



Service Manual

Nakamichi DS-200/DS-100 program timer



CONTENTS

1. General (DS-200/DS-100)	2
1. 1. DS-200	2
1. 2. DS-100	3
2. Principle of Operation (DS-200/DS-100)	4
2. 1. Fluorescent-Character-Display-Tube Timer Clock	4
2. 2. Transistors on Switch P.C.B.	5
3. DS-200 Removal Procedures	7
3. 1. Top Cover and Front Mechanism Ass'y	7
3. 2. Front Panel Ass'y	7
3. 3. Push Button Ass'y and Switch Holder Ass'y	7
3. 4. Display Ass'y	7
3. 5. Relay P.C.B. Ass'y and Side Chassis	7
4. DS-200 Mechanism Ass'y and Parts List	8
4. 1. Synthesis	8
4. 2. Front Mechanism Ass'y (A01)	9
4. 3. Bottom Case Ass'y (A02)	9
5. DS-200 Mounting Diagrams and Parts List	12
5. 1. Switch P.C.B. Ass'y	12
5. 2. Display Ass'y	12
5. 3. Relay P.C.B. Ass'y	12
6. DS-200 Schematic Diagram	13
7. DS-100 Removal Procedures	14
7. 1. Front Panel and Case Covers	14
7. 2. Front Mechanism Ass'y, Rear Panel Ass'y, Power Transformer and Relay P.C.B. Ass'y	14
7. 3. Display Ass'y	14
7. 4. Push Button Ass'y, Push Switch and Switch P.C.B. Ass'y	14
7. 5. Slide Switch, 3P Terminal, Power Cord and Outlets	14
8. DS-100 Mechanism Ass'y and Parts List	16
8. 1. Synthesis	16
8. 2. Front Panel Ass'y (A01)	16
8. 3. Front Mechanism Ass'y (A02)	16
9. DS-100 Mounting Diagrams and Parts List	17
9. 1. Switch P.C.B. Ass'y	17
9. 2. Display Ass'y	17
9. 3. Relay P.C.B. Ass'y	17
10. DS-100 Schematic Diagram	18
11. Specifications (DS-200/DS-100)	19
11. 1. DS-200	19
11. 2. DS-100	19

1. GENERAL

1.1. DS-200

Nakamichi DS-200 Program Timer control functions are shown below:

- | | |
|----------------------------|----------------------------|
| 1. Timer Indicator (Colon) | 9. Timer |
| 2. Display | 10. Record/Play |
| 3. Brightness | 11. Record Indicator |
| 4. Fast | 12. Remote Control Sockets |
| 5. Slow | 13. Line Frequency |
| 6. Second | 14. AC Outlets |
| 7. Set | 15. AC Power Cord |
| 8. Sleep | |

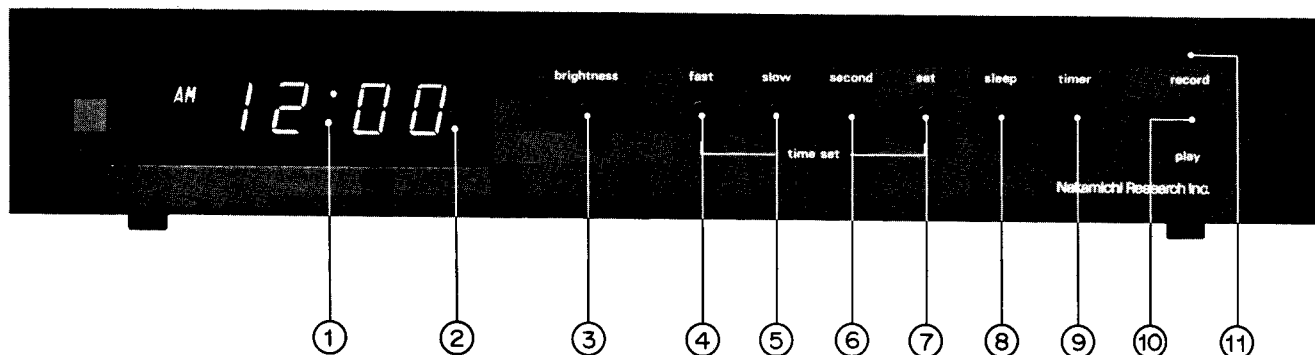


Fig. 1.1 Front View

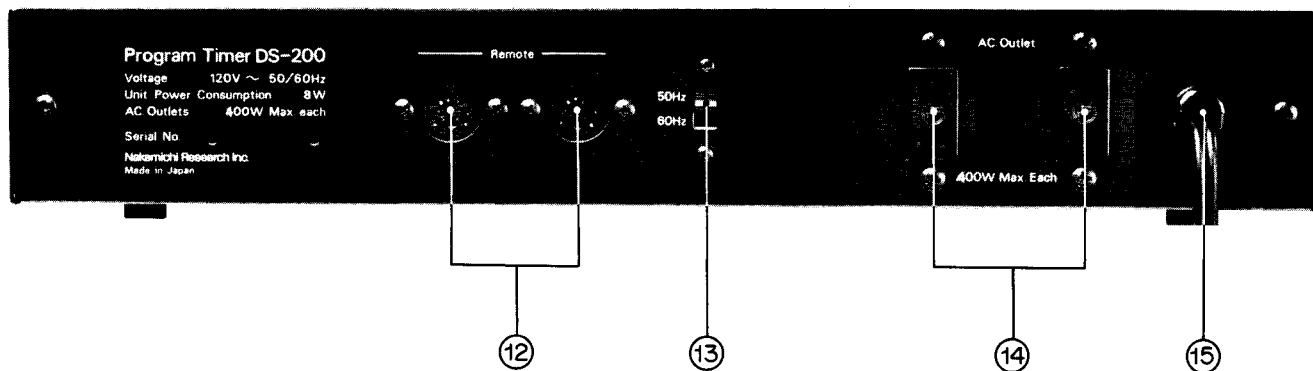


Fig. 1.2 Rear View

1.2. DS-100

Nakamichi DS-100 Program Timer control functions are shown below:

- | | |
|----------------------------|--------------------|
| 1. Timer Indicator (Colon) | 8. Sleep |
| 2. Display | 9. Timer |
| 3. Brightness | 10. System Mains |
| 4. Fast | 11. AC Outlets |
| 5. Slow | 12. Line Frequency |
| 6. Sec | 13. AC Power Cord |
| 7. Set | |

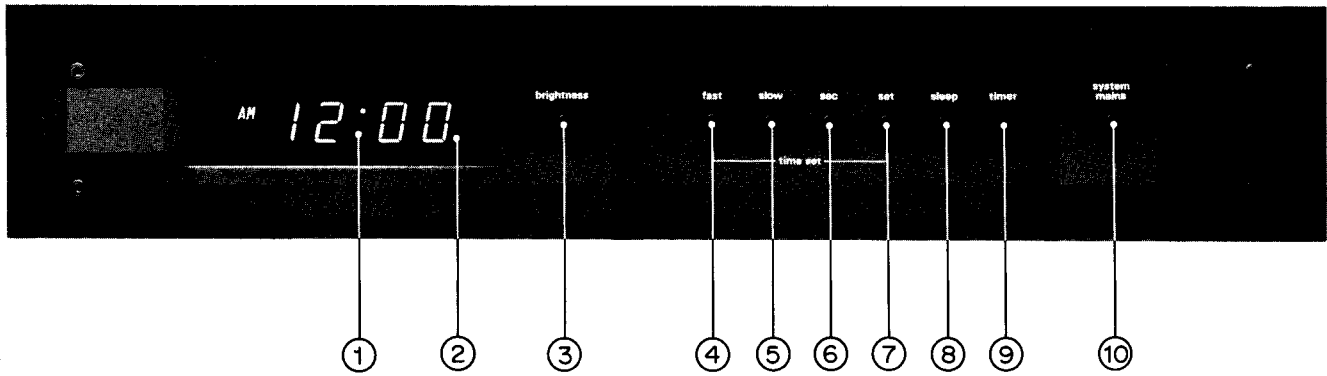


Fig. 1.3 Front View

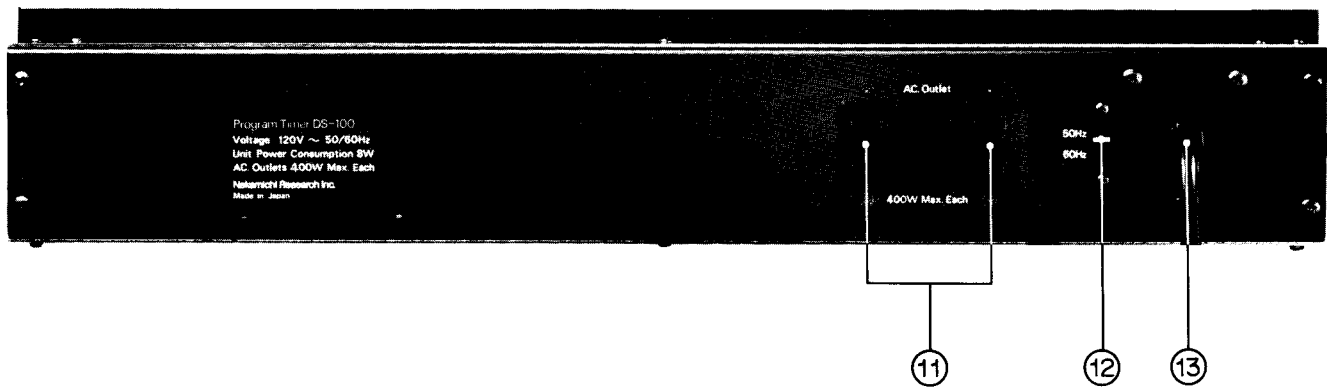


Fig. 1.4 Rear View

2. PRINCIPLE OF OPERATION (DS-200/DS-100)

2.1. Fluorescent-Character-Display-Tube Timer Clock

Timer Clock consists of a display unit which displays time and other functions and a MOS IC which controls the display unit.

Display tube is a fluorescent character display tube of the directly heated type of multi-anode multiple-triode tube, the details of which are shown in Fig. 2.1.1.

MOS IC is packed in a 40-pin package and its inputs and outputs are TTL compatible.

About +22 V is applied to VDD and VSS is connected to GND. The block diagram of MOS IC (μ PD5316C) is shown in Fig. 2.1.2 and its functions are explained below:

Min Display:

First digit of display activated by the output of the MOS IC pin Nos. 16–22.

10 Min Display:

Second digit of display activated by the output of the MOS IC pin Nos. 10–15.

Hrs Display:

Third digit of display activated by the output of the MOS IC pin Nos. 3–9.

10 Hrs Display:

Fourth digit of display activated by the output of the MOS IC pin No. 2. Only characters 0 and 1 are available.

AM Display:

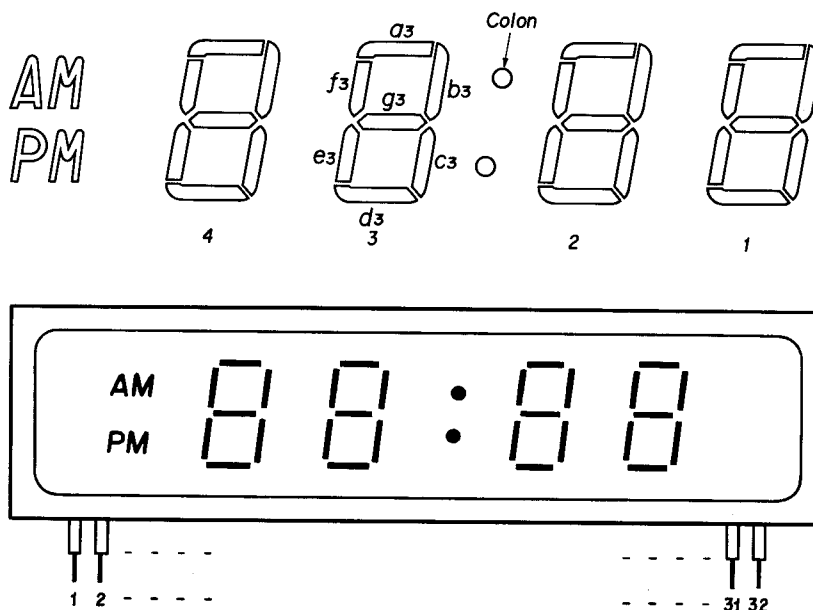
AM is activated by the output of MOS IC pin No. 1.

PM Display:

PM is activated by the output of MOS IC pin No. 40.

Timer Indicator (Colon) Display:

With Timer Switch turned ON, H level applied to colon is cut off and 1 Hz signal is applied from the inside circuit of the IC instead, conducting flashing of colon.



Terminal No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Signal	F	Col1	Col2	PM	AM	f4	g4	d4	C4	b4	f3	g3	a3	b3	d3	C3	e3	G	f2	g2	a2	b2	e2	C2	f1	g1	a1	b1	e1	C1	d1	F

Fig. 2.1.1

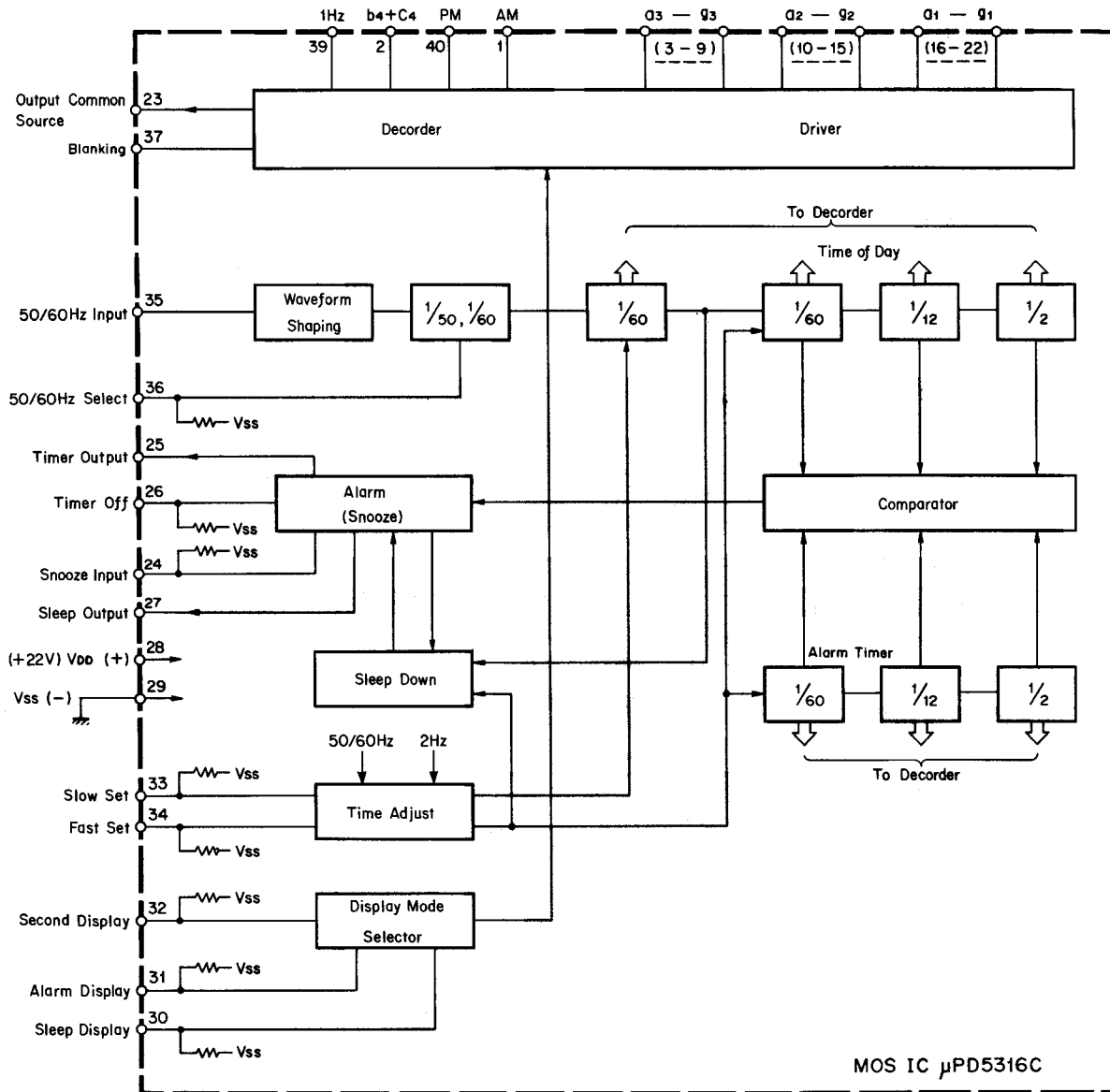


Fig. 2.1.2

2.2. Transistors on Switch P.C.B.

(1) Q1, Q2 (DS-100/DS-200)

Refer to Fig. 2.2.1. When Sleep Switch (SW6) is positioned ON, transistor Q1 turns ON while the capacitor C3 is charging, but turns OFF when C3 finished charging. When Q1 turns ON, Sleep Display and Fast Set turn to H, and the time changes from 0 to 59 min. At this time Sleep Output turns to H and Q2 will turn to ON, conducting Sleep Display and Fast Set to GND. Therefore sleep function will be released 59 minutes later.

Note: Above sleep function is only effective when the time displays 0, as the Sleep Output is H and Q2 turns ON except 0.

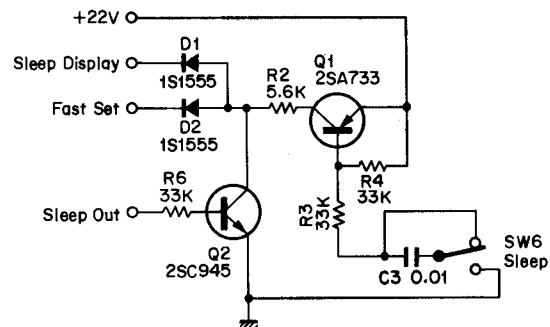


Fig. 2.2.1

(2) Q3 (DS-100/DS-200)

Refer to Fig. 2.2.2. While in timer mode, H signal of Timer Output conducts Q3 to ON and Q3 actuates the RL1 relay to turn the AC power source outlet for ON/OFF.

While in sleep mode, when sleep display becomes 0 the Sleep Output turns from H to L. Then Q3 is cut off and RL1 will also turn to OFF.

While in modes other than the above, Q3 turns to ON through R7 and actuates RL1.

Note: DS-100 incorporates System Mains Switch and in the position of OFF, Q3 can not turn ON as the base of Q3 is conducted to GND. In the position ON, the base of Q3 is released from GND allowing Q3 to turn ON.

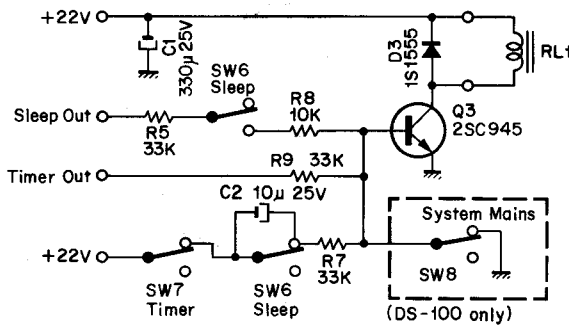


Fig. 2.2.2

(3) Q4, Q5, Q6 (DS-200 only)

Refer to Figs. 2.2.3 and 2.2.4. When Timer Switch is positioned ON, power supply is applied to a Flip-Flop explained in the item (4).

At the timer-set time, Timer Output turns H and Q4 turns ON while C4 is charging, but turns OFF when C4 finished charging. Therefore Q4 turns ON in the form of pulse. While Q4 is ON, if LED (D7) goes out (i.e. Q9 is cut off and the collector of Q9 is L), Q5 will not be able to turn ON but Q6 will turn ON after C5 finished charging.

The output from Q6 (play) enters tape decks (Nakamichi 1000II, 700II, 1000 and 700) through Remote Control Sockets and will give the instructions to play.

If LED (D7) lights (i.e. the collector of Q9 is H), Q5 will turn ON and also Q6 will turn ON in the same manners as above. The outputs from Q5 (record) and Q6 (play) enter tape decks and will give the instructions to record.

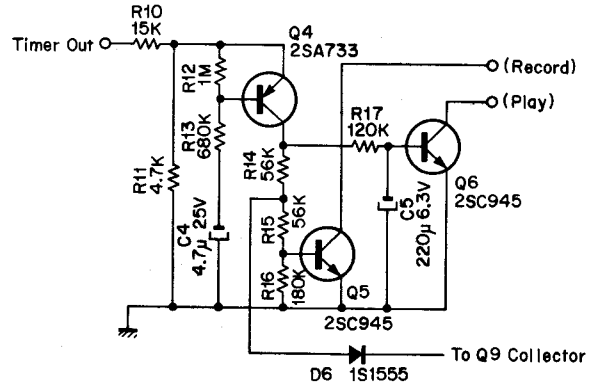


Fig. 2.2.3

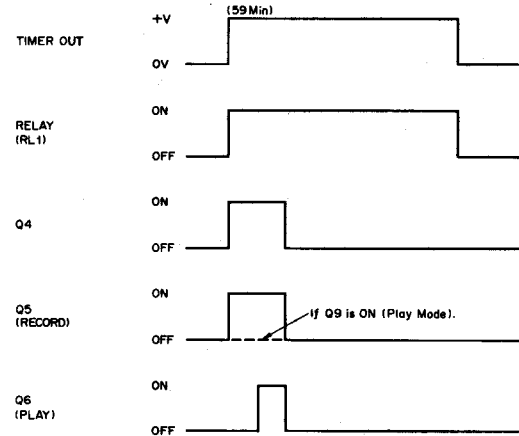


Fig. 2.2.4

(4) Q7, Q8, Q9 (DS-200 only)

Refer to Fig. 2.2.5. Q8 and Q9 compose a Flip-Flop for Record/Play. Every time when Record/Play button is depressed, the Flip-Flop is reversed and selects record (Q8: ON) or play (Q9: ON) mode.

Record Indicator on the Front Panel will illuminate in record mode. When Timer Switch is turned ON, Q7 turns ON in the form of pulse and subsequently Q9 is turned ON to initially restrict the Flip-Flop to the play mode.

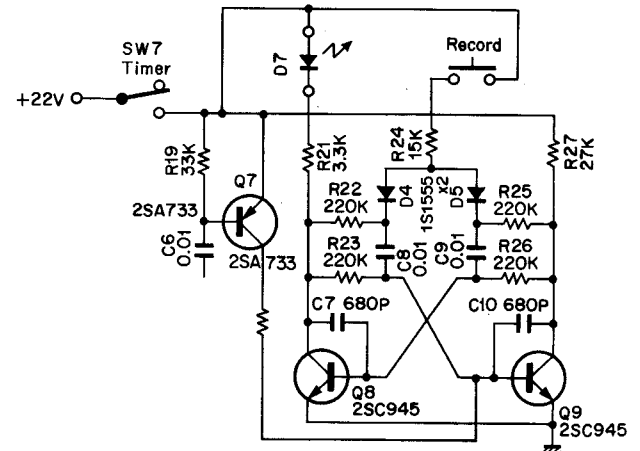


Fig. 2.2.5

3. DS-200 REMOVAL PROCEDURES

3.1. Top Cover and Front Mechanism Ass'y

Refer to Fig. 3.1. Remove F01, F02, then F03 (Top Cover).

Remove F04, F05, F06 and F07, then F08 (Front Mechanism Ass'y).

3.2. Front Panel Ass'y

Refer to Fig. 3.2. Remove Top Cover and Front Mechanism Ass'y referring to item 3.1. Remove F01, then F02 (Front Panel Ass'y).

3.3. Push Button Ass'y and Switch Holder Ass'y

Refer to Fig. 3.3. Remove Top Cover and Front Mechanism Ass'y referring to item 3.1, then remove Front Panel Ass'y referring to item 3.2. Remove F01, F02 and F03, then F04 (Push Button Ass'y) and F05 (Switch Holder Ass'y).

3.4. Display Ass'y

Refer to Fig. 3.4. Remove Top Cover and Front Mechanism Ass'y referring to item 3.1. Remove F01, then F02 (Display Ass'y).

3.5. Relay P.C.B. Ass'y and Side Chassis

Refer to Fig. 3.5. Remove Top Cover and Front Mechanism Ass'y referring to item 3.1. Remove F01 and F02, then F03 (Relay P.C.B. Ass'y). Remove F04 and F05, then F06 (Side Chassis R) and F07 (Side Chassis L).

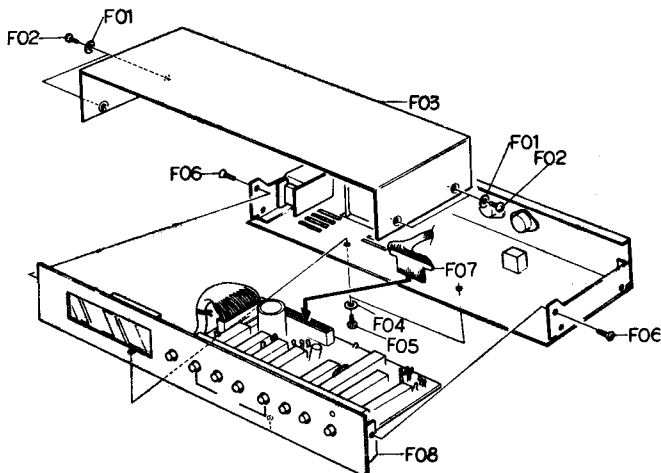


Fig. 3.1

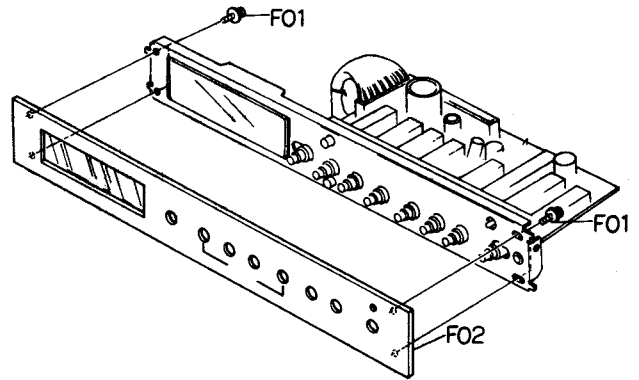


Fig. 3.2

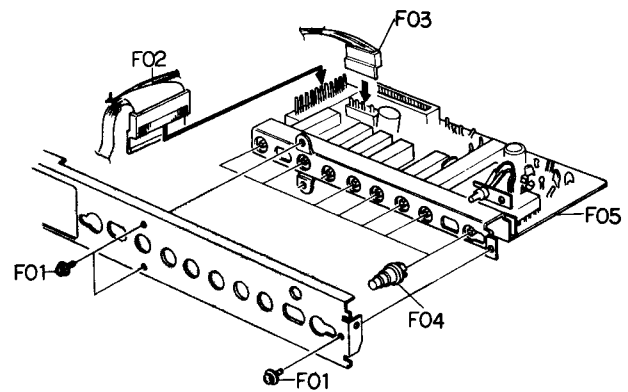


Fig. 3.3

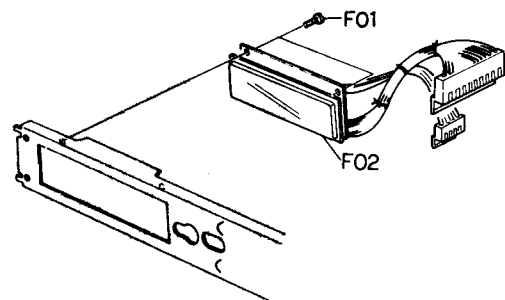


Fig. 3.4

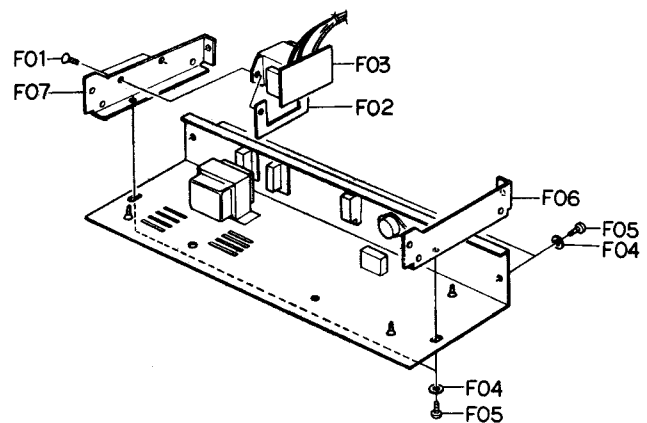


Fig. 3.5

4. DS-200 MECHANISM ASS'Y AND PARTS LIST

4.1. Synthesis

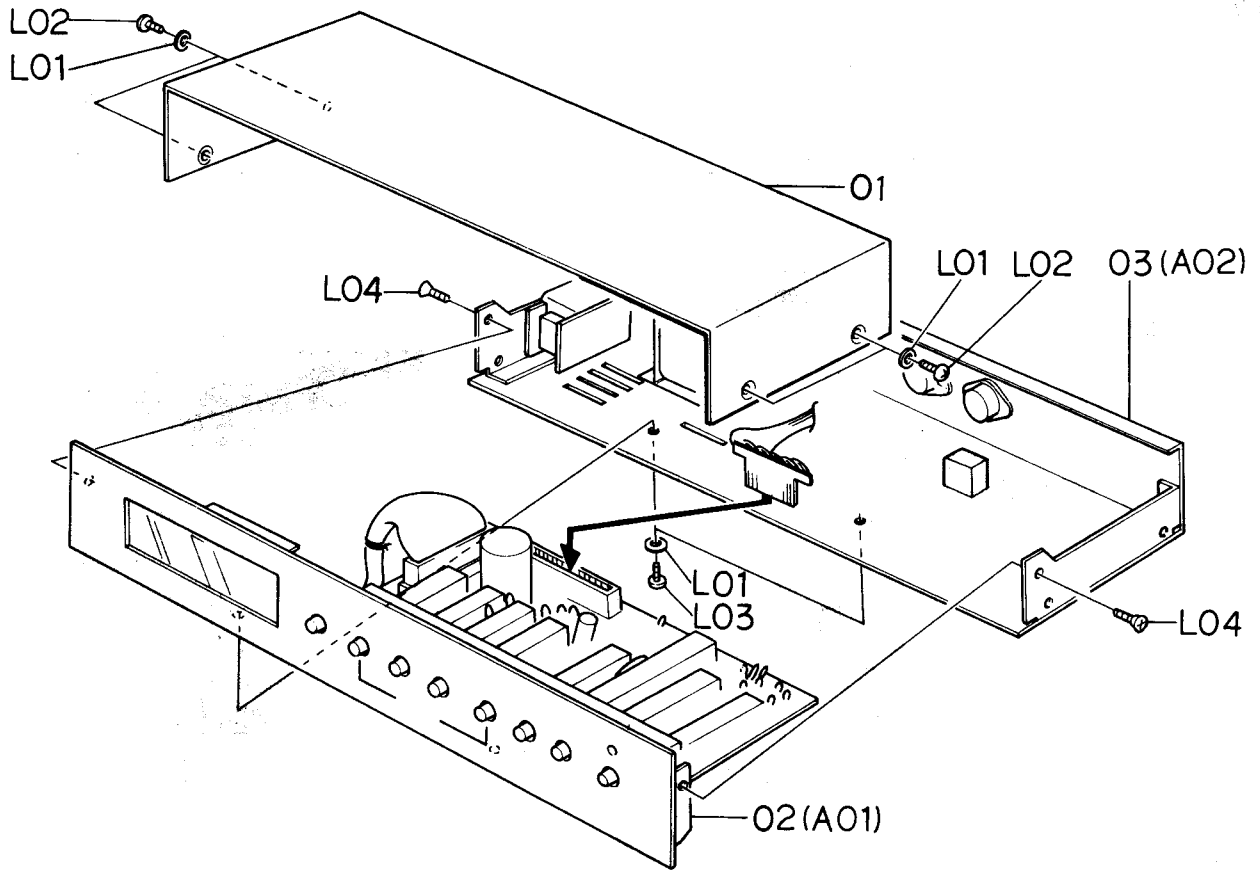


Fig. 4.1

Schematic Ref. No.	Part No.	Description	Q'ty
		Synthesis	
01	0H03463A	Top Cover	1
02	-	Front Mechanism Ass'y	1
03	JA03311A	Bottom Case Ass'y (JAPAN)	1
	JA03297A	Bottom Case Ass'y (CANADA, U.S.A.)	1
	JA03298A	Bottom Case Ass'y (SEMKO)	1
	JA03299A	Bottom Case Ass'y (BS)	1
	JA03310A	Bottom Case Ass'y (OTHERS)	1
L01	0E00157A	Washer 3mm (Plastics)	6
L02	0E00713A	Screw M3x6 Philips Truss Head (Bronze)	4
L03	0E00540A	Screw M3x5 Philips Binding Head (Bronze)	2
L04	0E00505A	Screw M3x6 Philips Countersunk	2

4.2. Front Mechanism Ass'y (A01)

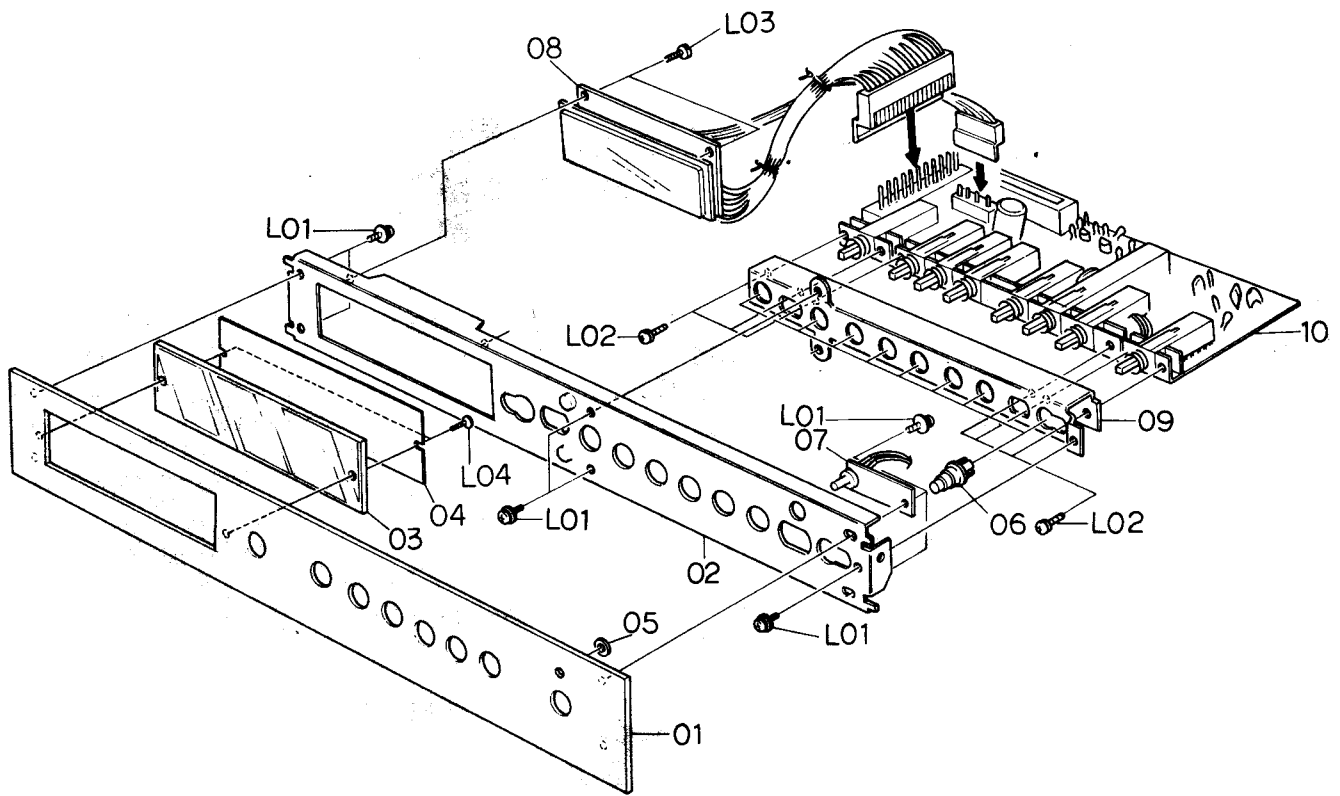


Fig. 4.2

4.3. Bottom Case Ass'y (A02)

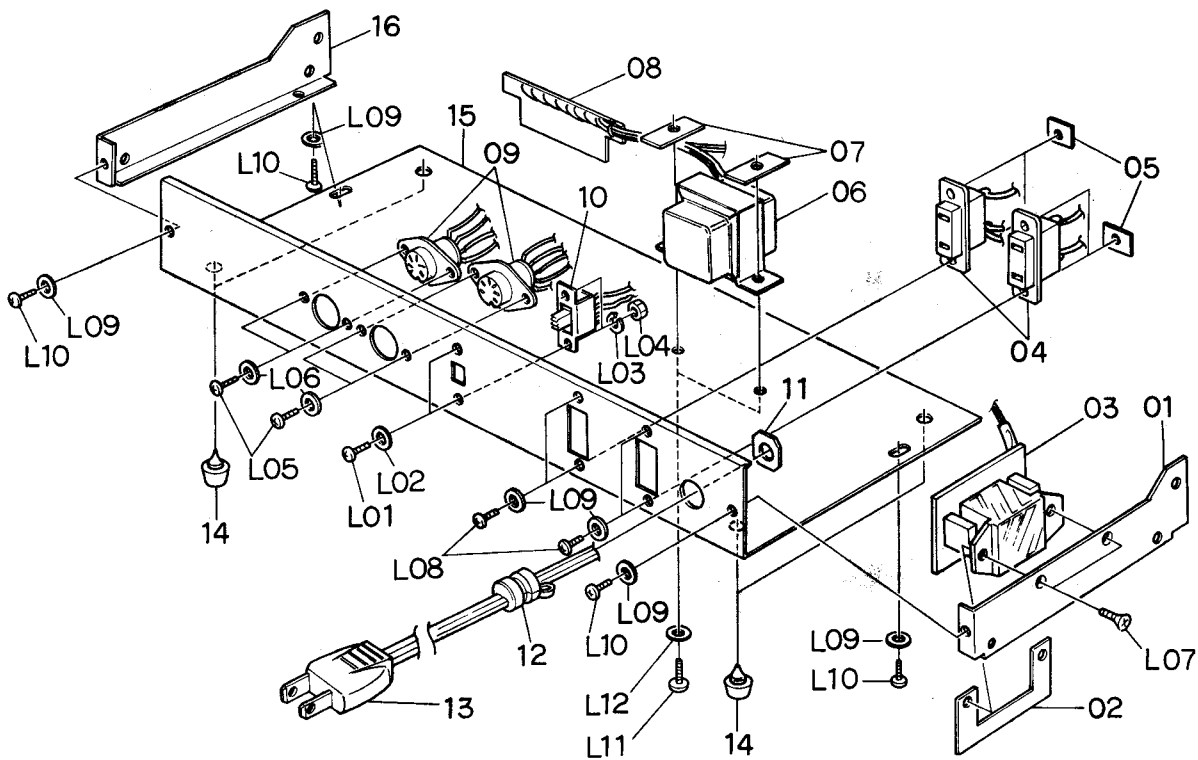


Fig. 4.3

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
A01	—	Front Mechanism Ass'y	1	15	0J03779B	Bottom Case DS-200 (CANADA, U.S.A., JAPAN, OTHERS)	1
01	HA03741A	Front Panel Ass'y	1		0J03881C	Bottom Case DS-200 (SEMKO)	1
02	JA03223B	Front Chassis Sub Ass'y	1		0J03780B	Bottom Case DS-200 (BS)	1
03	0H03573A	Acrylic Cover	1	16	0J03550A	Side Chassis R	1
04	0H03574A	Blue Filter	1	L01	0E00746A	Screw M2x6 Philips Binding Head (Bronze)	2
05	0J03555A	Double Face Tape B	1				
06	JA03061A	Push Button Ass'y	8	L02	0E00805A	Washer 2mm (Plastics)	2
07	0J03558A	LED Holder	1	L03	0E00025A	Washer 2mm Spring	2
08	BA03934A	Display Ass'y	1	L04	0E00176A	Nut Hex. M2	2
09	0J03548B	Switch Holder	1	L05	0E00714A	Screw M2.6x6 Philips Binding Head (Bronze)	4
10	BA03938A	Switch P.C.B. Ass'y (CANADA, U.S.A., JAPAN)	1				
	BA03978A	Switch P.C.B. Ass'y (SEMKO, BS, OTHERS)	1	L06	0E00651A	Washer 2.6mm (plastics)	4
				L07	0E00518A	Screw M3x8 Philips Countersunk	2
L01	0E00606A	Screw M3x6 Philips Pan Head (3A)	7	L08	0E00594A	Screw M3x8 Philips Binding Head (Bronze) (JAPAN)	4
L02	0E00612A	Screw M3x6 Philips Pan Head (2A)	6		0E00815A	Screw M2x4 Philips Countersunk (CANADA, U.S.A., OTHERS)	4
L03	0E00226A	Screw M2.6x4 Philips Pan Head	2	L09	0E00157A	Washer 3mm (Plastics)	8
L04	0E00773A	BT Screw M2x4 Philips Pan Head	2	L10	0E00540A	Screw M3x5 Philips Binding Head (Bronze)	4
				L11	0E00738A	Screw M4x6 Philips Binding Head (Bronze)	2
A02	JA03311A	Bottom Case Ass'y (JAPAN)	1	L12	0E00645A	Washer 4mm (Plastics)	2
	JA03297A	Bottom Case Ass'y (CANADA, U.S.A.)	1	—	0E00037A	Earth Lug B-5 (SEMKO, BS)	1
	JA03298A	Bottom Case Ass'y (SEMKO)	1				
	JA03299A	Bottom Case Ass'y (BS)	1				
	JA03310A	Bottom Case Ass'y (OTHERS)	1				
01	0J03549A	Side Chassis L	1				
02	0J03552A	Bolt Receptacle Plate for Relay	1				
03	BA03935A	Relay P.C.B. Ass'y (CANADA, U.S.A., JAPAN)	1				
	BA03936A	Relay P.C.B. Ass'y (SEMKO)	1				
	BA03937A	Relay P.C.B. Ass'y (BS, OTHERS)	1				
04	0B08398A	AC Outlet (JAPAN)	2				
	0B08510A	AC Outlet (CANADA, U.S.A., OTHERS)	2				
	0B08509A	AC Outlet (SEMKO)	1				
	0B08356A	AC Outlet (BS)	2				
05	0J03878A	Bolt Receptacle Plate for Outlet (JAPAN)	4				
06	0B06577A	Power Transformer (CANADA, U.S.A., JAPAN)	1				
	0B06578A	Power Transformer (SEMKO, BS, OTHERS)	1				
07	0C01162B	Bolt Receptacle Plate for Trans.	2				
08	0B07551A	10P Plug Board	1				
09	0B08075A	7P DIN Socket	2				
10	0B07125A	Slide Switch	1				
11	0A03154A	Cord Spacer	1				
12	0B08037U	Cord Bushing C (CANADA, U.S.A., JAPAN, OTHERS)	1				
	0B08325A	Cord Bushing E (SEMKO, BS)	1				
13	0B08219U	Power Cord (JAPAN)	1				
	0B08350A	Power Cord (CANADA, U.S.A., OTHERS)	1				
	0B08149U	Power Cord (SEMKO)	1				
	0B08266U	Power Cord (BS)	1				
14	0H03427B	Foot	4				

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	
Q1,4,7 Q2,3,5,6 8,9 D1,2,3,4 5,6 D7 R1,14,15 R2 R3,4,5,6 7,9,19, 28 R8 R10,24 R11 R12 R13 R16 R17 R18,20 R21 R22,23,25 26 R27 C1 C2 C3,6,8,9 C4 C5 C7,10 CN1 CN2 CN3 F1,F2	BA03938A	Switch P.C.B. Ass'y (CANADA, U.S.A., JAPAN)	CN1	OB08443A	4P-H Connector Timer A	
	BA03978A	Switch P.C.B. Ass'y (SEMKO, BS, OTHERS)	CN2	OB08187A	12P-H Connector Ass'y	
	OB07776A	DS-200 Switch P.C.B.		OB08508A	Display Tube 5-4T-02 (1 pce.)	
	OB06013A	Transistor 2SA733		OJ03888A	Double Face Tape for Display (1 pce.)	
	OB01872A	Transistor 2SC945	RL1	BA03935A	Relay P.C.B. Ass'y (CANADA, U.S.A., JAPAN)	
	OB01909A	Silicon Diode 1S1555	M4,5	OB07778A	Relay P.C.B.	
	OB06028A	LED		OB07216A	Power Relay HL2-TM-DC 24V	
	OB05563A	Carbon Resistor 56K ERD-25V J		OB08342A	Spark Killer AC 125V (R + C)	
	OB05673A	Carbon Resistor 5.6K ERD-25V J	RL1	BA03936A	Relay P.C.B. Ass'y (SEMKO)	
	OB01879A	Carbon Resistor 33K ERD-25V J	M4,5	OB07778A	Relay P.C.B.	
	OB01833A	Carbon Resistor 10K ERD-25V J	F3	OB07216A	Power Relay HL2-TM-DC 24V	
	OB05591A	Carbon Resistor 15K ERD-25V J		OB07096U	Spark Killer (C: 0.01μ)	
	OB01795A	Carbon Resistor 4.7K ERD-25V J		OB08420A	Fuse 32mA T	
	OB05564A	Carbon Resistor 1M ERD-25V J		OB08349A	Fuse Clip (2 pcs.)	
	OB05597A	Carbon Resistor 680K ERD-25V J	RL1	BA03937A	Relay P.C.B. Ass'y (BS, OTHERS)	
	OB05669A	Carbon Resistor 180K ERD-25V J	M4,5	OB07778A	Relay P.C.B.	
	OB05568A	Carbon Resistor 120K ERD-25V J	F3	OB07216A	Power Relay HL2-TM-DC 24V	
	OB01920A	Carbon Resistor 100K ERD-25V J		OB08240U	Spark Killer AC 250V (R + C)	
	OB01793A	Carbon Resistor 3.3K ERD-25V J		OB08420A	Fuse 32mA T	
	OB05596A	Carbon Resistor 220K ERD-25V J		OB08349A	Fuse Clip (2 pcs.)	
	OB05538A	Carbon Resistor 27K ERD-25V J	RL1			
	OB05793A	Electrolytic Capacitor 330μ 25V	M4,5			
	OB01674A	Electrolytic Capacitor 10μ 25V	F3			
	OB01918A	Mylar Capacitor 0.01μ 50V				
	OB01402A	Electrolytic Capacitor 4.7μ 25V				
	OB01394A	Electrolytic Capacitor 220μ 6.3V				
	OB05893A	Ceramic Capacitor 680P 50V K				
	OB08236A	4P-T Post				
	OB08178A	12P-T Post				
	BA03807A	10P Connector Ass'y				
	OB07198A	Timer Push Switch A (1 pce.)				
	OB03870A	Push Switch (Lock) (1 pce.)				
	OB07128A	Push Switch (Nonlock) (1 pce.)				
	OB08505A	Fuse 500mA *				
	OB08349A	Fuse Clip (4 pcs.) *				
	OM03906A	Fuse Label 500mA x 2 (1 pce.) *				
		Note: Part marked with * is incorporated in Switch P.C.B. Ass'y (SEMKO, BS, OTHERS) only.				
	Q1 Q2 IC1 D1,2,3,4 D5,6 R1 R2,3 R4 R5 R6 C1 C2 C3	BA03934A	Display Ass'y			
		OB07777C	Display P.C.B.			
		OB01426A	Transistor 2SA562			
OB01872A		Transistor 2SC945				
OB06168A		IC μPD5316C				
OB06109A		Silicon Diode GP08B				
OB01909A		Silicon Diode 1S1555				
OB01684A		Carbon Resistor 470K ERD-25T J				
OB05795A		Carbon Resistor 150 ERD-25T J				
OB05784A		Carbon Resistor 560K ERD-25T J				
OB05620A		Carbon Resistor 270K ERD-25T J				
OB05641A		Carbon Resistor 47K ERD-25T J				
OB05638A		Tantalum Capacitor 1μ 35V				
OB09090A	Ceramic Capacitor 1500P					
OB05657A	Tantalum Capacitor 4.7μ 16V					

5. DS-200 MOUNTING DIAGRAMS AND PARTS LIST

Note: Mounting diagram shows a dip side view of the printed circuit board.

5.1. Switch P.C.B. Ass'y

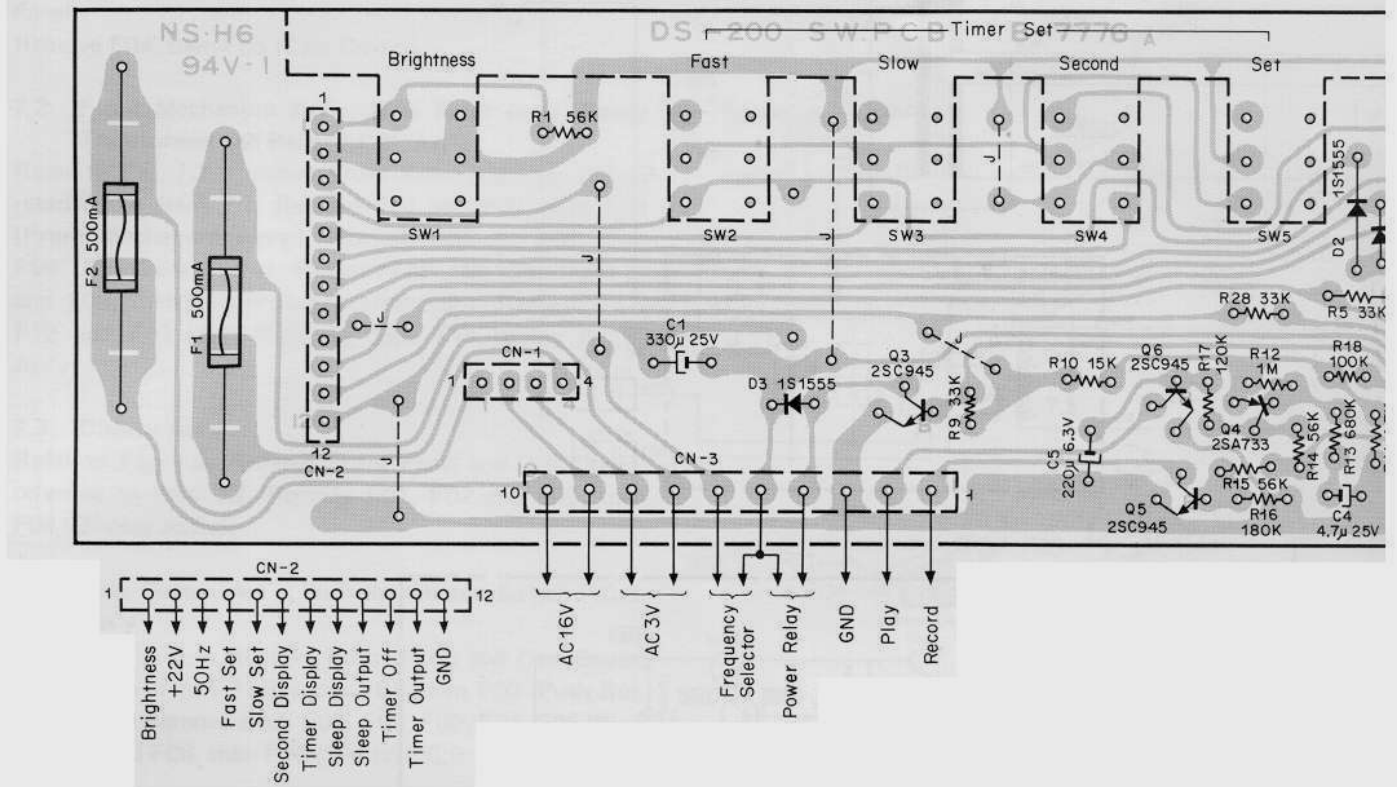


Fig. 5.1

5.2. Display Ass'y

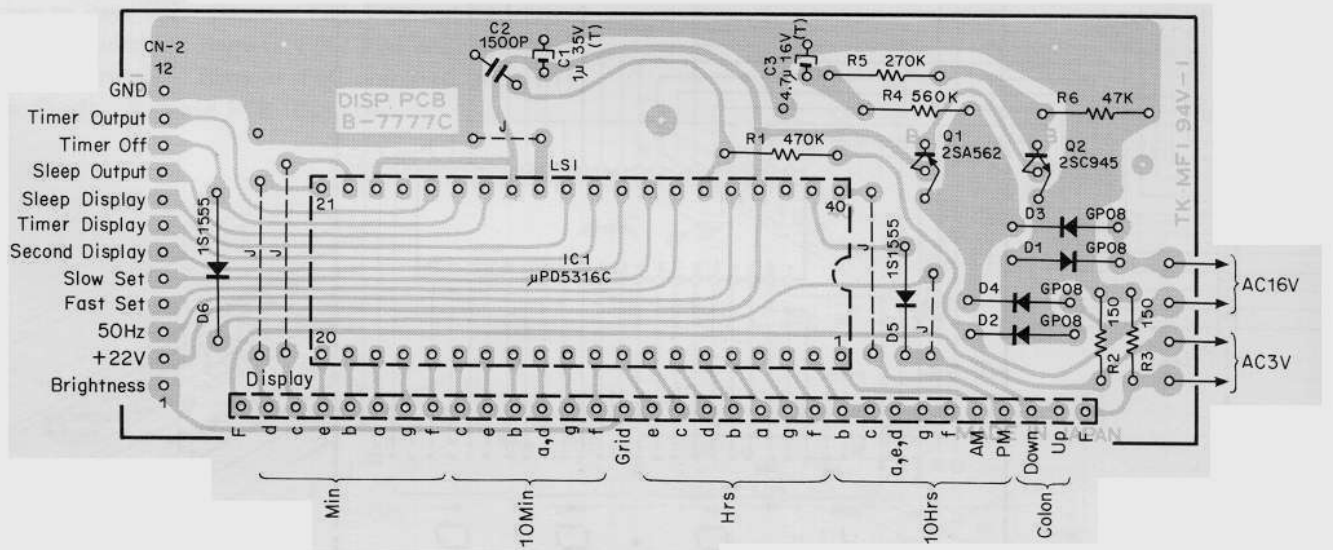
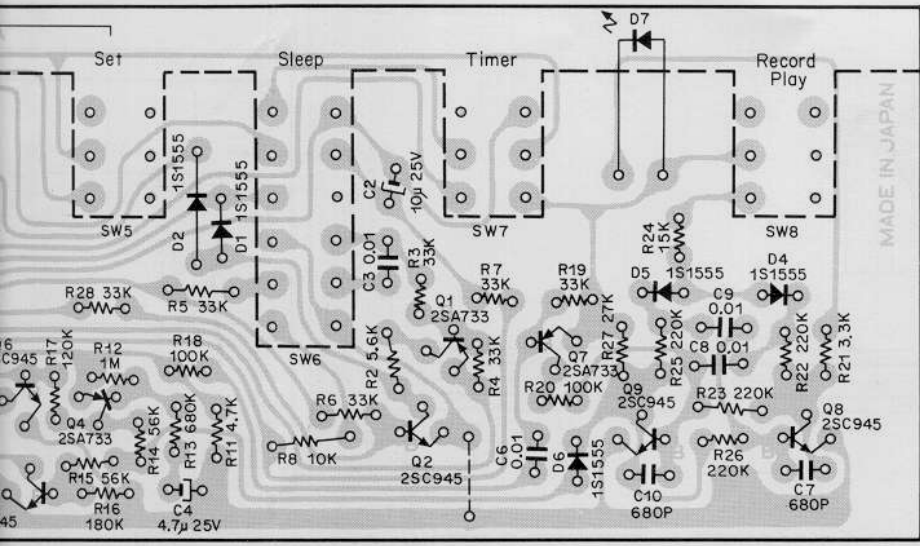


Fig. 5.2



5.3. Relay P.C.B. Ass'y

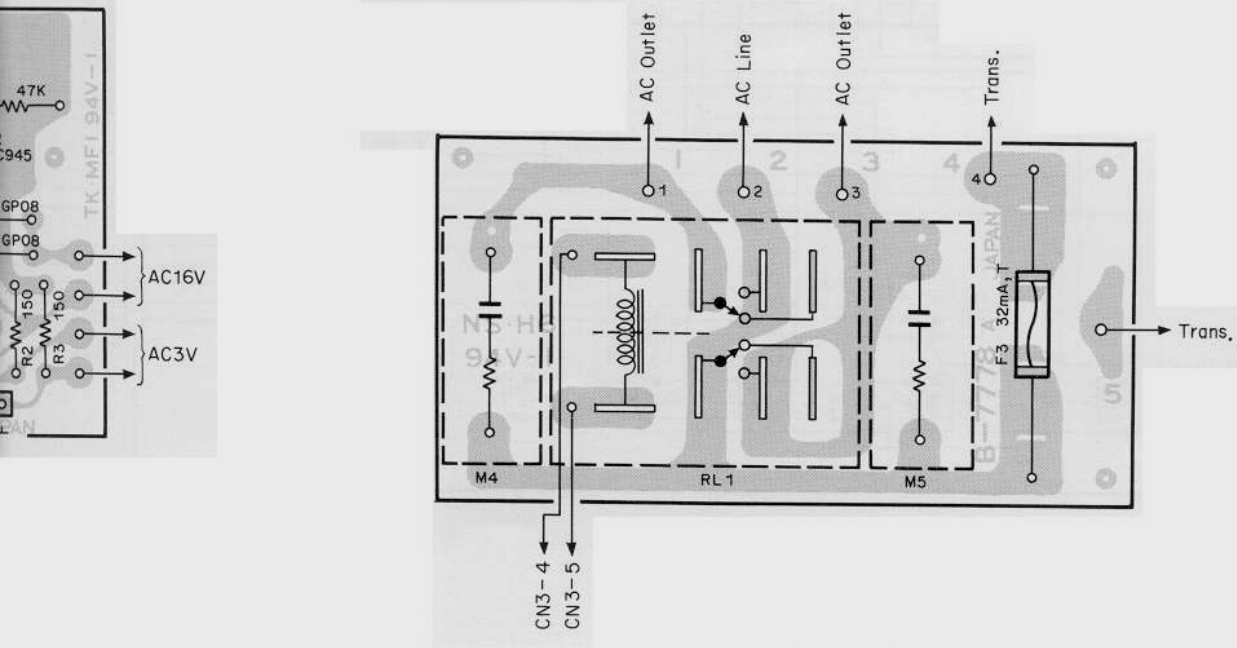


Fig. 5.3

6. DS-200 SCHEMATIC DIAGRAM

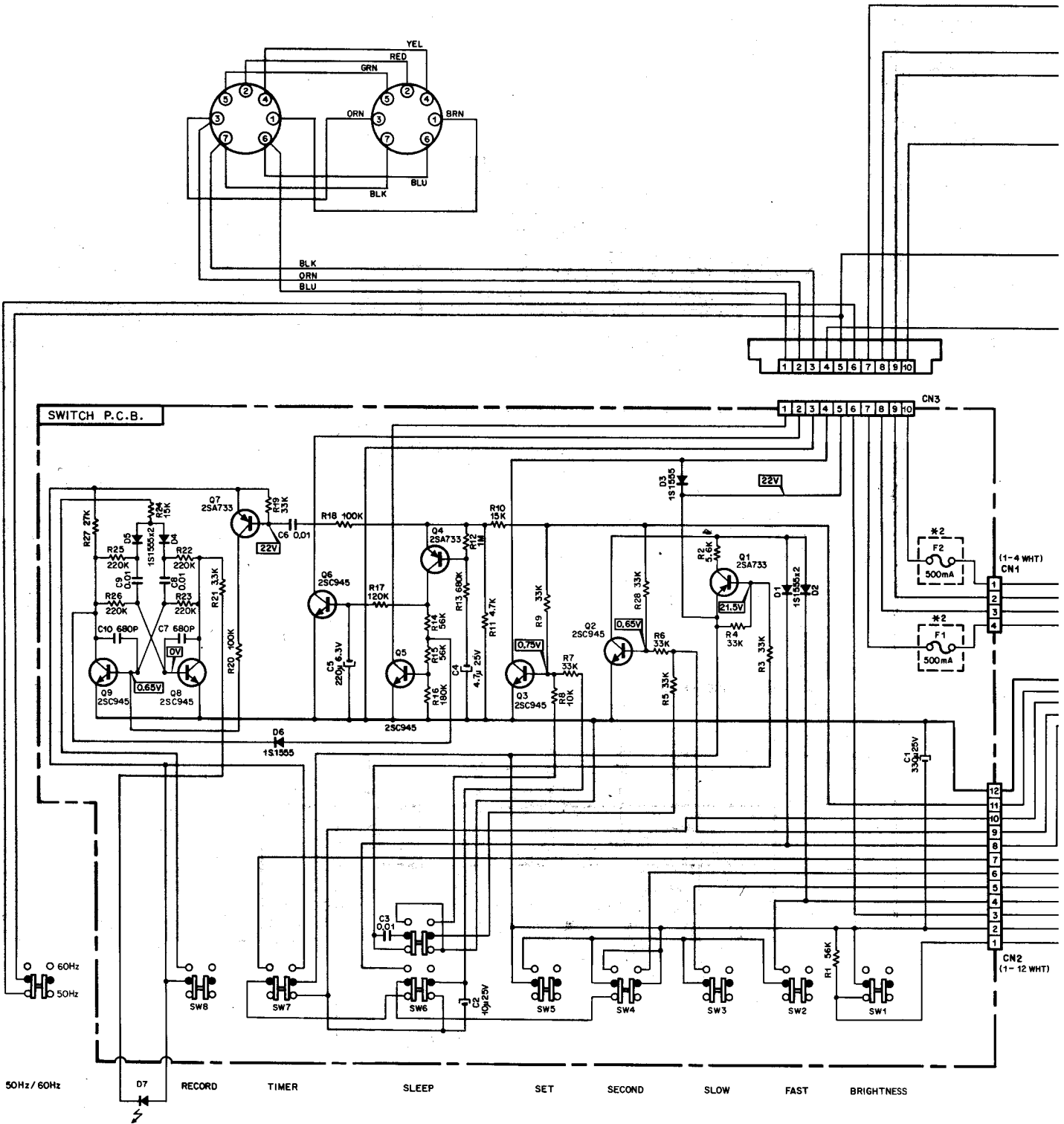
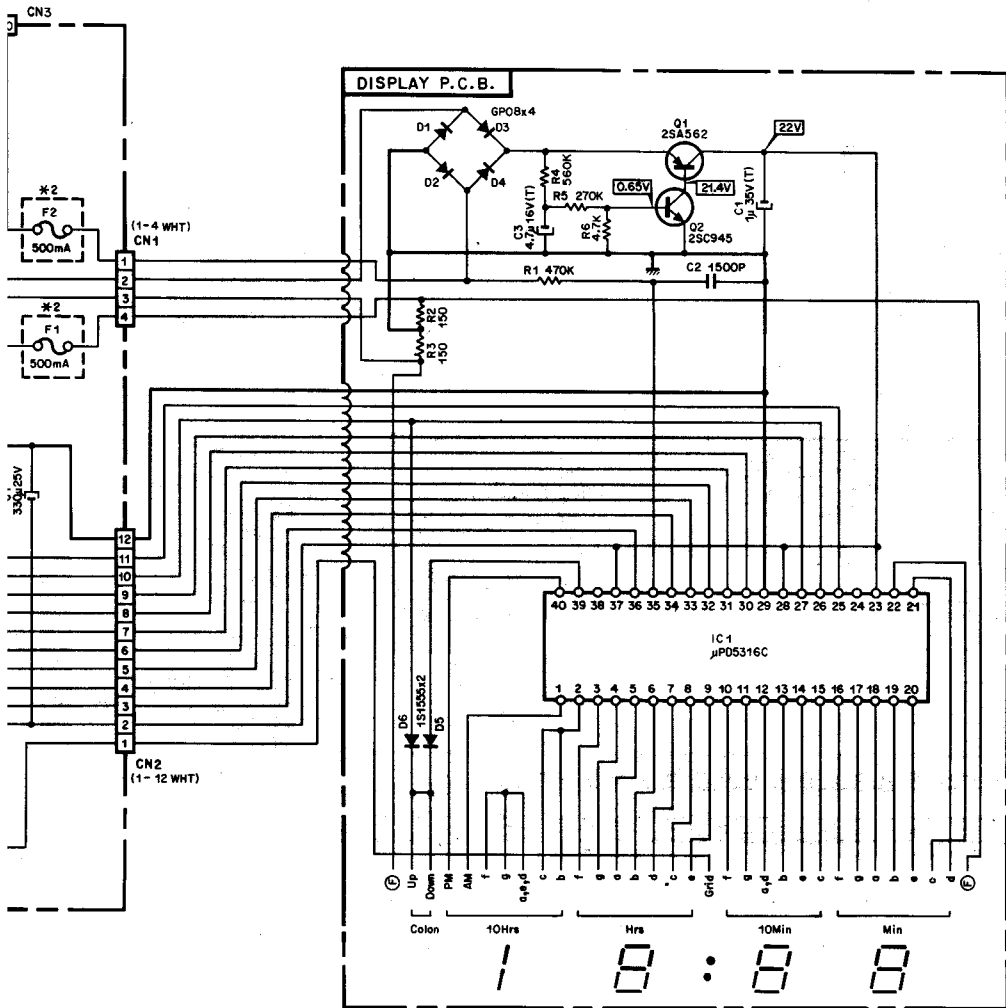
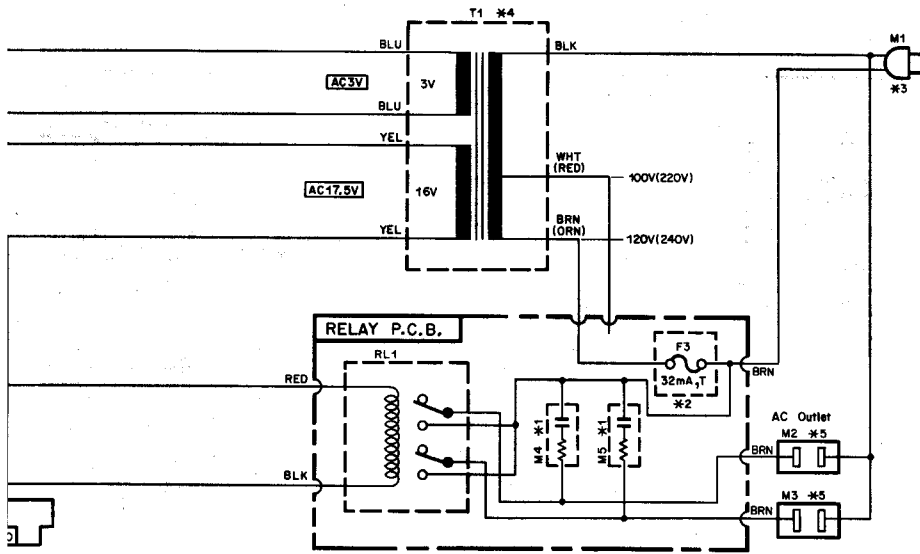


Fig. 6



Note: *1 (Spark Killer): Depends on each version.
 *2 (Fuse): Some versions do not incorporate.
 *3 (Power Cord): Depends on each version.
 *4 (Power Transformer): Depends on each version.
 *5 (AC Outlet): Depends on each version.
 (SEMKO version incorporates only one Outlet.)

7. DS-100 REMOVAL PROCEDURES

7.1. Front Panel and Case Covers

Refer to Fig. 7.1. Remove F01 and F02, then F03 (Front Panel).

Remove F04, then F05 (Case Covers).

7.2. Front Mechanism Ass'y, Rear Panel Ass'y, Power Transformer and Relay P.C.B. Ass'y

Refer to Fig. 7.2. Remove Front Panel and Case Covers referring to item 7.1. Remove F01 and F02, then F03 (Front Mechanism Ass'y). Remove F04 and F05, then F06 (Rear Panel Ass'y). Remove F07, F08 (Side Plate L) and F09, then F10 (Power Transformer). Remove F11, F12 and F13 (Side Plate R), then F14 (Relay P.C.B. Ass'y).

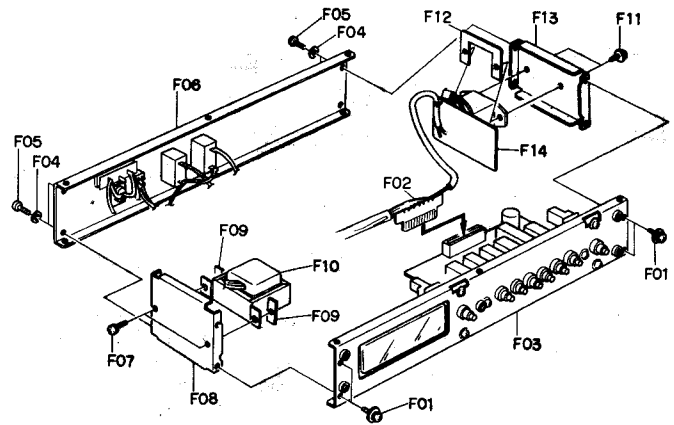


Fig. 7.2

7.3. Display Ass'y

Refer to Fig. 7.3. Remove Front Panel and Case Covers referring to item 7.1. Remove F01, F02 and F03, then F04 (Display Ass'y).

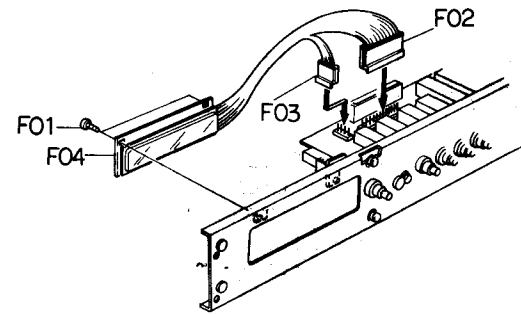


Fig. 7.3

7.4. Push Button Ass'y, Push Switch and Switch P.C.B. Ass'y

Refer to Fig. 7.4. Remove Front Panel and Case Covers referring to item 7.1. Remove F01, then F02 (Push Button Ass'y). Remove F03, F07, F08, F09, F04, F05 (Push Switch) and F06, then F10 (Switch P.C.B. Ass'y).

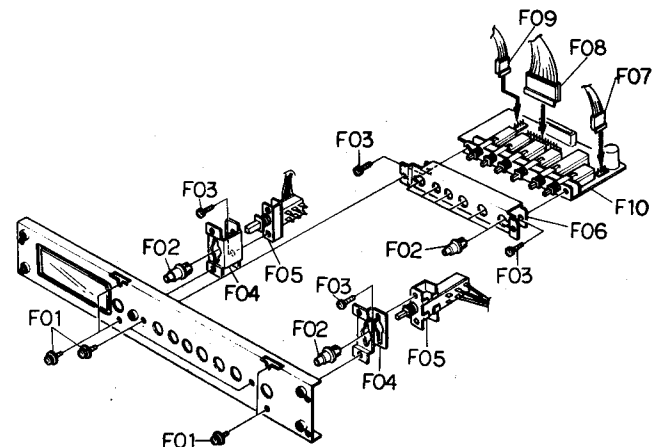


Fig. 7.4

7.5. Slide Switch, 3P Terminal, Power Cord and Outlets

Refer to Fig. 7.5. Remove Front Panel and Case Covers referring to item 7.1, then remove Rear Panel Ass'y referring to item 7.2. Remove F01, F02 and F03, then F04 (Slide Switch). Remove F05, F06 and F07, then F08 (3P Terminal). Remove F09 and F10, then F11 (Power Cord). Remove F12 (Outlets).

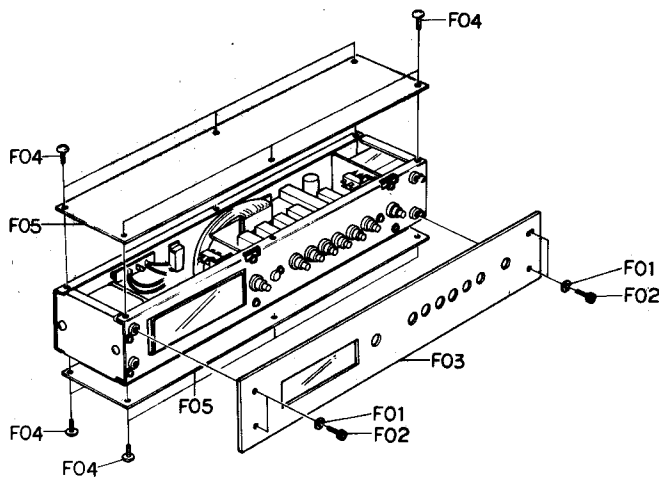


Fig. 7.1

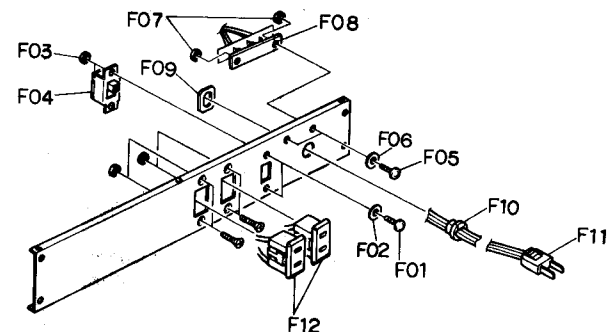


Fig. 7.5

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
		Synthesis		L10	0E00025A	Washer 2mm Spring	2
				L11	0E00176A	Nut Hex. M2	6
01	—	Front Panel Ass'y	1	L12	0E00746A	Screw M2x6 Philips Binding Head (Bronze)	2
02	—	Front Mechanism Ass'y	1				
03	0H03459A	Case Cover	2	L13	0E00805A	Washer 2mm (Plastics)	2
04	0B07551A	10P Plug Board	1	L14	0E00701A	Screw M3x10 Philips Binding Head (CANADA, U.S.A., JAPAN, SEMKO, OTHERS)	2
05	0J03788B	Side Chassis R	1				
06	BA03935A	Relay P.C.B. Ass'y (CANADA, U.S.A., JAPAN)	1	L15	0E00507A	Nut Hex. M3	2
	BA03936A	Relay P.C.B. Ass'y (SEMKO)	1	—	0E00594A	Screw M3x8 Philips Binding Head (Bronze) (JAPAN)	4
	BA03937A	Relay P.C.B. Ass'y (BS, OTHERS)	1				
07	0J03552A	Bolt Receptacle Plate for Relay	1	—	0E00037A	Earth Lug B-5 (SEMKO, BS)	1
08	0J03787B	Side Chassis L	1				
09	0B06577A	Power Transformer (CANADA, U.S.A., JAPAN)	1	A01	—	Front Panel Ass'y	1
	0B06578A	Power Transformer (SEMKO, BS, OTHERS)	1	01	0H03576A	Front Panel	1
10	0C01162B	Bolt Receptacle Plate for Trans.	2	02	0H03573A	Acrylic Cover	1
11	0J03781C	Rear Panel DS-100 (CANADA, U.S.A., JAPAN, OTHERS)	1	03	0H03574A	Blue Filter	1
	0J03882C	Rear Panel DS-100 (SEMKO)	1	L01	0E00773A	BT Screw M2x4-Philips Pan Head	2
	0J03782C	Rear Panel DS-100 (BS)	1	A02	—	Front Mechanism Ass'y	1
12	0B08510A	AC Outlet (CANADA, U.S.A., OTHERS)	2	01	JA03224B	Front Chassis Sub Ass'y	1
	0B08398A	AC Outlet (JAPAN)	2	02	BA03934A	Display Ass'y	1
	0B08509A	AC Outlet (SEMKO)	2	03	BA03939A	Switch P.C.B. Ass'y (CANADA, U.S.A., JAPAN)	1
	0B08356A	AC Outlet (BS)	2		BA03979A	Switch P.C.B. Ass'y (SEMKO, BS, OTHERS)	1
13	0B07125A	Slide Switch	1	04	0J03410B	Switch Holder	1
14	0B08024U	3P Terminal (CANADA, U.S.A., JAPAN, SEMKO, OTHERS)	1	05	JA03061A	Push Button Ass'y	8
—	0B07786A	Terminal P.C.B. (BS)	1	06	0J03449C	Power Switch Holder	2
—	0J03892A	Terminal P.C.B. Holder (BS)	1	07	0B07199A	Push Switch	2
15	0B08270U	3P Terminal Insulator (CANADA, U.S.A., JAPAN)	1	L01	0E00606A	Screw M3x6 Philips Pan Head (3A)	6
	0B08410U	3P Terminal Insulator (SEMKO, OTHERS)	1	L02	0E00612A	Screw M3x6 Philips Pan Head (2A)	6
16	0A03154A	Cord Spacer	1	L03	0E00226A	Screw M2.6x4 Philips Pan Head	2
17	0B08037U	Cord Bushing C (CANADA, U.S.A., JAPAN, OTHERS)	1				
	0B08325U	Cord Bushing E (SEMKO, BS)	1				
18	0B08350U	Power Cord (CANADA, U.S.A., OTHERS)	1				
	0B08219U	Power Cord (JAPAN)	1				
	0B08149U	Power Cord (SEMKO)	1				
	0B08266U	Power Cord (BS)	1				
19	0B08444A	4P-H Connector Timer B	1				
—	0J03878A	Bolt Receptacle Plate for Outlet (JAPAN)	4				
L01	0E00813A	Screw M3x8 Hex. Socket Head	4				
L02	0E00677A	Washer 3mm (Plastics)	4				
L03	0E00606A	Screw M3x6 Philips Pan Head (3A)	4				
L04	0E00791A	Screw M2.6x5 Philips Binding Head	12				
L05	0E00607A	Screw M3x8 Philips Pan Head (3A)	2				
L06	0E00664A	Screw M4x8 Philips Pan Head (2A)	2				
L07	0E00815A	Screw M2x4 Philips Countersunk (CANADA, U.S.A., OTHERS)	4				
L08	0E00593A	Screw M3x6 Philips Binding Head (Bronze)	4				
L09	0E00157A	Washer 3mm (Plastics)	6				

8. DS-100 MECHANISM ASS'Y AND PARTS LIST

8.1. Synthesis

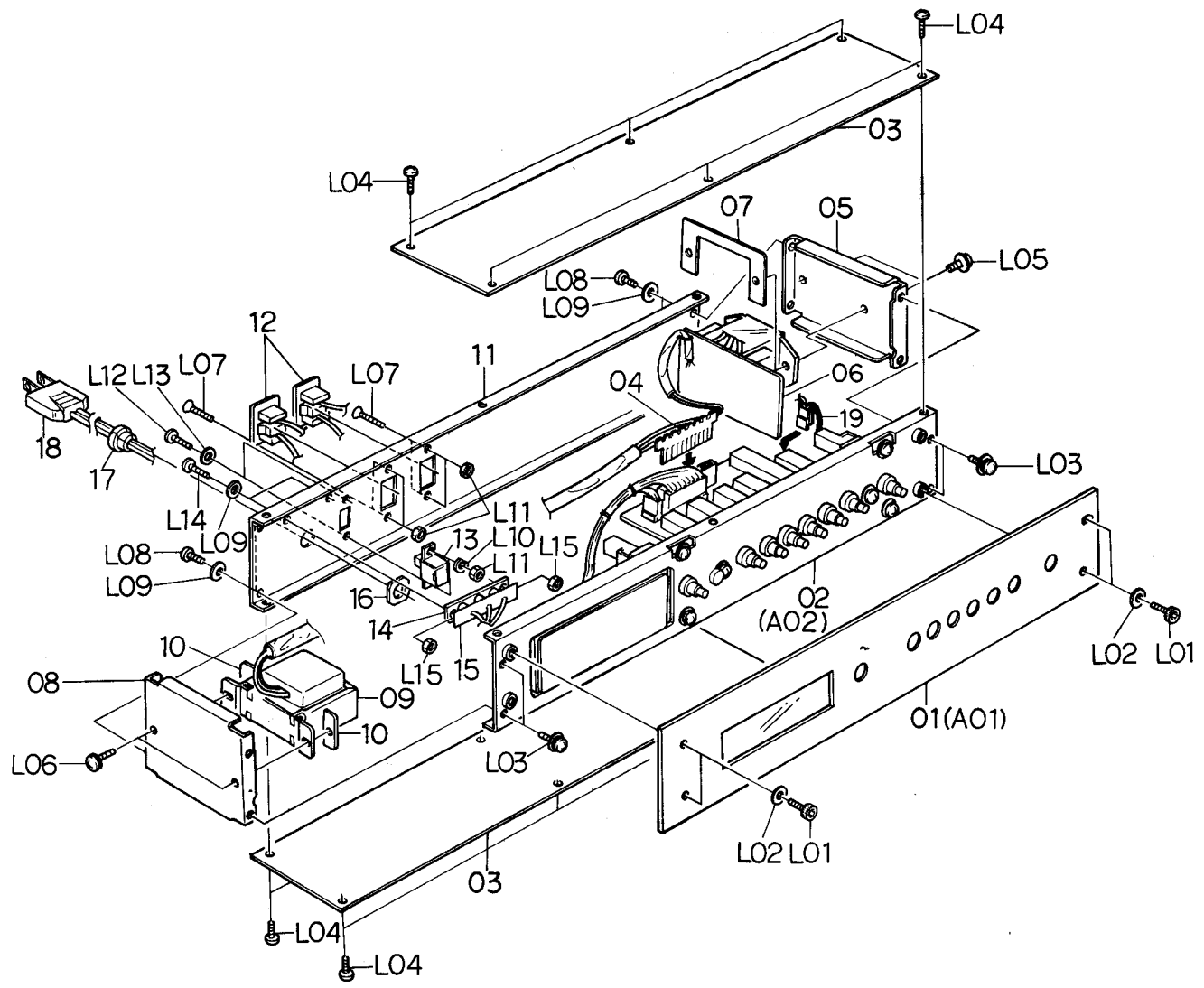


Fig. 8.1

8.2. Front Panel Ass'y (A01)

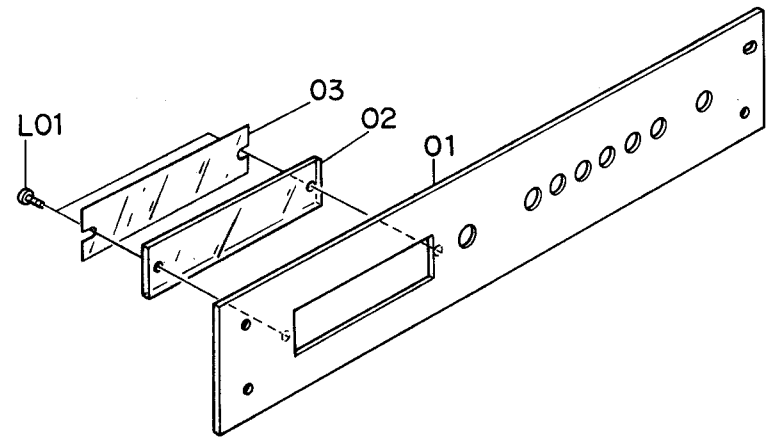


Fig. 8.2

8.3. Front Mechanism Ass'y (A02)

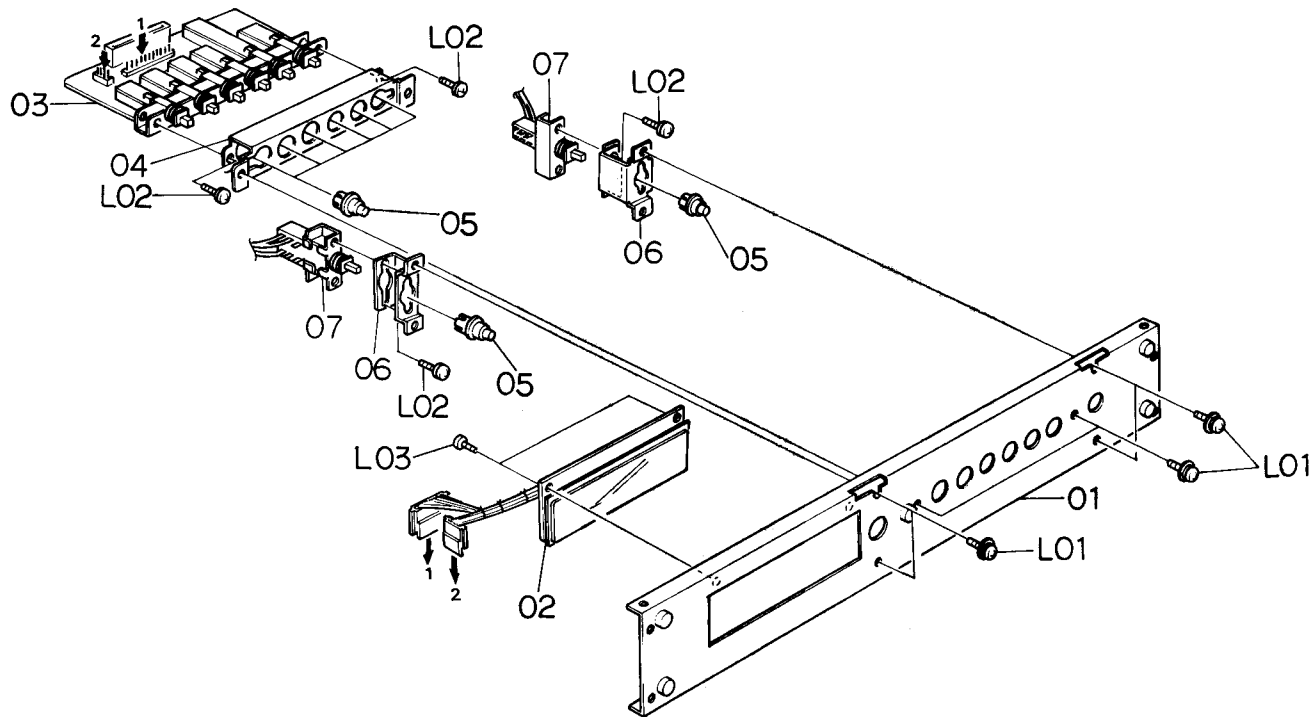


Fig. 8.3

9. DS-100 MOUNTING DIAGRAMS AND PARTS LIST

Note: Mounting diagram shows a dip side view of the printed circuit board.

9.1. Switch P.C.B. Ass'y

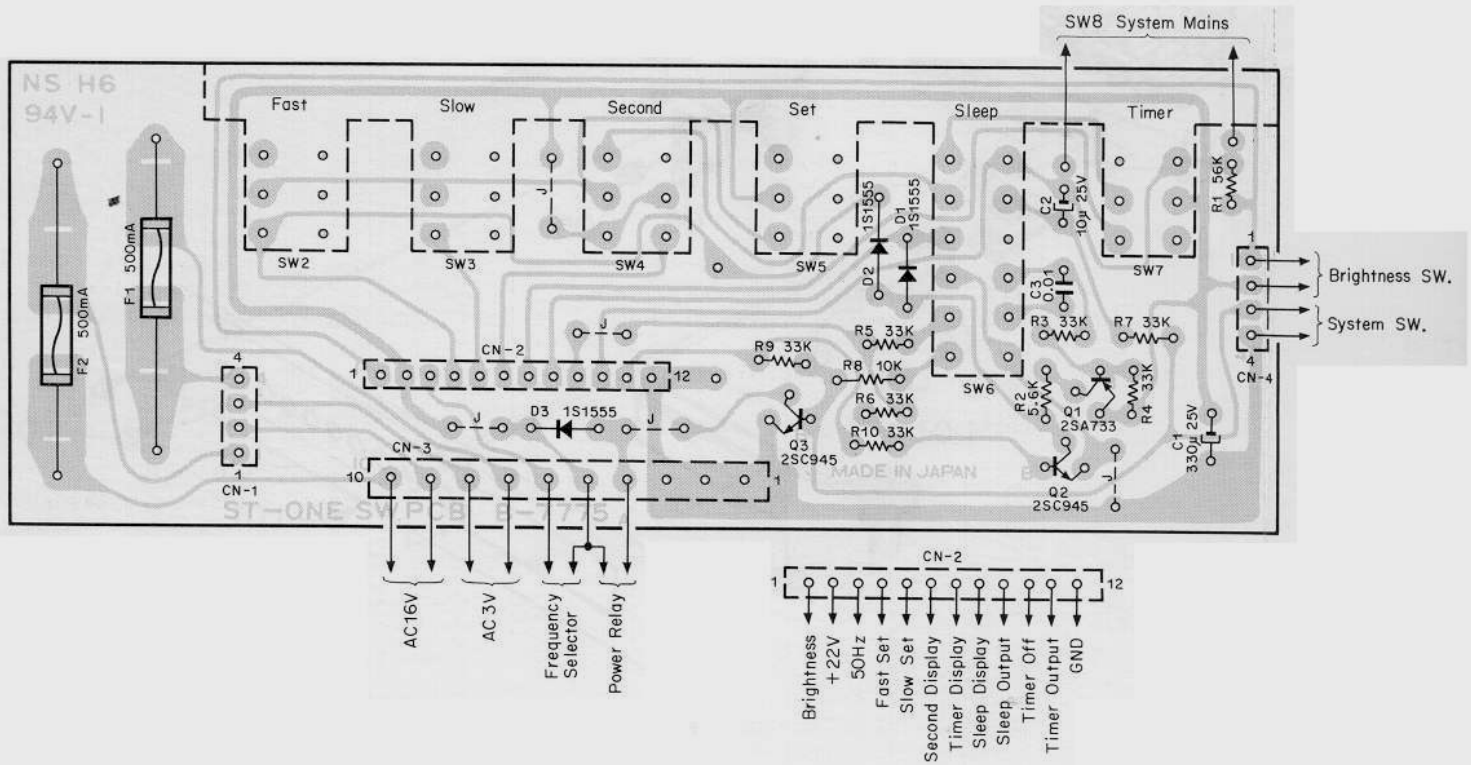


Fig. 9.1

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.
	BA03939A	Switch P.C.B. Ass'y (CANADA, U.S.A., JAPAN)		BA03934A	Display Ass'y	
	BA03979A	Switch P.C.B. Ass'y (SEMKO, BS, OTHERS)		0B07777C	Display P.C.B.	
Q1	0B07775A	ST-ONE Switch P.C.B.	Q1	0B01426A	Transistor 2SA562	RL1
Q2,3	0B06013A	Transistor 2SA7333	Q2	0B01872A	Transistor 2SC945	M4,5
D1,2,3	0B01909A	Silicon Diode 1S1555	IC1	0B06168A	IC μ PD5316C	
R1	0B05563A	Carbon Resistor 56K ERD-25V J	D1,2,3,4	0B06109A	Silicon Diode GP08B	
R2	0B05673A	Carbon Resistor 5.6K ERD-25V J	D5,6	0B01909A	Silicon Diode 1S1555	
R3,4,5,6	0B01879A	Carbon Resistor 33K ERD-25V J	R1	0B01684A	Carbon Resistor 470K ERD-25T J	RL1
7,9,10			R2,3	0B05795A	Carbon Resistor 150 ERD-25T J	M4,5
R8	0B01833A	Carbon Resistor 10K ERD-25V J	R4	0B05784A	Carbon Resistor 560K ERD-25T J	F3
C1	0B05793A	Electrolytic Capacitor 330 μ 25V	R5	0B05620A	Carbon Resistor 270K ERD-25T J	
C2	0B01674A	Electrolytic Capacitor 10 μ 25V	R6	0B05641A	Carbon Resistor 47K ERD-25T J	
C3	0B01918A	Mylar Capacitor 0.01 μ 50V	C1	0B05638A	Tantalum Capacitor 1 μ 35V	
CN1,4	0B08236A	4P-T Post	C2	0B09090A	Ceramic Capacitor 1500P	
CN2	0B08178A	12P-T Post	C3	0B05657A	Tantalum Capacitor 4.7 μ 16V	
CN3	BA03807A	10P Connector Ass'y	CN1	0B08443A	4P-H Connector Timer A	RL1
F1,2	0B07198A	Timer Push Switch A (1 pce.)	CN2	0B08187A	12P-H Connector Ass'y	M4,5
	0B08505A	Fuse 500mA *		0B08508A	Display Tube 5-4T-02 (1 pce.)	F3
	0B08349A	Fuse Clip (4 pcs.) *		0J03888A	Double Face Tape for Display (1 pce.)	
	0M03906A	Fuse Label 500mA x 2 (1 pce.) *				
		Note: Part marked with * is incorporated in Switch P.C.B. Ass'y (SEMKO, BS, OTHERS) only.				

9.2. Display Ass'y

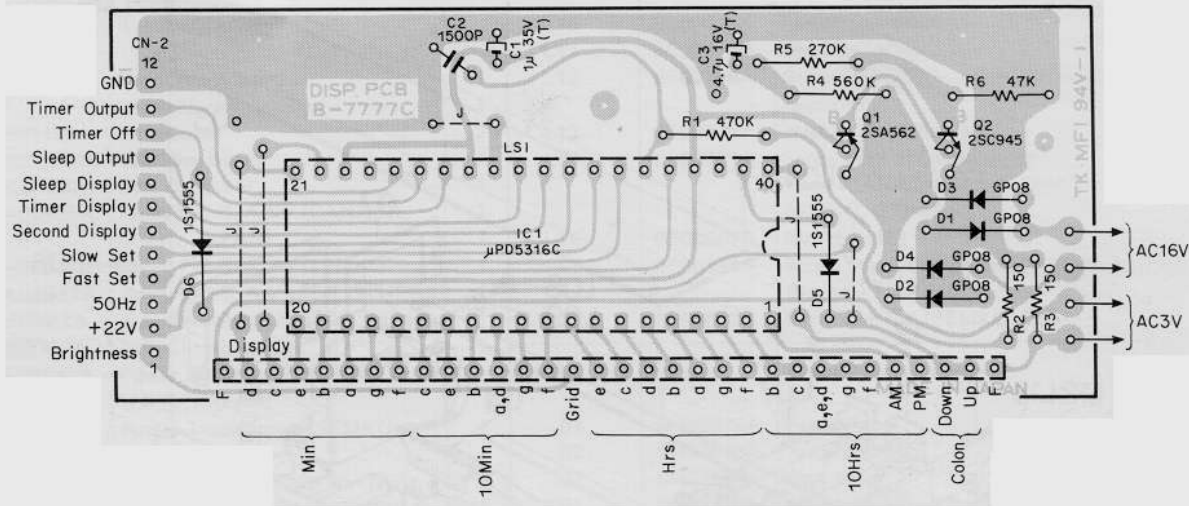


Fig. 9.2

Relay P.C.B. Ass'y

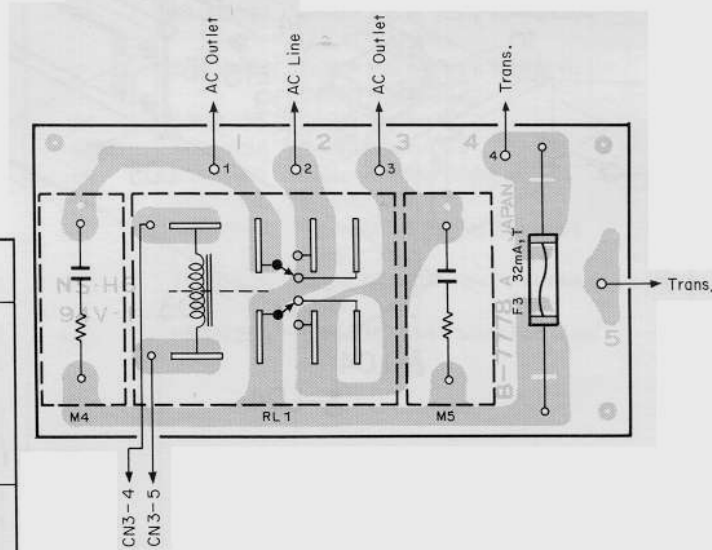


Fig. 9.3

Schematic Ref. No.	Part No.	Description
RL1 M4,5	BA03935A	Relay P.C.B. Ass'y (CANADA, U.S.A., JAPAN)
	0B07778A	Relay P.C.B.
	0B07216A	Power Relay HL2-TM-DC 24V
	0B08342A	Spark Killer AC 125V (R + C)
RL1 M4,5 F3	BA03936A	Relay P.C.B. Ass'y (SEMKO)
	0B07778A	Relay P.C.B.
	0B07216A	Power Relay HL2-TM-DC 24V
	0B07096U	Spark Killer (C: 0.01µ)
	0B08420A	Fuse 32mA T
	0B08349A	Fuse Clip (2 pcs.)
RL1 M4,5 F3	BA03937A	Relay P.C.B. Ass'y (BS, OTHERS)
	0B07778A	Relay P.C.B.
	0B07216A	Power Relay HL2-TM-DC 24V
	0B08240U	Spark Killer AC 250V (R + C)
	0B08420A	Fuse 32mA T
	0B08349A	Fuse Clip (2 pcs.)

10. DS-100 SCHEMATIC DIAGRAM

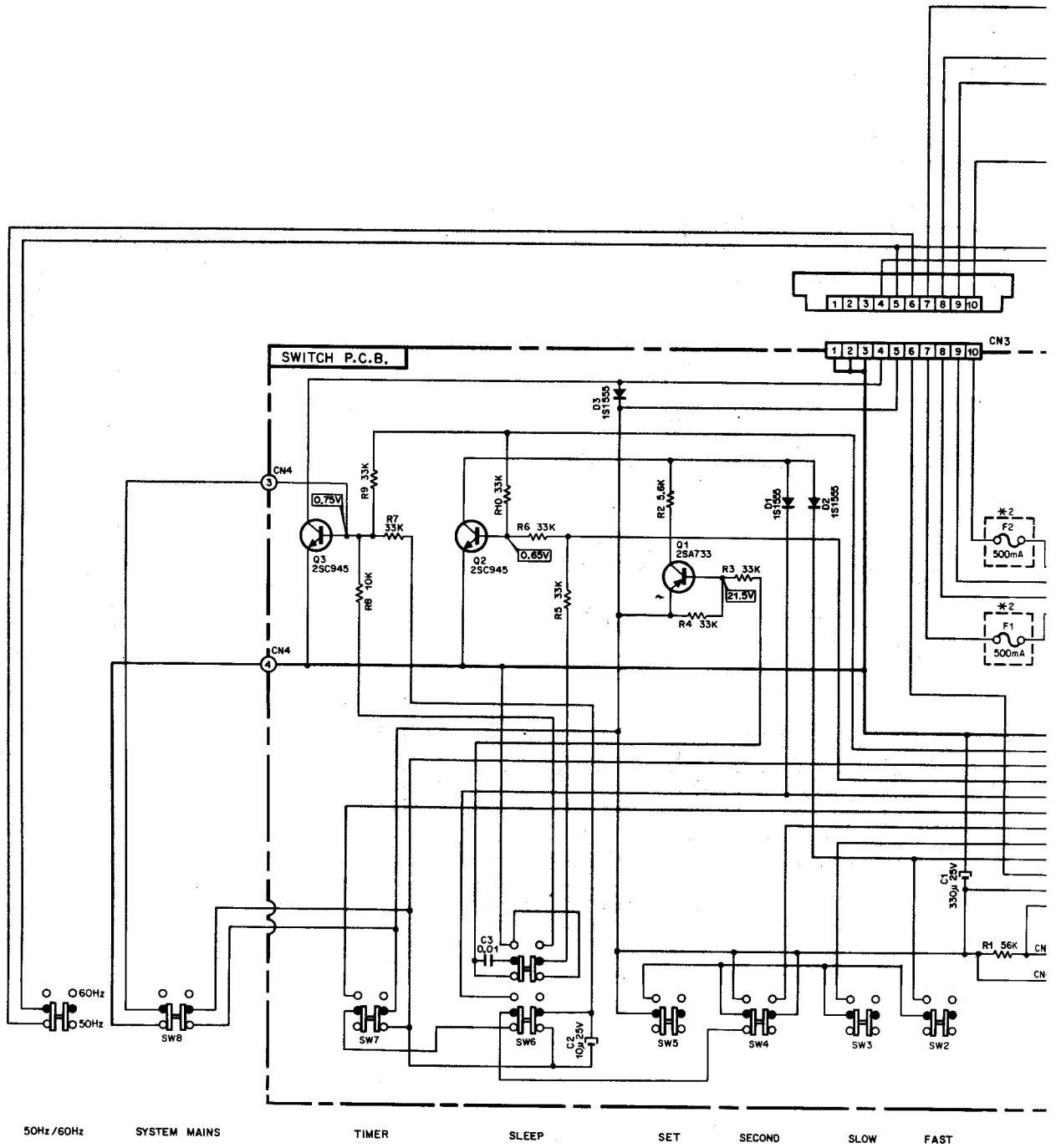


Fig. 10

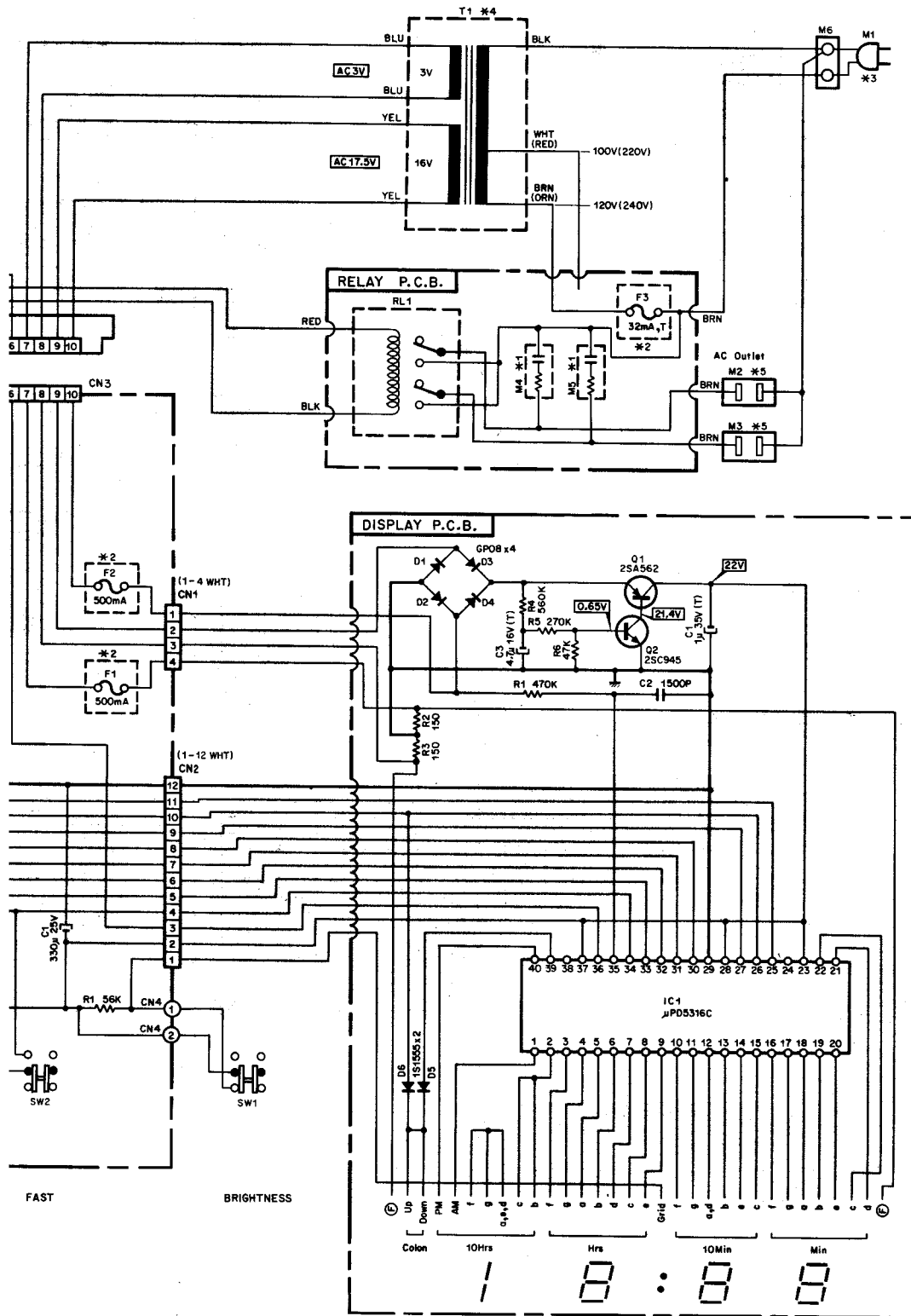


Fig. 10

- Note:
- *1 (Spark Killer): Depends on each version.
 - *2 (Fuse): Some versions do not incorporate.
 - *3 (Power Cord): Depends on each version.
 - *4 (Power Transformer): Depends on each version.
 - *5 (AC Outlet): Depends on each version.

11. SPECIFICATIONS (DS-200/DS-100)

11.1. DS-200

AC Outlet	400 W x 2
Timer Power Consumption	8 W
Timer Operation	12 hour basis; self repeating
Sleep Timer	1 – 59 minutes
Automatic Timer Setting	1 minute interval
Dimensions	310(W) x 50(H) x 113(D) mm
Weight	1.9 kg

11.2. DS-100

AC Outlet	400 W x 2
Timer Power Consumption	8 W
Timer Operation	12 hour basis; self repeating
Sleep Timer	1 – 59 minutes
Automatic Timer Setting	1 minute interval
Dimensions	400(W) x 70(H) x 90(D) mm
Weight	2.2 kg

Service Manual

Nakamichi DS-200/DS-100

Nakamichi Research Inc.

1-153 Suzukicho, Kodaira, Tokyo
Phone: (0423) 42-1111
Telex: 2832610 (NAKREI J)
Cable: NAKAMICHI KOKUBUNJI

Nakamichi Research (U.S.A.), Inc.

220 Westbury Avenue,
Carle Place, N.Y. 11514
Phone: (516) 333-5440
Telex: 144513 (NAKREI CAPL)

1101 Colorado Avenue,
Santa Monica, Calif. 90401
Phone: (213) 451-5901
Telex: 652429 (NAKREI SNM)