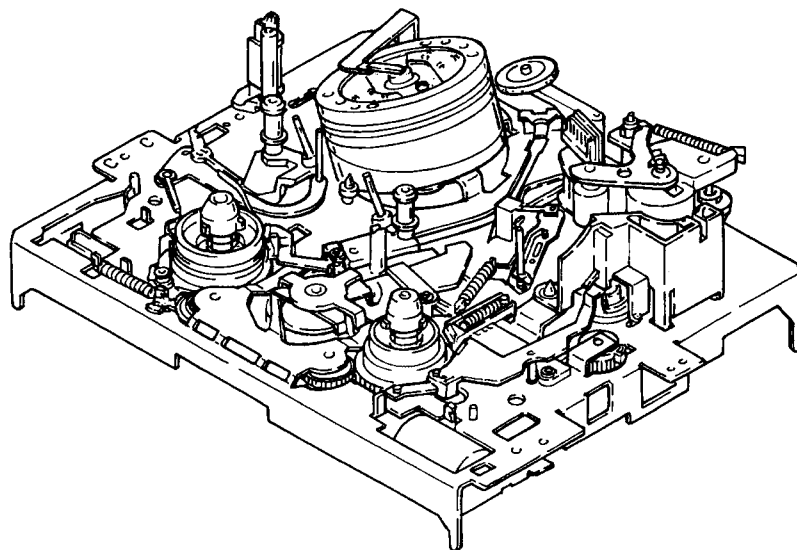
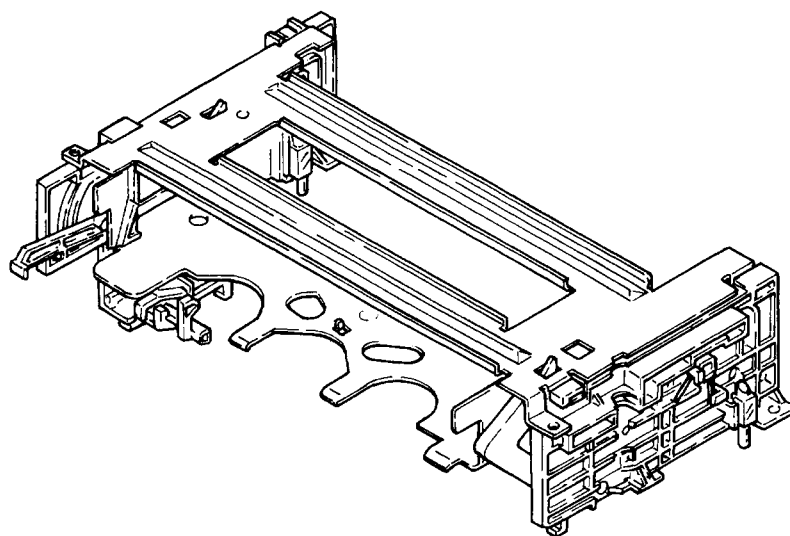


VHS MECHANICAL ADJUSTMENT MANUAL IV

H MECHANISM

Please use with the service manual.



VHS VIDEO CASSETTE RECORDER
SONY[®]



TABLE OF CONTENTS

<u>Section</u>	<u>Title</u>	<u>Page</u>	<u>Section</u>	<u>Title</u>	<u>Page</u>
1.	PREPARATION FOR MECHANISM CHECK ADJUSTMENT AND REPLACEMENT		3-11.	Soft Brake T Assembly (Fig. 3-13)	21
1-1.	Loading and Threading Procedure When the Power Turns Off (Fig. 1-1)	3	3-12.	RVS Brake Arm Assembly, Reel Table (T) Assembly (Fig. 3-14)	22
1-1-1.	Loading and Threading Procedure With Hands	3	3-13.	TG8 Assembly (Fig. 3-15)	23
1-1-2.	Loading and Threading Procedure With Regulated DC Power Supply	3	3-14.	TG8 Holder (Fig. 3-16)	24
1-2.	Unloading and Unthreading Procedure When the Power Turns Off (Figs. 1-2 and 1-3)	4	3-15.	TG8 and Press Gears (Fig. 3-17)	25
1-2-1.	Unloading and Unthreading Procedure With Hands	4	3-16.	Cam Motor Chassis Block Assembly, Upper/Lower Communication Gear (Fig. 3-18)	26
1-2-2.	Unloading and Unthreading Procedure With Regulated DC Power Supply	4	3-17.	Rotary Encoder Switch (Fig. 3-19)	27
1-3.	How to Complete Threading Without Cassette Compartment (Fig. 1-4)	6	3-18.	Main Slider (Fig. 3-20)	28
2.	PERIODIC CHECK AND REPLACEMENT		3-19.	Shuttle T Block and Loading Gear T Block Assemblies (Fig. 3-21)	29
2-1.	Cleaning of Rotating Head Disk Assembly	7	3-20.	Shuttle S Block and Loading Gear S Block Assemblies (Fig. 3-22)	30
2-2.	Cleaning of the Tape Movement System	7	3-21.	Reel Table (S) Assembly (Fig. 3-23)	31
2-3.	Cleaning the Drive System	7	3-22.	TG1 Assembly (Fig. 3-24)	32
2-4.	Periodic Check Items	8	3-23.	S Winding Block Assembly (Fig. 3-25)	33
2-5.	Tools and Fixtures Required for Servicing	9	3-24.	Trigger Lever and RKB Block Assemblies (Fig. 3-26)	34
3.	MAINLY MECHANICAL PARTS REPLACEMENT		4.	ADJUSTMENT	
3-1.	FL Block Assembly (Fig. 3-1)	10	4-1.	Tape Path Adjustment	35
3-2.	Drum Assembly (Fig. 3-2)	11	4-1-1.	Tension Regulator (TG1) Position/ Tension Adjustment (Fig. 4-1)	35
3-3.	Timing Belt (Fig. 3-3)	12	4-1-2.	TG8 Guide Roller Height Adjustment (Fig. 4-2)	36
3-4.	Cap Brake Assembly (Fig. 3-4)	13	4-1-3.	Height Adjustment of Guide Rollers No. 3 and No. 6 (Fig. 4-3)	36
3-5.	TG2 Roller, FE Head Assembly (Fig. 3-5)	14	4-1-4.	Ace Head Assembly Adjustment (Rough Adjustment) (Figs. 4-4 and 4-5)	37
3-6.	Pinch Press Block Assembly, Elevator Gear (Fig. 3-6)	15	4-1-5.	Ace Head Assembly Adjustment (Precision Adjustment)	38
3-7.	Ace Block Assembly (Fig. 3-7)	16	4-1-6.	X-Value Adjustment	38
3-8.	TG3, TG8 Guide Roller Assemblies (Fig. 3-8)	17	4-1-7.	Adjustments After Replacing the Drum (Video Head)	40
3-9.	Capstan Motor (Fig. 3-11)	19	4-1-8.	Checking the Tension and Torque	42
3-10.	Main Brake Assemblies S and T (Fig. 3-12)	20			

1. PREPARATION FOR MECHANISM CHECK ADJUSTMENT AND REPLACEMENT

Refer to the service manual, "DISASSEMBLY" for removal of the cabinet and boards.

1-1. LOADING AND THREADING PROCEDURE WHEN THE POWER TURNS OFF (Fig. 1-1)

1-1-1. LOADING AND THREADING PROCEDURE WITH HANDS

- 1) Turn cam motor in the arrow **A** direction until loading and threading are end.

1-1-2. LOADING AND THREADING PROCEDURE WITH REGULATED DC POWER SUPPLY

- 1) Applying approx. +9 V (300 mA) to cam motor with regulated DC power supply makes it loading and threading.

Note: When loading and threading without cassette, claws are caught in four positions as following figure (in the order ① → ② → ③ → ④).

So release them with hands.

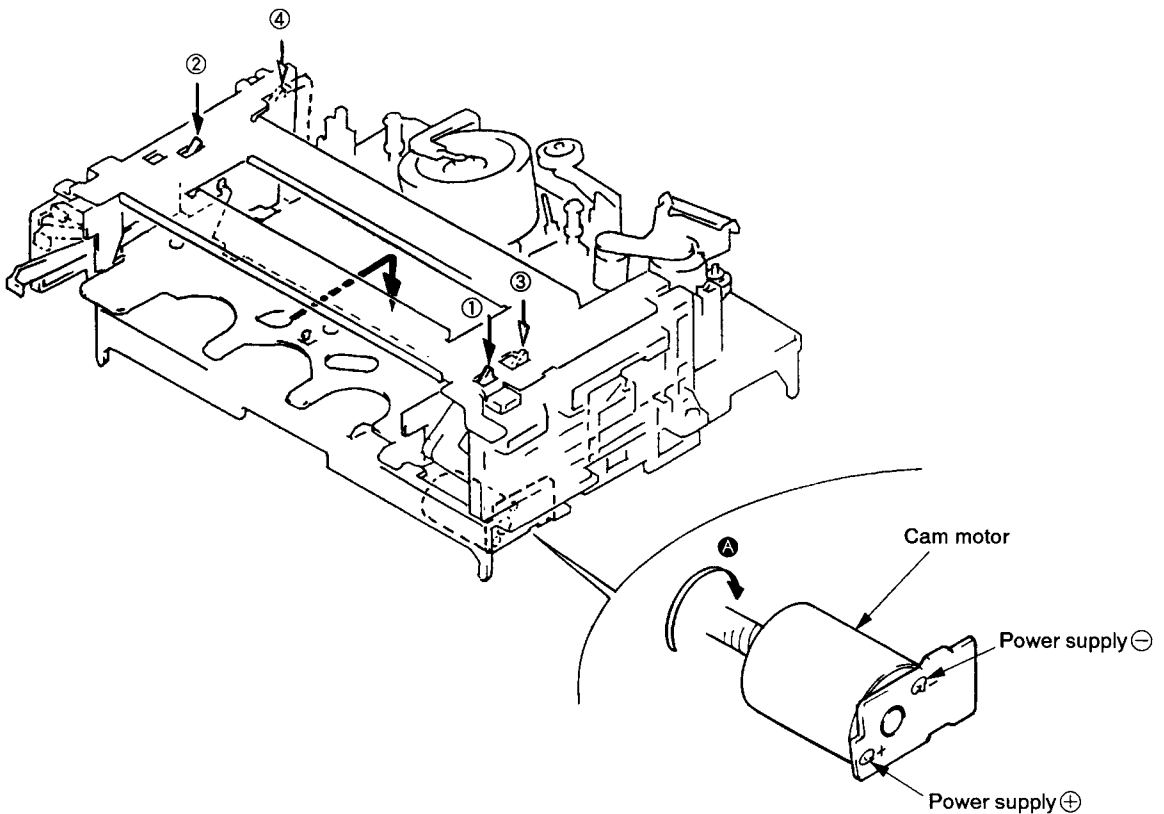


Fig. 1-1

1-2. UNLOADING AND UNTHREADING PROCEDURE WHEN THE POWER TURNS OFF (Figs. 1-2 and 1-3)

1-2-1. UNLOADING AND UNTHREADING PROCEDURE WITH HANDS

- 1) Turn cam motor in the arrow **B** direction until unthreading is end.
- 2) Turn capstan motor in the arrow **C** direction to take up tape in cassette.
- 3) Turn cam motor in the arrow **B** direction until unloading is end.

1-2-2. UNLOADING AND UNTHREADING PROCEDURE WITH REGULATED DC POWER SUPPLY

- 1) Apply approx. +9 V (300 mA) to contrary polarities of cam motor.
- 2) Unthreading operation begins, tape guides return to their original positions (Unthreading operation is end but tape remains), then stop cam motor by turning power off.

Note: When unloading begins and cassette lid is closed, turn cam motor in the arrow **A** direction to open tape guard.

- 3) Turn capstan motor in the arrow **C** direction to take up tape in cassette.

Note: That tape is not caught at pinch roller. (Fig. 1-3)

- 4) Check that tape is not loosened completely, and apply approx. +9 V (300 mA) to contrary polarities of cam motor with regulated DC power supply. (Fig. 1-2)

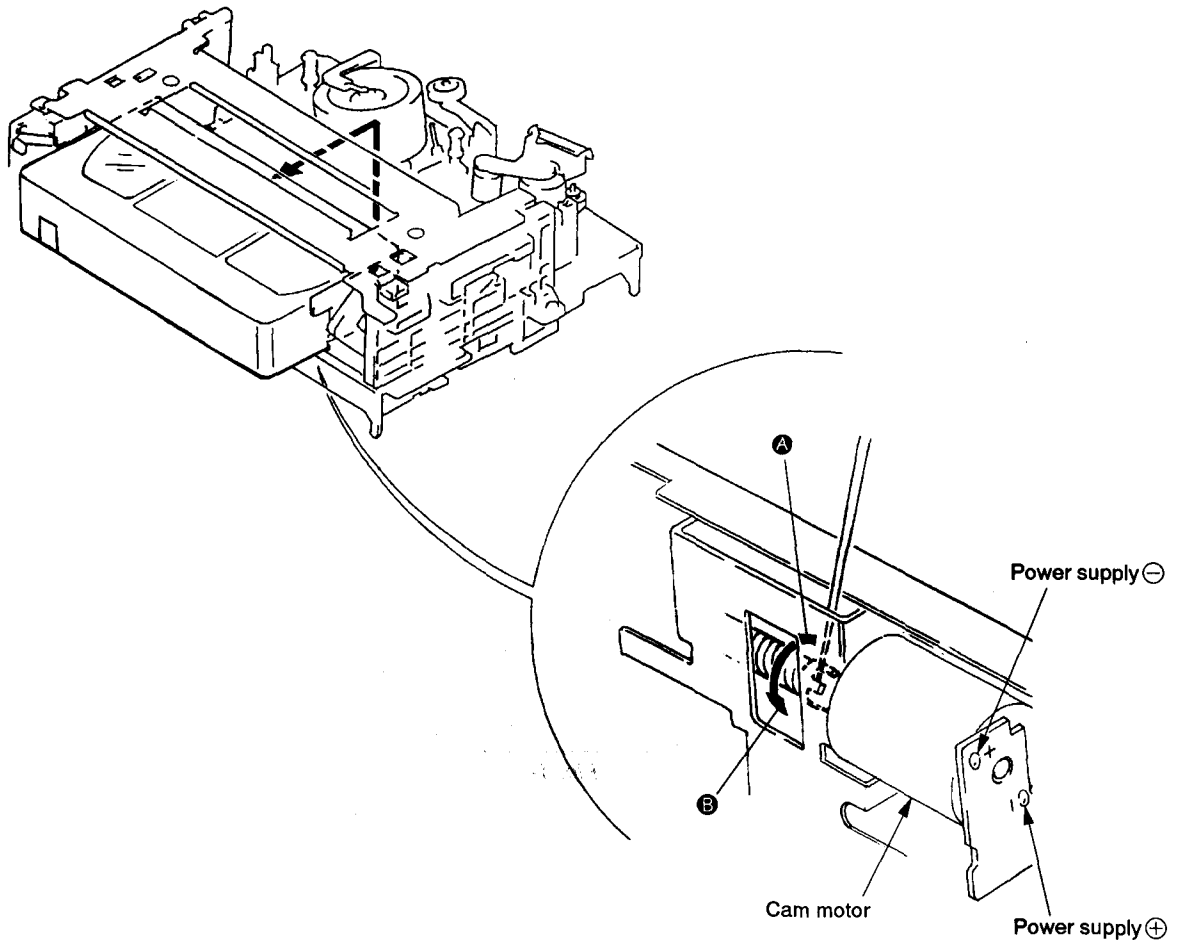


Fig. 1-2

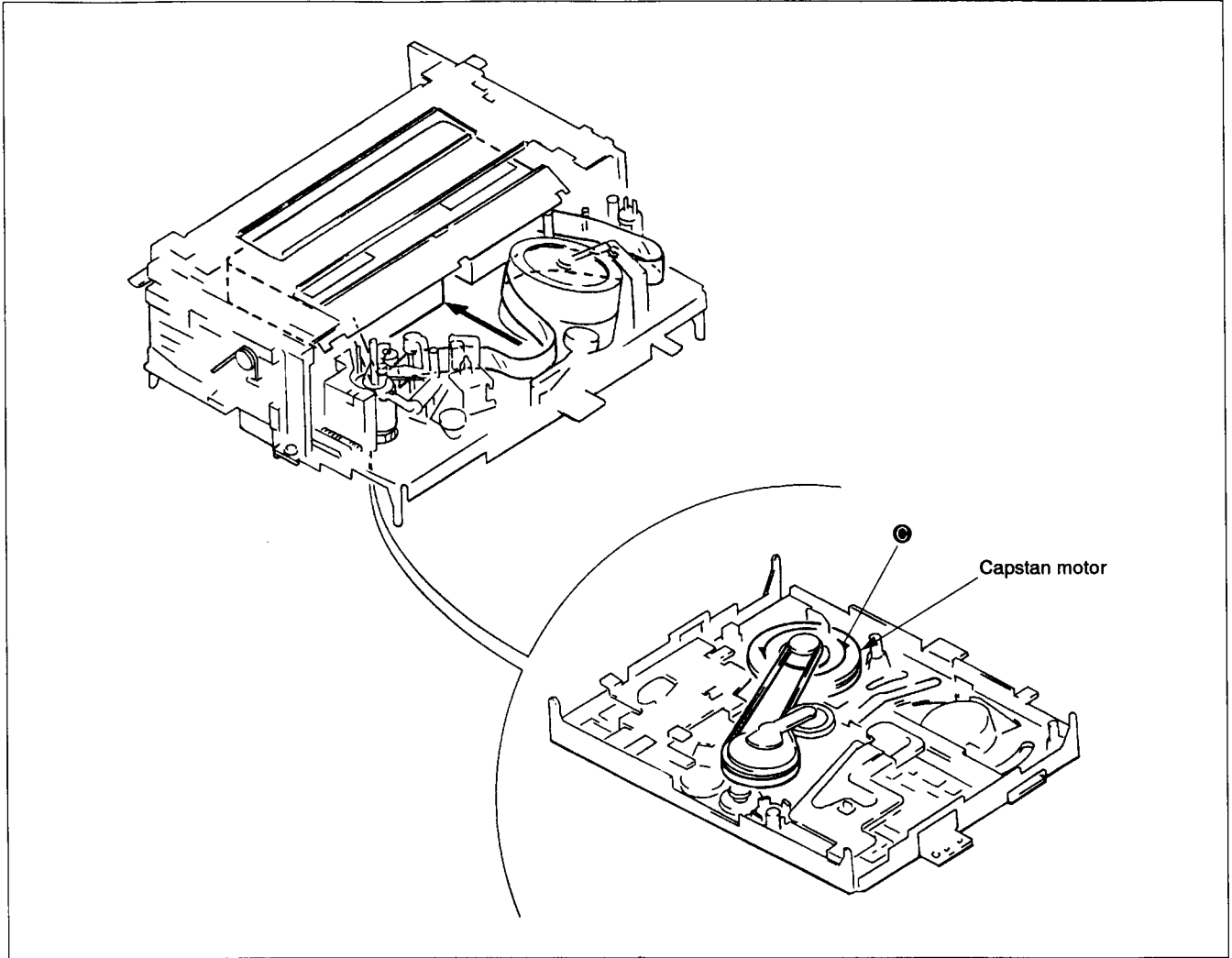


Fig. 1-3

1-3. HOW TO COMPLETE THREADING WITHOUT CASSETTE COMPARTMENT (Fig. 1-4)

Note 1: Put the FL block assembly removed the FL top plate on the bottom not to put dust or grease the top sensor and the end sensor luminous plates or not to scratch them.
(Fig. A)

- 1) Pull out AC plug from wall outlet.
- 2) Shade near the end and top sensors with a black masking tape on the like.
- 3) Press cassette in/rec proof switch with a tip of screwdriver or the like.
- 4) Connect AC plug to wall outlet.
- 5) Release cassette in/rec proof switch by putting off a tip of screwdriver or the like.

(At this time, power turns on, rewind operates for 10 seconds, after that power turns off.)

Note 2: In this condition, each mode can be set to video cassette recorder. (including recording mode)
However, fast forward should be done after rewinding for 15 seconds or more.

Note 3: After above mentioned operation, be sure to return the mode in the following order.

- 1) Remove the tape near the end and top sensors.
- 2) Pull out AC plug from wall outlet to reset the system control microcomputer.

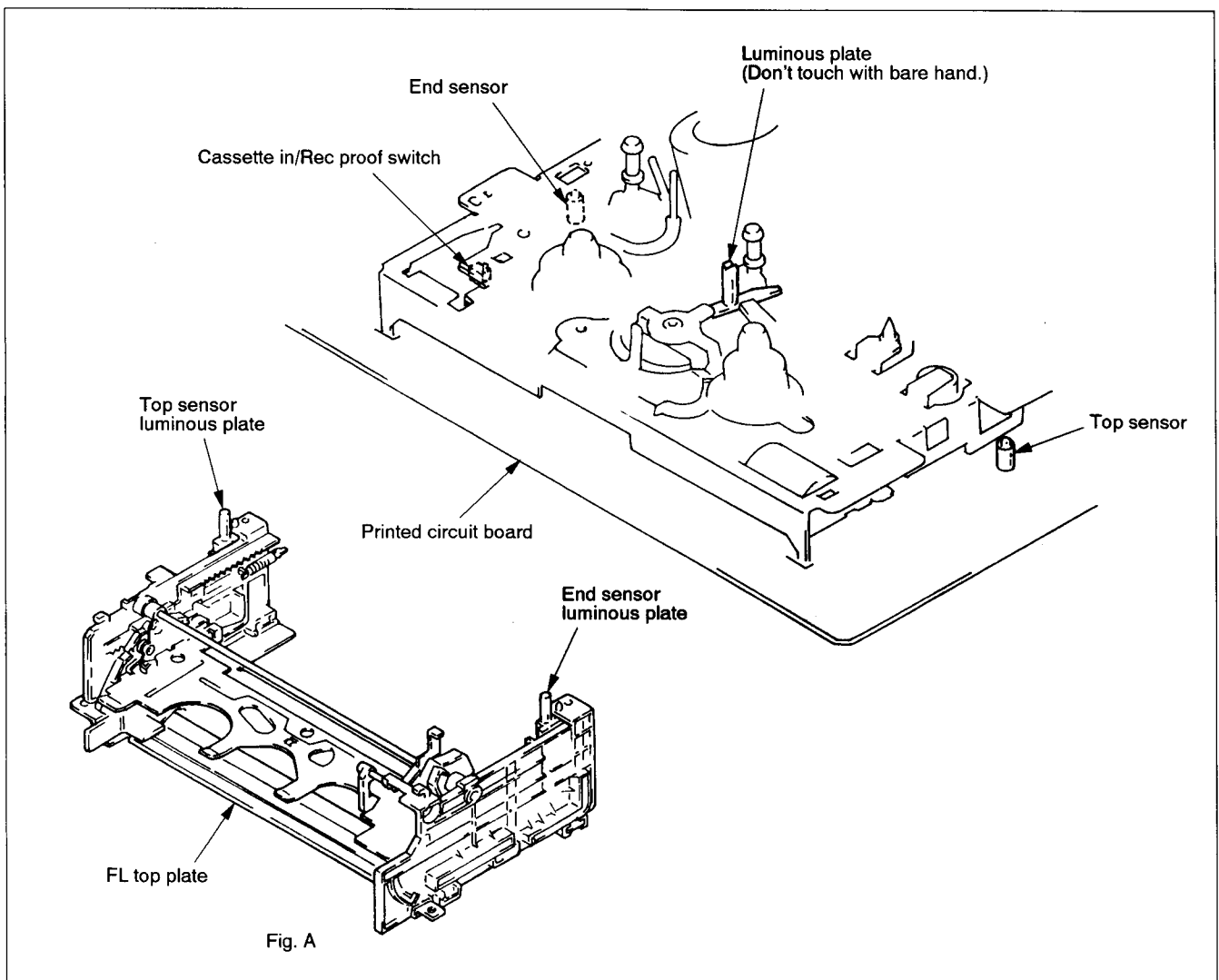


Fig. 1-4

2. PERIODIC CHECK AND REPLACEMENT

In order to obtain the best performance from this unit and make full use of its capabilities, and to extend the life of the unit and tapes, it is recommended that the following periodic checks and maintenance be performed.

* The following must be done after every repair regardless of how many hours the user has operated the machine.

2-1. CLEANING OF ROTATING HEAD DISK ASSEMBLY

- 1) Press a chamois cloth (Jig Ref. No. J-9) which has been dipped in cleaning fluid (Jig Ref. No. J-8) lightly against the rotating drum assembly, then do the cleaning by slowly rotating the rotating head disk by hand. (Never try to clean by using the motor to turn it.)
- 2) Never try to clean by moving the chamois cloth at a vertical angle to the head tip. There is a very great danger of damaging the head tip if this is done.

2-2. CLEANING OF THE TAPE MOVEMENT SYSTEM

- 1) Clean the surfaces which the tape contacts during its movement (tape guide, drum assembly surface, capstan, pinch roller, etc.) with a chamois cloth that has been dipped in cleaning fluid.

2-3. CLEANING THE DRIVE SYSTEM

- 1) Clean the driving parts with a cloth that been dipped in cleaning fluid.

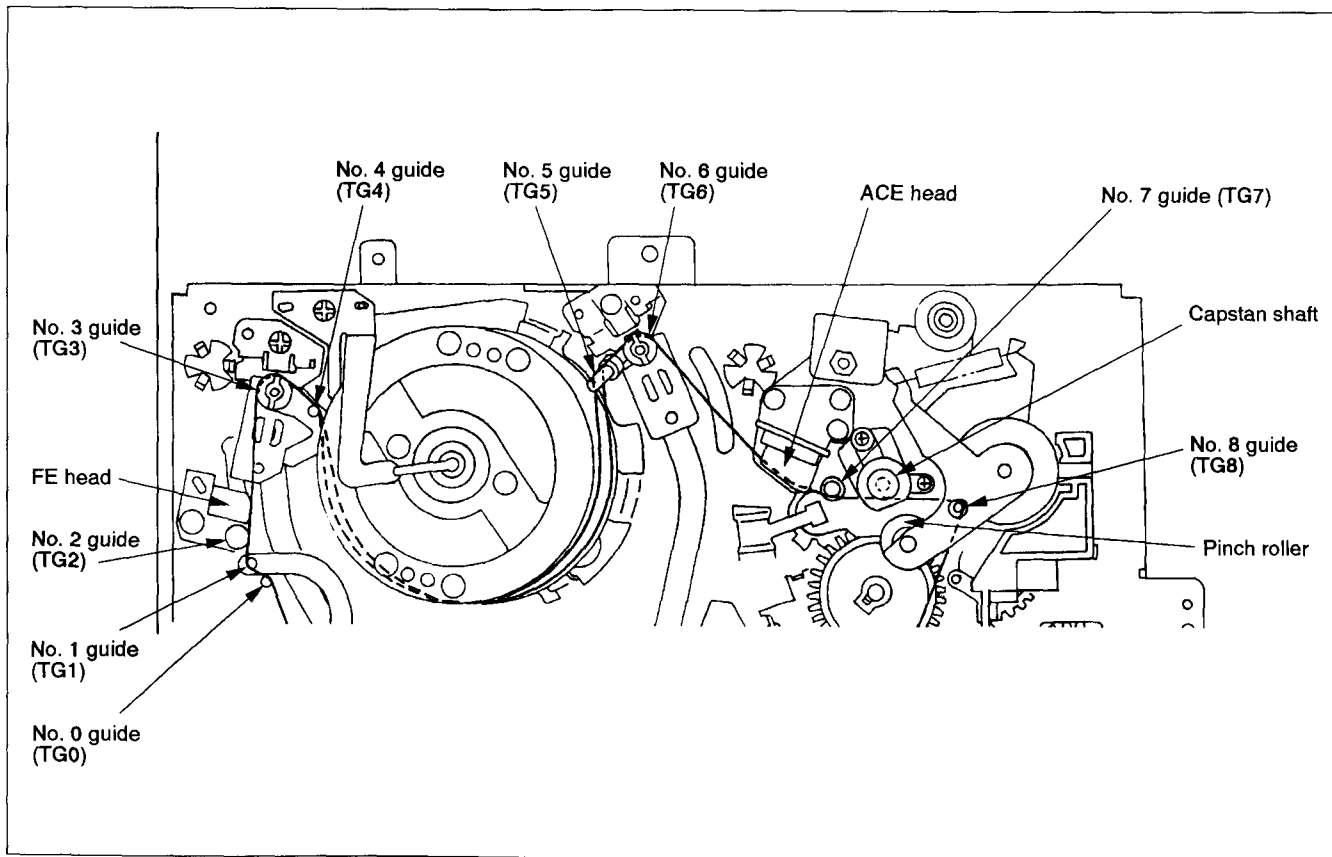


Fig. 2-1 Parts requiring cleaning

2-4. PERIODIC CHECK ITEMS

Perform the maintenance and check listed on the table below,
according to users operating hours.

Maintenance & Check		Operating Hours (H)										Remarks
		500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	
Tape Transportation System	Cleaning of tape transportation system	○	○	○	○	○	○	○	○	○	○	This cleaning must be done whenever a repair is made.
	Cleaning and degaussing of ACE assembly	○	○	○	○	○	○	○	○	○	○	
	Cleaning & degaussing of upper drum assembly	○	○	○	○	○	○	○	○	○	○	The life of the head varies, depending on operational conditions and method.
Performance Confirmation	Abnormal sound	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Adjust or replace the section which causes abnormal sound.
	Measurement of FWD back tension	-	☆	-	☆	-	☆	-	☆	-	☆	Confirmation must be made according to 4-1-1. Specified value: adjust to 36 to 44 g·cm (when measured with torque cassette tape)
	Confirmation of brake system	-	☆	-	☆	-	☆	-	☆	-	☆	Confirmation must be made according to section.
	Confirmation of record & playback functions	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Perform the confirmation whenever repair is made.
	Measurement of forward torque	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Adjust to 70 to 120 g·cm


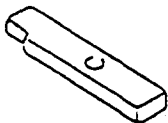

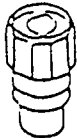

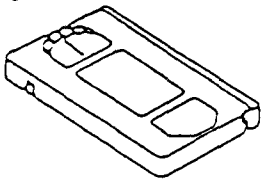
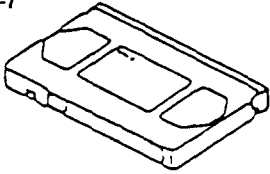

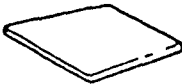
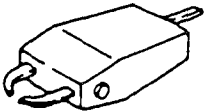
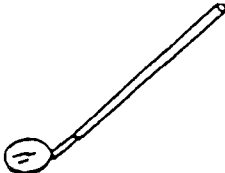



○ Cleaning ☆ Confirmation

Note: On overhaul

When overhauling the unit, replace parts as indicated in the above table.

2-5. TOOLS AND FIXTURES REQUIRED FOR SERVICING

Ref No.	Name	Part No.	Carved Jig No.	Remarks
J-1	Master Plane	H-7099-279-H		Applicable to S-VHS
J-2	Reel Disk Height Jig	H-7099-038-H		
J-3	Torque Gauge Adaptor	H-7099-035-H		
J-4	0.93 mm Torque Gauge	H-7099-039-H		
J-5	Hex. Wrench	H-7099-202-H		
J-6	Torque Measurement Cassette VHT-063S	J-6082-011-A		For FWD & back tension torque measurement.
	Torque Measurement Cassette VHT-404S	J-6082-012-A		For CUE and review torque measurement.
J-7	Alignment Tape JVC-MH-1 (NTSC) 24HASF-2 (NTSC Hi-Fi) JVC-MH-2 (PAL) JVC-MH-4 (SECAM)	H-7099-046-H H-7099-153-H H-7099-052-H H-7099-053-H		
J-8	Cleaning Fluid	Y-2031-001-0	_____	
J-9	Chamois Leather	2-034-697-00	_____	
J-10	Head Demagnetizer	Widely available	_____	Demagnetize video heads and audio heads.
J-11	Dental Mirror (With handle) Dental Mirror (Mirror)	J-6080-029-A J-6080-030-1	SL-5052	Tape path and tape traveling adjustments or checks.
J-12	FLOIL SG-055G	7-651-000-09		
J-13	Diamond Oil NT-68	7-661-018-18		
J-14	Screw Lock G (1401B)	7-432-114-11		

J-1 	J-2 	J-3 	J-4 
J-5 	J-6 	J-7 	J-8 
J-9 	J-10 	J-11 	J-12 
J-13 	J-14 		

3. MAINLY MECHANICAL PARTS REPLACEMENT

Notes:

- Refer to the service manual, "DISASSEMBLY" for removal of the cabinet and boards.
- On mounting, while referring to notes on mounting perform reversely in the removal order.
- When replacing greased parts, grease them in the same way.
- Do not oil, grease or touch with bare hands the surfaces contacts tape of guides and brake shoes.
- Install gears to engage each other.
- Basically, disassembling and assembling should be done in the unthreading-end condition.

3-1. FL BLOCK ASSEMBLY (Fig. 3-1)

- 1) Remove screws ①.
 - 2) Remove FL block assembly ② in the arrow **A** direction.
- Note:** Be careful not to damage claws on the bottom and front.

[Note on Mounting]

- First insert claws on the bottom and front not to damage.
- Engage FL slide plate to FL driving gear with slightly sliding FL slide plate. (Fig. A)
- Keep clean top sensor and end sensor luminous plates. (Refer to 1-3.)

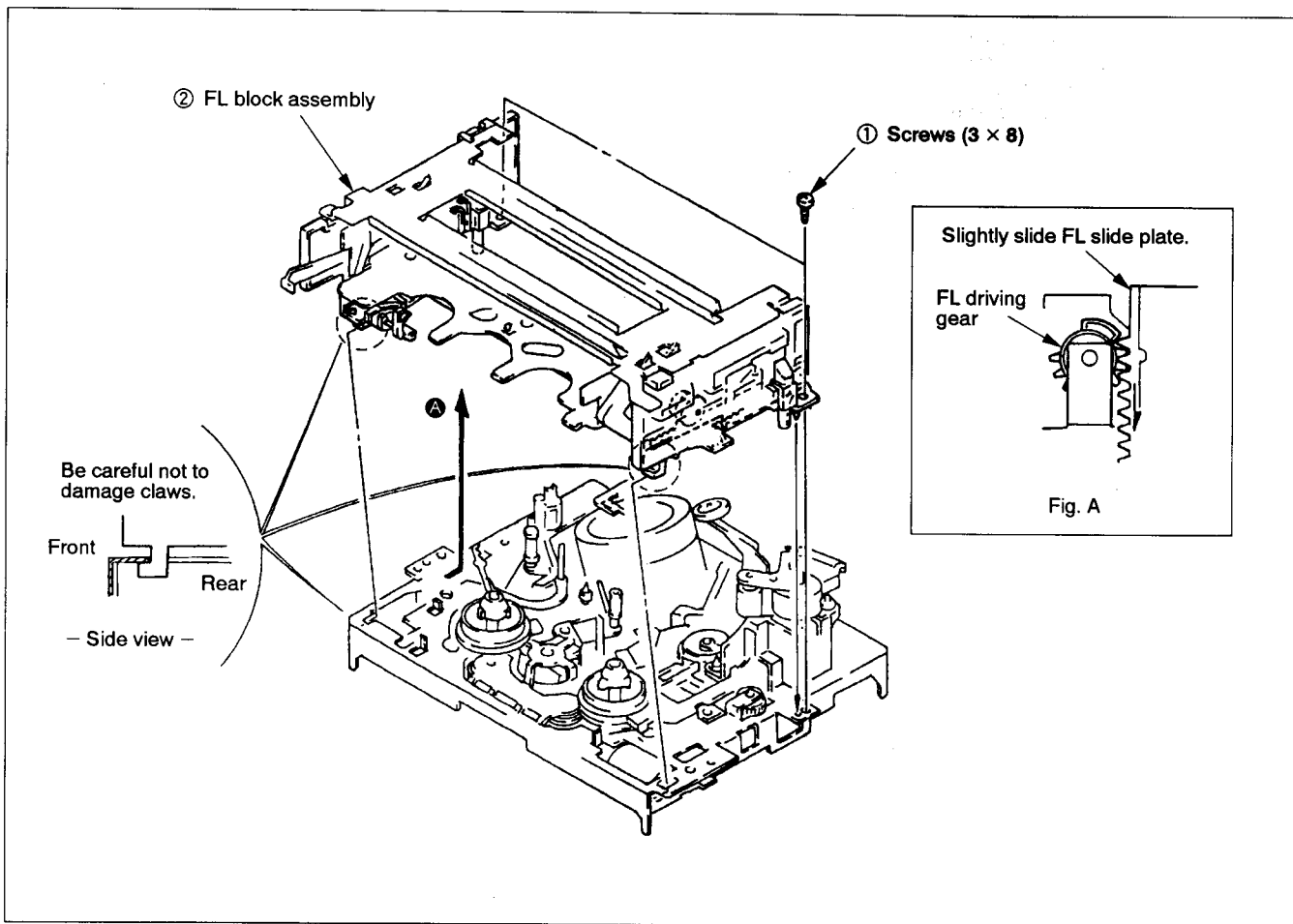


Fig. 3-1

3-2. DRUM ASSEMBLY (Fig. 3-2)

- 1) Remove screw ①.
- 2) Remove ground shaft assembly ② not to touch its tip with bare hand or tools.
- 3) Remove screws ③ to remove drum assembly ④.

[Note on Mounting]

- Don't touch head chips ⑤ and ground shaft assembly ④ with bare hand or tools.
- Keep clean the surface contacts tape of drum assembly ④.

[Adjustment after Mounting]

- 4-1. Tape path adjustment.

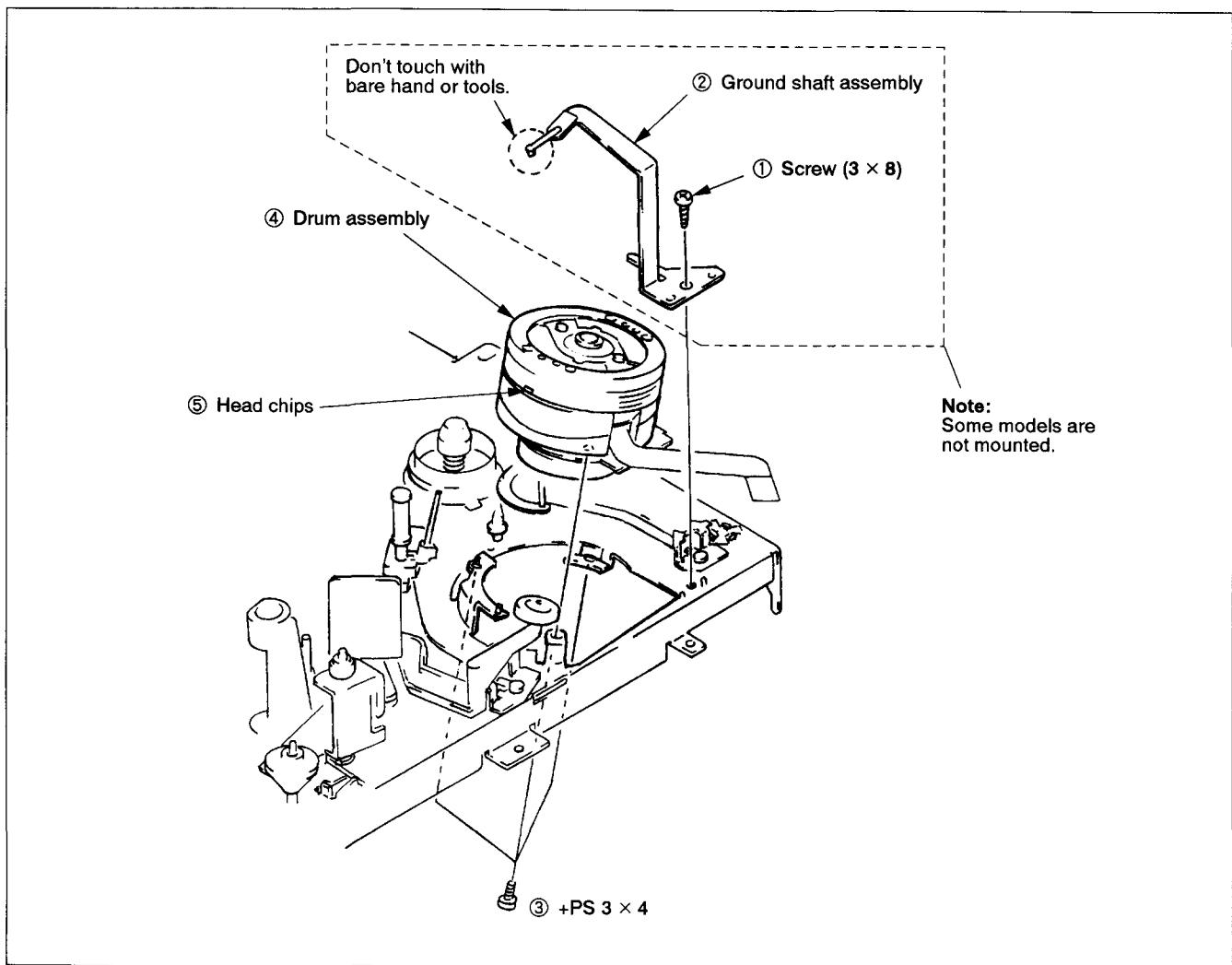


Fig. 3-2

3-3. TIMING BELT (Fig. 3-3)

- 1) Remove screw ① to remove tension vehicle arm assembly ②.
- 2) Remove timing belt ③.

[Note on Mounting]

- Tighten screw ① while pressing tension vehicle arm in the arrow **A** direction.

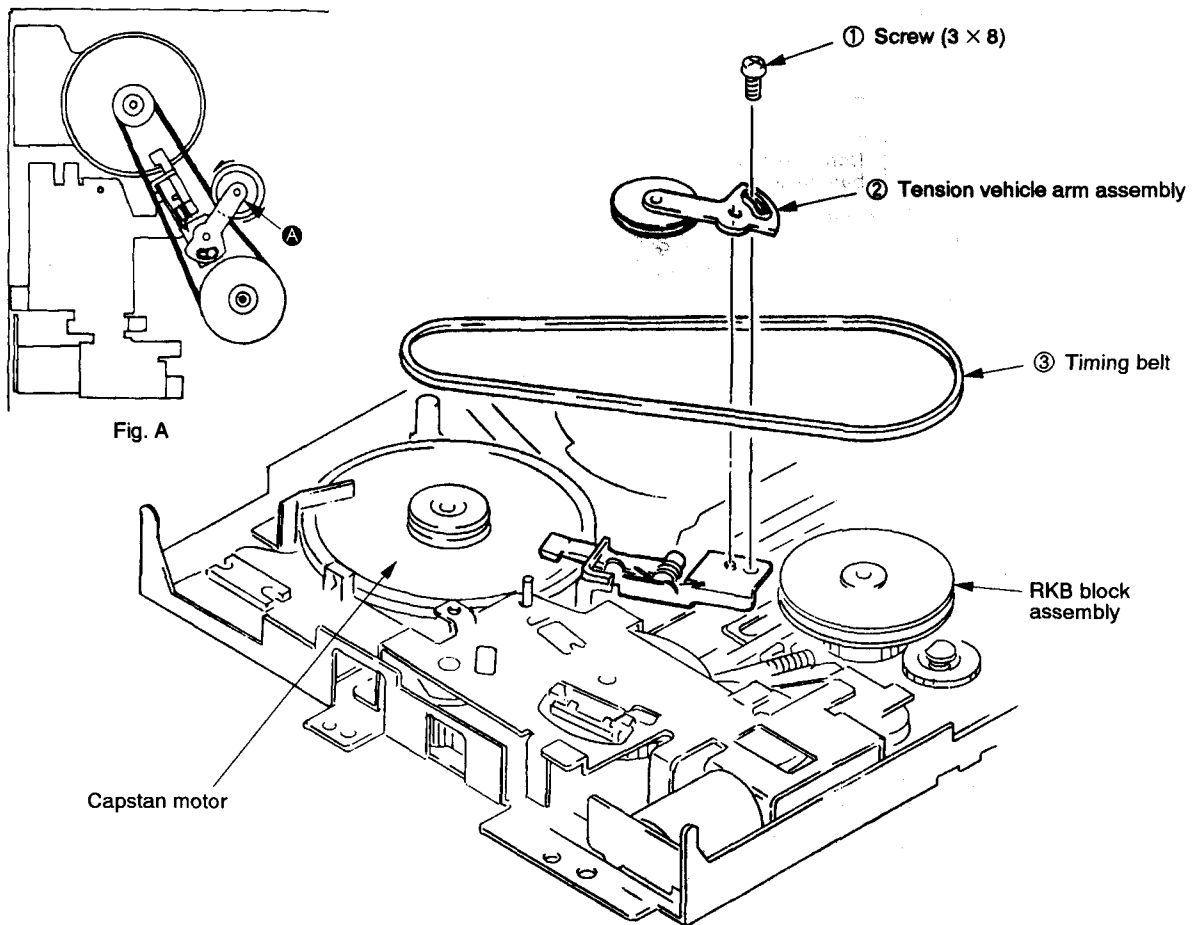


Fig. 3-3

3-4. CAP BRAKE ASSEMBLY (Fig. 3-4)

- 1) Remove tension vehicle arm assembly. (Refer to 3-3)
- 2) Remove torsion coil spring ① from portion ④ to remove CAP brake assembly.

[Note on Mounting]

- Mount torsion coil spring ① to CAP brake assembly ② in the order ④ and ⑤. (Fig. A)
- Put the fulcrum of CAP brake assembly ② to CAP brake shaft ③ and the tip of torsion coil spring to ⑥.
- Don't touch brake shoe ⑦ with bare hand.

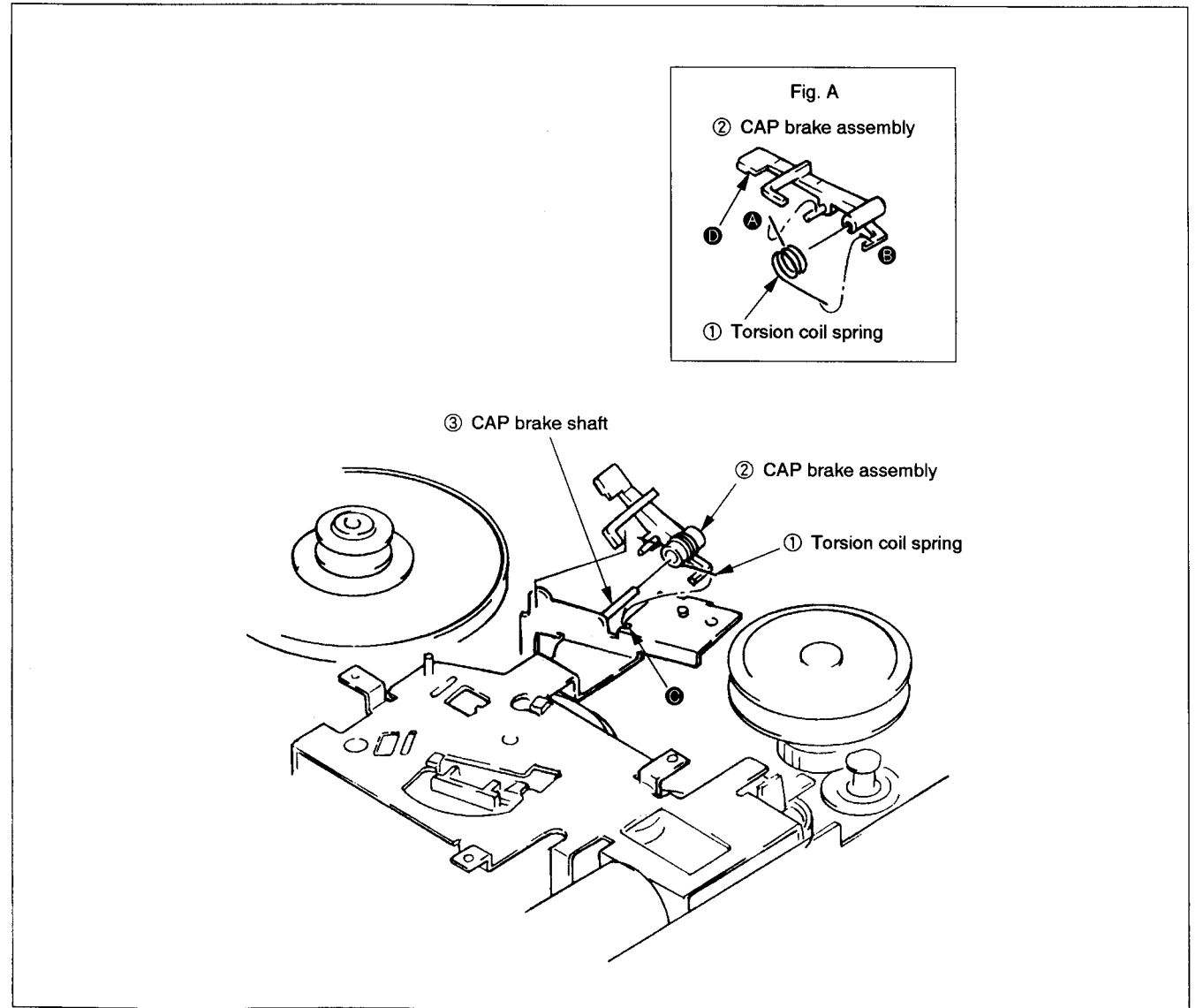


Fig. 3-4

3-5. TG2 ROLLER, FE HEAD ASSEMBLY (Fig. 3-5)

- 1) Remove claw **A** to pull out TG2 roller **1**.
- 2) Remove screw **2** to pull out FE head assembly.

[Note on Mounting]

- Keep clean the surface contacts tape of TG2 roller **1**.

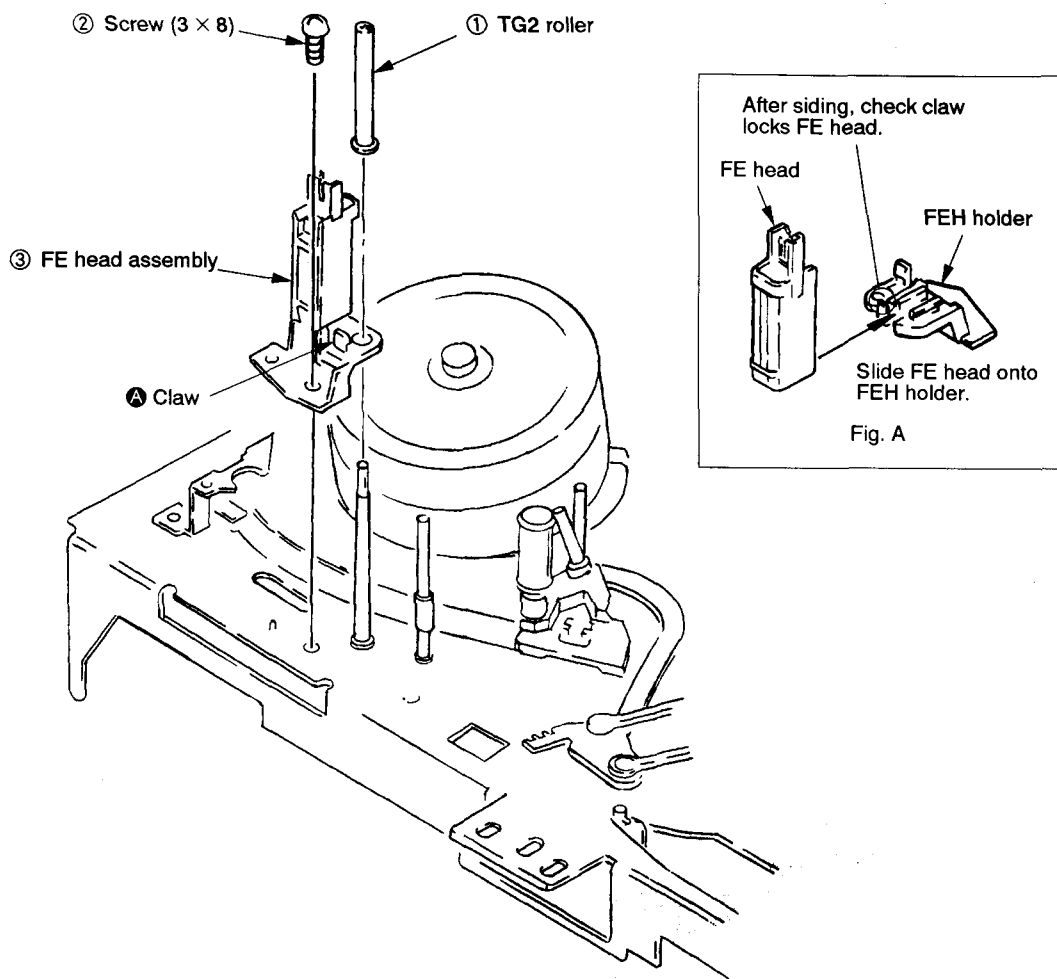


Fig. 3-5

3-6. PINCH PRESS BLOCK ASSEMBLY, ELEVATOR GEAR (Fig. 3-6)

- 1) Remove E ring ① to pull out pinch press block assembly ②.
- 2) Remove lid opener ③ by pressing claw ④ in the arrow ⑤ direction.
- 3) Pull out elevator gear ④.

[Note on Mounting]

- Apply grease FLOIL SG-055G (Jig Ref. No. J-12) to ☆ marked portions.
- Be sure to match the phase ⑥ between elevator gear ④ and press gear ⑤ on mounting elevator gear ④.

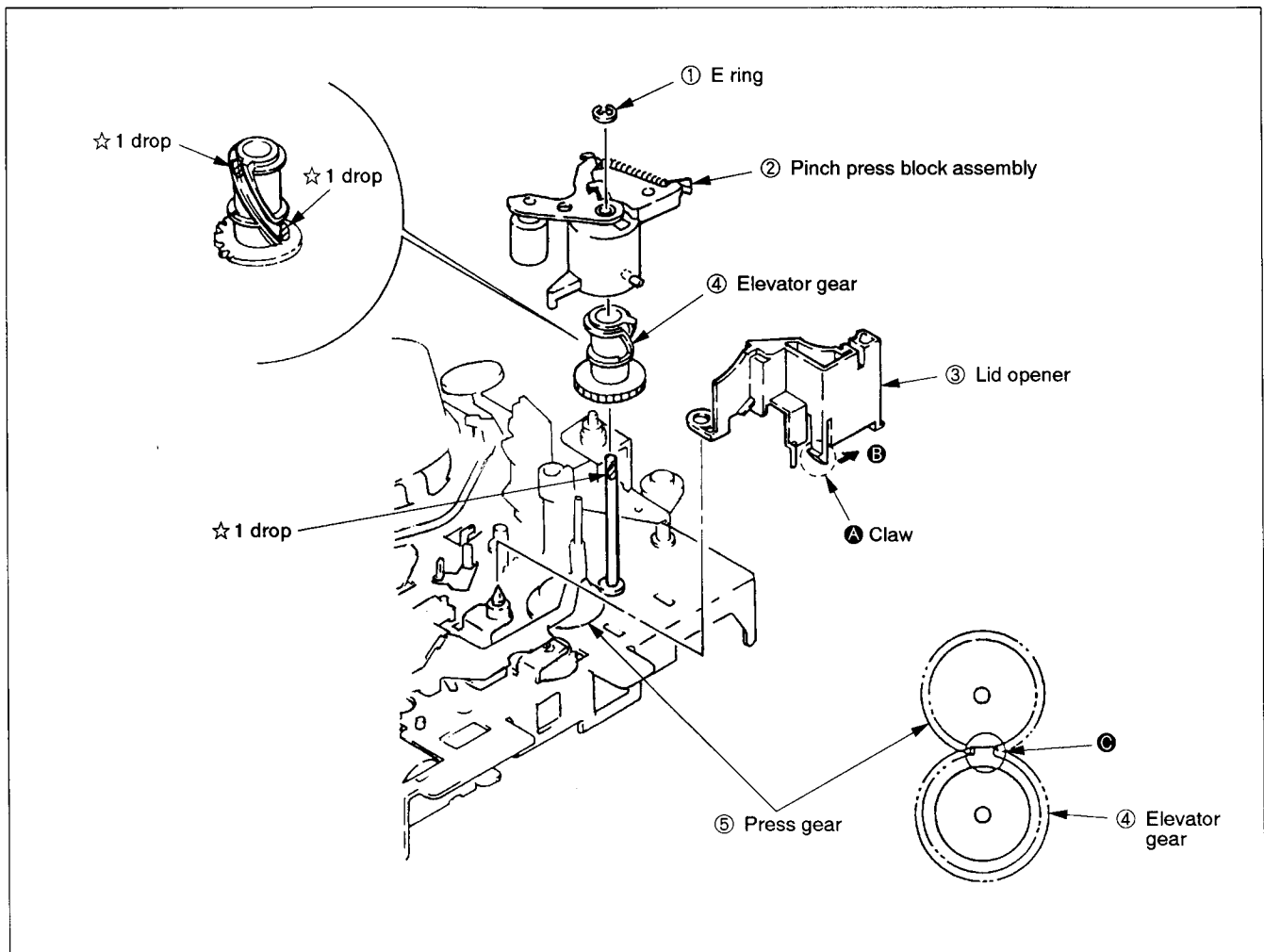


Fig. 3-6

3-7. ACE BLOCK ASSEMBLY (Fig. 3-7)

- 1) Move torsion coil spring (ACE) ① in the arrow **A** direction.
- 2) Remove ACE adjustment screw ②.
- 3) Remove AC height adjustment nut ③ to pull out ACE block assembly ④.

[Note on Mounting]

- Keep clean the surface contacts tape of ACE block assembly ④.
- Be sure to hang torsion coil spring (ACE) ① in the arrow **B** direction.
- Set ACE adjustment screw ② to the height as shown in Fig. A.

[Adjustment after Mounting]

- 4-1. Tape path adjustment.
- After adjustment apply Screw Lock G (1401B) (Jig Ref. No. J-14) at ☆ marked portion.

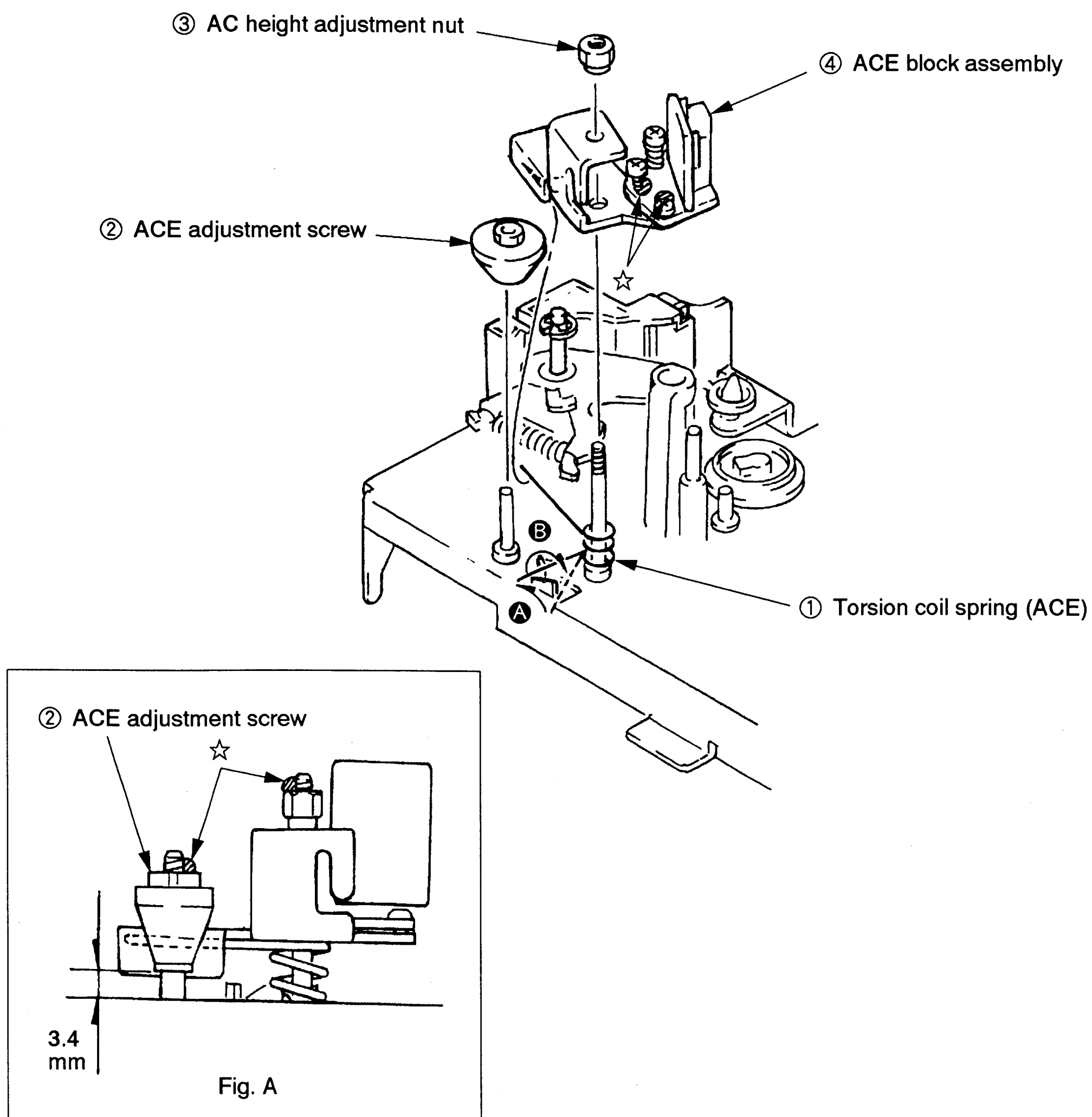


Fig. 3-7

3-8. TG3, TG6 GUIDE ROLLER ASSEMBLIES (Fig. 3-8)

- 1) Loosen screw ① and pull out TG3 guide roller assembly ② by turning it in the arrow **A** direction.
- 2) Loosen screw ③ and pull out TG6 guide roller assembly ④ by turning it in the arrow **B** direction.

[Note on Mounting]

- Keep clean the surface contacts tape of TG3 and TG6 guide roller assemblies ②, ④.

[Adjustment after Mounting]

- 4-1. Tape path adjustment.

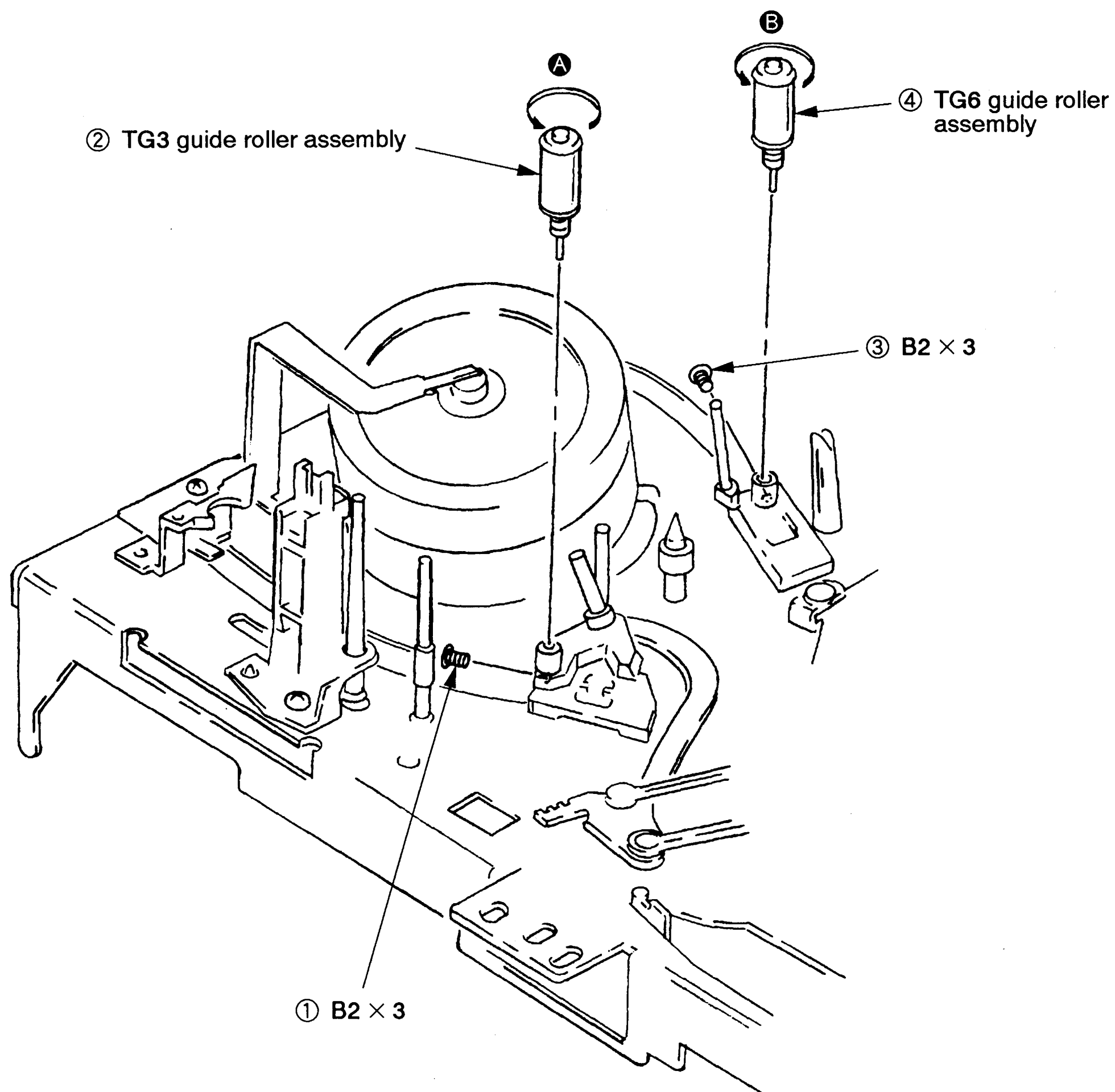


Fig. 3-8

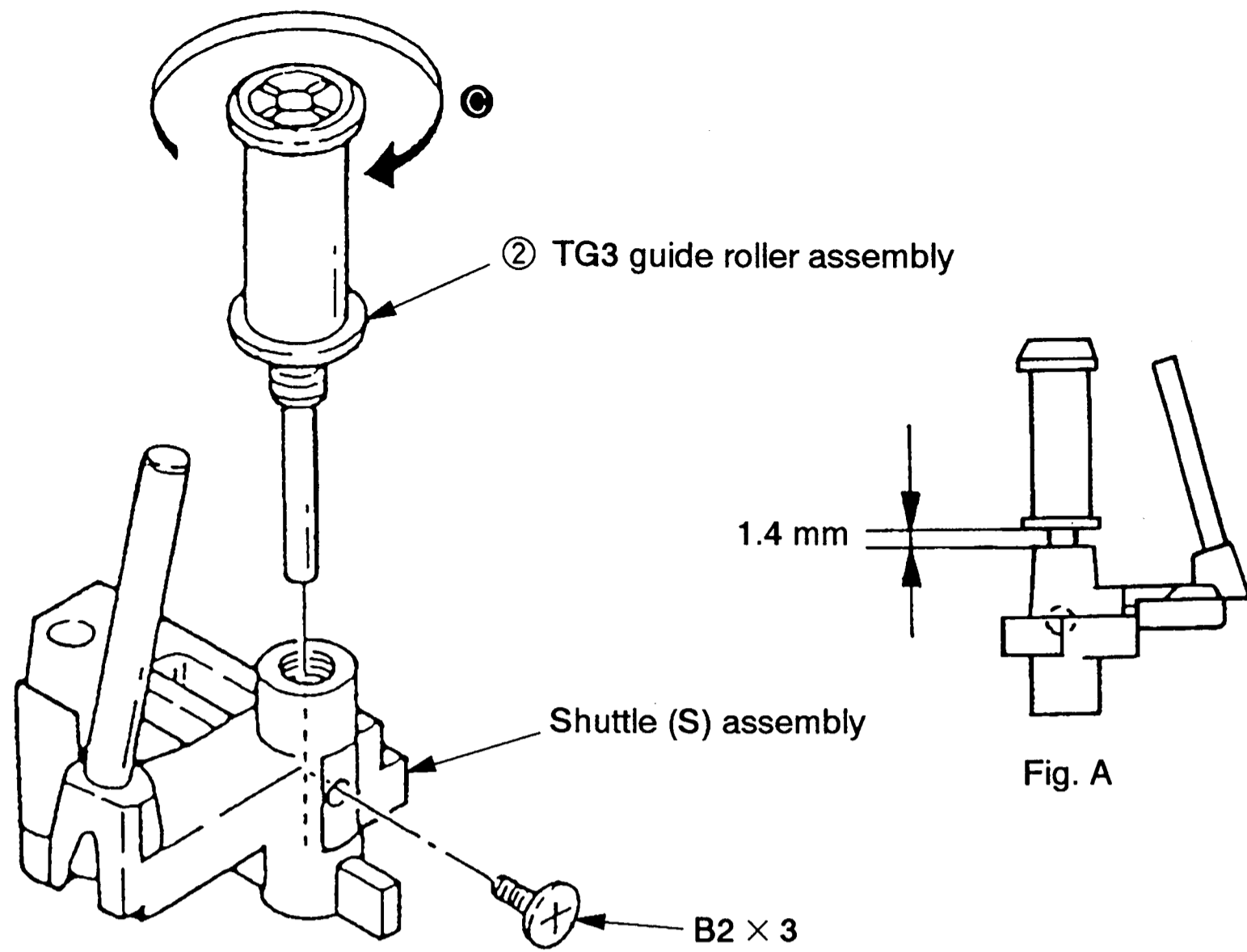


Fig. 3-9

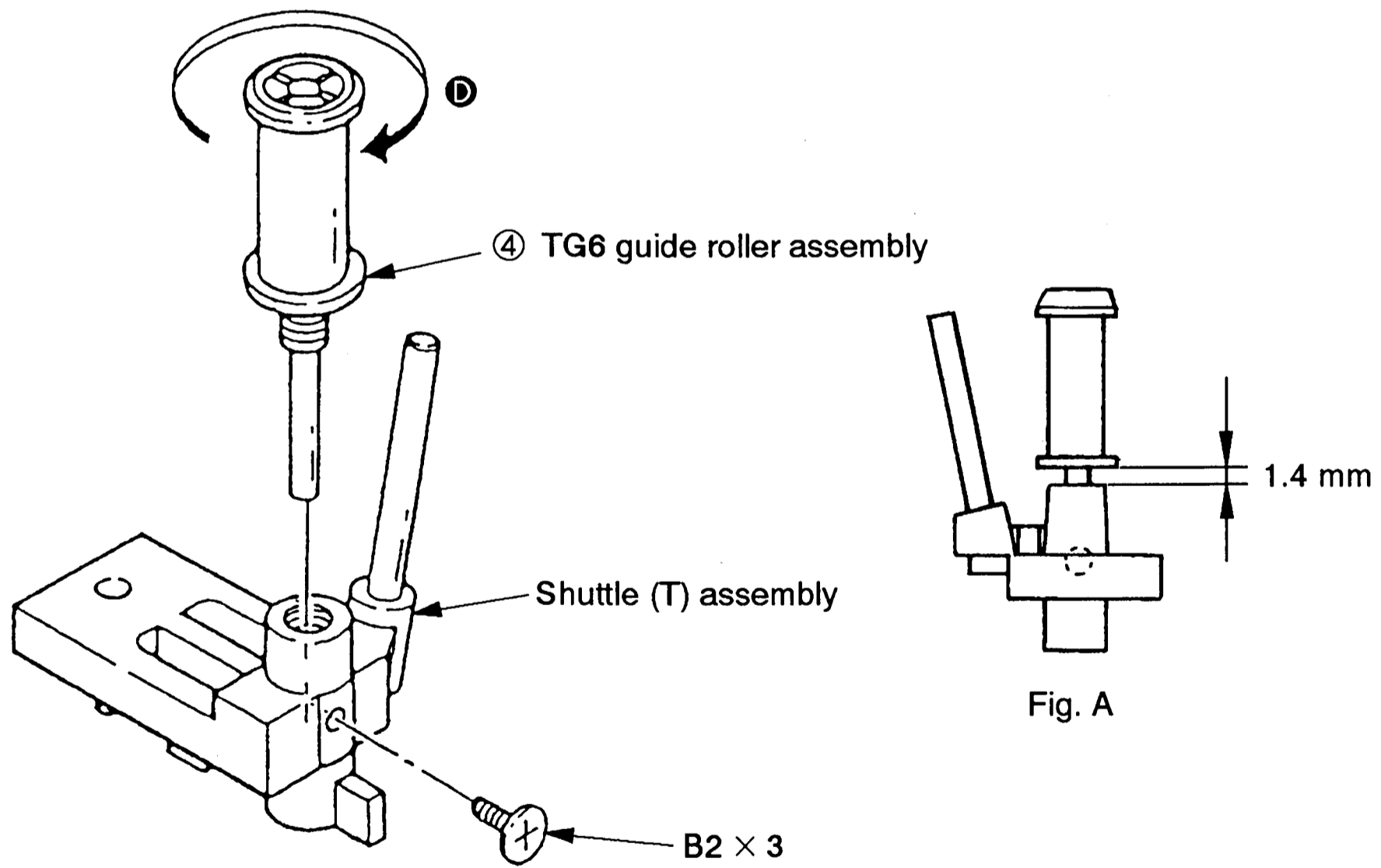


Fig. 3-10

3-9. CAPSTAN MOTOR (Fig. 3-11)

- 1) Remove timing belt. (Refer to 3-3.)
- 2) Remove CAP brake assembly. (Refer to 3-4.)
- 3) Remove screws ① to pull out capstan motor ②.

[Note on Mounting]

- Keep clean the surface contacts tape of capstan motor ②.
- On tightening screws ①, first tighten screw A temporarily, next tighten screws in the order B to C to A.

[Adjustment after Mounting]

- 4-1. Tape path adjustment.

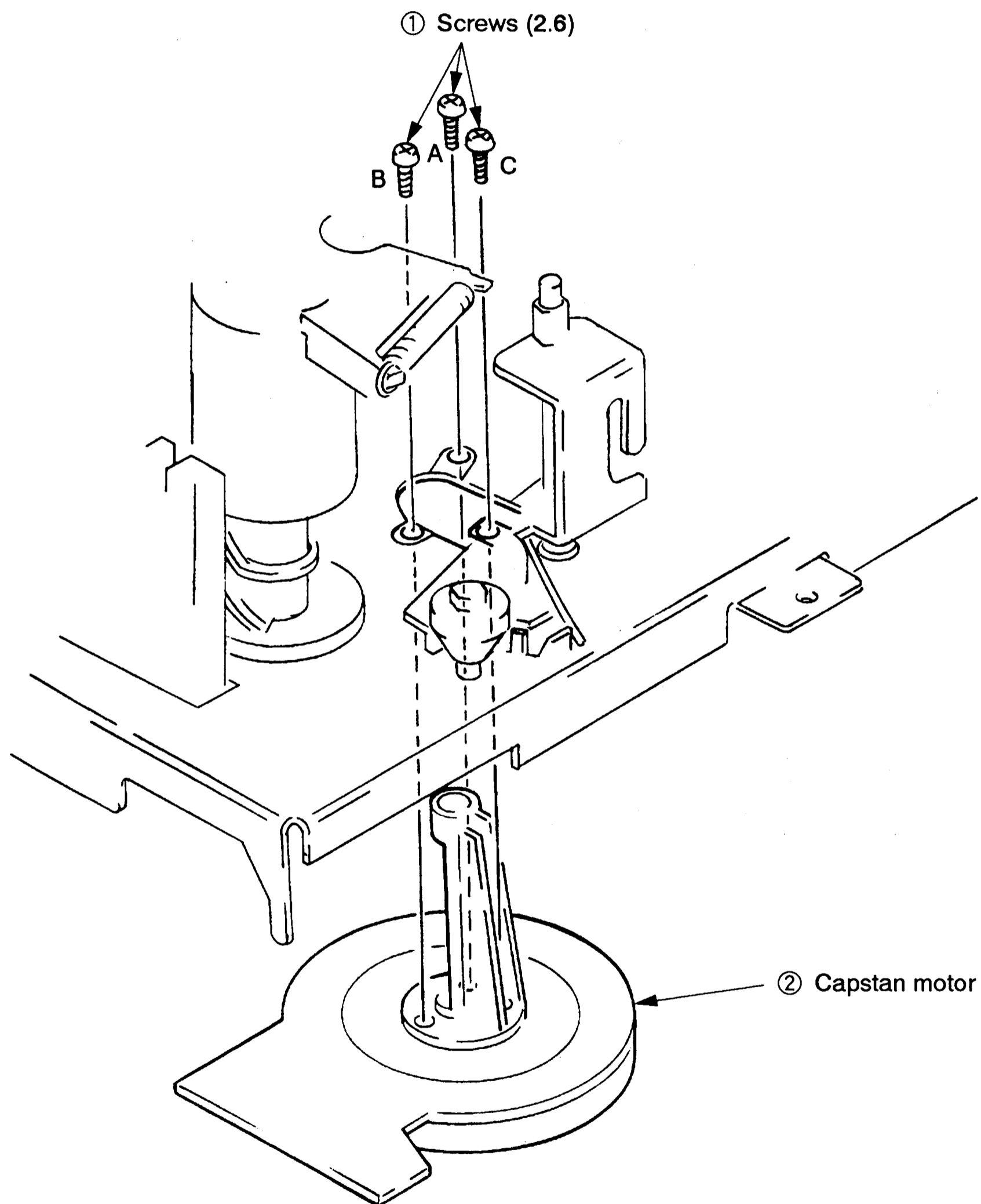


Fig. 3-11

3-10. MAIN BRAKE ASSEMBLIES S AND T (Fig. 3-12)

- 1) Remove tension spring ①.
- 2) Remove stopper washer (2) ② to remove neutrality arm ③.
- 3) Remove pendulum compulsion arm ④ and tension coil spring ⑤.
- 4) Remove stopper washer (2) ⑥ to remove main brake S assembly ⑦.
- 5) Remove stopper washer (2) ⑧ to remove main brake T assembly ⑨.

[Note on Mounting]

- Don't touch brake shoes **A** and **B** with bare hand.
- Apply FLOIL FG-055G (Jig Ref. No. J-12) to ☆ marked portions.

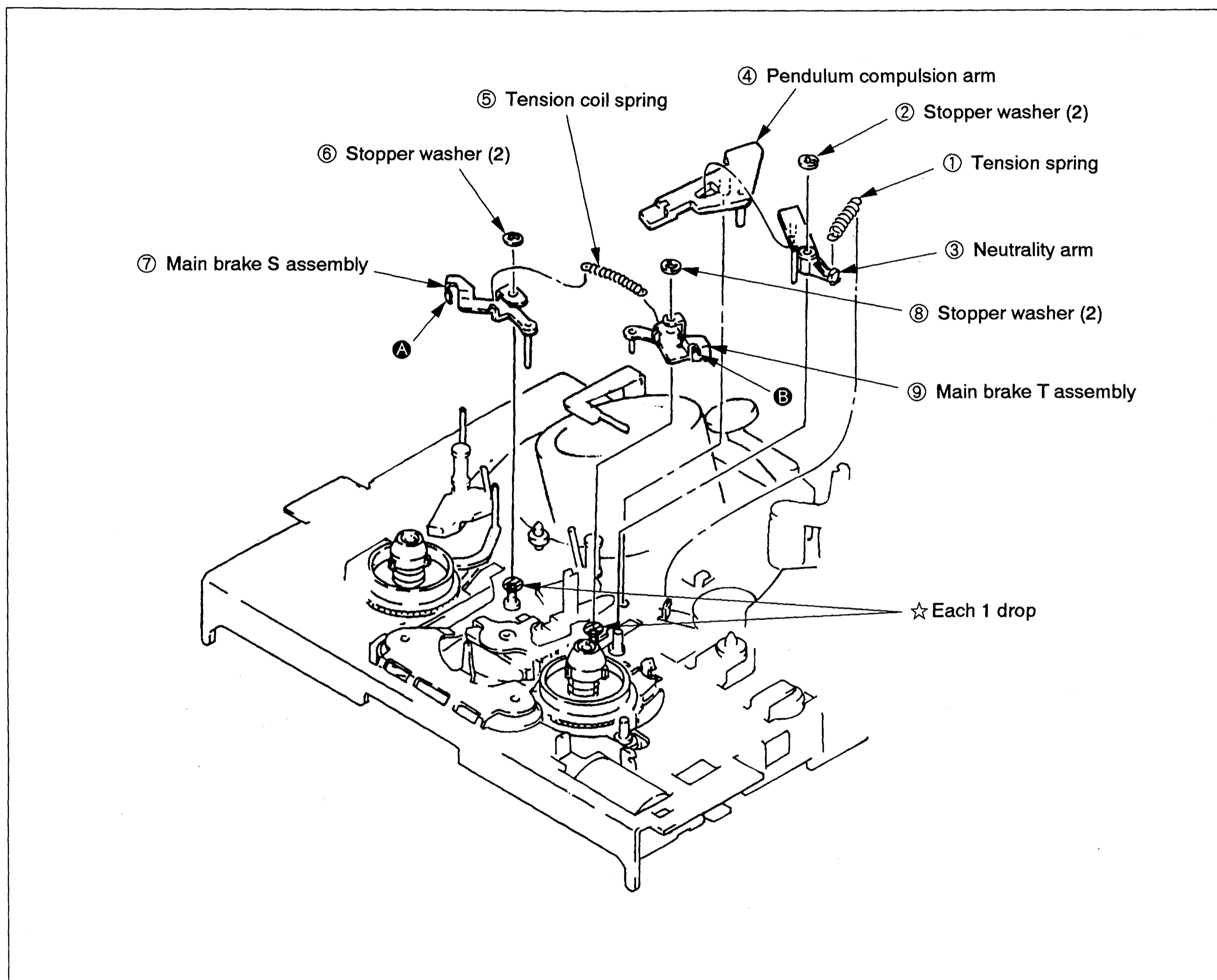


Fig. 3-12

3-11. SOFT BRAKE T ASSEMBLY (Fig. 3-13)

- 1) Remove pinch press block assembly. (Refer to 3-6.)
- 2) Remove lid opener ① carefully not to damage claw ④.
- 3) Remove tension spring ② from side ⑤ to pull out soft brake T assembly ③.

[Note on Mounting]

- Don't touch brake shoes ⑥ with bare hand.

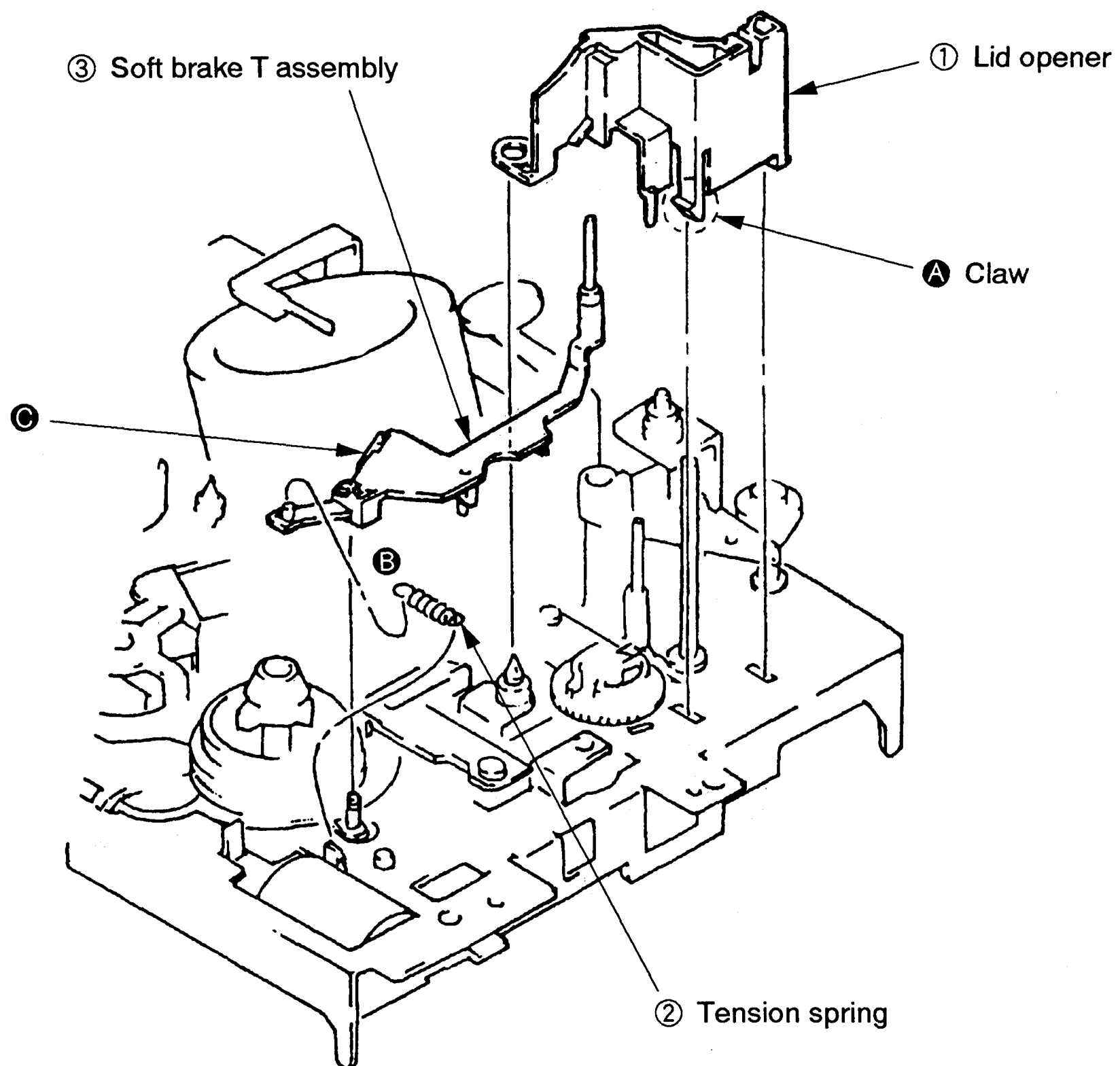


Fig. 3-13

3-12. RVS BRAKE ARM ASSEMBLY, REEL TABLE (T) ASSEMBLY (Fig. 3-14)

- 1) Remove main brake T assembly. (Refer to 3-10.)
- 2) Remove soft brake T assembly. (Refer to 3-11.)
- 3) Remove tension coil spring ① in the order A to B.
- 4) Remove RVS brake arm assembly ②.
- 5) Remove stopper washer (2) ③ to pull out reel table (T) assembly ④.

[Note on Mounting]

- Apply one drop of Diamond Oil NT-68 (Jig Ref. No. J-13) to ☆ marked portion before mounting reel table (T) assembly ④. (Fig. A)
- Don't touch the hatched portion on reel table (T) assembly ④ and brake shoe ⑥ of RVS brake arm assembly ② with bare hand.

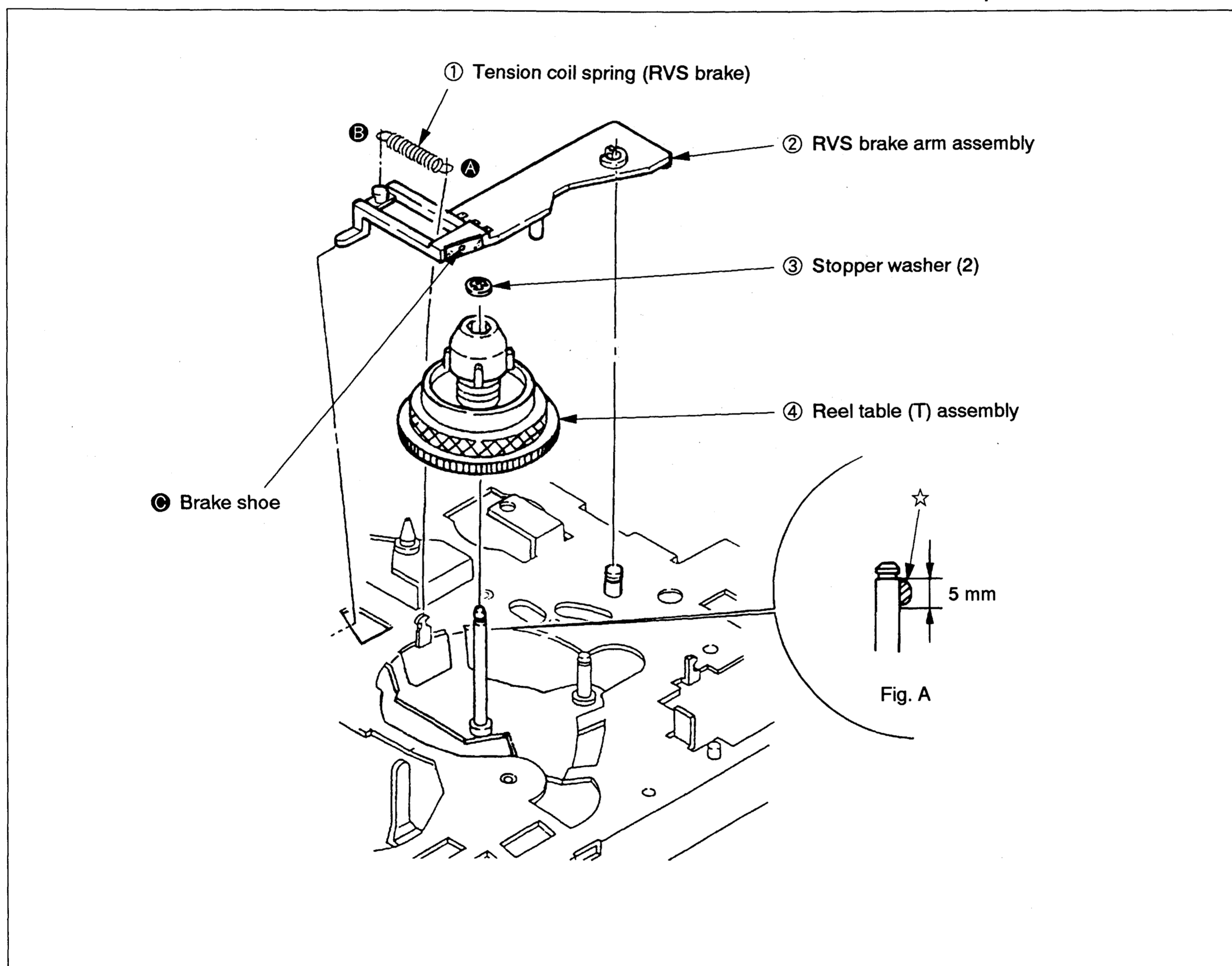


Fig. 3-14

3-13. TG8 ASSEMBLY (Fig. 3-15)

- 1) Remove TG8 retainer ① to pull out TG8 assembly ②.

[Note on Mounting]

- Apply FLOIL SG-055G (Jig Ref. No. J-12) to ☆ marked portion.
- Keep clean the surface contacts tape of TG8 assembly ②.
- Be careful not to change the shape of TG8 retainer ①.

[Adjustment after Mounting]

- 4-1. Tape path adjustment.

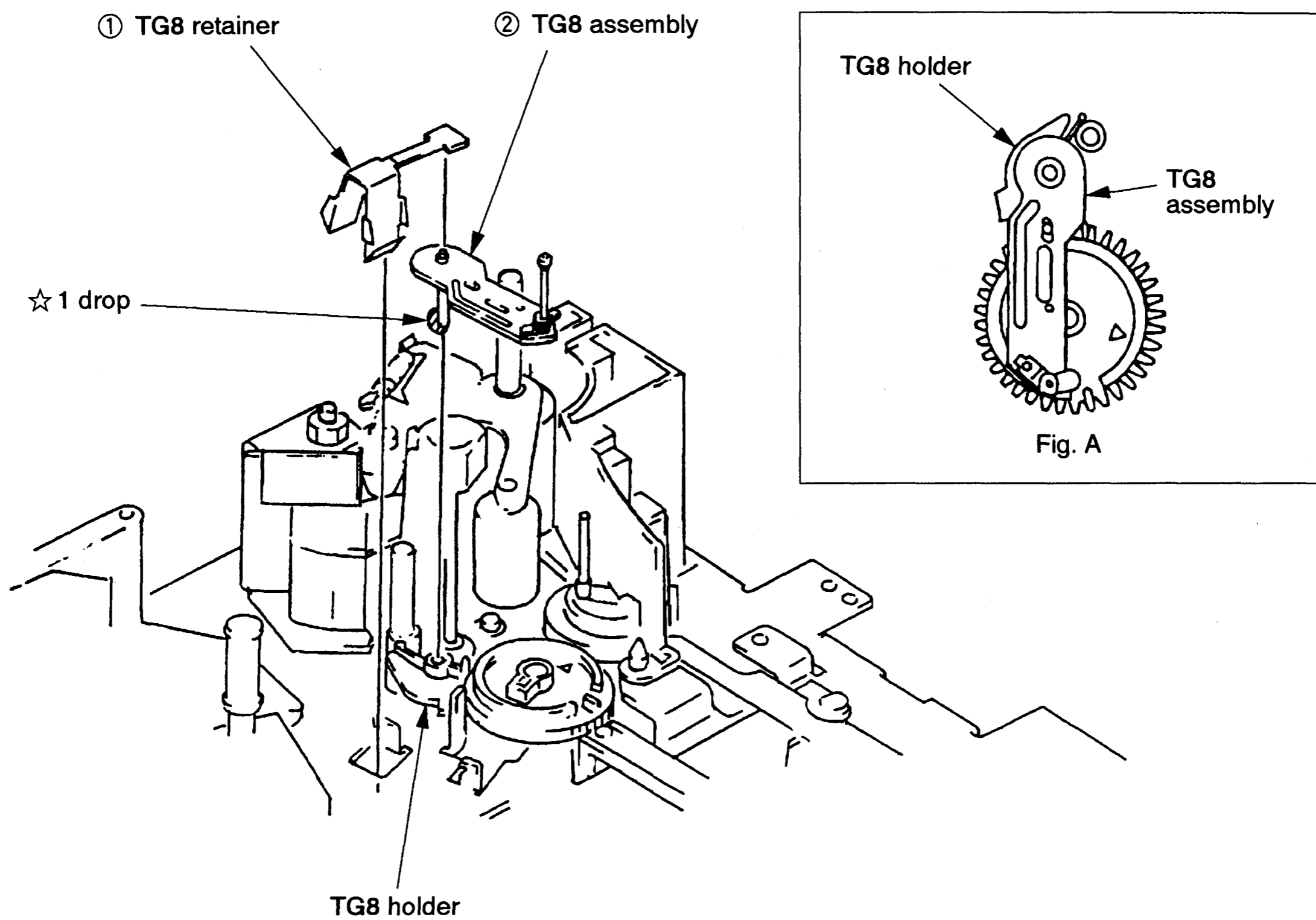


Fig. 3-15

3-14. TG8 HOLDER (Fig. 3-16)

- 1) Remove TG8 assembly. (Refer to 3-13)
- 2) Pull out TG8 holder ①.

[Note on Mounting]

- Be careful about the direction of TG8 holder ①. (A of Fig. A)

[Adjustment after Mounting]

- 4-1. Tape path adjustment.

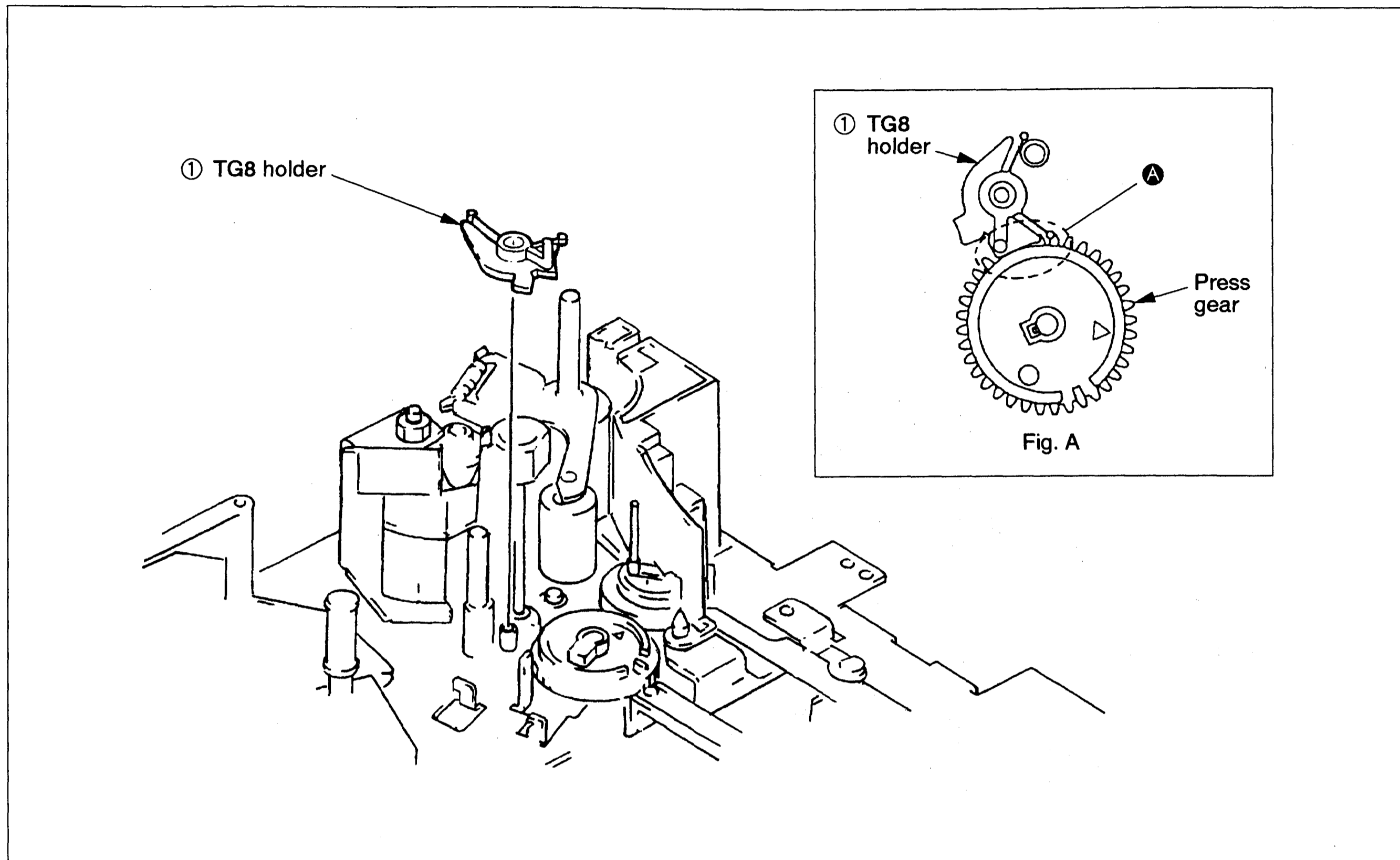


Fig. 3-16

3-15. TG8 AND PRESS GEARS (Fig. 3-17)

- 1) Remove pinch press block assembly. (Refer to 3-6.)
- 2) Remove soft brake T assembly. (Refer to 3-11.)
- 3) Remove TG8 assembly. (Refer to 3-13.)
- 4) Remove TG8 holder. (Refer to 3-14.)
- 5) Pull out TG8 gear ① or press gear ②.

[Note on Mounting]

- Adjust the holes on gears to the holes on chassis. (Fig. A)
- Adjust the arrows carved on gears each other. (Fig. A)

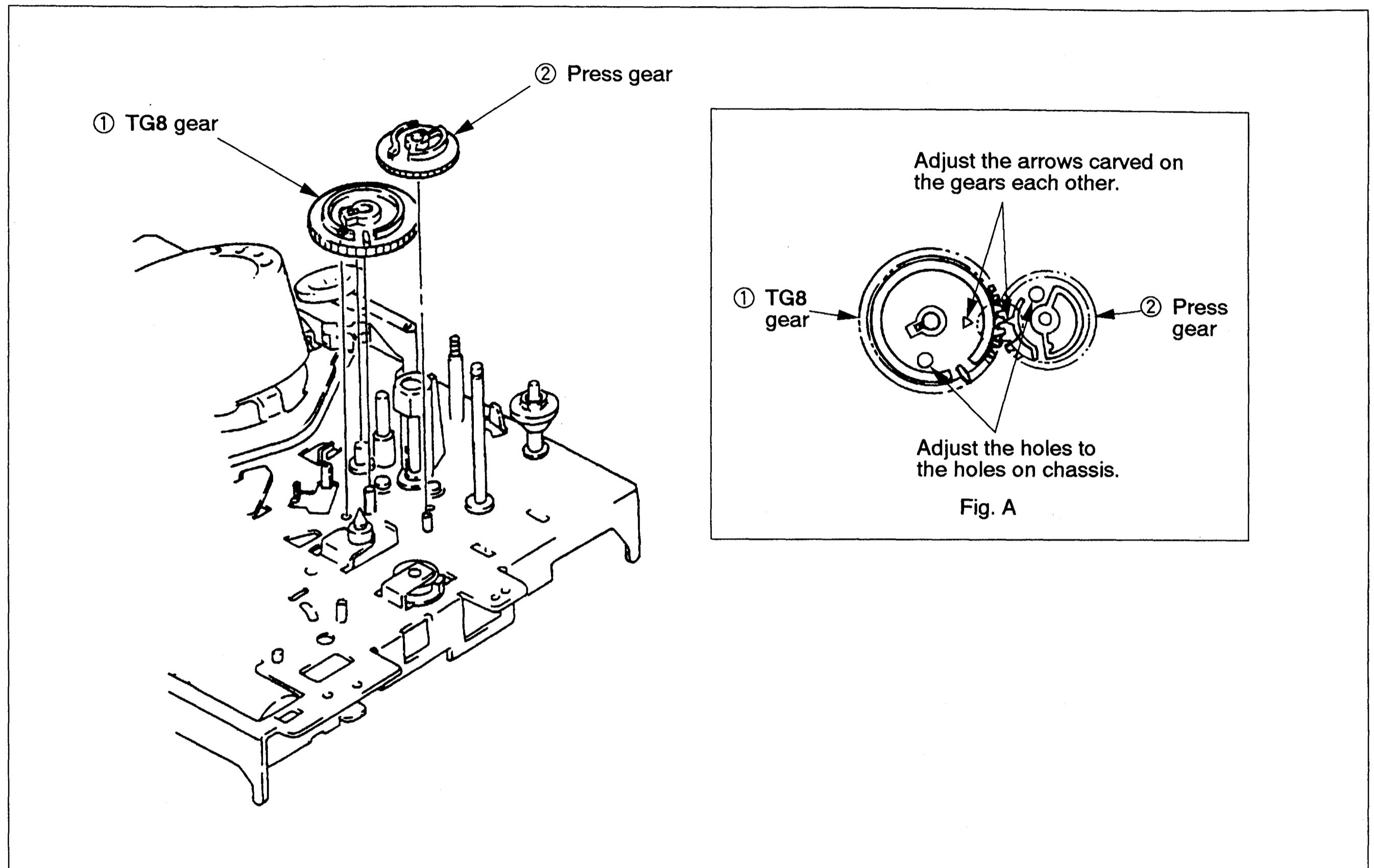


Fig. 3-17

3-16. CAM MOTOR CHASSIS BLOCK ASSEMBLY, UPPER/LOWER COMMUNICATION GEAR (Fig. 3-18)

- 1) Remove timing belt. (Refer to 3-3.)
- 2) Remove CAP brake assembly. (Refer to 3-4.)
- 3) Remove screws ① to remove cam motor chassis assembly ②.
- 4) Pull out upper/lower communication gear ③.

[Note on Mounting]

- First, check main slider ④ slides fully in the arrow **E** direction.
- Set rotary encoder switch position to "E" seen from the window of cam motor chassis. (Fig. A)
- Tighten screws ① in the order **A** to **B** to **C** to **D**.

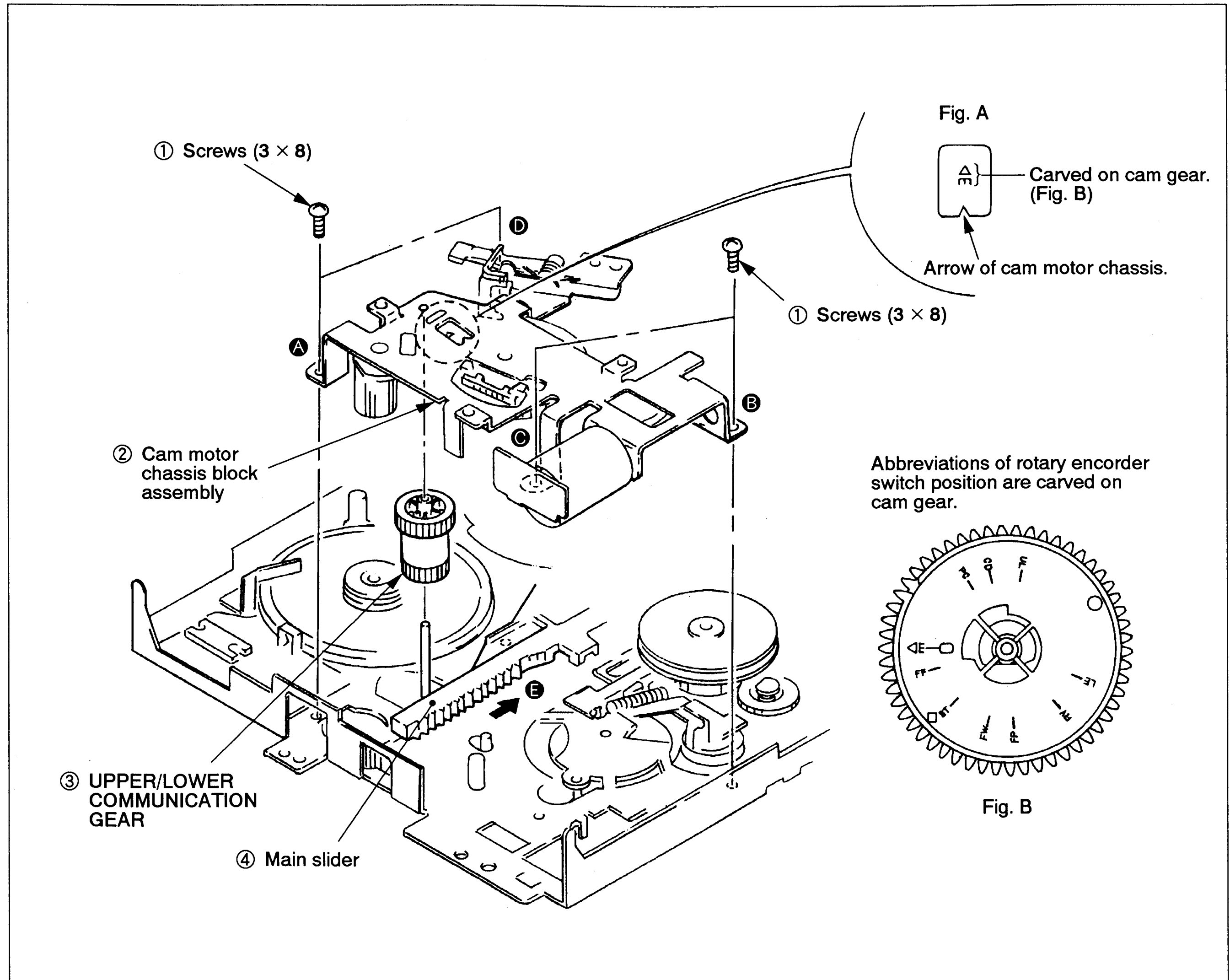


Fig. 3-18

3-17. ROTARY ENCODER SWITCH (Fig. 3-19)

- 1) Remove timing belt. (Refer to 3-3.)
- 2) Remove CAP brake assembly. (Refer to 3-4.)
- 3) Remove cam motor chassis block assembly (Refer to 3-15.) and turn upside on the bottom.
- 4) Remove stopper washer (2) ① to pull out worm wheel ②.
- 5) Remove stopper washer (2) ③ to pull out cam gear ④.
- 6) Pull out FL driving gear ⑤ and rotary encoder switch ⑥.

[Note on Mounting]

- Apply FLOIL SG-055G (Jig Ref. No. J-12) to ☆ marked portions. (Fig. 3-19, A)
- Adjust the hole ① to the hole on cam motor chassis. (Fig. B)
- Adjust the holes ② and ③ to the hole on cam motor chassis. (Fig. C)

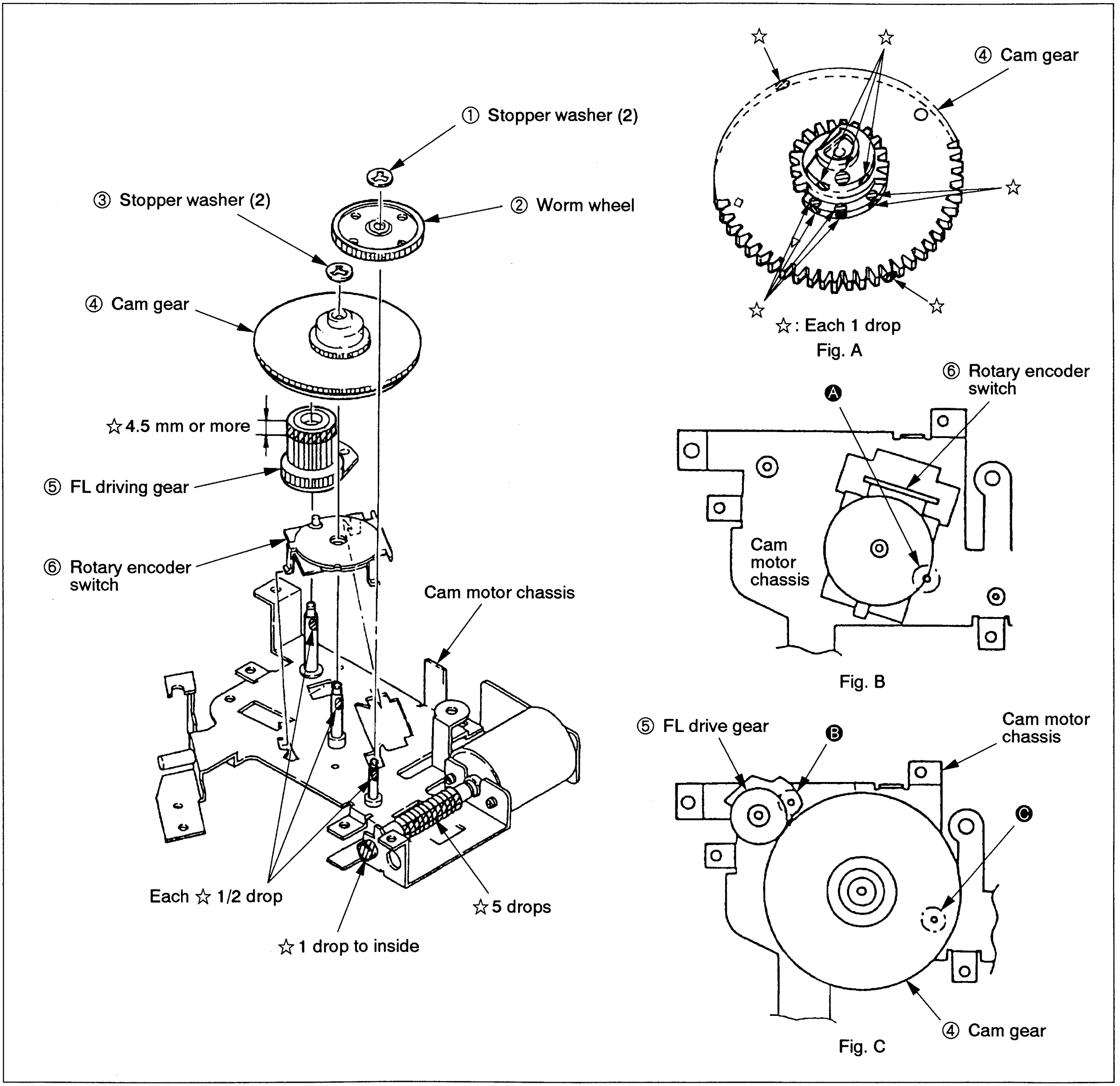


Fig. 3-19

3-18. MAIN SLIDER (Fig. 3-20)

- 1) Remove timing belt. (Refer to 3-3.)
- 2) Remove CAP brake assembly. (Refer to 3-4.)
- 3) Remove cam motor chassis block assembly. (Refer to 3-16.)
- 4) Remove screw ① to remove retainer ②.
- 5) Pull out main slider ③.

[Note on Mounting]

- Apply FLOIL SG-055G (Jig Ref. No. J-12) as shown in Fig. A.
- At the last, slide main slider fully in the arrow **A** direction.

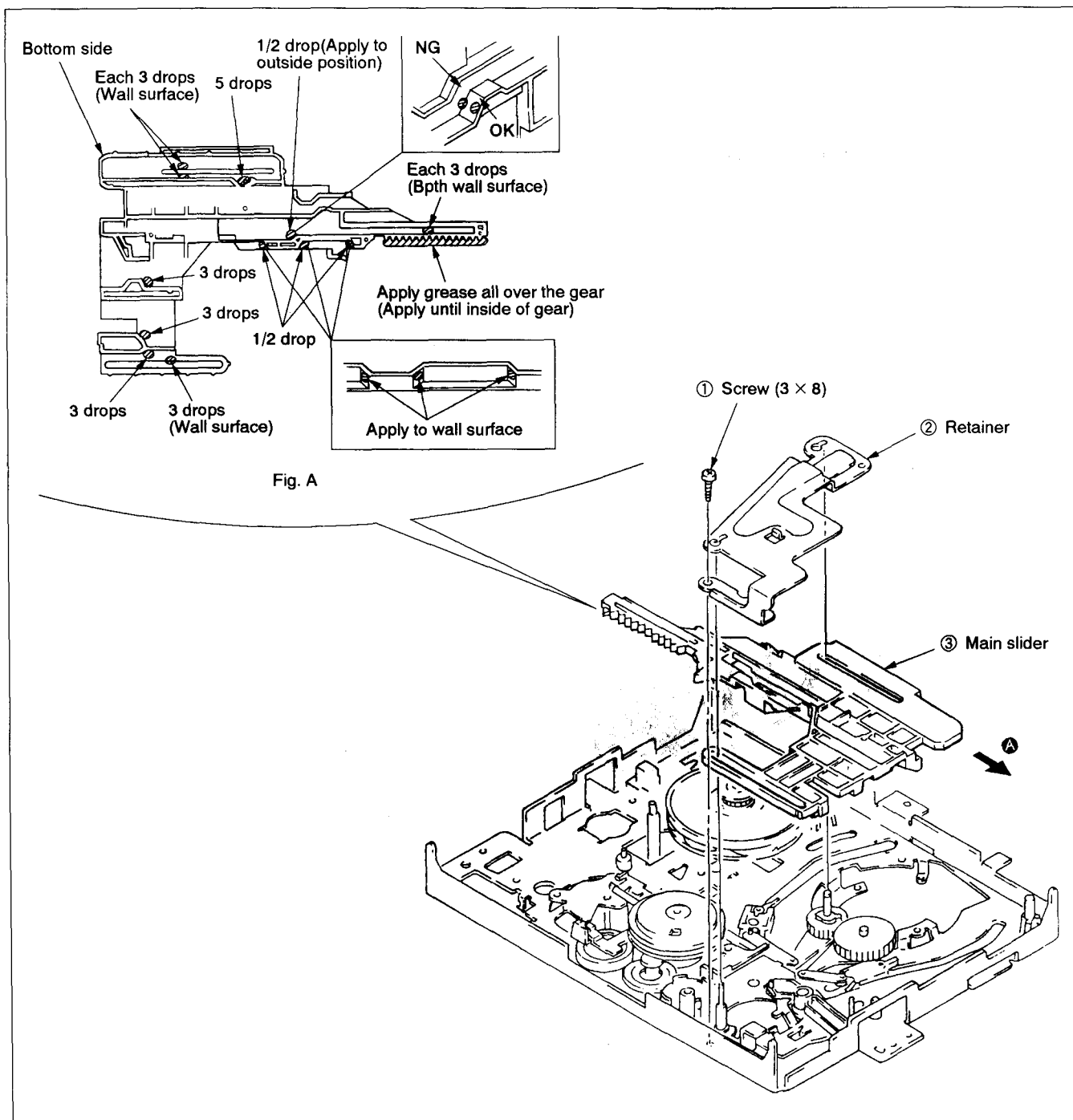


Fig. 3-20

3-19. SHUTTLE T BLOCK AND LOADING GEAR T BLOCK ASSEMBLIES (Fig. 3-21)

- 1) Remove timing belt. (Refer to 3-3.)
- 2) Remove CAP brake assembly. (Refer to 3-4.)
- 3) Remove cam motor chassis block assembly. (Refer to 3-16.)
- 4) Remove main slider. (Refer to 3-18.)
- 5) Remove screw ① to remove loading leaf (T) spring ② and shuttle T block assembly ③.
- 6) Pull out loading gear T block assembly ④.

[Note on Mounting]

- Adjust the phase ● between loading gear (T) and loading gear (S). (Fig. A)
- Keep clean the surface contacts tape of shuttle T block assembly ③.

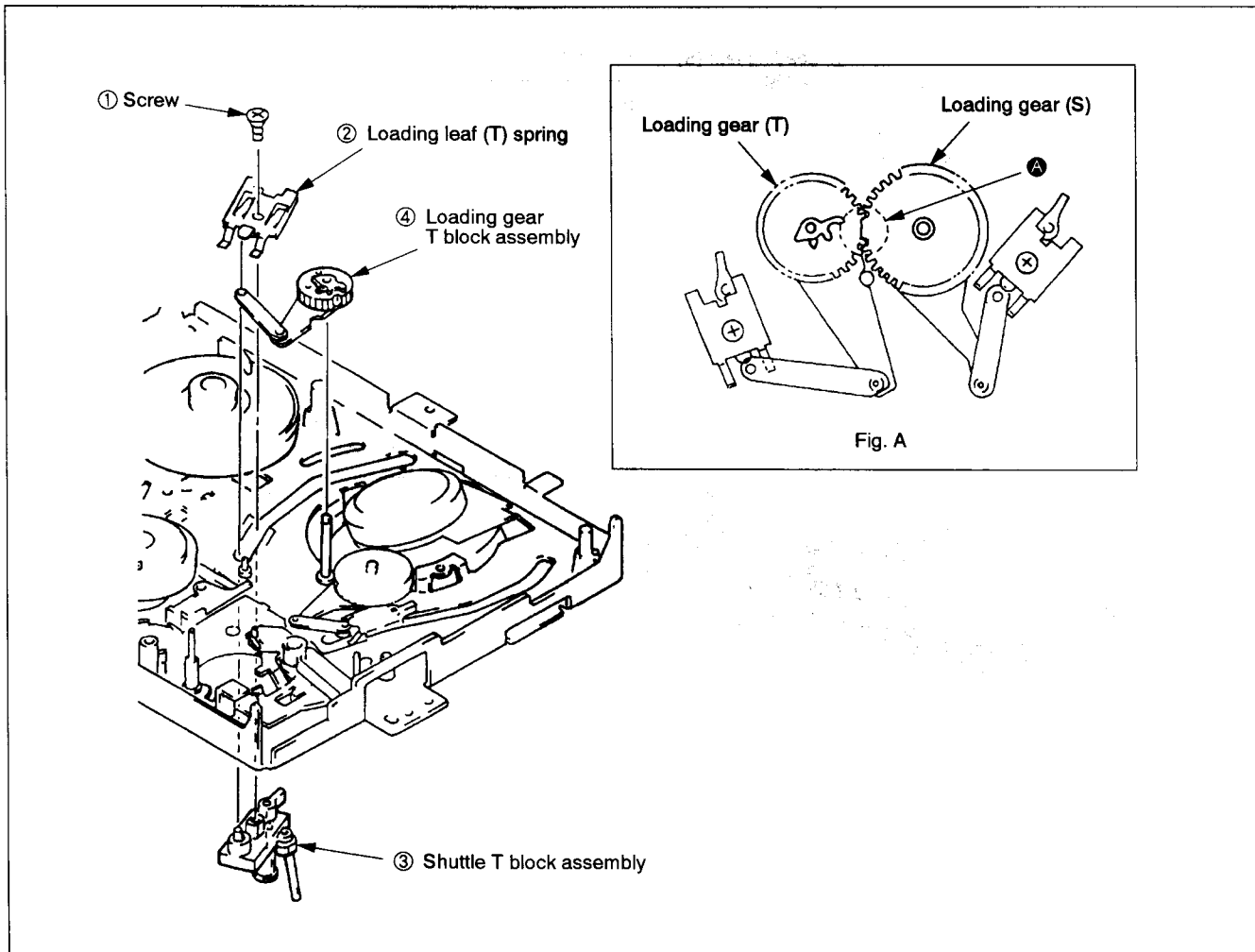


Fig. 3-21

3-20. SHUTTLE S BLOCK AND LOADING GEAR S BLOCK ASSEMBLIES (Fig. 3-22)

- 1) Remove timing belt. (Refer to 3-3.)
- 2) Remove CAP brake assembly. (Refer to 3-4.)
- 3) Remove cam motor chassis block assembly. (Refer to 3-16.)
- 4) Remove main slider. (Refer to 3-15.)
- 5) Remove screw ① to remove loading leaf (S) spring ② and shuttle S block assembly ③.
- 6) Pull out loading gear S block assembly ④.

[Note on Mounting]

- Adjust the phase **A** between loading gear (S) and loading gear (S). (Fig. A)
- Keep clean the surface contacts tape of shuttle S block assembly ③.

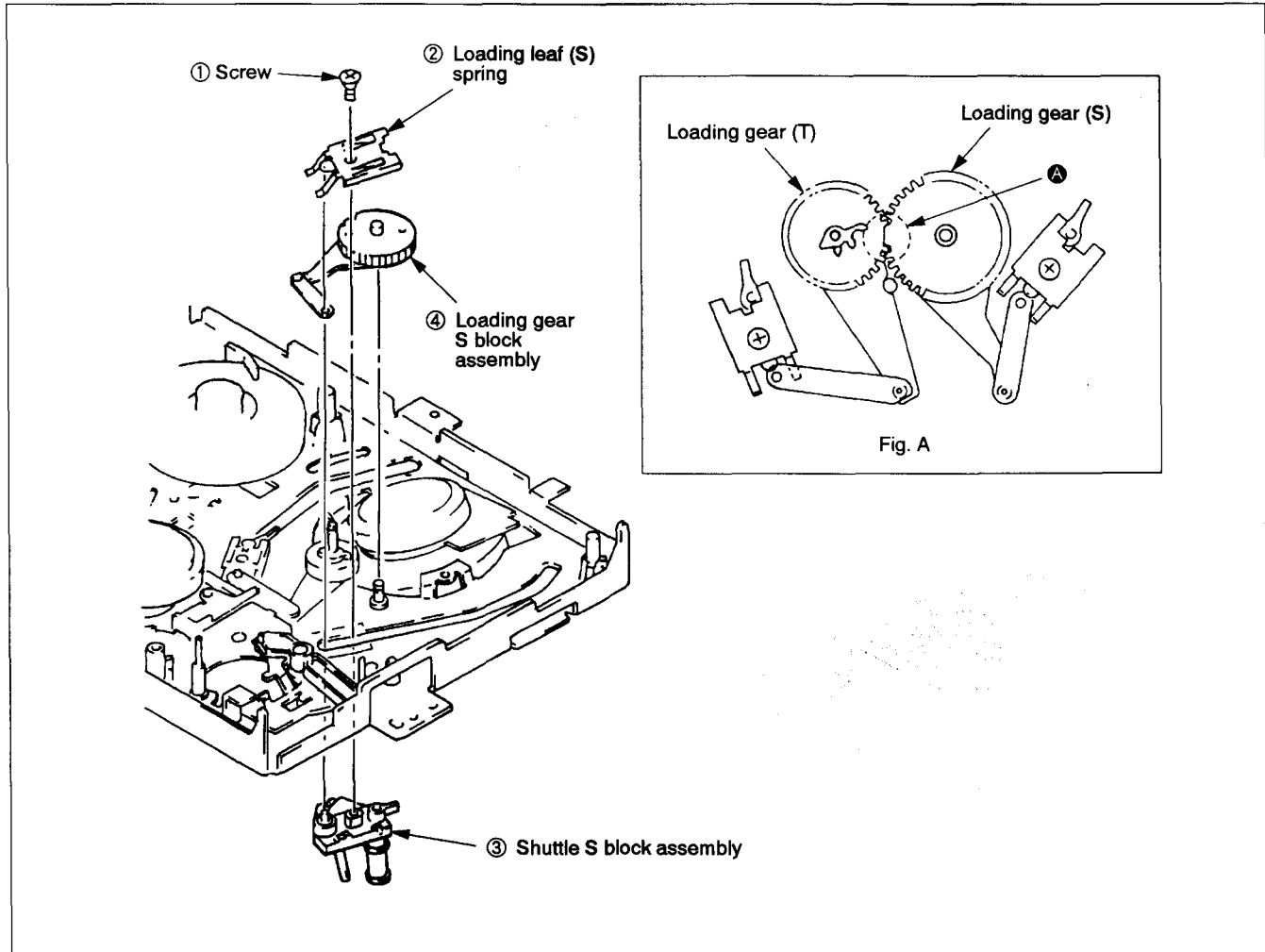


Fig. 3-22

3-21. REEL TABLE (S) ASSEMBLY (Fig. 3-23)

- 1) Remove tension spring ① from the chassis side.
- 2) Remove stopper washer (2) ② to pull out soft brake (S) ③.
- 3) Move TG1 band ④ over the reel table.
- 4) Remove stopper washer (2) ⑤.
- 5) While pressing main brake S assembly ⑥, pull out reel table (S) assembly ⑦.

[Note on Mounting]

- Apply one drop of Diamond Oil NT-68 (Jig Ref. No. J-13) to ☆ marked portion before mounting reel table (S) assembly ⑦. (Fig. A)
- Don't touch the hatched portion on reel table (S) assembly ⑦ with bare hand.

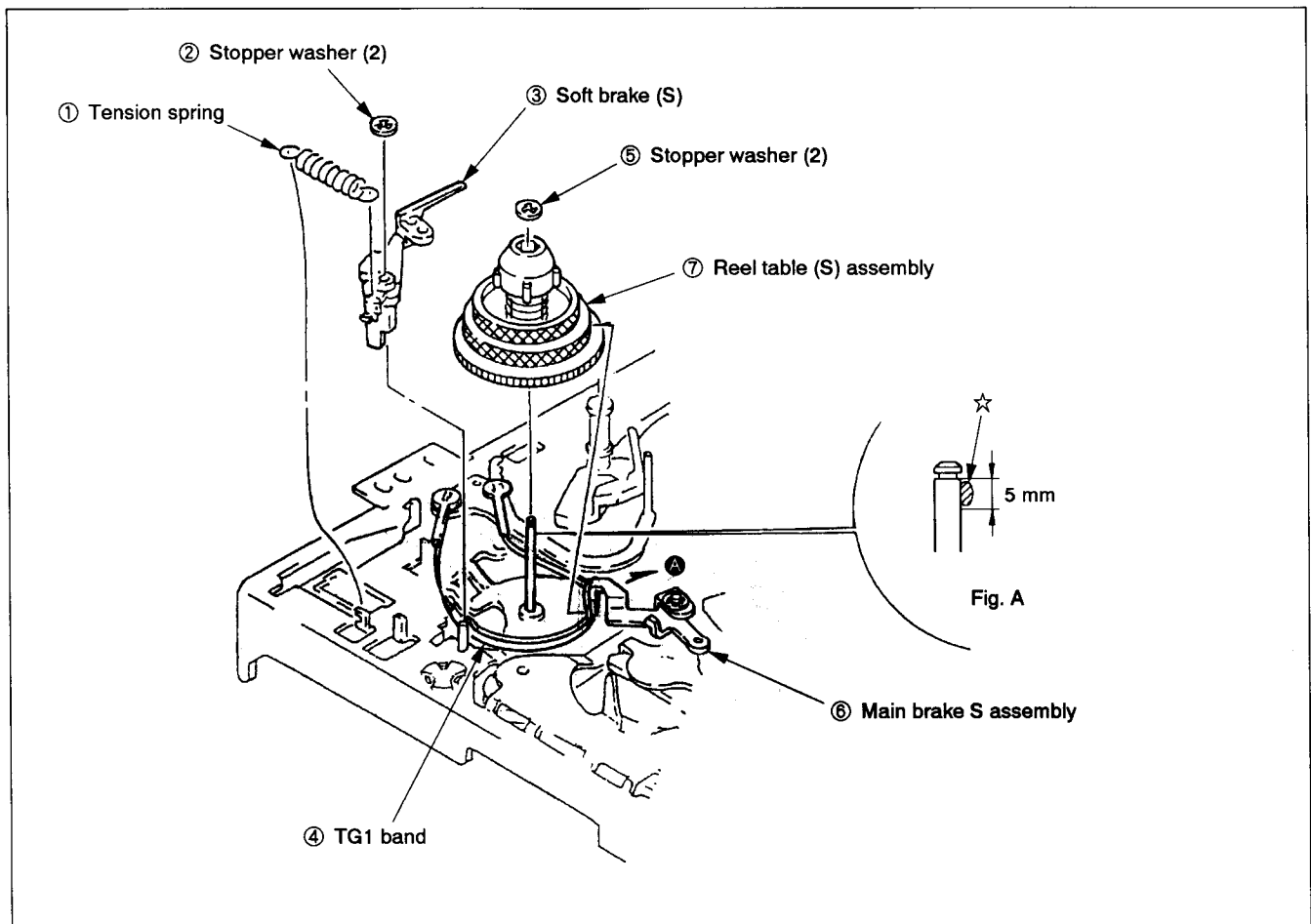


Fig. 3-23

3-22. TG1 ASSEMBLY (Fig. 3-24)

- 1) Set the mechanism to the loading-end condition referring to 1-1. (Cam gear indicates "LE". (Refer to Fig. A and B of Fig. 3-18.))
- 2) Remove tension spring ① in the order A to B.
- 3) Remove stopper washer (2) ② to pull out TG1 assembly ③.

[Note on Mounting]

- Apply one drop of Diamond Oil NT-68 (Jig Ref. No. J-13) to ☆ marked portion.
- Keep clean the felt side of TG1 assembly.

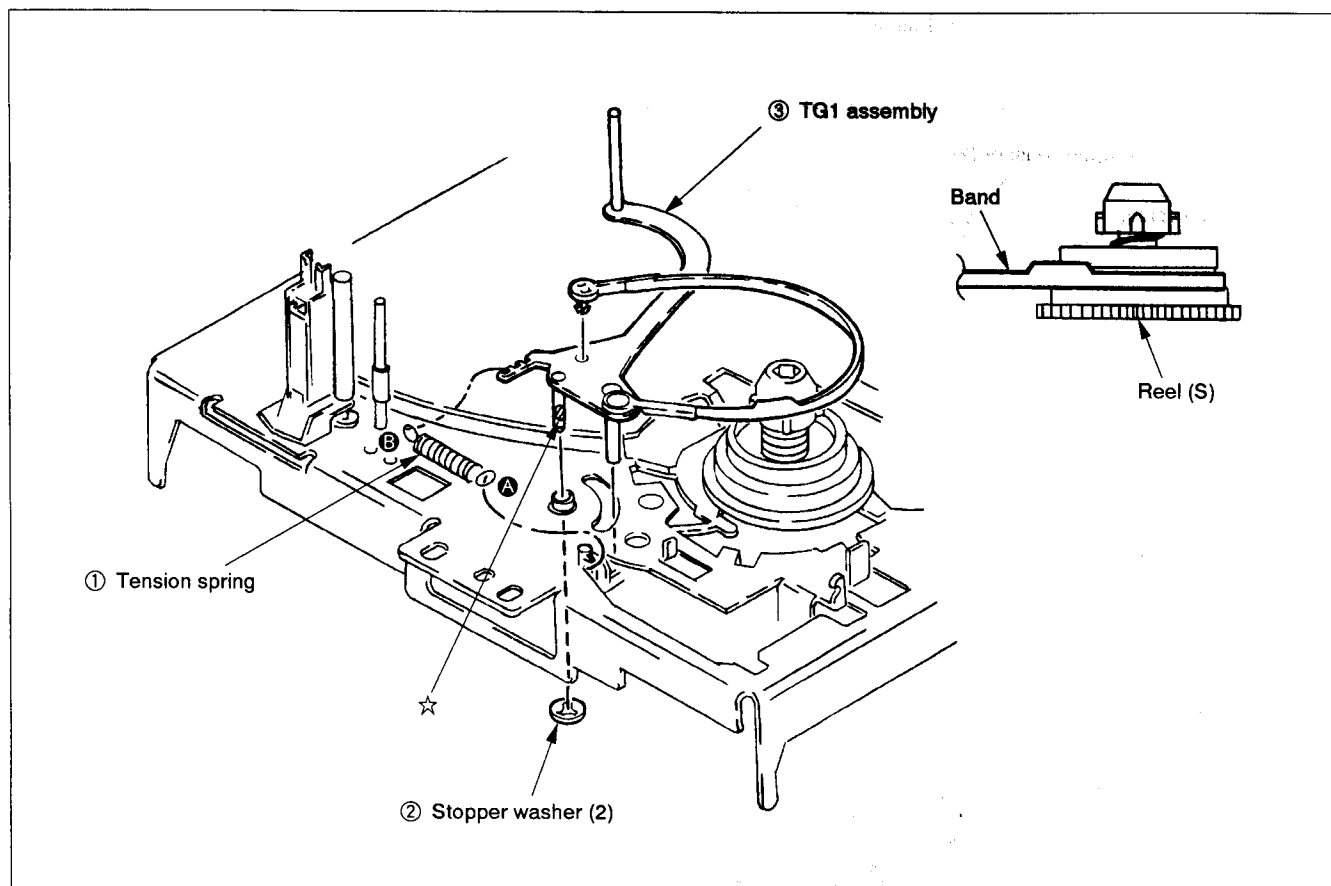


Fig. 3-24

3-23. S WINDING BLOCK ASSEMBLY (Fig. 3-25)

- 1) Remove timing belt. (Refer to 3-3.)
- 2) Remove CAP brake assembly. (Refer to 3-4.)
- 3) Remove cam motor chassis block assembly. (Refer to 3-16.)
- 4) Remove main slider. (Refer to 3-18.)
- 5) Remove stopper washer (2) ① to pull out S winding block assembly ②.
- 6) Remove torsion spring ③.

[Note on Mounting]

- At the last, hang torsion spring ② to the position A.
- Apply FLOIL SG-055G (Jig Ref. No. J-12) to ☆ marked portions.

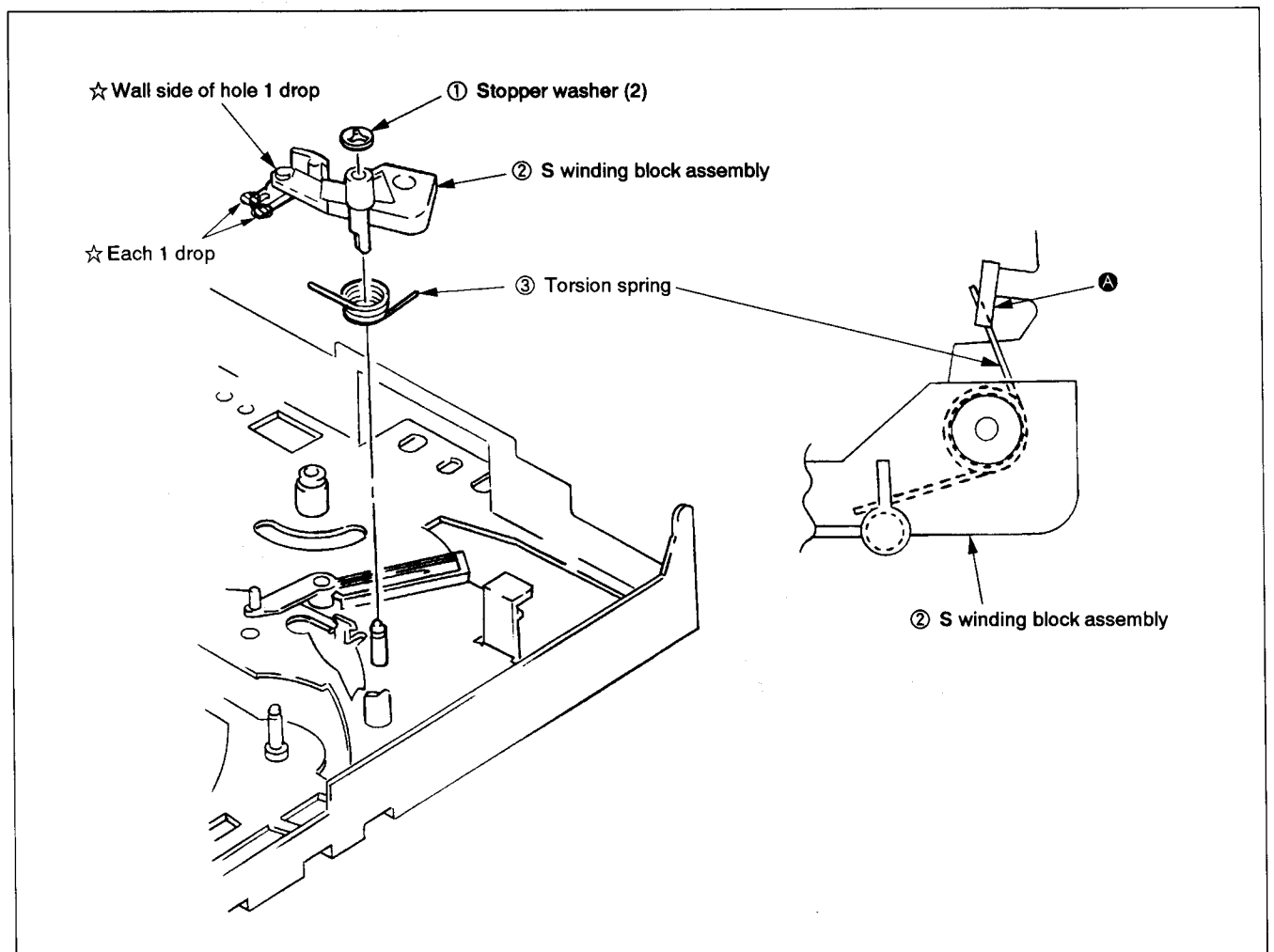


Fig. 3-25

3-24. TRIGGER LEVER AND RKB BLOCK ASSEMBLIES (Fig. 3-26)

- 1) Remove timing belt. (Refer to 3-3.)
- 2) Remove CAP brake assembly. (Refer to 3-4.)
- 3) Remove cam motor chassis block assembly. (Refer to 3-16.)
- 4) Remove main slider. (Refer to 3-18.)
- 5) Remove tension spring ① in the order **A** to **B** to remove trigger lever assembly ②.
- 6) Remove screws (3 × 8) ③ to remove RKB block assembly ④.

[Note on Mounting]

- Apply FLOIL SG-055G (Jig Ref. No. J-12) to ☆ marked portions on trigger lever assembly. (Fig. A)

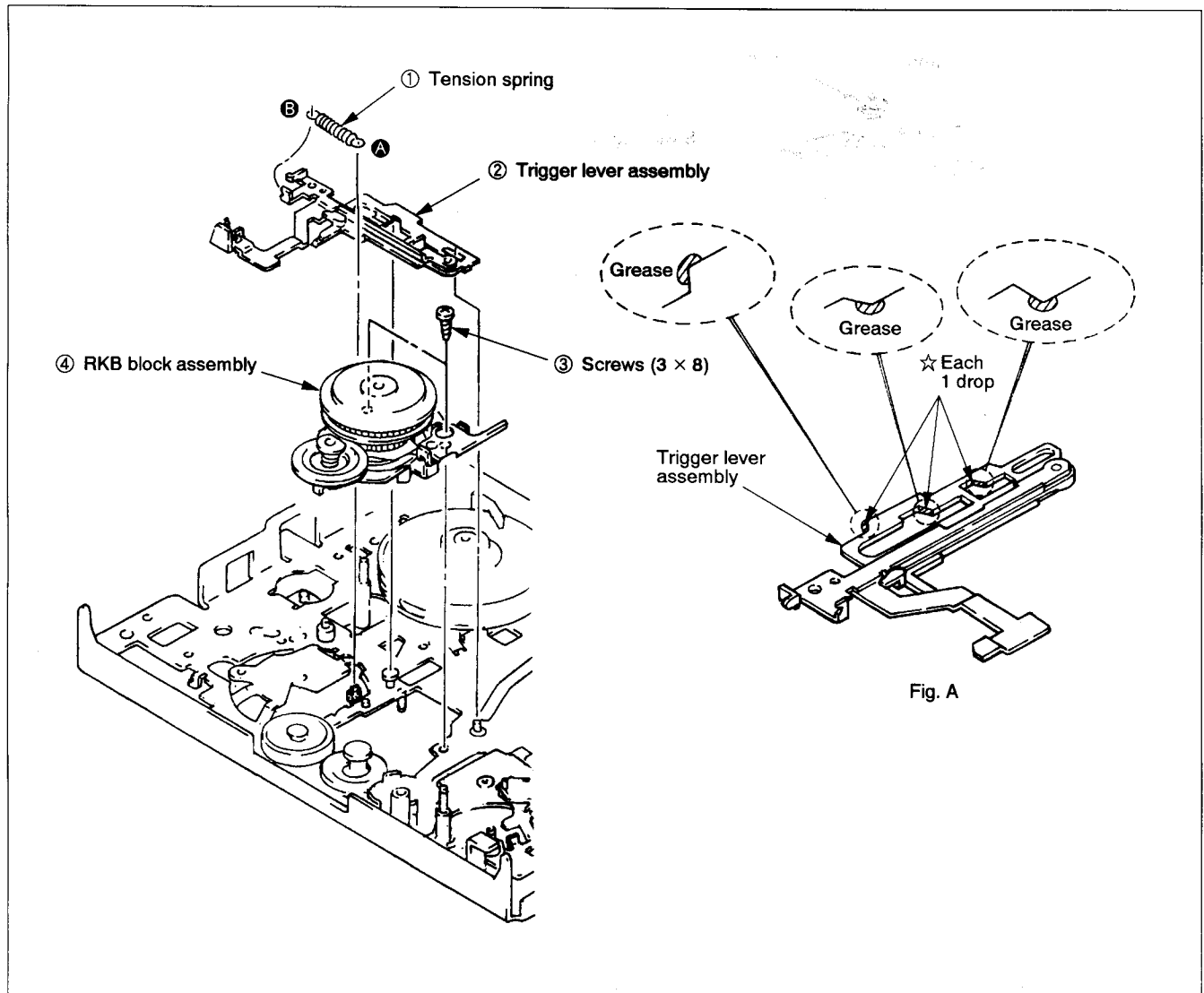


Fig. 3-26

4. ADJUSTMENT

4-1. TAPE PATH ADJUSTMENT

The "Tape path" refers to the route of the tape from the supply reel disk to the take-up reel disc via the video heads.

Each component part of the tape transport system particularly the surface of parts which make direct contact with the tape must always be kept clean, free of dust, oil, scratches and so forth.

The tape path system is factory preadjusted, when parts of the tape transport system are replaced, be sure to make the required adjustments as precisely as possible in order to ensure stable tape transport.

4-1-1. TENSION REGULATOR (TG1) POSITION/ TENSION ADJUSTMENT (Fig. 4-1)

Purpose: stabilizes contact of the video head and the tape to maintain the tension of the tape so that it feeds at a constant level.

• Position adjustment

Mode	Treading is completed without a cassette loaded
Adjustment locations	Eccentric pin of TG1 band assembly

[Adjustment Method]

- 1) Allow the unit to go through the threading procedure without a cassette loaded.

- 2) Set the unit to play back, then turn the eccentric pin so that the tip of tension arm goes to the left side line carved on the mechanical chassis. (Fig. A)
- 3) After adjustment, go through the loading procedure once more without a cassette loaded, then check the position of the tension arm.

• Tension adjustment

Mode	Playback
Measuring instrument/tool	Torque cassette
Adjustment locations	Position for hooking the tension spring
Specified value	36 to 44 g•cm

[Adjustment Method]

- 1) Playback the torque cassette.
- 2) Check that the center value deviation reading on the torque cassette meets with the standards.
- 3) When the reading is higher than the standards: Move the spring toward direction **A**.
When the reading is less than the standards: Move the spring toward direction **B**.

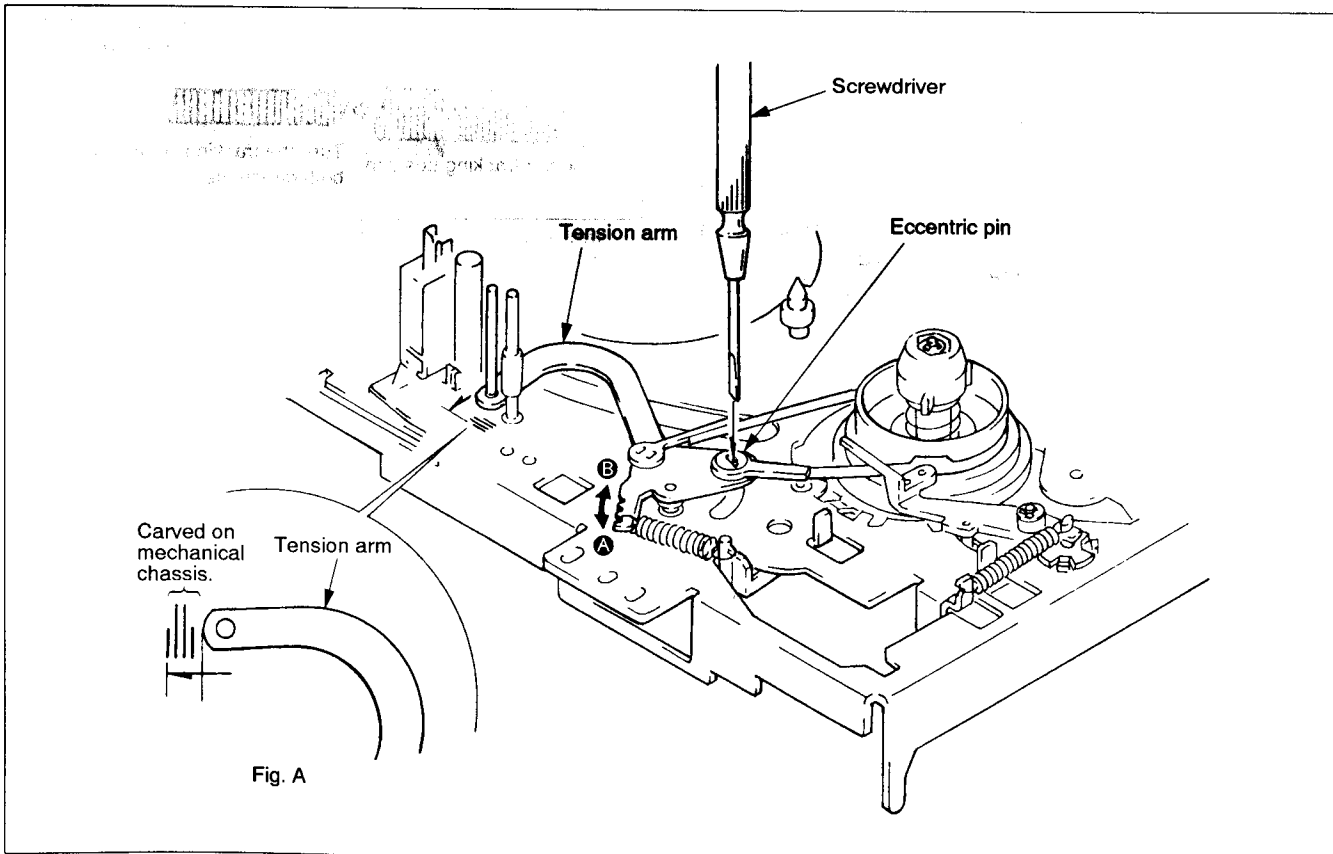


Fig. 4-1

4-1-2. TG8 GUIDE ROLLER HEIGHT ADJUSTMENT (Fig. 4-2)

Mode	Playback
Jig	Blank tape
Adjustment locations	Guide roller height adjustment screw
Specified value	0 to 0.1 mm

Procedure:

- 1) Set the tape, during CUE playing back, check the height from lower flange of TG7 to the running tape. (Fig. A)
- 2) During REV playing back, check the height from lower flange of TG7 to the running tape. (Fig. B)
- 3) When the difference between items 1) and 2) doesn't go to specified value, adjust by turning TG8 guide roller height adjustment screw.
- 4) Check the tape is creased or not between the capstan and TG8, adjust with TG8 guide roller height adjustment screw so that the tape is not creased during normal playback, CUE and REV.

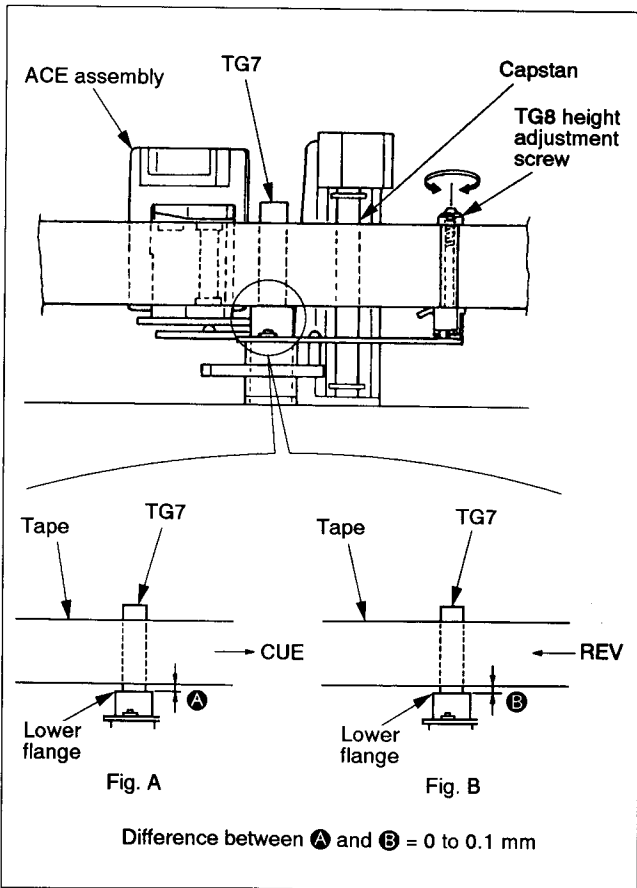


Fig. 4-2

4-1-3. HEIGHT ADJUSTMENT OF GUIDE ROLLERS NO. 3 AND NO. 6 (Fig. 4-3)

Mode	Playback
Signal	Alignment tape
Measuring instrument	Oscilloscope
Measuring point	CH-1: Connector PB RF pin for RF PC board check. CH-2: Connector RF SW P pin for RF PC board check.
Adjustment locations	Guide roller height adjuster screw

[Adjustment Method]

- 1) Tracking (playback): Turn off the auto tracking, then press the tracking buttons ∇ and \triangle simultaneously to set the tracking at the center position.
(If adjustment is made after the drum is replaced, the tracking must be set at the max. RF output position.)
- 2) Height adjuster screw: Even out the RF output waveforms.
- 3) Press the tracking buttons (playback), ∇ and \triangle alternately.
- 4) Check that RF output drops the same amount at the front and rear edges.

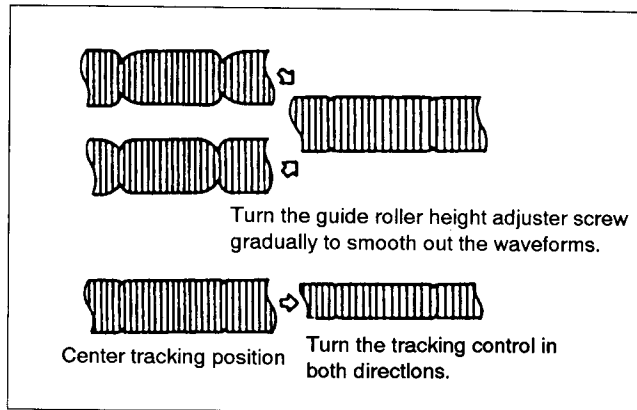


Fig. 4-3

**4-1-4. ACE HEAD ASSEMBLY ADJUSTMENT
(ROUGH ADJUSTMENT) (Figs. 4-4 and 4-5)**

Purpose: Allows the tape to make even contact with the head for recording and playback of the specified track.

Mode	Playback
Tool	Blank tape
Adjustment locations	Height adjuster nut, Tilt adjuster screw

[Adjustment Method]

- 1) Mount the ACE head assembly. At this time, adjust the height so that the height of guide flange No. 7 matches the level of the lower edge of the control head.
- 2) Remove the adjustment tool and load a new tape, then set the unit for playback.
- 3) Check that the tape does not curl or rise up noticeably near the ACE head.
- 4) If the tape curls up or rises noticeably, readjust the tilt adjuster screw, the azimuth adjuster screw and the height adjuster nut.
(The height of the tape is approx. 0.1 to 0.15 mm from the lower edge of the control head.)
- 5) Perform precision adjustment.

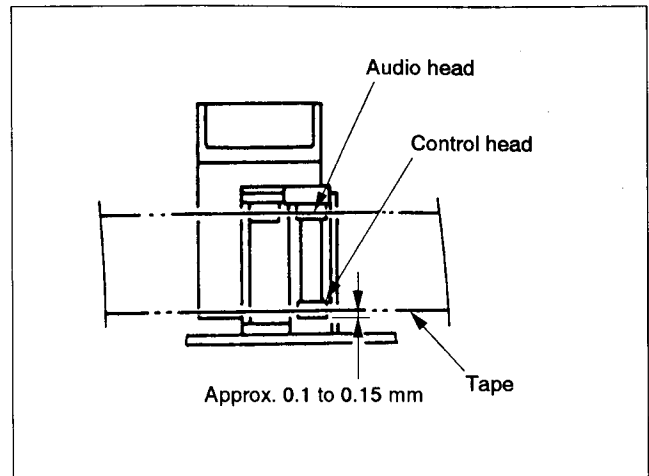


Fig. 4-5

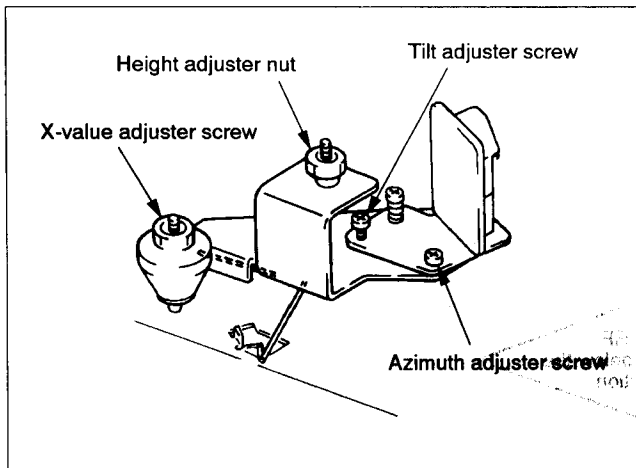


Fig. 4-4

4-1-5. ACE HEAD ASSEMBLY ADJUSTMENT (PRECISION ADJUSTMENT)

Mode	Playback
Signal	Alignment tape (1kHz track)
Measuring instrument	Oscilloscope
Measuring point	Audio output terminal
Adjustment locations	Azimuth adjuster screw, Height adjuster nut, Tilt adjuster screw

[Adjustment Method]

- 1) Adjust the tilt adjuster screw in the FWD or REV mode so that the lower flange of guide No. 7 does not curl up or rise.
- 2) Alternately adjust the azimuth adjuster screw, the height adjuster nut, and the tilt adjuster screw to maintain even audio output at maximum with minimum deviation.

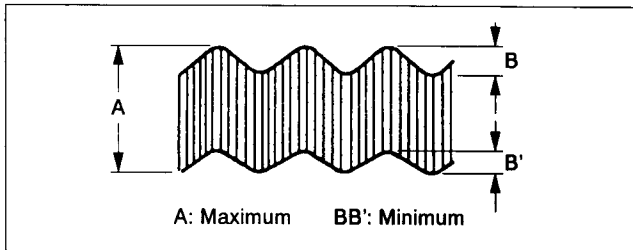


Fig. 4-6

4-1-6. X-VALUE ADJUSTMENT

Purpose: To obtain compatibility with other VTR

Precaution: Be sure to perform the preset tracking adjustment before perform this adjustment. (Refer to the Service Guide.)

Turn off the auto tracking and set the VTR for manual tracking mode.

Mode	Playback
Signal	Alignment tape
Measuring instrument	Oscilloscope
Measuring point	CH-1: Connector PB RF pin for RF PC board check. CH-2: Connector RF SW P pin for RF PC board check.
Adjustment locations	X-value adjuster screw

[Adjustment Method]

- **Adjustment by Hi-Fi alignment tape (NTSC only)**
When the tracking is set at the center position (by pressing the \square and \triangle keys simultaneously), adjust the RF output to maximum.

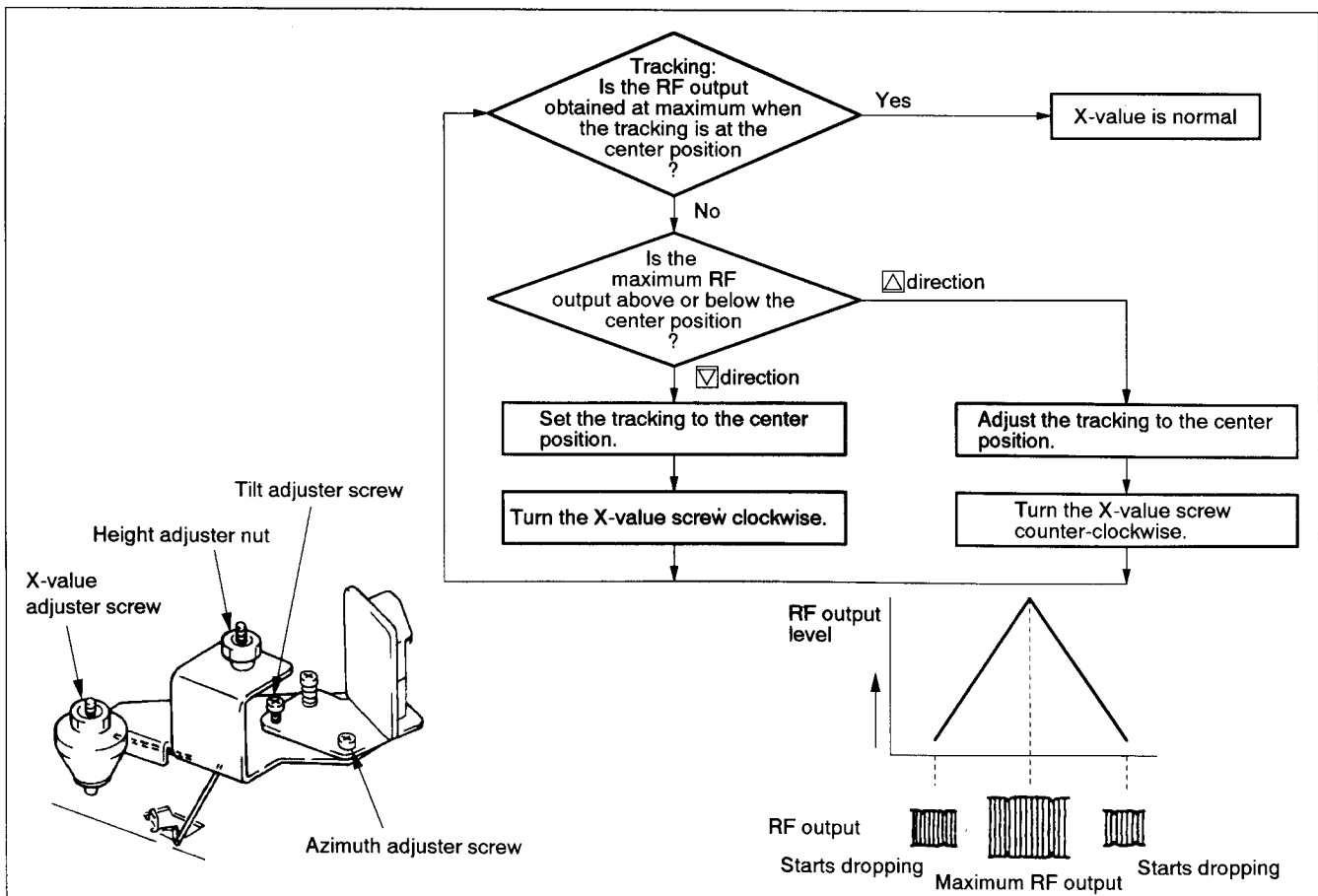


Fig. 4-7

• **Adjustment by alignment tape**

Adjust the X-value adjuster screw so that maximum RF output is obtained and also that the RF output drops to the same position on pressing the respective ▽ and △ buttons while the tracking is set at the center position.

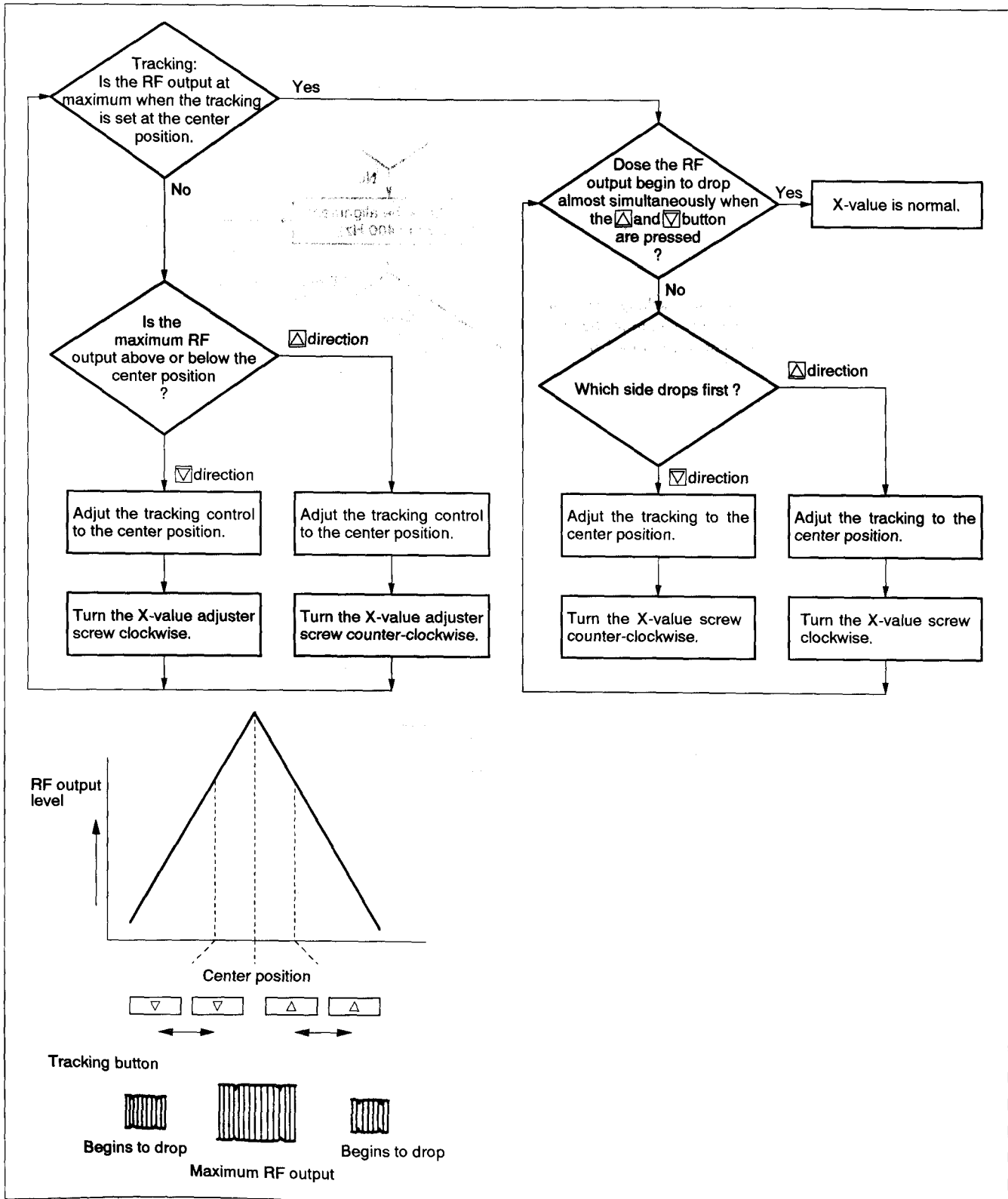


Fig. 4-8

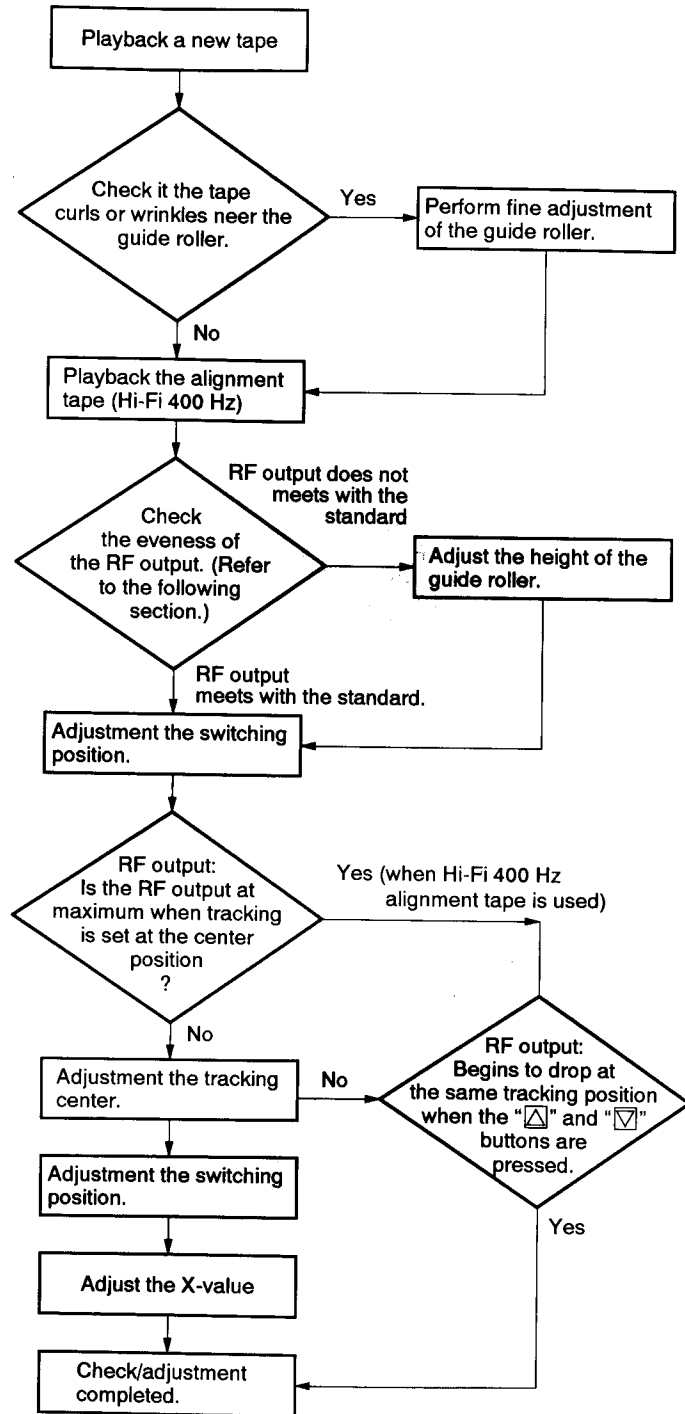
4-1-7. ADJUSTMENTS AFTER REPLACING THE DRUM (VIDEO HEAD)

Purpose: Co-relative height, X-value and other factors of the drum will deviate from those of the guide roller. If the drum is replaced properly, these deviations are extremely small.

Precaution: Turn off the auto tracking and set the manual tracking mode.

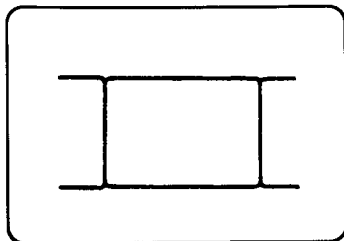
Mode	Playback
Signal	Alignment tape, blank tape
Measuring instrument	Oscilloscope
Measuring point	CH-1: Connector PB RF pin for RF PC board check. CH-2: Connector RF SW P pin for RF PC board check.
Adjustment locations	Guide roller (refer to 4-1-2, 4-1-3.) Switching position, Tracking preset, SP delay mono-multi (Refer to the Service Manual), X-value. (refer to 4-1-6.)

[Adjustment Method]

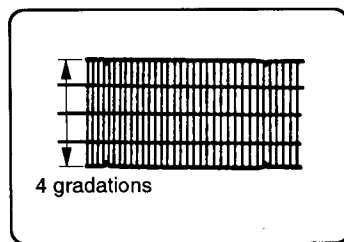


[Checking the evenness and fluctuation of the RF output]

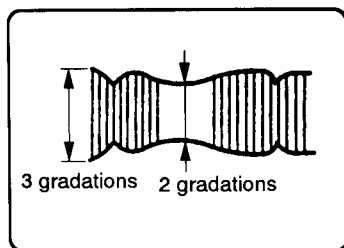
- 1) Set the RF output to the maximum level using the tracking buttons.



- 2) Perform fine adjustment of the voltage level range of the oscilloscope, then adjust the RF output deviation to within 4 gradations.



- 3) Press the tracking buttons and adjust the maximum amplitude of the RF output to within 3 gradations.
- 4) At this time, check if the minimum amplitude is more than 2 gradations.



- 5) Check that the RF output fluctuation between minimum and maximum levels is within 13%.

4-1-8. CHECKING THE TENSION AND TORQUE

Purpose: To check that the tension, torque and compression force of the tape take-up section and mobile sections to ensure smooth tape run and achieve standard VTR performance.

If the tape transport is not smooth or problems occur in relation to the tape transport speed, perform the following check.

Mode	Each operation mode without loading a cassette tape. (Refer to section 1-3.)
Measuring instrument	Torque gauge, Torque gauge adaptor

Item	VTR operation mode	Reel to be measured	Measurement value
Main brake torque	Stop	Supply and take-up reels	170 g•cm or more
Review torque	Review	Supply reel	180 ± 30 g•cm (using the torque cassette)
Take-up torque	Playback	Take-up reel	95 ± 25 g•cm (using the torque cassette)
Back tension torque	Playback	Take-up reel	33 to 44 g•cm (using the torque cassette)

[Check Method]

Measure the torque using the torque gauge and torque gauge adaptor with the torque gauge fixed.

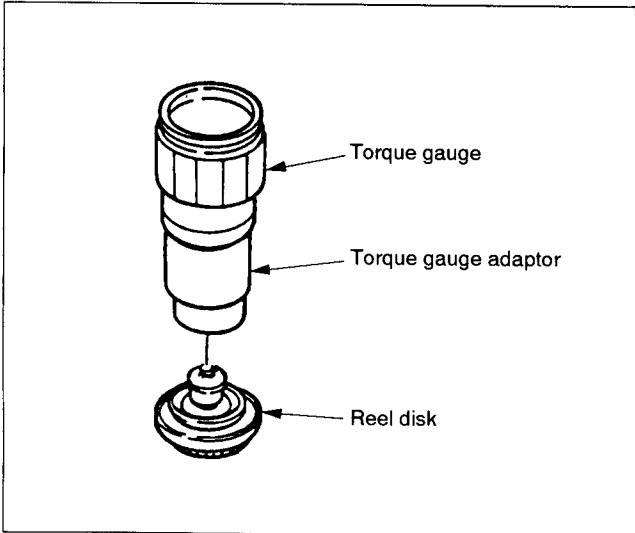


Fig. 4-9