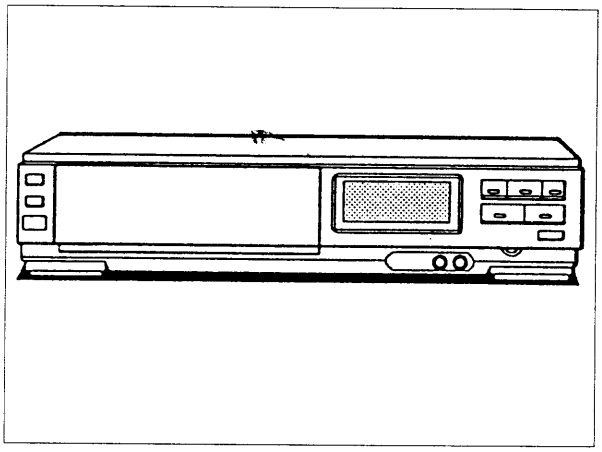
TEAC®



SERVICE MANUAL

MV-505

Video Cassette Recorder

VHS HQ High Quality VHS

CAUTION

⚠ Parts marked with this sign are safety critical components. They must always be replaced with identical components-refer to the appropriate parts list and ensure exact replacement.

Effective: February, 1991

5704052800

TABLE OF CONTENTS

SPECIFICATIONS

Recording system
Video : Rotary 2 heads helical scan system
Audio : fixed head
Video heads
Double azimuth 4 heads
Video signal
PAL color signal, 625 lines, 50 fields
Recording/Playback time
4 hours max. with E-240 tape, standard speed
Tape speed
Standard speed, 23.39 mm/sec.
Tape width
12.65 mm
Usable cassette
VHS video cassette
Clock accuracy
±50 seconds/month
Timer display
24-hour cycle, month, day, hour, minute, digital fluorescent display
Timer recording
6 programs within 1 month
Channel coverage
VHF : 0 - 5 and 5A - 11 channels
UHF : E21 - E69 channels
RF output
Channel between O/I, LOW/HIGH
Video input
1.0 Vp-p, 75 ohms unbalanced
Video output
1.0 Vp-p, 75 ohms unbalanced
Horizontal resolution
240 lines (nominal) [SP mode]
Video S/N (luminance)
43 dB (nominal) [SP mode]

Audio input
-8 dBs, 47 kohms
Audio output
-6 dBs, 2.2 kohms
Audio frequency response
200 Hz - 8kHz
Audio S/N
41 dB (nominal)
Operating temperature
5℃ - 40℃
Power requirements
240 V AC, 50Hz
Power consumption
27 watts
Dimensions
432 (W) × 95 (H) × 345 (D) mm
Weight 5.8 kg
Input/output
Audio input (AUDIO INPUT) :
phono jack (2)
Audio output (AUDIO OUTPUT) :
phono jack (1)
Video input (VIDEO INPUT) :
phono jack (2)
Video output (VIDEO OUTPUT) :
phono jack (1)
Antenna input (AERIAL) :
IEC connector, 75 ohms (1)
Antenna output (RF OUT) :
IEC connector, 75 ohms (1)

• Design and specifications are subject to change without notice.

STANDARD MAINTENANCE

1. SERVICE SCHEDULE OF COMPONENT

DECK		
Ref. No.	Parts Name	Periodic Sevice Schedule
	UPPER DRUM ASSY	1000Hr (change)
2-29	AC HEAD ASSY	2100Hr (change)
2-37	ROLLER, PINCH (2-42. ARM PINCH ASSY)	2100Hr (change)
2-26	LOAD MOTOR ASSY	2100Hr (change)
2-19	FE HEAD ASSY	2100Hr (change)
2-43	REEL, UNIT DISK	2100Hr (change)
2-31	UNIT, INP ROLLER	2100Hr (change)
3-8	BELT, REEL	2100Hr (change)
M1	MOTOR, CAPSTAN	2100Hr (change)
2-46	BRAKE, MAIN S	2100Hr (change)
2-48	BRAKE, MAIN T	2100Hr (change)
2-10	BELT, TENSION BRAKE	2100Hr (change)

2. CLEANING

* Be sure to clean the following items during servicing in order to ensure performance and maintenance of the deck.

2-1. Cleaning of the "Video Head" (See Figure-1)

① If the picture does not playback normally due to foreign particles or dirt on the "Video Head", carefully apply a "Video Head" cleaning cloth wetted with alcohol to the "Drum"and clean the "Drum" by slowly turning the "Drum" counterclockwise.

Note : Do not directly touch the head attached to the "Drum, Upper".
Although the head is very hard, do not add any vertical pressure to it since it can be easily damaged through impact.

② After cleaning the deck with alcohol, do not allow a tape to be run through the tape transport system until after the "Drum" has dried completely. If alcohol gets on the tape because the "Drum" was not completely dry, that part of the tape may be damaged.

2-2. Cleaning of the Tape Transport System (See Figure-1)

① Clean the tape transport system shown in Figure-1.

② When cleaning the tape transport system, clean it with gauze wetted with alcohol.

③ After cleaning the deck with alcohol, do not allow a tape to be run through the tape transport system until after the transport system has dried completely.
If alcohol gets on the tape because the transport system was not completely dry, that part of the tape may be damaged.

2-3. Cleaning of the "Reel Disk" Driving System

① Clean the brake surface of the "Reel Disk" and the "Belt, Reel" for the "Reel Disk" driving system.

② When cleaning the "Reel Disk" driving system, clean it with gauze wetted with alcohol.

Note : Operate this system only after it has competely dried.

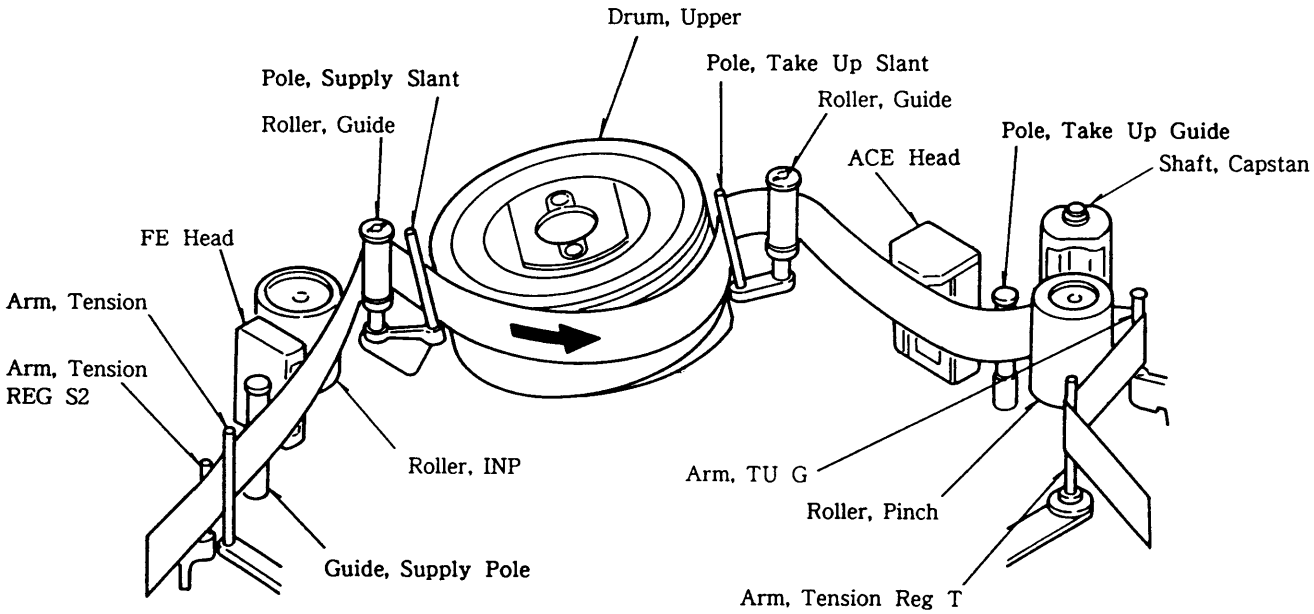


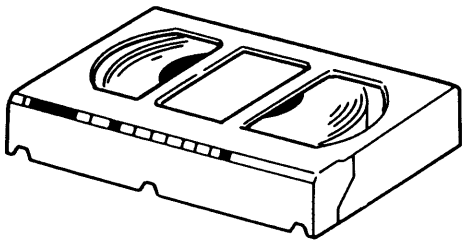
Fig - 1

SERVICE JIG AND TOOLS

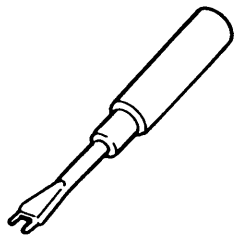
1. SERVICE JIG AND TOOLS

Ref. No.	Name	Adjustment
J-1	Torque Meter (FSJ-VHT-063)	Back Tension
J-2	Special Driver (SMALL)	Tape Running Position, Envelope Waveform
J-3	Special Driver (LARGE)	X value
J-4	Mirror	Tape Transportation check
J-5	Alignment Tape (TTV-P2)	X value, envelope waveform, ACE Head Azimuth
J-6	Alignment Tape (TTV-P1)	ACE Head Height/ACE Head Tilt
J-7	Alignment Tape (TTV-P1L)	Skew correction
J-8	Box Driver M3	Tape running position, X value, envelope waveform
J-9	Box Driver M4	Tape running position, X value, envelope waveform
J-10	Reel Disk Height Jig (for the F deck)	Reel Disk Height (F deck)
J-11	Reel Disk Height Jig (for the E deck)	Reel Disk Height (E deck)
J-12	Hex keys (1.5mm)	Tape running position, X value, envelope waveform
J-13	EXT. PCB. KIT [Parts No. 09-054-018-010]	HA (For repair of circuit board)

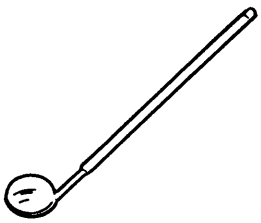
J-1
J-5
J-6
J-7



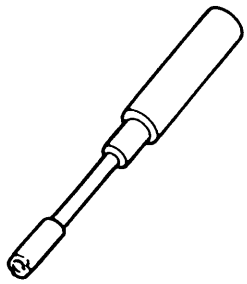
J-2
J-3



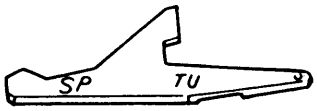
J-4



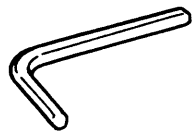
J-8
J-9



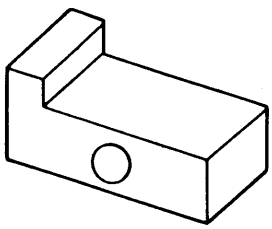
J-10



J-12

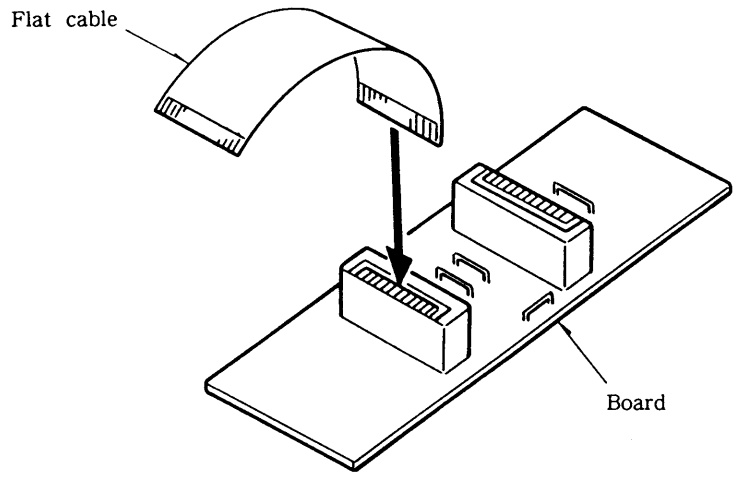


J-11



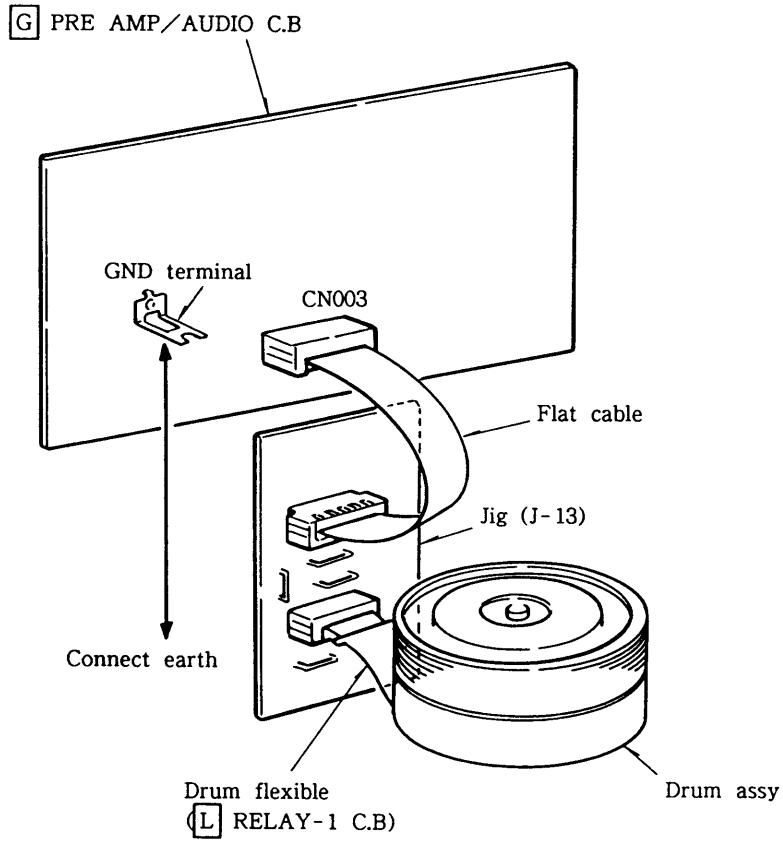
2. HOW TO ASSEMBLE THE JIGS

EXT. PCB KIT (parts number 09-054-018-010)
(1) Creating method



- Solder 2 connectors on the board and 4 wires respectively.
- Insert the flat cable into the connector.

(2) Using method



DISASSEMBLY INSTRUCTIONS

1. "Front Cabinet ASSY" Removal (See Figure-1)

1) Remove the 4 screws (Ⓐ) and then remove the "Cabinet, Steel".

2) Remove the 7 screws (Ⓑ) and then remove the "Plate, Bottom".

3) Remove 6 hooks and then remove the "Front Cabinet ASSY" in the direction of the arrow.

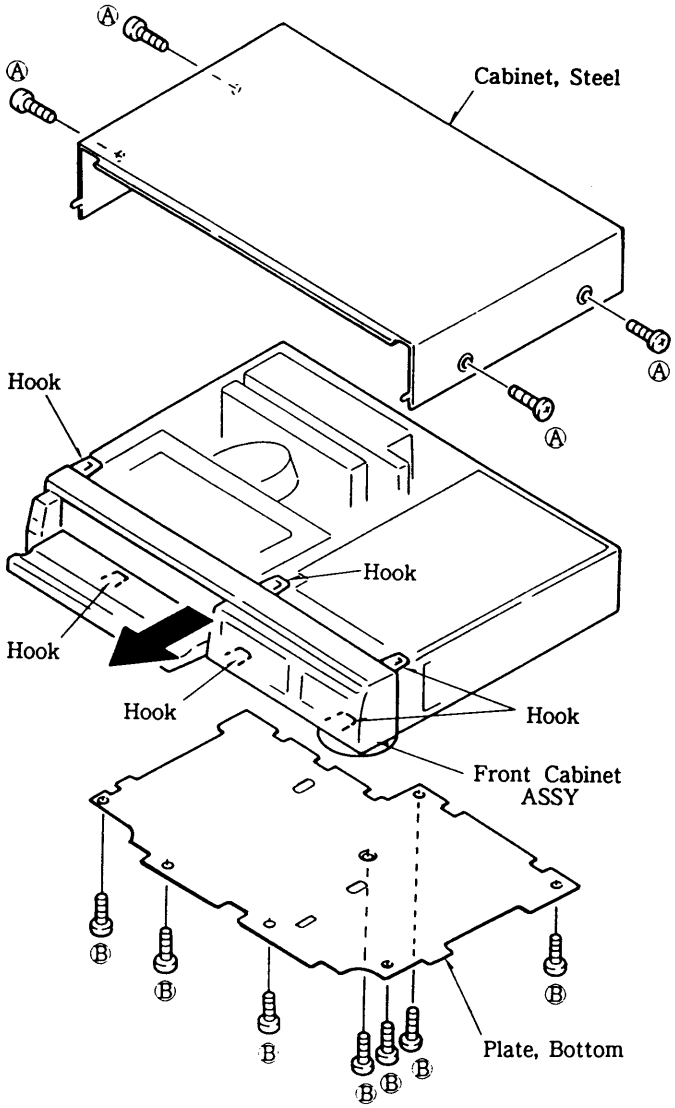


Fig – 1

2. "Panel, Key" Removal (See Figure-2)

1) Raise the "Panel, Key" to a 60-degree vertical angle and remove the hinges from both sides of the "Panel, Key" in the direction of the arrow ①.

2) Pull the "Connector" in the direction of the arrow ②, remove the "Flexible Wire", and then remove the "Panel, Key" in the direction of the arrow ③.

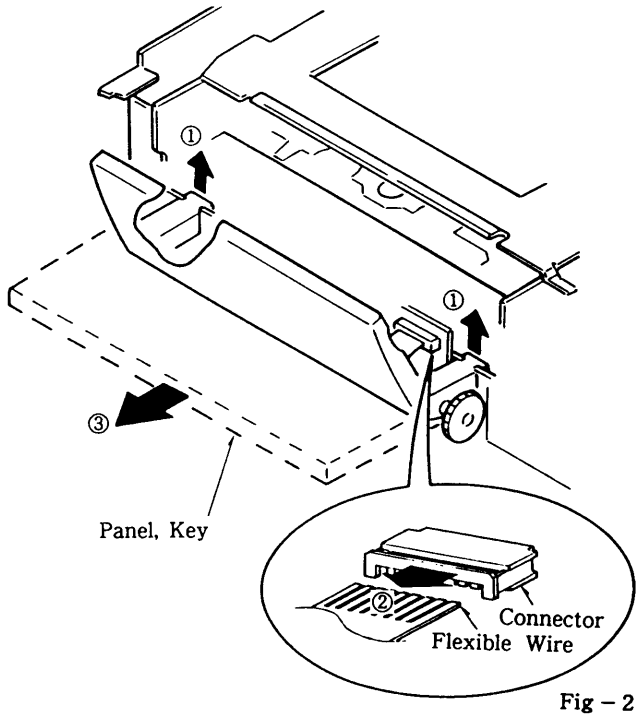


Fig – 2

3. "Main Circuit Board" and "Power Unit" Removal (See Figure-3)

1) Remove the 4 screws (Ⓐ) and then remove the "Main Circuit Board" in the direction of the arrow.

2) Remove the 4 screws (Ⓑ×2, Ⓒ×2) and then remove the "Power Unit".

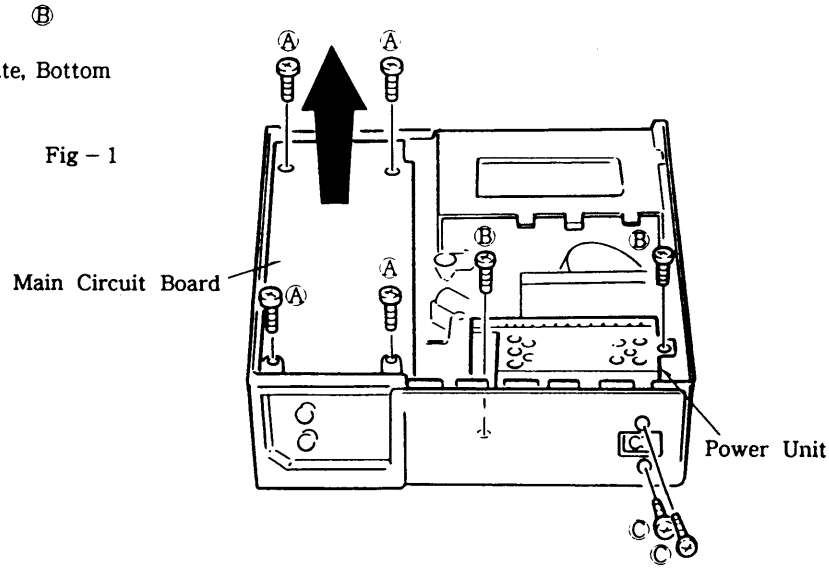


Fig – 3

4. "PRE AMP/Audio Circuit Board" Removal

(See Figure-4)

1) Remove the "Panel, Shield" of the "PRE AMP/Audio Circuit Board" in the direction of the arrow ①. Pull the "Connector" in the direction of the arrow ② and then remove the "Flexible Wire".

2) Remove the 3 screws (Ⓐ) and then remove the "PRE AMP/Audio Circuit Board".

5. "Mechanism ASSY" Removal (See Figure-4)

1) Remove the 5 screws (Ⓑ×3, Ⓒ×2) and then remove the "Mechanism ASSY" in the direction of the arrow ③ by removing two "Connectors".

6. "Unit, F/L F" Removal (See Figure-5)

1) Remove the 2 screws (Ⓐ) and then remove "Unit, F/L F " in the direction of the arrow.

Note 1 : To install the "Unit, F/L F ", align points ⓐ and ⓑ with the left and right pins of "Main Plate ASSY".

Note 2 : Since it is difficult to fit the "Gear, Front Loading" axle into the receptacle on the "Main Plate ASSY", install the "Gear, Front Loading" axle into the receptacle using a screwdriver as shown in Figure-6.

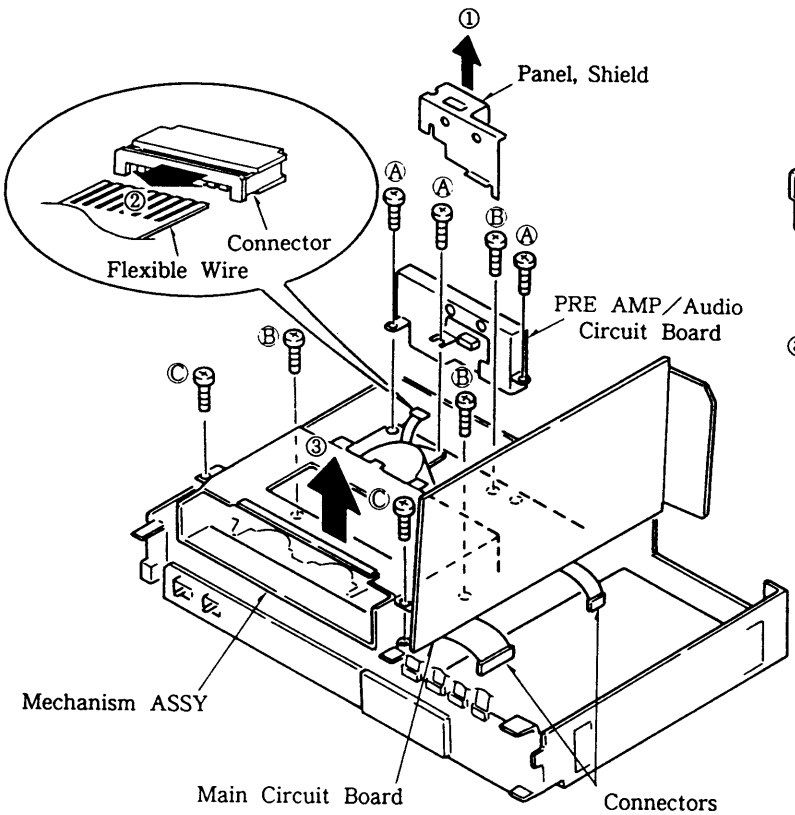


Fig – 4

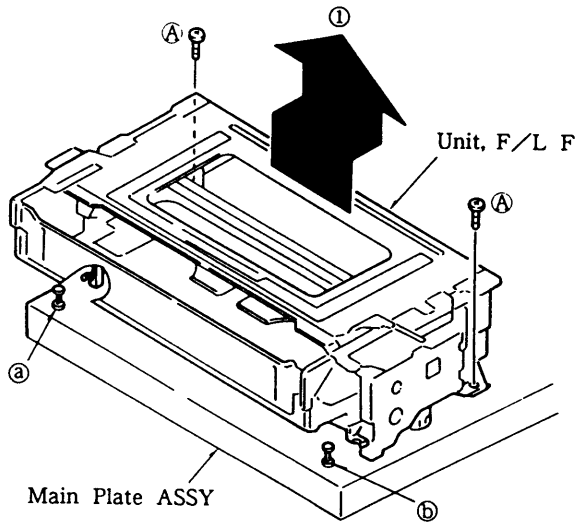


Fig – 5

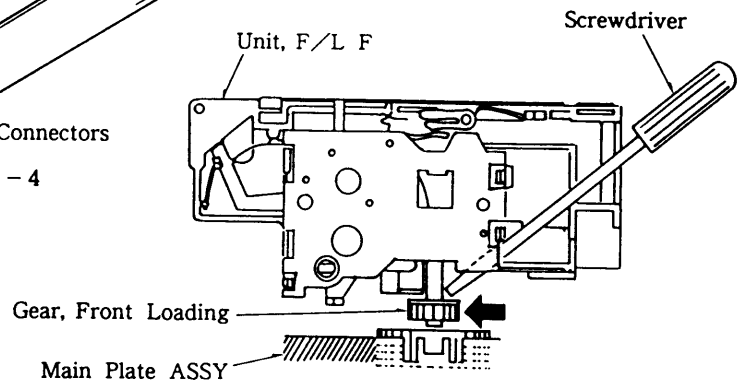


Fig – 6

7. "Drum" Removal (See Figure-7)

1) Remove screw (Ⓐ) and then remove the "Brush".

2) Remove the "Panel, Shield" of the "PRE AMP/Audio Circuit Board" and remove the "Connector" as shown in figure-7-1.

Note 1 : Since the "Flexible Wire" is normally short, be very careful when removing it.

3) Remove the 3 screws (Ⓑ) and then remove the "PRE AMP/Audio Circuit Board".

4) Remove the 3 screws (Ⓒ) and then remove the "Drum" after removing the "Connector" of the "Drum".

Note 1 : Since the "Drum" can be easily damaged, be very careful when handling it.

Note 2 : If the "Drum" has been replaced, make sure to perform all necessary mechanical adjustments.

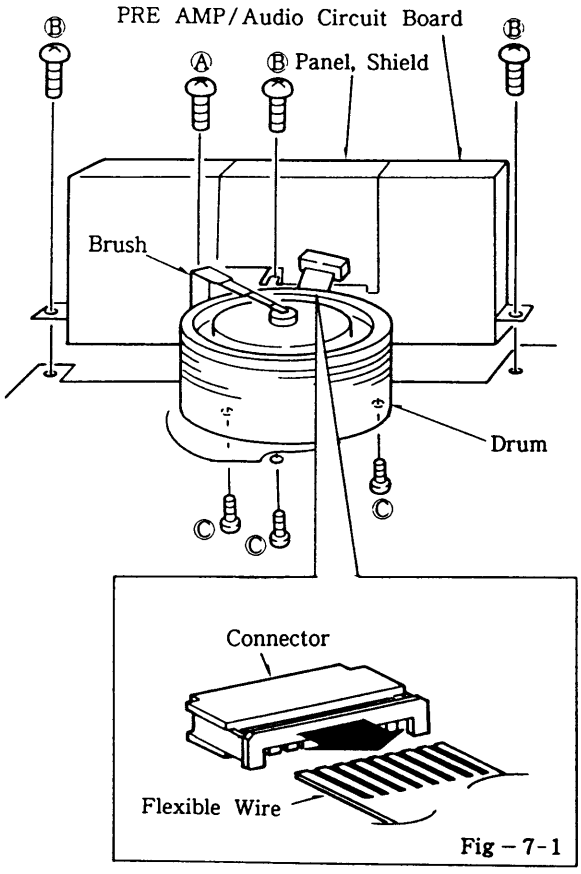


Fig – 7-1

Fig – 7

8. "Drum, Upper" Removal (See Figure-8)

1) Remove the 2 screws (Ⓐ) and then remove the "Drum, Upper" after removing the four solders.

< A word of advice >

If removing the "Drum, Upper" is difficult, heat the hole of screw (Ⓐ) with a soldering iron to make it easier to remove the "Drum, Upper".

Note 1 : To install the "Drum, Upper" match the hole of the "Drum, Lower Shaft" to the ▲ indicated on the "Drum, Upper".

Note 2 : Since the video head tip can be easily damaged, be very careful when handling it.

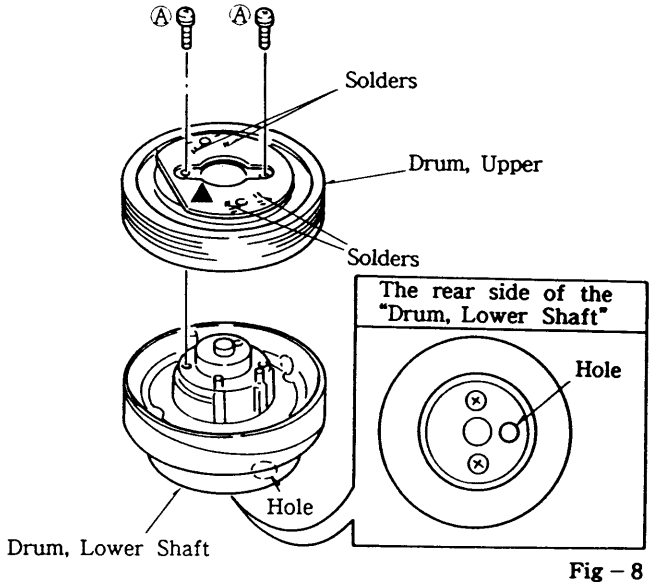


Fig – 8

9. "Motor, Capstan" Removal (See Figure-9)

1) Remove the "Flat Cable" of the "Motor, Capstan".

2) Remove the "Belt, Reel".

3) Remove the 3 screws (Ⓐ) and then remove the "Motor, Capstan".

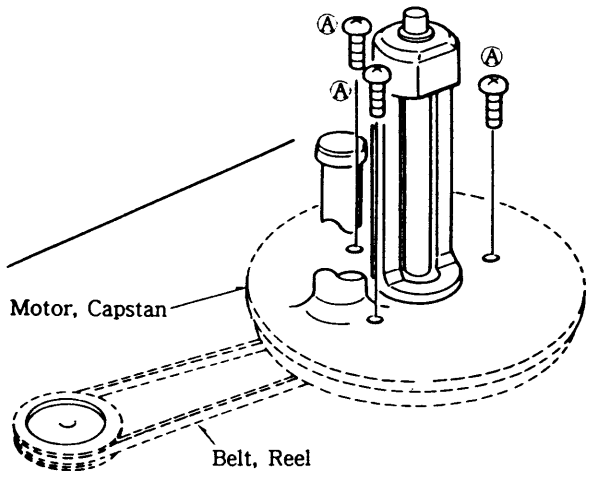


Fig – 9

10. "Motor, Loading" Removal

1) Put the set into the eject mode.

2) Remove the "Connector, Motor Loading".

3) Remove the 2 hooks and then remove the "Plate, Holder M". (See Figure-10-1)

4) Remove the 2 screws (Ⓐ) and then remove the "Motor, Loading". (See Figure-10)

Note : When replacing the "Motor, Loading", remove the "Coupling" from the "Motor, Loading". (See Figure 10-2).
Moreover, when installing the "Coupling", install in intervals as shown in Figure-10-2.

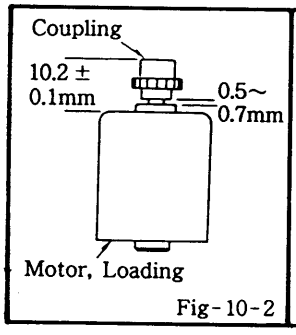


Fig-10-2

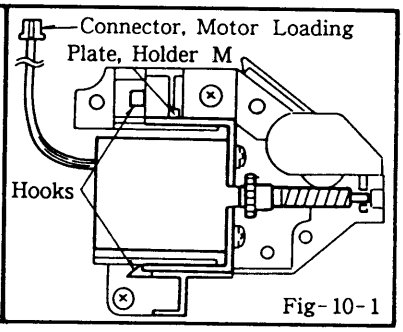


Fig-10-1

11. "Arm Pinch ASSY" and "Arm, TU G" Removal (See Figure-10)

1) Put the set into the eject mode.

2) Remove Ring, Crip (Ⓑ) and then remove the "Cap, Arm Pinch".

3) Remove the "Arm Pinch ASSY".

4) Remove the "Arm, Gear TU G".

5) Remove the "Cam, Pinch".

6) Remove nut (Ⓒ) and then remove the "Arm, TU G" and "Spring, TU G".

Note 1 : Install the "Arm, Gear TU G" and the "Arm, TU G" by aligning the gear of the "Arm, Gear TU G" to the "Arm, TU G" from the edge, as shown in Figure-11.

Note 2 : Install the "Cam, Pinch" by adjusting it to the aligning mark of "Gear, 1". (See Figure-11)

Note 3 : When replacing the "Roller, Pinch", remove the "Cap, Roller" and then insert it, (See Figure-12)

Note 4 : Place the "Reel Disk Height Jig (for the F deck)"on the reference position and then place the "Reel Disk Height Jig (for the E deck)"on top of that. Then tighten and adjust the nut nylon so that the lower flange of the "Arm, TU G" is aligned with the ⓐ point of the "Reel Disk Height Jig (For the E deck)"as shown in Figure-13.

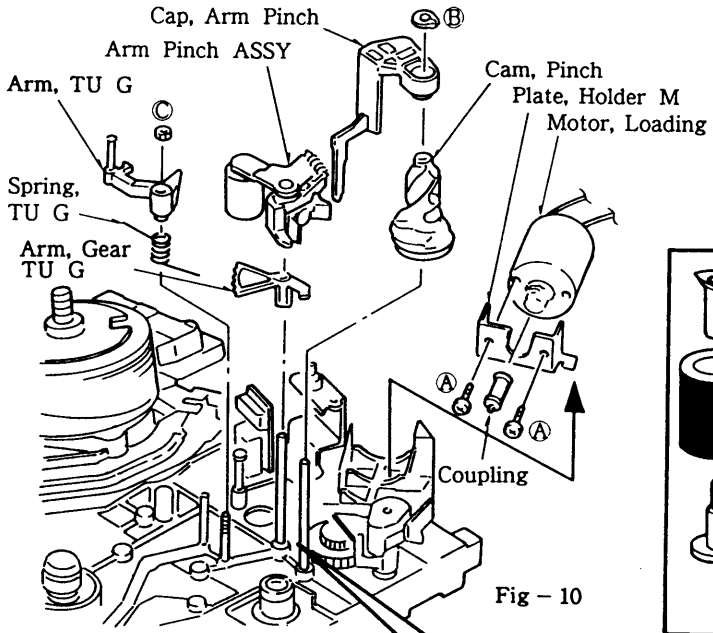


Fig – 10

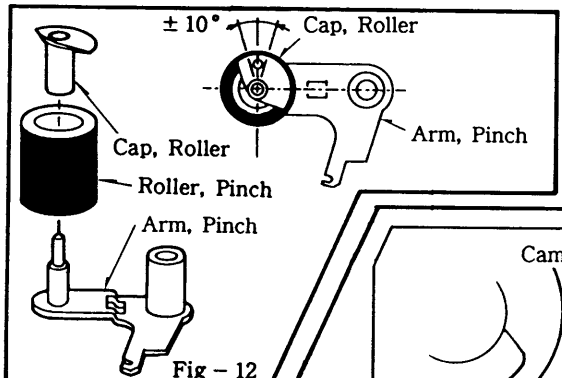


Fig – 12

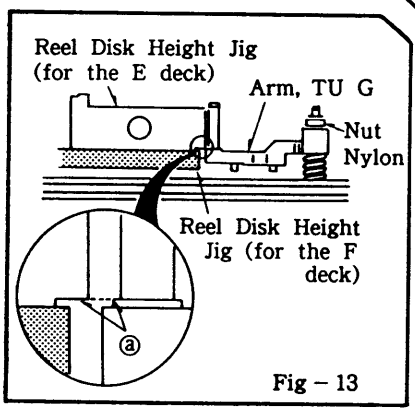


Fig – 13

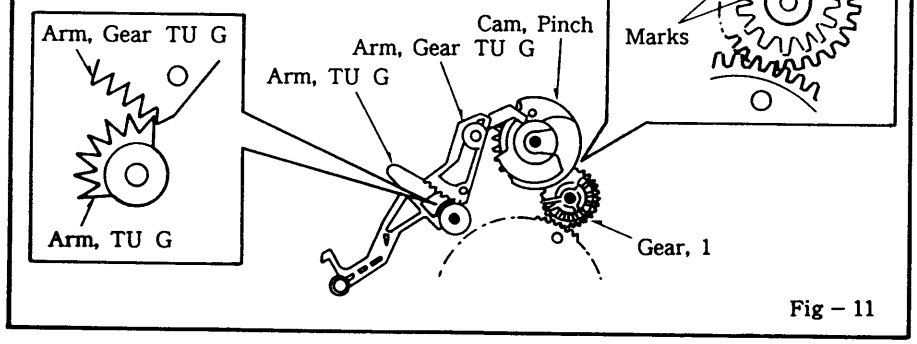


Fig – 11

12. "Switch, Mode" Removal (See Figure-14)

1) Put the set into the eject mode.

2) Remove the 5 "Switch, Mode" solders and remove the "Switch, Mode", by removing 2 hooks.(See Figure-15)

Note : Before installing the "Switch, Mode", always align the matching marks of the "Switch, Mode" and install the "Switch, Mode" by turning and adjusting the "Switch, Mode" as the conductivity between each terminal of the "Switch, Mode" indicates in Figure-15.

< A word of advice >

When installing the "Switch, Mode", be careful that an adjustment discrepancy does not occur due to a "Switch, Mode" discrepancy.

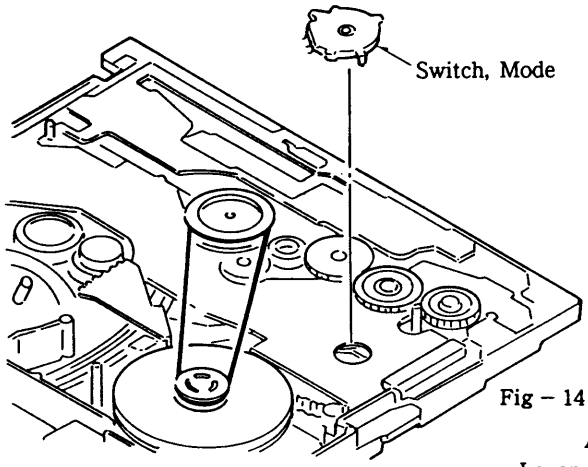


Fig – 14

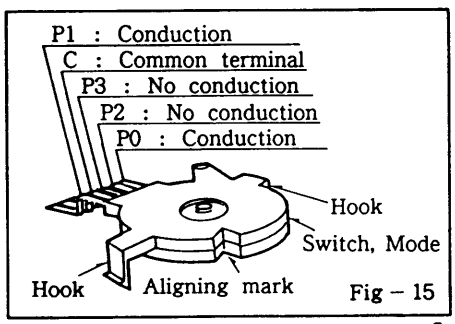


Fig – 15

13. "Reel, Unit Disk (Supply)" Removal (See Figure-16)

1) Remove screw (Ⓐ) and E-Ring (Ⓑ) and then remove the "Arm, Tension REG S2" by removing the "Spring, Tension" while removing the "Holder, T-Band" and "Belt, Tension Brake".

2) Remove the "Spring, Tension REG S2" and "Spring, REC Safety", and then remove the "Lever, REC Safety".

3) Remove the "Brake, Main S" and "Arm, Tension REG S2" while moving the "Brake, Main S" in the direction of the arrow.

4) Remove the "Reel, Unit Disk (Supply)"while being careful of the "Brake, Main S".

Note 1 : When installing the "Lever, Tension", set the "Lever, Tension" pin to point ⓐ

Note 2 : Be careful not to get any scratches or dirt on the "Belt, Tension Brake".

Note 3 : After installing the "Reel, Unit Disk (Supply)", remove the "Brake, Main S" and "Arm, Tension REG S2" from the "Reel, Unit Disk (Supply)" and check that the "Reel, Unit Disk (Supply)" can be turned easily.

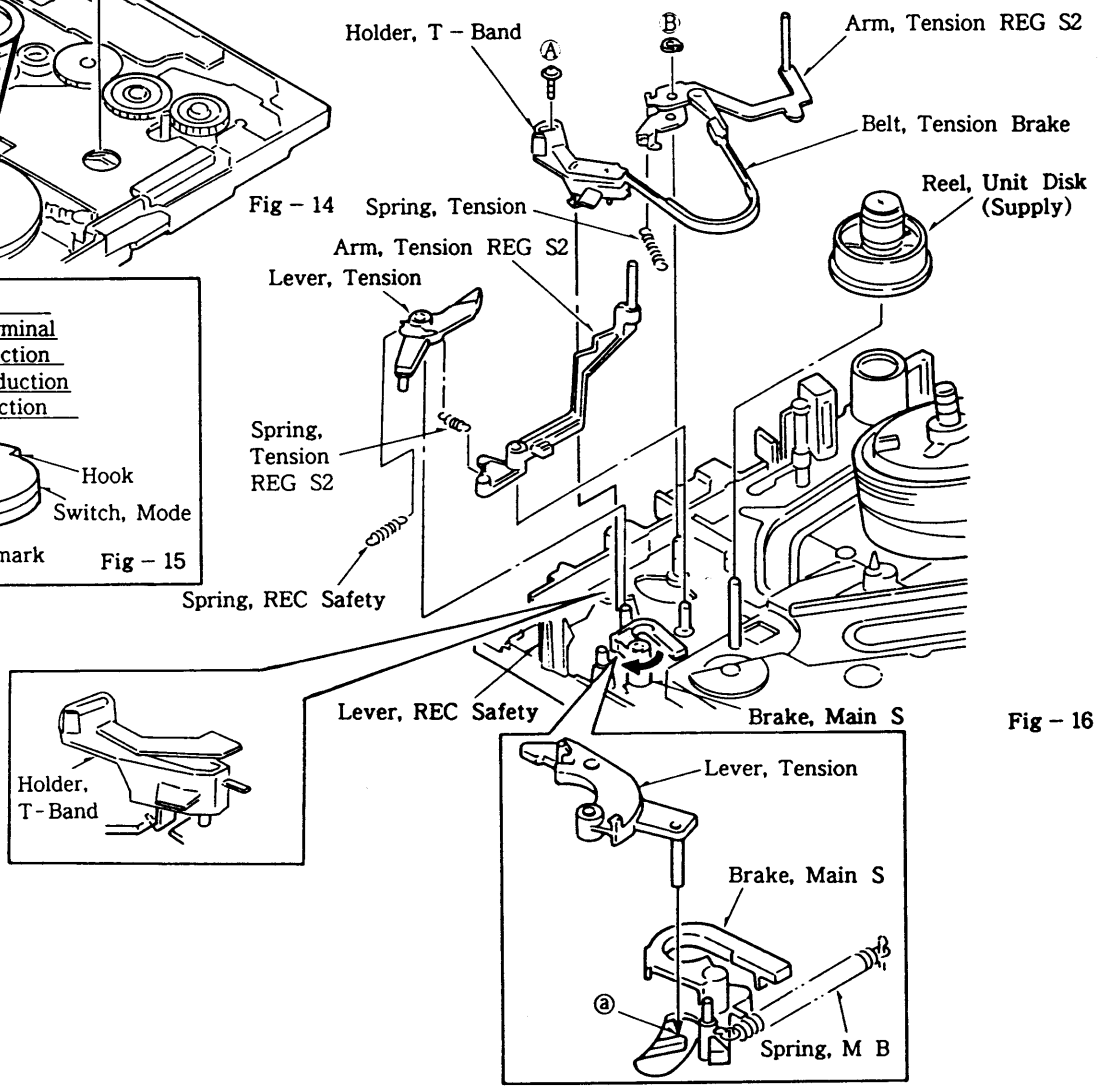


Fig – 16

14. "Reel, Unit Disk (Take-Up)"Removal
(See Figure-17)

1) Remove washer Ⓐ and then remove the "Arm, Tension REG T" by removing the "Spring, Tension REG T2" and "Spring, RS".

2) Remove the "Reel, Unit Disk (Take-Up)" while moving the "Brake, Main T" in the direction of the arrow ①.

Note 1 : After installing the "Reel, Unit Disk (Take-Up)", remove the "Brake, Main T" and "Arm, Tension REG T" from the "Reel, Unit Disk (Take-Up)", and check that the "Reel, Unit Disk (Take-Up)" can be rotated easily.

Note 2 : When installing the "Arm, Tension REG T", install it while moving the "Arm, TU G" in the direction of the arrow ②.

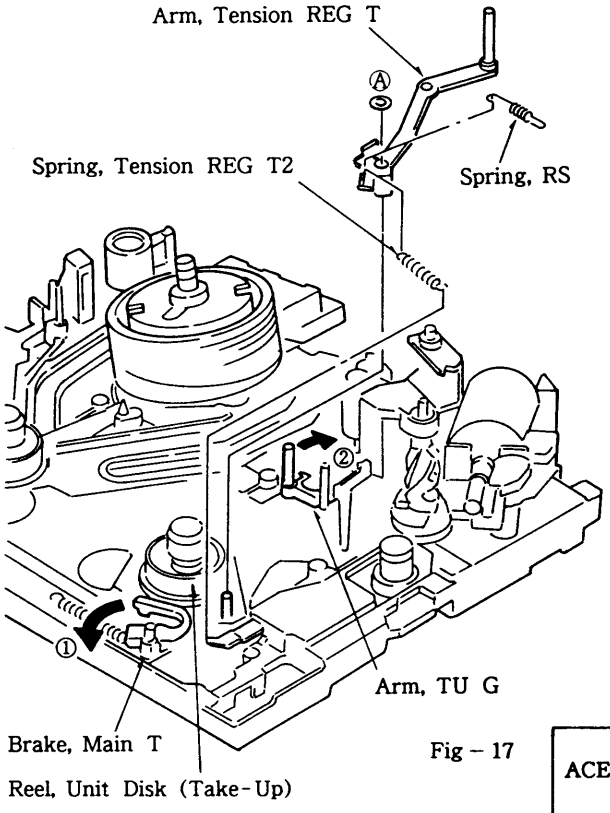


Fig – 17

15. "ACE Head Circuit Board ASSY" Removal
(See Figure-18)

1) Remove the "ACE Head Circuit Board" connector.

2) Remove the nut Ⓐ and then remove the "ACE Head ASSY".

3) Remove the 3 screws (Ⓑ× 1, Ⓒ× 1, Ⓓ× 1) and then remove the "ACE Head Circuit Board" by removing the "ACE Head Circuit Board" solder. (See Figure 18-1)

Note 1 : When installing the "ACE Head ASSY", insert the "Spring, Arm ACE" into the "ACE Head ASSY" while turning it about 60 degrees in the direction of the arrow ①.

Note 2 : When installing the "ACE Head ASSY", install it by matching it to the measurement of Figure-19.

Note 3 : When replacing the "ACE Head ASSY", perform the "ACE Head ASSY "and phase adjustments.

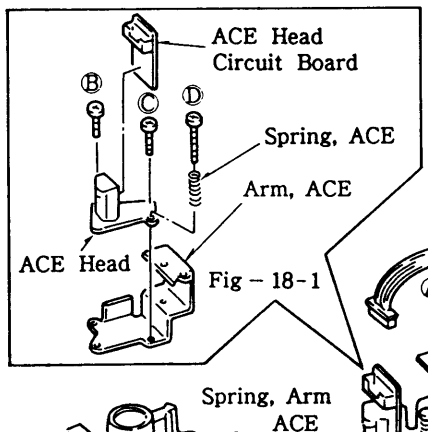


Fig – 18-1

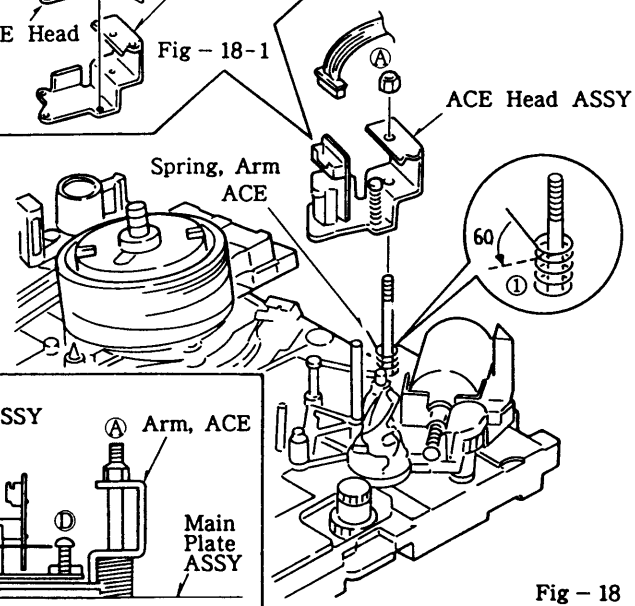


Fig – 18

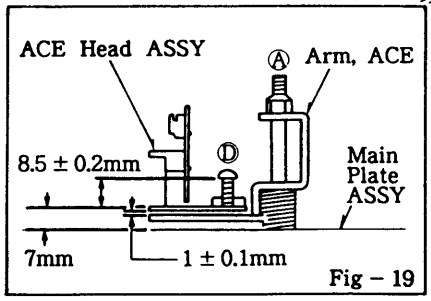


Fig – 19

16. "Base Circuit Board" Removal
(See Figure-20)

1) Remove the "Spring, B CP SUS 304 WPB".

2) Remove the "Belt, Reel".

3) Remove the E-Ring Ⓐ and then remove the "Arm, Gear Load". (See Figure-21)

4) Remove the solder of the "FE Head Terminal". (See Figure-21)

5) Remove the "Gear, F/L2, Gear, F/L3, Gear, F/L4". (See Figure-21)

6) Remove the 2 E-Rings (Ⓑ× 1 , Ⓒ× 1) and then remove the "Plate, Unit Cam B". (See Figure-21)

7) Remove the 5 screws (Ⓓ) and remove the "Base Circuit Board". (See Figure-21)

Note 1 : When installing the "Base Circuit Board", check that the "Switch, Mode" is set to Eject Mode before installation.

Note 2 : When installing the "Base Circuit Board", install it while pulling the "Lever, REC Safety" in the direction of the arrow ①. (See Figure-22)

Note 3 : When installing the "Plate, Cam C", make sure that the "Magnet, Latch" lever does not run aground on the "Plate, Cam C" at point ⓐ before installation. (See Figure-22)

Note 4 : When installing the "Arm, Gear Load", match the "Arm, Load T" and "Arm, Gear Load" marks, and install the "Arm, Gear Load" so that the "Arm, Gear Load" pin fits in the "Cam, Main 2" slot at point ⓑ. (See Figure-22)

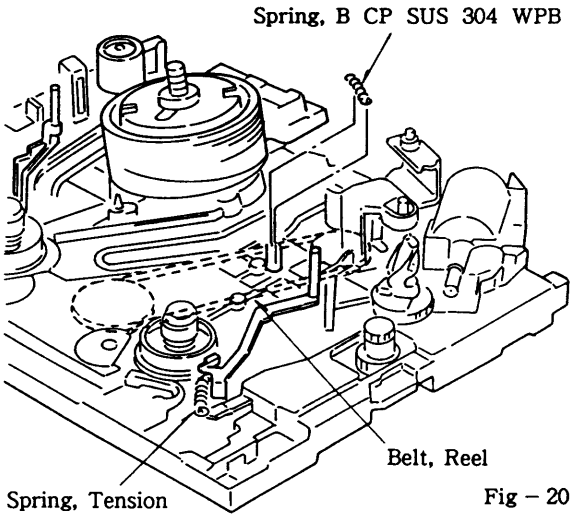


Fig – 20

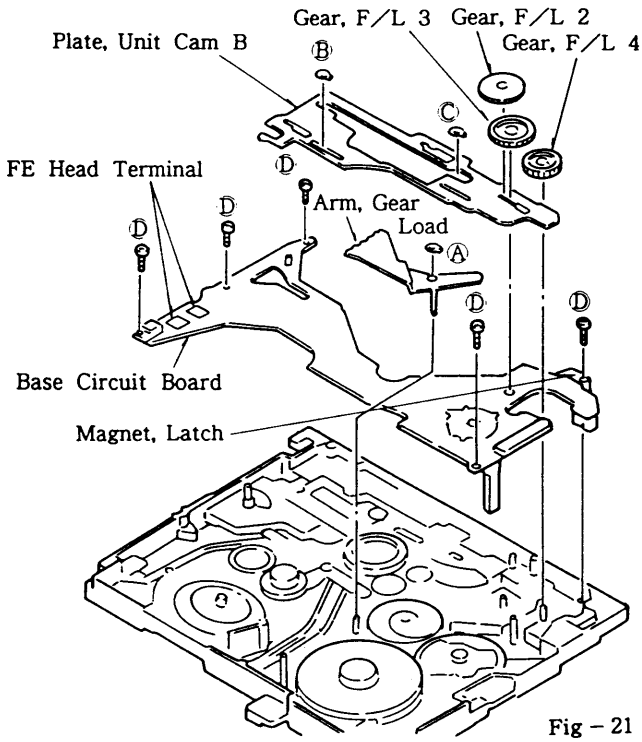


Fig – 21

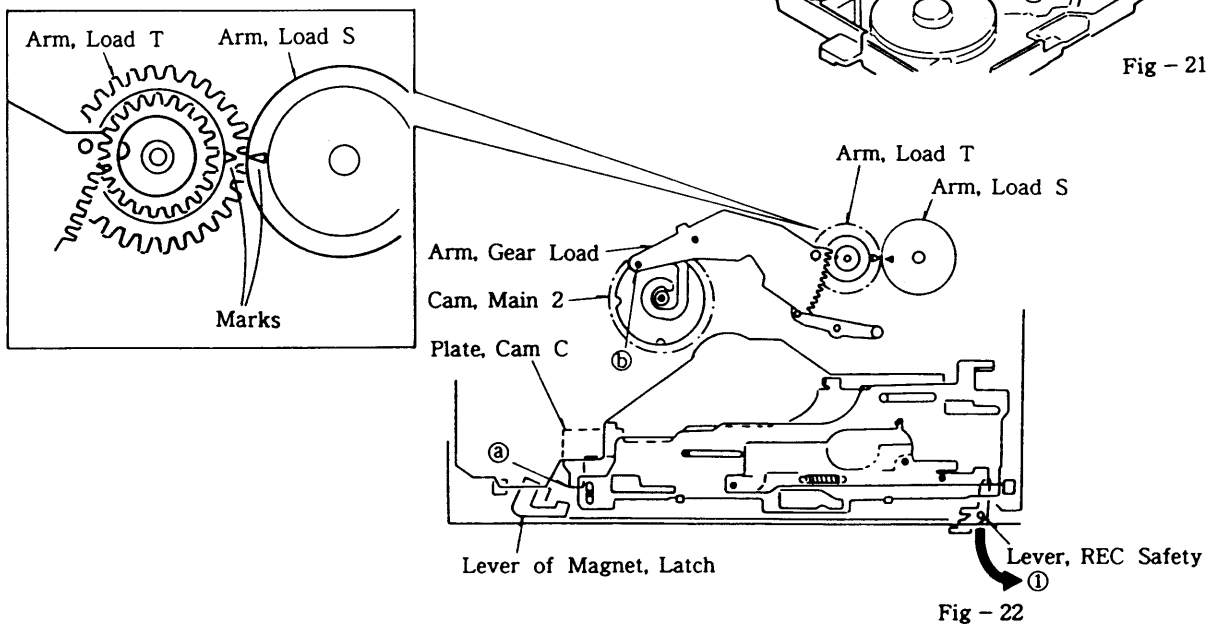


Fig – 22

17. Installation Instructions for Peripheral Components to the "Cam, Main 1"

1) Install "Lever, RS" by matching its hole to the specified hole ⓐ of the "Main Plate ASSY". (See Figure-23)

2) Install "Lever, C" by matching its hole to the specified hole ⓑ of the "Main Plate ASSY". (See Figure-23)

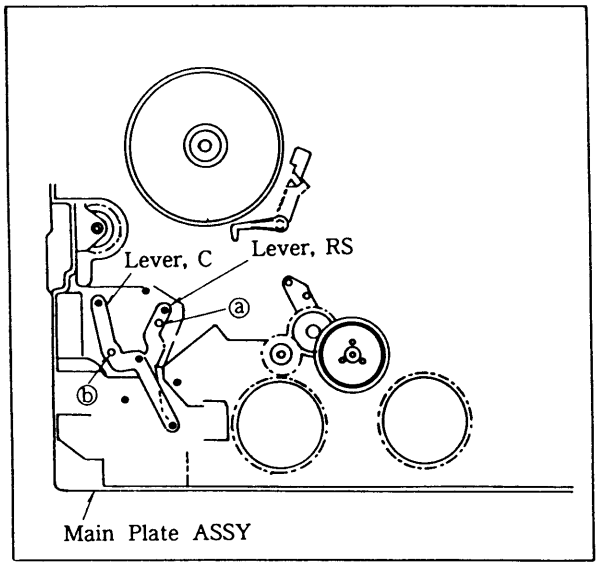


Fig – 23

3) While being careful not to move "Lever, RS" and "Lever, C", install the "Cam, Main 1" to Clip Ring Ⓐ by aligning it with the "Gear, Joint" mark ⓒ and at the same time aligning the specified hole of the "Cam, Main 1" with the specified hole ⓓ of the "Main Plate ASSY". (See Figure-24)

4) Install "Plate, Cam C" with Slide Washer Ⓑ so that positions ⓔ through ⓚ are aligned.

5) Install "Spring, Cam C" to "Plate, Cam C" and the "Holder, P Cam". (See Figure-24)

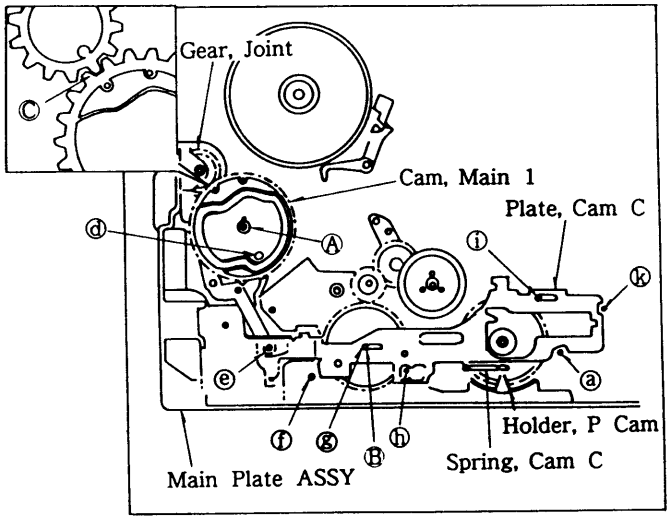


Fig – 24

6) Install "Lever, B" with clip ring ⓒ by setting the "Lever, B" pin to the cam slot of "Cam, Main 1" point ⓘ (See Figure-25)

7) Install "Lever F/L ID" by aligning its hole with the specified hole ⓜ of the "Main Plate ASSY". (See Figure-25)

8) Set "Cam, Main 2" to the matching marks of "Cam, Main 1" Point ⓝ and at the same time, align the specified hole of "Cam Main 2" with the specified hole ⓠ of the "Main Plate ASSY" to install "Cam, Main 2". (See Figure-25)

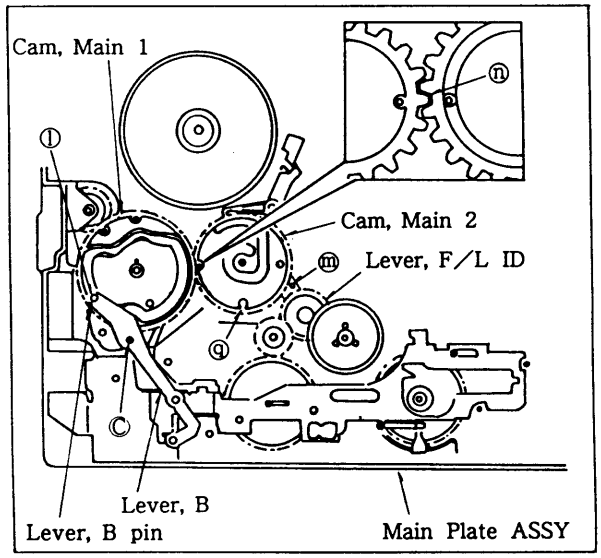


Fig – 25

9) Install the "Base Circuit Board" using 5 screws Ⓐ and solder the "FE Head Terminal". At this time, check that the "Switch, Mode" is set to eject. (See Figure-26)

Note : When installing the "Base Circuit Board", install it while pulling the "Lever, REC Safety".

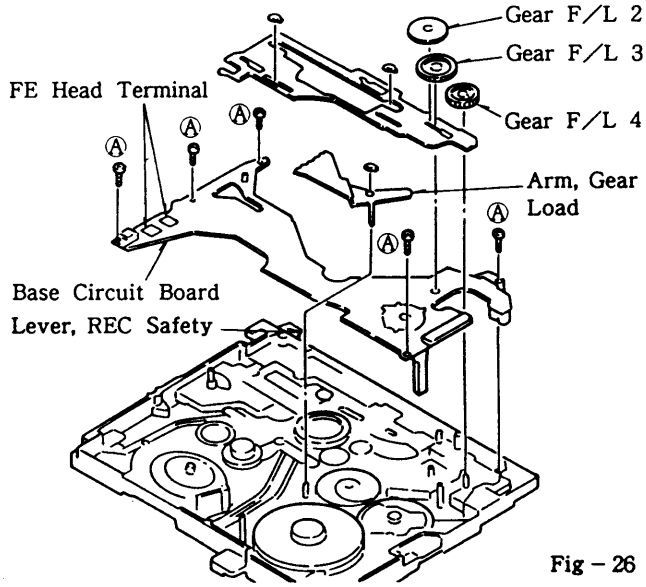


Fig – 26

10) Install the "Plate, Unit Cam B" while matching it to positions ⓠ ~ ⓦ so that it will be fixed at the Hooks of 3 places and Clip Rings (Ⓔ× 1, Ⓕ× 1) (See Figure-27)

11) While matching the "Arm, Load T" and "Arm, Gear Load" marks, install the "Arm, Gear Load" at Clip Ring Ⓖ so that the "Arm, Gear Load" pin fits the "Cam, Main 2" slot at point ⓧ (See Figure-27)

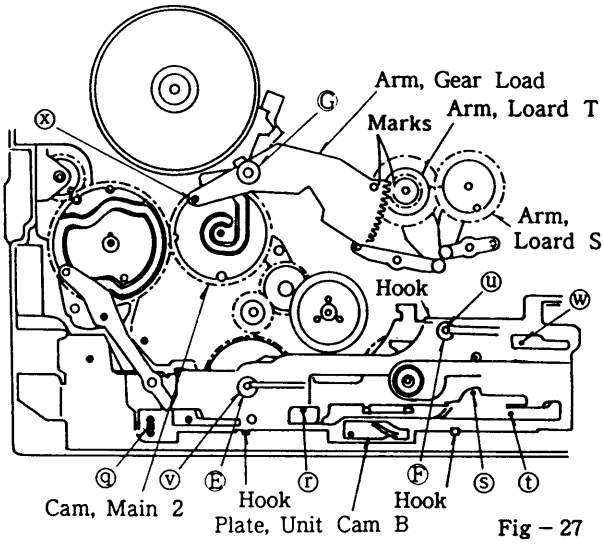


Fig – 27

12) Install "Gear F/L2","Gear F/L3" and "Gear F/L4" to the shaft and then install the "Belt, Reel". (See Figure-26)

13) Install the "Spring, Tension REG T2" to the "Arm, Tension REG T" and "Lever, RS". (See Figure-28)

14) Install the "Spring, B CP SUS 304 WPB" to the "Brake CP" and "Arm, Gear Load". (See Figure-28)

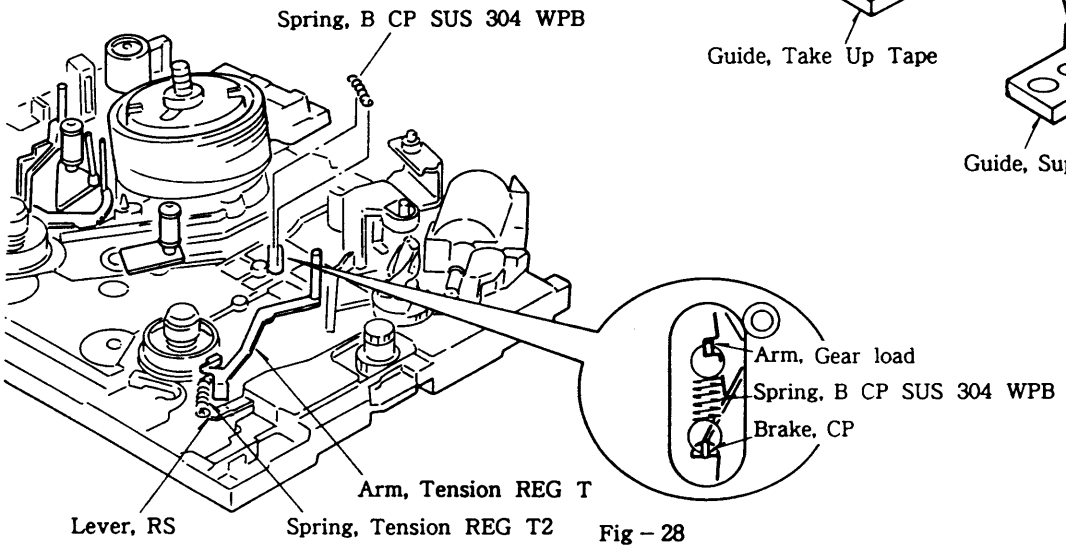


Fig – 28

18. "Roller, Guide" Removal (See Figure-29)

1) Remove "Unit F/L F".

2) Loosen the "Screw, Set" such that the "Roller, Guide" can be easily rotated.

3) Loosen the height adjustment screw at the top part of the roller, guide by rotating it counterclockwise using the special driver and remove it from the "Guide Tape" by unscrewing and by lifting it up to the top.

Note : When replacing the "Roller, Guide", check that a rubber ring is attached to the "Roller, Guide" installation part before installation.

4) "Roller, Guide" Installation

4-1) Slowly turn the "Roller, Guide" clockwise and after tightening it about 1/6 of a turn, turn it by a turn counterclockwise.

4-2) Slowly turn the "Roller, Guide" clockwise again and tighten it about 1/6 of a turn after turning becomes difficult.

4-3) Carefully fix the "Roller, Guide" in place using the "Screw, Set" and then check and adjust it in the FM Envelope as described in the mechanical compatibility adjustments.

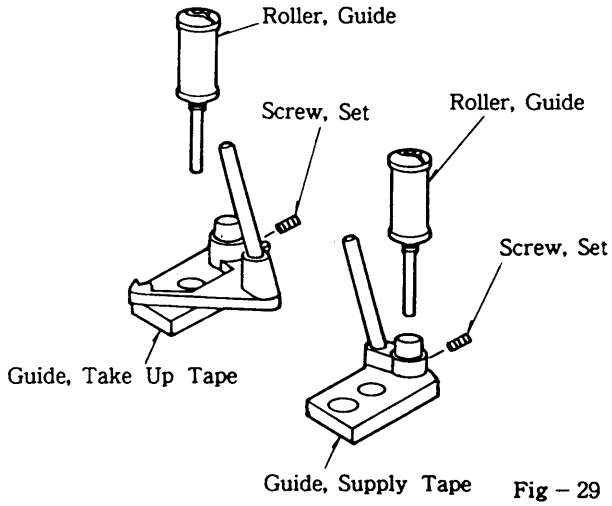


Fig – 29

19. "Guide Tape S ASSY" and "Guide Tape T ASSY" Removal

1) Remove "Unit F/L F".

2) Remove the "Spring, B CP SUS 304 WPB". (See Figure-30)

3) Remove the "Belt, Reel".

4) Fix a rubber ring to the "Arm, Tension" and "Arm, Tension REG S2" so that they separate from the " Roller, Guide (Supply)". (See Figure-30)

5) Turn the "Unit, IMP Roller" 90 degrees in the direction of the arrow ⓐ so that it separates from the "Drum". (See Figure-30)

6) Remove Clip Ring Ⓐ and then remove the "Arm, Gear Load". (See Figure-31)

7) Set "Arm, Load S" and "Arm, Load T" as shown in the figure by rotating them. (See Figure-31)

8) Remove the hook which stops the "Arm, Load S" in the direction of the arrow ⓑ as shown in Figure-3, and then remove the "Arm, Load S".(See Figure-32)

9) Remove the "Arm, Load T".(See Figure-31)

10) Remove the "Guide Tape S ASSY" and "Guide Tape T ASSY" from the "Slider of hooks" to fix them. (See Figure-33)

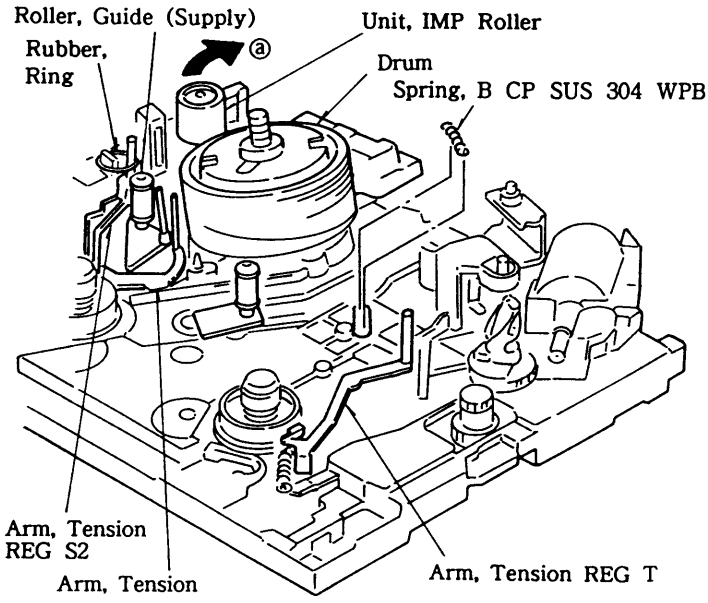


Fig – 30

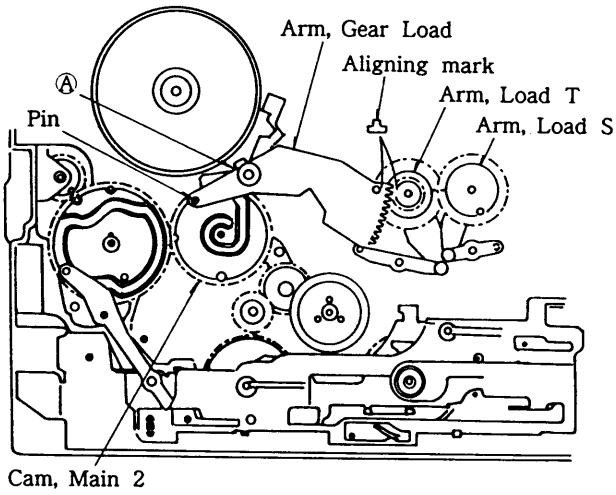


Fig – 31

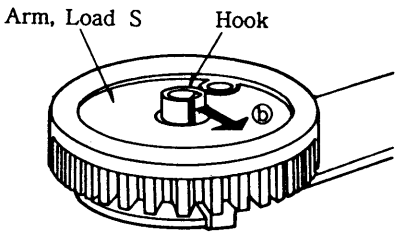


Fig – 32

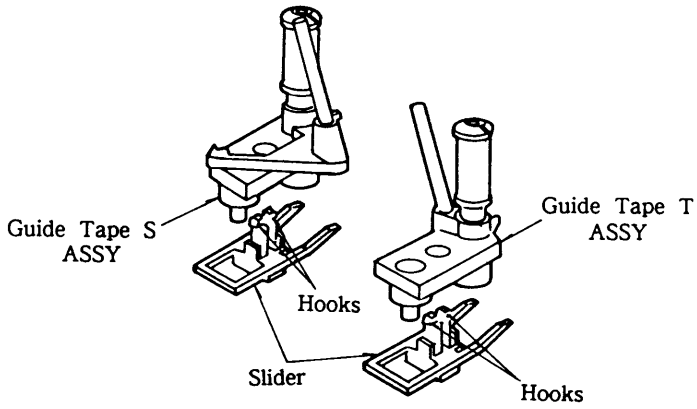


Fig – 33

MECHANICAL ADJUSTMENT – 1

1. Reel Disk Height Adjustment

★ When replacing the "Reel, Unit Disk (Supply)" and "Reel, Unit Disk (Take-Up)", perform the following adjustments.

1) Place the "Reel Disk Height Jig (for the F deck)" on the reference position as shown in the figure. (See Figure-1)

2) Slide the "Reel Disk Height Jig (for the F deck)"on the axle (point Ⓐ) in the direction of the arrow ① and adjust the "Reel Disk Height Adjustment Screw" so that the upper surface of the "Reel, Unit Disk (Supply)" is aligned with the "Reel Disk Height Jig (for the F deck)" at point Ⓑ as shown the figure below. (See Figure-2)

3) Slide the "Reel Disk Height Jig (for the F deck)"on the axle (point Ⓐ) in the direction of the arrow ② and adjust the "Reel Disk Height Adjustment Screw"so that the upper surface of the "Reel, Unit Disk (Take-up)" is aligned with the "Reel Disk Height Jig (for the F deck)" at point Ⓒ as shown the figure below. (See Figure-3)

Note 1 : Adjusting Height of Reel Disk
- In order to raise up the "Supply Reel Disk", turn the "Reel Disk Height Adjustment Screw" Clockwise.
- In order to lower the "Supply Reel Disk", turn the "Reel Disk Height Adjustment Screw" counterclockwise.

Note 2 : After performing the Reel Disk Height Adjustment, be sure to apply locking compound to the screws.

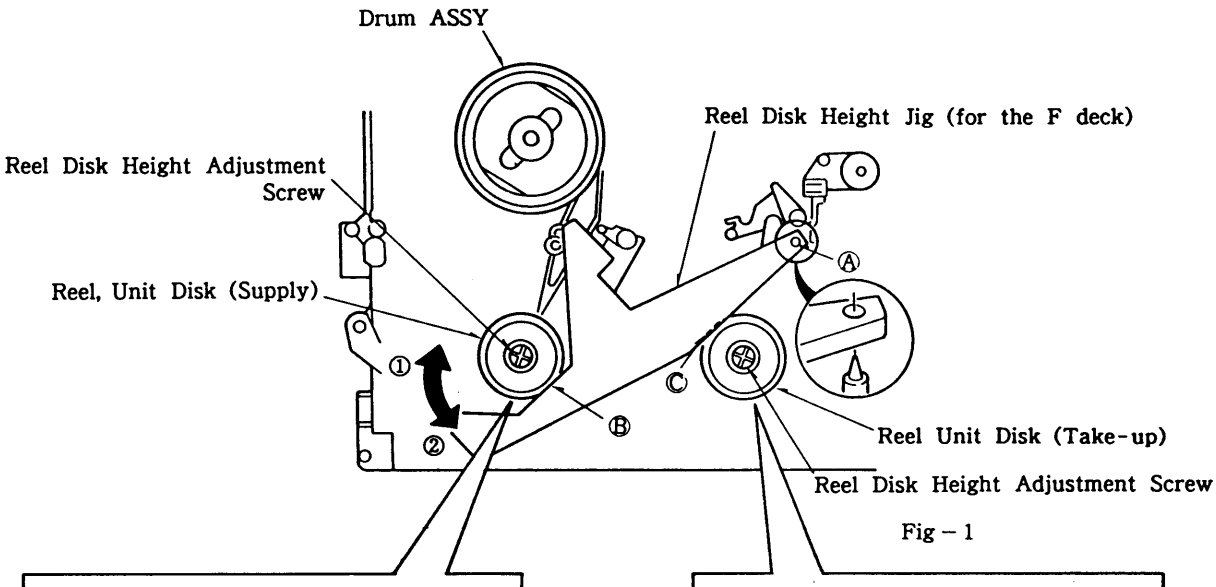


Fig – 1

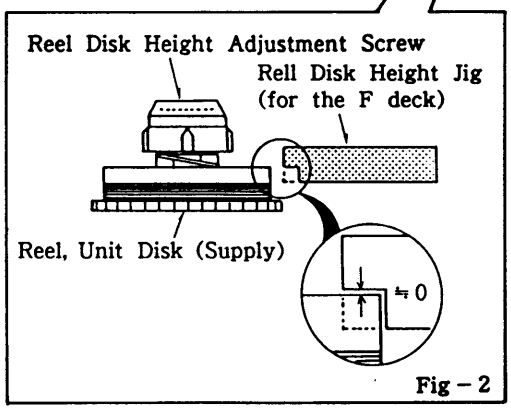


Fig – 2

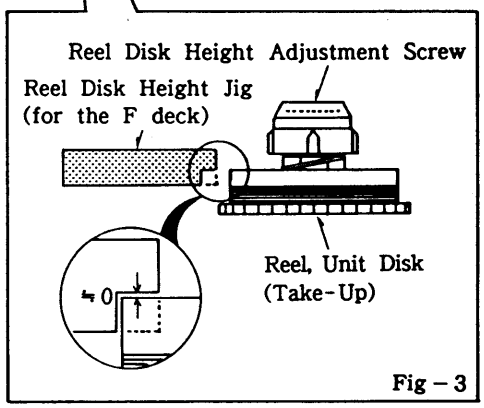


Fig – 3

2. Back Tension Adjustment And Position Adjustment

Note : Before performing these adjustments, let the recording or playback run for a few minutes to allow it to become familiar with the "Reel Disk"and transport system.

1) Set the "Torque Meter" and then put the set into the playback mode.

2) After checking that the transport mode of the tape is stabilized, read the indicated value of the "Torque Meter" and check that the value meets the specified value of 50 ± 12 g-cm.

3) If the reading of the "Torque Meter" is greater than 62 g-cm, carefully loosen the screw that stops the "Holder, T Band", move it in the direction of the arrow Ⓐ, and adjust so that the reading of the "Torque Meter" is 50 g-cm.

4) If the reading of the "Torque Meter" is less than 38 g-cm, lightly loosen the "screw" that stops the "Holder, T Band", move it in the direction of the arrow Ⓑ, and adjust so that the reading of the "Torque Meter" is 50 g-cm.

5) After the adjustment has been completed, tighten the "Holder, T Band" stopping screw.

6) Check that the check hole of the "Arm, Tension" is aligned with the "M/P Hole" on the "Main Plate ASSY".

7) After tape transport has stablized, check that the tilt of the tension pole is less than 1 mm and check that the adjustment made in item ⑥ above is satisfactory through visual inspection.

Note : Although no exact specifications concerning variations in width of the back tension are given, look for and correct any variation of more than 5 g-cm since shifts and scratches on the "Reel Disk" may result.

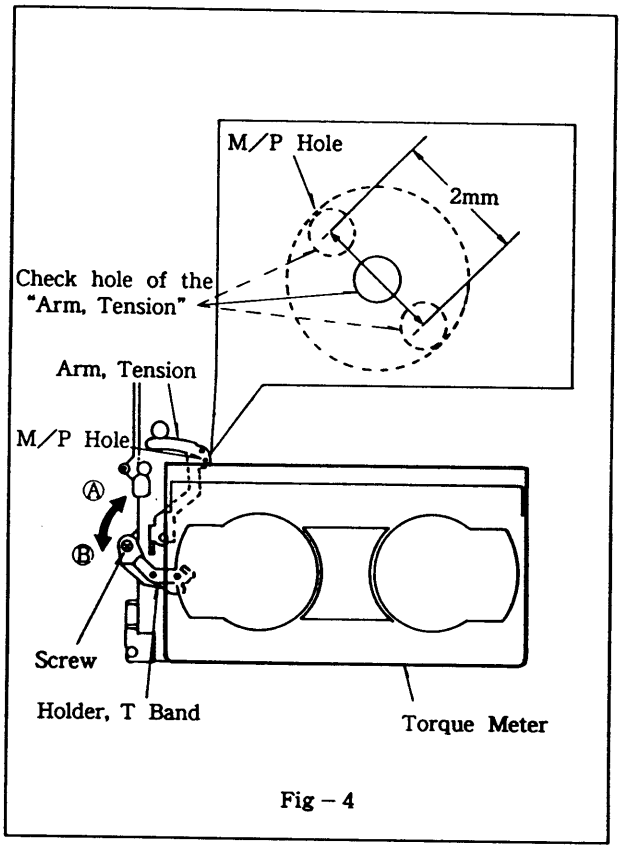


Fig – 4

NOTE:

As regards the resisters and capacitors, refer to the circuit diagrams and the PCB assy drawings contained in this manual.

PWB COMBI B COMPL PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION
	*9A02827540	PWB COMBI B COMPL(PCB ASSY) (CONSISTS OF MAIN,PRE AMP PCB SECTION)
	*9A02840900	PWB, COMB B (CONSISTS) (CONSISTS OF MAIN,PRE AMP/AUDIO,PCB)

PCB-A.....MAIN PCB SECTION

CF101	9A02451600	FLTR,SFS 5.06ME
CN003	9A02840200	CONN, 9P 52030 V
CN101	9A02439100	CONN, 7P 8283 V WHT
CN102	9A02840700	CONN, 8P 8283 V WHT
CN103	9A02840800	CONN, 8P 8283 V RED
D104	9A02436600	DIODE,1SS133
D106,301	9A02436600	DIODE,1SS133
DL101	9A02838800	DL,2H ADL-CX22W
FL101	9A02838500	FLTR,LPF 1.1MHZ
FL102	9A02838600	FLTR,BPE 4.43MHZ
FL103	9A02838700	FLTR,LPF 3.1MHZ
FT101	9A02839300	F-CABLE, 9-2.0 240
FT102	9A02839400	F-CABLE, 9-2.0 220
FT103	9A02839200	F-CABLE,12-2.0 160
FT104	9A02839100	F-CABLE,13-2.0 140
IC001	9A02839900	IC,BA7274S
IC101	9A02839800	IC,BA7280AS
IC102	9A02446600	IC,LA7333
IC103	9A02446000	IC,LC8992
IC104,106	9A02446400	IC,LVA 522S
IC108	9A02840000	IC,LA7210
IC301	9A02840100	IC,LA7913
IC302	9A02840400	IC,TC4053BP
IC303	9A02839700	IC,BA10393N
IC304	9A02455200	IC,UPC574J
IC306	9A02840300	IC,NJM78M09
IC307	9A02839600	IC,ICP-N10
J101	9A02820900	JACK,PIN 4P YBYB
L001,004	9A02451300	COIL, 47UH
L005	9A02841600	COIL,4.7UH EL0606 J
L102,109	9A02451300	COIL, 47UH
L105	9A02451400	COIL, 18UH J
L106	9A02451000	COIL,3.3UH LAL02
L107,108	9A02451100	COIL, 68UH LAL02 MV-308
L113,118	9A02823900	COIL, 82UH LAL02
L114	9A02841500	COIL, 390UH
L115	9A02439700	COIL, 47UH
L116	9A02439600	COIL, 15UH LAL02
L119	9A02841400	COIL,180UH
L123	9A02439800	COIL, 180UH LAL02

Parts marked with *require longer delivery time

PWB COMBI B COMPL PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION
L301-305	9A02451300	COIL, 47UH
Q101,165	9A02455000	TR.,DTA144ES
Q109,114	9A02436700	TR.,DTC144ES
Q111,116	9A02442300	TR.,2SC1740S(RS)
Q117,120	9A02442300	TR.,2SC1740S(RS)
Q121	9A02455000	TR.,DTA144ES
Q125,126	9A02442300	TR.,2SC1740S(RS)
Q127,153	9A02442400	TR.,2SA933S(RS)
Q128-130	9A02442300	TR.,2SC1740S(RS)
Q132,133	9A02442300	TR.,2SC1740S(RS)
Q134,138	9A02436700	TR.,DTC144ES
Q137,154	9A02825000	TR.,DTA114YS
Q140,142	9A02442300	TR.,2SC1740S(RS)
Q143,162	9A02442300	TR.,2SC1740S(RS)
Q156,159	9A02436700	TR.,DTC144ES
Q157,164	9A02442400	TR.,2SA933S(RS)
Q160	9A02436700	TR.,DTC144ES
Q163,301	9A02442300	TR.,2SC1740S(RS)
Q251,282	9A02442400	TR.,2SA933S(RS)
Q302	9A02842600	TR.,DTC144WS
RF301	9A02450900	RF MOD,S130A
SFR101	9A02454700	SFR, 10K DIA6 V
SFR102	9A02824700	SFR, 22K DIA6 V
SFR103	9A02824700	SFR, 22K DIA6 V
SFR104	9A02824700	SFR, 22K DIA6 V
SFR105	9A02454500	SFR, 1K DIA6 V
SFR106	9A02824800	SFR, 47K DIA6 V
SFR107	9A02842500	SFR,4.7K DIA6 V
SFR108	9A02454700	SFR, 10K DIA6 V
SFR109	9A02824600	SFR,330 DIA6 V
TU301	9A02450700	TV TU,4EA-721
VIF301	9A02839500	VIF PAC,01A-02
X102	9A02840500	VIB,CER KBR500AH2

PCB-G.....PRE AMP/AUIDO PCB SECTION

BT001	9A02839000	CONN ASSY, 8P RV-11
BT004	9A02838900	CONN ASSY, 7P RS-11
CN002	9A02840600	CONN, 3P 8283 H WHT
D001	9A02436600	DIODE,1SS133
L006	9A02841700	COIL, 22UH EL0606 J
Q001,002	9A02442300	TR.,2SC1740S(RS)
Q115	9A02844800	TR.,2SA1015GR
Q119	9A02844900	TR.,2SC1923(O)
SH004	9A02838400	CLAMP,EARTH 1
X101	9A02458800	VIB,XTAL 4.43M

PWB COMBI C COMPL PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION
	*9A02827640	PWB COMBI C COMPL(PCB ASSY)
	(CONSISTS OF SYSCON/SERVP PCB SECTION)	
	*9A02847200	PWB, COMB C (CONSISTS)
	(CONSISTS OF SYSCON/SERVO PCB)	
	PCB-B.....SYSCON/SERVO PCB SECTION	
CN401	9A02846400	CONNECTOR, 4P PH V WHT
CN503	9A02846600	CONNECTOR,12P 52147 MXJ
CN504	9A02846700	CONNECTOR,13P 52147 MXJ
CN505	9A02846900	CONNECTOR,21P FE V
CN506	9A02821400	CONNECTOR,12P 6383 V WHT
CN507	9A02846200	CONNECTOR, 2P PH VR (M)
CN508	9A02846500	CONNECTOR, 6P PH V
CN509	9A02846800	CONNECTOR, 9P FE V
CN510	9A02846300	CONNECTOR, 3P PH V (M)
CN511	9A02439100	CONNECTOR, 7P 8283 V WHT
CN512	9A02847000	CONNECTOR, 2P XH V AM
CN513	9A02847100	CONNECTOR, 2P 8283 V WHT
D401-403	9A02436600	DIODE,1SS133
D501	9A02436800	ZENER DIODE,HZ9C1L
D502-504	9A02436600	DIODE,1SS133
D506-508	9A02436600	DIODE,1SS133
D511	9A02848700	DIODE,S5277B
D512-515	9A02436600	DIODE,1SS133
D516	9A02848800	ZENER DIODE,HZ5C3
D517	9A02436600	DIODE,1SS133
FT501	9A02845700	F-CABLE,10-2.0 130
FT502	9A02845600	F-CABLE, 9-2.0 120
IC401	9A02845800	IC,LA7295
IC501	9A02845200	IC,M50747-A06SP
IC503	9A02845300	IC,M50925-372SP
IC504	9A02448000	IC,TC4011BP
IC505	9A02845900	IC,TC4077BP
IC506	9A02845400	IC,MN67472MQB
IC507	9A02846100	IC,BA10324
IC508	9A02846000	IC,TA7291S
IC509	9A02454400	IC,PST 523D
L401-402	9A02847700	COIL,8.2MH LHL06
L403	9A02847400	COIL, 1MH TL-8
L404	9A02847500	COIL, 47UH
L501	9A02440000	COIL, 10UH
L503	9A02847600	COIL, 22UH
L504	9A02440100	COIL,100UH
Q401,503	9A02442300	TR.,2SC1740S(RS)
Q402	9A02848600	TR.,DTA114ES
Q403,501	9A02436700	TR.,DTC144ES
Q404	9A02850800	TR.,2SC3331 T
Q502,506	9A02436700	TR.,DTC144ES
Q504,509	9A02442300	TR.,2SC1740S(RS)
Q508,511	9A02442400	TR.,2SA933S(RS)
Q510,512	9A02442300	TR.,2SC1740S(RS)

PWB COMBI C COMPL PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION
Q513,518	9A02442400	TR.,2SA933S(RS)
Q514,515	9A02442300	TR.,2SC1740S(RS)
Q516	9A02850700	TR.,2SB892 ST
Q517,519	9A02442300	TR.,2SC1740S(RS)
Q520,521	9A02442300	TR.,2SC1740S(RS)
R568	9A02849300	R.,CARBON 1/2W 1.8K J
R585	9A02848400	R.,M/F 51K-1/4WERO
R595	9A02848500	R.,M/F 200K-1/4WERO
SFR501	9A02848300	SFR,100K D1A6 V TP
T401	9A02845500	T,REC BIAS OSC 70K
TP501	9A02447600	PIN,TEST 4P 1.1-19
X501	9A02849000	VIB,CER CST8.0M
X502	9A02848900	VIB,CER KBR-4.0MKS

PWB COMBI A COMPL PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION
	*9A02835140	PWB COMBI A COMPL(PCB ASSY)
	(CONSISTS OF FRONT-1,2,3,JACK PCB SECTION)	
	*9A02836900	PWB, COMB A (CONSISTS)
	(CONSISTS OF FRONT-1,2,3,JACK PCB)	
	PCB-C.....FRONT-1 PCB SECTION	
	9A02835400	FILTER
BT708	9A02835600	CONN ASSY, 4P FV-14
CN701,702	9A02835900	CONNECTOR, 9P 52151 MXJ
CN703	9A02836000	CONNECTOR,10P 52151 MXJ
CN704	9A02835900	CONNECTOR, 9P 52151 MXJ
CN705	9A02836100	CONNECTOR,12P 6208 V
CN706	9A02836400	CONNECTOR, 9P P-FJ B
CN708	9A02836200	CONNECTOR,12P 6200 ZIF
CN709	9A02836300	CONNECTOR, 9P R-FJ B
D701-706	9A02436600	DIODE,1SS133
FL701	9A02835500	FL, 12-MT-46GK
IC701	9A02835200	IC,CXP50116-149Q
IC702	9A02835800	IC,BR93C46
IC703	9A02835700	IC,BA10358N
L701,702	9A02837500	COIL,100UH
Q702	9A02442300	TR.,2SC1740S(RS)
SW701-711	9A02825300	SW,TACT EVQ-21404M
VR701	9A02836600	VOL,100KB 09K113 L20
X701	9A02837600	VIB,CER KBR4.19MKS
X702	9A02434900	VIB,XTAL32.768K5PPM
X703	9A02836700	VIB,BZ KBS-13DB

Parts marked with *require longer delivery time

PWB COMBI A COMPL PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION
		PCB-D.....FRONT-2 PCB SECTION
IC781	9A02434100	IC,SBX1610-52
L781	9A02837500	COIL,100UH
SW783	9A02825300	SW,TACT EVQ-21404M
		PCB-E.....FRONT-3 PCB SECTION
D751-755	9A02436600	DIODE,1SS133
D762,784	9A02436600	DIODE,1SS133
SW752	9A02825300	SW,TACT EVQ-21404M
SW754-758	9A02825300	SW,TACT EVQ-21404M
SW761765	9A02825300	SW,TACT EVQ-21404M
		PCB-I.....JACK PCB SECTION
J796	9A02836500	JACK, 2P JPJ3822 G

OTHERS PCB COMPL PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION
		PCB-E.....BASE PCB SECTION
D570	9A02870600	DIODE,LE GL-451
D571	9A02870700	DIODE, MA165
L570	9A02871400	LATCH MAGNET,
Q571,572	9A02870800	TR.,PN205L-(NC)
Q573,574	9A02870900	PHOTO INTERRUPTER,GP1L52
Q575	9A02878300	PHOTO INTERRUPTER,GP
QC971	9A02870500	TR.,2SD2012
SW570	9A02871500	SW,MODE SELECT F
SW571	9A02871600	SW,LIMIT
		PCB-K.....ACE HEAD PCB SECTION
ACEH	9A02891800	HEAD,AC

OTHERS PCB COMPL PARTS LIST

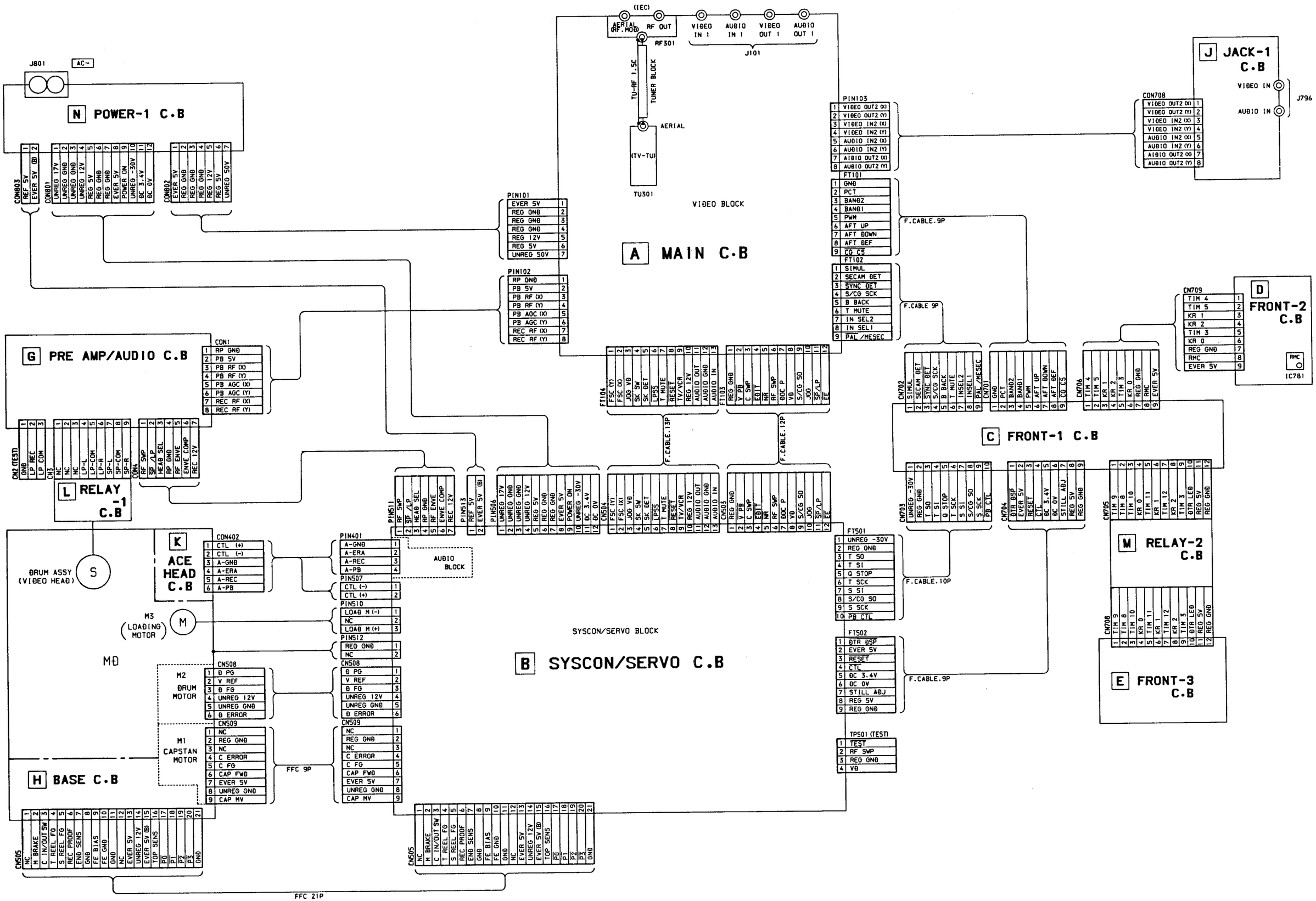
REF. NO.	PARTS NO.	DESCRIPTION
		PCB-M.....RELAY PCB SECTION
	9A02831100	PWB,FLEX FK-11 (RELAY PCB)

PWB COMCI G COMPL PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION
	*9A02827740	PWB COMBI G COMPL(PCB ASSY)
		(CONSISTS OF POWER-1,2 PCB SECTION)
	*9A02853200	PWB,COMB G 2M (CONSISTS)
		(CONSISTS OF POWER-1,2 PCB SECTION)
		PCB-N (1)...POWER-1 PCB SECTION
	9A02854200	CLAMP,FUSE SMK
J801	⚠ 9A02852200	JACK,AC E CCT9302
F803	⚠ 9A02851300	FUSE,630MA 250V T E
		PCB-N (2)...POWER-2 PCB SECTION
	9A02851100	HLDR,PS
BT801	9A02851900	CONN ASSY,12P PS-12
BT802	9A02851800	CONN ASSY, 7P PV-12
BT803	9A02852000	CONN ASSY, 2P PS-13
CF801-804	9A02854200	CLAMP,FUSE SMK
D801,814	9A02436600	DIODE,1SS133
D802 805	9A02853600	DIODE,DIN L20
D806-809	9A02852100	DIODE,S2V10
D810-812	9A02853900	DIODE,MPG06D-L
D813	9A02853500	ZENER DIODE,HZ30-2
D815	9A02436600	DIODE,1SS133
F801,802	⚠ 9A02851400	FUSE, 2A 250V T E
IC801	9A02846100	IC,BA10324
PT101	⚠ 9A02851200	POWER TRANSFORMER,240V
Q801,802	9A02851500	TR.,2SD1406Y
Q803	9A02442400	TR.,2SA933S(RS)
Q804	9A02854400	TR.,2SA1015Y
R802	9A02854100	R.,M/F 56K-1/4WERO
R803	9A02854000	R.,M/F 39K 1/4WERO
R804	9A02854300	R.,CARBON 1/2W 5.6K J
R806	⚠ 9A02852600	R.,FUSE 1/4W 47
R808	⚠ 9A02852500	R.,FUSE 1/4W 100
W801	9A02851600	WIRE,POWER 21T R
W802	9A02851700	WIRE,POWER 21T G

Parts marked with *require longer delivery time

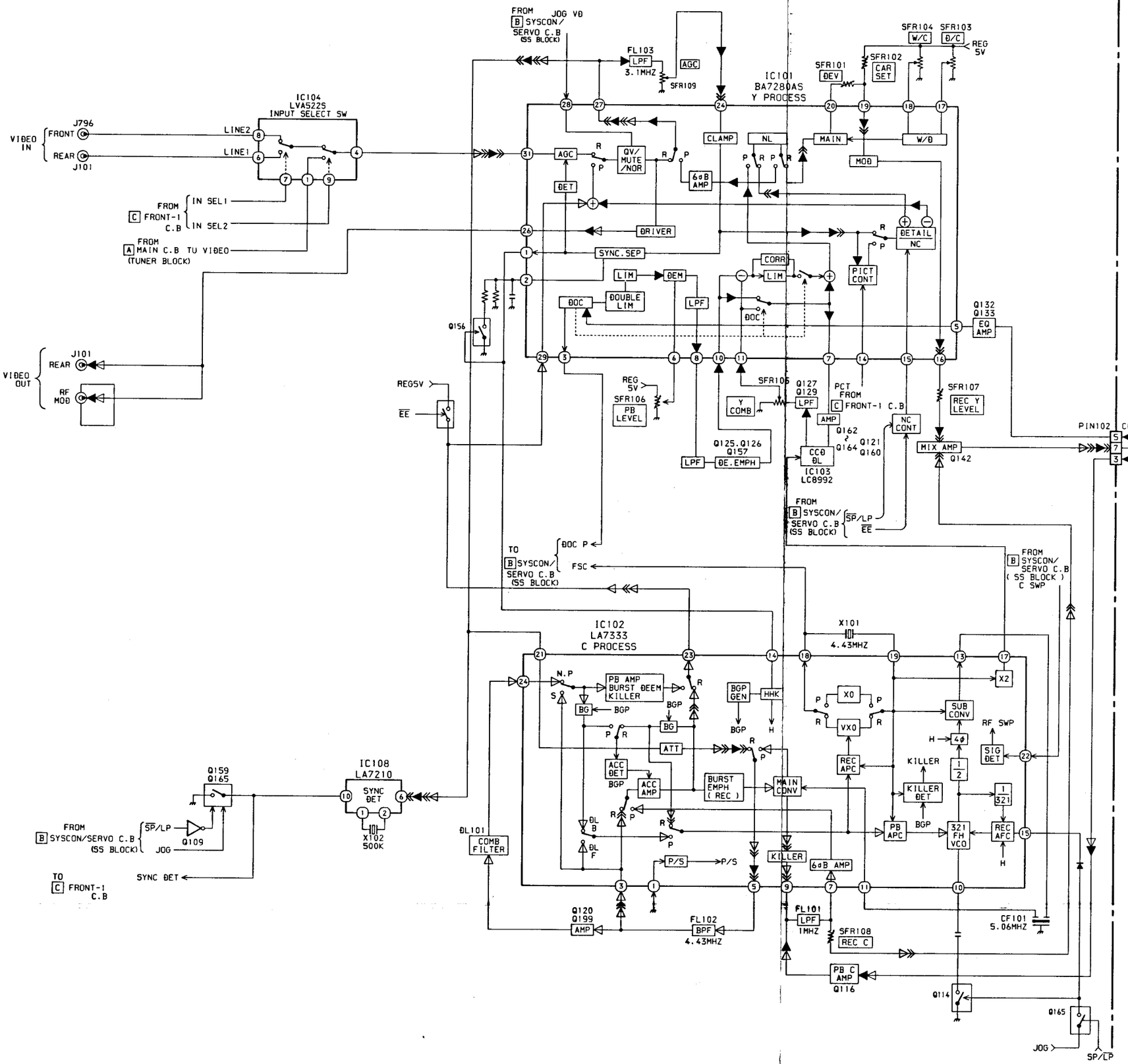
WIRE HARNESS DIAGRAM



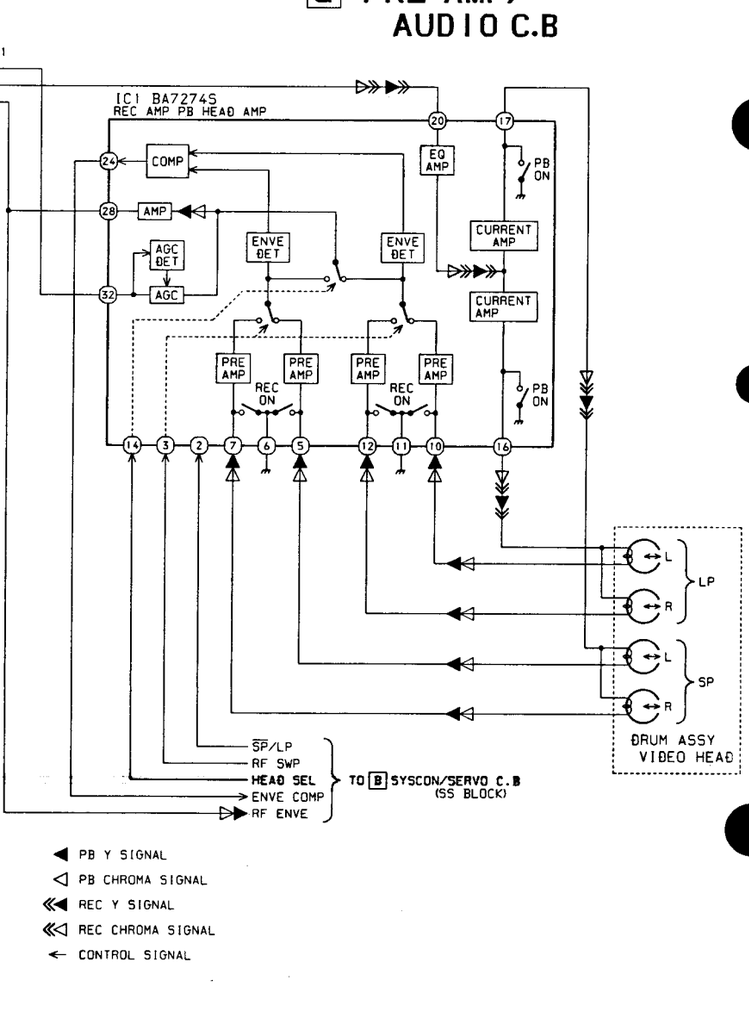
BLOCK DIAGRAM – 1 (VIDEO)

A MAIN C.B

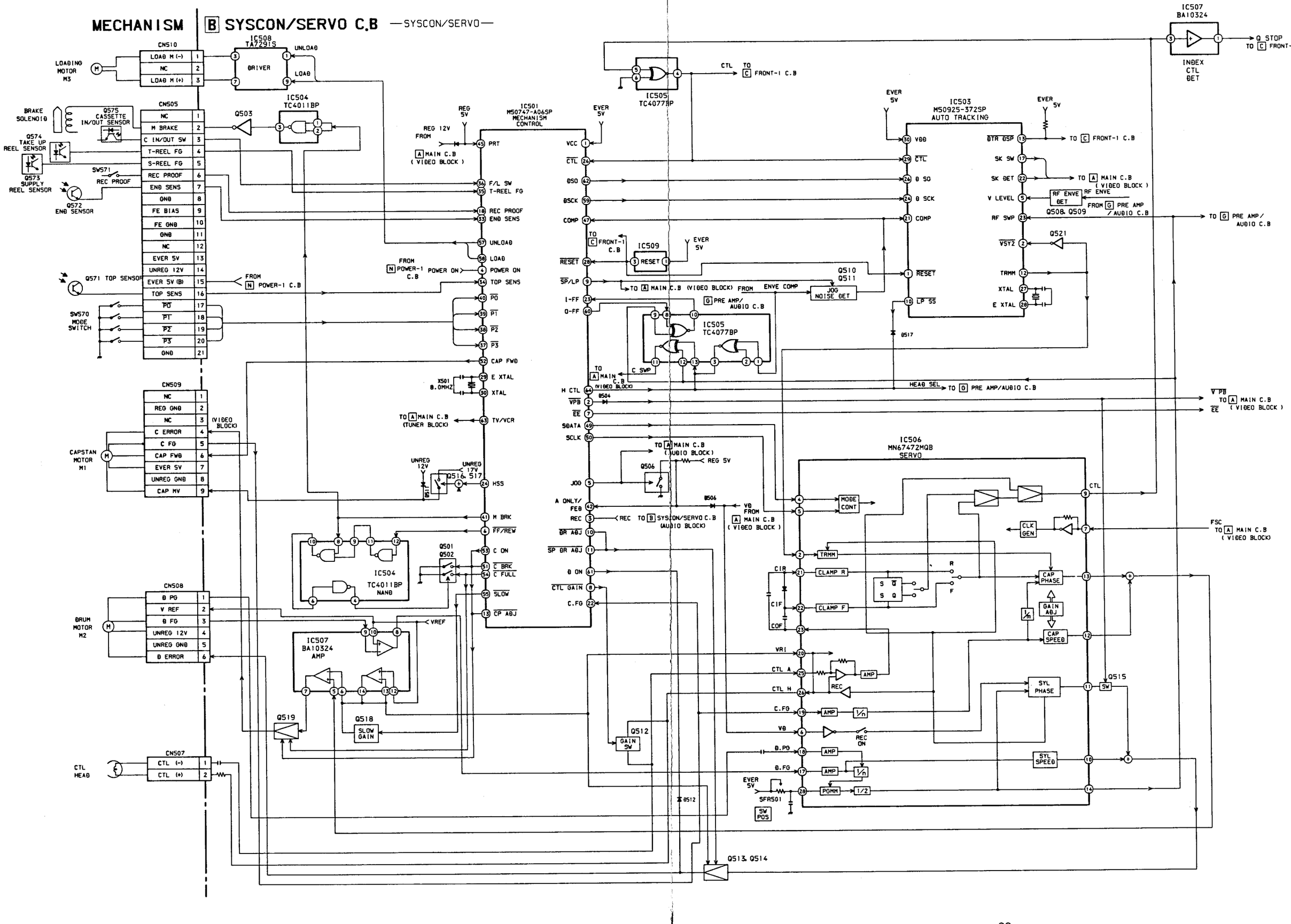
— VIDEO BLOCK —



G PRE AMP/ AUDIO C.B



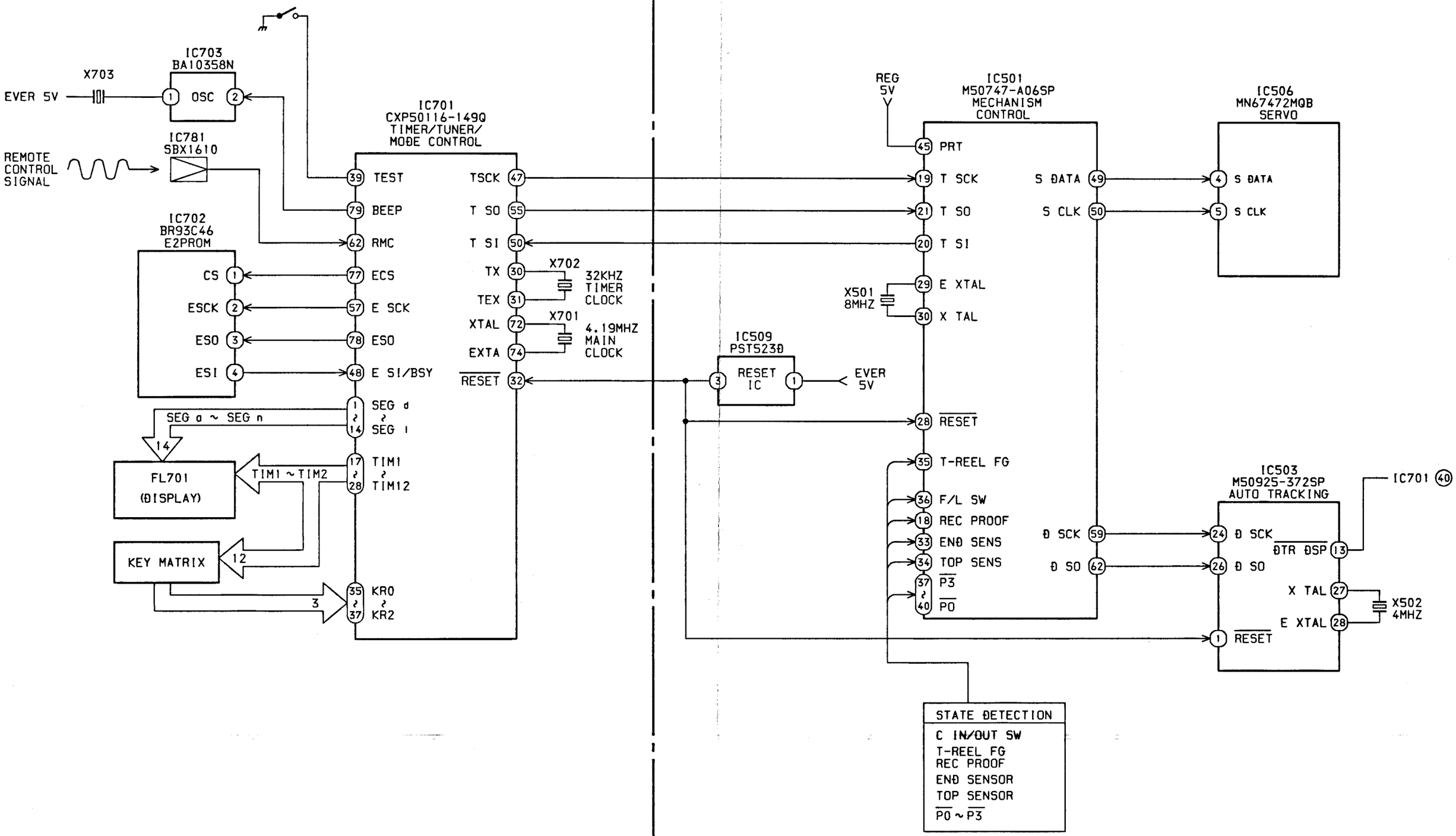
BLOCK DIAGRAM – 2 (SYSCON/SERVO)



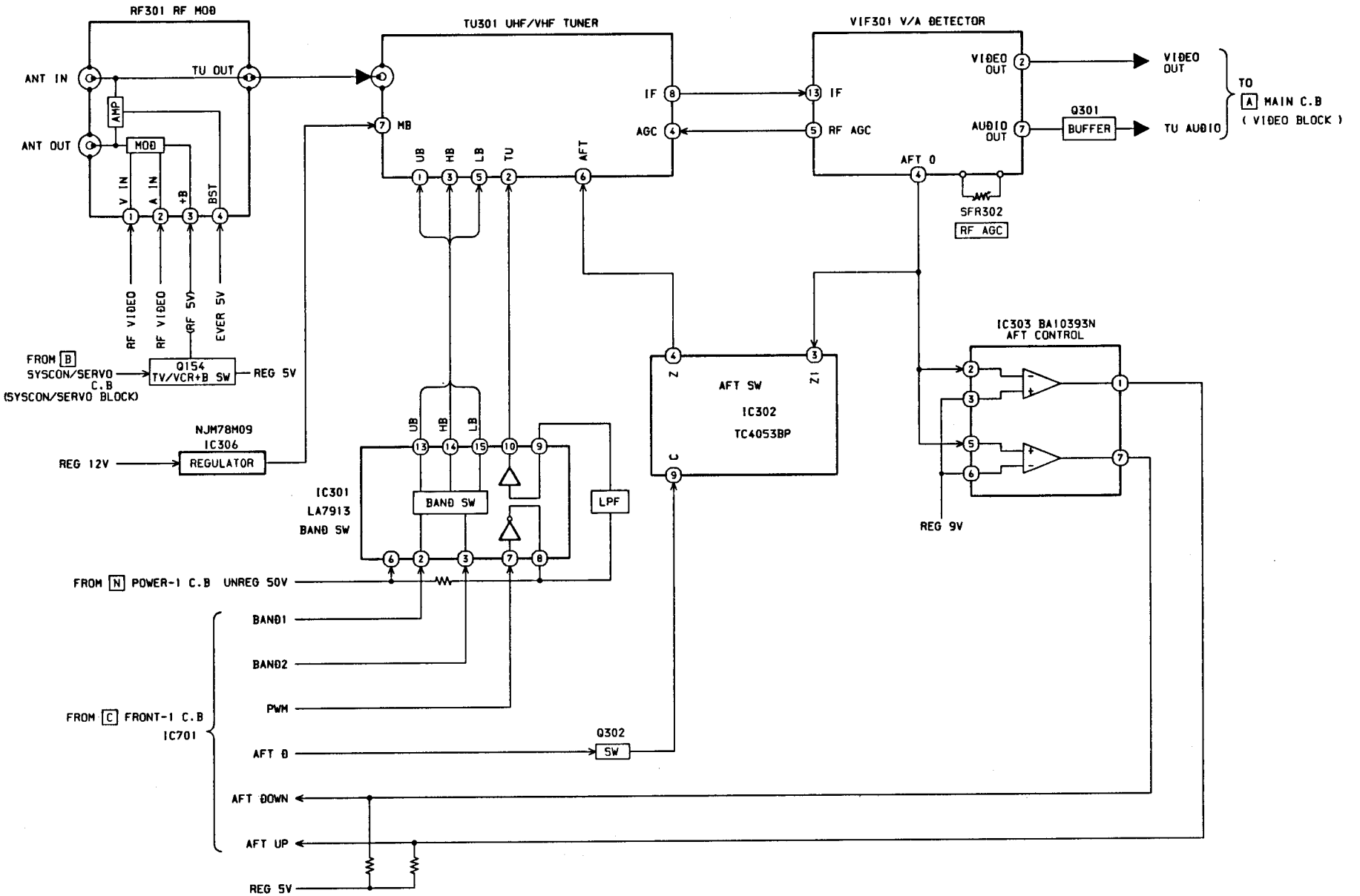
C FRONT-1 C.B

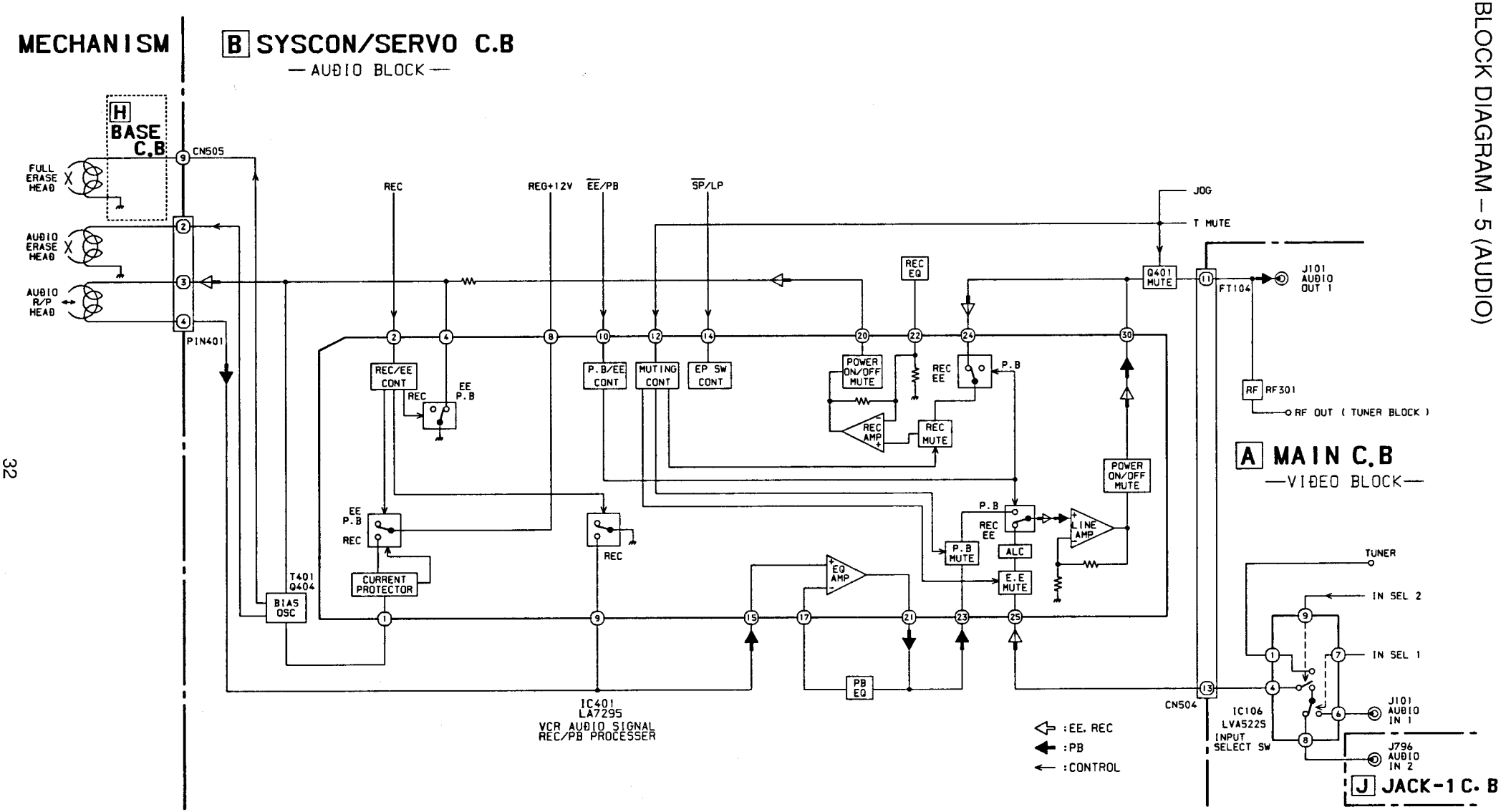
B SYSCON/SERVO C.B

— SYSCON/SERVO BLOCK —

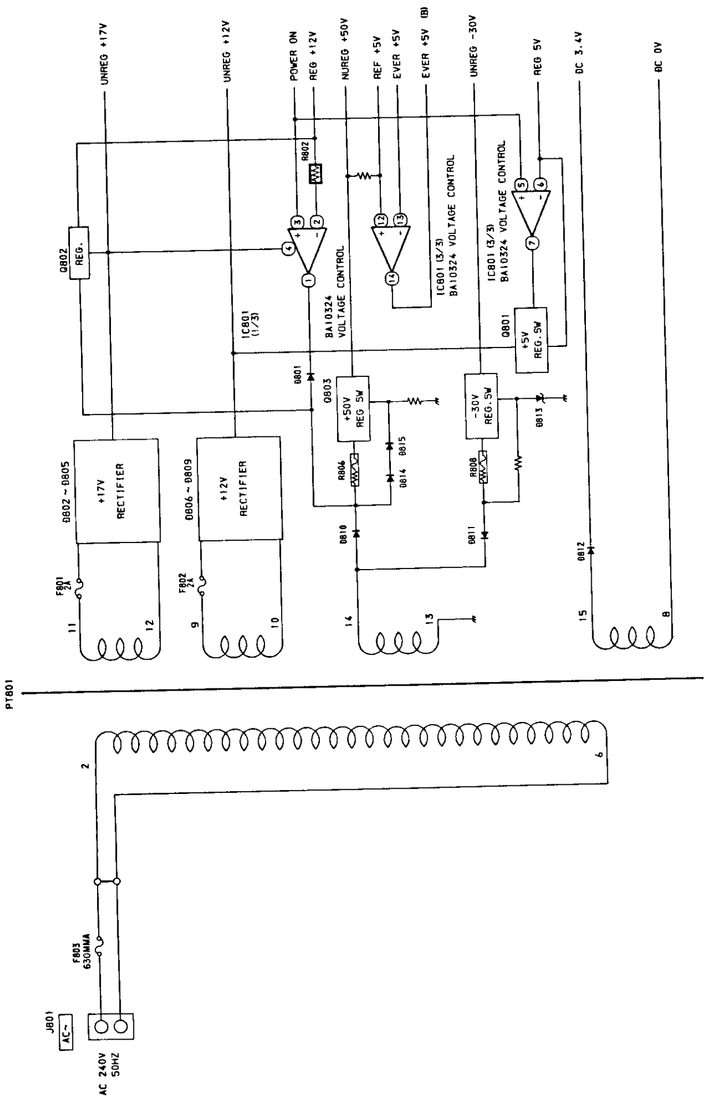


A MAIN C.B
— TUNER BLOCK —




MECHANISM
B SYSCON/SERVO C.B
— AUDIO BLOCK —
H BASE C.B
CN505
FULL ERASE HEAD
AUDIO ERASE HEAD
AUDIO R/P HEAD
PIN401
REC
REG+12V
EE/PB
SP/LP
JOG
T MUTE
REC/EE CONT
EE P.B
REC
P.B/EE CONT
MUTING CONT
EP SW CONT
POWER ON/OFF MUTE
REC EE
P.B
REC AMP
REC MUTE
REC EQ
Q401 MUTE
J101 AUDIO OUT 1
FT104
RF
RF301
RF OUT (TUNER BLOCK)
A MAIN C.B
—VIDEO BLOCK—
POWER ON/OFF MUTE
EE P.B
REC
CURRENT PROTECTOR
T401 Q404
BIAS OSC
EQ AMP
P.B MUTE
ALC
E.E MUTE
LINE AMP
PB EQ
TUNER
IN SEL 2
IN SEL 1
J101 AUDIO IN 1
J796 AUDIO IN 2
IC106 LVA522S INPUT SELECT SW
CN504
J JACK-1 C. B
IC401 LA7295 VCR AUDIO SIGNAL REC/PB PROCESSER
:EE. REC
:PB
:CONTROL

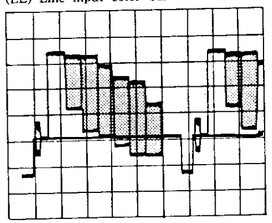
BLOCK DIAGRAM – 6 (POWER UNIT)



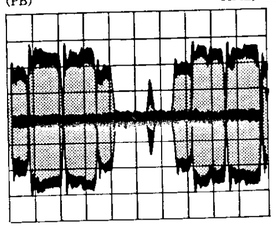
N POWER-1 C.B

WAVE FORM – 1 (VIDEO)

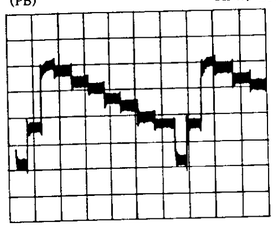
① IC104 Pin ④ (EE) Line input color bar
VOLT/DIV : 200mV
TIME/DIV : 10 μ S



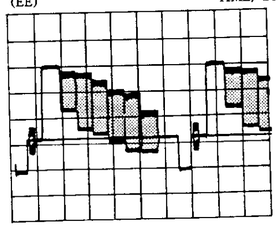
② IC101 Pin ㉙ (PB)
VOLT/DIV : 50mV
TIME/DIV : 10 μ S



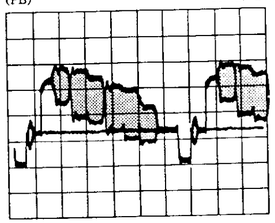
③ IC101 Pin ㉗ (PB)
VOLT/DIV : 200mV
TIME/DIV : 10 μ S



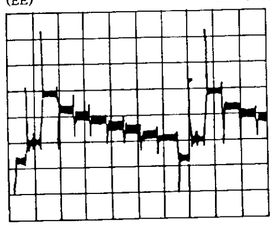
④ IC101 Pin ㉘ (EE)
VOLT/DIV : 500mV
TIME/DIV : 10 μ S



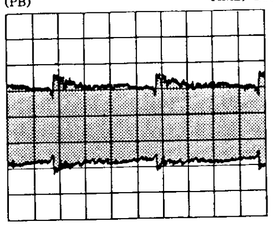
⑤ IC101 Pin ㉕ (PB)
VOLT/DIV : 500mV
TIME/DIV : 10 μ S



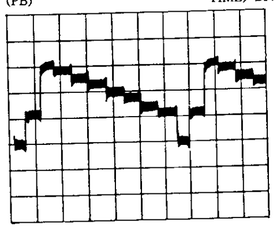
⑥ IC101 Pin ㉑ (EE)
VOLT/DIV : 200mV
TIME/DIV : 10 μ S



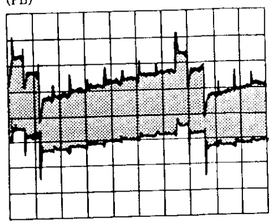
⑦ IC101 Pin ⑤ (PB)
VOLT/DIV : 100mV
TIME/DIV : 10 μ S



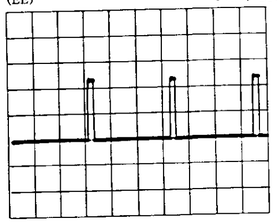
⑧ IC101 Pin ⑦ (PB)
VOLT/DIV : 100mV
TIME/DIV : 10 μ S



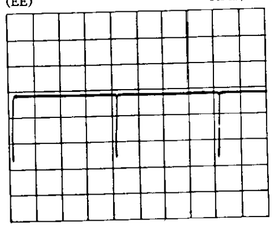
⑨ IC101 Pin ⑧ (PB)
VOLT/DIV : 200mV
TIME/DIV : 10 μ S



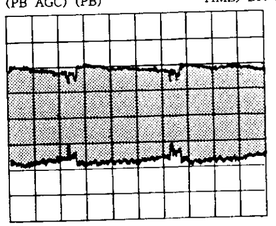
⑩ IC101 Pin ① (EE)
VOLT/DIV : 2V
TIME/DIV : 20 μ S



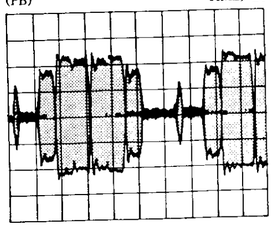
⑪ Q128 Collection (EE)
VOLT/DIV : 2V
TIME/DIV : 5mS



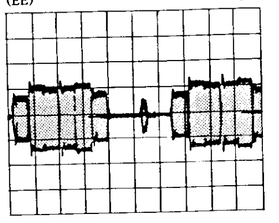
⑫ C212 CN102 Pin ⑤ (PB AGC) (PB)
VOLT/DIV : 100mV
TIME/DIV : 5mS



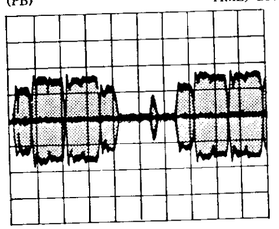
⑬ IC102 Pin ㉔ (PB)
VOLT/DIV : 50mV
TIME/DIV : 10 μ S



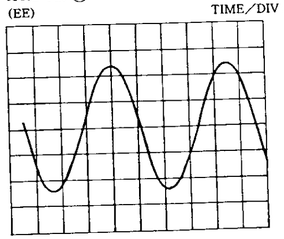
⑭ IC102 Pin ㉓ (EE)
VOLT/DIV : 200mV
TIME/DIV : 10 μ S



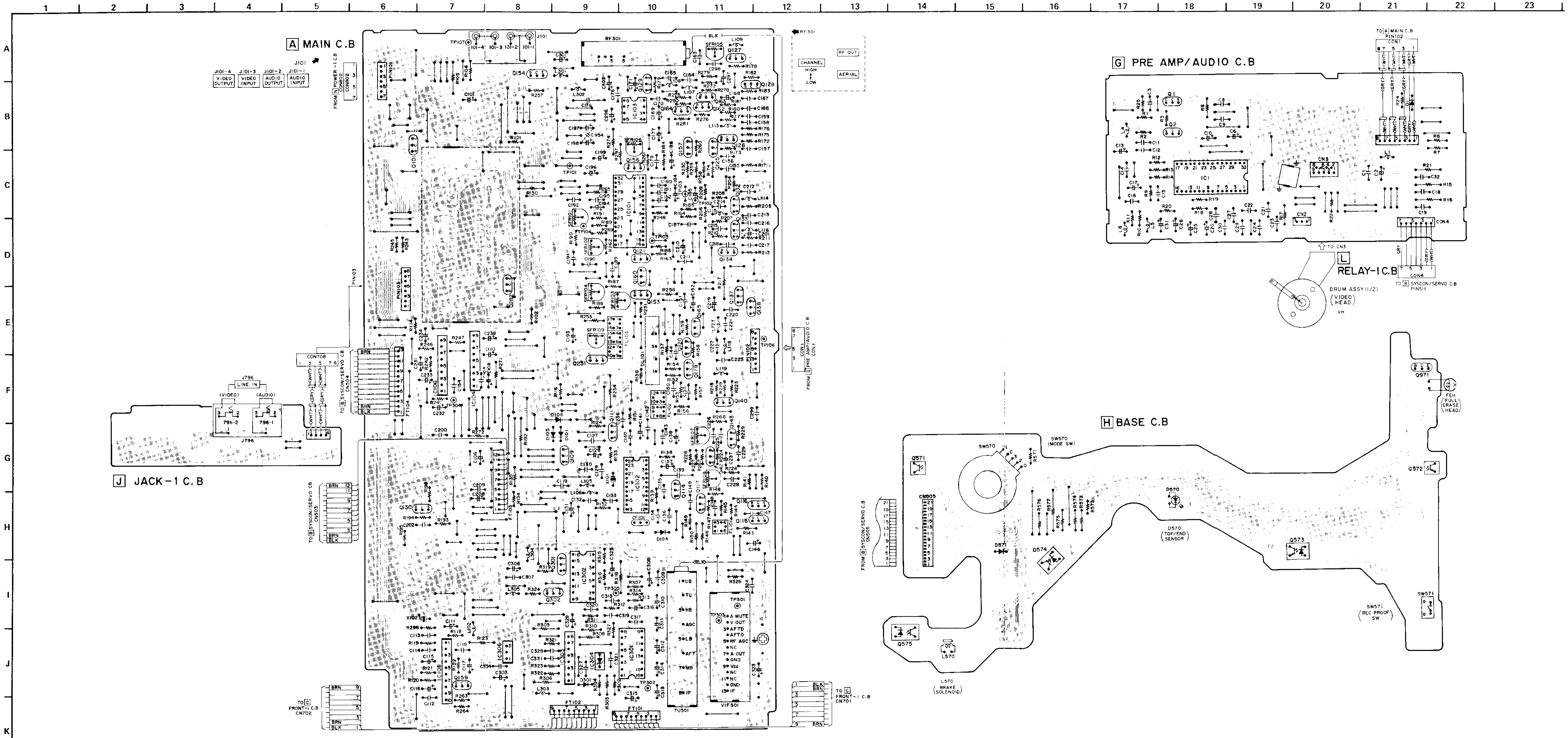
⑮ IC102 Pin ㉓ (PB)
VOLT/DIV : 200mV
TIME/DIV : 10 μ S



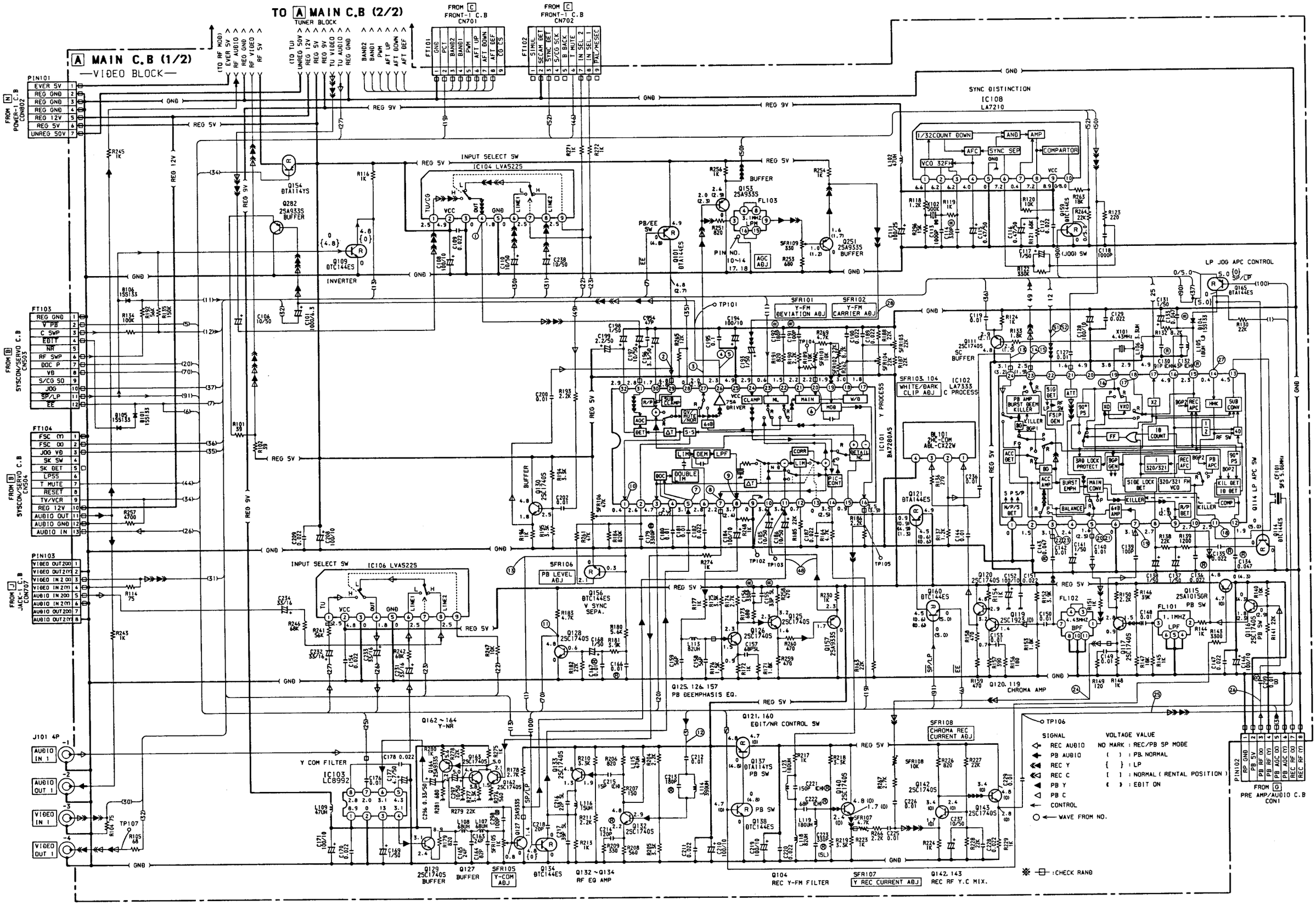
⑯ IC102 Pin ⑲ (EE)
VOLT/DIV : 200mV
TIME/DIV : 50nS

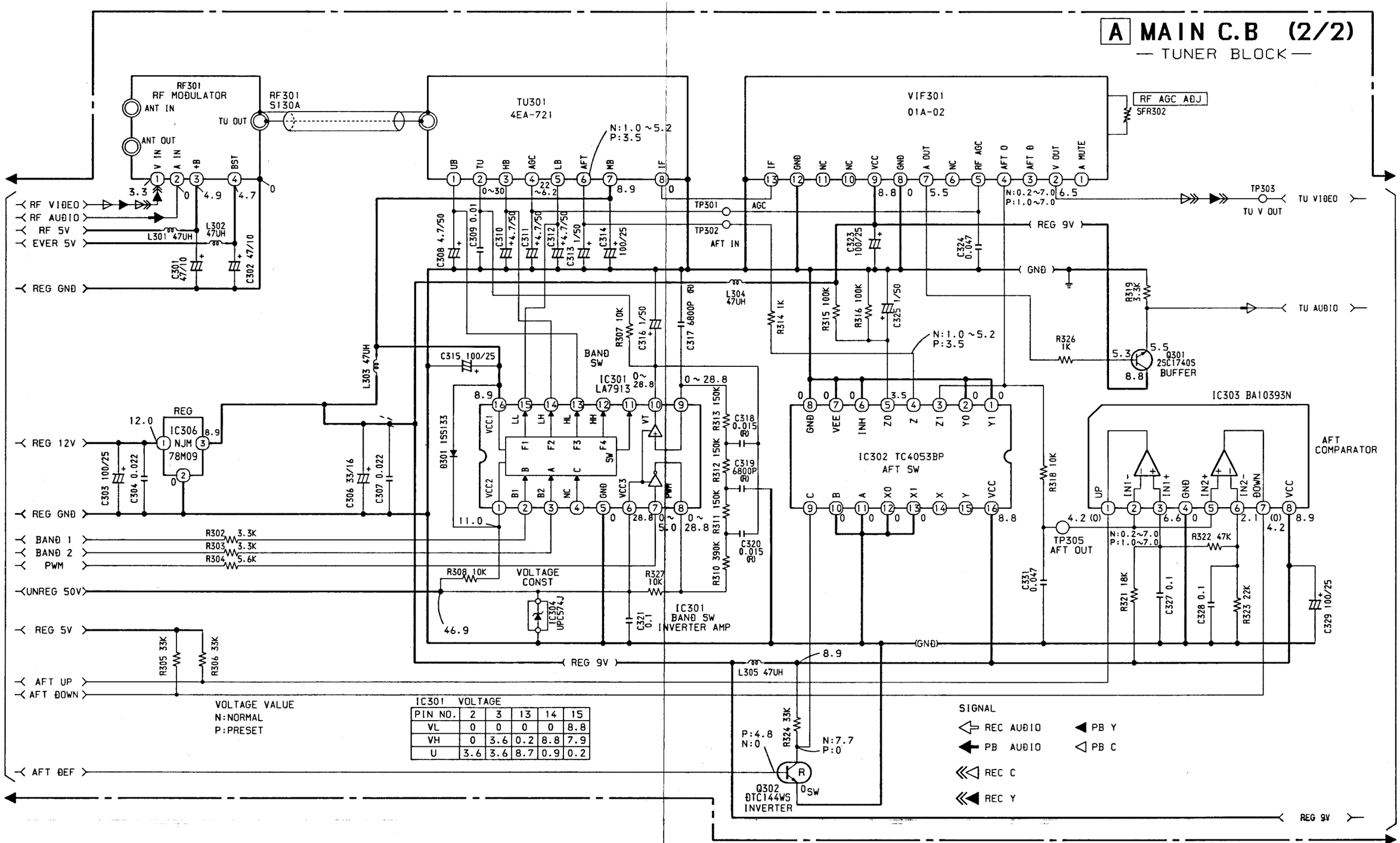


WIRING – 1 (VIDEO, PRE AMP/AUDIO, BASE)



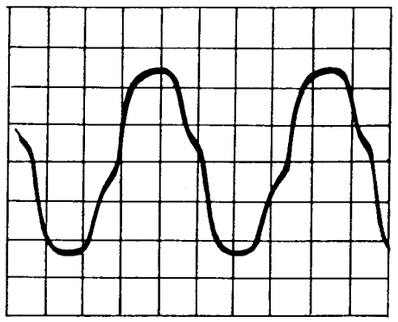
SCHEMATIC DIAGRAM – 1 (VIDEO)



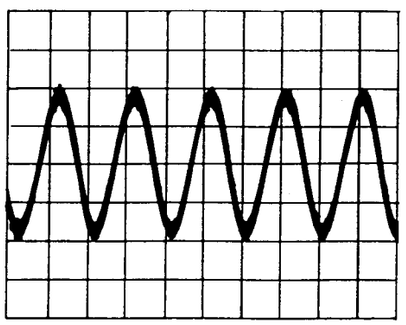

A MAIN C.B (2/2)
— TUNER BLOCK —
RF301
RF MODULATOR
ANT IN
ANT OUT
TU OUT
RF301
S130A
TU301
4EA-721
N:1.0 ~5.2
P:3.5
VIF301
01A-02
RF AGC ADJ
SFR302
V IN
A IN
+B
BST
UB
TU
HB
AGC
LB
AFT
MB
IF
IF
GND
NC
NC
VCC
GND
A OUT
NC
RF AGC
AFT D
AFT B
V OUT
A MUTE
TP303
TU V OUT
TU VIDEO
RF VIDEO
RF AUDIO
RF 5V
EVER 5V
REG GND
L301 47UH
L302 47UH
C301 47/10
C302 47/10
TP301
AGC
TP302
AFT IN
REG 9V
GND
C308 4.7/50
C309 0.01
C310 +4.7/50
C311 +4.7/50
C312 +4.7/50
C313 1/50
C314 100/25
C323 100/25
C324 0.047
L304 47UH
R314 1K
R315 100K
R316 100K
C325 1/50
R319 3.3K
TU AUDIO
R326 1K
Q301 2SC1740S BUFFER
IC303 BA10393N
AFT COMPARATOR
L303 47UH
C315 100/25
BAND SW
R307 10K
C316 1/50
C317 6800P (B)
IC301 LA7913
0 ~ 28.8
D301 1SS133
C318 0.015 (B)
C319 6800P (B)
C320 0.015 (B)
R313 150K
R312 150K
R311 150K
R310 390K
IC302 TC4053BP
AFT SW
R318 10K
TP305
AFT OUT
C331 0.047
R321 18K
C327 0.1
C328 0.1
R322 47K
R323 22K
C329 100/25
REG
IC306 NJM 78M09
REG 12V
REG GND
C303 100/25
C304 0.022
C306 33/16
C307 0.022
BAND 1
BAND 2
PWM
R302 3.3K
R303 3.3K
R304 5.6K
UNREG 50V
R308 10K
VOLTAGE CONST
IC304 UPC574J
R327 10K
C321 0.1
IC301 BAND SW INVERTER AMP
REG 5V
R305 33K
R306 33K
AFT UP
AFT DOWN
L305 47UH
R324 33K
Q302 DTC144WS INVERTER
AFT DEF
REG 9V
(GND)
TO A MAIN C.B (1/2) VIDEO BLOCK
TO A MAIN C.B (1/2) VIDEO BLOCK
VOLTAGE VALUE
N:NORMAL
P:PRESET
IC301 VOLTAGE
PIN NO. | 2 | 3 | 13 | 14 | 15
VL | 0 | 0 | 0 | 0 | 8.8
VH | 0 | 3.6 | 0.2 | 8.8 | 7.9
U | 3.6 | 3.6 | 8.7 | 0.9 | 0.2
SIGNAL
REC AUDIO
PB AUDIO
REC C
REC Y
PB Y
PB C

WAVE FORM – 2 (VIDEO)

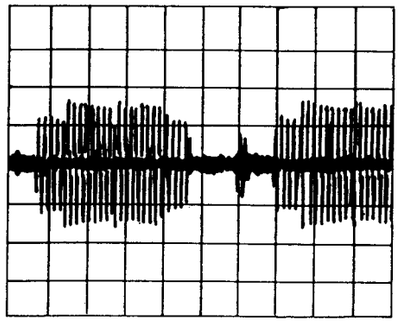
⑰ IC102 Pin ⑱ (EE)
VOLT/DIV : 200mV
TIME/DIV : 50nS



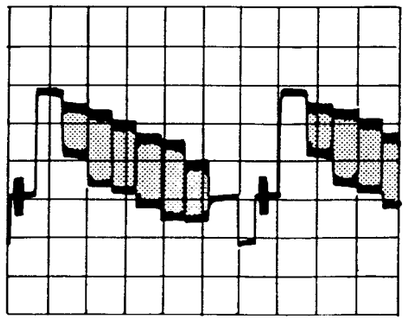
⑱ IC102 Pin ⑪ (EE)
VOLT/DIV : 20mV
TIME/DIV : 100nS



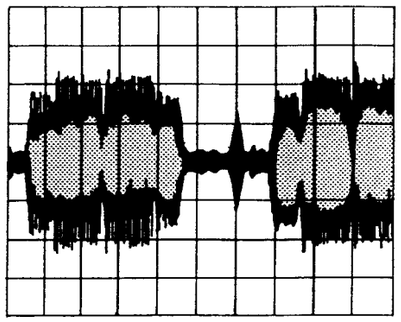
⑲ IC102 Pin ⑦ (PB)
VOLT/DIV : 50mV
TIME/DIV : 10 μ S



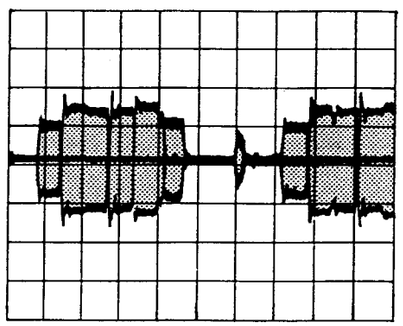
⑳ IC102 Pin ⑤ (EE)
VOLT/DIV : 200mV
TIME/DIV : 10 μ S



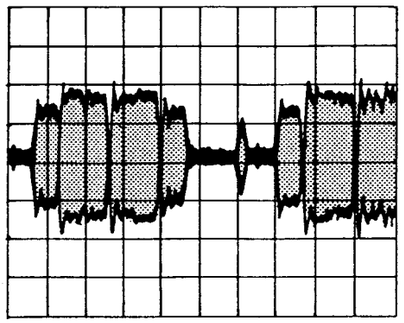
㉑ IC102 Pin ⑤ (PB)
VOLT/DIV : 200mV
TIME/DIV : 10 μ S



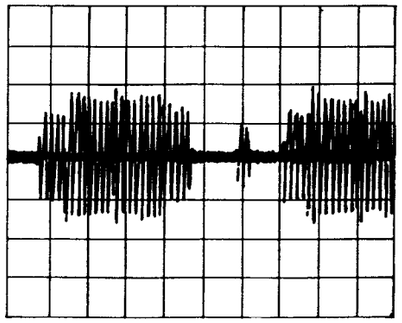
㉒ IC102 Pin ③ (EE)
VOLT/DIV : 50mV
TIME/DIV : 10 μ S



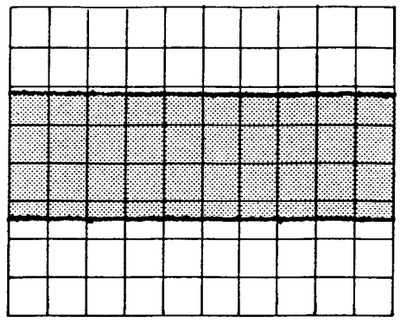
㉓ IC102 Pin ③ (PB)
VOLT/DIV : 50mV
TIME/DIV : 10 μ S



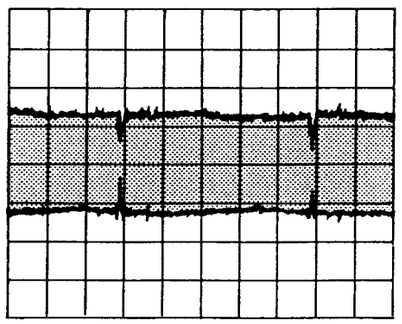
㉔ Q117 Emitter (EE)
VOLT/DIV : 50mV
TIME/DIV : 10 μ S



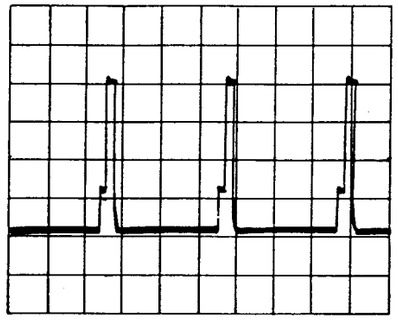
㉕ C229 CN102 Pin ⑦
REC RF (EE/REC)
VOLT/DIV : 50mV
TIME/DIV : 2mS



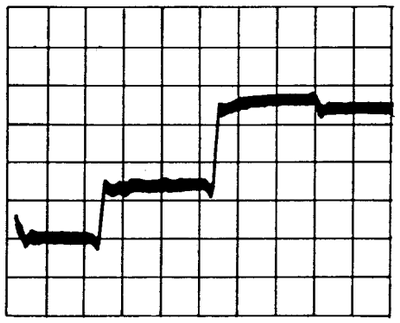
㉖ R298 CN102 Pin ③
PB RF (PB)
VOLT/DIV : 50mV
TIME/DIV : 2mS



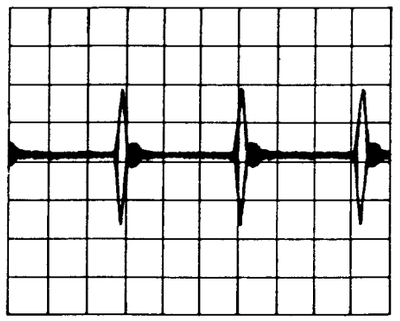
㉗ IC102 Pin ⑭ (PB/REC)
VOLT/DIV : 1V
TIME/DIV : 20 μ S



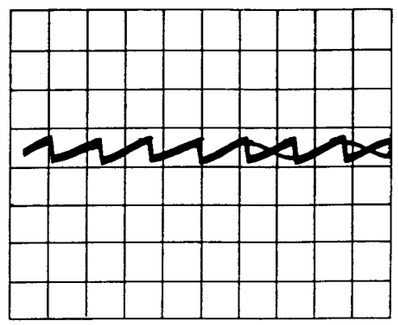
㉘ C193 CN105 Pin ⑧
Y OUT (PB) Normal position
VOLT/DIV : 100mV
TIME/DIV : 2 μ S



㊹ IC105 Pin ⑨ (REC)
PAL form during color bar input
VOLT/DIV : 100mV
TIME/DIV : 20 μ S

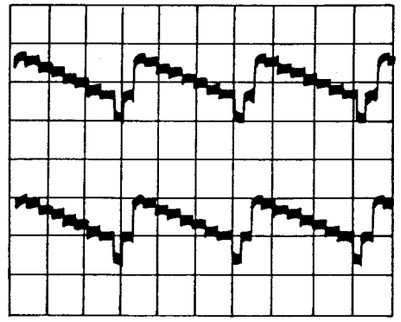


㊻ IC105 Pin ⑪ (EE)
PAL form during color bar input
VOLT/DIV : 1V
TIME/DIV : 50 μ S



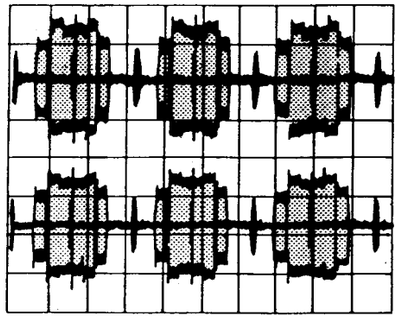
㊽ IC101 Pin ⑩ (PB)
VOLT/DIV : 200mV
TIME/DIV : 20 μ S

IC101 Pin ⑪ (PB)
VOLT/DIV : 200mV
TIME/DIV : 20 μ S



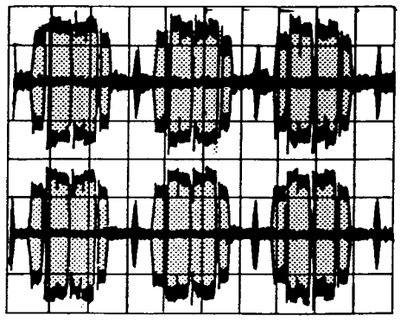
(49) IC105 Pin ① (EE) VOLT/DIV : 200mV TIME/DIV : 20 μ S

IC105 Pin ④ (EE) VOLT/DIV : 200mV TIME/DIV : 20 μ S

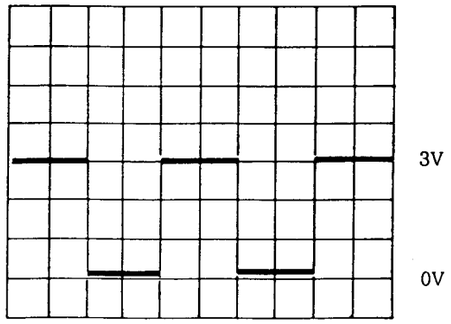


(50) IC105 Pin ① (PB) VOLT/DIV : 200mV TIME/DIV : 20 μ S

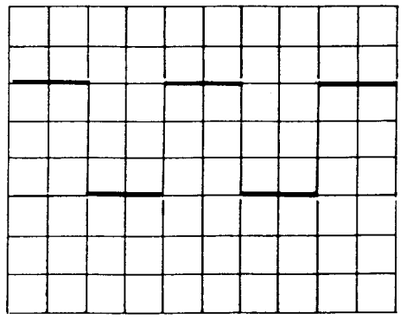
IC105 Pin ④ (PB) VOLT/DIV : 200mV TIME/DIV : 20 μ S



(51) IC102 Pin ㉒ (REC/PB) SP mode VOLT/DIV : 1V TIME/DIV : 10mS



(52) IC102 Pin ㉒ (REC/PB) LP mode VOLT/DIV : 1V TIME/DIV : 10mS



PRACTICAL SERVICE FIGURE

Output Level
Video (Impedance) : 1.0 ± 0.2 Vp-p (75 Ω ± 20 %, Unbalance)
Audio (Impedance) : -6 ± 3dB (Less than 2.6 kΩ)
RF Modulated (Impedance) : 75dB μ V (75 Ω, Unbalance)

Input Level
Video (Impedance) : 0.5 ~ 2.0V (75 Ω ± 20 %, Unbalance)
Audio (Impedance) : -8 ± 3dB (More than 47k Ω)
TV channels received

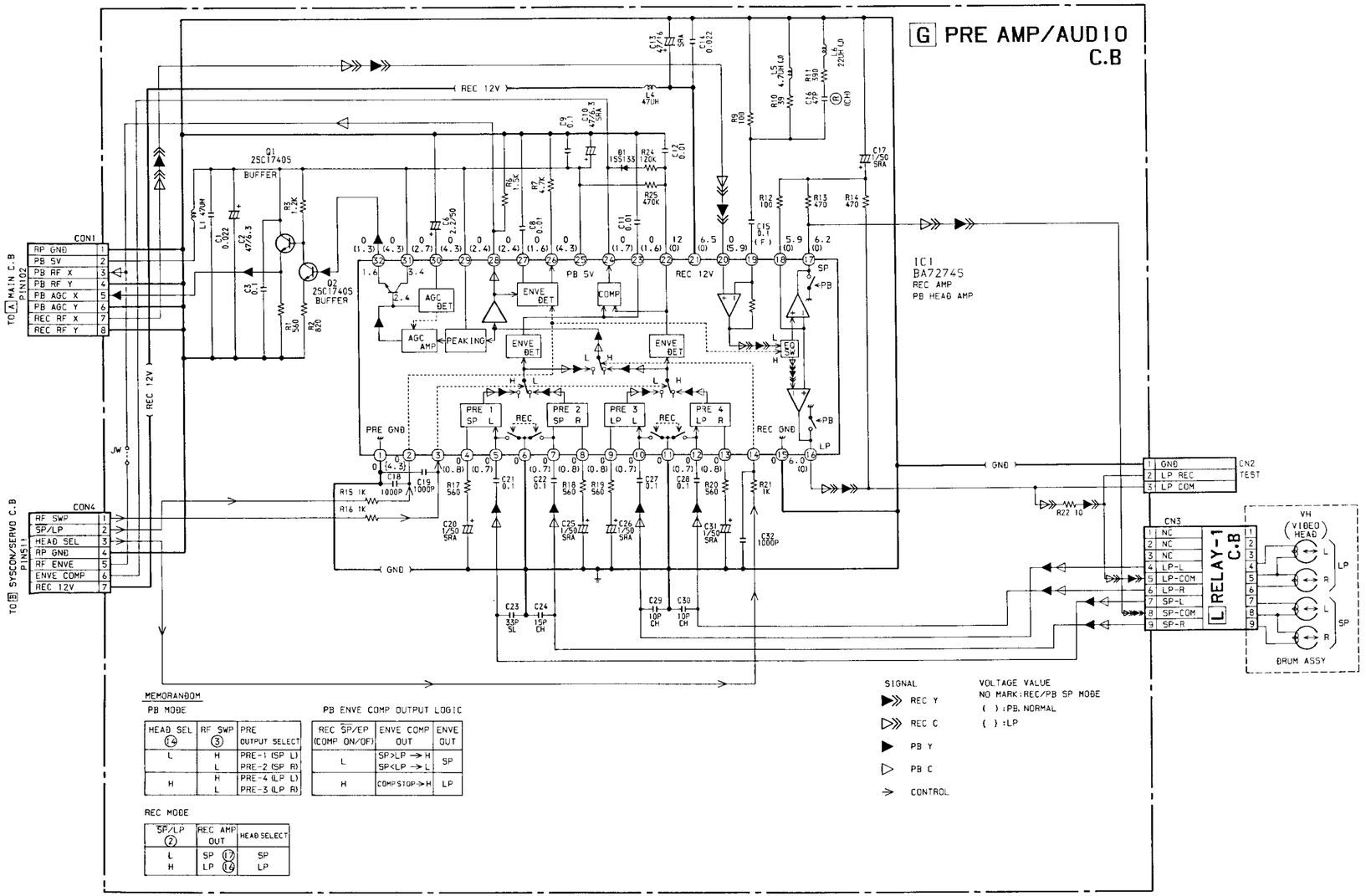
Destination	VHF Low	VHF High	UHF	Signal format
SH	0~5	5A~11	E21~E69	B, G

S/N Ratio
Video : [Test tape MVP-08 (PB), MVP-09 (PB) TDK HS-120 (R/P)]

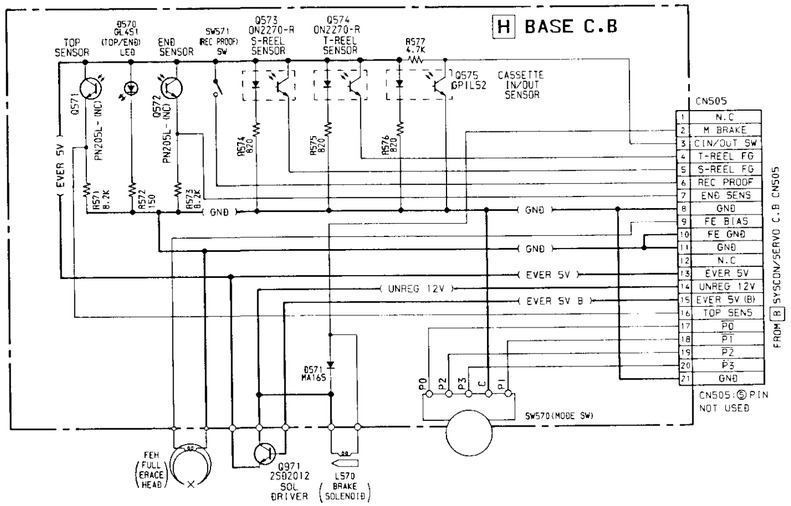
		PB		R/P	
		SP	LP	SP	LP
Y-Signal		42dB	35dB	40dB	35dB
Chrominance-Signal	AM	38dB	36dB	38dB	36dB
	PM	35dB	30dB	35dB	30dB

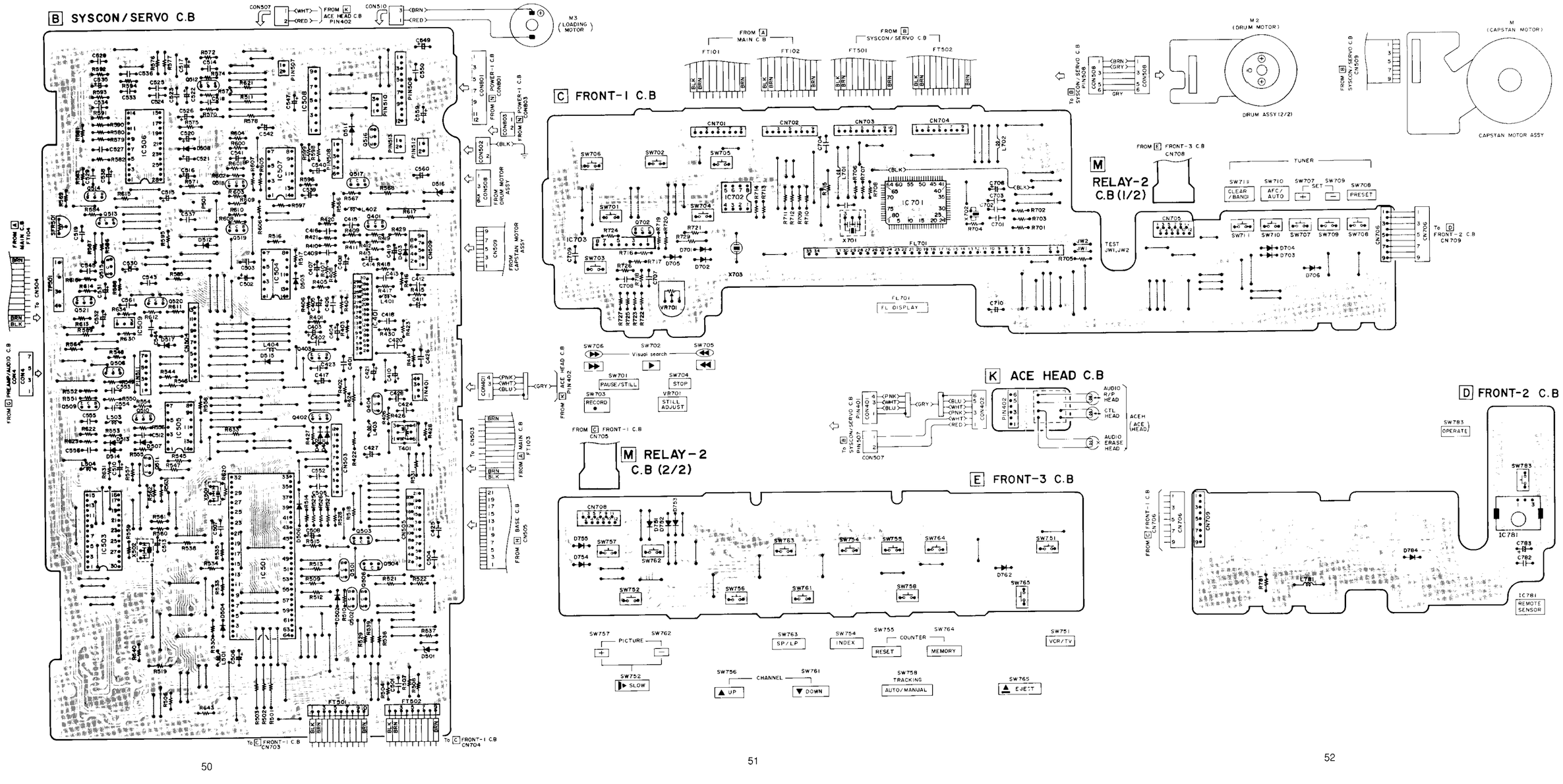
Audio : More than 45dB
Audio Frequency Response : 50Hz~5kHz (± 4dB)
Horizontal Resolution : More than 230lines (PB, R/P) (Test tape SP : MVP-06T, LP : TDK HS-120)
Erase Ratio : More than 55dB
Bias Frequency : 70kHz ± 10 %
Tape speed : 23.39mm/sec ± 0.5 % (SP) 11.695mm/sec ± 0.5 % (LP)
Wow & Flutter : Less than 0.6 % (SP) Less than 1.0 % (LP) (Test tape T-120 CCIR UNWTD)
FF Time : Less than 150sec (T-120)
REW Time : Less than 150sec (T-120)
Back tension : 50 ± 12g-cm
Take-up torgue : 50~140g-cm
Loading Time : Less than 1.8 ± 0.8sec
Unloading Time : Less than 1.5 ± 0.8sec

SCHEMATIC DIAGRAM – 3 (PRE AMP/AUDIO)

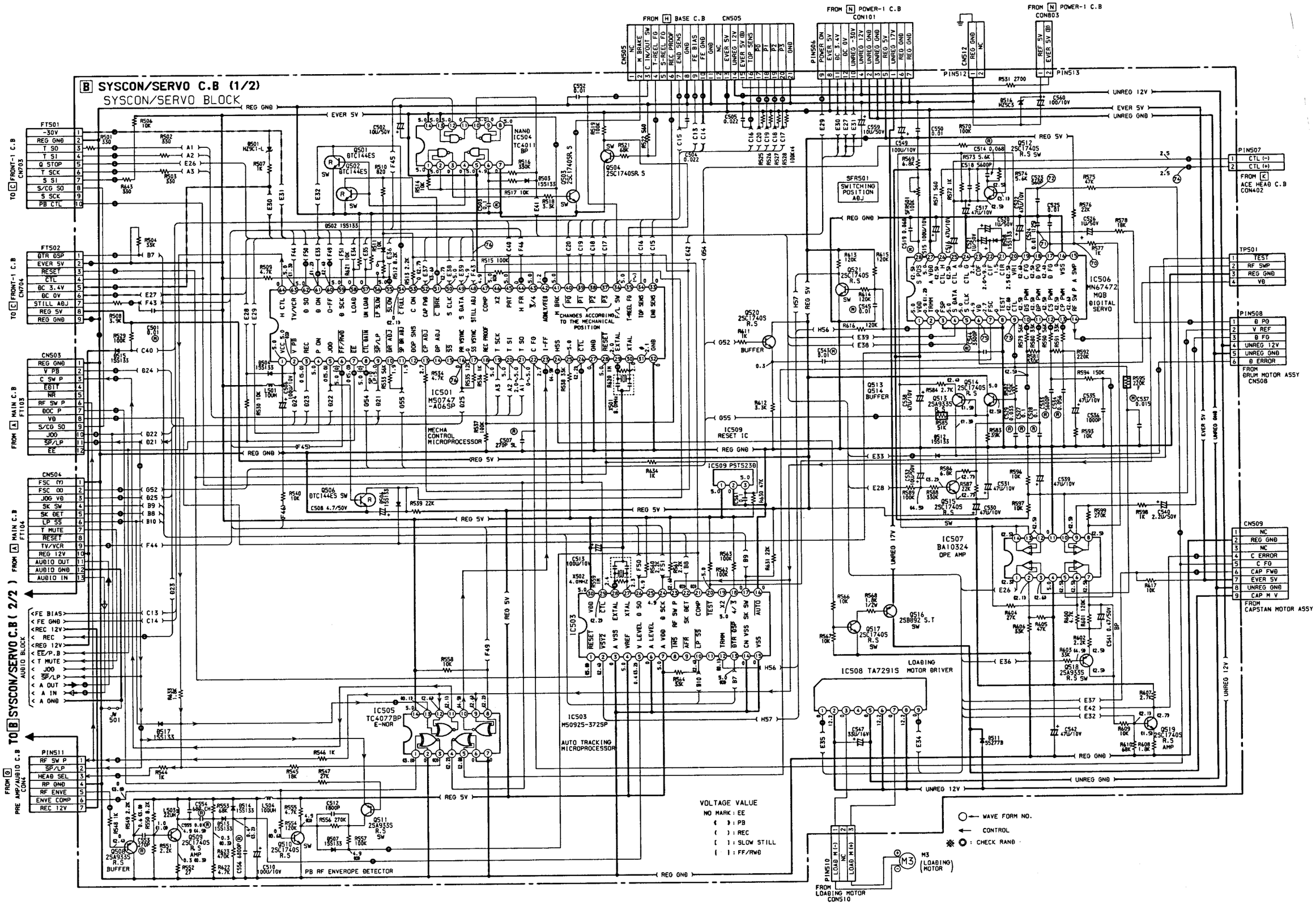


SCHEMATIC DIAGRAM – 4 (BASE)




B SYSCON/SERVO C.B
C FRONT-1 C.B
M RELAY-2 C.B (1/2)
M RELAY-2 C.B (2/2)
K ACE HEAD C.B
E FRONT-3 C.B
D FRONT-2 C.B
M2 (DRUM MOTOR)
DRUM ASSY (2/2)
M (CAPSTAN MOTOR)
CAPSTAN MOTOR ASSY
M3 (LOADING MOTOR)
FL DISPLAY
TUNER
SW706 SW702 SW705 Visual search
SW701 PAUSE/STILL
SW704 STOP
SW703 RECORD
VR701 STILL ADJUST
SW757 PICTURE
SW762
SW752 SLOW
SW763 SP/LP
SW754 INDEX
SW755 COUNTER RESET
SW764 MEMORY
SW751 VCR/TV
SW756 CHANNEL UP
SW761 DOWN
SW758 TRACKING AUTO/MANUAL
SW765 EJECT
SW783 OPERATE
IC781 REMOTE SENSOR
AUDIO R/P HEAD
CTL HEAD
AUDIO ERASE HEAD
ACEH (ACE HEAD)

SCHEMATIC DIAGRAM – 5 (SYSCON/SERVO)



SCHEMATIC DIAGRAM – 6 (FRONT)

INPUT SWITCHING LOGIC

INPUT	L1	L2	TU	B
INSEL 1	L	H	L	H
INSEL 2	L	L	H	H

BAND LOGIC

INPUT	L	H	U	LINE
BAND 1	L	L	H	H
BAND 2	L	H	L	H

PICTURE CONTROL LOGIC

LEVEL	-3	-2	-1	0	1	2	3
PCT 1	H	L	H	L	H	L	H
PCT 2	L	H	H	L	L	H	H
PCT 3	L	L	L	H	H	H	H

LEVEL
-3 : SHARP
0 : NORMAL
3 : SOFT

C FRONT-1 C.B

FL701 12-MT-46GT FL DISPLAY

E FRONT-3 C.B

D FRONT-2 C.B

J JACK-1 C.B

M RELAY-2 C.B

IC701
CXP50116-149Q
TIMER/MODE/TUNER CONTROL

IC702 BR93C46 E2PROM

IC781 SBX1610-52

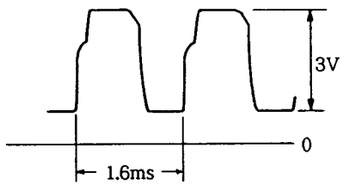
OSC IC703 BA10358N A/D CONVERTOR

CN701 CN702 CN703 CN704 CN705 CN706 CN708 CN709

WAVE FORM – 3 (SYSCON/SERVO)

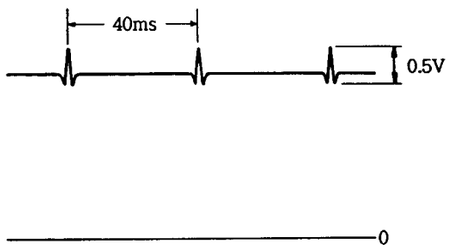
⑦⓪ IC506 Pin ⑰ (DRUM FG)

VOLT/DIV : 1V
TIME/DIV : 0.5mS



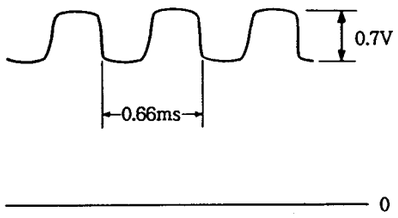
⑦⓫ IC506 Pin ⑱ (DRUM PG)

VOLT/DIV : 0.5V.
TIME/DIV : 10mS



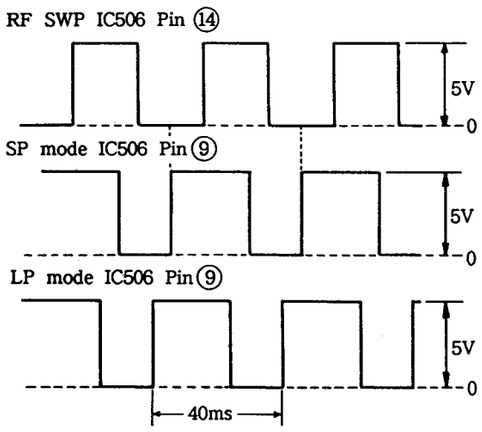
⑦⓬ IC506 Pin ⑲ (CAPSTAN FG)

VOLT/DIV : 0.5V
TIME/DIV : 0.2mS

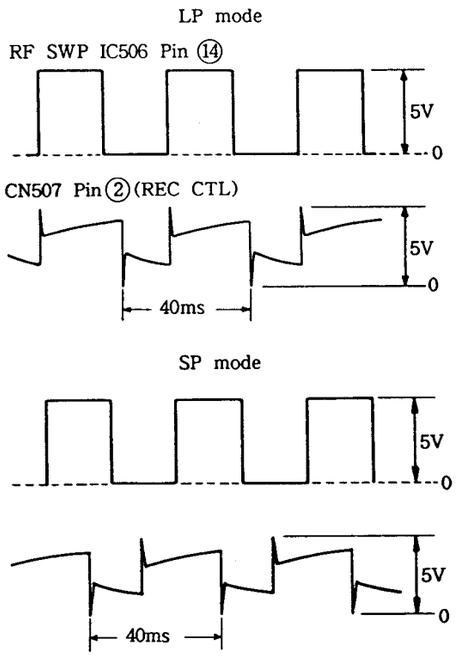


⑦⓭ P.B CTL and RF SWP

VOLT/DIV : 2V
TIME/DIV : 10mS

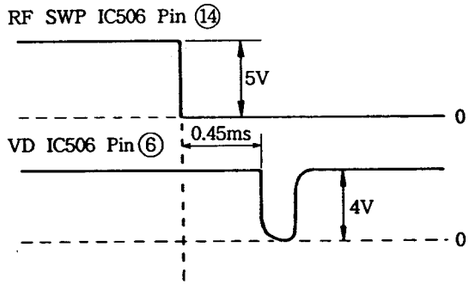


⑦⓮ REC CTL and RF SWP



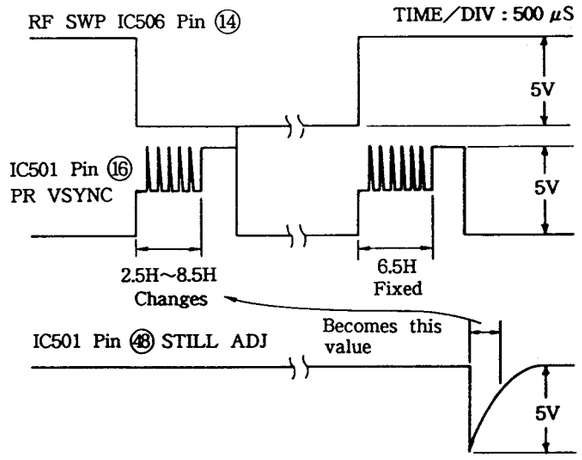
⑦⓯ VD and RF SWP

VOLT/DIV : 2V
TIME/DIV : 0.2mS

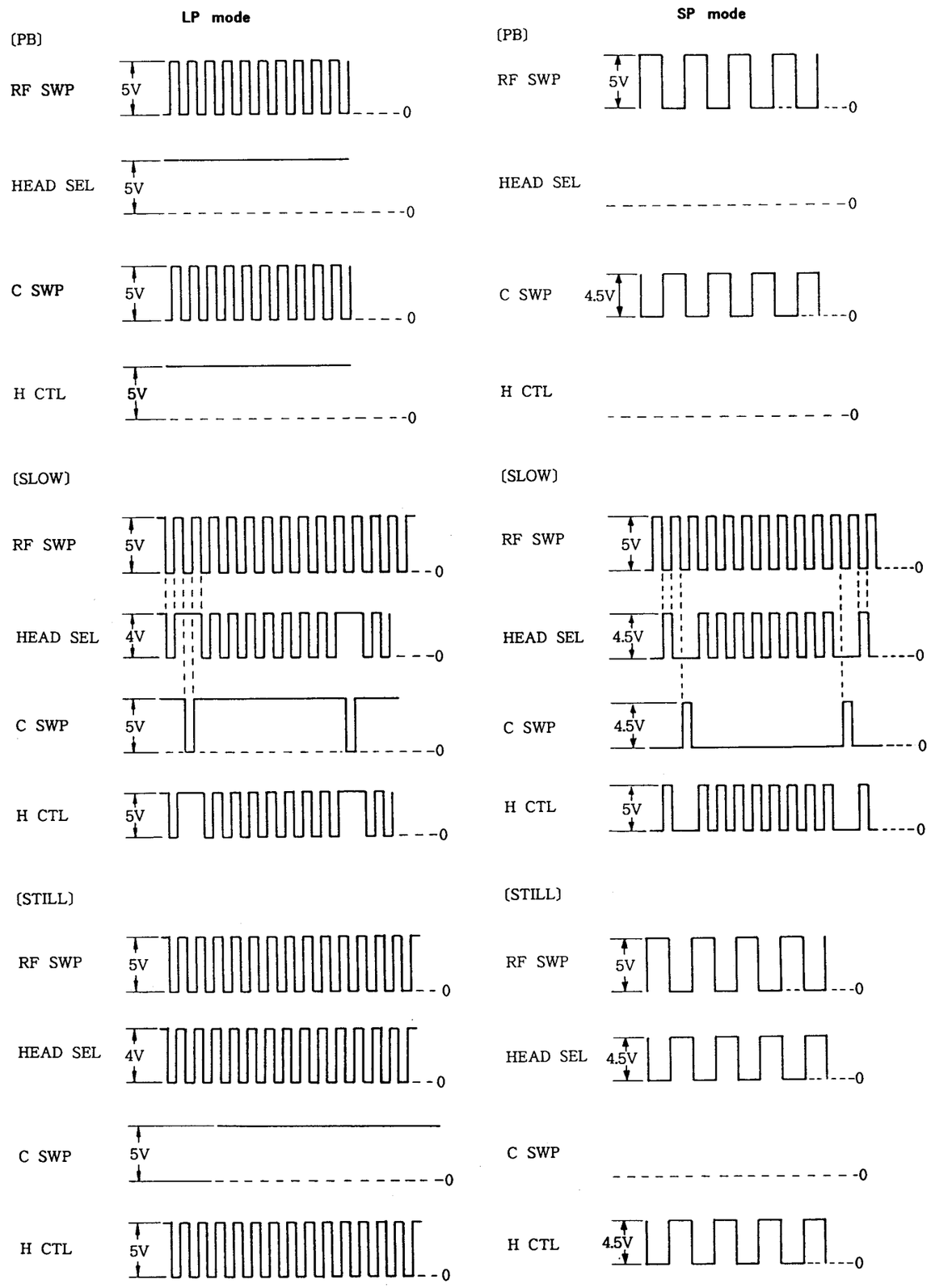


⑦⓰ JOG MODE

VOLT/DIV : 1V
TIME/DIV : 500 μS

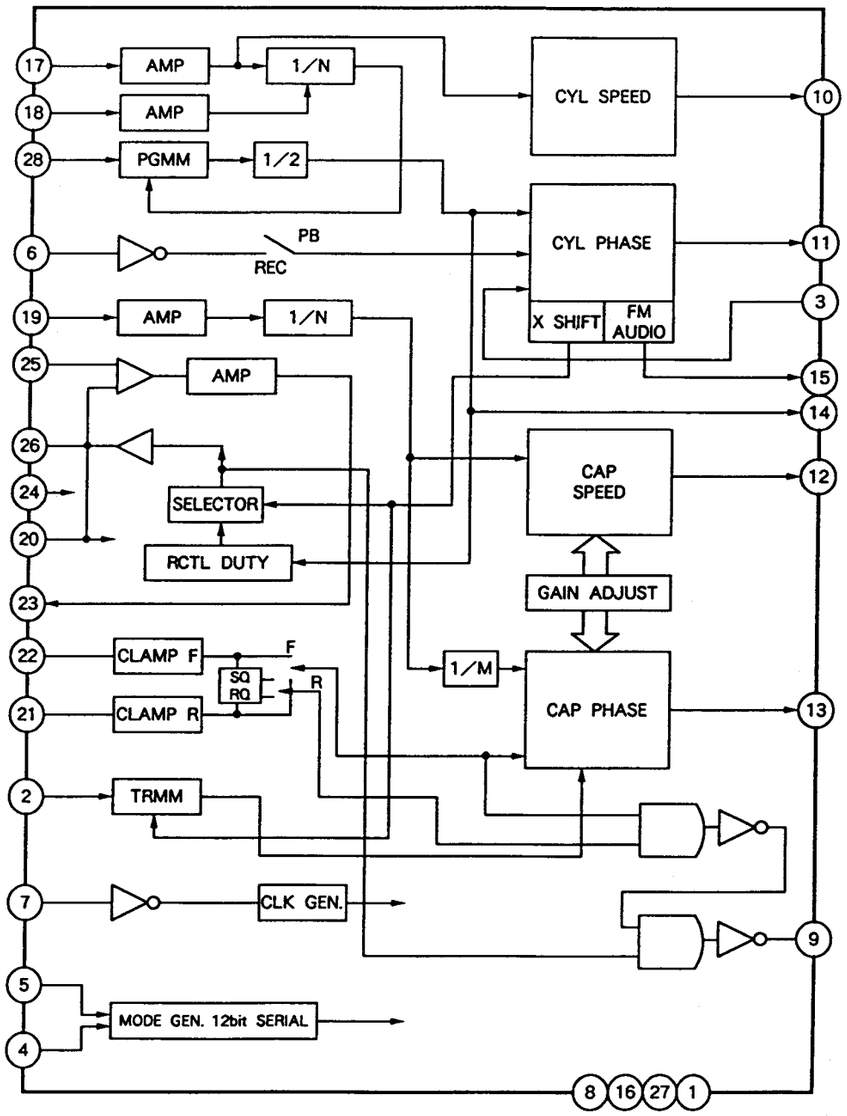


Modes in the LP and SP modes.

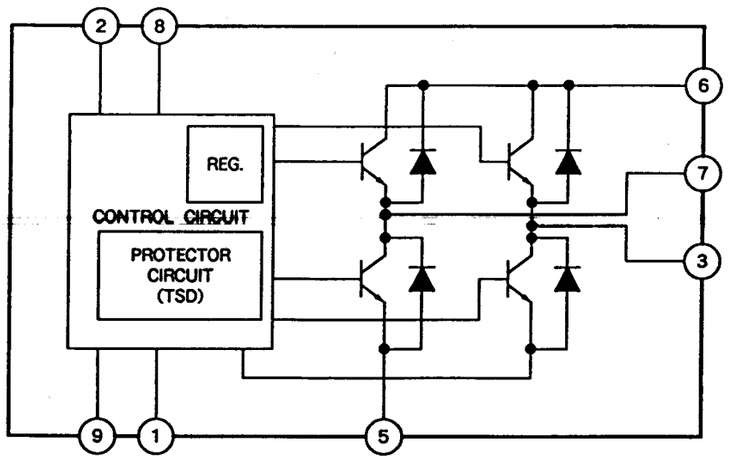


IC BLOCK DIAGRAM

IC,MN67472

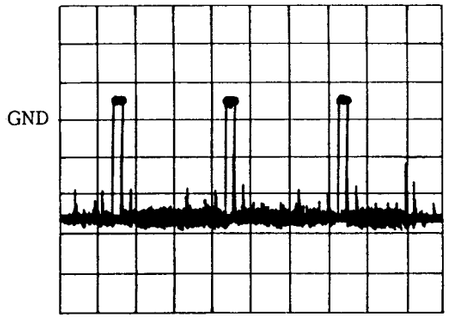


IC,TA7291

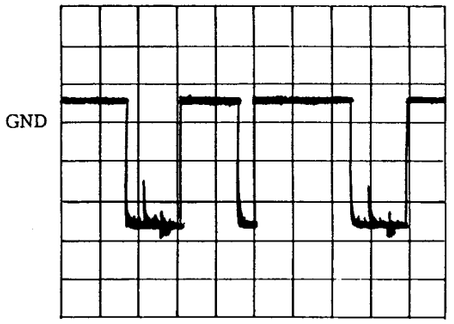


WAVE FORM – 4 (FRONT, AUDIO)

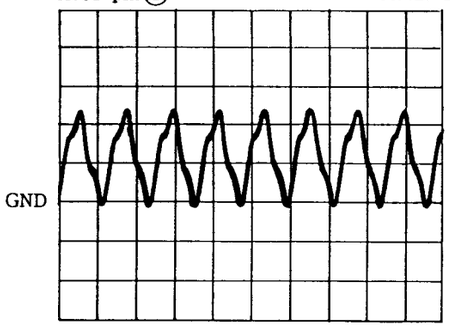
(53) IC701 Pin (17)
TIM 1
VOLT/DIV : – 10V
TIME/DIV : 1mS



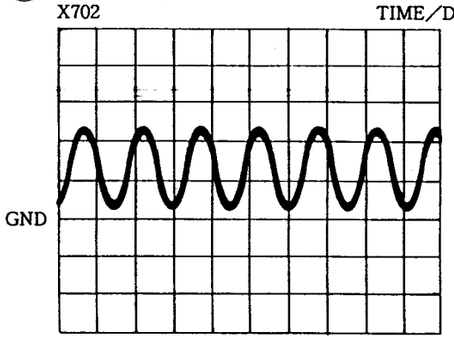
(54) IC701 Pin (1)
SEG d
VOLT/DIV : – 10V
TIME/DIV : 5mS



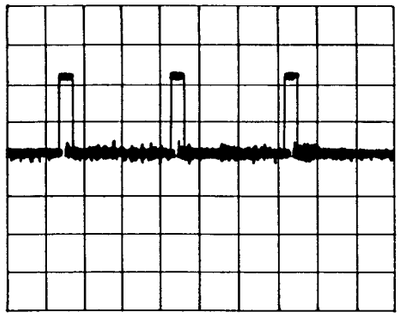
(55) IC701 Pin (72)
X701 pin (1)
VOLT/DIV : 2V
TIME/DIV : 2mS



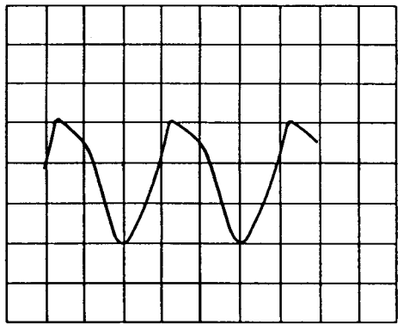
(56) IC701 Pin (30)
X702
VOLT/DIV : 2V
TIME/DIV : 20mS



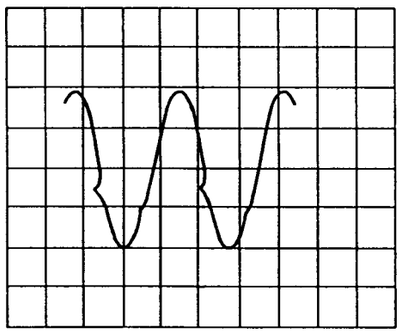
(57) IC701 Pin (37)
KR2 (during key make mode)
VOLT/DIV : 2V
TIME/DIV : 20mS



(58) T401 Pin (1)
VOLT/DIV : 1V
TIME/DIV : 5 μ S



(59) Q404 Base
VOLT/DIV : 5V
TIME/DIV : 5 μ S



※ Other AC voltages that are generated in T401 are sine waves of 68-70 kHz.

B SYSCON/SERVO C.B (2/2)

—AUDIO BLOCK—

AT REC

	AC	DC
T401 ①	6.5V RMS	10.5V
②	0V RMS	10.5V
③	0V RMS	0V
④	12.9V RMS	0V
⑤	18.5V RMS	0V
⑥	38.4V RMS	0V
Q404 BASE	1.1V RMS	-0.4V

FE BIAS
FE GND
REC 12V
REC
REG 12V
EE/P.B
TMUTE
JOG
SP/LP
A OUT
A IN
A GND
TO B SYSCON/SERVO C.B (1/2) SYSCON/SERVO BLOCK

GND
REG 12V
REC 12V

REC:11.7
Q402 DTA114ES (SPT) VOLTAGE SELECT
Q403 DTC144ES (SPT) VOLTAGE SELECT
L404 47UH
C423 0.022
C417 100/25
C418 0.01
R422 10K
R424 10K
R427 10K
R430 1K
D401 1SS133
D402 1SS133
C419 0.47/50
R423 27K
C420 0.01
C421 10/50
C412 0.027 (M)
R415 150
D403 1SS133
R429 1K
Q401 2SC1740S (SPT) MUTE
R416 330
C413 0.047 (M)
R418 15K
C414 4.7/50
R419 680
R420 1K
L402 8.2MH
C415 0.012 (M)
C416 8200P
R421 15K

C427 33/16
L403 1MH
BIAS OSC
R426 15K
Q404 2SC3331
T401
R428 27K
C426 560P
C424 1000P
C425 100V 0.039 (M)
C428 0.01 (M)

R414 27K
C410 47/10
C411 1/50
L401 8.2MH
R417 3.3K

REC:3.8 | PB:4.2 | TMUTE JOG:4.3 | LP:4.2 | 3.9 | 1.3 | 4.0

REC/EE CONT
RIPPLE FILTER
P.B/EE CONT
MUTING CONT
EP SW CONT
LP SW CONT
POWER ON/OFF MUTE
REC AMP
REC MUTE
REC EE P.B

IC401
LA7295
VTR AUDIO SIGNAL
REC/PB PROCESSER

EE P.B REC
CURRENT PROTECTOR
REC
EQ AMP
P.B MUTE
ALC
E.E MUTE
LINE AMP
ALC DET

:EE, REC
:PB
:CONTROL

REC:10.7 | 7.8 | 2.28 | 2.32 | 2.44

R401 33K
C401 0.01 (M)
C402 820P
R403 270
C403 1/50
C404 1/50
R404 330K
R405 6.8K
C406 0.018 (M)
C407 0.47/50
C405 33/16
R407 3.9K
R408 6.8K
R406 150
R402 10
R413 33K
R411 1M
R412 12K
C408 22/50
R410 5.6K
R409 820
C409 5600P

GND

PIN401 CON401
4 A P.B 4
3 A REC 3
2 A ERA 2
1 A GND 1

CON402 PIN402
6 A P.B 6
5 A REC 5
4 A ERA 4
3 A GND 3
2 CTL (-) 2
1 CTL (+) 1

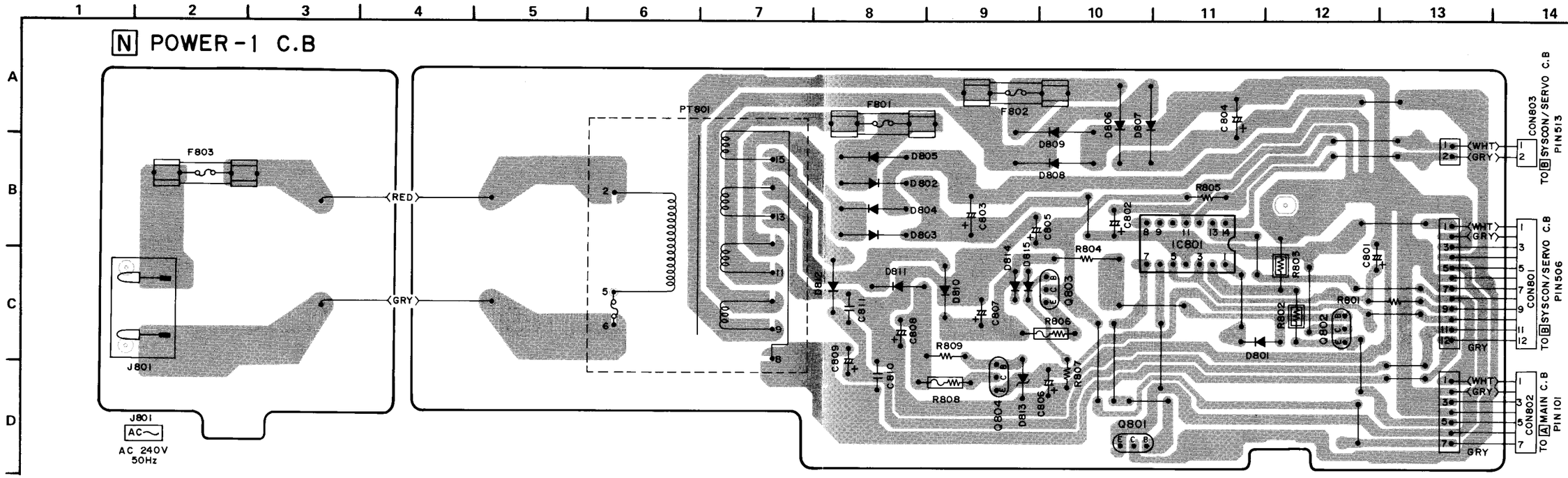
AUDIO R/P HEAD
AUDIO ERASE HEAD
CTL HEAD
ACEH (ACE HEAD)

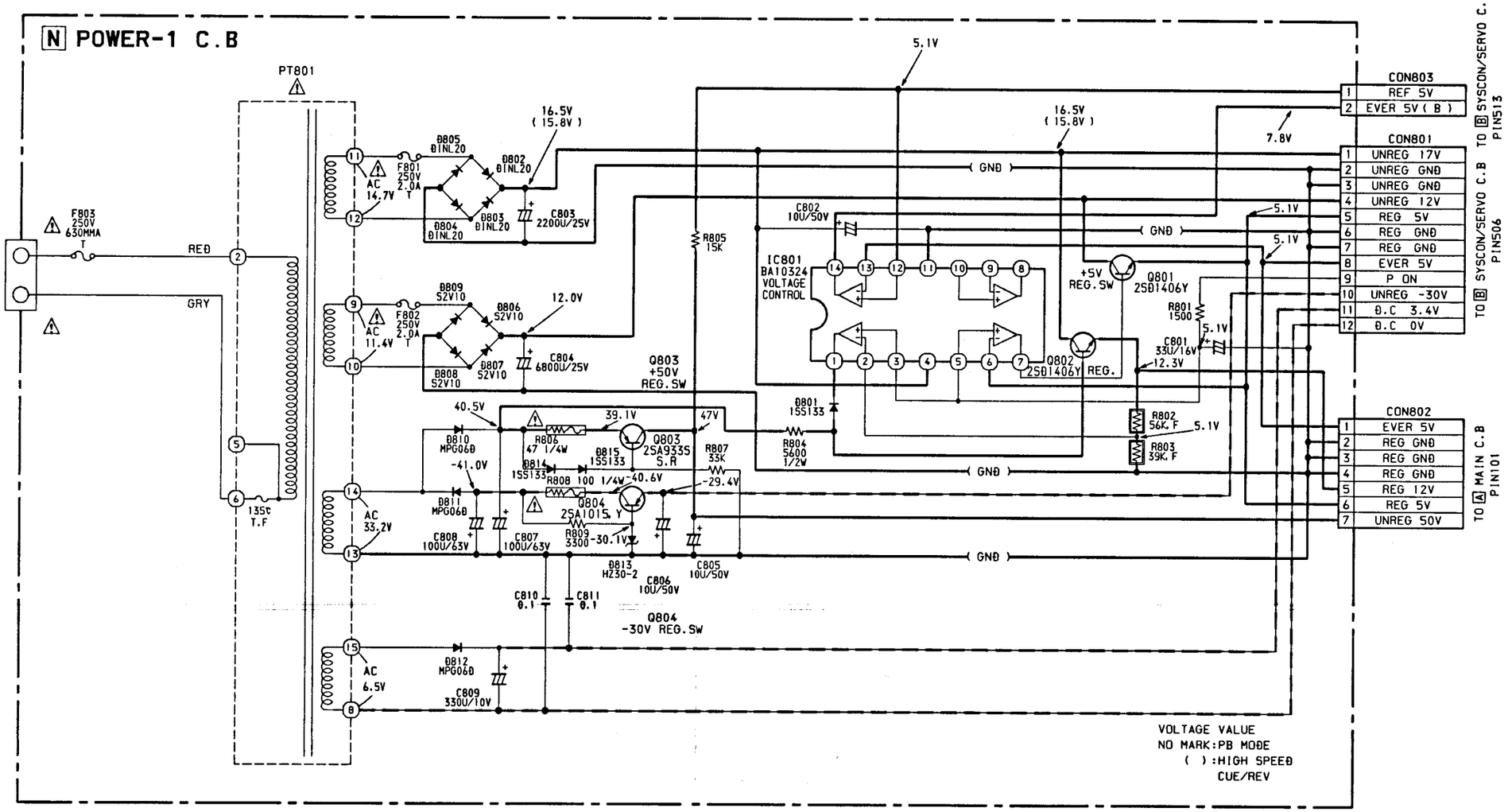
K ACE HEAD C.B

PIN507 CON507
1 CTL (-) 1
2 CTL (+) 2

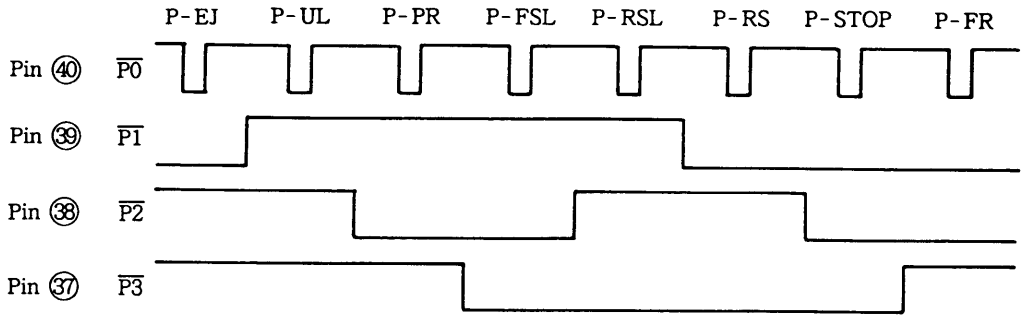
FROM B SYSCON/SERVO C.B (1/2) SYSCON/SERVO BLOCK PIN507

WIRING - 3 SCHEMATIC DIAGRAM - 8 (POWER UNIT)





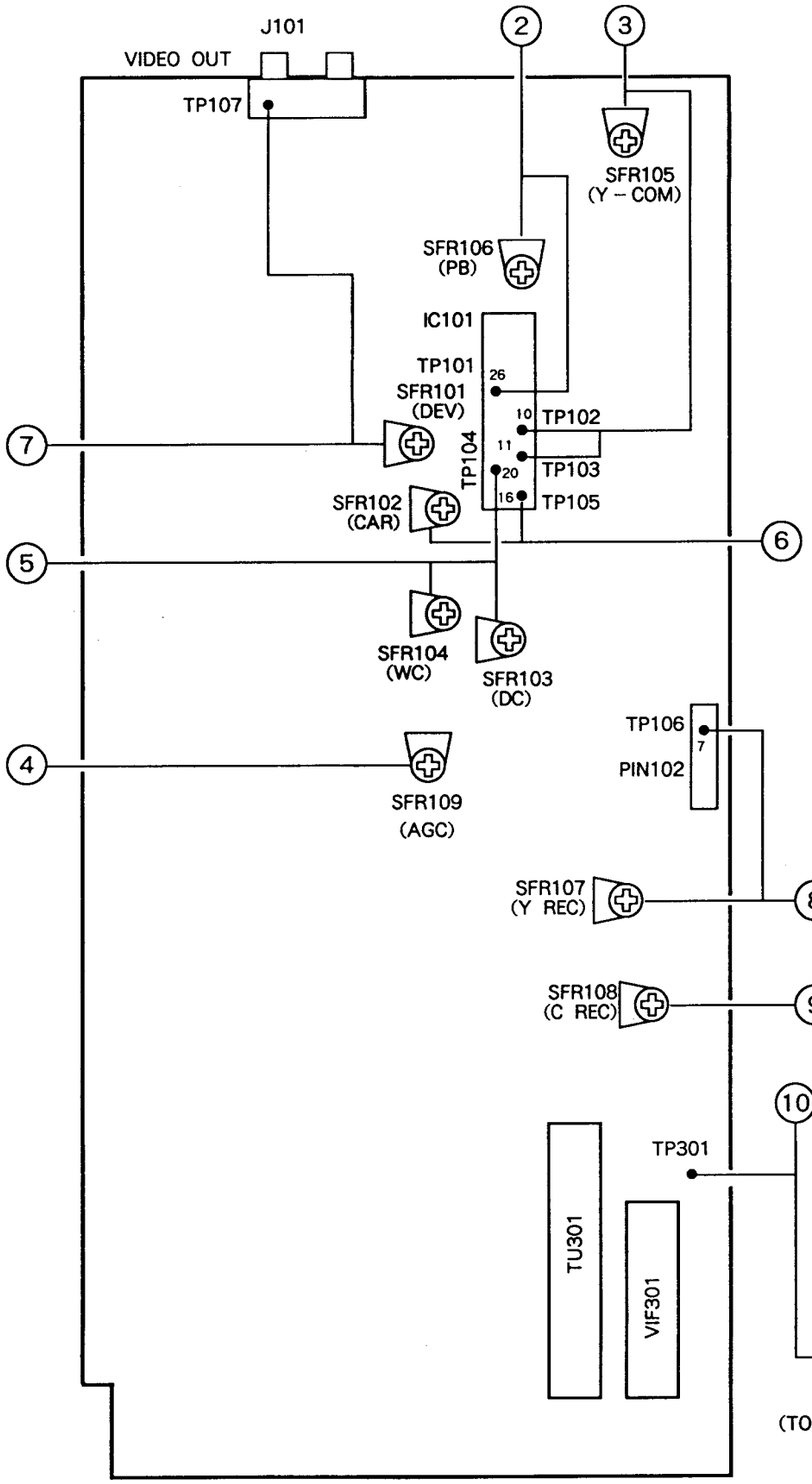
IC501 Concerning the mode switches P0-P3 and their positions



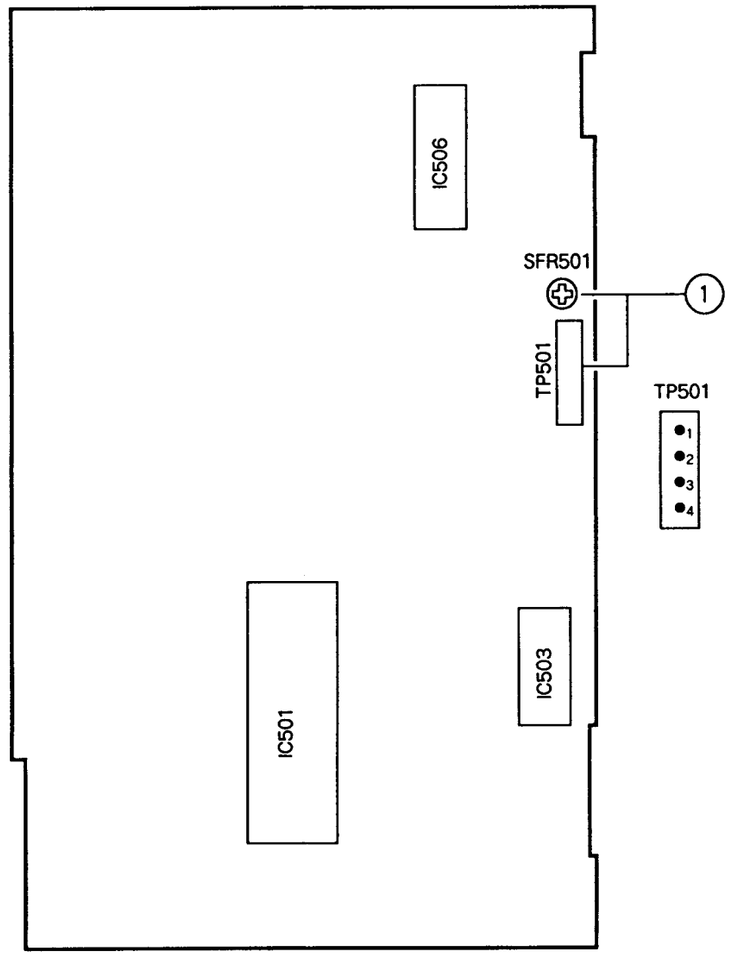
P-EJ : EJECT POSITION
P-UL : UN LOADING POSITION
P-PR : PLAY REC POSITION
P-FSL : FWD SLOW POSITION
P-RSL : REV SLOW POSITION
P-RS : REV SEARCH POSITION
P-STOP : STOP POSITION
P-FR : FF/REW POSITION

MEMO

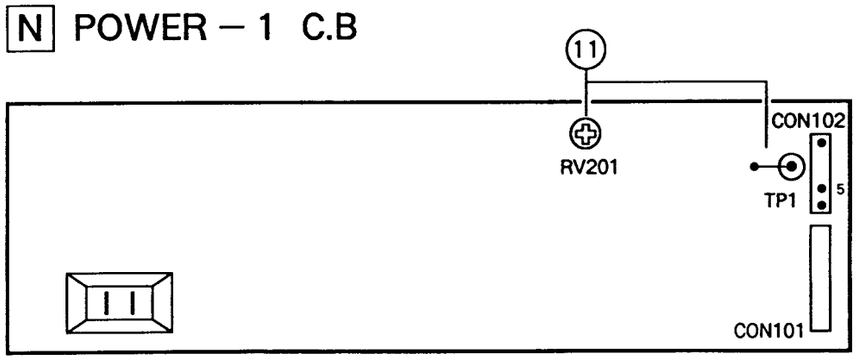
A MAIN C.B



B SYSCON/SERVO C.B

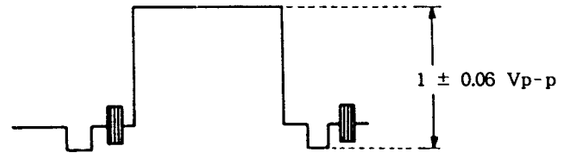


N POWER – 1 C.B



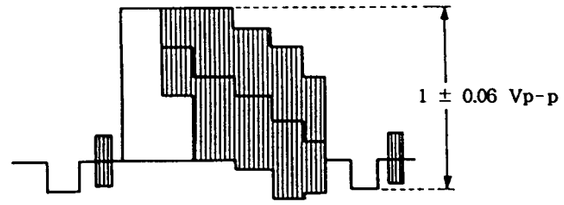
Preparation for Adjustment

Input signal (100% white)



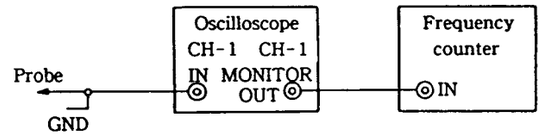
※Note : Voltage measured with a signal generator connected to the VCR.

Input signal (color bar)



※Note : Voltage measured with a signal generator connected to the VCR.

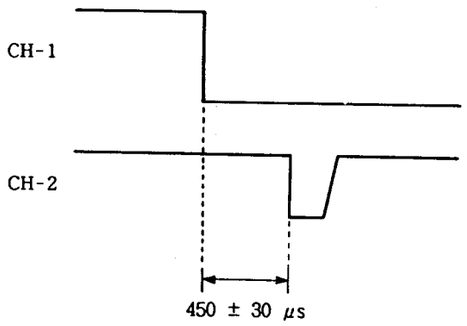
Connection of test equipment



Servo Adjustment

1. Switching position adjustment
([B] SERVO/SYSCON C.B)
Oscilloscope CH-1 : TP501 Pin ②
CH-2 : TP501 Pin ④

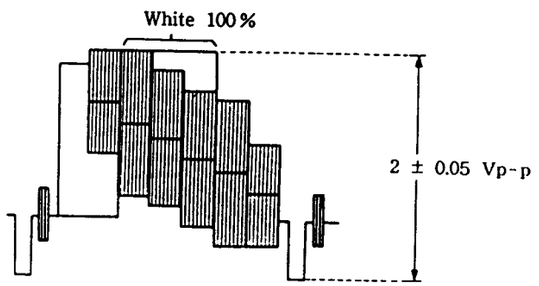
(1) Short circuit TP501 pin ① and pin ③.
(2) Play back test tape TTV-P1.
(3) Adjust SFR501 so that the V. SYNC signal is as shown in the figure below.
(4) After adjustment, remove the grounding lead wire.



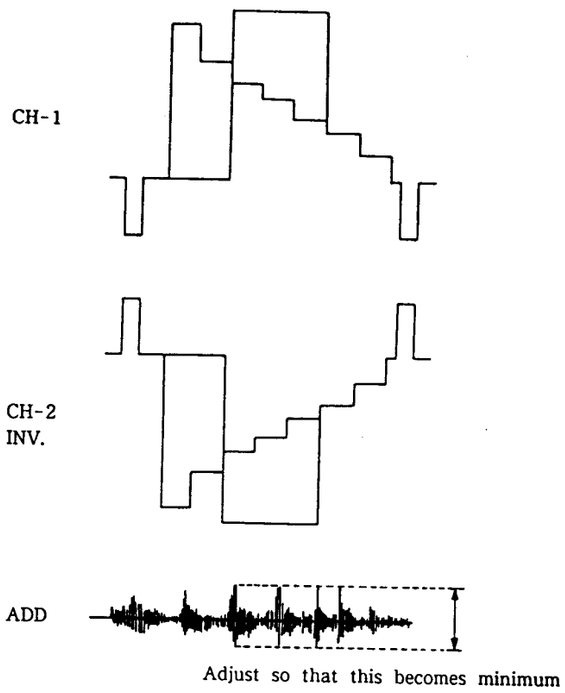
Video Adjustment

2. PB level adjustment ([A] MAIN C.B)
Oscilloscope : TP101 (IC101 Pin ㉘)
(1) playback the test tape TTV-P1.
(2) Adjust SFR106 so that the white 100% level is as shown in the figure below.

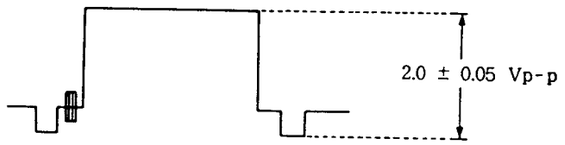
※ Terminate the VIDEO OUT jack with 75ohms or connect a monitor to it.



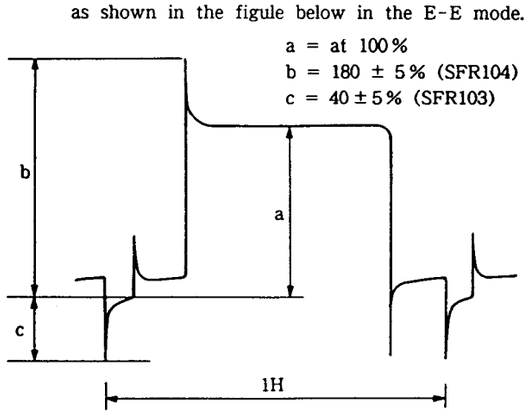
3. Y-COM adjustment ([A] MAIN C.B)
Oscilloscope CH-1 : TP102 (IC101 Pin ⑩)
CH-2 : TP103 (IC101 Pin ⑪)
(1) Play back the test tape TTV-P1.
(2) Turn the oscilloscope CH-2 INV switch on.
(3) Turn the oscilloscope VERT MODE ADD switch on.
(4) Adjust SFR105 so that the waveform becomes minimum as shown in the figure.
※ Leave the oscilloscope power range the same as that of the CH-1 and CH-2 range.



4. AGC adjustment ([A] MAIN C.B)
Oscilloscope : TP101 (IC101 Pin ㉘)
(1) Set the input switch to LINE IN 1.
(2) Input 100% white signal in the LINE IN 1 jack (J101).
(3) Adjust SFR109 so that the Y signal is as shown in the figure below in the E-E mode.

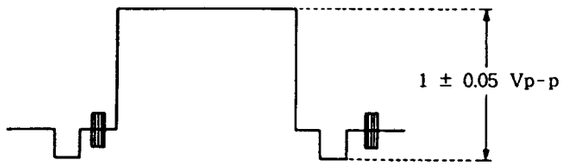


5. White/dark clip adjustment ([A] MAIN C.B)
Oscilloscope : TP104 (IC101 Pin ⑳)
(1) Set the input switch to LIN IN 1.
(2) Input 100% white signal in the LINE IN 1 jack (J101).
(3) Adjust SFR103 and SFR104 so that the Y signal is as shown in the figule below in the E-E mode.

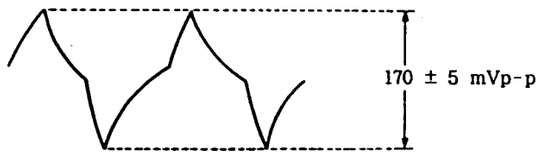


6. Y-FM carrier adjustment ([A] MAIN C.B)
Oscilloscope : TP105 (IC101 Pin ⑯)
(1) Set the input switch to LINE IN 1.
(2) Specify no input condition (do not connect input to LINE IN 1 jack (J101)).
(3) Adjust SFR102 so that the frequency adjustment counter reads 3.85 ± 0.05MHz.

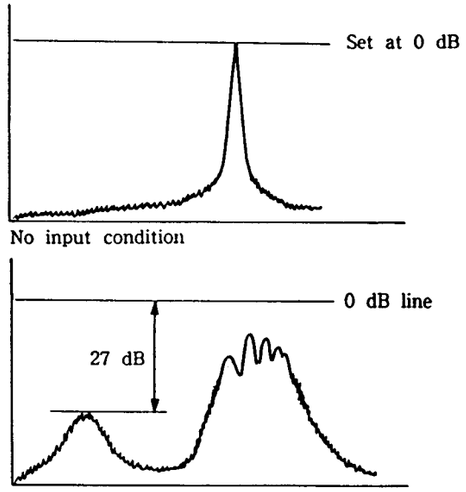
7. Y-FM deviation adjustment ([A] MAIN C.B)
※The Y FM carrier frequency adjustment should have been completed.
Oscilloscope : TP107 (J101 VIDEO OUT)
(1) Switch the input selector to LINE IN 1.
(2) Record a 100% white signal.
(3) Play the recorded section and check the Y signal level.
(4) IF out of specification (1 ± 0.05 Vp-p) turn SFR101.
(5) Repeat (2) ~ (4) unit observe the waveform as indicated below.
※ Terminated the VIDEO OUT jack with 75ohms or connect a monitor to it.



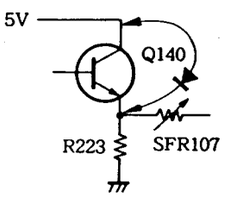
8. Y REC current adjustment ([A] MAIN C.B)
Oscilloscope : TP106 (PIN102 Pin ⑦)
(1) Set input switch to LINE IN 1.
(2) Specify no input condition (do not connect input to LINE IN 1 jack (J101)).
(3) **Adjust SFR107 so that the Y signal is as shown in** the figure below in the E-E mode.



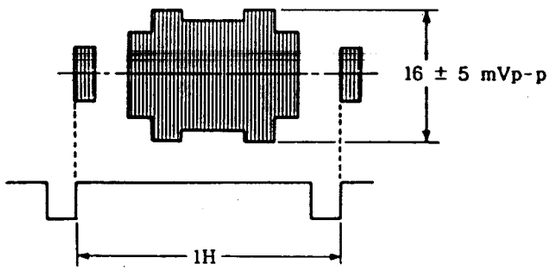
9-1. Chroma REC current adjustment
([A] MAIN C.B)
Spectrum analyser : TP106 (PIN102 Pin ⑦)
(1) Set the input switch to LINE IN 1.
(2) Specify no input condition (do not connect input to LINE IN 1 jack (J101)).
(3) Input the color bar in LINE IN 1 and adjust SFR 108 so that the level is as shown in the figure below in the E-E mode.



9-2 Chroma REC current adjustment
([A] MAIN C.B)
Simple adjustment
Perform this adjustment when there is no spectrum analyser.
Oscilloscope CH-1 : TP106 (PIN102 Pin ⑦)
CH-2 : TP107 (J101 VIDEO OUT)
(1) Connect the diode between the transistor (Q140) emitter and collector.



(2) Set the input switch to LINE IN 1 and input the color bar.
(3) Adjust SFR108 so that the red part of the chroma signal is as shown in the figure below.
(4) Confirm that there are no beat or color discrepancies in record or playback.



Tuner Adjustment

10-1. RF AGC adjustment (A MAIN C.B)

RF MOD ANT input : 55dBμ, 0ch (46.25MHz)
VIDEO : color bar 87.5% Modulation
SOUND : 400Hz 60% Modulation
Digital volt meter : TP301 (TU301 Pin ④)

(1) Perform tuning of audio and video.
(2) Adjust so that 5.25 ± 0.2V is achieved in SFR302 inside VIF301.

10-2. RF AGC adjustment (A MAIN C.B)

Simple adjustment TV

(1) Receive free broadcast station.
(2) Perform tuning of audio and video.
(3) Maximize the TV monitor contrast.
(4) Turn SFR302 inside VIF301 to the right so that snow noise is produced.
(5) Turn SFR302 to the left and adjust it so that there is no more snow noise.
(6) Receive each TV broadcast and confirm that there is no beat, screen discrepancy, or snow noise using the comeback.

TEST MODE

Concerning the test mode :
There is a test mode in the operation check in the HV-F80.

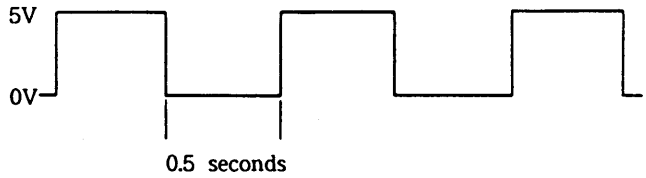
1. Starting of the test mode

The micro-computer test terminals JW1 and JW2 of the FRONT -1 circuit board are left short circuited, and the test mode is entered when the AC code is inserted.

※ The test mode is cancelled if the AC code is extracted.

2. Function of the test mode

(1) It can check the 0.5 second space turnover output of the output port that excludes the micro-computer communication system.



Note : However, the PWM output does not ever output "H" and "L".

(2) The fluorescent lamp is turned down at the 0.5 second space.
The buzzer sounds at 0.5 second's interval.

SERVICE MODE

Concerning the service mode :
There is a service mode in the adjustment operation check in the MV-505.

1. Starting of the service mode :

The service mode is entered by following the order below.

(1) Connect the TV monitor to VIDEO OUT (J101).
(2) Turn POWER ON.
(3) Short circuit the micro-computer test terminals JW1 and JW2 of the FRONT-1 circuit board with a pin set. (Short circuit it after more than 2 seconds after POWER ON.)
(4) The service mode is entered by following meeting conditions above.

※ The service mode rotates after every short circuit. There are 3 modes in the service mode and it makes transitions in the manner shown below.

※ The service mode is cancelled if the AC code is extracted.

Fluorescent display lamp

Service mode display only necessary

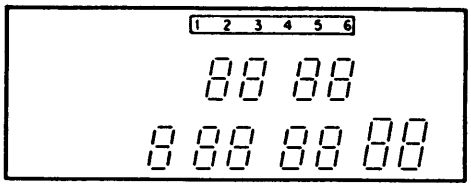


Fig-1

2. Description of each service mode

(1) Service mode 3

In this mode, the clock display is specified to about 10 speeds.
The clock display can be advanced and can confirm timer.

3. FM Envelope Check and Adjustment

3-1 "Roller, Guide" check

1) Connect an oscilloscope as shown in the figure. (See Figure-1)

2) Put the set into the PLAYBACK mode. (Use TTV-P2)

3) Set the tracking to the preset mode. (Short SYSCON/ SERVO C. B TP501 pin① with pin③ to shorted modes.)

4) Check that the FM waveform is level as shown by waveform A in Figure-2.

5) If the start of the FM waveform (drum entrance side) is not level (waveforms B and C in Figure-2), carry out the "Roller, Guide (Supply)" Height Adjustment described in section 3-2. If the constricted part of the FM waveform (drum exitting side) is not level (waveforms D and E in Figure-2), carry out the "Roller, Guide (Take-Up)" Height Adjustment described in section 3-3.

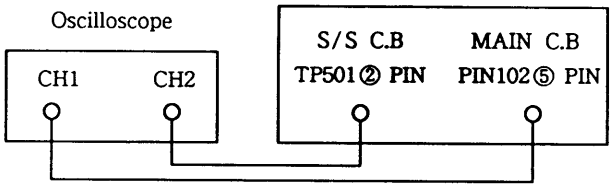


Fig-1

3-2 "Roller, Guide (Supply)" Height Adjustment

1) Loosen the "Screw Set" until the main body "Roller, Guide (Supply)" can be turned easily. (See Figure-3)

2) If the start of the FM waveform (drum entrance side) is like waveform B in Figure-2, it is usually because the "Roller, Guide (Supply)" has shifted to the bottom. If the waveform is like waveform C in Figure-2, it is usually because the "Roller, Guide (Supply)" has shifted to the top. Turn the height adjustment screw found at the top of the "Roller, Guide (Supply)" and make adjustments accordingly so that the FM waveform becomes level like waveform A in Figure-2.

- Turn the screw counterclockwise if the "Roller, Guide (Supply)" has shifted to the bottom. (See Figure-3)
- Turn the screw clockwise if the "Roller, Guide (Supply)" has shifted to the top. (See Figure-3)

3) Carry out the Rough Phase Adjustment described in section 3-4.

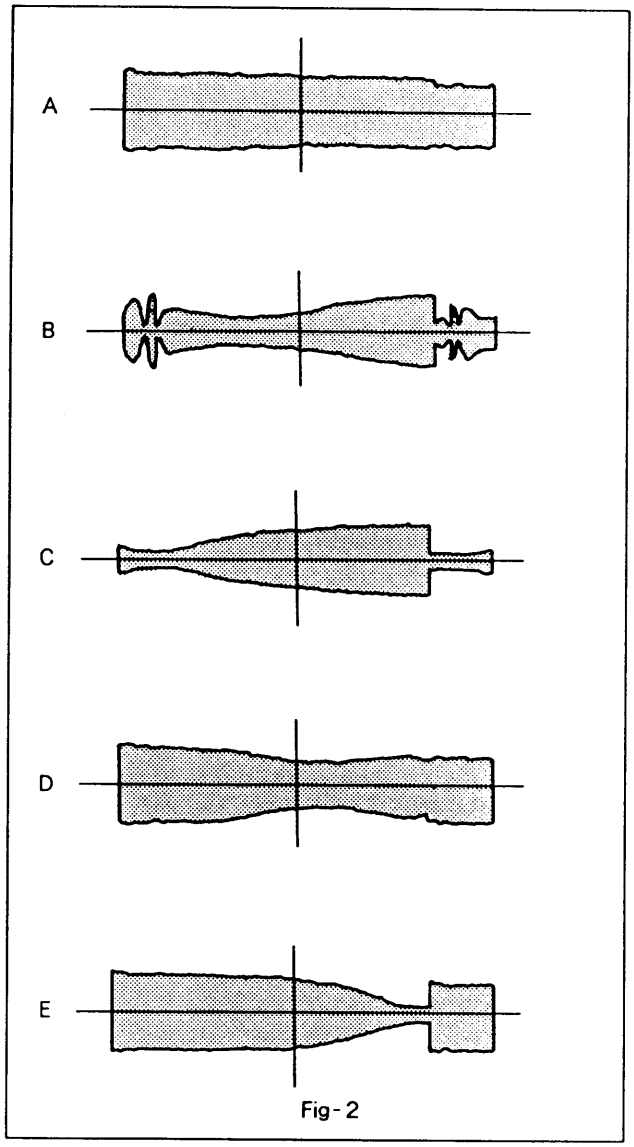


Fig-2

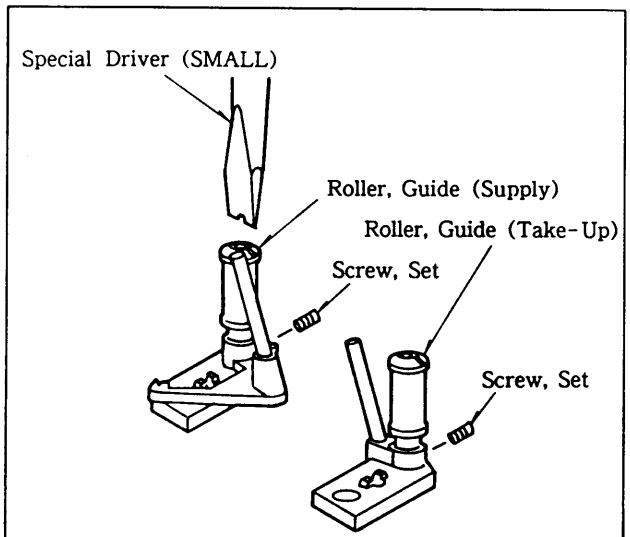


Fig-3

3-3 Roller, Guide (Take-Up) Height Adjustment

1) Loosen the "Screw Set" until the main body of the "Roller, Guide (Take-Up)" can be turned easily. (See Figure-4)

2) If the constricted part of the FM waveform (drum exit) is like waveform D in Figure-2, it is usually because the "Roller, Guide (Take-Up)" has shifted to the bottom.
If the waveform is like waveform E in Figure-2, it is usually because the "Roller, Guide (Take-Up)" has shifted to the top. Turn the height adjustment screw found at the top of the "Roller, Guide (Take-Up)" and make adjustments accordingly so that the FM waveform becomes level like waveform A in Figure-2.

- Turn the screw counterclockwise if the "Roller, Guide (Take-Up)" has shifted to the bottom. (See Figure-4)

- Turn the screw counterclockwise if the "Roller, Guide (Take-Up)" has shifted to the top. (See Figure-4)

3) After this adjustment has been completed, carry out the azimuth and height adjustments for the "ACE Head" as described in section 4-2.

4) Carry out the rough phase adjustment described in section 3-4.

3-4 Rough Phase Adjustment

1) Connect an oscilloscope as shown in the figure. (See Figure-5)

2) Put the set into the PLAYBACK mode. (Use TTV-P2)

3) Set the tracking to the preset mode.
(Short SYSCON/SERVO C.B TP501 pin ① with pin ③.)

4) After checking and adjusting the "Roller, Guide", check the FM waveform. (See Figure-7)

5) If the amplitude level of the FM waveform has fallen like waveform F, turn the "Nut B (for phase adjustment)" so that the amplitude level of the FM waveform is maximized. (See Figure-6, 7)

Note : Do not turn the Nut B (for phase adjustment) more than ± 1 turn.

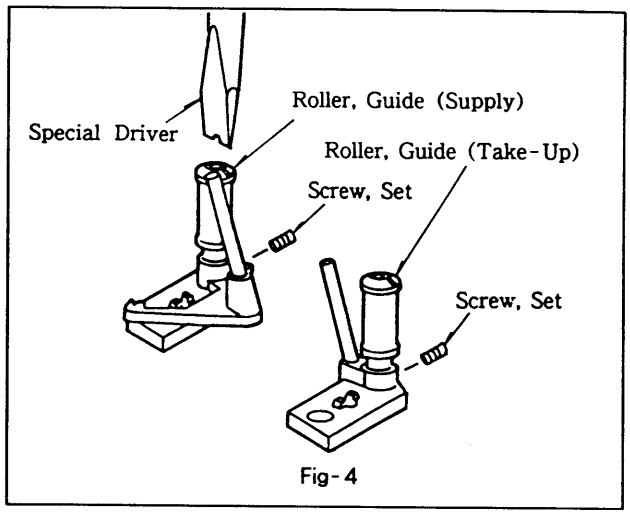


Fig-4

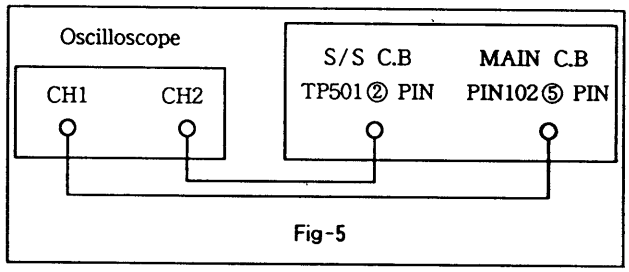


Fig-5

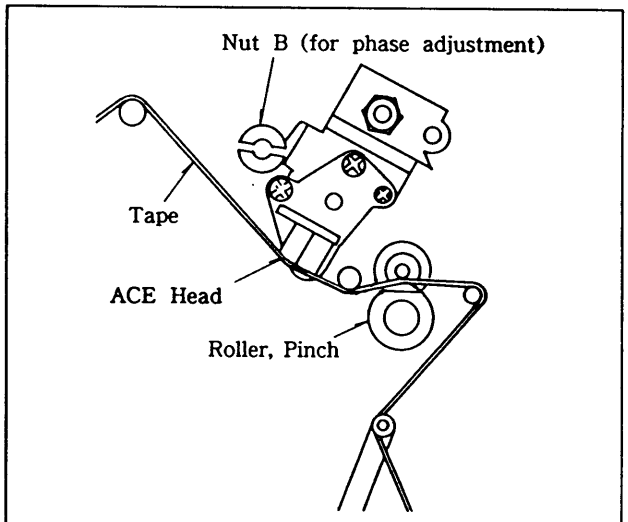


Fig-6

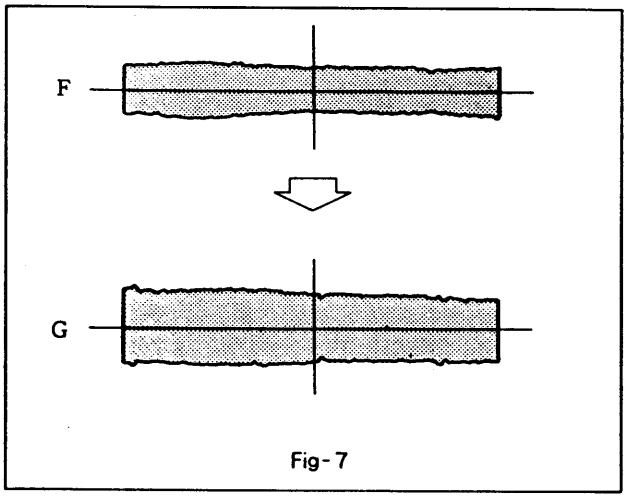


Fig-7

3-5 Check of the "FM Waveform Level Degree"

1) Connect an oscilloscope as shown in the figure. (See Figure-8)

2) Put the set into the PLAYBACK mode. (Use TTV-P2)

3) Set the tracking switch to MANUAL mode, change the tracking, and check that the amplitude level of FM waveform at the time of the tracking change also changes.

4) Adjust the tracking while in MANUAL mode so that the amplitude level of the FM waveform is maximized. Then adjust the oscilloscope so that the amplitude level of that waveform reaches the fifth level on the oscilloscope.(See Figure-9)

5) Adjust the tracking so that the amplitude level near the center (near point ⓑ) of the FM waveform on the oscilloscope is eighty percent (fourth level on the oscilloscope) of its maximum amplitude level. Then check that the amplitude levels near point ⓐ and point ⓒ of that FM waveform meet the specifications indicated in Figure-9.

6) If the amplitude level does not meet the specifications indicated in Figure-9, perform the adjustments from item 3-1 again.

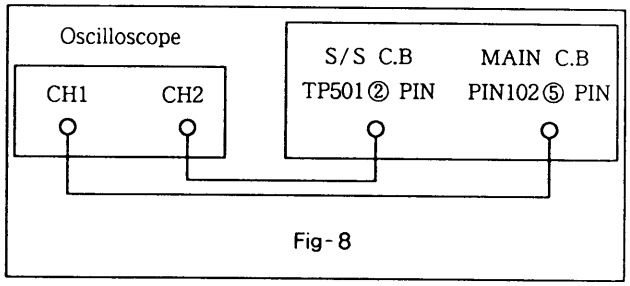
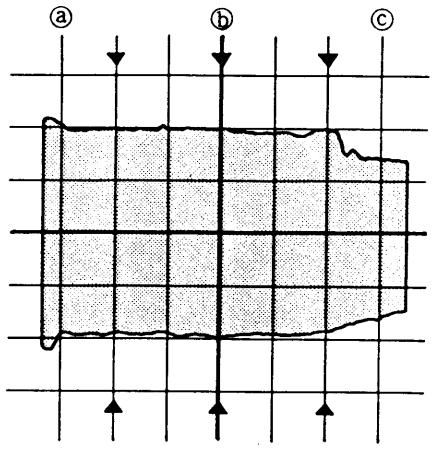


Fig-8



ⓐ ⓒ	Greater than 50% (greater than the 2.5 level)

Fig-9

3-6 Check 1 of the "Roller, Guide" Tape Transport Mode

1) Put the set into the PLAYBACK mode. (Use TTV-P2)

2) Set the tracking to the preset mode. (Short SYSCON/ SREVO C.B TP501 pin ① with pin ③.)

3) Check that there is no curling or wrinkling of the tape at the lower flange of either the "Roller, Guide (Supply)" or the "Roller, Guide (Take-Up)". (See Figure-10)

4) If there is curling or wrinkling, carry out the "Roller, Guide" check described in section 4-1 and the FM Waveform Level Degree check described in section 3-5.

5) Load and Unload the tape repeatedly and check that there are no level degree changes in the FM waveform.

6) If there are any problems with the above adjustments, check whether or not the installation shaft of the "Arm, ACE" rattles. If it does not rattle, replace the "Arm, ACE" (because this indicates some other problem with the "Arm, ACE") and carry out the "ACE Head" adjustment described in section 4.

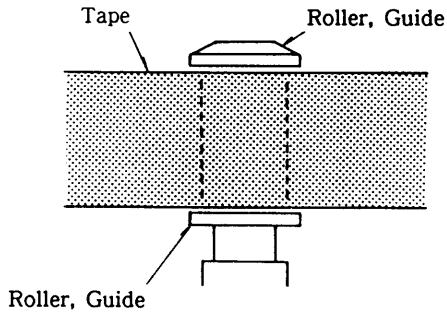


Fig-10

3-7 Check 2 of the "Roller, Guide" Tape Transport Mode

1) Put the set into the PLAYBACK mode. (Use TTV-P2)

2) Set the tracking to the preset mode. (Short SYSCON/SERVO C.B TP501 pin ① with pin ③ to shorted modes.)

3) Gently press the tops of the "Roller, Guide (Supply)" and "Roller, Guide (Take-Up)" then release and check that the FM waveform quickly recovers its original shape.

4) If the FM waveform does not quickly recover, carry out the "Roller, Guide" check described in section 3-1 and the "FM waveform level degree" check 1 described in section 3-5.

5) If there are no problems with any of the above adjustments, tighten the "Screw, Set" of the fixed "Roller, Guide" for both the supply-side and take-up-side.

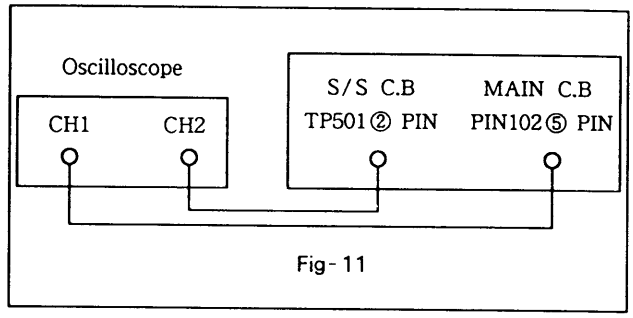


Fig-11

4. Adjustment of the "ACE Head"

4-1 ACE Head Tilt Adjustment

1) Connect an oscilloscope as shown in the figure. (See Figure-1)

2) Play back the Tape (Test Tape MVP-06T).

3) Slowly turn "Screw C (tilt adjustment)" clockwise to cause the tape to wrinkle slightly at the lower edge near the lower flange of the Roller, Guide (Take-Up).

4) Slowly turn "Screw C (tilt adjustment)" counterclockwise to get rid of the wrinkles at the lower edge of the tape.

5) Slowly turn "Screw C (tilt adjustment)" clockwise again but stop just before any wrinkles appear.

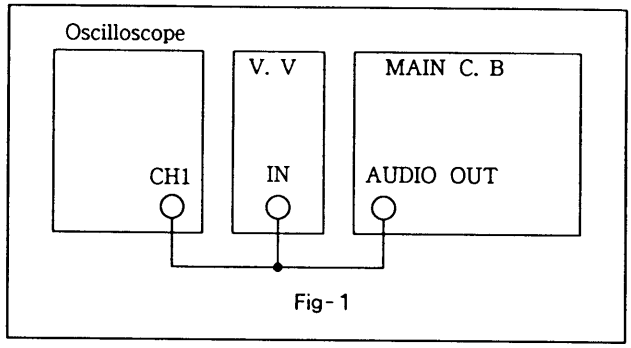


Fig-1

4-2 Azimuth and Height Adjustments for the "ACE Head"

1) Connect the oscilloscope to the audio output terminal and put the set into the playback mode. (Use TTV-P1 for height adjustment and TTV-P2 for azimuth adjustment) (See Figure-1)

2) Turn "Nut A (for height adjustment)" and "Screw B (for azimuth adjustment)" and adjust them so that the audio output level is at its maximum. (See Figure-2, 3)

3) Tilt the "ACE Head" counterclockwise and check that the audio output level has changed when the "ACE Head" is returned to its original position. (See Figure-3).

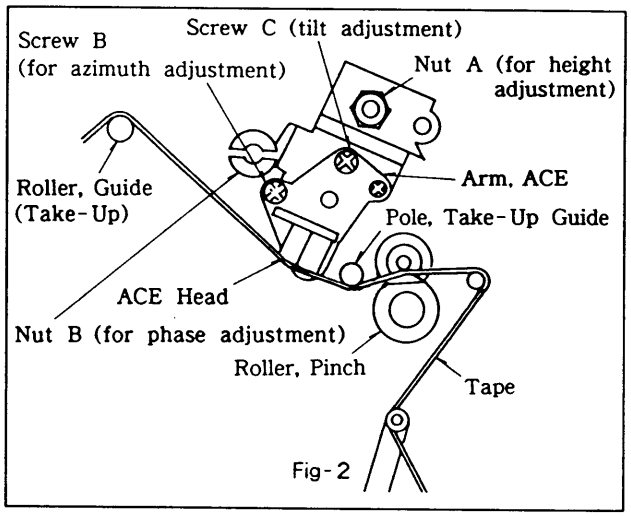


Fig-2

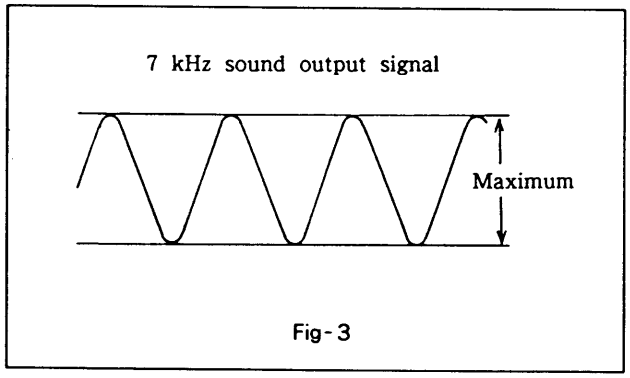


Fig-3

4) If there are any problems with the above adjustments, check whether or not the installation shaft of the "Arm, ACE" rattles. If it does not rattle, replace the "Arm, ACE" (because this indicates some other problem with the "Arm, ACE") and re-perform the " ACE Head" tilt adjustment described in section 4 and this adjustment from the beginning. (See Figure-1, 3)

5) After gently putting pressure on the "ACE Head" installation shaft in the direction of the arrow A←→A' shown in Figure-4, check that the maximum audio output level has not changed. (See Figure-4)

6) If there are any problems with the above adjustments, turn "Nut A" (for height adjustment) again and adjust them so that the audio output level is at its maximum. After gently putting pressure on the "Shaft, ACE Head" in the direction of the arrow B←→B' shown in Figure-4, check that the maximum audio output level has not changed. (See Figure-4)

7) Check that the change in the audio output level is less than 2 dBp-p in playback mode. (See Figure-3)

8) If the change in the audio output level exceeds 2 dBp-p, re-adjust the tilt of the "ACE Head" and carry out this adjustment. (See Figure-3)

9) After the adjustments have been completed, carry out the section 5 Phase Adjustment.

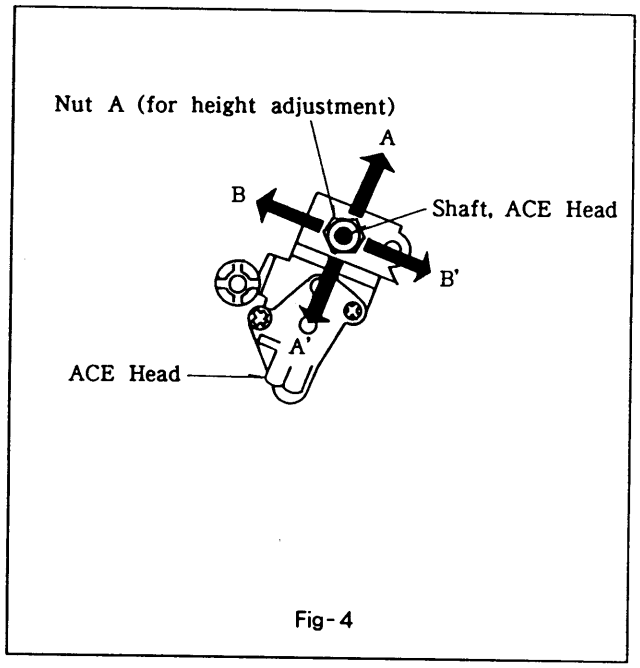


Fig-4

5. Phase Adjustment (See Figure-1, 2)

① Put the set into the playback mode. (Use TTV-P2)

② Set the tracking to the preset mode. (Short SYSCON/ SERVO C.B TP501 pin ① with pin ③ to shorted modes.)

③ Turn the Nut B (for phase adjustment) and adjust it so that the FM waveform is maximized. (See Figure-2)

Note : Do not turn the Nut B (for phase adjustment) more than ± 1 turn.

④ Cancel the tracking preset mode. (remove the short clip from pins ① and ③).

⑤ Adjust the tracking to the manual mode so that the FM waveform is maximized and adjust the oscilloscope so that the waveform reaches the fifth level on the oscilloscope.

⑥ Set the tracking to the preset mode.

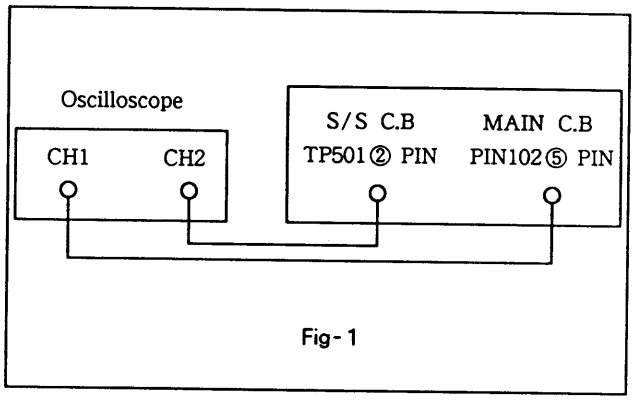


Fig-1

⑦ Check that the FM waveform on the oscilloscope is at the 4.8 level or greater.

⑧ Tilt the "ACE Head" counterclockwise and check that the amplitude level of the FM waveform, after the "ACE Head" is returned to its original position, has not changed when compared to before the "ACE Head" was tilted.

⑨ If there are any problems with the above adjustments, check whether the installation shaft of the "Arm, ACE" rattles or not. If it does not rattle, replace the "Arm, ACE" (because this indicates some other problem with the "Arm, ACE"), carry out the 5 Adjustment of the "ACE Head" and re-perform this adjustment from the beginning.

⑩ Load and Unload the tape repeatedly and check that the amplitutde level of the FM waveform does not change.

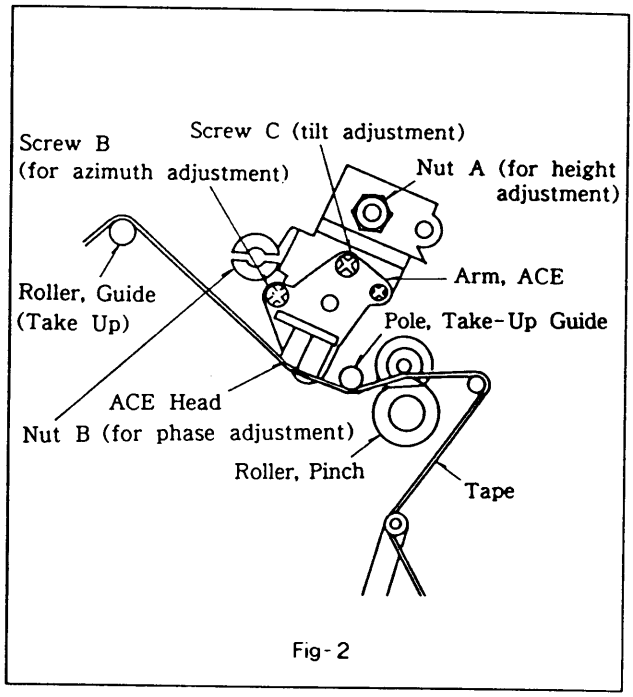


Fig-2

6. Height Adjustment of the "Arm, TU G" (See Figure-1)

① Put the VCR into REV mode for the record tape (near the end of t-160).

② Adjust the height of the "Arm, TU G" after turning the "Corresponding Height Adjustment Nut" so that there are no wrinkles in the tape near the upper or lower flanges of the "Pole, Take-Up Guide".

Note : When adjusting the height, do not turn the adjustment nut more than ± 1 turn when the "Corresponding Height Adjustment Nut" has stopped at the tightened direction.

③ However, after ejecting the cassette, put the set into the REV mode again and check that there are no wrinkles in the tape near the upper or lower flanges of the "Pole, Take-Up Guide".

④ Put the set into the playback mode and check that there are no wrinkles in the tape near the upper and lower flanges of the "Pole, Take-Up Guide".

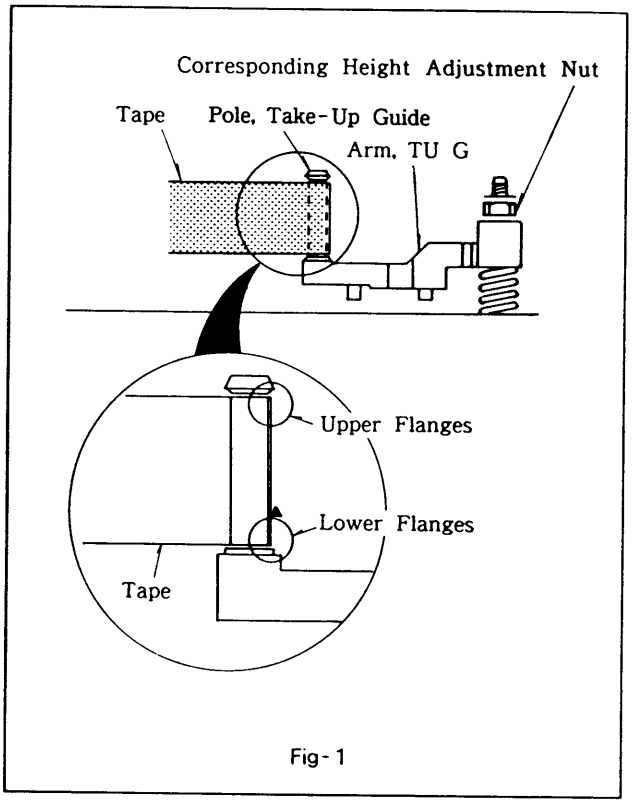


Fig-1

IC DESCRIPTION

IC, M50925-372SP

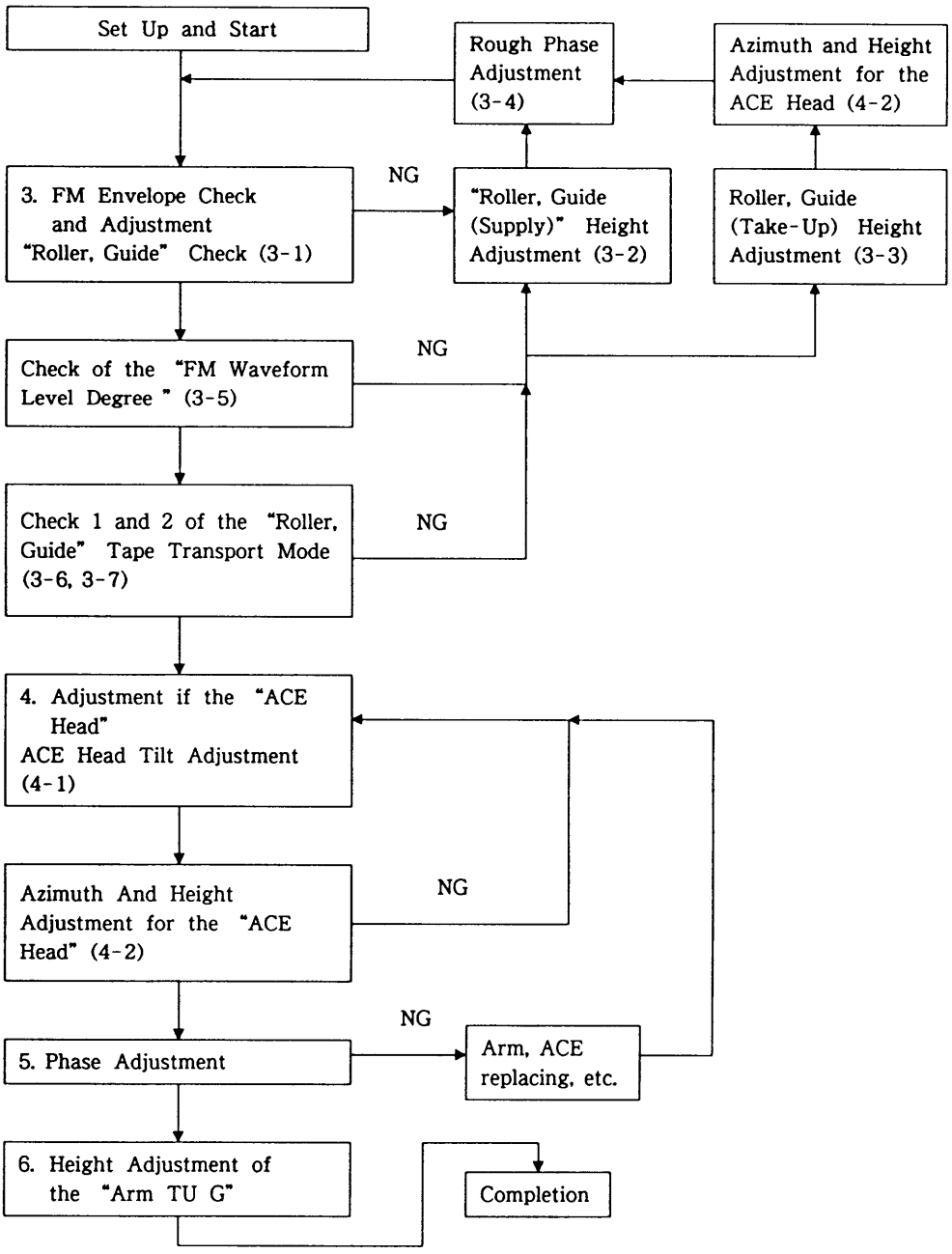
Pin No.	Pin Name	I/O	Description
1	$\overline{\text{RESET}}$	I	Micro-computer reset pulse input terminal
2	$\overline{\text{VSY2}}$	I	$\overline{\text{VSY2}}$ rise/fall terminal detection input
3	A VSS	—	Analog GND
4	V REF	I	A/D converter standard power terminal
5	V LEVEL	I	Playback image level signal input
6	A LEVEL	O	Playback audio signal(connected to GND)
7	A VDD	I	Analog power terminal
8	$\overline{\text{INS}}$	O	Insert signal output(not used)
9	$\overline{\text{AFR}}$	O	After record signal output(not used)
10	$\overline{\text{LP SS}}$	O	"L" output in LP speed search mode
11	——	—	Not used
12	TRMM	O	Tracking output
13	$\overline{\text{DTR DSP}}$	O	LED display output
14	CN VSS	—	Connected to GND
15	VSS	—	Connected to GND
16	$\overline{\text{AUTO}}$	O	Slide SW detection output
17	SK SW	O	Skew supplement output
18	4/$\overline{3}$	I	4 head, 3 head detection input
19	X2	O	Double speed output(not used)
20	$\overline{\text{TEST}}$	I	Test mode terminal
21	COMP	I	Comparator
22	SK DET	I	Skew signal detection input
23	RF SWP	I	RF SWP input
24	D SCK	I	DTR serial clock input
25	——	—	Not used
26	D SO	I	DTR mode information input
27	XTAL	O	Clock output
28	EXTAL	I	Clcok input
29	$\overline{\text{CTL}}$	I	CTL detection
30	VDD	—	Power terminal(+5 V)

IC, M50747-A06SP

Pin No.	Pin Name	I/O	Description
1	VCC	—	Power terminal
2	$\overline{\text{V PB}}$	O	"L" output in playback mode
3	REC	O	"H" output in record mode
4	P ON	O	"H" output in POWER SW ON mode
5	JOG	O	"H" output in special playback mode, P on, change mode SP→LP(PLAYBACK).
6	$\overline{\text{FF/RWD}}$	O	"L" output in FF, REW modes
7	$\overline{\text{EE}}$	O	"L" output in monitor mode
8	$\overline{\text{CTL GAIN}}$	O	"L" output in FF, REW, FS, RS, HFS, HRS, PW OFF modes
9	$\overline{\text{SP/LP}}$	O	"L" output in standard mode(mode discrimination output)
10	$\overline{\text{DR ADJ}}$	O	Drive drum motor, prevent screen shaking in SLOW mode
11	$\overline{\text{SP DR ADJ}}$	O	Drive drum motor, adjust screen shaking prevention in SLOW mode
12	DOP ADJ	—	Not used
13	$\overline{\text{CP ADJ}}$	O	Control brake of capstan motor in SLOW mode
14	DP ADJ	—	Not used
15	$\overline{\text{SS}}$	—	Not used
16	PR VSYNC	O	Suppress noise that occurred before pseudo sync signal in special playback
17	SS VSYNC	O	Mode pseudo sync signal output in special playback mode
18	REC PROOF	I	Recording mistake prevention tab detection input
19	T SCK	I	Timer micro-computer's serial clock terminal
20	T SI	O	Timer micro-computer's serial data output
21	T SO	I	Serial data input from Timer micro-computer
22	C FG	I	Capstan FG signal input
23	I FF	I	Drum FF pulse signal input
24	HSS	O	"H" output in high-speed search mode
25	——	—	Connected to GND
26	$\overline{\text{CTL}}$	I	Control signal input
27	GND	—	GND
28	$\overline{\text{RESET}}$	I	Micro-computer reset pulse input
29	EXTAL	I	8 MHz oscillator terminal
30	XTAL	O	
31	ϕ	O	Timing output(divide oscillator waveform 4 parts)
32	GND	—	GND
33	END SENS	I	End sensor detection input. Sensor ON at "H"
34	TOP SENS	I	Start sensor detection input. Sensor ON at "H"
35	T REEL FG	I	Rotation signal input of take up reel.
36	F/L SW	I	Front loading mode switch input. "H" at cassette IN, cassette OUT mode, "L" midway through *
37	$\overline{\text{P3}}$	I	Deck mode switch input
38	$\overline{\text{P2}}$	I	
39	$\overline{\text{P1}}$	I	
40	$\overline{\text{P0}}$	I	

MECHANICAL ADJUSTMENT – 2

1. Tape Transport Adjustment Flowchart



2. Switching and Operation of the Tracking

- Switchover between AUTO/MANUAL tracking is performed using the [ON/MANUAL] switch on the key panel. [A-TR] does not appear on the fluorescent display during manual tracking.
- To switch to MANUAL mode from AUTO mode, press the [ON/MANUAL] switch for one second.
- The tracking adjustment procedures for MANUAL mode change if the [ON/MANUAL] switch is held down.

Pin No.	Pin Name	I/O	Description
41	M BRK	O	"L" output in main break cancelling plunger "ON" mode
42	AONLY/FED	I	Only audio mode specified at "H" in REC mode, Connected recordings at "H" in PW OFF mode
43	$\overline{3}$/4	I	3 head, 4 head distinction input. "H" in 4 head mode
44	H FR	I	High-speed FF/REW specified when "H" input
45	PRT	I	Protect terminal of power line
46	X2	—	Not used
47	COMP	I	Comparator signal input in SP mode. DOP signal input in LP mode
48	STILL ADJ	I	Vertical shaking adjustment input in STILL, SLOW modes
49	S DATA	O	Servo IC serial data output
50	S CLK	O	Servo IC serial data clock output
51	$\overline{\text{C BRK}}$	O	Capstan motor brake output
52	CAP FWD	O	"L" output in capstan motor reverse mode
53	C ON	O	"L" output in capstan motor STOP mode
54	$\overline{\text{C FULL}}$	O	"L" output to drive capstan motor in STILL, SLOW, FADV modes
55	$\overline{\text{SLOW}}$	O	"L" output in STILL, SLOW modes
56	$\overline{\text{LP SLOW}}$	O	"L" output in LP STILL, SLOW modes
57	UN LOAD	O	Loading motor drive output
58	LOAD	O	
59	D SCK	O	DTR micro-computer serial clock output
60	O FF	O	Pulse signal made with drum FF(PIN ㉓)
61	D ON	O	"L" output in drum motor STOP mode
62	D SO	O	DTR micro-computer serial data output
63	TV/VCR	O	"H" output in TV mode of video/TV switch. OPEN otherwise
64	H CTL	O	Head controll signal output

IC, CXP50116

Pin No.	Pin Name	I/O	Description
1 | 14	SEG a | SEG n	O	Fluorescent lamp driving segement output a ~ n
15, 16	NC	—	Not used
17 | 28	TIM 1 | TIM 12	O	Fluorescent lamp driving timing output 1~12 (for key matrix scan)
29	GND	—	GND
30	TX	O	Crystal oscillator output(32.768 kHz)
31	TEX	I	Crystal oscillator input(32.768 kHz)
32	$\overline{\text{RESET}}$	I	Reset input
33	NC	—	Not used
34	VDD	—	Power terminal(+5 V)
35 | 37	KR0 | KR2	I	Key matrix input 0~2
38	——	—	Connected to GND
39	$\overline{\text{TEST}}$	I	Test mode and Service mode starting input starts with "L"
40	$\overline{\text{DTR}}$	I	DTR micro-computer display mode(just: "L", search: pulse)
41	BAND2	O	Tuner band switching signal output
42	BAND1	O	
43	$\overline{\text{PB CTL}}$	I	Playback CTL input(linear time counter using CTL pulse)
44	S/CG SCK	O	Remain micro-computer's on-screen display(OSD)notifying system clock output
45	S/CG SO	O	Remain micro-computer's on-screen display(OSD)notifying serial data output
46	S SI	I	Remain micro-computer notifying serial data input
47	TSCK	O	Mechanism control serial notifying system clock output
48	E SI/BSY	I/O	E^2 PROM data input(READY/BUSY mode confirmation)
49	Q STP	I	Index inspection signal input
50	T SI	I	Mechanism control serial data input
51	$\overline{\text{PAL}}$/MSEC	O	PAL/MSECAM distinction signal output. "L" in PAL mode
52	INSEL 1	O	Input terminal, switching signal output
53	INSEL 2	O	
54	T MUTE	O	Audio mute signal output
55	T SO	O	Mechanism control notifying data output
56	B BACK	O	OSD blueback ON/OFF signal output. "H" in blueback mode
57	E SCK	O	E^2 PROM system clock output
58	$\overline{\text{CG CS}}$	O	OSD chip select signal output. "L" in select mode
59, 61	——	—	Not used
60	PWM	O	Tuner PWM output
62	RMC	I	Remote control input
63	AFT	O	AFT defeat signal. "H" in defeat mode

	V_L	V_H	U	LINE IN
BAND 1	L	L	H	H
BAND 2	L	H	L	H

	L1	L2	TUNER	DATA REC
INSEL 2	L	L	H	H
INSEL 1	L	H	L	H

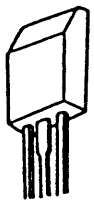
Pin No.	Pin Name	I/O	Description
64	PCT1	O	Picture controlling signal output
65	PCT2	O	
66	PCT3	O	
67	AFT DOWN	I	Tuning mode distinction input
68	AFT UP	I	
69	$\overline{\text{SYNC DET}}$	I	SYNCRO yes/no distinction input. SYNC yes: "L"
70	SECAM DET	I	PAL/MESECAM distinction signal input. "H" in SECAM mode
71	GND	—	GND
72	XTAL	O	Main clock output(4.19 MHz)
73	NC	—	Not used
74	EXTAL	I	Main clock input(4.19 MHZ)
75	VREF	I	Connected to EVER 5V.
76	VFDP	I	Fluorescent lamp driving power(-30 V)
77	ECS	O	E^2 PROM chip select signal output. "H" in select mode
78	ESO	O	E^2 PROM serial output
79	BEEP	O	Buzzer output terminal. "H" during output
80	SIMUL	O	"H" in SIMUL ON mode

LEVEL	-3	-2	-1	0	1	2	3
PCT1	1	0	1	0	1	0	1
PCT2	0	1	1	0	0	1	1
PCT3	0	0	0	1	1	1	1

※LEVEL
-3: SHARP
0: NORMAL
3: SOFT

TRANSISTOR ILLUSTRATION

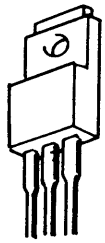
2SA933
2SC1740
DTA114
DTA144
DTC124
DTC144



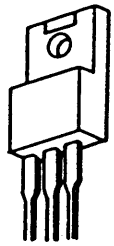
2SB733

2SB892

2SC1923
2SC3331



2SD1406



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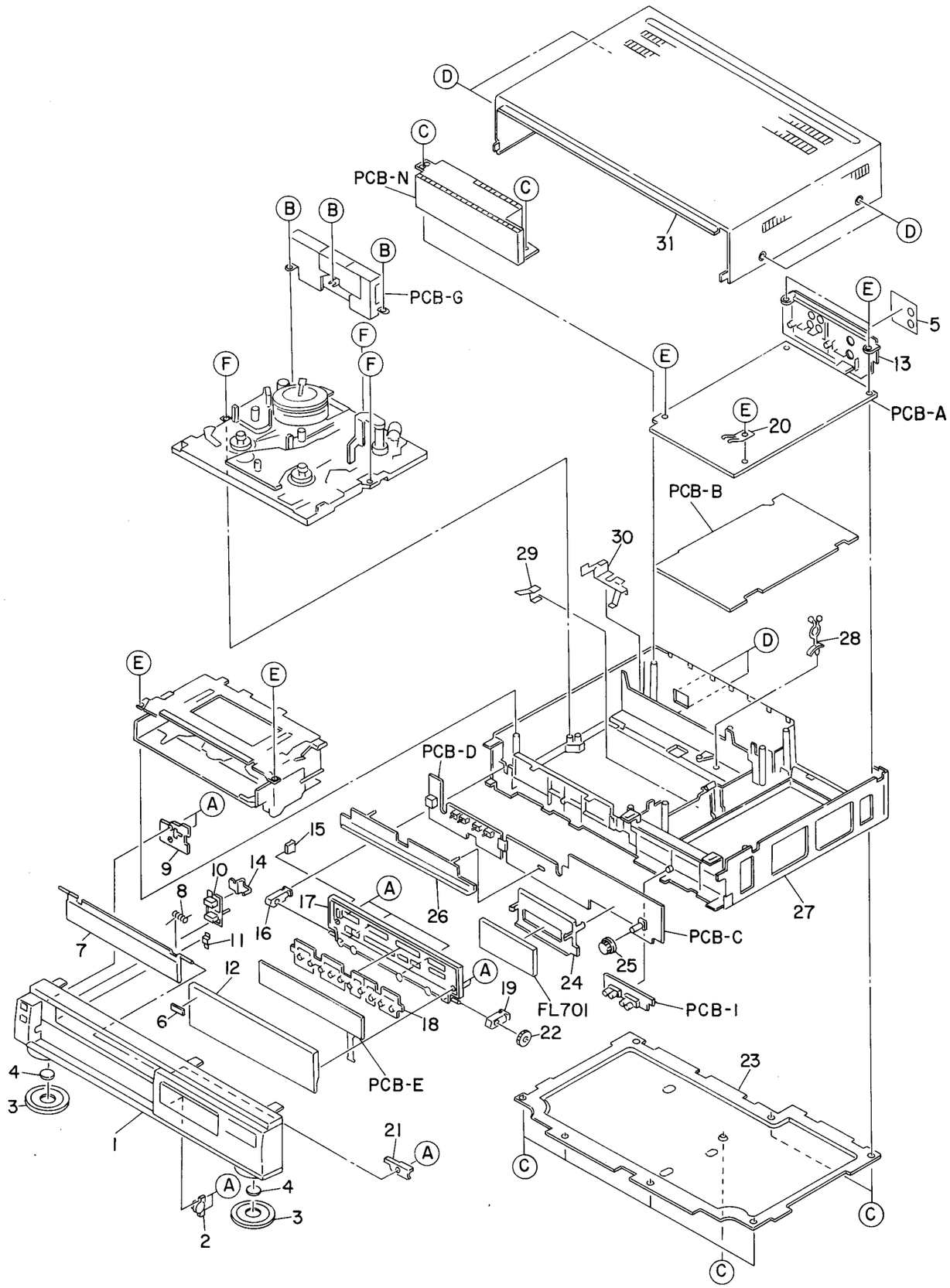
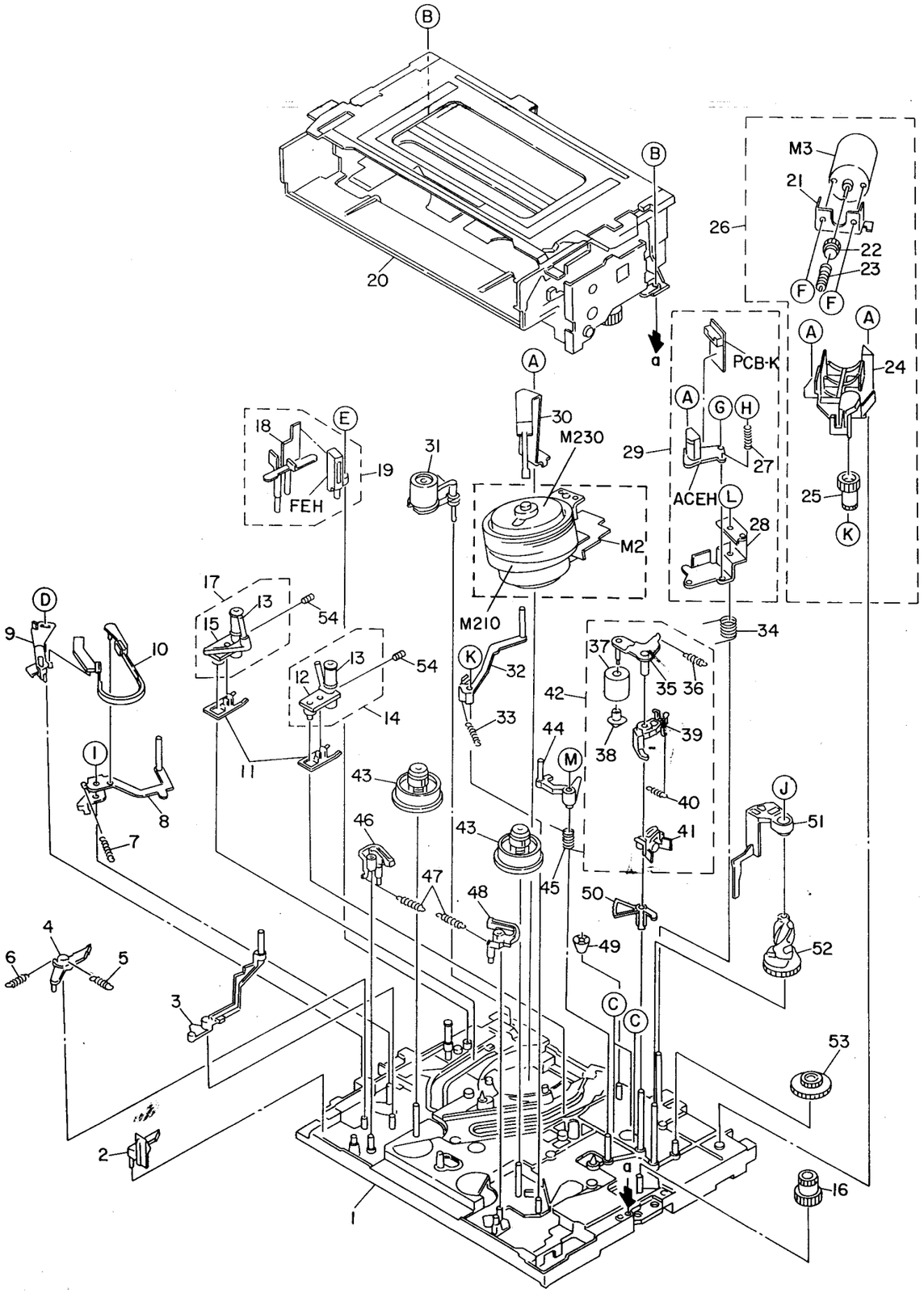
EXPLODED VIEW – 1



EXPLODED VIEW..(1) CABINET PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
1- 1	*9A02829940	CABINET,FRONT ASSY	
1- 2	*9A02830000	DAMPER,	
1- 3	*9A02829100	FOOT,RING	
1- 4	*9A02829400	FOOT,	
1- 5	*9A02837900	PANEL,JACK	
1- 6	*9A02831200	BADGE,T	
1- 7	*9A02829800	WINDOW,CASSETTE T	
1- 8	*9A02829200	SPRING,DOOR	
1- 9	*9A02829700	HOLDER,LVR MO	
1-10	*9A02829000	BUTTON,F	
1-11	*9A02829500	HOLDER,MAGNET	
1-12	*9A02831300	DOOR,T	
1-13	*9A02838300	PLATE,JACK RE T	
1-14	*9A02829300	LVR,DOOR	
1-15	*9A02831700	MAGNET ASSY	
1-16	*9A02828000	HOLDER,DOOR L	
1-17	*9A02831400	DOOR,TOP T	
1-18	*9A02831500	BUTTON D T	
1-19	*9A02828300	HOLDER,DOOR R	
1-20	- - - - -	PLATE,EARTH	
1-21	*9A02829600	HOLDER,LVR 2	
1-22	*9A02828400	GEAR	
1-23	- - - - -	PLATE,BOTTOM	
1-24	*9A02835300	HLDR,FL	
1-25	*9A02828100	KNOB,ADJUST	
1-26	*9A02828700	COVER,PCB	
1-27	- - - - -	CABINET,MAIN	
1-28	- - - - -	LEAD,CLAMP	
1-29	- - - - -	CLAMP,EARTH 2	
1-30	- - - - -	CLAMP,EARTH 3	
1-31	*9A02827900	CABINET,STEEL	
FL701	*9A02835500	FL, 12-MT-46GK	
PCB-A	- - - - -	MAIN PCB ASSY	
PCB-B	- - - - -	SYSCON/SERVO PCB ASSY	
PCB-C	- - - - -	FRONT-1 PCB ASSY	
PCB-D	- - - - -	FRONT-2 PCB ASSY	
PCB-E	- - - - -	FRONT-3 PCB ASSY	
PCB-G	- - - - -	PRE AMP/AUDIO PCB ASSY	
PCB-I	- - - - -	JACK PCB ASSY	
PCB-N	- - - - -	POWER PCB ASSY	
(A)	9A02832200	SCREW,UT2+2-8 BLK	
(B)	9A02832100	SCREW,BVTT+2.6-6	
(C)	9A02426900	SCREW,BVIT3B+3-10	
(D)	9A02832300	SCREW,UT2+3-8 BLK W/O SLOT	
(E)	9A02831900	SCREW,BVT2+3-12 W/O SLOT	
(F)	9A02832000	SCREW,BVT2+4-16	

Parts marked with *reguire longer delivery time



EXPLODED VIEW..(2) MACHANICAL PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
	*9A02827340	MECHA UNIT,(FP4-1)	
2- 1	*9A02880200	MAIN PLATE ASSY	
2- 2	*9A02874900	LEVER,REC SAFETY	
2- 3	*9A02876900	ARM TENS REG S2	
2- 4	*9A02877300	LEVER TENS	
2- 5	*9A02873300	SPRING,TENSION REC S2	
2- 6	*9A02873100	SPRING,REC SAFETY	
2- 7	*9A02872700	SPRING,TENSION	
2- 8	*9A02877800	ARM TENSION	
2- 9	*9A02877600	HOLDER,T BAND	
2-10	*9A02873500	BELT,TENSION BRAKE	
2-11	*9A02873700	SLIDER,	
2-12	- - - - -	GUIDE,TAPE T	
2-13	- - - - -	ROLLER,GUIDE	
2-14	*9A02876200	TAPE GUIDE T ASSY,	
2-15	- - - - -	GUIDE,TAPE S	
2-16	*9A02877200	GEAR,JOINT	
2-17	*9A02876100	TAPE GUIDE S ASSY,	
2-18	- - - - -	HOLDER,FE	
2-19	*9A02876400	FE HEAD ASSY,	
2-20	*9A02873400	UNIT,F/L F (See to F/L UNIT Parts List)	
2-21	- - - - -	PLATE,HOLDER M	
2-22	*9A02891400	COUPLING,	
2-23	*9A02891300	GEAR,WORM	
2-24	*9A02891100	HOLDER,MOTOR	
2-25	*9A02891200	GEAR,WHEEL	
2-26	*9A02875800	LOAD MOTOR ASSY,	
2-27	*9A02891900	SPRING,AC	
2-28	- - - - -	ARM,AC	
2-29	*9A02875900	AC HEAD PAL ASSY,	
2-30	*9A02871300	BRUSH,	
2-31	*9A02874100	UNIT,IMP ROLLER	
2-32	9A02877000	ARM,TENSION REG T	9A02877000
2-33	*9A02873200	SPRING,TENSION REC T2	
2-34	*9A02873000	SPRING,ARM ACE	
2-35	- - - - -	ARM PINCH	
2-36	*9A02876700	SPRING,PINCH	
2-37	*9A02876600	ROLLER,PINCH	
2-38	*9A02876500	CAP ROLLER,	
2-39	- - - - -	LEVER,ARM PINCH	
2-40	*9A02876800	SPRING,CAM PINCH	
2-41	- - - - -	LEVER,CAM PINCH	
2-42	*9A02876300	ARM PINCH ASSY,	
2-43	*9A02871800	UNIT,REEL DISK	
2-44	*9A02873900	ARM,TU G	
2-45	*9A02872900	SPRING,TU G	
2-46	*9A02874600	BRAKE,MAIN S	
2-47	*9A02872600	SPRING,M B	
2-48	*9A02874700	BRAKE,MAIN T	
2-49	*9A02873800	NUT,TAPPER	
2-50	*9A02877400	ARM,GEAR TU G	

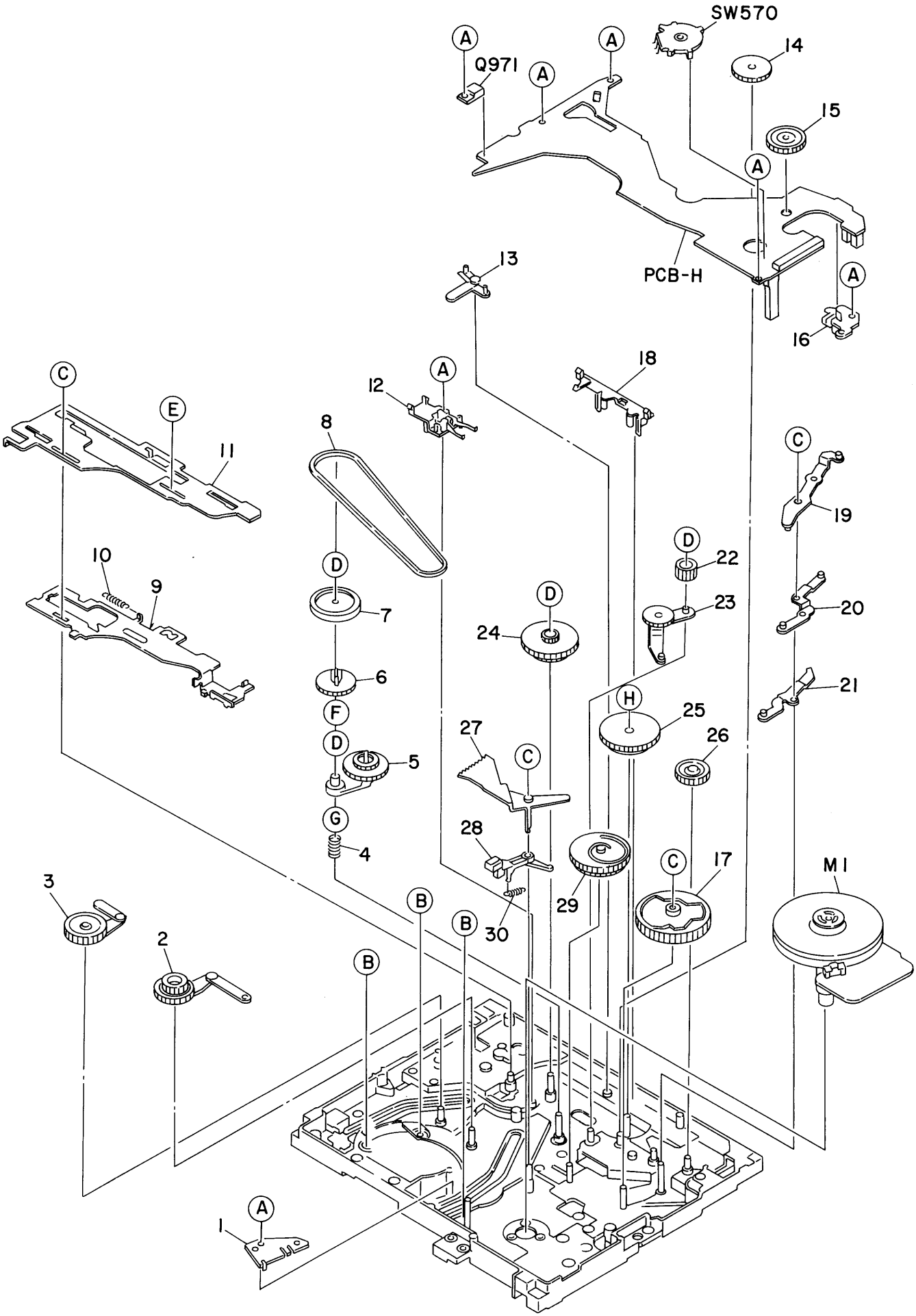
Parts marked with *require longer delivery time

EXPLODED VIEW..(2) MACHANICAL PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
2-51	*9A02877500	CAP ARM,PINCH	
2-52	*9A02877100	CAM PINCH,	
2-53	*9A02877700	GEAR,I	
2-54	- - - - -	SET SCREW,F	
ACEH	*9A02891800	HEAD,AC	
FEH	*9A02890300	HEAD,FE	
M-2	*9A02876000	DRUM PAL ASSY,	
M-210	*9A02875600	UP DRUM PAL ASSY,	
M-230	*9A02871100	MOTOR,DRUM	
M-3	*9A02871000	MOTOR,LOADING	
PCB-K	- - - - -	PWB,AC F (ACE HEAD PCB ASSY)	
(A)	9A02875000	SCREW,TS M2.6 6	
(B)	9A02884100	SCREW,TS M2.6 8	
(E)	9A02875100	SCREW,TS M2.6 10	
(F)	9A02891600	SCREW,F FE PAN	
(G)	9A02892200	SCREW,	
(H)	9A02892100	SCREW,F FE PAN	
(I)	9A02875400	GRIP,RING	
(J)	9A02875500	GRIP,RING	
(K)	9A02872300	CUT WASHER,	
(K)	9A02872300	CUT WASHER,	
(L)	9A02875300	NUT,NYLON S	
(M)	9A02875200	NUT,NYLON	

Parts marked with *reguire longer delivery time

EXPLODED VIEW – 3

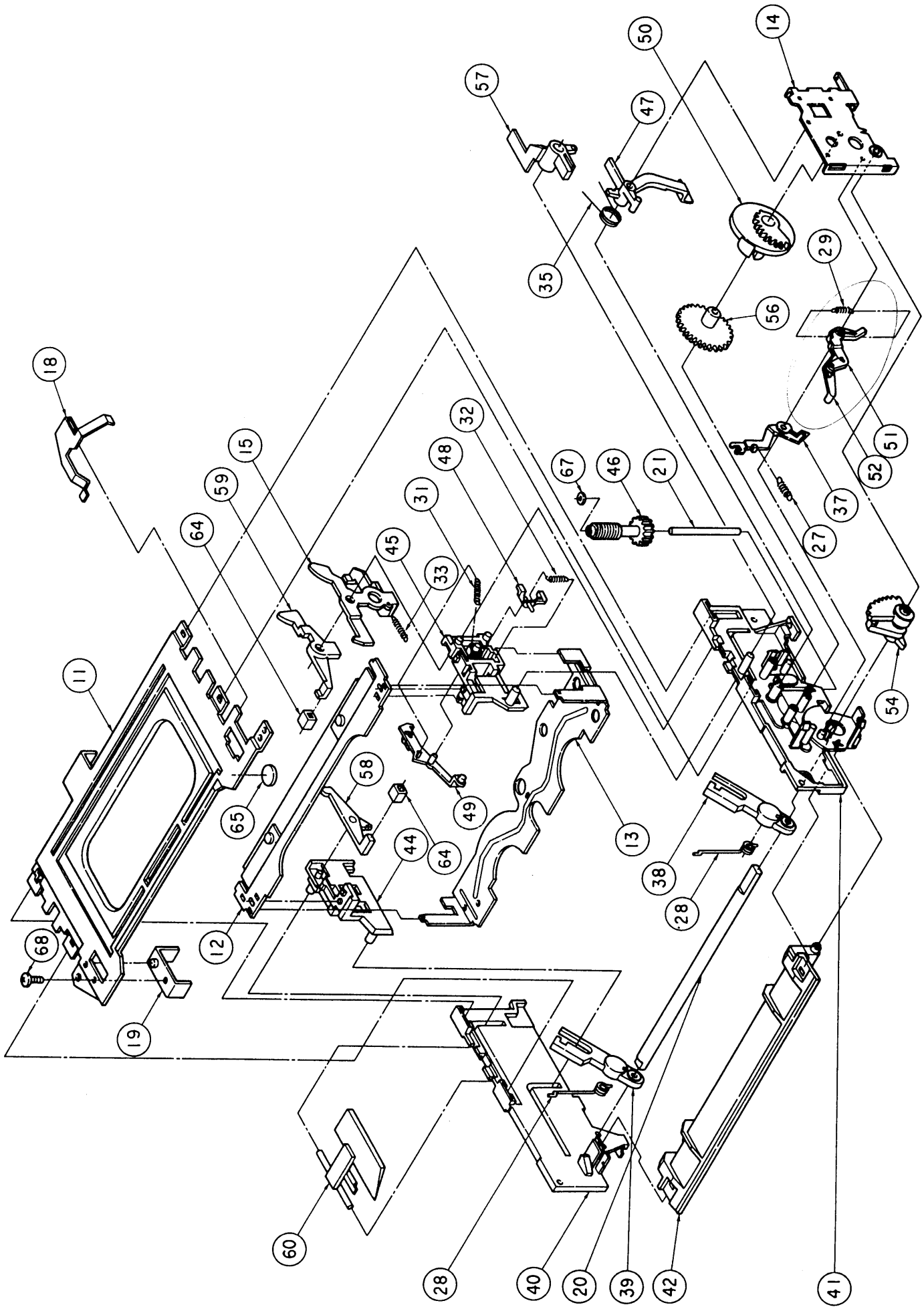


EXPLODED VIEW..(3) MACHANICAL PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
3- 1	*9A02879300	PLATE,SHIELD F	
3- 2	*9A02878800	ARM,LOAD T	
3- 3	*9A02878700	ARM,LOAD S	
3- 4	*9A02872500	SPRING,SHIFT	
3- 5	*9A02871900	UNIT,GEAR IDLER	
3- 6	*9A02874400	PULLEY,GEAR	
3- 7	*9A02874500	PULLEY,BELT	
3- 8	*9A02871700	BELT,REEL	
3- 9	*9A02878900	PLATE,CAM C	
3-10	*9A02872800	SPRING,CAM C	
3-11	*9A02879200	UNIT,PLAY CAM B	
3-12	*9A02874000	UNIT,LEVER SHIFT	
3-13	*9A02879600	LEVER,IDLER S	
3-14	*9A02878400	GEAR,F/L 2	
3-15	*9A02878500	GEAR,F/L 3	
3-16	*9A02871400	LATCH MAGNET,	
3-17	*9A02874200	CAM,MAIN 1	
3-18	*9A02879700	HOLDER,P CAM	
3-19	*9A02879100	LEVER,B	
3-20	*9A02878000	LEVER,C	
3-21	*9A02878200	LEVER,RS	
3-22	*9A02877900	GEAR,F L 1	
3-23	*9A02878100	LEVER,F L ID	
3-24	*9A02872000	UNIT,GEAR REEL	
3-25	*9A02872100	UNIT,GEAR REEL	
3-26	*9A02878600	GEAR,F/L 4	
3-27	*9A02879000	ARM,GEAR LOAD	
3-28	*9A02874800	BRAKE,CP	
3-29	*9A02874300	CAM,MAIN 2	
3-30	*9A02879400	SPRING,B CP	
M 1	*9A02871200	MOTER,CP PAL	
PCB-H	- - - - -	PWB DECK ASSY,(BASE PCB ASSY)	
QC971	9A02870500	TR.,2SD2012	
SW570	9A02871500	SW,MODE SELECT F	
(A)	9A02875000	SCREW,TS M2.6 6	
(B)	9A02879800	SCREW, SEMS M2.6 0.45-10	
(C)	9A02875400	GRIP,RING	
(C)	9A02880000	SCREW, M2.6-8	
(D)	9A02872300	CUT WASHER,	
(D)	9A02880100	SCREW, M2.6-6	
(E)	9A02879500	GRIP RING	
(F)	9A02872400	WASHER,THRUST 6.7*12*0.13	
(G)	9A02873600	WASHER,R 0.3	
(H)	9A02872200	WASHER,THRUST	

Parts marked with *reguire longer delivery time

EXPLODED VIEW – 4



EXPLODED VIEW..(4) F/L UNIT PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
11	*9A02880300	PLATE,ROOF	
12	*9A02880400	PLATE,UPPER	
13	*9A02880500	PLATE,BOTTOM	
14	*9A02880600	PLATE,SIDE TU	
15	*9A02880700	PLATE,LOCK FL	
18	*9A02880800	PLATE,EARTH	
19	*9A02880900	PLATE,GUARD	
20	*9A02881000	SHAFT,FL	
21	*9A02881100	SHAFT,WORM	
28	*9A02881200	SPRING,FL	
29	*9A02881300	SPRING,DOOR SUB	
31	*9A02881400	SPRING,OPENER LID	
32	*9A02881500	SPRING,JUT FL	
33	*9A02881600	SPRING,LEVER LOCK	
35	*9A02881700	SPRING,LEVER SW	
38	*9A02881800	ARM,FL	
39	*9A02881900	ARM,FL	
40	*9A02882000	HOLDER,SIDE FP	
41	*9A02882100	HOLDER,SIDE TU	
42	*9A02882200	GUIDE,INSERT	
44	*9A02882300	HOUSING,CASS	
45	*9A02882400	HOUSING,CASS	
46	*9A02882500	GEAR,WORM FL	
47	*9A02882600	LEVER,SW FL	
48	*9A02882700	JUT,	
49	*9A02882800	OPENER,LID CASS	
50	*9A02882900	GEAR,DRIVE	
51	*9A02883000	ARM,DOOR FL A	
52	*9A02883100	ARM,DOOR FL B	
54	*9A02883200	ARM,LOCK	
55	*9A02883300	GEAR,W H F/L	
57	*9A02883400	LEVER,PICK CASS	
58	*9A02883500	LEVER,CASS SP	
59	*9A02883600	LEVER,CASS TU	
60	*9A02883700	STOPPER,SP FL	
64	*9A02883800	RUBBER,FL	
67	*9A02883900	WASHER,THRUST	
68	*9A02884000	UT2,2.6-5	

INCLDED ACCESSORIES PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
	*9A02854500	REMOCON,RC-418	
	9A02460200	CORD,RF PAL	
	9A02460300	AC CORD ASSY, AS	
	9A02460500	SUM-3,(MAXELL 2P)	
	*9A02630000	OWNER'S MANUAL,(E)	

Parts marked with *reguire longer dellvery time

MV-505

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