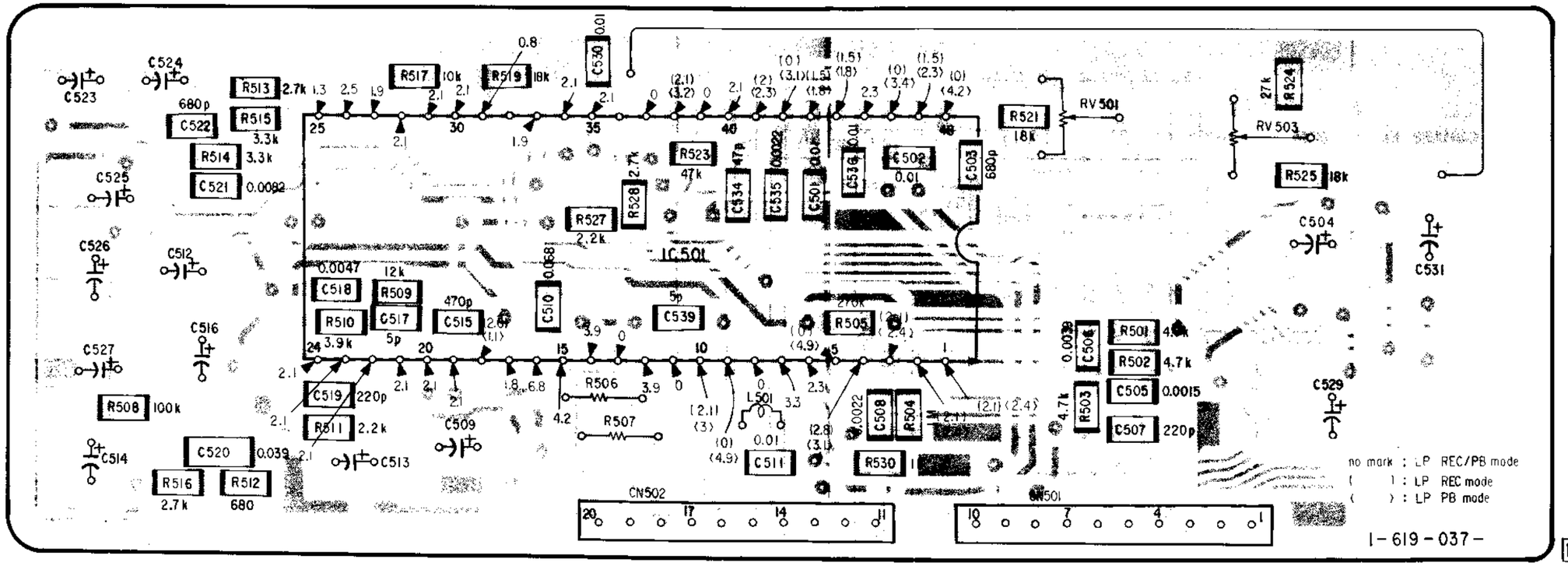


AF-20 (AFM MOD/DEMOD NOISE REDUCTION) PRINTED WIRING BOARD

—Ref. No. AF-20 BOARD : 8, 000 series—

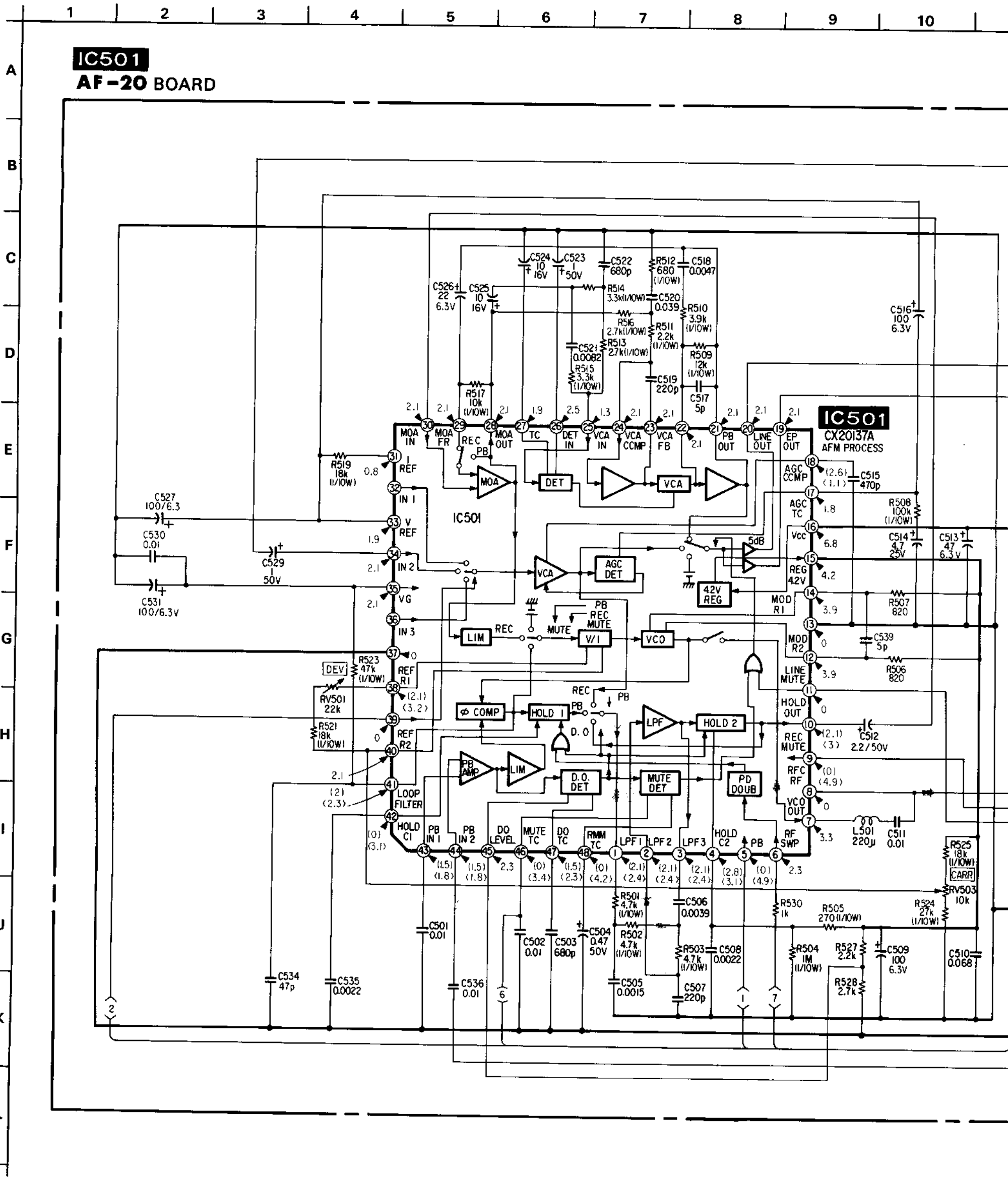
IC501

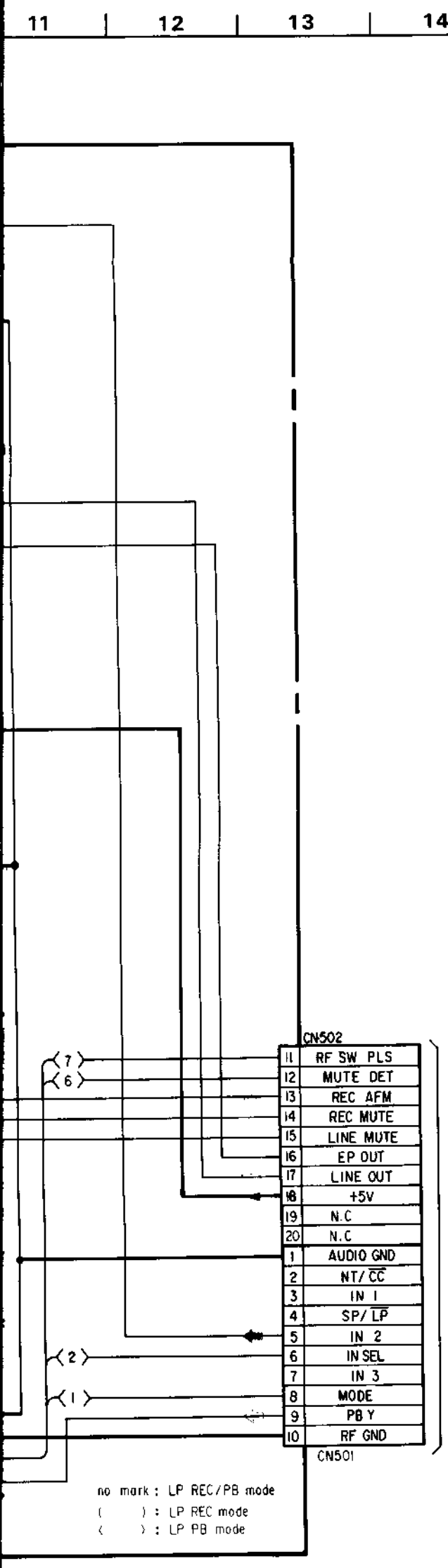
AF-20 BOARD



AF-20 (AFM MOD/DEMOD NOISE REDUCTION) SCHEMATIC DIAGRAM

—Ref. No. AF-20 BOARD : 8,000 series—





Note:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/10W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF.
  50V or less are not indicated except for electrolytice. and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : adjustment for repair.
- ━━ : B + bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a colour-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

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

- **Signal path**

PW-30 (LEVEL METER/VOLUME/JACK/REMOTE CONTROL RECEIVER) PRINTED WIRING BOARD

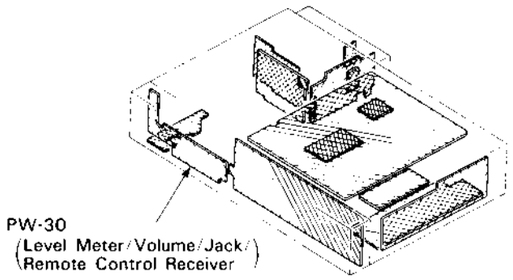
—Ref. No. PW-30 BOARD : 9,000 series—

Note:

- ○ : indicates a lead wire mounted on the component side.
- ● - : indicates a lead wire mounted on the printed side.
- ⊗ : Through hole.
- : soldering side.
-

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

D101	A-9
D102	D-7
D103	C-10
D104	D-9
D105	D-10
IC101	D-8
IC201	D-9
IC202	C-4
Q211	C-3
Q212	D-1
Q213	D-8
RV201	B-10
RV301	D-3

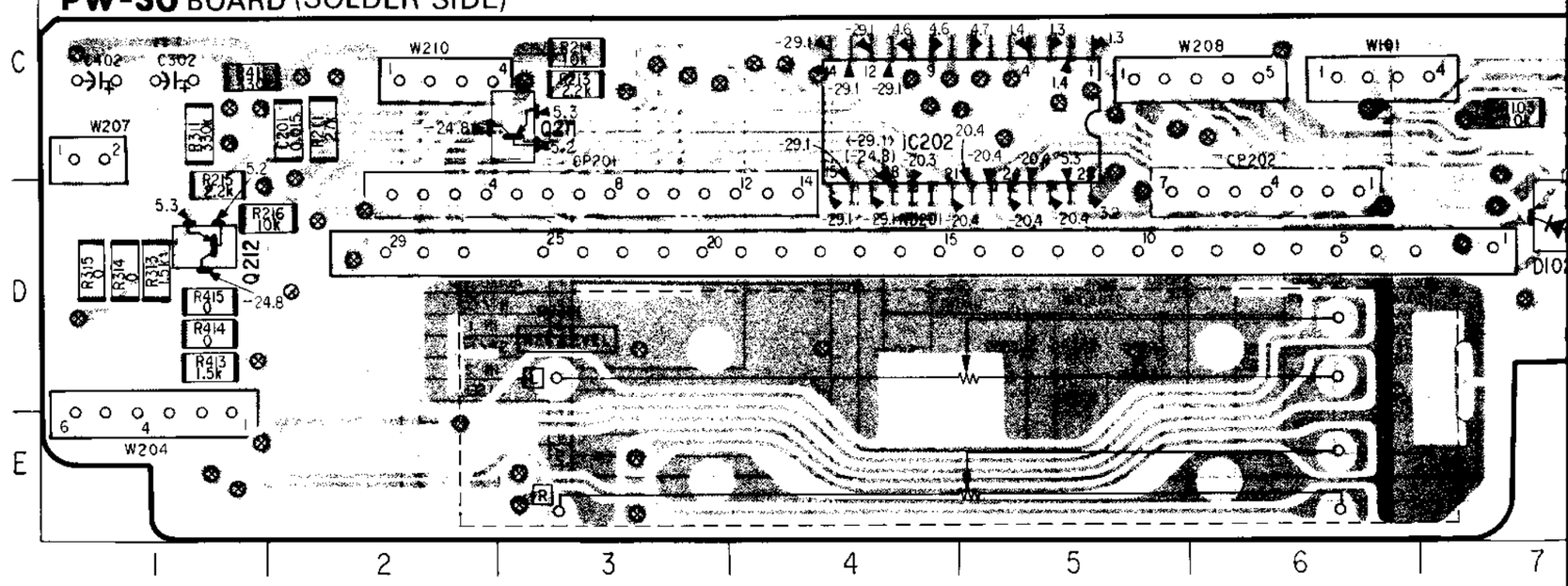


PW-30
(Level Meter/Volume/Jack/
Remote Control Receiver)

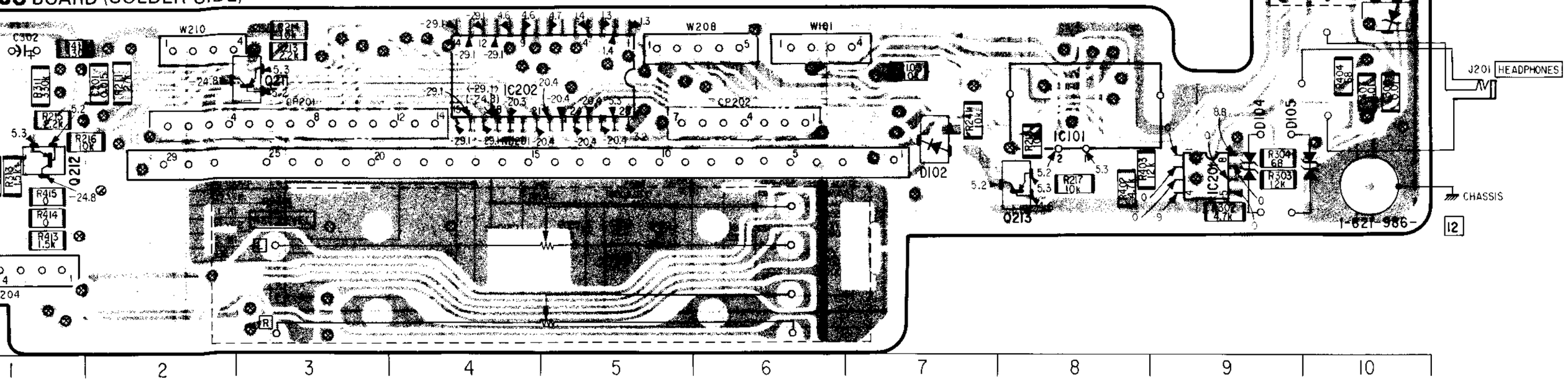
A

B

PW-30 BOARD (SOLDER SIDE)



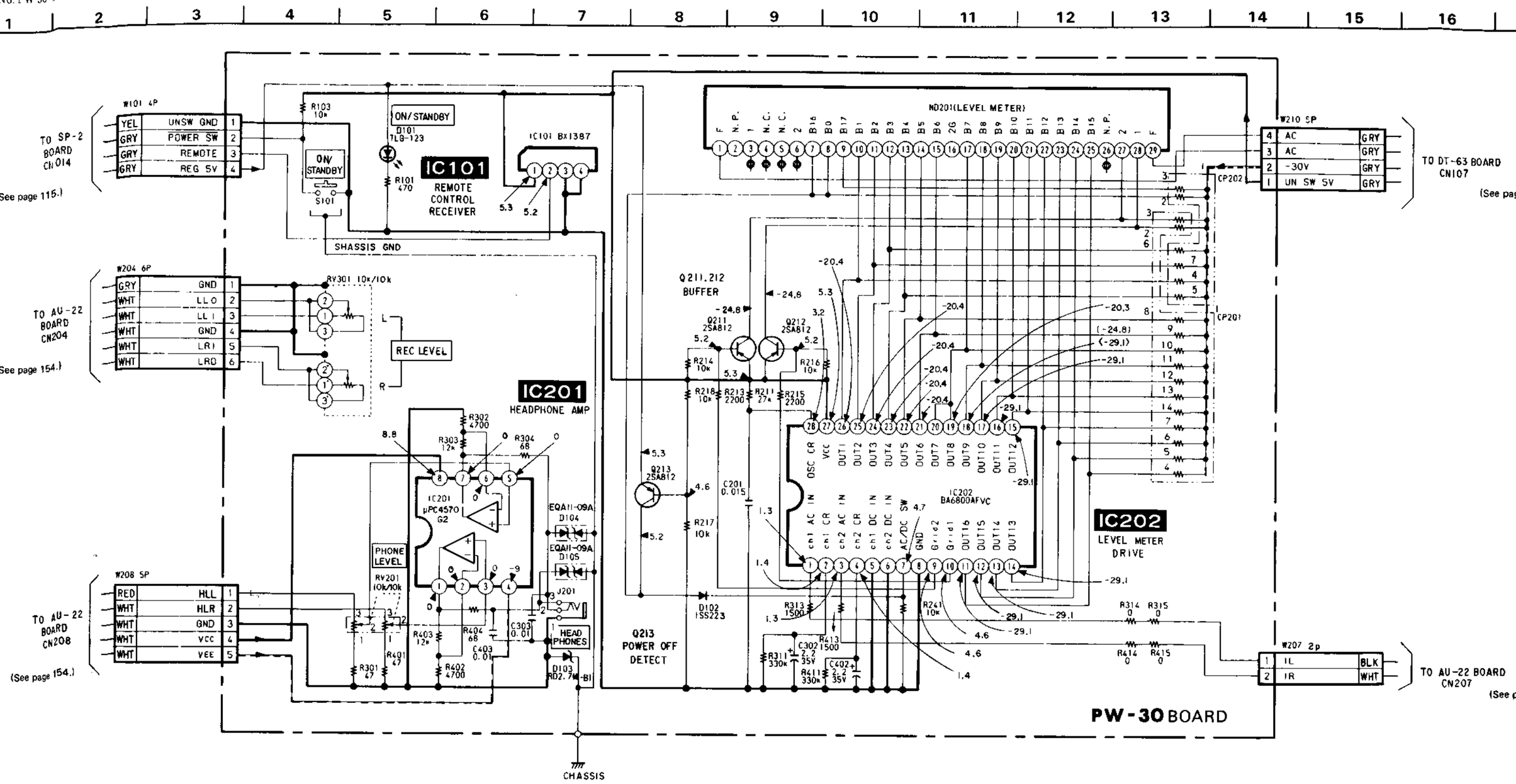
30 BOARD (SOLDER SIDE)



no mark : LP REC/PB mode
( ) : LP REC mode
< > : LP PB mode

PW-30 (LEVEL METER/VOLUME/JACK/REMOTE CONTROL RECEIVER) SCHEMATIC DIAGRAM

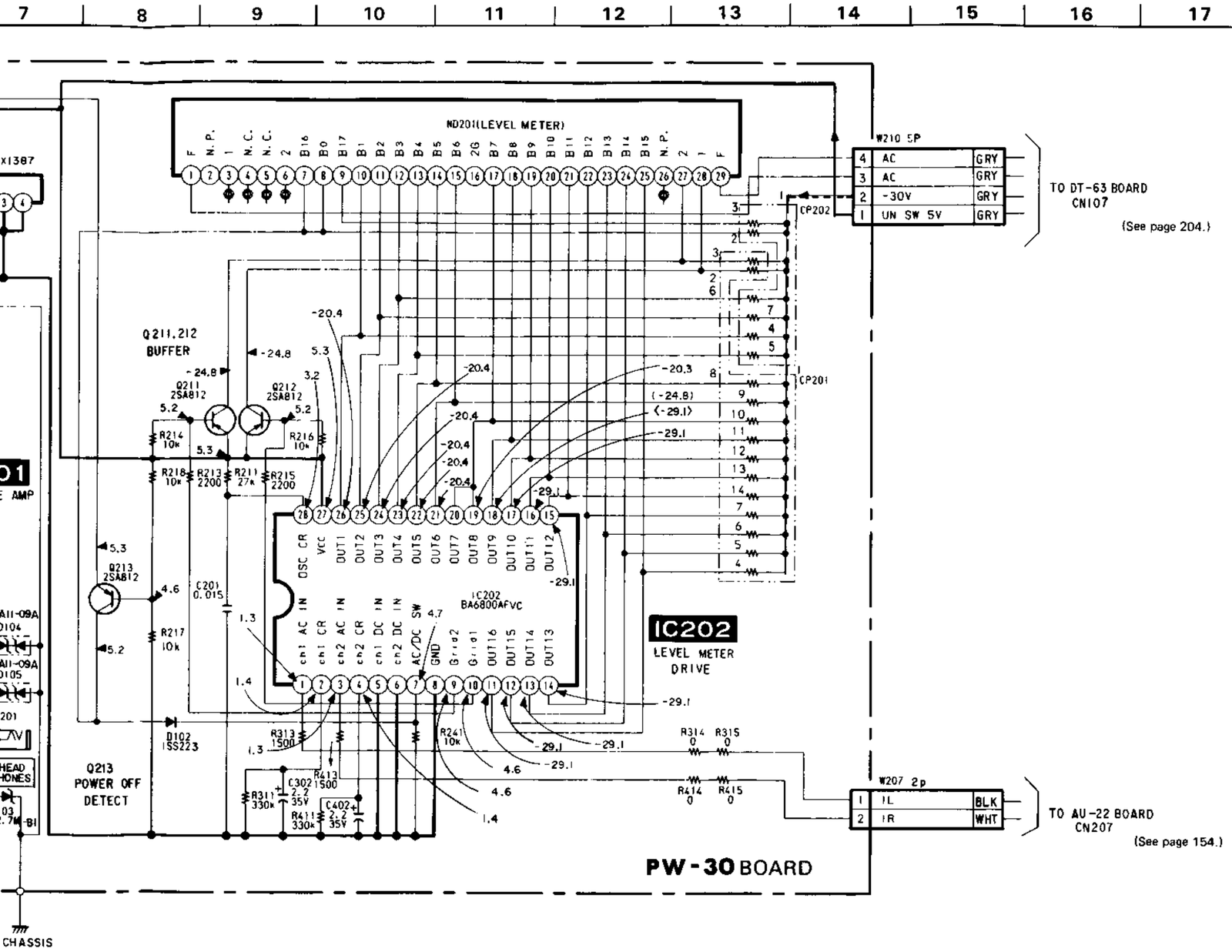
—Ref. No. PW-30 BOARD : 9,000 series—



no mark : LP REC/PB mode

( ) : LP REC mode

〈 〉 : LP PB mode



no mark : LP REC/PB mode

( ) : LP REC mode

〈 〉 : LP PB mode

Note:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/10W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF.
  50WV or less are not indicated except for electrolytics. and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : adjustment for repair.
- ——— : B + bus.
- — — — : B − bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a colour-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

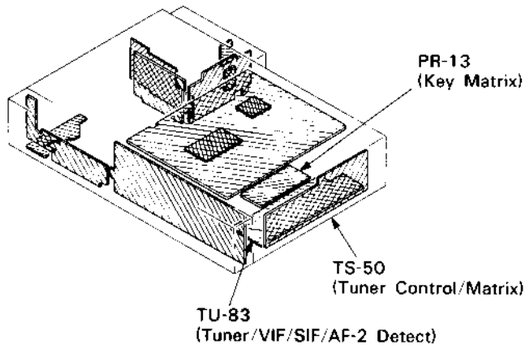
When indicating parts by reference number, please include the board name.

- **Signal path**

Note:

- ○ - : indicates a lead wire mounted on the component side.
- ● - : indicates a lead wire mounted on the printed side.
- : soldering side.
- Digital transistor (TU-83:Q005,Q006,Q007,TS-50:Q018) transistor with resistors.
  Refer to the TU-83,TS-50 boards schematic diagram for digital transistor.

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



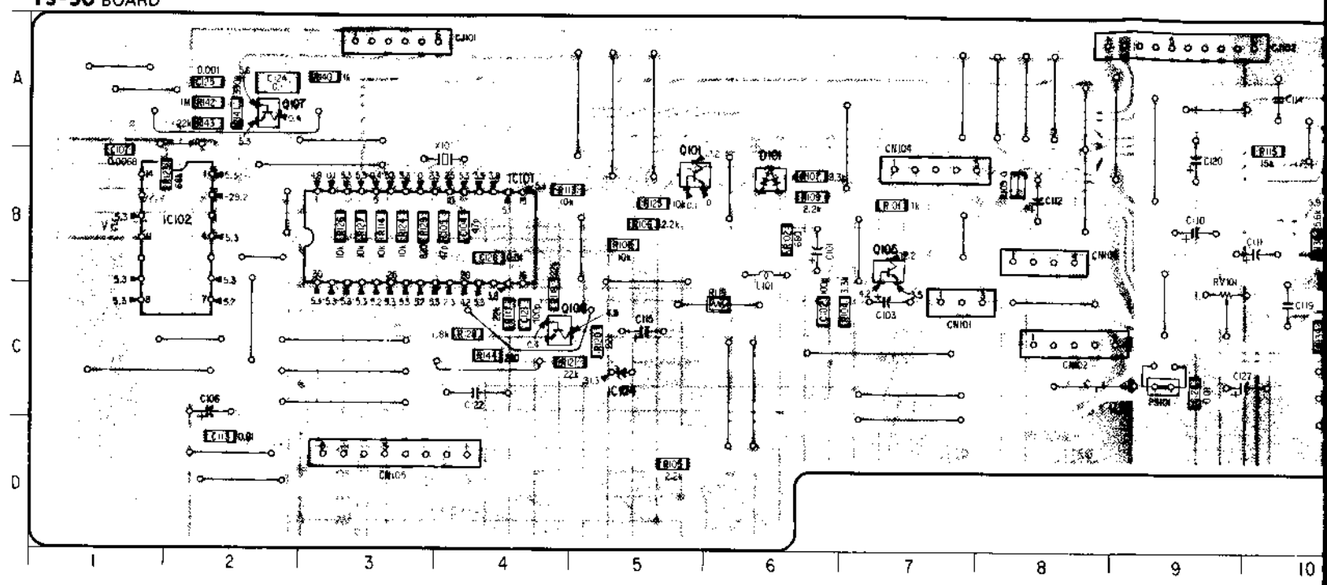
D101	B-6
IC101	B-4
IC102	B-2
IC103	A-11
IC104	C-5
Q101	B-5
Q102	B-10
Q103	B-11
Q104	B-11
Q105	B-7
Q106	C-4
Q107	A-2
RV101	C-9

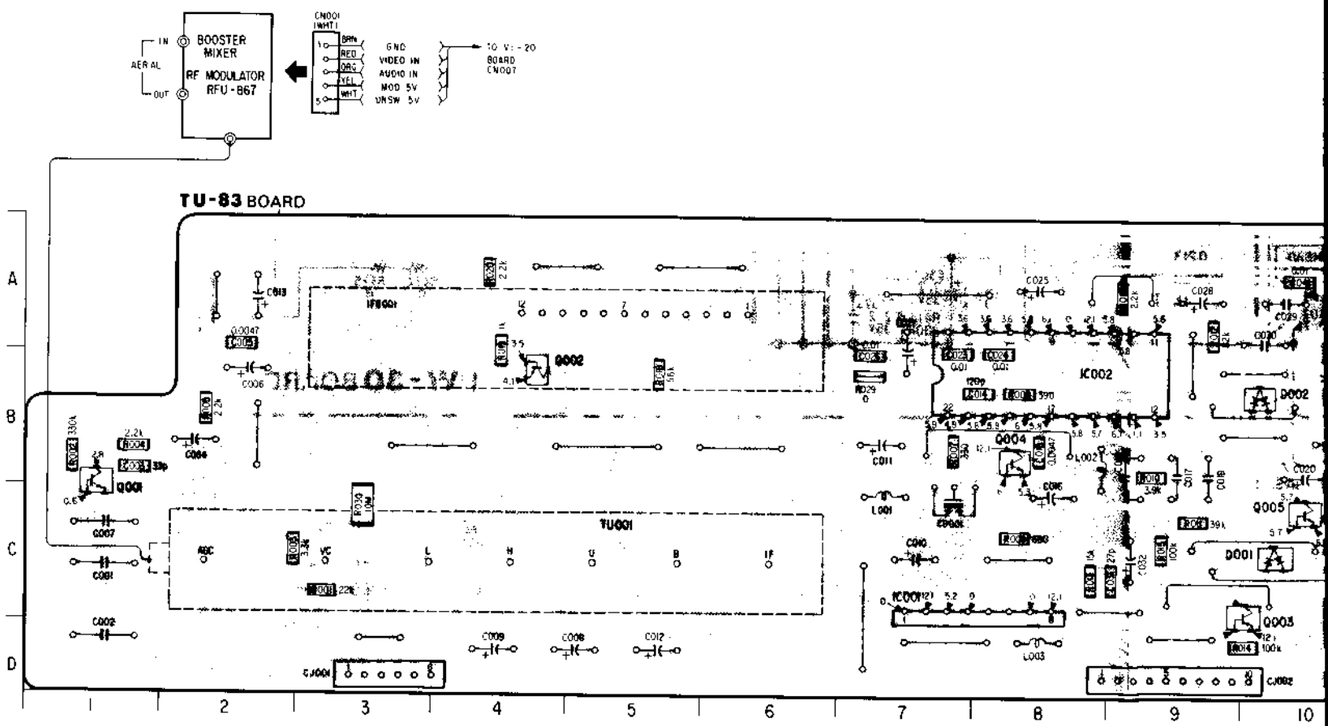
D001	C-10
D002	B-10
IC001	C-7
IC002	B-8
Q001	B-1
Q002	B-4
Q003	C-10
Q004	B-8
Q005	C-10
Q006	B-10
Q007	B-10

TU-83 (TUNER, VIF, SIF, AF-2 DETECT), TS-50 (TUNER CONTROL, MATRIX), PR-13 (KEY MATRIX) PRINTED WIRING BOARDS

– Ref. No. TU-83 and TS-50 BOARDS : 10,000 series, PR-13 BOARD : 10,500 series–

TS-50 BOARD





TU-83 (TUNER, VIF, SIF, AF-2 DETECT), TS-50 (TUNER CONTROL, MATRIX), PR-13 (KEY MATRIX) PRINTED WIRING BOARDS

—Ref. No. TU-83 and TS-50 BOARDS : 10,000 series, PR-13 BOARD : 10,500 series—

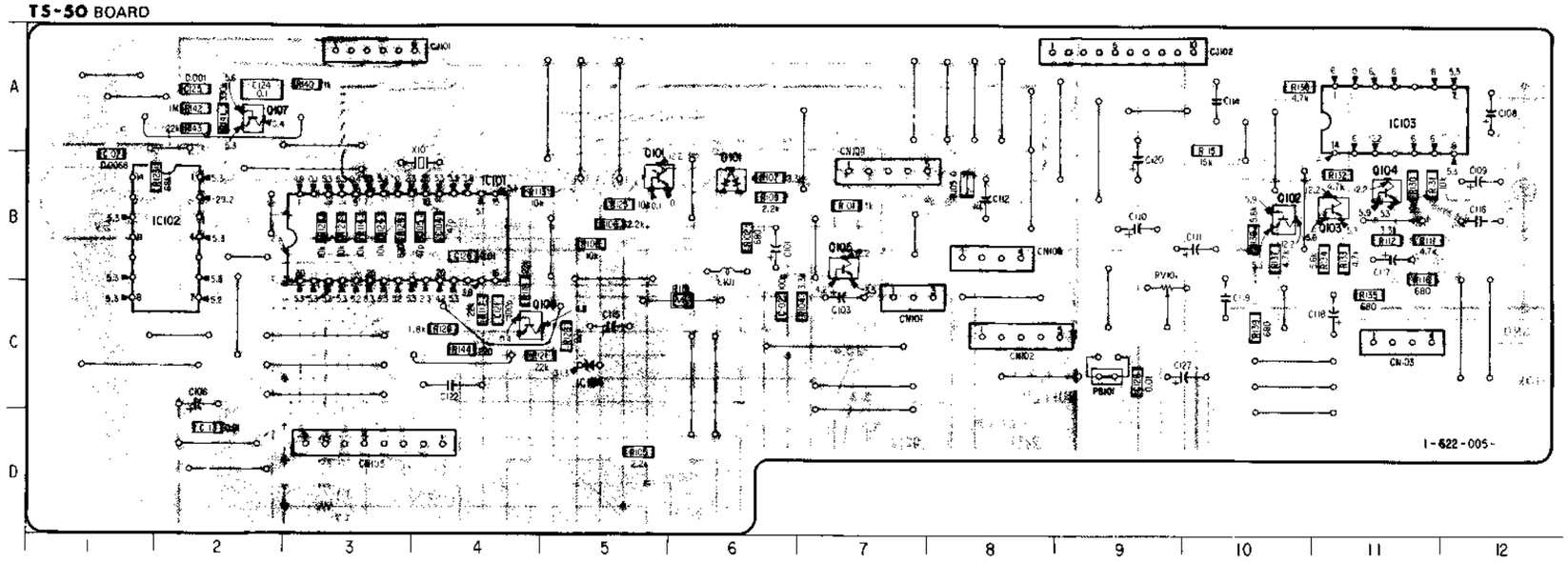
TS-50 BOARD

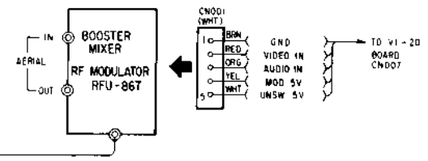
D101 B-6

IC101 B-4
IC102 B-2
IC103 A-11
IC104 C-5

Q101 B-5
Q102 B-10
Q103 B-11
Q104 B-11
Q105 B-7
Q106 C-4
Q107 A-2

RV101 C-9



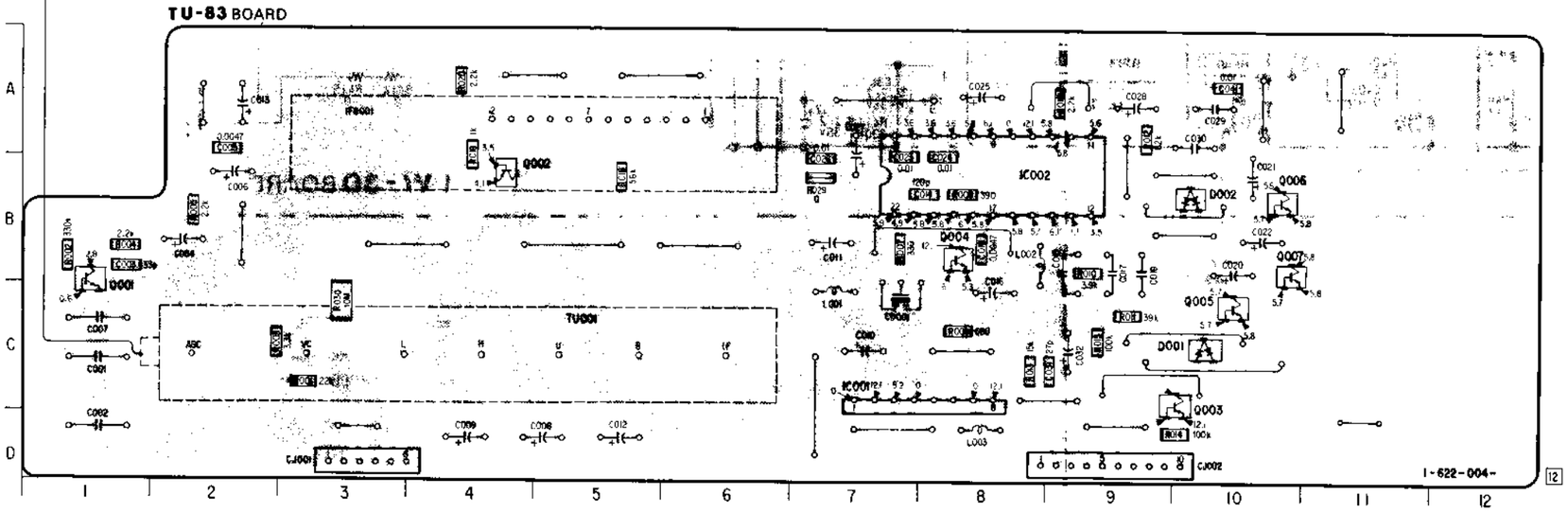


TU-83 BOARD

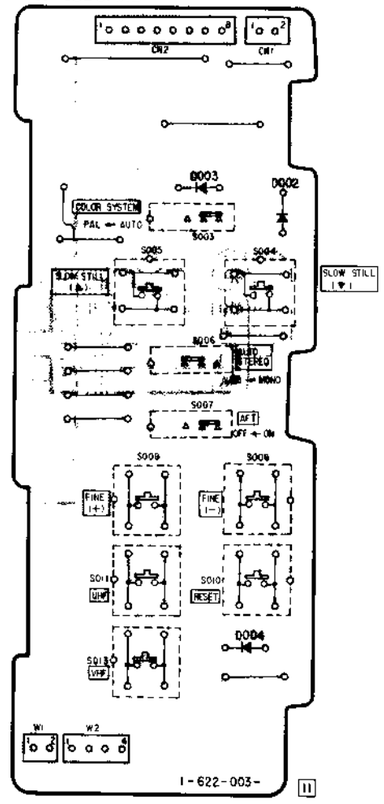
D001 C-10
D002 B-10

IC001 C-7
IC002 B-8

Q001 B-1
Q002 B-4
Q003 C-10
Q004 B-8
Q005 C-10
Q006 B-10
Q007 B-10

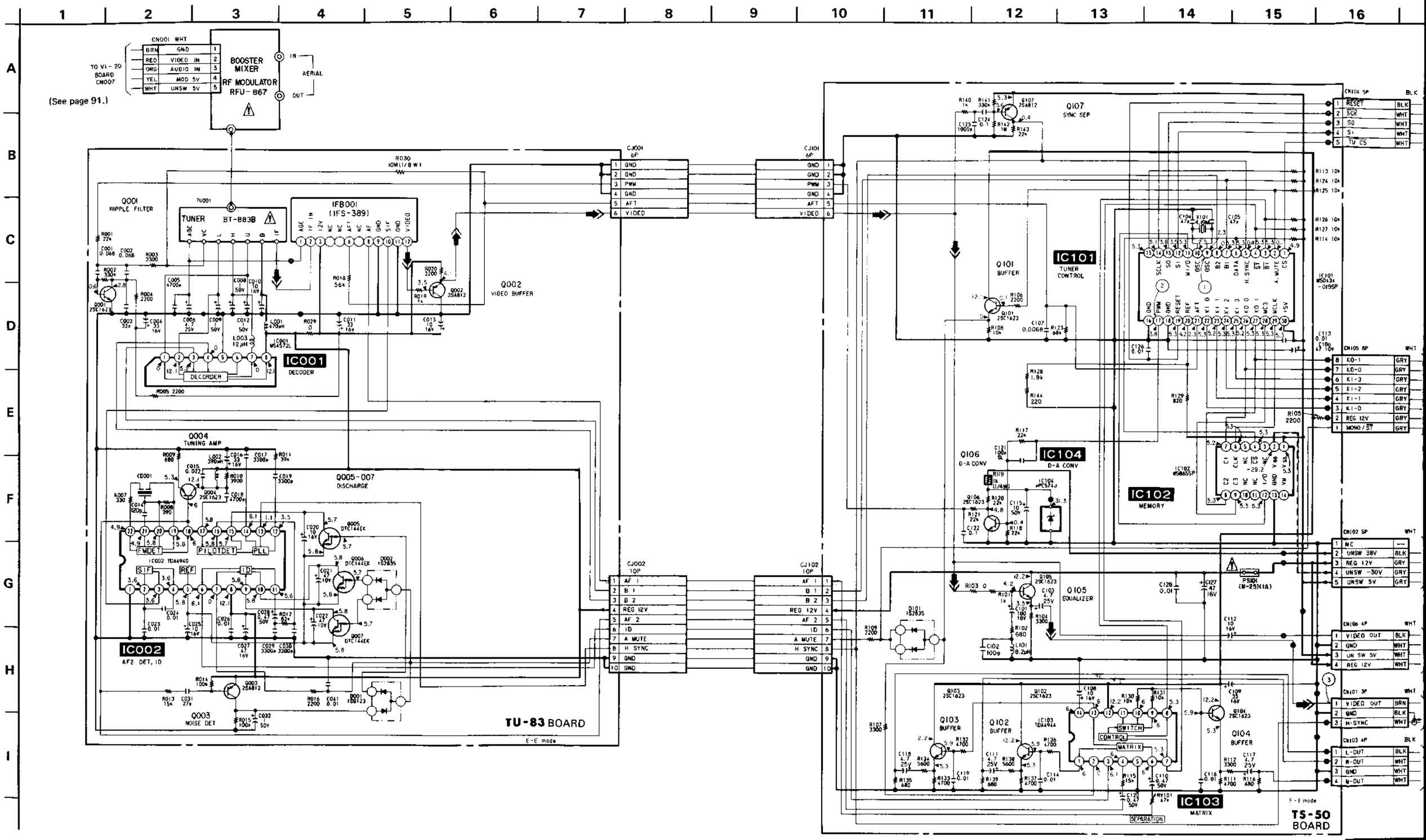


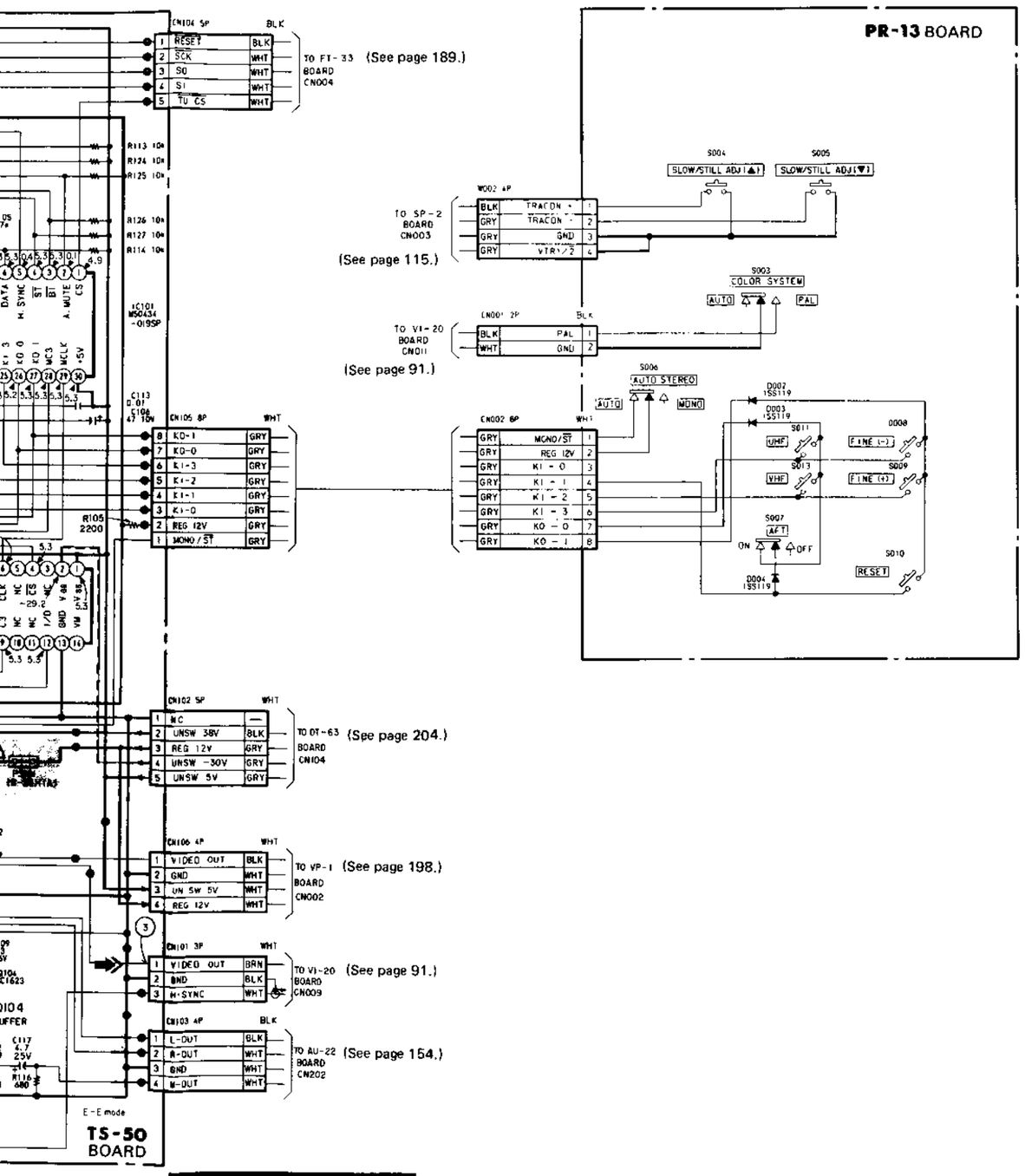
PR-13 BOARD



TU-83 (TUNER, VIF, SIF, AF-2 DETECT), TS-50 (TUNER CONTROL, MATRIX, PR-13 (KEY MATRIX) SCHEMATIC DIAGRAM

—Ref. No. TU-83 and TS-50 BOARDS : 10,000 series, PR-13 BOARD : 10,500 series—





Note:

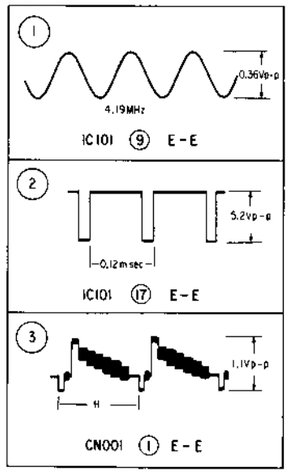
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/10W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF.
  50V or less are not indicated except for electrolytice. and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : panel designation.
- ▭ : adjustment for repair.
- ——— : B + bus.
- - - - : B − bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a colour-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

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

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

- **Signal path**
  ➡ : REC Y/CHROMA Signal

TS-50 BOARD



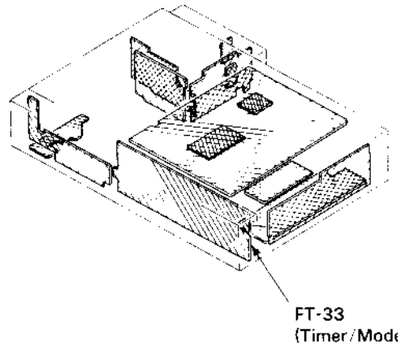
FT-33 (TIMER/MODE CONTROL) PRINTED WIRING BOARD

—Ref. No. FT-33 BOARD : 11,000 series—

Note:

- ○— : indicates a lead wire mounted on the component side.
- ●··· : indicates a lead wire mounted on the printed side.
- ⊗ : Through hole.
- : soldering side.
- : component side.

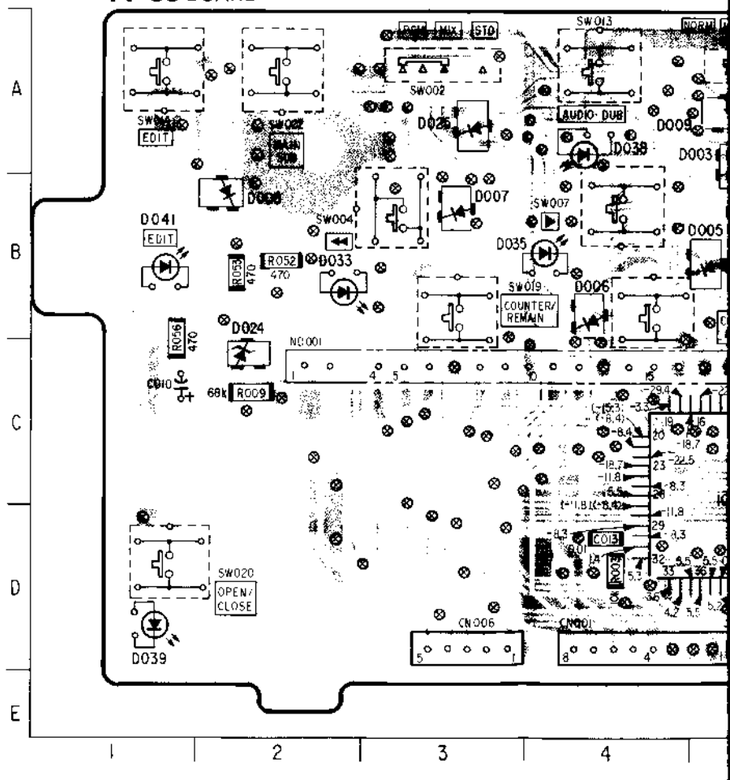
When indicating parts by reference number, please include the board name.



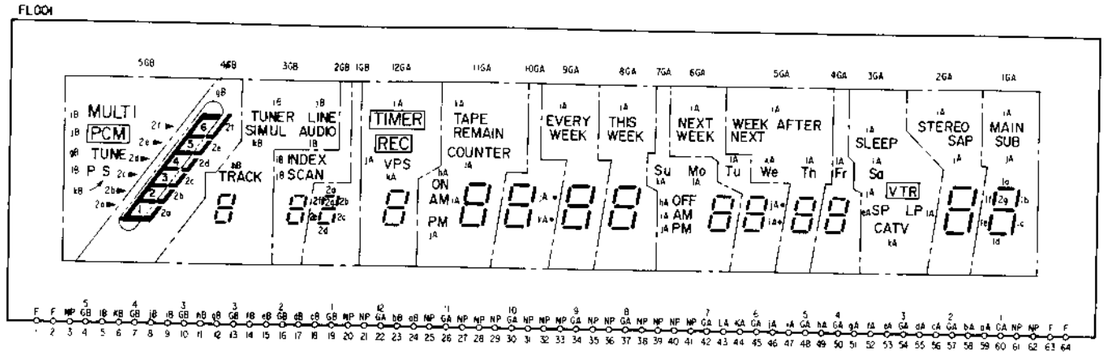
FT-33
(Timer/Mode Control)

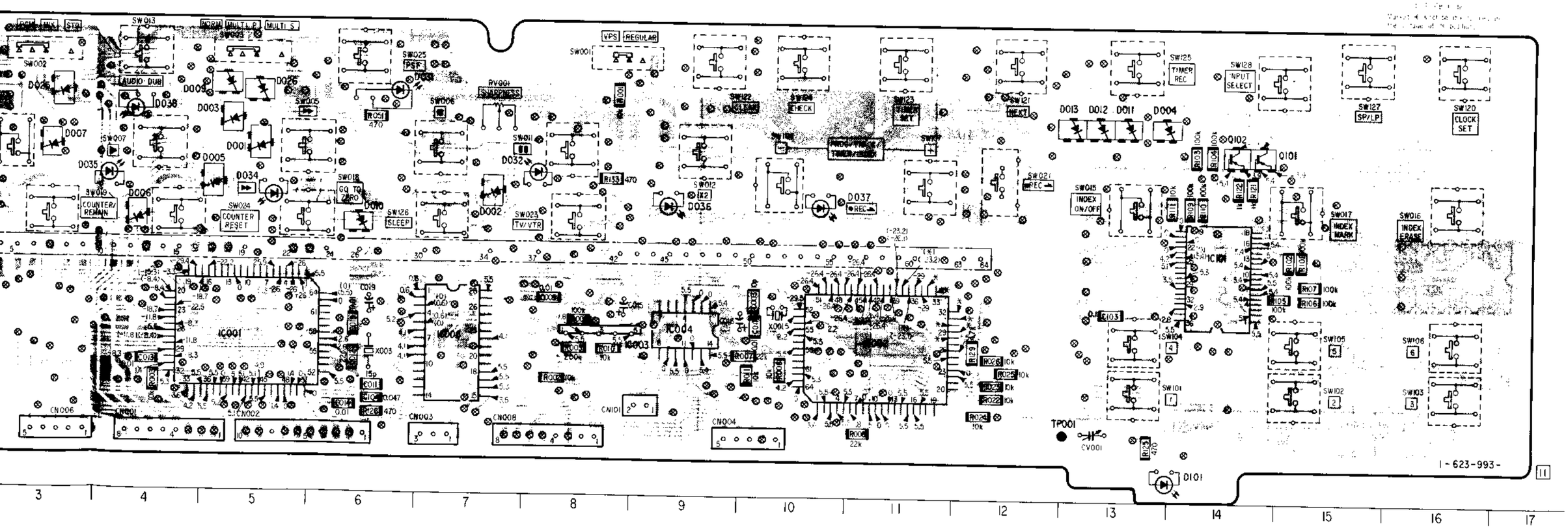
CN001	D-4	IC001	C-5
CN002	D-5	IC002	C-11
CN003	D-7	IC003	C-8
CN004	D-9	IC004	C-9
CN006	D-3	IC006	C-7
CN008	D-8	IC101	C-14
CV001	D-13	Q101	B-14
		Q102	B-14
D001	B-5		
D002	B-7	RV001	A-7
D003	B-5		
D004	A-13	TP001	D-13
D005	B-5		
D006	B-4		
D007	B-3		
D008	B-2		
D009	A-5		
D010	B-6		
D011	A-13		
D012	A-13		
D013	A-13		
D024	C-2		
D025	A-3		
D026	A-5		
D031	A-6		
D032	B-8		
D033	B-2		
D034	B-5		
D035	B-4		
D036	B-9		
D037	B-10		
D038	A-4		
D039	D-1		
D041	B-1		
D001	E-13		

FT-33 BOARD



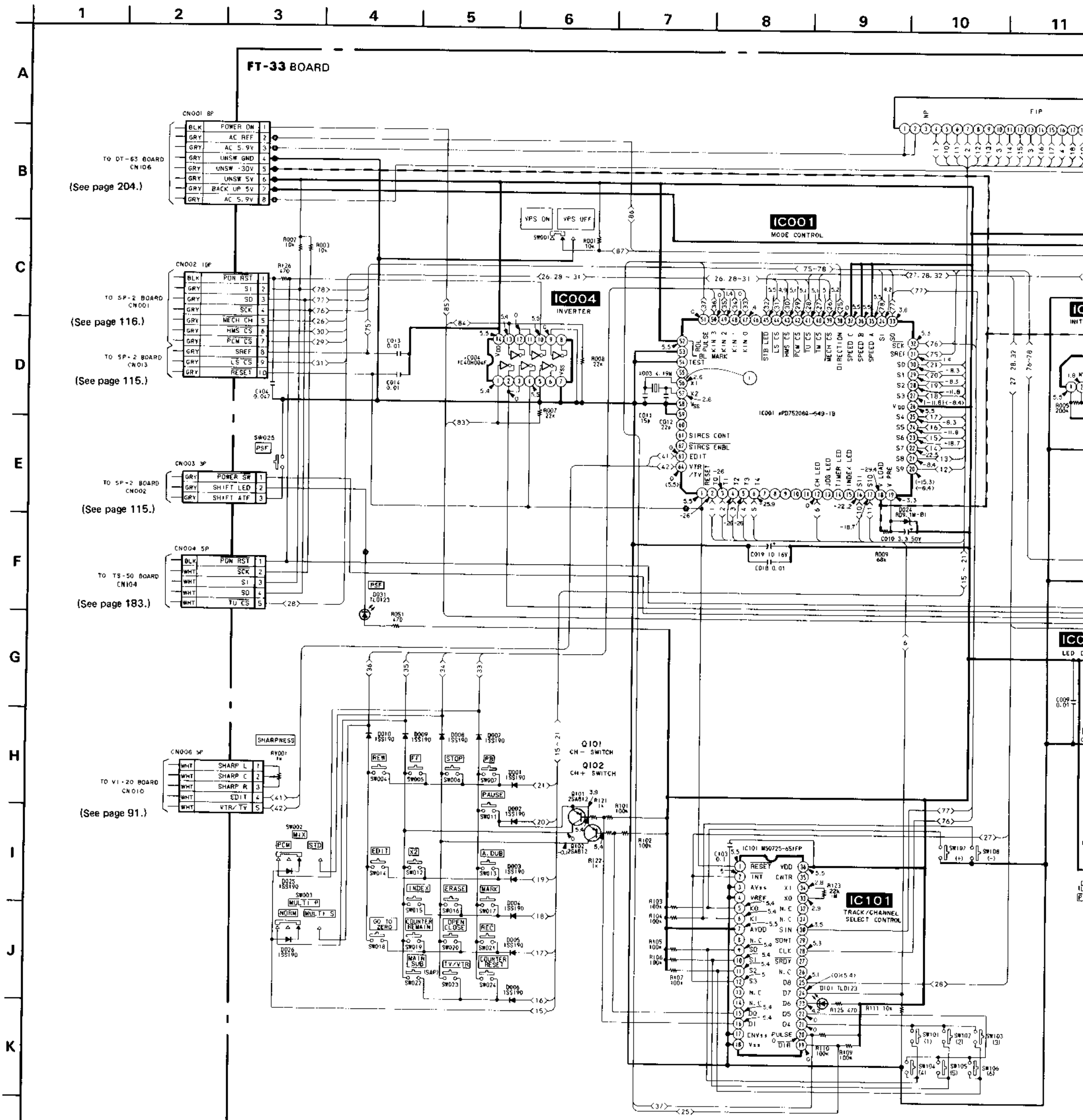
FLOOR


MULTI
PCM
TUNE
P S
TRACK
TUNER SIMUL
LINE AUDIO
INDEX SCAN
TIMER
REC
VPS
TAPE REMAIN COUNTER
ON
AM
PM
EVERY WEEK
THIS WEEK
NEXT WEEK
WEEK AFTER NEXT
Su Mo Tu We Th Fr Sa
OFF
AM
PM
SLEEP
V TR
SP LP
CATV
STEREO SAP
MAIN SUB

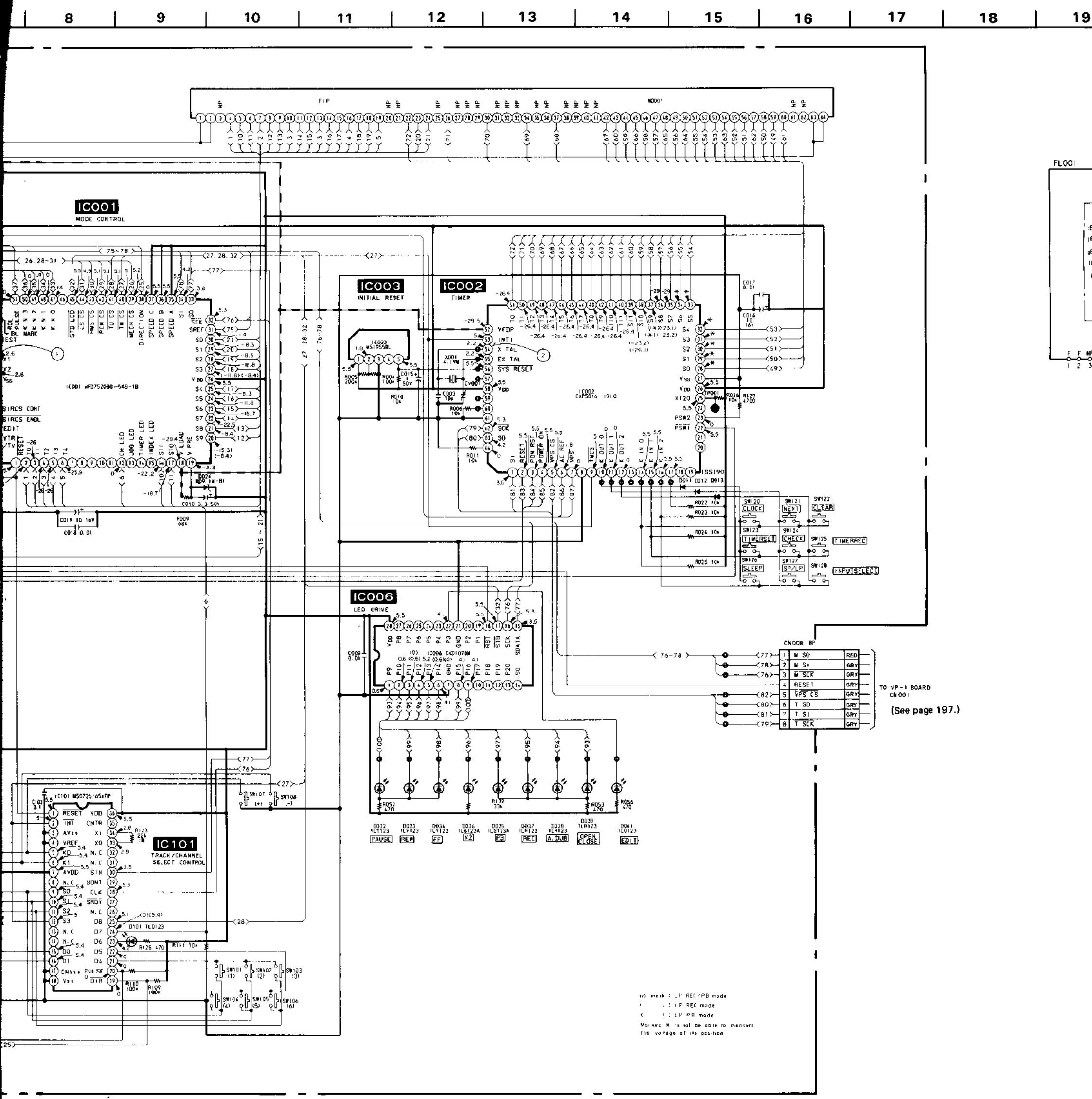

SW002
SW003
SW004
SW025
PSF
SW001
VPS
REGULAR
SW122
CLEAR
SW124
CHECK
SW123
TIMER SET
SW121
NEXT
SW125
TIMER REC
SW128
INPUT SELECT
SW127
SP/LP
SW120
CLOCK SET
SW009
COUNTER/ REMAIN
SW024
COUNTER RESET
SW018
GO TO ZERO
SW126
SLEEP
SW023
TV/VTR
SW012
SW021
REC
SW015
INDEX ON/OFF
SW017
INDEX MARK
SW016
INDEX ERASE
SW101
SW102
SW103
SW104
SW105
SW106
RV001
SHARPNESS
D001
D002
D003
D004
D005
D006
D007
D009
D010
D011
D012
D013
D025
D026
D032
D034
D035
D036
D037
D101
Q101
Q102
IC001
IC002
IC003
IC004
IC101
X001
X003
CN001
CN002
CN003
CN004
CN006
CN008
CN101
TP001
CV001
1-623-993-

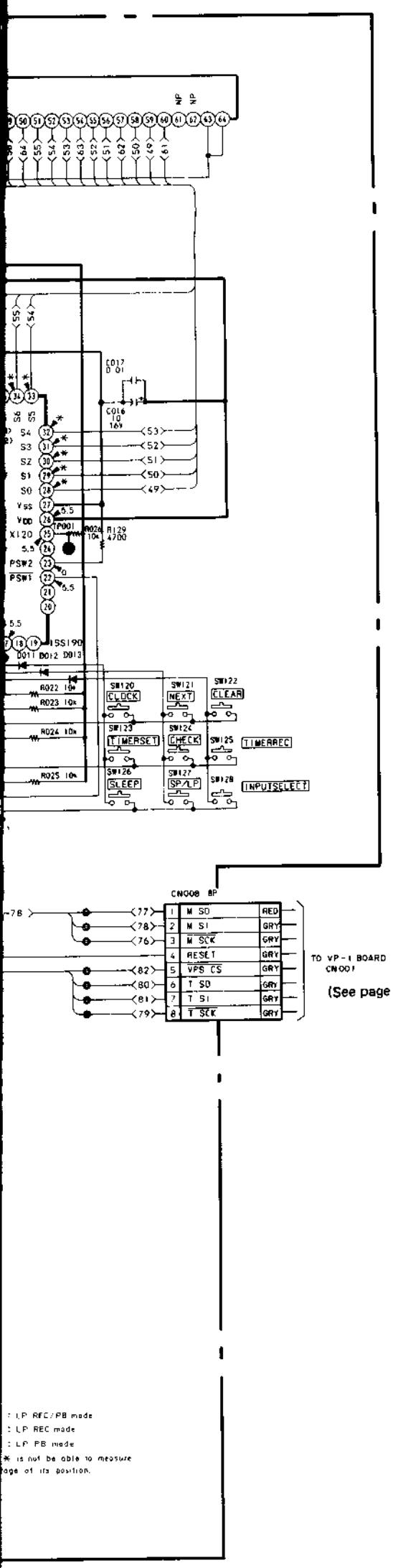
FT-33 (TIMER/MODE CONTROL) SCHEMATIC DIAGRAM

—Ref. No. FT-33 BOARD : 11,000 series—

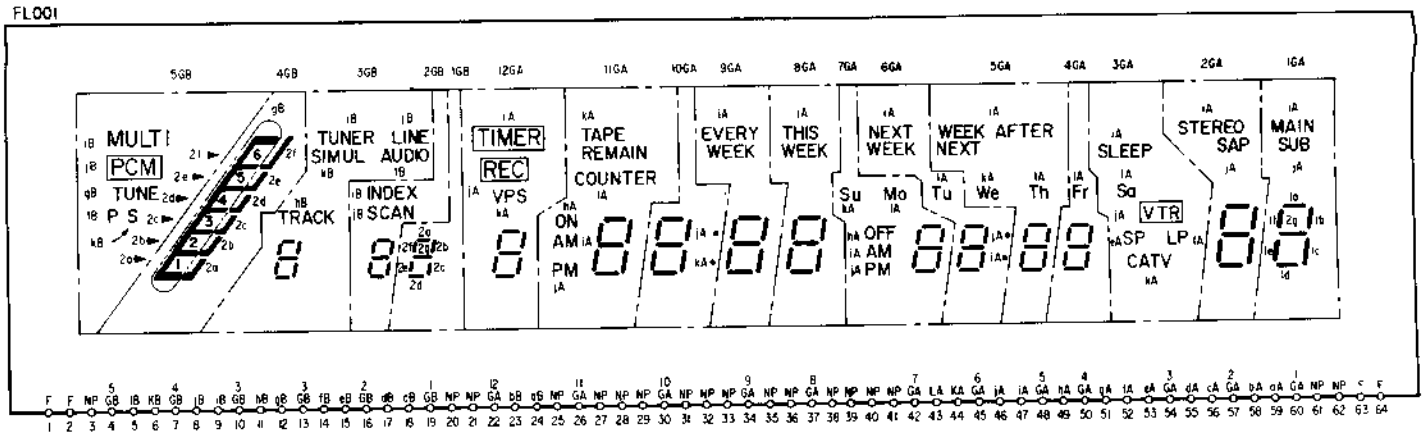


TIMER/MODE CONTROL (1) **TIMER/MODE CONTROL (1)**

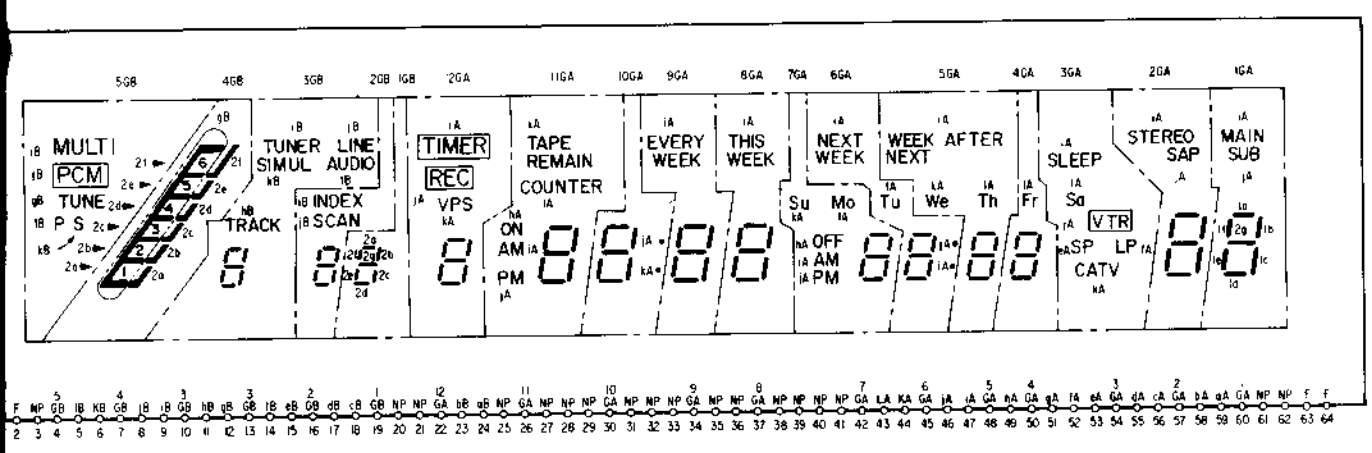

8
9
10
11
12
13
14
15
16
17
18
19
IC001
MODE CONTROL
IC003
INITIAL RESET
IC002
TIMER
IC006
LED DRIVE
IC101
TRACK/CHANNEL SELECT CONTROL
FL001
CN008 BP
TO VP-1 BOARD CN001
(See page 197.)
SW120 CLOCK
SW121 NEXT
SW122 CLEAR
SW123 TIMERSET
SW124 CHECK
SW125 TIMEREC
SW126 SLEEP
SW127 SP/LP
SW128 INPUTSELECT
PAUSE
REW
FF
X2
PB
REC
A. DUB
OPEN CLOSE
EDIT
no mark : LP REC./PB mode
( ) : LP REC mode
< > : LP PB mode
Marked * is not be able to measure the voltage of its position



(See page 197.)



: LP REC/PB mode
: LP REC mode
: LP PB mode
* is not be able to measure
age of its position.

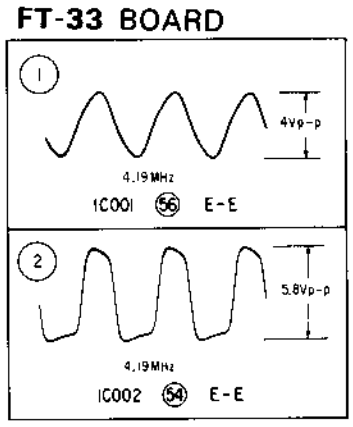


Note:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/10W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF.
  50V or less are not indicated except for electrolytice. and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : panel designation.
- ▭ : adjustment for repair.
- ——— : B + bus.
- - - - : B − bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a colour-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

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

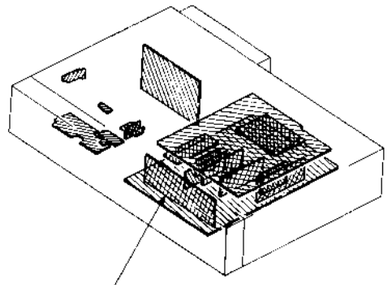
FT-33 BOARD



Note:

- ○— : indicates a lead wire mounted on the component side.
- ●— : indicates a lead wire mounted on the printed side.
- ▩ : soldering side.

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

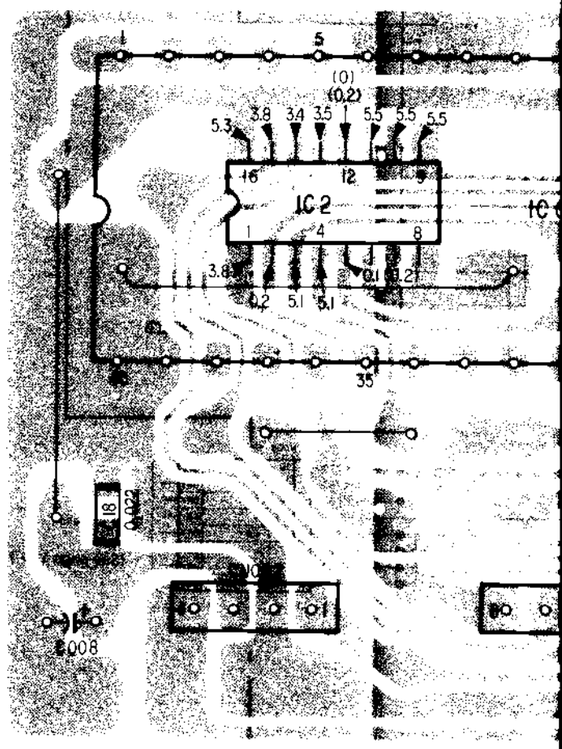


VP-1
(VPS/BUS Select)

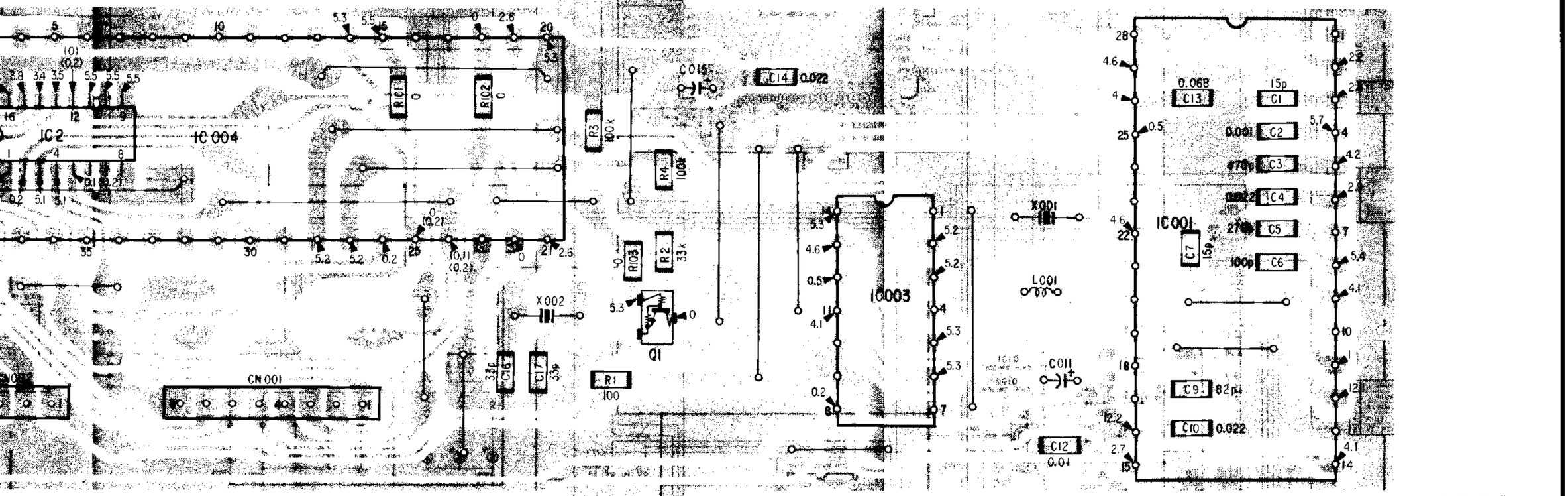
VP-1 (VPS/BUS SELECT) PRINTED WIRING BOARD

—Ref. No. VP-1 BOARD : 12,000 series—

VP-1 BOARD



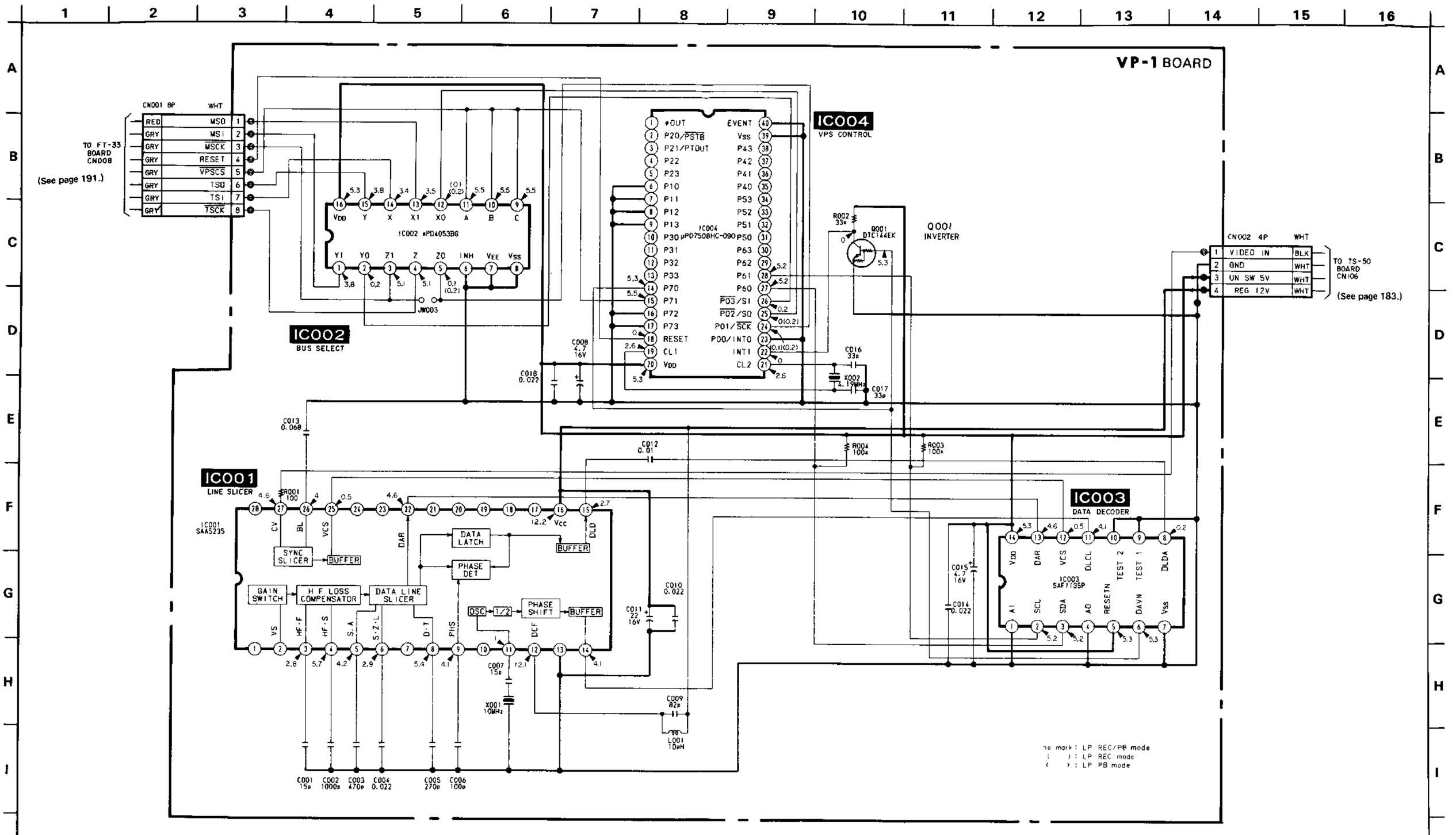
TIMER/MODE CONTROL (2)

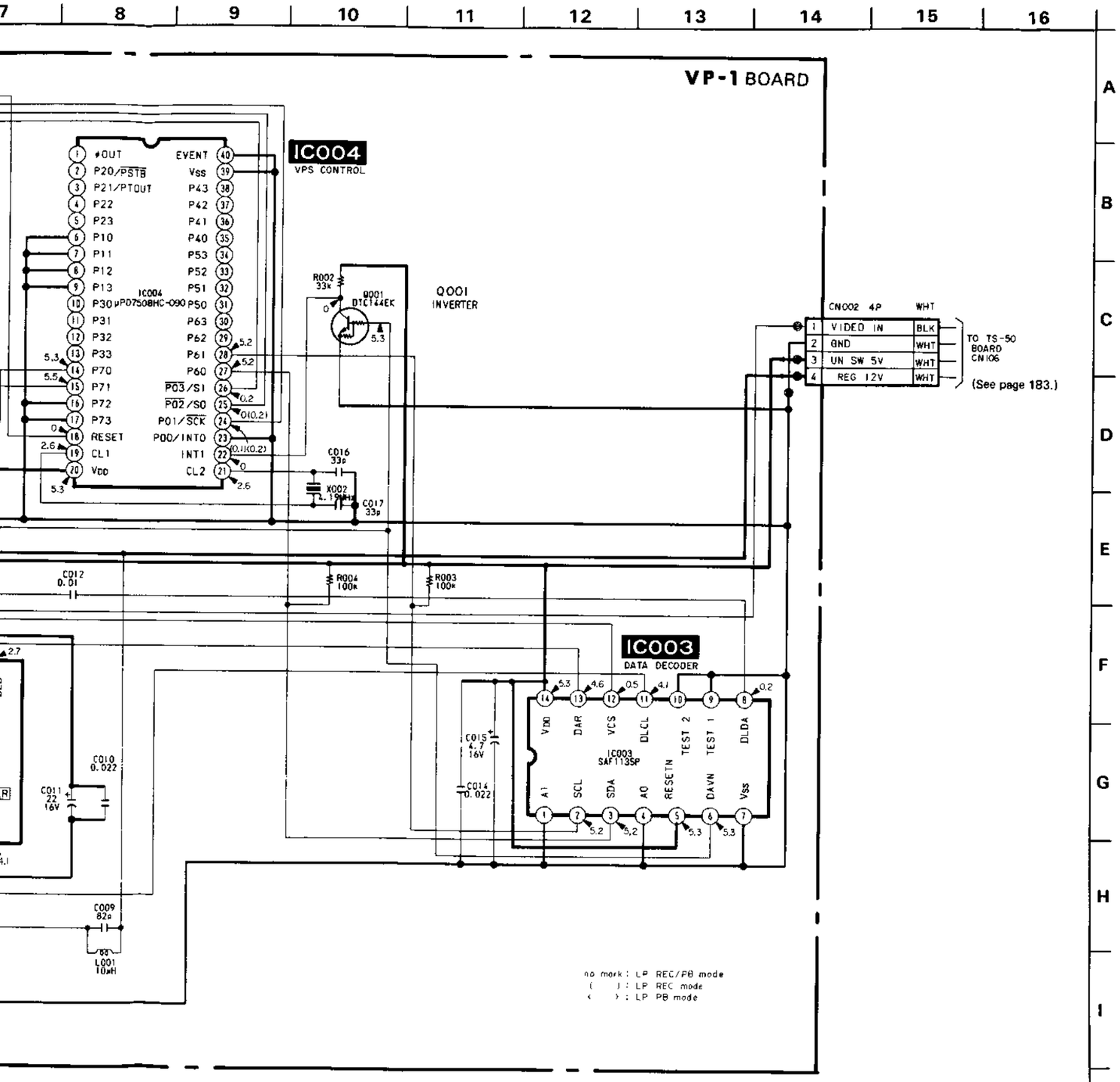


no mark : LP REC / PB mode
( ) : LP REC mode
〈 〉 : LP PB mode

VP-1 (VPS/BUS SELECT) SCHEMATIC DIAGRAM

—Ref. No. VP-1 BOARD : 12,000 series—





Note:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/10W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF.
  50V or less are not indicated except for electrolytice, and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- [ ] : panel designation.
- [ ] : adjustment for repair.
- ——— : B + bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a colour-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

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

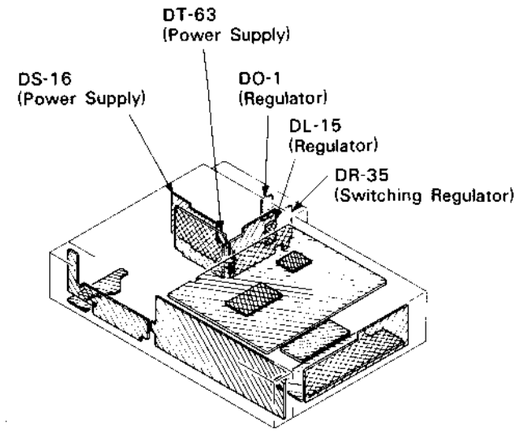
DR-35 (SWITCHING REGULATOR), DT-63 (POWER SUPPLY), DL-15 (REGULATOR), DO-1 (REGULATOR), DS-16 (POWER SUPPLY) PRINTED WIRING BOARDS

—Ref. No. DR-35, DT-63, DL-15, DO-1 and DS-16 BOARDS : 13, 000 series—

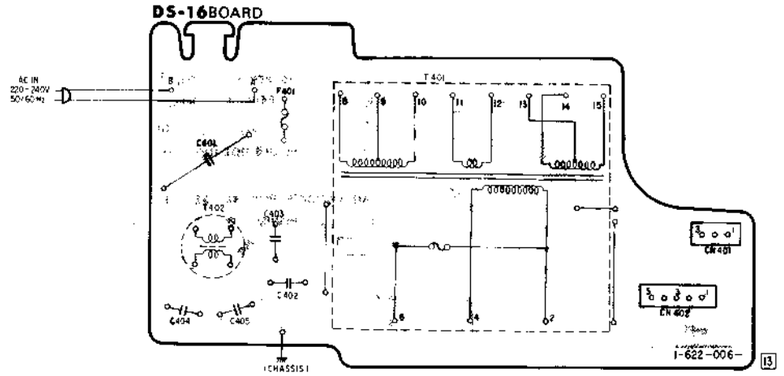
Note:

- ○— : indicates a lead wire mounted on the component side.
- ●— : indicates a lead wire mounted on the printed side.
- ▨ : soldering side.
- Digital transistor (DR-35:Q208,Q212,Q213,Q214,DL-15:Q001) transistor with resistors.
  Refer to the DR-35,DL-15 boards schamatic diagram for digital transistor.

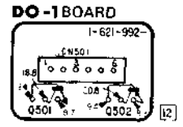
When indicating parts by reference number, please include the board name.



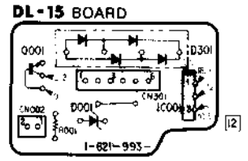
DS-16 BOARD



DO-1 BOARD

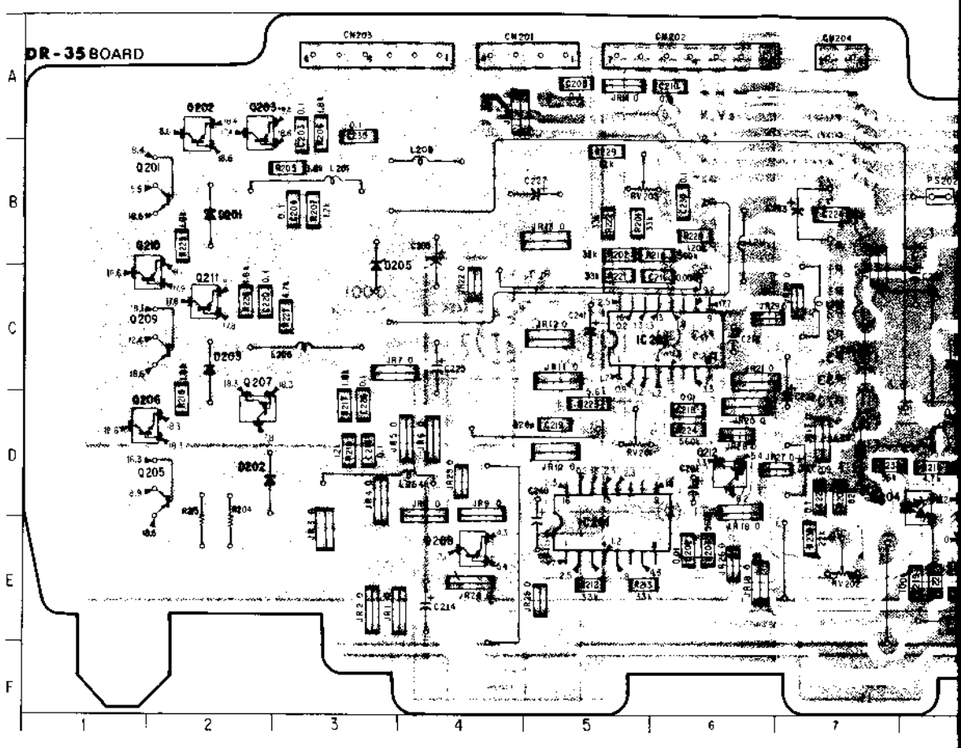


DL-15 BOARD



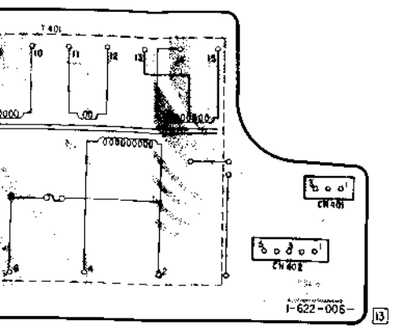
D201	B-2
D202	D-2
D203	C-2
D204	D-8
D205	B-3
IC201	E-5
IC202	C-6
Q201	B-2
Q202	A-2
Q203	A-2
Q204	D-8
Q205	D-2
Q206	D-1
Q207	D-2
Q208	E-4
Q209	C-2
Q210	C-1
Q211	C-2
Q212	D-6
Q213	D-8
Q214	E-8
RV201	D-5
RV202	E-7
RV203	B-5

DR-35 BOARD

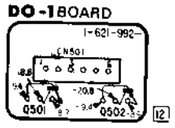


DT-63 (POWER SUPPLY), DL-15 (REGULATOR), DO-1 (REGULATOR), DS-16 (POWER SUPPLY) PRINTED WIRING BOARDS

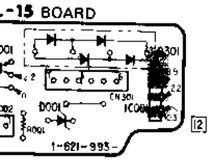
-16 BOARDS : 13, 000 series—



DO-1 BOARD

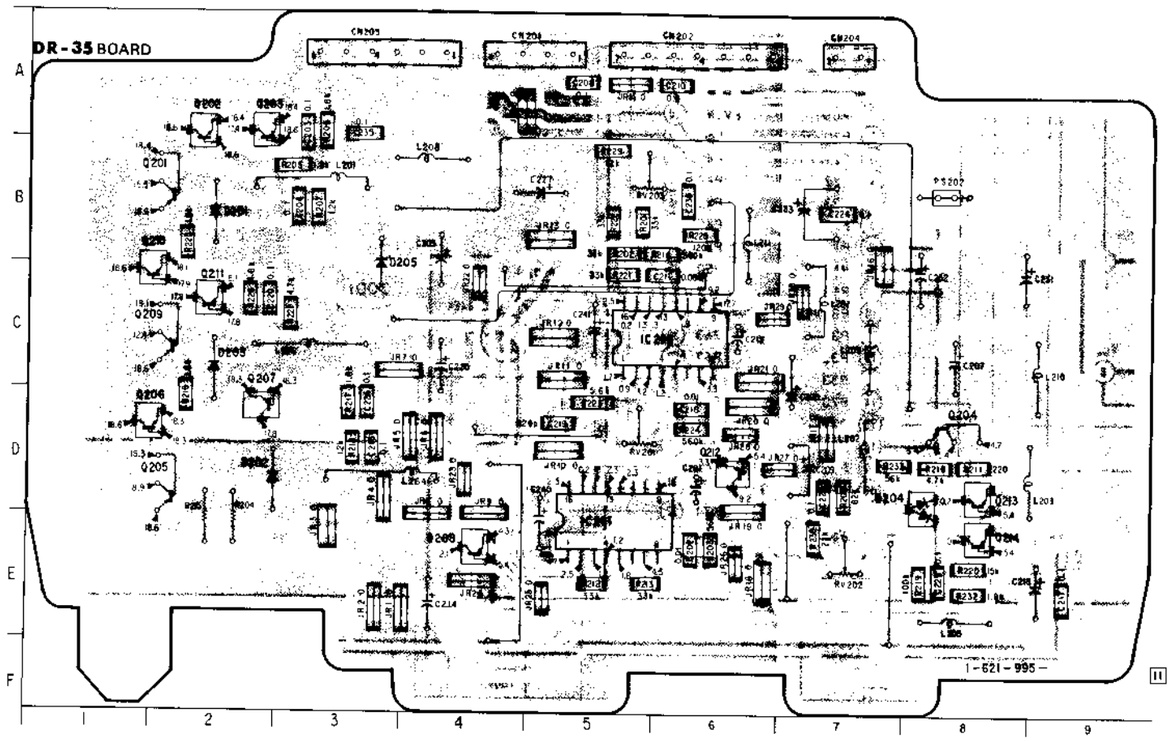


L-15 BOARD

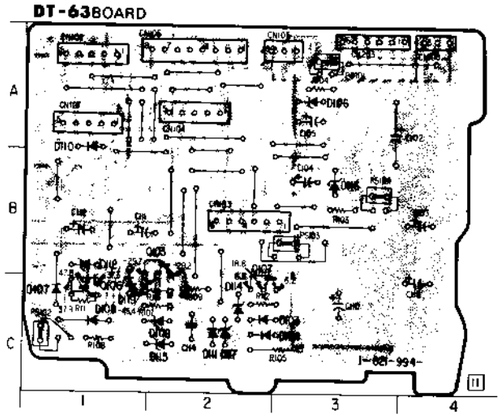


D201	B-2
D202	D-2
D203	C-2
D204	D-8
D205	B-3
IC201	E-5
IC202	C-6
Q201	B-2
Q202	A-2
Q203	A-2
Q204	D-8
Q205	D-2
Q206	D-1
Q207	D-2
Q208	E-4
Q209	C-2
Q210	C-1
Q211	C-2
Q212	D-6
Q213	D-8
Q214	E-8
RV201	D-5
RV202	E-7
RV203	B-5

DR-35 BOARD



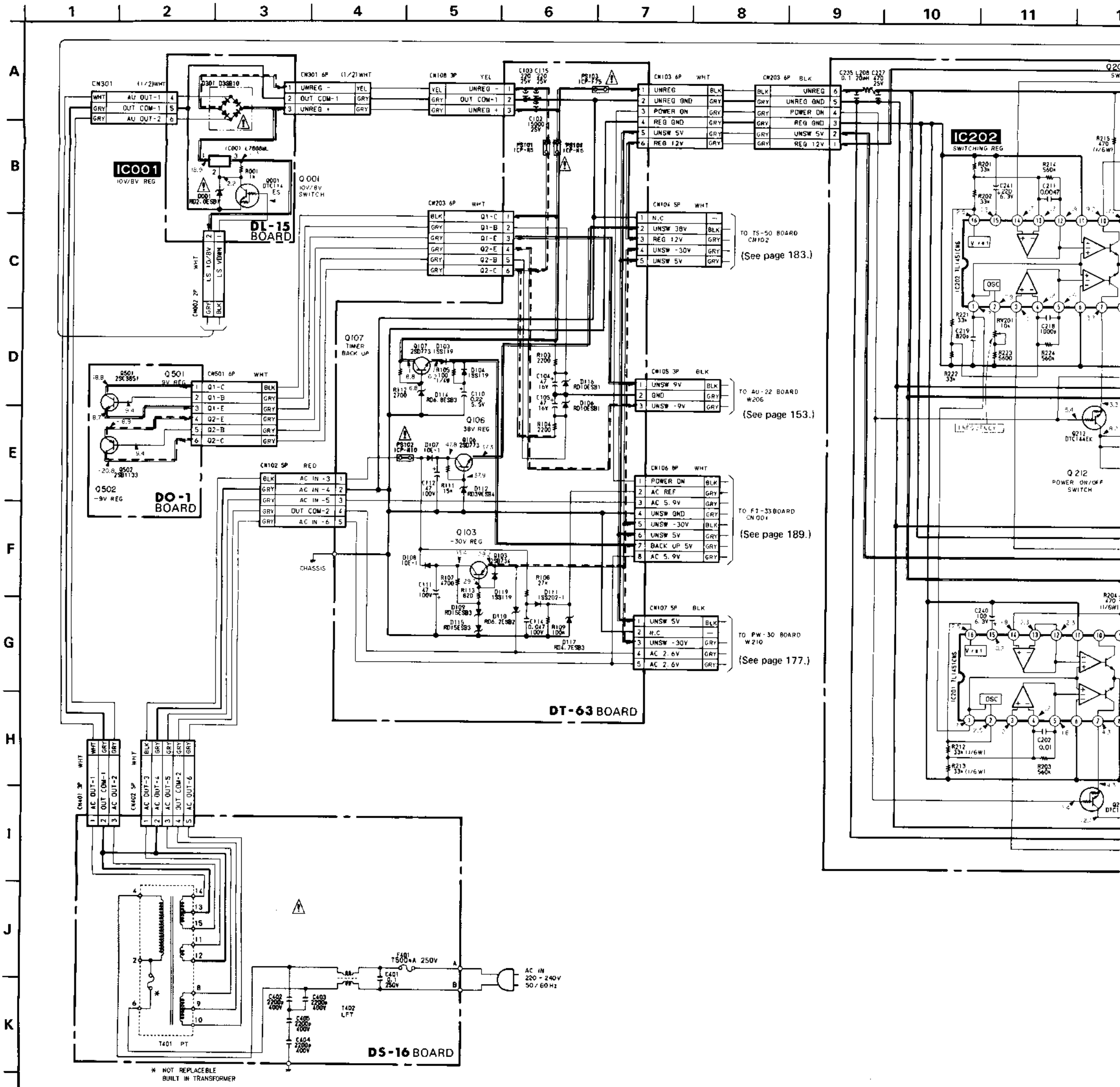
DT-63 BOARD

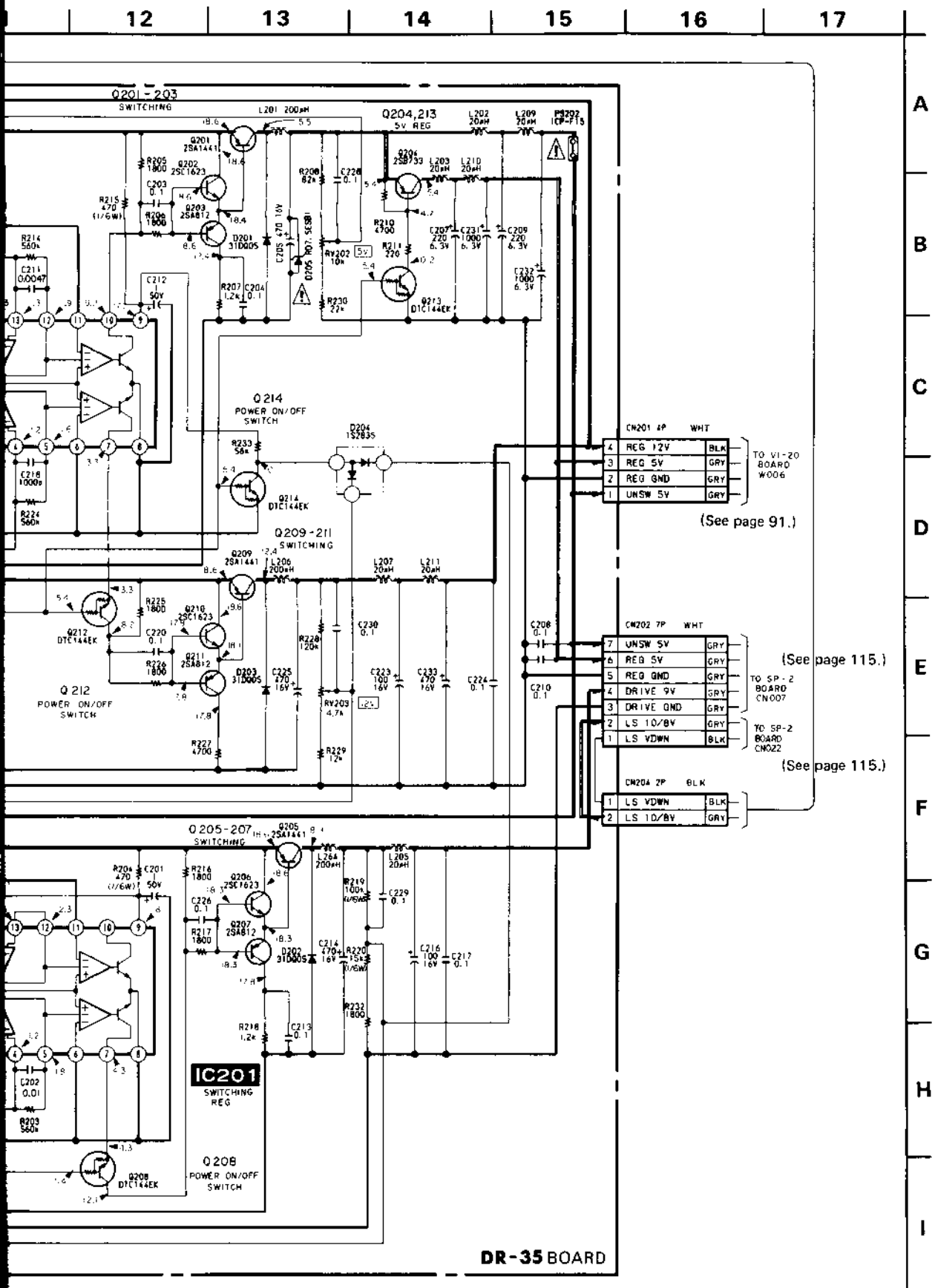


※ mark : E-E mode

DR-35 (SWITCHING REGULATOR), DT-63 (POWER SUPPLY), DL-15 (REGULATOR), DO-1 (REGULATOR), DS-16 (POWER SUPPLY) SCHEMATIC DIAGRAM

—Ref. No. DR-35, DT-63, DL-15, DO-1 and DS-16 BOARDS : 13,000 series—





no mark: E-E mode

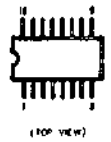
Note:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- Resistors on the DR-35 board are in ohms 1/10W unless otherwise noted.
  Resistors on the DT-63 and DL-15 boards are in ohms 1/6W otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF.
  50V or less are not indicated except for electrolytice, and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- [ ] : adjustment for repair.
- ——— : B + bus.
- – – – : B – bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

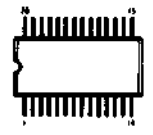
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

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

BA6303F
BU4053BF
CX20115A
CX22021
HD14052BFP
LA5005M
MB84053BPF
TC4052BF
TC4053BF
TC4538BF
TL1451CNS
μPD4052BG
μPD4053BG

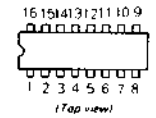


BA6800AF
CXD1077M
CXD1078M
CX20035
CX20099
CX23012
MB8464-12LPF
MB8464-15LPF
M51955BL

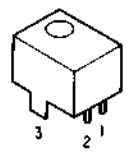


BA7036LS

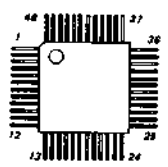
BU4051B
BU4052B
BU4053B
CXA1042M
CX23078
HD14051BP
HD14052BP
HD14053BFP
HD14053BP
HD14538BP
MB84051B
MB84052B
MB84053B
MB88306P
MC14538BCP
MSM6411B-19RS
TC4051BP
TC4051BP-HB
TC4052BP
TC4052BP-HP
TC4053BP
TC4053BP-HP
TC4538BP
μPD4051BC
μPD4052BC
μPD4053BC



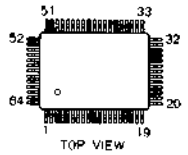
BX1387



CXD1066Q
CX20034
CX23011
MB64H428PF

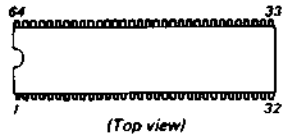


CXP5016-191Q
CXP5048H-069Q
CXP5048H-070Q
MB674101PF
μPD75104G-519-B1
μPD75106G-518-1B
μPD75208G-549-1B

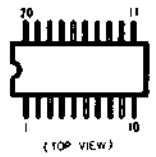


CX20032
SAA5235
μPD4364G-15L

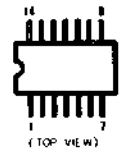
CX20061



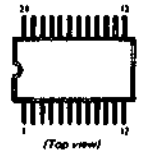
CX20102



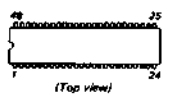
CX20103
HD14066BFP
HD14070BFP
NJM3403AM
TC40H000F
TC40H004F
TC4011BF
TC4030BF
TC4030BF-HB
TC4066BF
μPC324G2
μPD4066BG



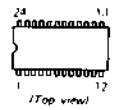
CX20114



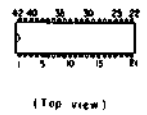
CX20130
CX20131
CX20137



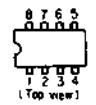
CX20147
TDA3592A
μPD7566G-506



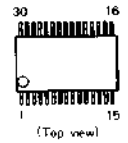
CX23064



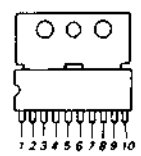
IR3N05
MB3763P
NJM3414D
NJM4558D
μPC4558C



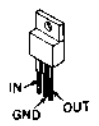
LB1616M



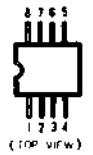
LB1640N



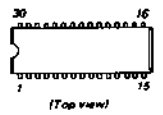
L7808ML



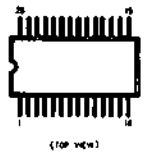
MB3763PF
NJM4560M
μPC358G2
μPC393G2
μPC4570G2



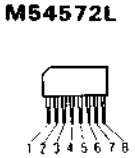
M50434-019SP



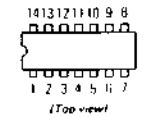
M50725-651FP



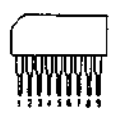
M54572L



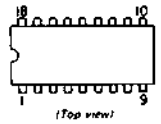
M58655P
SAF1135P
TDA4944



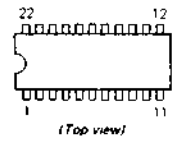
NJM4560S



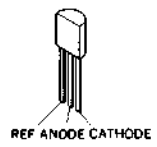
TDA2594



TDA4940

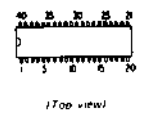


TL431CLP
TL431CLPB



μPC574J

μPD7508HC-090



DTA114EK
DTA124EK
DTA144EK
DTC144EK
2SA1037K
2SA1122C
2SA1162
2SA1179
2SA812
2SC1623
2SC2412K
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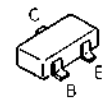
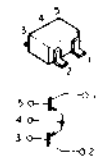
2SC3052
2SC3326N



DTC114ES
DTC143TS

FMS1FE
FMW2



PT360FS

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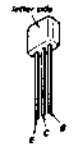

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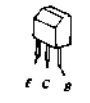
2SC3851
2SD1266-Q
2SD1406
2SD1585
2SD1666

2SB733
2SB734
2SD773



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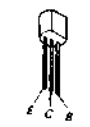
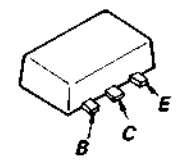
2SB740
2SD788



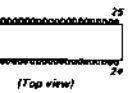
2SD1366A
2SD1664-Q
2SD999



X20103
D14066BFP
D14070BFP
JM3403AM
C40H000F
C40H004F
C4011BF
C4030BF
C4030BF-HB
C4066BF
C324G2
D4066BG

X20114

X20130
X20131
X20137



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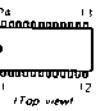

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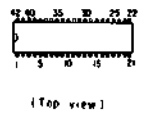

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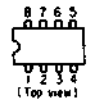
μPC4558C



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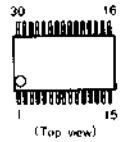

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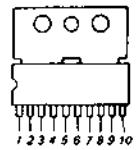
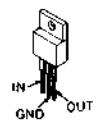


L7808ML



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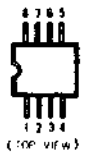
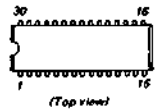
μPC393G2
μPC4570G2



M50434-019SP



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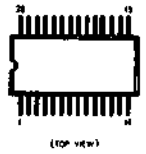
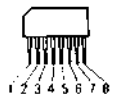


M54572L



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SAF1135P
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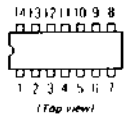

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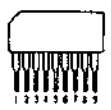

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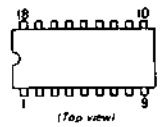

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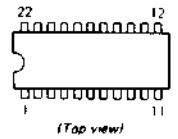
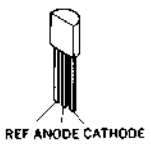


TL431CLP
TL431CLPB



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μPD7508HC-090

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DTA124EK
DTA144EK
DTC144EK
2SA1037K
2SA1122C
2SA1162
2SA1179
2SA812
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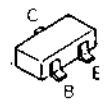
2SC2412K
2SC2712
2SC2812L5
2SC2812L6
2SC2812L7
2SC3052
2SC3326N



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DTC143TS

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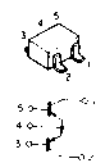
FMW2



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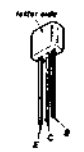

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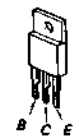
2SD1585
2SD1666



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2SD1366A
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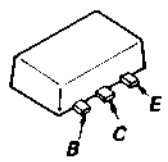
2SD999



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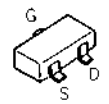
2SK209-Y
2SK433
2SK94-X2



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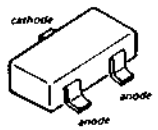

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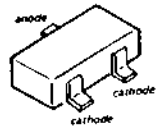
MA152WK
MA157



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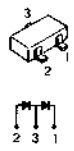

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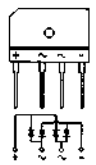
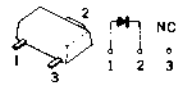


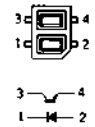
EQA11-09A

E10DS2

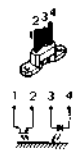


GL-450S

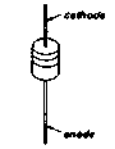
GP-2S09



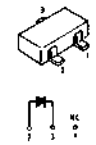
MA153



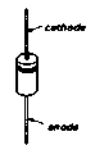
RD10ES-B1
RD15ES-B3
RD18ES-B1
RD2.0ES-B1
RD39JS-B
RD4.7ES-B3
RD6.2ES-B1
RD6.2ES-B2
RD6.2ES-B3
RD6.8ES-B2
RD6.8ES-B3
RD7.5ES-B1
1SS119
1SS133
1SS148
1SS202-1



RD12M-B1
RD12M-B2
RD12M-B3
RD5.1M-B2
RD7.5M-B1
RD9.1M-B1
1SS193
1SS220



RD2.7ES-B1
RD2.7ES-B2
RD39ES-B4
1SS106
10E1
10E2



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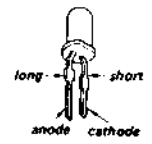
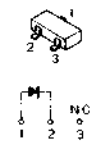
TLO123
TLR123
TLY123



1SS187
1SS190
1SS223



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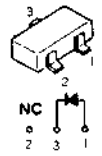
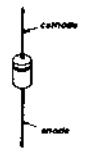


31DQ05



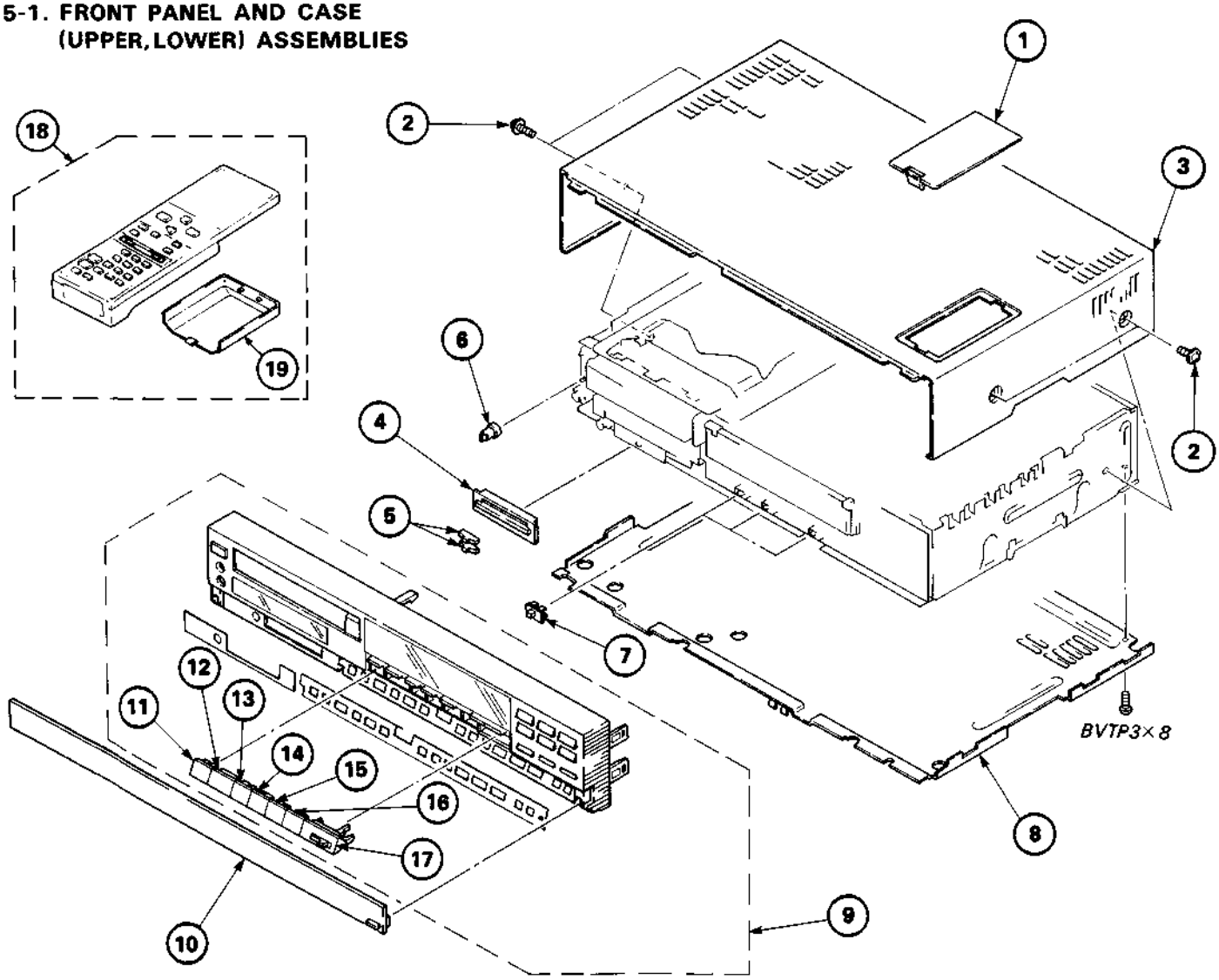
SECTION 5
EXPLODED VIEWS

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- 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.
- -XX, -X mean standardized parts, so they may have some differences from the original one.

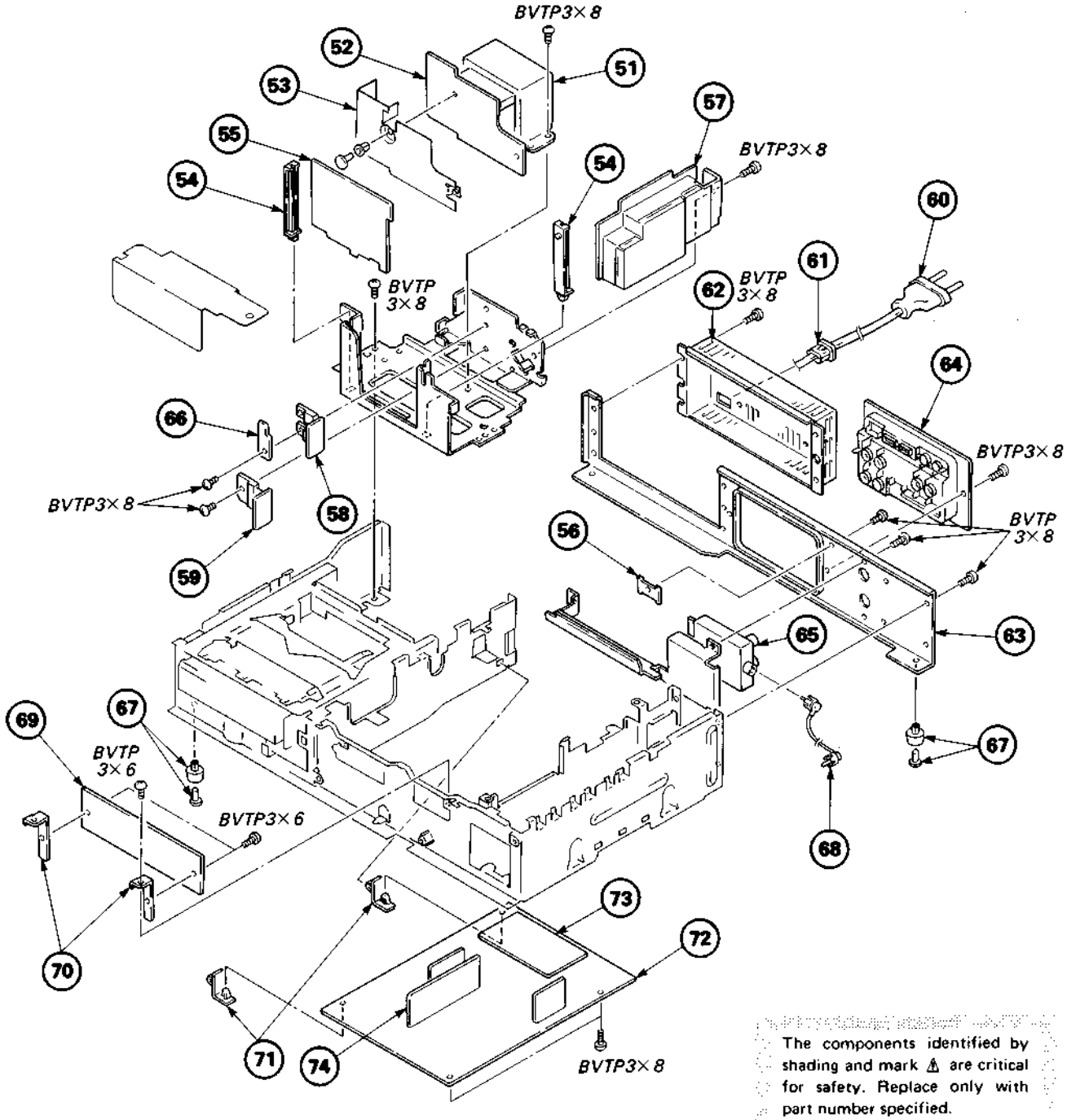
The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

5-1. FRONT PANEL AND CASE (UPPER, LOWER) ASSEMBLIES



No.	Part No.	Description	Remark
1	X-3711-957-1	LID ASSY, PRESET	
2	4-886-821-01	SCREW, M3 CASE	
3	3-716-941-01	CASE, UPPER	
4	X-3711-980-1	COVER ASSY, SLIDE	
5	3-716-868-01	KEY, SLIDE	
6	3-716-867-01	KNOB, HP	
7	3-716-882-01	KNOB, SLIDE	
8	*3-716-913-11	PLATE, BOTTOM	
9	X-3713-401-1	PANEL ASSY, FRONT	11-17
10	X-3711-995-1	LID ASSY, ALUMINIUM	
11	X-3711-953-1	KEY ASSY, REW	
12	X-3711-951-1	KEY ASSY, FWD	
13	X-3711-952-1	KEY ASSY, FF	
14	3-716-856-01	KEY, STOP	
15	X-3711-954-1	KEY ASSY, PAUSE	
16	X-3711-955-1	KEY ASSY, X2	
17	X-3711-981-1	KEY ASSY, REC	
18	A-6767-550-A	COMMANDER ASSY (RMT-439)	19
19	2-357-280-01	COVER, BATTERY	

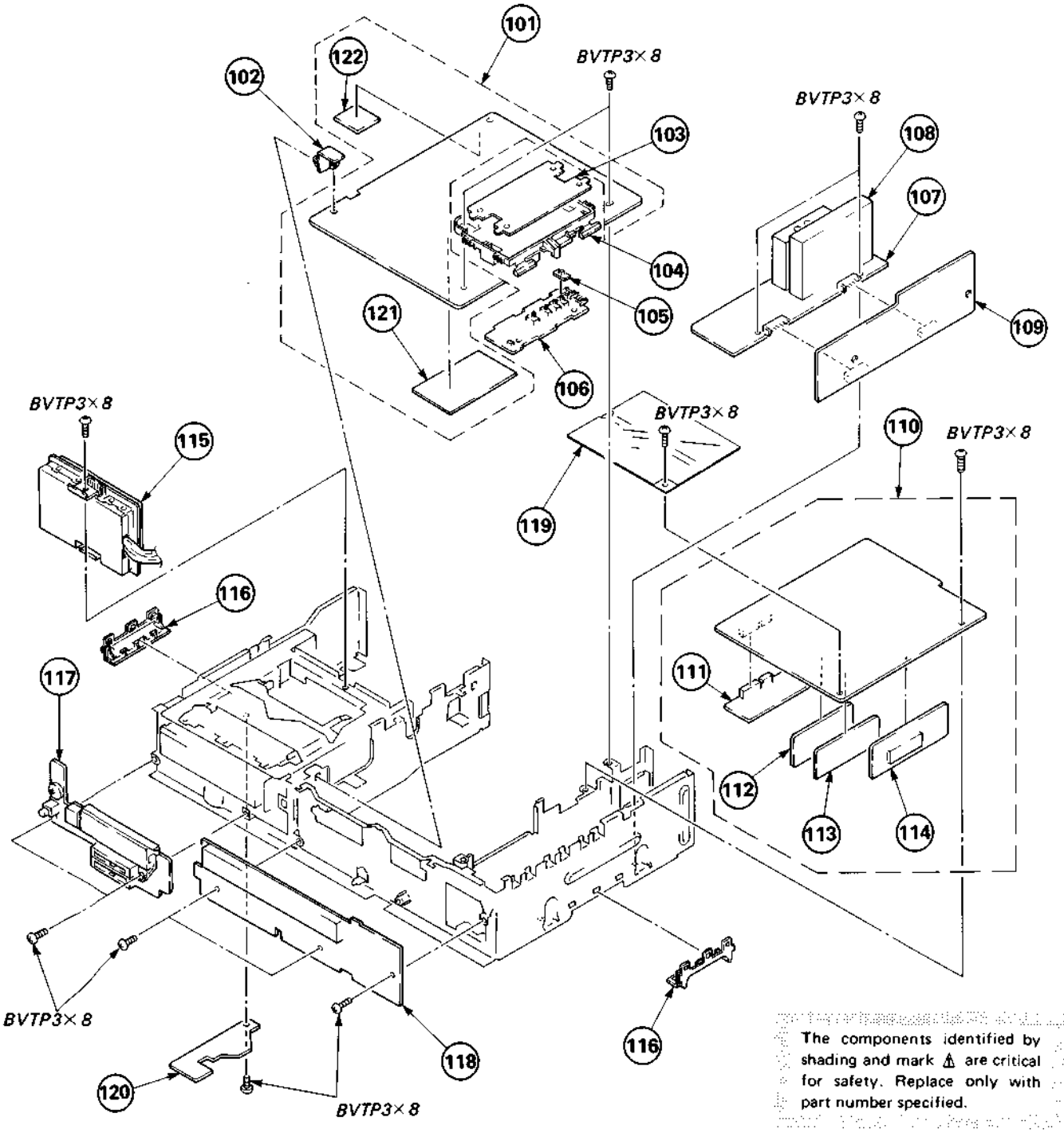
5-2. BOARD AND POWER BLOCK ASSEMBLIES



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

No.	Part No.	Description	Remark
51	⚠1-448-836-11	TRANSFORMER, POWER (T401)	
52	*1-622-006-11	DS-16 BOARD	
53	3-716-892-11	SHEET (LARGE), INSULATING	
54	3-680-719-11	GUIDE, CHASSIS	
55	*1-621-994-11	DT-63 BOARD	
56	*3-716-986-01	SHEET METAL, FTZ	
57	*A-7060-585-A	DR-35 BOARD, COMPLETE	
58	*1-621-992-11	DO-1 BOARD	
59	*1-621-993-11	DL-15 BOARD	
60	⚠ 1-534-817-XX	CORD, POWER	
61	⚠*3-703-244-00	BUSHING (2104), CORD	
62	3-713-667-31	COVER (A), POWER	
63	3-713-669-01	FRAME (A), REAR	
64	3-716-978-01	PLATE, ORNAMENTAL, JACK	
65	⚠1-464-829-11	MODULATOR, RF (RFU-867)	
66	*3-716-954-01	BRACKET, DO-1 MOUNT	
67	3-697-937-01	LEG	
68	*1-555-110-00	CABLE, PIN	
69	*A-7060-917-A	VP-1 BOARD, COMPLETE	
70	*3-713-660-01	HOLDER, VPS	
71	*3-701-832-00	HINGE, CIRCUIT BOARD	
72	*A-7060-845-A	V1-20 BOARD, COMPLETE	74
73	*A-7068-031-A	TC-3 BOARD, COMPLETE	
74	*A-7060-916-A	CH-44 BOARD, COMPLETE	

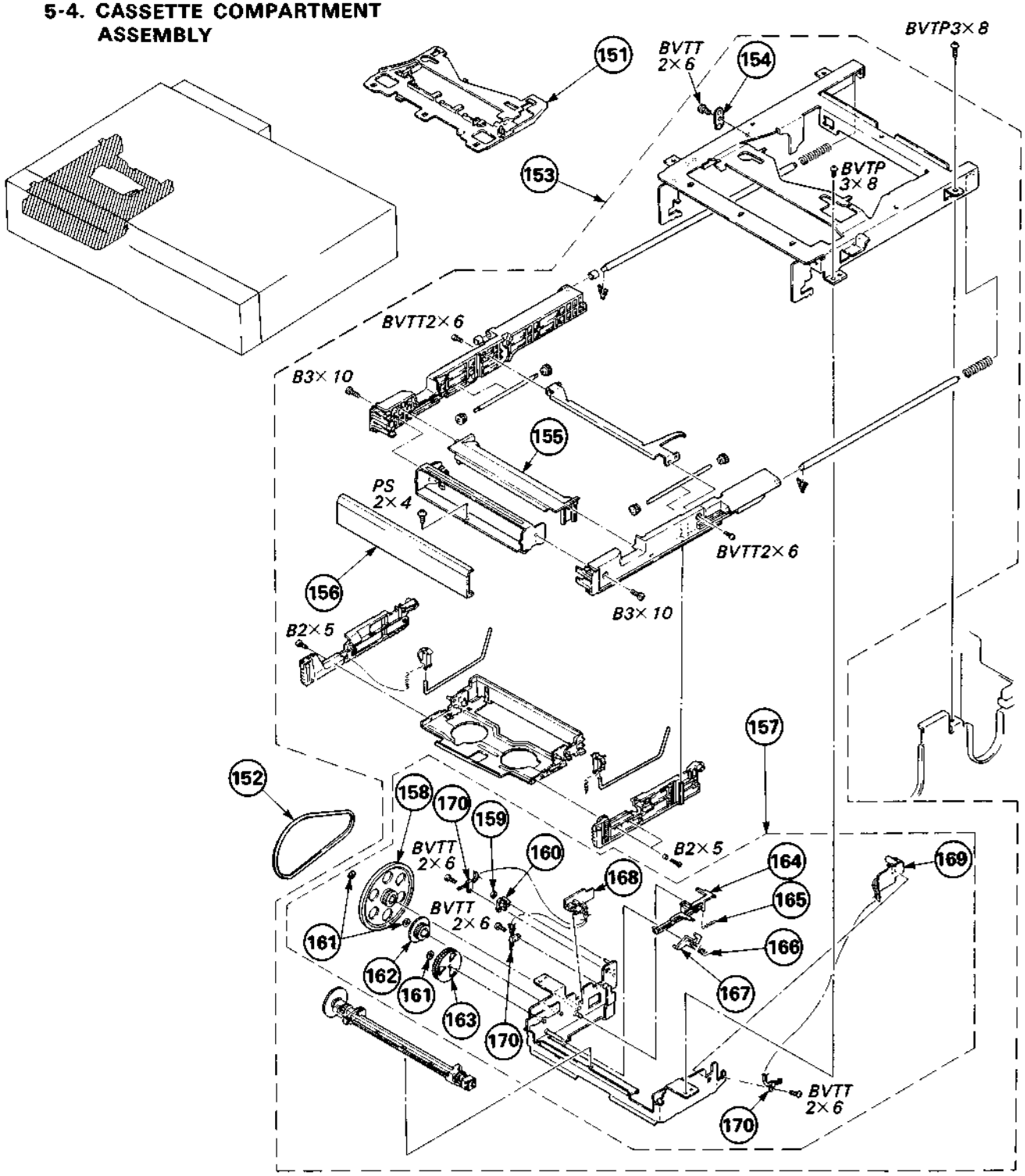
5-3. BOARD ASSEMBLIES



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

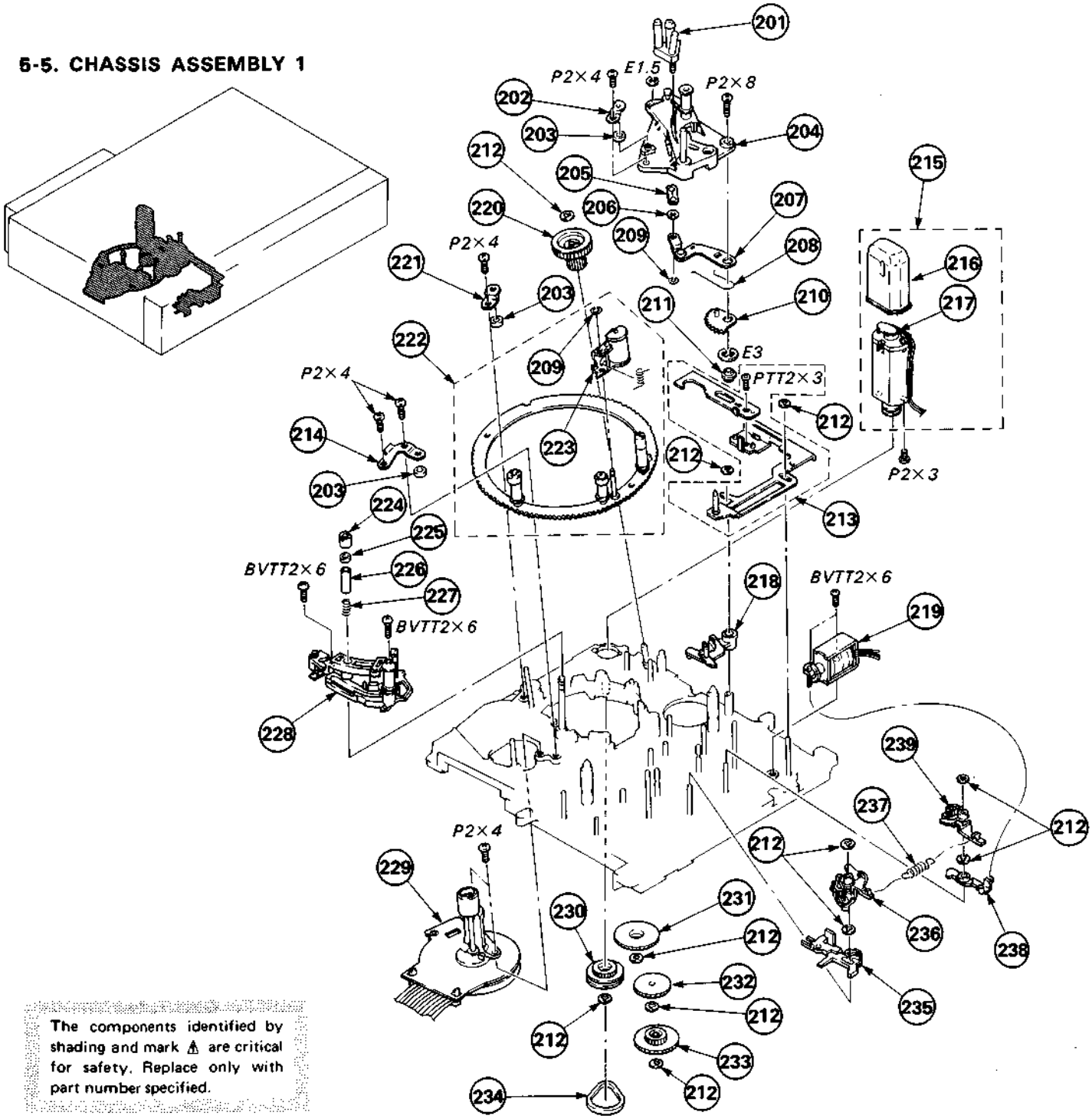
No.	Part No.	Description	Remark
101	*A-7060-844-B	SP-2 BOARD, COMPLETE	121, 122
102	*3-701-832-00	HINGE, CIRCUIT BOARD	
103	3-716-841-51	SHEET, PRESET	
104	3-716-896-01	PRESET (MAIN)	
105	3-713-694-01	KNOB (P), SLIDE	
106	*A-7060-843-A	PR-13 BOARD, COMPLETE	
107	*A-7060-471-A	TU-83 BOARD, COMPLETE	
108	⚠1-463-761-11	TUNER, ET (BT-8838) (TU001)	
109	*A-7060-482-A	TS-50 BOARD, COMPLETE	
110	*A-7060-841-A	AU-22 BOARD, COMPLETE	111-114
111	*A-7060-912-A	AD-12 BOARD, COMPLETE	
112	*A-7060-913-A	NR-6 BOARD, COMPLETE	
113	*A-7060-914-A	MK-2 BOARD, COMPLETE	
114	*A-7060-911-A	AF-20 BOARD, COMPLETE	
115	*A-7060-908-A	RP-36 BOARD, COMPLETE	
116	3-716-907-01	PROTECTOR, FRAME	
117	*A-7060-909-A	PW-30 BOARD, COMPLETE	
118	*A-7060-842-A	FT-33 BOARD, COMPLETE	
119	*X-3711-990-1	PLATE (AU) ASSY, SHIELD	
120	*1-621-982-13	MJ-11 BOARD	
121	*A-7070-438-A	RB-2 BOARD, COMPLETE	
122	*1-623-747-11	KM-1 BOARD	

5-4. CASSETTE COMPARTMENT ASSEMBLY



No.	Part No.	Description	Remark
151	3-716-908-01	CLAMP, LAMP	
152	3-713-670-01	BELT, LS	
153	A-7090-673-A	CASSETTE COMPARTMENT ASSY, LS	154-170
154	*3-716-944-01	BRACKET, STOPPER, SHAFT	
155	3-716-885-01	PLATE, SLOPE	
156	3-713-682-11	HEAD, FRONT	
157	A-7090-674-A	BASE ASSY, FRONT	158-170
158	3-716-849-01	PULLEY, MIDWAY	
159	3-669-465-00	WASHER (1.5), STOPPER	
160	3-716-821-01	ARM, SW	
161	3-669-596-00	WASHER (2.3), STOPPER	
162	3-716-819-01	GEAR, DECELERATION	
163	X-3711-968-1	GEAR ASSY, LIMITER	
164	3-716-937-01	SLIDER, LOCK	
165	3-716-825-01	SPRING, TENSION	
166	3-713-687-01	SPRING	
167	3-716-850-01	HOLDER, LOCK	
168	*1-621-998-11	TE-6 BOARD	
169	*1-621-997-11	TE-5 BOARD	
170	1-570-112-11	SWITCH, LEAF (CASSETTE DOWN R/L, LS TOP) (S903-S904)	

5-5. CHASSIS ASSEMBLY 1

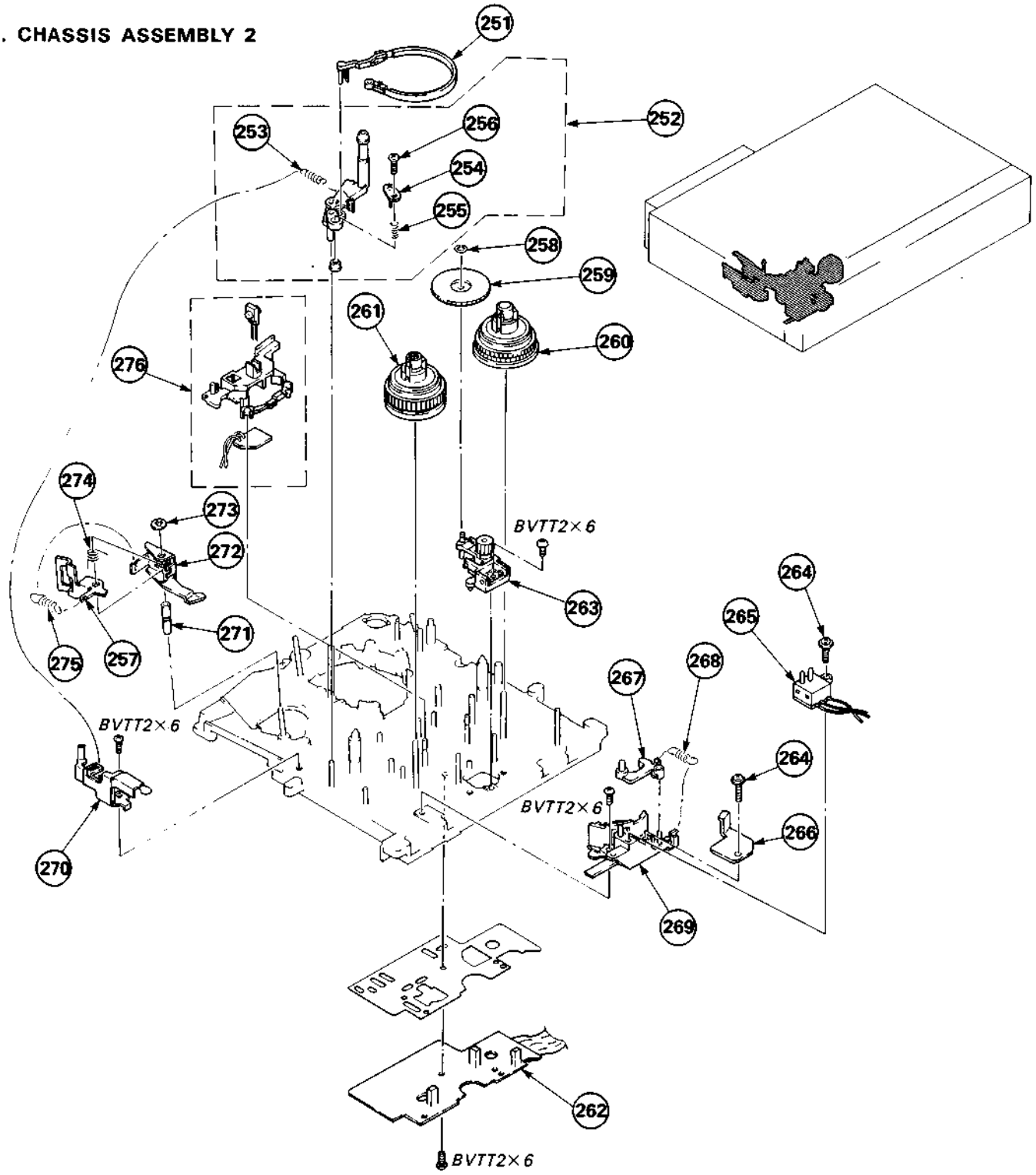


The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

No.	Part No.	Description	Remark
201	X-3686-502-1	BASE ASSY, GUIDE	
202	*3-686-503-01	RETAINER, ROLLER	
203	3-697-538-01	ROLLER, RING	
204	X-3686-577-1	CHASSIS ASSY, GUIDE, SLANT	
205	3-686-663-01	WASHER, STOPPER, 2 GANG	
206	3-701-436-21	WASHER, POLYEHTHYLENE	
207	X-3686-537-1	ARM ASSY	
208	3-686-701-01	SPRING	
209	3-315-384-31	WASHER, STOPPER	
210	3-699-509-01	GEAR, SECTOR	
211	3-686-537-01	RETAINER, LOCK SLODER	
212	3-669-465-00	WASHER (1.5), STOPPER	
213	A-7040-103-A	SLIDER ASSY, LOCK	
214	*3-686-675-01	STOPPER, RING	
215	A-7040-065-A	MOTOR ASSY, L (LOADING) M904	216, 217
216	*3-686-757-01	CAP, SHIELD, L MOTOR	
217	1-161-057-00	CAP, CERAMIC 0.033MF X C901	
218	*3-686-636-04	ARM, T.S RELEASE	
219	⚠1-454-377-31	SOLENOID, PLUNGER (BRAKE) PM901	
220	3-697-518-01	GEAR, NO.10	

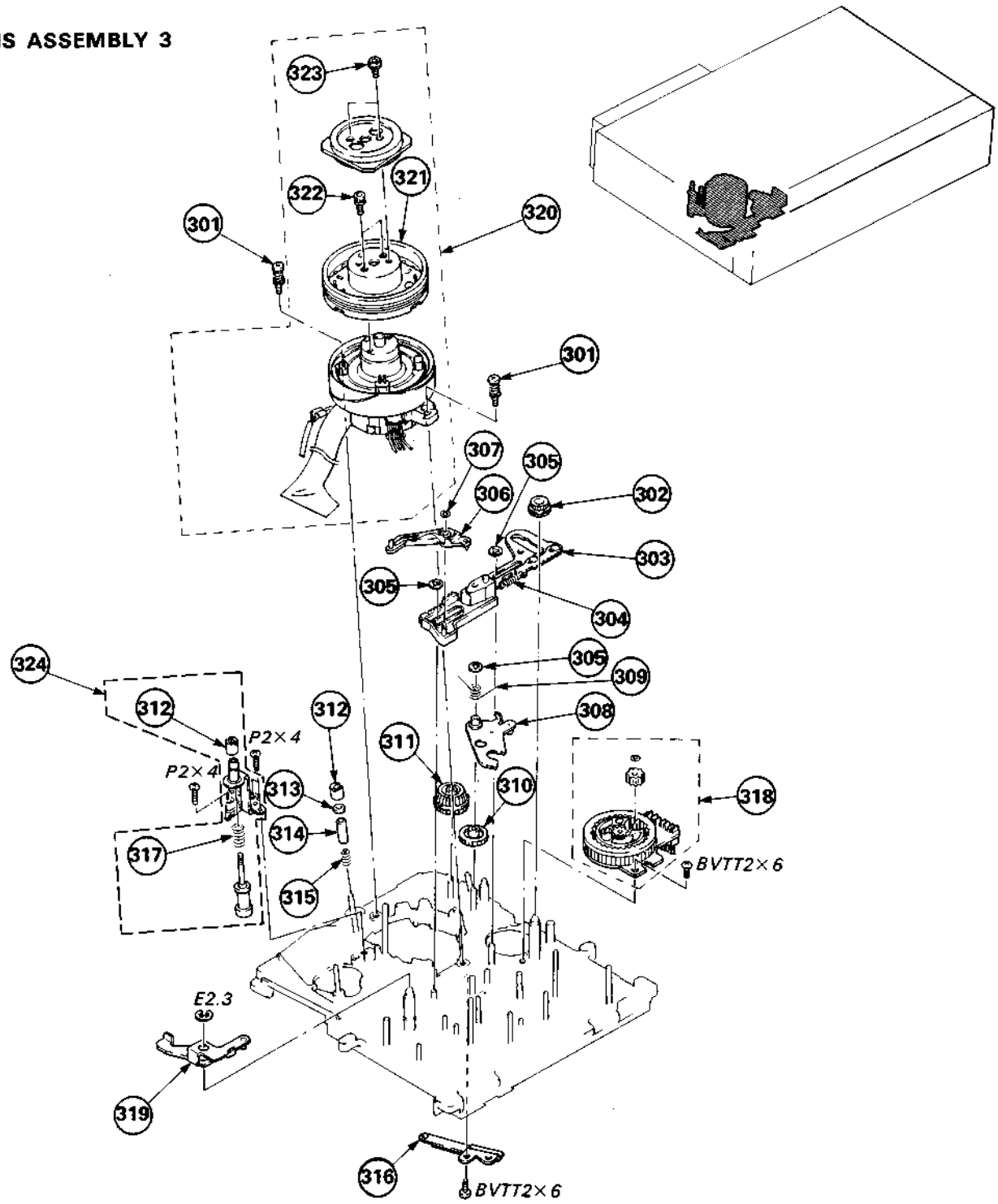
No.	Part No.	Description	Remark
221	*3-686-911-01	PLATE, TOP, ROLLER	
222	A-7040-123-A	RING ASSY, LOADING	209, 223
223	X-3686-576-1	ARM ASSY, PINCH ROLLER	
224	3-686-724-01	NUT, GUIDE	
225	*3-686-894-01	FLANGE, #3 #4 GUIDE	
226	3-686-912-01	GUIDE, #3 #4	
227	3-699-609-01	SPRING, COMPRESSION	
228	A-7040-054-A	GUIDE (P) ASSY, ENTRANCE	
229	8-835-247-01	MOTOR, DC BHF-28040 (CAPSTAN) M906	
230	X-3686-514-1	GEAR ASSY, NO.1	
231	3-686-508-01	GEAR, NO.2	
232	3-686-545-01	GEAR, NO.3	
233	3-686-544-01	GEAR, NO.4	
234	3-686-546-01	BELT, L- MOTOR	
235	*3-686-629-01	SLIDER, SELECTION, UPPER & LOWER	
236	X-3711-991-1	BRAKE ASSY, S MAIN	
237	3-713-560-01	SPRING, TENSION	
238	*3-686-635-01	ARM, P	
239	X-3686-574-1	BRAKE ASSY, MAIN, TAKE-UP	

5-6. CHASSIS ASSEMBLY 2



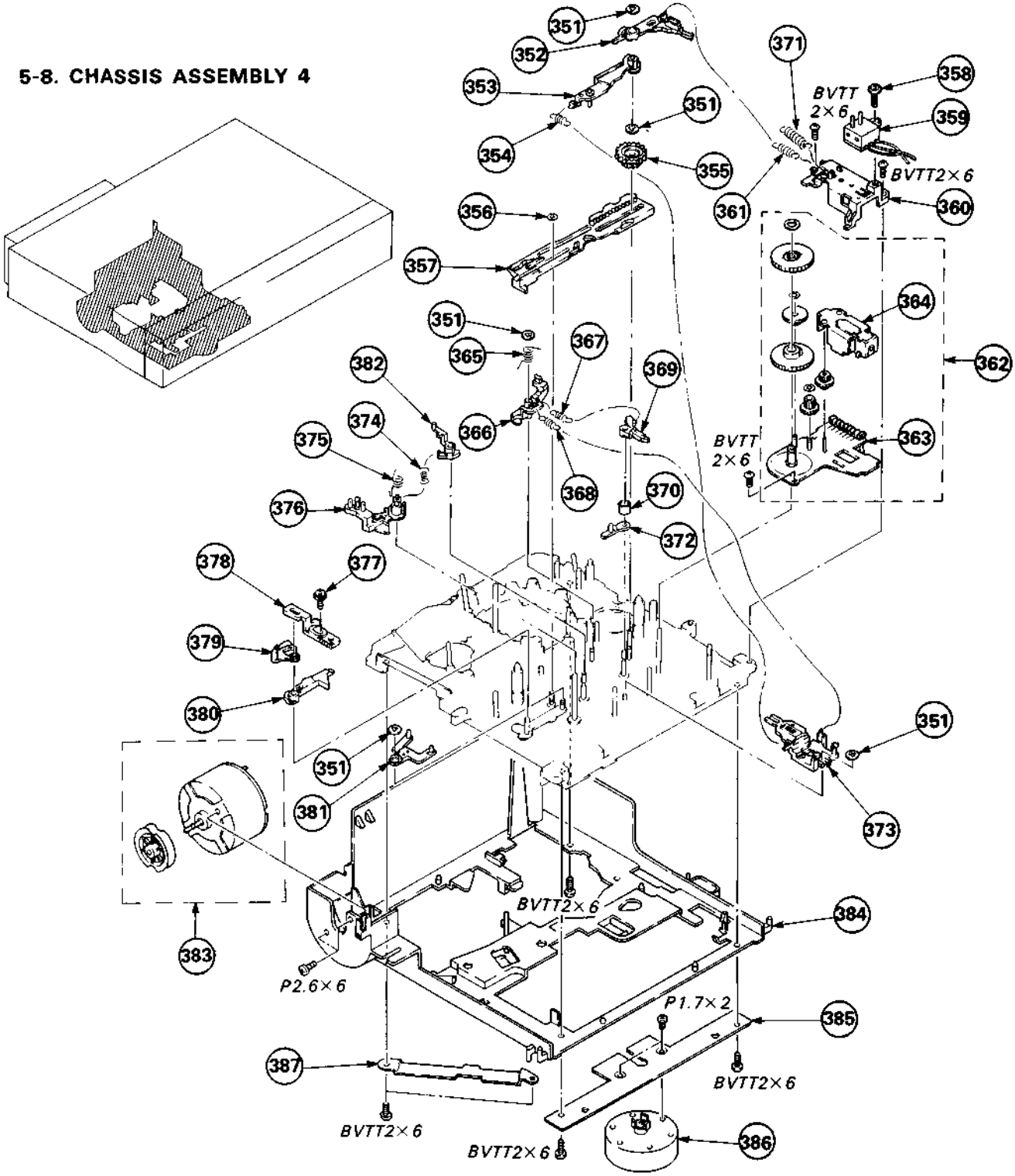
No.	Part No.	Description	Remark
251	X-3686-531-1	BAND ASSY, TENSION REGULATOR	
252	A-7040-071-A	ARM ASSY, TENSION REGULATOR	253-256
253	3-699-519-01	SPRING, TENSION	
254	*X-3686-523-1	PLATE ASSY, TENSION REGULATOR	
255	3-669-666-00	SPRING, COMPRESSION	
256	3-697-546-01	SCREW (+-M2X6), SPECIAL	
257	*3-686-641-01	ARM, PINCH PRESS	
258	3-315-384-31	WASHER, STOPPER	
259	X-3686-763-1	GEAR (B) ASSY, DRIVING	
260	X-3711-998-1	TABLE ASSY, REEL, TAKE-UP	
261	X-3711-962-1	TABEL ASSY, SUPPLY REEL	
262	*A-7060-411-A	RS-17 BOARD, COMPLETE	
263	X-3711-963-1	DRIVING COMPLETE ASSY	
264	3-669-480-11	+ PTPWH 2	
265	1-554-942-11	SWITCH, PUSH (RECOG R) S901	
266	*3-686-991-01	STOPPER, REEL TABLE	
267	*3-686-637-01	BRAKE (S), SOFT	
268	3-696-082-01	SPRING, TENSION	
269	*3-686-760-01	GUIDE, BAND	
270	*X-3686-525-1	HOOK ASSY, SPRING	
271	*3-686-567-01	SLEEVE, PINCH PRESS	
272	*3-686-660-01	ARM, PINCH LIMITER	
273	3-669-465-00	WASHER (1.5), STOPPER	
274	3-686-568-01	SPRING, TORSION	
275	3-686-885-01	SPRING, TENSION	
276	*A-7070-024-A	LD-1 BOARD, COMPLETE	

5-7. CHASSIS ASSEMBLY 3



No.	Part No.	Description	Remark
301	X-3686-915-1	SCREW ASSY, FITTING	
302	3-686-702-01	GEAR, DRIVING, GUIDE, SLANT	
303	*X-3686-548-2	SLIDER SUB ASSY, L	
304	3-686-886-01	SPRING, TENSION	
305	3-669-465-00	WASHER (1.5), STOPPER	
306	*X-3686-518-3	ARM ASSY	
307	3-315-384-31	WASHER, STOPPER	
308	X-3686-579-1	CHANGE ASSY, DRIVE	
309	3-686-540-01	SPRING, TORSION	
310	3-686-535-01	GEAR, NO.8	
311	3-686-539-01	GEAR, NO.9	
312	3-686-724-01	NUT, GUIDE	
313	*3-686-894-01	FLANGE, #3 #4 GUIDE	
314	3-686-912-01	GUIDE, #3 #4	
315	3-699-609-01	SPRING, COMPRESSION	
316	1-535-535-11	TERMINAL, SHAFT GROUND	
317	3-699-514-01	SPRING, COMPRESSION	
318	X-3712-403-1	L-SW ASSY	
319	*X-3686-509-1	LEVER ASSY, PINCH PRESS	
320	A-7048-128-A	DRUM ASSY (DGH-12E-R)	321-323
321	A-7049-147-A	DRUM ASSY, UPPER, ROTARY (DGR-12E-R)	
322	3-686-403-01	SCREW (2X5), BOLT WASHER	
323	3-686-422-01	WASHER (2X2.7), BOLT, HOLE	
324	A-7040-058-A	GUIDE BLOCK COMPLETE ASSY, #5	312, 317

5-8. CHASSIS ASSEMBLY 4



No.	Part No.	Description	Remark
351	3-669-465-00	WASHER (1.5), STOPPER	
352	X-3711-987-1	BRAKE ASSY, T.S	
353	*X-3686-528-4	ARM ASSY, B RELEASE	
354	3-686-903-01	SPRING, TENSION	
355	3-686-909-01	GEAR, MODE OUTPUT	
356	3-315-384-31	WASHER, STOPPER	
357	3-716-935-01	SLIDER, M	
358	3-669-480-11	+ PTPWH 2	
359	1-554-942-11	SWITCH, PUSH (RECOG L) S902	
360	X-3711-992-1	COVER ASSY, C MOTOR	
361	3-714-035-01	SPRING, TENSION	
362	A-7090-029-A	M-SW ASSY	363, 364
363	*A-7070-025-A	MS-4 BOARD, COMPLETE	
364	8-835-138-01	MOTOR, DC (DNR-5301B) (CONTROL) M903	
365	3-686-579-01	SPRING	
366	*3-686-634-01	ARM, RL	
367	3-686-906-01	SPRING, TENSION	
368	3-686-904-01	SPRING, TENSION	
369	X-3711-993-1	BRAKE ASSY, REW	
370	3-716-933-01	SPACER, REW BRAKE	
371	3-699-650-01	SPRING, TENSION	
372	*3-686-580-01	ARM, SET UP	
373	*3-686-656-01	SLIDER, B RELEASE	
374	3-686-905-02	SPRING, TENSION	
375	3-686-603-04	SPRING	
376	*3-686-644-01	ARM, BAND	
377	3-686-528-01	SCREW (2X6), +	
378	*3-686-642-01	PLATE, ADJUSTMENT, BAND	
379	*3-716-934-01	DISK, EJECT	
380	*3-686-643-01	ARM, MODE	
381	*X-3686-530-1	ARM (A) ASSY, SELECTION	
382	3-686-996-01	BRAKE (S), HARD	
383	A-7090-661-A	MOTOR BLOCK ASSY, LS (LINEAR SKATE) M905	
384	*3-716-915-01	FRAME, MD	
385	*3-716-922-01	BRACKET, REEL MOTOR	
386	A-7040-134-A	MOTOR ASSY, REEL M901	
387	*3-716-894-01	RETAINER, ROTOR	

5-9. HARDWARE LIST

SCREW

7-621-255-15 SCREW +PTT 2X3 (S)
7-621-255-20 SCREW +P 2X4
7-621-255-45 SCREW +BVTP 2X6 (S)
7-621-255-50 SCREW +P 2X8
7-621-772-20 SCREW +B 2X5

7-627-553-48 SCREW, PRECISION +P 2X4
7-628-253-00 SCREW +PS 2X4
7-628-254-00 SCREW +PS 2.6X5
7-682-549-09 SCREW +B 3X10
7-685-101-11 SCREW +P 2X3 NON-SLIT TYPE 2

7-685-102-19 SCREW +P 2X4 NON-SLIT TYPE 2
7-685-645-79 SCREW +BVTP 3X6 TYPE2 IT-3
7-685-645-79 SCREW +BVTP 3X6 TYPE2
7-685-646-79 SCREW +BVTP 3X8 TYPE2 IT-3
7-685-646-79 SCREW +BVTP 3X8 TYPE2

STOP RING

7-624-101-01 STOP RING 1.2 (E TYPE)
7-624-102-04 STOP RING 1.5, TYPE -E
7-624-105-04 STOP RING 2.3, TYPE -E
7-624-106-04 STOP RING 3.0, TYPE -E
7-624-190-71 STOP RING 5, TYPE-CS

DRUM***

SCREW

7-621-255-15 SCREW +P 2X3
7-621-255-25 SCREW +P 2X4
7-621-734-09 SET-SCT, HEX, 2.6X3

WASHER

7-623-420-07 LW 2, TYPE B

EV-S650PS

SECTION 6
ELECTRICAL PARTS LIST

PW-30 | RS-17

NOTE:

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

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.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X, mean standardized parts, so they may have some difference from the original one.
- SEMIDONDUCTORS
  In each case, U: μ, for example:
  UA. . .: μA. . ., UPA. . .: μPA. . .,
  UPB. . .: μPB. . ., UPC. . .: μPC. . .,
  UPD. . .: μPD. . .
- CAPACITORS
  MF: μF, PF: μμF
- COILS
  MMH: mH, UH: μH

Ref.No	Part No.	Description				Remark
	*A-7060-909-A	PW-30 BOARD, COMPLETE **********				
	*3-662-205-00	HOLDER (E), LED				
	*3-716-919-01	HOLDER, LEVEL INDICATION TUBE				
		CAPACITOR				
C201	1-163-023-00	CERAMIC CHIP	0.015MF	10%	50V	
C302	1-124-257-00	ELECT	2.2MF	20%	35V	
C303	1-163-021-00	CERAMIC CHIP	0.01MF		50V	
C402	1-124-257-00	ELECT	2.2MF	20%	35V	
C403	1-163-021-00	CERAMIC CHIP	0.01MF		50V	
		COMPOSITION CIRCUIT BLOCK				
CP201	1-232-957-11	COMPOSITION CIRCUIT BLOCK				
CP202	1-232-967-11	COMPOSITION CIRCUIT BLOCK				
		DIODE				
D101	8-719-812-33	DIODE TLG123A				
D102	8-719-118-29	DIODE 1SS220				
D103	8-719-105-32	DIODE RD2.7M-B2				
D104	8-719-907-29	DIODE EQA11-09A				
D105	8-719-907-29	DIODE EQA11-09A				
		IC				
IC101	8-741-138-70	IC BX-1387				
IC201	8-759-745-64	IC NJM4560M				
IC202	8-759-933-54	IC BA6800AF				
		JACK				
J201	1-507-792-21	JACK				
		INDICATOR TUBE				
ND201	1-519-406-11	INDICATOR TUBE, FLUORESCENT				
		TRANSISTOR				
Q211	8-729-100-76	TRANSISTOR 2SA812				
Q212	8-729-100-76	TRANSISTOR 2SA812				
Q213	8-729-100-76	TRANSISTOR 2SA812				
		RESISTOR				
R101	1-216-041-00	METAL CHIP	470	5%	1/10W	
R103	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R211	1-216-083-00	METAL CHIP	27K	5%	1/10W	
R213	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R214	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R215	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R216	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R217	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R218	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R241	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R301	1-216-017-00	METAL CHIP	47	5%	1/10W	
R302	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R303	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R304	1-216-021-00	METAL CHIP	68	5%	1/10W	
R311	1-216-109-00	METAL CHIP	330K	5%	1/10W	
R313	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R314	1-216-295-00	METAL CHIP	0	5%	1/10W	
R315	1-216-295-00	METAL CHIP	0	5%	1/10W	
R401	1-216-017-00	METAL CHIP	47	5%	1/10W	
R402	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R403	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R404	1-216-021-00	METAL CHIP	68	5%	1/10W	
R411	1-216-109-00	METAL CHIP	330K	5%	1/10W	
R413	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R414	1-216-295-00	METAL CHIP	0	5%	1/10W	
R415	1-216-295-00	METAL CHIP	0	5%	1/10W	
		VARIABLE RESISTOR				
RV201	1-228-988-00	RES, VAR, CARBON 10K/10K				
RV301	1-237-589-11	RES, VAR, SLIDE 10K/10K				
		SWITCH				
S101	1-554-174-00	SWITCH, KEY BOARD				

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	*A-7060-411-A	RS-17 BOARD, COMPLETE **********				
	3-712-410-01	HOLDER, RS				
		CAPACITOR				
C001	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C002	1-124-465-00	ELECT	0.47MF	20%	50V	
C003	1-123-608-00	ELECT	0.22MF	20%	50V	
C004	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C005	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V	
C006	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V	
		CONNECTOR				
CN002	*1-564-003-00	PIN, CONNECTOR 4P				
CN003	*1-564-003-00	PIN, CONNECTOR 4P				
CN004	*1-564-001-11	PIN, CONNECTOR 2P				
CN005	*1-564-001-11	PIN, CONNECTOR 2P				
CN006	*1-564-001-11	PIN, CONNECTOR 2P				
		IC				
IC001	8-759-107-68	IC CX20115A				
IC002	8-759-100-93	IC UPC393G2				
		DIODE				
PH001	8-719-939-11	GP2S09-B				
PH002	8-719-939-11	GP2S09-B				
PH003	8-719-939-11	GP2S09-B				

Ref.No	Part No.	Description				Remark
		TRANSISTOR				
Q001	8-729-901-01	TRANSISTOR DTC144EK				
Q002	8-729-901-01	TRANSISTOR DTC144EK				
Q003	8-729-901-01	TRANSISTOR DTC144EK				
Q004	8-729-903-97	TRANSISTOR FMS1FE				
Q005	8-729-903-82	TRANSISTOR FMW2				
		RESISTOR				
R001	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R002	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R003	1-216-031-00	METAL CHIP	180	5%	1/10W	
R004	1-216-174-00	METAL CHIP	100	5%	1/8W	
R005	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R006	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R007	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R008	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R009	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R010	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R011	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R012	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R013	1-216-107-00	METAL CHIP	270K	5%	1/10W	
R014	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R015	1-216-107-00	METAL CHIP	270K	5%	1/10W	
R016	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R017	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R018	1-216-107-00	METAL CHIP	270K	5%	1/10W	
R019	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R020	1-216-107-00	METAL CHIP	270K	5%	1/10W	
		THERMISTOR				
THP001	1-806-886-11	THERMISTOR (POSITIVE)				

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*A-7060-908-A RP-36 BOARD, COMPLETE
****

		CAPACITOR			
C101	1-135-095-00	TANTAL. CHIP	1.5MF	20%	10V
C102	1-135-095-00	TANTAL. CHIP	1.5MF	20%	10V
C103	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C104	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C105	1-124-638-11	ELECT	22MF	20%	6.3V
C106	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C107	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C108	1-124-638-11	ELECT	22MF	20%	6.3V
C109	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C110	1-163-035-00	CERAMIC CHIP	0.047MF	10%	25V
C111	1-163-033-00	CERAMIC CHIP	0.022MF		50V
C112	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C113	1-163-818-00	CERAMIC CHIP	0.1MF	10%	50V
C114	1-163-818-00	CERAMIC CHIP	0.1MF	10%	50V
C115	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C116	1-163-035-00	CERAMIC CHIP	0.047MF	10%	25V
C117	1-163-033-00	CERAMIC CHIP	0.022MF		50V
C118	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C119	1-163-818-00	CERAMIC CHIP	0.1MF	10%	50V
C120	1-163-818-00	CERAMIC CHIP	0.1MF	10%	50V
C121	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C122	1-163-107-00	CERAMIC CHIP	39PF	5%	50V
C123	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C124	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C125	1-124-638-11	ELECT	22MF	20%	6.3V
C126	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C127	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C128	1-123-611-00	ELECT	1MF	20%	50V
C129	1-124-638-11	ELECT	22MF	20%	6.3V
C130	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C131	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C132	1-123-611-00	ELECT	1MF	20%	50V
C133	1-163-107-00	CERAMIC CHIP	39PF	5%	50V
C134	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C136	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V
C137	1-163-033-00	CERAMIC CHIP	0.022MF	10%	25V
C138	1-163-033-00	CERAMIC CHIP	0.022MF	10%	25V
C139	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C140	1-123-617-00	ELECT	10MF	20%	16V
C201	1-135-095-00	TANTAL. CHIP	1.5MF	20%	10V
C202	1-135-095-00	TANTAL. CHIP	1.5MF	20%	10V
C203	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C204	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C205	1-124-638-11	ELECT	22MF	20%	6.3V
C206	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C207	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C208	1-124-638-11	ELECT	22MF	20%	6.3V
C209	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C210	1-163-035-00	CERAMIC CHIP	0.047MF	10%	25V
C211	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C212	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C213	1-163-818-00	CERAMIC CHIP	0.1MF	10%	50V
C214	1-163-818-00	CERAMIC CHIP	0.1MF	10%	50V
C215	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C216	1-163-035-00	CERAMIC CHIP	0.047MF	10%	25V
C217	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C218	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C219	1-163-818-00	CERAMIC CHIP	0.1MF	10%	50V
C220	1-163-818-00	CERAMIC CHIP	0.1MF	10%	50V
C221	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C222	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C223	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C224	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C225	1-124-638-11	ELECT	22MF	20%	6.3V
C226	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C227	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C228	1-123-611-00	ELECT	1MF	20%	50V
C229	1-124-638-11	ELECT	22MF	20%	6.3V

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

RP-36

Ref.No	Part No.	Description		Remark
C230	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C231	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C232	1-123-611-00	ELECT 1MF	20%	50V
C233	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C237	1-163-033-00	CERAMIC CHIP 0.022MF	10%	25V
C238	1-163-033-00	CERAMIC CHIP 0.022MF	10%	25V
C239	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C240	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C241	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C301	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C302	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C303	1-124-462-00	ELECT 10MF	20%	16V
C304	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C305	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C306	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C307	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C308	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C309	1-123-617-00	ELECT 10MF	20%	16V
C401	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C402	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C403	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C404	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C405	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C406	1-163-121-00	CERAMIC CHIP 150PF	5%	50V
C407	1-163-117-00	CERAMIC CHIP 100PF	5%	50V

CONNECTOR

CN001	1-562-629-11	SOCKET, CONNECTOR (19P)
CN002	*1-564-001-11	PIN, CONNECTOR 2P
CN003	*1-564-005-00	PIN, CONNECTOR 6P
CN004	*1-564-004-00	PIN, CONNECTOR 5P
CN005	*1-564-007-00	PIN, CONNECTOR 8P
CN006	*1-564-002-00	PIN, CONNECTOR 3P
CN007	*1-564-002-00	PIN, CONNECTOR 3P
CN008	*1-564-017-00	PIN, CONNECTOR 7P

DIODE

D101	8-719-100-03	DIODE 1S2835

IC

IC001	8-752-003-40	IC CX20034
IC002	8-752-003-40	IC CX20034

COIL

L101	1-408-791-00	INDUCTOR CHIP 150UH
L103	1-407-189-XX	MICRO INDUCTOR 15UH
L104	1-407-189-XX	MICRO INDUCTOR 15UH
L105	1-408-970-21	MICRO INDUCTOR 10UH
L106	1-407-161-XX	MICRO INDUCTOR 22UH
L107	1-408-794-00	INDUCTOR CHIP 270UH
L108	1-408-794-00	INDUCTOR CHIP 270UH
L201	1-408-791-00	INDUCTOR CHIP 150UH
L203	1-407-158-XX	MICRO INDUCTOR 12UH
L204	1-407-158-XX	MICRO INDUCTOR 12UH
L205	1-408-970-21	MICRO INDUCTOR 10UH
L206	1-407-161-XX	MICRO INDUCTOR 22UH
L207	1-408-794-00	INDUCTOR CHIP 270UH
L208	1-408-794-00	INDUCTOR CHIP 270UH
L302	1-407-163-XX	MICRO INDUCTOR 33UH
L401	1-408-948-00	MICRO INDUCTOR 220UH
L402	1-408-970-21	MICRO INDUCTOR 10UH

TRANSISTOR

Q101	8-729-202-38	TRANSISTOR 2SC3326N
Q102	8-729-202-38	TRANSISTOR 2SC3326N
Q103	8-729-901-05	TRANSISTOR DTA124EK
Q104	8-729-312-22	TRANSISTOR 2SA1122
Q105	8-729-901-01	TRANSISTOR DTC144EK
Q201	8-729-202-38	TRANSISTOR 2SC3326N
Q202	8-729-202-38	TRANSISTOR 2SC3326N
Q203	8-729-901-05	TRANSISTOR DTA124EK
Q301	8-729-100-67	TRANSISTOR 2SC1623-L7
Q302	8-729-901-01	TRANSISTOR DTC144EK
Q303	8-729-901-01	TRANSISTOR DTC144EK
Q304	8-729-100-67	TRANSISTOR 2SC1623-L7
Q307	8-729-100-67	TRANSISTOR 2SC1623-L7
Q308	8-729-100-67	TRANSISTOR 2SC1623-L7
Q402	8-729-100-76	TRANSISTOR 2SA812
Q403	8-729-117-54	TRANSISTOR 2SA1175
Q404	8-729-312-22	TRANSISTOR 2SA1122

RESISTOR

R001	1-247-293-00	CARBON	27	5%	1/4W
R101	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R102	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R103	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R104	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R105	1-216-081-00	METAL CHIP	22K	5%	1/10W
R106	1-216-083-00	METAL CHIP	27K	5%	1/10W
R107	1-216-082-00	METAL CHIP	24K	5%	1/10W
R108	1-216-082-00	METAL CHIP	24K	5%	1/10W
R109	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R110	1-216-089-00	METAL CHIP	47K	5%	1/10W
R111	1-216-081-00	METAL CHIP	22K	5%	1/10W
R112	1-216-083-00	METAL CHIP	27K	5%	1/10W
R113	1-216-082-00	METAL CHIP	24K	5%	1/10W
R114	1-216-082-00	METAL CHIP	24K	5%	1/10W
R115	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R116	1-216-089-00	METAL CHIP	47K	5%	1/10W
R117	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R118	1-216-035-00	METAL CHIP	270	5%	1/10W
R119	1-216-025-00	METAL CHIP	100	5%	1/10W
R120	1-216-025-00	METAL CHIP	100	5%	1/10W
R121	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R122	1-216-683-11	METAL CHIP	22K	0.50%	1/16W
R123	1-216-684-11	METAL CHIP	24K	0.50%	1/16W

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

Ref.No	Part No.	Description				Remark
R126	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R127	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R128	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R129	1-216-023-00	METAL CHIP	82	5%	1/10W	
R130	1-216-023-00	METAL CHIP	82	5%	1/10W	
R131	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R134	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R135	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R201	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R202	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R203	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R204	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R205	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R206	1-216-083-00	METAL CHIP	27K	5%	1/10W	
R207	1-216-082-00	METAL CHIP	24K	5%	1/10W	
R208	1-216-082-00	METAL CHIP	24K	5%	1/10W	
R209	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R210	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R211	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R212	1-216-083-00	METAL CHIP	27K	5%	1/10W	
R213	1-216-082-00	METAL CHIP	24K	5%	1/10W	
R214	1-216-082-00	METAL CHIP	24K	5%	1/10W	
R215	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R216	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R217	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R218	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R219	1-216-025-00	METAL CHIP	100	5%	1/10W	
R220	1-216-025-00	METAL CHIP	100	5%	1/10W	
R221	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R224	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R225	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R229	1-216-023-00	METAL CHIP	82	5%	1/10W	
R230	1-216-023-00	METAL CHIP	82	5%	1/10W	
R231	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R232	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R233	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R234	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R235	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R301	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R302	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R303	1-216-045-00	METAL CHIP	680	5%	1/10W	
R304	1-216-091-00	METAL CHIP	56K	5%	1/10W	
R305	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R306	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R307	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R308	1-216-039-00	METAL CHIP	390	5%	1/10W	
R309	1-216-047-00	METAL CHIP	820	5%	1/10W	
R310	1-216-035-00	METAL CHIP	270	5%	1/10W	
R311	1-216-041-00	METAL CHIP	470	5%	1/10W	
R401	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R402	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R403	1-216-029-00	METAL CHIP	150	5%	1/10W	
R404	1-216-033-00	METAL CHIP	220	5%	1/10W	
R405	1-216-017-00	METAL CHIP	47	5%	1/10W	
R406	1-216-005-00	METAL CHIP	15	5%	1/10W	
R407	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R408	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R421	1-216-295-00	METAL CHIP	0	5%	1/10W	
R423	1-216-295-00	METAL CHIP	0	5%	1/10W	

VARIABLE RESISTOR

RV101	1-228-920-00	RES, ADJ, CARBON 2.2K				
RV102	1-228-920-00	RES, ADJ, CARBON 2.2K				
RV201	1-228-920-00	RES, ADJ, CARBON 2.2K				
RV202	1-228-920-00	RES, ADJ, CARBON 2.2K				

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*A-7060-844-A SP-2 BOARD, COMPLETE
****
(Including the RB-2 and KM-1 board)

CAPACITOR

C001	1-123-875-11	ELECT	10MF	20%	50V
C002	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C003	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C004	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C020	1-123-875-11	ELECT	10MF	20%	50V
C021	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C022	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C023	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C024	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C025	1-123-875-11	ELECT	10MF	20%	50V
C030	1-123-875-11	ELECT	10MF	20%	50V
C031	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C032	1-163-093-00	CERAMIC CHIP	10PF	5%	50V
C033	1-163-093-00	CERAMIC CHIP	10PF	5%	50V
C050	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C051	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C080	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C081	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C082	1-131-345-00	TANTALUM	0.47MF	10%	35V
C083	1-124-261-00	ELECT	10MF	20%	50V
C084	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C085	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C201	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V
C202	1-124-908-11	ELECT	22MF	20%	25V
C203	1-163-035-00	CERAMIC CHIP	0.047MF	10%	25V
C204	1-124-463-00	ELECT	0.1MF	20%	50V
C205	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C206	1-124-283-00	ELECT	4.7MF	20%	16V
C207	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C208	1-124-258-00	ELECT	3.3MF	20%	50V
C209	1-124-247-00	ELECT	10MF	20%	25V
C210	1-124-247-00	ELECT	10MF	20%	25V
C211	1-124-247-00	ELECT	10MF	20%	25V
C212	1-124-247-00	ELECT	10MF	20%	25V

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

SP-2

Ref.No	Part No.	Description			Remark
C212	1-124-247-00	ELECT	10MF	20%	25V
C213	1-124-255-00	ELECT	1MF	20%	50V
C214	1-124-499-00	ELECT	1MF	20%	50V
C215	1-124-499-00	ELECT	1MF	20%	50V
C216	1-124-229-00	ELECT	33MF	20%	10V
C217	1-124-229-00	ELECT	33MF	20%	10V
C218	1-124-229-00	ELECT	33MF	20%	10V
C219	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C220	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C221	1-123-875-11	ELECT	10MF	20%	50V
C222	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C223	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C224	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C224	1-123-875-11	ELECT	10MF	20%	50V
C225	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C226	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C228	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C229	1-123-875-11	ELECT	10MF	20%	50V
C230	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V
C231	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V
C232	1-163-209-11	CERAMIC CHIP	0.0015MF	5%	50V
C233	1-163-209-11	CERAMIC CHIP	0.0015MF	5%	50V
C234	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C235	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C236	1-163-019-00	CERAMIC CHIP	0.0068MF	10%	50V
C237	1-124-284-00	ELECT	10MF	20%	16V
C238	1-124-499-11	ELECT	1MF	20%	50V
C239	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C240	1-163-033-00	CERAMIC CHIP	0.022MF	10%	25V
C241	1-163-033-00	CERAMIC CHIP	0.022MF	10%	25V
C242	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V
C243	1-124-277-11	ELECT	4.7MF	20%	35V
C244	1-123-875-11	ELECT	10MF	20%	50V
C245	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C246	1-163-035-00	CERAMIC CHIP	0.047MF	10%	25V
C247	1-124-767-00	ELECT	2.2MF	20%	50V
C248	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C249	1-124-499-11	ELECT	1MF	20%	50V
C250	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V
C251	1-163-035-00	CERAMIC CHIP	0.047MF	10%	25V
C261	1-163-035-00	CERAMIC CHIP	0.047MF	10%	25V
C262	1-163-035-00	CERAMIC CHIP	0.047MF	10%	25V
C264	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C470	1-124-177-00	ELECT	0.15MF	20%	50V
C471	1-163-034-00	CERAMIC CHIP	0.033MF	10%	25V
C472	1-163-077-00	CERAMIC CHIP	0.1MF	10%	25V
C473	1-163-034-00	CERAMIC CHIP	0.033MF	10%	25V
C485	1-130-495-00	MYLAR	0.1MF	5%	50V
C490	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C491	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C492	1-163-075-00	CERAMIC CHIP	0.047MF	10%	25V
C493	1-163-075-00	CERAMIC CHIP	0.047MF	10%	25V
C500	1-163-035-00	CERAMIC CHIP	0.047MF		50V

Ref.No	Part No.	Description			Remark
C501	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C502	1-163-131-00	CERAMIC CHIP	390PF	10%	50V
C600	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C601	1-163-035-00	CERAMIC CHIP	0.047MF	10%	25V
C602	1-124-462-00	ELECT	10MF	20%	16V
C603	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C604	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C605	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C606	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C607	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C608	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C609	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C610	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C611	1-124-462-00	ELECT	1UMF	20%	16V
C612	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C613	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V
C614	1-124-462-00	ELECT	10MF	20%	16V
C615	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C616	1-124-465-00	ELECT	0.47MF	20%	50V
C617	1-124-258-00	ELECT	3.3MF	20%	50V
C618	1-124-239-00	ELECT	6.8MF	20%	10V
C619	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C620	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C621	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C624	1-163-085-00	CERAMIC CHIP	2PF	0.25PF	50V
C627	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C628	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C629	1-124-462-00	ELECT	10MF	20%	16V
C630	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C632	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C633	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C634	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C635	1-124-462-00	ELECT	10MF	20%	16V
C636	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C637	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C638	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C639	1-124-462-00	ELECT	10MF	20%	16V
C645	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C646	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C647	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C648	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C649	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C650	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C651	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C652	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C653	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C654	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C701	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C702	1-163-035-00	CERAMIC CHIP	0.047MF	10%	25V
C703	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V
C704	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C705	1-163-033-00	CERAMIC CHIP	0.022MF	10%	25V
C706	1-163-033-00	CERAMIC CHIP	0.022MF	10%	25V

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

Ref.No	Part No.	Description			Remark
C707	1-124-908-11	ELECT	22MF	20%	25V
C708	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V
C709	1-163-035-00	CERAMIC CHIP	0.047MF	10%	25V
C712	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C713	1-163-123-00	CERAMIC CHIP	180PF	5%	50V
C714	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C715	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C716	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C717	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C718	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C719	1-124-925-00	ELECT	2.2MF	20%	50V
C720	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C721	1-163-145-00	CERAMIC CHIP	0.0015MF	5%	50V
C722	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C723	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C724	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V
C725	1-163-111-00	CERAMIC CHIP	56PF	5%	50V
C726	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C727	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C728	1-124-925-00	ELECT	2.2MF	20%	50V
C729	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C730	1-163-123-00	CERAMIC CHIP	180PF	5%	50V
C731	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C732	1-163-131-91	CERAMIC CHIP	390PF	5%	50V
C733	1-163-111-00	CERAMIC CHIP	56PF	5%	50V
C734	1-163-134-00	CERAMIC CHIP	510PF	5%	50V
C735	1-163-035-00	CERAMIC CHIP	0.047MF	10%	25V
C736	1-163-021-00	CERAMIC CHIP	0.01MF	10%	50V
C740	1-124-925-00	ELECT	2.2MF	20%	50V

CONNECTOR

CN001	*1-564-006-11	PIN, CONNECTOR 7P
CN002	*1-564-004-00	PIN, CONNECTOR 5P
CN003	*1-564-002-00	PIN, CONNECTOR 3P
CN004	*1-564-001-11	PIN, CONNECTOR 2P
CN005	*1-564-004-00	PIN, CONNECTOR 5P
CN006	*1-564-002-00	PIN, CONNECTOR 3P
CN007	*1-564-004-00	PIN, CONNECTOR 5P
CN008	*1-564-001-11	PIN, CONNECTOR 2P
CN009	*1-564-006-11	PIN, CONNECTOR 7P
CN010	*1-564-001-11	PIN, CONNECTOR 2P
CN011	*1-564-004-00	PIN, CONNECTOR 5P
CN012	*1-564-017-00	PIN, CONNECTOR 7P
CN013	*1-564-002-00	PIN, CONNECTOR 3P
CN014	*1-564-003-00	PIN, CONNECTOR 4P
CN015	*1-564-001-11	PIN, CONNECTOR 2P
CN016	*1-564-001-11	PIN, CONNECTOR 2P
CN017	*1-564-001-11	PIN, CONNECTOR 2P
CN018	*1-564-002-00	PIN, CONNECTOR 3P
CN019	*1-564-001-11	PIN, CONNECTOR 2P
CN020	*1-564-005-00	PIN, CONNECTOR 6P
CN021	*1-564-004-00	PIN, CONNECTOR 5P
CN022	*1-564-001-11	PIN, CONNECTOR 2P

Ref.No	Part No.	Description	Remark
CN207	*1-564-001-11	PIN, CONNECTOR 2P	
CN212	*1-564-010-11	PIN, CONNECTOR 11P	
CN213	*1-564-014-00	PIN, CONNECTOR 4P	
CN214	*1-564-005-00	PIN, CONNECTOR 6P	
CN215	*1-564-005-00	PIN, CONNECTOR 6P	
CN216	*1-564-006-11	PIN, CONNECTOR 7P	
CN217	*1-564-002-00	PIN, CONNECTOR 3P	
CN601	*1-564-006-11	PIN, CONNECTOR 7P	
CN603	*1-564-015-00	PIN, CONNECTOR 5P	
CN605	*1-564-007-00	PIN, CONNECTOR 8P	
CN606	*1-564-001-11	PIN, CONNECTOR 2P	
CN607	*1-564-002-00	PIN, CONNECTOR 3P	

DIODE

D020	8-719-101-23	DIODE 1SS123
D021	8-719-101-23	DIODE 1SS123
D060	8-719-911-19	DIODE 1SS119
D082	8-719-100-05	DIODE 1S2837
D099	8-719-911-19	DIODE 1SS119
D203	8-719-200-27	DIODE E10DS2
D205	8-719-801-48	DIODE 1SS193
D206	8-719-100-03	DIODE 1S2835
D208	8-719-100-03	DIODE 1S2835
D209	8-719-100-05	DIODE 1S2837
D211	8-719-101-23	DIODE 1SS123
D212	8-719-100-03	DIODE 1S2835
D213	8-719-100-03	DIODE 1S2835
D214	8-719-100-03	DIODE 1S2835
D215	8-719-101-23	DIODE 1SS123
D216	8-719-101-23	DIODE 1SS123
D217	8-719-801-48	DIODE 1SS193
D218	8-719-100-05	DIODE 1S2837
D220	8-719-200-27	DIODE E10DS2
D221	8-719-200-27	DIODE E10DS2
D222	8-719-200-27	DIODE E10DS2
D223	8-719-100-05	DIODE 1S2837
D226	8-719-100-03	DIODE 1S2835
D227	8-719-801-48	DIODE 1SS193
D230	8-719-105-82	DIODE RD5.1M
D232	8-719-101-23	DIODE 1SS123
D233	8-719-801-48	DIODE 1SS193
D390	8-719-100-05	DIODE 1S2837
D391	8-719-100-03	DIODE 1S2835
D392	8-719-801-48	DIODE 1SS193
D393	8-719-100-05	DIODE 1S2837
D470	8-719-911-19	DIODE 1SS119
D480	8-719-801-54	DIODE 1SS190
D485	8-719-911-19	DIODE 1SS119
D501	8-719-118-29	DIODE 1SS220
D502	8-719-100-05	DIODE 1S2837
D600	8-719-108-24	DIODE 1SS223
D601	8-719-100-05	DIODE 1S2837
D603	8-719-100-03	DIODE 1S2835
D604	8-719-100-05	DIODE 1S2837

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

SP-2

Ref.No	Part No.	Description	Remark
D701	8-719-100-05	DIODE 1S2837	
D702	8-719-100-03	DIODE 1S2835	
		FILTER	
FL701	1-235-829-11	BPF (15KHz)	
FL702	1-235-830-11	BPF (45KHz)	
		IC	
IC001	8-752-800-76	IC CXP5048H-069Q	
IC002	8-752-800-91	IC CXP5048H-070Q	
IC003	8-759-112-01	IC UPD75104G-519-1B	
IC004	8-759-202-45	IC TC4066BF	
IC005	8-759-201-61	IC TC40H004F	
IC007	8-759-801-60	IC LB1640N	
IC008	8-759-913-67	IC MB3763P	
IC009	8-759-908-81	IC MB3763PF	
IC010	8-759-920-94	IC MSM6411B-19RS	
IC011	8-759-200-68	IC TC4011BF	
IC201	8-759-803-47	IC LA5005M	
IC202	8-759-100-94	IC UPC358G2	
IC204	8-759-929-55	IC MB64H428PF	
IC205	8-759-932-07	IC MB674101PF	
IC206	8-759-701-43	IC NJM3414D	
IC207	8-759-202-45	IC CX20114	
IC208	8-759-802-79	IC LB1616M	
IC209	8-759-100-94	IC UPC358G2	
IC210	8-752-003-50	IC CX20035	
IC211	8-759-925-66	IC BA6303F	
IC212	8-759-701-39	IC NJM3403AM	
IC213	8-759-202-45	IC TC4066BF	
IC215	8-759-100-94	IC UPC358G2	
IC216	8-759-200-81	IC TC4053BF	
IC220	8-759-200-90	IC TC4538BF	
IC500	8-759-141-04	IC UPD75106G-529-1B	
IC501	8-759-200-81	IC TC4053BF	
IC502	8-759-200-78	IC TC4030BF	
IC600	8-752-010-20	IC CX20102	
IC601	8-752-321-97	IC CXD1066Q	
IC602	8-759-911-18	IC CX23011	
IC603	8-759-927-98	IC MB8464-15LPF	
IC604	8-759-911-19	IC CX23012	
IC605	8-752-010-30	IC CX20103	
IC606	8-759-915-30	IC CX23078	
IC701	8-759-928-56	IC CXA1042M	
IC703	8-759-193-24	IC UPC324G2	
		JACK	
J101	1-507-678-00	JACK	
		JUMPER REED	
JR001	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR002	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR003	1-216-295-00	METAL CHIP 0 5% 1/10W	
		IC LINK	
PS003⚠	1-532-685-00	LINK, IC (ICP-N20)	
PS004⚠	1-532-637-00	LINK, IC (ICP-N25)	
PS201⚠	1-532-685-00	LINK, IC (ICP-N20)	
		TRANSISTOR	
Q010	8-729-901-01	TRANSISTOR DTC144EK	
Q011	8-729-901-01	TRANSISTOR DTC144EK	
Q012	8-729-901-01	TRANSISTOR DTC144EK	
Q013	8-729-901-01	TRANSISTOR DTC144EK	
Q014	8-729-901-01	TRANSISTOR DTC144EK	
Q015	8-729-901-06	TRANSISTOR DTA144EK	
Q020	8-729-901-05	TRANSISTOR DTA124EK	
Q021	8-729-901-01	TRANSISTOR DTC144EK	
Q022	8-729-901-05	TRANSISTOR DTA124EK	
Q023	8-729-199-92	TRANSISTOR 2SD999	
Q054	8-729-901-01	TRANSISTOR DTC144EK	
Q055	8-729-901-01	TRANSISTOR DTC144EK	
Q060	8-729-901-06	TRANSISTOR DTA144EK	
Q085	8-729-901-01	TRANSISTOR DTC144EK	
Q086	8-729-100-76	TRANSISTOR 2SA812	
Q090	8-729-901-01	TRANSISTOR DTC144EK	
Q091	8-729-901-01	TRANSISTOR DTC144EK	
Q098	8-729-900-89	TRANSISTOR DTC144ES	
Q099	8-729-900-61	TRANSISTOR DTA144ES	
Q120	8-729-901-01	TRANSISTOR DTC144EK	
Q121	8-729-901-01	TRANSISTOR DTC144EK	
Q122	8-729-901-01	TRANSISTOR DTC144EK	
Q123	8-729-901-01	TRANSISTOR DTC144EK	
Q201	8-729-901-04	TRANSISTOR DTA114EK	
Q202	8-729-900-53	TRANSISTOR DTC114EK	
Q203	8-729-201-78	TRANSISTOR 2SD1406	
Q204	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q205	8-729-100-66	TRANSISTOR 2SC1623	
Q206	8-729-804-67	TRANSISTOR 2SB1133-R	
Q207	8-729-901-06	TRANSISTOR DTA144EK	
Q208	8-729-100-76	TRANSISTOR 2SA812	
Q209	8-729-201-78	TRANSISTOR 2SD1406	
Q210	8-729-901-01	TRANSISTOR DTC144EK	
Q211	8-729-901-01	TRANSISTOR DTC144EK	
Q212	8-729-105-29	TRANSISTOR 2SA1385	
Q213	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q214	8-729-901-01	TRANSISTOR DTC144EK	
Q215	8-729-901-01	TRANSISTOR DTC144EK	
Q216	8-729-901-01	TRANSISTOR DTC144EK	
Q217	8-729-901-01	TRANSISTOR DTC144EK	
Q218	8-729-113-33	TRANSISTOR 2SB733-4	
Q219	8-729-113-33	TRANSISTOR 2SB733-4	
Q220	8-729-100-76	TRANSISTOR 2SA812	
Q221	8-729-100-76	TRANSISTOR 2SA812	
Q222	8-729-177-33	TRANSISTOR 2SD773-4	

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

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

Ref.No	Part No.	Description	Remark
Q223	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q224	8-729-177-33	TRANSISTOR 2SD773-4	
Q225	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q226	8-729-901-01	TRANSISTOR DTC144EK	
Q227	8-729-901-06	TRANSISTOR DTA144EK	
Q228	8-729-901-01	TRANSISTOR DTC144EK	
Q229	8-729-901-06	TRANSISTOR DTA144EK	
Q230	8-729-901-01	TRANSISTOR DTC144EK	
Q232	8-729-901-06	TRANSISTOR DTA144EK	
Q233	8-729-901-01	TRANSISTOR DTC144EK	
Q235	8-729-901-01	TRANSISTOR DTC144EK	
Q237	8-729-901-06	TRANSISTOR DTA144EK	
Q238	8-729-901-01	TRANSISTOR DTC144EK	
Q240	8-729-901-01	TRANSISTOR DTC144EK	
Q242	8-729-901-01	TRANSISTOR DTC144EK	
Q245	8-729-901-06	TRANSISTOR DTA144EK	
Q246	8-729-901-01	TRANSISTOR DTC144EK	
Q248	8-729-901-01	TRANSISTOR DTC144EK	
Q249	8-729-901-06	TRANSISTOR DTA144EK	
Q250	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q251	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q252	8-729-100-76	TRANSISTOR 2SA812	
Q253	8-729-100-76	TRANSISTOR 2SA812	
Q254	8-729-901-01	TRANSISTOR DTC144EK	
Q256	8-729-901-01	TRANSISTOR DTC144EK	
Q260	8-729-199-92	TRANSISTOR 2SD999	
Q261	8-729-199-92	TRANSISTOR 2SD999	
Q262	8-729-199-92	TRANSISTOR 2SD999	
Q263	8-729-901-06	TRANSISTOR DTA144EK	
Q264	8-729-901-04	TRANSISTOR DTA114EK	
Q280	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q281	8-729-901-01	TRANSISTOR DTC144EK	
Q282	8-729-901-01	TRANSISTOR DTC144EK	
Q390	8-729-901-01	TRANSISTOR DTC144EK	
Q401	8-729-901-01	TRANSISTOR DTC144EK	
Q470	8-729-100-76	TRANSISTOR 2SA812	
Q471	8-729-901-01	TRANSISTOR DTC144EK	
Q472	8-729-901-01	TRANSISTOR DTC144EK	
Q480	8-729-900-89	TRANSISTOR DTC144ES	
Q481	8-729-900-89	TRANSISTOR DTC144ES	
Q482	8-729-900-89	TRANSISTOR DTC144ES	
Q485	8-729-900-61	TRANSISTOR DTA144ES	
Q500	8-729-901-01	TRANSISTOR DTC144EK	
Q501	8-729-901-01	TRANSISTOR DTC144EK	
Q502	8-729-901-01	TRANSISTOR DTC144EK	
Q601	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q602	8-729-901-01	TRANSISTOR DTC144EK	
Q604	8-729-901-06	TRANSISTOR DTA144EK	
Q605	8-729-901-01	TRANSISTOR DTC144EK	
Q606	8-729-901-01	TRANSISTOR DTC144EK	
Q701	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q702	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q703	8-729-901-01	TRANSISTOR DTC144EK	
Q704	8-729-100-76	TRANSISTOR 2SA812	
Q705	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q706	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q707	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q708	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q709	8-729-100-76	TRANSISTOR 2SA812	
Q710	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q711	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q712	8-729-901-01	TRANSISTOR DTC144EK	
Q713	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q714	8-729-901-01	TRANSISTOR DTC144EK	
Q715	8-729-100-76	TRANSISTOR 2SA812	
Q716	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q717	8-729-901-01	TRANSISTOR DTC144EK	
Q790	8-729-900-65	TRANSISTOR DTA144ES	

RESISTOR

Ref.No	Part No.	Description			Remark
R001	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R002	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R003	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R004	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R005	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R006	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R007	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R008	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R010	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R011	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R012	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R013	1-216-081-00	METAL CHIP	22K	5% 1/10W	
R014	1-216-061-00	METAL CHIP	3.3K	5% 1/10W	
R015	1-216-081-00	METAL CHIP	22K	5% 1/10W	
R016	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R018	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R019	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R020	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R021	1-216-295-00	METAL CHIP	0	5% 1/10W	
R022	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R023	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R024	1-216-041-00	METAL CHIP	470	5% 1/10W	
R025	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R026	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R027	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R028	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R029	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R030	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R031	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R032	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R033	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R034	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R039	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R040	1-216-295-00	METAL CHIP	0	5% 1/10W	
R041	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R042	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R050	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R051	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R052	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R058	1-216-073-00	METAL CHIP	10K	5% 1/10W	

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

SP-2

Ref.No	Part No.	Description				Remark
R080	1-216-001-00	METAL CHIP	10	5%	1/10W	
R084	1-216-041-00	METAL CHIP	470	5%	1/10W	
R086	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R087	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R088	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R089	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R090	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R097	1-216-113-00	METAL CHIP	470K	5%	1/10W	
R098	1-216-113-00	METAL CHIP	470K	5%	1/10W	
R099	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R100	1-216-001-00	METAL CHIP	10	5%	1/10W	
R151	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R152	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R153	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R154	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R155	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R156	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R157	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R158	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R160	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R161	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R162	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R163	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R170	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R171	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R200	1-249-220-00	CARBON	1.2	5%	1/4W	
R202	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R203	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R204	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R205	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R206	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R207	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R208	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R209	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R210	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R211	1-216-295-00	METAL CHIP	0	5%	1/10W	
R212	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R214	1-216-105-00	METAL CHIP	220K	5%	1/10W	
R215	1-216-113-00	METAL CHIP	470K	5%	1/10W	
R216	1-216-663-11	METAL CHIP	3.3K	0.50%	1/16W	
R217	1-216-669-11	METAL CHIP	5.6K	0.50%	1/16W	
R218	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R219	1-216-113-00	METAL CHIP	470K	5%	1/10W	
R220	1-216-025-00	METAL CHIP	100	5%	1/10W	
R221	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R222	1-216-295-00	METAL CHIP	0	5%	1/10W	
R223	1-216-025-00	METAL CHIP	100	5%	1/10W	
R224	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R225	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R226	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R227	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R228	1-216-033-00	METAL CHIP	220	5%	1/10W	
R229	1-216-081-00	METAL CHIP	22K	5%	1/10W	

Ref.No	Part No.	Description				Remark
R230	1-216-101-00	METAL CHIP	150K	5%	1/10W	
R231	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R232	1-216-304-11	METAL CHIP	3.3	5%	1/10W	
R233	1-216-304-11	METAL CHIP	3.3	5%	1/10W	
R234	1-216-304-11	METAL CHIP	3.3	5%	1/10W	
R235	1-216-295-00	METAL CHIP	0	5%	1/10W	
R236	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R237	1-216-068-00	METAL CHIP	6.2K	5%	1/10W	
R238	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R240	1-216-683-11	METAL CHIP	22K	0.50%	1/10W	
R241	1-216-667-11	METAL CHIP	4.7K	0.50%	1/10W	
R242	1-216-683-11	METAL CHIP	22K	0.50%	1/10W	
R244	1-216-681-11	METAL CHIP	18K	0.50%	1/10W	
R245	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R246	1-216-681-11	METAL CHIP	18K	0.50%	1/10W	
R247	1-216-080-00	METAL CHIP	20K	5%	1/10W	
R248	1-216-080-00	METAL CHIP	20K	5%	1/10W	
R249	1-216-080-00	METAL CHIP	20K	5%	1/10W	
R250	1-216-080-00	METAL CHIP	20K	5%	1/10W	
R251	1-216-080-00	METAL CHIP	20K	5%	1/10W	
R252	1-216-080-00	METAL CHIP	20K	5%	1/10W	
R253	1-216-080-00	METAL CHIP	20K	5%	1/10W	
R254	1-216-080-00	METAL CHIP	20K	5%	1/10W	
R255	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R256	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R257	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R258	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R259	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R260	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R261	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R262	1-216-080-00	METAL CHIP	20K	5%	1/10W	
R263	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R264	1-216-033-00	METAL CHIP	220	5%	1/10W	
R265	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R266	1-216-150-00	METAL CHIP	10	5%	1/8W	
R267	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R268	1-216-150-00	METAL CHIP	10	5%	1/8W	
R269	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R270	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R271	1-216-025-00	METAL CHIP	100	5%	1/10W	
R272	1-216-041-00	METAL CHIP	470	5%	1/10W	
R273	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R274	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R275	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R276	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R277	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R278	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R279	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R280	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R281	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R282	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R283	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R284	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	

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

Ref.No	Part No.	Description				Remark
R285	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R286	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R287	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R288	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R290	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R291	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R294	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R295	1-216-103-00	METAL CHIP	180K	5%	1/10W	
R296	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R297	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R298	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R299	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R300	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R301	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R303	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R305	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R306	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R307	1-216-043-00	METAL CHIP	560	5%	1/10W	
R308	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R309	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R310	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R311	1-216-113-00	METAL CHIP	470K	5%	1/10W	
R312	1-216-115-00	METAL CHIP	560K	5%	1/10W	
R313	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R314	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R315	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R316	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R317	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R318	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R319	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R320	1-216-685-11	METAL CHIP	27K	0.50%	1/16W	
R321	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R322	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R323	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R324	1-216-099-00	METAL CHIP	120K	5%	1/10W	
R326	1-216-109-00	METAL CHIP	330K	5%	1/10W	
R327	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R328	1-216-091-00	METAL CHIP	56K	5%	1/10W	
R329	1-216-117-00	METAL CHIP	680K	5%	1/10W	
R330	1-216-117-00	METAL CHIP	680K	5%	1/10W	
R331	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R332	1-216-115-00	METAL CHIP	560K	5%	1/10W	
R333	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R334	1-216-115-00	METAL CHIP	560K	5%	1/10W	
R336	1-216-083-11	METAL CHIP	27K	5%	1/10W	
R337	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R338	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R339	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R340	1-216-663-11	METAL CHIP	3.3K	0.50%	1/16W	
R341	1-216-667-11	METAL CHIP	4.7K	0.50%	1/16W	
R342	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R343	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R344	1-216-049-00	METAL CHIP	1K	5%	1/10W	

Ref.No	Part No.	Description				Remark
R351	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R352	1-216-685-11	METAL CHIP	27K	0.50%	1/10W	
R353	1-216-663-11	METAL CHIP	3.3K	0.50%	1/10W	
R354	1-216-689-11	METAL CHIP	39K	0.50%	1/10W	
R356	1-216-693-11	METAL CHIP	56K	0.50%	1/10W	
R357	1-216-691-11	METAL CHIP	47K	0.50%	1/10W	
R358	1-216-663-11	METAL CHIP	3.3K	0.50%	1/10W	
R359	1-216-685-11	METAL CHIP	27K	0.50%	1/10W	
R360	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R361	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R362	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R363	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R364	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R365	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R366	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R367	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R370	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R371	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R372	1-216-681-11	METAL CHIP	18K	0.50%	1/10W	
R373	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R376	1-216-107-00	METAL CHIP	270K	5%	1/10W	
R377	1-216-107-00	METAL CHIP	270K	5%	1/10W	
R380	1-216-115-00	METAL CHIP	560K	5%	1/10W	
R381	1-216-115-00	METAL CHIP	560K	5%	1/10W	
R388	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R390	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R391	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R392	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R394	1-216-035-00	METAL CHIP	270	5%	1/10W	
R395	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R396	1-216-693-11	METAL CHIP	56K	0.50%	1/10W	
R398	1-216-111-00	METAL CHIP	390K	5%	1/10W	
R399	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R401	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R408	1-216-115-00	METAL CHIP	560K	5%	1/10W	
R470	1-216-109-00	METAL CHIP	330K	5%	1/10W	
R471	1-216-109-00	METAL CHIP	330K	5%	1/10W	
R472	1-216-109-00	METAL CHIP	330K	5%	1/10W	
R473	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R474	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R475	1-216-103-00	METAL CHIP	180K	5%	1/10W	
R480	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R485	1-216-091-00	METAL CHIP	56K	5%	1/10W	
R502	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R504	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R505	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R506	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R508	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R509	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R510	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R511	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R514	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R515	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R516	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R517	1-216-049-00	METAL CHIP	1K	5%	1/10W	

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

SP-2

Ref.No	Part No.	Description				Remark
R518	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R519	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R530	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R607	1-216-045-00	METAL CHIP	680	5%	1/10W	
R608	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R609	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R610	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R611	1-216-001-00	METAL CHIP	10	5%	1/10W	
R612	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R613	1-216-041-00	METAL CHIP	470	5%	1/10W	
R614	1-216-045-00	METAL CHIP	680	5%	1/10W	
R615	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R616	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R617	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R618	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R619	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R620	1-216-645-11	METAL CHIP	560	0.50%	1/10W	
R621	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R622	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R623	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R624	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R625	1-216-033-00	METAL CHIP	220	5%	1/10W	
R626	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R627	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R628	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R630	1-216-295-00	METAL CHIP	0	5%	1/10W	
R632	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R633	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R634	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R635	1-216-029-00	METAL CHIP	150	5%	1/10W	
R636	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R637	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R638	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R640	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R641	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R650	1-216-041-00	METAL CHIP	470	5%	1/10W	
R652	1-216-109-00	METAL CHIP	330K	5%	1/10W	
R653	1-216-109-00	METAL CHIP	330K	5%	1/10W	
R660	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R661	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R662	1-216-033-00	METAL CHIP	220	5%	1/10W	
R663	1-216-033-00	METAL CHIP	220	5%	1/10W	
R664	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R665	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R699	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R701	1-216-105-00	METAL CHIP	220K	5%	1/10W	
R702	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R703	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R704	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R705	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R706	1-216-117-00	METAL CHIP	680K	5%	1/10W	
R707	1-216-091-00	METAL CHIP	56K	5%	1/10W	
R708	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R709	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R715	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R716	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R717	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R718	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R719	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R720	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R721	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R722	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R723	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R724	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R725	1-216-045-00	METAL CHIP	680	5%	1/10W	
R726	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R727	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R728	1-216-027-00	METAL CHIP	120	5%	1/10W	
R729	1-216-035-00	METAL CHIP	270	5%	1/10W	
R730	1-216-039-00	METAL CHIP	390	5%	1/10W	
R731	1-216-072-00	METAL CHIP	9.1K	5%	1/10W	
R732	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R733	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R734	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R735	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R736	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R737	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R738	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R739	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R740	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R741	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R742	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R743	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R744	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R745	1-216-088-00	METAL CHIP	43K	5%	1/10W	
R746	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R747	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R748	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R749	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R750	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R751	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R752	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R753	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R754	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R755	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R756	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R757	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R758	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R759	1-216-070-00	METAL CHIP	7.5K	5%	1/10W	
R760	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R761	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R762	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R764	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R790	1-249-422-11	CARBON	2.7K	5%	1/4W	

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

Ref.No	Part No.	Description	Remark
		VARIABLE RESISTOR	
RV201	1-228-998-00	RES, ADJ, METAL GLAZE 220K	
RV202	1-228-998-00	RES, ADJ, METAL GLAZE 220K	
RV203	1-228-993-00	RES, ADJ, CARBON 4.7K	
RV204	1-228-993-00	RES, ADJ, CARBON 4.7K	
RV206	1-228-995-00	RES, ADJ, METAL GLAZE 22K	
RV208	1-228-995-00	RES, ADJ, METAL GLAZE 22K	
RV209	1-228-989-00	RES, ADJ, CARBON 470	
RV210	1-228-991-00	RES, ADJ, METAL GLAZE 2.2K	
RV601	1-228-991-00	RES, ADJ, CARBON 2.2K	
RV602	1-228-991-00	RES, ADJ, CARBON 2.2K	
RV603	1-228-997-00	RES, ADJ, CARBON 100K	
RV604	1-228-994-00	RES, ADJ, CARBON 10K	
RV701	1-228-996-00	RES, ADJ, CARBON 47K	
		CRYSTAL	
X001	1-567-346-11	OSCILLATOR, CERAMIC (5MHz)	
X002	1-567-121-00	VIBRATOR, CRYSTAL (4.19MHz)	
X080	1-567-192-11	OSCILLATOR, CERAMIC (4MHz)	
X201	1-567-699-21	VIBRATOR, CRYSTAL (5.94MHz)	
X600	1-567-419-11	VIBRATOR, LITHIUM TANTALATE (11.58MHz)	
**********			
*A-7070-844-A		RB-2 BOARD, COMPLETE **********	
		CAPACITOR	
C450	1-124-584-00	ELECT 100MF 20% 10V	
C451	1-101-004-00	CERAMIC 0.07MF 50V	
		CONNECTOR	
CN450	*1-564-012-00	PIN, CONNECTOR 2P	
		DIODE	
D450	8-719-911-19	DIODE 1SS119	
D451	8-719-911-19	DIODE 1SS119	
D452	8-719-911-19	DIODE 1SS119	
		TRANSISTOR	
Q450	8-729-900-89	TRANSISTOR DTC144ES	
Q451	8-729-900-89	TRANSISTOR DTC144ES	
Q452	8-729-900-65	TRANSISTOR DTA144ES	
Q453	8-729-900-65	TRANSISTOR DTA144ES	
Q454	8-729-900-89	TRANSISTOR DTC144ES	
Q455	8-729-900-74	TRANSISTOR DTC143TS	
Q456	8-729-900-74	TRANSISTOR DTC143TS	
Q457	8-729-900-89	TRANSISTOR DTC144ES	
Q458	8-729-900-65	TRANSISTOR DTA144ES	

Ref.No	Part No.	Description			Remark
		RESISTOR			
R450	1-249-429-11	CARBON	10K	5% 1/4W	
R451	1-249-429-11	CARBON	10K	5% 1/4W	
R452	1-249-440-11	CARBON	82K	5% 1/4W	
R453	1-215-468-00	CARBON	91K	5% 1/4W	
R454	1-249-433-11	CARBON	22K	5% 1/4W	
R455	1-247-887-00	CARBON	220K	5% 1/4W	
R456	1-249-429-11	CARBON	10K	5% 1/4W	
R457	1-249-417-11	CARBON	1K	5% 1/4W	
**********					
*1-623-747-11		KM-1 BOARD **********			
		DIODE			
D490	8-719-911-19	DIODE 1SS119			
D491	8-719-911-19	DIODE 1SS119			
D492	8-719-911-19	DIODE 1SS119			
D493	8-719-911-19	DIODE 1SS119			
		TRANSISTOR			
Q490	8-729-900-89	TRANSISTOR DTC144ES			
**********					
*A-7060-841-A		AU-22 BOARD, COMPLETE ********** (Including the MK-2, AF-20(IC501), NR-6(IC601) and AD-12(IC701) board)			
	1-563-533-11	CONNECTOR, BOARD TO BOARD 15P			
		FILTER			
BPF801	1-235-517-21	FILTER, BAND PASS (230KHz)			
BPF802	1-235-517-21	FILTER, BAND PASS (230KHz)			
		CAPACITOR			
C101	1-163-075-00	CERAMIC CHIP 0.047MF		50V	
C201	1-163-205-00	CERAMIC CHIP 0.001MF		50V	
C203	1-163-205-00	CERAMIC CHIP 0.001MF	5%	50V	
C210	1-163-075-00	CERAMIC CHIP 0.047MF		50V	
C211	1-124-443-00	ELECT 100MF	20%	10V	
C212	1-163-075-00	CERAMIC CHIP 0.047MF		50V	
C213	1-124-443-00	ELECT 100MF	20%	10V	
C214	1-163-075-00	CERAMIC CHIP 0.047MF		50V	
C215	1-124-443-00	ELECT 100MF	20%	10V	
C216	1-163-075-00	CERAMIC CHIP 0.047MF		50V	
C217	1-124-443-00	ELECT 100MF	20%	10V	
C218	1-124-443-11	ELECT 100MF	20%	10V	
C219	1-124-443-11	ELECT 100MF	20%	10V	
C220	1-124-443-00	ELECT 100MF	20%	10V	
C224	1-163-075-00	CERAMIC CHIP 0.047MF		50V	
C225	1-163-075-00	CERAMIC CHIP 0.047MF		50V	

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

AU-22

Ref.No	Part No.	Description			Remark
C226	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C227	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C305	1-124-903-00	ELECT	1MF	20%	50V
C306	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C308	1-130-495-00	MYLAR	0.1MF	5%	50V
C309	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C310	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C311	1-130-472-00	MYLAR	0.0012MF	5%	50V
C312	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C313	1-130-474-00	MYLAR	0.0018MF	5%	50V
C314	1-130-489-00	MYLAR	0.033MF	5%	50V
C321	1-124-261-00	ELECT	10MF	20%	50V
C331	1-163-035-00	CERAMIC CHIP	0.047MF	10%	25V
C332	1-163-035-00	CERAMIC CHIP	0.047MF	10%	25V
C405	1-124-903-00	ELECT	1MF	20%	50V
C406	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C408	1-130-495-00	MYLAR	0.1MF	5%	50V
C409	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C410	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C411	1-130-472-00	MYLAR	0.0012MF	5%	50V
C412	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C413	1-130-474-00	MYLAR	0.0018MF	5%	50V
C414	1-130-489-00	MYLAR	0.033MF	5%	50V
C421	1-124-216-00	ELECT	10MF	20%	50V
C431	1-163-035-00	CERAMIC CHIP	0.047MF	10%	25V
C432	1-163-035-00	CERAMIC CHIP	0.047MF	10%	25V
C502	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C507	1-124-903-00	ELECT	1MF	20%	50V
C801	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C802	1-163-073-00	CERAMIC CHIP	0.022MF		50V
C805	1-124-903-00	ELECT	1MF	20%	50V
C806	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C821	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C822	1-163-073-00	CERAMIC CHIP	0.022MF		50V
C825	1-124-255-91	ELECT	1MF		50V
C826	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C840	1-124-892-11	ELECT	47MF	20%	10V
C841	1-163-073-00	CERAMIC CHIP	0.022MF		50V

CONNECTOR

CN201	*1-564-003-00	PIN, CONNECTOR	4P
CN202	*1-564-003-00	PIN, CONNECTOR	4P
CN204	*1-564-005-00	PIN, CONNECTOR	6P
CN205	*1-564-003-00	PIN, CONNECTOR	4P
CN207	*1-564-001-11	PIN, CONNECTOR	2P
CN208	*1-564-004-00	PIN, CONNECTOR	5P
CN501	*1-564-004-00	PIN, CONNECTOR	5P
CN801	*1-564-002-00	PIN, CONNECTOR	3P
CN901	*1-564-001-11	PIN, CONNECTOR	2P

JACK

CNJ251	1-507-500-41	JACK, PIN	2P
CNJ253	1-507-500-41	JACK, PIN	2P

Ref.No	Part No.	Description	Remark

DIODE

D201	8-719-110-47	DIODE RD18ESB
D203	8-719-110-47	DIODE RD18ESB
D701	8-719-109-58	DIODE RD2.7ES-B

FILTER

FL301	1-235-565-21	FILTER, LOW PASS (15KHz)
FL401	1-235-565-21	FILTER, LOW PASS (15KHz)
FL501	1-235-484-11	FILTER, BAND PASS (1.5MHz)

IC

IC101	8-759-937-21	IC CXD1078M
IC201	8-759-240-52	IC TC4052BP
IC203	8-759-145-58	IC UPC4558C
IC301	8-759-700-40	IC NJM4560S
IC302	8-759-240-51	IC TC4051BP
IC303	8-759-700-40	IC NJM4560S
IC304	8-759-700-40	IC NJM4560S
IC401	8-759-700-40	IC NJM4560S
IC402	8-759-240-51	IC TC4051BP
IC403	8-759-700-40	IC NJM4560S
IC404	8-759-700-40	IC NJM4560S
IC501	A-7068-021-A	AF-20 BOARD, COMPLETE
IC503	8-759-240-53	IC TC4053BP
IC601	*A-7068-022-A	AD-12 BOARD, COMPLETE
IC602	8-729-240-53	IC TC4053BP
IC701	*A-7068-025-A	NR-6 BOARD, COMPLETE

TRANSISTOR

Q201	8-729-901-06	TRANSISTOR DTA144EK
Q203	8-729-100-67	TRANSISTOR 2SC1623-L7
Q204	8-729-901-01	TRANSISTOR DTC144EK
Q208	8-729-113-32	TRANSISTOR 2SB733
Q209	8-729-100-67	TRANSISTOR 2SC1623-L7
Q210	8-729-100-67	TRANSISTOR 2SC1623-L7
Q211	8-729-100-76	TRANSISTOR 2SA812
Q212	8-729-100-76	TRANSISTOR 2SA812
Q213	8-729-177-32	TRANSISTOR 2SD773
Q301	8-729-109-42	TRANSISTOR 2SK94-X2
Q302	8-729-100-67	TRANSISTOR 2SC1623-L7
Q401	8-729-109-42	TRANSISTOR 2SK94-X2
Q402	8-729-100-67	TRANSISTOR 2SC1623-L7
Q502	8-729-901-01	TRANSISTOR DTC144EK
Q801	8-729-100-67	TRANSISTOR 2SC1623-L7
Q802	8-729-100-76	TRANSISTOR 2SA812
Q803	8-729-100-67	TRANSISTOR 2SC1623-L7
Q821	8-729-100-67	TRANSISTOR 2SC1623-L7
Q822	8-729-100-76	TRANSISTOR 2SA812
Q823	8-729-100-67	TRANSISTOR 2SC1623-L7

RESISTOR

R001	1-216-295-00	METAL CHIP	0	5%	1/10W

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

Ref.No	Part No.	Description				Remark
R002	1-216-295-00	METAL CHIP	0	5%	1/10W	
R003	1-216-295-00	METAL CHIP	0	5%	1/10W	
R004	1-216-295-00	METAL CHIP	0	5%	1/10W	
R005	1-216-295-00	METAL CHIP	0	5%	1/10W	
R006	1-216-295-00	METAL CHIP	0	5%	1/10W	
R007	1-216-295-00	METAL CHIP	0	5%	1/10W	
R008	1-216-295-00	METAL CHIP	0	5%	1/10W	
R009	1-216-295-00	METAL CHIP	0	5%	1/10W	
R010	1-216-295-00	METAL CHIP	0	5%	1/10W	
R011	1-216-295-00	METAL CHIP	0	5%	1/10W	
R012	1-216-295-00	METAL CHIP	0	5%	1/10W	
R013	1-216-295-00	METAL CHIP	0	5%	1/10W	
R014	1-216-295-00	METAL CHIP	0	5%	1/10W	
R015	1-216-295-00	METAL CHIP	0	5%	1/10W	
R016	1-216-295-00	METAL CHIP	0	5%	1/10W	
R017	1-216-295-00	METAL CHIP	0	5%	1/10W	
R018	1-216-295-00	METAL CHIP	0	5%	1/10W	
R019	1-216-295-00	METAL CHIP	0	5%	1/10W	
R020	1-216-295-00	METAL CHIP	0	5%	1/10W	
R026	1-216-295-00	METAL CHIP	0	5%	1/10W	
R027	1-216-295-00	METAL CHIP	0	5%	1/10W	
R028	1-216-295-00	METAL CHIP	0	5%	1/10W	
R029	1-216-295-00	METAL CHIP	0	5%	1/10W	
R030	1-216-295-00	METAL CHIP	0	5%	1/10W	
R031	1-216-295-00	METAL CHIP	0	5%	1/10W	
R032	1-216-295-00	METAL CHIP	0	5%	1/10W	
R033	1-216-295-00	METAL CHIP	0	5%	1/10W	
R034	1-216-295-00	METAL CHIP	0	5%	1/10W	
R035	1-216-295-00	METAL CHIP	0	5%	1/10W	
R036	1-216-295-00	METAL CHIP	0	5%	1/10W	
R037	1-216-295-00	METAL CHIP	0	5%	1/10W	
R038	1-216-295-00	METAL CHIP	0	5%	1/10W	
R039	1-216-295-00	METAL CHIP	0	5%	1/10W	
R040	1-216-295-00	METAL CHIP	0	5%	1/10W	
R041	1-216-295-00	METAL CHIP	0	5%	1/10W	
R042	1-216-295-00	METAL CHIP	0	5%	1/10W	
R043	1-216-295-00	METAL CHIP	0	5%	1/10W	
R044	1-216-295-00	METAL CHIP	0	5%	1/10W	
R045	1-216-295-00	METAL CHIP	0	5%	1/10W	
R046	1-216-295-00	METAL CHIP	0	5%	1/10W	
R047	1-216-295-00	METAL CHIP	0	5%	1/10W	
R053	1-216-295-00	METAL CHIP	0	5%	1/10W	
R054	1-216-295-00	METAL CHIP	0	5%	1/10W	
R055	1-216-296-00	METAL CHIP	0	5%	1/8W	
R056	1-216-296-00	METAL CHIP	0	5%	1/8W	
R057	1-216-296-00	METAL CHIP	0	5%	1/8W	
R058	1-216-296-00	METAL CHIP	0	5%	1/8W	
R059	1-216-296-00	METAL CHIP	0	5%	1/8W	
R060	1-216-296-00	METAL CHIP	0	5%	1/8W	
R061	1-216-296-00	METAL CHIP	0	5%	1/8W	
R062	1-216-296-00	METAL CHIP	0	5%	1/8W	
R063	1-216-296-00	METAL CHIP	0	5%	1/8W	
R064	1-216-296-00	METAL CHIP	0	5%	1/8W	
R065	1-216-296-00	METAL CHIP	0	5%	1/8W	
R066	1-216-296-00	METAL CHIP	0	5%	1/8W	
R067	1-216-296-00	METAL CHIP	0	5%	1/8W	
R068	1-216-296-00	METAL CHIP	0	5%	1/8W	
R069	1-216-296-00	METAL CHIP	0	5%	1/8W	
R070	1-216-296-00	METAL CHIP	0	5%	1/8W	
R072	1-216-296-00	METAL CHIP	0	5%	1/8W	
R073	1-216-296-00	METAL CHIP	0	5%	1/8W	
R074	1-216-296-00	METAL CHIP	0	5%	1/8W	
R075	1-216-296-00	METAL CHIP	0	5%	1/8W	
R076	1-216-296-00	METAL CHIP	0	5%	1/8W	
R077	1-216-296-00	METAL CHIP	0	5%	1/8W	
R078	1-216-296-00	METAL CHIP	0	5%	1/8W	
R079	1-216-296-00	METAL CHIP	0	5%	1/8W	
R080	1-216-296-00	METAL CHIP	0	5%	1/8W	
R081	1-216-296-00	METAL CHIP	0	5%	1/8W	
R082	1-216-296-00	METAL CHIP	0	5%	1/8W	
R083	1-216-296-00	METAL CHIP	0	5%	1/8W	
R084	1-216-296-00	METAL CHIP	0	5%	1/8W	
R085	1-216-296-00	METAL CHIP	0	5%	1/8W	
R086	1-216-296-00	METAL CHIP	0	5%	1/8W	
R087	1-216-296-00	METAL CHIP	0	5%	1/8W	
R088	1-216-296-00	METAL CHIP	0	5%	1/8W	
R089	1-216-296-00	METAL CHIP	0	5%	1/8W	
R090	1-216-296-00	METAL CHIP	0	5%	1/8W	
R091	1-216-296-00	METAL CHIP	0	5%	1/8W	
R092	1-216-296-00	METAL CHIP	0	5%	1/8W	
R102	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R104	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R107	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R110	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R202	1-249-393-11	CARBON	10	5%	1/4W	
R203	1-216-295-00	METAL CHIP	0	5%	1/10W	
R205	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R206	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R207	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R210	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R211	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R216	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R217	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R218	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R220	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R221	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R230	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R233	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R236	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R237	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R238	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R240	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R241	1-216-074-00	METAL CHIP	11K	5%	1/10W	
R242	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R244	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R305	1-216-295-00	METAL CHIP	0	5%	1/10W	

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

AU-22 | AF-20

Ref.No	Part No.	Description				Remark
R307	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R309	1-216-093-00	METAL CHIP	68K	5%	1/10W	
R310	1-216-099-00	METAL CHIP	120K	5%	1/10W	
R314	1-247-837-00	CARBON	1.8K	5%	1/4W	
R315	1-247-841-00	CARBON	2.7K	5%	1/4W	
R317	1-215-477-00	CARBON	220K	5%	1/4W	
R319	1-249-433-11	CARBON	22K	5%	1/4W	
R320	1-215-473-00	CARBON	150K	5%	1/4W	
R321	1-216-001-00	METAL CHIP	10	5%	1/10W	
R322	1-216-101-00	METAL CHIP	150K	5%	1/10W	
R327	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R330	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R331	1-216-025-00	METAL CHIP	100	5%	1/10W	
R332	1-216-095-00	METAL CHIP	82K	5%	1/10W	
R333	1-247-854-00	CARBON	9.1K	5%	1/4W	
R335	1-249-414-11	CARBON	560	5%	1/4W	
R336	1-247-860-00	CARBON	16K	5%	1/4W	
R337	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R338	1-249-423-11	CARBON	3.3K	5%	1/4W	
R339	1-249-423-11	CARBON	3.3K	5%	1/4W	
R340	1-247-844-00	CARBON	3.6K	5%	1/4W	
R345	1-249-427-11	CARBON	6.8K	5%	1/4W	
R346	1-216-025-00	METAL CHIP	100	5%	1/10W	
R347	1-216-087-00	METAL CHIP	39K	5%	1/10W	
R349	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R350	1-249-425-11	CARBON	4.7K	5%	1/4W	
R351	1-249-423-11	CARBON	3.3K	5%	1/4W	
R360	1-215-418-00	CARBON	750	5%	1/4W	
R362	1-247-858-00	CARBON	13K	5%	1/4W	
R363	1-247-861-00	CARBON	18K	5%	1/4W	
R370	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R407	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R409	1-216-093-00	METAL CHIP	68K	5%	1/10W	
R410	1-216-099-00	METAL CHIP	120K	5%	1/10W	
R414	1-249-420-11	CARBON	1.8K	5%	1/4W	
R415	1-247-841-00	CARBON	2.7K	5%	1/4W	
R416	1-216-295-00	METAL CHIP	0	5%	1/10W	
R417	1-215-477-00	CARBON	220K	5%	1/4W	
R419	1-249-433-11	CARBON	22K	5%	1/4W	
R420	1-215-473-00	CARBON	150K	5%	1/4W	
R421	1-216-001-00	METAL CHIP	10	5%	1/10W	
R422	1-216-101-00	METAL CHIP	150K	5%	1/10W	
R427	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R430	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R431	1-216-025-00	METAL CHIP	100	5%	1/10W	
R432	1-216-095-00	METAL CHIP	82K	5%	1/10W	
R433	1-247-854-00	CARBON	9.1K	5%	1/4W	
R435	1-249-414-11	CARBON	560	5%	1/4W	
R436	1-247-860-00	CARBON	16K	5%	1/4W	
R437	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R438	1-249-423-11	CARBON	3.3K	5%	1/4W	
R439	1-249-423-11	CARBON	3.3K	5%	1/4W	
R440	1-247-844-00	CARBON	3.6K	5%	1/4W	
R445	1-249-427-11	CARBON	6.8K	5%	1/4W	
R446	1-216-025-00	METAL CHIP	100	5%	1/10W	
R447	1-247-869-00	CARBON	39K	5%	1/4W	
R449	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R450	1-249-425-11	CARBON	4.7K	5%	1/4W	
R451	1-249-423-11	CARBON	3.3K	5%	1/4W	
R460	1-215-418-00	CARBON	750	5%	1/4W	
R462	1-247-858-00	CARBON	13K	5%	1/4W	
R463	1-247-861-00	CARBON	18K	5%	1/4W	
R470	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R501	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R502	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R503	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R505	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R506	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R562	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R563	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R564	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R565	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R566	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R570	1-216-047-00	METAL CHIP	820	5%	1/10W	
R701	1-216-295-00	METAL CHIP	0	5%	1/10W	
R801	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R802	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R803	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R804	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R805	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R806	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R807	1-216-074-00	METAL CHIP	11K	5%	1/10W	
R808	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R809	1-216-041-00	METAL CHIP	470	5%	1/10W	
R821	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R822	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R823	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R824	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R825	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R826	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R827	1-216-074-00	METAL CHIP	11K	5%	1/10W	
R828	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R829	1-216-041-00	METAL CHIP	470	5%	1/10W	
R902	1-216-066-00	METAL CHIP	5.1K	5%	1/10W	

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*A-7068-021-A AF-20 BOARD, COMPLETE (IC501)
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CAPACITOR

C501	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C502	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C503	1-163-137-00	CERAMIC CHIP	680PF	10%	50V
C504	1-124-465-00	ELECT	0.47MF	20%	50V
C505	1-163-145-00	CERAMIC CHIP	0.0015MF	10%	50V

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

Ref.No	Part No.	Description			Remark
C506	1-163-016-00	CERAMIC CHIP	0.0039MF	10%	50V
C507	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C508	1-163-013-00	CERAMIC CHIP	0.0022MF	10%	50V
C509	1-124-123-00	ELECT	100MF	20%	6.3V
C510	1-163-036-00	CERAMIC CHIP	0.068MF		50V
C511	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C512	1-123-612-00	ELECT	2.2MF	20%	50V
C513	1-123-306-00	ELECT	47MF	20%	6.3V
C514	1-123-369-00	ELECT	4.7MF	20%	25V
C515	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C516	1-123-661-00	ELECT	100MF	20%	6.3V
C517	1-163-088-00	CERAMIC CHIP	5PF	0.25PF	50V
C518	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V
C519	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C520	1-163-079-00	CERAMIC CHIP	0.039MF	10%	25V
C521	1-163-020-00	CERAMIC CHIP	0.0082MF	10%	50V
C522	1-163-137-00	CERAMIC CHIP	680PF	10%	50V
C523	1-124-255-00	ELECT	1MF	20%	50V
C524	1-124-462-00	ELECT	10MF	20%	16V
C525	1-123-617-00	ELECT	10MF	20%	16V
C526	1-124-638-11	ELECT	22MF	20%	6.3V
C527	1-123-661-00	ELECT	100MF	20%	6.3V
C529	1-123-380-00	ELECT	1MF	20%	50V
C530	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C531	1-123-661-00	ELECT	100MF	20%	6.3V
C534	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C535	1-163-013-00	CERAMIC CHIP	0.0022MF	10%	50V
C536	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C539	1-163-088-00	CERAMIC CHIP	5PF	0.25PF	50V

CONNECTOR

CN501	*1-564-318-00	PIN, BOARD TO BOARD 10P
CN502	*1-564-318-00	PIN, BOARD TO BOARD 10P

IC

IC501	8-752-013-71	IC CX20137A

COIL

L501	1-408-948-00	MICRO INDUCTOR 220UH

RESISTOR

R501	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R502	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R503	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R504	1-216-121-00	METAL CHIP	1M	5%	1/10W
R505	1-216-107-00	METAL CHIP	270K	5%	1/10W
R506	1-249-416-11	CARBON	820	5%	1/4W
R507	1-249-416-11	CARBON	820	5%	1/4W
R508	1-216-097-00	METAL CHIP	100K	5%	1/10W
R509	1-216-075-00	METAL CHIP	12K	5%	1/10W
R510	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R511	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R512	1-216-045-00	METAL CHIP	680	5%	1/10W
R513	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R514	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R515	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R516	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R517	1-216-073-00	METAL CHIP	10K	5%	1/10W
R519	1-216-079-00	METAL CHIP	18K	5%	1/10W
R521	1-216-079-00	METAL CHIP	18K	5%	1/10W
R523	1-216-089-00	METAL CHIP	47K	5%	1/10W
R524	1-216-083-00	METAL CHIP	27K	5%	1/10W
R525	1-216-079-00	METAL CHIP	18K	5%	1/10W
R527	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R528	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R530	1-216-049-00	METAL CHIP	1K	5%	1/10W

VARIABLE RESISTOR

RV501	1-228-995-00	RES, ADJ, CARBON 22K
RV503	1-228-994-00	RES, ADJ, CARBON 10K

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*A-7068-912-A AD-12 BOARD, COMPLETE (IC701)
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CAPASITOR

C701	1-123-618-00	ELECT	22MF	20%	6.3V
C703	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C705	1-123-618-00	ELECT	22MF	20%	6.3V
C707	1-123-617-00	ELECT	10MF	20%	16V
C709	1-124-224-00	ELECT	47MF	20%	6.3V
C710	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C713	1-123-661-00	ELECT	100MF	20%	6.3V
C715	1-123-661-00	ELECT	100MF	20%	6.3V
C716	1-123-617-00	ELECT	10MF	20%	16V
C717	1-123-661-00	ELECT	100MF	20%	6.3V
C718	1-103-709-00	CERAMIC	220PF	5%	50V
C719	1-163-021-00	POLYSTYRENE	220PF	5%	50V
C720	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C721	1-124-224-00	ELECT	47MF	20%	6.3V
C722	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C751	1-123-618-00	ELECT	22MF	20%	6.3V
C753	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C755	1-124-638-11	ELECT	22MF	20%	6.3V
C757	1-123-617-00	ELECT	10MF	20%	16V

CONNECTOR

CN701	1-566-139-11	CONNECTOR, BOARD TO BOARD 15P

IC

IC701	8-752-301-00	IC CX23010
IC702	8-759-914-44	IC TL431CLPB

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

AD-12 NR-6

Ref.No	Part No.	Description				Remark
		RESISTOR				
R701	1-216-083-00	METAL CHIP	27K	5%	1/10W	
R703	1-216-087-00	METAL CHIP	39K	5%	1/10W	
R711	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R712	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R713	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R717	1-216-117-00	METAL CHIP	680K	5%	1/10W	
R718	1-216-029-00	METAL CHIP	150	5%	1/10W	
R719	1-216-022-00	METAL CHIP	75	5%	1/10W	
R720	1-216-039-00	METAL CHIP	390	5%	1/10W	
R721	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R722	1-216-653-11	METAL CHIP	1.2K	0.50%	1/10W	
R723	1-216-661-11	METAL CHIP	2.7K	0.50%	1/10W	
R724	1-215-485-00	METAL	470K	1%	1/6W	
R751	1-216-083-00	METAL CHIP	27K	5%	1/10W	
R753	1-216-087-00	METAL CHIP	39K	5%	1/10W	
R761	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R762	1-249-422-11	CARBON	2.7K	5%	1/4W	
R763	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
		VARIABLE RESISTOR				
RV701	1-228-995-00	RES, ADJ, CARBON 22K				
RV703	1-228-991-00	RES, ADJ, CARBON 2.2K				
RV705	1-228-999-00	RES, ADJ, CARBON 470K				
RV751	1-228-995-00	RES, ADJ, CARBON 22K				
RV753	1-228-991-00	RES, ADJ, CARBON 2.2K				

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*A-7068-025-A NR-6 BAORD, COMPLETE (IC601)

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		CAPACITOR			
C601	1-123-661-00	ELECT	100MF	20%	6.3V
C602	1-123-306-00	ELECT	47MF	20%	10V
C603	1-123-661-00	ELECT	100MF	20%	6.3V
C604	1-123-661-00	ELECT	100MF	20%	6.3V
C605	1-130-490-11	MYLAR	0.039MF	5%	50V
C606	1-163-125-00	CERAMIC CHIP	220PF	10%	50V
C607	1-163-088-00	CERAMIC CHIP	5PF	0.25PF	50V
C608	1-130-479-00	MYLAR	0.0047MF	5%	50V
C609	1-163-020-00	CERAMIC CHIP	0.0082MF	10%	50V
C610	1-123-612-00	ELECT	2.2MF	20%	50V
C611	1-163-137-00	CERAMIC CHIP	680PF	10%	50V
C612	1-127-482-11	ELECT(SOLID)	10MF	20%	6.3V
C613	1-127-502-00	ELECT(SOLID)	0.22MF	20%	25V
C614	1-123-330-00	ELECT	22MF	20%	10V
C615	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C616	1-123-661-00	ELECT	100MF	20%	6.3V
C617	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C618	1-123-661-00	ELECT	100MF	20%	6.3V
C651	1-123-661-00	ELECT	100MF	20%	6.3V
C652	1-123-306-00	ELECT	47MF	20%	10V

Ref.No	Part No.	Description				Remark
C653	1-123-661-00	ELECT	100MF	20%	6.3V	
C654	1-123-661-00	ELECT	100MF	20%	6.3V	
C655	1-130-490-11	MYLAR	0.039MF	5%	50V	
C656	1-163-125-00	CERAMIC CHIP	220PF	10%	50V	
C657	1-163-088-00	CERAMIC CHIP	5PF	0.25PF	50V	
C658	1-130-479-00	MYLAR	0.0047MF	5%	50V	
C659	1-163-020-00	CERAMIC CHIP	0.0082MF	10%	50V	
C660	1-123-612-00	ELECT	2.2MF	20%	50V	
C661	1-163-137-00	CERAMIC CHIP	680PF	10%	50V	
C662	1-127-482-11	ELECT(SOLID)	10MF	20%	6.3V	
C663	1-127-502-00	ELECT(SOLID)	0.22MF	20%	25V	
C664	1-123-330-00	ELECT	22MF	20%	10V	
		IC				
IC601	8-752-009-90	IC CX20099				
		RESISTOR				
R600	1-216-025-00	METAL CHIP	100	5%	1/10W	
R601	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R602	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R603	1-216-009-00	METAL CHIP	22	5%	1/10W	
R604	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R605	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R606	1-216-045-00	METAL CHIP	680	5%	1/10W	
R607	1-216-083-00	METAL CHIP	27K	5%	1/10W	
R608	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R609	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R610	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R611	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R612	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R613	1-215-444-00	METAL CHIP	9.1K	5%	1/4W	
R614	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R617	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R650	1-216-025-00	METAL CHIP	100	5%	1/10W	
R651	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R652	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R653	1-216-009-00	METAL CHIP	22	5%	1/10W	
R654	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R655	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R656	1-216-045-00	METAL CHIP	680	5%	1/10W	
R657	1-216-083-00	METAL CHIP	27K	5%	1/10W	
R658	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R659	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R660	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R661	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R662	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R667	1-216-081-00	METAL CHIP	22K	5%	1/10W	
		PIN BOARD				
W601	*1-566-099-11	PIN, BOARD TO BOARD 15P				

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

Ref.No	Part No.	Description			Remark
	*A-7068-914-A	MK-2 BOARD, COMPLETE			
		**********			
		CAPACITOR			
C807	1-130-487-00	MYLAR	0.022MF	5%	50V
C808	1-130-487-00	MYLAR	0.022MF	5%	50V
C809	1-130-467-00	MYLAR	470PF	5%	50V
C810	1-130-471-00	FILM	0.001MF	5%	50V
C827	1-130-487-00	MYLAR	0.022MF	5%	50V
C828	1-130-487-00	MYLAR	0.022MF	5%	50V
C829	1-130-467-00	MYLAR	470PF	5%	50V
C830	1-130-471-00	FILM	0.001MF	5%	50V
C843	1-124-443-00	ELECT	100MF	20%	10V
C851	1-101-004-00	CERAMIC	0.01MF		50V
C852	1-102-116-00	CERAMIC	680PF	10%	50V
		CONNECTOR			
CN803	*1-564-318-00	PIN, BOARD TO BOARD 10P			
		IC			
IC801	8-759-913-62	IC IR3N05			
IC821	8-759-913-62	IC IR3N05			
		TRANSISTOR			
Q851	8-729-178-54	TRANSISTOR 2SC2785			
		RESISTOR			
R801	1-247-793-11	CARBON	27	5%	1/4W
R810	1-249-423-11	CARBON	3.3K	5%	1/4W
R811	1-249-428-11	CARBON	8.2K	5%	1/4W
R812	1-249-436-11	CARBON	39K	5%	1/4W
R830	1-249-423-11	CARBON	3.3K	5%	1/4W
R831	1-249-428-11	CARBON	8.2K	5%	1/4W
R851	1-249-435-11	CARBON	33K	5%	1/4W
R852	1-247-849-00	CARBON	5.6K	5%	1/4W
R853	1-247-875-11	CARBON	68K	5%	1/4W
R855	1-249-435-11	CARBON	33K	5%	1/4W
		VARIABLE RESISTOR			
RV801	1-228-990-00	RES, ADJ, METAL GLAZE 1K			
RV821	1-228-990-00	RES, ADJ, METAL GLAZE 1K			
**********					
	*A-7060-845-A	VI-20 BOARD, COMPLETE			
		**********			
		(Including the CH-44 board(IC010), BS6324(IC011) and BS7443(IC012))			
	*3-703-353-07	SUPPORT, PC BOARD			
		CAPACITOR			
C003	1-124-468-11	ELECT	100MF	20%	6.3V
C004	1-163-117-00	CERAMIC CHIP	100PF	5%	50V

Ref.No	Part No.	Description			Remark
C005	1-123-619-00	ELECT	4.7MF	20%	50V
C007	1-163-093-00	CERAMIC CHIP	10PF	5%	50V
C008	1-124-907-00	ELECT	10MF	20%	50V
C009	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C010	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C011	1-163-118-00	CERAMIC CHIP	110PF	5%	50V
C012	1-163-119-00	CERAMIC CHIP	120PF	5%	50V
C014	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C015	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C016	1-124-247-00	ELECT	10MF	20%	25V
C017	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C026	1-163-123-00	CERAMIC CHIP	180PF	5%	50V
C027	1-163-123-00	CERAMIC CHIP	180PF	5%	50V
C028	1-163-102-00	CERAMIC CHIP	24PF	5%	50V
C029	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C030	1-124-907-00	ELECT	10MF	20%	50V
C032	1-163-103-00	CERAMIC CHIP	27PF	5%	50V
C033	1-163-115-00	CERAMIC CHIP	82PF	5%	50V
C034	1-163-119-00	CERAMIC CHIP	120PF	5%	50V
C035	1-163-103-00	CERAMIC CHIP	27PF	5%	50V
C036	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C037	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C038	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C039	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C040	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C041	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C042	1-124-907-00	ELECT	10MF	20%	50V
C043	1-124-247-00	ELECT	10MF	20%	25V
C044	1-124-907-00	ELECT	10MF	20%	50V
C045	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C046	1-124-903-00	ELECT	1MF	20%	50V
C047	1-124-927-11	ELECT	4.7MF	20%	50V
C048	1-124-442-00	ELECT	330MF	20%	6.3V
C049	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C050	1-124-927-11	ELECT	4.7MF	20%	50V
C051	1-124-908-11	ELECT	22MF	20%	25V
C053	1-163-119-00	CERAMIC CHIP	120PF	5%	50V
C054	1-124-907-00	ELECT	10MF	20%	50V
C055	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C056	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C057	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C058	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C060	1-163-092-00	CERAMIC CHIP	9PF	0.25PF	50V
C061	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C062	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C063	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C064	1-124-464-11	ELECT	0.22MF	20%	50V
C065	1-124-907-00	ELECT	10MF	20%	50V
C066	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C100	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C101	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C102	1-163-093-00	CAREMIC CHIP	10P	5%	50V
C104	1-163-105-00	CERAMIC CHIP	33PF	5%	50V

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

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Ref.No	Part No.	Description			Remark
C105	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C106	1-163-111-00	CERAMIC CHIP	56PF	5%	50V
C107	1-124-908-11	ELECT	22MF	20%	25V
C110	1-163-107-00	CERAMIC CHIP	39PF	5%	50V
C111	1-163-107-00	CERAMIC CHIP	39PF	5%	50V
C112	1-163-111-00	CERAMIC CHIP	56PF	5%	50V
C113	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C114	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C115	1-163-092-00	CERAMIC CHIP	9PF	0.25PF	50V
C116	1-124-908-11	ELECT	22MF	20%	25V
C117	1-163-127-00	CERAMIC CHIP	270PF	5%	50V
C201	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C202	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C203	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C204	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C205	1-163-111-00	CERAMIC CHIP	56PF	5%	50V
C206	1-124-257-00	ELECT	2.2MF	20%	35V
C207	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C208	1-123-619-00	ELECT	4.7MF	20%	50V
C209	1-163-111-00	CERAMIC CHIP	56PF	5%	50V
C210	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C211	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C212	1-124-904-00	ELECT	2.2MF	20%	50V
C213	1-124-907-00	ELECT	10MF	20%	50V
C215	1-124-927-11	ELECT	4.7MF	20%	50V
C216	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C217	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C218	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C219	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C220	1-124-892-11	ELECT	47MF	20%	10V
C221	1-163-115-00	CERAMIC CHIP	82PF	5%	50V
C222	1-163-103-00	CERAMIC CHIP	27PF	5%	50V
C223	1-163-115-00	CERAMIC CHIP	82PF	5%	50V
C224	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C225	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C226	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C227	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C228	1-163-111-00	CERAMIC CHIP	56PF	5%	50V
C229	1-124-462-00	ELECT	10MF	20%	16V
C230	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C236	1-124-462-00	ELECT	10MF	20%	16V
C237	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C238	1-124-468-11	ELECT	100MF	20%	6.3V
C239	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C240	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C241	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C242	1-124-908-11	ELECT	22MF	20%	25V
C243	1-124-908-11	ELECT	22MF	20%	25V
C244	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C250	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C251	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C252	1-124-927-11	ELECT	4.7MF	20%	50V
C253	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C254	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C255	1-124-907-00	ELECT	10MF	20%	50V
C260	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C261	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C262	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C263	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C264	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C265	1-124-927-11	ELECT	4.7MF	20%	50V
C266	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C267	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C268	1-124-462-00	ELECT	10MF	20%	16V
C301	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C302	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C303	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V
C304	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C305	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C306	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C307	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C308	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C309	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C310	1-163-118-00	CERAMIC CHIP	110PF	5%	50V
C311	1-124-907-00	ELECT	10MF	20%	50V
C312	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C313	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V
C314	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C315	1-124-904-00	ELECT	2.2MF	20%	50V
C316	1-163-019-00	CERAMIC CHIP	0.0068MF	10%	50V
C317	1-124-905-11	ELECT	3.3MF	20%	50V
C318	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C319	1-163-093-00	CERAMIC CHIP	10PF	5%	50V
C320	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C321	1-163-145-00	CERAMIC CHIP	0.0015MF	10%	50V
C322	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C323	1-124-907-00	ELECT	10MF	20%	50V
C324	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C325	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C326	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C327	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C328	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C329	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C330	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C331	1-163-111-00	CERAMIC CHIP	56PF	5%	50V
C332	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C414	1-124-907-00	ELECT	10MF	20%	50V
C415	1-163-127-00	CERAMIC CHIP	270PF	5%	50V
C416	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C417	1-130-473-00	MYLAR	0.0015MF	5%	50V
C418	1-124-908-11	ELECT	22MF	20%	25V
C424	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C425	1-124-907-00	ELECT	10MF	20%	50V
C426	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C427	1-163-063-00	CERAMIC CHIP	0.022MF		50V
C428	1-163-075-00	CERAMIC CHIP	0.047MF		50V

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

Ref.No	Part No.	Description			Remark
C429	1-163-063-00	CERAMIC CHIP	0.022MF		50V
C430	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C433	1-124-907-00	ELECT	10MF	20%	50V
C434	1-124-907-00	ELECT	10MF	20%	50V
C437	1-124-907-00	ELECT	10MF	20%	50V
C438	1-124-908-11	ELECT	22MF	20%	25V
C440	1-124-908-11	ELECT	22MF	20%	25V
C445	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C446	1-124-892-11	ELECT	47MF	20%	10V
C451	1-124-443-00	ELECT	100MF	20%	10V
C452	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C455	1-163-115-00	CERAMIC CHIP	82PF	5%	50V
C456	1-124-908-11	ELECT	22MF	20%	25V

CONNECTOR

CN003	*1-564-007-00	PIN, CONNECTOR 8P
CN007	*1-564-006-11	PIN, CONNECTOR 7P
CN009	*1-564-028-00	PIN, CONNECTOR 3P
CN010	*1-560-893-00	PIN, CONNECTOR 5P
CN011	*1-564-001-11	PIN, CONNECTOR 2P
CN012	*1-564-003-00	PIN, CONNECTOR 4P
CN013	*1-564-014-00	PIN, CONNECTOR 4P

JACK

CNJ001	1-561-534-82	SOCKET 21P
CNJ002	1-507-945-21	JACK, PIN 1P
CNJ003	1-507-945-21	JACK, PIN 1P

DIODE

D004	8-719-100-03	DIODE 1S2835
D005	8-719-101-23	DIODE 1SS123-T1
D202	8-719-100-05	DIODE 1S2837-T1
D204	8-719-101-23	DIODE 1SS123
D205	8-719-100-03	DIODE 1S2835
D206	8-719-101-23	DIODE 1SS123
D301	8-719-100-05	DIODE 1S2837
D302	8-719-101-23	DIODE 1SS123
D303	8-719-101-23	DIODE 1SS123
D304	8-719-101-23	DIODE 1SS123
D305	8-719-100-03	DIODE 1S2835
D402	8-719-100-05	DIODE 1S2837
D403	8-719-106-08	DIODE RD6.2M-B2
D412	8-719-106-22	DIODE RD7.5M-B1
D413	8-719-106-22	DIODE RD7.5M-B1
D414	8-719-106-22	DIODE RD7.5M-B1
D415	8-719-106-22	DIODE RD7.5M-B1
D416	8-719-106-22	DIODE RD7.5M-B1
D417	8-719-106-22	DIODE RD7.5M-B1
D418	8-719-106-22	DIODE RD7.5M-B1
D419	8-719-106-22	DIODE RD7.5M-B1
D501	8-719- -	DIODE RD5.1E-B2
D502	8-719-911-19	DIODE 1SS119

Ref.No	Part No.	Description			Remark
		DELAY LINE			
DL001	1-415-282-00	DELAY LINE			
DL002	1-415-386-21	DELAY LINE, 1H (13.3MHZ)			
		IC			
IC001	8-752-013-00	IC CX20130			
IC002	8-752-013-10	IC CX20131			
IC003	8-759-913-64	IC CX23064			
IC004	8-759-927-52	IC BA7036LS			
IC005	8-759-202-68	IC CX20147			
IC007	8-752-006-10	IC CX20061			
IC010	*A-7068-030-A	CH-44 BOARD, COMPLETE			
IC011	1-807-844-11	IC BS6324			
IC012	1-807-846-11	IC BS7443			
		JUMPER RESISTOR			
JR001	1-216-295-00	METAL CHIP	0	5%	1/10W
JR002	1-216-295-00	METAL CHIP	0	5%	1/10W
JR003	1-216-295-00	METAL CHIP	0	5%	1/10W
JR004	1-216-295-00	METAL CHIP	0	5%	1/10W
JR005	1-216-295-00	METAL CHIP	0	5%	1/10W
JR006	1-216-295-00	METAL CHIP	0	5%	1/10W
JR007	1-216-295-00	METAL CHIP	0	5%	1/10W
JR008	1-216-295-00	METAL CHIP	0	5%	1/10W
JR009	1-216-295-00	METAL CHIP	0	5%	1/10W
JR010	1-216-295-00	METAL CHIP	0	5%	1/10W
JR011	1-216-295-00	METAL CHIP	0	5%	1/10W
JR012	1-216-295-00	METAL CHIP	0	5%	1/10W
JR013	1-216-295-00	METAL CHIP	0	5%	1/10W
JR014	1 216-295-00	METAL CHIP	0	5%	1/10W
JR015	1-216-295-00	METAL CHIP	0	5%	1/10W
JR016	1-216-295-00	META CHIP	0	5%	1/10W
JR018	1-216-295-00	METAL CHIP	0	5%	1/10W
JR019	1-216-295-00	METAL CHIP	0	5%	1/10W
JR020	1-216-295-00	METAL CHIP	0	5%	1/10W
JR021	1-216-295-00	METAL CHIP	0	5%	1/10W
JR022	1-216-295-00	METAL CHIP	0	5%	1/10W
JR023	1-216-295-00	METAL CHIP	0	5%	1/10W
JR024	1-216-295-00	METAL CHIP	0	5%	1/10W
JR025	1 216-295-00	METAL CHIP	0	5%	1/10W
JR026	1-216-295-00	METAL CHIP	0	5%	1/10W
JR027	1-216-295-00	METAL CHIP	0	5%	1/10W
JR028	1-216-295-00	METAL CHIP	0	5%	1/10W
JR029	1-216-295-00	METAL CHIP	0	5%	1/10W
JR030	1-216-295-00	METAL CHIP	0	5%	1/10W
JR031	1-216-295-00	METAL CHIP	0	5%	1/10W
JR032	1-216-295-00	METAL CHIP	0	5%	1/10W
JR033	1-216-295-00	METAL CHIP	0	5%	1/10W
JR034	1-216-295-00	METAL CHIP	0	5%	1/10W
JR035	1-216-295-00	METAL CHIP	0	5%	1/10W
JR036	1-216-295-00	METAL CHIP	0	5%	1/10W
JR037	1-216-295-00	METAL CHIP	0	5%	1/10W

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

Ref.No	Part No.	Description				Remark
JR038	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR039	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR040	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR041	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR042	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR043	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR044	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR045	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR046	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR047	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR048	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR049	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR050	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR051	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR052	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR053	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR054	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR055	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR056	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR057	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR058	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR059	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR060	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR061	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR062	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR063	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR064	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR065	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR066	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR067	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR068	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR069	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR070	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR071	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR072	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR073	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR074	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR075	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR076	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR077	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR078	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR079	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR080	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR081	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR082	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR083	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR084	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR085	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR086	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR087	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR088	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR089	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR090	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR091	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR092	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR093	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR094	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR095	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR096	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR097	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR098	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR099	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR100	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR101	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR102	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR103	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR104	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR105	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR106	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR107	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR108	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR109	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR110	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR111	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR112	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR113	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR114	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR115	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR116	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR117	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR118	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR119	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR120	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR121	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR122	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR123	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR124	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR125	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR126	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR127	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR128	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR129	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR130	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR131	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR132	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR133	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR134	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR135	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR136	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR137	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR138	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR139	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR140	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR141	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR142	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR143	1-216-296-00	METAL CHIP	0	5%	1/8W	

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

Ref.No	Part No.	Description				Remark
JR144	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR145	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR146	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR147	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR148	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR149	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR150	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR151	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR152	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR153	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR154	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR155	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR156	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR157	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR158	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR159	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR160	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR161	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR162	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR163	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR164	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR165	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR166	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR167	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR168	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR169	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR170	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR171	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR172	1-216-296-00	METAL CHIP	0	5%	1/8W	
JR173	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR174	1-216-295-00	METAL CHIP	0	5%	1/10W	
JR175	1-216-295-00	METAL CHIP	0	5%	1/10W	
		COIL				
L002	1-408-416-00	MICRO INDUCTOR 30UH				
L003	1-408-421-00	MICRO INDUCTOR 100UH				
L004	1-408-427-00	MICRO INDUCTOR 330UH				
L005	1-408-422-00	MICRO INDUCTOR 120UH				
L009	1-408-418-00	MICRO INDUCTOR 56UH				
L010	1-408-420-00	MICRO INDUCTOR 82UH				
L011	1-408-418-00	MICRO INDUCTOR 56UH				
L012	1-408-423-00	MICRO INDUCTOR 150UH				
L013	1-408-421-00	MICRO INDUCTOR 100UH				
L100	1-408-409-00	MICRO INDUCTOR 10UH				
L101	1-408-428-00	MICRO INDUCTOR 390UH				
L102	1-408-409-00	MICRO INDUCTOR 10UH				
L103	1-408-423-00	MICRO INDUCTOR 150UH				
L105	1-408-408-00	MICRO INDUCTOR 8.2UH				
L106	1-408-414-00	MICRO INDUCTOR 27UH				
L107	1-408-422-00	MICRO INDUCTOR 120UH				
L201	1-408-397-00	MICRO INDUCTOR 1UH				
L202	1-408-397-00	MICRO INDUCTOR 1UH				
L204	1-408-419-00	MICRO INDUCTOR 68UH				

Ref.No	Part No.	Description	Remark
L205	1-408-419-00	MICRO INDUCTOR 68UH	
L206	1-408-417-00	MICRO INDUCTOR 47UH	
L207	1-408-420-00	MICRO INDUCTOR 82UH	
L208	1-408-417-00	MICRO INDUCTOR 47UH	
L209	1-408-413-00	MICRO INDUCTOR 22UH	
L212	1-408-413-00	MICRO INDUCTOR 22UH	
L213	1-408-408-00	MICRO INDUCTOR 8.2UH	
L220	1-408-411-00	MICRO INDUCTOR 15UH	
L221	1-408-427-00	MICRO INDUCTOR 330UH	
L301	1-408-421-00	MICRO INDUCTOR 100UH	
L302	1-408-413-00	MICRO INDUCTOR 22UH	
L303	1-408-425-00	MICRO INDUCTOR 220UH	
L304	1-408-422-00	MICRO INDUCTOR 120UH	
L401	1-410-118-11	MICRO INDUCTOR 0.82MMH	
L402	1-408-424-00	MICRO INDUCTOR 180UH	
L405	1-408-409-00	MICRO INDUCTOR 10UH	
L411	1-408-422-00	MICRO INDUCTOR 120UH	
L412	1-408-421-00	MICRO INDUCTOR 100UH	
		VARIABIE COIL	
LV201	1-408-512-00	COIL (VARIABLE) 10UH	
		IC LINK	
PS001⚠	1-532-679-00	LINK, IC (ICP-N15)	
		TRANSISTOR	
Q002	8-729-901-06	TRANSISTOR DTA144EK	
Q004	8-729-901-06	TRANSISTOR DTC144EK	
Q006	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q009	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q010	8-729-312-22	TRANSISTOR 2SA1122	
Q011	8-729-312-22	TRANSISTOR 2SA1122	
Q013	8-729-901-00	TRANSISTOR DTC124EK	
Q014	8-729-117-54	TRANSISTOR 2SA1175	
Q015	8-729-901-06	TRANSISTOR DTC144EK	
Q018	8-729-312-22	TRANSISTOR 2SA1122	
Q019	8-729-100-76	TRANSISTOR 2SA812	
Q020	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q023	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q024	8-729-100-76	TRANSISTOR 2SA812	
Q025	8-729-901-06	TRANSISTOR DTC144EK	
Q026	8-729-901-06	TRANSISTOR DTA144EK	
Q027	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q100	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q101	8-729-901-06	TRANSISTOR DTC144EK	
Q102	8-729-901-06	TRANSISTOR DTC144EK	
Q103	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q104	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q106	8-729-901-06	TRANSISTOR DTA144EK	
Q107	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q110	8-729-312-22	TRANSISTOR 2SA1122C	
Q113	8-729-100-67	TRANSISTOR 2SC1623-L7	

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

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

Ref.No	Part No.	Description	Remark
Q201	8-729-901-06	TRANSISTOR DTC144EK	
Q202	8-729-901-00	TRANSISTOR DTC124EK	
Q203	8-729-901-00	TRANSISTOR DTC124EK	
Q204	8-729-901-06	TRANSISTOR DTC144EK	
Q205	8-729-901-06	TRANSISTOR DTC144EK	
Q206	8-729-901-06	TRANSISTOR DTC144EK	
Q207	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q208	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q209	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q211	8-729-901-06	TRANSISTOR DTC144EK	
Q215	8-729-312-22	TRANSISTOR 2SA1122	
Q216	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q217	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q218	8-729-312-22	TRANSISTOR 2SA1122	
Q219	8-729-901-04	TRANSISTOR DTA114EK	
Q220	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q221	8-729-312-22	TRANSISTOR 2SA1122	
Q222	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q301	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q302	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q304	8-729-901-00	TRANSISTOR DTC124EK	
Q403	8-729-901-06	TRANSISTOR DTA144EK	
Q404	8-729-901-06	TRANSISTOR DTA144EK	
Q405	8-729-901-06	TRANSISTOR DTC144EK	
Q406	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q407	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q408	8-729-177-33	TRANSISTOR 2SD773-4	
Q409	8-729-901-06	TRANSISTOR DTC144EK	
Q410	8-729-901-06	TRANSISTOR DTA144EK	
Q413	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q420	8-729-312-22	TRANSISTOR 2SA1122	
Q421	8-729-178-54	TRANSISTOR 2SC2785	
Q423	8-729-177-33	TRANSISTOR 2SD773-4	

RESISTOR

Ref.No	Part No.	Description			Remark
R008	1-216-041-00	METAL CHIP	470	5% 1/10W	
R009	1-216-037-00	METAL CHIP	330	5% 1/10W	
R010	1 216-041-00	METAL CHIP	470	5% 1/10W	
R012	1-216-051-00	METAL CHIP	1.2K	5% 1/10W	
R013	1-216-075-00	METAL CHIP	12K	5% 1/10W	
R014	1-216-081-00	METAL CHIP	22K	5% 1/10W	
R016	1-216-057-00	METAL CHIP	2.2K	5% 1/10W	
R017	1-216-055-00	METAL CHIP	1.8K	5% 1/10W	
R018	1-216-059-00	METAL CHIP	2.7K	5% 1/10W	
R019	1-216-057-00	METAL CHIP	2.2K	5% 1/10W	
R020	1-216-039-00	METAL CHIP	390	5% 1/10W	
R021	1-216-043-00	METAL CHIP	560	5% 1/10W	
R022	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R023	1-216-043-00	METAL CHIP	560	5% 1/10W	
R024	1-216-049-00	METAL CHIP	1K	5% 1/10W	
R025	1-216-057-00	METAL CHIP	2.2K	5% 1/10W	
R026	1-216-059-00	METAL CHIP	2.7K	5% 1/10W	
R027	1-216-057-00	METAL CHIP	2.2K	5% 1/10W	
R028	1-216-049-00	METAL CHIP	1K	5% 1/10W	
R029	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R030	1-216-049-00	METAL CHIP	1K	5% 1/10W	
R044	1-216-065-00	METAL CHIP	4.7K	5% 1/10W	
R045	1-216-065-00	METAL CHIP	4.7K	5% 1/10W	
R046	1-216-039-00	METAL CHIP	390	5% 1/10W	
R047	1-216-101-00	METAL CHIP	150K	5% 1/10W	
R048	1-216-099-00	METAL CHIP	120K	5% 1/10W	
R049	1-216-113-00	METAL CHIP	470K	5% 1/10W	
R050	1-216-075-00	METAL CHIP	12K	5% 1/10W	
R051	1-216-081-00	METAL CHIP	22K	5% 1/10W	
R052	1-216-077-00	METAL CHIP	15K	5% 1/10W	
R053	1-216-063-00	METAL CHIP	3.9K	5% 1/10W	
R054	1-216-033-00	METAL CHIP	220	5% 1/10W	
R055	1-216-109-00	METAL CHIP	330K	5% 1/10W	
R056	1-216-049-00	METAL CHIP	1K	5% 1/10W	
R057	1-216-081-00	METAL CHIP	22K	5% 1/10W	
R058	1-216-081-00	METAL CHIP	22K	5% 1/10W	
R059	1-216-089-00	METAL CHIP	47K	5% 1/10W	
R060	1-216-091-00	METAL CHIP	56K	5% 1/10W	
R061	1-216-059-00	METAL CHIP	2.7K	5% 1/10W	
R062	1-216-083-00	METAL CHIP	27K	5% 1/10W	
R063	1-216-093-00	METAL CHIP	68K	5% 1/10W	
R064	1-249-417-11	CARBON	1K	5% 1/4W	
R066	1-216-043-00	METAL CHIP	560	5% 1/10W	
R067	1-216-037-00	METAL CHIP	330	5% 1/10W	
R068	1-216-045-00	METAL CHIP	680	5% 1/10W	
R069	1-216-035-00	METAL CHIP	270	5% 1/10W	
R070	1-216-047-00	METAL CHIP	820	5% 1/10W	
R071	1-216-081-00	METAL CHIP	22K	5% 1/10W	
R072	1-216-081-00	METAL CHIP	22K	5% 1/10W	
R073	1-216-065-00	METAL CHIP	4.7K	5% 1/10W	
R074	1-216-065-00	METAL CHIP	4.7K	5% 1/10W	
R075	1-216-047-00	METAL CHIP	820	5% 1/10W	
R076	1-216-089-00	METAL CHIP	47K	5% 1/10W	
R078	1-216-081-00	METAL CHIP	22K	5% 1/10W	
R079	1-216-041-00	METAL CHIP	470	5% 1/10W	
R080	1-216-051-00	METAL CHIP	1.2K	5% 1/10W	
R081	1-216-081-00	METAL CHIP	22K	5% 1/10W	
R082	1-216-081-00	METAL CHIP	22K	5% 1/10W	
R083	1-216-081-00	METAL CHIP	22K	5% 1/10W	
R084	1-216-081-00	METAL CHIP	22K	5% 1/10W	
R087	1-216-025-00	METAL CHIP	100	5% 1/10W	
R100	1-216-049-00	METAL CHIP	1K	5% 1/10W	
R101	1-216-049-00	METAL CHIP	1K	5% 1/10W	
R102	1-216-039-00	METAL CHIP	390	5% 1/10W	
R103	1-216-057-00	METAL CHIP	2.2K	5% 1/10W	
R109	1-216-091-00	METAL CHIP	56K	5% 1/10W	
R110	1-216-065-00	METAL CHIP	4.7K	5% 1/10W	
R111	1-216-059-00	METAL CHIP	2.7K	5% 1/10W	
R112	1-216-055-00	METAL CHIP	1.8K	5% 1/10W	
R113	1-216-031-00	METAL CHIP	180	5% 1/10W	
R114	1-216-041-00	METAL CHIP	470	5% 1/10W	

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

Ref.No	Part No.	Description				Remark
R115	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R116	1-216-041-00	METAL CHIP	470	5%	1/10W	
R117	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R118	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R119	1-216-019-00	METAL CHIP	56	5%	1/10W	
R120	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R121	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R128	1-216-295-00	METAL CHIP	0	5%	1/10W	
R129	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R131	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R132	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R133	1-216-033-00	METAL CHIP	220	5%	1/10W	
R134	1-216-033-00	METAL CHIP	220	5%	1/10W	
R136	1-216-041-00	METAL CHIP	470	5%	1/10W	
R137	1-216-041-00	METAL CHIP	470	5%	1/10W	
R138	1-216-041-00	METAL CHIP	470	5%	1/10W	
R139	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R140	1-216-041-00	METAL CHIP	470	5%	1/10W	
R141	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R142	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R144	1-216-023-00	METAL CHIP	82	5%	1/10W	
R145	1-216-029-00	METAL CHIP	150	5%	1/10W	
R146	1-216-296-00	METAL CHIP	0	5%	1/8W	
R148	1-216-047-00	METAL CHIP	820	5%	1/10W	
R149	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R201	1-216-009-00	METAL CHIP	22	5%	1/10W	
R202	1-216-025-00	METAL CHIP	100	5%	1/10W	
R203	1-216-027-00	METAL CHIP	120	5%	1/10W	
R204	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R205	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R206	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R207	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R208	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R209	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R210	1-216-117-00	METAL CHIP	680K	5%	1/10W	
R211	1-216-087-00	METAL CHIP	39K	5%	1/10W	
R212	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R213	1-216-025-00	METAL CHIP	100	5%	1/10W	
R214	1-216-039-00	METAL CHIP	390	5%	1/10W	
R215	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R216	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R217	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R218	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R219	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R220	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R221	1-216-045-00	METAL CHIP	680	5%	1/10W	
R222	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R224	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R225	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R226	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R227	1-216-045-00	METAL CHIP	680	5%	1/10W	
R228	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R229	1-216-045-00	METAL CHIP	680	5%	1/10W	

Ref.No	Part No.	Description				Remark
R230	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R231	1-216-045-00	METAL CHIP	680	5%	1/10W	
R232	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R233	1-216-045-00	METAL CHIP	680	5%	1/10W	
R234	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R236	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R237	1-216-041-00	METAL CHIP	470	5%	1/10W	
R238	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R239	1-216-041-00	METAL CHIP	470	5%	1/10W	
R241	1-216-035-00	METAL CHIP	270	5%	1/10W	
R246	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R247	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R248	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R249	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R250	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R251	1-216-039-00	METAL CHIP	390	5%	1/10W	
R252	1-216-027-00	METAL CHIP	120	5%	1/10W	
R253	1-216-035-00	METAL CHIP	270	5%	1/10W	
R254	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R255	1-216-083-00	METAL CHIP	27K	5%	1/10W	
R256	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R257	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R258	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R265	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R266	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R267	1-216-047-00	METAL CHIP	820	5%	1/10W	
R268	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R269	1-216-045-00	METAL CHIP	680	5%	1/10W	
R270	1-216-031-00	METAL CHIP	180	5%	1/10W	
R271	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R272	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R273	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R274	1-216-035-00	METAL CHIP	270	5%	1/10W	
R275	1-216-017-00	METAL CHIP	47	5%	1/10W	
R276	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R277	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R278	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R279	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R280	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R281	1-216-044-00	METAL CHIP	620	5%	1/10W	
R282	1-216-031-00	METAL CHIP	180	5%	1/10W	
R285	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R286	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R287	1-216-035-00	METAL CHIP	270	5%	1/10W	
R288	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R289	1-216-025-00	METAL CHIP	100	5%	1/10W	
R290	1-216-083-00	METAL CHIP	27K	5%	1/10W	
R291	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R292	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R293	1-216-111-00	METAL CHIP	390K	5%	1/10W	
R294	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R297	1-216-295-00	METAL CHIP	0	5%	1/10W	
R298	1-216-073-00	METAL CHIP	10K	5%	1/10W	

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

Ref.No	Part No.	Description				Remark
R299	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R301	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R302	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R303	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R304	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R305	1-216-043-00	METAL CHIP	560	5%	1/10W	
R306	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R307	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R309	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R310	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R311	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R312	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R313	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R317	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R318	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R319	1-216-041-00	METAL CHIP	470	5%	1/10W	
R320	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R321	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R322	1-216-043-00	METAL CHIP	560	5%	1/10W	
R323	1-216-093-00	METAL CHIP	68K	5%	1/10W	
R324	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R325	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R326	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R327	1-216-095-00	METAL CHIP	82K	5%	1/10W	
R328	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R329	1-216-099-00	METAL CHIP	120K	5%	1/10W	
R330	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R331	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R332	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R333	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R334	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R335	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R336	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R337	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R338	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R339	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R340	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R341	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R342	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R343	1-216-039-00	METAL CHIP	390	5%	1/10W	
R344	1-216-115-00	METAL CHIP	560K	5%	1/10W	
R345	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R346	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R407	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R408	1-216-022-00	METAL CHIP	75	5%	1/10W	
R413	1-216-045-00	METAL CHIP	680	5%	1/10W	
R414	1-216-045-00	METAL CHIP	680	5%	1/10W	
R415	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R416	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R417	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R425	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R427	1-216-047-00	METAL CHIP	820	5%	1/10W	
R428	1-216-295-00	METAL CHIP	0	5%	1/10W	

Ref.No	Part No.	Description				Remark
R429	1-216-041-00	METAL CHIP	470	5%	1/10W	
R430	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R431	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R432	1-216-029-00	METAL CHIP	150	5%	1/10W	
R433	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R434	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R435	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R436	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R437	1-216-022-00	METAL CHIP	75	5%	1/10W	
R440	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R441	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R442	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R443	1-216-033-00	METAL CHIP	220	5%	1/10W	
R444	1-216-197-00	METAL CHIP	910	5%	1/8W	
R445	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R446	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R447	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R454	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R456	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R457	1-216-045-00	METAL CHIP	680	5%	1/10W	
R458	1-216-025-00	METAL CHIP	100	5%	1/10W	
R459	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R460	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R470	1-249-408-11	CARBON	180	5%	1/4W	
R471	1-216-021-00	METAL CHIP	68	5%	1/10W	
R472	1-216-030-00	METAL CHIP	160	5%	1/10W	
R473	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R474	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R482	1-216-295-00	METAL CHIP	0	5%	1/10W	
R483	1-216-295-00	METAL CHIP	0	5%	1/10W	
R484	1-216-064-00	METAL CHIP	4.3K	5%	1/10W	
R485	1-216-048-00	METAL CHIP	910	5%	1/10W	
R486	1-216-035-00	METAL CHIP	270	5%	1/10W	
R501	1-216-295-00	METAL CHIP	0	5%	1/10W	

VARIABLE RESISTOR

RV001	1-228-989-00	RES, ADJ, CARBON 470
RV002	1-228-989-00	RES, ADJ, CARBON 470
RV005	1-228-994-00	RES, ADJ, CARBON 10K
RV006	1-228-994-00	RES, ADJ, CARBON 10K
RV007	1-228-994-00	RES, ADJ, CARBON 10K
RV008	1-228-994-00	RES, ADJ, CARBON 10K
RV009	1-228-994-00	RES, ADJ, CARBON 10K
RV010	1-228-993-00	RES, ADJ, CARBON 4.7K
RV011	1-228-994-00	RES, ADJ, CARBON 10K
RV012	1-228-994-00	RES, ADJ, CARBON 10K
RV013	1-228-998-00	RES, ADJ, CARBON 220K
RV014	1-228-996-00	RES, ADJ, CARBON 47K

TRANSFORMER

T001	1-235-437-11	BPF, PB C
T004	1-409-396-11	REC C TRAP
T005	1-409-397-11	TRAP

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

Ref.No	Part No.	Description			Remark
T006	1-235-632-11	BPF			
T007	1-235-633-11	BPF			
		THERMISTOR			
TH001	1-800-200-00	THERMISTOR S-3K			
		CRYSTAL			
X201	1-567-442-11	VIBRATOR, CRYSTAL			
**********					
	*A-7068-030-A	CH-44 BOARD, COMPLETE			
		**********			
		CAPASITOR			
C001	1-163-093-00	CERAMIC CHIP	10PF	5%	50V
C002	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C003	1-163-108-00	CERAMIC CHIP	43PF	5%	50V
C004	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C005	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C006	1-163-033-00	CERAMIC CHIP	0.022MF		50V
C007	1-163-063-00	CERAMIC CHIP	0.022MF	10%	50V
C008	1-131-358-41	TANTALUM	6.8MF	10%	25V
C009	1-124-245-00	ELECT	4.7MF	20%	35V
C011	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C012	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C013	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C014	1-124-462-00	ELECT	10MF	20%	16V
C015	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C016	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C017	1-124-257-00	ELECT	2.2MF	20%	50V
C018	1-124-251-00	ELECT	0.22MF	20%	50V
C019	1-163-063-00	CERAMIC CHIP	0.022MF		50V
C020	1-163-076-00	CERAMIC CHIP	0.068MF		50V
C021	1-124-257-00	ELECT	2.2MF	20%	50V
C022	1-124-257-00	ELECT	2.2MF	20%	50V
C023	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C024	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V
C025	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C026	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C027	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C028	1-124-462-00	ELECT	10MF	20%	16V
C029	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C030	1-163-088-00	CERAMIC CHIP	5PF	0.25PF	50V
C031	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C032	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C033	1-163-091-00	CERAMIC CHIP	8PF	0.25PF	50V
C034	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C035	1-163-123-00	CERAMIC CHIP	180PF	5%	50V
C036	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C037	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C038	1-124-249-00	ELECT	0.1MF	20%	50V
C039	1-124-252-00	ELECT	0.33MF	20%	50V

Ref.No	Part No.	Description			Remark
C040	1-163-021-00	CERAMIC CHIP	0.01MF		50V
		TRIMMER			
CV001	1-141-227-00	CAP, CERAMIC TRIMMER			
		IC			
IC001	8-752-003-20	IC CX20032			
IC002	8-752-202-10	IC CX22021			
		COIL			
L001	1-408-607-00	MICRO INDUCTOR	22UH		
L002	1-407-172-XX	MICRO INDUCTOR	180UH		
L003	1-407-168-XX	MICRO INDUCTOR	82UH		
L004	1-407-188-XX	MICRO INDUCTOR	6.8UH		
		TRANSISTOR			
Q001	8-729-202-38	TRANSISTOR 2SC3326N			
		RESISTOR			
R002	1-216-295-00	METAL CHIP	0	5%	1/10W
R003	1-216-073-00	METAL CHIP	10K	5%	1/10W
R004	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R005	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R007	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R008	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R009	1-216-025-00	METAL CHIP	100	5%	1/10W
R010	1-216-081-00	METAL CHIP	22K	5%	1/10W
R011	1-216-097-00	METAL CHIP	100K	5%	1/10W
R012	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R013	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R014	1-216-049-00	METAL CHIP	1K	5%	1/10W
R015	1-216-081-00	METAL CHIP	22K	5%	1/10W
R016	1-216-081-00	METAL CHIP	22K	5%	1/10W
R017	1-216-049-00	METAL CHIP	1K	5%	1/10W
R018	1-216-049-00	METAL CHIP	1K	5%	1/10W
R019	1-216-077-00	METAL CHIP	15K	5%	1/10W
R020	1-216-037-00	METAL CHIP	330	5%	1/10W
R021	1-216-077-00	METAL CHIP	15K	5%	1/10W
R022	1-216-081-00	METAL CHIP	22K	5%	1/10W
R023	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R024	1-216-025-00	METAL CHIP	100	5%	1/10W
R025	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R026	1-216-073-00	METAL CHIP	10K	5%	1/10W
R029	1-216-103-00	METAL CHIP	180K	5%	1/10W
R030	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
		VARIABLE RESISTOR			
RV001	1-230-524-11	RES, ADJ, SOLID	22K		
RV002	1-230-523-11	RES, ADJ, SOLID	10K		

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

CH-44 IC BS6324 IC BS7443

Ref.No	Part No.	Description			Remark
		TRANSFORMER			
T001	1-409-394-11	TRAP, CHROMA EMPHASIS			
		JACK			
W001	*1-566-103-11	PIN, BOARD TO BOARD, 19P			
W002	*1-566-102-11	PIN, BOARD TO BOARD, 18P			
		CRYSTAL			
X001	1-527-345-00	CRYSTAL, OSC (4.43MHz)			
**********					
IC011	1-807-844-11	IC BS6324 *********			
		CAPACITOR			
C001	1-124-462-00	ELECT	10MF	20%	16V
C002	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C003	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C004	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C005	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C006	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C007	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C008	1-163-141-00	CERAMIC CHIP	1000PF	5%	50V
C009	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C010	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C011	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C012	1-163-033-00	CERAMIC CHIP	0.022MF		50V
C013	1-163-095-00	CERAMIC CHIP	12PF	5%	50V
C014	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C015	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C016	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C018	1-124-462-00	ELECT	10MF	20%	16V
C019	1-163-035-00	CERAMIC CHIP	0.047MF		50V
		DIODE			
D001	8-719-911-19	DIODE 1SS119			
D002	8-719-911-19	DIODE 1SS119			
		TRANSISTOR			
DT001	8-729-901-01	TRANSISTOR DTC144EK			
		CONNECTOR			
J001	1-564-549-11	PIN, BOARD TO BOARD 10P			
J002	1-564-548-11	PIN, BOARD TO BOARD 5P			
		COIL			
L001	1-408-415-00	MICRO INDUCTOR 33UH			
L002	1-408-415-00	MICRO INDUCTOR 33UH			

Ref.No	Part No.	Description			Remark
		TRANSISTOR			
Q001	8-729-100-66	TRANSISTOR 2SC1623			
Q002	8-729-100-66	TRANSISTOR 2SC1623			
Q003	8-729-100-66	TRANSISTOR 2SC1623			
Q004	8-729-100-66	TRANSISTOR 2SC1623			
Q005	8-729-100-66	TRANSISTOR 2SC1623			
		RESISTOR			
R001	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R002	1-216-049-00	METAL CHIP	1K	5%	1/10W
R003	1-216-041-00	METAL CHIP	470	5%	1/10W
R004	1-216-033-00	METAL CHIP	220	5%	1/10W
R005	1-216-047-00	METAL CHIP	820	5%	1/10W
R006	1-216-045-00	METAL CHIP	680	5%	1/10W
R008	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R009	1-216-035-00	METAL CHIP	270	5%	1/10W
R010	1-216-035-00	METAL CHIP	270	5%	1/10W
R011	1-216-041-00	METAL CHIP	470	5%	1/10W
R012	1-216-077-00	METAL CHIP	15K	5%	1/10W
R013	1-216-073-00	METAL CHIP	10K	5%	1/10W
R014	1-216-043-00	METAL CHIP	560	5%	1/10W
R016	1-216-075-00	METAL CHIP	12K	5%	1/10W
R017	1-216-073-00	METAL CHIP	10K	5%	1/10W
R018	1-216-033-00	METAL CHIP	220	5%	1/10W
R019	1-216-021-00	METAL CHIP	68	5%	1/10W
R021	1-216-043-00	METAL CHIP	560	5%	1/10W
R022	1-216-045-00	METAL CHIP	680	5%	1/10W
R023	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R024	1-216-039-00	METAL CHIP	390	5%	1/10W
R025	1-216-079-00	METAL CHIP	18K	5%	1/10W
R026	1-216-079-00	METAL CHIP	18K	5%	1/10W
R027	1-216-049-00	METAL CHIP	1K	5%	1/10W
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IC012	1-807-846-11	IC BS7443 **********			
		CAPACITOR			
C001	1-163-120-00	CERAMIC CHIP	130PF	5%	50V
C002	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C003	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C004	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C005	1-124-236-00	CERAMIC CHIP	47MF	20%	16V
C006	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C007	1-163-141-00	CERAMIC CHIP	1000PF	5%	50V
C008	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C009	1-163-120-00	CERAMIC CHIP	130PF	5%	50V
C010	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C011	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C012	1-163-115-00	CERAMIC CHIP	82PF	5%	50V
C013	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C014	1-124-255-00	CERAMIC CHIP	1.0MF	20%	50V

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

Ref.No	Part No.	Description	Remark
		DIODE	
D001	8-719-911-19	DIODE 1SS119	
D002	8-719-911-19	DIODE 1SS119	
D003	8-719-911-19	DIODE 1SS119	
D004	8-719-911-19	DIODE 1SS119	
		TRANSISTOR	
DT001	8-729-901-04	TRANSISTOR DTA114EK	
DT002	8-729-901-04	TRANSISTOR DTA114EK	
DT003	8-729-901-04	TRANSISTOR DTA114EK	
DT004	8-729-901-04	TRANSISTOR DTA114EK	
DT005	8-729-901-04	TRANSISTOR DTA114EK	
DT006	8-729-901-04	TRANSISTOR DTA114EK	
		IC	
IC001	8-759-925-60	IC BA401	
		CONNECTOR	
J001	1-506-592-11	PIN, BOARD TO BOARD 4P	
J002	1-506-592-11	PIN, BOARD TO BOARD 4P	
		TRANSISTOR	
Q001	8-729-100-66	TRANSISTOR 2SC1623	
Q002	8-729-100-66	TRANSISTOR 2SC1623	
Q003	8-729-100-66	TRANSISTOR 2SC1623	
Q004	8-729-100-66	TRANSISTOR 2SC1623	
		RESISTOR	
R001	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R002	1-216-063-00	METAL CHIP 3.9K 5% 1/10W	
R003	1-216-041-00	METAL CHIP 470 5% 1/10W	
R004	1-216-037-00	METAL CHIP 330 5% 1/10W	
R005	1-216-039-00	METAL CHIP 390 5% 1/10W	
R006	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R007	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R008	1-216-031-00	METAL CHIP 180 5% 1/10W	
R009	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R010	1-216-063-00	METAL CHIP 3.9K 5% 1/10W	
R011	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R012	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	
R013	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R014	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R015	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	
R016	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R017	1-216-045-00	METAL CHIP 680 5% 1/10W	
R018	1-216-033-00	METAL CHIP 220 5% 1/10W	
R019	1-216-035-00	METAL CHIP 270 5% 1/10W	
R020	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R021	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R022	1-216-045-00	METAL CHIP 680 5% 1/10W	
R023	1-216-045-00	METAL CHIP 680 5% 1/10W	
R024	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R025	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R026	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R027	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R028	1-216-295-00	METAL CHIP 0 5% 1/10W	
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	*A-7060-842-A	FT-33 BOARD, COMPLETE **********	
	*3-689-521-01	HOLDER, LED, ROUND	
	3-691-611-11	KNOB (S), CONTROL	
	*3-697-607-11	HOLDER (SU), LED	
	*3-716-870-01	HOLDER (LEFT), INDICATION TUBE	
	*3-716-871-01	HOLDER(RIGHT), INDICATION TUBE	
		CAPACITOR	
C003	1-163-093-00	CERAMIC CHIP 10PF 5% 50V	
C009	1-163-021-00	CERAMIC CHIP 0.01MF 50V	
C010	1-124-258-00	ELECT 3.3MF 20% 50V	
C011	1-163-097-00	CERAMIC CHIP 15PF 5% 50V	
C012	1-163-101-00	CERAMIC CHIP 22PF 5% 50V	
C013	1-163-021-00	CERAMIC CHIP 0.01MF 50V	
C014	1-163-021-00	CERAMIC CHIP 0.01MF 50V	
C015	1-124-255-00	ELECT 1MF 20% 50V	
C016	1-124-462-00	ELECT 10MF 20% 16V	
C017	1-163-021-00	CERAMIC CHIP 0.01MF 50V	
C018	1-163-021-00	CERAMIC CHIP 0.01MF 50V	
C019	1-124-462-00	ELECT 10MF 20% 16V	
C103	1-163-038-00	CERAMIC CHIP 0.1MF 25V	
C104	1-163-035-00	CERAMIC CHIP 0.047MF 50V	
		TRIMMER	
CV001	1-141-294-11	CAP, TRIMMER	
		DIODE	
D001	8-719-801-52	DIODE 1SS190	
D002	8-719-801-52	DIODE 1SS190	
D003	8-719-801-52	DIODE 1SS190	
D004	8-719-801-52	DIODE 1SS190	
D005	8-719-801-52	DIODE 1SS190	
D006	8-719-801-52	DIODE 1SS190	
D007	8-719-801-52	DIODE 1SS190	
D008	8-719-801-52	DIODE 1SS190	
D009	8-719-801-52	DIODE 1SS190	
D010	8-719-801-52	DIODE 1SS190	
D011	8-719-801-52	DIODE 1SS190	
D012	8-719-801-52	DIODE 1SS190	
D013	8-719-801-52	DIODE 1SS190	
D024	8-719-106-43	DIODE RD9.1M-B1	
D025	8-719-801-52	DIODE 1SS190	
D026	8-719-801-52	DIODE 1SS190	
D031	8-719-812-30	DIODE TL0123	
D032	8-719-812-32	DIODE TLY123	
D033	8-719-812-32	DIODE TLY123	

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

FT-33

Ref.No	Part No.	Description	Remark
D034	8-719-812-32	DIODE TLY123	
D035	8-719-812-33	DIODE TLG123A	
D036	8-719-812-33	DIODE TLG123A	
D037	8-719-812-31	DIODE TLR123	
D038	8-719-812-31	DIODE TLR123	
D039	8-719-812-31	DIODE TLR123	
D041	8-719-812-30	DIODE TLO123	
D101	8-719-812-30	DIODE TLO123	
		IC	
IC001	8-759-113-51	IC UPD75208G-549-1B	
IC002	8-752-800-70	IC CXP5016-191Q	
IC003	8-759-604-09	IC M5195581	
IC004	8-759-201-61	IC TC40H004F	
IC006	8-759-937-21	IC CXD1078M	
IC101	8-759-605-42	IC M50725-651FP	
		INDICATOR TUBE	
ND001	1-519-410-11	INDICATOR TUBE, FLUORESCENT	
		TRANSISTOR	
Q101	8-729-100-76	TRANSISTOR 2SA812	
Q102	8-729-100-76	TRANSISTOR 2SA812	
		RESISTOR	
R001	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R002	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R003	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R004	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R005	1-216-104-00	METAL CHIP 200K 5% 1/10W	
R006	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R007	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R008	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R009	1-216-093-00	METAL CHIP 68K 5% 1/10W	
R010	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R011	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R022	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R023	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R024	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R025	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R026	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R051	1-216-041-00	METAL CHIP 470 5% 1/10W	
R052	1-216-041-00	METAL CHIP 470 5% 1/10W	
R053	1-216-041-00	METAL CHIP 470 5% 1/10W	
R056	1-216-041-00	METAL CHIP 470 5% 1/10W	
R101	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R102	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R103	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R104	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R105	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R106	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R107	1-216-097-00	METAL CHIP 100K 5% 1/10W	

Ref.No	Part No.	Description	Remark
R109	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R110	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R111	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R121	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R122	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R123	1-216-683-11	METAL CHIP 22K 0.50% 1/10W	
R125	1-216-037-00	METAL CHIP 330 5% 1/10W	
R126	1-216-041-00	METAL CHIP 470 5% 1/10W	
R129	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R133	1-216-041-00	METAL CHIP 470 5% 1/10W	
		VARIABLE RESISTOR	
RV001	1-237-219-11	RES, VAR, CARBON 1K	
		SWITCH	
SW001	1-570-865-11	SWITCH, SLIDE	
SW002	1-570-854-11	SWITCH, SLIDE	
SW003	1-570-854-11	SWITCH, SLIDE	
SW004	1-554-174-42	SWITCH, KEY BOARD	
SW005	1-554-174-42	SWITCH, KEY BOARD	
SW006	1-554-174-42	SWITCH, KEY BOARD	
SW007	1-554-174-42	SWITCH, KEY BOARD	
SW011	1-554-174-42	SWITCH, KEY BOARD	
SW012	1-554-174-42	SWITCH, KEY BOARD	
SW013	1-554-174-42	SWITCH, KEY BOARD	
SW014	1-554-174-42	SWITCH, KEY BOARD	
SW015	1-554-174-42	SWITCH, KEY BOARD	
SW016	1-554-174-42	SWITCH, KEY BOARD	
SW017	1-554-174-42	SWITCH, KEY BOARD	
SW018	1-554-174-42	SWITCH, KEY BOARD	
SW019	1-554-174-42	SWITCH, KEY BOARD	
SW020	1-554-174-42	SWITCH, KEY BOARD	
SW021	1-554-088-00	SWITCH, KEY BOARD	
SW022	1-554-174-42	SWITCH, KEY BOARD	
SW023	1-554-174-42	SWITCH, KEY BOARD	
SW024	1-554-174-42	SWITCH, KEY BOARD	
SW025	1-554-174-42	SWITCH, KEY BOARD	
SW101	1-554-174-42	SWITCH, KEY BOARD	
SW102	1-554-174-42	SWITCH, KEY BOARD	
SW103	1-554-174-42	SWITCH, KEY BOARD	
SW104	1-554-174-42	SWITCH, KEY BOARD	
SW105	1-554-174-42	SWITCH, KEY BOARD	
SW106	1-554-174-42	SWITCH, KEY BOARD	
SW107	1-554-174-42	SWITCH, KEY BOARD	
SW108	1-554-174-42	SWITCH, KEY BOARD	
SW120	1-554-174-42	SWITCH, KEY BOARD	
SW121	1-554-174-42	SWITCH, KEY BOARD	
SW122	1-554-174-42	SWITCH, KEY BOARD	
SW123	1-554-174-42	SWITCH, KEY BOARD	
SW124	1-554-174-42	SWITCH, KEY BOARD	
SW125	1-554-174-42	SWITCH, KEY BOARD	
SW126	1-554-174-42	SWITCH, KEY BOARD	
SW127	1-554-174-42	SWITCH, KEY BOARD	

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

Ref.No	Part No.	Description				Remark
SW128	1-554-174-42	SWITCH, KEY BOARD				
		CRYSTAL				
X001	1-567-519-11	VIBRATOR, CRYSTAL (4.19MHz)				
X003	1-567-160-21	OSCILLATOR, CERAMIC (4.19MHz)				
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	*A-7060-471-A	TU-83 BOARD, COMPLETE				
		**********				
		CAPACITOR				
C001	1-130-493-00	MYLAR	0.068MF	5%	50V	
C002	1-130-493-00	MYLAR	0.068MF	5%	50V	
C003	1-163-105-00	CERAMIC CHIP	33PF	5%	50V	
C004	1-123-318-00	ELECT	33MF	20%	16V	
C005	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V	
C006	1-123-369-00	ELECT	4.7MF	20%	25V	
C008	1-123-380-00	ELECT	1MF	20%	50V	
C009	1-123-380-00	ELECT	1MF	20%	50V	
C010	1-123-356-00	ELECT	10MF	20%	16V	
C011	1-123-318-00	ELECT	33MF	20%	16V	
C012	1-123-380-00	ELECT	1MF	20%	50V	
C013	1-123-356-00	ELECT	10MF	20%	16V	
C014	1-163-119-00	CERAMIC CHIP	120PF	5%	50V	
C015	1-130-072-00	FILM	0.022MF	2%	100V	
C016	1-123-318-00	ELECT	33MF	20%	16V	
C017	1-106-184-00	MYLAR	0.0033MF	5%	50V	
C018	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V	
C019	1-106-184-00	MYLAR	0.0033MF	5%	50V	
C020	1-123-356-00	ELECT	10MF	20%	16V	
C021	1-123-306-00	ELECT	47MF	20%	10V	
C022	1-123-306-00	ELECT	47MF	20%	10V	
C023	1-163-021-00	CERAMIC CHIP	0.01MF		50V	
C024	1-163-021-00	CERAMIC CHIP	0.01MF		50V	
C025	1-123-356-00	ELECT	10MF	20%	16V	
C026	1-163-021-00	CERAMIC CHIP	0.01MF		50V	
C027	1-123-332-00	ELECT	47MF	20%	16V	
C028	1-123-379-00	ELECT	0.47MF	20%	50V	
C029	1-106-184-00	MYLAR	0.0033MF	5%	50V	
C030	1-106-184-00	MYLAR	0.0033MF	5%	50V	
C031	1-163-103-00	CERAMIC CHIP	27PF	5%	50V	
C032	1-123-380-00	ELECT	1MF	20%	50V	
C041	1-163-021-00	CERAMIC CHIP	0.01MF		50V	
		DISCRIMINATOR				
CD1	1-404-501-00	DISCRIMINATOR, CERAMIC				
		CONNECTOR				
CJ001	1-566-285-11	CONNECTOR, BOARD TO BOARD 6P				
CJ002	1-566-287-11	CONNECTOR, BOARD TO BOARD 10P				

Ref.No	Part No.	Description				Remark
		DIODE				
D001	8-719-101-23	DIODE 1SS123				
D002	8-719-100-03	DIODE 1S2835				
		IC				
IC001	8-759-602-16	IC M54572L				
IC002	8-759-007-54	IC TDA4940				
		IF				
IFB001	1-464-697-11	IF BLOCK (IFS-389)				
		COIL				
L001	1-408-429-00	MICRO INDUCTOR 470UH				
L002	1-408-428-00	MICRO INDUCTOR 390UH				
L003	1-408-422-00	MICRO INDUCTOR 120UH				
		TRANSISTOR				
Q001	8-729-100-67	TRANSISTOR 2SC1623-L7				
Q002	8-729-100-76	TRANSISTOR 2SA812				
Q003	8-729-100-76	TRANSISTOR 2SA812				
Q004	8-729-100-67	TRANSISTOR 2SC1623-L7				
Q005	8-729-901-01	TRANSISTOR DTC144EK				
Q006	8-729-901-01	TRANSISTOR DTC144EK				
Q007	8-729-901-01	TRANSISTOR DTC144EK				
		RESISTOR				
R001	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R002	1-216-109-00	METAL CHIP	330K	5%	1/10W	
R003	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R004	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R005	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R007	1-216-037-00	METAL CHIP	330	5%	1/10W	
R008	1-216-039-00	METAL CHIP	390	5%	1/10W	
R009	1-216-045-00	METAL CHIP	680	5%	1/10W	
R010	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R011	1-216-087-00	METAL CHIP	39K	5%	1/10W	
R012	1-216-095-00	METAL CHIP	82K	5%	1/10W	
R013	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R014	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R015	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R016	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R018	1-216-091-00	METAL CHIP	56K	5%	1/10W	
R019	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R020	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R029	1-216-295-00	METAL CHIP	0	5%	1/10W	
		TUNER				
TU001⚠	1-463-761-11	TUNER, ET (BT-883B)				
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The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

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

PR-13 | VP-1 | TS-50

Ref.No	Part No.	Description	Remark
	*A-7060-843-A	PR-13 BOARD, COMPLETE	
		**********	
		CONNECTOR	
CN001	*1-564-012-00	PIN, CONNECTOR 2P	
CN002	*1-564-018-11	PIN, CONNECTOR 8P	
		DIODE	
D002	8-719-911-19	DIODE 1SS119	
D003	8-719-911-19	DIODE 1SS119	
D004	8-719-911-19	DIODE 1SS119	
		SWITCH	
S003	1-553-716-00	SWITCH, SLIDE	
S004	1-554-174-00	SWITCH, KEY BOARD	
S005	1-554-174-00	SWITCH, KEY BOARD	
S006	1-553-716-00	SWITCH, SLIDE	
S007	1-553-716-00	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	
S013	1-554-174-00	SWITCH, KEY BOARD	
**********			
	*A-7060-917-A	VP-1 BOARD, COMPLETE	
		**********	
		CAPACITOR	
C001	1-163-097-00	CERAMIC CHIP 15PF 5% 50V	
C002	1-163-141-00	CERAMIC CHIP 0.001MF 5% 50V	
C003	1-163-133-00	CERAMIC CHIP 470PF 5% 50V	
C004	1-163-033-00	CERAMIC CHIP 0.022MF 10% 25V	
C005	1-163-127-00	CERAMIC CHIP 270PF 5% 50V	
C006	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	
C007	1-163-097-00	CERAMIC CHIP 15PF 5% 50V	
C008	1-124-245-00	ELECT 4.7MF 20% 16V	
C009	1-163-115-00	CERAMIC CHIP 82PF 5% 50V	
C010	1-163-033-00	CERAMIC CHIP 0.022MF 10% 25V	
C011	1-124-234-00	ELECT 22MF 20% 16V	
C012	1-163-021-00	CERAMIC CHIP 0.01MF 10% 50V	
C013	1-163-833-00	CERAMIC CHIP 0.068MF 25V	
C014	1-163-033-00	CERAMIC CHIP 0.022MF 10% 25V	
C015	1-124-245-00	ELECT 4.7MF 20% 16V	
C016	1-163-105-00	CERAMIC CHIP 33PF 5% 50V	
C017	1-163-105-00	CERAMIC CHIP 33PF 5% 50V	
C018	1-163-033-00	CERAMIC CHIP 0.022MF 10% 25V	
		CONNECTOR	
CN001	*1-564-018-11	PIN, CONNECTOR 8P	
CN002	*1-564-014-00	PIN, CONNECTOR 4P	

Ref.No	Part No.	Description	Remark
		IC	
IC001	8-759-929-51	IC SAA5235	
IC002	8-759-103-25	IC UPD40538G	
IC003	8-759-929-52	IC SAF1135P	
IC004	8-759-111-94	IC UPD7508HC-090	
		COIL	
L001	1-408-970-21	MICRO INDUCTOR 10UH	
		TRANSISTOR	
Q001	8-729-901-01	TRANSISTOR DTC144EK	
		RESISTOR	
R001	1-216-025-00	METAL CHIP 100 5% 1/10W	
R002	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R003	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R004	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R101	1-216-295-00	METAL CHIP 0 5% 1/10W	
R102	1-216-295-00	METAL CHIP 0 5% 1/10W	
R103	1-216-295-00	METAL CHIP 0 5% 1/10W	
		CRYSTAL	
X001	1-567-925-11	OSCILLATOR, CRYSTAL (10MHz)	
X002	1-567-160-21	OSCILLATOR, CERAMIC (4.19MHz)	
**********			
	*A-7060-482-A	TS-50 BOARD, COMPLETE	
		**********	
		CAPACITOR	
C101	1-123-307-00	ELECT 100MF 20% 10V	
C102	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	
C103	1-123-369-00	ELECT 4.7MF 20% 25V	
C104	1-163-109-00	CERAMIC CHIP 47PF 5% 50V	
C105	1-163-109-00	CERAMIC CHIP 47PF 5% 50V	
C106	1-123-822-00	ELECT 47MF 20% 10V	
C107	1-163-019-00	CERAMIC CHIP 0.0068MF 10% 50V	
C108	1-123-356-00	ELECT 10MF 20% 16V	
C109	1-123-318-00	ELECT 33MF 20% 16V	
C110	1-123-379-00	ELECT 0.47MF 20% 50V	
C111	1-123-369-00	ELECT 4.7MF 20% 25V	
C112	1-123-356-00	ELECT 10MF 20% 16V	
C113	1-163-021-00	CERAMIC CHIP 0.01MF 50V	
C114	1-130-483-00	MYLAR 0.01MF 5% 50V	
C115	1-123-816-00	ELECT 10MF 20% 50V	
C116	1-130-483-00	MYLAR 0.01MF 5% 50V	
C117	1-123-369-00	ELECT 4.7MF 20% 25V	
C118	1-123-369-00	ELECT 4.7MF 20% 25V	
C119	1-130-483-00	MYLAR 0.01MF 5% 50V	
C120	1-123-379-00	ELECT 0.47MF 20% 50V	
C121	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	

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

Ref.No	Part No.	Description			Remark
C122	1-130-495-00	MYLAR	0.1MF	5%	50V
C124	1-163-818-00	CERAMIC CHIP	0.1MF	10%	50V
C125	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C126	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C127	1-123-332-00	ELECT	47MF	20%	16V
C128	1-163-021-00	CERAMIC CHIP	0.01MF		50V
		CONNECTOR			
CJ101	1-563-717-11	CONNECTOR, BOARD TO BOARD 6P			
CJ102	1-563-719-11	CONNECTOR, BOARD TO BOARD 10P			
		CONNECTOR			
CN101	*1-560-891-00	PIN, CONNECTOR 3P			
CN102	*1-560-893-00	PIN, CONNECTOR 5P			
CN103	*1-560-892-00	PIN, CONNECTOR 4P			
CN104	*1-560-893-00	PIN, CONNECTOR 5P			
CN105	*1-564-033-00	PIN, CONNECTOR 8P			
CN106	*1-560-892-00	PIN, CONNECTOR 4P			
		DIODE			
D101	8-719-100-03	DIODE 1S2835			
		IC			
IC101	8-759-604-20	IC M50434-019SP			
IC102	8-759-603-41	IC M58655P			
IC103	8-759-007-55	IC TDA4944			
IC104	8-759-157-40	IC UPC574J			
		COIL			
L101	1-408-408-00	MICRO INDUCTOR 8.2UH			
		IC LINK			
PS101⚠	1-532-637-00	LINK, IC (ICP-M25)			
		TRANSISTOR			
Q101	8-729-100-67	TRANSISTOR 2SC1623-L7			
Q102	8-729-100-67	TRANSISTOR 2SC1623-L7			
Q103	8-729-100-67	TRANSISTOR 2SC1623-L7			
Q104	8-729-100-67	TRANSISTOR 2SC1623-L7			
Q105	8-729-100-67	TRANSISTOR 2SC1623-L7			
Q106	8-729-100-67	TRANSISTOR 2SC1623-L7			
Q107	8-729-100-76	TRANSISTOR 2SA812			
		RESISTOR			
R101	1-216-049-00	METAL CHIP	1K	5%	1/10W
R102	1-216-045-00	METAL CHIP	680	5%	1/10W
R103	1-216-295-00	METAL CHIP	0	5%	1/10W
R104	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R105	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R106	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R107	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R108	1-216-073-00	METAL CHIP	10K	5%	1/10W
R109	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R111	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R112	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R113	1-216-073-00	METAL CHIP	10K	5%	1/10W
R114	1-216-073-00	METAL CHIP	10K	5%	1/10W
R115	1-216-077-00	METAL CHIP	15K	5%	1/10W
R116	1-216-045-00	METAL CHIP	680	5%	1/10W
R117	1-216-081-00	METAL CHIP	22K	5%	1/10W
R118	1-216-081-00	METAL CHIP	22K	5%	1/10W
R119	1-247-713-11	CARBON	1K	5%	1/4W F
R120	1-216-081-00	METAL CHIP	22K	5%	1/10W
R121	1-216-081-00	METAL CHIP	22K	5%	1/10W
R123	1-216-093-00	METAL CHIP	68K	5%	1/10W
R124	1-216-073-00	METAL CHIP	10K	5%	1/10W
R125	1-216-073-00	METAL CHIP	10K	5%	1/10W
R126	1-216-073-00	METAL CHIP	10K	5%	1/10W
R127	1-216-073-00	METAL CHIP	10K	5%	1/10W
R128	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R129	1-216-047-00	METAL CHIP	820	5%	1/10W
R130	1-216-073-00	METAL CHIP	10K	5%	1/10W
R131	1-216-073-00	METAL CHIP	10K	5%	1/10W
R132	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R133	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R134	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R135	1-216-045-00	METAL CHIP	680	5%	1/10W
R136	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R137	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R138	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R139	1-216-045-00	METAL CHIP	680	5%	1/10W
R140	1-216-049-00	METAL CHIP	1K	5%	1/10W
R141	1-216-109-00	METAL CHIP	330K	5%	1/10W
R142	1-216-121-00	METAL CHIP	1M	5%	1/10W
R143	1-216-081-00	METAL CHIP	22K	5%	1/10W
R144	1-216-033-00	METAL CHIP	220	5%	1/10W
		VARIABLE RESISTOR			
RV101	1-228-996-00	RES, ADJ, CARBON 47K			
		CRYSTAL			
X101	1-567-121-00	VIBRATOR, CRYSTAL (4.19MHz)			

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	*1-622-006-13	DS-16 BOARD
		**********
	*1-533-189-11	HOLDER, FUSE
	⚠2-430-344-01	COVER (CC-1017), INSULATING
		CAPACITOR
C401	⚠1-136-472-13	FILM 0.1MF 20% 250V
C402	⚠1-161-742-00	CERAMIC 0.0022MF 20% 400V
C403	⚠1-161-742-00	CERAMIC 0.0022MF 20% 400V

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

DS-16 DR-35

Ref.No	Part No.	Description			Remark
C404	⚠1-161-742-00	CERAMIC	0.0022MF	20%	400V
C405	⚠1-161-742-00	CERAMIC	0.0022MF	20%	400V
		CONNECTOR			
CN401	*1-560-891-00	PIN, CONNECTOR 3P			
		FUSE			
F401	⚠1-532-279-00	FUSE, TIME-LAG (T500mA 250V)			
		IC LINK			
PS402	⚠1-532-847-21	LINK, IC (REF6300)			
PS403	⚠1-532-847-21	LINK, IC (REF6300)			
		TRANSFORMER			
T402	⚠1-421-357-31	TRANSFORMER, LINE FILTER			
**********					
	*A-7060-585-A	DR-35 BOARD, COMPLETE **********			
	7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3			
		CAPACITOR			
C201	1-124-255-00	ELECT	1MF	20%	50V
C202	1-163-021-00	CERAMIC CHIP	0.01MF	5%	50V
C203	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C204	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C205	1-123-874-00	ELECT	470MF	20%	16V
C207	1-124-124-00	ELECT	220MF	20%	6.3V
C208	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C209	1-124-124-00	ELECT	220MF	20%	6.3V
C210	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C211	1-163-017-00	CERAMIC CHIP	0.0047MF	5%	50V
C212	1-124-255-00	ELECT	1MF	20%	50V
C213	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C214	1-123-874-00	ELECT	470MF	20%	16V
C216	1-123-333-00	ELECT	100MF	20%	16V
C217	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C218	1-163-021-00	CERAMIC CHIP	0.01MF	5%	50V
C219	1-163-139-00	CERAMIC CHIP	820PF	5%	50V
C220	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C221	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C224	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C225	1-123-874-00	ELECT	470MF	20%	16V
C226	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C227	1-123-336-00	ELECT	470MF	20%	25V
C228	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C229	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C230	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C231	1-123-299-00	ELECT	1000MF	20%	6.3V
C232	1-123-299-00	ELECT	1000MF	20%	6.3V
C233	1-123-323-00	ELECT	470MF	20%	16V

Ref.No	Part No.	Description			Remark
C235	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C240	1-124-123-00	ELECT	100MF	20%	6.3V
C241	1-123-296-00	ELECT	220MF	20%	6.3V
		CONNECTOR			
CN201	*1-560-892-00	PIN, CONNECTOR 4P			
CN202	*1-560-895-00	PIN, CONNECTOR 7P			
CN203	*1-560-894-00	PIN, CONNECTOR 6P			
CN204	*1-560-890-00	PIN, CONNECTOR 2P			
		DIODE			
D201	8-719-200-00	DIODE 31DQ05			
D202	8-719-200-00	DIODE 31DQ05			
D203	8-719-200-00	DIODE 31DQ05			
D204	8-719-100-03	DIODE 1S2835			
D205	⚠8-719-110-02	DIODE RD7.5ESB1			
		IC			
IC201	8-759-908-95	IC TL1451CNS			
IC202	8-759-908-95	IC TL1451CNS			
		JUMPER RESISTOR			
JR001	1-216-296-00	METAL CHIP	0	5%	1/8W
JR002	1-216-296-00	METAL CHIP	0	5%	1/8W
JR003	1-216-296-00	METAL CHIP	0	5%	1/8W
JR004	1-216-296-00	METAL CHIP	0	5%	1/8W
JR005	1-216-296-00	METAL CHIP	0	5%	1/8W
JR006	1-216-296-00	METAL CHIP	0	5%	1/8W
JR007	1-216-296-00	METAL CHIP	0	5%	1/8W
JR008	1-216-296-00	METAL CHIP	0	5%	1/8W
JR009	1-216-296-00	METAL CHIP	0	5%	1/8W
JR010	1-216-296-00	METAL CHIP	0	5%	1/8W
JR011	1-216-296-00	METAL CHIP	0	5%	1/8W
JR012	1-216-296-00	METAL CHIP	0	5%	1/8W
JR013	1-216-296-00	METAL CHIP	0	5%	1/8W
JR014	1-216-296-00	METAL CHIP	0	5%	1/8W
JR015	1-216-296-00	METAL CHIP	0	5%	1/8W
JR016	1-216-296-00	METAL CHIP	0	5%	1/8W
JR017	1-216-296-00	METAL CHIP	0	5%	1/8W
JR018	1-216-296-00	METAL CHIP	0	5%	1/8W
JR019	1-216-296-00	METAL CHIP	0	5%	1/8W
JR020	1-216-296-00	METAL CHIP	0	5%	1/8W
JR021	1-216-296-00	METAL CHIP	0	5%	1/8W
JR022	1-216-295-00	METAL CHIP	0	5%	1/10W
JR023	1-216-295-00	METAL CHIP	0	5%	1/10W
JR024	1-216-295-00	METAL CHIP	0	5%	1/10W
JR025	1-216-295-00	METAL CHIP	0	5%	1/10W
JR026	1-216-295-00	METAL CHIP	0	5%	1/10W
JR027	1-216-295-00	METAL CHIP	0	5%	1/10W
JR028	1-216-295-00	METAL CHIP	0	5%	1/10W
JR029	1-216-295-00	METAL CHIP	0	5%	1/10W
JR030	1-216-295-00	METAL CHIP	0	5%	1/10W

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Ref.No	Part No.	Description	Remark
		COIL	
L201	1-408-945-00	COIL, CHOKE 200UH	
L202	1-408-944-00	COIL, CHOKE 20UH	
L203	1-408-944-00	COIL, CHOKE 20UH	
L205	1-408-944-00	COIL, CHOKE 20UH	
L206	1-408-945-00	COIL, CHOKE 200UH	
L207	1-408-944-00	COIL, CHOKE 20UH	
L208	1-408-944-00	COIL, CHOKE 20UH	
L209	1-408-944-00	COIL, CHOKE 20UH	
L210	1-408-944-00	COIL, CHOKE 20UH	
L211	1-408-944-00	COIL, CHOKE 20UH	
L264	1-408-945-00	COIL, CHOKE 200UH	
		IC LINK	
PS202⚠	1-532-679-21	LINK, IC (ICP-F15)	
		TRANSISTOR	
Q201	8-729-112-61	TRANSISTOR 2SA1441-L	
Q202	8-729-100-66	TRANSISTOR 2SC1623	
Q203	8-729-100-76	TRANSISTOR 2SA812	
Q204	8-729-113-33	TRANSISTOR 2SB733-4	
Q205	8-729-112-61	TRANSISTOR 2SA1441-L	
Q206	8-729-100-66	TRANSISTOR 2SC1623	
Q207	8-729-100-76	TRANSISTOR 2SA812	
Q208	8-729-901-01	TRANSISTOR DTC144EK	
Q209	8-729-112-61	TRANSISTOR 2SA1441-L	
Q210	8-729-100-66	TRANSISTOR 2SC1623	
Q211	8-729-100-76	TRANSISTOR 2SA812	
Q212	8-729-901-01	TRANSISTOR DTC144EK	
Q213	8-729-901-01	TRANSISTOR DTC144EK	
Q214	8-729-901-01	TRANSISTOR DTC144EK	
		RESISTOR	
R201	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R202	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R203	1-216-115-00	METAL CHIP 560K 5% 1/10W	
R204	1-249-413-11	CARBON 470 5% 1/6W	
R205	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
R206	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
R207	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	
R208	1-216-095-00	METAL CHIP 82K 5% 1/10W	
R210	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R211	1-216-033-00	METAL CHIP 220 5% 1/10W	
R212	1-216-687-11	METAL CHIP 33K 0.50% 1/16W	
R213	1-216-687-11	METAL CHIP 33K 0.50% 1/16W	
R214	1-216-115-00	METAL CHIP 560K 5% 1/10W	
R215	1-249-413-11	CARBON 470 5% 1/6W	
R216	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
R217	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
R218	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	
R219	1-216-699-11	METAL CHIP 100K 0.50% 1/16W	
R220	1-216-679-11	METAL CHIP 15K 0.50% 1/16W	

Ref.No	Part No.	Description	Remark
R221	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R222	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R223	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R224	1-216-115-00	METAL CHIP 560K 5% 1/10W	
R225	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
R226	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
R227	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R228	1-216-099-00	METAL CHIP 120K 5% 1/10W	
R229	1-216-075-00	METAL CHIP 12K 5% 1/10W	
R230	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R232	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
R233	1-216-091-00	METAL CHIP 56K 5% 1/10W	
		VARIABLE RESISTOR	
RV201	1-230-523-11	RES, ADJ, METAL GLAZE 10K	
RV202	1-230-523-11	RES, ADJ, METAL GLAZE 10K	
RV203	1-230-522-11	RES, ADJ, METAL GLAZE 4.7K	

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*A-7068-031-A TC-3 BOARD, COMPLETE
****

		CAPACITOR			
C001	1-124-236-00	ELECT	47MF	20%	16V
C002	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C003	1-163-123-00	CERAMIC CHIP	180PF	5%	50V
C004	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C005	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C006	1-163-019-00	CERAMIC CHIP	0.0068MF	10%	50V
C007	1-130-026-00	FILM	0.0047MF	5%	50V
C008	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V
C009	1-124-245-00	ELECT	4.7MF	20%	25V
C010	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C011	1-123-333-00	ELECT	100MF	20%	25V
C012	1-135-072-21	TANTAL. CHIP	0.22MF	20%	35V
C013	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C014	1-123-333-00	ELECT	100MF	20%	25V
C015	1-135-074-21	TANTAL. CHIP	0.47MF	20%	35V
C016	1-130-491-00	MYLAR	0.047MF	5%	50V
C017	1-124-236-00	ELECT	47MF	20%	16V
C018	1-163-112-00	CERAMIC CHIP	62PF	5%	50V
C019	1-163-114-00	CERAMIC CHIP	75PF	5%	50V
C020	1-163-103-00	CERAMIC CHIP	27PF	5%	50V
C021	1-124-236-00	ELECT	47MF	20%	16V
C022	1-163-106-00	CERAMIC CHIP	36PF	5%	50V
C023	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C024	1-163-096-00	CERAMIC CHIP	13PF	5%	50V
C025	1-124-462-00	ELECT	10MF	20%	16V
C026	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C027	1-162-816-11	CERAMIC CHIP	180PF	5%	50V
C028	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C029	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C030	1-163-139-00	CERAMIC CHIP	820PF	5%	50V

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

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

TC-3

Ref.No	Part No.	Description			Remark
C031	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C032	1-124-255-00	ELECT	1MF	20%	50V
C033	1-123-332-00	ELECT	47MF	20%	25V
C035	1-124-245-00	ELECT	4.7MF	20%	25V
C036	1-124-236-00	ELECT	47MF	20%	16V
C037	1-124-236-00	ELECT	47MF	20%	16V
C038	1-124-257-00	ELECT	2.2MF	20%	35V
C039	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C040	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C041	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C042	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C043	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C044	1-124-255-00	ELECT	1MF	20%	50V
C045	1-135-070-00	TANTAL. CHIP	0.1MF	20%	35V
C046	1-124-240-00	ELECT	10MF	20%	25V
C047	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V
C048	1-163-063-00	CERAMIC CHIP	0.022MF		50V
C049	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V
C050	1-163-063-00	CERAMIC CHIP	0.022MF		50V
C051	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C053	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C054	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C055	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C056	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C057	1-163-075-00	CERAMIC CHIP	0.047MF		50V
C101	1-126-103-11	ELECT	470MF	20%	16V

CONNECTOR

CN001	*1-564-014-00	PIN, CONNECTOR 4P
CN002	*1-564-014-00	PIN, CONNECTOR 4P

TRIMMER

CV001	1-141-227-00	CAP, CERAMIC TRIMMER 20PF

DIODE

D001	8-719-109-97	DIODE RD6.8ESB2
D002	8-719-911-06	DIODE 1SS106

DELAY LINE

DL001	1-415-313-00	DELAY LINE (1H)

IC

IC001	8-759-933-40	IC HD14538BP
IC002	8-759-933-74	IC TDA2594
IC003	8-759-345-38	IC TC4538BP
IC004	8-752-006-10	IC CX20061

COIL

L001	1-408-787-00	INDUCTOR CHIP	68UH
L002	1-408-789-21	INDUCTOR CHIP	100UH
L003	1-408-786-21	INDUCTOR CHIP	56UH
L004	1-408-786-21	INDUCTOR CHIP	56UH
L005	1-408-788-21	INDUCTOR CHIP	82UH
L006	1-408-775-41	INDUCTOR CHIP	6.8UH
L007	1-408-776-00	INDUCTOR CHIP	8.2UH
L008	1-408-789-21	INDUCTOR CHIP	100UH

VARIABLE COIL

LV001	1-408-512-00	COIL (VARIABLE) 10UH
LV002	1-408-530-00	COIL (VARIABLE) 3.3UH
LV003	1-408-512-00	COIL (VARIABLE) 10UH

TRANSISTOR

Q001	8-729-100-67	TRANSISTOR 2SC1623-L7
Q002	8-729-100-67	TRANSISTOR 2SC1623-L7
Q003	8-729-100-67	TRANSISTOR 2SC1623-L7
Q004	8-729-100-67	TRANSISTOR 2SC1623-L7
Q005	8-729-100-67	TRANSISTOR 2SC1623-L7
Q006	8-729-100-67	TRANSISTOR 2SC1623-L7
Q007	8-729-901-04	TRANSISTOR DTA114EK
Q008	8-729-100-67	TRANSISTOR 2SC1623
Q009	8-729-100-67	TRANSISTOR 2SC1623
Q010	8-729-100-67	TRANSISTOR 2SC1623
Q012	8-729-100-67	TRANSISTOR 2SC1623

RESISTOR

R001	1-216-093-00	METAL CHIP	68K	5%	1/10W
R002	1-216-079-00	METAL CHIP	18K	5%	1/10W
R003	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R004	1-216-043-00	METAL CHIP	560	5%	1/10W
R005	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R006	1-216-129-00	METAL CHIP	2.2M	5%	1/10W
R007	1-216-085-00	METAL CHIP	33K	5%	1/10W
R008	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R009	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R010	1-216-095-00	METAL CHIP	82K	5%	1/10W
R011	1-216-075-00	METAL CHIP	12K	5%	1/10W
R012	1-216-097-00	METAL CHIP	100K	5%	1/10W
R013	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R014	1-216-127-11	METAL CHIP	1.8M	5%	1/10W
R015	1-216-001-00	METAL CHIP	10	5%	1/10W
R016	1-216-003-11	METAL CHIP	12	5%	1/10W
R017	1-216-097-00	METAL CHIP	100K	5%	1/10W
R018	1-216-081-00	METAL CHIP	22K	5%	1/10W
R019	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R020	1-215-453-00	METAL	22K	1%	1/6W
R021	1-216-081-00	METAL CHIP	22K	5%	1/10W
R022	1-216-083-00	METAL CHIP	27K	5%	1/10W
R023	1-216-079-00	METAL CHIP	18K	5%	1/10W
R024	1-216-041-00	METAL CHIP	470	5%	1/10W
R025	1-216-043-00	METAL CHIP	560	5%	1/10W
R026	1-216-049-00	METAL CHIP	1K	5%	1/10W
R027	1-216-049-00	METAL CHIP	1K	5%	1/10W
R028	1-216-085-00	METAL CHIP	33K	5%	1/10W
R029	1-216-083-00	METAL CHIP	27K	5%	1/10W

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

Ref.No	Part No.	Description				Remark
R030	1-216-045-00	METAL CHIP	680	5%	1/10W	
R031	1-216-045-00	METAL CHIP	680	5%	1/10W	
R032	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R033	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R034	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R035	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R036	1-216-041-00	METAL CHIP	470	5%	1/10W	
R037	1-216-041-00	METAL CHIP	470	5%	1/10W	
R038	1-216-039-00	METAL CHIP	390	5%	1/10W	
R039	1-216-041-00	METAL CHIP	470	5%	1/10W	
R040	1-216-045-00	METAL CHIP	680	5%	1/10W	
R041	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R042	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R043	1-216-037-00	METAL CHIP	330	5%	1/10W	
R044	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R045	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R046	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R047	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R048	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R049	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R050	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R051	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R052	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R053	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R054	1-216-043-00	METAL CHIP	560	5%	1/10W	
R055	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R056	1-216-039-00	METAL CHIP	390	5%	1/10W	
R057	1-216-039-00	METAL CHIP	390	5%	1/10W	
R058	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R059	1-216-091-00	METAL CHIP	56K	5%	1/10W	

VARIABLE RESISTOR

RV001	1-230-871-11	RES, ADJ, METAL GLAZE	22K
RV002	1-230-873-11	RES, ADJ, METAL GLAZE	47K
RV003	1-230-871-11	RES, ADJ, METAL GLAZE	22K
RV004	1-230-867-11	RES, ADJ, METAL GLAZE	1K
RV005	1-230-867-11	RES, ADJ, METAL GLAZE	1K
RV006	1-230-868-11	RES, ADJ, METAL GLAZE	2.2K
RV007	1-230-867-11	RES, ADJ, METAL GLAZE	1K

CRYSTAL

X001	1-567-504-11	CRYSTAL, OSC (4.43MHz)

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*A-7070-024-A LD-1 BOARD, COMPLETE
****

DIODE

D001	8-719-928-54	DIODE GL-450S

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Ref.No	Part No.	Description				Remark
	A-7070-025-A	MS-4 BOARD, COMPLETE **********				
	1-163-038-00	CERAMIC CHIP 0.1MF				25V
	*1-564-671-31	PIN, CONNECTOR (HOOK TYPE)				

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LS-9 BOARD
****

*1-564-671-11 PIN, CONNECTOR (HOOK TYPE)

****

*1-621-982-13 MJ-11 BOARD
****

CAPACITOR

C725	1-124-462-00	ELECT	10MF	20%	16V
C726	1-124-462-00	ELECT	10MF	20%	16V
C741	1-124-462-00	ELECT	10MF	20%	16V
C742	1-124-225-00	ELECT	100MF	20%	6.3V
C743	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C744	1-163-121-00	CERAMIC CHIP	150PF	5%	50V

DIODE

D101	8-719-109-60	DIODE RD2.7ESB2

IC

IC721	8-759-106-02	IC UPC4570G2

JACK

J401	1-507-899-00	JACK (SMALL TYPE)

JUMPER RESISTOR

JR053	1-216-295-00	METAL CHIP	0	5%	1/10W
JR054	1-216-295-00	METAL CHIP	0	5%	1/10W
JR055	1-216-295-00	METAL CHIP	0	5%	1/10W
JR056	1-216-295-00	METAL CHIP	0	5%	1/10W
JR057	1-216-295-00	METAL CHIP	0	5%	1/10W
JR099	1-216-296-00	METAL CHIP	0	5%	1/8W

RESISTOR

R710	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R732	1-216-081-00	METAL CHIP	22K	5%	1/10W
R733	1-216-025-00	METAL CHIP	100	5%	1/10W
R735	1-216-083-00	METAL CHIP	27K	5%	1/10W
R741	1-216-105-00	METAL CHIP	220K	5%	1/10W
R742	1-216-081-00	METAL CHIP	22K	5%	1/10W
R743	1-216-025-00	METAL CHIP	100	5%	1/10W
R744	1-216-025-00	METAL CHIP	100	5%	1/10W
R745	1-216-083-00	METAL CHIP	27K	5%	1/10W

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

TE-6 | TE-5 | DL-15 | DO-1 | DT-63

Ref.No	Part No.	Description	Remark
	*1-621-998-11	TE-6 BOARD **********	
	*3-716-845-01	HOLDER (LEFT), SENSOR	
		TRANSISTOR	
Q001	8-729-904-10	PT360FS	
		SWITCH	
S904	1-570-112-11	SWITCH, LEAF	
S905	1-570-112-11	SWITCH, LEAF	
**********			
	*1-621-997-11	TE-5 BOARD **********	
	*3-716-844-01	HOLDER (RIGHT), SENSOR	
		TRANSISTOR	
Q001	8-729-904-10	PT360FS	
		SWITCH	
S903	1-570-112-11	SWITCH, LEAF	
**********			
	*1-621-993-12	DL-15 BOARD **********	
		DIODE	
D001	⚠8-719-109-50	DIODE RD2.0ESB1	
D301	⚠8-719-500-32	DIODE D3SB10	
		IC	
IC001	8-759-803-56	IC L7808ML	
		TRANSISTOR	
Q001	8-729-900-80	TRANSISTOR DTC114ES	
		RESISTOR	
R001	1-249-417-11	CARBON 1K 5% 1/6W	
**********			
	*1-621-992-12	DO-1 BOARD **********	
		TRANSISTOR	
Q501	8-729-303-58	TRANSISTOR 2SC3851-O	
Q502	8-729-804-67	TRANSISTOR 2SB1133-R	
**********			

Ref.No	Part No.	Description	Remark
	*1-621-994-11	DT-63 BOARD **********	
	1-938-846-11	HARNESS (DO-12)	
		CAPACITOR	
C102	1-126-175-11	ELECT 15000MF 20% 25V	
C103	1-123-334-00	ELECT 220MF 20% 25V	
C104	1-123-332-00	ELECT 47MF 20% 16V	
C105	1-123-332-00	ELECT 47MF 20% 16V	
C110	1-125-445-11	DOUBLE LAYERS 0.22MF 5.5V	
C111	1-123-387-00	ELECT 47MF 20% 100V	
C112	1-123-387-00	ELECT 47MF 20% 100V	
C114	1-106-212-00	MYLAR 0.047MF 10% 100V	
C115	1-123-334-00	ELECT 220MF 20% 25V	
		CONNECTOR	
CN102	*1-560-893-00	PIN, CONNECTOR 5P	
CN104	*1-560-893-00	PIN, CONNECTOR 5P	
CN105	*1-560-891-00	PIN, CONNECTOR 3P	
CN106	*1-560-896-00	PIN, CONNECTOR 8P	
CN107	*1-560-893-00	PIN, CONNECTOR 5P	
CN108	*1-560-891-00	PIN, CONNECTOR 3P	
CN203	*1-560-894-00	PIN, CONNECTOR 6P	
		DIODE	
D103	8-719-911-19	DIODE 1SS119	
D104	8-719-911-19	DIODE 1SS119	
D106	8-719-110-16	DIODE RD10ES-B1	
D107	8-719-200-02	DIODE 10E2	
D108	8-719-200-02	DIODE 10E2	
D109	8-719-110-42	DIODE RD15ES-B3	
D110	8-719-109-93	DIODE RD6.2ES-B2	
D111	8-719-107-94	DIODE 1SS202	
D112	8-719-115-21	DIODE RD39JSB	
D114	8-719-109-98	DIODE RD6.8ES-B3	
D115	8-719-110-42	DIODE RD15ESB3	
D116	8-719-110-16	DIODE RD10ES-B1	
D117	8-719-109-82	DIODE RD4.7ES-B3	
D119	8-719-911-19	DIODE 1SS119	
		IC LINK	
PS101	⚠1-532-727-11	LINK, IC (ICP-N5)	
PS102	⚠1-532-679-00	LINK, IC (ICP-N15)	
PS103	⚠1-532-686-00	LINK, IC (ICP-F75)	
PS104	⚠1-532-605-11	LINK, IC (ICP-N10)	
		TRANSISTOR	
Q103	8-729-103-43	TRANSISTOR 2SB734	
Q106	8-729-177-32	TRANSISTOR 2SD773	
Q107	8-729-177-32	TRANSISTOR 2SD773	

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

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

Ref.No	Part No.	Description				Remark
		RESISTOR				
R103	1-249-421-11	CARBON	2.2K	5%	1/6W	
R104	1-249-421-11	CARBON	2.2K	5%	1/6W	
R105	1-246-449-25	CARBON	100	5%	1/4W	
R107	1-249-425-11	CARBON	4.7K	5%	1/6W	
R108	1-249-434-11	CARBON	27K	5%	1/6W	
R109	1-249-441-11	CARBON	100K	5%	1/6W	
R111	1-249-431-11	CARBON	15K	5%	1/6W	
R112	1-249-422-11	CARBON	2.7K	5%	1/6W	
R113	1-249-416-11	CARBON	820	5%	1/6W	
		MISCELLANEOUS				
	⚠1-464-829-11	MODULATOR, RF (RFU-867)				
	⚠1-534-817-XX	CORD, POWER				
	1-535-535-11	TERMINAL, SHAFT GROUND				
	*1-555-110-00	CABLE, PIN				
C901	1-161-057-00	CAP, CERAMIC 0.033MF				
M901	A-7040-134-A	MOTOR SUB ASSY, REEL				
M903	8-835-138-01	MOTOR, DC (DNR-5301A) (CONTROL)				
M904	A-7040-065-A	MOTOR ASSY, L (LOADING)				
M905	A-7090-661-A	MOTOR BLOCK ASSY, LS (LINEAR SKATE)				
M906	8-835-247-01	MOTOR, DC BHF-2804D (CAPSTAN)				
PM901	⚠1-454-377-31	SOLENOID, PLUNGER (BRAKE)				
S901	1-554-942-11	SWITCH, PUSH (RECOG R)				
S902	1-554-942-11	SWITCH, PUSH (RECOG L)				
T401	⚠1-448-836-11	TRANSFORMER, POWER				

ACCESSORIES AND PACKING MATERIALS

Part No.	Description	Remark
A-6767-550-A	COMMANDER ASSY	
1-551-513-00	CABLE, COAXAL ASSY	
1-551-734-11	CORD, CONNECTION	
1-534-049-31	CORD, CONNECTION (RK-74H)	
*3-677-503-00	SHEET, PROTECTION	
3-695-308-01	DRIVER, VOLUME	
*3-713-409-11	CUSHION (UPPER)	
*3-713-410-01	CUSHION (LOWER)	
*3-716-990-01	INDIVIDUAL CARTON	
3-765-383-11	MANUAL, INSTRUCTION	

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

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

SECTION 7
MECHANISM ADJUSTMENT

7-1. MECHANICAL CHECK, ADJUSTMENT AND PREPARATIONS FOR REPLACEMENT

Note: Regarding the removal procedures of the cabinet and board, see Section 2.

7-1-1. Cassette Compartment Assembly And Operation Without Tape Inserted

Note: The set will not operate if there is a strong light source near it.

1. Method to loading (See Fig. 7-1)

1) Remove the front panel and covers (upper, lower) according to item Section 2, 2-1 and 2-2.
2) Connect a power supply and press the power button to turn on.
3) Press the EJECT button.
4) Disconnect power supply.
5) According to item Section 2, 2-14, remove the cassette compartment assembly.
6) Place tape over the pin coming out of the push switch ❶.
7) Place a cap ❷ over the LED assembly.
8) Press the lock holder ❸ in the direction of arrow Ⓐ.
9) Short-circuit the leaf switch ❹ by clip ❺, etc.
10) Connect power supply and press the power button to turn on.

2. Putting into Playback State (See Fig. 7-1)

1) Perform the loading procedure in 1.
2) Place the rubber band ❻ as shown between S reel and T reel sides.
3) Press the playback button, and when the T reel side starts to rotate, press the tension regulator arm assembly ❼ in the direction of arrow Ⓑ. (At this time, the tension regulator band is released and the S reel side rotates.)
4) Press the stop button to stop.

3. Putting into Recording State (See Fig. 7-1)

1) Perform the loading procedure in 1.
2) Place a rubber band ❻ as shown between the S reel and T reels.
3) Press the recording button, and when the T reel side starts to rotate, push the tension regulator arm assembly ❼ in the direction of arrow Ⓑ. (At this time, the tension regulator band is released and the S reel side rotates.)
4) Press the stop button to stop.

4. Eject

1) Press the OPEN/CLOSE button.

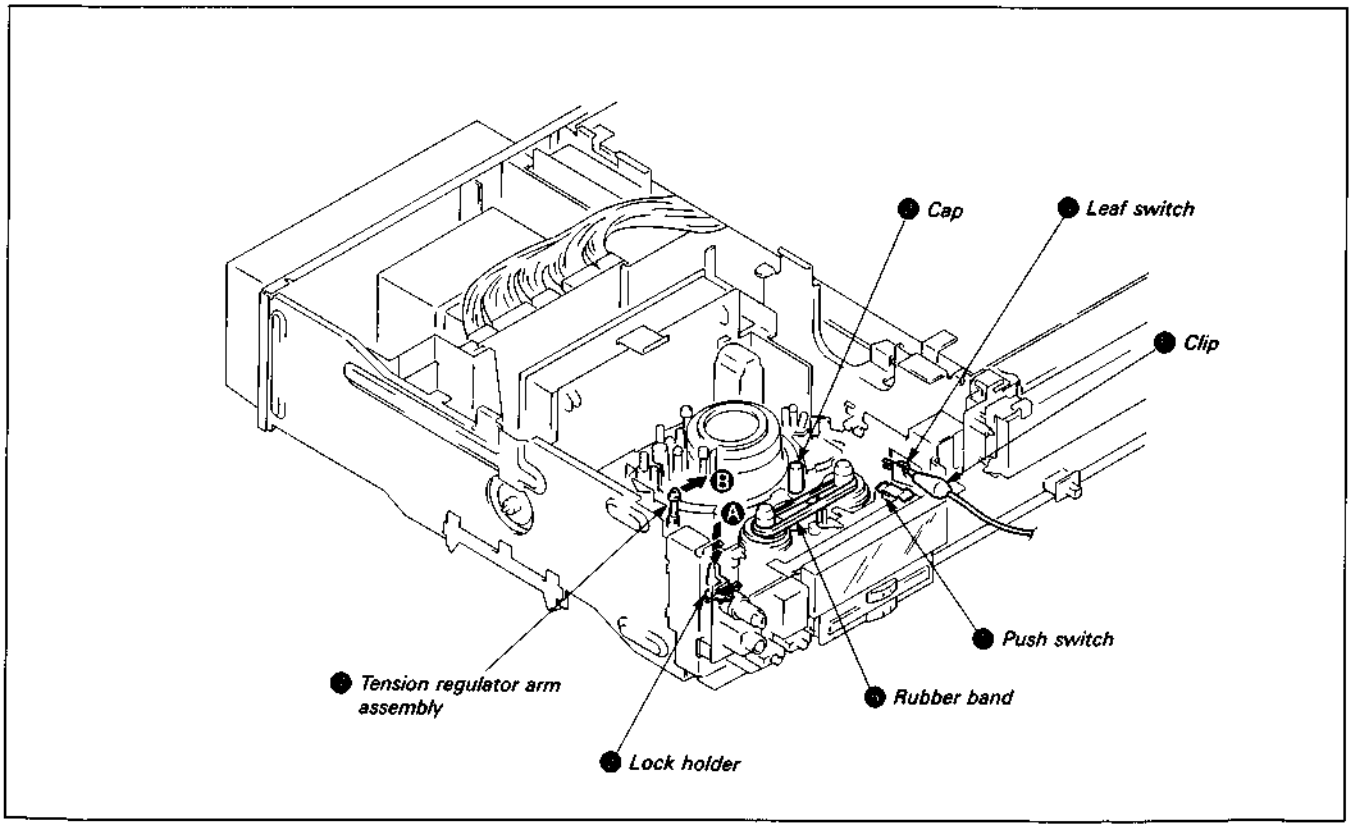


Fig. 7-1.

7-1-2. Handling of Mode Selector

1. Location of parts (External view)

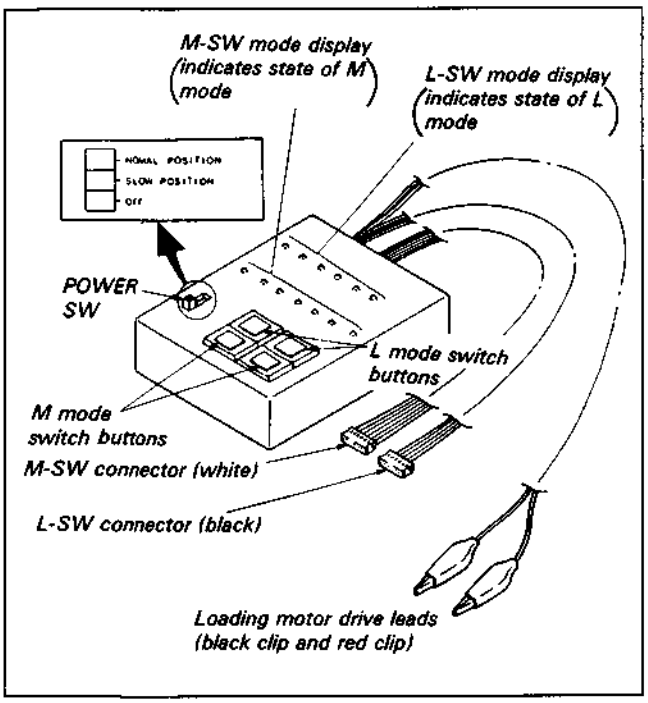


Fig. 7-2.

2. Connection (See Fig. 7-3.)

1) Remove the front panel and covers (upper, lower) according to item Section 2, 2-1 and 2-2.
2) According to item Section 2, 2-14, remove the cassette compartment assembly.
3) Remove the MS-4 board and LS-9 board connectors.
4) Insert the M-SW connector (6P connector, 6 harness, white) ● into the set MS-4 board.
5) Insert the L-SW connector (6P connector, 4 harness, black) ● into the set LS-9 board.
6) Connect the loading motor drive lead ● red lead side to the loading motor red clip and the brown lead to the black clip.

3. Caution

1) When operating L-SW, be sure to set the M-SW mode to LOADING/UNLOADING.
2) When operating M-SW, be sure to set the L-SW mode to TOP or END.

4. Handling

BLANK lights up regardless of L MODE or M MODE when it is in neither mode during select.

1) L MODE
   - When the L mode switch button right side is pressed continuously, the display lights up from LOADING TOP ➡ LOADING END, in order from left to right.
   - To go from LOADING END ➡ LOADING TOP, press the left button continuously until the desired MODE is reached.
   - In slow position, the L mode operates more slowly than for normal position.
2) M MODE
   - Set L-SW to LOADING TOP before performing EJECT.
   - Set L-SW to LOADING END to perform FF/REW ➡ RVS or RVS ➡ FF/REW.
   - When the right M MODE switch button is pressed continously, the display lights up from EJECT ➡ RVS in order from left to right.
   - To go from RVS ➡ EJECT, press the left side switch button continuously until the desired MODE is reached.

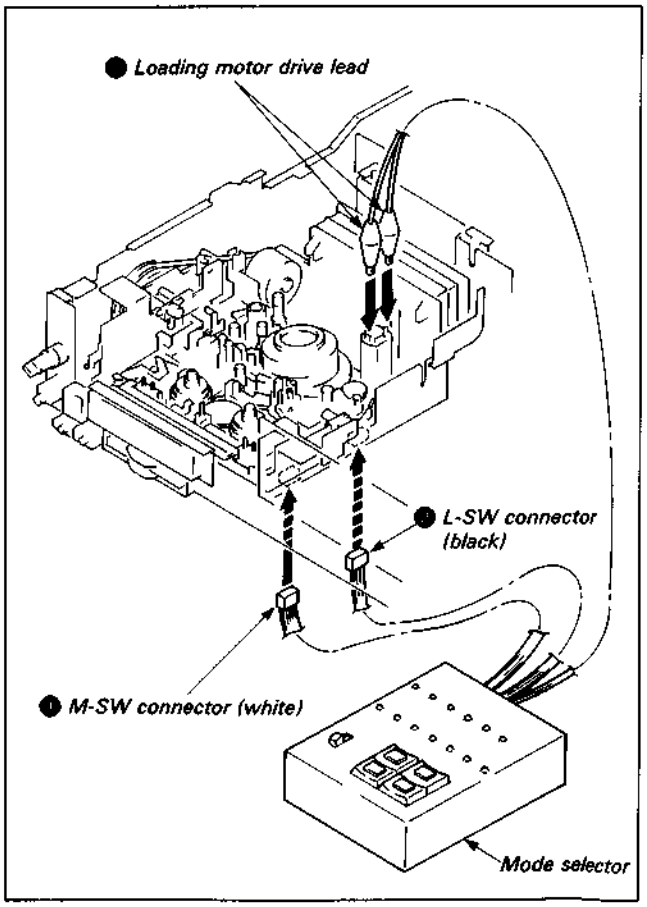
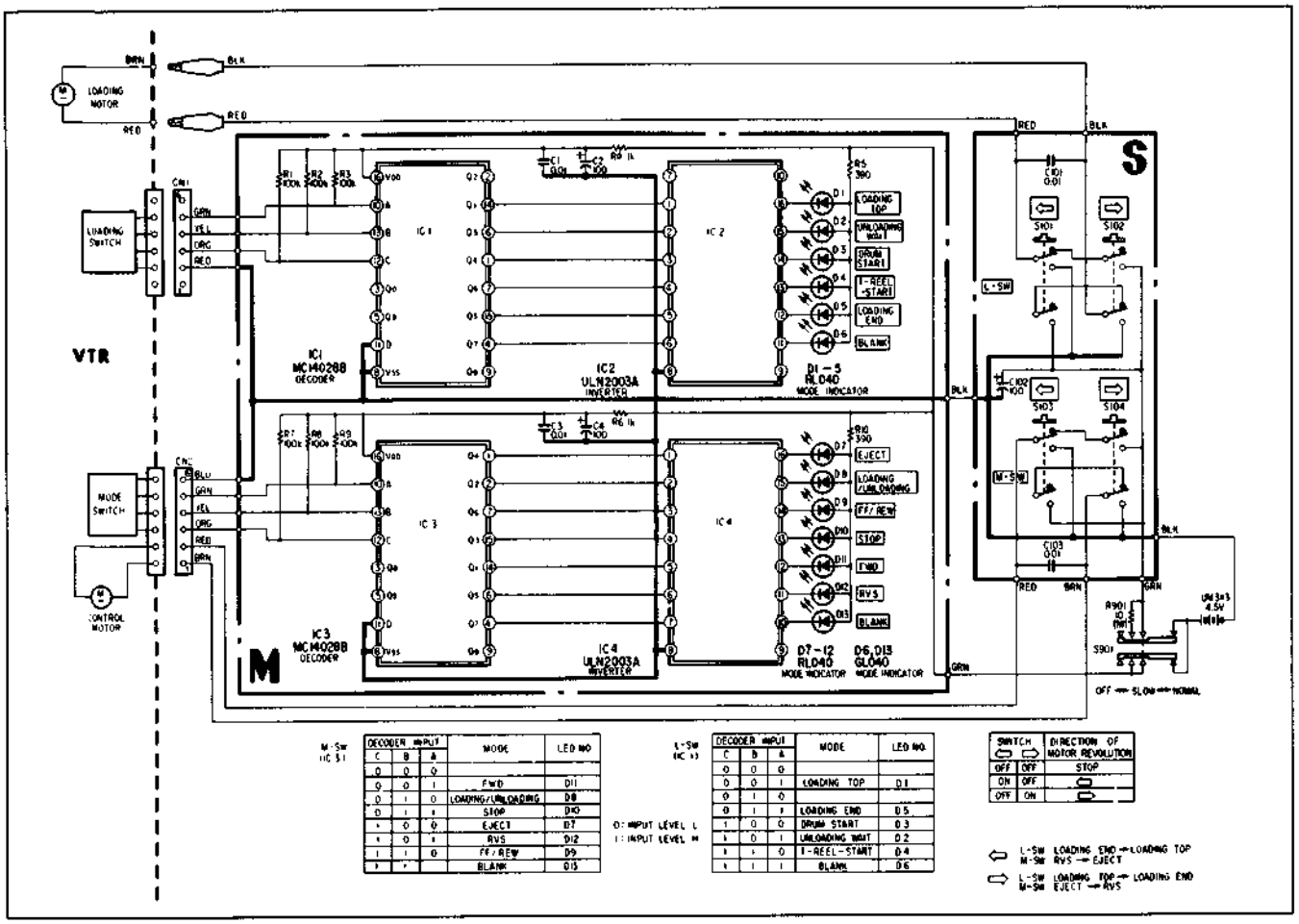


Fig. 7-3.

5. Mode Selector Schematic



6. Mode Selector Parts List

Symbol	Part No.	Part Name		
		capacitors		
C1	1-108-579-00	mylar	0.01μF	50V
C2	1-123-333-00	electrolytic	100μF	24V
C3	1-108-579-00	mylar	0.01μF	50V
C4	1-123-333-00	electrolytic	100μF	24V
C101	1-108-579-00	mylar	0.01μF	50V
C102	1-123-333-00	electrolytic	100μF	24V
C103	1-108-579-00	mylar	0.01μF	50V
		Diodes		
D1	8-179-812-31	diode	RL040	
D2	8-179-812-31	diode	RL040	
D3	8-179-812-31	diode	RL040	
D4	8-179-812-31	diode	RL040	
D5	8-179-812-31	diode	RL040	
D6	8-719-812-33	diode	GL040	
D7	8-179-812-31	diode	RL040	
D8	8-179-812-31	diode	RL040	
D9	8-179-812-31	diode	RL040	
D10	8-179-812-31	diode	RL040	
D11	8-179-812-31	diode	RL040	
D12	8-179-812-31	diode	RL040	
D13	8-719-812-33	diode	GL040	

Symbol	Part No.	Part Name		
		IC		
IC1	8-759-240-28 IC	TC4028BP		
IC2	8-759-120-03	IC	μPA2003A	
IC3	8-759-240-28	IC	TC4028BP	
IC4	8-759-120-03	IC	μPA2003A	
		resistor		
R1	1-247-179-00	carbon	100K	1/4W
R2	1-247-179-00	carbon	100K	1/4W
R3	1-247-179-00	carbon	100K	1/4W
R4	1-247-131-00	carbon	1K	1/4W
R5	1-247-121-00	carbon	390	1/4W
R6	1-247-131-00	carbon	1K	1/4W
R7	1-247-179-00	carbon	100K	1/4W
R8	1-247-179-00	carbon	100K	1/4W
R9	1-247-179-00	carbon	100K	1/4W
R10	1-247-121-00	carbon	390	1/4W
R901	1-214-594-00	metal film	10	1W

7-2. PERIODIC CHECK AND MAINTENANCE

Please perform the following periodic checks and maintenance in order to obtain optimum set function and performance, and to keep the mechanism and tape in good condition. Also, perform the maintenance below after repair, regardless of the length of time the set has been used by the user.

7-2-1. Cleaning of Rotary Drum Assembly

1) Press a chamois cloth (Ref. No. J-2) soaked in cleaning fluid (Ref. No. J-1) lightly against the rotary drum assembly, and slowly rotate the rotary upper drum assembly counterclockwise by finger to clean.

Note: Do not use the power supply to rotate the motor, and do not rotate the drum clockwise by finger.
Also, there is a danger of damaging the head tip if the chamois cloth is moved vertically relative to the head tip, so please follow the instruction above for cleaning.

7-2-2. Cleaning of Tape Path (See Fig. 7-4)

1) Place the cassette compartment assembly in EJECT state, and clean the tape path (No. 1 ~ No. 11 guides, capstan shaft, pinch roller) with a chamois cloth soaked in cleaning fluid.

7-2-3. Cleaning of Drive System

1) Clean the drive system (timing belt, surface of reel tables) with a chamois cloth soaked in cleaning fluid.

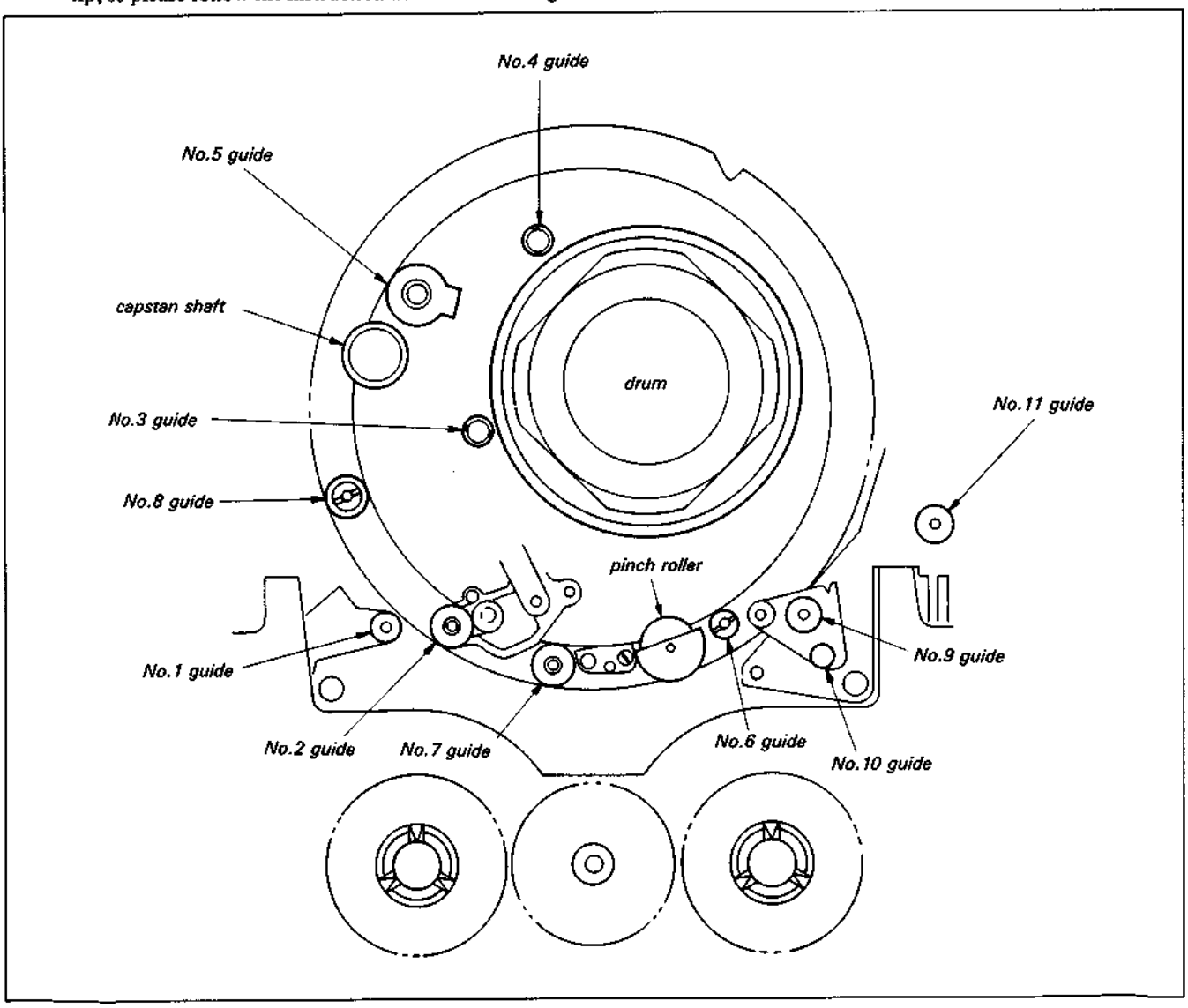


Fig. 7-4.

7-2-4. Periodic Check

Perform following according to number of hours of use.

○Cleanning ◎Oiling ★Replacement ☆Checking

	Location	Hours of Use (H)										Notes
		500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	
Tape Path	Cleaning of tape path surface	○	○	○	○	○	○	○	○	○	○	Be careful of oil
	Cleaning and degaussing of rotary drum assembly	○	○	○	○	○	○	○	○	○	○	Be careful of oil
Drive System	L motor belt	○	○	○	○	○	○	○	★	○	○	3-686-546-01 Replace here, or every two years.
	Plunger solenoid	—	—	—	○	—	—	—	○	—	—	1-454-377-31
	Capstan shaft bearing	—	◎	—	◎	—	◎	—	◎	—	◎	Be careful not to get oil on the tape path surface.
	Loading motor	—	☆	—	☆	—	☆	—	☆	—	☆	A-7040-065-A
	Control motor	—	☆	—	☆	—	☆	—	☆	—	☆	8-835-138-01
	LS motor belt	○	○	○	○	○	○	○	★	○	○	3-713-670-01
	LS motor	—	☆	—	☆	—	☆	—	☆	—	☆	A-7090-661-A
	Reel motor	—	☆	—	☆	—	☆	—	☆	—	☆	A-7040-134-A
Performance Check	Abnormal noise	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Back tension measurement	—	☆	—	☆	—	☆	—	☆	—	☆	
	Brake system	—	☆	—	☆	—	☆	—	☆	—	☆	
	FWD, RVS torque measurement	—	☆	—	☆	—	☆	—	☆	—	☆	

Note: When performing an overhaul, refer to the items above when replacing parts.

Note: Sony Oil

- Be sure to use Sony Oil. (There is a danger of trouble occurring if a different viscosity is used.)
  Sony Oil: Parts No. 7-661-018-01 (Mitsubishi Diamond oil Hydrofluid EP56)
- Be sure to use clean oil when lubricating the shaft bearing, because there is a danger of wear and burning if dirty oil is used.
- One drop of oil means the amount which sticks to a 2mm diameter rod, as shown in Fig. 7-5.

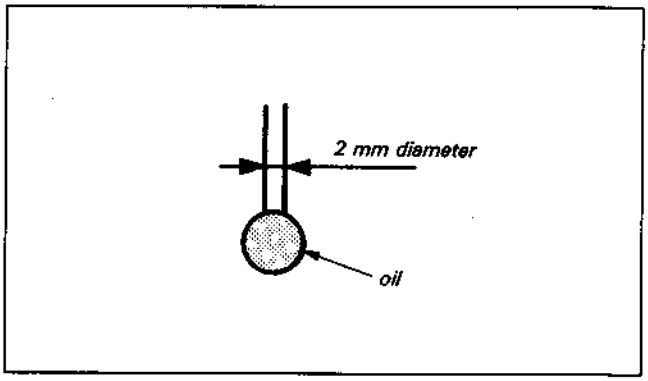
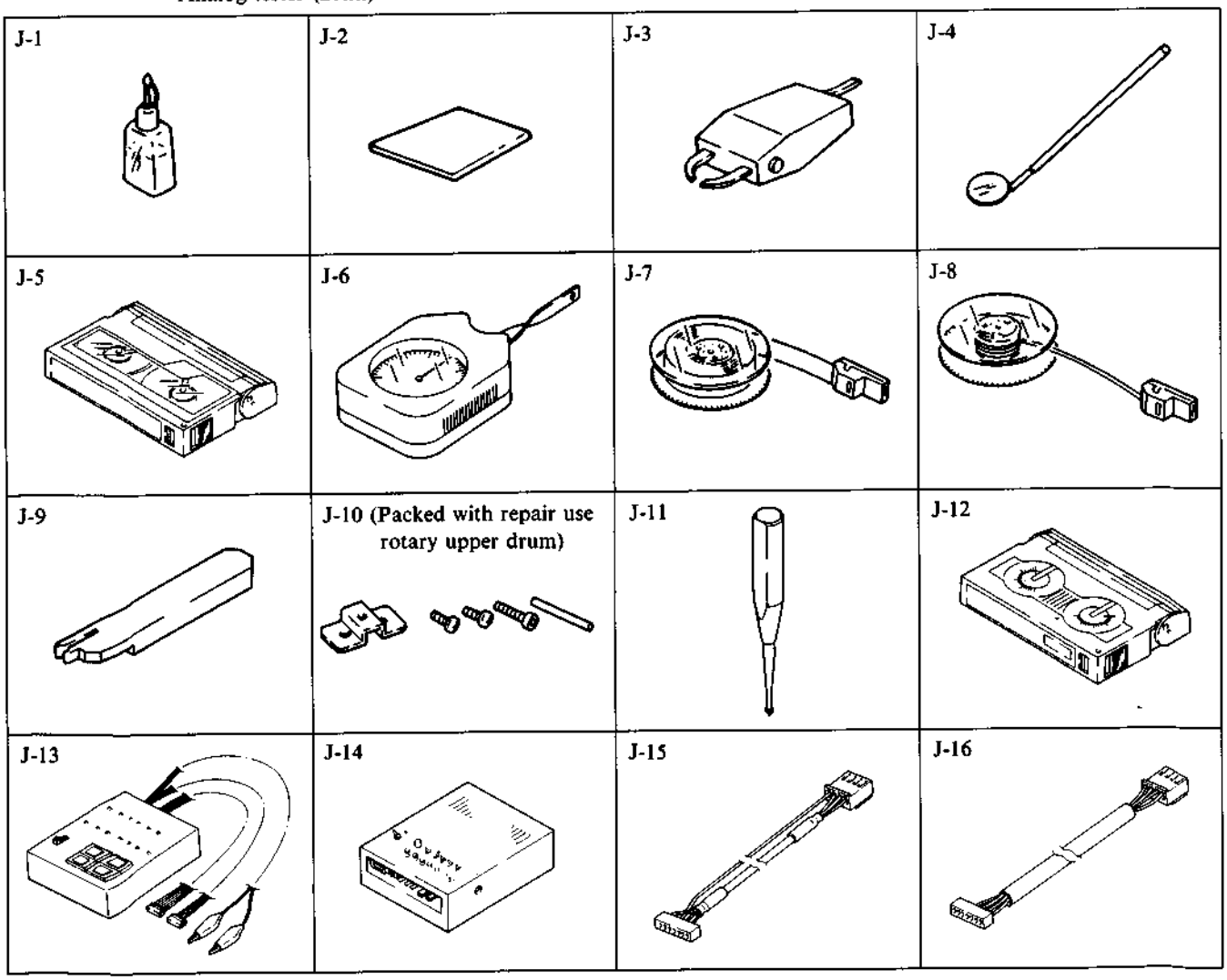


Fig. 7-5.

7-2-5. Service Jig Table

Ref. No.	Name	Part No.	Jig	Use, Notes
J-1	Cleaning fluid	Y-2031-001-1	———	
J-2	Chamois cloth	2-034-697-00	———	
J-3	Head degausser	Commercially sold	———	
J-4	Small adjustment mirror, spare mirror	J-6080-029-A J-6080-030-1	SL-5052	Tape path
J-5	Alignment tape (WR5-1C)	8-967-995-06		Tape path
J-6	Dial tension gauge	J-6080-827-A		torque measurement
J-7	Tension measurement reel	J-6080-831-A		with ϕ30 tape
J-8	Tension measurement reel	J-6080-832-A		with ϕ16 string
J-9	No. 10 gear phase jig	J-6080-823-A	GD-2047	
J-10	Rotary drum jig	(packed with the repair rotary upper drum)		
J-11	No. 6 guide lock jig	J-6080-826-A		
J-12	FWD, RVS take-up torque cassette	J-6080-824-A	GD-2089	
J-13	Mode selector	J-6080-825-A		for all models
J-14	TRACK SHIFT & MONITOR JIG	J-6080-851-A		Tape path
J-15	RF/SWP connector	J-6080-883-A		Tape path
J-16	CTL connector	J-6080-884-A		Tape path

Other equipment: Oscilloscope
Analog tester (20kΩ)



7-3. MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

Note: Use the mode selector (Ref. No. J-13) for this mechanical check, adjustment and replacement.
The mode inside the [ ] is the mode set by pressing the mode selector button.

7-3-1. S Reel Table Assembly (See Fig. 7-6.)

1. Removal

1) Remove the cassette compartment assembly according to item Section 2, 2-14.
2) Set to [FF/REW] mode.
3) Remove screw ❶ and reel table stopper ❷.
4) Remove the S reel table assembly ❸.

Note: Be sure to hold the upper reel hook when removing.

2. Mounting

1) Place a half drop of oil on the spindle ❹ upper surface.
2) Move the S main brake assembly, ❺ in the direction of arrow.
3) Mount the S reel table assembly ❸, being careful not to hit the tension regulator band assembly ❻.
4) Mount the reel table stopper ❷ and tighten with screw ❶.
5) Set to [LOADING/UNLOADING] mode.
6) Mount the cassette compartment assembly by following the procedure in item Section 2, 2-14. in reverse.

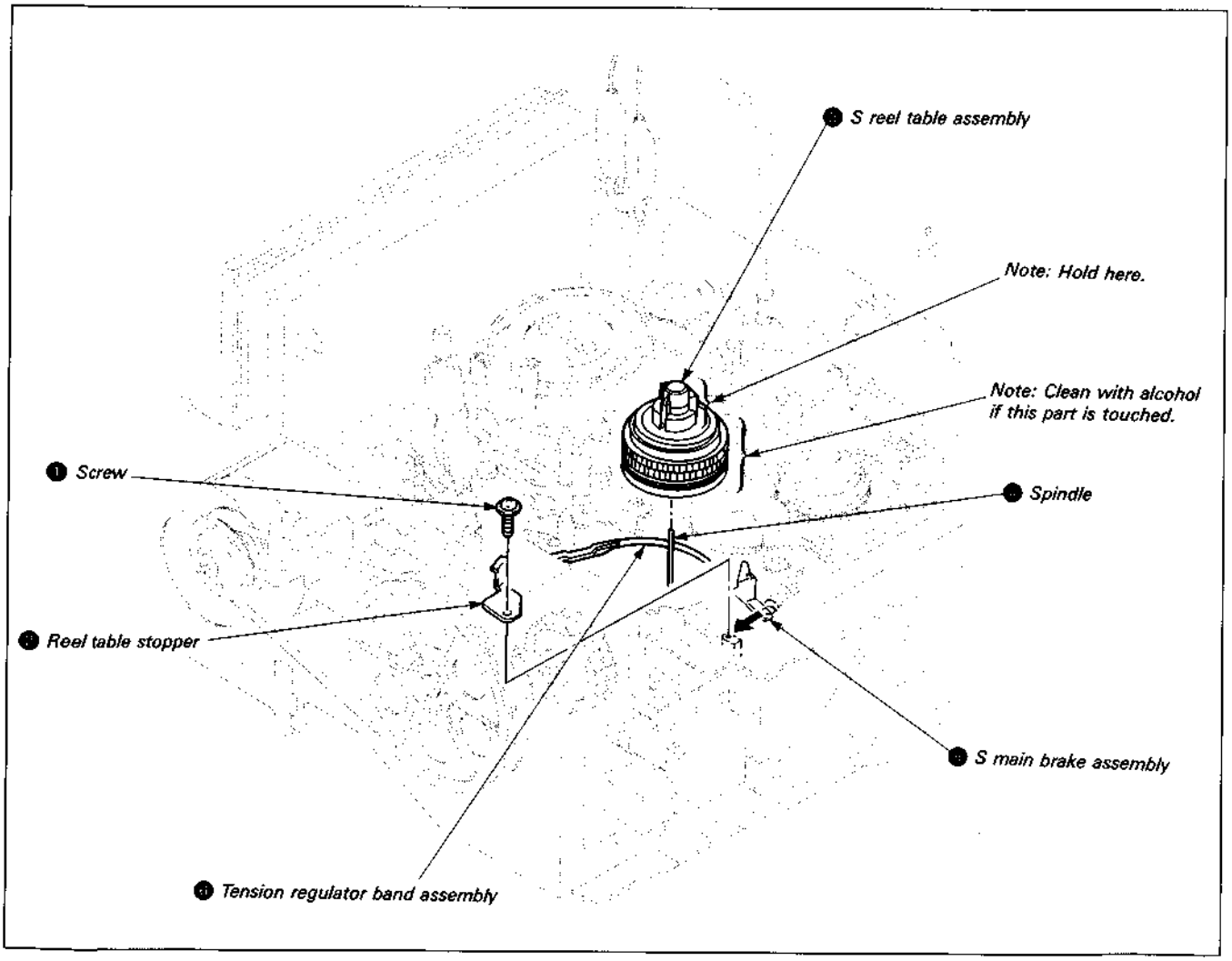


Fig. 7-6.

7-3-2. T Reel Table Assembly (See Fig. 7-7.)

1. Removal

1) Remove the cassette compartment assembly according to item Section 2, 2-14.
2) Set to [UNLOADING WAIT] mode.
3) Place the spring ❷ on the T.S brake assembly ❶ on the hook on the lock slider assembly.
4) Remove the stopper washer ❸ and the T soft brake assembly ❶.
5) Set to [EJECT] mode.
6) Move drive gear (B) assembly ❹ in the direction of arrow.
7) Remove T reel table assembly ❺.

Note: Be sure to hold the upper reel hook when removing.

2. Mounting

1) Place a half drop of oil on the spindle ❶ upper surface.
2) Move the drive gear (B) assembly ❶ in the direction of arrow. (Check [EJECT] mode.)
3) Mount the T reel table assembly ❶.
4) Mount the T soft brake assembly ❶ and the stopper washer ❶.
5) Place the spring ❶ on the T.S brake assembly ❶ hook.
6) Set to [LOADING TOP], [LOADING/UNLOADING] mode.
7) Mount the cassette compartment assembly by following the procedure in item Section 2, 2-14. in reverse.

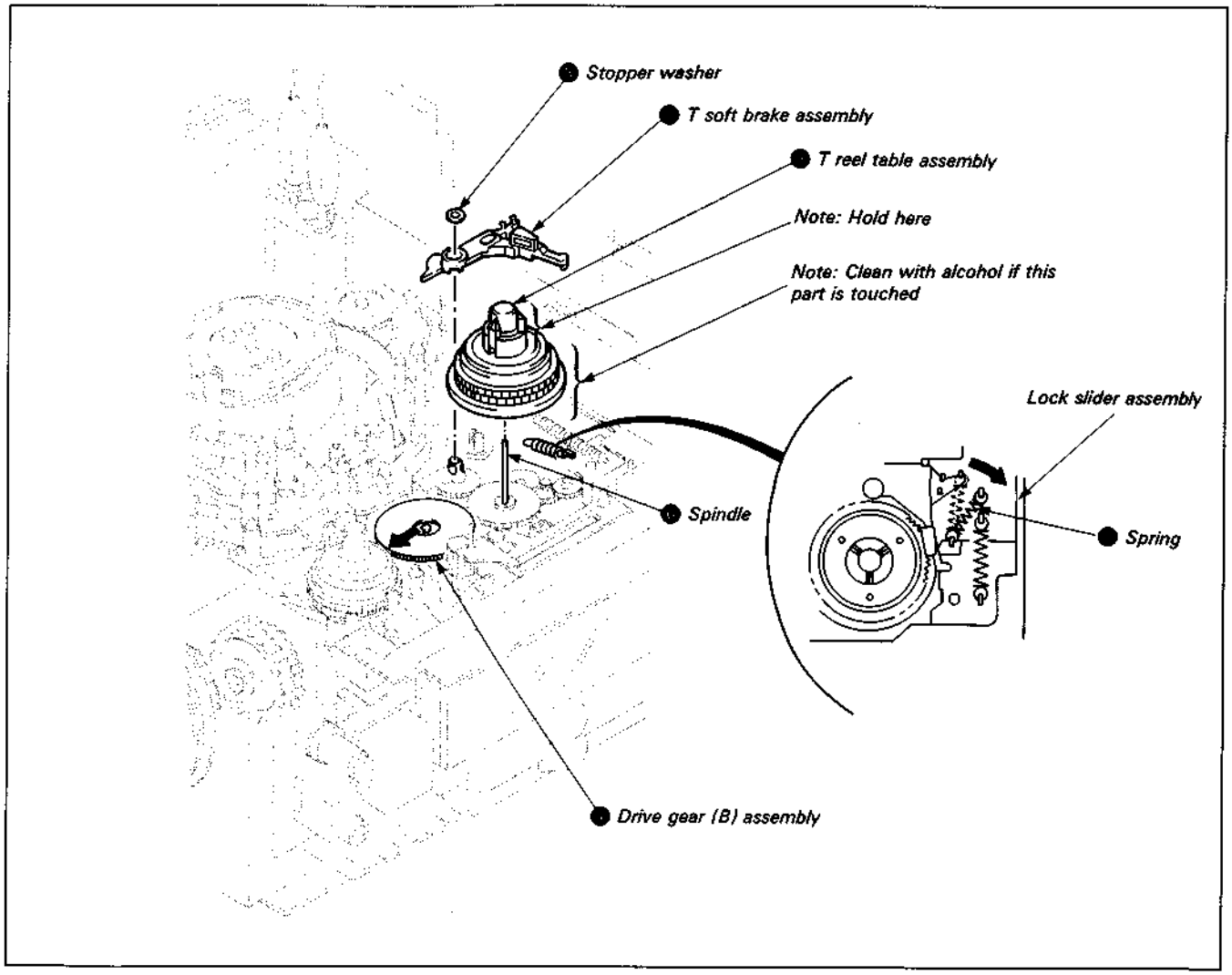


Fig. 7-7.

7-3-3. Pinch Press Arm Assembly (See Fig. 7-8)

1. Removal

1) Remove the cassette compartment assembly according to item Section 2, 2-14.
2) Place the spring ● on the pinch press arm assembly ●.
3) Remove the stopper washer ● and the pinch press arm assembly ●.

2. Mounting

1) Place a half drop of oil on shaft ●.
2) Mount the pinch press arm assembly ● and the stopper washer ●.
3) Place the spring ● on the tension regulator spring hook assembly ●.
4) Mount the cassette compartment assembly by following the procedure in item Section 2, 2-14. in reverse.

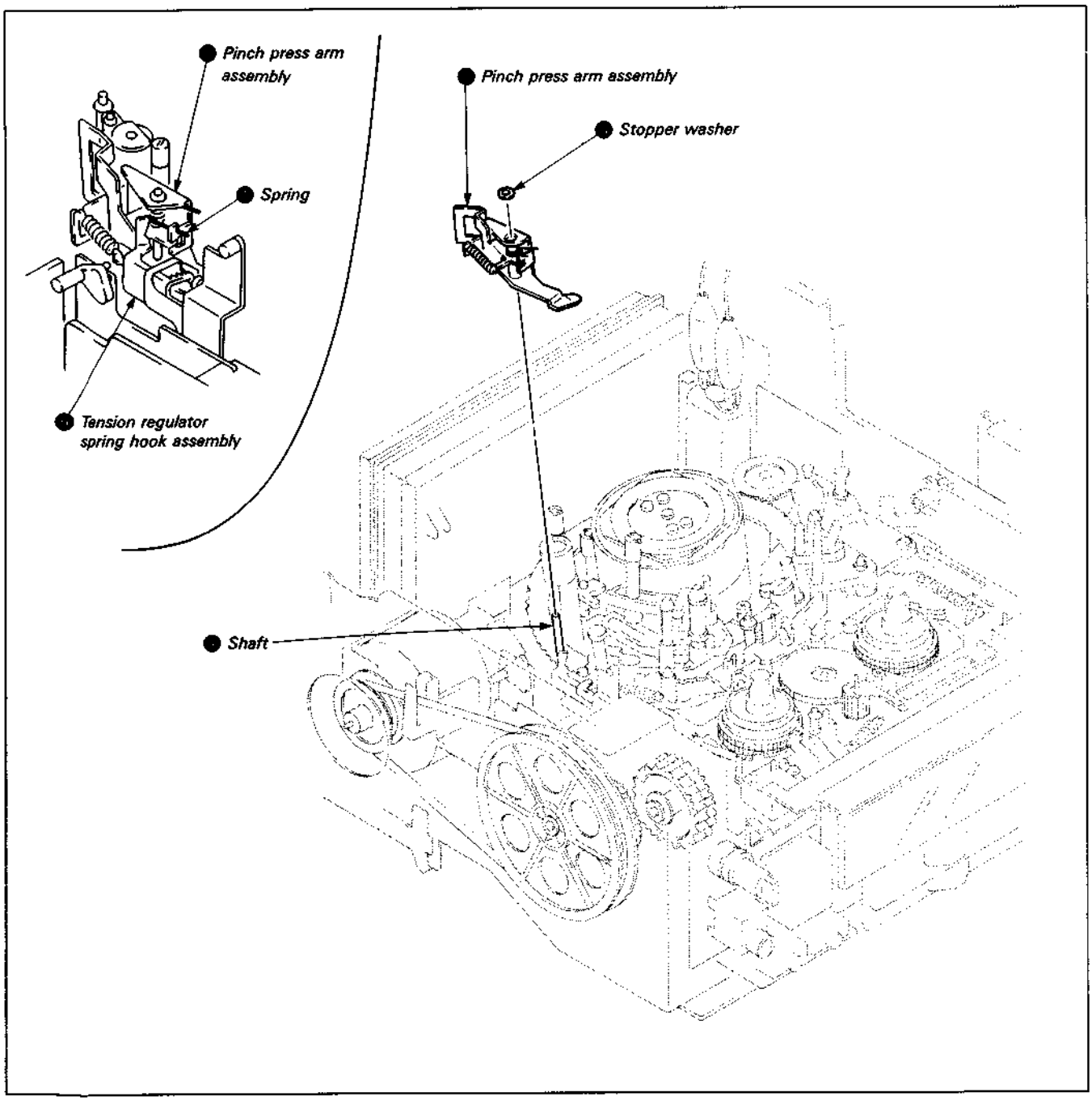


Fig. 7-8.

7-3-4. Tension Regulator Arm Assembly (See Fig. 7-9.)

1. Removal

1) Remove the mechanism as described in item Section 2, 2-15.
2) Remove the cassette compartment assembly according to item Section 2, 2-14.
3) Remove the LS motor belt ●.
4) Remove the Four screws ●, and then move the Front base ● in the direction of arrow.
5) Change the spring position as described in 7-3-3. 1. Removal, 2). (See Fig. 7-8.)
6) Remove tension spring ●. (Note its position.)
7) Remove screw ● and the tension regulator spring hook assembly ●.
8) Set to [FF/REW] mode.
9) Remove the tension regulator band assembly hook ●.
10) Remove the tension regulator arm assembly ●.

2. Mounting

1) Place a half drop of oil on the spindle ●.
2) Mount the tension regulator arm assembly ●, placing the tension regulator load arm assembly pin ● in the tension regulator arm assembly ● cam groove (on the back).
3) Mount the tension regulator band assembly hook ●. (Do not touch the band or change its shape.)
4) Set to [LOADING/UNLOADING] mode.
5) Mount the tension regulator spring hook assembly ● and tighten with screw ●.
6) Replace tension spring ● in its original position and lock the screws.
7) Position the spring according to item 7-3-3, 2. Mounting, 3). (See Fig. 7-8.)
8) Mount the Front base ●, and then tighten with four screws ●.
9) Mount the LS motor belt ●.
10) Mount the cassette compartment assembly by following the procedure in item Section 2, 2-14. in reverse.
11) Mount the mechanism by following the procedure in Section 2, 2-15. in reverse.

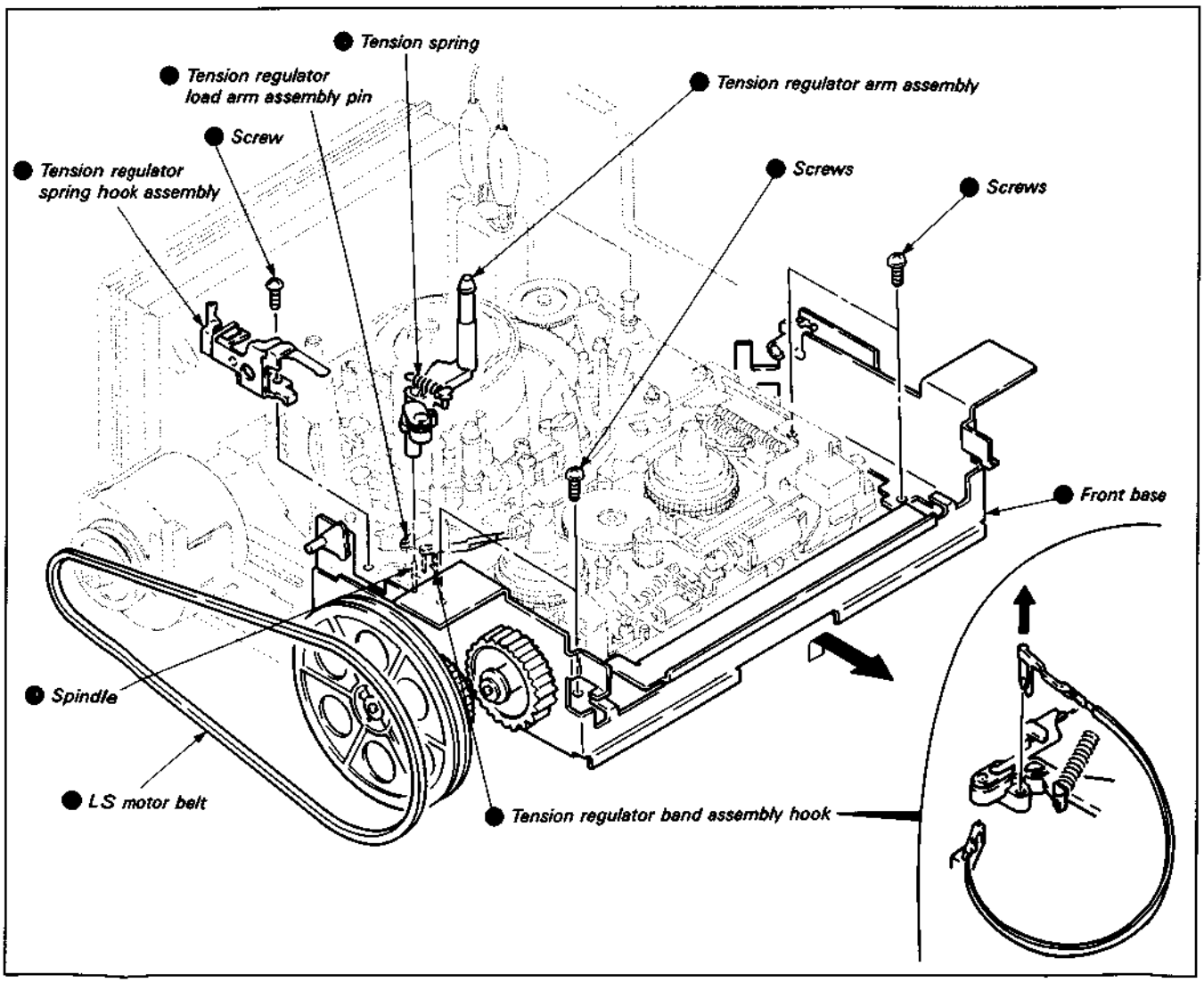


Fig. 7-9.

7-3-5. Tension Regulator Band Assembly (See Fig. 7-10.)

1. Removal

1) Remove the S reel table assembly according to item 7-3-1, 1. Removal. (See Fig. 7-6.)
2) Remove the band arm hook ●.
3) Remove hook ● and the tension regulator band assembly ●.

2. Mounting

1) Mount the tension regulator band assembly ●. (Do not touch the band or change its shape.)
2) Fit on the band arm hook ●.
3) Mount the S reel table assembly according to 7-3-1, 2. Mounting. (See Fig. 7-6.)
4) Perform 7-3-21. FWD Back Tension Adjustment.

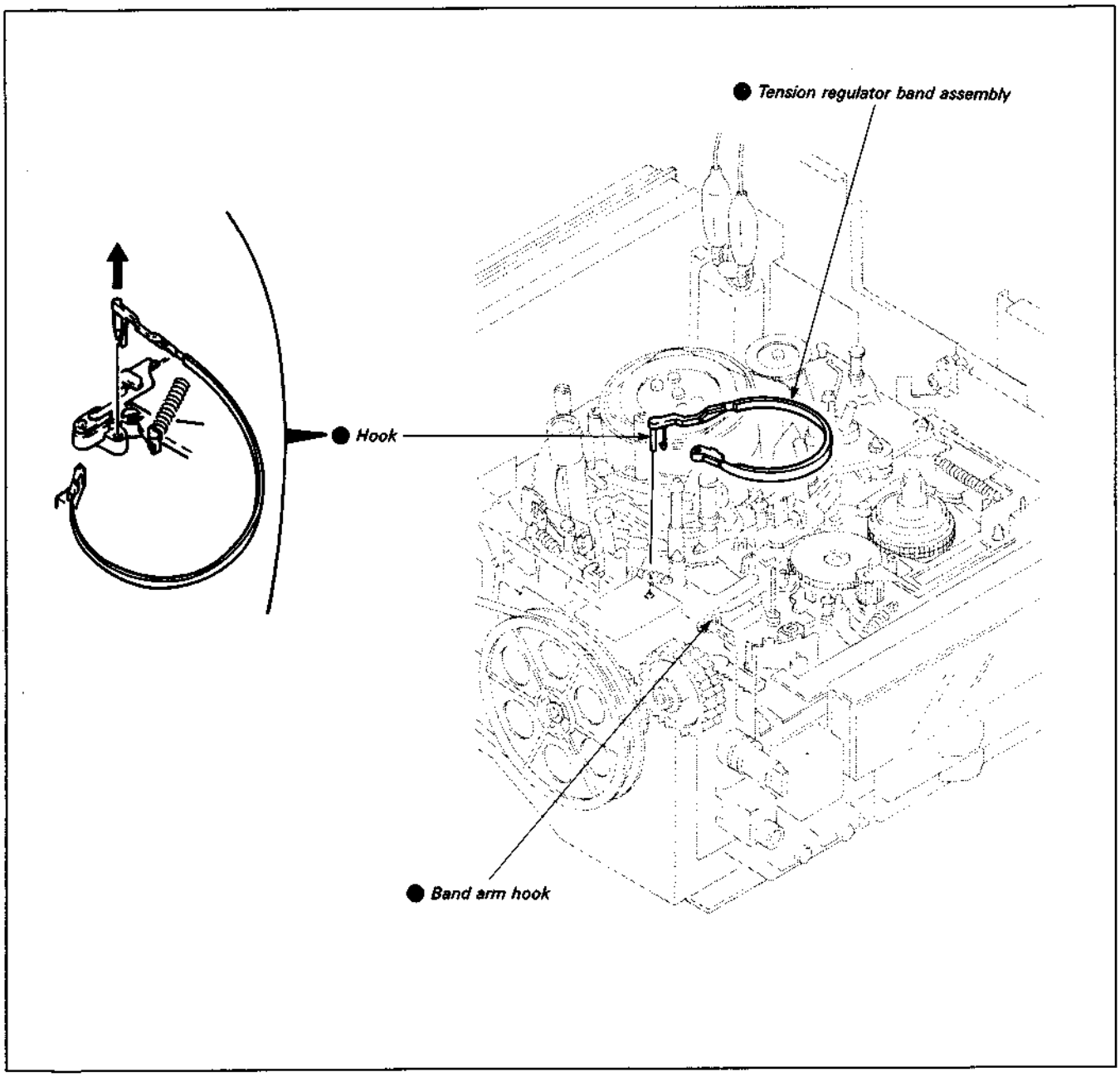


Fig. 7-10.

7-3-6. Loading Motor Assembly (See Fig. 7-11.)

1. Removal

1) Connect a power supply and press the push button to turn on.
2) Press the OPEN/CLOSE button.

Note: Disconnect the power supply after being set to EJECT state.

3) Open the SP-2 board ❶ according to item Section 2, 2-6.
4) Remove connector ● from SP-2 board ●.
5) Remove L motor belt ●.
6) Remove the two screws ●.
7) Remove the loading motor assembly ❺.

2. Mounting

1) Mount the loading motor assembly ❺ and tighten the two screws ●.
2) Mount L motor belt ●.
3) Connect connector ● to SP-2 board ●.
4) Mount SP-2 board ● by following the procedure in item Section 2, 2-6. in reverse.

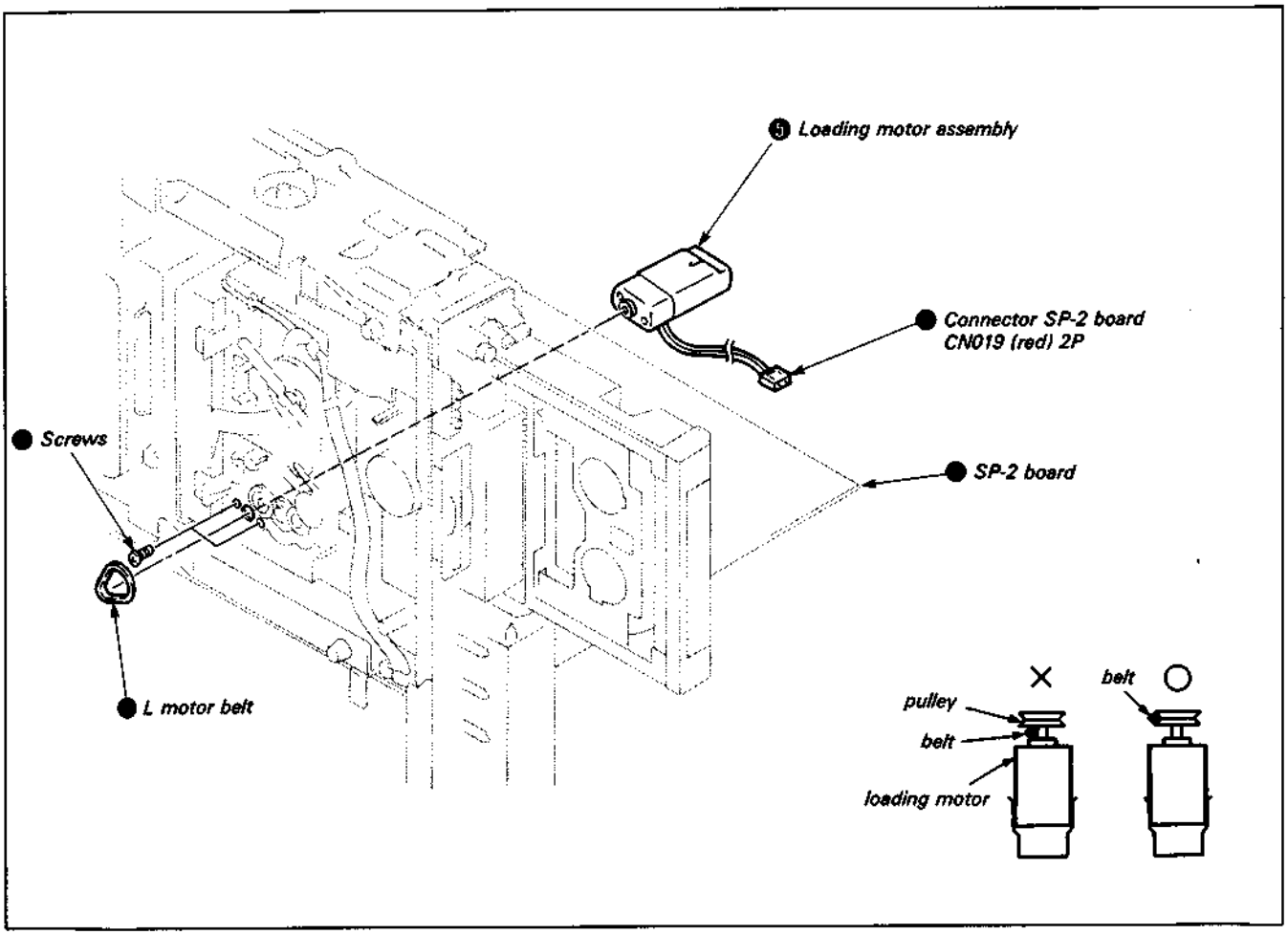


Fig. 7-11.

7-3-7. Loading Ring Assembly (See Fig. 7-12, 13.)

1. Removal

1) Remove the mechanism as described in item Section 2, 2-15.
2) Remove the cassette compartment assembly according to item Section 2, 2-14.
3) Operate the mode selector, and move the guide base assembly ● until just before lock, and the entrance guide assembly ● until just before lock where the ring stopper ● screw is visible. (Do not move loading ring assembly ●.)
4) Remove the stopper washer ● and remove No. 10 gear assembly ●.
5) Remove screw ● and the roller retainer ● and ring roller ●.
6) Remove the two screws ● and the ring stopper ● and ring roller ●.
7) Remove the loading ring assembly ● as shown by arrow. (See Fig. 7-12.)

Note: Be careful that the loading ring assembly ● does not touch the drum when it is removed.

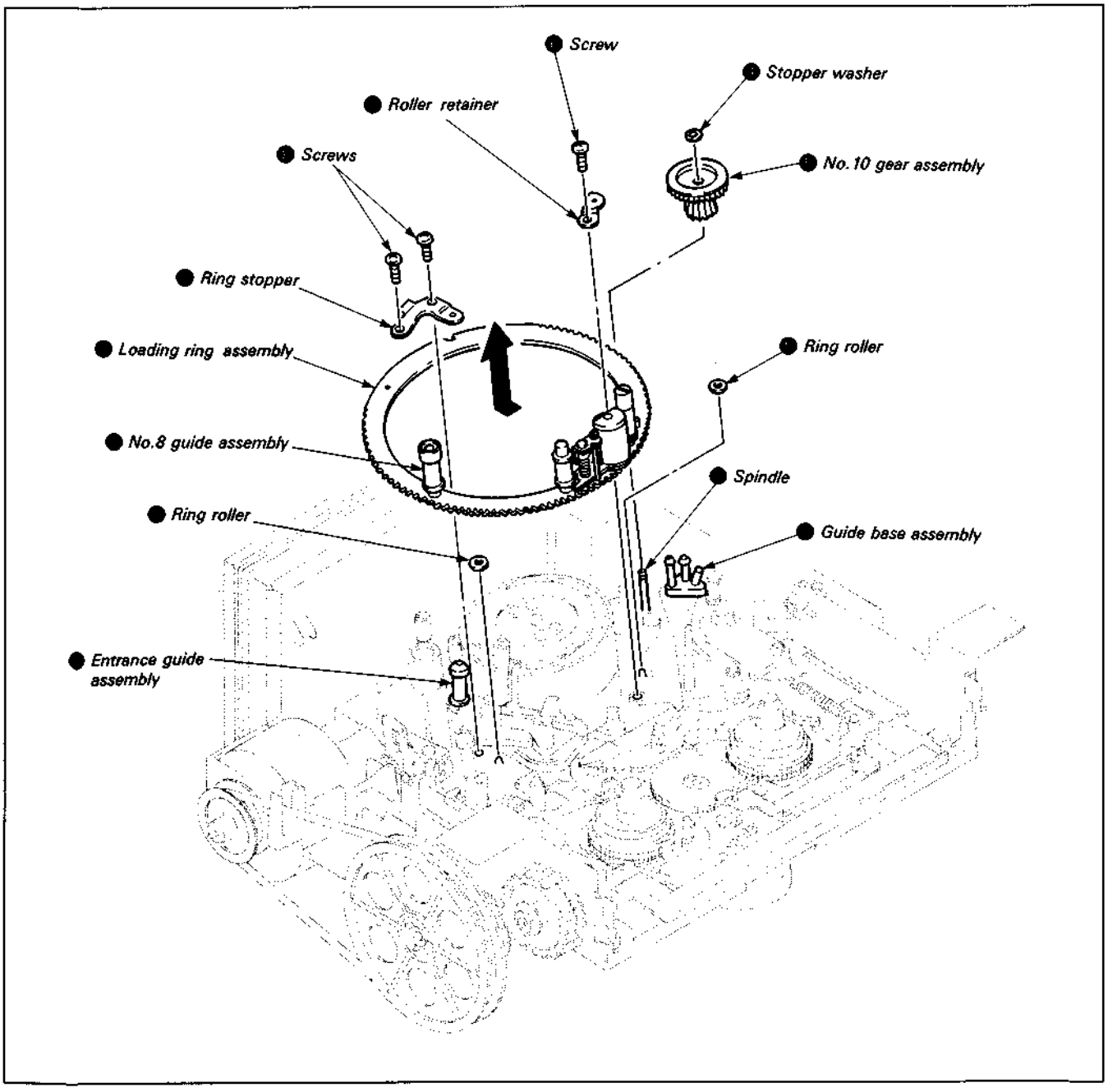


Fig. 7-12.

2. Mounting

1) Mount the loading ring assembly ● so that it is in unthreaded state (pinch roller arm assembly is on the front panel side). (Check that is in the state in step 3) under Removal.)
2) Mount the ring roller ● and ring stopper ● and tighten with the two screws ●. (No. 8 guide assembly ● should be closer to the front panel than the ring stopper ●.)
3) Mount the ring roller ● and roller retainer ● and tighten with screw ●. (Check that the loading ring assembly matches the three ring spacers.)
4) Place a half drop of oil on the spindle ●. (See Fig. 7-12.)
5) Check that the protrusions on the drive changer assembly are in the indentations of the L-SW assembly and insert the No. 10 gear phase jig (Ref. No. J-9). (See Fig. 7-13.)
6) Mount No. 10 gear assembly ● and stopper washer ● while pushing the No. 8 guide assembly ● against the ring stopper ●.
7) Pull out the No. 10 gear phase jig.
8) Set to LOADING TOP mode.
9) Mount the cassette compartment assembly by following the procedure in item Section 2, 2-14. in reverse.
10) Mount the mechanism by following the procedure in Section 2, 2-15. in reverse.

Note: Be sure to perform 7-4. Tape Path Adjustment after mounting.

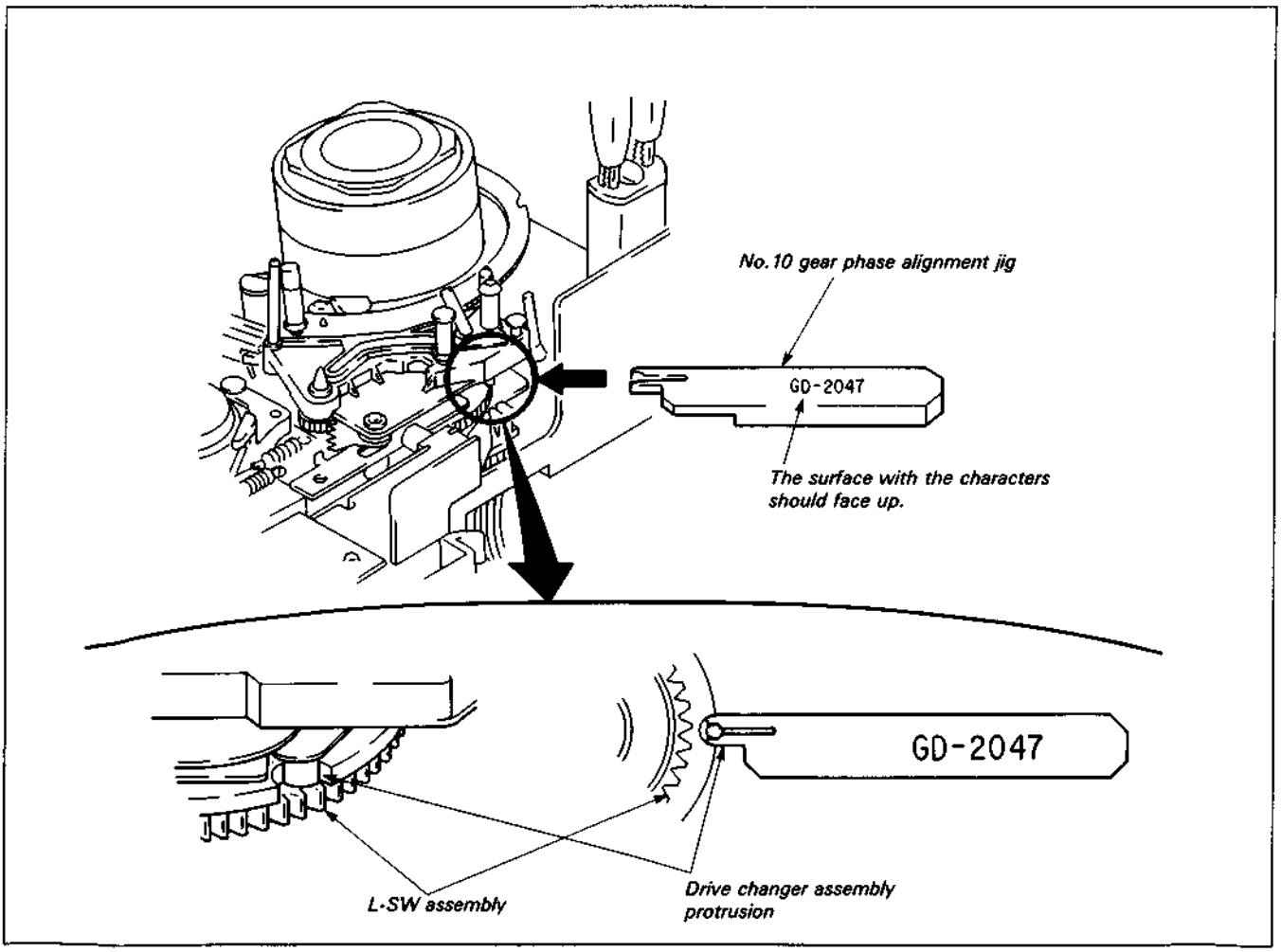


Fig. 7-13.

7-3-8. Pinch Roller Assembly (See Fig. 7-14. ~ 25.)

1. Removal

1) Remove the loading ring assembly as described in 7-3-7., 1. Removal. (See Fig. 7-12.)
2) Remove stopper washer ❶. (See Fig. 7-14.)
3) Change the position of the torsion spring ❸ on No. 7 guide assembly ❷. (See Fig. 7-15.)
4) Rotate pinch roller arm assembly ❹ in the direction of arrow. (See Fig. 7-16.)
5) Remove pinch roller arm assembly ❹ in the direction of arrow. (See Fig. 7-17.)
6) Remove torsion spring ❸. (See Fig. 7-18.)

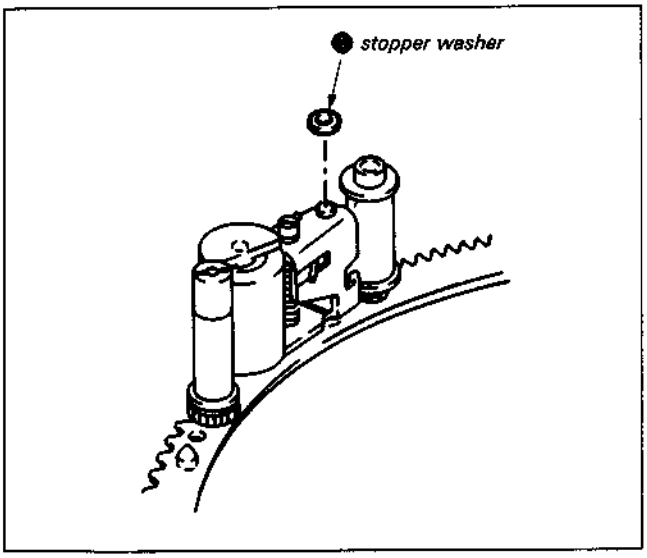


Fig. 7-14.

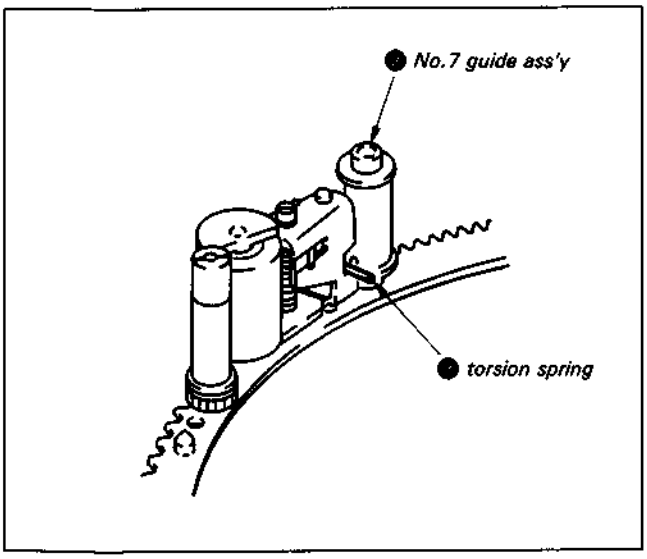


Fig. 7-15

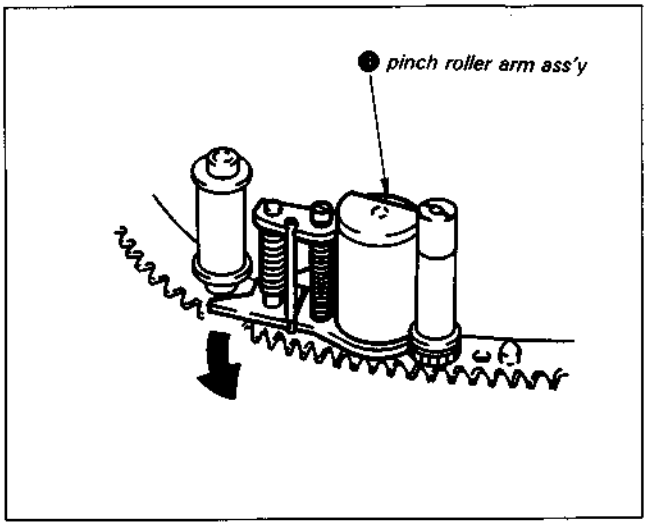


Fig. 7-16.

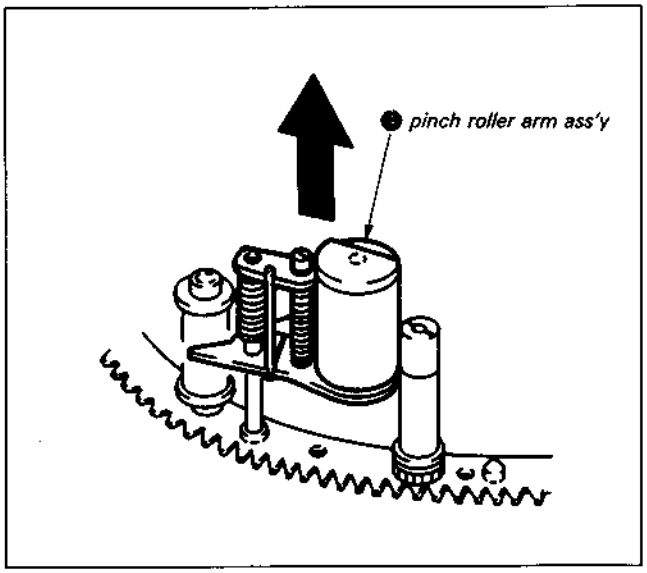


Fig. 7-17.

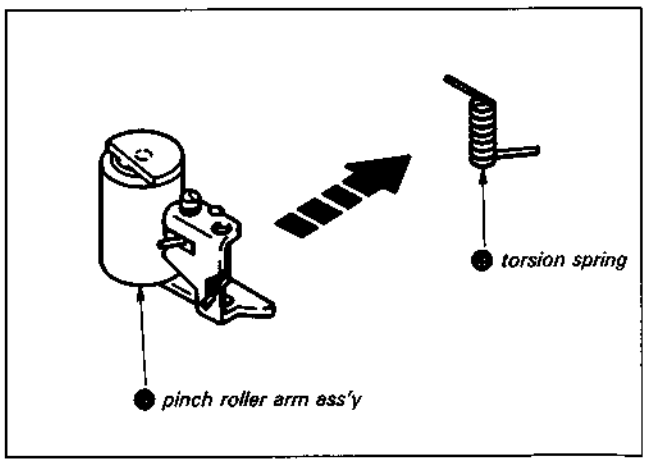


Fig. 7-18.

2. Mounting

1) Position torsion spring ●. (See Fig. 7-19.)
2) Insert the end of a paper clip ● or other thin rod inside the pinch roller arm assembly hole ●. (See Fig. 7-20, 7-21.)
3) Push the end of the clip ● through to contact the loading ring assembly shaft ● and mount the pinch roller arm assembly ●. (See Fig. 7-22, 7-23.)
4) Place the spring on No. 7 guide assembly ●. At this time, check that the spring is hooked on section Ⓐ. (See Fig. 7-24.)
5) Mount the stopper washer ●. (See Fig. 7-25.)
6) Mount the loading ring assembly according to 7-3-7., 2. Mounting. (See Fig. 7-12, 7-13)

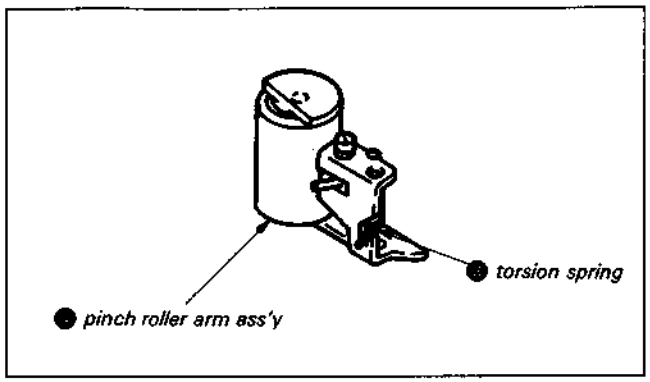


Fig. 7-19.

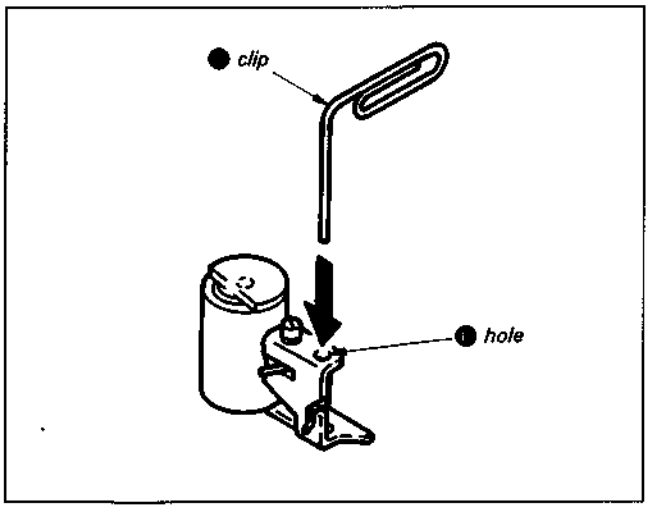


Fig. 7-20.

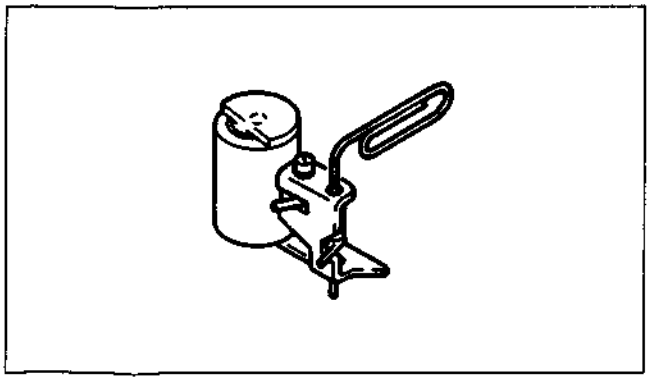


Fig. 7-21.

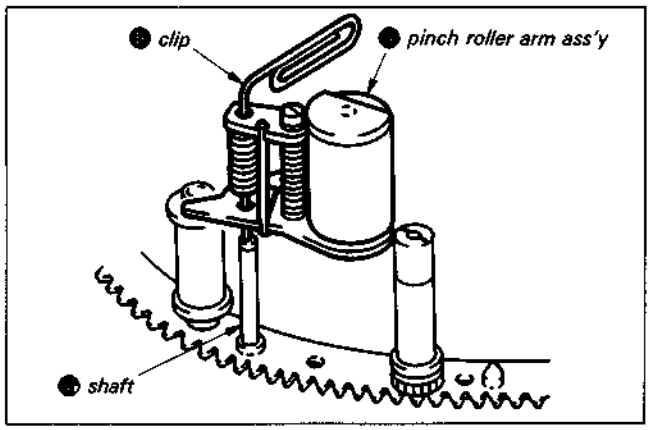


Fig. 7-22.

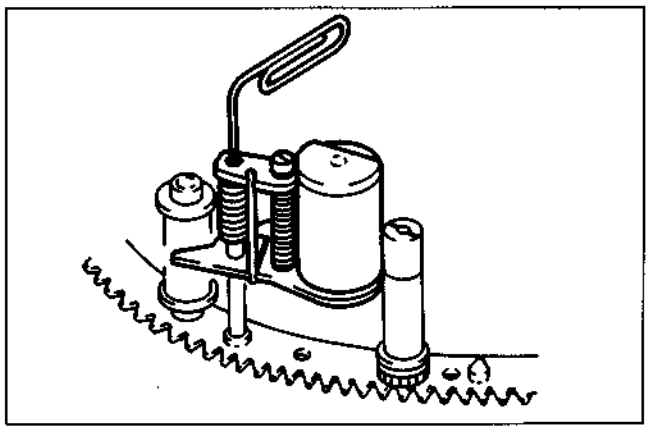


Fig. 7-23.

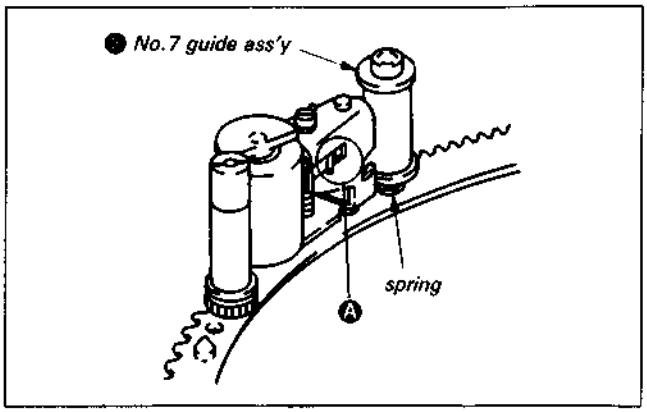


Fig. 7-24.

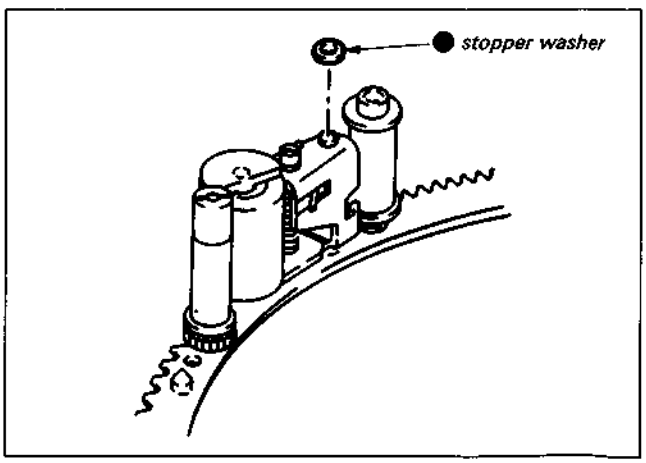


Fig. 7-25.

7-3-9. Slant Guide Assembly (See Fig. 7-26 ~ 28.)

1. Removal

1) Remove the loading ring assembly according to 7-3-7., 1. Removal. (See Fig. 7-12.)
2) Remove screw ● and E ring ●.
3) Remove the slant guide assembly ●. (See Fig. 7-26.)

2. Mounting

1) Operate the mode selector, and line up the right edge of the L slider assembly and the right edge of the lock slider assembly. (See Fig. 7-27.)
2) Set the slant guide assembly guide base assembly in unthreaded state (guide base assembly is on front panel side) and mount. (See Fig. 7-28.)

Note: At this time, confirm the engagement position of the slant guide drive gear and L slider assembly gear. (See Fig. 7-32.)

3) Mount the E ring ● and tighten screw ●. (See Fig. 7-26.)
4) Put in the state in 7-3-7., 1. Removal, 3).
5) Mount the loading ring assembly according to 7-3-7., 2. Mounting (See Fig. 7-12, 7-13.)

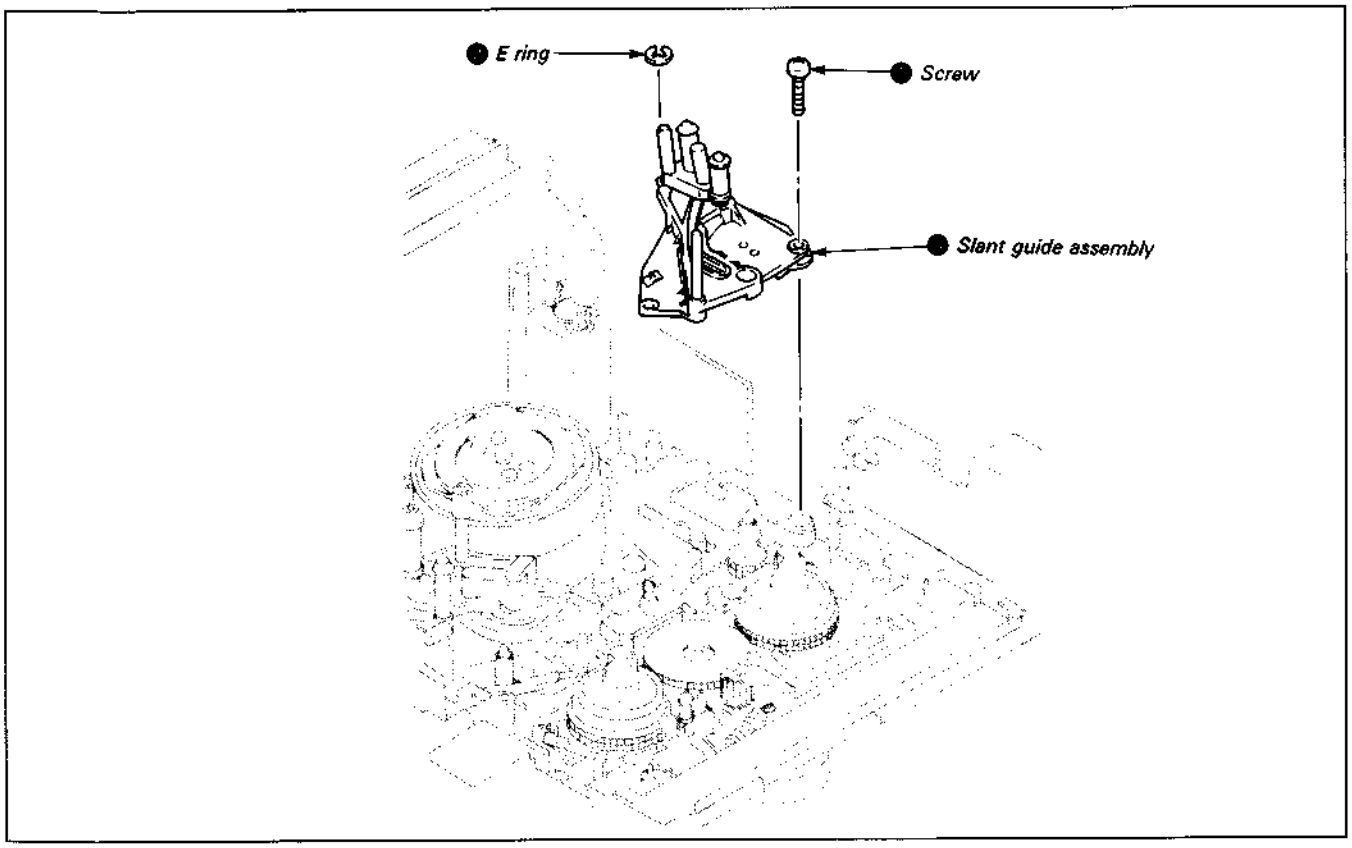


Fig. 7-26.

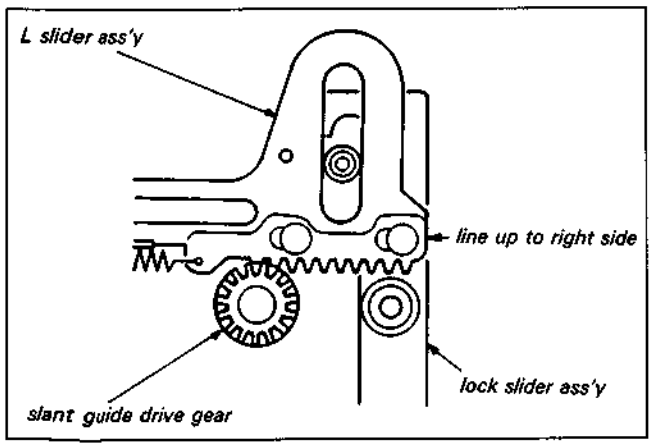


Fig. 7-27.

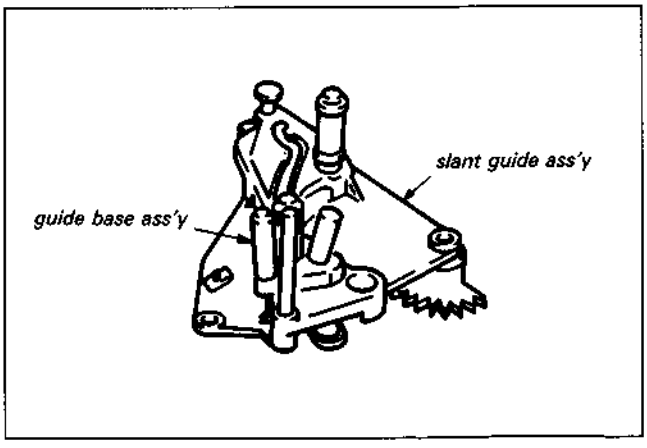


Fig. 7-28.

7-3-10. Entrance Guide (P) Assembly (No. 2 Guide Assembly) (See Fig. 7-29.)

1. Removal

1) Remove the cassette compartment assembly according to item Section 2, 2-14.
2) Turn the rotary upper drum counterclockwise and separate the head portion from the entrance guide (P) assembly ❶.
3) Remove the two screws ●.
4) Remove No. 3 guide nut ●, and remove guide flange ●, guide ● and compression spring ●.
5) Remove the entrance guide assembly ●.

2. Mounting

1) Engage the entrance guide (P) assembly and L slider assembly so that the part without teeth Ⓐ on the bottom of the entrance guide (P) assembly and the part without teeth Ⓑ on the L slider assembly match.
2) Mount the compression spring ●, guide ● and guide flange ● in that order, then temporarily tighten the guide nut ●.
3) Tighten the two screws ●.
4) Mount the cassette compartment assembly by following the procedure in item Section 2, 2-14. in reverse.

Note: Be sure to perform 7-4. Tape Path Adjustment after mounting.

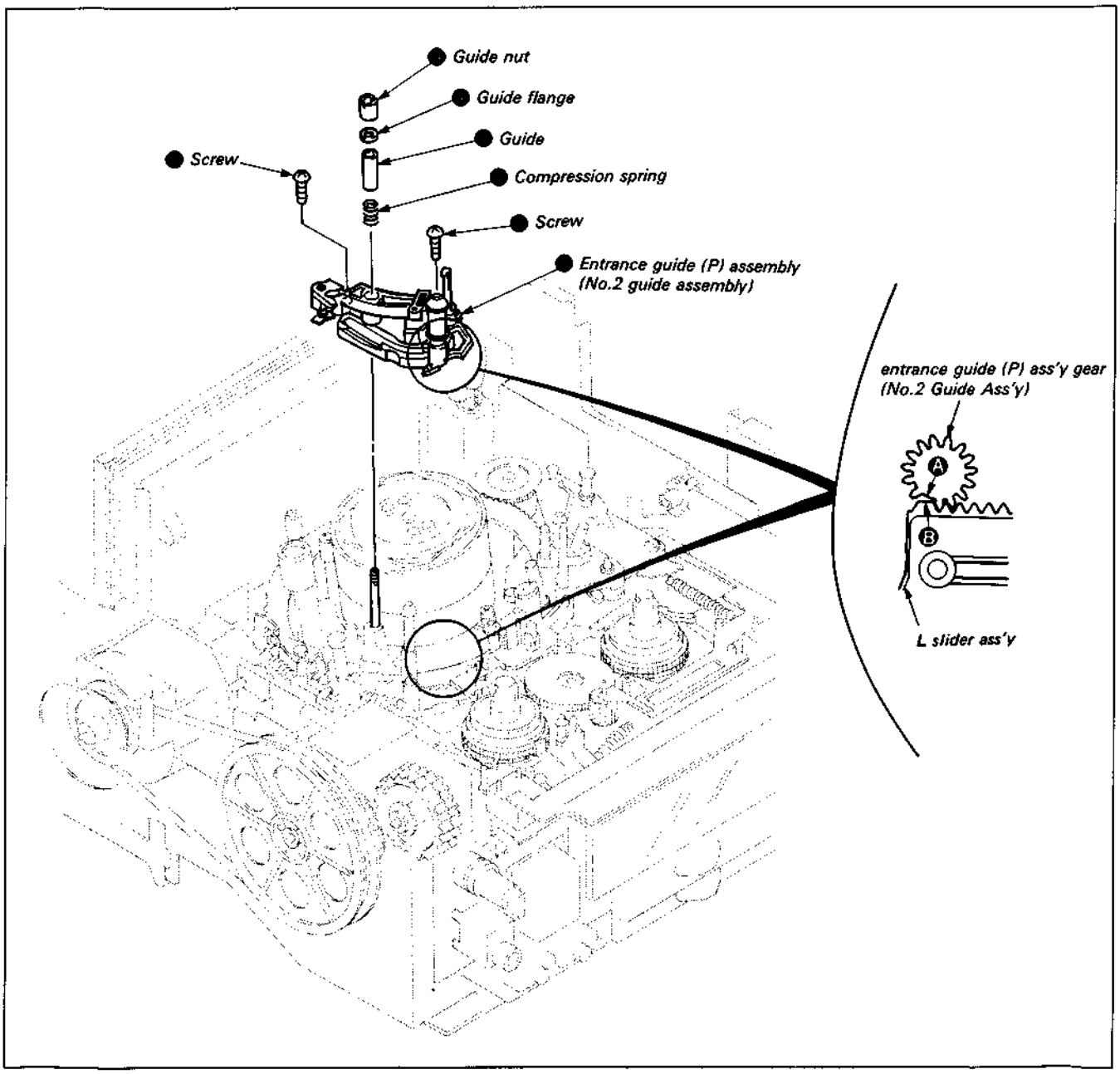


Fig. 7-29.

7-3-11. L Slider Assembly (See Fig. 7-30. ~ 32.)

1. Removal

1) Remove the slant guide assembly according to 7-3-9., 1. Removal.
2) Remove the entrance guide (P) assembly according to 7-3-10., 1. Removal.
3) Set to DRUM START mode.
4) Remove slant guide drive gear ●.
5) Remove the tension regulator load arm assembly ● pin from the cam groove of the tension regulator arm assembly. (Refer to 7-3-4. Tention Regulator Arm Assembly.)
6) Remove the two stopper washers ●.
7) Remove the L slider assembly ● while pushing the RL arm assembly protrusion ● in the direction of arrow.
8) Remove the stopper washer ● and the tension regulator load arm assembly ●.

2. Mounting

1) Lubricate the portions indicated in Fig. 7-31.
2) Mount the tension regulator load arm assembly ● and the stopper washer ●.
3) Mount the L slider assembly ● while pushing the RL arm assembly protrusion ● in the direction of arrow.
4) Put the tension regulator load arm assembly ● pin into the M slider groove. (Refer to 7-3-15. M slider)
5) Mount the two stopper washers ●.
6) Refer to 7-3-4, 2. Mounting, 2), and place the tension regulator load arm assembly ● pin in the tension regulator arm assembly cam groove.
7) Operate the mode selector, and match up the right edge of the L slider assembly and the right edge of the lock slider assembly. (See Fig. 7-27.)
8) Engage the slant guide drive gear so that the notch is 1 tooth away from the L slider assembly left side tooth. (See Fig. 7-32.)
9) Mount the entrance guide (P) assembly according to 7-3-10., 2. Mounting.
10) Mount the slant guide assembly according to 7-3-9., 2. Mounting.

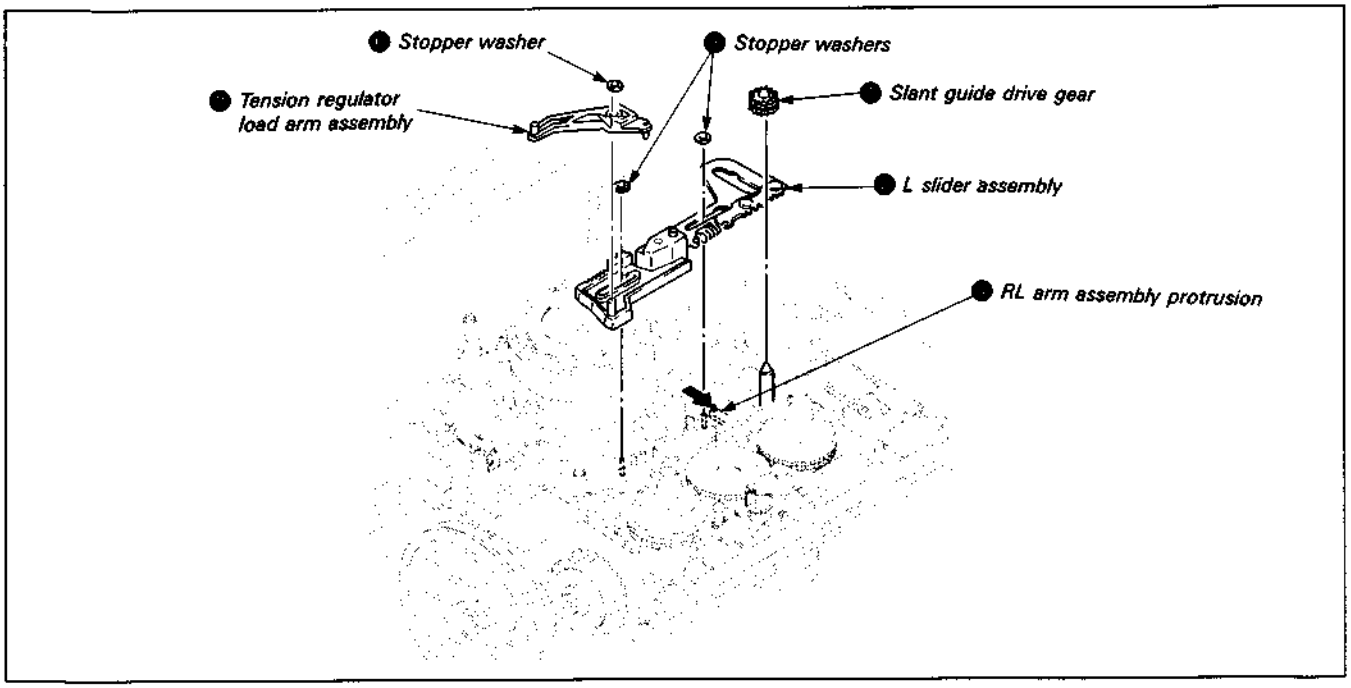


Fig. 7-30.

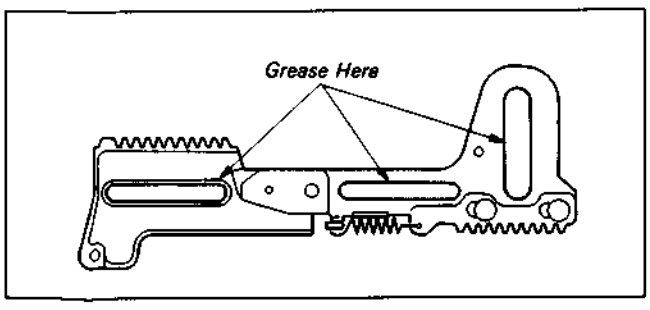


Fig. 7-31.

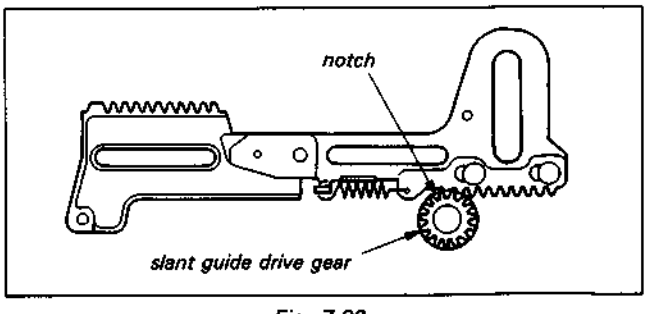


Fig. 7-32.

7-3-12. L-SW Assembly (See Fig. 7-33 ~ 35.)

1. Removal

1) Remove the L slider assembly according to 7-3-11., 1. Removal.
2) Remove lock slider retainer ❶.
3) Remove screw ❷ and lock slider A ❸.
4) Remove stopper washer ❹ and torsion spring ❺.
5) Remove drive changer assembly ❻.
6) Remove connector ❼.
7) Remove the two screws ❽ and the L-SW assembly ❾.

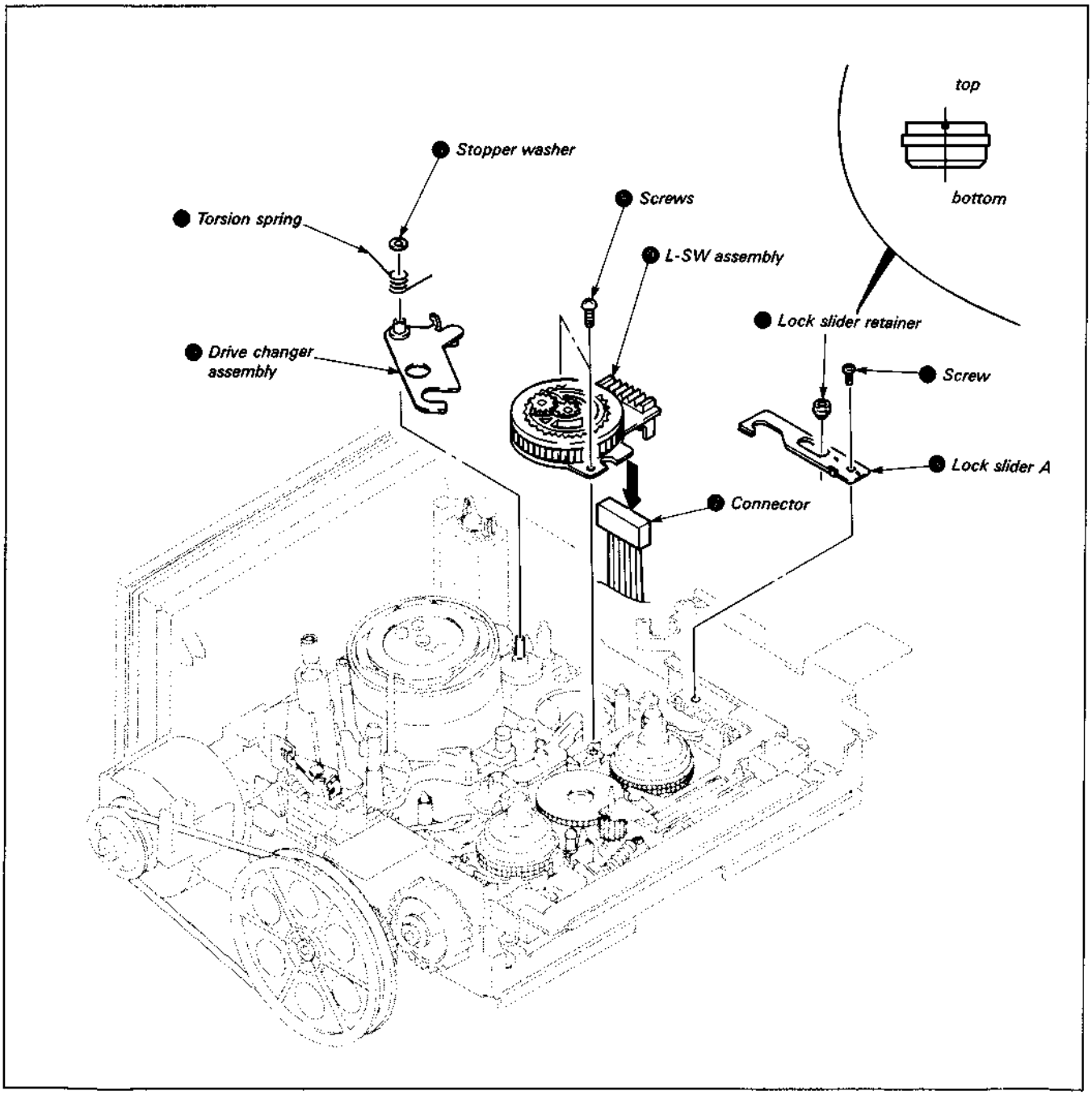


Fig. 7-33.

2. Mounting

1) Place a half drop of oil on the L-SW assembly ⑭ spindle (planetary gear).
2) Mount L-SW assembly ⑭ and tighten with the two screws ⑮.
3) Connect connector ⑰.
4) Operate the mode selector and check that the L-SW assembly ⑭ rotates.
5) Place a half drop of oil on spindle ⑬.
6) Grease the drive change assembly ⑩ as shown in Fig. 7-34.
7) Mount the drive changer assembly ⑩.
8) Mount the torsion spring ⑫ and the stopper washer ⑪.
9) Operate the mode selector and check that the L-SW assembly ⑭ rotates.
10) Mount lock slider A ⑧ and tighten screw ⑨.
11) Mount lock slider retainer ⑦.
12) Operate the mode selector and set to the position in Fig. 7-35.
13) Mount the L slider assembly according to 7-3-11., 2, Mounting.

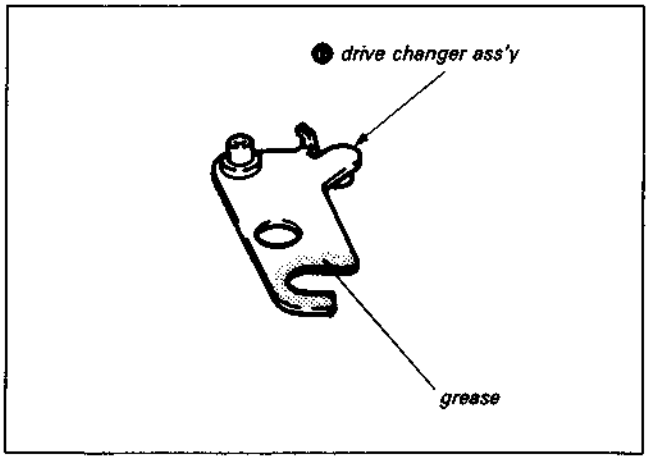


Fig. 7-34.

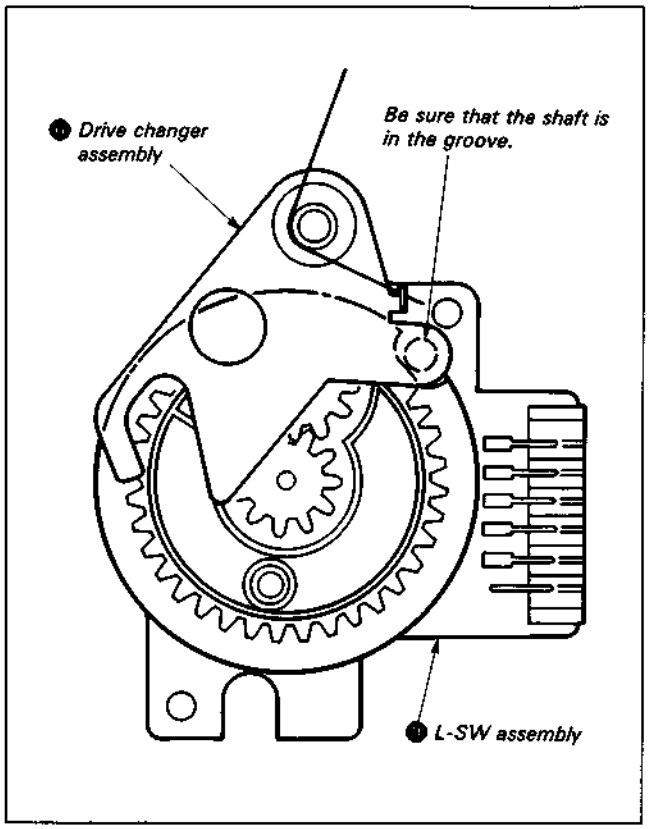


Fig. 7-35.

7-3-13. Plunger Solenoid (See Fig. 7-36.)

1. Removal

1) Open the SP-2 board according to Section 2, 2-6. and remove connector CN018 (white) 3P.
2) Remove the cassette compartment assembly according to Section 2, 2-14.
3) Remove tension spring ●.
4) Remove the two stopper washers ●.
5) Remove screw ● and the lock slider B assembly ●.
6) Remove the two screws ● and the plunger solenoid ●. (At this time, be careful not to scratch the T reel assembly with the screwdriver, and do not touch it.)

2. Mounting

1) Insert the plunger solenoid pin ● into the P arm hole ● and mount with the two screws ●. (Again, be careful not to scratch or touch the T reel assembly.)
2) Mount lock slider B assembly ● and tighten screw ●.
3) Mount the two stopper washers ●.
4) Hook on the tension spring ●.
5) Mount the cassette compartment assembly by following the procedure in item Section 2, 2-14. in reverse.
6) Connect the CN018 connector (white) to the SP-2 board.
7) Mount the SP-2 board by following the procedure in Section 2, 2-6. in reverse.

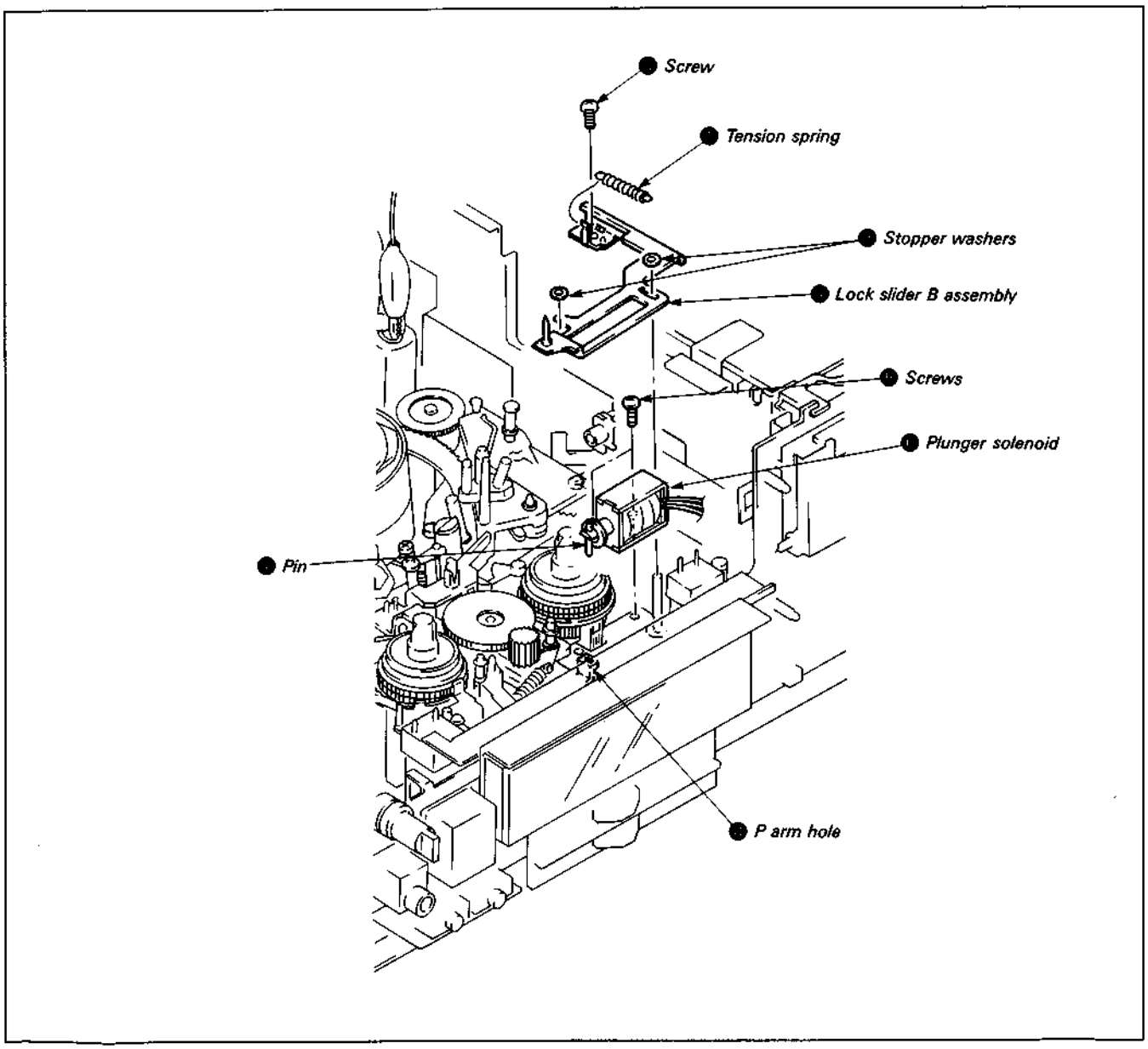


Fig. 7-36.

7-3-14. M-SW Assembly (See Fig. 7-37 ~ 39)

1. Removal

1) Remove the T reel assembly according to 7-3-2. (See Fig. 7-7.)
2) Remove stopper washer ● and the drive gear (B) assembly ●.
3) Remove the LD-1 board ●. (See Fig. 7-37.)
4) Remove lock slider B assembly according to 7-3-13., 1. Removal, 3), 4) and 5).
5) Remove tension spring ● and B release arm ●.
6) Check [EJECT] mode.
7) Remove stopper washer ● and the mode output gear ●.
8) Remove screw ● and the push switch ●.
9) Remove connector ●.
10) Remove the three screws ●, the control motor cover ● and the M-SW assembly ●.
11) Remove solder Ⓐ and remove the DC motor ●.

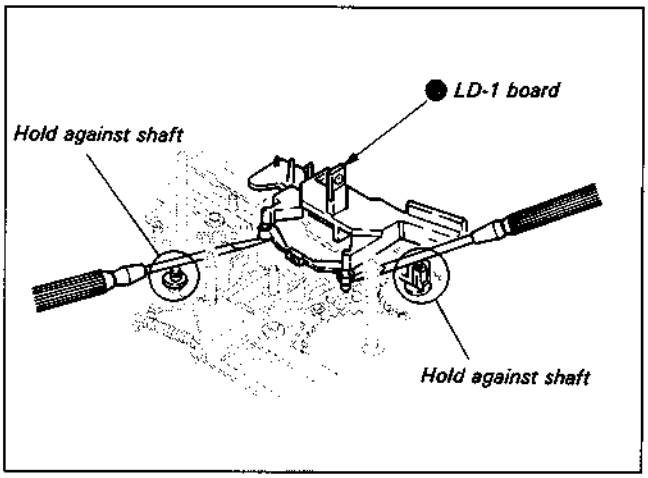


Fig. 7-37.

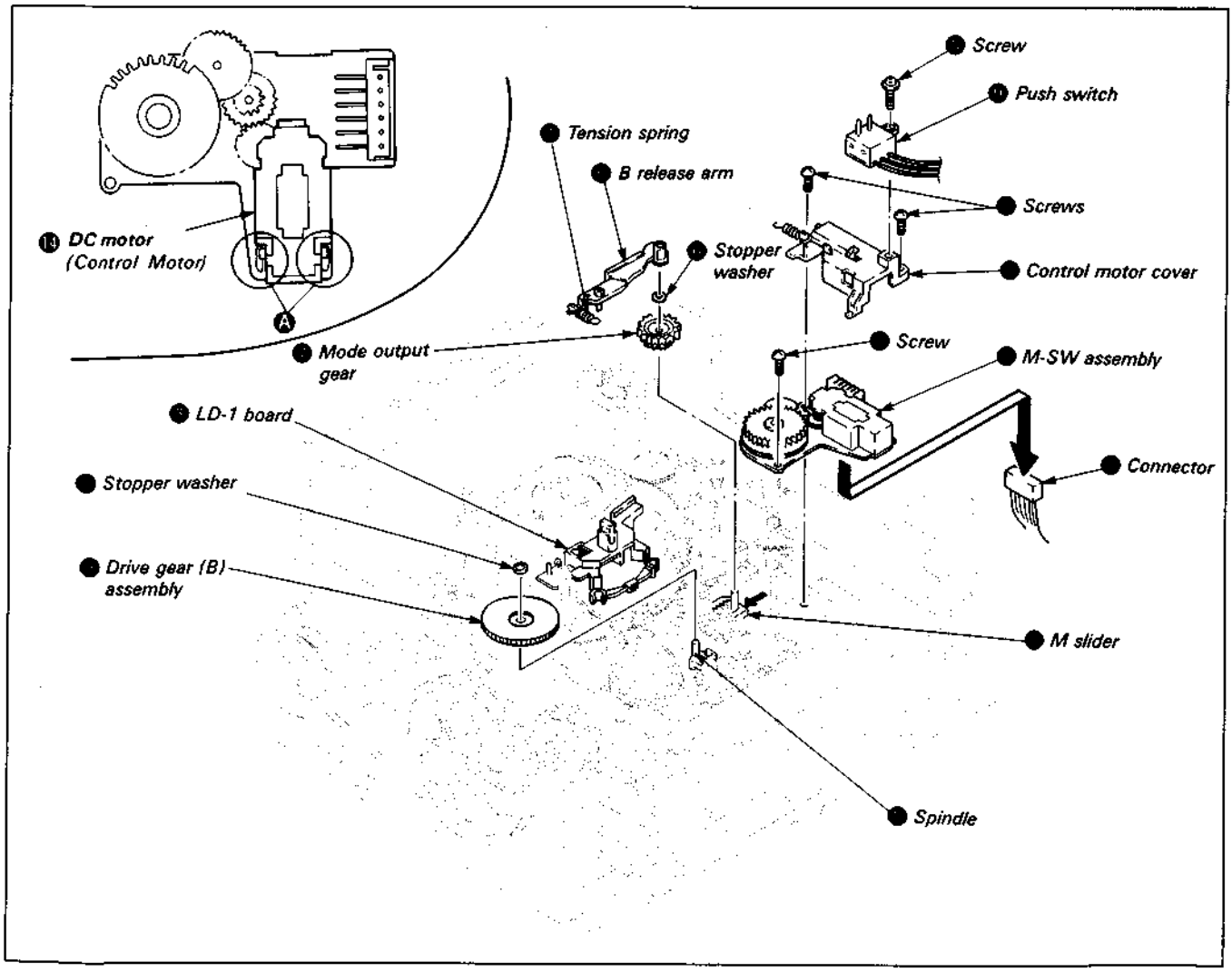


Fig. 7-38.

2. Mounting

1) Solder the DC motor (Control Motor) ●.
2) Mount the M-SW assembly ● and the control motor cover ●, and tighten the three screws ●.
3) Connect connector ●.
4) Mount push switch ● and tighten screw ●.
5) Check [EJECT] mode.
6) Check that M slider ● is moved fully in the direction of arrow Ⓑ.
7) Place a half drop of oil on spindle ●. (See Fig. 7-38.)
8) Mount the mode output gear ● so that the positioning holes are lined up. (See Fig. 7-39.)
9) Mount stopper washer ●.
10) Set to [LOADING/UNLOADING] mode.
11) Mount B release arm ● and tension spring ●.
12) Mount the lock slider B assembly according to 7-3-13., 2. Mounting, 2), 3) and 4).
13) Mount the LD-1 board ●.
14) Mount drive gear B assembly ● and stopper washer ●.
15) Mount the T reel assembly according to 7-3-2., 2. Mounting.

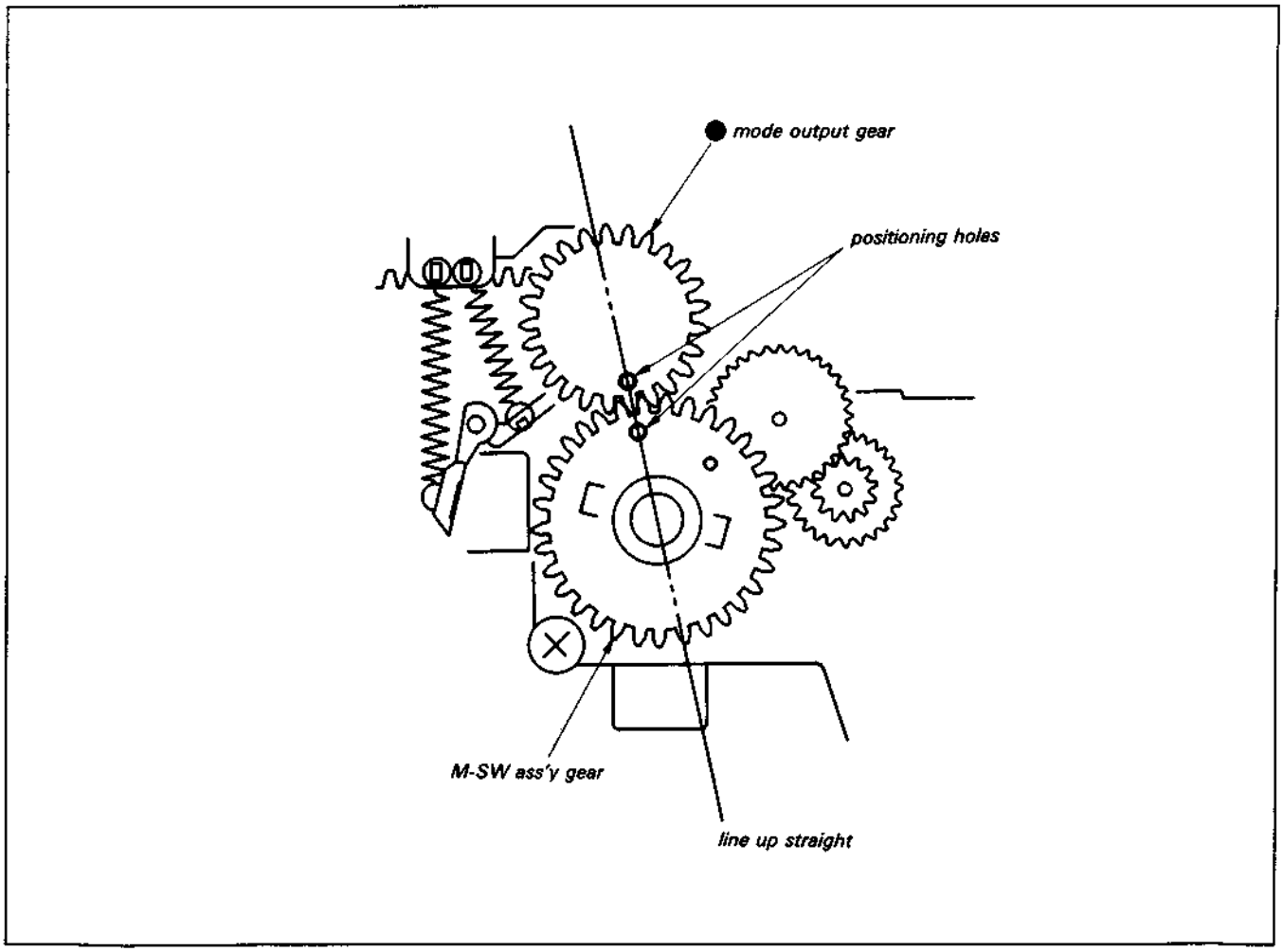


Fig. 7-39.

7-3-15. M Slider (See Fig. 7-40 ~43.)

1. Removal

1) Remove the pinch press arm assembly according to 7-3-3., 1. Removal. (See Fig. 7-8.)
2) Remove the tension regulator arm assembly according to 7-3-4., 1. Removal. (See Fig. 7-9.)
3) Remove the tension regulator band assembly according to 7-3-5., 1. Removal. (See Fig. 7-10.)
4) Remove the loading ring assembly according to 7-3-7., 1. Removal. (See Fig. 7-12.)
5) Perform 7-3-14., 1. Removal, Steps 1)~5). (See Fig. 7-37, 7-38.)
6) Remove the tension regulator load arm assembly according to 7-3-11., 1. Removal, 8). (See Fig. 7-30.)
7) Remove tension spring ●.
8) Remove the two stopper washers ● and remove the S main brake assembly ● and T main brake assembly ●.
9) Set to [LOADING TOP], [LOADING/UNLOADING] mode.
10) Remove the screw ● and the drive assembly ●.
11) Perform 7-3-14., 1. Removal, steps 6) and 7).
12) Remove the two tension springs ●.
13) Remove REW brake assembly ●.
14) Remove stopper washer ● and B release slider ●.
15) Remove stopper washer ● and ring lock spring ● and RL arm ●.
16) Move the M slider ● to the right (leave about 5 mm at the left.)
17) Remove the E ring ● and the pinch press lever assembly ●.
18) Remove spring ● and the hard brake (S) ●.
19) Remove stopper washer ●, push the mode arm ● in the direction of arrow, and lift up the left side of the M slider ● to remove.

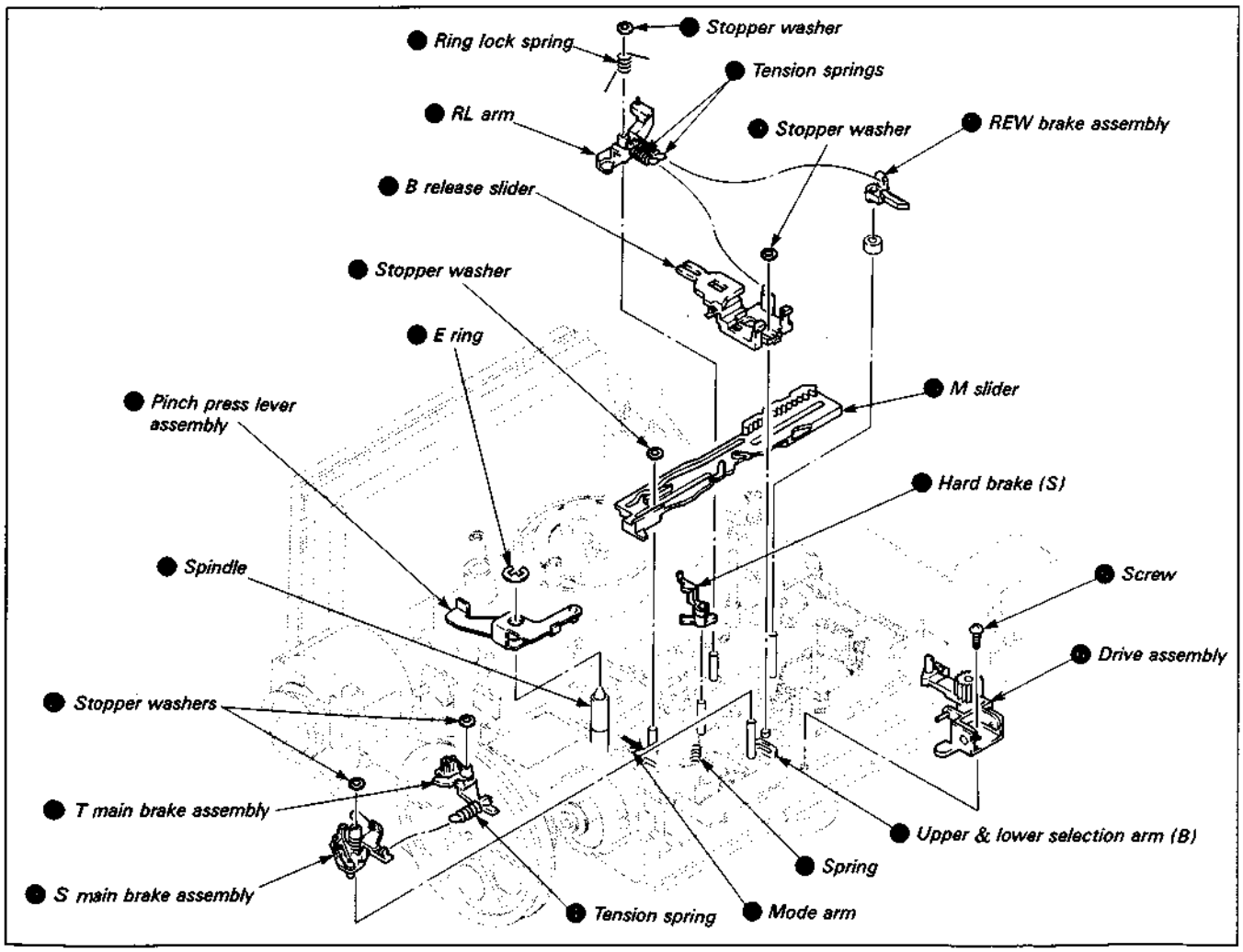


Fig. 7-40.

2. Mounting

1) Apply grease. (See Fig. 7-41.)
2) Push mode arm ● in the direction of arrow, and mount the M slider ●, noticing the positioning of the other parts in Fig. 7-42. and mount the stopper washer ●.
3) Mount hard brake (S) ● and spring ●.
4) Apply grease. (See Fig. 7-43.)
5) Apply a half drop of oil from the spindle ● groove to the bottom, mount the pinch press lever assembly ● and the E ring ●.
6) Mount RL arm ●, mount the ring lock spring ● and the stopper washer ●.
7) Mount B release slider ● and stopper washer ●.
8) Mount REW brake assembly ●.
9) Mount the two tension springs ●.

Note: Mount the springs as follows, being careful not to mix them up.
- B release slider spring: total diameter 2 mm, wire diameter 0.18 mm
- REW brake assembly spring: total diameter 1.6 mm, wire diameter 0.12 mm

10) Push the M slider ● all the way to the left.
11) Perform 7-3-14., 2. Mounting, steps 7), 8) and 9).
12) Set to LOADING/UNLOADING mode.
13) Insert the drive assembly ● horizontal shaft into the upper & lower selection arm (B) ● groove, and mount with the screw ●.
14) Mount T main brake assembly ● and S main brake assembly ●. Mount the two stopper washers ● and the tension spring ●.
15) Mount the tension regulator load arm assembly according to 7-3-11., 2. Mounting, step 2).
16) Perform 7-3-14., 2. Mounting, steps 11)~15).
17) Mount the loading ring assembly according to 7-3-7., 2. Mounting.
18) Mount the tension regulator band assembly according to 7-3-5., 2. Mounting.
19) Mount the tension regulator arm assembly according to 7-3-4., 2. Mounting.
20) Mount the pinch press arm assembly according to 7-3-3., 2. Mounting.

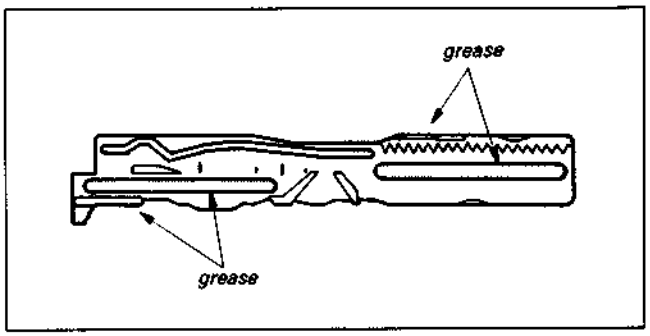


Fig. 7-41.

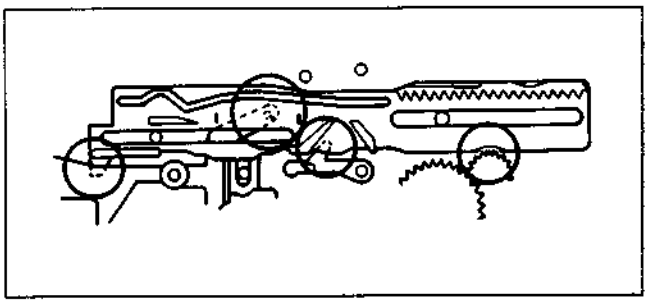


Fig. 7-42.

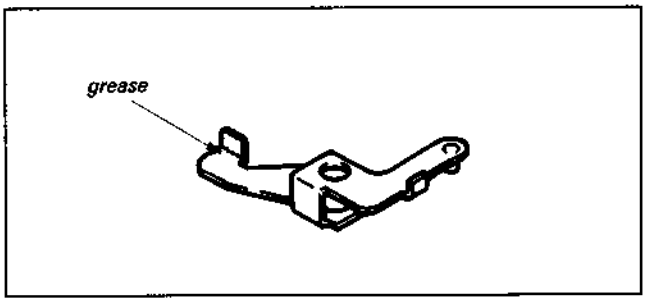


Fig. 7-43.

7-3-16. Capstan Motor (See Fig. 7-44.)

1. Removal

1) Remove the loading ring assembly according to 7-3-7., 1. Removal. (See Fig. 7-12.)
2) Open the SP-2 board according to Section 2, 2-6.
3) Remove the connector ● (CN002, white, 11P) from SP-2 board.
4) Remove the connector ● (CN005, white, 4P) from RS-17 board.
5) Remove the two screws ● and rotor retainer ●.
6) Remove the two screws ● and remove the capstan motor ● in the direction of arrow.

2. Mounting

1) Mount capstan motor ● and tighten the two screws ●.
2) Mount the rotor retainer ● and tighten the two screws ●.
3) Connect connectors ● and ●.
4) Mount the loading ring assembly according to 7-3-7., 2. Mounting. (See Fig. 7-12, 7-13.)
5) Mount the SP-2 board by performing the procedure in Section 2, 2-6. in reverse.

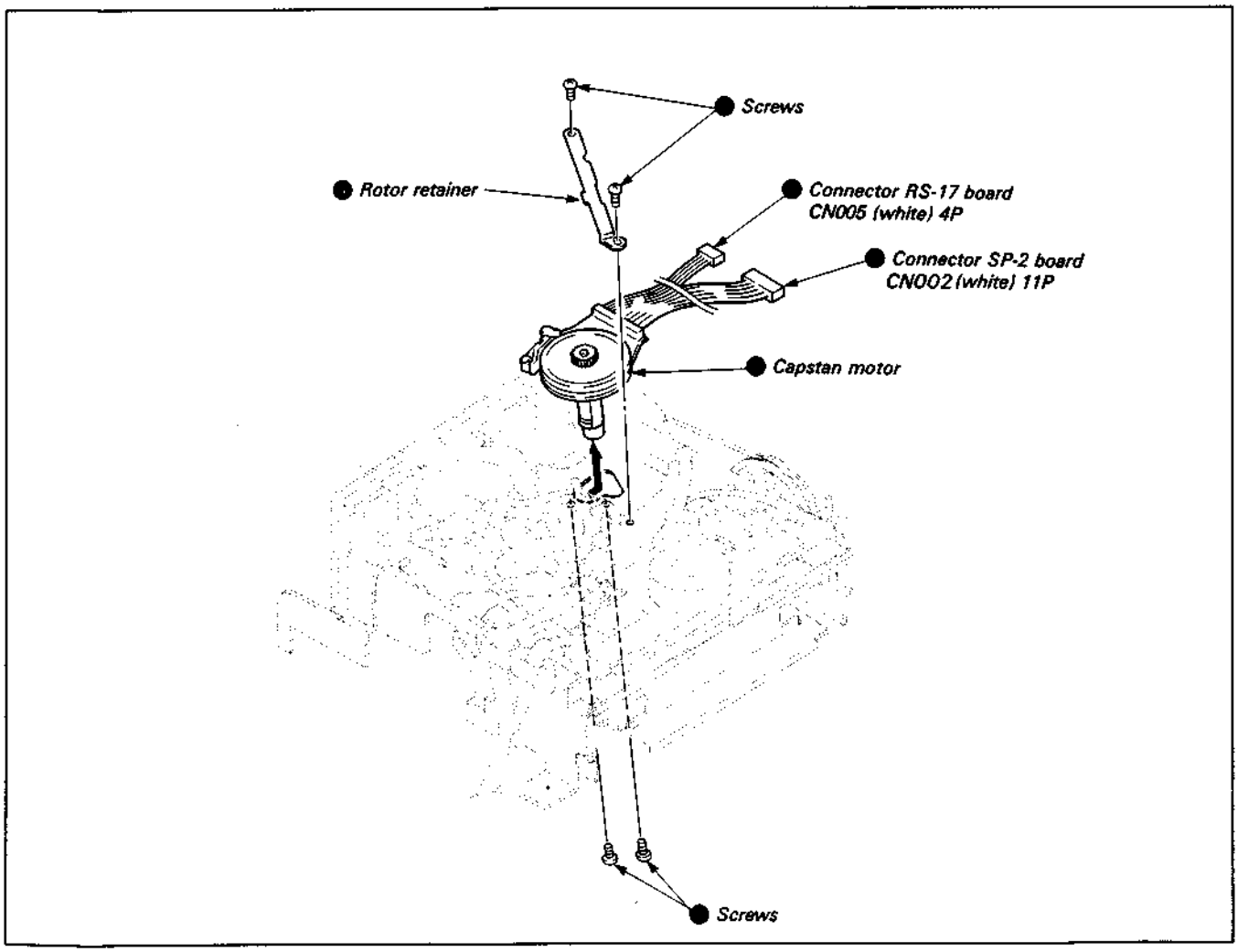


Fig. 7-44.

7-3-17. Rotary Upper Drum Replacement

1. Removal

1) Remove two hexagon socket screws (2 × 2.7) ● and dismount the dynamic damper ●. (See Fig. 7-45.)
2) Suction solder at all of the soldered eight positions Ⓐ. Check that the printed wiring board and pins jutting out from below freely moove using tweezers, or other tool. (See Fig. 7-45.)
3) Remove the two hexagon socket screws (2 × 5) ●. (See Fig. 7-45.)
4) Mount the dismounting Jig Ⓑ with the accessory screws ● utilizing the screw holes in which the dynamic damper was mounted.
   Drive the hexagon socket screw ● into the jig Ⓑ and remove the rotary upper drum ●. (See Fig. 7-46.)

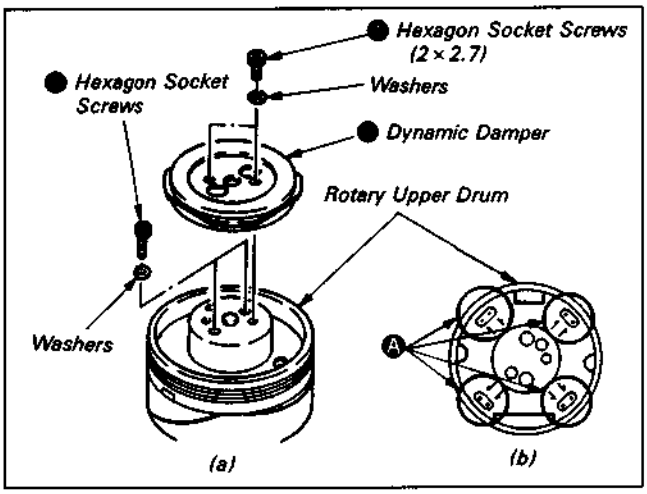


Fig. 7-45.

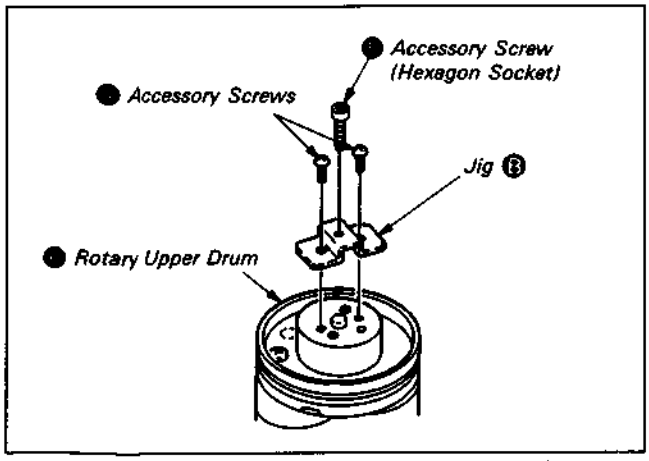


Fig. 7-46.

2. Mounting

Rotary Upper Drum	Part No.
DGR-12E-R	A-7049-147-A

1) Carefully clean the flange surfaces and planes of the rotary upper drum and visually check that no blemishes or flaws are left.
2) Insert Jig Ⓒ in the positioning hole Ⓓ so that the holes of the rotary upper drum ● and flange coincide. Lightly insert the rotary upper drum in the drum shaft while aligning their positions. (See Fig. 7-47.) (Check that pins are projecting above the holes on the printed circuit board of the rotary upper drum. When the pins are caught, correct using tweezers, etc.)
3) Remove Jig Ⓒ, lightly push the rotary upper drum by hands. If the rotary upper drum does not go in to the bottom, alternately tighten the two hexagon socket screws (2 × 5) ● by hand and fix them temporarily. (See Fig. 7-45, 7-48.)
4) Reinsert the Jig Ⓒ in the positioning hole Ⓓ and check that the jig can be inserted smoothly. (When the jig cannot be inserted, loosen the two hexagon socket screws (2 × 5) ● and slide it inserting a clock screw-driver in the hole.)
5) Tighten the two hexagon socket screws (2 × 5) ●.

Note: Do not tighten too strongly.

6) Solder the eight positions Ⓐ. (See Fig. 7-45.)

Note: Be careful not to flow solder below the printed wiring board.

7) Tighten the two hexagon socket screws (2 × 2.7) ● reversing the screw removal procedure and remount the dynamic damper ●. (See Fig. 7-45.)

Note: Be careful not to tighten too strongly.
When mounting, be careful not to mix the hexagon socket screws (2 × 2.7) ● and hexagon socket screws (2 × 5) ●.

Note: After mounting, be sure to perform 7-4. Tape Path Adjustment.

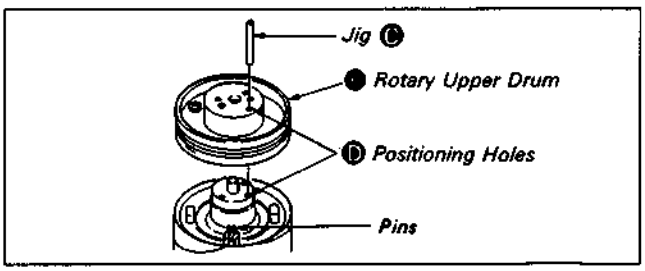


Fig. 7-47.

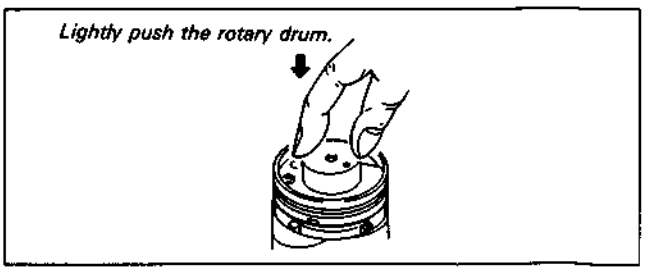
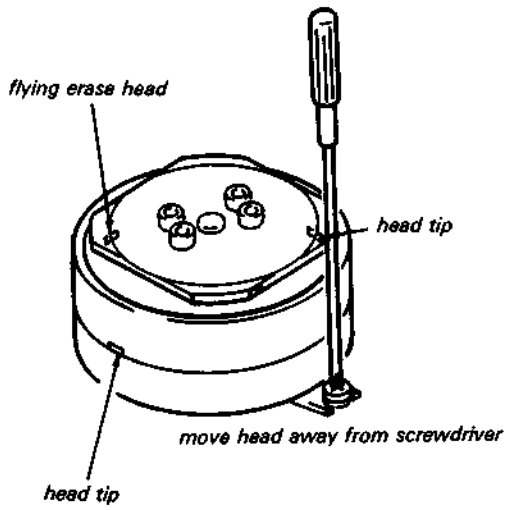


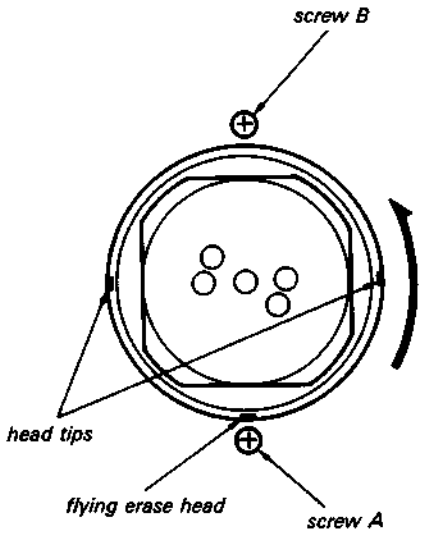
Fig. 7-48.

Notes on Drum Assembly and Rotary Upper Drum Mounting

1. When mounting the drum assembly with a magnetized screwdriver, mount with the head tip in the position shown below to prevent it from being affected by the screwdriver.
2. Be sure to perform tape path adjustment after mounting.



Tightening screw A



When tightening screw B, lotate the head halfway and check the head tip position.

Fig. 7-49.

7-3-18. Replacement of Drum Assembly

(See Fig. 7-50, 51)

1. Removal

1) Remove the cassette compartment assembly according to item Section 2, 2-14.
2) Open the SP-2 board according to Section 2, 2-6.
3) Remove screw ● and the shaft ground terminal ●. (See Fig. 7-50.)
4) Remove the three connectors ●.
5) Remove the two screws ●.
6) Remove the drum assembly ●. (See Fig. 7-51.)

Note: At this time, be careful that the drum assembly does not hit No. 3 guide, etc.

2. Mounting

1) Mount drum assembly ● and tighten the two screws ●.
2) Connect the three connectors ●.
3) Mount shaft ground terminal ● and tighten screw ●.
4) Mount the SP-2 board by following the procedure in Section 2, 2-6. in reverse.
5) Mount the cassette compartment assembly by following the procedure in item Section 2, 2-14. in reverse.

Note: Be sure to perform 7-4. Tape Path Adjustment after mounting.

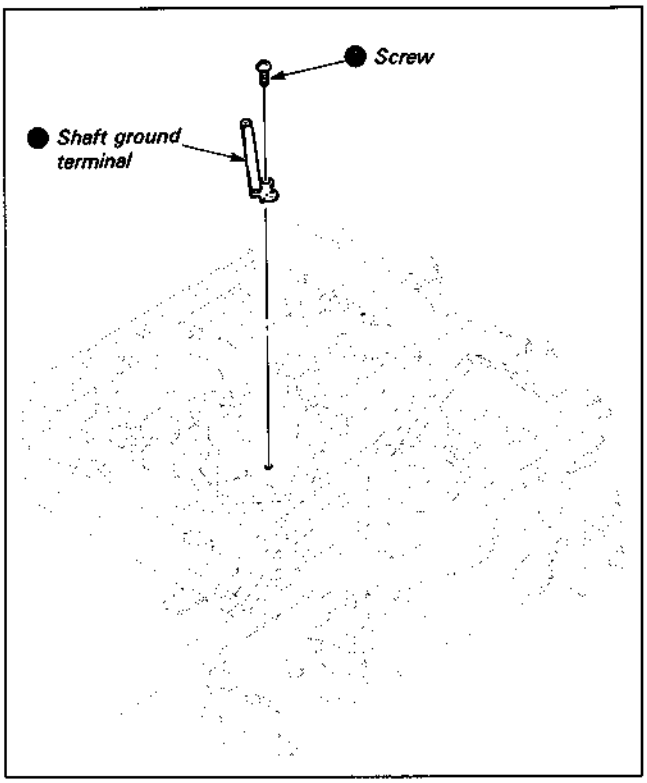


Fig. 7-50.

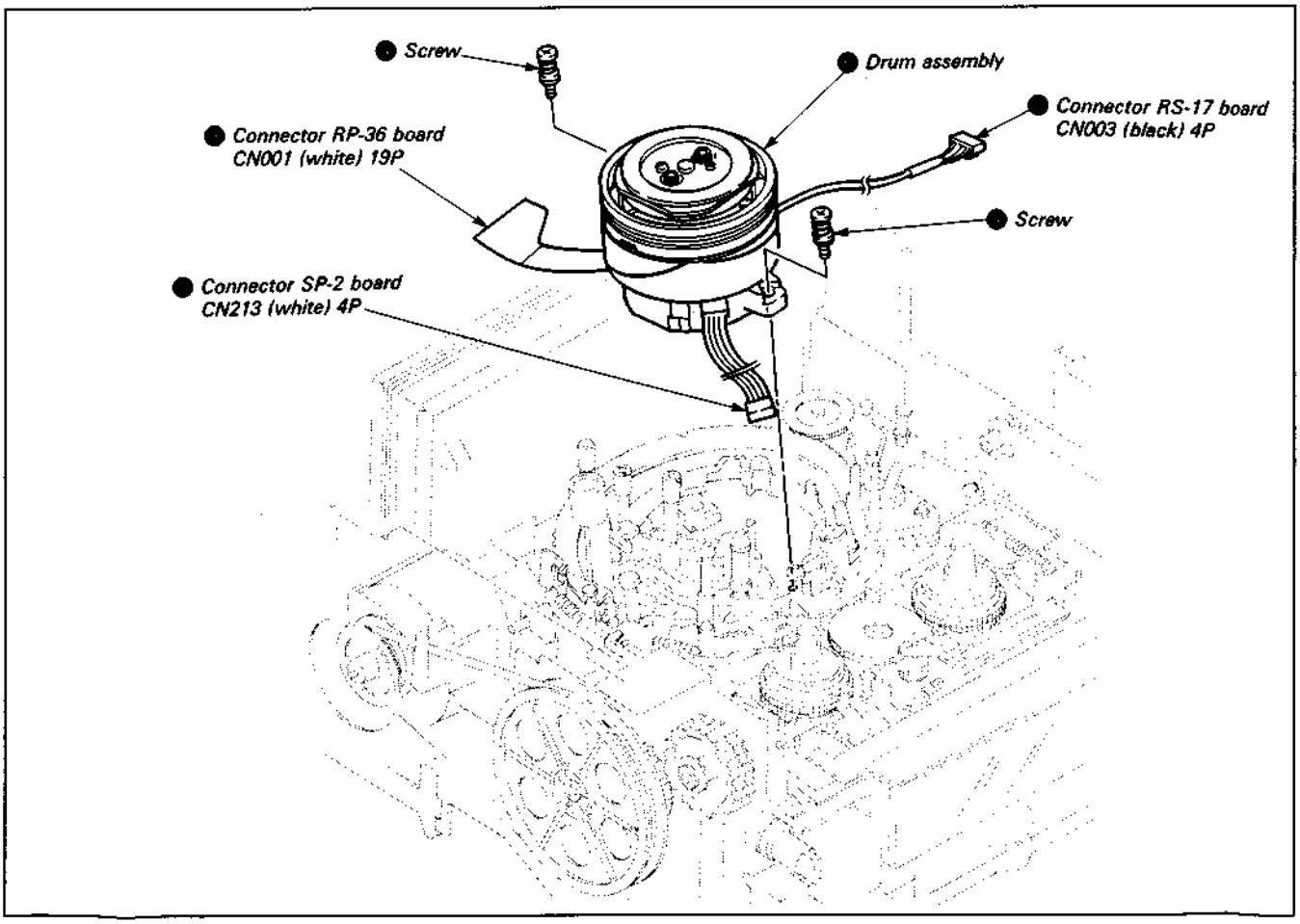


Fig. 7-51.

7-3-19. Adjustment After Replacement of No.3 Guide and No.4 Guide

For replacement of both No.3 and No.4 guides, line up the tape along the upper flange after replacing.

7-3-20. No.5 Guide Assembly (See Fig. 7-52.)

1. Removal

1) Remove the cassette compartment assembly according to item Section 2, 2-14.
2) Remove the three screws ● and No.5 guide assembly.
3) Remove guide nut ●, compression spring ● and No.5 guide roller assembly ●.

2. Mounting

1) Insert compression spring ● into No.5 guide roller assembly ●, engage the bottom section and tighten guide nut ●.
2) Mount No.5 guide assembly and tighten the three screws ●.
3) Mount the cassette compartment assembly by following the procedure in item Section 2, 2-14. in reverse.

Note: Be sure to perform 7-4. Tape Path Adjustment after mounting.

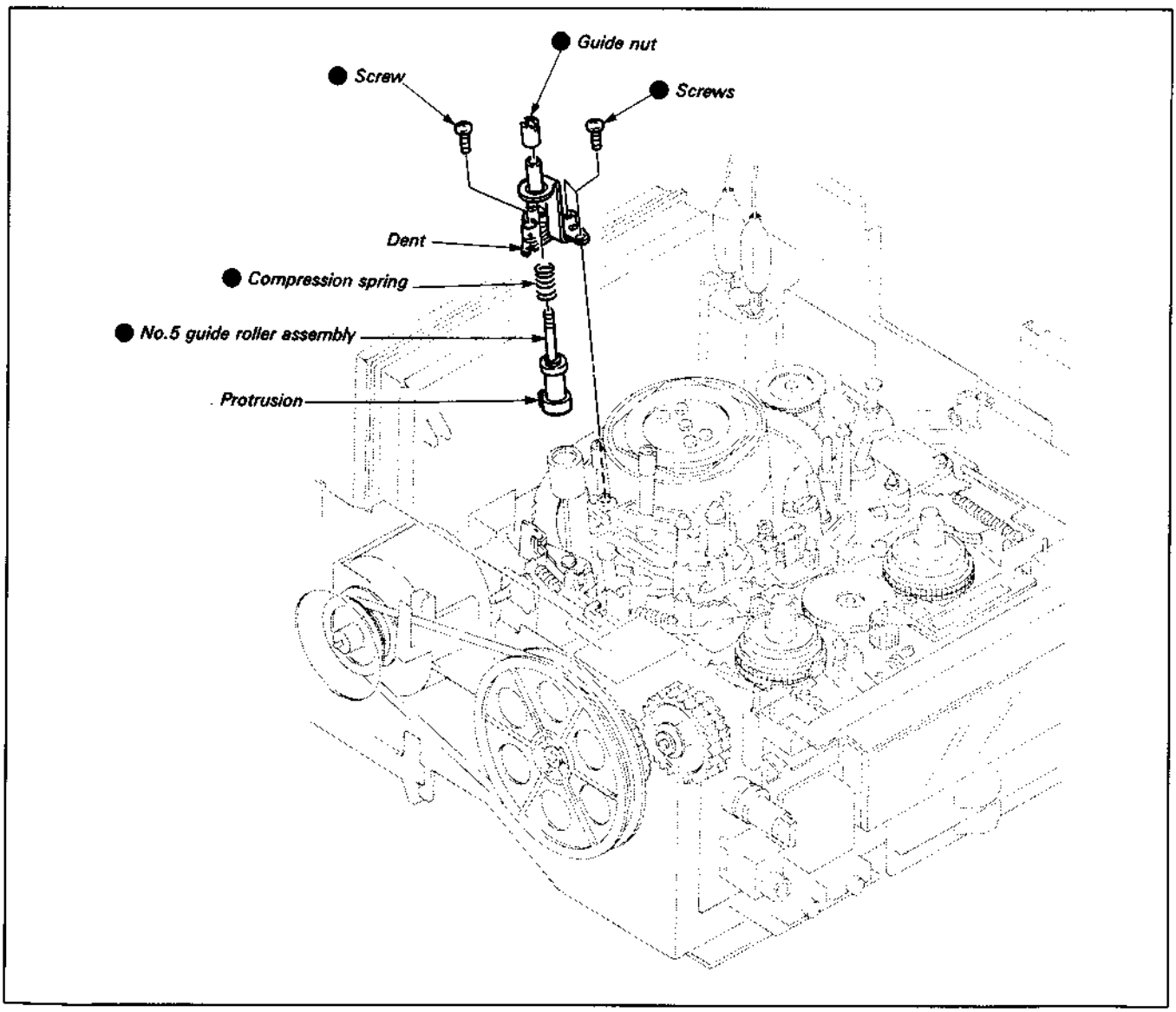


Fig. 7-52.

7-3-21. FWD Back Tension Adjustment (See Fig. 7-53.)

1) Remove the cassette compartment assembly according to Section 2, 2-14.
2) Remove the mechanism according to Section 2, 2-15.
3) Set to [LOADING END] [FWD] mode.
4) Loosen band adjustment plate ● screw ● and adjust as shown by arrow Ⓐ so that the tension regulator arm assembly slit ● and tension regulator arm assembly pin ● are positioned as shown, and tighten screw ●.
5) Place tension measurement reel (Ref. No. J-7) ● on the S reel table assembly ● and line up with No.1 guide, No.2, No.3 guide and the drum.
6) Pull dial tension gauge (Ref. No. J-6) ● in the direction of arrow Ⓑ and hook tension spring ● onto the tension regulator spring hook assembly ● so that the value is 12.5±1g, as shown.
Value too large: arrow Ⓒ direction
Value too small: arrow Ⓓ direction

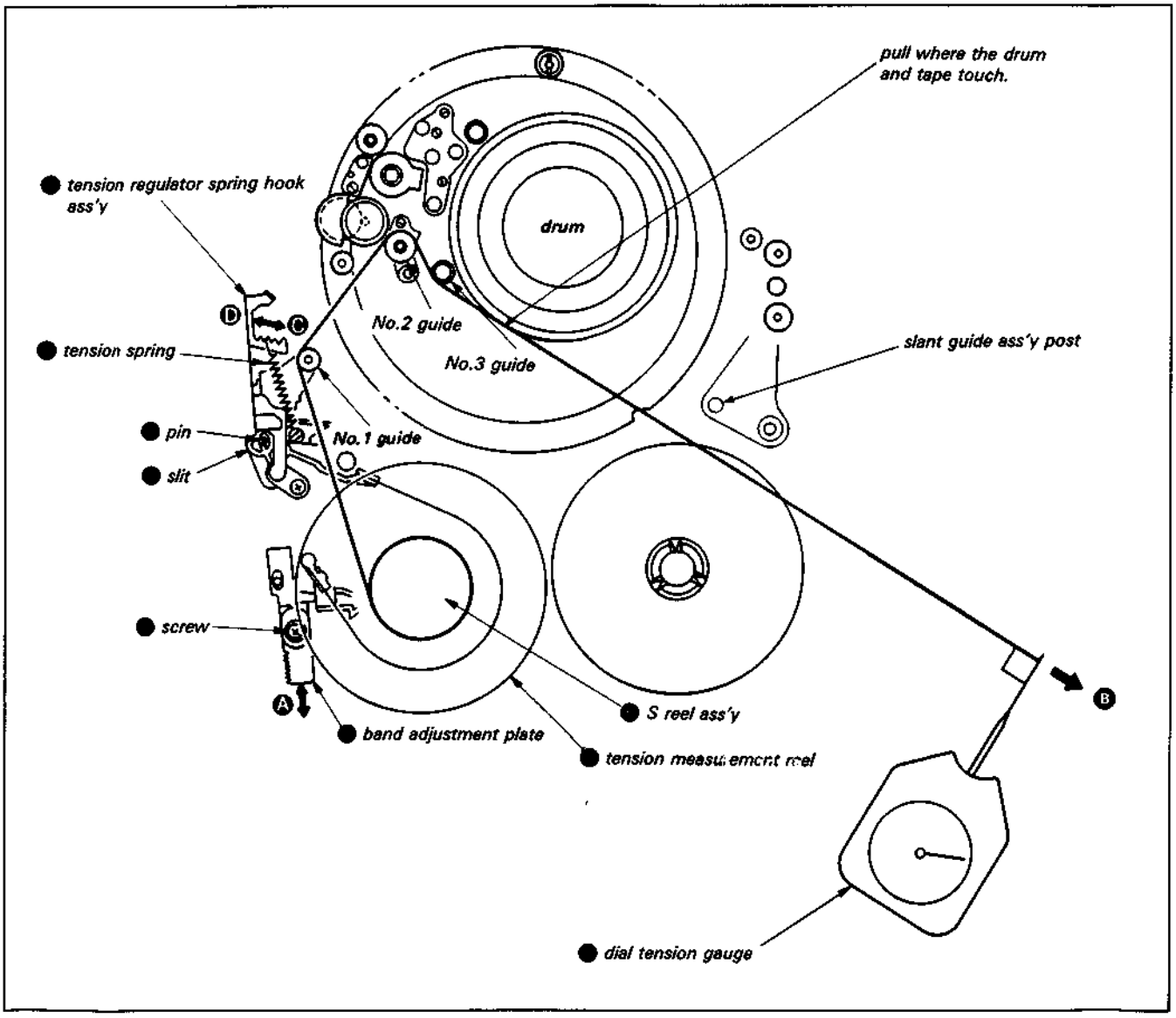


Fig. 7-53.

7-3-22. Replacement of Reel Motor (See Fig. 7-54.)

1. Removal

1) Open the SP-2 board according to item Section 2, 2-6.
2) Remove connector ● from SP-2 board.
3) Remove the two screws ● and reel motor bracket ●.
4) Remove the two screws ● and reel motor ● in the direction of arrow.

2. Mounting

1) Mount the reel motor ● to reel motor bracket ● with two screws ●.
2) Mount the reel motor assembly and tighten with two screws ●.
3) Connect the connector ● to SP-2 board.
4) Mount the SP-2 board by following the procedure in Section 2, 2-6. in reverse.

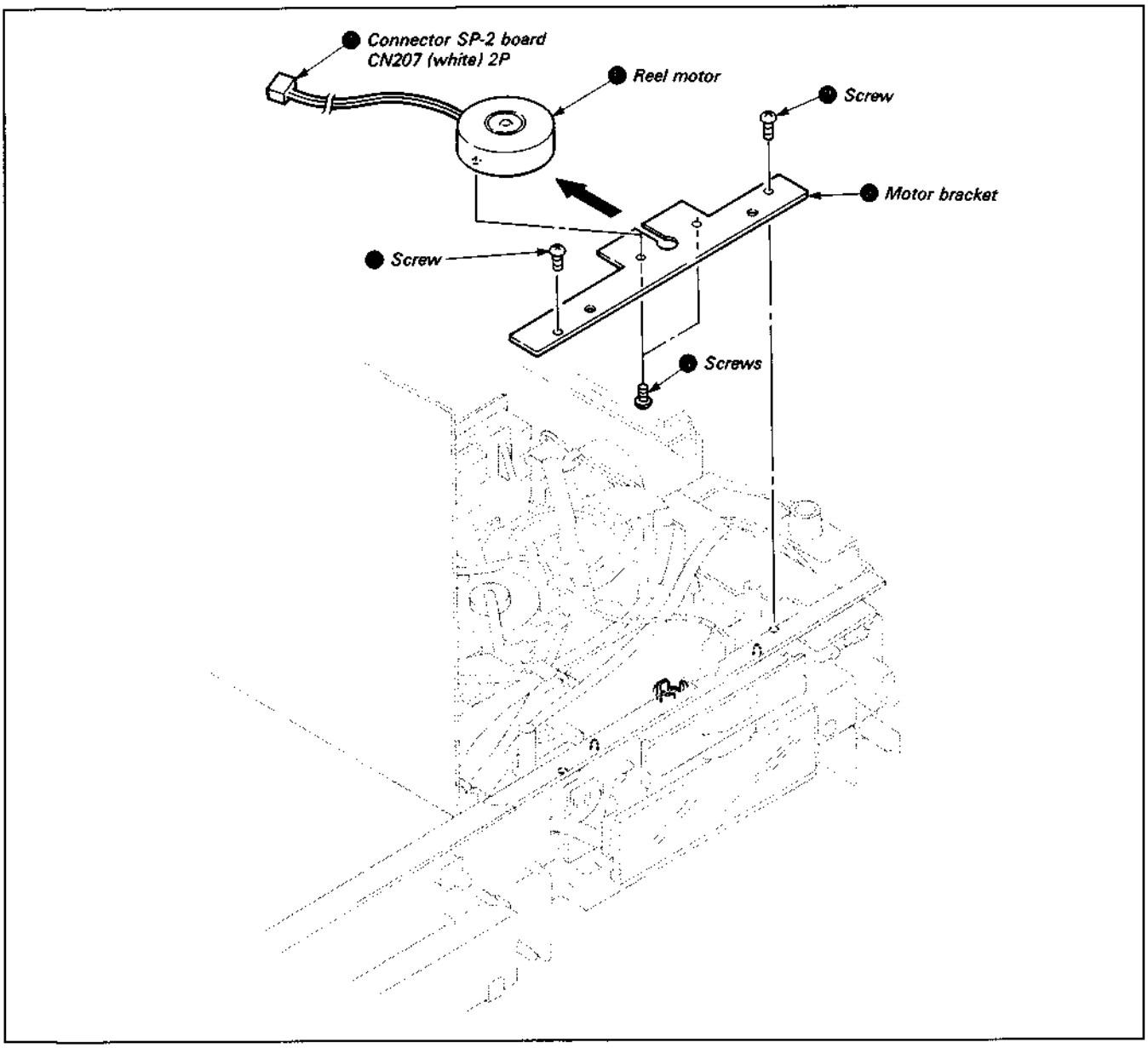


Fig. 7-54.

7-3-23. Check of S and T Main Brake Torque

1) Remove the front panel according to Section 2, 2-2.
2) Remove the cassette compartment assembly according to Section 2, 2-14.

1. S Main Brake Torque (See Fig. 7-55, 7-56)

1) Set to [FF/REW] mode.
2) Place the tension measurement reel (Ref. No. J-8) on the S reel table.
3) Pull the dial tension gauge (Ref. No. J-6) in the direction of the arrow and confirm that the value are satisfied.

2. T Main Brake Torque (See Fig. 7-57, 7-58.)

1) Set to [FF/REW] mode.
2) Place the tension measurement reel (Ref. No. J-8) on the T reel table.
3) Pull the dial tension gauge (Ref. No. J-6) in the direction of the arrow and confirm that the value are satisfied.

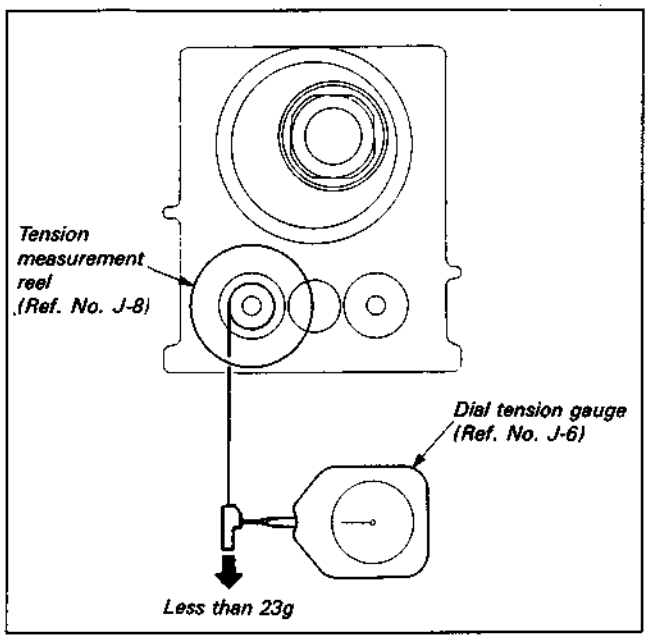


Fig. 7-55.

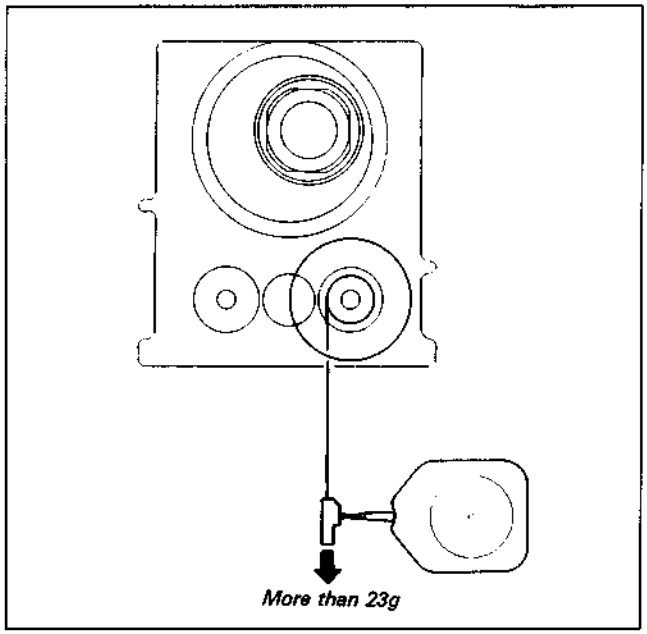


Fig. 7-57.

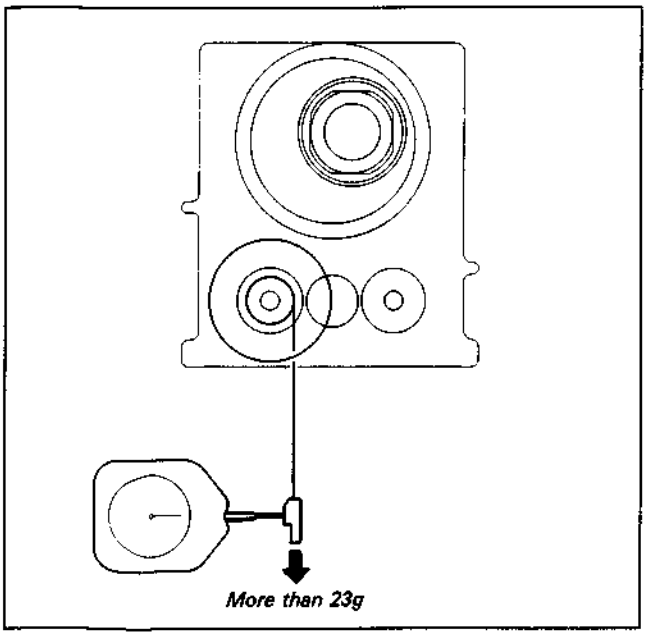


Fig. 7-56.

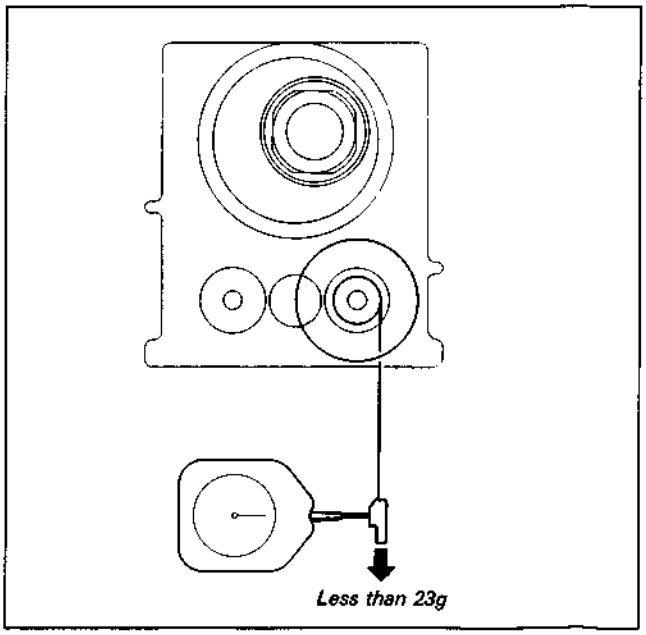


Fig. 7-58.

7-3-24. Check of S and T Soft Brake Torque

1) Remove the front panel according to Section 2, 2-2.
2) Remove the cassette compartment assembly according to Section 2, 2-14.

1 S Soft Brake Torque (See Fig. 7-59.)

1) Set to [FF/REW] mode.
2) Place the tension measurement reel (Ref. No. J-8) on the S reel table.
3) Release the S main brake with a finger.
4) Pull the dial tension gauge (Ref. No. J-6) in the direction of the arrow and confirm that the value are satisfied.

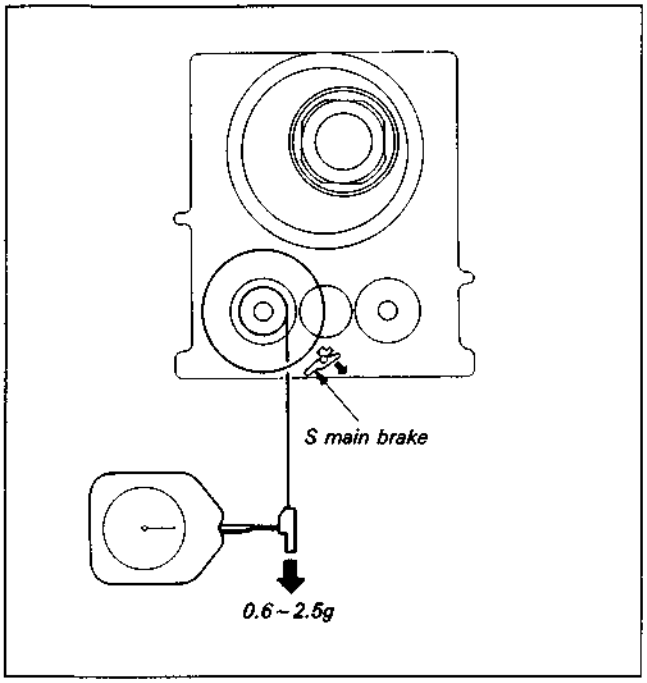


Fig. 7-59.

2. T Soft Brake Torque (See Fig. 7-60.)

1) Set to [REV] mode.
2) Place the tension measurement reel (Ref. No. J-8) on the T reel table.
3) Release the T main brake with a finger.
4) Pull the dial tension gauge (Ref. No. J-6) in the direction of the arrow and confirm that the value are satisfied.

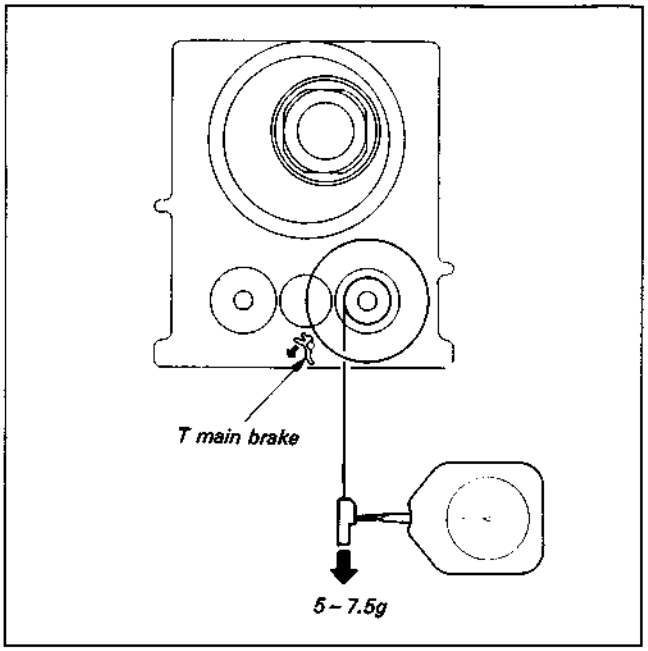


Fig. 7-60.

7-3-25. Check of REV and REW Brake Torque

1) Remove the front panel according to Section 2, 2-2.
2) Remove the cassette compartment assembly according to Section 2, 2-14.

1. REV Brake Torque (See Fig. 7-61.)

1) Set to [REV] mode.
2) Place the tension measurement reel (Ref. No. J-8) on the S reel table.
3) Release the S main brake with a finger.
4) Pull the dial tension gauge (Ref. No. J-6) in the direction of the arrow and confirm that the value are satisfied.

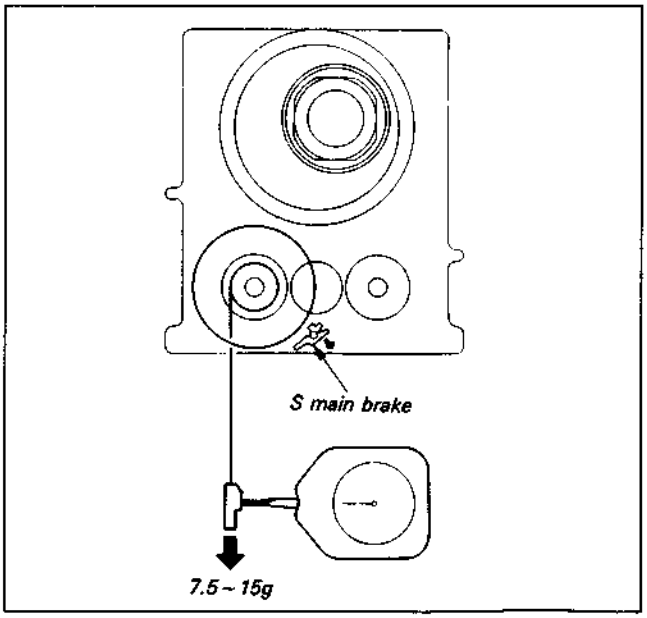


Fig. 7-61.

2. REW Brake Torque (See Fig. 7-62.)

1) Set to FF/REW mode.
2) Place the tension measurement reel (Ref. No. J-8) on the T reel table.
3) Release the T main brake with a finger.
4) Pull the dial tension gauge (Ref. No. J-6) in the direction of the arrow and confirm that the value are met.

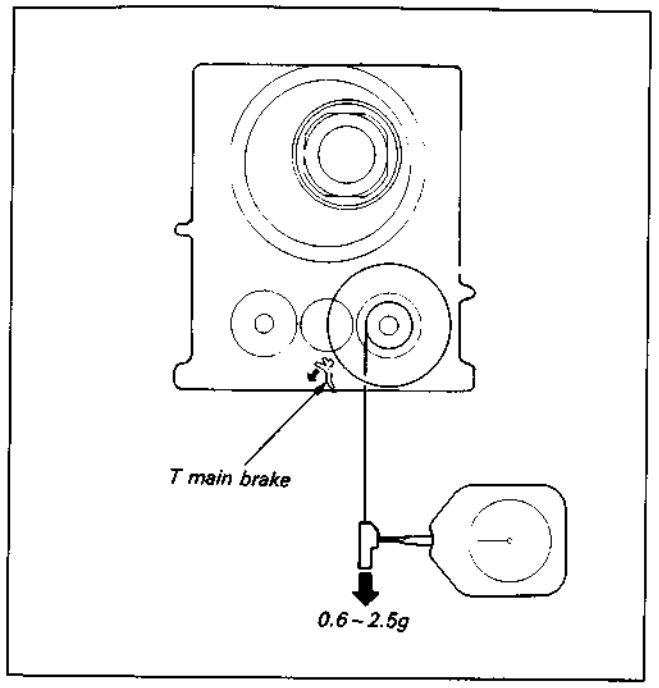
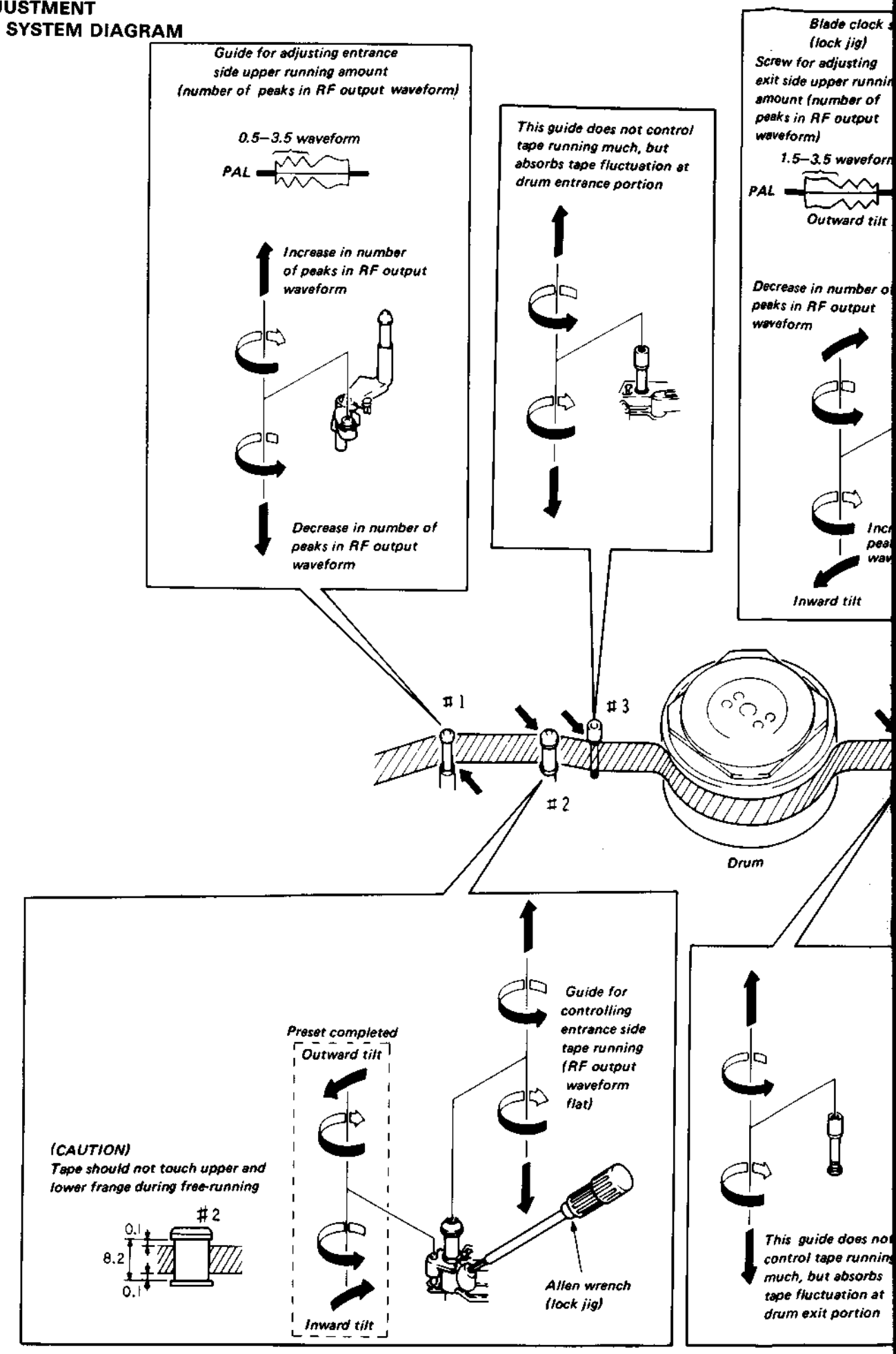


Fig. 7-62.

7-3-26. Check by FWD, RVS Take-up Torque Cassette

1) Insert the FWD, RVS take-up torque cassette (Ref. No. J-12).
2) Set for playback mode and confirm that T reel table torque is 9.5 ~ 15.5 g · cm.
3) Set for playback mode, and check that the S reel torque immediately after the REW button is pressed is 17-23 g · cm.
4) Replace the appropriate reel table if the above value are not satisfied.

7-4. TAPE PATH ADJUSTMENT
TAPE RUNNING SYSTEM DIAGRAM



orque

ette (Ref. No.

T reel table

S reel torque
is 17-23 g·cm.
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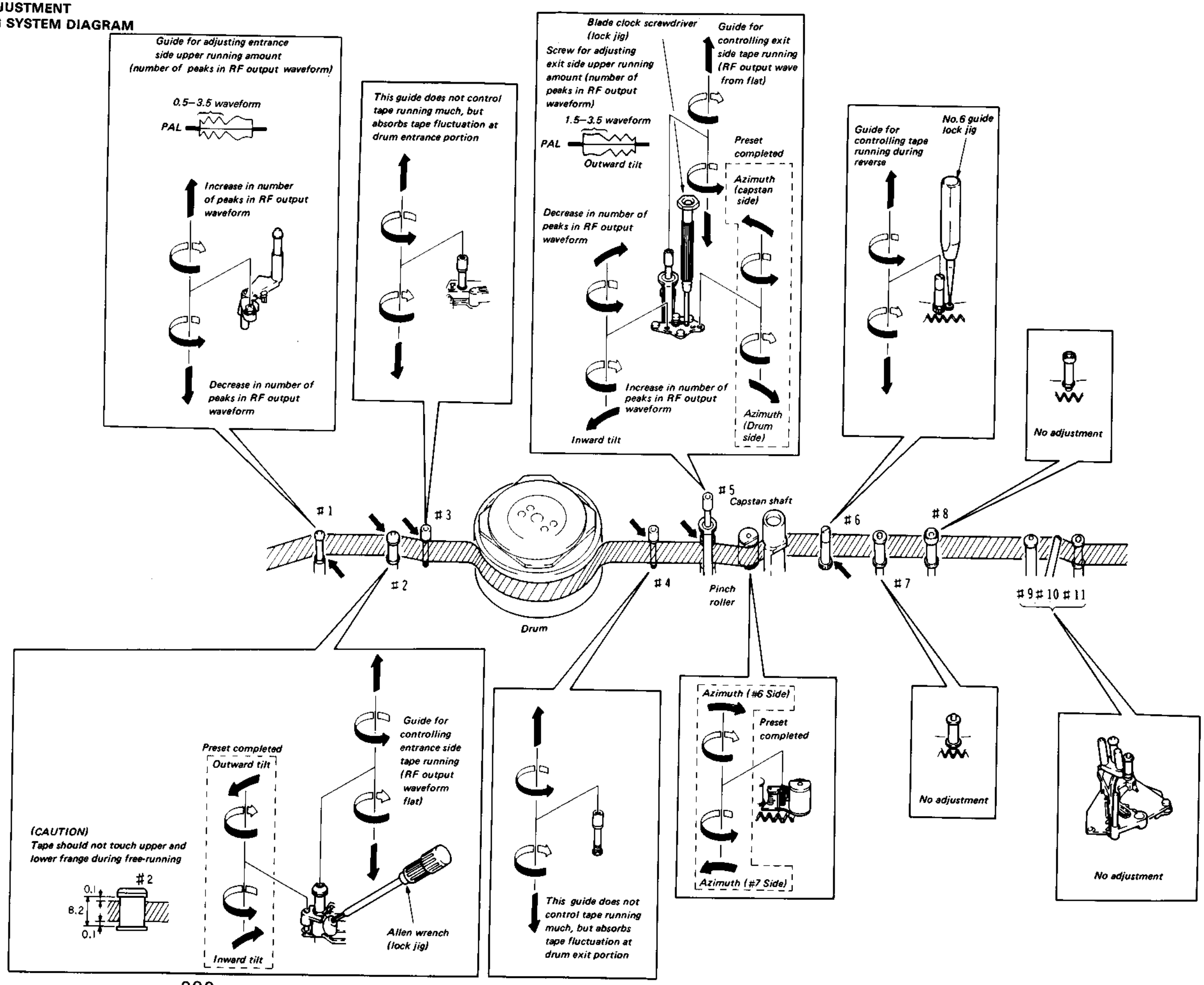
7-4. TAPE PATH ADJUSTMENT
TAPE RUNNING SYSTEM DIAGRAM



[REGARDING TRACK SHIFT AND MONITOR JIG]

The video 8 system employs a high precision tracking ATF (auto track finding) and instantaneously controls the tape running speed with the 4 kinds pilot signals. In this way, the tracking adjustment knob becomes unnecessary, and accurate tracking has become possible.
However, on the other hand, there has been difficulty in adjusting the tape path system with the ATF method. It was due to the fact that complete adjustment had been impossible to be performed because even when the tracing of the head had been a slightly off course, the ATF would perform correction automatically.
Because of this, adjustment is carried out to the tape path system by using the track shift & monitor jig (Ref. No. J-6080-851-A). As the track shift and monitor jig forcibly releases the ATF and sets the tracking amount (track shift) manually, the adjustment of the tape path system can easily be carried out.

Perform this adjustment after the electrical adjustment of Section 8 has been completed.

7-4-1. Connection with Track Shift and Monitor Jig

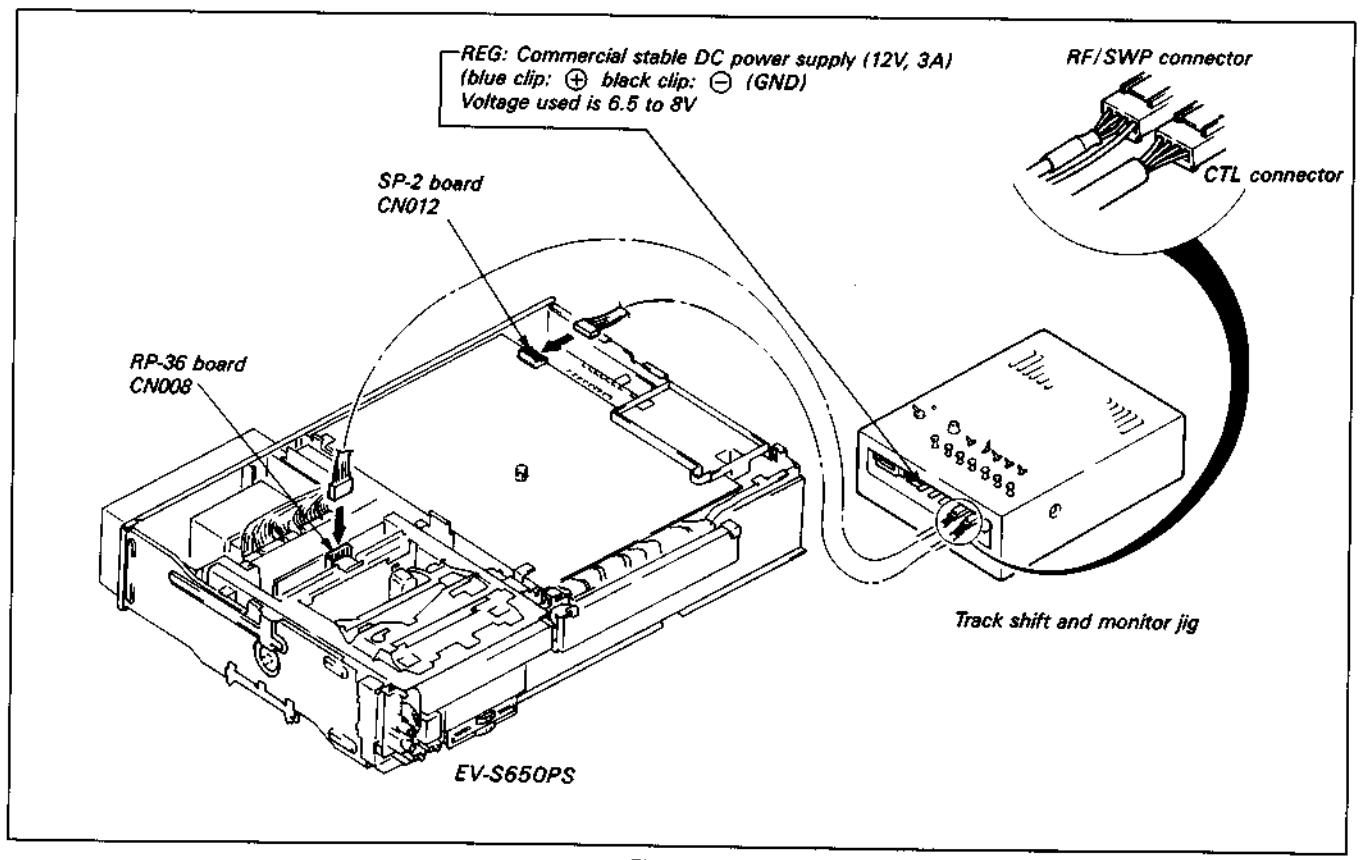


Fig. 7-63.

[Track Shift and Monitor Jig Power Supply]

The track shift & monitor jig has three types of connectors for external power supply, and the following three types of power supply can be used.

Connector Name	Power Supply
SYSTEM CONN	Connect modified CCD-V8E/UB AC adapter AC-V8 E/UB. (Refer to the track shift and monitor jig instruction manual for the modification procedure.)
AC ADP	Betamovie AC adapter AC-M100E/UB is connected.
REG	Connect commercially sold DC stable power supply of more than 12V3A and use at 6.5 ~ 8V. Be sure to make correct ⊕ and ⊖ connections.

- Two or more types of power supply can not be used at the same time.
- Use the connector supplied with the track shift & monitor jig when connecting.
- Power supplies or voltages other than those given above should not be used.
- When using the modified AC-V8E/UB, the circuit power supply is cut off about 10 seconds after the AC-V8E/UB power switch is turned off.
- Power is not supplied to itself, so be sure to supply AC power to it at the same time.

[Connector Connection]

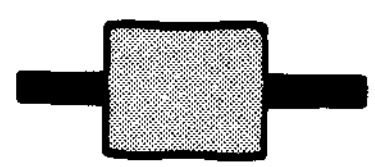
Connect the track shift & monitor jig as shown in Fig. 7-63. Connect RF/SWP connector to RP-36 board CN008, and the CTL conector to SP-2 board CN012.

[Switch Settings]

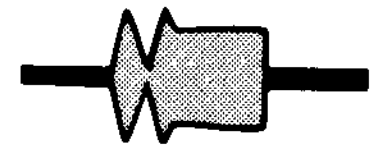
SEL switch: Set to ON when doing track shift. When OFF, control is from side.
PATTERN switch: Set to EV side.
ATF LOCK: Set to OFF.
Other switches are not used during adjustment.

7-4-2. Preparation for Adjustment

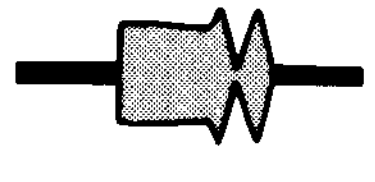
1) Perform cleaning of the tape running surface (the individual tape guides, drum, capstan shaft and pinch roller).
2) Connection of oscilloscope
   1ch: CH2 pin (RF signal)
   EXT TRIG: RF SWP pin (RF SWP signal)
3) Set the SEL switch of the track shift & monitor jig to OFF, then playback the alignment tape (WR5-1C) for tracking, and confirm that the RF waveform of both the entrance and exit sides become flat (Fig. ⓐ in 7-64.). If the RF waveform of both sides is not flat, the adjustment should be carried out in accordance with the following.
   * In case the RF waveform on the entrance side is not flat (Fig. ⓑ in 7-64.) . . . Perform the adjustment in Item 7-4-3. Entrance side adjustment.
   * In case RF waveform on the exit side is not flat (Fig. ⓒ in 7-64.) . . . Perform the adjustment in Item 7-4-4, Exit Side Adjustment.



ⓐ *Normal*



ⓑ *Entrance side is defective.*



ⓒ *Exit side is defective.*

Fig. 7-64.

[Track Shift and Monitor Jig Power Supply]

The track shift & monitor jig has three types of connectors for external power supply, and the following three types of power supply can be used.

Connector Name	Power Supply
SYSTEM CONN	Connect modified CCD-V8E/UB AC adapter AC-V8 E/UB. (Refer to the track shift and monitor jig instruction manual for the modification procedure.)
AC ADP	Betamovie AC adapter AC-M100E/UB is connected.
REG	Connect commercially sold DC stable power supply of more than 12V3A and use at 6.5~8V. Be sure to make correct ⊕ and ⊖ connections.

- Two or more types of power supply can not be used at the same time.
- Use the connector supplied with the track shift & monitor jig when connecting.
- Power supplies or voltages other than those given above should not be used.
- When using the modified AC-V8E/UB, the circuit power supply is cut off about 10 seconds after the AC-V8E/UB power switch is turned off.
- Power is not supplied to itself, so be sure to supply AC power to it at the same time.

[Connector Connection]

Connect the track shift & monitor jig as shown in Fig. 7-63. Connect RF/SWP connector to RP-36 board CN008, and the CTL conector to SP-2 board CN012.

[Switch Settings]

SEL switch: Set to ON when doing track shift. When OFF, control is from side.
PATTERN switch: Set to EV side.
ATF LOCK: Set to OFF.
Other switches are not used during adjustment.

7-4-2. Preparation for Adjustment

1) Perform cleaning of the tape running surface (the individual tape guides, drum, capstan shaft and pinch roller).
2) Connection of oscilloscope
   1ch: CH2 pin (RF signal)
   EXT TRIG: RF SWP pin (RF SWP signal)
3) Set the SEL switch of the track shift & monitor jig to OFF, then playback the alignment tape (WR5-1C) for tracking, and confirm that the RF waveform of both the entrance and exit sides become flat (Fig. ⓐ in 7-64.). If the RF waveform of both sides is not flat, the adjustment should be carried out in accordance with the following.
   * In case the RF waveform on the entrance side is not flat (Fig. ⓑ in 7-64.) ... Perform the adjustment in Item 7-4-3. Entrance side adjustment.
   * In case RF waveform on the exit side is not flat (Fig. ⓒ in 7-64.) ... Perform the adjustment in Item 7-4-4, Exit Side Adjustment.

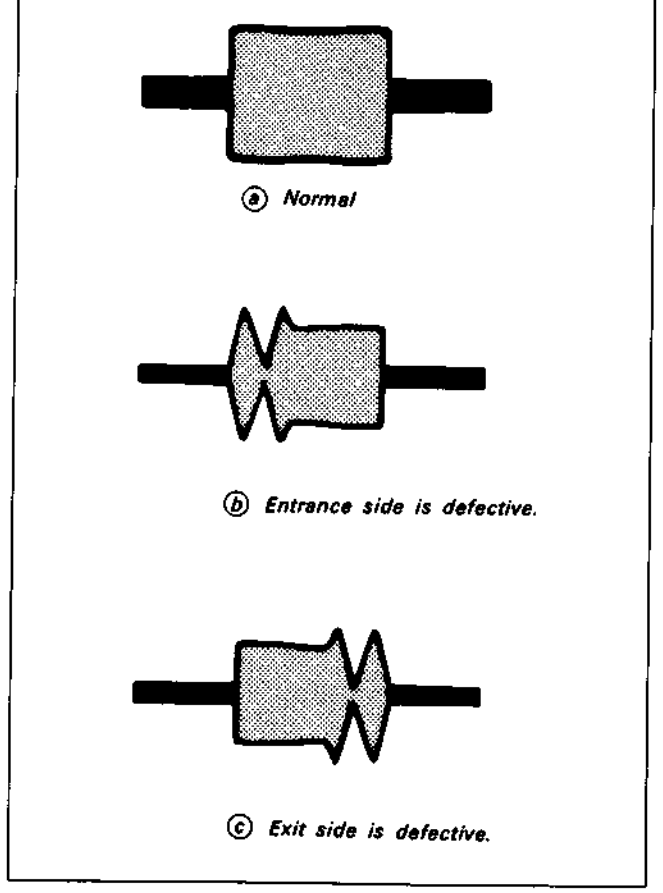


Fig. 7-64.

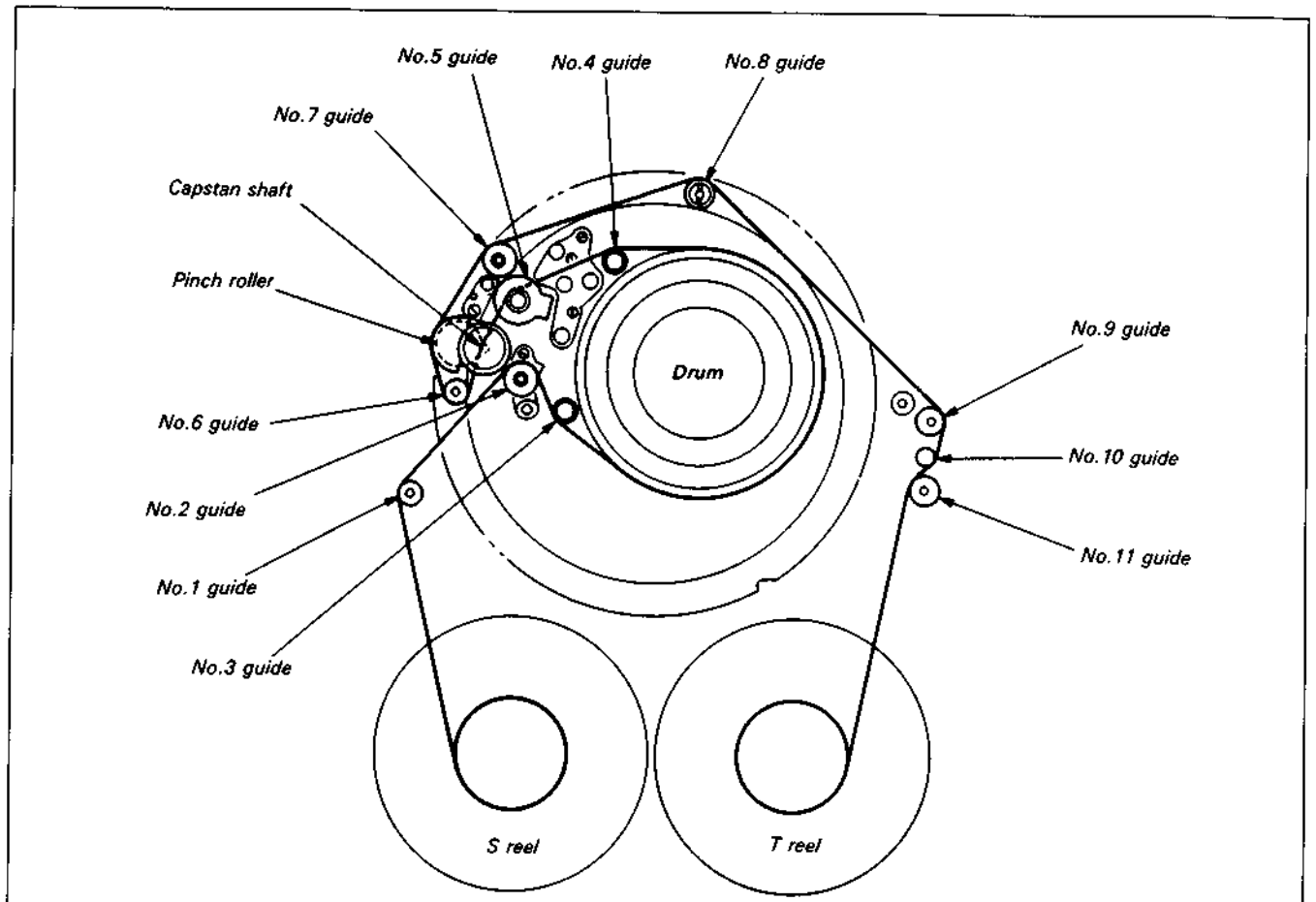


Fig. 7-65. Tape guide arrangement diagram

7-4-3. Entrance Side Adjustment

1) Playback the tracking alignment tape (WR5-1C) and loosen No.2 guide lock screw ●, and rotate No.2 and No.3 guides counterclockwise to free tape running on the entrance side. (See Fig. 7-66.)

   Note: Since the space between the top and bottom flanges of No.2 guide is narrow, confirm that the tape is contacting neither top nor bottom flanges at this point. If No.2 guide is loosened excessively, the tape contacts the bottom flange and the RF waveform on the entrance side ceases to be the original free waveform.

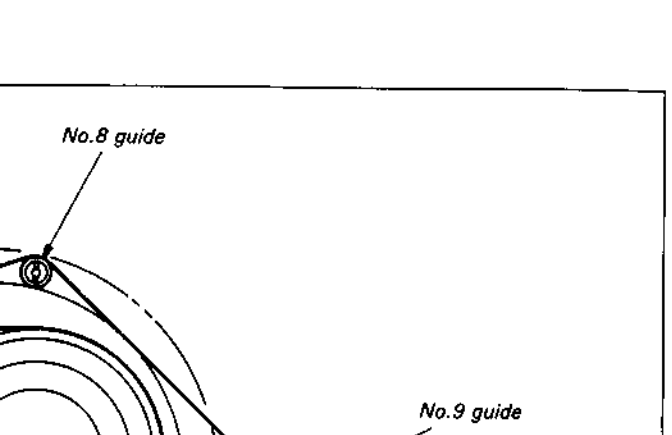


Fig. 7-66 (a).

Fig. 7-66 (b).

2) Confirm that RF waveform on the entrance side has 0.5 to 3.5 peaks in this condition. If not, adjust as follows. (See Fig. 7-67.)

[less the 0.5 peak]
Adjust the No.2 guide zenith screw ● by turning it counterclockwise 90° at a time. (See Fig. 7-66(a).)
[more than 3.5 peaks]
Adjust the height adjustment screw of No.1 guide (tension regulator assembly) by turning it counterclockwise 90° at a time. (See Fig. 7-68.)

3) Slowly rotate the No.2 guide clockwise to make the entrance side waveform approximately flat. (See Fig. 7-69)
Note: Do not rotate No.2 guide excessively.
4) Set the SEL switch of the track shift & monitor jig to ON, then turn the track shift knob until the RF waveform amplitude is 2/3. (See Fig. 7-70.)
5) Turn No.2 guide so that the entrance side waveform flattens slightly. (See Fig. 7-71.)
6) Flatten the waveform with No.3 guide. (See Fig. 7-72.)
7) Tighten No.2 lock screw ●. (See Fig. 7-66 (b).)
Note: Be sure to perform checking in accordance with 7-4-5. after making the adjustment.

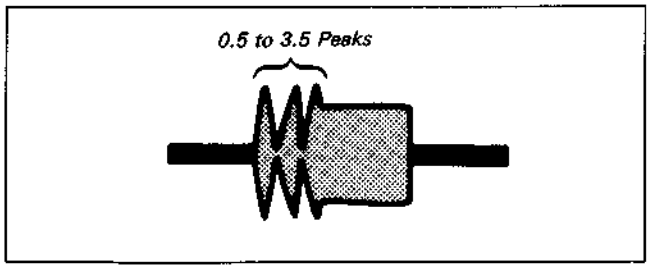


Fig. 7-67.

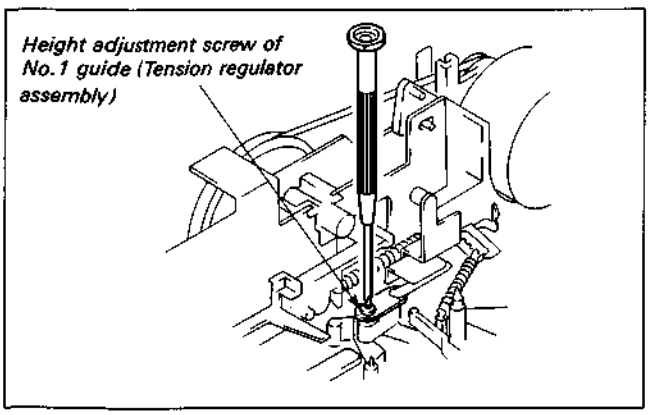


Fig. 7-68.

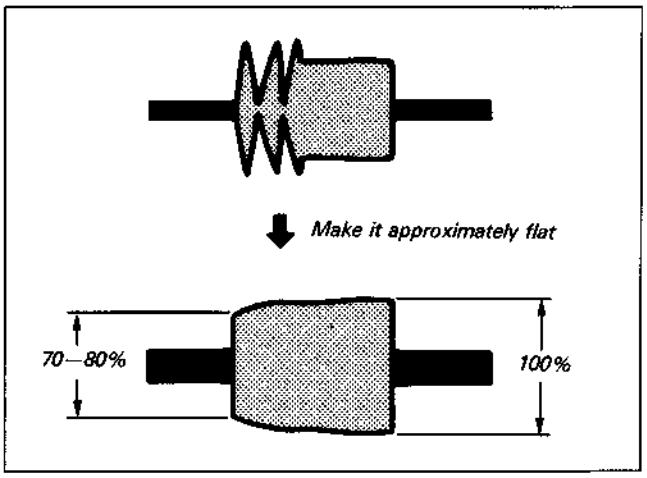


Fig. 7-69.

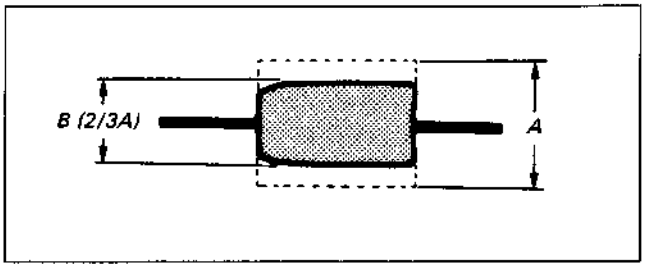


Fig. 7-70.

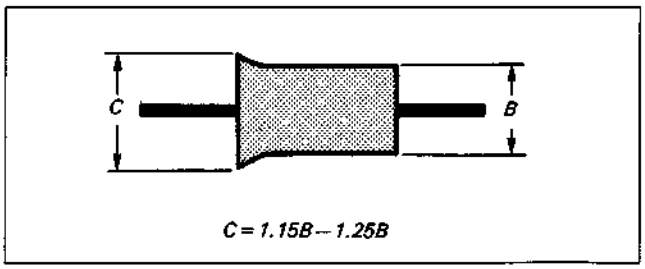


Fig. 7-71.

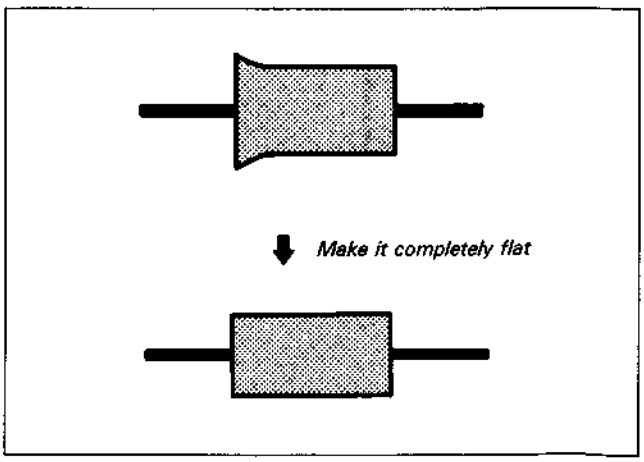


Fig. 7-72.

7-4-4. Exit Side Adjustment

1) Playback the alignment tape (WR5-1C) for tracking. Rotate No.4 guide counterclockwise and No.5 guide colockwise in order to make the tape running on the exit side free. (See Fig. 7-73.)

   Note: • If screw lock is stuck to the No.5 guide nut, it may prevent the nut from rotating. Rotate the guide after immersing the nut thread into alcohol and to dissolve the screw lock agent.
   • Check that the tape is not contacting the top and buttom of flanges of No.5 guide during free tape running.

2) Check that the RF waveform on the exit side has 1.5 to 3.5 peaks. If not, readjust as follows: (See Fig. 7-74.)

   If off standard

   i) Rotate the lock screw ● counterclockwise to loosen.
   ii) Slowly rotate the zenith screw ● 45° at a time and wait until the RF waveform varies.
   iii) Rotate the lock screw ● clockwise to tighten. (See Fig. 7-73.)

   Note: • The waveform varies if the lock screw is tightened too strongly. Tighten moderately.
   • Never rotate the azimuth screw of No.5 guide.

3) Rotate No.5 guide counterclockwise to make the RF waveform on the exit side approximately flat. (See Fig. 7-75.)

   Note: The waveform reaction is slow against nut rotation. Rotate the nut after the waveform variations are stabilized.

4) Set the SEL switch of the track shift & monitor jig to ON, then turn the track shift knob until the RF waveform amplitude is 2/3 (See Fig. 7-76.)

5) Turn No.5 guide so that the exit side waveform flats slightly. (See Fig. 7-77.)

6) Turn No.4 guide so that waveform flat. (See Fig. 7-78.)

   Note: Be sure to perform checking in accordance with 7-4-5. after making the adjustment.

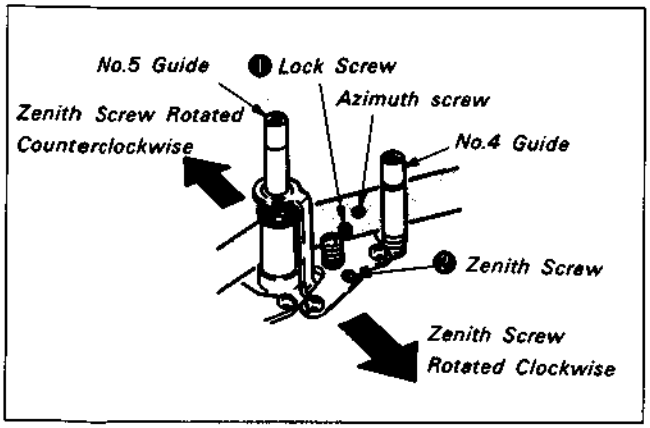


Fig. 7-73.

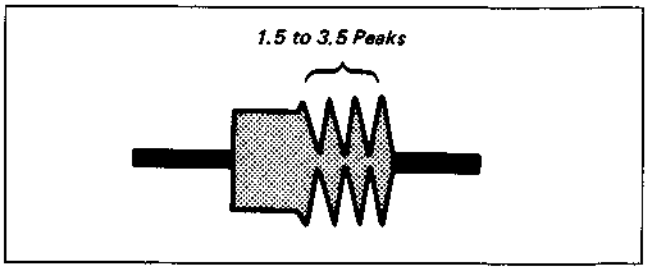


Fig. 7-74.

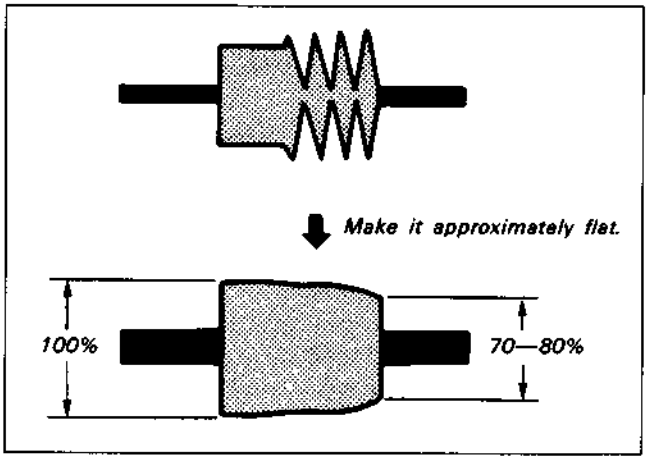


Fig. 7-75.

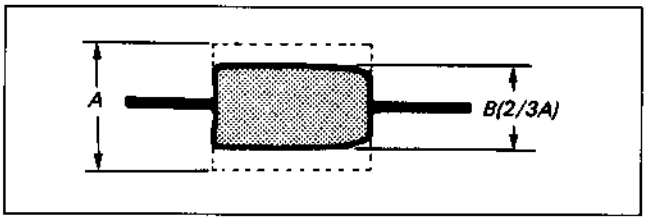


Fig. 7-76.

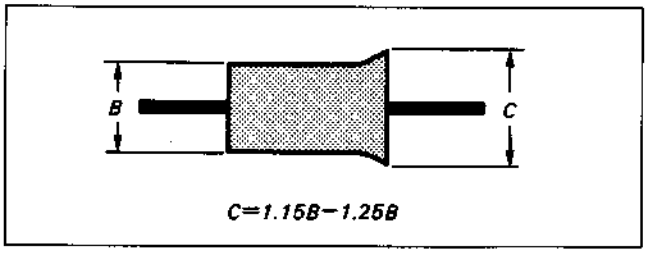


Fig. 7-77.

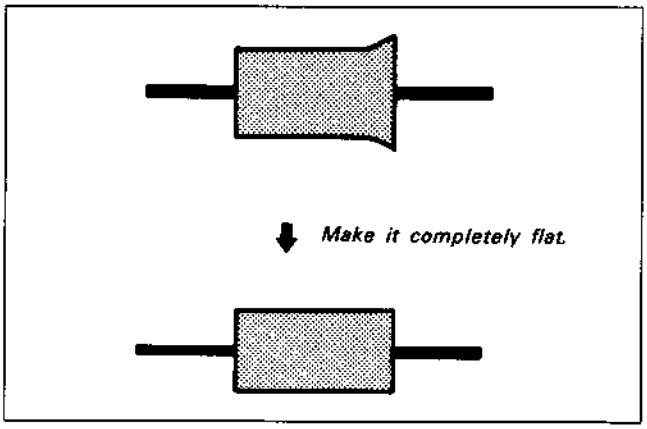


Fig. 7-78.

7-4-5. Checking After Adjustment

1. Tracking check

1) Playback the alignment tape (WR5-1C) for tracking.
2) Set the SEL switch of the track shift & monitor jig to ON, and turn track shift knob until the RF waveform amplitude is 2/3. (See Fig. 7-79.)

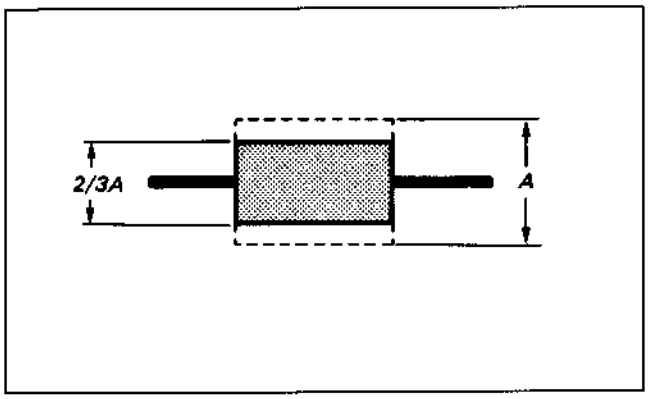


Fig. 7-79.

3) Confirm that the RF waveform amplitude minimum value (E min) at this time is more that 80% of maximum value (E max.). (See Fig. 7-80.)

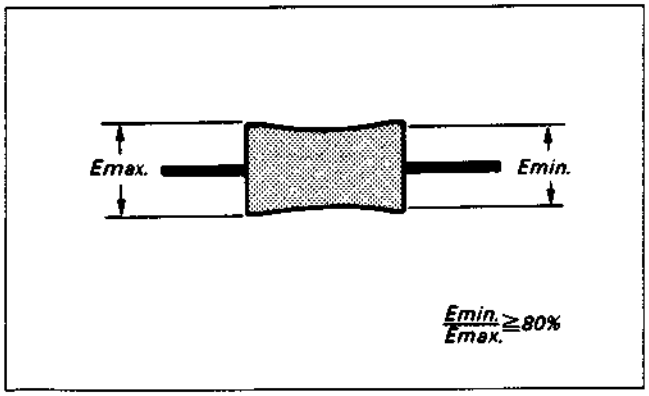


Fig. 7-80.

4) Check that the fluctuation amount of RF waveform entrance and exit sides both is as shown in Fig. 7-81.

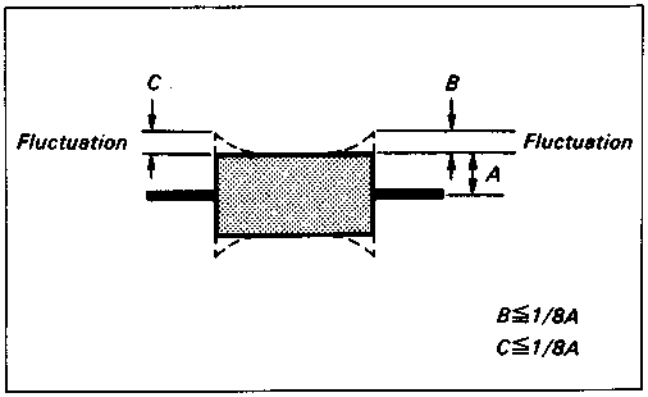


Fig. 7-81.

5) Set the SEL switch of the track shift & monitor jig to OFF.
6) Set up the REV mode and confirm that the waveform noise pitches are uniform. If not adjust as follows. (See Fig. 7-82.)

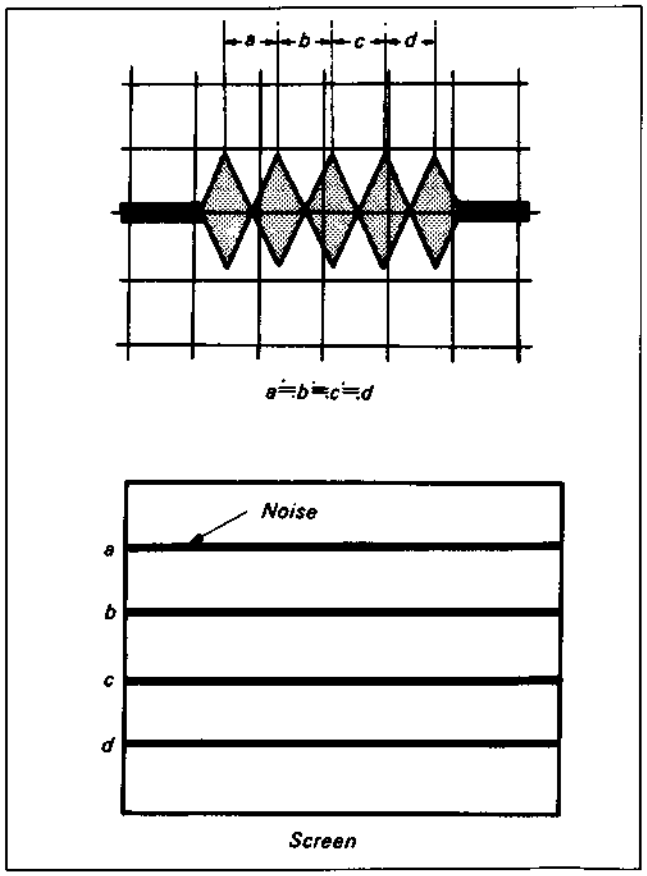


Fig. 7-82.

[Narrow noise pitch on entrance side (upper screen)]
(See Fig. 7-83.)
Confirm that the RF waveforms are flat in the PLAYBACK mode.
Waveform is not flat:
Adjust the heights of No.2 and 3 guides as in 7-4-3. Entrance Side Adjustment.
Waveform is flat:
Check again by performing No.1 guide height and No.2 guide zenith adjustment according to 7-4-3. Entrance Side Adjustment.

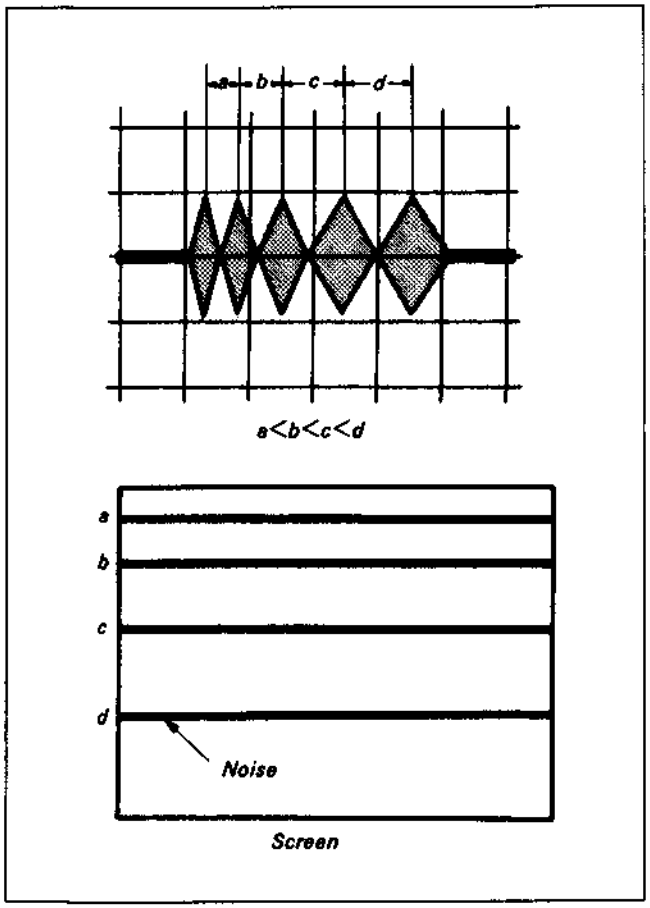


Fig. 7-83.

[Narrow noise pitch on exit side (lower screen)]
(See Fig. 7-84.)
Set up the PLAYBACK mode and adjust No.4 and 5 guide heights in accordance with 7-4-4. Exit Side Adjustment.

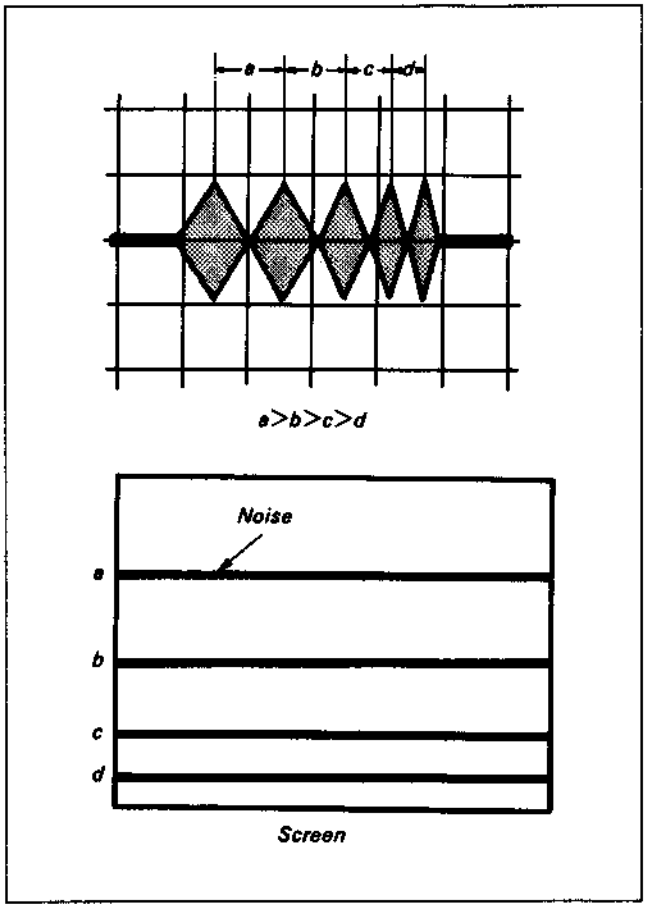


Fig. 7-84

[Wide noise pitch on exit side (lower screen)]
(See Fig. 7-85.)
Set up the PLAYBACK mode and confirm that the RF waveform is flat.

Waveform is not flat:
Adjust height of No.4 and 5 guides in accordance with 7-4-4. Exit Side Adjustment.

Waveform is flat:
Rotate the guide lower toothed wheel counterclockwise with No.6 guide lock jig (Ref. No. J-11) to loosen the toothed wheel. Rotate No.6 guide counterclockwise 45° to tighten the lower toothed wheel. Confirm the RF waveform of the REV mode again. (See Fig. 7-86.)

Note: Wrinkles may be caused in Part Ⓐ between the capstan spindle and No.5 guide, if No.6 guide is raised excessively. Confirm that no wrinkles have been caused. (See Fig. 7-87.)

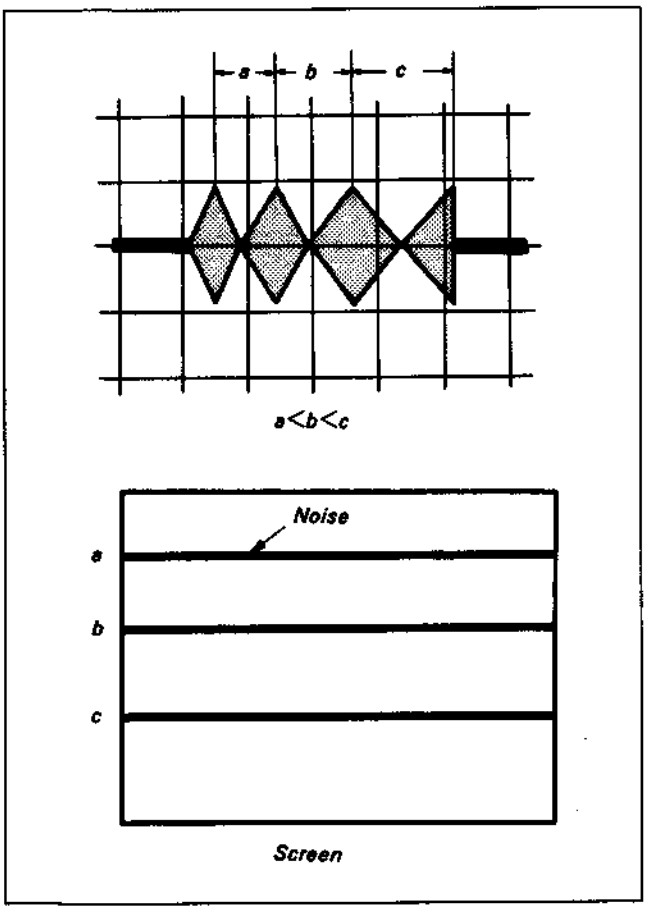


Fig. 7-85.

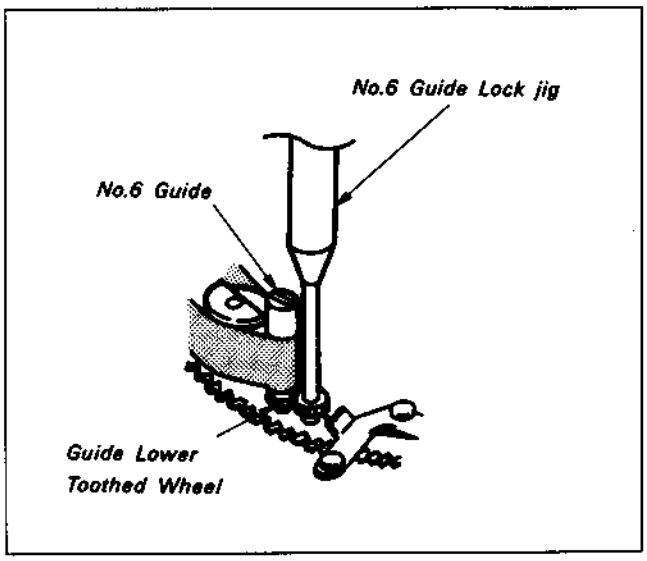


Fig. 7-86.

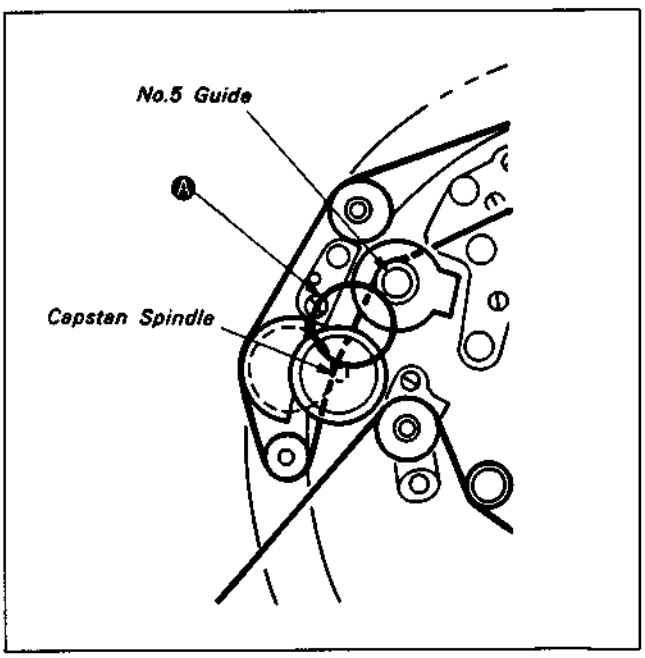


Fig. 7-87.

2. Checking rising edge

1) Check that the RF waveform rises horizontally during playback after finishing loading, after CUE/REV, and during playing back after FF. If not, adjust as follows.

[Noise emits from the exit side (lower screen) with rising during playback after finishing loading]
(See Fig. 7-88.)
Check that the FWD back tension is not too low.
If too low:
Readjust as instructed in 7-3-21. FWD Back Tension Adjustment.
If normal:
Rotate the azimuth screw of the pinch roller clockwise 5° at a time and adjust after rechecking the rising edge. (See Fig. 7-89.)

[Noise emits from the exit side (lower screen) with rising during playback after REV]
(See Fig. 7-88.)
Loosen the guide lower toothed wheel of No.6 guide using No.6 guide lock jig, rotate No.6 guide 90° counterclockwise to tighten the toothed wheel, then recheck the rising edge.
Note: Wrinkles may be caused in Part Ⓐ of Fig. 7-87, if No.6 guide is raised excessively at this time, between the capstan spindle and No.5 guide, so check that no wrinkles are caused.

[Noise emits from the exit side (lower screen) with rising during playing back after FF]
(See Fig. 7-88.)
Confirm that the FWD back tension is not too low.
If too low:
Readjust as required in 7-3-21. FWD Back Tension Adjustment.
If normal:
Remote the azimuth screw of the pinch roller clockwise by 5° at a time and adjust after checking the rising edge. (See Fig. 7-89.)
Note: Be sure to check play rising after finishing loading in case an adjustment is made.

3. Tape running check

In PLAYBACK and REV modes, there should be no spaces and curl should be within 0.3 mm for No.1, 2 and 5 guides at No.1 — No.6 guide flanges (Fig. 7-90.). Check also that there is no space or curl at No.3, 4 and 6 guides.

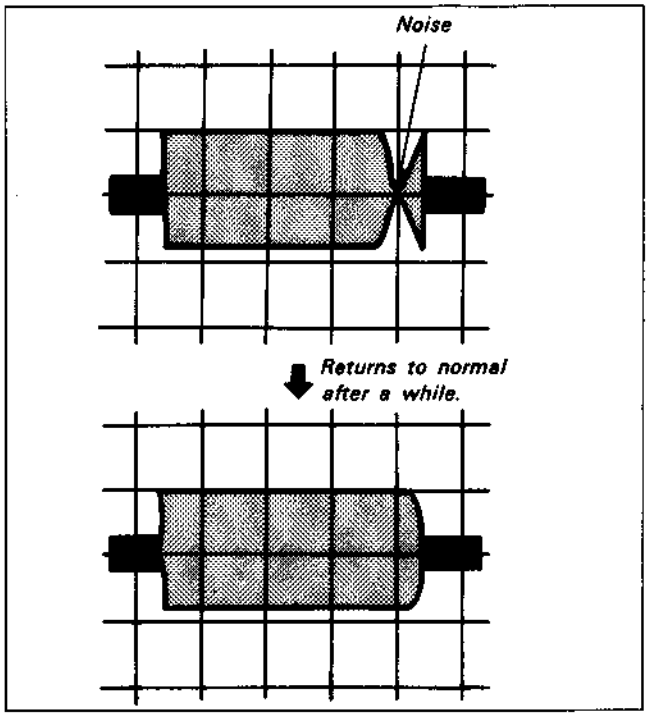


Fig. 7-88.

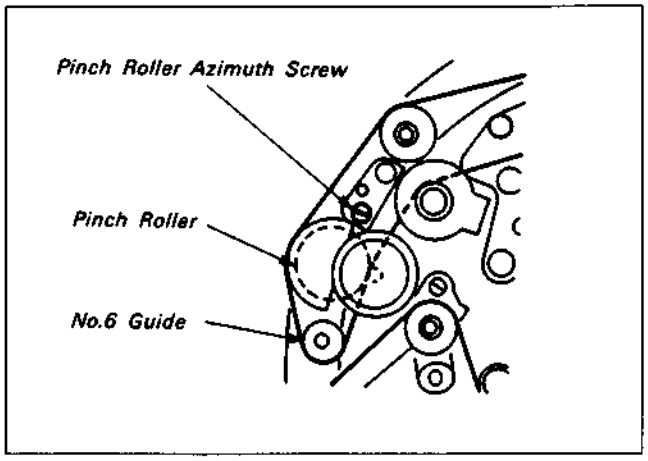


Fig. 7-89.

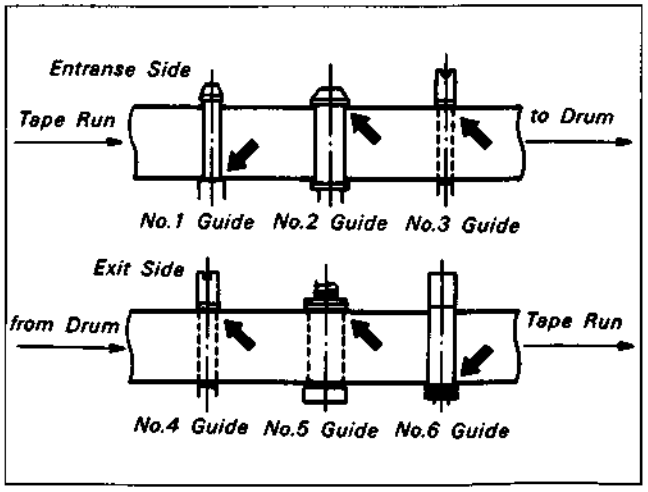


Fig. 7-90.

SECTION 8
ELECTRICAL ADJUSTMENT

During the adjustment, see the parts arrangement diagram relevant to the adjustment on page 326.

The following measuring instruments are needed for electrical adjustment.

[Equipment]

1) Monitor TV
2) Oscilloscope, dual trace, band 10 MHz or wider, with delay mode (Use a 10:1 probe unless otherwise specified)
3) Frequency counter
4) PAL pattern generator
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuator
10) Alignment tapes

Tracking adjustment (WR5-1C)
Parts code: 8-967-995-06

Video frequency response adjustment (WR5-2C)
Parts code: 8-967-995-16

Operation check (WR5-3CL)
Parts code: 8-967-995-36

Operation check (WR5-3CSP)
Parts code: 8-967-995-27

[Equipment Connection]

Unless otherwise specified, adjustment is made by connecting the measuring instruments as shown below.

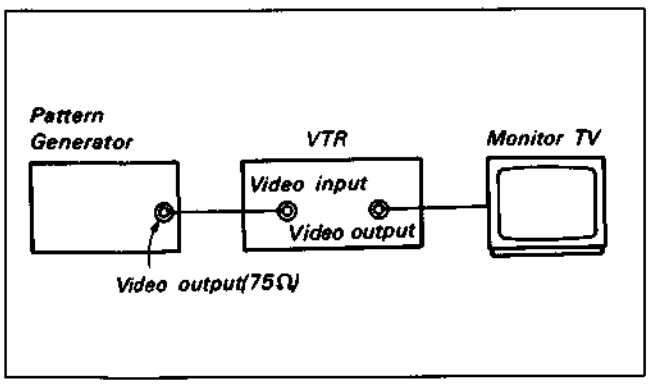


Fig. 8-1.

Setting up during adjustment

Video signals output by a pattern generator are used as adjustment signals when making the electrical adjustments, and these video output signals should be within the required standard. Connect an oscilloscope CNJ002 (VIDEO IN) on the VI-20 Board. Check that the amplitudes of video signal SYNC signals, picture portions, and burst signals are flat at approximately 0.3, 0.7, and 0.3V, respectively, and that the level ratio of the burst signal and "red" signal is 0.30:0.66. Fig. 8-2. shows video signals (colour bars) used in making the electrical adjustment.

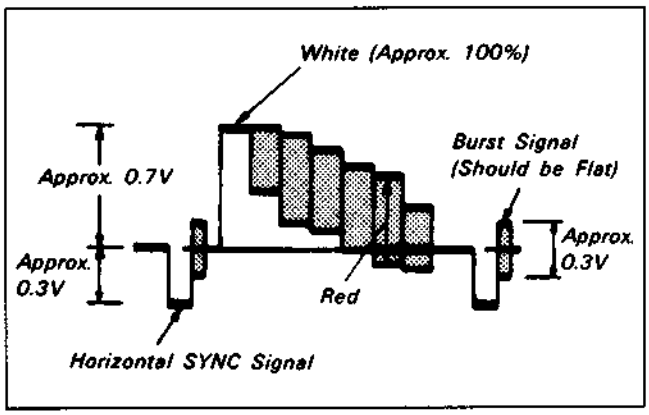
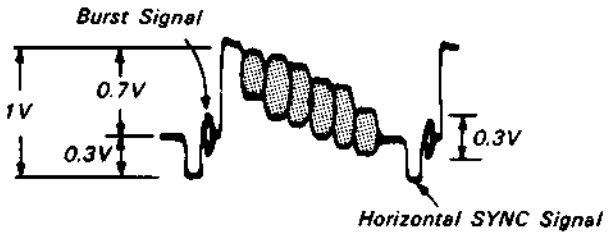
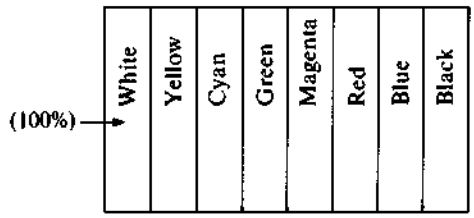


Fig. 8-2.

[Alignment tape]

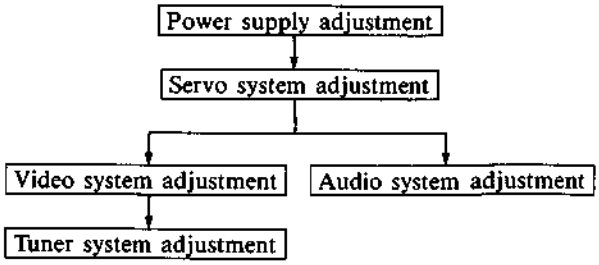
Tape	Content	Use
Tracking (WR5-1C)	1. Recording area: PCM — video 2. Recording content: CH2: 1 MHz linearity adjustment signal (CH1: 9 MHz)	Drum linearity adjustment
Video Frequency Response (WR5-2C)	1. Recording area: Video 2. Recording content: RF sweep 0 to 10 MHz 3. Marker: 1, 3.58, 5.5 and 7 MHz	Frequency response adjustment
Operation Check SP mode WR5-3CSP LP mode (WR5-3CL)	1. Recording area: Video, PCM 2. Recording content: ■Video area ●Video signals Colour bars 10 sec, Monoscope 8 sec } Iterative (Colour bars)   ●Audio signals (AFM) 400 Hz 60% modulation ■PCM area (WR5-3CSP only) ●Audio signals (PCM) 1kHz 0dBs 10sec 20Hz −6dBs 2sec 400Hz −6dBs 4sec } Iterative 14kHz −0.7dBs 2sec	Operation check

Input/output level and impedance

Video input Phono jack
Input signals: 1 Vp-p, 75Ω unbalanced, sync negative
Video output Phono jack
Output signals: 1 Vp-p, 75Ω unbalanced, sync negative
Audio input Phono jack
Input level: −10dBs (0dBs = 0.775 Vrms)
Input impedance: 47kΩ or higher
Audio output Phono jack
Regulated output: −10dBs (at load impedance 47kΩ)
Load impedance: More than 10kΩ

Adjustment Procedure

Adjust in the following sequence:



8-1. Power Supply Adjustment

8-1-1. Oscillation frequency adjustment (DR-35 board)

Mode	E-E
Measurement point	Q201 collector
Measurement equipment	Frequency counter
Adjustment element	RV201
Specified value	91 ± 2kHz

[Adjustment method]

1) Adjust with RV201 so that it becomes 91 ± 2kHz.

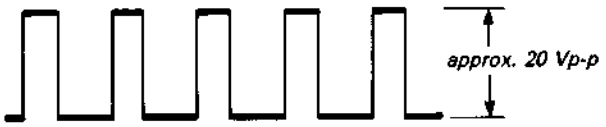


Fig. 8-3.

8-1-2. REG 5V adjustment (DR-35 board)

Mode	E-E
Measurement point	Pin ③ of CN201
Measurement equipment	Digital voltmeter
Adjustment element	RV202
Specified value	5.3 ± 0.1Vdc

[Adjustment method]

1) Adjust with RV202 so that it becomes 5.3 − 0.1Vdc.

8-1-3. REG 12V adjustment (DR-35 board)

Mode	E-E
Measurement point	Pin ① of CN203
Measurement equipment	Digital voltmeter
Adjustment element	RV203
Specified value	12.3 ± 0.3Vdc

[Adjustment method]

1) Adjust with RV203 so that it becomes 12.3 ± 0.3Vdc.

8-1-4. Voltages Check (DR-35, DT-63 Boards)

Mode	E-E
Measurement equipment	Digital voltmeter
UNSW 5V Check	
Measurement point	Pin ② of CN203 on DR-35 board
Specified value	5.4 ± 0.2Vdc
DRIVE 9V Check	
Measurement point	Pin ④ of CN202 on DR-35 board
Specified value	9.1 ± 0.2Vdc
UNSW 38V Check	
Measurement point	Pin ② of CN104 on DT-63 board
Specified value	36.5 ± 0.8Vdc
UNSW −30V Check	
Measurement point	Pin ④ of CN104 on DT-63 board
Specified value	−29 ± 0.8Vdc
UNSW 9V Check	
Measurement point	Pin ① of CN105 on DT-63 board
Specified value	8.8 ± 0.2Vdc
UNSW −9V Check	
Measurement point	Pin ③ of CN105 on DT-63 board
Specified value	−8.8 ± 0.2Vdc
BACK UP 5V Check	
Measurement point	Pin ⑦ of CN106 on DT-63 board
Specified value	5.7 ± 0.8Vdc

[Confirmation method]

Check that each voltage satisfies the specified value.

8-2. SERVO SYSTEM ADJUSTMENT

8-2-1. Reel Bias Adjustment (SP-2 board)

Mode	REC (SP)
Signal	Arbitrary
Measurement point	+: TP210 (Pin ② of CN207) −: TP211 (Pin ① of CN207)
Measurement equipment	Digital voltmeter
Adjustment element	RV209
Specified value	1.00−0.05Vdc

[Adjustment method]

1) Set up the REC mode and wait for 5 seconds.
2) Adjust with RV209 so that the DC-voltage is 1.00 ±0.05Vdc.
3) Set up the FF mode.
4) Check that the DC-voltage is 2.25±0.1Vdc.

8-2-2. REC ATF Level Check (SP-2 board)

Mode	E-E
Signal	Arbitrary
Measurement point	TP235 (CN214 ⑤ PIN: REC ATF)
Measurement equipment	Oscilloscope
Specified value	500±50mVp-p

[Confirmation method]

1) Check that the REC ATF level is 500±50mVp-p.

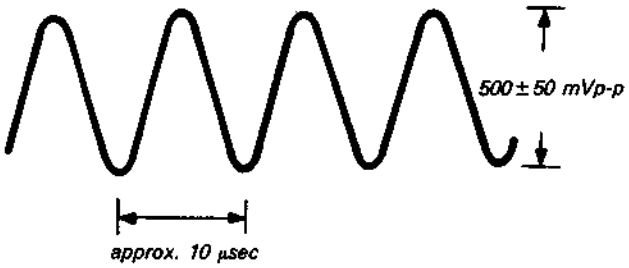


Fig. 8-4.

8-2-3. Drum Free Speed Adjustment (SP-2 Board)

Mode	REC
Signal	Arbitrary
Measurement point	TP213 (IC212 ⑭ PIN: ADE)
Measurement equipment	Digital voltmeter
Adjustment element	RV202
Specified value	1.9±0.1Vdc

[Adjustment method]

1) Adjust with RV202 so that it becomes 1.9±0.1Vdc.

8-2-4. Capstan Free Speed Adjustment (SP-2 Boards)

Mode	Playback
Signal	Arbitrary tape
Measurement point	TP202 (IC204 ⑬ PIN: CFG)
Measurement equipment	Frequency counter
Adjustment element	SP mode: RV206 LP mode: RV208
Specified value	SP mode: 1341±1Hz LP mode: 670±1Hz

[Connection]

1) Connect TP230 (Q704 emitter: PB ATF) and TP002 (GND) with a jumper wire.

[Adjustment method]

The adjustment element of LP mode is shown in parentheses [ ].

1) Set up the SP [LP] mode by the SP/LP button.
2) Set up the playback mode.
3) Adjust with RV206 [RV208] so that it becomes 1341 ±1Hz [670±1Hz].

1341±1Hz (SP mode)
670±1Hz (LP mode)

Fig. 8-5.

8-2-5. Switching Position Adjustment (SP-2 Board)

Mode	Playback
Signal	Alignment tape: For operation confirmation (WR5-3CSP)
Measurement point	CH1: VIDEO OUT terminal CH2: TP207 (IC204 ㉑ PIN: SV RF)
Measurement equipment	Oscilloscope
Adjustment element	RV201
Specified value	6.5±0.3H (416±20 μsec)

[Adjustment method]

1) Adjust with RV201 so that it becomes 6.5±0.3H (416±20 μsec).

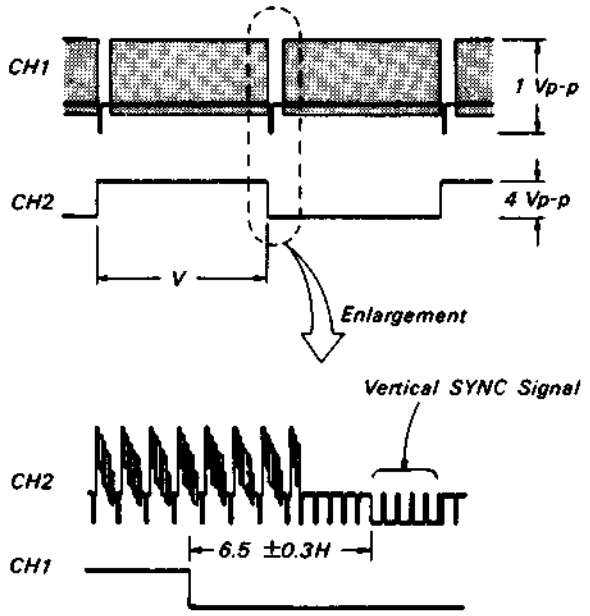


Fig. 8-6.

8-2-6. ATF BPF Balance Adjustment (SP-2 Board)

Mode	Playback
Signal	See Fig. 8-7
Measurement point	TP236 (IC703 ⑨ PIN: ATF ER)
Measuring equipment	Oscilloscope.
Adjustment element	RV701
Specified value	Minimum level difference of the ATF ERROR signal.

[Connection 1]

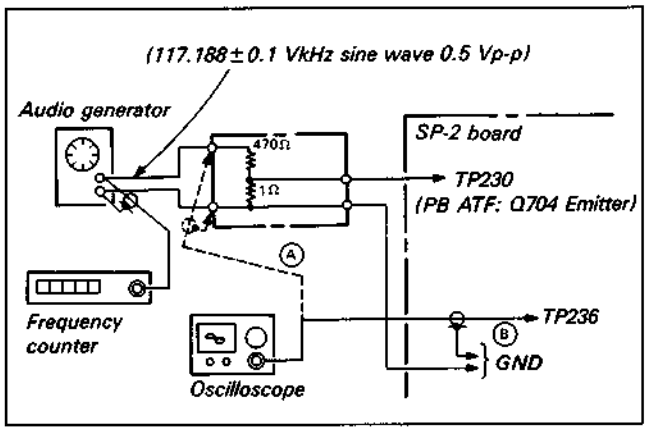


Fig. 8-7.

[Connection 2]

Connect Pin ⑤ of CN012 (P SEL 1) to Pin ① of CN005 (REG 5V) with a jumper wire.

[Adjustment method]

1) Check the output level of the audio generator with an oscilloscope and adjust so that the sine wave output level becomes 0.5 Vp-p. (Fig. 8-7 Ⓐ)
2) Adjust the oscillation frequency of the audio generator so that reading of the frequency counter becomes 117.188±0.1kHz.
3) Playback an arbitrary tape.
4) Connect an oscilloscope to TP236.
5) Adjust with RV701 to eliminate level difference of the ATF ERROR signal.

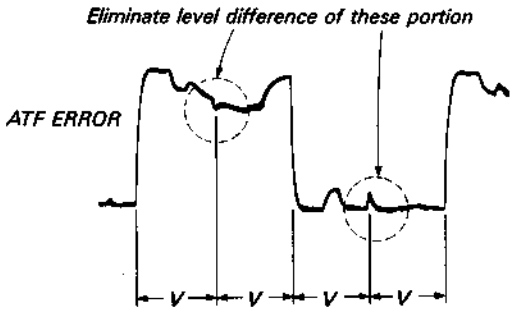


Fig. 8-8.

8-2-7. SLOW Tracking Adjustment (SP-2 Board)

The adjustment element of LP mode is shown in parenthess [ ].

Mode	SLOW
Signal	SP [LP] mode recorded tape
Measurement point	TP232 (IC208 ㉓ PIN: C. ON)
Measurement equipment	Oscilloscope •Trigger mode: NORMAL •Trigger slope: +
Adjustment element	SLOW/STILL ADJ buttons in the tuner preset compartment (S004, S005 on PR-13 board)
Specified value	38.5±0.5 msec

[Connection]

Connect TP001 (IC001 ㊴ PIN: $\overline{\text{EMERG OFF}}$) and TP002 (GND) with a jumper wire to set up the TEST mode.

[Adjustment method]

1) Playback the SP [LP] recorded tape.
2) Adjust to 38.5±0.5 msec with the SLOW/STILL ADJ buttons.

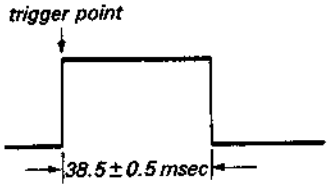


Fig. 8-9.

8-2-8. TRACKING Adjustment (SP-2 Board)

Mode	Playback
Signal	SP mode Self-recorded tape
Measurement point	CH1: Pin ③ of CN008 on RP-36 board (SP 1 CH) CH2: TP207 (Pin ㉑ of IC204: SV RF)
Measurement equipment	Oscilloscope
Adjustment element	RV210
Specified value	Maximum SP 1 channel RF level

[Adjustment method]

1) Maximize the SP 1 channel RF level by turning RV210 slowly.

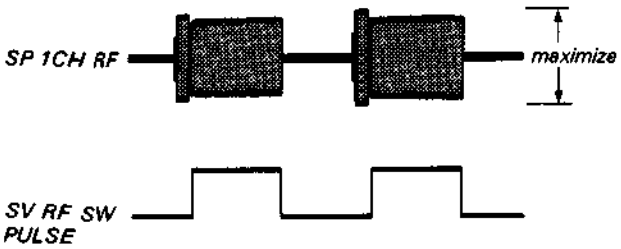


Fig. 8-10.

8-2-9. STILL Adjustment (SP-2 Board)

Mode	STILL
Signal	SP mode self-recorded tape
Measurement point	CH1: TP207 (Pin ㉑ of IC204: SV RF) CH2: TP228 (Pin ⑧ of IC703: ST ID)
Measurement equipment	Oscilloscope.
Adjustment element	RV203, RV204
Specified value	1. 4.8±0.6 msec (RV203) 2. 13.8±0.6 msec (RV204)

[Adjustment method]

1) Rotate the rotor of the capstan motor by your hand and stop it at the position that noise on the monitor screen is hidden into its upper or lower section.
2) Adjust to 4.8±0.6 msec with RV203. (See Fig. 8-11.)
3) Adjust to 13.8±0.6 msec with RV204. (See Fig. 8-11.)

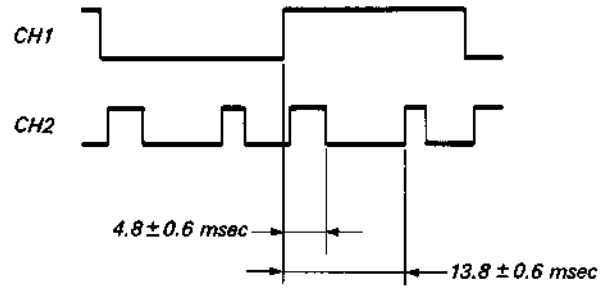


Fig. 8-11.

8-2-10. FORWARD SLOW Adjustment (SP-2 Board)

The adjustment element of LP mode is shown in parentheses [ ].

Mode	FORWARD SLOW
Signal	SP [LP] mode self-recorded tape
Measurement point	Confirm with monitor TV screen picture
Measurement equipment	
Adjustment element	RV205 [RV207]
Specified value	Be sure that there is no noise and no skew on the monitor TV screen.

[Adjustment method]

1) Adjust with RV205 [RV207] so that noise on the monitor screen is hidden into its upper or lower section.

8-2-11. SLOW fH Adjustment (SP-2 Board)

1. fH Bias Adjustment

The adjustment element of LP mode is shown in parentheses [ ].

Mode	E-E
Signal	None
Measurement point	TP242 (Pin ⑦of IC219: FH BIAS)
Measurement equipment	Digital voltmeter
Adjustment element	RV216 [RV215]
Specified value	2.0±0.1Vdc

[Adjustment method]

1) Set up the SP [LP] mode by the SP/LP button.
2) Adjust with RV216 [RV215] to 2.0±0.1Vdc.

8-2-12. SLOW fH Adjustment

The adjustment element of LP mode is shown in parentheses [ ].

Mode	FORWARD SLOW
Signal	SP [LP] mode self-recorded tape
Measurement point	Pin ③ of CN216 (COMP SYNC)
Measurement equipment	Oscilloscope
Adjustment element	RV218, RV212 [RV217]
Specified value	Minimum shaking width of fH pulse

[Connection]

Connect TP001 ($\overline{\text{EMERG OFF}}$) and TP002 (GND) with a jumper wire to set up the TEST mode.

[Adjustment method]

1) Adjust with RV218 and RV212 Alternately to minimize the shaking of the fH pulse.
   [Adjust with RV217 to minimize the shaking width of fH pulse.]

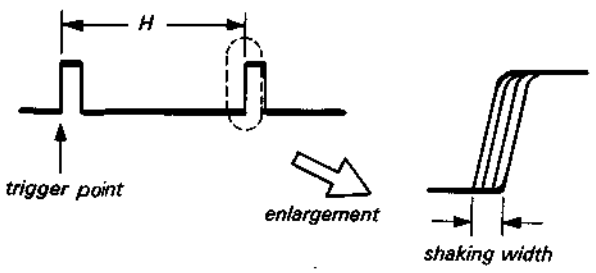


Fig. 8-12.

8-3. VIDEO SYSTEM ADJUSTMENT

The adjustment of the video system should in principle be followed the undermentioned adjustment procedure.
The colour video signal supplied from the pattern generator is utilized as the video input signal of the video system adjustment in recording mode. Make sure to check that the SYNC signal and colour burst signal are matched with those in the set-up of during the adjustment of as shown in Fig. 8-2.

[Adjustment procedure]

1) Playback frequency characteristics adjustment
2) Flying erase check
3) Crystal oscillator fo adjustment
4) Y/C separation adjustment
5) Y comb type filter adjustment
6) SYNC AGC adjustment
7) VIDEO OUT level adjustment
8) PB Y level adjustment
9) Y FM carrier frequency adjustment
10) Y FM deviation adjustment
11) AC clipping adjustment
12) 375fH VCO adjustment
13) Chroma emphasis fo adjustment
14) Carrier balance adjustment
15) GCA adjustment
16) fH VCO adjustment
17) REC Y level adjustment
18) REC C level adjustment
19) REC AFM level check
20) REC ATF level check

8-3-1. Playback Frequency Characteristic Adjustment (RP-36 Board)

(1) LP playback frequency characteristic adjustment

The adjustment elements of CH2 are shown in parentheses [ ].

Mode	Playback
Signal	Alignment tape: For frequency characteristic adjustment (WR5-2C)
Measurement point	Pin ⑤ [Pin ⑥] of CN008 •External trigger: Pin ② of CN008 •Trigger slope: + [−]
Measurement equipment	Oscilloscope
Adjustment element	RV101 [RV102]
Specified value	3.58MHz level: 5.5MHz level = 10:7

[Adjustment method]

1) Adjust with RV101 [RV102] so that the level difference ratio between 3.58 MHz and 5.5 MHz becomes 10:7.

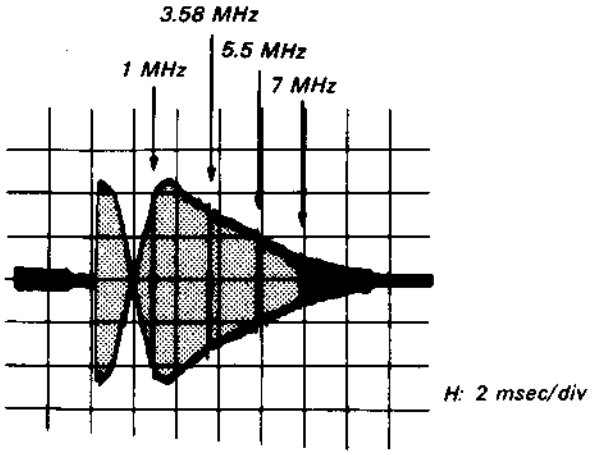


Fig. 8-13.

(2) SP playback frequency characteristic adjustment

The adjustment elements of CH2 are shown in parentheses [ ].

Mode	Playback
Signal	Alignment tape: For frequency characteristic adjustment use (WR5-2C)
Measurement point	Pin ③ [Pin ④] of CN008 •External trigger: Pin ② of CN008 •Trigger slope: − [+]
Measurement equipment	Oscilloscope.
Adjustment element	RV201 [RV202]
Specified value	3.58MHz level: 5.5MHz level = 10:7

[Connection]

Connect TP206 (F TAPE) on the SP-2 board and GND with a jumper wire.

[Adjustment method]

1) Adjust with RV201 [RV202] so that the level difference ratio between 3.58 MHz and 5.5 MHz becomes 10:7.

8-3-2. Flying Erase Check (RP-36 Board)

Mode	REC
Signal	Arbitrary
Measurement point	Pin ⑱ of CN001 (FE(X))
Measurement equipment	Oscilloscope and frequency counter
Specified value	Frequency: Over 7 MHz Voltage: Over 8 Vp-p

Note: Be sure to use MP type tape (Pin ② of CN002 should be "L").

[Confirmation method]

1) Make sure that the oscillation frequency is over 7 MHz and the oscillation voltage is over 8 Vp-p.

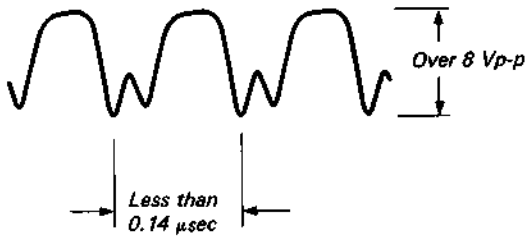


Fig. 8-14.

8-3-3. Crystal Oscillator fo Adjustment (CH-44/VI-20 Board)

Mode	Playback
Signal	Alignment tape: For operation confirmation (WR5-3CSP)
Measurement point	Pin ② of CH-44 board
Measurement equipment	Frequency counter
Adjustment element	CV001 on CH-44 board
Specified value	4433619 ± 50Hz

Note: Connect the frequency counter through a buffer of high impedance (approximately 10 MΩ) and low capacitance (less than 10pF)

[Adjustment method]

1) Adjust with CV001 on the CH-44 board so that it becomes 4433619 ± 50Hz.

(4433619±50 Hz)

Fig. 8-15.

8-3-4. Chrome Comb Filter Adjustment (VI-20 Board)

Mode	E-E
Signal	Colour bar
Measurement point	Pin ⑳ of IC002
Measuring equipment	Oscilloscope.
Adjustment element	RV011, LV201
Specified value	Minimum residual chroma component

[Connection]

Connect Q202 base to GND with a jumper wire.

[Adjustment method]

1) Adjust with RV011 and LV201 alternately so that the residual chroma component becomes minimum.

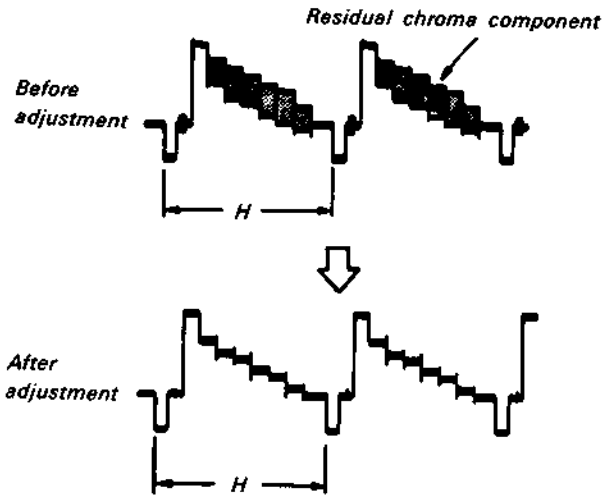


Fig. 8-16.

8-3-5. Y Comb Type Filter Adjustment (VI-20 Board)

Mode	E-E
Signal	Colour bar
Measurement point	Pin ③ of IC002
Measurement equipment	Oscilloscope
Adjustment element	RV012
Specified value	Minimum Y-YD signal level

Note: Be sure to connect a 22kΩ of resistor in series between Pin ③ of IC002 and 10:1 probe.

[Adjustment method]

1) Adjust with RV012 so that the Y-YD signal level at the sync portion is minimum.
2) While playing back a tape in which dropouts are recorded, be sure to confirm that these dropouts are not discernible. In the event the dropouts become discernible, adjust with RV012 so that they become undiscernible.

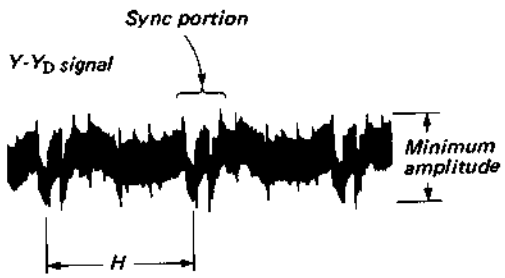


Fig. 8-17.

8-3-6. SYNC AGC Adjustment (VI-20 Board)

Mode	E-E
Signal	Colour bar
Measurement point	Pin ㉛ of IC001
Measurement equipment	Oscilloscope
Adjustment element	RV009
Specified value	0.50±0.02Vp-p

[Adjustment method]

1) Adjust with RV009 so that it becomes 0.50±0.02 Vp-p.

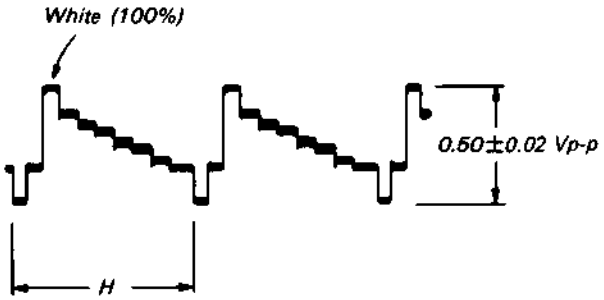


Fig. 8-18.

8-3-7. VIDEO OUT Level Adjustment (VI-20 Board)

Mode	E-E
Signal	Colour bar
Measurement point	Pin ⑤ of CN007
Measurement equipment	Oscilloscope.
Adjustment element	RV010
Specified value	1.00±0.05 Vp-p

[Adjustment method]

1) Adjust with RV010 so that it becomes 1.00±0.05 Vp-p.

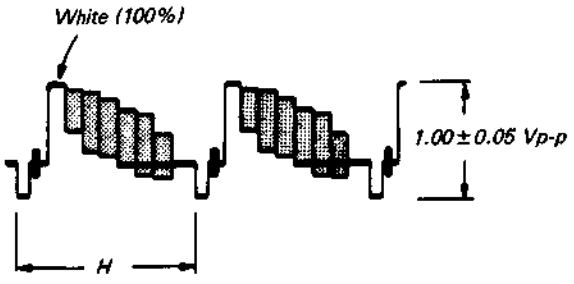


Fig. 8-19.

8-3-8. PB Y Level Adjustment (VI-20 Board)

Mode	Playback
Signal	Alignment tape: For operation confirmation (WR5-3 CSP) Colour bar section
Measurement point	Pin ⑤ of CN007
Measurement equipment	Oscilloscope
Adjustment element	RV005
Specified value	1.00±0.05 Vp-p

Note: 1. Set the SHARPNESS control (FT-13 board RV001) to the center click position.

2. Be sure that the EDIT switch (S014 on FT-13 board) is turned OFF. (Confirm that the EDIT lamp is not lit.)

[Adjustment method]

1) Adjust with RV005 so that it becomes 1.00±0.05 Vp-p.

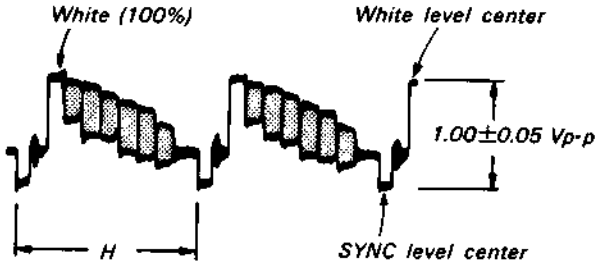


Fig. 8-20.

8-3-9. Y FM Carrier Frequency Adjustment (VI-20 Board)

Mode	E-E
Signal	Non-signal
Measurement point	Pin ⑤ of CN003 (REC Y)
Measurement equipment	Frequency counter
Adjustment element	RV008
Specified value	4.20±0.05 MHz

Note: Set up the SP mode.

[Adjustment method]

1) Set RV007 (EMPH) to the mechanical center. (The slide pin of RV007 is approximately 2.7Vdc.)
2) Adjust with RV008 so that it becomes 4.20±0.05MHz.
3) Be sure to perform the "Deviation adjustment" and "AC CLIP adjustment".

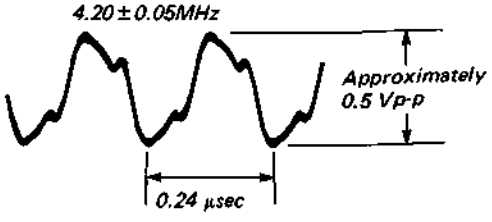


Fig. 8-21.

8-3-10. Y FM Deviation Adjustment (VI-20 Board)

Mode	Recording and playback
Signal	Colour bar
Measurement point	Pin ⑤ of CN007
Measurement equipment	Oscilloscope
Adjustment element	RV006
Specified value	Playback level: 1.00±0.05Vp-p

Note: 1. Be sure that the "VIDEO OUT level adjustment". "PB Y level adjustment" and "Y FM carrier frequency adjustment" have been completed.
2. Set the SHARPNESS Control (FT-13 board RV001) to the center click position.
3. Be sure the EDIT switch (S014 on the FT-13 board) is turned OFF. (Confirm that the EDIT lamp is not lit.)

[Adjustment method]

1) Record the colour bar signal.
2) Playback the recorded section.
3) Be sure to check the playback output level.
Specified value: 1.00±0.05 Vp-p
4) When the specified value is not satisfied, repeat 1) to 3) after turning RV006 in the following manner.

	Turning direction of RV006 Seen from component side
When larger than the specified value	Clockwise (↻)
When smaller than the specified value	Counterclockwise (↺)

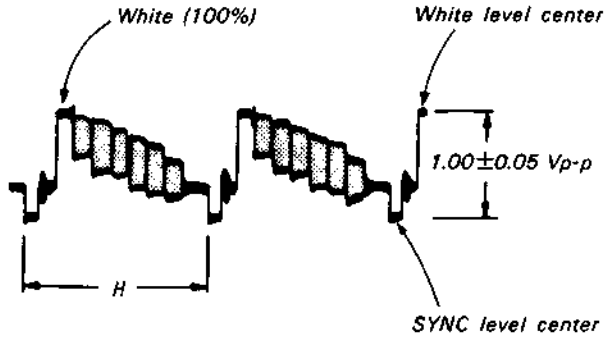


Fig. 8-22.

8-3-11. Emphasis Adjustment (VI-20 Board)

Mode	E-E
Signal	Colour bar
Measurement point	Pin ⑱ of IC001
Measurement equipment	Oscilloscope
Adjustment element	RV007
Specified value	230±10%

[Adjustment method]

1) Adjust with RV007 so that the peak of the white 100% becomes 230±10%.

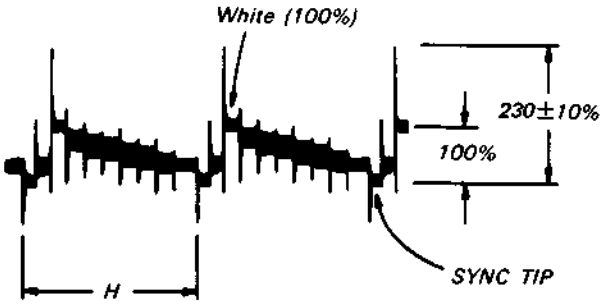


Fig. 8-23.

8-3-12. 375fH VCO Adjustment (CH-44/VI-20 Board)

Mode	Recording
Signal	Colour bar
Measurement point	Pin ㉖ of IC001 on CH-44 board
Measurement equipment	Digital voltmeter
Adjustment element	RV001 on CH-44 board
Specified value	3.00±0.05Vdc

[Adjustment method]

1) Adjust with RV001 on the CH-44 board so that it becomes 3.0±0.05Vdc.

8-3-13. Chroma Emphasis fo Adjustment (CH-44/VI-20 Boards)

Mode	E-E
Signal	Colour bar
Measurement point	Pin ㊱ of CH-44 board
Measurement equipment	Oscilloscope
Adjustment element	T001 on CH-44 board
Specified value	Be sure to confirm that the fo component is minimum and zero cross appears between green and magenta.

[Connection]

Connect the following two locations of CH-44 board using 4.7kΩ resistors.

Pin ㉗ (ACC) — Pin ㉝ (GND)
Pin ㉗ (ACC) — Pin ㉟ (5V)

[Adjustment method]

1) Adjust with T001 on the CH-44 board so that the amplitude of the flat cyan section of the chroma signal becomes minimum.
   At this point, be sure to confirm that the zero cross appears between the green and magenta.

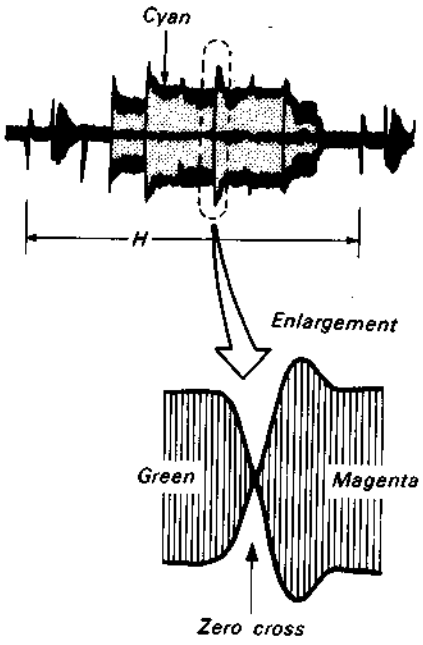


Fig. 8-24.

8-3-14. Carrier Balance Adjustment (CH-44/VI-20 Board)

Mode	E-E
Signal	Colour bar
Measurement point	Pin ㉘ of CH-44 board
Measurement equipment	Oscilloscope
Adjustment element	RV002 on CH-44 board
Specified value	Minimize 5.17 MHz signal component

[Adjustment method]

1) Adjust with RV002 on the CH-44 board so that the 5.17 MHz signal component becomes minimum.

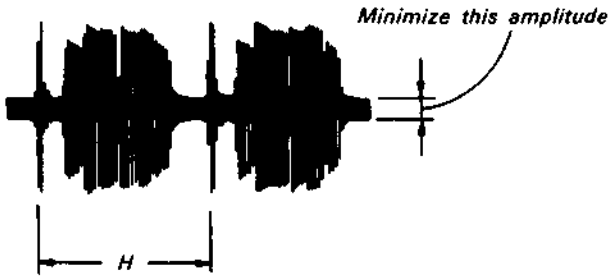


Fig. 8-25.

8-3-15. GCA Adjustment (VI-20 Board)

Mode	Playback
Signal	Arbitrary tape
Measurement point	Pin ㉒ of IC005
Measurement equipment	Oscilloscope
Adjustment element	RV014
Specified value	500±25 mVp-p

[Adjustment method]

1) Adjust with RV014 so that it becomes 500±25 mVp-p.
2) Set to either the STILL, CUE or REVIEW mode, and be sure to confirm that the thickness of the colour does not differ from that of the playback mode. If necessary, adjust with RV014. (Be sure to play back a tape of LP mode.)

Fig. 8-26.

8-3-16. f_H VCO Adjustment (VI-20 Board)

Mode	E-E
Signal	Colour bar
Measurement point	CH1: Pin ⑬ of IC005 CH2: Pin ⑤ of CN007
Measurement equipment	Oscilloscope
Adjustment element	RV013
Specified value	14.5 ± 0.2 μsec

[Adjustment method]

1) Adjust RV013 so that the T_R of CH1 is 14.5 ± 0.2 μsec.
2) Confirm that the H (time) of CH1 and CH2 is stable.

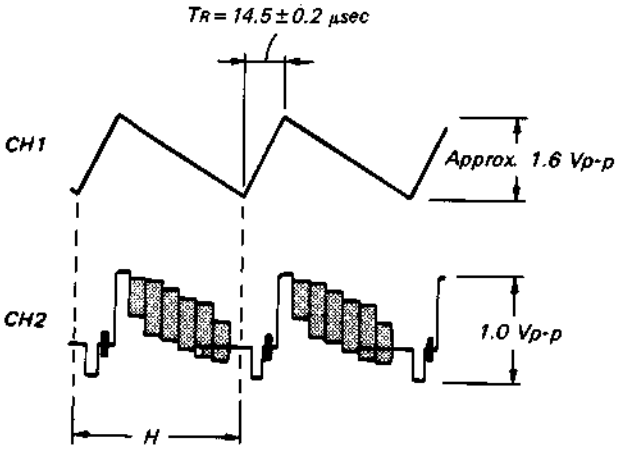


Fig. 8-27.

8-3-17. REC Y Level Adjustment (VI-20 Board)

Mode	REC (SP mode)
Signal	Non-signal
Measurement point	Pin ⑤ of CN003 (Note 2.)
Measurement equipment	Oscilloscope
Adjustment element	RV005
Specified value	0.46 ± 0.02 Vp-p

Note 1: Be sure to always perform the adjustment of the REC C level after the REC Y level adjustment has been completed.

Note 2: Use the low-pass filter shown in Fig. 8-28.

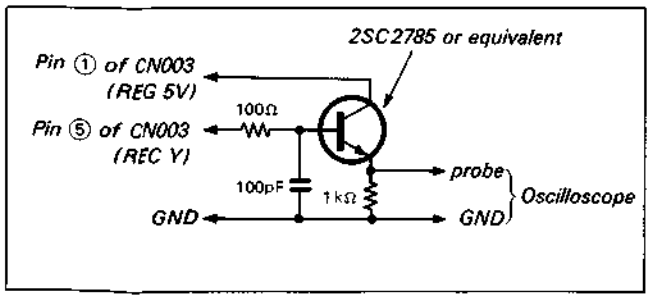


Fig. 8-28.

[Adjustment method]

1) Adjust with RV005 so that it becomes 0.46 ± 0.02 Vp-p.

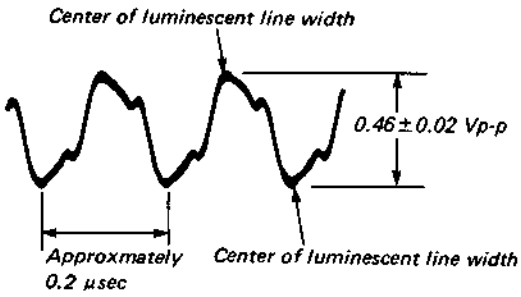


Fig. 8-29.

8-3-18. REC C Level Adjustment (VI-20 Board)

Mode	REC
Signal	Colour bar
Measurement point	Pin ⑤ of CN003 (Note 1.)
Measurement equipment	Oscilloscope
Adjustment element	RV001
Specified value	58 ± 3 mVp-p

Note 1 : Use the low-pass filter shown in Fig. 8-28.

Note 2 : Be sure to use the MP type tape. (Be sure Pin ④ of W001 TAPE 2/$\overline{\text{TAPE 1}}$ is at "L".)

[Connection]

Connect the following three points on VI-20 board with jumper wires.

1) L106 (Q113 base: REC Y) and GND.
2) W002 ① PIN (REC AFM) and GND.
3) W005 ⑤ PIN (REC ATF) and GND.

[Adjustment method]

1) Adjust with RV001 so that it becomes 60 mVp-p.

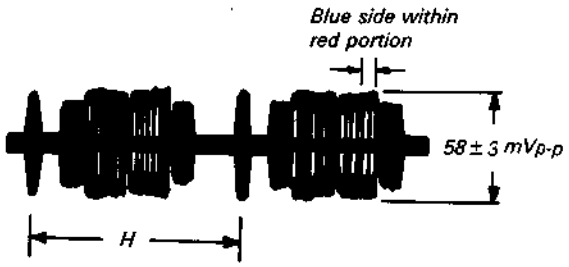


Fig. 8-30.

8-3-19. REC AFM Level Check (VI-20 Board)

Mode	REC (SP mode)
Signal	Non-signal
Measurement point	Pin ⑤ of CN003 (Note 1.)
Measurement equipment	Oscilloscope
Specified value	20.5±4.0 mVp-p

Note: 1. Use the low-pass filter shown in Fig. 8-28.
2. Be sure to use the MP type tape.
(Be sure Pin ④ of W001 TAPE 2/$\overline{\text{TAPE 1}}$ is at "L".
3. When the signal level is too small to read, use a 1:1 probe.

[Connection]

Connect the following three points on the VI-20 board with jumper wires.

1) L106 (Q113 base: REC Y) and GND.
2) W005 ⑤ PIN (REC ATF) and GND.

[Confirmation method]

1) Check that the REC AFM level is 20.5±4.0 mVp-p.

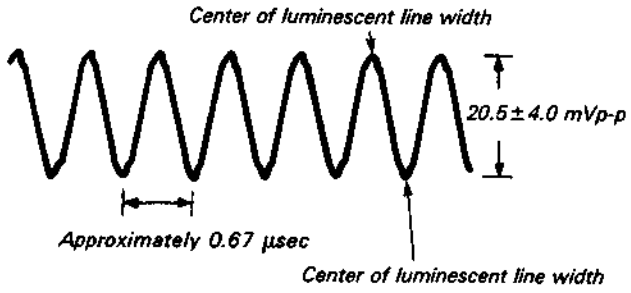


Fig. 8-31.

8-3-20. REC ATF Level Check (VI-20 Board)

Mode	REC (SP mode)
Signal	Non-signal
Measurement point	Pin ⑤ of CN003 (Note 1.)
Measurement equipment	Oscilloscope
Specified value	13.5±3.0 mVp-p

Note: 1. Use the low-pass filter shown in Fig. 8-28.
2. Be sure to use the MP type tape.
(Be sure Pin ④ of W001 TAPE 2/$\overline{\text{TAPE 1}}$ is at "L".)
3. When the signal level is too small too read, use a 1:1 probe.

[Connection]

Connect the following two points on the VI-20 board with jumper wires.

1) L106 (Q113 base: REC Y) and GND.
2) W002 ① PIN (REC AFM) and GND.

[Confirmation method]

1) Check that the REC ATF level is 13.5±3.0 mVp-p.

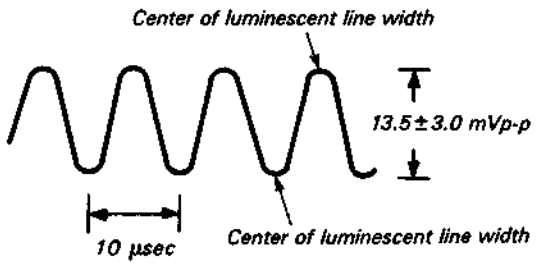


Fig. 8-32.

8-4. AUDIO SYSTEM ADJUSTMENT

Use a colour bar signal as video signal input when performing adjustment.
Connection of Audio Adjustment Measuring Instruments
Connect the following audio measuring equipment in addition to the video measuring instruments.

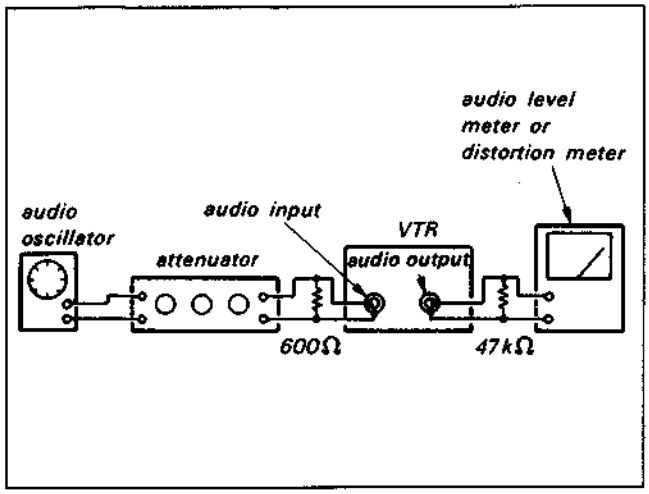


Fig. 8-33.

8-4-1. PCM Audio System Adjustment

Unless otherwise specified, set the VTR switches and controls as shown below when making the adjustment.

INPUT SELECT switch .....LINE
AUDIO MONITOR (PCM/MIX/STD) switch .....PCM
REC LEVEL controls .....[5]
PCM MODE switch.....NORMAL

Note: The adjustment element of R ch is shown in parentheses [ ].

[Adjustment Order]

1) PCM Master Clock Oscillation Frequency Adjustment
2) REC PCM Level Check
3) MULTI PILOT Frequency Check
4) PCM Playback VCO Free Oscillation Frequency Adjustment
5) MULTI PILOT Detector Adjustment
6) PCM Playback Level Adjustment
7) E-E Output Level Check
8) PCM Offset Adjustment
9) PCM Recording Level Adjustment
10) Overall Frequency Characteristics
11) Overall Distortion Ratio Check
12) Overall S/N Check

1. PCM Master Clock Adjustment (SP-2 Board)

Mode	Record
Signal	None
Measurement point	Pin ③ of CN601
Measurement equipment	Frequency counter
Adjustment element	RV602
Specified value	11.45±0.01 MHz

[Adjustment method]

1) Connect TP604 (IC605 ⑭ PIN) to Pin ① (REG 5V) of CN601 with a jumper wire.
2) Adjust to 11.45±0.01 MHz with RV602.
3) Remove the jumper wire.
4) Connect TP604 to GND with a jumper wire.
5) Check that the frequency is more than 11.63MHz.

Fig. 8-34.

2. REC PCM Level Check (SP-2 board)

Mode	Record
Signal	None
Measurement point	Pin ① of CN607
Measurement equipment	Oscilloscope
Specified value	approx. 0.5 Vp-p

[Confirmation method]

1) Check that the REC PCM level is approximately 0.5 Vp-p.

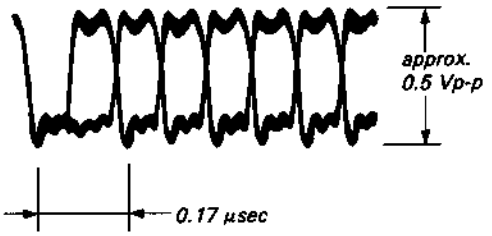


Fig. 8-35.

3. MULTI PILOT Frequency Check (SP-2 board)

Mode	E-E
Signal	Arbitrary
Measurement point	Pin ㊴ of IC204
Measurement equipment	Frequency counter
Specified value	225.360±0.200 kHz

[Confirmation method]

1) Check that the frequency is 225.360±0.200 kHz.

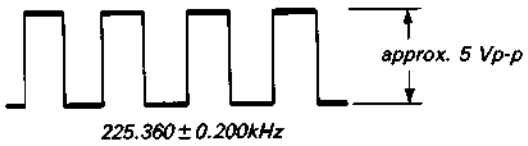


Fig. 8-36.

4. PCM Playback VCO Free Oscillation Frequency Adjustment (SP-2 Board)

Mode	PLAYBACK, FF INDEX SEARCH and REW INDEX SEARCH
Signal	Arbitrary tape
Measurement point	TP603
Measurement equipment	Frequency counter
Adjustment element	RV601 (PLAYBACK) RV604 (FF INDEX SEARCH) RV603 (REW INDEX SEARCH)
Specified value	11.50±0.05 MHz (PLAYBACK) 10.29±0.05 MHz (FF INDEX SEARCH) 12.71±0.05 MHz (REW INDEX SEARCH)

[Connection]

1) Connect TP600 (IC600 ① PIN) to Pin ① (REG 5V) of CN005 with a jumper wire.
2) Disconnect the CN607 from the SP-2 board.

[Adjustment method]

1) Set up the PLAYBACK mode.
2) Adjust to 11.50±0.05 MHz with RV601.
3) Set up the FF INDEX SEARCH mode.
4) Adjust to 10.29±0.05 MHz with RV604.
5) Set up the REW INDEX SEARCH mode.
6) Adjust to 12.71±0.05 MHz with RV603.

Fig. 8-37.

5. MULTI PILOT Detector Adjustment (MK-2/AU-22 board)

Mode	E-E
Signal	None
Measurement point	1. Pin ⑤ of IC801 on MK-2 board 2. Pin ⑤ of IC821 on MK-2 board
Measurement equipment	Frequency counter
Adjustment element	1. RV801 (SP 1 CH) on MK-2 board 2. RV821 (LP 2 CH) on MK-2 board
Specified value	225.361±1 kHz

Note: Connect the frequency counter through a buffer of high impedance (approximately 10MΩ) and low capacitance (less than 10pF)

The adjustment element of LP 2 CH is shown in parentheses [ ].

[Adjustment method]

1) Connect the frequency counter to Pin ⑤ of IC801 [IC851].
2) Adjust to 225.361±1kHz with RV801 [RV821].

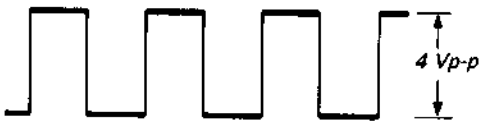


Fig. 8-38.

6. PCM Playback Level Adjustment (AD-12/AU-22 Board)

Mode	Playback
Signal	Alignment tape: For Operation confirmation (WR5-3CSP) 400Hz section
Measurement point	AUDIO OUT L [R]
Measurement equipment	Audio level meter
Adjustment element	RV705 on AD-12 board
Specified value	−10.0±0.1dBs

[Adjustment method]

1) Adjust to −10.0±0.1dBs with RV705.

Note: If there is a level difference between Lch and Rch, adjust to the center level.

7. E-E Output Level Check

Mode	E-E
Signal	400Hz, −10dBs: AUDIO IN L [R]
Measurement point	AUDIO OUT L [R]
Measurement equipment	Audio level meter
Specified value	−10±2dBs

[Confirmation method]

1) Set the REC LEVEL control to [5] position.
2) Check that the REC LEVEL meter indicate −10dB.
3) Check that the AUDIO OUT L [R] level is −10±2dBs.

8. PCM Offset Adjustment (AD-12/AU-22 Board)

Mode	REC
Signal	None
Measurement point	CH1: Pin ⑨ (ADDA) of AD-12 board CH2: Pin ⑪ (WCK) of AD-12 board
Measurement equipment	Oscilloscope
Adjustment element	RV701 [RV751] on AD-12 board
Specified value	Equal brightness of the upper luminescent line and the lower

Note: Be sure to perform the adjustment alternatly, since Lch and Rch affect each others.

[Adjustment method]

1) Set the REC LEVEL controls to the minimum position.
2) Adjust with RV701 [RV705] so that the brightness of the uppwer luminescent line is equal to that of the lower luminescent line.

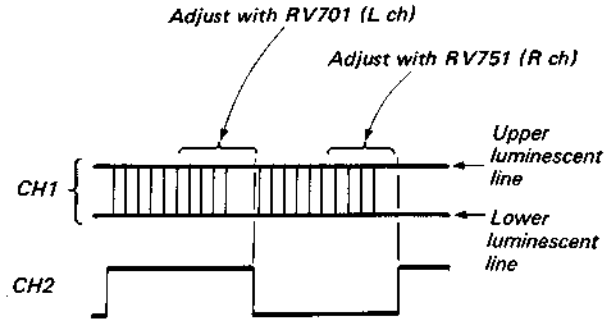


Fig. 8-39.

9. PCM Recording Level Adjustment (AD-12/AU-22 board)

Mode	Self-recording and playback
Signal	400Hz, −10dBs: AUDIO IN (Both L and R)
Measurement point	AUDIO OUT L [R]
Measurement equipment	Audio level meter
Adjustment element	RV703 [RV753] on AD-12 board
Specified value	−10±0.5dBs

Note: Be sure that the "PCM playback level adjustment" have been completed.

[Adjustment method]

1) Set up E-E mode.
2) Adjust with the REC LEVEL control so that the AUDIO OUT level is −10dBs. (Both L CH and R CH).
3) Record the signal.
4) Playback the recorded portion.
5) Check that the AUDIO OUT L [R] level is −10 ±0.5dBs.
6) If the specified value is not satisfied, repeat 1 to 5 after turning RV703 [RV753] on AD-12 board.

10. Overall Frequency Characteristic Check

Mode	Self-recording and playback
Signal	Ⓐ 400Hz, −10dBs Ⓑ 20Hz, −10dBs Ⓒ 14kHz, −10dBs AUDIO IN L [R]
Measurement point	AUDIO OUT L [R]
Measurement equipment	Audio level meter
Specified value	When the playback output level of 400Hz is specified as 0dB. that of 20Hz should be 0±2dB, and that of 14kHz should be 0^{+2}_{-3}dB.

[Confirmation method]

1) Adjust the AUDIO OUT L [R] level to −10dBs with REC LEVEL control.
2) Record the signals Ⓐ to Ⓒ in sequence.
3) Playback the recorded section.
4) When the playback output level of 400Hz is specified as 0dB, that of 20Hz should be 0±2dB, that of 14kHz should be 0^{+2}_{-3}dB.

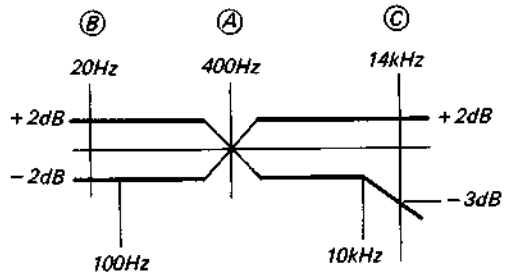


Fig. 8-40.

11. Overall Distortion Ratio Check

Mode	Self-recording and playback
Signal	400Hz, −10dBs: AUDIO IN L [R]
Measurement point	LINE OUT L [R]
Measurement equipment	Distortion meter
Specified value	Less than 0.35%

[Confirmation method]

1) Adjust the AUDIO OUT L [R] level to −10dBs with REC LEVEL control.
2) Record the signal.
3) Playback the recorded section.
4) The distortion ratio should be less than 0.35%.

12. Overall Noise Level Check

Mode	Self-recording and playback
Signal	Non-signal (Install shorting plugs to AUDIO IN both of L and R.)
Measurement point	AUDIO OUT L [R]
Measurement equipment	Audio level meter
Specified value	Less than −89dBs*1

[Confirmation method]

1) Record the signal.
2) Playback the recorded section.
3) The noise level should be less than −89dBs*1

*1 :The measured value when using IHF-A hearing sensitivity compensation filter.

8-4-2. AFM Audio System Adjustment

Unless otherwise specified, set the VTR switches and controles as shown below when making the adjustment.

INPUT SELECT switch .....LINE
AUDIO MONITOR (PCM/MIX/STD) switch.....STD

[Adjustment Order]

1) AFM carrier frequency adjustment.
2) AFM deviation adjustment.
3) E-E output level check
4) Overall level characteristics check
5) Overall frequency characteristics check
6) Overall distortion check
7) Overall noise level check

1. AFM Carrier Frequency Adjustment (AF-20/AU-22 Board)

Mode	REC (SP mode)
Signal	Non-signal
Measurement point	Pin ⑬ (REC AFM) of AF-20 board
Measurement equipment	Frequency counter and oscilloscope
Adjustment element	RV503 on AF-20 board
Specified value	1.500±0.003MHz

[Adjustment method]

1) Adjust with RV503 so that it becomes 1.500±0.003MHz.
2) Check that the REC AFM level is approx. 90 mVp-p.

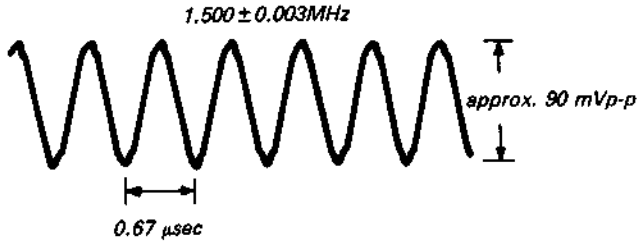


Fig. 8-41.

2. AFM Deviation Adjustment (AF-20/AU-22 Board)

Mode	Playback
Signal	Alignment tape: For operation confirmation (WR5-3CSP)
Measurement point	AUDIO OUT L or R
Measurement equipment	Audio level meter
Adjustment element	RV501 on AF-20 board
Specified value	−10±0.2dBs

[Adjustment method]

1) Adjust with RV501 so that the AUDIO OUT level becomes −10±0.2dBs.

3. E-E Output Level Check

The Checking element of Rch is shown in parentheses [ ].

Mode	E-E
Signal	400Hz, −10dBs: AUDIO IN (Both of L and R)
Measurement point	AUDIO OUT L [R]
Measurement equipment	Audio level meter
Specified value	−10±2dBs

[Confirmation method]

1) Be sure the AUDIO OUT L [R] level is −10±2dBs.

4. Overall Level Characteristics Check

Mode	Self-recording and playback (SP)
Signal	400Hz, −10dBs: AUDIO IN (Both of L and R)
Measurement point	AUDIO OUT L or R
Measurement equipment	Audio level meter
Specified value	−10±3dBs.

[Confirmation method]

1) Record the signal.
2) Playback the recorded section.
3) Be sure the AUDIO OUT level is −10±3dBs.

5. Overall Frequency Characteristics Check

Mode	Self-recording and playback (SP)
Signal	Ⓐ 400Hz, −20dBs Ⓑ 30Hz, −20dBs Ⓒ 14kHz, −20dBs: AUDIO IN (Both of L and R)
Measurement point	AUDIO OUT L or R
Measurement equipment	Audio level meter
Specified value	When the 400Hz playback output level is specified as 0dB, the playback output levels of 30Hz and 14kHz become both 0±3dB.

[Confirmation method]

1) Record the signals of Ⓐ to Ⓒ in sequence.
2) Playback the recorded section.
3) Be sure that when the 400Hz playback output level is specified as 0dB, the playback output levels of 30Hz and 14kHz become both 0±3dB.

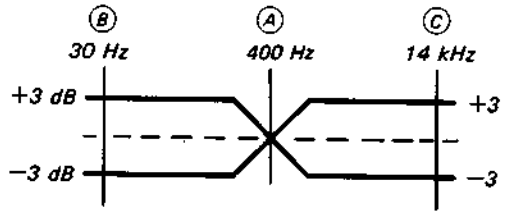


Fig. 8-42.

6. Overall Distortion Check

Mode	Self-recording and playback
Signal	400Hz, −10dBs: AUDIO IN (Both of L and R)
Measurement point	AUDIO OUT L or R
Measurement equipment	Distortion meter
Specified value	Less than 0.5%*1

[Confirmation method]

1) Record the signal
2) Playback the recorded section.
3) Be sure the distortion is less than 0.5%*1.

*1: The value when a distortion measuring filter (Fig. 8-43.) is used and that when the filter is not used is less than 1.0%.

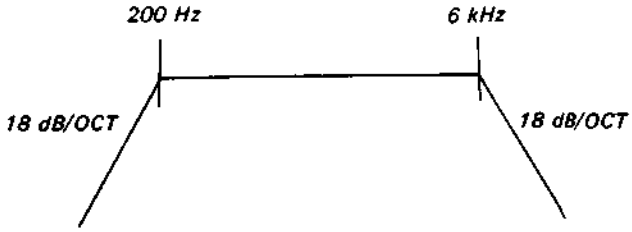


Fig. 8-43.

7. Overall Noise Level Check

Mode	Self-recording and playback (SP)
Signal	Non-signal (Install shorting plugs to AUDIO IN both of L and R.)
Measurement point	AUDIO OUT L or R
Measurement equipment	Audio level meter
Specified value	Less than −62dBs*2

[Confirmation method]

1) Record the signal.
2) Playback the recorded section.
3) Be sure the noise level is less than −62dBs*2.

*2: The value when an IHF-A listening sensitivity correction filter is used.

8-5. TUNER SYSTEM ADJUSTMENT

8-5-1. Stereo Separation Adjustment (TS-50 Board)

Mode	E-E
Signal	Stereo broadcasting signal by a RF signal generator L CH...None R CH...400Hz 30% MOD •INPUT...AERIAL IN
Measurement point	AUDIO OUT (L) terminal
Measurement equipment	Audio level meter
Adjustment element	RV101
Specified value	Minimum output level

[Adjustment method]

Minimize the 400Hz output level with RV101.

8-6. TIMER SYSTEM ADJUSTMENT (FT-33 Board)

Measurement point	Pin ⑥⓪ of IC002
Measurement equipment	Frequency counter
Adjustment element	CV001
Specified value	1048.58±0.01kHz

[Connection]

1) Connect Pin ⑤⑥ of IC002 and GND with a jumper wire.
2) Connect Pin ⑤⑨ of IC002 and GND with a jumper wire.

[Adjustment method]

Adjust to 1048.58±0.01kHz with CV001.

8-7. SECAM-PAL CONVERSION SYSTEM ADJUSTMENT

- Make this adjustment aligning the PAL video system.
- For this adjustment, use the equipment listed below.

[Equipment Required]

(1) PAL Colour Monitor TV
(2) Oscilloscope, Dual-trace, Bandwidth...more than 10MHz with delay mode
(3) SECAM colour-bar generator
(4) PAL vector scope
(5) Frequency counter
(6) Digital voltmeter

Setting up during adjustment

Video signals output by a pattern generator are used as adjustment signals when making the electrical adjustments, and these video output signals should be within the required standard. Connect an oscilloscope to CNJ002 (VIDEO IN) on the VI-20 Board. Check that the amplitudes of video signal SYNC signals, picture portions, and line ID signals are flat at approximately 0.3, 0.7, and 0.3V, respectively. Fig. 8-45. shows video signals (colour bars) used in making the electrical adjustment.

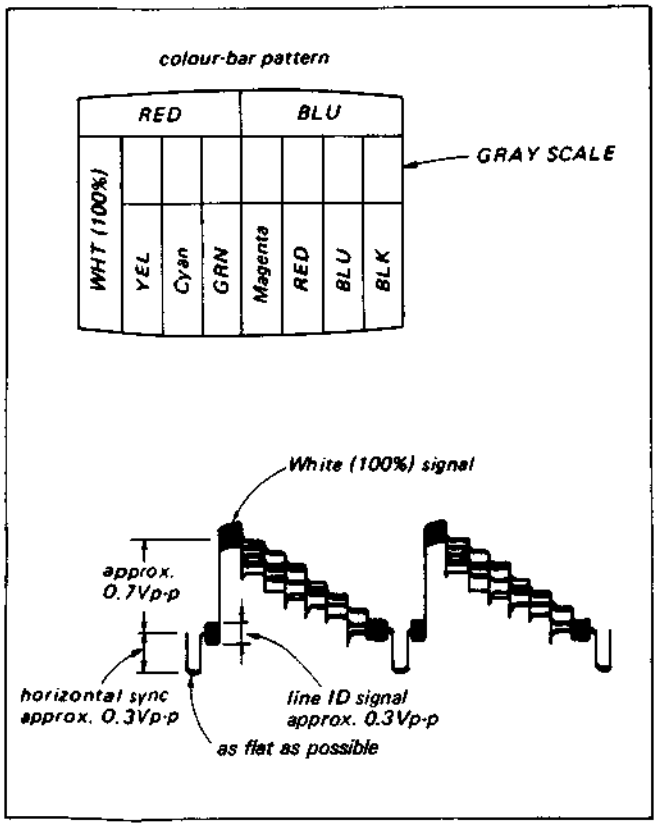


Fig. 8-44.

8-7-1. fH VCO ADJUSTMENT (TC-3 Board)

Mode	E-E
Signal	Non-signal
Measurement point	Pin ③ of IC002
Measurement equipment	Frequency counter
Adjustment element	RV001
Specified value	15.630±0.01kHz

[Connection]

Connect between pin ⑪ of IC002 and GND with a capacitor of 0.1 μF.

[Adjustment method]

1) Adjust with RV001 so that it becomes 15.630±0.01kHz.

Fig. 8-45.

8-7-2. V Blanking Pulse Adjustment (TC-3 Board)

Mode	E-E
Signal	SECAM colour-bar
Measurement point	CH1: Pin ① of CN002 CH2: Pin ⑨ of IC003
Measurement equipment	Oscilloscope
Adjustment element	RV002, RV003
Specified value	Leading edge adjustment (RV002) ... −6±1H Trailing edge adjustment (RV003) ... +23±0.5H

[Adjustment method]

1) Adjust with RV003 so that the trailing edge of the V blanking pulse comes to the position of +23±0.5H (+1472±32μsec) from the front edge of the vertical SYNC signal.
2) Adjust with RV002 so that the leading edge of the V blanking pulse comes to the position of −6±1H (−384±64μsec) from the front edge of the vertical SYNC signal.

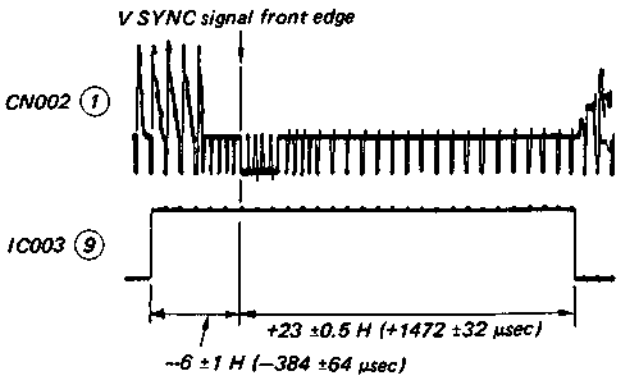


Fig. 8-46.

8-7-3. Bell Filter Adjustment (TC-3 Board)

Mode	E-E
Signal	SECAM colour-bar
Measurement point	TP001 (Connecting point of R053 and R054)
Measurement equipment	Oscilloscope
Adjustment element	LV002
Specified value	The level variation of the chroma signal amplitude is 0 ± 10%.

Note: When performing (Adjustment method 1), be sure to use 1:1 probe as the signal level of TP001 is extremely small. In addition, when the adjustment is impossible because of the signal level is too small to read, perform (Adjustment method 2).

[Adjustment method 1]

1) Adjust LV002 until the waveform is flat.

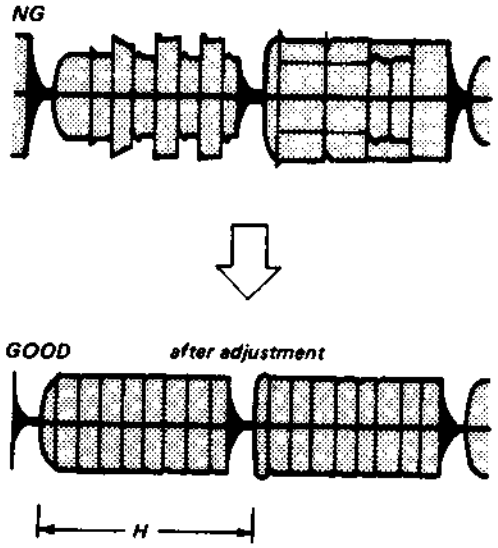


Fig. 8-47.

[Adjustment method 2]

1) Set the picture level of the monitor TV to maximum.
2) Adjust by turning LV002 so that the boarders of the respective colour-bars (especially red and blue) become vivid and stop LV002 at the position where the beat (red and magenta sections) becomes small.

8-7-4. FSC Adjustment (TC-3/VI-20 Board)

Mode	E-E
Signal	SECAM colour-bar
Measurement point	Pin ③ W005 on VI-20 board
Measurement equipment	Frequency counter
Adjustment element	CV001 on TC-3 board
Specified value	4433618.75 ± 10Hz

Note: Connect the frequency counter through a buffer with high impedance (approx. 10MΩ) and low capacity (less than 10 pF.)

[Adjustment method]

1) Adjust to 4433618.75 ± 10Hz with CV001 on TC-3 board.

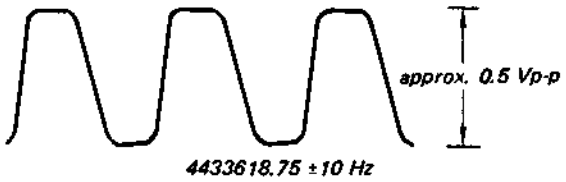


Fig. 8-48.

8-7-5. Demodulator Adjustment (TC-3 Board)

Mode	E-E
Signal	SECAM colour-bar
Measurement point	Pin ① of CN002
Measurement equipment	Oscilloscope
Adjustment element	LV001, RV005
Specified value	Minimum carrier leak (less than 20 mVp-p)

[Adjustment method]

1) Adjust LV001 and RV005 alternately to minimize carrier leak.

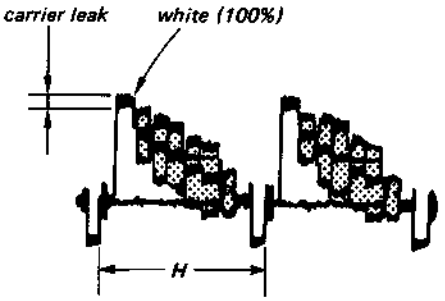


Fig. 8-49.

8-7-6. Delay Line Adjustment (TC-3 Board)

Mode	E-E
Signal	SECAM colour-bar
Measurement point	VIDEO OUT terminal
Measurement equipment	PAL vector scope (75Ω terminated)
Adjustment element	LV003, RV007
Specified value	1. Be sure that RED and CYAN are within the (⊞). 2. Be sure that other colours than the above are within (□).

[Adjustment method]

1) Adjust with LV003 and RV007 alternately so that the colour luminescent spots come into the specified frame.

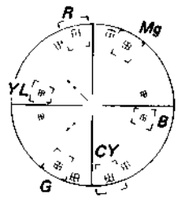


Fig. 8-50

8-7-7. Y/C Mix Adjustment (TC-3 Board)

Mode	E-E
Signal	SECAM colour-bar
Measurement point	Pin ① of CN002
Measurement equipment	Oscilloscope
Adjustment element	RV004
Specified value	When the SYNC level is specified as 100%, the burst level becomes 100±5%.

[Adjustment method]

1) Adjust with RV004 so that burst level becomes equivalent to the SYNC level.

Fig. 8-51

8-7-8. PAL/SECAM Distinction Adjustment (TC-3 Board)

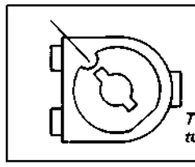
Mode	E-E
Signal	SECAM colour-bar
Measurement point	1. Pin ⑭ of IC001 2. Pin ④ of CN002
Measurement equipment	Digital voltmeter
Adjustment element	RV006
Specified value	12.0±0.5 Vdc

[Connection]

Connect an adjustable resistor of 2.2 kΩ in parallel with LV002.

[Adjustment method]

1) Set the adjustable resistor of 2.2 kΩ to its maximum resistance value.
2) Confirm the DC voltage of pin ⑭ of IC001 is approx. 6.5 Vdc.
3) Make the resistance value of the adjustable resistor of 2.2 kΩ gradually small and stop it at the position when the DC voltage of pin ⑭ of IC001 becomes approx. 5 V dc after suddenly dropped.
4) Set RV006 to the position that it is turned fully to counterclockwise ((⟲)).



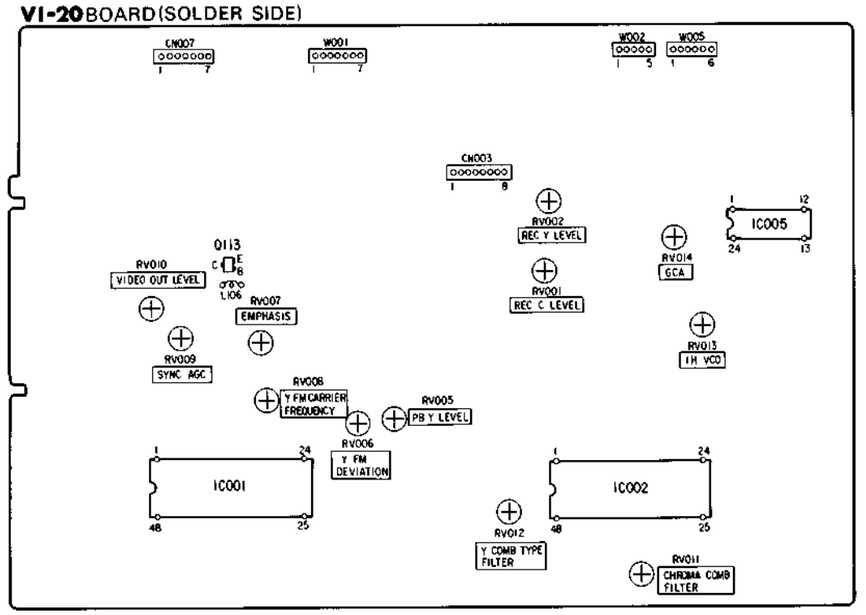
This shows the state of RV006 has been turned fully counterclockwise.

Fig. 8-52

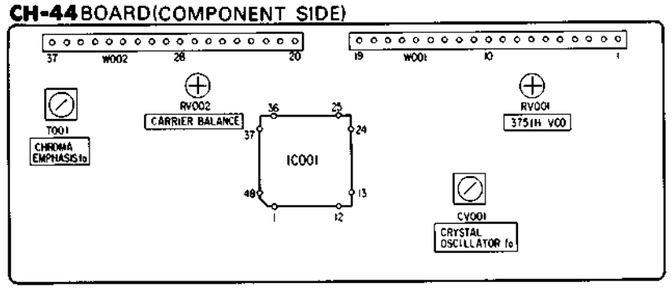
5) Connect a digital voltmeter to pin ④ of CN002 and confirm that the DC voltage is 0 Vdc.
6) Turn RV006 gradually clockwise ((⟳)) and stop it at the position when the DC voltage at pin ④ of CN002 becomes 12±0.5 Vdc after suddenly increased.

8-8. ADJUSTMENT ELEMENT LOCATION

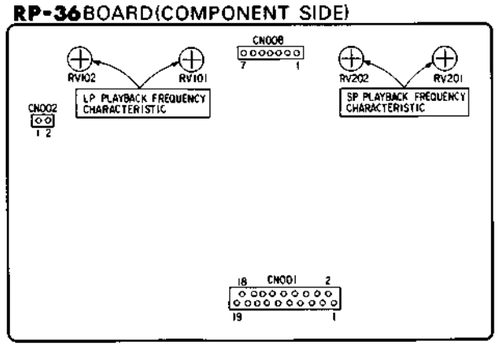
VI-20 BOARD (SOLDER SIDE)



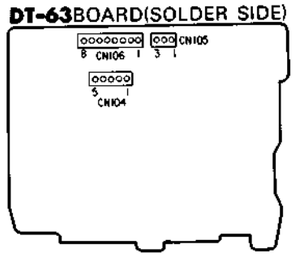
CH-44 BOARD (COMPONENT SIDE)



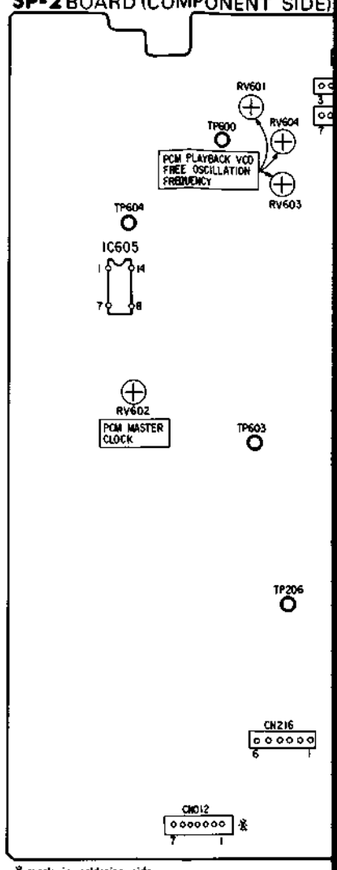
RP-36 BOARD (COMPONENT SIDE)



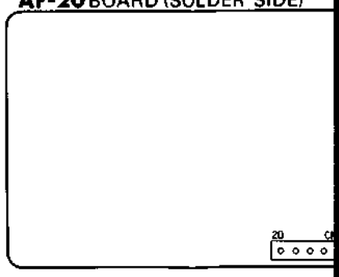
DT-63 BOARD (SOLDER SIDE)



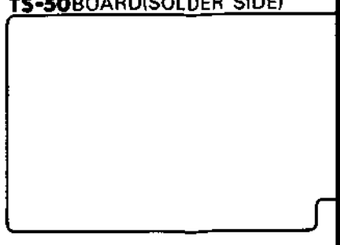
SP-2 BOARD (COMPONENT SIDE)



AF-20 BOARD (SOLDER SIDE)

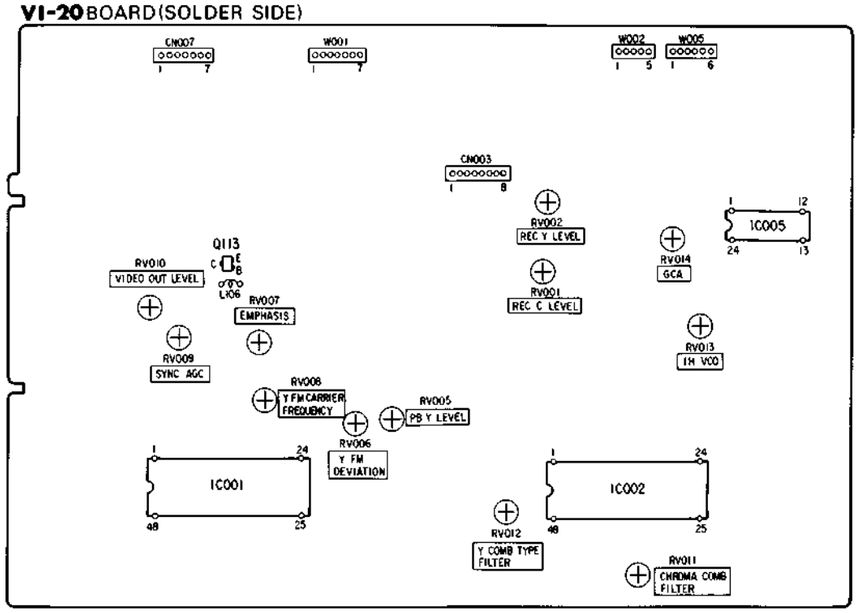


TS-50 BOARD (SOLDER SIDE)

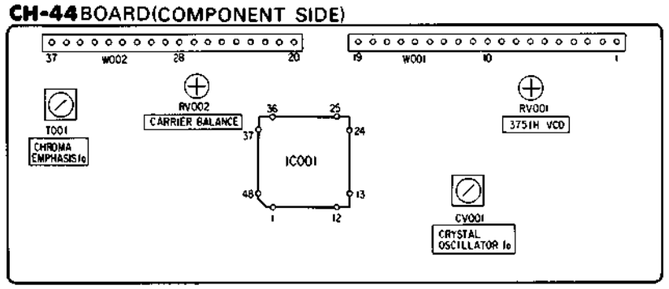


8-8. ADJUSTMENT ELEMENT LOCATION

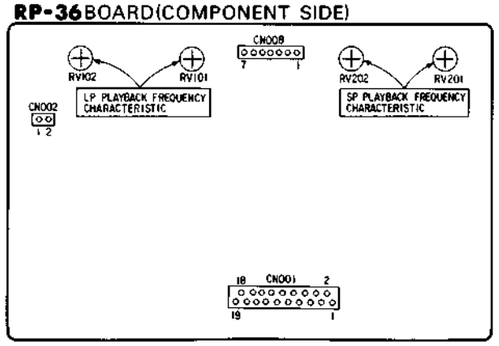
VI-20 BOARD (SOLDER SIDE)



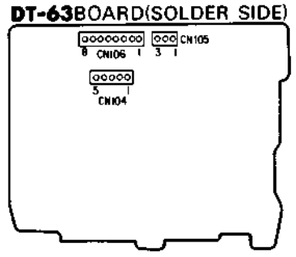
CH-44 BOARD (COMPONENT SIDE)



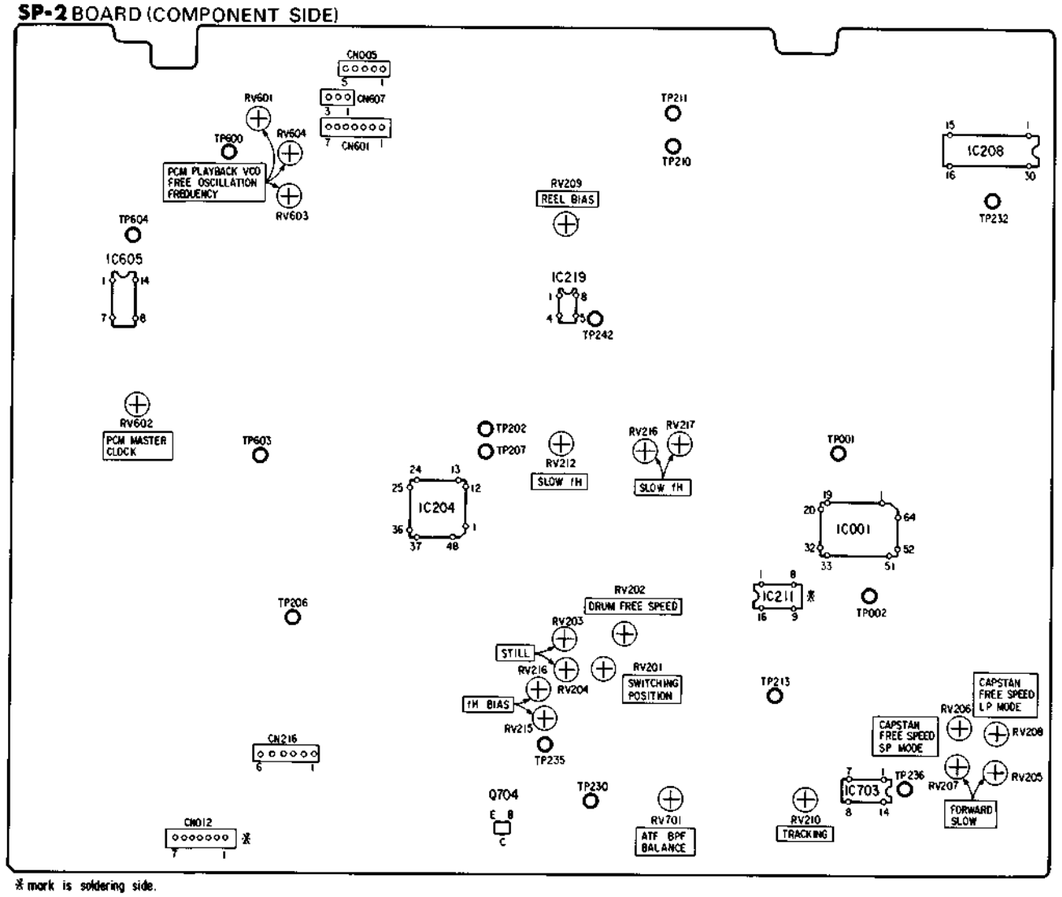
RP-36 BOARD (COMPONENT SIDE)



DT-63 BOARD (SOLDER SIDE)

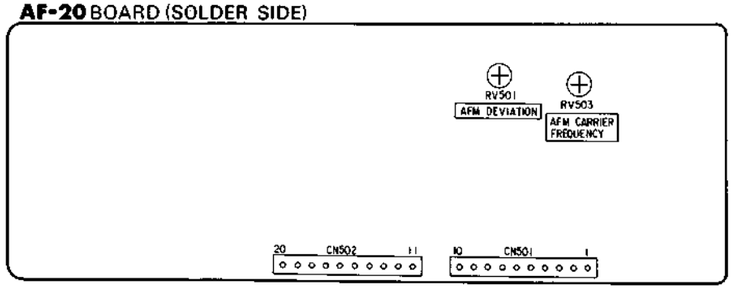


SP-2 BOARD (COMPONENT SIDE)

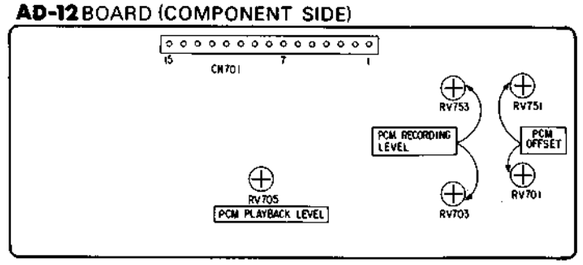


※ mark is soldering side.

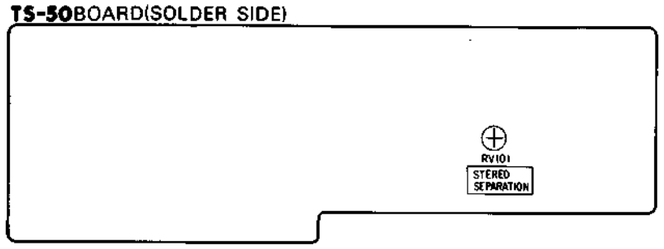
AF-20 BOARD (SOLDER SIDE)



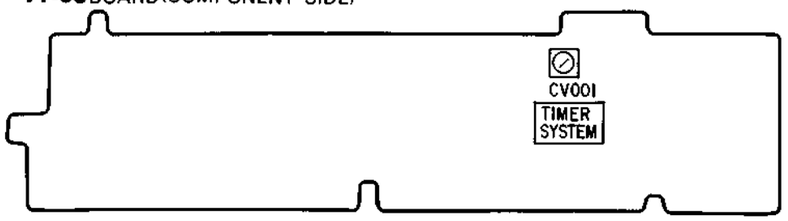
AD-12 BOARD (COMPONENT SIDE)



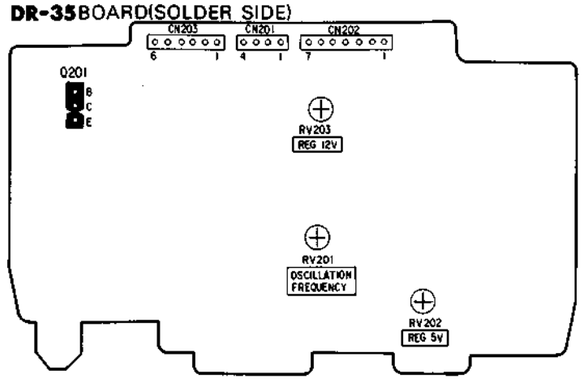
TS-50 BOARD (SOLDER SIDE)



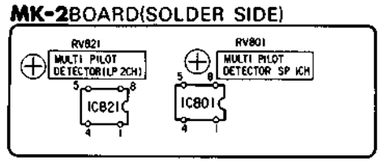
FT-33 BOARD (COMPONENT SIDE)



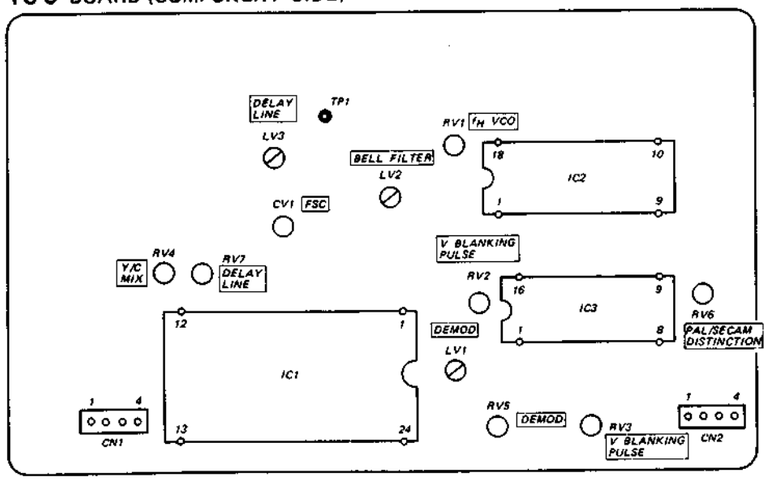
DR-35 BOARD (SOLDER SIDE)



MK-2 BOARD (SOLDER SIDE)



TC-3 BOARD (COMPONENT SIDE)



EV-S650PS
RMT-439

SONY

SERVICE MANUAL

West Germany Model

SUPPLEMENT-1

• File this supplement-1 with the Service Manual.

Subject: The circuits have been changed.

- SP-2 and NR-6 boards are changed, DM-18 board are added, RB-2 and KM-1 boards are deleted due to improvement.
- Parts number of added or changed pc boards are as follows.

SP-2 board	1-621-979-16
DM-18 board	1-625-210-11

- Although there is SP-2 board whose part number suffix is 15, refer to printed wiring boards and schematic diagram of part number suffix 16 for it.

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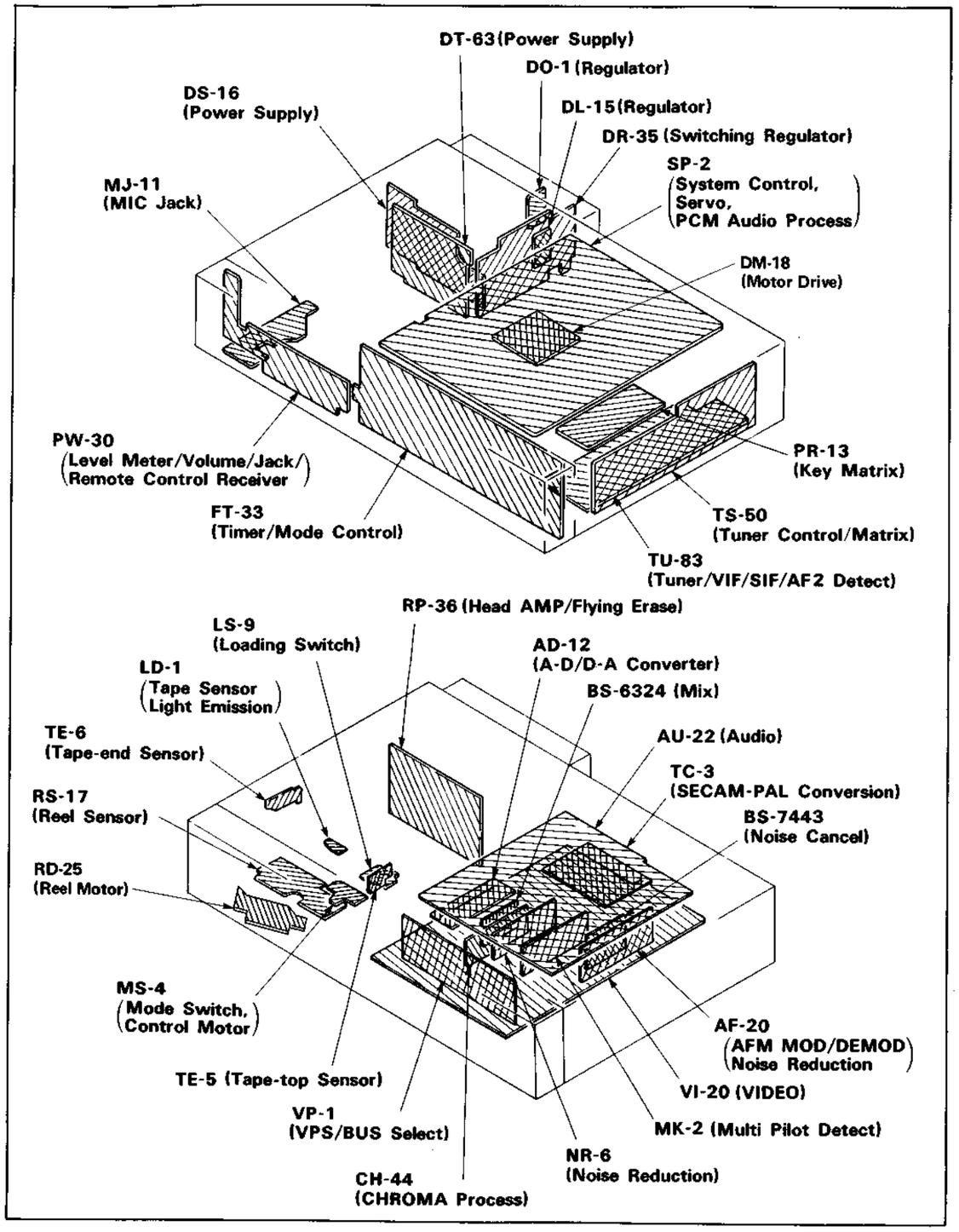
SECTION 1
DIAGRAM

1-1. CIRCUIT BOARDS LOCATION



SECTION 2
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAM

2-1. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAM

Note:

- ● : indicates a lead wire mounted on the component side.
- ● : indicates a lead wire mounted on the conductor side.
- ⊗ : Through hole.
- : Pattern from the side which enables seeing.

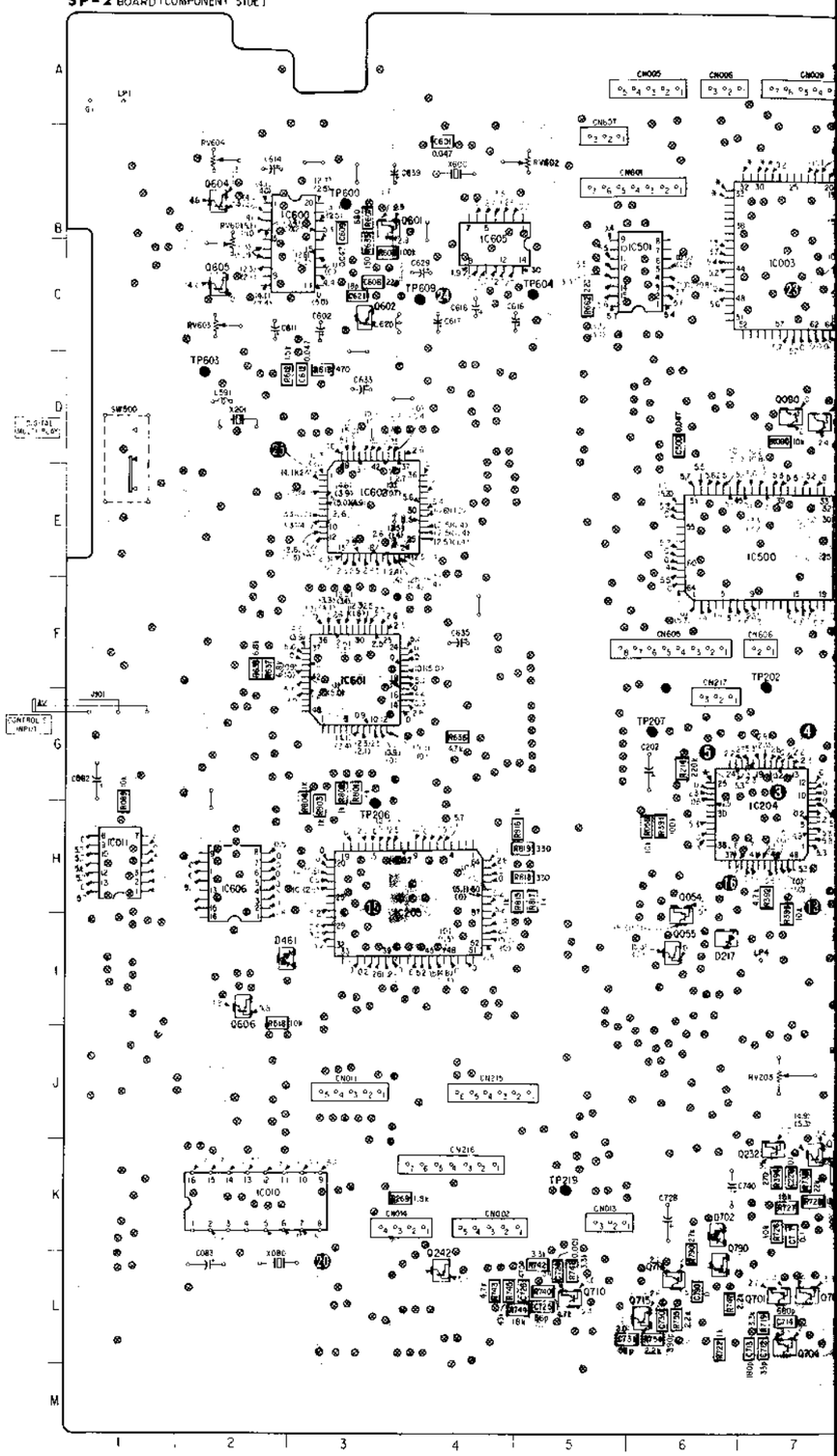
- Circled numbers refer to waveforms.
- Digital transistor: transistor with resistors.
  Refer to the schematic diagram for digital transistor.
  SP-2 board: Q010, Q011, Q012, Q013, Q014, Q015, Q020, Q021, Q022, Q054, Q060, Q080, Q085, Q090, Q091, Q098, Q099, Q201, Q202, Q207, Q210, Q211, Q214, Q215, Q226, Q227, Q228, Q229, Q230, Q232, Q233, Q235, Q237, Q238, Q240, Q242, Q245, Q246, Q248, Q249, Q254, Q256, Q263, Q264, Q281, Q282, Q285, Q286, Q287, Q390, Q401, Q458, Q471, Q472, Q485, Q500, Q501, Q502, Q602, Q604, Q605, Q606, Q703, Q712, Q714, Q717, Q777, Q790.

Caution:
Pattern face side: (Conductor Side) Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side) Parts on the parts face side seen from the parts face are indicated.

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

CN001	D-10	IC206	D-15	Q390	H-28
CN002	K-4	IC207	B-13	Q401	K-20
CN003	H-15	IC208	B-15	Q458	H-10
CN004	A-10	IC210	K-23	Q470	I-9
CN005	A-6	IC211	I-21	Q471	J-23
CN006	A-6	IC212	J-21	Q485	D-9
CN007	A-11	IC213	J-10	Q500	E-26
CN008	G-15	IC215	I-18	Q501	F-26
CN009	A-7	IC216	I-25	Q502	E-25
CN010	E-9	IC220	B-10	Q591	E-30
CN011	J-3	IC500	E-7	Q601	B-4
CN012	M-30	IC501	C-6	Q602	C-3
CN013	K-5	IC502	I-31	Q604	B-2
CN014	K-3	IC600	B-3	Q605	C-2
CN015	A-8	IC601	F-3	Q606	I-2
CN016	H-15	IC602	E-3	Q701	L-7
CN017	C-13	IC603	F-30	Q702	L-7
CN018	A-11	IC604	E-29	Q703	L-25
CN019	C-13	IC605	B-4	Q704	L-7
CN020	E-15	IC606	H-2	Q705	K-25
CN021	E-14	IC701	K-21	Q706	K-26
CN022	C-11	IC703	L-13	Q707	K-7
CN200	E-9			Q708	K-26
CN212	A-14	J101	G-1	Q709	L-25
CN213	A-12			Q710	L-5
CN214	L-8	Q010	H-19	Q711	L-27
CN215	J-4	Q012	G-14	Q712	K-27
CN216	k-4	Q013	G-14	Q713	L-6
CN217	F-6	Q014	D-26	Q714	K-27
CN280	F-9	Q015	D-26	Q715	L-6
CN601	B-6	Q020	B-21	Q717	J-25
CN603	L-28	Q021	B-12	Q777	J-20
CN605	F-6	Q022	B-11	Q790	K-6
CN606	F-7	Q023	B-21		
CN607	A-5	Q054	H-6	RV201	J-8
		Q055	I-6	RV202	J-9
D020	A-21	Q060	F-19	RV203	J-7
D021	A-12	Q080	J-31	RV204	J-7
D060	E-13	Q085	G-31	RV209	E-9
D082	G-31	Q086	H-31	RV210	L-12
D099	B-26	Q090	D-7	RV215	K-8
D203	B-18	Q091	D-7	RV216	J-8
D205	H-22	Q098	E-15	RV601	B-2
D206	H-21	Q099	G-17	RV602	B-5
D208	H-25	Q201	B-21	RV603	C-2
D209	I-10	Q202	B-11	RV604	B-2
D211	K-10	Q203	B-11	RV701	L-10
D212	K-20	Q204	C-21		
D213	H-27	Q205	K-9	TP001	I-13
D214	J-14	Q206	C-14	TP002	I-13
D215	I-20	Q207	C-18	TP003	E-15
D216	H-24	Q208	D-15	TP202	F-7
D217	I-6	Q209	C-13	TP206	H-3
D218	J-13	Q210	G-26	TP207	G-6
D223	H-23	Q211	J-20	TP213	J-11
D226	J-13	Q212	A-9	TP219	K-5
D227	H-27	Q213	B-9	TP228	I-13
D230	D-14	Q214	G-22	TP236	L-9
D232	J-23	Q215	G-10	TP232	C-15
D233	C-22	Q226	K-25	TP235	K-8
D280	H-22	Q227	K-26	TP236	L-14
D390	B-13	Q228	J-22	TP237	I-15
D391	G-29	Q229	F-19	TP240	K-11
D392	H-26	Q230	E-20	TP443	F-12
D393	H-26	Q232	K-7	TP603	D-2
D443	I-12	Q233	J-13	TP604	C-5
D461	I-2	Q235	H-27	TP609	C-4
D470	I-23	Q237	B-24		
D485	D-23	Q238	G-19		
D501	E-26	Q240	E-11		
D502	G-28	Q242	K-4		
D600	B-30	Q245	K-19		
D601	G-30	Q246	G-9		
D603	G-30	Q248	I-14		
D604	F-30	Q249	K-13		
D701	J-22	Q250	K-14		
D702	K-6	Q251	K-14		
		Q252	K-14		
IC001	H-13	Q253	K-19		
IC002	F-14	Q254	K-14		
IC003	C-7	Q256	K-20		
IC004	E-12	Q260	B-17		
IC005	F-22	Q261	B-18		
IC007	C-13	Q262	B-18		
IC008	D-12	Q263	G-25		
IC009	D-13	Q264	H-25		
IC010	K-2	Q280	C-14		
IC011	H-1	Q281	D-19		
IC201	B-9	Q282	D-18		
IC202	I-17	Q285	H-21		
IC204	G-7	Q286	H-23		
IC205	H-4	Q287	H-22		

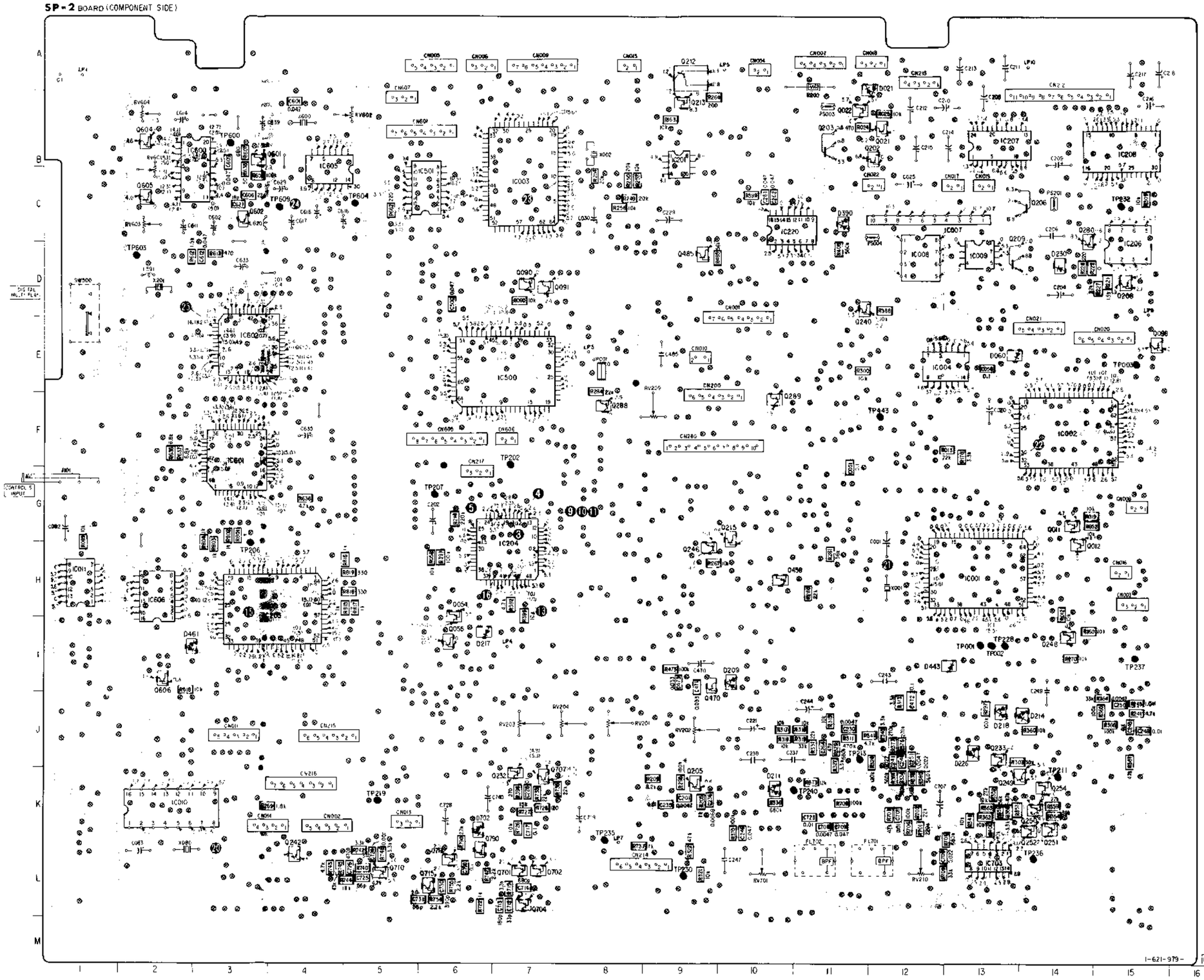
SP-2 (SYSTEM CONTROL) PRINTED WIRING BOARD
—Ref. No. SP-2 BOARD : 4,000 series—



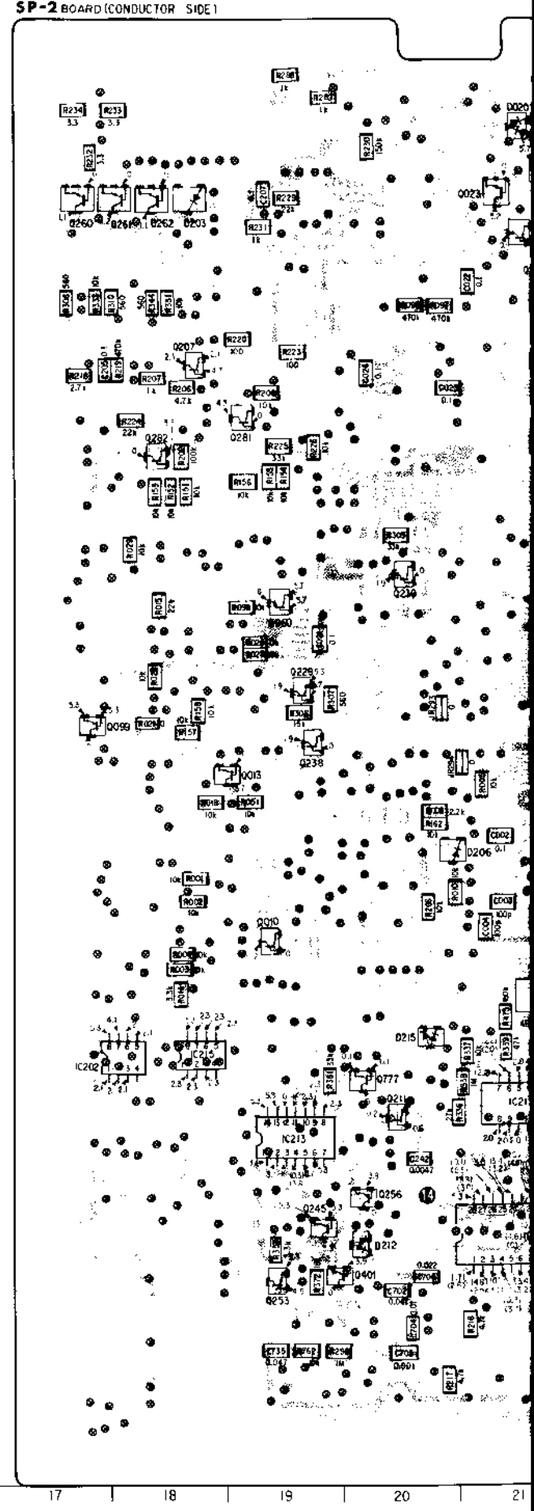
SP-2 (SYSTEM CONTROL) PRINTED WIRING BOARD

—Ref. No. SP-2 BOARD : 4,000 series—

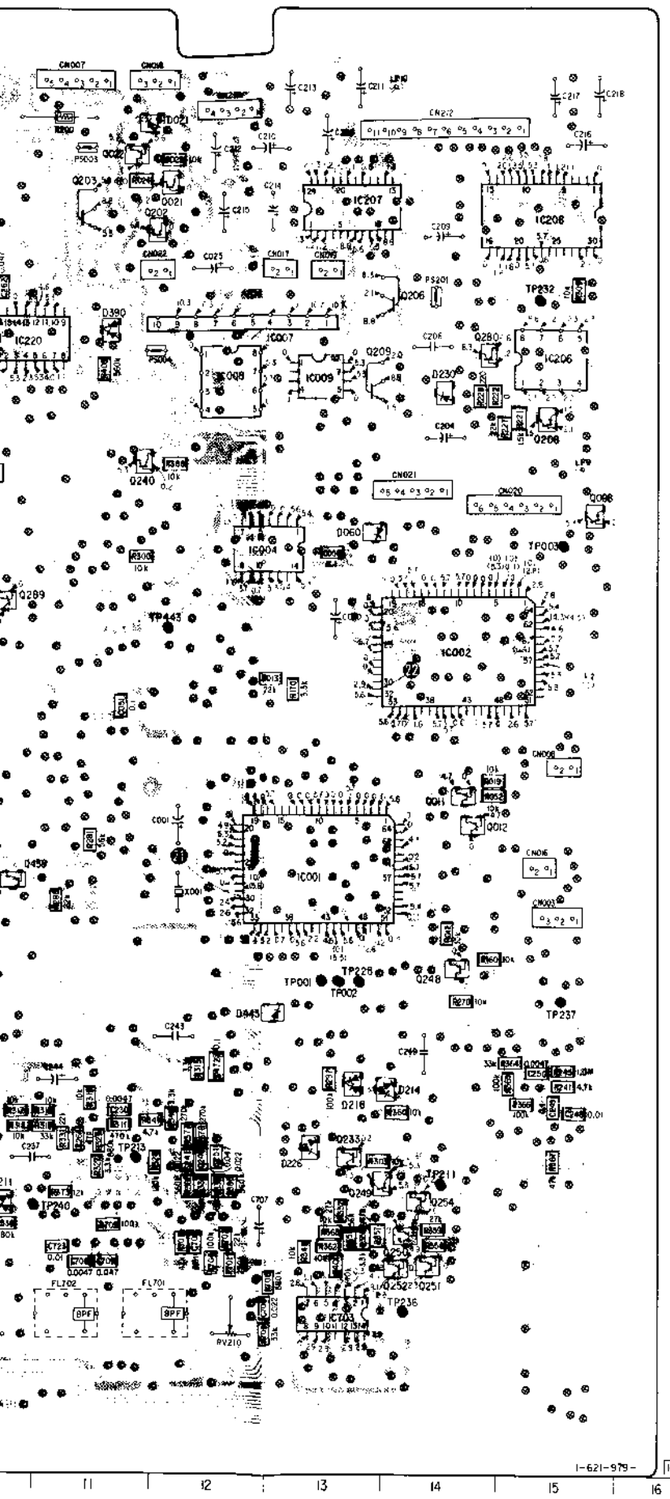
SP-2 BOARD (COMPONENT SIDE)

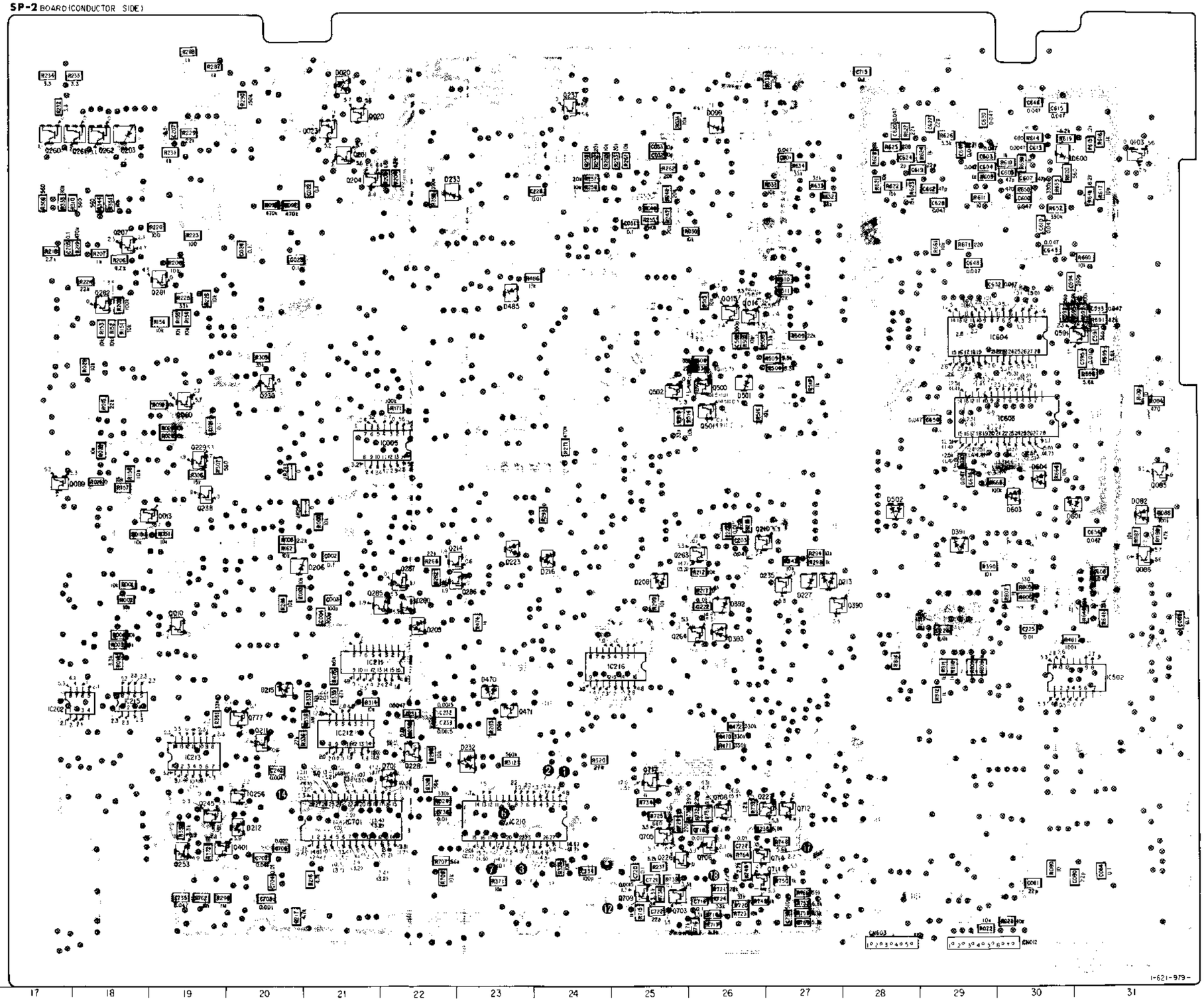


SP-2 BOARD (CONDUCTOR SIDE)



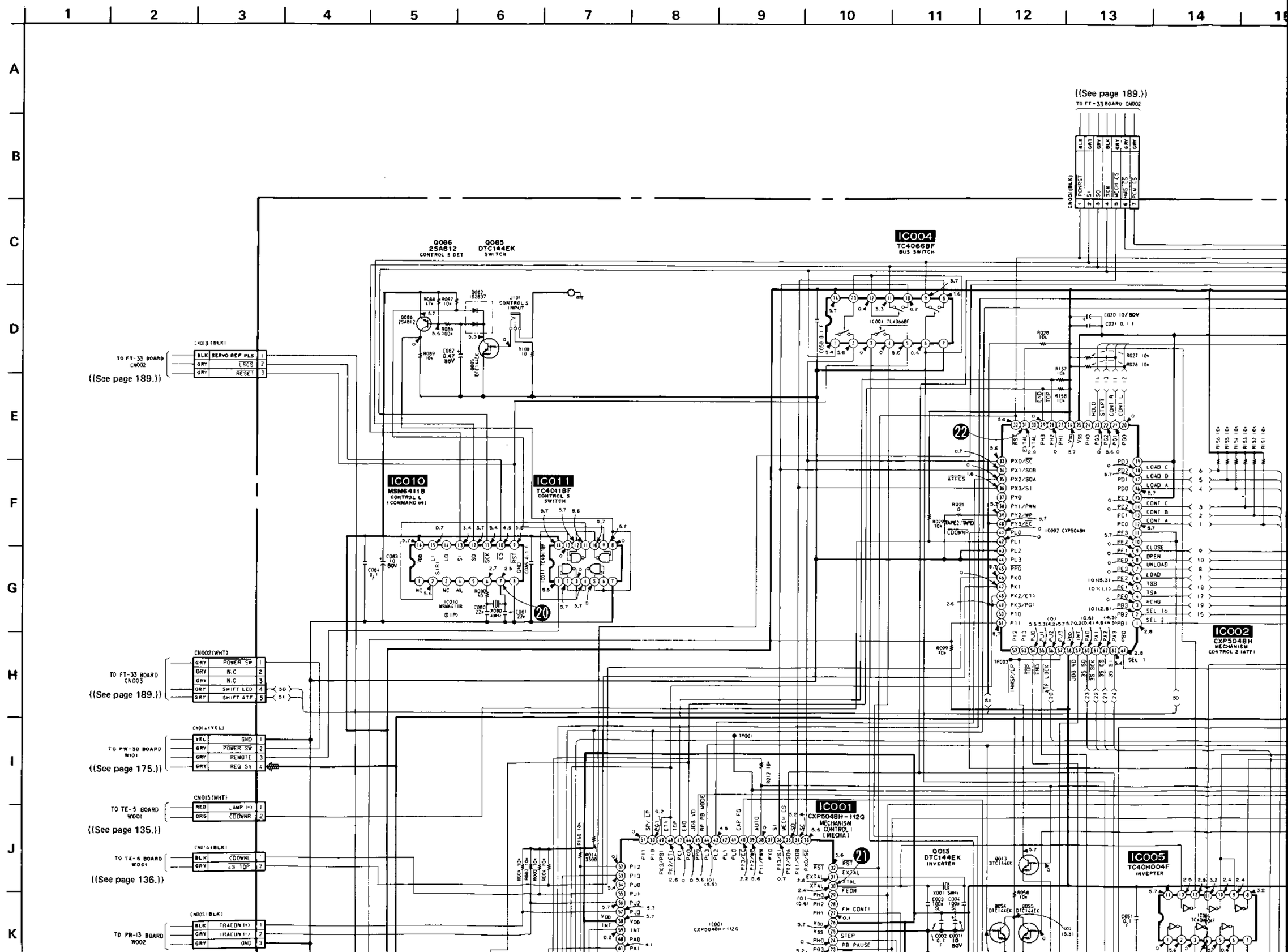
SP-2 BOARD (CONDUCTOR SIDE)





SP-2 (SYSTEM CONTROL) SCHEMATIC DIAGRAM

—Ref. No. SP-2 BOARD : 4,000 series—



((See page 189.))

TO FT-33 BOARD CN002

CN001 (BLK)
1 PONRST BLK
2 SI GRY
3 SO GRY
4 SCK BLK
5 MECH CS GRY
6 MMS CS GRY
7 PCM CS GRY

CN012 (WHT)
1 PCM REC
2 SEL 1
3 SEL 2
4 D.REF. DECK
5 SEL
6 SEL 2
7 GND

CHECK PINS

((See page 94.))

TO VI-20 BOARD W001

CN003 (RED)
1 VIDEO PB MODE BLK
2 VIDEO MUTE GRY
3 LINE VIDEO GRY
4 TAPE2/TAPE1 BLK
5 JOG GRY
6 SPC LP GRY
7 DVD GRY

IC004
TC4066BF
BUS SWITCH

IC001
CXP5048H-(120
MECHANISM CONTROL 1 (MECHA)

IC002
CXP5048H
MECHANISM CONTROL 2 (ATF)

IC003
μPD75104
MECHANISM CONTROL 3 (HMS)

IC005
TC40H004F
INVERTER

IC008
M63763P
LOADING MOTOR DRIVE

IC009
M63765PF
CAPSTAN MOTOR DRIVE

Q013
DTC144EK
INVERTER

Q014,015,090,091
DTC144EK
D00 SWITCH

Q011,012
DTC144EK
AND GATE

D099
1SS119

X001 5MHz
X002 4.19MHz

CN010(BLK)
1 PE ON BLK
2 TAPE2/TAPE1 GRY
→ TO RP-36 BOARD CN002

((See page 85.))

CAPDN
PCM REC
MPE ON
FEDN
MPDATA
PWDATA
SCK
PCM CS
CLOCK
CLOCK
RESET
GND
REG 5V
UNS 5V

→ TO SP-2 BOARD (1/3)
PCM

(See page 28.)

S901
RECOG SWITCH

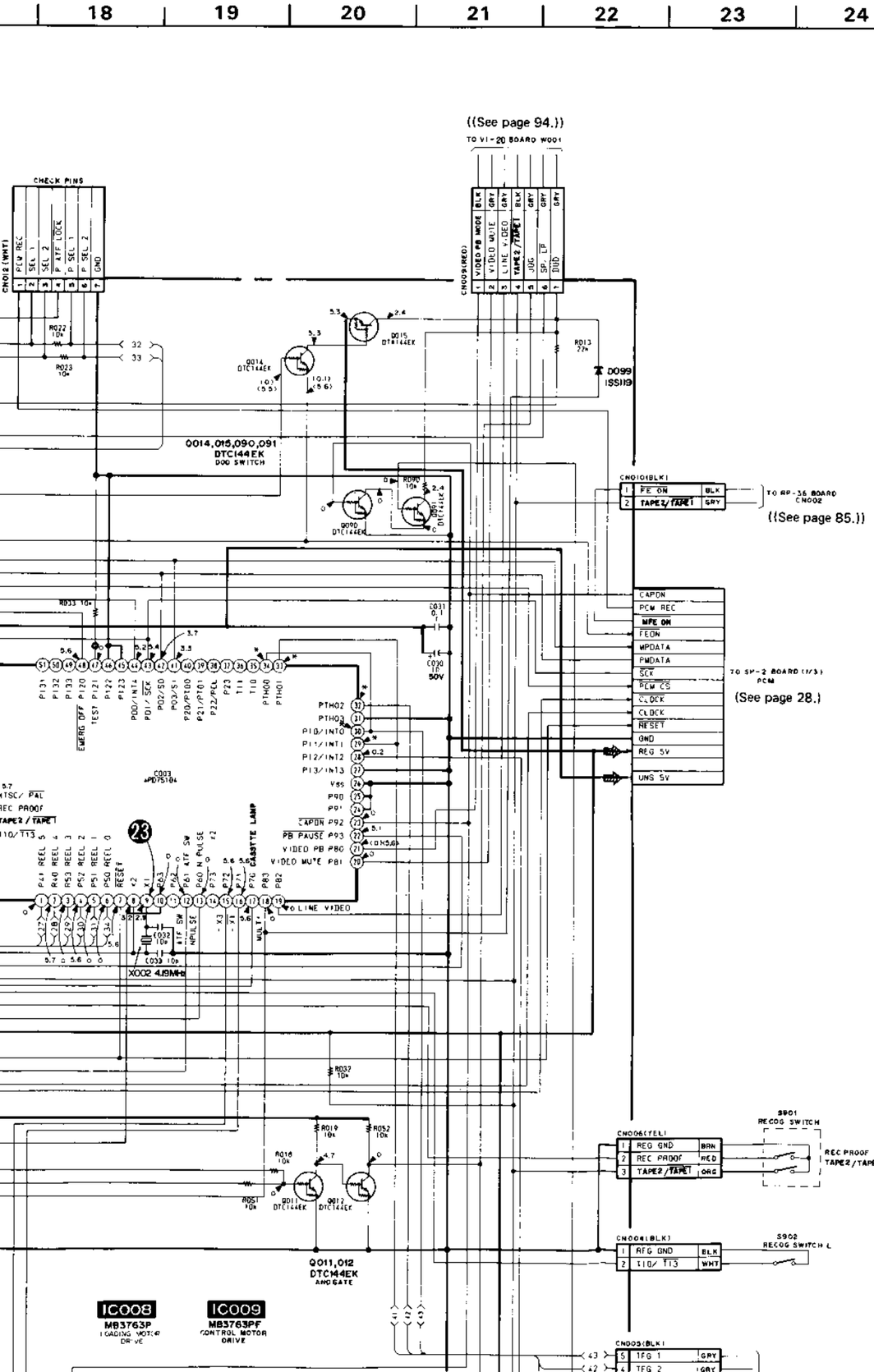
CN006(YEL)
1 REG GND BRN
2 REC PROOF RED
3 TAPE2/TAPE1 ORG

REC PROOF
TAPE2/TAPE1

S902
RECOG SWITCH L

CN004(BLK)
1 REG GND BLK
2 110V T13 WHT

CN005(BLK)
5 IFG 1 GRY
4 IFG 2 GRY

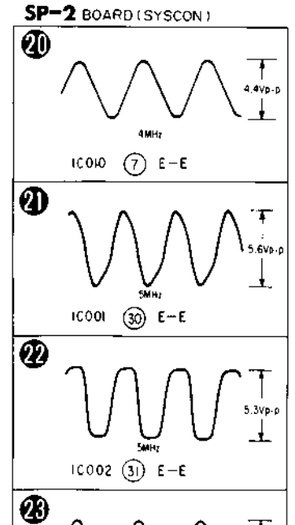


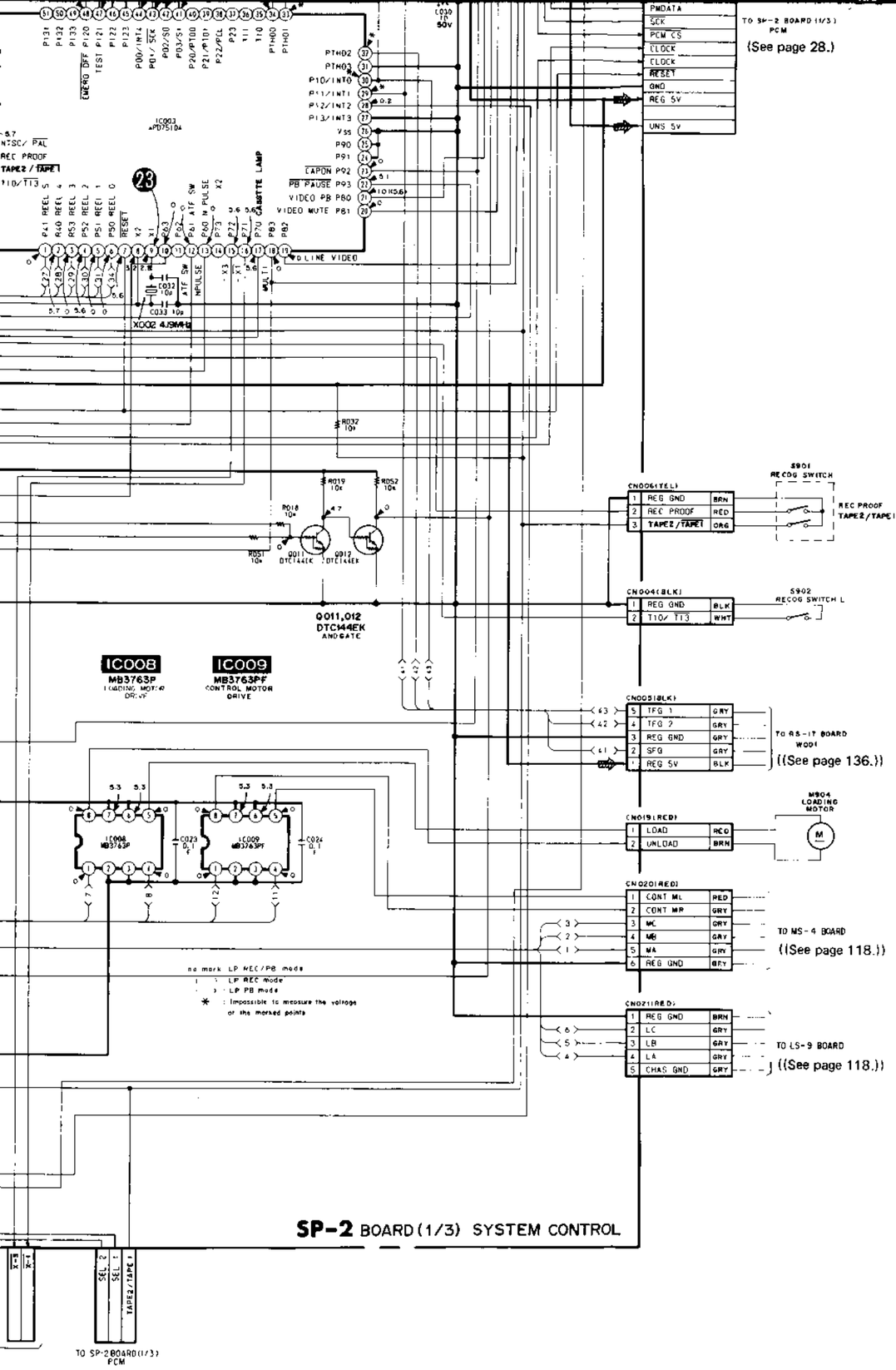
Note:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/10W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- : panel designation.
- △ : internal component.
- : adjustment for repair.
- : B + Line
- : IN/OUT direction of (+, −) B line.
- Circled numbers refer to waveforms.
- Voltages are dc between ground and measurement points.
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.
- In case of page reference, pay attention to the following.
  ( ): Page of present SUPPLEMENT-1.
  (( )): Page for SERVICE MANUAL unit.

Note: The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

SP-2 BOARD (SYSCON)





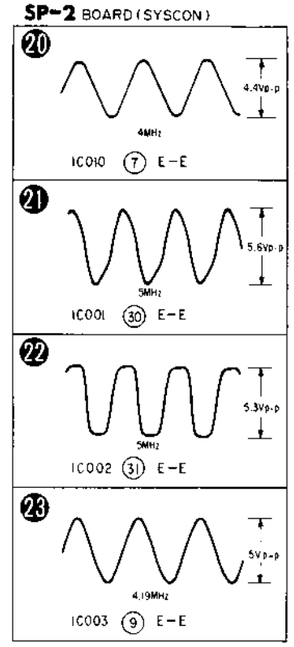
Note:

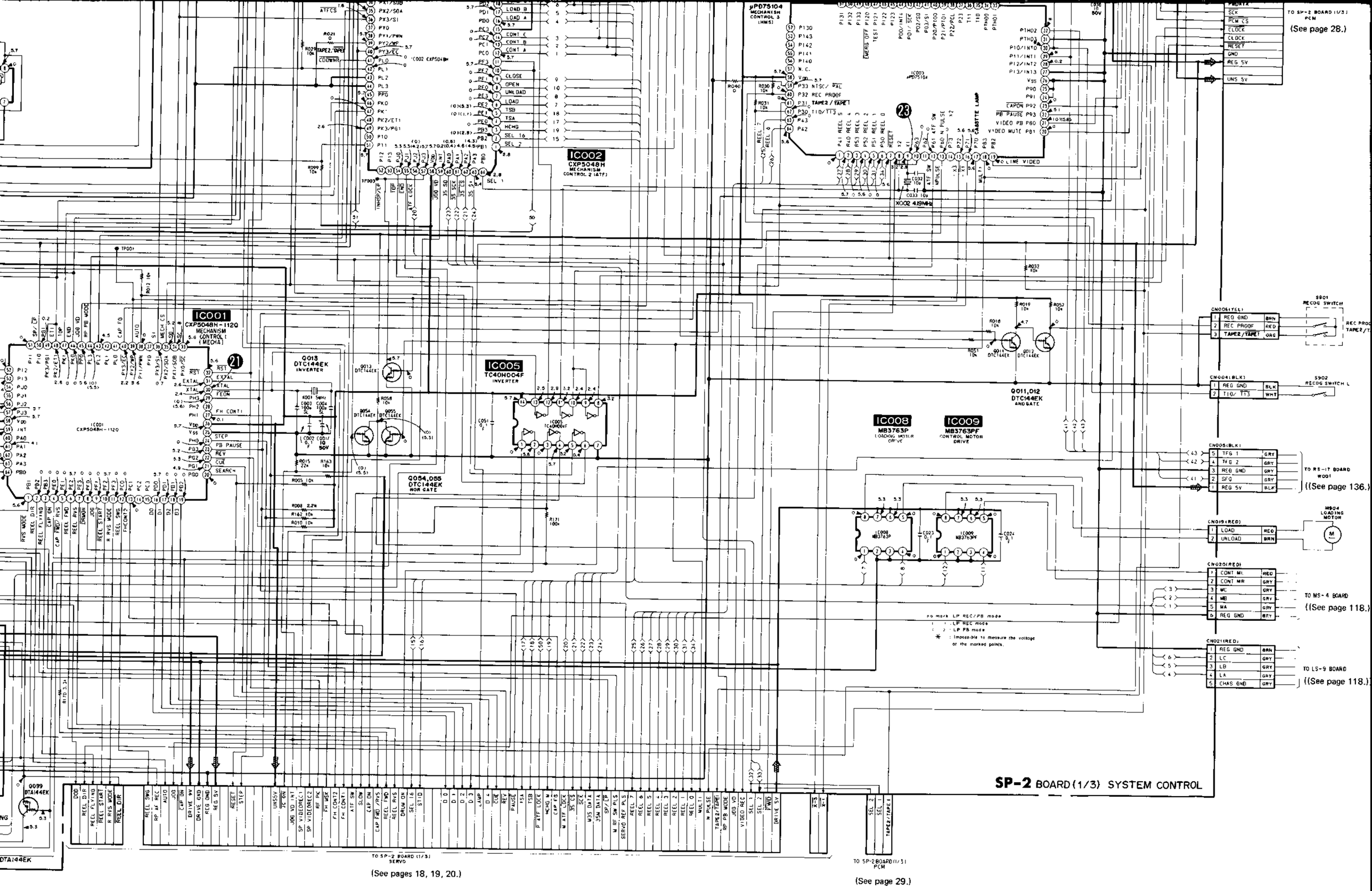
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/10W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- : panel designation.
- △ : internal component.
- : adjustment for repair.
- : B + Line
- : IN/OUT direction of (+, –) B line.
- Circled numbers refer to waveforms.
- Voltages are dc between ground and measurement points.
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.
- In case of page reference, pay attention to the following.
  ( ): Page of present SUPPLEMENT-1.
  (( )): Page for SERVICE MANUAL unit.

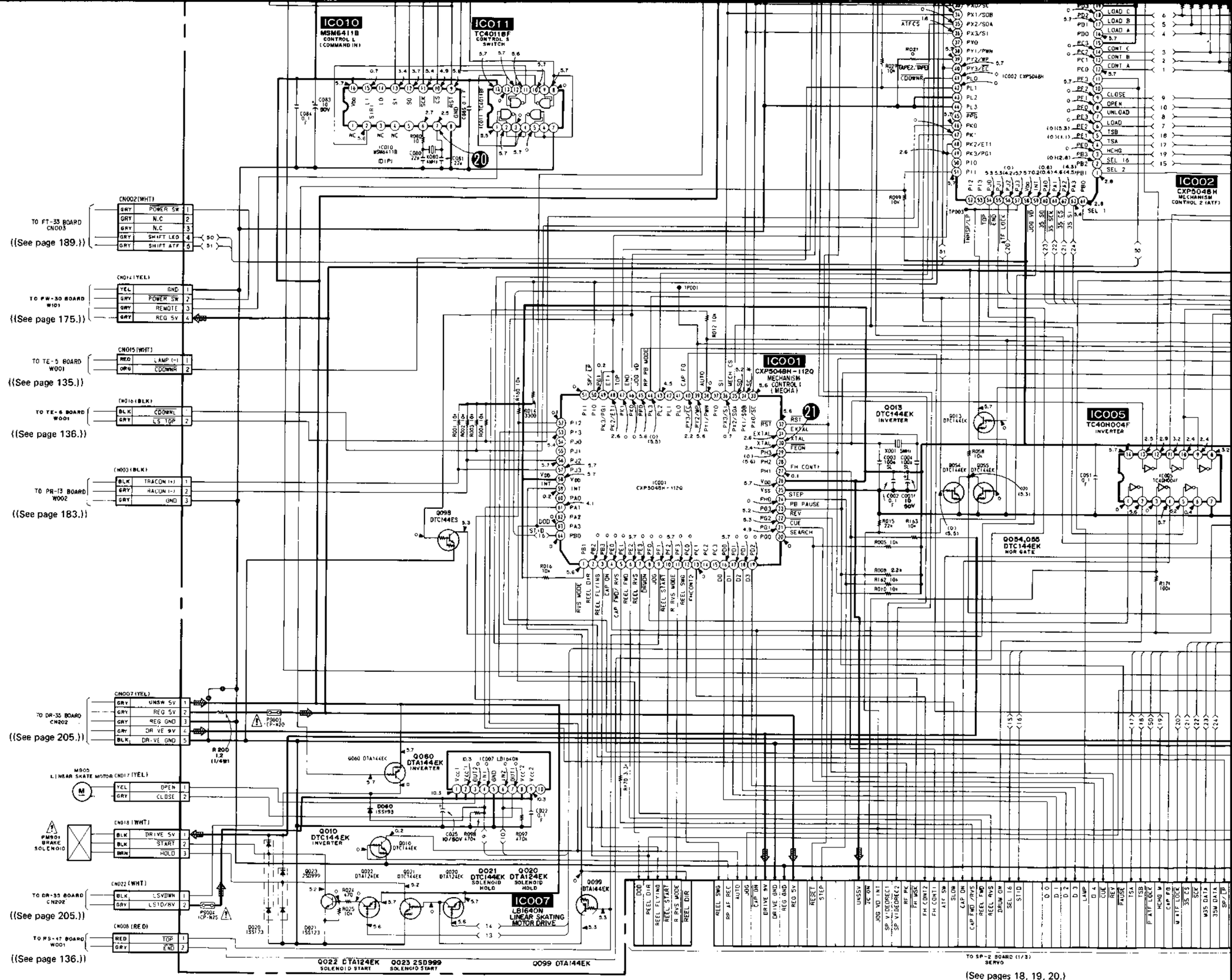
Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

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

SP-2 BOARD (SYSCON)

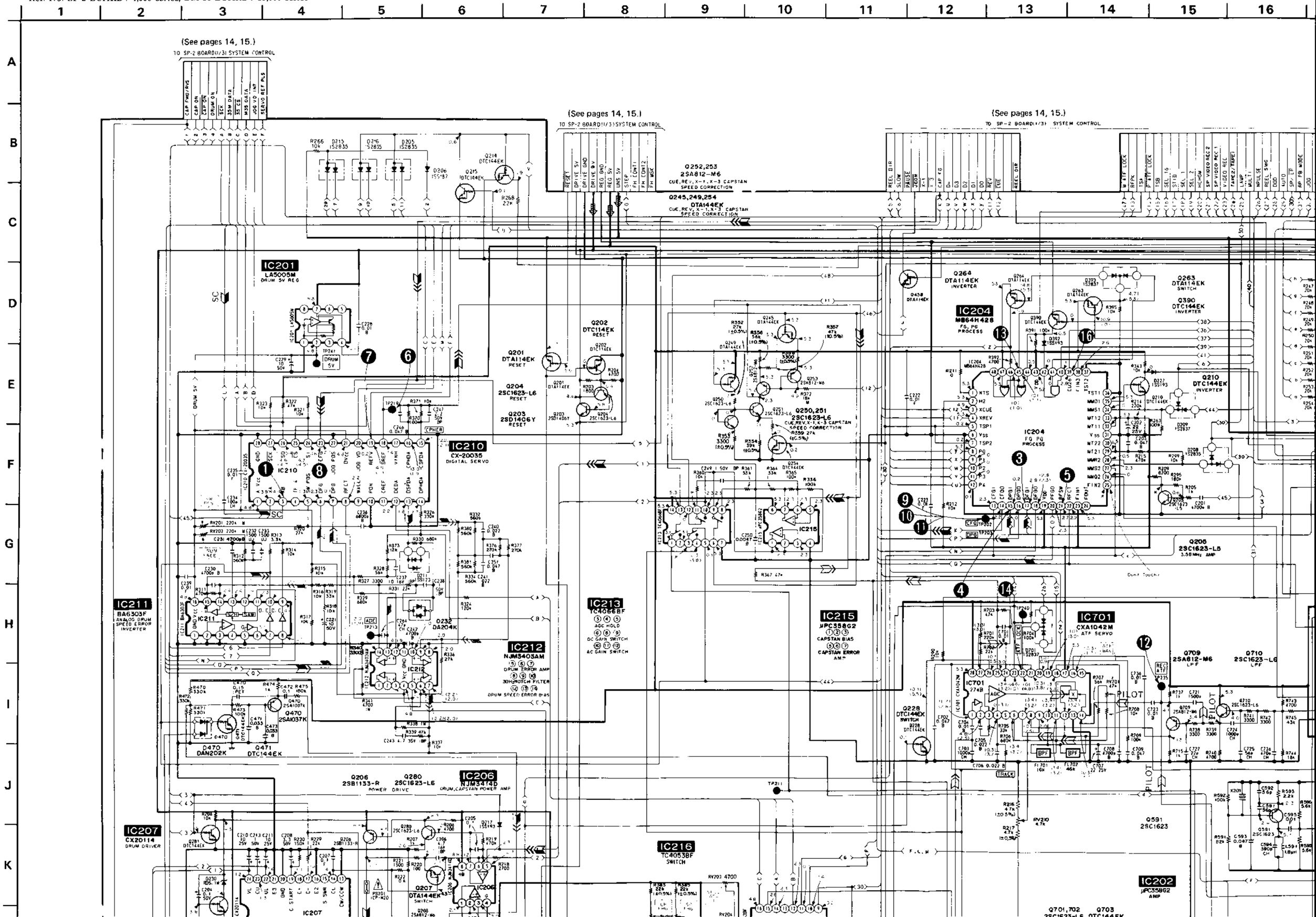


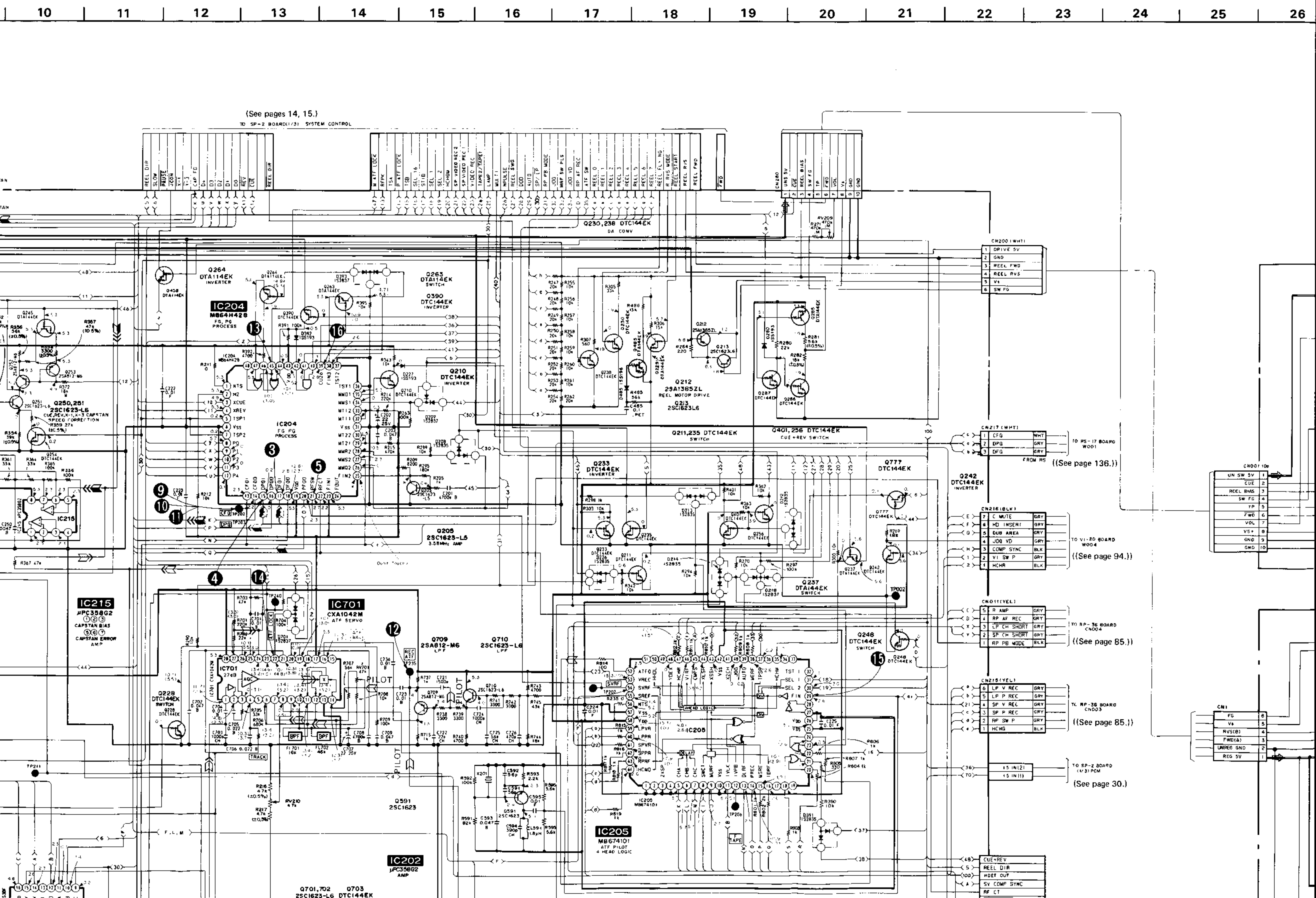

IC001
CXP5048H-1120
MECHANISM CONTROL (MECHA)
IC002
CXP5048H
MECHANISM CONTROL 2 (ATF)
IC003
μPD75104
MECHANISM CONTROL 3 (HMS)
IC005
TC40H004F
INVERTER
IC008
MB3763P
LOADING MOTOR DRIVE
IC009
MB3763PF
CONTROL MOTOR DRIVE
Q013
DTC144EK
INVERTER
Q054,055
DTC144EK
NOR GATE
Q011,012
DTC144EK
AND GATE
X002 4.19MHz
CN006(YEL)
REG GND
REC PROOF
TAPE2/TAPE1
CN004(BLK)
REG GND
T10/T13
CN005(BLK)
TFG 1
TFG 2
REG GND
SFG
REG 5V
CN019(RED)
LOAD
UNLOAD
CN020(RED)
CONT MI
CONT MR
MC
MB
MA
REG GND
CN021(RED)
REG GND
LC
LB
LA
CHAS GND
S801
RECOG SWITCH
S902
RECOG SWITCH L
M804
LOADING MOTOR
TO SP-2 BOARD (1/3) PCM
(See page 28.)
TO RS-17 BOARD
(See page 136.)
TO MS-4 BOARD
(See page 118.)
TO LS-9 BOARD
(See page 118.)
no mark LP REC/PB mode
( ) : LP REC mode
< > : LP PB mode
* : Impossible to measure the voltage at the marked points.
TO SP-2 BOARD (1/3) SERVO
(See pages 18, 19, 20.)
TO SP-2 BOARD (1/3) PCM
(See page 29.)
SP-2 BOARD (1/3) SYSTEM CONTROL


IC010
MSM6411B
CONTROL L (COMMAND IN)
IC011
TC4011BF
CONTROL R SWITCH
IC001
CXP5048H-112Q
MECHANISM CONTROL I (MECHA)
IC002
CXP5046H
MECHANISM CONTROL 2 (ATF)
IC005
TC40H004F
INVERTER
IC007
LB1640N
LINEAR SKATING MOTOR DRIVE
Q013 DTC144EK INVERTER
Q054,055 DTC144EK NOR GATE
Q060 DTA144EK INVERTER
Q010 DTC144EK INVERTER
Q021 DTC144EK SOLENOID HOLD
Q020 DTA124EK SOLENOID HOLD
Q098 DTC144ES
Q099 DTA144EK
Q022 DTA124EK SOLENOID START
Q023 2SD999 SOLENOID START
CN002 (WHT)
TO FT-33 BOARD CN003
(See page 189.)
CN014 (YEL)
TO PW-30 BOARD W101
(See page 175.)
CN015 (WHT)
TO TE-5 BOARD W001
(See page 135.)
CN016 (BLK)
TO TE-6 BOARD W001
(See page 136.)
CN003 (BLK)
TO PR-13 BOARD W002
(See page 183.)
CN007 (YEL)
TO DR-35 BOARD CN202
(See page 205.)
CN017 (YEL)
M905 LINEAR SKATE MOTOR
CN018 (WHT)
PM901 BRAKE SOLENOID
CN022 (WHT)
TO DR-35 BOARD CN202
(See page 205.)
CN008 (RED)
TO RS-47 BOARD W001
(See page 136.)
TO SP-2 BOARD (1/3) SERVO
(See pages 18, 19, 20.)

SP-2 (SERVO), DM-18 (MOTOR DRIVE) SCHEMATIC DIAGRAM

—Ref. No. SP-2 BOARD : 4,000 series, DM-18 BOARD : 15,000 series—



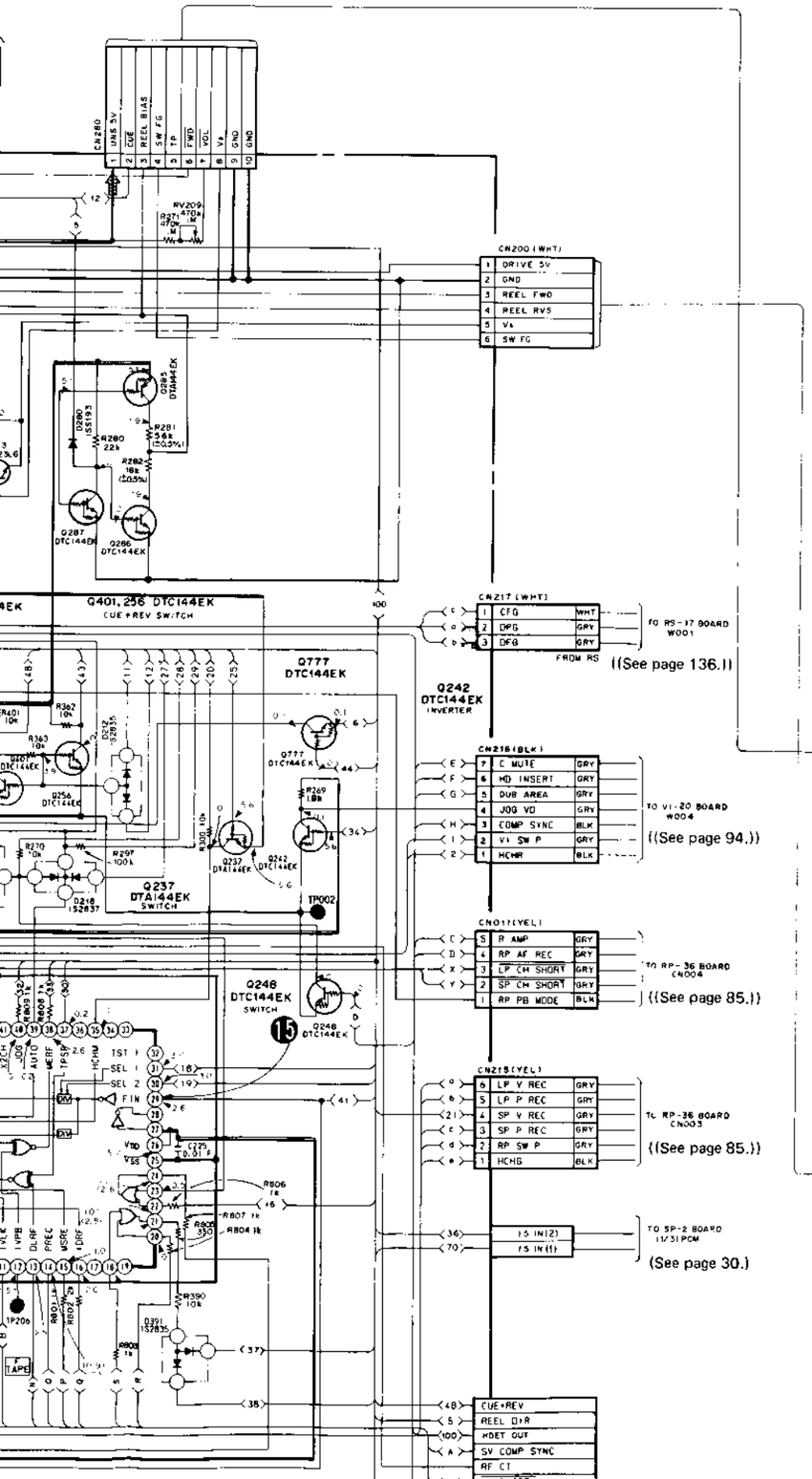

10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26
(See pages 14, 15.)
TO SP-2 BOARD(1/3) SYSTEM CONTROL
REEL DIR
SLOW
PAUSE
JCON
CAP FG
REV
CUE
M ATF LOCK
RFPK
TSA
P ATF LOCK
TSB
SEL 16
STID
SEL 1
SEL 2
HCHGM
SP VIDEO REC 2
SP VIDEO REC 1
VIDEO REC
TAPE 2/TAPE 1
LAMP
MULTI
HPULSE
REEL SWG
DOD
AUTO
SP/LP
RP PB MODE
JOG
MRF SW PLS
JOG VD
RP AF REC
ATF SW
REEL 0
REEL 1
REEL 2
REEL 3
REEL 4
REEL 5
REEL 6
REEL 7
REEL FL NG
R RVS MODE
REEL START
REEL RVS
REEL FWD
FWD
CN280
UNS 5V
CUE
REEL BIAS
SW FG
TP
FWD
VOL
V+
GND
GND
RV209 470k
Q230,238 DTC144EK
DA CONV
Q264 DTA114EK INVERTER
IC204 MB64H428 FG, PG PROCESS
Q263 DTA114EK SWITCH
Q390 DTC144EK INVERTER
Q210 DTC144EK INVERTER
Q212 2SA1385ZL REEL MOTOR DRIVE
Q213 2SC1623L6
Q211,235 DTC144EK SWITCH
Q401,256 DTC144EK CUE+REV SWITCH
Q250,251 2SC1623-L6 CUE,REV,X-1,X-3 CAPSTAN SPEED CORRECTION
IC204 FG PG PROCESS
Q205 2SC1623-L5 3.58MHz AMP
Q233 DTC144EK INVERTER
Q777 DTC144EK
Q242 DTC144EK INVERTER
Q237 DTA144EK SWITCH
TP002
IC215 μPC358G2
①②③ CAPSTAN BIAS
⑤⑥⑦ CAPSTAN ERROR AMP
IC701 CXA1042M ATF SERVO
Q709 2SA812-M6 LPF
Q710 2SC1623-L6 LPF
Q228 DTC144EK SWITCH
Q246 DTC144EK SWITCH
PILOT
BPF
TRACK
ATF LOCK
REC ATF
TP240
TP235
TP211
TP202
TP203
TP206
IC205 MB67410l ATF PILOT 4 HEAD LOGIC
HEAD LOGIC
DELAY
TAPE
Q591 2SC1623
IC202 μPC358G2 AMP
Q701,702 2SC1623-L6
Q703 DTC144EK
CN200 (WHT)
1 DRIVE 5V
2 GND
3 REEL FWD
4 REEL RVS
5 V+
6 SW FG
CN217 (WHT)
1 CFG WHT
2 DPG GRY
3 DFG GRY
FROM RS
TO RS-17 BOARD W001
((See page 136.))
CN216 (BLK)
7 C MUTE GRY
6 HD INSERT GRY
5 DUB AREA GRY
4 JOG VD GRY
3 COMP SYNC BLK
2 VI SW P GRY
1 HCHR BLK
TO VI-20 BOARD W004
((See page 94.))
CN011 (YEL)
5 R AMP GRY
4 RP AF REC GRY
3 LP CH SHORT GRY
2 SP CH SHORT GRY
1 RP PB MODE BLK
TO RP-36 BOARD CN004
((See page 85.))
CN215 (YEL)
6 LP V REC GRY
5 LP P REC GRY
4 SP V REC GRY
3 SP P REC GRY
2 RP SW P GRY
1 HCHG BLK
TO RP-36 BOARD CN003
((See page 85.))
15 IN(2)
15 IN(1)
TO SP-2 BOARD (1/3) PCM
(See page 30.)
CUE+REV
REEL DIR
HDET OUT
SV COMP SYNC
RF CT
CN001 10p
1 UN SW 5V
2 CUE
3 REEL BIAS
4 SW FG
5 TP
6 FWD
7 VOL
8 VS+
9 GND
10 GND
CN1
6 FG
5 V+
4 RVS(B)
3 FWD(A)
2 UNREG GND
1 REG 5V

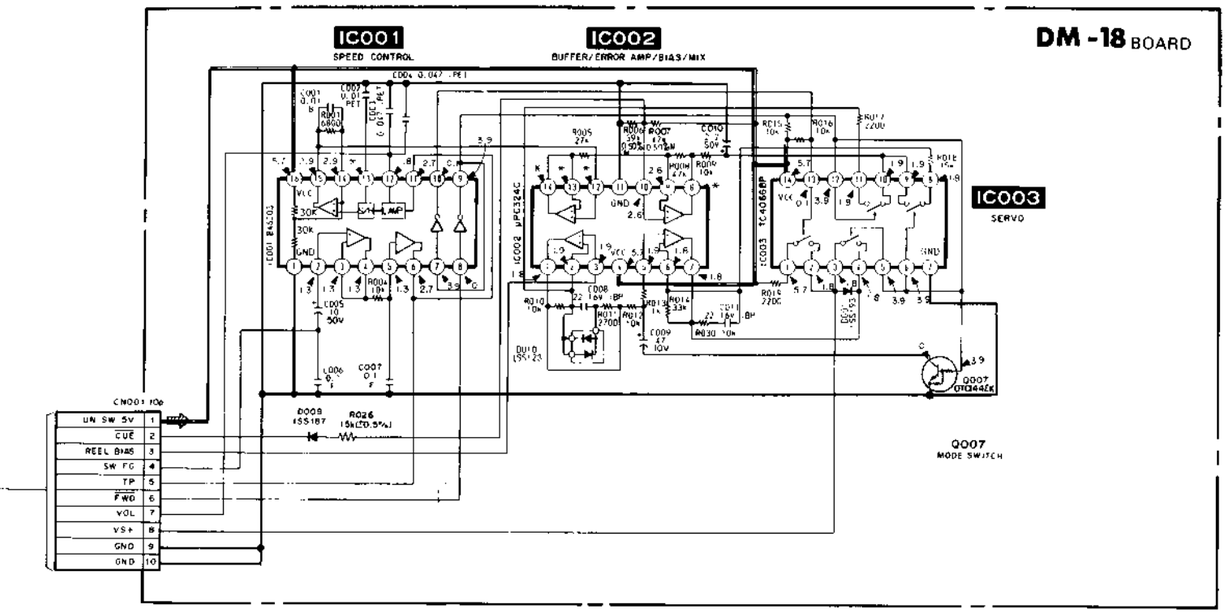
Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

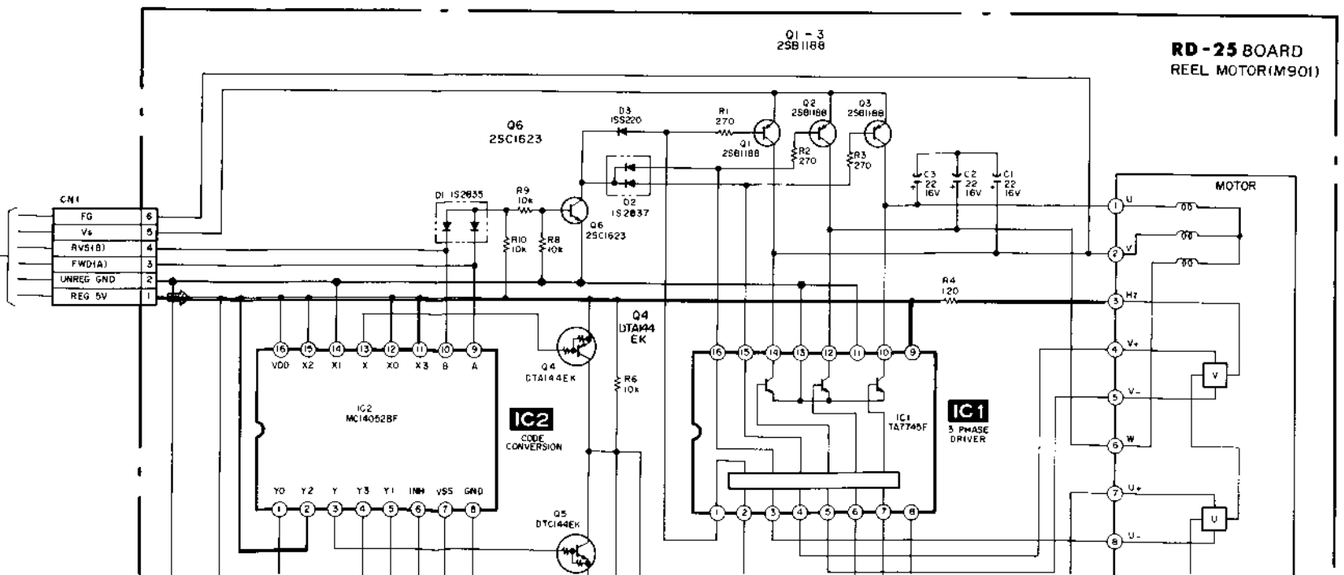
When indicating parts by reference number, please include the board name.

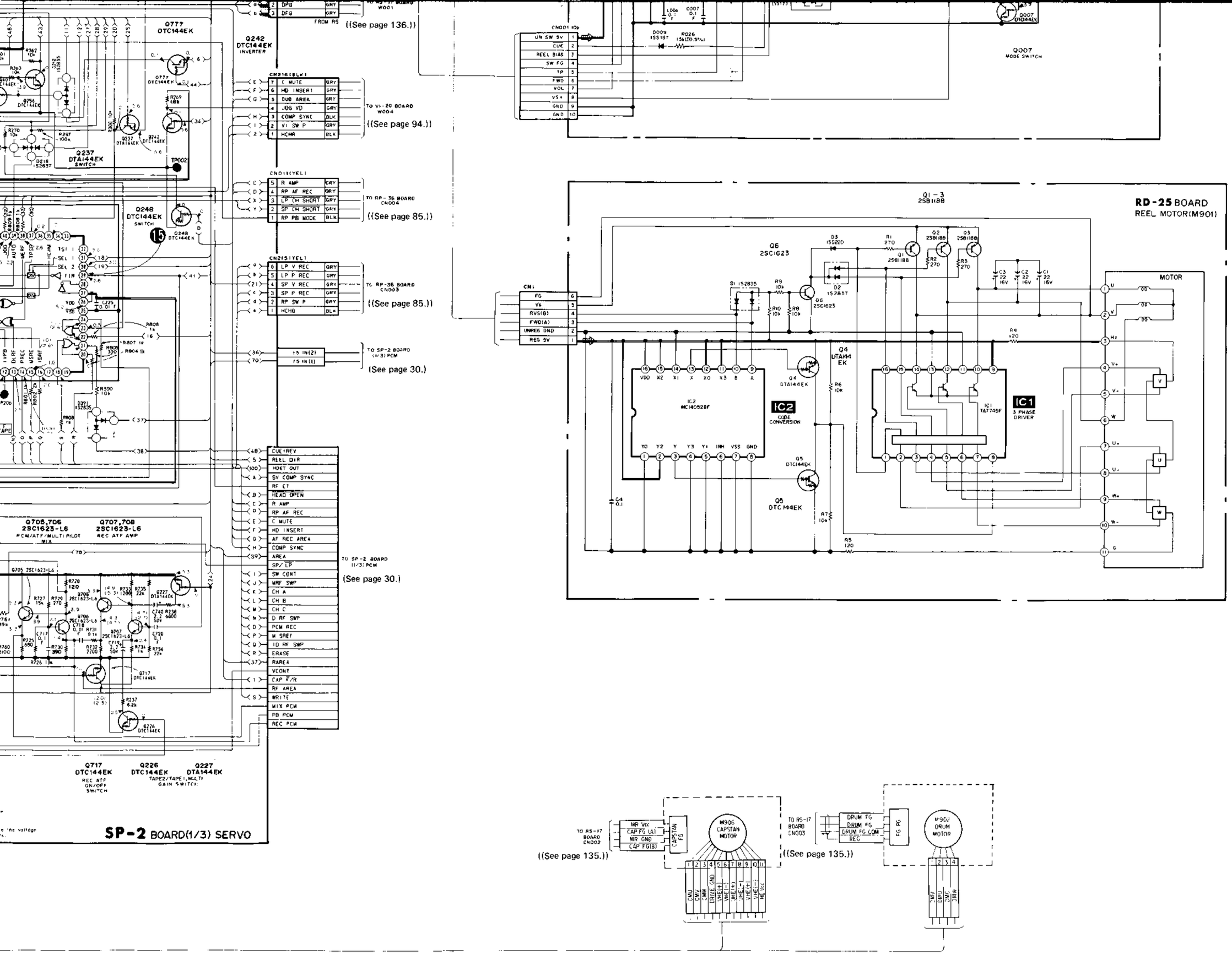
Signal path

	REC	REC/PB	PB
Capstan speed servo		▷	
Capstan phase servo	▶»		▷»
Capstan servo (speed and phase)		▶»	
Ref. signal	▶	▷	▷



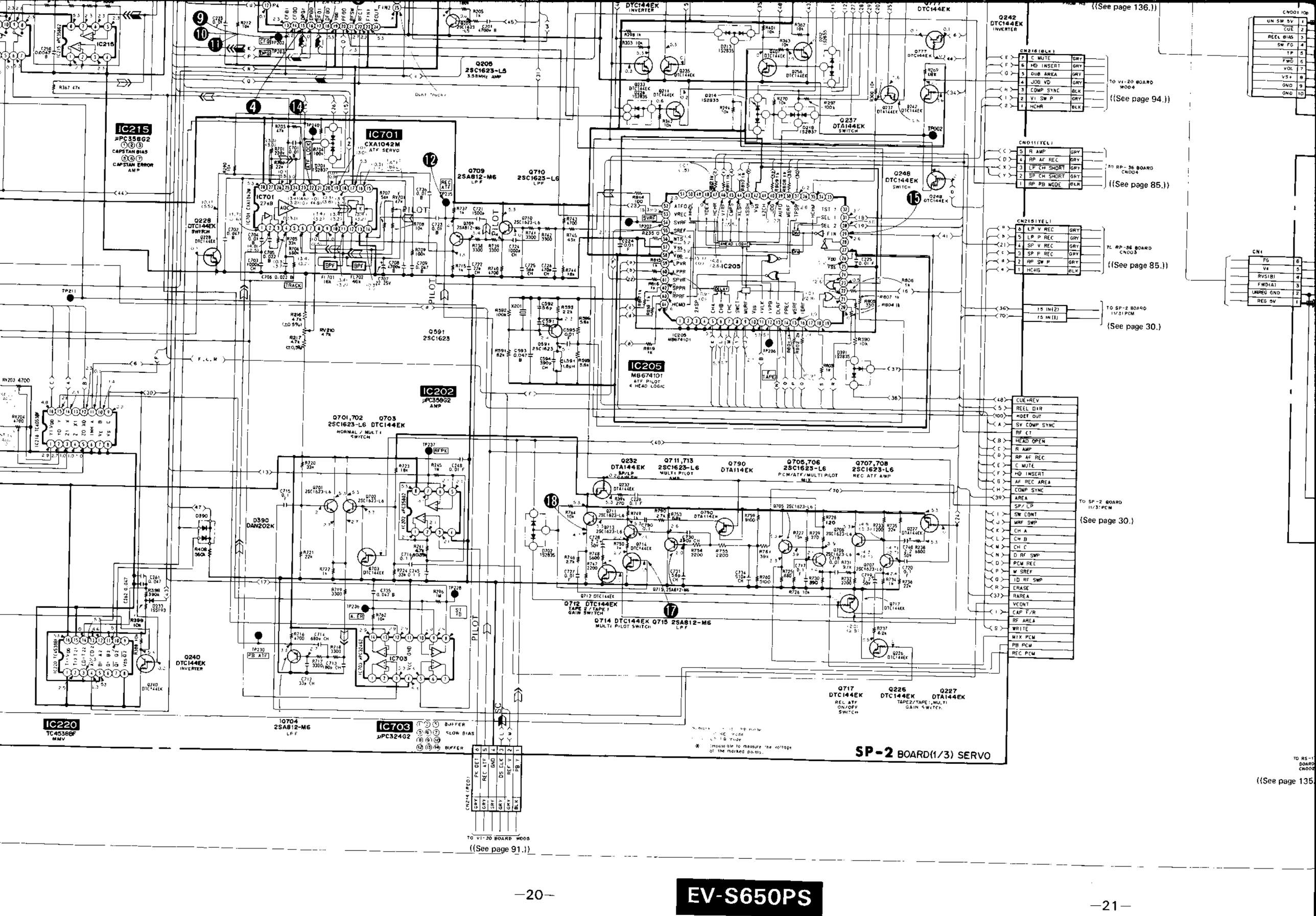


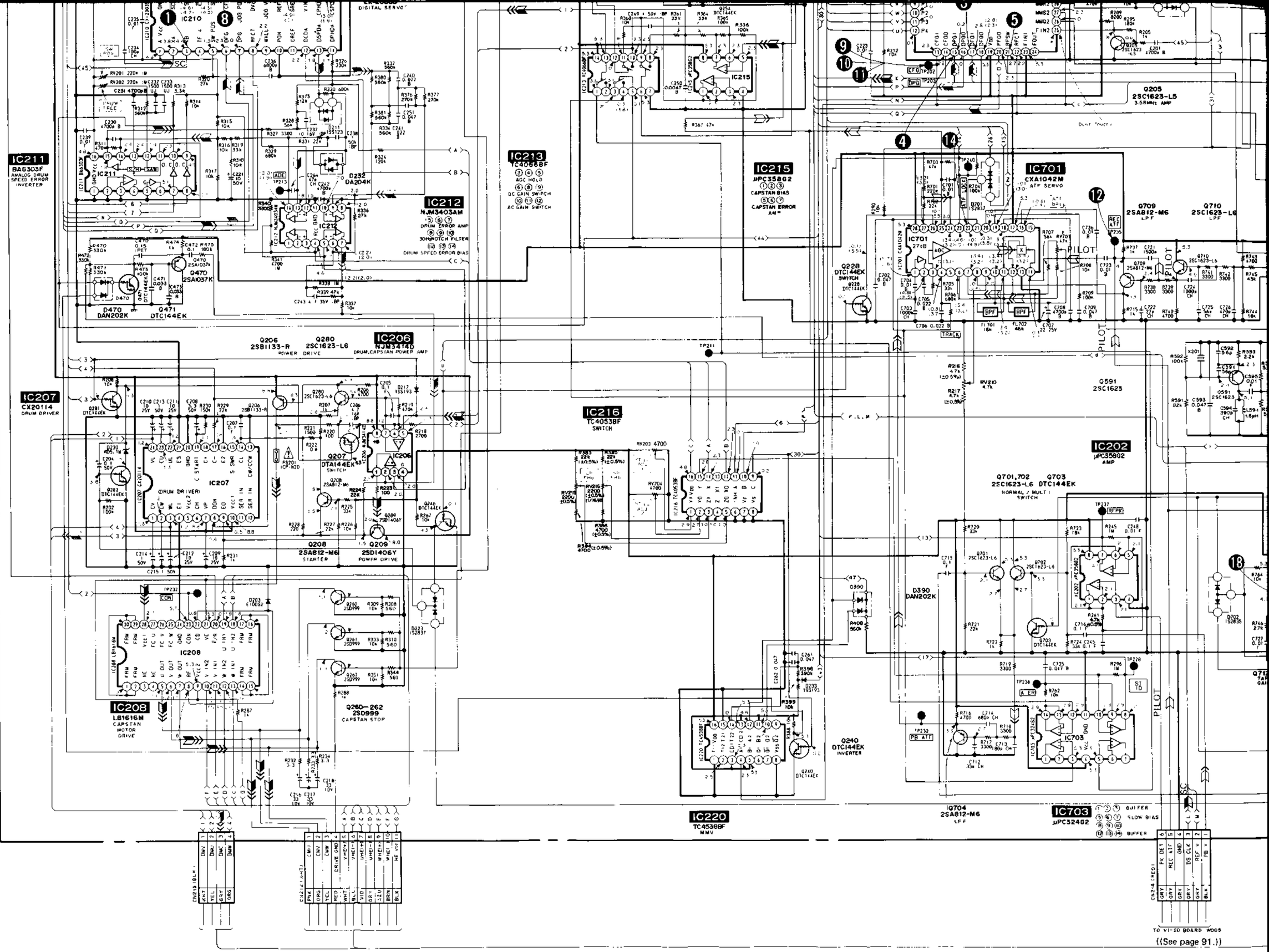



Q777 DTC144EK
Q242 DTC144EK INVERTER
Q237 DTA144EK SWITCH
Q248 DTC144EK SWITCH
CN216(BLK)
CN215(YEL)
CN213(YEL)
TO RP-36 BOARD CN004
TO RP-36 BOARD CN003
TO SP-2 BOARD (1/3) PCM
TO VI-20 BOARD W004
FROM RS W001
(See page 136.)
(See page 94.)
(See page 85.)
(See page 30.)
Q705,706 2SC1623-L6 PCM/ATF/MULTI PILOT MIX
Q707,708 2SC1623-L6 REC ATF AMP
Q717 DTC144EK REC ATF ON/OFF SWITCH
Q226 DTC144EK TAPE2/TAPE1,MULTI GAIN SWITCH
Q227 DTA144EK
SP-2 BOARD(1/3) SERVO
CUE+REV
REEL DIR
HDET OUT
SV COMP SYNC
RF E1
HEAD OPEN
R AMP
RP AF REC
C MUTE
HD INSERT
AF REC AREA
COMP SYNC
AREA
SP/LP
SW CONT
WRF SWP
CH A
CH B
CH C
D RF SWP
PCM REC
M SREF
ID RF SWP
ERASE
RAREA
VCONT
CAP F/R
RF AREA
WRITE
MIX PCM
PB PCM
REC PCM

Q007 DTC144EK
MODE SWITCH
CN001
UN SW 5V
CUE
REEL BIAS
SW FG
TP
FWD
VOL
VSS
GND
GND
RD-25 BOARD
REEL MOTOR(M901)
Q1 - 3 2SB1188
Q6 2SC1623
Q4 DTA144EK
Q5 DTC144EK
IC1 TA7745F 3 PHASE DRIVER
IC2 MC14052BF CODE CONVERSION
MOTOR
CN1
FG
Vs
RVS(B)
FWD(A)
UNREG GND
REG 5V

TO RS-17 BOARD CN002
MR Vcc
CAP FG (A)
MR GND
CAP FG(B)
CAPSTAN FG
M906 CAPSTAN MOTOR
(See page 135.)
TO RS-17 BOARD CN003
DRUM FG
DRUM FG
DRUM FG COM
REG
FG PG
M902 DRUM MOTOR
(See page 135.)


IC215
μPC358G2
CAPSTAN BIAS
CAPSTAN ERROR AMP
IC701
CXA1042M
ATF SERVO
IC205
M6674101
ATF PILOT 4 HEAD LOGIC
IC202
μPC358G2
AMP
IC220
TC4538BF
MMV
IC703
μPC324G2
BUFFER
SLOW BIAS
BUFFER
Q205
2SC1623-L6
3.58MHz AMP
Q591
2SC1623
Q701,702 Q703
2SC1623-L6 DTC144EK
NORMAL / MULTI SWITCH
Q709
2SA812-M6
LPF
Q710
2SC1623-L6
LPF
Q704
2SA812-M6
LPF
Q228
DTC144EK
SWITCH
Q240
DTC144EK
INVERTER
Q242
DTC144EK
INVERTER
Q248
DTC144EK
SWITCH
Q237
DTA144EK
SWITCH
Q232
DTA144EK
Q711,713
2SC1623-L6
MULTI PILOT AMP
Q790
DTA114EK
Q705,706
2SC1623-L6
PCM/ATF/MULTI PILOT MIX
Q707,708
2SC1623-L6
REC ATF AMP
Q712 DTC144EK
TAPE 2 / TAPE 1 GAIN SWITCH
Q714 DTC144EK Q715 2SA812-M6
MULTI PILOT SWITCH
Q717
DTC144EK
REC ATF ON/OFF SWITCH
Q226
DTC144EK
TAPE2/TAPE1 MULTI GAIN SWITCH
Q227
DTA144EK
D390
DAN202K
PILOT
TO VI-20 BOARD W005
((See page 91.))
TO SP-2 BOARD (1/3) PCM
(See page 30.)
TO RP-36 BOARD CN004
((See page 85.))
TO RP-36 BOARD CN003
((See page 85.))
TO VI-20 BOARD W004
((See page 94.))
((See page 136.))
SP-2 BOARD(1/3) SERVO
* : Impossible to measure the voltage of the marked points.

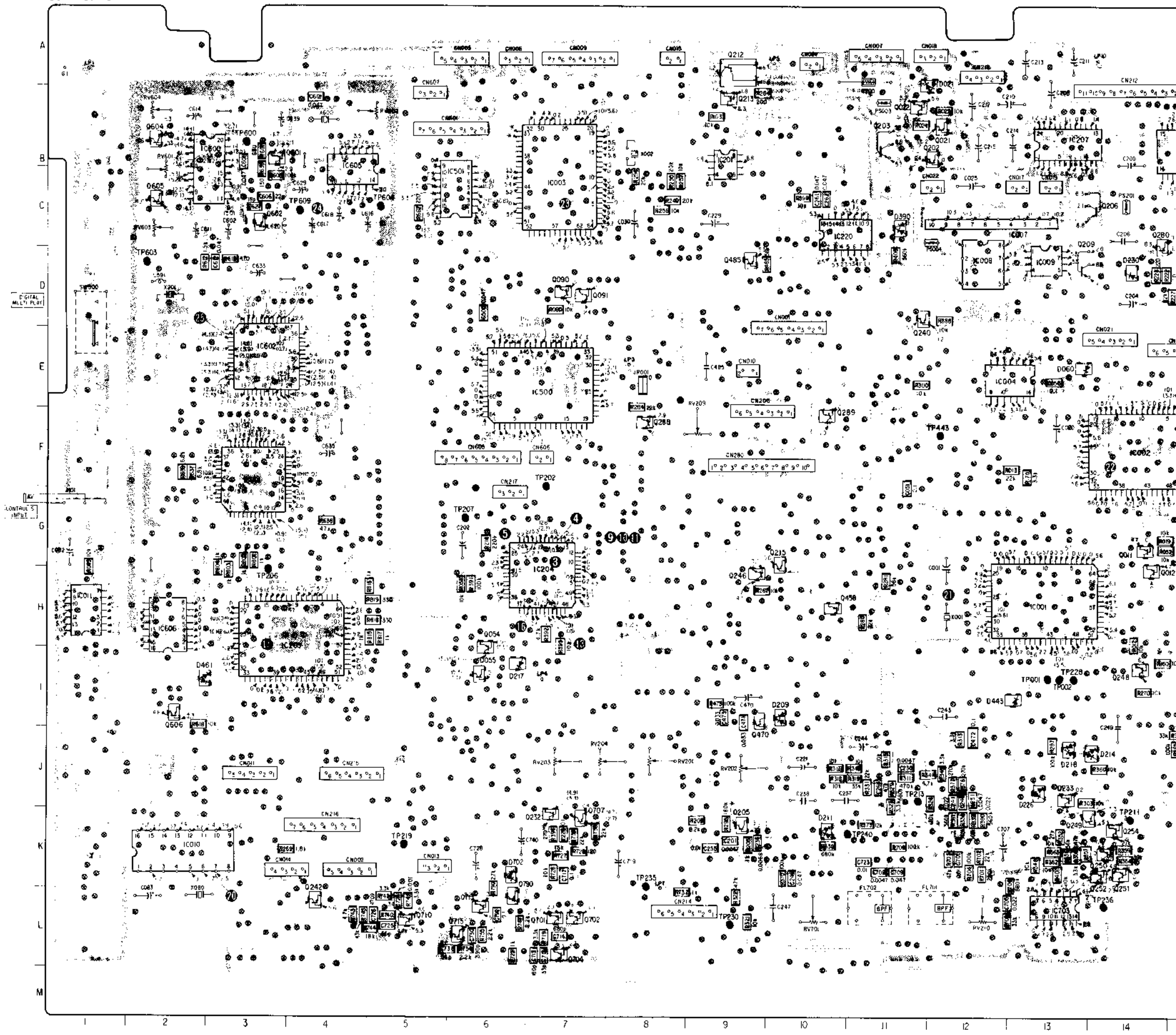

IC211
BA6303F
ANALOG DRUM SPEED ERROR INVERTER
IC210
DIGITAL SERVO
IC212
NJM3403AM
DRUM ERROR AMP
30Hz NOTCH FILTER
DRUM SPEED ERROR BIAS
IC213
TC40668F
AGC HOLD
DC GAIN SWITCH
AC GAIN SWITCH
IC215
μPC3586Z
CAPSTAN BIAS
CAPSTAN ERROR AMP
IC701
CXA1042M
ATF SERVO
IC206
NJM3414D
DRUM,CAPSTAN POWER AMP
Q206
2SB1133-R
POWER DRIVE
Q280
2SC1623-L6
IC207
CX20114
DRUM DRIVER
IC216
TC40538F
SWITCH
IC202
μPC359G2
AMP
Q205
2SC1623-L5
3.58MHz AMP
Q709
2SA812-M6
LPF
Q710
2SC1623-L6
LPF
Q591
2SC1623
Q701,702
Q703
2SC1623-L6
DTC144EK
NORMAL / MULTI SWITCH
Q228
DTC144EK
SWITCH
Q207
DTA144EK
SWITCH
Q208
2SA812-M6
STARTER
Q209
2SD1406Y
POWER DRIVE
IC208
LB1616M
CAPSTAN MOTOR DRIVE
Q260~262
2SD999
CAPSTAN STOP
Q240
DTC144EK
INVERTER
IC220
TC4538BF
MMV
IC703
μPC324G2
BUFFER
SLOW BIAS
BUFFER
Q704
2SA812-M6
LPF
D390
DAN202K
D470
DAN202K
Q470
2SA1037K
Q471
DTC144EK
D232
DA204K
TO VI-20 BOARD
(See page 91.)

CN001	D-10	D020	A-21	D601	G-30	IC603	F-30	Q209	C-13	Q282	D-18	Q790
CN002	K-4	D021	A-12	D603	G-30	IC604	E-29	Q210	G-26	Q285	H-21	
CN003	H-15	D060	E-13	D604	F-30	IC605	B-4	Q211	J-20	Q286	H-23	RV201
CN004	A-10	D082	G-31	D701	J-22	IC606	H-2	Q212	A-9	Q287	H-22	RV202
CN005	A-6	D099	B-26	D702	K-6	IC701	K-21	Q213	B-9	Q390	H-28	RV203
CN006	A-6	D203	B-18			IC703	L-13	Q214	G-22	Q401	K-20	RV204
CN007	A-11	D205	H-22	IC001	H-13			Q215	G-10	Q458	H-10	RV209
CN008	G-15	D206	H-21	IC002	F-14	J101	G-1	Q226	K-25	Q470	I-9	RV210
CN009	A-7	D208	H-25	IC003	C-7			Q227	K-26	Q471	J-23	RV215
CN010	E-9	D209	I-10	IC004	E-12	Q010	H-19	Q228	J-22	Q485	D-9	RV216
CN011	J-3	D211	K-10	IC005	F-22	Q012	G-14	Q229	F-19	Q500	E-26	RV601
CN012	M-30	D212	K-20	IC007	C-13	Q013	G-14	Q230	E-20	Q501	F-26	RV602
CN013	K-5	D213	H-27	IC008	D-12	Q014	D-26	Q232	K-7	Q502	E-25	RV603
CN014	K-3	D214	J-14	IC009	D-13	Q015	D-26	Q233	J-13	Q591	E-30	RV604
CN015	A-8	D215	I-20	IC010	K-2	Q020	B-21	Q235	H-27	Q601	B-4	RV701
CN016	H-15	D216	H-24	IC011	H-1	Q021	B-12	Q237	B-24	Q602	C-3	
CN017	C-13	D217	I-6	IC201	B-9	Q022	B-11	Q238	G-19	Q604	B-2	TP001
CN018	A-11	D218	J-13	IC202	I-17	Q023	B-21	Q240	E-11	Q605	C-2	TP002
CN019	C-13	D223	H-23	IC204	G-7	Q054	H-6	Q242	K-4	Q606	I-2	TP003
CN020	E-15	D226	J-13	IC205	H-4	Q055	I-6	Q245	K-19	Q701	L-7	TP202
CN021	E-14	D227	H-27	IC206	D-15	Q060	F-19	Q246	G-9	Q702	L-7	TP206
CN022	C-11	D230	D-14	IC207	B-13	Q080	J-31	Q248	I-14	Q703	L-25	TP207
CN200	E-9	D232	J-23	IC208	B-15	Q085	G-31	Q249	K-13	Q704	L-7	TP213
CN212	A-14	D233	C-22	IC210	K-23	Q086	H-31	Q250	K-14	Q705	K-25	TP219
CN213	A-12	D280	H-22	IC211	I-21	Q090	D-7	Q251	K-14	Q706	K-26	TP228
CN214	L-8	D390	B-13	IC212	J-21	Q091	D-7	Q252	K-14	Q707	K-7	TP236
CN215	J-4	D391	G-29	IC213	J-10	Q098	E-15	Q253	K-19	Q708	K-26	TP232
CN216	k-4	D392	H-26	IC215	I-18	Q099	G-17	Q254	K-14	Q709	L-25	TP235
CN217	F-6	D393	H-26	IC216	I-25	Q201	B-21	Q256	K-20	Q710	L-5	TP236
CN280	F-9	D443	I-12	IC220	B-10	Q202	B-11	Q260	B-17	Q711	L-27	TP237
CN601	B-6	D461	I-2	IC500	E-7	Q203	B-11	Q261	B-18	Q712	K-27	TP240
CN603	L-28	D470	I-23	IC501	C-6	Q204	C-21	Q262	B-18	Q713	L-6	TP443
CN605	F-6	D485	D-23	IC502	I-31	Q205	K-9	Q263	G-25	Q714	K-27	TP603
CN606	F-7	D501	E-26	IC600	B-3	Q206	C-14	Q264	H-25	Q715	L-6	TP604
CN607	A-5	D502	G-28	IC601	F-3	Q207	C-18	Q280	C-14	Q717	J-25	TP609
		D600	B-30	IC602	E-3	Q208	D-15	Q281	D-19	Q777	J-20	

SP-2 (SERVO), DM-18 (MOTOR DRIVE) PRINTED WIRING BOARDS

—Ref. No. SP-2 BOARD : 4,000 series, DM-18 BOARD : 15,000 series—

SP-2 BOARD (COMPONENT SIDE)



SERVO(1) SERVO(1)

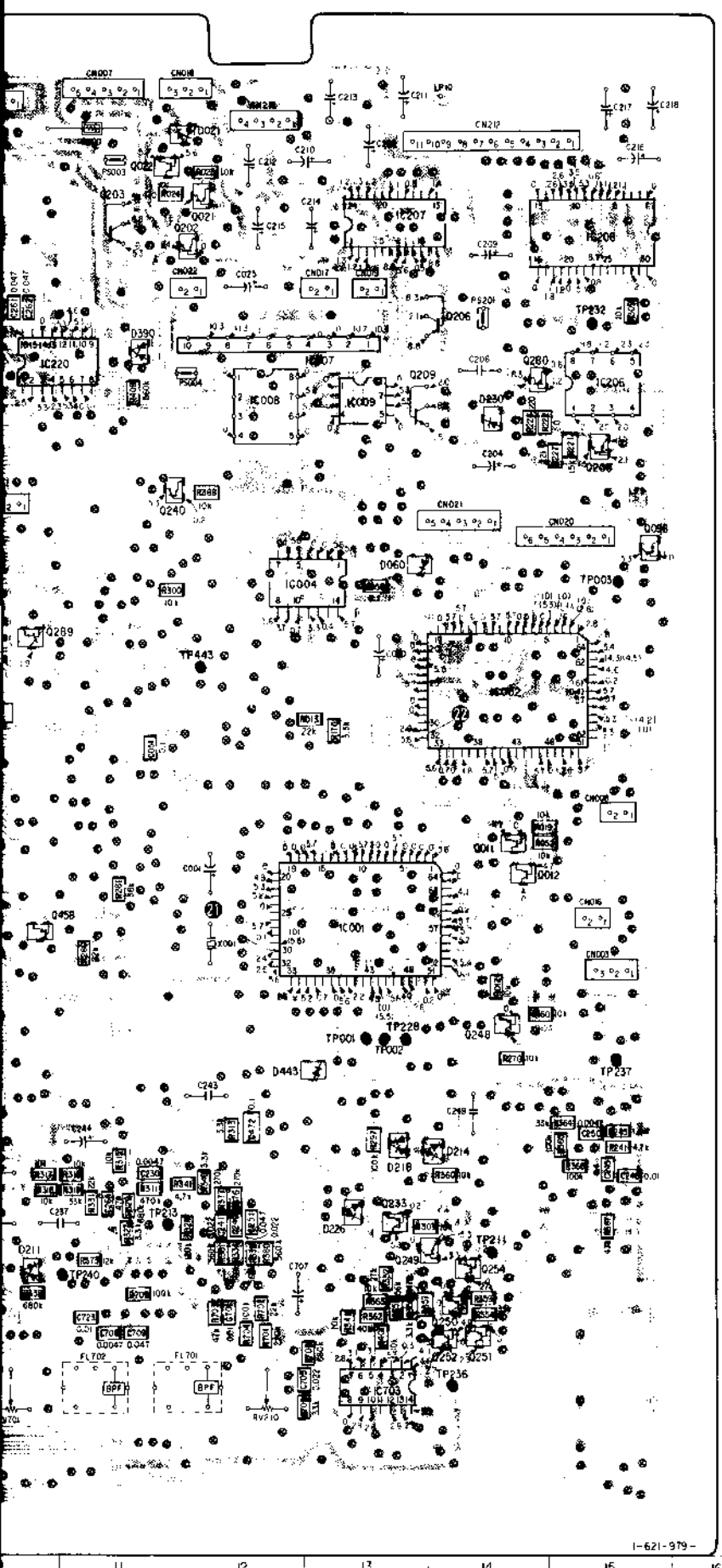
IC603	F-30	Q209	C-13	Q282	D-18	Q790	K-6
IC604	E-29	Q210	G-26	Q285	H-21		
IC605	B-4	Q211	J-20	Q286	H-23	RV201	J-8
IC606	H-2	Q212	A-9	Q287	H-22	RV202	J-9
IC701	K-21	Q213	B-9	Q390	H-28	RV203	J-7
IC703	L-13	Q214	G-22	Q401	K-20	RV204	J-7
		Q215	G-10	Q458	H-10	RV209	E-9
J101	G-1	Q226	K-25	Q470	I-9	RV210	L-12
		Q227	K-26	Q471	J-23	RV215	K-8
Q010	H-19	Q228	J-22	Q485	D-9	RV216	J-8
Q012	G-14	Q229	F-19	Q500	E-26	RV601	B-2
Q013	G-14	Q230	E-20	Q501	F-26	RV602	B-5
Q014	D-26	Q232	K-7	Q502	E-25	RV603	C-2
Q015	D-26	Q233	J-13	Q591	E-30	RV604	B-2
Q020	B-21	Q235	H-27	Q601	B-4	RV701	L-10
Q021	B-12	Q237	B-24	Q602	C-3		
Q022	B-11	Q238	G-19	Q604	B-2	TP001	I-13
Q023	B-21	Q240	E-11	Q605	C-2	TP002	I-13
Q054	H-6	Q242	K-4	Q606	I-2	TP003	E-15
Q055	I-6	Q245	K-19	Q701	L-7	TP202	F-7
Q060	F-19	Q246	G-9	Q702	L-7	TP206	H-3
Q080	J-31	Q248	I-14	Q703	L-25	TP207	G-6
Q085	G-31	Q249	K-13	Q704	L-7	TP213	J-11
Q086	H-31	Q250	K-14	Q705	K-25	TP219	K-5
Q090	D-7	Q251	K-14	Q706	K-26	TP228	I-13
Q091	D-7	Q252	K-14	Q707	K-7	TP236	L-9
Q098	E-15	Q253	K-19	Q708	K-26	TP232	C-15
Q099	G-17	Q254	K-14	Q709	L-25	TP235	K-8
Q201	B-21	Q256	K-20	Q710	L-5	TP236	L-14
Q202	B-11	Q260	B-17	Q711	L-27	TP237	I-15
Q203	B-11	Q261	B-18	Q712	K-27	TP240	K-11
Q204	C-21	Q262	B-18	Q713	L-6	TP443	F-12
Q205	K-9	Q263	G-25	Q714	K-27	TP603	D-2
Q206	C-14	Q264	H-25	Q715	L-6	TP604	C-5
Q207	C-18	Q280	C-14	Q717	J-25	TP609	C-4
Q208	D-15	Q281	D-19	Q777	J-20		

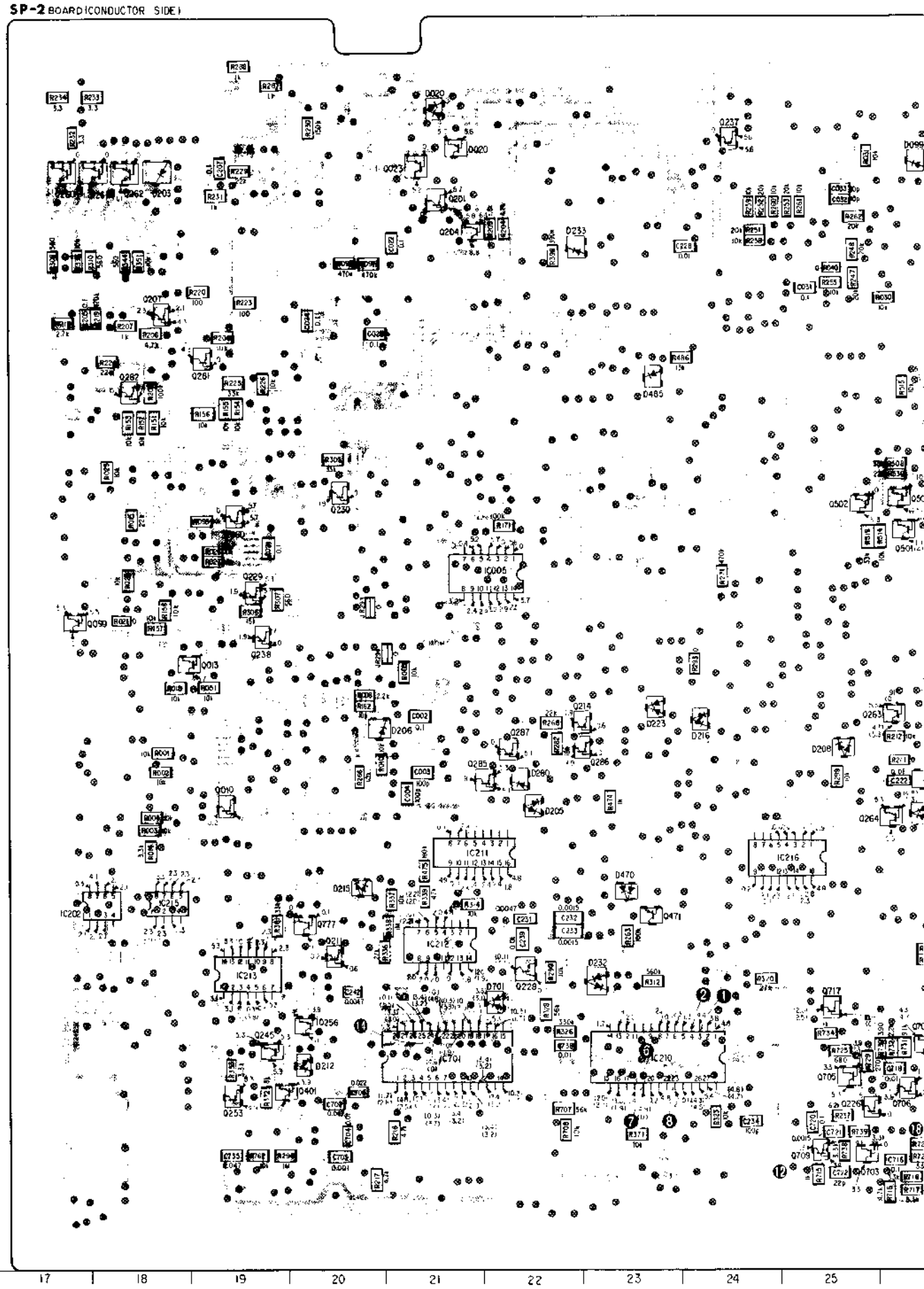
Note:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/10W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- : panel designation.
- : internal component.

- : adjustment for
- B + Line
- : IN/OUT direction of
- Circled numbers refer to wav
- Voltages are dc between gro
- Readings are taken with a col
- Readings are taken with a d
- Control variation
- In case of page reference, pay
  ( ): Page of present S
  (( )): Page for SERVIC

SP-2 BOARD (CONDUCTOR SIDE)



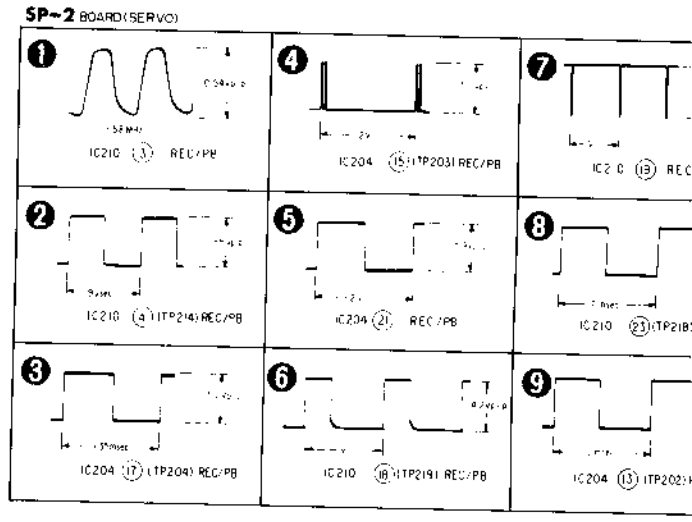


Note:

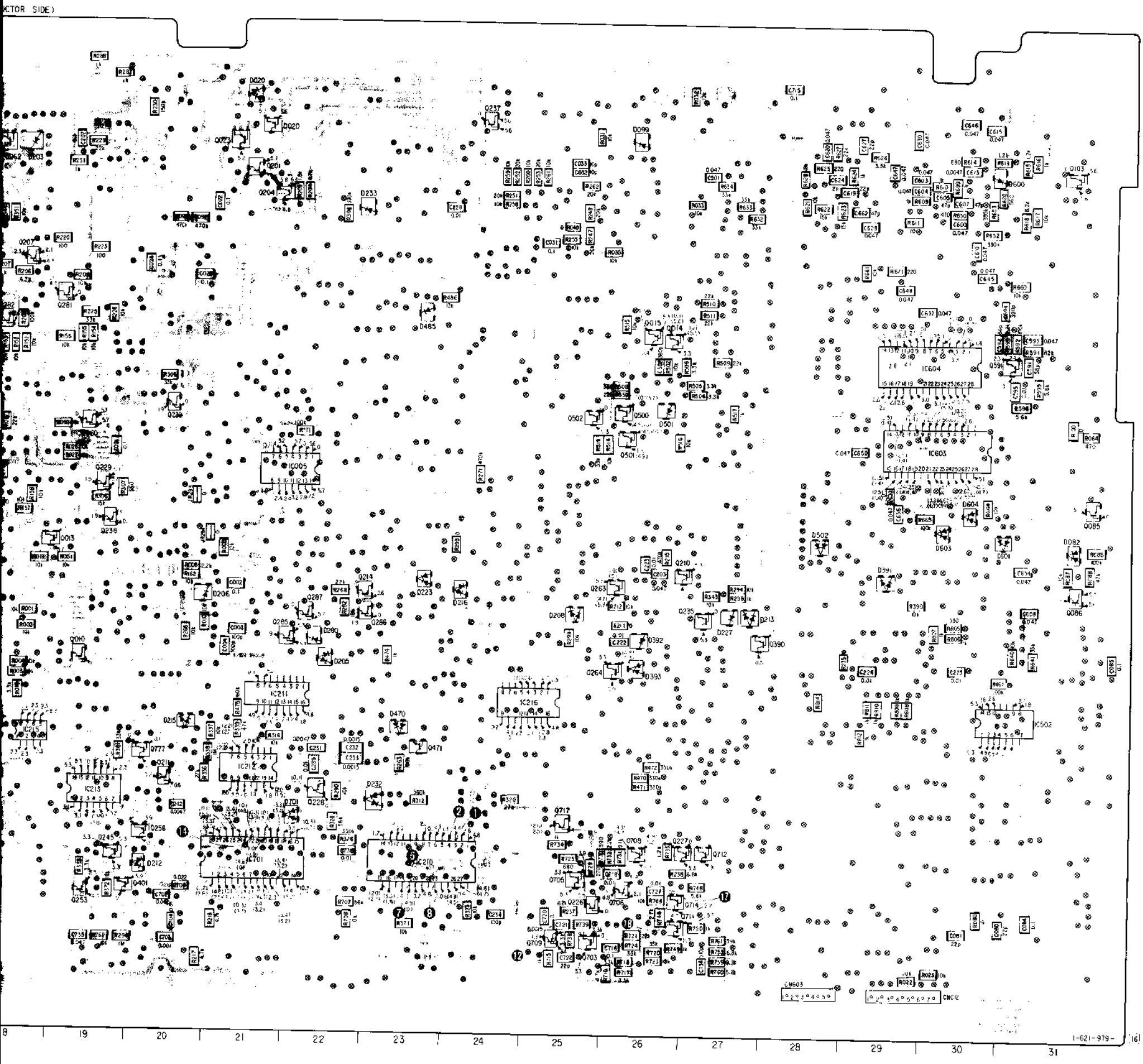
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/10W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- : panel designation.
- : internal component.

- ( ) : Page of present SUPPLEMENT-1.
- (( )) : Page for SERVICE MANUAL unit.
- —— : B + Line.
- ⇨ IN/OUT direction of ( ) B line.
- Circled numbers refer to waveforms.
- Voltages are dc, between ground and measurement points.
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC10M Ω).
- Voltage variations may be noted due to normal production tolerances.
- In case of page reference, pay attention to the following.

SP-2 BOARD (SERVO)



(CTOR SIDE)



CN001 A-2

D001 C-4
D009 A-1
D010 B-1

IC001 B-3
IC002 C-2
IC003 C-4

Q007 B-5

Note:

- Circle
- Digital
  Refer
  SP-2 b
  Q021,
  Q099,
  Q227,
  Q240,
  Q264,
  Q471,
  Q606,
  DM-18

Caution
Pattern
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Parts fa
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When i
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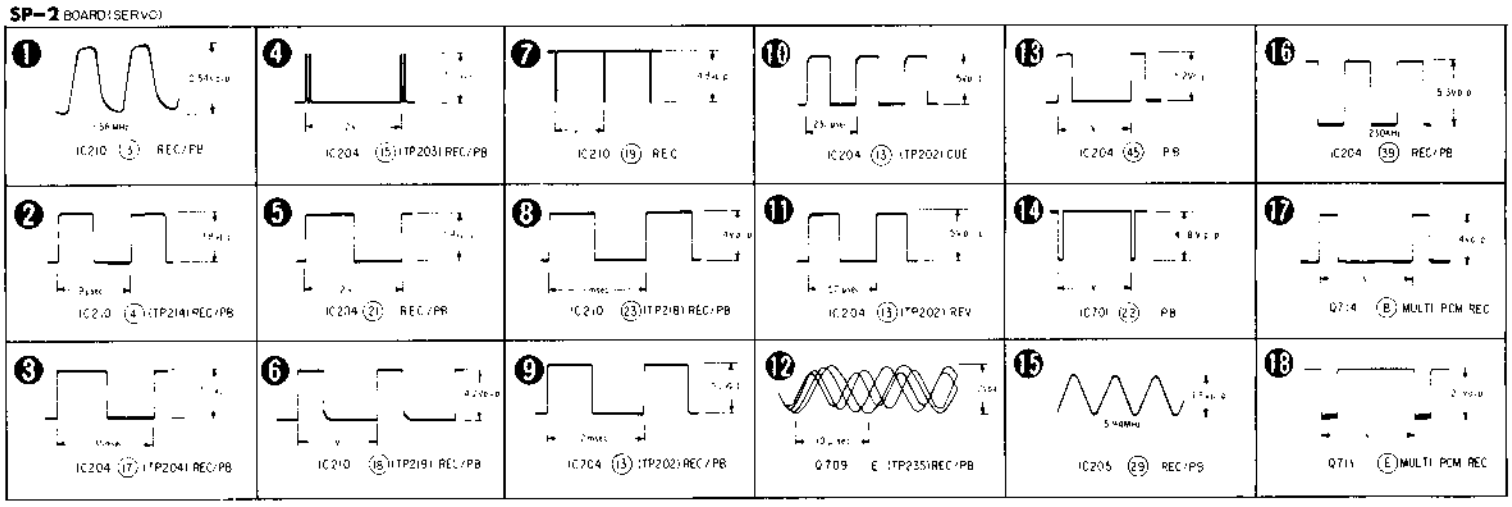
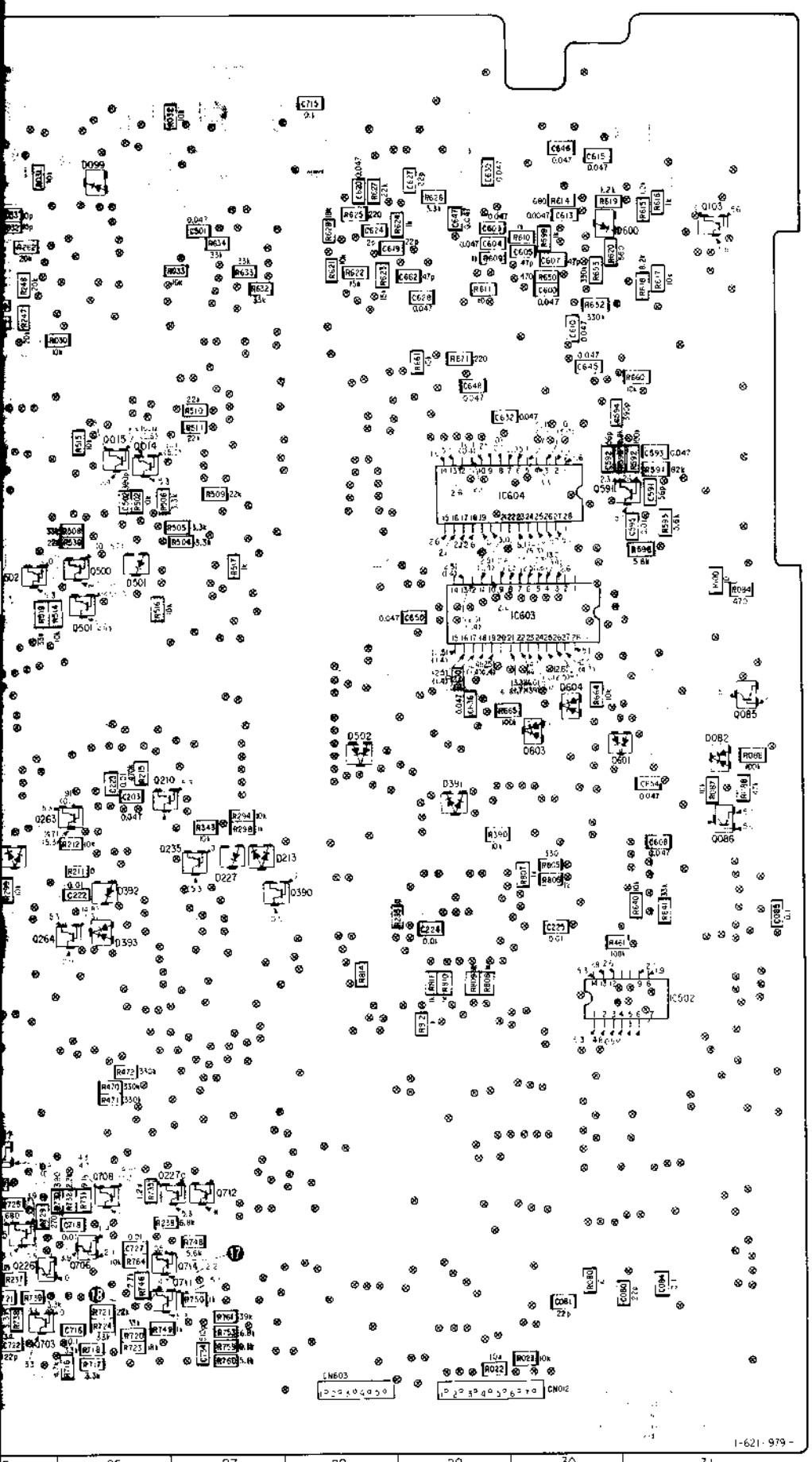
direction of (+, –) B line.
s refer to waveforms.
between ground and measurement points.
ken with a color-bar signal input.
ken with a digital multimeter (DC10M Ω)
ons may be noted due to normal production

reference, pay attention to the following.
e of present SUPPLEMENT-1.
e for SERVICE MANUAL unit.

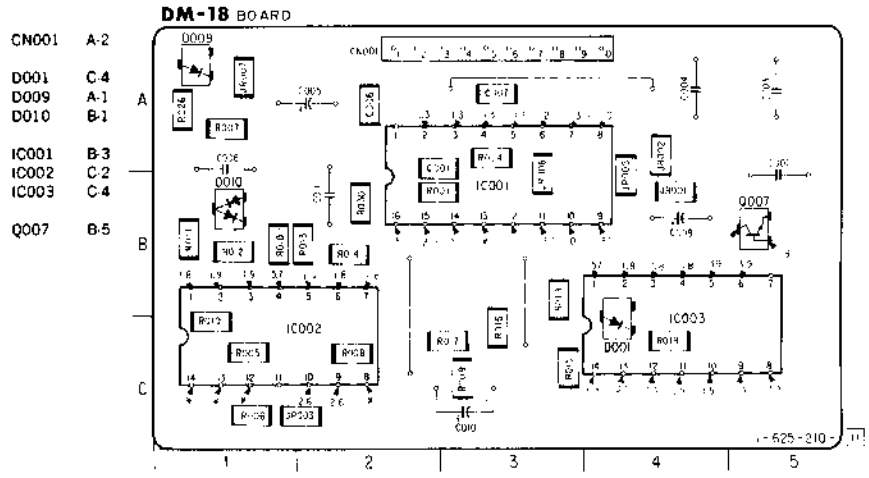
SP–2 BOARD (SERVO)





DM-18 BOARD

CN001	A-2
D001	C-4
D009	A-1
D010	B-1
IC001	B-3
IC002	C-2
IC003	C-4
Q007	B-5



Note:

- ——— : indicates a lead wire mounted on the component side.
- ● ● : indicates a lead wire mounted on the conductor side.
- ● ·· : Through hole.
- ▨ : Pattern from the side which enables seeing.

- Circled numbers refer to waveforms.
- Digital transistor: transistor with resistors.
  Refer to the schematic diagram for digital transistor.
  SP-2 board: Q010, Q011, Q012, Q013, Q014, Q015, Q020, Q021, Q022, Q054, Q060, Q080, Q085, Q090, Q091, Q098, Q099, Q201, Q202, Q207, Q210, Q211, Q214, Q215, Q226, Q227, Q228, Q229, Q230, Q232, Q233, Q235, Q237, Q238, Q240, Q242, Q245, Q246, Q248, Q249, Q254, Q256, Q263, Q264, Q281, Q282, Q285, Q286, Q287, Q390, Q401, Q458, Q471, Q472, Q485, Q500, Q501, Q502, Q602, Q604, Q605, Q606, Q703, Q712, Q714, Q717, Q777, Q790.
  DM-18 board: Q007.

Caution:
Pattern face side (Conductor Side) — Parts on the pattern face side seen from the pattern face are indicated.
Parts face side (Component Side) — Parts on the parts face side seen from the parts face are indicated.

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

SP-2 (PCM AUDIO PROCESS) SCHEMATIC DIAGRAM

—Ref. No. SP-2 BOARD : 4,000 series—

Note:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/10W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- : panel designation.
- △ : internal component.
- : adjustment for repair.
- : B + Line
- : IN/OUT direction of (+,) B line.
- Circled numbers refer to waveforms.
- Voltages are dc between ground and measurement points.
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.
- **In case of page reference, pay attention to the following.**
  ( ): Page of present SUPPLEMENT-1.
  (( )): Page for SERVICE MANUAL unit.

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

- **Signal path**
  : REC AUDIO Signal
  : PB AUDIO Signal

SP-2 BOARD(PCM)

㉔	㉕
4.1Vp-p, 11.6MHz	5.2Vp-p, 11.58MHz
IC605 (8) E-E	IC602 (1) REC

SP-2 BOARD(1/3) PCM

IC601 CXD1066Q MULTI/INDEX PROCESS

PCM PCM

PCM PCM

TO MJ-11 BOARD CN606

((See page 165.))

TO AU-22 BOARD W101

((See page 156.))

TO SP-2 BOARD (1/3) SYSTEM CONTROL

(See page 16.)

2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13

SP-2 BOARD(1/3) PCM

IC601
CXD1066Q
MULTI/INDEX PROCESS

IC602
CX23011
PCM PROCESS

IC603
M88464
RAM

IC604
CX23012
PCM PROCESS

IC500
μPD75106G
PCM/INDEX CONTROL

IC501
TC40538BF
BUS SELECT

Q500,501
DTC144EK
AND GATE

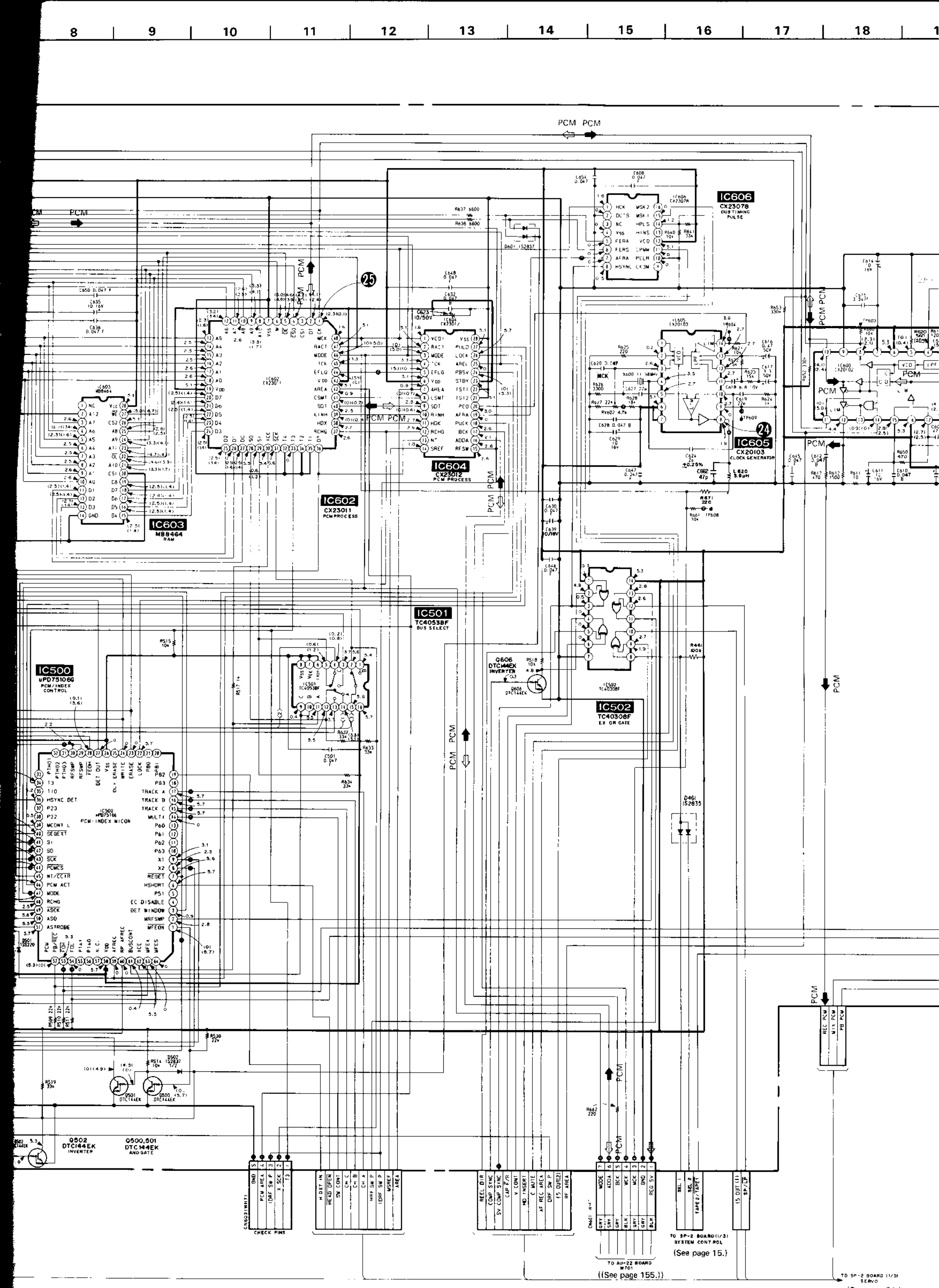
Q502
DTC144EK
INVERTER

SW500
DIGITAL MULTI PLAY

TO SP-2 BOARD (1/3)
SYSTEM CONTROL

CHECK PINS

(See page 16.)


8
9
10
11
12
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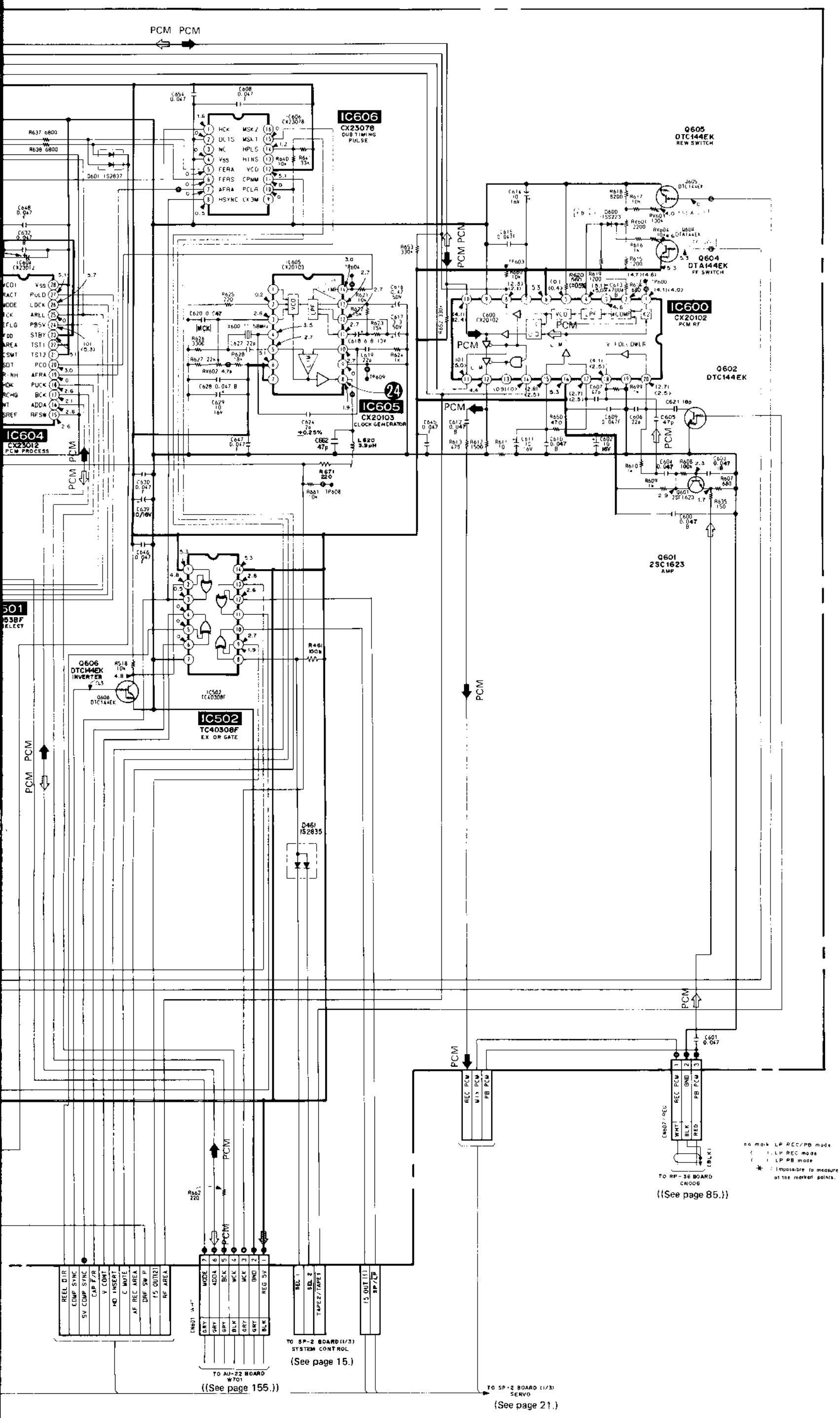
14
15
16
17
18
PCM PCM
IC606
CX23078
SUB TIMING PULSE
IC605
CX20103
CLOCK GENERATOR
IC604
CX23012
PCM PROCESS
IC602
CX23011
PCM PROCESS
IC603
MB8464
RAM
IC501
TC4053BF
BUS SELECT
IC500
μPD75106G
PCM/INDEX CONTROL
IC500
μPD75106
PCM-INDEX MICON
IC502
TC4030BF
EX OR GATE
Q606
DTC144EK
INVERTER
Q502
DTC144EK
INVERTER
Q500,501
DTC144EK
AND GATE
D461
IS2835
CHECK PINS
TO SP-2 BOARD (1/3)
SYSTEM CONTROL
(See page 15.)
TO AU-22 BOARD
W701
((See page 155.))
TO SP-2 BOARD (1/3)
SERVO
(See page 21.)

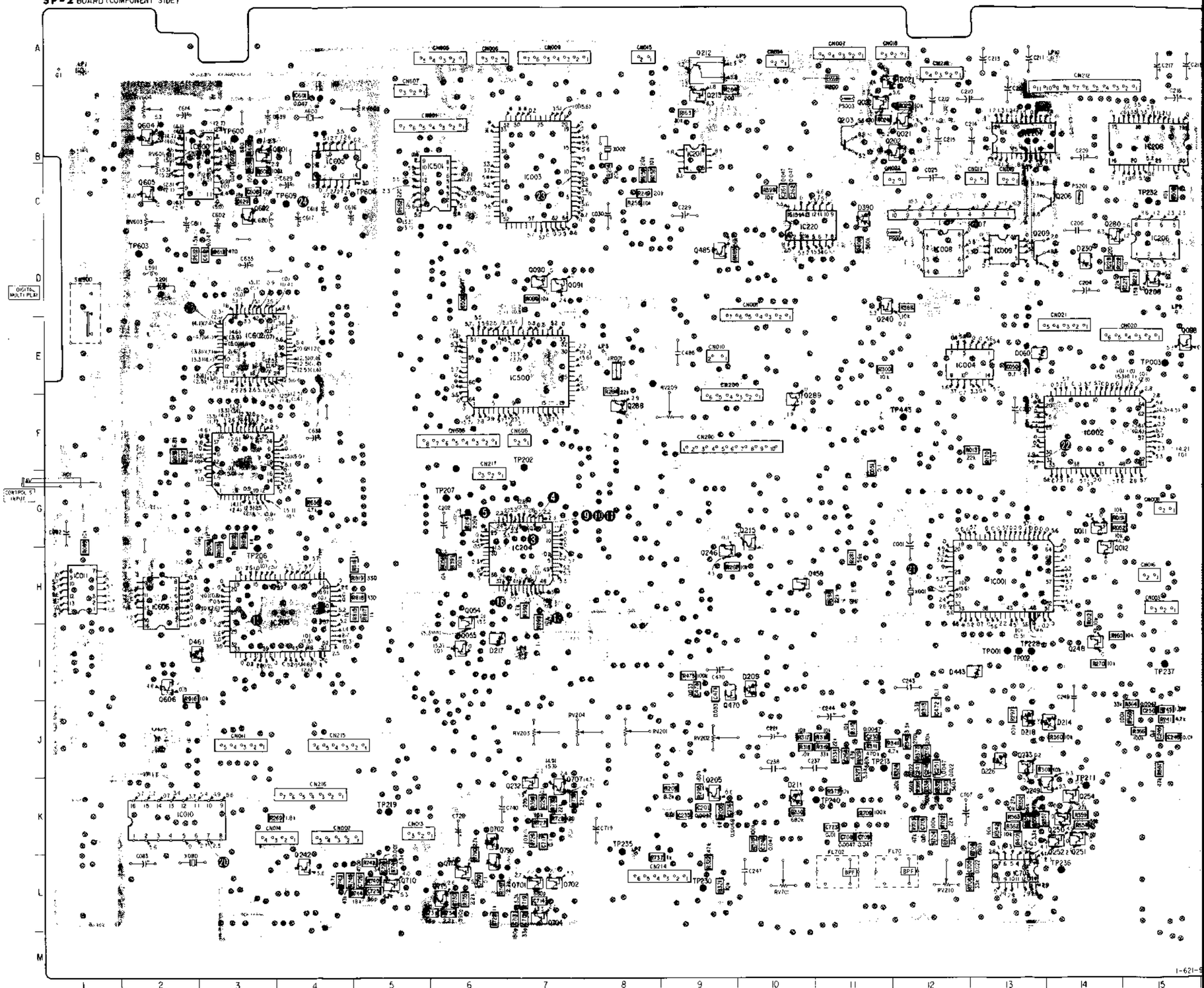

IC606
CX23078
DUB TIMING PULSE
IC605
CX20103
CLOCK GENERATOR
IC604
CX23012
PCM PROCESS
IC600
CX20102
PCM RF
IC502
TC40308F
EX OR GATE
Q605
DTC144EK
REW SWITCH
Q604
DTA144EK
FF SWITCH
Q602
DTC144EK
Q601
2SC1623
AMP
Q606
DTC144EK
INVERTER
D601 1S2837
D461 1S2835
PCM PCM
REEL DIR
COMP SYNC
SV COMP SYNC
CAP F/R
V CONT
HD INSERT
C MUTE
AF REC AREA
DRF SW P
f5 OUT(2)
RF AREA
MODE
ADDA
BCK
WCK
WCK
GND
REG 5V
SEL 1
SEL 2
TAPE2/TAPE1
f5 OUT (1)
SP/LP
REC PCM
GND
PB PCM
WHT
BLK
RED
(BLK)
TO AU-22 BOARD W701
((See page 155.))
TO SP-2 BOARD (1/3) SYSTEM CONTROL
(See page 15.)
TO SP-2 BOARD (1/3) SERVO
(See page 21.)
TO RP-36 BOARD CN006
((See page 85.))
no mark : LP REC/PB mode
( ) : LP REC mode
[ ] : LP PB mode
* : Impossible to measure the voltage at the marked points.

SP-2 (PCM AUDIO PROCESS) PRINTED WIRING BOARD

—Ref. No. SP-2 BOARD : 4,000 series—

CN001	D-10	IC206	D-15	Q390	H-28
CN002	K-4	IC207	B-13	Q401	K-20
CN003	H-15	IC208	B-15	Q458	H-10
CN004	A-10	IC210	K-23	Q470	I-9
CN005	A-6	IC211	I-21	Q471	J-23
CN006	A-6	IC212	J-21	Q485	D-9
CN007	A-11	IC213	J-10	Q500	E-26
CN008	G-15	IC215	I-18	Q501	F-26
CN009	A-7	IC216	I-25	Q502	E-25
CN010	E-9	IC220	B-10	Q591	E-30
CN011	J-3	IC500	E-7	Q601	B-4
CN012	M-30	IC501	C-6	Q602	C-3
CN013	K-5	IC502	I-31	Q604	B-2
CN014	K-3	IC600	B-3	Q605	C-2
CN015	A-8	IC601	F-3	Q606	I-2
CN016	H-15	IC602	E-3	Q701	L-7
CN017	C-13	IC603	F-30	Q702	L-7
CN018	A-11	IC604	E-29	Q703	L-25
CN019	C-13	IC605	B-4	Q704	L-7
CN020	E-15	IC606	H-2	Q705	K-25
CN021	E-14	IC701	K-21	Q706	K-26
CN022	C-11	IC703	L-13	Q707	K-7
CN200	E-9			Q708	K-26
CN212	A-14	J101	G-1	Q709	L-25
CN213	A-12			Q710	L-5
CN214	L-8	Q010	H-19	Q711	L-27
CN215	J-4	Q012	G-14	Q712	K-27
CN216	K-4	Q013	G-14	Q713	L-6
CN217	F-6	Q014	D-26	Q714	K-27
CN280	F-9	Q015	D-26	Q715	L-6
CN601	B-6	Q020	B-21	Q717	J-25
CN603	L-28	Q021	B-12	Q777	J-20
CN605	F-6	Q022	B-11	Q790	K-6
CN606	F-7	Q023	B-21		
CN607	A-5	Q054	H-6	RV201	J-8
		Q055	I-6	RV202	J-9
D020	A-21	Q060	F-19	RV203	J-7
D021	A-12	Q080	J-31	RV204	J-7
D060	E-13	Q085	G-31	RV209	E-9
D082	G-31	Q086	H-31	RV210	L-12
D099	B-26	Q090	D-7	RV215	K-8
D203	B-18	Q091	D-7	RV216	J-8
D205	H-22	Q098	E-15	RV601	B-2
D206	H-21	Q099	G-17	RV602	B-5
D208	H-25	Q201	B-21	RV603	C-2
D209	I-10	Q202	B-11	RV604	B-2
D211	K-10	Q203	B-11	RV701	L-10
D212	K-20	Q204	C-21		
D213	H-27	Q205	K-9	TP001	I-13
D214	J-14	Q206	C-14	TP002	I-13
D215	I-20	Q207	C-18	TP003	E-15
D216	H-24	Q208	D-15	TP202	F-7
D217	I-5	Q209	C-13	TP206	H-3
D218	J-13	Q210	G-26	TP207	G-6
D223	H-23	Q211	J-20	TP213	J-11
D226	J-13	Q212	A-9	TP219	K-5
D227	H-27	Q213	B-9	TP228	I-13
D230	D-14	Q214	G-22	TP236	L-9
D232	J-23	Q215	G-10	TP232	C-15
D233	C-22	Q226	K-25	TP235	K-8
D280	H-22	Q227	K-26	TP236	L-14
D390	B-13	Q228	J-22	TP237	I-15
D391	G-29	Q229	F-19	TP240	K-11
D392	H-26	Q230	E-20	TP443	F-12
D393	H-26	Q232	K-7	TP603	D-2
D443	I-12	Q233	J-13	TP604	C-5
D461	I-2	Q235	H-27	TP609	C-4
D470	I-23	Q237	B-24		
D485	D-23	Q238	G-19		
D501	E-26	Q240	E-11		
D502	G-28	Q242	K-4		
D600	B-30	Q245	K-19		
D601	G-30	Q246	G-9		
D603	G-30	Q248	I-14		
D604	F-30	Q249	K-13		
D701	J-22	Q250	K-14		
D702	K-6	Q251	K-14		
		Q252	K-14		
IC001	H-13	Q253	K-19		
IC002	F-14	Q254	K-14		
IC003	C-7	Q256	K-20		
IC004	E-12	Q260	B-17		
IC005	F-22	Q261	B-18		
IC007	C-13	Q262	B-18		
IC008	D-12	Q263	G-25		
IC009	D-13	Q264	H-25		
IC010	K-2	Q280	C-14		
IC011	H-1	Q281	D-19		
IC201	B-9	Q282	D-18		
IC202	I-17	Q285	H-21		
IC204	G-7	Q286	H-23		
IC205	H-4	Q287	H-22		

SP-2 BOARD (COMPONENT SIDE)



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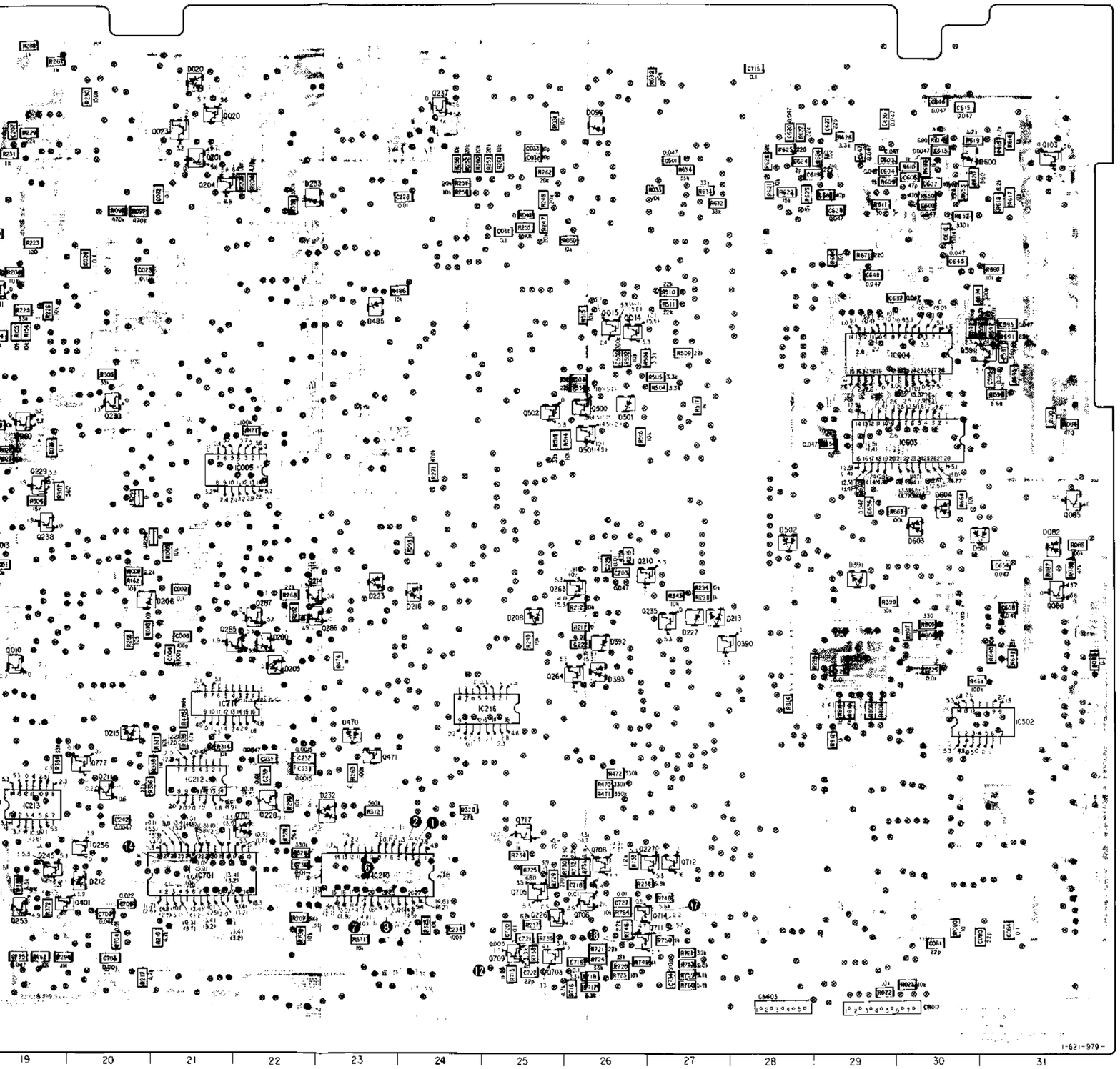
EV-S6

SP-2 BOARD (CONDUCTOR SIDE)



Note:

- ——— : indicates a lead wire mounted on the component side.
- ●●●● : indicates a lead wire mounted on the conductor side.
- ⊗ : Through hole.
- ▭ : Pattern from the side which enables seeing.

- Circled numbers refer to waveforms.
- Digital transistor: transistor with resistors.
  Refer to the schematic diagram for digital transistor.
  SP-2 board: Q010, Q011, Q012, Q013, Q014, Q015, Q020, Q021, Q022, Q054, Q060, Q080, Q085, Q090, Q091, Q098, Q099, Q201, Q202, Q207, Q210, Q211, Q214, Q215, Q226, Q227, Q228, Q229, Q230, Q232, Q233, Q235, Q237, Q238, Q240, Q242, Q245, Q246, Q248, Q249, Q254, Q256, Q263, Q264, Q281, Q282, Q285, Q286, Q287, Q390, Q401, Q458, Q471, Q472, Q485, Q500, Q501, Q502, Q602, Q604, Q605, Q606, Q703, Q712, Q714, Q717, Q777, Q790.

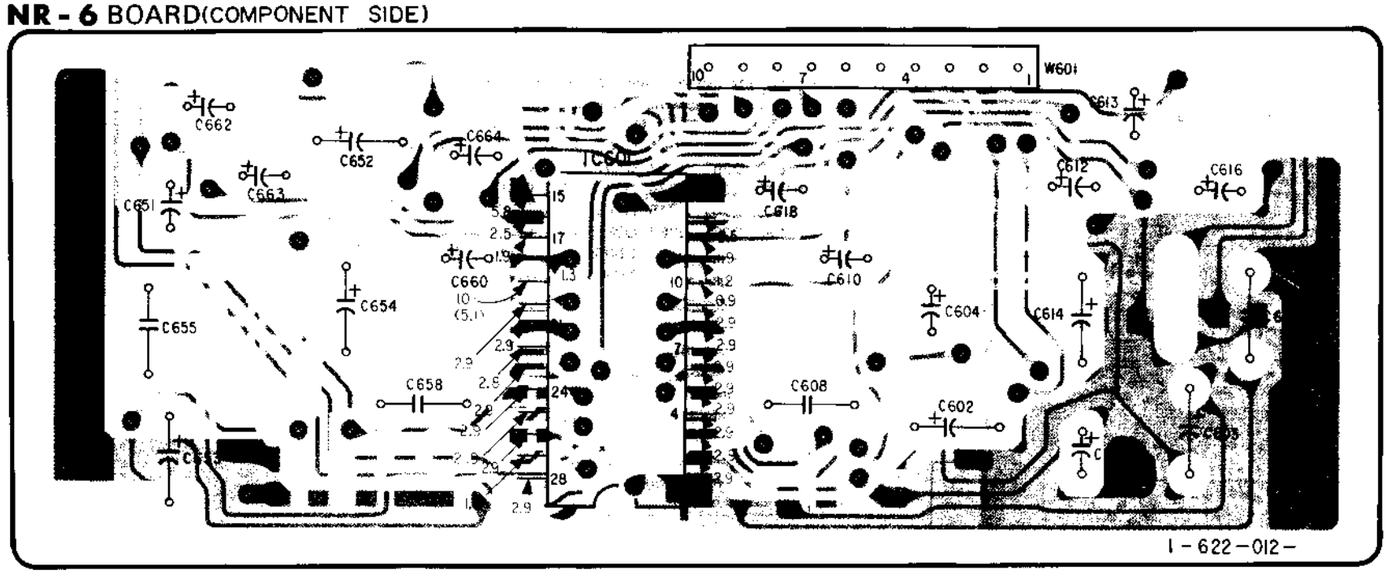
Caution:
Pattern face side: (Conductor Side) Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side) Parts on the parts face side seen from the parts face are indicated.

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

NR-6 (NOISE REDUCTION) PRINTED WIRING BOARD
—Ref. No. NR-6 BOARD : 8,000 series—

IC601

NR-6 BOARD(COMPONENT SIDE)

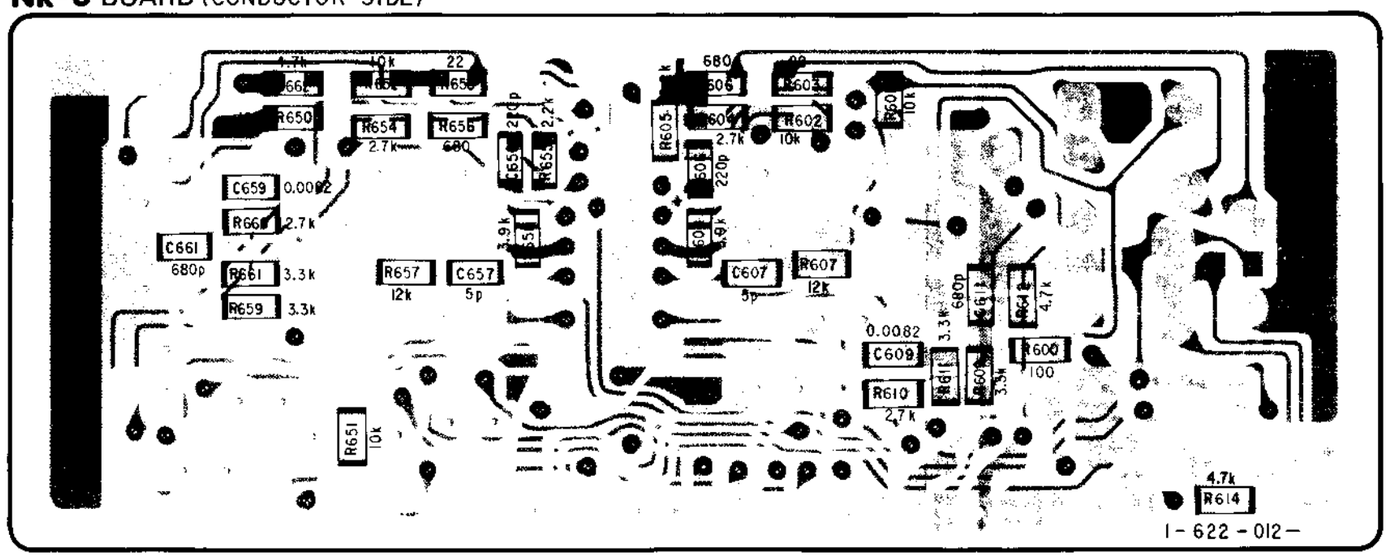


12

no mark : LP REC/PB mode
( ) : LP REC mode
( ) : LP PB mode

IC601

NR-6 BOARD (CONDUCTOR SIDE)



12

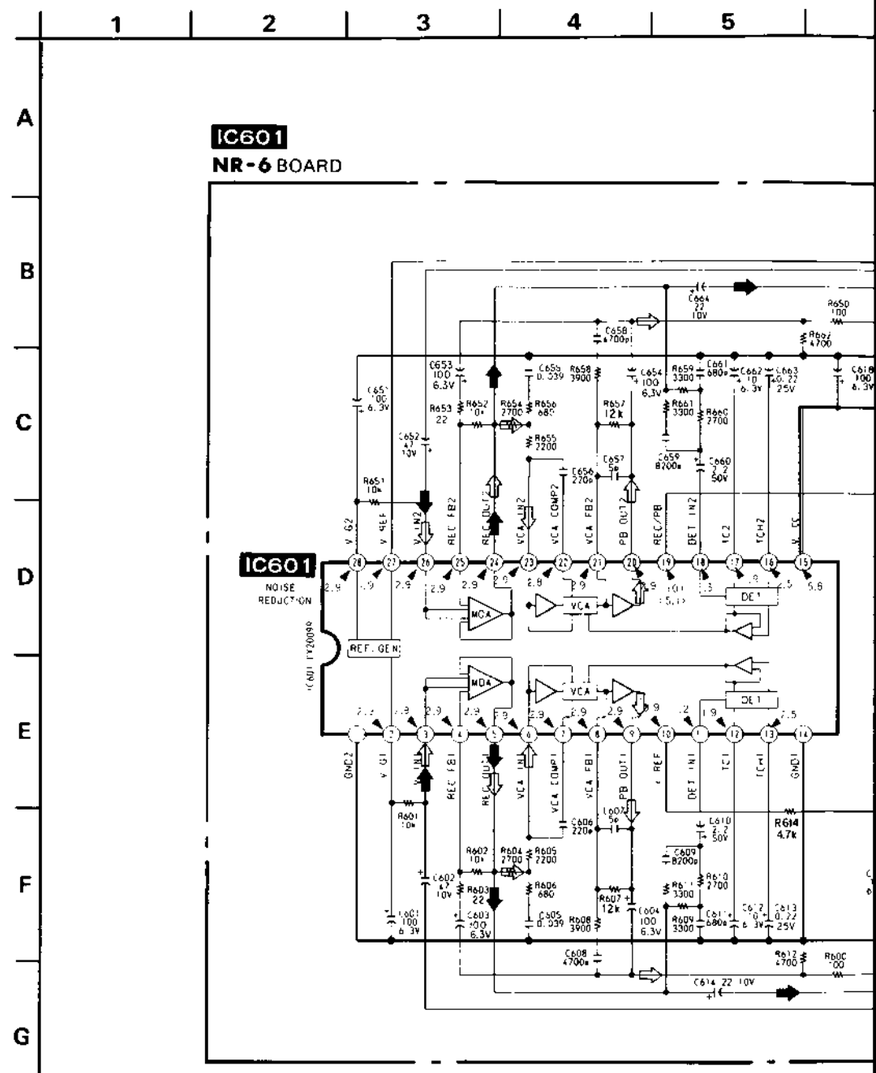
Note:

- ○ : indicates a lead wire mounted on the component side.
- ●– : indicates a lead wire mounted on the conductor side.
- ⊗ : Through hole.
- : Pattern from the side which enables seeing.
- : Pattern of the rear side.

Caution:
Pattern face side: (Conductor Side) Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side) Parts on the parts face side seen from the parts face are indicated.

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

NR-6 (NOISE REDUCTION) SCHEMATIC DIAGRAM
—Ref. No. NR-6 BOARD : 8,000 series—



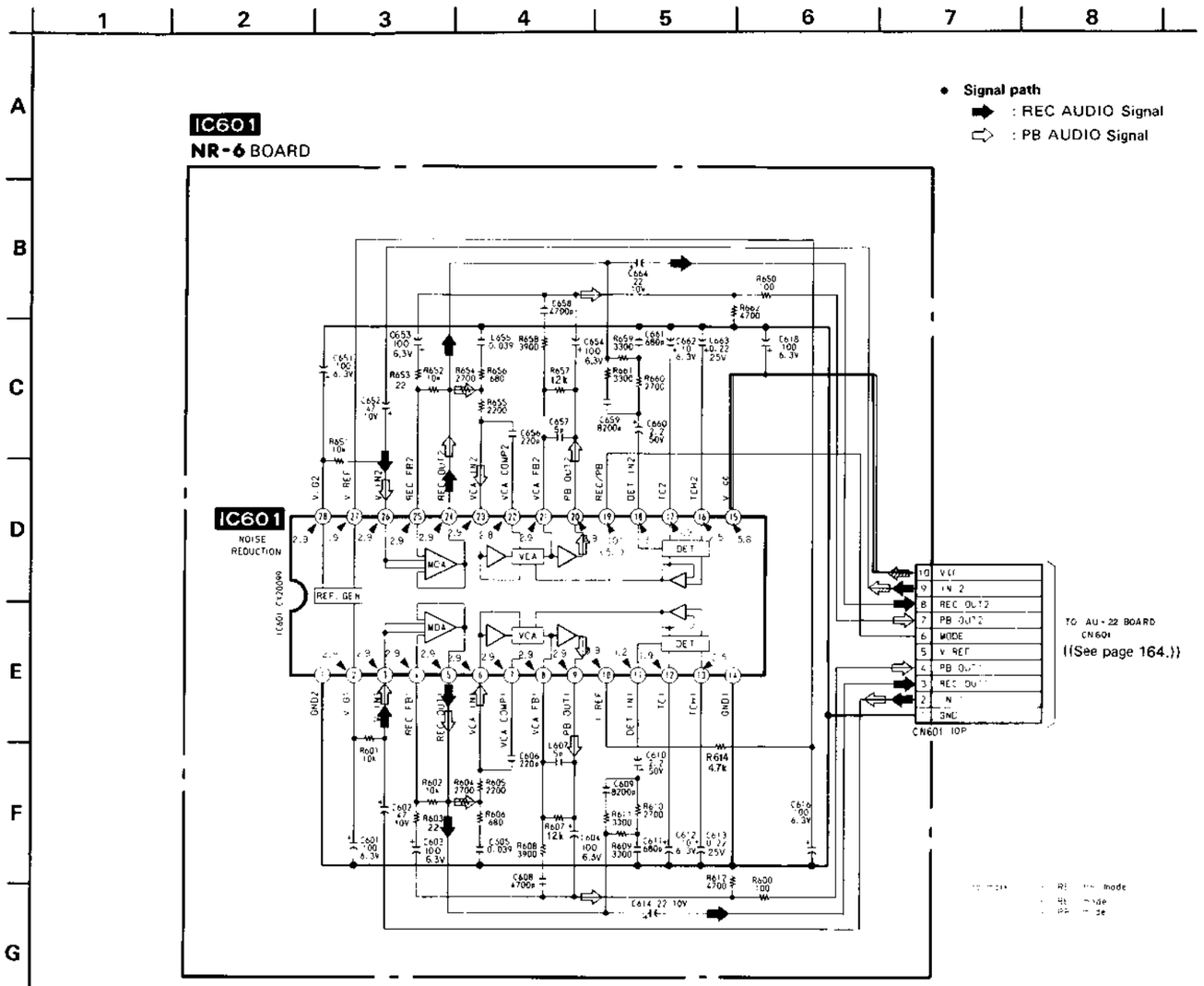
Note:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/10W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- : panel designation.
- △ : internal component.
- : adju
- : B +
- : IN/
- Voltages a
- Readings a
- Readings a
- Voltage v tolerances.
- In case of
  ( ) :
  (( )) :

When indic ence num the board n

NR-6 (NOISE REDUCTION) SCHEMATIC DIAGRAM

—Ref. No. NR-6 BOARD : 8,000 series—



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- All capacitors are in μF unless otherwise noted. pF : μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- : panel designation.
- △ : internal component.
- : adjustment for repair.
- : B + Line
- : IN/OUT direction of (+, −) B line.
- Voltages are dc between ground and measurement points.
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.
- In case of page reference, pay attention to the following.
  ( ) : Page of present SUPPLEMENT-1.
  {{ }} : Page for SERVICE MANUAL unit.

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

SECTION 3
EXPLODED VIEW

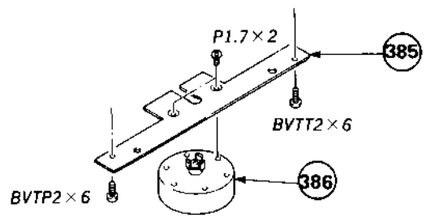
NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- 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.

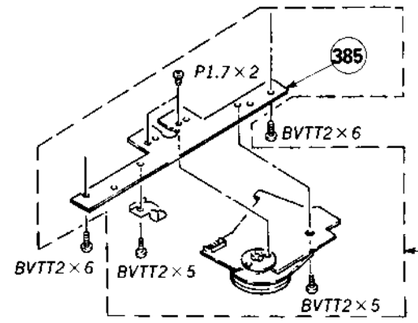
3-1. Reel motor change

There are two types of reel motors as illustrated below because the reel motor has been changed to brushless type.

Former



New



	Former			New		
No.	Part No.	Description	Remark	Part No.	Description	Re
385	* 3-716-922-01	BRACKET, REEL MOTOR		* 3-716-922-01	BRACKET, REEL MOTOR	
386	X-3711-961-1	MOTOR SUB ASSY, REEL		8-835-282-02	REEL MOTOR (U-11A)M901 (Including the RD-25 board)	

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EXPLODED VIEW

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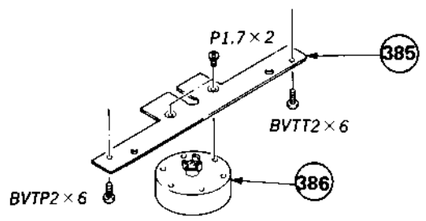
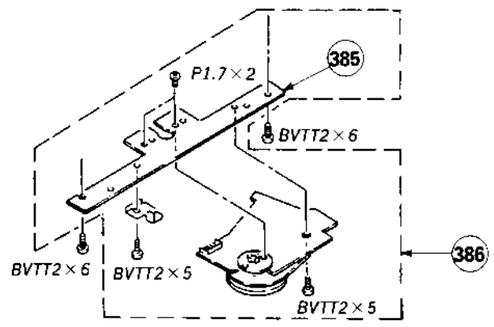


New



	Former			New		
No.	Part No.	Description	Remark	Part No.	Description	Remark
385	* 3-716-922-01	BRACKET, REEL MOTOR		* 3-716-922-01	BRACKET, REEL MOTOR	
386	X-3711-961-1	MOTOR SUB ASSY, REEL		8-835-282-02	REEL MOTOR (U-11A)M901 (Including the RD-25 board)	385

SECTION 4
ELECTRICAL PARTS LIST

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

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.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X, mean standardized parts, so they may have some difference from the original one.
- SEMIDONDUCTORS
  In each case, U: μ, for example:
  UA. . .: μA. . ., UPA. . .: μPA. . .,
  UPB. . .: μPB. . ., UPC. . .: μPC. . .,
  UPD. . .: μPD. . .
- CAPACITORS
  MF: μF, PF: μμF
- COILS
  MMH: mH, UH: μH

No.	Part No.	Description			Remark
	*A-7060-913-A	NR-6 BOARD, COMPLETE (IC601)			
		**********			
		CAPACITOR			
C601	1-123-661-00	ELECT	100MF	20% 6.3V	
C602	1-124-446-11	ELECT	47MF	20% 10V	
C603	1-123-661-00	ELECT	100MF	20% 6.3V	
C604	1-123-661-00	ELECT	100MF	20% 6.3V	
C605	1-130-490-11	MYLAR	0.039MF	5% 50V	
C606	1-163-125-00	CERAMIC CHIP	220PF	10% 50V	
C607	1-163-088-00	CERAMIC CHIP	5PF	0.25PF 50V	
C608	1-130-479-00	MYLAR	0.0047MF	5% 50V	
C609	1-163-020-00	CERAMIC CHIP	0.0082MF	10% 50V	
C610	1-124-257-00	ELECT	2.2MF	20% 50V	
C611	1-163-137-00	CERAMIC CHIP	680PF	10% 50V	
C612	1-127-489-00	ELECT(SOLID)	10MF	20% 6.3V	
C613	1-127-502-00	ELECT(SOLID)	0.22MF	20% 25V	
C614	1-123-330-00	ELECT	22MF	20% 10V	
C616	1-123-661-00	ELECT	100MF	20% 6.3V	
C618	1-123-661-00	ELECT	100MF	20% 6.3V	
C651	1-123-661-00	ELECT	100MF	20% 6.3V	
C652	1-124-446-11	ELECT	47MF	20% 10V	
C653	1-123-661-00	ELECT	100MF	20% 6.3V	
C654	1-123-661-00	ELECT	100MF	20% 6.3V	
C655	1-130-490-11	MYLAR	0.039MF	5% 50V	
C656	1-163-125-00	CERAMIC CHIP	220PF	10% 50V	
C657	1-163-088-00	CERAMIC CHIP	5PF	0.25PF 50V	
C658	1-130-479-00	MYLAR	0.0047MF	5% 50V	
C659	1-163-020-00	CERAMIC CHIP	0.0082MF	10% 50V	
C660	1-124-257-00	ELECT	2.2MF	20% 50V	
C661	1-163-137-00	CERAMIC CHIP	680PF	10% 50V	
C662	1-127-489-00	ELECT(SOLID)	10MF	20% 6.3V	
C663	1-127-502-00	ELECT(SOLID)	0.22MF	20% 25V	
C664	1-123-330-00	ELECT	22MF	20% 10V	
		CONNECTOR			
CN601	*1-565-002-11	PIN, CONNECTOR 15P			
		IC			
IC601	8-752-009-90	IC CX20099			
		RESISTOR			
R600	1-216-025-00	METAL GLAZE	100	5% 1/10W	
R601	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R602	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R603	1-216-009-00	METAL GLAZE	22	5% 1/10W	
R604	1-216-059-00	METAL GLAZE	2.7K	5% 1/10W	
R605	1-216-057-00	METAL GLAZE	2.2K	5% 1/10W	
R606	1-216-045-00	METAL GLAZE	680	5% 1/10W	
R607	1-216-075-00	METAL GLAZE	12K	5% 1/10W	
R608	1-216-063-00	METAL GLAZE	3.9K	5% 1/10W	
R609	1-216-061-00	METAL GLAZE	3.3K	5% 1/10W	
R610	1-216-059-00	METAL GLAZE	2.7K	5% 1/10W	
R611	1-216-061-00	METAL GLAZE	3.3K	5% 1/10W	
R612	1-216-065-00	METAL GLAZE	4.7K	5% 1/10W	
R614	1-216-065-00	METAL GLAZE	4.7K	5% 1/10W	
R617	1-216-081-00	METAL GLAZE	22K	5% 1/10W	
R650	1-216-025-00	METAL GLAZE	100	5% 1/10W	
R651	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R652	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R653	1-216-009-00	METAL GLAZE	22	5% 1/10W	
R654	1-216-059-00	METAL GLAZE	2.7K	5% 1/10W	
R655	1-216-057-00	METAL GLAZE	2.2K	5% 1/10W	
R656	1-216-045-00	METAL GLAZE	680	5% 1/10W	
R657	1-216-075-00	METAL GLAZE	12K	5% 1/10W	
R658	1-216-063-00	METAL GLAZE	3.9K	5% 1/10W	
R659	1-216-061-00	METAL GLAZE	3.3K	5% 1/10W	
R660	1-216-059-00	METAL GLAZE	2.7K	5% 1/10W	
R661	1-216-061-00	METAL GLAZE	3.3K	5% 1/10W	
R662	1-216-065-00	METAL GLAZE	4.7K	5% 1/10W	
R667	1-216-081-00	METAL GLAZE	22K	5% 1/10W	
	*A-7060-844-B	SP-2 BOARD, COMPLETE			
		**********			
		CAPACITOR			
C001	1-123-875-11	ELECT	10MF	20% 50V	
C002	1-163-038-00	CERAMIC CHIP	0.1MF	25V	
C003	1-163-117-00	CERAMIC CHIP	100PF	5% 50V	
C004	1-163-117-00	CERAMIC CHIP	100PF	5% 50V	
C020	1-123-875-11	ELECT	10MF	20% 50V	
C021	1-163-038-00	CERAMIC CHIP	0.1MF	25V	
C022	1-163-038-00	CERAMIC CHIP	0.1MF	25V	
C023	1-163-038-00	CERAMIC CHIP	0.1MF	25V	
C024	1-163-038-00	CERAMIC CHIP	0.1MF	25V	
C025	1-123-875-11	ELECT	10MF	20% 50V	
C030	1-123-875-11	ELECT	10MF	20% 50V	
C031	1-163-038-00	CERAMIC CHIP	0.1MF	25V	
C032	1-163-093-00	CERAMIC CHIP	10PF	5% 50V	
C033	1-163-093-00	CERAMIC CHIP	10PF	5% 50V	
C050	1-163-038-00	CERAMIC CHIP	0.1MF	25V	
C051	1-163-038-00	CERAMIC CHIP	0.1MF	25V	
C080	1-163-101-00	CERAMIC CHIP	22PF	5% 50V	
C081	1-163-101-00	CERAMIC CHIP	22PF	5% 50V	
C082	1-131-345-00	TANTALUM	0.47MF	10% 35V	
C083	1-124-261-00	ELECT	10MF	20% 50V	
C084	1-163-038-00	CERAMIC CHIP	0.1MF	25V	
C085	1-163-038-00	CERAMIC CHIP	0.1MF	25V	
C201	1-163-017-00	CERAMIC CHIP	0.0047MF	10% 50V	
C202	1-124-908-11	ELECT	22MF	20% 25V	
C203	1-163-809-11	CERAMIC CHIP	0.047MF	10% 25V	
C204	1-124-463-00	ELECT	0.1MF	20% 50V	
C205	1-163-038-00	CERAMIC CHIP	0.1MF	25V	
C206	1-126-151-11	ELECT	4.7MF	20% 16V	

No.	Part No.	Description		Remark
C207	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C208	1-126-162-11	ELECT 3.3MF	20%	50V
C209	1-124-247-00	ELECT 10MF	20%	25V
C210	1-124-247-00	ELECT 10MF	20%	25V
C211	1-124-247-00	ELECT 10MF	20%	25V
C212	1-124-247-00	ELECT 10MF	20%	25V
C213	1-124-255-00	ELECT 1MF	20%	50V
C214	1-124-499-11	ELECT 1MF	20%	50V
C215	1-124-499-11	ELECT 1MF	20%	50V
C216	1-124-229-00	ELECT 33MF	20%	10V
C217	1-124-229-00	ELECT 33MF	20%	10V
C218	1-124-229-00	ELECT 33MF	20%	10V
C221	1-123-875-11	ELECT 10MF	20%	50V
C222	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C223	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C224	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C225	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C226	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C228	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C229	1-123-875-11	ELECT 10MF	20%	50V
C230	1-163-017-00	CERAMIC CHIP 0.0047MF	10%	50V
C231	1-163-017-00	CERAMIC CHIP 0.0047MF	10%	50V
C232	1-163-209-00	CERAMIC CHIP 0.0015MF	5%	50V
C233	1-163-209-00	CERAMIC CHIP 0.0015MF	5%	50V
C234	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C235	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C236	1-163-019-00	CERAMIC CHIP 0.0068MF	10%	50V
C237	1-124-284-00	ELECT 10MF	20%	16V
C238	1-124-499-11	ELECT 1MF	20%	50V
C239	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C240	1-163-037-11	CERAMIC CHIP 0.022MF	10%	25V
C241	1-163-037-11	CERAMIC CHIP 0.022MF	10%	25V
C242	1-163-017-00	CERAMIC CHIP 0.0047MF	10%	50V
C243	1-124-277-11	ELECT 4.7MF	20%	35V
C244	1-123-875-11	ELECT 10MF	20%	50V
C245	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C246	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C247	1-124-767-00	ELECT 2.2MF	20%	50V
C248	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C249	1-124-499-11	ELECT 1MF	20%	50V
C250	1-163-017-00	CERAMIC CHIP 0.0047MF	10%	50V
C251	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C261	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C262	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C264	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C470	1-124-250-00	ELECT 0.15MF	20%	50V
C471	1-163-989-11	CERAMIC CHIP 0.033MF	10%	25V
C472	1-163-077-00	CERAMIC CHIP 0.1MF	10%	25V
C473	1-163-989-11	CERAMIC CHIP 0.033MF	10%	25V
C485	1-130-495-00	MYLAR 0.1MF	5%	50V
C500	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C501	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C502	1-163-131-00	CERAMIC CHIP 390PF	10%	50V

No.	Part No.	Description		Remark
C591	1-163-111-00	CERAMIC CHIP 56PF	5%	50V
C592	1-163-111-00	CERAMIC CHIP 56PF	5%	50V
C593	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C594	1-163-131-00	CERAMIC CHIP 390PF	5%	50V
C595	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C600	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C601	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C602	1-126-157-11	ELECT 10MF	20%	16V
C603	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C604	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C605	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C606	1-163-101-00	CERAMIC CHIP 22PF	5%	50V
C607	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C608	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C609	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C610	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C611	1-126-157-11	ELECT 10MF	20%	16V
C612	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C613	1-163-017-00	CERAMIC CHIP 0.0047MF	10%	50V
C614	1-126-157-11	ELECT 10MF	20%	16V
C615	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C616	1-124-465-00	ELECT 0.47MF	20%	50V
C617	1-126-162-11	ELECT 3.3MF	20%	50V
C618	1-124-239-00	ELECT 6.8MF	20%	10V
C619	1-163-101-00	CERAMIC CHIP 22PF	5%	50V
C620	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C621	1-163-099-00	CERAMIC CHIP 18PF	5%	50V
C624	1-163-085-00	CERAMIC CHIP 2PF	0.25PF	50V
C627	1-163-101-00	CERAMIC CHIP 22PF	5%	50V
C628	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C629	1-126-157-11	ELECT 10MF	20%	16V
C630	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C632	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C633	1-126-157-11	ELECT 10MF	20%	16V
C635	1-126-157-11	ELECT 10MF	20%	16V
C636	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C639	1-126-157-11	ELECT 10MF	20%	16V
C645	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C646	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C647	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C648	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C650	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C654	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C662	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C701	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C702	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C703	1-163-141-00	CERAMIC CHIP 0.001MF	5%	50V
C704	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C705	1-163-037-11	CERAMIC CHIP 0.022MF	10%	25V
C706	1-163-037-11	CERAMIC CHIP 0.022MF	10%	25V
C707	1-124-908-11	ELECT 22MF	20%	25V
C708	1-163-017-00	CERAMIC CHIP 0.0047MF	10%	50V
C709	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V

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

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No.	Part No.	Description		Remark
C712	1-163-105-00	CERAMIC CHIP 33PF	5%	50V
C713	1-163-123-00	CERAMIC CHIP 180PF	5%	50V
C714	1-163-137-00	CERAMIC CHIP 680PF	5%	50V
C715	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C716	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C717	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C718	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C719	1-124-925-11	ELECT 2.2MF	20%	50V
C720	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C721	1-163-145-00	CERAMIC CHIP 0.0015MF	5%	50V
C722	1-163-101-00	CERAMIC CHIP 22PF	5%	50V
C723	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C724	1-163-141-00	CERAMIC CHIP 0.001MF	5%	50V
C725	1-163-111-00	CERAMIC CHIP 56PF	5%	50V
C726	1-163-133-00	CERAMIC CHIP 470PF	5%	50V
C727	1-163-021-00	CERAMIC CHIP 0.01MF		50V
C728	1-124-925-11	ELECT 2.2MF	20%	50V
C730	1-163-131-00	CERAMIC CHIP 390PF	5%	50V
C731	1-163-111-00	CERAMIC CHIP 56PF	5%	50V
C734	1-163-134-00	CERAMIC CHIP 510PF	5%	50V
C735	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C736	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C740	1-124-925-11	ELECT 2.2MF	20%	50V
C790	1-163-038-00	CERAMIC CHIP 0.1MF		25V

CONNECTOR

CN001	*1-564-006-11	PIN, CONNECTOR 7P
CN002	*1-564-004-00	PIN, CONNECTOR 5P
CN003	*1-564-002-00	PIN, CONNECTOR 3P
CN004	*1-564-001-11	PIN, CONNECTOR 2P
CN005	*1-564-004-00	PIN, CONNECTOR 5P
CN006	*1-564-002-00	PIN, CONNECTOR 3P
CN007	*1-564-004-00	PIN, CONNECTOR 5P
CN008	*1-564-001-11	PIN, CONNECTOR 2P
CN009	*1-564-006-11	PIN, CONNECTOR 7P
CN010	*1-564-001-11	PIN, CONNECTOR 2P
CN011	*1-564-004-00	PIN, CONNECTOR 5P
CN012	*1-564-017-00	PIN, CONNECTOR 7P
CN013	*1-564-002-00	PIN, CONNECTOR 3P
CN014	*1-564-003-00	PIN, CONNECTOR 4P
CN015	*1-564-001-11	PIN, CONNECTOR 2P
CN016	*1-564-001-11	PIN, CONNECTOR 2P
CN017	*1-564-001-11	PIN, CONNECTOR 2P
CN018	*1-564-002-00	PIN, CONNECTOR 3P
CN019	*1-564-001-11	PIN, CONNECTOR 2P
CN020	*1-564-005-00	PIN, CONNECTOR 6P
CN021	*1-564-004-00	PIN, CONNECTOR 5P
CN022	*1-564-001-11	PIN, CONNECTOR 2P
CN200	*1-564-005-00	PIN, CONNECTOR 6P
CN212	*1-564-010-11	PIN, CONNECTOR 11P
CN213	*1-564-014-00	PIN, CONNECTOR 4P
CN214	*1-564-005-00	PIN, CONNECTOR 6P
CN215	*1-564-005-00	PIN, CONNECTOR 6P
CN216	*1-564-006-11	PIN, CONNECTOR 7P
CN217	*1-564-002-00	PIN, CONNECTOR 3P
CN280	*1-506-773-11	CONNECTOR, BOARD TO BOARD 10P
CN601	*1-564-006-11	PIN, CONNECTOR 7P
CN603	*1-564-015-00	PIN, CONNECTOR 5P
CN605	*1-564-007-00	PIN, CONNECTOR 8P
CN606	*1-564-001-11	PIN, CONNECTOR 2P
CN607	*1-564-002-00	PIN, CONNECTOR 3P

DIODE

D020	8-719-104-22	DIODE 1SS123
D021	8-719-104-22	DIODE 1SS123
D060	8-719-801-48	DIODE 1SS193
D082	8-719-100-05	DIODE 1S2837
D099	8-719-801-48	DIODE 1SS193
D203	8-719-200-27	DIODE E10DS2
D205	8-719-100-03	DIODE 1S2835
D206	8-719-801-47	DIODE 1SS187
D208	8-719-100-03	DIODE 1S2835
D209	8-719-100-05	DIODE 1S2837
D211	8-719-101-23	DIODE 1SS123
D212	8-719-100-03	DIODE 1S2835
D213	8-719-100-03	DIODE 1S2835
D214	8-719-100-03	DIODE 1S2835
D215	8-719-100-03	DIODE 1S2835
D216	8-719-100-03	DIODE 1S2835
D217	8-719-801-48	DIODE 1SS193
D218	8-719-100-05	DIODE 1S2837
D223	8-719-100-05	DIODE 1S2837
D226	8-719-100-03	DIODE 1S2835
D227	8-719-801-48	DIODE 1SS193
D230	8-719-105-82	DIODE RD5.1M-B2
D232	8-719-101-23	DIODE 1SS123
D233	8-719-801-48	DIODE 1SS193
D280	8-719-801-48	DIODE 1SS193
D390	8-719-100-05	DIODE 1S2837
D391	8-719-100-03	DIODE 1S2835
D392	8-719-801-48	DIODE 1SS193
D393	8-719-100-05	DIODE 1S2837
D443	8-719-801-45	DIODE 1SS187
D461	8-719-100-03	DIODE 1S2835
D470	8-719-100-05	DIODE 1S2837
D485	8-719-801-41	DIODE 1SS196
D501	8-719-118-29	DIODE ISS220
D502	8-719-100-05	DIODE 1S2837
D600	8-719-108-22	DIODE 1SS223
D601	8-719-100-05	DIODE 1S2837
D603	8-719-100-03	DIODE 1S2835
D604	8-719-100-05	DIODE 1S2837
D701	8-719-100-05	DIODE 1S2837
D702	8-719-100-03	DIODE 1S2835

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

No.	Part No.	Description	Remark
		FILTER	
FL701	1-235-829-11	BPF	
FL702	1-235-830-11	BPF	
		IC	
IC001	8-752-803-62	IC CXP5048H-112Q	
IC002	8-752-803-63	IC CXP5048H-113Q	
IC003	8-759-141-21	IC UPD75104G-547-1B	
IC004	8-759-201-01	IC TC4066BF	
IC005	8-759-201-61	IC TC40H004F	
IC007	8-759-801-60	IC LB1640N	
IC008	8-759-913-67	IC MB3763P	
IC009	8-759-908-81	IC MB3763PF	
IC010	8-759-920-94	IC M5M6411B-19RS	
IC011	8-759-200-68	IC TC4011BF	
IC201	8-759-803-47	IC LA5005M	
IC202	8-759-100-94	IC UPC358G2	
IC204	8-759-929-55	IC MB64H428PF	
IC205	8-759-932-07	IC MB674101PF	
IC206	8-759-701-43	IC NJM3414D	
IC207	8-759-202-45	IC CX20114	
IC208	8-759-802-79	IC LB1616M	
IC210	8-752-003-50	IC CX20035	
IC211	8-759-925-66	IC BA6303F	
IC212	8-759-701-39	IC NJM3403AM	
IC213	8-759-201-01	IC TC4066BF	
IC215	8-759-100-94	IC UPC358G2	
IC216	8-759-200-81	IC TC4053BF	
IC220	8-759-200-90	IC TC4538BF	
IC500	8-759-141-04	IC UPD75106G-529-1B	
IC501	8-759-200-89	IC TC4053BF	
IC502	8-759-200-78	IC TC4030BF	
IC600	8-752-010-20	IC CX20102	
IC601	8-752-321-97	IC CXD1066Q	
IC602	8-759-911-18	IC CX23011	
IC603	8-759-927-98	IC MB8464-12LPF	
IC604	8-759-911-19	IC CX23012	
IC605	8-752-010-30	IC CX20103	
IC606	8-759-929-17	IC CXD1051M	
IC701	8-759-928-56	IC CXA1042M	
IC703	8-759-193-24	IC UPC324G2	
		JACK	
J101	1-507-678-00	JACK	
		JUMPER RESISTOR	
JR001	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR293	1-216-295-00	METAL GLAZE 0 5% 1/10W	
JR294	1-216-295-00	METAL GLAZE 0 5% 1/10W	

No.	Part No.	Description	Remark
		COIL	
L591	1-408-961-11	INDUCTOR 1.8UH	
L620	1-408-965-21	INDUCTOR 3.9UH	
		IC LINK	
PS003⚠	1-532-685-00	LINK, IC ICP-N20 (0.8A)	
PS004⚠	1-532-637-00	LINK, IC ICP-N25 (1.0A)	
PS201⚠	1-532-685-00	LINK, IC ICP-N20 (0.8A)	
		TRANSISTOR	
Q010	8-729-901-01	TRANSISTOR DTC144EK	
Q011	8-729-901-01	TRANSISTOR DTC144EK	
Q012	8-729-901-01	TRANSISTOR DTC144EK	
Q013	8-729-901-01	TRANSISTOR DTC144EK	
Q014	8-729-901-01	TRANSISTOR DTC144EK	
Q015	8-729-901-06	TRANSISTOR DTA144EK	
Q020	8-729-901-05	TRANSISTOR DTA124EK	
Q021	8-729-901-53	TRANSISTOR DTC114EK	
Q022	8-729-901-05	TRANSISTOR DTA124EK	
Q023	8-729-199-92	TRANSISTOR 2SD999	
Q054	8-729-901-01	TRANSISTOR DTC144EK	
Q055	8-729-901-01	TRANSISTOR DTC144EK	
Q060	8-729-901-06	TRANSISTOR DTA144EK	
Q085	8-729-901-01	TRANSISTOR DTC144EK	
Q086	8-729-100-76	TRANSISTOR 2SA812	
Q090	8-729-901-01	TRANSISTOR DTC144EK	
Q091	8-729-901-01	TRANSISTOR DTC144EK	
Q098	8-729-901-01	TRANSISTOR DTC144EK	
Q099	8-729-901-06	TRANSISTOR DTA144EK	
Q201	8-729-901-04	TRANSISTOR DTA114EK	
Q202	8-729-901-53	TRANSISTOR DTC114EK	
Q203	8-729-201-78	TRANSISTOR 2SD1406	
Q204	8-729-100-67	TRANSISTOR 2SC1623-L	
Q205	8-729-100-66	TRANSISTOR 2SC1623	
Q206	8-729-804-67	TRANSISTOR 2SB1133-R	
Q207	8-729-901-06	TRANSISTOR DTA144EK	
Q208	8-729-100-76	TRANSISTOR 2SA812	
Q209	8-729-201-78	TRANSISTOR 2SD1406	
Q210	8-729-901-01	TRANSISTOR DTC144EK	
Q211	8-729-901-01	TRANSISTOR DTC144EK	
Q212	8-729-105-29	TRANSISTOR 2SA1385	
Q213	8-729-100-67	TRANSISTOR 2SC1623	
Q214	8-729-901-01	TRANSISTOR DTC144EK	
Q215	8-729-901-01	TRANSISTOR DTC144EK	
Q226	8-729-901-01	TRANSISTOR DTC144EK	
Q227	8-729-901-06	TRANSISTOR DTA144EK	
Q228	8-729-901-01	TRANSISTOR DTC144EK	
Q229	8-729-901-06	TRANSISTOR DTA144EK	
Q230	8-729-901-01	TRANSISTOR DTC144EK	
Q232	8-729-901-06	TRANSISTOR DTA144EK	
Q233	8-729-901-01	TRANSISTOR DTC144EK	
Q235	8-729-901-01	TRANSISTOR DTC144EK	

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

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

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No.	Part No.	Description	Remark
Q237	8-729-901-06	TRANSISTOR DTA144EK	
Q238	8-729-901-01	TRANSISTOR DTC144EK	
Q240	8-729-901-01	TRANSISTOR DTC144EK	
Q242	8-729-901-01	TRANSISTOR DTC144EK	
Q245	8-729-901-06	TRANSISTOR DTA144EK	
Q246	8-729-901-01	TRANSISTOR DTC144EK	
Q248	8-729-901-01	TRANSISTOR DTC144EK	
Q249	8-729-901-06	TRANSISTOR DTA144EK	
Q250	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q251	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q252	8-729-100-76	TRANSISTOR 2SA812	
Q253	8-729-100-76	TRANSISTOR 2SA812	
Q254	8-729-901-01	TRANSISTOR DTC144EK	
Q256	8-729-901-01	TRANSISTOR DTC144EK	
Q260	8-729-199-92	TRANSISTOR 2SD999	
Q261	8-729-199-92	TRANSISTOR 2SD999	
Q262	8-729-199-92	TRANSISTOR 2SD999	
Q263	8-729-901-06	TRANSISTOR DTA144EK	
Q264	8-729-901-04	TRANSISTOR DTA114EK	
Q280	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q281	8-729-901-01	TRANSISTOR DTC144EK	
Q282	8-729-901-01	TRANSISTOR DTC144EK	
Q285	8-729-901-06	TRANSISTOR DTA144EK	
Q286	8-729-901-01	TRANSISTOR DTC144EK	
Q287	8-729-901-01	TRANSISTOR DTC144EK	
Q390	8-729-901-01	TRANSISTOR DTC144EK	
Q401	8-729-901-01	TRANSISTOR DTC144EK	
Q458	8-729-901-04	TRANSISTOR DTA114EK	
Q470	8-729-100-76	TRANSISTOR 2SA812	
Q471	8-729-901-01	TRANSISTOR DTC144EK	
Q485	8-729-901-06	TRANSISTOR DTA144EK	
Q500	8-729-901-01	TRANSISTOR DTC144EK	
Q501	8-729-901-01	TRANSISTOR DTC144EK	
Q502	8-729-901-01	TRANSISTOR DTC144EK	
Q591	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q601	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q602	8-729-901-01	TRANSISTOR DTC144EK	
Q604	8-729-901-06	TRANSISTOR DTA144EK	
Q605	8-729-901-01	TRANSISTOR DTC144EK	
Q606	8-729-901-01	TRANSISTOR DTC144EK	
Q701	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q702	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q703	8-729-901-01	TRANSISTOR DTC144EK	
Q704	8-729-100-76	TRANSISTOR 2SA812	
Q705	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q706	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q707	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q708	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q709	8-729-100-76	TRANSISTOR 2SA812	
Q710	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q711	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q712	8-729-901-01	TRANSISTOR DTC144EK	
Q713	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q714	8-729-901-01	TRANSISTOR DTC144EK	
Q715	8-729-100-76	TRANSISTOR 2SA812	
Q717	8-729-901-01	TRANSISTOR DTC144EK	
Q777	8-729-901-01	TRANSISTOR DTC144EK	
Q790	8-729-901-01	TRANSISTOR DTC144EK	

RESISTOR

No.	Part No.				Remark
R001	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R002	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R003	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R004	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R005	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R008	1-216-057-00	METAL GLAZE	2.2K	5% 1/10W	
R010	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R012	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R013	1-216-081-00	METAL GLAZE	22K	5% 1/10W	
R014	1-216-061-00	METAL GLAZE	3.3K	5% 1/10W	
R015	1-216-081-00	METAL GLAZE	22K	5% 1/10W	
R018	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R019	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R021	1-216-295-00	METAL GLAZE	0	5% 1/10W	
R022	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R023	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R024	1-216-041-00	METAL GLAZE	470	5% 1/10W	
R025	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R026	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R027	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R028	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R029	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R030	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R031	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R032	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R033	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R040	1-216-295-00	METAL GLAZE	0	5% 1/10W	
R051	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R052	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R058	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R080	1-216-001-00	METAL GLAZE	10	5% 1/10W	
R086	1-216-097-00	METAL GLAZE	100K	5% 1/10W	
R087	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R088	1-216-089-00	METAL GLAZE	47K	5% 1/10W	
R089	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R090	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R097	1-216-113-00	METAL GLAZE	470K	5% 1/10W	
R098	1-216-113-00	METAL GLAZE	470K	5% 1/10W	
R099	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R100	1-216-001-00	METAL GLAZE	10	5% 1/10W	
R151	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R152	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R153	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R154	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R155	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R156	1-216-073-00	METAL GLAZE	10K	5% 1/10W	

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

No.	Part No.	Description				Remark
R157	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R158	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R160	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R162	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R163	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R170	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R171	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R200	1-249-448-11	CARBON	1.2	5%	1/4W	
R202	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R203	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R204	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R205	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R206	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R207	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R208	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R209	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R211	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R212	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R214	1-216-105-00	METAL GLAZE	220K	5%	1/10W	
R215	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R216	1-216-667-11	METAL CHIP	4.7K	0.50%	1/10W	
R217	1-216-667-11	METAL CHIP	4.7K	0.50%	1/10W	
R218	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R219	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R220	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R221	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R222	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R223	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R224	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R225	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R226	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R227	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R228	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R229	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R230	1-216-101-00	METAL GLAZE	150K	5%	1/10W	
R231	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R232	1-216-304-11	METAL GLAZE	3.3	5%	1/10W	
R233	1-216-304-11	METAL GLAZE	3.3	5%	1/10W	
R234	1-216-304-11	METAL GLAZE	3.3	5%	1/10W	
R235	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R237	1-216-068-00	METAL GLAZE	6.2K	5%	1/10W	
R238	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R241	1-216-667-11	METAL CHIP	4.7K	0.50%	1/10W	
R245	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R247	1-216-080-00	METAL GLAZE	20K	5%	1/10W	
R248	1-216-080-00	METAL GLAZE	20K	5%	1/10W	
R249	1-216-080-00	METAL GLAZE	20K	5%	1/10W	
R250	1-216-080-00	METAL GLAZE	20K	5%	1/10W	
R251	1-216-080-00	METAL GLAZE	20K	5%	1/10W	
R252	1-216-080-00	METAL GLAZE	20K	5%	1/10W	
R253	1-216-080-00	METAL GLAZE	20K	5%	1/10W	
R254	1-216-080-00	METAL GLAZE	20K	5%	1/10W	
R255	1-216-073-00	METAL GLAZE	10K	5%	1/10W	

No.	Part No.	Description				Remark
R256	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R257	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R258	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R259	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R260	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R261	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R262	1-216-080-00	METAL GLAZE	20K	5%	1/10W	
R263	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R264	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R266	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R267	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R268	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R269	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R270	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R271	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R272	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R280	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R281	1-216-693-11	METAL CHIP	56K	0.50%	1/10W	
R282	1-216-681-11	METAL CHIP	18K	0.50%	1/10W	
R287	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R288	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R290	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R293	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R294	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R295	1-216-103-00	METAL GLAZE	180K	5%	1/10W	
R296	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R297	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R298	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R299	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R300	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R303	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R305	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R306	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R307	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R308	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R309	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R310	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R311	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R312	1-216-115-00	METAL GLAZE	560K	5%	1/10W	
R313	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R314	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R315	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R316	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R317	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R318	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R319	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R320	1-216-685-11	METAL CHIP	27K	0.50%	1/10W	
R321	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R322	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R323	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R324	1-216-099-00	METAL GLAZE	120K	5%	1/10W	
R326	1-216-109-00	METAL GLAZE	330K	5%	1/10W	
R327	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	

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

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No.	Part No.	Description				Remark
R328	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R329	1-216-117-00	METAL GLAZE	680K	5%	1/10W	
R330	1-216-117-00	METAL GLAZE	680K	5%	1/10W	
R331	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R332	1-216-115-00	METAL GLAZE	560K	5%	1/10W	
R333	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R334	1-216-115-00	METAL GLAZE	560K	5%	1/10W	
R336	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R337	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R338	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R339	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R340	1-216-663-11	METAL CHIP	3.3K	0.50%	1/10W	
R341	1-216-667-11	METAL CHIP	4.7K	0.50%	1/10W	
R342	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R343	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R344	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R351	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R352	1-216-685-11	METAL CHIP	27K	0.50%	1/10W	
R353	1-216-663-11	METAL CHIP	3.3K	0.50%	1/10W	
R354	1-216-689-11	METAL CHIP	39K	0.50%	1/10W	
R356	1-216-693-11	METAL CHIP	56K	0.50%	1/10W	
R357	1-216-691-11	METAL CHIP	47K	0.50%	1/10W	
R358	1-216-663-11	METAL CHIP	3.3K	0.50%	1/10W	
R359	1-216-685-11	METAL CHIP	27K	0.50%	1/10W	
R360	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R361	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R362	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R363	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R364	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R365	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R366	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R367	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R370	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R371	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R372	1-216-681-11	METAL CHIP	18K	0.50%	1/10W	
R373	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R376	1-216-107-00	METAL GLAZE	270K	5%	1/10W	
R377	1-216-107-00	METAL GLAZE	270K	5%	1/10W	
R380	1-216-115-00	METAL GLAZE	560K	5%	1/10W	
R381	1-216-115-00	METAL GLAZE	560K	5%	1/10W	
R383	1-216-683-11	METAL CHIP	22K	0.50%	1/10W	
R384	1-216-667-11	METAL CHIP	4.7K	0.50%	1/10W	
R385	1-216-683-11	METAL CHIP	22K	0.50%	1/10W	
R386	1-216-667-11	METAL CHIP	4.7K	0.50%	1/10W	
R388	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R390	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R391	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R392	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R394	1-216-035-00	METAL GLAZE	270	5%	1/10W	
R395	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R398	1-216-111-00	METAL GLAZE	390K	5%	1/10W	
R399	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R401	1-216-073-00	METAL GLAZE	10K	5%	1/10W	

No.	Part No.	Description				Remark
R408	1-216-115-00	METAL GLAZE	560K	5%	1/10W	
R461	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R470	1-216-109-00	METAL GLAZE	330K	5%	1/10W	
R471	1-216-109-00	METAL GLAZE	330K	5%	1/10W	
R472	1-216-109-00	METAL GLAZE	330K	5%	1/10W	
R473	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R474	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R475	1-216-103-00	METAL GLAZE	180K	5%	1/10W	
R485	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R486	1-216-076-00	METAL GLAZE	13K	5%	1/10W	
R502	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R504	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R505	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R506	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R508	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R509	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R510	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R511	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R514	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R515	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R516	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R517	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R518	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R519	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R530	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R591	1-216-095-00	METAL GLAZE	82K	5%	1/10W	
R592	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R593	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R595	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R596	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R607	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R608	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R609	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R610	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R611	1-216-001-00	METAL GLAZE	10	5%	1/10W	
R612	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R613	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R614	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R615	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R616	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R617	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R618	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R619	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R620	1-216-645-11	METAL CHIP	560	0.50%	1/10W	
R621	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R622	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R623	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R624	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R625	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R626	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R627	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R628	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R630	1-216-295-00	METAL GLAZE	0	5%	1/10W	

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

No.	Part No.	Description				Remark
R632	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R633	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R634	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R635	1-216-029-00	METAL GLAZE	150	5%	1/10W	
R636	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R637	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R638	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R640	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R641	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R650	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R652	1-216-109-00	METAL GLAZE	330K	5%	1/10W	
R653	1-216-109-00	METAL GLAZE	330K	5%	1/10W	
R660	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R661	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R662	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R664	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R665	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R671	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R699	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R701	1-216-105-00	METAL GLAZE	220K	5%	1/10W	
R702	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R703	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R704	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R705	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R706	1-216-117-00	METAL GLAZE	680K	5%	1/10W	
R707	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R708	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R709	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R715	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R716	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R717	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R718	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R719	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R720	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R721	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R722	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R723	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R724	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R725	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R726	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R727	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R728	1-216-027-00	METAL GLAZE	120	5%	1/10W	
R729	1-216-035-00	METAL GLAZE	270	5%	1/10W	
R730	1-216-039-00	METAL GLAZE	390	5%	1/10W	
R731	1-216-072-00	METAL GLAZE	9.1K	5%	1/10W	
R732	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R733	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R734	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R735	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R736	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R737	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R738	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R739	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R740	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R741	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R742	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R743	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R744	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R745	1-216-088-00	METAL GLAZE	43K	5%	1/10W	
R746	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R747	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R748	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R749	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R750	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R753	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R754	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R755	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R759	1-216-072-00	METAL GLAZE	9.1K	5%	1/10W	
R760	1-216-066-00	METAL GLAZE	5.1K	5%	1/10W	
R761	1-216-748-11	METAL GLAZE	39K	5%	1/10W	
R762	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R764	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R790	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R801	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R802	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R803	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R804	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R805	1-216-037-00	METAL GLAZE	330	5%	1/10W	
R806	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R807	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R808	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R809	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R810	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R811	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R812	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R813	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R814	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R815	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R816	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R817	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R818	1-216-037-00	METAL GLAZE	330	5%	1/10W	
R819	1-216-037-00	METAL GLAZE	330	5%	1/10W	

VARIABLE RESISTOR

RV201	1-228-998-00	RES, ADJ, METAL GLAZE 220K
RV202	1-228-998-00	RES, ADJ, METAL GLAZE 220K
RV203	1-228-993-00	RES, ADJ, CARBON 4.7K
RV204	1-228-993-00	RES, ADJ, CARBON 4.7K
RV209	1-228-999-00	RES, ADJ, METAL GLAZE 470K
RV210	1-228-993-00	RES, ADJ, METAL GLAZE 4.7K
RV215	1-228-995-00	RES, ADJ, METAL GLAZE 22K
RV216	1-228-995-00	RES, ADJ, METAL GLAZE 22K
RV601	1-230-521-11	RES, ADJ, SOLID 2.2K
RV602	1-230-522-11	RES, ADJ, SOLID 4.7K
RV603	1-230-527-11	RES, ADJ, SOLID 100K
RV604	1-230-523-11	RES, ADJ, SOLID 10K

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

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No.	Part No.	Description			Remark
RV701	1-228-996-00	RES, ADJ, CARBON 47K			
		SWITCH			
SW500	1-553-725-21	SWITCH, SLIDE			
		CRYSTAL			
X001	1-567-346-11	OSCILLATOR, CERAMIC (5MHz)			
X002	1-567-121-00	VIBRATOR, CRYSTAL (4.19MHz)			
X080	1-567-192-11	OSCILLATOR, CERAMIC (4MHz)			
X201	1-567-699-21	VIBRATOR, CRYSTAL			
X600	1-567-419-11	VIBRATOR, LITHIUM TANTALATE (11.58MHz)			
**********					
	*A-7061-074-A	DM-18 BOARD, COMPLETE **********			
		CAPACITOR			
C001	1-163-021-00	CERAMIC CHIP	0.01MF		50V
C002	1-130-483-00	MYLAR	0.01MF	5%	50V
C003	1-130-491-00	MYLAR	0.047MF	5%	50V
C004	1-130-491-00	MYLAR	0.047MF	5%	50V
C005	1-126-157-11	ELECT	10MF	20%	16V
C006	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C007	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C008	1-124-282-00	ELECT	22MF	20%	16V
C009	1-124-589-11	ELECT	47MF	20%	10V
C010	1-124-257-00	ELECT	2.2MF	20%	50V
C011	1-124-282-00	ELECT	22MF	20%	16V
		CONNECTOR			
CN001	1-563-311-11	CONNECTOR, BOARD TO BOARD 10P			
		DIODE			
D001	8-719-801-45	DIODE 1SS187			
D009	8-719-801-45	DIODE 1SS187			
D010	8-719-104-22	DIODE 1SS123			
		IC			
IC001	8-759-937-25	IC BA6303			
IC002	8-759-132-40	IC UPC324C			
IC003	8-759-240-66	IC TC4066BP			
		JUMPER RESISTOR			
JR001	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR002	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR003	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR004	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR005	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR006	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR007	1-216-296-00	METAL GLAZE	0	5%	1/8W

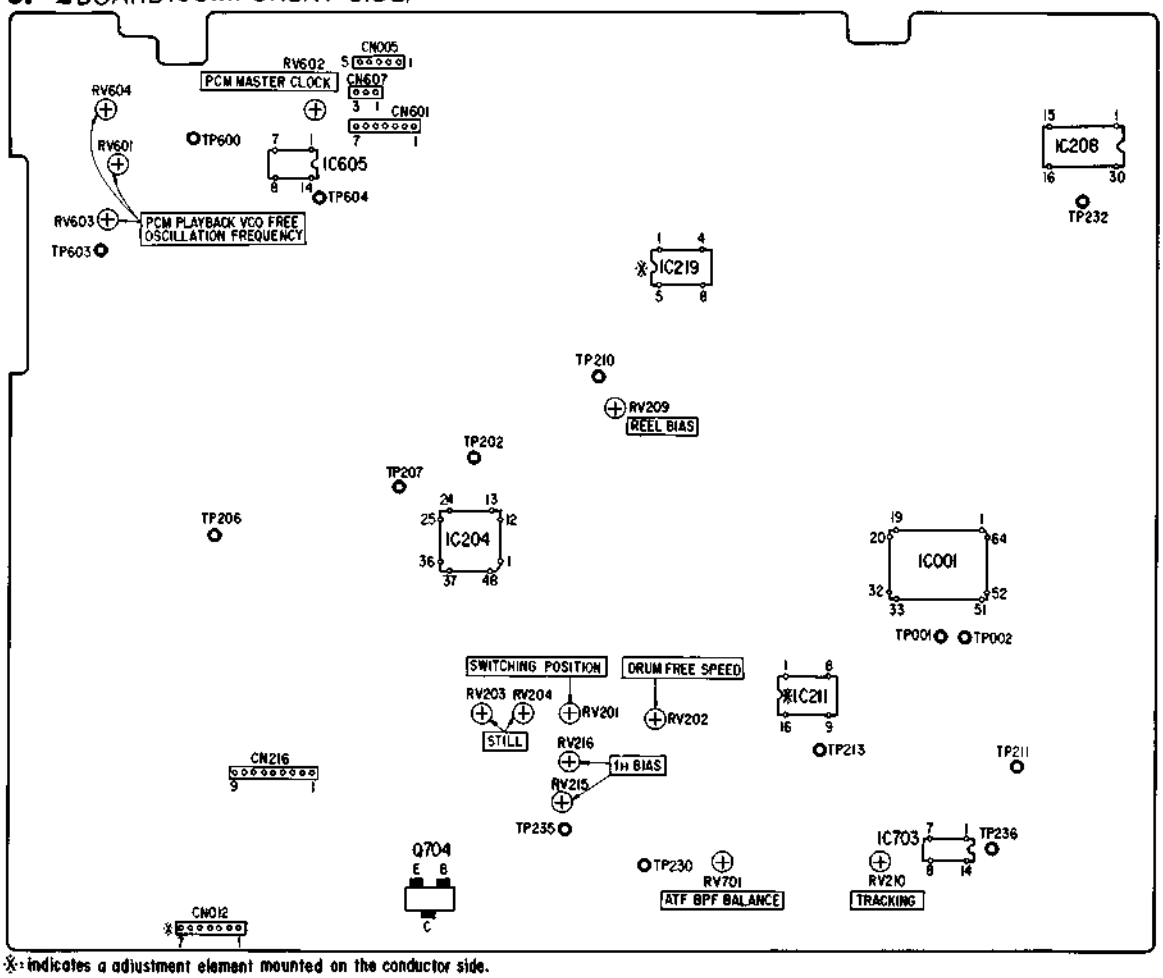
No.	Part No.	Description			Remark
		TRANSISTOR			
Q007	8-729-901-01	TRANSISTOR DTC144EK			
		RESISTOR			
R001	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W
R004	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R005	1-216-083-00	METAL GLAZE	27K	5%	1/10W
R006	1-216-689-11	METAL CHIP	39K	0.50%	1/10W
R007	1-216-691-11	METAL CHIP	47K	0.50%	1/10W
R008	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R009	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R010	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R011	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W
R012	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R013	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R014	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R015	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R016	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R017	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R018	1-216-077-00	METAL GLAZE	15K	5%	1/10W
R019	1-216-206-00	METAL GLAZE	2.2K	5%	1/8W
R026	1-216-679-11	METAL CHIP	15K	0.50%	1/10W
R030	1-216-073-00	METAL GLAZE	10K	5%	1/10W
**********					

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

SECTION 5
ELECTRICAL ADJUSTMENT

5-1. ADJUSTMENT ELEMENT LOCATION

SP-2 BOARD (COMPONENT SIDE)



※: indicates a adjustment element mounted on the conductor side.

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