

11
DOKORDER
model **1140**

CLP

SERVICE MANUAL
1976.2

SECTION **1**

**TECHNICAL DESCRIPTION AND ADJUSTMENT
PROCEDURES**

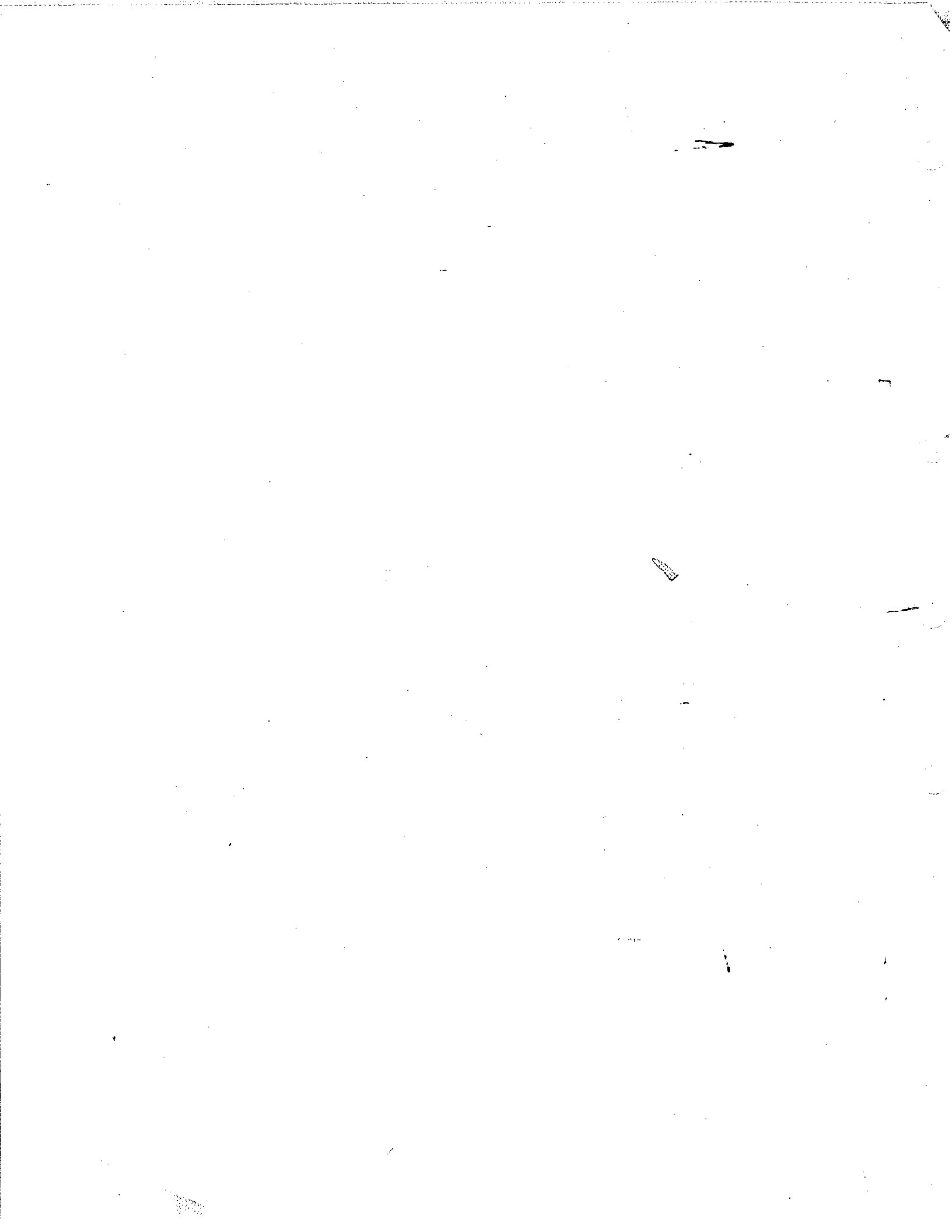


PRELIMINARY



Dokorder, Inc.

5430 ROSECRANS AVENUE, LAWDALE, CALIF. 90260 U.S.A.
DENKI ONKYO CO., LTD
26-11, 3-GHOMI, NISHI-ROKUGO, OTA-KU, TOKYO, JAP



4. ADJUSTMENT — MECHANICAL —

1. AUTO SHUT-OFF SWITCH

a. Specification

When the Auto Shut-Off Pin (2) is pushed upward, the microswitch (7) clicks (switch-on) at the point of more than 5mm (3/16") outside of the tape travel position and clicks again (switch-off) before the Auto Shut Pin returns the full-length of its operating stroke.

b. Adjustment

Mounting position of microswitch

c. Reference

Fig. 1-1 and Fig. 5 on page M-8.

d. Special Tools and/or Instruments required

None

e. Preparation

Remove Head Cover, Front Panel and Control Panel

f. Procedure

- 1) Check the on/off position of the microswitch by gently moving the Auto Shut Pin by hand.
- 2) If the spec. is not met, adjust the position of the microswitch by loosening two mount screws (6).
(Moving the microswitch to the left increases switch-on stroke.)

g. Note

- 1) Replace the dismantled parts and check again that the Auto Shut Pin moves freely through the hole in the front panel and does not come into contact with cover.
- 2) Load tape and set the deck in play mode and check if the tape travels normally. Then take up the tape completely by setting the deck in FF or REW mode, checking that the Auto Shut Arm returns to shut off the tape travel automatically at tape end.

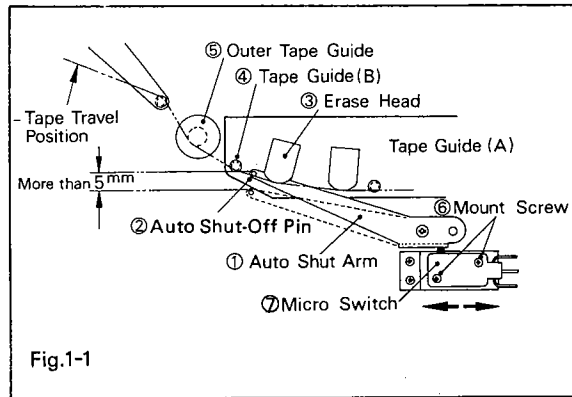


Fig.1-1

2. TAPE LIFTERS

a. Specification

Requires 1mm space between the tape and Tape Lifter Pin (3) while the deck is in play mode and the tape does not touch Erase and REC heads in FF/REW or Pause modes.

b. Adjustment

Position, Tape Lifter Solenoid (4).

c. Reference

Fig. 2 and Fig. 11 on page M-20 and Fig. 13-C on page M-24.

d. Special Tools and/or Instruments required.

None

e. Preparation

Remove Head Cover and Bottom Board.

f. Procedure

- 1) Load the tape and set the deck in Play and Pause modes alternately several times and check that the lifter operates normally.
- 2) Adjust the mounting position of the lifter solenoid by loosening the two screws (5), if the spec. is not met.

g. Note

Paint-lock the two screws after the position of the solenoid has been adjusted.

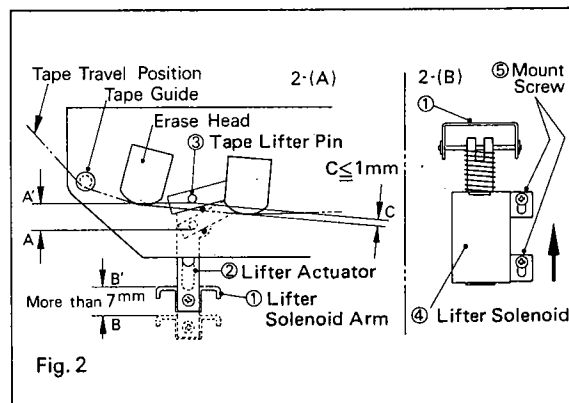
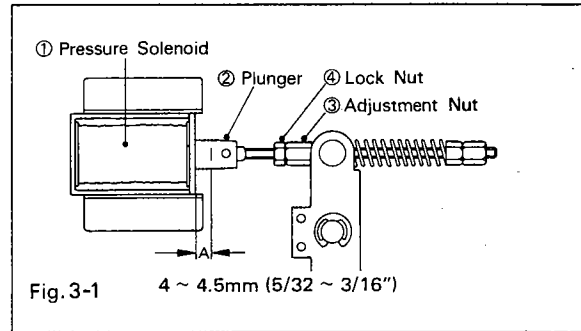


Fig. 2

3. PINCH ROLLER DRIVE MECHANISM

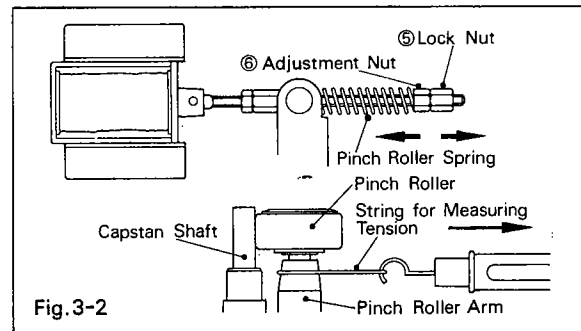
3-1 STROKE ADJUSTMENT OF THE PINCH ROLLER PRESSURE SOLENOID

- a. Specification
Stroke 4 ~ 4.5mm (5/32 ~ 3/16")
- b. Adjustment
Stroke Adjustment Nut (3)
- c. Reference
Fig. 3-1, Fig. 11 on page M-20 and Fig. 13-C on page M-24.
- d. Special Tools and/or Instruments required
4mm Open End Wrench
- e. Preparation
Remove Front Panel and Head Cover
- f. Procedure
 - 1) Push Play and Stop Buttons alternately several times, mark the positions of the solenoid plunger (2) as it pulls and returns.
 - 2) Adjust the Nut (3) so that the operating stroke of the plunger (indicated as A) is from 4 to 4.5mm (5/32 ~ 3/16").
- g. Note
Loosen the Lock Nut (4) first then proceed with step f-2.
After the stroke has been adjusted, fix the Nut (3) with the lock nut, then paint-lock it.



3-2 PINCH ROLLER PRESSURE

- a. Specification
2kg ± 0.1kg
- b. Adjustment
Pressure Adjustment Nut.
- c. Reference
Fig. 3-2, Fig. 11 on page M-20 and Fig. 13-C on page M-24.
- d. Special Tools and/or Instruments required
4mm Open End Wrench and Spring Balance (4kg)
- e. Preparation
Remove Front Panel and Head Cover
- f. Procedure
 - 1) Read the pressure indicated on the spring balance on the point when the pinch roller loses contact with the capstan and the pinch roller stops revolving.
 - 2) Adjust the pressing force of the pinch roller by turning the Nuts (5), (6), if necessary.
- g. Note
Use a precision spring balance with a scale of up to 4kg graduated in steps of 50g or less.
Loosen lock nut first before attempting step f-2.
Fix the Adjustment Nut (6) with the lock nut (5) and then paint-lock it.



4. REEL MOTOR TORQUES

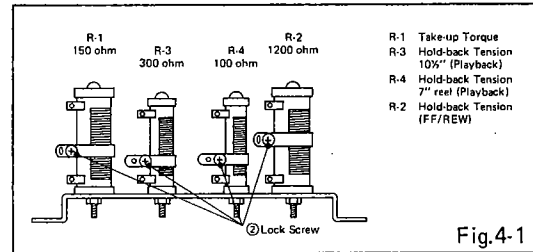
a. Specification

Refer to below chart

b. Adjustment

Refer to below chart

Item	Adjustment Parts	Specifications	
1	Take-up Torque 7" reel R-1 (150 ohm)	420 ± 15 gr/cm (140 gr)	
2	Hold-back Tension 7" reel (Playback) R-4 (100 ohm)	180 ± 15 gr/cm (60 gr)	
3	Hold-back Tension 10 1/2" reel (Playback) R-3 (300 ohm)	360 ± 15 gr/cm (120 gr)	
4	Hold-back Tension (FF/REW) R-2 (1200 ohm)	135 ± 15 gr/cm (45 gr)	



c. Reference

Fig. 4-1 and Fig. 8 on page M-14

d. Special Tools and/or Instruments required

Spring Balance (200g and 500g)

e. Preparation

Remove Amp Supporter, Back Board and Bottom Board.

f. Procedures

f-1. Holdback, 10-1/2" Reel (Playback)

- 1) Set the Reel Size Select Switch to Large and mount on the left turntable a 7" small-hub reel with a piece of string attached to it, as shown in Fig. 4-2(A).
- 2) Set the deck in Play mode and pull the spring balance gently in the arrow direction indicated in Fig. 4-2(A) and read the figures indicated by the balance.
- 3) Loosen Lock Screw ② securing the adjustment band on the R-3 in Fig. 4-1 and adjust the position of the adjustment band so that the spring balance indicate 120g.

f-2. Holdback, 7" Reel (Playback)

- 1) Set the Reel Size Select Switch to Small and follow the steps described above to obtain 60g by adjusting R-4.

f-3. Holdback (FF/REW)

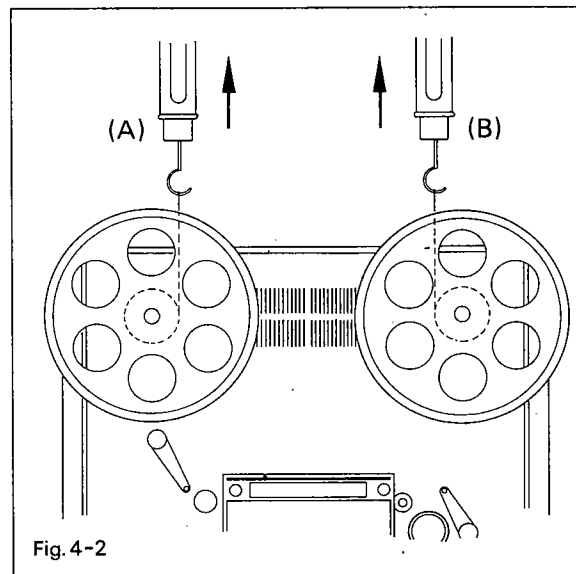
- 1) Set the deck in FF mode and follow the steps described in step f-1. to obtain 45g by adjusting R-2.
- 2) Mount on the right turntable a 7" small-hub reel with a piece of string attached to it as shown Fig. 4-2(A) to check REW back tension. If you discover a considerable difference between the torques of the FF and the REW, re-adjust the R-2 to minimize the difference between them.

f-4. Take-up Torque (7" Reel, Playback)

- 1) Set the Reel Size Select Switch to Small and mount on the right turntable a 7" reel, described on f-1-1, and adjust R-1 to obtain 140g as shown Fig. 4-2(B).

g. Note

Take-up Torque in use of 10-1/2" reel in playback mode is fixed. Tighten all the lock screws to prevent the adjustment band from loosening.



5. BRAKE MECHANISM

5-1 BRAKE TORQUE LIMITER

- a. Specification
1 ~ 1.5mm (1/32 ~ 1/16") gap between the Damper ② and the Bracket ③
- b. Adjustment
Bracket
- c. Reference
Fig. 5-1, Fig. 8 on page M-14 and Fig. 9 on page M-16.
- d. Special Tools and/or Instruments required
None
- e. Preparation
Remove Front Panel.
- f. Procedure

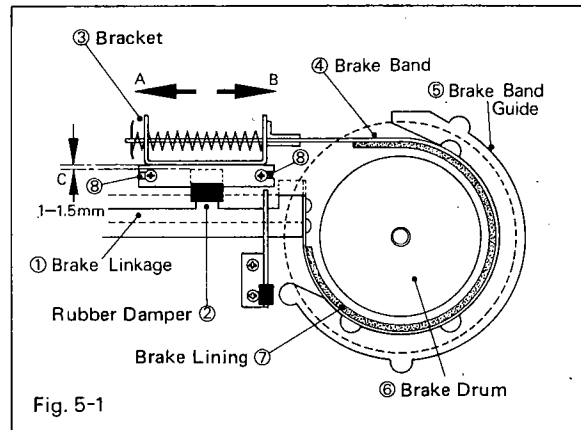


Fig. 5-1

- 1) Push the Play and Stop Buttons alternately several times and check the movement of the brake band.
- 2) Push the Stop Button once again and loosen the two screws ⑧ securing the Bracket ③ so that the space between the Rubber Damper ② and the Bracket ③ will be from 1 to 1.5mm (1/32 ~ 1/16"). (Arrow (A) direction will increase the space (C).)
- 3) Keeping the tape deck in the stop mode, push the Brake Linkage ① downward by hand, check that the Brake Band ④ contacts the inside of the Brake Band Guide ⑤ uniformly, and that the space between the Brake Drum ⑥ and the Brake Lining ⑦ is also uniform.
- g. When the adjustment has been completed, paint-lock the two screws ⑧.

5-2 STROKE OF BRAKE SOLENOID

- a. Specification
2 ~ 2.5mm (1/16 ~ 3/32")
- b. Adjustment
Mounting position of the brake solenoid
- c. Reference
Fig. 5-2
- d. Special Tools and/or Instruments required
None
- e. Procedure

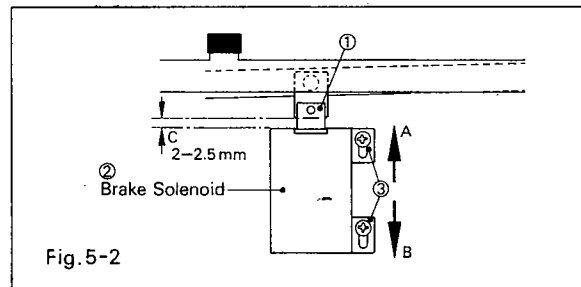


Fig. 5-2

- 1) Push the Play and Stop Buttons alternately and check the stroke of the Brake Solenoid Plunger (indicated (C) in Fig. 5-2).
- 2) Loosen two screws ③ and adjust the position of the solenoid so that the operating stroke of the solenoid plunger will be from 2 to 2.5mm.
- g. Note
After the stroke has been adjusted, paint-lock the two screws ③.

5-3 BRAKE TORQUE

- a. Specification
700g ~ 800g
- b. Adjustment
Brake Torque Adjustment Screw
- c. Reference
Fig. 5-3 and Fig. 8 on page M-14.
- d. Special Tools and/or Instruments required
Spring Balance (1kg)
- e. Preparation
Remove Front Panel and Amp Supporter.
- f. Procedure

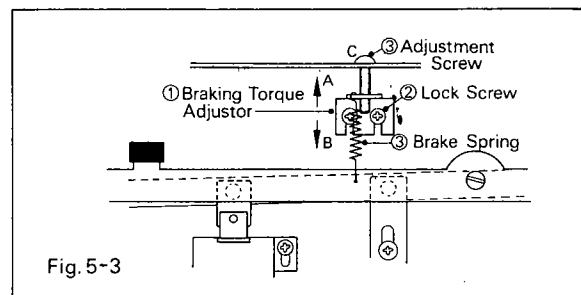


Fig. 5-3

- 1) Mount on the left turntable a 7" small-hub reel with a piece of string to it, as shown in Fig. 4-2(A).
- 2) Push the Stop Button, hook a spring balance to the string attached above reel, pull the balance gently

in the arrow direction indicated in Fig. 4-2, and read the pressure indicated by the balance when the left turntable begins to turn.

- 3) Loosen the two screws securing the Braking Torque Adjuster ① in Fig. 5-3, then turn the adjustment screw ③ so that the spring balance will indicate a brake torque of from 700 to 800g.
- 4) Repeat the steps 2 and 3 for the right turntable. If you discover a considerable difference between the brake torques for the left and right turntable, refer back to 5-1 and 5-2 to minimize the difference of the torque between them.

6. WOW/FLUTTER AND TAPE SPEED

a. Specification

	Wow/Flutter		Tape Speed Accuracy
15ips (38cm/sec)	0.08% (rms)	0.04% (wrms)	±0.5% (2985 ~ 3015 by 3KHz TEST TAPE)
7-1/2ips (19cm/sec)	0.12% (rms)	0.06% (wrms)	±0.5% (2985 ~ 3015 by 3KHz TEST TAPE)

b. Adjustment

Motor Torque, Pinch Pressure, Alignment of Tape Path.

c. Reference

Refer 1, 2, 3, 4, and 5 described above for mechanical adjustments.

d. Special Tools and/or Instruments required

Wow/Flutter Meter, Test Tape, Frequency Counter and Tools described in the mechanical adjustment above.

e. Preparation

Clean the heads, pinch roller, tape guide and all other parts that touch the tape.

f. Procedures

f-1. Wow/Flutter

- 1) Deterioration of wow/flutter may be avoided by attending to the following problems:
 1. Parts along the tape path (the pinch roller, heads, tape guides, capstan shaft) may be stained with oxide particles, etc., scraped from tape surfaces.
 2. Reel-motor torque, pinch roller pressure and tape path alignment may be needed.
 3. Capstan drive assembly (the capstan belt, flywheel, motor pulley) may be fouled.
 4. Rotational parts (such as the pinch roller metal, pinch roller shaft, capstan metal, capstan sleeve and motor sleeve) may need lubrication.
 5. Tape drive mechanism (such as the reel motors, capstan motor, guides, counter mechanism and solenoids) may need replacement.
 6. Other causes might include cases where lead cables running along the tape drive mechanism causes wear by friction, or where the disengaging action of the brake mechanism is faulty.
- 2) Adjustments should be undertaken in the most efficient manner, as suggested below:
 1. Use test tapes and measuring apparatus that are new (if possible) and well calibrated.
 2. Check first that the tape transport mechanism is in order.
 3. Carefully clean off accumulated tape particles.
 - a) Inspect, clean and lubricate the pinch roller's metal parts, pinch roller shaft, capstan shaft, capstan metal, etc.
 - b) Clean the belts, flywheel, motor pulley, etc. and check for rubbing parts or marred surfaces.
 4. Measure the wow; if it exceeds the specification, measure and adjust the torque.
 5. In most cases, the measured wow/flutter should meet the specification by the time you reach the 3rd or 4th step above. If not, a faulty pinch roller, capstan or belt may be the cause, and replacement is called for. Usually replacement of a motor should not be considered; should the motor be suspect, first apply oil to its shaft and keep it running for two or three hours, and check it again. Inspecting the phase advance capacitor may also reveals the solution.

f-2. TAPE SPEED

Adjustments of tape speed should be undertaken after replacement of the motor pulley. Since the motor pulley is available in various sizes (0.5% increments and decrements), select the best suitable one. In most cases, however, replacement should be unnecessary; the most suitable pulley is selected and mounted on the deck at our factory before shipment. When the speed does not meet the specification, first adjust the motor torque and pinch roller pressure, and measure wow/flutter before actually replacing the pulley.

DOKORDER

model 1140



SERVICE MANUAL
SM-0100-00
1975-11

SECTION 2

EXPLODED VIEWS AND PARTS LIST

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PARTS NOMENCLATURE

Mark	Name	Shape	Illustration	Remarks
PS	Pan Head Screw			
PF	Pan Head Screw with Flat Washer			with Spring Washer = PG
BH	Binding Head Screw			
TS	Taping Screw			
WS	Wood Screw			
BS	Binding Screw			
HB	Hexagon Bolt			
FS	Flat Countersunk Head Screw			
LS	Lock Screw			
R	Rivet			
AS	Allen Hex. Screw			
S	Spacer			
Example	PS 4 x 6			Length in mm L Diameter in mm D Mark
NW	Nylon Washer			
FW	Fibre Washer			
IL	Internal Lock Washer			
EL	External Lock Washer			
E	Retaining Ring [E Washer]			
N	Nut			
NF	Nut with Flat Washer			with Spring Washer = NG
K	Knurled Thumb Nut			
WN	Wing Nut			
Example	NW 4			Diameter in mm D Mark

NOTE: Items without part number and description are not available for standard spare parts.



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CABINET EXPLODED VIEW

Ref. No.	Parts No.	Description	Identity No.	Source
1-11-(1)	880-0001-00	Top Board Assy, Amp.	SE2D82J3	
1-11-(2)	880-0002-00	Bottom Board Assy, Amp.	SE2D82J4	
1-12-(1)	880-0003-00	Front Panel, Amp.	SE2D82J1	
1-12-(2)	551-0001-01	Back Board, Amp.	1ST2-241044-1	
1-13-(1)	551-0002-06	Side Board, Amp.	3ST2-235003-6	
1-13-(2)	555-0016-02	Side Bezel, Amp.	4ST2-235028-2	
1-14-(1)	556-0001-00	Knob, Control	4ST2-241164	
1-14-(2)	556-0011-81	Knob, Control, Outer	4ST2-241231-1	
1-14-(3)	556-0012-83	Knob, Control, Inner	4ST2-241228-3	
1-15-(1)	553-0001-00	Emblem, 4-Ch.	3ST2-244001	
1-15-(2)	554-0001-01	Dress Plate, Head Phone	4ST2-241176-1	
1-15-(3)	554-0002-01	Dress Plate, Mic.	4ST2-241175-1	
1-15-(4)	532-0001-01	Spacer, Amp. Supporter	4ST2-235037-1	
1-16-(1)	511-0007-00	Supporter, Amp.	1ST2-241020	
1-16-(2)	555-0018-00	Dresser, Supporter	2ST2-241032	
1-16-(3)	533-0001-00	Holder, 20-P Connector	4ST2-241274	
1-16-(4)	534-0013-00	Plate, 20-P Connector Mount	4ST2-241181	
1-16-(5)	534-0003-00	Clamp, 20-P Wire Harness	4SE2-241015	
1-16-(6)	132-0002-00	Connector, 20-P	ST8B172	MR-20MH (M)
1-16-(7)	535-0010-00	Cushion, Amp. Supporter	4SE2-241068	
1-17-(1)	880-0004-00	Panel Assy, Deck	SE2D81J3	
1-17-(2)	880-0005-00	Head Cover	SE2D81J4	
1-17-(3)	531-0001-00	Post, Head Cover	4ST2-241104	
1-17-(4)	558-0014-02	Screw, Head Cover Mount	4ST2-241047-2	
1-17-(5)	880-0006-00	Cover, Multi-Sync.	SE2D81J-11/13	
1-17-(6)	555-0011-01	Cover, Bias Control	4ST2-241194-1	
1-17-(7)	556-0002-03	Knob, Bias Control	4ST2-241127-3	
1-17-(8)	880-0007-00	Panel, Front, Control	SE2D81J2	
1-18-(1)	551-0004-00	Side Board (Left)	1ST2-235002	
1-18-(2)	551-0005-00	Side Board (Right)	1ST2-235003	
1-18-(3)	555-0019-00	Side Bezel, Deck	3ST2-235012	
1-19-(1)	551-0003-00	Front Board, Deck	1ST2-235013	
1-19-(2)	551-0006-02	Back Board, Deck	1ST2-241014-2	
1-19-(3)	532-0001-01	Spacer, Supporter	4ST2-235037-1	
1-20-(1)	551-0007-00	Bottom Board, Deck	2ST2-241019	
1-20-(2)	555-0001-00	Foot, Rubber		K-40

FLAME WORK EXPLODED VIEW

Ref. No.	Parts No.	Description	Identity No.	Source
2-11	511-0001-28	Chassis, Deck		1ST2-241006-28
2-12-(1)	531-0002-01	Stud, Front Panel (B)		4ST2-241239-1
2-12-(2)	531-0003-02	Stud, Front Panel (A)		4ST2-241103-2
2-13	533-0002-01	Bracket, 6-station SW Mount		4ST2-241144-1
2-14-(1)	533-0003-02	Bracket, Panel Mount (C)		4ST2-233007-2
2-14-(2)	533-0004-01	Bracket, Panel Mount (B)		4ST2-241021-1
2-14-(3)	533-0005-00	Bracket, Control Panel Mount		4ST2-241020
2-15-(1)	536-0001-10	Heat Sink		2ST2-241026-10
2-15-(2)	536-0005-02	Shield, Bias PCB		3ST2-241070-2
2-15-(3)	531-0004-00	Stud, Bias PCB		4ST2-241245
2-15-(4)	536-0013-00	Heat Sink (2)		3SE2-241009
2-16-(1)	513-0001-02	Chassis, Head Amp. PCB		2ST2-241033-2
2-16-(2)	* Not used	Stud, Head Amp. PCB		
2-16-(3)	534-0001-00	Lock, Connector		4ST2-241180
2-16-(4)	* Not used	Shield, Head Amp. PCB		
2-16-(5)	533-0038-00	Holder, Muting PCB		4SE2-241068
2-17-(1)	111-1001-80	Power Transformer	PT-1039	SE1B169
2-17-(2)	851-0001-00	PC Board Assy, Head Amp.	PCM-342E	SE2D52J2
2-17-(3)	851-0002-00	PC Board Assy, Power Supply	PCM-341B	SE2D51J2
2-17-(4)	851-0003-00	PC Board Assy, Bias OSC.	PCM-313E	SE2D51J3
2-17-(5)	851-0004-00	PC Board Assy, Muting	PCM-402	SE2D52J3
2-17-(6)	851-0005-00	PC Board Assy, Power Tr.	PCM-319	SE2D51J4
2-18-(1)	511-0002-87	Side Frame, Deck Mount (L)		1ST2-235016-7
2-18-(2)	511-0003-87	Side Frame, Deck Mount (R)		1ST2-235016-7
2-18-(3)	511-0004-87	Frame, Front, Deck Mount		2ST2-235004-7
2-18-(4)	511-0005-87	Frame, Rear, Deck Mount		1ST2-235017-7
2-18-(5)	511-0006-00	Angle, Blind		2ST2-241028
2-18-(6)	511-0008-80	Bracket, Supporter Mount		4ST2-241308
2-18-(7)	532-0001-01	Spacer, Supporter Bracket		4ST2-235037-1
2-18-(8)	533-0036-00	Holder, 20-P Connector		4ST2-235032
2-18-(9)	513-0002-00	Frame, Power Supply Chassis		3ST2-235006
2-18-(10)	533-0017-00	Holder, Remote Control Socket		4SE2-241018
2-18-(11)	533-0014-01	Holder, Heat Sink		4SE2-241057-1
2-19-(1)	134-2001-00	Connector, 10-P		251-10-50-169M
2-19-(2)	133-2001-00	Connector, 10-P		250-10-50-179M
2-19-(3)	133-6001-00	Connector, 18-P		250-18-50-179M
2-19-(4)	133-2001-00	Connector, 10-P		250-10-50-179M
2-19-(5)	134-6001-00	Connector, 18-P		251-18-50-169M
2-19-(6)	134-2001-00	Connector, 10-P		251-10-50-169M
2-19-(7)	132-0001-00	Connector, 20-P		MR-20MH (F)
2-19-(8)	136-7001-00	Socket, Remote Control 1:1P		SA-602B-D0
2-19-(9)	136-2001-00	Socket, Transistor TD-3		S2-104W-05
2-19-(10)	536-0014-00	Transistor		2SC-793Y
2-19-(11)	536-0002-00	Mylar Sheet, 2SC-793Y		SE1B078
2-19-(12)		Mylar Sheet, 2SD-234Y		
2-21	162-1001-00	U.S.A. TYPE		ST9B178
2-22	537-0002-00	AC Cord with Plug		SE1B014
2-23	554-0003-02	Stopper, Cord	4N-4	AST2-241200-2
2-24	135-7001-00	Chassis (A), Power Supply		SE0B159
2-25	138-1001-00	Holder, Fuse	FH-001	ST8B091
		Fuse, 3 Amp.	MF-6ML-3A	

CABINET EXPLODED VIEW

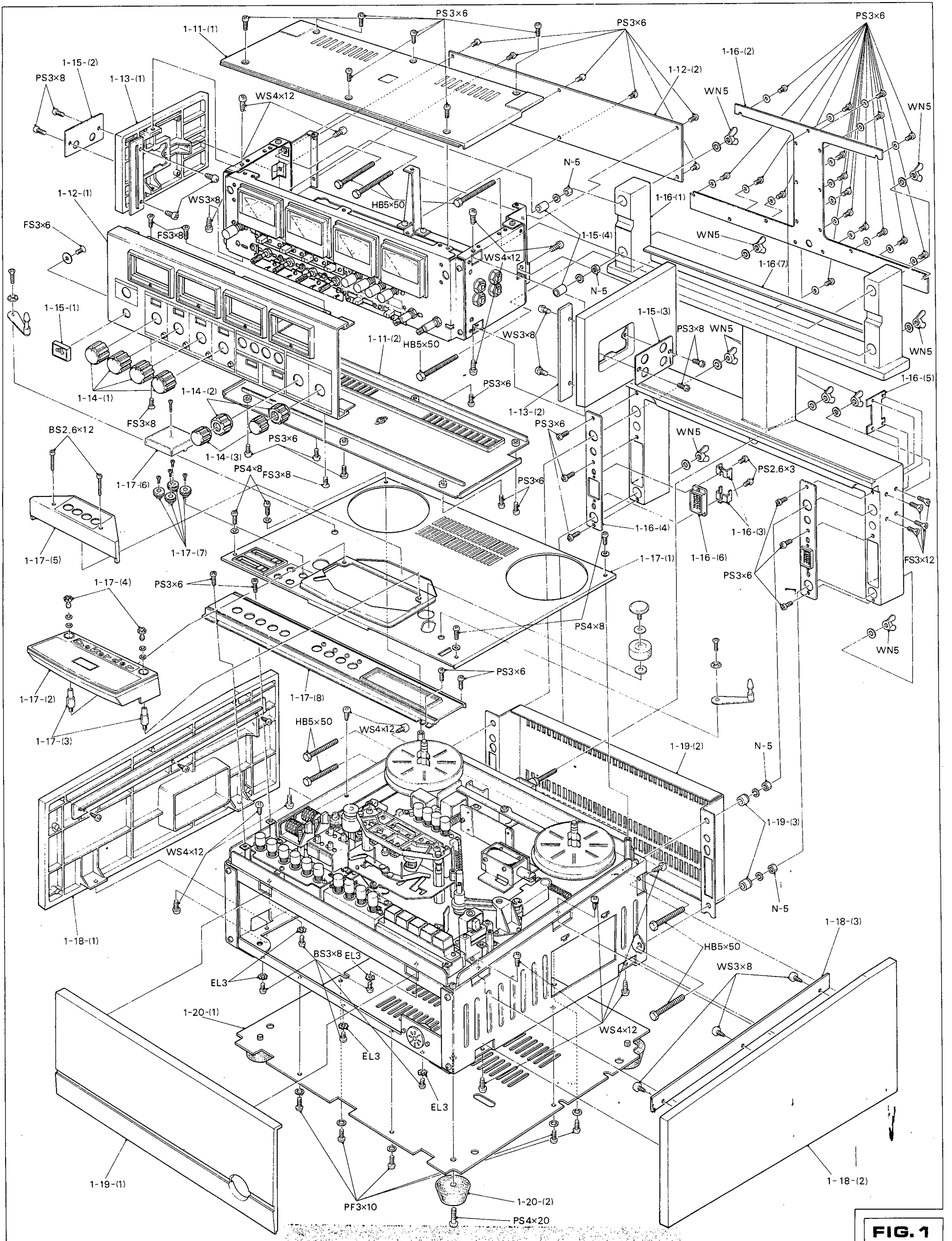
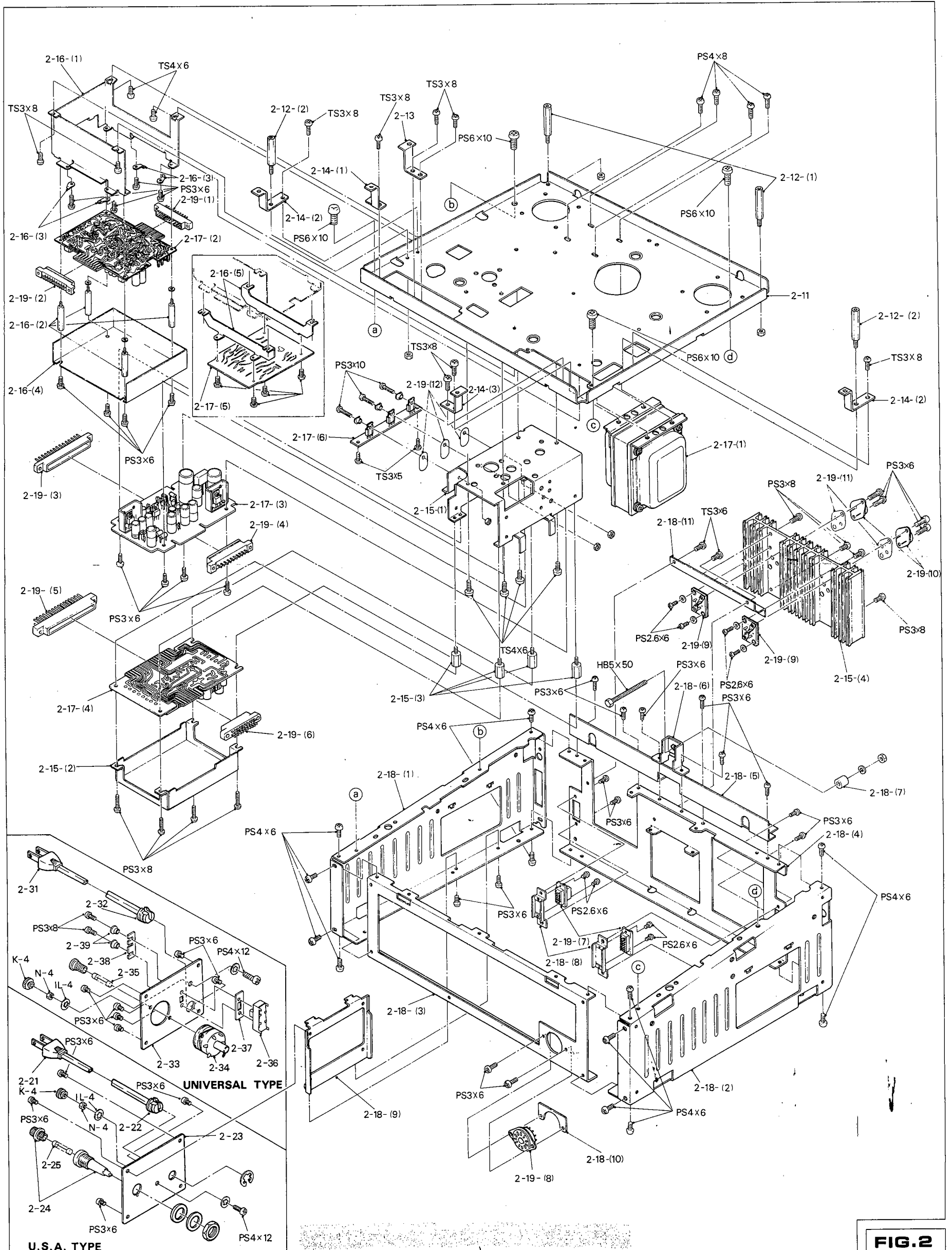


FIG. 1

M-3

FRAME WORK EXPLODED VIEW



M-4

U.S.A. TYPE

FIG. 2

AMP EXPLODED VIEW (1)

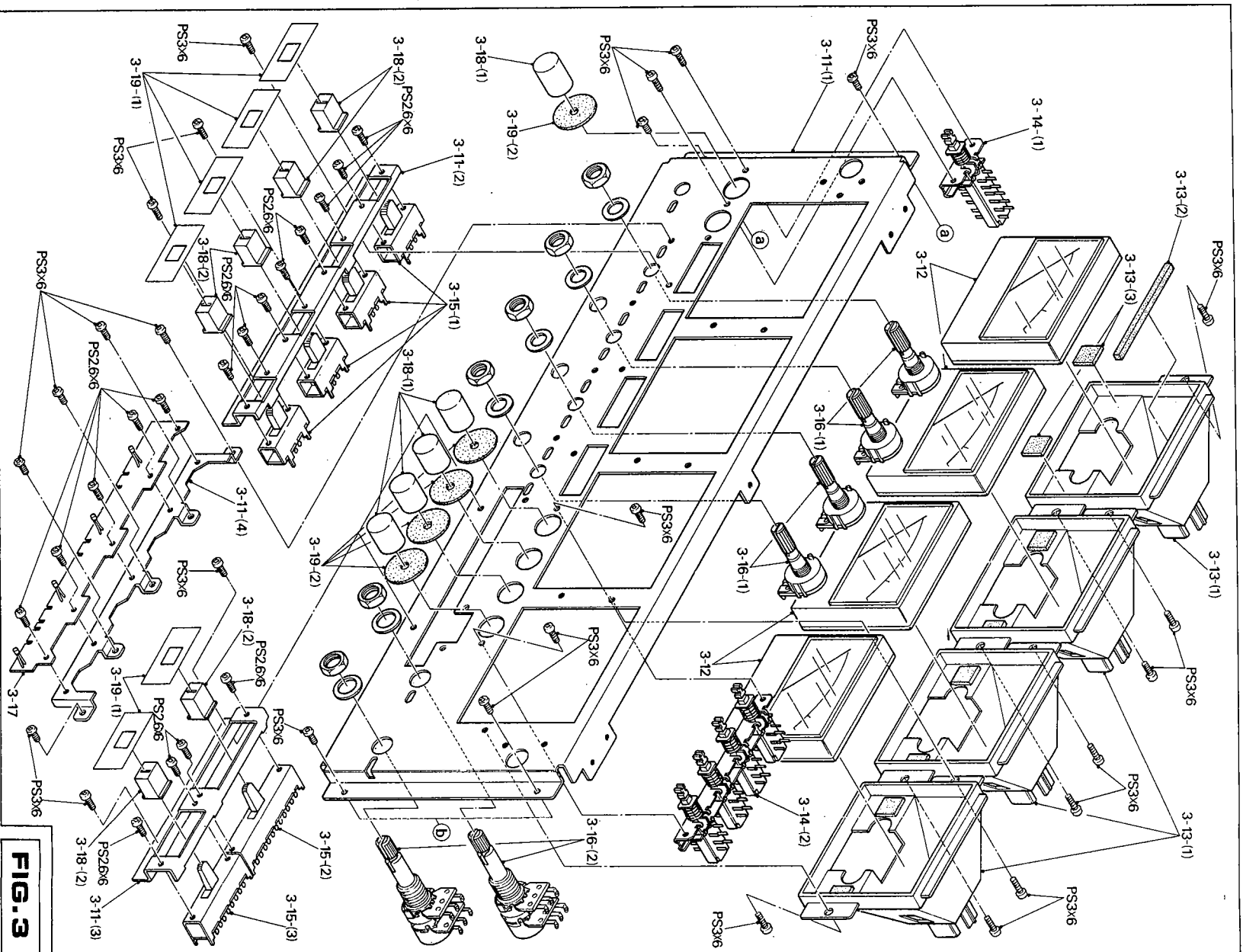


FIG. 3

AMP EXPLODED VIEW (1)

Ref. No.	Parts No.	Description	Identity No.	Source
3-11-(1)	512-0001-07	Chassis, Front, Amp.		2ST2-241042-7
3-11-(2)	533-0008-00	Bracket, Mic/Line SW Mount		4ST2-241320
3-11-(3)	533-0009-00	Bracket, EQ/Test Gen. SW Mount		4ST2-241318
3-11-(4)	533-0010-00	Bracket, Peak Indicator Mount		3ST2-241101
3-12	141-1001-00	Level Meter	MG-13F	SE1B179
3-13-(1)	536-0003-00	Lamp Shade		3ST2-241013
3-13-(2)	535-0001-03	Cushion Rubber (3), Meter		4ST2-241201-3
3-13-(3)	535-0002-01	Cushion Rubber (4), Meter		4ST2-241232-1
3-14-(1)	131-1001-00	Switch, Mode Select, 2/4-Ch.	1F-0003AF2010	SE1B005
3-14-(2)	131-1002-00	Switch, Tape/Source Monitor, 4-station	4FS-8U-85-1	SE0B-032
3-15-(1)	131-6001-00	Switch, Slide, Mic/Line Select	SL-222B4	SE1B095
3-15-(2)	131-6002-00	Switch, Slide, EQ Select	SL-282B4	SE1B172
3-15-(3)	131-6003-00	Switch, Slide, Test Gen. On/Off	SL-262B4	SE1B171
3-16-(1)	370-5036-90	Control, Single, Mic/Line	VM-10A100KB	SE2B008
3-16-(2)	360-1046-90	Control, Play Back, 2-gang, Non-friction	DM-10A50KB	SE1B057
3-17	871-0001-00	PC Board Assy, LED	PCM-349	SE2D71J7
3-18-(1)	556-0013-82	Push Button, Round, Metal		4ST2-241252-2
3-18-(2)	556-0003-00	Knob, Slide SW, Metal		4ST2-241126
3-19-(1)	555-0010-00	Blind Cloth, Slide SW		4ST2-242018
3-19-(2)	555-0017-00	Blind Cloth, Push SW		4SE2-241025

AMP EXPLODED VIEW (2)

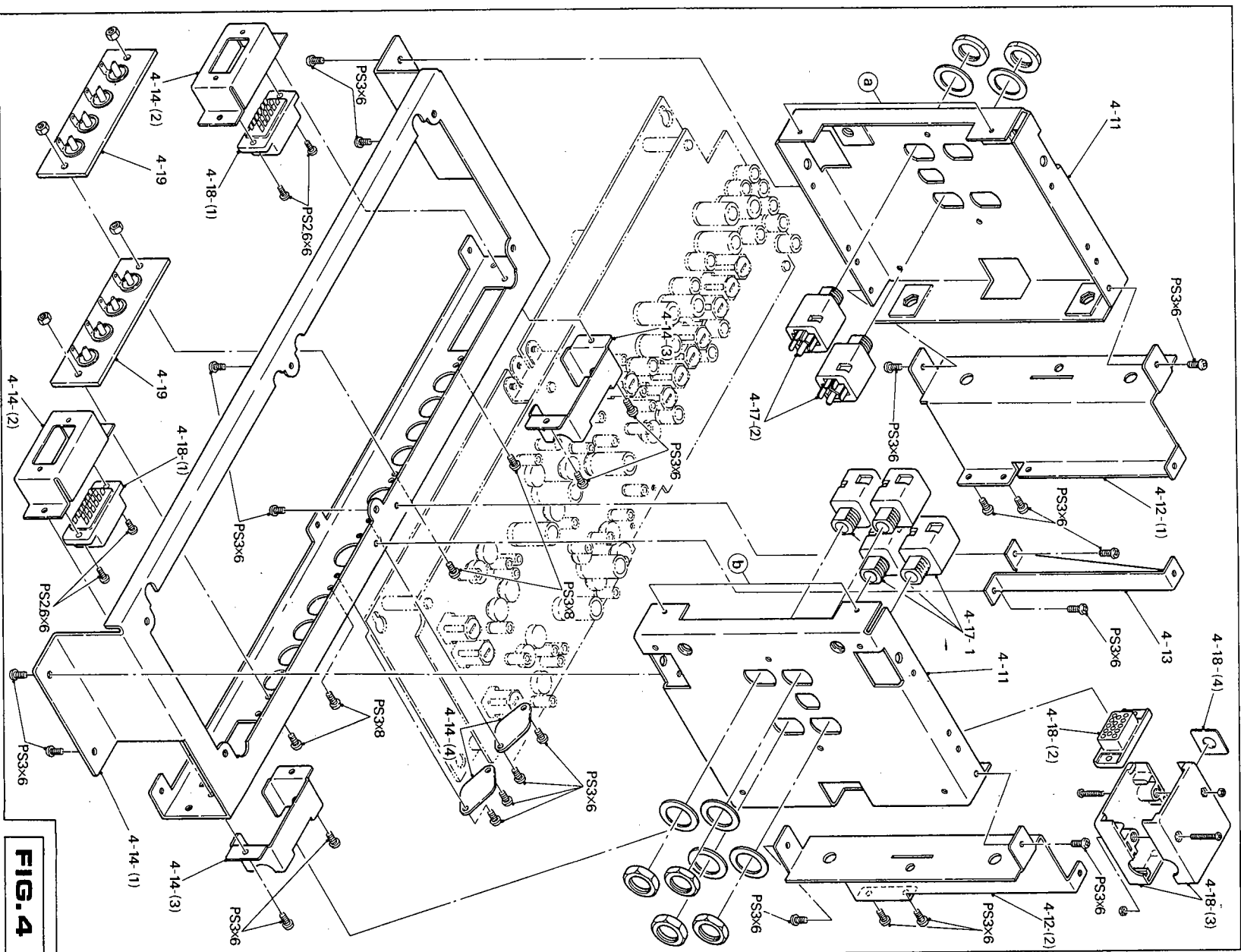


FIG. 4

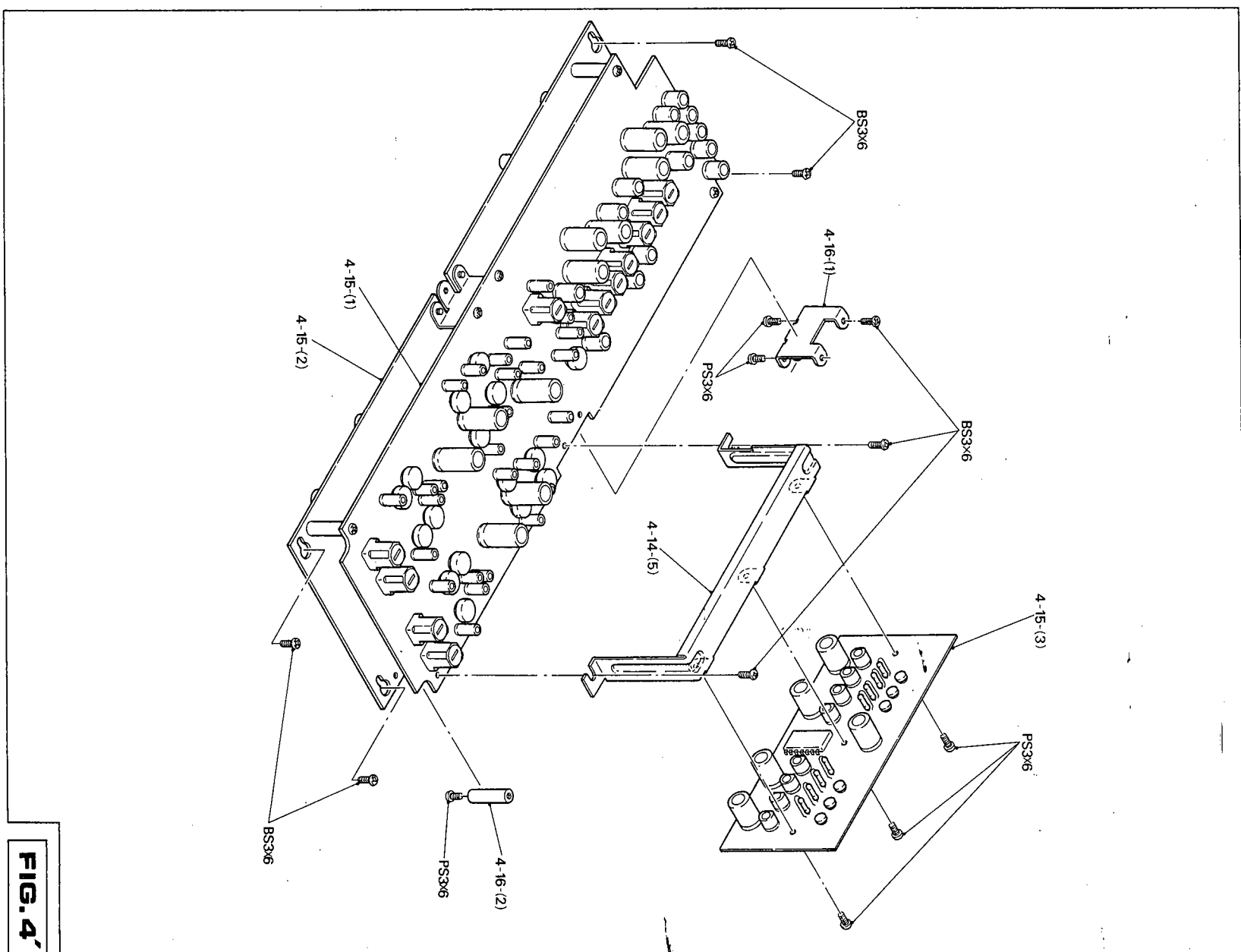


FIG. 4

AMP EXPLODED VIEW (2)

Ref. No.	Parts No.	Description	Identity No.	Source
4-11	512-0002-80	Side Frame (L), Amp.		3ST2-241117
	512-0003-80	Side Frame (R), Amp.		3ST2-241117
4-12-(1)	512-0004-00	Angle, Amp. Supporter Mount (L)		3ST2-235010
4-12-(2)	512-0005-00	Angle, Amp. Supporter Mount (R)		3ST2-235010
4-13	533-0011-00	Bracket, Amp. Back Board Mount		4ST2-235026
4-14-(1)	512-0006-00	Chassis, Amp. PC Board		2ST2-241001
4-14-(2)	533-0013-00	Mount, 20-P Connector		4ST2-235095
4-14-(3)	534-0002-00	Protector, 20-P Connector		4ST2-241286
4-14-(4)	555-0002-00	Blind, DIN Connector		4ST2-241319
4-17-(1)	135-5001-00	Jack, Mic.	S-G7625 #1	SE0B142
4-17-(2)	135-5002-00	Jack, Head Phone	S-G7825 #1	SE1B040
4-18-(1)	132-0002-00	Connector, 20-P	MR-20MH (M)	ST8B172
4-18-(2)	132-0001-00	Connector, 20-P	MR-20MH (F)	ST8B172
4-18-(3)	555-0003-00	Cover, 20-P Connector		4ST2-227124
4-18-(4)	555-0004-00	Blind Tip, 20-P Connector Cover		4ST2-227125
4-19	135-5003-00	Jack, Pin, 4-P	S-Q3463	SE1B058
4-14-(5)	533-0019-00	Holder, Analog SW PC Board		4SE2-241046
4-15-(1)	871-0002-00	PC Board Assy, Amp. (2)	PCM-312D	SE2D71J6
4-15-(2)	871-0003-00	PC Board Assy, Amp. (1)	PCM-311A	SE2D71J5
4-15-(3)	871-0004-00	PC Board Assy, Analog SW	PCM-409	SE2D71J9
4-16-(1)	533-0015-00	Support (A), Amp. PC Board		4ST2-241168
4-16-(2)	531-0005-00	Stud, Amp. PC Board Support		4ST2-241307

MECHANISM EXPLODED VIEW (A)

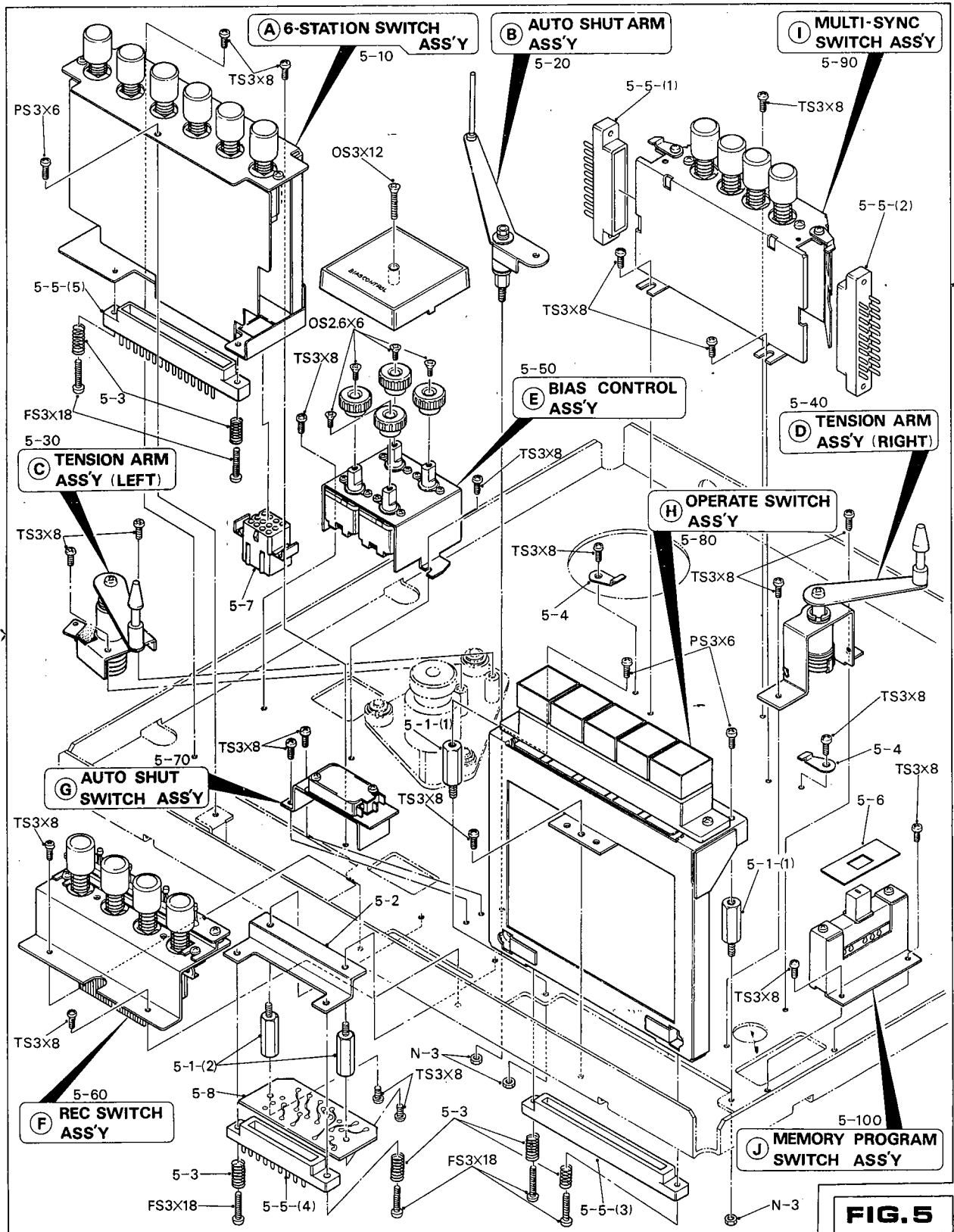


FIG. 5

MECHANISM EXPLODED VIEW (A)

Ref. No.	Parts No.	Description	Identity No.	Source
5-1-(1)	531-0006-01	Stud, 5-station SW Mount		4ST2-241285-1
5-1-(2)	531-0006-01	Stud, Relay Drive PCB		4ST2-241285-1
5-2	533-0016-00	Holder, REC. Connector		4ST2-241186
5-3	541-0001-00	Spring, Connector Hold		4ST2-227114
5-4	534-0001-00	Lock, Connector		4ST2-241180
5-5-(1)	134-2001-00	Connector, 10-P	251-10-50-169M	
5-5-(2)	134-2001-00	Connector, 10-P	251-10-50-169M	
5-5-(3)	134-6001-00	Connector, 18-P	251-18-50-169M	
5-5-(4)	134-2001-00	Connector, 10-P, REC.	251-10-50-169M	
5-5-(5)	134-5001-00	Connector, 15-P	251-15-50-169M	
5-6	555-0010-00	Sheet, Slide SW, Anti-dust		4ST2-242018
5-7	132-0003-00	Connector, 12-P	1625-12-R	
5-8	801-0002-00	PC Board Assy, Relay Drive	PCM-391	SE2D01J5

PARTIAL EXPLODED VIEW (A-1)

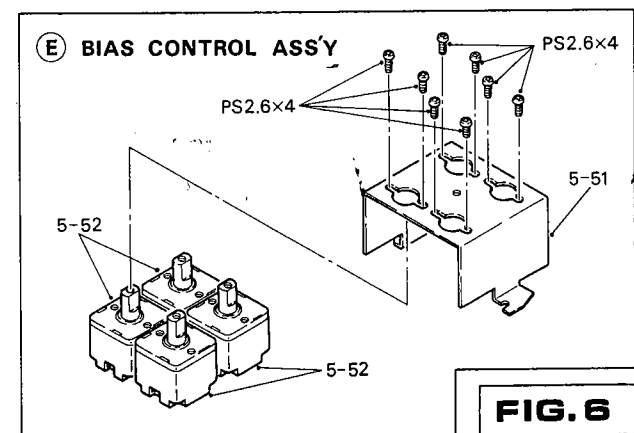
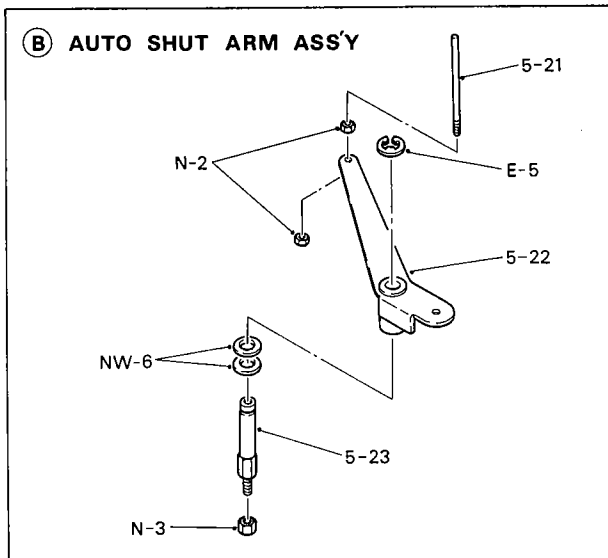
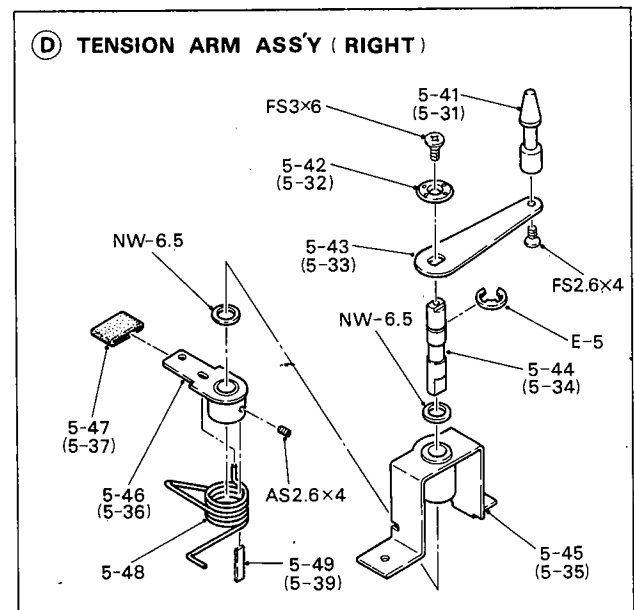
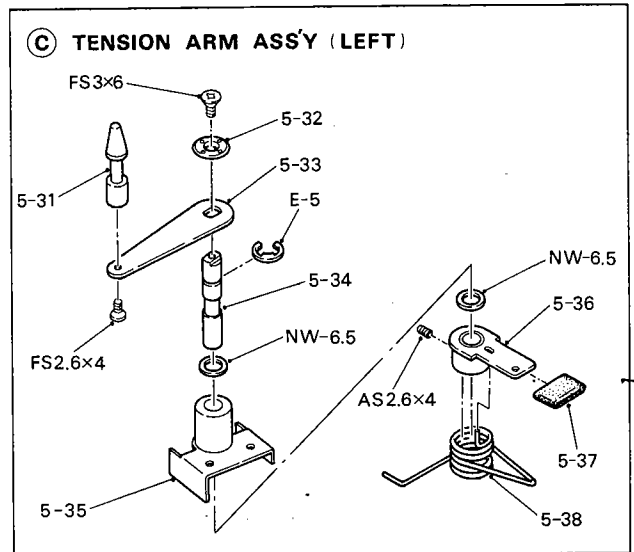
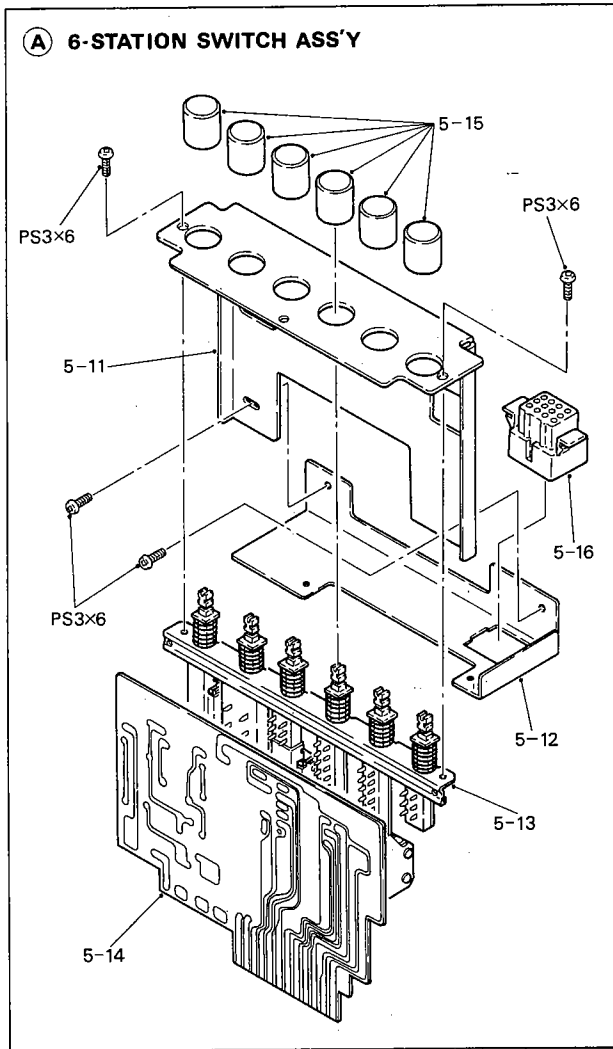


FIG. 6

PARTIAL EXPLODED VIEW (A-1)

Ref. No.	Parts No.	Description	Identity No.	Source
(A) 6-STATION SWITCH ASSY				
5-10	820-0003-00	Switch Assy, 6-station		SE2D22J1
5-11	513-0003-00	Chassis, 6-station SW Mount		3ST2-241006
5-12	513-0004-00	Holder, 6-station SW Connector		3ST2-241080
5-13	131-1003-00	Switch, Push, 6-station	6FPY-0004FF-2020	SE1B170
5-14	821-0001-00	PC Board Assy, 6-station SW	PCM-337A	SE2D22J2
5-15	556-0013-82	Push Button, Round, Metal		4ST2-241252-2
5-16	132-0004-00	Connector, 12-P	1625-12P	
(B) AUTO SHUT ARM ASSY				
5-20	840-0001-00	Arm Assy, Auto Shut		SE2D41J1
5-21	558-0013-00	Pin, Auto Shut		4ST2-241117
5-22	525-0001-84	Arm, Auto Shut		4ST2-241109-4
5-23	521-0001-01	Shaft, Auto Shut		4SE2-241002-1
(C) TENSION ARM ASSY (LEFT)				
5-30	840-0002-00	Arm Assy, Tension (L)		SE2D43J1
5-31	558-0005-05	Tape Guide, Tension Arm		4ST2-241069-5
5-32	555-0020-00	Washer, Dress, Tension Arm		4ST2-241271
5-33	558-0006-00	Arm, Tension		4ST2-241025
5-34	521-0002-04	Shaft, Tension Arm		4ST2-241070-4
5-35	522-0005-80	Mount, Tension Arm		4ST2-241380
5-36	528-0001-82	Limiter, Tension Arm		4ST2-241193-2
5-37	535-0003-00	Damper, Tension Arm		4ST2-231087
5-38	541-0002-00	Spring, Tension Arm (L)		4ST2-241358
(D) TENSION ARM ASSY (RIGHT)				
5-40	840-0003-00	Arm Assy, Tension (R)		SE2D43J2
5-41	558-0005-05	Tape Guide, Tension Arm		4ST2-241069-5
5-42	555-0020-00	Washer, Dress, Tension Arm		4ST2-241271
5-43	558-0006-00	Arm, Tension		4ST2-241025
5-44	521-0002-04	Shaft, Tension Arm		4ST2-241070-4
5-45	522-0004-83	Mount, Tension Arm		4ST2-241068-3
5-46	528-0001-82	Limiter, Tension Arm		4ST2-241193-2
5-47	535-0003-00	Damper, Tension Arm		4ST2-231087
5-48	541-0003-00	Spring, Tension Arm (R)		4ST2-241359
5-49	534-0005-00	Key, Tension Arm Limiter		4ST2-241361
(E) BIAS CONTROL ASSY				
5-50	820-0004-00	Bias Control Assy		SE2D26J1
5-51	533-0007-00	Cover, Bias Control		4ST2-241291
5-52	172-2001-00	Capacitor, Bias Adjust	2K20T-1	

PARTIAL EXPLODED VIEW (A-2)

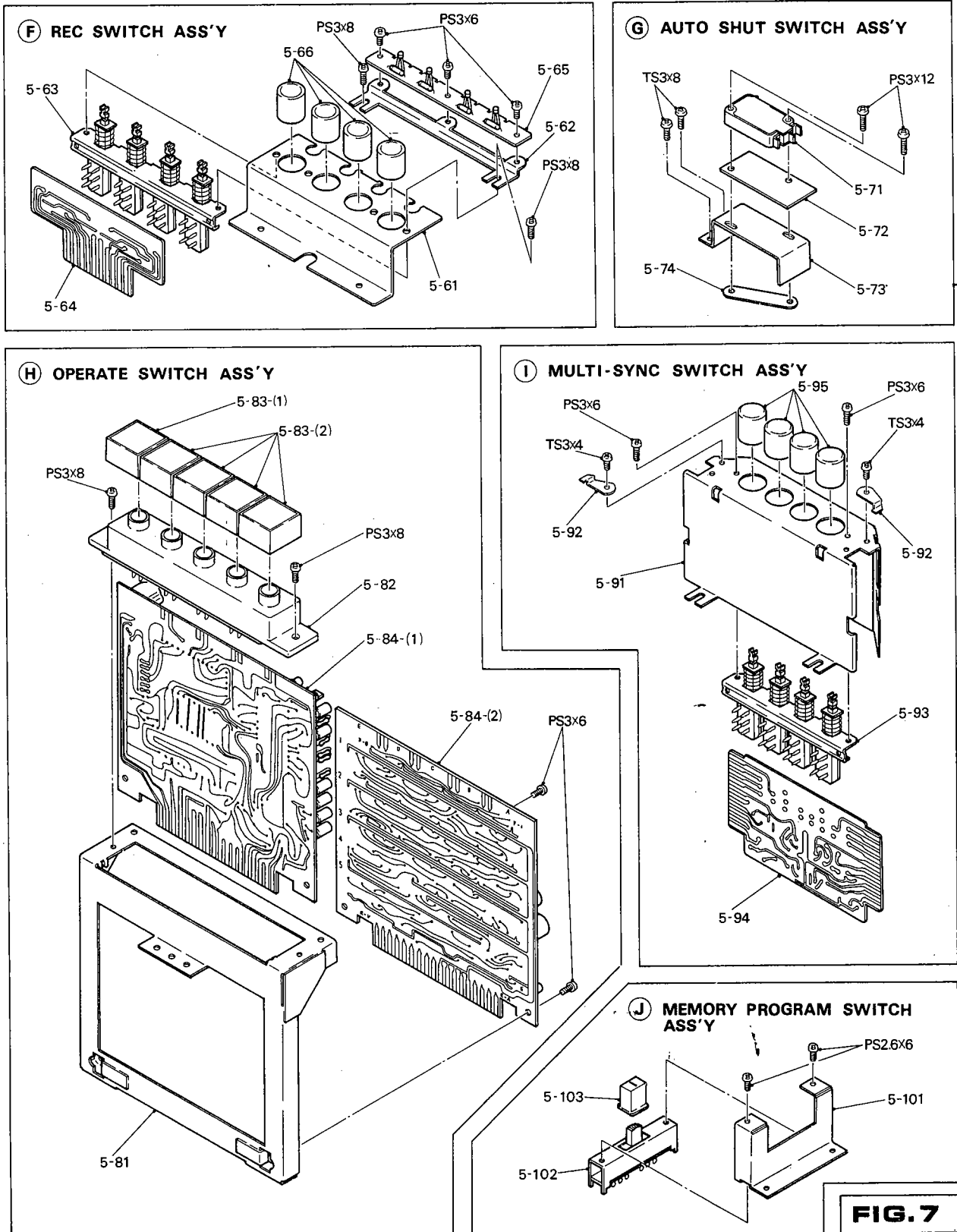


FIG. 7

PARTIAL EXPLODED VIEW (A-2)

Ref. No.	Parts No.	Description	Identity No.	Source
(F) REC SWITCH ASSY				
5-60	820-0005-00	Switch Assy, REC.		SE2D23J1
5-61	533-0024-05	Holder, REC. SW		4ST2-241084-5
5-62	533-0025-00	Holder, REC. Lamp		4ST2-241289
5-63	131-1002-00	Switch, Push, 4-station Miniature	4FS-8U-85-1	SE0B032
5-64	821-0002-00	PC Board Assy, REC. SW	PCM-291E	SE2D23J1
5-65	821-0003-00	PC Board Assy, REC. Lamp	PCM-335	SE2D23J2
5-66	556-0009-00	Push Button, Round, Red		4ST2-235087
(G) AUTO SHUT SWITCH ASSY				
5-70	840-0004-00	Switch Assy, Auto Shut		SE2D41J2
5-71	131-3001-00	Switch, Micro, Auto Shut Off	MT-10	ST9B045
5-72	536-0006-01	Insulator, Micro SW		4ST2-231175-1
5-73	533-0026-01	Mount, Auto Shut SW		4ST2-241108-1
5-74	533-0027-00	Plate, Auto Shut SW Fixing		4ST2-231032
(H) OPERATE SWITCH ASSY				
5-80	820-0006-00	Switch Assy, Operate		SE2D21J1
5-81	513-0006-84	Frame, Ope. SW Assy		2ST2-241029-4
5-82	131-2001-00	Key Board, Ope. SW	KS-R04-052020	SE2B022
5-83-(1)	556-0014-80	Ope. Button, REC. Red		SE2D81J
5-83-(2)	556-0015-80	Ope. Button, Silver		SE2D81J
5-84-(1)	821-0004-00	PC Board Assy, Logic (1)	PCM-382 or PCM-400	SE2D21J2
5-84-(2)	821-0005-00	PC Board Assy, Logic (2)		SE2D21J1
(I) MULTI-SYNC SWITCH ASSY				
5-90	820-0001-00	Switch Assy, Multi-Sync.		SE2D24
5-91	513-0005-00	Chassis, Multi-Sync.		3ST2-241037
5-92	534-0001-00	Lock, Connector		4ST2-241180
5-93	131-1004-00	Switch, Push, 4-station, Multi-Sync.	4FS-8U-68-1	SE0B086
5-94	821-0006-00	PC Board Assy, Multi-Sync.	PCM-290E	SE2D24J2
5-95	556-0013-82	Push Button, Round, Metal		4ST2-241252-2
(J) MEMORY PROGRAM SWITCH ASSY				
5-100	820-0002-00	Switch Assy, Memory Program		SE2D25
5-101	533-0030-00	Mount, Program SW		4ST2-241212
5-102	131-6004-00	Switch, Slide, Program	SL-243BF	SE1B024
5-103	556-0003-00	Knob, Slide SW		4ST2-241126

MECHANISM EXPLODED VIEW (B)

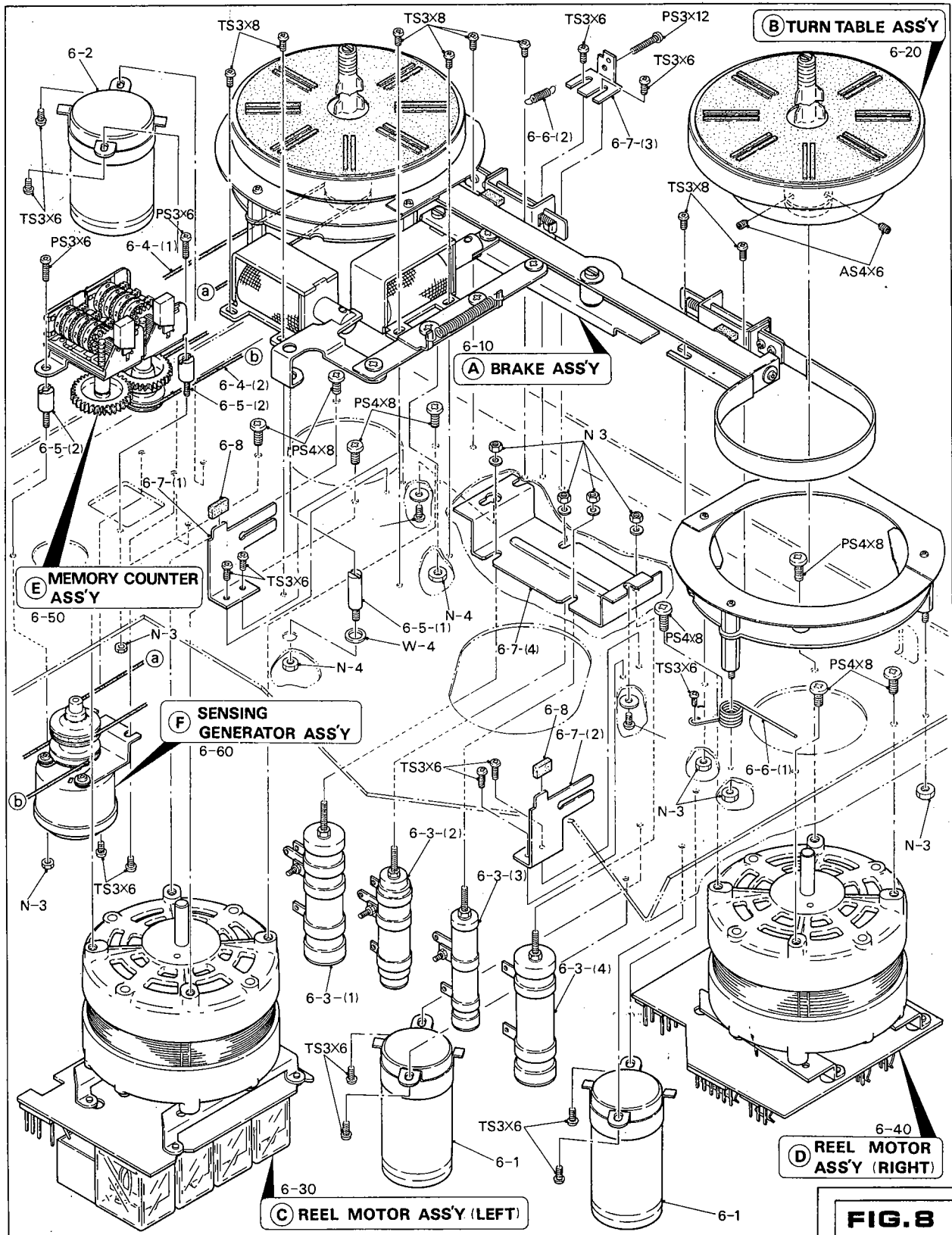
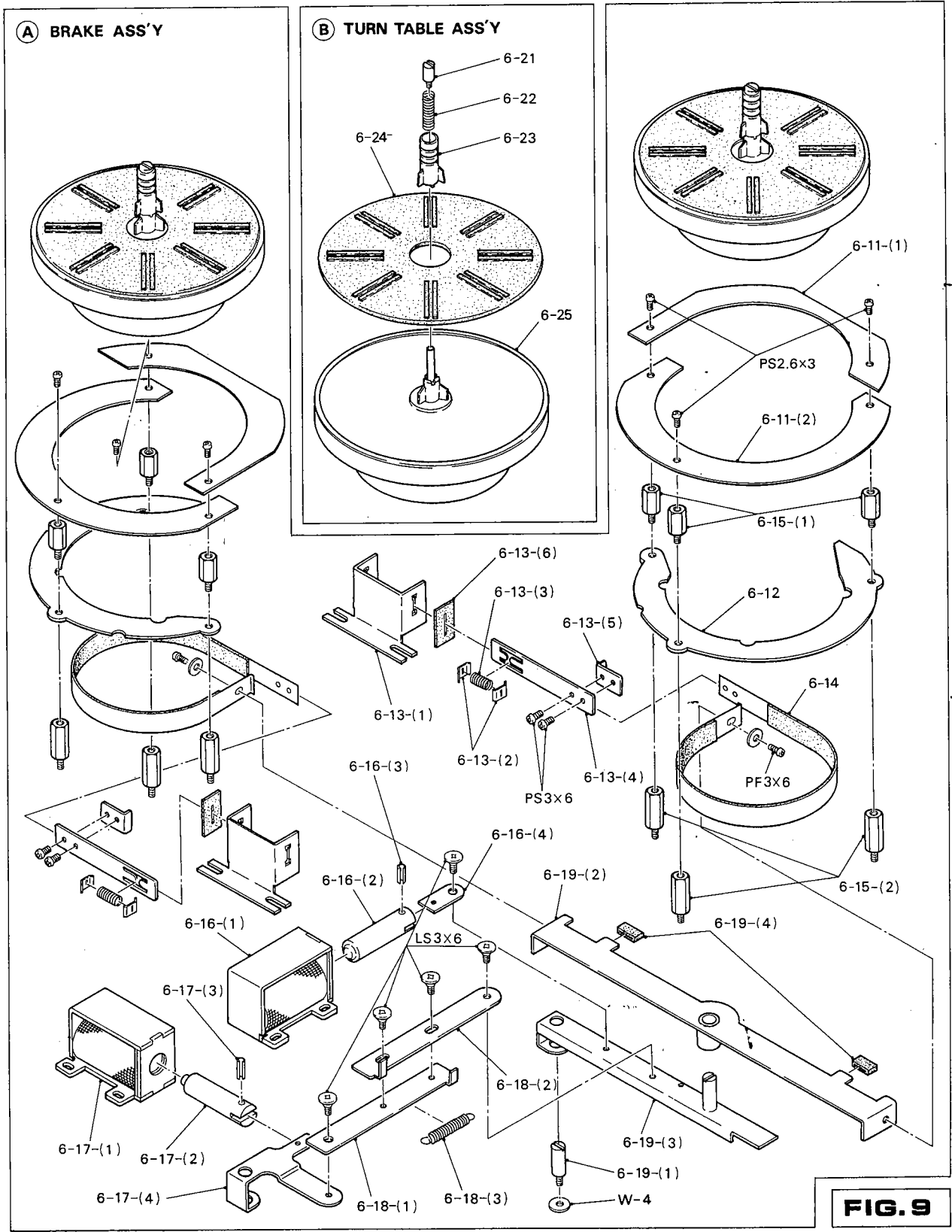


FIG. 8

MECHANISM EXPLODED VIEW (B)

Ref. No.	Parts No.	Description	Identity No.	Source
6-1	449-4542-80	Capacitor, Phase Advancing, 4.0 +0.5 μ F, Reel Motor		SE1B079
6-2	426-2278-60	Capacitor, Electrolytic, 2200 μ F 50WV	CE-62W	ST9B102
6-3-(1)	300-1512-90	Resistor, Wirewound, 150 ohm 20W, Play Take up	RHA20A1G	SE1B084
6-3-(2)	300-3012-90	Resistor, Wirewound, 300 ohm 10W, Play Holdback 7"	RHA10A1G	
6-3-(3)	300-1012-90	Resistor, Wirewound, 100 ohm 10W, Play Holdback 10"	RHA10A1G	SE2B009
6-3-(4)	300-1222-90	Resistor, Wirewound, 1200 ohm 20W, FF/REW Holdback	RHA20A1G	SE1B084
6-4-(1)	524-0001-00	Belt, Counter, Large 103 ϕ		4ST2-241092
6-4-(2)	524-0002-00	Belt, Counter, Small 47.43 ϕ		4ST2-241092
6-5-(1)	521-0003-00	Shaft, Aux. Brake		4ST2-241262
6-5-(2)	531-0007-00	Stud, Counter		4ST2-241182
6-6-(1)	541-0004-00	Spring, Pinch Lever Return		4ST2-241188
6-6-(2)	541-0005-01	Spring, Brake Torque		4ST2-241191-1
6-7-(1)	528-0003-00	Guide (A), Brake Linkage		4ST2-241057
6-7-(2)	528-0004-00	Guide (B), Brake Linkage		4ST2-241057
6-7-(3)	534-0006-01	Adjuster, Brake Torque		4ST2-241056-1
6-7-(4)	533-0018-00	Mount, Wirewound Resistor		4SE2-241017
6-8	535-0004-00	Cushion, Brake Linkage Guide		4ST2-231279

PARTIAL EXPLODED VIEW (B-1)



PARTIAL EXPLODED VIEW (B-1)

Ref. No.	Parts No.	Description	Identity No.	Source
(A) BRAKE ASSY				
6-10	800-0002-00	Brake Assy		SE2D02J
6-11-(1)	555-0013-03	Dresser (A), Turn Table		4ST2-241149-3
6-11-(2)	555-0014-02	Dresser (B), Turn Table		4ST2-241150-2
6-12	528-0005-02	Guide, Brake Band		4ST2-241100-2
6-13-(1)	533-0033-01	Bracket, Brake		4ST2-241313-1
6-13-(2)	532-0003-00	Washer, Torque Limitter Spring		4ST2-231021
6-13-(3)	541-0006-01	Spring, Brake Torque Limitter		4ST2-231126-1
6-13-(4)	534-0007-00	Plate, Brake Troque Limitter		4ST2-231059
6-13-(5)	528-0006-00	Limitter, Brake Band		4ST2-231060
6-13-(6)	535-0006-00	Damper, Brake Band Limitter		4ST2-241166
6-14	800-0001-00	Brake Band with Lining		SE2D02J1-05,06
6-15-(1)	531-0008-00	Stud, Turn Table Dresser		4ST2-241151
6-15-(2)	531-0009-02	Stud, Brake Band Guide		4ST2-241098-2
6-16-(1)	116-2001-00	Solenoid, Brake, DC24V 32 ohm	DS-10M-702B	SE1B123
6-16-(2)		Plunger, Brake Solenoid		
6-16-(3)	537-0003-00	Spring Pin, 3 ϕ x 12 mm		
6-16-(4)	525-0008-01	Linkage, Brake Solenoid		4ST2-241099-1
6-17-(1)	116-2002-00	Solenoid, Aux. Brake, DC24V 48 ohm	DS-10M-703	SE0B031
6-17-(2)		Plunger, Aux. Solenoid		
6-17-(3)	537-0003-00	Spring Pin, 3 ϕ x 12 mm		
6-17-(4)	525-0003-02	Arm, Aux. Brake		4ST2-241261-2
6-18-(1)	525-0004-01	Plate (A), Aux. Brake		4ST2-241259-1
6-18-(2)	525-0005-02	Plate (B), Aux. Brake		4ST2-241260-2
6-18-(3)	541-0007-01	Spring, Aux. Brake		4ST2-231125-1
6-19-(1)	521-0005-02	Shaft, Brake Lever		4ST2-241097-2
6-19-(2)	525-0006-84	Linkage, Brake		3ST2-241012-4
6-19-(3)	525-0007-88	Lever, Brake		4ST2-241096-8
6-19-(4)	535-0004-00	Damper, Brake Linkage		4ST2-231279
(B) TURN TABLE ASSY				
6-20	810-0001-00	Turn Table Assy		SE2D13J3
6-21	558-0011-00	Top Screw, Turn Table Spindle		4ST2-227092
6-22	541-0008-00	Spring, Reel Clamper		4ST2-241146
6-23	558-0012-02	Clamper, Turn Table		4ST2-241129-2
6-24	558-0009-00	Sheet, Rubber, Turn Table		4ST2-241071
6-25	558-0010-88	Turn Table		2ST2-241008-8

PARTIAL EXPLODED VIEW (B-2)

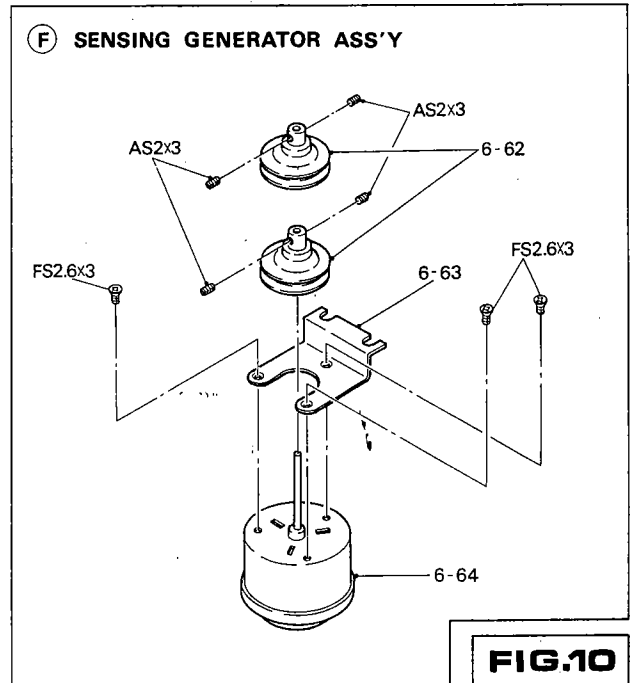
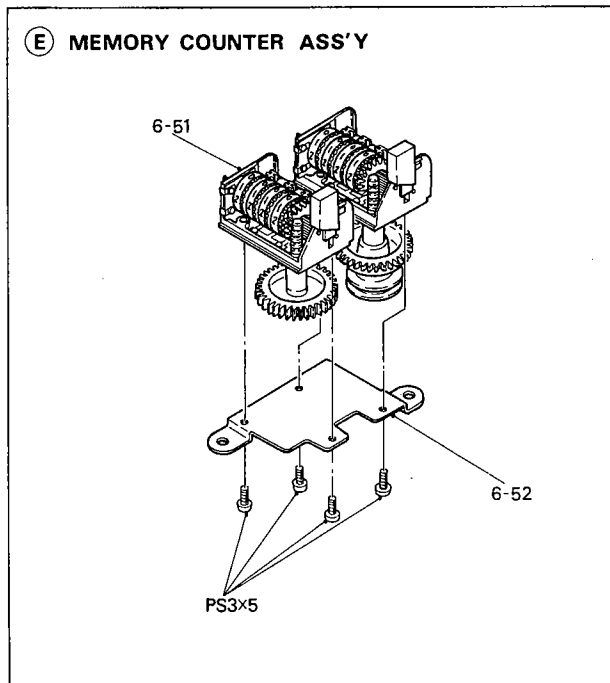
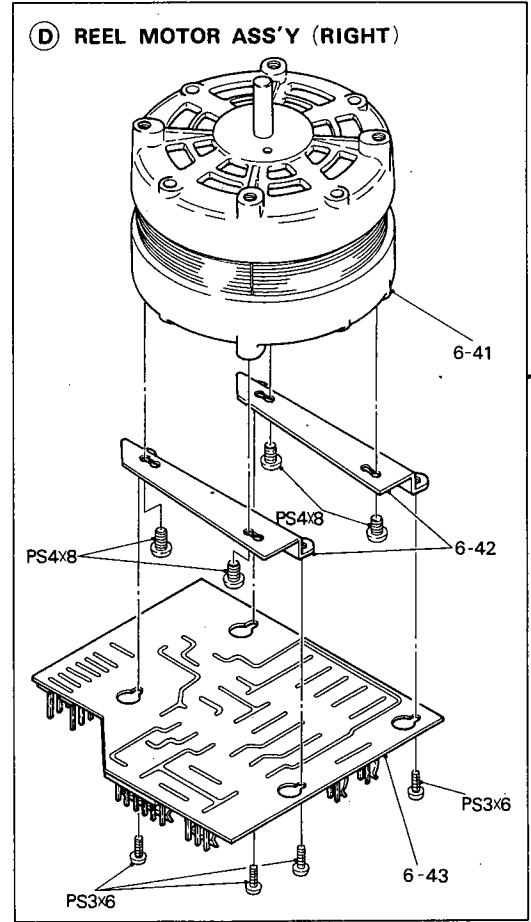
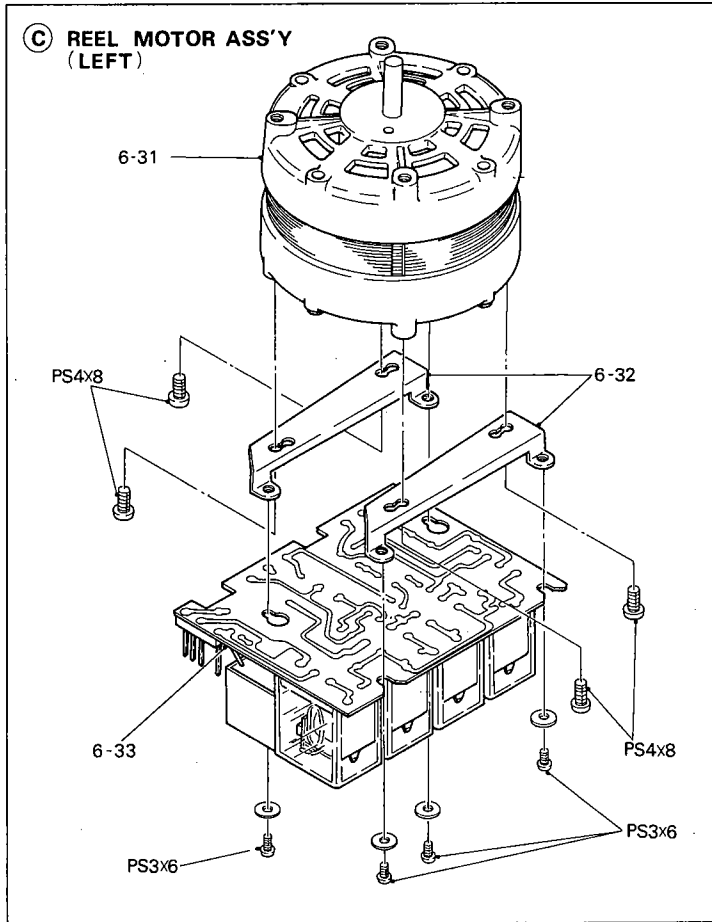
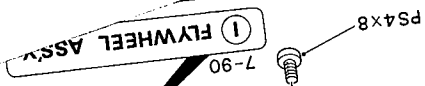


FIG.10

PARTIAL EXPLODED VIEW (B-2)

Ref. No.	Parts No.	Description	Identity No.	Source
(C) REEL MOTOR ASSY (LEFT)				
6-30	810-0005-00	Reel Motor Assy (Left)		SE2D13J
6-31	113-1001-00	Motor, Reel	1B-961R5	SE1B065
6-32	533-0022-00	Bracket (A), Relay PC Board		4ST2-235129
6-33	811-0001-00	PC Board Assy, Relay	PCM-305B	SE2D13J1
(D) REEL MOTOR ASSY (RIGHT)				
6-40	810-0006-00	Reel Motor Assy (Right)		SE2D13J
6-41	113-1001-00	Motor, Reel	1B-961R5	SE1B065
6-42	533-0023-00	Bracket, AC Terminal PC Board		4ST2-231220
6-43	811-0002-00	PC Board Assy, AC Terminal	PCM-304C	SE2D13J2
(E) MEMORY COUNTER ASSY				
6-50	840-0006-00	Memory Counter Assy		SE2D42J2
6-51	143-3201-00	Counter, Dual	RMP-490-06	SE1B168
6-52	*Included in above			
(F) SENSING GENERATOR ASSY				
6-60	840-0007-00	Sensing Generator Assy		SE2D42J1
6-61		Set Screw, Hex. Hole M2 x 3		
6-62	523-0001-82	Pulley, Intermediate		4ST2-235002-2
6-63	533-0028-00	Bracket, Generator		4ST2-241264
6-64	114-9001-00	Generator	M6-FG1	SE2B075

M-19



MECHANISM EXPLODED VIEW (C)

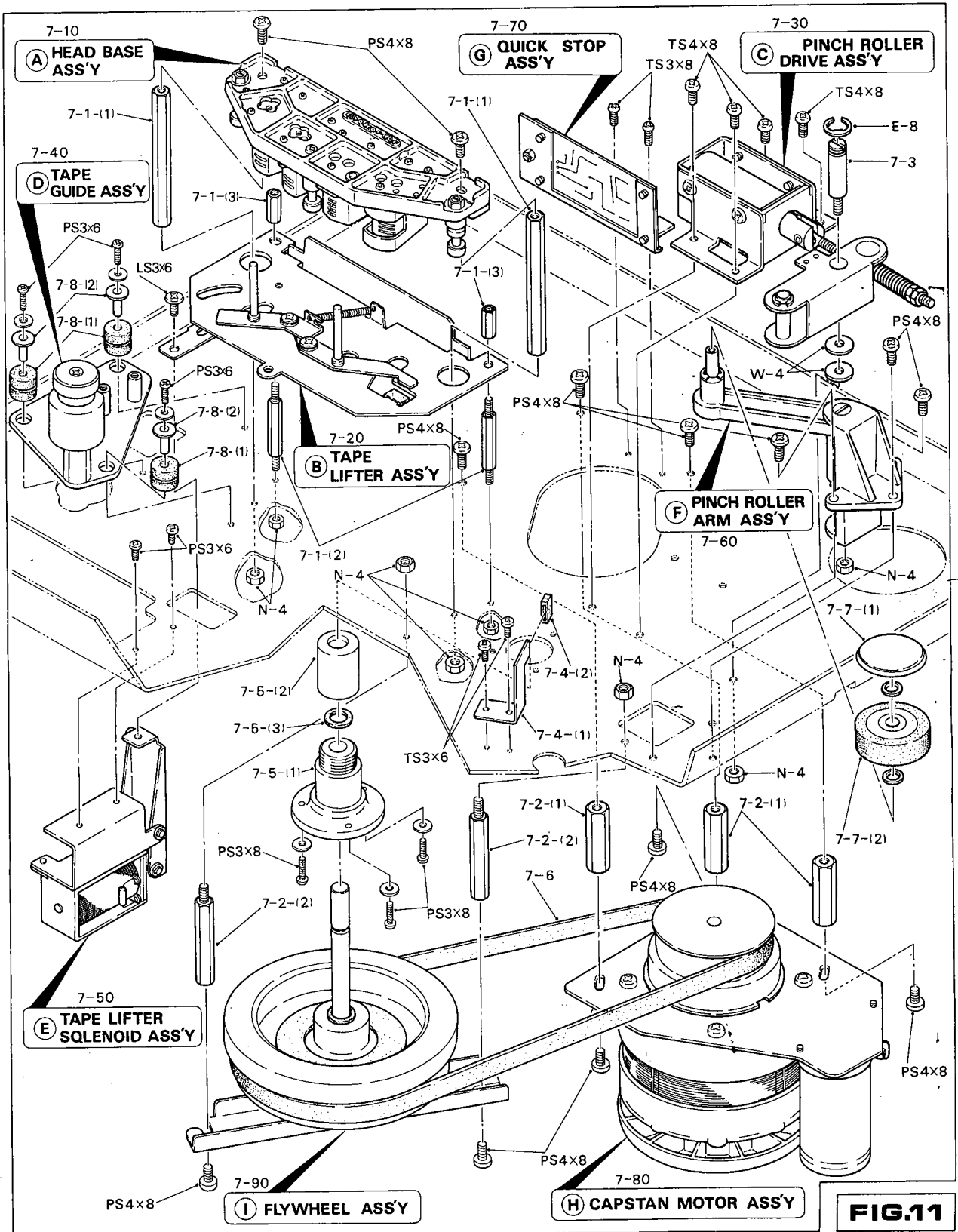


FIG.11

MECHANISM EXPLODED VIEW (C)

Ref. No.	Parts No.	Description	Identity No.	Source
7-1-(1)	531-0010-00	Post, Hex. Head Base Mount		4ST2-241111
7-1-(2)	531-0011-01	Post (Lower), Hex. Head Cover Mount		4ST2-241037-1
7-1-(3)	531-0012-01	Post (Upper), Hex. Head Cover Mount		4ST2-241036-1
7-2-(1)	531-0013-01	Post, Capstan Drive Motor Mount		4ST2-231145-1
7-2-(2)	531-0014-01	Stud, Flywheel		4ST2-231124-1
7-3	521-0008-05	Shaft, Pinch Roller Drive Arm		4ST2-231154-5
7-4-(1)	528-0007-00	Stopper, Pinch Roller Arm		4ST2-241115
7-4-(2)	535-0004-00	Damper, Pinch Roller Arm		4ST2-231279
7-5-(1)	522-0002-01	Bearing, Capstan		4ST2-241256-1
7-5-(2)	555-0005-00	Cap, Capstan Bearing		4ST2-241113
7-5-(3)	532-0007-00	Ring, Oil Cut, Capstan		4ST2-241143
7-6	524-0003-02	Belt, Capstan Drive		4ST2-241316-2
7-7-(1)	555-0021-02	Screw, Dress, Pinch Roller		4ST2-241079-2
7-7-(2)	523-0013-00	Pinch Roller		4ST2-241089
7-8-(1)	535-0008-00	Damper, Tape Guide Mount		4ST2-241378
7-8-(2)	537-0004-00	Collar, Inlet Damper		4ST2-241376

M-21

PARTIAL EXPLODED VIEW (C-1)

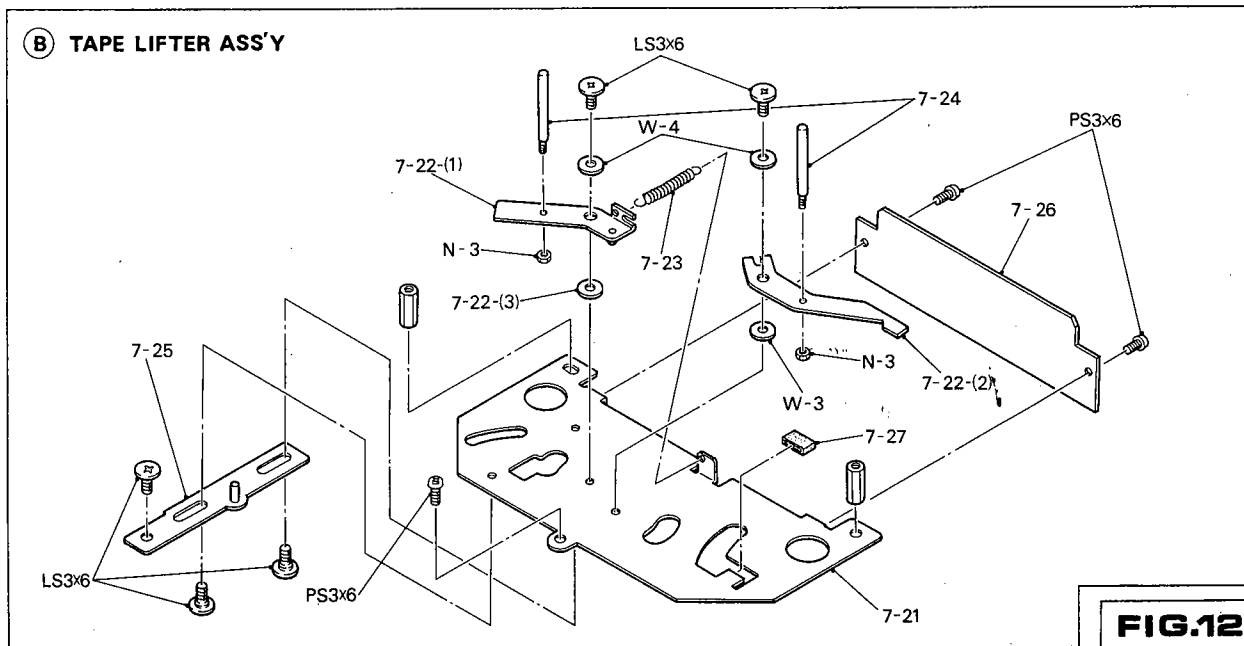
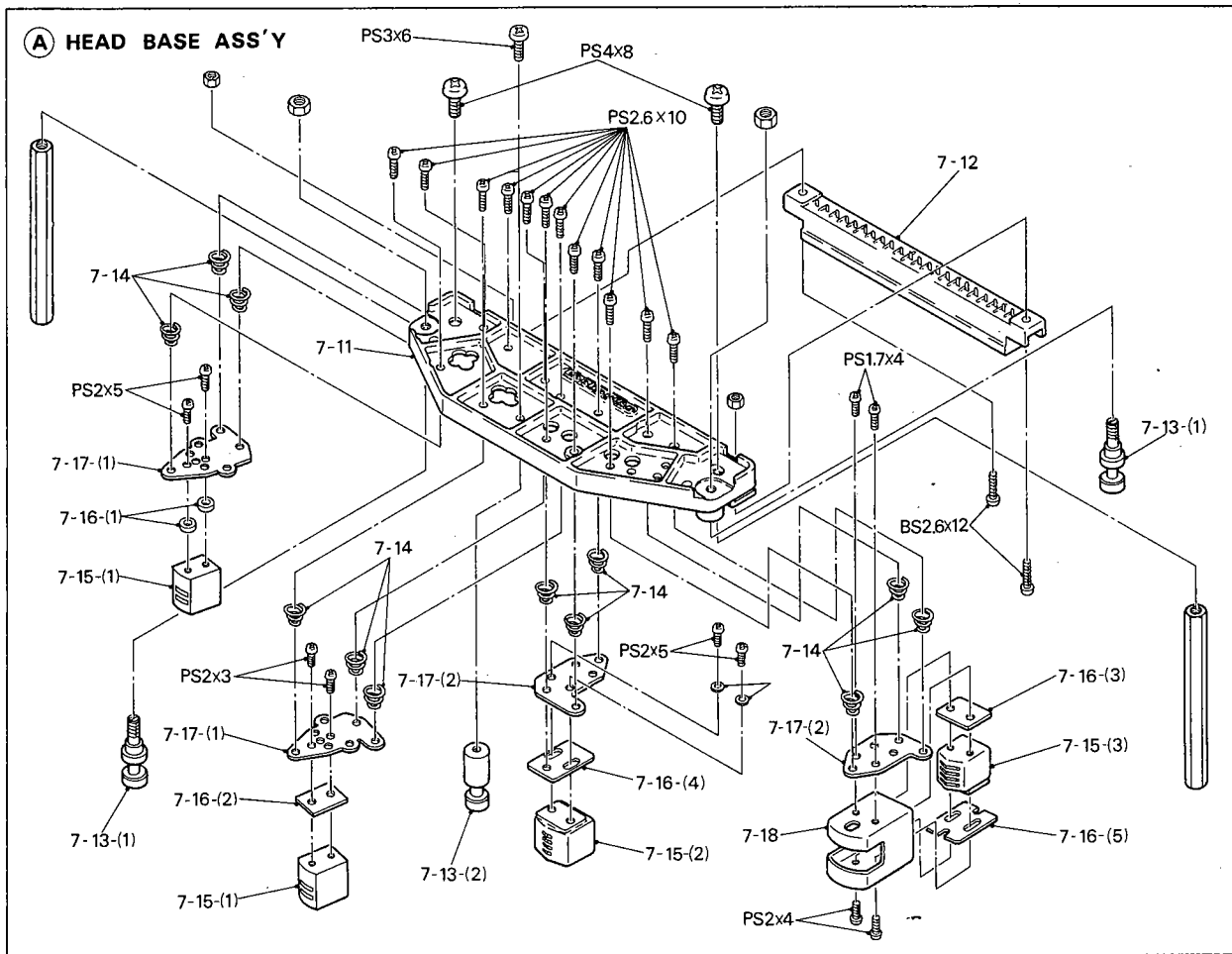


FIG.12

PARTIAL EXPLODED VIEW (C-1)

Ref. No.	Parts No.	Description	Identity No.	Source
(A) HEAD BASE ASSY				
7-10	830-0001-00	Head Base Assy		SE2D31J1
7-11	513-0007-04	Base, Head Mount		1ST2-241021-4
7-12	133-8001-00	Connector, 22-P	250-22-50-179M	SE2B002
7-13-(1)	558-0003-05	Tape Guide (B)		4ST2-231079-5
7-13-(2)	558-0004-02	Tape Guide (A)		4ST2-241112-2
7-14	541-0009-01	Spring, Head Azimuth		4ST2-231276-1
7-15-(1)	121-4201-00	Head, Erase	E-2542-GI0000	
7-15-(2)	121-2501-00	Head, Record	R-1244-BD1200	SE0B095
7-15-(3)	121-1501-00	Head, Play Back	P-1344-AA1200	
7-16-(1)	532-0008-02	Spacer (Ring), Erase Head, d=2.2 D=5.5 t=1.72mm		4SE2-236038-2
7-16-(2)	532-0009-00	Spacer (Plate), Erase Head		4ST2-241217
7-16-(3)	532-0010-02	Spacer (Upper), Play Head		4ST2-231253-2
7-16-(4)	532-0011-01	Spacer (D), Record Head t=2mm		4ST2-236053-1-1
7-16-(5)	532-0012-01	Spacer (Lower), Play Back Head t=1.2mm		4ST2-236053-1-1
7-17-(1)	533-0034-01	Mount (E), Erase Head		4ST2-241341-1
7-17-(2)	533-0035-02	Mount, REC/Play Head		4ST2-231053-2
7-18	536-0008-05	Shield Case, Play Head		4ST2-231195-5
(B) TAPE LIFTER ASSY				
7-20	830-0002-00	Tape Lifter Assy		SE2D32J1
7-21	513-0008-00	Plate, Dress, Tape Lifter		3ST2-241007
7-22-(1)	525-0010-82	Tape Lifter (A), Left		4ST2-241061-2
7-22-(2)	525-0009-00	Tape Lifter (B), Right		4ST2-241063
7-22-(3)	532-0002-00	Spacer, Ring, Tape Lifter		4ST2-241219
7-23	541-0011-01	Spring, Tape Lifter		4ST2-241191-1
7-24	521-0016-00	Pin, Tape Lifter		4ST2-241045
7-25	525-0011-82	Slide Lever, Tape Lifter Drive		4ST2-241062-2
7-26	831-0001-00	PC Board Assy, Head Connector	PCM-308	SE2D31J2
7-27	535-0004-00	Damper, Tape Lifter		4ST2-231279

PARTIAL EXPLODED VIEW (C-2)

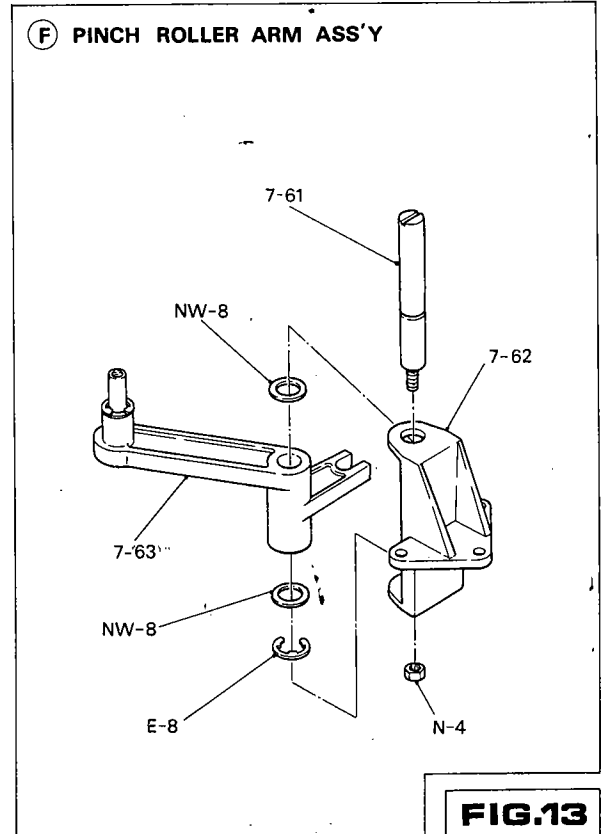
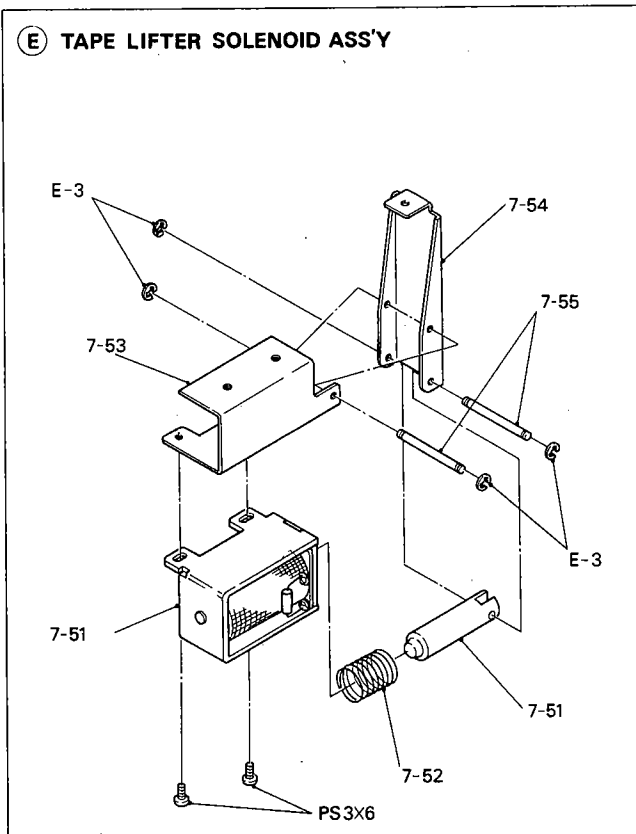
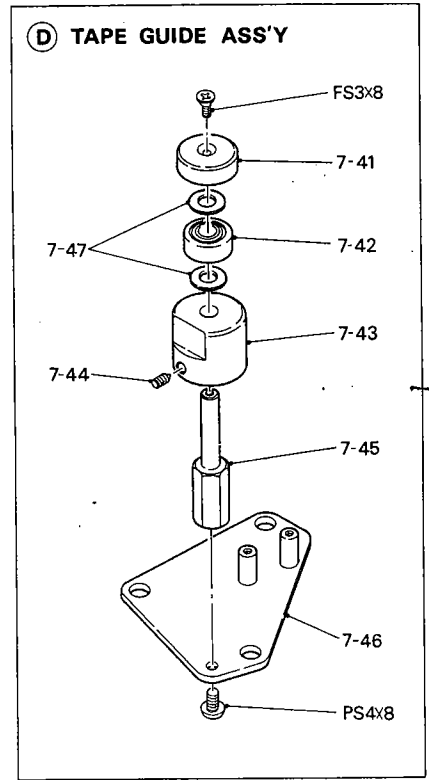
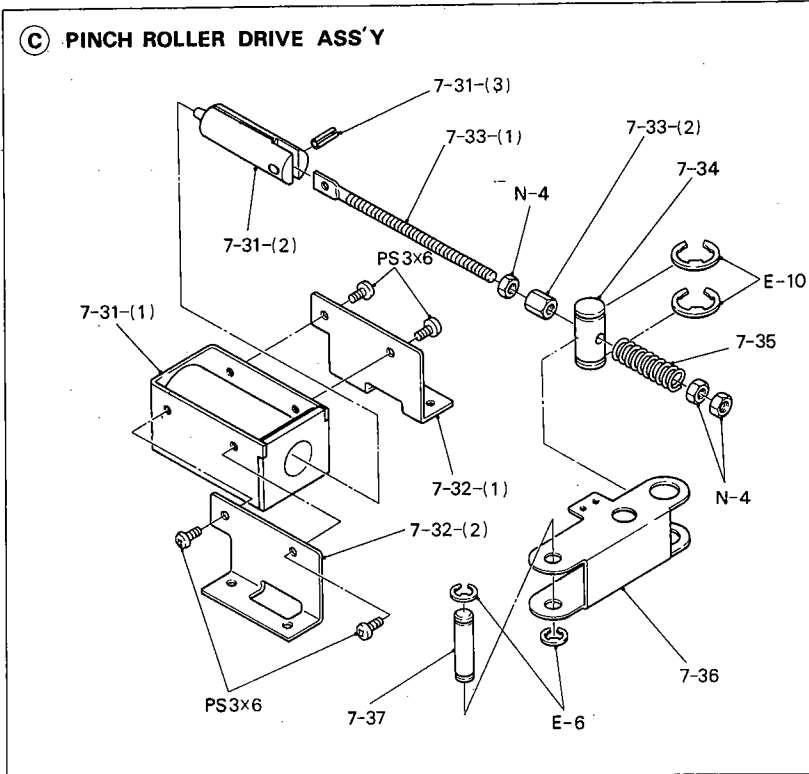


FIG.13

PARTIAL EXPLODED VIEW (C-2)

Ref. No.	Parts No.	Description	Identity No.	Source
Ⓒ PINCH ROLLER DRIVE ASSY				
7-30	810-0002-00	Pinch Roller Drive Assy		SE2D14J1
7-31-(1)	116-2003-00	Solenoid, Pinch Roller Pressure, DC24V 15 ohm	DS-12E-708	ST9B163
7-31-(2)		Plunger, Pressure Solenoid		
7-31-(3)	537-0003-00	Spring Pin, 3φ x 12mm		
7-32-(1)	533-0031-02	Bracket (R), Pressure Solenoid		4ST2-231171-2
7-32-(2)	533-0032-02	Bracket (L), Pressure Solenoid		4ST2-231171-2
7-33-(1)	525-0012-01	Screw (S), Pressure Adjustment		4ST2-241134-1
7-33-(2)	532-0006-00	Nut, Pressure Adjustment		4ST2-231072
7-34	521-0009-01	Drive Shaft, PR Drive Arm		4ST2-241145-1
7-35	541-0010-01	Spring, Pressure		4ST2-231126-1
7-36	525-0013-06	Arm, Pinch Roller Drive		4ST2-241102-6
7-37	521-0010-03	Pin, Pinch Roller Arm Drive		4ST2-241087-3
Ⓓ TAPE GUIDE ASSY				
7-40	840-0005-00	Tape Guide Assy		SE2D44J1
7-41	558-0007-01	Tape Guide (Upper)		4SE2-241053-1
7-42	522-0006-00	Bearing, Ball	R1760ZZP0	
7-43	558-0008-00	Tape Guide (Lower)		4SE2-241056
7-44		Set Screw, Hex. Hole M4 x 6		
7-45	531-0018-00	Pole, Tape Guide		4SE2-241051
7-46	533-0006-80	Mount, Tape Guide		4ST2-241377
7-47	558-0017-00	Spacer, Bearing		4SE2-241054
Ⓔ TAPE LIFTER SOLENOID ASSY				
7-50	830-0003-00	Tape Lifter Solenoid Assy		SE2D33J1
7-51-(1)	116-2002-00	Solenoid, Tape Lifter, DC24V 48 ohm	DS-10M-703	SE0B031
7-51-(2)		Plunger		
7-52	541-0012-01	Spring, Plunger Return		4ST2-231126-1
7-53	533-0029-01	Mount, Tape Lifter Solenoid		4ST2-241058-1
7-54	525-0014-01	Arm, Slide Lever Drive		4ST2-241059-1
7-55	521-0012-03	Pin, Plunger & Slide Lever Drive Arm		4ST2-231065-3
Ⓕ PINCH ROLLER ARM ASSY				
7-60	810-0003-00	Pinch Roller Arm Assy		SE2D14J2
7-61	521-0013-03	Shaft (S), Pinch Roller Arm		4ST2-241141-3
7-62	533-0037-01	Bracket, Pinch Roller Arm		3ST2-231003-1
7-63	525-0002-07	Arm, Pinch Roller		3ST2-241009-7

PARTIAL EXPLODED VIEW (3)

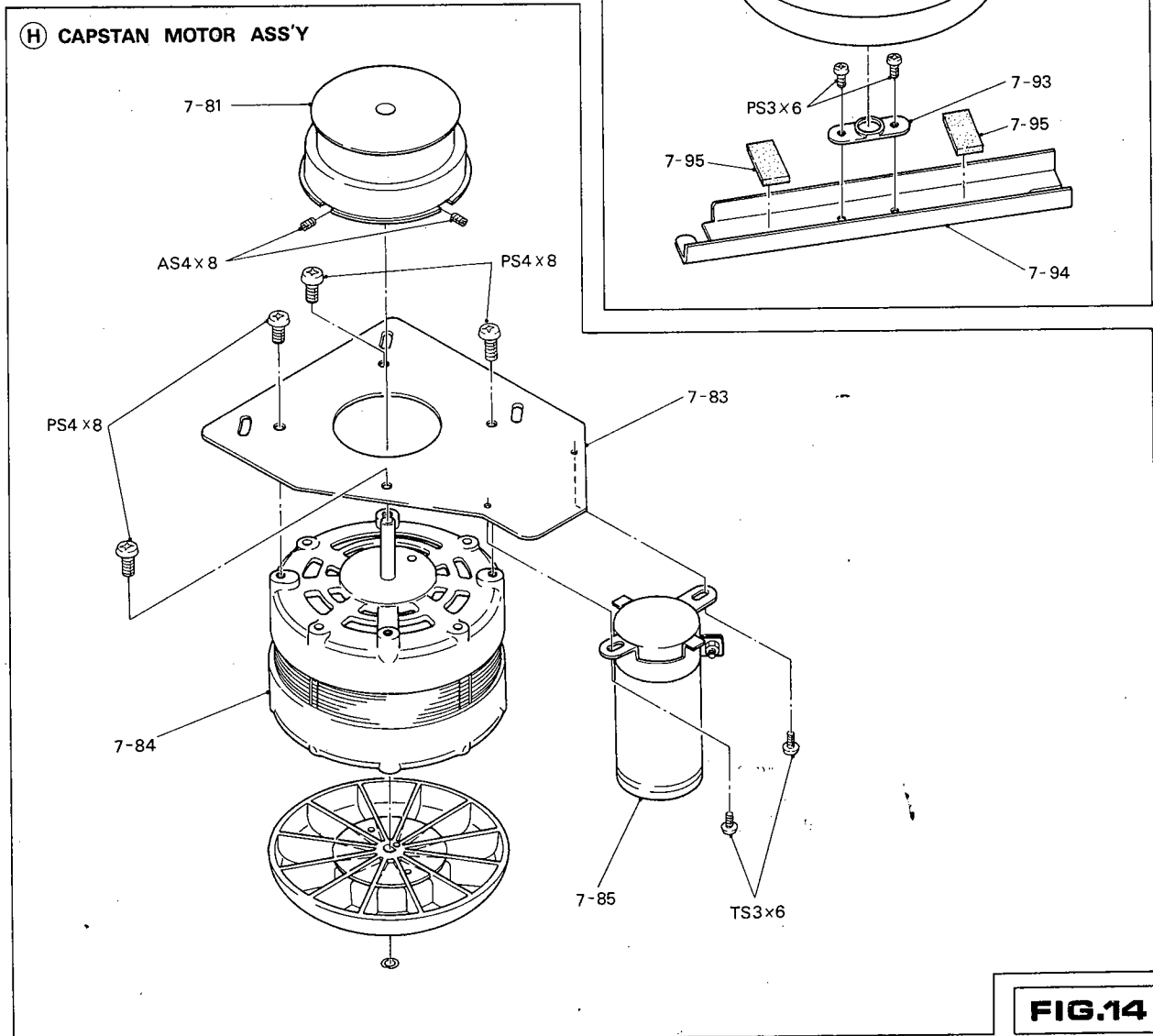
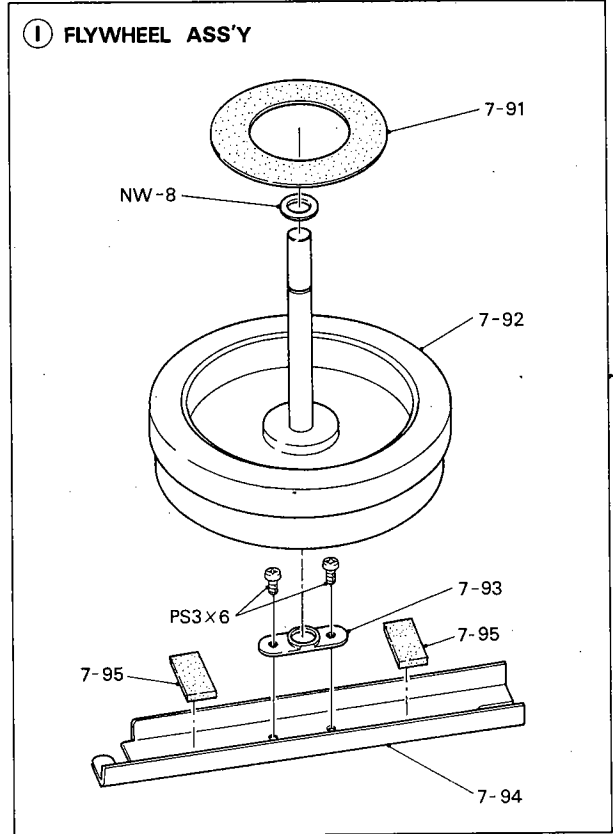
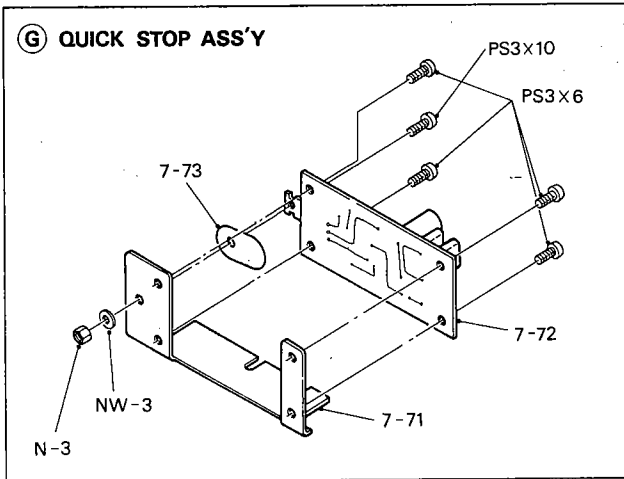


FIG.14

PARTIAL EXPLODED VIEW (3)

Ref. No.	Parts No.	Description	Identity No.	Source
Ⓒ QUICK STOP ASSY				
7-70	800-0003-00	Quick Stop Assy		SE2D02J
7-71	533-0021-01	Heat Sink, Quick Stop PCB		4ST2-241270-1
7-72	801-0001-00	PC Board Assy, Quick Stop	PCM-339A	SE2D02J6
7-73	536-0002-00	Mylar Sheet, 2SD234Y		
Ⓓ CAPSTAN MOTOR ASSY				
7-80	810-0007-00	Capstan Motor Assy		SE2D11J1
7-81	523-0004-00	Pulley, Motor No. 1		3ST2-241132
	523-0005-00	Pulley, Motor No. 1.5		3ST2-241132
	523-0006-00	Pulley, Motor No. 2		3ST2-241132
	523-0007-00	Pulley, Motor No. 2.5		3ST2-241132
	523-0008-00	Pulley, Motor No. 3		3ST2-241132
	523-0009-00	Pulley, Motor No. 3.5		3ST2-241132
	523-0010-00	Pulley, Motor No. 4		3ST2-241132
	523-0011-00	Pulley, Motor No. 4.5		3ST2-241132
	523-0012-00	Pulley, Motor No. 5		3ST2-241132
7-82		Set Screw, Hex. Hole M4 x 8		
7-83	513-0009-00	Chassis, Motor		4SE2-241015
7-84	113-2001-00	Motor, Capstan	MG634D7	
7-85	449-2542-80	Capacitor, Phase Advancing, 2.0 + 0.5μF 250WV		SE2B077
Ⓔ FLYWHEEL ASSY				
7-90	810-0004-00	Flywheel Assy		SE2D12J
7-91	535-0005-00	Felt, Oil Stop		4ME2-010148
7-92	523-0003-81	Flywheel		4ST2-241243-1
7-93	522-0003-02	Bearing, Thrust		4ST2-241305-2
7-94	533-0020-02	Arm, Flywheel Support		3ST2-231018-2
7-95	535-0007-00	Felt, Oil Stop		4SE2-236058

DOKORDER

model **1140**

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SERVICE MANUAL
SM-0200-00
1975-11

SECTION **3**

PRINTED CIRCUIT BOARDS AND PARTS LIST

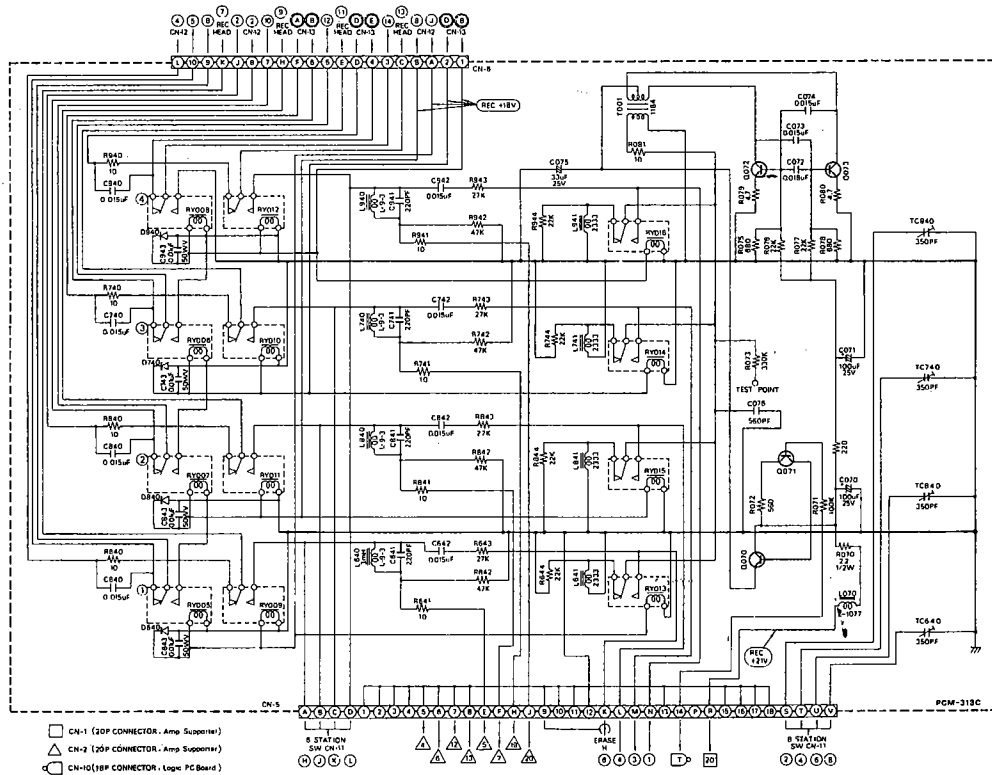
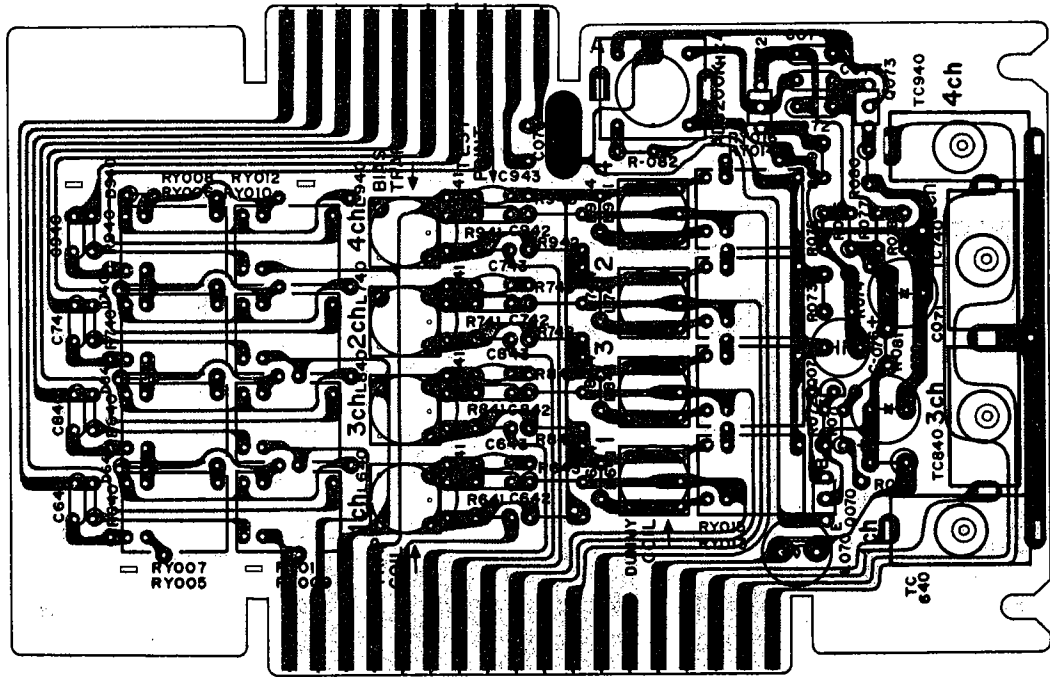
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DENKI ONKYO CO., LTD.
26-11, 3-CHOME, NISHI-ROKUGO, OTA-KU, TOKYO, JAPAN

BIAS P. C. B. ASS'Y (PCM-313C)



BIAS P.C.B. ASSY (PCM-313C)

Reference No.	Parts No.	Description	Identity No.	Source
	851-0003-00	PC Board Assy, Bias		SE2D51J3
		PC BOARD		
	161-2005-00	PC Board, Bias	PCM-313C	3ST2-241136-1 3ST2-241137-3
		RELAYS		
RY-005	137-2001-00	DC 24V	MZ-24HG (YEL)	SE1B186
RY-006	137-2001-00	DC 24V	MZ-24HG (YEL)	SE1B186
RY-007	137-2001-00	DC 24V	MZ-24HG (YEL)	SE1B186
RY-008	137-2001-00	DC 24V	MZ-24HG (YEL)	SE1B186
RY-009	137-2001-00	DC 24V	MZ-24HG (YEL)	SE1B186
RY-010	137-2001-00	DC 24V	MZ-24HG (YEL)	SE1B186
RY-011	137-2001-00	DC 24V	MZ-24HG (YEL)	SE1B186
RY-012	137-2001-00	DC 24V	MZ-24HG (YEL)	SE1B186
RY-013	137-2002-00	DC 24V	MZ-24 (WHT)	SE2B007
RY-014	137-2002-00	DC 24V	MZ-24 (WHT)	SE2B007
RY-015	137-2002-00	DC 24V	MZ-24 (WHT)	SE2B007
RY-016	137-2002-00	DC 24V	MZ-24 (WHT)	SE2B007
		COILS		
L-640, 740, 840, 940	112-1001-00	Choke	L-9-3	ST8B204
L-641, 741, 841, 941	112-1002-00	Dummy	L-2618	SE2B070
L-070	112-1003-00	Choke	L-1077	SE2B021
T-001	112-2001-00	OSC	L-1184	SE2B016

Reference No.	Description	Reference No.	Description
	TRANSISTORS		CAPACITORS
Q-070, 072, 073	Silicon 2SC-495 (Y)	C-640, 740, 840, 940	Mylar 0.015μF 50V
Q-071	Silicon 2SC-373	C-641, 741, 841, 941	Ceramic 220μF 50V
	DIODES	C-642, 742, 842, 942	Mylar 0.015μF 50V
D-640, 740, 840, 940	Silicon 1S-2473	C-643, 743, 843, 943	Mylar 0.01μF 50V
	RESISTORS	C-070, 071	Elect. 100μF 25V
(All Resistors are in ¼W unless Otherwise Stated)		C-072	Mylar 0.0018μF 50V
R-640, 740, 840, 940	Carbon 10 Ω	C-073, 074	Mylar 0.015μF 50V
R-641, 741, 841, 941	10 Ω	C-076	Polystyrene 560μF 500V
R-642, 742, 842, 942	47K Ω	TC-640, 740, 840, 940	Trimmer 350pF
R-643, 743, 843, 943	27K Ω		
R-644, 744, 844, 944	22K Ω		
R-070	Carbon 2.2 Ω ½ W		
R-071	100K Ω		
R-072	560 Ω		
R-073	330K Ω		
R-075, 078	Carbon 1K Ω		
R-076, 077	22K Ω		
R-079, 080	4.7 Ω		
R-081	10 Ω		
R-082	220 Ω		

MULTI-SYNC P.C.B. ASSY (PCM-290E)

Reference No.	Parts No.	Description	Identity No.	Source
	821-0006-00	PC Board Assy, Multi-Sync		SE2D24J2
		PC BOARD		
	161-2004-00	PC Board, Multi-Sync	PCM-290E	4ST2-241347-2 4ST2-241348-2
		RELAYS		
RY-001	137-1001-00	DC 24V	MZ-24HG (YEL)	SE1B186
RY-002	137-1001-00	DC 24V	MZ-24HG (YEL)	SE1B186
RY-003	137-1001-00	DC 24V	MZ-24HG (YEL)	SE1B186
RY-004	137-1001-00	DC 24V	MZ-24HG (YEL)	SE1B186

Reference No.	Description	Reference No.	Description
	TRANSISTORS		CAPACITORS
Q-631, 731, 831, 931	FET 2SK-30A	C-631, 731, 831, 931	Mylar 0.0056 μ F 50V
	RESISTORS	C-632, 732, 832, 932	Mylar 0.047 μ F 50V
	(All Resistors are in $\frac{1}{4}$ W unless Otherwise Stated)	C-069	Elect. 100 μ F 16V
R-631, 931	Carbon 2.7K Ω		
731, 831	1.5K Ω		
R-632, 732, 832, 932	100K Ω		
R-633, 733, 833, 933	4.7K Ω		
R-634, 734, 834, 934	470 Ω		
R-635, 735, 835, 935	33K Ω		
R-069	Carbon 1K Ω		

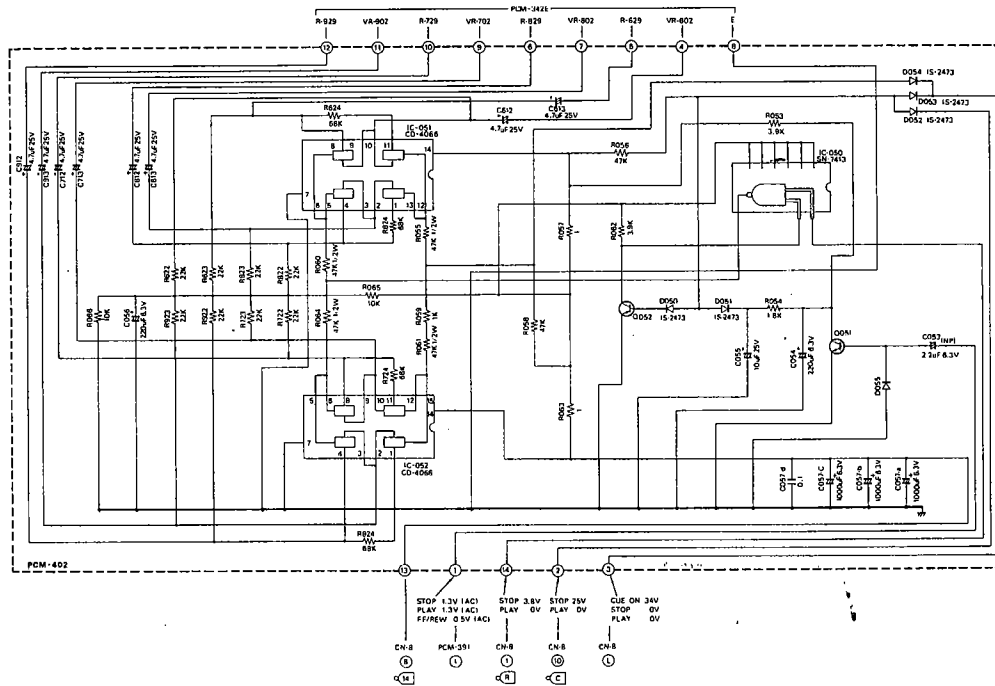
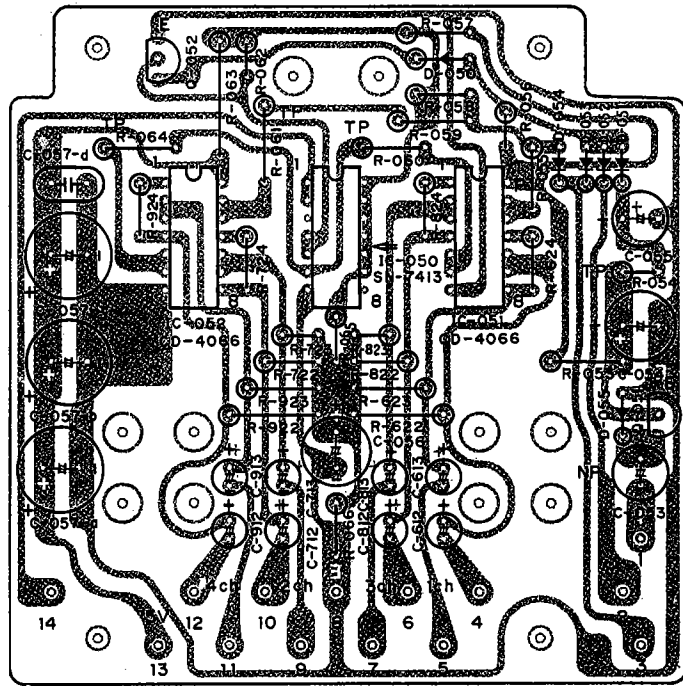
HEAD AMP P.C.B. ASSY (PCM-342E)

Reference No.	Parts No.	Description	Identity No.	Source
	851-0001-00	PC Board Assy, Head Amp.		SE2D52J2
		PC BOARD		
	161-2006-00	PC Board, Head Amp.	PCM-342E	3ST2-241150-3 3ST2-241151-4
		COILS		
L-601	112-1004-00	Choke, Bias Trap ADJ.	L-1028 (23mH)	SE0B110
L-701	112-1004-00	Choke, Bias Trap ADJ.	L-1028 (23mH)	SE0B110
L-801	112-1004-00	Choke, Bias Trap ADJ.	L-1028 (23mH)	SE0B110
L-901	112-1004-00	Choke, Bias Trap ADJ.	L-1028 (23mH)	SE0B110
		SEMI VARIABLE RESISTORS		
VR-601	390-0103-69	EQ. ADJ. (15 ips)	SR-19R 10K (B)	SE1B132
VR-701	390-0103-69	EQ. ADJ. (15 ips)	SR-19R 10K (B)	SE1B132
VR-801	390-0103-69	EQ. ADJ. (15 ips)	SR-19R 10K (B)	SE1B132
VR-901	390-0103-69	EQ. ADJ. (15 ips)	SR-19R 10K (B)	SE1B132
VR-602	390-0103-69	P/B Level ADJ.	SR-19R 10K (B)	SE1B132
VR-702	390-0103-69	P/B Level ADJ.	SR-19R 10K (B)	SE1B132
VR-802	390-0103-69	P/B Level ADJ.	SR-19R 10K (B)	SE1B132
VR-902	390-0103-69	P/B Level ADJ.	SR-19R 10K (B)	SE1B132

Reference No.	Description	Reference No.	Description
	TRANSISTORS		
Q-601, 701, 801, 901	Silicon 2SC-1571G	R-615, 715, 815, 915	Carbon 22K Ω
Q-602, 702, 802, 902	Silicon 2SC-1571G	R-616, 716, 816, 916	Carbon 22K Ω
Q-603, 703, 803, 903	Silicon 2SC-1571G	R-617, 717, 817, 917	Carbon 22K Ω
	DIODES	R-618, 718, 818, 918	Carbon 22K Ω
D-601, 701, 801, 901	Silicon 1S-2473	R-619, 719, 819, 919	Carbon 4.7K Ω
D-602, 702, 802, 902	Silicon 1S-2473	R-050, 051	Carbon 100 Ω
	RESISTORS	R-061	4.7K Ω
	(All Resistors are in $\frac{1}{4}$ W unless Otherwise Stated)	R-062	22 Ω
R-601, 701, 801, 901	Carbon 2.2K Ω		CAPACITORS
R-602, 702, 802, 902	Carbon 100K Ω	C-601, 701, 801, 901	Tantalum 6.8 μ F 25V
R-603, 703, 803, 903	Carbon 560K Ω	C-602, 702, 802, 902	Ceramic 22pF 50V
R-604, 704, 804, 904	Carbon (LN) 220K Ω	C-603, 703, 803, 903	Ceramic 100pF 50V
R-605, 705, 805, 905	120 Ω	C-604, 704, 804, 904	Elect. 10 μ F 25V
R-606, 706, 806, 906	10K Ω	C-605, 705, 805, 905	Ceramic 22pF 50V
R-607, 707, 807, 907	5.6K Ω	C-606, 706, 806, 906	Elect. 100 μ F 10V
R-608, 708, 808, 908	2.2K Ω	C-607, 707, 807, 907	Elect. 4.7 μ F 25V
R-609, 709, 809, 909	2.7K Ω	C-608, 708, 808, 908	Mylar 0.01 μ F 50V
R-610, 710, 810, 910	10 Ω	C-609, 709, 809, 909	Mylar 0.018 μ F 50V
R-611, 711, 811, 911	220 Ω	C-610, 710, 810, 910	Mylar 0.022 μ F 50V
R-612, 712, 812, 912	470K Ω	C-611, 711, 811, 911	Elect. (NP) 2.2 μ F 25V
R-613, 713, 813, 913	100 Ω	C-615, 715, 815, 915	Ceramic 3.3 μ F 50V
R-614, 714, 814, 914	180K Ω	C-050	Elect. 470 μ F 25V
		C-051, 052	Elect. 100 μ F 25V

Note: (LN)=Low Noise Resistor

MUTING P. C. B. ASS'Y (PCM-402)



MUTING P.C.B. ASSY (PCM-402)

Reference No.	Parts No.	Description	Identity No.	Source
	851-0004-00	PC Board Assy, Muting		SE2D-52J3
		PC BOARD		
	161-1011-00	PC Board, Muting	PCM-402	3SE2-241015

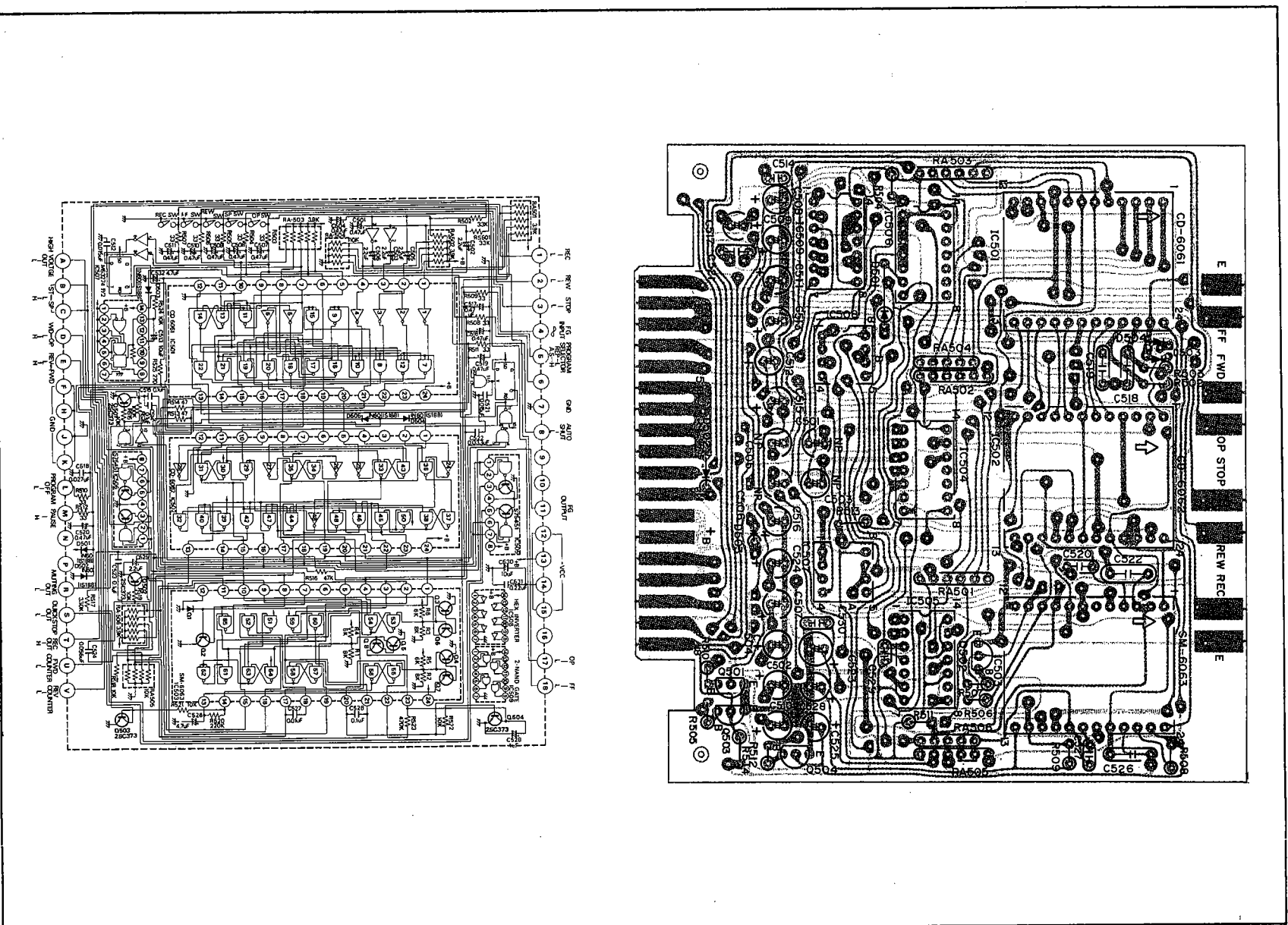
Reference No.	Description	Reference No.	Description
	INTEGRATED CIRCUITS	R-059	Carbon 1K Ω
IC-050	SN-7413 (Logic IC)	R-060	47K Ω 1/2 W
IC-051	CD-4066 (Mos. IC)	R-061	47K Ω 1/2 W
IC-052	CD-4066 (Mos. IC)	R-062	3.9K Ω
	TRANSISTORS	R-063	1 Ω
Q-051	Silicon 2SC-373	R-064	47K Ω 1/2 W
Q-052	Silicon 2SC-373	R-065	10K Ω
	DIODES	R-066	10K Ω
D-050	Silicon 1S-2473	R-622, 722, 822, 922	Carbon 22K Ω
D-051	Silicon 1S-2473	R-623, 723, 823, 923	22K Ω
D-052	Silicon 1S-2473	R-624, 724, 824, 924	68K Ω
D-053	Silicon 1S-2473		CAPACITORS
D-054	Silicon 1S-2473	C-053	Elect. (NP) 2.2 μ F 25V
D-055	Silicon 1S-2473	C-054	Elect. 220 μ F 6.3V
	RESISTORS	C-055	Elect. 10 μ F 25V
	(All Resistors are in 1/4W unless Otherwise Stated)	C-056	Elect. 220 μ F 6.3V
R-053	Carbon 3.9K Ω	C-057a	Elect. 1000 μ F 6.3V
R-054	1.8K Ω 1/2 W	C-057b	Elect. 1000 μ F 6.3V
R-055	47K Ω 1/2 W	C-057c	Elect. 1000 μ F 6.3V
R-056	47K Ω	C-058d	Mylar 0.1 μ F 50V
R-057	1 Ω	C-612, 712, 812, 912	Elect. 4.7 μ F 25V
R-058	47K Ω	C-613, 713, 813, 913	Elect. 4.7 μ F 25V

Y (PCM-339A), RELAY DRIVE P.C.B. ASS'Y (PCM-391)

RELAY P.C.B. ASSY (PCM-305B)				
Reference No.	Parts No.	Description	Identity No.	Source
	811-0001-00	PC Board Assy, Relay		SE2D13J1
	PC BOARD			
	161-1003-07	PC Board, Relay	PCM-305B	3ST2-241084-7
	RELAYS			
RY-1	137-4001-00	DC 24V, ST/STOP	MAT-2B-CR	SE1B173
RY-2	137-4001-00	DC 24V, FWD/REV	MAT-2B-CR	SE1B173
RY-3	137-4001-00	DC 24V, OP/WD	MAT-2B-CR	SE1B173
RY-4	137-4001-00	DC 24V, HIGH VOLT.	MAT-2B-CR	SE1B173
	MODULES			
CR-1		Module, CR	1203	
CR-2, 3, 4, 5, 6, 7		Module, CR	1201A	
8, 9, 10, 11				
	DIODES			
D-01, 02, 03, 04	Silicon		1S-2473	
RELAY DRIVE P.C.B. ASSY (PCM-391)				
Reference No.	Parts No.	Description	Identity No.	Source
	S01-0002-00	PC Board Assy, Relay Drive		SE2D01J5
	PC BOARD			
	161-1001-00	PC Board, Relay Drive	PCM-391	4SE2-241033
	TRANSISTORS			
Q-641, 741, 841, 941	Silicon		2SC-734	
	RESISTORS			
(All Resistors are in 1/4W unless Otherwise Stated)				
R-070	Carbon		1.8K Ω	
R-661, 761, 861, 961			5.6K Ω	

QUICK STOP P.C.B. ASS'Y (PCM-339A)				
Reference No.	Parts No.	Description	Identity No.	Source
	801-0001-00	PC Board Assy, Quick Stop		SE2D-02J6
	PC BOARD			
	161-1006-03	PC Board, Quick Stop	PCM-339A	4ST2-241314-3
	TRANSISTOR			
Q-087	Silicon		2SC-373	
	RESISTORS			
(All Resistors are in 1/4W unless Otherwise Stated)				
R-091	Carbon		1 Ω	
R-092			10K Ω	
R-093			47K Ω	
R-094			10 Ω	
R-095			2.2K Ω	

LOGIC CIRCUIT (1) P.C.B. ASS'Y (PCM-400)

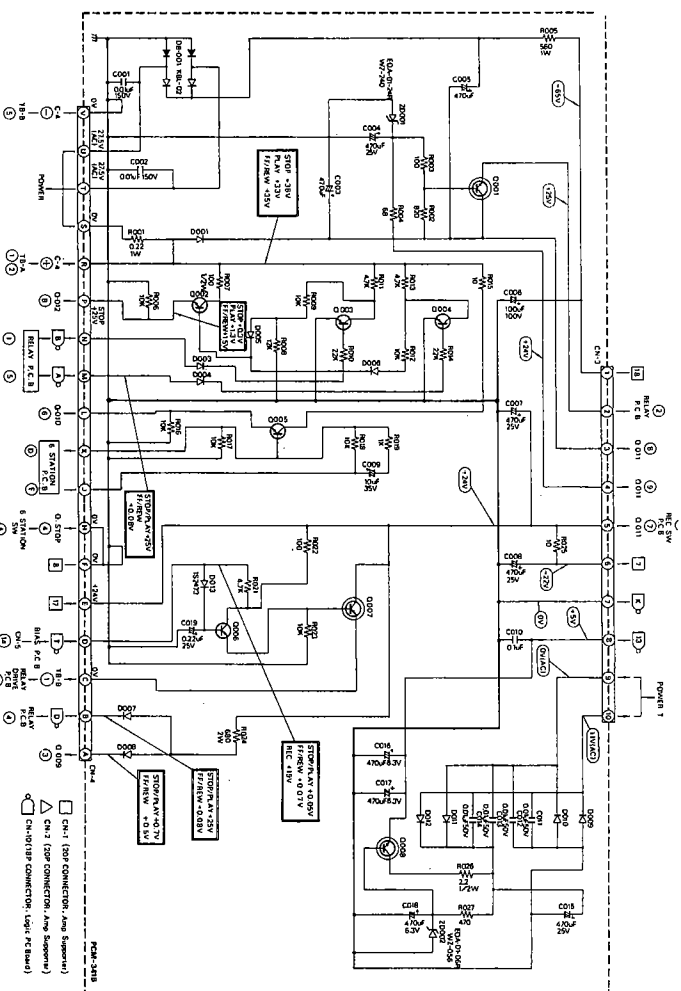
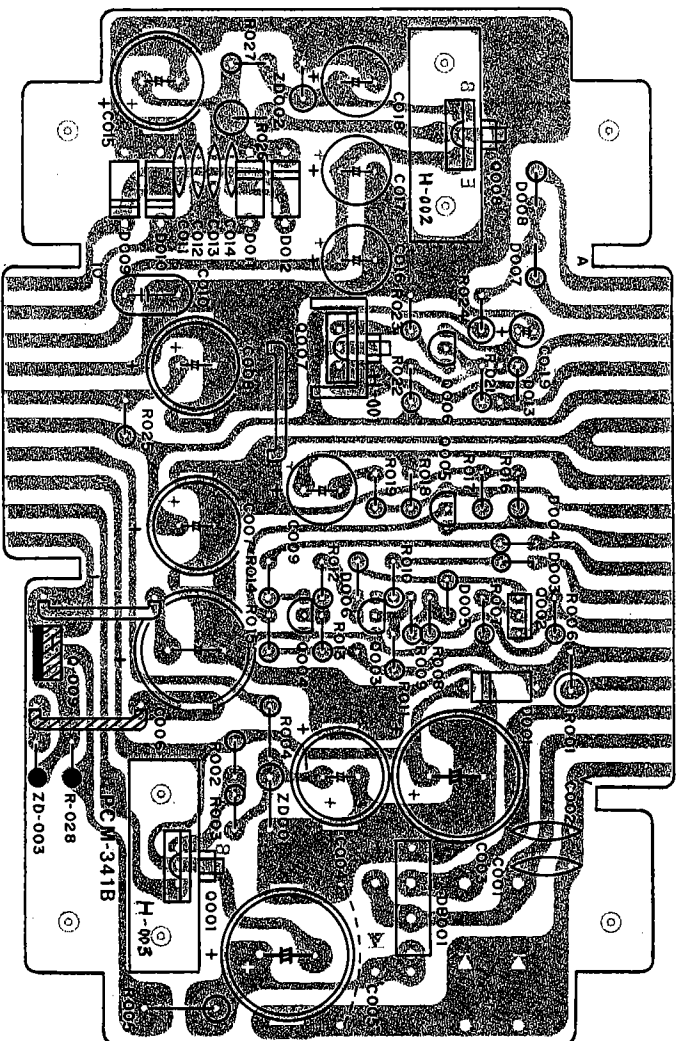


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LOGIC CIRCUIT (1) P.C.B. ASS'Y (PCM-400)				
Reference No.	Parts No.	Description	Identity No.	Source
	821-0004-00	PC Board Ass'y, Logic Circuit (1)		SE2D-21J2
	161-2001-00	PC Board, Logic Circuit	PCM-400	2ST2-241050-2 2ST2-241051-2
Reference No.	Description	Reference No.	Description	
INTEGRATED CIRCUITS				
IC-501	CD-6061	R-508	Carbon	470K Ω
IC-502	CD-6062	R-509		220K Ω
IC-503	SM-6063	R-510		10K Ω
IC-504	M-53204P	R-511		10K Ω
IC-505	M-53274P/2	R-512		10K Ω
IC-506	SN-74122N	R-513		3.9K Ω
IC-507	SN-75451N	R-514		100K Ω
IC-508	SN-75451N			
IC-509	M-53200P			
CAPACITORS				
C-501		C-501	Elect. (NP)	2.2 μ F 25V
C-502		C-502	Elect.	0.47 μ F 25V
C-503		C-503	Elect. (NP)	2.2 μ F 25V
C-504		C-504	Elect.	0.47 μ F 25V
C-505		C-505	Elect. (NP)	2.2 μ F 25V
C-506		C-506	Elect. (NP)	2.2 μ F 25V
C-507		C-507	Elect.	0.47 μ F 25V
C-508		C-508	Elect.	0.47 μ F 25V
C-509		C-509	Elect.	0.47 μ F 25V
C-510		C-510	Elect.	0.47 μ F 25V
C-511		C-511	Elect.	0.47 μ F 25V
C-512		C-512	Elect.	0.47 μ F 25V
C-513		C-513	Elect.	0.47 μ F 25V
C-514		C-514	Mylar	0.027 μ F 25V
C-515		C-515	Elect.	0.47 μ F 25V
C-516		C-516	Elect.	0.47 μ F 25V
C-517		C-517	Elect.	10 μ F 6.3V
C-518		C-518	Mylar	0.1 μ F 50V
C-519		C-519	Mylar	0.1 μ F 50V
C-520		C-520	Mylar	0.1 μ F 50V
C-521		C-521	Mylar	0.018 μ F 50V
C-522		C-522	Mylar	0.1 μ F 50V
RESISTORS				
(All Resistors are in $\frac{1}{4}$ W unless Otherwise Stated)				
R-502	Carbon	C-524	Elect.	2.2 μ F 25V
R-503		C-525	Elect.	1 μ F 25V
R-504		C-526	Mylar	0.1 μ F 50V
R-505		C-527	Mylar	0.01 μ F 50V
R-506		C-528	Elect.	4.7 μ F 25V
R-507		C-529	Mylar	0.015 μ F 50V
		C-530	Mylar	0.015 μ F 50V
D-501	Germanium	IS-188		
D-502	Germanium	IS-188		
D-503	Germanium	IS-188		
DIODES				
RESISTOR MODULES				
RA-501	392K	(3.9K X 5)		
RA-502	392K	(3.9K X 5)		
RA-503	392K	(3.9K X 5)		
RA-504	103K	(10K X 4)		
RA-505	392K	(3.9K X 5)		
RA-506	103K	(10K X 4)		

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POWER SUPPLY P.C.B. ASSY (PCM-341B)



POWER SUPPLY P.C.B. ASSY (PCM-341B)

Reference No.	Parts No.	Description	Identity No.	Source
	851-0002-00	PC Board Assy, Power Supply		SE2D51J2
	161-1002-08-	PC Board, Power Supply	PCM-341B	3ST2-241088-8
		HEAT SINKS		
H-001	536-0010-00	Heat Sink (A), 2SD-234Y		4ST2-231189
H-002	536-0009-00	Heat Sink (B), 2SD-234Y		4ST2-241299
H-003	536-0009-00	Heat Sink (B), 2SD-234Y		4ST2-241299
		TRANSISTORS		
Q-001	2SD-234Y	Silicon	R-011	Carbon 4.7K Ω
Q-002	2SC-509Y	Silicon	R-012	10K Ω
Q-003	2SC-373	Silicon	R-013	4.7K Ω
Q-004	2SC-373	Silicon	R-014	22K Ω
Q-005	2SC-734Y	Silicon	R-015	10 Ω
Q-006	2SC-734Y	Silicon	R-016	10K Ω
Q-007	2SD-234Y	Silicon	R-017	10K Ω
Q-008	2SD-234Y	Silicon	R-018	10K Ω
		DIODES		
DB-001	KBL-02	Silicon	R-021	4.7K Ω
D-001	S1B-01-02	Silicon	R-022	100 Ω
D-003	1S-2473	Silicon	R-023	10K Ω
D-004	1S-2473	Silicon	R-024	Metal Oxide Film 680 Ω 2 W
D-005	1S-2473	Silicon	R-025	10 Ω
D-006	1S-2473	Silicon	R-026	2.2 Ω ½ W
D-007	1S-2473	Silicon	R-027	470 Ω
D-008	1S-2473	Silicon		
D-009	S1B-01-02	Silicon	C-001	Ceramic 0.01μF 150V
D-010	S1B-01-02	Silicon	C-002	Ceramic 0.01μF 150V
D-011	S1B-01-02	Silicon	C-003	Elect. 470μF 50V
D-012	S1B-01-02	Silicon	C-004	Elect. 470μF 25V
D-013	1S-2473	Silicon	C-005	Elect. 470μF 50V
ZD-001	EOA-01-24R	Zener	C-006	Elect. 100μF 100V
ZD-002	EOA-01-06R	Zener	C-007	Elect. 470μF 25V
		RESISTORS		
R-001	0.22 Ω 1 W	Metal Oxide Film	C-008	Elect. 470μF 25V
R-002	820 Ω	Carbon	C-009	Elect. 10μF 35V
R-003	100 Ω	Carbon	C-010	Mylar 0.1μF 50V
R-004	68 Ω	Metal Oxide Film	C-011	Ceramic 0.01μF 50V
R-005	560 Ω 1 W	Carbon	C-012	Ceramic 0.01μF 50V
R-006	10K Ω	Carbon	C-013	Ceramic 0.01μF 50V
R-007	100 Ω ½ W	Carbon	C-014	Elect. 470μF 50V
R-008	12K Ω	Carbon	C-015	Elect. 470μF 25V
R-009	10K Ω	Carbon	C-016	Elect. 470μF 6.3V
R-010	22K Ω	Carbon	C-017	Elect. 470μF 6.3V
		CAPACITORS		
			C-018	Elect. 1000μF 6.3V
			C-019	Elect. (AL) 0.22μF 25V

Note: (AL)=Aluminum

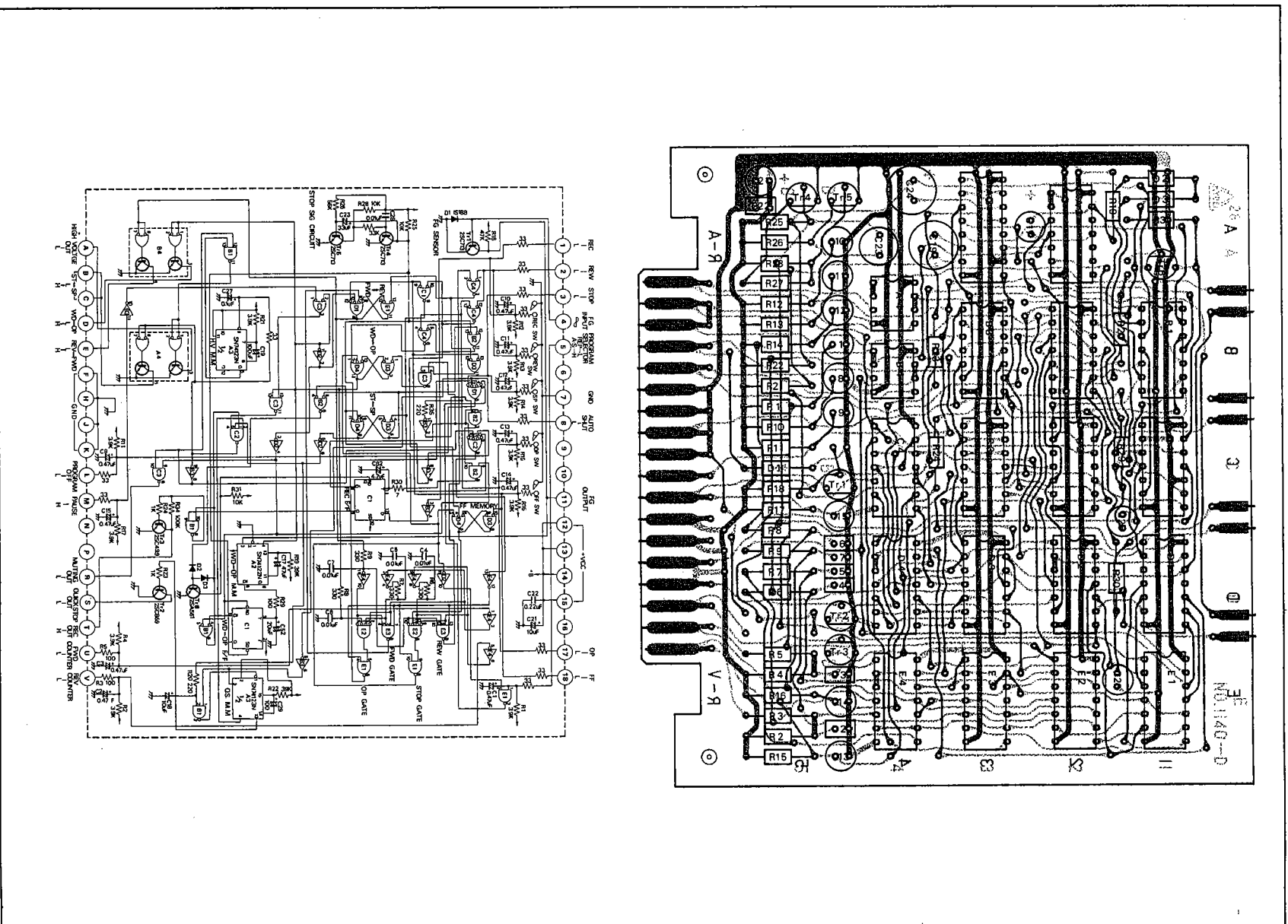
AMP (2-A) P.C.B. ASSY (PCM-312D)

Reference No.	Parts No.	Description	Identity No.	Source
	871-0002-00	PC Board Assy, Amp. (2-A)		SE2D71J6
	161-1009-08	PC BOARD PC Board, Amp. (2-A)	PCM-312D	1ST2-241027-8
	L-101, 201, 301, 401	COILS Choke, Bias Trap ADJ.	L-9-3 (3mH)	ST8B204
		SEMI VARIABLE RESISTORS		
VR-101, 201, 301, 401	390-0472-69	Meter Level ADJ.	SR-19R 4.7K (B)	SE1B132
VR-102, 202, 302, 402	390-0473-69	Peak Indicator ADJ.	SR-19R 47K (B)	SE1B132
VR-103, 203, 303, 403	390-0473-69	REC, EQ, ADJ. (15 ips)	SR-19R 47K (B)	SE1B132
VR-104, 204, 304, 404	390-0473-69	Source Gain ADJ.	SR-19R 47K (B)	
VR-105, 205, 305, 405	390-0473-69	Gen. ADJ.	SR-19R 47K (B)	
Reference No.	Description	Reference No.	Description	Source
	TRANSISTORS			
Q-110, 210, 310, 410	Silicon	R-146, 246, 346, 446	Carbon	1.8K Ω
Q-111, 211, 311, 411	Silicon	R-150, 250, 350, 450	Carbon	22K Ω
		R-151, 251, 351, 451	Carbon	33K Ω
		R-152, 252, 352, 452	Carbon	18K Ω
		R-153, 253, 353, 453	Carbon	22K Ω
	DIODES			
D-103, 203, 303, 403	Germanium	R-038A, 038B	Carbon	47K Ω
D-104, 204, 304, 404	Germanium	R-189A, 189B	Carbon	4.7K Ω
D-105, 205, 305, 405	Germanium			
D-108, 208, 308, 408	Silicon			
D-109, 209, 309, 409	Silicon			
	RESISTORS			
(All Resistors are in $\frac{1}{4}$ W unless Otherwise Stated)				
R-138, 238, 338, 438	Carbon	C-121, 221, 321, 421	Ceramic	220pF 50V
R-139, 239, 339, 439	Carbon	C-122, 222, 322, 422	Elect.	4.7 μ F 25V
R-140, 240, 340, 440	Carbon	C-123, 223, 323, 423	Elect.	4.7 μ F 25V
R-141, 241, 341, 441	Carbon	C-124, 224, 324, 424	Elect.	4.7 μ F 25V
R-142, 242, 342, 442	Carbon	C-126, 226, 326, 426	Elect.	4.7 μ F 25V
R-143, 243, 343, 443	Carbon	C-127, 227, 327, 427	Elect.	0.47 μ F 25V
R-144, 244, 344, 444	Carbon	C-041A, 041B	Elect.	4.7 μ F 25V
R-145, 245, 345, 445	Carbon	C-042A, 042B	Elect.	100 μ F 25V
		C-043A, 043B	Elect.	100 μ F 25V
		C-044A	Elect.	100 μ F 25V

AMP (2-B) P.C.B. ASSY (PCM-312D)

Reference No.	Parts No.	Description	Identity No.	Source
	L-102, 202, 302, 402	COILS Choke	L-9-3 (3mH)	ST8B204
	L-103, 203, 303, 403	Choke	L-9-3 (3mH)	ST8B204
	L-180	Choke	L-1294	SE1B177
Reference No.	Description	Reference No.	Description	Source
	TRANSISTORS			
Q-112, 212, 312, 412	Silicon	R-039	Carbon	100 Ω
Q-113, 213, 313, 413	Silicon	R-040A,B,C,D,E	Carbon	4.7K Ω
Q-180	Silicon	R-180	Carbon	1K Ω
Q-181	Silicon	R-181	Carbon	220 Ω
Q-182	Silicon	R-182	Carbon	4.7K Ω
Q-183	Silicon	R-183	Carbon	180K Ω
	DIODES			
D-110, 111, 112, 113	Silicon	R-184	Carbon	15K Ω
114, 115, 116, 117	Silicon	R-185	Carbon	3.3K Ω
118, 119	Silicon	R-186	Carbon	270 Ω
D-210, 211, 212, 213	Silicon	R-187	Carbon	22 Ω
214, 215, 216, 217	Silicon	R-188	Carbon	470 Ω
218, 219	Silicon			
D-310, 311, 312, 313	Silicon	C-128, 228, 328, 428	Tantalum	0.33 μ F 25V
314, 315, 316, 317	Silicon	C-129, 229, 329, 429	Ceramic	100pF 50V
318, 319	Silicon	C-131, 231, 331, 431	Ceramic	22pF 50V
D-410, 411, 412, 413	Silicon	C-132, 232, 332, 432	Elect.	100 μ F 10V
414, 415, 416, 417	Silicon	C-133, 233, 333, 433	Elect.	2.2 μ F 63V
418, 419	Silicon	C-134, 234, 334, 434	Elect.	4.7 μ F 25V
ZD-180	Zener	C-135, 235, 335, 435	Mylar	0.068 μ F 50V
		C-136, 236, 336, 436	Mylar	0.068 μ F 50V
		C-137, 237, 337, 437	Mylar	0.0056 μ F 50V
		C-138, 238, 338, 438	Mylar	0.01 μ F 50V
		C-139, 239, 339, 439	Mylar	0.0068 μ F 50V
		C-140, 240, 340, 440	Mylar	0.0068 μ F 50V
		C-141, 241, 341, 441	Elect.	33 μ F 25V
		C-045A, B	Elect.	100 μ F 25V
		C-046A, B	Elect.	47 μ F 63V
		C-047	Elect.	220 μ F 63V
		C-048A, B, C, D, E	Elect.	33 μ F 25V
		C-180	Mylar	0.047 μ F 50V
		C-181	Tantalum	1 μ F 25V
		C-182	Elect.	4.7 μ F 25V
		C-183	Elect.	0.47 μ F 25V
		C-184	Elect.	22 μ F 6.3V
		C-185	Elect.	0.47 μ F 25V
		C-044B	Elect.	100 μ F 25V

LOGIC CIRCUIT (2) P.C.B. ASS'Y



LOGIC CIRCUIT (2) P.C.B. ASS'Y

Reference No.	Parts No.	Description	Identity No.	Source
	821-0005-00	PC Board Ass'y, Logic Circuit		SE2D-21J1
	161-2002-00	PC Board, Logic Circuit		
PC BOARD				
Reference No.	Description	Reference No.	Description	
INTEGRATED CIRCUIT				
A-2	SN-74122N	R-5	Carbon	100 Ω
A-3	SN-74123N	R-6, 7, 8, 9		330 Ω
A-4	SN-75451BP	R-10, 11, 12, 13		3.9K Ω
B-1	M-53200P	R-14, 15, 16, 17		3.9K Ω
B-2	9N08/7408	R-18		47K Ω
B-3	M-53204P	R-19		39K Ω
B-4	SN-75451BP	R-20		220 Ω
C-1	M-53274P	R-21, 22		39K Ω
C-2	M-53220P	R-23, 24		1K Ω
C-3	M-53200P	R-25		10K Ω
C-4	9N08/7408	R-26		56K Ω
D-1	M-53220P	R-27		33K Ω
D-2	M-53204P	R-28		10K Ω
D-3	M-53200P	R-29		100 Ω
D-4	M-53210P	R-30		47 Ω
E-1	M-53200P	R-31		10K Ω
E-2	SN-7425N	R-32, 33	No use	
E-3	M-53220P	R-34		100K Ω
E-4	M-53204P	R-35		220 Ω
TRANSISTORS				
T-1	Silicon	C-1	Elect.	0.47μF 50V
T-2	Silicon	C-2, 3, 4, 5	Mylar	0.01μF 50V
T-3	Silicon	C-6, 7	Mylar	0.01μF 50V
T-4	Silicon	C-8, 9, 10, 11	Elect.	0.47μF 50V
T-5	Silicon	C-12, 13, 14, 15	Elect.	0.47μF 50V
T-6	Silicon	C-17	Elect.	47μF 10V
DIODES				
D-1, 2, 3, 4	Germanium	C-18	Elect.	10μF 16V
RESISTORS				
(All Resistors are in 1/4W unless Otherwise Stated)				
R-1	Carbon	C-19	Elect.	100μF 10V
R-2		C-21	Elect.	10μF 16V
R-3		C-22	Ceramic	0.22μF 50V
R-4		C-23	Elect.	33μF 6.3V
		C-25	Elect.	22μF 16V
		C-26	Elect.	4.7μF 25V
		C-27, 28	Ceramic	0.1μF 50V
		C-29	Elect.	100μF 10V

Adjustment Procedures for Model 1140 – Playback

Item	Test Signal	Mode of Switch	Output Connection	Adjustment Parts	Spec.	Remarks
1. Play Head Alignment	15KHz Ampex Test Tape 01-31311-01	Monitor SW to Tape Mic/Line SW Line Mode SW 4-Ch Test Gen. SW Off Tape Speed Fast	VTVM & Oscilloscope to the Line Output Jacks	PB Head Alignment Screws See Fig. 2-1	Max.	P.B.VR at 2 o'clock position. Refer Note 1. for phase adjustment
2. Playback Level (15ips)	700Hz (0dB) Ampex Test Tape 01-31311-01	ditto	ditto	Track-1 VR-602 Track-3 VR-802 Track-2 VR-702 Track-4 VR-902 on HEAD AMP P.C.B. PCM-342E	*0dB±0.5dB (6dB±0.5dB) *0dB=0.775V	Obtain +6dB at P.B. VR Max, then retard the VR until 0dB is obtained. This will be at approximately 2 o'clock position. Do not disturb this setting.
3. Playback Equalizer	15kHz (0dB) Ampex Test Tape 01-31311-01	ditto	ditto	Track-1 VR-601 Track-3 VR-801 Track-2 VR-701 Track-4 VR-901 on HEAD AMP P.C.B. PCM-342E	0dB±3dB (6dB±3dB)	At the specified Output Level setting. (At PB VR Max. position)

Note 1: Connect the test equipment as shown Fig. 1-2. Adjust the Playback Head Azimuth Screw carefully so that the signals of Left and Right Channels are to be in phase. Then adjust Rec Head Azimuth Screw so that the phase shift is less than 45°. (Typical Phase Shift Pattern as shown in Fig. 1-3.)
 2: Track-1 = Front Left, Track-3 = Front Right, Track-2 = Back Left, Track-4 = Back Right

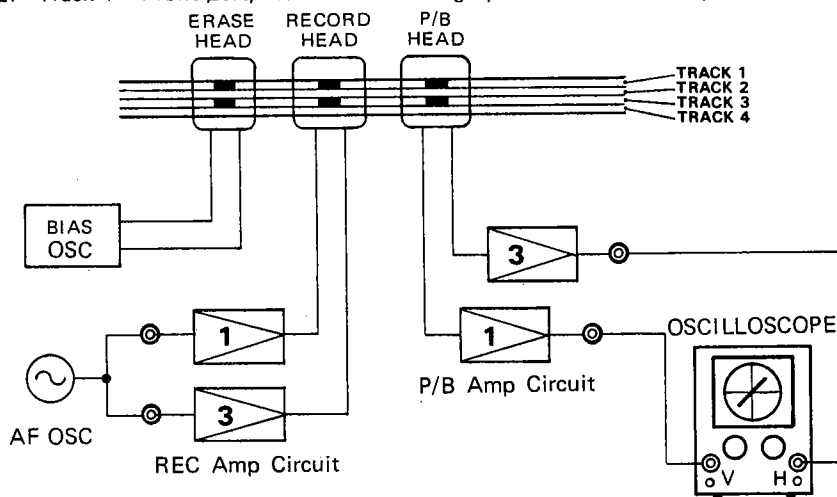


Fig.1-2 Connect the Test Equipment

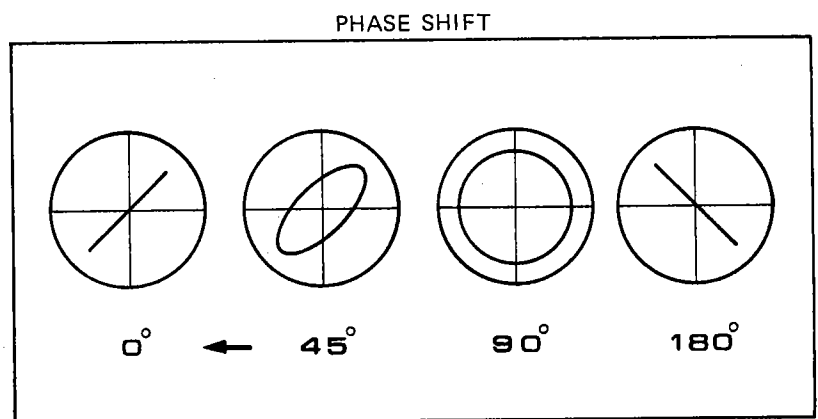


Fig.1-3 Typical Phase Shift Pattern

Recording/Meter Calibration

Item	Test Signal	Mode of Switch	Output Connection	Adjustment Parts	Spec.	Remarks
1. Source Gain	700Hz (-20dB) to the Line Input	Rec SW On Monitor SW Source Mic/Line SW Line Mode SW 4-Ch Test Sig. SW Off Ope Button On (REC & PB)	VTVM & Oscilloscope to the Line Output	Track-1 VR-104 Track-3 VR-304 Track-2 VR-204 Track-4 VR-404 on AMP (2) P.C.B. PCM-312D	0dB±0.5dB	Rec. VR – Max. Multi-sync – Normal Thread blank Tape and set the Deck in Recording Mode
2. Meter Level	ditto		none	Track-1 VR-101 Track-3 VR-301 Track-2 VR-201 Track-4 VR-401 on AMP (2) P.C.B. PCM-312D	0 VU of the Meter Scale	
3. Peak Indicator	700Hz (-12dB) to the Line Input	ditto	ditto	Track-1 VR-102 Track-3 VR-302 Track-2 VR-202 Track-4 VR-402 on AMP (2) P.C.B. PCM-312D	8db±0.5dB	Flash on at 8db±0.5dB and disappear when sig. reduced by -0.5dB
4. Bias Osc.	none		Frequency Counter across the TP-5 & 6 on the Bias PCB (PCM-313C)	T-001 on BIAS P.C.B.	200KHz±1KHz	Step 4 through 7 are not required to undertake unless HEAD or COIL is replaced.
5. Bias Trap (Rec Amp)	none	ditto	VTVM across Track-1 TP 1 & 6 Track-3 TP 3 & 6 Track-2 TP 2 & 6 Track-4 TP 4 & 6	Track-1 L640 Track-3 L840 Track-2 L740 Track-4 L940 on BIAS P.C.B. PCM-313C	Min	
6. Bias Trap (P.B AMP)	none	Monitor SW Tape	VTVM & Oscilloscope to the Line Output	Track-1 L601, L101 Track-3 L801, L301 Track-2 L701, L201 Track-4 L901, L401 on HEAD AMP P.C.B. PCM-342E	Min	L101, 201, 301 and 401 located on AMP (2) P.C.B. PCM-312D

OVERALL FREQUENCY RESPONSE

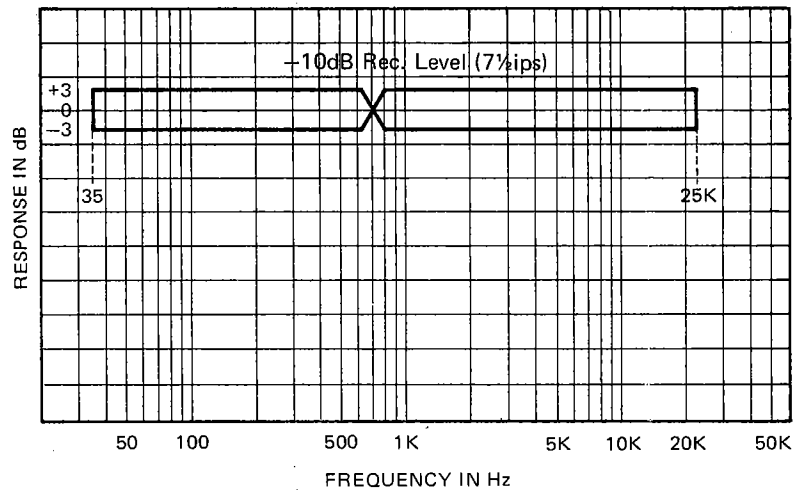
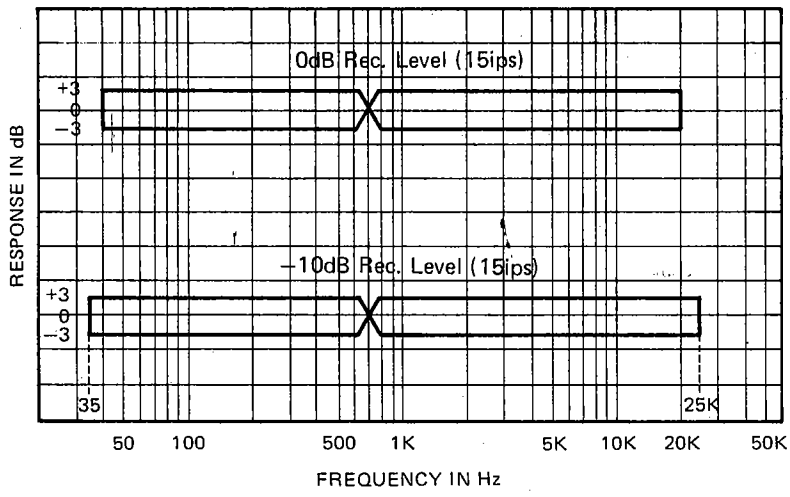


Fig.1-4

Item	Test Signal	Mode of Switch	Output Connection	Adjustment Parts	Spec.	Remarks	
7.	Dummy Coil	none	ditto	Frequency Counter across the TP-5 & 6 on the Bias PCB (PCM-313C)	Track-1 L641 Track-3 L841 Track-2 L741 Track-4 L941 on BIAS P.C.B PCM-313C	Min	Release Rec SW one by one and Adjust related coils in order to minimize drift of Bias Frequency
8.	Rec Head Alignment	20KHz (-20dB) to the Line Input	Rec SW On Monitor SW Tape Mic/Line SW Line Mode SW 4-Ch Test.Sig. SW Off (Rec mode)	VTVM & Oscilloscope to the Line Output	Rec Head Alignment Screw See Fig. 2-1	Max	Refer Note 1 for Phase Adjustment. Rec VR at Max, PB VR at specified output level setting and Multi-sync at normal position.
9.	Bias (15ips)	700Hz (-20dB) to the Line Input	ditto and set Tape Speed Fast EQ SW Normal Bias Select Fix	ditto	Track-1 TC640 Track-3 TC840 Track-2 TC740 Track-4 TC940 on BIAS P.C.B. PCM-313C	Max (PEAK LEVEL)	Load Scotch #212 blank Tape
10.	Rec Gain (15ips)	ditto	ditto	ditto	Track-1 VR-103 Track-3 VR-303 Track-2 VR-203 Track-4 VR-403 on AMP (2) P.C.B PCM-312D	0dB ±0.5dB	ditto
11.	Rec EQ (15ips)	20KHz (-20dB) to the Line Input	Monitor SW Tape Mic/Line SW Line Mode SW 4-Ch Test Sig. SW Off Bias Select Fix EQ SW Normal Tape Speed Fast Rec SW On Ope Button On (REC & PB)	ditto	Track-1 L102 Track-3 L302 Track-2 L202 Track-4 L402 on AMP (2) P.C.B PCM-312D	0dB ±0.5dB	Load Scotch #212 blank Readjustment of TC640, 740, 840 and 940 may be required in order to obtain optimum performance Refer Fig. 1-4 for overall frequency response limits
12.	Rec EQ (7 1/2 ips)	20KHz (-30dB) to the Line Input	ditto except Tape Speed Slow	ditto	Track-1 L103 Track-3 L303 Track-2 L203 Track-4 L403 on AMP (2) P.C.B PCM-312D	-10dB ±2dB	ditto
13.	Test Sig. Generator	none	ditto except Test Sig. SW On Tape Speed Fast	ditto	VR-105 VR-106 VR-107 or VR-180 VR-108 on AMP (2) P.C.B PCM-312D	0 VU of the Meter Scale	