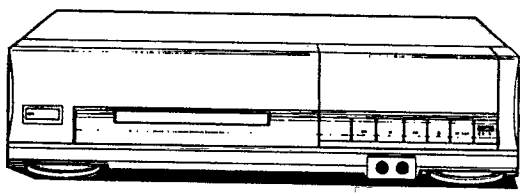
TEAC®



SERVICE MANUAL

MV-404/MV-318

Video Cassette Recorder

VHS
PAL

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 : May, 1992

5704059500

TABLE OF CONTENTS

■ STANDARD MAINTENANCE 4
1. SERVICE SCHEDULE OF COMPONENT 4
2. CLEANING 4

■ SERVICE JIG AND TOOLS ..... 5~6
1. SERVICE JIG AND TOOLS 5
2. HOW TO ASSEMBLE THE JIGS 6

■ DISASSEMBLY INSTRUCTIONS ..... 7~19
■ ELECTRICAL MAIN PARTS LIST ..... 20~24
■ ACCESSORIES/PACKAGE LIST 24

■ BLOCK DIAGRAM ..... 25~35
• BLOCK DIAGRAM – 1 (VIDEO SECTION) ..... 25~26
• BLOCK DIAGRAM – 2 (SERVO/SYSCON SECTION) ..... 27~28
• BLOCK DIAGRAM – 3 (SYSTEM CONTROL SECTION) ..... 29~30
• BLOCK DIAGRAM – 4 (TUNER SECTION) ..... 31~32
• BLOCK DIAGRAM – 5 (AUDIO SECTION) 33
• BLOCK DIAGRAM – 6 (POWER UNIT – 1 SECTION) 34
• BLOCK DIAGRAM – 7 (POWER UNIT – 2 SECTION) 35

■ PRACTICAL SERVICE FIGURE 36
■ TRANSISTOR ILLUSTRATION 36
■ WIRE HARNESS DIAGRAM ..... 37~38
■ WIRING – 1 (VIDEO/TUNER/SERVO/SYSTEM CONTROL SECTION) ..... 39~40
■ SCHEMATIC DIAGRAM – 1 (VIDEO SECTION) ..... 41~43
■ WAVE FORM – 1 (SERVO WAVE FORM) ..... 44~45
■ DRUM SERVO SYSTEM TIMING CHART ..... 45~46
■ SCHEMATIC DIAGRAM – 2 (SERVO/SYSTEM CONTROL SECTION) ..... 47~49
■ NOISE CANCELLER TIMING CHART 50
■ IC BLOCK DIAGRAM 51
• IC, MSM16811/IC, LVA522S/IC, SBX1610/IC, LA7910/IC, PQ09R05
■ WAVE FORM – 2 (AUDIO WAVE FORM) ..... 52~54
■ SCHEMATIC DIAGRAM – 3 (TUNER SECTION) ..... 55~56
■ WAVE FORM – 3 (TUNER WAVE FORM) ..... 57~58
■ SYSTEM SWITCH MODE 59
■ WAVE FORM – 4 (POWER UNIT – 1 WAVE FORM) ..... 60~61
(TIMER WAVE FORM) ..... 60~61
■ WAVE FORM – 5 (VIDEO WAVE FORM) ..... 62~66
■ WIRING – 3 (POWER UNIT – 2/PRE AMP./AUDIO/MECHANISM SECTION) ..... 67~68
■ SCHEMATIC DIAGRAM – 6 (PRE AMP. SECTION) ..... 69~70
■ SCHEMATIC DIAGRAM – 7 (AUDIO SECTION) ..... 71~72
■ SCHEMATIC DIAGRAM – 8 (POWER UNIT – 2 SECTION) ..... 73~74
■ WIRING – 4 (TIMER SECTION) ..... 75~76
■ SCHEMATIC DIAGRAM – 9 (TIMER SECTION) ..... 77~78

■ IC DESCRIPTION ..... 79~84
1. IC, MB88525 – 205M (IC201) ..... 79~81
2. IC, μPD75208CW – A83 (IC901) ..... 81~82
3. IC, MN67481P (IC203) ..... 82~83
4. IC, μPD1730CT (IC881) 83
5. IC, HD404302A06P (IC207) 84

■ CIRCUIT DESCRIPTION ..... 85~86
• AUTO TRACKING 85
• AUTO NOISE CANCELLER 86

■ ELECTRICAL ADJUSTMENT ..... 87~90
1. POWER VOLTAGE ADJUSTMENT 87
2. SERVO CIRCUIT ADJUSTMENT 88
(1) TRACKING ADJUSTMENT 88

(2) SWITCHING POSITION ADJUSTMENT 88
3. TUNER SECTION ADJUSTMENT 89
(1) REG 9V VOLTAGE ADJUSTMENT 89
4. VIDEO CIRCUIT ADJUSTMENT 89
(1) PB Y – FM LEVEL ADJUSTMENT 89
(2) DOC LEVEL ADJUSTMENT 89
(3) AGC ADJUSTMENT 90
(4) Y – FM CARRIER FREQUENCY ADJUSTMENT 90
(5) Y – FM DEVIATION ADJUSTMENT 90
(6) REC Y – FM LEVEL ADJUSTMENT 90
(7) CHROMA RECORDING CURRENT ADJUSTMENT 90

■ MECHANICAL ADJUSTMENT ..... 91~100
1. TAPE TRANSPORT ADJUSTMENT FLOWCHART 91
2. TAPE RUNNING POSITION ADJUSTMENT ..... 92~94
3. AUDIO CONTROL HEAD ADJUSTMENT 95
4. X VALUE ADJUSTMENT 96
5. ENVELOPE WAVE FORM ADJUSTMENT ..... 97~98
6. AUDIO CONTROL HEAD HEIGHT/AUDIO CONTROL HEAD TILT ADJUSTMENT 99
7. AUDIO CONTROL HEAD AZIMUTH ADJUSTMENT 100

■ EXPLODED VIEW, MECHANICAL PARTS LIST ..... 101~111
• EXPLODED VIEW – 1 ..... 101~102
• EXPLODED VIEW – 2 103
• EXPLODED VIEW – 3 104
• EXPLODED VIEW – 4 ..... 105~106
• EXPLODED VIEW – 5 107
• EXPLODED VIEW – 6 ..... 108~109
• EXPLODED VIEW – 7 110
• EXPLODED VIEW – 8 111

Specifications

Recording/playback system
Video: Rotary 2 heads helical scanning
Audio: Fixed head

Video signal
PAL B/G color signal
625 lines, 50 fields

Recording/playback time
4 hours max. with E-240 tape, standard speed

Fast forward/rewind time
Less than 300 sec., with E-180 tape

Usable cassette
VHS video cassette

Tape width
12.65 mm

Tape speed
Standard speed, 23.39 mm/sec.

Timer display
24-hour cycle,
day, hour, minute,
digital fluorescent display

Timer recording
7 programs within 2 weeks
1 program for weekly recording

Channel coverage

L (VHF low)	0 – 5
H (VHF high)	5A – 11
U (UHF)	21 – 69

RF output
Low (ϕ) High (I)

RF output level
74 dB

Video input
0.5 – 2.0 Vp-p, 75 ohms unbalanced

Video output
1.0 Vp-p, 75 ohms unbalanced

Horizontal resolution
240 lines (nominal)

Video S/N (luminance)
43 dB (nominal)

Audio input
–10 dBs (nominal)

Audio output
–8 dBs, 2.2 k ohms

Audio frequency response
200 Hz – 8 kHz

Audio S/N
41 dB (nominal)

Operating temperature
5°C – 40°C

Power requirements
240 V AC, 50 Hz

Power consumption
26 watts

Dimensions
380 (W) × 96 (H) × 328 (D) mm

Weight Approx. 5.5 kg

Accessories
Remote controller (1)
AC power cord (1)
Antenna cable (1)
Batteries (2)

Design and specifications are subject to change without notice for the purpose of performance improvement.

STANDARD MAINTENANCE

1.SERVICE SCHEDULE OF COMPONENT

○ : Check ● : Change

DECK		Periodic Service Schedule			
Ref. No.	Parts Name	1000 h	2000 h	3000 h	4000 h
2-2	UPPER DRUM	○	●	○	●
4-6	PINCH ROLLER A		●		●
3-32	CAPSTAN MOTOR ASSY		●		●
5-27	CLUTCH ASSY		●		●
4-46	LM ASSY			●	
6-22	MAIN BELT		●		●
3-5	BT BAND ASSY		●		●
5-29	DRIVE BELT		●		●
4-41	BRAKE SHOE		●		●
6-1	LOADING BELT		●		●
5-26	FL BELT		●		●
2-5	DRUM EARTH			●	
4-21	ACE HEAD HV225211			●	
3-25	REEL ASSY			●	
4-50	FULL ERASE HEAD			●	

NOTE :

1. Clean all parts for the tape transport.
   Upper Drum with video head/Pinch Roller A/ACE Head/Full Erase Head
2. After cleaning up the parts, perform all DECK ADJUSTMENT.

2.CLEANING

1. Cleaning of "Video Head" (See Figure – 1)
   Head cleaning by using a chamois skin.

   – Procedure –
   1) Remove the "Cabinet, Steel".
   2) Put on a glove (thin type) to avoid touching the "Upper Drum"and "Lower Drum"with bare hand.
   3) Put a few drops of alcohol on the chamois skin, and by slightly placing it against the "Head Tip", allow the "Upper Drum"to turn the right and left.

   – Remark –
   1) The video head is of very hard material, but since it is very thin, avoid cleaning it vertically.
   2) Wait for the cleaned part to dry out, before operating the unit.
   3) Do not reuse stained chamois skin.

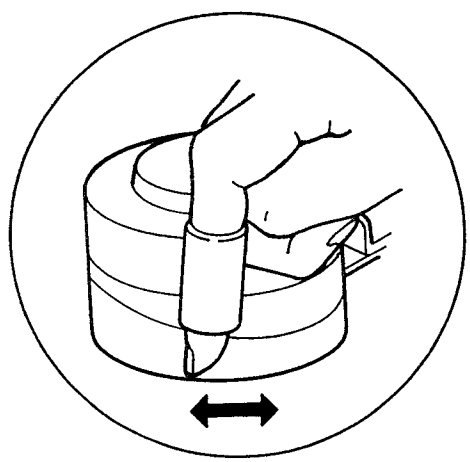


Fig.-1

2. Cleaning of "ACE Head" (See Figure – 2)
   Head cleaning by using a chamois skin.

   – Procedure –
   1) Remove the "Cabinet, Steel".
   2) Put a few drops of alcohol on the chamois skin, clean up the "Audio Control Head", being careful not to damage the "Upper Drum" and other tape running parts.

   – Remark –
   1) Avoid cleaning "ACE Head" vertically.
   2) Wait for the cleaned part to dry well, before operating the unit.

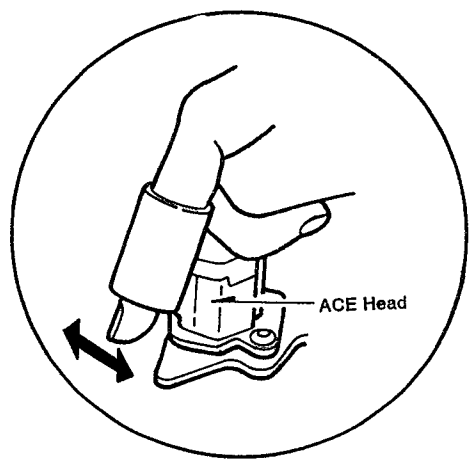
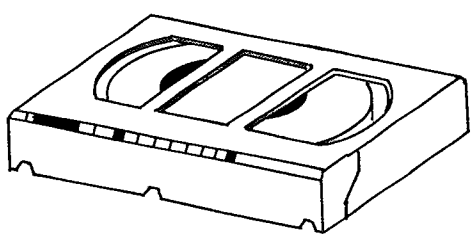


Fig.-2

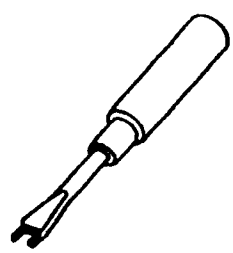
1.SERVICE JIG AND TOOLS

Ref. No.	Name	Adjustment
J-1	Torque Meter (FSJ-VHT-063)	Back Tension
J-2	Special Driver (SMALL)	Tape Running Position, Envelope Wave Form
J-3	Special Driver(LARGE)	X Value
J-4	Mirror	Tape Transportation Check
J-5	Alignment Tape (TTV-P2)	X Value, Envelope Wave Form, ACE Head Azimuth
J-6	Alignment Tape (TTV-P1)	ACE Head Height / ACE Head Tilt
J-7	Box Driver M3	Tape Running Position, X Value, Envelope Wave Form
J-8	EXT. PCB. KIT (A) [Parts No. 09-054-012-010]	HA (For repair of circuit board)

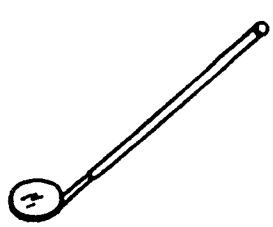
J-1, J-5, J-6



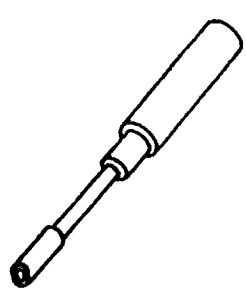
J-2, J-3



J-4



J-7



2.HOW TO ASSEMBLE THE JIGS

1. Assembling the J – 8 (See Figure – 1)

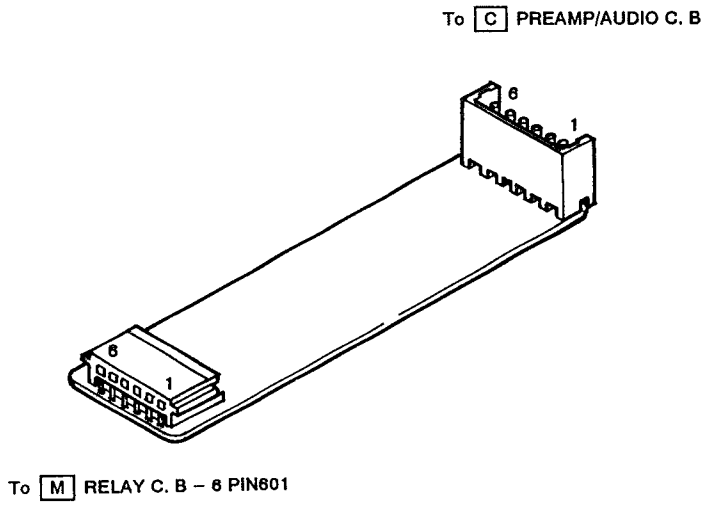


Fig.-1

Place the circuit board with the solder side down as shown in the figure above and assemble the connectors, taking care of their directions.

2. Using the J – 8 (See Figure – 1)

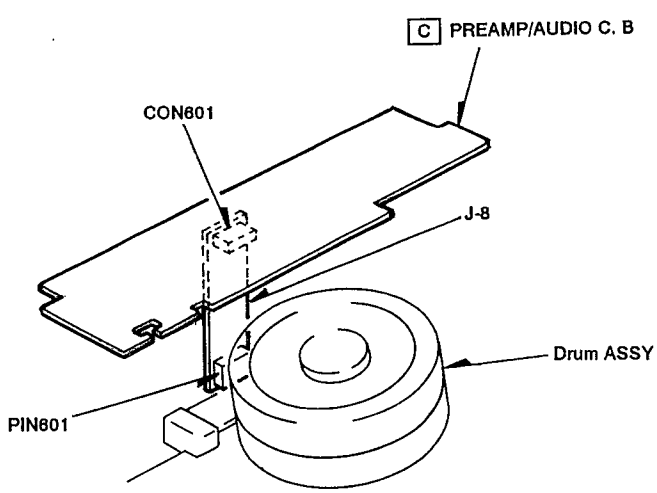


Fig.-1

Use this jig when servicing the "Preamp/Audio C. B".

DISASSEMBLY INSTRUCTIONS

1. "Cabinet Front ASSY" Removal (See Figure – 1)
   1) Remove 4 screws (Ⓐ) holding the "Cabinet, Steel".
   2) Remove 8 screws (Ⓑ) holding the "Plate, Bottom".
   3) Remove screw (Ⓒ) and releases 5 hooks to remove the "Cabinet Front ASSY" in the direction of the arrow.

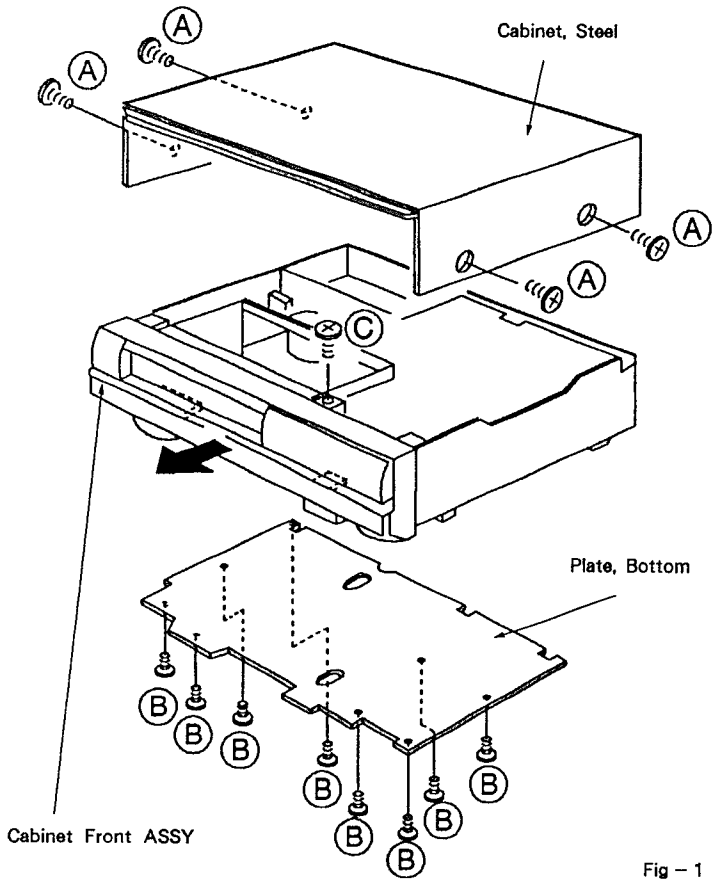


Fig – 1

2. "Power Unit ASSY and Main C. B" Removal (See Figure – 2)
   1) Remove 6 screws (Ⓐ) holding the "Main C.B".
   2) Remove 3 screws (Ⓑ) and 2 screws (Ⓒ) holding the "Power Unit ASSY".

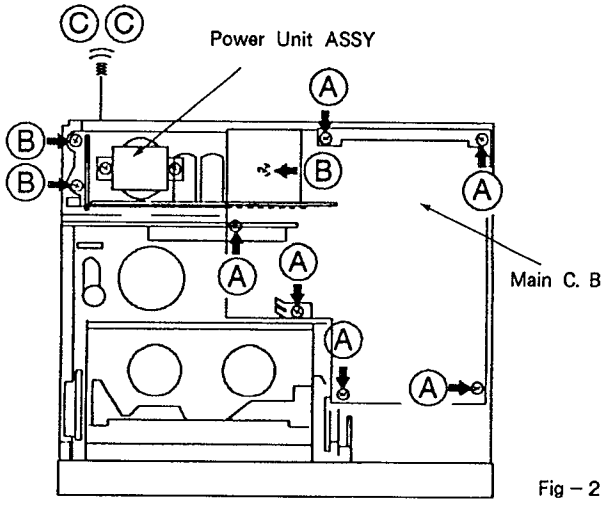


Fig – 2

3. "Mechanism ASSY" Removal (See Figure – 3)
   1) Remove screw (Ⓐ) and dissconnect the connector to remove the "Preamp/Audio C.B" in the dorection of the arrow.
   2) Remove 3 screws (Ⓑ) holding the "Mechanism ASSY".

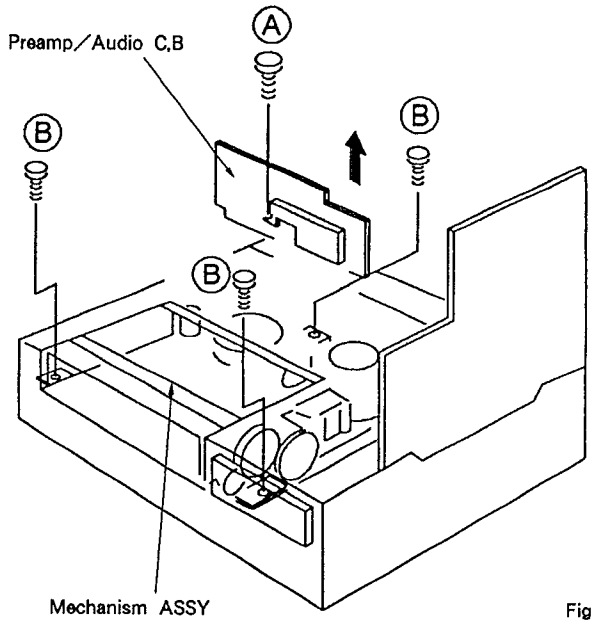


Fig – 3

4. "Front Loading ASSY" Removal (See Figure – 4)
   1) Remove "Main Belt".
   2) Remove 4 screws (Ⓐ).
   3) Release the hooks on both sides and remove the "Front Loading ASSY". (Since it is difficult to release these hooks, hold the front of the "Front Loading ASSY" and shake it up and down to release them.)

5. "Cassette Load Bracket ASSY" Removal (See Figure – 4)
   1) Remove 1 screw (Ⓑ).
   2) Take off the "Cassette Load Bracket ASSY".

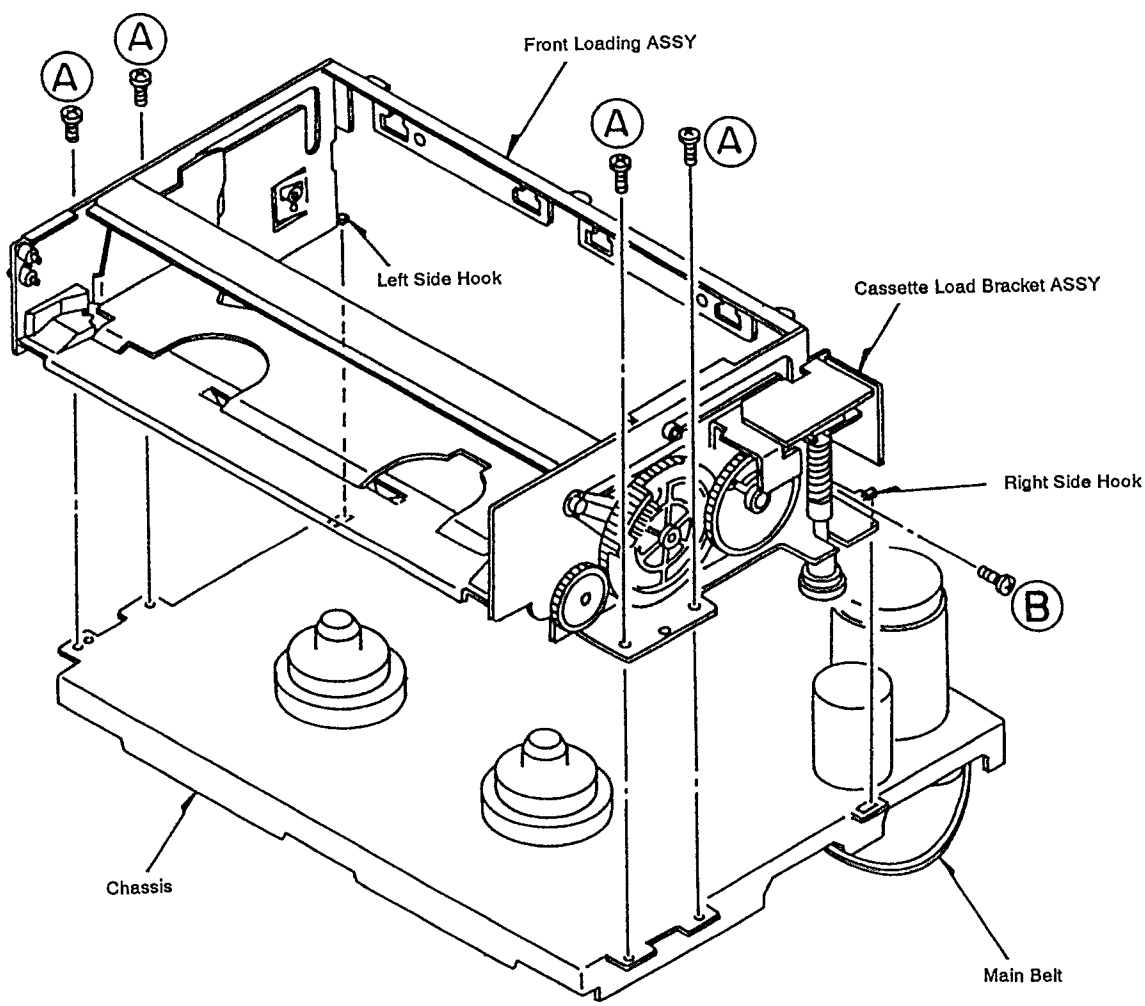


Fig-4

6. "Photo Sensor ASSY" Removal (See Figure – 5)
   1. "Lamp Holder ASSY" Removal
      1) Remove 1 screw (Ⓐ) and take off the "T Soft Brake ASSY".
         (At this time, never take off the "T – Spring, Soft Brake Arm".)
      2) Release the "Lamp Holder ASSY" from hook (a) of the chassis and turn it counterclockwise to remove it from the chassis.
   2. "Switch C. B", "Sensor Guide" and "Start Sensor C. B" Removal
      1) Remove 1 screw (Ⓑ) and take off the "Switch C. B".
      2) Remove 1 screw (Ⓒ) and take off the "Sensor Guide".
      3) Remove 1 screw (Ⓓ) and take off the "Start Sensor C. B".
   3. "Sensor Guide" and "End Sensor C. B" Removal
      1) Remove 1 screw (Ⓔ) and take off the "Sensor Guide".
      2) Remove 1 screw (Ⓕ) and take off the "End Sensor C. B".

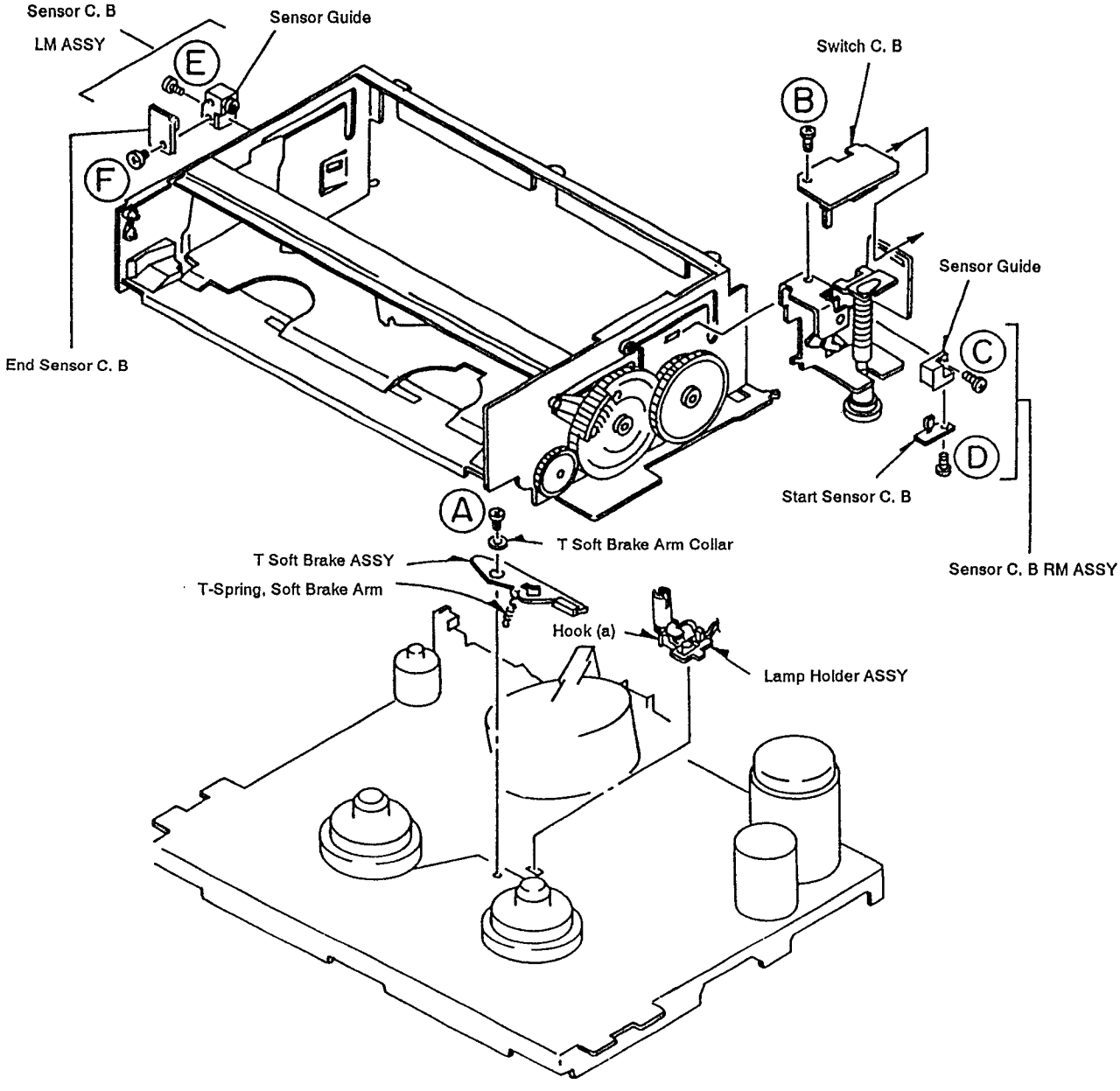


Fig-5

7. "FE Plate" and "ACE Head" Removal (See Figure – 6)

1. "FE Plate" Removal

1) Remove Nut (Ⓐ).

2) Take out the "Impedance Roller" and pull up the "FE Plate".

(Take care not to lose parts "Impedance Roller", "Impedance Roller Sleeve", "Tape Guide Flange A", "Tape Guide Flange Spring" and "Plane Washer 3 × 8 × 0.5" at the time of the "FE Plate"removal.)

3) Remove 1 screw (Ⓑ) and take off the "Full Erase Head".

2. "ACE Head" Removal

1) Remove 3 screws (Ⓒ × 1, Ⓓ × 1, Ⓔ × 1) and "Azimuth Spring".

2) Remove "ACE Head".

8. "Rec Actuator" Removal (See Figure – 6)

1) Remove "Wire Holder".

2) Remove screw (Ⓕ) and take off the "Leaf Switch".

3) Remove screw (Ⓖ) and take off the "FE Actuate Lever", "FE Slide Plate" and "FE Actuate".

4) Remove screw (Ⓗ) and take off the "Rec Lever", and "Rec Lever Spring".

5) Remove "Rec Actuate Spoke".

6) Remove "Rec Actuate".

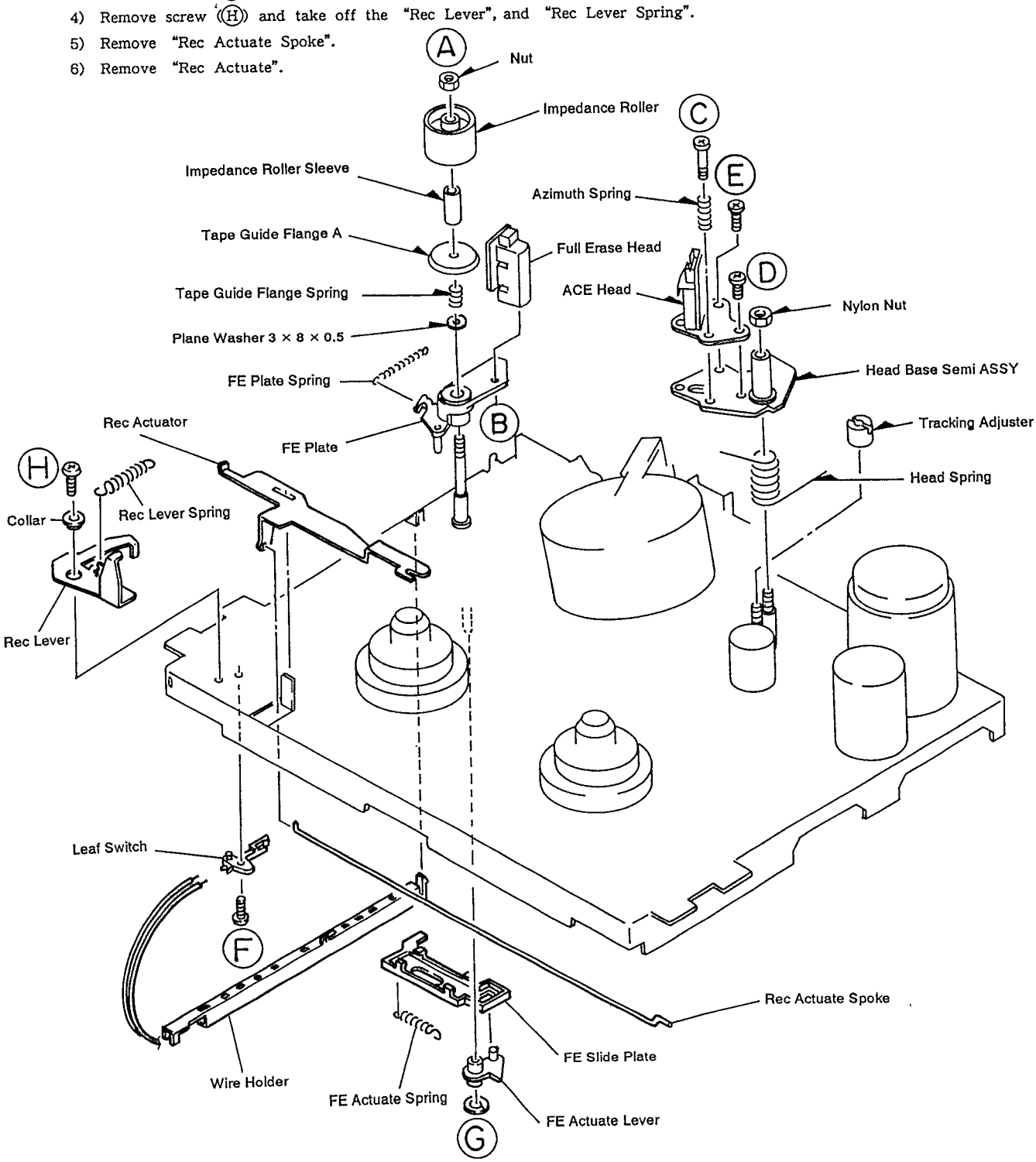


Fig.-6

9. "Sub Plate ASSY" Removal (See Figure – 7)
   1) Remove the "Front Loading ASSY".
   2) Remove "Drive Belt".
   3) Remove Poly – Washer and "Middle Pulley ASSY".
   4) Remove Nylon – Washer (Ⓐ) and take off the "Clutch ASSY".
   5) Remove 1 screw (Ⓑ) and 2 screws (Ⓒ) and take off the "Sub Plate ASSY".
   6) Remove 1 screw (Ⓓ) and take off the "T – Spring, Soft Brake Arm".
   7) Take off the "T Soft Brake ASSY".
   8) Remove 2 "E – Rings (Ⓔ)" and take off the 2 "Reel Drive Gear".

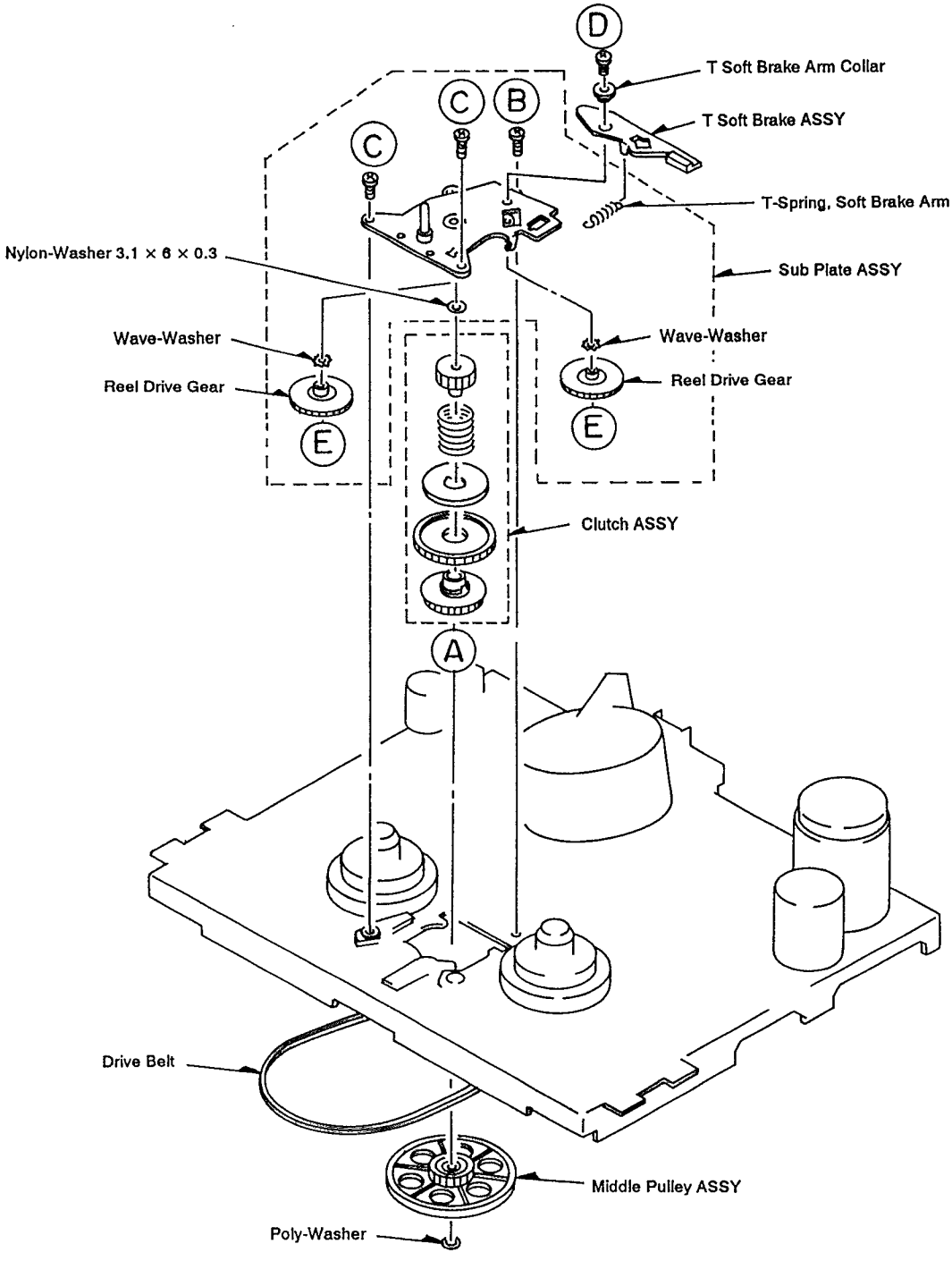


Fig.-7

10. "BT Band ASSY" And "BT Arm Semi ASSY" Removal (See Figure – 8)
    1) Remove the "Front Loading ASSY".
    2) Remove Poly – Washer (Ⓐ) and "BT Actuate Plate Spring" from the "BT Arm Semi ASSY".
    3) Remove 1 screw (Ⓑ) and "Band Holder Spring".
    4) Take off the "BT Band ASSY" from the "BT Arm Semi ASSY".

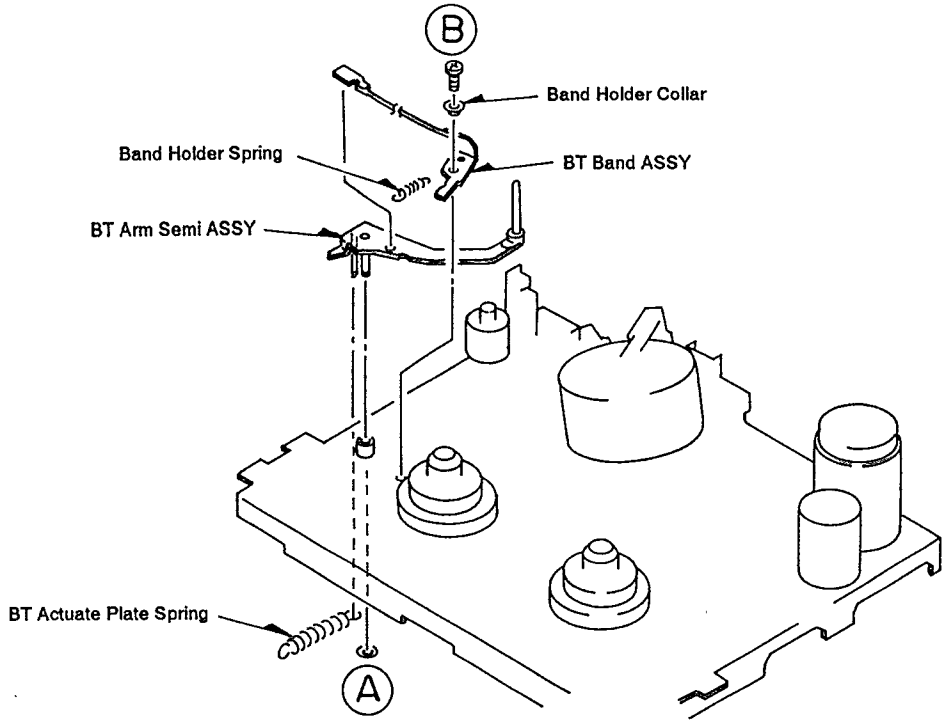


Fig.-8

11. "Reel ASSY" Removal (See Figure – 9)
    1) Remove the "Front Loading ASSY", "Gear Holder ASSY" and "BT Band ASSY".
    2) Remove 1 screw (Ⓐ) and the "Back Tension Support".
    3) Remove the 2 "Reel ASSY".

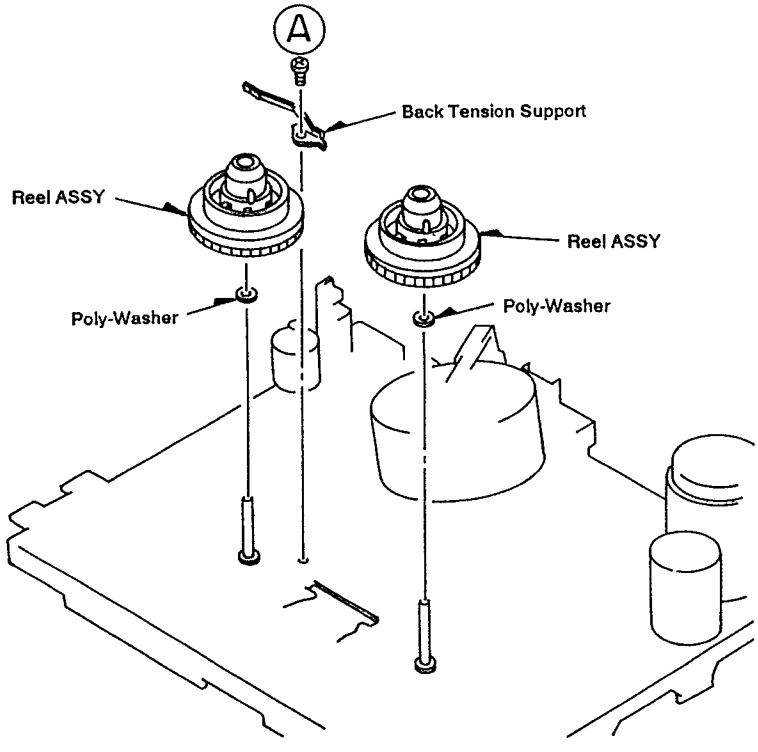


Fig.-9

12. "Cylinder ASSY" Removal (See Figure – 10)

1) Remove the "Front Loading ASSY".
2) Pull out the "RELAY C. B – 5" from the "Cylinder Motor TM82".
3) Remove 1 screw (Ⓐ) and take off the "Drum Earth".
4) Remove 3 screws (Ⓑ) and take off the "Cylinder ASSY".

= Remarks =

Take off the "Cylinder ASSY" carefully without any damage.

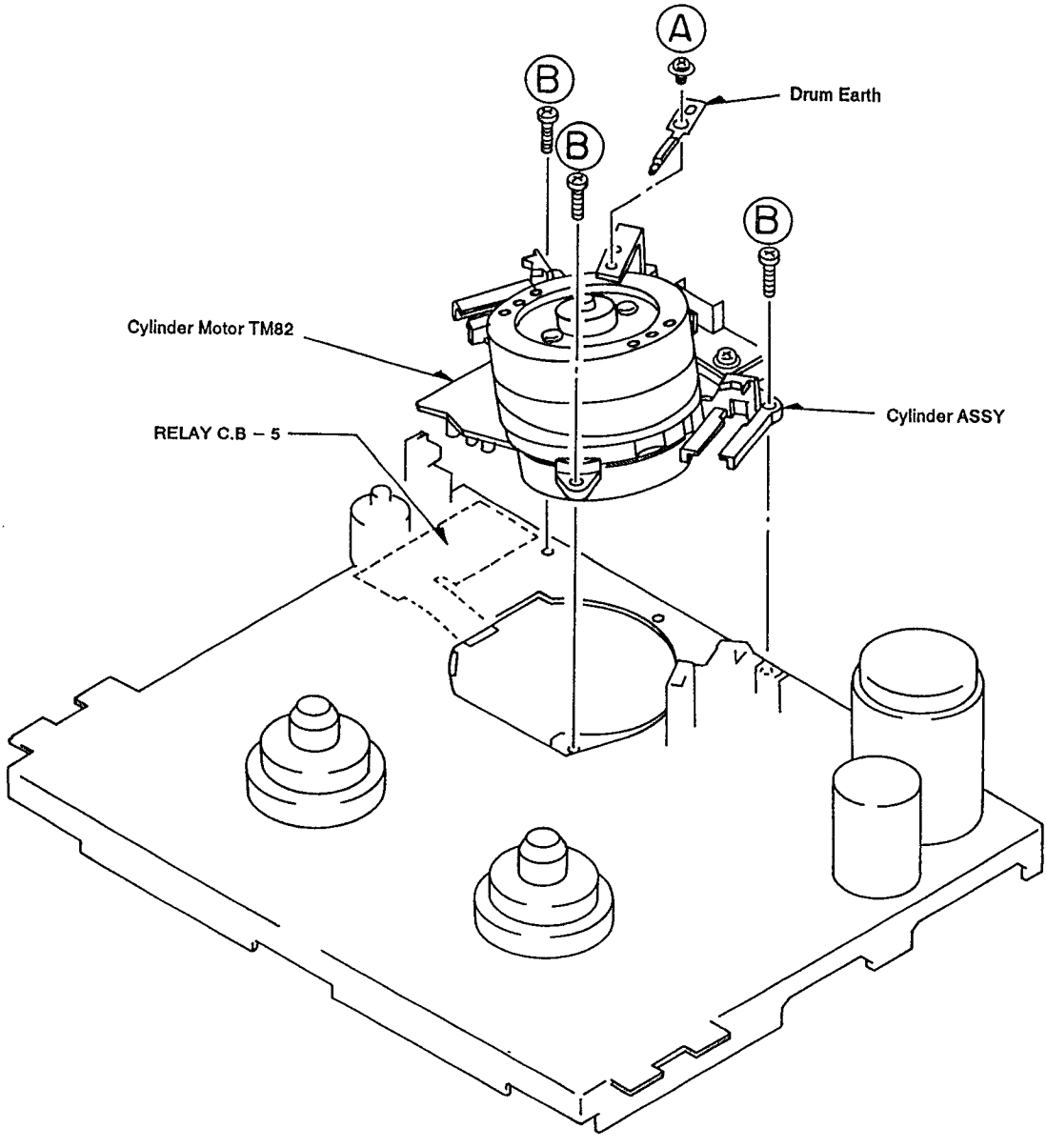


Fig.-10

13. "Upper Drum" Removal (See Figure – 11)
    1) Remove the "Front Loading ASSY".
    2) Remove 1 screw (Ⓐ) and take off the "Drum Earth Bracket".
    3) Remove 2 screws (Ⓑ) and take off the "Upper Drum".

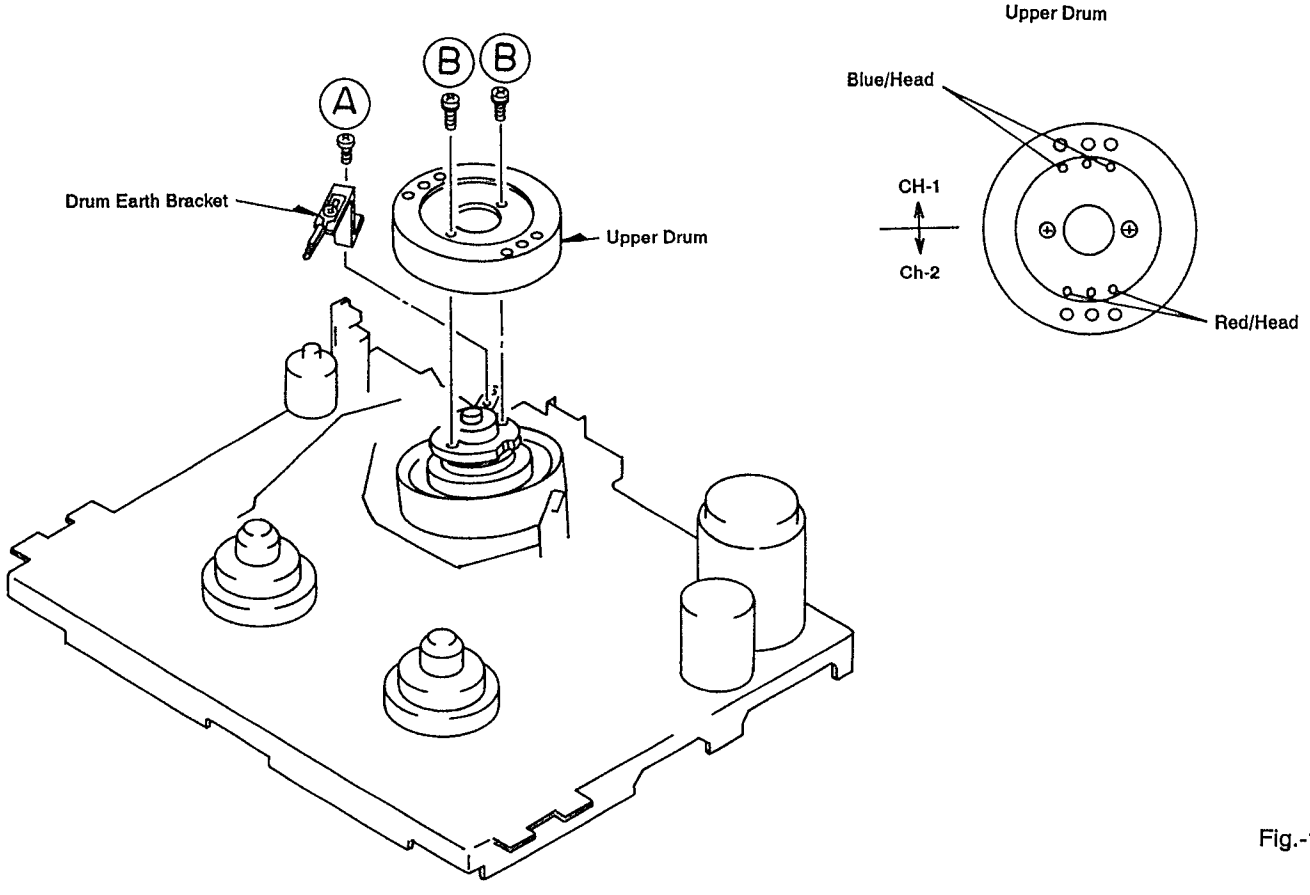


Fig.-11

= Remark =

1. Use gloves and do not touch the drum surface with bare fingers.
2. If the Video head is defective, replace the complete "Upper Drum" with the Head.
3. When installing "Upper Drum" and "Rotor", Upper Drum point ⓐ, Lower Drum point ⓑ and Rotor point ⓒ, these point ⓐ, ⓑ, ⓒ mast line up each other. Otherwise it will creates problem. (See Figure – 11 – 1)

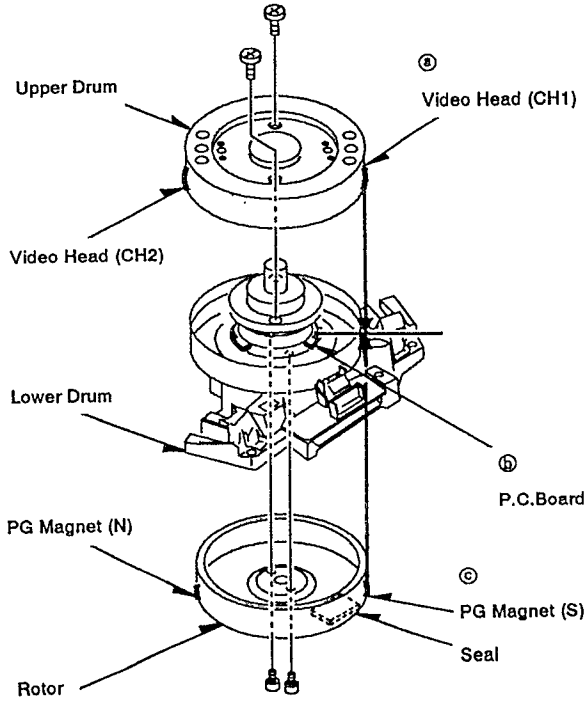
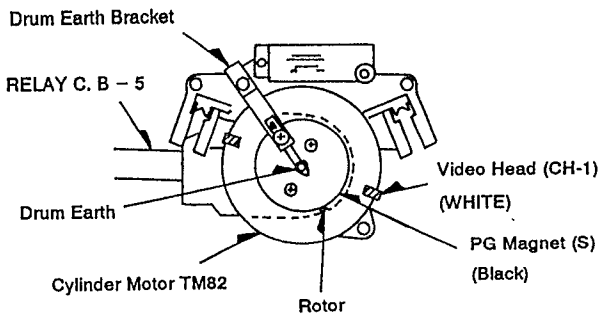


Fig.-11-1

14. "Cylinder Motor TM82" Removal (See Figure – 12)
    1) Pull out the "RELAY C. B – 5" from the "Cylinder Motor TM82".
    2) Remove 2 screws (Ⓐ) and take off the "Cylinder Motor TM82".
    3) Remove 3 screws (Ⓑ) and take off the "Cylinder Motor TM82".



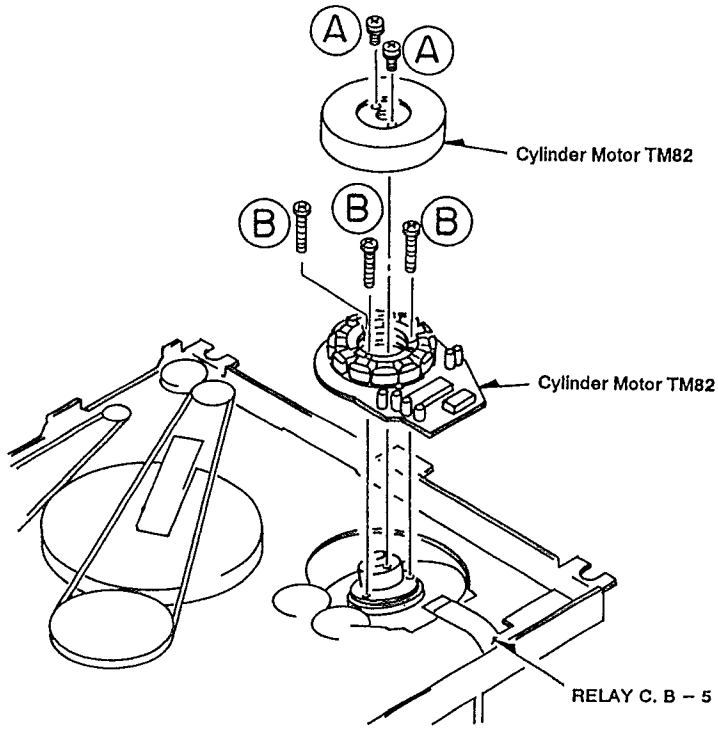


Fig.-12

15. "Capstan Motor ASSY" and "LM ASSY" Removal (See Figure – 13)
    1. "Capstan Motor ASSY" Removal
        1) Take off the "Drive Belt" and "Main Belt".
        2) Remove 2 screws (Ⓐ) and take off the "Capstan Motor ASSY".
    2. "LM ASSY" Removal
        1) Take off the "FI Belt".
        2) Remove 2 screws (Ⓑ) and take off the "LM ASSY".

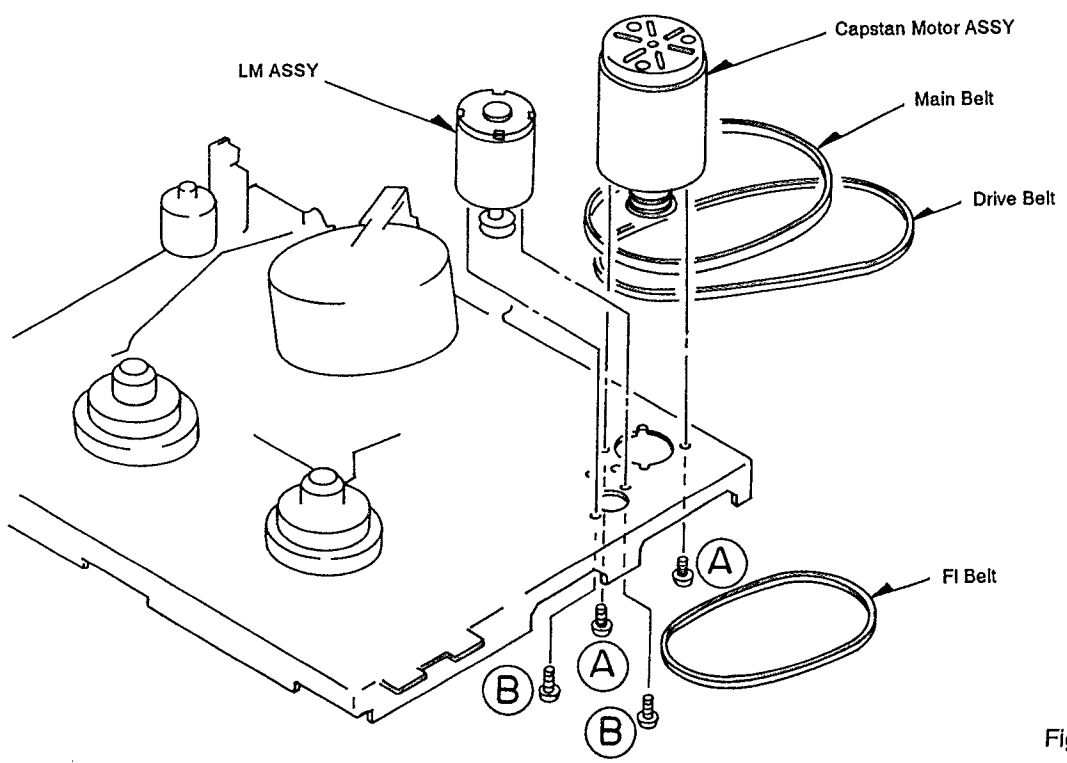


Fig.-13

18. "Reel Sensor" Removal (See Figure – 16)

1. Remove "Front Loading ASSY" and the "Gear Holder ASSY".
2. Remove "Reel ASSY".
3. Remove "Reel Sensor".

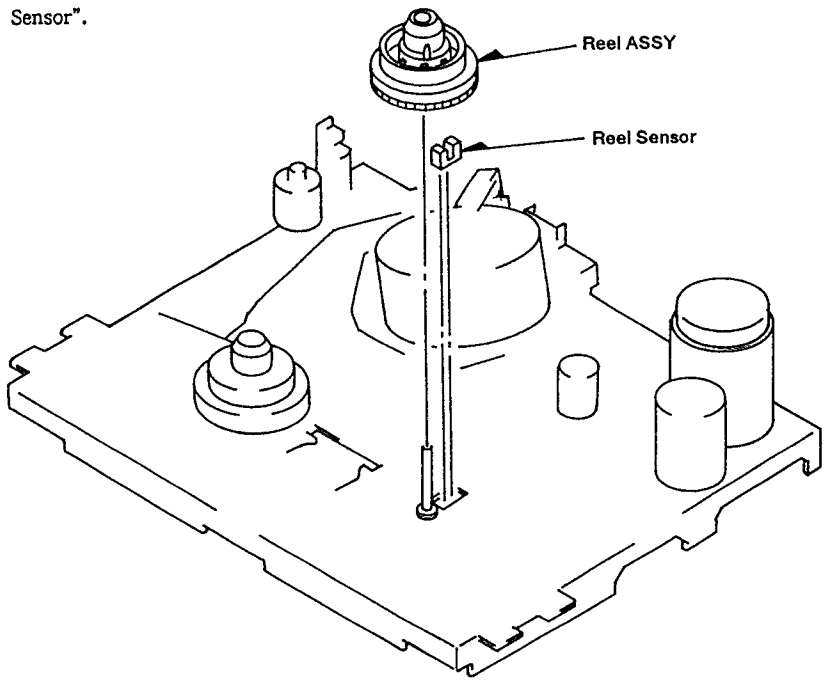


Fig.-16

19. "Loading Base Semi ASSY" Removal (See Figure – 17)

1) Remove "Cylinder ASSY", "BT Arm Semi ASSY", "BT Band ASSY" and "Front Loading ASSY".
2) Remove 1 screw (Ⓐ) and "L Gear Plate Collar", "L Gear Plate".
3) Remove 2 screws (Ⓑ).
4) Take off the "Loading Base Semi ASSY".

= Remark =

When installing the "L Gear Plate", align markings (Ⓒ) on the "T Loading Gear L" and "L Gear Plate".

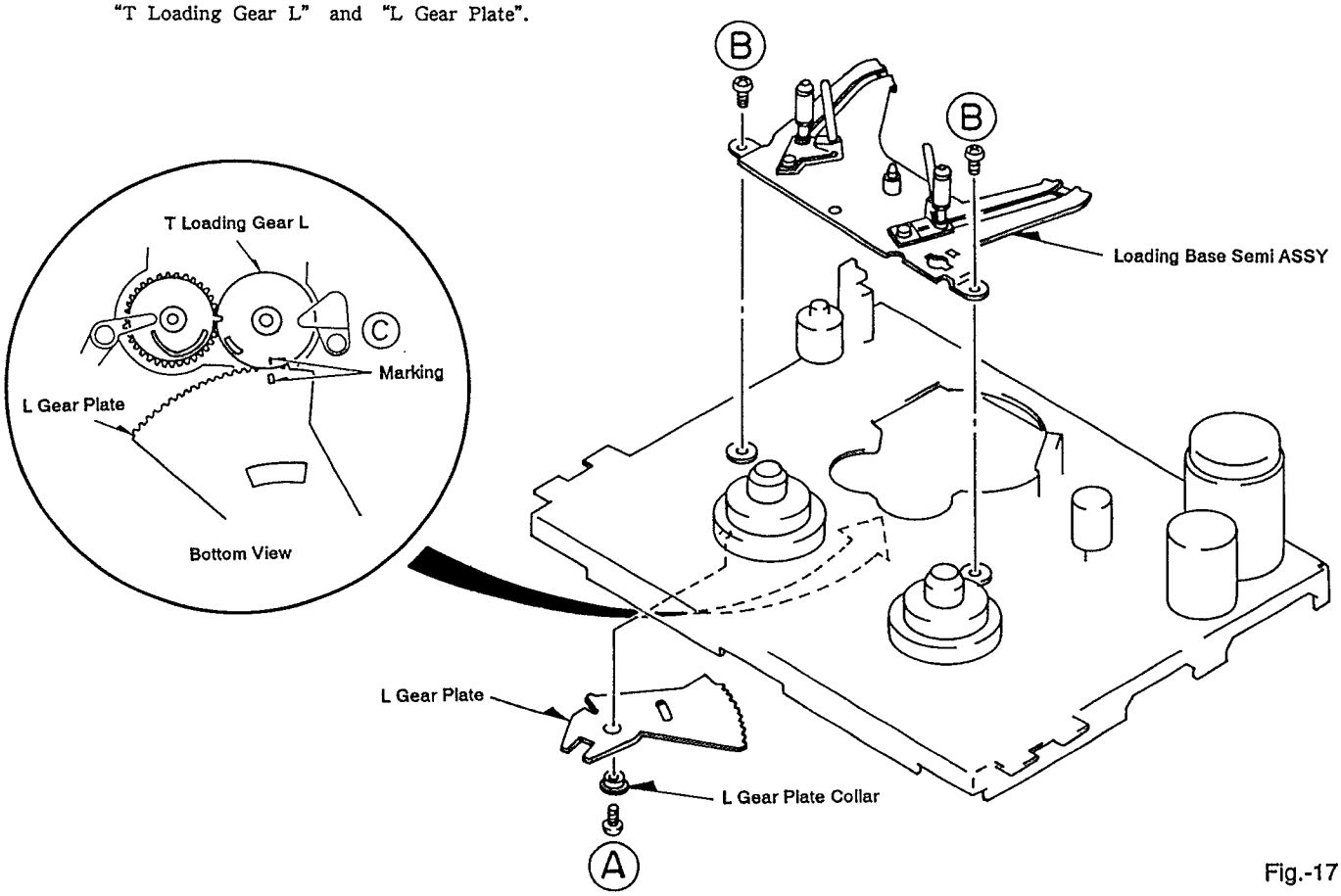


Fig.-17

20. "Wormwheel ASSY" Removal (See Figure – 18)

1. Disassembly

1) Remove "Front Loading ASSY".

2) Remove "Cassette Load Bracket ASSY".

3) Remove E – Ring (Ⓐ).

4) Remove "Wormwheel ASSY." ("Wormwheel", "Friction Spring", "Friction Gear")

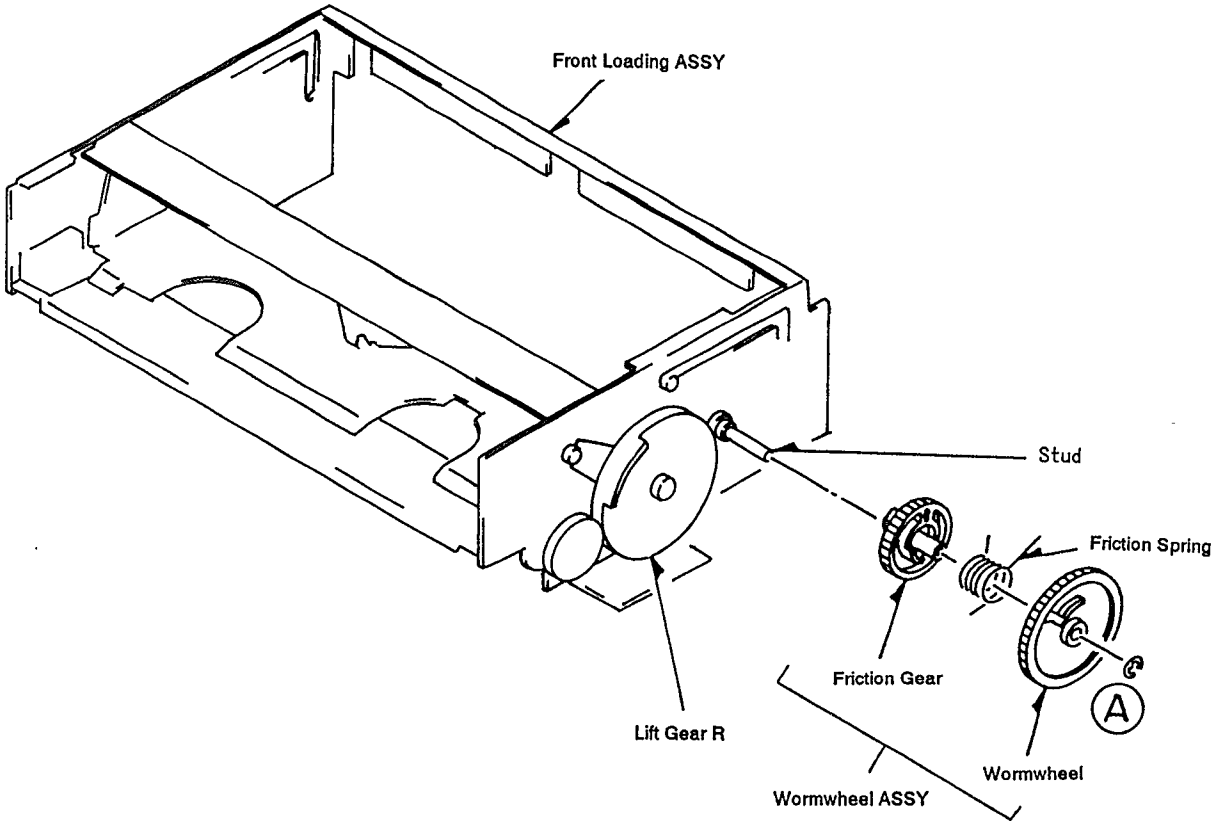
2. Assembly

1) Turn the "Lift Gear R" fully counterclockwise.

2) Restore "Wormwheel ASSY" to the stud.

= Remark =

Match "Lift Gear R" to the "Wormwheel Hole" as illustrated.



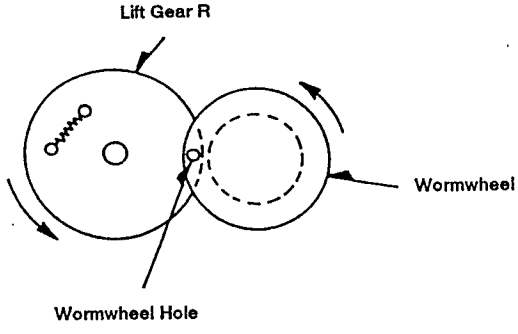


Fig-18

PARTS LISTS SECTION

NOTES

- PC boards shown are viewed from parts side.
- Parts marked with * require longer delivery time.
- The parts with no reference number or no parts number in the exploded views are not supplied.
- As regards the resistors and capacitors, refer to the circuit diagrams contained in this manual.
- ⚠ Parts marked with this sign are safety critical components. They must be replaced with identical components - refer to the appropriate parts list and ensure exact replacement.

ELECTRICAL MAIN PARTS LIST

NOTE:

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

COMB VTSS COMPL PCB ASSY

REF. NO.	PARTS NO.	DESCRIPTION
	*9A03573400	PWB COMB VTSS COMPL ASSY (Consists of PCB-A,B,F,G,H,I ASSY)
	*9A03342440	PWB,COMB VTSS MV-317 (Consists of PCB-A,B,F,G,H,I)
PCB-A	- - - - -	PCB, VT-11 (MAIN)
PCB-B	- - - - -	PCB, SS-11 (SERVO/SYSCOM)
PCB-F,G	- - - - -	PCB, CN-11 (RELAY-1/2)
PCB-H	- - - - -	PCB, CN-12 (RELAY-3)
PCB-I	- - - - -	PCB, CN-13 (RELAY-4)
CN201	9A02445800	CONN, 2P IL-S
CN202	9A03341200	CONN, 5P SBRK 5S-5
CN205	9A02446700	CONN, 7P IL-SDD F
CN206	9A02446900	CONN, 11P IL-SDD F
CN207	9A02446800	CONN, 9P IL-SDD F
CN208	9A02447000	CONN, 6P IL-SDD M
CN211	9A03341300	CONN, 6P SBRK 6S-5
CN212	9A03341400	CONN, 7P SBRK 7S-5
CN213	9A03341600	CONN, 11P SBRK 11S-5
CN214	9A03341500	CONN, 9P SBRK 9S-5
CN215,401	9A02448300	CONN, 9P 8283 V WHT
CN402	9A02439100	CONN, 7P 8283 V WHT
CN403	9A02439000	CONN, 4P 8283 V WHT
CN404	9A02840700	CONN, 8P 8283 V WHT
D201-207	9A02436600	DIODE,1SS133
D411,412	9A02436600	DIODE,1SS133
D801,881	9A02436600	DIODE,1SS133
DL461	9A02450500	DL, EFD-JF124A13F
FL411	9A02449900	FTR.,LPF 3M 7YCP
FL461	9A02450300	FLTR, LPF 1M
FL462	9A02449800	FTR.,BPF 4.43M AC-7
FL463	9A02451600	FLTR SFS 5.06ME
IC201	9A02449500	IC.,MB88525-205M
IC202	9A02454400	IC, PST 523D
IC203	9A02450100	IC.,MN6748IP
IC204,205	9A02445900	IC.,M5223L
IC206	9A02446200	IC.,BA6219B
IC207	9A02450200	IC.,HD404302A06P
IC209	9A02448000	IC.,TC4011BP
IC210	9A02446300	IC.,BA6209-V3
IC401,581	9A02446400	IC.,LVA522S
IC411	9A02446100	IC.,LA7323
IC412	9A02446000	IC.,LC8992
IC461	9A02446600	IC.,LA7333

Parts marked with * require longer delivery time

COMB VTSS COMPL PCB ASSY

REF. NO.	PARTS NO.	DESCRIPTION
IC801	9A02447900	IC.,LA7910
IC802	9A03578000	IC,L5631
IC803	9A03341700	IC, TC4066BP
IC804	9A02446500	IC.,PQ09R05
IC881	9A02449700	IC.,UPD1730
IC882	9A02449600	IC.,MSM1681I
J401,402	9A02450400	JACK, PIN 2-2
L201,202	9A02451300	COIL, 47UH
L203,204	9A02451500	COIL, 220UH EL0909
L401,402	9A02440100	COIL, 100UH
L411,412	9A02440100	COIL, 100UH
L415	9A02439800	COIL, 180UH LAL02
L416,417	9A02451100	COIL, 68UH LAL02
L461,801	9A02440100	COIL, 100UH
L462	9A02451400	COIL, 18UH J
L463	9A02451000	COIL, 3.3UH LAL02
L464	9A02451200	COIL, 27UH LAL02
L809-811	9A02440100	COIL, 100UH
L812	9A02451300	COIL, 47UH
L814	9A02440100	COIL, 100UH
Q201,202	9A02455100	TR., 2SA933S S
Q204,207	9A02436700	TR.,DTC144ES DIGITAL
Q205,206	9A02442300	TR.,2SC1740S/SR
Q208,211	9A02436700	TR.,DTC144ES DIGITAL
Q209	9A02455100	TR., 2SA933S S
Q210,411	9A02455000	TR.,DTA144ES
Q212	9A02442300	TR.,2SC1740S/SR
Q213-215	9A02436700	TR.,DTC144ES DIGITAL
Q216,217	9A02458900	TR., 2SA1048Y
Q218,420	9A02436700	TR.,DTC144ES DIGITAL
Q413	9A02442400	TR.,2SA933S/SR
Q414-416	9A02442300	TR.,2SC1740S/SR
Q417-419	9A02442400	TR.,2SA933S/SR
Q450,462	9A02442300	TR.,2SC1740S/SR
Q451,464	9A02442400	TR.,2SA933S/SR
Q452,581	9A02436700	TR.,DTC144ES DIGITAL
Q463,465	9A02442300	TR.,2SC1740S/SR
Q466,468	9A02442300	TR.,2SC1740S/SR
Q467	9A02455000	TR.,DTA144ES
Q469,801	9A02442300	TR.,2SC1740S/SR
Q598	9A02454900	TR., DTC114YS
Q599	9A02459000	TR., 2SA1048GR
Q802,808	9A02442300	TR.,2SC1740S/SR
Q805	9A02442400	TR.,2SA933S/SR
Q810	9A02442300	TR.,2SC1740S/SR
R254	9A02448100	R.FUSE,100-1/4W
R266,282	9A02448200	R.FUSE,3.3-1/2W
RF801	9A02450900	RF UNIT,S130A
SFR201	9A02454800	SFR, 220K DIA6 V TP
SFR202	9A02454800	SFR, 220K DIA6 V TP

COMBI VTSS COMPL PCB ASSY

REF. NO.	PARTS NO.	DESCRIPTION
SFR411	9A03578600	SFR,10K RH063EC
SFR412	9A03578600	SFR,10K RH063EC
SFR413	9A03578600	SFR,10K RH063EC
SFR414	9A03578400	SFR,1K RH063EC
SFR415	9A03578400	SFR,1K RH063EC
SFR416	9A03578500	SFR,3.3K RH063EC
SFR461	9A03578400	SFR,1K RH063EC
SFR801	9A03578500	SFR,3.3K RH063EC
TP201	9A02447600	PIN, TEST 4P 1.1-19
TS011	9A02448700	F-CABLE, 8-2.5 190
TS012	9A03579700	F-CABLE,11-2.0 170
TS013	9A02449400	CONN, ASSY 2P TS-13
TU801	9A02450700	TV TU, 4EA-721
VIF801	9A02450800	VIF PAC, 101A
WS208,209	9A02448900	F-CABLE, 8-2.0 120
WS211	9A02449000	F-CABLE, 6-2.0 60
WS222	9A02449200	F-CABLE, 7-2.0 220
WS223	9A02449100	F-CABLE, 11-2.0 160
WS224	9A03341100	F-CABLE, 9-2.0 450
X201	9A02455400	VIB, CER KBR6.0MES
X202	9A02455300	VIB, CER KBR-4.0MES
X461	9A02458800	VIB, XTAL 4.43M
X801	9A02455500	VIB, CER 4.5MGW
	9A02445700	CORD, PIN 10CM TU
	9A02426900	BVIT3B+3-10
	9A02450000	HT SINK, SV
	9A02450600	WIRE, U24X0-10-5F

COMBI FR COMPL PCB ASSY

REF. NO.	PARTS NO.	DESCRIPTION
	*9A03573700	PWB COMBI FR COMPL ASSY (Consists of PCB-D,E ASSY)
	*9A03576800	PWB,COMB FR 2M MV-318 (Consists of PCB-D,E)
PCB-D	- - - - -	PCB, FR-31 (TIMER)
PCB-E	- - - - -	PCB, FR-32 (POWER SW)
BT901	9A02435400	CONN,ASSY 9P TF-11
BT902	9A02435300	CONN,ASSY 5P FP-11
CN901,902	9A02434400	CONN, 8P HBRK-8R-2
CN903	9A03578300	CONN,10P P-FJ
CN904	9A03578200	CONN,10P R-FJ
D901-920	9A02436600	DIODE,1SS133
D922-934	9A02436600	DIODE,1SS133
D936,937	9A02436600	DIODE,1SS133
D938	9A02435900	LED, SLZ-981C-02
D939,950	9A02823700	LED, SLZ-481C-02

Parts marked with * require longer delivery time

COMBI FR COMPL PCB ASSY

REF. NO.	PARTS NO.	DESCRIPTION
D940,941	9A02436600	DIODE,1SS133
D942	9A02436800	ZENER DIODE, HZ9C1L
D943-946	9A03578800	ZENER,HZ6B1L
FL901	9A03577100	FL,9-MT-112 GK
IC901	9A03343300	IC, UPD75208CW-B18
IC902	9A02434100	IC.,SBX1610-52
J901	9A02528400	JACK, PIN JPJ3844GOLD
L901,902	9A02436100	COIL, 100UH
Q901-910	9A02436700	TR.,DTC144ES DIGITAL
RV901	9A03578700	VR,250KB RK09K113-4
SW901-912	9A02528100	SW, TACT EVQ21409K
SW914-926	9A02528100	SW, TACT EVQ21409K
SW928,929	9A02528100	SW, TACT EVQ21409K
SW930	9A03579100	SW,SL 2-2-2 UOL12B
SW931	9A02528100	SW, TACT EVQ21409K
X901	9A02837600	VIB, CER KBR4.19MKS
X902	9A02434900	VIB,XTAL32.768K5PPM
X903	9A02434800	VIB, PIEZO PKM22EPP
	9A02435100	FILTER, FL
	9A02435200	HOLDER, FL
	9A02435800	WIRE, U24X0-18-5

HA COMPL PCB ASSY

REF. NO.	PARTS NO.	DESCRIPTION
	*9A03572900	PWB HA COMPL ASSY (Consists of PCB-C,V ASSY)
	*9A03345040	PWB,COMB HA 2M MV-317 (Consists of PCB-D,E)
PCB-D	- - - - -	PCB, HA-12 (PRE AMP)
PCB-E	- - - - -	PCB, HA-13 (AUDIO)
CN601	9A02438900	CONN, 6P IL-SDD F
CN602	9A02439100	CONN, 7P 8283 V WHT
CN701	9A03344500	CONN, 5P IL-S S2L2
CN702	9A03344700	CONN, 4P 8283 V RED
CN703	9A03344900	CONN, 4P 8283 H RED
CN704	9A03344400	CONN, 2P IL-S S2L2
CN705	9A03344800	CONN, 4P 8283 H WHT
IC610	9A02438700	IC, LA7320
IC701	9A02438800	IC, BA7767AS
L601	9A03345100	COIL, 10UH
L602	9A03341900	COIL, 100UH
L630	9A02439700	COIL, 47UH
L631	9A02439900	COIL, 5.6UH LAL02
L633	9A02439600	COIL, 15UH LAL02
L634	9A02439800	COIL, 180UH LAL02

HA COMPL PCB ASSY

REF. NO.	PARTS NO.	DESCRIPTION
L701	9A02445000	COIL, 18MH TL-8
L702	9A02436100	COIL, 100UH
Q630-632	9A02442400	TR.,2SA933S/SR
Q633,634	9A02442300	TR.,2SC1740S/SR
Q701	9A02445100	TR.,2SC3940R
Q702	9A02436700	TR.,DTC144ES DIGITAL
T701	9A02439500	COIL,OSC BIAS-70K
WS601	9A02439300	F-CABLE, 5-2.0 160
	9A03344600	PIN, DIAI COATING
	9A02439200	SHLD, RP

COMBI PS COMPL PCB ASSY

REF. NO.	PARTS NO.	DESCRIPTION
	*9A03338240	PWB COMBI PS COMPL ASSY
	*9A03574200	PWB COMBI PS COMPL ASSY (Consists of PCB-T,U ASSY)
	*9A03346840	PWB,COMB PS 2M MV-317 (Consists of PCB-T,U)
PCB-T	- - - - -	PCB, PS-31 (POWER-1)
PCB-U	- - - - -	PCB, PS-32 (POWER-2)
BT101	9A03346000	CONN ASSY, 9P PS
BT102	9A03345900	CONN ASSY, 8P PV
C101	9A03346400	C., ELEC 3300-35 SME
C102	9A03346500	C., ELEC 6800-16
C105,106	9A02853800	C., ELEC 100-63
C111	9A02452500	C., ELEC 47-50 SME
C112	9A02452400	C., ELEC 10-50 SME
C115	9A02436600	DIODE,1SS133
C116	9A02442100	C., TC-U 0.1-50 F
CF101-106	9A02854200	CLAMP, FUSE SMK
CN101	9A03346700	CONN, 5P TXK H
D101-108	9A03578100	DIODE,11EFS2
D109-111	9A03346900	DIODE, 1SR139-200
D112,113	9A02436600	DIODE,1SS133
D116	9A02848800	ZENER DIODE, HZ5C3
D117	9A03578900	ZENER,HZ24-2L
F101	⚠9A02851300	FUSE, 630MA 250V T E
F102,103	⚠9A02851400	FUSE, 2A 250V T E
FL101	⚠9A03346300	FLTR, LINE PLA2230R4C
IC101	9A02846100	IC.,BA10324
J101	⚠9A02852200	JACK, AC E CCT9302
Q101-104	9A02851500	TR., 2SD1406Y
Q105	9A02442400	TR.,2SA933S/SR
Q106	9A02854400	TR., 2SA1015Y
Q107,108	9A02454900	TR., DTC114YS
R101	9A03347600	R., CARBON 1/2W 4.7K J

Parts marked with * require longer delivery time

COMBI PS COMPL PCB ASSY

REF. NO.	PARTS NO.	DESCRIPTION
R103	⚠9A02852600	R., FUSE 1/4W 47
R104	⚠9A02852500	R., FUSE 1/4W 100
R105	⚠9A03579000	R., FUSW 1/4W 1
R110	9A02854100	R., M/F 56K-1/4W ERO
R111,115	9A02854000	R., M/F 39K-1/4W ERO
R114	9A03347400	R., M/F 5K-1/4W ERO
T101	⚠9A03348000	POWER TRANSFORMER, K 240V
W101	9A03346100	WIRE, POWER 834TR
W102	9A03346200	WIRE, POWER 834TG
	9A02437100	JUMPER WIRE,PLATING
	9A03575600	SH,11-11-0.05
	9A03579400	BVT2+3-8 W CONVEX
	9A02426900	BVIT3B+3-10
	9A03579500	VFT2+3-10 GLD

OTHER PCB ASSY PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION
PCB-K	*9A02763500	BASE PCB ASSY (W/MODE SW)
CP1	9A02509300	PHOTO(REEL) SENSOR ON1385

REF. NO.	PARTS NO.	DESCRIPTION
PCB-L	*9A02763600	RELAY PCB ASSY-5

REF. NO.	PARTS NO.	DESCRIPTION
PCB-M	*9A02763700	RELAY PCB ASSY-6

REF. NO.	PARTS NO.	DESCRIPTION
PCB-N	*9A02763800	SW PCB ASSY (W/SW1,2,3)

REF. NO.	PARTS NO.	DESCRIPTION
PCB-O	*9A02763900	SENSOR PCB RM ASSY

OTHER PCB ASSY PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION
PCB-P	*9A02764000	SENSOR PCB LM ASSY

REF. NO.	PARTS NO.	DESCRIPTION
PCB-Q	- - - - -	LED PCB ASSY (W/PCB-Q)
LED1	9A02764100	LED ASSY (W/PCB-Q)

REF. NO.	PARTS NO.	DESCRIPTION
PCB-R	- - - - -	ACE HEAD PCB ASSY
ACEH	*9A02764200	ACE HEAD HV224206 (W/PCB-R)

REF. NO.	PARTS NO.	DESCRIPTION
PCB-S	- - - - -	ERASE HEAD PCB ASSY
FEH	*9A02503900	FULL ERASE HEAD (W/PCB-S)

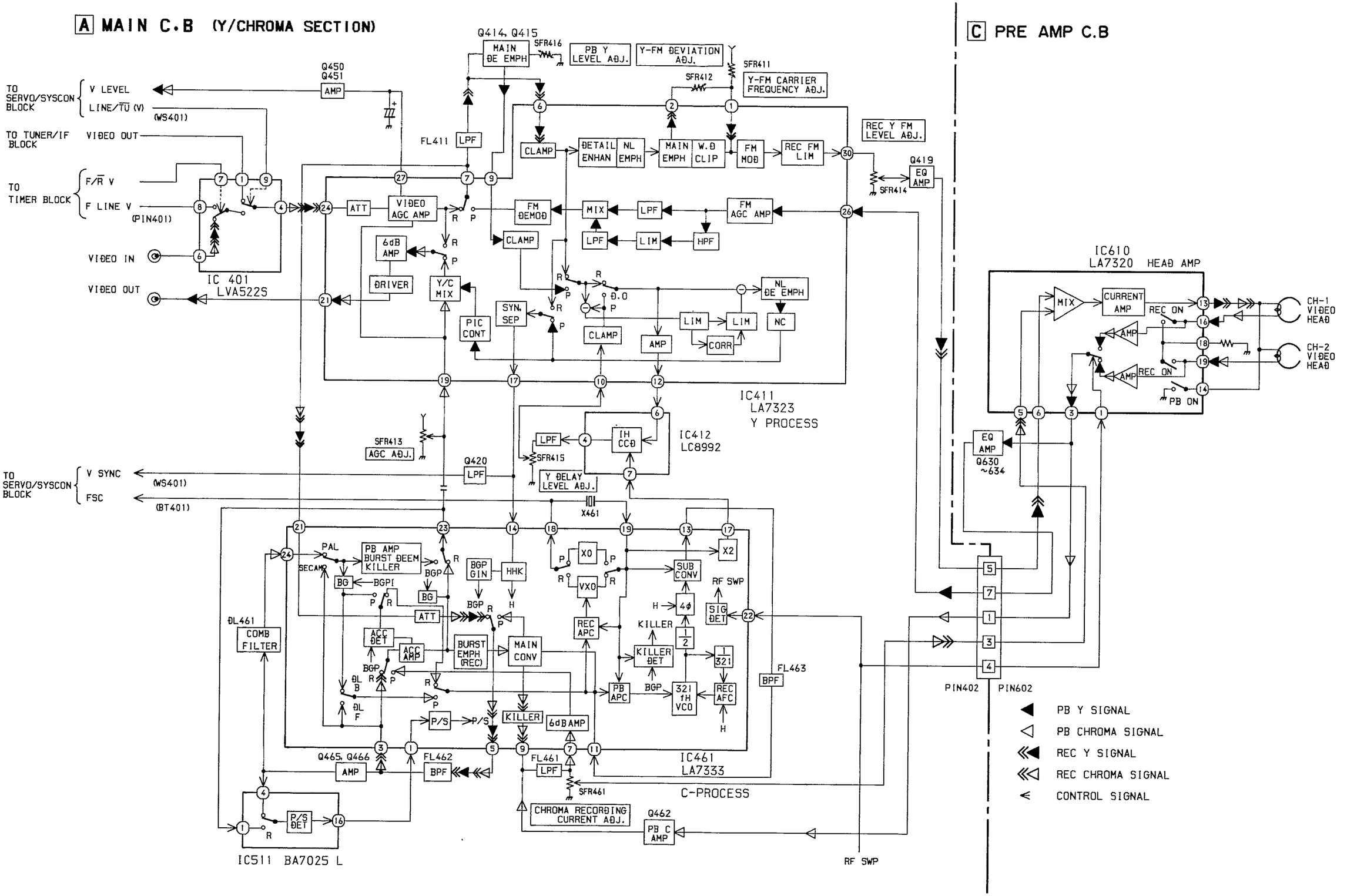
OTHER HRNES PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION
HM011	9A03348400	CONN ASSY, 6P MH-15
HM012	9A03348200	CONN ASSY, 2P MH-13
HM013	9A03348300	CONN ASSY, 4P MH-14
SH011	9A03348500	CONN ASSY, 7P SH-11
SH012	9A03348600	CONN ASSY, 4P SH-12

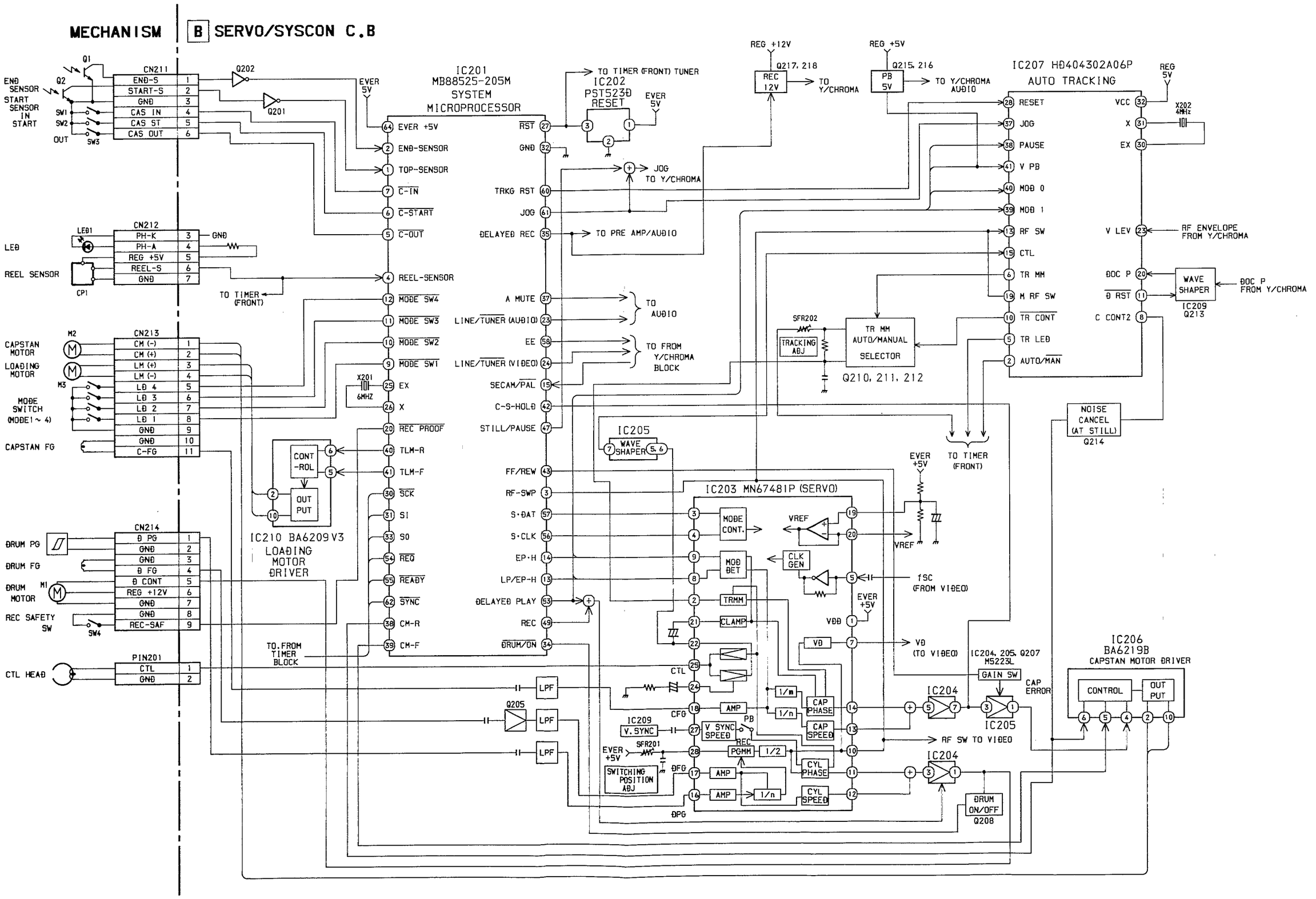
Parts marked with * require longer delivery time

PACKING & INCLUDED PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION
	*9A03577200	CUSHION,FRONT
	*9A03577300	CUSHION,REAR
	*9A03577400	BOX,ACCESSORY
	9A03577500	CTN,PRINTED 318
	9A03577600	LBL,POP
	9A02459400	LBL,SERIAL NO SMALL
	9A03579800	SHEET,FOAMED MAT
	9A03577700	OWNER'S MANUAL,(MV-318/404)
	9A03349000	CORD, RF PAL YAF
	⚠9A02460300	AC CORD ASSY, AS
	9A02460500	SUM-3,(MAXELL 2P)
	*9A02531940	REMOCON, RC-397


A MAIN C.B (Y/CHROMA SECTION)
C PRE AMP C.B
TO SERVO/SYSCON BLOCK
V LEVEL
LINE/TU (V)
(WS401)
TO TUNER/IF BLOCK
VIDEO OUT
TO TIMER BLOCK
F/R V
F LINE V
(PIN401)
VIDEO IN
VIDEO OUT
IC 401 LVA522S
Q450 Q451
AMP
Q414, Q415
MAIN DE EMPH
SFR416
PB Y LEVEL ADJ.
Y-FM DEVIATION ADJ.
SFR411
SFR412
Y-FM CARRIER FREQUENCY ADJ.
REC Y FM LEVEL ADJ.
FL411
LPF
CLAMP
DETAIL ENHAN
NL EMPH
MAIN EMPH
W.D CLIP
FM MOD
REC FM LIM
Q419
EQ AMP
SFR414
ATT
VIDEO AGC AMP
FM DEMOD
MIX
LPF
FM AGC AMP
6dB AMP
DRIVER
Y/C MIX
LIM
HPF
NL DE EMPH
PIC CONT
SYN. SEP
D.O
NC
CORR
AMP
IC411 LA7323 Y PROCESS
SFR413 AGC ADJ.
Q420
LPF
IH CCD
IC412 LC8992
SFR415
Y DELAY LEVEL ADJ.
X461
TO SERVO/SYSCON BLOCK
V SYNC
FSC
(WS401)
(BT401)
PAL
SECAM
PB AMP BURST DEEM KILLER
BG
BGPI
BGP
BGP GIN
HHK
X0
X2
VXO
SUB CONV
RF SWP
4φ
SIG DET
KILLER
1/2
1/321
KILLER DET
REC APC
ACC DET
ACC AMP
BURST EMPH (REC)
MAIN CONV
PB APC
321 fH VCO
REC AFC
DL461
COMB FILTER
DL B
DL F
P/S
KILLER
6dB AMP
FL463
BPF
Q465, Q466
AMP
FL462
BPF
FL461
LPF
SFR461
CHROMA RECORDING CURRENT ADJ.
Q462
PB C AMP
IC461 LA7333 C-PROCESS
P/S DET
IC511 BA7025 L
RF SWP
IC610 LA7320 HEAD AMP
MIX
CURRENT AMP
REC ON
AMP
PB ON
CH-1 VIDEO HEAD
CH-2 VIDEO HEAD
EQ AMP
Q630 ~634
PIN402
PIN602
PB Y SIGNAL
PB CHROMA SIGNAL
REC Y SIGNAL
REC CHROMA SIGNAL
CONTROL SIGNAL

BLOCK DIAGRAM – 2 (SERVO/SYSCON CONTROL SECTION)



B SERVO/SYSCON C.B

A MAIN C.B (TUNER/IF SECTION)

D TIMER C.B

IC882
EP ROM
MSM16811

IC881
TUNER MICROPROCESSOR
UPD1730

CS
SK
DI
DO
RESET
TUSCK
TUSO
TUSI
TUCS
EUSO
EUSI
ROM CLK

STATE DETECTION
START.SENSOR
END.SENSOR
REEL.SENSOR
CASSETTE START
CASSETTE IN
CASSETTE OUT
MODE SW1
MODE SW2
MODE SW3
MODE SW4
REC SAFETY SW

MECHANISM CONTROL
MICROPROCESSOR
MB88525 (4K)

IC201

IC207
AUTO TRACKING
MICROPROCESSOR
HD404302A06P

TR LED
RESET
TRKG RST

IC203
SERVO
IC
MN67481

S.CLK
S.DAT
S·CLK
S·DAT
SYNC
READY
REQ
SO
SI
SCK
RESET
X
EX
X201
6MHZ

EVER +5V
D939, 950
AUTO TRACKING
Q909

EVER +5V
D938
POWER
Q910

EVER +5V
TEST
24h/12h
TV/VCR
SERVICE
TU·SCK
TU·SO
TU·SI
TU·CS
POWER LED
G1 ~ G10
A ~ J

TIMER
MICROPROCESSOR
UPD75208CW-B18

IC901

X903
BUZZER

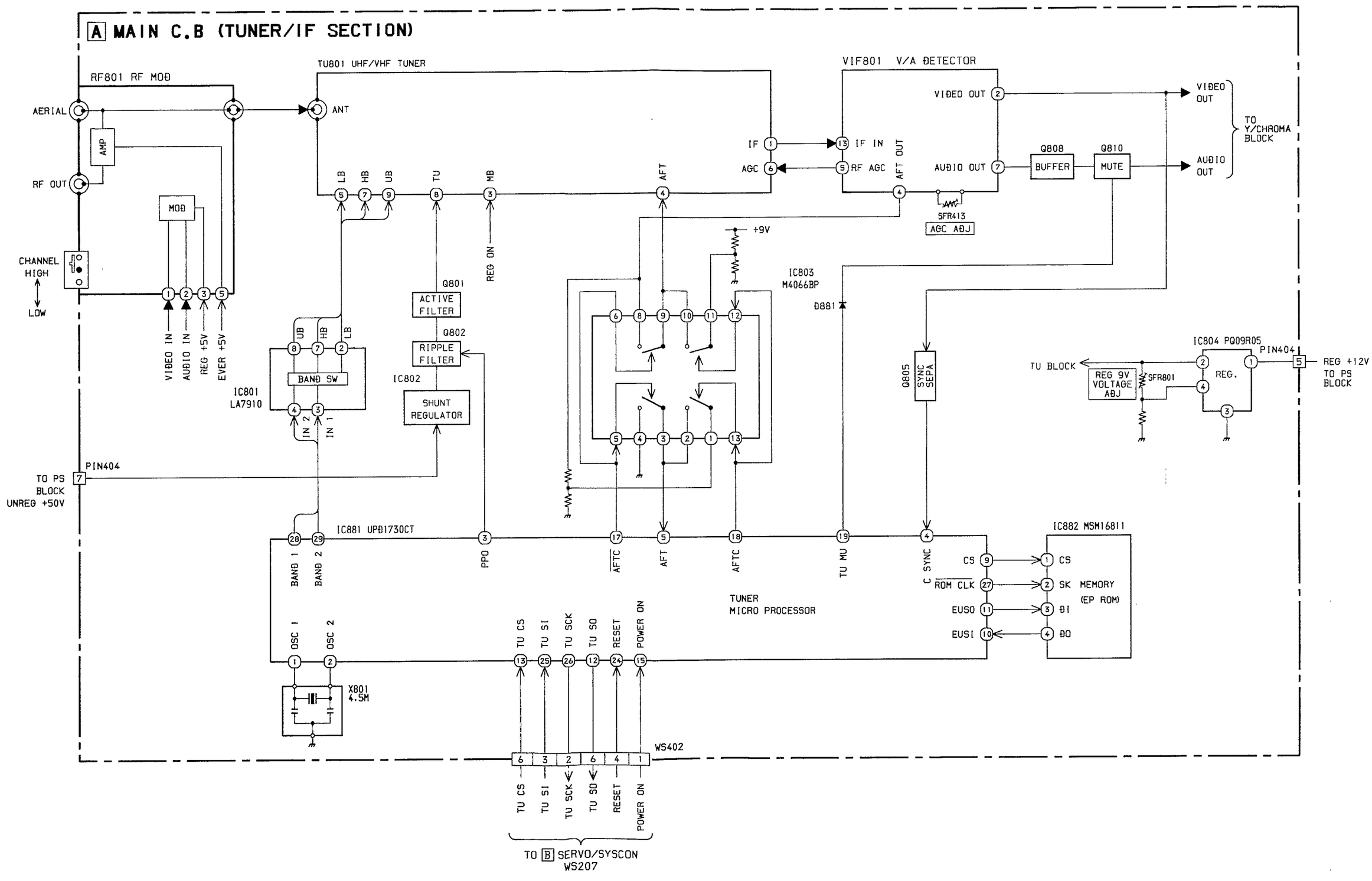
FL901
(DISPLAY)

KM0 ~ KM3
KEY.MATRIX

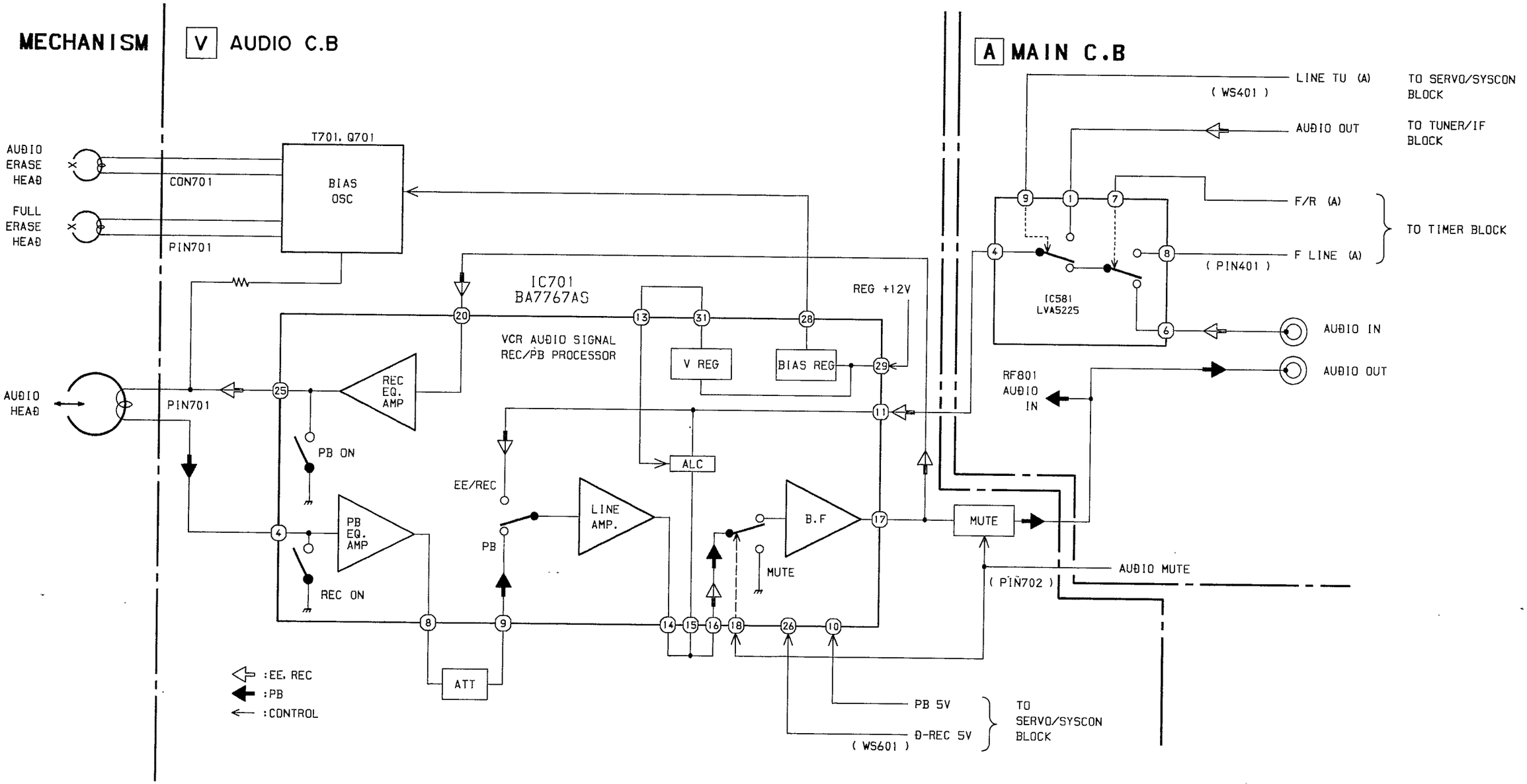
IC902
REMOTE
CONT.
SBX1610-52
REMOTE
CONTROL
SIGNAL

EVER +5
RESET IC
PST523D
IC202

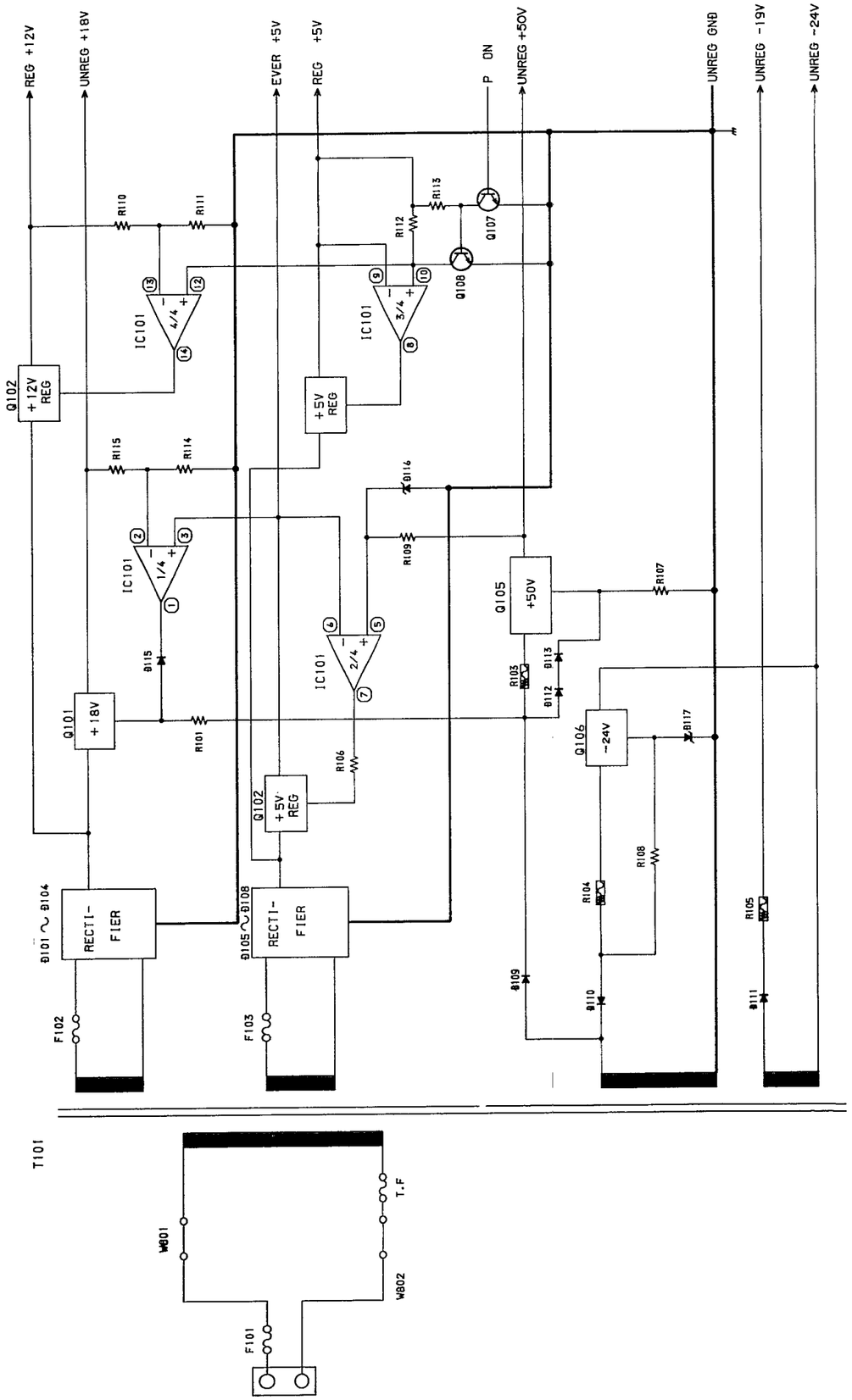
X901
4.19MHZ
EX
X
EXT
XT
X902
32.768KHZ


A MAIN C.B (TUNER/IF SECTION)
RF801 RF MOD
AERIAL
AMP
RF OUT
MOD
CHANNEL
HIGH
LOW
VIDEO IN
AUDIO IN
REG +5V
EVER +5V
TU801 UHF/VHF TUNER
ANT
LB
HB
UB
TU
MB
AFT
IF
AGC
VIF801 V/A DETECTOR
VIDEO OUT
IF IN
RF AGC
AFT OUT
AUDIO OUT
Q808
BUFFER
Q810
MUTE
VIDEO OUT
AUDIO OUT
TO Y/CHROMA BLOCK
SFR413
AGC ADJ
+9V
REG ON
Q801
ACTIVE FILTER
Q802
RIPPLE FILTER
IC802
SHUNT REGULATOR
IC801
LA7910
BAND SW
IN 2
IN 1
IC803
M4066BP
D881
Q805
SYNC SEPA
IC804 PQ09R05
PIN404
REG +12V
TO PS BLOCK
TU BLOCK
REG 9V VOLTAGE ADJ
SFR801
REG.
PIN404
TO PS BLOCK
UNREG +50V
IC881 UPD1730CT
BAND 1
BAND 2
PPO
AFTC
AFT
AFTC
TU MU
C SYNC
TUNER MICRO PROCESSOR
IC882 MSM16811
CS
ROM CLK
EUSO
EUSI
SK MEMORY (EP ROM)
DI
DO
OSC 1
OSC 2
X801
4.5M
TU CS
TU SI
TU SCK
TU SO
RESET
POWER ON
WS402
TO B SERVO/SYSCON WS207

BLOCK DIAGRAM – 5 (AUDIO SECTION)



BLOCK DIAGRAM – 7 (POWER UNIT – 2 SECTION)



PRACTICAL SERVICE FIGURE

Output Level

Video (Impedance) : 1.0 ± 0.2Vp – p
(75 Ω ± 20 %, Unbalance)

Audio (Impedance) : – 8 ± 3dB (Less then 3.3k Ω)

RF Modulated (Impedance) : 75 ± 3dB μ V (75 Ω, Unbalance)

Input Level

Video (Impedance) : 0.5V~2.0V ± 0.5Vp – p
(75 Ω ± 20 %, Unbalance)

Audio (Impedance) : – 10 ± 3dB (More than 47k Ω)

TV channels received

Destination	VHF Low	VHF High	UHF	Signal format	
				VHF	UHF
				B	G
AUS	0~5	5A~11	E21~E69	VIF 36.9MHz, SIF 31.4MHz	

Tuner AGC : 72 ± 3dB (VHF, UHF)

S/N Ratio

Video (SP mode) : [Test tape MVP – 08 (PB), MVP – 09 (PB), TDK HS – 120 (R/P)]

Signal	PB	R/P
Y-signal	More than 42dB	More than 42dB
Chrominance-Signal (AM)	More than 38dB	More than 38dB
Chrominance-Signal (PM)	More than 36dB	More than 35dB

Audio (SP mode) : More than 40dB

Audio Frequency Response : 200Hz~6kHz (± 4dB)
(SP mode, Test tape A – BEX TPV – 160S)

Horizontal Resolution : More than 230 Lines
(PB, R/P)
(Test tape TTV – 06T)

Erase Ratio : More than 55dB

Bias Frequency : 70kHz ± 10 %

Tape speed : 23.39mm/sec ± 0.5 %
(SP mode)

Wow & Flutter : Less than 0.4 %
(Test tape TTV – P5, CCIR WTD)

F.F time : Less than 290sec (E – 240)

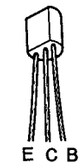
REW time : Less than 290sec (E – 240)

Back tension : 46.5 ± 12g-cm

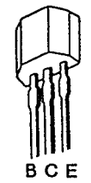
Loading : Less than 3sec

Unloading : Less than 3.5sec

TRANSISTOR ILLUSTRATION

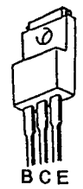


2SC3940
2SD2274

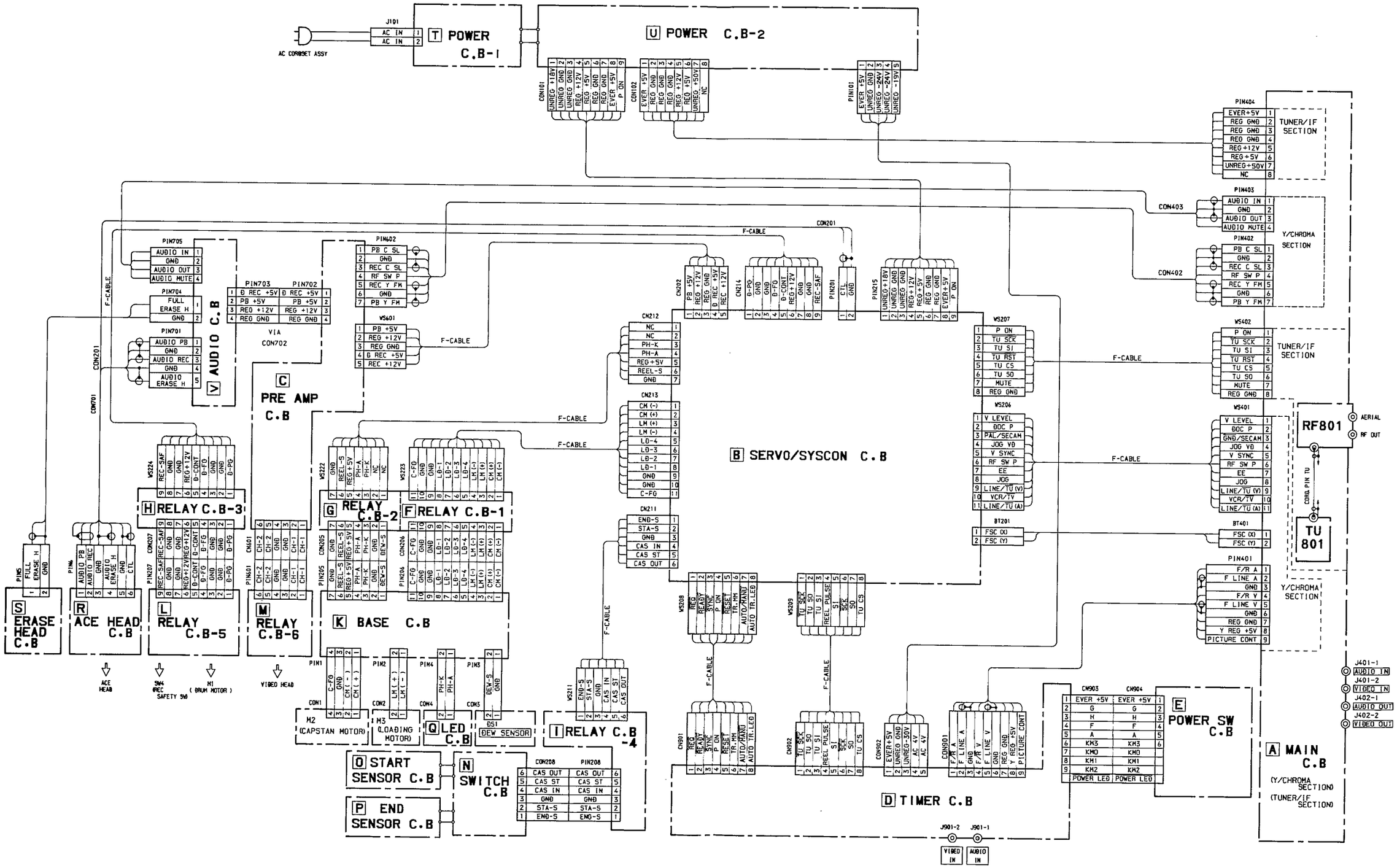


DTA144
DTC114
DTC144

2SA1048
2SA993
2SC1740

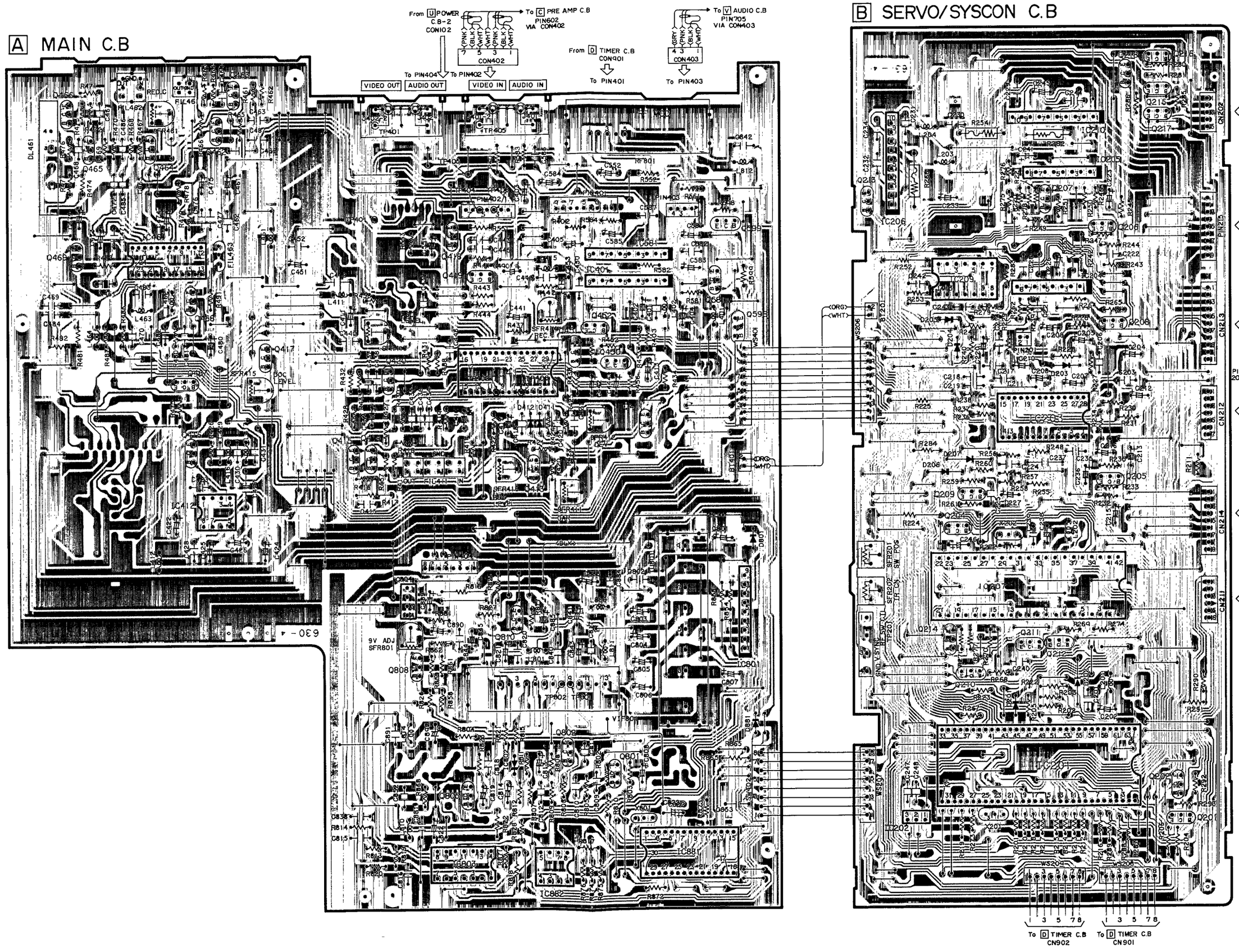


2SD1406


T POWER C.B-1
U POWER C.B-2
J101
AC IN
AC CORDSET ASSY
CON101
CON102
PIN101
PIN404
TUNER/IF SECTION
PIN403
Y/CHROMA SECTION
PIN402
CON403
CON402
CON201
F-CABLE
PIN705
PIN704
PIN701
V AUDIO C.B
PIN703
PIN702
VIA CON702
PIN602
WS601
C PRE AMP C.B
CN212
CN213
CN211
CN202
CN214
PIN201
PIN215
WS207
WS206
BT201
WS402
WS401
BT401
PIN401
RF801
AERIAL
RF OUT
CORD PIN TU
TU 801
B SERVO/SYSCON C.B
H RELAY C.B-3
G RELAY C.B-2
F RELAY C.B-1
S ERASE HEAD C.B
R ACE HEAD C.B
L RELAY C.B-5
M RELAY C.B-6
K BASE C.B
ACE HEAD
SW4 (REC SAFETY SW)
M1 (DRUM MOTOR)
VIDEO HEAD
M2 (CAPSTAN MOTOR)
M3 (LOADING MOTOR)
Q LED C.B
DEW SENSOR
I RELAY C.B -4
O START SENSOR C.B
N SWITCH C.B
P END SENSOR C.B
WS208
WS209
CN901
CN902
CN903
CN904
D TIMER C.B
E POWER SW C.B
A MAIN C.B
(Y/CHROMA SECTION)
(TUNER/IF SECTION)
J901-2
J901-1
VIDEO IN
AUDIO IN
J401-1
J401-2
J402-1
J402-2
AUDIO OUT
VIDEO OUT

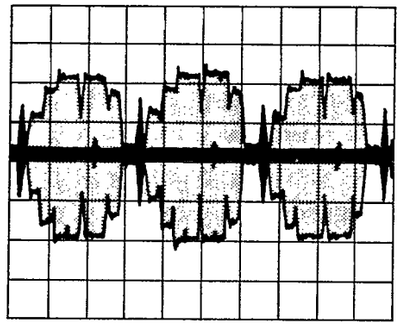
A MAIN C.B

B SERVO/SYSCON C.B



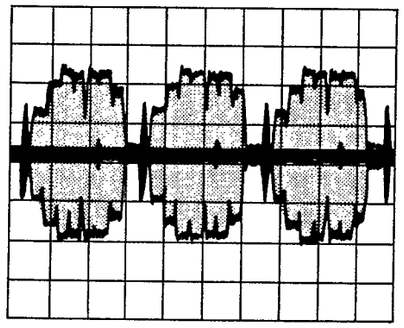
IC461 pin ③ (PB)
20 µs/div.
50mV/div.

⑦



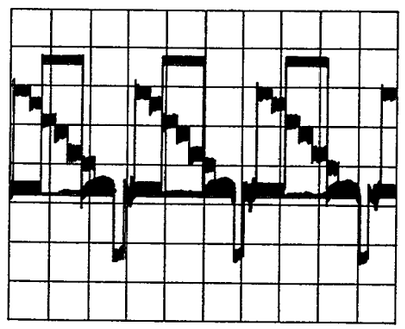
IC461 pin ㉔ (PB)
20 µs/div.
50mV/div.

⑧



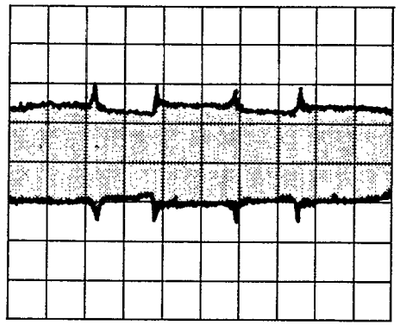
IC411 pin ⑨ (PB)
20 µs/div.
100mV/div.

⑨



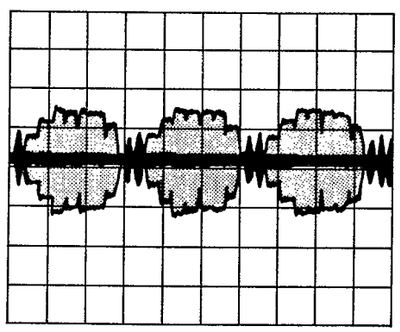
PIN402 pin ① (PB)
5ms/div.
100mV/div.

⑩



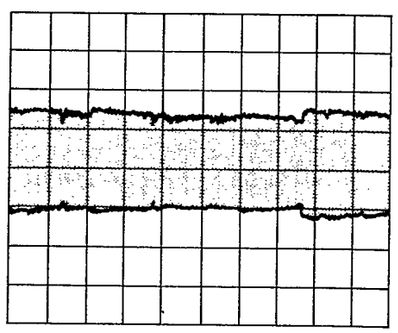
IC461 pin ⑦ (PB)
20 µs/div.
100mV/div.

⑪



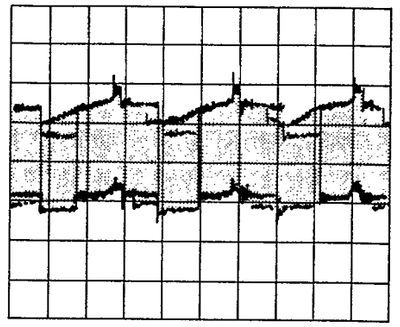
PIN402 pin ⑦ (PB)
5ms/div.
200mV/div.

⑫



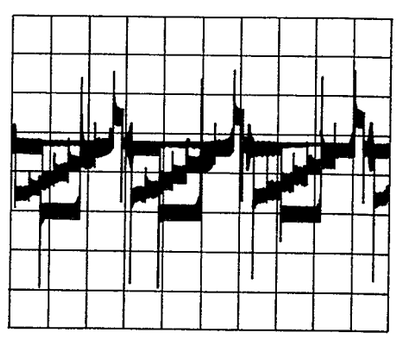
IC411 pin ⑦ (PB)
20 µs/div.
500mV/div.

⑬



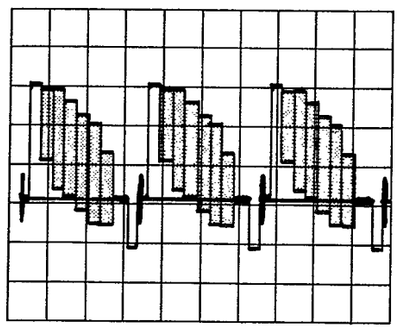
FIL411 OUT (PB)
20 µs/div.
100mV/div.

⑭



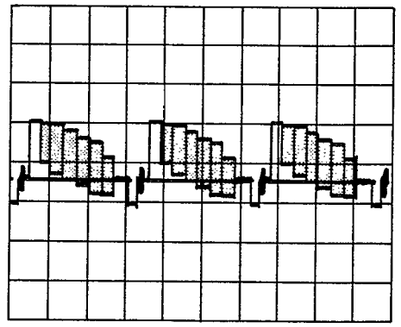
IC411 pin ㉑ (EE)
20 µs/div.
500mV/div.

⑮



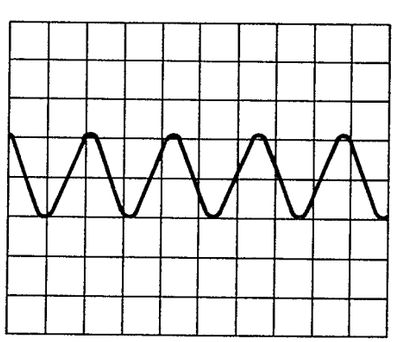
LINE OUT (EE)
20 µs/div.
500mV/div.

⑯



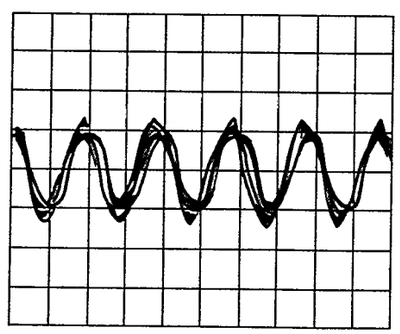
IC461 pin ⑲ (EE)
100ns/div.
500mV/div.

⑰



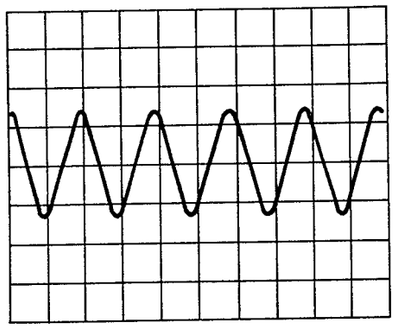
IC461 pin ⑬
100ns/div
100mV/div.

⑱



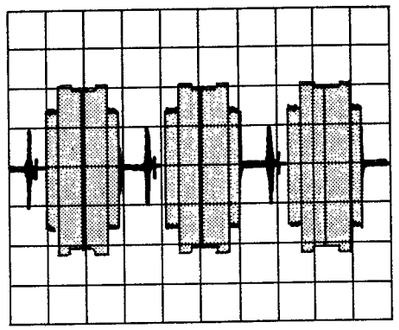
IC461 pin ⑪
100ns/div.
100mV/div.

⑲



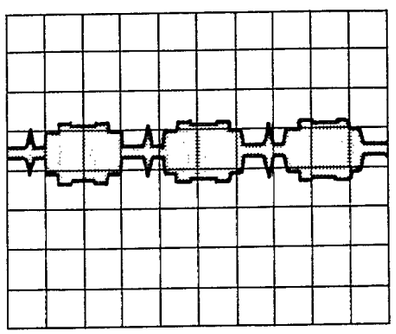
IC461 pin ⑨ (EE)
200mV/div.
20 μs/div.

⑳



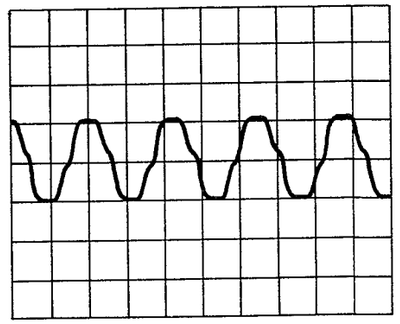
PIN402 pin ③ (EE)
50mV/div.
20 μs/div.

㉑



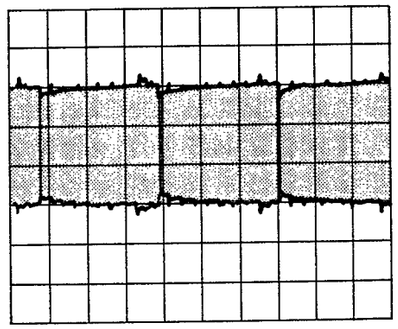
IC461 pin ⑱ (EE)
50mV/div.
100ns/div.

㉒



PIN402 pin ⑤ (EE)
100mV/div.
20 μs/div.

㉓

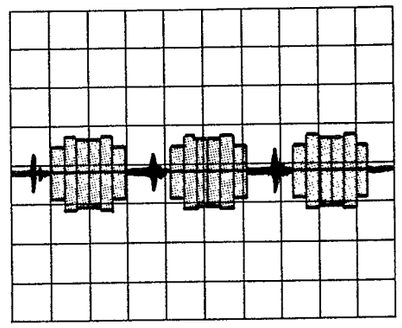


IC461 pin ⑤ (EE)
100mV/div.
20 μs/div.

㉔

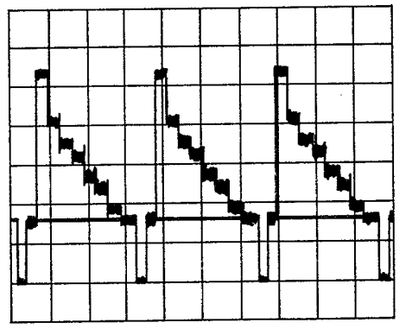
IC461 pin ③ (EE)
50mV/div.
20 μs/div.

㉕



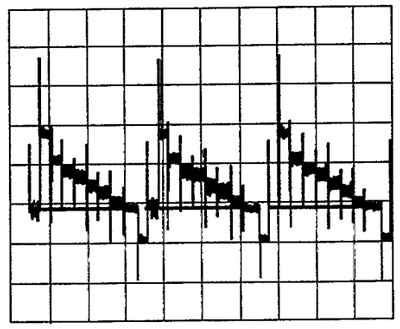
IC411 pin ⑥ (EE)
20 μs/div.
100mV/div.

㉖



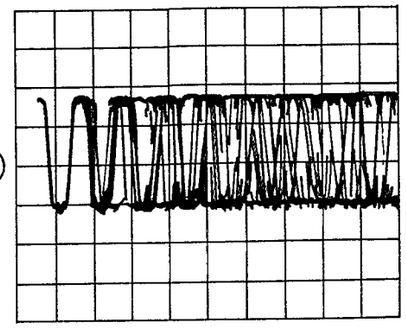
IC411 pin ② (EE)
20 μs/div.
200mV/div.

㉗



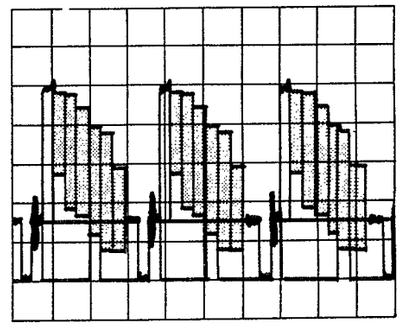
IC411 pin ㉚ (EE)
200ns/div.
500mV/div.

㉘



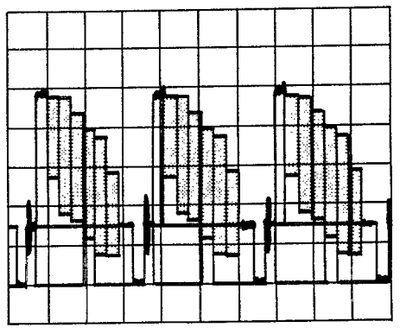
LINE IN (EE)
20 μs/div.
200mV/div.

㉙



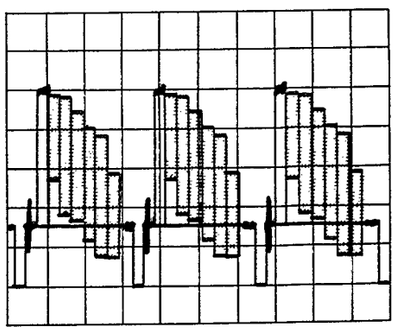
IC411 pin 24 (EE)
20 μs/div.
200mV/div.

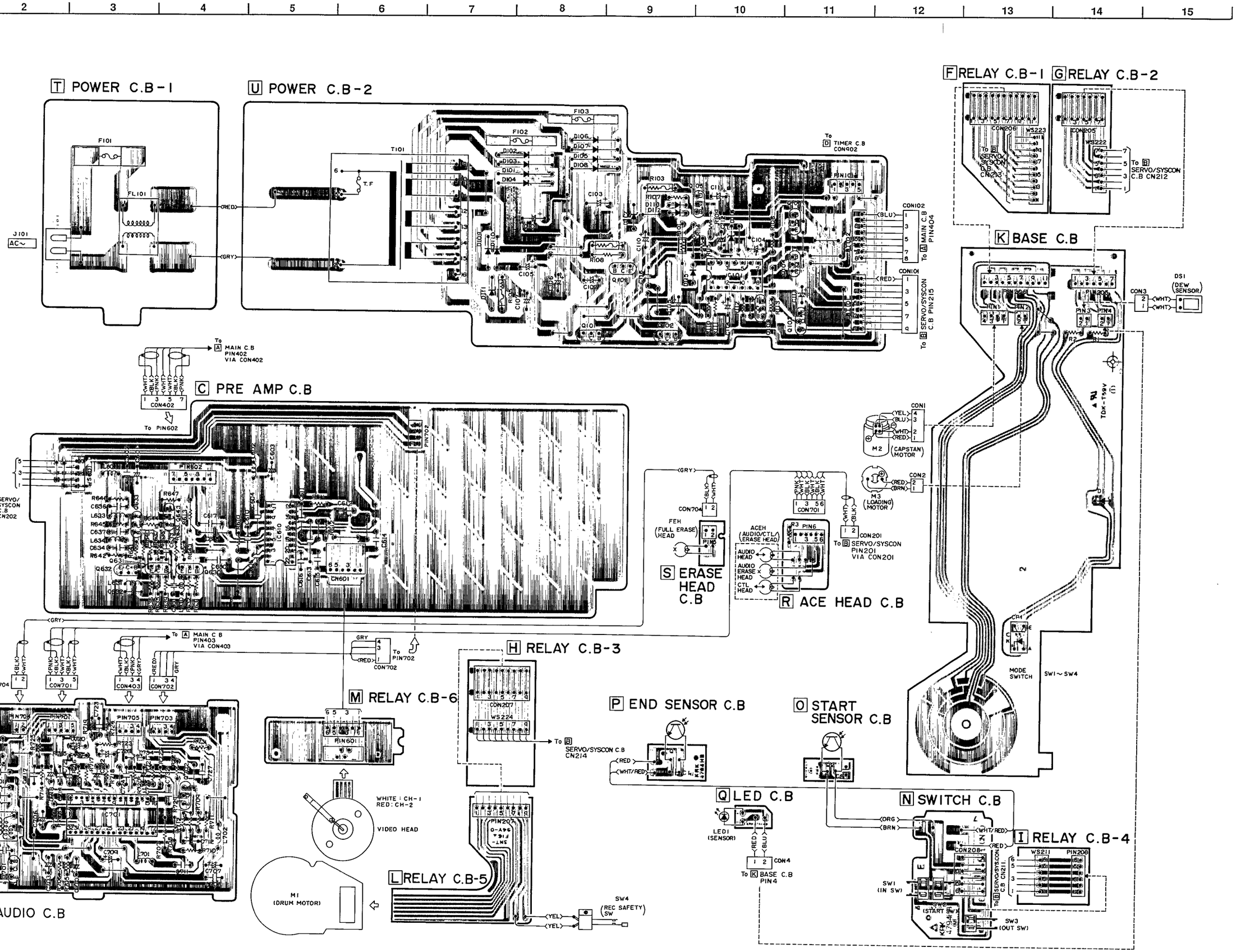
㉚

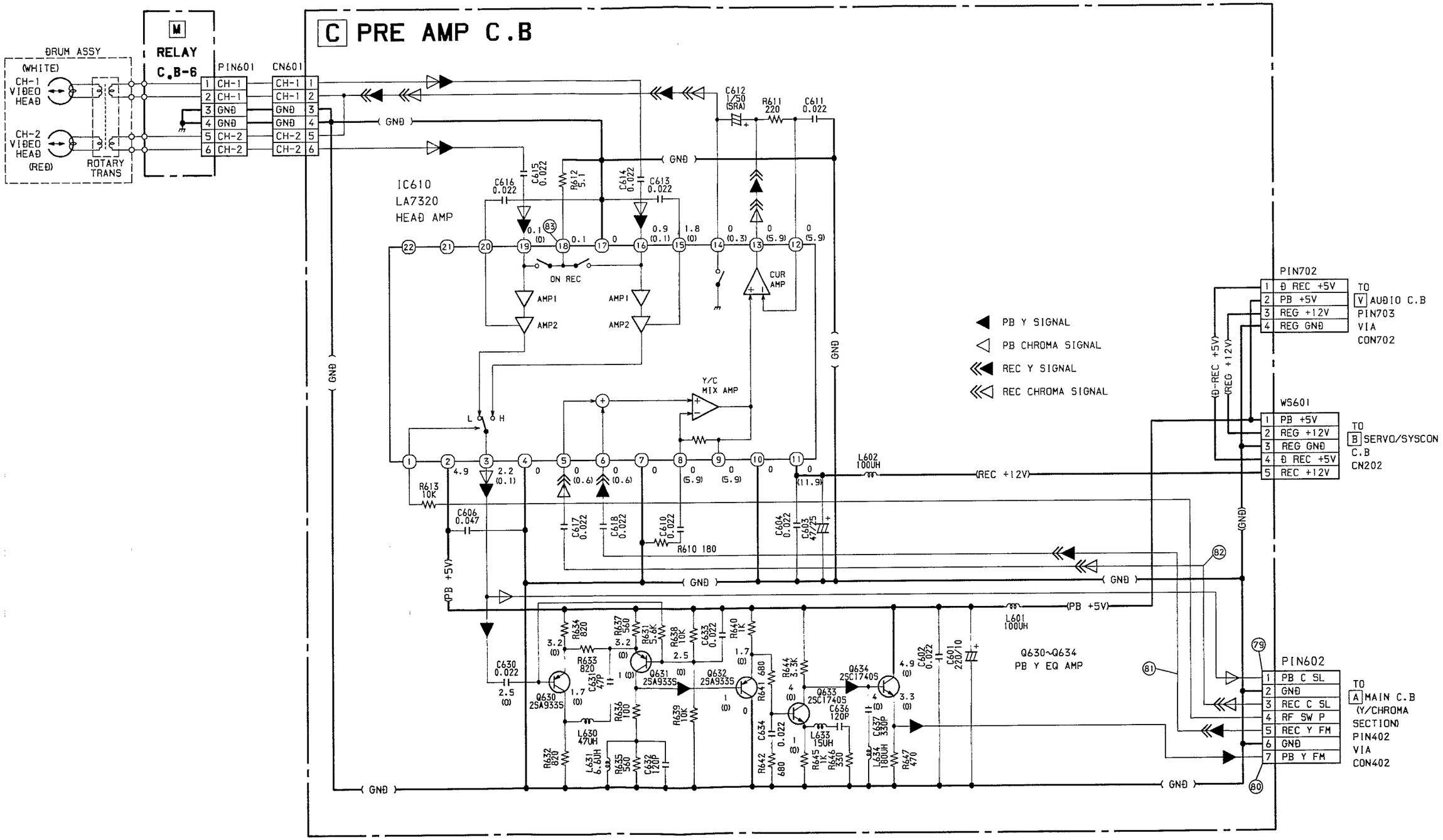


IC411 pin ⑦ (EE)
20 μs/div.
200mV/div.

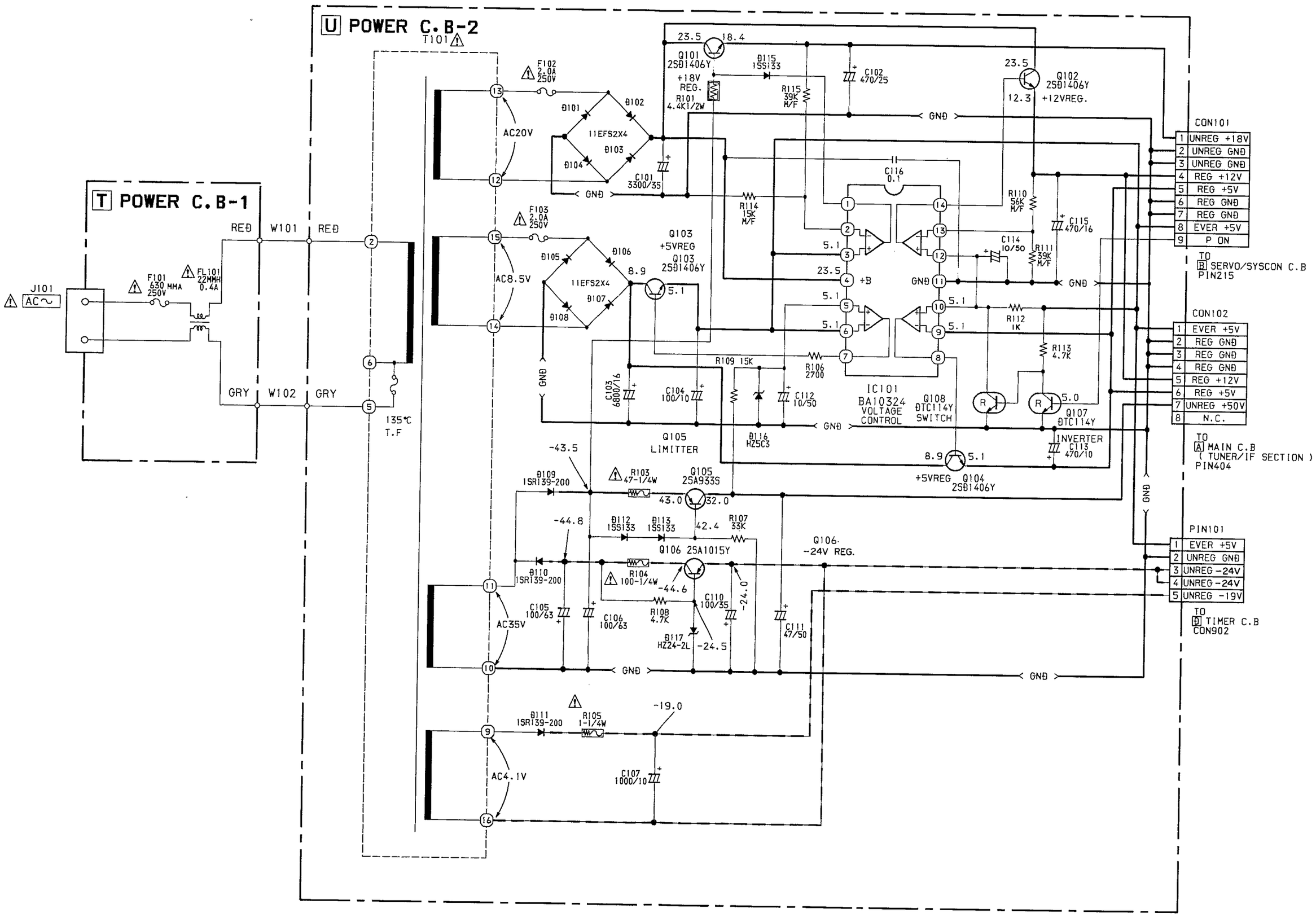
㉛

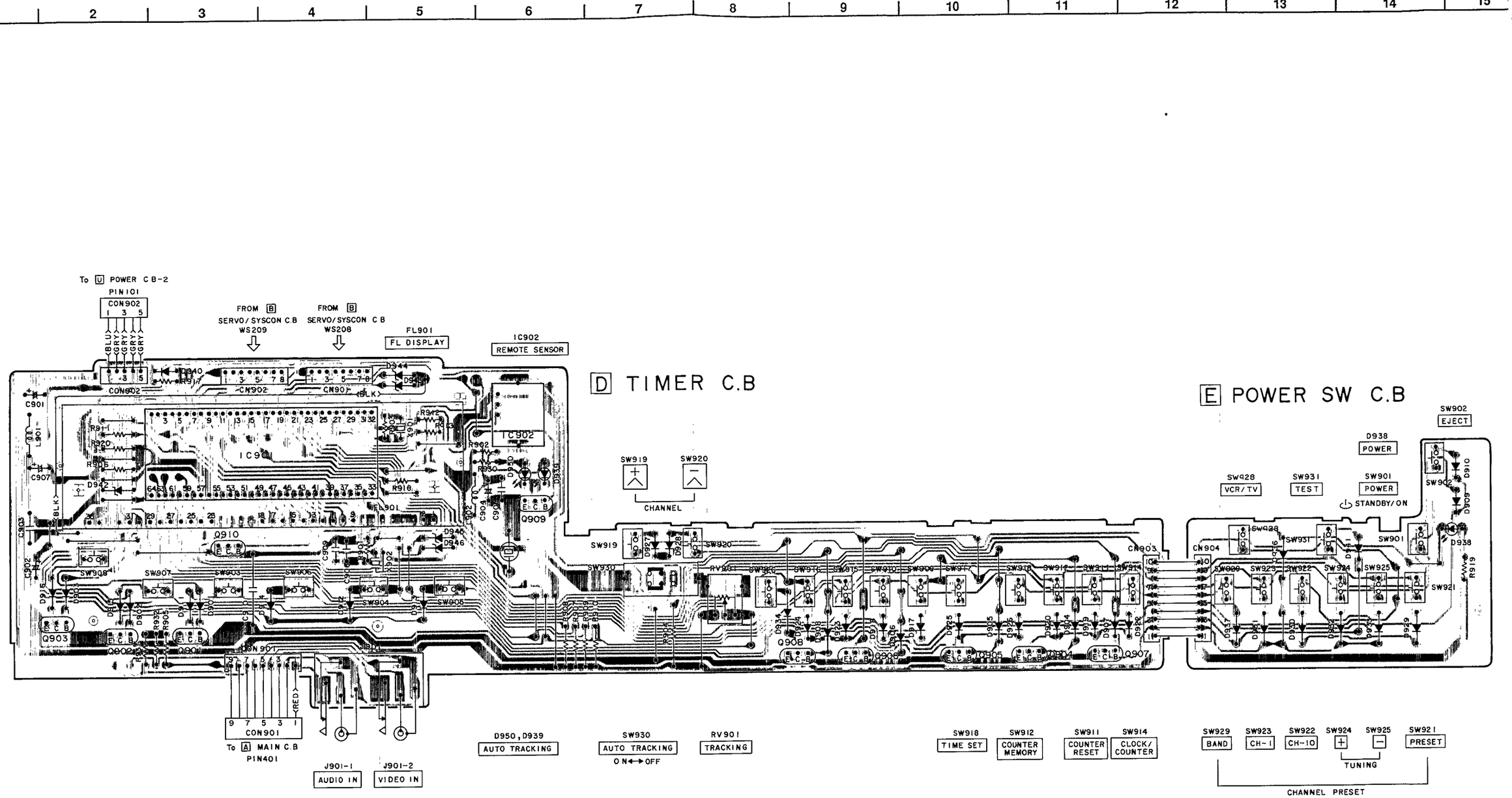


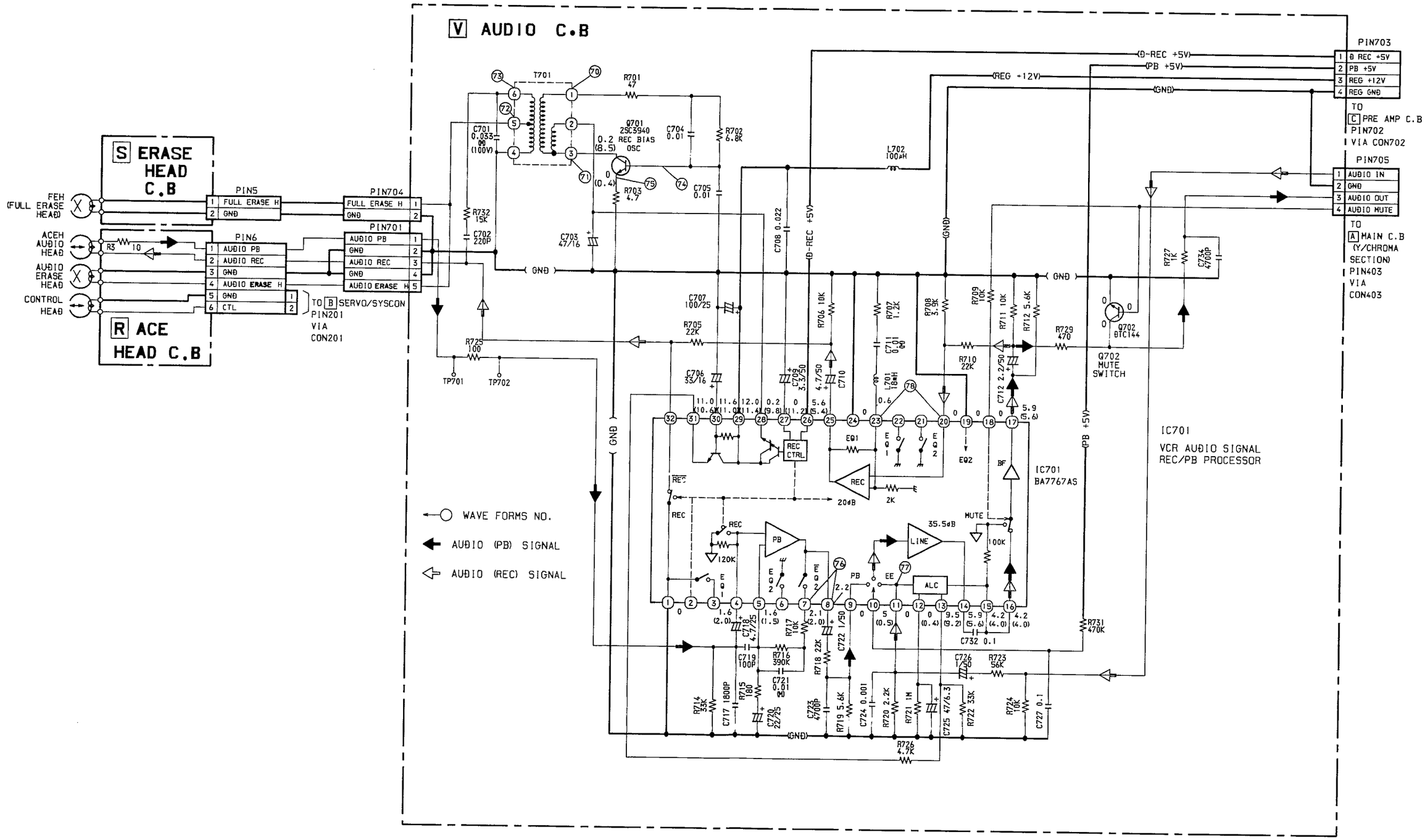

T POWER C.B-1
U POWER C.B-2
F RELAY C.B-1
G RELAY C.B-2
K BASE C.B
C PRE AMP C.B
V AUDIO C.B
H RELAY C.B-3
M RELAY C.B-6
L RELAY C.B-5
S ERASE HEAD C.B
R ACE HEAD C.B
P END SENSOR C.B
O START SENSOR C.B
Q LED C.B
N SWITCH C.B
I RELAY C.B-4
J101
AC~
F101
FL101
T101
T.F
F102
F103
D101
D102
D103
D104
D105
D106
D107
D108
D109
D110
D111
D112
R103
R107
R108
C103
C104
C105
C106
C107
Q101
Q102
Q107
Q108
RY101
CON101
CON102
To D TIMER C.B CON402
To A MAIN C.B PIN404
To B SERVO/SYSCON C.B PIN215
CON206
CON205
WS223
WS222
To B SERVO/SYSCON C.B CN213
To B SERVO/SYSCON C.B CN212
DS1 (DEW SENSOR)
CON3
PIN1
PIN2
PIN3
PIN4
R1
R2
TDK-T59V
To A MAIN C.B PIN402 VIA CON402
CON402
To PIN602
To B SERVO/SYSCON C.B CN202
PIN802
PIN702
CN601
CON704
CON701
CON403
CON702
To A MAIN C.B PIN403 VIA CON403
To PIN702
PIN707
PIN705
PIN703
PIN601
CON207
WS224
To B SERVO/SYSCON C.B CN214
WHITE : CH-1
RED : CH-2
VIDEO HEAD
M1 (DRUM MOTOR)
SW4 (REC SAFETY SW)
PIN201
CON201
To B SERVO/SYSCON PIN201 VIA CON201
FEH (FULL ERASE HEAD)
ACEH (AUDIO/CTL/ERASE HEAD)
AUDIO HEAD
AUDIO ERASE HEAD
CTL HEAD
CON701
CON704
LED1 (SENSOR)
To K BASE C.B PIN4
CON4
CON2
M2 (CAPSTAN) MOTOR
M3 (LOADING) MOTOR
MODE SWITCH
SW1~SW4
SW1 (IN SW)
SW2 (START SW)
SW3 (OUT SW)
CON208
WS211
PIN206
To B SERVO/SYSCON C.B CN211


C PRE AMP C.B
M
RELAY
C.B-6
DRUM ASSY
(WHITE)
CH-1 VIDEO HEAD
CH-2 VIDEO HEAD
(RED)
ROTARY TRANS
PIN601
CN601
CH-1
CH-2
GND
IC610
LA7320
HEAD AMP
ON REC
AMP1
AMP2
CUR AMP
Y/C MIX AMP
L
H
PB +5V
REC +12V
L602 100UH
L601 100UH
Q630~Q634
PB Y EQ AMP
PB Y SIGNAL
PB CHROMA SIGNAL
REC Y SIGNAL
REC CHROMA SIGNAL
PIN702
PB REC +5V
PB +5V
REG +12V
REG GND
TO V AUDIO C.B PIN703 VIA CON702
WS601
PB +5V
REG +12V
REG GND
PB REC +5V
REC +12V
TO B SERVO/SYSCON C.B CN202
PIN602
PB C SL
GND
REC C SL
RF SW P
REC Y FM
GND
PB Y FM
TO A MAIN C.B (Y/CHROMA SECTION) PIN402 VIA CON402

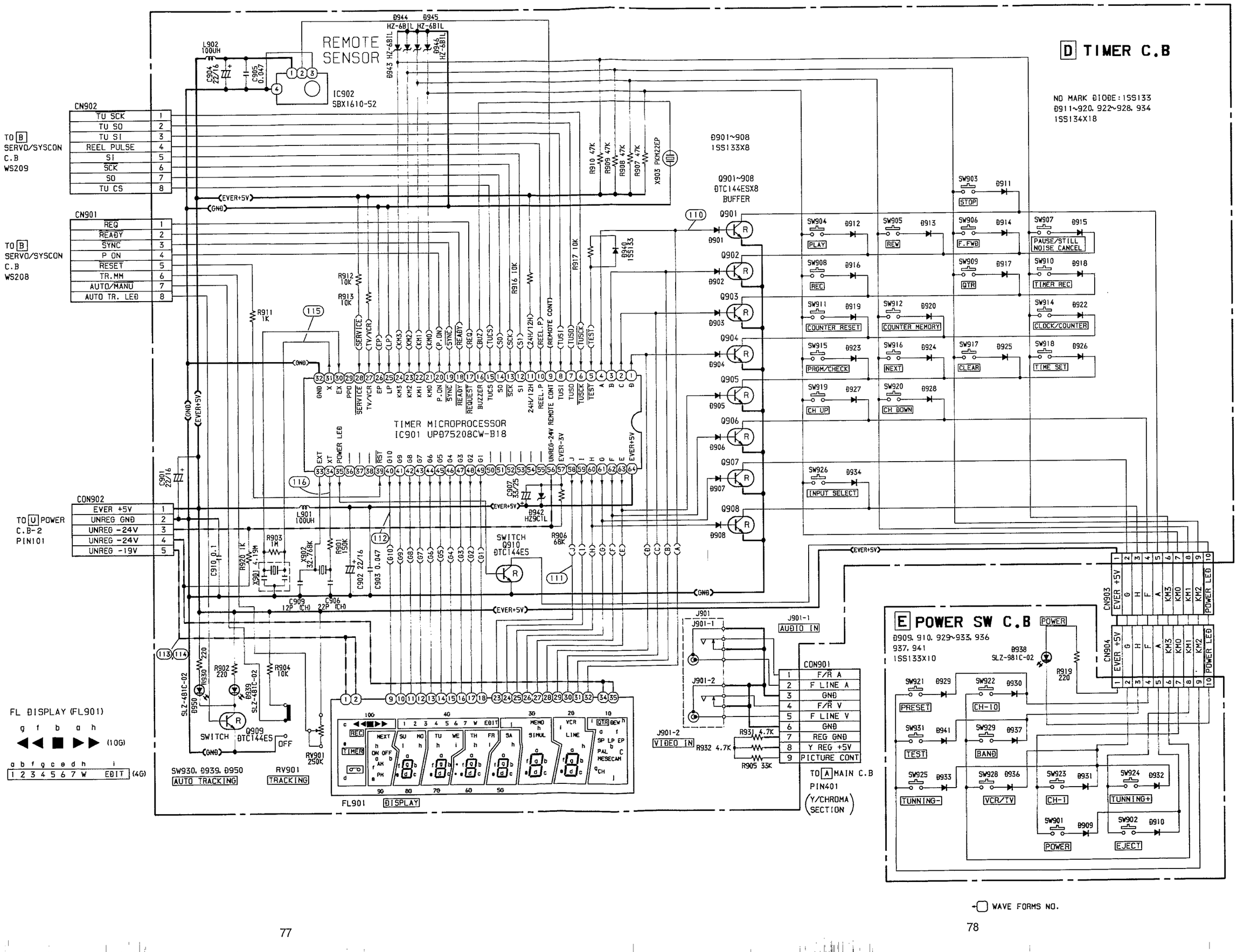
SCHEMTIC DIAGRAM – 8 (POWER UNI – 2 SECTION) (G75, AE, SE)




To U POWER C B-2
PIN101
CON902
FROM B SERVO/SYSCON C.B WS209
FROM B SERVO/SYSCON C B WS208
FL901
FL DISPLAY
IC902
REMOTE SENSOR
D TIMER C.B
E POWER SW C.B
SW919
SW920
CHANNEL
SW902
EJECT
D938
POWER
SW928
VCR/TV
SW931
TEST
SW901
POWER
STANDBY/ON
CON901
To A MAIN C.B
PIN401
J901-1
AUDIO IN
J901-2
VIDEO IN
D950, D939
AUTO TRACKING
SW930
AUTO TRACKING
ON↔OFF
RV901
TRACKING
SW918
TIME SET
SW912
COUNTER MEMORY
SW911
COUNTER RESET
SW914
CLOCK/COUNTER
SW929
BAND
SW923
CH-I
SW922
CH-10
SW924
SW925
TUNING
SW921
PRESET
CHANNEL PRESET
SW908
RECORD
SW907
PAUSE/STILL (NOISE CANCEL)
SW903
STOP
SW906
▶▶/F.FWD
SW904
PLAY
SW905
◀◀/REW
SW926
INPUT SELECT
SW916
NEXT
SW915
CHECK/PRGM
SW910
TIMER REC
SW909
QTR
SW917
CLEAR


S ERASE HEAD C.B
FEH (FULL ERASE HEAD)
ACEH AUDIO HEAD
AUDIO ERASE HEAD
CONTROL HEAD
R3 10
PIN5
1 FULL ERASE H
2 GND
PIN6
1 AUDIO PB
2 AUDIO REC
3 GND
4 AUDIO ERASE H
5 GND
6 CTL
R ACE HEAD C.B
TO B SERVO/SYSCON PIN201 VIA CON201
PIN704
FULL ERASE H 1
GND 2
PIN701
AUDIO PB 1
GND 2
AUDIO REC 3
GND 4
AUDIO ERASE H 5
V AUDIO C.B
T701
R701 47
Q701 2SC3940 REC BIAS OSC
C701 0.033 (100V)
C704 0.01
R702 6.8K
R732 15K
C702 220P
C703 47/16
R703 4.7
C705 0.01
L702 100μH
C708 0.022
(D-REC +5V)
(PB +5V)
(REG +12V)
(GND)
PIN703
1 D REC +5V
2 PB +5V
3 REG +12V
4 REG GND
TO C PRE AMP C.B PIN702 VIA CON702
PIN705
1 AUDIO IN
2 GND
3 AUDIO OUT
4 AUDIO MUTE
TO A MAIN C.B (Y/CHROMA SECTION) PIN403 VIA CON403
R727 1K
C734 4700P
C707 100/25
R705 22K
R725 100
TP701
TP702
R706 10K
R707 1.2K
R708 3.9K
R709 10K
R711 10K
R712 5.6K
R729 470
Q702 DTC144
Q702 MUTE SWITCH
R710 22K
C712 2.2/50
C706 33/16
C709 3.3/50
C710 4.7/50
L701 10μH
C711 0.01
IC701
VCR AUDIO SIGNAL REC/PB PROCESSOR
IC701 BA7767AS
REC CTRL
EQ1
EQ2
REC
2K
20dB
BF
PB +5V
WAVE FORMS NO.
AUDIO (PB) SIGNAL
AUDIO (REC) SIGNAL
PB
120K
35.5dB
LINE
MUTE
100K
ALC
EE
C718 4.7/25
R717 10K
C719 100P
R716 390K
C721 0.01
R718 22K
C722 1/50
C732 0.1
R731 470K
C726 1/50
R723 56K
R714 33K
C717 1800P
R715 180
C720 22/25
C725 4700P
R719 5.6K
C724 0.001
R720 2.2K
R721 1M
C725 47/6.3
R722 33K
R724 10K
C727 0.1
R726 4.7K
GND

SCHEMATIC DIAGRAM – 9 (TIMER SECTION)



IC DESCRIPTION

IC,MB88525 – 205M (IC201)

<table>
<tr><th>Pin No.</th><th>Pin Name</th><th>I/O</th><th>Description</th><th>Active</th></tr>
<tr><td>1</td><td>TOP – SENSOR
(START)</td><td>I</td><td>Receives the tape top (start) detection signal and
A) Prevents the tape running in the reverse direction.
B) Shifts the unit to the stop mode if this signal is input when the tape is running in reverse.</td><td>H</td></tr>
<tr><td>2</td><td>END – SENSOR</td><td>I</td><td>Receives the tape end detection signal and
A) Prevents the tape running in the forward direction.
B) Shifts the unit to the stop mode if this signal is input when the tape is running in forward.</td><td>H</td></tr>
<tr><td>3</td><td>RF – SWP</td><td>I</td><td>Receives drum rotation pulses.
When pulses are not input for 2 seconds in a mode where the drum is rotating due to an abnormality in the tape or deck mechanism, the VCR enters the stop mode to protect the tape.</td><td>Pulse</td></tr>
<tr><td>4</td><td>REEL – SENSOR</td><td>I</td><td>Receives a signal from the reel sensor in the deck mechanism.
When pulses are not input for 2 seconds in a mode where the reel is rotating due to an abnormality in the tape or deck mechanism, the VCR enters the stop mode to protect the tape.</td><td>Pulse</td></tr>
<tr><td>5</td><td>$\overline{\text{CASSETTE – OUT}}$</td><td>I</td><td>The CASSETTE OUT switch in the cassette loading mechanism is connected to detect the cassette-out state (eject).
Instructs the cassette out operation (unloading) to stop.</td><td>L</td></tr>
<tr><td>6</td><td>$\overline{\text{CASSETTE – START}}$</td><td>I</td><td>The CASSETTE START switch in the cassette loading mechanism is connected to instruct the cassette-in operation (loading).
When the input is detected during the cassette-out operation, the capstan motor is pulse driven.</td><td>L</td></tr>
<tr><td>7</td><td>$\overline{\text{CASSETTE – IN}}$</td><td>I</td><td>The cassette-in switch in the cassette loading mechanism is connected to detect the cassette-in state.</td><td>L</td></tr>
<tr><td>8</td><td>——</td><td>–</td><td>Unused (pulled up).</td><td>–</td></tr>
<tr><td>9
10
11
12</td><td>$\overline{\text{MODE SW 1}}$
$\overline{\text{MODE SW 2}}$
$\overline{\text{MODE SW 3}}$
$\overline{\text{MODE SW 4}}$</td><td>I</td><td>These pins detect the position of the tape sledding mechanism.</td><td>H or L</td></tr>
<tr><td>13
14</td><td>LP • EP – H
EP – H</td><td>I</td><td>Tape speed detection inputs.
<table>
<tr><th></th><th>NTSC/PAL</th><th>LP • EP-H</th><th>EP-H</th></tr>
<tr><td>SP</td><td>2H/3H</td><td>L</td><td>L</td></tr>
<tr><td>LP</td><td>4H/3H</td><td>H</td><td>L</td></tr>
<tr><td>EP</td><td>6H/6H</td><td>H</td><td>H</td></tr>
</table></td><td>H</td></tr>
<tr><td>15
16</td><td>MESECAM/$\overline{\text{PAL}}$
NTSC/$\overline{\text{PAL}}$</td><td>I</td><td>Video system discrimination inputs.
<table>
<tr><th>NTSC/PAL</th><th>MESECAM/PAL</th><th>MODE</th></tr>
<tr><td>H</td><td>※</td><td>NTSC</td></tr>
<tr><td>L</td><td>H</td><td>MESECAM</td></tr>
<tr><td>L</td><td>L</td><td>PAL</td></tr>
</table>
※ : DON'T CARE</td><td>H or L</td></tr>
<tr><td>17</td><td>——</td><td>–</td><td>Unused (pulled up).</td><td>–</td></tr>
<tr><td>18</td><td>——</td><td>–</td><td>Unused (pulled up).</td><td>–</td></tr>
<tr><td>19</td><td>$\overline{\text{DEW – SENSOR}}$
(fixed at "H")</td><td>I</td><td>Receives a signal from the dew sensor circuit and prevents mechanical operation in the high humidity state.</td><td>L</td></tr>
<tr><td>20</td><td>$\overline{\text{REC – PROOF}}$</td><td>I</td><td>Detects the presence/absence of the mis-erasure prevention tab.
"H" : No tab
"L" : Tab</td><td>L</td></tr>
<tr><td>21</td><td>–</td><td>–</td><td>Unused.</td><td>–</td></tr>
<tr><td>22</td><td>VCR/$\overline{\text{TV}}$</td><td>O</td><td>Switches the RF signal output of the VCR.
"H" : Built-in RF converter signal output
"L" : External antenna signal output</td><td>H or L</td></tr>
<tr><td>23</td><td>LINE/$\overline{\text{TUNER}}$
(AUDIO)</td><td>O</td><td>Switches the audio output.
"H" : Line input audio
"L" : Tuner audio</td><td>H or L</td></tr>
<tr><td>24</td><td>LINE/$\overline{\text{TUNER}}$
(VIDEO)</td><td>O</td><td>Switches the video output.
"H" : Line input video
"L" : Tuner video</td><td>H or L</td></tr>
<tr><td>25
26</td><td>EX
X</td><td>I
O</td><td>A ceramic oscillator which generates the system clock signal (6MHz) is connected to these pins.</td><td></td></tr>
</table>

<table>
<tr><th>Pin No.</th><th>Pin Name</th><th>I/O</th><th>Description</th><th>Active</th></tr>
<tr><td>27</td><td>$\overline{\text{RST}}$</td><td>I</td><td>System reset input.</td><td>L</td></tr>
<tr><td>28</td><td>——</td><td>–</td><td>Unused.</td><td>–</td></tr>
<tr><td>29</td><td>——</td><td>–</td><td>Unused (pulled up).</td><td>–</td></tr>
<tr><td>30</td><td>$\overline{\text{SCK}}$</td><td>I</td><td>Receives a pulse to time writing/reading of the serial data to/ from the timer microprocessor.</td><td>Pulse</td></tr>
<tr><td>31</td><td>SI</td><td>I</td><td>Signal for receiving serial data from the timer microprocessor.</td><td>H or L</td></tr>
<tr><td>32</td><td>GND</td><td>–</td><td>GND.</td><td>–</td></tr>
<tr><td>33</td><td>SO</td><td>O</td><td>Signal to output serial data to the timer microprocessor.</td><td>H or L</td></tr>
<tr><td>34</td><td>$\overline{\text{DRUM – ON}}$</td><td>O</td><td>Drum motor rotation/stop control.</td><td>L</td></tr>
<tr><td>35</td><td>DELAYED – REC</td><td>O</td><td>Outputs "H"after the tape transport and the capstan speed are stabilized when the stop mode is switched to the record mode and the record pause mode is switched to the record mode, to instruct recording of a signal on the tape.</td><td>H</td></tr>
<tr><td>36</td><td>——</td><td>–</td><td>Unused.</td><td>–</td></tr>
<tr><td>37</td><td>A – MUTE</td><td>O</td><td>Mutes an audio signal.
A) Outputs "H" during trick play.
B) Outputs "H" for the specified period before and after the EE output is inverted to cut off the noise occurring when switching between the tape recording signal and EE signal (when the EE output is inverted).</td><td>H</td></tr>
<tr><td>38
39</td><td>CM – R
CM – F</td><td>O</td><td>Capstan motor rotation/stop and rotation direction control outputs.
<table>
<tr><th>CM-F</th><th>CM-R</th><th>State</th></tr>
<tr><td>L</td><td>L</td><td>Moter stopped</td></tr>
<tr><td>H</td><td>L</td><td>Rotates forward</td></tr>
<tr><td>L</td><td>H</td><td>Rotates in reverse</td></tr>
<tr><td>H</td><td>H</td><td>Braking stopped</td></tr>
</table></td><td>H or L</td></tr>
<tr><td>40
41</td><td>TLM – R
TLM – F</td><td>O</td><td>Tape sledding motor rotation/stop and rotation direction control outputs.
<table>
<tr><th>TLM-F</th><th>TLM-R</th><th>State</th></tr>
<tr><td>L</td><td>L</td><td>Moter stopped</td></tr>
<tr><td>H</td><td>L</td><td>Rotates forward</td></tr>
<tr><td>L</td><td>H</td><td>Rotates in reverse</td></tr>
<tr><td>H</td><td>H</td><td>Braking stopped</td></tr>
</table></td><td>H or L</td></tr>
<tr><td>42</td><td>CAPSTAN – SPEED • HOLD</td><td>O</td><td>Outputs "H" when the tape sledding motor moves among the REVERSE, PLAY and PINCH OFF positions accompanying the transition between PLAY and REVIEW from REC to REC PAUSE.
Outputs "H" during STILL and PAUSE to hold the capstan speed so the capstan servo circuit can easily be returned to the play speed.</td><td>H</td></tr>
<tr><td>43</td><td>FF/REW</td><td>O</td><td>Outputs "H" during FF/REW, cassette-in and out operations and during unloading from PLAY to STOP.
Controls the high-speed rotation of the capstan motor.</td><td>H</td></tr>
<tr><td>44</td><td>REV</td><td>O</td><td>Unused. Outputs "H" during REVIEW.
Controls the review speed of the servo circuit.</td><td>H</td></tr>
<tr><td>45</td><td>CUE</td><td>O</td><td>Unused. Outputs "H" during CUE.
Controls the cue speed of the servo circuit.</td><td>H</td></tr>
<tr><td>46</td><td>STILL – ADVANCE</td><td>O</td><td>Unused. Outputs "H" during STILL ADVANCE.</td><td>H</td></tr>
<tr><td>47</td><td>STILL /PAUSE</td><td>O</td><td>Unused. Outputs "H" during STILL, REC PAUSE and S-ADV.</td><td>H</td></tr>
<tr><td>48</td><td>PLAY</td><td>O</td><td>Unused. Outputs "H" during PLAY, STILL, CUE, REV and S-ADV.</td><td>H</td></tr>
<tr><td>49</td><td>REC</td><td>O</td><td>Unused. Outputs "H" during REC and REC PAUSE.</td><td>H</td></tr>
<tr><td>50</td><td>REW</td><td>O</td><td>Unused. Outputs "H" during REW and REV.</td><td>H</td></tr>
<tr><td>51</td><td>FF</td><td>O</td><td>Unused. Outputs "H" during FF and CUE.</td><td>H</td></tr>
<tr><td>52</td><td>——</td><td>–</td><td>Unused.</td><td>–</td></tr>
<tr><td>53</td><td>DELAYED – PLAY</td><td>O</td><td>Outputs "H" after the tape transport and capstan speed are stabilized when STOP is switched to PLAY and STOP is switched to STILL, to prevent picture distortion.</td><td>H</td></tr>
<tr><td>54</td><td>$\overline{\text{REQUEST}}$</td><td>O</td><td>Signal to request serial communications to the timer microprocessor.</td><td>L</td></tr>
<tr><td>55</td><td>$\overline{\text{READY}}$</td><td>O</td><td>Signal to inform the timer microprocessor that the standby for serial data reception is completed.</td><td>L</td></tr>
<tr><td>56</td><td>S • CLK</td><td>O</td><td>Outputs a pulse to time the writing of serial data to the servo IC.</td><td>Pulse</td></tr>
<tr><td>57</td><td>S • DAT</td><td>O</td><td>Signal to output serial data to the servo IC.</td><td>H or L</td></tr>
</table>

Pin No.	Pin Name	I/O	Description	Active
58	EE	O	Switches the video output between the external input signal and tape playback signal. "H" : External input signal "L" : Tape playback signal	H
59	——	–	Unused.	–
60	TRKG RST	O	Outputs a pulse of approx. 5ms when the POWER, EJECT or REC key is pressed to reset the tracking microprocessor.	H
61	JOG	O	Outputs "H" during CUE and REV.	H
62	$\overline{\text{SYNC}}$	I	Signal to synchronize serial communications with the timer microprocessor.	L
63	——	–	Unused.	–
64	EVER +5V	–	Positive power supply pin.	–

IC,UPD75208CW – A83 (IC901)

Pin No.	Pin Name	I/O	Description	Active
1 2 3 4	D C B A	O	Anode and key matrix signals for the fluorescent display tube.	Pulse
5	$\overline{\text{TEST}}$	I	Input for the test mode of the unit.	L
6	$\overline{\text{TUSCK}}$	I	Receives a pulse to time the writing/reading of serial data to/from the tuner microprocessor.	Pulse
7	TUSO	O	Signal to output serial data to the tuner microprocessor.	H or L
8	TUSI	I	Signal for receiving serial data from the tuner microprocessor.	H or L
9	$\overline{\text{REMOCON}}$	I	Remote control data input.	Pulse
10	REEL-PULSE	I	Receives a signal from the reel sensor in the deck mechanism. Receives reel pulses for the tape counter. When 4 pulses are input, the counter counts up by one step.	Pulse
11	24h/$\overline{\text{12h}}$	I	Switches the clock indication. "H" : 24 hours "L" : 12 hours AM/PM	H or L
12	SI	I	Signal to receive serial data from the mechanism microprocessor.	H or L
13	$\overline{\text{SCK}}$	O	Receives a pulse to time the writing/reading of serial data to/from the mechanism microprocessor.	Pulse
14	SO	O	Signal to output serial data to the mechanism microprocessor.	H or L
15	TUCS	O	Outputs a signal to request serial communications to the tuner microprocessor.	H
16	BUZZER	O	Outputs signal (approx. 2kHz) to drive the buzzer.	Pulse
17	$\overline{\text{REQUEST}}$	I	Receives a signal to request serial communications from the mechanism microprocessor.	L
18	$\overline{\text{READY}}$	I	Receives a signal from the mechanism microprocessor which signals that the standby for serial data reception is completed.	L
19	$\overline{\text{SYNC}}$	O	Signal to synchronize serial communications with the mechanism microprocessor.	L
20	P. ON	O	Controls the power supply circuit of the VCR. Power is turned on.	H
21 22 23 24	KM 0 KM 1 KM 2 KM 3	I	Key matrix scan input.	Pulse
25	LP	I	Tape speed mode. Tape speed is LP.	H
26	EP	I	Tape speed mode. Tape speed is EP.	H
27	TV/VCR	I	Selects the indication in the fluorescent display of the VCR. "H" : Displays information. "L" : Does not display information.	H
28	$\overline{\text{SERVICE}}$	I	Input for the service mode of the VCR.	L
29	PPO	–	Unused.	–
30 31	EX X	I O	A ceramic oscillator which generates a main system clock pulse (4.19MHz) is connected.	

Pin No.	Pin Name	I/O	Description	Active
32	GND	–	GND.	–
33 34	EXT XT	I O	A crystal oscillator which generates a sub-system clock pulse (32.768kHz) is connected.	
35	POWER LED	O	Outputs "H" when power is turned on.	H
36 37 38	———	–	Unused.	–
39	$\overline{RST}$	I	System reset input.	L
40 41 42 43 44 45 46 47 48 49	G10 G9 G8 G7 G6 G5 G4 G3 G2 G1	O	Grid signals of the fluorescent display tube.	Pulse
50 51 52 53 54 55	———	–	Unused.	–
56	EVER – 30V	I	The pull-down resistors of the FIP controller/driver are connected.	
57	EVER – 3V	I	Supplies power to the output buffer of the FIP controller/driver.	
58 59	J I	O	Anode signals of the fluorescent display tube.	Pulse
60 61 62 63	H G F E	O	Anode and key matrix signals for the fluorescent display tube.	Pulse
64	EVER + 5V	–	Positive power supply.	–

IC,MN67481P (IC203)

Pin No.	Pin Name	I/O	Description
1	VDD	–	Power supply (+5V) of digital section.
2	TR MM	I	Tracking monostable multivibrator. Delay time constant for CTL locking position adjustment.
3	SDAT	I	Servo mode setting data input.
4	SCLK	I	Servo mode setting clock input.
5	RCLK	I	Reference timing clock for servo control (PAL : 4.433618MHz).
6	TEST	I	Unused (fixed at "L").
7	VLP	O	Artificial VD output (only during CUE, REV and STILL).
8 9	MOD 0 MOD 1	O	Record mode output.
10	RF SW P	O	RF SW P output (PAL : 25Hz).
11	PWM 2	O	Drum servo phase error output.
12	PWM 1	O	Drum servo speed error output.
13	PWM 3	O	Capstan servo speed error output.
14	PWM 4	O	Capstan servo phase error output.

	MODE 0	MODE 1
SP mode 3H	"L"	"L"
LP mode 3H	"H"	"L"
EP mode 6H	"H"	"H"

Pin No.	Pin Name	I/O	Description
15	VSS	–	Power supply (GND) of digital section.
16	YPG	I	Drum PG amplifier input.
17	YFG	I	Drum FG amplifier input.
18	FGI	I	Capstan FG amplifier input.
19	RI	I	Sets the reference neutral point voltage (+2.5V) of the internal linear amplifier.
20	VRO	O	Reference voltage (set by pin 19) output.
21	CI	I	CTL clamp input.
22	CO	O	CTL amplifier output.
23	CTLG	–	CTL amplifier GND.
24	CTLA	I	Sets the CTL amplifier gain (negative input terminal).
25	CTLH	I	CTL input.
26	A VDD	–	Power supply (+5V) of analog section.
27	V SYN	I	Vertical sync signal input.
28	PG MM	I	Switching position monostable multivibrator. Delay time constant for head switching point adjustment.

IC,UPD1730CT (IC881)

Pin No.	Pin Name	I/O	Description
1	OSC 1	I	4.5MHz ceramic oscillator input.
2	OSC 2	O	4.5MHz ceramic oscillator output.
3	PPO	O	D/A converter PWM output (tuning voltage).
4	CSYNC	I	H. sync pulse input (sync detection input).
5	AFT	I	AFT voltage input.
6	VDD	–	+5V power supply.
7	———	–	Unused.
8	AUS	I	Signal to select the destination, Australia.
9	CS	O	E^2 PROM chip select.
10	EUSI	I	E^2 PROM serial data input.
11	EUSO	O	E^2 PROM serial data output.
12	TUSO	O	Serial data output (input to the tuner).
13	TUCS	I	Data transfer trigger.
14	GND	O	GND.
15	POWER ON	I	POWER key signal.
16	———	–	Unused.
17	$\overline{\text{AFTC}}$	O	AFT control.
18	AFTC	O	AFT control.
19	TUMU	O	Goes "H" when muting a signal.
20	TUMTC	O	Goes "L" when H. sync pulse is detected.
21	———	–	Unused.
22	———	–	Unused.
23	GND	–	GND.
24	$\overline{\text{RESET}}$	I	Goes "H" at the program start.
25	TUSI	I	Serial data input (output from the tuner).
26	$\overline{\text{TUSCK}}$	O	Serial data clock.
27	$\overline{\text{ROMCLK}}$	O	E^2 PROM clock.
28 29	BAND 1 BAND 2	O	These pins assign the tuner band.
30	———	–	Unused.

BAND	BAND 1	BAND 2
VH	1	0
VL	0	1
U	1	1

2. AUTO NOISE CANCELLER

When the STILL button is pressed during play, the auto noise canceller drives noise bars out of the screen so that they are not visible.

[Function devices]

IC207, IC209, Q213, Q214

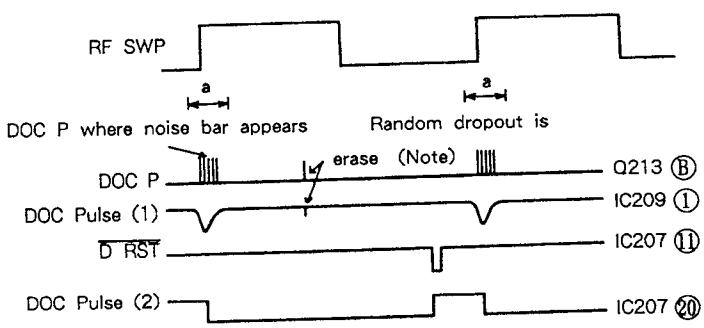
[Conditions]

IC207 determines whether the auto cancelling function should be operated or not and executes operation.

1. IC207 (41) High (PB)
2. IC207 (38) High (PAUSE)

[Principle]

The position of the noise bar can be known from the DOC P waveform in the video circuit. If the DOC P waveform is in area (a) of the RF SWP pulse as shown in the diagram below, the noise bar is not visible on the TV screen. The following DOC P pulse is produced so that IC207 (microprocessor) can read it easily.



1. When the trailing edge of the DOC P pulse is within range (a) in the STILL mode, the cancelling operation is not necessary.
2. When it is out of range (a), the pulse which turn the capstan motor minutely are generated at pin 8 of IC207.
3. When the tape is fed minutely and the trailing edge of the DOC P pulse enters area (a), the generating of pulses is stopped.

The DOC pulse moves to the right with reference to the RF SWP pulse in steps 2 and 3.

(Note) When tapes with large random dropouts are used, the random dropouts and DOC pulses cannot be discriminated and the unit performs the detection erroneously.

Pin No.	Pin Name	I/O	Description
15	VSS	–	Power supply (GND) of digital section.
16	YPG	I	Drum PG amplifier input.
17	YFG	I	Drum FG amplifier input.
18	FGI	I	Capstan FG amplifier input.
19	RI	I	Sets the reference neutral point voltage (+2.5V) of the internal linear amplifier.
20	VRO	O	Reference voltage (set by pin 19) output.
21	CI	I	CTL clamp input.
22	CO	O	CTL amplifier output.
23	CTLG	–	CTL amplifier GND.
24	CTLA	I	Sets the CTL amplifier gain (negative input terminal).
25	CTLH	I	CTL input.
26	A VDD	–	Power supply (+5V) of analog section.
27	V SYN	I	Vertical sync signal input.
28	PG MM	I	Switching position monostable multivibrator. Delay time constant for head switching point adjustment.

IC,UPD1730CT (IC881)

Pin No.	Pin Name	I/O	Description
1	OSC 1	I	4.5MHz ceramic oscillator input.
2	OSC 2	O	4.5MHz ceramic oscillator output.
3	PPO	O	D/A converter PWM output (tuning voltage).
4	CSYNC	I	H. sync pulse input (sync detection input).
5	AFT	I	AFT voltage input.
6	VDD	–	+5V power supply.
7	——	–	Unused.
8	AUS	I	Signal to select the destination, Australia.
9	CS	O	E^2 PROM chip select.
10	EUSI	I	E^2 PROM serial data input.
11	EUSO	O	E^2 PROM serial data output.
12	TUSO	O	Serial data output (input to the tuner).
13	TUCS	I	Data transfer trigger.
14	GND	O	GND.
15	POWER ON	I	POWER key signal.
16	——	–	Unused.
17	$\overline{\text{AFTC}}$	O	AFT control.
18	AFTC	O	AFT control.
19	TUMU	O	Goes "H" when muting a signal.
20	TUMTC	O	Goes "L" when H. sync pulse is detected.
21	——	–	Unused.
22	——	–	Unused.
23	GND	–	GND.
24	$\overline{\text{RESET}}$	I	Goes "H" at the program start.
25	TUSI	I	Serial data input (output from the tuner).
26	$\overline{\text{TUSCK}}$	O	Serial data clock.
27	$\overline{\text{ROMCLK}}$	O	E^2 PROM clock.
28 29	BAND 1 BAND 2	O	These pins assign the tuner band.
30	——	–	Unused.

BAND	BAND 1	BAND 2
VH	1	0
VL	0	1
U	1	1

IC,HD404302A06P (IC207)

Pin No.	Pin Name	I/O	Description
1	———	–	Unused (fixed at "H").
2	AUTO/$\overline{\text{MAN}}$	I	Auto tracking on/off signal ("H" in the AUTO Mode).
3	———	–	Unused (fixed at "H").
4	———	–	Unused (fixed at "L").
5	TR LED	O	Outputs pulses to make the LED flash during search in the auto tracking mode, and outputs "H" after auto tracking is completed.
6	TR MM	O	Outputs a delay timing pulse during auto tracking.
7	———	–	Unused.
8	C CONT 2	O	Outputs a noise feed pulse in the noise cancelling mode.
9	———	–	Unused.
10	$\overline{\text{TR CONT}}$	O	Outputs "L"during auto tracking to switch the TR MM circuit to the AUTO side.
11	$\overline{\text{D RST}}$	O	Outputs a reset pulse to detect the noise position in the noise cancelling mode.
12	———	–	Unused.
13	RF SW	I	RF SWP input.
14	———	–	Unused (fixed at "H").
15	CTL	I	CTL shaped wave form input.
16	———	–	Unused (fixed at "H").
17	———	–	Unused (fixed at "L").
18	———	–	Unused (fixed at "L").
19	M RF SW	I	RF SWP input.
20	DOC P	I	Noise position detection signal for the noise canceller.
21	GND	–	Power supply (GND).
22	A VCC	–	Power supply (+5V) of A/D converter.
23	V LEV	I	Input to detect the amplitude of the video signal during auto tracking (Analog DC).
24	———	–	Unused (fixed at "L").
25	———	–	Unused (fixed at "L").
26	———	–	Unused (fixed at "L").
27	A VSS	–	Power supply (GND) of A/D converter.
28	RESET	I	Reset input (goes "H" when reset).
29	———	–	Unused (fixed at "H").
30 31	EX X	–	A clock generator is connected to these pins.
32	VCC	–	Power supply (+5V).
33	———	–	Unused.
34	NTSC/$\overline{\text{PAL}}$	I	NTSC/PAL selection (fixed at "L").
35	———	–	Unused (fixed at "H").
36	———	–	Unused (fixed at "L").
37	JOG	I	"H" is input during CUE/REV.
38	PAUSE	I	Detects STILL ("H") and cancels noise.
39 40	MOD 1 MOD 0	I	These pins detect the tape speed mode.
41	V PB	I	"H" is input during PLAY.
42	———	–	Unused.

CIRCUIT DESCRIPTION

1. AUTO TRACKING

When the VCR is in a play mode other than the JOG (CUE/REV) and STILL modes, this function operates by turning AUTO TRACKING on (IC207 pin②: High).

[Function devices]

IC207, Q450, Q451, Q210, Q211, Q212 and peripheral capacitors and resistors.

[Principle]

The tracks are traced so that the CTL signal (which is delayed = TR MM) is servo – locked during play. However, the CTL heads have tolerances within the specification in different mechanisms, therefore, TR MM (tracking control) is adjusted with ordinary VCRs and the CTL signal is set to the optimum position.

The auto tracking function detects the level of the signals output from the video heads and sets the delay from the CTL signal so that the level is maximum. Auto tracking is performed through the following three processes.

1. Search ... Detects the position where the level is maximum.
2. Fixing ... Fixes the delay so that the level is optimum.
3. Monitoring of change ... Detects whether or not the recording state was changed, and if a change is detected, searching re – started.

[Operation]

1. Search

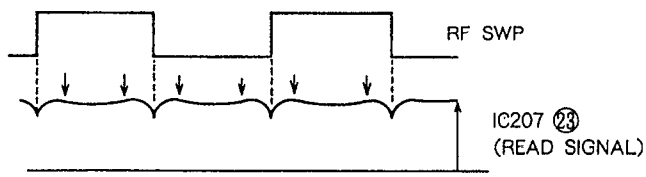
a. When a cassette is loaded and the VCR first enters the play mode.

b. When the recording state was changed and the head output level changes (change of ± 1/8 or more from the design value).

c. When there are non – signal recorded sections and recorded sections due to a change of recording state.

When the auto tracking circuit detects one of the following items, a, b and c, it performs searching and controls the delay from the CTL signal in steps so that the head output level is maximum.

Since the read levels vary as shown in the diagram below due to different rotation angles of the drum heads, the read timing is specified from RF SWP and the average read data is detected to improve reliability.



(↓ ·····Sampling the read data)

2. Fixing

The delay is varied by the auto compulsory tracking MM (Q210, Q211, Q212) and the signal levels at each delay time are read. When the maximum level is detected, it is stored in memory and the delay is fixed.

The data of the tape with which search is completed is stored until ejection of power off is performed and the VCR enters the AUTO mode at the start of play without passing through search even when the stop mode is entered.

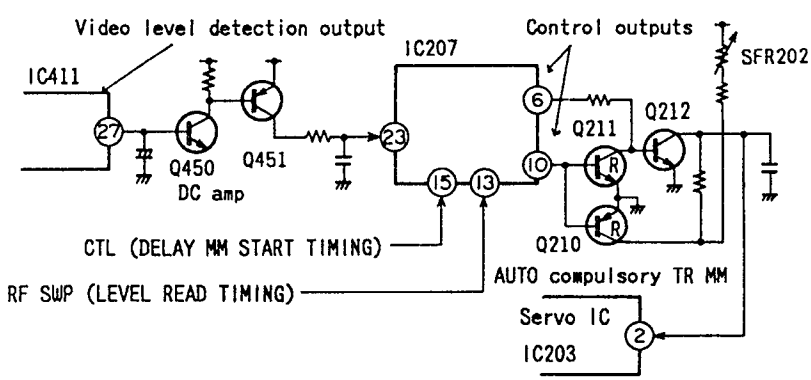
3. Monitoring of changes

The auto tracking circuit always monitors an abnormality even if the delay is fixed in the AUTO mode, and if any change occurs, it repeats search to adjust the tracking for the best.

(Note) The LED does not light in the following case even if the auto tracking switch is turned on.

When a tape with no signal recorded on it is played.

(presence/absence of CTL signal)



2. AUTO NOISE CANCELLER

When the STILL button is pressed during play, the auto noise canceller drives noise bars out of the screen so that they are not visible.

[Function devices]

IC207, IC209, Q213, Q214

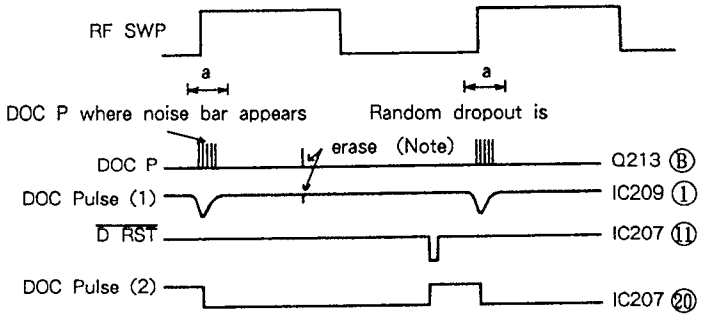
[Conditions]

IC207 determines whether the auto cancelling function should be operated or not and executes operation.

1. IC207 (41) High (PB)
2. IC207 (38) High (PAUSE)

[Principle]

The position of the noise bar can be known from the DOC P waveform in the video circuit. If the DOC P waveform is in area (a) of the RF SWP pulse as shown in the diagram below, the noise bar is not visible on the TV screen. The following DOC P pulse is produced so that IC207 (microprocessor) can read it easily.

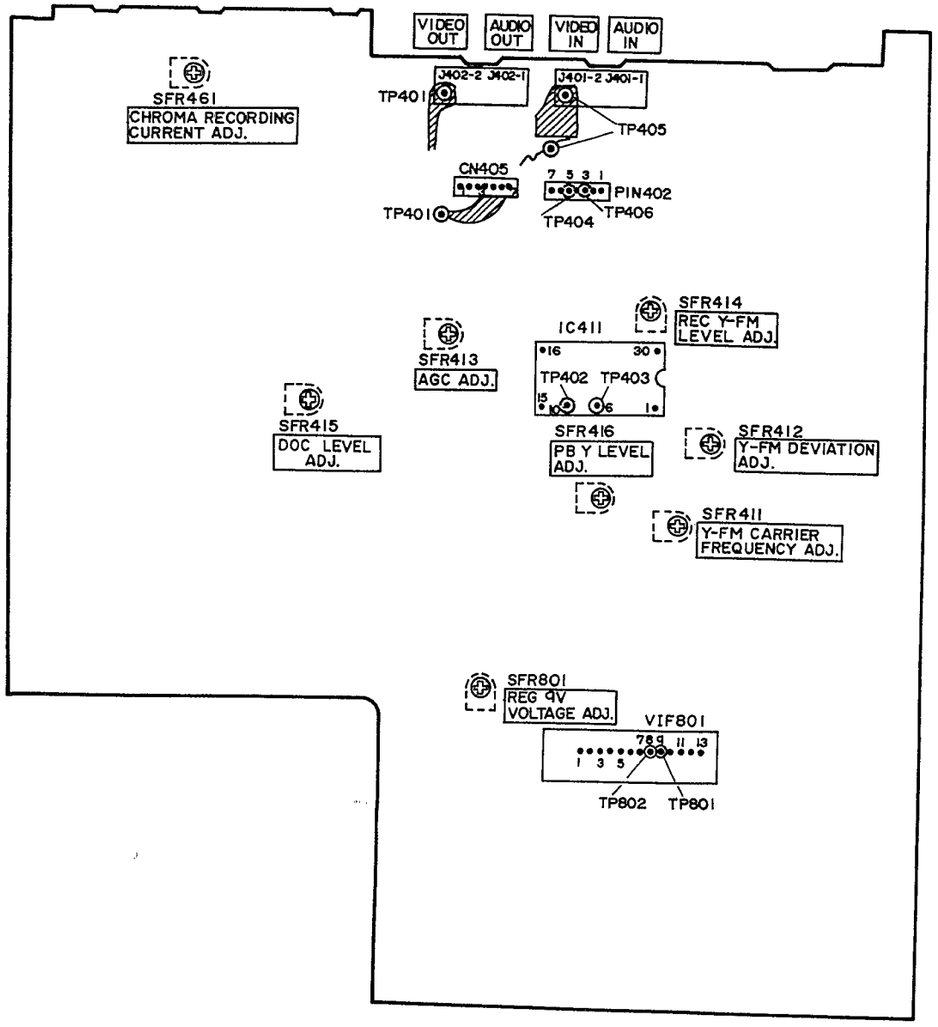


1. When the trailing edge of the DOC P pulse is within range (a) in the STILL mode, the cancelling operation is not necessary.
2. When it is out of range (a), the pulse which turn the capstan motor minutely are generated at pin 8 of IC207.
3. When the tape is fed minutely and the trailing edge of the DOC P pulse enters area (a), the generating of pulses is stopped.

The DOC pulse moves to the right with reference to the RF SWP pulse in steps 2 and 3.

(Note) When tapes with large random dropouts are used, the random dropouts and DOC pulses cannot be discriminated and the unit performs the detection erroneously.

[A] MAIN C.B (PATTERN SIDE)



2. Tuner section adjustment

(1) REG 9V Voltage Adjustment ([A] MAIN C.B)

Digital voltmeter Positive terminal : VIF801 pin ⑨ (TP801)

Negative terminal : VIF801 pin ⑧ (TP802)

Adjust SFR801 so that the voltage is within the specification, 9.00 ± 0.05V.

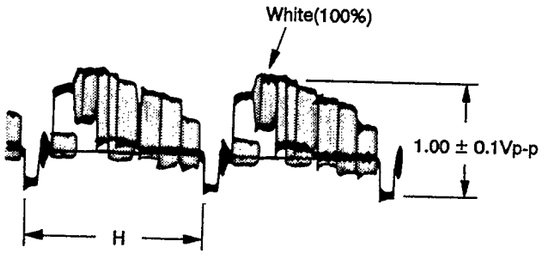
3. Video circuit adjustment

(1) PB Y·FM Level Adjustment ([A] MAIN C. B)

Oscilloscope : VIDEO OUT (TP401)

1) Play alignment tape TTV – P1.
2) Adjust SFR416 so that the white 100% level is as shown in the figure below.

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



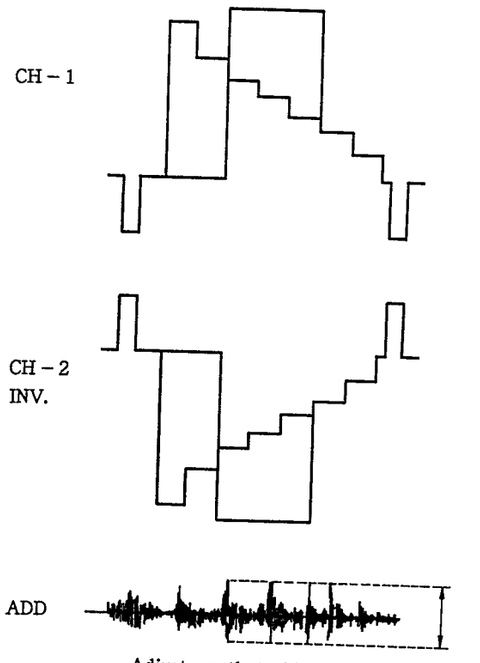
(2) DOC Level Adjustment ([A] MAIN C. B)

Oscilloscope CH – 1 : IC411 Pin ⑩ (TP402)

CH – 2 : IC411 Pin ⑨

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 SFR415 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.

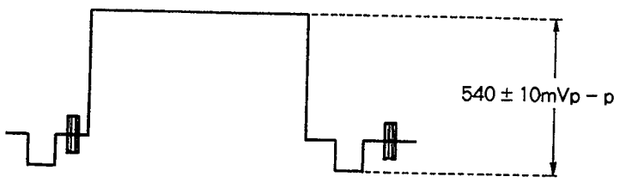


Adjust so that this become minimum

(3) AGC Adjustment ([A] MAIN C.B)

Oscilloscope : IC411 pin ⑥ (TP403)

1) Switch the input selector to LINE.
2) Apply a 100% white signal to the VIDEO IN jack.
3) Adjust SFR413 so that the Y signal is as shown in the figure below in the E – E mode.



(4) Y – FM Carrier Frequency Adjustment ([A] MAIN C.B)

Oscilloscope : PIN402 pin ⑤ (TP404)

1) Switch the input selector to LINE.
2) Set the VCR to the no signal input state (with no input connected to the VIDEO IN jack).
3) Set the VCR to the E – E mode.
4) Adjust SFR411 so that the frequency counter reads 3.8MHz ± 0.05MHz.

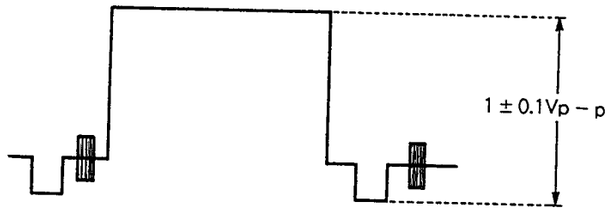
(5) Y – FM Deviation Adjustment ([A] MAIN C.B)

※ The Y FM carrier frequency adjustment should have been completed.

Oscilloscope : VIDEO OUT (TP401)

1) Switch the input selector to LINE.
2) Record a 100% white signal.
3) Play the recorded section and check the Y signal level.
4) IF out of specification turn SFR412.
5) Repeat 2) ~4) until observe the waveform as indicated below.

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

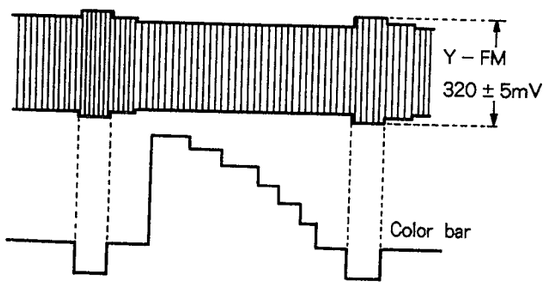


(6) REC Y – FM Level Adjustment ([A] MAIN C.B)

Oscilloscope CH – 1 : PIN402 pin ⑤ (TP404)

CH – 2 : VIDEO IN (TP405)

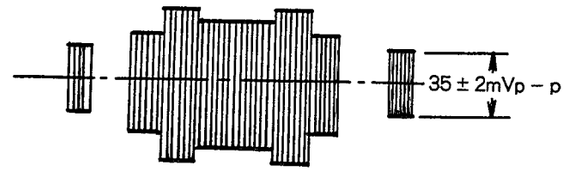
1) Switch the input selector to LINE.
2) Apply a color bar signal or 100% white signal to the VIDEO IN jack.
3) Adjust SFR414 so that the synchro signal level of the Y FM level is as shown in the figure below in the E – E mode.



(7) Chroma Recording Current Adjustment ([A] MAIN C.B)

Oscilloscope : PIN402 pin ③ (TP406)

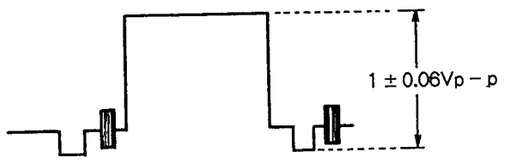
1) Switch the input selector to LINE.
2) Apply a color bar signal to the VIDEO IN jack.
3) Set the VCR the record mode and adjust SFR461 so that the burst level is as shown in the figure below.



ELECTRICAL ADJUSTMENT

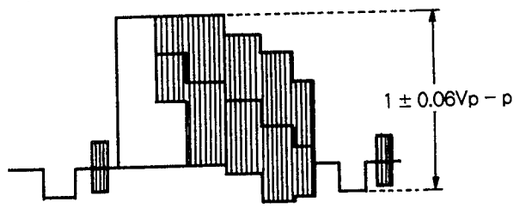
Preparation for adjustment

Input signal (100% white)



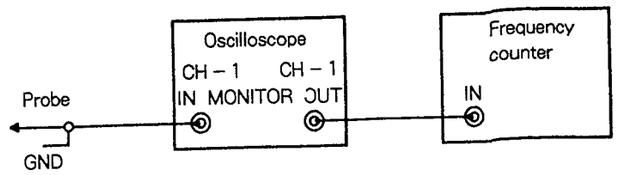
※Note : Voltage measured with a signal generator connected to the VCR

Input signal (color bar)

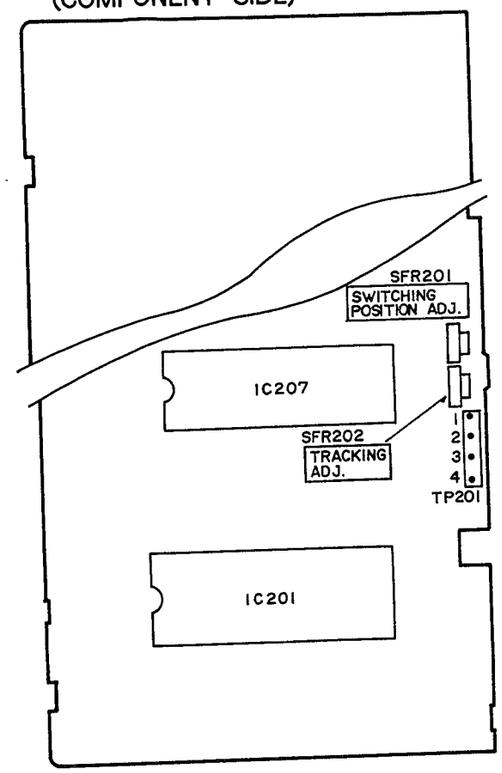


※Note : Voltage measured with a signal generator connected to the VCR

Connections of test equipment



B SERVO/SYSCON C.B (COMPONENT SIDE)

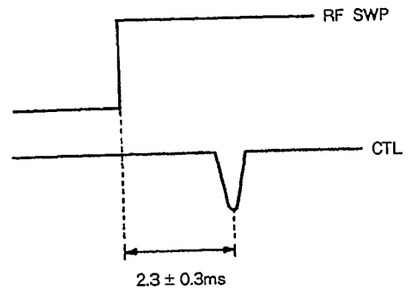


1. Servo circuit adjustment

(1) Tracking Adjustment (B SERVO/SYSCON C.B)

Oscilloscope CH – 1 : TP201 pin ② (RF SWP)
CH – 2 : TP201 pin ① (CTL)

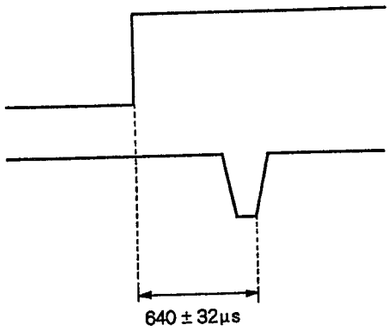
1) Set RV901 (tracking VR) to the center position.
2) Play alignment tape TTV – P1.
3) Adjust SFR202 so that the position of the CTL signal is as shown in the figure below.



(2) Switching Position Adjustment (B SERVO/SYSCON C.B)

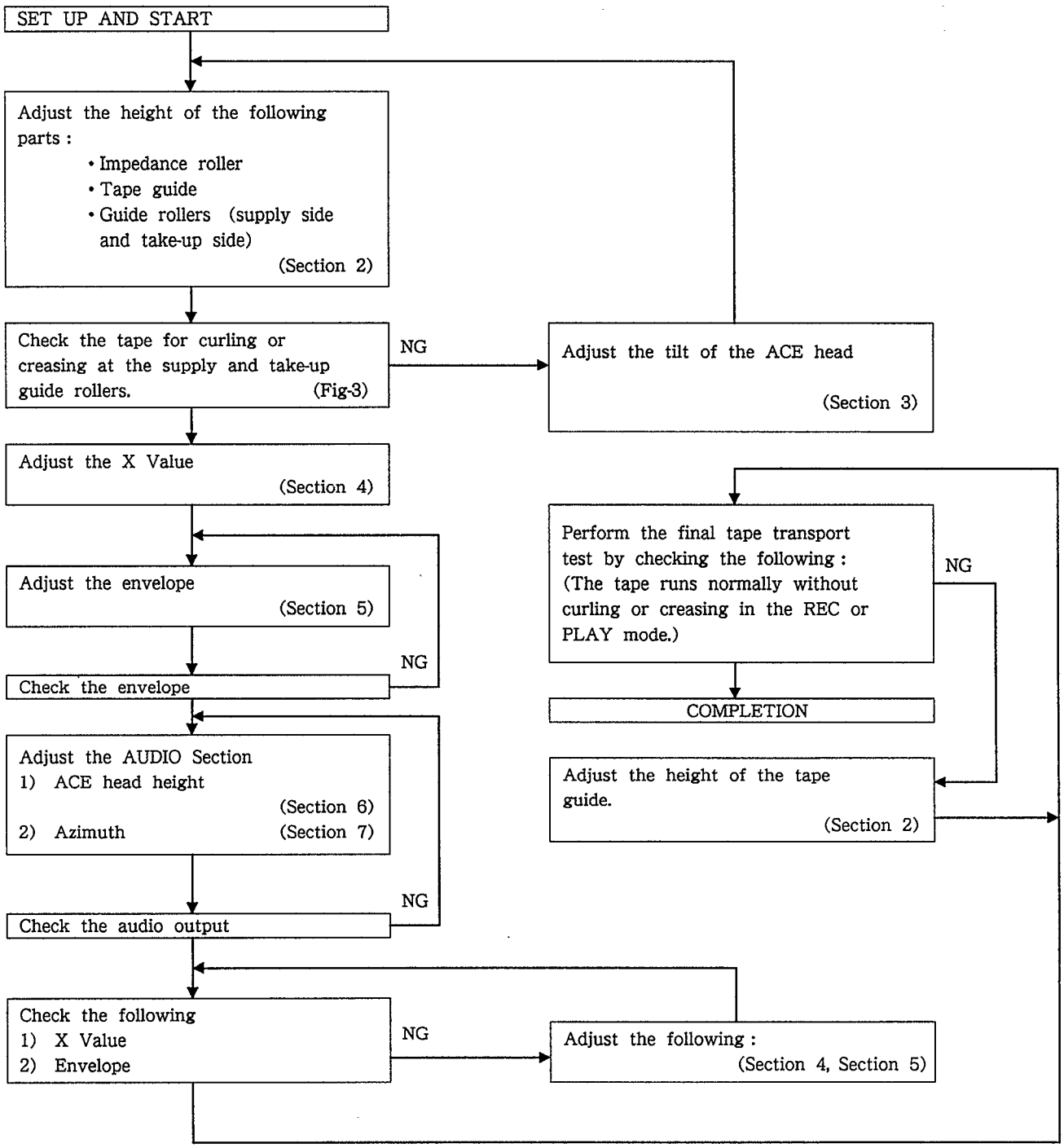
Oscilloscope CH – 1 : TP201 pin ② (RF SWP)
CH – 2 : TP201 pin ④ (V SYNC)

1) Set RV901 (tracking VR) to the center position.
2) Play alignment tape TTV – P1.
3) Adjust SFR201 so that the V. SYNC signal is as shown in the figure below.



4. MECHANICAL ADJUSTMENT

1. TAPE TRANSPORT ADJUSTMENT FLOWCHART



2.TAPE RUNNING POSITION ADJUSTMENT

(GUIDE ROLLER/TAPE GUIDE/IMPEDANCE ROLLER)

Set – up

Lift the "Main circuit board".

1. Perform the height adjustment for the following items to obtain the proper tape running position. (See Figure – 1)
   - ① Impedance roller
   - ② Guide roller (Supply side)
   - ③ Guide roller (Take – up side)
   - ④ Tape guide

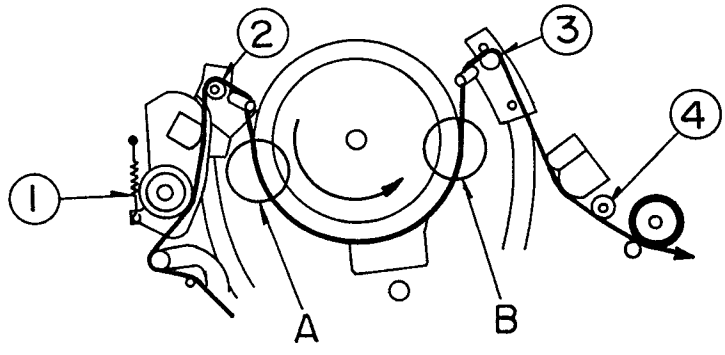


Fig. – 1

2. Load a blank tape and set it to the PLAY mode. Check the tape transport at points "A" and "B" as shown in Figure – 1.

3. Operate it between the PLAY and STOP modes several times.

4. Observe the tape transport at the "Lead surface of the cylinder" during the PLAY mode, and confirm that the tape runs smoothly along the "Lead surface of the cylinder" without slipping downward or upward. (See Figure – 2)

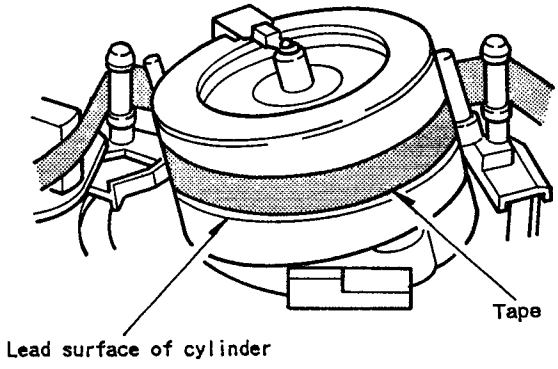


Fig. – 2

5. During loading, play and unloading, observe the tape at the supply and take – up "Guide rollers", "Tape guide" and "Impedance roller". Confirm that there is no curling or creasing etc., as shown in Figure – 3.

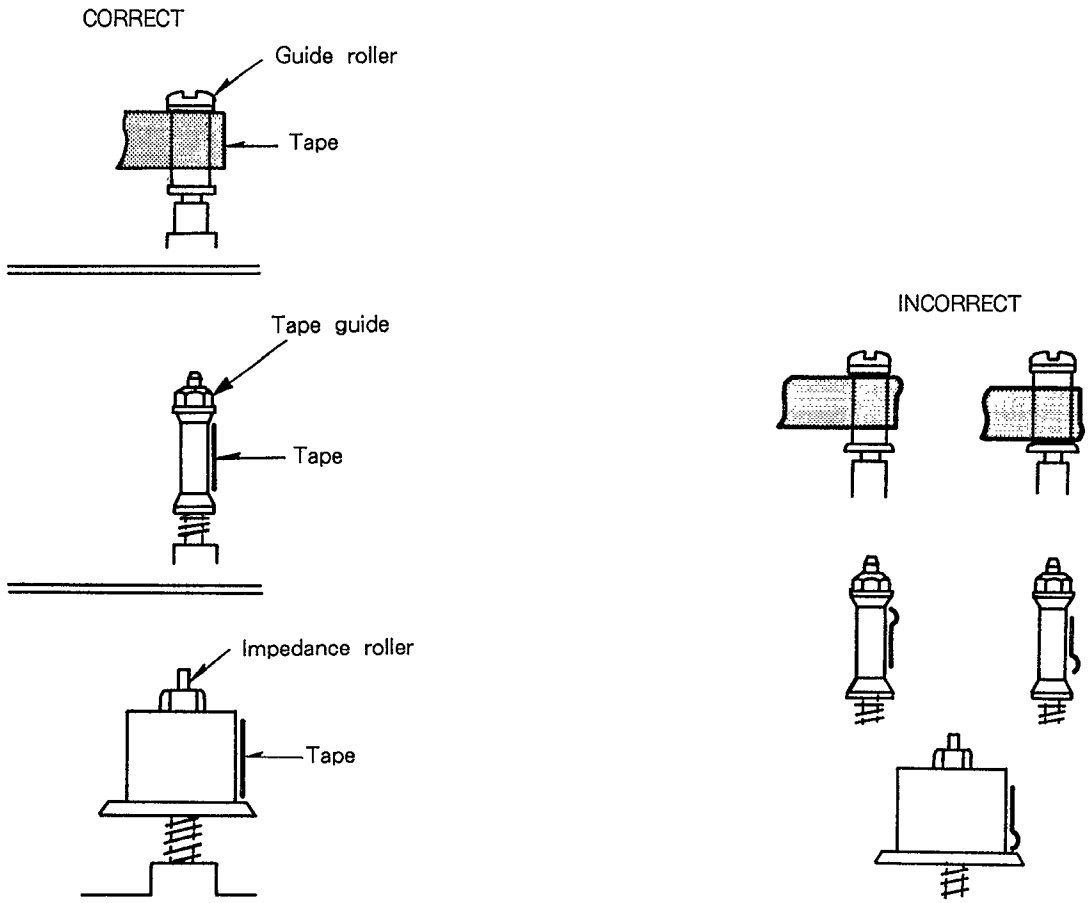


Fig. – 3

6. If any curling or creasing is noted, adjust "Tape guide roller" and "Impedance roller" first. In this case, adjust the "Impedance roller" in both PLAY and REV modes so that the tape runs as shown in Figure – 4.

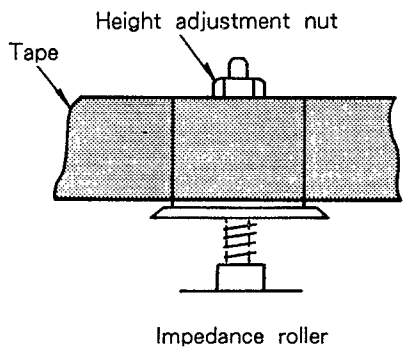


Fig. – 4

7. Next, adjust the "Guide roller" height. Insert the adjustment driver (J2) into the "Guide roller" top. (See Figure – 5)
Adjust the height by turning the driver slightly so that the tape runs on the "Guide roller" as shown in Figure – 3, and the lower edge of the tape runs along the "Lead surface of the cylinder".

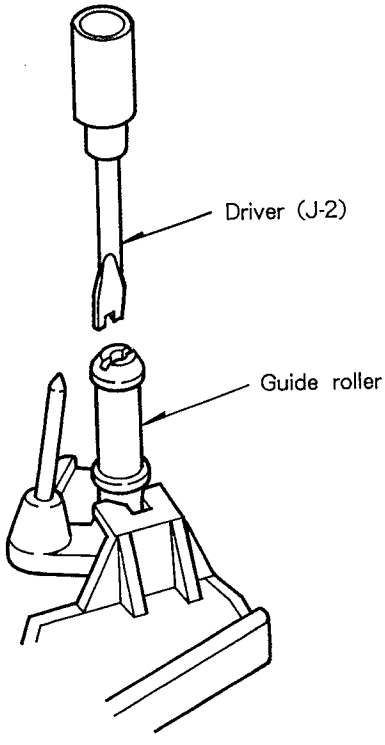


Fig. – 5

8. After completion of the supply side "Guide roller" adjustments, adjust "Tape guide" so that tape runs as shown in Figure – 6 and adjust the take – up side "Guide roller" by using the same procedures as for the supply side adjustments.
In this case, adjust the "Guide roller" height first.

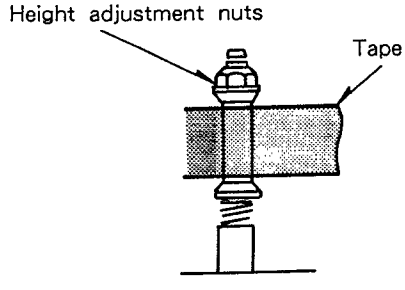


Fig. – 6

9. Confirm that there is no curling or creasing at the "Impedance roller" (Both PLAY and REV modes). If there is any curling or creasing at the "Impedance roller", adjust the same procedures of Figure – 6.

10. Finally, confirm that there is no curling or creasing at the take – up side guide roller and tape guide. If there is any curling or creasing between the take – up side "Guide roller" and the "ACE head", adjust the "ACE head".

3.AUDIO CONTROL HEAD ADJUSTMENT

1. Load a recorded tape and set the it to PLAY mode.

2. Adjust the height of the edge of the "Audio track" on the "Audio control head" by using the height adjustment nut Ⓐ and the "Tilt adjustment screw" Ⓒ so that the tape transport is smooth at the "Take – up guide pole". Align the "Audio control head" height. (See Figure – 7)

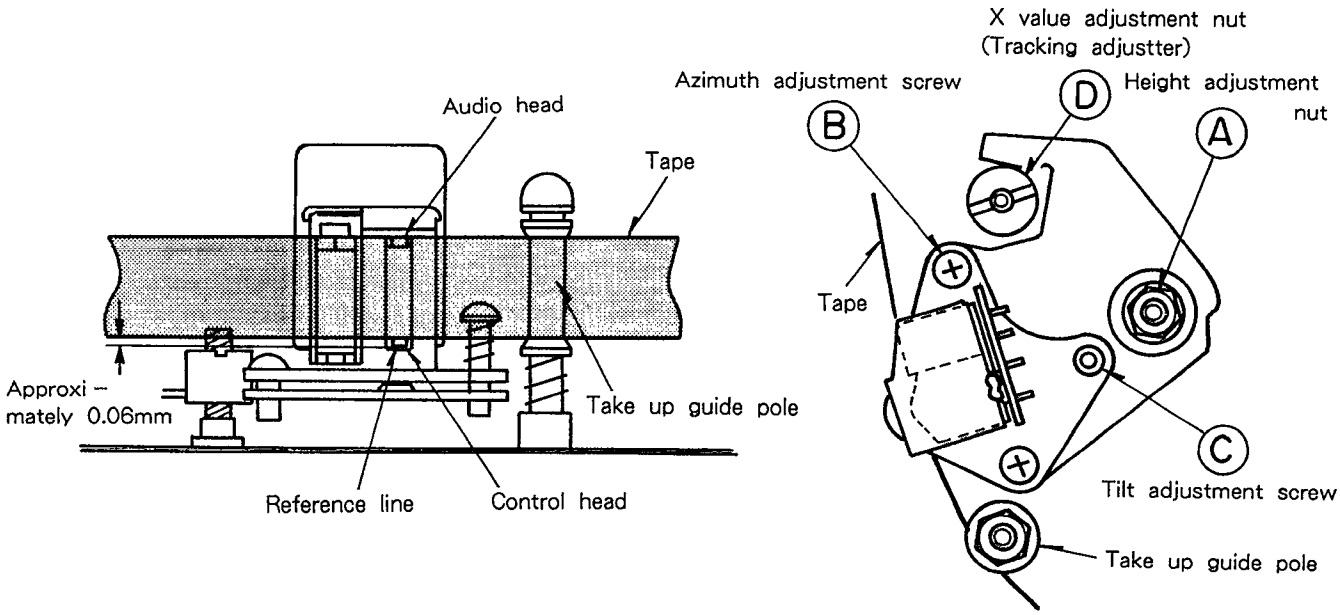


Fig. – 7

3. The fine adjustment is not required at this time.
   The following conditions as sufficient :
   (a) Proper tape transport between the "Audio control head" and the "Take – up guide pole".
   (b) Stable SERVO system operation (proper pickup of tape's recorded control signal).

4.X VALUE ADJUSTMENT (PB FM PEAK ADJUSTMENT)

MEASURING METHOD

Measuring Point	Measuring Equip.	ADJ. Condition
MAIN C.B IC411 26 pin SERVO/SYSCON C.B TP201 2 pin	Oscilloscope	PLAY (SP) MODE Test tape TTV-P2

ADJ. Location	ADJ. Value
X value adjustment nut	Maximum level (CH1 PB Y FM signal)

TEST EQUIPMENT CONNECTING DIAGRAMS

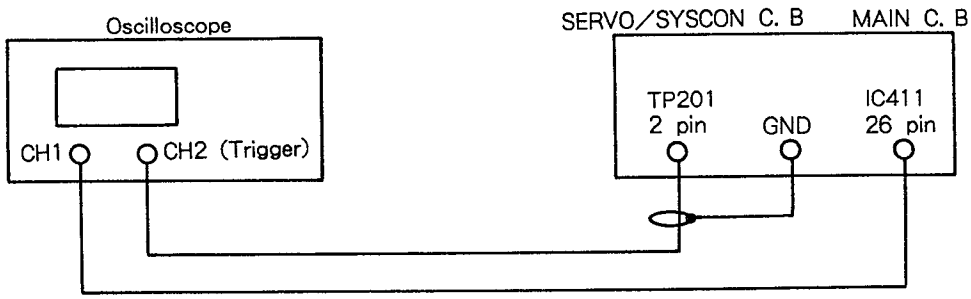


Fig.- 8

1. Connect the equipment as shown in Figure - 8.
2. Adjust RV901 (Tracking volume) to its center position. (clockwise)
3. Adjust the "X value adjustment nut" Ⓓ for maximum PB FM Signal for CH1 by using TTV - P2 test tape. (See Figure - 9)
4. After adjusting the "X value", check that the output level of the PB FM Signal for CH1 changes symmetrically by rotating RV901 (Tracking volume).

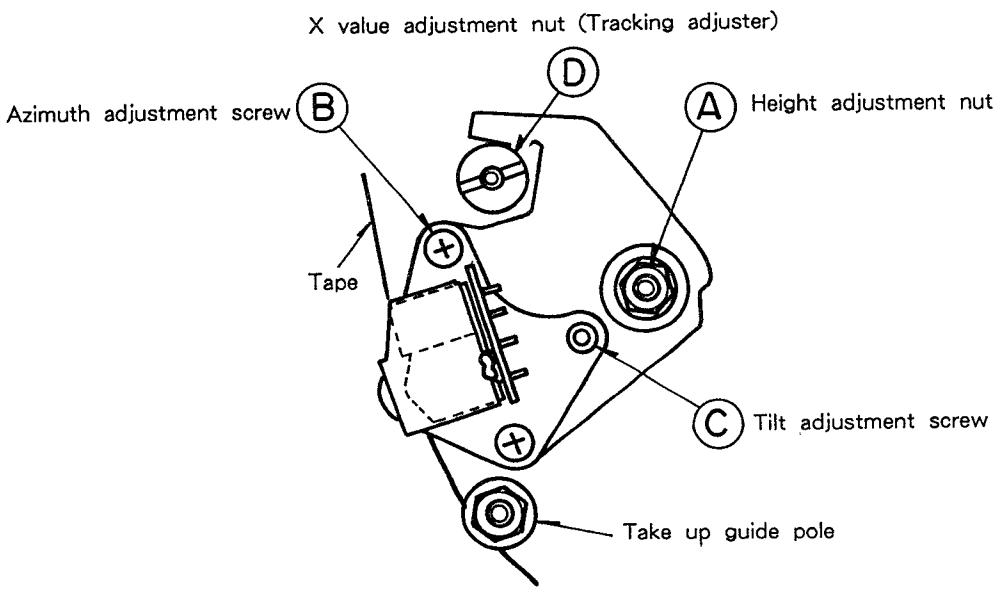


Fig.- 9

5.ENVELOPE WAVE FORM ADJUSTMENT

MEASURING METHOD

Measuring Point	Measuring Equip.	ADJ. Condition
MAIN C.B IC411 26 pin SERVO/SYSCON C.B TP201 2 pin	Oscilloscope	PLAY (SP) MODE Test tape TTV-P2

ADJ. Location	ADJ. Value
Guide rollers	Maximum level and correct wave form (PB Y FM Signal)

TEST EQUIPMENT CONNECTING DIAGRAMS

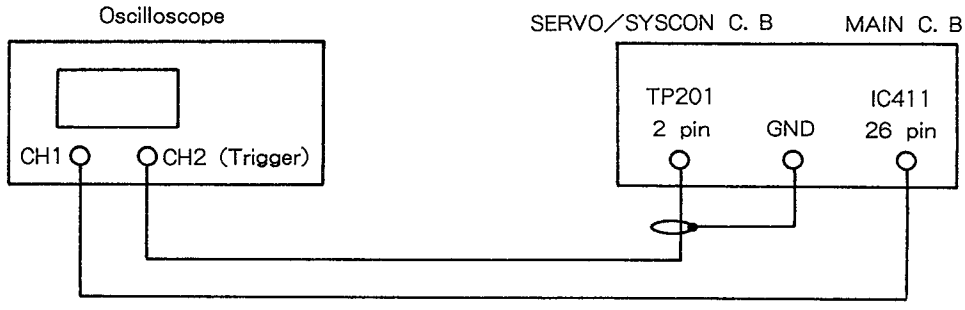


Fig. – 10

1. Connect equipment as shown in Figure – 10.

2. Playback the test tape TTV – P2.

3. The envelope wave form can be performed by adjusting the height of both the supply side and take – up side "Guide rollers". Finaly adjust the height of "Guide rollers" so that the envelope wave form is as flat as possible.

4. Set RV901 (Tracking Volume) to its center position and confirm that a nearly maximum level is obtained. Then rotate the RV901 (Tracking Volume) in both directions while adjusting the height of "Guide rollers", in order to obtain the envelope wave form which is as flat as possible.
   If the tape is above or lower the helical tape position, the envelope wave forms will take the shape as shown in Figure – 11 and Figure – 12.

5. Adjust for maximum flatness of the envelope wave form according to the Figure – 11 and Figure – 12.

6. After adjustment, rotate RV901 (Tracking Volume) counterclockwise and clockwise, and check that the wave form changes symmetrically.

7. Check the tape curl. (Refer to Section 2)

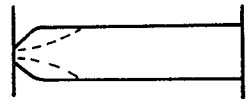
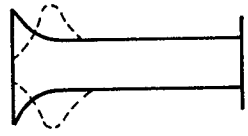
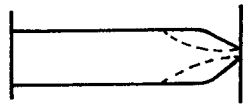
	Tape is too high	
	Supply side	Take-up side
When the tracking volume is rotated counterclockwise and clockwise directions.	 	
Adjustment	Supply side "Guide roller" rotated clockwise direction (lowers "Guide roller") to flatten envelope.	Take-up side "Guide roller" rotated clockwise direction (lowers "Guide roller") to flatten envelope.

Fig.-11

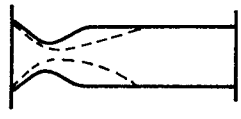
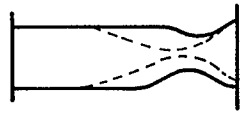
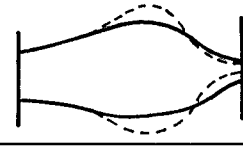
	Tape is too low	
	Supply side	Take-up side
When the tracking volume is rotated counterclockwise and clockwise directions.		 
Adjustment	Supply side "Guide roller" rotated counterclockwise direction (raises "Guide roller") to flatten envelope.	Take-up side "Guide roller" rotated counterclockwise direction (raises "Guide roller") to flatten envelope.

Fig.-12

6.AUDIO CONTROL HEAD HEIGHT/AUDIO CONTROL HEAD TILT ADJUSTMENT

MEASURING METHOD

Measuring Point	Measuring Equip.	ADJ. Condition
AUDIO OUTPUT	Oscilloscope AC voltmeter	PLAY (SP) MODE Test tape TTV-P1

ADJ. Location	ADJ. Value
Height adjustment nut Azimuth adjustment screw	Maximum level (AC voltmeter)
Tilt adjustment screw	

TEST EQUIPMENT CONNECTING DIAGRAMS

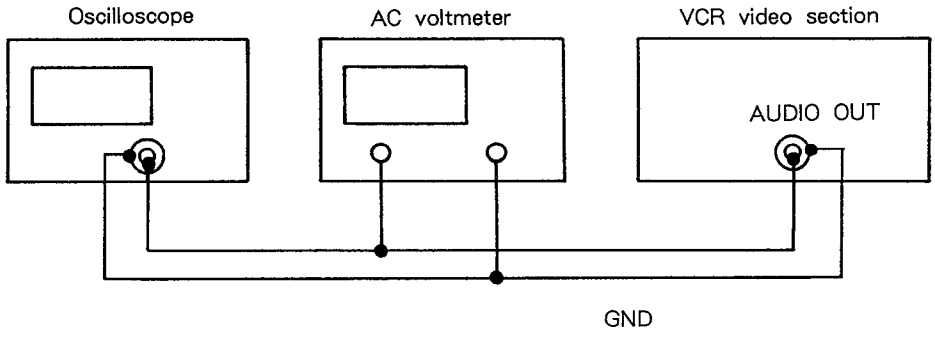


Fig. – 13

1. Connect equipment as shown in Figure – 13.

2. Confirm that the running between the "Take – up guide roller" and the "ACE head" has no slack. If the tape has slack, take it up by turning the "Tilt adjustment screw Ⓒ". (See Figure – 15)
Then readjust "Guide roller" height in section 2 and the "X value" in section 4.

3. After confirming on the oscilloscope that a 1kHz audio signal is being output by playing back TTV – P1 test tape, adjust the "Height adjustment nut Ⓐ" so that the AC voltmeter's reading is brought to its maximum level. (See Figure – 7)

4. Adjust the "Azimuth adjustment screw Ⓑ" so that the AC voltmeter's reading is brought to its maximum level. (See Figure – 7)

7.AUDIO CONTROL HEAD AZIMUTH ADJUSTMENT

MEASURING METHOD

Measuring Point	Measuring Equip.	ADJ. Condition
AUDIO OUTPUT	Oscilloscope AC voltmeter	PLAY (SP) MODE Test tape TTV – P2

ADJ. Location	ADJ. Value
Azimuth adjustment screw	Maximum level (AC voltmeter)

Fig.-14

TEST EQUIPMENT CONNECTING DIAGRAMS

See Figure – 13.

1. After confirming on the oscilloscope that a 6kHz audio signal is being output by playing back TTV – P2 test tape, adjust the "Azimuth adjustment screw Ⓑ" so that the AC voltmeter's reading or oscilloscope wave form is brought to its maximum level. (See Figure – 15)

Note : Fix the screw Ⓑ and Ⓒ with lock paint after readjustment.

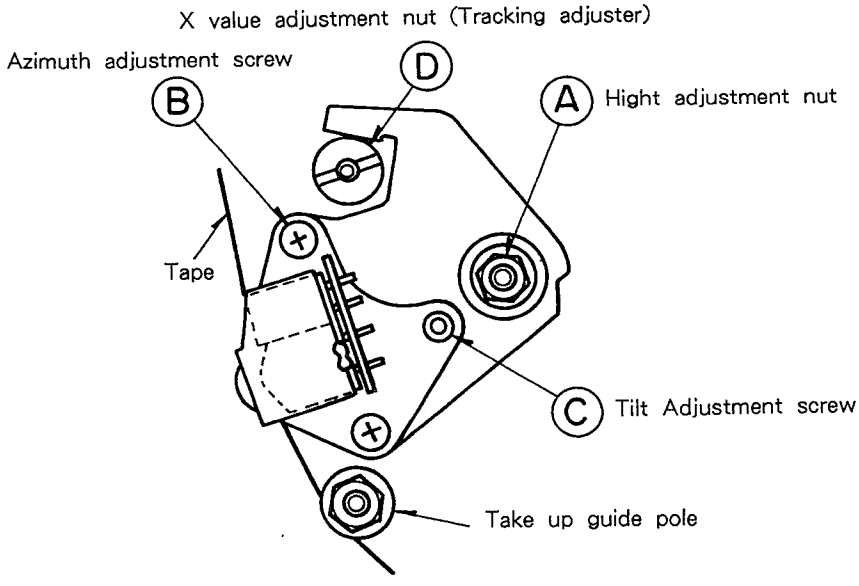
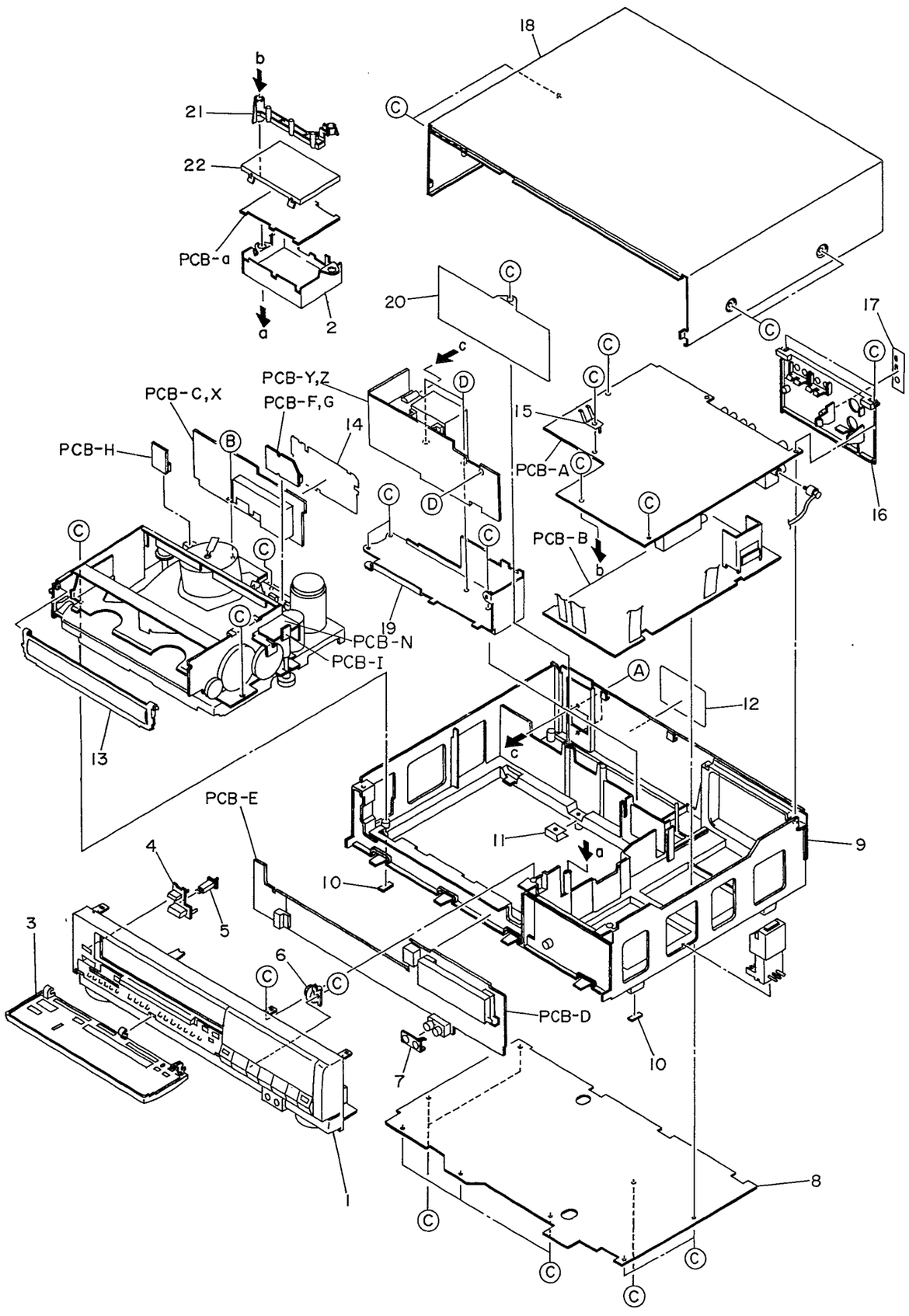


Fig. – 15

EXPLODED VIEW – 1

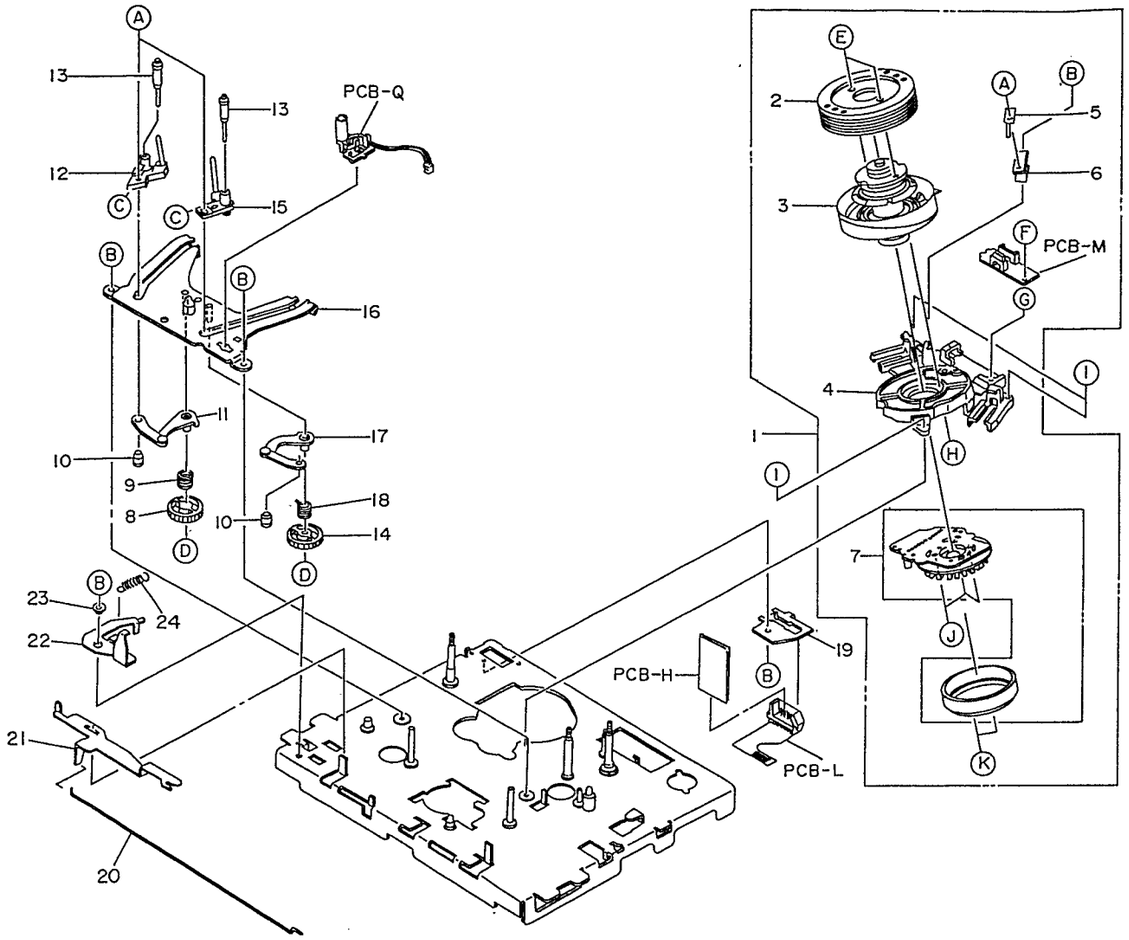


EXPLODED VIEW..(1) CABINET PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
1-1	*9A03788100	CABINET FRONT ASSY,..(MV-318 ONLY)	
1-1	*9A03788200	CABINET FRONT ASSY,..(MV-404 ONLY)	
1-2	- - - - -	SHLD, AU1	
1-3	*9A03788300	DOOR ASSY,...(MV-318 ONLY)	
1-3	*9A03788400	DOOR ASSY,...(MV-404 ONLY)	
1-4	*9A03574800	KEY,POWER	
1-5	*9A03574900	GUIDE,LIGHT PO	
1-6	*9A03579300	OIL-DMPR 37	
1-7	- - - - -	PLATE,EARTH FR	
1-8	*9A03339000	BOTTOM 2	
1-9	- - - - -	CAB, MAIN 2	
1-10	*9A02424400	FELT, FOOT	
1-11	*9A02424600	CLAMP, EARTH	
1-12	*9A03576600	PLATE,SPEC	
1-13	*9A03576500	DOOR,CASS	
1-14	- - - - -	SHIELD, RP2	
1-15	- - - - -	PLATE, EARTH	
1-16	*9A02426500	PANEL, JACK (G)	
1-17	*9A02426000	PLATE, JACK (G)	
1-18	*9A03579600	CAB,STEEL	
1-19	*9A03347900	HLDR, PS	
1-20	- - - - -	SHLD, S1	
1-21	*9A03577900	HLDR,AU	
1-22	- - - - -	SHLD, AU2	
PCB-A	- - - - -	MAIN PCB ASSY	
PCB-B	- - - - -	SERVO/SYSCON PCB ASSY	
PCB-D	- - - - -	TIMER PCB ASSY	
PCB-E	- - - - -	POWER SW PCB ASSY	
PCB-F	- - - - -	RELAY PCB ASSY-1	
PCB-G	- - - - -	RELAY PCB ASSY-2	
PCB-I	- - - - -	RELAY PCB ASSY-4	
PCB-N	- - - - -	SW PCB ASSY (W/SW1,2,3)	
PCB-X	- - - - -	PRE AMP PCB ASSY	
PCB-Y	- - - - -	POWER PCB 1 ASSY	
PCB-Z	- - - - -	POWER PCB 2 ASSY	
PCB-a	- - - - -	AUDIO PCB ASSY	
1-A	9A02426800	BVT2+3-8W/O SLOT BLK	
1-B	9A02427000	BVIT3+2.6-8	
1-C	9A02426900	BVIT3B+3-10	
1-D	9A03451700	VFT2+3-10	

Parts marked with * regulre longer delivery tlme

EXPLODED VIEW – 2

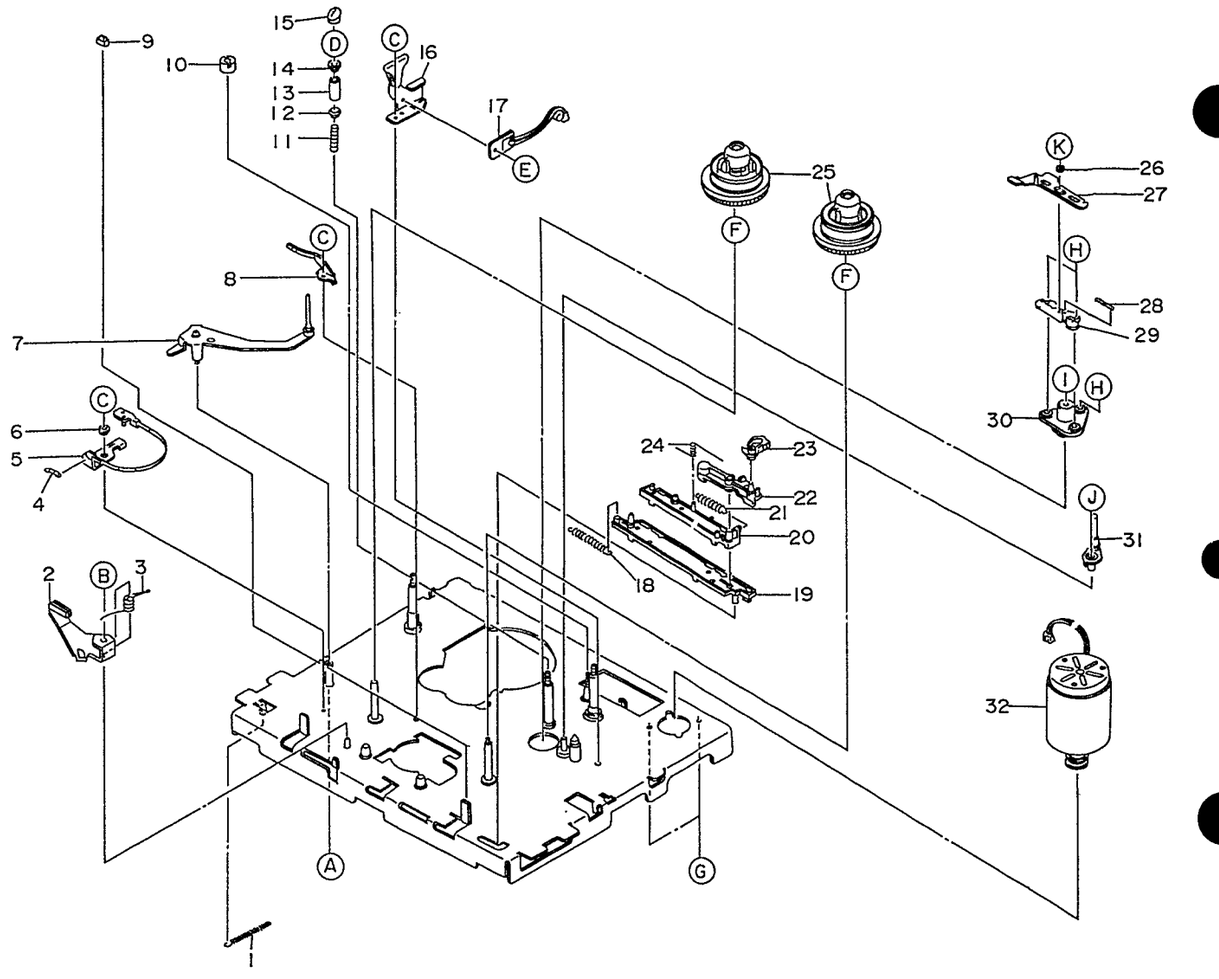


EXPLODED VIEW..(2) MECHANICAL PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION
	*9A03571800	MECHA UNIT, TN5900P2SRN104D
2-1	*9A02492800	CYLINDER ASSY,
2-2	*9A02492900	DRUM,UPPER
2-3	*9A02493000	DRUM ASSY,LOWER
2-4	*9A02493100	CYLINDER MOUNT
2-5	*9A02493200	DRUM EARTH
2-6	*9A02493300	DRUM EARTH BRACKET
2-7	*9A02493400	MOTOR,DC TM82
2-8	*9A02493500	T LOADING GEAR L
2-9	*9A02493600	LOADING GEAR SPRING L
2-10	*9A02493700	LOADING BOSS
2-11	*9A02493800	LOADING PLATE L SEMI ASSY
2-12	*9A02493900	LOADING BLOCK L
2-13	*9A02494000	ROLLER POST ST
2-14	*9A02494100	T LOADING GEAR R
2-15	*9A02494200	LOADING BLOCK R
2-16	*9A02494300	LOADING BASE SEMI ASSY
2-17	*9A02494400	LOADING PLATE R SEMI ASSY
2-18	*9A02494500	LOADING GEAR SPRING R
2-19	- - - - -	CONNECTOR BRACKET
2-20	*9A03638400	REC ACTUATE SPOKE
2-21	*9A03638100	REC ACTUATOR
2-22	*9A03638000	REC LEVER
2-23	*9A02499900	COLLAR
2-24	*9A03638500	REC LEVER SPRING
PCB-H	- - - - -	RELAY PCB ASSY-3
PCB-L	9A02763600	RELAY PCB ASSY-5
PCB-M	9A02763700	RELAY PCB ASSY-6
PCB-Q	- - - - -	LED PCB ASSY (W/PCB-Q)
2-A	9A03642600	CUP SCREW 2.6X3
2-B	9A03641500	C TAPPING SCREW 2.6X5
2-C	9A03643700	SET SCREW 2.0-3 (PLATE)
2-D	9A03643500	P WASHER CUT 2.6-6-0.5
2-E	9A03644200	BIND TAMS SCREW 3X8
2-F	9A03644300	W TAMS SCREW 2.6X6
2-G	9A03642900	WASHER 2.6
2-H	9A03642400	SCREW (CAMERA) 2-5 (NO.1)
2-I	9A03641900	C TAPPING SCREW 3X10
2-J	9A03640600	SCREW 2.6-20
2-K	9A03641000	TAMS SCREW 2.6X6

Parts marked with * require longer delivery time

EXPLODED VIEW – 3

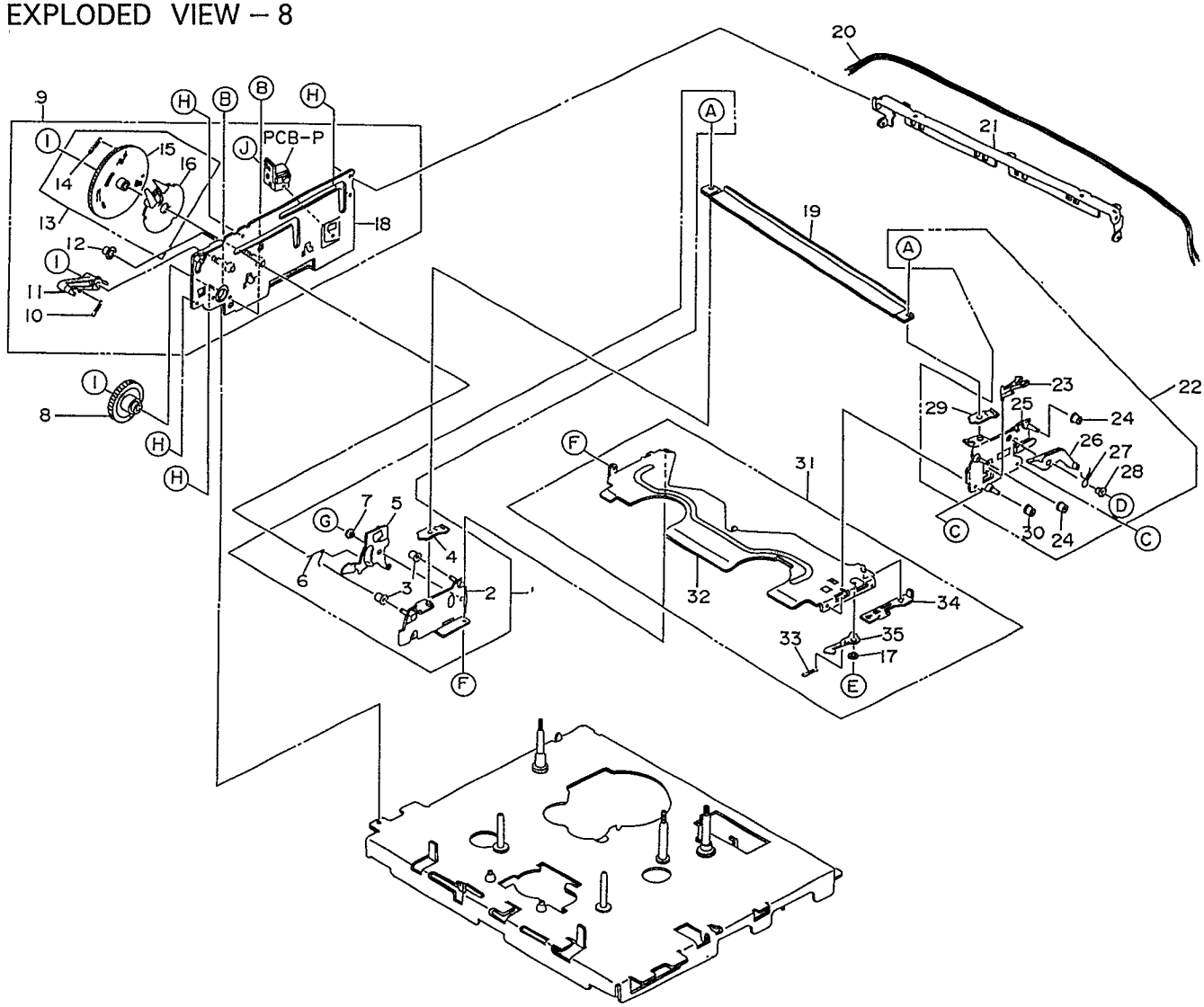


EXPLODED VIEW..(3) MECHANICAL PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION
3-1	*9A02495500	BT ACTUATE PLATE SPRING
3-2	*9A02495600	S SOFT BRAKE ASSY
3-3	*9A02495700	S SOFT BRAKE SPRING
3-4	*9A02495800	BAND HOLDER SPRING
3-5	*9A02495900	BT BAND ASSY
3-6	*9A02496000	BAND HOLDER COLLAR
3-7	*9A02496100	BT ARM SEMI ASSY
3-8	*9A02496200	BACK TENSION SUPPORT
3-9	*9A02496300	DAMPER RUBBER
3-10	*9A02496400	TRACKING ADJUSTER
3-11	*9A02496500	TAPE GUIDE SPRING
3-12	*9A02496600	TAPE GUIDE FLANGE D
3-13	*9A02496700	TAPE GUIDE
3-14	*9A02496800	TAPE GUIDE FLANGE C
3-15	*9A02496900	GUIDE CAP
3-16	*9A02497000	OPEN ANGLE ASSY
3-17	*9A02497100	DEW SENSOR EYH-S10R
3-18	*9A02497200	BRAKE ACTUATE BASE SPRING
3-19	*9A02497300	BRAKE ACTUATE BASE
3-20	*9A02497400	BRAKE PLATE
3-21	*9A02497500	BRAKE PLATE SPRING
3-22	*9A02497600	TRIGGER LEVER
3-23	*9A02497700	TRIGGER HOOK
3-24	*9A02497800	TRIGGER LEVER SPRING
3-25	*9A02497900	REEL ASSY,
3-26	*9A02498000	RG SLIDE PLA.COLLAR
3-27	*9A02498100	RG SLIDE PLATE
3-28	*9A02498200	RG SLIDE SPRING
3-29	*9A02498300	RG SLIDE BASE
3-30	*9A02498400	METAL HOUSING ASSY
3-31	*9A02498500	RG ARM SEMI ASSY
3-32	*9A02498600	CAPSTAN MOTOR ASSY
3-A	9A03644800	P WASHER CUT 2.1-4-0.5
3-B	9A03643400	P WASHER CUT 2.1-5-0.5
3-C	9A03641400	C TAPPING SCREW 2.6X4
3-D	9A03642100	NUT 3.0
3-E	9A03640900	TAMS SCREW 2.6-4
3-F	9A03643600	R WASHER 3.1-6-0.5
3-G	9A03641200	TAMS SCREW 3-4
3-H	9A03641600	C TAPPING SCREW 2.6-8
3-I	9A03644900	NYLON WASHER 2.92-5-0.5
3-J	9A03643500	P WASHER CUT 2.6-6-0.5
3-K	9A03640700	TAMS SCREW 2-4

Parts marked with * require longer delivery time

EXPLODED VIEW – 8



EXPLODED VIEW..(8) MECHANICAL PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION
7-1==18-35	*9A03639900	FRONT LOADING ASSY
8-1	*9A02511200	SIDE PLATE L ASSY
8-2	- - - - -	SIDE PLATE (L) SEMI ASSY
8-3	- - - - -	GUIDE ROLLER
8-4	- - - - -	CASSETTE PUSH PLATE
8-5	- - - - -	C LOCK PLATE (L)
8-6	- - - - -	LOCK PLATE SPG (L)
8-7	- - - - -	LOCK PLATE COLLER
8-8	*9A02510000	SYNCHRONIZE GEAR A
8-9	*9A02511300	FRAME L ASSY
8-10	- - - - -	LIFT LEVER SPRING
8-11	*9A02511400	LIFT LEVER
8-12	- - - - -	GUIDE SLEEVE
8-13	*9A02511500	LIFT GEAR L ASSY
8-14	- - - - -	LP SPRING
8-15	- - - - -	LIFT GEAR (L)
8-16	- - - - -	LIFT ARM
8-17	- - - - -	COLLAR
8-18	- - - - -	FRAME (L) ASSY
8-19	*9A02511600	TOP STAY
8-20	- - - - -	END SENSOR WIRE
8-21	*9A02511700	REAR ANGLE
8-22	*9A02511800	SIDE PLATE R ASSY

REF. NO.	PARTS NO.	DESCRIPTION
8-23	- - - - -	LOCK RELEASE LEVER
8-24	- - - - -	LP SPRING
8-25	- - - - -	SIDE PLATE (R) SEMI ASSY
8-26	*9A02511900	OPEN LEVER
8-27	- - - - -	OPEN LEVER SPRING
8-28	- - - - -	OPEN LEVER COLLER
8-29	- - - - -	CASSETTE PUSH PLATE
8-30	- - - - -	GUIDE ROLLER
8-31	*9A02512000	CASSETTE HOLDER ASSY
8-32	- - - - -	CASSETTE HOLDER
8-33	- - - - -	LOCK SPRING
8-34	- - - - -	SLIDE PLATE
8-35	- - - - -	C LOCK PLATE (A)
PCB-P	*9A02764000	SENSOR PCB LM ASSY
8-A	9A03643100	SCREW (CAMERA) 2.3-2
8-B	9A03641400	C TAPPING SCREW 2.6X4
8-C	9A03642500	SCREW (CAMERA) 2.6-3
8-D	9A03644000	SL SCREW (CAMERA) 2-4
8-E	9A03644100	SL SCREW (CAMERA) 2.6-3
8-F	9A03644500	SCREW (CAMERA) 2.3-2.5
8-G	9A03643900	SL SCREW (CAMERA) 2-2.5
8-H	9A03640900	TAMS SCREW 2.6-4
8-I	9A03642300	E RING S2.5
8-J	9A03641100	TAMS SCREW 2.6-7

Parts marked with * require longer delivery time

MV-404/MV-318

TEAC®

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TEAC NEDERLAND BV	Perkinsbaan 11, 3439 ND Nieuwegein, Nederland	Phone:03-402-30229
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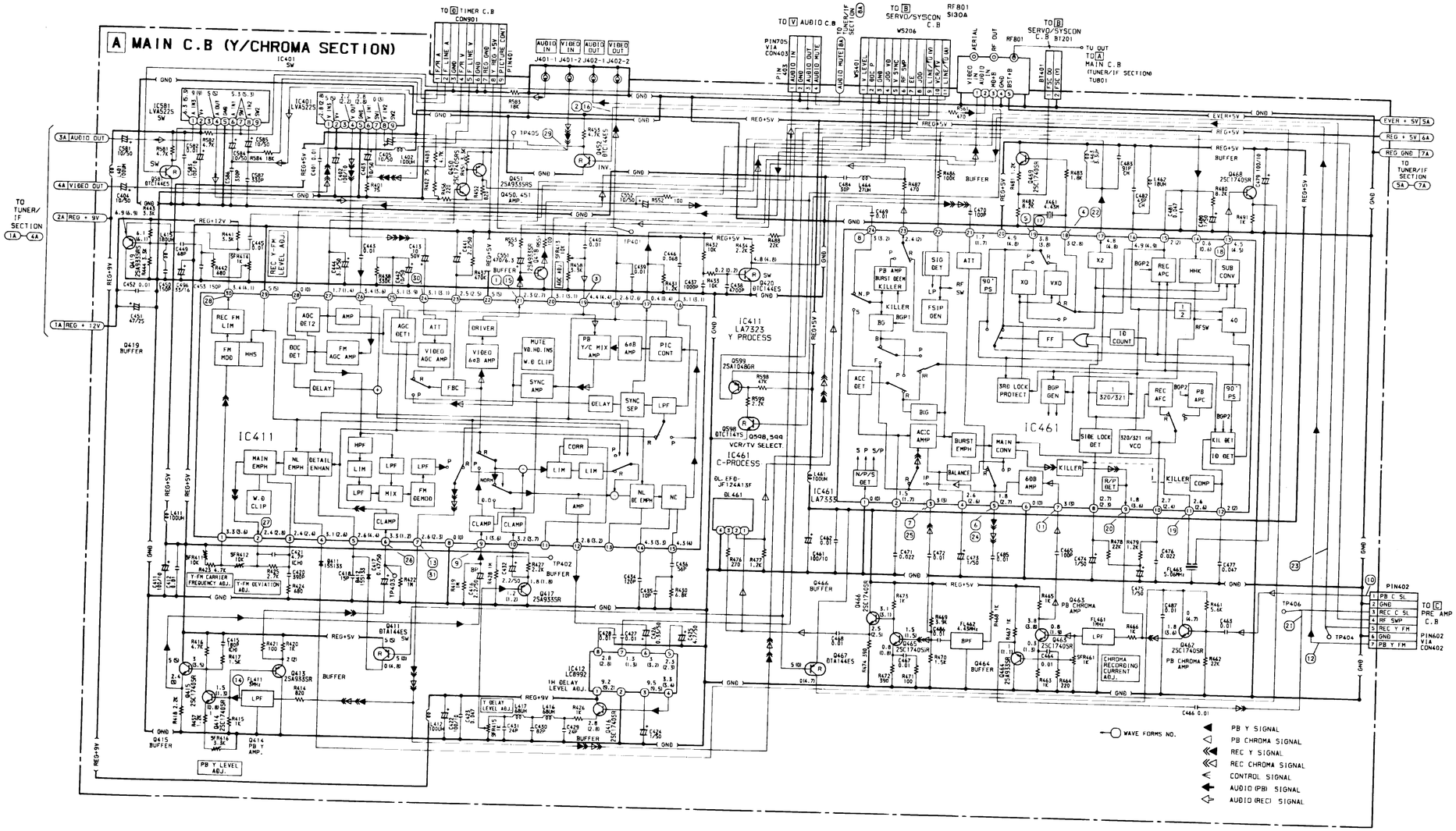
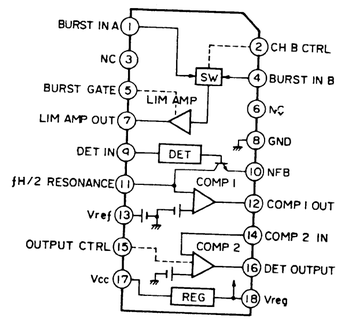
SCHEMATIC DIAGRAM – 1 (VIDEO SECTION)



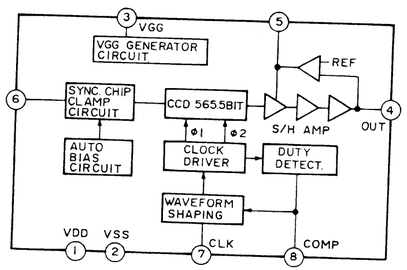
41

42

IC,BA7025L

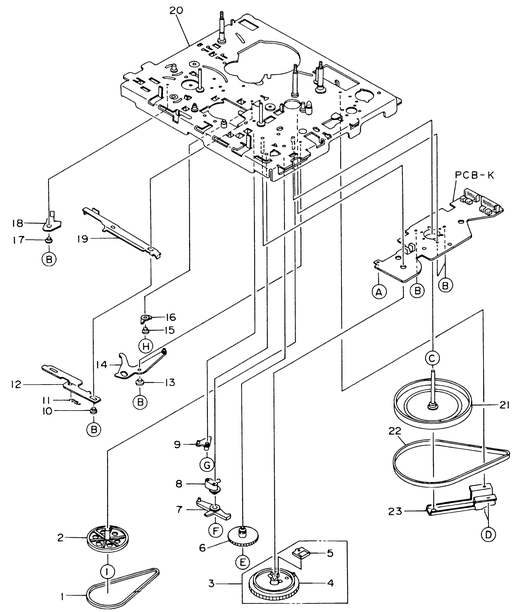


IC,LC8992



43

EXPLODED VIEW – 6

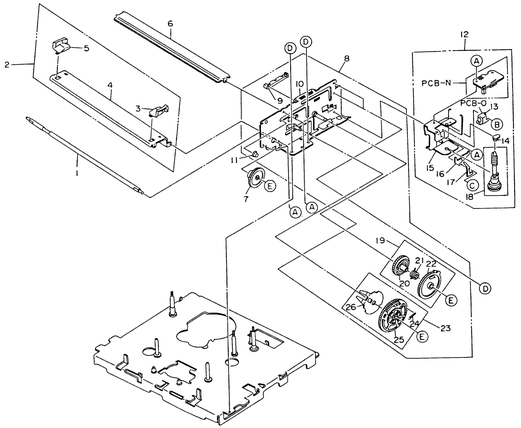


EXPLODED VIEW..(6) MECHANICAL PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
6-1	*9A02507400	LOADING BELT,	
6-2	*9A02507500	LOADING PULLEY	
6-3	*9A02507600	LOADING CAM ASSY,	
6-4	- - - - -	LOADING CAM	
6-5	- - - - -	S BRAUSH	
6-6	*9A02507700	LOADING GEAR,	
6-7	*9A02507800	EJECT ARM	
6-8	*9A02507900	BRAKE ACTUATE ARM	
6-9	*9A02508000	SEARCH ARM B	
6-10	*9A02508100	P SLIDER COLLAR	
6-11	*9A02508200	P-SPRING, SLIDER	
6-12	*9A02508300	P SLIDER	
6-13	*9A02508400	P CAM LEVER COLLAR	
6-14	*9A02508500	P CAM LEVER SEMI ASSY	
6-15	*9A02508600	P CRANK COLLAR	
6-16	*9A02508700	P CRANK	
6-17	*9A02499900	COLLAR	
6-18	*9A02508800	BT RETURN LEVER	
6-19	*9A02508900	BT CHANGE PLATE	
6-20	- - - - -	CHASSIS SEMI ASSY	
6-21	*9A02509000	FLYWHEEL CAPSTAN	
6-22	*9A03637400	MAIN BELT	
6-23	*9A02509200	FL ANGLE ASSY	
PCB-K	*9A02763500	BASE PCB ASSY (W/MODE SW)	
6-A	9A03642700	S TAPPING SCREW (CAMERA)	
6-B	9A03641500	C TAPPING SCREW 2.6X5	
6-C	9A03643600	R WASHER 3.1-6-0.5	
6-D	9A03641700	C TAPPING SCREW 3-5	
6-E	9A03643400	P WASHER CUT 2.1-5-0.5	
6-F	9A03644600	PWASHER CUT 2.6-8-0.5	
6-G	9A03643500	P WASHER CUT 2.6-6-0.5	
6-H	9A03645100	C TAPPING FH SCREW,(CAMERA)	
6-I	9A03643000	P WASHER CUT 1.6-3.8-0.3	

Parts marked with * require longer delivery time

EXPLODED VIEW – 7



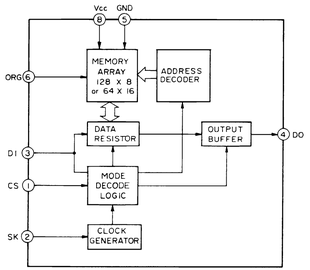
EXPLODED VIEW,.(7) MECHANICAL PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION
7-1==18-35	*9A03639900	FRONT LOADING ASSY
7-1	*9A02509500	SYNCHRONIZE SHAFT
7-2	- - - - -	FRONT ANGLE ASSY
7-3	*9A02509600	TAPE GUIDE R
7-4	*9A02509700	FRONT ANGLE
7-5	*9A02509800	TAPE GUIDE L
7-6	*9A02509900	UPPER PLATE
7-7	*9A02510000	SYNCHRONIZE GEAR A
7-8	*9A02510100	FRAME R ASSY
7-9	- - - - -	OPEN LEVER GUIDE
7-10	- - - - -	FRAME (R) SEMI ASSY
7-11	- - - - -	GUIDE SLEEVE
7-12	*9A02510200	C LOAD BRACKET ASSY
7-13	- - - - -	SENSOR PCB RM ASSY
7-14	- - - - -	F WORM BEARING (A)
7-15	- - - - -	C ROAD BRACKET SEMI ASSY
7-16	- - - - -	IN SW LEVER
7-17	- - - - -	S SW LEVER
7-18	*9A02510300	F.LOADING CLUTCH ASSY
7-19	*9A02510400	WORM WHEEL ASSY
7-20	- - - - -	FRICTION GEAR
7-21	- - - - -	FRICTION SPRING
7-22	- - - - -	WORM WHEEL
7-23	*9A02510500	LIFT GEAR R ASSY
7-24	- - - - -	LP SPRING
7-25	- - - - -	LIFT GEAR (R)
7-26	- - - - -	LIFT ARM
PCB-N	*9A02763800	SW PCB ASSY (W/SW1,2,3)
PCB-O	*9A02763900	SENSOR PCB RM ASSY
7-A	9A03640900	TAMS SCREW 2.6-4
7-B	9A03640800	TAMS SCREW 2-5
7-C	9A03643000	P WASHER CUT 1.6-3.8-0.3
7-D	9A03641500	C TAPPING SCREW 2.6X5
7-E	9A03642300	E RING S2.5

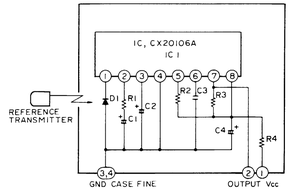
Parts marked with * require longer delivery time

IC BLOCK DIAGRAM

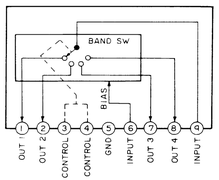
IC,MSM16811



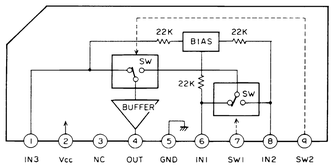
IC,SBX1610



IC,LA7910



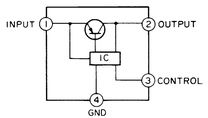
IC,LVA522S



CONTROL INPUT
TRUTH TABLE

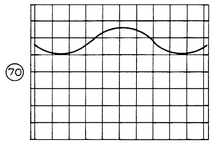
SW1	SW2	OUT
L	L	IN1
H	L	IN2
H	H	IN3

IC,PQ09R05

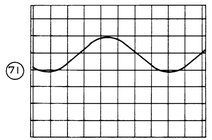


WAVE FORM – 2 (AUDIO WAVE FORM)

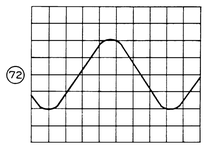
T701 pin ①
5V/div.
2 μs/div.



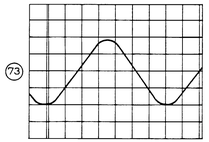
T701 pin ③
10V/div.
2 μs/div.



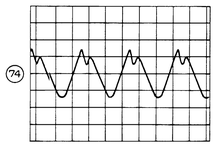
T701 pin ⑤
10V/div.
2 μs/div.



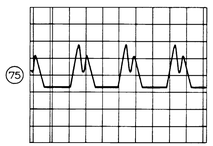
T701 pin ⑥
20V/div.
2 μs/div.



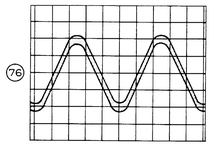
Q701 BASE
1V/div.
5 μs/div.



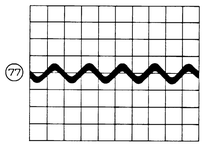
Q701 emitter
500mV/div.
5 μs/div.



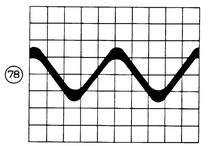
IC701 pins ⑦ and ⑧
20mV/div.
200 μs/div.



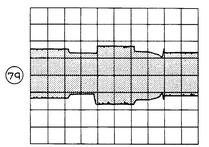
- The wave form shown in the illustration on the below is at pin ⑪ of IC701.
- IC701 pins ⑭ to ⑰ are 900mVp – p.
- The specification of the EE level is – 8.5 ± 1dBs when a 1kHz – 10dBs signal is input.
  20mV/div.
  500 μs/div.



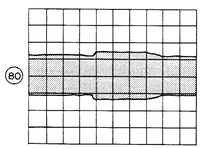
- The wave form shown in the illustration on the below is at pins ㉒ and ㉓ of IC701.
- IC701 pin ㉕ is 1.53Vp – p.
  50mV/div.
  200 μs/div.



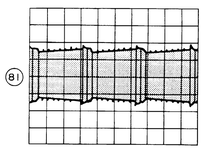
PIN602 pin ① (PB)
5ms/div.
100mV/div.



PIN602 pin ⑦ (PB)
5ms/div.
200mV/div.

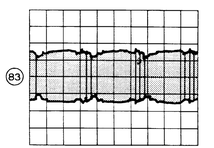


PIN602 pin ⑤ (REC)
20 μs/div.
100mV/div.

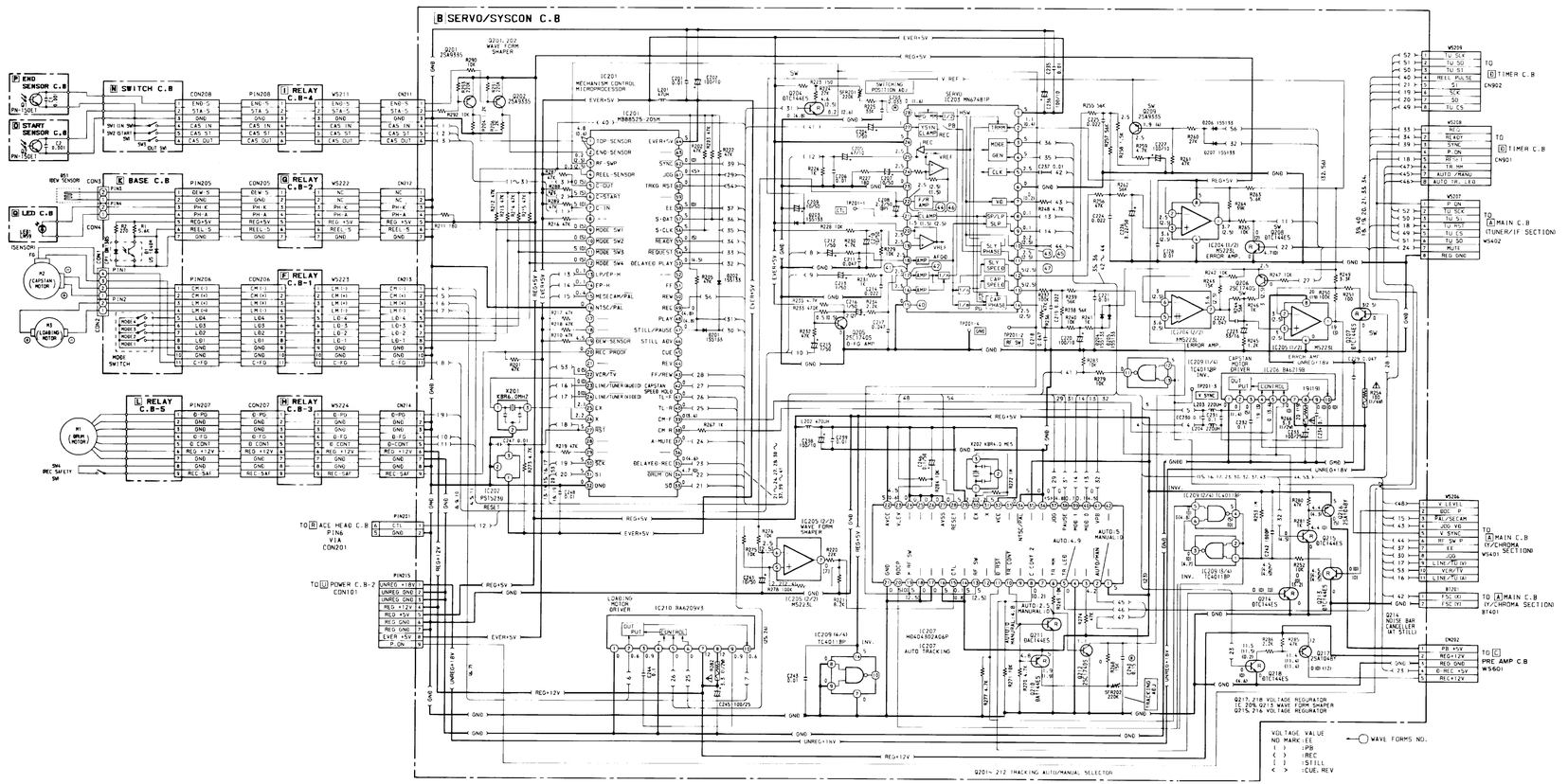


PIN602 pin ③ (REC)
20 μs/div.
20mV/div.

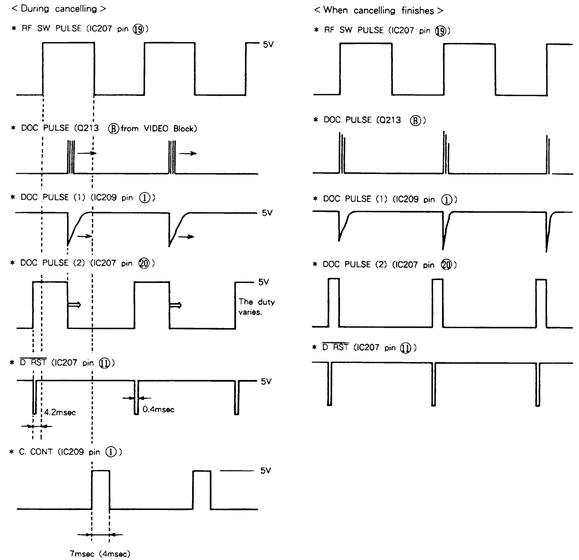
IC810 pin ⑱ (REC)
20 μs/div.
50mV/div.



SCHEMATIC DIAGRAM – 2 (AUDIO SECTION)



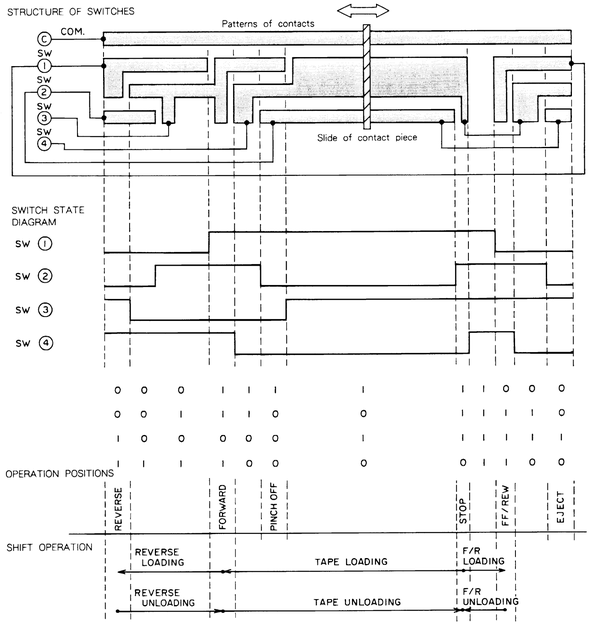
NOISE CANCELLER TIMING CHART



※ This is a wave form when a noise bar is moved by slightly turning the capstan motor gradually using the C. CONT pulse.

SYSTEM SWITCH MODE

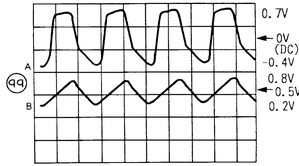
※When SYSTEM CONTROL IC has run away
SYSTEM CONTROL IC will not accept any mode.



SWITCH				Position
SW1	SW2	SW3	SW4	
0	0	1	0	Front loading, Eject
0	1	1	0	Intermediate
0	1	1	1	F.F, REW
1	1	1	1	Intermediate
1	1	1	0	Stop
1	0	1	0	Tape loading
1	0	0	0	Gear change
1	1	0	0	Intermediate
1	1	0	1	Play (Pause)
0	1	0	1	Intermediate
0	0	0	1	Intermediate
0	0	1	1	Reset

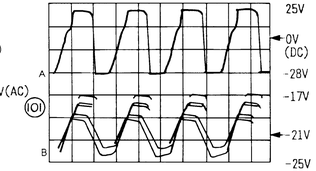
・Q301 BASE SIDE (99 -A)
0.5V/div.
2 μs/div.

・Q302 BASE SIDE (99 -B)
0.5V/div.
2 μs/div.



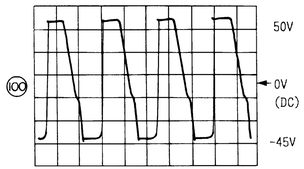
・T301 pin 8 (101 -A)
20V/div.
2 μs/div.

・T301 pin 9 (101 -B)
2V/div.
2 μs/div.

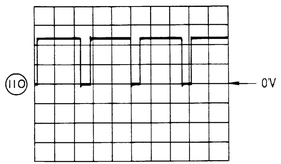


TIMER WAVE FORM

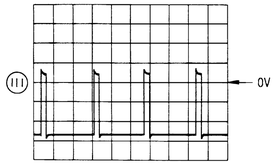
・D303 ANODE SIDE
20V/div.
2 μs/div.



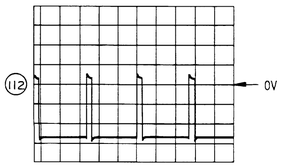
Q901 DTC144E Base
2ms/div.
2V/div.



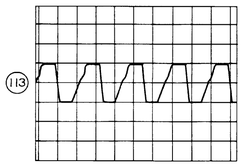
Anode voltage
IC901 pin 58 : S9
2ms/div.
10V/div.



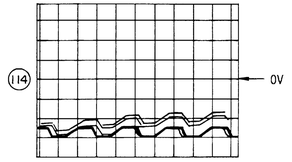
Grid voltage
IC901 pin 40 : TO
2ms/div.
10V/div.



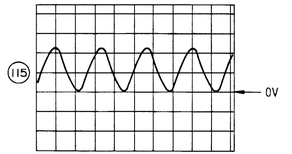
Filament voltage
CON902 pin 5 : AC 4V
AC range
2 μs/div.
5V/div.



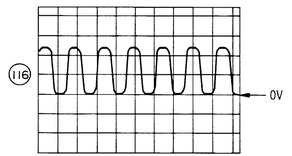
Filament voltage
CON902 pin 5 : AC 4V
DC range
2 μs/div.
10V/div.



Main clock
IC901 pin 31 : x
4.19MHz
100ns/div.
2V/div.

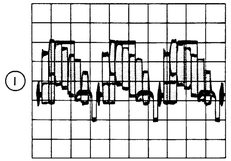


Sub-clock
IC901 pin 34 : XT
32.768kHz
20 μs/div.
2V/div.

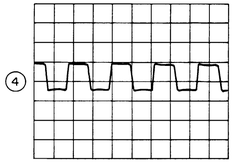


WAVE FORM－5 (VIDEO WAVE FORM)

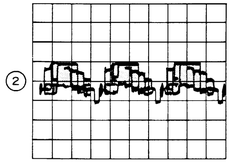
IC411 pin 21 (PB)
20 μs/div.
500mV/div.
LINE OUT 75Ω TERMINATE



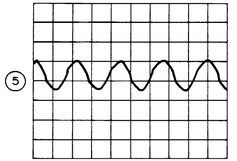
IC461 pin 18 (PB)
100ns/div.
500mV/div.



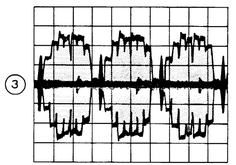
LINE OUT
20 μs/div.
500mV/div.
LINE OUT 75Ω TERMINATE



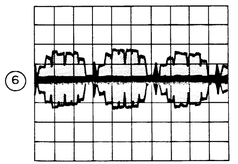
IC461 pin 19 (PB)
100ns/div.
500mV/div.



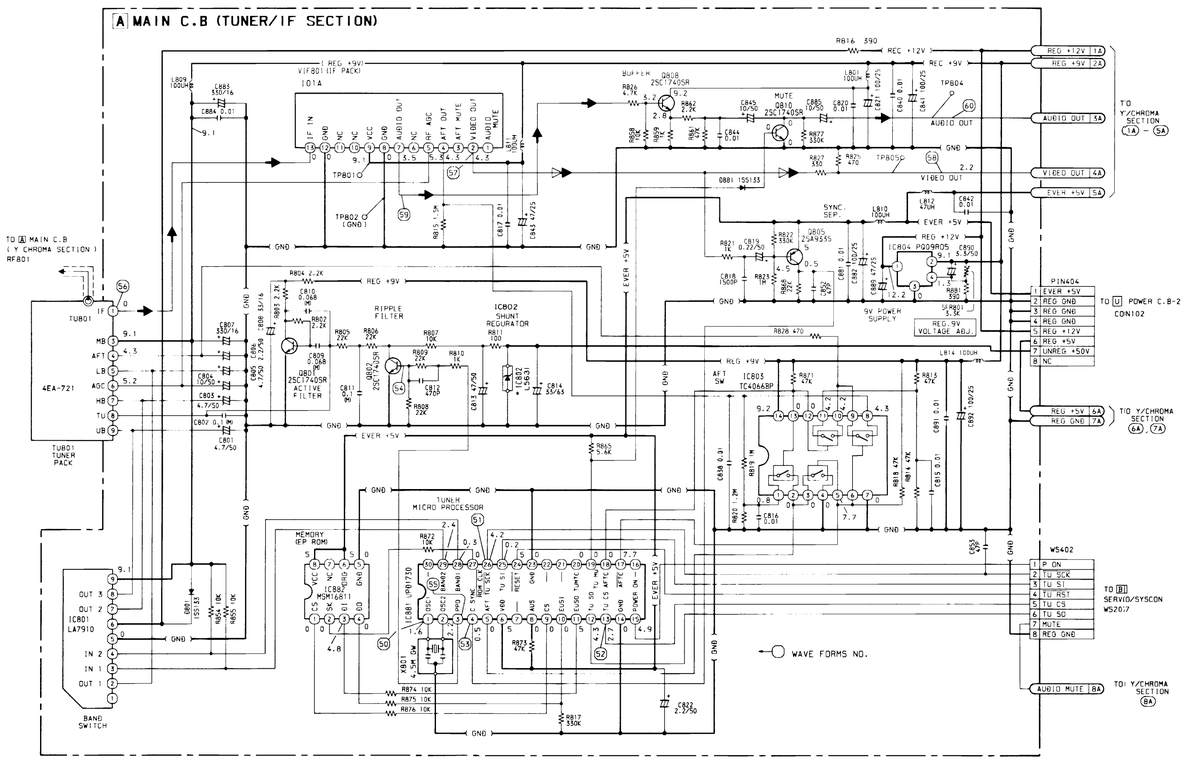
IC411 pin 19 (PB)
20 μs/div.
50mV/div.



IC461 pin 5 (PB)
20 μs/div.
500mV/div.

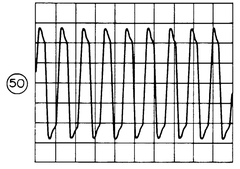


SCHEMATIC DIAGRAM – 3 (TUNER SECTION)

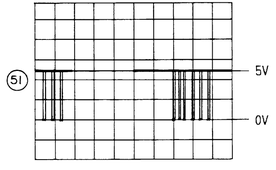


WAVE FORM – 3 (TUNER WAVE FORM)

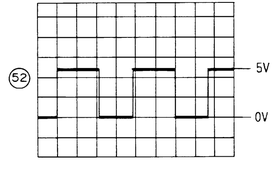
IC881 pin (1)
Oscillated by the microprocessor.
1V/div.
200ns/div.



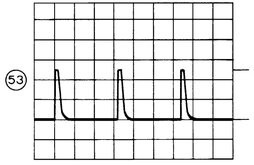
IC881 pin (20)
Clock of microprocessor.
2V/div.
20ms/div.



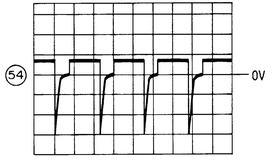
IC881 pin (13)
Microprocessor chip select.
2V/div.
20ms/div.



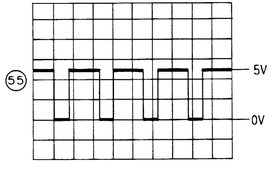
IC881 pin (4)
H. sync
2V/div.
20 µs/div.



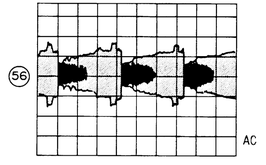
Q802 base
1V/div.
50 µs/div.



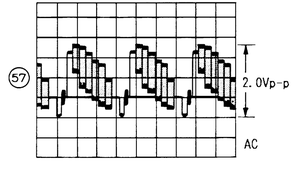
IC881 pin (3)
Pulse for generating a tuning voltage.
The pulse width varies for different channels.
2V/div.
50 µs/div.



TU801 pin (1)
IF signal
P : Color bar signal
50ms/div.
20 µs/div.

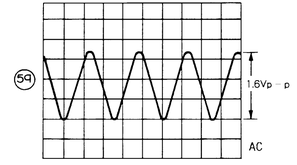


VIF801 pin (2)
VIDEO OUT
500mV/div.
20 µs/div.

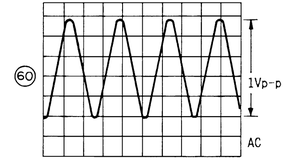


TP805
TU VIDEO OUT 75Ω TERMINATE
500mV/div.
20 µs/div.

VIF801 pin (7)
TU AUDIO OUT
When modulated
at 400Hz and 50kHz.
500mV/div.
1ms/div.

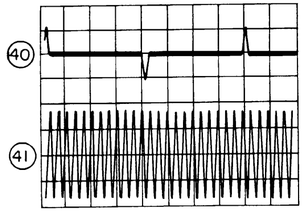


TP804
TU AUDIO OUT
When modulated
at 400Hz and 50kHz.
200mV/div.
1ms/div.

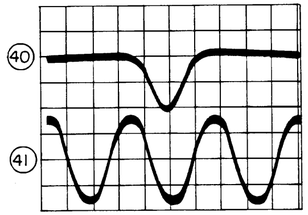


WAVE FORM – 1 (SERVO WAVE FORM)

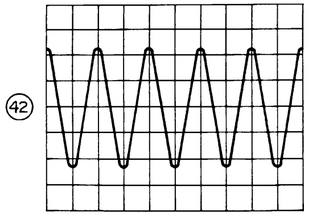
1. DRUM PG AND FG
   Lower : DRUM PG AC 0.1V/div.
   (IC203 pin ⑯)
   Lower : DRUM FG AC 50mV/div.
   (IC203 pin ⑰)
   Time 5ms/div.



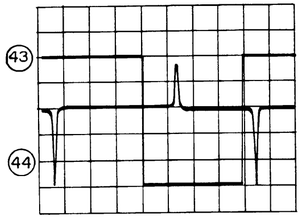
2. DRUM PG AND FG
   Enlargement of 1
   The PG pulse (upper) is generated (either positive or negative) when the FG pulse (lower) is a negative half wave.



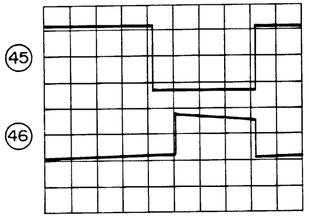
3. CAPSTAN FG (IC203 pin ⑱)
   AC 0.1V/div.
   Time 1ms/div/



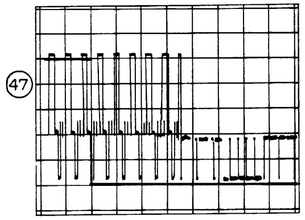
4. RF SW PULSE AND CTL (PB MODE)
   RF SW PULSE DC 1V/div. (IC203 pin ⑩)
   CTL AC 0.5V/div. (IC203 pin ㉒)
   Time 5ms/div.
   The CTL pulse (negative) is 2.3 ± 0.3ms from the leading edge of the RF SW pulse.

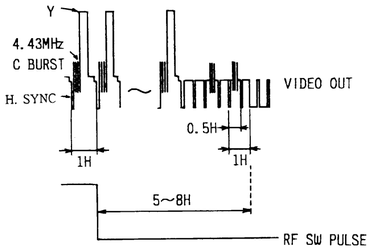


5. RF SW PULSE AND CTL (REC MODE)
   Upper : RF SW PULSE DC 2V/div.
   (IC203 pin ⑩)
   Lower : CTL AC 2V/div.
   (IC203 pin ㉒)
   Time 5ms/div.

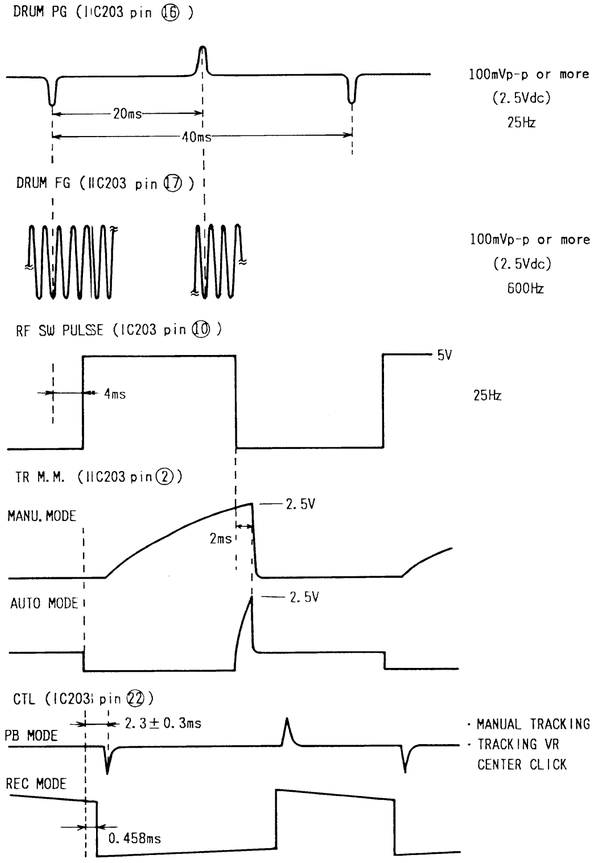


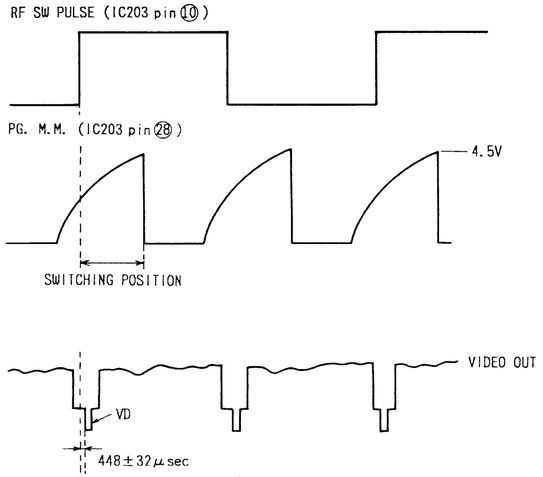
6. RF SW PULSE AND VIDEO OUT
   RF SW PULSE DC 1V/div. (IC203 pin ⑩)
   Video out (OPEN) AC 0.5V/div.
   Time 0.1ms/div.
   The RF SW pulse rises of falls 5~8H (320~512 μs) before the VD (vertical sync) signal in the video signal.



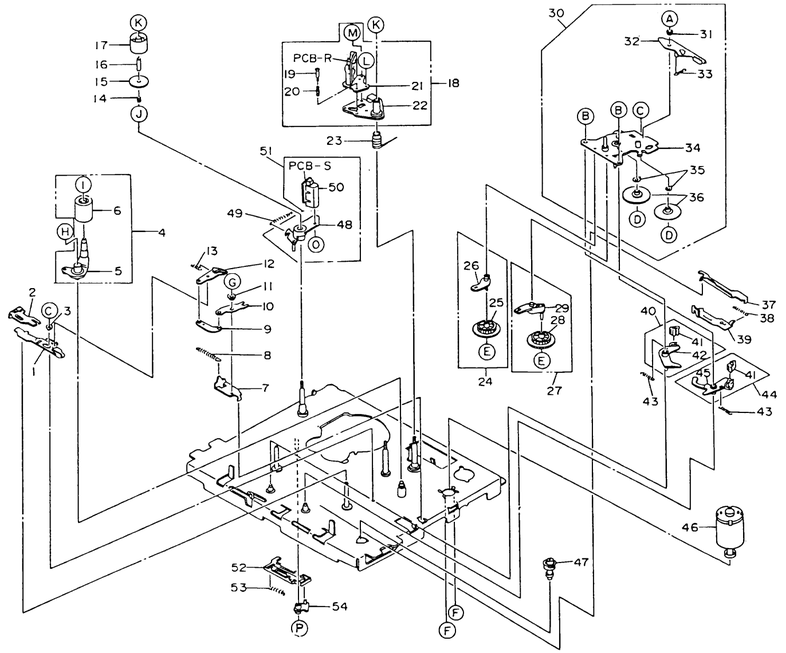


DRUM SERVO SYSTEM TIMING CHART





EXPODED VIEW – 4



EXPLODED VIEW..(4) MECHANICAL PARTS LIST

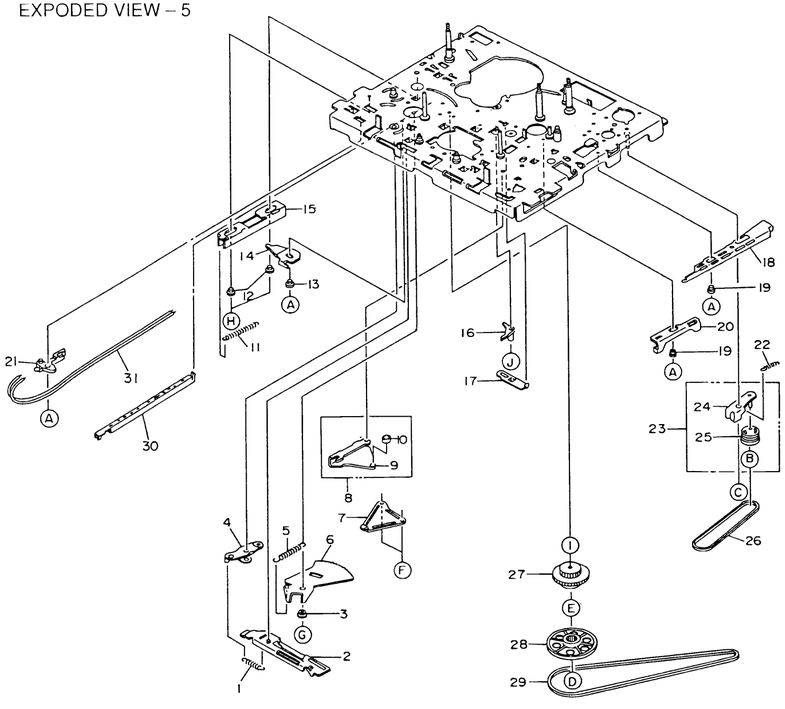
REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
4-1	*9A02499700	P SLIDE PLATE A	
4-2	*9A02499800	P SLIDE PLATE B	
4-3	*9A02499900	COLLAR	
4-4	*9A02500000	ARM ASSY,P.ROLLER	
4-5	*9A02500100	SEMI ARM ASSY,P.R.	
4-6	*9A02500200	PINCH ROLLER A,	
4-7	*9A02500300	P ANGLE HOLDER	
4-8	*9A02500400	P-SPRING, ROLLER	
4-9	*9A02500500	JOINT PLATE	
4-10	*9A02500600	P ACTUATE ANGLE	
4-11	*9A02499900	COLLAR	
4-12	*9A02500700	P ACTUATE ARM	
4-13	*9A02500800	P-SPRING, ACTUATE ARM	
4-14	*9A02500900	TAPE GUIDE FLANGE SPRING	
4-15	*9A02501000	TAPE GUIDE FLANGE A	
4-16	*9A02501100	IMPEDANCE ROLLER SLEEVE	
4-17	*9A02501200	IMPEDANCE ROLLER	
4-18	*9A02501300	HEAD BASE ASSY	
4-19	- - - - -	AZIMUTH SPG SCREW	
4-20	- - - - -	AZIMUTH SPRING	

EXPLODED VIEW..(4) MECHANICAL PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
4-21	*9A02501400	ACE HEAD,HV225211	
4-22	- - - - -	HEAD BASE SEMI ASSY	
4-23	- - - - -	HEAD SPRING	
4-24	*9A02501500	P GEAR ASSY	
4-25	*9A02501600	PLAY GEAR	
4-26	*9A02501700	P GEAR ARM ASSY	
4-27	*9A02501800	RF GEAR ASSY	
4-28	*9A02501900	FF GEAR	
4-29	*9A02502000	RF GEAR ARM ASSY	
4-30	*9A02502100	SUB PLATE ASSY	
4-31	*9A02502200	T SOFT BRAKE ARM COLLAR	
4-32	*9A02502300	T SOFT BRAKE ASSY	
4-33	*9A02502400	T-SPRING, SOFT BRAKE ARM	
4-34	- - - - -	SUB PLATE SEMI ASSY	
4-35	*9A02502500	WASHER, WAVE	
4-36	*9A02502600	REEL DRIVE GEAR	
4-37	*9A02502700	BRAKE LIFTER	
4-38	*9A02502800	L BRAKE ACTUATOR SPRING	
4-39	*9A02502900	L BRAKE ACTUATOR	
4-40	*9A02503000	S BRAKE ARM ASSY	
4-41	*9A02503100	BRAKE SHOE,	
4-42	*9A02503200	S BRAKE ARM	
4-43	*9A02503300	BRAKE ARM SPRING	
4-44	*9A02503400	T BRAKE ARM ASSY	
4-45	*9A02503500	T BRAKE ARM	
4-46	*9A02503600	LM ASSY	
4-47	*9A02503700	TRIGGER BEARING ASSY	
4-48	- - - - -	FE PLATE	
4-49	*9A02503800	FE PLATE SPRING	
4-50	*9A02503900	FE HEAD HVFMD 0006	
4-51	*9A02504000	FE PLATE ASSY	
4-52	*9A02504100	FE SLIDE PLATE	
4-53	*9A02504200	FE ACTUATE SPRING	
4-54	*9A02504300	FE ACTUATE LEVER	
PCB-R	- - - - -	ACE HEAD PCB ASSY	
PCB-S	- - - - -	ERACE HEAD PCB ASSY	
4-A	9A03644400	SL FH SCREW (CAMERA) 2-3	
4-B	9A03640700	TAMS SCREW 2-4	
4-C	9A03641500	C TAPPING SCREW 2.6X5	
4-D	9A03642200	E RING S1.5	
4-E	9A03643000	P WASHER CUT 1.6-3.8-0.3	
4-F	9A03641200	TAMS SCREW 3-4	
4-G	9A03640900	TAMS SCREW 2.6-4	
4-H	9A03644700	P WASHER CUT 5-8-0.5	
4-I	9A03640500	SCREW 2.6-4	
4-J	9A03642000	PLATE WASHER 3-8-0.5	
4-K	9A03643800	NYLON NUT M3	
4-L	9A03645200	SCREW 3-6 (SHAPE TYPE)	
4-M	9A03642800	LONG LOCK SCREW 2.6-7	
4-O	9A03641300	FLANGE BIND SCREW 2-3	
4-P	9A03643400	P WASHER CUT 2.1-5-0.5	

Parts marked with * regulre longer delivery tlme

EXPODED VIEW – 5



EXPLODED VIEW..(5) MECHANICAL PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION	REF. NO.	PARTS NO.	DESCRIPTION
5-1	*9A02504900	LOADING ACTUATOR SPRING	5-21	*9A03634900	LEAF SW, MCV-00321MVDO
5-2	*9A02505000	LOADING ACTUATOR SEMI ASSY	5-22	*9A02506400	IDLER ARM SPRING
5-3	*9A02505100	L GEAR PLATE COLLAR	5-23	*9A02506500	E.IDLER ARM ASSY
5-4	*9A02505200	LOAD.ACTUA.LEVER SEMI ASSY	5-24	- - - - -	F IDLER ARM SEMI ASSY
5-5	*9A02505300	L GEAR PLATE SPRING	5-25	- - - - -	EJECT PULLEY
5-6	*9A02505400	L GEAR PLATE	5-26	*9A02506600	FL BELT
5-7	*9A02505500	LOAD.LEVER REINFORCE PLATE	5-27	*9A02506700	CLUTCH ASSY,
5-8	*9A02505600	LOADING LEVER ASSY	5-28	*9A02506800	MIDDLE PULLEY ASSY
5-9	- - - - -	LOADING LEVER SEMI ASSY	5-29	*9A02506900	DRIVE BELT,
5-10	- - - - -	CAM ROLLER	5-30	- - - - -	WIRE
5-11	*9A02505700	BACK TENSION SPRING	5-31	- - - - -	WIRE HOLDER
5-12	*9A02505800	BT ACTUATE PLATE COLLAR	5-A	9A03641500	C TAPPING SCREW 2.6X5
5-13	*9A02499900	COLLAR	5-B	9A03643000	P WASHER CUT 1.6-3.8-0.3
5-14	*9A02505900	BT ACTUATE LEVER	5-C	9A03643400	P WASHER CUT 2.1-5-0.5
5-15	*9A02512100	BT ACTUATE PLATE	5-D	9A03643500	P WASHER CUT 2.6-6-0.5
5-16	*9A02506000	RG ACTUATE ARM	5-E	9A03645000	NYLON WASHER 2.98-6-0.3
5-17	*9A02506100	RG ACTUATE	5-F	9A03640800	TAMS SCREW 2-5
5-18	*9A02506200	L BRAKE PLATE	5-G	9A03641800	C TAPPING SCREW 3-6
5-19	*9A02499900	COLLAR	5-H	9A03643200	S TAPPING SCREW (CAMERA)
5-20	*9A02506300	EJECT ACTUATOR	5-I	9A03643300	NYLON WASHER 3.1-6-0.3

Parts marked with * regulre longer delivery tlme