

Technical Guide

Vol. 3-4

COMPACT STEREO CASSETTE DECK SECTION

FOR

**RX-A5 SERIES,
SG-P100,
SG-P300**

**SG-152 SERIES
SG-P200**

CONTENTS

	Page
I. FEATURES	1
II. LIST OF APPLICABLE MODELS	1
III. MECHANISM FRONT AND REAR VIEWS (EXAMPLE S-100N)	2, 3
IV. EXPLODED VIEW AND PARTS LIST (EXAMPLE S-100N)	4 ~ 13
V. OPERATIONS	
1 PLAY OPERATION.....	14, 15
2 PAUSE OPERATION.....	15, 16
3 STOP OPERATION.....	17
4 AUTO STOP OPERATION.....	18
5 FF OPERATION	19
6 REW OPERATION	20
7 TPS (FF, REW) OPERATION.....	21, 22
8 REC OPERATION.....	23
VI. NOTES FOR DISASSEMBLY AND REASSEMBLY.....	24

I. FEATURES

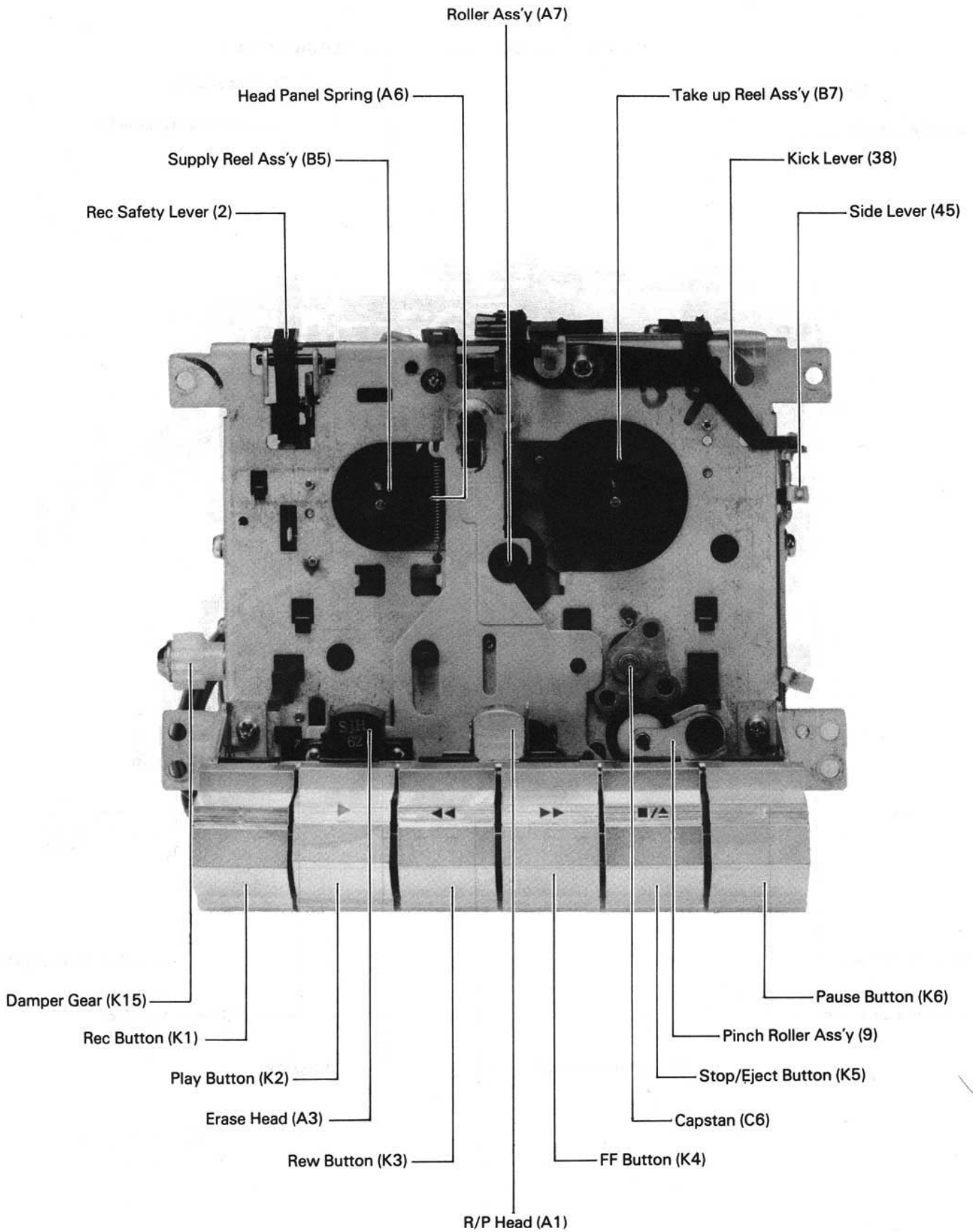
1. Soft touch operation
2. Full auto stop mechanism
3. One touch recording mechanism
4. Soft eject mechanism
5. TPS mechanism (RX-A5, SG-152, S-100N)
6. Metal tape automatic switching mechanism (S-100N, SG-P200/300)

II. LIST OF APPLICABLE MODELS

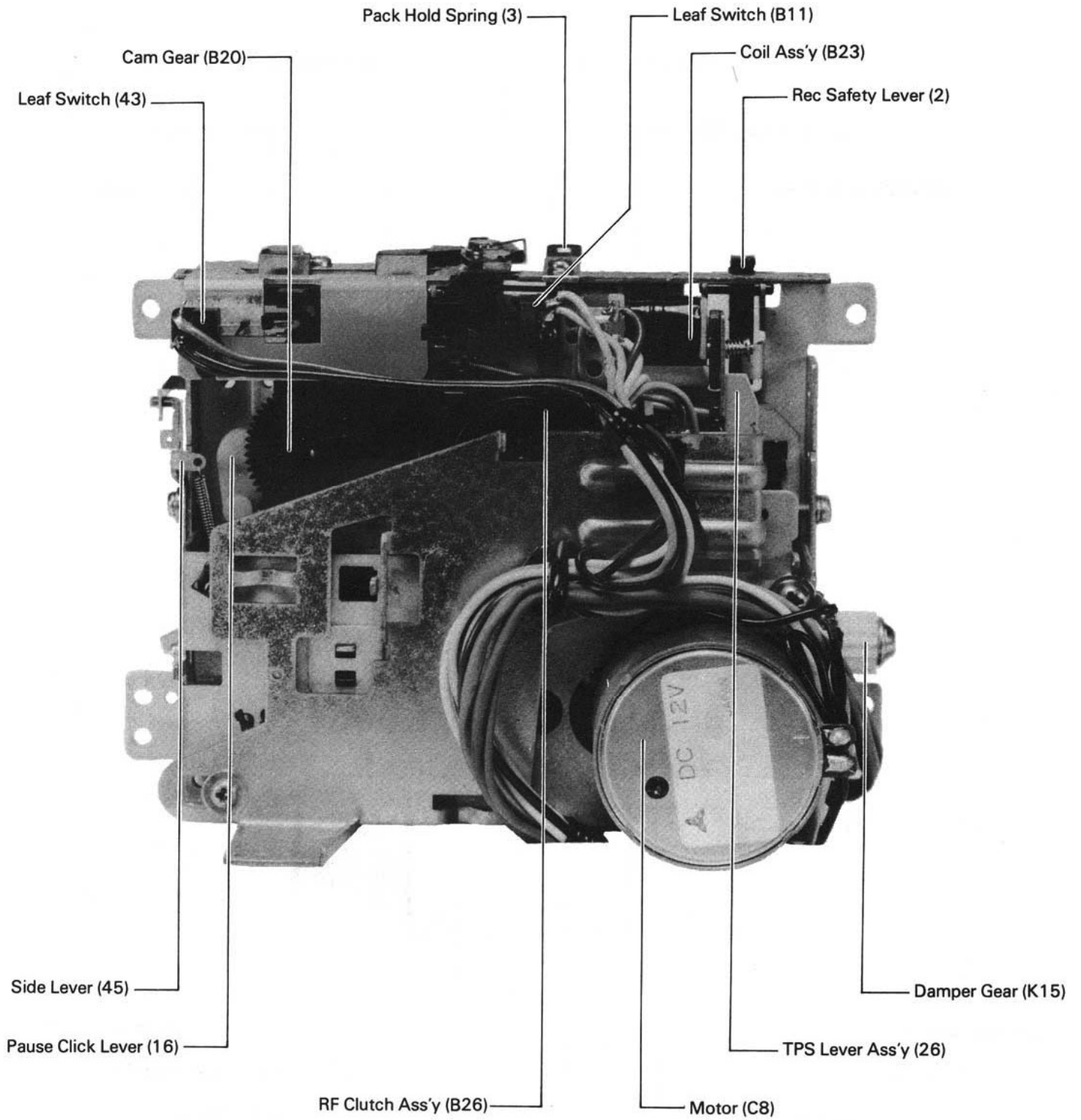
- RX-A5 series
- SG-152 series
- SG-P100/200/300
- S-100N (Domestic Model)
- S-60N (Domestic Model)

III. MECHANISM FRONT AND REAR VIEWS (EXAMPLE S-100N)

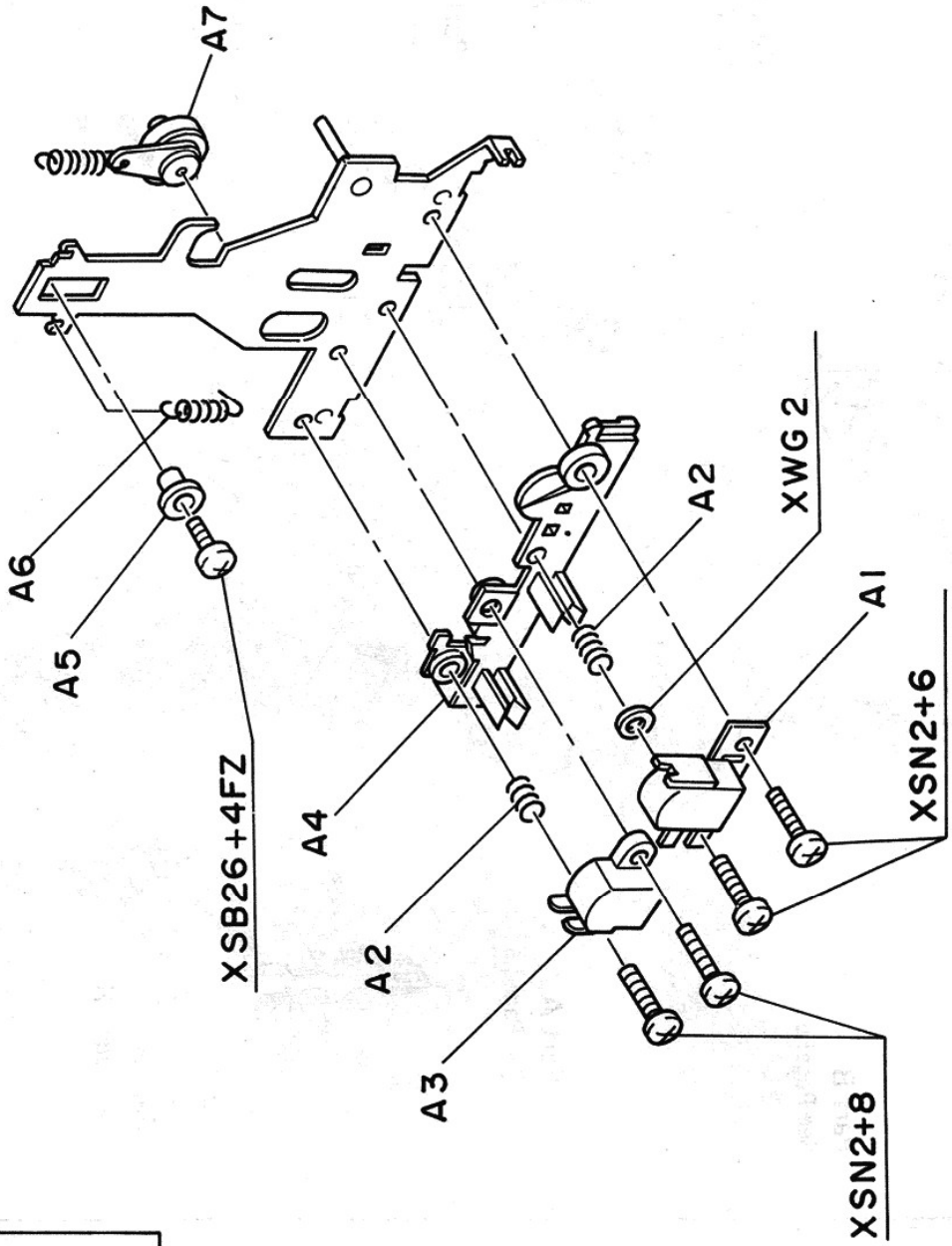
FRONT VIEW



REAR VIEW

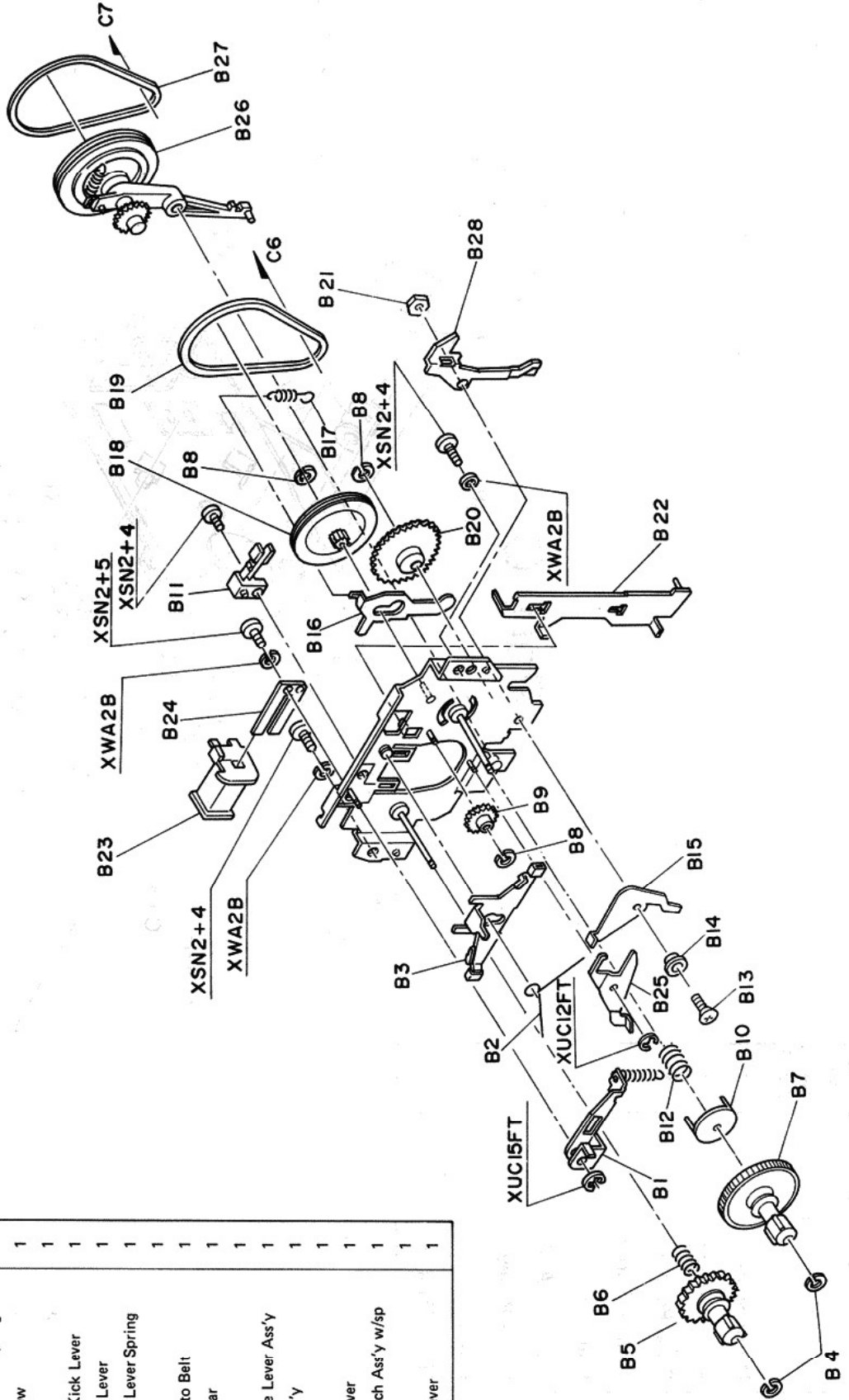


Part A



Ref. No.	Part No.	Description	Per Set (p.c.s)
A1	SJH60	R/P Head	1
A2	SMQ4596	Head Spring	2
A3	SJH62	Erase Head	1
A4	SMQ4768	Head Base	1
A5	SMQ4168	Collar	1
A6	SMQ4770	Head Panel Spring	1
A7	SMQ4772	Roller Ass'y w/sp	1

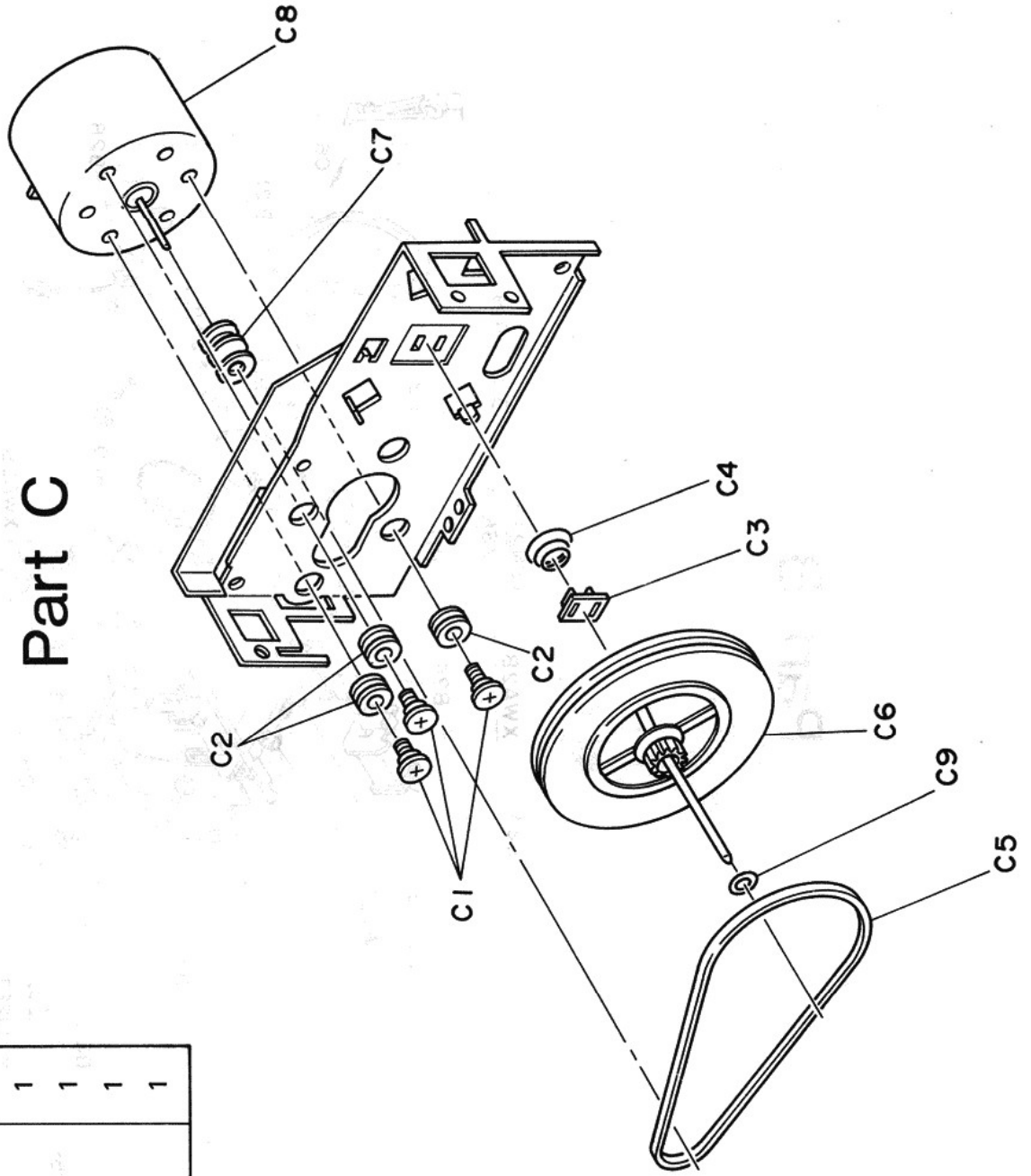
Part B



Ref. No.	Part No.	Description	Per Set (p.c.s)
B1	SMO4790	Control Lever w/sp	1
B2	SMO4792	Brake Spring	1
B3	SMO4794	Brake Arm Ass'y	1
B4	SMO4928	Poly Washer	2
B5	SMO4800	Supply Reel Ass'y	1
B6	SMO4802	Back Tension Spring	1
B7	SMO4804	Take Up Reel Ass'y	1
B8	SMO4930	Poly Washer	3
B9	SMO4810	FF Gear	1
B10	SMO4806	Sensing Piece	1
B11	SMO4812	Leaf Switch	1
B12	SMO4808	Sensing Piece Spring	1
B13	SMO4944	FH Screw	1
B14	SMO4816	Collar	1
B15	SMO4814	Roller Kick Lever	1
B16	SMO4818	Sensing Lever	1
B17	SMO4820	Sensing Lever Spring	1
B18	SMO4822	Pulley	1
B19	SMO4824	Full Auto Belt	1
B20	SMO4826	Cam Gear	1
B21	SMO4938	Collar	1
B22	SMO4832	RF Slide Lever Ass'y	1
B23	SMO4796	Coil Ass'y	1
B24	SMO4798	Core B	1
B25	SMO4940	Kick Lever	1
B26	SMO4828	RF Clutch Ass'y w/sp	1
B27	SMO4830	RF Belt	1
B28	SMO4839	Auto Lever	1

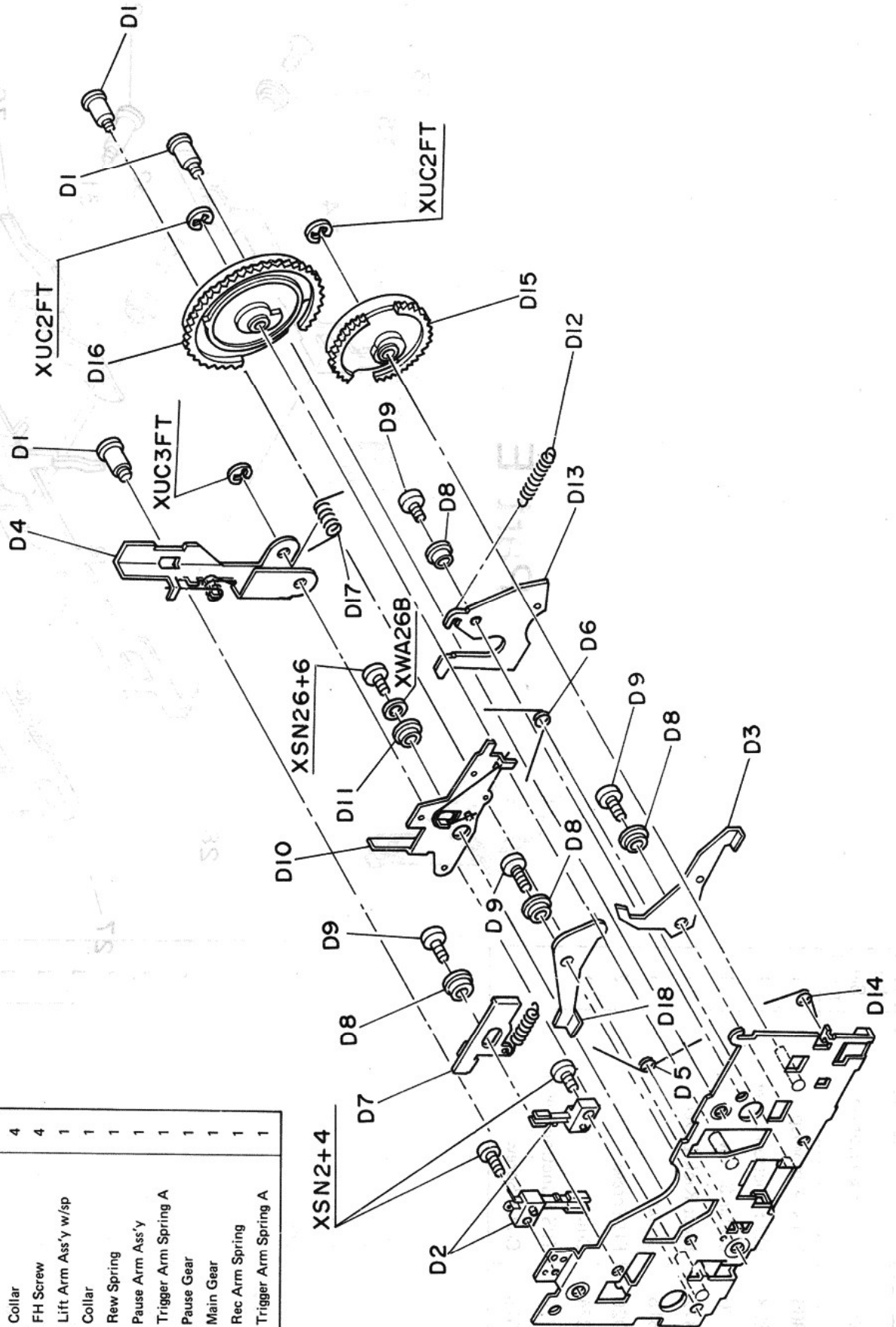
Ref. No.	Part No.	Description	Per Set (p.c.s)
C1	SMQ4918	Motor Screw	3
C2	SMQ4916	Motor Rubber	3
C3	SMQ4920	Patch Plate	1
C4	SMQ4922	Damper Spring	1
C5	SMQ4898	Main Belt	1
C6	SMQ4900	Flywheel Ass'y	1
C7	SMQ4914	Motor Pulley	1
C8	MMI5A21	Motor	1
C9	SMQ4932	Nylon Washer	1

Part C



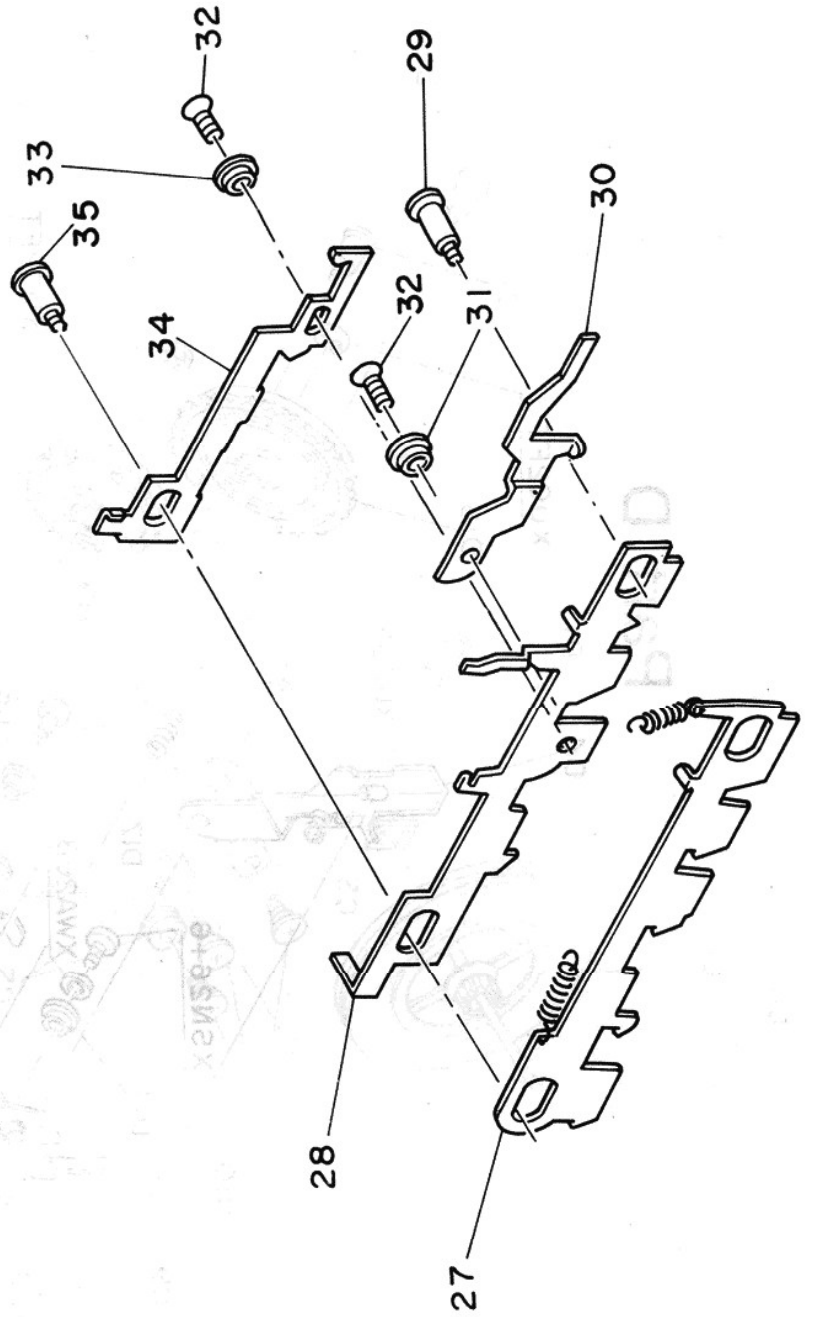
Ref. No.	Part No.	Description	Per Set (p.c.s)
D1	SMQ4942	Collar Screw	3
D2	SMQ4882	Leaf Switch	2
D3	SMQ4902	Trigger Arm Ass'y A	1
D4	SMQ4884	Rec Arm w/sp	1
D5	SMQ4888	Main Gear Spring	1
D6	SMQ4890	Trigger Arm Spring B	1
D7	SMQ4880	Function Lever w/sp	1
D8	SMQ4816	Collar	4
D9	SMQ4926	FH Screw	4
D10	SMQ4912	Lift Arm Ass'y w/sp	1
D11	SMQ4910	Collar	1
D12	SMQ4908	Rew Spring	1
D13	SMQ4906	Pause Arm Ass'y	1
D14	SMQ4904	Trigger Arm Spring A	1
D15	SMQ4896	Pause Gear	1
D16	SMQ4894	Main Gear	1
D17	SMQ4886	Rec Arm Spring	1
D18	SMQ4892	Trigger Arm Spring A	1

Part D

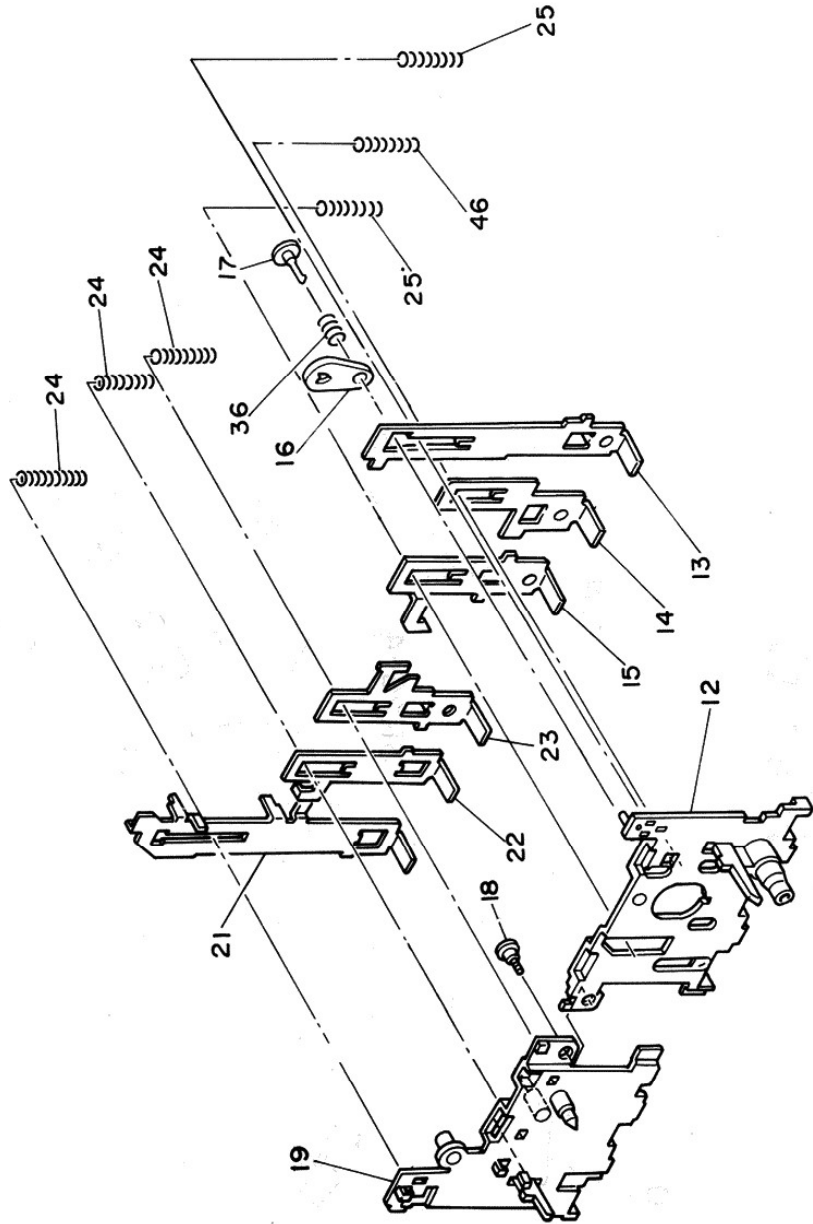


Ref. No.	Part No.	Description	Per Set (p.c.s)
27	SMQ4866	Lock Arm w/sp	1
28	SMQ4868	SW Function Lever	1
29	SMQ4870	Collar Screw	1
30	SMQ4872	Eject Kick Lever	1
31	SMQ4816	Collar	1
32	SMQ4926	FH Screw	2
33	SMQ4874	Collar	1
34	SMQ4876	TPS Function Lever	1
35	SMQ4878	Collar Screw	1

Part E

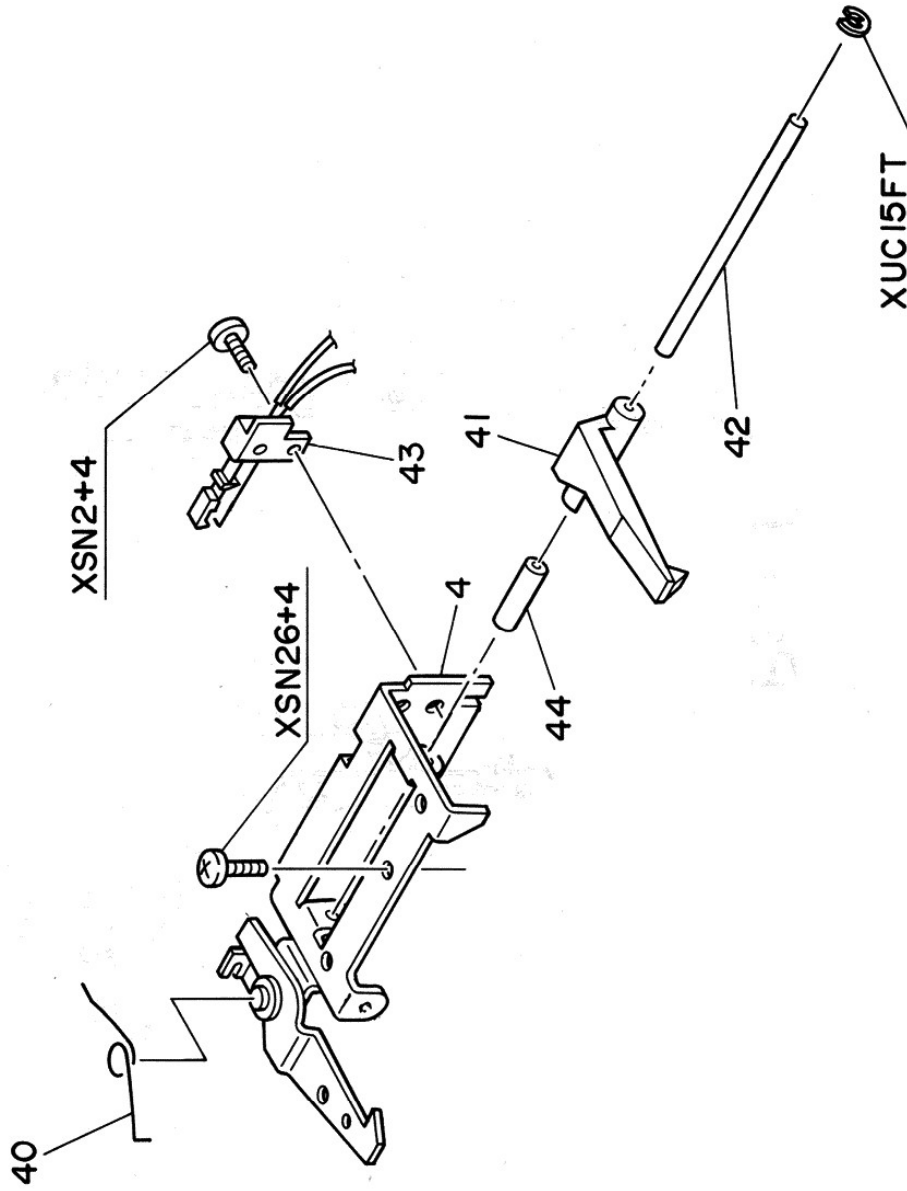


Part F



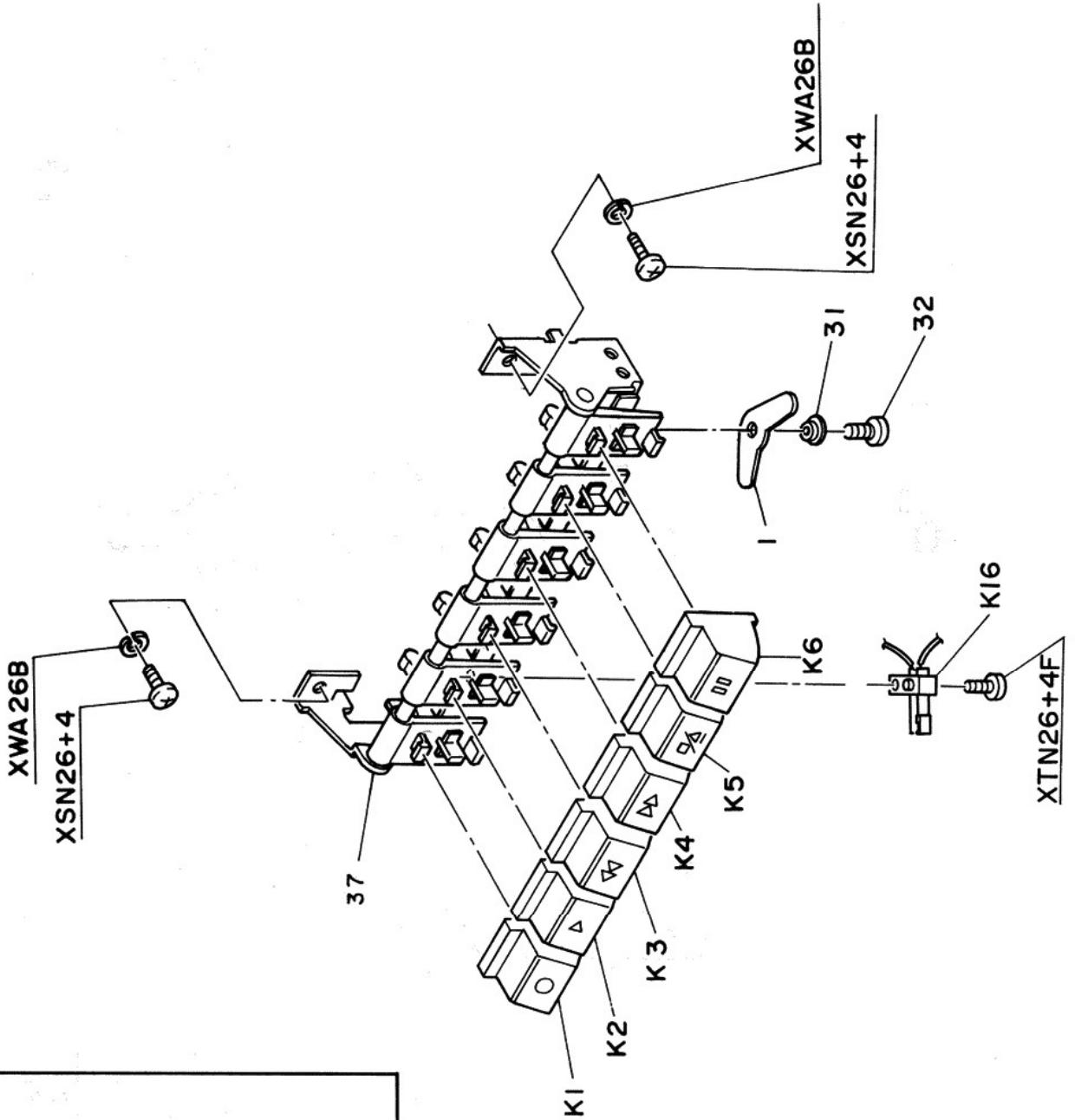
Ref. No.	Part No.	Description	Per Set (p.c.s)
12	SMO4836	Button Base (L)	1
13	SMO4854	Pause Button	1
14	SMO4852	Stop Button Lever	1
15	SMO4850	FF Button Lever	1
16	SMO2444	Pause Click Lever	1
17	SMO4862	Pause Stopper	1
18	SMO4838	Collar Screw	1
19	SMO4840	Button Base (R)	1
21	SMO4844	Rec Button Lever	1
22	SMO4846	Play Button Lever	1
23	SMO4848	Rew Button Lever	1
24	SMO4856	Button Lever Spring	3
25	SMO4858	Button Lever Spring	2
36	SMO4860	Pause Lever Spring	1
46	SMO4988	Button Lever Spring	1

Part G



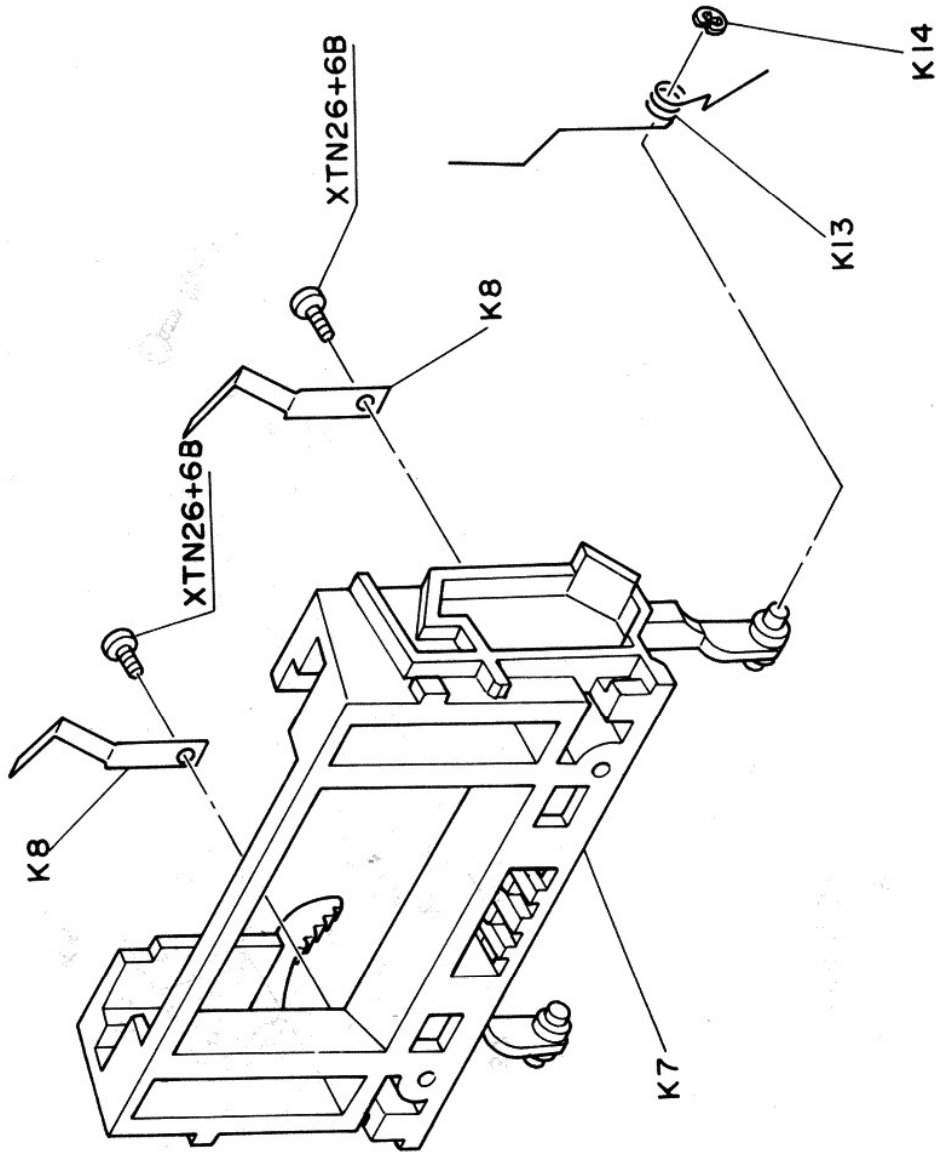
Ref. No.	Part No.	Description	Per Set (p.c.s)
4	SMO4970	Hook	1
40	SMO4976	Hook Spring	1
41	SMO4978	Chrome Sensing Lever	1
42	SMO4980	Sensing Lever Shaft	1
43	SMO4982	Leaf Switch	1
44	SMO4984	Spacer	1

Part H



Ref. No.	Part No.	Description	Per Set (p.c.s)
1	SMQ4962	RF Stopper	1
31	SMQ4816	Collar	1
32	SMQ4926	Pause Lever Spring	1
37	SMQ4924	Button Frame Ass'y	1
K1	SBC518A	Rec Button	1
K2	SBC518B	Play Button	1
K3	SBC518C	Rew Button	1
K4	SBC518D	FF Button	1
K5	SBC518E	Stop/Eject Button	1
K6	SBC518F	Pause Button	1
K16	SSP70	Leaf Switch	1

Part I



Ref. No.	Part No.	Description	Per Set (p.c.s)
K7	SGE1554	Cassette Holder	1
K8	SMO4748	Spring	2
K13	SMO4642	Eject Spring	1
K14	SNE478	Push Nut	1

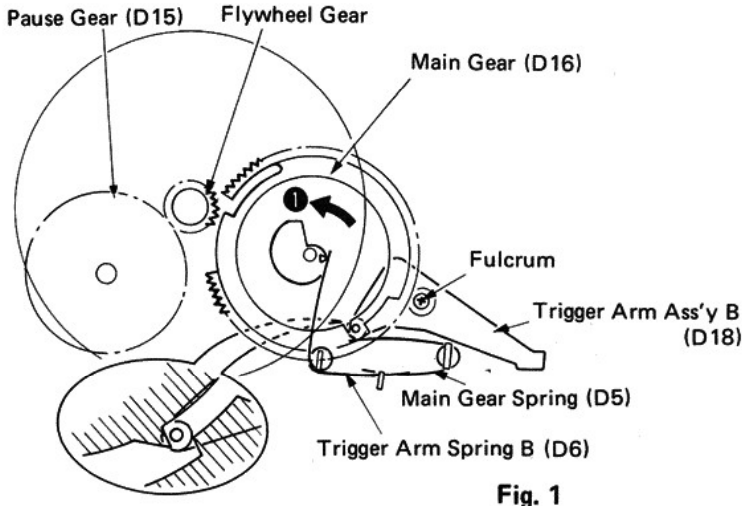
V. OPERATIONS

The following explanations use model S-100N (Domestic Model) as an example.

■ STOP MODE:

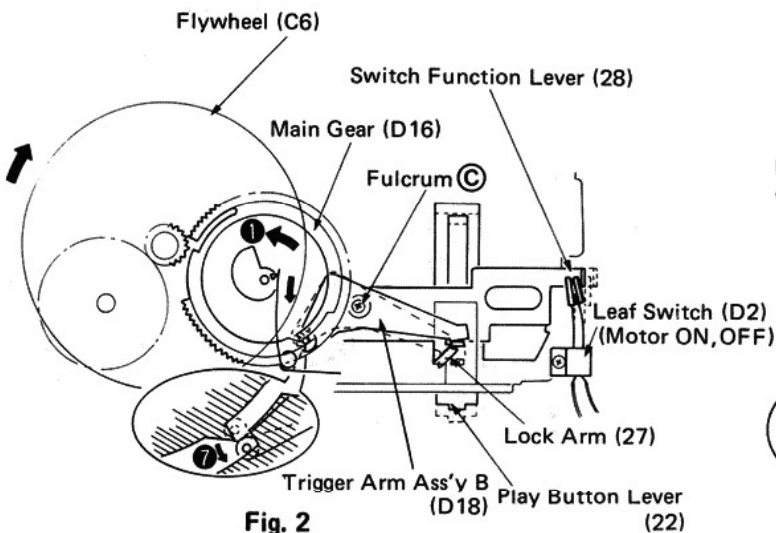
The mechanism in the neutral or stop position is shown in Fig. 1.

Trigger arm spring B (D6) exerts a force on the main gear (D16) in direction ①. Trigger arm Ass'y B (D18) locks the gear in place until the play button is pressed.

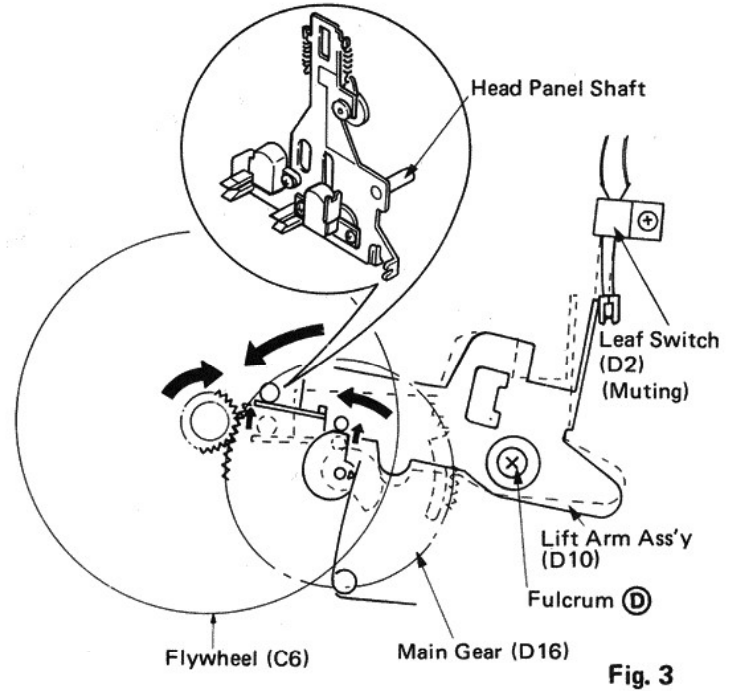


1 PLAY OPERATION

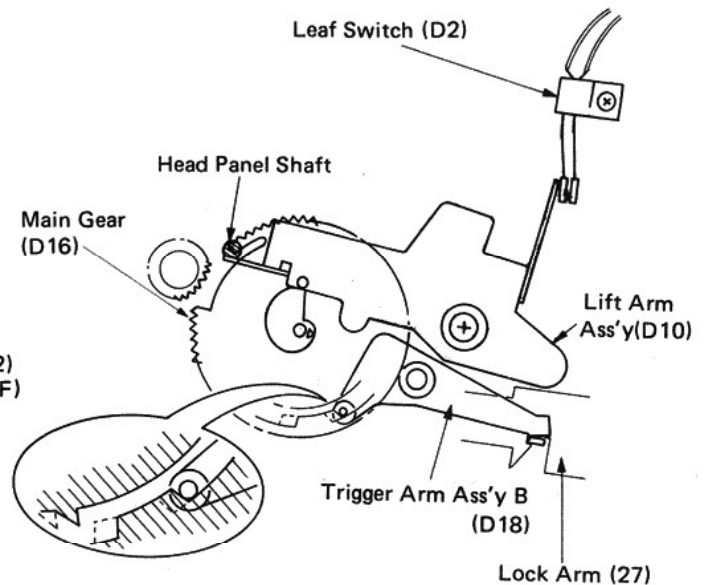
- 1 In Fig. 2, when the PLAY button is pressed, the trigger arm assembly B (D18) and the switch function lever (28) are pushed by the play button lever (22) and locked by the lock arm (27).
- 2 The switch function lever turns on the leaf switch (D2) (Motor-off → on) and the motor (C8) begins to rotate the flywheel (C6).
- 3 As the trigger arm assembly B (D18) rotates around fulcrum ③ in the direction ⑦, the main gear (D16) is released and turns in direction ① to mesh with the gear of the flywheel (C6). (Fig. 2)



- 4 As the main gear (D16) rotates, its cam raises the lift arm assembly (D10) pivoting on fulcrum ④.
- 5 The leaf switch (D2) is turned on by the lift arm assembly (D10). Thus the tape muting circuit is released and output is obtainable.
- 6 Forward and backward motions of the head panel assembly are made by the head panel shaft. (Fig. 3)



- 7 In Fig. 4, when the head panel has reached its highest point, the main gear (D16) reaches its neutral position and stops rotating. Trigger arm ass'y B (D18) holds the main gear in position and is locked by the Lock arm (27) to maintain the PLAY position. (Fig. 4)



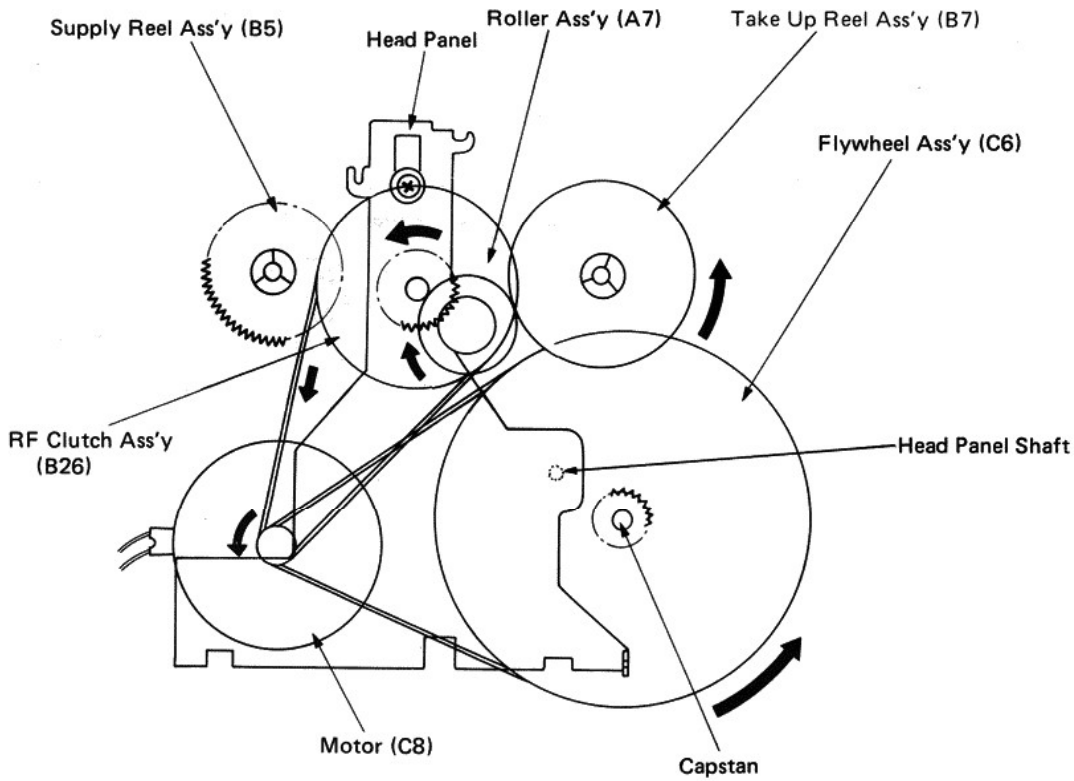


Fig. 5
Front View

2 PAUSE OPERATION

In the PLAY mode the pause arm assembly (D13) is pulled by the spring (D12) pivoting on fulcrum (A). The pause gear (D15) is pushed in the ⑦ direction at point (B) and locked by the trigger arm assembly (B3) at point (C). Thus the pause gear does not rotate. (Fig. 6)

1 When the PAUSE button is pressed, the trigger arm assembly A (D3) begins to turn around the fulcrum (D) and is disengaged at point (C). The pause gear (D15) is rotated slightly in direction ⑦ by the force of spring (D12). (Fig. 7)

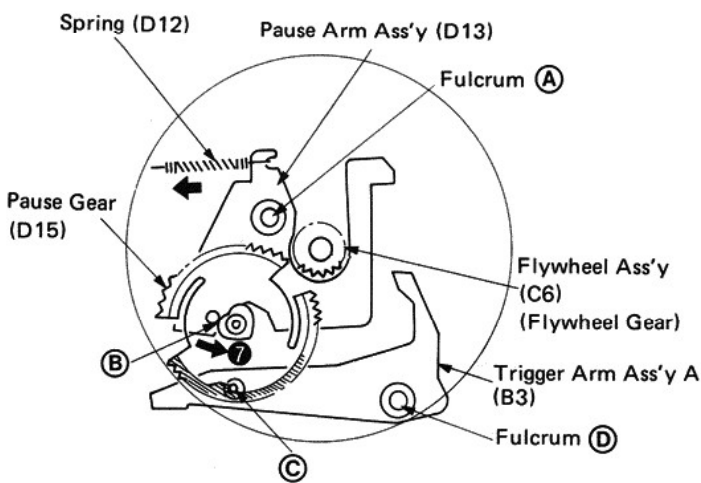


Fig. 6

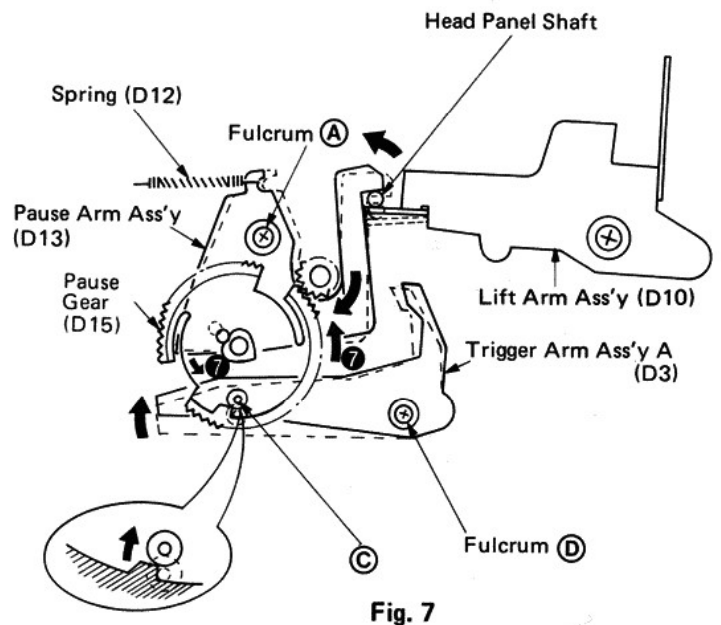
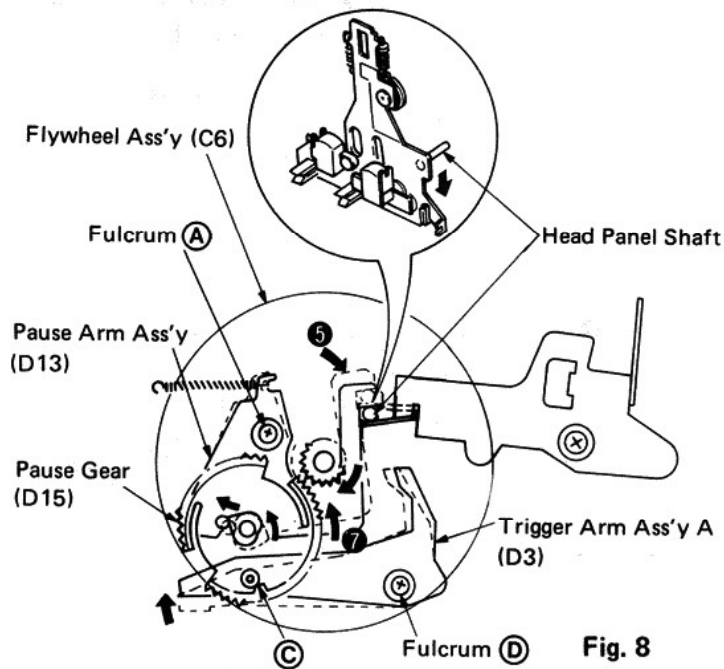


Fig. 7

- 2 This slight rotation causes the pause gear (D15) to mesh with the gear of the flywheel assembly (C6). The pause gear continues to revolve.
- 3 When the pause gear (D15) rotates in the ⑦ direction, the pause arm assembly (D13) rotates around the fulcrum ④ in the ⑤ direction. Hence the head panel shaft (namely the head panel) makes a backward motion. (Fig. 8)



- 4 Shortly after passing over the peak point of backward movement, point ③ of the trigger arm assembly A (D3) functions as a stopper which suspends rotation of the pause gear (D15). Since part of the teeth of the pause gear are missing on the flywheel side at that time, the pause gear stops rotating.
- 5 When the head panel makes a backward motion, the pinch roller (9) detaches from the tape so there is no contact between the roller assembly (A7) and the take-up reel assembly (B7). Therefore the mechanism is in the PAUSE MODE. (Fig. 9)

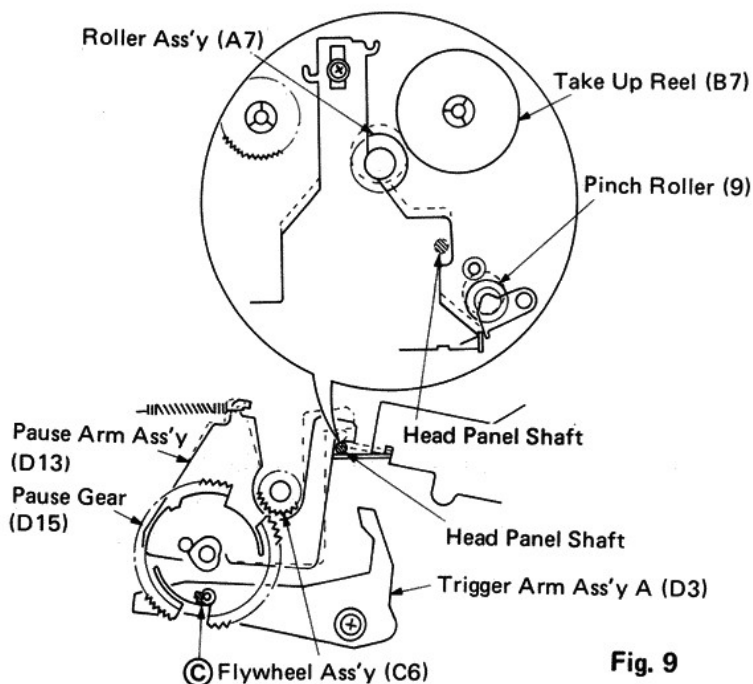


Fig. 9

■ Maintaining the PAUSE MODE:

The trigger arm assembly (D3) is locked and held by the pause button lever (13). (Fig. 10)

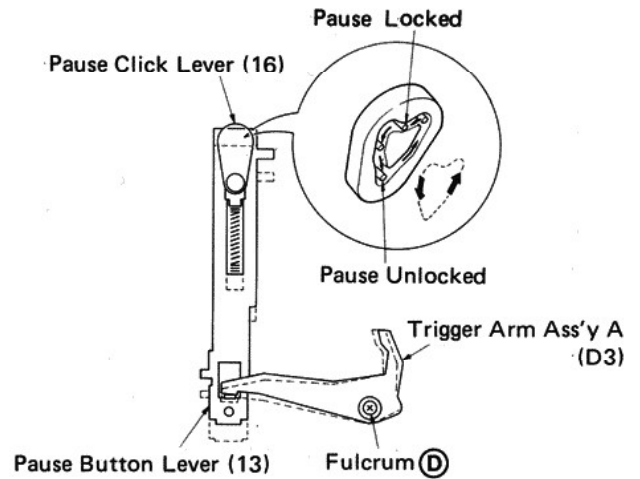


Fig. 10

■ Releasing from the PAUSE MODE:

- 1 Pressing the PAUSE button again releases the pause button lever (13) and allows the trigger arm assembly A (D3) to move backward. The lock ③ of the pause gear (D15) is thereby disengaged.
- 2 Since the pause arm assembly (D13) pushes the pause gear (D15) at Point B with the aid of the spring (D12), the pause gear begins to rotate in direction ⑦.
- 3 The pause gear (D15) continues to rotate since it is meshed with the gear of the flywheel assembly (C6). The pause gear stops at the point where Point ⑤ comes in contact with Point ③. At that time the flywheel keeps on revolving but the pause gear does not rotate since there is a partial lack of teeth on the pause gear (D15).
- 4 Since the pause arm assembly (D13) returns in direction ⑤, the head panel shaft (namely the head panel assembly) is restored to normal to assume the PLAY (or REC) condition as shown in Fig. 4. (Fig. 11)

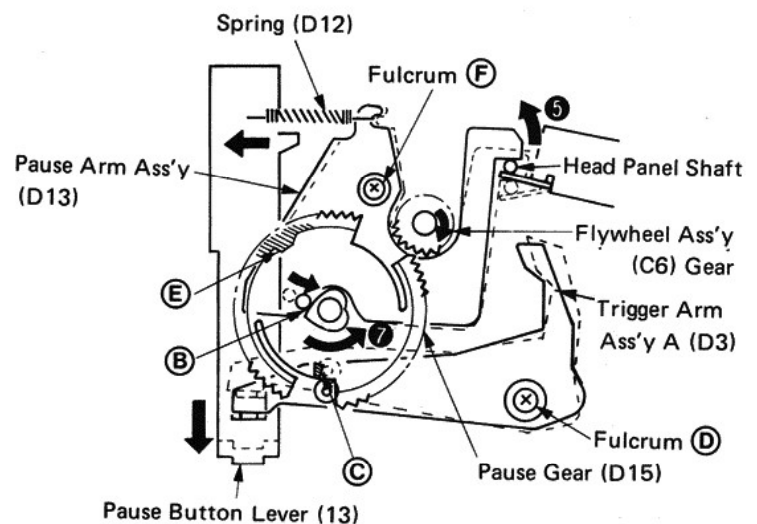


Fig. 11

3 STOP OPERATION

The method of stopping the mechanism is essentially the same, regardless of the present operating mode. In any case the STOP button is pressed to stop the mechanism. The following explanation is based on the assumption that the mechanism is stopped in the PLAY mode.

- 1 Fig. 12 shows the behavior of each button lever and the lock arm (27) in the STOP mode.

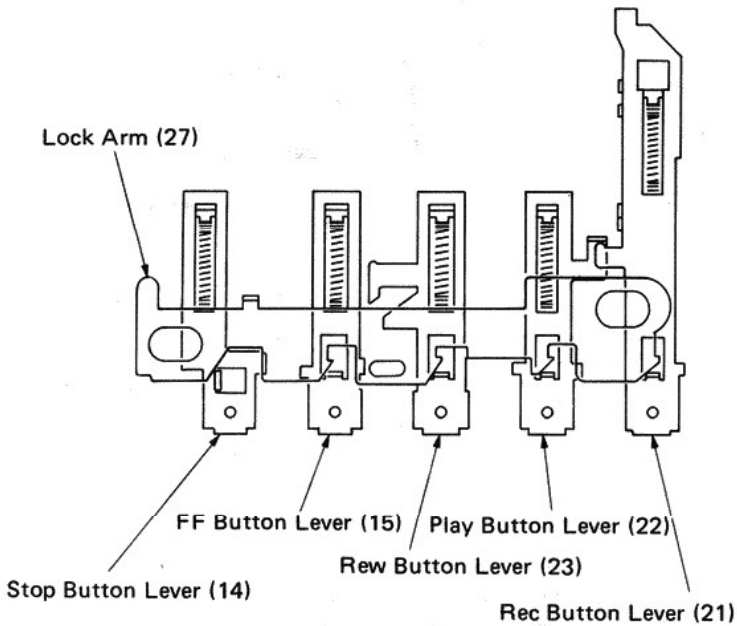


Fig. 12

- 2 Fig. 13 shows the mechanism in the PLAY mode.

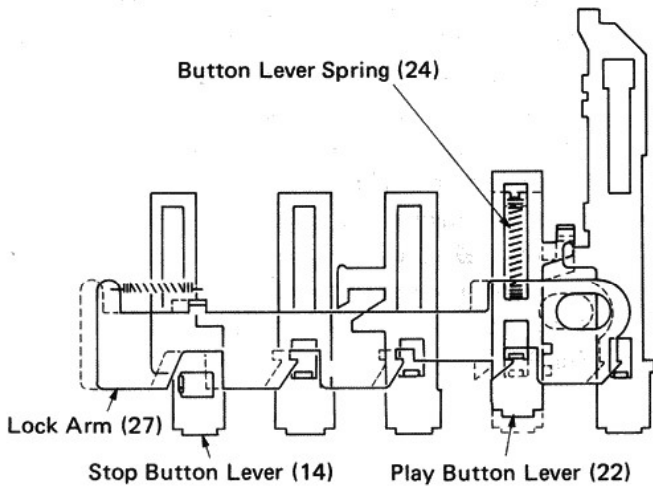


Fig. 13

- 3 When the STOP button is pushed, the lock arm (27) slides in direction ① and the play button lever (22) returns in direction ② by the button lever spring (24) to assume the stop mode. (Fig. 14)

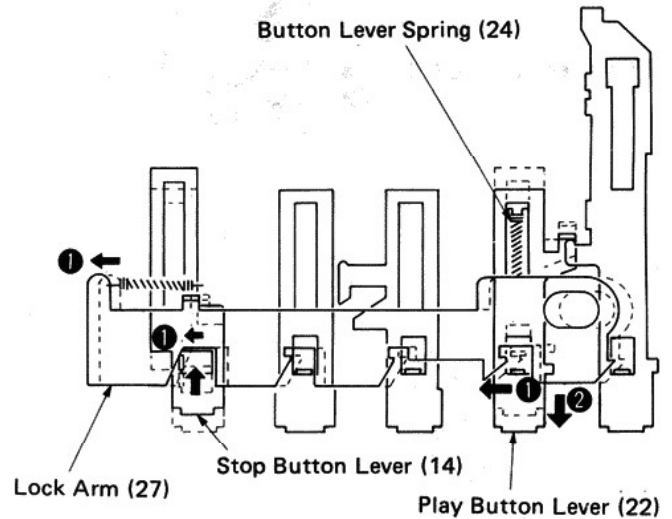


Fig. 14

4 AUTO STOP OPERATION

This mechanism is designed to provide a full-autostop feature. The AUTO STOP feature is effective and the mechanism is stopped automatically when an operation of PLAY (REC), FF, or REW has been finished. Detection of an AUTO STOP condition is effected by the sensing piece (B10) which is tied with the take-up reel (B7). The effect of AUTO STOP is available when rotation of the reel assembly is suspended on the take-up side.

The AUTO STOP mechanism is composed of the pulley (B18), the cam gear (B20), the sensing lever (B16), the sensing piece (B10), and the auto lever (B28).

■ **Movement of each Component during PLAY Operation:**

- 1 As shown in Fig. 15, the pulley (B18) is coupled with the flywheel through the full auto belt (B19). Therefore, the pulley (B18) and the cam gear (20) always keep revolving while the motor is running.

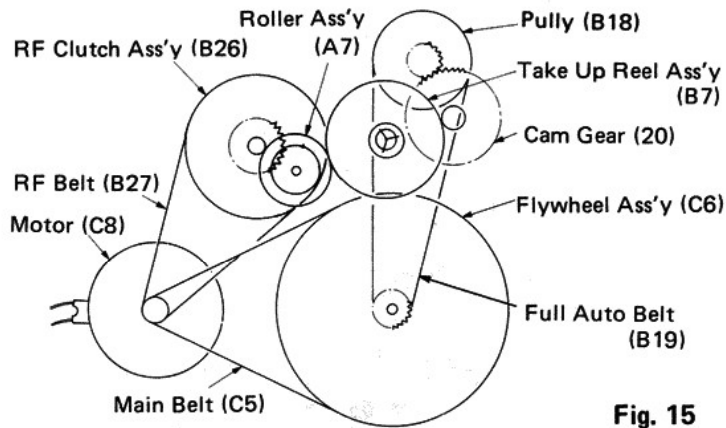


Fig. 15

- 2 As shown in Fig. 16, the take-up reel (B7) is revolving in direction ① in the PLAY mode and the sensing piece (B10) coupled through the felt clutch receives a force to revolve also in direction ①.
- 3 On the other hand, the cam gear (B20) is revolving in direction ③ since it is meshed with the gear of the pulley (B18).
- 4 When the sensing piece (B10) arrives at Point (B), it comes in contact with the sensing lever (B16) and slips against the take-up reel assembly (B7).
- 5 Since the cam gear (B20) pushes the sensing lever (B16) in direction ④ with the aid of the inside cam, the sensing piece is also pushed in direction ⑤.
- 6 When the sensing lever (B16) returns to Point (F), it assumes a free condition due to the internal construction of the cam gear (B20). On the contrary, the sensing piece (B10) pushes the sensing lever (B16) to rotate it as far as Point (B). This operation is repeated in the PLAY mode. (Fig. 16)

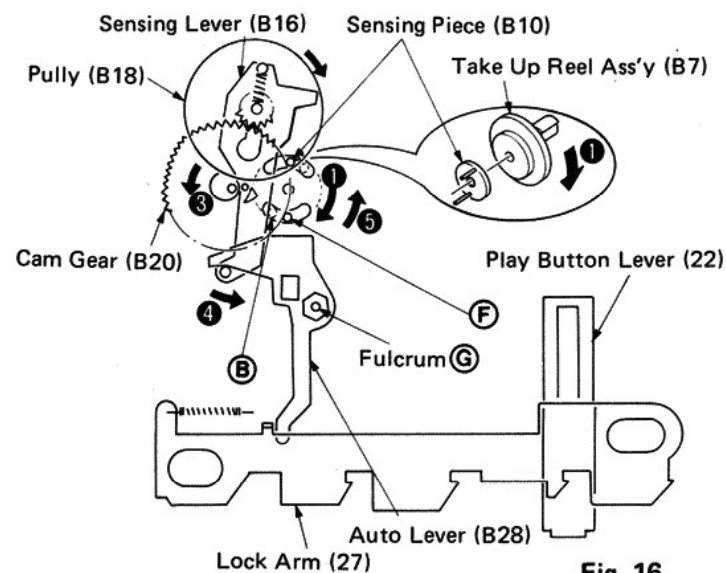


Fig. 16

■ **Method of AUTO STOP:**

- 1 When the tape is finished, the take-up reel (B7) stops its rotation and as a result the sensing piece (B10) coupled to the take-up reel loses its revolving force. Thus the sensing lever (B16) stops when it has returned to Point (F). (Fig. 17)

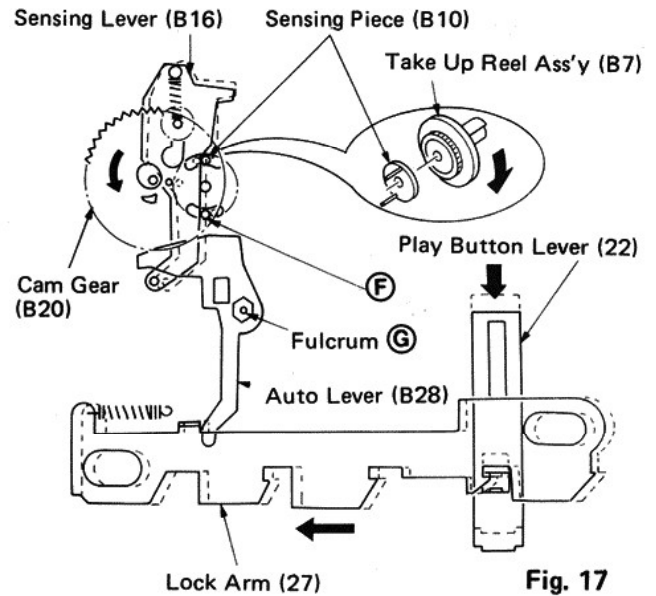


Fig. 17

- 2 When the cam gear (B20) revolves, Part (H) pushes up Part (J) of the sensing lever (B16) and the auto lever (B28) revolves around the fulcrum (G) in direction ⑥. Accordingly the lock arm (27) slides to the left and the play button lever (22) is released to assume the STOP mode. (Fig. 18)

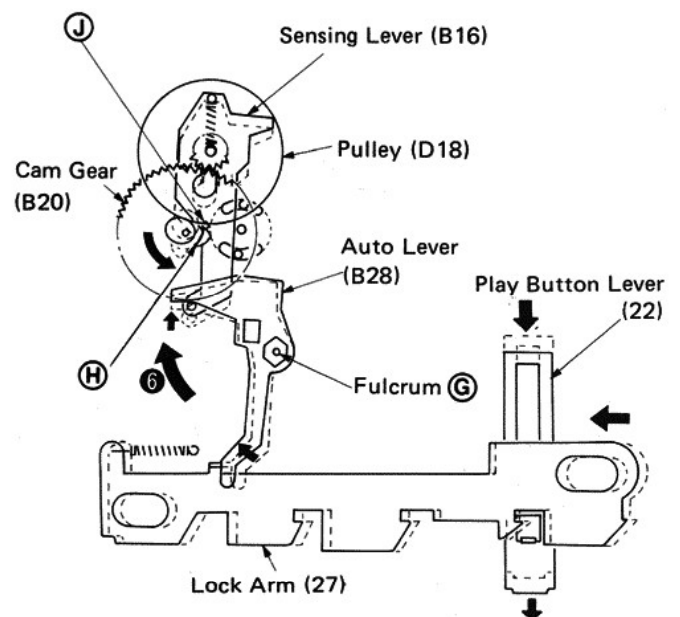


Fig. 18

5 FF OPERATION

- 1 Fig. 19 shows the positional relationship of the FF-related mechanism in the stop mode.
- 2 The RF clutch assembly (B26) is pulled by the spring toward the FF gear (B9). However, pin © located on the opposite side is hindered by the FF button lever (15). Therefore the RF clutch assembly (B26) does not operate.
- 3 On the other hand the brake arm assembly (B3) also keeps contact with the take-up reel assembly (B7) and the supply reel assembly (B5). Consequently it is in the braked state. (Fig. 19)

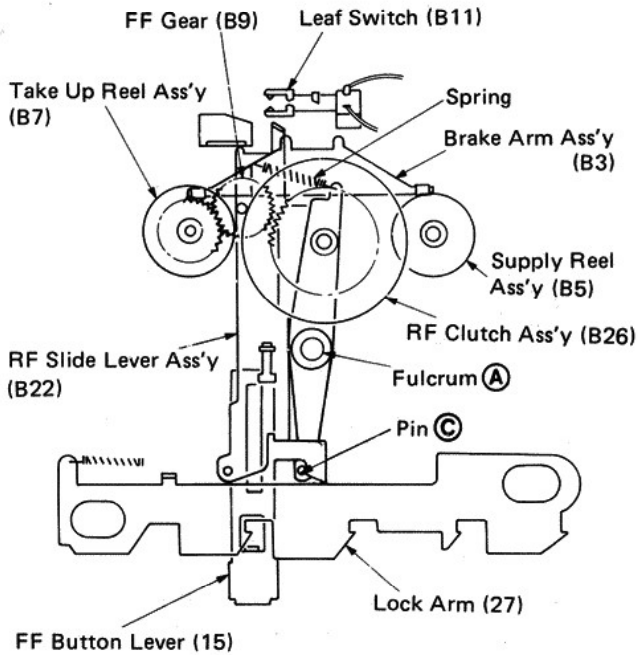


Fig. 19

■ Movement of each Component toward FF Condition:

- 1 When the FF button is pushed, the switch function lever (28) and the FF button lever (15) are locked by the lock arm (27).
- 2 The leaf switch (D2) (Motor ON-OFF Switch) is turned on by the switch function lever (28) and the motor (C8) begins to run. Simultaneously the RF clutch assembly (B26) begins to rotate.
- 3 As the FF button lever (15) is pushed forward, the pin of the RF clutch assembly (B26) is released from the grip of the FF lever and the RF clutch is rotated around the fulcrum (A) in direction ⑦ by the effect of the spring force. The RF clutch gear is then meshed with the FF gear (B9). Simultaneously the brake arm assembly (B3) uncouples from the take-up reel (D7) and the supply reel (B5). (Fig. 20)

- 4 Since the gear of the take-up reel assembly (B7) is coupled with the FF gear (B9) from the beginning, the take-up reel (B7) begins to rotate when it meshes with the gear of the RF clutch assembly (B26). In this step the mechanism assumes an FF state. (Fig. 20)

Fig. 21 shows the front view.

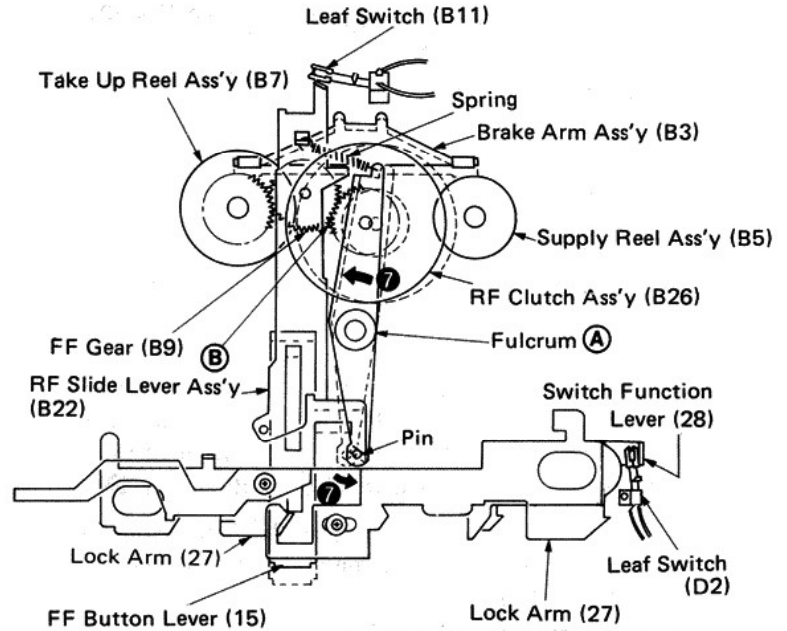


Fig. 20

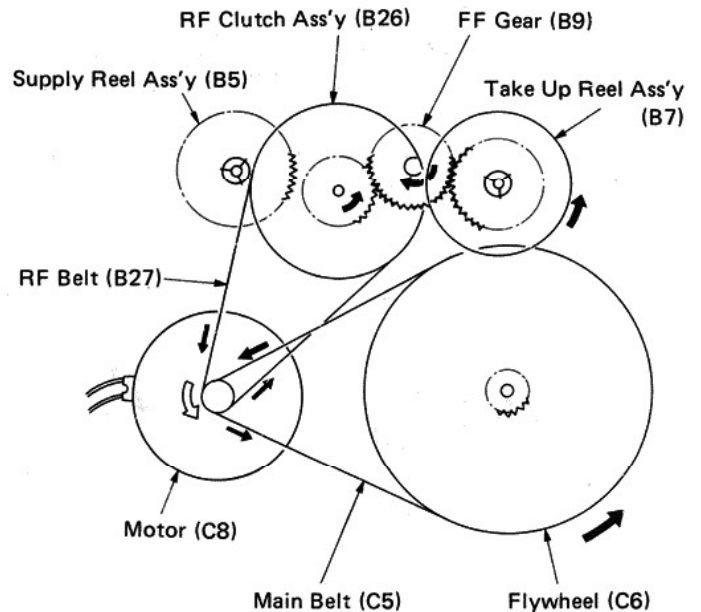


Fig. 21

6 REW OPERATION

- 1 Fig. 22 shows the conditions of the REW-related mechanism in the STOP mode.
- 2 The RF clutch assembly (B26) is pulled by the spring in direction ❶ based on the fulcrum ❷.
- 3 On the other hand the brake arm assembly (B3) also keeps contact with the take-up reel assembly (B7) and the supply reel assembly (B5), and is in the braked condition. (Fig. 22)

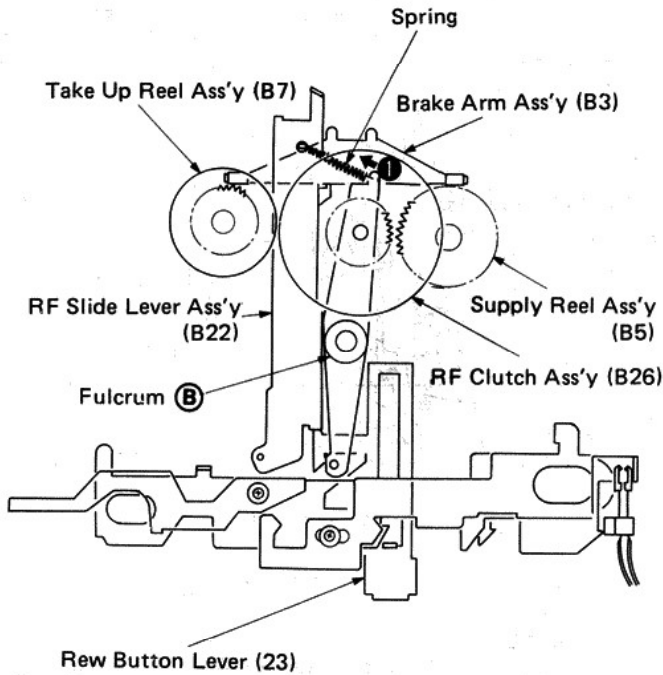


Fig. 22

■ Status Change into REW mode:

- 1 When the REW button is pressed, the rewind button lever (23) and the switch function lever (28) are locked by the lock arm (27).
- 2 The leaf switch (D2) is turned on by the switch function lever (28) and the motor begins to run. In this state the RF clutch assembly (B26) also begins to rotate.
- 3 Since the RF slide lever assembly (B22) is pushed by the rewind button lever (23), the brake arm assembly (B3) uncouples from the supply reel (B5) and the take-up reel (B7) to release the brake. (Fig. 23)
- 4 When the rewind button lever (23) is pushed forward, the RF clutch assembly (B26) revolves around the fulcrum ❷ in direction ❶, thus causing its opposite side to move in ❸ direction and mesh with the gear of the supply reel assembly (B5). Then the supply reel (B5) rotates to assume the REW mode. (Fig. 23)

Fig. 24 shows the front view. (Fig. 24)

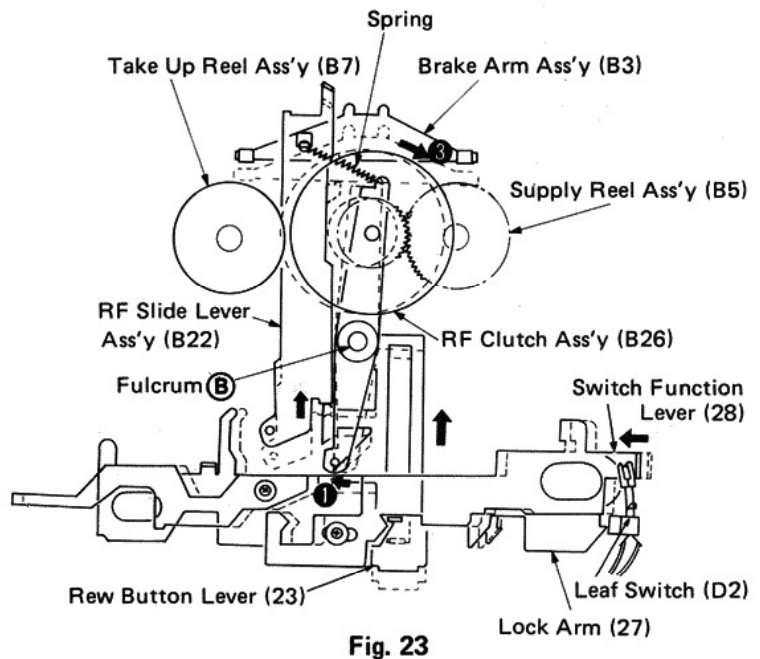


Fig. 23

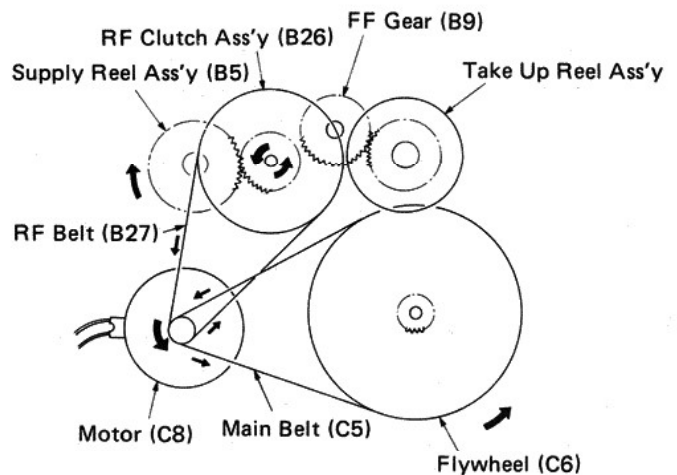


Fig. 24

7 TPS OPERATION (RX-A5 series, SG-152 series, S-100N only)

FF TPS

The FF TPS operation denotes a mechanical condition in which the FF button is pressed during the PLAY mode.

Fig. 25 shows the status of the TPS-related mechanism in the PLAY mode. (Fig. 25)

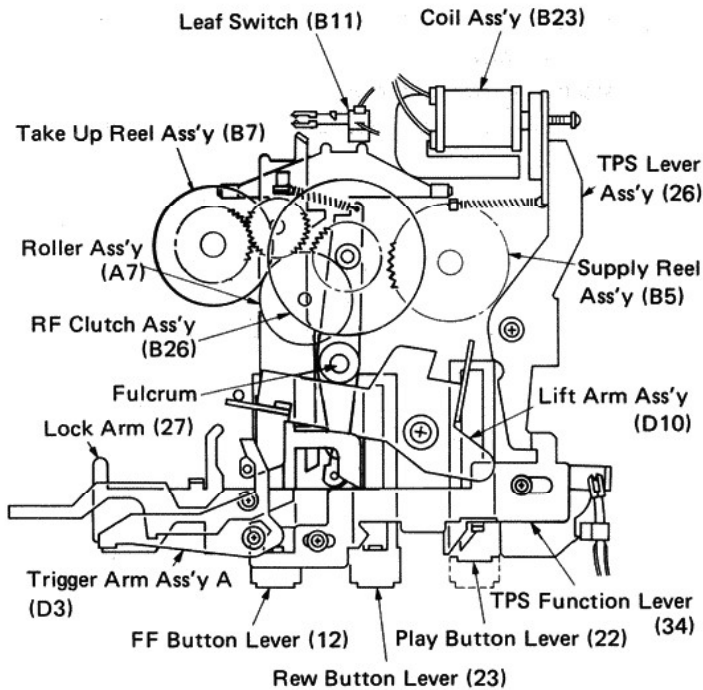


Fig. 25

Status Change into FF TPS Mode: (Fig. 26)

- 1 When the FF button is pressed during the PLAY mode, the RF slide lever assembly (B22) is pushed forward and the leaf switch (B11) is turned on.
- 2 When the leaf switch (B11) turns on, the tape output is muted. Since current flows in the coil assembly (B23), the TPS lever assembly (26) and the TPS function lever (34) are held. Consequently the FF button lever (15) maintains the pressed condition.
- 3 On the other hand the forward movement of the RF slide lever assembly (B22) makes the trigger arm assembly (D3) move clockwise. Since this motion is the same as the pause button lever (21) being pressed (as shown in Fig. 8), the pause arm assembly (D13) pushes the head panel shaft as a result and the entire head panel is made to move backward.
- 4 The gear of the RF clutch assembly (B26) meshes with the FF gear (B9) by the effect of the FF button lever (15). This gear coupling is further interlinked with the gear of the take-up reel assembly (B7). Thus the take-up reel rotates to assume an FF TPS condition. (Fig. 26)

Release of FF TPS (FF TPS → PLAY):

- 1 When current does not flow into the coil assembly (B23) because of a no-signal section between tunes, the coil assembly (B23) releases the TPS lever assembly (26). Therefore the rewind button lever assembly (15) having been locked by the TPS function lever (34) is restored to the PLAY condition. (Fig. 25)

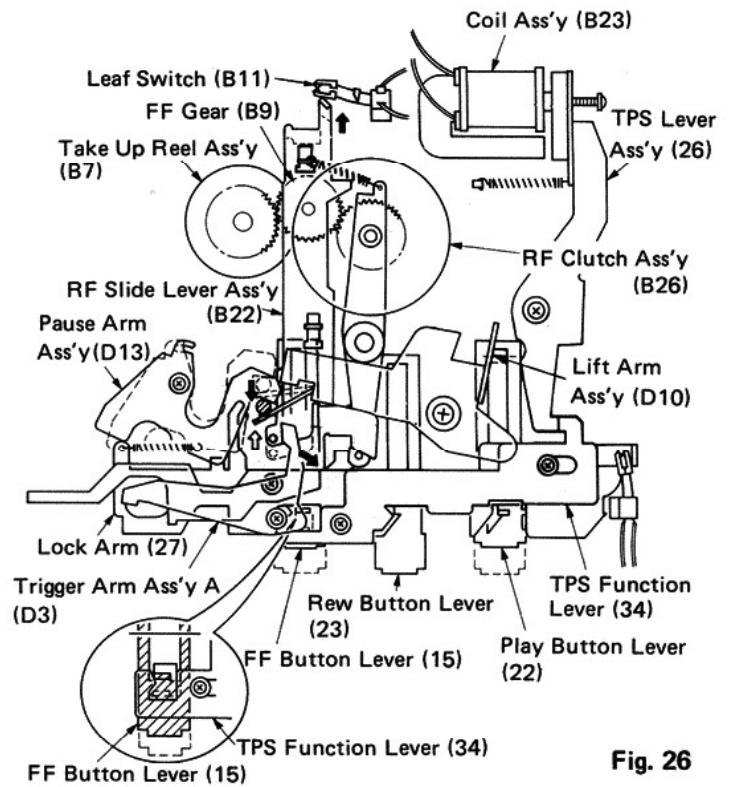


Fig. 26

REW TPS

The REW TPS operation denotes a mechanical condition in which the REW button is pressed during the PLAY mode.

Fig. 27 shows the status of the TPS-related mechanism in the PLAY mode. (Fig. 27)

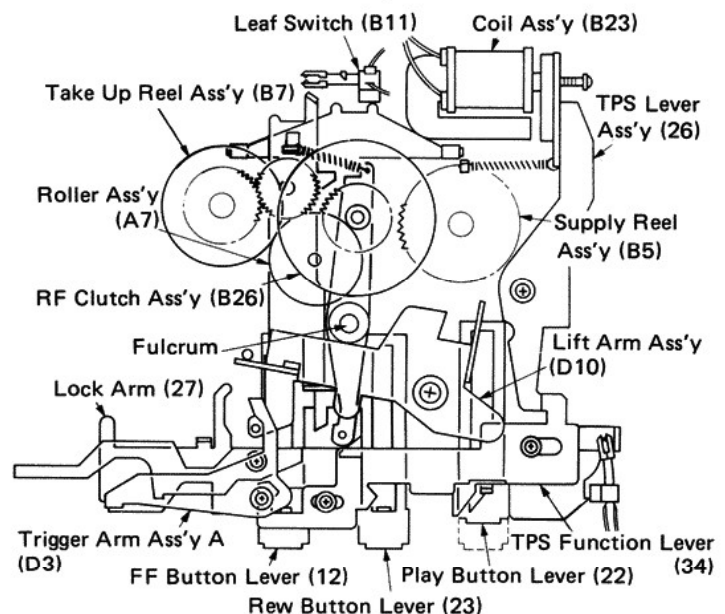


Fig. 27

● **Status Change into REW TPS Mode: (Fig. 28)**

- 1 When the REW button is pressed during the PLAY mode, the RF slide lever assembly (B22) is pushed forward and the leaf switch (B11) is turned on.
- 2 When the leaf switch (B11) is turned on, the tape output is muted. Since a current flows in the coil assembly (B23), the TPS lever assembly (26) and the TPS function lever (34) are held. Consequently the rewind button lever (23) maintains the pressed condition.
- 3 On the other hand the forward movement of the RF slide lever assembly (B22) makes the trigger arm assembly A (D3) move in direction ⑦. Since this motion is the same as the pause button lever (21) being pressed (as shown in Fig. 8), the pause arm assembly (D13) pushes the head panel shaft as a result and the whole head panel is made to move backward.
- 4 The gear of the RF clutch assembly (B26) meshes with that of the rewind button lever (23) and the mechanism assumes the REW TPS mode. (Fig. 28)

● **Release of REW TPS (REW TPS → PLAY):**

When current does not flow into the coil assembly (B23) because of a no-signal section between tunes, the coil assembly (B23) releases the TPS lever assembly (26). Therefore the rewind button lever assembly (15) having been locked by the TPS function lever (34) is restored to the PLAY condition. (Fig. 27)

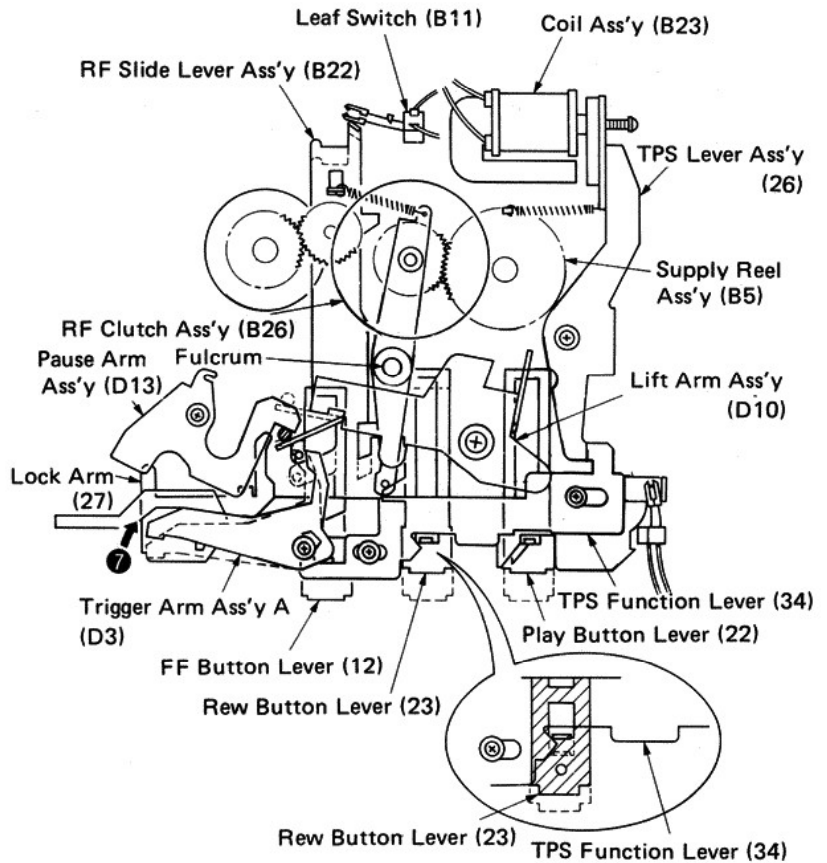


Fig. 28

8 REC Operation:

Generally the REC condition denotes a status in which the REC button and the PLAY button are pushed at the same time. However, the REC button of this mechanism is interlocked with the PLAY button and recording can be started by simply pressing the REC button only.

The status of the REC related mechanism in the STOP mode. (Fig. 29)

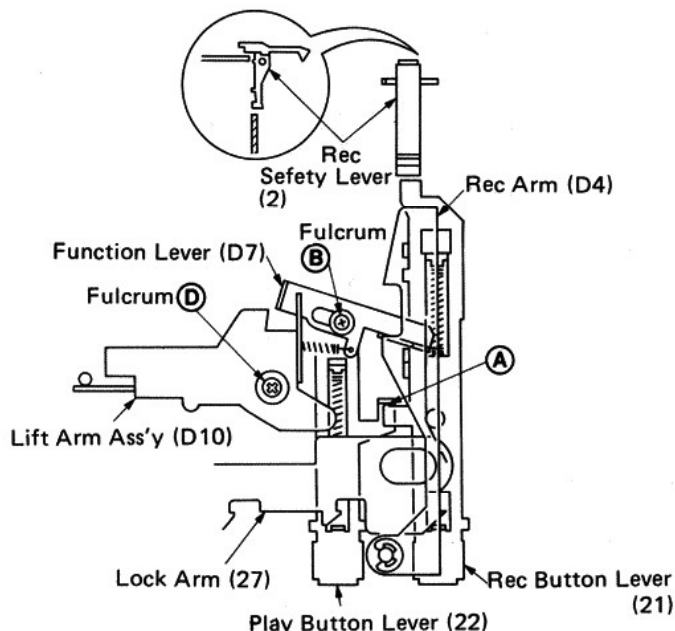


Fig. 29

■ Status Change into REC:

- 1 When a cassette tape is mounted in position and the REC button is pressed, the REC button lever (21) and the PLAY button lever (22) are locked by the lock arm (27) since these two levers are interlinked with each other at Point A.
- 2 When the REC button lever (21) slides the function lever begins to rotate around the fulcrum B in direction 7. (Fig. 30)

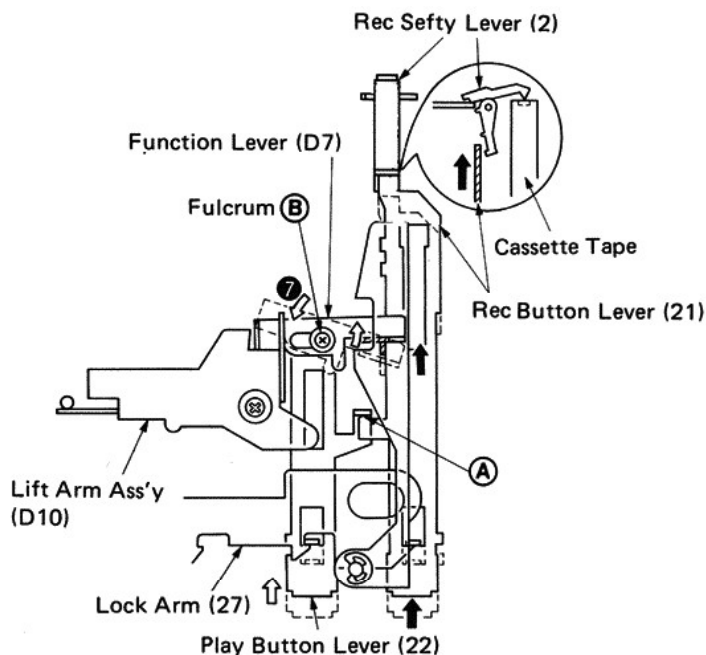


Fig. 30

- 3 When the play button lever (22) slides the lift arm assembly (D10) moves in direction 6 around the fulcrum D in the same manner as for PLAYBACK (Figs. 2 ~ 4).
- 4 Therefore, when the function lever slides to the right and the spring section of the REC arm (D4) is pushed by it, the REC arm (D4) begins to move in direction 6 around the fulcrum C.
- 5 The movement of the REC arm is used to switch over the RECORD/PLAYBACK switch into the REC mode. (Fig. 31)

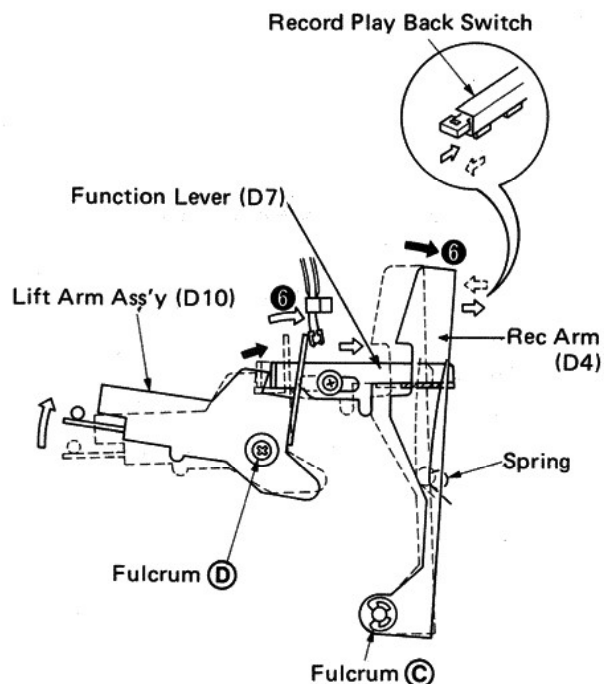


Fig. 31

VI. NOTES FOR DISASSEMBLY AND REASSEMBLY

Use the following procedures when removing or installing the motor, flywheel or belts.

• **Disassembly Procedure:**

- 1 Remove the nylon washer (C9) from the capstan. ----- ①
- 2 Remove the RF belt (B27) from the RF clutch assembly (B26) and hang it on the raised hook part of the bracket. ----- ②
- 3 Remove the full-auto belt (B19) from the pulley (B18) and hang it on the raised hook part of the bracket. ----- ③
- 4 Remove the right and left bolts (3 pcs.) from the bracket. ----- ④
- 5 Dismantle the flywheel (C6) and the bracket. ---- ⑤
(Keep the flywheel (C6) and the bracket as stable as possible and gently and directly draw out the flywheel shaft.) ----- (Fig. 32)

• **Reassembly Procedure:**

- 1 Place the flywheel (C6) on the bracket.
- 2 Hang the main belt (C5) on the flywheel (C6) and the motor pulley (C7). ----- ①
- 3 Hang the RF belt (B27) on the raised hook part of the bracket and the motor pulley (C7). ----- ②
- 4 Hang the full-auto belt (B19) on the raised hook part of the bracket and flywheel. ----- ③
- 5 Hold the flywheel (C6) and the bracket, and insert the flywheel shaft. (Insert it gently and straight-forward, without tilting it.)
- 6 Tighten the right and left bolts (3 pcs.) of the bracket.
- 7 Hang the RF belt (B27) on the RF clutch assembly (B26) and the full-auto belt (B19) on the pulley (B18). (Fig. 33)

Fig. 34 shows the shape of each belt. (Fig. 34)

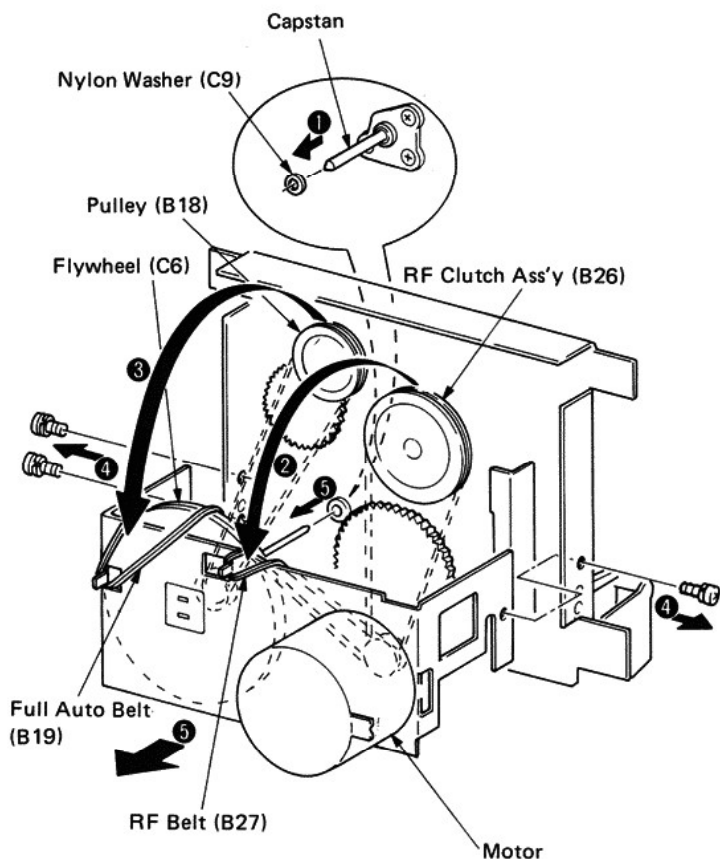


Fig. 32

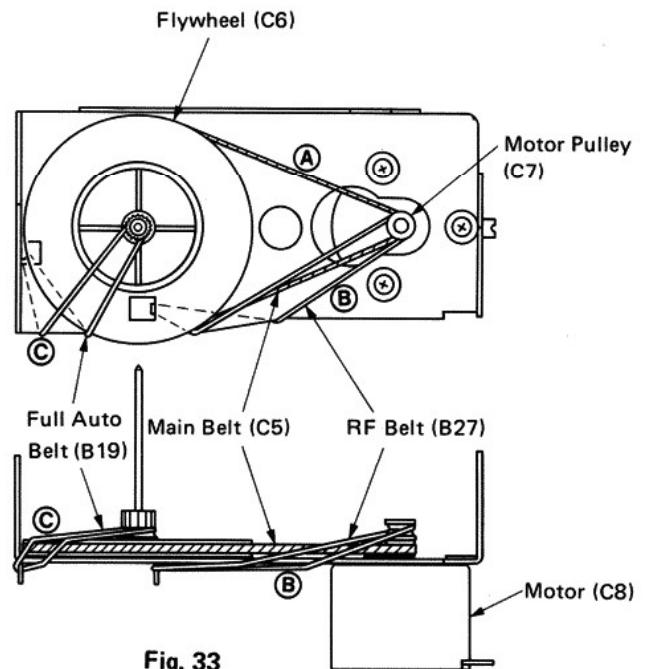


Fig. 33

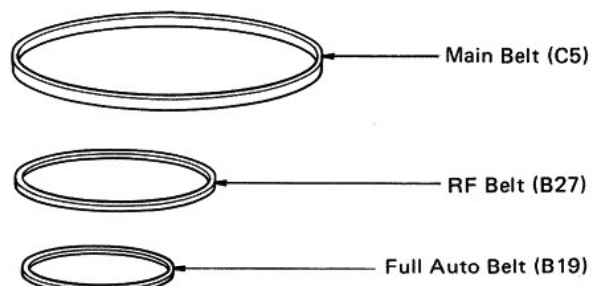


Fig. 34

