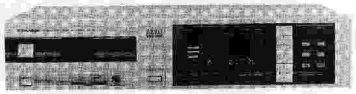
Service Manual

PIONEER®



ORDER NO.
VRT-024-0

COMPACT DISC PLAYER

P-D70 HEM, HB, KU, S, S/G

MODEL P-D70 COMES IN FIVE VERSIONS DISTINGUISHED AS FOLLOWS:

Type	Voltage	Remarks
HEM	AC220V, 240V (switchable)	European model
HB	AC220V, 240V (switchable)	United Kingdom model
KU	AC120V only	U.S.A. model
S	AC110V, 120V, 220V, 240V (switchable)	General export model
S/G	AC110V, 120V, 220V, 240V (switchable)	U.S.A. military model

- This service manual is applicable to the HEM type.

The HB, KU, S and S/G types are the same as the HEM type with the exception of the following sections.

Contrast of Miscellaneous Parts

Mark	Symbol & description	Part No.				
		HEM	HB	KU	S	S/G
⚠	Power transformer	VTT-038	VTT-038	VTT-041	VTT-042	VTT-042
⚠	Fuse	VEK-012	VEK-012	VEK-016	VEK-013	VEK-013
⚠	Voltage selector	VSB-001	VSB-001	NO	VSB-002	VSB-002
⚠	Power cord	VDG-019	VDG-021	VDG-020	VDG-013	VDG-013
	Power cord stopper	VEC-152	VEC-152	VEC-147	VEC-147	VEC-147
	FUSB	VWR-047	VWR-047	VWR-042	VWR-054	VWR-054
⚠	L1	VTL-003	VTL-003	VTL-004	VTL-004	VTL-004
	Fuse holder	VKR-002	VKR-002	VKR-001	VKR-001	VKR-001
	Packing case	VHG-070	VHG-076	VHG-075	VHG-077	VHG-084
	Operating instructions	VRD-003	VRB-027	VRB-027	VRB-027	VRB-027
	Pick up	VWY-061	VWY-061	VWY-063	VWY-061	VWY-061

For servicing of the other types, please refer to the Additional Service Manual.

CONTENTS

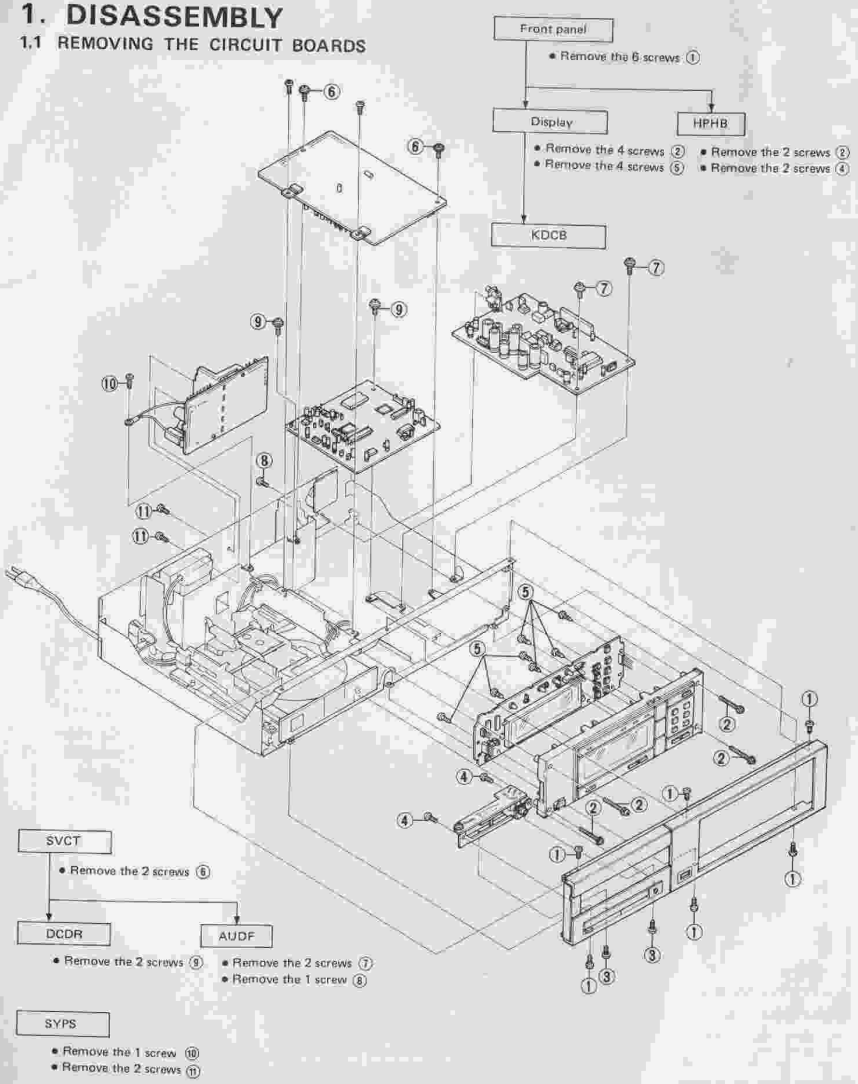
PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS [USA] INC. P.O. Box 1760, Long Beach, California 90801 U.S.A.
TEL: (800) 421-1404, (213) 420-5914
PIONEER ELECTRONIC [EUROPE] N.V. Keetberglaan 1, 2740 Beveren, Belgium TEL: 03/775-2808
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia
TEL: (03) 580-9911

ME

Printed in Japan

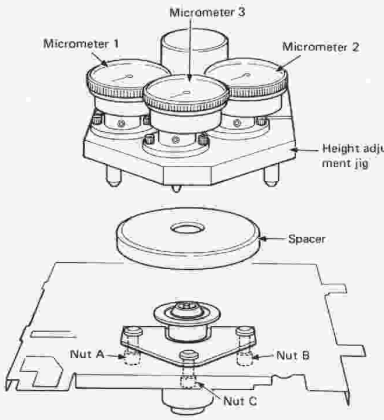
1. DISASSEMBLY

1.1 REMOVING THE CIRCUIT BOARDS

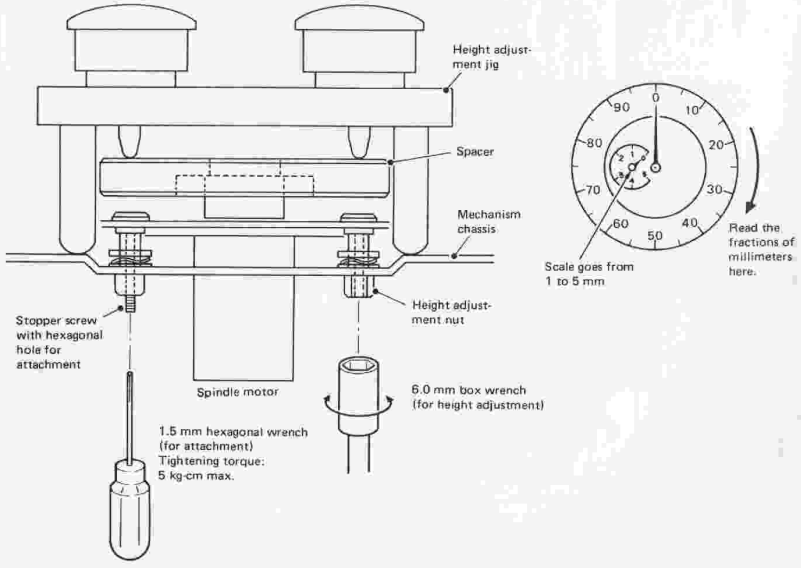


2. MECHANICAL ADJUSTMENT

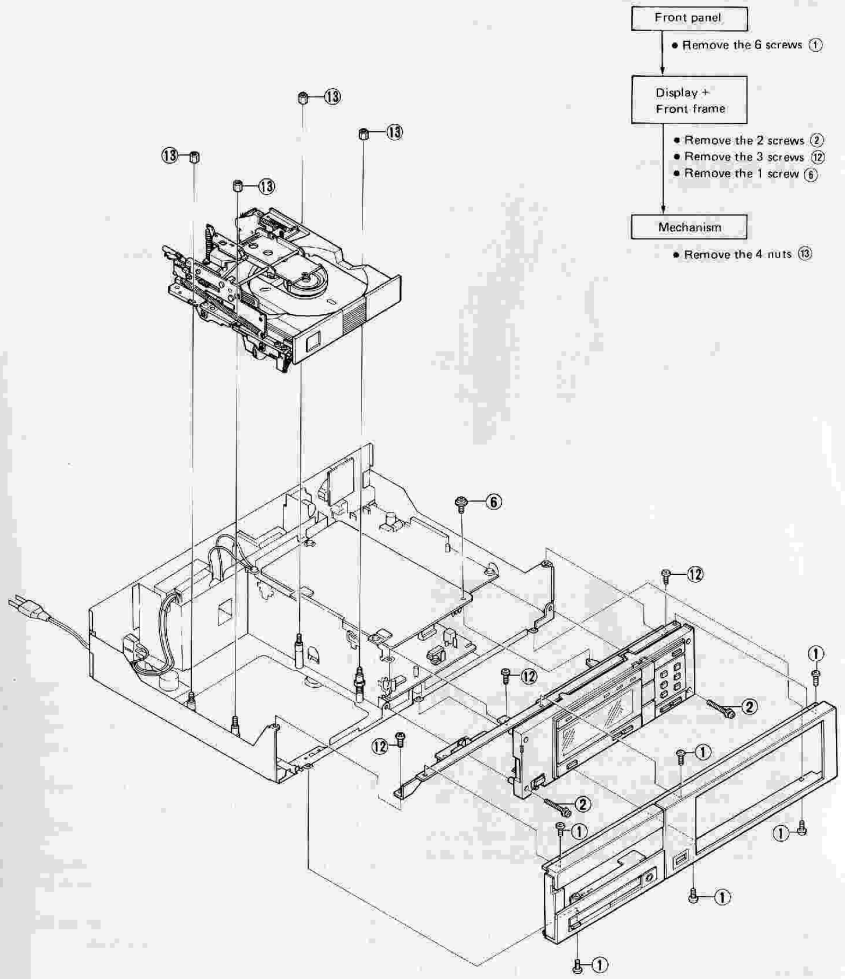
2.1 SPINDLE MOTOR HEIGHT ADJUSTMENT



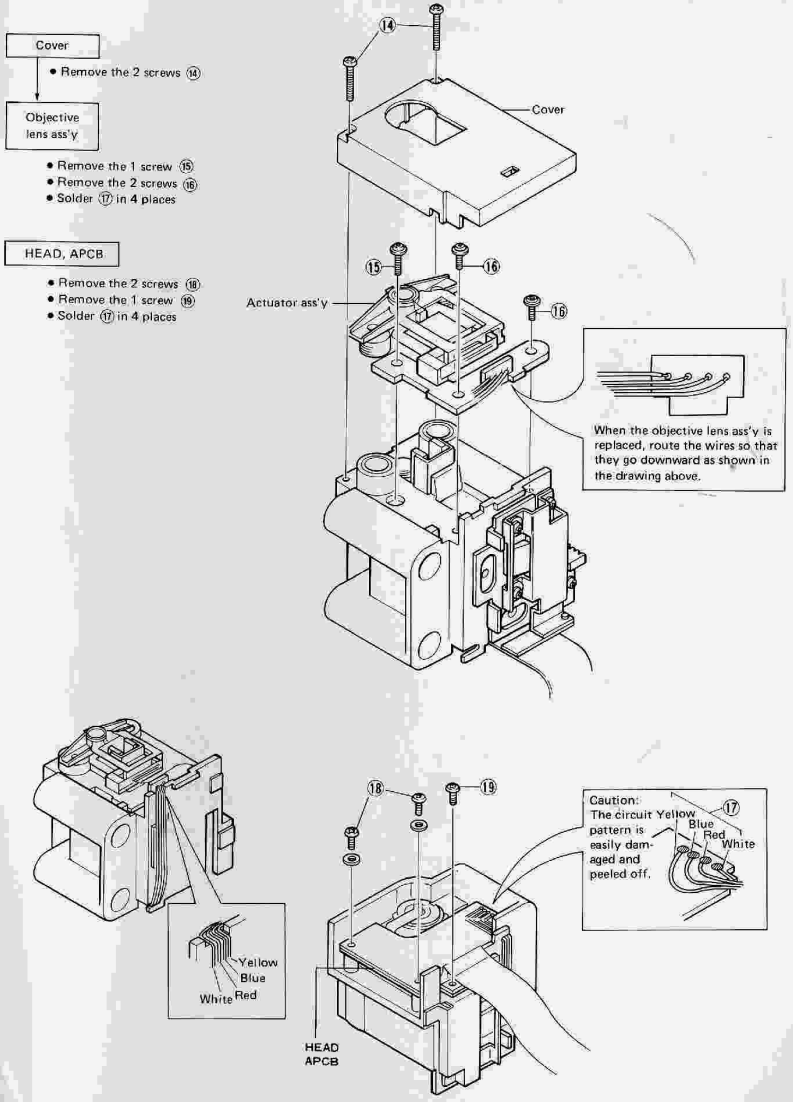
1) If height readjustment or motor replacement is to be performed, first loosen the stopper screws with hexagonal holes.
2) Tightening and loosening of height adjustment screws A, B and C should be performed little by little in order, A, B and C.
3) Set the height adjustment jig in place as shown.
4) Adjust height adjustment screw A until micrometer 1 reads 2.0 mm.
5) Adjust height adjustment screw B until micrometer 2 reads 2.0 mm.
6) Adjust height adjustment screw C until micrometer 3 reads 2.0 mm.
7) Tighten the three hexagonal bolts to hold height adjustment screws A, B and C in place. Then confirm that the micrometer reading is within the following tolerances:
   Micrometers 1, 2 and 3: 2.0 mm ± 0.05 mm
8) Apply screw lock to all screws.



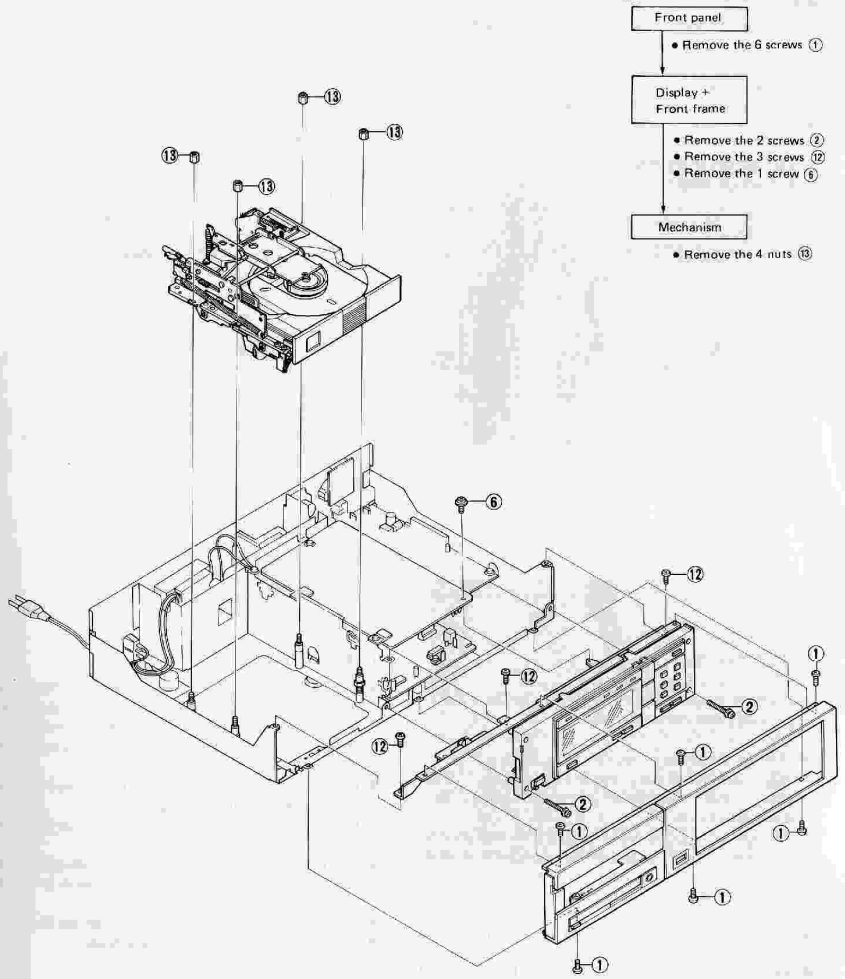
1.2 REMOVING THE MECHANISM



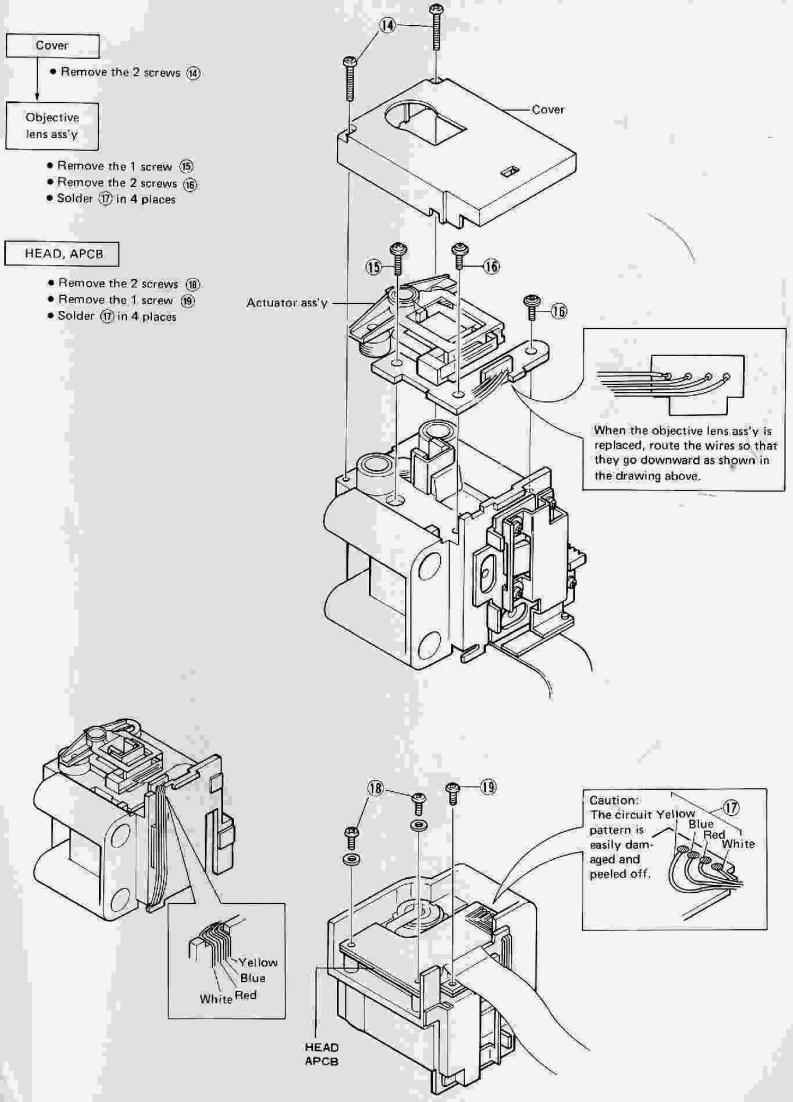
1.3 DISASSEMBLING THE PICKUP



1.2 REMOVING THE MECHANISM



1.3 DISASSEMBLING THE PICKUP

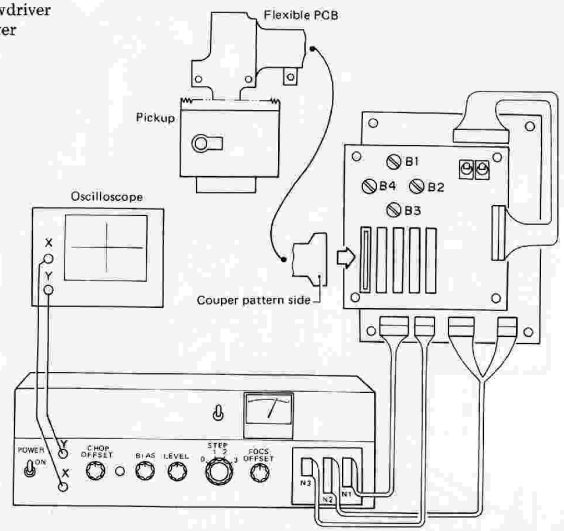


2.2 PICKUP ADJUSTMENTS

Connections Diagram for Pickup Adjustments

Instruments, Tools and Equipment:

- Dual trace oscilloscope (DC—35 MHz)
- Dynamic jig
- Grating adjustment screwdriver
- PD adjustment screwdriver
- Conductive mat
- Conductive wristband
- Reflection mirror jig



PRECAUTIONS

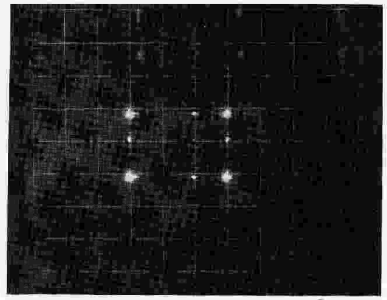
Strictly observe precautions to protect the pickup from static electricity.

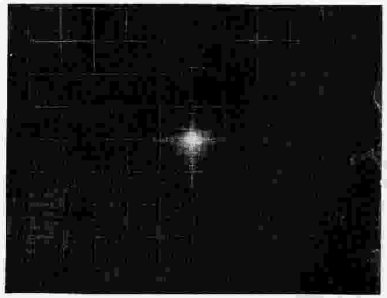
- Place a conductive mat on the work bench.
- All workers should cover the ends of their sleeves with conductive covers connected to a conductive mat.
- Use a battery-powered soldering iron and ground the tip of the iron on the conductive mat. (AC 120 V soldering irons with an earth connection must not be connected to the conductive mat.)
- Perform pickup replacement and adjustments only after completing the above preparations.
- Store the pickup in a conductive bag wrapped by itself.
- Do not inadvertently look at the objective lens when the laser is on.

PREPARATIONS

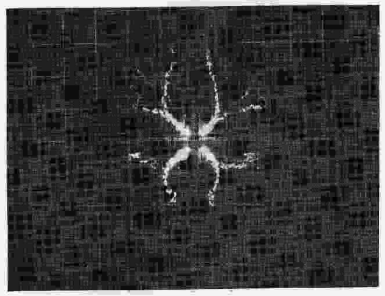
- To perform the Z-axis adjustment of the cylinder lens ass'y, first remove the actuator ass'y wiring and the HEAD/APCB ass'y screws, turn the unit upside-down and then reattach the wiring.
- Connect the dynamic jig (DY jig) and oscilloscope as shown in the diagram.
- Connect the pickup's flexible PCB to the connector of the DY jig.
- Set the oscilloscope to the X-Y mode and adjust so that the beam spot GND position is in the center of the screen.
- Turn on the DY jig power and turn on the laser.
- Turn the DY jig vibration switch on.

Step No.	DY jig Step SW	Oscilloscope range X	Oscilloscope range Y	Test point	Adjustment point	Adjustment procedure
1	0	0.2V/div	0.2V/div			**ROUGH ADJUSTMENT OF PD** • Set the step of the dynamic jig to 0. • Using the dynamic jig CHOP OFFSET and B1, B2, B3 and B4 offset controls, bring the four beam spots on the oscilloscope screen into the center as shown.

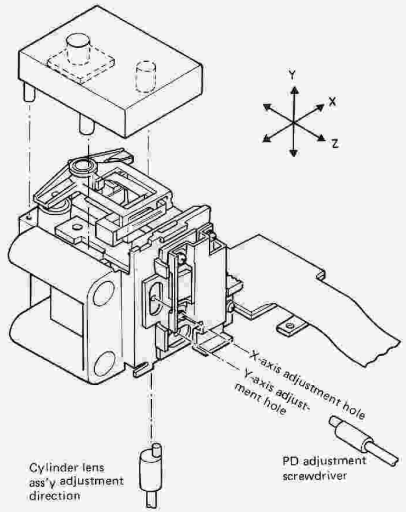




Step No.	DY jig Step SW	Oscilloscope range X	Oscilloscope range Y	Test point	Adjustment point	Adjustment procedure
	0	0.2V/div	0.2V/div			• Place the reflection mirror device on the pickup as shown in the diagram. • Using the PD adjustment screwdriver, adjust the position of PD until the waveform on the oscilloscope screen is the same as in the picture below. • If no waveform appears, adjust the mirror device's BIAS and LEVEL controls.

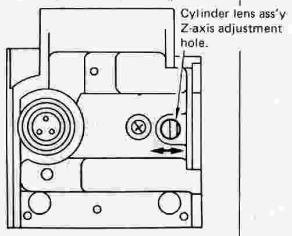


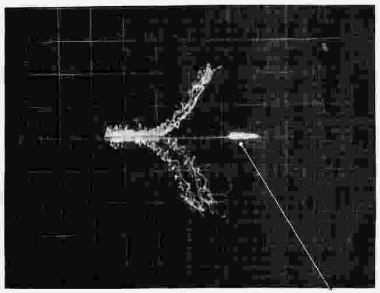
PD adjustment location



Step No.	DY jig Step SW	Oscilloscope range X	Oscilloscope range Y	Test point	Adjustment point	Adjustment procedure
2	1	0.2V/div	0.2V/div			**CYLINDER LENS Z-AXIS POSITION ADJUSTMENT** • Set the step of the dynamic device to 1. • Using the dynamic device FCS offset control, align the lissajous' waveform on the oscilloscope screen with the grand marker (vertically) as shown in the picture.

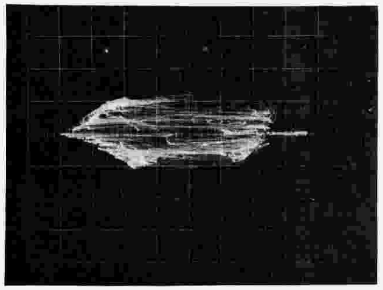
Cylinder lens adjustment point





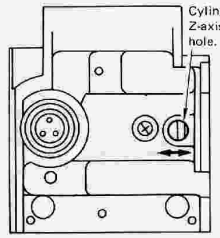
Grand marker

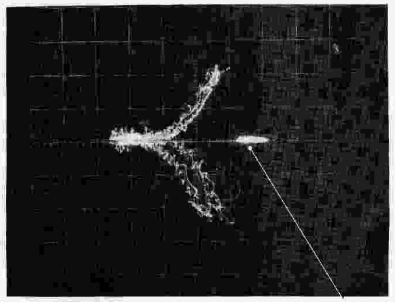
	2	0.2V/div	0.2V/div			• Set the step of the dynamic jig to 2. • Confirm that the amplitude (RF level) in the horizontal direction at the grand marker (vertically) of the lissajous' waveform is at its maximum level. • If the amplitude is not acceptable, adjust the position of the cylinder lens in the Z-axis. • Loosen the cylinder lens attachment screw a little (do not remove the screw). • Using the grating adjustment screwdriver, adjust the position of the cylinder so that the amplitude of the RF signal (horizontally) at the marker point (vertically) is at its maximum point. • After finishing the adjustment, tighten the screw and confirm that there is no change in the waveform.

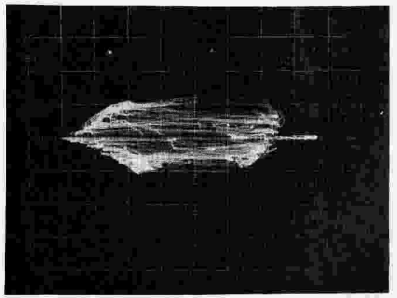


Step No.	DY jig Step SW	Oscilloscope range X	Oscilloscope range Y	Test point	Adjust-ment point	Adjustment procedure
2	1	0.2V/div	0.2V/div			**CYLINDER LENS Z-AXIS POSITION ADJUSTMENT** • Set the step of the dynamic device to 1. • Using the dynamic device FCS offset control, align the lissajous' waveform on the oscilloscope screen with the grand marker (vertically) as shown in the picture.
	2	0.2V/div	0.2V/div			• Set the step of the dynamic jig to 2. • Confirm that the amplitude (RF level) in the horizontal direction at the grand marker (vertically) of the lissajous' waveform is at its maximum level. • If the amplitude is not acceptable, adjust the position of the cylinder lens in the Z-axis. • Loosen the cylinder lens attachment screw a little (do not remove the screw). • Using the grating adjustment screwdriver, adjust the position of the cylinder so that the amplitude of the RF signal (horizontally) at the marker point (vertically) is at its maximum point. • After finishing the adjustment, tighten the screw and confirm that there is no change in the waveform.

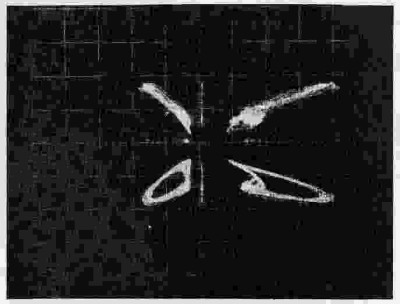
Cylinder lens adjustment point

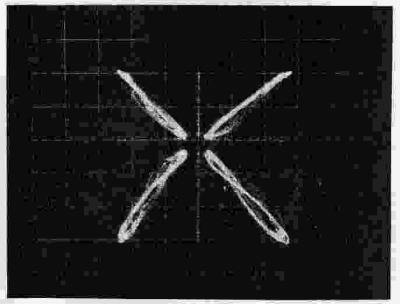




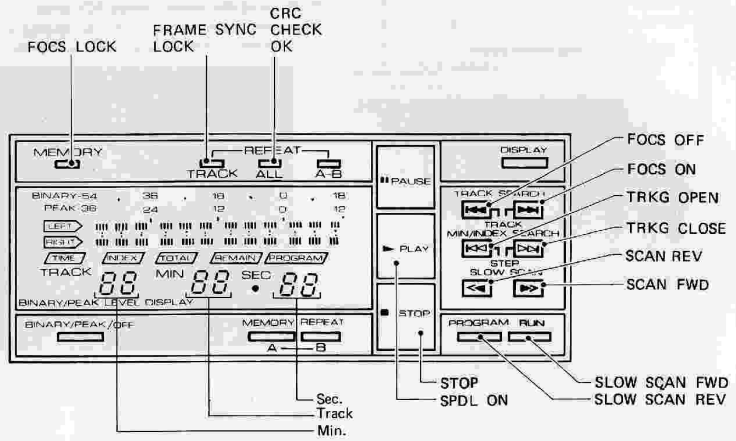


Step No.	DY jig Step SW	Oscilloscope range X	Oscilloscope range Y	Test point	Adjust-ment point	Adjustment procedure
3	3	0.2V/div	0.2V/div			**PD FINE ADJUSTMENT** • Set the step of the dynamic device to 3. • Finely adjust the position of PD so that the lissajous' waveform is angled diagonally and so that each of the diagonal waveforms is of about the same size. • After finishing the adjustment, tighten the screw.





KEY FUNCTIONS WHEN TEST CPU IS ATTACHED



Step No.	Oscilloscope range		Test point	Adjustment point	Check points/ Adjustment specifications	Adjustment procedure

INSTRUMENTS AND DEVICES USED

- Dual trace oscilloscope with time delay sweep
- Light power meter
- Test disc YEDS-7 and Demonstration disc
- FTG adjuster
- Test CPU
- Post (for mechanism ass'y hold)
- Grating screwdriver
- 2-shaft screwdriver (for adjustment of wire connection angle)

PRECAUTIONS

- A 1:1 probe should be used with the oscilloscope.
- All waveform photos are on a 35 MHz band oscilloscope.
- Do not look at the objective lens when the laser is on.
- TP is on SVCT board unless otherwise specified.
- VR is on PREB board unless otherwise specified.
- The spindle motor height should be adjusted beforehand.
- The adjustment specifications listed here assume the use of a test CPU. When the test CPU is used instead of the standard CPU (PD3007 or PD3014), the player functions differ as follows.

With test CPU	With standard CPU
FOCUS ON, SPDL ON	—
FOCUS ON, SPDL ON (TRKG OPEN)	SVCT TP3 is connected to -5V when play is started
FOCUS ON, SPDL ON TRKG CLOSE	Play on

- Steps 4, 5, 6 and 7 are performed with the TRKG loop open.
- Steps 8, 9, 10, 11, 12, 13 and 14 are performed with the TRKG loop closed.

PREPARATIONS

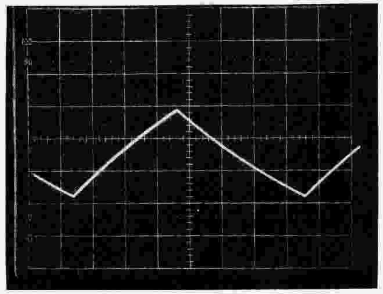
- Remove the top cover and bottom panel.
- Replace the CPU (Z8) on the SVCT with the test CPU.
- Remove the connectors between the mechanism ass'y PREB and the DCDR and SVCT.
- Remove the mechanism from the unit (remove the four nuts) and put the four posts in place. Refer to the mechanism ass'y removal procedure for details.
- Replace the connectors as they were before. Follow directions in the chart to the left and be sure each connector is firmly inserted.

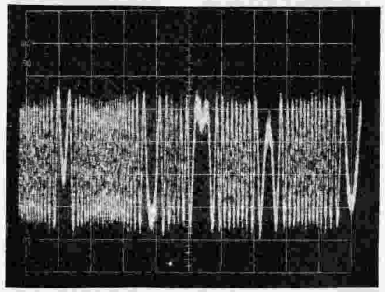
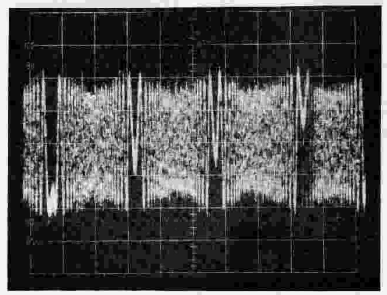
Mechanism ass'y

2P (White shield wire)		➡ DCDR N10
2P (Red, Black	: SPDL motor)	➡ DCDR N2
2P (Red, Black	: CARG motor)	➡ SVCT N3
2P (Yellow, Black	: LOAD motor)	➡ SVCT N4
2P (Green, Red	: INSIDE SW)	➡ SVCT N5
2P (Blue, Black	: DOOR SW)	➡ SVCT N6
2P (Perple, Black	: CLAMP SW)	➡ SVCT N7

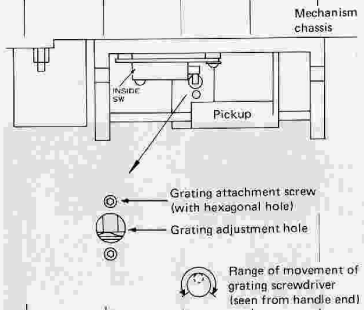
PREB

3P (White, Black, Brown)	➡ SVCT N14
8P	➡ SVCT N15
4P	➡ SVCT N13

Step No.	Oscilloscope		Test point	Adjustment point	Check points/ Adjustment specifications	Adjustment procedure
			Unless otherwise specified, TP is on SVCT	Unless otherwise specified, VR is on PREB		**GENERAL ADJUSTMENTS**
1						**CHECK OF FOCUS, TRKG RETURN VOLTAGE**
	0.1V/div	1mS/div	N13-2		(F return) 0V±100mV	• Turn on the power and confirm that the focus return voltage is 0V ± 100 mV and that the tracking return voltage is 0V ± 10 mV.
	10mV/div		N13-4	SVCT VR1	(T return) 0V±10mV	• If the tracking return voltage is not acceptable, correct by adjusting SVCT VR1 (tracking offset). • If the focus return voltage is not acceptable, check SVCT Z1, Z2, Q2 and Q3. **Note:** If the return voltage is not within the acceptable range, correct promptly because it could cause the actuator coil to fail.
	0.1V/div	1mS/div	N15-7	VR2	0V±0.1V	• Measure the DC voltage at N15-7. If it is not acceptable, correct by adjusting VR2.
2						**CHECK OF RAMP WAVEFORM**
	0.5V/div	0.2S/div	N13-2	–	Ramp waveform	• Press FOCUS ON (▶▶I) and confirm that the objective lens goes up and down. (Ramp waveform at N13-2)
						
3						**CHECK OF LD POWER**
	–	–	–	APCB VR1	0.26mW ±0.02mW	• Place the light power meter sensor directly over the objective lens and confirm that the LD power is acceptable. • If the power is not acceptable, correct by adjusting the VR of APCB.

Step No.	Oscilloscope range		Test point	Adjustment point	Check points/ Adjustment specifications	Adjustment procedure
4						**CHECK OF FOCUS AND SPINDLE LOCKS**
	1V/div 2V/div	0.2S/div	N13-2 SVCT Z3 25		Ramp waveform FOCUS LOCK	• Press the stop button and load the demonstration disc. • Press FOCUS ON (▶▶I) and confirm that one Ramp waveform cycle is generated at N13-2 and that a negative voltage is generated at SVCT Z3 25 (focus lock). • Press SPDL ON (▶) and confirm that the disc spins and that the disc does not begin to spin out of control.
5						**TRACKING BALANCE**
	0.5V/div	5mS/div	TP-2	VR4 (TRKG BAL)	|A – B| < 0.1V	• Measure the tracking error at TP-2 and adjust to eliminate any DC element.
						
						

Step No.	Oscilloscope range		Test point	Adjustment point	Check points/ Adjustment specifications
6					
	0.2V/div	5mS/div	TP-2	VR5	2.0Vp-p
	0.2V/div	5mS/div	TP-2	VR4	|A - B| < 0.1V
	0.2V/div	5mS/div	TP-2	Grating	Null point
	0.2V/div	5mS/div	TP-2	Grating	Max. amplitude

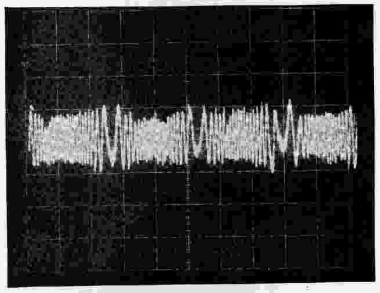


Adjustment procedure

GRATING ADJUSTMENT

- Use the disc "38DC15", SONY.
- Press SCAN FWD (▶▶) to move the pickup toward the outer edge of the disc and stop the pickup at a point where the pickup grating adjustment hole is slightly beyond the inside limit switch.
- Roughly adjust VR5 (tracking gain) so that the tracking error is 2.0Vp-p.
- Confirm that there is no DC element in the tracking error. If DC exists, fine adjust VR4.
- Loosen the grating attachment screws.
- Insert the grating screwdriver in the grating hole with the cam section of the tip pointing upward.
- Rotate the grating screwdriver to the point where the tracking error is at its minimum level and the envelope is as clean as possible (null point). If it is difficult to find the null point, check by inserting an LPF (cutoff: about 4 kHz) between TP-2 and the probe.

  Note: The grating screwdriver can only be rotated over a range of about 300°. Do not try to forcibly rotate it any farther.

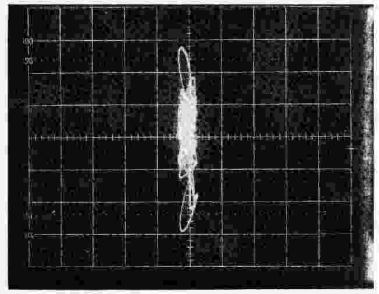


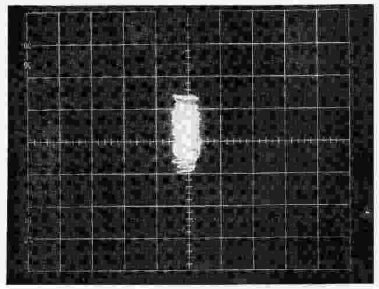
- Now rotate the screwdriver clockwise from its present position to the point where the tracking error amplitude is at its highest point.
- While measuring the tracking error, tighten the attachment screws. After tightening the screws, confirm that the tracking error amplitude is still at its maximum level.

Step No.	Oscilloscope range		Test point	Adjustment point	Check points/ Adjustment specifications
	X: 0.1V/div Y: 20mV/div		X: TP-2 Y: TP-1	Grating	Min. on Y-axis
			X: TP-2 Y: TP-1	SPDL Motor holder	Min. on Y-axis

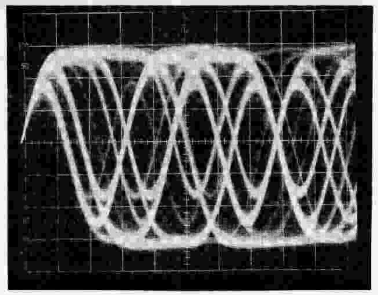
Adjustment procedure

- Set the oscilloscope to the X-Y mode, perform AC coupling and observe the TRKG SUM and TRKG VAL lissajous' waveforms.
- Fine adjust the grating so that the lissajous' waveform amplitude in the vertical direction is at its lowest level.
- Next, press SCAN REV (◀◀) to move the pickup toward the center of the disc to the point just before the pickup pushes against the inside switch.
- Check the lissajous' waveform. If it is not the same as the lissajous' waveform for the outer edge of the disc, adjust the position of the spindle motor.

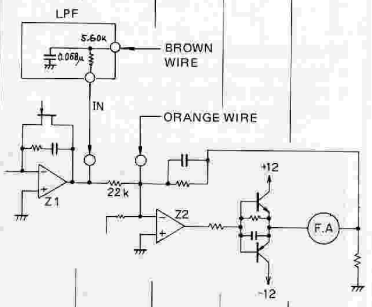


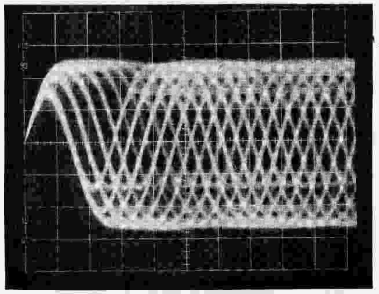
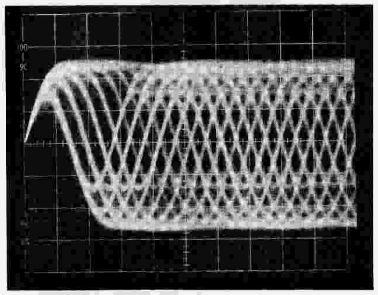


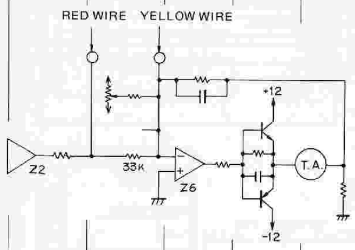
Step No.	Oscilloscope range		Test point	Adjustment point	Check points/ Adjustment specifications	Adjustment procedure
7	X: 0.1V/div Y: 20mV/div		X: TP-2 Y: TP-1	SPDL Motor position adjustment hole	Min. on Y-axis	**SPINDLE MOTOR POSITION ADJUSTMENT** • Remove spindle motor attachment screw C (mechanism adjustment point in section 3-1) and insert the spindle motor position adjustment screwdriver in the screw hole. • Rotate the screwdriver to the point where the lissajous' waveform is at its lowest level in the vertical direction. • Check the waveforms at the inner and outer tracks of the disc. If either is not correct, repeat the spindle motor position adjustment. • After finishing the adjustment, replace the screw and apply screw lock.
8	50mV/div	0.5 μs/div	DCDR C1 ⊕		Flatten the tops of the RF waveform	**SPINDLE MOTOR HORIZONTAL ADJUSTMENT IN TANGENTIAL DIRECTION** • Press the stop button once and attach the 2-shaft screwdriver. • Press the FOCUS ON (▶▶I), SPDL ON (▶) and TRKG CLOSE (▷◁I) buttons in succession. • Roughly adjust VR2 (FOCUS OFFSET) so that the RF waveform eye pattern is at its highest level.
			DCDR C1 ⊕	Angle adjustment hexagonal bolt	Maximum eye pattern	• Rotate the 2-shaft screwdriver to the point where the tops of the peaks of the RF waveform are flat at the innermost tracks of the disc. • After finishing the adjustment, observe the RF waveform for between-songs tracks in the center and outer section of the disc to confirm that the peaks at these locations are also flat.



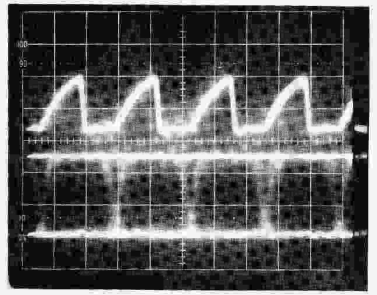
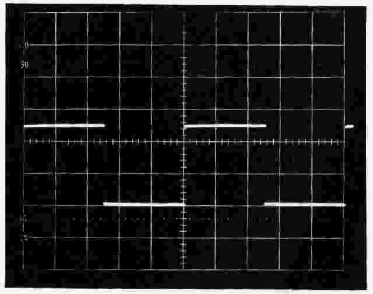
Step No.	Oscilloscope range		Test point	Adjustment point	Check points/ Adjustment specifications	Adjustment procedure
9				Inside SW	Track 0 4 min. 10 sec.	**INSIDE LIMIT SWITCH POSITION ADJUSTMENT** • Stop the player and load test disc YEDS-7. • Press SCAN FWD (▶▷) to move the pickup toward the outer edge of the disc, then press stop and wait until the pickup stops returning. Finally, press FOCUS ON (▶▶I), SPDL ON (▶) and TRKG C/L (▷◁I) in succession. • Confirm that the display reads track 0, 4 min. 10 sec. ±10 sec. If the display is not correct, press stop and readjust the position of the inside switch.
10	X: 10mV/div Y: 20mV/div		Z2 2 Z1 7	VR3	J-LED ON	**FOCUS GAIN ADJUSTMENT** • Set frequency of the FTG adjuster at 500 Hz with Frequency-VR1. • Set the gain of the FTG adjuster at 50 mVp-p with Gain-VR1. Oscilator's output is available from Orange wire by turning the Switch to 1. • Connect the Orange wire of the FTG adjuster as shown in the diagram. • Connect the LPF (5.60 k/0.068 μF) between Z1 output and the brown wire of the FTG adjuster. • Adjust VR3 to turn on the green j (JUST) LED. • Disconnect the FTG adjuster.

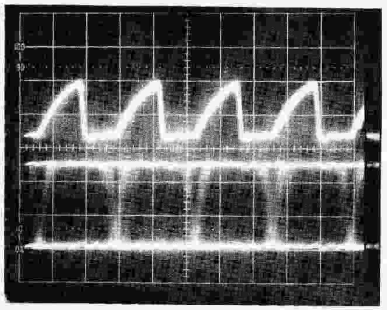
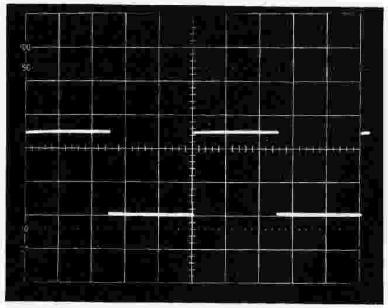


Step No.	Oscilloscope range		Test point	Adjustment point	Check points/ Adjustment specifications	Adjustment procedure
11	0.1V/div	0.5μs/div	DCDR C1 ⊕	VR2	Max. eye pattern	**FOCUS OFFSET ADJUSTMENT** • Observe the RF waveform during the second track. • Fine adjust VR2 (FOCUS OFFSET) so that the eye pattern aperture is at its maximum. 
	0.1V/div	0.5μs/div	N15-7	VR2	Within ±0.1V	• Press stop and confirm that the DC voltage at N15-7 is 0V±0.1V. If the voltage is not correct, fine adjust VR2 to bring to either +0.1V or -0.1V, whichever is closest.
12	0.1V/div	0.5μs/div	DCDR C1 ⊕	VR1	0.5V ±0.05V	**RF LEVEL ADJUSTMENT** • Observe the RF waveform during the second track. • Adjust VR1 (RF level) so that the amplitude of the RF waveform is 0.5V±0.05V. 

Step No.	Oscilloscope range		Test point	Adjustment point	Check points/ Adjustment specifications	Adjustment procedure
13	X: 20mV/div Y: 0.2V/div		Z6 ② Z2 ⑦	VR5	J-LED ON	**TRACKING GAIN ADJUSTMENT** • Set the frequency of the FTG adjuster at 1.35 kHz with Frequency-VR2. • Set the gain of the FTG adjuster at 30 mVp-p with Gain-VR2. Oscillator's output is available from Yellow wire by turning the Switch to 2. • Connect the Yellow wire of the FTG adjuster as shown in the diagram. • Connect red wire of the FTG adjuster as shown in the diagram. • Adjust VR5 to turn J-LED on. 

Step No.	Oscilloscope range		Test point	Adjustment point	Check point/ Adjustment specifications	Adjustment procedure
14	50mV/div	1mS/div	N13-2	SPDL motor height adjustment bolt	DC -200mV ±100mV	**SPINDLE MOTOR RADIAL ANGLE CONFIRMATION** • Perform DC coupling for channel 1 of the oscilloscope and AC coupling for channel 2, reverse the polarity and set both channels 1 and 2 to ADD. • Connect both channels 1 and 2 to N13-2. • Check the DC voltage at the innermost and outermost tracks of the disc. Correct value: -200 mV ±100 mV • The difference between the two DC voltages obtained in the above step should not be more than 50 mV. • If the difference is larger, readjust the spindle motor height (angle). After completing all of the above steps: • Replace the test CPU with the original PD3007, or PD3014 type. • Replace the mechanism ass'y in the player.

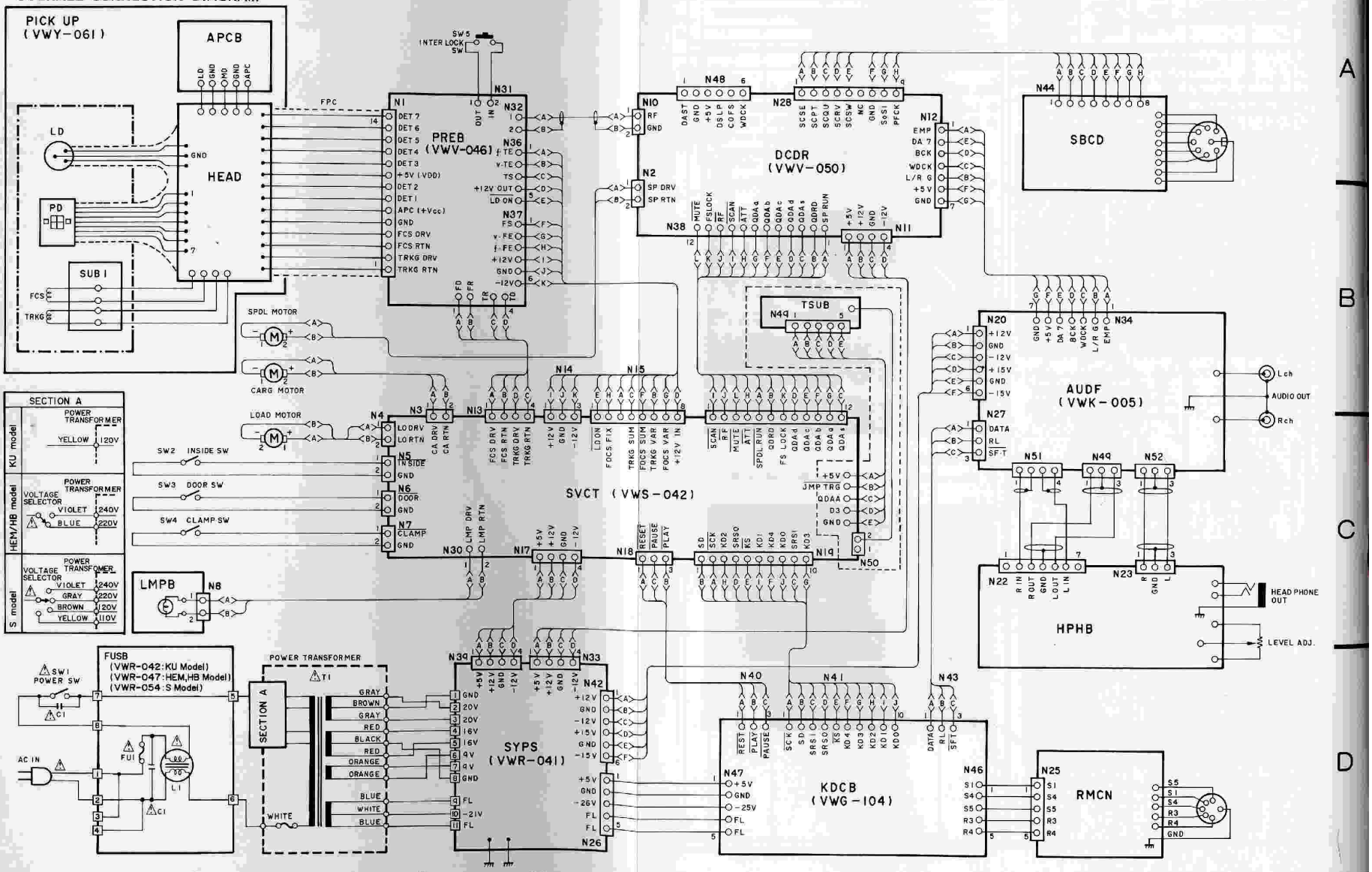
Step No.	Oscilloscope range		Test point	Adjustment point	Check points/ Adjustment specifications	Adjustment procedure
	2V/div 2V/div	0.1 μs/div	DCDR Z3 ⑫ (PLCK) Z3 ⑭ (EFM2)	DCDR VR1	See photo	**DCDR PANEL** **PLL OFFSET** • Load the YEDS-7 test disc and press the play button. • Observe the PLCK and EFM2 waveforms. (Apply the trigger for PLCK.) (The upper photo shows the PLCK waveform and the lower photo shows the EFM2.) • Align the edge of the PLCK rise with the EFM2 jitter. 
	2V/div	20 μs/div	DCDR Z1 ⑲ (APCO)	DCDR VR2	Duty 50%	**SPDL OFFSET** • Observe APCO and adjust so the duty ratio is 50%. 

Step No.	Oscilloscope range		Test point	Adjustment point	Check points/ Adjustment specifications	Adjustment procedure
						DCDR PANEL
						PLL OFFSET • Load the YEDS-7 test disc and press the play button. • Observe the PLCK and EFM2 waveforms. (Apply the trigger for PLCK.) (The upper photo shows the PLCK waveform and the lower photo shows the EFM2.)
	2V/div 2V/div	0.1 μs/div	DCDR Z3 ⑫ (PLCK) Z3 ⑭ (EFM2)	DCDR VR1	See photo	• Align the edge of the PLCK rise with the EFM2 jitter.
						
						SPDL OFFSET • Observe APCO and adjust so the duty ratio is 50%.
	2V/div	20 μs/div	DCDR Z1 ⑲ (APCO)	DCDR VR2	Duty 50%	

Step No.	Oscilloscope range		Test point	Adjustment point	Check points/ Adjustment specifications	Adjustment procedure
						BRAKE PULSE ADJUSTMENT • Load the demonstration disc and press the play button. • Press the stop button while playing the first track and measure the time required for the disc to come to a full stop on its own in the clockwise direction. • Press the stop button while playing the last track and measure the time required for the disc to come to a full stop on its own in the counterclockwise direction. • The stopping time should be about the same for both the first and last tracks. • If the stopping times differ significantly, adjust VR3.
				VR3		
	2V/div	1mS/div	DCDR R42//C17	VL1	5V±0.2V	**VCO ADJUSTMENT** • While playing a disc, measure the DC voltage at the point between DCDR R42 and C17 to confirm that it is 5V ±0.2V. • If the voltage is not acceptable, adjust VL1.
						SVCT PANEL
						LOADING STOP ADJUSTMENT • Press the OPEN/CLOSE button to eject the disc. • Press the OPEN/CLOSE button again and, while the loading motor is rotating (while the disc table is closing), adjust VR2 so that the voltage drop between TP-7 and TP-6 is 0.3V ±0.05V. • After finishing adjustments, block the disc table loading movement (when the table is moving inward) and confirm that the loading motor stops rotating.
			SVCT TP-7 TP-6	SVCT VR2	0.3±0.05V	
						AUDF PANEL
						OFFSET ADJUSTMENT • Turn on the power and adjust so that the DC voltage at TP-1 is 0V ± 10 mV. • Adjust so that the DC voltage at TP-2 is 0V ±10 mV.
	10mV/div	1mS/div	AUDF TP-1	AUDF VR1	0V±10mV	
	10mV/div	1mS/div	TP-2	VR2	0V±10mV	

4. SCHEMATIC DIAGRAM, PCB PATTERNS, & PARTS LIST

4.1 OVERALL CONNECTION DIAGRAM



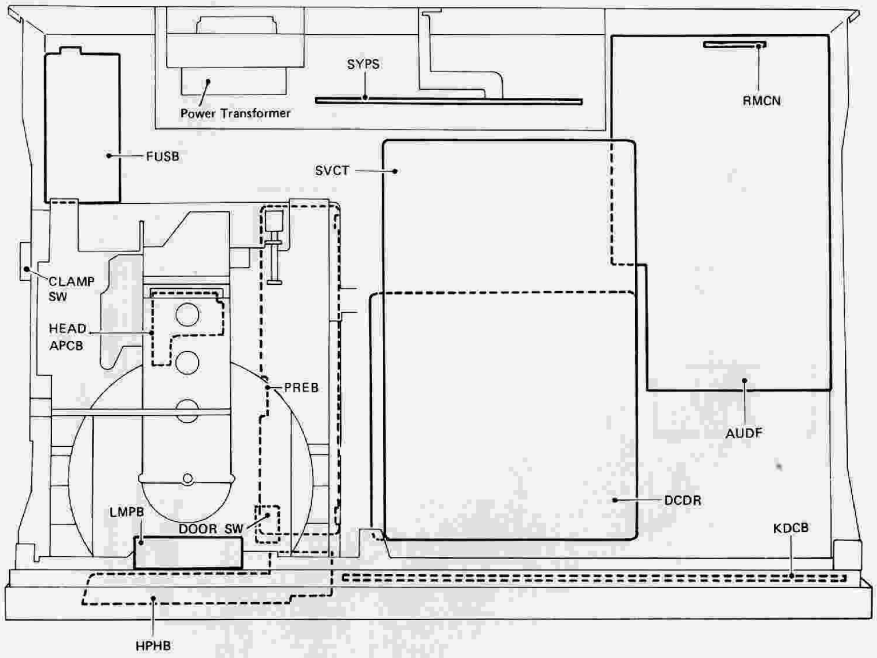
Miscellaneous Parts List

NOTES:
- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

P-D70/HEM Parts list 1

	(MK)(Part No.)	(IT)(REF Nos. & DESCRIPTIONS)
	VWR-041	SYPS
	VWR-047	FUSB
	VWV-046	PREB
	VWS-042	SVCT
	VWV-050	DCDR
	VWK-005	AUDF
	VWG-104	KDCB
		TSUB
		HPHB
		LMPB
	VWY-047	iNTB
		RMCN
	VWY-061	Pickup
⚠	VTT-038	Power transformer
⚠	VSA-006	SW 1 Power switch
⚠	VCG-018	Capacitor
	VEK-012	FU1 250mA
	VSF-009	SW2-4
	VXM-032	CARG Motor
	VXM-033	SPDL Motor
	VXM-034	Loading motor
⚠	VSA-001	Voltage selector
⚠	VDG-019	Power cord

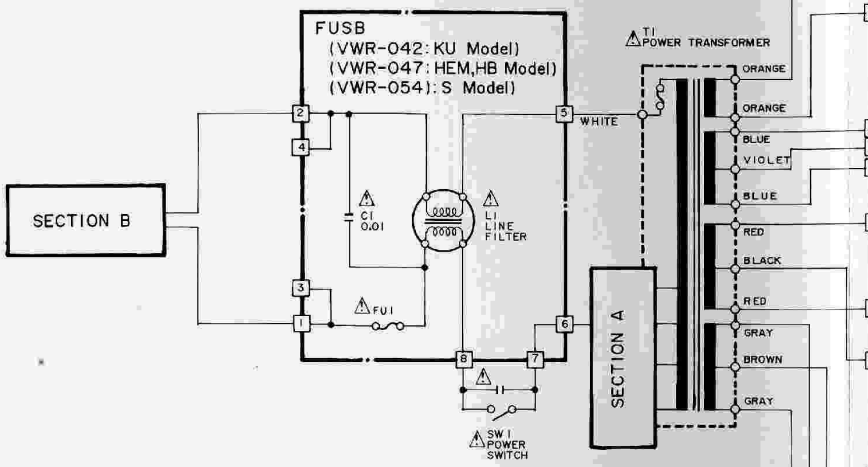
4.2 LOCATION OF PCBS



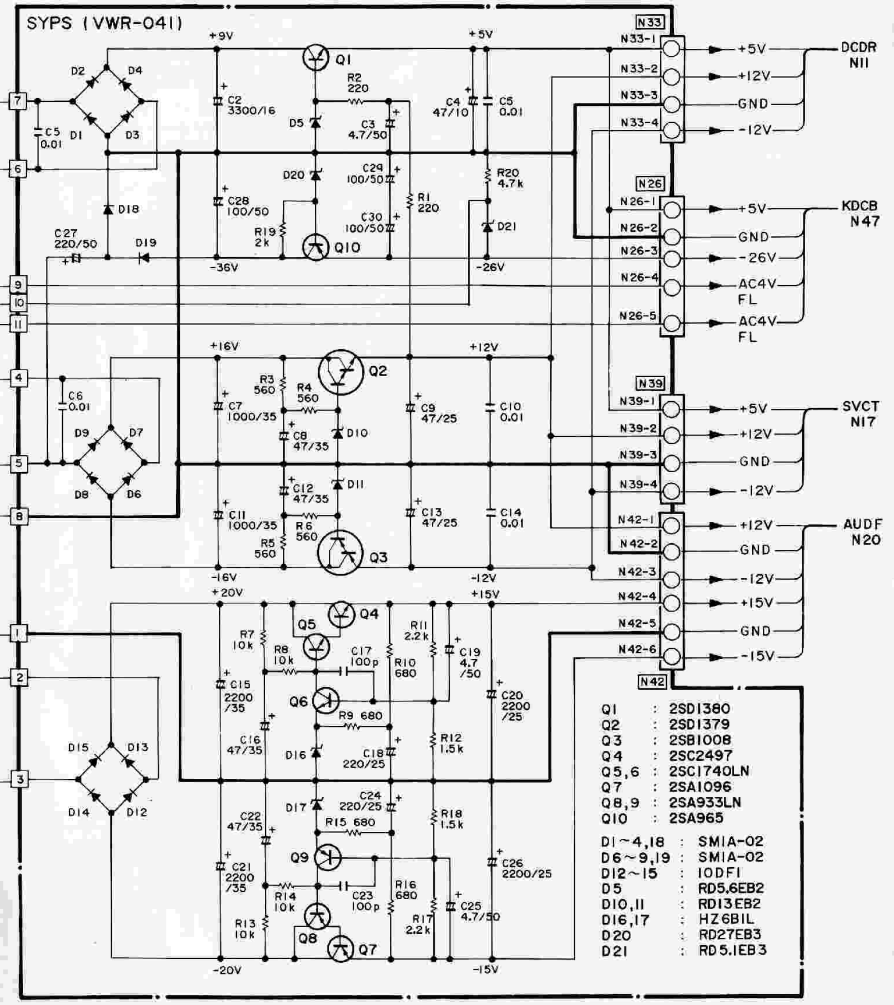
Abbreviation List

FUSB	Fuse board	DCDR	Decoder board
SYPS	System power supply	AUDF	Audio & filter board
HEAD	Head amp.	HPHB	Headphone board
APCB	Automatic laser power control board	LMPB	Lamp board
PREB	Pre-processing board	KDCB	Key, display, & control board
SVCT	Servo & control board	RMCN	Remote control board

4.3 FUSB, SYPS

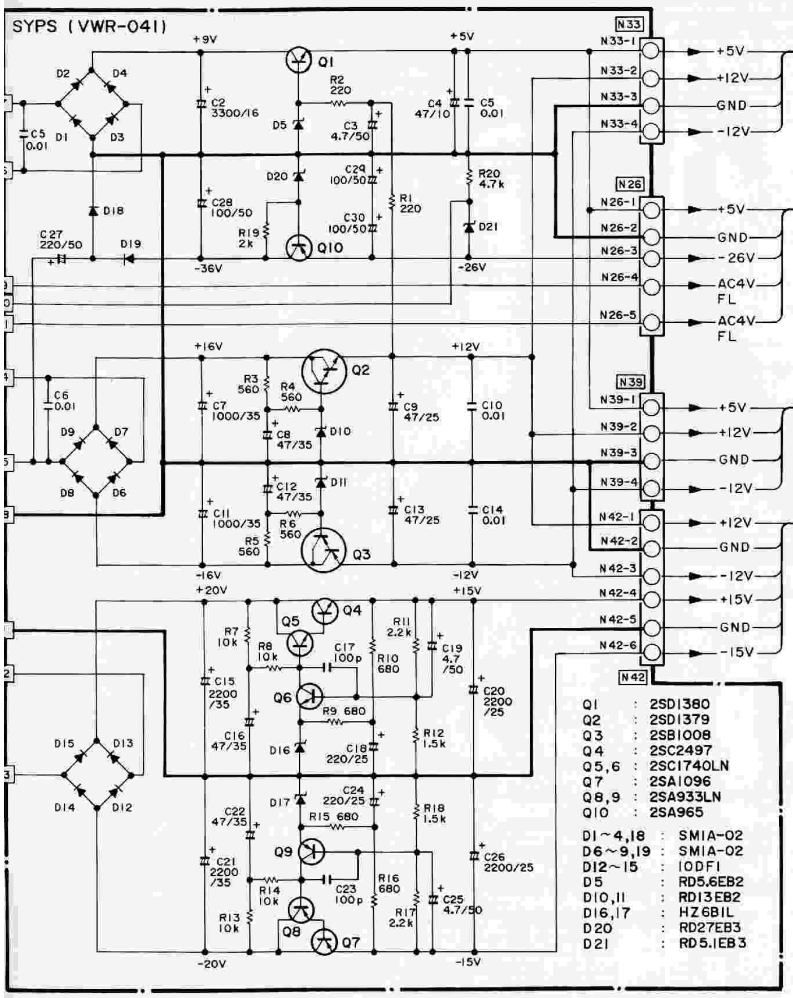


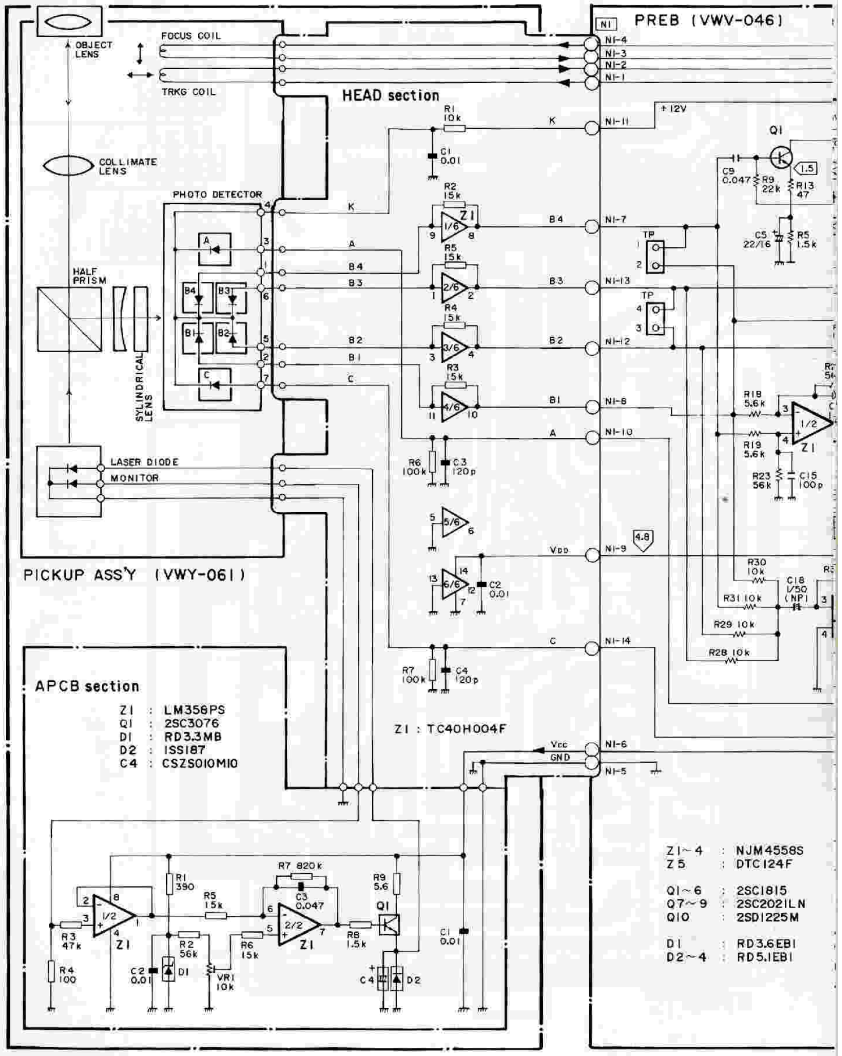
	KU model	HEM model	HB model	S model
SECTION A	POWER TRANSFORMER VTT-041; YELLOW 120V; TO FUSB ⑥	⚠VOLTAGE SELECTOR VSB-001; POWER TRANSFORMER VTT-038; BLUE 220V; VIOLET 240V; TO FUSB ⑥		YELLOW 110V; BROWN 120V; GRAY 220V; VIOLET 240V; POWER TRANSFORMER VTT-042; TO FUSB ⑥ ⚠VOLTAGE SELECTOR VSB-002
FUSE	125V 800mA (VEK-016)	250V 250mA (VEK-012)		250V 250mA (VEK-014)
SECTION B	AC120V 50Hz	AC240/220V 50/60Hz	AC240/220V WITHOUT POWER PLUG	AC 240/220/120/110V 50/60Hz

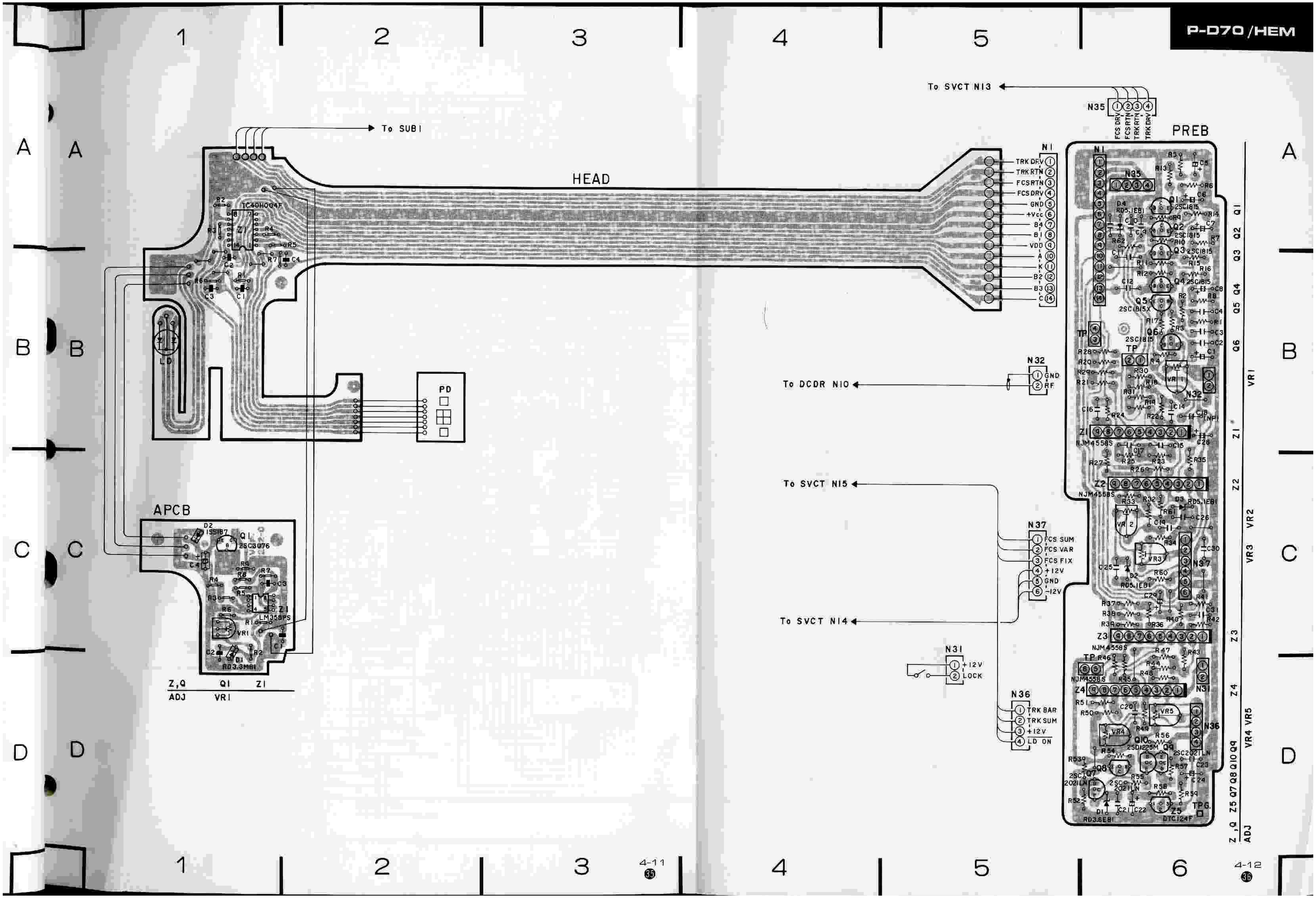


Q1	2SD1380
Q2	2SD1379
Q3	2SB1008
Q4	2SC2497
Q5,6	2SC1740LN
Q7	2SA1096
Q8,9	2SA933LN
Q10	2SA965
D1~4,18	SMIA-02
D6~9,19	SMIA-02
D12~15	10DFI
D5	RD5.6EB2
D10,11	RD13EB2
D16,17	HZ6BIL
D20	RD27EB3
D21	RD5.1EB3

4.4 PICKUP, PREB



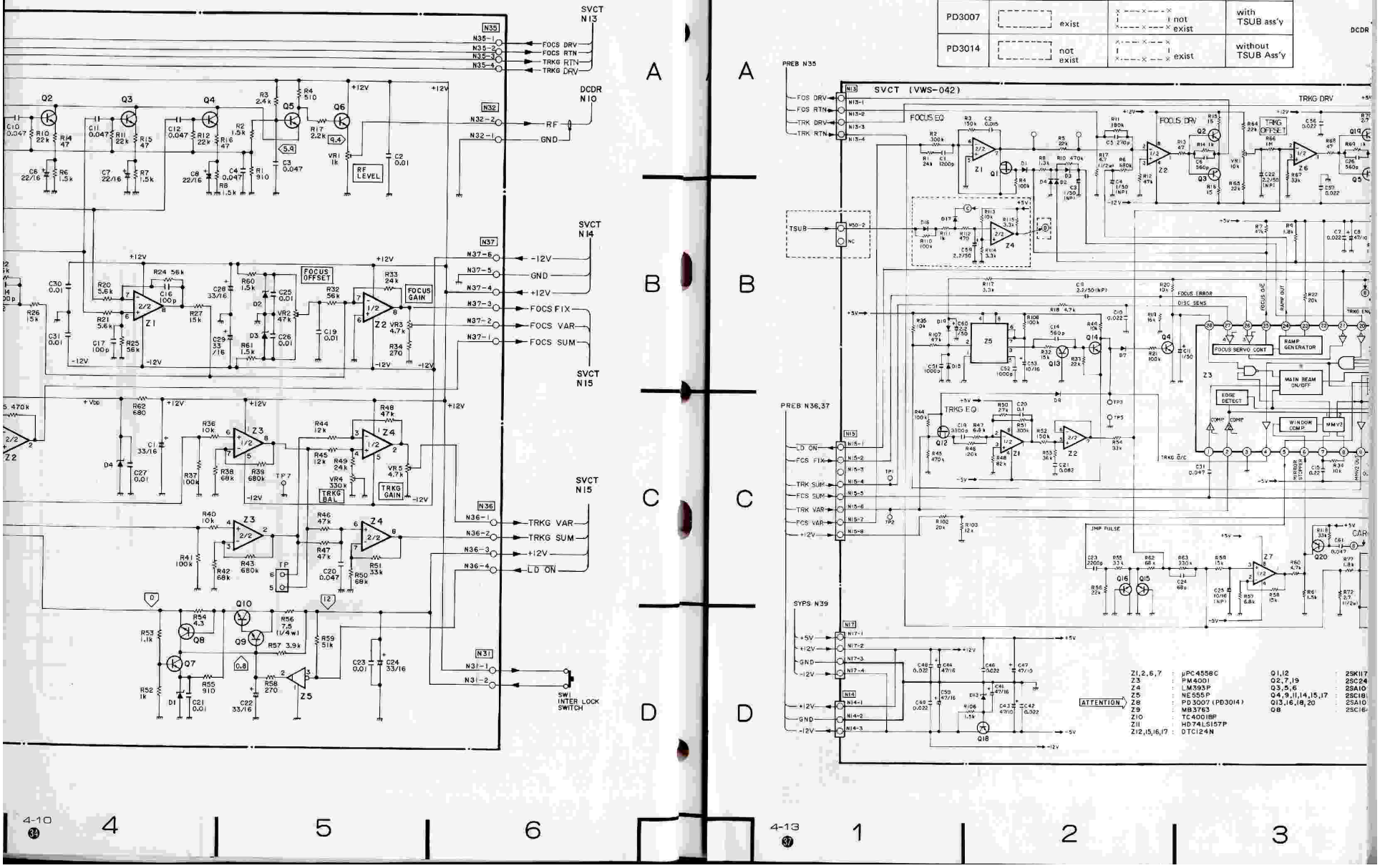


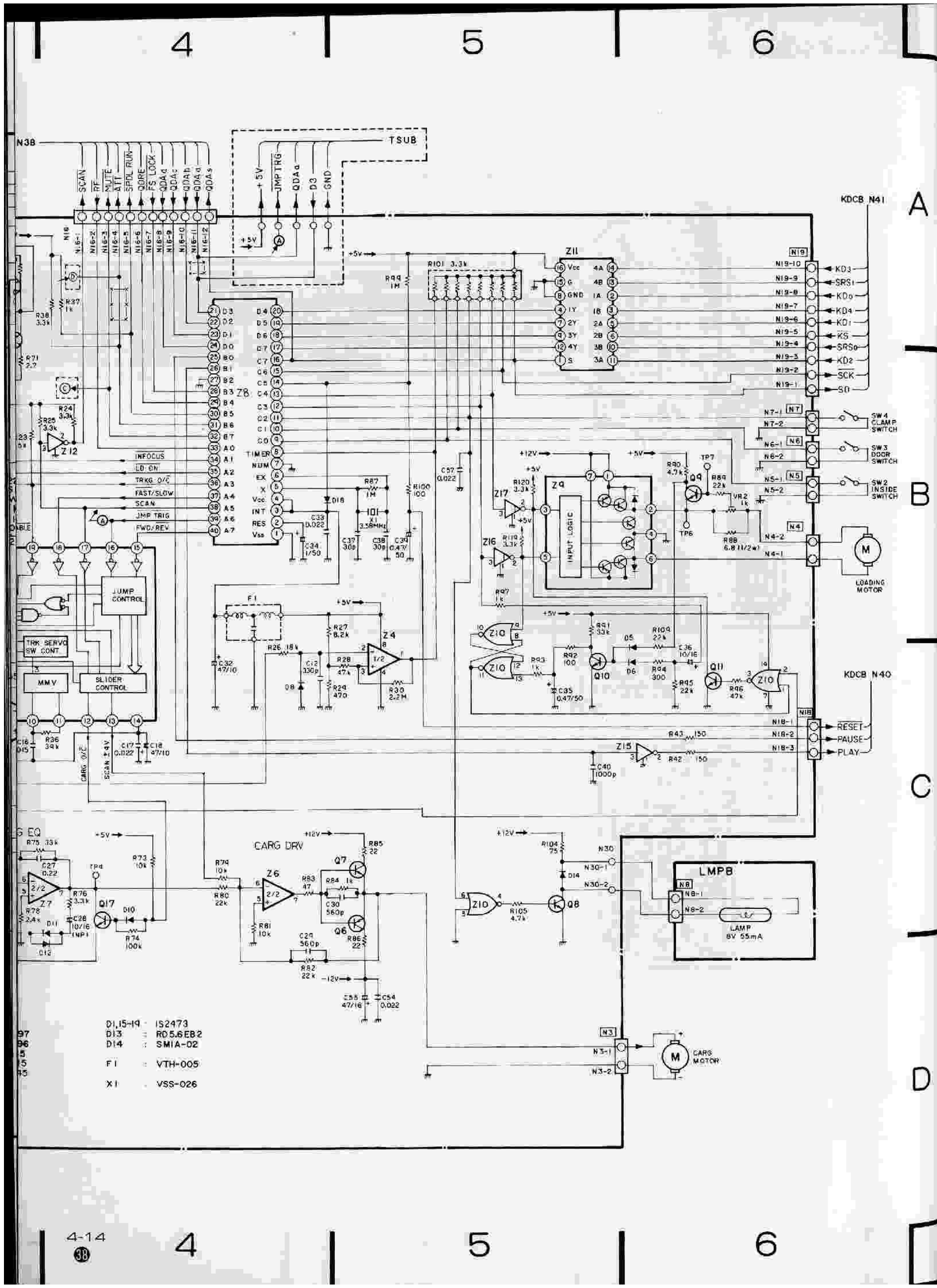


To SUB1
HEAD
TC40H004F
APCB
2SC3076
LM358PS
RD3.3MB1
1SS187
Z,Q Q1 Z1
ADJ VR1
PD
LD
To SVCT N13
N35
FCS DRV
FCS RTN
TRK RTN
TRK DRV
N1
TRK DRV
TRK RTN
FCS RTN
FCS DRV
GND
+Vcc
B4
B1
VDD
A
K
B2
B3
C
PREB
N32
GND
RF
To DCDR N10
To SVCT N15
N37
FCS SUM
FCS VAR
FCS FIX
+12V
GND
-12V
To SVCT N14
N31
+12V
LOCK
N36
TRK BAR
TRK SUM
+12V
LD ON
NJM4558S
2SC1815
2SC2021LN
2SD1225M
DTC124F
RD5.1EB1
RD3.6EB1
Q1 Q2 Q3 Q4 Q5 Q6 VR1 Z1 Z2 VR2 VR3 Z3 Z4 VR4 VR5 Q9 Q10 Q8 Q7 Z5
Z,Q ADJ

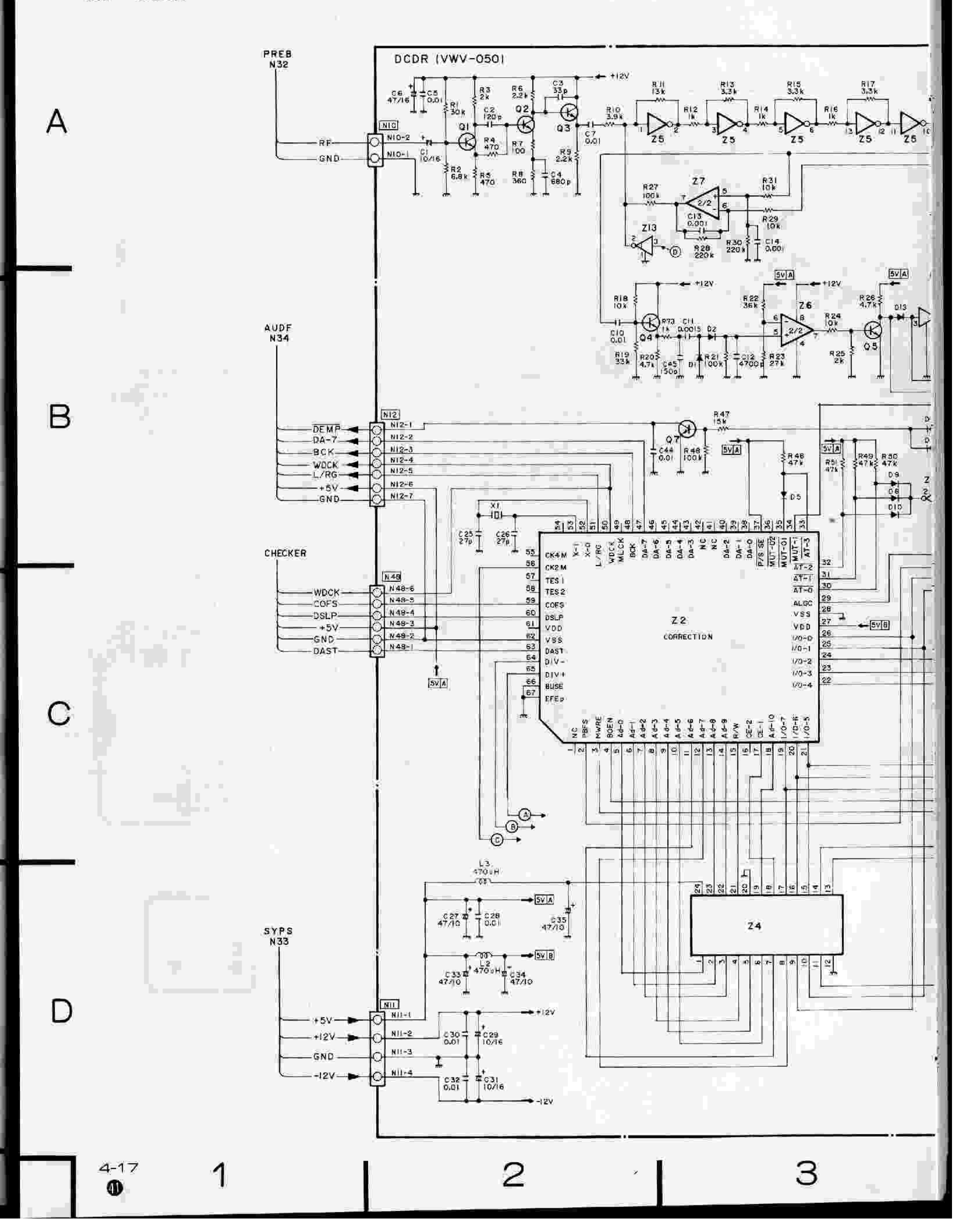
4.5 SVCT, LMPB

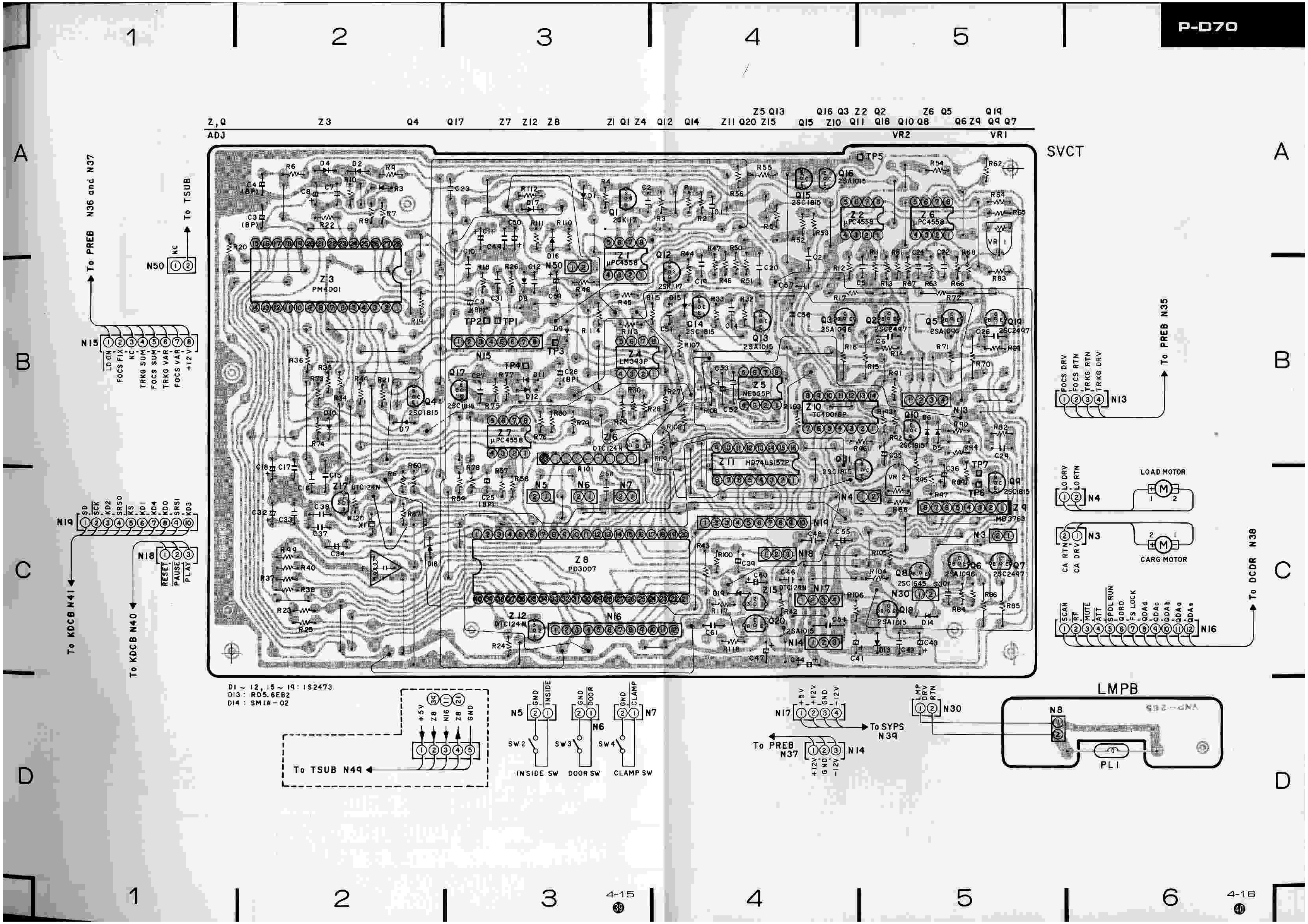
CPU Z8			
PD3007	exist	not exist	with TSUB ass'y
PD3014	not exist	exist	without TSUB Ass'y



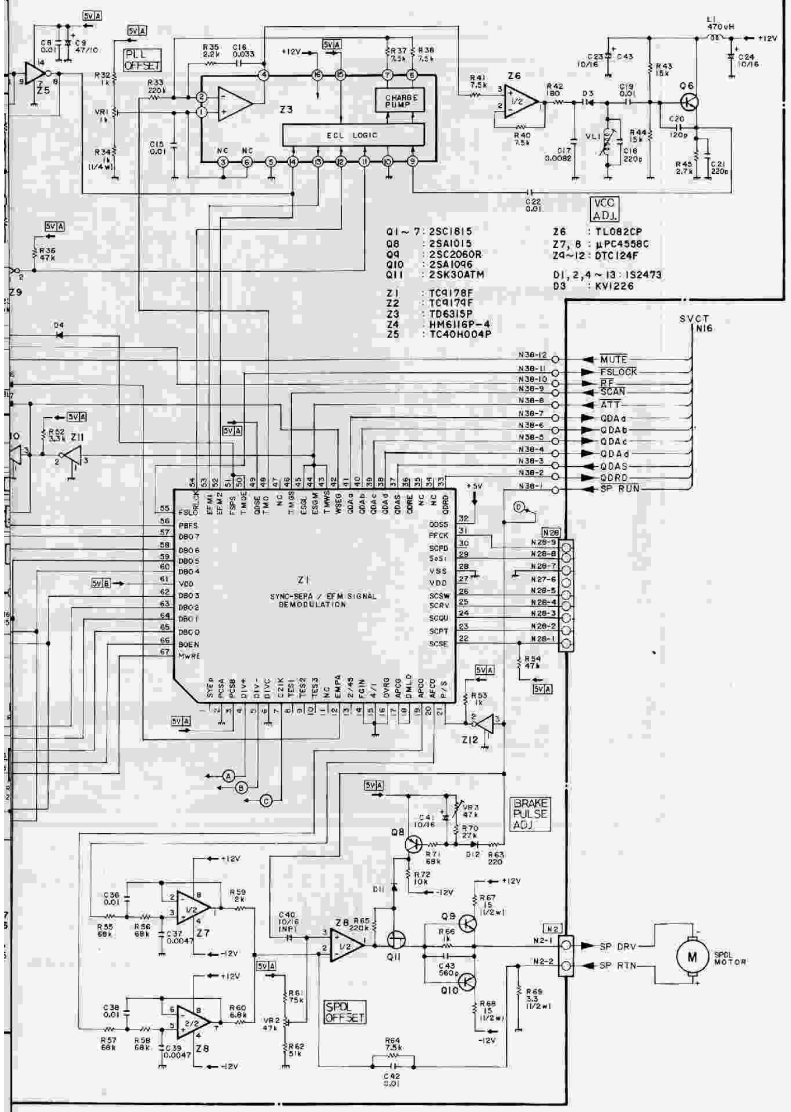

TSUB
KDCB N41
KDCB N40
CARG DRV
LMPB
LAMP 8V 55mA
LOADING MOTOR
CARG MOTOR
JUMP CONTROL
SLIDER CONTROL
MMV
D1,15-19 : 1S2473
D13 : RD5.6EB2
D14 : SMIA-02
F1 : VTH-005
X1 : VSS-026

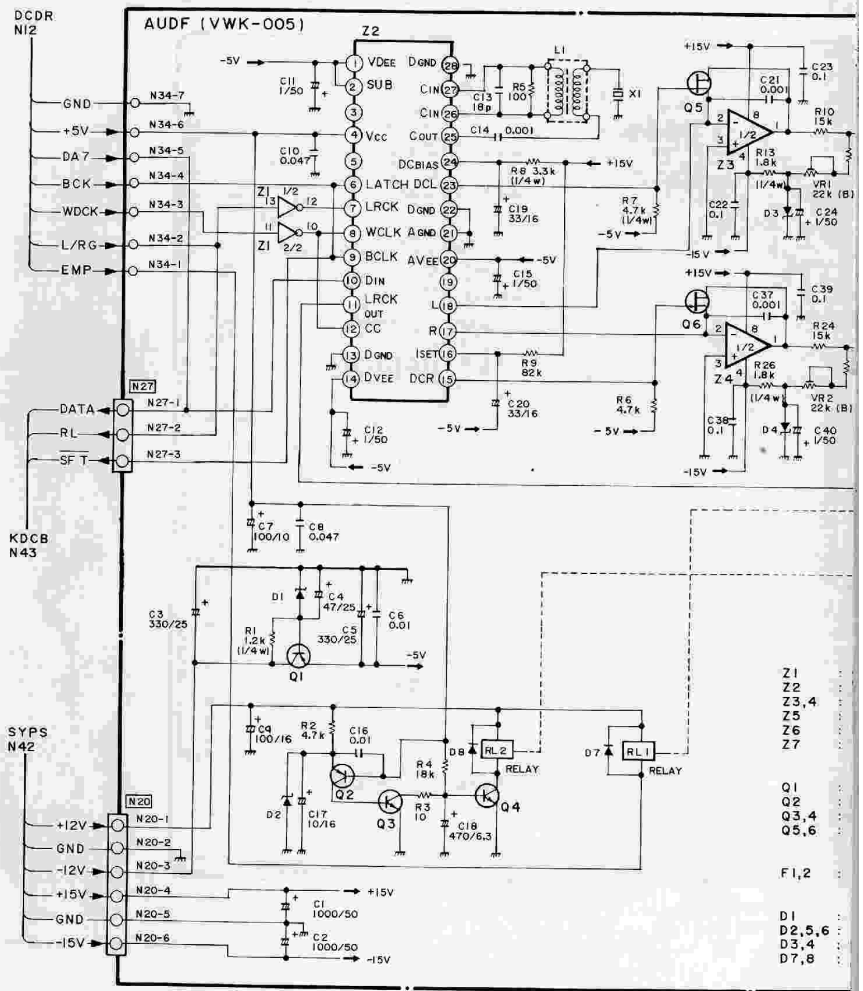
4.6 DCDR

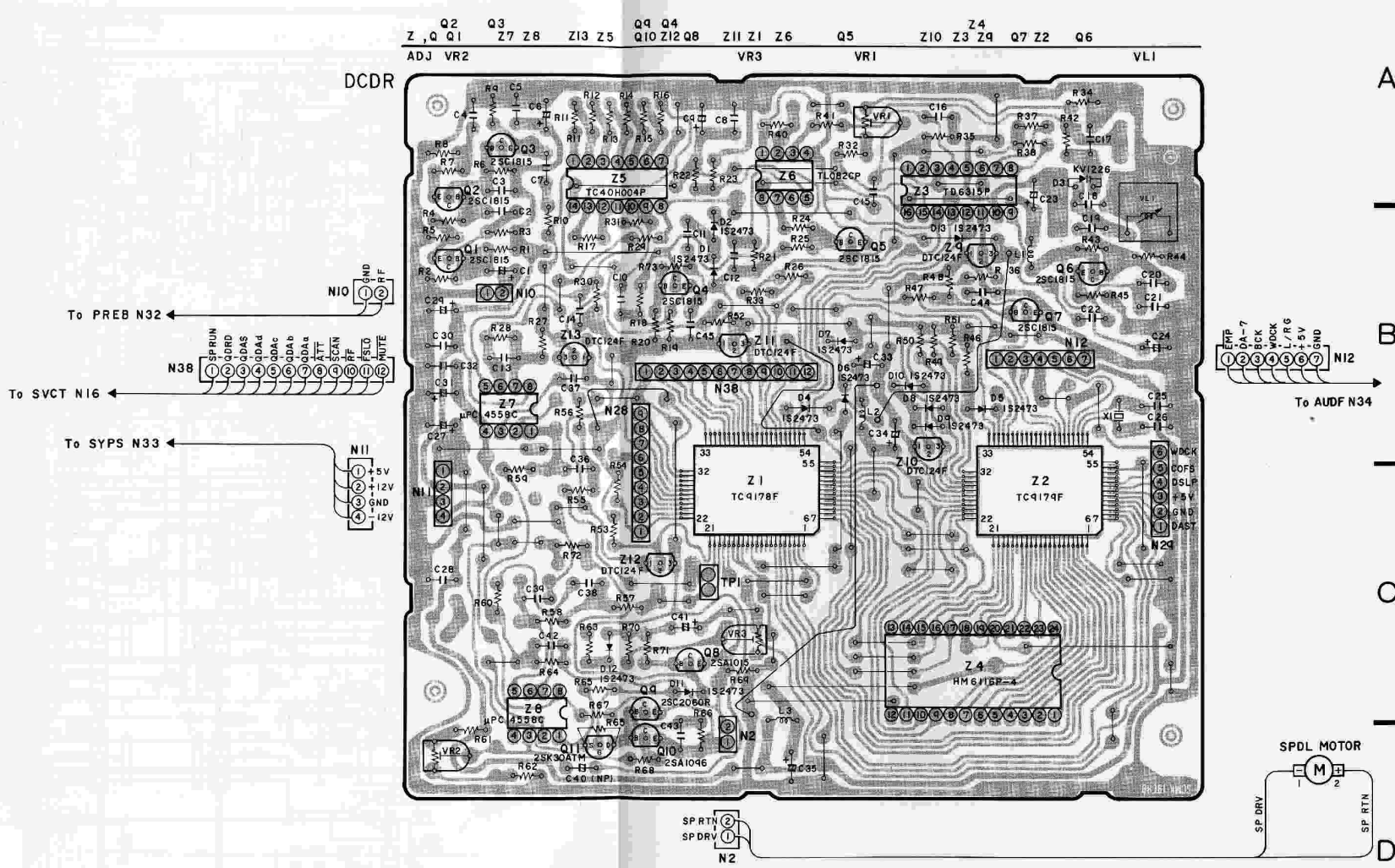

DCDR (VWV-050)
PREB N32
AUDF N34
CHECKER
SYPS N33
Z2 CORRECTION
Z4


SVCT
Z3
PM4001
Z8
PD3007
Z11
HD74LS157P
Z10
TC4001BP
Z9
MB3763
Z5
NE555P
Z4
LM393P
LMPB
LOAD MOTOR
CARG MOTOR
To PREB N36 and N37
To TSUB
To KDCB N41
To KDCB N40
To TSUB N49
To PREB N35
To DCDR N38
To SYPS N39
To PREB N37
INSIDE SW
DOOR SW
CLAMP SW
D1 ~ 12, 15 ~ 19 : 1S2473
D13 : RD5.6EB2
D14 : SM1A-02

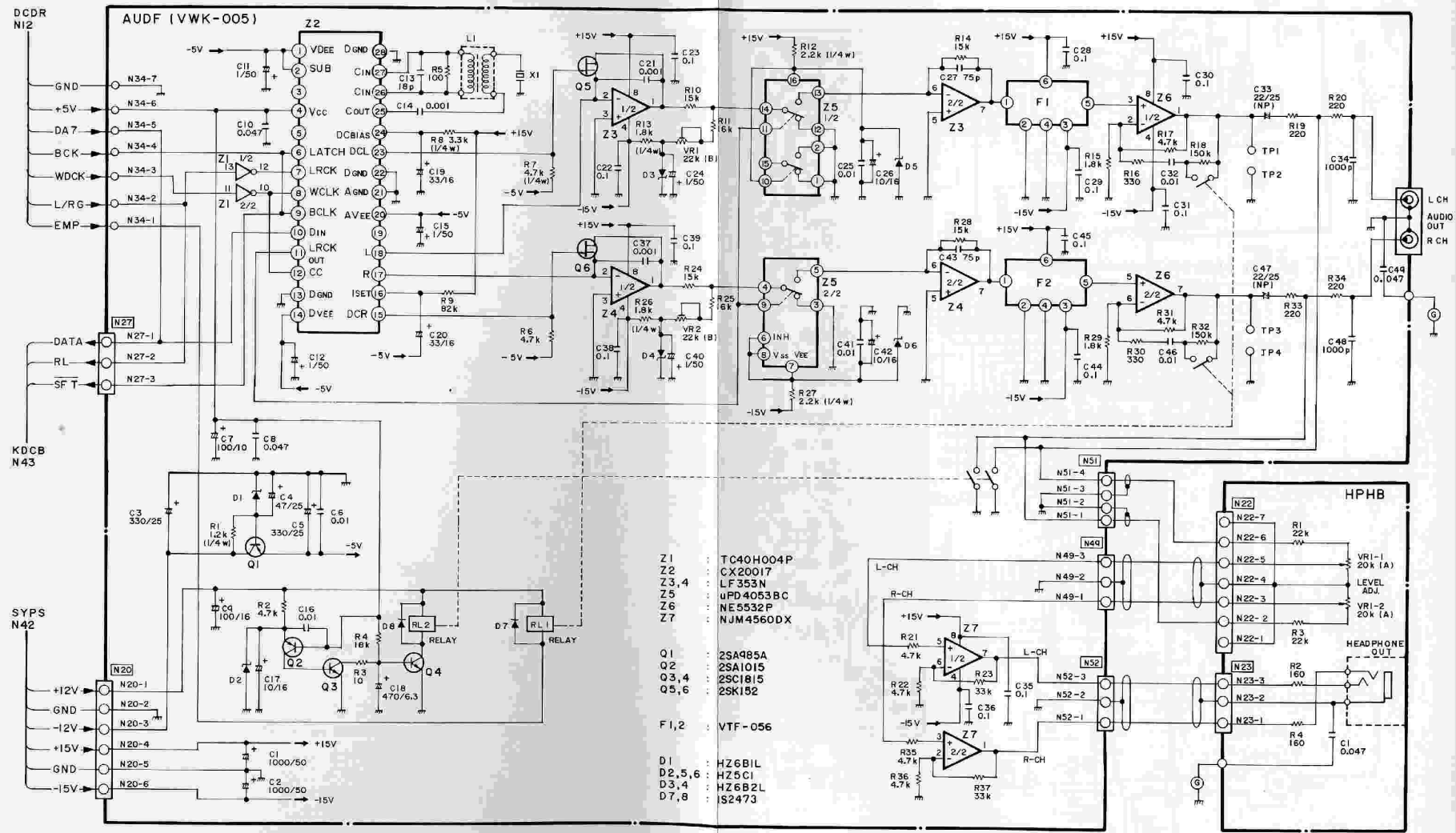
4.7 AUDF, HPHB

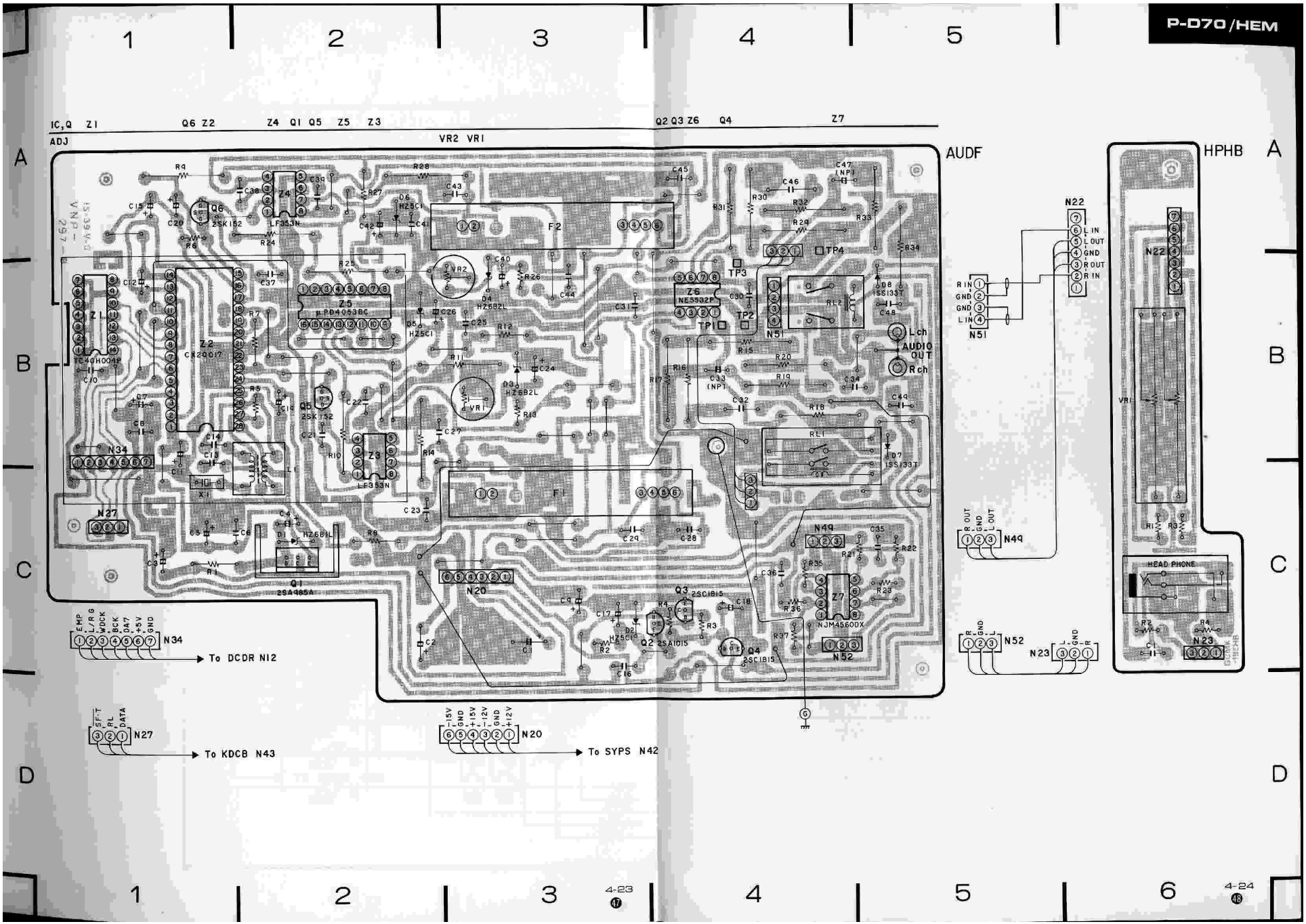

PLL OFFSET
CHARGE PUMP
ECL LOGIC
VCC ADJ.
Q1 ~ 7 : 2SC1815
Q8 : 2SA1015
Q9 : 2SC2060R
Q10 : 2SA1066
Q11 : 2SK30ATM
Z1 : TC9178F
Z2 : TC9179F
Z3 : TD6315P
Z4 : HM6116P-4
Z5 : TC40H004P
Z6 : TL082CP
Z7, 8 : μPC4558C
Z9~12 : DTC124F
D1, 2, 4 ~ 13 : 1S2473
D3 : KV1226
SVCT
N16
MUTE
FSLOCK
RF
SCAN
ATT
QDAd
QDAb
QDAc
QDAd
QDAS
QDRD
SP RUN
SYNC-SEPA / EFM SIGNAL DEMODULATION
BRAKE PULSE ADJ.
SPOOL OFFSET
SP DRV
SP RTN
SPOOL MOTOR

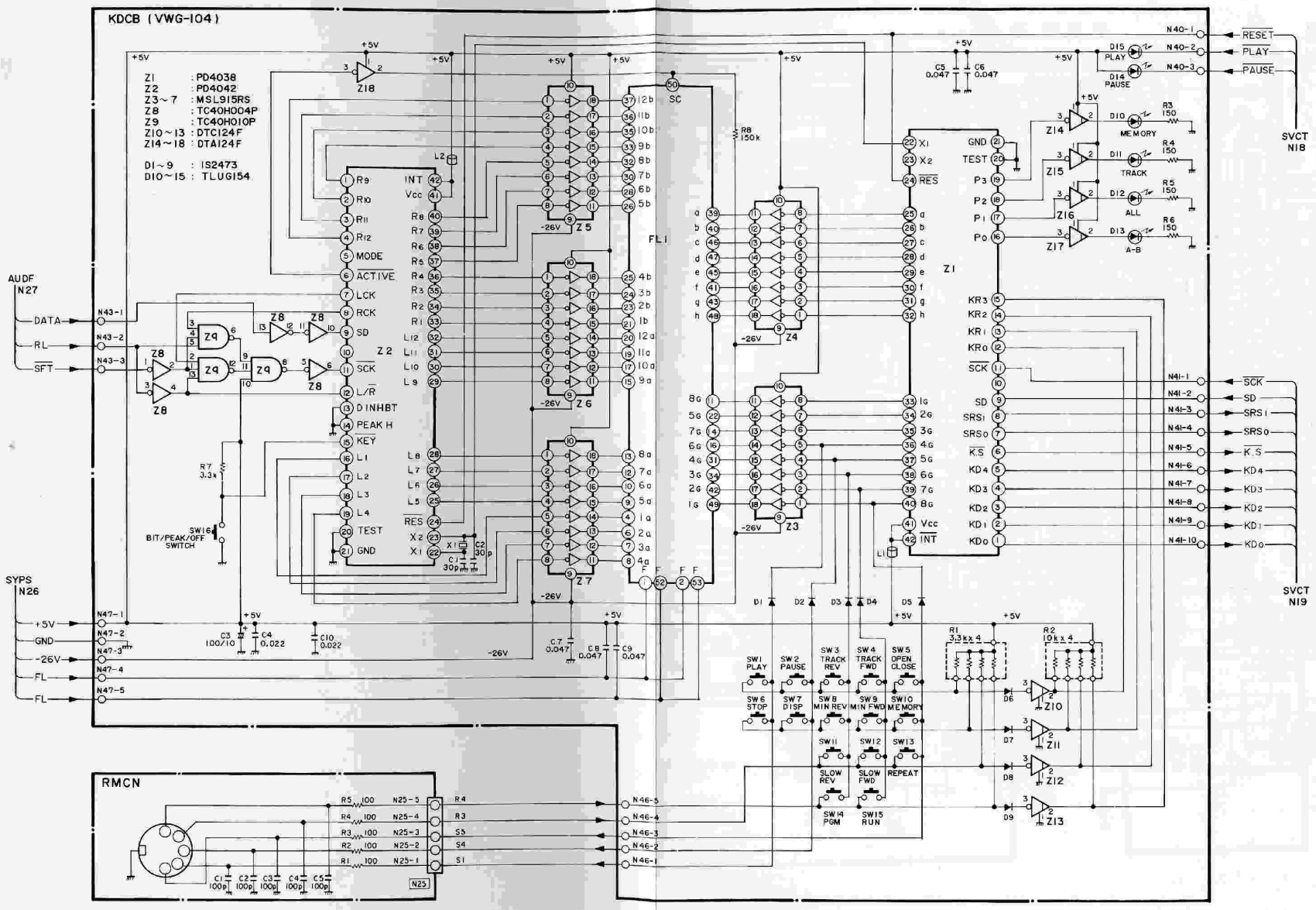

AUDF (VWK-005)
DCDR
N12
GND
+5V
DA7
BCK
WDCK
L/RG
EMP
DATA
RL
SFT
KDCB
N43
SYPS
N42
+12V
GND
-12V
+15V
GND
-15V
VDEE
SUB
Vcc
DGND
CIN
COUT
DCBIAS
LATCH DCL
LRCK
WCLK
BCLK
DIN
LRCK
CC
DGND
DVEE
AGND
AVEE
L
R
ISET
DCR
LRCK
RELAY
Z1
Z2
Z3,4
Z5
Z6
Z7
Q1
Q2
Q3,4
Q5,6
F1,2
D1
D2,5,6
D3,4
D7,8

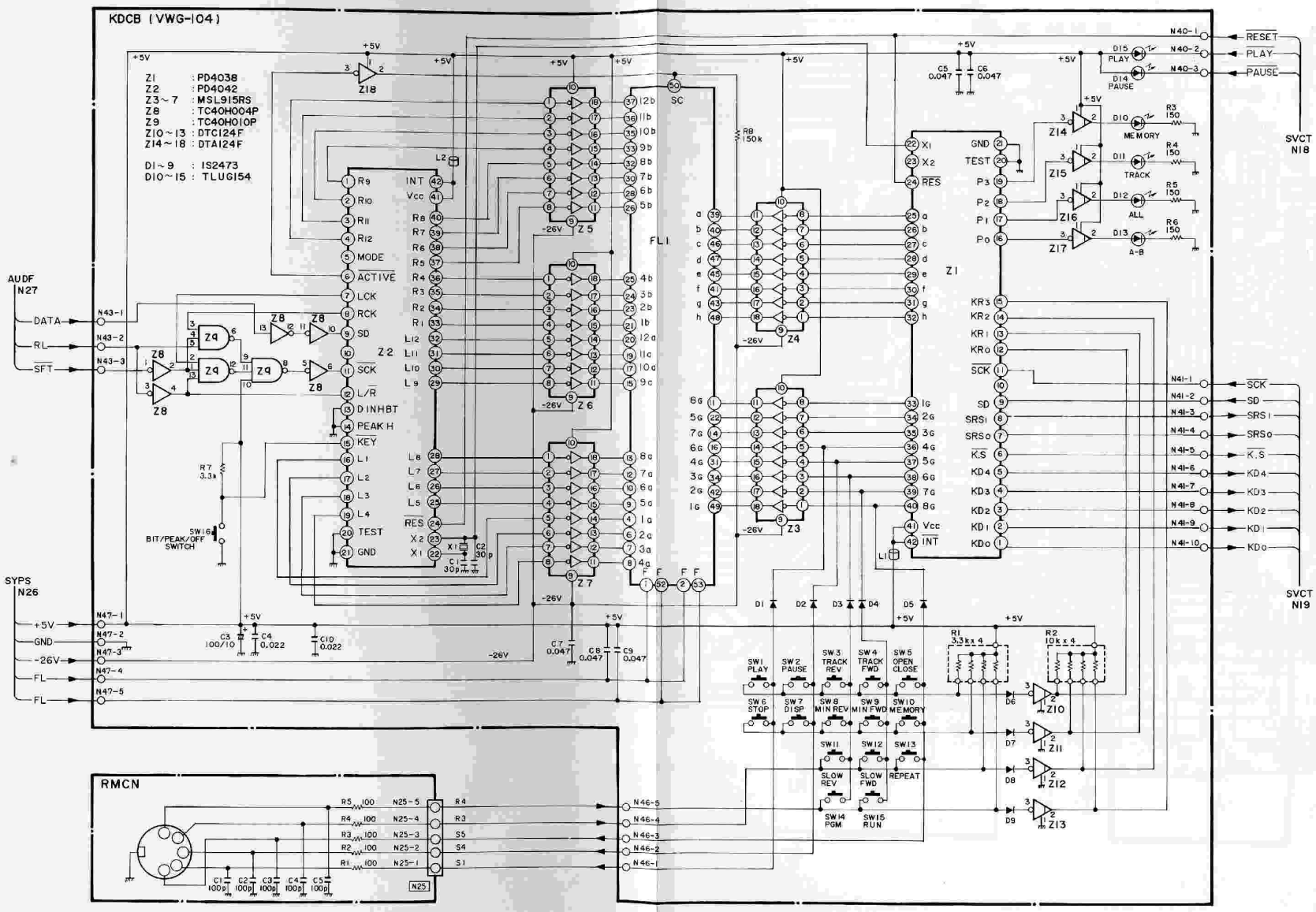

DCDR
ADJ VR2
VR3
VR1
VL1
To PREB N32
To SVCT N16
To SYPS N33
To AUDF N34
SPDL MOTOR
SP DRV
SP RTN
N2
N10
N38
N11
N12
N29
Z1 TC9178F
Z2 TC9174F
Z4 HM6116P-4
Z5 TC40H004P
Z6 TL082CP
Z3 TD6315P
Z7 μPC4558C
Z8 μPC4558C
Z9 DTC124F
Z10 DTC124F
Z11 DTC124F
Z12 DTC124F
Z13 DTC124F
Q1 2SC1815
Q2 2SC1815
Q3 2SC1815
Q4 2SC1815
Q5 2SC1815
Q6 2SC1815
Q7 2SC1815
Q8 2SA1015
Q9 2SC2060R
Q10 2SA1046
Q11 2SK30ATM
D1 IS2473
D2 IS2473
D3 IS2473
D4 IS2473
D5 IS2473
D6 IS2473
D7 IS2473
D8 IS2473
D9 IS2473
D10 IS2473
D11 IS2473
D12 IS2473
KV1226
TPI
L2
L3
X1

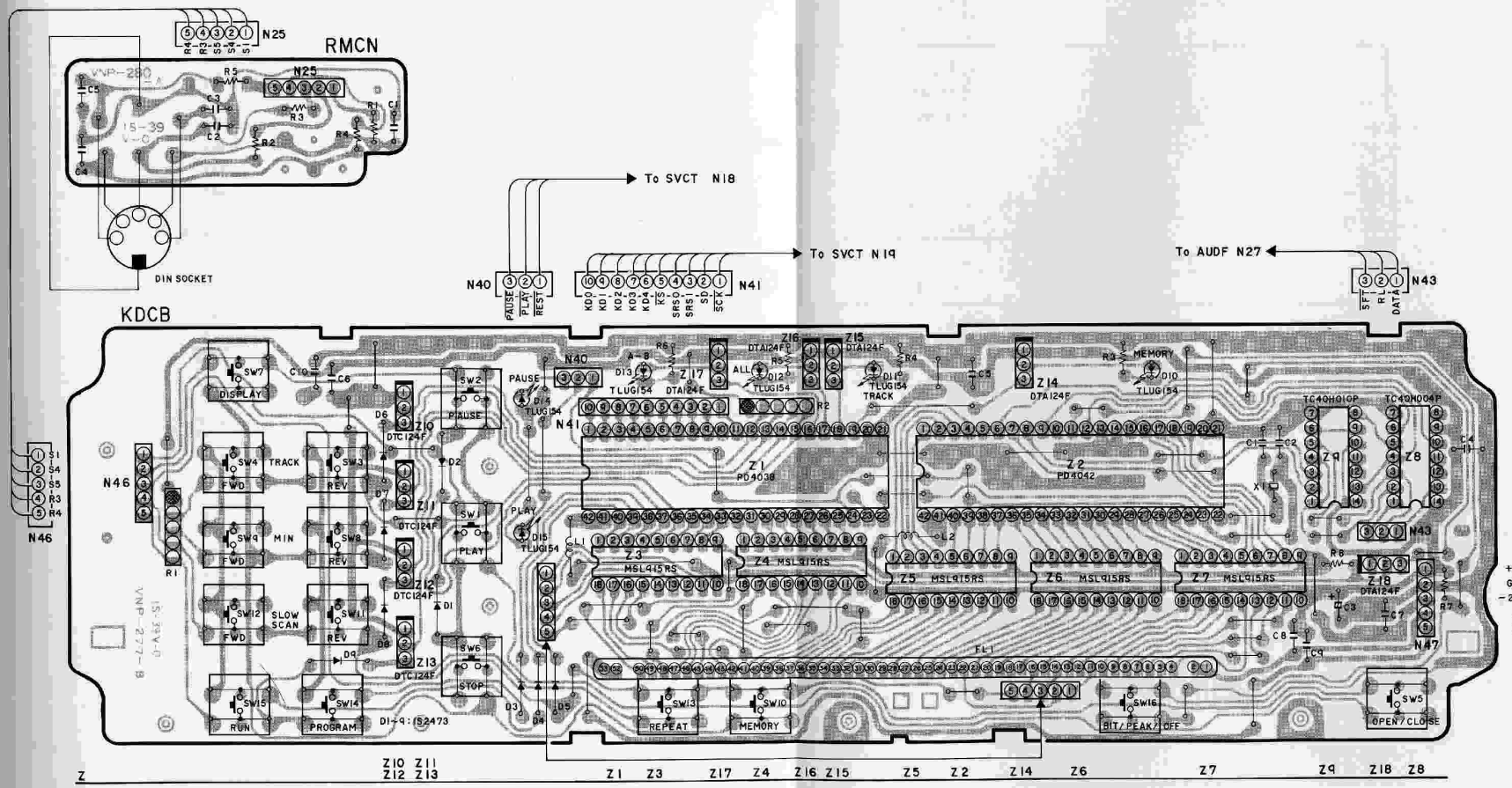
4.7 AUDF, HPHB


AUDF (VWK-005)
DCDR N12
KDCB N43
SYPS N42
HPHB
Z1 : TC40H004P
Z2 : CX20017
Z3,4 : LF353N
Z5 : uPD4053BC
Z6 : NE5532P
Z7 : NJM4560DX
Q1 : 2SA985A
Q2 : 2SA1015
Q3,4 : 2SC1815
Q5,6 : 2SK152
F1,2 : VTF-056
D1 : HZ6BIL
D2,5,6 : HZ5CI
D3,4 : HZ6B2L
D7,8 : IS2473

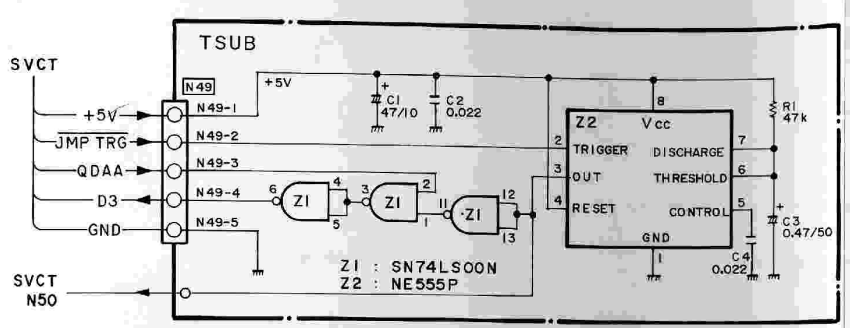

IC,Q Z1 Q6 Z2 Z4 Q1 Q5 Z5 Z3 Q2 Q3 Z6 Q4 Z7
ADJ VR2 VR1
AUDF
HPHB
Z1 TC40H004P
Z2 CX20017
Z3 LF353N
Z4 LF353N
Z5 μPD4053BC
Z6 NE5532P
Z7 NJM4560DX
Q1 2SA1465A
Q2 2SA1015
Q3 2SC1815
Q4 2SC1815
Q5 2SK152
Q6 2SK152
F1
F2
N34
N27
N20
N49
N52
N51
N22
N23
AUDIO OUT
Lch
Rch
HEAD PHONE
To DCDR N12
To KDCB N43
To SYPS N42
4-23
4-24

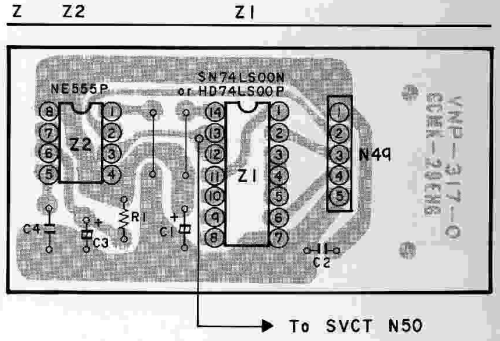

KDCB (VWG-104)
Z1 : PD4038
Z2 : PD4042
Z3~7 : MSL9I5RS
Z8 : TC40H004P
Z9 : TC40H010P
Z10~13 : DTC124F
Z14~18 : DTA124F
D1~9 : IS2473
D10~15 : TLUG154
AUDF N27
DATA
RL
SFT
SYPS N26
+5V
GND
-26V
FL
SVCT N18
SVCT N19
RESET
PLAY
PAUSE
SCK
SD
SRS1
SRS0
K.S
KD4
KD3
KD2
KD1
KD0
RMCN

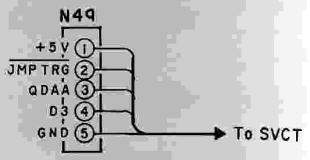

KDCB (VWG-104)
Z1 : PD4038
Z2 : PD4042
Z3~7 : MSL915RS
Z8 : TC40H004P
Z9 : TC40H010P
Z10~13 : DTC124F
Z14~18 : DTA124F
D1~9 : IS2473
D10~15 : TLUG154
AUDF N27
DATA
RL
SFT
SYPS N26
+5V
GND
-26V
FL
FL
SVCT N18
SVCT N19
RESET
PLAY
PAUSE
SCK
SD
SRSI
SRSO
K.S
KD4
KD3
KD2
KD1
KD0
SC
FL1
Z1
Z2
Z3
Z4
Z5
Z6
Z7
Z8
Z9
Z10
Z11
Z12
Z13
Z14
Z15
Z16
Z17
Z18
SW1 PLAY
SW2 PAUSE
SW3 TRACK REV
SW4 TRACK FWD
SW5 OPEN CLOSE
SW6 STOP
SW7 DISP
SW8 MIN REV
SW9 MIN FWD
SW10 MEMORY
SW11 SLOW REV
SW12 SLOW FWD
SW13 REPEAT
SW14 PGM
SW15 RUN
SW16 BIT/PEAK/OFF SWITCH
MEMORY
TRACK
ALL
A-B
RMCN
N25
N46-5
N46-4
N46-3
N46-2
N46-1


RMCN
N25
DIN SOCKET
To SVCT N18
To SVCT N19
To AUDF N27
N40
N41
N43
KDCB
N46
N47
To SYPS N26
SW7 DISPLAY
SW2 PAUSE
SW4 TRACK FWD
SW3 REV
SW9 MIN FWD
SW8 REV
SW12 SLOW SCAN FWD
SW11 REV
SW15 RUN
SW14 PROGRAM
SW1 PLAY
SW6 STOP
SW13 REPEAT
SW10 MEMORY
SW16 BIT/PEAK OFF
SW5 OPEN/CLOSE
Z1 PD4038
Z2 PD4042
Z3 MSL415RS
Z4 MSL415RS
Z5 MSL415RS
Z6 MSL415RS
Z7 MSL415RS
Z8 TC40H004P
Z9 TC40H010P
Z10 Z11 Z12 Z13 DTC124F
Z14 DTA124F
Z15 DTA124F
Z16 DTA124F
Z17 DTA124F
Z18 DTA124F
FL1
+5V GND -25V FL FL

4.9 TSUB







4.10 PARTS LIST

NOTES:
- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

SYPS(VWR-041) Parts list 1

(MK)(Part No.)	(IT)(REF Nos. & DESCRIPTIONS)
2SD1380	Q 1
2SD1379	Q 2
2SB1008	Q 3
2SC2497	Q 4
2SC1740LN	Q 5, 6
2SA1096	Q 7
2SA933LN	Q 8, 9
2SA965	Q 10
SM1A-02	D 1- 4, 6- 9, 18, 19
RD5.6EB2	D 5
RD13EB2	D 10, 11
10DF1	D 12- 15
HZ6B1L	D 16, 17
RD27EB3	D 20
RD5.1EB3	D 21
RD1/6PS000J	R 1- 20
CKDYF103Z50	C 1, 5, 6, 10, 14
VCH-021	C 2 3300/16
CEA4R7M50	C 3, 19, 25
CEA470M10	C 4
VCH-013	C 7, 11 1000/35
CEA470M35	C 8, 12, 16, 22
CEA470M25	C 9, 13
VCH-019	C 15, 21
VCF-001	C 17, 23
CEYA221M25	C 18, 24
CEYA222M25	C 20, 26
CEA221M50	C 27
CEA101M50	C 28- 30
VBF-003	Ceramic tube
VBA-003	Screw
VEC-072	Spacer

FUSB(VWR-047) Parts list 1

(MK)(Part No.)	(IT)(REF Nos. & DESCRIPTIONS)		
⚠ VCG-010	C 1	Capacitor
⚠ VTL-003	L 1	Line filter
⚠ VEK-012	FU 1	Fuse
VKR-002	Fuse holder	

PREB(VWV-046) Parts list 1

(MK)(Part No.)	(IT)(REF Nos. & DESCRIPTIONS)	
NJM4558S	Z 1- 4	
DTC124F	Z 5	
2SC1815	Q 1- 6	
2SC2021LN	Q 7- 9	
2SD1225M	Q 10	
RD3.6EB1	D 1	
RD5.1EB1	D 2- 4	
RD1/6PS000J	R 1- 55, 57- 62	
RD1/4PM000J	R 56	
VCP-070	VR 1	1k
VCP-080	VR 2	47k
VCP-074	VR 3, 5	4.7k
VCP-085	VR 4	330k
CEA330M16	C 1, 22, 24, 28, 29	
CKDYF103Z50	C 2, 19, 21, 23, 25- 27, 31	
VCG-003	C 3, 4, 9- 12, 20	0.047
CEA220M16	C 5- 8	
CCDSL101J50	C 14- 17	
CEA010M50NP	C 18	

4.10 PARTS LIST

NOTES:
- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

SYPS(VWR-041) Parts list 1

(MK)(Part No.)	(IT)(REF Nos. & DESCRIPTIONS)
2SD1380	Q 1
2SD1379	Q 2
2SB1008	Q 3
2SC2497	Q 4
2SC1740LN	Q 5, 6
2SA1096	Q 7
2SA933LN	Q 8, 9
2SA965	Q 10
SM1A-02	D 1- 4, 6- 9, 18, 19
RD5.6EB2	D 5
RD13EB2	D 10, 11
10DF1	D 12- 15
HZ6B1L	D 16, 17
RD27EB3	D 20
RD5.1EB3	D 21
RD1/6PS000J	R 1- 20
CKDYF103Z50	C 1, 5, 6, 10, 14
VCH-021	C 2 3300/16
CEA4R7M50	C 3, 19, 25
CEA470M10	C 4
VCH-013	C 7, 11 1000/35
CEA470M35	C 8, 12, 16, 22
CEA470M25	C 9, 13
VCH-019	C 15, 21
VCF-001	C 17, 23
CEYA221M25	C 18, 24
CEYA222M25	C 20, 26
CEA221M50	C 27
CEA101M50	C 28- 30
VBF-003	Ceramic tube
VBA-003	Screw
VEC-072	Spacer

FUSB(VWR-047) Parts list 1

(MK)(Part No.)	(IT)(REF Nos. & DESCRIPTIONS)		
⚠ VCG-010	C 1		Capacitor
⚠ VTL-003	L 1		Line filter
⚠ VEK-012	FU 1		Fuse
VKR-002		Fuse holder	

PREB(VWV-046) Parts list 1

(MK)(Part No.)	(IT)(REF Nos. & DESCRIPTIONS)
NJM4558S	Z 1- 4
DTC124F	Z 5
2SC1815	Q 1- 6
2SC2021LN	Q 7- 9
2SD1225M	Q 10
RD3.6EB1	D 1
RD5.1EB1	D 2- 4
RD1/6PS000J	R 1- 55, 57- 62
RD1/4PM000J	R 56
VCP-070	VR 1 1k
VCP-080	VR 2 47k
VCP-074	VR 3, 5 4.7k
VCP-085	VR 4 330k
CEA330M16	C 1, 22, 24, 28, 29
CKDYF103Z50	C 2, 19, 21, 23, 25- 27, 31
VCG-003	C 3, 4, 9- 12, 20 0.047
CEA220M16	C 5- 8
CCDSL101J50	C 14- 17
CEA010M50NP	C 18

NOTES:
- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

SVCT(VWS-042) Parts list 1

(MK)(Part No.)	(IT)(REF Nos. & DESCRIPTIONS)
uPC4558C (NJM4558D)	Z 1, 2, 6, 7
PM4001	Z 3
LM393P (uPC393C)	Z 4
NE555P	Z 5
PD3007	Z 8
MB3763	Z 9
TC4001BP (MB84001BM)	Z 10
SN74LS157N (HD74LS157P)	Z 11
DTC124N	Z 12, 15- 17
2SK117	Q 1, 12
2SC2497	Q 2, 7, 19
2SA1096	Q 3, 5, 6
2SC1815	Q 4, 9- 11, 14, 15, 17
2SC1645	Q 8
2SA1015	Q 13, 16, 18, 20
1S2473	D 1- 12, 15- 19
RD5.6EB2	D 13
SM1A-02	D 14
RD1/6PS000J	R 1- 14, 18, 19, 21- 29, 32- 42, 44- 69, 73- 84, 87, 89- 100,102-107,109
RD1/4PM000J	R 15, 16, 43, 70, 71, 85, 86
RD1/2PS000J	R 17, 72, 85, 86
RD1/4VM000J	R 20, 23, 30, 34,108,116-120
RD1/2VS6R8J	R 88
VCN-070	R 101 8P 3.3k
VCP-076	VR 1 10k
VCP-070	VR 2 1k
CQMA122J50	C 1
CQMA393J50	C 2
CEA010M50NP	C 3, 4
CCDSL271J50	C 5
CCDSL561J50	C 6, 14, 26, 29, 30
CKDYF223Z50	C 7, 10, 17, 33, 42, 46, 48, 49, 54, 56- 58
CEA470M10	C 8, 18, 32, 43, 47
CEA2R2M50NP	C 9, 22
CEA010M50	C 11, 34
CCDSL331J50	C 12
CQMA224J50	C 15, 27
CQMA153J50	C 16
CQMA332J50	C 19
CQMA104J50	C 20
CQMA823J50	C 21
CQMA222J50	C 23
CCDSL680J50	C 24
CEA100M16NP	C 25, 28
CQMA473J50	C 31, 61
CEAR47M50	C 35, 39
CEA100M16	C 36, 53
CCDSL300J50	C 37, 38
CEA470M16	C 41, 44, 50, 55
CQMA102J50	C 51, 52
CEA2R2M50	C 59, 60

SVCT(VWS-042) Parts list 2

(MK)(Part No.)	(IT)(REF Nos. & DESCRIPTIONS)
VTH-005	F 1
VSS-026	X 1 3.58MHz
VKH-012	IC 40P socket

LMPB(VWY-044) Parts list 1

(MK)(Part No.)	(IT)(REF Nos. & DESCRIPTIONS)
VEL-003	Lamp

NOTES:
- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

AUDF(VWK-005) Parts list 1

(MK)(Part No.)	(IT)	(REF Nos. & DESCRIPTIONS)	
TC40H004P	Z	1	
CX20017	Z	2	D/A
LF353N	Z	3, 4	
uPD4053BC	Z	5	
NE5532P	Z	6	
NJM4560DX	Z	7	
2SA985A	Q	1	
2SA1015	Q	2	
2SC1815	Q	3, 4	
2SK152-3	Q	5, 6	
HZ6B1L	D	1	
HZ5C1	D	2, 5, 6	
HZ6B2L	D	3, 4	
1S2473	D	7, 8	
RD1/4PM000J	R	1, 7, 8, 12, 27	
RD1/6PS000J	R	2- 6, 21- 23, 35- 37	
VCN-117	R	9	82.0k
VCN-118	R	10, 14, 24, 28	15.0k
VCN-123	R	11, 25	16.0k
RD1/4VM000J	R	13, 26	
VCN-121	R	15, 29	1.88k
VCN-120	R	16, 30	330
VCN-079	R	17, 31	4.70k
VCN-122	R	18, 32	150k
VCN-115	R	19, 20, 33, 34	220
VCR-028	VR	1, 2	22k
CEYA102M50	C	1, 2	
CEYA331M25	C	3, 5	
CEYA470M25	C	4	
VCE-020	C	6, 25, 41	
CEA101M10	C	7	
VCG-025	C	8, 10, 49	
CEA101M16	C	9	
CEA010M50	C	11, 12, 15, 24, 48	
CCDCH180J50	C	13	
CKDYB102K50	C	14	
CKDYF103Z50	C	16	
CEA100M16	C	17, 26, 42	
CEA471M6R3	C	18	
CEA330M16	C	19	
CEYA330M25	C	20	
VCE-017	C	21, 37	1000p
VCE-019	C	22, 23, 28- 31, 35, 36, 38, 39, 44, 45	
VCF-004	C	27, 43	75p
VCE-018	C	32, 46	0.01
CEXANP220M25	C	33, 47	
CKDYF223Z50	C	50	
VTL-156	L	1	
VTF-056	F	1, 2	L.P.F
VSS-030	X	1	35.802MHz
VSR-006	RL	1	Reed relay
VSR-005	RL	2	12V

DCDR(VWV-050) Parts list 1

(MK)(Part No.)	(IT)	(REF Nos. & DESCRIPTIONS)	
TC9178F	Z	1	
TC9179F	Z	2	
TD6315P	Z	3	
HM6116P-4	Z	4	
TC40H004P	Z	5	
TL082CP	Z	6	
uPC4558C (NJM4558D)	Z	7, 8	
DTC124F	Z	9- 13	
2SC1815	Q	1- 7	
2SA1015	Q	8	
2SC2060	Q	9	
2SA1096	Q	10	
2SK30ATM	Q	11	
1S2473	D	1, 2, 4- 13	
KV1226YBR	D	3	
RD1/6PS000J	R	1- 8, 10- 33, 35- 38, 40- 66, 70- 72	
RD1/4VM000J	R	9, 34, 73	
RD1/2VS000J	R	67- 69	
VCP-070	VR	1	1K
VCP-080	VR	2, 3	47k
CEA100M16	C	1, 23, 24, 29, 31	
CCDCH121J50	C	2	
CCDCH330J50	C	3	
CCDSL681J50	C	4	
CKDYF103Z50	C	5, 7, 8, 10, 15, 19, 22, 28, 30, 32, 42, 44	
CEA470M16	C	6	
CEA470M10	C	9, 27, 33- 35	
CQMA152J50	C	11	
CQMA104J50	C	12	
CQMA102J50	C	13, 14	
CQMA333J50	C	16	
CQMA822J50	C	17	
CCDRH221J50	C	18, 21	
CCDRH121J50	C	20	
CCDCH270J50	C	25, 26	
CQMA103J50	C	36, 38	
CQMA472J50	C	37, 39	
CEANL100M16NP	C	40	
CEANL100M16	C	41	
CCDSL561J50	C	43	
CCDSL151J50	C	45	
VTL-043	L	1- 3	470u
VTF-054	VL	1	
VSS-025	X	1	8.4672MHz

NOTES:
- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

HPHB(VWY-043) Parts list 1

(MK)(Part No.)	(IT)	(REF Nos. & DESCRIPTIONS)	
RD1/6PS000J	R	1- 4	
VCS-012	VR	1	
VCG-025	C	1	
VKN-143		Headphone jack	

KDCB(VWG-104) Parts list 1

(MK)(Part No.)	(IT)	(REF Nos. & DESCRIPTIONS)	
PD4038	Z	1	
PD4042	Z	2	
MSL915RS	Z	3- 7	
TC40H004P	Z	8	
TC40H010P	Z	9	
DTC124F	Z	10- 13	
DTA124F	Z	14- 18	
1S2473	D	1- 9	
TLUG154	D	10- 15	
VCN-102	R	1	4P 3.3k
VCN-101	R	2	4P 10k
RD1/6PS000J	R	3- 6	
RD1/4VM000J	R	7, 8	
CCDSL300J50	C	1, 2	
CEA101M10	C	3	
CKDYF223Z50	C	4, 10	
CKDYF473Z50	C	5- 9	
VTH-004	L	1, 2	Ferrite bead
VSS-026	X	1	3.58MHz
VSG-014	SW	1- 16	
VAW-001		FL display	

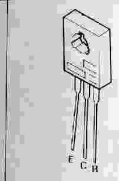
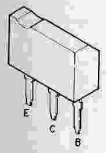
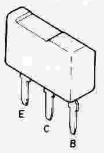
RMCN(VWY-048) Parts list 1

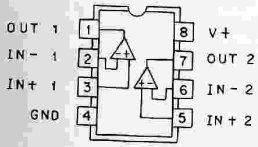
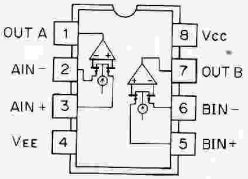
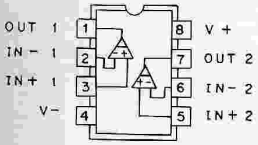
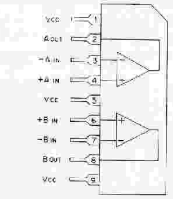
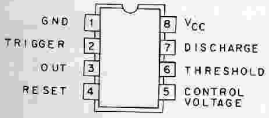
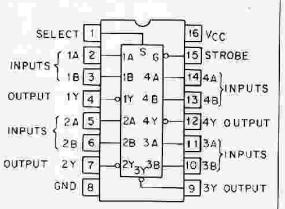
(MK)(Part No.)	(IT)	(REF Nos. & DESCRIPTIONS)	
RD1/6PS101J	R	1- 5	
CCDSL101J50	C	1- 5	
VKN-140		DIN Socket 5P	

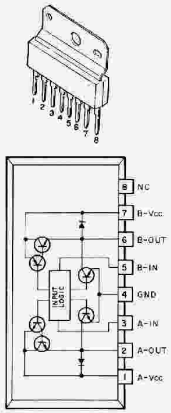
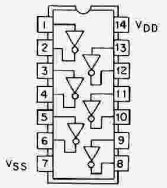
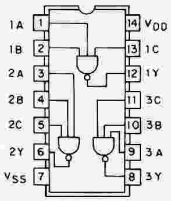
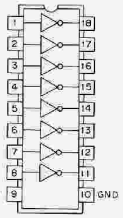
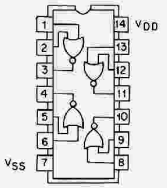
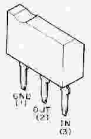
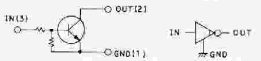
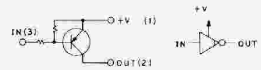
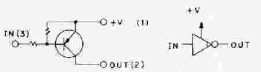
TSUB(VWG-112) Parts list 1

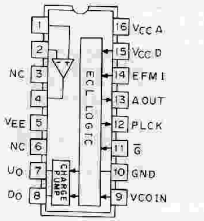
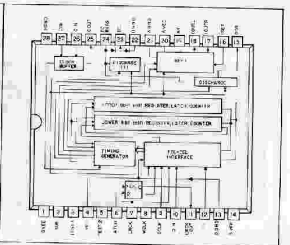
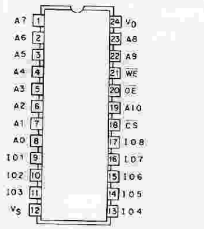
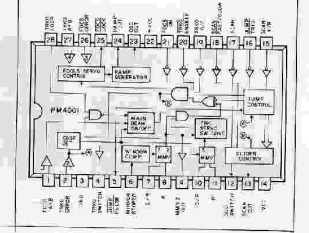
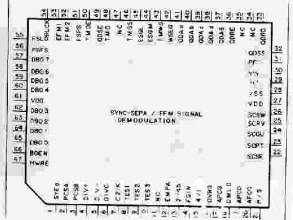
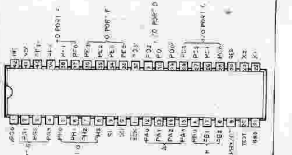
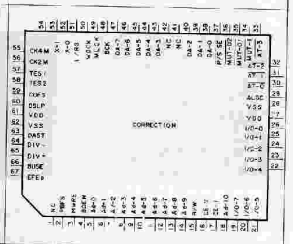
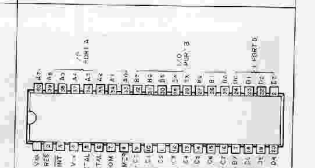
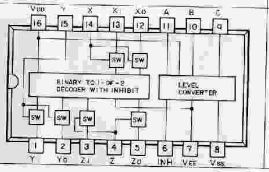
(MK)(Part No.)	(IT)	(REF Nos. & DESCRIPTIONS)	
SN74LS00N (HD74LS00P)	Z	1	
NE555P	Z	2	
RD1/4VM000J	R	1	
CEA470M10	C	1	
CKDYF223Z50	C	2, 4	
CEAR47M50	C	3	

4.11 TR & ICs

2SA1096 2SB1008 2SC2497 2SD1379 2SD1380		2SA817 2SA933LN 2SA1015 2SC1627 2SC1645 2SC1740LN 2SC1815		2SA965 2SC2060	
2SC2021LN		2SD1225M		2SK117	

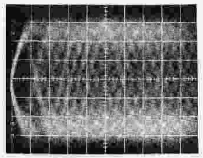
μPC4558C TL082CP NE5532P NJM4560DX		LF353N	
LM393P		NJM4558S	
NE555P		SN74LS157N	

MB3716		TC40H004P	
		TC40H010P	
MSL915RS		TC4001BP	
DTC124N DTA124N		DTC124F DTA124F	
DTC124N		DTC124F	
DTA124N		DTA124F	

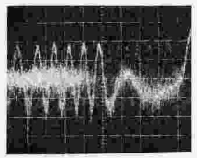
TD6315P		CX-20017	
HM6116P-4		PM4001	
TC9178F		PD4038 PD4042	
TC9179F		PD3007	
μPD4053BC			

4.12 WAVEFORMS

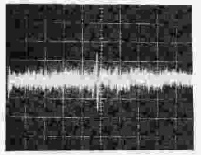
PREB TP1 MODE; PLAY
V: PROBE 1 : 1 5mV/div H: 0.5msec/div



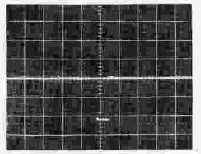
PREB N37-1 MODE; PLAY (TRKG OFF)
V: 50mV/div H: 5msec/div



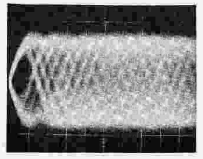
SVCT Z3-26 MODE; PLAY
V: 10mV/div H: 5msec/div



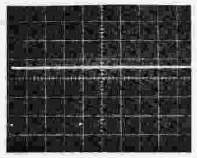
SVCT Z3-5 MODE; SLOW SCAN REV
V: 0.2V/div H: 5msec/div



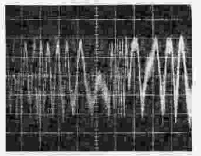
PREB TP3 MODE; PLAY
V: PROBE 1 : 1 5mV/div H: 0.5msec/div



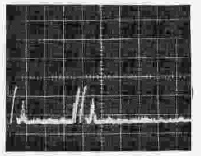
SVCT Z3-11 MODE; SLOW SCAN FWD
V: 0.2V/div H: 2msec/div



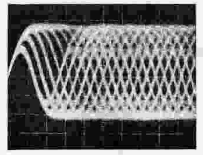
PREB TP5 MODE; PLAY (TRKG OFF)
V: 20mV/div H: 5msec/div



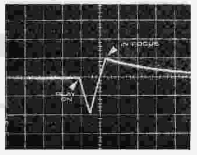
SVCT Z3-10 MODE; SLOW SCAN FWD
V: 0.2V/div H: 2msec/div



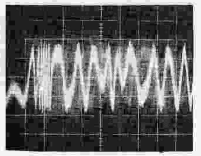
PREB N32-2 MODE; PLAY
V: 10mV/div H: 0.5msec/div



SVCT Z3-24 MODE; PUSH PLAY KEY
V: 0.1V/div H: 0.2msec/div

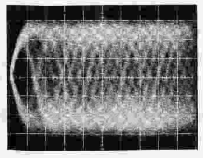


PREB N36-1 MODE; PLAY (TRKG OFF)
V: 50mV/div H: 5msec/div

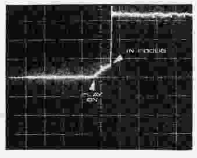


SVCT Z3-2 MODE; PLAY
V: 20mV/div H: 5msec/div

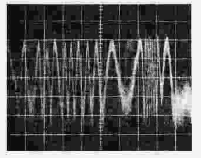
PREB TP2 MODE; PLAY
V: PROBE 1 : 1 5mV/div H: 0.5msec/div



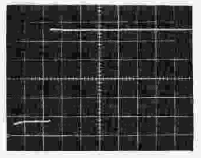
SVCT Z3-27 MODE; PLAY
V: 0.1V/div H: 0.2sec/div



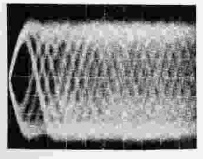
PREB TP6 MODE; PLAY (TRKG OFF)
V: 20mV/div H: 5msec/div



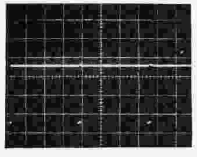
SVCT Z3-9 MODE; MIN/INDEX SEARCH
V: 0.2V/div H: 0.5msec/div



PREB TP4 MODE; PLAY
V: PROBE 1 : 1 5mV/div H: 0.5msec/div

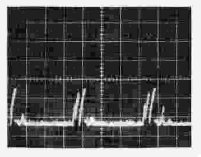


SVCT Z3-11 MODE; SLOW SCAN REV
V: 0.1V/div H: 2msec/div

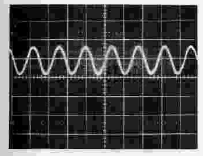


SVCT Z3-1 MODE; PLAY
V: 50mV/div H: 2msec/div

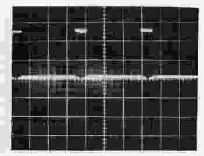
SVCT Z3-10 MODE; SLOW SCAN REV
V: 0.2V/div H: 2msec/div



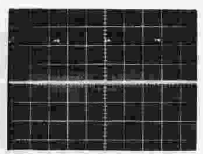
SVCT Z8-5 MODE; STAND-BY
V: 0.2V/div H: 0.2μsec/div



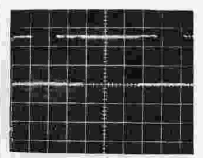
SVCT Z8-16 MODE; STAND-BY
V: 0.2V/div H: 5msec/div



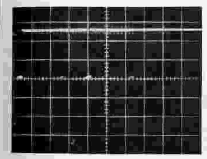
SVCT Z8-18 MODE; PLAY
V: 0.2V/div H: 5msec/div



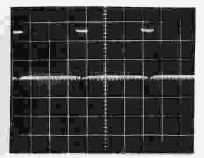
SVCT Z8-22 MODE; PLAY
V: 0.2V/div H: 2msec/div



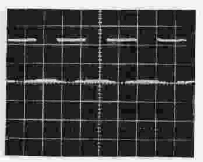
SVCT Z8-8 MODE; SLOW SCAN FWD
V: 0.2V/div H: 0.2μsec/div



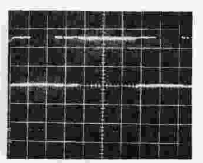
SVCT Z8-17 MODE; STAND-BY
V: 0.2V/div H: 5msec/div



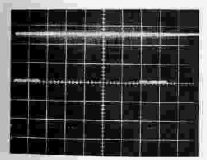
SVCT Z8-19 MODE; PLAY (after SLOW REV)
V: 0.2V/div H: 5msec/div



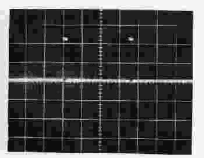
SVCT Z8-23 MODE; PLAY
V: 0.2V/div H: 2msec/div



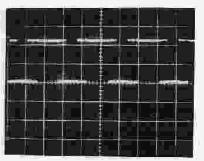
SVCT Z8-15 MODE; PLAY
V: 0.2V/div H: 2msec/div



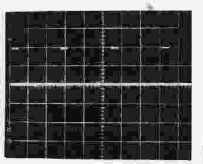
SVCT Z8-18 MODE; STAND-BY
V: 0.2V/div H: 5msec/div



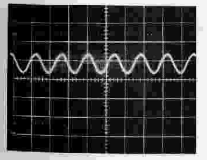
SVCT Z8-20 MODE; PLAY
V: 0.2V/div H: 5msec/div



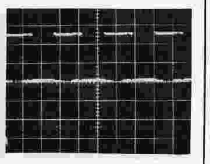
SVCT Z8-29 MODE; PLAY
V: 0.2V/div H: 5msec/div



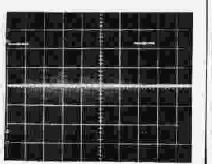
SVCT Z8-6 MODE; STAND-BY
V: 0.2V/div H: 0.2μsec/div



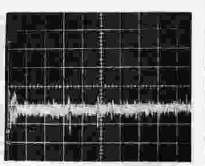
SVCT Z8-16 MODE; PLAY
V: 0.2V/div H: 5msec/div



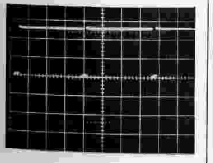
SVCT Z8-21 MODE; PLAY
V: 0.2V/div H: 2msec/div



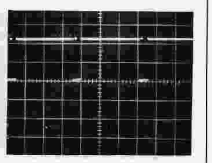
SVCT N13-1 MODE; SLOW SCAN FWD
V: 0.2V/div H: 2msec/div



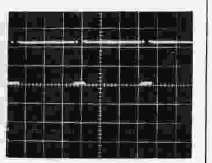
SVCT Z8-8 MODE; SLOW SCAN REV
V: 0.2V/div H: 0.2μsec/div



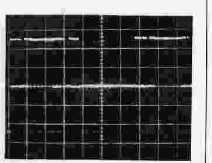
SVCT Z8-17 MODE; PLAY (after MIN/INDEX SEARCH)
V: 0.2V/div H: 5msec/div



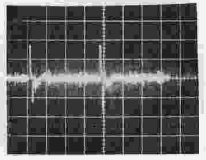
SVCT Z8-20 MODE; PUSH STOP, TS?REV, MS?REV.
V: 0.2V/div H: 5msec/div



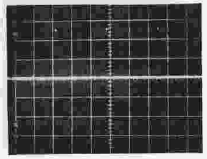
SVCT Z8-24 MODE; PLAY
V: 0.2V/div H: 2msec/div



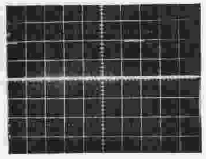
SVCT N13-3 MODE; SLOW SCAN REV
V: 0.5V/div H: 2msec/div



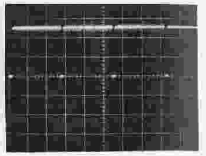
DCDR Z1-24 MODE; PLAY
V: 0.2V/div H: 5msec/div



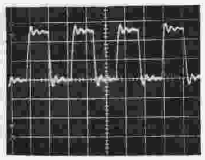
DCDR Z1-33 MODE; PLAY
V: 0.2V/div H: 2msec/div



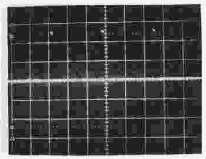
DCDR Z1-56 MODE; PLAY
V: 0.2V/div H: 50μsec/div



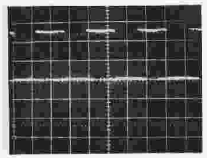
DCDR Z1-7 MODE; PLAY
V: 0.2V/div H: 0.2μsec/div



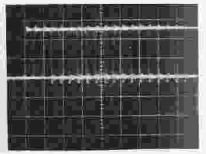
DCDR Z1-29 MODE; PLAY
V: 0.2V/div H: 5msec/div



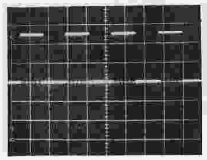
DCDR Z1-38 MODE; PLAY
V: 0.2V/div H: 5msec/div



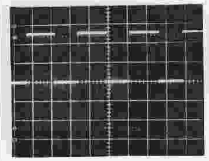
DCDR Z1-52 MODE; PLAY
V: 0.2V/div H: 0.5μsec/div



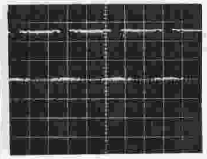
DCDRZ1-20 MODE; PLAY
V: 0.2V/div H: 50μsec/div



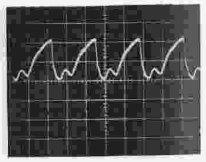
DCDR Z1-31 MODE; PLAY
V: 0.2V/div H: 50μsec/div



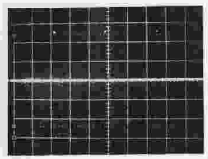
DCDR Z1-40 MODE; PLAY
V: 0.2V/div H: 5msec/div



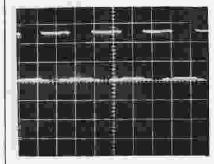
DCDR Z1-54 MODE; PLAY
V: 0.2V/div H: 0.1μsec/div



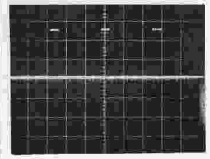
DCDR Z1-25 MODE; PLAY
V: 0.2V/div H: 5msec/div



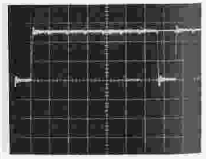
DCDR Z1-37 MODE; PLAY
V: 0.2V/div H: 5msec/div



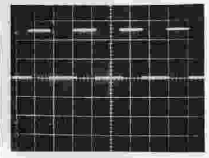
DCDR Z1-41 MODE; PLAY
V: 0.2V/div H: 5msec/div



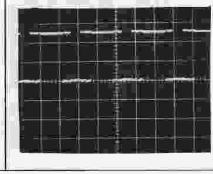
DCDR Z1-66 MODE; PLAY
V: 0.2V/div H: 0.5μsec/div



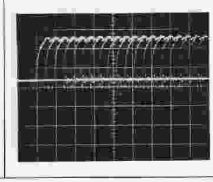
DCDR Z1-19 MODE; PLAY
V: 0.2V/div H: 50μsec/div



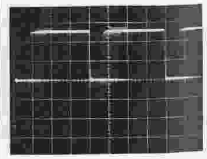
DCDR Z1-39 MODE; PLAY
V: 0.2V/div H: 5msec/div



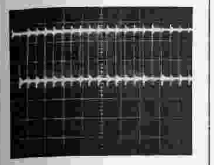
DCDR Z1-53 MODE; PLAY
V: 0.2V/div H: 0.5μsec/div



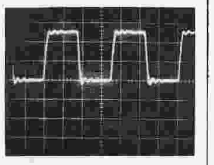
DCDR Z1-67 MODE; PLAY
V: 0.2V/div H: 1μsec/div



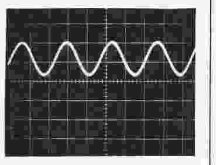
DCDR Z2-5~14 MODE; PLAY
V: 0.2V/div H: 1μsec/div



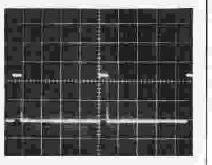
DCDR Z2-48 MODE; PLAY
V: 0.2V/div H: 0.2μsec/div



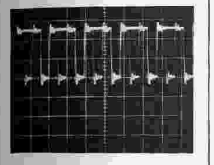
DCDR Z2-53 MODE; STAND-BY
V: 0.2V/div H: 50nsec/div



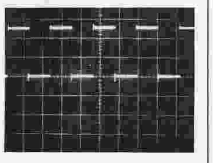
AUDF Z2-15 MODE; PLAY
V: 0.2V/div H: 5μsec/div



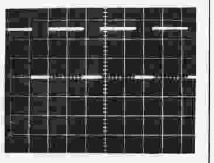
DCDR Z2-17 MODE; PLAY
V: 0.2V/div H: 0.5μsec/div



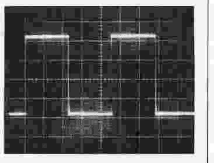
DCDR Z2-50 MODE; PLAY
V: 0.2V/div H: 5μsec/div



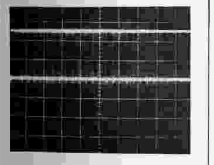
DCDR Z2-59 MODE; PLAY
V: 0.2V/div H: 50μsec/div



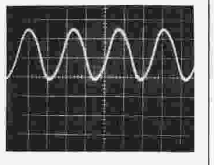
AUDF Z2-11 MODE; PLAY
V: 0.2V/div H: 5μsec/div



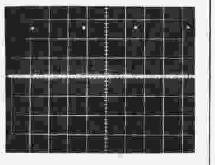
DCDR Z2-47 MODE; PLAY
V: 0.2V/div H: 2μsec/div



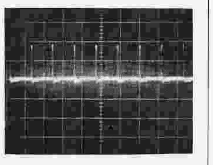
DCDR Z2-52 MODE; STAND-BY
V: 0.2V/div H: 50nsec/div



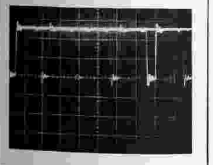
DCDR Z2-60 MODE; PLAY
V: 0.2V/div H: 50μsec/div



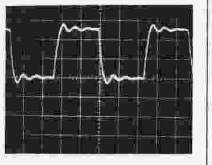
AUDF Z2-17 MODE; PLAY
V: 0.2V/div H: 5μsec/div



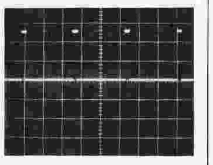
DCDR Z2-15 MODE; PLAY
V: 0.2V/div H: 0.5μsec/div



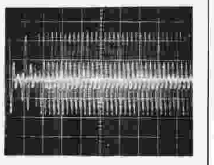
DCDR Z2-56 MODE; PLAY
V: 0.2V/div H: 0.1μsec/div



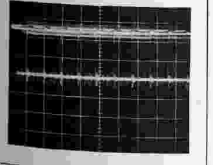
DCDR Z2-63 MODE; PLAY
V: 0.2V/div H: 50μsec/div



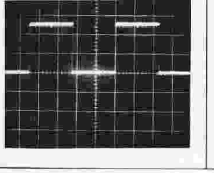
DCDR Z3-2 MODE; PLAY
V: 20mV/div H: 1μsec/div



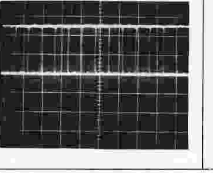
DCDR Z2-25 MODE; PLAY
V: 0.2V/div H: 1μsec/div



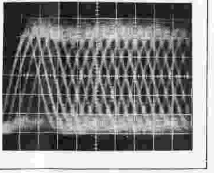
DCDR Z2-51 MODE; PLAY
V: 0.2V/div H: 5μsec/div



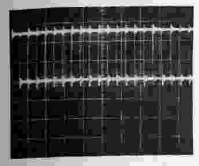
AUDF Z2-10 MODE; PLAY
V: 0.2V/div H: 1μsec/div



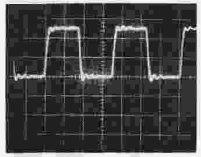
DCDR Z5-1 MODE; PLAY
V: RANGE AC 20mV/div H: 0.5μsec/div



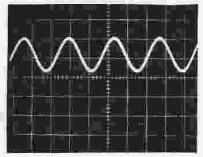
DCDR Z2-5~14 MODE; PLAY
V: 0.2V/div H: 1μsec/div



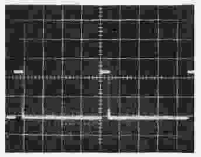
DCDR Z2-48 MODE; PLAY
V: 0.2V/div H: 0.2μsec/div



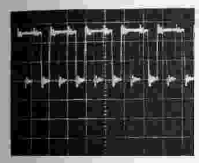
DCDR Z2-53 MODE; STAND-BY
V: 0.2V/div H: 50nsec/div



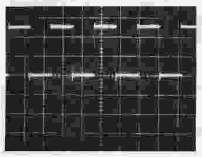
AUDF Z2-15 MODE; PLAY
V: 0.2V/div H: 5μsec/div



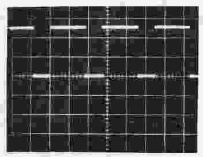
DCDR Z2-17 MODE; PLAY
V: 0.2V/div H: 0.5μsec/div



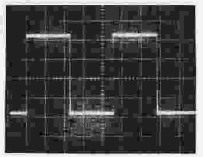
DCDR Z2-50 MODE; PLAY
V: 0.2V/div H: 5μsec/div



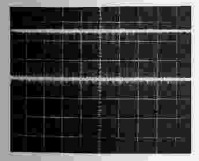
DCDR Z2-59 MODE; PLAY
V: 0.2V/div H: 50μsec/div



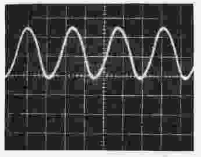
AUDF Z2-11 MODE; PLAY
V: 0.2V/div H: 5μsec/div



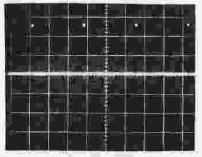
DCDR Z2-47 MODE; PLAY
V: 0.2V/div H: 2μsec/div



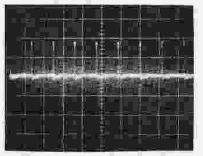
DCDR Z2-52 MODE; STAND-BY
V: 0.2V/div H: 50nsec/div



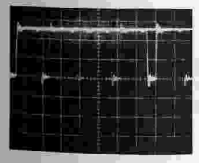
DCDR Z2-60 MODE; PLAY
V: 0.2V/div H: 50μsec/div



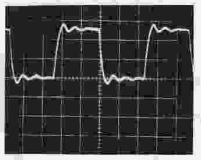
AUDF Z2-17 MODE; PLAY
V: 0.2V/div H: 5μsec/div



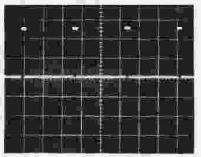
DCDR Z2-15 MODE; PLAY
V: 0.2V/div H: 0.5μsec/div



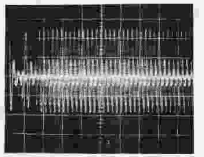
DCDR Z2-56 MODE; PLAY
V: 0.2V/div H: 0.1μsec/div



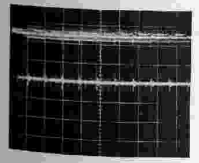
DCDR Z2-63 MODE; PLAY
V: 0.2V/div H: 50μsec/div



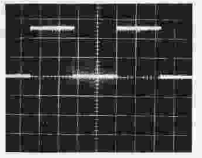
DCDR Z3-2 MODE; PLAY
V: 20mV/div H: 1μsec/div



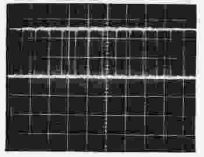
DCDR Z2-25 MODE; PLAY
V: 0.2V/div H: 1μsec/div



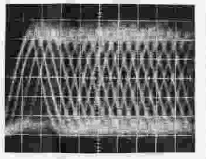
DCDR Z2-51 MODE; PLAY
V: 0.2V/div H: 5μsec/div



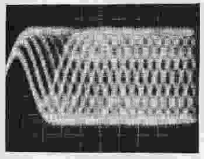
AUDF Z2-10 MODE; PLAY
V: 0.2V/div H: 1μsec/div



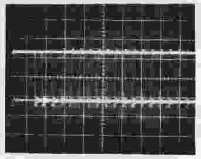
DCDR Z5-1 MODE; PLAY
V: RANGE AC 20mV/div H: 0.5μsec/div



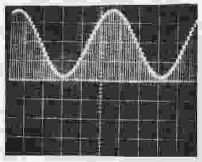
DCDR N10-2 MODE; PLAY
V: RANGE AC 10mV/div H: 0.5μsec/div



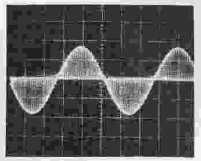
DCDR Z5-8 MODE; PLAY
V: RANGE AC 0.2V/div H: 0.5μsec/div



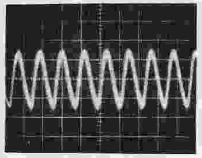
AUDF Z4-1 MODE; 1 kHz PLAY
V: 0.2V/div H: 0.2msec/div



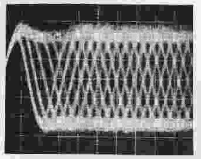
AUDF Z4-7 MODE; 1 kHz PLAY
V: 0.2V/div H: 0.2msec/div



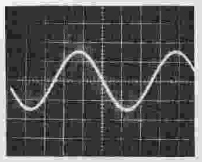
DCDR Z3-9 MODE; PLAY
V: RANGE AC 20mV/div H: 50nsec/div



DCDR Q3-E MODE; PLAY
V: RANGE AC 50mV/div H: 0.5μsec/div

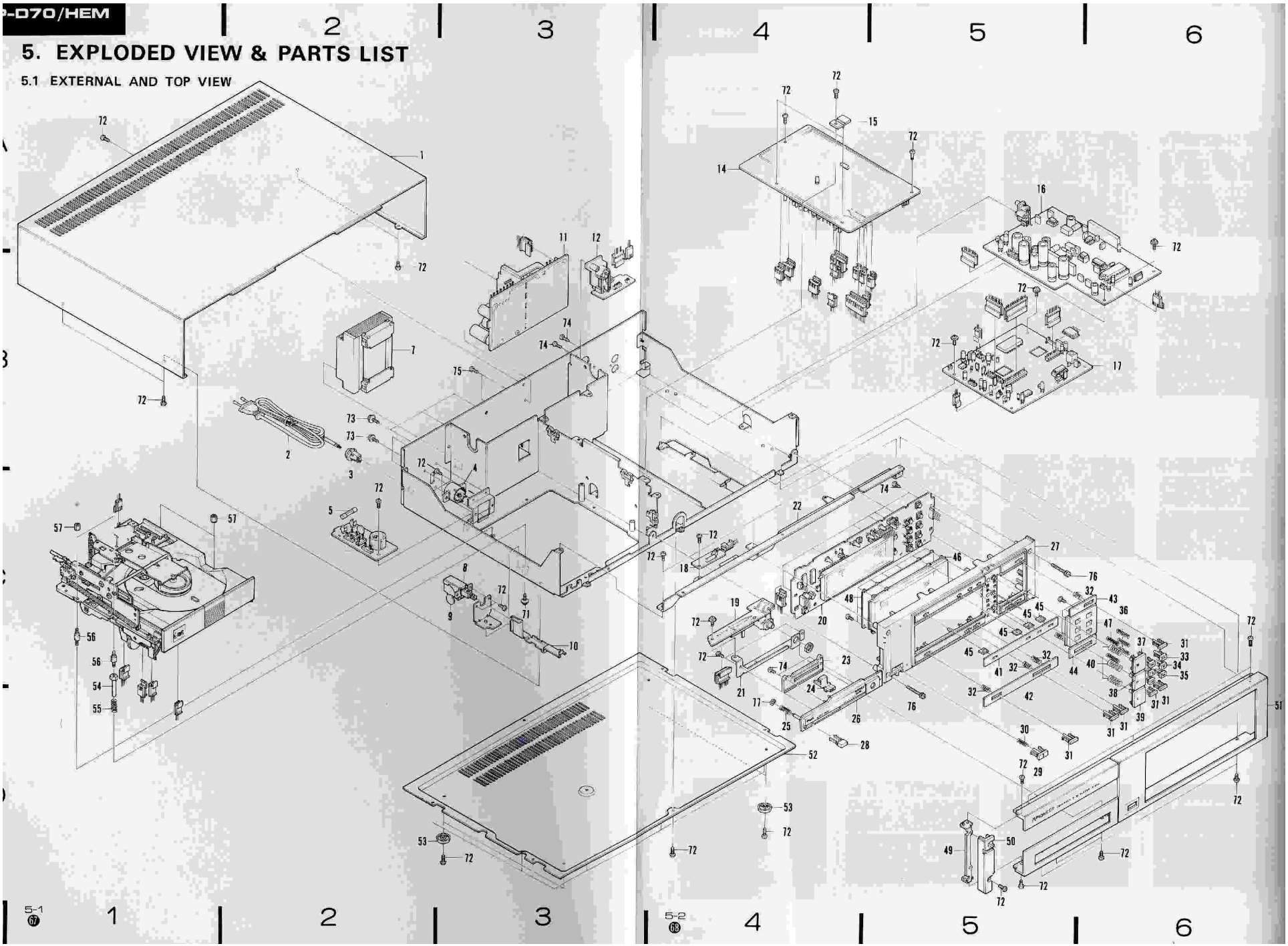


AUDF Z6-7 MODE; 1 kHz PLAY
V: 0.2V/div H: 0.2msec/div



5. EXPLODED VIEW & PARTS LIST

5.1 EXTERNAL AND TOP VIEW



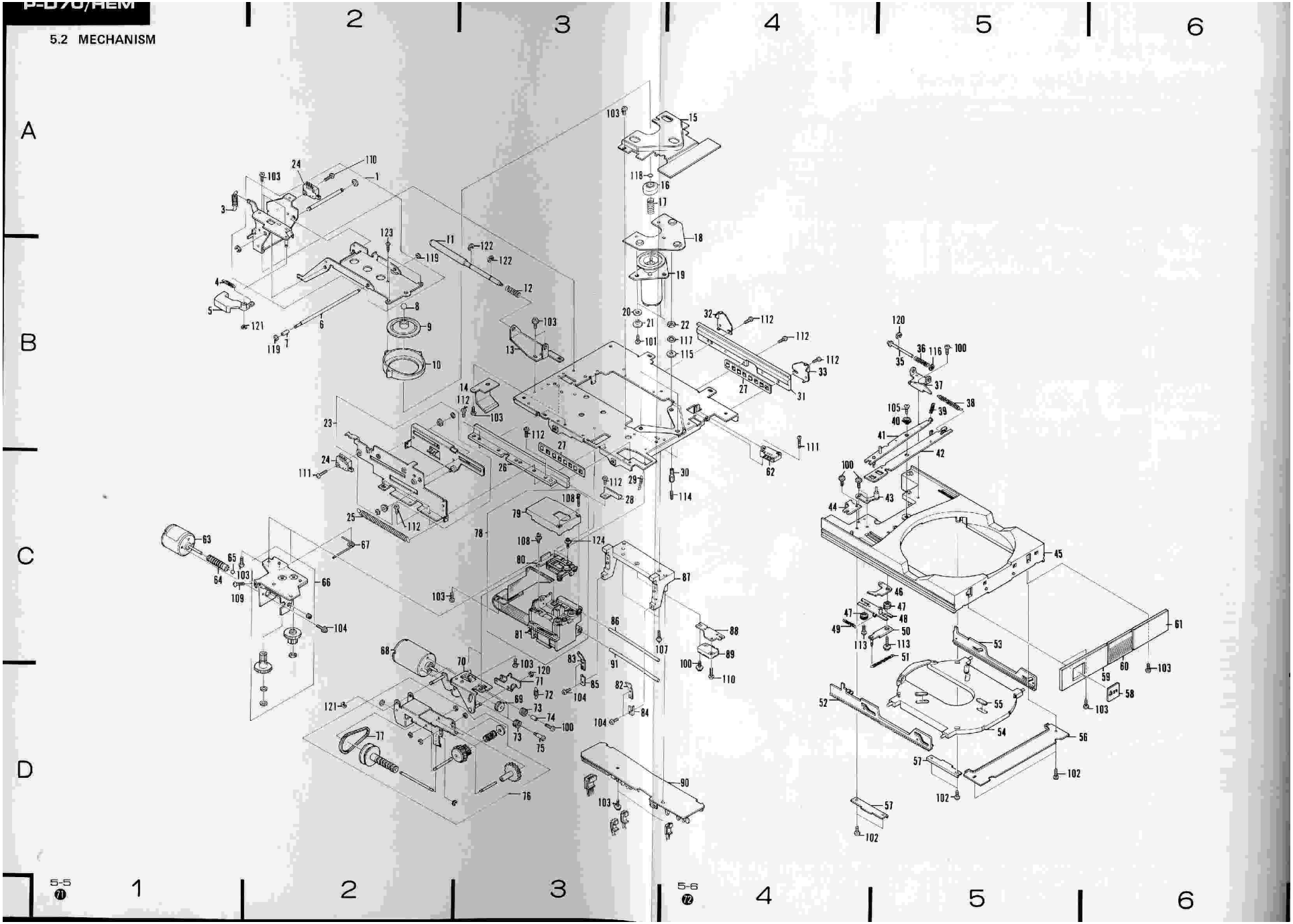
NOTES:
- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

P-D70/HEM(TOP) Parts list 1

(MK)	(KY)	(Part Number)	(D E S C R I P T I O N)
	1	VXA-190	Bonnet
⚠	2	VDG-019	Power cord
	3	VEC-152	Cord stopper
⚠	4	VSB-001	Voltage selector
⚠	5	VEK-012	Fuse 250mA
	6	VWR-047	FUSB
⚠	7	VTT-038	Power transformer
⚠	8	VSA-006	Power switch
⚠	9	VCG-018	Capacitor
	10		Joint
	11	VWR-041	SYPS
	12		RMCN
	13		
	14	VWS-042	SVCT
	15		PCB hinge
	16	VWK-005	AUDF
	17	VWV-050	DCDR
	18		LMPB
	19		HPHB
	20	VWG-104	KDCB
	21		Angle
	22		Front frame
	23	VNL-236	Holder
	24	VAC-222	Slide knob
	25	VBH-109	Spring
	26	VNK-181	PH panel
	27	VNK-212	Key panel
	28	VXA-167	Power button
	29	VXA-168	OPEN/CLOSE button
	30	VBH-113	Spring
	31	VAC-214	Button
	32	VBH-106	Spring
	33	VAC-229	TRACK button
	34	VAC-230	MIN button
	35	VAC-231	SCAN button
	36	VBH-107	Spring
	37	VXA-169	PAUSE button
	38	VXA-170	PLAY button
	39	VXA-171	STOP button
	40	VBH-108	Spring
	41	VAK-035	Aluminum panel A
	42	VAK-036	Aluminum panel B
	43	VAK-037	Aluminum panel C
	44	VAK-038	Aluminum panel D
	45	VNK-177	LED lens
	46	VNK-214	Acryl window
	47	VNK-215	Acryl key panel
	48		Filter
	49		Holder
	50	VNK-180	Side escutcheon
	51	VAH-044	Front panel
	52		Bottom cover
	53	VNL-218	Foot
	54	VLL-236	Shaft
	55	VBH-112	Spring

P-D70/HEM(TOP) Parts list 2

(MK)	(KY)	(Part Number)	(D E S C R I P T I O N)
	56	VEB-061	Insulator
	57	VLL-233	Nut
	58		
	59		
	60		
	61		
	62		
	63		
	64		
	65		
	66		
	67		
	68		
	69		
	70		
	71	AMZ30P100FMC	
	72	BCZ30P060FZK	
	73	PCZ40P060FZK	
	74	VBZ30P060FZK	
	75	VCZ30P060FMC	
	76	VCZ30P200FMC	
	77	YS24FBT	


2
3
4
5
6
A
B
C
D
1
5-5
71
5-6
72

NOTES:
- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

P-D70/HEM(MECH) Parts list 1

(MK)	(KY)	(Part Number)	(D E S C R I P T I O N)
1		VXA-179	Clamper holder
2			
3		VBH-098	
4		VBH-097	Spring
5		VNT-025	Caddy lock
6		VLL-198	Clamper shaft
7		VLL-199	Roller
8		VNH-043	Steel ball
9		VNL-208	Clamper
10		VNL-209	Clamper guide
11			Caddy clamp shaft
12			Spring
13			Caddy clamp
14			PCB guide
15			Blind
16		VLL-210	Taper wheel
17		VBH-104	Spring
18			Motor holder
19		VXM-033	SPDL motor
20		VEF-023	Spring
21		VLL-211	Collar
22		VLA-061	M5 nut
23		VXA-180	Slider holder
24		VSF-009	Micro switch
25		VBH-099	Spring
26		VNG-010	Rail B
27		VXA-178	Retainer ASS'Y
28		VNE-472	Retainer holder C
29		VBH-092	Spring
30		VLL-209	Hight adj. screw
31		VNG-009	Rail A
32		VNE-470	Retainer holder A
33		VNE-471	Retainer holder B
34			
35			Switch pin
36		VBH-091	Spring
37			Switch holder
38		VBH-094	Spring
39		VBH-114	Spring
40		VLL-195	Link spacer
41			Link B
42			Link A
43		VXA-149	Lock plate
44			Caddy clamp
45		VNT-032	Caddy
46			Spacer B
47		VLL-197	Spacer
48			Link holder A
49		VBH-096	Spring
50			Lack arm
51		VBH-101	Spring
52		VNL-210	Rack L
53		VNL-211	Rack R
54		VNK-211	Tray
55		VED-041	Disc guard

P-D70/HEM(MECH) Parts list 2

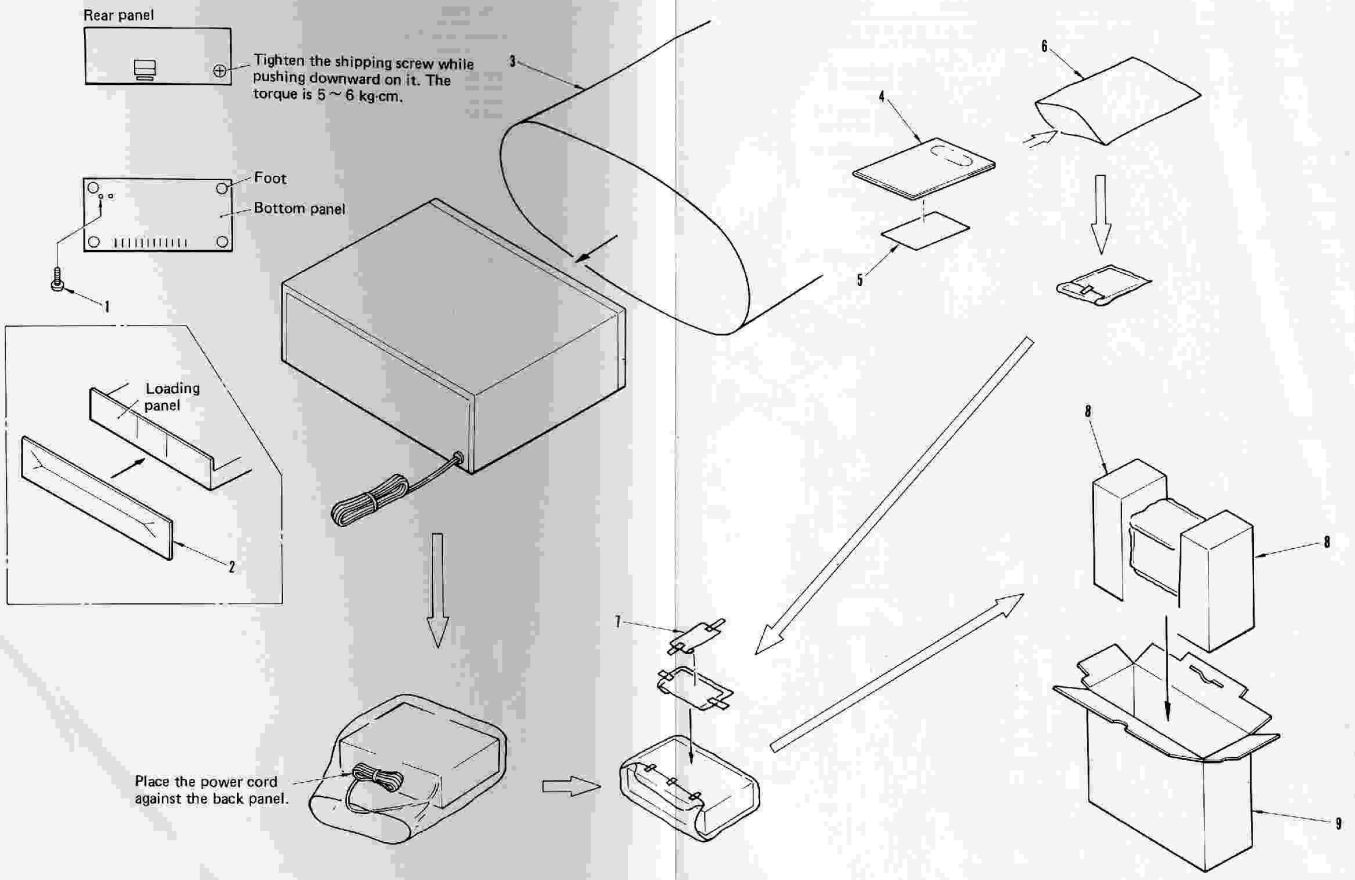
(MK)	(KY)	(Part Number)	(D E S C R I P T I O N)
56			Rack holder A
57			Rack holder B
58		VNK-163	CD badge
59		VAH-045	Loading panel L
60		VNK-213	Loading window
61		VAH-046	Loading panel R
62		VSF-009	Micro switch
63		VXM-032	CARG motor
64		VNL-214	Carriage worm
65		VNH-026	Steel ball
66		VXA-183	Gear unit
67		VBH-105	Spring
68		VXM-034	Loading motor
69		VNL-207	Pulley
70			Motor holder
71			Clutch lever
72		VBH-102	Spring
73		VEB-050	Bushing
74		VEF-022	Spacer
75		VLL-183	Screw
76		VXA-177	Worm holder
77		VEB-058	Belt
78		VWY-061	Pick up
79		VNH-047	Cover
80		VGX-044	Actuator ASS'Y
81		VGX-045	CD body
82		VNE-558	Shaft holder A
83		VNE-559	Shaft holder B
84		VNE-494	Shaft holder C
85		VNE-495	Shaft holder D
86		VLL-251	Slider shaft
87			Slider base
88			Limitter SW holder
89		VSF-009	Micro-switch
90		VWV-046	PREB
91		VLL-252	Slider shaft B
92			
93			
94			
95			
96			
97			
98			
99			
100		ACZ30P060FMC	
101		AMZ30P060FMC	
102		BCZ30P040FZK	
103		BCZ30P060FZK	
104		BMZ26P040FMC	
105		CMZ30P060FMC	
106		PBZ30P080FMC	
107		PMA30P080FMC	
108		PMZ26P100FMC	
109		PMZ30P120FMC	
110		VCZ26P060FMC	

NOTES:
- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

P-D70/HEM(MECH) Parts list 3

(MK)	(KY)	(Part Number)	(D E S C R I P T I O N)
111		VCZ26P100FMC	
112		VCZ30P080FZK	
113		VCZ30P100FMC	
114		ZMD30H200FBT	
115		WB50FMC	
116		WC30FMC	
117		WW50FBT	
118		YC25FBT	
119		YE15FUC	
120		YE20FUC	
121		YE25FUC	
122		YE40FUC	
123		PBZ20P060FZK	
124		PMB20P060FMC	

5.3 PACKING MATERIALS



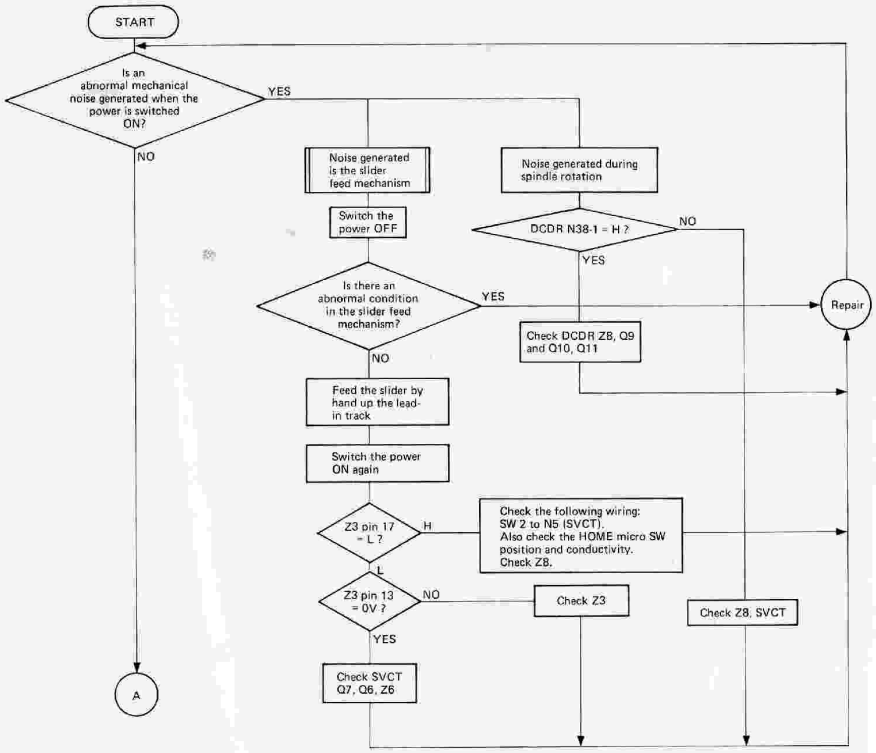
NOTES:

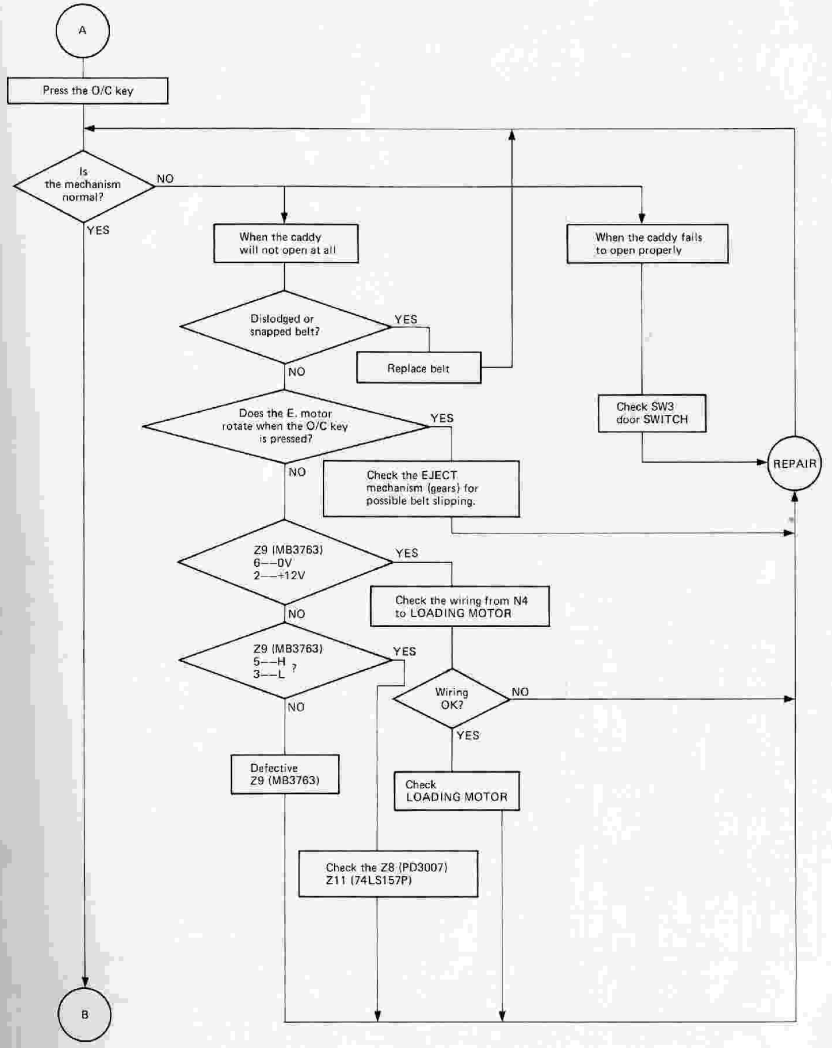
- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

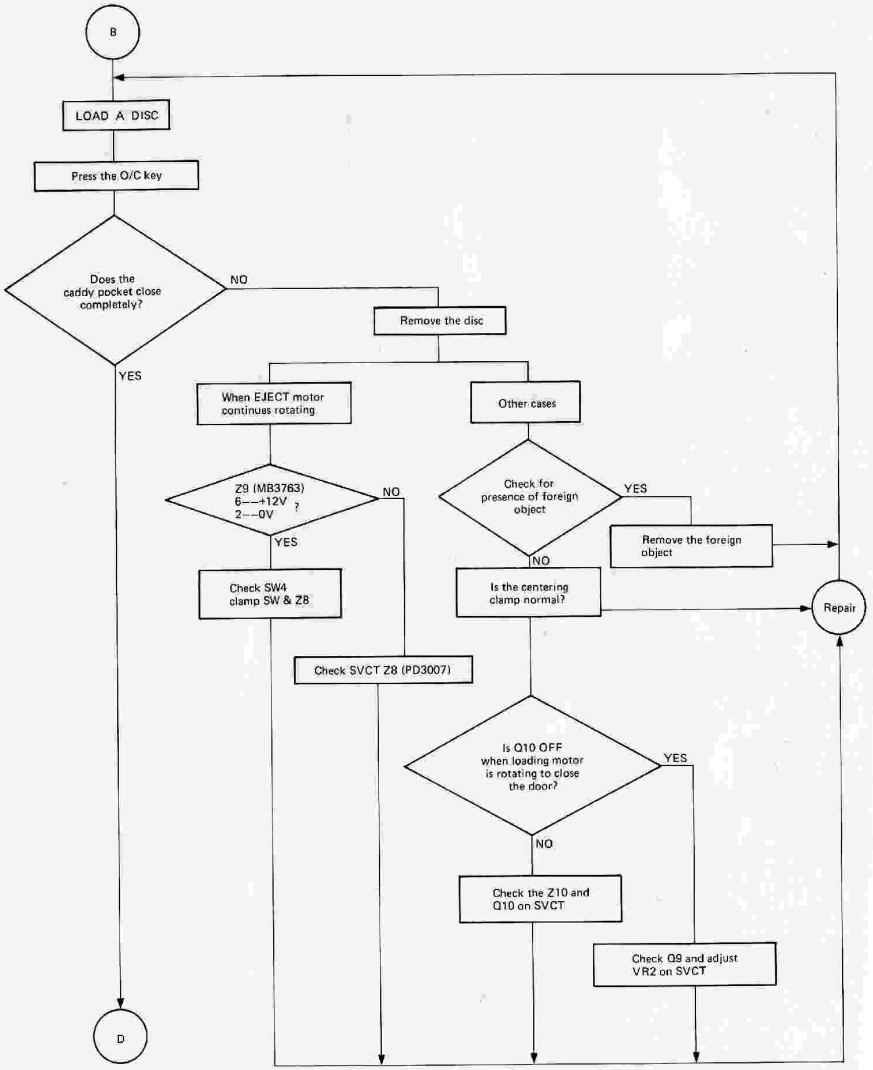
P-D70/HEM(PACKING) Parts list 1

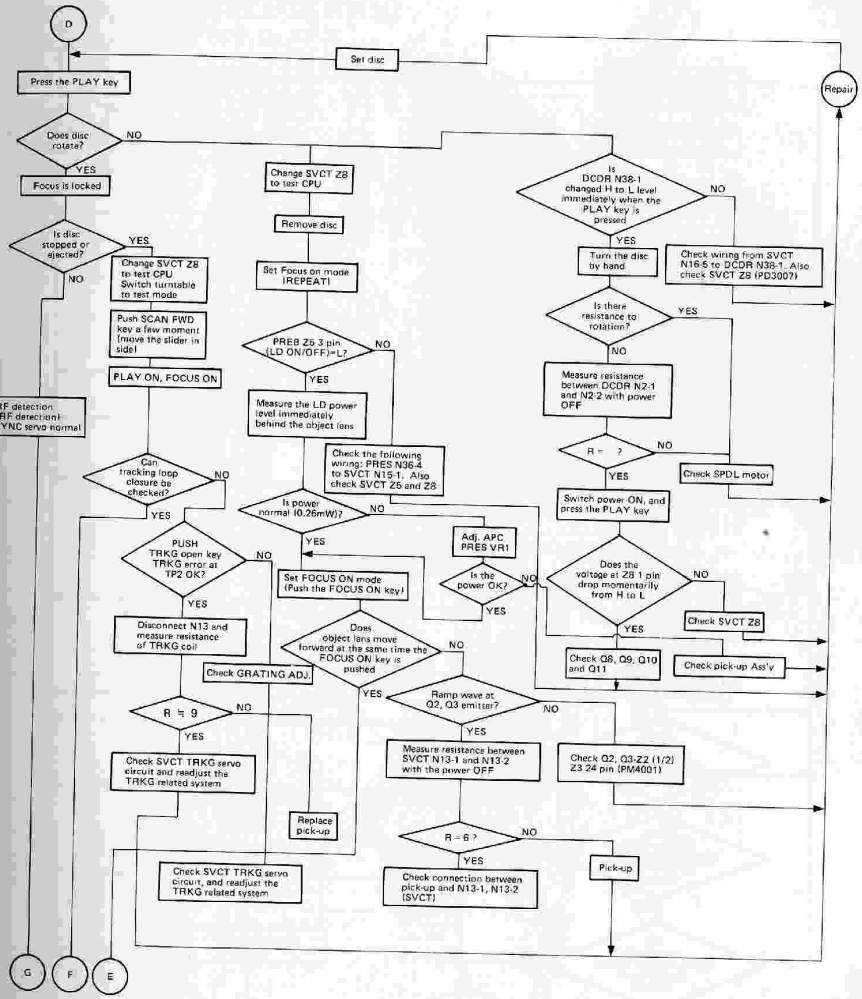
(MK)	(KY)	(Part Number)	(D E S C R I P T I O N)
	1	BCZ30Y160FGN	
	2	VHA-087	Panel cushion
	3	VHA-043	Bag
	4	VRD-003	Operating instructions
	5		
	6	VHL-014	Polyethylene bag
	7	VDE-032	Connecting cord
	8	VHA-084	Side pad
	9	VHG-070	Packing case

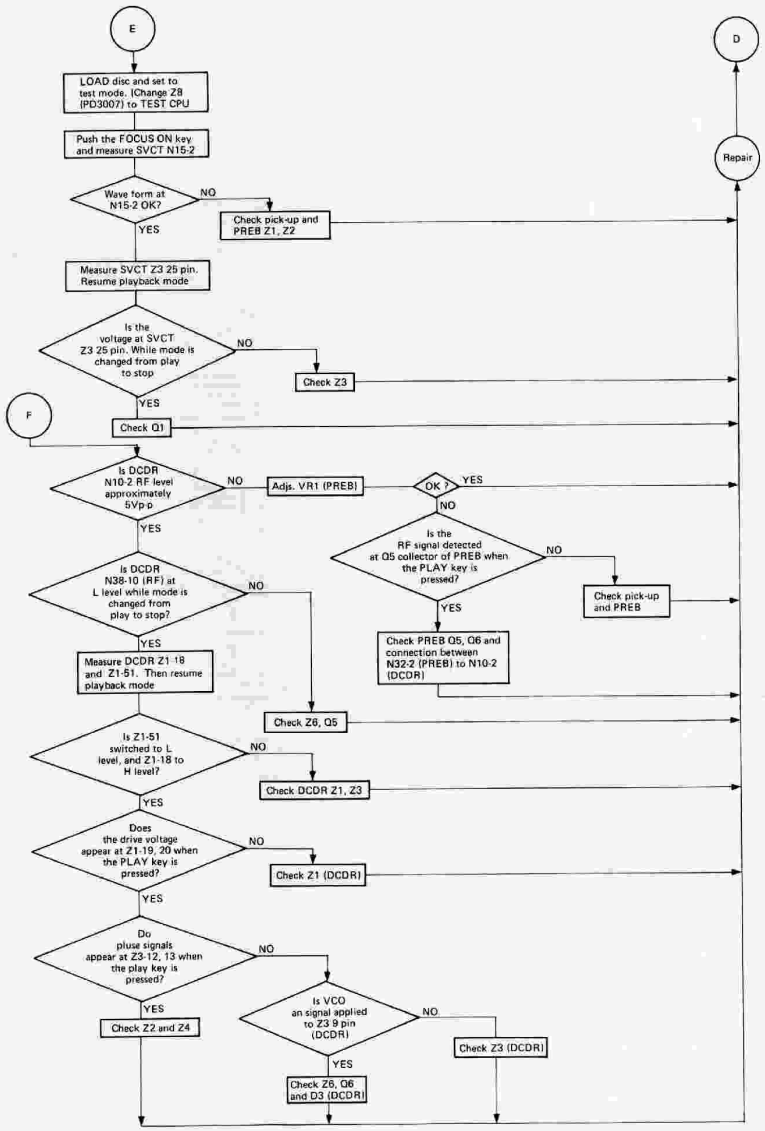
6. TROUBLE SHOOTING

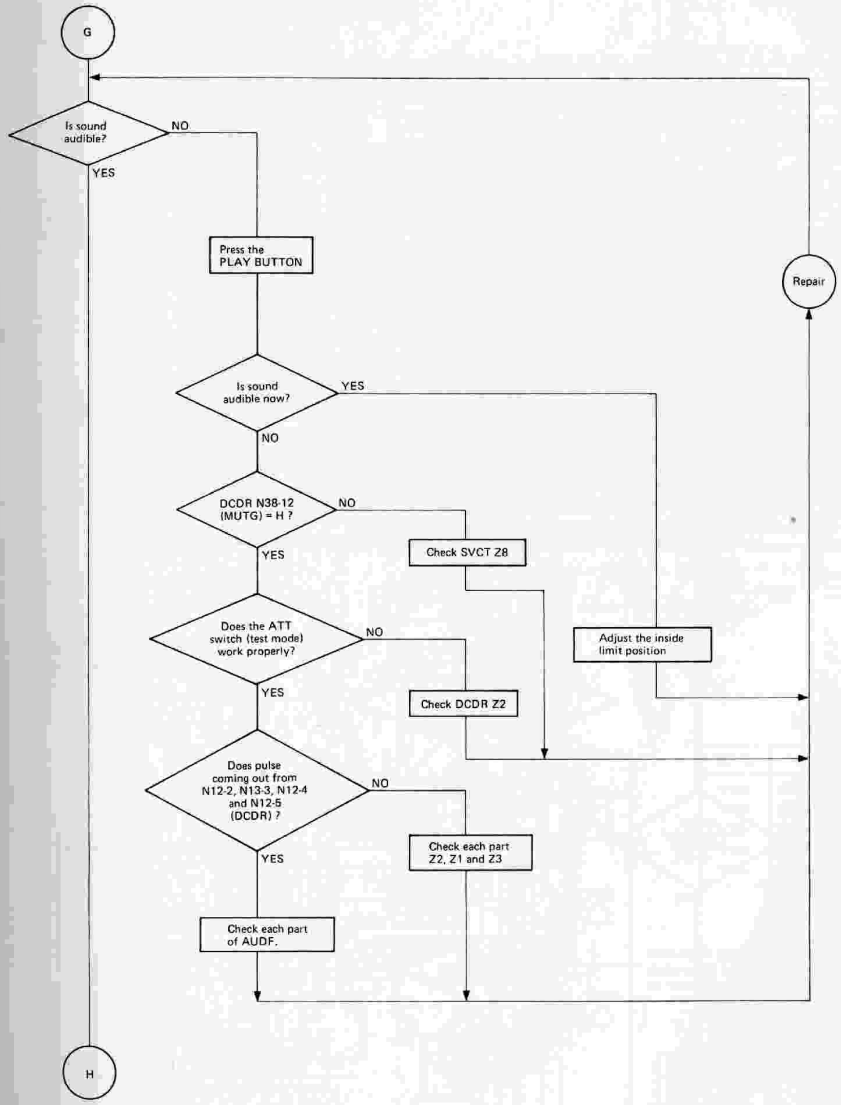


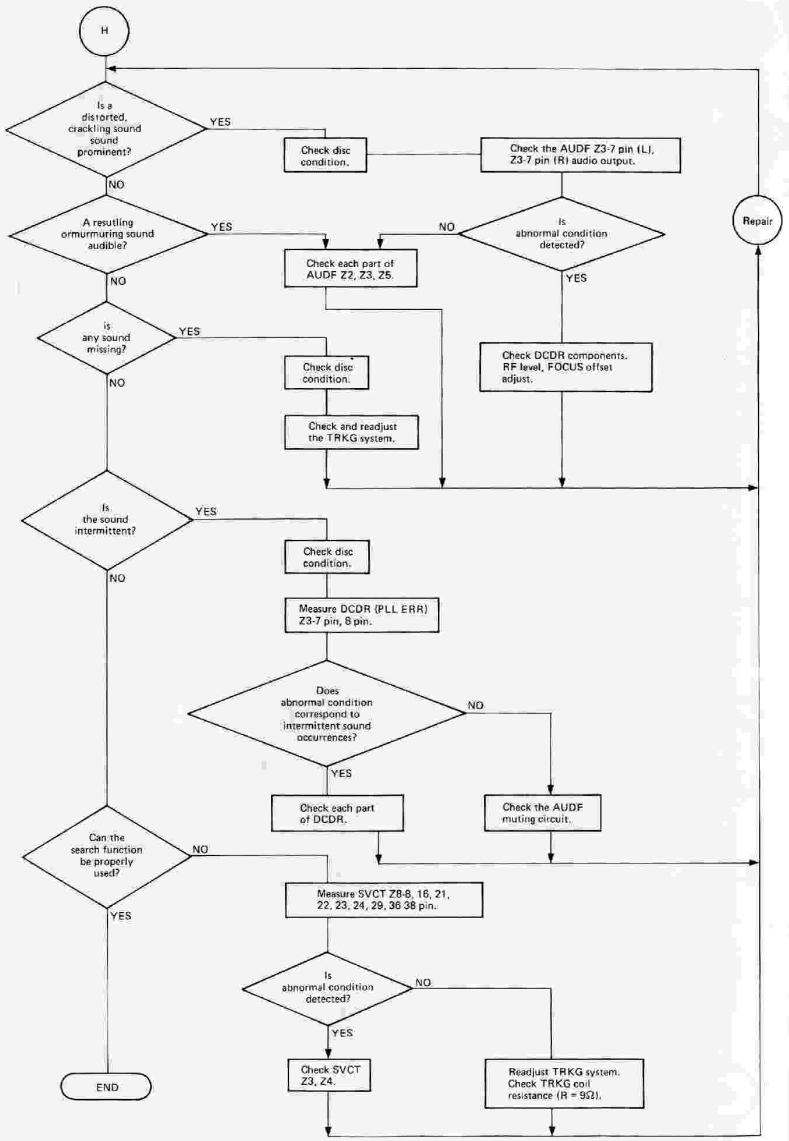



B
LOAD A DISC
Press the O/C key
Does the caddy pocket close completely?
NO
YES
Remove the disc
When EJECT motor continues rotating
Other cases
Z9 (MB3763) 6—+12V ? 2—0V
NO
YES
Check SW4 clamp SW & Z8
Check SVCT Z8 (PD3007)
Check for presence of foreign object
YES
NO
Remove the foreign object
Is the centering clamp normal?
Repair
Is Q10 OFF when loading motor is rotating to close the door?
YES
NO
Check the Z10 and Q10 on SVCT
Check Q9 and adjust VR2 on SVCT
D


D
Press the PLAY key
Does disc rotate?
NO
YES
Focus is locked
Is disc stopped or ejected?
YES
NO
Change SVCT Z8 to test CPU. Switch turntable to test mode
Push SCAN FWD key a few moment (move the slider in side)
PLAY ON, FOCUS ON
RF detection (RF detection) SYNC servo normal
Can tracking loop closure be checked?
NO
YES
PUSH TRKG open key TRKG error at TP2 OK?
NO
YES
Disconnect N13 and measure resistance of TRKG coil
R ≒ 9
NO
YES
Check SVCT TRKG servo circuit and readjust the TRKG related system
Check SVCT TRKG servo circuit, and readjust the TRKG related system
Replace pick-up
Check GRATING ADJ.
Change SVCT Z8 to test CPU
Remove disc
Set Focus on mode (REPEAT)
PREB Z6 3 pin (LD ON/OFF)=L?
NO
YES
Measure the LD power level immediately behind the object lens
Check the following wiring: PRES N36-4 to SVCT N15-1. Also check SVCT Z6 and Z8
Is power normal (0.26mW)?
NO
YES
Set FOCUS ON mode (Push the FOCUS ON key)
Does object lens move forward at the same time the FOCUS ON key is pushed
NO
YES
Adj. APC PRES VR1
Is the power OK?
NO
YES
Ramp wave at Q2, Q3 emitter?
NO
YES
Measure resistance between SVCT N13-1 and N13-2 with the power OFF
R = 6 ?
NO
YES
Check connection between pick-up and N13-1, N13-2 (SVCT)
Pick-up
Is DCDR N38-1 changed H to L level immediately when the PLAY key is pressed
NO
YES
Turn the disc by hand
Check wiring from SVCT N16-5 to DCDR N38-1. Also check SVCT Z8 (PD3007)
Is there resistance to rotation?
YES
NO
Measure resistance between DCDR N2-1 and N2-2 with power OFF
R = ?
NO
YES
Check SPDL motor
Switch power ON, and press the PLAY key
Does the voltage at Z8 1 pin drop momentarily from H to L
NO
YES
Check SVCT Z8
Check Q8, Q9, Q10 and Q11
Check pick-up Ass'y
Check Q2, Q3-Z2 (1/2) Z3 24 pin (PM4001)
Repair
G
F
E


E
LOAD disc and set to test mode. (Change Z8 (PD3007) to TEST CPU
Push the FOCUS ON key and measure SVCT N15-2
Wave form at N15-2 OK?
NO
YES
Check pick-up and PREB Z1, Z2
Measure SVCT Z3 25 pin. Resume playback mode
Is the voltage at SVCT Z3 25 pin. While mode is changed from play to stop
NO
YES
Check Z3
F
Check Q1
Is DCDR N10-2 RF level approximately 5Vp-p
NO
Adjs. VR1 (PREB)
OK ?
YES
NO
YES
Is DCDR N38-10 (RF) at L level while mode is changed from play to stop?
NO
YES
Is the RF signal detected at Q5 collector of PREB when the PLAY key is pressed?
NO
YES
Check pick-up and PREB
Check PREB Q5, Q6 and connection between N32-2 (PREB) to N10-2 (DCDR)
Measure DCDR Z1-18 and Z1-51. Then resume playback mode
Check Z6, Q5
Is Z1-51 switched to L level, and Z1-18 to H level?
NO
YES
Check DCDR Z1, Z3
Does the drive voltage appear at Z1-19, 20 when the PLAY key is pressed?
NO
YES
Check Z1 (DCDR)
Do pluse signals appear at Z3-12, 13 when the play key is pressed?
NO
YES
Check Z2 and Z4
Is VCO an signal applied to Z3 9 pin (DCDR)
NO
YES
Check Z3 (DCDR)
Check Z6, Q6 and D3 (DCDR)
D
Repair


G
Is sound audible?
NO
YES
Press the PLAY BUTTON
Is sound audible now?
YES
NO
DCDR N38-12 (MUTG) = H ?
NO
YES
Check SVCT Z8
Does the ATT switch (test mode) work properly?
NO
YES
Adjust the inside limit position
Check DCDR Z2
Does pulse coming out from N12-2, N13-3, N12-4 and N12-5 (DCDR) ?
NO
YES
Check each part Z2, Z1 and Z3
Check each part of AUDF.
H
Repair



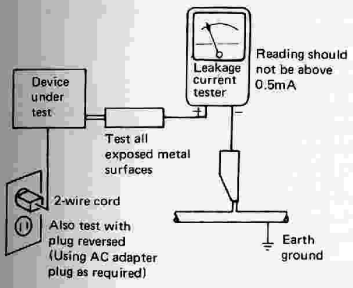
7. SAFETY INFORMATION

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.