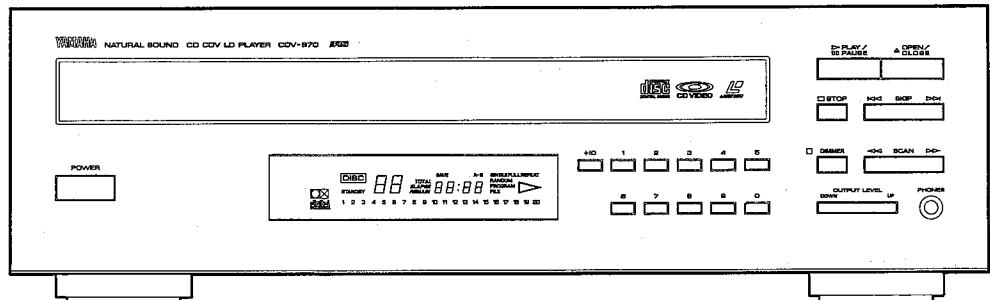
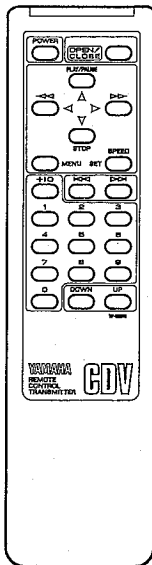


CD CDV LD PLAYER CDV-870

SERVICE MANUAL



COMPACT
disc
DIGITAL AUDIO

CD VIDEO

LaserVision

IMPORTANT NOTICE

This manual has been provided for the use of authorized YAMAHA Retailers and their service personnel. It has been assumed that basic service procedures inherent to the industry, and more specifically YAMAHA Products, are already known and understood by the users, and have therefore not been restated.

WARNING: Failure to follow appropriate service and safety procedures when servicing this product may result in personal injury, destruction of expensive components, and failure of the product to perform as specified. For these reasons, we advise all YAMAHA product owners that any service required should be performed by an authorized YAMAHA Retailer or the appointed service representative.

IMPORTANT: The presentation or sale of this manual to any individual or firm does not constitute authorization, certification or recognition of any applicable technical capabilities, or establish a principle-agent relationship of any form.

The data provided is believed to be accurate and applicable to the unit(s) indicated on the cover. The research, engineering, and service departments of YAMAHA are continually striving to improve YAMAHA products. Modifications are, therefore, inevitable and specifications are subject to change without notice or obligation to retrofit. Should any discrepancy appear to exist, please contact the distributor's Service Division.

WARNING: Static discharges can destroy expensive components. Discharge any static electricity your body may have accumulated by grounding yourself to the ground buss in the unit (heavy gauge black wires connect to this buss).

IMPORTANT: Turn the unit OFF during disassembly and part replacement. Recheck all work before you apply power to the unit.

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■ TO SERVICE PERSONNEL

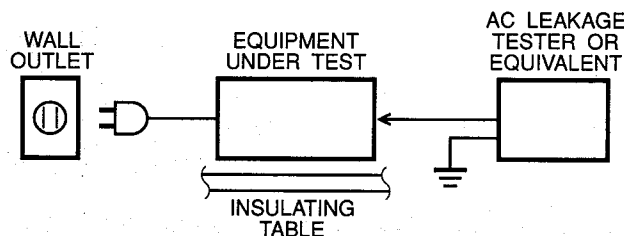
1. Critical Components Information.

Components having special characteristics are marked and must be replaced with parts having specifications equal to those originally installed.

2. Leakage Current Measurement (For 120V Models Only).

When service has been completed, it is imperative to verify that all exposed conductive surfaces are properly insulated from supply circuits.

- Meter impedance should be equivalent to 1500 ohm shunted by 0.15 μ F.
- Leakage current must not exceed 0.5mA.
- Be sure to test for leakage with the AC plug in both polarities.



CAUTION: USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

THE COMPACT DISC PLAYER SHOULD NOT BE ADJUSTED OR REPAIRED BY ANYONE EXCEPT PROPERLY QUALIFIED SERVICE PERSONNEL.

PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs a laser. Therefore, be sure to carefully follow the instructions below when servicing.

1. Laser Diode Properties

- Material : GaAlAs
- Wavelength : 780 nm
- Emission Duration : Continuous
- Laser Output : max. 44.6 μ W*

* This output is the value measured at a distance of about 200 mm from the objective lens surface on the Optical Pick-up Block.

- When checking the laser diode emission, keep your eyes more than 30 cm away from the objective lens.

WARNING: CHEMICAL CONTENT NOTICE!

The solder used in the production of this product contains LEAD. In addition, other electrical/electronic and/or plastic (where applicable) components may also contain traces of chemicals found by the California Health and Welfare Agency (and possibly other entities) to cause cancer and/or birth defects or other reproductive harm.

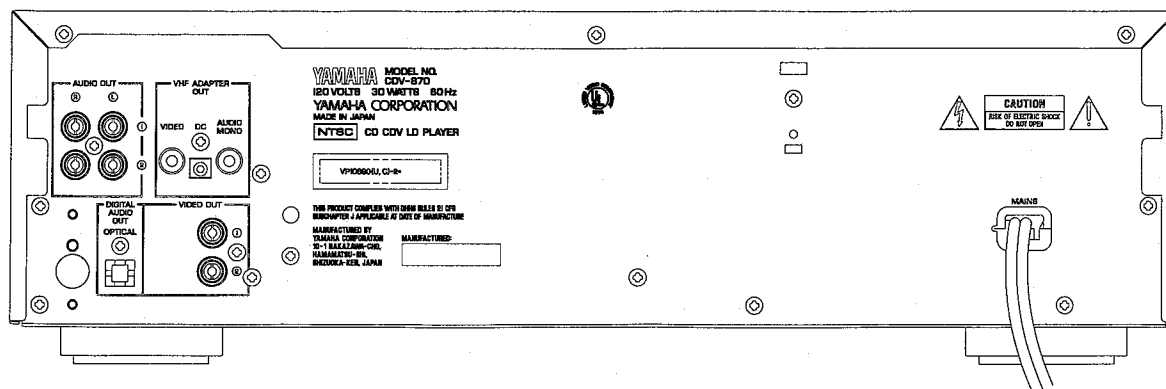
DO NOT PLACE SOLDER, ELECTRICAL/ELECTRONIC OR PLASTIC COMPONENTS IN YOUR MOUTH FOR ANY REASON WHATSOEVER!

Avoid prolonged, unprotected contact between solder and your skin! When soldering, do not inhale solder fumes or expose eyes to solder/flux vapor!

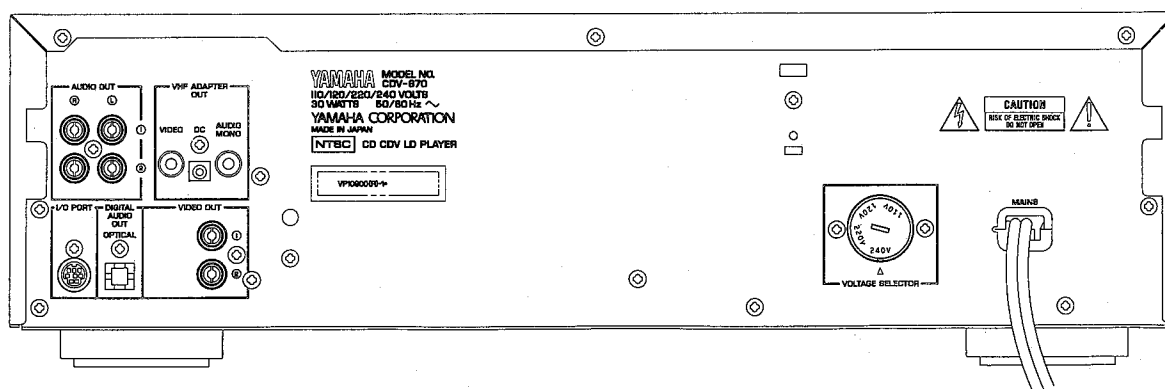
If you come in contact with solder or components located inside the enclosure of this product, wash your hands before handling food.

REAR PANELS

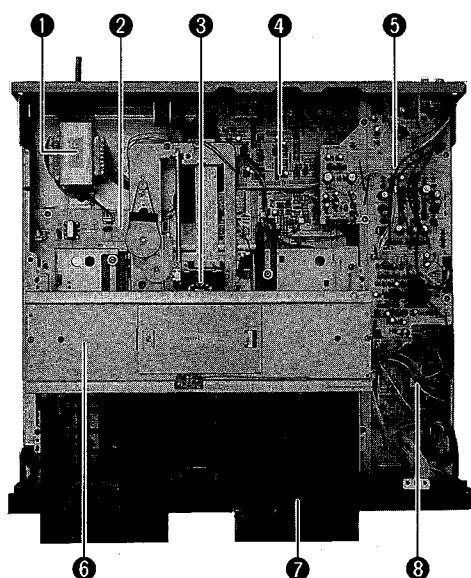
▼ U, C models



▼ R model



INTERNAL VIEW



- ① POWER TRANSFORMER
- ② AUDIO P.C.B. ASS'Y (1)
- ③ PICK UP HEAD
- ④ MAIN P.C.B. ASS'Y
- ⑤ AUDIO P.C.B. ASS'Y (2)
- ⑥ PU MECHANISM UNIT
- ⑦ TRAY ASS'Y
- ⑧ 8bit μ -COM (IC43 : μ PD78014CW)

■ SPECIFICATIONS

■ FORMAT

System (or Type)	Optical videodisc system complies with MCA/Phillips specifications (Laservision system)
Signal	NTSC format

■ INPUT/OUTPUT terminals

Video output	1Vp-p (75-ohms load, sync. negative) RCA pin jack
Audio output (right and left channels)	Analog : 200mV r.m.s. (1kHz, 40% Modulation) Digital : 200mV r.m.s. (1kHz, -20dB) Stereo pin jacks

■ Video signal characteristics

Horizontal resolution	440 lines
Signal to noise ratio (Y signal)	49dB

■ Audio signal

Frequency response	20Hz to 20kHz, +0.5, -1.0dB (digital)
Signal to noise ratio	120dB (digital, IHF-A) 70dB (analog, IHF-A)
Dynamic range	96dB (digital)
Harmonic distortion + noise	0.003% (1kHz, 0dB, digital)
De-emphasis deviation	±0.5dB (digital)
Output impedance	930ohms
Headphone jack rated output	0.35 ± 0.1Vrms (1kHz, -20dB, 150-ohms load)
RF modulator output	Video : 1Vp-p Audio : 200mVrms DC : +5V

■ GENERAL

Power requirements	
R model	AC110/120/220/240V, 50/60Hz
U, C models	AC120V, 60Hz
H model	AC230V, 50Hz
Power consumption	30W
Weight	10kg (22lb 1oz)
Dimensions	435 (W) x 132 (H) x 413 (D) mm (17-1/8" x 5-3/16" x 16-1/4")
Operative temperature	+5 to 35°C (41 to 95°F)
Operative humidity range	0 to 90% (No condensation)

■ ACCESSORIES

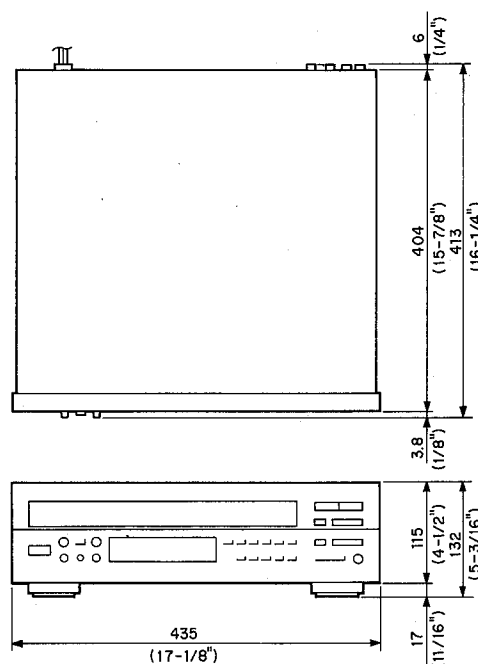
Remote Control Transmitter	x 1
Size "AA, R06" battery	x 2
Audio cord	x 1
Video cord	x 1

* Specifications subject to change without notice.

U U. S. A. model
C Canadian model

H European model
R General model

● DIMENSIONS



Units : mm (inch)

■ DISASSEMBLY PROCEDURES

(Remove parts in the order as numbered.)

1. Removal of Top Cover

Remove 4 screws (①) and 3 screws (②), and then remove the Top Cover. (Fig. 1)

2. Removal of Bottom Cover

Remove 9 screws (③) and then remove the Bottom Cover. (Fig. 1)

3. Removal of Tray Ass'y

- Turn on the Power and open the Tray.
- With the Tray in the open state, disconnect the Power cord.
- Pull out the Tray as far as it reaches the Stopper.
- While pushing the Stopper Rib in the arrow (◁) direction with a slotted screwdriver or the like inserted into the opening for removal at the rear right of the Tray, pull out the Tray Ass'y. (Fig. 2)

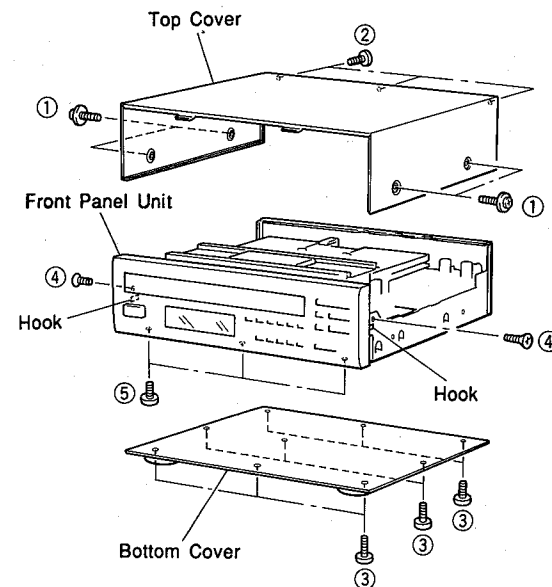


Fig. 1

4. Removal of Front Panel Unit

- Remove 2 screws (④) and 3 screws (⑤). (Fig. 1)
- Remove hooks on both sides and then remove the Front Panel unit. (Fig. 1)
- Disconnect the following connectors.
Main PCB#30, #31, #32
Audio PCB#60, #61

5. Removal of PU Mechanical Unit

- Remove the TE Spring. (Fig. 5)
- Remove 4 screws (⑥) and then remove the PU Mechanism Unit. (Fig. 5)
- Disconnect the following connectors.
Main PCB#96, #97, #95
Audio PCB(1).....#80
Pickup head#90

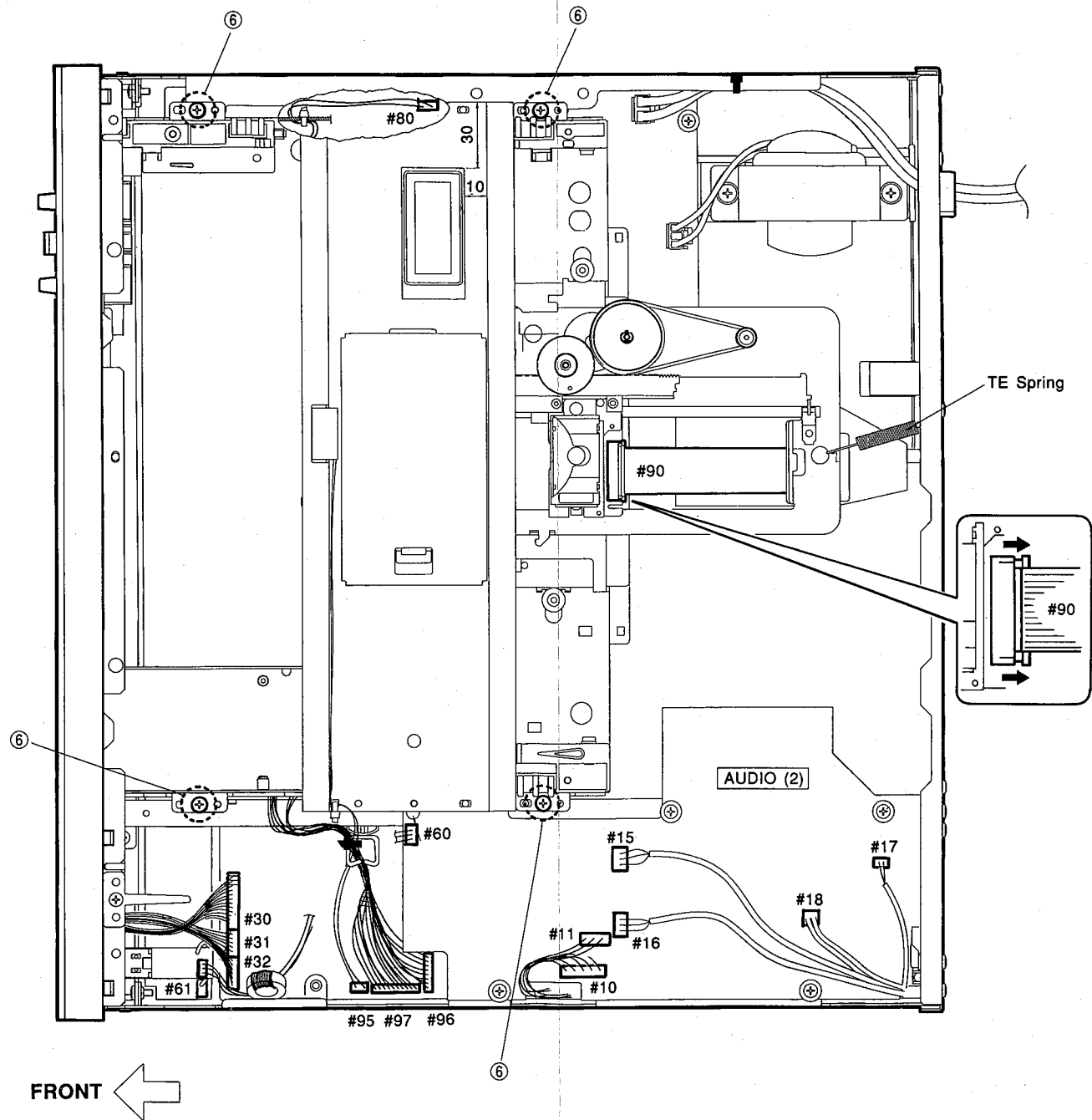


Fig. 5

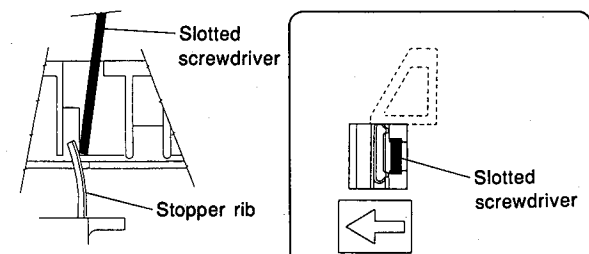


Fig. 2

● Precaution for Installation of Tray Ass'y

- Before inserting the Tray Ass'y, check to make sure that the PU Mechanical Unit satisfies the following conditions.
1) The spindle motor is lowered.
2) The Cam Gear and Idler Gear are not engaged, in other words, the Change Lever is as shown in Fig. 3.

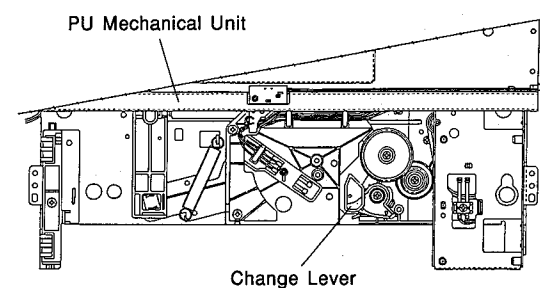


Fig. 3

- Insert the Tray Ass'y into the guides on both sides of the PU Mechanical Unit (Right : roller, Left : guide tray at left front). At this time, the Tray Gear and the Change Lever should be positioned as shown in Fig. 4 with respect to the Tray Ass'y.

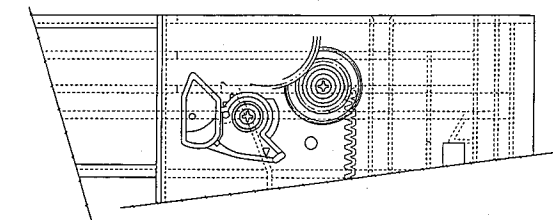


Fig. 4

6. Removal of Pickup Head

- a. Remove 2 screws (⑦) and then remove the Stay Clamper. (Fig. 6)
- b. Remove a screw (⑧) and then remove the Shaft Support. (Fig. 6)
- c. Pull off the Shaft and then remove the Pick Up Head.

* Try not to touch the Shaft by hand as much as possible.

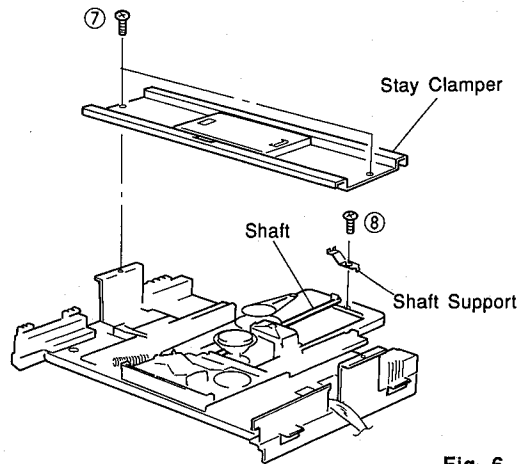
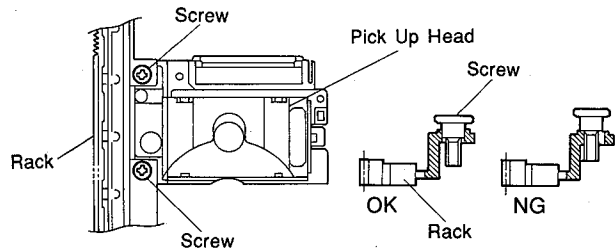


Fig. 6

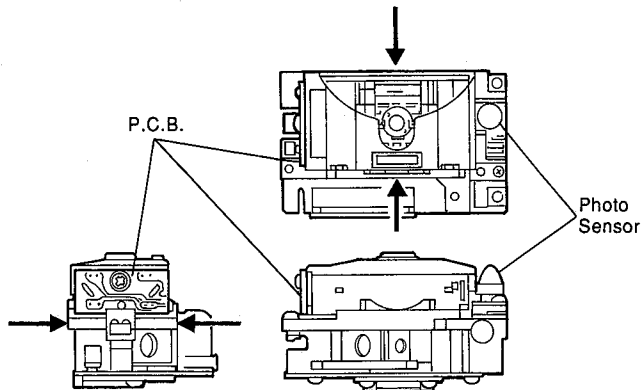
● Notes on Rack Installation



When tightening the Screw, its Spacer must go into the hole in the Rack fully as shown below.
(The circumference of the hole must not be damaged.)

● Notes on Handling Pick Up Head

- (1) Hold the Pick Up Head at the position as indicated with arrows (die cast section).
- (2) Don't touch the Photo Sensor and the PCB on the side.



7. Removal of Spindle Motor

- a. Remove 3 screws (⑨) and then remove the Inner Cup. (Fig. 7)
- b. Remove a screw (⑩) and then remove the Spindle FG. (Fig. 7)
- c. After removing 3 screws (⑪), lower the Spindle Motor first and then pull it out. (Fig. 7)

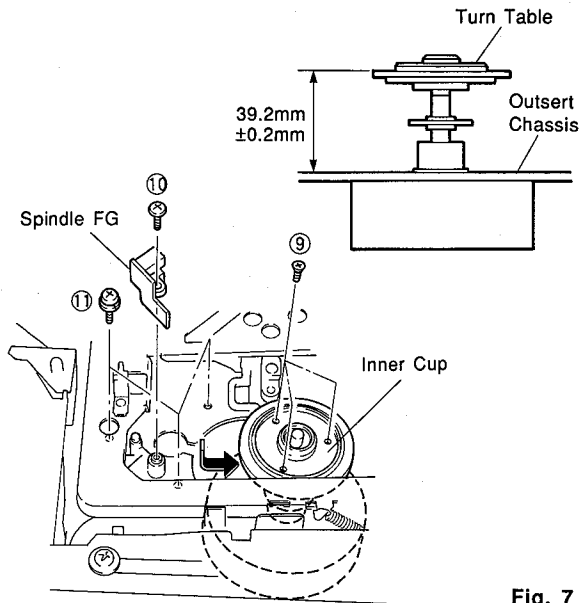
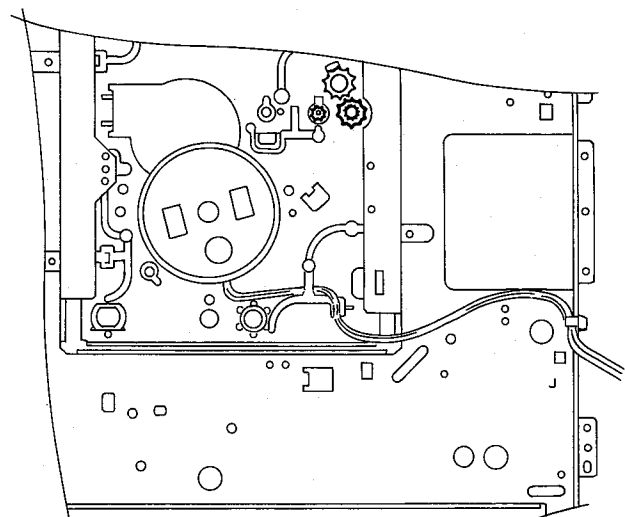


Fig. 7

● Notes on Replacement of Spindle Motor

- (1) When installing the Spindle Motor, screws should be tightened to 3.8kg-cm torque.
- (2) The installation direction of the Spindle Motor should be as shown below.
- (3) The lead wire of the Spindle Motor should be caught with plastic claws and clamped onto the Sheet Metal Chassis. When clamping the lead wire, allow some slack to it between the Plastic Claw and the Chassis Clamp so that it would not be pulled when the Spindle Motor is moved.



■ TEST MODE

The TEST mode will be set when the power is turned ON while pressing the **PLAY/PAUSE** and **OPEN/CLOSE** keys on the main unit panel simultaneously.

Panel key	Description of operation
OPEN/CLOSE	Tray opens and closes.
PLAY/PAUSE	PLAY mode is set if focus servo is ON. TRON, MUTE OF, VOCOL, TILTON
STOP	All functions are stopped. (focus, spindle, feed, laser, tray, etc.)
SKIP	Feed inward
SKIP	Feed outward
SCAN	10 track kick inward
SCAN	10 track kick outward
DIMMER	Focus search
OUTPUTLEVEL DOWN	Tracking servo OFF MUTEON, VCOH, TILTOFF
OUTPUTLEVEL UP	Tracking servo ON

Panel key	Description of operation
+10	Laser ON
1	Return from TEST mode to PRODUCT mode
2	CD mode
3	12cm CDV mode
4	20cm LD mode
5	30cm LD mode
6	Tilt down
7	Tilt up
8	FL display check (Lights OFF → Test pattern → All lights ON)
9	Analog audio signal switch
0	Spindle start in the mode specified by ten keys, 2, 3, 4 and 5. (AFC mode)

● Example of reproduction procedure in TEST mode

- 1) Set to TEST mode.
- 2) Operate the tray with **OPEN/CLOSE** key and clamp the disc.
- 3) Selecting **2**, **3**, **4** or **5** keys, set to the mode suitable for the clamped disc.
- 4) Activate Focus Servo function with **DIMMER** key.
- 5) Using **0** key, run the spindle at a constant speed.
- 6) Set to PLAY mode with **PLAY/PAUSE** key.

■ ERROR MESSAGE

● How to get an error message displayed

Press the STOP key of the remote controller while pressing the STOP key on the panel.

Error message and meaning

Error message	Meaning
E-X0	E-X0 Data can't be read after search.
E-X1	E-X1 Data can't be read during Play (X=0), Multi speed play (X=2) or Scan (X=3) state.
E-81	E-81 Motor is locked. (The motor fails to run even when so instructed.)
E-82	E-82 Miss-chucking is detected at LV start.
E-83	E-83 Data can't be read at start even once.
E-A4	E-A4 Tray closed but CLOSE switch failed to turn ON.
E-B5	E-B5 Tray opened but OPEN switch failed to turn ON.
E-X6	
E-X7	E-X7 Feed moved to specified position which, however, couldn't be detected.
E-X8	E-X8 Focus dropped and could not be restored even when retried (3 times normally, once during play in TEST REPEAT mode)
E-99	E-99 Clamp lowered but not as far down as its down position.
E-A9	E-A9 During tray being closed, CLAMP DOWN switch failed to change. (abnormal)

● Number of each state (meaning of "X")

PLAY	X = "0"Normal play function being executed	READ-IN	X = "7"First search after reading the disc for the external I/O port data output
MULTI SPEED PLAY	X = "2"Trick reproduction being executed (reciprocal) (including still)	START	X = "8"Starting from stop to reach specified speed before passing on to search. If it is the initial start, TOC is read.
SCAN	X = "3"Scan being executed (reciprocal)	STOP	X = "9"Stop after disc has been identified.
PAUSE	X = "4"Screen OFF and kept at pause	LOAD	X = "A"With the disc loaded, its size and type are checked. (including checking by focus search)
PEAK SEARCH	X = "5"Peak Search function being executed.	EJECT	X = "B"The tray is open.
SEARCH	X = "6"Target being searched automatically for Play-Pause	NO DISC	X = "C"Stop without disc

■ ADJUSTMENTS

● Necessary Items

Measuring instruments:

Oscilloscope	
(Band width of 50MHz or more,	
2-ch type with X-Y position)	1
AC voltmeter (ACVM)	1
DC voltmeter (DCVM)	1
Frequency counter (FC)	1
Low frequency oscillator	1
Monitor TV set	1

Test discs:

CD : TCD-782 (A-BEX) (P/No.TX913350) or	
YEDS-18 (P/No.TX911730)	1
LD : 20cm CAV disc LD-07 (P/No.TX913100)	1

Jigs:

5P connector kit (P/No. MX600350)	1
Filter (for adjusting tracking servo	
gain and focus servo gain)	1
Filter (for adjusting Y axis)	1

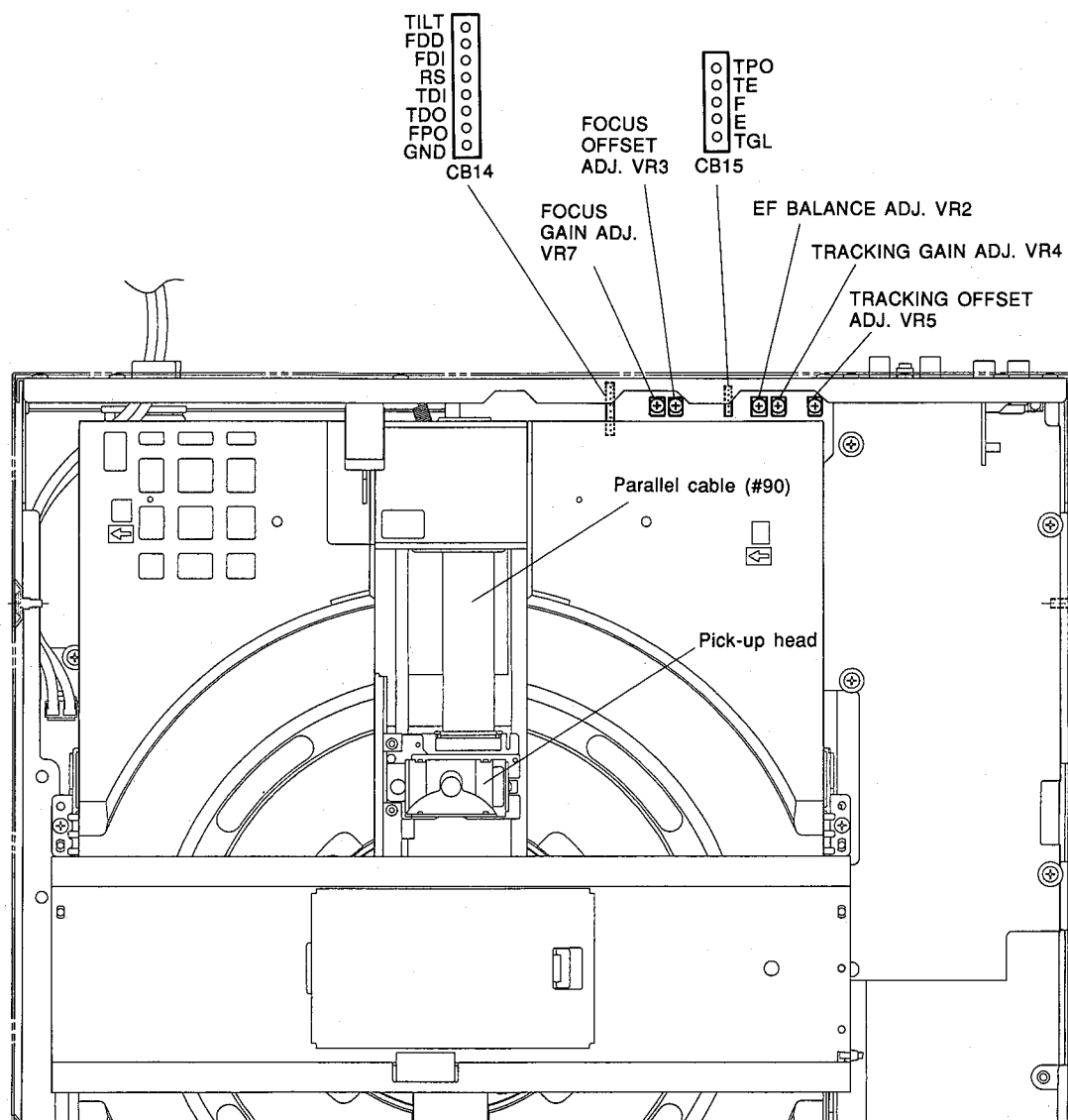
Tools:

Phillips screwdriver	
(for adjusting semi-fixed resistor)	1
Hexagon wrench (width across flats : 4mm)	1

Adhesive:

Three Bond (1401B)	1
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● Test Point



● Before Adjustment

Check the power voltage according to the table below.

Check Item		Test Point	Rating	
Main P.C.B.	+5V	Both ends of C24	+5V±0.2V	] in STOP mode
	-5V	Both ends of C25	-5V±0.2V	
	Power OFF	Both ends of C24, both ends of C25	0±0.5V	The power should be OFF but the power cord should be plugged in the AC outlet.
Audio P.C.B.	+SB	Both ends of C616 (+SB terminal of #70 connector)	+13V±2V	] in STOP mode
	-SB	Both ends of C618 (-SB terminal of #70 connector)	-13V±2V	
	+B	Both ends of C609 (+B terminal of #70 connector)	+8V±1.5V	
	-B	Both ends of C611 (-B terminal of #70 connector)	-8.4V±1.5V	
	+5A	Both ends of C633 (+5A terminal of #72 connector)	+5V±0.2V	
	+5.6	Emitter of Q603 (+5.6 terminal of #70 connector)	+5.6V±0.4V	
	-18 (-20)	Emitter of Q601 (-18 terminal of #70 connector)	-17V±1V	

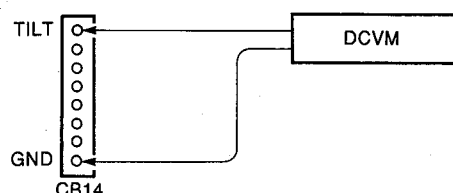
● Carry out following adjustments in the order as numbered.

1. Tilt offset adjustment
2. VCO adjustment
3. Focus offset adjustment
4. Tracking offset adjustment
5. EF balance adjustment
6. Focus gain adjustment
7. Tracking gain adjustment
8. Confirmation of tilt operation
9. Y axis adjustment
10. θ j adjustment
11. Video output level adjustment

1. Tilt Offset Adjustment

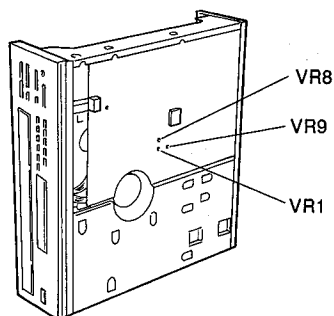
See page 8 for TP locations.

- 1) Turn OFF the POWER switch and disconnect the parallel cable (#90).
- 2) Connect the DC voltmeter to the TILT terminal (in CB14).



- 3) Turn ON the POWER switch and adjust the VR1 so the voltage at the TILT terminal will be 0±0.05V.

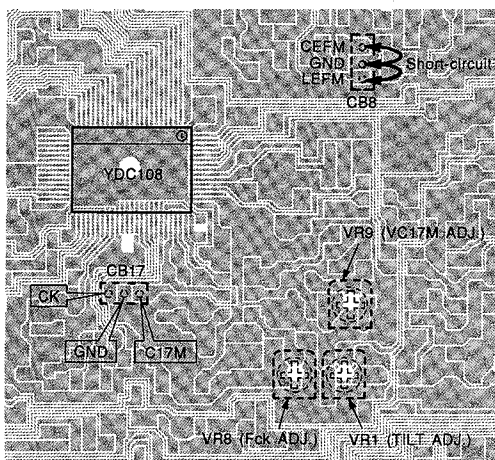
The VR1 should be adjusted from the underside of the Main P.C.B. which is set on its side as shown below. As there is a hole for the VR1 in the Main P.C.B., insert a screwdriver in it and make an adjustment.



- 4) Turn OFF the POWER switch. Then, with a parallel cable (#90) connected to the pick-up head, turn ON the POWER switch.

2. VCO Adjustment

- 1) Short-circuit the CEFM terminal and LEFM terminal to GND terminal. (in CB8)
- 2) Connect the DC voltmeter to the C17M terminal (in CB17) from the underside of the Main P.C.B..

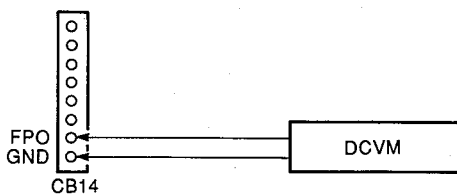


- 3) In the STOP mode, adjust the VR9 so that the voltage at the C17M terminal will be 2.5V, +0.1V, -0.05V.
- 4) Connect a frequency counter to the CK terminal (in CB17) from the underside of the Main P.C.B..
- 5) In the STOP mode, adjust the VR8 so that the frequency at the CK terminal will be 4.3218MHz $\pm$ 0.02MHz.
- 6) Repeat above steps 3) and 5) so that both ratings will be satisfied.
- 7) After adjustment, cancel short-circuit of the CEFM, LEFM and GND terminals. (in CB8)

3. Focus Offset Adjustment

See page 8 for TP locations.

- 1) Connect a DC voltmeter to the FPO terminal (in CB14) as shown below.

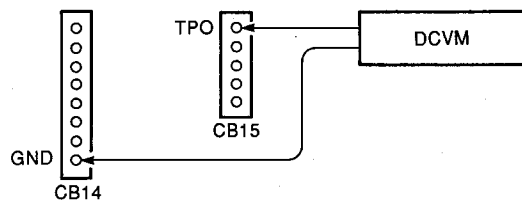


- 2) In the STOP mode, adjust the VR3 so that the voltage at the FPO terminal will be 0 $\pm$ 0.01V.

4. Tracking Offset Adjustment

See page 8 for TP locations.

- 1) Connect a DC voltmeter to the TPO terminal (in CB15).

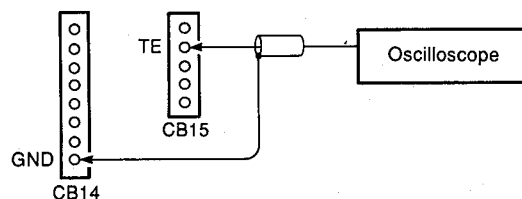


- 2) In the STOP mode, adjust the VR5 so that the voltage at the TPO terminal will be 0 $\pm$ 5mV.

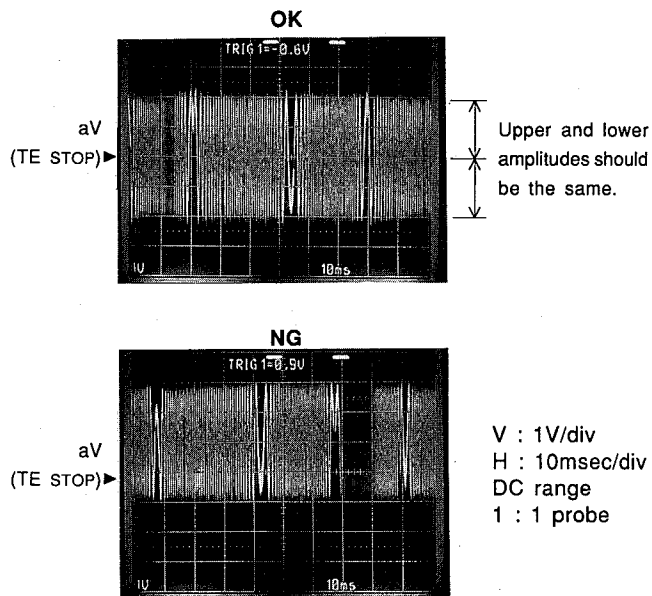
5. EF Balance Adjustment

See page 8 for TP locations.

- 1) Connect an oscilloscope to the TE terminal (in CB15) as shown below.



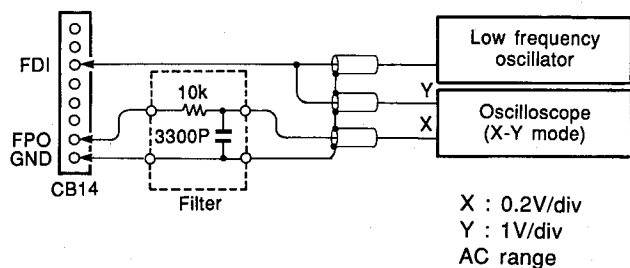
- 2) In the STOP mode, read the voltage (aV) at the TE terminal.
- 3) Set to the TEST mode. (See page 7)
- 4) Load the CD test disc.
- 5) Set to the CD PLAY mode ([2], [DIMMER], [0], [PLAY/PAUSE]) and turn OFF the tracking servo. (OUTPUT LEVEL DOWN Key)
- 6) Adjust the VR2 so that the DC component of the output at the TE terminal becomes $\pm$ 0.05V of the voltage (aV) which was read in the STOP mode in previous step 2).



6. Focus Gain Adjustment

See page 8 for TP locations.

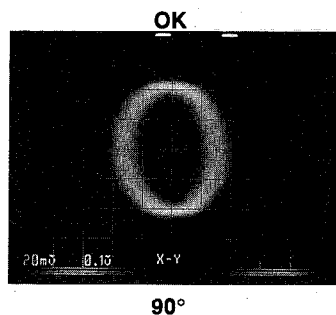
- 1) Connect a low frequency oscillator and an oscilloscope (Y axis) to the FDI terminal (in CB14).
- 2) Connect an oscilloscope (X axis) to the FPO terminal (in CB14) through a filter as shown below.



- 3) Set to the TEST mode.
- 4) Load the CD test disc.
- 5) Set to the CD PLAY mode.
- 6) Apply a sine wave to the FDI terminal from the low frequency oscillator.
Note that the frequency varies depending on the test disc.

Test Disc	Signal
YEDS-18	790HZ, 1.5Vrms
TCD-782	800HZ, 1.5Vrms

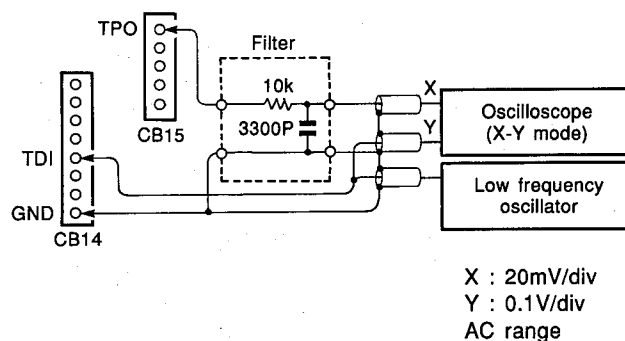
- 7) Set the oscilloscope to the X-Y mode/AC range (both X and Y axes) and adjust the VR7 so that the phase difference between the FDI terminal and the FPO terminal will be 90 degrees.



7. Tracking Gain Adjustment

See page 8 for TP locations.

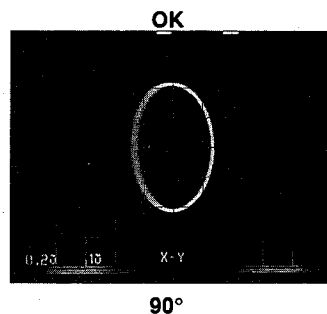
- 1) Connect a low frequency oscillator and an oscilloscope (Y axis) to the TDI terminal (in CB14) as shown below.
- 2) Connect an oscilloscope (X axis) to the TPO terminal (in CB15) through a filter as shown below.



- 3) Set to the TEST mode.
- 4) Load the CD test disc.
- 5) Set to the CD PLAY mode.
- 6) Apply a sine wave to the TDI terminal from the low frequency oscillator.
Note that the frequency varies depending on the test disc.

Test Disc	Signal
YEDS-18	1.2kHz, 0.15Vrms
TCD-782	1.3kHz, 0.15Vrms

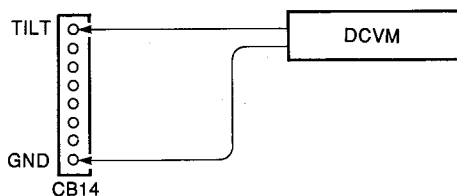
- 7) Set an oscilloscope to the X-Y mode/AC range (both X and Y axes) and adjust the VR4 so that the phase difference between the TDI terminal and the TPO terminal will be 90 degrees.



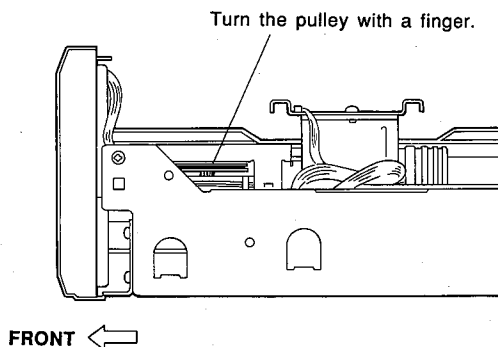
8. Confirmation of Tilt Operation

See page 8 for TP locations

- 1) Connect a DC voltmeter to the TILT terminal (in CB14) as shown below.

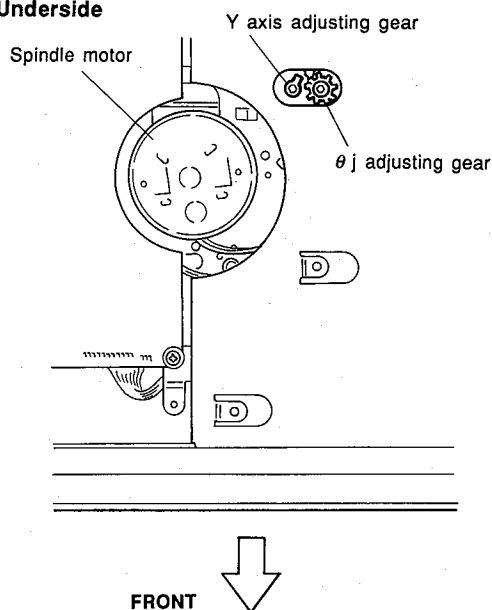


- 2) Load a 20cm CAV test disc LD-07 and set to the PLAY mode.
- 3) Move the tilt gear by force to cause a DC voltage to occur at the TILT terminal, and the tilt mechanism returns by the servo function. Check that the voltage generated then is $0 \pm 0.4V$.



- 6) Set the oscilloscope to the X-Y mode/AC range (both X and Y axes) and adjust the Y-axis adjusting gear so that the phase difference between the E terminal and the F terminal is 180 degrees. (Be sure to remove the thread lock before making an adjustment.)

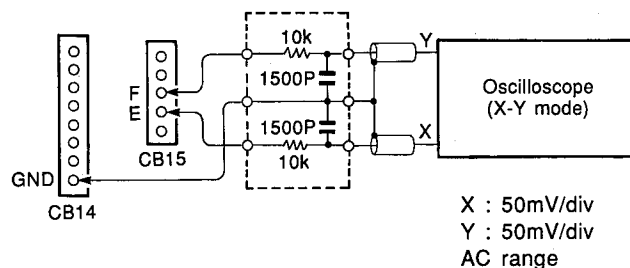
● Underside



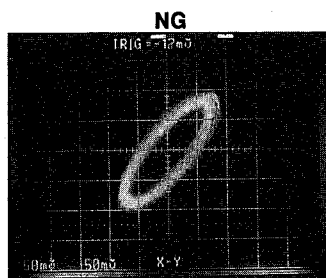
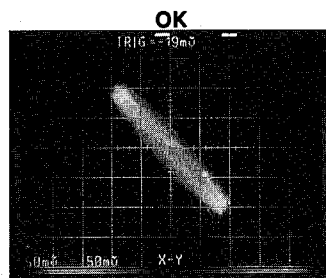
9. Y Axis Adjustment

See page 8 for TP locations.

- 1) Connect an oscilloscope (X axis) to the E terminal (in CB15) through a filter as shown below.
- 2) Connect an oscilloscope (Y axis) to the F terminal (in CB15) through a filter as shown below.



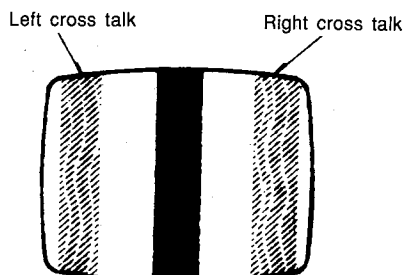
- 3) Set to the TEST mode.
- 4) Load the CD test disc.
- 5) Set to the CD PLAY mode and set the tracking servo OFF at the inner circuit of the disc (in about 3 minutes area).



- 7) Set the tracking OFF at the outer circuit of the disc (in about 60 minutes area).
- 8) Check that the phase difference between the E terminal and the F terminal is 180 degrees.

10. θ j Adjustment

- 1) Connect a monitor TV set to the video output terminal.
- 2) Set a 20cm CAV test disc LD-07 and set to the STILL PLAY mode by using the Frame No.502.
- 3) Select PICUTE by pressing the "MENU" key for better view of the cross talks and set to the PICTURE screen by pressing the "SET" key. Then set the picture to the Sharper level.
- 4) Adjust the θ j adjusting gear so as to minimize cross talks.

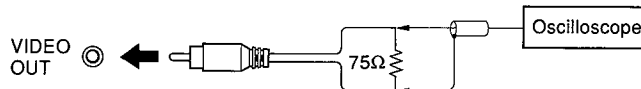


Frame No.502

- 5) Upon completion of above adjustments, apply the thread lock (Three Bond 1401B) to the Y axis adjusting gear.

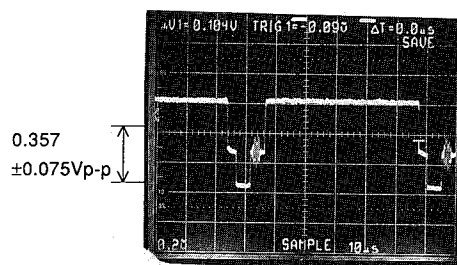
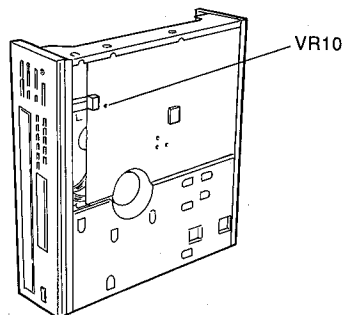
11. Video Output Level Adjustment

- 1) Apply a 75 ohm load to the video output terminal and connect an oscilloscope as shown below.



- 2) Load a 20cm CAV test disc LD-07 and play Chapter No.2 (white 50%).
- 3) Adjust the VR10 so that the voltage between the pedestal level (0 IRE) and 50IRE of the video output will be 0.357 ± 0.075 Vp-p.

The VR10 should be adjusted from the underside of the Main P.C.B. which is placed on its side as shown below. As there is a hole in the Main P.C.B., insert a screwdriver in it and make an adjustment.



V : 0.2V/div
H : 10μsec/div
AC range
1 : 1 probe

● Main P.C.B. Inspection Specifications

Use a test disc LD-07. For the waveform points ① to ⑭ of each item, refer to the schematic diagram.

Check Item		Test Point	Rating
Resetting	μ-COM system reset	Pin No.1 of IC40 CH1 : VCC Pin No.43 of IC43 CH2 : RESET	Check waveforms of RESET and VCC by plugging and unplugging the power cord (not by turning ON/OFF the POWER switch). Waveform point ①
Motor operation	Loading	Pin No.1 of IC14	Pressing the OPEN/CLOSE key will cause about +6V voltage to occur and the tray comes out after the clamp is released. Pressing it again will cause about -6V voltage to occur and the tray draws back and is clamped.
Spindle servo	FG output	Pin No.79 of IC41	About 9kHz, 5Vp-p signal should be obtained when LD-07 test disc is played. Waveform point ②
Pick-up Operation	Focus search	Test pin : FDO (in CB14)	Pressing the PLAY/PAUSE key without a disc loaded will cause about -3V to +7V sawtooth waveform to occur and the pick-up lens will move up and down.
Video system	RF	Emitter of Q22	8MHz and about 0.5Vp-p signal should be obtained when the inner circuit of LD-07 test disc is played. Waveform point ③
	FM detector operation	Pin No.6 of IC47	About 0.8Vp-p video signal (opposite phase) should be obtained when White 100% is reproduced. Waveform point ④
	CSYNC output	Collector of Q48	The waveform of Waveform point ⑤ should be output.
	A/D converter input and clamp	Pin No.5 of IC52	About 1.8Vp-p video signal should be obtained when White 100% is reproduced. Also, a sync. chip should be clamped to 0V. Waveform point ⑥
	VCO oscillation for TBC	Pin No.8 of IC57	In the STOP mode, about 28MHz oscillation waveform should be obtained. Waveform point ⑦ Also, it should be 28.64MHz±1MHz when pin No.2 of IC58 is shorted to GND.
	TBC operation	Pin No.2 of IC58	When the disc is played, the output waveform should vary according to the eccentricity of the disc. Waveform point ⑧
	D/A converter output	Pin No.12 of IC47	About 1.4Vp-p video signal should be obtained when White 100% is reproduced. Waveform point ⑨
	Video output	VIDEO OUT 75 ohm load	The voltage between the pedestal level (0 IRE) and 50IRE of the video output should be about 0.357Vp-p when White 50% is reproduced.
CD sound	EFM input	Pin No.71 of IC41 or Test pin : CEFM (CB8)	About 1.3Vp-p EFM signal should be obtained when a CD is played. Waveform point ⑩
	DAC output	Both ends of C258 (LL) Both ends of C259 (LH) Both ends of C260 (RH) Both ends of C261 (RL)	1kHz, about 1.6Vp-p output should be obtained when 1kHz, 0dB is reproduced. Waveform point ⑪
	Output level	LINE OUT L, R	1kHz, about 2.0Vrms output should be obtained when 1kHz, 0dB is reproduced.

Check Item		Test Point	Rating
LD digital sound	EFM input	Pin No.70 of IC41 or Test pin : LEFM (CB8)	About 1Vp-p EFM signal should be obtained when the inner circuit of LD-07 test disc is played. Waveform point ⑫
	VCXO	Pin No.2 of IC32	Convergence to about 0V should follow convergence of rotation when LD-07 test disc is played from the STOP mode.
	Output level	LINE OUT L, R	About 0.5Vrms output should be obtained when Chapter 1 (1kHz, -12dB) of LD-07 test disc is played.
LD analog sound	2.3MHz RF input	Collector of Q43	2.3MHz, about 1Vp-p signal should be obtained when LD-07 test disc is played. Waveform point ⑬
	2.8MHz RF input	Collector of Q44	2.8MHz, about 1Vp-p signal should be obtained when LD-07 test disc is played. Waveform point ⑭
	Output level	LINE OUT L, R	About 0.5Vrms output should be obtained when Chapter 1 (1kHz, 100% modulation) of LD-07 test disc is played.

● Audio P.C.B. Inspection Specifications

Check Item		Test Point	Rating
Muting		Collector of Q602	+5V should be obtained immediately when the power cord is connected to the AC outlet and -5V when disconnected.
Spindle drive	+sawtooth oscillation	Both ends of C636	In the STOP mode, about 15kHz oscillation should be obtained. Waveform point ⑮ (Refer to the schematic diagram.)
	-sawtooth oscillation	Both ends of C637	In the STOP mode, about 15kHz oscillation should be obtained. Waveform point ⑯ (Refer to the schematic diagram.)
	PWM driver	Connector CB604 SPD1 : CH1 SPD2 : CH2	Plus and minus voltages of about the same absolute value should be generated when LD-07 test disc is played and stopped repeatedly.

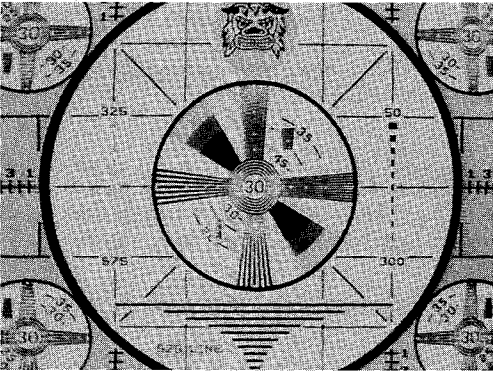
■ TEST DISC

● CAV Test disc LD-07(Part No. TX913100)

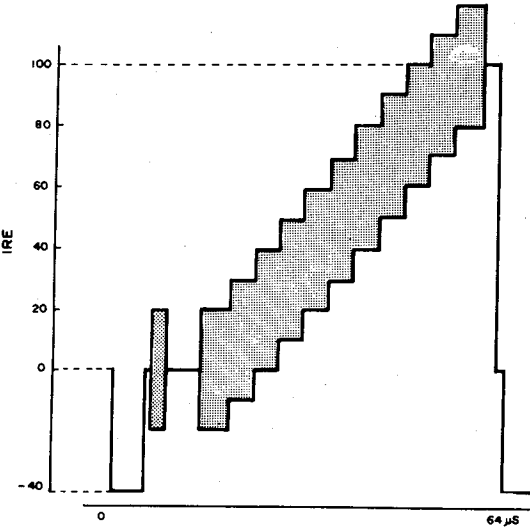
VIDEO									AUDIO		Sound	CX		
	A		B		C		D		Lch	Rch				
	FR	C	FR	C	FR	C	FR	CC						
100% White	1—500	01	6001—6500	08	12001—12500	15	18001—18500	22	1kHz 100%		Digital + Analog	OFF		
Picture Separation 1	(A) 501		6501		12501		18501							
	(B) 502		6502		12502		18502							
	(C) 503		6503		12503		18503							
	Black 504		6504		12504		18504							
	White 505		6505		12505		18505							
	Black 506		6506		12506		18506							
Picture Separation 2	(A) 507		6507		12507		18507							
	(B) 508		6508		12508		18508							
	(C) 509		6509		12509		18509							
	Black 510		6510		12510		18510							
	White 511		6511		12511		18511							
	Black 512		6512		12512		18512							
50% White	513—1000	02	6513—7000	09	12513—13000	16	18513—19000	23						
Color Staircase	1001—1500	03	7001—7500	10	13001—13500	17	19001—19500	24	1kHz 100%	Non-modulation				
Multi-burst	1501—2000	04	7501—8000	11	13501—14000	18	19501—20000	25	Non-modulation	1kHz 100%				
Test Pattern Pattern	2001—2500	05	8001—8500	12	14001—14500	19	20001—20500	26	1kHz 75%		Analog + Digital (Non-modulation)	ON		
Composite signal	2501—3000	06	8501—9000	13	14501—15000	20	20501—21000	27	Non-modulation					
EIA Color Bar	3001—3500	07	9001—9500	14	15001—15500	21	21001—21500	28	CX test signal	Non-modulation				
Magenta	3501—3750		9501—9750		15501—15750		21501—21750							
Blue	3751—4000		9751—10000		15751—16000		21751—22000							
Red	4001—4250		10001—10250		16001—16250		22001—22250							
Green	4251—4500		10251—10500		16251—16500		22251—22500		20Hz 9.05%		Digital + Analog	OFF		
Still	4501—5000		10501—11000		16501—17000		22501—23000		1kHz 10.00%					
Moving Picture 1	5001—5500		11001—11500		17001—17500		23001—23500		10kHz 43.60%					
Moving Picture 2	5501—6000		11501—12000		17501—18000		23501—24000		20kHz 85.70%					

-20dB = 40% modulation

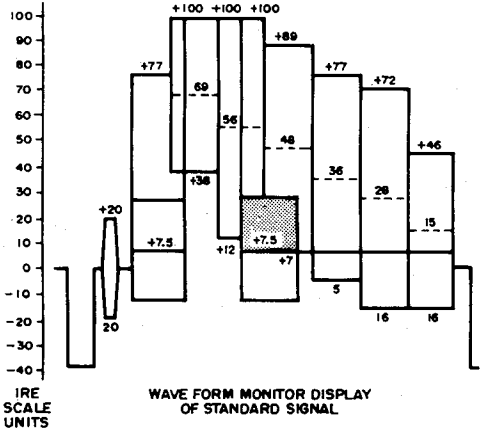
Test pattern



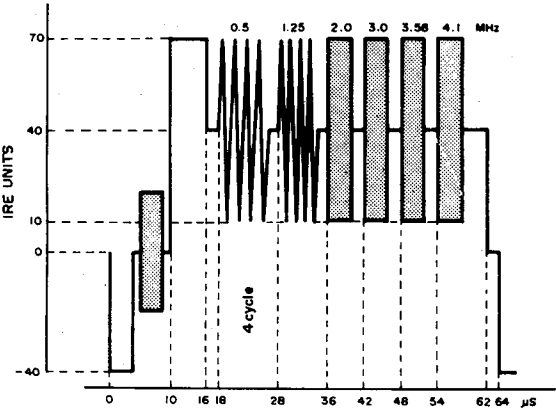
Color staircase



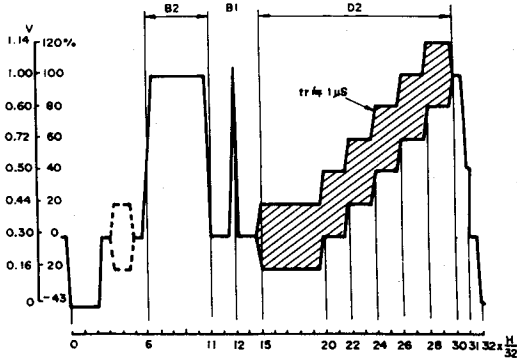
EIA color bar



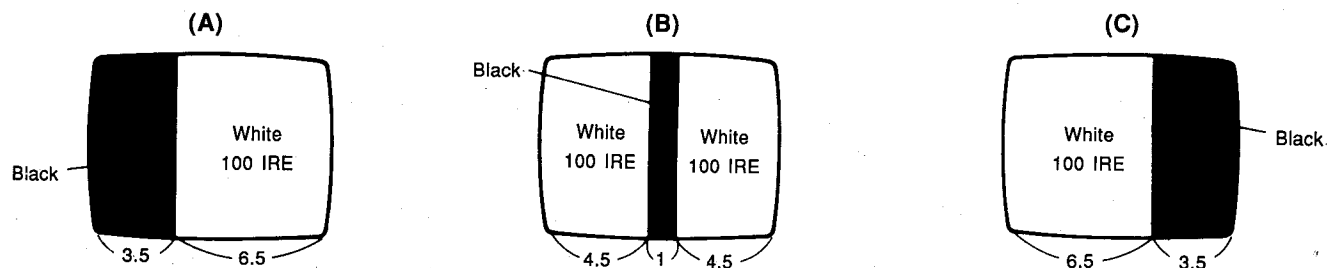
Multi-burst



Composite signal

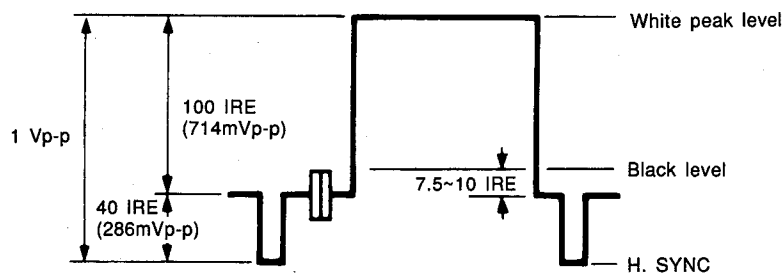


Pattern for picture separation

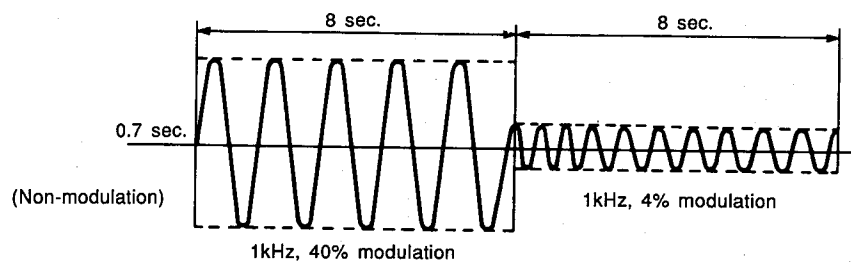


About IRE (International Radio Engineers) unit

The TV signal 1 Vp-p which is the unit defined by International Radio Engineers Association, the picture signal is set as 100 IRE and the synchronous signal as 40 IRE. 1 IRE equals to 7.14mV in the NTSC system.



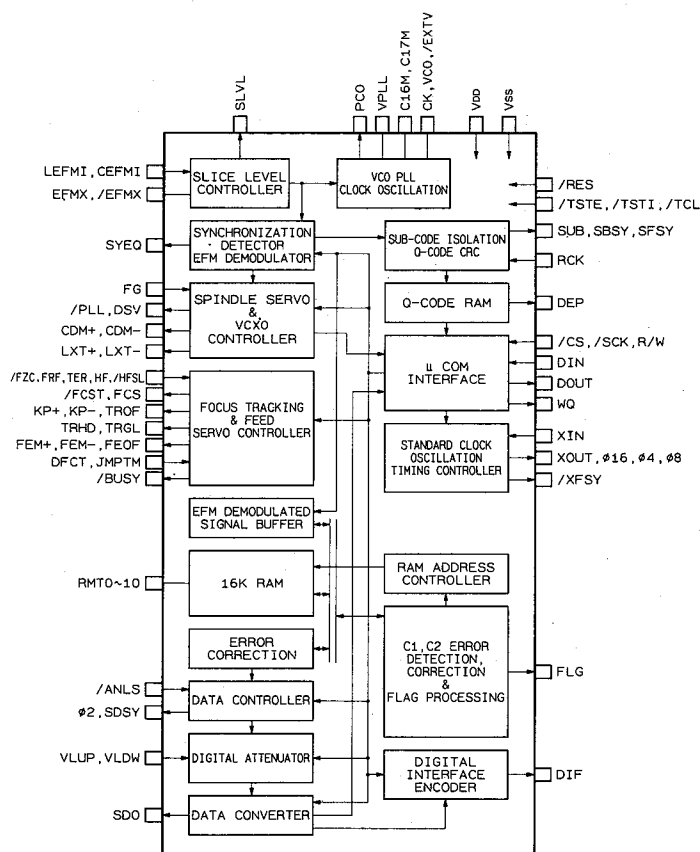
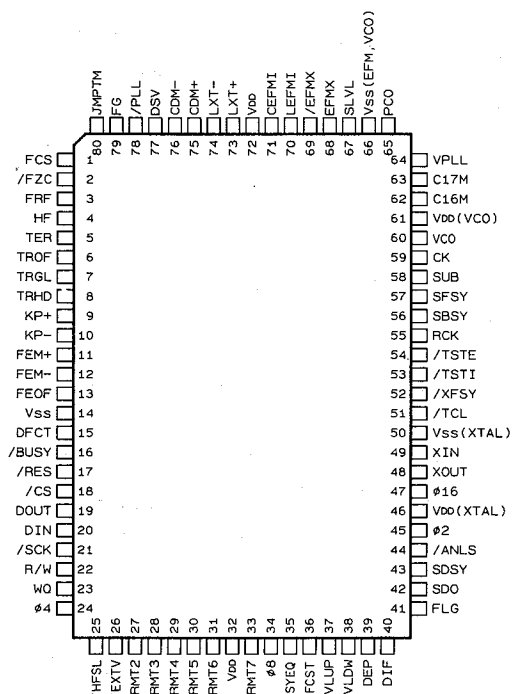
CX test signal



IC DATA

IC41 : YDC108-F

Signal Processor & Controller (CDVP)

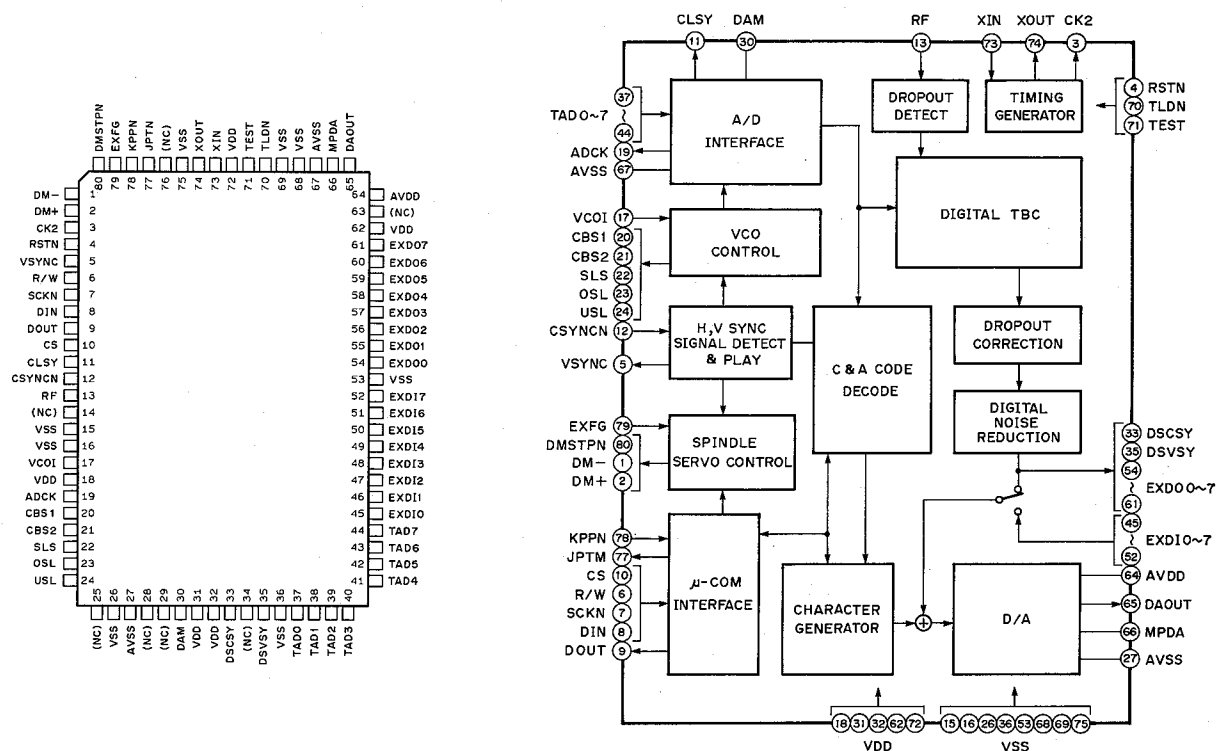


Pin No.	Pin Name	I/O	Function
1	FCS	O	Focus search signal output
2	/FZC	I+	Focus zero cross signal input
3	FRF	I	Focus reflection signal input
4	HF	I	HF signal input
5	TER	I	Tracking error signal input
6	TROF	O	Tracking servo OFF signal output
7	TRGL	O	TRGL signal output
8	TRHD	O	Tracking hold signal output
9	KP+	O	Outward kick pulse output
10	KP-	O	Inward kick pulse output
11	FEM+	O	Outward feed pulse output
12	FEM-	O	Inward feed pulse output
13	FEOF	O	Feed servo OFF signal output
14	VSS		GND
15	DFCT	I	For setting track count synchronous mode
16	/BUSY	O	Sequence control output (H : End of track count)
17	/RES	I+	System reset input
18	/CS	I-	Chip select input from µ-COM
19	DOUT	O	Serial data output to µ-COM
20	DIN	I	Serial data input from µ-COM
21	/SCK	I	Clock input for input/output of serial data with µ-COM
22	R/W	I	Control signal input for data input/output with µ-COM
23	WQ	O	Request signal output for data output to µ-COM
24	Ø4	O	System clock output (4.2336MHz)
25	/HFSL	I+	HF polarity select
26	/EXTV	I+	External VCO

Pin No.	Pin Name	I/O	Function
27	RMT2		For testing internal RAM
28	RMT3		
29	RMT4		
30	RMT5		
31	RMT6		
32	VDD		+5V
33	RMT7		For testing internal RAM
34	Ø8	O	System clock output (8.4672MHz)
35	SYEQ	O	Synchronous coincidence monitor (H : EFM pattern and internal counter are synchronized)
36	FCST	O	Focus search start signal output
37	VLUP	I	Volume up input Digital attenuator
38	VLDW	I	
39	DEP	O	Deemphasis control signal output
40	DIF	O	Data output for digital interface
41	FLG	O	Flag output to correct error in SDO output data
42	SDO	O	Serial data output
43	SDSY	O	Synchronous signal output (44.1kHz) of SDO output data
44	ANLS	I+	Analog sound serial data input
45	Ø2	O	Systems lock output (2.1168MHz)
46	VDD		XTAL system +5V
47	Ø16	O	System lock output
48	XOUT	O	For connecting quartz oscillator (16.9344MHz)
49	XIN	I	
50	VSS		XTAL system GND
51	TCL	I+	Test signal input
52	XFSY	O	Frame synchronous signal output (7.35kHz)
53	TSTI		Test mode input
54	TSTE		Test mode control signal input For testing
55	RCK	I-	Clock input for reading sub-code
56	SBSY	O	Sub-code block synchronization output
57	SFSY	O	Sub-code frame signal output
58	SUB	O	Sub-code serial output (P~W)
59	CK	O	VCO system clock output (4.3218MHz)
60	VCO	O	VCO select
61	VDD		VCO system +5V
62	C16M	I/O	For VCO control
63	C17M	I/O	For VCO adjusted voltage
64	VPLL		For VCO power supply
65	PCO	O	Clock reproduction system phase error output
66	VSS		EFM, VCO system GND
67	SLVL	O	Slice level output
68	EFMX	I/O	Signal output after limiting amplitude of EFM signal input (normal phase)
69	EFMX	I/O	Signal output after limiting amplitude of EFM signal output (reverse phase)
70	LEFMI	I	LD mode EFM signal input
71	CEFMI	I	CD mode EFM signal input
72	VDD		+5V
73	LXT+	O	VCXO frequency up signal output (only in LD mode)
74	LXT-	O	VCXO frequency down signal output (only in LD mode)
75	CDM+	O	Disc motor acceleration signal output (only in CD mode)
76	CDM-	O	Disc motor deceleration signal output (only in CD mode)
77	DSV	O	For system expansion
78	PLL	O	PLL operation monitor (L : Spindle control is PLL operated)
79	FG	I	FG signal input
80	JMPTM	I	Trigger input to start sequence control

Note)

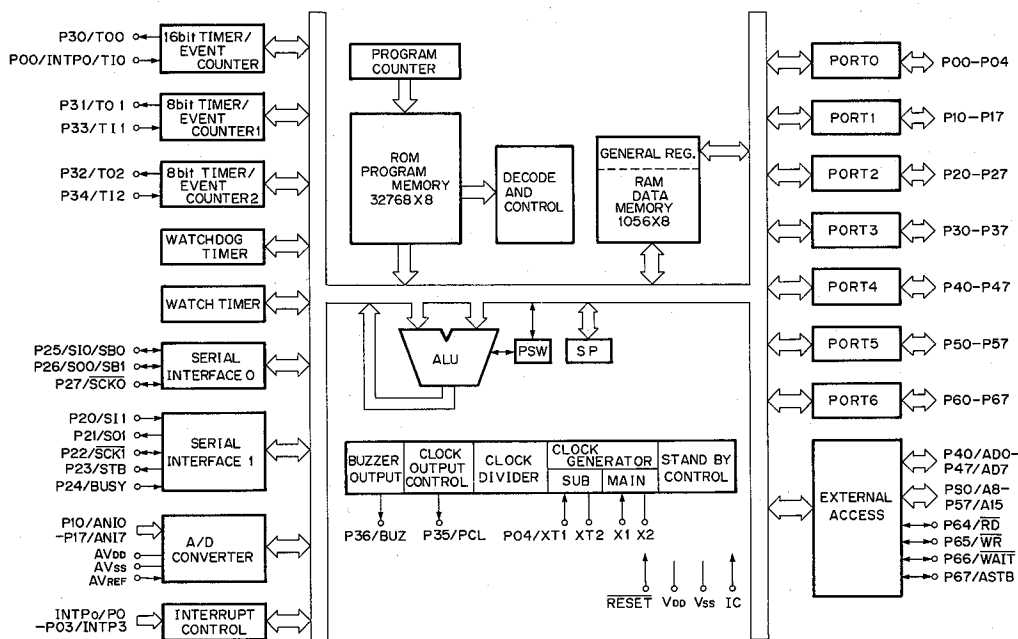
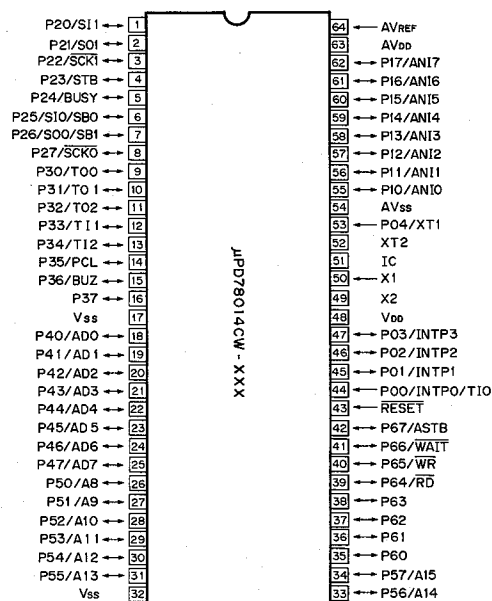
Symbols in I/O I : Input terminal O : output terminal + : Pull-up terminal - : Pull-down terminal

IC49 : YVL151B-F
LVP


No.	Name	I/O	Function
1	DM-	O	Spindle motor speed reducing signal output
2	DM+	O	Spindle motor speed increasing signal output
3	CK2	O	2fsc (7.15909MHz) clock output
4	RSTN	I+	Reset signal input
5	VSYNC	O	Vertical synchronous signal output
6	R/W	I	Microprocessor interface input/output control input
7	SCKN	I	Microprocessor interface clock input
8	DIN	I	Microprocessor interface data input
9	DOUT	O	Microprocessor interface data output
10	CS	I+	Microprocessor interface chip enable input
11	CLSY	O	Pulse output for video signal clamp
12	CSYNCN	I	Complex synchronous signal input
13	RF	I	RF signal input for drop-out detect or external drop-out detect signal input
14	(NC)		
15	VSS	—	Ground
16	VSS	—	Ground (for VCO block)
17	VCOI	I	VCO clock (8fsc) input
18	VDD	—	+5V power supply (for VCO block)
19	ADCK	O	ADC interface clock output
20	CBS1	O	Color burst sampling signal output (inverted phase)
21	CBS2	O	Color burst sampling signal output (positive phase)
22	SLS	O	Side lock occurrence detect signal output
23	OSL	O	Over side lock occurrence detect signal output
24	USL	O	Under side lock occurrence detect signal output
25	(NC)		
26	VSS	—	Built-in ADC digital ground

No.	Name	I/O	Function
27	AVSS	—	Built-in ADC analog ground
28	NC	—	Unconnected
29	NC	—	Unconnected
30		—	D/A mode selection
31	VDD	—	Digital +5V power supply
32	VDD	—	+5V power supply
33	DSCSY	O	VMC interface complex synchronous signal output
34	(NC)		
35	DSVSY	O	VMC interface vertical synchronous signal output
36	VSS	—	Ground
37	TAD0	I	ADC interface data input (LSB)
38	TAD1	I	ADC interface data input
39	TAD2	I	ADC interface data input
40	TAD3	I	ADC interface data input
41	TAD4	I	ADC interface data input
42	TAD5	I	ADC interface data input
43	TAD6	I	ADC interface data input
44	TAD7	I	ADC interface data input (MSB)
45	EXDI0	I	VMC interface data input (LSB)
46	EXDI1	I	VMC interface data input
47	EXDI2	I	VMC interface data input
48	EXDI3	I	VMC interface data input
49	EXDI4	I	VMC interface data input
50	EXDI5	I	VMC interface data input
51	EXDI6	I	VMC interface data input
52	EXDI7	I	VMC interface data input (MSB)
53	VSS	—	Ground
54	EXDO0	O	VMC interface data output (LSB)
55	EXDO1	O	VMC interface data output
56	EXDO2	O	VMC interface data output
57	EXDO3	O	VMC interface data output
58	EXDO4	O	VMC interface data output
59	EXDO5	O	VMC interface data output
60	EXDO6	O	VMC interface data output
61	EXDO7	O	VMC interface data output (MSB)
62	VDD	—	Built-in DAC digital +5V power supply
63	(NC)		
64	AVDD	—	Built-in DAC analog +5V power supply
65	DAOUT	O	Built-in DAC video signal output
66	MPDA	—	Built-in DAC mid-point voltage terminal
67	AVSS	—	Built-in DAC analog ground
68	VSS	—	Built-in DAC digital ground
69	VSS	—	Ground
70	TLDN	I+	LSI test terminal (usually kept unconnected)
71	TEST	I	LSI test terminal (usually connected to ground)
72	VDD	—	+5V power supply
73	XIN	I	Crystal oscillator connection terminal or external clock input (4fsc)
74	XOUT	O	Crystal oscillator connection terminal
75	VSS	—	Ground
76	(NC)		
77	JPTM	O	Jump timing signal output
78	KPPN	I+	Kick pulse timing signal input
79	EXFG	I	External FG signal input
80	DMSTPN	O	Spindle motor control OFF signal output

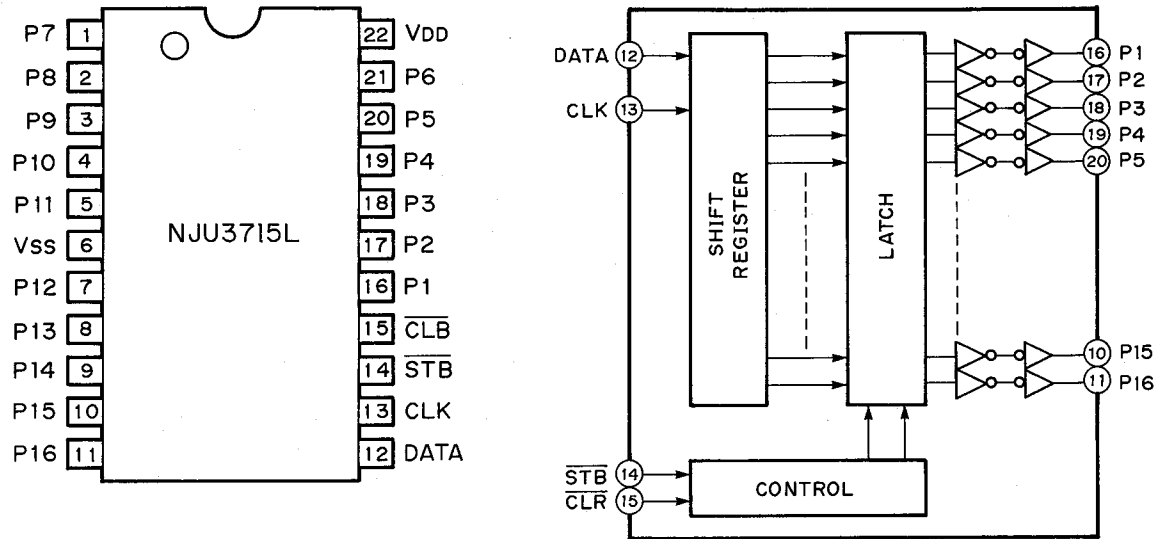
Note 1) I+ (in I/O column) : Input terminal with pull-up resistor

IC43 : μ PD78P014W
8bit μ -COM


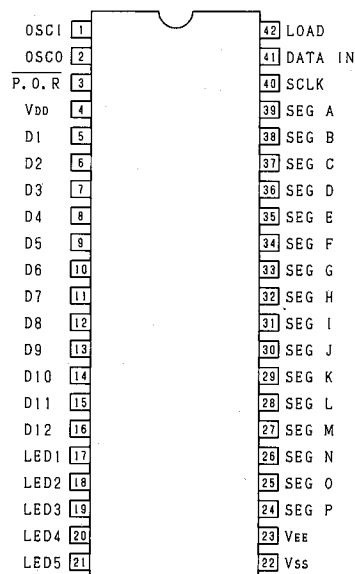
No.	Port	Name	I/O	Function
1	P20/SI1	SI	I	Serial input
2	P21/SO1	SO	O	Serial output
3	P22/SCK1	SCK	O	Serial clock output Usually at "H"
4	P23/STB	R/W	O	Serial interface direction Output from CPU at "H"/input at "L"
5	P24/BUSY		O	Unused
6	P25/SIO/SB0		O	Unused
7	P26/SO0/SB1		O	Unused
8	P27/SCK0		O	Unused
9	P30/TO0		O	Unused
10	P31/TO1		O	Unused
11	P32/TO2	VSYNC	I	V synchronous signal drawn out by LVP from video signal being output currently About 16ms cycle

No.	Port	Name	I/O	Function
12	P33/TI1	TER	I	Track cross signal
13	P34/TI2	FG	I	Square wave signal attached to Turn Table and generated 30 times per revolution
14	P35/PCL	DVSYNC	I	V synchronous signal from Disc to video signal among video signals Stable at about 16ms cycle during PLAY mode
15	P36/BUZ		O	Unused
16	P37	PWRS	I	Input to judge whether power is supplied from peripheral power supply Power ON at "H"
17	VSS	VSS	I	GND
18	P40/AD0	LVP	O	Select signal of LVP Select at "H"
19	P41/AD1	CDVP	O	Select signal of CDVP Select at "L"
20	P42/AD2		O	Unused
21	P43/AD3	FLD	O	Select signal of display tube driver Select at "L"
22	P44/AD4		O	Unused
23	P45/AD5	EXPO	O	Select signal of external port Select at "L"
24	P46/AD6		O	Unused
25	P47/AD7	PWRC	O	Power control output Power ON at "H"
26	P50/A8	D0	O	Key digit 0 1/8-duty square wave at a constant cycle
27	P51/A9	D1	O	Key digit 1 1/8-duty square wave at a constant cycle
28	P52/A10	D2	O	Key digit 2 1/8-duty square wave at a constant cycle
29	P53/A11	D3	O	Key digit 3 1/8-duty square wave at a constant cycle
30	P54/A12	D4	O	Key digit 4 1/8-duty square wave at a constant cycle
31	P55/A13	D5	O	Key digit 5 1/8-duty square wave at a constant cycle
32	VSS	VSS	I	GND
33	P56/A14	D6	O	Key digit 6 1/8-duty square wave at a constant cycle
34	P57/A15	D7	O	Key digit 7 1/8-duty square wave at a constant cycle
35	P60	K0	I	Key input 0, usually at "H" Square wave for "L" at key input
36	P61	K1	I	Key input 1, usually at "H" Square wave for "L" at key input
37	P62	K2	I	Key input 2, usually at "H" Square wave for "L" at key input
38	P63	PSDWN	I	Power abnormality detect input "L" when abnormal
39	P64/RD		O	Unused
40	P65/WR	CK	O	Clock output to external I/O port
41	P66/WAIT	DO	O	Data output to external I/O port
42	P67/ASTB	EXT	I	With/without connection signal to external I/O port With connection at "L"
43	RESET	RESET	I	Reset input
44	P00/INTP0/TIO	REM	I	Remote control input/data input from external I/O port (when /EXT is at "L")
45	P01/INTP1	DVOLDN	O	CDVP digital volume down output (very fine pulse)
46	P02/INTP2	DVOLUP	O	CDVP digital volume up output (very fine pulse)
47	P03/INTP3	TEST	O	For development
48	VDD	VDD	I	+5V
49	X2	X2	—	Oscillator (Ceramic Resonator 8.467MHz)
50	X1	X1	I	Oscillator (Ceramic Resonator 8.467MHz)
51	IC	IC	I	GND
52	XT2		O	Unused
53	P04/XT1	SW1	I	SW1 input of mechanical unit
54	AVSS	AVSS	I	Ground potential of A/D converter
55	P10/ANI0	TILT	I	Error signal input from tilt sensor (analog)
56	P11/ANI1	DISCS	I	Signal input from disc sensor (analog)
57	P12/ANI2	SW2	I	SW2 input of mechanical unit
58	P13/ANI3	SW3	I	SW3 input of mechanical unit
59	P14/ANI4	WQ	I	CDVP request Request at "H"
60	P15/ANI5	SW6	I	SW6 input of mechanical unit
61	P16/ANI6	SW5	I	SW5 input of mechanical unit
62	P17/ANI7	SW4	I	SW4 input of mechanical unit
63	AVDD	AVDD	I	+5V (analog power input of A/D converter)
64	AVREF	AVREF	I	+5V (reference voltage input of A/D converter)

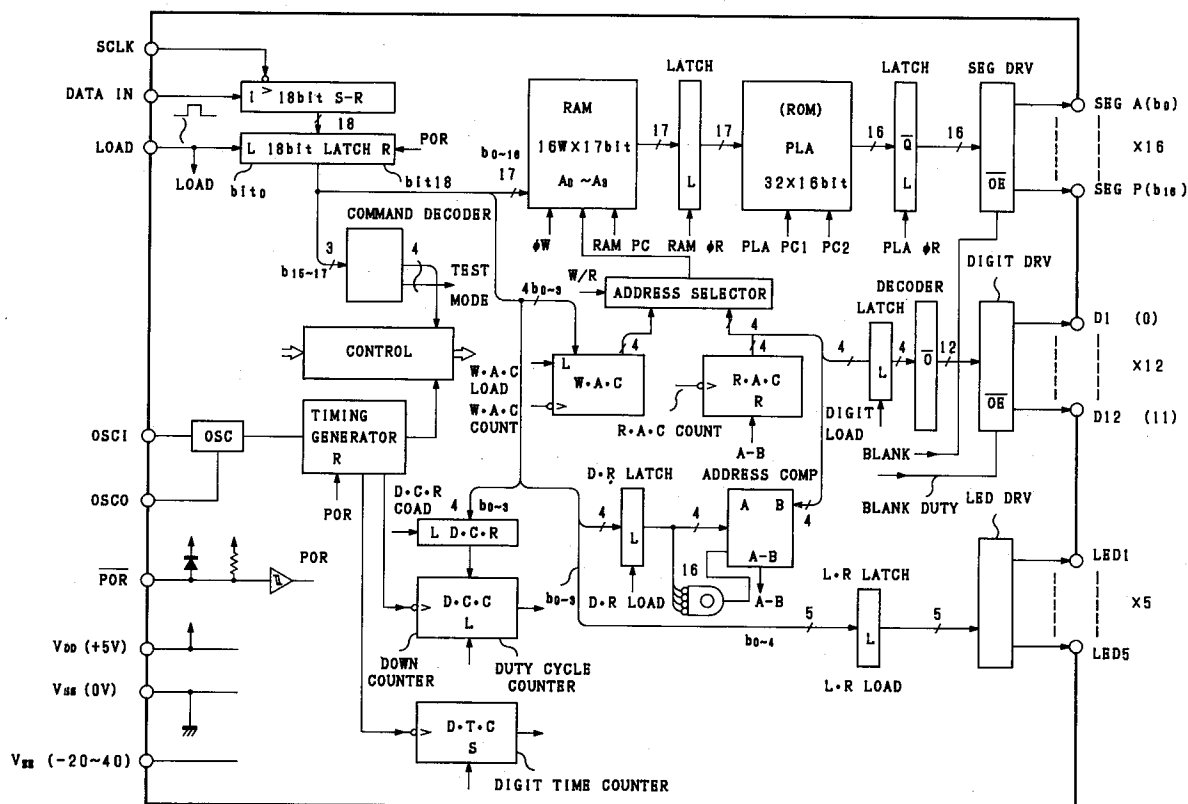
IC21 : NJU3715L
16bit Serial-Parallel Converter



No.	Port	Name	I/O	Function	
1	P7	MUTE	O	Analog mute	Mute at "L"
2	P8	CDV	O	Spindle constant switching	12cmCDV at "H"
3	P9	CXON	O	CX switching	CX ON at "H"
4	P10	LSON	O	Laser diode control	ON at "L"
5	P11	30/20	O	Spindle constant switching	30cmLD at "H"
6	VSS		I	GND	
7	P12	WIDE	O	Unused	
8	P13	MTF	O	MTF switching	MTF ON at "H"
9	P14	PLAY	O	VCO gain switching	Gain low at "H"
10	P15	LD/CD	O	Focus gain, etc. switching	LD at "H"
11	P16		O	Unused	
12	DATA	DIN	I	Microprocessor control I/F	Serial data input
13	CLK	SCK	I	Microprocessor control I/F	Serial clock input
14	STB	EXPO	I	Microprocessor control I/F	Chip select
15	CLB		I	+5V	
16	P1	LDM+	O	Loading motor control	Forward, at "H"
17	P2	LDM-	O	Loading motor control	Reverse at "H"
18	P3		O	Unused	
19	P4		O	Unused	
20	P5	GAIN	O	Gain control of output step	Gain high at "H"
21	P6	DEMP	O	Deemphasis control	Emphasis ON at "H"
22	VDD		I	+5V	

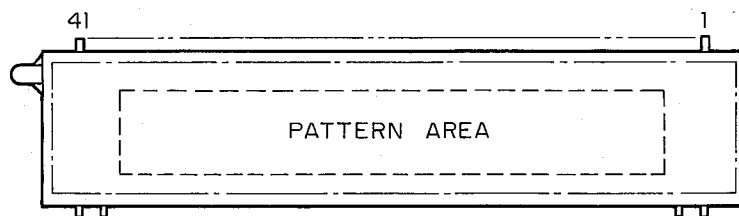
IC1 : MSC7112-01SS
VF Display Controller


Pin Name	Pin No.	I/O	Connected to	Function
VDD VSS VEE	4 22 23		Power source	VDD-VSS : Power source for internal logic. VDD-VEE : Power source for fluorescent character display tube operating circuit.
DATA IN	41	I	Microcomputer	Control/display data input. Serial input from MBS on positive logic. Data shifts at SCLK rise.
SCLK	40	I	Microcomputer	Shift clock of shift register. Data shifts at SCLK fall.
LOAD	42	I	Microcomputer	Latch clock of display data. Through state at LOAD "H" level and immediately preceding data is latched at "L" level.
POR	3	I Schmitt trigger type Pull-up resistor With diode		After reset input of internal logic at the power On is reset, 1B bit latch, duty cycle register, digit register, LED register and write/read address counter are all reset and SEG A~SEGP and LED1~LED3 all become "low". Auto power reset function becomes available by connecting a capacitor externally.
OSC1 OSC0	1 2	I O		Oscillation circuit is formed by connecting a resistor and capacitor externally through oscillation circuit input. C=100pF, R=47kΩ, fosc=235kHz
SEG A~ SEG P	39~24	O	Fluorescent character display tube Anode side	Output to operate anode of fluorescent character display tube. Direct connection is possible through push-pull output.
D1~D12	5~16	O	Fluorescent character display tube Grid side	Output to operate grid of fluorescent character display tube. Direct connection is possible through push-pull output.
LED1~LED5	17~21	O	Loading and Disc clamp	Output to operate static of Loading and disc clamp. Direct connection is possible through push-pull output.



■ DISPLAY DATA (VP554200)

● V1 : 8-BT-144GK



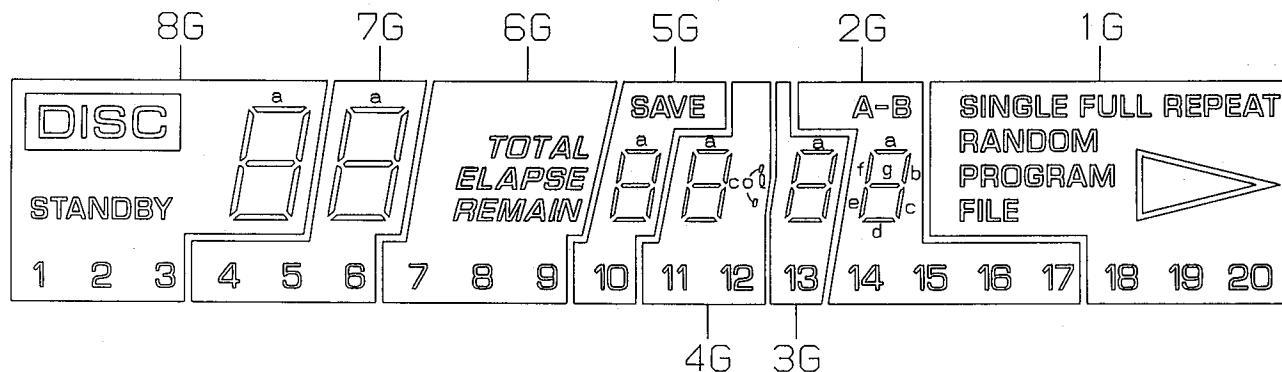
PIN CONNECTION

Pin No.	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21
Connection	F2	F2	NP	NP	8G	7G	6G	5G	4G	3G	2G	1G	NC	NC	NC	NC	NP	NP	NP	NP	NP

Pin No.	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Connection	NP	NP	NP	NP	P12	P11	P10	P9	P8	P7	P6	P5	P4	P3	P2	P1	NP	NP	F1	F1

- Note**
- 1) F1, F2 Filament
 - 2) NP No pin
 - 3) NC No connection
 - 4) 1G~8G Grid
 - 5) DL Datum Line

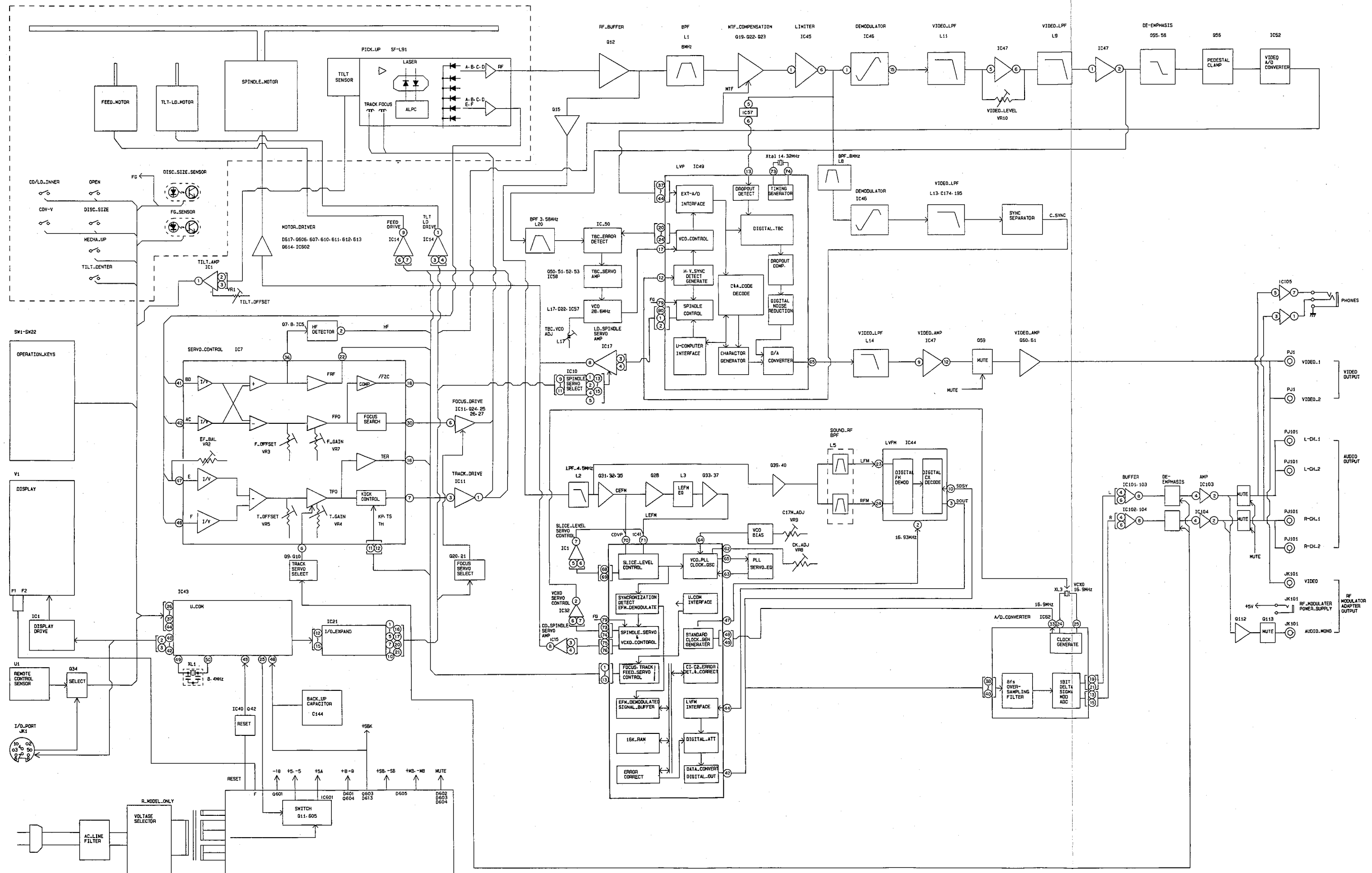
GRID ASSIGNMENT



ANODE CONNECTION

	8G	7G	6G	5G	4G	3G	2G	1G
P1	a	a	—	a	a	a	a	FULL
P2	b	b	TOTAL	b	b	b	b	REPEAT
P3	c	c	—	c	c	c	c	▶
P4	d	d	—	d	d	d	d	FILE
P5	e	e	—	e	e	e	e	—
P6	f	f	ELAPSE	f	f	f	f	RANDOM
P7	g	g	REMAIN	g	g	g	g	PROGRAM
P8	DISC	—	—	SAVE	—	—	A-B	SINGLE
P9	STANDBY	—	—	—	—	—	17	—
P10	3	6	9	10	12	13	16	20
P11	2	5	8	—	11	—	15	19
P12	1	4	7	—	—	—	14	18

■ BLOCK DIAGRAM

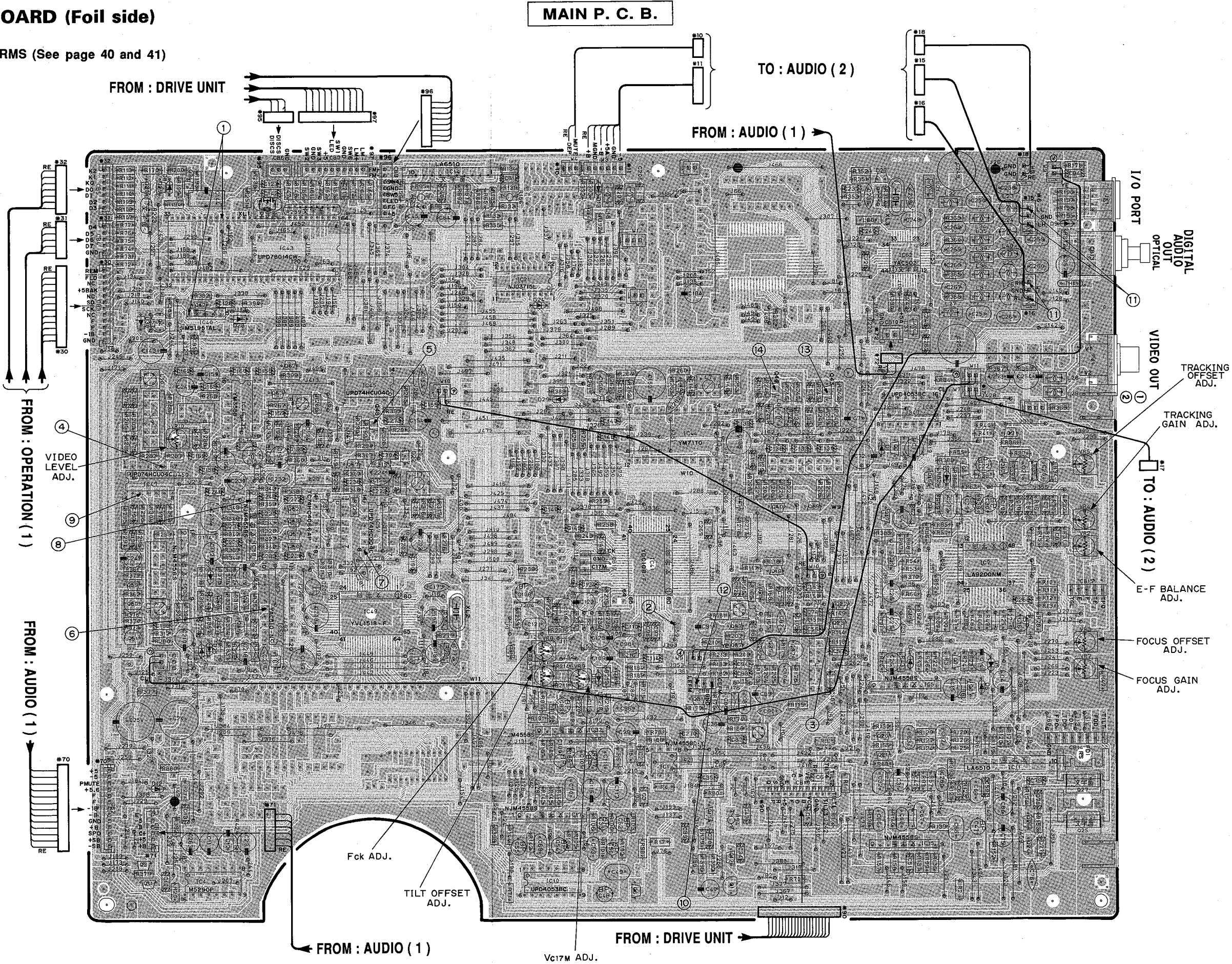


PRINTED CIRCUIT BOARD (Foil side)

①~⑭ : TEST POINT WAVEFORMS (See page 40 and 41)

Semiconductor Location

Ref. No.	Location	Ref. No.	Location
IC 1	E5	Q 19	F4
IC 3	F3	Q 20	F5
IC 4	C5	Q 21	F5
IC 5	F4	Q 22	F4
IC 7	G4	Q 23	F4
IC 10	E5	Q 24	G5
IC 11	G5	Q 25	G5
IC 14	D2	Q 26	G5
IC 15	F5	Q 27	G5
IC 17	E5	Q 28	F4
IC 21	D2	Q 29	C2
IC 32	E5	Q 30	C2
IC 40	C2	Q 31	E5
IC 41	E4	Q 32	F4
IC 43	C2	Q 33	F4
IC 44	E3	Q 34	C2
IC 45	D3	Q 35	F4
IC 46	C3	Q 36	D4
IC 47	C3	Q 37	F4
IC 49	D4	Q 38	E4
IC 50	C4	Q 39	F4
IC 52	C4	Q 40	F4
IC 53	C4	Q 42	C2
IC 57	D4	Q 43	F3
IC 58	C4	Q 44	F3
IC 62	F2	Q 45	F3
Q 1	F5	Q 46	C3
Q 2	F3	Q 47	D3
Q 3	C5	Q 48	D3
Q 4	C3	Q 49	C4
Q 5	G3	Q 50	C4
Q 6	E5	Q 51	C4
Q 7	G4	Q 52	C4
Q 8	G4	Q 53	C4
Q 9	G3	Q 54	E2
Q 10	G3	Q 55	C4
Q 11	C5	Q 56	C4
Q 12	F5	Q 57	D3
Q 13	F4	Q 58	C4
Q 14	G4	Q 59	B4
Q 15	E5	Q 60	B4
Q 16	G3	Q 61	B4
Q 17	F4	Q 62	C3
Q 18	G4	Q 63	C3



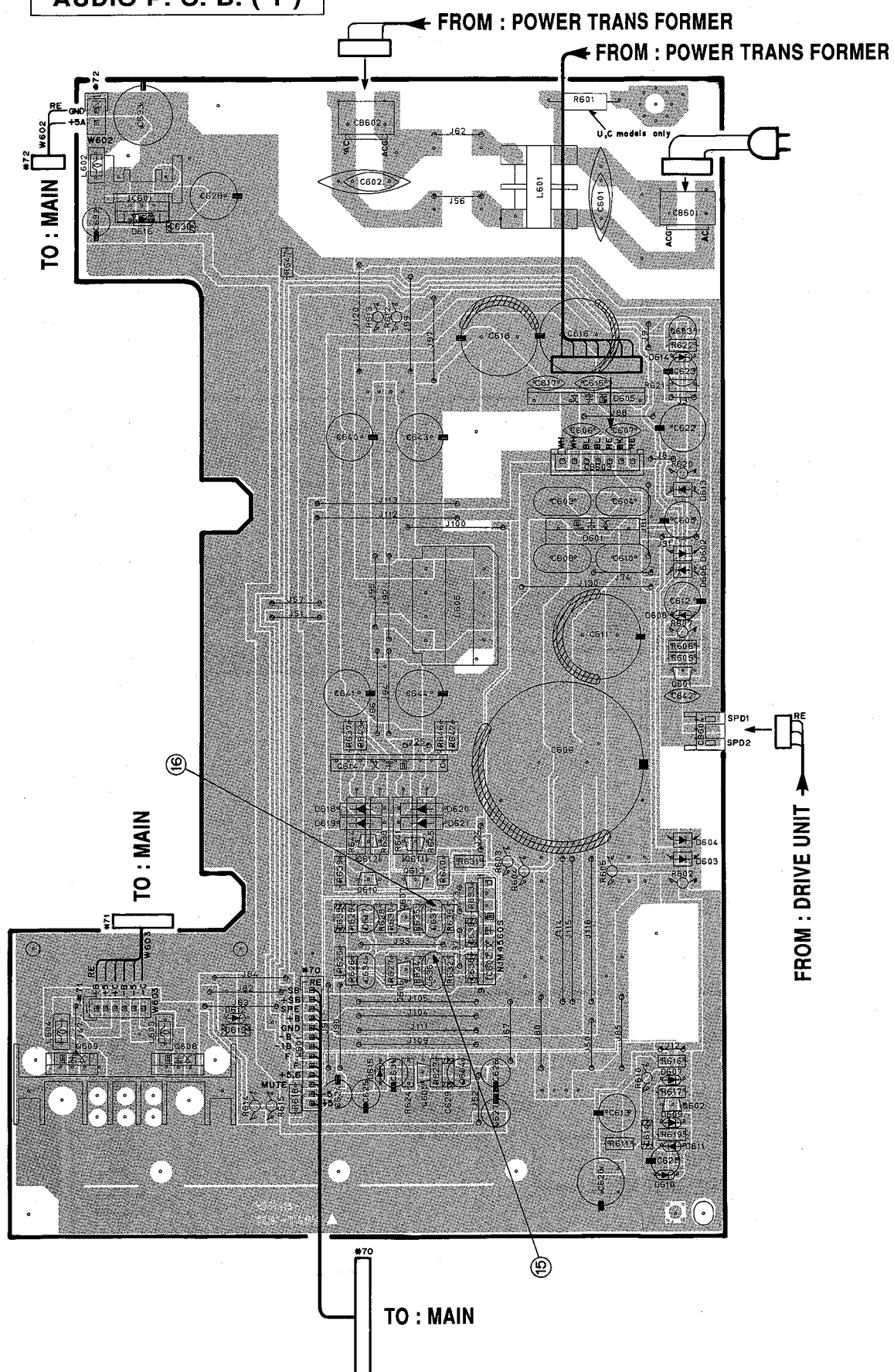
PRINTED CIRCUIT BOARD (Foil side)

⑮ and ⑯ : TEST POINT WAVEFORMS (See page 39)

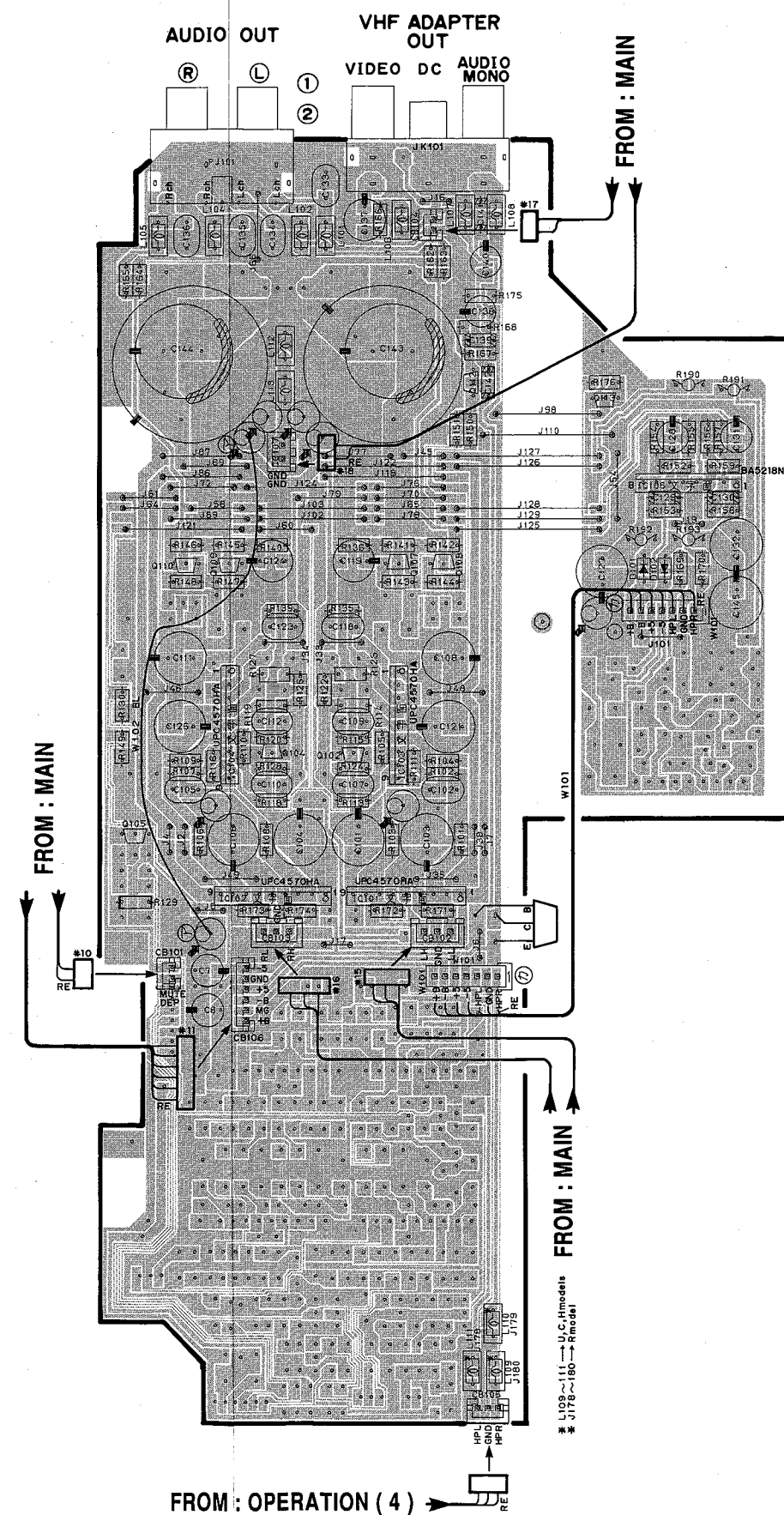
Semiconductor Location

Ref. No.	Location
IC 101	G4
IC 102	F4
IC 103	G4
IC 104	F4
IC 105	H3
IC 601	C2
IC 602	D4
Q 102	F4
Q 104	F4
Q 105	F4
Q 107	G3
Q 108	G3
Q 109	F3
Q 110	F3
Q 112	G2
Q 113	G2
Q 114	G4
Q 601	E3
Q 602	E5
Q 603	E2
Q 604	D5
Q 605	D5
Q 606	D4
Q 607	D4
Q 608	C5
Q 609	C5
Q 610	D4
Q 611	D4
Q 612	D4
Q 613	D4
Q 614	D4

AUDIO P. C. B. (1)



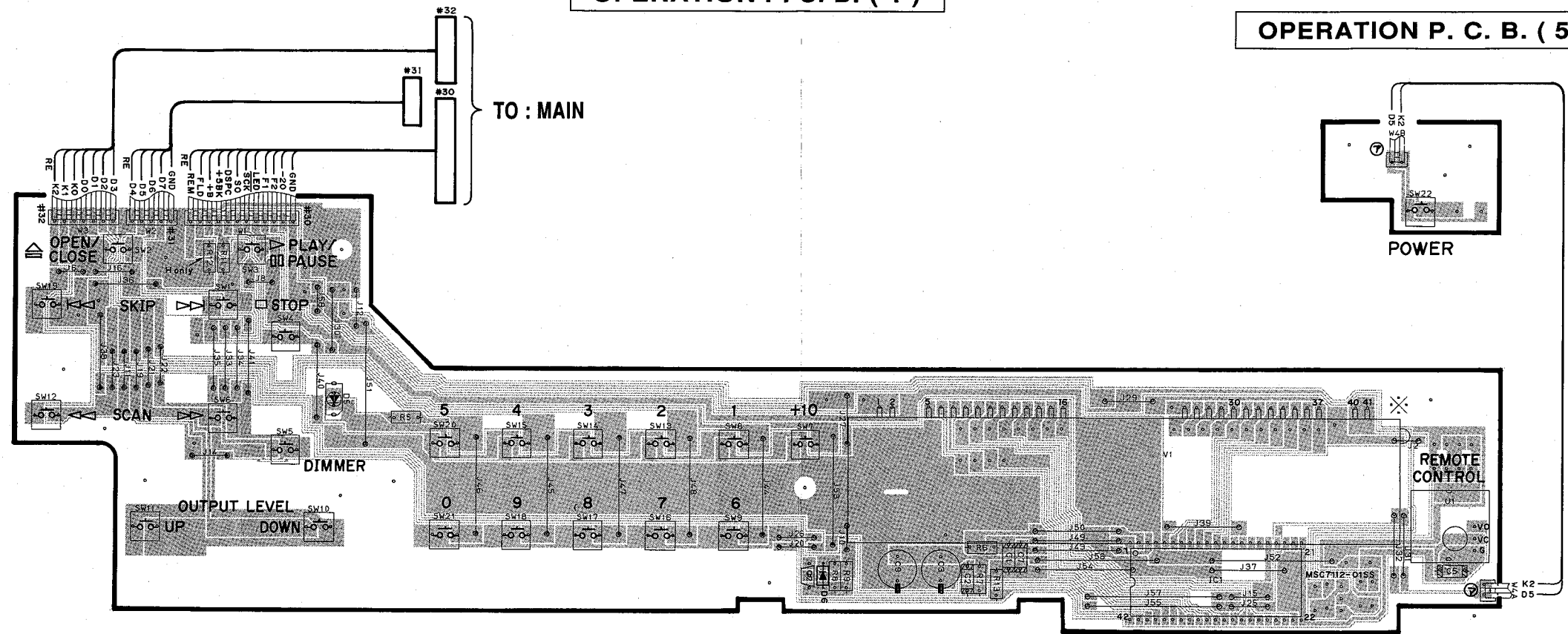
AUDIO P. C. B. (2)



■ PRINTED CIRCUIT BOARD (Foil side)

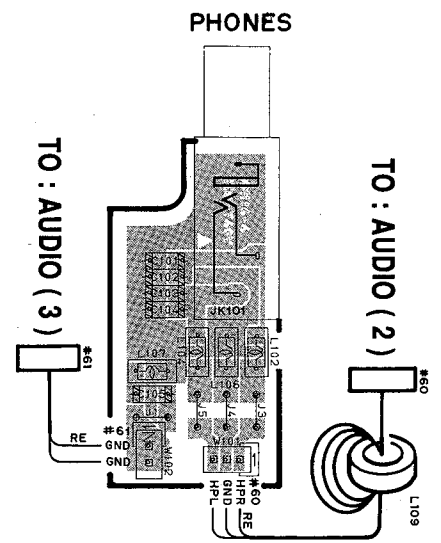
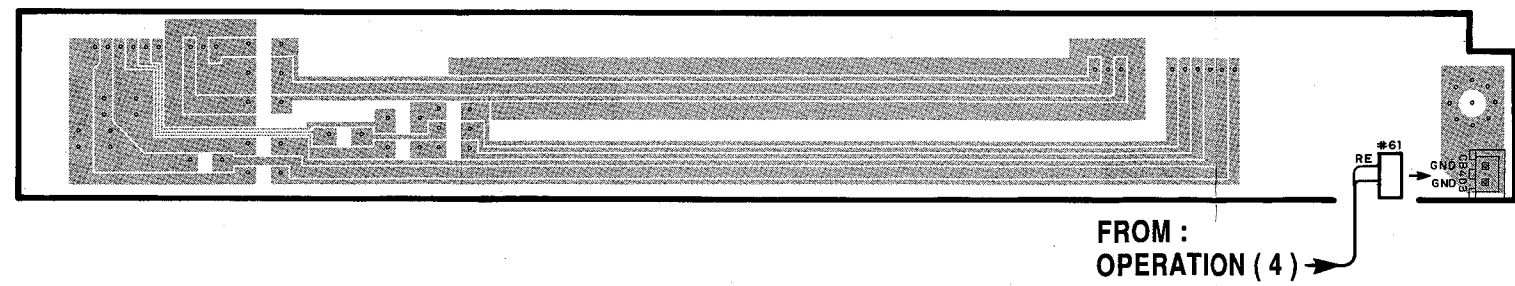
OPERATION P. C. B. (1)

OPERATION P. C. B. (5)



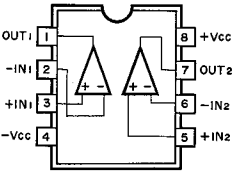
AUDIO P. C. B. (3)

OPERATION P. C. B. (4)

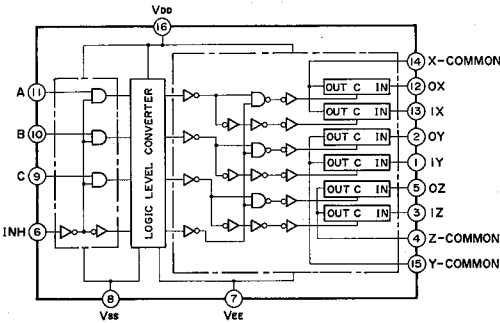


IC BLOCK

IC1 : NJM4558D-Y or RC4558D-V
Dual OP-Amp

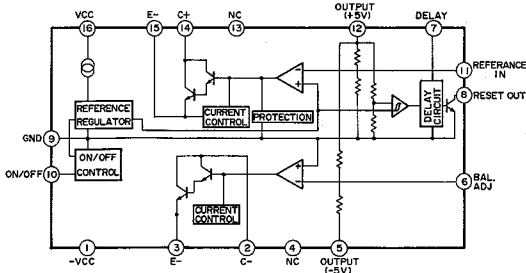


IC3, 10 : μ PD4053BC or TC4053BP
Triple - 2 Channel Multiplexer/Demultiplexer

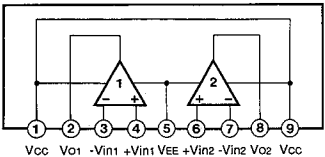


CONTROL INPUTS				"ON" CHANNEL			
INHIBIT (Pin 6)	C (Pin 9)	B (Pin 10)	A (Pin 11)	0X (Pin 12), 0Y (Pin 2), 0Z (Pin 5)	1X (Pin 13), 1Y (Pin 1), 1Z (Pin 3)	2X (Pin 14), 2Y (Pin 4), 2Z (Pin 6)	3X (Pin 15), 3Y (Pin 7), 3Z (Pin 8)
L	L	L	L	0X, 0Y, 0Z	1X, 1Y, 1Z	2X, 2Y, 2Z	3X, 3Y, 3Z
L	L	L	H	0X, 0Y, 0Z	1X, 1Y, 1Z	2X, 2Y, 2Z	3X, 3Y, 3Z
L	L	H	L	0X, 0Y, 0Z	1X, 1Y, 1Z	2X, 2Y, 2Z	3X, 3Y, 3Z
L	L	H	H	0X, 0Y, 0Z	1X, 1Y, 1Z	2X, 2Y, 2Z	3X, 3Y, 3Z
L	H	L	L	0X, 0Y, 0Z	1X, 1Y, 1Z	2X, 2Y, 2Z	3X, 3Y, 3Z
L	H	L	H	0X, 0Y, 0Z	1X, 1Y, 1Z	2X, 2Y, 2Z	3X, 3Y, 3Z
L	H	H	L	0X, 0Y, 0Z	1X, 1Y, 1Z	2X, 2Y, 2Z	3X, 3Y, 3Z
L	H	H	H	0X, 0Y, 0Z	1X, 1Y, 1Z	2X, 2Y, 2Z	3X, 3Y, 3Z
H	*	*	*	1X, 1Y, 1Z	NONE	NONE	NONE

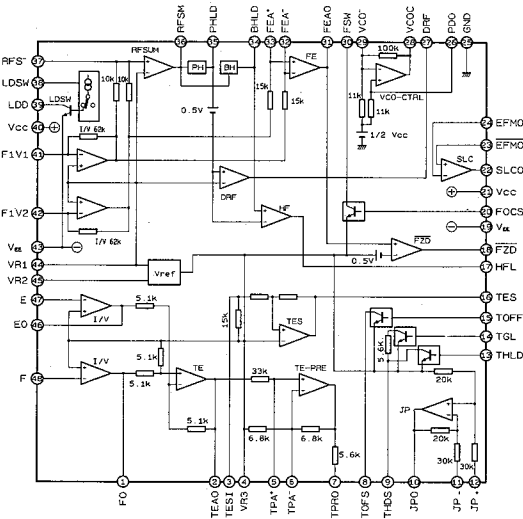
IC4 : M5290P
Constant-Voltage Tracking Supply with Reset



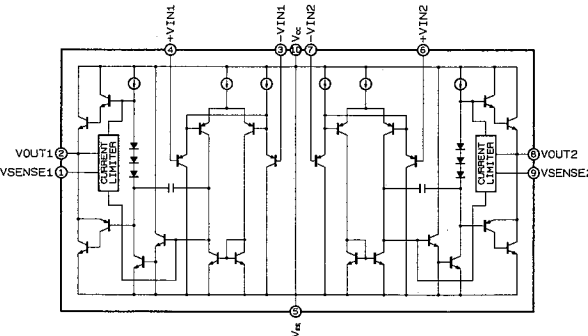
IC5, 15, 17, 32, 58 : NJM4558S, AN6551 or BA715
IC53 : NJM4556S
Dual OP-Amp



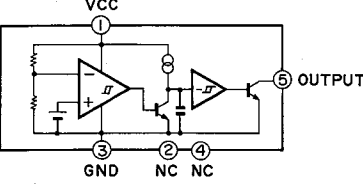
IC7 : LA9200NM
RF Amp & Servo Controller



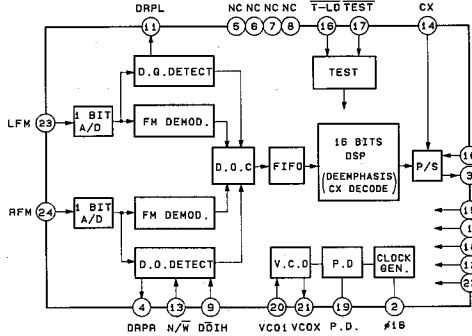
IC11, 14 : LA6510
Dual Power Operational Amp



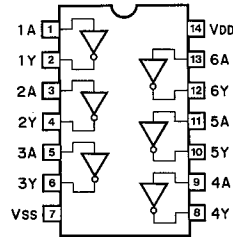
IC40 : M51951AL
Reset



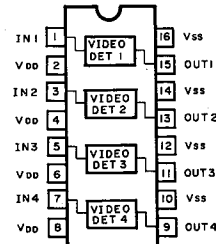
IC44 : YM7110
LVFM



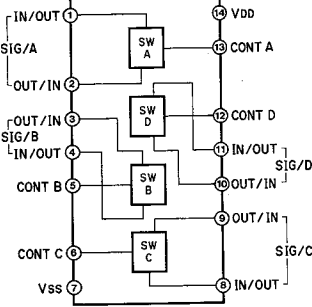
IC45, 47, 57 : μ PD74HCU04C or MC74HCU04N
Hex Inverter



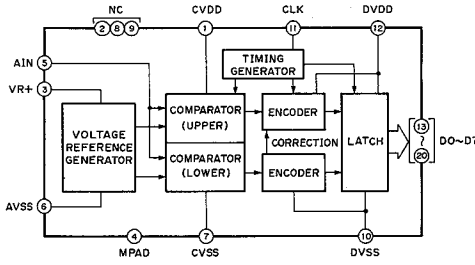
IC46 : YM3558
Video Detector



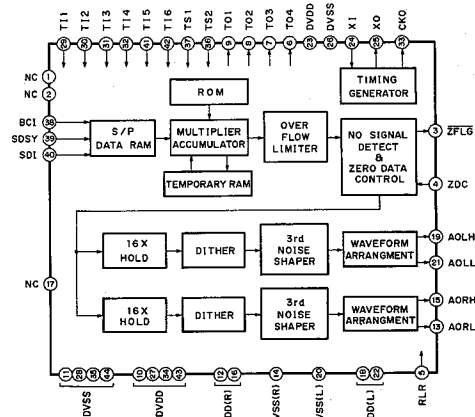
IC50 : TC74HC4066AP
Quad Bilateral Switch



IC52 : YAC510-N
A/D Converter

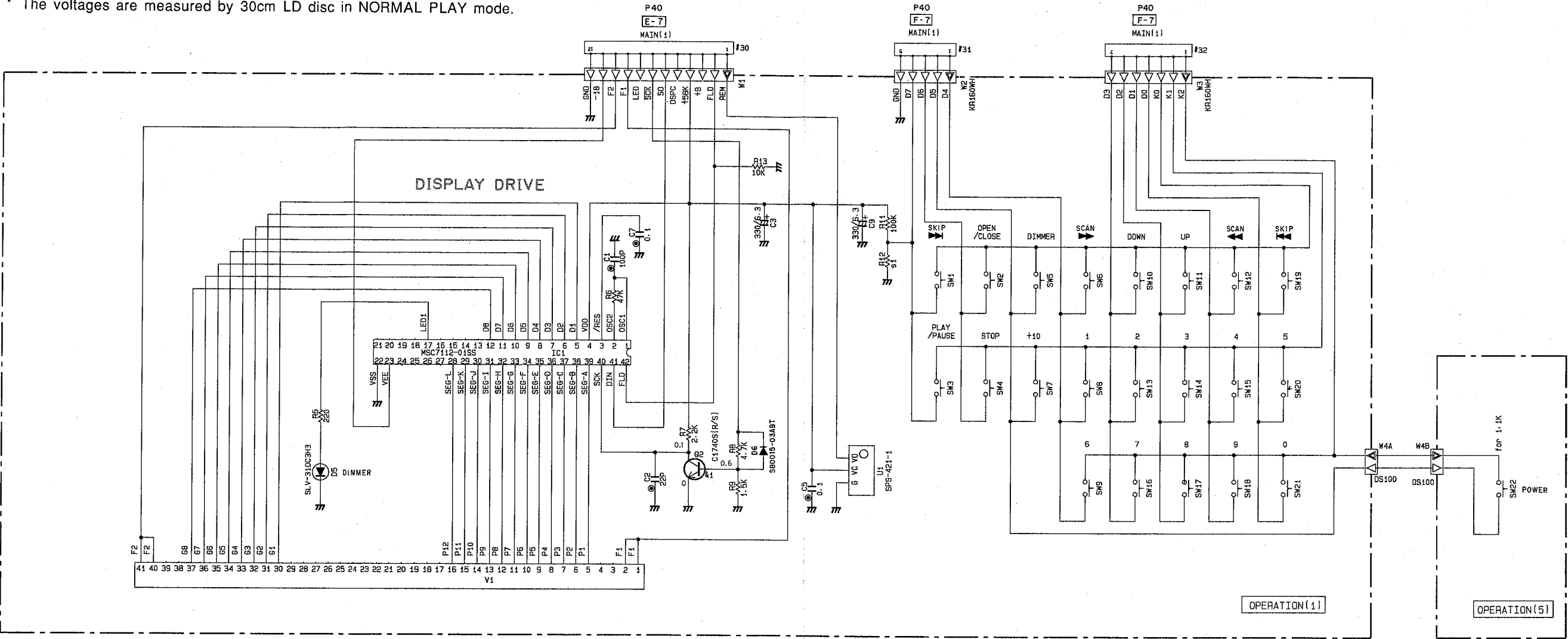


IC62 : YAC502
D/A Converter



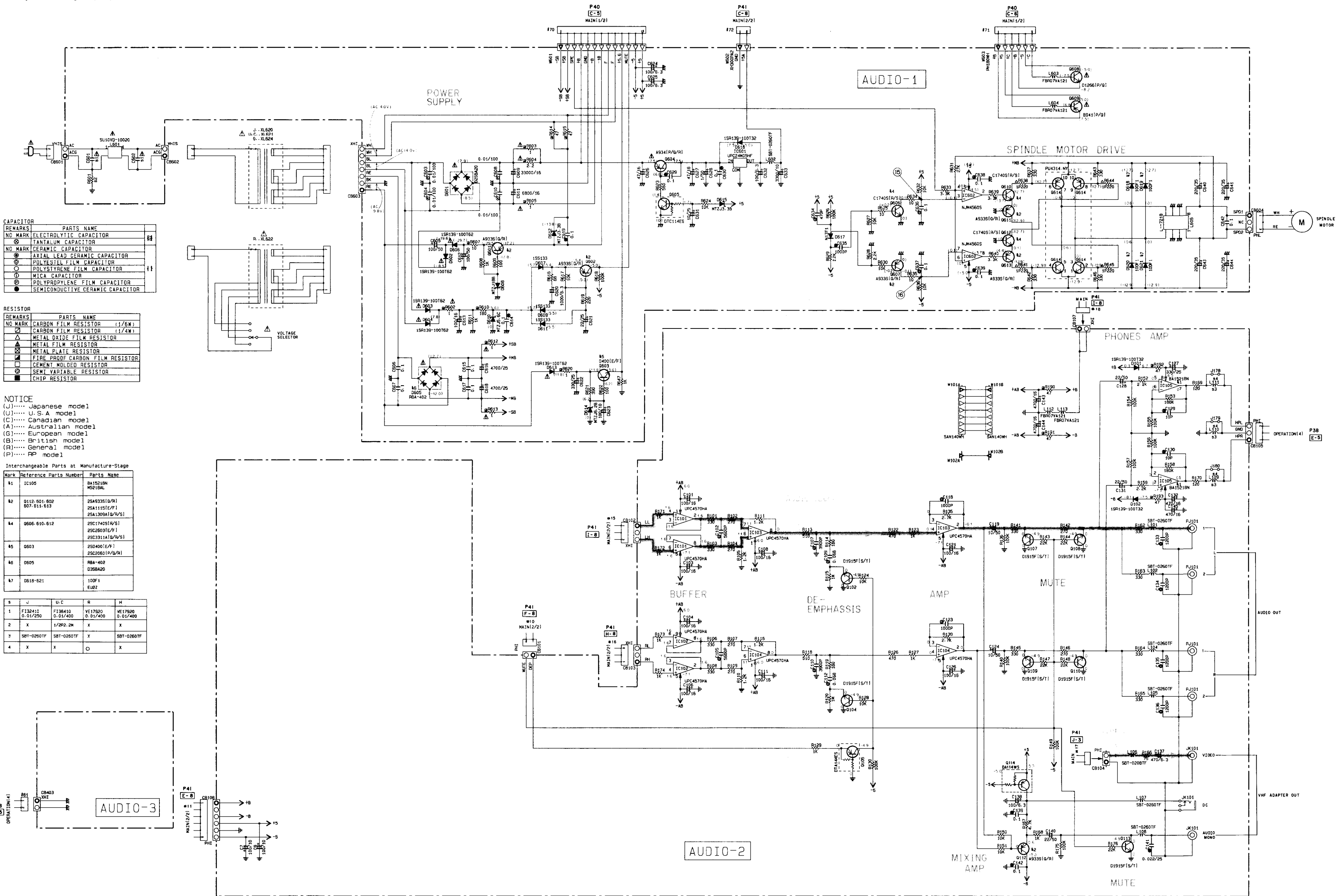
■ SCHEMATIC DIAGRAM (OPERATION)

* The voltages are measured by 30cm LD disc in NORMAL PLAY mode.

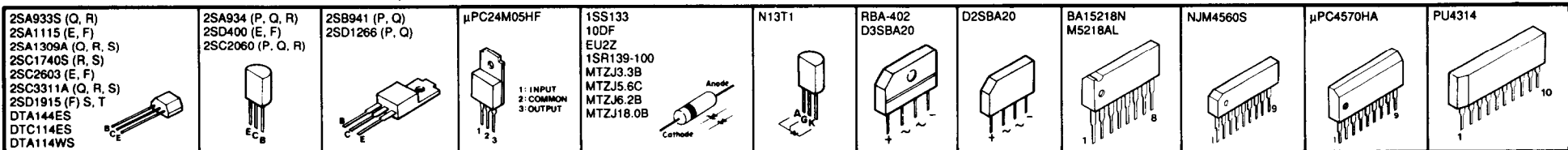


■ SCHEMATIC DIAGRAM (AUDIO)

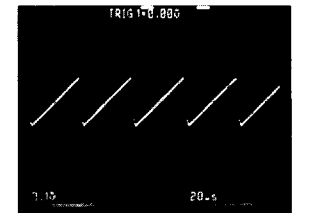
* The voltages are measured by 30cm LD disc in NORMAL PLAY mode.
Only the voltages () are at STOP mode.



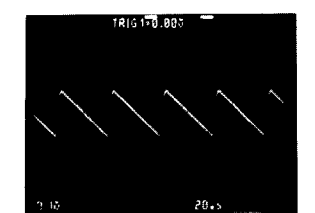
PIN CONNECTION DIAGRAM OF TRANSISTORS, DIODES AND ICs.



Point 19
V : 0.1V/div H : 20μsec/div
AC range 1 : 1 probe



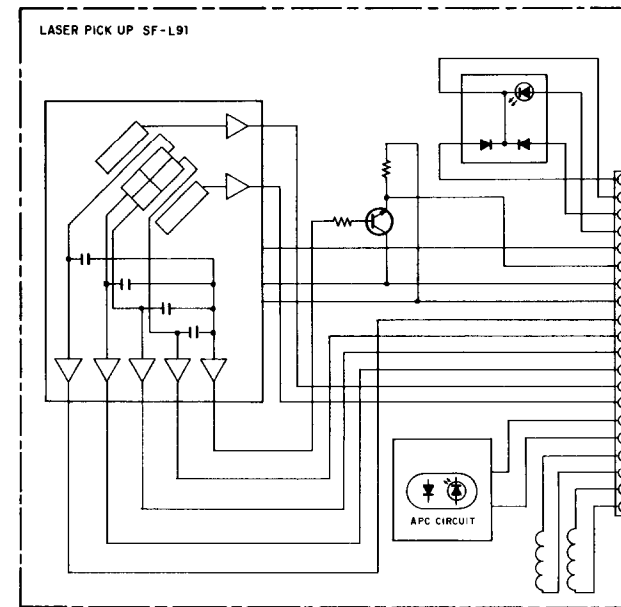
Point 19
V : 0.1V/div H : 20μsec/div
AC range 1 : 1 probe



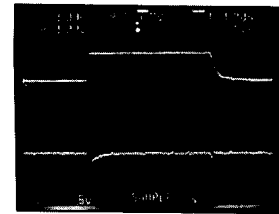
* All voltage are measured with a 10MΩ/V DC electric volt meter.
* Components having special characteristics are marked Δ and must be replaced with parts having specifications equal to those originally installed.
* Schematic diagram is subject to change without notice.

■ SCHEMATIC DIAGRAM (MAIN 1/2)

* The voltages are measured by 30cm LD disc in NORMAL PLAY mode.



Point ①
V : 5V/div H : 1sec/div
DC range 1 : 1 probe

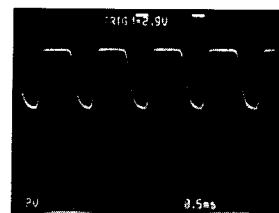


With the POWER switch turned ON, connect the power cord to the AC outlet.

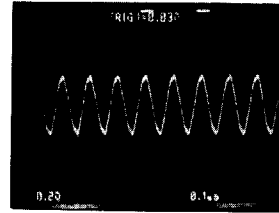
Disconnect the power cord from the AC outlet.

(This waveform is not available by pushing the power switch ON and OFF)

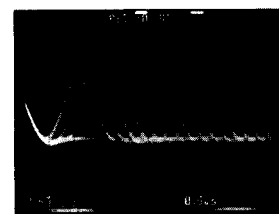
Point ②
V : 2V/div H : 0.5msec/div
DC range 1 : 1 probe



Point ③
V : 0.2V/div H : 0.1μsec/div
AC range 1 : 1 probe



Point ④
V : 0.5V/div H : 0.5μsec/div
AC range 1 : 1 probe



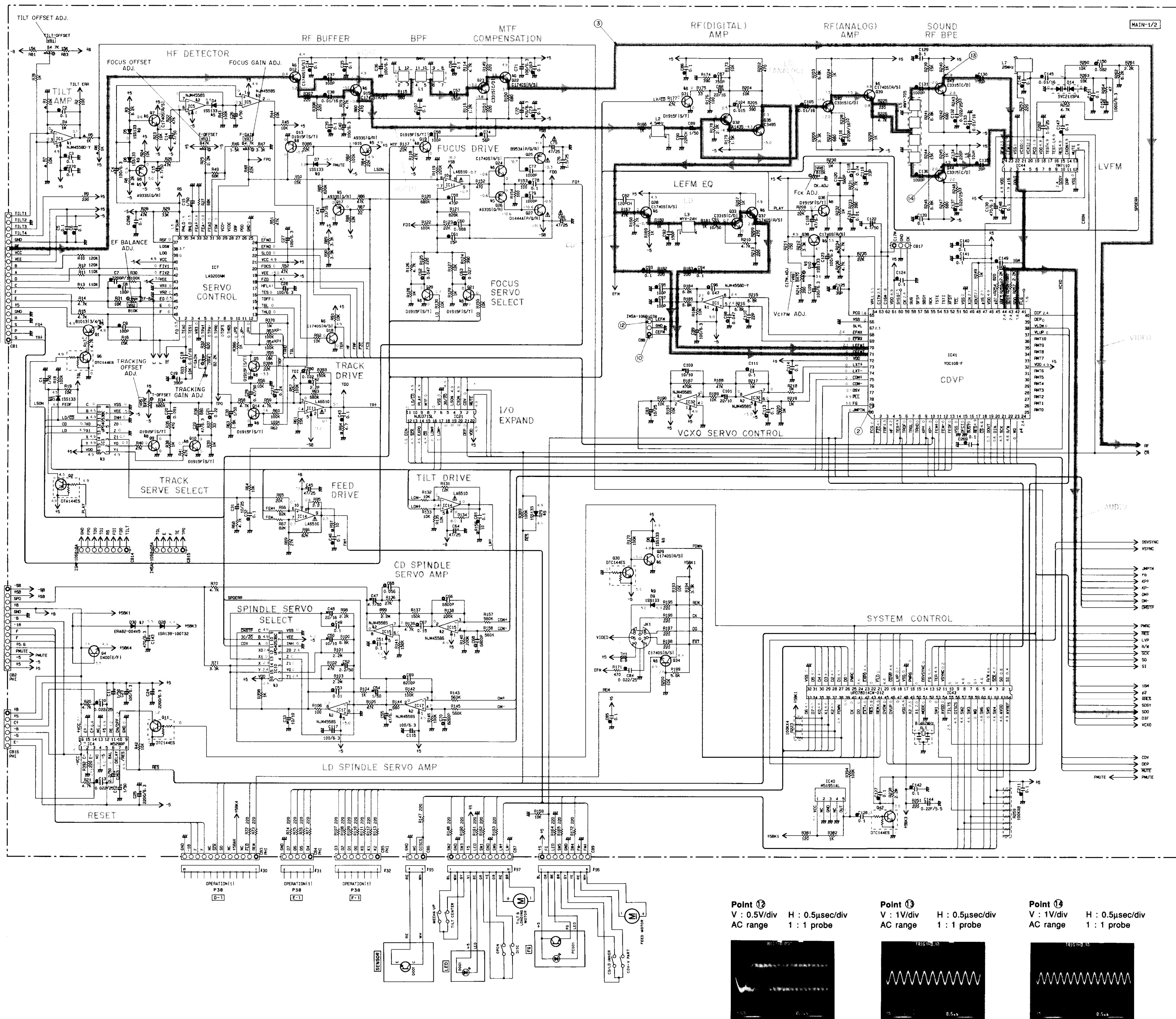
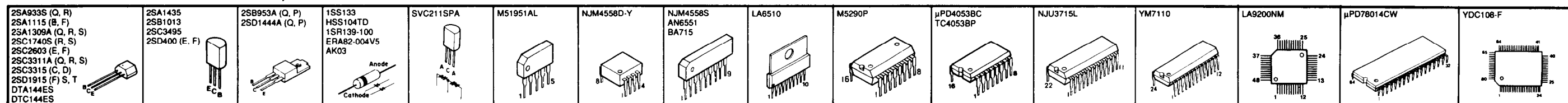
REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
②	TANTALUM CAPACITOR
NO MARK	CERAMIC CAPACITOR
③	AXIAL LEAD CERAMIC CAPACITOR
④	POLYESTER FILM CAPACITOR
⑤	POLYSTYRENE FILM CAPACITOR
⑥	MICA CAPACITOR
⑦	POLYPROPYLENE FILM CAPACITOR
⑧	SEMICONDUCTIVE CERAMIC CAPACITOR

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (1/4W)
①	CARBON FILM RESISTOR (1/4W)
②	METAL OXIDE FILM RESISTOR
③	METAL FILM RESISTOR
④	METAL PLATE RESISTOR
⑤	FIRE PROOF CARBON FILM RESISTOR
⑥	CEMENT MOUNTED RESISTOR
⑦	SEMI VARIABLE RESISTOR
⑧	CHIP RESISTOR

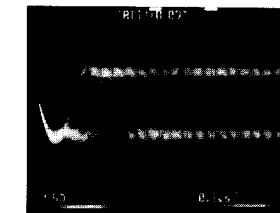
NOTICE
(J)..... Japanese model
(U)..... U.S.A. model
(C)..... Canadian model
(A)..... Australian model
(G)..... European model
(B)..... British model
(P)..... General model
(P)..... PP model

Mark	Reference Parts Number	Parts Name
IC1	IC1	IC1
IC2-15	IC2-15	IC2-15
IC3-10	IC3-10	IC3-10
IC45	IC45	IC45
IC5	IC5	IC5
IC6	IC6	IC6
IC7	IC7	IC7
IC8	IC8	IC8
IC9	IC9	IC9
IC10	IC10	IC10
IC11	IC11	IC11

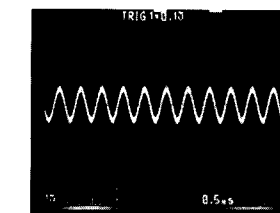
PIN CONNECTION DIAGRAM OF TRANSISTORS, DIODES AND ICs.



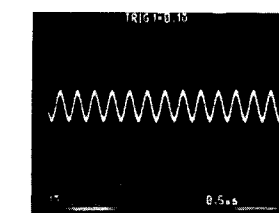
Point ⑤
V : 0.5V/div H : 0.5μsec/div
AC range 1 : 1 probe



Point ⑥
V : 1V/div H : 0.5μsec/div
AC range 1 : 1 probe



Point ⑦
V : 1V/div H : 0.5μsec/div
AC range 1 : 1 probe



* All voltage are measured with a 10MΩ/IV DC electric volt meter.
* Components having special characteristics are marked Δ and must be replaced with parts having specifications equal to those originally installed.
* Schematic diagram is subject to change without notice.

■ SCHEMATIC DIAGRAM (MAIN 2/2)

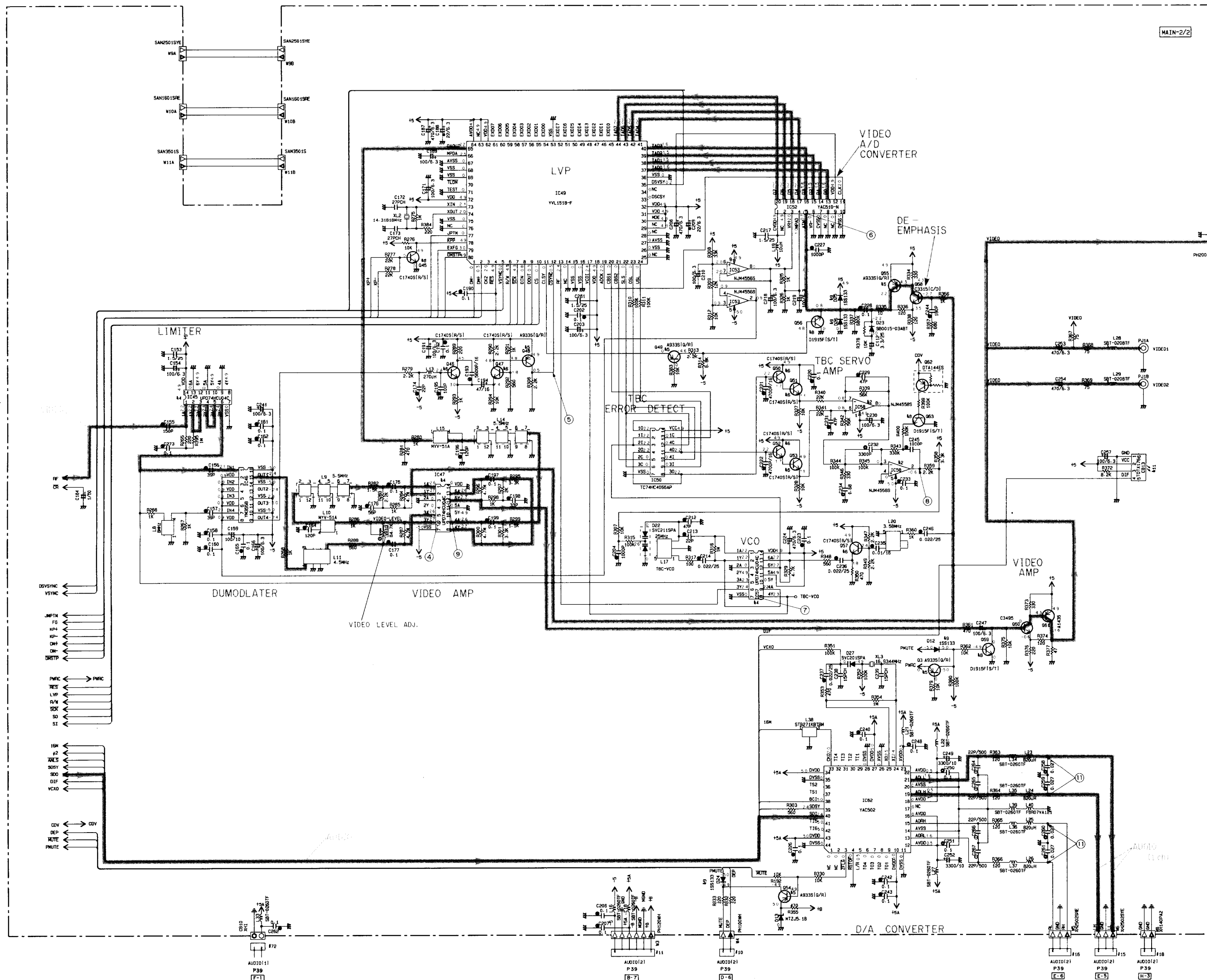
* The voltages are measured by 30cm LD disc in NORMAL PLAY mode.

CAPACITOR	REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR	
NO MARK	TANTALUM CAPACITOR	
NO MARK	CERAMIC CAPACITOR	
NO MARK	AXIAL LEAD CERAMIC CAPACITOR	
NO MARK	POLYESTER FILM CAPACITOR	
NO MARK	POLYSTYRENE FILM CAPACITOR	
NO MARK	MICA CAPACITOR	
NO MARK	POLYPROPYLENE FILM CAPACITOR	
NO MARK	SEMICONDUCTIVE CERAMIC CAPACITOR	

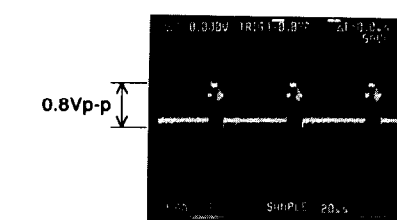
RESISTOR	REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (1/5W)	
NO MARK	CARBON FILM RESISTOR (1/4W)	
NO MARK	METAL FILM RESISTOR	
NO MARK	METAL PLATE RESISTOR	
NO MARK	FIRE PROOF CARBON FILM RESISTOR	
NO MARK	CEMENT MOUNTED RESISTOR	
NO MARK	SEMI VARIABLE RESISTOR	
NO MARK	CHIP RESISTOR	

NOTICE

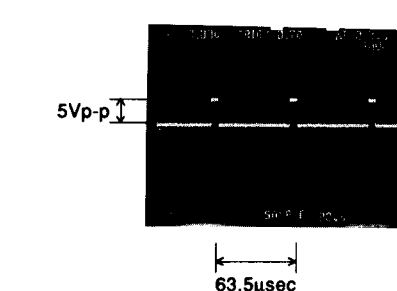
(J)..... Japanese model
 (U)..... U.S.A. model
 (C)..... Canadian model
 (A)..... Australian model
 (G)..... European model
 (B)..... British model
 (S)..... General model
 (P)..... PP model



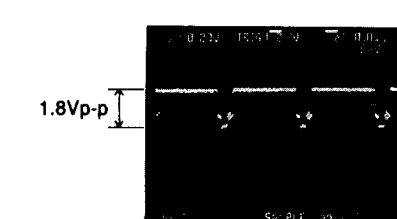
Point ④
 V : 0.5V/div H : 20μsec/div
 AC range 1 : 1 probe



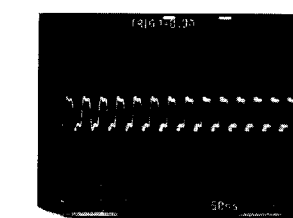
Point ⑤
 V : 5V/div H : 20μsec/div
 AC range 1 : 1 probe



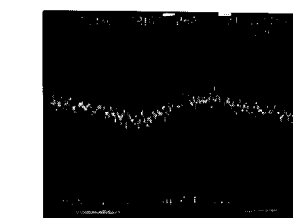
Point ⑥
 V : 1V/div H : 20μsec/div
 DC range 1 : 1 probe



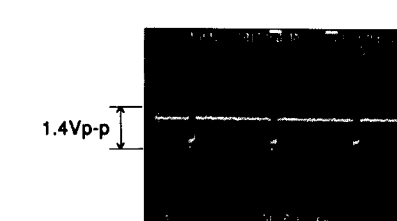
Point ⑦
 V : 5V/div H : 50nsec/div
 AC range 1 : 1 probe



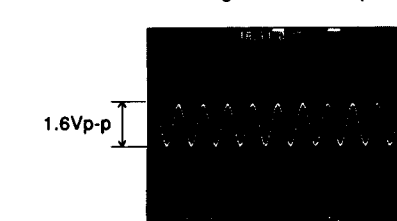
Point ⑧
 V : 50mV/div H : 5msec/div
 AC range 1 : 1 probe



Point ⑨
 V : 1V/div H : 5msec/div
 AC range 1 : 1 probe



Point ⑩
 V : 1V/div H : 1msec/div
 AC range 1 : 1 probe



PIN CONNECTION DIAGRAM OF TRANSISTORS, DIODES AND ICs.

2SA933S (Q, R) 2SA1115 (E, F) 2SA1309A (Q, R, S) 2SC1740S (R, S) 2SC2800 (E, F) 2SC3311A (Q, R, S) 2SC3315 (C, D) 2SD1915 (F, S, T) 2SC2878 (A, B) DTA144ES	2SA1435 2SC3495	SVC201SPA	SVC211SPA	1SS133 WSS104TD SB0015-03ABT MTZJ5.1B	NJM4558S AN5551 BA715 NJM4556S	μPD74HC04C MC74HC04H TC74HC066AP	YM3558	YAC510-N	YAC502	YVL151B-F
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* All voltage are measured with a 10MΩ/V DC electric volt meter.
 * Components having special characteristics are marked Δ and must be replaced with parts having specifications equal to those originally installed.
 * Schematic diagram is subject to change without notice.

PARTS LIST

■ ELECTRICAL PARTS

■ WARNING

Components having special characteristics are marked $\triangle$ and must be replaced with parts having specifications equal to those originally installed.

- Carbon resistors (1/6W or 1/4W) are not included in the ELECTRICAL PARTS List. For the parts No. of the carbon resistors, refer to last page.

ABBREVIATIONS IN THIS LIST ARE AS FOLLOWS :

C.A.EL.CHP	: CHIP ALUMI. ELECTROLYTIC CAP	L.EMIT	: LIGHT EMITTING MODULE
C.CE	: CERAMIC CAP	LED.DSPLY	: LED DISPLAY
C.CE.ARRAY	: CERAMIC CAP ARRAY	LED.INFRD	: LED, INFRARED
C.CE.CHP	: CHIP CERAMIC CAP	MODUL.RF	: MODULATOR, RF
C.CE.ML	: MULTILAYER CERAMIC CAP	PHOT.CPL	: PHOTO COUPLER
C.CE.M.CHP	: CHIP MULTILAYER CERAMIC CAP	PHOT.INTR	: PHOTO INTERRUPTER
C.CE.SAFETY	: RECOGNIZED CERAMIC CAP	PHOT.RFLCT	: PHOTO REFLECTOR
C.CE.TUBLR	: CERAMIC TUBULAR CAP	PIN.TEST	: PIN, TEST POINT
C.CE.SMI	: SEMI CONDUCTIVE CERAMIC CAP	PLST.RIVET	: PLASTIC RIVET
C.EL	: ELECTROLYTIC CAP	R.ARRAY	: RESISTOR ARRAY
C.MICA	: MICA CAP	R.CAR	: CARBON RESISTOR
C.ML.FLM	: MULTILAYER FILM CAP	R.CAR.CHP	: CHIP RESISTOR
C.MP	: METALLIZED PAPER CAP	R.CAR.FP	: FLAME PROOF CARBON RESISTOR
C.MYLAR	: MYLAR FILM CAP	R.FUS	: FUSABLE RESISTOR
C.MYLAR.ML	: MULTILAYER MYLAR FILM CAP	R.MTL.CHP	: CHIP METAL FILM RESISTOR
C.PAPER	: PAPER CAPACITOR	R.MTL.FLM	: METAL FILM RESISTOR
C.PLS	: POLYSTYRENE FILM CAP	R.MTL.OXD	: METAL OXIDE FILM RESISTOR
C.POL	: POLYESTER FILM CAP	R.MTL.PLAT	: METAL PLATE RESISTOR
C.POLY	: POLYETHYLENE FILM CAP	RSNR.CE	: CERAMIC RESONATOR
C.PP	: POLYPROPYLENE FILM CAP	RSNR.CRYS	: CRYSTAL RESONATOR
C.TNTL	: TANTALUM CAP	R.TW.CEM	: TWIN CEMENT FIXED RESISTOR
C.TNTL.CHP	: CHIP TANTALUM CAP	R.WW	: WIRE WOUND RESISTOR
C.TRIM	: TRIMMER CAP	SCR.BND.HD	: BIND HEAD B-TITE SCREW
CN	: CONNECTOR	SCR.BW.HD	: BW HEAD TAPPING SCREW
CN.BS.PIN	: CONNECTOR, BASE PIN	SCR.CUP	: CUP TITE SCREW
CN.CANNON	: CONNECTOR, CANNON	SCR.TERM	: SCREW TERMINAL
CN.DIN	: CONNECTOR, DIN	SCR.TR	: SCREW, TRANSISTOR
CN.FLAT	: CONNECTOR, FLAT CABLE	SUPRT.PCB	: SUPPORT, P.C.B.
CN.POST	: CONNECTOR, BASE POST	SURG.PRTCT	: SURGE PROTECTOR
COIL.MX.AM	: COIL, AM MIX	SW.TACT	: TACT SWITCH
COIL.AT.FM	: COIL, FM ANTENNA	SW.LEAF	: LEAF SWITCH
COIL.DT.FM	: COIL, FM DETECT	SW.LEVER	: LEVER SWITCH
COIL.MX.FM	: COIL, FM MIX	SW.MICRO	: MICRO SWITCH
COIL.OUTPT	: OUTPUT COIL	SW.PUSH	: PUSH SWITCH
DIOD.ARRAY	: DIODE ARRAY	SW.RT.ENC	: ROTARY ENCODER
DIODE.BRG	: DIODE BRIDGE	SW.RT.MTR	: ROTARY SWITCH WITH MOTOR
DIODE.CHP	: CHIP DIODE	SW.RT	: ROTARY SWITCH
DIODE.VAR	: VARACTOR DIODE	SW.SLIDE	: SLIDE SWITCH
DIOD.Z.CHP	: CHIP ZENER DIODE	TERM.SP	: SPEAKER TERMINAL
DIODE.ZENR	: ZENER DIODE	TERM.WRAP	: WRAPPING TERMINAL
DSCR.CE	: CERAMIC DISCRIMINATOR	THRMST.CHP	: CHIP THERMISTOR
FER.BEAD	: FERRITE BEADS	TR.CHP	: CHIP TRANSISTOR
FER.CORE	: FERRITE CORE	TR.DGT	: DIGITAL TRANSISTOR
FET.CHP	: CHIP FET	TR.DGT.CHP	: CHIP DIGITAL TRANSISTOR
FL.DSPLY	: FLUORESCENT DISPLAY	TRANS	: TRANSFORMER
FLTR.CE	: CERAMIC FILTER	TRANS.PULS	: PULSE TRANSFORMER
FLTR.COMB	: COMB FILTER MODULE	TRANS.PWR	: POWER TRANSFORMER ASS'y
FLTR.LC.RF	: LC FILTER, EMI	TUNER.AM	: TUNER PACK, AM
GND.MTL	: GROUND PLATE	TUNER.FM	: TUNER PACK, FM
GND.TERM	: GROUND TERMINAL	TUNER.PK	: FRONT-END TUNER PACK
HOLDER.FUS	: FUSE HOLDER	VR	: ROTARY POTENTIOMETER
IC.PRTCT	: IC PROTECTOR	VR.MTR	: POTENTIOMETER WITH MOTOR
JUMPER.CN	: JUMPER CONNECTOR	VR.SW	: POTENTIOMETER WITH ROTARY SW
JUMPER.TST	: JUMPER, TEST POINT	VR.SLIDE	: SLIDE POTENTIOMETER
L.DTCT	: LIGHT DETECTING MODULE	VR.TRIM	: TRIMMER POTENTIOMETER

Note) Those parts marked with "#" are not included in the P.C.B. ass'y.

MAIN P. C. B.

Schm Ref.	PART NO.	Description
* CB1	VP879900	P.C.B.
* CB2	VP880000	P.C.B.
* CB3	VO002900	CN.BS.PIN
CB4	VH431000	CN.BS.PIN
CB5	VG699800	CN.BS.PIN
CB6	VD004800	CN.BS.PIN
CB7	VD005000	CN.BS.PIN
* CB8	VO047300	CN.BS.PIN
* CB9	VO047500	CN.BS.PIN
CB10	VE015900	TERM
* CB11	VO047400	CN.BS.PIN
CB12	LB918020	CN.BS.PIN
CB13	Vi623600	L.EMIT
CB14	VE636300	TERM
CB15	VE016100	TERM
CB16	VD004900	CN.BS.PIN
CB17	VD035100	CN
C1	VJ839100	C.EL
C2	VJ599100	C.CE
C3	VJ599100	C.CE
C4	VF760000	C.EL
C5	VJ599100	C.CE
C6	VJ599100	C.CE
C7	VG279400	C.CE.TUBLR
C8	VF466800	C.CE.TUBLR
C9	VF466800	C.CE.TUBLR
C10	VG280100	C.CE.TUBLR
C11	VJ839100	C.EL
C12	VJ839100	C.EL
C13	VG280100	C.CE.TUBLR
C14	UM416470	C.EL
C15	UM416470	C.EL
C16	VG722100	C.EL
C18	VF467300	C.CE.TUBLR
C19	VG278700	C.CE.TUBLR
C20	UA654910	C.MYLAR
C21	UA655220	C.MYLAR
* C22	VN508100	C.EL
C23	VF760000	C.EL
C24	Vi460900	C.EL
C25	Vi460900	C.EL
C26	VJ839100	C.EL
C27	VF760000	C.EL
C28	VF760000	C.EL
C29	UK665470	C.EL
C30	VG722100	C.EL
C31	UM417100	C.EL
C32	UA655100	C.MYLAR
C33	VQ121500	C.EL
C34	VJ599100	C.CE
C35	VJ599100	C.CE
C36	VF760000	C.EL
C37	VF466800	C.CE.TUBLR

* New Parts

Schm Ref.	PART NO.	Description
C38	VF467300	C.CE.TUBLR
C39	VJ599100	C.CE
C40	VF760000	C.EL
C41	UM397330	C.EL
* C42	VG274400	C.CE.TUBLR
C43	VJ599100	C.CE
C45	UJ667470	C.EL
C46	VJ599100	C.CE
C47	VD929600	C.EL
C48	UK137220	C.EL
C49	UA655100	C.MYLAR
C50	VQ121500	C.EL
C51	VJ599100	C.CE
C52	VD916400	C.EL
C53	UA654100	C.MYLAR
C54	VG722100	C.EL
* C55	VN508100	C.EL
C56	VJ599100	C.CE
C57	VG278200	C.CE.TUBLR
C58	VF466800	C.CE.TUBLR
C59	VF466900	C.CE.TUBLR
C60	UA654680	C.MYLAR
C61	VG276200	C.CE.TUBLR
C62	UA654470	C.MYLAR
C63	UA654270	C.MYLAR
C64	UJ667470	C.EL
C65	UA654560	C.MYLAR
C66	UA653680	C.MYLAR
C67	UA655150	C.MYLAR
C68	UA653680	C.MYLAR
C69	UA653820	C.MYLAR
C70	UA653820	C.MYLAR
C71	VF760000	C.EL
C72	UJ628470	C.EL
C73	VJ599100	C.CE
C74	VG277500	C.CE.TUBLR
△ C75	UJ667470	C.EL
C76	VD534400	C.CE.ML
C77	VF467000	C.CE.TUBLR
C78	VJ599100	C.CE
C79	VF467000	C.CE.TUBLR
△ C80	UJ667470	C.EL
C81	VJ599100	C.CE
C82	VA777400	C.CE
C83	VE040000	C.EL
C84	VG280100	C.CE.TUBLR
C85	VJ599100	C.CE
C86	VJ599100	C.CE
C87	UA652750	C.MYLAR
C88	UM407220	C.EL
C89	VJ839100	C.EL
C90	VA761000	C.CE
C91	UM417100	C.EL

* New Parts

MAIN P. C. B.

Schm Ref.	PART NO.	Description
C92	VG278200	C.CE.TUBLR 150pF 50V
C93	VJ599100	C.CE 0.01uF 50V
C94	VJ599100	C.CE 0.01uF 50V
C95	VF466800	C.CE.TUBLR 100pF 50V
C96	UA654470	C.MYLAR 0.047uF 50V
C97	VF466800	C.CE.TUBLR 100pF 50V
C98	UA654470	C.MYLAR 0.047uF 50V
C99	VF760000	C.EL 100uF 10V
C100	VQ121500	C.EL 10uF 10V
C101	VQ121600	C.EL 22uF 10V
C104	UA654150	C.MYLAR 0.015uF 50V
C105	VF467300	C.CE.TUBLR 0.01uF 16V
C107	VJ599100	C.CE 0.01uF 50V
* C108	VN508100	C.EL 47uF 6.3V
C109	VF760000	C.EL 100uF 10V
C110	VG276600	C.CE.TUBLR 22pF 50V
C111	UA655100	C.MYLAR 0.1uF 50V
C112	UM216330	C.EL 3.3uF 25V
C113	UA655100	C.MYLAR 0.1uF 50V
C114	VJ599100	C.CE 0.01uF 50V
C115	VF760000	C.EL 100uF 10V
C116	VG279500	C.CE.TUBLR 2700pF 16V
C117	VF760000	C.EL 100uF 10V
C118	UA655240	C.MYLAR 0.24uF 50V
C119	VG277000	C.CE.TUBLR 33pF 50V
C120	VG278800	C.CE.TUBLR 560pF 50V
C121	UA654100	C.MYLAR 0.01uF 50V
C122	UM416470	C.EL 4.7uF 50V
C123	VF760000	C.EL 100uF 10V
C124	VJ599100	C.CE 0.01uF 50V
C125	VG277200	C.CE.TUBLR 39pF 50V
C127	VJ599100	C.CE 0.01uF 50V
C128	VJ599100	C.CE 0.01uF 50V
C129	VJ599100	C.CE 0.01uF 50V
C130	VG277200	C.CE.TUBLR 39pF 50V
C131	VF467000	C.CE.TUBLR 1000pF 50V
C132	VG280100	C.CE.TUBLR 0.022uF 25V
C133	VF467300	C.CE.TUBLR 0.01uF 16V
C134	VG278400	C.CE.TUBLR 220pF 50V
C135	VG277200	C.CE.TUBLR 39pF 50V
C136	VF467000	C.CE.TUBLR 1000pF 50V
C137	VG280100	C.CE.TUBLR 0.022uF 25V
C138	VE990500	C.EL 470uF 10V
C139	VJ599100	C.CE 0.01uF 50V
C140	VJ599100	C.CE 0.01uF 50V
C141	VJ599100	C.CE 0.01uF 50V
C142	VJ599100	C.CE 0.01uF 50V
C143	UJ628470	C.EL 470uF 10V
C144	VP552800	C.EL 0.22F 5.5V
C145	VF467300	C.CE.TUBLR 0.01uF 16V
C146	VJ599100	C.CE 0.01uF 50V
C147	VJ599100	C.CE 0.01uF 50V
C148	VJ599100	C.CE 0.01uF 50V

* New Parts

Schm Ref.	PART NO.	Description
C149	VF466800	C.CE.TUBLR 100pF 50V
C150	UA654820	C.MYLAR 0.082uF 50V
C151	VJ599100	C.CE 0.01uF 50V
C152	VF637900	C.EL 1000uF 10V
C153	VD534400	C.CE.ML 1.5uF 25V
C154	VF760000	C.EL 100uF 10V
C155	VG278200	C.CE.TUBLR 150pF 50V
C156	VG277200	C.CE.TUBLR 39pF 50V
C157	VG277200	C.CE.TUBLR 39pF 50V
C158	VJ599100	C.CE 0.01uF 50V
C159	VF760000	C.EL 100uF 10V
C160	VJ599100	C.CE 0.01uF 50V
C161	VJ599100	C.CE 0.01uF 50V
C162	VJ599100	C.CE 0.01uF 50V
C163	VJ599100	C.CE 0.01uF 50V
C164	VG278100	C.CE.TUBLR 120pF 50V
C165	VJ599100	C.CE 0.01uF 50V
C166	VF760000	C.EL 100uF 10V
C171	VF760000	C.EL 100uF 10V
C172	VA761100	C.CE 27pF 50V
C173	VA761100	C.CE 27pF 50V
C174	VG276600	C.CE.TUBLR 22pF 50V
C175	VJ599100	C.CE 0.01uF 50V
C176	VG277500	C.CE.TUBLR 56pF 50V
C177	VJ599100	C.CE 0.01uF 50V
C184	VJ839100	C.EL 1uF 50V
C187	UJ628470	C.EL 470uF 10V
C188	FP717220	C.TNTL 22uF 6.3V
C189	VF760000	C.EL 100uF 10V
C190	VJ599100	C.CE 0.01uF 50V
C191	VF760000	C.EL 100uF 10V
C192	VJ599100	C.CE 0.01uF 50V
C193	VG279800	C.CE.TUBLR 5600pF 16V
C194	VJ837200	C.EL 47uF 16V
C195	VF466800	C.CE.TUBLR 100pF 50V
C196	VG278100	C.CE.TUBLR 120pF 50V
C197	VJ599100	C.CE 0.01uF 50V
C198	VG277000	C.CE.TUBLR 33pF 50V
C199	VJ599100	C.CE 0.01uF 50V
C202	VJ599100	C.CE 0.01uF 50V
C203	VF760000	C.EL 100uF 10V
C204	VF467000	C.CE.TUBLR 1000pF 50V
C206	VJ599100	C.CE 0.01uF 50V
C207	VJ599100	C.CE 0.01uF 50V
C208	UJ628470	C.EL 470uF 10V
C209	FP717220	C.TNTL 22uF 6.3V
C210	VF760000	C.EL 100uF 10V
C211	VJ599100	C.CE 0.01uF 50V
C212	VF466700	C.CE.TUBLR 47pF 50V
C213	VG276600	C.CE.TUBLR 22pF 50V
C214	VG280100	C.CE.TUBLR 0.022uF 25V
C217	VD534400	C.CE.ML 1.5uF 25V
C218	VF760000	C.EL 100uF 10V

* New Parts

MAIN P. C. B.

Schm Ref.	PART NO.	Description
C219	VF760000	C.EL 100uF 10V
C220	VJ599100	C.CE 0.01uF 50V
C221	VF467100	C.CE.TUBLR 4700pF 16V
C222	VF467100	C.CE.TUBLR 4700pF 16V
C223	VJ599100	C.CE 0.01uF 50V
C224	UJ628470	C.EL 470uF 10V
C226	VJ599100	C.CE 0.01uF 50V
C227	VF467000	C.CE.TUBLR 1000pF 50V
C228	VJ599100	C.CE 0.01uF 50V
C229	VF466700	C.CE.TUBLR 47pF 50V
C230	VF760000	C.EL 100uF 10V
C231	VF466700	C.CE.TUBLR 47pF 50V
C232	UA653330	C.MYLAR 3300pF 50V
C233	VJ599100	C.CE 0.01uF 50V
C234	UA655680	C.MYLAR 0.68uF 50V
C235	VF467300	C.CE.TUBLR 0.01uF 16V
C236	VG280100	C.CE.TUBLR 0.022uF 25V
C237	VG280100	C.CE.TUBLR 0.022uF 25V
C238	VA760800	C.CE 15pF 50V
C239	VA760800	C.CE 15pF 50V
C240	VJ599100	C.CE 0.01uF 50V
C241	VF760000	C.EL 100uF 10V
C242	VJ599100	C.CE 0.01uF 50V
C243	VJ599100	C.CE 0.01uF 50V
C244	VG278300	C.CE.TUBLR 180pF 50V
C245	VF467000	C.CE.TUBLR 1000pF 50V
C246	VG280100	C.CE.TUBLR 0.022uF 25V
C247	VF760000	C.EL 100uF 10V
C248	UA655100	C.MYLAR 0.1uF 50V
C249	Vi720700	C.EL 3300uF 10V
C250	UA655100	C.MYLAR 0.1uF 50V
C251	UA655100	C.MYLAR 0.1uF 50V
C252	Vi720700	C.EL 3300uF 10V
C253	UJ628470	C.EL 470uF 10V
C254	UJ628470	C.EL 470uF 10V
C257	VF760000	C.EL 100uF 10V
C258	UA654270	C.MYLAR 0.027uF 50V
C259	UA654270	C.MYLAR 0.027uF 50V
C260	UA654270	C.MYLAR 0.027uF 50V
C261	UA654270	C.MYLAR 0.027uF 50V
C262	VJ599100	C.CE 0.01uF 50V
C263	VJ839200	C.EL 2.2uF 50V
C264	FU351220	C.MICA 22pF 500V
C265	FU351220	C.MICA 22pF 500V
C266	FU351220	C.MICA 22pF 500V
C267	FU351220	C.MICA 22pF 500V
C268	VJ599100	C.CE 0.01uF 50V
C269	VJ599100	C.CE 0.01uF 50V
C270	VJ599100	C.CE 0.01uF 50V
C272	UA655240	C.MYLAR 0.24uF 50V
C273	VJ599100	C.CE 0.01uF 50V
C280	UA654220	C.MYLAR 0.022uF 50V
C281	VD534400	C.CE.ML 1.5uF 25V

* New Parts

Schm Ref.	PART NO.	Description
C282	VD534400	C.CE.ML 1.5uF 25V
D1	iF004600	DIODE 1SS133
D4	iF004600	DIODE 1SS133
D5	iF004600	DIODE 1SS133
D6	iF004600	DIODE 1SS133
D7	iF004600	DIODE 1SS133
D8	iF004600	DIODE 1SS133
D9	iF004600	DIODE 1SS133
D10	iF004600	DIODE 1SS133
D12	iF004600	DIODE 1SS133
D13	VG437400	DIODE.ZENR MTZJ5.1B 5.1V
D14	VG086900	DIODE.VAR SVC211SPA
D22	VG086900	DIODE.VAR SVC211SPA
D23	VQ189800	DIODE SB0015-03ABT
D24	iF004600	DIODE 1SS133
D25	iF004600	DIODE 1SS133
D26	iF004600	DIODE 1SS133
D27	VG649300	DIODE.VAR SVC201SPA
D28	VH770800	DIODE 1SR139-100 T-32
D29	iF004600	DIODE 1SS133
D30	VJ664400	DIODE ERA82-004V5
IC1	iG028400	IC NJM4558DY
IC3	iG105900	IC uPD4053BC
IC4	XD201A00	IC M5290P
IC5	iG076800	IC NJM4558S
IC7	XG839A00	IC LA9200NM
IC10	iG105900	IC uPD4053BC
△ IC11	XF947A00	IC LA6510
△ IC14	XF947A00	IC LA6510
IC15	iG076800	IC NJM4558S
IC17	iG076800	IC NJM4558S
* IC21	XL749A00	IC NJU3715L
IC32	iG076800	IC NJM4558S
* IC40	XL752A00	IC M51951AL
IC41	XL244A00	IC YDC108-F
IC43	XM056B00	IC uPD78014CW
IC44	XF778A00	IC YM7110
IC45	iG142220	IC uPD74HCU04C
IC46	Xi703A00	IC YM3598
IC47	iG142220	IC uPD74HCU04C
* IC49	XL581B00	IC YVL151B-F
IC50	iR406600	IC TC74HC4066AP A-SW
* IC52	XL580A00	IC YAC510-N
IC53	iG077400	IC NJM4556S
IC57	iG142220	IC uPD74HCU04C
IC58	iG076800	IC NJM4558S
* IC62	XK998A00	IC YAC502
JK1	Vi342900	JACK.MNI 8P DIN TCS7927
L1	VG991400	FLTR.LC 8.1MHz MXV-7ZWP
L2	VD931200	COIL.LPF 4.5MHz MYV-24D
L3	VD931000	COIL.LPF 1.7MHz MYV-24H
L5	VF946400	COIL.DELAY 2.3MHz, 2.8MHz
L6	VG668100	COIL 10uH

* New Parts

MAIN P. C. B.

Schm Ref.	PART NO.	Description
L7	VF891800	COIL 25MHz
L8	VF881000	COIL.DELAY 8MHz BPF
L9	VE452400	COIL.DELAY 5.5MHz MXV-25DP
L10	VE452500	COIL.DELAY MYV-51A
L11	VF880900	COIL.DELAY 5MHz LPF
* L13	VG669600	COIL 270uH LHL06TB271K
L14	VE452400	COIL.DELAY 5.5MHz MXV-25DP
L15	VE452500	COIL.DELAY MYV-51A
L16	VF968800	COIL 60uH
L17	VF891800	COIL 25MHz
L18	VF968800	COIL 60uH
* L19	VP652100	COIL 10uH
L20	VK580500	FLTR.LP H287BSJS
L21	VF968800	COIL 60uH
L22	VF968800	COIL 60uH
* L23	VP746600	COIL 820uH
* L24	VP746600	COIL 820uH
* L25	VP746600	COIL 820uH
* L26	VP746600	COIL 820uH
L27	VF968800	COIL 60uH
* L28	VP897500	COIL 8uH
* L29	VP897500	COIL 8uH
L33	VF968800	COIL 60uH
L34	VF968800	COIL 60uH
L35	VF968800	COIL 60uH
L36	VF968800	COIL 60uH
L37	VF968800	COIL 60uH
* L38	VP897700	FLTR.LC.RF ST B271KBTEB
L39	VF968800	COIL 60uH
L40	VM749700	FER.BEAD FB07VA121TB
* PJ1	VP907500	JACK.PIN 2P
Q1	Vi915200	TR 2SB1013
Q2	VG721700	TR.DGT DTA144ES
Q3	IA093320	TR 2SA933S Q,R
Q4	ID040040	TR 2SD400
Q5	VK432900	TR 2SD1915F S,T
Q6	VG722000	TR.DGT DTC144ES
Q7	IC174020	TR 2SC1740S R,S
Q8	IA093320	TR 2SA933S Q,R
Q9	VK432900	TR 2SD1915F S,T
Q10	VK432900	TR 2SD1915F S,T
Q11	VG722000	TR.DGT DTC144ES
Q12	IC174020	TR 2SC1740S R,S
Q13	VK432900	TR 2SD1915F S,T
Q14	VK432900	TR 2SD1915F S,T
Q15	IC174020	TR 2SC1740S R,S
Q16	IA093320	TR 2SA933S Q,R
Q17	IA093320	TR 2SA933S Q,R
Q18	IC174020	TR 2SC1740S R,S
Q19	VK432900	TR 2SD1915F S,T
Q20	VK432900	TR 2SD1915F S,T
Q21	VK432900	TR 2SD1915F S,T
Q22	IC174020	TR 2SC1740S R,S

* New Parts

Schm Ref.	PART NO.	Description
Q23	VC529400	TR 2SC3315 C,D
Q24	IC174020	TR 2SC1740S R,S
Q25	VD107400	TR 2SB953A Q,P
Q26	IA093320	TR 2SA933S Q,R
Q27	VD107500	TR 2SD1444A Q,P
Q28	IC174020	TR 2SC1740S R,S
Q29	IC174020	TR 2SC1740S R,S
Q30	VG722000	TR.DGT DTC144ES
Q31	VK432900	TR 2SD1915F S,T
Q32	VD288400	TR 2SA1435
Q33	VC529400	TR 2SC3315 C,D
Q34	IC174020	TR 2SC1740S R,S
Q35	VD288500	TR 2SC3495
Q36	VK432900	TR 2SD1915F S,T
Q37	IC174020	TR 2SC1740S R,S
Q38	IC174020	TR 2SC1740S R,S
Q39	IC174020	TR 2SC1740S R,S
Q40	VC529400	TR 2SC3315 C,D
Q42	VG722000	TR.DGT DTC144ES
Q43	VC529400	TR 2SC3315 C,D
Q44	VC529400	TR 2SC3315 C,D
Q45	IC174020	TR 2SC1740S R,S
Q46	IC174020	TR 2SC1740S R,S
Q47	IC174020	TR 2SC1740S R,S
Q48	IA093320	TR 2SA933S Q,R
Q49	IA093320	TR 2SA933S Q,R
Q50	IC174020	TR 2SC1740S R,S
Q51	IC174020	TR 2SC1740S R,S
Q52	IC174020	TR 2SC1740S R,S
Q53	IC174020	TR 2SC1740S R,S
Q54	IA093320	TR 2SA933S Q,R
Q55	IA093320	TR 2SA933S Q,R
Q56	VK432900	TR 2SD1915F S,T
Q57	IC174020	TR 2SC1740S R,S
Q58	VC529400	TR 2SC3315 C,D
Q59	VK432900	TR 2SD1915F S,T
Q60	VD288500	TR 2SC3495
Q61	VD288400	TR 2SA1435
Q62	VG721700	TR.DGT DTA144ES
Q63	VK432900	TR 2SD1915F S,T
R1	VH007200	R.MTL.FLM 10K Ω 1/4W
R5	VH004800	R.MTL.FLM 1K Ω 1/4W
R6	VH004800	R.MTL.FLM 1K Ω 1/4W
R7	VH007200	R.MTL.FLM 10K Ω 1/4W
R94	HV453470	R.CAR.FP 4.7 Ω 1/4W
R97	HV454100	R.CAR.FP 10 Ω 1/4W
R156	HV454100	R.CAR.FP 10 Ω 1/4W
R223	VH721500	R.ARRAY 100K Ω x4
R234	VH006400	R.MTL.FLM 4.7K Ω 1/4W
R236	VH006400	R.MTL.FLM 4.7K Ω 1/4W
R259	VF824300	R.ARRAY 100K Ω x8
TH1	VK046400	POSISTOR PTH60G30BD6R8N
VR1	VJ693400	VR.TRIM B4.7K Ω

* New Parts

MAIN & AUDIO P. C. B.

Schm Ref.	PART NO.	Description
VR2	VJ693600	VR.TRIM B10K Ω
VR3	VJ694000	VR.TRIM B47K Ω
VR4	VJ693200	VR.TRIM B2.2K Ω
VR5	VJ694000	VR.TRIM B47K Ω
VR7	VJ693400	VR.TRIM B4.7K Ω
VR8	VJ693600	VR.TRIM B10K Ω
VR9	VJ692800	VR.TRIM B470 Ω
VR10	VJ693400	VR.TRIM B4.7K Ω
XL1	VN773800	RSNR.CE 8.467MHz
XL2	QU009500	RSNR.CRYS 14.32MHz
XL3	VK237300	RSNR.CRYS 16.9344MHz
	VP944700	HEAT.SINK UOT-10C25-SPL
	BB071360	SCR.TERM 8.3x13
	VB966900	CN IMSA-6024

* New Parts

Schm Ref.	PART NO.	Description
*	VP880300	P.C.B. AUDIO(UC)
*	VP880400	P.C.B. AUDIO(R)
	CB101	VD004500 CN.BS.PIN PH i-TYPE 2P TE
	CB102	VL844700 CN.BS.PIN XH 3P TE
	CB103	VL844700 CN.BS.PIN XH 3P TE
	CB104	VD004500 CN.BS.PIN PH i-TYPE 2P TE
	CB105	VD004600 CN.BS.PIN PH 3P TE
	CB106	VD004900 CN.BS.PIN PH 6P TE
	CB107	LB918020 CN.BS.PIN XH i-TYPE 2P TE
	CB403	LB918020 CN.BS.PIN XH i-TYPE 2P TE
	CB601	VG879900 CN.BS.PIN VH 2P TE
	CB602	VG879900 CN.BS.PIN VH 2P TE
	CB603	VL845100 CN.BS.PIN XH 7P TE
	CB604	VB858200 CN.BS.PIN PH L-TYPE 3P SE
*	C7	VP473600 C.EL 100uF 10V
*	C8	VP473600 C.EL 100uF 10V
	C101	VG288900 C.EL 100uF 25V
	C102	UA653560 C.MYLAR 5600pF 50V
	C103	VG288900 C.EL 100uF 25V
	C104	VG288900 C.EL 100uF 25V
	C105	UA653560 C.MYLAR 5600pF 50V
	C106	VG288900 C.EL 100uF 25V
	C107	UA653390 C.MYLAR 3900pF 50V
	C108	VG288900 C.EL 100uF 25V
	C109	UA654680 C.MYLAR 0.068uF 50V
	C110	UA653390 C.MYLAR 3900pF 50V
	C111	VG288900 C.EL 100uF 25V
	C112	UA654680 C.MYLAR 0.068uF 50V
	C118	UA653100 C.MYLAR 1000pF 50V
	C119	VG290900 C.EL 10uF 50V
	C121	VG288900 C.EL 100uF 25V
	C123	UA653100 C.MYLAR 1000pF 50V
	C124	VG290900 C.EL 10uF 50V
	C126	VG288900 C.EL 100uF 25V
	C127	VG289100 C.EL 330uF 25V
	C128	VG291000 C.EL 22uF 50V
	C129	VF466600 C.CE.TUBLR 10pF 50V
	C130	VF466600 C.CE.TUBLR 10pF 50V
	C131	VG291000 C.EL 22uF 50V
	C132	VG287900 C.EL 470uF 16V
	C133	UA653120 C.MYLAR 1200pF 50V
	C134	UA653120 C.MYLAR 1200pF 50V
	C135	UA653120 C.MYLAR 1200pF 50V
	C136	UA653120 C.MYLAR 1200pF 50V
	C137	VG287100 C.EL 470uF 10V
	C138	VF760000 C.EL 100uF 10V
	C139	VJ599100 C.CE 0.01uF 50V
	C140	VG291000 C.EL 22uF 50V
	C141	VG280100 C.CE.TUBLR 0.022uF 25V
	C142	VJ599100 C.CE 0.01uF 50V
	C143	VG288300 C.EL 4700uF 16V
	C144	VG288300 C.EL 4700uF 16V
	C145	VG287900 C.EL 470uF 16V

* New Parts

AUDIO P. C. B.

Schm Ref.	PART NO.	Description
△ C601	F1384100	C.CE.SAFTY 0.01uF 400V(UC)
△ C601	VE179200	C.CE.SAFTY 0.01uF 400V(R)
C602	F1384100	C.CE.SAFTY 0.01uF 400V(UC)
C602	VE179200	C.CE.SAFTY 0.01uF 400V(R)
C603	UT454100	C.PP 0.01uF 100V
C604	UT454100	C.PP 0.01uF 100V
C605	UJ668100	C.EL 100uF 50V
C606	VF611200	C.CE.ML 0.1uF 50V
C607	VF611200	C.CE.ML 0.1uF 50V
C608	UT454100	C.PP 0.01uF 100V
* C609	VP514600	C.EL 3300uF 16V
C610	UT454100	C.PP 0.01uF 100V
C611	Vi578400	C.EL 6800uF 16V
C612	UJ668100	C.EL 100uF 50V
C613	VF964800	C.EL 100uF 16V
C614	VJ599100	C.CE 0.01uF 50V
C615	VF611200	C.CE.ML 0.1uF 50V
* C616	VP514700	C.EL 4700uF 25V
C617	VF611200	C.CE.ML 0.1uF 50V
* C618	VP514700	C.EL 4700uF 25V
C619	VJ599100	C.CE 0.01uF 50V
C620	VF637900	C.EL 1000uF 10V
C621	UM407220	C.EL 22uF 16V
C622	VK457600	C.EL 330uF 25V
C623	VF760000	C.EL 100uF 10V
C624	VF760000	C.EL 100uF 10V
C625	VF760000	C.EL 100uF 10V
C626	VG291200	C.EL 47uF 50V
C627	VG291200	C.EL 47uF 50V
C628	VG290500	C.EL 1uF 50V
C629	VJ599100	C.CE 0.01uF 50V
C630	VJ599100	C.CE 0.01uF 50V
C631	UM417100	C.EL 10uF 50V
C632	VF760000	C.EL 100uF 10V
C633	Vi720700	C.EL 3300uF 10V
C634	UA652470	C.MYLAR 470pF 50V
C635	VF467000	C.CE.TUBLR 1000pF 50V
C636	UA655100	C.MYLAR 0.1uF 50V
C637	UA655100	C.MYLAR 0.1uF 50V
C638	VJ599100	C.CE 0.01uF 50V
C639	VJ599100	C.CE 0.01uF 50V
C640	UJ658220	C.EL 220uF 35V
C641	UJ658220	C.EL 220uF 35V
C642	VF611200	C.CE.ML 0.1uF 50V
C643	UJ658220	C.EL 220uF 35V
C644	UJ658220	C.EL 220uF 35V
D101	VH770800	DIODE 1SR139-100 T-32
D102	VH770800	DIODE 1SR139-100 T-32
△ * D601	VP344100	DIODE.BRG D2SBA20 1.5A 200V
△ D602	VH801600	DIODE 1SR139-100
△ D603	VH801600	DIODE 1SR139-100
△ D604	VH801600	DIODE 1SR139-100
△ D605	VP477600	DIODE.BRG RBA-402 4.0A 200V

* New Parts

Schm Ref.	PART NO.	Description
△ D606	VH801600	DIODE 1SR139-100
D607	iF004600	DIODE 1SS133
* D608	VG441400	DIODE.ZENR MTZJ18B 18V
D609	iF004600	DIODE 1SS133
D610	VG437800	DIODE.ZENR MTZJ5.6C 5.6V
D611	iF004600	DIODE 1SS133
D612	VG436100	DIODE.ZENR MTZJ3.3B 3.3V
△ D613	VH801600	DIODE 1SR139-100
D614	VG438000	DIODE.ZENR MTZJ6.2B 6.2V
D615	VG436100	DIODE.ZENR MTZJ3.3B 3.3V
D616	VH770800	DIODE 1SR139-100 T-32
* D617	VP326100	THYRISTOR N13T1
D618	iH001330	DIODE 10DF
D619	iH001330	DIODE 10DF
D620	iH001330	DIODE 10DF
D621	iH001330	DIODE 10DF
IC101	XB247301	IC uPC4570HA
IC102	XB247301	IC uPC4570HA
IC103	XB247301	IC uPC4570HA
IC104	XB247301	IC uPC4570HA
IC105	XG938A00	IC BA15218N
IC601	XH730A00	IC uPC24M05HF
IC602	iG121800	IC NJM4560S
* JK101	VO038700	JACK.PIN 2P
L101	VF968800	COIL 60uH
L102	VF968800	COIL 60uH
L104	VF968800	COIL 60uH
L105	VF968800	COIL 60uH
* L106	VP897500	COIL 8uH
L107	VF968800	COIL 60uH
L108	VF968800	COIL 60uH
L109	VF968800	COIL 60uH(UC)
L110	VF968800	COIL 60uH(UC)
L111	VF968800	COIL 60uH(UC)
L112	VM749700	FER.BEAD FB07VA121TB
L113	VM749700	FER.BEAD FB07VA121TB
△ L601	VH227500	FLTR 20uH SU10VD-10020
L602	VF968800	COIL 60uH
L603	VM749700	FER.BEAD FB07VA121TB
L604	VM749700	FER.BEAD FB07VA121TB
L605	VC154300	COIL.CHOKE 1mH
* PJ101	VP345400	JACK.PIN 4P
Q102	VK432900	TR 2SD1915F S,T
Q104	VK432900	TR 2SD1915F S,T
Q105	VG721700	TR.DGT DTA144ES
Q107	VK432900	TR 2SD1915F S,T
Q108	VK432900	TR 2SD1915F S,T
Q109	VK432900	TR 2SD1915F S,T
Q110	VK432900	TR 2SD1915F S,T
Q112	iA093320	TR 2SA933S Q,R
Q113	VK432900	TR 2SD1915F S,T
Q114	VQ377700	TR.DGT DTA114WS
Q601	iA093320	TR 2SA933S Q,R

* New Parts

AUDIO & OPERATION P. C. B.

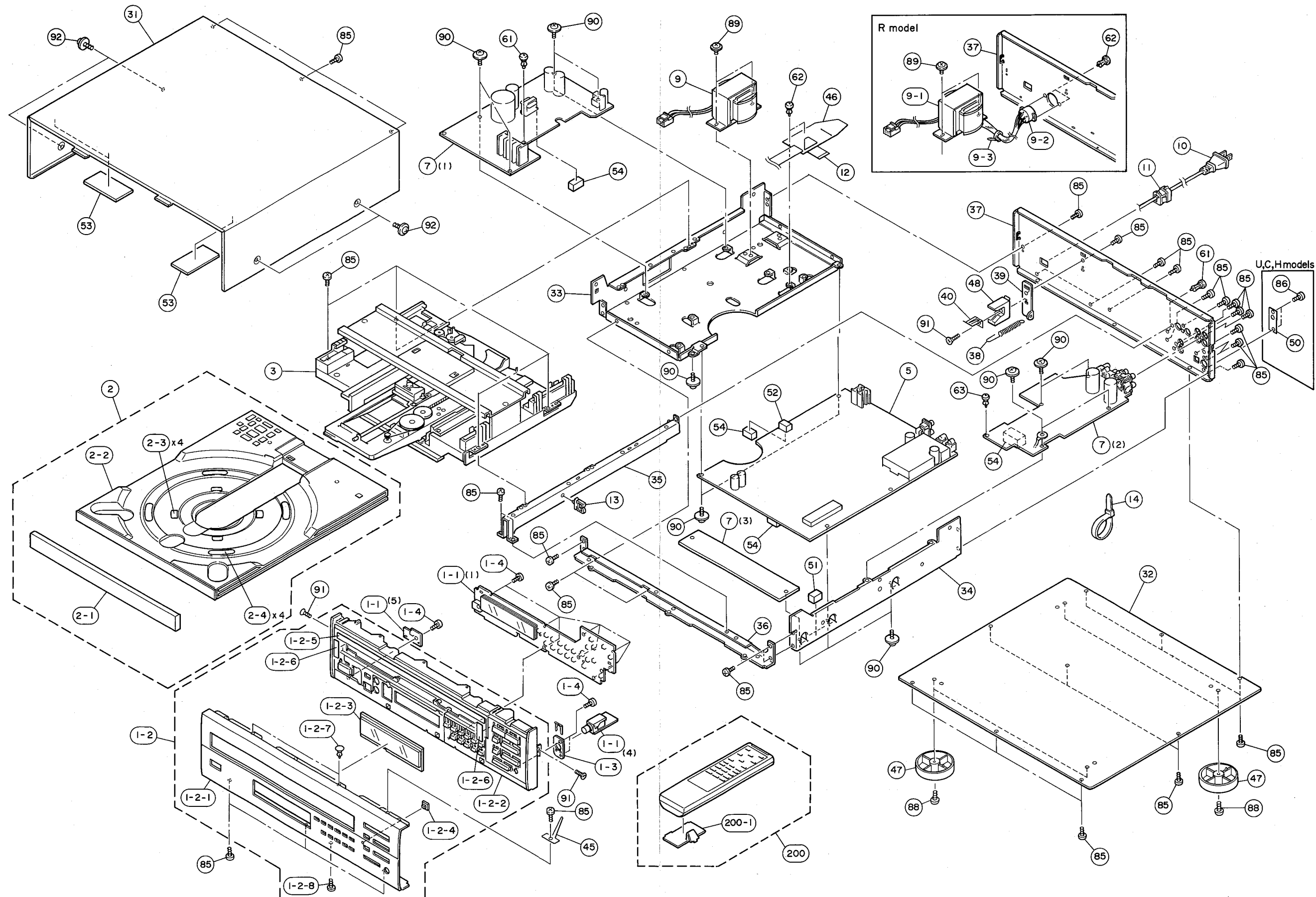
Schm Ref.	PART NO.	Description
Q602	iA093320	TR 2SA933S Q,R
Q603	iD040040	TR 2SD400
△ Q604	iA093410	TR 2SA934 P,Q,R
Q605	VD678700	TR.DGT DTC114ES
Q606	iC174020	TR 2SC1740S R,S
Q607	iA093320	TR 2SA933S Q,R
△ Q608	iD126600	TR 2SD1266 P,Q
△ Q609	VC141900	TR 2SB941 P,Q
Q610	iC174020	TR 2SC1740S R,S
Q611	iA093320	TR 2SA933S Q,R
Q612	iC174020	TR 2SC1740S R,S
Q613	iA093320	TR 2SA933S Q,R
Q614	VC268200	IC PU4314NY
R190	HV454470	R.CAR.FP 47Ω 1/4W
R191	HV454470	R.CAR.FP 47Ω 1/4W
R192	HV454470	R.CAR.FP 47Ω 1/4W
R193	HV454470	R.CAR.FP 47Ω 1/4W
R602	HV453100	R.CAR.FP 1Ω 1/4W
△ R603	HV453100	R.CAR.FP 1Ω 1/4W
△ R604	HV453220	R.CAR.FP 2.2Ω 1/4W
△ R605	HV453100	R.CAR.FP 1Ω 1/4W
R607	HV454100	R.CAR.FP 10Ω 1/4W
R610	HV455180	R.CAR.FP 180Ω 1/4W
△ R612	HV453100	R.CAR.FP 1Ω 1/4W
△ R613	HV453100	R.CAR.FP 1Ω 1/4W
R614	HV454470	R.CAR.FP 47Ω 1/4W
R615	HV454470	R.CAR.FP 47Ω 1/4W
R620	HV453100	R.CAR.FP 1Ω 1/4W
R638	HL315220	R.MTL.OXD 220Ω 1W
R641	HL315220	R.MTL.OXD 220Ω 1W
R644	HL315220	R.MTL.OXD 220Ω 1W
R645	HL315220	R.MTL.OXD 220Ω 1W
	VB966900	CN IMSA-6024
	VP944700	HEAT.SINK UOT-10C25-SPL
*	VO003000	HEAT.SINK OSH-4735-SP
	ED330066	SCR.BND.HD 3x6 FCM3

* New Parts

Schm Ref.	PART NO.	Description
* VP880700	P.C.B.	OPERATION(UC)
* VP880800	P.C.B.	OPERATION(R)
C1	VF466800	C.CE.TUBLR 100pF 50V
C2	VG276600	C.CE.TUBLR 22pF 50V
* C3	VP473100	C.EL 330uF 6.3V
C5	VJ599100	C.CE 0.01uF 50V
C7	VJ599100	C.CE 0.01uF 50V
* C9	VP473100	C.EL 330uF 6.3V
C101	VJ599100	C.CE 0.01uF 50V
C102	VF467000	C.CE.TUBLR 1000pF 50V
C103	VJ599100	C.CE 0.01uF 50V
C104	VF467000	C.CE.TUBLR 1000pF 50V
C105	VJ599100	C.CE 0.01uF 50V
* D5	Vi013400	LED(or) SLV-31DC3H3
D6	VQ189800	DIODE SB0015-03ABT
IC1	XD469001	IC MSC7112-01SS
JK101	LB301720	JACK.PHONE M1669-A
L102	VF968800	COIL 60uH
L104	VF968800	COIL 60uH
L106	VF968800	COIL 60uH
L107	VM749700	FER.BEAD FB07VA121TB
L109	Vi491100	FER.CORE BP53RB19012080M
Q2	iC174020	TR 2SC1740S R,S
SW1	VG392900	SW.TACT SKHVAA
SW2	VG392900	SW.TACT SKHVAA
SW3	VG392900	SW.TACT SKHVAA
SW4	VG392900	SW.TACT SKHVAA
SW5	VG392900	SW.TACT SKHVAA
SW6	VG392900	SW.TACT SKHVAA
SW7	VG392900	SW.TACT SKHVAA
SW8	VG392900	SW.TACT SKHVAA
SW9	VG392900	SW.TACT SKHVAA
SW10	VG392900	SW.TACT SKHVAA
SW11	VG392900	SW.TACT SKHVAA
SW12	VG392900	SW.TACT SKHVAA
SW13	VG392900	SW.TACT SKHVAA
SW14	VG392900	SW.TACT SKHVAA
SW15	VG392900	SW.TACT SKHVAA
SW16	VG392900	SW.TACT SKHVAA
SW17	VG392900	SW.TACT SKHVAA
SW18	VG392900	SW.TACT SKHVAA
SW19	VG392900	SW.TACT SKHVAA
SW20	VG392900	SW.TACT SKHVAA
SW21	VG392900	SW.TACT SKHVAA
SW22	VG392900	SW.TACT SKHVAA
U1	VK498900	L.DTCT S-100
* V1	VP554200	FL.DSPLY 8-BT-144GK
	VM407900	SHEET FL
	VM440900	SPACER FL

* New Parts

■ EXPLODED VIEW



MECHANICAL PARTS Note) Ø : Diameter

Ref. No.	PART NO.	Description	Remarks	Markets
* 1-1	VP880700	P.C.B. ASS'y, OPERATION		(UC)
* 1-1	VP880800	P.C.B. ASS'y, OPERATION		(R)
* 1-2	VP613100	FRONT PANEL ASS'y		
1-2-1	VP110500	FRONT PANEL		
1-2-2	VP111500	SUB PANEL		
* 1-2-3	VP613600	WINDOW PANEL		
1-2-4	VG080800	LENS		
* 1-2-5	VP484400	CUSHION A		
* 1-2-6	VP484500	CUSHION B		
1-2-7	CB068880	PLASTIC RIVET	No.1027	
1-2-8	EX600310	BIND HEAD P-TITE SCREW	3x8 FCRM3-BL	
* 1-3	VP110300	HOLDER, HEAD PHONES		
1-4	EX600310	BIND HEAD P-TITE SCREW	3x8 FCRM3-BL	
* 2	VP613700	TRAY ASS'y		
2-1	VP112400	LID		
2-2	VP112000	TRAY		
* 2-3	VP113100	FELT, TRAY A		
* 2-4	VP113200	FELT, TRAY B		
* 3	VP113000	PU MECHA. UNIT	LDKPIYAM	
* 5	VP879900	P.C.B. ASS'y, MAIN		(UC)
* 5	VP880000	P.C.B. ASS'y, MAIN		(R)
* 7	VP880300	P.C.B. ASS'y, AUDIO		(UC)
* 7	VP880400	P.C.B. ASS'y, AUDIO		(R)
△ * 9	XL621A00	POWER TRANSFORMER		(UC)
△ * 9-1	XL622A00	POWER TRANSFORMER		(R)
△ * 9-2	VP887400	VOLTAGE SELECTOR	ESE372-F	(R)
9-3	CB069250	BINDING TIE		(R)
△ 10	VL012900	POWER CORD ASS'y		(UC)
△ 10	VL238100	POWER CORD ASS'y		(R)
11	VD375900	CORD STOPPER	No.2271	(R)
11	VN158600	CORD STOPPER	No.2104	(UC)
* 12	VP897800	CONNECTOR, FLAT CABLE	20P 250mm	
13	CB092990	BINDING TIE	No.245	
14	CB069250	BINDING TIE		
* 31	VP107400	TOP COVER		
32	VP107800	BOTTOM COVER		
33	VP108000	FRAME, SIDE L		
34	VP108200	FRAME, SIDE R		
35	VP108400	FRAME, CENTER		
* 36	VP108600	FRAME, FRONT		
* 37	VP108900	REAR PANEL		(UC)
* 37	VP109000	REAR PANEL		(R)
* 38	VP823100	SPRING, TE		
* 39	VP823200	HOLDER, TE		
* 40	VP842800	SPRING, TE		
45	VN806000	GROUND PLATE		
* 46	VP484300	HOLDER, FLEX.		
47	VK016800	LEG		
* 48	VP842900	HOLDER, TRAY		
* 50	VP823000	COVER, I/O PORT		(UC)
51	VD295000	SPACER		
* 52	VN033600	CUSHION	PCB	
* 53	VP652600	CUSHION, TOP	70x35x3	

* New Parts

Ref. No.	PART NO.	Description	Remarks	Markets
* 54	VP652700	CUSHION, P.C.B.	10x20x11	
61	CB068880	PLASTIC RIVET	No.1027	
62	CB601420	PLASTIC RIVET	No.6204	(R)
63	CB605620	PLASTIC RIVET	No.1781	
64	V1695800	PLASTIC RIVET		
85	EN301010	BIND HEAD BONDING TAP. SCREW	3x8 FCRM3-BL	
86	E1330086	BIND HEAD TAPPING SCREW	3x8 FCM3	(UC)
88	VE529700	BW HEAD B-TITE SCREW	3x6-8 FCRM3-BL	
89	VF755800	CUP B-TITE SCREW	4x6 FCRM3-BL	
90	EK930010	BW HEAD B-TITE SCREW	3x8-8 FCM3-CU	
91	VE276800	FLAT HEAD P-TITE SCREW	3x8 FCRM3-BL	
92	EK365090	BW HEAD SCREW	4x8 ZMC2-BL	
ACCESSORIES				
* 200	VP482600	REMOTE CONTROL TRANSMITTER		
200-1	CX674420	LID	56x33KURON	K-PM2-603-1
	VC167600	PIN-PLUG CORD	2P 0.8m	
	VA819500	PIN-PLUG CORD	1P (ye) 1.0m	
		BATTERY, MANGANESE	SUM-3,AA,R06	

* New Parts

■ MECHANICAL PARTS (PU MECHA. UNIT) Note) Ø : Diameter

Ref. No.	PART NO.	Description	Remarks	Markets
* 1	PX601760	PICK UP LASER	SF-L91K	14926431
* 2	NX612060	MOTOR ASS'y, FEED	1EA0M10A02900	
* 3	NX612070	MOTOR ASS'y, TRAY	1EA4M10A03000	
* 4	NX611940	CHASSIS ASS'y, MOTOR	1EA0311A02800	
* 5	NX611950	TILT BASE ASS'y	1EA0332A00200	
* 6	NX611960	GUIDE ASS'y, TRAY	1EA0362A00400	
* 7	NX611970	TURNTABLE MOTOR ASS'y	1EA0541A00700	
* 8	NX611980	LEVER ASS'y, MECH UP	1EA0721A01300	
* 9	NX611990	TABLE ASS'y, LOADING	1EA0761A00100	
* 10	AX618070	CHASSIS GEAR CAM	1EA2311A05800	
* 11	AX618080	CHASSIS	1EA2311A06000	
* 12	BX602450	BRACKET-M CLAMP	1EA2322A10300	
* 13	BX602460	GUIDE TRAY, F LEFT	1EA2362A01500	
* 14	BX602470	GUIDE TRAY, R LEFT	1EA2362A01600	
* 15	BX602480	GUIDE TRAY, R RIGHT	1EA2362A01700	
* 16	BX602490	SUPPORT CLAMP	1EA2413A01200	
* 17	CX674460	HOLDER DISC	1EA2451A08000	
* 18	CX674470	FIXER SHAFT	1EA2452A01000	
* 19	CX674490	GEAR CAM	1EA2511A09000	
* 20	CX674500	GEAR PULLEY PICK	1EA2511A09100	
* 21	CX674510	GEAR IDLER TRAY	1EA2511A09200	
* 22	CX674520	GEAR IDLER FAST	1EA2511A09300	
* 23	CX674530	GEAR LOAD PICK	1EA2511A09400	
* 24	CX674540	GEAR LOAD TRAY	1EA2511A09500	
* 25	CX674550	GEAR PINION PICK	1EA2511A09600	
* 26	CX674560	GEAR RACK	1EA2511A09700	
* 27	CX674570	PULLEY GEAR TRAY	1EA2524A01400	
* 28	CX674580	BELT SQUARE PICK	1EA2563A01900	
* 29	CX674590	BELT SQUARE TRAY	1EA2563A02000	
* 30	BX602500	MAGNET DISC CLAMP	1EA2641A02100	
* 31	CX674600	YOKE HOLDER	1EA2642A00800	
* 32	CX674610	LEVER CHANGE	1EA2721A04800	
* 33	BX602510	PLATE MECH UP LEFT	1EA2731A02400	
* 34	BX602520	PLATE MECH UP RIGHT	1EA2731A02500	
* 35	BX602530	PLATE DISC CLAMP	1EA2731A02700	
* 36	AX618090	SHAFT SLIDE PICK	1EA2744A00700	
* 37	AX618100	SPRING TENS BASE 1	1EA2811A04000	
* 38	AX618110	SPRING TENS BASE 2	1EA2811A04100	
* 39	AX618120	SPRING TENS LEVER	1EA2811A04200	
* 40	AX618130	SPRING COMP CLAMP	1EA2812A04700	
* 41	AX618140	SPRING PLATE CHASSIS	1EA2814A04800	
* 42	AX618150	SPRING PLATE MECH UP	1EA2814A05400	
* 43	KX604000	SWITCH LEAF	4AG4S13A01500	
* 51	NX612000	P.C.B. ASS'y, SENSOR	1EA0B10A88400	
* 51-1	1X632680	PHOTO DIODE	TPS606	4071524700
* 52	NX612010	P.C.B ASS'y, LED	1EA0B10A88500	
* 52-1	1X632690	LED	SIR-56SB	4071496700
* 53	NX612020	ASS'y PCB FG	1EA0B10A88600	
* 53-1	1X632670	PHOTO COUPLER	SG-23FH	4071496601
* 61	AX618160	PAN HEAD SCREW PCS	2x2.5	SE3PN202R5SC
* 62	AX618170	PAN HEAD P-TITE SCREW	2.6x8	SFBAN268ROSE
* 63	AX618180	PAN HEAD S-TITE SCREW	3x14	SFBAN30140SE
* 64	AX618190	PAN HEAD S-TITE SCREW	3x25	SFBAN30250SE

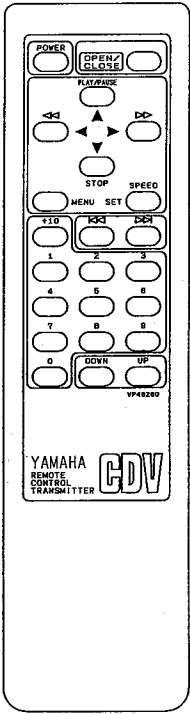
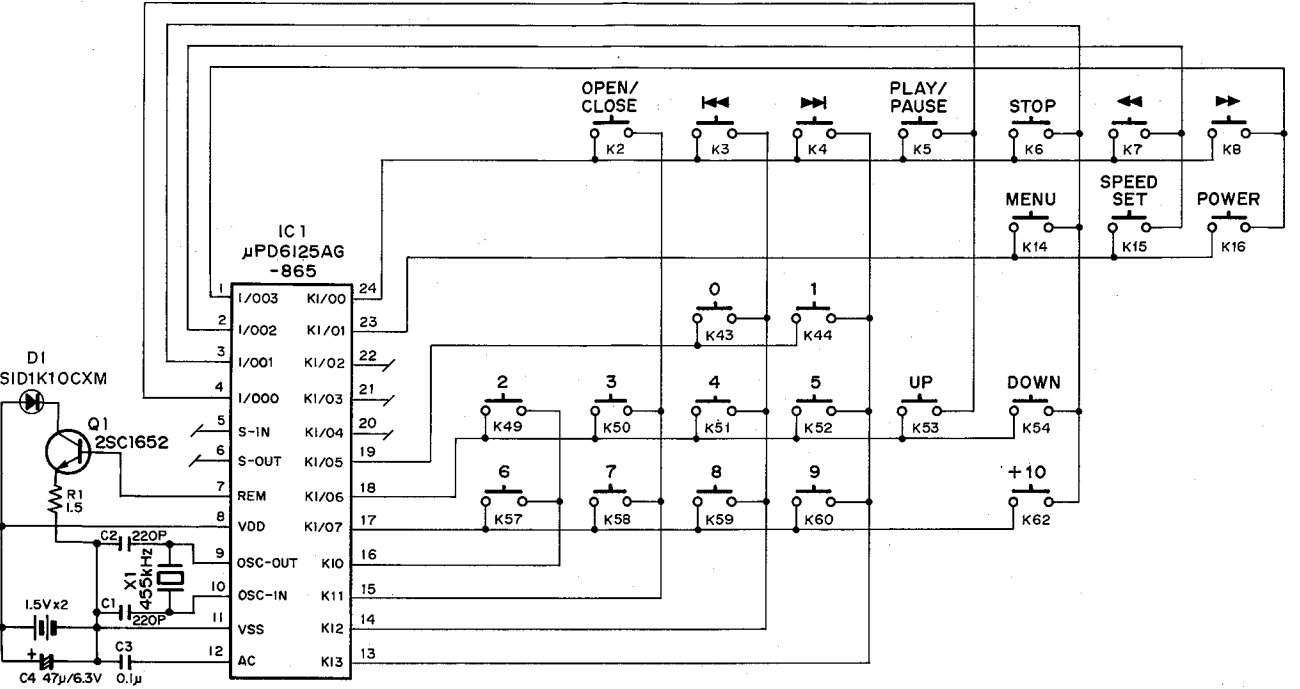
* New Parts

Ref. No.	PART NO.	Description	Remarks	Markets
* 65	AX618210	PAN HEAD S-TITE SCREW	3x6	SFBAN30GR0SE
* 66	AX618200	PAN HEAD S-TITE SCREW	3x8	SFBAN308ROSE
* 67	AX618220	BIND HEAD S-TITE SCREW	2x8	SFBDN208ROSE
* 68	AX618230	BIND HEAD S-TITE SCREW	2.6x4	SFBND264ROSE
* 69	AX618240	PAN HEAD S-TITE SCREW	3x14	SFBPN30140SE
* 70	AX618250	PAN HEAD S-TITE SCREW	3x4	SFCPN304R0SE
* 71	AX618260	SPECIAL SCREW		SFXEA02200
* 72	AX618270	SPECIAL SCREW		SHXEA01100
* 73	AX618290	SPECIAL SCREW		SMXEA03500
* 74	AX618280	PAN HEAD SCREW	2.6x4	SM2PN264R0SE
* 75	AX618300	SPECIAL WASHER		SWXEA11500
* 76	AX618310	SPECIAL WASHER		SWXEA11900
* 77	AX618050	SCREW WASHER		14124219121000
* 78	AX618060	WASHER	Ø2.1x4.5x0.3	14124539303000
* 79	NX612050	ASS'y CONNECTOR-S	3P	1EA0J13A35400
* 80	NX612030	ASS'y CONNECTOR-S	8P	1EA0J13A32500
* 81	NX612040	ASS'y CONNECTOR-S	10P	1EA0J13A32600
* 82	CX674450	CUSHION RUBBER		1EA2443A08500
* 83	CX674480	SHEET FELT		1EA2462A11600

* New Parts

REMOTE CONTROL TRANSMITTER

■ SCHEMATIC DIAGRAM



Key No.	CUSTOM (HEX)	DATA (HEX)	FUNCTION	Key No.	CUSTOM (HEX)	DATA (HEX)	FUNCTION
2	7A	01	OPEN/CLOSE	49	7A	18	2
3	7A	02	◀◀	50	7A	19	3
4	7A	03	▶▶	51	7A	1A	4
5	7A	40	PLAY/PAUSE	52	7A	1B	5
6	7A	41	STOP	53	7A	58	UP
7	7A	42	◀◀	54	7A	59	DOWN
8	7A	43	▶▶	57	7A	1C	6
14	7A	45	MENU	58	7A	1D	7
15	7A	46	SPEED SET	59	7A	1E	8
16	7A	47	POWER	60	7A	1F	9
43	7A	16	0	62	7A	5D	+10
44	7A	17	1				

Parts List for Carbon Resistors

Value	1/4W Type Part No.	1/6W Type Part No.	Value	1/4W Type Part No.	1/6W Type Part No.
1.0 Ω	HJ35 3100	HF85 3100	10 kΩ	HF45 7100	HF45 7100
1.8 Ω	HJ35 3180	*	11 kΩ	HF45 7110	HF45 7110
2.2 Ω	HJ35 3220	HF85 3220	12 kΩ	HJ35 7120	HF85 7120
3.3 Ω	HJ35 3330	HF85 3330	13 kΩ	HF45 7130	HF45 7130
4.7 Ω	HJ35 3470	HF85 3470	15 kΩ	HF45 7150	HF45 7150
5.6 Ω	HJ35 3560	HF85 3560	18 kΩ	HF45 7180	HF45 7180
10 Ω	HF45 4100	HF45 4100	22 kΩ	HF45 7220	HF45 7220
15 Ω	HJ35 4150	HF85 4150	24 kΩ	HF45 7240	HF45 7240
22 Ω	HF45 4220	HF45 4220	27 kΩ	HJ35 7270	HF85 7270
27 Ω	HJ35 4270	HF85 4270	30 kΩ	HF45 7300	HF45 7300
33 Ω	HF45 4330	HF45 4330	33 kΩ	HF45 7330	HF45 7330
39 Ω	HJ35 4470	HF85 4390	36 kΩ	HF45 7360	HF45 7360
47 Ω	HF45 4470	HF45 4470	39 kΩ	HF45 7390	HF45 7390
56 Ω	HF45 4560	HF45 4560	47 kΩ	HF45 7470	HF45 7470
68 Ω	HF45 4680	HF45 4680	51 kΩ	HF45 7510	HF45 7510
75 Ω	HF45 4750	HF45 4750	56 kΩ	HF45 7560	HF45 7560
82 Ω	HF45 4820	HF45 4820	62 kΩ	HF45 7620	HF45 7620
91 Ω	HF45 4910	HF45 4910	68 kΩ	HF45 7680	HF45 7680
100 Ω	HF45 5100	HF45 5100	82 kΩ	HF45 7820	HF45 7820
110 Ω	HJ35 5110	HF85 5110	91 kΩ	HF45 7910	HF45 7910
120 Ω	HF45 5120	HF45 5120	100 kΩ	HF45 8100	HF45 8100
150 Ω	HF45 5150	HF45 5150	110 kΩ	HF45 8110	HF45 8110
160 Ω	HJ35 5160	*	120 kΩ	HF45 8120	HF45 8120
180 Ω	HF45 5180	HF45 5180	150 kΩ	HF45 8150	HF45 8150
200 Ω	HF45 5200	HF45 5200	180 kΩ	HF45 8180	HF45 8180
220 Ω	HF45 5220	HF45 5220	220 kΩ	HJ35 8220	HF85 8220
270 Ω	HF45 5270	HF45 5270	270 kΩ	HF45 8270	HF45 8270
330 Ω	HF45 5330	HF45 5330	300 kΩ	HF45 8300	HF45 8300
390 Ω	HF45 5390	HF45 5390	330 kΩ	HF45 8330	HF45 8330
430 Ω	HF45 5430	HF45 5430	390 kΩ	HJ35 8390	HF85 8390
470 Ω	HF45 5470	HF45 5470	470 kΩ	HF45 8470	HF45 8470
510 Ω	HF45 5510	HF45 5510	560 kΩ	HJ35 8560	HF85 8560
560 Ω	HF45 5560	HF45 5560	680 kΩ	HJ35 8680	HF85 8680
680 Ω	HF45 5680	HF45 5680	820 kΩ	HJ35 8820	HF85 8820
820 Ω	HF45 5820	HF45 5820	1.0 MΩ	HF45 9100	HF45 9100
910 Ω	HF45 5910	HF45 5910	1.2 MΩ	HJ35 9120	*
1.0 kΩ	HF45 6100	HF45 6100	1.5 MΩ	HJ35 9150	HF85 9150
1.2 kΩ	HF45 6120	HF45 6120	1.8 MΩ	HJ35 9180	HF85 9180
1.5 kΩ	HF45 6150	HF45 6150	2.2 MΩ	HJ35 9220	HF85 9220
1.8 kΩ	HF45 6180	HF45 6180	3.3 MΩ	HJ35 9330	HF85 9330
2.0 kΩ	HJ35 6200	HF85 6200	3.9 MΩ	HJ35 9390	*
2.2 kΩ	HF45 6220	HF45 6220	4.7 MΩ	HJ35 9470	HF85 9470
2.4 kΩ	HJ35 6240	HF85 6240			
2.7 kΩ	HF45 6270	HF45 6270			
3.0 kΩ	HF45 6300	HF45 6300			
3.3 kΩ	HF45 6330	HF45 6330			
3.6 kΩ	HJ35 6360	HF85 6360			
3.9 kΩ	HF45 6390	HF45 6390			
4.7 kΩ	HF45 6470	HF45 6470			
5.1 kΩ	HF45 6510	HF45 6510			
5.6 kΩ	HF45 6560	HF45 6560			
6.8 kΩ	HF45 6680	HF45 6680			
8.2 kΩ	HF45 6820	HF45 6820			
9.1 kΩ	HF45 6910	HF45 6910			

