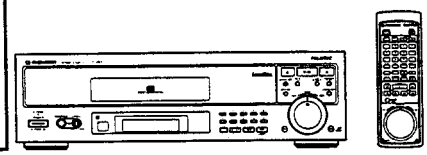
PIONEER®
The Art of Entertainment

Service Manual



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CD CDV LD PLAYER

CLD-1950

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Type	Model	Power Requirement	The voltage can be converted by the following method.
	CLD-1950		
HB	○	AC240V	AC220—230V, *
HEZ	○	AC220—230V	AC240V, *

* : Alter the wiring of the Power-supply block at the primary winding of Power-transformer referring to the "Line Voltage Selection" described in Service Manual.

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CHAPTER 1

1.1 SAFETY INFORMATION

(FOR EUROPEAN MODEL ONLY)

VARO!
AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.

ADVERSEL:
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGÅ UDSAETTELSE FOR STRÅLING.

VARNING!
OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.

LASER
Kuva 1
Lasersateilyn varoitusmerkki

WARNING!
DEVICE INCLUDES LASER DIODE WHICH EMITS INVISIBLE INFRARED RADIATION WHICH IS DANGEROUS TO EYES. THERE IS A WARNING SIGN ACCORDING TO PICTURE 1 INSIDE THE DEVICE CLOSE TO THE LASER DIODE.

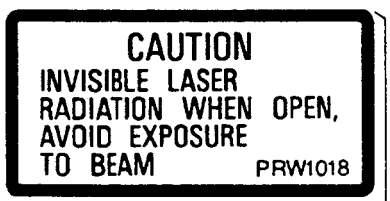
IMPORTANT
THIS PIONEER APPARATUS CONTAINS LASER OF CLASS 1.
SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

LASER DIODE CHARACTERISTICS
MAXIMUM OUTPUT POWER: 5 mw
WAVELENGTH: 780-785 nm

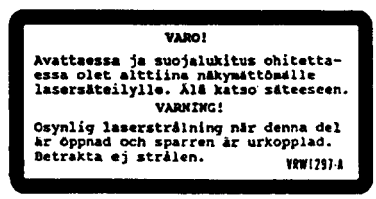
LASER
Picture 1
Warning sign for laser radiation

LABEL CHECK

HB model

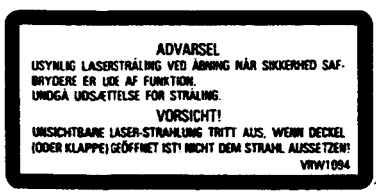


HEZ model

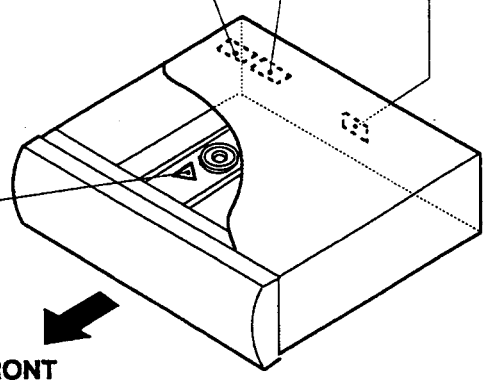


HEZ and HB models

HEZ model



HEZ and HB models



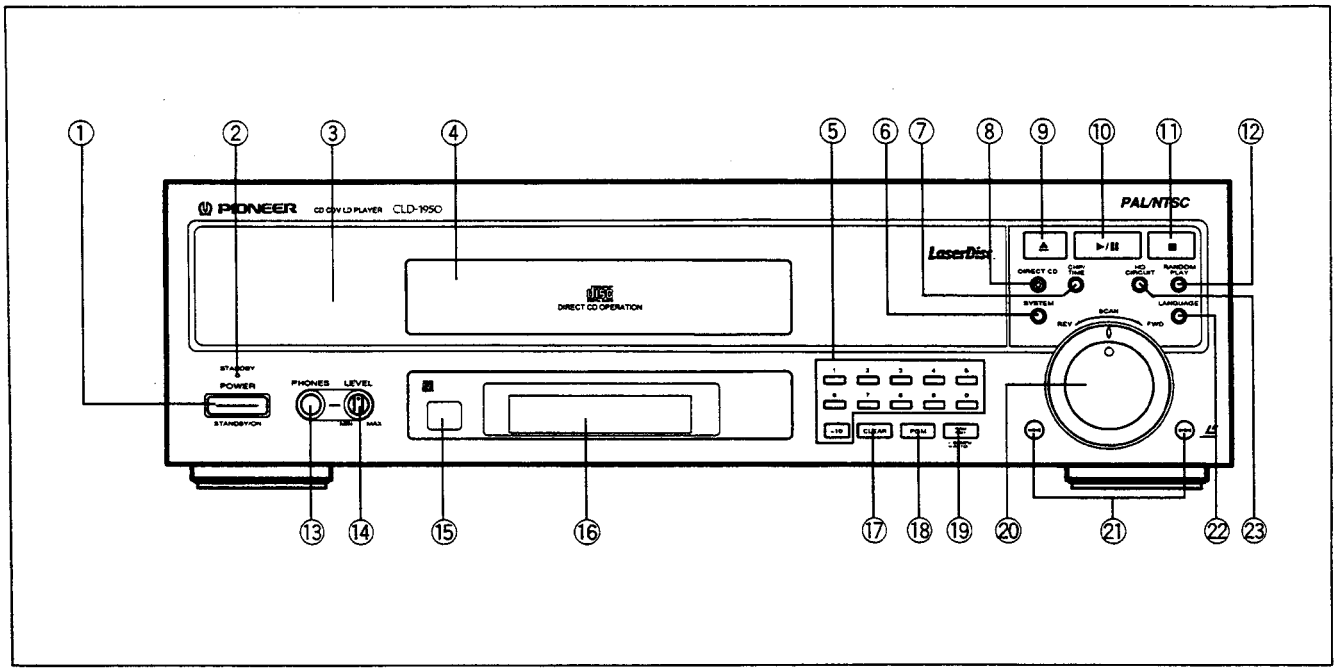
FRONT

Additional Laser Caution

1. The ON/OFF statuses of the slider - position detection switches (PARK INNER, PARK OUTER on the PASB assembly), loading - status detection switches (SW 1,2 and 3 on LOSB assembly) are detected by the microprocessor (IC101 in the MAIN ASSY). To permit the laser diode to oscillate, it is required to set the slider - position detection switch for the LD ACTIVE status (PARK INNER: OFF, PARK OUTER: OFF), and to set the loading - status detection switch for tilt neutral state (SW1: ON, SW2: OFF, SW3: ON). As long as these requirements are not satisfied, the laser diode will not oscillate. When the requirements are met in any way, the laser diode can oscillate. The laser diode oscillation will continue if pin 13 of IC801 is shorted to GND or the emitter and collector of Q834 are shorted each other (fault condition) in MAIN ASSY.
   In the test mode* , the laser diode oscillates when microprocessor detects a PLAY signal, or when the PLAY key is pressed (S207 ON in the FLKY assembly), with the above requirements satisfied.
2. When the cover is open, close viewing through the objective lens with the naked eye will cause exposure to a Class 1 laser beam.

* Refer to page 1—10.

1.2 PANEL FACILITIES



① **POWER STANDBY/ON switch**
Press to turn the power on and off.
② **STANDBY indicator**
③ **Disc table**
④ **CD disc table**
⑤ **Digit buttons**
⑥ **SYSTEM button**
⑦ **CHP/TIME button**
⑧ **DIRECT CD button/indicator**
⑨ **Open/close button (⏏)**
⑩ **Play/pause button (▶/II)**
⑪ **Stop button (■)**
⑫ **RANDOM PLAY button**
⑬ **PHONES jack**
⑭ **PHONES LEVEL control**
Turn this control in the "MAX" direction to increase the output level from the PHONES jack. Turn this control in the "MIN" direction to decrease the output level from the PHONES jack.
⑮ **Remote sensor**
⑯ **Display window**
⑰ **CLEAR button**
⑱ **PGM (program) button**
⑲ **PGM EDIT button**
⑳ **SCAN control**
㉑ **Skip buttons (|◀◀, ▶▶|)**
㉒ **LANGUAGE button**
㉓ **HQ CIRCUIT button**

1.3 SPECIFICATIONS

1. General

System ..... LaserVision Disc system and Compact Disc digital audio system
Laser ..... Semiconductor laser wavelength 780 nm
Power requirements
European model ..... AC 220 ~ 230 V, 50/60 Hz
UK model ..... AC 240 V, 50/60 Hz
Power consumption ..... 47 W
Weight
European model ..... 7.4 kg
UK model ..... 7.5 kg
Dimensions ..... 420 (W) x 390 (D) x 122 (H) mm
Operating temperature ..... +5°C ~ +35°C
Operating humidity ..... 5% ~ 85%
(There should be no condensation of moisture.)

2. Disc

LaserVision Discs
PAL disc
*Maximum playing times
30 cm active play disc ..... 72 min/both sides
30 cm long play disc ..... 2 hours/both sides
20 cm active play disc ..... 28 min/both sides
14 min/one side
20 cm long play disc ..... 40 min/both sides
20 min/one side
Spindle motor speed
Active play disc ..... 1,500 rpm
Long play disc ..... 1,500 rpm (inner circumference) to 570 rpm (outer circumference)
(For a 30 cm disc)

NTSC disc
*Maximum playing times
30 cm standard play disc ..... 1 hour/both sides
30 cm extended play disc ..... 2 hours/both sides
20 cm standard play disc ..... 28 min/both sides
14 min/one side
20 cm extended play disc ..... 40 min/both sides
20 min/one side

Standard play disc ..... 1,800 rpm
Extended play disc ..... 1,800 rpm (inner circumference) to 600 rpm (outer circumference)
(For a 30 cm disc)

Compact Discs
DISC ..... Diameter: 12 cm, 8 cm, Thickness: 1.2 mm
Rotation direction (pickup side) ..... Counterclockwise
Linear speed ..... 1.2 ~ 1.4m/sec
*Maximum playing time ..... 74 min. 12 cm discs
20 min. 8 cm discs
(For stereo playback)

Compact Discs with Video
Disc ..... Diameter: 12 cm, Thickness: 1.2 mm
Rotation direction (pickup side) ..... Counterclockwise
Linear speed ..... Audio portion: 1.2 ~ 1.4m/sec
Video portion: 11 ~ 12m/sec
*Maximum playing time ..... Video portion: 5 min. (CLV)
Audio portion: 20 min. (Digital)

** Actual playback time differs for each disc.*

3. Video characteristics

Format ..... PAL/NTSC specifications
Video output
Level ..... 1 Vp-p nominal, sync. negative, terminated
Impedance ..... 75Ω unbalanced
Jack ..... RCA jack
S-Video output
Y (luminance) level ..... 1 Vp-p (75 Ω)
C (color) level ..... 286 mVp-p (75 Ω)
Jack ..... S-VIDEO jack

4. Audio characteristics

Output level
During analog audio output ..... 200 mVrms (1 kHz, 40%)
During digital audio output ..... 200 mVrms (1 kHz, –20 dB)
Jacks ..... Both RCA jacks
Number of channels 2

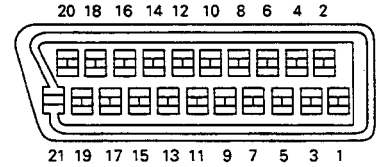
Digital Audio Characteristics

Frequency response	4 Hz - 20 kHz
SN ratio	115 dB (EIAJ)
Dynamic range	97 dB (EIAJ)
Total harmonic distortion	0.003 % (EIAJ)
Wow and flutter	Limit of measurement (EIAJ)

5. Other Terminals

Control input/output ..... Both miniature jacks
CD-DECK synchro ..... Miniature jack
Optical digital output ..... Optical digital jack
AV connector input/output ..... 21-pin connector x 2
This connector provides the video and audio signals for connection to a colour video TV monitor (or TV set) which has a "AV CONNECTOR" terminal.

21-pin connector assignment



PIN no.		
1	Audio 2/R out	17 GND
3	Audio 1/L out	19 Video out
4	GND	21 GND
8	Status	

6. Accessories

Remote control unit (CU-CLD096) 1
Size "AAA" (IEC R03) dry cell batteries 2
Euroconnector cable 1
Audio cord 1
Operating instructions 1
Warranty card 1

7. Functions

Remote control unit operations (CU-CLD096)

	Function	Active play Disc (CAV)	Long play Disc (CLV)	Compact Disc with Video	Compact Disc
Basic Functions	Single-side play	YES	YES	YES	YES
	Pause	YES	YES	YES	YES
	Stop	YES	YES	YES	YES
Search	Fast forward (forward and reverse)	YES	YES	YES	YES
	Chapter/Track skip	YES	YES	YES	YES
	Direct chapter/Track number search	YES	YES	YES	YES
	Frame number search	YES	NO	NO	NO
	Time number search	NO	YES	YES	YES
	Absolute time search	NO	NO	NO	YES
Program	Chapter/Track program play	YES	YES	YES	YES
	Program correction	YES	YES	YES	YES
Repeat	Repeat between 2 points	YES	YES	YES	YES
	Memory repeat	YES	YES	YES	YES
	Chapter/Track repeat	YES	YES	YES	YES
	One-side repeat	YES	YES	YES	YES
	Program repeat	YES	YES	YES	YES
	Random repeat	YES*1	YES*1	YES	YES
	Program random repeat	YES	YES	YES	YES
Trick play	Still/Step	YES	NO	NO	NO
	Multi-speed (Forward/reverse 9-level variable)	YES	NO	NO	NO
Time display	Elapsed time display	NO	YES	YES	YES
	Absolute time display	YES*1	NO	NO	YES
	Remaining track time display	NO	NO	YES	YES
	Remaining total time display	YES*1	YES*1	YES	YES
	Total number of selections, total time display	YES*1	YES*1	YES	YES
Others	Compu program/Auto program edit	YES*1	YES*1	YES	YES
	Hi-Lite scan	NO	NO	YES*4	YES
	Intro scan	YES	YES	YES*5	NO
	Digital level control	YES*3	YES*3	YES	YES
	CX system ON/OFF	YES*2	YES*2	NO	NO
	Audio channel selection (Stereo, 1/L, 2/R)	YES	YES	YES	YES

*1 Only discs with TOC
*2 Valid for analog audio playing a disc with the CX mark.
*3 Can only be used with discs with digital audio tracks.
*4 Audio part only
*5 Video part only

NOTE:
The specifications and design of this product are subject to change without notice, due to improvements.

PLAYER FUNCTIONS

- Display, Visual Calendar Display
- Intro Scan, Hi-Lite Scan, Direct CD, Digital Level Control, Random Playback, Program Random Playback and Compu Program/Auto Program Edit
- Digital Audio for LaserVision Discs
- Last Memory

1.4 IC INFORMATION

■ PD3274A (FLKY ASS'Y IC201)

● Mode control IC

● Pin function

- The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

No.	Pin name	I/O	Function
1	VCC	I	+5V
2	SYNC OUT	O	CD deck synchro output
3	xS−CLOCK	I/O	Serial communication clock (Mechanism control, Chara. Gen.)
4	S−MTOF	I	Serial communication data input (Mechanism control)
5	S−FTOM	O	Serial communication data output (Mechanism control, Chara. Gen.)
6	xRESET OUT	O	Mother board reset output
7	xCS	O	Chara. Gen. (PD0175A) CS output (L:enable)
8	SYNC IN	I	CD deck synchro input
9	POWER ON	O	Mother board power supply swiching output
10	AVCC	I	+5V
11	AN0		
12	AN1		
13	P02		
14	P03		
15	D-CD SEL	I	Direct CD FL display select port ("H" OFF)
16	xPANL	I	PAL With analog circuit (No "H")
17	P06	I	GND
18	P07		
19	AVSS		
20	TEST		
21	X2	O	NC (OPEN)
22	X1	I	+5V
23	VSS	I	GND
24	OSC1	I	Main system clock oscillation (8MHz)
25	OSC2	O	
26	xRESET IN	I	CPU Reset (L : reset)
27	SHAKE	I	Mechanism control communication request
28	SEL IR	I	Remote control input
29	DOGFOOD	O	Pulse output for watchdog timer
30	P15	O	NC (OPEN)
31	P16	I	+5V
32	P47	O	NC (OPEN)
33	SHTLSCAN	O	Shuttle scan output
34	LED (DRCTCD)	O	LED output : Direct CD indication
35	LED (STNBY)	O	LED output : Standby indication

No.	Pin name	I/O	Function
36	SEG L	O	Display segment output
37	SEG K		
38	SEG J		
39	SEG I		
40	KSCAN0/SEG H	O	Key scan output/Display segment output
41	KSCAN1/SEG G		
42	KSCAN2/SEG F		
43	KSCAN3/SEG E		
44	SEG D		
45	SEG C		
46	SEG B		
47	SEG A		
48	VDISP	I	−27V
49	G9	O	Display grid output
50	G8		
51	G7		
52	G6		
53	G5		
54	G4		
55	G3		
56	G2		
57	G1		
58	KIN0	I	Key data input
59	KIN1		
60	KIN2		
61	KIN3		
62	KIN4		
63	KIN5		
64	KIN6		

■ PD0193A (MAIN ASSY IC101)

● Mechanism control IC

● Pin function

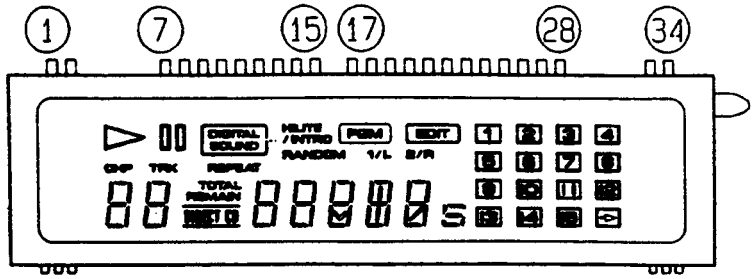
No.	Pin name	I/O	Function
1	VCC	I	Power connection pin Impresses 5V±10%.
2	XCD	O	LD/CD switching signal output pin. "L" = CD "H" = LD
3	RFCORR	O	RF collection switch signal output pin. "H" = gain up CD,CDV-A:Low Raise the gain with the CAV inner circuit, otherwise High.
4	GPWM	O	Duty pulse signal output terminal for spindle gain switching. CLV inner circuit : L Outer circuit : H
5	FBAL	O	Focus balance control H: TEMAX L: RFMAX
6	SLDERR	I A/D	Carries out A/D conversion of this signal and controlled input of the slider servo. Control the slider motor so that this signal becomes 2.5V.
7	SLDPOS	I A/D	Pick up position detection switch input pin. Divides the resistance of each switch and detects the reading position of the A/D input value.
8	TBALERR	I A/D	Tracking balance error signal input pin. Carries out A/D conversion of this signal and controlled input of the tracking offset.
9	TILTERR	I A/D	Carries out A/D conversion of this signal and controlled input of the tilt servo. Control the tilt motor so that this signal becomes 2.5V.
10	XFOK	I	Focus servo lock signal input pin. "L" = lock "H" = unlock Used for detecting focus servo locking.
11	FSEQ	I	Sub−code sync conformity detection signal input pin. "L" = Others "H" = Conformity
12	TBALDRV	O PWM	Carries out PWM output of the tracking offset, and is used for auto tracking offset. 910µsec cycles, 3 value control H, L, Z.
13	TLATCH	O	DAC & digital filter PD2026 serial control latch signal output terminal. Startup is latched.
14	TILTDRV	I/O	Load/tilt control output pin. 0, 5V−tray IN, OUT/tilt DOWN, UP 2.5V−STOP Carries out PWM output of the tilt drive, and is used for the tilt servo.
15	SQOUT	I	DSP reading command data input pin. SUBQ is read out.
16	COIN	O	DSP writing command data output pin.
17	CQCK	O	DSP reading/writing command clock output pin. Start−up reading.
18	SLD DRV	O PWM	Slider control signal output pin. 5V = FWD, 0V = REV, 2.5V = STOP 910µsec cycles, 3 value control H, L, Z.
19	SI1	I	Input pin for data from mode control IC.
20	SO1	O	Serial data output to mode control IC.
21	SCK1	I/O	Clock for serial communication with mode control IC. Is set to input mode at all times when not used for communication with the mode control IC.
22	TZC	I INT	Tracking error zero cross signal input pin. At the time of miss clamp detection, this signal is monitored during track count search.
23	WRQ	I	Sub−code Q reading OK signal input pin. "L" = NG "H" = OK This terminal becomes H when the sub−code Q data passes the CRC check.
24	RWC	O	DSP reading/writing command signal output pin. "L" = READ "H" = WRITE
25	SHAKE	I/O	Handshake signal pin for data communication with mode control IC. This terminal is used as a data line for both directions, and each microcomputer carries out input/output control.
26	XPBV	I	LD/CDV play vertical synchronous signal input pin. "L" = vertical synchronous
27	CNVss	I	GND grounding for A/D conversion.
28	XRESET	I	Reset signal input pin. "L" = reset "H" = reset cancel Controlled by mode control IC.
29	XIN	I	9MHz clock oscillation input pin.
30	XOUT	O	9MHz clock oscillation output pin.
31	N. C.	O	Not used. Since it is for only φ output, it cannot be used for anything else.
32	GND	I	GND grounding.
33	SW1	I	Switch input pin for loading/tilt position detection.

No.	Pin name	I/O	Function
34	SW2	I	Switch input pin for loading/tilt position detection.
35	SW3	I	Switch input pin for loading/tilt position detection.
36	XSLOCK	I	Spindle lock signal input pin. "H" = unlock "L" = lock
37	FG	I	Spindle motor FG signal input pin 24 outputs per rotation. Used after dividing by 3 in microcomputer.
38	DATA	I	Input pin for Phillips code decoder with built in mechanism controller.
39	PBH	I	Play H−SYNC input for Phillips code decoder.
40	XPBV	I	Play V−SYNC input for Phillips code decoder.
41	16:9	O	16:9 switching signal output pin. 16:9 "H" 4:3 (normal) "L"
42	VLOCK	I	Vertical synchronous lock detection signal input pin. "L" = phase is not correct "H" = phase is correct.
43	N. C.	O	Not used
44	N. C.	O	Not used
45	XPAL	O	PAL/NTSC signal output pin. L : PAL, H : NTSC
46	XPLAY	O	PLAY signal output terminal for PAL. L : PLAY H : NOT PLAY
47	JF/R	I/O	JUMP FWD signal output terminal for PAL. FWD jump : H REV jump : L Others : Z
48	SCK3	O	Serial 3 clock signal output pin.
49	XLATCH3	O	Serial 3 latch signal output pin TBC.
50	SO3	O	Serial 3 data signal output pin. The serial signal is a common one, and the signals are distinguished with latch signals (XLAT3, TLAT).
51	DIRECT	O	CD direct video line power off signal output pin. Video PWOFF: H normal: L
52	XCLV	O	CAV/CLV switching signal output pin. "H" = CAV, "L" = CLV
53	VSQ	O	Switching signal output terminal for the video signal. H : squelch ON L : squelch OFF
54	SENA	O	Shift enable signal output terminal. H : H is picked and REFV is made closer to PBV. L : Normal
55	CLRSCN	O	Clear scan signal output terminal. H : During clear scanning. L : Others
56	T HOLD	I	Track jump accelerating/decelerating signal input pin. "H" = accelerating/decelerating "L" = Others
57	HQON	O	High quality circuit control signal output terminal. H : HQ circuit ON. L : HQ circuit OFF.
58	AMPDET	I	Spindle overcurrent detection signal input pin. "L" = overcurrent "H" = normal
59	SQ1	O	Analog sound switching signal output pin. 1/L "L" = squelch OFF "H" = squelch ON
60	SQ2	O	Analog sound switching signal output pin. 2/R "L" = squelch OFF "H" = squelch ON
61	XCX	O	Analog sound CX noise reduction switching signal output pin. "L" = CX ON "H" = CX OFF
62	MUTE	O	Audio line sound mute control signal output pin. "H" = MUTE "L" = MUTE CANCEL
63	ACCONT	I/O	Output terminal for signal increasing/reducing the spindle speed. H : Accelerator L : Brake Z : Others
64	XANA	O	Digital/analog audio switch signal output pin. "H" = digital "L" = analog

1.5 FL INFORMATION

●VAW1033(V201)

PIN LOCATION



PIN ASSIGNMENT

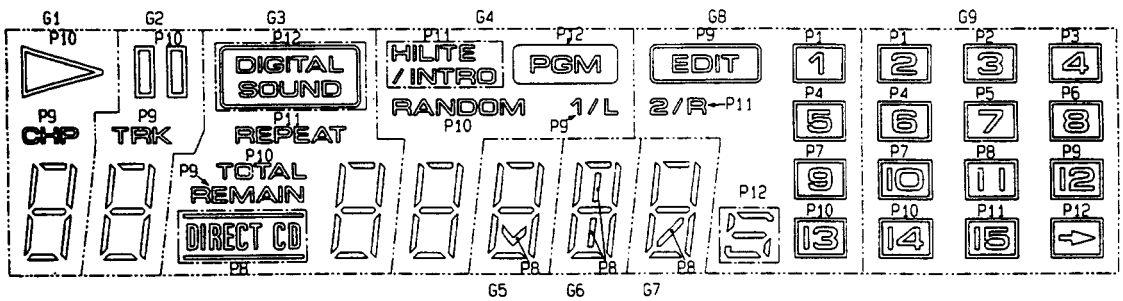
PIN ASSIGNMENT

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Assignment	F	F	NP	NP	NP	NP	G1	G2	G3	G4	G5	G6	G7	G8	G9	NP	P1

Pin No.	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
Assignment	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	NP	NP	NP	NP	F	F

F:Filament G1~G9:Grid P1~P12:Anode NP:No pin

ANODE GRID ASSIGNMENT & PIN ASSIGNMENT



ANODE GRID ASSIGNMENT

	G1	G2	G3	G4	G5	G6	G7	G8	G9
P1	P1	P1	P1	P1	P1	P1	P1	1	2
P2	P2	P2	P2	P2	P2	P2	P2		3
P3	P3	P3	P3	P3	P3	P3	P3		4
P4	P4	P4	P4	P4	P4	P4	P4	5	6
P5	P5	P5	P5	P5	P5	P5	P5		7
P6	P6	P6	P6	P6	P6	P6	P6		8
P7	P7	P7	P7	P7	P7	P7	P7	9	10
P8			DIRECT CD						11
P9	CHP	TRK	REMAIN	1/L				EDIT	12
P10	▷	▯▯	TOTAL	RANDOM				13	14
P11			REPEAT	HILITE /INTRO				2/R	15
P12			DIGITAL SOUND	PGM					▷

1.6 ADJUSTMENTS

1.6.1 TEST MODE

1) How to start test mode

With the MAIN ASSY test mode TP (W407) dropped to GND, the test mode is started by putting the power switch ON. (Fig. 1)

After confirming that all FL indicators are lit, remove test mode jumper wire and GND connection. Or, with power switch ON, press test mode remote control (GGF1067) ESC key and TEST key in order.

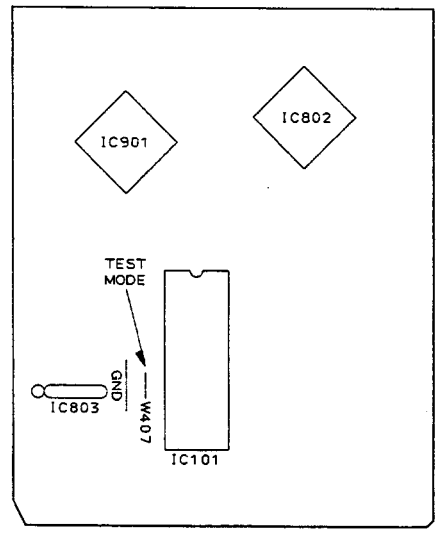
- When entering the test mode, the FL display and the LED will light until an operation is carried out with a key.
- When entering the test mode, the TV system will become that of NTSC.
- During the test mode, the background will be blue if an LD or a CDV is not playing (When NTSC and PAL), or black (in the case of quasi−PAL).
- The TV system is unconditionally toggled between the 3 systems of PAL → NTSC → quasi−PAL.

2) How to cancel test mode

Turn power switch OFF. Or, press test mode remote control ESC key.

3) Functions and key control when in test mode

Note : For keys not on player or on accompanying remote control, use test mode remote control (GGF1067)



MAIN ASSY

Fig. 1

• Key operation in the Test mode

Player Status	Key Operation	Function	Remarks
Tray Open	⏮/⏭ SKIP (Refer to Note 1)	⏮: Shifts the tray in the closed direction and also raises the turn table while pressing the key. ⏭: Shifts the tray in the open direction and also lowers the turn table while pressing the key.	
Tray Open	▶ PLAY	Clamps	
Clamp	▶ PLAY	Turns the disc through TRK Servo OFF	TRK-OFF
TRK Servo OFF	▶ PLAY	TRK Servo ON	TRK-ON
TRK Servo ON	▶ PLAY	TRK Servo OFF	TRK-OFF
TRK Servo ON	◀II/II▶ (STEP)	FOCS balance select	F-0/F-1
TILT Neutral	+ MULTI−SPEED	TILT Servo ON	T-□ : ON
TILT ON	−MULTI−SPEED	TILT Neutral	T-□ : N
TILT Neutral or ON	⏮/⏭ SKIP	Setting TILT Servo to OFF, can force TILT to move.	T-1 to T-E
Clamp	⏪/⏩ SCAN	Can force the slider to move	S-LD S-CDV S-CD S-IN
Play	II PAUSE	Still	
Play	■ STOP	Stop	
Stop	⏏ OPEN	Open	
Play	[+10] ⇩ [0] to [9] ⇩ [▶ PLAY]	Sets to SEARCH Lead Address Input mode. Designates the SEARCH lead address through keys 0 to 9. Press the CLEAR [C] key if the designated address is incorrect. Searches the designated address upon pressing the PLAY key.	

Note 1 : Press SKIP (⏮ / ⏭) Keys after the tray is set to open state by pressing Open (⏏) key. Because, in tray open state, pressing PLAY (▶) key causes it to set to clamp state and SKIP (⏮ / ⏭) keys can not function properly.

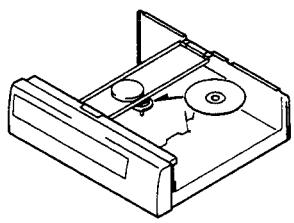
Table 1

● PLAYER OPERATION IN THE TEST MODE

Operate the player by selecting a test mode function with the keys on the player or on the remote control unit.

• CD PLAYBACK

① Place the CD disc on the turn table.



② Press the PLAY (▶) key once.
(Twin gear starts to move.)

③ Push the cam plate (Fig. 4) in the direction of the arrow and wait until the CD disc is clamped.

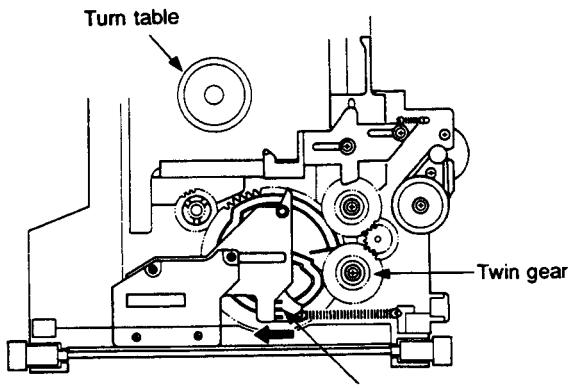
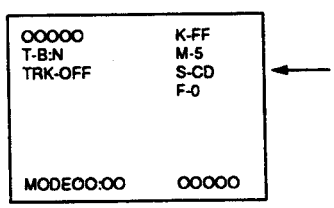


Fig. 4

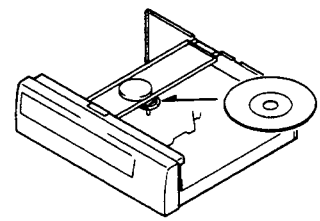
④ Press the ◀◀ or ▶▶ keys to appear "S-CD" on the TV screen display.



TV screen display

⑤ Press the PLAY (▶) key twice, disc will be normally playbacked.

• LD PLAYBACK

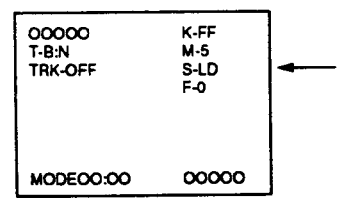


① Press the PLAY (▶) key once. (Twin gear starts to move.)

② Press the SKIP REV (⏮) key to raise the turn table (spindle motor section) while pressing the cam plate (Fig. 4) in the direction of the arrow. Raise it to the position where the LD disc can be easily placed on the turn table.
If the turn table is raised too high, lower it with the SKIP FWD (⏭) key.

③ Place the LD disc on the turn table and press the PLAY (▶) key once to clamp the disc.

④ Press the ◀◀ or ▶▶ keys to appear "S-LD" on the TV screen display.



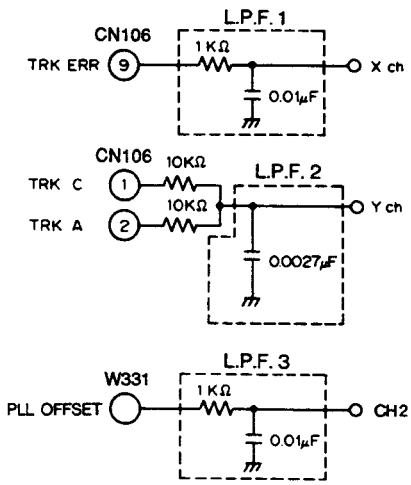
TV screen display

⑤ Press the PLAY (▶) key twice, disc will be normally playbacked.

1.6.2 ADJUSTMENT PRECAUTIONS

- JIGS FOR ADJUSTMENT
  - CD test disc (STD−901 or STD−902)
  - LD test disc (GGV1003 and GGV1007)
  - (−) Screwdriver (medium)
  - (−) Screwdriver (small)
  - Hexagonal wrench driver (straight type, size : 3mm)
  - Resistor (10kΩ × 2, 47kΩ)
  - Dual-trace oscilloscope (with delay)
  - AF oscillator
  - Frequency counter
  - Digital voltmeter
  - TV monitor
  - Low-pass filter

  Use the low-pass filters below in the coarse centering adjustment 2. and fine centering adjustment (L.P.F.1 and L.P.F.2) 6. and PLL OFFSET adjustment (L.P.F.3) 1. when the S/N of the waveform is hard to observe.



- RACK ASSEMBLY DURING CENTERING ADJUSTMENT

  The S-IN position (without hitting the mechanism stopper) of the rack assembly during centering adjustment is indicated below.

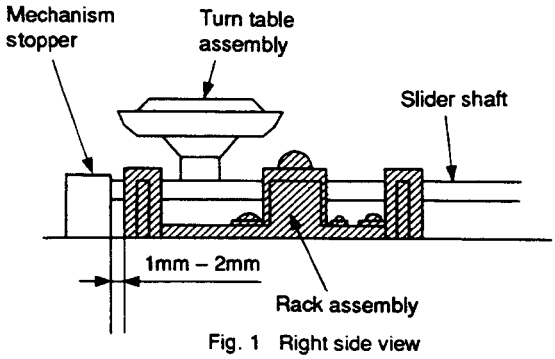
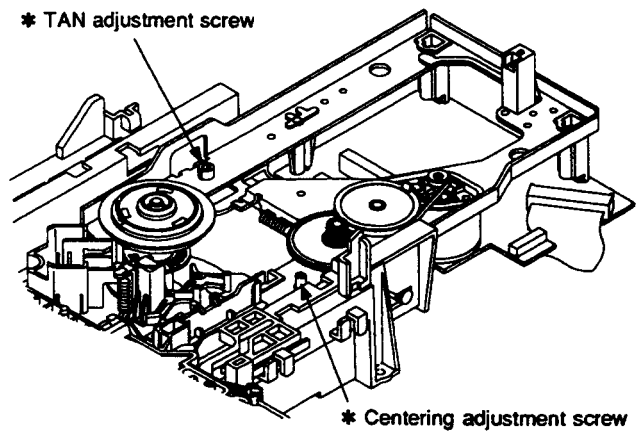


Fig. 1 Right side view



✱ : As the adjustment range of both the TAN and centering adjustment screws is only ±90° from the center, do not turn the screws beyond this range.

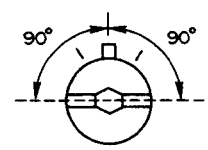
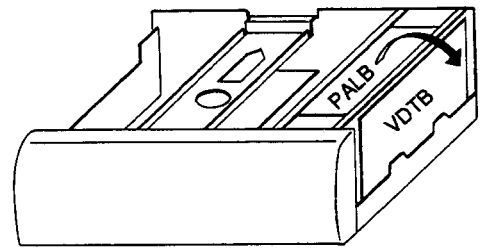


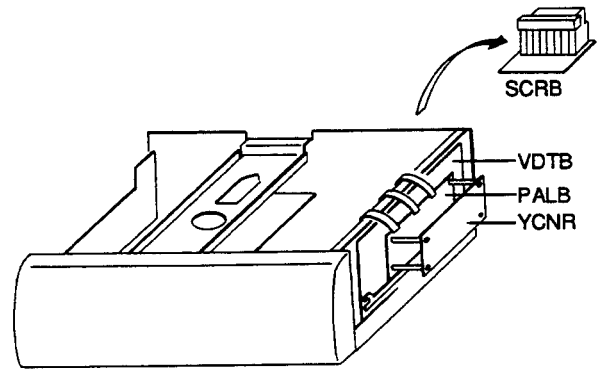
Fig. 2 TILT base section

• DISASSEMBLY ORDER
(When diagnosing the MAIN ASSY)

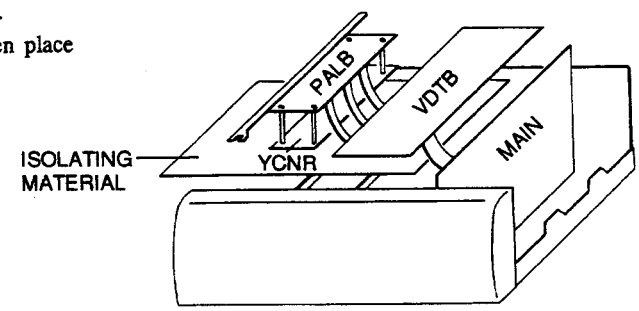
① Remove the tray, open PALB and YCNR assy, and fix it to the holder.



② Removes SCRB assy.



③ Remove VDTB and MAIN assy, and stand MAIN up.
Put isolating material on top of the clamper, and then place the VDTB, PALB and YCNR assy on top.



1.6.3 MAIN ASSY, VDTB ASSY, PALB ASSY AND YCNR ASSY ADJUSTMENT LOCATION

● MAIN ASSY

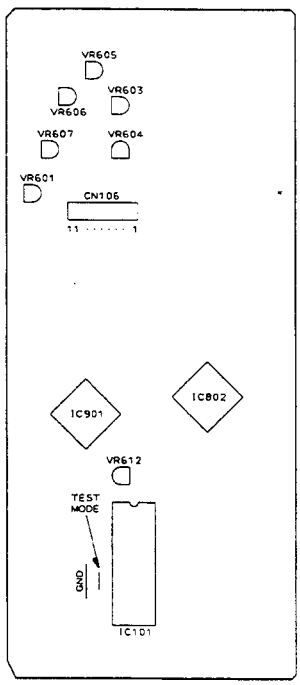


Fig. 1 Adjustment diagram of MAIN ASSY

VR607 : Tilt offset adjustment
VR605 : FCS Balance adjustment (TRK error max)
VR606 : FCS Balance adjustment (RF level max)
VR604 : FCS Servo loop gain adjustment
VR603 : TRK Servo loop gain adjustment
VR601 : RF level adjustment
VR612 : PLL offset adjustment
(Order in adjustment)

● VDTB ASSY, PALB ASSY AND YCNR ASSY

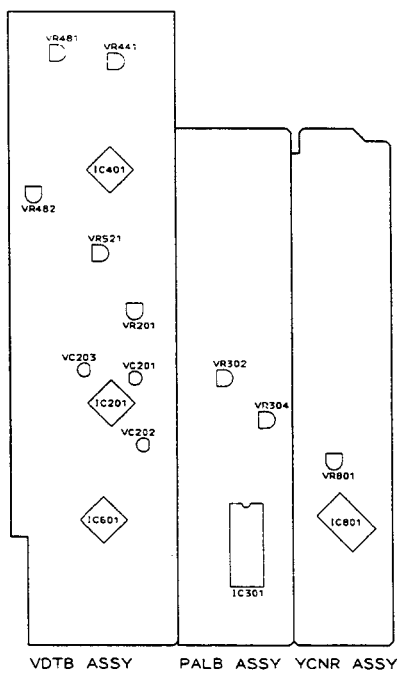
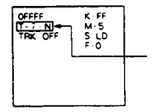
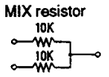
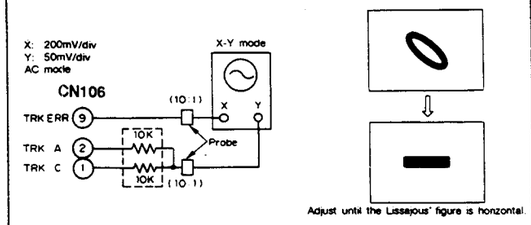
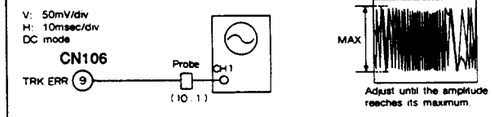
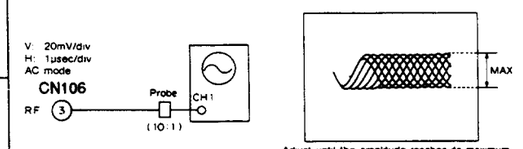
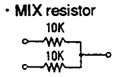
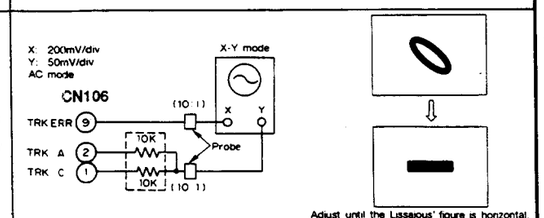
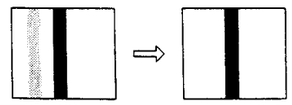
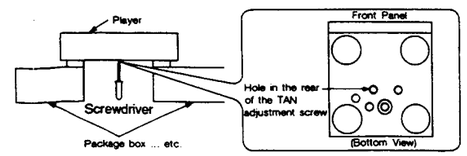


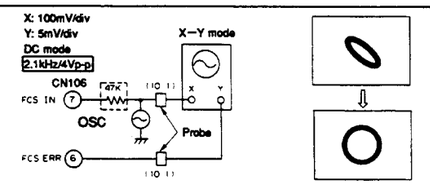
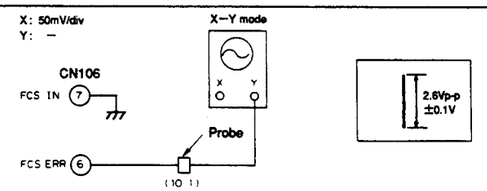
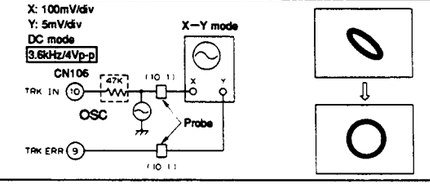
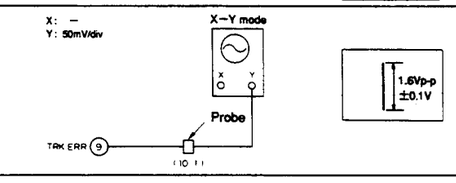
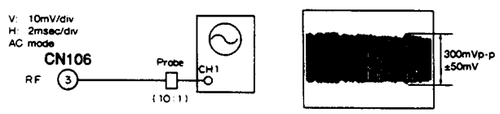
Fig. 2 Adjustment diagram of VDTB ASSY, PALB ASSY AND YCNR ASSY

VC202 : NTSC Reference clock adjustment
VC201 : PAL Reference clock 910fH adjustment
VC203 : PAL Reference clock adjustment
VR481 : VCO Center frequency adjustment
VR482 : Output video level adjustment
VR441 : 1H Delay video level adjustment
VR521 : VPS Error adjustment
VR801 : Y output level adjustment
VR304 : MOD Y− Signal level adjustment
VR302 : MOD C−Signal level adjustment
VR201 : PAL Inverting SC phase adjustment
(Order in adjustment)

1.6.4 MECHANICAL ADJUSTMENT

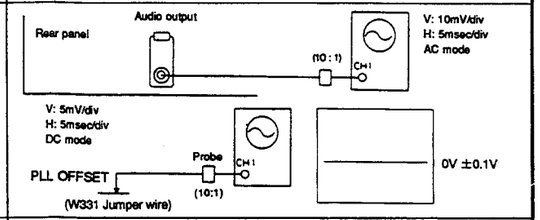
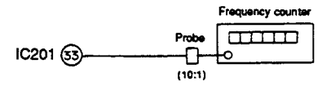
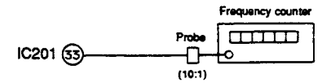
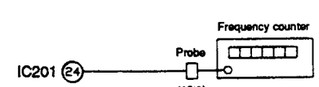
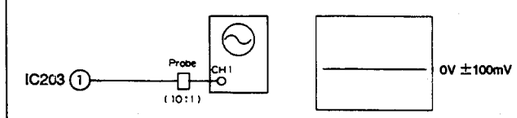
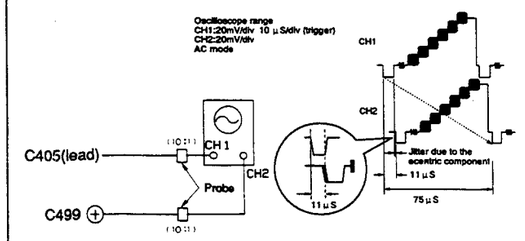
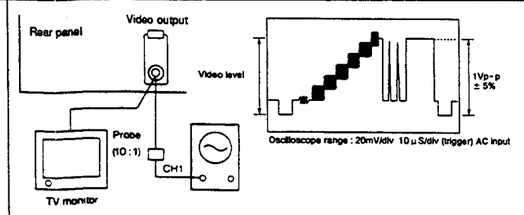
NOTE : All VRs and CNs (connectors) in the tables are parts of MAIN ASSY.

	Adjustment name	Adjustment point	Measuring equipment and jigs	Measurement point	Player condition	Adjustment procedure	Waveform and connection diagram
1	Tilt offset Check and adjustment	VR607	· TV monitor	Tilt indication on Test mode screen	· Power ON · Test mode · Disc not installed	1. Check if the tilt indication on the test mode screen is at T−6 to T−8. 2. If the tilt indication is not at T−6 to T−8, adjust VR607 until the tilt indication reaches T−6 to T−8.	 Adjusts this figure while looking at it on the test mode screen.
2	Coarse centering adjustment	Mechanism assembly Centering adjustment screw	· ⊖ Screwdriver (Large) · Oscilloscope · STD − 901 or STD − 902 · MIX resistor 	CN106 X : ⑨pin (TRK ERR) Y : ①+②pin (TRK SUM)	· Test mode TRK servo OFF Tilt servo ON · Innermost track of STD−901 or STD−902 which does not come in contact with the mechanical stopper.	Note : Be careful not to turn the centering adjustment screw past its limit. 1. Move the slider until it does not come in contact with the mechanical stopper at the slider position indication S−IN. 2. Observe TRK ERR (Xch) and TRK SUM (Ych) at the X−Y mode during TRK Servo OFF. 3. Adjust centering adjustment screw until the Lissajous' figure is horizontal.	 Adjust until the Lissajous' figure is horizontal.
3	FCS balance adjustment (1) TRK ERR MAX	VR605	· Oscilloscope · STD − 901 or STD − 902	CN106 ⑨pin (TRK ERR)	· Test mode TRK servo OFF Tilt servo ON · Inner track of STD − 901 or STD − 902	1. Observe TRK ERR at CH1 of the oscilloscope during TRK Servo OFF. 2. Adjust VR605 until the amplitude of the waveform reaches its maximum and the envelope is very clear.	 Adjust until the amplitude reaches its maximum.
4	FCS balance adjustment (2) RF LEVEL MAX	VR606	· Oscilloscope · STD − 901 or STD − 902	CN106 ③pin (RF)	· Test mode TRK servo ON Tilt servo ON · Inner track of STD − 901 or STD − 902	1. Observe RF at CH1 of the oscilloscope at TRK Servo ON. 2. Adjust VR606 until the amplitude of the waveform reaches its maximum and the envelope is very clear.	 Adjust until the amplitude reaches its maximum and the envelope is very clear.
5	Tangential direction angle adjustment	Carriage assembly TAN adjustment screw	· Oscilloscope · STD − 901 or STD − 902 · ⊕ Screwdriver (Medium)	CN106 ③pin (RF)	· Test mode TRK servo ON Tilt servo ON · Outermost track of STD−901 or STD−902 (position where TAN screw can be seen)	Note : Be careful not to turn the TAN adjustment screw past its limit. 1. Observe RF at CH1 of the oscilloscope at TRK Servo Close. 2. Turn TAN adjustment screw until the amplitude of the waveform reaches its maximum and the envelope is very clear. After adjustment, stabilize the screw with an adhesive.	
6	Fine centering adjustment	Mechanism assembly Centering adjustment screw	· Oscilloscope · STD − 901 or STD − 902 · MIX resistor 	CN106 X : ⑨pin (TRK ERR) Y : ①+②pin (TRK SUM)	· Test mode TRK servo OFF Tilt servo ON · Innermost track of STD−901 or STD−902 which does not come in contact with the mechanical stopper.	Note : Be careful not to turn the centering adjustment screw past its limit. Perform fine centering adjustment again by following the same procedure as in "Coarse centering adjustment" (2). After adjustment, stabilize the screw with an adhesive.	 Adjust until the Lissajous' figure is horizontal.
7	Crosstalk check and tilt offset adjustment.	VR607	· TV monitor · GGV1003	Crosstalk check screen	· Test mode TRK servo ON Tilt servo ON · GGV1003still #115	1. Search for address #115 of GGV1003 and still the address 2. Check the crosstalk. If the crosstalk is pronounced, adjust VR607 until the crosstalk is not noticeable.	 If the crosstalk is pronounced, adjust until the crosstalk is not noticeable.
	When the crosstalk is still noticeable in spite of the adjustment in (7), after carrying out the adjustment in (1) and bringing the tilt indication to T−6 to T−8, use a hexagonal wrench driver (straight type, size : 3mm) to adjust the TAN adjustment screw on the bottom side of the player through the GGV1003 # 115 STILL screen. Afterwards, perform the adjustment procedures from (6).						

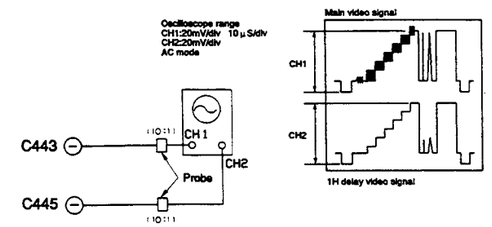
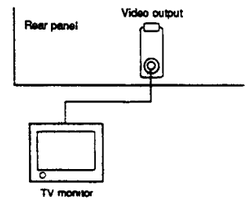
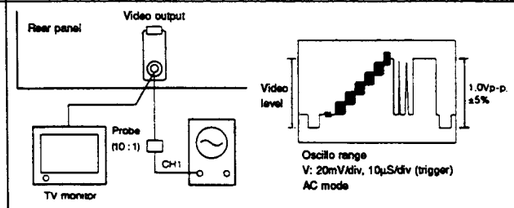
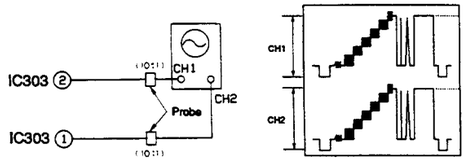
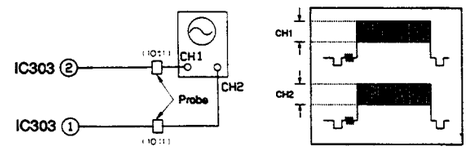
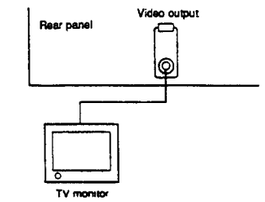
	Adjustment name	Adjustment point		Measuring equipment and jigs	Measurement point	Player condition	Adjustment procedure	Waveform and connection diagram
8	FCS Servo loop gain adjustment	A	VR604	· Oscilloscope · GGV1003 · AF Oscillator · Resistor (47kΩ)	CN106 X : ⑦ pin FCS IN Y : ⑥ pin FCS ERR	· Test mode TRK servo ON Tilt servo ON · GGV1003 #15,000still	1. Xch : Connect to ⑦ pin with 47kΩ Ych : Connect to ⑥ pin 2. Search #15,000 of GGV1003 and still the address. 3. Connect AF oscillator between Xch and 47kΩ and adjust VR604 until Lissajous' figure is a circle.	
		B	VR604	· Oscilloscope · GGV1003 · Clip etc. (Short GND–⑦ pin)	CN106 X : – Y : ⑥ pin FCS ERR ⑦ pinGND (⑦, ⑧ pin Short)	· Test mode · Stop mode · F–1	1. Ych : connect to ⑥ pin. Drop ⑦ pin to GND. 2. Put in GGV1003, press reverse side of skip key and bring F–0 to F–1. 3. Press brake and adjust VR604 until the waveform level is 2.6 Vp–p±0.1 V.	
9	TRK Servo loop gain adjustment	A	VR603	· Oscilloscope · GGV1003 · AF Oscillator · Resistor (47kΩ)	CN106 X : ⑩ pin TRK IN Y : ⑨ pin TRK ERR	· Test mode TRK servo ON Tilt servo ON · GGV1003 #15,000still	1. Xch : Connect to ⑩ pin with 47kΩ Ych : Connect to ⑨ pin 2. Search #15,000 of GGV1003 and still the address. 3. Connect AF oscillator between Xch and 47kΩ and adjust VR603 until Lissajous' figure is a circle.	
		B	VR603	· Oscilloscope · GGV1003	CN106 X : – Y : ⑨ pin TRK ERR	· Test mode · TRK servo ON Tilt servo ON · F–1 · GGV1003 #15,000still	1. Ych : connect to ⑨ pin. 2. Search #15,000 of GGV1003 and still the address. 3. Adjust VR603 until the waveform level is 1.6 Vp–p±0.1 V.	
10	RF level adjustment	VR601		· Oscilloscope · GGV1003	CN106 ③ pin (RF)	· Test mode TRK servo ON Tilt servo ON · GGV1003 #15,000still	1. Search for address #15,000 of GGV1003, still the address, and observe RF at CH1. 2. Adjust VR601 until RF amplitude is 300mVp–p±50 mV.	

1.6.5 ELECTRICAL ADJUSTMENT

ADJUSTMENT TABLE OF MAIN ASSY, VDTB ASSY, PALB ASSY AND YCNR ASSY

	Adjustment name	Adjustment point	Measuring equipment and jigs	Measurement point	Player condition	Adjustment procedure	Waveform and connection diagram
1	PLL offset adjustment	VR612 (MAIN ASSY)	· Oscilloscope · DC Volt meter · STD—901 or STD—902 (or LDD disc)	Digital sound terminal W331	· Test mode Tilt servo ON TRK servo ON/OFF · Digital sound play	With TRK Servo OFF, play digital sound and coarsely adjust VR612 so that sound is produced. Connect W331 and DC voltmeter and while playing digital sound, turn TRK Servo on and off. Adjust VR612 so that DC voltage difference between ON and OFF conditions is 0 ±0.1V.	
2	NTSC Reference clock adjustment	VC202 (VDTB ASSY)	· Frequency counter · GGV1003	IC201—33(TBC CLK)	· NTSC PLAY mode. Play the NTSC disc. or Select the NTSC mode with the SYSTEM button of the front panel. (Note1)	Adjust VC202 so that the 4fsc frequency becomes 14.31818MHz ±0.1kHz.	
3	PAL Reference clock 910fH adjustment	VC201 (VDTB ASSY)	· Frequency counter · GGV1007	IC201—33(TBC CLK)	· PAL PLAY mode. Play the PAL disc. or Select the PAL mode with the SYSTEM button of the front panel. (Note1)	Adjust VC201 so that the 910fH frequency becomes 14.21875MHz ±0.1kHz.	
4	PAL Reference clock adjustment	VC203 (VDTB ASSY)	· Frequency counter · GGV1007	IC201—24(OSD CLK)	· PAL PAUSE mode. Play the PAL disc and set to pause state. or Select the PAL mode with the SYSTEM button of the front panel. (Note1)	Adjust VC203 so that the 4fsc frequency becomes 17.734475MHz ±0.1kHz.	
5	PAL VCXO ERR Offset check	VC201 (VDTB ASSY)	· Oscilloscope · GGV1007	IC203—1	· Play the PAL disc.	Play the PAL disc and check that the voltage of VCXO ERR at IC203—1pin is 0V±100mV. If the specified voltage is not obtained, adjust VC201 so that the voltage becomes 0V ±100mV. Note : The adjustment of VC201 in this step should have priority over that in step 2.	
6	VCO Center frequency adjustment	VR481 (VDTB ASSY)	· Oscilloscope · GGV1007	CH1 : C405 lead wire CH2 : C499 + lead wire	· Normal mode · GGV1007 #4,000 still	Adjust VR481 so that the center position of jitter of CH2 video signal is delayed to 75μS(1H + 11 μS) ±1.4μS as compared with CH1 video signal.	
7	Output video level adjustment	VR482 (VDTB ASSY)	· Oscilloscope · TV monitor · GGV1003	Video output terminal (75Ω termination or TV monitor connection)	· Normal mode · GGV1003 #19,900 still · HQ circuit OFF	Adjust VR482 so that the voltage between the sync tip and the white peak becomes 1.0Vp—p ±5%.	

Note1 : PAL mode → NTSC mode → MOD PAL mode (Cyclic change)

	Adjustment name	Adjustment point	Measuring equipment and jigs	Measurement point	Player condition	Adjustment procedure	Waveform and connection diagram
8	1H Delay video level adjustment	VR441 (VDTB ASSY)	· Oscilloscope · GGV1003	CH1 : C443—(minus) lead wire CH2 : C445—(minus) lead wire	· Normal mode · GGV1003 #19,900 still	Adjust VR441 so that the level of the 1H delay video signal becomes the same as that of the main video signal.	
9	VPS Error adjustment	VR521 (VDTB ASSY)	· TV monitor · GGV1003	Video output terminal (TV monitor)	· Normal mode · GGV1003 #8,000 still	Color irregularity on the magenta screen is minimized.	
10	Y output level adjustment	VR801 (YCNR ASSY)	· TV monitor · Oscilloscope · GGV1003	Video output terminal (75Ω terminated) (NOTE2)	· Normal mode · GGV1003 #19,900still	Connect video output terminal and oscilloscope. (video output terminal is terminated with 75Ω) When stilled with GGV1003 #19,900 (composite), measure video signal and adjust VR801 until level from sync tip to 100% white becomes 1Vp—p ±5%.	
11	MOD Y— Signal level adjustment	VR304 (PALB ASSY)	· Oscilloscope · GGV1003	CH1 : IC303—2 (REFERENCE) CH2 : IC303—1	· Normal mode · GGV1003 #19,900 still · HQ circuit ON	Adjust VR304 so that the level of Y signal at IC303—1 pin between the sync tip and the white 100% becomes the same as that of the Y signal at IC303—2 pin.	
12	MOD C—Signal level adjustment	VR302 (PALB ASSY)	· Oscilloscope · GGV1003	CH1 : IC303—2 (REFERENCE) CH2 : IC303—1	· Normal mode · GGV1003 #8,000 still	Adjust VR302 so that the level of C signal at IC303—1 pin becomes the same as that of the C signal at IC303—2 pin.	
13	PAL Inverting SC phase adjustment	VR201 (VDTB ASSY)	· TV monitor · GGV1007	Video output terminal (TV monitor)	· Normal mode GGV1007 test disc #6,500 still	Adjust VR201 so that the color irregularity on the magenta screen is minimized at still.	

Note2 : It is possible to terminate video output terminal with 75Ω by connecting TV monitor.

1.7 PARTS LIST FOR PACKING AND EXPLODED VIEWS

NOTES:

- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by " ◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *Parts list without notice are common for CLD −1950/HB and CLD −1950/HEZ.*

1.7.1 PACKING

(1) CONTRAST OF CLD-1950/HB AND CLD-1950/HEZ.

CLD-1950/HB and CLD-1950/HEZ have the same construction except for the following :

Mark	No.	Symbol & Description	Part No.	
			CLD-1950/HB	CLD-1950/HEZ
NSP	2	Caution	Not used	VRR1009
	3	Caution(UC)	VRR1020	Not used
NSP	3	Caution(EW)	Not used	VRM1027
	5	Operating instructions (Dutch/Swedish/Spanish/Portuguese)	Not used	VRF1028
	17	Packing case	VHG1367	VHG1355

(2) FOR CLD−1950/HB

Mark	No.	Description	Parts No.
NSP	1	Warranty card	ARW−088
	2	.....	
	3	Caution (UC)	VRR1020
	4	Operating instructions (English/French/German/Italian)	VRE1022
	5	.....	
	6	Protector A	VHB1004
	7	Connection cord	VDE−055
	8	Euro scart cable(21P)	VDE1027
NSP	9	Battery (R03,AAA)	VEM−022
	10	Remote control unit	VXX2029
	11	Battery cover	VNK2431
NSP	12	Polyethylene bag	Z21−029
	13	Protector B	VHB1005
	14	Mirror mat	VHL1006
NSP	15	Polyethylene bag	VHL−014
	16	.....	
	17	Packing case	VHG1367

1.7.2 EXTERIOR SECTION

(1) CONTRAST OF CLD-1950/HB AND CLD-1950/HEZ

CLD-1950/HB and CLD-1950/HEZ have the same construction except for the following:

Mark	No.	Symbol & Description	Part No.	
			CLD-1950/HB	CLD-1950/HEZ
	32	Caution label	PRW1018	VRW1094
	33	Caution label(HE)	Not used	VRW1297

(2) FOR CLD-1950/HB

Mark	No.	Description	Parts No.
	1	Guide plate (L)	VNE1805
	2	Guide plate (R)	VNE1806
	3	Lock plate spring	VBH1188
	4	Lock plate	VNL1513
	5	CD tray	VNK1992
	6	Tray ASSY-S	VXX2066
NSP	7	LD tray	VNK2550
	8	Disc pad (L)	VEC1657
	9	Disc pad (C)	VEC1658
NSP	10	Carry label	VRW1289
	11	Bonnet case S	VXX1898
	12	Door spring	VBH1223
NSP	13	Laser disc plate	VAM1029
	14	Tray panel ASSY-S	VXX1931
	15	CD door	VNK2320
NSP	16	Tray panel	VNK2319
	17	Door holder	VNE1905
	18	Door shaft	VLL1441
	19	.....	
	20	Damper ASSY	VXA1999
NSP	21	Damp cushion	VEC1110
NSP	22	PCB holder (A)	VNE1875
	23	Screw	BPZ30P060FCU
	24	Screw	BPZ30P080FCU
	25	Screw	BBZ30P080FCC
	26	Screw	BCZ40P060FZK
	27	Screw	BPZ20P040FZK
	28	Screw	VBA1032
	29	Tray rubber	VEB1091
NSP	30	Cushion	VEC1618
	31	Caution label(G)	VRW-329
	32	Caution label	PRW1018
	33	.....	

1.7.3 TOP VIEW SECTION

Mark	No.	Description	Parts No.
	1	Clamper holder	VNL1514
	2	Rubber sheet	VEB1114
	3	Thrust holder	VNL1289
	4	Clamper head	VNL1615
	5	Clamper	VNL1515
	6	Clamp spring	VBH1192
	7	Clamper arm	VNE1804
	8	Stabilizer	VNE1807
	9	Rack ASSY	VWT1099
	10	Carriage shaft	VLL1434
NSP	11	Side stay (R)	VNE1810
NSP	12	Front angle	VNE1808
	13	Screw	CPZ20P050FMC
	14	Screw	BBZ30P080FCC
	15	Screw	IBZ30P060FCC
	16	Screw	IPZ30P060FMC
NSP	17	Earth plate	VNE1518
	18	Screw	PCZ30P060FMC
	19	Flexible cable (22P)	VDA1448
	20	Screw	BBZ30P060FMC
NSP	21	Mechanism ASSY	VWT1108
NSP	22	Caution label (F)	VRW-328
NSP	23	PALB ASSY	VWV1355
NSP	24	YCNR ASSY	VWV1356
NSP	25	SCRB ASSY	VWV1357
NSP	26	PC support	VEC1415
NSP	27	PCB holder(A)	VNE1875
NSP	28	PCB holder(B)	VNE1880
NSP	29	P plate holder	PNY-405
	30	Screw	BBZ30P060FMC
	31	Housing ASSY (2P)	VKP2048
	32	Flexible cable (28P)	VDA1461
	33	Connector ASSY	PF06PP-C20
	34	Connector ASSY	PF03PP2C22

1.7.4 FRONT PANEL SECTION

Mark	No.	Description	Parts No.
NSP	1	PWSB ASSY	VWG1526
	2	Power button	VNK2329
	3	LED lens	PNW2019
	4	FLKY ASSY	VWG1525
	5	Name plate	VAM1032
	6	Ten key	VNK2331
	7	Main key	VNK2324
	8	LED lens A	VNK2325
	9	Shuttle knob	VNK2321
	10	Sub panel	VNK2692
NSP	11	Front panel	VNK2693
	12	FL lens	VEC1631
	13	Skip key L	VNK2322
	14	Skip key R	VNK2323
	15	Snap plate	VNE1102
	16	Headphone knob	PAC1707
NSP	17	Jack holder	VNE1609
NSP	18	HEPB ASSY	VWV1367
	19	Screw	BPZ26P060FCU
	20	Front panel ASSY－S	VXX2049
	21	Damp cushion	VEC1110

1.7.5 BASE SECTION

(1) CONTRAST OF CLD－1950/HB AND CLD－1950/HEZ.

CLD－1950/HB and CLD－1950/HEZ have the same construction except for the following :

Mark	No.	Symbol & Description	Part No.	
			CLD－1950/HB	CLD－1950/HEZ
	3	SYPS ASSY	VWR1220	VWR1219
⚠	5	Power cord with plug	PDG1055	PDG1003
	7	Rear panel	VNA1434	VNA1431
⚠	28	Fuse(T5A)	PEK1003	Not used

(2) FOR CLD－1950/HB

Mark	No.	Description	Parts No.
	1	MAIN ASSY	VWX1206
⚠	2	Cord stopper	CM－22B
	3	SYPS ASSY	VWR1220
	4	Tray stopper	VNL1519
⚠	5	Power cord with plug	PDG1055
	6	PCB spacer	PNY－404
	7	Rear panel	VNA1434
⚠	8	Fuse (T500mA)	REK－097
NSP	9	Cord clamper	Z09－060
NSP	10	PCB hinge	VEC1174
⚠	11	Power transformer	VTT1138
⚠	12	Fuse (T3.15A)	REK.－105
NSP	13	P. plate holder	PNY－405
NSP	14	Side stay (L)	VNE1809
NSP	15	Cord clamper	Z09－061
	16	Insulator	PNW1912
NSP	17	Base chassis	VNA1255
	18	Insulator ASSY	VXA1881
	19	Screw	BBZ30P080FCC
	20	Screw	BBZ30P040FMC
	21	Screw	BCZ40P060FZK
	22	Screw	BCZ30P080FMC
	23	Screw	BPZ30P140FMC
NSP	24	Heat shink	VNE1854
	25	.....	
	26	Screw	BCZ30P060FCC
NSP	27	VDTB ASSY	VWS1131
⚠	28	Fuse(T5A)	PEK1003
NSP	29	Rear angle	VNE1844

1.7.6 MECHANISM SECTION

Mark	No.	Description	Parts No.
	1	Mechanism base	VNK1990
	2	.....	
	3	Clamp cam	VNL1621
	4	Shaft holder	VNE1817
	5	Cam plate	VNL1511
	6	CAS spring	VBH1190
	7	Cam gear	VNL1507
	8	CD plate	VNL1512
	9	CDP spring	VBH1191
	10	Rubber belt	VEB1184
	11	Gear pulley	VNL1510
	12	Twin gear	VNL1508
	13	Center gear	VNL1509
	14	L−SW lever	VNL1504
	15	C−SW lever	VNL1505
	16	R−SW lever	VNL1506
NSP	17	LOSB ASSY	VWG1419
	18	Synchro gear ASSY	VXA1822
	19	Roller	VNL1042
NSP	20	LOMB ASSY	VWG1420
	21	Loading motor ASSY	VXX1712
NSP	22	Slider motor	VXM1033
	23	Motor pulley	PNW1643
	24	Screw	Z39−019
	25	Screw	BMZ26P040FMC

1.7.7 MECHANISM ASSY

Mark	No.	Description	Parts No.
	1	CA belt	VEB1077
	2	CA pulley (2)	VNL1496
	3	CA gear (3)	VNL1497
	4	Tilt base	VNL1499
	5	CA−SW lever	VNL1498
NSP	6	CAMB ASSY	VWG1418
	7	Carriage motor ASSY	VXX1261
NSP	8	Carriage motor	VXM1033
	9	CA pulley (1)	VNL1197
NSP	10	PASB ASSY	VWG1417
	11	Radial spring	VBH1201
	12	Thrust spring	VBH1200
	13	Tilt tension spring	VBH1187
NSP	14	FG ASSY	VWG1416
	15	FG. base	VNL1503
	16	Y gear	VNL1501
	17	Tilt cam spring	VBH1189
	18	Tilt cam	VNL1502
	19	Spindle motor ASSY	VXA2108
	20	Centering hab	VNL1174
	21	Centering spring	VBH1083
NSP	22	Rubber sheet	VEB1103
NSP	23	Turn table ASSY	VXA1283
NSP	24	Oil stopper	VBF1002
NSP	25	Spindle motor	VXM1053
	26	Motor base	VNE1803
	27	Screw	BMZ26P040FMC
	28	Screw	ABZ30P300FMC
	29	Screw	PMA30P050FMC
	30	Washer	WT26D060D025
	31	Housing ASSY	VKP2020

1.7.8 RACK ASSY

Mark	No.	Description	Parts No.
NSP	1	Sensor stay	VBK1036
NSP	2	Tilt sensor	SG−302
NSP	3	Pickup ASSY	VWY1036
	4	Rack	VNL1495
	5	Tan.base	VNL1494
	6	Screw	PBB26P080FMC
	7	Screw	PMA20P060FMC
	8	Screw	PMA20P080FMC
	9	Screw	PMH20P040FMC
	10	Screw	SMZ20H120FZK

1.8 PCB PARTS LIST

NOTES:

- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω	→ *56×10¹* → *561*	.....	*RD1/8PM 5 6 1 J*
47kΩ	→ *47×10³* → *473*	.....	*RD1/4PS 4 7 3 J*
0.5Ω	→ *0R5*	.....	*RN2H 0 R 5 K*
1Ω	→ *010*	.....	*RS1P 0 1 0 K*

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	→ *562×10¹* → *5621*	.....	*RN1/4PC 5 6 2 1 F*

Mark	No.	Description	Parts No.
LIST OF ASSEMBLIES			
NSP		FLKB ASSY	VWM1474
		├ FLKY ASSY	VWG1525
NSP		├ PWSB ASSY	VWG1526
NSP		└ HEPB ASSY	VWV1367
		SYPS ASSY(HB TYPE)	VWR1220
		SYPS ASSY(HEZ TYPE)	VWR1219
Note : Although VWR1220 and VWR1219 are different in part number, they have the same service parts.			
		MOTHER ASSY	VWM1461
		└ MAIN ASSY	VWX1206
		VTPB ASSY	VWM1457
NSP		├ VDTB ASSY	VWS1131
NSP		├ PALB ASSY	VWV1355
NSP		├ YCNR ASSY	VWV1356
NSP		└ SCRB ASSY	VWV1357
NSP		MACBS ASSY	VWM1358
NSP		├ FG ASSY	VWG1416
NSP		├ PASB ASSY	VWG1417
NSP		├ CAMB ASSY	VWG1418
NSP		├ LOSB ASSY	VWG1419
NSP		└ LOMB ASSY	VWG1420
FLKB ASSY			
OTHERS			
		PCB(FLKB)	VNP1466
FLKY ASSY			
SEMICONDUCTORS			
		IC201	PD3274A
		IC202	S−806D
		Q203	DTA144ES
		Q202	DTC114ES
		Q201,Q204	DTC124ES
		D203−D206	1SS252
		D201	1SS254
		D210	PG3361X

Mark	No.	Description	Parts No.
SWITCHES AND RELAYS			
		S201−S204,S206,S210,S214	RSG1030
		S217−S225	RSG1030
		S205,S207−S209,S211−S213	RSG1034
		S215,S216	RSG1034
		S228	VSD1008
CAPACITORS			
		C204	CEAL100M16
		C201	CEAL101M6R3
		C206	CEAL2R2M50
		C207	CEAS100M16
		C205	CKPUYF103Z25
		C202,C203	CKPUYF223Z25
RESISTORS			
		R230	RA5T104J
		Other Resistors	RD1/6PM□□□J
OTHERS			
		4P Cable holder	51048−0400
	X201	Ceramic resonator	EFOEC8004A4
		Remote sensor	GP1U58X
	V201	FL Tube	VAW1033
	J21	Flat cord(4P)	VDA1440
		Spacer	VEC1599
		FL Holder	VNF1078
PWSB ASSY			
SEMICONDUCTORS			
		D211	SLH34VCF04
SWITCHES AND RELAYS			
		S226	RSG1030
RESISTORS			
		All Resistors	RD1/6PM□□□J
HEPB ASSY			
COILS AND FILTERS			
		F201−F203	VTH1016

Mark	No.	Description	Parts No.
CAPACITORS			
	C208		CGCYF473Z25
	C209,C210		CKPUYB101K50
RESISTORS			
	VR201	(0.5KB)	VCS1015
OTHERS			
	CN204	3P Jumper connector(2MMP)	52151−0310
	JA201	Headphone jack	RKN1002

SYPS ASSY

Mark	No.	Description	Parts No.
SEMICONDUCTORS			
⚠	IC205		ICP−N10
⚠	IC204		ICP−N15
⚠	IC201−IC203		ICP−N20
⚠	IC2		NJM4558D
⚠	IC1		NJM78L05A
⚠	IC41		NJM78M12FA
	Q5,Q22,Q23,Q29		2SA933S
⚠	Q60,Q61		2SB1185
	Q31		2SB1240
⚠	Q25,Q27		2SB1566
	Q4,Q21,Q24		2SC1740S
⚠	Q3		2SD1762
⚠	Q26,Q28		2SD2395
	Q32		DTC114TS
	Q30		DTC124ES
⚠	D23,D26		10ELS2
⚠	D3,D41,D42		11ES2
⚠	D2,D24,D25		1SR35−100AVL
⚠	D21,D22		1SS254
⚠	D7		MTZJ12B
⚠	D1		S4VB20F
COILS AND FILTERS			
⚠	L51		VTL−004
⚠	L1		VTL1043
CAPACITORS			
	C31		CEAS100M16
	C30		CEAS101M10
	C10,C29		CEAS101M50
	C42		CEAS220M25
	C26		CEAS2R2M50
	C3−C6		CEAS470M10
	C13		CEAS471M16
	C41		CEAS471M35
	C25		CEJA2R2M50
⚠	C14,C23,C24		CGCYX473M25
	C11,C12		CKPUYF103Z25
⚠	C61−C63		CKPUYF223Z25
	C27,C28		CQMA223J50
	C21,C22		CQMA272J50
⚠	C52	(0.01,AC400V)	VCG−048
⚠	C1,C2	(16MM,3L)	VCH1053
RESISTORS			
	R41	(4R7,1/6W)	DCN1001
⚠	R27−R30	(47,1/6W)	DCN1003
	R36		RD1/2PMR47J
⚠	R32		RD1/2VM1R5J
⚠	R23−R26		RD1/2VM221J
		Other Resistors	RD1/6PM□□□J
OTHERS			
		6P Cable holder	51048−0600
	CN31	KR Connector	B2B−PH−K−S
		Capacitor cover	REC−150
⚠		Power supply terminal	VKC−019
⚠		Taping fuse holder	VKR1001
		Coil cover	VNE1857
		Earth plate	VNF−091
	J1	Earth lead unit	XDF−511

MAIN ASSY

Mark	No.	Description	Parts No.
SEMICONDUCTORS			
	IC202,IC205,IC903		BA4560F
	IC351		CA0002AM
	IC803		LA6510L
	IC802		LC78681E
	IC206		NJM78L06A
	IC207		NJM79L06A
	IC801		PAC002A
	IC901		PAC003A
	IC101		PD0193A
	IC201		PD2026B
	IC902		TA8464K
	Q102,Q154,Q802,Q963		2SA1037K
	Q501		2SA933S
	Q834		2SB1237X
	Q201,Q202,Q801,Q805		2SC2412K
	Q903−Q905,Q907,Q913		2SC2412K
	Q152,Q803,Q804		2SC3802K
	Q204,Q205		2SD2144S
	Q962		2SK184
	Q203,Q207−Q213		DTA124EK
	Q103,Q104,Q206,Q502,Q503		DTC124EK
	D202		11EQS06
	D101,D102,D205−D208,D502		1SS254
	D520,D905,D963,D964		1SS254
	D201		FC54M
COILS AND FILTERS			
	L201−L204,L206−L208		LAU010J
	L802−L804		LAU121J
	L351		LAU181J
	L205,L352,L800,L801		LAU220J
	F201		VTH1016
CAPACITORS			
	C159,C809,C811		CCSQCH100D50
	C108,C109,C120,C121		CCSQCH101J50
	C258,C259,C370		CCSQCH101J50
	C814,C846,C848		CCSQCH121J50
	C232		CCSQCH150J50
	C161,C353,C810		CCSQCH151J50
	C352		CCSQCH180J50
	C812		CCSQCH221J50
	C371		CCSQCH270J50
	C208,C209		CCSQCH271J50

Mark	No.	Description	Parts No.
	C106,C107,C354,C813		CCSQCH330J50
	C351,C931		CCSQCH390J50
	C260−C263,C963		CCSQCH470J50
	C375,C806		CCSQCH680J50
	C374		CCSQCH820J50
	C902		CEAL2R2M50
	C893,C933		CEAL470M6R3
	C871		CEALNP100M16
	C522		CEANP100M16
	C926		CEANP2R2M50
	C838		CEANP470M6R3
	C904		CEAS010M50
	C228,C274,C275,C367,C845		CEAS100M50
	C225,C226,C256,C364,C895		CEAS101M10
	C227,C281		CEAS2R2M50
	C101,C230,C252,C253,C363		CEAS470M10
	C369,C801,C803,C833,C836		CEAS470M10
	C842,C844,C927,C974,C975		CEAS470M10
	C207,C255,C257,C270,C271		CEAS471M10
	C279		CEAS471M10
	C368,C913		CEASR47M50
	C970		CEHAQ010M50
	C967,C968		CEHAQ100M50
	C987		CEHAQ220M50
	C365,C908,C910		CFTYA104J50
	C359,C360,C905		CFTYA224J50
	C521		CFTYA563J50
	C891,C914,C936,C969		CKSQYB102K50
	C110,C888,C907		CKSQYB222K50
	C361,C362		CKSQYB392K50
	C355−C358		CKSQYB472K50
	C105,C122,C160,C213,C231		CKSQYF103Z50
	C234,C251,C286,C288,C376		CKSQYF103Z50
	C523,C807,C834,C835,C843		CKSQYF103Z50
	C872,C876,C894,C929		CKSQYF103Z50
	C961,C962		CKSQYF103Z50
	C102,C151,C196−C198,C215		CKSQYF104Z25
	C254,C284,C285,C305		CKSQYF104Z25
	C308,C309,C366,C372,C373		CKSQYF104Z25
	C802,C804,C831,C832		CKSQYF104Z25
	C840,C841,C873,C874,C892		CKSQYF104Z25
	C896,C901,C915,C928,C932		CKSQYF104Z25
	C981		CKSQYF104Z25
	C837,C930		CKSQYF333Z25
	C103,C210,C214,C808,C815		CKSQYF473Z25
	C847,C875,C877,C911,C912		CKSQYF473Z25
	C925,C964,C971,C983,C984		CKSQYF473Z25
	C934		CQMA122J50
	C903,C909		CQMA222J50
	C278,C282		CQMA332J50
RESISTORS			
	R192,R193		RD1/6PM220J
	R505		RD1/6PM331J
	R180		RD1/6PM333J
	R212,R213,R220,R221		RD1/6PM470J
	R839,R840		RD1/6PM470J
	R501		RD1/6PM471J
	R909		RD1/6PM473J
	R502		RD1/6PM563J
	R507		RD1/6PM822J
	R259−R262		RN1/10SE473D
	VR606		VRTB6VS153
	VR601		VRTB6VS222
	VR605		VRTB6VS333
	VR603		VRTB6VS472
	VR604,VR607,VR612		VRTB6VS473
		Other Resistors	RS1/10S□□□J
OTHERS			
		3P Cable holder	51048−0300
		5P Cable holder	51048−0500
		11P Cable holder	51048−1100
	CN103	22P FFC Connector	52045−2245
	CN106	11P Top post	B11P−SHF−1AA
	CN516	KR Connector	B3B−PH−K−R
	CN110	5P Top post	B5B−EH
	CN101	KR Connector	B5B−PH−K−S
	CN504	KR Connector	B6B−PH−K−S
	J1	2mm Pitch flat cable11P	D20PDY1120G
	JA3,JA4	Remote control jack	RKN1004
	CN105	2mm Pitch jumper connector(6P)	SBRK06S−4
	CN501	1.0mm Pitch FFC Connector	SLW28S−1C7
	JA8	Optical output jack	TOTX178
		PCB Binder	VEF1040
	JA6	2P Pin jack	VKB1031
		64P Shrink IC socket	VKH1004
	JA2	Mini jack	VKN1165
		Screw terminal	VNE1841
		IC Heat sink(AL)	VNE1921
		Earth plate	VNF−091
	X101	Ceramic resonator	VSS1040
	X201	Crystal resonator(16MHz)	VSS1057

VDTB ASSY

SEMICONDUCTORS

IC203,IC602		BA4560F
IC403		CXL1009P
IC404		PA0017−P
IC401		PA5013A
IC201		PD3239A
IC402		PM0001
IC601		PM3002
IC207		TC4W53F
IC202		TC7SU04F
Q204,Q207,Q406,Q407,Q411		2SA1037K
Q456,Q496,Q502,Q511		2SA1037K
Q703,Q704		2SA1037K
Q401		2SB1237X
Q431		2SC1740S
Q202,Q203,Q205,Q206		2SC2412K

Mark	No.	Description	Parts No.
	Q208－Q210,Q404,Q408		2SC2412K
	Q497－Q501,Q601－Q605,Q608		2SC2412K
	Q700－Q702		2SC2412K
	Q409		2SC3802K
	Q402		2SD1858X
	Q201,Q403,Q405,Q606,Q609		DTA124EK
	Q621－Q623		DTA124EK
	Q607,Q610,Q612,Q613		DTC124EK
	Q624,Q625		DTC124EK
	D401,D601,D602,D609,D610		1SS254
	D201		DAN202K
	D203		SVC201SPA
COILS AND FILTERS			
	L203,L204,L208,L412－L415		LAU120J
	L521		LAU120J
	L206,L207		LAU121J
	L430		LAU150J
	L497		LAU151J
	L201,L202,L209		LAU1R2J
	L496,L701		LAU220J
	L702		LAU270J
	L525		LAU330J
	L523		LAU390J
	L432		LAU430J
	L433		LAU470J
	L522		LAU560J
	L411,L431		LAU680J
	L458		LFA221J
	L457,L524		LFA561J
	F201		VTF1051
CAPACITORS			
	C203,C431,C438,C441		CCSQCH050C50
	C207,C231,C241,C415,C417		CCSQCH100D50
	C500,C532,C774		CCSQCH100D50
	C212,C238,C419,C461,C496		CCSQCH101J50
	C430		CCSQCH120J50
	C456		CCSQCH121J50
	C439,C440,C516,C520		CCSQCH150J50
	C509,C550,C771,C772		CCSQCH151J50
	C409,C423,C424,C485,C529		CCSQCH180J50
	C612,C633		CCSQCH180J50
	C410,C437		CCSQCH220J50
	C236		CCSQCH221J50
	C204,C208,C416,C495,C510		CCSQCH270J50
	C775,C779		CCSQCH270J50
	C402,C463,C507,C508		CCSQCH271J50
	C206,C240,C462		CCSQCH330J50
	C211,C433,C524,C528		CCSQCH390J50
	C406		CCSQCH391J50
	C205,C239,C455		CCSQCH470J50
	C549,C778		CCSQCH560J50
	C237		CCSQCH680J50
	C411,C412,C498,C609		CCSQCH820J50
	C536		CCSQCH910J50
	C651		CCSQSL102J50
	C530		CEANP100M25
	C551,C613,C620		CEANP220M10
	C537		CEAS010M50
	C522		CEAS100M50
	C472,C477		CEAS3R3M50
	C213,C434,C445,C452,C499		CEAS470M16
	C484		CEJA100M16
	C473		CEJA3R3M50
	C201,C220－C222,C227,C428		CEJA470M6R3
	C457,C474,C489,C490		CEJA470M6R3
	C501,C502,C512,C521,C525		CEJA470M6R3
	C533,C622,C624,C643,C647		CEJA470M6R3
	C675,C676		CEJA470M6R3
	C401,C405,C619		CEJANP2R2M50
	C443,C625,C628		CEJANP4R7M16
	C223		CEJANPR47M50
	C446,C618		CFTYA103J50
	C514		CFTYA104J50
	C224		CFTYA223J50
	C471,C603		CFTYA224J50
	C610,C617		CFTYA563J50
	C515,C517		CFTYA683J50
	C202,C209,C214－C217		CKSQYF103Z50
	C225,C226,C230,C232,C233		CKSQYF103Z50
	C242,C414,C418,C421,C422		CKSQYF103Z50
	C425,C426,C458－C460		CKSQYF103Z50
	C475,C476,C486,C535,C602		CKSQYF103Z50
	C604,C615,C616,C621,C644		CKSQYF103Z50
	C776,C777,C780,C781,C783		CKSQYF103Z50
	C403,C404,C427,C429,C435		CKSQYF104Z25
	C442,C479－C481,C483		CKSQYF104Z25
	C503－C506,C511,C513,C526		CKSQYF104Z25
	C531		CKSQYF104Z25
	C407,C408,C466,C467		CKSQYF473Z25
	C487,C488,C527,C601,C629		CKSQYF473Z25
	C219,C605－C607,C626		CQMA102J50
	C608		CQMA152J50
	C627		CQMA222J50
	C444,C611		CQMA272J50
	C614		CQMA332J50
	C218		CQMA472J50
	VC201		PCM1001
	VC202		VCM－008
	VC203		VCM1005
RESISTORS			
	R496		RD1/6PM101J
	R406		RD1/6PM224J
	R403		RD1/6PM271J
	R431		RD1/6PM510J
	R512,R519,R520		RD1/6PM680J
	R612,R613		RN1/10SE103D
	R771		RN1/10SE202D
	R231,R475,R521		RN1/10SE562D
	R438		RN1/6PQ1803F
	R511		RN1/6PQ2002F

Mark	No.	Description	Parts No.
	R415,R416		RN1/6PQ3002F
	R434		RN1/6PQ5101F
	VR201		VRTB6VS222
	VR441		VRTB6VS223
	VR481,VR482,VR521		VRTB6VS472
		Other Resistors	RS1/10S□□□J
OTHERS			
		5P Cable holder	51048−0500
		7P Cable holder	51048−0700
		12P Cable holder	51048−1200
	CN603	1.0mm Pitch FFC connector	SLW28S−1C7
		PCB Binder	VEF1040
	JA14	1P Pin jack	VKB1063
	JA11	4P Mini DIN socket	VKN1072
		Screw terminal	VNE1841
	X202	Crystal resonator(14.32MHz)	VSS1029
	X203	Crystal resonator(17.73MHz)	VSS1059
	X201	Crystal resonator(14.22MHz)	VSS1060

PALB ASSY

SEMICONDUCTORS

	IC303	BU4053BCF
	IC301	M50552−132SP
	IC304	MM1130XD
	IC302	TA7320P
	Q303,Q310,Q314,Q319,Q363	2SA1037K
	Q315,Q316,Q361,Q365	2SC1740S
	Q302,Q308,Q309,Q311	2SC2412K
	Q321,Q322,Q352,Q353	2SC2412K
	Q355,Q356,Q359,Q360,Q953	2SC2412K
	Q301,Q304,Q307,Q312,Q313	DTA124EK
	Q317,Q320,Q351	DTA124EK
	Q305,Q306,Q318	DTC124EK
	D301	DAN202K
	D302	DAP202K

COILS AND FILTERS

	L302,L303,L355	LAU120J
	L304	LAU220J
	L301	LAU270J
	F303	VTF1034

CAPACITORS

	C312	CCSQCH050C50
	C315	CCSQCH070D50
	C356,C364,C392	CCSQCH101J50
	C327	CCSQCH151J50
	C365	CCSQCH181J50
	C316	CCSQCH200J50
	C368	CCSQCH220J50
	C311,C317	CCSQCH270J50
	C306,C307,C310,C325	CCSQCH330J50
	C326	CCSQCH390J50
	C352	CCSQSL391J50
	C304	CCSQSL561J50
	C383	CEALNP470M6R3
	C384	CEANP220M10
	C313	CEAS010M50
	C341,C354,C358,C362	CEAS470M16
	C309	CEJA100M16
	C303	CEJA3R3M50
	C319,C323,C336,C339,C360	CEJA470M6R3
	C373,C375,C380−C382,C386	CEJA470M6R3
	C388,C390	CEJA470M6R3
	C367	CEJANP220M10
	C314	CFTYA223J50
	C301,C305,C308,C318	CKSQYF103Z50
	C320−C322,C324,C328,C329	CKSQYF103Z50
	C335,C351,C353,C355,C357	CKSQYF103Z50
	C359,C361,C363,C366,C369	CKSQYF103Z50
	C374,C376,C385,C395,C396	CKSQYF103Z50
	C334,C340,C342,C389,C391	CKSQYF104Z25
	C302	CQMA392J50

RESISTORS

	R339,R387	RD1/6PM101J
	R355,R361	RD1/6PM470J
	R306,R307	RD1/6PM751J
	R316	RN1/10SE562D
	R323	RN1/6PQ2401F
	VR304	VRTB6VS222
	VR302	VRTB6VS471
		Other Resistors RS1/10S□□□J

OTHERS

	3P Cable holder	51048−0300
	4P Cable holder	51048−0400
	7P Cable holder	51048−0700
	12P Cable holder	51048−1200
CN302	KR Connector	B3B−PH−K−R
CN303	KR Connector	B6B−PH−K−S
CN301	3P Side post	BS3P−SHF−1AA
X301	Crystal resonator(8.87MHz)	VSS1062

YCNR ASSY

SEMICONDUCTORS

	IC803	BU4053BCF
	IC801	CXD2024Q
	IC804	TA7302P
	Q804,Q807,Q809,Q811,Q814	2SA1037K
	Q821,Q822,Q827−Q829	2SA1037K
	Q837,Q838	2SA1037K
	Q825	2SA933S
	Q802,Q803,Q806,Q808,Q810	2SC2412K
	Q815−Q817,Q820,Q823,Q824	2SC2412K
	Q830,Q831,Q836,Q839	2SC2412K
	Q840	DTA124EK
	Q801	DTC124EK

COILS AND FILTERS

	L801,L802,L805−L808	LAU150J
	L803,L804,L810	LAU220J
	L809	LAU470J

Mark	No.	Description	Parts No.
CAPACITORS			
	C809,C839,C846,C853		CCSQCH060D50
	C897,C916		CCSQCH120J50
	C864		CCSQCH180J50
	C810,C811,C840,C841		CCSQCH220J50
	C847,C848,C854,C855		CCSQCH220J50
	C892,C898		CCSQCH390J50
	C813,C843,C850,C857,C872		CCSQCH470J50
	C812,C842,C849,C856,C873		CCSQCH560J50
	C805		CCSQSL102J50
	C814		CEAS010M50
	C871		CEJA100M16
	C806,C815,C816,C818,C820		CEJA470M6R3
	C823,C825,C831,C835,C874		CEJA470M6R3
	C876,C880,C885,C887,C893		CEJA470M6R3
	C896,C906,C907,C909		CEJA470M6R3
	C911－C913		CEJA470M6R3
	C808,C826,C865,C867,C868		CKSQYF103Z50
	C890,C891,C905		CKSQYF103Z50
	C807,C817,C819,C821,C822		CKSQYF104Z25
	C824,C827－C830,C832－C834		CKSQYF104Z25
	C836－C838,C844,C845		CKSQYF104Z25
	C851,C852,C866,C869,C870		CKSQYF104Z25
	C875,C877,C879,C881		CKSQYF104Z25
	C883,C884,C886,C888		CKSQYF104Z25
	C894,C895,C900,C908,C910		CKSQYF104Z25
	C915		CKSQYF104Z25
RESISTORS			
	R814,R816		RD1/6PM271J
	R822		RD1/6PM681J
	R901		RN1/10SE182D
	R879,R885		RN1/10SE202D
	R818,R820,R886		RN1/10SE222D
	R864,R902		RN1/10SE562D
	VR801		VRTB6VS472
		Other Resistors	RS1/10S□□□J
OTHERS			
		3P Cable holder	51048－0300
		4P Cable holder	51048－0400
	J801	3P Jumper wire	D20PDD0310E
	DL801,DL802	Filter	VTN1001

SCRB ASSY

SEMICONDUCTORS			
	IC107		LA7955
	Q111,Q112		2SC1740S
	Q113		DTC124EK
	D101,D102		MTZJ12B
CAPACITORS			
	C137,C141,C145,C149		CCSQCH101J50
	C139,C143,C147,C151		CCSQCH221J50
	C133,C134,C138,C140,C142		CEAS100M50
	C144,C146,C148,C150,C152		CEAS100M50
	C159,C160		CEAS100M50
	C155		CEAS470M16
	C153,C154		CEAS471M10
	C131,C162,C163		CEJA100M16
	C132,C157,C161		CKSQYF103Z50
	C158		CKSQYF473Z25
RESISTORS			
⚠	R169,R170 (47,1/6W)		DCN1003
	R160,R164		RD1/6PM471J
	R140,R141,R159,R163		RD1/6PM750J
		Other Resistors	RS1/10S□□□J
OTHERS			
	JA101	RGB Connector	VKB1056
		Earth plate(FE)	VNF1081

MACBS ASSY

OTHERS			
		PCB(MACBS)	VNP1396

FG ASSY

SEMICONDUCTORS			
	D1	Photo interruptor	GP1S51V
OTHERS			
		HOUSING ASS'Y	VKP1950

PASB ASSY

SWITCHES AND RELAYS			
	S4,S5		DSG1015
OTHERS			
		HOUSING ASS'Y	VKP1951

CAMB ASSY

SEMICONDUCTORS			
	Q10		2SC1740S
RESISTORS			
	R10		RD1/4VM182J
	R11		RD1/4VM470J
		Other Resistors	RD1/6PM□□□J
OTHERS			
	CN403	22P Connector	52045－2245
	CN404	Connector post	B3B－PH－K－S
	CN402	KR Connector	B3B－PH－K－R
	CN401	23P FFC Connector(Top)	SLEM23S－2
		HOUSING ASS'Y	VKP2009

LOSB ASSY

SWITCHES AND RELAYS			
	S1－S3		DSG1015

LOMB ASSY

CAPACITORS			
	C1		CGCYX473M25
OTHERS			
		4P Cable holder	51048－0400
	J55	2mm Pitch flat cable(6P)	D20PWY0615G

PIONEER®
The Art of Entertainment

Service Manual

ORDER NO.
RRZ1154

The chapter 1 of this Service Manual will not be reprinted. On your additional orders, we may supply only the chapter 2. For the chapter 1, please make copies and attach to the chapter 2 at your side if necessary.

CD CDV LD PLAYER

CLD-1950

CHAPTER 2

CONTENTS

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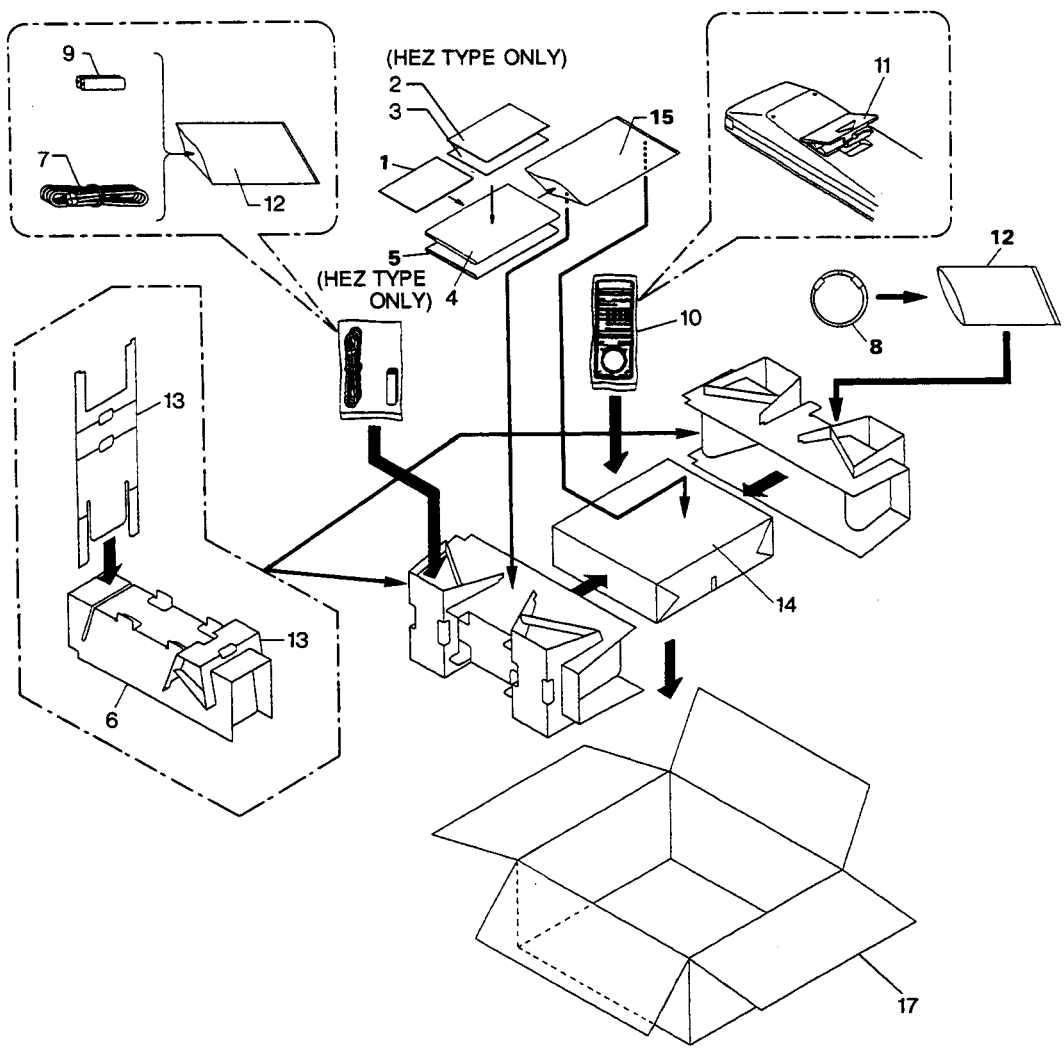
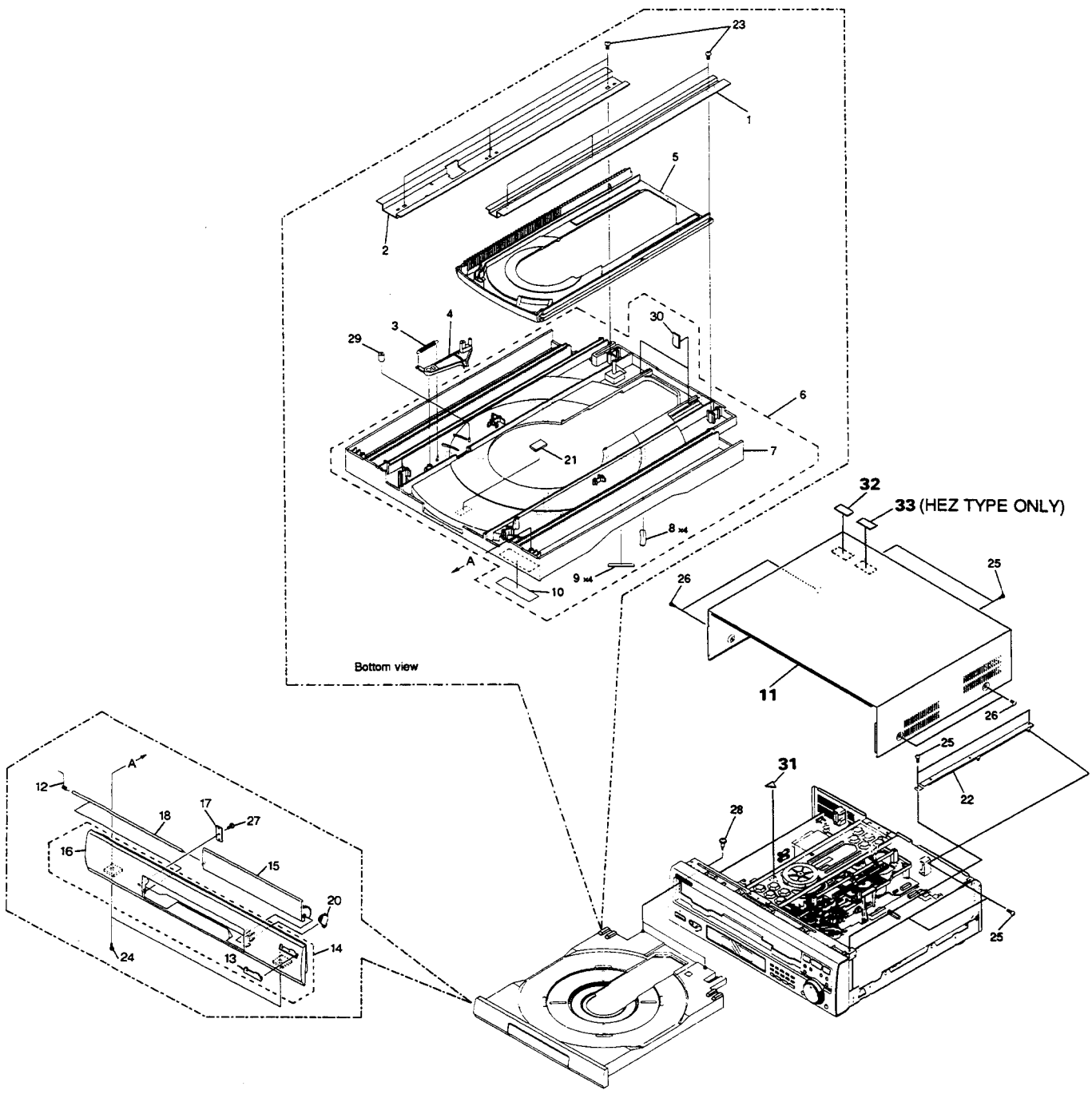
T-FFM JUNE 1994 Printed in Japan

2.1 PACKING AND EXPLODED VIEWS

2.1.1 PACKING

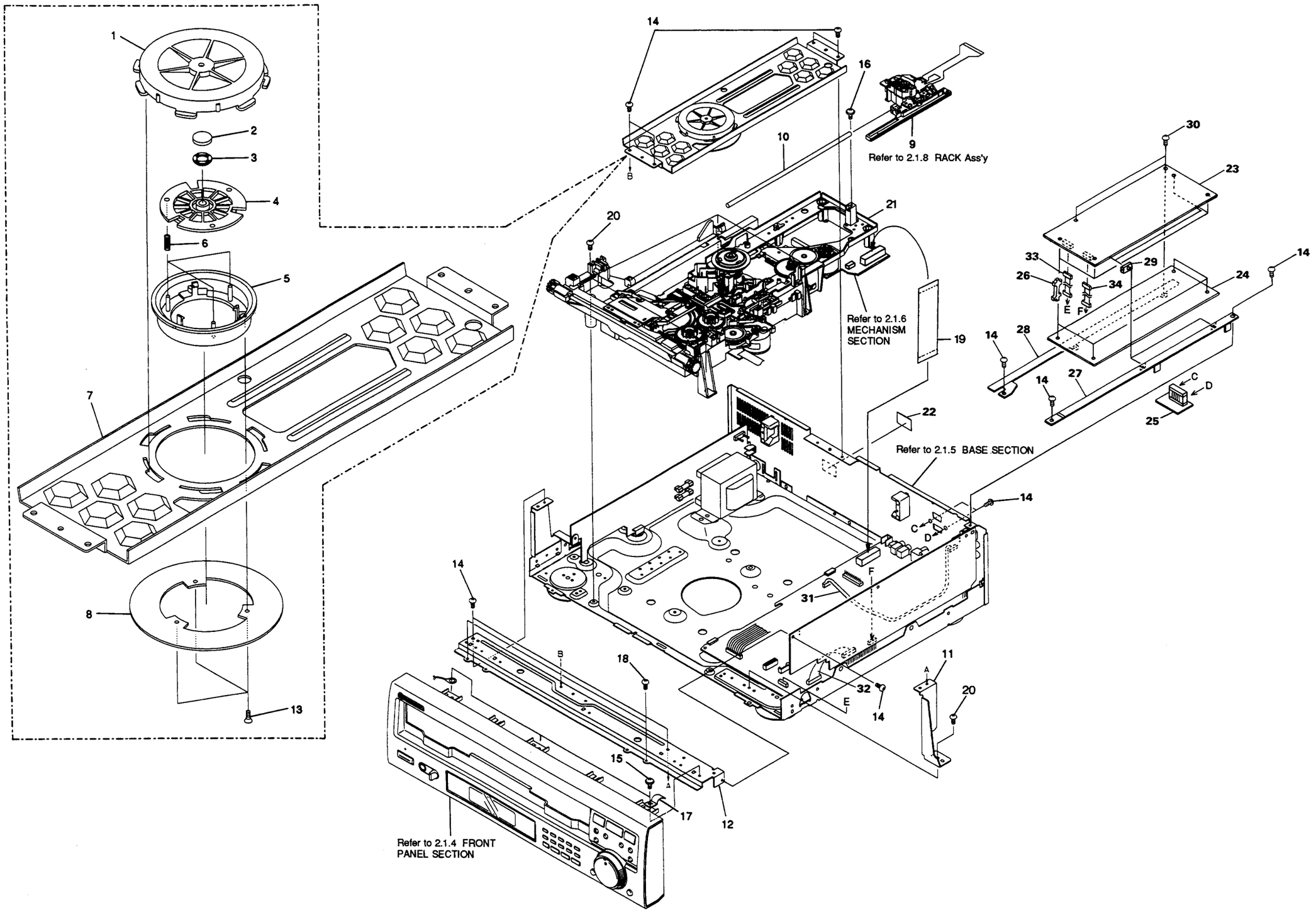


2.1.2 EXTERIOR SECTION

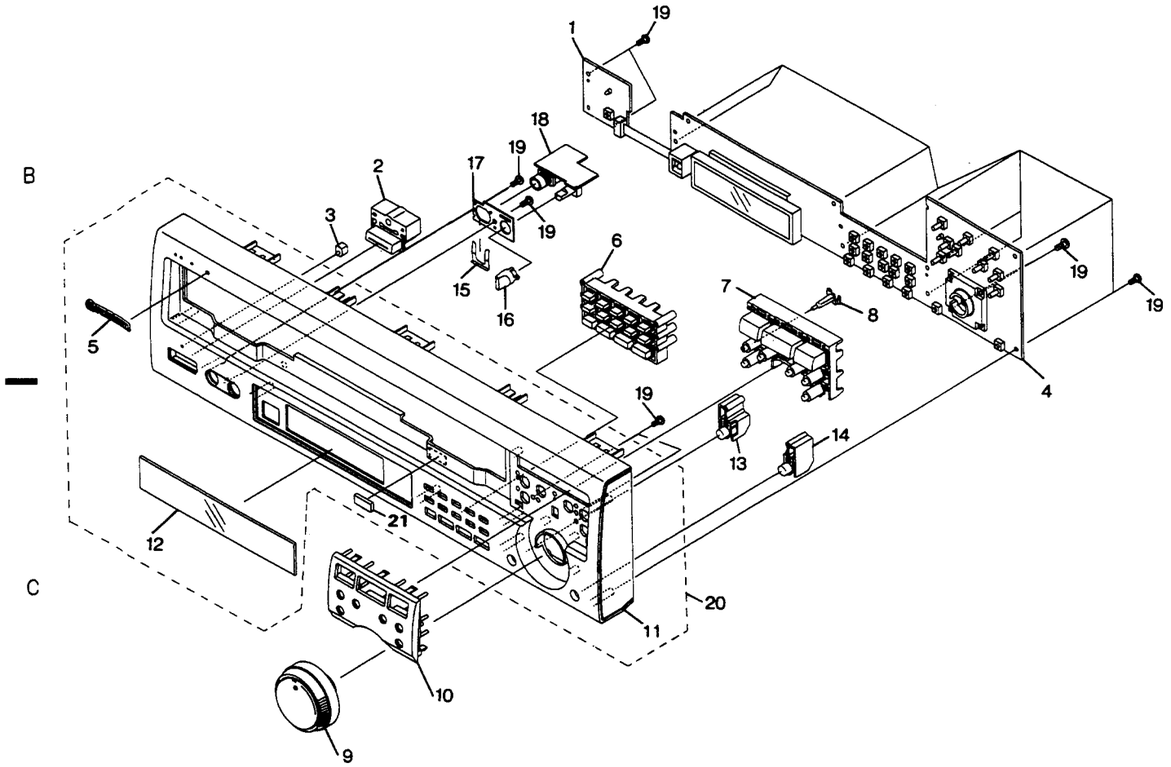


NOTE : Screws adjacent to ▼ mark on product are used for disassembly.

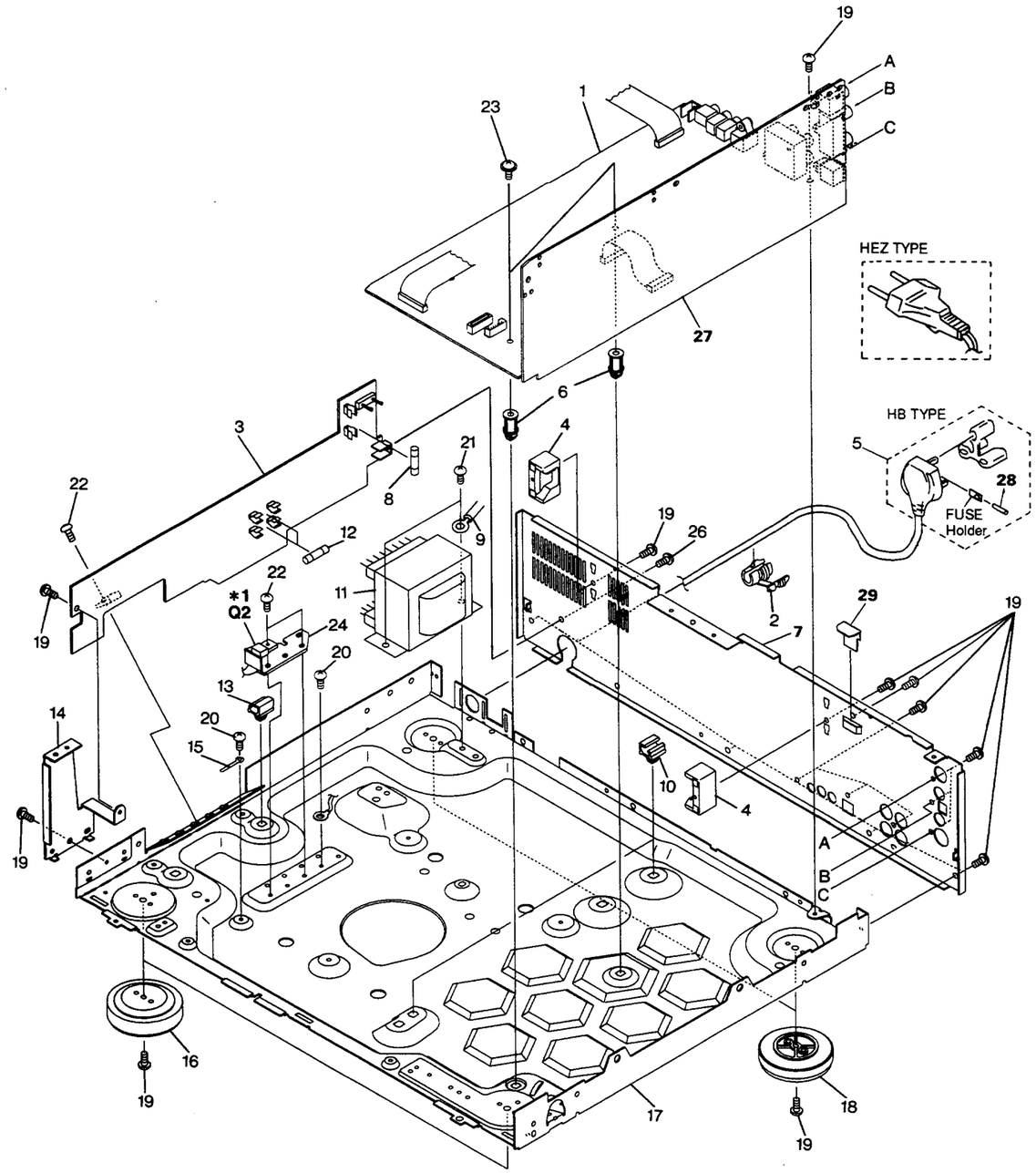
2.1.3 TOP VIEW SECTION



2.1.4 FRONT PANEL SECTION

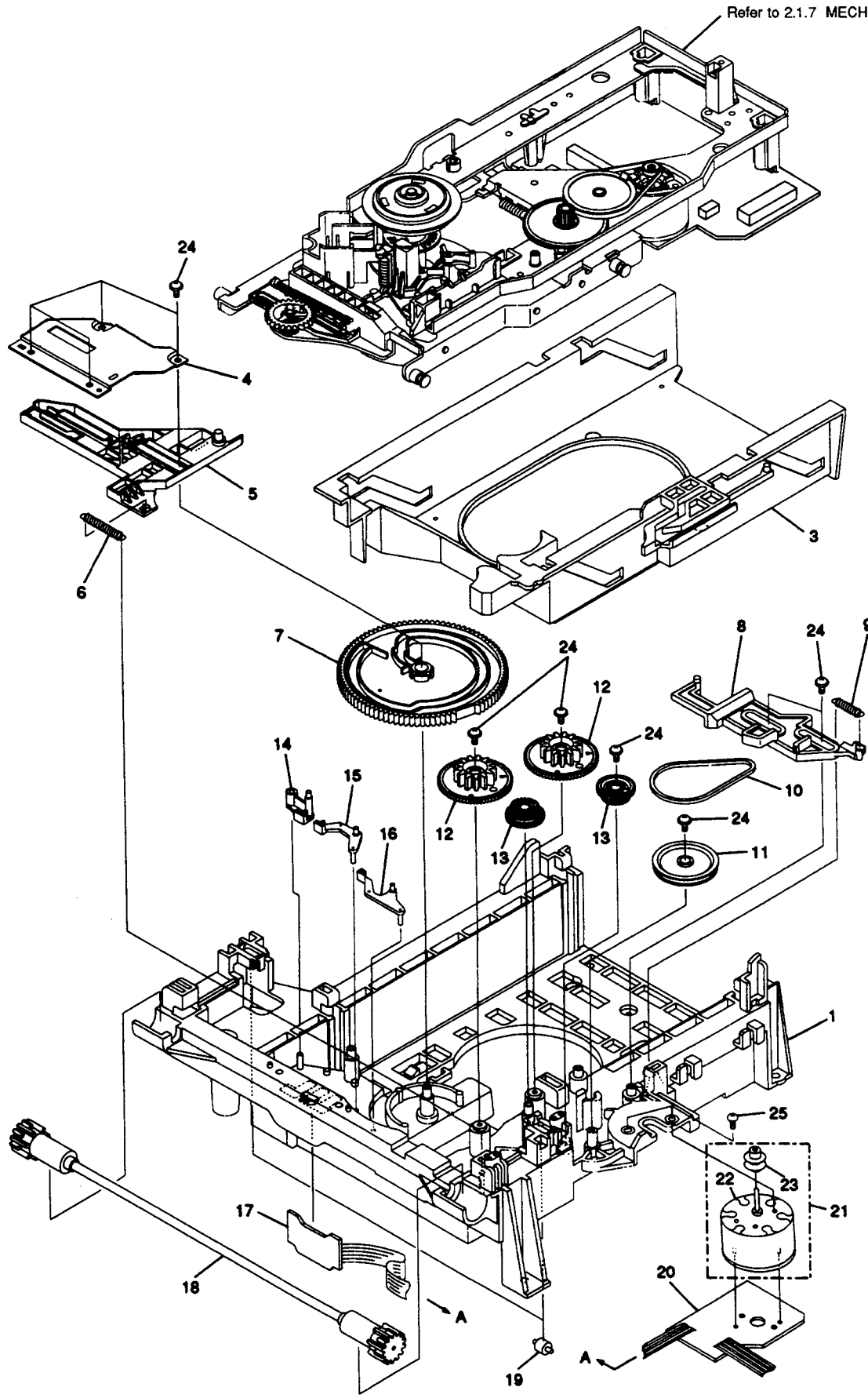


2.1.5 BASE SECTION

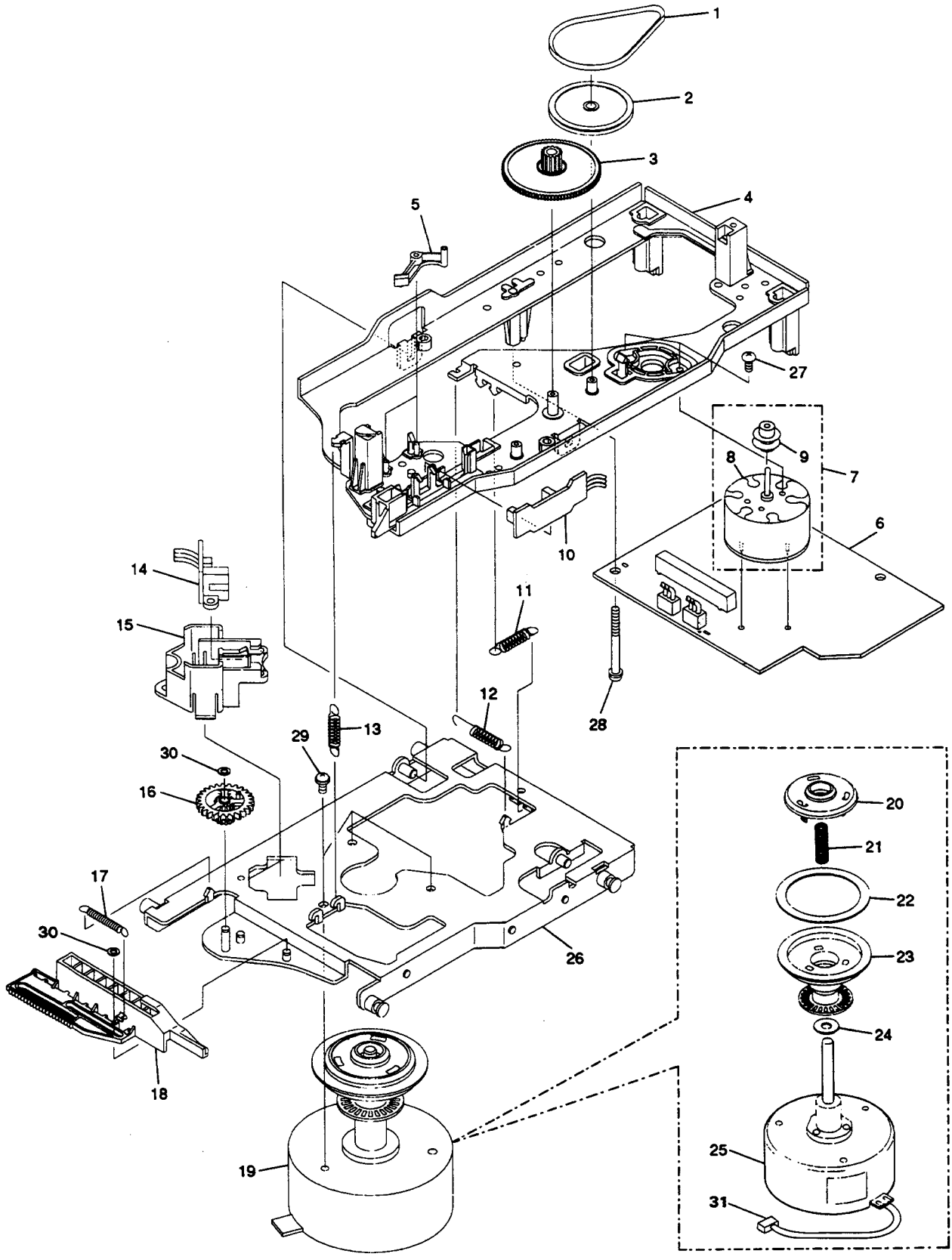


Note :
*1 : Q2 is component of the SYPS Ass'y.

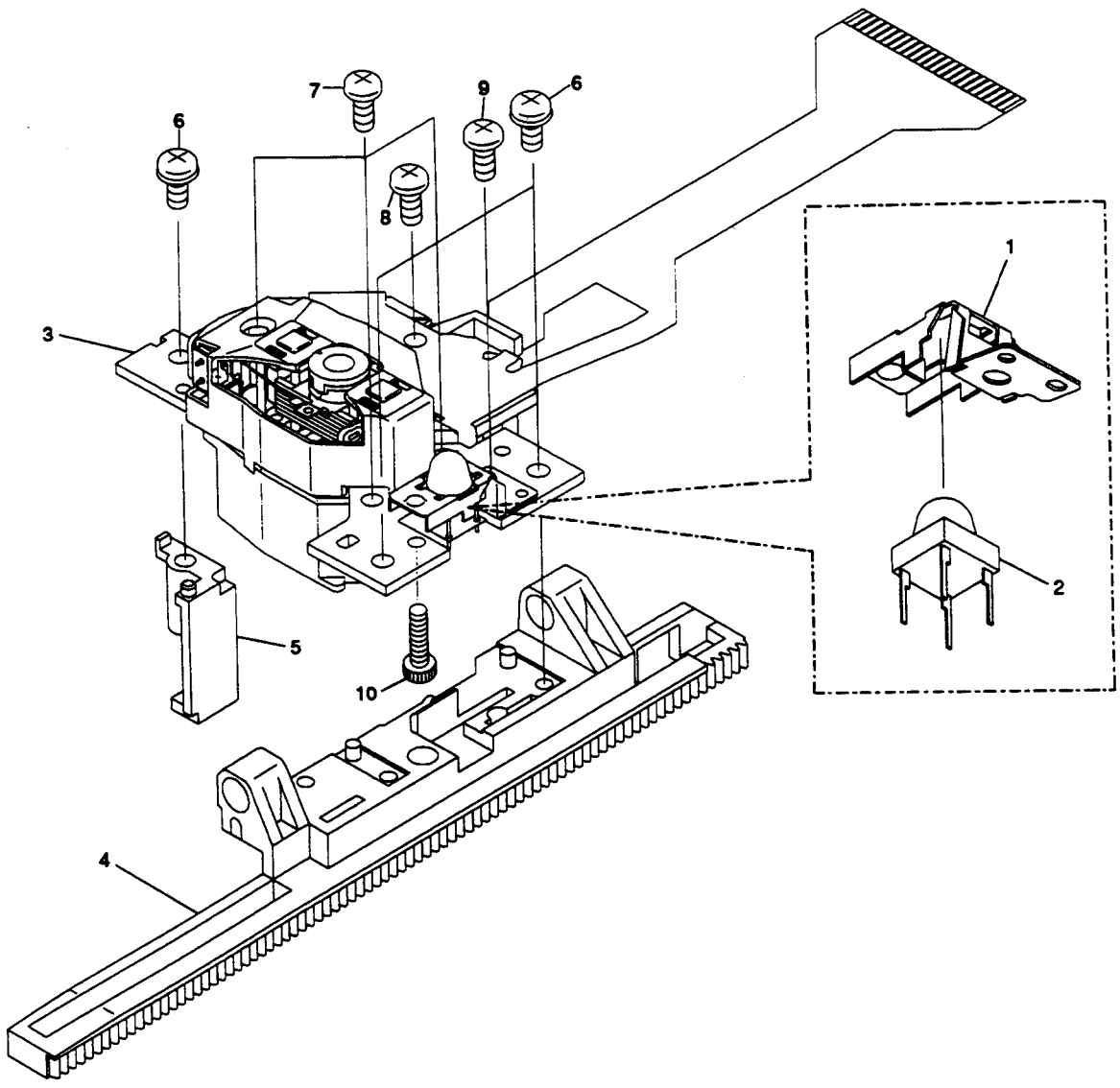
2.1.6 MECHANISM SECTION



2.1.7 MECHANISM ASSY



2.1.8 RACK ASSY



2.2 SCHEMATIC AND PCB CONNECTION DIAGRAMS

NOTE FOR SCHEMATIC DIAGRAMS (Type 4A)

1. **When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".**
2. **Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.**
3. **RESISTORS:**
   Unit: k:kΩ, M:MΩ, or Ω unless otherwise noted.
   Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.
   Tolerance: (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% or ±5% unless otherwise noted.
4. **CAPACITORS:**
   Unit: p:pF or μF unless otherwise noted.
   Ratings: capacitor (μF)/ voltage (V) unless otherwise noted.
   Rated voltage: 50V except for electrolytic capacitors.
5. **COILS:**
   Unit: m:mH or μH unless otherwise noted.
6. **VOLTAGE AND CURRENT:**
   ⎓ or ⊢ V :
   DC voltage (V) in PLAY mode unless otherwise noted.
   ⇦ mA or ⊢ mA :
   DC current in PLAY mode unless otherwise noted.
   Value in ( ) is DC current in STOP mode.
7. **OTHERS:**
   - ⊘ or ⓿ : Adjusting point.
   - ⊢ : Measurement point.
   - The ⚠ mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.
8. **SCH—□ ON THE SCHEMATIC DIAGRAM:**
   - SCH—□ indicates the drawing number of the schematic diagram. (SCH stands for schematic diagram.)
9. **SWITCHES** (Underline indicates switch position):

FLKY ASSY

S201 : 1
S202 : 7
S203 : ⏭
S204 : ⏮
S205 : ⏏
S206 : 8
S207 : ▶/II
S208 : ■
S209 : DIRECT CD
S210 : 9
S211 : CHAP/TIME
S212 : HILITE INTRO
S213 : D—LEVEL CONTROL
S214 : 0
S215 : REPEAT
S216 : RANDOM PLAY
S217 : 5
S218 : 3
S219 : CLEAR
S220 : PGM
S221 : 4
S222 : 2
S223 : +10
S224 : PGM EDIT
S225 : 6
S228 : SCAN (ROTARY ENCODER)

PWSB ASSY

S226 : POWER (STAND BY/ON)

PASB ASSY

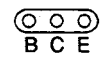
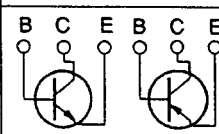
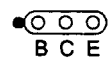
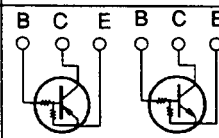
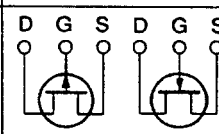
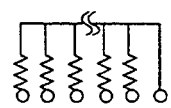
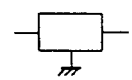
S4 : PARK OUT
S5 : PARK IN

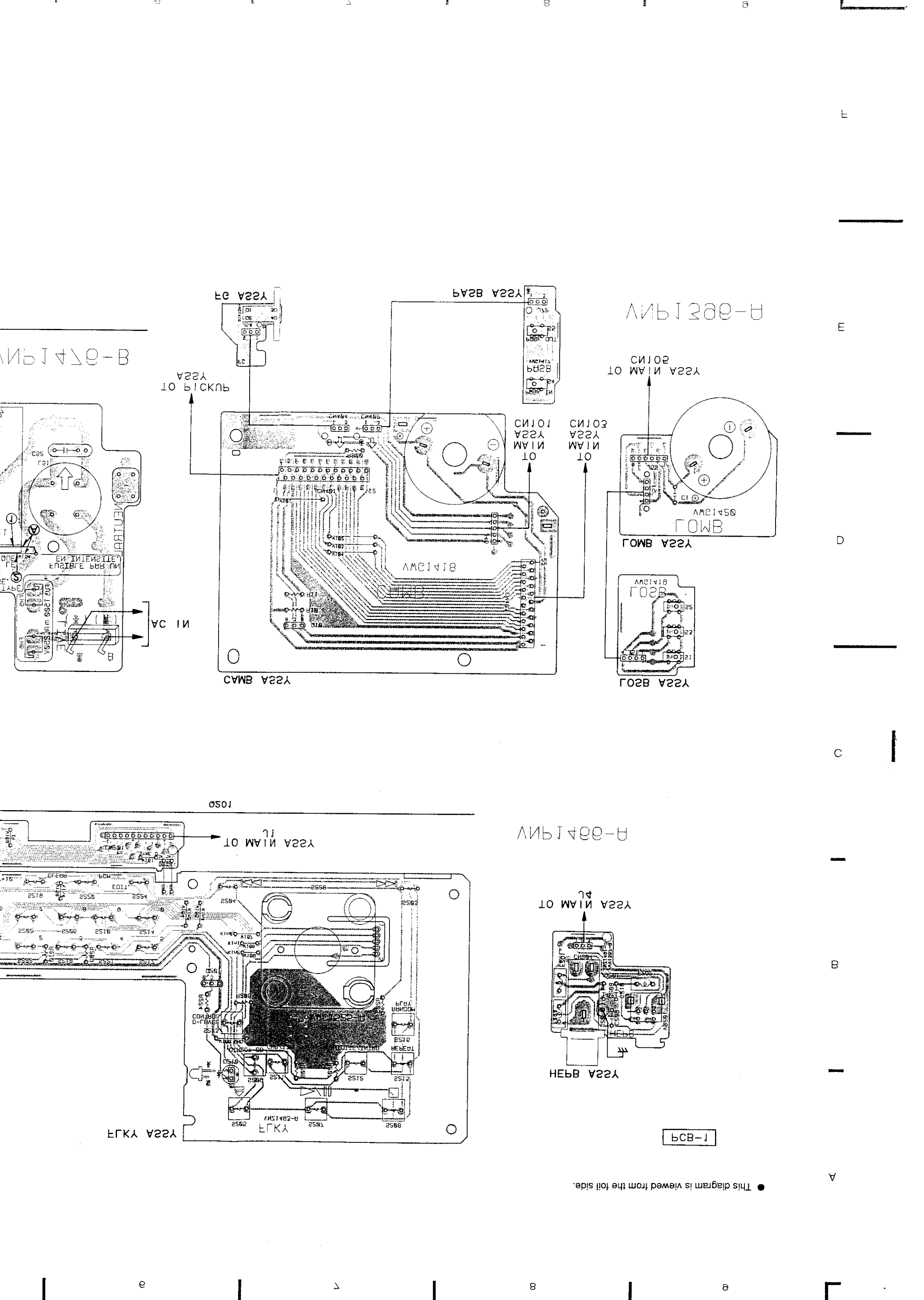
LOSB ASSY

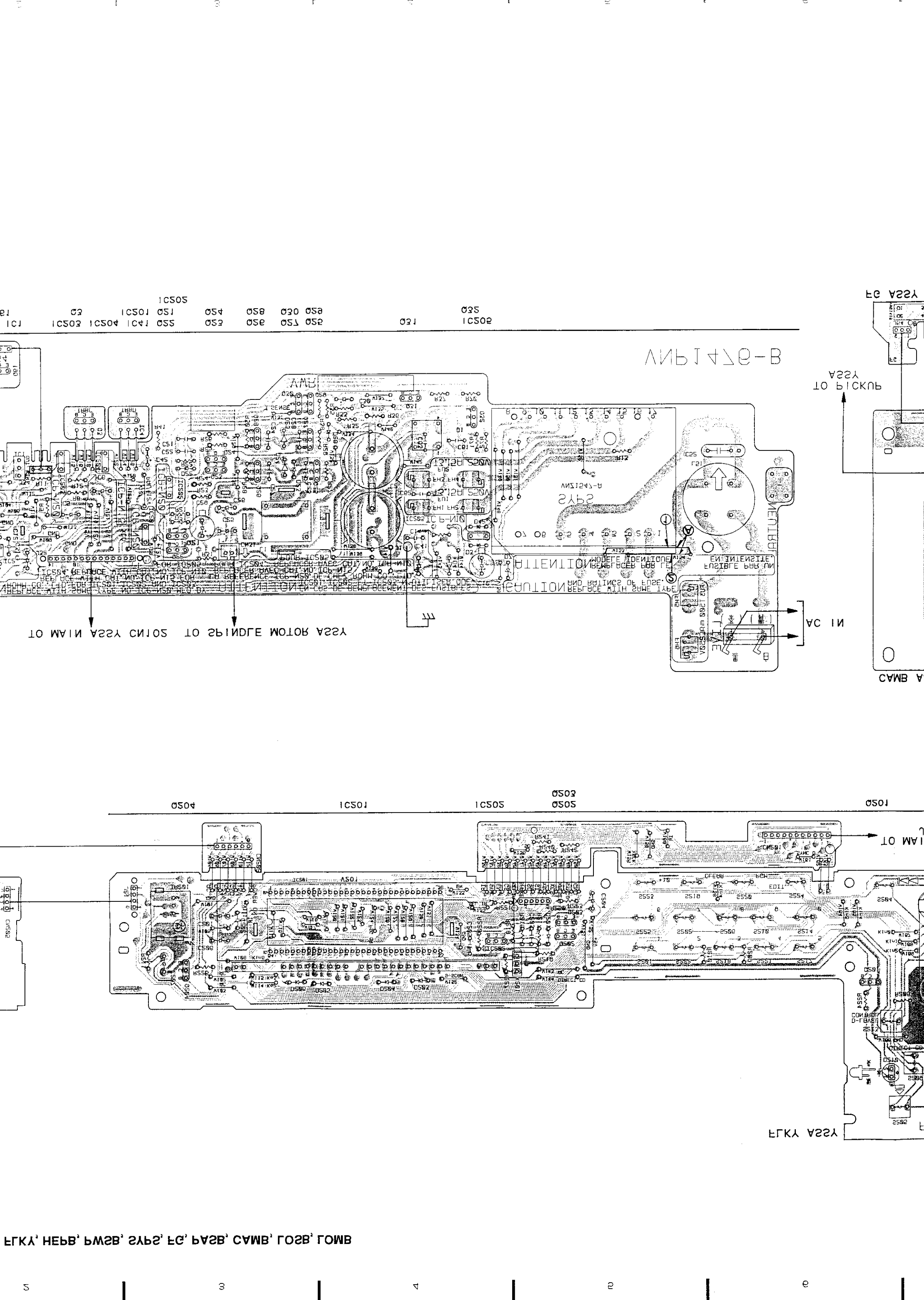
S1 : TILT, LOADING1
S2 : TILT, LOADING2
S3 : TILT, LOADING3

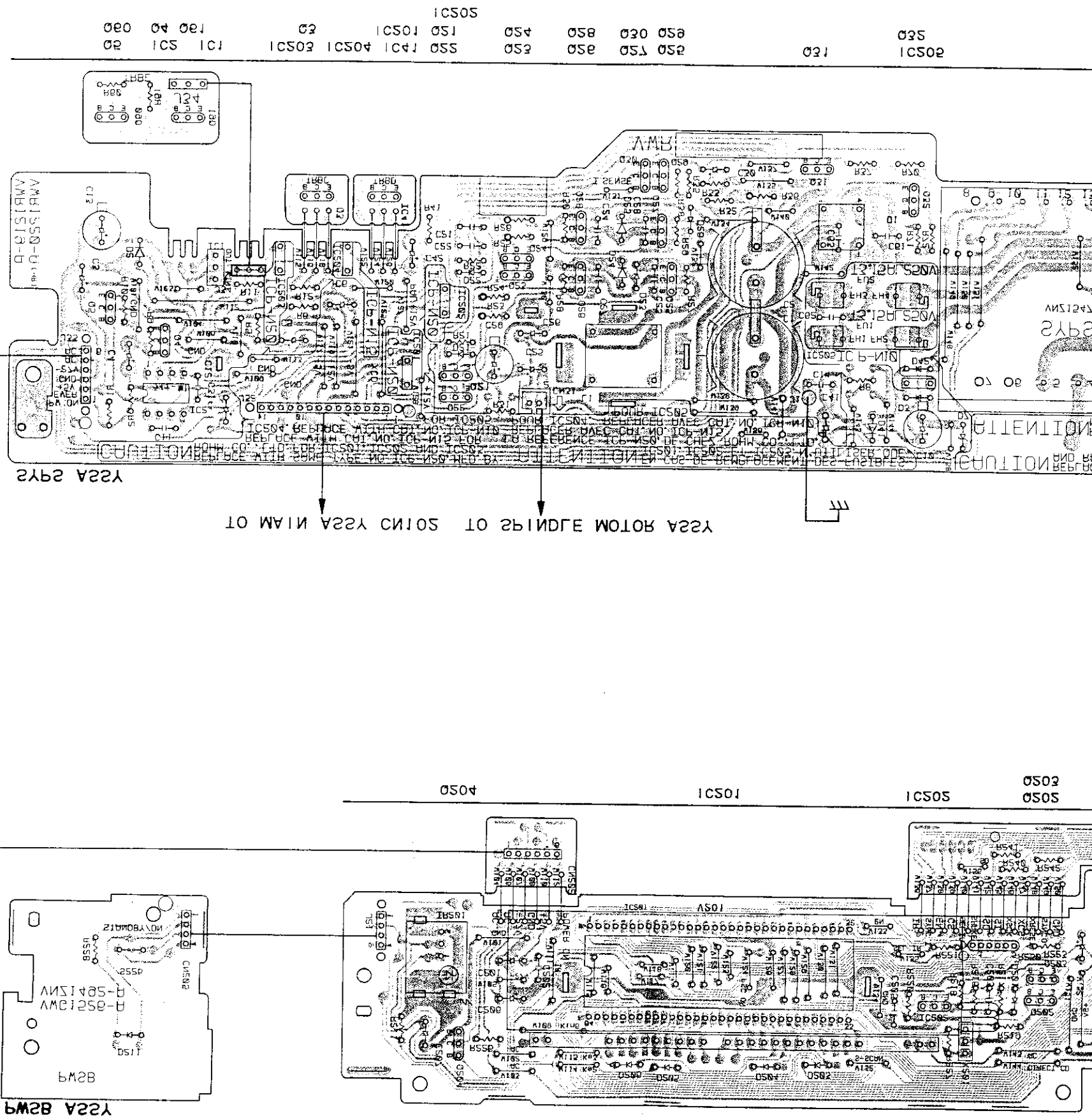
NOTE FOR PCB DIAGRAMS:

1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

Symbol in PCB Diagrams	Symbol in Schematic Diagrams	Part Name
		Transistor
		Transistor with resistor
		Field effect transistor
		Resistor array
		3- terminal regulator


A-3A1425-A
A-3A1426-A
A-3A1427-A
A-3A1428-A
A-3A1429-A
PCB-1
This diagram is viewed from the foil side.

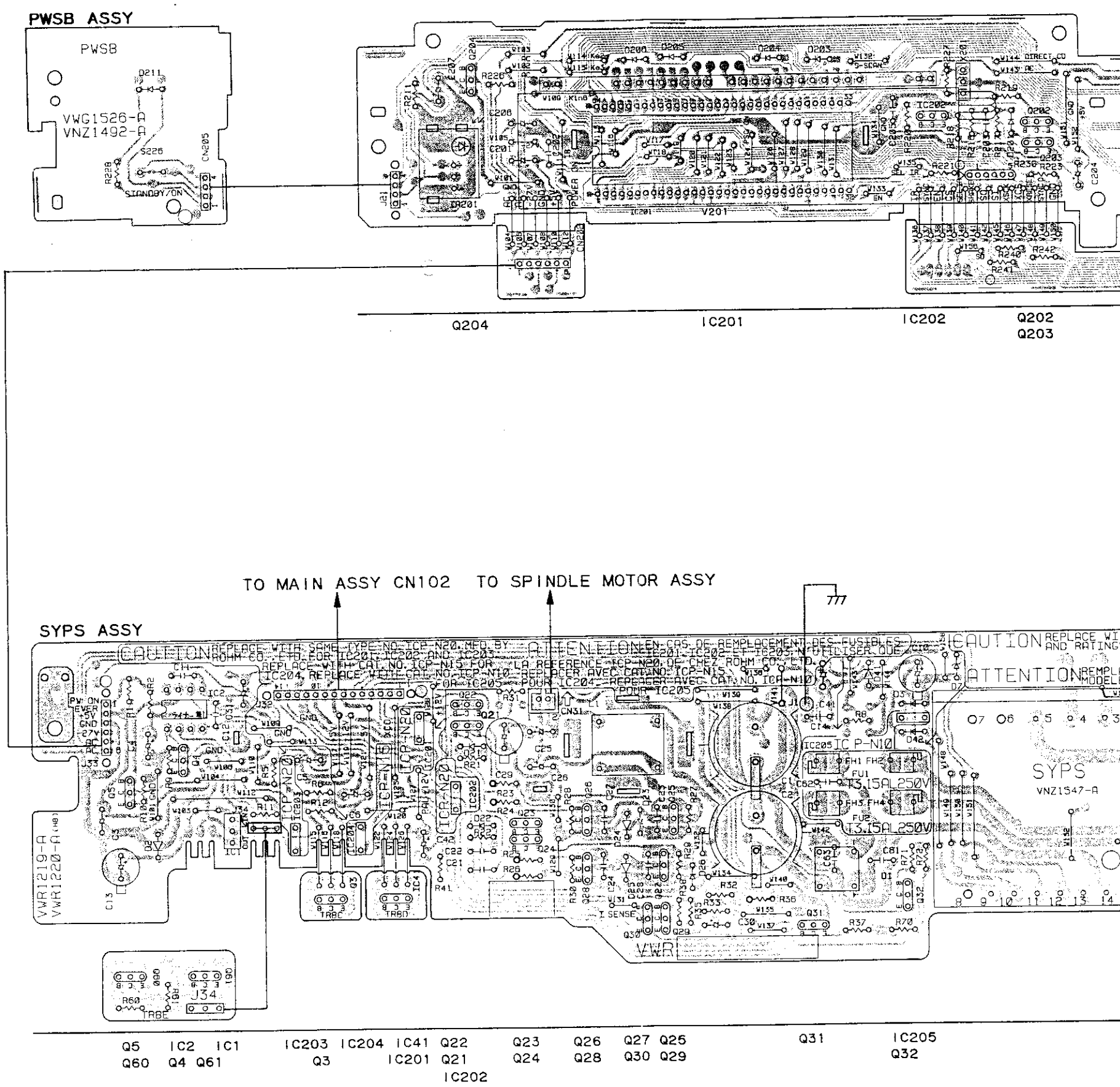

TO MAIN ASSY CN105
TO SPINDLE MOTOR ASSY
AC IN
TO PICKUP ASSY
TO MAIN ASSY
PICKUP ASSY



AND PICKUP ASSEMBLIES

S.S.T OVERALL CONNECTIONS, LCX, HEPB, PWSB, SYS, FC, PASB, CAMB, LOSB, LOMB

2.2.1 OVERALL CONNECTIONS, FLKY, HEPB, PWSB, SYPS, FG, PASB, CAMB, LOSB, LOMB AND PICKUP ASSEMBLIES



Line Voltage Selection

Line Voltage can be changed by the following modification:

1. Disconnect the AC power cord.
2. Remove the cover.
3. Change the position of the jumper-lines Ⓐ follows.

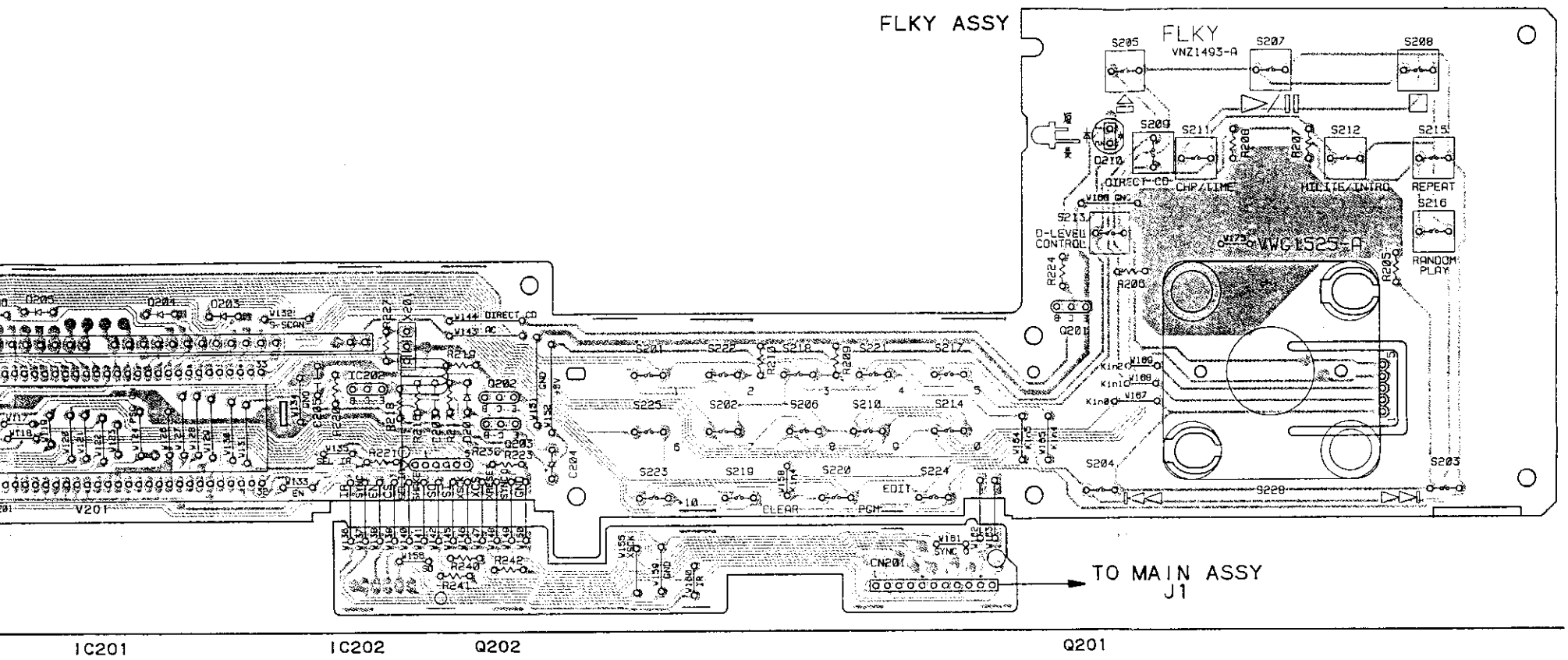
Voltage	jumper–line Ⓐ position
220V–230V	①
240V	②

NOTE: When repiacing a PCB which has the primary winding circuit of Power-transformer, be sure to compare its circuit with the diagram in Service Manual.
jumper-lines on the PCB may have to be removed.
Forgetting this check-up will cause a serious damage.

4. Stick a line voltage label on the rear panel.

Part No.	Description
AAX–193	220V label
AAX–192	240V label

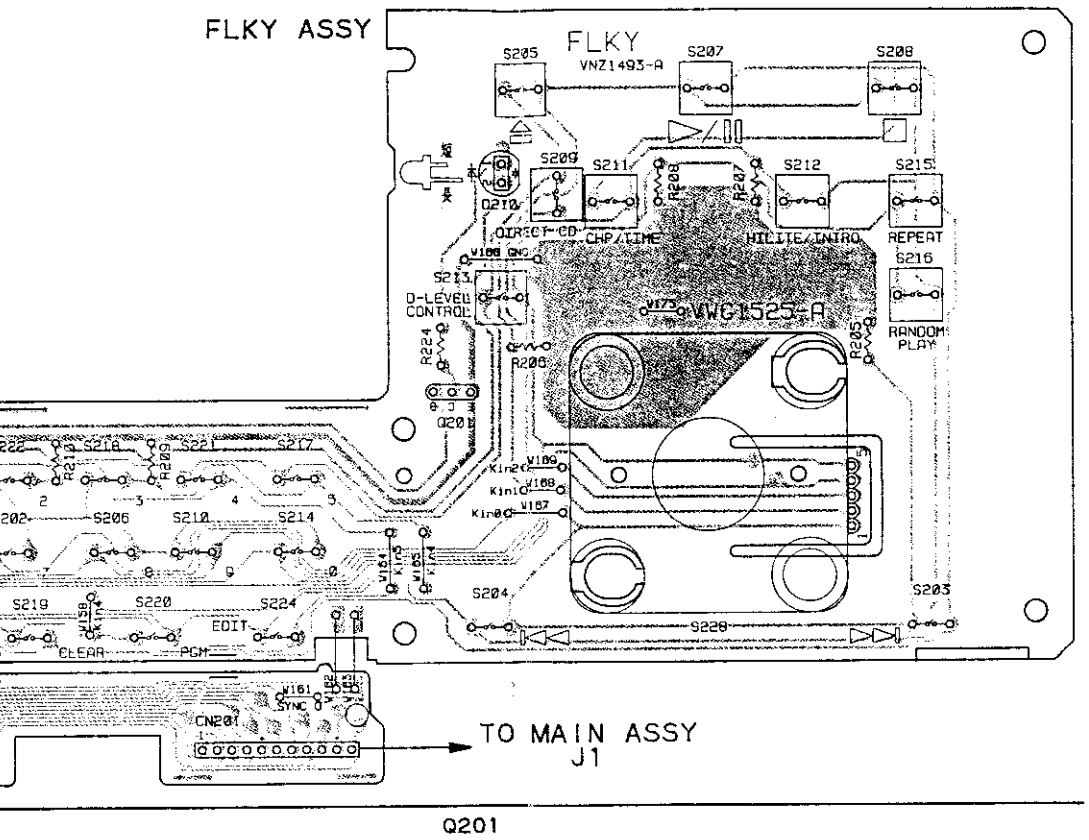
B, LOMB

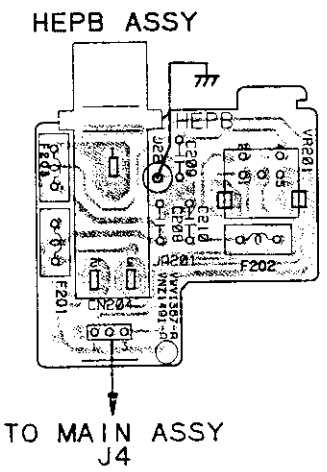


Q25 Q29 Q31 IC205 Q32

● This diagram is viewed from the mounted parts side.

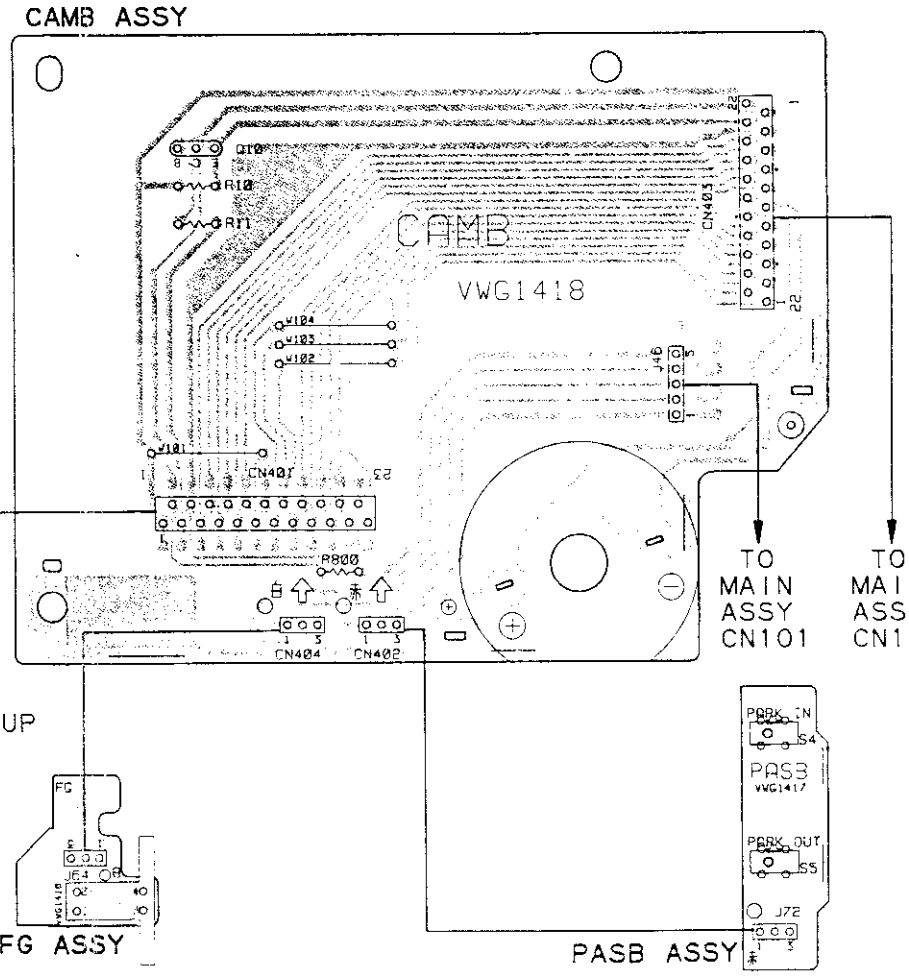
PCB-1

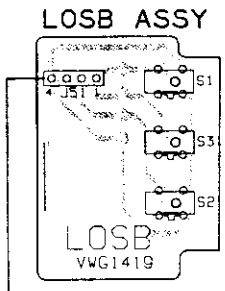


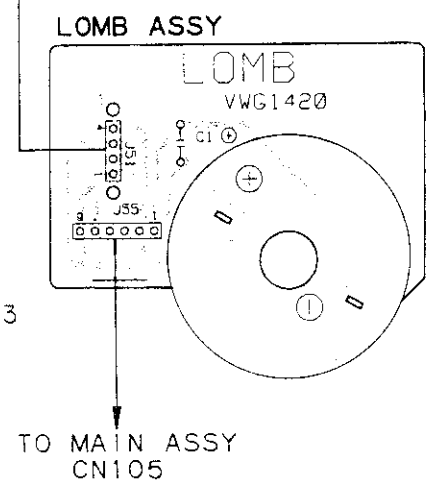


VNP1466-A

Q201







VNP1476-B

VNP1396-A

SCH-1

OVERALL CONNECTIONS,
FLKY ASSY, HEPB ASSY
PWSB ASSY, SYPS ASSY,
FG ASSY, PASB ASSY,
CAMB ASSY, LOSB ASSY,
LOMB ASSY, PICKUP ASSY

FLKY ASSY
(VWG1525)

FLKB ASSY
(VWM1474)

CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE WITH SAME TYPE NO. ICP-N10, MFD BY ROHM CO., LTD. FOR IC205.

CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE WITH SAME TYPE NO. ICP-N20, MFD BY ROHM CO., LTD. FOR IC201-IC203.

CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE WITH SAME TYPE NO. ICP-N15, MFD BY ROHM CO., LTD. FOR IC204.

SYPS ASSY
(VWR1220: HB TYPE)
(VWR1219: HEZ TYPE)

IC201-IC205: IC PROTECTOR

IC2 (1/2), Q4, Q60, Q61: +5V REGULATOR

IC41: EVER +12V REGULATOR

IC1: EVER +5V REGULATOR

IC2 (2/2), Q3, Q5: -5V REGULATOR

Q29-Q32: CURRENT DETECTOR

Q21-Q24: SPINDLE PRE-DRIVE

Q25-Q28: SPINDLE DRIVE

SPINDLE MOROR ASSY VXA2108

HEPB ASSY (VWV1367)

IC202: RESET

AC POWER CORD
PDG1055
AC240V
50/60Hz
(HB TYPE ONLY)

PDG1003
AC220-230V
50/60Hz
(HEZ TYPE ONLY)

MAIN ASSY
(VWX1206)
(→SCH-2)

VDTB ASSY
(VWS1131)
(→SCH-3)

SCRB ASSY
(VWV1357)
(→SCH-5)

CARRIAGE MOTOR ASSY VXX1261

J53 GPW M ORANGE
J12 CURRENT DET BROWN
J13 XCD RED
J51 SCRT +12V PURPLE
J52 TEL WHITE

OVERALL
FLKY AS
PWSB AS
FG AS
CAMB AS
LOMB ASS

SCH-1

CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE WITH SAME TYPE NO. ICP-N10, MFD BY ROHM CO., LTD. FOR IC205.

CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE WITH SAME TYPE NO. ICP-N20, MFD BY ROHM CO., LTD. FOR IC201-IC203.

CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE WITH SAME TYPE NO. ICP-N15, MFD BY ROHM CO., LTD. FOR IC204.

SYPS ASSY
(VWR1220: HB TYPE)
(VWR1219: HEZ TYPE)

IC201-IC205: IC PROTECTOR

IC2 (1/2), Q4, Q60, Q61: +5V REGULATOR

IC41: EVER +12V REGULATOR

TRBE

HEZ TYPE ONLY

HB TYPE ONLY

POWER TRANSFORMER

IC1: EVER +5V REGULATOR

Q29-Q32: CURRENT DETECTOR

IC2 (2/2), Q3, Q5: -5V REGULATOR

Q21-Q24: SPINDLE PRE-DRIVE

Q25-Q28: SPINDLE DRIVE

SPINDLE MOROR ASSY VXA2108

YCNR ASSY (VWV1356) (→SCH-4)

J804 XPLAY RED

D20PDD8310E

MAIN ASSY (VWX1206) (→SCH-2)

VDTB ASSY (VWS1131) (→SCH-3)

PALB ASSY (VWV1355) (→SCH-4)

SCRB ASSY (VWV1357) (→SCH-5)

GPW M ORANGE

CURRENT DET BROWN

XCD RED

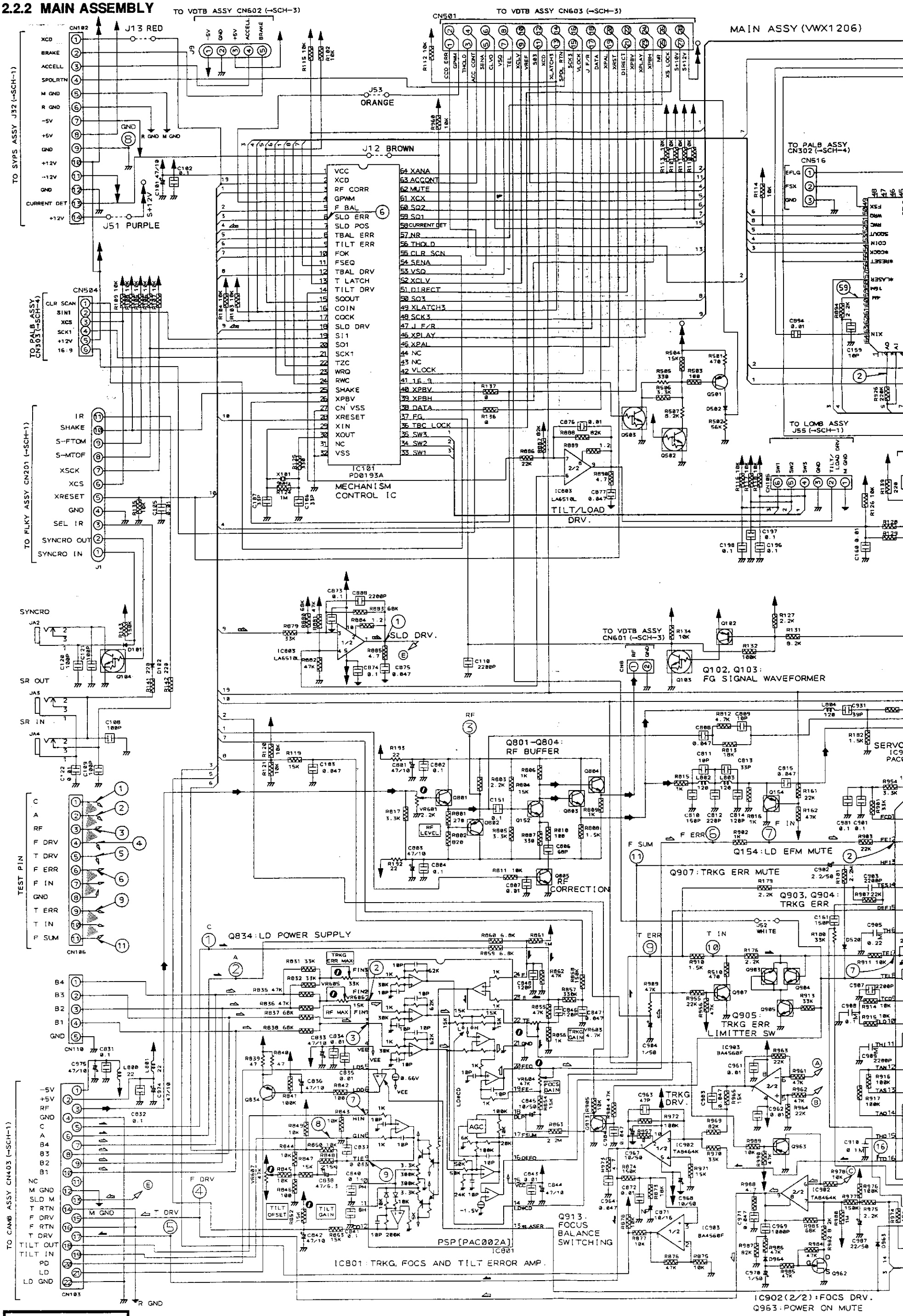
SCRT +12V PURPLE

TEL WHITE

OVERALL CONNECTIONS,
FLKY ASSY, HEPB ASSY
PWSB ASSY, SYPS ASSY,
FG ASSY, PASB ASSY,
CAMB ASSY, LOSB ASSY,
LOMB ASSY, PICKUP ASSY

SCH-1

2.2.2 MAIN ASSEMBLY



SCH-2 MAIN ASSY

MAIN ASSY (VWX1206)

SY CN603 (→SCH-3)

XLATCH3 SPDL RTN SCK3 VCLOCK J F/R DATA XPAL XRST DIRECT XPBV XPLAY XPBH NR XS LOCK S+16V S+12V

TO PALB ASSY CN302 (→SCH-4)

CN516 EFLG FSX GND

JA8 Vin Vcc GND

DSP [LC78681E] IC802

DIGITAL SOUND PROCESSOR

D/A CONVERTER IC201 PD20258

VDX GND C LZ MCK LATCH SHIFT ATT OSCE RESET DATA BCK LRCK VDD

X0 X1 GNDX VDA LO LO GNDA GNDA RO RO VDA TEST RZ S/P

Q211 AUDIO MUTE CONTROL

Q213 Q212 MUTE DRV. when ZERO DETECTING

Q208: DIG/ANA SWITCH DRV.

TO LOMB ASSY J55 (→SCH-1)

TO CAMB ASSY J46 (→SCH-1)

CN105 SW1 SW2 SW3 GND TILT/LOAD DRV M GND

CN101 LED PD PARK IN PARK OUT GND

TILT/LOAD DRV.

IC803 LA6510L

IC202: LOW-PASS FILTER

IC202 BA4560F

INVERTER BUFFER

Q210: MUTE DRV. when ZERO DETECTING

Q201: DIG/ANA SW for L

Q202: DIG/ANA SW for R

TO VDTB ASSY CN601 (→SCH-3)

CNB RF GND

Q102, Q103: FG SIGNAL WAVEFORMER

SERVO CONTROL IC901 PAC003A

Q154: LD EFM MUTE

Q907: TRKG ERR MUTE

Q903, Q904: TRKG ERR

Q905: TRKG ERR LIMITTER SW

TRKG DRV.

IC902 TA8464K

IC903 BA4560F

Q913: FOCUS BALANCE SWITCHING

IC351: AFM

F SUM F ERR T ERR F IN T IN

IC902(2/2): FOCS DRV.

Q963: POWER ON MUTE

4 5 6 7 8

SCH-2

→ : RF SIGNAL LINE
→ : TRKG SERVO LOOP LINE
→ : FOCS SERVO LOOP LINE
→ : SLDR SERVO LOOP LINE
⇨ : AUDIO SIGNAL LINE

D/A CONVERTER
IC201 PD2026B

AUDIO MUTE CONTROL
MUTE DRV. when ZERO DETECTING
Q208: DIG/ANA SWITCHING DRV.
INVERTER BUFFER
Q206: MUTE DRV.
Q205: MUTE SW
IC202: LOW-PASS FILTER
Q204: MUTE SW
Q210: MUTE DRV. when ZERO DETECTING
Q201: DIG/ANA SW for L
Q202: DIG/ANA SW for R
IC205: HEAD PHONE AMP.
IC351: AFM

TO SCRB ASSY CN101 (→SCH-5)
TO HEPB ASSY CN204 (→SCH-1)

MAIN ASSY

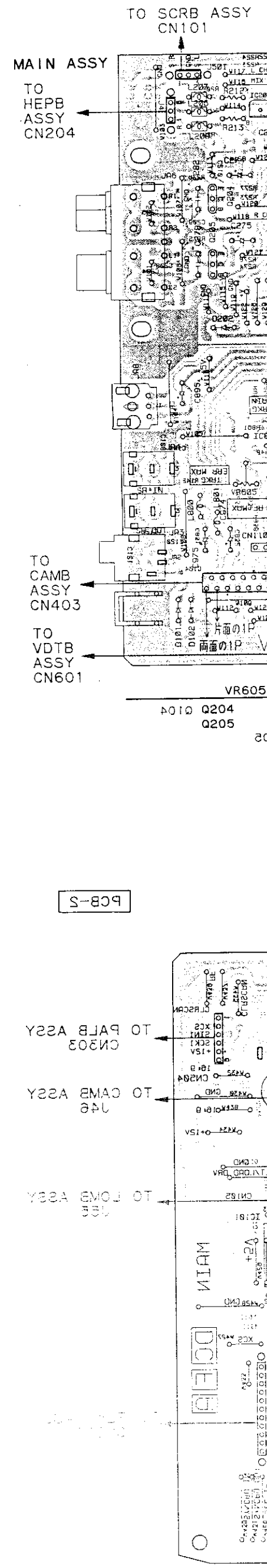
SCH-2

MAIN ASSEMBLY

Note: (No.) in the table correspond to the pin number.

Measurement condition: In case when (D.audio) is written, at time when disc that has digital audio recording is played.

IC801(PAC002A)	IC802(LC78681E)	IC803(LA6510L)	IC901(PAC003A)	CN106	IC101 (PD0193A)
②, ③ 1mS/Div. 16mVp-p — AC mode	② 0.1μS/Div. 4.3Vp-p — AC mode(D.audio)	① 2mS/Div. 1.8Vp-p 0V — DC mode	② 0.2mS/Div. 74mVp-p 0V — DC mode	①, ② 5mS/Div. 65mVp-p 0V — DC mode	⑥ 1V/Div 5mS/Div approx. 1.8V 0V — DC mode (Sldr err)
⑦, ⑧ 1mS/Div. 67mVp-p 0V — DC mode	㉝ 10μS/Div. 4.2Vp-p — AC mode(D.audio)		⑦ 0.2mS/Div. 74mVp-p 0V — DC mode	③ 0.5mS/Div. 300mVp-p — AC mode	
⑨ 5mS/Div. 0.1Vp-p 0V — DC mode	㉟ 0.2μS/Div. 4.4Vp-p — AC mode(D.audio)		⑯ 0.2mS/Div. 0.61Vp-p 0V — DC mode	④ 5mS/Div. 15Vp-p 0V — DC mode	
	㊱ 0.2μS/Div. 4.5Vp-p — AC mode(D.audio)		㊽ 50μS/Div. 6.2Vp-p 0V — DC mode	⑤ 5mS/Div. 5.8Vp-p 0V — DC mode	
	㊸ 0.1μS/Div. 4.5Vp-p — AC mode(D.audio)		㊷ 0.2μS/Div. 2.1Vp-p — AC mode	⑥ 5mS/Div. 3.5Vp-p 0V — DC mode	
	㊾ 0.1μS/Div. 2Vp-p — AC mode(D.audio)		㊼ 1mS/Div. 0.53Vp-p 0V — DC mode	⑨ 5mS/Div 1.25Vp-p 0V — DC mode	
			㊽ 0.2mS/Div. 0.32Vp-p 0V — DC mode	⑪ 10mS/Div. 1.7Vp-p — DC mode	



● This diagram is viewed

TO SCRB ASSY CN101

TO SYPS ASSY J32

TO VDTB ASSY CN602

TO PALB ASSY CN302

MAIN ASSY

TO HEPB ASSY CN204

TO CAMB ASSY CN403

TO VDTB ASSY CN601

VNP1462-B

VNZ1528-B V.W.X

VR603 VR604 VR605 VR606 VR607 VR601 VR612

Q204 Q205 IC206 IC207 IC801 Q834 IC209 Q206 Q207 Q907 IC902 IC201 Q962 Q801 Q805 IC803 Q901 IC302 Q903 Q904 Q905 Q913 Q803 Q804 IC805 IC801 IC351 IC101

● This diag

PCB-2

TO VDTB ASSY CN603

TO PALB ASSY CN602

TO SYPS ASSY J32

TO PALB ASSY CN303

TO CAMB ASSY J46

TO LOMB ASSY

MAIN

DCJH

VNP1462-B

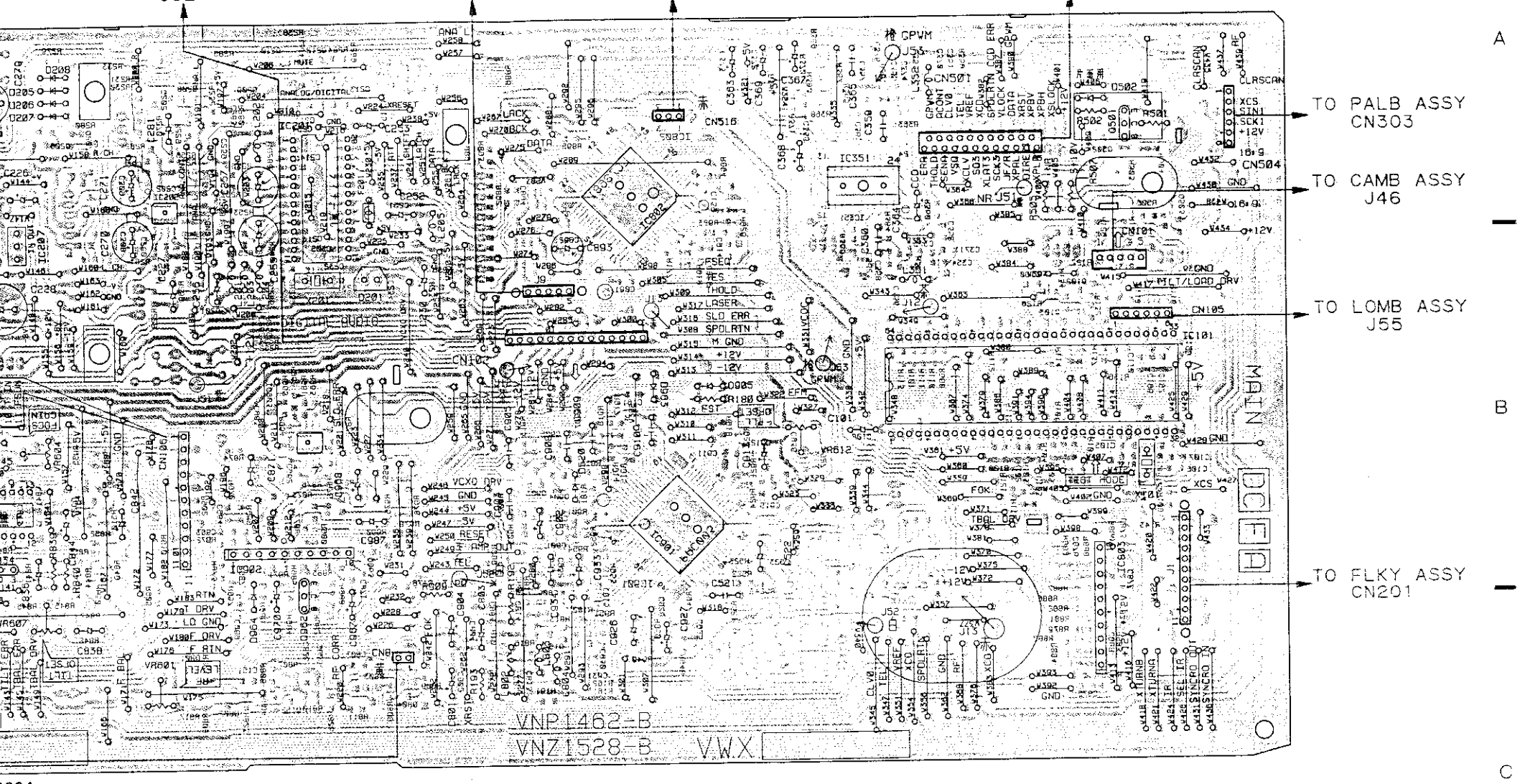
VNZ1528-B V.W.X

VR612 IC101 IC351 IC805 IC801 Q803 Q804 VR601 IC902 IC201 Q962 Q801 Q805 IC803 Q901 IC209 Q206 Q207 Q907 Q204 Q205 IC206 IC207 Q834 IC801

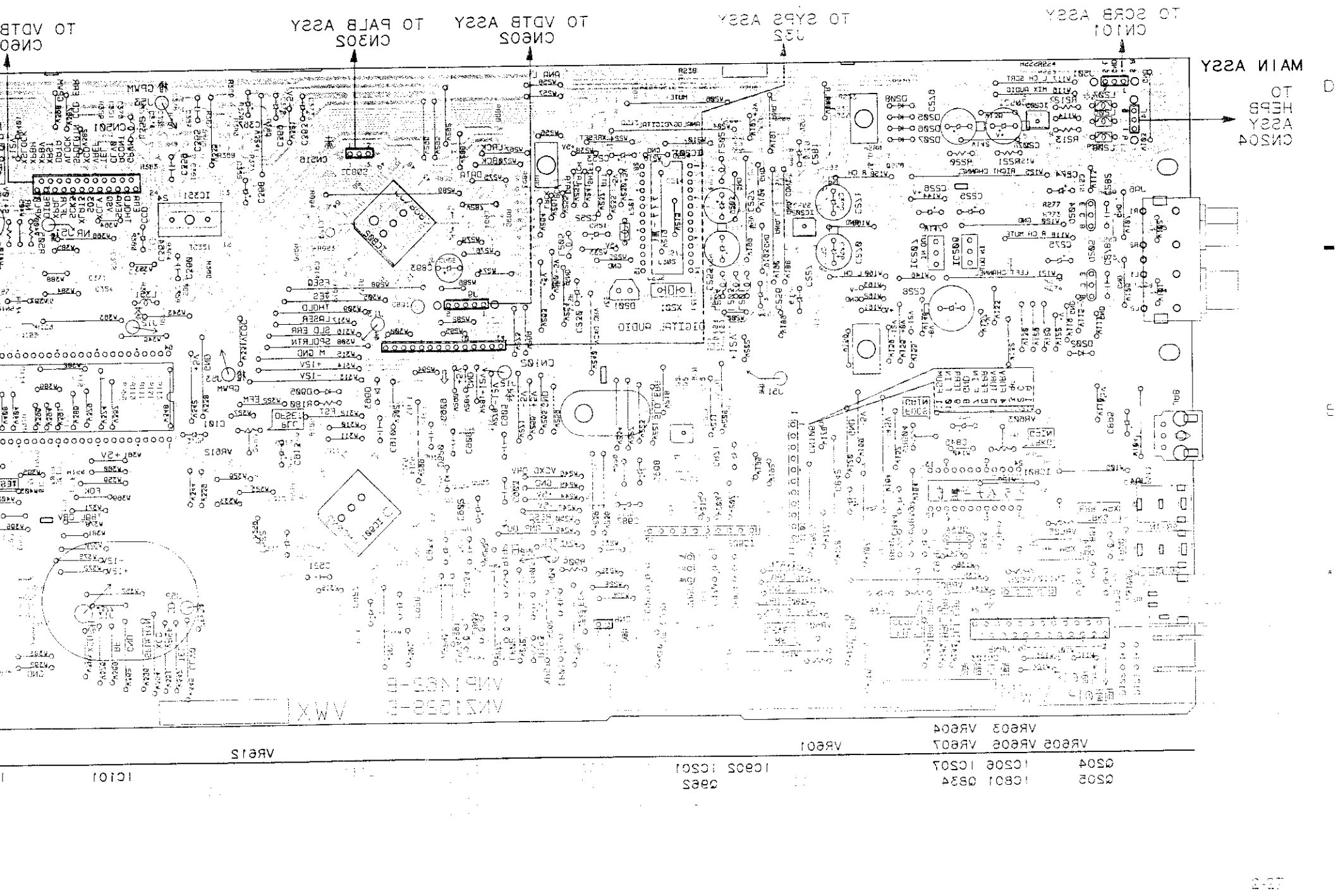
6 7 8

● This diagram is viewed from the mounted parts side.

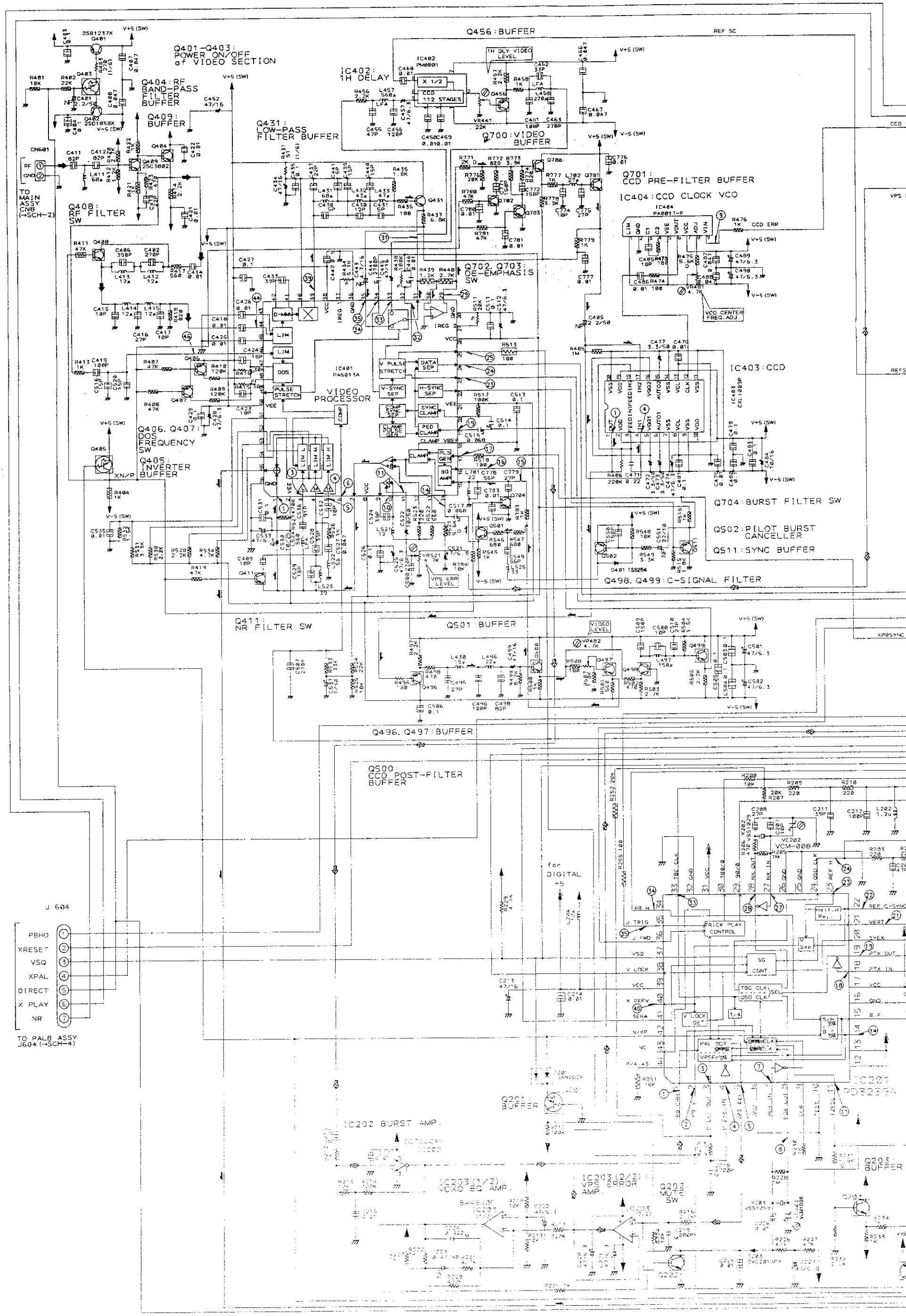
PCB-2



● This diagram is viewed from the foil side.



2.2.3 VDTB ASSEMBLY



SCH-3 VDTB ASSY

VDTB ASSY (VWS1131)

DTA124EK Q201 403 405 606 609 621 622 623
2SC2412K Q202 203 205 206 208 209 210 404 408 497 498
Q499 500 501 601 602 603 604 605 608 700 701 702
2SA1037K Q204 207 406 407 411 456 496 502 511 703 704
2SB1237K Q401
2SD1858K Q402
2SC3802K Q409
2SC1740S Q431
DTC124EK Q607 610 612 613 624 625

■ : RP
▬ : VI
◈ : SP

REF SC
CCD ERR
VPS ERR
REFSC
XPRSYNC
VREF

Q701: CCD PRE-FILTER BUFFER
IC404: CCD CLOCK VCO
IC404 PA0017-P
VCO CENTER FREQ. ADJ.
IC403: CCD
IC403 CXL1089P
Q704: BURST FILTER SW
Q502: PILOT BURST CANCELLER
Q511: SYNC BUFFER
Q498, Q499: C-SIGNAL FILTER
VIDEO LEVEL

Q608: BUFFER
Q625: MUTE SW
Q607: INVERTER BUFFER

Q602: TBC GAIN SWITCHING
Q603, Q604: TRAPEZOIDE WAVEFORMER
Q601, Q605, Q606: TBC ERROE DETECTOR

LOGIC BLOCK
SYNC SIGNAL GEN
REF H GEN
REF SC GEN
PBH TIMING GEN
LOCK DETECTOR
PFC
IC601: TBC SERVO
IC601 PM3002
SPINDLE DRIVE LOGIC
SERIAL-PARALEL DECORDER

Q624: MUTE SW
Q621: BUFFER
Q622, Q623: BUFFER
Q613: INVERTER BUFFER

for DIGITAL

VC202 VCM-008
IC201: DUAL TBC CONTROLLER
IC201 PD3239A
IC203(2/2) VPS ERROR AMP.
Q202 MUTE SW
Q203 BUFFER
Q204 PHASE EQUALIZER
Q206 BUFFER
Q207 PHASE EQUALIZER
Q205 BUFFER
Q210 BUFFER
IC207 CONVERT CLOCK SW
Q208 LOW-PASS FILTER BUFFER
Q209 MUTE SW

SCH-3

ASSY (VWS1131)

DTA124EK Q201 403 405 606 609 621 622 623
2SC2412K Q202 203 205 206 208 209 210 404 408 497 498
Q499 500 501 601 602 603 604 605 608 700 701 702
2SA1037K Q204 207 406 407 411 456 496 502 511 703 704
2SB1237X Q401
2SD1858X Q402
2SC3802K Q409
2SC1740S Q431
DTC124EK Q607 610 612 613 624 625

➡: RF SIGNAL LINE
➡: VIDEO SIGNAL LINE
⇔: SPINDLE SERVO LOOP LINE

Q602: TBC GAIN SWITCHING

Q603, Q604: TRAPEZOIDE WAVEFORMER

Q601, Q605, Q606: TBC ERROR DETECTOR

IC602(1/2): REFERENCE VOLTAGE BUFFER

IC602(2/2): CCD ERROR AMP.

Q609: INVERTER BUFFER

Q612: CD SPINDLE LOOP SW

LOGIC BLOCK
SYNC SIGNAL GEN
REF H GEN
REF SC GEN
PBH TIMING GEN
LOCK DETECTOR

PFC

IC601: TBC SERVO
IC601
PM3002

SPINDLE DRIVE LOGIC

SERIAL-PARALEL DECORDER

Q607: INVERTER BUFFER

Q610: INVERTER BUFFER

Q624: MUTE SW

Q621: BUFFER

Q622, Q623: BUFFER

Q613: INVERTER BUFFER

CN602
-5V
GND
+5V
ACCELL
BRAKE
TO MAIN ASSY J9 (→SCH-2)

CN603
CDD_ERR
GPWM
THOLD
ACCONT
SENA
CLVO
VSO
TEL
XCLV
VREF
SO3
XCO
XLAT3
SPDL RTN
SCK3
VLOCK
J F/R
DATA
XPAL
XRESET
DIRECT
XPBV
XPLAY
XPBH
NR
XSLOCK
S+10V
S+12V
TO MAIN ASSY CN501 (→SCH-2)

J 603
+5V
-5V
GND
VKILL
T2FSC
B.F
SYEX
VERT
REF CSYNC
OSD CLK
90/0
4FSC
TO PALB ASSY J603 (→SCH-4)

Q207: PHASE EQUALIZER

Q206: BUFFER

Q205: BUFFER

Q210: BUFFER

Q204: PHASE EQUALIZER

Q208: LOW-PASS FILTER BUFFER

IC207: CONVERT CLOCK SW
IC207
TC4W53F

J 601
S+10V
+5V
S VIDEO
+5V
GND
TO SCRB ASSY CN102 (→SCH-5)

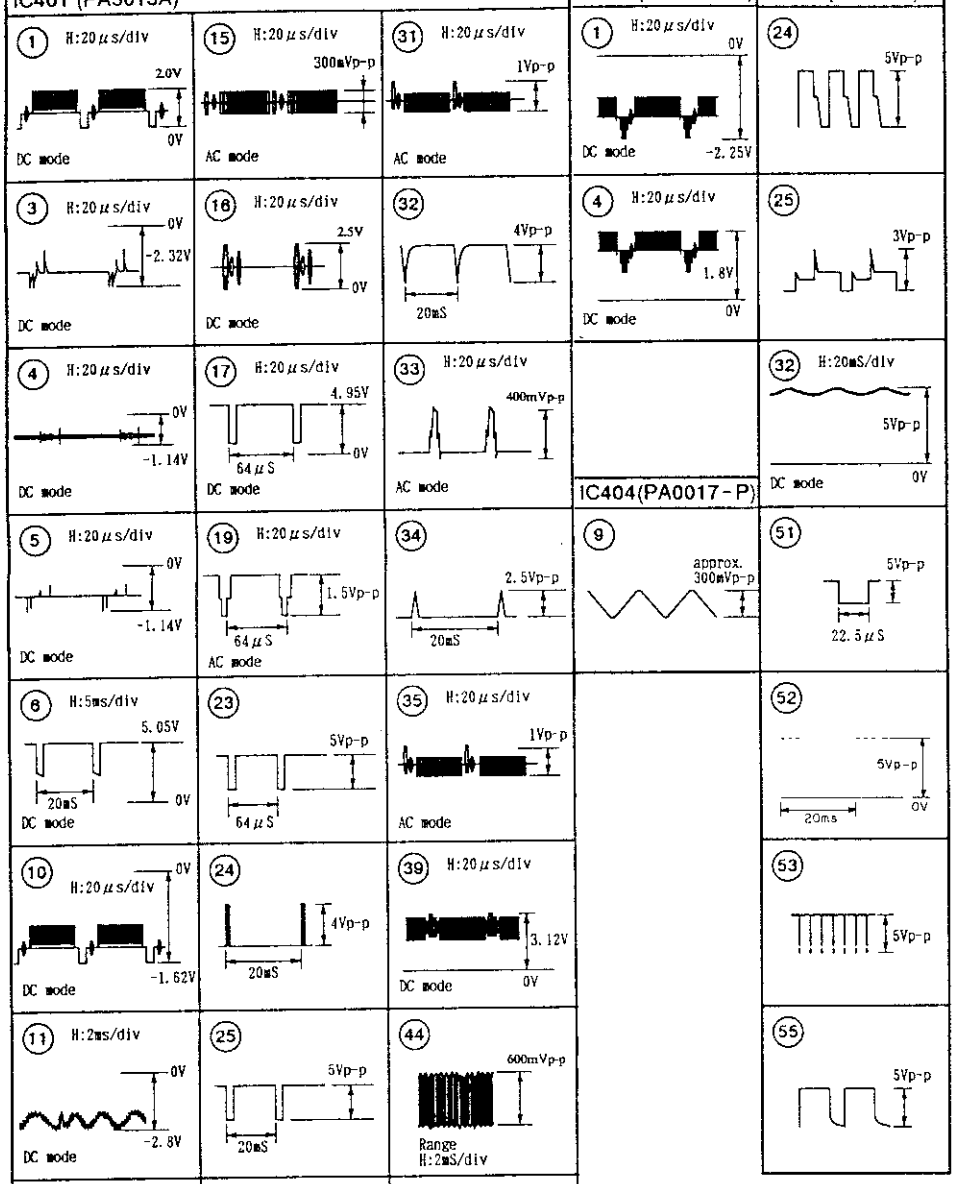
J 602
V
GND
C
GND
VIDEO OUT
GND
VIDEO
TO PALB ASSY J602 (→SCH-4)

VDTB ASSY SCH-3

VDTB ASSEMBLY

Note: (No.) in the table correspond to the pin number.

IC401 (PA5013A)

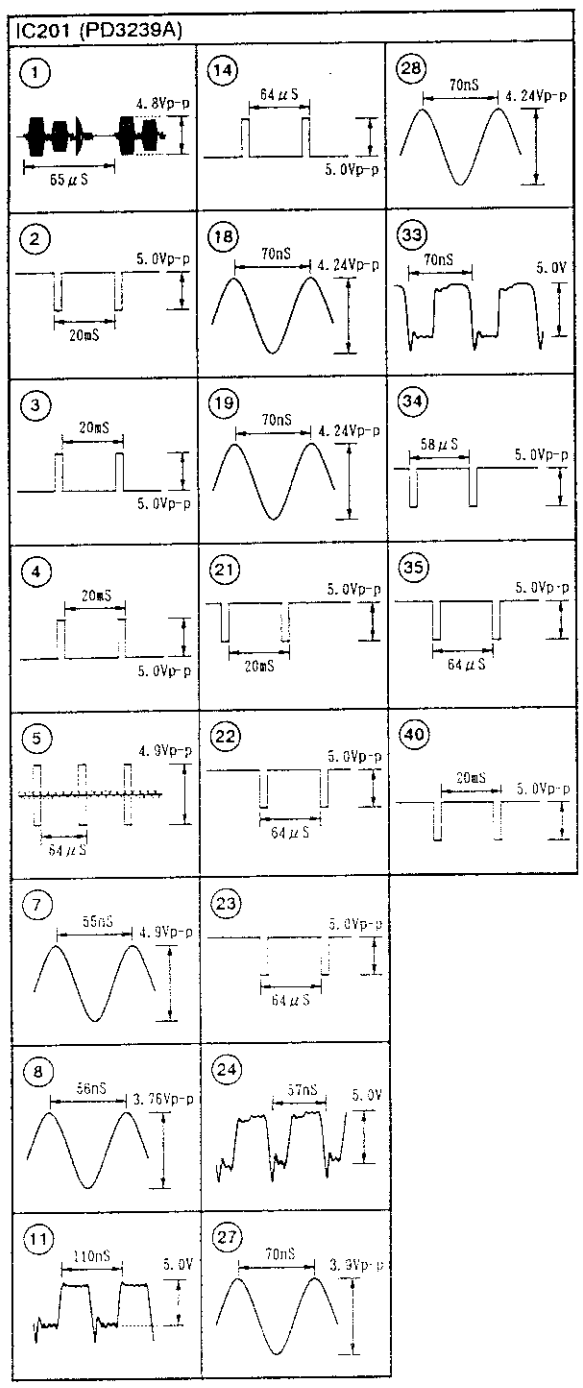


IC403 (CXL1009P)

IC601 (PM3002)

IC404 (PA0017-P)

IC201 (PD3239A)

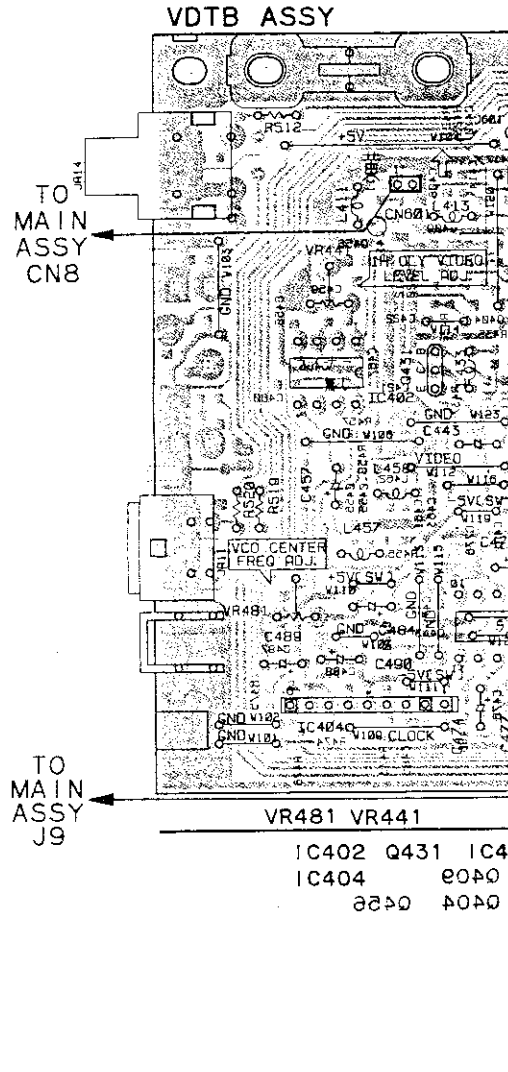


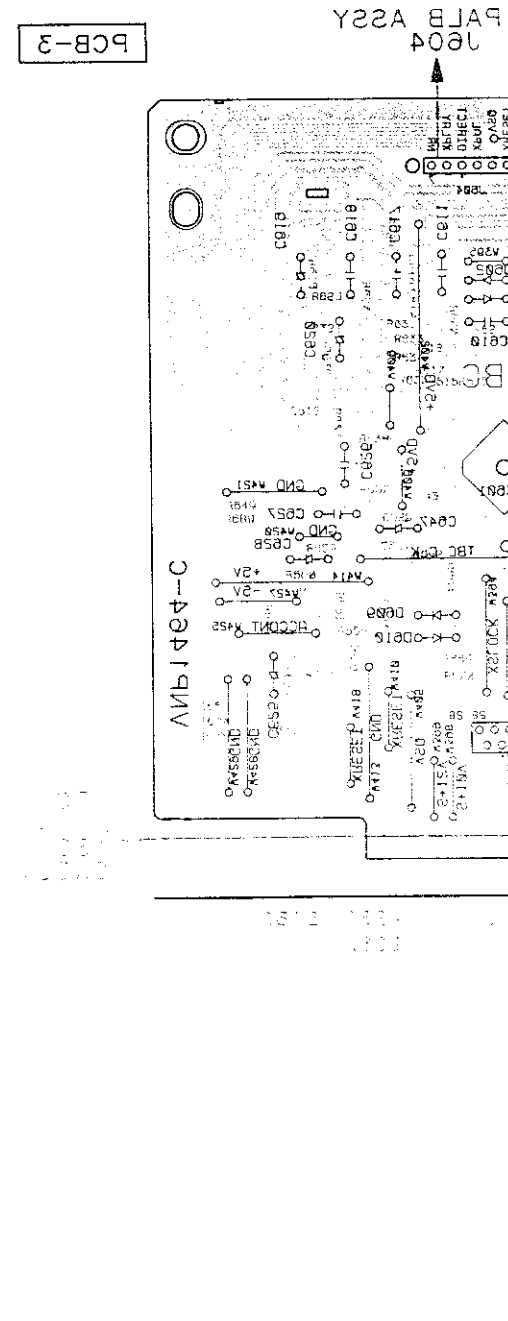
Note : These waveforms and voltage are in the PAL DISC playback.

● IC201 (PD3239A)

Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	*	12	5.0	23	*	34	*
2	*	13	5.0	24	*	35	*
3	*	14	*	25	0	36	5.0
4	*	15	5.0	26	0	37	5.0
5	*	16	0	27	*	38	5.0
6	0	17	5.0	28	*	39	5.0
7	*	18	*	29	5.0	40	*
8	*	19	*	30	5.0	41	0
9	5.0	20	5.0	31	5.0	42	0
10	0	21	*	32	0	43	5.0
11	*	22	*	33	*	44	5.0

* : Refer to waveforms





4 5 6 7 8

● This diagram is viewed

TO SCRB ASSY CN102

TO PALB ASSY J602

TO PALB ASSY J603

VDTB ASSY

TO MAIN ASSY CN8

TO MAIN ASSY J9

VNZ1518-C VDTB

VR481 VR441 VR482 VR521 VR201 VC203 VC201 VC202

IC402 Q431 IC403 Q408 Q703 Q407 IC401 Q511 Q411 Q402 IC207 Q205 Q202 IC201 Q621 IC602 Q606
IC404 Q409 Q706 Q406 Q698 Q497 Q398 Q501 Q401 Q205 Q204 Q625 Q601
Q456 Q404 Q701 Q702 Q500 Q704 Q410 Q403 Q208 Q203 Q610 Q604
Q499 Q502 IC203 Q608 Q607 Q603
Q613

● This diagr

PCB-3

TO PALB ASSY J604

TO PALB ASSY J603

TO PALB ASSY J602

SCRB ASSY CN102

VNZ1518-C

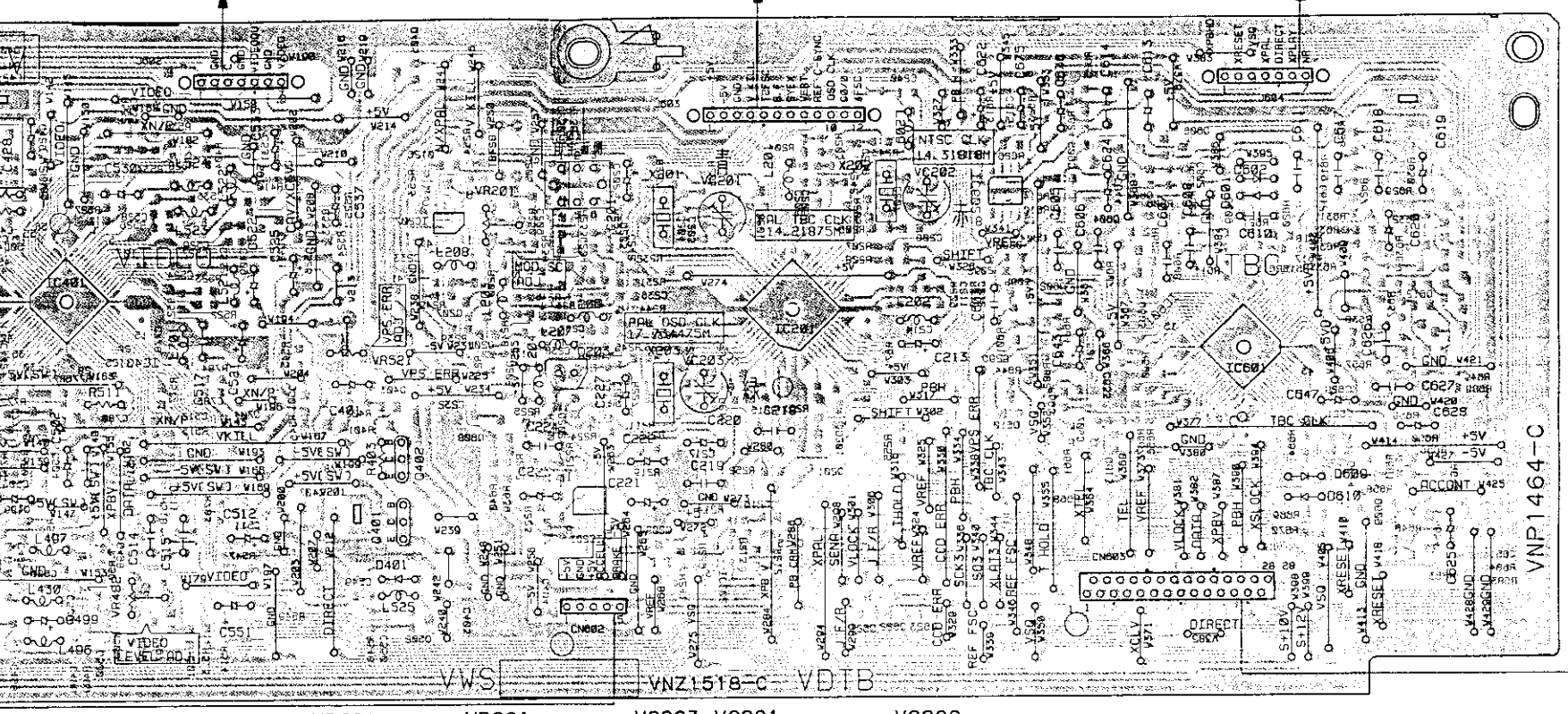
VC202 VC201 VC203 VR201 VR521 VR482

Q401 Q402

6 7 8

● This diagram is viewed from the mounted parts side.

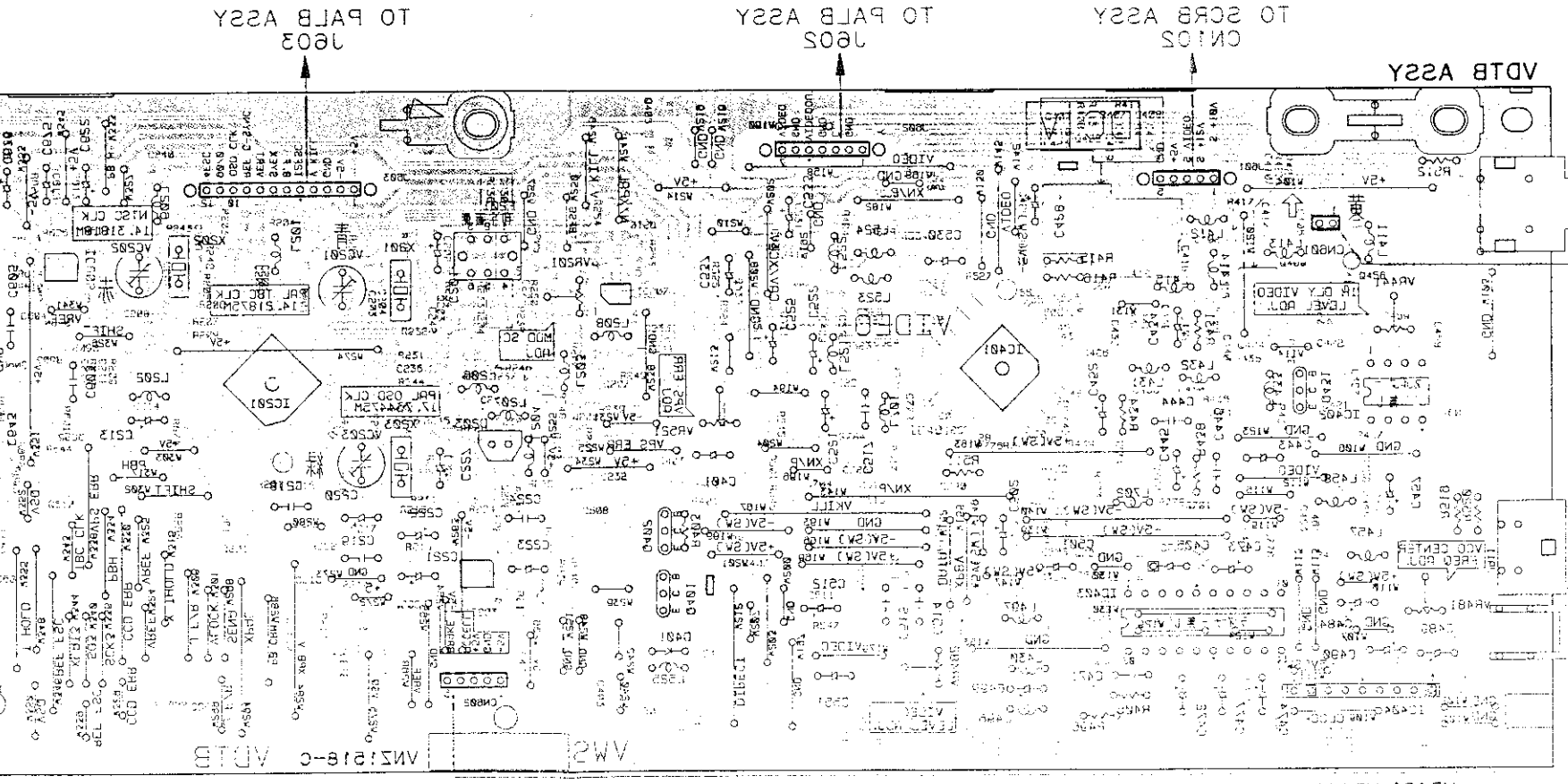
PCB-3



VR482 VR521 VR201 VC203 VC201 VC202

Q402 Q401 Q405 Q210 Q502

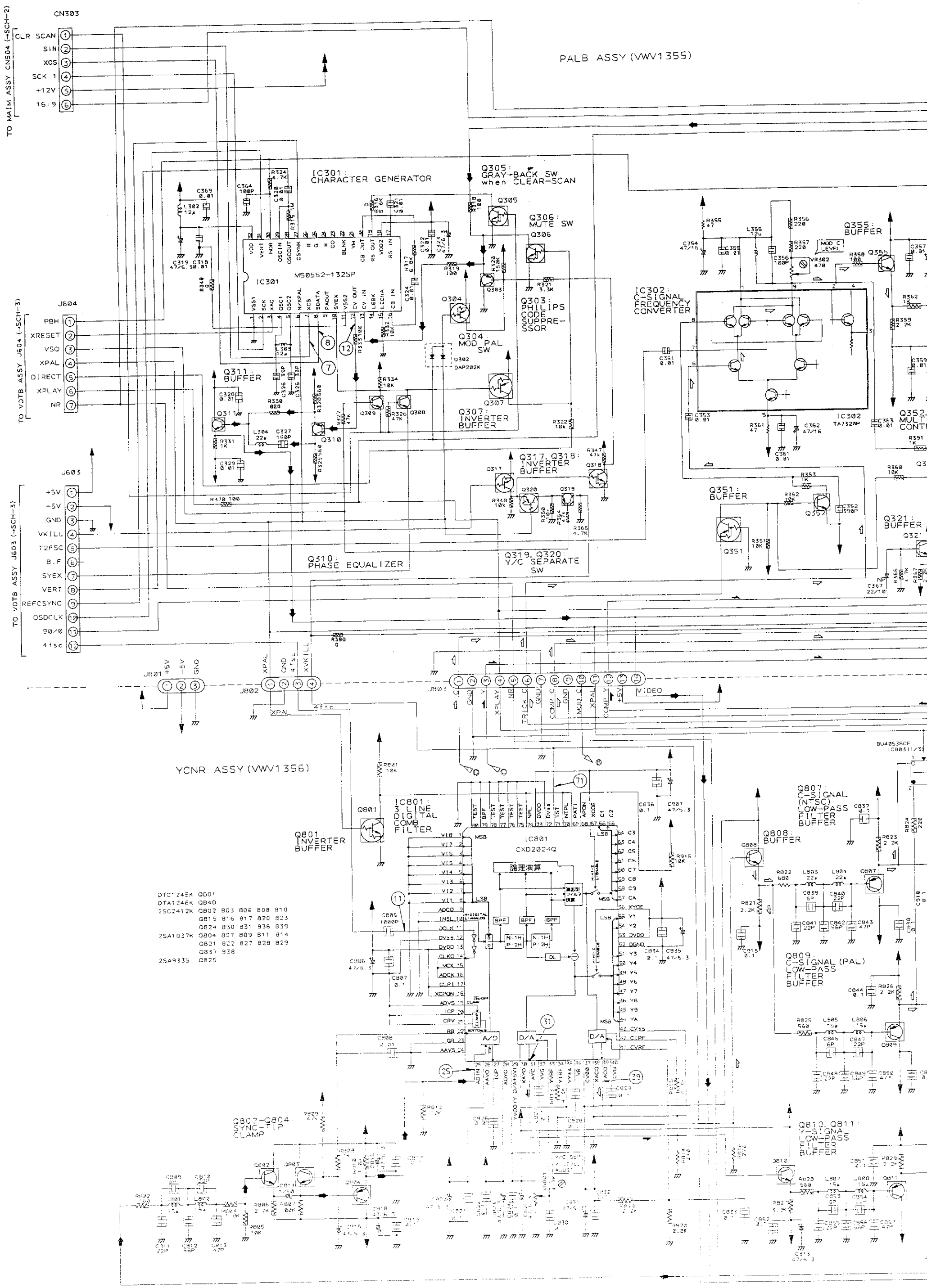
● This diagram is viewed from the foil side.



VC202 VC203 VC201 VR201 VR521 VR482 VR481

Q402 Q401

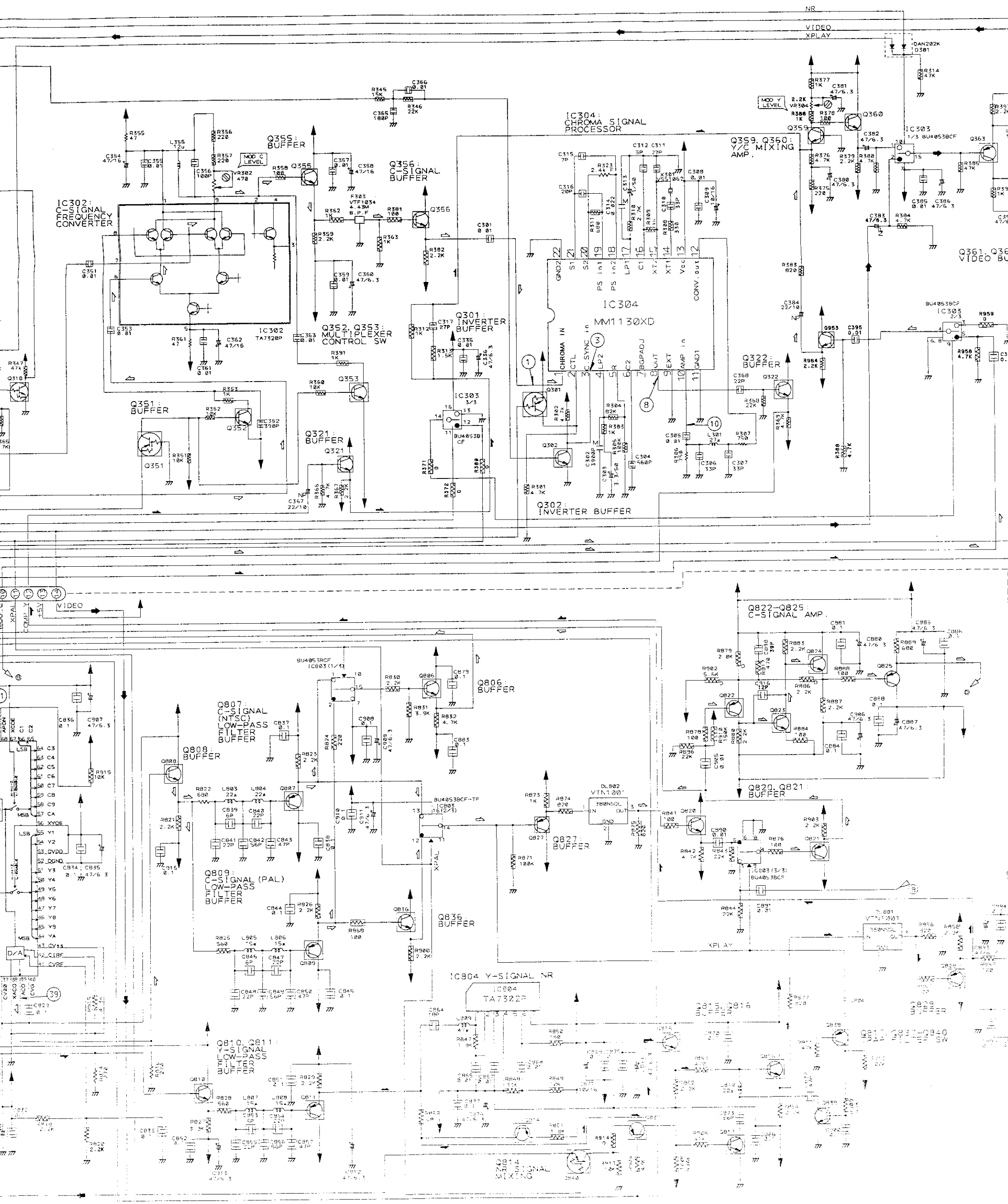
2.2.4 PALB AND YCNR ASSEMBLIES



SCH-4 PALB ASSY, YCNR ASSY

LB ASSY (VWV1355)

DTA124EK Q301 304 307 312 313 317 320 351
DTC124EK Q305 306 318
2SC2412K Q302 308 309 311 321 322 352 353
Q355 356 359 360 953
2SA1037K Q303 310 314 319 363
2SC1740S Q315 316 361 365



DTA124EK Q301 304 307 312 313 317 320 351
DTC124EK Q305 306 318
2SC2412K Q302 308 309 311 321 322 352 353
Q355 356 359 360 953
2SA1037K Q303 310 314 319 363
2SC1740S Q315 316 361 365

SCH-4

➡: VIDEO SIGNAL LINE
➖: Y-SIGNAL LINE
⇨: C-SIGNAL LINE

NR
VIDEO
XPLAY

IC304: CHROMA SIGNAL PROCESSOR

IC304 MM1130XD

Q301: INVERTER BUFFER

Q302: INVERTER BUFFER

Q322: BUFFER

Q359, Q360: Y/C MIXING AMP.

IC303 1/3 BU4053BCF

IC303 2/3 BU4053BCF

Q361, Q363, Q365: VIDEO BUFFER

J602
1 Y
2 GND
3 C
4 GND
5 VIDEO OUT
6 GND
7 VIDEO
TO VDTB ASSY J602 (→SCH-3)

CN302 CN301
1 EFLG
2 FSX
3 GND
TO MAIN ASSY CN516 (→SCH-2)

Q312, Q313: 16:9 SW

Q822-Q825: C-SIGNAL AMP.

Q820, Q821: BUFFER

Q314-Q316: Y-SIGNAL BUFFER

Q806: BUFFER

Q827: BUFFER

Q836: BUFFER

Q829-Q831: Y-SIGNAL AMP.

IC804: Y-SIGNAL NR
IC804 TA7302P

Q815, Q816 BUFFER

Q828: BUFFER

Q817, Q837-Q840: TRAP FILTER SW

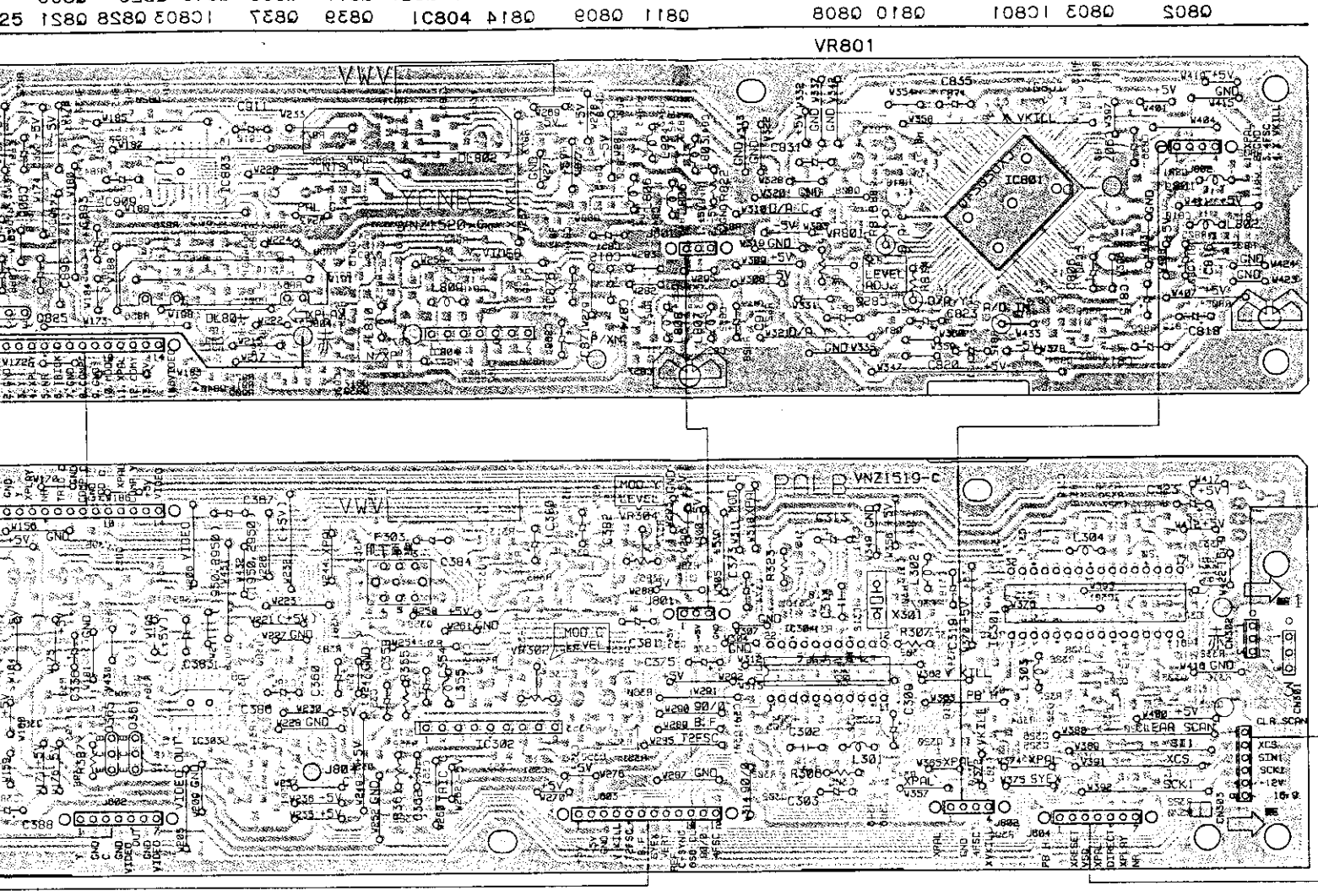
Q814: NR SIGNAL MIXING

PALB ASSY, YCNR ASSY

SCH-4

● This diagram is viewed from the mounted parts side.

PC8-4



● This diagram is viewed from the foil side.

umber.

[PALB ASSY]

Note : These waveforms and voltage are in the play mode.

● IC301 (M50552-132SP)

Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	0	9	–	17	0.8	25	–
2	5	10	5	18	–	26	–
3	5	11	0	19	0	27	–
4	2.4	12	1.1	20	0	28	2.3
5	2.4	13	1.1	21	–	29	2.3
6	–	14	–	22	–	30	–
7	5	15	1.8	23	–	31	–
8	0.4	16	0.6	24	–	32	–

[PALB ASSY]

Note: These waveforms and voltage are in the play mode.

● IC304 (MM1130XD)

Pin No.	Voltage [V]	Pin No.	Voltage [V]	Pin No.	Voltage [V]	Pin No.	Voltage [V]
1	3.2	7	1.8	13	5.0	19	3.3
2	—	8	2.9	14	3.0	20	3.3
3	—	9	0	15	3.7	21	3.3
4	2.0	10	2.6	16	3.7	22	0
5	2.1	11	0	17	2.6		
6	1.9	12	2.6	18	3.3		

[YCNR ASSY]

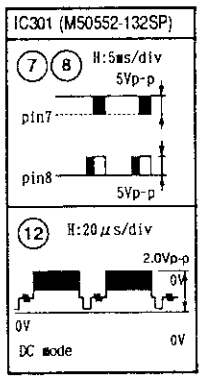
Note: These waveforms and voltage are in the play mode.

● IC801 (CXD2024Q)

Pin No.	Voltage [V]	Pin No.	Voltage [V]	Pin No.	Voltage [V]	Pin No.	Voltage [V]
1	0	21	0	41	2.6	61	0
2	0	22	0.5	42	2.6	62	0
3	0	23	0	43	0	63	0
4	0	24	0	44	0	64	0
5	0	25	—	45	0	65	0
6	0	26	5	46	0	66	0
7	0	27	2.6	47	0	67	5
8	0	28	5	48	0	68	5
9	0	29	5	49	0	69	—
10	0	30	0	50	0	70	—
11	2.3	31	—	51	0	71	—
12	0	32	3.4	52	0	72	0
13	5	33	2.6	53	5	73	5
14	2.4	34	2.6	54	0	74	—
15	2.4	35	0	55	0	75	0
16	2.5	36	1.1	56	5	76	0
17	5	37	5	57	0	77	0
18	5	38	0	58	0	78	0
19	0	39	1.3	59	0	79	0
20	0	40	3.4	60	0	80	0

PALB AND YCNR ASSEMBLIES

Note: (No.) in the table correspond to the pin number.

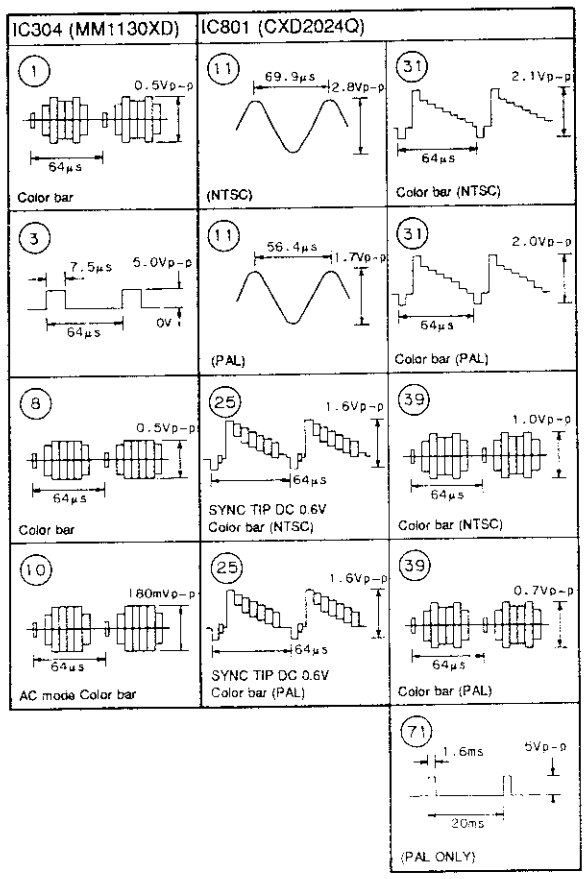


[PALB ASSY]

Note : These waveforms and voltage are in the play mode.

● IC301 (M50552-132SP)

Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	0	9	–	17	0.8	25	–
2	5	10	5	18	–	26	–
3	5	11	0	19	0	27	–
4	2.4	12	1.1	20	0	28	2.3
5	2.4	13	1.1	21	–	29	2.3
6	–	14	–	22	–	30	–
7	5	15	1.8	23	–	31	–
8	0.4	16	0.6	24	–	32	–



[PALB ASSY]

Note: These waveforms and voltage are in the play mode.

● IC304 (MM1130XD)

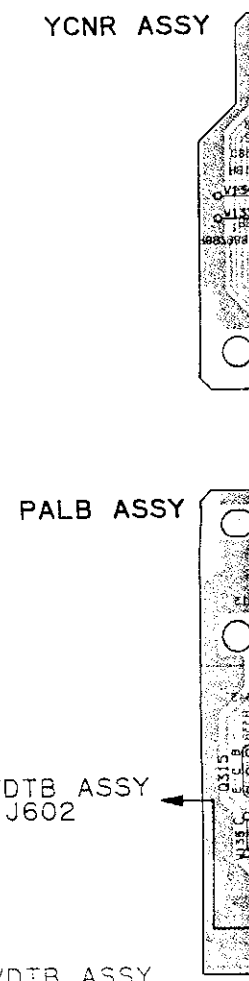
Pin No.	Voltage [V]	Pin No.	Voltage [V]	Pin No.	Voltage [V]	Pin No.	Voltage [V]
1	3.2	7	1.8	13	5.0	19	3.3
2	–	8	2.9	14	3.0	20	3.3
3	–	9	0	15	3.7	21	3.3
4	2.0	10	2.6	16	3.7	22	0
5	2.1	11	0	17	2.6		
6	1.9	12	2.6	18	3.3		

[YCNR ASSY]

Note: These waveforms and voltage are in the play mode.

● IC801 (CXD2024Q)

Pin No.	Voltage [V]	Pin No.	Voltage [V]	Pin No.	Voltage [V]	Pin No.	Voltage [V]
1	0	21	0	41	2.6	61	0
2	0	22	0.5	42	2.6	62	0
3	0	23	0	43	0	63	0
4	0	24	0	44	0	64	0
5	0	25	–	45	0	65	0
6	0	26	5	46	0	66	0
7	0	27	2.6	47	0	67	5
8	0	28	5	48	0	68	5
9	0	29	5	49	0	69	–
10	0	30	0	50	0	70	–
11	2.3	31	–	51	0	71	–
12	0	32	3.4	52	0	72	0
13	5	33	2.6	53	5	73	5
14	2.4	34	2.6	54	0	74	–
15	2.4	35	0	55	0	75	0
16	2.5	36	1.1	56	5	76	0
17	5	37	5	57	0	77	0
18	5	38	0	58	0	78	0
19	0	39	1.3	59	0	79	0
20	0	40	3.4	60	0	80	0



2.2.5 SCRB ASSEMBLY

SCH-5 SCRB ASSY

SCH-5

➡: VIDEO SIGNAL LINE
⇨: AUDIO SIGNAL LINE

IC107:
AUDIO & VIDEO
SIGNAL SWITCHING

IC107
LA7955

+12V
+12VE

R169 47 DCN1003
C159 10/50
R161 47
R159 75
Q111 2SC1740S
R160 470

Q112:
DRIVER

R170 47 DCN1003
C160 10/50
R165 47
R163 75
Q112 2SC1740S
R164 470

C155 47/16
C131 10/16
C132 0.01
R139 10K
Q113 DTC124EK
C157 0.01

Q113:
POWER ON DET &
IC107 SW CONTROL

R140 75
C133 10/50
D102 MTZJ12B
R141 75
C134 10/50
D101 MTZJ12B

C163 10/16
C162 10/16

CN501
BUF
GND
VCC
TO MAIN ASSY J501 (→SCH-2)

SCRB ASSY

SCH-5

● This diagram is

AV CONNECTOR IN/OUT

SCRB ASSY

IC107 Q112 Q111

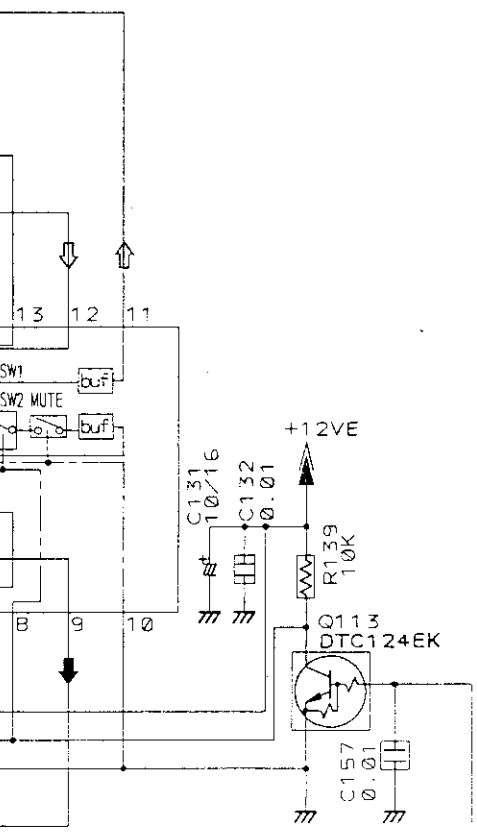
PCB-5

VIDEO SIGNAL LINE

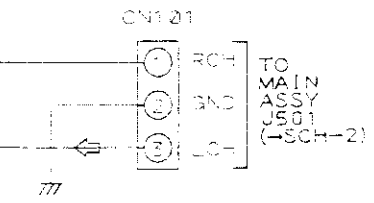
Q111 Q112

SCH-5

➡: VIDEO SIGNAL LINE
⇨: AUDIO SIGNAL LINE

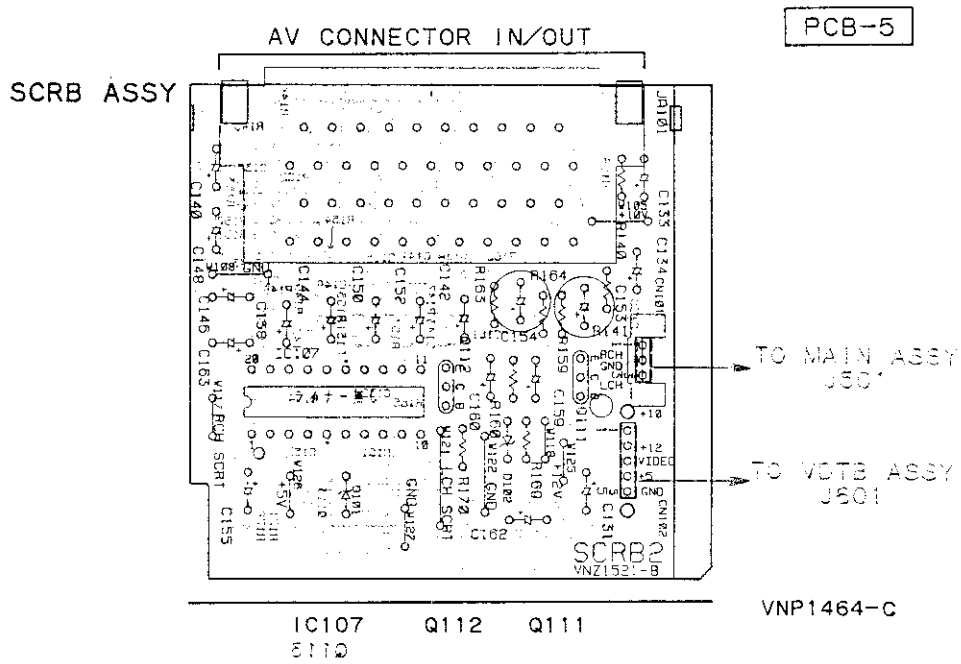


Q113:
POWER ON DET &
IC107 SW CONTROL

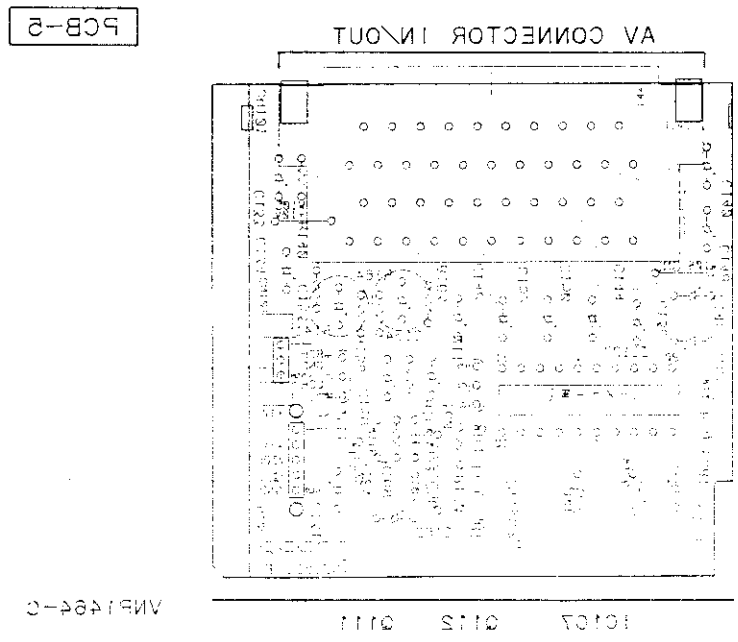


● This diagram is viewed from the mounted parts side.

PCB-5



● This diagram is viewed from the foil side.



SCRB ASSY

SCH-5

2.3 BLOCK DIAGRAMS

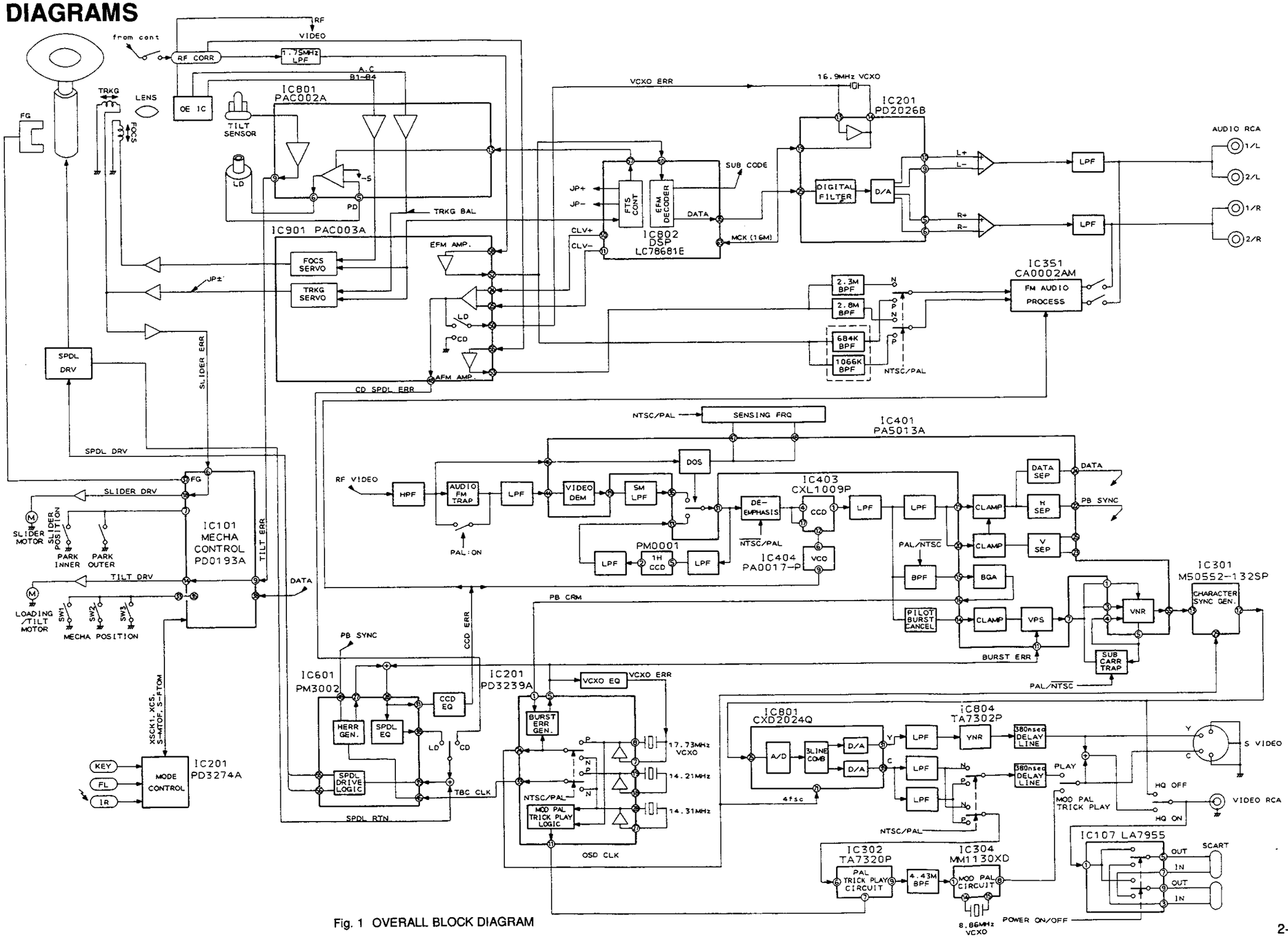


Fig. 1 OVERALL BLOCK DIAGRAM

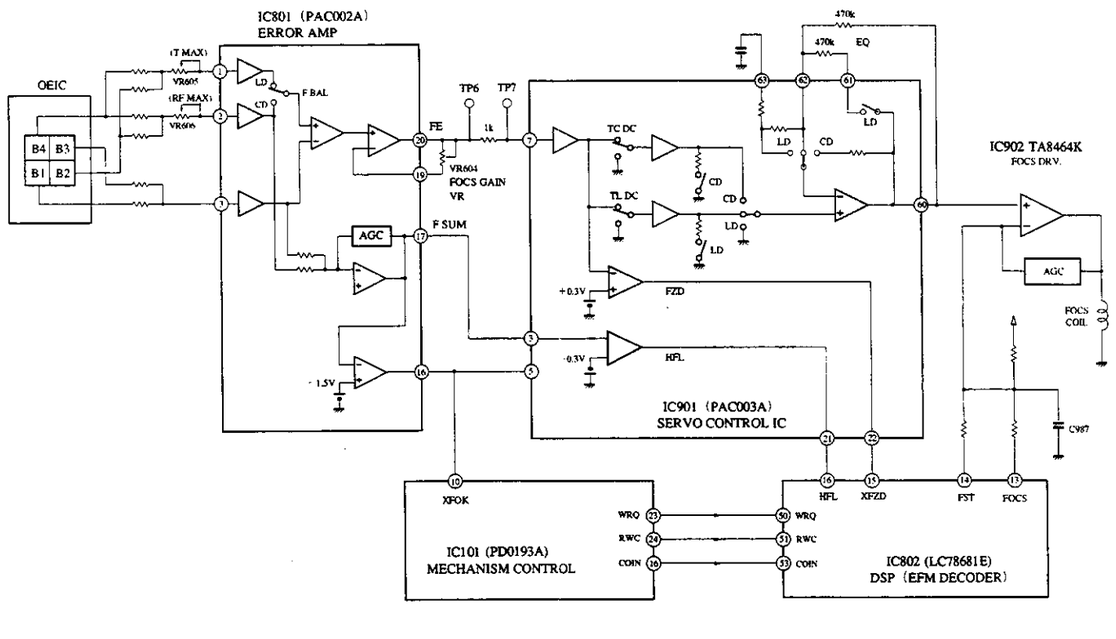


Fig. 2 FOCS SERVO BLOCK DIAGRAM

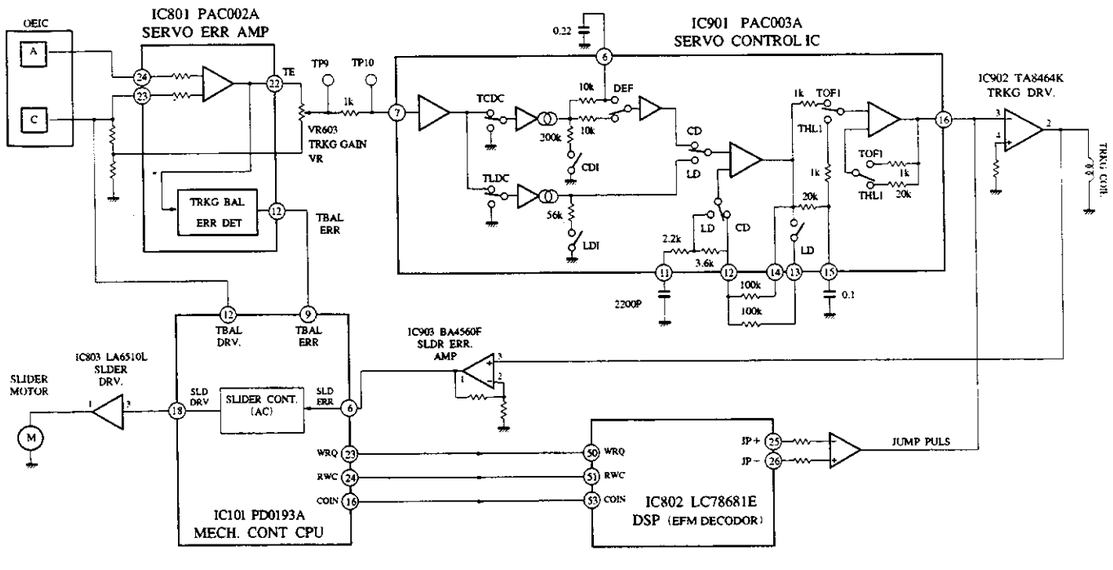


Fig. 3 TRKG & SLDR SERVO BLOCK DIAGRAM