DOKORDER model 1120/1122

SERVICE MANUAL
SM.1001-00
1976. 3

SECTION 2

EXPLODED VIEWS AND PARTS LIST

TABLE OF CONTENTS

IMPORTANT

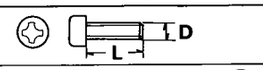
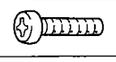
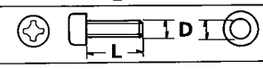
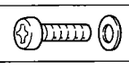
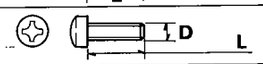
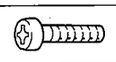
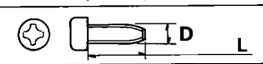
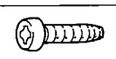
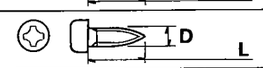
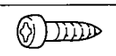
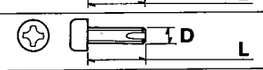
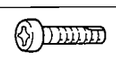
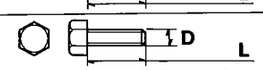
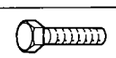
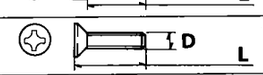
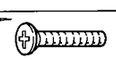
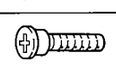
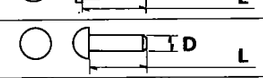
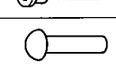
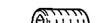
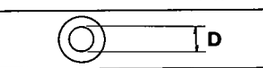
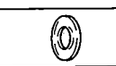
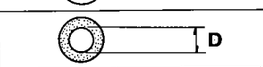
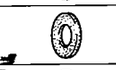
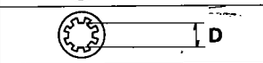
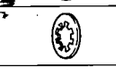
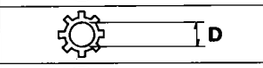
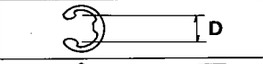
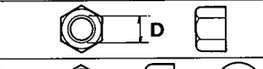
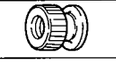
This manual applies to both Dokorder Models 1120 and 1122. The parts for the two models are identified in the manual by certain marks placed in front of their parts numbers, or the absence of such marks, as follows:

- ☆ Parts exclusive to Model 1120 with Serial #1001 and after
- ★ Parts exclusive to Model 1120 with Serial #from 1001 up to 3029
- ● Parts exclusive to Model 1122 with Serial #1001 and after
- No mark Parts common to both Models 1120/1122

When ordering replacement parts, please be sure to specify the model number and serial number of the unit for which the parts are needed, in addition to the reference numbers and parts numbers of the particular parts. This is because subsequent improvements or specification changes may create new parts which are not interchangeable with their previous counterparts.

Dokorder, Inc.
5430 ROSECRANS AVENUE, LAWNDALE, CALIF. 90260 U.S.A.
DENKI ONKYO CO., LTD.

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 Countersink Head Screw			
LS	Lock Screw			
R	Rivet			
AS	Allen Hex. Screw			
S	Spacer			
Example	PS4x6 • Length in mm [L] • Diameter in mm [D] • Mark			
NW	Nylon Washer			
FW	Fiber 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.

CABINET EXPLODED VIEW

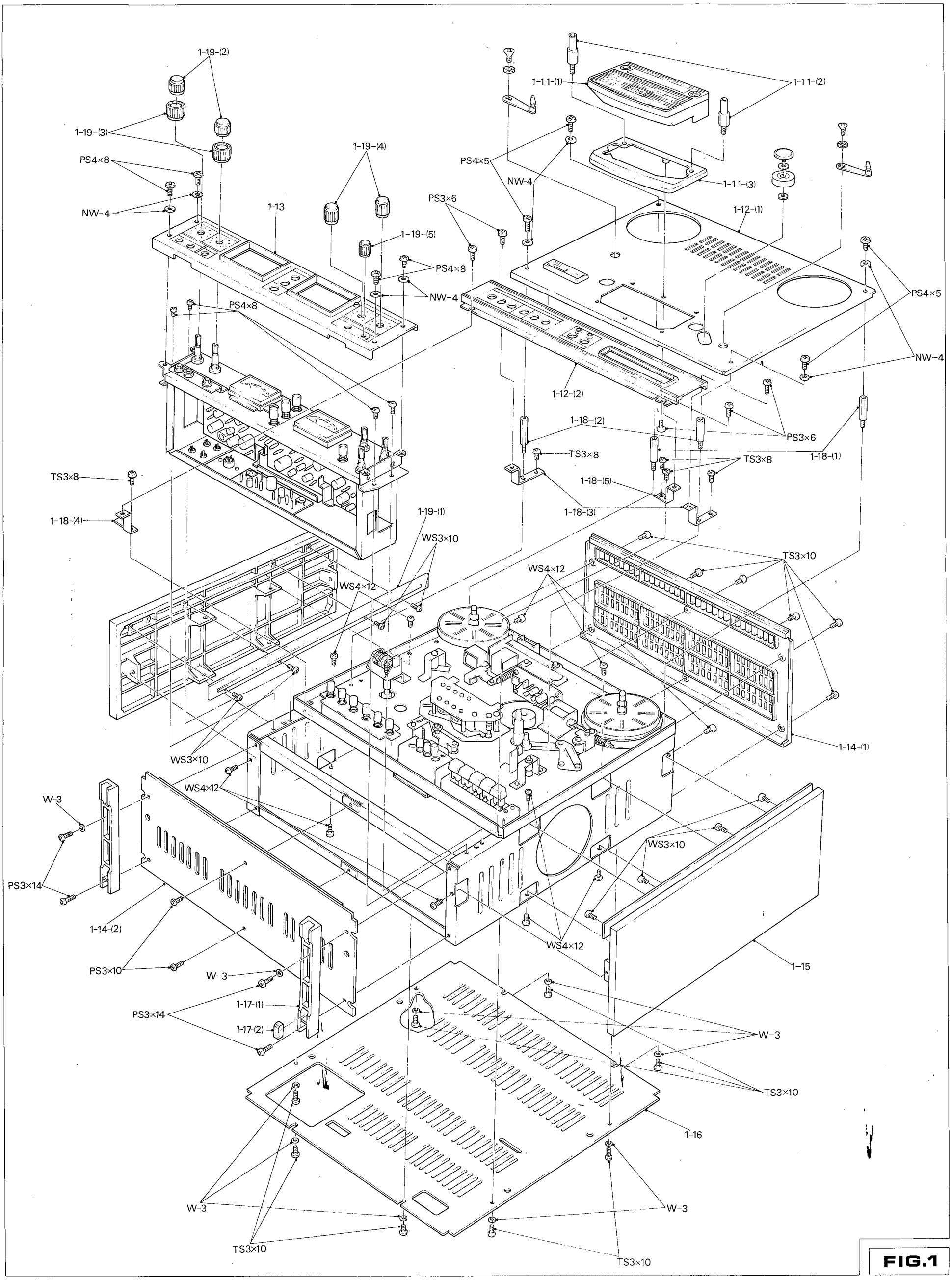


FIG.1

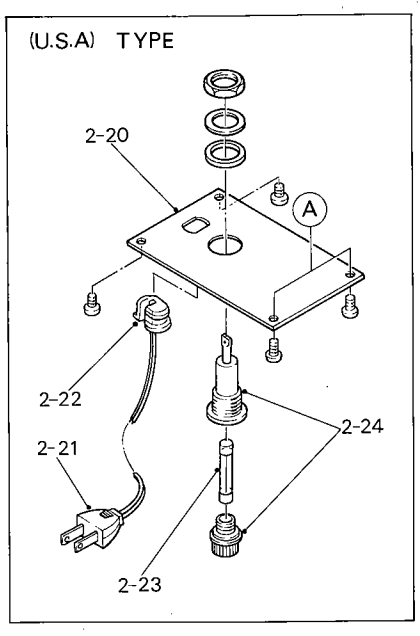
CABINET EXPLODED VIEW

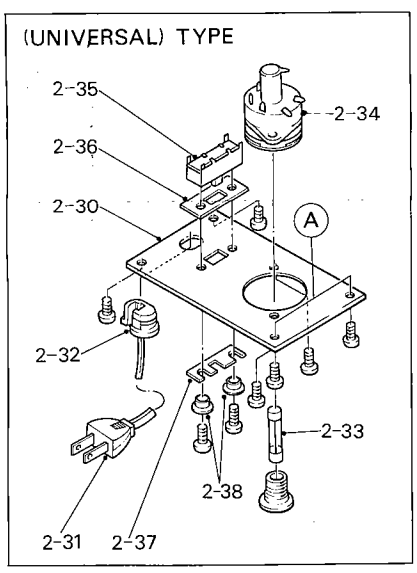
Ref. No.	Parts No.	Description	Identity No.	Source
1-11-(1)	☆880-0008-00	Head Cover		ST1D81D06
	●880-0012-00	Head Cover		SE2D81K4
1-11-(2)	531-0001-00	Post, Head Cover		4ST2-241104
1-11-(3)	552-0005-03	Head Panel		2ST2-241009-3
1-12-(1)	☆880-0009-00	Panel Assy, Deck		ST1D81D03
	●880-0013-00	Panel Assy, Deck		SE2D81K3
1-12-(2)	880-0010-00	Panel Assy, Control		ST1D81D04
1-13	880-0011-00	Panel Assy, Amp.		ST1D81D05
1-14-(1)	551-0013-90	Top Board		1ST2-231006-10
1-14-(2)	551-0010-00	Bottom Board		2ST2-246005
1-15	551-0011-00	Side Board		1ST2-231005
1-16	☆551-0012-00	Back Board		2ST2-241105
	●551-0014-80	Back Board		2SE2-241001
1-17-(1)	555-0028-00	Foot		3ST2-231025
1-17-(2)	555-0027-00	Rubber, Anti-Slip		4ST2-231247
1-18-(1)	531-0002-01	Stud, Deck Panel (B)		4ST2-241239-1
1-18-(2)	531-0003-02	Stud, Deck Panel (A)		4ST2-241103-2
1-18-(3)	533-0004-01	Bracket, Panel Mount (B)		4ST2-241021-1
1-18-(4)	533-0003-02	Bracket, Panel Mount (C)		4ST2-233007-2
1-18-(5)	533-0005-00	Bracket, Control Panel Mount		4ST2-241020
1-19-(1)	555-0019-00	Side Bezel		3ST2-235012
1-19-(2)	556-0012-83	Knob, Control, Inner		4ST2-241228-3
1-19-(3)	556-0011-81	Knob, Control, Outer		4ST2-241231-1
1-19-(4)	556-0001-00	Knob, Control		4ST2-241164
1-19-(5)	556-0016-00	Knob, Control, Small		4ST2-241162

FRAME WORK EXPLODED VIEW

Ref. No.	Parts No.	Description	Identity No.	Source
2-11-(1)	511-0012-33	Chassis, Deck		1ST2-231004-33
2-11-(2)	533-0002-01	Bracket, 6-station SW Mount		4ST2-241144-1
2-12	513-0010-00	Holder, Power Supply Chassis		2ST2-241021
2-13	536-0001-10	Heat Sink		2ST2-241026-10
2-14-(1)	511-0009-00	Side Frame, Deck Mount		1ST2-231003
2-14-(2)	511-0010-00	Angle (A), Deck		2SE2-231004
2-14-(3)	511-0011-00	Angle (B), Deck		2SE2-231005
2-15-(1)	531-0009-02	Stud, Bias PCB		4ST2-241098-2
2-15-(2)	*Not Used			
2-16-(1)	133-2001-00	Connector, 10-P (S)	250-10-50-179M	SE2B002
2-16-(2)	133-6001-00	Connector, 18-P (S)	250-18-50-179M	SE2B002
2-16-(3)	133-6001-00	Connector, 18-P (S)	250-18-50-179M	SE2B002
2-17-(1)	☆851-0006-00	PC Board Assy, Bias OSC.	PCM-327	ST1D51D01
	●851-0007-00	PC Board Assy, Bias OSC.	PCM-327	SE2D51K2
2-17-(2)	☆861-0001-00	PC Board Assy, Control	PCM-325	ST1D62D01
	●861-0002-00	PC Board Assy, Control	PCM-325	SE2D51K3
2-17-(3)	851-0005-00	PC Board Assy, Power Tr.	PCM-319	ST1D61D03
2-18-(1)		Transistor	2SC-793Y	SE1B078
2-18-(2)	536-0014-00	Mylar Sheet, 2SC-793Y		
2-18-(3)	536-0002-00	Mylar Sheet, 2SD-234Y		
2-19-(1)	136-2001-00	Socket, Transistor TD-3	S2-104W-05	
2-19-(2)	536-0012-00	Grommet, Flexible	KG-024	
		U.S.A. TYPE		
2-20	533-0048-01	Chassis (A), Power Supply		4ST2-231020-1
2-21	162-1001-00	AC Cord with Plug		ST9B144
2-22	537-0002-00	Stopper, Cord	4N-4	SE1B014
2-23	138-1001-00	Fuse, 3 Amp.	MF-6ML-3A	ST8B091
2-24	135-7001-00	Holder, Fuse	FH-001	SE0B159
		UNIVERSAL TYPE		
2-30	533-0049-00	Chassis (B), Power Supply		4ST2-231163
2-31	162-1001-00	AC Cord with Plug		ST9B-178
2-32	537-0002-00	Stopper, Cord	4N-4	SE1B014
2-33	138-1001-00	Fuse, 3 Amp.	MF-6ML-3A	ST8B091
2-34	136-7003-00	Changeover Socket with Fuse Holder	S-I7205	ST6B066
2-35	131-6007-00	Switch, Slide, 50/60 Hz	SL-242B4E	ST9B109
2-36	536-0018-00	Insulator, Slide SW		4ST2-231225
2-37	534-0015-00	Lock Plate, Slide SW, 50/60 Hz		4ST2-231227
2-38	532-0015-00	Washer, 3ϕ		

FRAME WORK EXPLODED VIEW





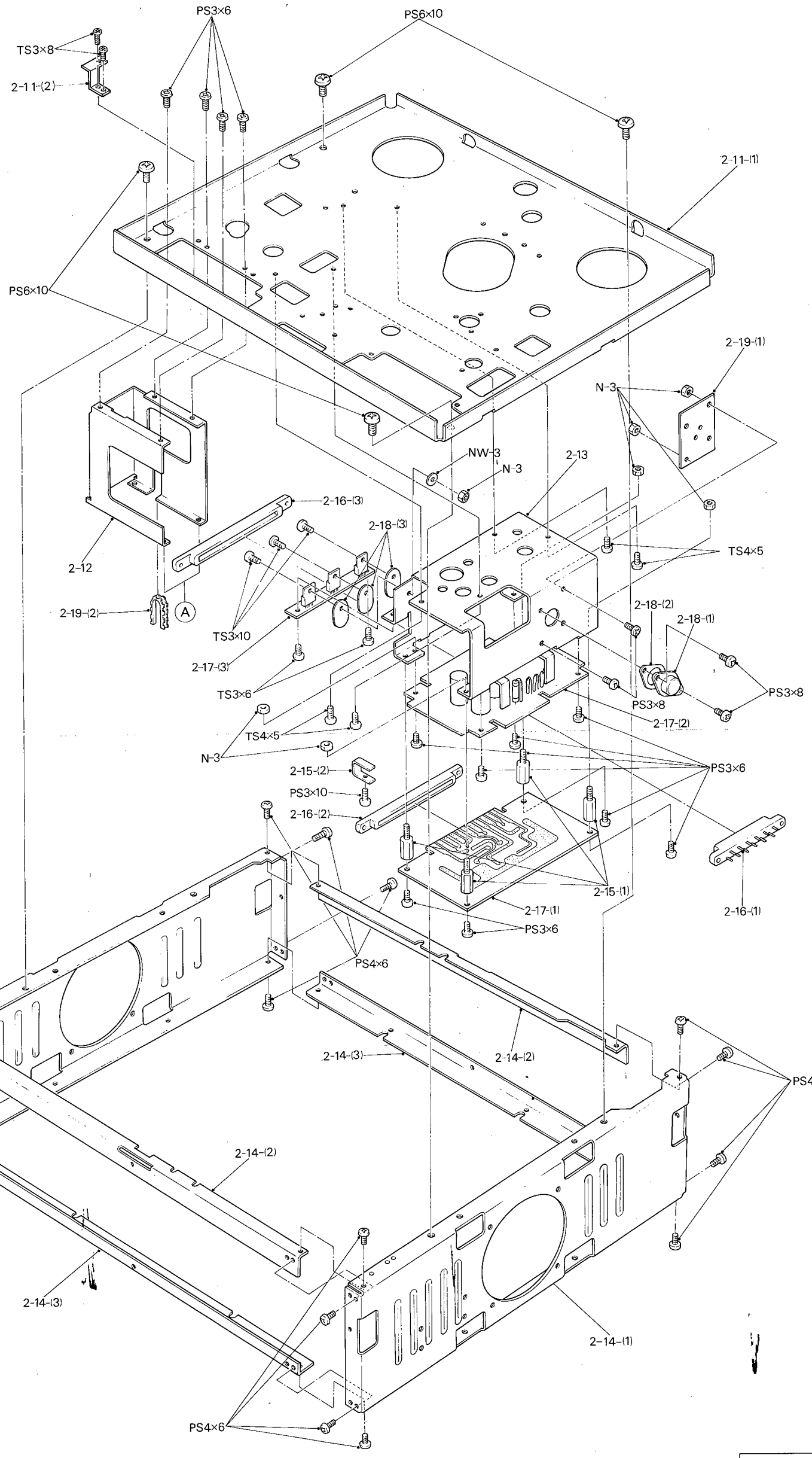


FIG.2

AMP EXPLODED VIEW(A)

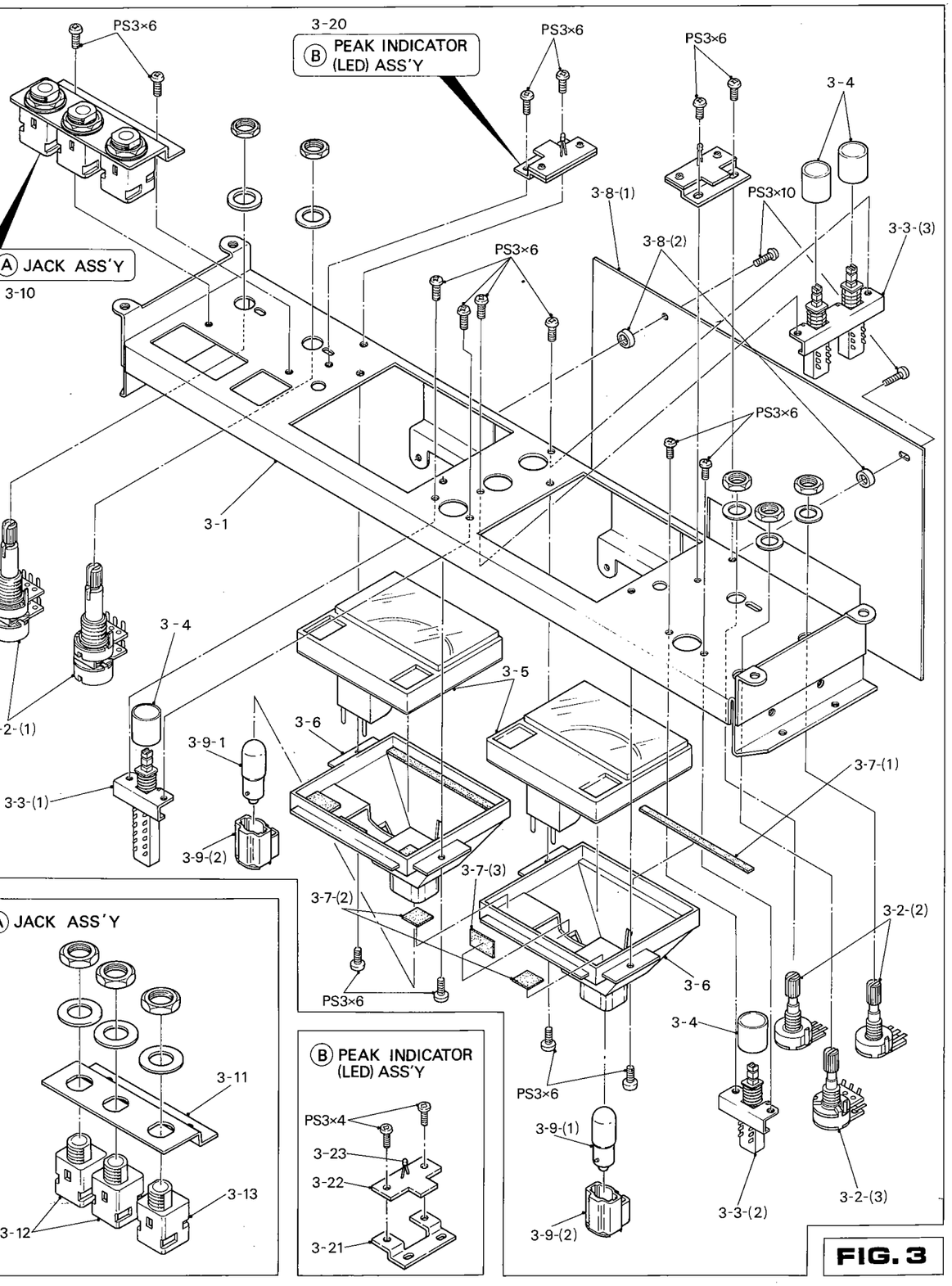


FIG. 3

AMP EXPLODED VIEW (A)

Ref. No.	Parts No.	Description	Identity No.	Source
3-1	512-0007-00	Chassis (A), Amp.		2ST2-241003
3-2-(1)	376-5030-01	Control, 2-gang, Non-friction, Rec.	DM10A-50K(B)x2	SE1B057
3-2-(2)	366-5030-01	Control, Single, Play-back	VM20A-50K(B)	ST9B093
3-2-(3)	376-5030-02	Control, 2-gang, Echo S.O.S.	GM80A-50K(B)x2	SE1B029
3-3-(1)	131-1009-00	Switch, Push, EQ Select	1F-0003AF-1910	SE1B063
3-3-(2)	131-1010-00	Switch, Push, Echo S.O.S.	1FS-2u-12BA	ST9B033
3-3-(3)	131-1005-00	Switch, Push, 2-station, Tape/ Source Monitor	2FS-4u-24-1	SE1B062
3-4	556-0022-00	Push Button, Round, Black		4ST2-235087
3-5	141-1002-00	Level Meter	D34ARR	SE1B087
3-6	536-0003-00	Lamp Shade		3ST2-241013
3-7-(1)	535-0001-03	Cushion Rubber (3), Meter		4ST2-241201-3
3-7-(2)	535-0002-01	Cushion Rubber (4), Meter		4ST2-241232-1
3-7-(3)	535-0011-01	Cushion Rubber (2), Meter		4ST2-239030-1
3-8-(1)	536-0019-00	Shield, Amp.		4ST2-241273
3-8-(2)	532-0016-00	Spacer		4ST2-241275
3-9-(1)	145-1001-00	Lamp, 6.3V 250mA		
3-9-(2)	136-7002-00	Socket, Lamp		SE0B073
		Ⓐ JACK ASSY		
3-10	870-0001-00	Jack Assy		ST1D52D02
3-11	533-0045-00	Mount, Jack, Mic.		4ST2-241014
3-12	135-5001-00	Jack, Mic.	S-G7625#1	SE0B142
3-13	135-5002-00	Jack, Head Phone	S-G7825#1	SE0B140
		Ⓑ PEAK INDICATOR (LED) ASSY		
3-20	870-0002-00	Peak Indicator (LED) Assy		ST1D52D02
3-21	533-0046-00	Bracket, Peak Indicator (LED)		4ST2-241222
3-22	811-0005-00	PC Board Assy, Peak Indicator (LED)	PCM-318	ST1D52D02
3-23		Light Emitting Diode	TLR-102	

AMP EXPLODED VIEW (B)

Ref. No.	Parts No.	Description	Identity No.	Source
4-1	512-0010-00	Chassis (B), Amp.		1ST2-231002
4-2	533-0043-00	Mount, 18-P Connector		4ST2-231015
4-3	541-0001-00	Spring, Connector Hold		4ST2-227114
4-4	531-0009-02	Stud, Peak Indicator PCB		4ST2-241098-2
4-5	533-0044-00	Lock Plate, Slide SW, 2/4-Track		4ST2-241051
4-6-(1)	☆871-0006-00	PC Board Assy, Amp.	PCM-328A	ST1D52D04
	●871-0007-00	PC Board Assy, Amp.	PCM-328A	SE2D71K3
4-6-(2)	☆871-0008-00	PC Board Assy, Peak Indicator	PCM-324	ST1D52D05
	●871-0009-00	PC Board Assy, Peak Indicator	PCM-324	SE2D71K4
4-7-(1)	135-5004-00	Jack, Pin, 4-P	S-Q3456	ME4B034
4-7-(2)	136-6001-00	Socket, DIN	S-I-3312	SE0B141
4-8	133-6001-00	Connector, 18-P (S)	250-18-50-179M	SE2B002
4-9	131-6005-00	Switch, Slide, 2/4-Track	SSB06212	SE1B052

AMP EXPLODED VIEW(B)

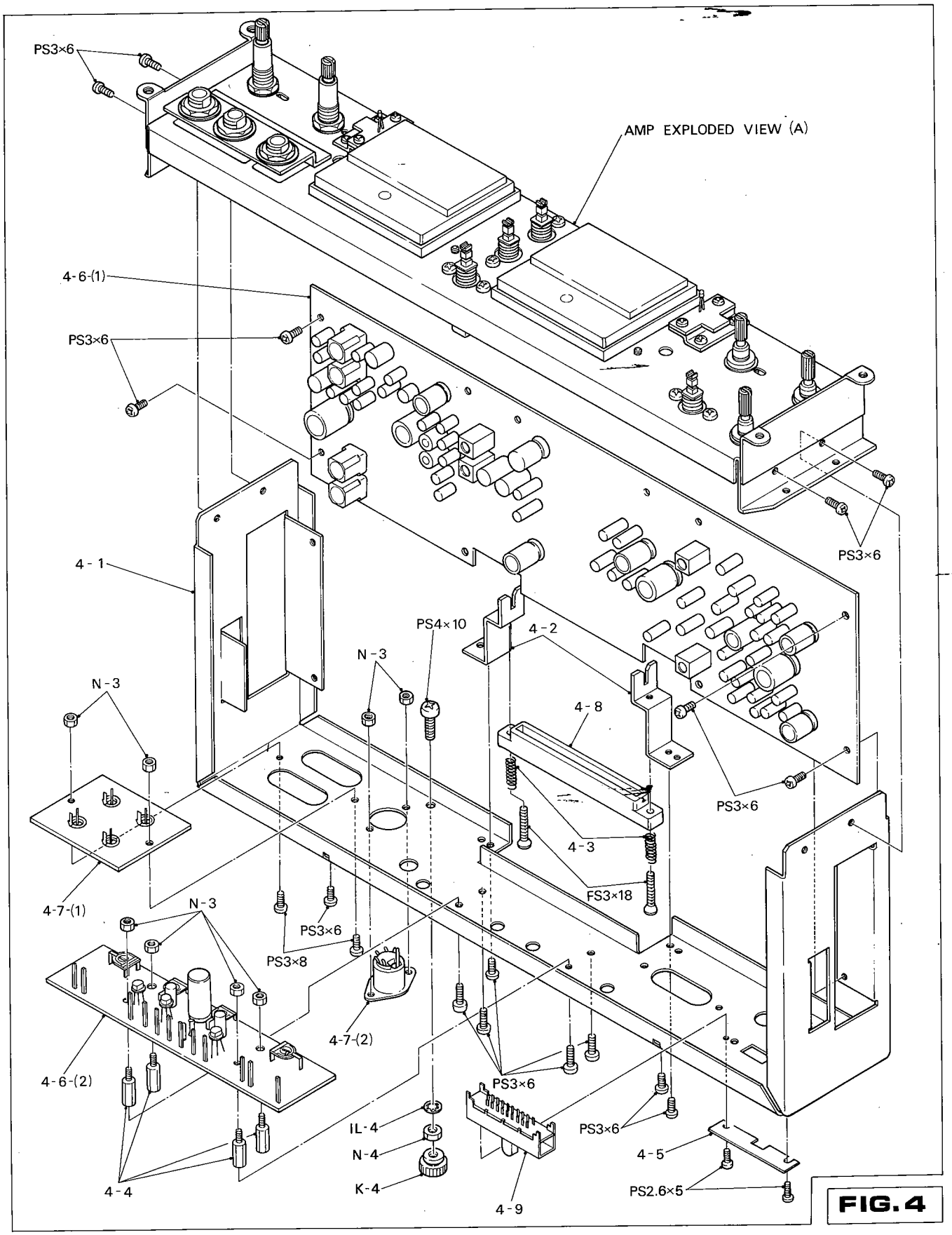


FIG. 4

MECHANISM EXPLODED VIEW(A)

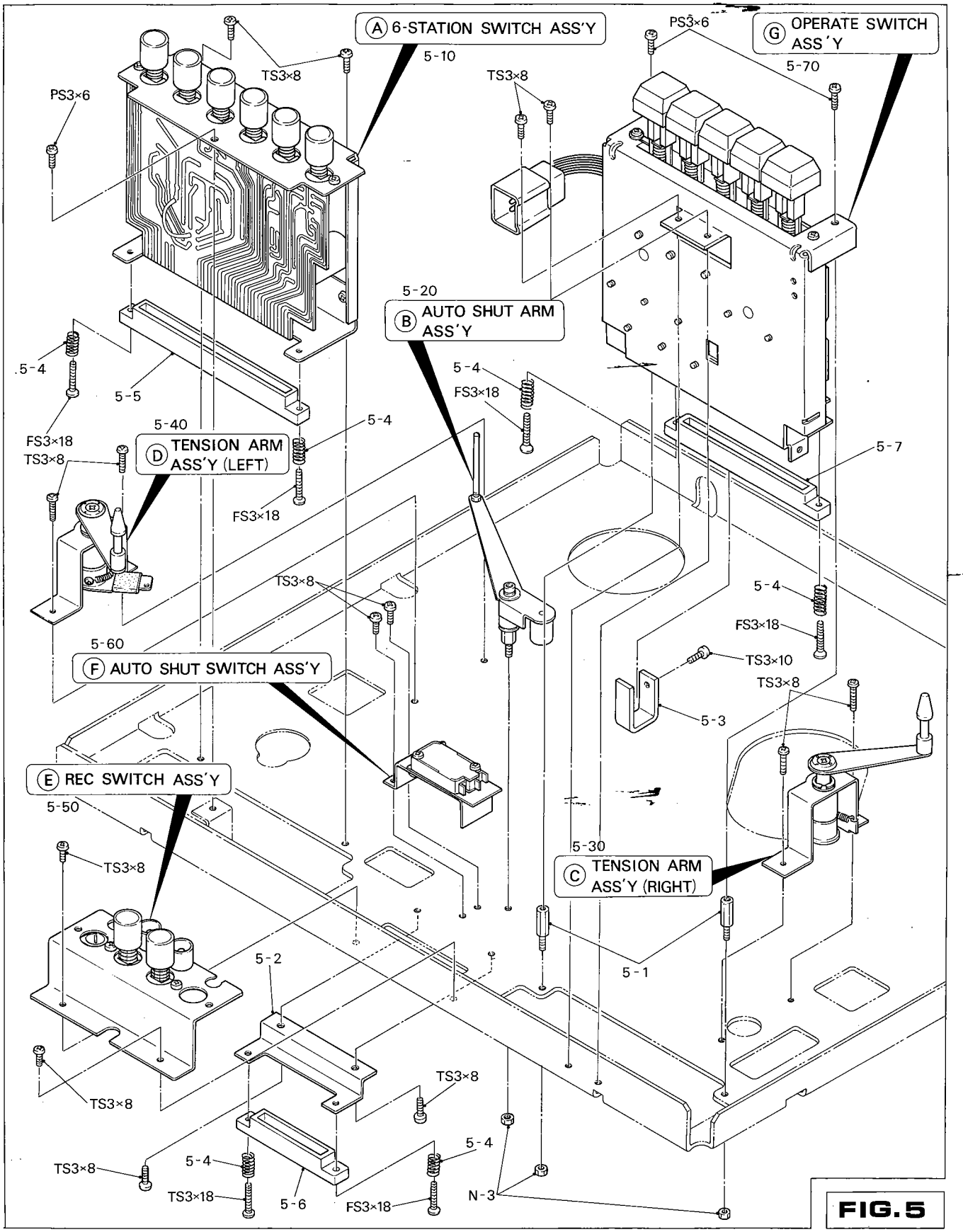


FIG.5

MECHANISM EXPLODED VIEW (A)

Ref. No.	Parts No.	Description	Identity No.	Source
5-1	531-0019-00	Stud, 5-station SW Mount		4ST2-231221
5-2	533-0016-00	Holder, Rec. Connector		4ST2-241186
5-3	*Not Used			
5-4	541-0001-00	Spring, Connector Hold		4ST2-241117
5-5	133-8001-00	Connector, 22-P (S)	250-22-50-179M	SE2B002
5-6	133-2001-00	Connector, 10-P (S)	250-10-50-179M	SE2B002
5-7	133-6001-00	Connector, 18-P (S)	250-18-50-179M	SE2B002

PARTIAL EXPLODED VIEW(A-1)

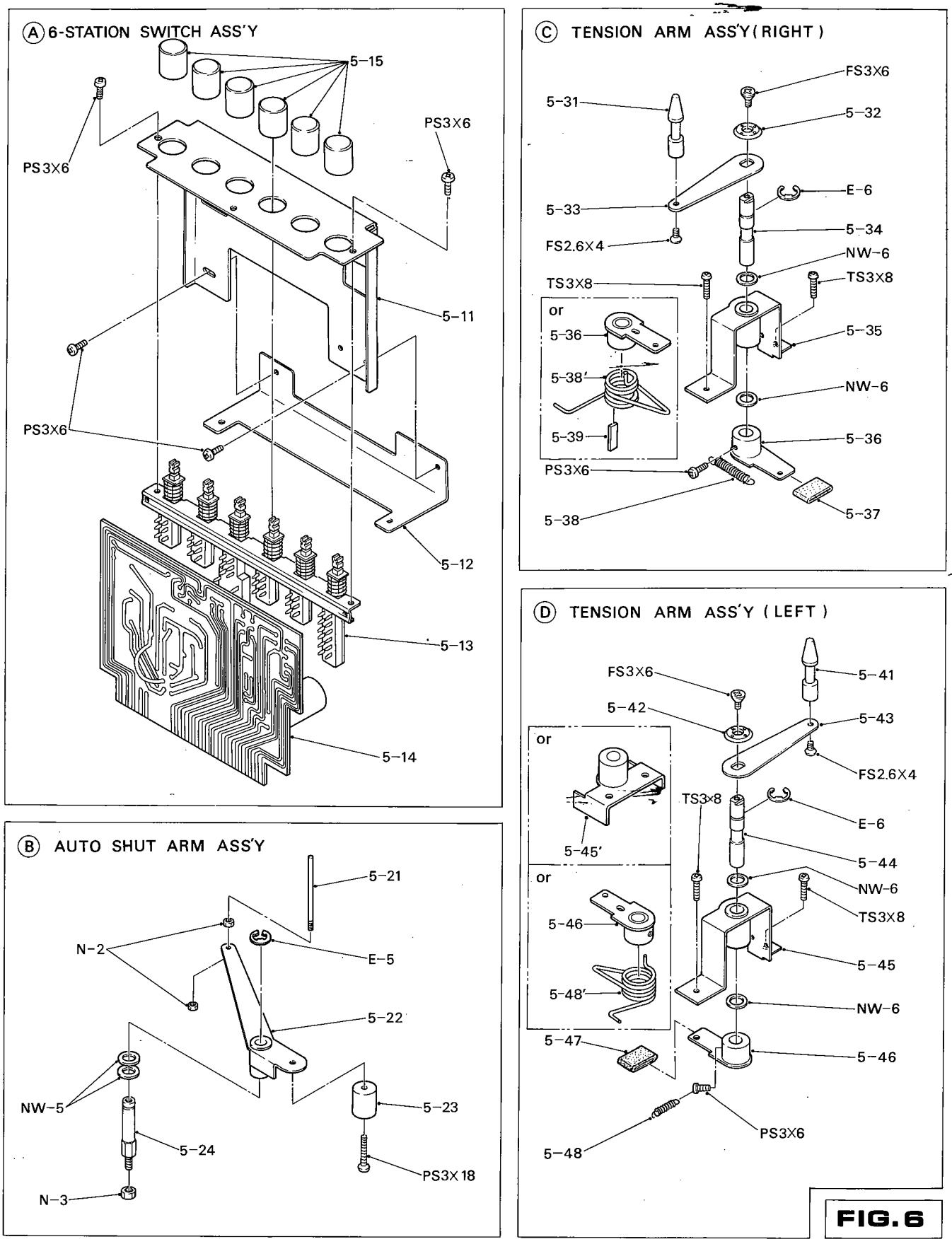


FIG.6

PARTIAL EXPLODED VIEW (A-1)

Ref. No.	Parts No.	Description	Identity No.	Source
		Ⓐ 6-STATION SWITCH ASSY		
5-10	☆820-0007-00	Switch Assy, 6-station		ST1D22D01
	●820-0008-00	Switch Assy, 6-station		SE2D22K
5-11	513-0003-00	Chassis, 6-station SW Mount		3ST2-241006
5-12	533-0047-00	Holder, 6-station SW Connector		4ST2-241248
5-13	☆131-1007-00	Switch, Push, 6-station	6FPY-0001FF2010	SE1B064
	●131-1008-00	Switch, Push, 6-station	6FPY-0008FF2020	SE2B056
5-14	☆821-0007-00	PC Board Assy, 6-station SW	PCM-326	ST1D22D01
	●821-0008-00	PC Board Assy, 6-station SW	PCM-326	SE2D22K
5-15	556-0022-00	Push Button, Round, Black		4ST2-235087
		Ⓑ AUTO SHUT ARM ASSY		
5-20	840-0001-00	Arm Assy, Auto Shut		ST1D32D02
5-21	558-0013-00	Pin, Auto Shut		4ST2-241117
5-22	525-0001-84	Arm, Auto Shut		4ST2-241109-4
5-23	532-0013-00	Counter Weight, Auto Shut Arm		4ST2-241101
5-24	521-0001-01	Shaft, Auto Shut		4SE2-241002-1
		Ⓒ TENSION ARM ASSY (RIGHT)		
5-30	☆840-0014-00	Arm Assy, Tension (R)		ST1D01D7
	●840-0003-00	Arm Assy, Tension (R)		SE2D43K2
5-31	558-0005-05	Tape Guide, Tension Arm		4ST2-241069-5
5-32	555-0020-01	Washer, Dress, Tension Arm		4ST2-241271-1
5-33	558-0006-00	Arm, Tension		4ST2-241025
5-34	521-0002-05	Shaft, Tension Arm		4ST2-241070-5
5-35	522-0004-85	Mount, Tension Arm		4ST2-241068-5
5-36	528-0001-82	Limiter, Tension Arm		4ST2-241193-2
5-37	535-0003-00	Damper, Tension Arm		4ST2-231087
5-38	☆●541-0003-02	Spring, Tension Arm (R)		4ST2-241359-2
	☆541-0018-03	Spring, Tension Arm (R)		4ST2-241246-3
5-39	☆●534-0005-02	Key, Tension Arm Limiter		4ST2-241361-2
		Ⓓ TENSION ARM ASSY (LEFT)		
5-40	★840-0008-00	Arm Assy, Tension (L)		ST1D01D7
	☆●840-0002-01	Arm Assy, Tension (L)		SE2D43K1
5-41	558-0005-05	Tape Guide, Tension Arm		4ST2-241069-5
5-42	555-0020-01	Washer, Dress, Tension Arm		4ST2-241271-1
5-43	558-0006-00	Arm, Tension		4ST2-241025
5-44	★521-0002-05	Shaft, Tension Arm		4ST2-241070-5
	☆●521-0007-01	Shaft, Tension Arm		4ST2-241382-1
5-45	★522-0004-85	Mount, Tension Arm		4ST2-241068-5
	☆●522-0005-81	Mount, Tension Arm		4ST2-241380-1
5-46	528-0001-82	Limiter, Tension Arm		4ST2-241193-2
5-47	535-0003-00	Damper, Tension Arm		4ST2-231087
5-48	★541-0017-03	Spring, Tension Arm (L)		4ST2-241246-3
	●541-0016-00	Spring, Tension Arm (L)		4SE2-241076
	☆541-0020-00	Spring, Tension Arm (L)		4SE2-241065

PARTIAL EXPLODED VIEW(A-2)

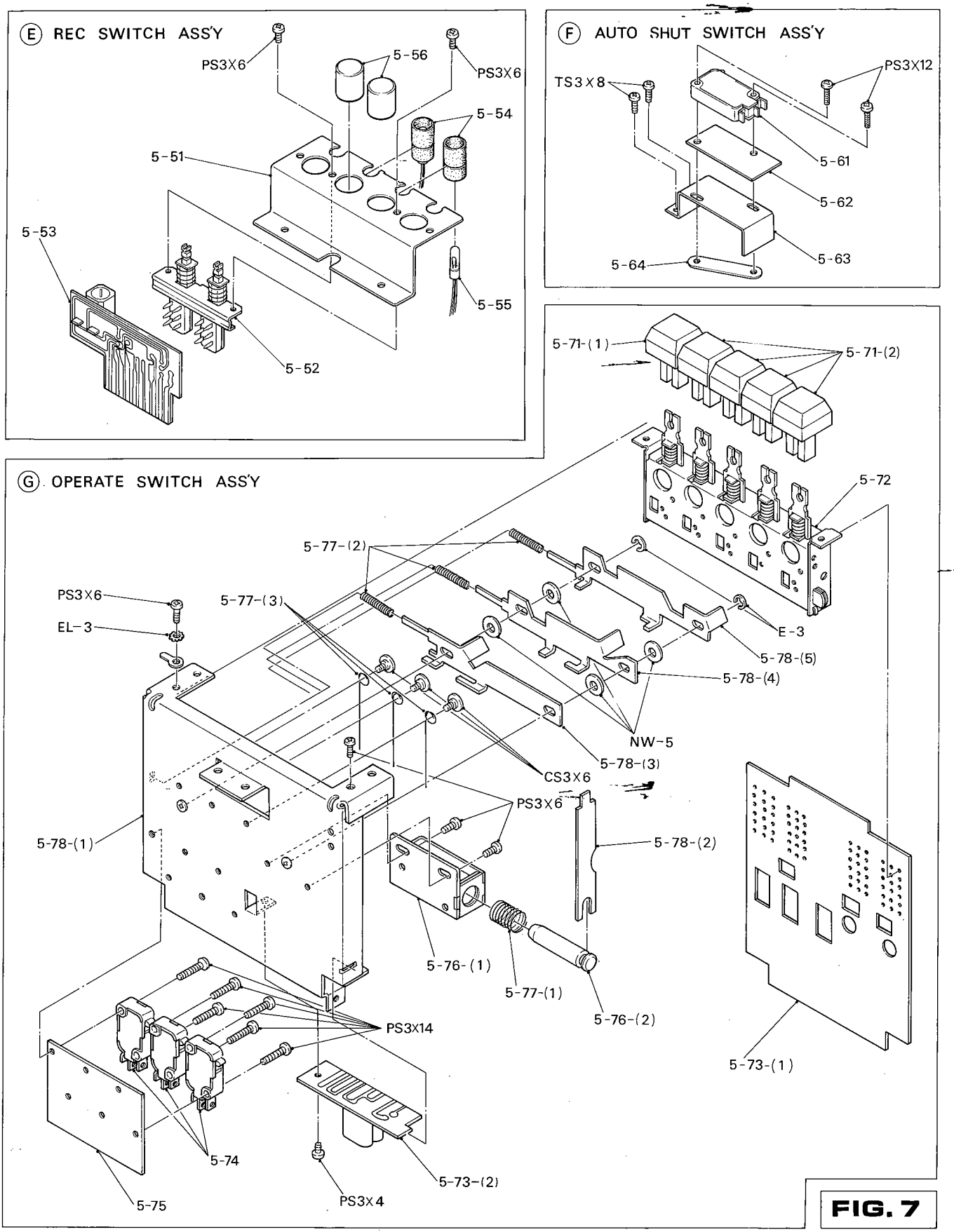


FIG. 7

PARTIAL EXPLODED VIEW (A-2)

Ref. No.	Parts No.	Description	Identity No.	Source
		Ⓔ REC SWITCH ASSY		
5-50	☆820-0009-00	Switch Assy, Rec.		ST1D23D01
	●820-0010-00	Switch Assy, Rec.		SE2D23K
5-51	533-0024-05	Holder, Rec. SW		4ST2-241084-5
5-52	131-1005-00	Switch, Push, 2-station, Miniature	2FS-4u-24-1	SE1B062
5-53	☆821-0009-00	PC Board Assy, Rec. SW	PCM-330 & PCM-321	ST1D23D02
	●821-0010-00	PC Board Assy, Rec. SW	PCM-330 & PCM-321	SE2D23K1
5-54	535-0013-00	Holder, Lamp		4ST2-241220
5-55	145-3001-00	Lamp, Rec. 6V, 100mA, 5ϕ		
5-56	556-0009-00	Push Button, Round, Red		4ST2-235087
		Ⓕ AUTO SHUT SWITCH ASSY		
5-60	840-0004-00	Switch Assy, Auto Shut		ST1D32D03
5-61	131-3001-00	Switch, Micro, Auto Shut Off	MT-10	ST9B045
5-62	536-0006-01	Insulator, Micro SW		4ST2-231175-1
5-63	533-0026-01	Mount, Auto Shut SW		4ST2-241108-1
5-64	533-0027-00	Plate, Auto Shut SW Fixing		4ST2-231032
		Ⓖ OPERATE SWITCH ASSY		
5-70	☆820-0011-00	Switch Assy, Operate		ST1D21D01
	●820-0012-00	Switch Assy, Operate		SE2D21K
5-71-(1)	556-0021-00	Ope. Button, Rec. Red		ST1D21D04
5-71-(2)	556-0020-00	Ope. Button, Black		ST1D21D04
5-72	131-1006-00	Switch, 5-station, Ope.	SPM055K	SEOB040
5-73-(1)	☆821-0011-00	PC Board Assy, Ope. SW	PCM-323	ST1D21D03
	●821-0012-00	PC Board Assy, Ope. SW	PCM-323	SE2D21K2
5-73-(2)	☆821-0013-00	PC Board Assy, Spark Killer	PCM-215	ST1D21D05
	●821-0014-00	PC Board Assy, Spark Killer	PCM-215	SE2D21K4
5-74	131-3002-00	Switch, Micro	~~MS-50t~~	SE2B062
5-75	536-0015-00	Insulator, Switch, Micro		4ST2-236038
5-76-(1)	116-2004-00	Solenoid, Ope. SW Release, DC24V 50 ohm	DS-08E-701	ST9B079
5-76-(2)		Plunger, Ope. SW Release Solenoid		
5-77-(1)	541-0013-00	Spring, Ope. SW Release Solenoid		4ST2-231182
5-77-(2)	541-0014-00	Spring, Slide Lever Return		4ST2-236015
5-77-(3)	541-0015-00	Actuator, Micro SW		4ST2-236014
5-78-(1)	533-0039-80	Holder, Ope. SW Assy		2ST2-236003
5-78-(2)	525-0015-00	Actuator, Ope. SW Release		4ST2-231135
5-78-(3)	525-0018-00	Lever, Slide, Lower		4ST2-236008
5-78-(4)	525-0017-00	Lever, Slide, Middle		4ST2-236007
5-78-(5)	525-0016-00	Lever, Slide, Upper		4ST2-236006

MECHANISM EXPLODED VIEW(B)

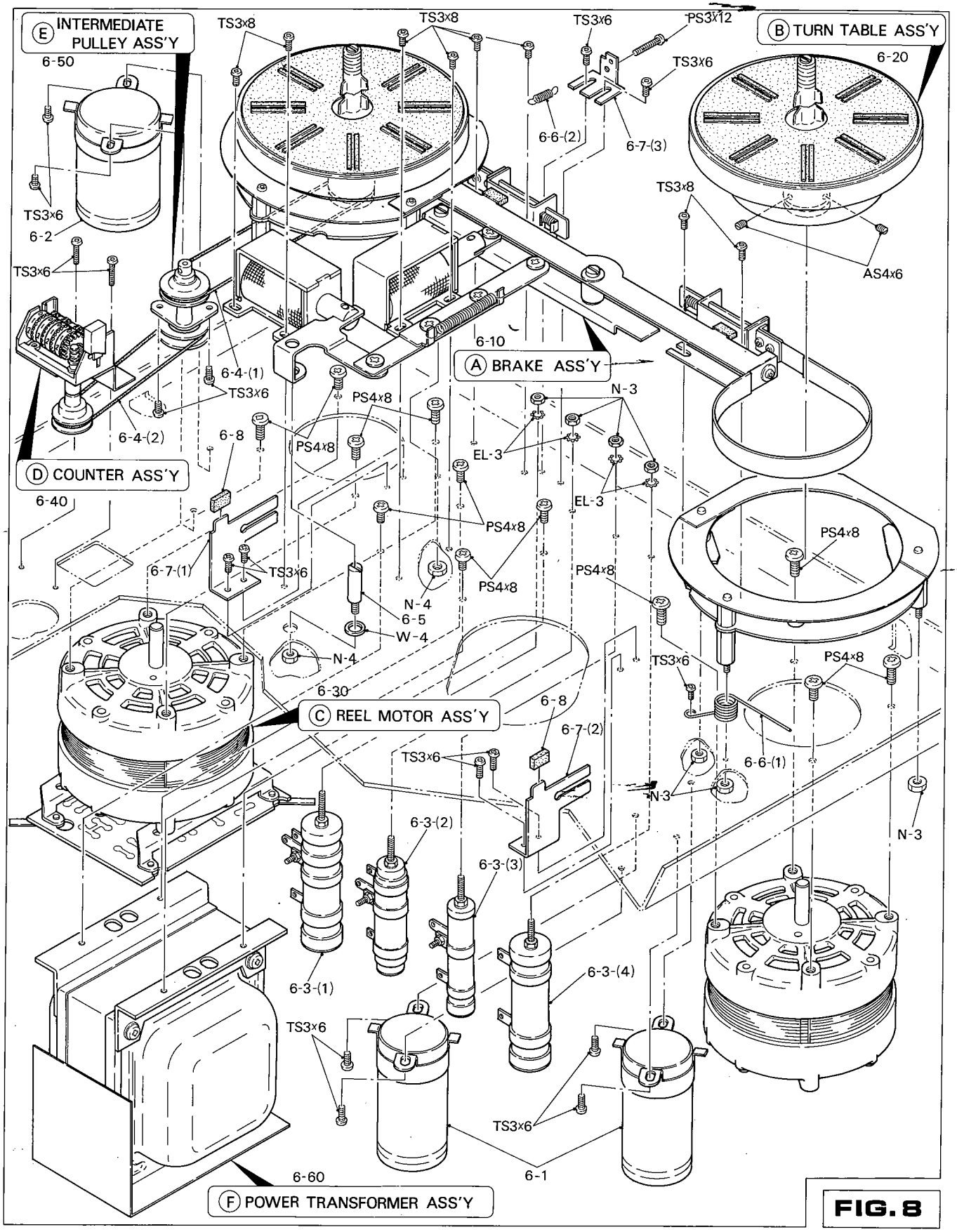


FIG. 8

MECHANISM EXPLODED VIEW (B)

Ref. No.	Parts No.	Description	Identity No.	Source
6-1	449-4542-80	Capacitor, Phase Advancing, 4.0+0.5μF, Reel Motor		SE1B079
6-2	426-2278-60	Capacitor, Electrolytic, 2200μF 50WV	CE-62W	ST9B102
6-3-(1)	300-1510-90	Resistor, Wirewound, 150 ohm 20W, Play Take up	HTH20A1G	SE1B084
6-3-(2)	300-4010-90	Resistor, Wirewound, 400 ohm 15W, Play Holdback 7''	HTH15A1G	
6-3-(3)	300-5009-90	Resistor, Wirewound, 50 ohm 10W, Play Holdback 10''	HTH10A1G	SE1B084
6-3-(4)	☆300-1420-80	Resistor, Wirewound, 1400 ohm 20W, FF/REW Holdback	HTH20G	
	●300-1420-90	Resistor, Wirewound, 1400 ohm 20W, FF/REW Holdback	HTH20A1G	
6-4-(1)	524-0001-00	Belt, Counter, Large 103φ		4ST2-241092
6-4-(2)	524-0002-00	Belt, Counter, Small 47.43φ		4ST2-241092
6-5	521-0003-00	Shaft, Aux. Brake		4ST2-241262
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
6-8	535-0004-00	Cushion, Brake Linkage Guide		4ST2-231279

PARTIAL EXPLODED VIEW(B-1)

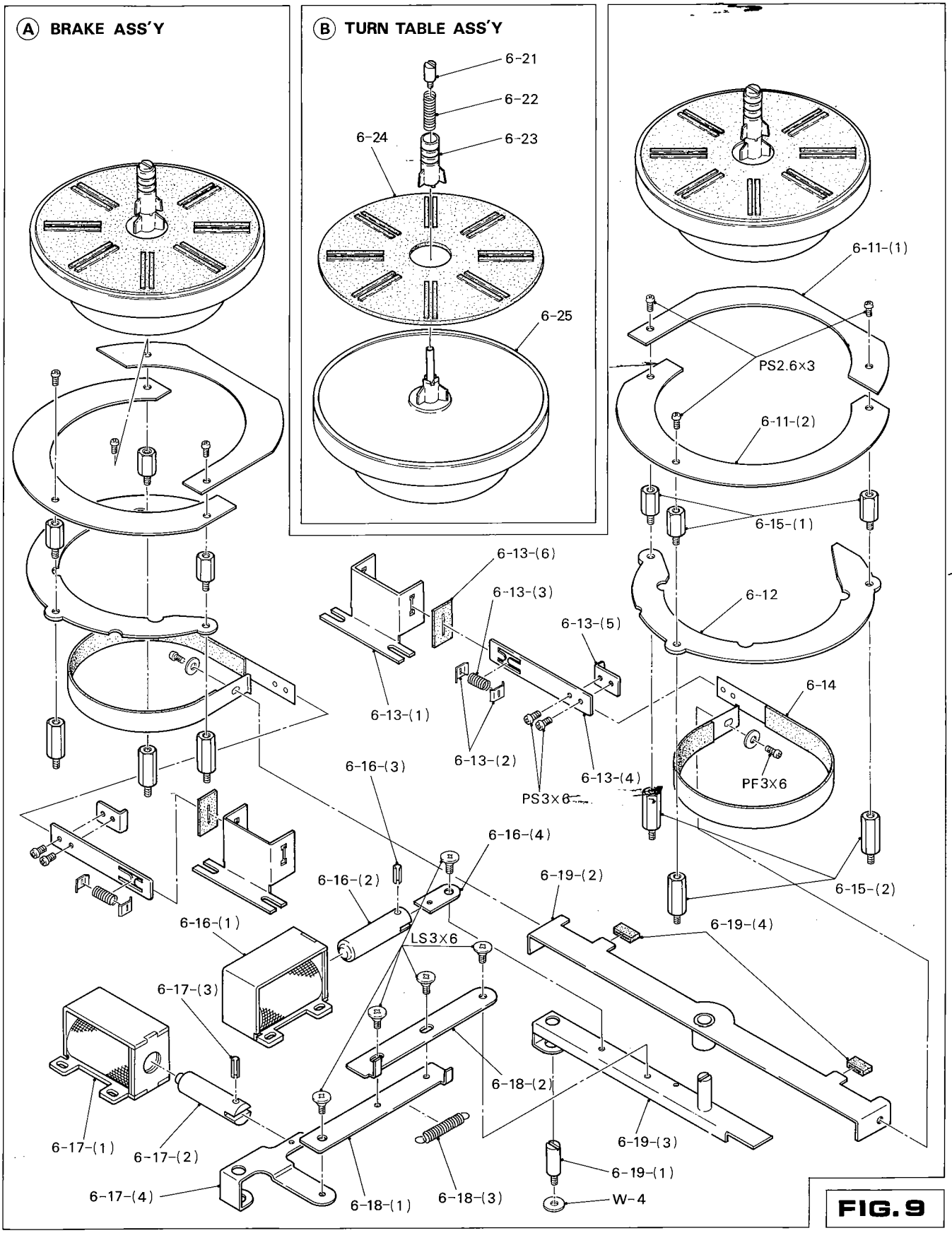
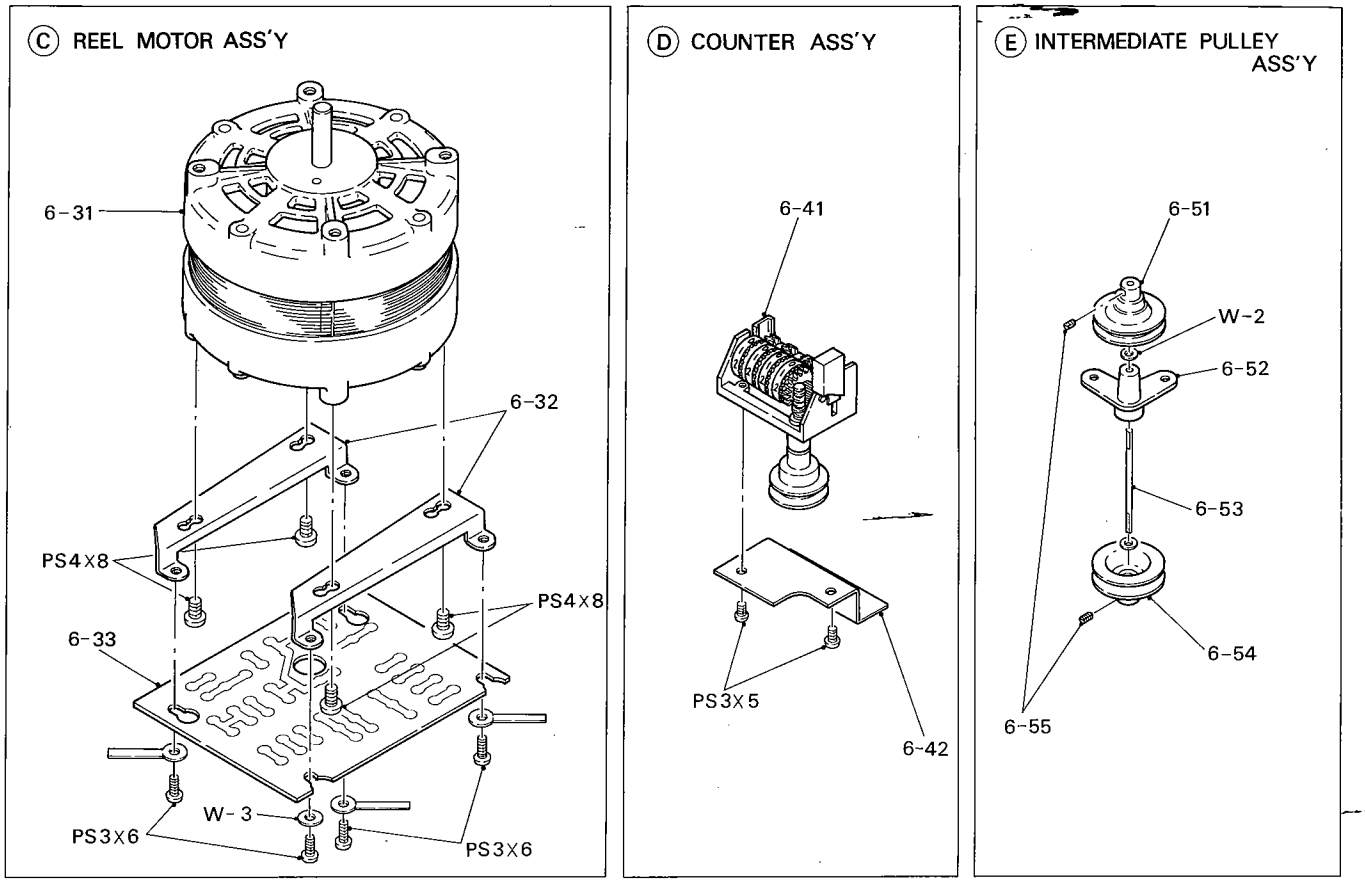


FIG. 9

PARTIAL EXPLODED VIEW (B-1)

R ef. No.	Parts No.	Description	Identity No.	Source
		Ⓐ BRAKE ASSY		
6-10	☆800-0004-00	Brake Assy		ST1D03D1
	●800-0002-00	Brake Assy		SE2D02K
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)	☆533-0040-00	Bracket, Brake		4ST2-231091
	●533-0033-01	Bracket, Brake		4ST2-241313-1
6-13-(2)	532-0003-00	Washer, Torque Limiter Spring		4ST2-231021
6-13-(3)	541-0006-01	Spring, Brake Torque Limiter		4ST2-231126-1
6-13-(4)	534-0007-00	Plate, Brake Torque Limiter		4ST2-231059
6-13-(5)	528-0006-00	Limiter, Brake Band		4ST2-231060
6-13-(6)	535-0006-00	Damper, Brake Band Limiter		4ST2-241166
6-14	800-0001-00	Brake Band with Lining		ST1D03D3
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, 3ϕx12mm		
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	SE1B031
6-17-(2)		Plunger, Aux. Solenoid		
6-17-(3)	537-0003-00	Spring Pin, 3ϕx12mm		
6-17-(4)	525-0003-02	Arm, Aux. Brake		4ST2-241261-2
6-18-(1)	525-0005-02	Plate (B), Aux. Brake		4ST2-241260-2
6-18-(2)	525-0004-01	Plate (A), Aux. Brake		4ST2-241259-1
6-18-(3)	541-0007-05	Spring, Aux. Brake		4ST2-231125-5
6-19-(1)	521-0005-02	Shaft, Brake Lever (A)		4ST2-241097-2
6-19-(2)	525-0006-84	Linkage, Brake		3ST2-241012-4
6-19-(3)	525-0007-80	Lever, Brake		4SE2-241012
6-19-(4)	535-0004-00	Damper, Brake Linkage		4ST2-231279
		Ⓑ TURN TABLE ASSY		
6-20	810-0001-00	Turn Table Assy		ST1D13D2
6-21	558-0011-00	Top Screw, Turn Table Spindle		4ST2-227094
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		3ST2-241071
6-25	558-0010-88	Turn Table		2ST2-241008-8

PARTIAL EXPLODED VIEW(B-2)



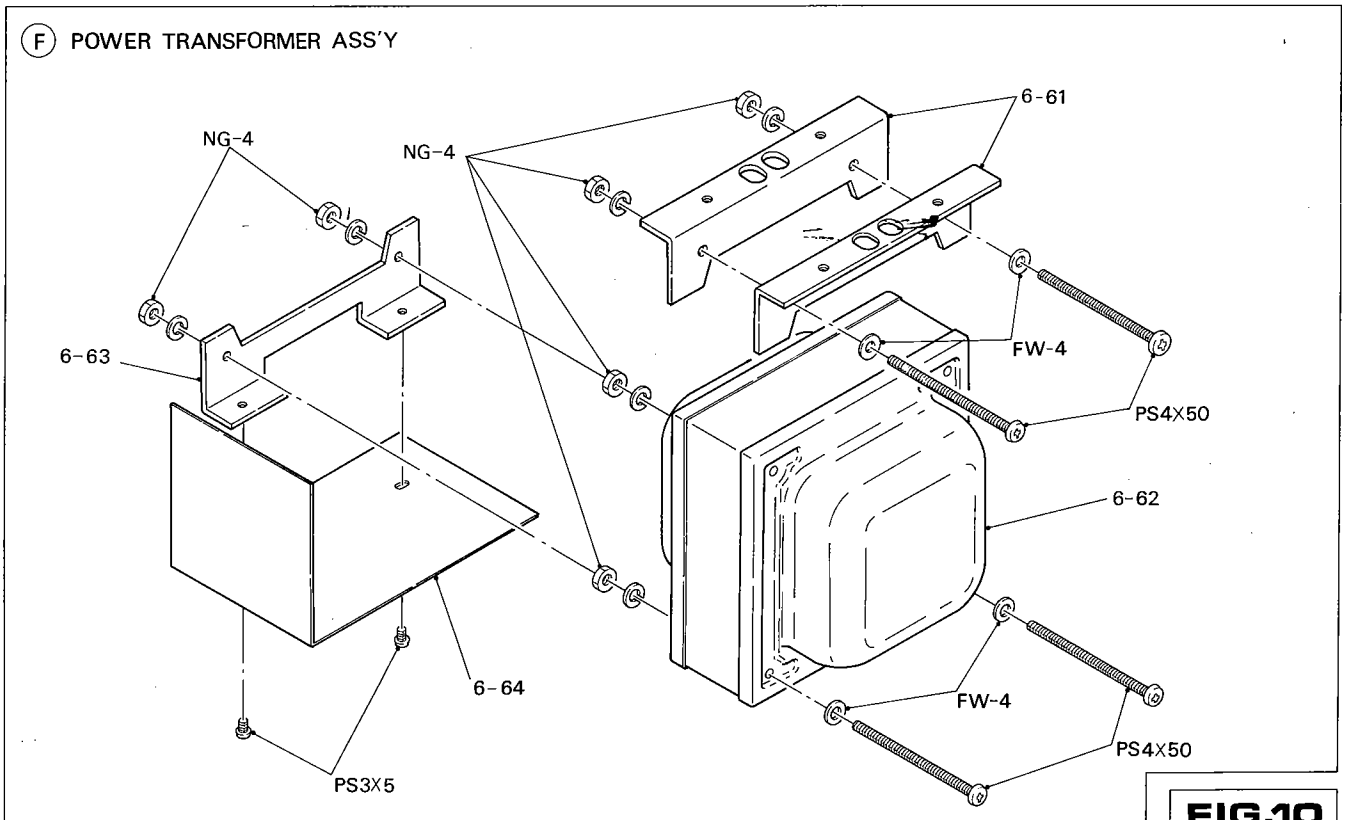


FIG.10

PARTIAL EXPLODED VIEW (B-2)

Ref. No.	Parts No.	Description	Identity No.	Source
		Ⓒ REEL MOTOR ASSY		
6-30	810-0008-00	Reel Motor Assy		ST1D13D1
6-31	113-1001-00	Motor, Reel	1B-961R5	SE1B065
6-32	533-0023-00	Bracket, AC Terminal PCB		4ST2-231220
6-33	811-0003-00	PC Board Assy, AC Terminal	PCM-322	ST1D13D3
		Ⓓ COUNTER ASSY		
6-40	840-0009-00	Counter Assy		ST1D33D02
6-41	143-3101-00	Counter	MP492-05	SE1B074
6-42	533-0041-00	Holder, Counter		4ST2-241078
		Ⓔ INTERMEDIATE PULLEY ASSY		
6-50	840-0010-00	Intermediate Pulley Assy		ST1D33D03
6-51	523-0016-82	Pulley, Intermediate		4ST2-235002-2
6-52	522-0008-80	Bearing, Intermediate Pulley		4ST2-235003
6-53	521-0017-00	Shaft, Intermediate Pulley		4ST2-235042
6-54	523-0016-82	Pulley, Intermediate		4ST2-235002-2
6-55		Set Screw, Hex. Hole M2		
		Ⓕ POWER TRANSFORMER ASSY		
6-60	860-0001-00	Power Transformer Assy		ST1D41D01
6-61	533-0042-00	Mount, Power Transformer		4ST2-241152
6-62	111-1002-00	Power Transformer	PT-1038	SE1B137
6-63	536-0016-00	Bracket, Power Transformer Shield		4ST2-241281
6-64	536-0017-00	Shield, Plate, Power Transformer		4ST2-241282

MECHANISM EXPLODED VIEW(C)

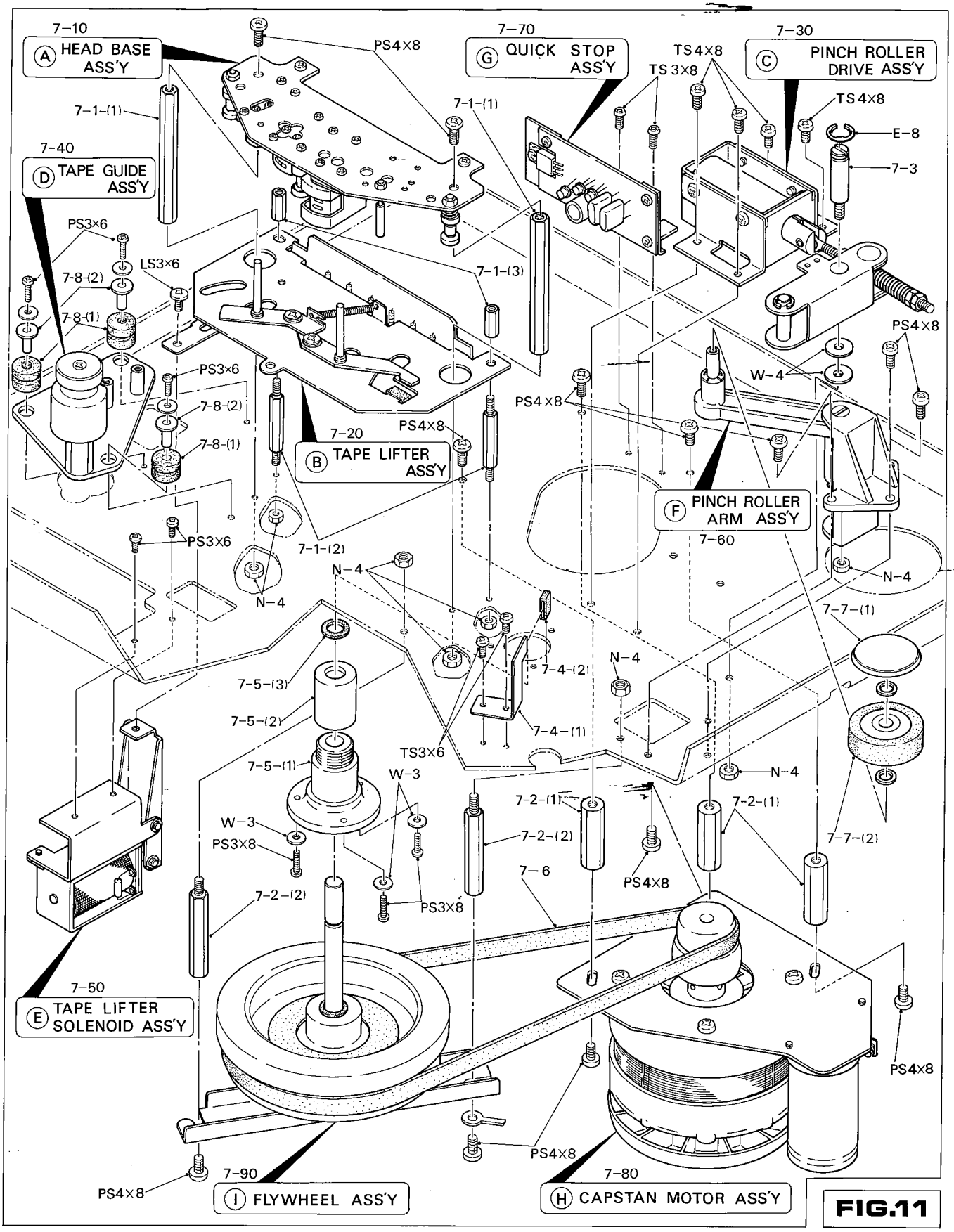
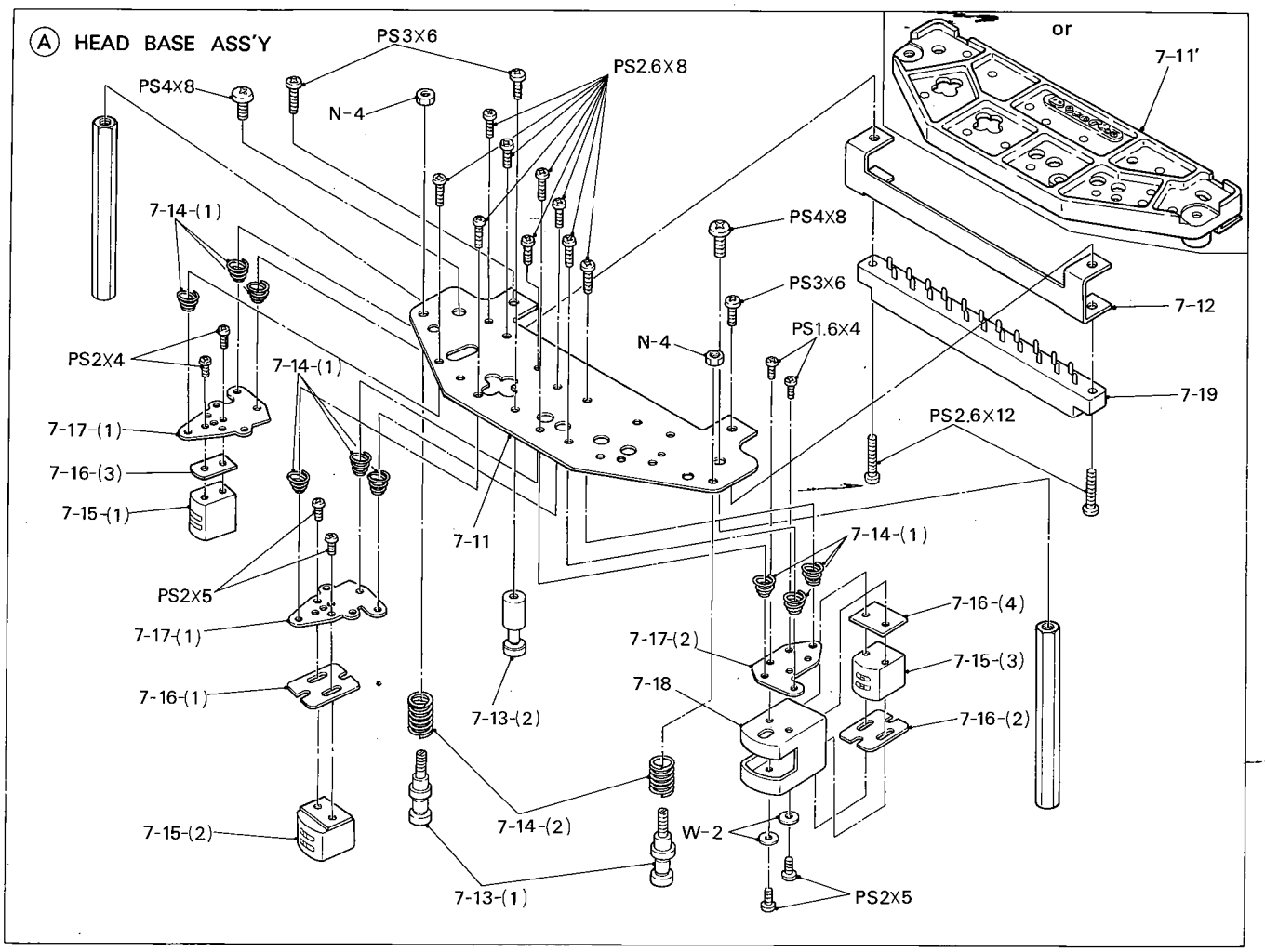


FIG.11

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
7-6	☆ 524-0004-00	Belt, Capstan Drive 122.5ϕ		4ST2-241093
	● 524-0003-02	Belt, Capstan Drive 135.5ϕ		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

PARTIAL EXPLODED VIEW(C-1)



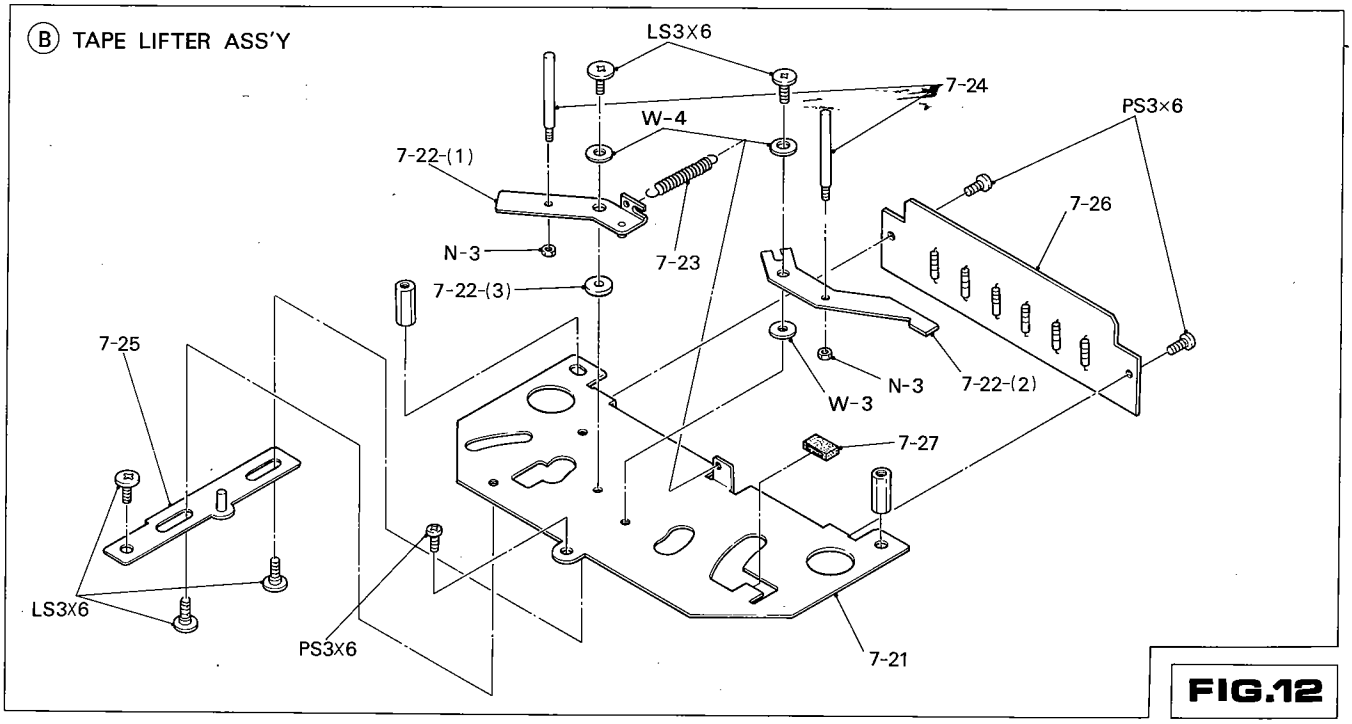


FIG.12

PARTIAL EXPLODED VIEW (C-1)

Ref. No.	Parts No.	Description	Identity No.	Source
		Ⓐ HEAD BASE ASSY		
7-10	☆830-0004-00	Head Base Assy		ST1D31D02
	●830-0005-00	Head Base Assy		SE2D31K1
7-11	☆513-0011-00	Base, Head Mount		3ST2-241010
	●513-0007-04	Base, Head Mount		1ST2-241021-4
7-12	☆533-0052-00	Holder, Head Connector		4ST2-241106
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-(1)	541-0009-01	Spring, Head Azimuth		4ST2-231276-1
7-14-(2)	☆541-0019-00	Spring, Tape Guide (B)		4ST2-231220
7-15-(1)	☆121-4402-00	Head, Erase	E-1242	
	●121-4301-00	Head, Erase	E-1222-EZ-1200	SE2B076
7-15-(2)	☆121-2401-00	Head, Record	R-1242	
	●121-2301-00	Head, Record	R-1222-CA-1200	SE2B061
7-15-(3)	☆121-1401-00	Head, Play-back	P-1242-BA-1200	SE2B144
	●121-1301-00	Head, Play-back	P-1222-AA-1200	SE2B060
7-16-(1)	☆532-0018-01	Spacer (C), Record Head t=1.6mm		4ST2-236053-1-1
	●532-0011-01	Spacer (D), Record Head t=2.0mm		4ST2-236053-1-1
7-16-(2)	☆532-0011-01	Spacer (D), Play-back Head t=2.0mm		4ST2-236053-1-1
	●532-0012-01	Spacer (E), Play-back Head t=1.2mm		4ST2-236053-1-1
7-16-(3)	☆532-0009-00	Spacer, Erase Head		4ST2-241217
	●532-0011-01	Spacer, Erase Head		4ST2-236053-1-1
7-16-(4)	532-0010-02	Spacer (Upper), Play-back Head		4ST2-231253-2
7-17-(1)	☆533-0053-00	Mount (E), Erase Head		4ST2-236033
	●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-back Head		4ST2-231195-5
7-19	133-8001-00	Connector, 22-P (S)	250-22-50-179M	SE2B002
		Ⓑ TAPE LIFTER ASSY		
7-20	☆830-0006-00	Tape Lifter Assy		ST1D31D03
	●830-0007-00	Tape Lifter Assy		SE2D32K1
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	☆831-0002-00	PC Board Assy, Head Connector	PCM-294	ST1D31D05
	●831-0003-00	PC Baord Assy, Head Connector	PCM-294	SE2D32K2
7-27	535-0004-00	Damper, Tape Lifter		4ST2-241279

PARTIAL EXPLODED VIEW(C-2)

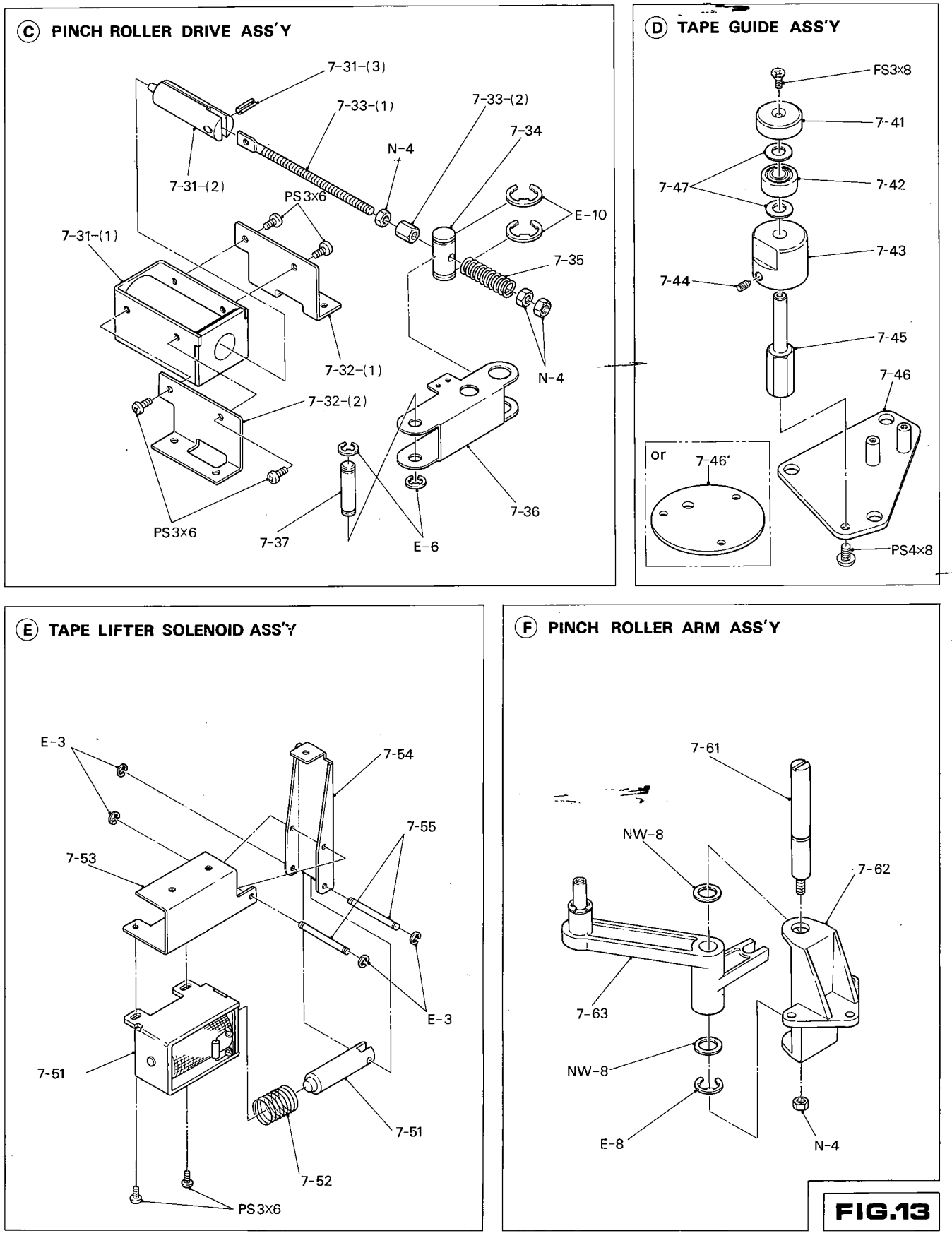


FIG.13

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		ST1D04D3
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, 3ϕx12mm		
7-32-(1)	533-0031-02	Bracket (R), Pressure Solenoid		4ST2-231171-2
7-32-(2)	533-0032-02	Bracket (L), Pressure Soelnoid		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	★840-0011-00	Tape Guide Assy		ST1D01D5
	☆840-0012-00	Tape Guide Assy		ST1D01D5
	●840-0013-00	Tape Guide Assy		SE2D43K1
7-41	★☆558-0015-00	Tape Guide (Upper)		4ST2-241073
	●558-0007-02	Tape Guide (Upper)		4SE2-241053-2
7-42	★☆558-0018-00	Bearing, Ball		4ST2-241075
	●122-0006-00	Bearing, Ball	SSR-1760ZZRPOP13LG20	SE2B100
7-43	★☆558-0016-00	Tape Guide (Lower)		4ST2-241074
	●558-0019-00	Tape Guide (Lower)		4SE2-241052
7-44		Set Screw, Hex. Hole M4x6		
7-45	★531-0015-00	Pole, Tape Guide		4ST2-241077
	☆531-0031-00	Pole, Tape Guide		4SE2-241024
	●531-0018-00	Pole, Tape Guide		4SE2-241051
7-46	★533-0054-00	Mount, Tape Guide		4ST2-241076
	☆●533-0055-80	Mount, Tape Guide		4ST2-241377
7-47	●558-0017-00	Spacer, Bearing		4ST2-241054
		Ⓔ TAPE LIFTER SOLENOID ASSY		
7-50	830-0003-00	Tape Lifter Solenoid Assy		ST1D31D04
7-51-(1)	116-2002-00	Solenoid, Tape Lifter, DC24V 48 ohm	DS-10M-703	SE1B031
7-51-(2)		Plunger, Tape Lifter Solenoid		
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		ST1D04D4
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(C-3)

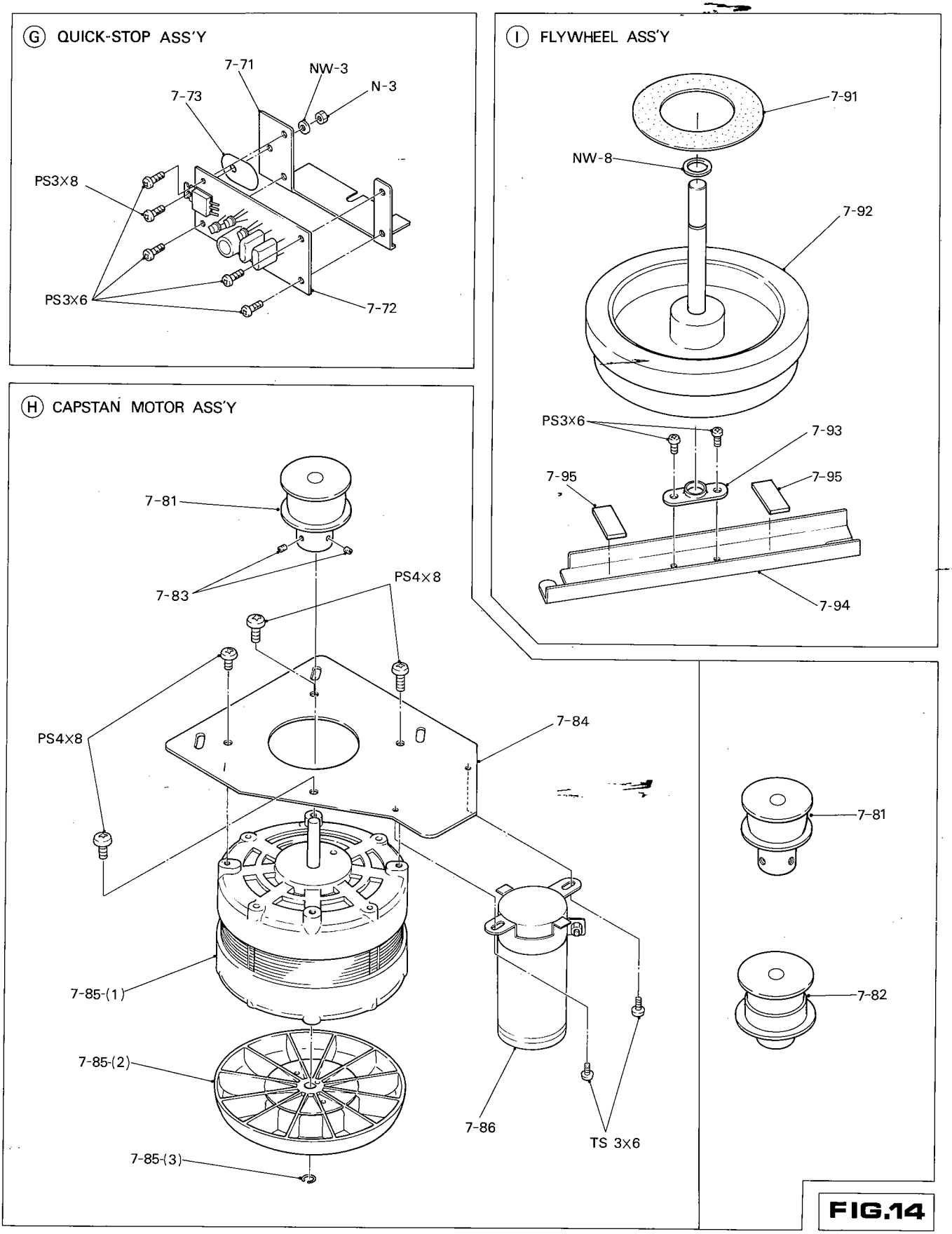


FIG.14

PARTIAL EXPLODED VIEW (C-3)

Ref. No.	Parts No.	Description	Identity No.	Source
		Ⓖ QUICK STOP ASSY		
7-70	800-0005-00	Quick Stop Assy		ST1D03D6
7-71	533-0021-01	Heat Sink, Quick Stop PCB		4ST2-241270-1
7-72	801-0003-00	PC Board Assy, Quick Stop	PCM-331	ST1D03D6
7-73	536-0002-00	Mylar Sheet, 2SD234Y		
		Ⓗ CAPSTAN MOTOR ASSY		
7-80	☆810-0009-00	Capstan Motor Assy (U.S.A. Type)		ST1D11D1
	☆810-0010-00	Capstan Motor Assy (Universal Type)		ST1D11D1
	●810-0007-00	Capstan Motor Assy		SE2D11K1
7-81	☆523-0018-00	Pulley, Motor (U.S.A. Type) No. 2		4SE2-241010
	☆523-0019-00	Pulley, Motor (U.S.A. Type) No. 3		4SE2-241010
	☆523-0020-00	Pulley, Motor (U.S.A. Type) No. 4		4SE2-241010
7-82	☆523-0021-00	Pulley, Motor (Universal Type) No. 2		4SE2-241009
	☆523-0022-00	Pulley, Motor (Universal Type) No. 3		4SE2-241009
	☆523-0023-00	Pulley, Motor (Universal Type) No. 4		4SE2-241009
	●523-0004-05	Pulley, Motor No. 1		3ST2-241132-5
	●523-0005-05	Pulley, Motor No. 1.5		3ST2-241132-5
	●523-0006-05	Pulley, Motor No. 2		3ST2-241132-5
	●523-0007-05	Pulley, Motor No. 2.5		3ST2-241132-5
	●523-0008-05	Pulley, Motor No. 3		3ST2-241132-5
	●523-0009-05	Pulley, Motor No. 3.5		3ST2-241132-5
	●523-0010-05	Pulley, Motor No. 4		3ST2-241132-5
	●523-0011-05	Pulley, Motor No. 4.5		3ST2-241132-5
	●523-0012-05	Pulley, Motor No. 5		3ST2-241132-5
	●523-0014-05	Pulley, Motor No. 5.5		3ST2-241132-5
	●523-0015-05	Pulley, Motor No. 6		3ST2-241132-5
7-83		Set Screw, Hex. Hole M4x6		
7-84	513-0009-00	Chassis, Motor		4SE2-241015
7-85-(1)	☆113-2002-00	Motor, Capstan	HS-51C	SE0B081
	●113-2001-00	Motor, Capstan	HC-634DD7Z	SE2B085
7-85-(2)	*Included in above			
7-85-(3)	*Included in above			
7-86	☆449-3842-80	Capacitor, Phase Advancing, 2.8 + 1.0μF 250WV		
	●449-2542-80	Capacitor, Phase Advancing, 2.0 + 0.5μF 250WV		SE2B077
		Ⓘ FLYWHEEL ASSY		
7-90	810-0004-00	Flywheel Assy		ST1D12D
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

MEMO

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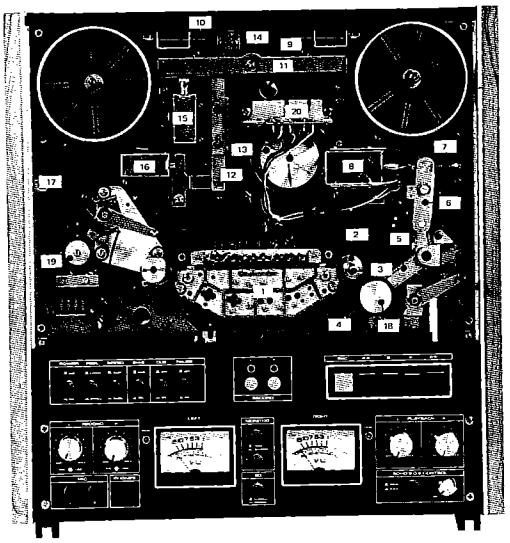
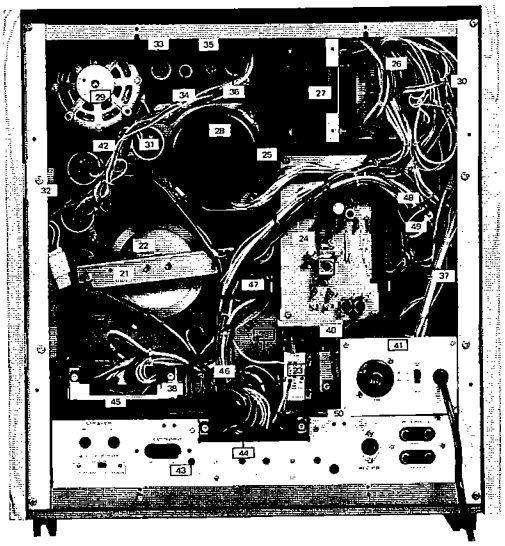
2-2 DOKORDER MODEL 1122

FRONT VIEW



1 Head Base Assy
2 Bearing, Capstan
3 Shaft, Capstan
4 Pinch Roller
5 Arm, Pinch Roller
6 Arm, Pinch Roller Drive
7 Spring, Pressure
8 Solenoid, Pinch Roller Pressure
9 Bracket, Brake
10 Spring, Brake Torque Limiter
11 Linkage, Brake
12 Belt, Capstan Drive
13 Pulley, Motor
14 Adjuster, Brake Torque
15 Solenoid, Brake
16 Solenoid, Aux. Brake
17 Belt, Counter (Large)
18 Dressing Screw, Pinch Roller
19 Intermedia Pulley Assy
20 Quick Stop Assy

BACK VIEW



21 Arm, Flywheel Support
22 Flywheel
23 Solenoid, Tape Lifter
24 PC Board Assy, Bias OSC
25 PC Board Assy, Control

26 PC Board Assy, AC Terminal
27 Power Transformer
28 Motor, Capstan
29 Motor, Reel (Left)
30 Motor, Reel (Right)
31 Capacitor 2.8 + 1.0uF, Phase Advancing (Capstan Motor)
32 Capacitor 4.0 + 0.5uF, Phase Advancing (Reel Motor)
33 Resistor 150 ohm 20W, Wirewound (Take-up)
34 Resistor 400 ohm 15W, Wirewound (Holdback 7")
35 Resistor 50 ohm 10W, Wirewound (Holdback 10")
36 Resistor 1.5K ohm 20W, Wirewound (FF/REW Holdback)
37 Belt, Counter (Small)
38 Operate Switch Assy
39 REC Switch Assy
40 6-Station Switch Assy
41 Chassis, Power Supply
42 Chassis, Motor
43 Chassis, Amp.
44 Connector 18P(S), Amp.
45 Connector 18P(S), Operate SW.
46 Connector 10P(S), REC. SW.
47 Connector 10P(S), Control P.C.B.
48 Connector 18P(S), Bias P.C.B.
49 Connector 18P(S), Control P.C.B.
50 Connector 22P(S), 6-Station SW.

4. REMOVAL OF OUTER PARTS

CAUTIONS

1. Before attempting to remove the outer parts, be sure to unplug the power cable.
2. Do not try to separate each assembly into its elements.
3. Do not try to separate each part into its elements; the replacement and repair parts are integral by themselves as the parts illustrations show.
4. Whenever a screw or some part accidentally drops inside the tape deck, be sure to remove it; if it is not, damage may occur due to short circuits, etc., when the power is turned on.

4-1 FRONT PANEL

1. Remove the screws ① fastening the HEAD COVER, turning them counterclockwise. Pull the HEAD COVER from the head cover posts ② in the direction of the arrow shown in Figure 1.
2. Loosen and remove the dressing washers ③ and screws fastening the LEFT and RIGHT TENSION ARMS as the Figure②shows.
3. Remove the dressing plate ④ of the PINCH ROLLER by turning it counterclockwise, while pressing it gently, and then remove the pinch roller ⑤ from the pinch-roller shaft.
4. Remove the four screws ⑥ securing the front panel and pull the panel in the direction of the arrow shown in the Figure. To mount the front panel simply reverse the steps (step 1 through 4).
5. To remove the control panel, first remove the amplifier panel. Refer to the section "AMP PANEL."
6. Then remove the four screws securing the control panel, and then the control panel itself.
7. Removal and mounting of the front panel, control panel and amplifier panel should be undertaken referring to the section "CABINET EXPLODED VIEW."

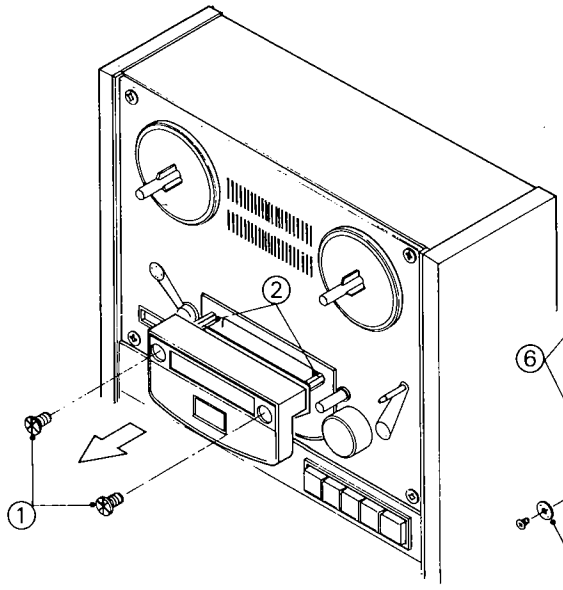


Fig. 1

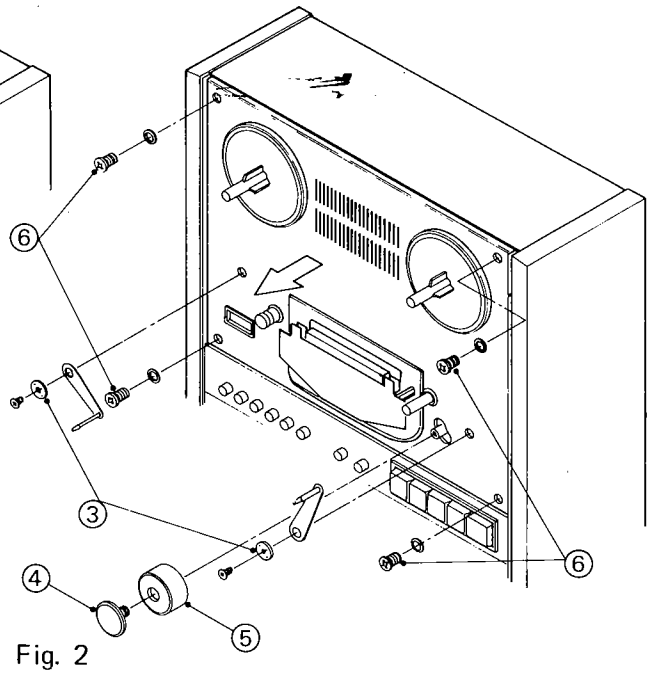


Fig. 2

4-2 AMP PANEL

1. Remove the knobs on the amplifier panel (MIC RECORD LEVEL CONTROLS, LINE RECORD LEVEL CONTROLS, PLAYBACK LEVEL CONTROLS, and ECHO/SOUND-ON-SOUND RECORD LEVEL CONTROL).
2. After the knobs are removed, remove the black-colored amplifier panel-fastening screws. Be careful not to lose the nylon washers.
3. Removal and mounting of the amplifier panel should be undertaken referring to the sections "CABINET EXPLODED VIEW."

4-3 TOP AND BOTTOM BOARDS

1. To remove the top board, loosen and remove the six black-colored top board-fastening screws and then withdraw the top board itself. Be careful not to lose the 4mm washers on the two black-colored screws fastening the board at the middle; these are inserted between the board and the frame.
2. To remove the bottom board, first remove the four screws that fasten the two mount foot assemblies.
3. When the mount foot assemblies are removed, remove the two screws that fasten the bottom board at the middle of the board.
4. In removing and mounting the top and bottom boards, note that different screws are used for each; the top board-fastening screws are painted black, while the bottom board-fastening screws are uncolored.

4-4 BACK PANEL

1. Align the protruding bar of the flywheel-locking screw with the slot in the back panel.
2. Remove the eight back panel-fastening screws. And while removing the back panel, withdraw the AC cord from the hole in the back panel.

4-5 SIDE BOARDS

1. Twelve tapping screws fasten the left and right side boards.
2. Two are located on the upper and lower side of each side board, and four more on each of the front and back sides of the frame.
3. The tapping screws are not accessible unless the front panel, control panel, amplifier panel, back panel, top board, and bottom board are removed beforehand; first remove these outer parts before trying to dismantle the side boards. Since these tapping screws are fastened tighter than the other screws, be careful not to damage the screw-heads by undue force while loosening them.

5. ADJUSTMENT —MECHANICAL—

5-1 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

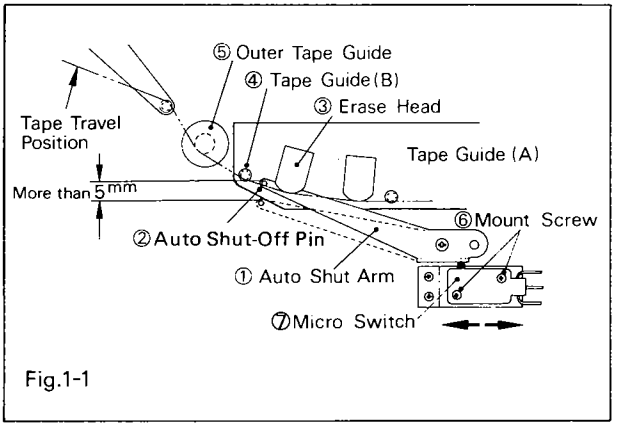


Fig.1-1

f. Procedure
1) Check the on/off position of the microswitch by gently moving the Auto Shut Pin by hand.
2) If the on/off position is not met the spec, 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 dismounted 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.

5-2 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-E on page M-24.

d. Special Tools and/or Instruments required.
None

e. Preparation
Remove Head Cover and Back Board.

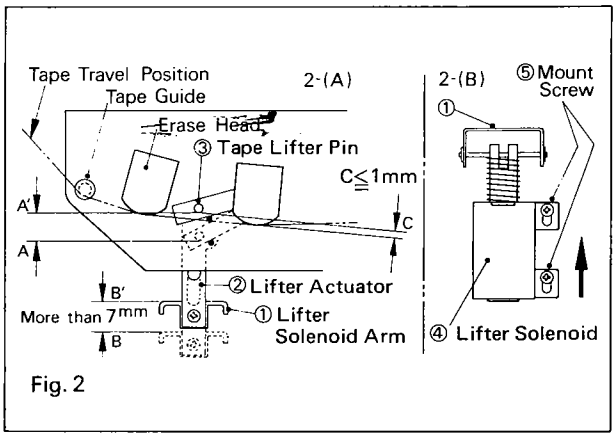


Fig. 2

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) If the lifter's position is not met the spec, adjust the mounting position of the lifter solenoid by loosening the two screw (5)

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

5-3 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-© on page M-24.
d. Special Tools and/or Instruments required
4mm Open End Wrench
e. Preparation
Remove Front Panel and Head Cover

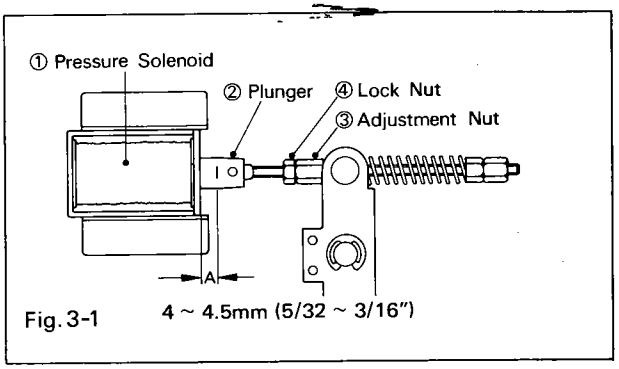


Fig. 3-1 4 ~ 4.5mm (5/32 ~ 3/16")

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-© 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

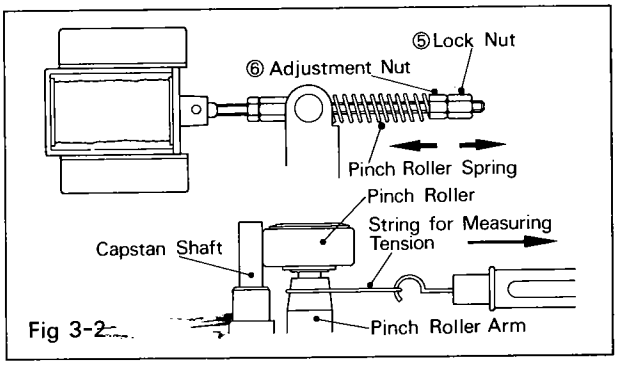


Fig 3-2

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.

5-4 REEL MOTOR TORQUES

a. Specification
Refer to below chart
b. Adjustment
Refer to below chart

	Item	Adjustment	Specifications
1	Hold-back Tension 7" reel (playback)	R-1 (400Ω)	60gr ±5 (180g/cm)
2	Hold-back Tension 10½" reel (playback)	—	120gr ±5 (360g/cm)
3	Take-up Torque 7" reel (playback)	R-3 (150Ω)	150gr ±5 (450g/cm)
4	Take-up Torque 10½" reel (playback)	R-4 (50Ω)	270gr ±5 (810g/cm)

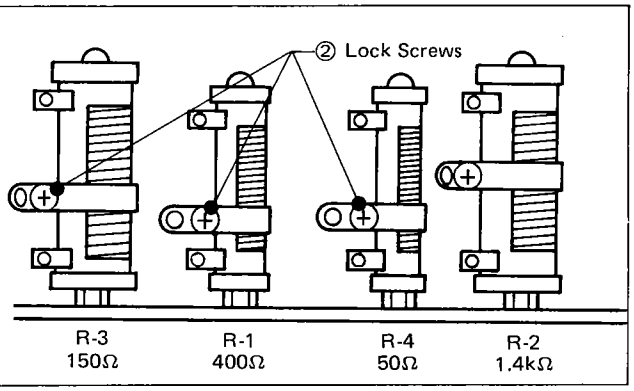


Fig. 4-1

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, 7" Reel (Playback)
1) Set the Reel Size Select Switch to Small 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 in balance.
3) Loosen Lock Screw ② securing the adjustment band on the R-1 in Fig. 4-1 and adjust the position of the adjustment band so that the spring balance indicate 60g±5g (180g/cm).
f-2. Holdback, 10-1/2" Reel (Playback)
1) Set the Reel Size Select Switch to Large and follow the steps described above and check that the Holdback Tension is 120g or 360g/cm.

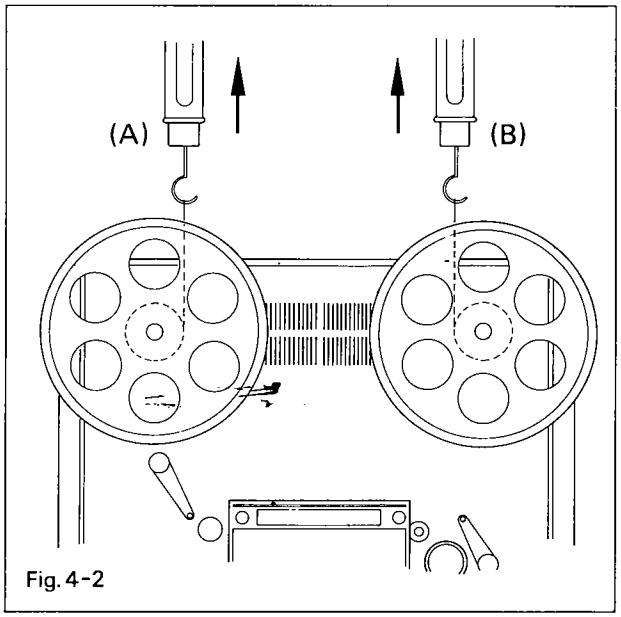


Fig. 4-2

f-3. 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-3 to obtain 150g±7g (450g/cm) as shown Fig. 4-2(B).
f-4. Take-up Torque (10-1/2" Reel, Playback)
1) Set the Reel Size Select Switch to Large and follow the steps described above to obtain 270g±5g by adjusting R-4.
g. Note
FF/REW Holdback Tension is fixed. Tighten all the lock screws to prevent the adjustment band from loosening.

5-5 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
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 increases 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).

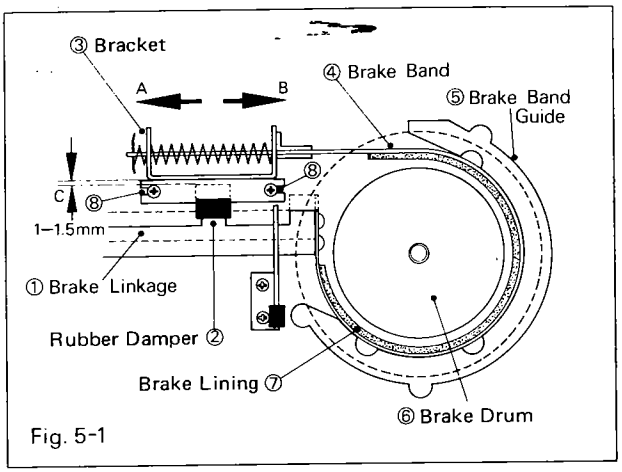


Fig. 5-1

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, Fig. 9-Ⓐ on page M-16.

d. Special Tools and/or Instruments required
None

e. Procedure
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)

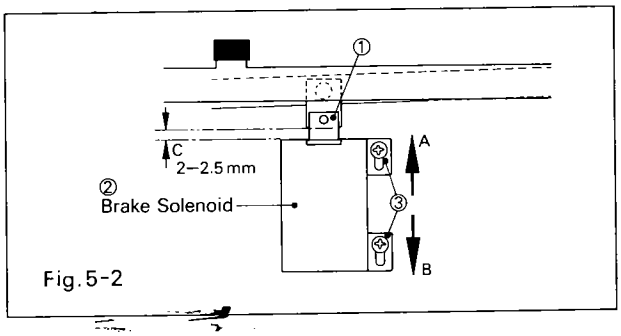


Fig. 5-2

5-3 QUICK STOP SOLENOIDE

a. Specification
Strokes of Plunger: 1 ~ 1.5mm (1/32 ~ 1/16 inch)

b. Adjustment
Mounting position of Aux. Brake Solenoid.

c. Reference
Fig. 5-3, Fig. 9-Ⓐ on page M-16.

d. Special Tools and/or Instruments required
None

e. Preparation
Remove the Front Panel (including Pinch Roller and Tension Arms)

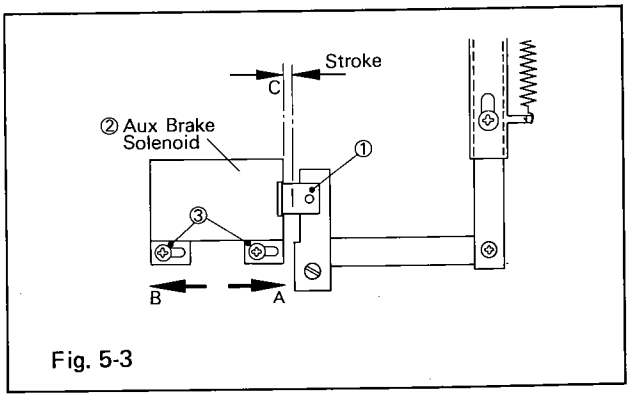


Fig. 5-3

f. Procedure
1) Move the solenoid all the way in the "A" arrow direction after loosening the two lock screws 3 and mark its position on the plunger 1 .
2) Then move the solenoid in the "B" arrow direction and fix it when it is 1 to 1.5mm (1/32 to 1/16 inch) away from the previously marked position (indicated as "C").

g. Note
This mechanism activates only when the auto shut arm returns its off position when the deck is set at FF or REW position.
To check this;
Hold the auto shut arm at on position by finger, push the FF or REW button and release the auto shut arm to its off position, then he deck will stop. And this moment check that the movement of the plunger; the plunger will be pulled into innermost position of the solenoid then will return to the position where previously adjusted.

*Paint-lock the screws ③

5-4 BRAKE TORQUE

a. Specification
700g ~ 800g (2.1kg/cm ~ 2.4kg/cm)
b. Adjustment
Brake Torque Adjustment Screw
c. Reference
Fig. 5-4 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.

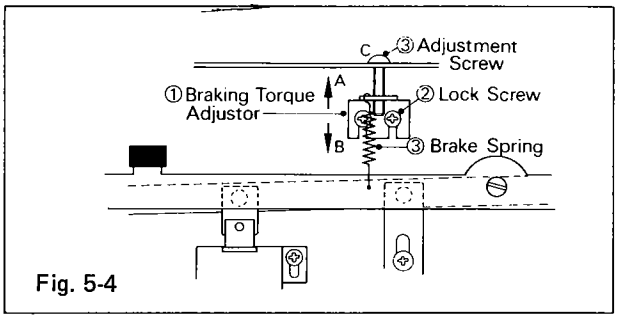


Fig. 5-4

f. Procedure
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.

5-6 WOW/FLUTTER AND TAPE SPEED

a. Specification
Refer to below chart

Model	Speed	Wow/Flutter	Tape Speed Accuracy
1120	7-½ ips (19 cm/sec)	0.15% (rms) 0.07% (wrms)	±0.5% (2985 ~ 3015 by 3kHz Test Tape)
	3-¾ ips (9.5 cm/sec)	0.18% (rms) 0.09% (wrms)	±0.5% (2985 ~ 3015 by 3kHz Test Tape)
1122	15 ips (38 cm/sec)	0.08% (rms) 0.04% (wrms)	±0.5% (2985 ~ 3015 by 3kHz Test Tape)
	7-½ ips (19 cm/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 AMPEX 01-31361-01 (15ips), 01-31362-01 (7-1/2ips), 01-31363-01 (3-3/4ips) or its equivalents, 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 fraction, 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 for 1122, 1% for 1120) 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.

6. ADJUTMENT — ELECTRICAL —

PRECAUTION

1. Before actually adjusting the parts, be sure to first clean the heads, pinch roller and other tape-scraping parts as well as the belts, idlers and other tape-drive torque transmission parts with alcohol. Lubricate, too, if necessary. Such procedures may bring back the performance to within tolerable specifications, eliminating any need for part replacements or torque re-adjustments.
   The position of the thrust stopper, if improperly set, may deteriorate the wow/flutter. So it is advisable to remove the belt and then turn the flywheel with your fingers to see if it turns smoothly.
2. For an efficient adjustment of record/playback level and frequency response, follow the order of preferences for the different adjusting procedures. For instance, if you adjust the record level before adjusting the playback level or without checking it, you'll have to re-adjust the record level same after you have adjusted the playback level.
3. When adjusting the overall response, it may sometimes become necessary to fine-adjust the previously-adjusted parts. In such a case, make sure that the fine-adjustments are still within tolerable ratings, before proceeding to the next step.
4. No two tapes, even if of the same brand and type, show identical recording responses, especially in the high-frequency range. Thus if you switch tapes during adjustments, you may have to re-adjust the parts you have already adjusted. If you are using a tape for the first time, it's often advisable to check its response beforehand, to know how different it is in response from the previous tape.

NOTES

The procedures in this section apply to the amplifier circuits of the Model 1120/1122.
In adjusting the amplifier circuits following the instructions in this section, the tapes belowlisted should be used.

1. When adjusting the playback circuits:

38CM (15 IPS)	AMPEX TEST TAPE	01-31311-01
19CM (7-½ IPS)	AMPEX TEST TAPE	01-31321-01
9.5CM (3-¾ IPS)	AMPEX TEST TAPE	01-31331-01

   (Or other types of alignment tape with the levels as are recorded on the above tapes.)
2. When adjusting the record circuits:
   Since with the Model 1120/1122 the record bias and the record equalizer can be used independently of each other, there are several types of tape to be used, for adjustment such as those listed below. For adjustment of record frequency response, the Scoth #212 and Maxell UD-35.

For the location of parts for adjustment on each of the amplifier circuit PC board (PCM-328A), refer to the section "ADJUSTABLE PARTS LOCATION."

ADJUSTMENT TAPE (Recording)

Tape Select Mode		Adjustment Tape
Bias Switch	Equalizer Switch	
NORMAL	NORMAL	Scotch #111, #150 or equivalents
NORMAL	SPECIAL	———
SPECIAL	NORMAL	Scotch #212 or equivalents
SPECIAL	SPECIAL	Maxell UD-35 or equivalents

6-1 HEAD ALIGNMENT

HEAD ASSEMBLY (head cluster) is adjusted to very close tolerance at the factory and normally requires only minor alignments or adjustments after replacement on the deck. Complete readjustment of the HEAD ASSEMBLY will be necessary when an individual head is replaced.

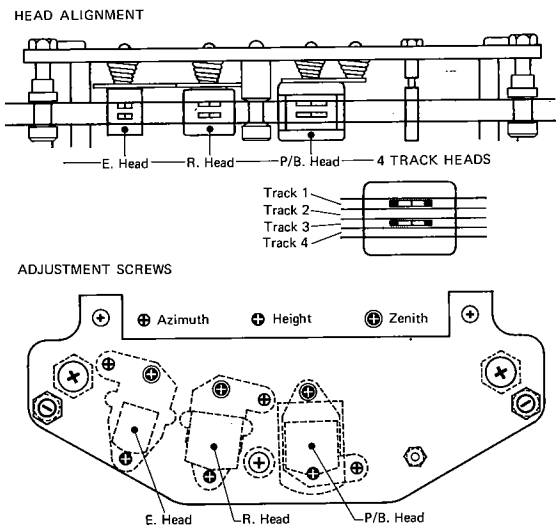


Fig. 6-1 Head Assembly for 1120

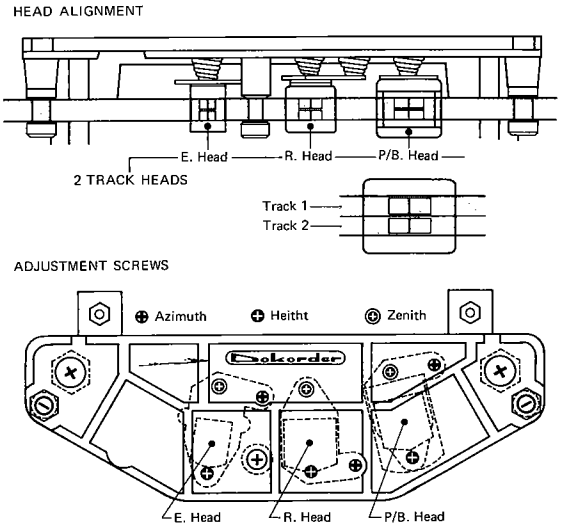


Fig. 6-2 Head Assembly for 1122

NOTE: On Model 1120 units with Serial No. D-3900 and after, the head assembly houses heads mounted as Fig. 6-2 shows.

MIS-ALIGNMENT OF THE HEADS –EXAMPLES–

- **ALIGNMENT**

The physical positioning of a tape head relative to the tape itself. Alignment in all respects must conform to rigid requirments in order for a unit to function properly.

- **AZIMUTH**

The angle of a tape head pole-piece gap relative to the direction of tape travel.

NOTE: In order for a tape unit to work at its best, with its own tapes as well as ones made on other units, its play and record heads must be aligned to correct the 3 possible errors as illustrated below.

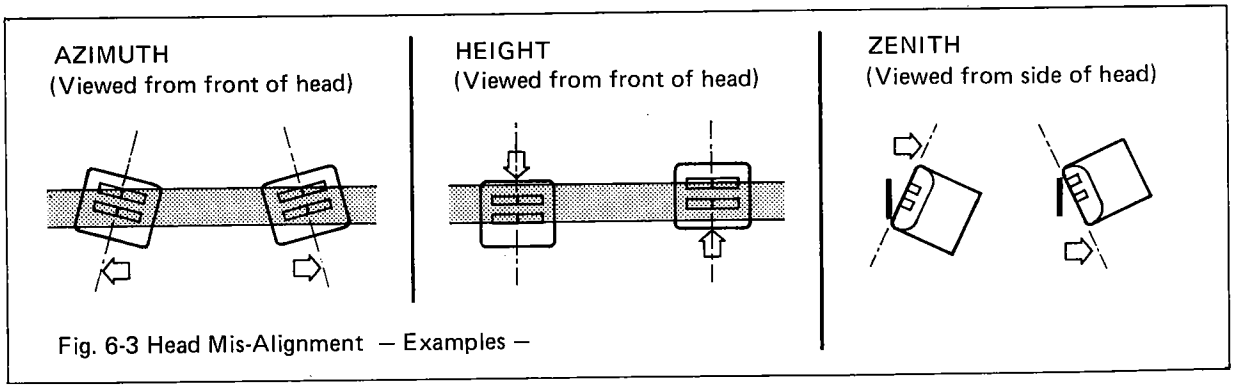
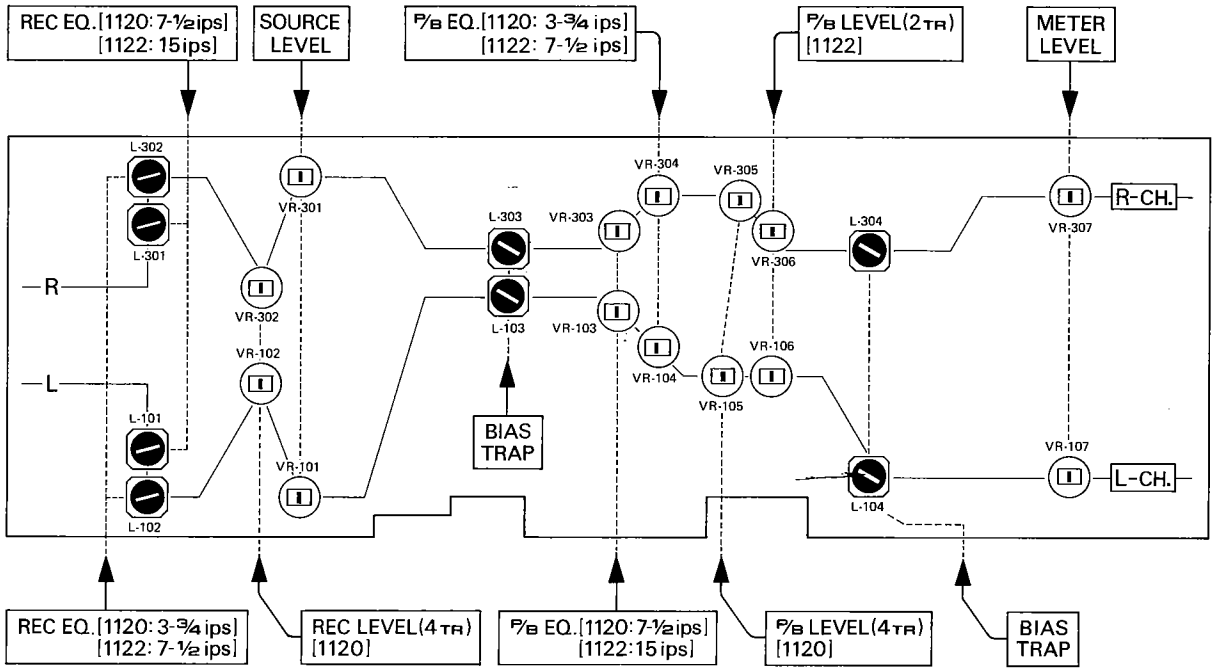


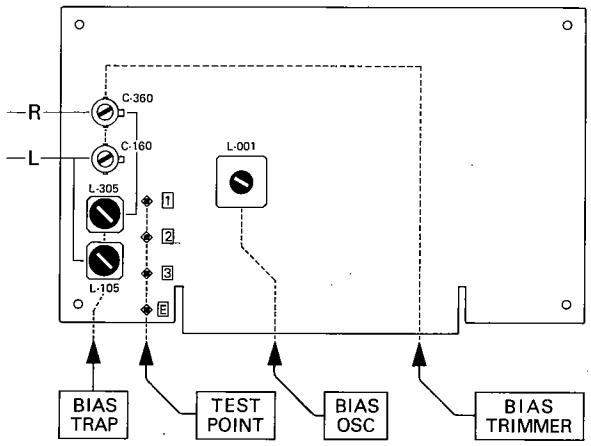
Fig. 6-3 Head Mis-Alignment – Examples –

6-2 ADJUSTABLE PARTS LOCATION

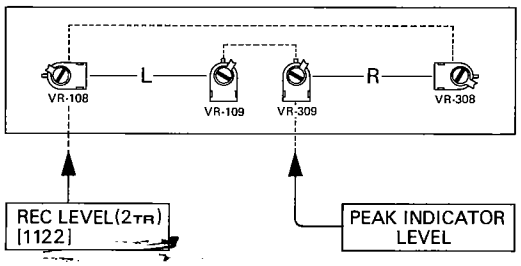
AMP P.C.B. (PCM-328A)



BIAS OSC P.C.B. (PCM-327)



PEAK INDICATOR P.C.B. (PCM-324)



REC. SWITCH

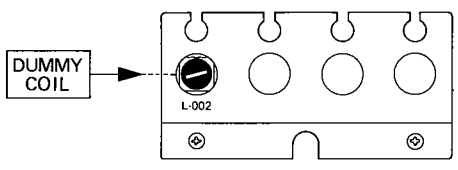


Fig. 6-4

6-3 ADJUSTMENT PROCEDURES FOR MODEL 1120

	Item	Test Signal	Mode of Switch	Test Point	Adjustment Parts	Spec.	Remarks
1.	Playback Head Azimuth	15kHz Test Tape Ampex 01-31321-01 or its equivalent.	Monitor SW Tape Tape Speed Fast (Playback mode)	VTVM & Oscilloscope to the Line Outputs.	Head alignment screws See Fig. 6-1 on page 15	Max. output level under the signal in phase condition.	Refer Note 1. 2/4 Track Select SW has to be set at 4-track position.
2.	Playback Level	700Hz (0dB) Test Tape, same as above.	"	"	L-ch VR105 R-ch VR305 on PCM328	(+3dB±0.5dB) 0dB±0.5dB	Obtain +3dB at PB control at Max., then retard the control until a 0dB is obtained. This will be at approx. three o'clock position. Do not disturb this setting.
3.	Frequency Response at 7-1/2ips.	15kHz (−10dB) Test Tape, same as above.	"	"	L-ch VR103 R-ch VR303 on PCM328	−10dB±2dB (−7dB±2dB) (30−15kHz ±3dB)	At the specified output Level Setting. (At PB Cont'l Max.)
4.	Frequency Response at 3-3/4ips.	7.5kHz (−10dB) Test Tape, Ampex 01-31331-01 or its equivalent.	Tape Speed Slow	"	L-ch R-ch on PCM328	−10dB±3dB (−7dB±3dB) (50−7.5kHz ±3dB)	
5.	Source Gain	700Hz (−20dB) to the Line Inputs.	Monitor SW Source Tape Speed Fast (Recording mode)	"	L-ch VR101 R-ch VR301 on PCM328	0dB±0.5dB	Line Input Control at Max. position.
6.	Meter Calibration	"	"	"	L-ch VR107 R-ch VR307	OVU of the Meter scale.	Line Output also has to be at 0dB.
7.	Peak Indicator	700Hz (−12dB) to the Line Inputs.	"	"	L-ch VR109 R-ch VR309	+8dB	Flash on at output level of +8dB and eliminate when the level is reduced by 0.5dB.
8.	Bias Frequency	None	Bias SW Special EQ SW Normal Pause On (recording mode)	Frequency Counter across TP1 and Ground.	L001 on PCM327	130kHz±1kHz	Load Scotch #212 tape. Step 8 through 11 are required to undertake only when heads or coils have been replaced.

Item		Test Signal	Mode of Switch	Test Point	Adjustment Parts	Spec.	Remarks
9.	Bias Trap (Rec Amp)	None	Bias SW Special EQ SW Normal Pause On (Recording mode)	VTVM across TP3 & Ground TP2 & Ground	L-ch L105 R-ch L305	Min.	
10.	Dummy Coil	"	"	Frequency Counter across TP1 and Ground.	L002 on PCM327	130kHz±2kHz	Reduce the drift of the frequency, if observed, when rec. mode is switched from Stereo to Mono by Rec Switches.
11.	Bias Trap (PB Amp)	"	"	VTVM to the Line Outputs.	L-ch L103, L104 R-ch L303, L304 on PCM328	Min.	Playback Level Controls at Max. Position.
12.	Bias Setting	700Hz (−20dB) to the Line Inputs.	Pause Off	"	L-ch C160 R-ch C360 on PCM327	−0.5dB (Over Bias)	Load Scotch #212 Tape (or its equivalents).
13.	Recording Gain	"	"	"	L-ch VR102 R-ch VR302 on PCM328	0dB±0.5dB	PB Control at specified level setting.
14.	Record Head Azimuth	20kHz (−30dB) to the Line Inputs.	" Tape Speed Fast	VTVM & Oscillo-scope to the Line Outputs.	Rec Head Azimuth screw See Fig. 6-1 on page 15	Max. and Phase shaft less than 45°	Refer Note 1.
15.	Frequency Response at 7-1/2ips.	20kHz (−30dB)	"	"	L-ch L101 R-ch L301	−10dB±3dB (35Hz−250Hz +5−3dB 250−27kHz ±3dB)	At Specified output level setting. Readjustment of C160 & C360 maybe required to obtain optimum performance.
16.	Frequency Response at 3-3/4ips.	20kHz (−30dB)	Tape Speed Slow	"	L-ch L102 R-ch L302	−10dB±3dB (30Hz−10kHz) ±3dB)	Refer to 500Hz±3dB
17.	Freq. Response at both Eq & Bias Special.					30Hz~20kHz ±3dB at 7-1/2ips 30Hz~10kHz ±3dB at 3-3/4ips.	Load UD-35 blank tape and check the responses.

6-3 ADJUSTMENT PROCEDURES FOR MODEL 1122

	Item	Test Signal	Mode of Switch	Test Point	Adjustment Parts	Spec.	Remarks
1.	Playback Head Azimuth	15kHz Test Tape Ampex 01-31311-01 or its equivalent.	Monitor SW Tape Tape Speed Fast (Playback mode)	VTVM & Oscillo-scope to the Line Outputs.	Head alignment screws See Fig. 6-2 on page 15	Max. output level under the signal in phase condition.	Refer Note 1. 2/4 Track Select SW has to be set at 2-track position.
2.	Playback Level	700Hz (0dB) Test Tape, same as above.	"	"	L-ch VR106 R-ch VR306 on PCM328.	(+6dB±0.5dB) 0dB±0.5dB	Obtain +6dB at PB control at Max., then retard the control until a 0dB is obtained. This will be at approx. one o'clock position. Do not disturb this setting.
3.	Frequency Response at 15ips.	15kHz Test Tape same as above.	"	"	L-ch VR103 R-ch VR303 on PCM328.	0dB±2dB (+6dB±2dB) (30–15kHz ±3dB)	At the specified output Level Setting. (At PB Cont'l Max.)
4.	Frequency Response at 7 1/2 ips.	15kHz (–10dB) Test Tape, Ampex 01-31321-01 or its equivalent.	Tape Speed Slow	"	"	–10dB±3dB (–4dB±3dB) (50–15kHz ±3dB)	If spec. is not met, re-adjust VR103, 303. EQ curve of 15ips & 7 1/2 ips are the same.
5.	Source Gain	700Hz (–20dB) to the Line Inputs.	Monitor SW Source Tape Speed Fast (Recording mode)	"	L-ch VR101 R-ch VR301 on PCM328	0dB±0.5dB	Line Input Control at Max. position.
6.	Meter Calibration	"	"	"	L-ch VR107 R-ch VR307	OVU of the Meter scale.	Line Output also has to be at 0dB.
7.	Peak Indicator	700Hz (–12dB) to the Line Inputs.	"	"	L-ch VR109 R-ch VR309	+8dB	Flash on at output level of +8dB and eliminate when the level is reduced by 0.5dB.
8.	Bias Frequency	None	Bias SW Special EQ SW Normal Pause On (recording mode)	Frequency Counter across TP1 and Ground.	L001 on PCM327	200kHz±1kHz	Load Scotch #212 tape. Step 8 through 11 are not required to undertake only when heads or coils have been replaced.

Item		Test Signal	Mode of Switch	Test Point	Adjustment Parts	Spec.	Remarks
9.	Bias Trap (Rec Amp)	None	Bias SW Special EQ SW Normal Pause On (Recording mode)	VTVM across TP3 & Ground TP2 & Ground	L-ch L105 R-ch L305	Min.	
10.	Dummy Coil	"	"	Frequency Counter across TP1 and Ground.	L002 on PCM327	200kHz±2kHz	Reduce the drift of the frequency, if observed, when rec. mode is switched from Stereo to Mono by Rec Switches.
11.	Bias Trap (PB Amp)	"	"	VTVM to the Line Outputs.	L-ch L103, L104 R-ch L303, L304 on PCM328.	Min.	Playback Level Controls to be set at Max.
12.	Bias Setting	700Hz (−20dB) to the Line Inputs.	Pause Off	"	L-ch C160 R-ch C360 on PCM327.	Max. (Peak Bias)	Load Scotch #212 Tape (or its equivalents).
13.	Recording Gain	"	"	"	L-ch VR108 R-ch VR308	0dB±0.5dB	PB Control at specified level setting.
14.	Record Head Azimuth	20kHz (−20dB) to the Line Inputs.	" Tape Speed Fast	VTVM & Oscillo-scope to the Line Outputs.	Rec Head Azimuth screw See Fig. 6-2 on page 15	Max. and Phase shaft less than 45°	Refer Note 1.
15.	Frequency Response at 15ips.	25kHz (−20dB)	"	"	L-ch L101 R-ch L301	0dB±1dB (35Hz−250Hz +5−3dB, 250−27kHz ±3dB)	At Specified output level setting. Readjustment of C160 & C360 maybe required to obtain optimum performance.
16.	Frequency Response at 7 1/2ips.	20kHz (−30dB)	Tape Speed Slow	"	L-ch L102 R-ch L302	−10dB±2dB (30Hz−22kHz ±3dB)	
17.	Freq. Response at both EQ & Bias Special.					35Hz−250Hz+5 −3dB 250−27kHz ±3dB at 15ips 30−22kHz ±3dB at 7 1/2ips	Load UD-35 blank tape and check the responses.

Note 1: Connect the test equipment as shown Fig. 6-5. 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. 6-6.)

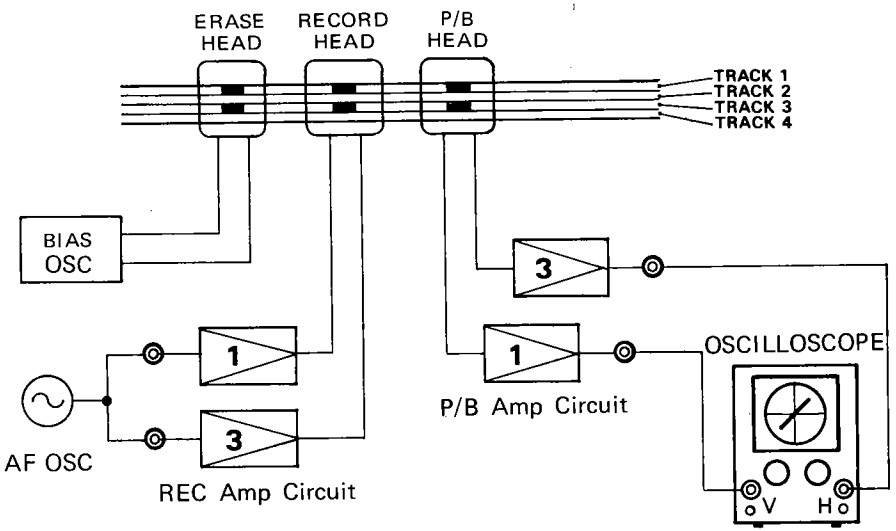


Fig. 6-5 Connect the Test Equipment

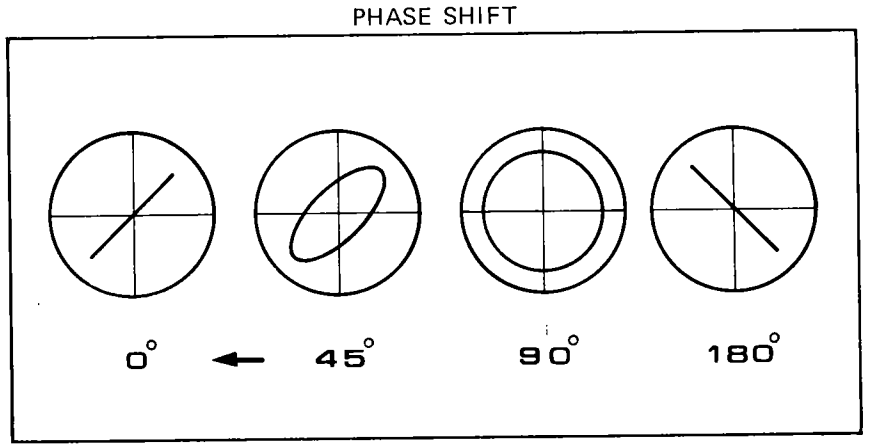


Fig. 6-6 Typical Phase Shift Pattern

7. MAINTENANCE

To maintain the deck's original performance, it is necessary to keep clean and well lubricated the rotating parts. Normally, motors, capstan, pinch roller, and other rotating parts require lubrication once every 2000 to 3000 hours. Therefore, once-a-year lubrication is all that is needed. However, dirt and dust accumulation, or extended use of the deck may result in a need for more frequent lubrication, even if oil was applied less than a year ago. So, be sure to check the rotating parts whenever you undertake repairs on the deck. Here's how to clean and lubricate each rotating part in the 1120/1122.

7-1. CLEANING

Motor: Remove dust on the outside with a brush or a peice of lint cloth. (A vacuum cleaner is more effective.) Take care not to let loose dust fly inside of the motor. Take extra care when the motor is of the hysteresis type, since a small piece of peeled-off iron may cling to its rotor, breaking down the unit.

Pinch Roller: Wipe the pinch roller gently where the tape scrapes, as well as its metal part, with alcohol-moistened lint cloth. Also wipe clean any residues on the pinch roller shaft. After cleaning, check very carefully that the rubber is not disfigured or cracked, or the surface of the shaft and metal bearing is not damaged.

Capstan: Extract the shaft from the metal bearing and check it carefully for damage. Light scoring damage can be smoothened and cured with light emery paper and oil. Heavy damage, however, requires replacement of the metal bearing and shaft. After checking and/or replacement, be sure to lubricate. Next, operate the deck in PLAYBACK mode for three to four hours, and then make sure the deck works well.

Belts & Pulleys: Remove and clean the belts with an alcoholmoistened piece of cloth. Check for hicks and stretches. If defective, replace with new ones.

Dirt accumulates—much more than you can imagine—on the pulleys and flywheel where belts are in constant contact, so clean pulley and flywheel carefully. Dirt deteriorates the wow characteristic of the deck.

7-2 LUBRICATION

We suggest you lubricate parts only after running the deck for one hour or two, for by then the rotating parts will have warmed up enough to faciltate lubrication.

Motors: Apply five or six drops of oil to each oil orifice. Use a long-necked oil filler for motors without an oiling tube. Where necessary, remove the turntable before applying oil to the bearing of a reel motor.

Pinch Roller: Apply one or two drops of oil each to its bearing and shaft.

Capstan: Apply one or two drops of oil to the capstan shaft, and three or four to the bearing oil basin.

NOTE: Should excessive oil flow from the bearing or oil orifice, be sure to wipe it perfectly clean. If left, it will eventually spread around, breaking down the machanism. With a deck that is fresh from the factory, one drop or two of oil each to the bearings will suffice; you need not remove the pinch roller, capstan, etc.

8. TECHNICAL DESCRIPTION

8-1 OPERATIONAL PRINCIPLE OF CONTROL PCB PCM325

The PCB PCM325 consists of three sections: (1) Solenoid Control Section controlling the power supply to solenoids, mode by mode, (2) Reel Motor Torque Control Section which, equipped with Relay, provides a high voltage of short duration to the Reel Motor for smooth tape startup, and (3) DC Power Supply.

(1) SOLENOID CONTROL SECTION

A. Basic Circuit and Its Operation

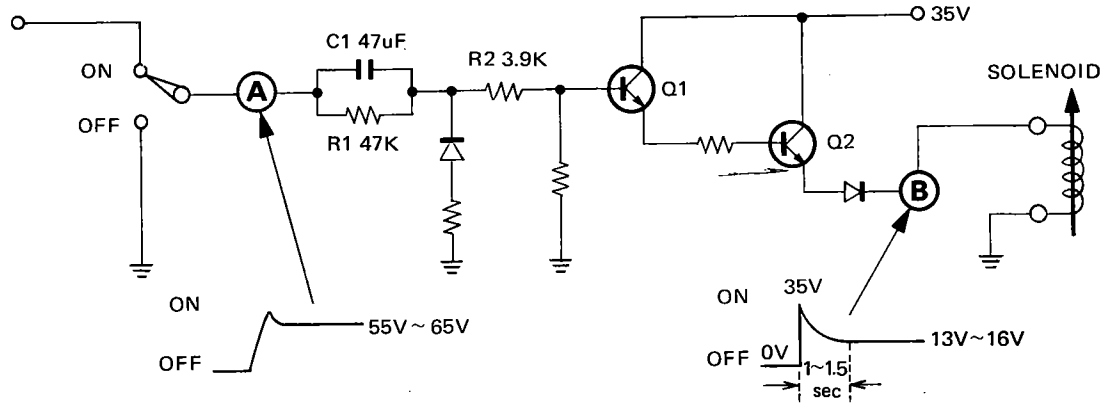


Fig. 8-1 SOLENOID POWER CONTROL

a) In STOP mode, as terminal A is at zero volts, Q_1 and Q_2 are turned off.

b) In other modes, the 55 ~ 65 VDC voltage, applied at terminal A, will turn Q_1 and Q_2 on, activating the solenoid.

c) C_1 and R_1 form a voltage-reduction circuit. The moment a mode is selected, current at terminal A flows through C_1 into Q_1 (base). But once C_1 is fully charged, current will stop flowing into C_1; it flows into R_1, causing drop of the voltage applied to the Base of Q_1.
The voltage-reduction circuit has functions of, first, supplying a voltage high enough to trigger solenoid operation and, then, supplying a voltage high enough to maintain selected solenoid operation but low enough to avoid heat generation. Solenoid-triggering high voltages are supplied for about 1 ~ 1.5 seconds.

B. Mode-by-Mode Operation

Modes are determined by whether a particular solenoid is supplied with control voltages for action or not. The chart below shows which solenoids are activated and which are not in respective modes.

Mode	Input Sig. (CN-4)	TR	Output Sig. (CN-4)	Solenoid		Remark
Play (Rec)	J*	———	—	———		Note 1
	P	Q503-On	C	SL-2	(Tape Shifter) activates	
		Q504-On	B	SL-3	(Pinch Press.) activates	
	(K)		A	DS-08E-48	(Ope. release) not activates	Note 2
		Q505-On	D	SL-1	(Brake) releases brake.	
FF	S	Q505-On	D	SL-1	(Brake) releases brake.	
REW	R	Q505-On	D	SL-1	(Brake) releases brake.	
Pause	P (OV)	Q503-Off	C	SL-2	(Tape Shifter) released	Note 3
		Q504-Off	B	SL-3	(Pinch Press.) released	
		Q505-Off	D	SL-1	(Brake) released (pull brake)	

Cue	F	Q503-On	C	SL-2 pulls tape shifter	
Auto shut	J* K M N	Q504-On Q503-Off Q504-Off Q505-Off	A B C A, B D	DS-08E-48 releases all Ope buttons. SL-3 not activates	Note 4

Note 1: Signal, applied to terminal J, is grounded by SW-7 through terminal K.
Note 2: DS-08E-48 is not activated as the SW-7 is set at Make position.
Note 3: Pause switch activates only in Play/Rec mode.
SL-2 (Tape Shifter) will not released if the Cue button is depressed.
Note 4: At the moment when SW-7 shifts from Make to Break position, high voltage is applied to Terminal K to increase Solenoid pull force.

(2) REEL TORQUE CONTROL SECTION

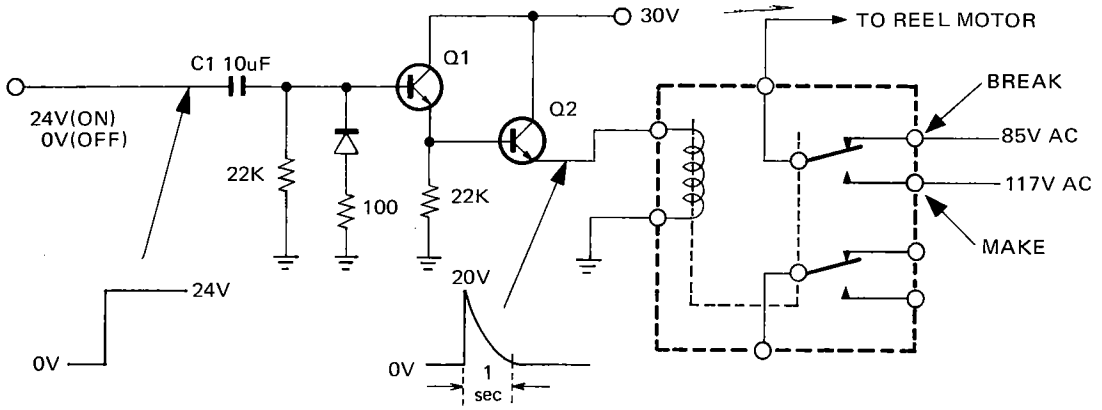


Fig. 8-2 STARTING TORQUE CONTROL

In PLAY (REC) mode, DC 24V voltage is supplied at terminal CN4U through CN6B, PAUSE SW, CN6A, CN5S, PLAY SW, CN5H and CN3B. The moment the deck is set in PLAY Mode, or PAUSE is or disengaged, that voltage will move to Q_1 (base) through C_1. When Q_1 and Q_2 are turned on, the relay, connected to the emitter of Q_2, is activated; the relay strip switches from position B to M. Since AC 85V and AC 117V voltages are applied to terminal B and terminal M respectively, a high AC 117V voltage will be applied to the Reel Motor, thus increasing the reel torque.
When C_1 is fully charged, the high voltage will stop entering Q_1 (base), turning Q_1 and Q_2 off and switching the relay strip to position B.
The time that Q_1 and Q_2 are turned on, and the torque-increasing high voltage is applied to the Reel Motor, is approximately 1.~1.5 seconds.
Note: For Model 1120, AC 100V instead of 117V is applied to terminal M of the relay.

(3) OPERATION OF QUICK STOP CIRCUIT

1) In FF and REW modes, the voltage at terminal 1 is about 24V. Terminal 1 is connected to terminal B of the Auto Shut Off Switch (SW7). (Since this terminal has a diode connected opposite to ground, it is not at zero voltage)
The Mono Multi-Vibrator Circuit consists of Q_1 and Q_2 with the later always turned on. Since the collector voltage of Q_2 is low, the base voltage of Q_3 is accordingly low, turning Q_3 and likewise Q_4 off. Q_4 Emiter is therefore at zero voltage.
2) When tape is completely wound on either reel in FF or REW mode, the Auto Shut Off Switch (SW7) will be activated; its common terminal will switch from position M to B. Since the common terminal of SW7 is connected to ground, terminal B will be at zero voltage. Then terminal 1, will change from 24V to zero voltage. (The zero voltage works as a trigger signal of the Mono Multi-Vibrator Circuit.)

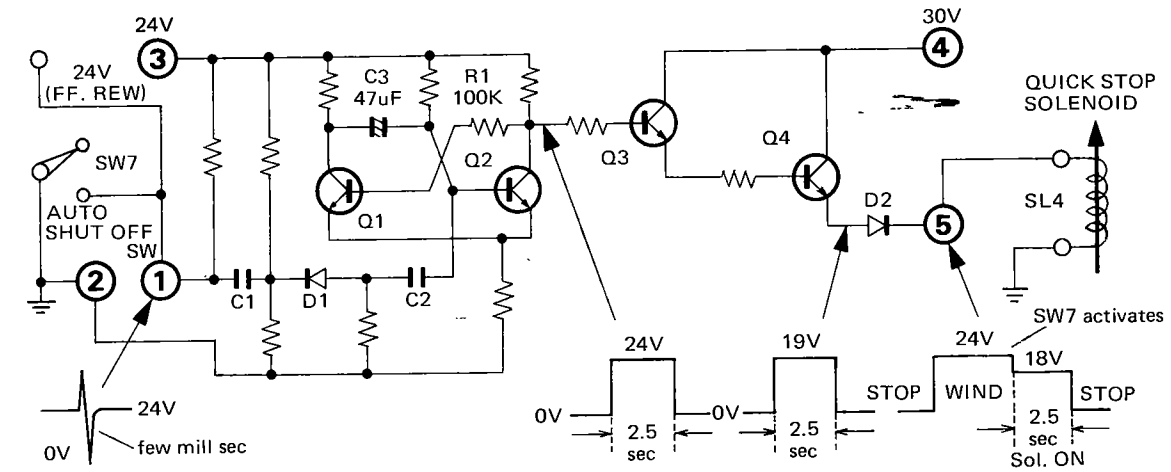


Fig. 8-3 QUICK STOP SOLENOID CONTROL

○ 24V D1 is applied on terminal ⑤, because the solenoid is connected to SW7-B. But this will not make the solenoid in activation.

The instant the voltage at terminal 1 becomes zero, Q_2 is turned off by the negative pulse applied to its base. (This is because the discharge current flows from C_2 to D_1 to C_1 to terminal 1.) When Q_2 is turned off, the collector voltage of Q_2 will increase, turning Q_1, Q_3 and Q_4 on. When Q_1 is turned on, C_3 will discharge, lowering the base voltage of Q_2. Then even when the negative pulse is no longer applied at terminal 1, Q_2 remains turned off. However, as C_3 is gradually charged through R_1 (100k ohms), the voltage of Q_2 Base also increases. The moment Q_2 Base is charged beyond its threshold voltage, it will be turned on, turning Q_3 and Q_4 off and also setting the voltage at terminal 5 to zero. Q_2 is turned off for about 2.5 seconds, a duration determined by the time constant of R_1 and C_3 ratings. In this way, this circuit supplies DC 19V voltage to the Quick Stop Solenoid to increase the brake torque for about 2.5 seconds after the Auto Shut Off Switch is activated.