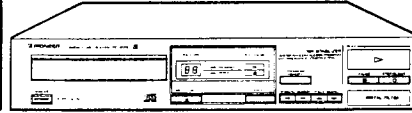


# Service Manual



**PIONEER®**  
The future of sound and vision.

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Tel: 01844-351694 Fax: 01844-352554  
Email: enquiries@mauritron.co.uk



**ORDER NO.  
ARP1332**

COMPACT DISC PLAYER

# PD-4050 PD-4050-S

009713

MODEL PD-4050 AND PD-4050-S COMES IN SEVEN VERSIONS DISTINGUISHED AS FOLLOWS:

Type	Applicable model		Power requirement	Except destination
	PD-4050	PD-4050-S		
KU	○	—	AC120V only	U.S.A.
KC	○	—	AC120V only	Canada
HEM	○	○	AC220V, 240V (switchable) *	European continent
HP	○	—	AC220V, 240V (switchable) *	Australia
SD	○	—	AC110V, 120-127V, 220V, 240V (switchable)	General market
SD/G	○	—	AC110V, 120-127V, 220V, 240V (switchable)	U.S. Military
HB	○	○	AC220V, 240V (switchable) *	United Kingdom

\* Change the position of jumper of the Transformer board assembly.

- This service manual is applicable to the KU, KC, HEM, HB, HP, SD and SD/G types.
- As to the KC, HEM, HB, HP, SD and SD/G types, please refer to pages 75.
- Ce manuel d'instruction se réfère au mode de réglage en français.
- Este manual de servicio trata del método ajuste escrito en español.

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**PIONEER ELECTRONIC CORPORATION** 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan  
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# 1. SAFETY INFORMATION

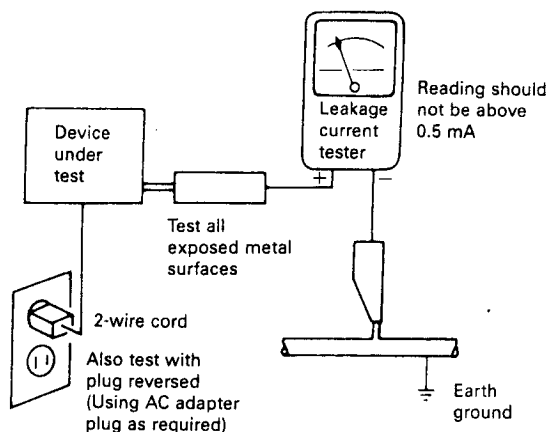
(FOR USA MODEL ONLY)

## 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 120 V AC 60 Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5 mA.



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  $\Delta$  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.

(FOR EUROPEAN MODEL ONLY)

### VAROITUS!

LAITE SISÄLTÄÄ LASERDIODIN, JOKA LAHETTAÄ NÄKYMÄTÖNTÄ, SILMILLE VAARALLISTA INFRAPUNASÄTEILYÄ LAITTEEN SISÄLLÄ ON LASERDIODIN LÄHEISYYDESSÄ KUVAN 1. MUKAINEN VAROITUSMERKKI.



LASER  
Kuva 1  
Lasersäteilyn  
varoituserkki

### WARNING!

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



LASER  
Picture 1  
Warning sign for  
laser radiation

### ADVERSEL:

USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UDGÅ UDSAETTELSE FOR STRÅLING.

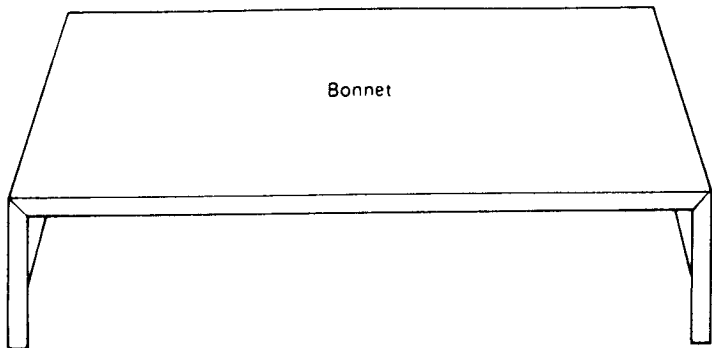
### VIKTIGT

APARATEN INNEHÅLLER LASER AV HÖGRE KLASS ÄN 1. INGREPP I APPARATEN BÖR GÖRAS AV SPECIELLT UTBILDAD PERSONAL.

### IMPORTANT

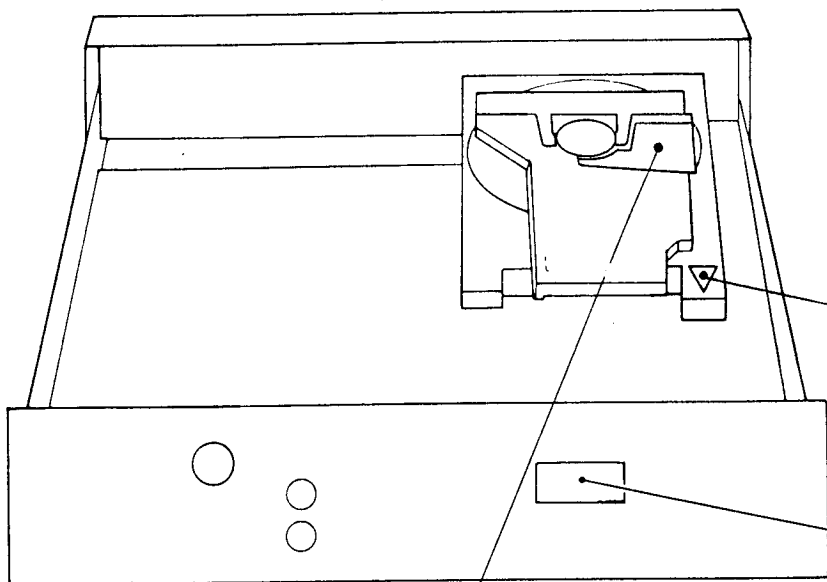
THIS PIONEER APPARATUS CONTAINS LASER OF HIGHER CLASS THAN 1. SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

LABEL CHECK



Bonnet

Front panel surface



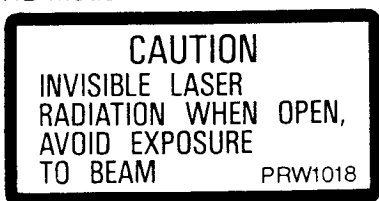
HEM and HB models



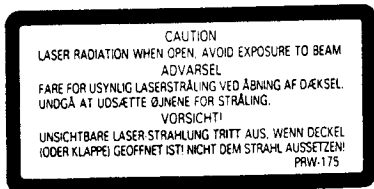
HEM and HB models



HB model



HEM model



ADDITIONAL LASER PRECAUTIONS

- Laser Interlock Mechanism**

The clamp switch (S102) detects the completion of the Load in operation, and the ON/OFF status of the clamp switch is in turn detected by the microcomputer. The laser diode is designed not to oscillate while the clamp switch is in OFF status. Consequently, if S102 is accidentally short-circuited, the interlock mechanism will become incapable of operation.

Moreover, when short-circuiting occurs between Pins 4 or 5 of CXA1081S (IC 1) and GND, or between Pin 29 of CXA1081S (IC 1) and GND, or between the terminals of Q1 (a Fault Condition will occur in all three cases), the laser diode will oscillate continuously. Note that during TEST Mode (see page 36), the interlock mechanism does not operate.
- While the bonnet is in opened status, if the pickup is positioned to allow direct visibility of the objective lens at the outer periphery from the outer diameter of the disc clamber (80-mm diameter), the pickup can be flooded with radiation of more than class 1 of the laser optical system during any Fault Condition in Item 1 above or during TEST Mode.

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## 2. SPECIFICATIONS

### 1. General

Type.....Compact disc digital audio system  
 Usable discs.....Compact Disc  
 Signal format.....Sampling frequency: 44.1 kHz  
 Quantized bit number: 16 bit linear  
 Power requirements  
 European models.....AC 220 V, 50/60 Hz  
 U.K., Australian models.....AC 240 V, 50/60 Hz  
 U.S., Canadian models.....AC 120 V, 60 Hz  
 Other models.....AC 110/120—127/220/240 V  
 (switchable), 50/60 Hz  
 Power consumption.....12 W  
 Operating temperature.....+5°C - +35°C  
 Weight.....3.8 kg (8 lb, 6 oz)  
 External dimensions.....420(W) x 315(D) x 80(H) mm  
 16-1/2 (W) x 12-2/5 (D) x 3-1/6 (H) in

### 2. Audio section

Frequency response.....4 Hz - 20 kHz  
 ( $\pm 0.5$  dB) (EIAJ)  
 S/N.....94 dB or more (EIAJ)  
 Total harmonic distortion.....0.009 % or less (EIAJ)  
 Output voltage.....1.8 V  $\pm$  0.5 V (EIAJ)  
 Wow and flutter.....Limit of measurement  
 ( $\pm 0.001\%$  W.PEAK) or less (EIAJ)  
 Number of channels.....2 channels (stereo)

### 3. Functions

- Play
- Pause
- Manual search
- Programmed playback
- Track search
- Programmed repeat
- All track repeat
- Timer start

### 4. Accessories

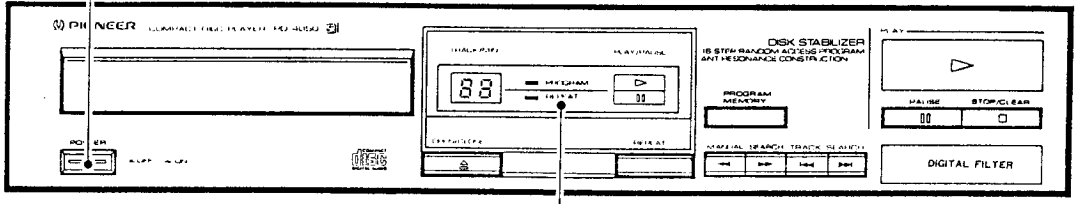
- Remote control cord.....1
- Output cable.....1
- Operating instructions.....1

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

### 3. PANEL FACILITIES

#### FRONT PANEL

**POWER switch ( ■ OFF, ■ ON)**  
 Press to turn power to the unit ON and OFF.  
 If there is a disc in the unit when power is turned ON, playback will begin automatically. (Timer start function)



<b>Indicators</b>		<b>MIN</b>	: Displays the playback time in minutes. (Only during manual search operation.)
<b>REPEAT</b>	: Lights during repeat play.	<b>PLAY/PAUSE</b>	
<b>PROGRAM</b>	: Lights after programming (after program has been memorized).	<b>PLAY ▷</b>	: Lights during playback.
<b>TRACK/MIN</b>	: Indicates current track number, and track numbers within program.	<b>PAUSE 00</b>	: Lights during pause mode, when playback is temporarily interrupted.

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**OPEN/CLOSE key  $\Delta$**

Press when you wish to eject or load a disc. Each time the key is pressed, the tray is alternately pushed out or pulled in.

**Disc Tray**

This is where the disc is set. When power is switched ON and the OPEN/CLOSE key is pressed, the tray is ejected forward.

To insert the tray, press the OPEN/CLOSE key, or lightly push the tray in with your finger. During play operation, pressing the PLAY key causes the tray to be inserted automatically.

**STOP/CLEAR Key  $\square$**

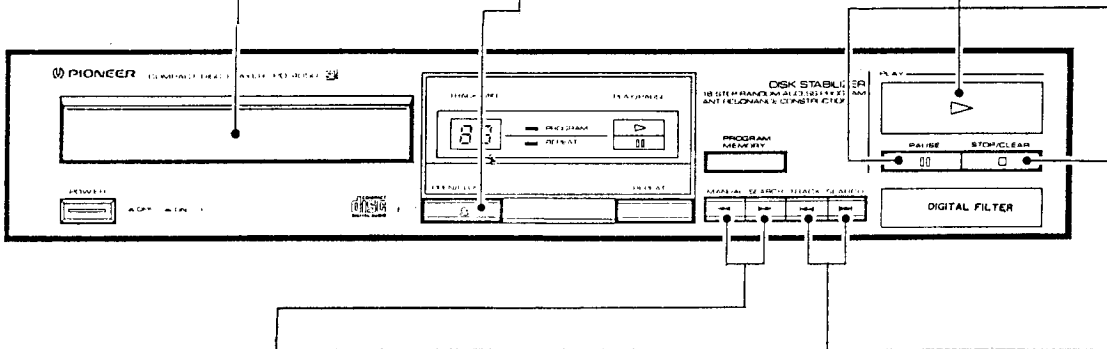
Press to stop playback. When pressed, the player goes into stop mode and all operations stop. Press to clear a program. When pressed during stop mode, the program stored in memory is cleared.

**PAUSE key  $\square\square$**

Press to temporarily interrupt playback. When pressed again, the pause mode is cancelled and playback resumes.

**PLAY key  $\triangleright$**

Press to begin playback, and to cancel the pause mode.



**MANUAL SEARCH Keys**

When the player is in play or pause modes, these keys are pressed to perform fast forward or fast backward operations, to allow manual searching. These operations are only carried out during the time either key is pressed.

**[▶▶]** : Fast forward operation (If fast forward operation is performed to the end of the disc, "E" will be displayed and the player will enter pause mode.)

**[◀◀]** : Fast backward operation (If fast backward operation is performed to the beginning of the disc, the player will enter play mode.) If these operations are performed during programmed play mode, the player will enter pause mode (or play mode) just before transferring to the next (or previous) step.

**TRACK SEARCH keys**

When the player is in the normal play, programmed play or pause modes, these keys are pressed to search for a desired track. Pressing either key causes the player to advance to the next track, or return to the previous track.

**[▶▶▶]** : When pressed once, the disc playback advances to the beginning of the next track on the disc; when pressed continuously, the disc playback moves to the beginning of succeeding tracks on the disc. (During programmed playback, it moves to the beginning of the next programmed track.)

**[◀◀◀]** : When pressed once, the disc playback returns to the beginning of the currently playing track; when pressed continuously, the disc playback moves further in reverse to the beginning of previous tracks on the disc. (During programmed playback it returns to the beginning of the previously programmed track.)

**REPEAT key**

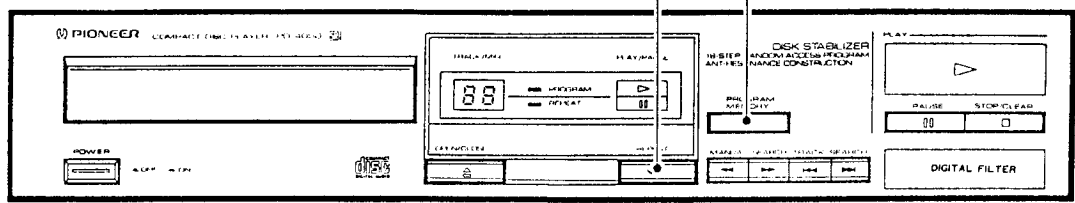
Press to perform repeat playback

- If pressed during normal playback mode, all tracks on the disc will be repeatedly played back.
- If pressed during programmed playback, the programmed tracks will be repeatedly played back in the programmed order.

**PROGRAM key (PROGRAM MEMORY)**

Used to program a sequence of tracks.


- Press this key after selecting a desired track with the TRACK SEARCH keys. Tracks will be added to the program in the order in which they are selected.




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REAR PANEL

**CONTROL INPUT terminal**

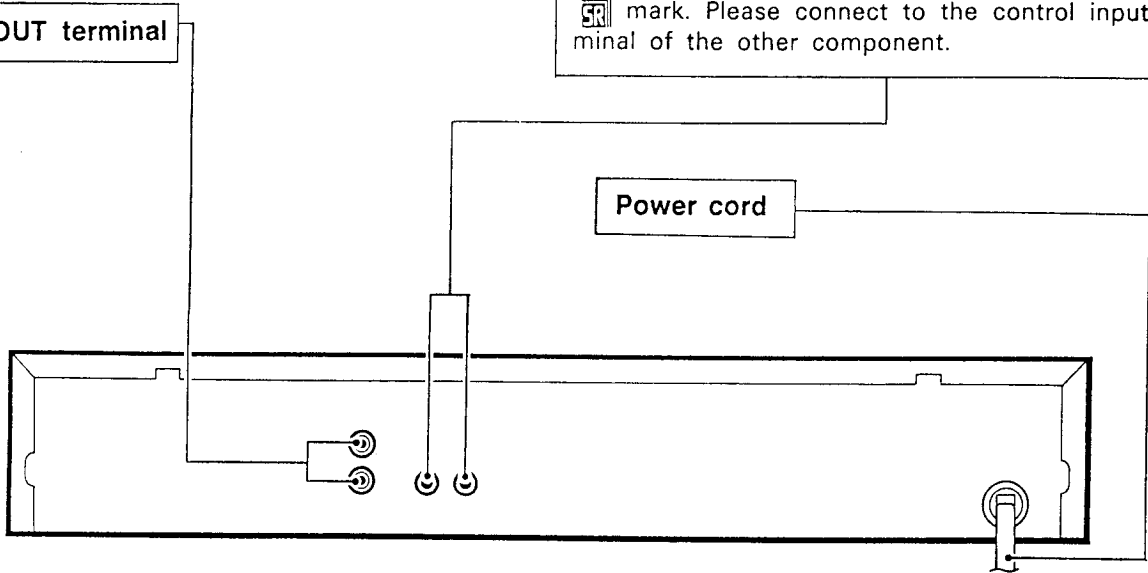
This terminal is for inputting the remote control signals relayed from an amplifier or other component with a sensor for receiving control signals from a remote controller and carrying the Pioneer  mark. Please connect to the control output terminal of the other component.

**CONTROL OUTPUT terminal**

This terminal is for further relaying remote control signals to other components carrying the Pioneer  mark. Please connect to the control input terminal of the other component.

AUDIO OUT terminal

Power cord





# 4. DISASSEMBLY

• FLOWCHART FOR DISASSEMBLY

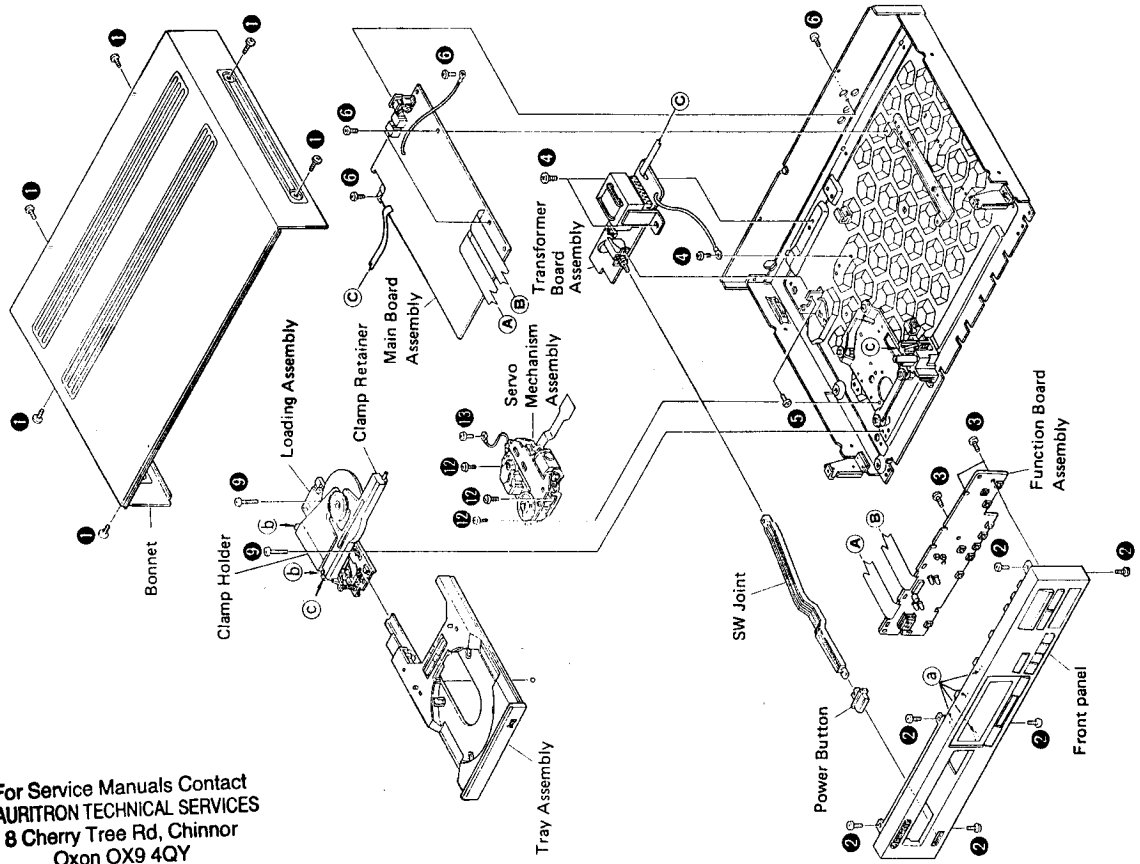
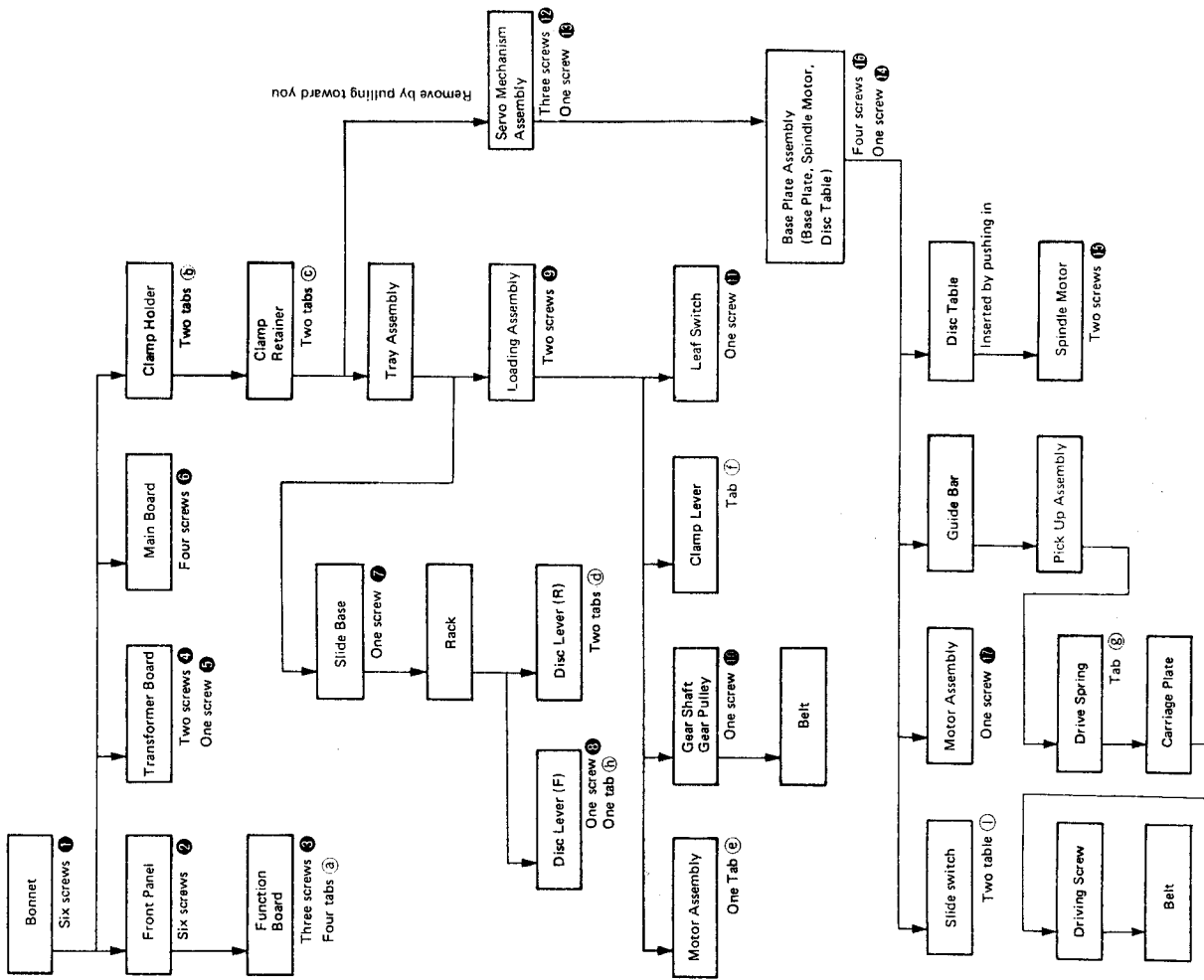


Fig. 4-1 Disassembly

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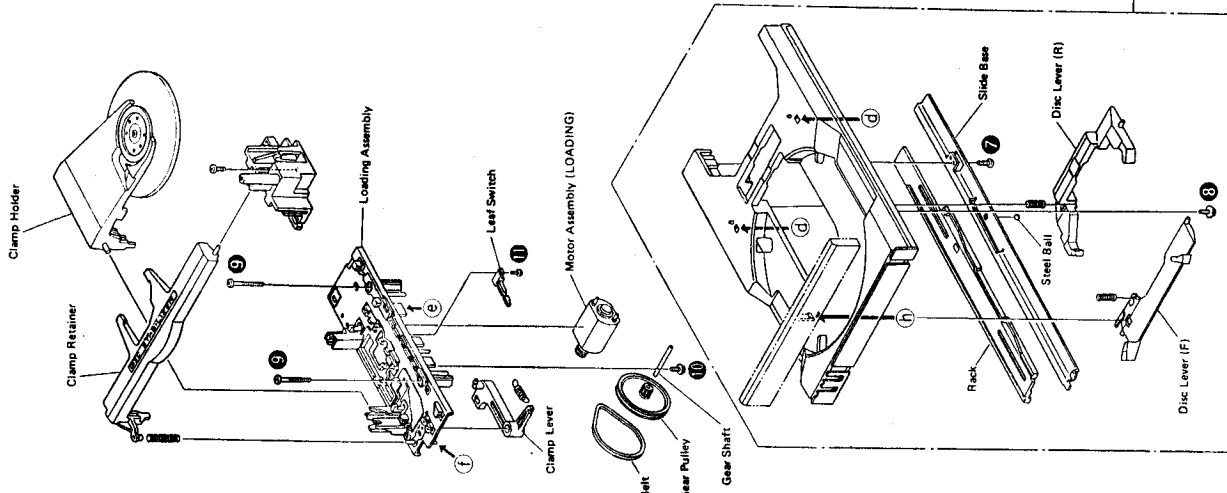


Fig. 4-2 Parts disassembly (Loading mechanism and Tray assembly section)

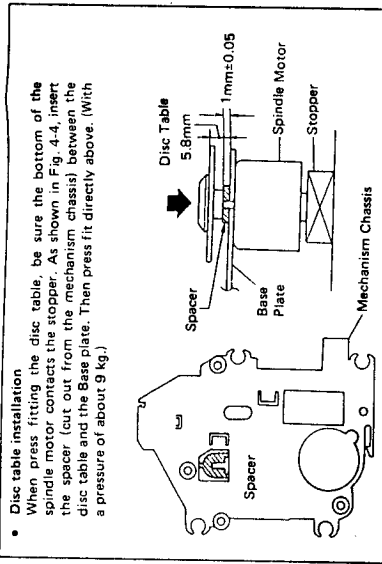


Fig. 4-4 Disc table installation

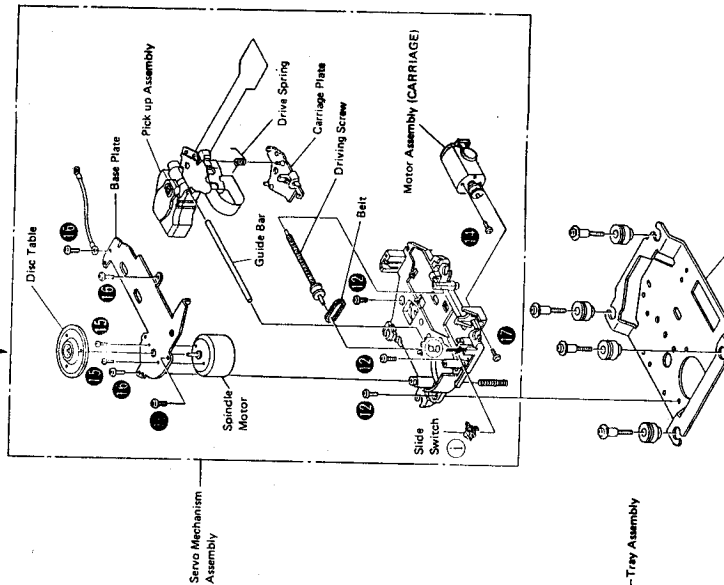
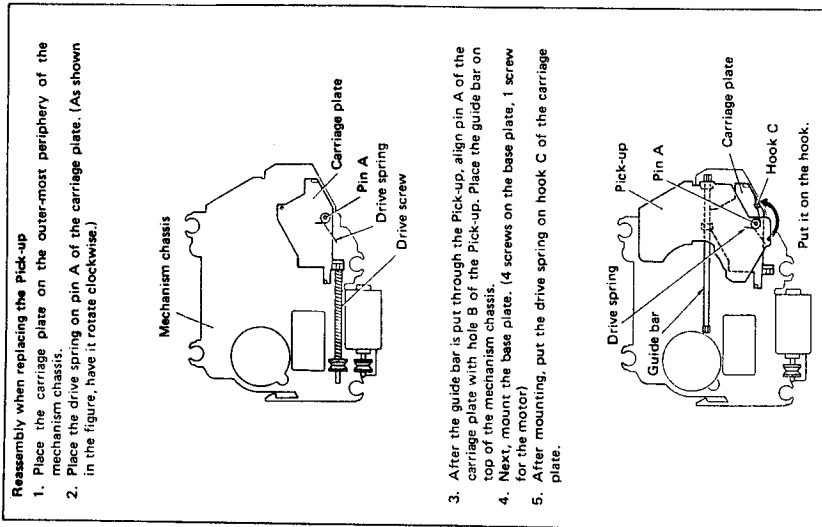


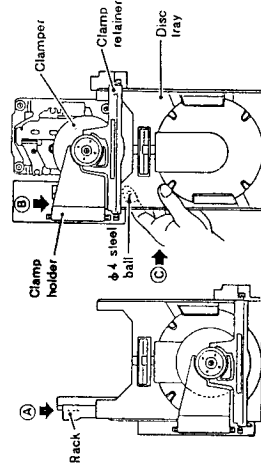
Fig. 4-3 Parts disassembly (Servo mechanism section)



**Reassembly when replacing the pick-up**

1. Place the carriage plate on the outer-most periphery of the mechanism chassis.
2. Place the drive spring on pin A of the carriage plate. (As shown in the figure, have it rotate clockwise.)

3. After the guide bar is put through the Pick-up, align pin A of the carriage plate with hole B of the Pick-up. Place the guide bar on top of the mechanism chassis.
4. Next, mount the base plate. (4 screws on the base plate, 1 screw for the motor)
5. After mounting, put the drive spring on hook C of the carriage plate.



**REMOVAL OF THE TRAY**

● Removal of the disc tray

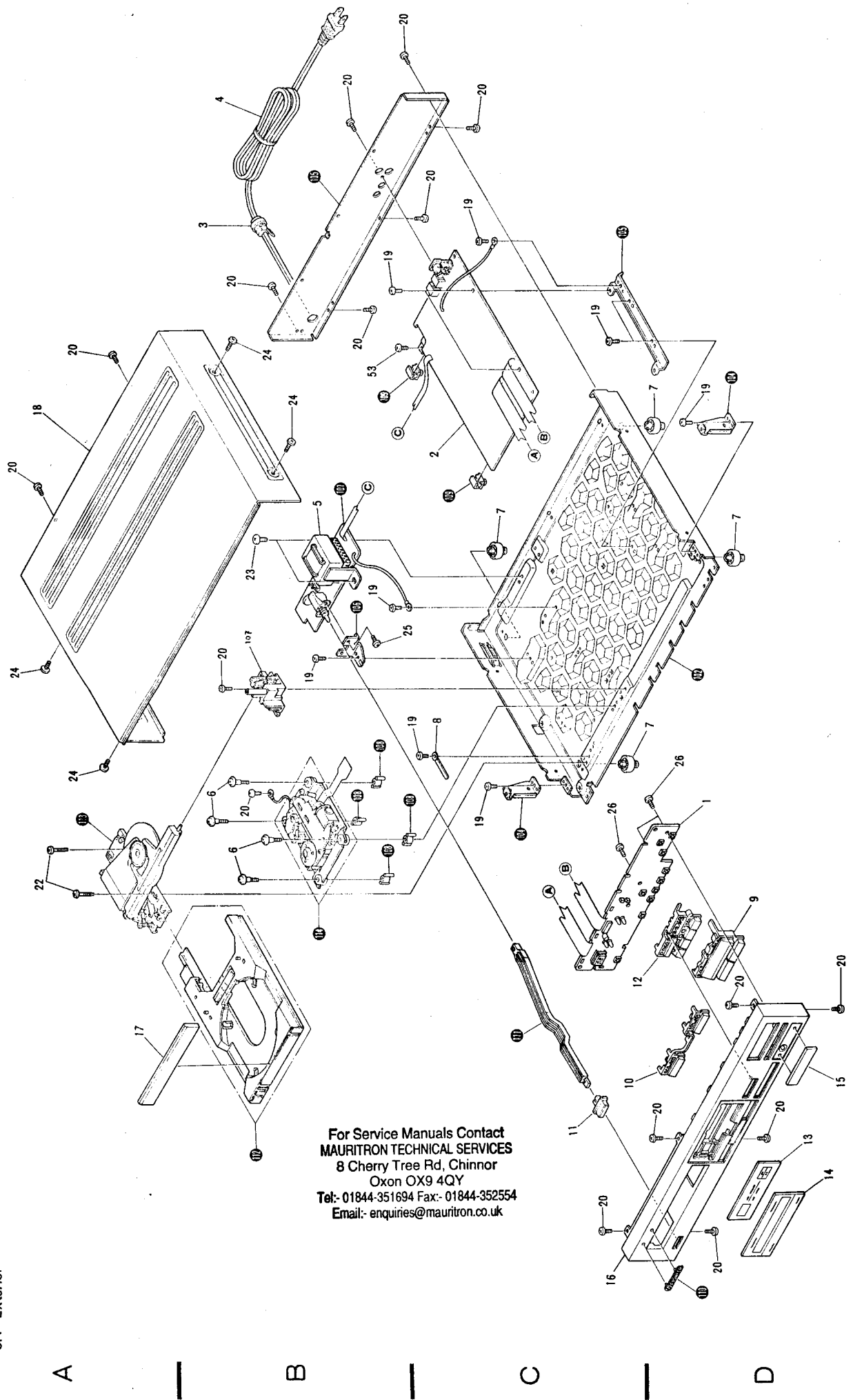
1. Press the rear edge of the rack, marked (A) in Fig. 4-5, while pulling the disc tray out to the position where it catches, illustrated in Fig. 4-6.
2. While pulling the clamp holder (B) (see Fig. 4-2) upward with the right hand, hold the tray as indicated by (C) in the left hand and pull it outward. Take care not to allow the  $\phi 4$  steel ball to fall (we recommend holding the ball in place with the left index finger while extracting the tray).

Fig. 4-6

Fig. 4-5

5. EXPLODED VIEWS AND PARTS LIST

5.1 Exterior



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A

B

C

D

5.2 Mechanism section

- NOTES:**
- Parts without part number cannot be supplied.
  - The  $\Delta$  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.
  - For your parts Stock Control, the fast moving items are indicated with the marks **\*\*** and **\***.
  - \*\* GENERALLY MOVES FASTER THAN \***
  - This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
  - Parts marked by  $\odot$  are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

Parts List of Exploded Views

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
$\Delta$	1.	PWZ1145	Function board assembly		23.	IBZ40P080FCC	Screw
$\Delta$	2.	PWZ1213	Main board assembly		24.	FBT40P080FZK	Screw
$\Delta$	3.	CM-22C	Strain relief		25.	PMZ30P060FMC	Screw
$\Delta$	4.	PDG1002 (PDG1015)	AC power cord		26.	PPZ30P080FMC	Screw
$\Delta$	5.	PTT1010	Power transformer (AC120V)	$\Delta$	101.		Transformer board assembly
	6.	PBA1001	Screw		102.		Under base
	7.	REC-369	Foot assembly		103.		Rear base
	8.	RNH-184	Card clamper		104.		Angle
	9.	PAC1053	Button 1D		105.	CGDYX104M25	Semiconductive ceramic capacitor
	10.	PAC1055	Button D (O/C)		106.		P.C. switch angle
	11.	PAC1058	Button (POWER)		107.		Slide guide
	12.	PAC1117	Button D (FUNCTION)		108.		Mechanism support
	13.	PAM1029	Filter D		109.		P. plate holder
	14.	PAM1030	Window D		110.		Name plate
	15.	PAM1041	Name plate D		111.		SW joint
	16.	PNW1078	Function panel D		112.		Tray assembly
	17.	PNW1124	Name plate D		113.		Loading assembly
	18.	PNA1041	Bonnet		114.		Servo mechanism assembly
	19.	BBZ30P060FMC	Screw				
	20.	BBZ30P080FZK	Screw				
	21.	.....	.....				
	22.	BBZ30P230FMC	Screw				

Parts List of Mechanism Section

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
	1.	PBH1013	Spring		30.	PEB1013	Belt (LOADING)
	2.	PBP-001	Steel ball $\phi$ 4		31.	PNW1069	Loading base
	3.	PNW1084	Clamp holder		32.	PNW1083	Clamp lever
	4.	PNW1085	Clamp retainer		33.	PNW1171	Gear pulley
	5.	PBH1009	Spring		34.	VSK-015	Leaf switch (OPEN/CLMP)
	6.	PEB1031	Floating rubber		35.	BPZ20P080FZK	Screw
	7.	PNM1010	Disc cushion		36.	PNZ20P030FMC	Screw
	8.	PYY1028	Clamper assembly		37.	IPZ30P060FMC	Screw
	9.	CGDYX104M25	Semiconductive ceramic capacitor		38.	PPZ30P080FMC	Screw
	10.	PBA-209	Screw M 2x3		39.	BBZ30P080FMC	Screw
	11.	PBH1008	Drive spring		40.	BBZ30P230FMC	Screw
	12.	PBK1010	Plate spring		41.	PBA1001	Screw
	13.	PEB1012	Belt (CARRIAGE)		42.		.....
	14.	PLA1003	Drive worm		43.	PEB1032	Stopper rubber
	15.	PLA1004	Guide bar		101.		Tray assembly
	16.	PNW1062	Mechanism chassis		102.		Loading base assembly
	17.	PNW1063	Carriage plate		103.		Magnet
	18.	PNW1064	Disc table		104.		Ballast base
	19.	PNW1066	Pulley		105.		Clamper
	20.	PSH1003	Slide switch (INSIDE)		106.		.....
	21.	PXM1001	Spindle motor		107.		.....
	22.	PWY1003	Pick up assembly		108.		.....
	23.	PYY1025	Motor assembly (CARRIAGE)		109.		Earth lead unit
	24.	PBH1011	Spring		110.		Motor pulley
	25.	PNW1079	Tray		111.		Base plate
	26.	PNW1183	Disc lever (F)		112.		Carriage M board
	27.	PNW1081	Disc lever (R)		113.		.....
	28.	PNW1082	Rack		114.		Motor (CARRIAGE, LOADING)
	29.	PBH1012	Clamp spring		115.		Slide base
					116.		.....
					117.		Gear shaft
					118.		Slide guide

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A

B

C

D

1

2

3

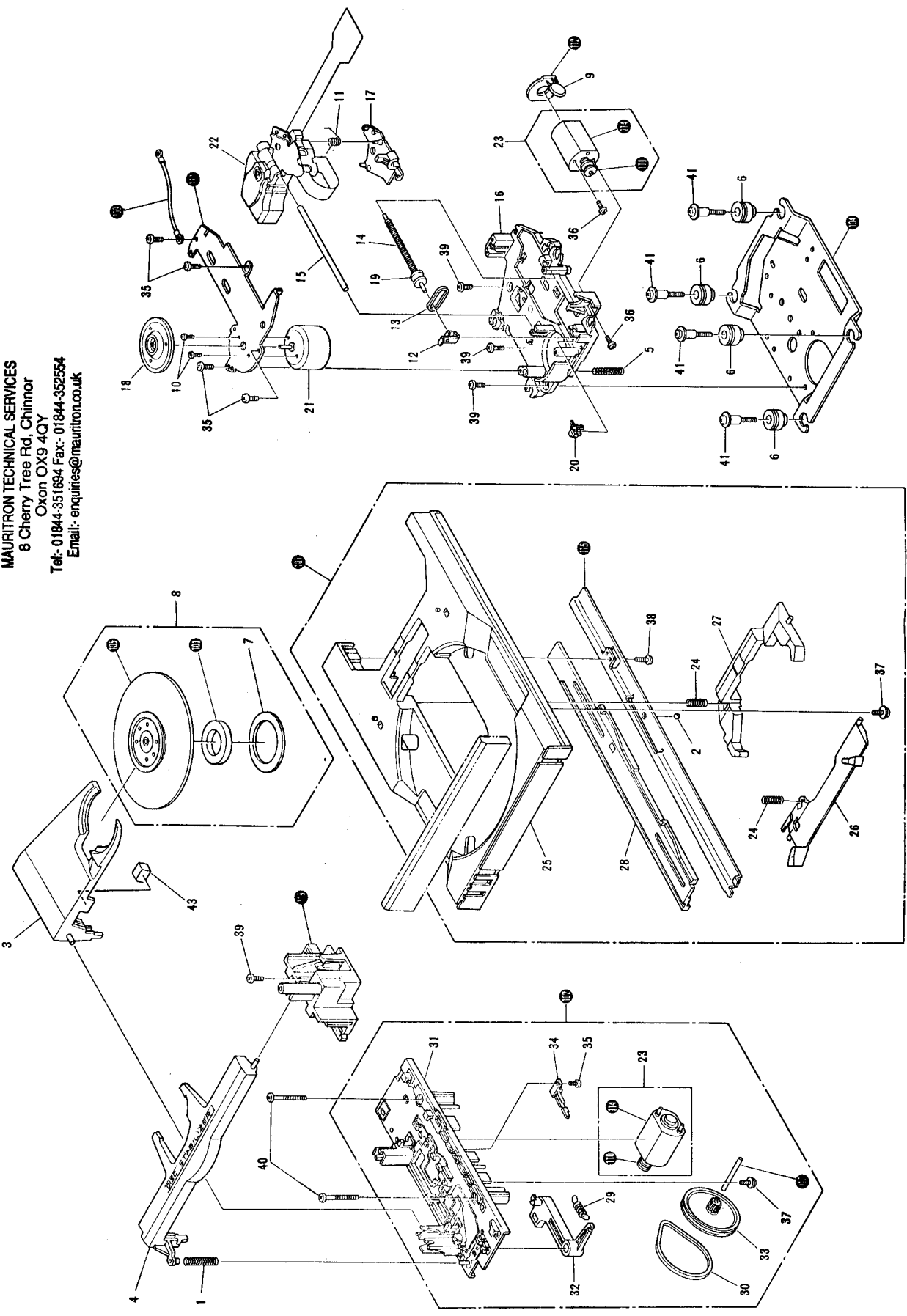
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19

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A

B

C

D

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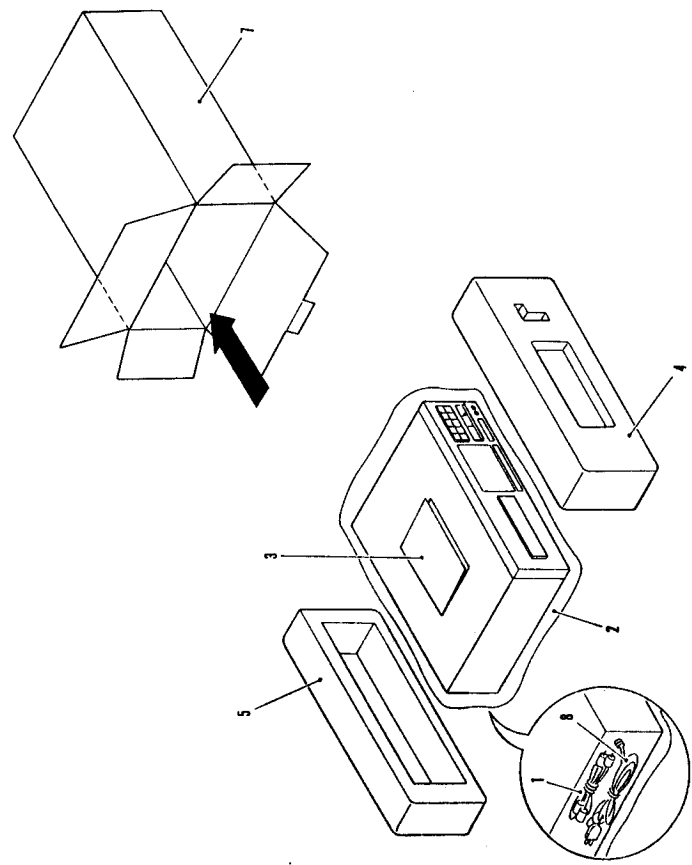
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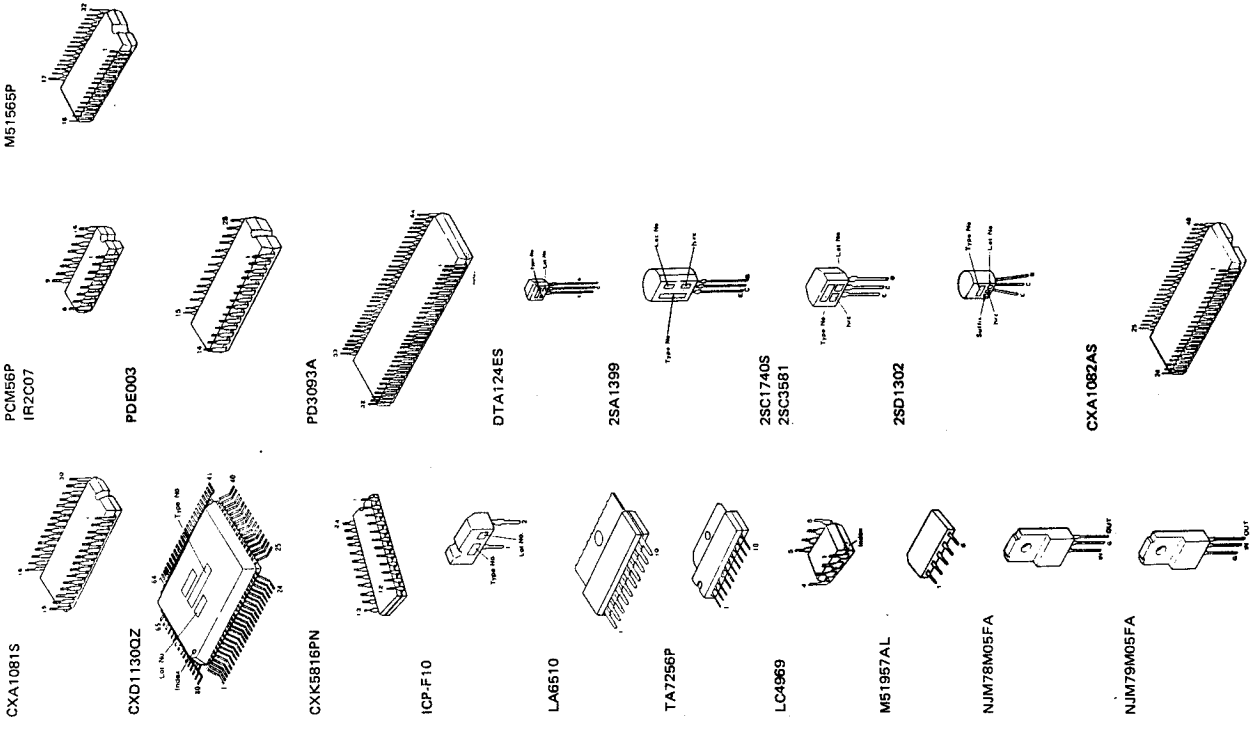
6

19

6. PACKING



External appearance of transistors and ICs



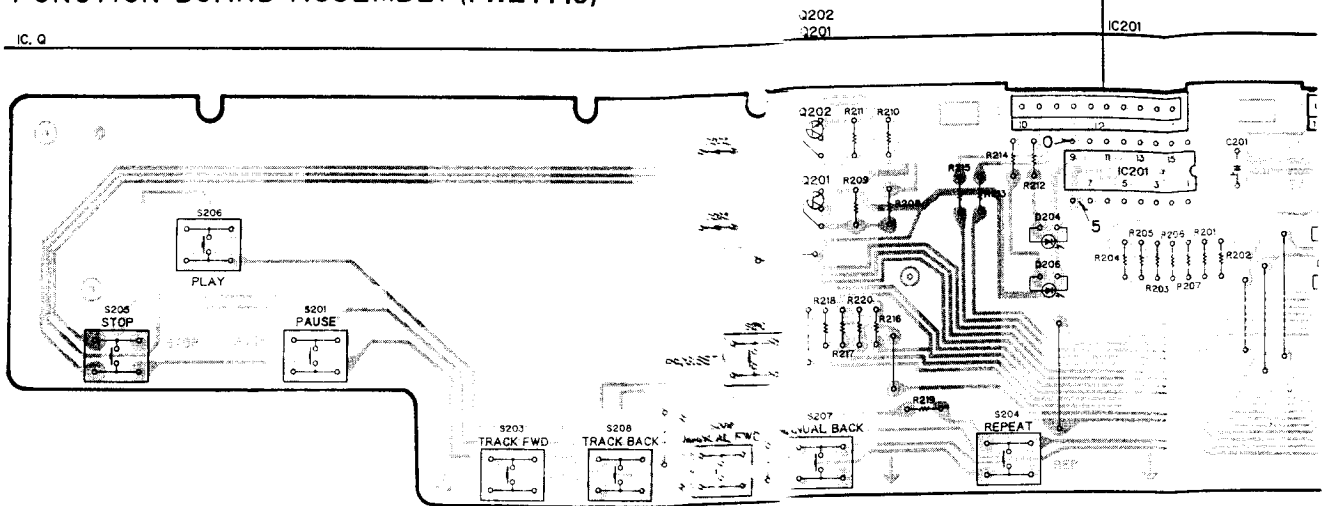
Parts List of Packing

Mark	No.	Part No.	Description
	1.	PDE-319	Mini plug connector cord
	2.	VHL-037	Sheet
	3.	PRB1017	Operating instructions (English)
	4.	PHA1013	Protector (F)
	5.	PHA1014	Protector (R)
	6.	PHG1032	Packing case
	7.	PDE1001	Connector cord
	8.	(PDE1002)	

# 7. P.C. BOARDS CONNECTION DIAGRAM

FUNCTION BOARD ASSEMBLY (PWZ1145)

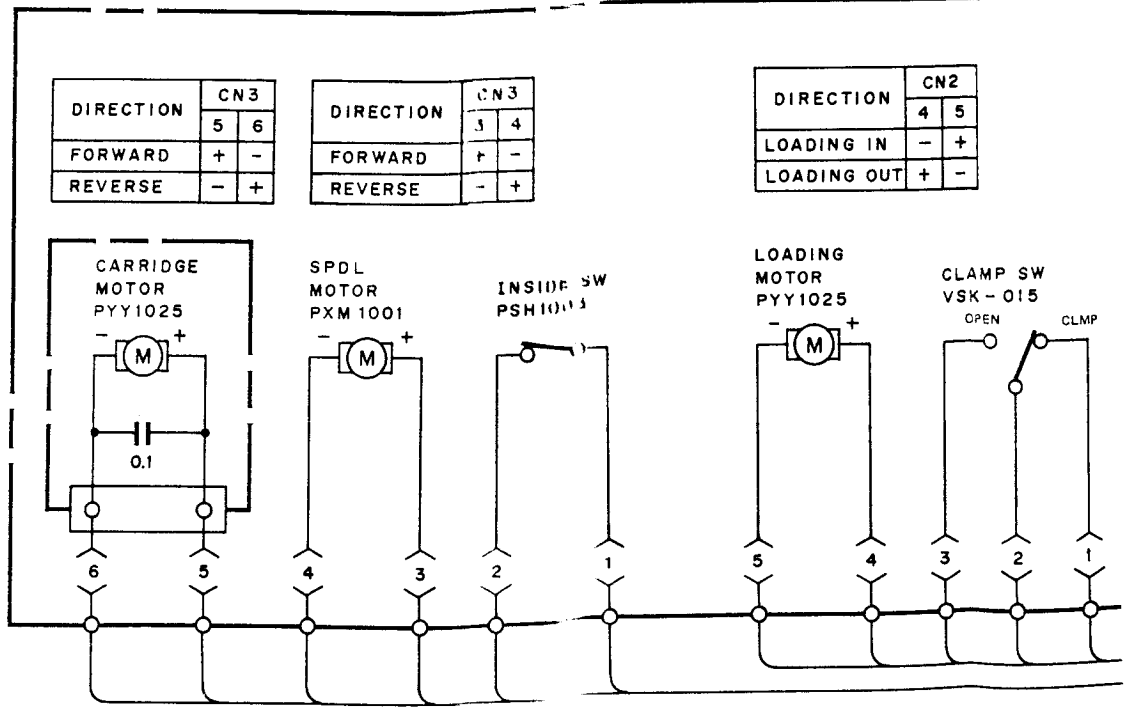
A



B

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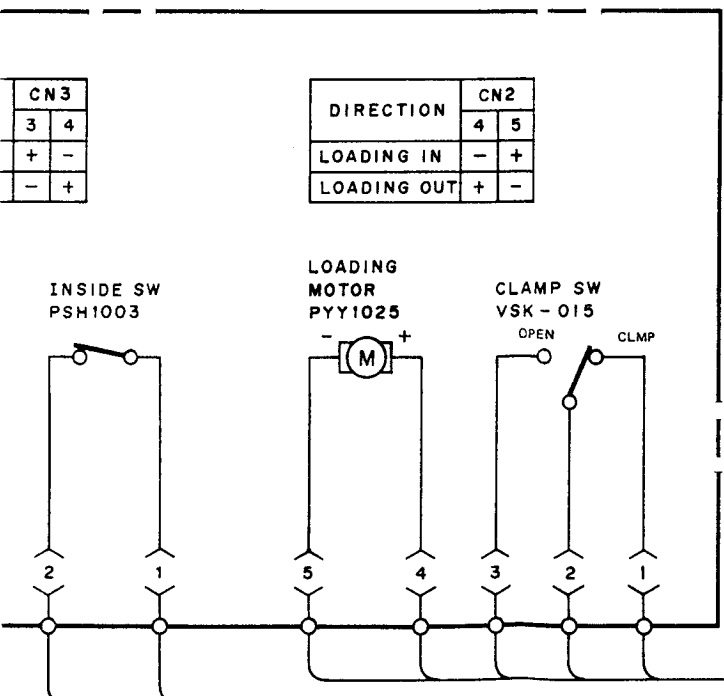
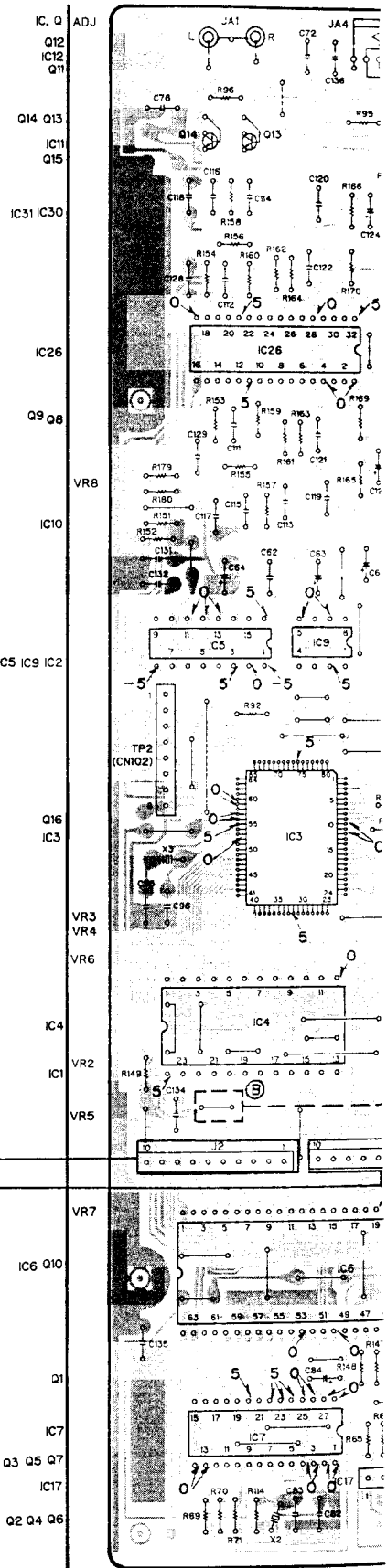
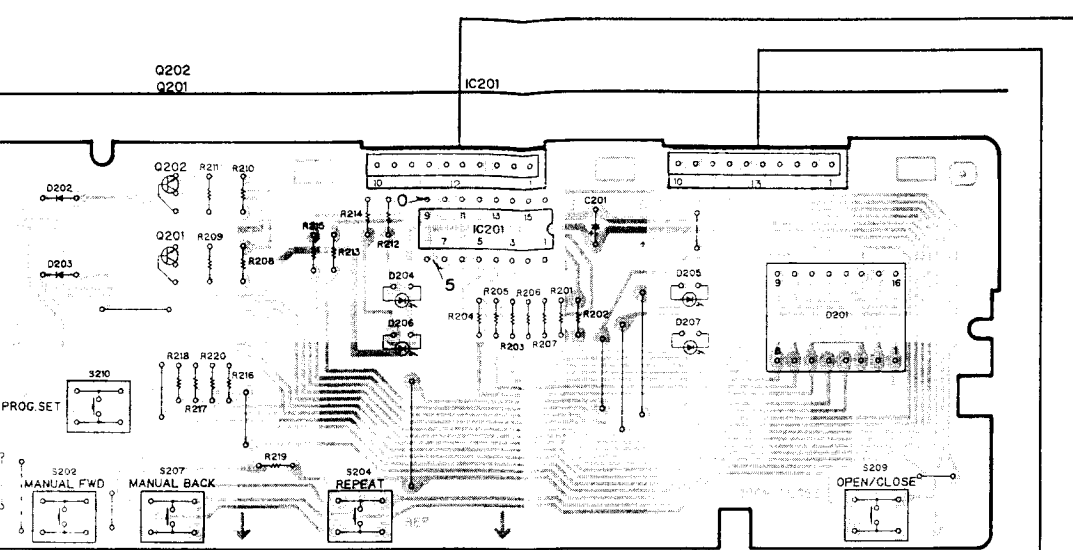
C



D

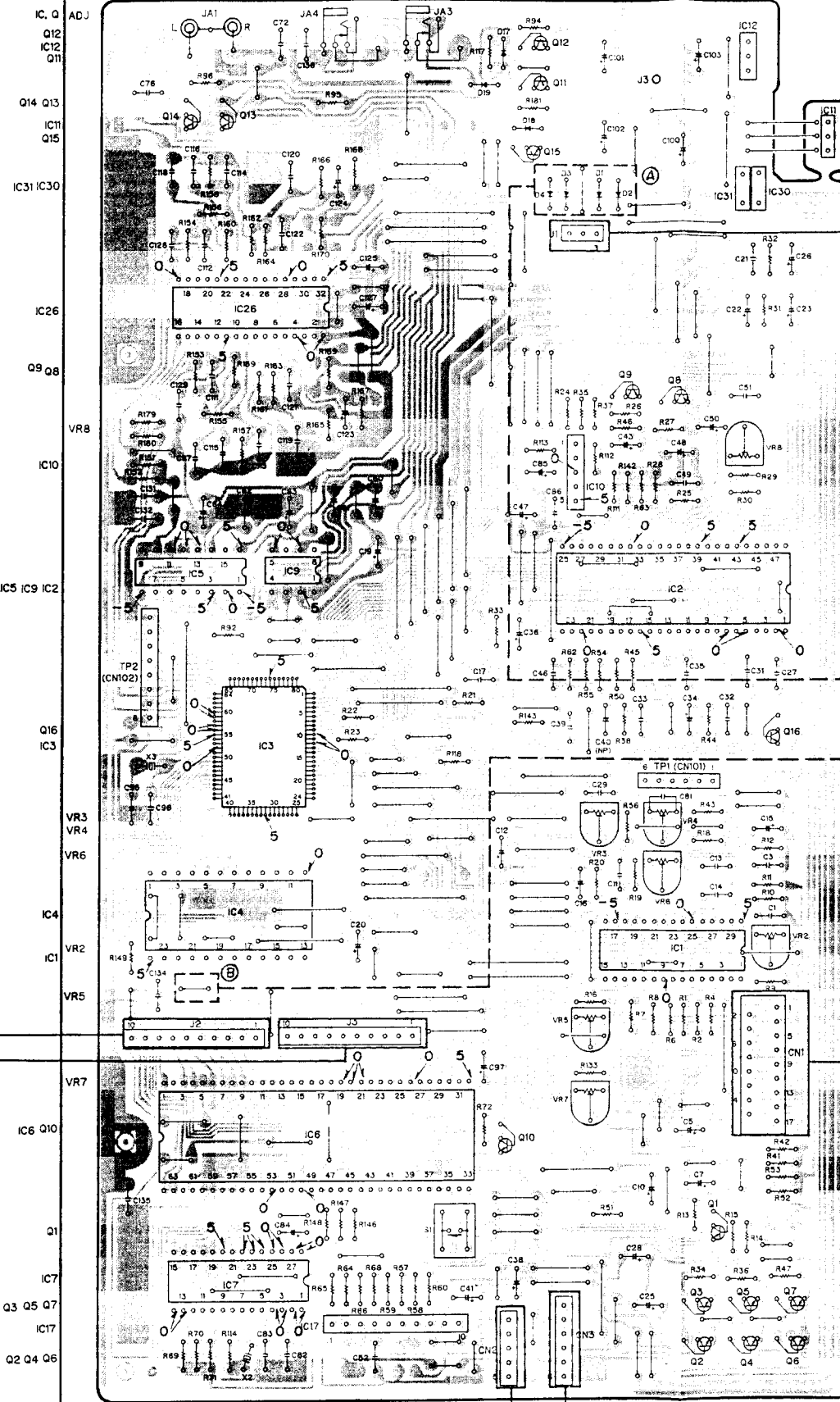
# DIAGRAM

# MAIN BOARD ASSEMBLY

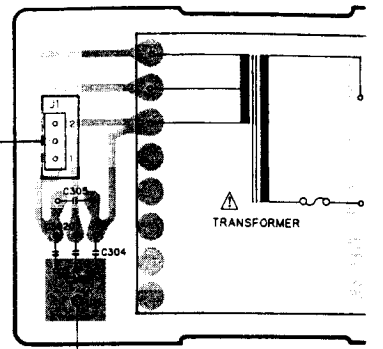




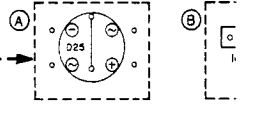
# MAIN BOARD ASSEMBLY (PWZ1213)



## TRANSFORMER BOARD



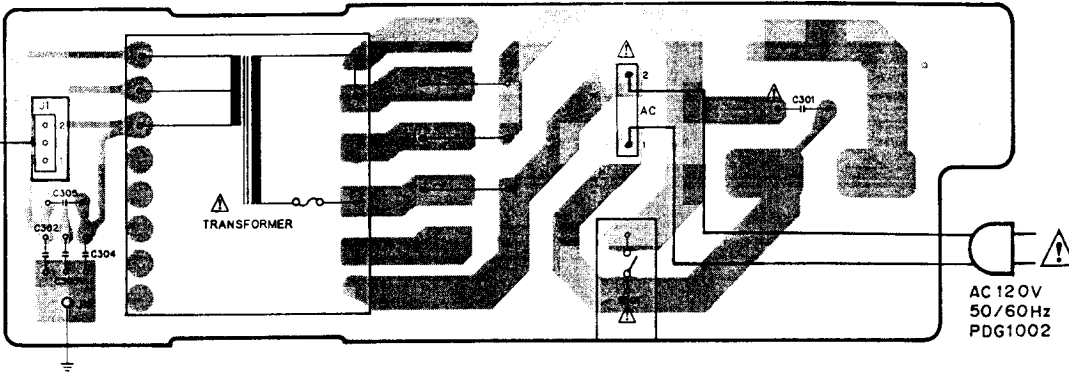
This P.C.B. pattern diagram is for areas except for KU and I enclosed by dotted lines have shown below.



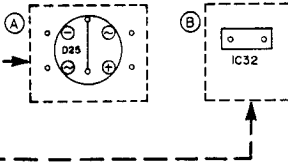
## PICK UP

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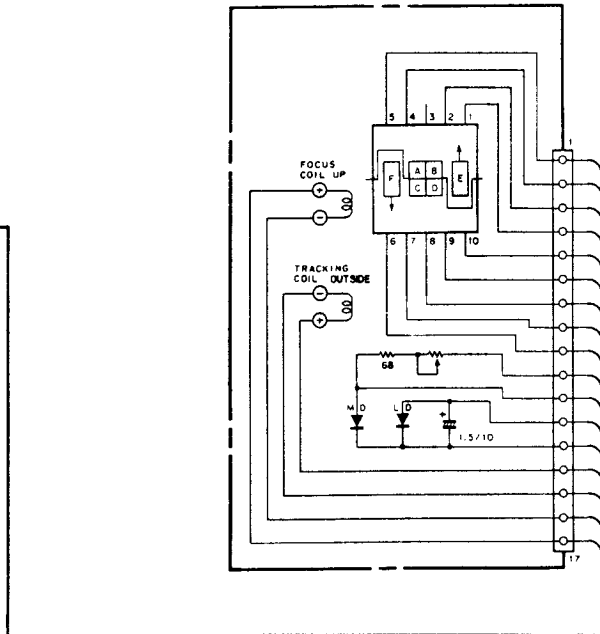
### TRANSFORMER BOARD ASSEMBLY



This P.C.B. pattern diagram is for KU and KC.  
 For areas except for KU and KC, the portions  
 enclosed by dotted lines have been changed as  
 shown below.



### PICK UP ASSEMBLY (PWY1003)



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A



B



C



D

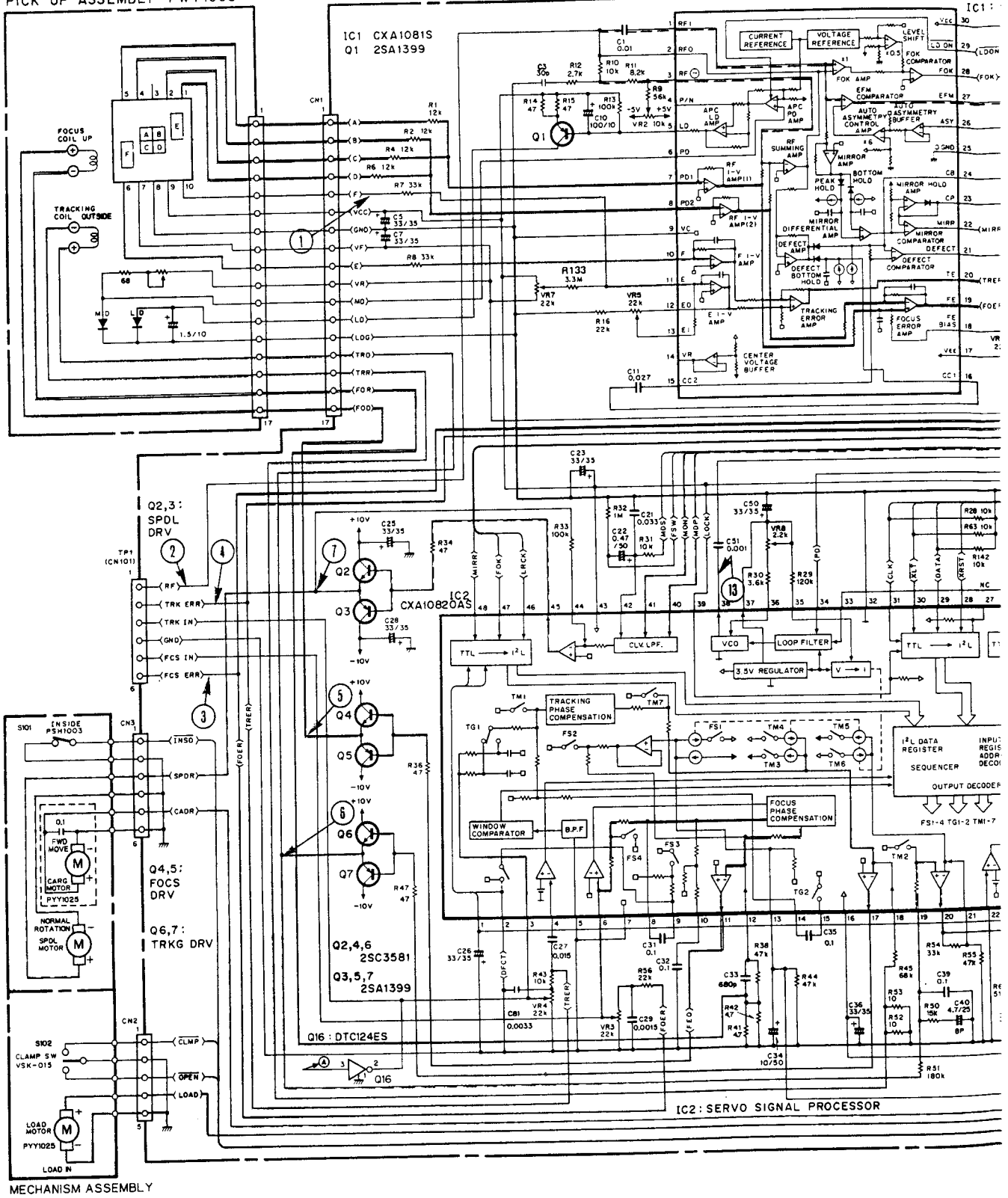
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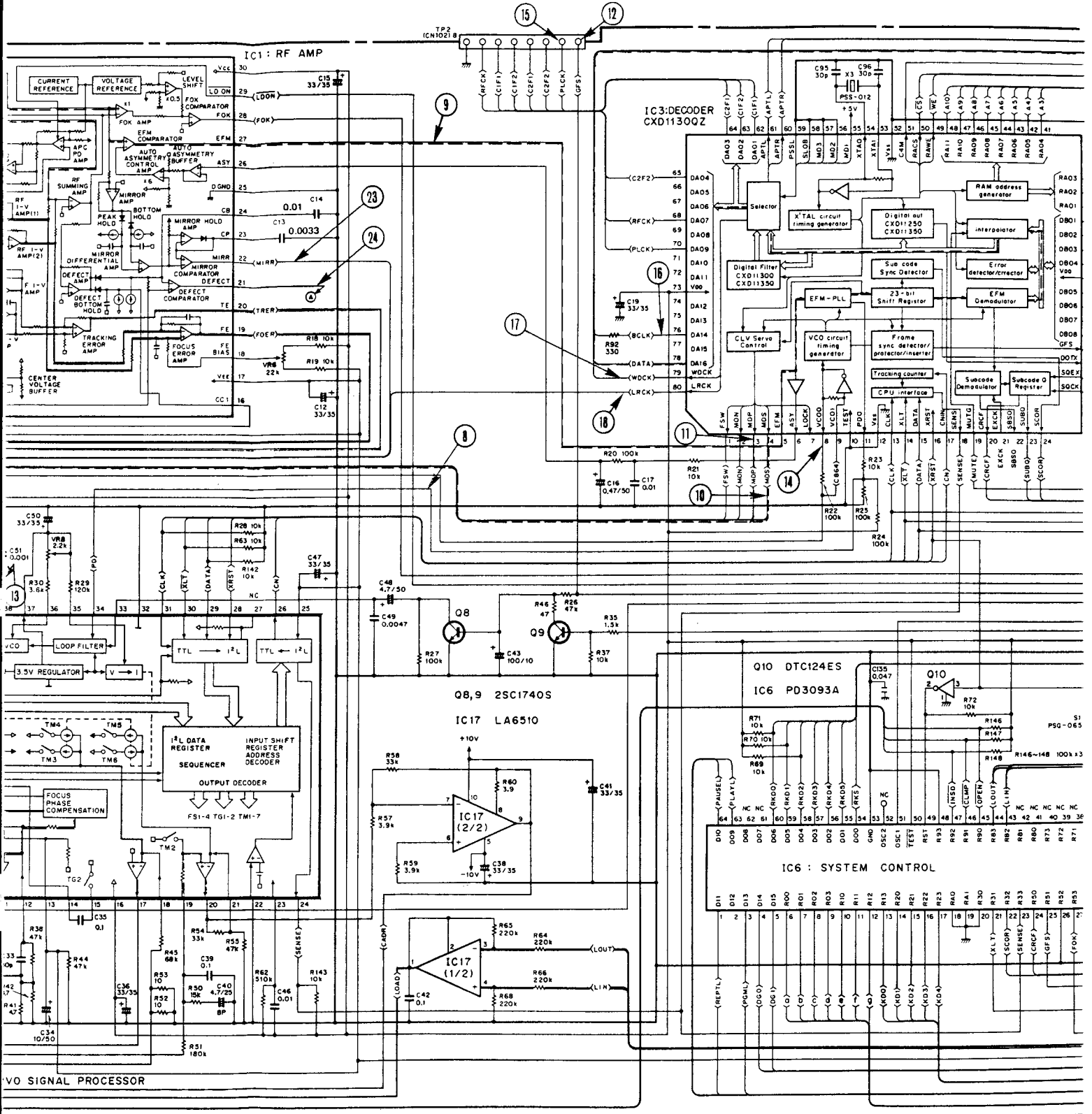
# 8. SCHEMATIC DIAGRAM

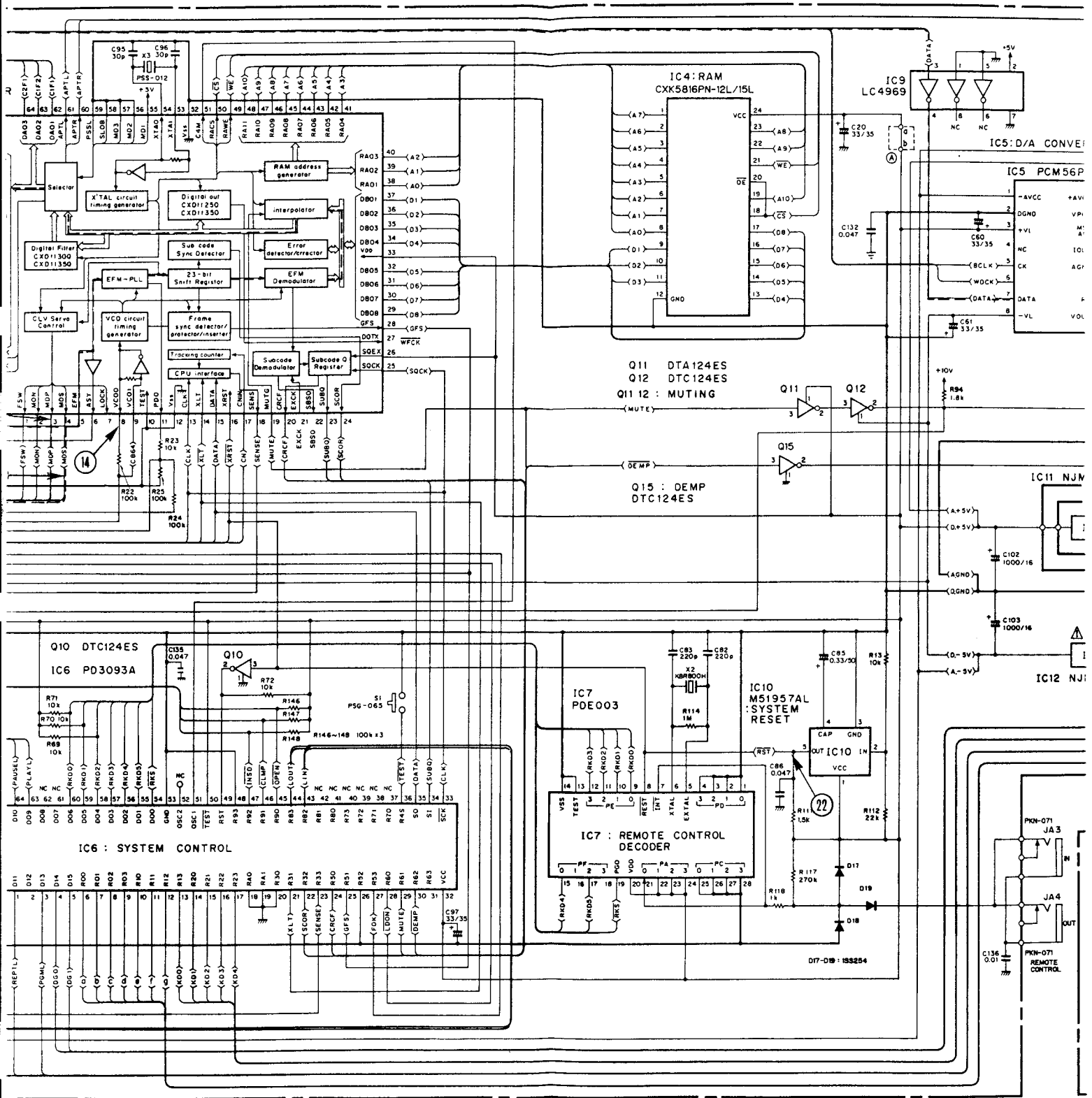
PICK UP ASSEMBLY PWY1003

MAIN BOARD ASSEMBLY PWZ1213

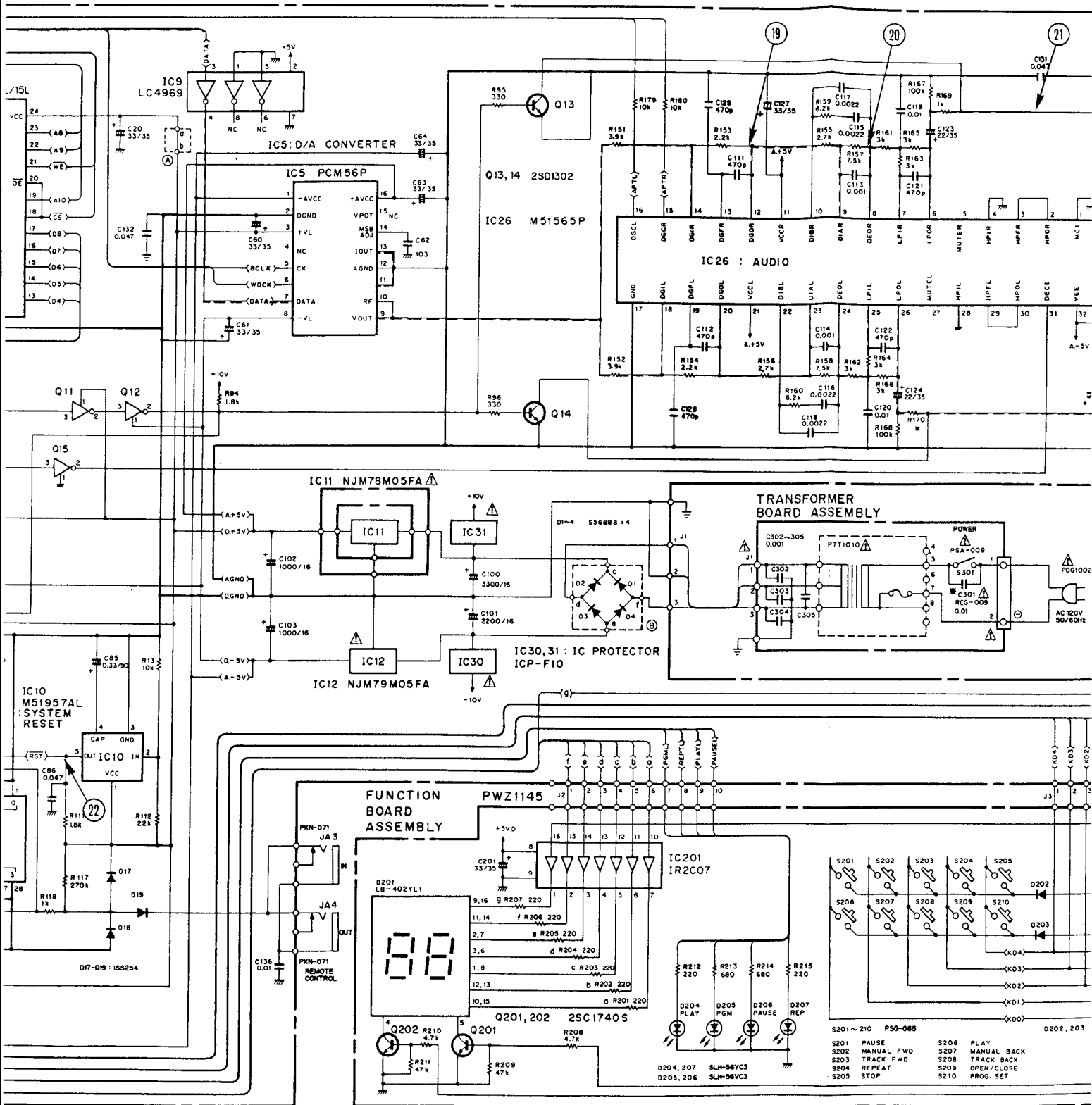


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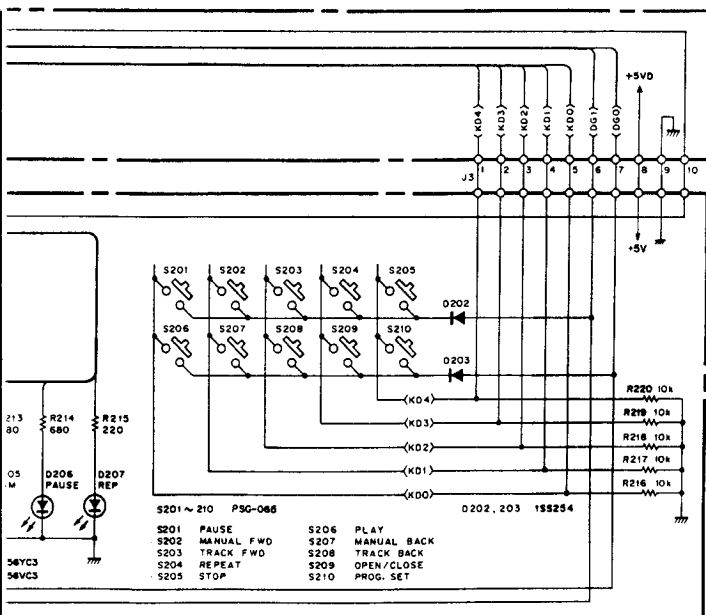
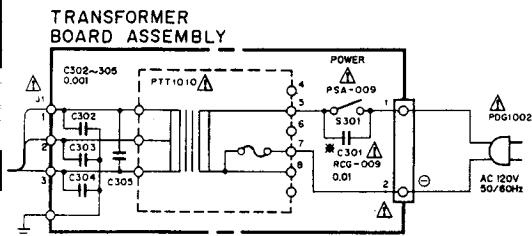
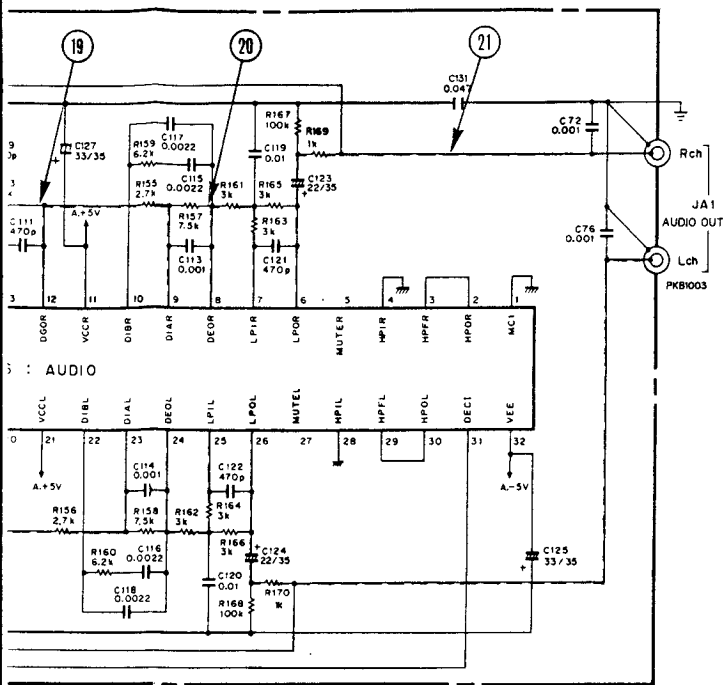




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- |                 |                  |
|-----------------|------------------|
| S201 PAUSE      | S206 PLAY        |
| S202 MANUAL FWD | S207 MANUAL BACK |
| S203 TRACK FWD  | S208 TRACK BACK  |
| S204 REPEAT     | S209 OPEN/CLOSE  |
| S205 STOP       | S210 PROG. SET   |

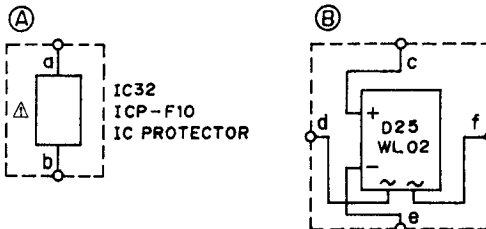


**NOTE:**

The indicated semiconductors are representative ones only. Other alternative semiconductors may be used and are listed in the parts list.

**CIRCUIT DIAGRAM PRECAUTIONS**

This circuit diagram is applicable to the KU and KC destinations. With respect to other destinations, Sections (A) and (B) of the MAIN BOARD ASSEMBLY are substituted in accordance with the figures below.



**NOTE:**

- RESISTORS:**  
Indicated in Ω, 1/8W & 1/4W, ±5% tolerance unless otherwise noted k; kΩ, M; MΩ, (F); ±1%, (G); ±2%, (K); ±10%, (M); ±20% tolerance
- CAPACITORS:**  
Indicated in capacity (μF)/voltage (V) unless otherwise noted p; pF. Indication without voltage is 50V except electrolytic capacitor.
- VOLTAGE, CURRENT:**  
□; DC voltage (V) at no input signal  
Value in ( ) is DC voltage at rated power.  
mA; DC current at no input signal
- OTHERS:**  
➔; Signal route.  
⊗; Adjusting point.

The Δ 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. \* marked capacitors and resistors have parts numbers. The underlined indicates the switch position.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

- TRACKING SERVO LOOP
- - - - - CARRIAGE SERVO LOOP
- LOADING MOTOR
- - - - - SPINDLE SERVO LOOP
- FOCUS SERVO LOOP

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A

B

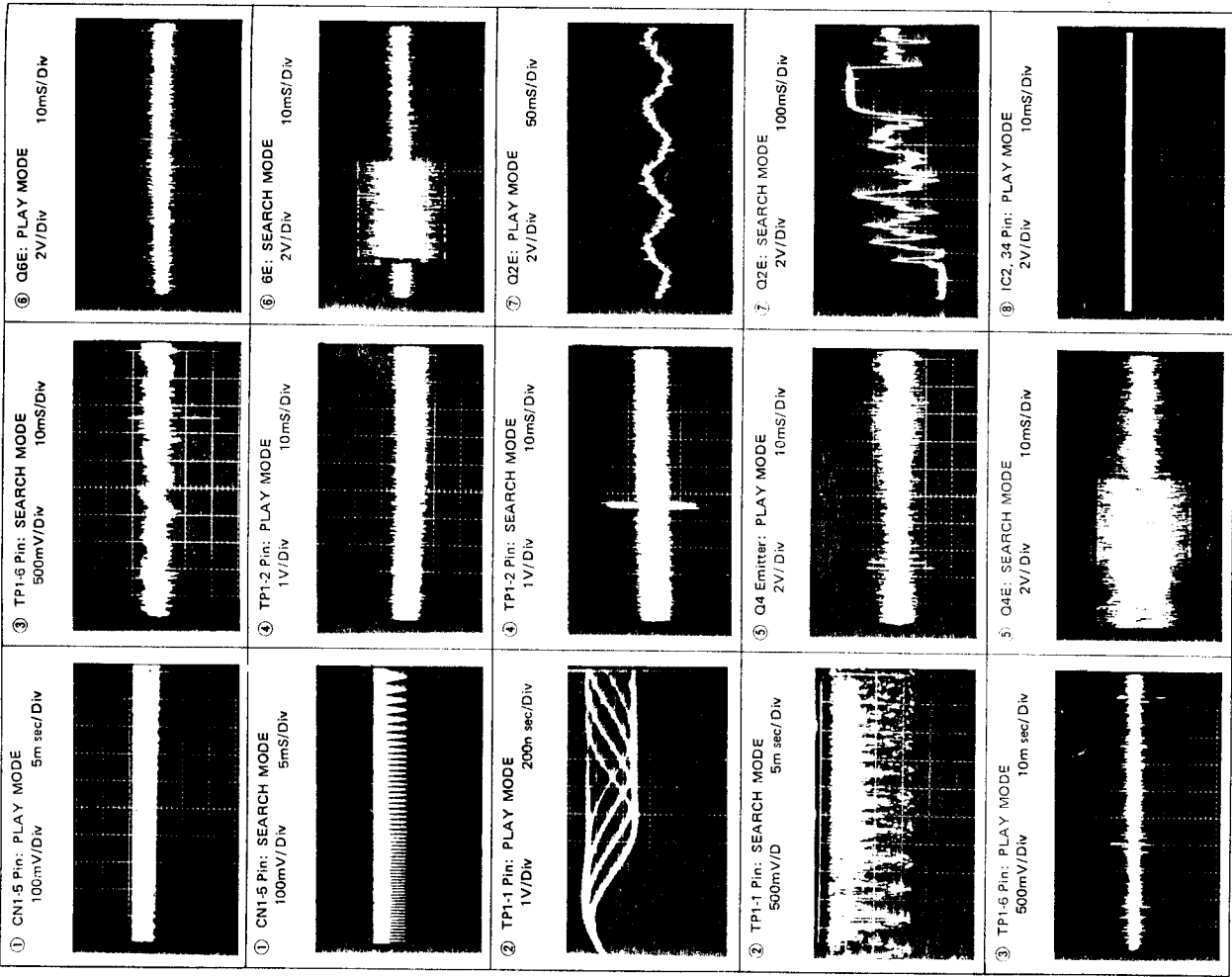
C

D



WAVE FORMS

NOTE: The encircled numbers denote measuring points in the circuit and pattern diagrams.



A

B

C

D

