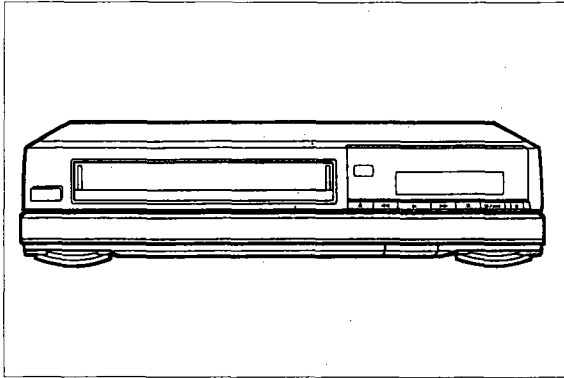


TEAC®



SERVICE MANUAL

MV-317

Video Cassette Recorder



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.

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Specifications

Recording/playback system	Video: Rotary 2 heads helical scan system Audio: Fixed head	Video input	0.5 – 2.0 Vp-p, 75 ohms unbalanced
Video signal	PAL B/G 625 lines, 50 field	Video output	1.0 Vp-p, 75 ohms unbalanced
Recording/playback time	4 hours max. with E-240 tape, standard speed	Horizontal resolution	240 lines (nominal)
Fast forward/rewind time	Less than 300 sec., with E-180 tape	Video S/N (luminance)	43 dB (nominal)
Tape speed	Standard speed, 23.39 mm/sec.	Audio input	-10 dBs (nominal)
Tape width	12.65 mm	Audio output	-8 dBs, 2.2 k ohms
Usable cassette	VHS video cassette	Audio frequency response	200 Hz – 8 kHz
Timer display	24-hour cycle, day, hour, minute, digital fluorescent display	Audio S/N	41 dB (nominal)
Timer recording	7 programs within 2 weeks 1 program for weekly recording	Operating temperature	5°C – 40°C
Channel coverage	Band L (VHF low) 0 – 5 H (VHF high) 5A – 11 U (UHF) 21 – 69	Power requirements	240V AC, 50 Hz
RF output	Low (0) High (1)	Power consumption	26 watts
RF output level	74 dB	Dimensions	380 (W) x 96 (H) x 325 (D) mm
		Weight	Approx. 5.5 kg
		Accessories	Remote control unit (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

Ref. No.	DECK Parts Name	Periodic Service Schedule			
		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.

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.

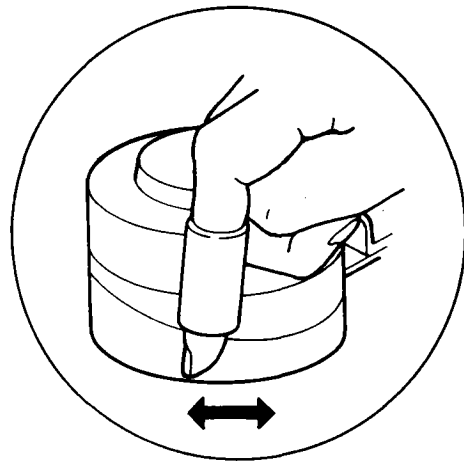


Fig.-1

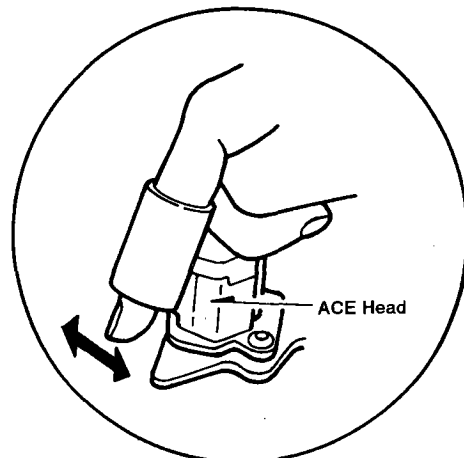


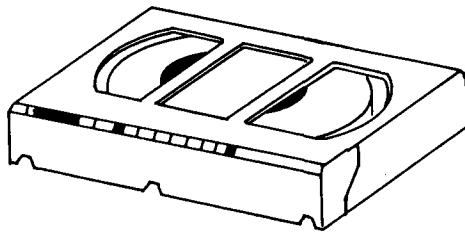
Fig.-2

SERVICE JIG AND TOOLS

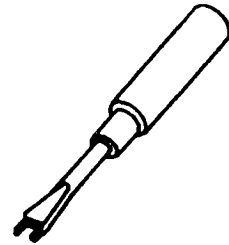
1. SERVICE JIG AND TOOLS

Ref. No.	Name	Adjustment
J-1	Torque Meter (FSJ-VHT-063)	Back Tension
J-2	Special Driver (SMALL)	Tape Running Position, Envelope 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)

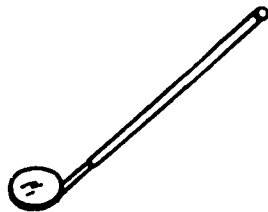
J-1, J-5, J-6



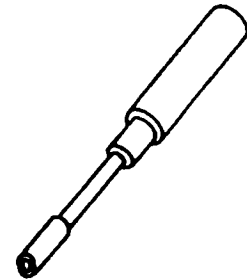
J-2, J-3



J-4



J-7



2. HOW TO ASSEMBLE THE JIGS

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

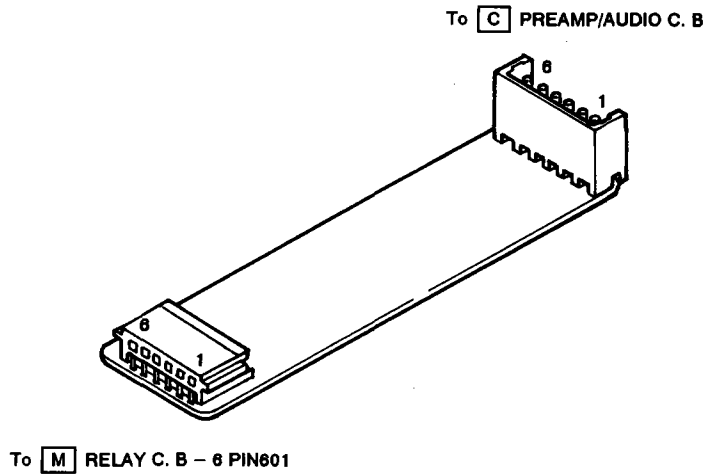


Fig.-1

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)

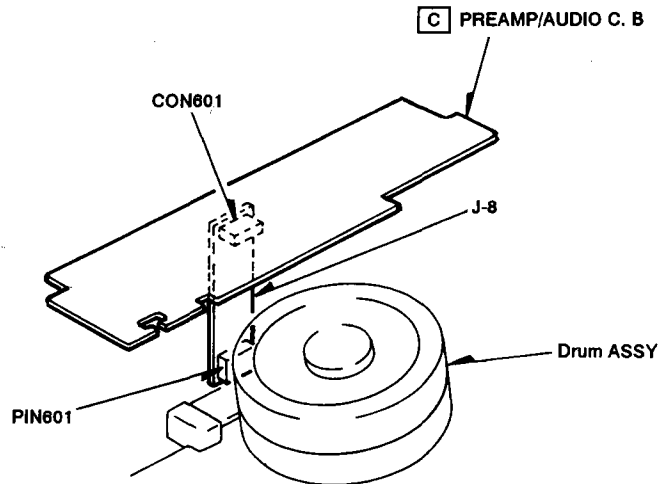


Fig.-1

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

DISASSEMBLY INSTRUCTIONS

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

- 1) Remove 4 screws (A) holding the "Cabinet, Steel".
- 2) Remove 8 screws (B) holding the "Plate, Bottom".
- 3) Releases 7 hooks to remove the "Cabinet Front ASSY" in the direction of the arrow.

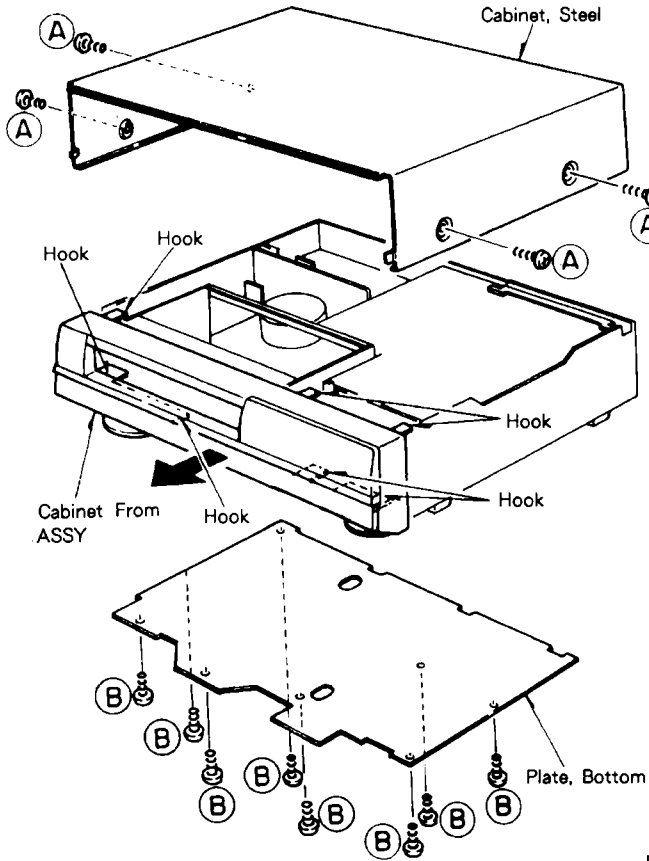


Fig-1

3. "Mechanism ASSY" Removal (See Figure - 3)

- 1) Remove screw (A) and disconnect the connector to remove the "Preamp/Audio C. B" in the direction of the arrow.
- 2) Remove 3 screws (B) holding the "Mechanism ASSY".

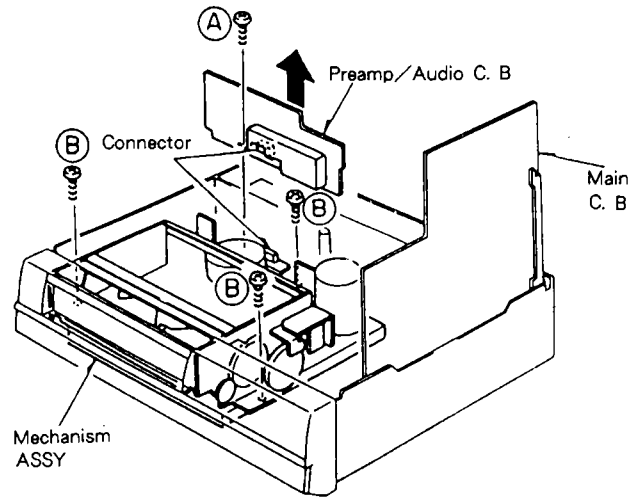


Fig-3

2. "Power Unit ASSY" and "Main C. B." Removal

(See Figure - 2)

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

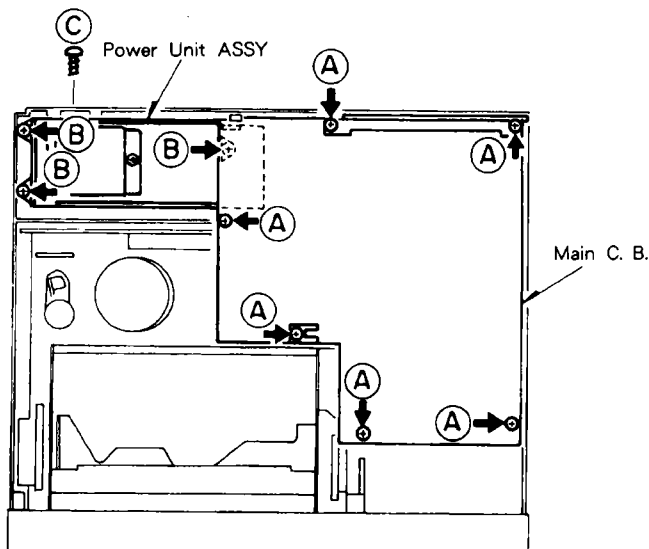


Fig-2

4. "Front Loading ASSY" Removal (See Figure - 4)

- 1) Remove "Main Belt".
- 2) Remove 4 screws (A).
- 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 (B).
- 2) Take off the "Cassette Load Bracket ASSY".

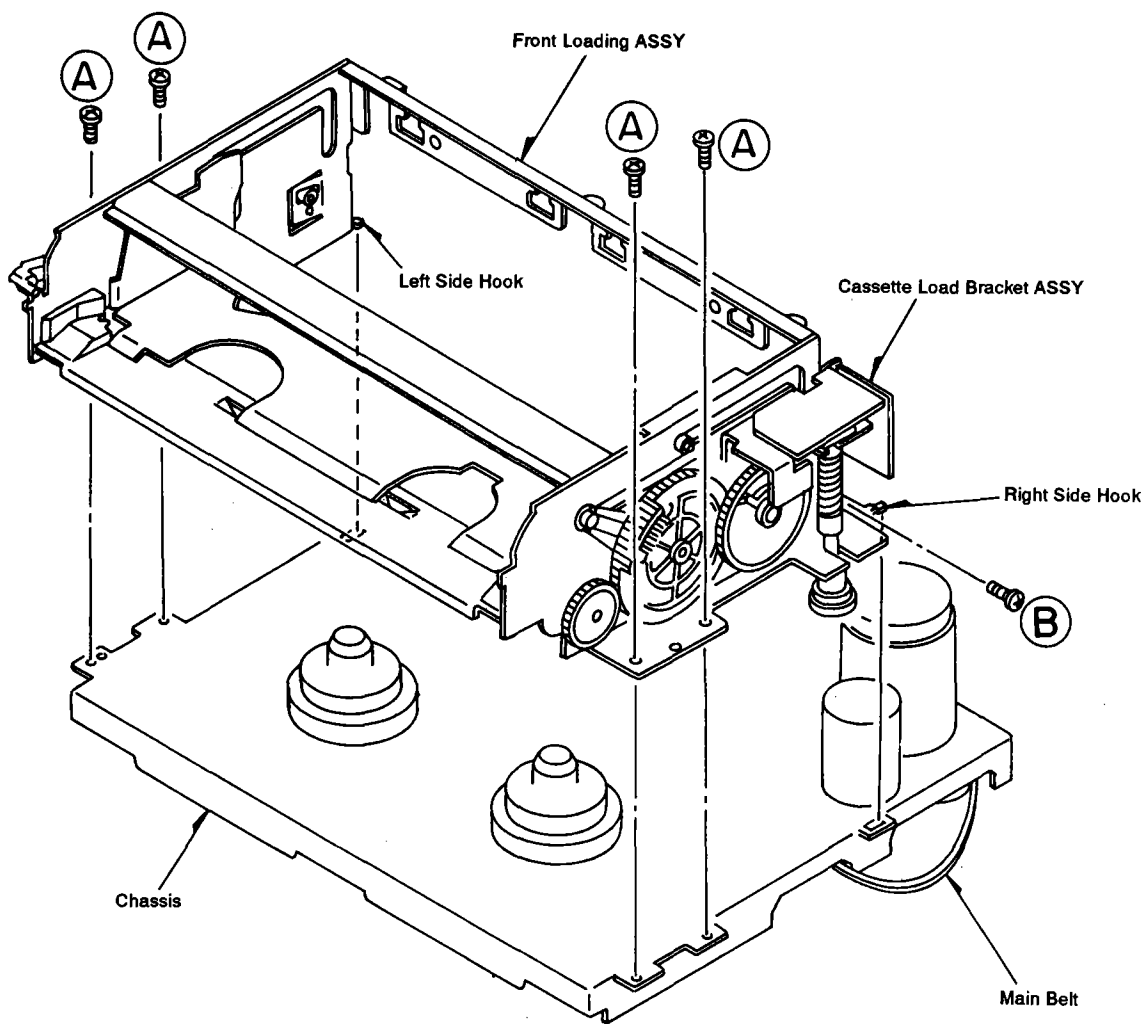


Fig.-4

6. "Photo Sensor ASSY" Removal (See Figure - 5)

1. "Lamp Holder ASSY" Removal

1) Remove 1 screw (A) 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 "End Sensor C. B" Removal

1) Remove 1 screw (B) and take off the "Switch C. B".

2) Remove 1 screw (C) and take off the "Sensor Guide".

3) Remove 1 screw (D) and take off the "End Sensor C. B".

3. "Sensor Guide" and "Start Sensor C. B" Removal

1) Remove 1 screw (E) and take off the "Sensor Guide".

2) Remove 1 screw (F) and take off the "Start Sensor C. B".

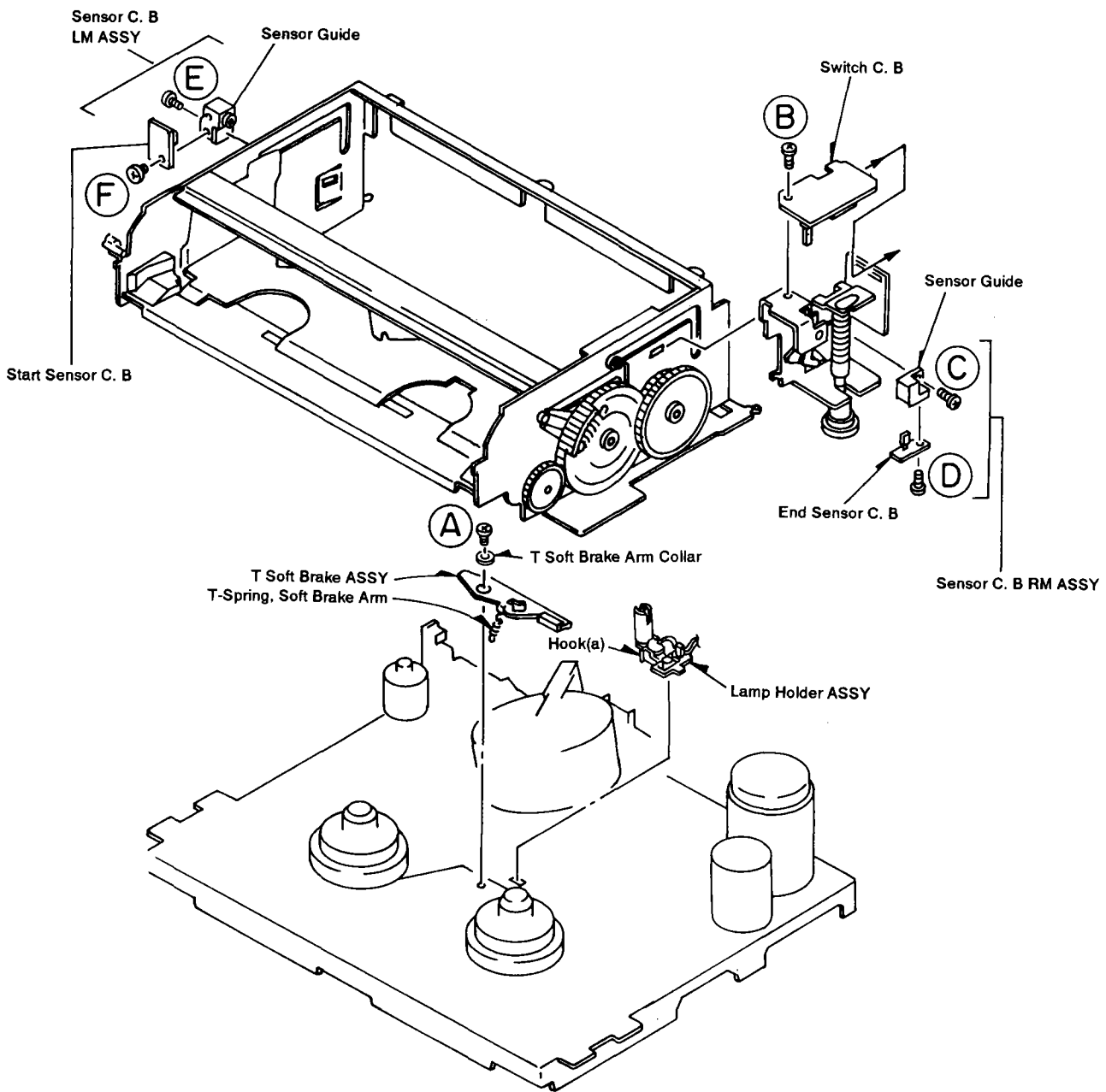


Fig.-5

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

1. "FE Plate" Removal

1) Remove Nut (A).

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 (B) and take off the "Full Erase Head".

2. "ACE Head" Removal

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

2) Remove "ACE Head".

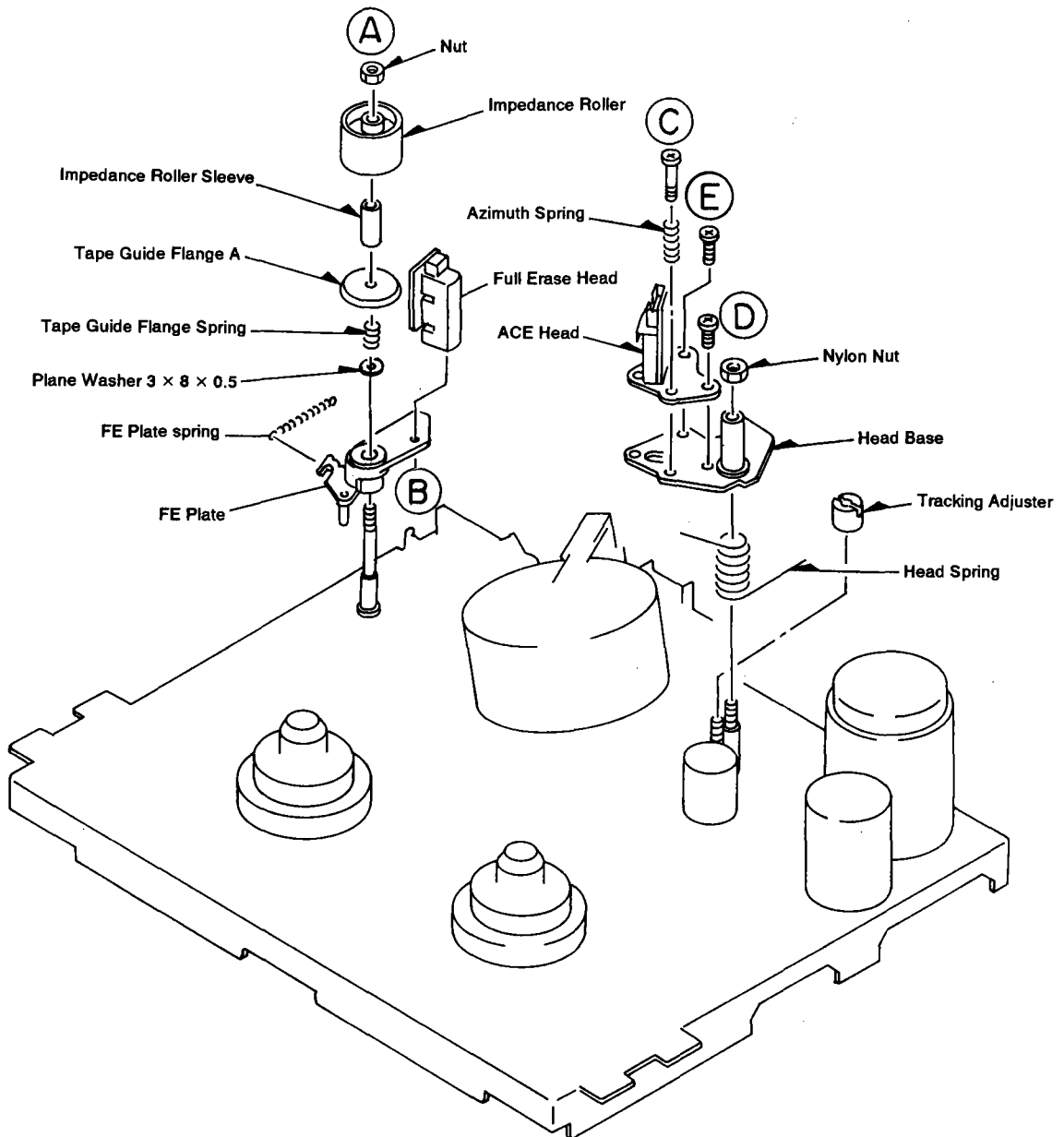


Fig.-6

8. "Gear Holder 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 (A) and take off the "Clutch ASSY".
- 5) Remove 1 screw (B) and 2 screws (C) and take off the "Gear Holder ASSY".
- 6) Remove 1 screw (D) and take off the "T - Spring, Soft Brake Arm".
- 7) Take off the "T Soft Brake ASSY".
- 8) Remove 2 "E - Rings (E)" and take off the 2 "Reel Drive Gear".

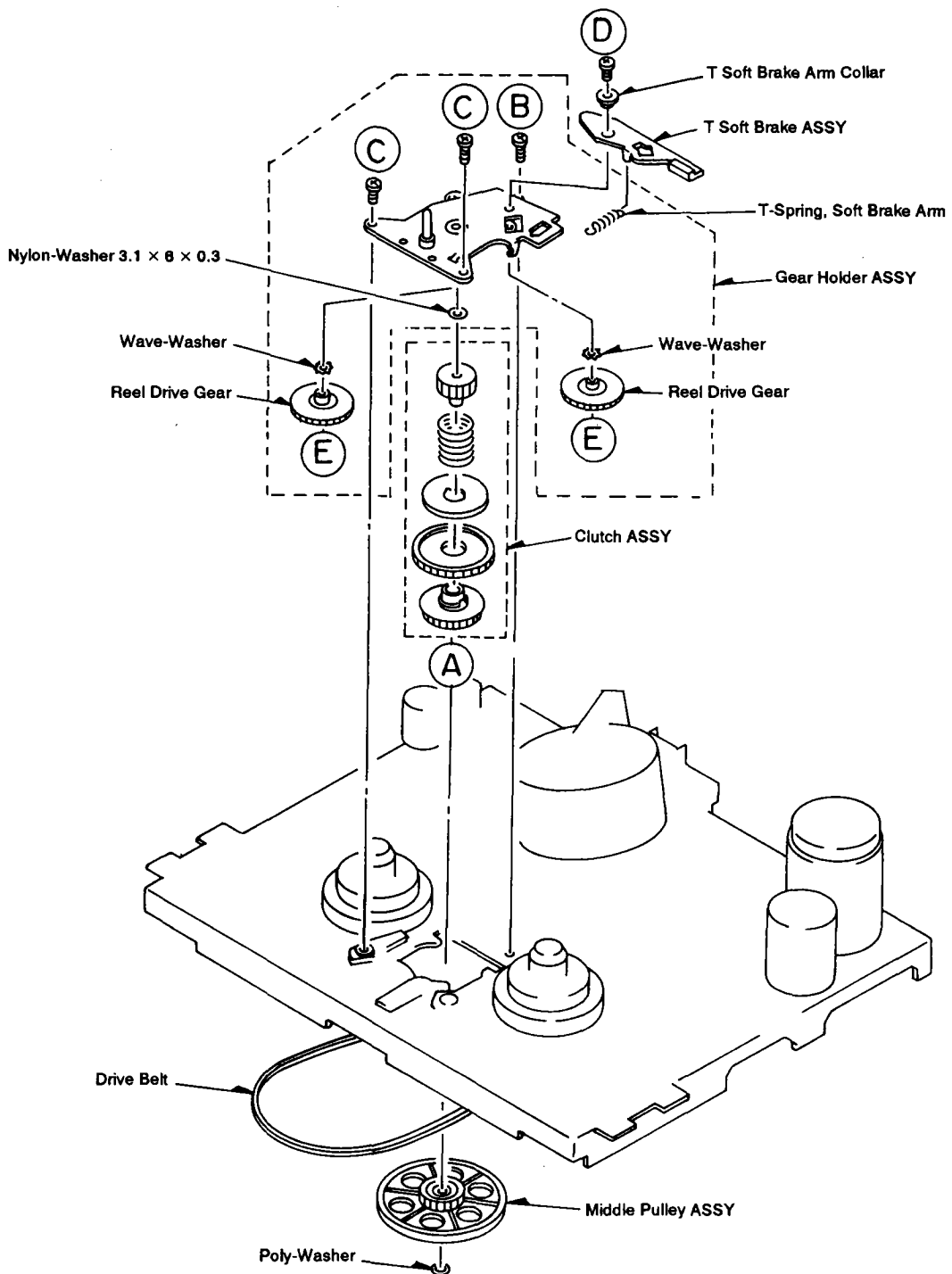


Fig.-7

9. "BT Band ASSY" And "BT Arm Semi ASSY" Removal (See Figure - 8)

- 1) Remove the "Front Loading ASSY".
- 2) Remove Poly - Washer (A) and "BT Actuate Plate Spring" from the "BT Arm Semi ASSY".
- 3) Remove 1 screw (B) and "Band Holder Spring".
- 4) Take off the "BT Band ASSY" from the "BT Arm Semi ASSY".

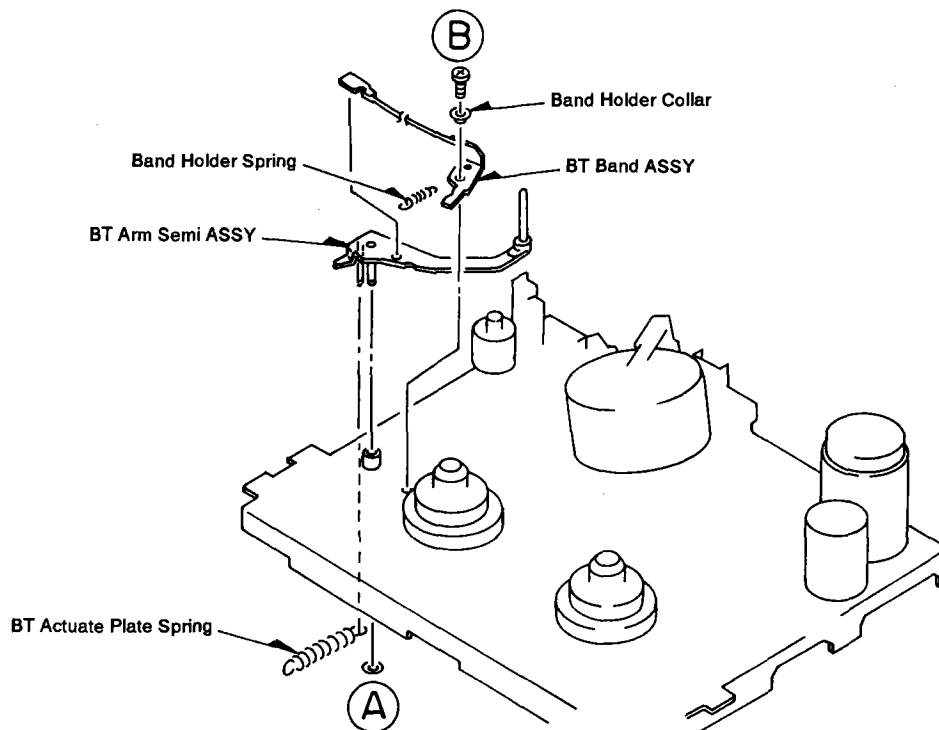


Fig.-8

10. "Reel ASSY" Removal (See Figure - 9)

- 1) Remove the "Front Loading ASSY", "Gear Holder ASSY" and "BT Band ASSY".
- 2) Remove 1 screw (A) and the "Back Tension Support".
- 3) Remove the 2 "Reel ASSY".

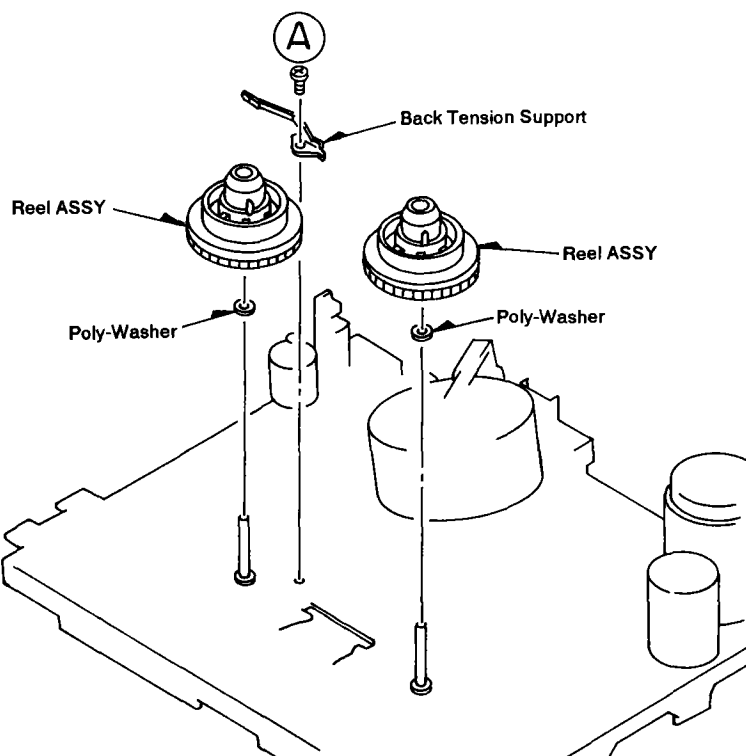


Fig.-9

11. "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 (A) and take off the "Drum Earth".
- 4) Remove 3 screws (B) and take off the "Cylinder ASSY".

= Remarks =

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

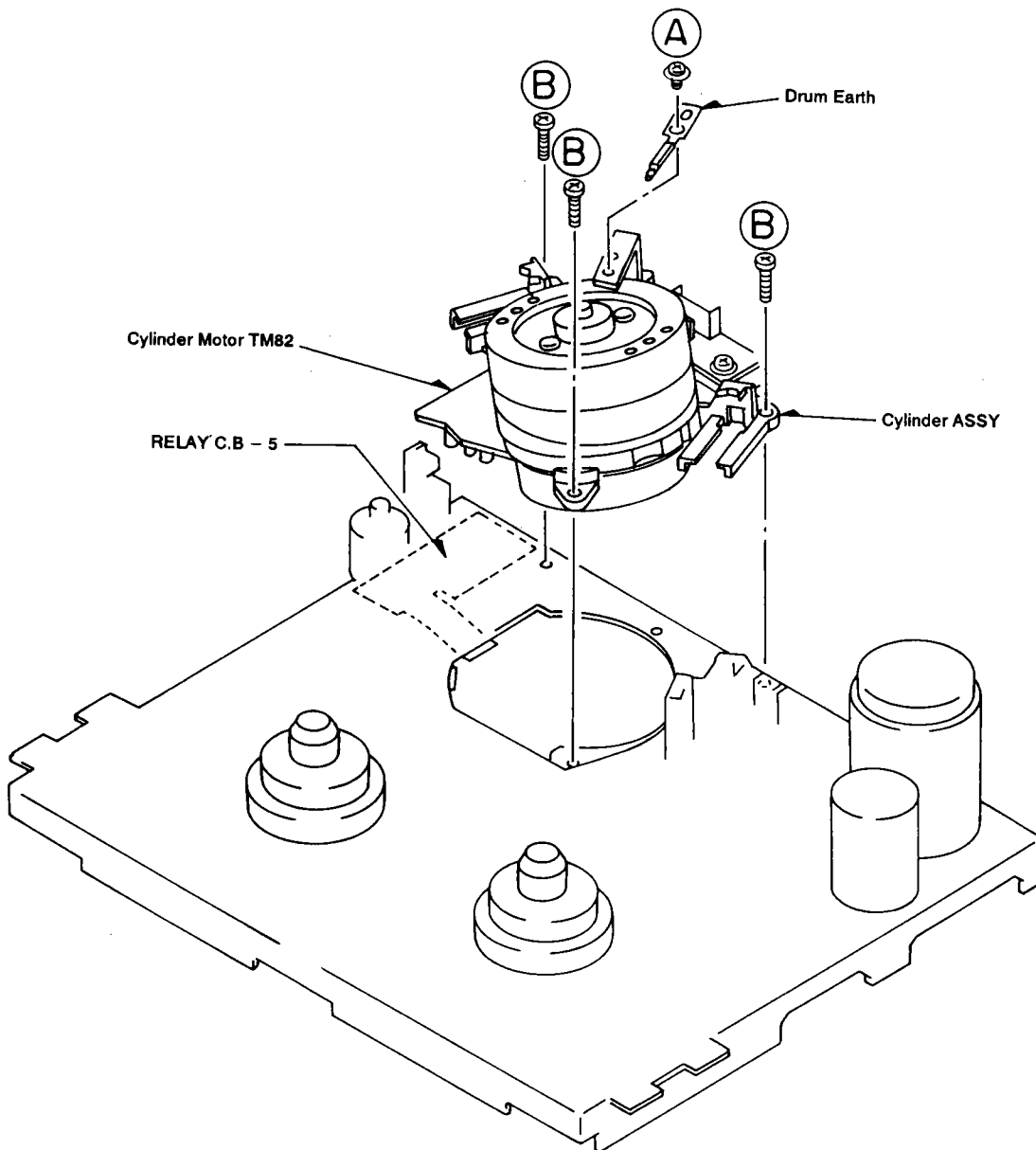


Fig.-10

12. "Upper Drum" Removal (See Figure - 11)

- 1) Remove the "Front Loading ASSY".
- 2) Remove 1 screw (A) and take off the "Drum Earth Bracket".
- 3) Remove 2 screws (B) and take off the "Upper Drum".

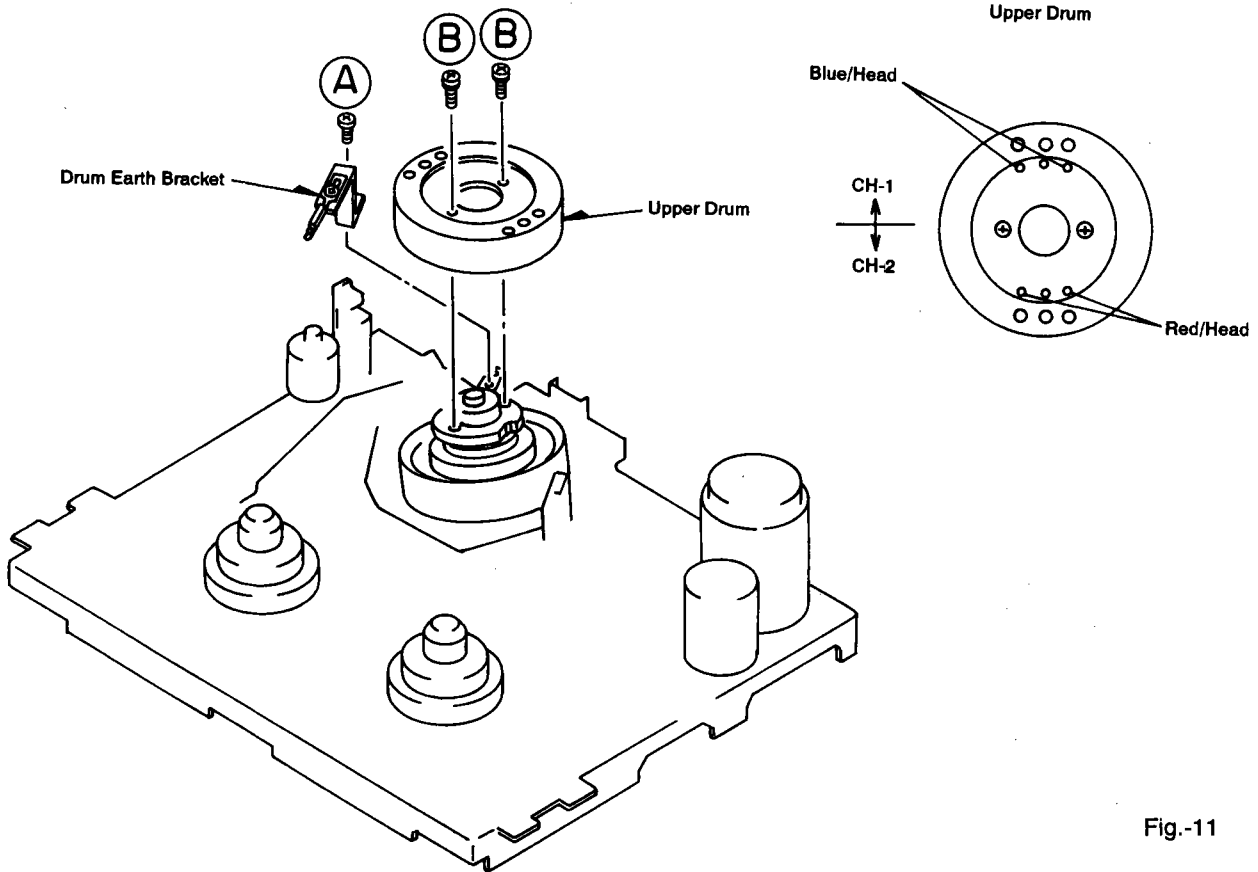


Fig.-11

= 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 (C), Lower Drum point (D) and Rotor point (E) These Point (C), (D), (E) must line up each other. Otherwise it will creates problem. (See Figure - 11 - 1)

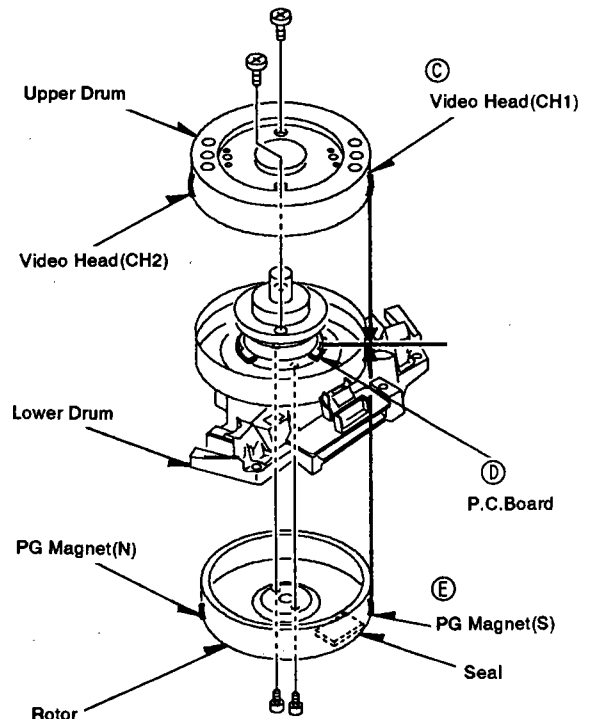


Fig.-11-1

13. "Cylinder Motor" Removal (See Figure - 12)

- 1) Pull out the "RELAY C. B - 5" from the "Cylinder Motor TM82".
- 2) Remove 2 screws (A) and take off the "Cylinder Motor TM82".
- 3) Remove 3 screws (B) and take off the "Cylinder Motor TM82".

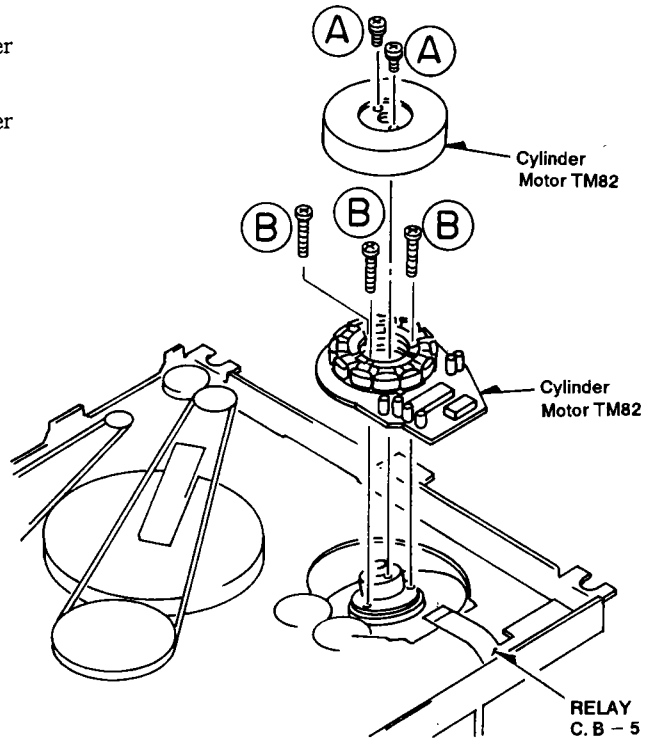
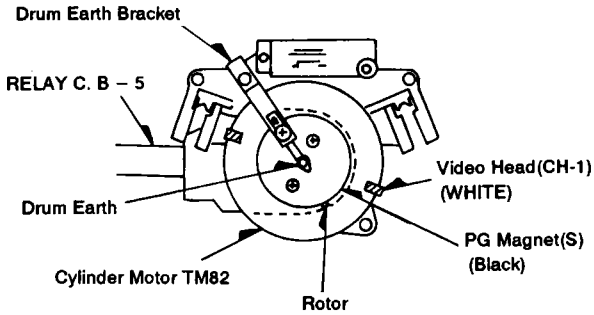


Fig.-12

14. "Capstan Motor ASSY" and "Loading Motor ASSY" Removal (See Figure - 13)

1. "Capstan Motor ASSY" Removal

- 1) Take off the "Drive Belt" and "Main Belt".
- 2) Remove 2 screws (A) and take off the "Capstan Motor ASSY".

2. "Loading Motor ASSY" Removal

- 1) Take off the "FI Belt".
- 2) Remove 2 screws (B) and take off the "Loading Motor ASSY".

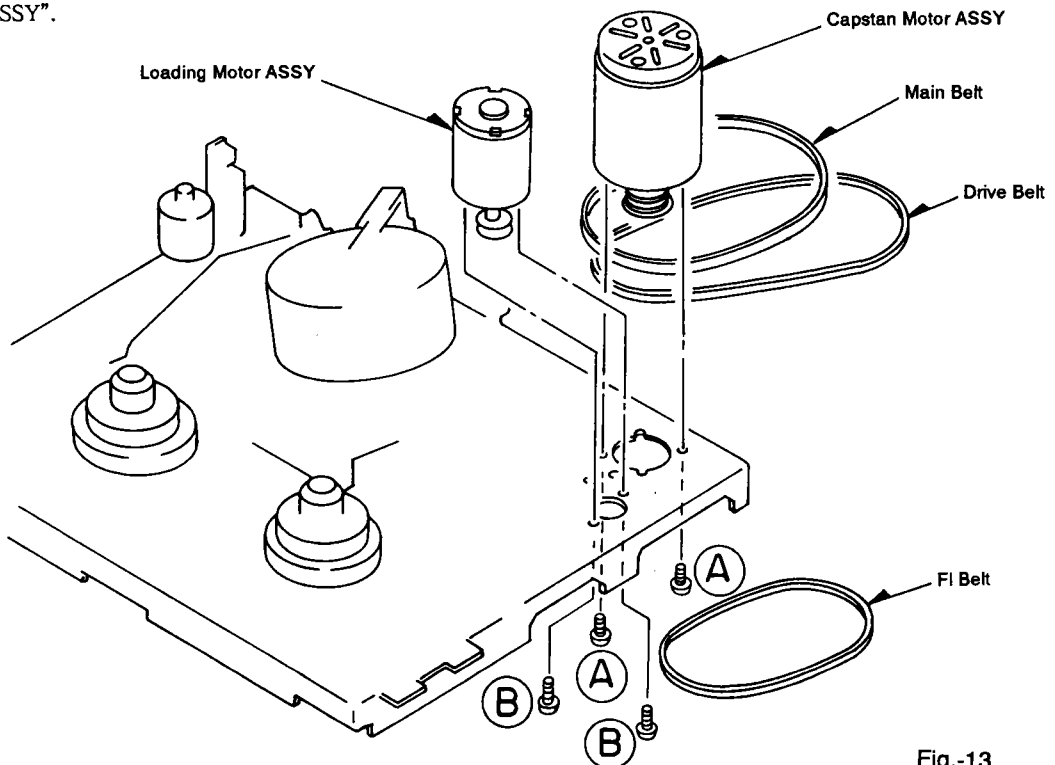
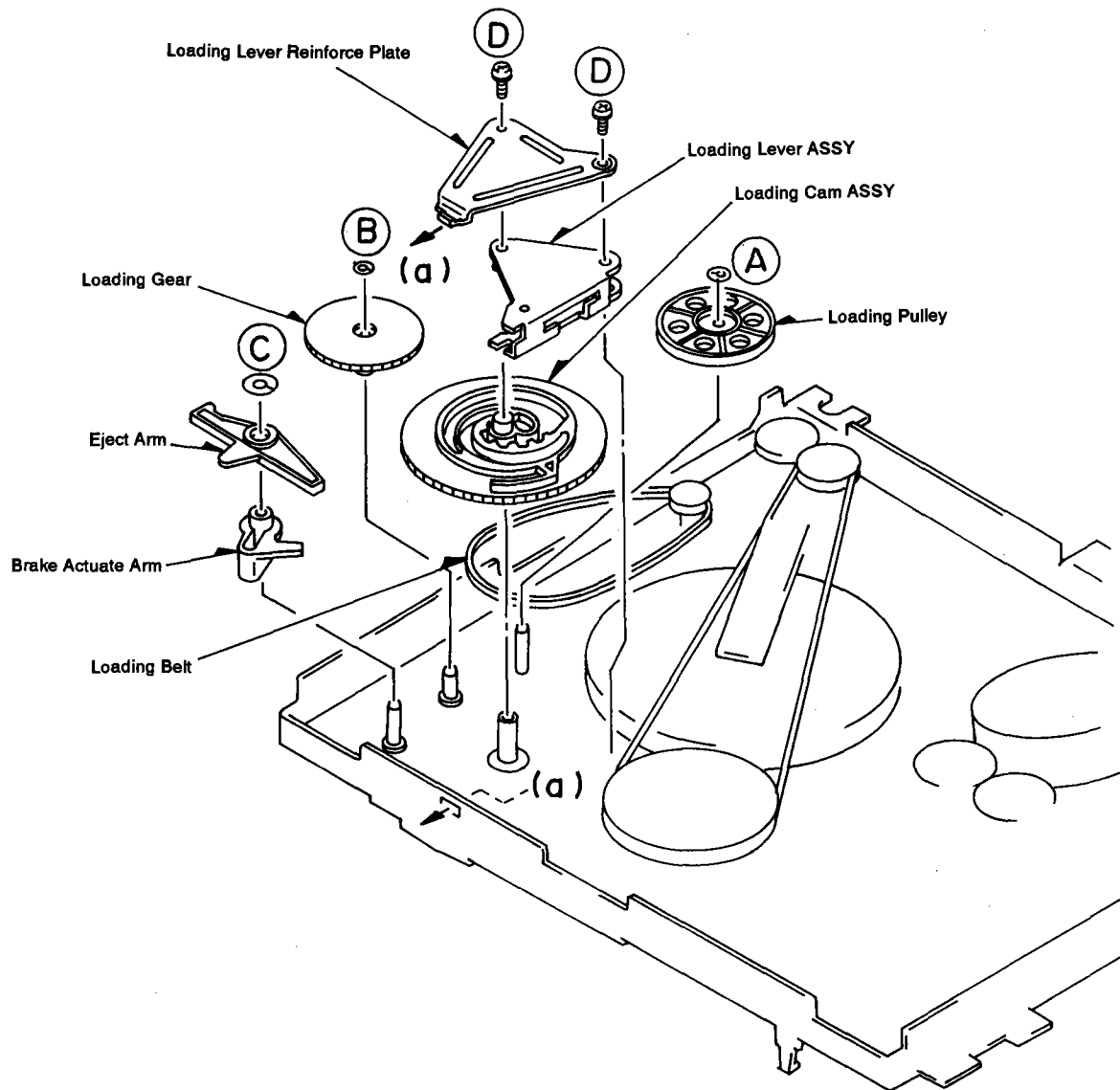


Fig.-13

15. "Loading Gear" and "Loading Cam ASSY" Removal (See Figure - 14)

- 1) Take off the "Loading Belt" from the "Loading Pulley".
- 2) Remove Poly - Washer (A) and take off the "Loading Pulley".
- 3) Remove Poly - Washer (B) and take off the "Loading Gear".
- 4) Remove Poly - Washer (C) and take off the "Eject Arm" and the "Brake Actuate Arm".
- 5) Remove 2 screws (D), and take off the "Loading Lever Reinforce Plate" and the "Loading Lever ASSY".
- 6) Take off the "Loading Cam ASSY".



16. "Flywheel Capstan" Removal (See Figure - 15)

- 1) Remove the Nylon - Washer (A).
- 2) Take off the "Drive Belt" and "Main Belt".
- 3) Remove 2 screws (B) and take off the "FL Angle ASSY".
- 4) Take off the "Flywheel Capstan".

≡ Remark ≡

Do not miss the Poly - Washer (C) when pulling out the "Flywheel Capstan".

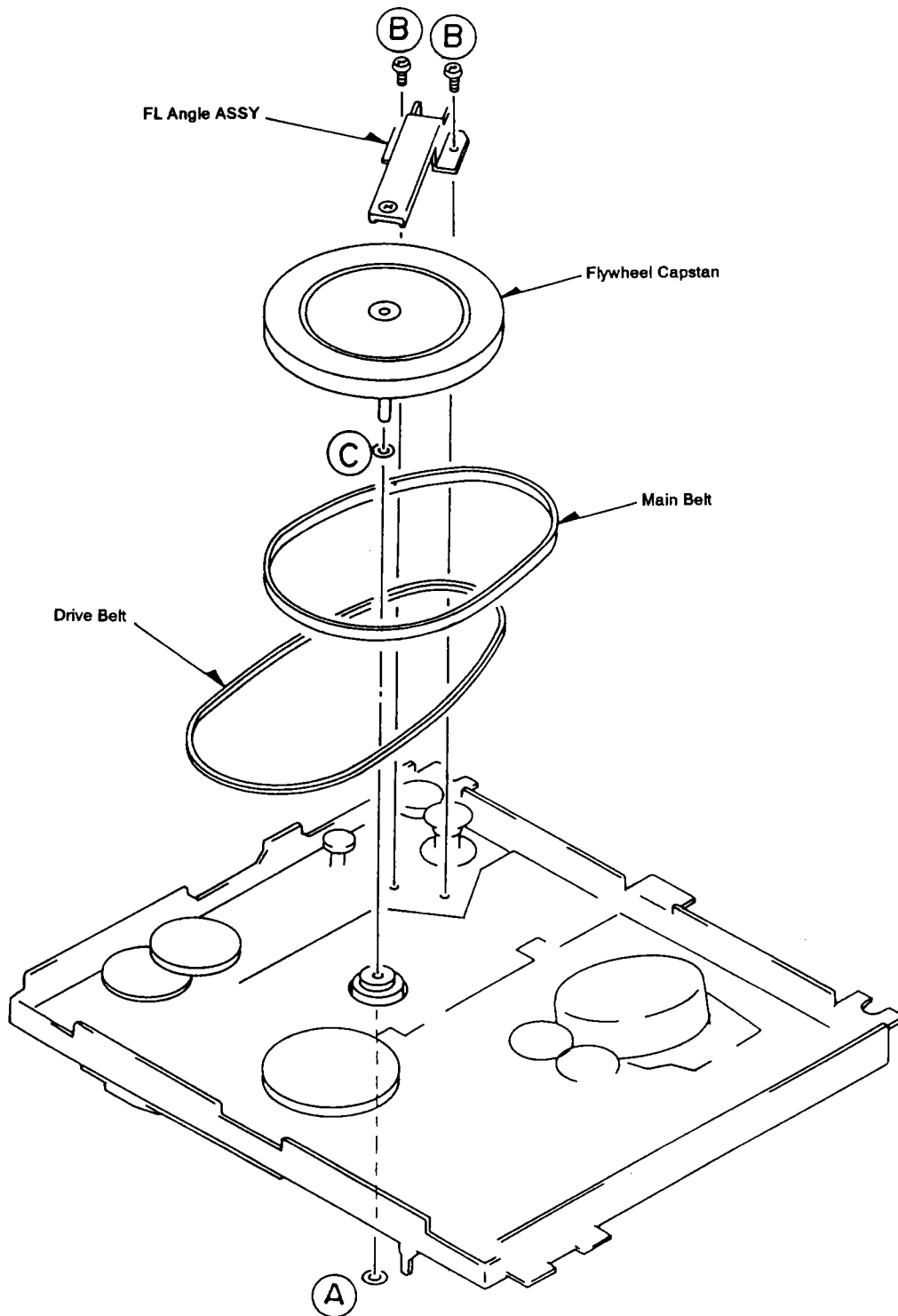


Fig.-15

17. "Reel Sensor" Removal (See Figure - 16)

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

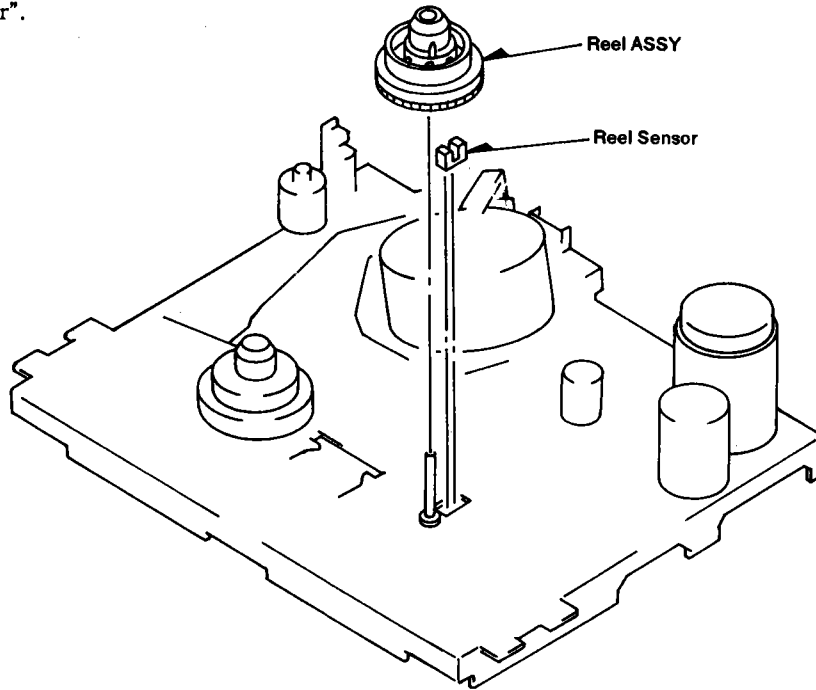


Fig.-16

18. "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 (A) and "L Gear Plate Collar", "L Gear Plate".
- 3) Remove 2 screws (B).
- 4) Take off the "Loading Base Semi ASSY".

= Remark =

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

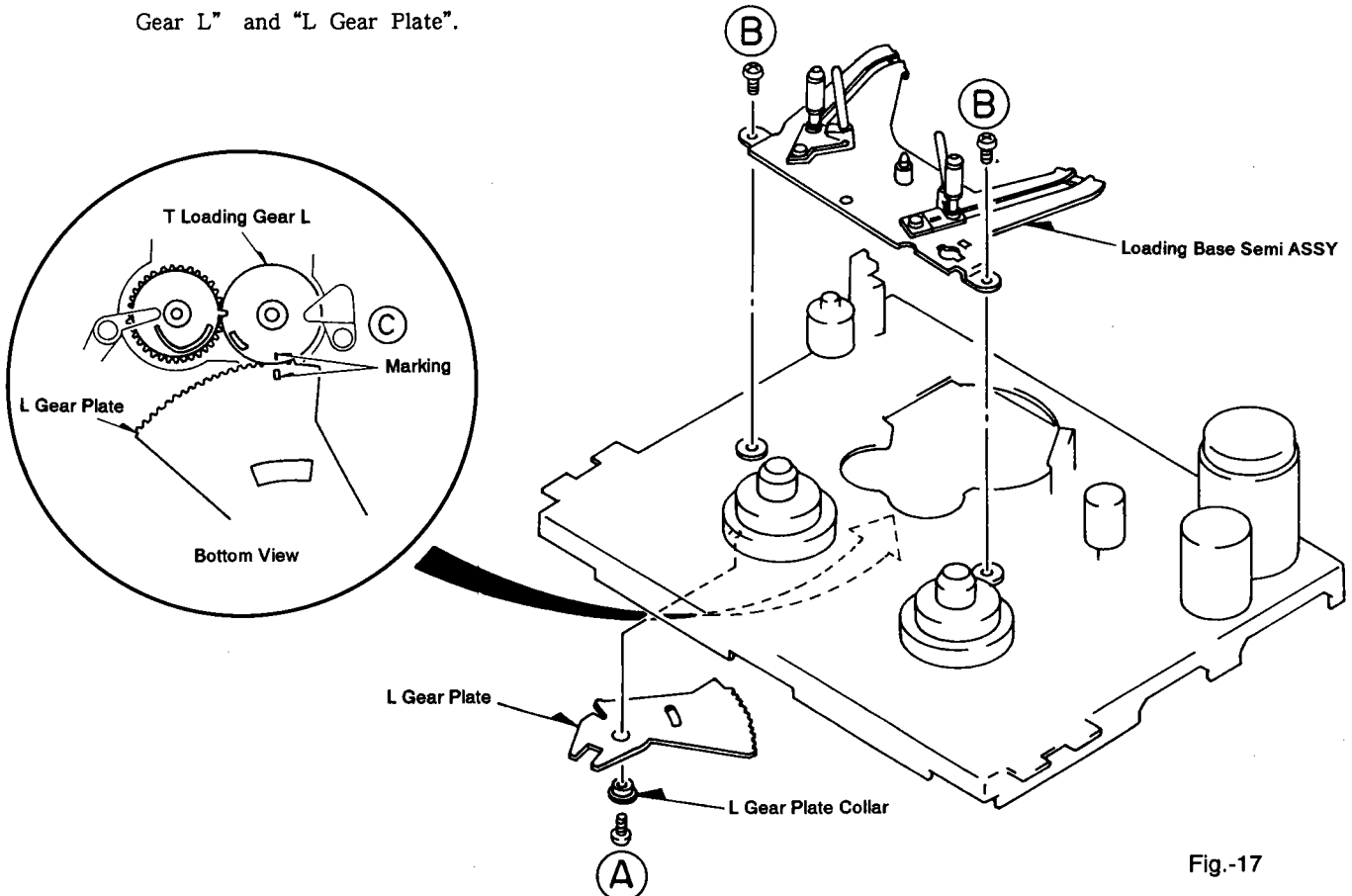


Fig.-17

19. "Wormwheel ASSY" Removal (See Figure - 18)

1. Disassembly

- 1) Remove "Front Loading ASSY".
- 2) Remove E - Ring (A).
- 3) 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.

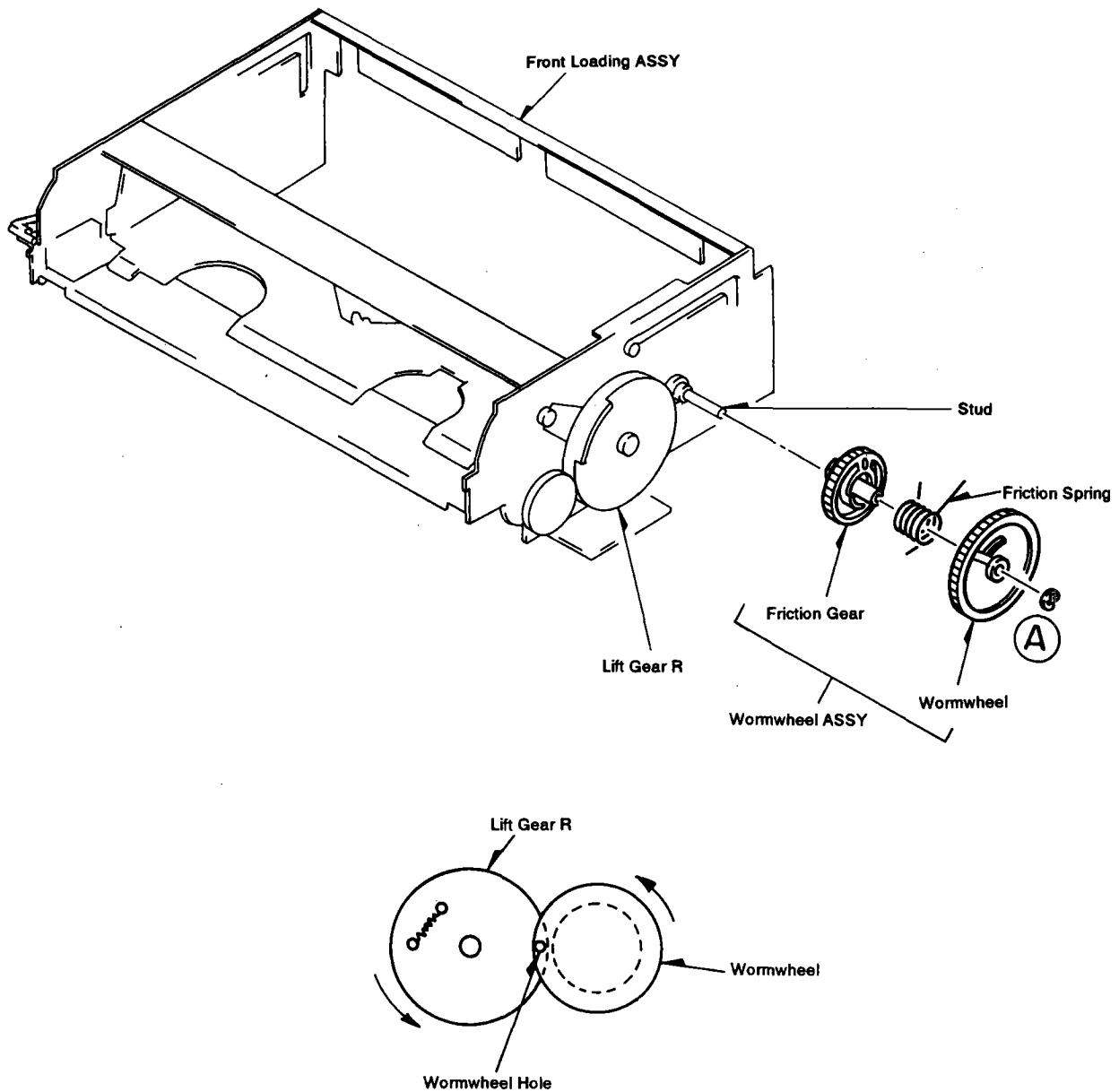


Fig.-18

ELECTRICAL MAIN PARTS LIST

NOTE:

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

COMBI VTSS COMPL PCB ASSY

REF. NO.	PARTS NO.	DESCRIPTION
	*9A03337040	PWB COMBI 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 1L-S
CN202	9A03341200	CONN, 5P SBRK 5S-5
CN205	9A02446700	CONN, 7P 1L-SDD F
CN206	9A02446900	CONN, 11P 1L-SDD F
CN207	9A02446800	CONN, 9P 1L-SDD F
CN208	9A02447000	CONN, 6P 1L-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	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, ISS133
D411,412	9A02436600	DIODE, ISS133
D801,881	9A02436600	DIODE, ISS133
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., MN6748 1P
IC204,205	9A02445900	IC., M5223L
IC206	9A02446200	IC., BA6219B
IC209	9A02448000	IC, TC4011BP
IC210	9A02446300	IC., BA6209-V3
IC401,581	9A02446400	IC., LVA522S
IC411	9A02446100	IC., LA7323
IC412	9A02446000	IC., LC8992

Parts marked with * require longer delivery time

COMBI VTSS COMPL PCB ASSY

REF. NO.	PARTS NO.	DESCRIPTION
IC461	9A02446600	IC., LA7333
IC801	9A02447900	IC, LA7910
IC802	9A02455200	IC., UPC574J
IC803	9A03341700	IC, TC4066BP
IC804	9A02446500	IC., PQ09R05
IC881	9A02449700	IC., UPD1730
IC882	9A02449600	IC., MSM16811
J401,402	9A02450400	JACK, PIN 2-2
L201,812	9A03341800	COIL, 47UH FLR50
L203,204	9A02451500	COIL, 220UH ELO909
L401,402	9A03341900	COIL, 100UH
L411,412	9A03341900	COIL, 100UH
L415	9A02439800	COIL, 180UH LAL02
L416,417	9A02451100	COIL, 68UH LAL02
L461,801	9A03341900	COIL, 100UH
L462	9A03342000	COIL, 18UH J
L463	9A02451000	COIL, 3.3UH LAL02
L464	9A02451200	COIL, 27UH LAL02
L809-811	9A03341900	COIL, 100UH
L814	9A03341900	COIL, 100UH
Q201,202	9A02455100	TR., 2SA933S S
Q204,207	9A02436700	TR., DTC144ES DIGITAL
Q205,206	9A02442300	TR., 2SC1740S/SR
Q208,213	9A02436700	TR., DTC144ES DIGITAL
Q209	9A02455100	TR., 2SA933S S
Q215,218	9A02436700	TR., DTC144ES DIGITAL
Q216,217	9A02458900	TR., 2SA1048Y
Q411,467	9A02455000	TR., DTA144ES
Q413	9A02442400	TR., 2SA933S/SR
Q414-416	9A02442300	TR., 2SC1740S/SR
Q417-419	9A02442400	TR., 2SA933S/SR
Q420,452	9A02436700	TR., DTC144ES DIGITAL
Q450,462	9A02442300	TR., 2SC1740S/SR
Q451,464	9A02442400	TR., 2SA933S/SR
Q463,465	9A02442300	TR., 2SC1740S/SR
Q466,468	9A02442300	TR., 2SC1740S/SR
Q469,801	9A02442300	TR., 2SC1740S/SR
Q581	9A02436700	TR., DTC144ES DIGITAL
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
SFR411	9A02454700	SFR, 10K DIA6 V

COMBI VTSS COMPL PCB ASSY

REF. NO.	PARTS NO.	DESCRIPTION
SFR412	9A02454700	SFR, 10K DIA6 V
SFR413	9A02454700	SFR, 10K DIA6 V
SFR414	9A02454500	SFR, 1K DIA6 V
SFR415	9A02454500	SFR, 1K DIA6 V
SFR416	9A02454600	SFR, 3.3K DIA6 V
SFR461	9A02454500	SFR, 1K DIA6 V
SFR801	9A02454600	SFR, 3.3K DIA6 V
TP201	9A02447600	PIN, TEST 4P 1.1-19
TS011	9A02448700	F-CABLE, 8-2.5 190
TS013	9A02449400	CONN, ASSY 2P TS-13
TS014	9A02528600	F-CABLE, 9-2.0 170
TU801	9A02450700	TV TU, 4EA-721
VIF801	9A02450800	VIF PAC, 101A
WS208	9A02532800	F-CABLE, 6-2.0 120
WS209	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
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
	*9A03337540	PWB COMBI FR COMPL ASSY (Consists of PCB-D,E ASSY)
	*9A03344040	PWB, COMB FR 2M MV-317 (Consists of PCB-D,E)
PCB-D	- - - - -	PCB, FR-31 (TIMER)
PCB-E	- - - - -	PCB, FR-32 (POWER SW)
BT902	9A02435300	CONN, ASSY 5P FP-11
BT903	9A02435600	CONN, ASSY 2P FF-11
CN901	9A02532600	CONN, 6P HBRK-6R-2
CN902	9A02434400	CONN, 8P HBRK-8R-2
CN903	9A02434300	CONN, 6P P-FJ
CN904	9A02434200	CONN, 6P R-FJ
D901-920	9A02436600	DIODE, 1SS133
D922-934	9A02436600	DIODE, 1SS133
D936,937	9A02436600	DIODE, 1SS133
D940,941	9A02436600	DIODE, 1SS133
D942	9A02436800	ZENER DIODE, HZ9CIL
FL901	9A03343200	FL, 9-MT-107 GK
IC901	9A03343300	IC, UPD75208CW-B18
IC902	9A02434100	IC., SBX1610-52
L901,902	9A02436100	COIL, 100UH
Q901-908	9A02436700	TR., DTC144ES DIGITAL
Q910	9A02436700	TR., DTC144ES DIGITAL
RV901	9A02434700	VOL, 250KB PK09K113
SW901-912	9A03344100	SW, TACT SOR-141HS
SW914-926	9A03344100	SW, TACT SOR-141HS
SW928,929	9A03344100	SW, TACT SOR-141HS
SW931	9A03344100	SW, TACT SOR-141HS
X901	9A02436900	VIB. CER KBR4.19MES,
X902	9A02434900	VIB, XTAL32.768K5PPM
	9A03343100	FLTR, FL 6J
	9A02435200	HOLDER, FL
	9A02435800	WIRE, U24X0-18-5

Parts marked with * require longer delivery time

HA COMPL PCB ASSY

COMBI PS COMPL PCB ASSY

REF. NO.	PARTS NO.	DESCRIPTION
	*9A03337840	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 1L-SDD F
CN602	9A02439100	CONN, 7P 8283 V WHT
CN701	9A03344500	CONN, 5P 1L-S S2L2
CN702	9A03344700	CONN, 4P 8283 V RED
CN703	9A03344900	CONN, 4P 8283 H RED
CN704	9A03344400	CONN, 2P 1L-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
L701	9A02445000	COIL, 18MH TL-8 MV-308
L702	9A02436100	COIL, 100UH
Q630,631	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
	9A02445200	SHIELD, RP2
	9A03345800	SHLD, S1
	9A03345700	SHLD, AU2
	9A03345600	SHLD, AU1
	9A03344600	PIN, DIA1 COATING
	9A02439200	SHLD, RP

REF. NO.	PARTS NO.	DESCRIPTION
	*9A03338240	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
CF101-106	9A02854200	CLAMP, FUSE SMK
CN101	9A03346700	CONN, 5P TXK H
D101-108	9A02853600	DIODE, DIN L20
D109-111	9A03346900	DIODE, 1SR139-200
D112-115	9A02436600	DIODE,ISS133
D116	9A02848800	ZENER DIODE, HZ5C3
D117	9A03347500	ZENER DIODE, HZ22-3L
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
R102	9A02854300	R., CARBON 1/2W 5.6K J
R103	△ 9A02852600	R., FUSE 1/4W 47
R104	△ 9A02852500	R., FUSE 1/4W 100
R105	△ 9A03346600	R., FUSE 1/4W 2.2
R110	9A02854100	R., M/F 56K-1/4W ERO
R111,115	9A02854000	R., M/F 39K-1/4W ERO
R114	9A03347400	R., M/F 15K-1/4W ERO
T101	△ 9A03348000	PT, K 240V
W101	9A03346100	WIRE, POWER 834TR
W102	9A03346200	WIRE, POWER 834TG
	9A03348100	VFT2+3-12
	9A03347900	HLDR, PS

Parts marked with * require longer delivery time

OTHER PCB 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

PACKING & INCLUDED PARTS LIST

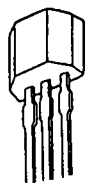
REF. NO.	PARTS NO.	DESCRIPTION
	9A03348700	CUSHION (L)
	9A03348800	CUSHION (R)
	9A03348900	CTN, PRINTED 317
	9A02459400	LBL, SERIAL NO SMALL
	9A02459800	SHEET FOAMED MAT
	9A03304100	OWNER'S MANUAL MV-317
	9A03349000	CORD, RF PAL YAF
	9A02460300	AC CORD ASSY, AS
	9A02460500	SUM-3 (MAXELL 2P)
	9A02531940	UNIT, RC-397

Parts marked with * require longer delivery time

TRANSISTOR ILLUSTRATION



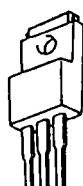
ECB
2SA993
2SC1740



BCE
DTA144
DTC114
DTC144



ECB
2SA1048



BCE
2SD1406

PRACTICAL SERVICE FIGURE

Output Level

Video (Impedance) : $1.0 \pm 0.2V_p - p$ ($75 \Omega \pm 20\%$, Unbalance)
 Audio (Impedance) : $-8 \pm 3dB$ (Less than $3.3k \Omega$)
 RF Modulated (Impedance) : $75 \pm 3dB \mu V$ (75Ω , Unbalance)

Input Level

Video (Impedance) : $0.5V \sim 2.0v \pm 0.5V_p - p$ ($75 \Omega \pm 20\%$, Unbalance)
 Audio (Impedance) : $-10 \pm 3dB$ (More than $47k \Omega$)

TV channels received

Desti- nation	Signal format		VHF		UHF	Remarks MHz
	VHF	UHF	L	H		
AUST- RALIA	B	G	E2~E4 0~5	E5~E12 5A~E11	21~69 21~69	VIF 38.9 SIF 33.4

Tuner AGC : $72 \pm 3dB$ (VHF, UHF)

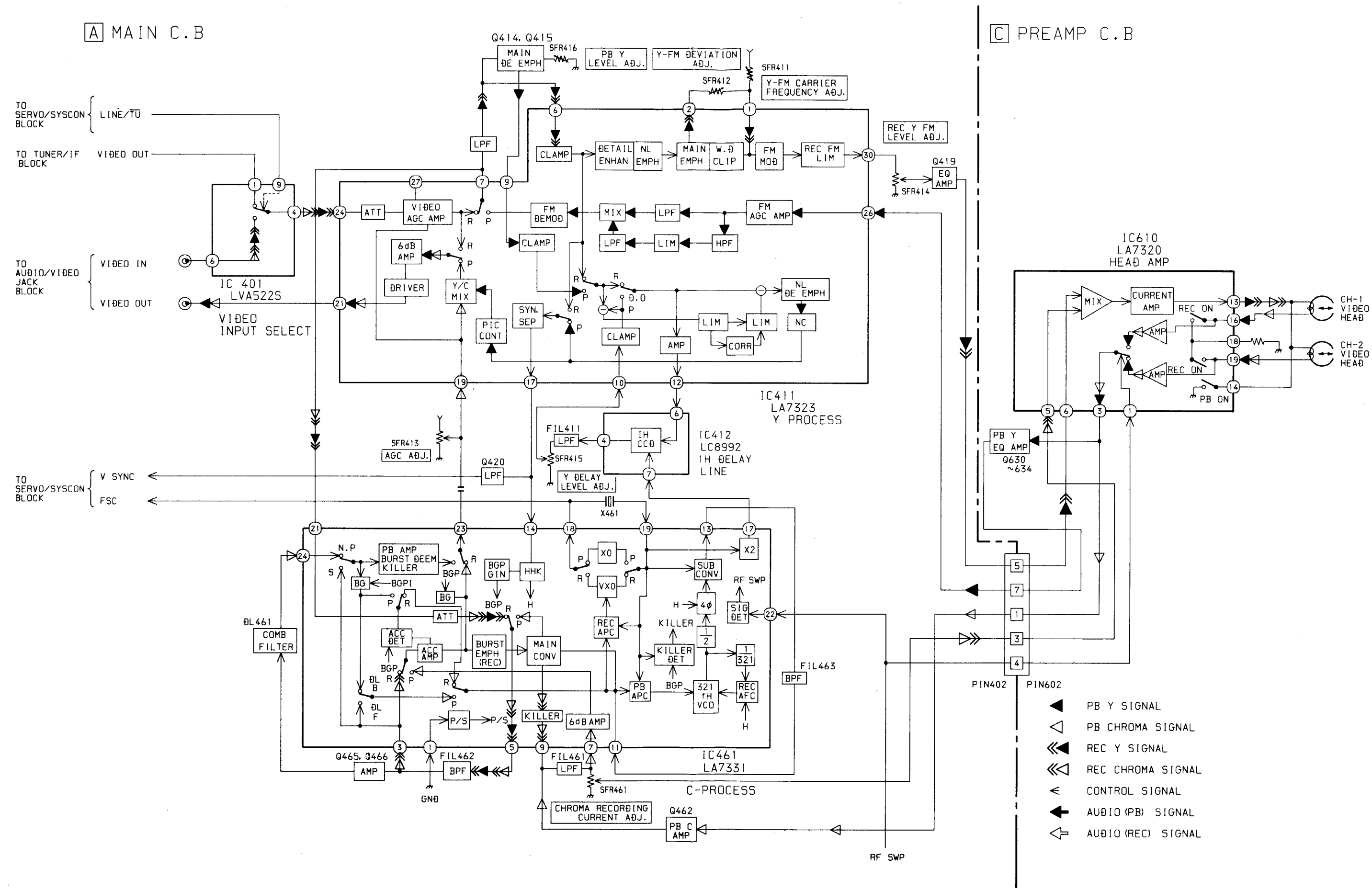
S/N Ratio

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 : $200Hz \sim 6kHz$ ($\pm 4dB$)
 (SP mode, Test tape A - BEX TPV - 160S)
 Horizontal Resolution : More than 230 Lines
 (Test tape TTV - 06T) (PB., R/P)
 Erase Ratio : More than 55dB
 Bias Frequency : $70kHz \pm 10\%$
 Tape speed : $23.39mm/sec \pm 0.5\%$
 (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 : $46.5 \pm 12 g\text{-cm}$
 Loading : Less than 3sec
 Unloading : Less than 3.5sec

BLOCK DIAGRAM - 1 (VIDEO SECTION)

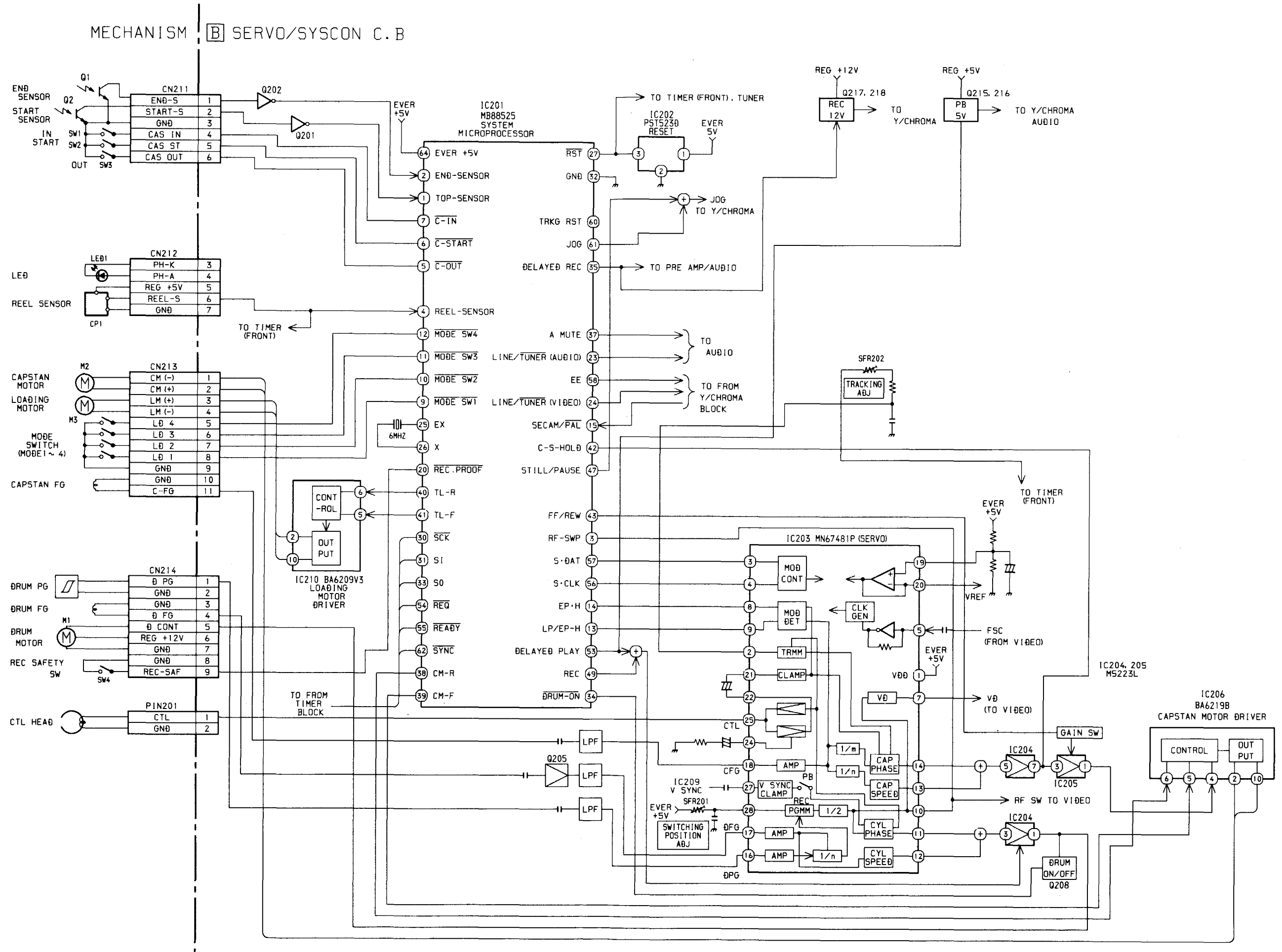


A MAIN C.B

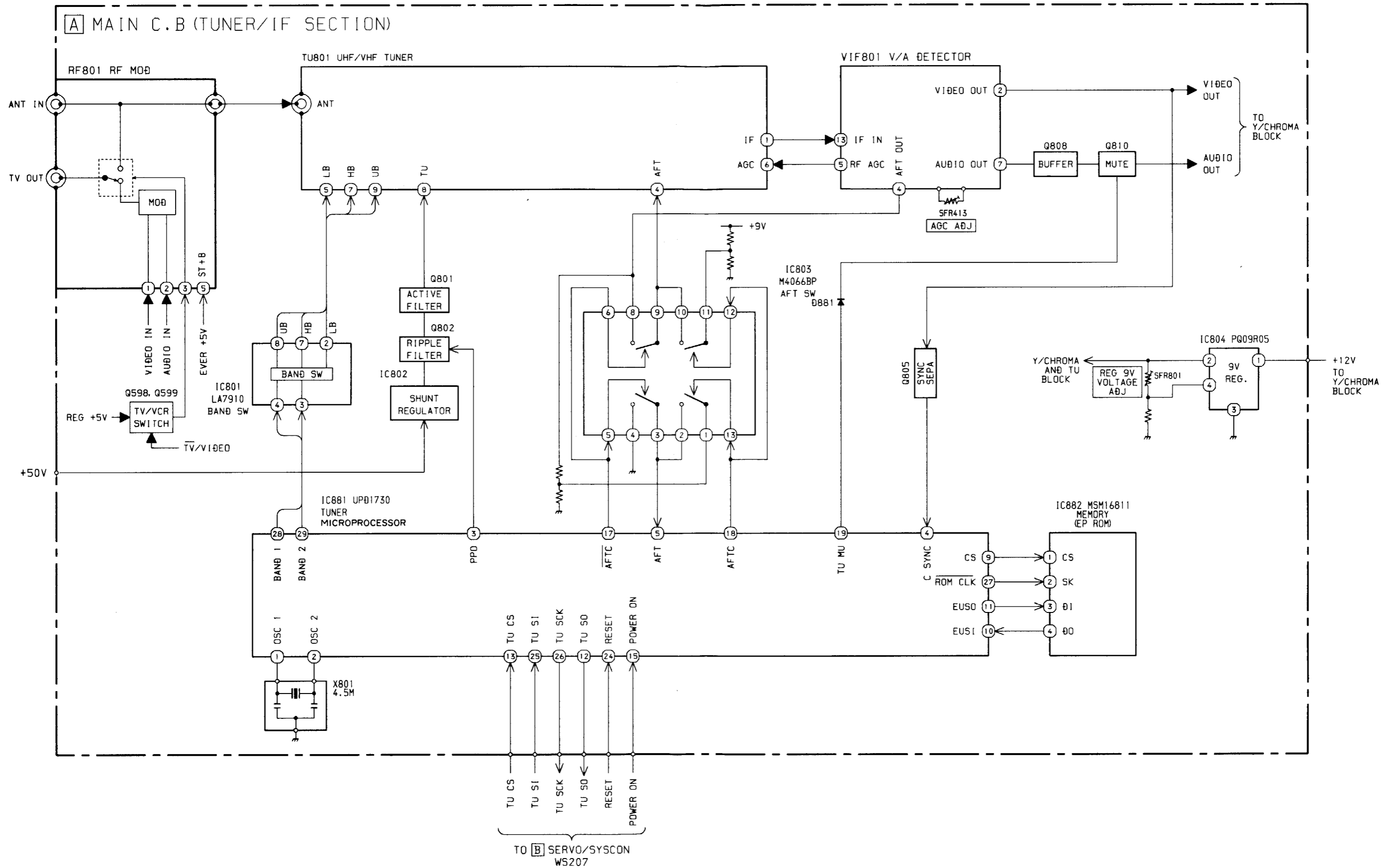
C PREAMP C.B

- ▶ PB Y SIGNAL
- ◁ PB CHROMA SIGNAL
- ◄◄ REC Y SIGNAL
- ◄◄◄ REC CHROMA SIGNAL
- ◄ CONTROL SIGNAL
- ▶▶▶ AUDIO (PB) SIGNAL
- ◄◄◄ AUDIO (REC) SIGNAL

BLOCK DIAGRAM - 2 (SERVO/SYSCON CONTROL SECTION)



BLOCK DIAGRAM - 4 (TUNER/IF SECTION)



BLOCK DIAGRAM - 3 (SYSTEM CONTROL SECTION)

B SERVO/SYSCON C.B

A MAIN C.B

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	

EP ROM
MSM16811

IC882

IC881

TUNER MICROPROCESSOR
UPD1730

D TIMER C.B

MECHANISM CONTROL
MICROPROCESSOR
MB88525 (4K)

IC201

TIMER
MICROPROCESSOR
UPD75208CW-B18

IC901

FL901
(DISPLAY)

KEY.MATRIX

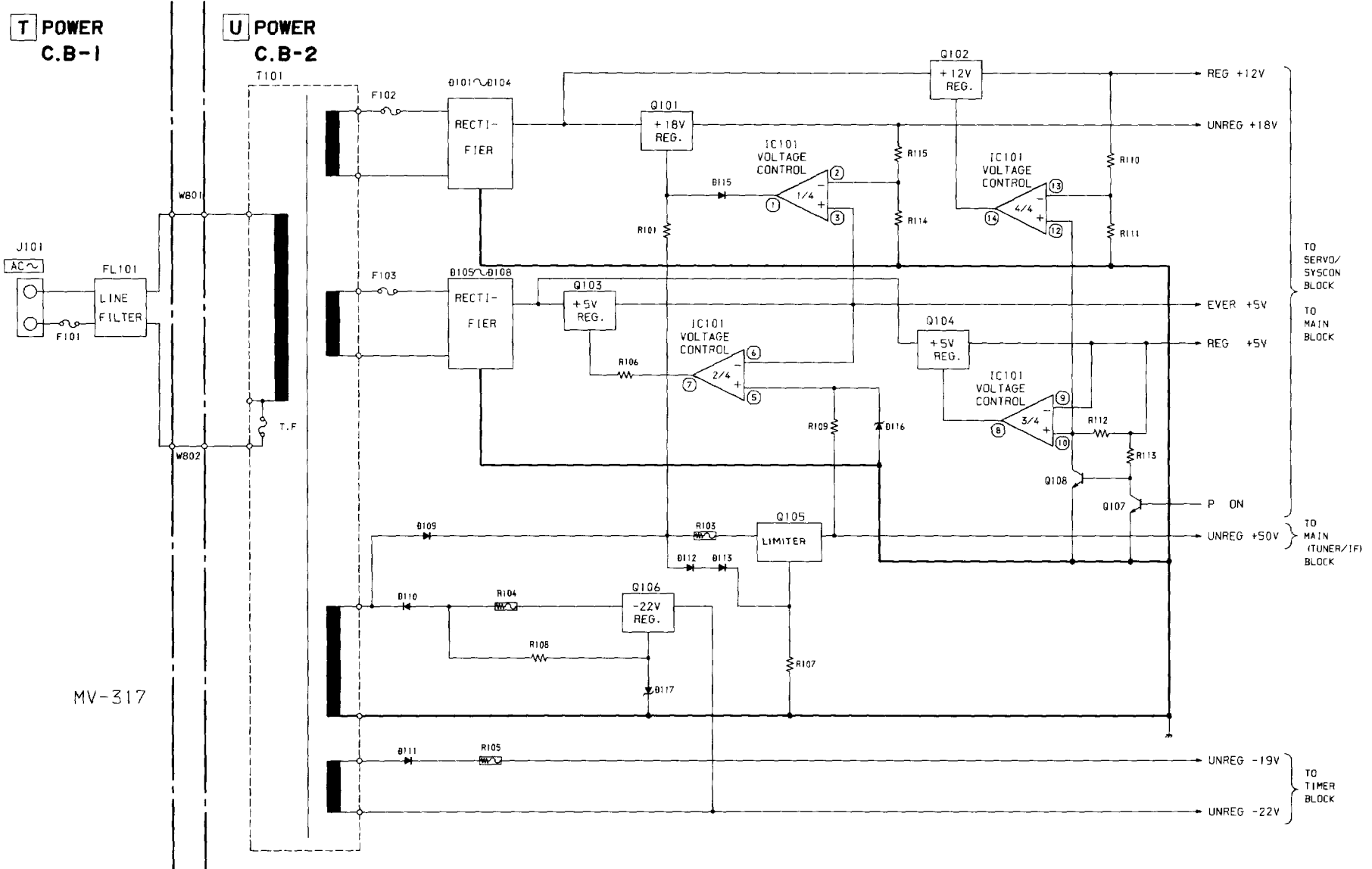
IC902
SBX1610-52

REMOTE
CONTROL
SIGNAL

SERVO
IC
MN67481

RESET IC
PST523D
IC202

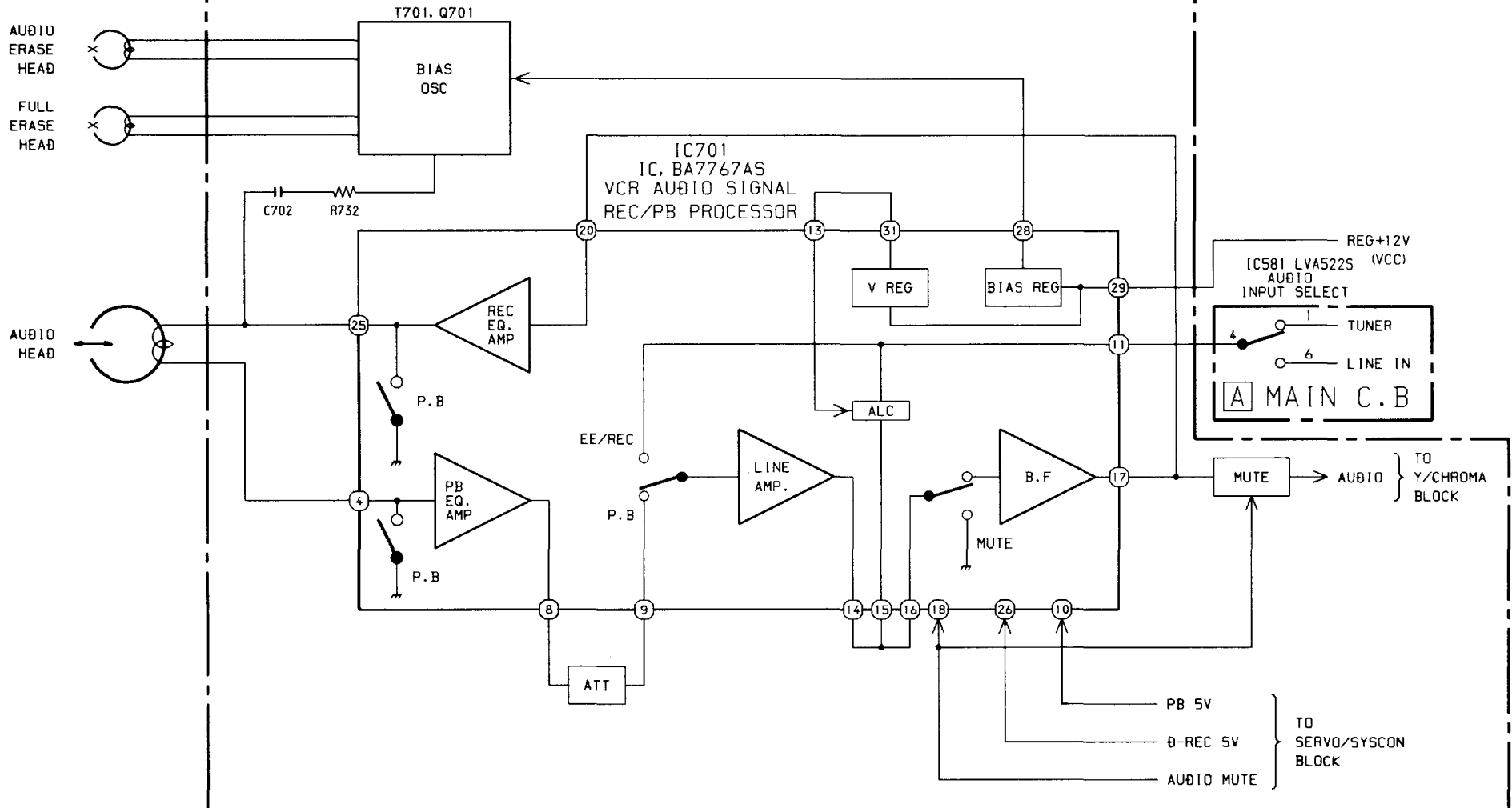
BLOCK DIAGRAM - 5 (AUDIO / POWER SECTION)



MV-317

MECHANISM

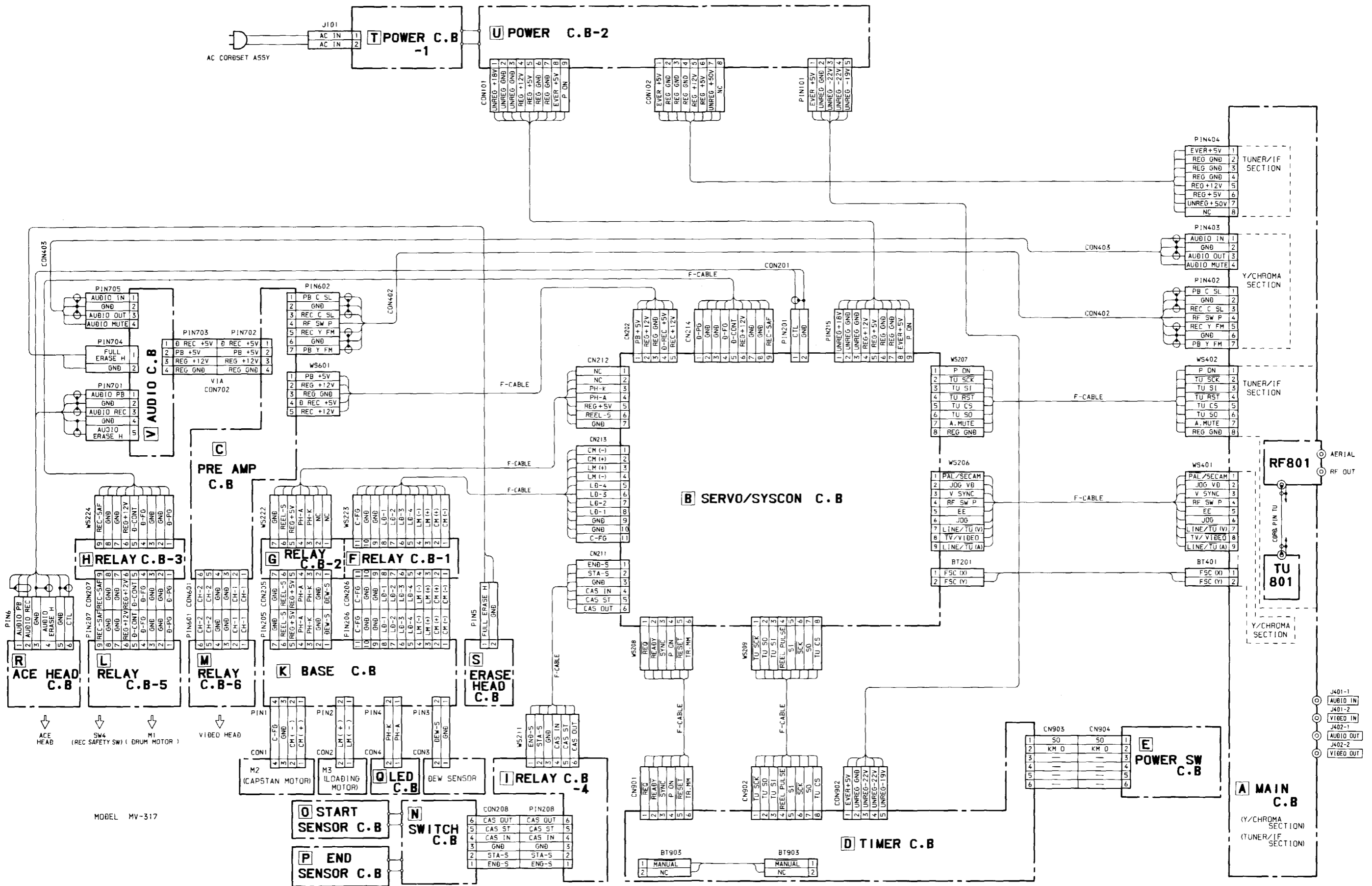
V AUDIO C.B



34

MODEL MV-317

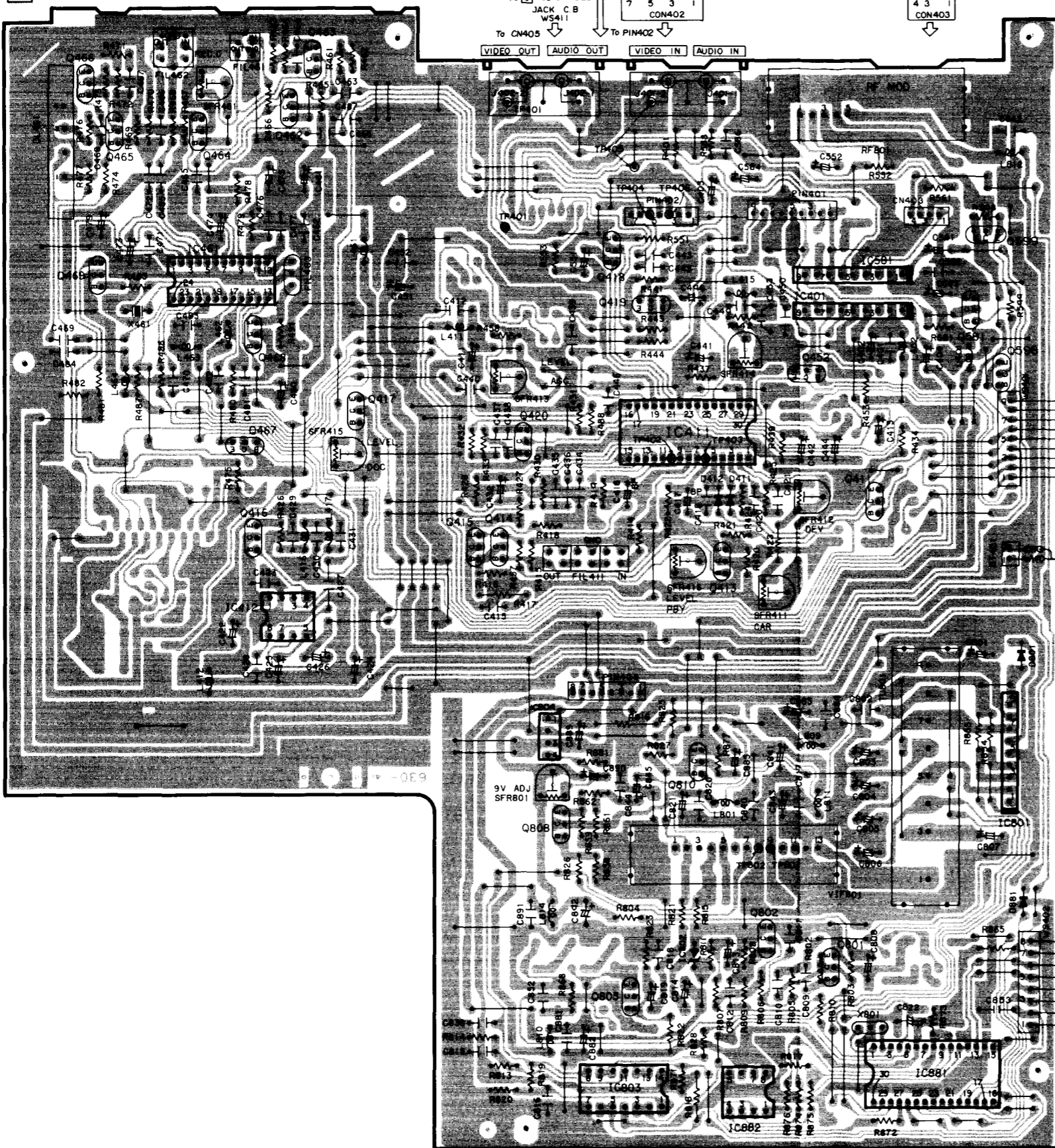
WIRE HARNESS DIAGRAM



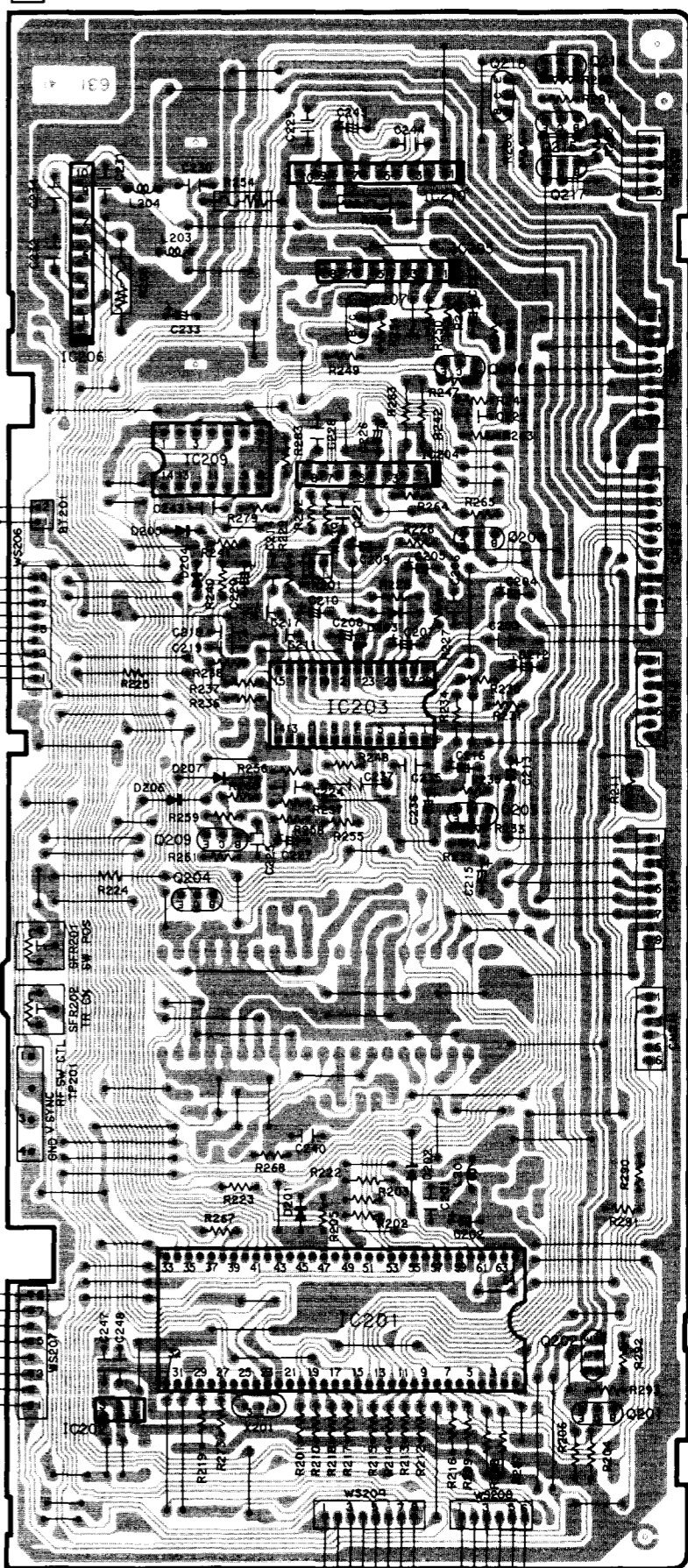
MODEL MV-317

A
B
C
D
E
F
G
H
I
J
K

A MAIN C.B

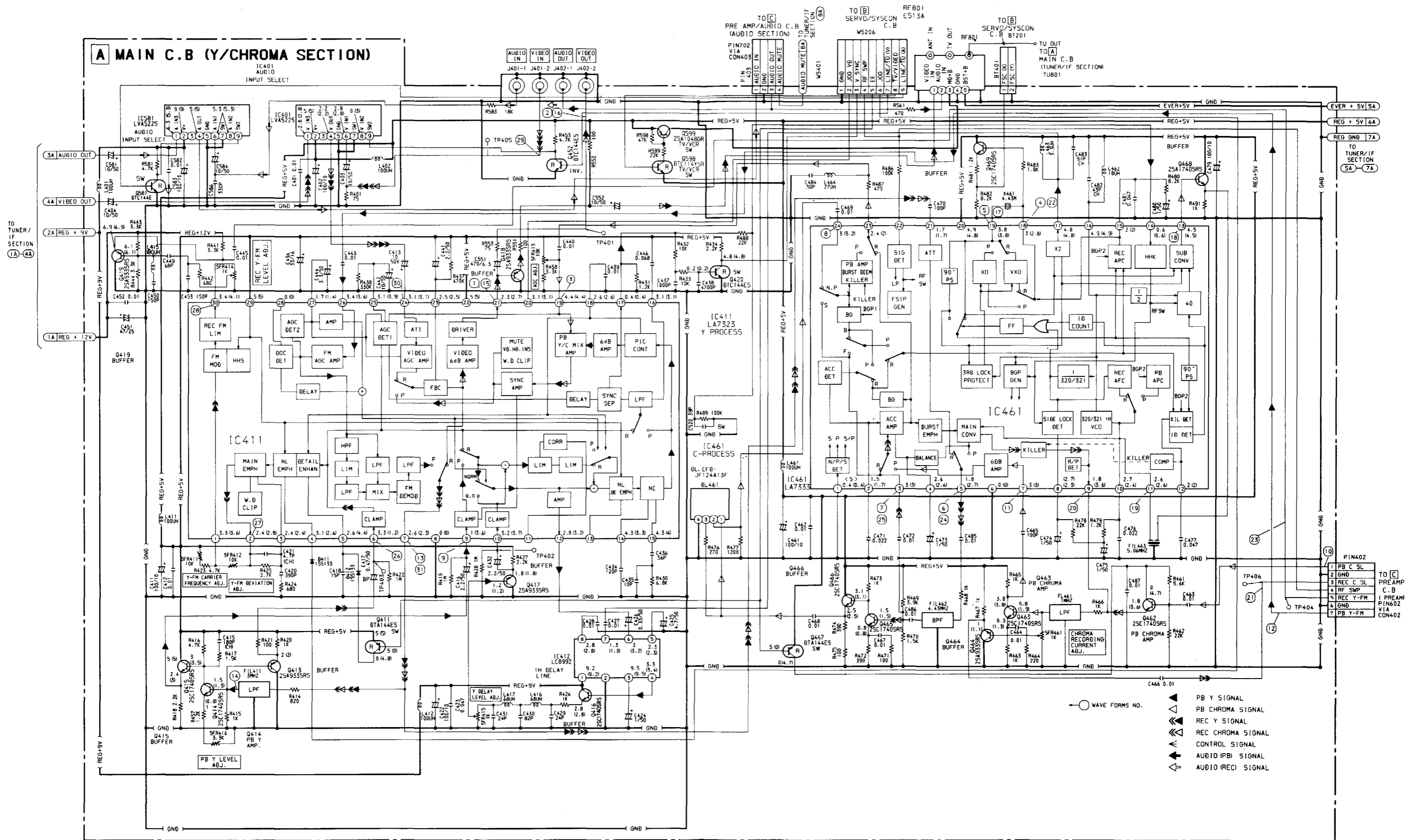


B SERVO/SYSCON C.B

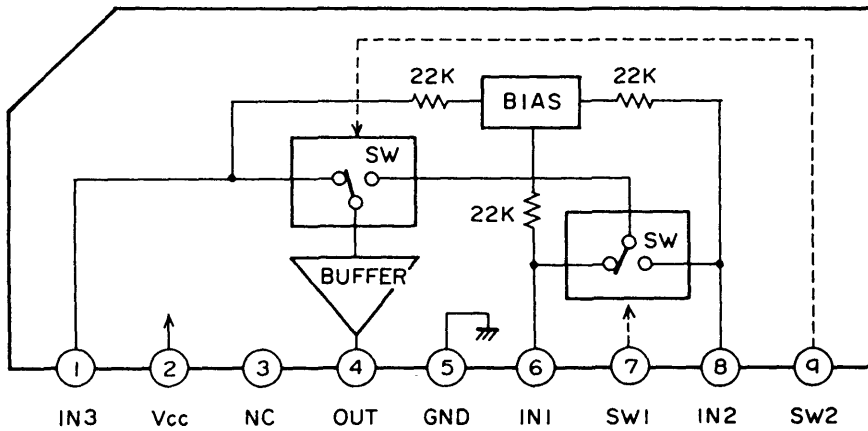


To **TIMER C.B** CN902
To **TIMER C.B** CN901

SCHEMATIC DIAGRAM - 1 (VIDEO SECTION)



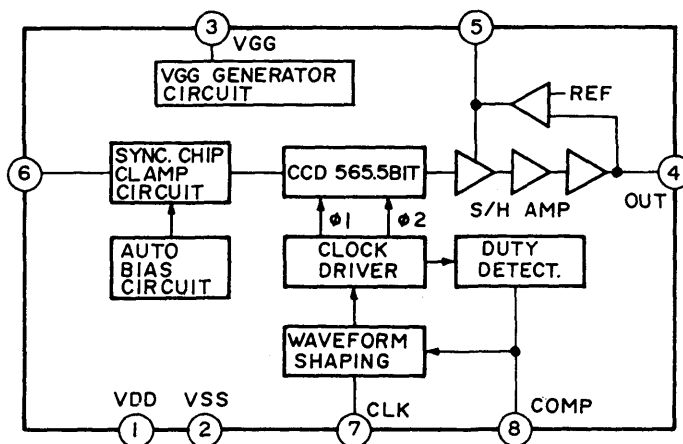
IC,LVA522S



CONTROL INPUT TRUTH TABLE

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

IC,LC8992



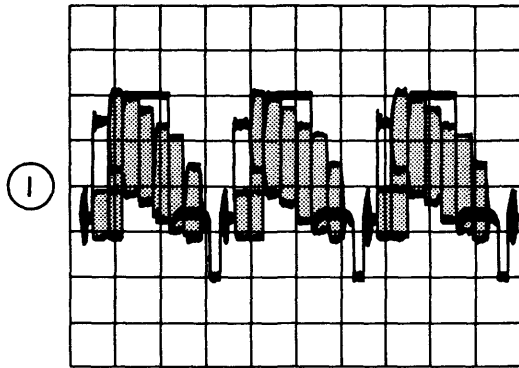
WAVE FORM – 1 (VIDEO WAVE FORM)

IC411 pin ⑫ (PB)

20 μ s/div.

500mV/div.

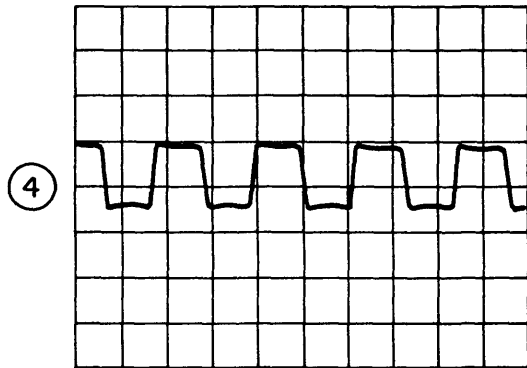
LINE OUT 75 Ω TERMINATE



IC461 pin ⑱ (PB)

100ns/div.

500mV/div.

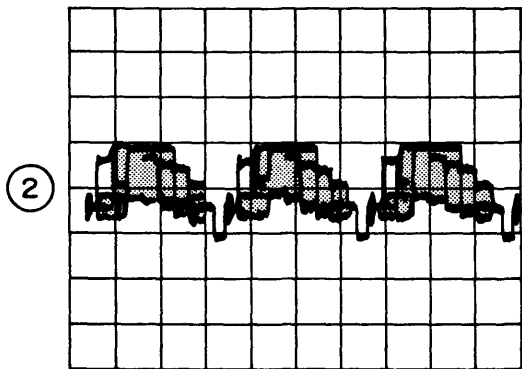


LINE OUT

20 μ s/div.

500mV/div.

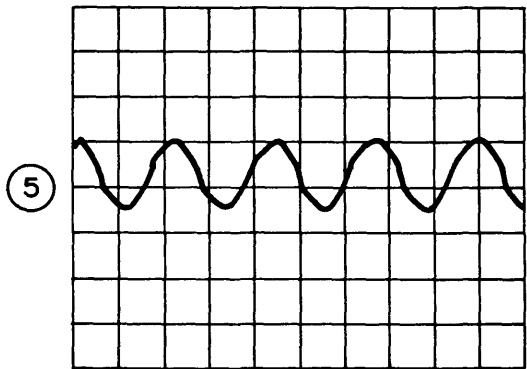
LINE OUT 75 Ω TERMINATE



IC461 pin ⑲ (PB)

100ns/div.

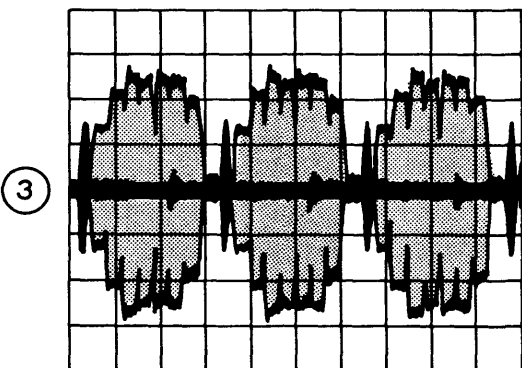
500mV/div.



IC411 pin ⑰ (PB)

20 μ s/div.

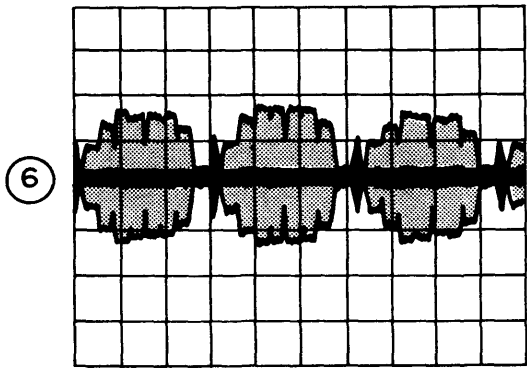
50mV/div.



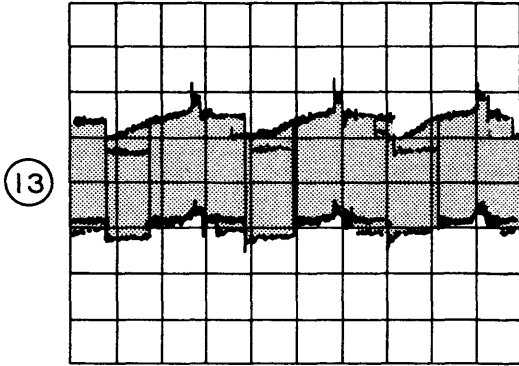
IC461 pin ⑮ (PB)

20 μ s/div.

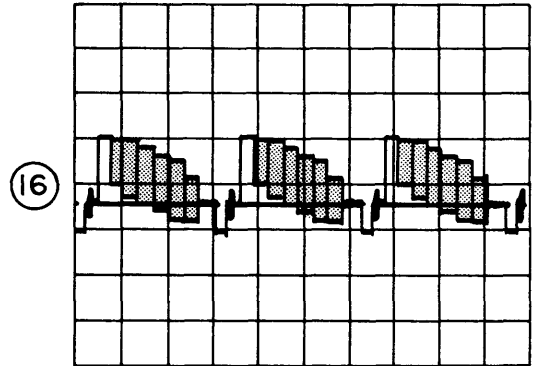
500mV/div.



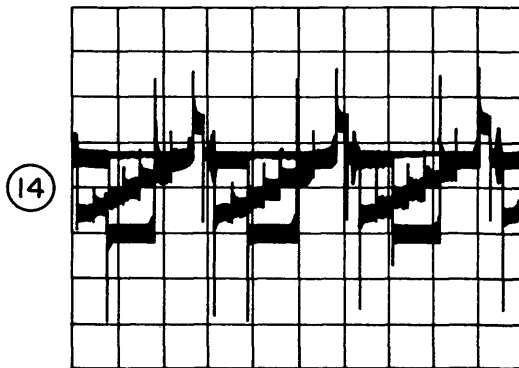
IC411 pin (7) (PB)
20 μ s/div.
500mV/div.



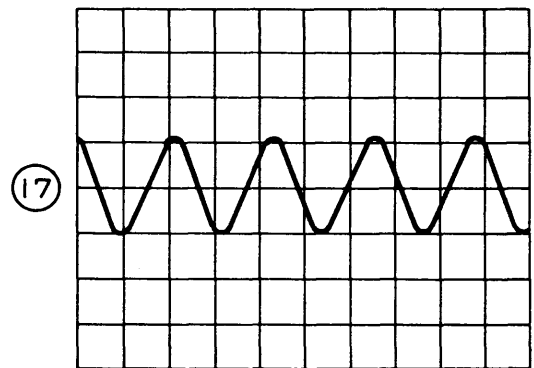
LINE OUT (EE)
20 μ s/div.
500mV/div.



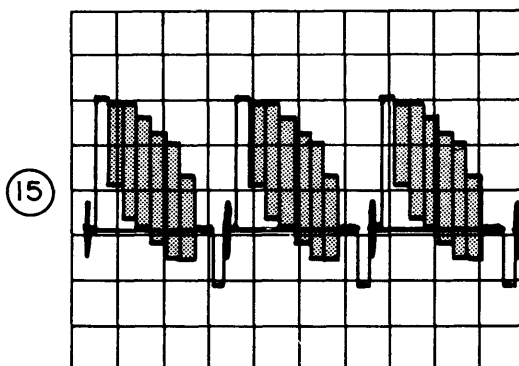
FIL411 OUT (PB)
20 μ s/div.
100mV/div.



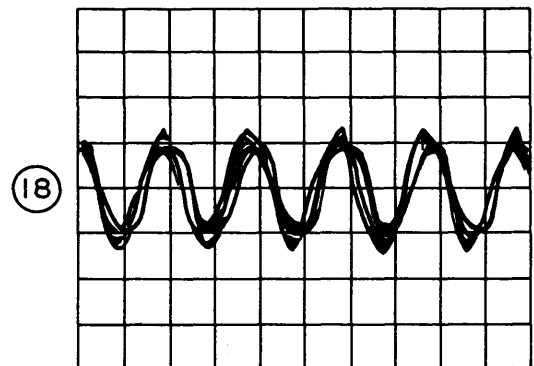
IC461 pin (19) (EE)
100ns/div.
500mV/div.



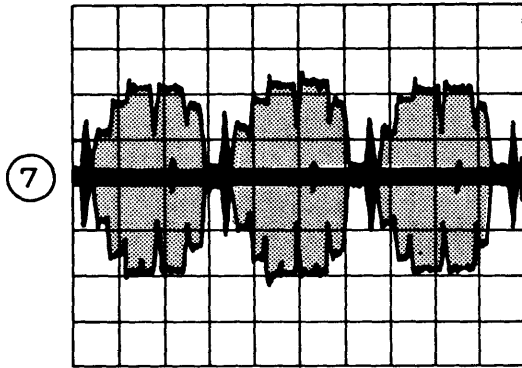
IC411 pin (21) (EE)
20 μ s/div.
500mV/div.



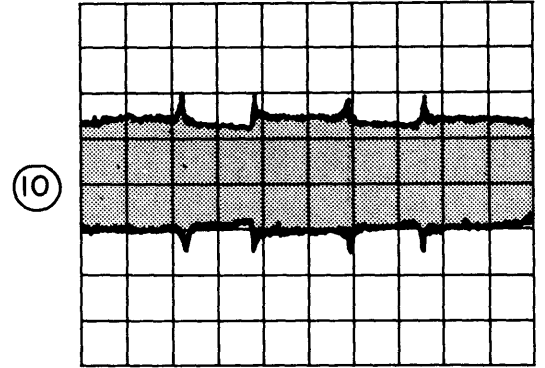
IC461 pin (13)
100ns/div.
100mV/div.



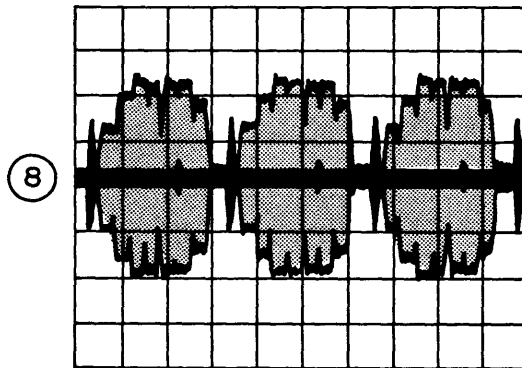
IC461 pin ③ (PB)
20 μ s/div.
50mV/div.



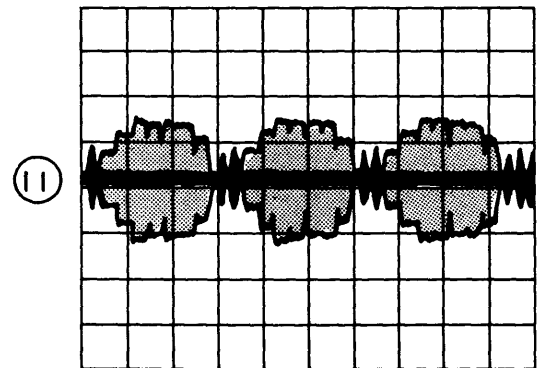
PIN402 pin ① (PB)
5ms/div.
100mV/div.



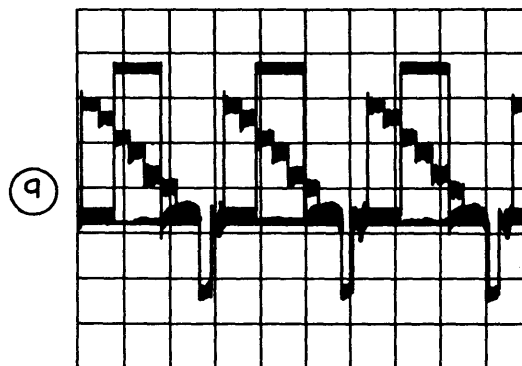
IC461 pin ②④ (PB)
20 μ s/div.
50mV/div.



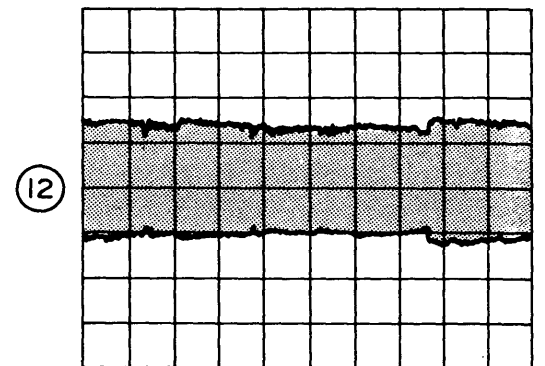
IC461 pin ⑦ (PB)
20 μ s/div.
100mV/div.



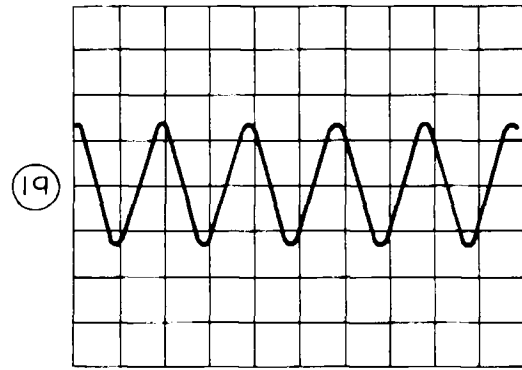
IC411 pin ⑨ (PB)
20 μ s/div.
100mV/div.



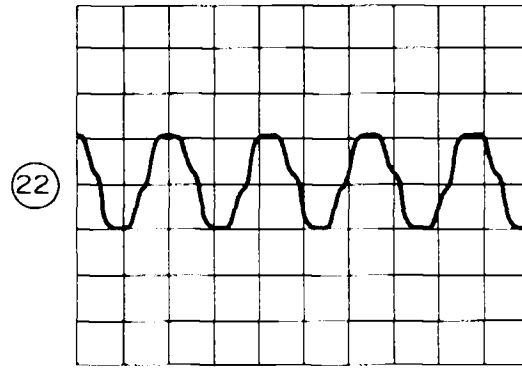
PIN402 pin ⑦ (PB)
5ms/div.
200mV/div.



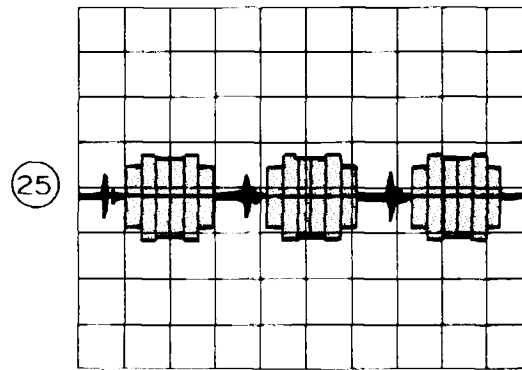
IC461 pin 11
100ns/div.
100mV/div.



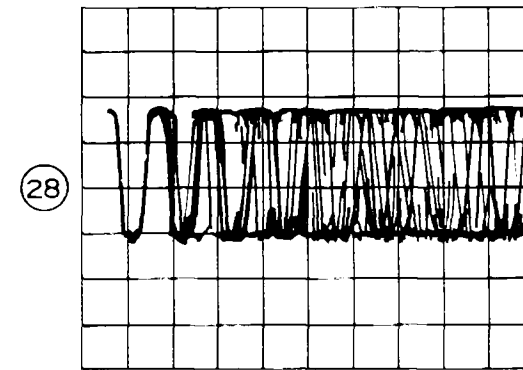
IC461 pin 18 (EE)
50mV/div.
100ns/div.



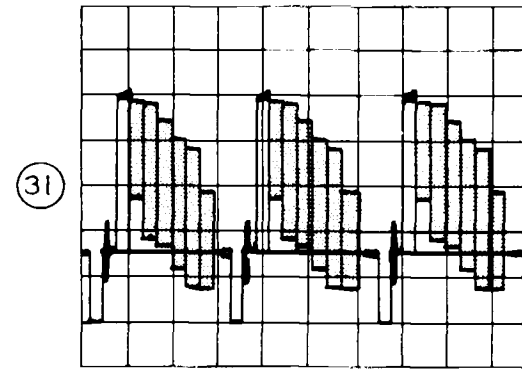
IC461 pin 3 (EE)
50mV/div.
20 μs/div.



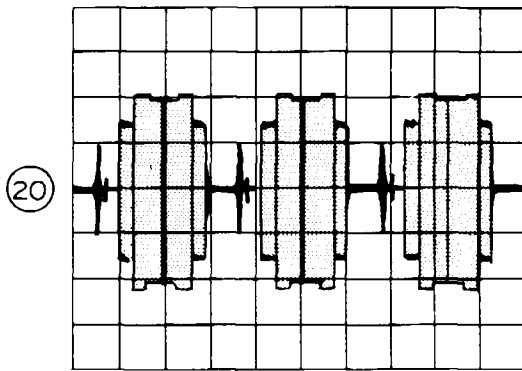
IC411 pin 30 (EE)
200ns/div.
500mV/div.



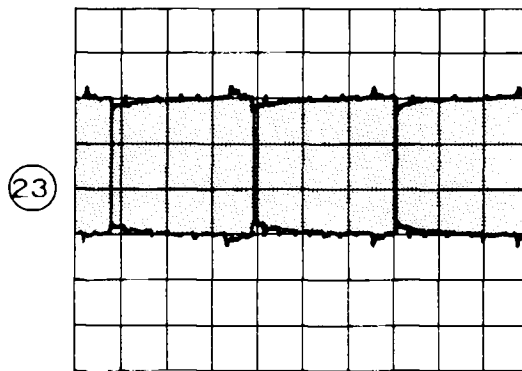
IC411 pin 7 (EE)
20 μs/div.
200mV/div.



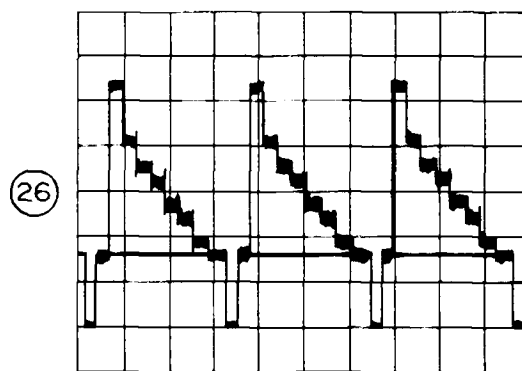
IC461 pin 9 (EE)
200mV/div.
20 μs/div.



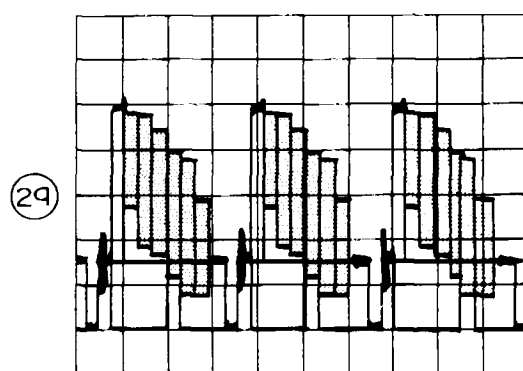
PIN402 pin 5 (EE)
100mV/div.
20 μs/div.



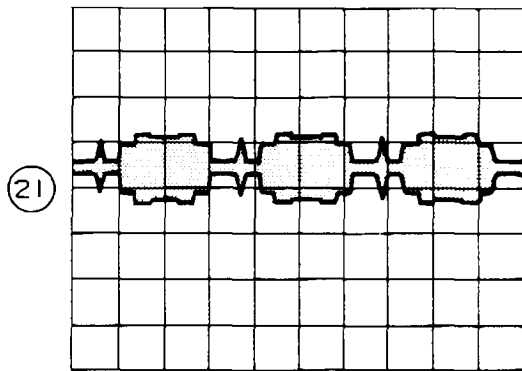
IC411 pin 6 (EE)
20 μs/div.
100mV/div.



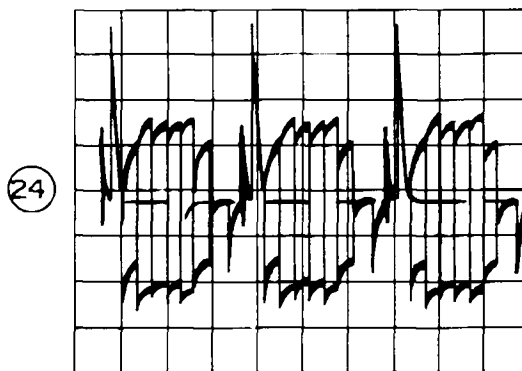
LINE IN (EE)
20 μs/div.
200mV/div.



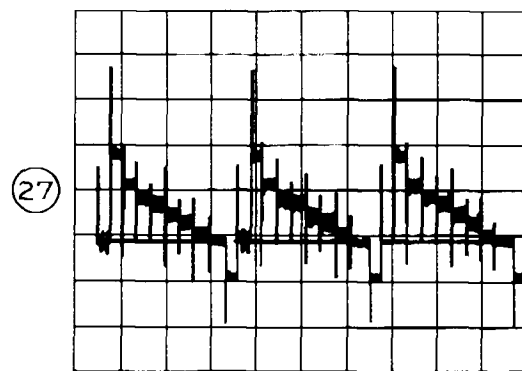
PIN402 pin 3 (EE)
50mV/div.
20 μs/div.



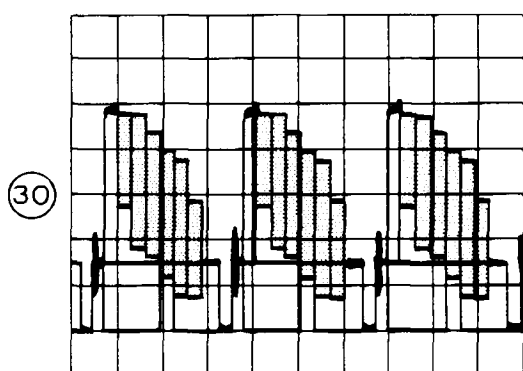
IC461 pin 5 (EE)
100mV/div.
20 μs/div.

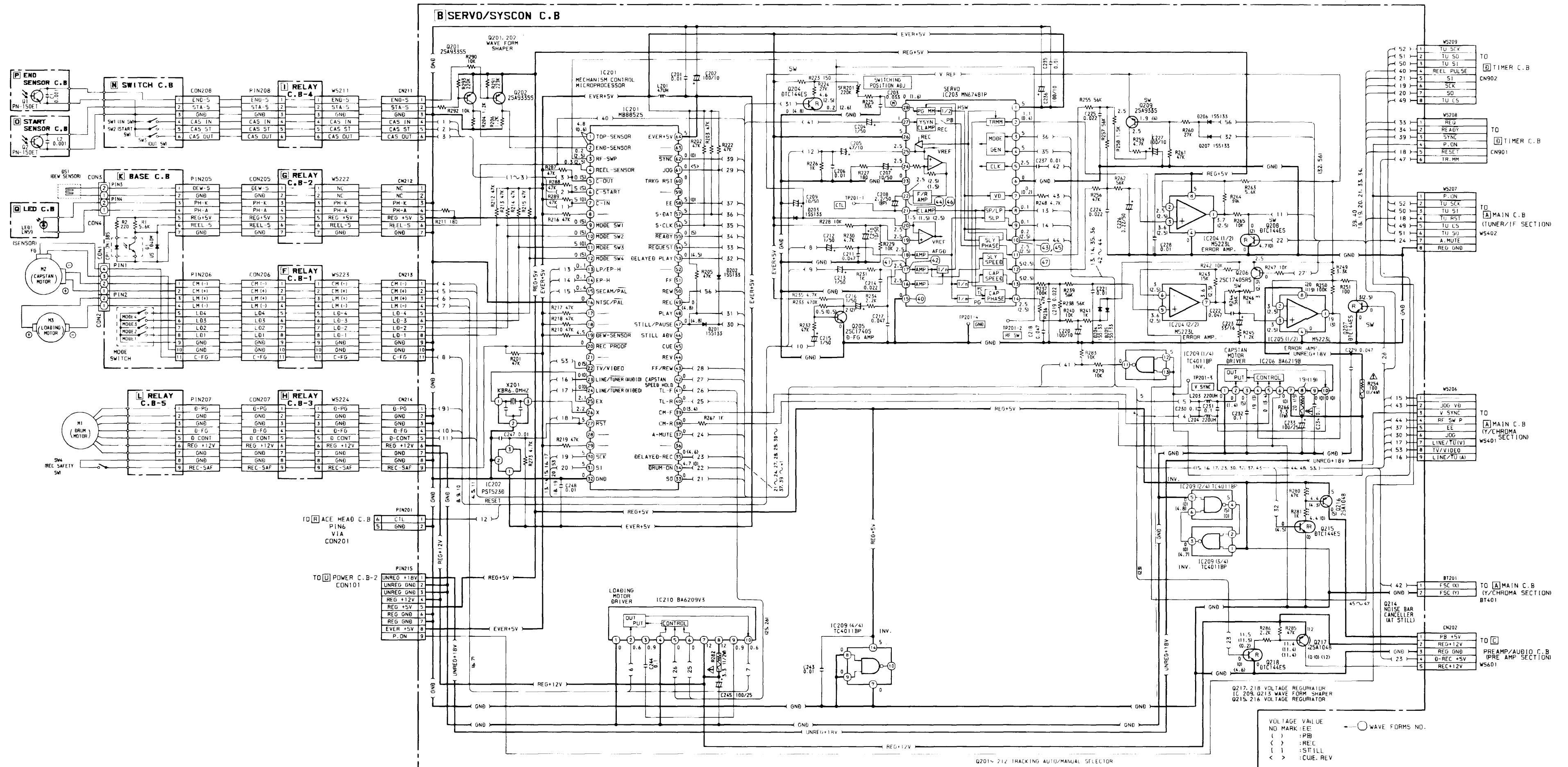


IC411 pin 2 (EE)
20 μs/div.
200mV/div.

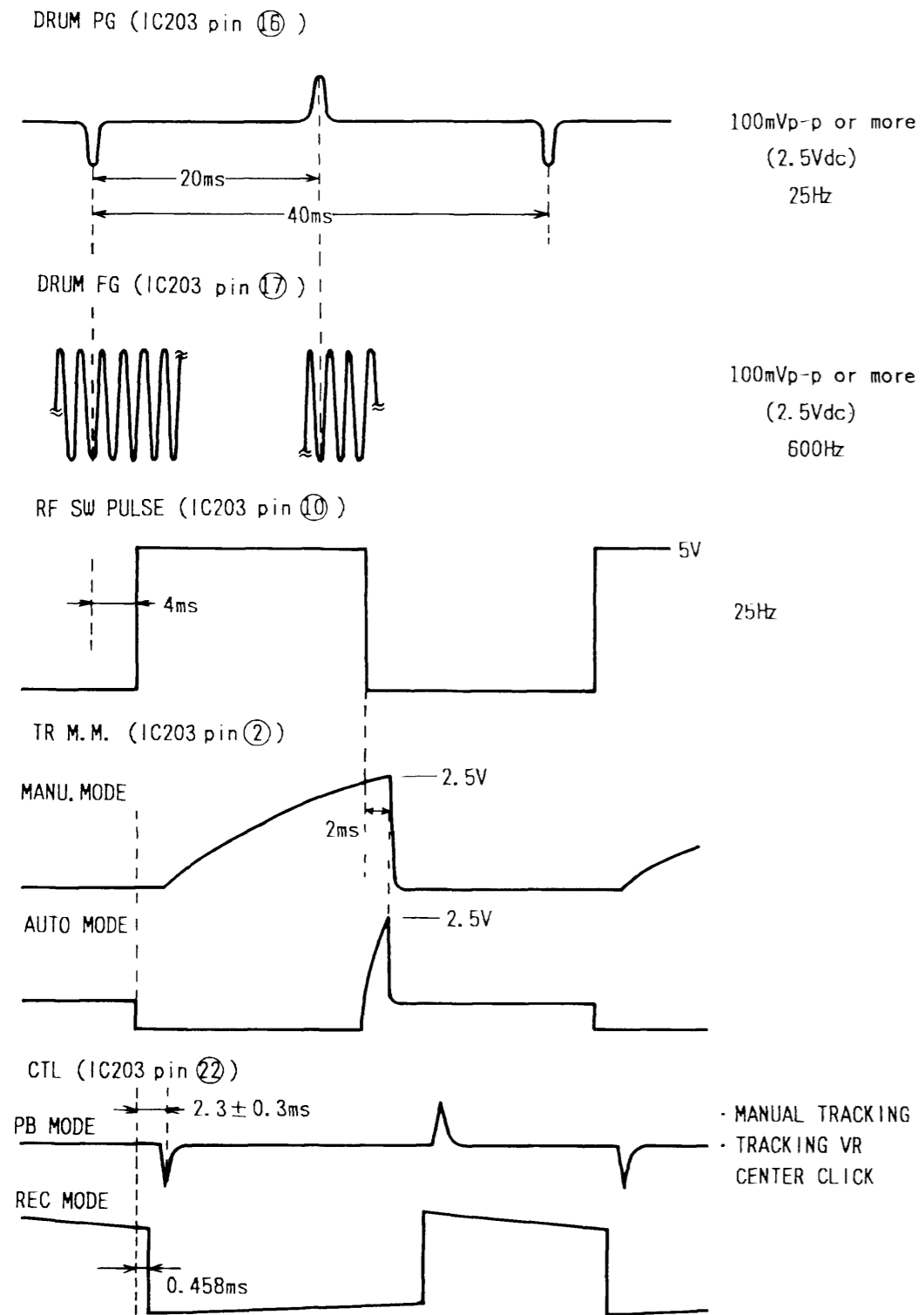


IC411 pin 24 (EE)
20 μs/div.
200mV/div.





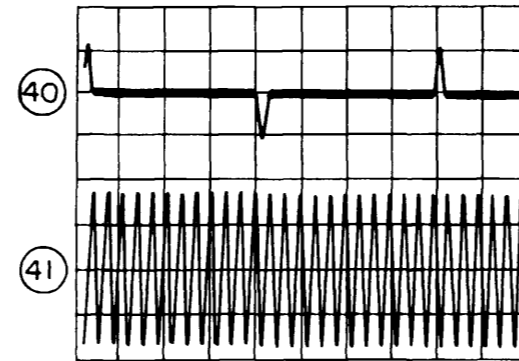
DRUM SERVO SYSTEM TIMING CHART



WAVE FORM - 2 (SERVO WAVE FORM)

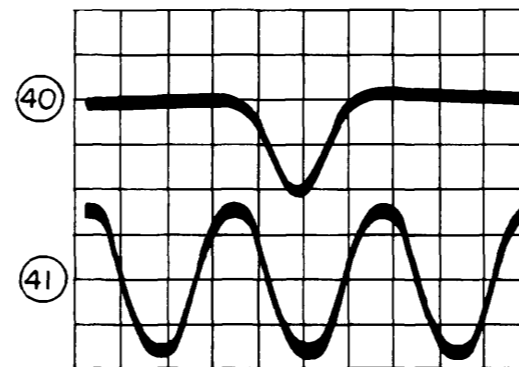
1. DRUM PG AND FG

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



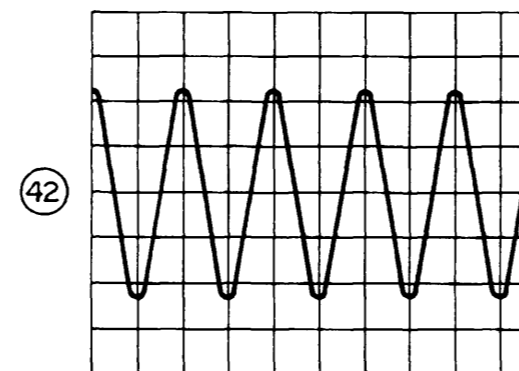
2. DRUM PG AND FG

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



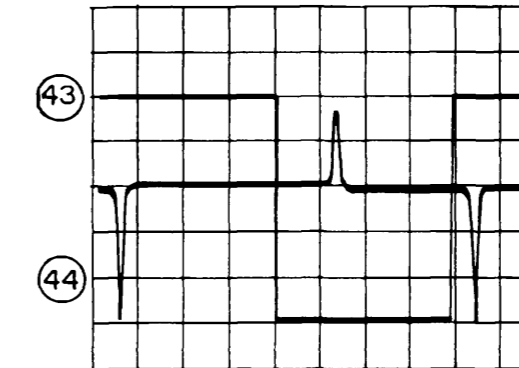
3. CAPSTAN FG (IC203 pin ①⑧)

AC 0.1V/div.
Time 1ms/div.



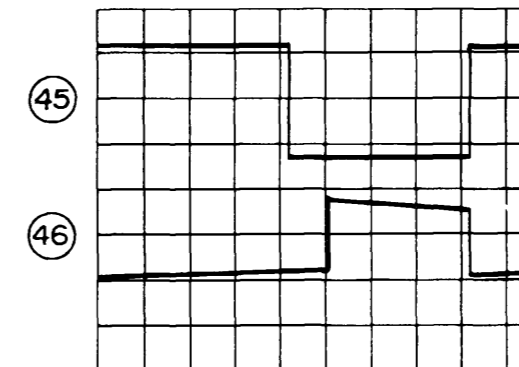
4. RF SW PULSE AND CTL (PB MODE)

RF SW PULSE DC 1V/div. (IC203 pin ①⑩)
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.



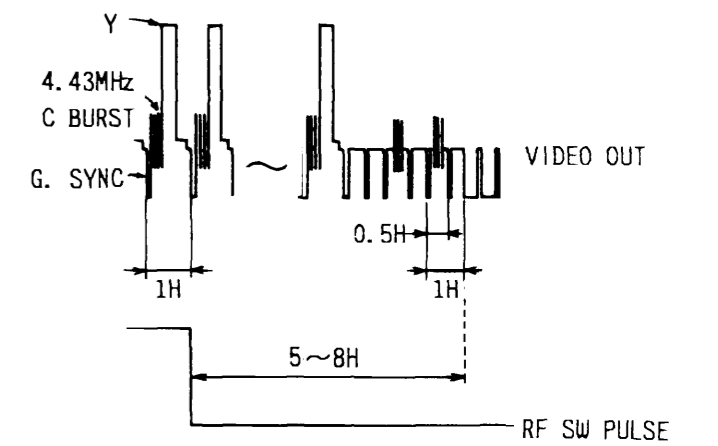
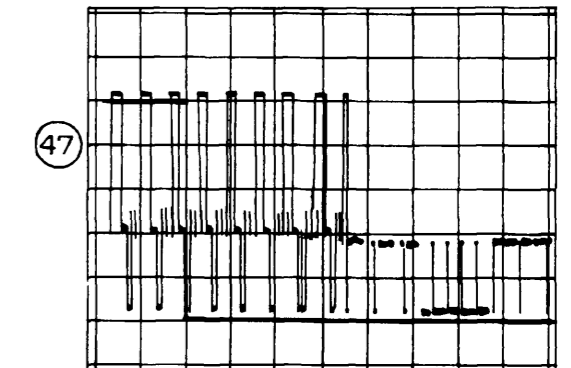
5. RF SW PULSE AND CTL (REC MODE)

Upper: RF SW PULSE DC 2V/div.
(IC203 pin ①⑩)
Lower: CTL AC 2V/div.
(IC203 pin ②②)
Time 5ms/div.

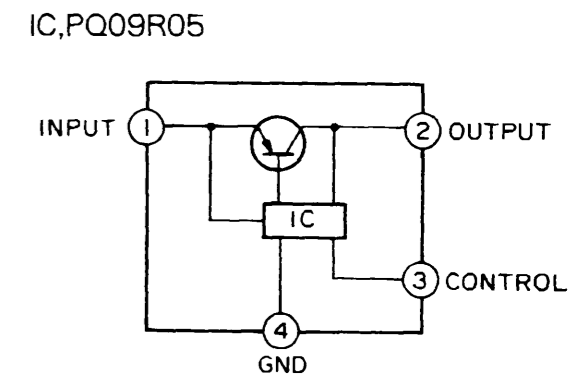
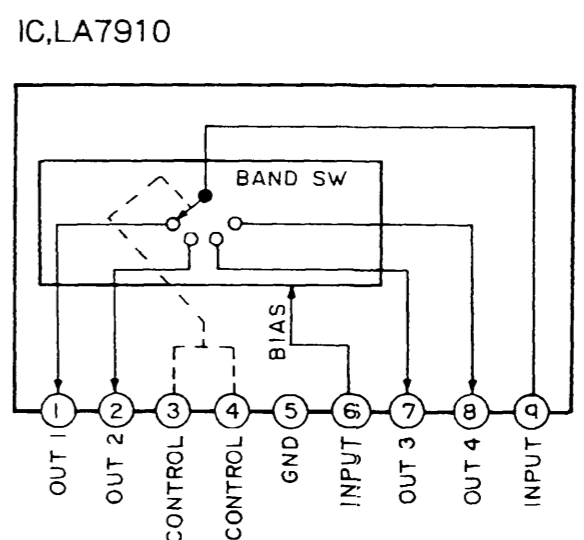
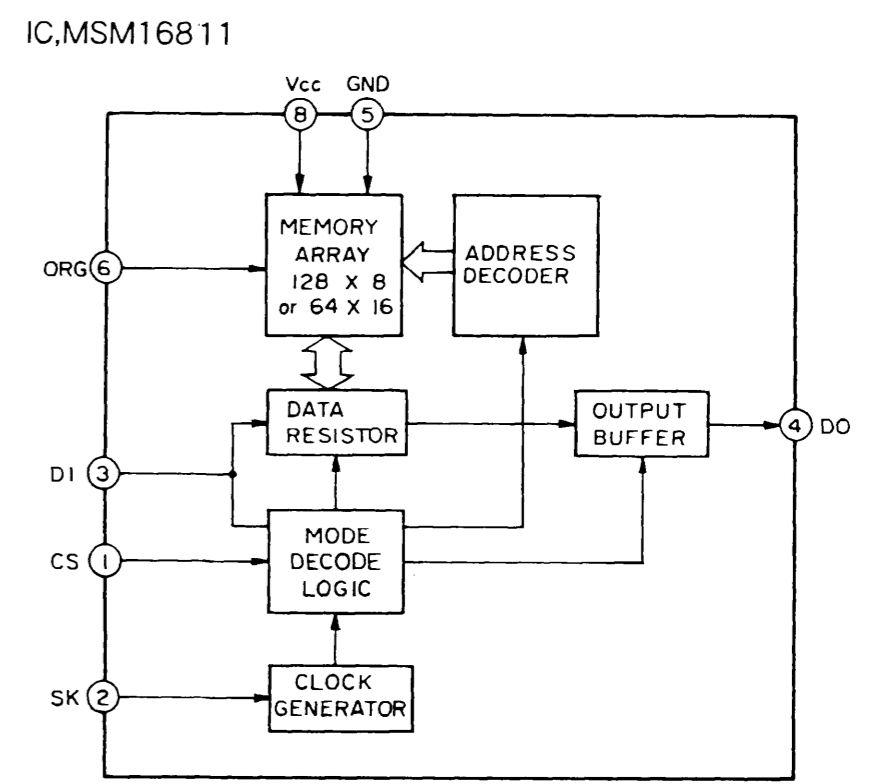
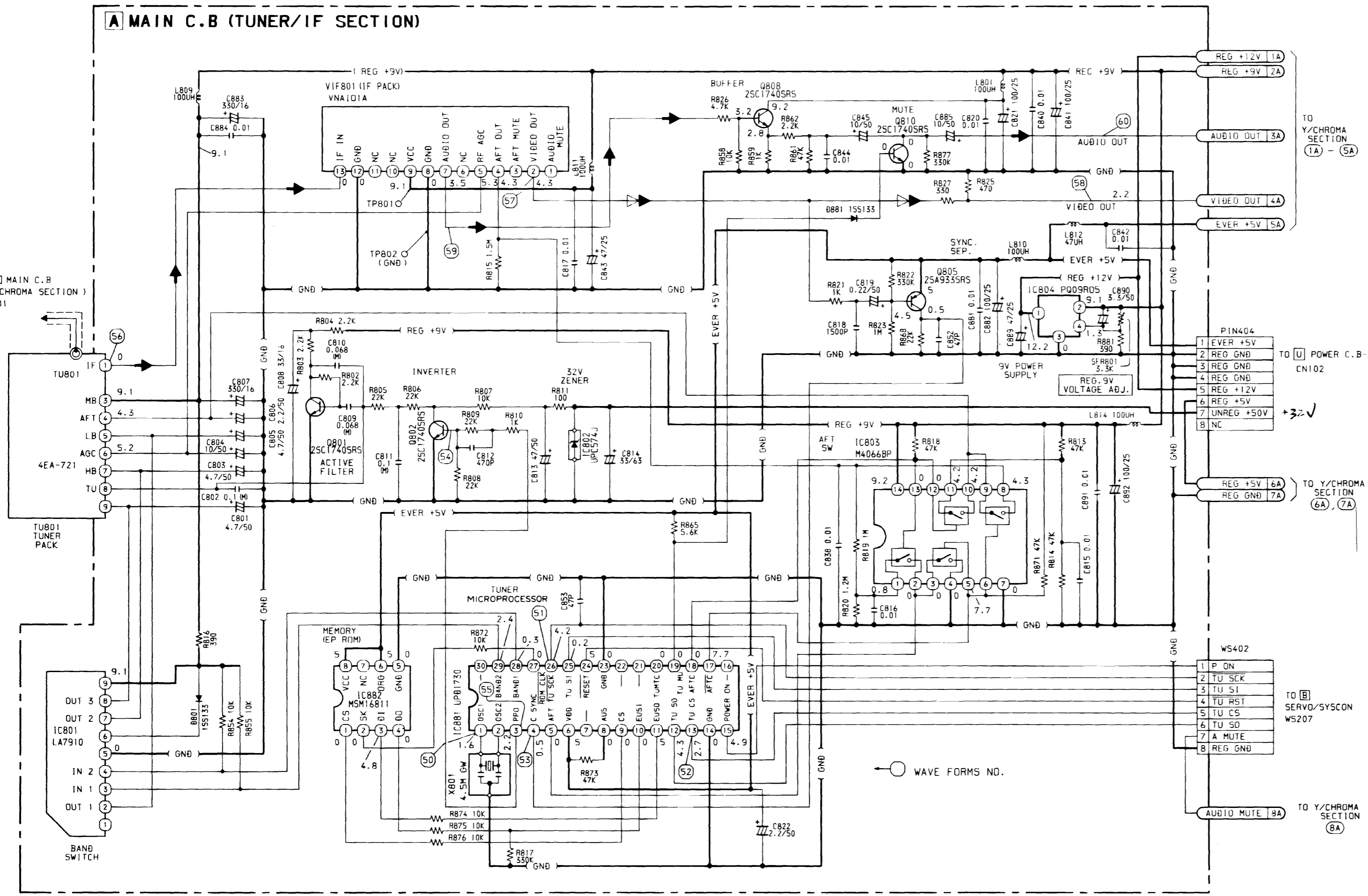


6. RF SW PULSE AND VIDEO OUT

RF SW PULSE DC 1V/div. (IC203 pin ①⑩)
Video out (OPEN) AC 0.5V/div.
Time 0.1ms/div.
The RF SW pulse rises or falls 5~8H (320~512 μs) before the VD (vertical sync) signal in the video signal.



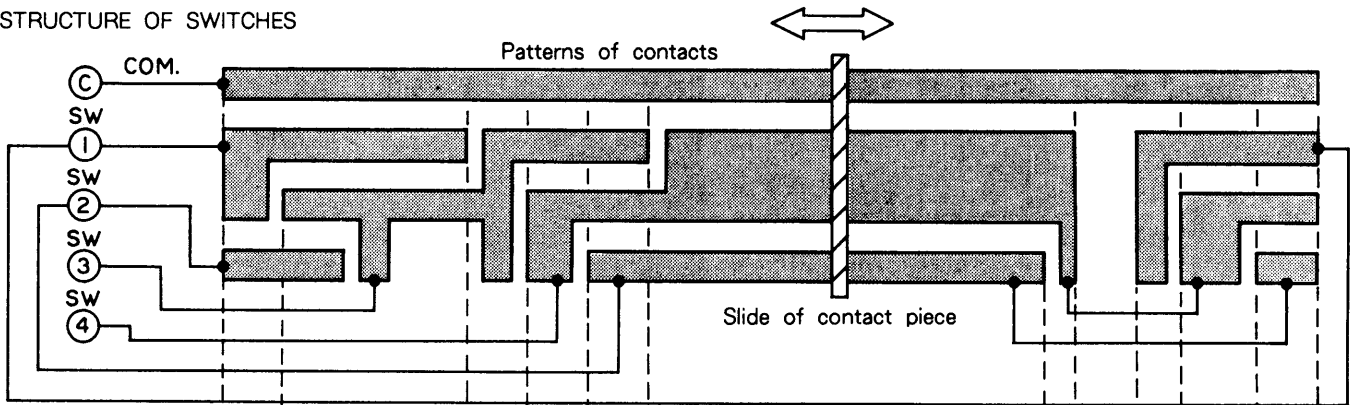
SCHEMATIC DIAGRAM - 3 (TUNER/IF SECTION)



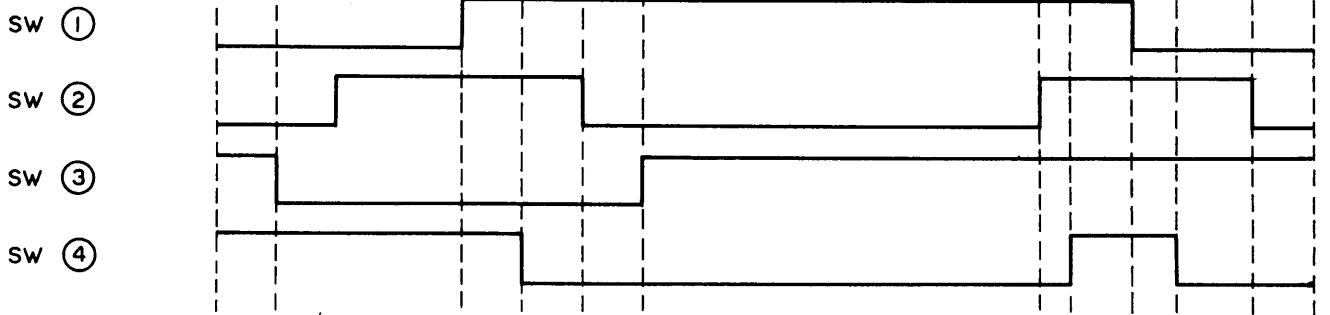
SYSTEM SWITCH MODE

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

STRUCTURE OF SWITCHES



SWITCH STATE DIAGRAM

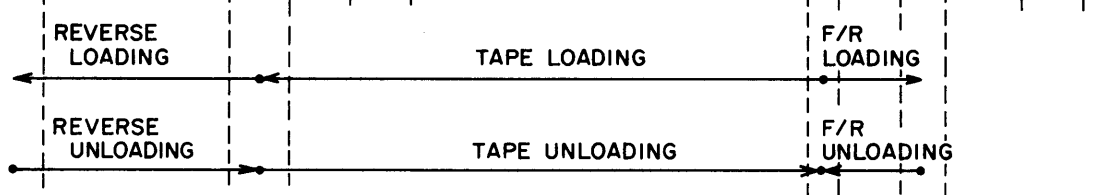


0	0	0	1	1	1	1	1	0	0	0	
0	0	1	1	1	0	0	1	1	1	1	0
1	0	0	0	0	0	1	1	1	1	1	
1	1	1	0	0	0	0	0	1	1	0	0

OPERATION POSITIONS

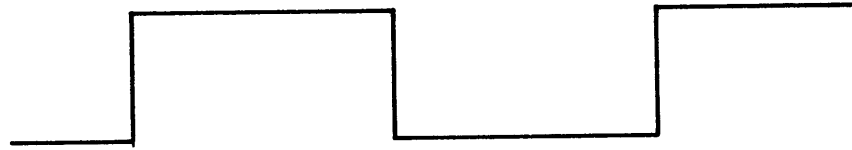


SHIFT OPERATION

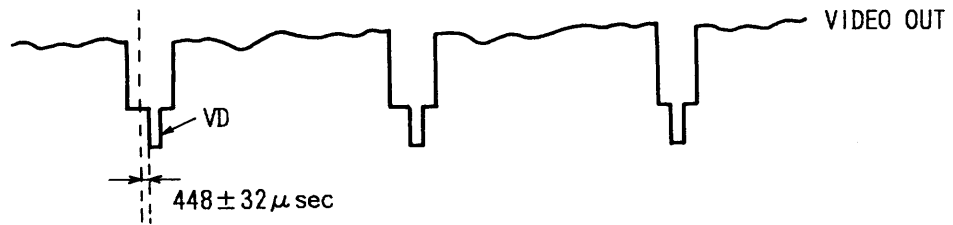
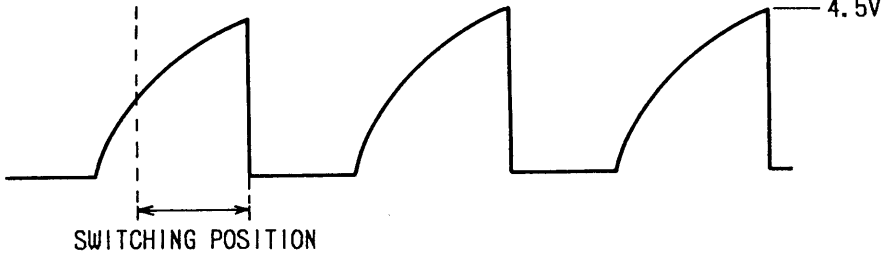


SWITCH				Position
SW1	SW2	SW3	SW4	
0	0	1	0	Front loading, Eject
0	1	1	0	Intermediate
0	1	1	1	F.F, REW
1	1	1	1	Intermediate
1	1	1	0	Stop
1	0	1	0	Tape loading
1	0	0	0	Gear change
1	1	0	0	Intermediate
1	1	0	1	Play (Pause)
0	1	0	1	Intermediate
0	0	0	1	Intermediate
0	0	1	1	Reset

RF SW PULSE (IC203 pin 10)

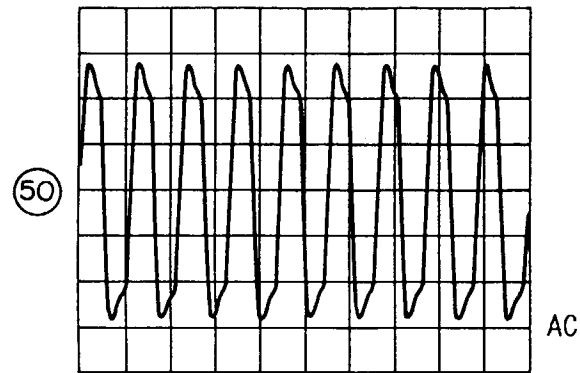


PG. M.M. (IC203 pin 28)

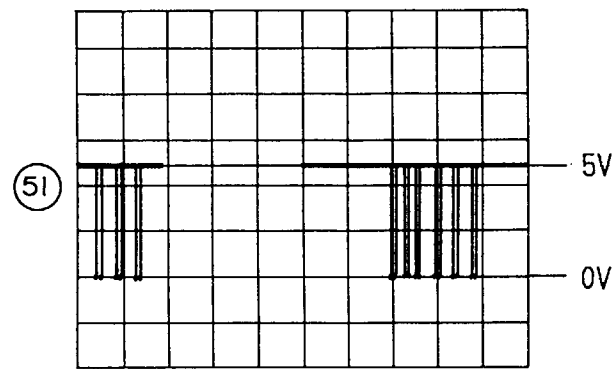


WAVE FORM - 3 (TUNER WAVE FORM)

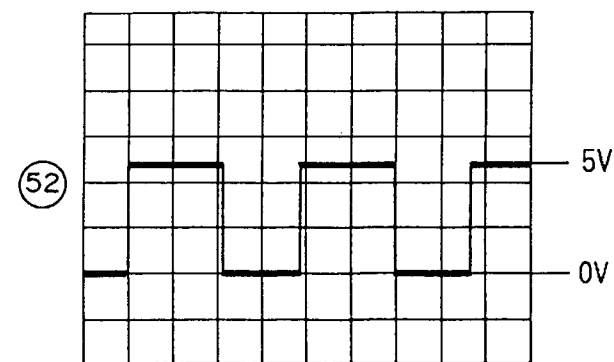
IC881 pin ①
Oscillated by the microprocessor.
1V/div.
200ns/div.



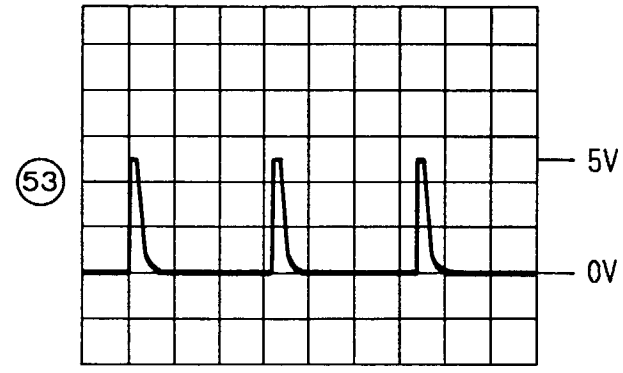
IC881 pin ②⑥
Clock of microprocessor.
2V/div.
20ms/div.



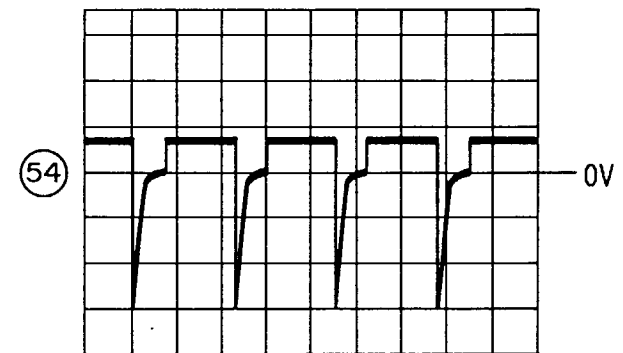
IC881 pin ⑬
Microprocessor chip select.
2V/div.
20ms/div.



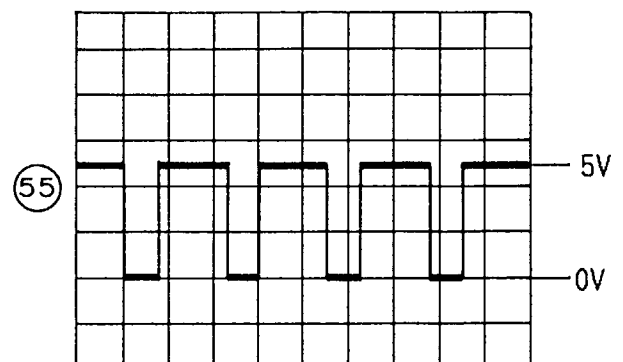
IC881 pin ④
H. sync
2V/div.
20 μs/div.



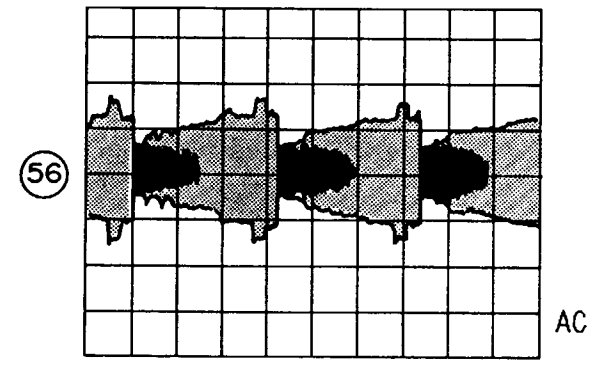
Q802 base
1V/div.
50 μs/div.



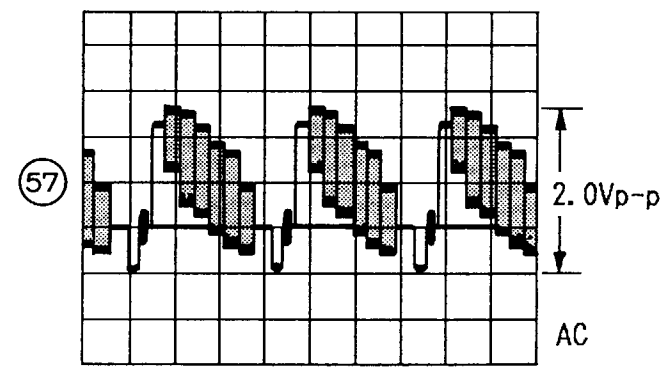
IC881 pin ③
Pulse for generating a tuning voltage.
The pulse width varies for different channels.
2V/div.
50 μs/div.



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



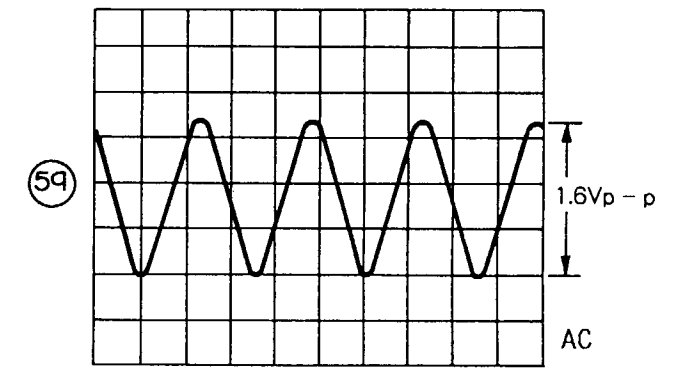
VIF801 pin ②
500mV/div.
20 μs/div.



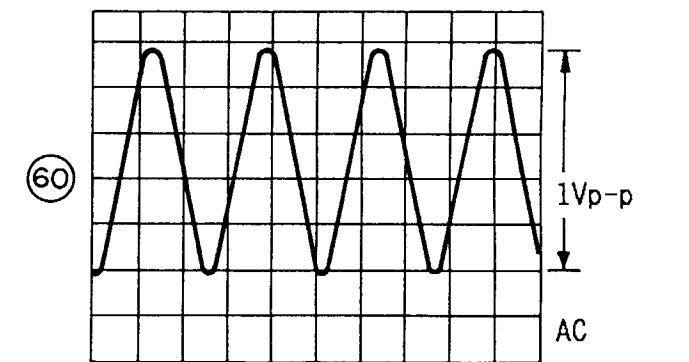
TP805
TU VIDEO OUT 75 Ω TERMINATE
500mV/div.
20 μs/div.



VIF802 pin ⑦
TU AUDIO OUT
When modulated
at 400Hz and 50kHz.
500mV/div.
1ms/div.

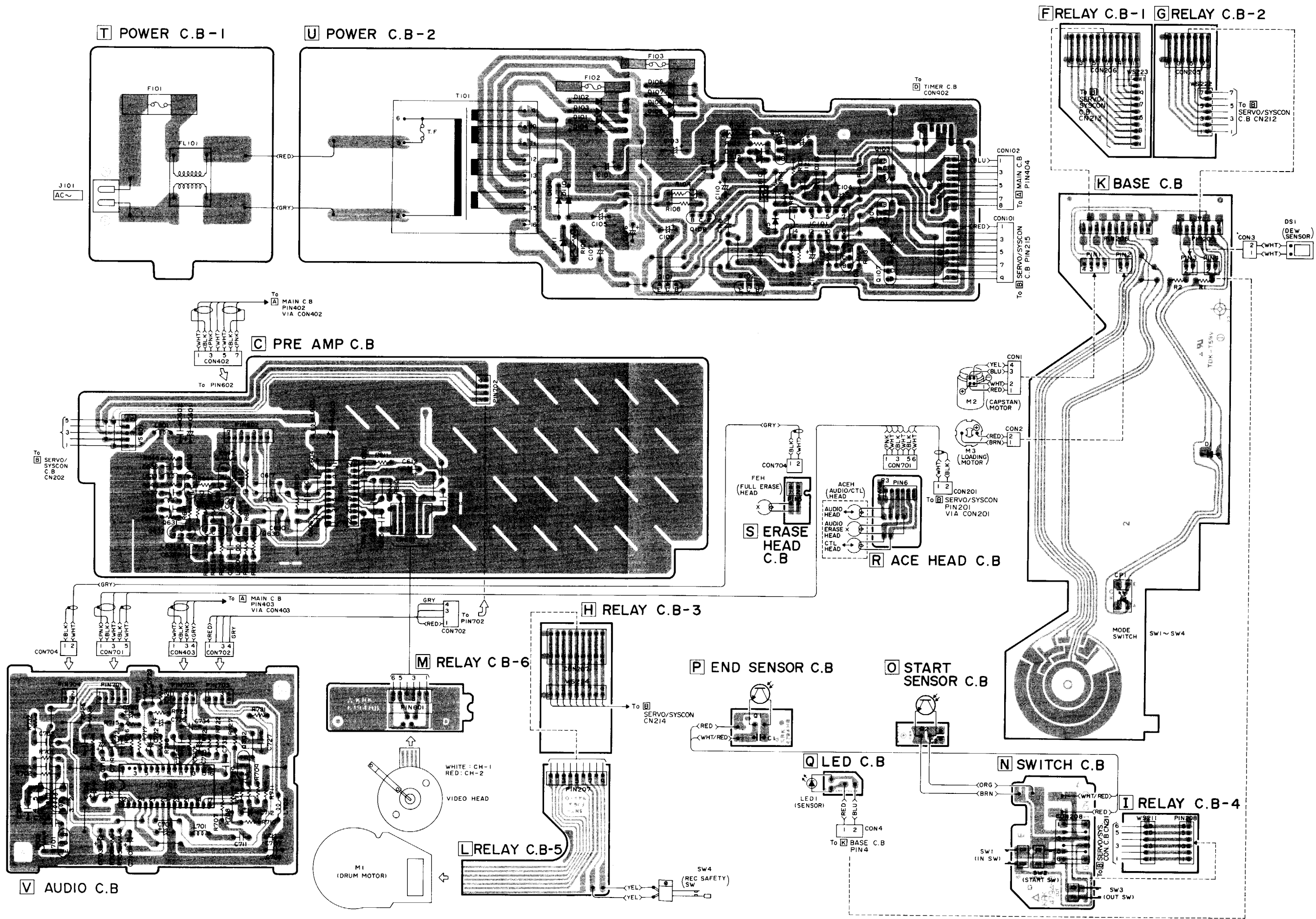


TP804
TU AUDIO OUT
When modulated
at 400Hz and 50kHz.
200mV/div.
1ms/div.

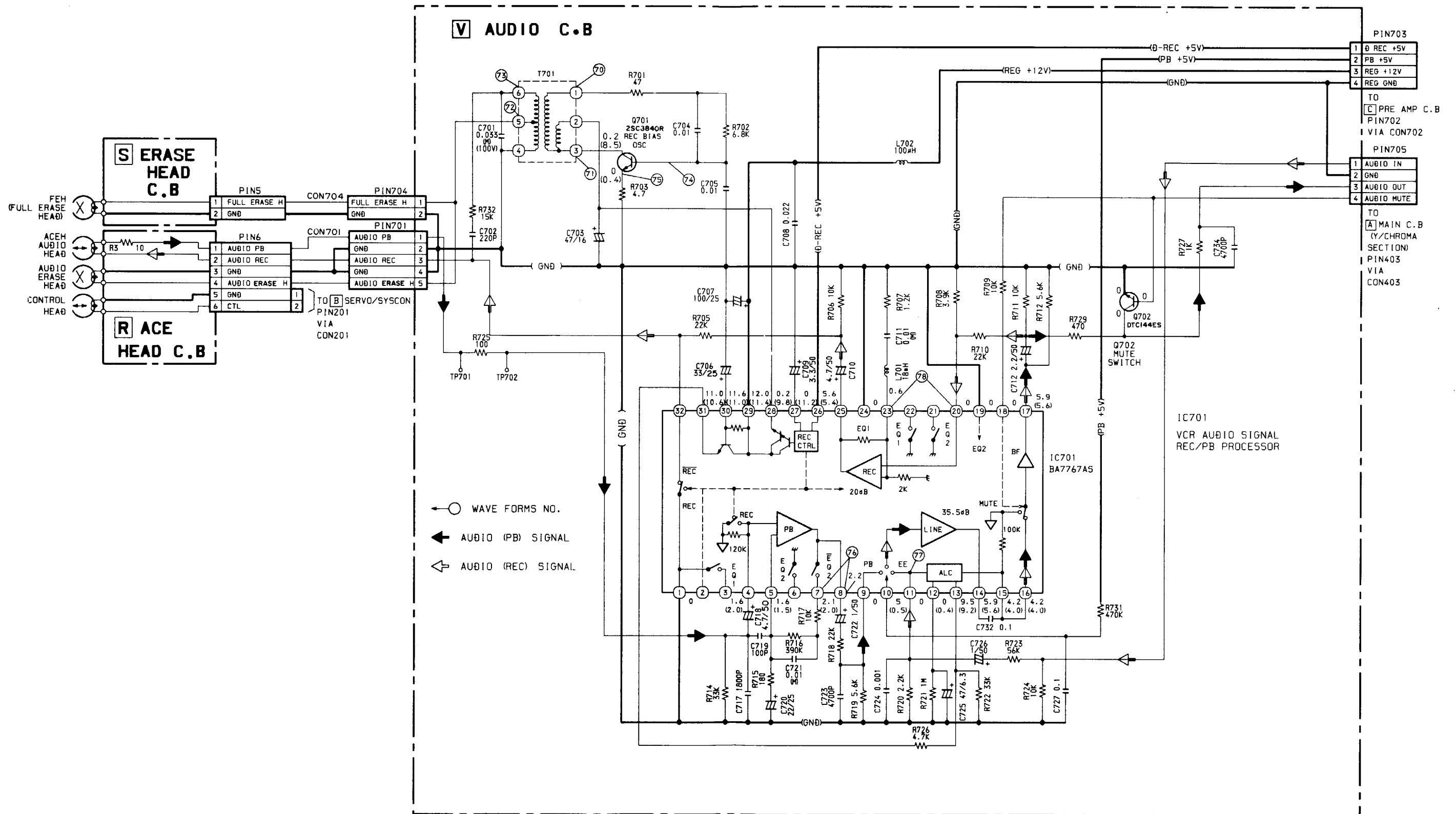


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

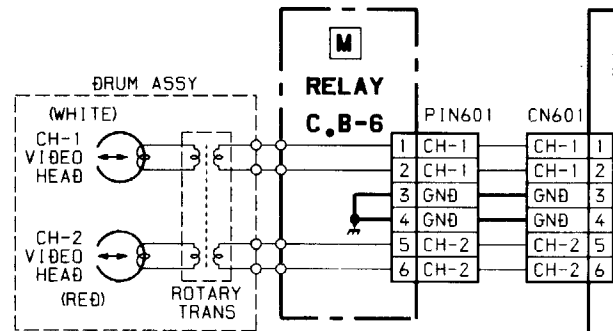
A
B
C
D
E
F
G
H
I
J
K



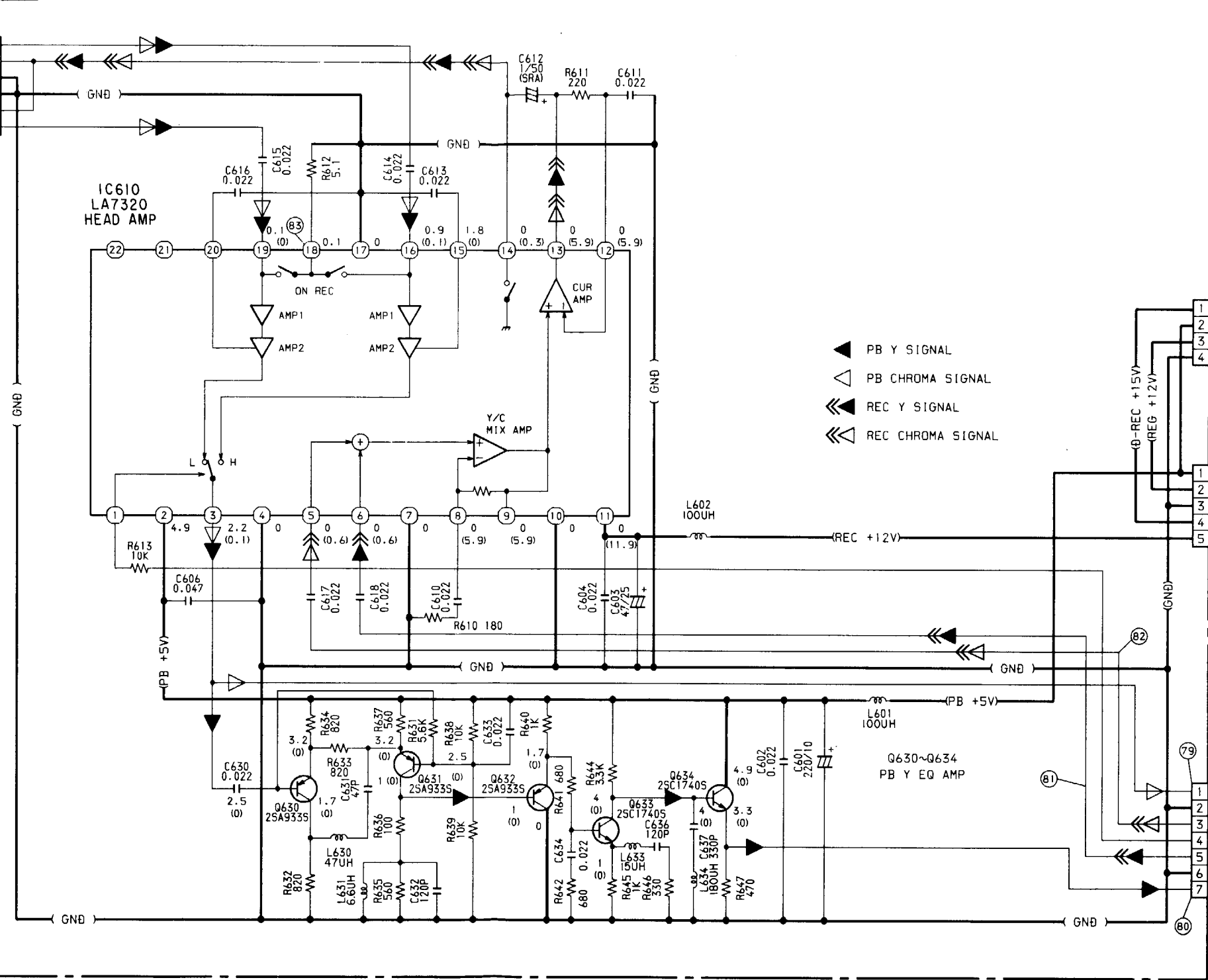
SCHEMATIC DIAGRAM - 4 (AUDIO SECTION)



SCHMATIC DIAGRAM - 5 (PRE AMP SECTION)

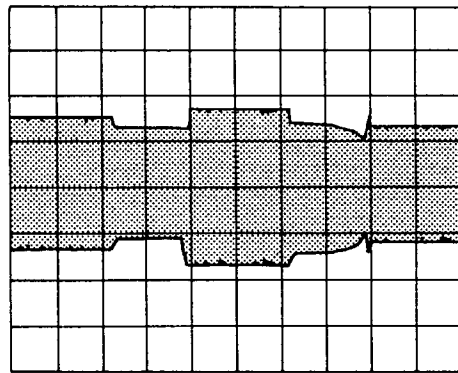


C PRE AMP C.B



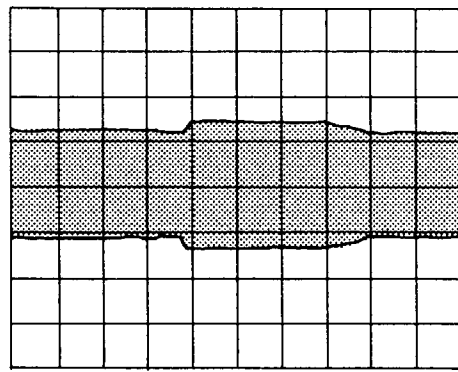
PIN602 pin ① (PB)

5ms/div.
100mV/div.



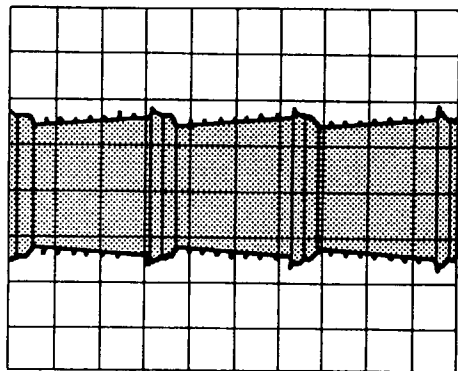
PIN602 pin ⑦ (PB)

5ms/div.
200mV/div.



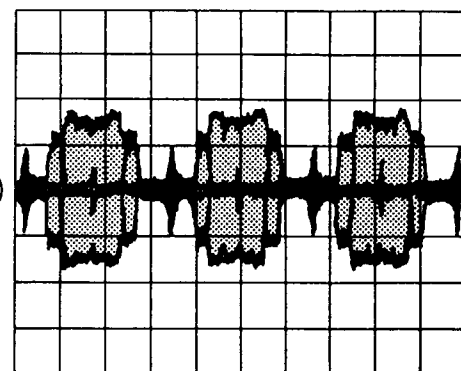
PIN602 pin ⑤ (REC)

20 μs/div.
100mV/div.



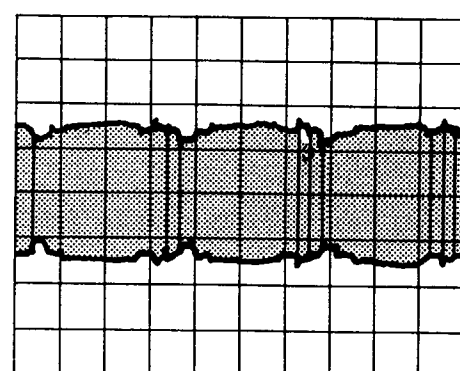
PIN602 pin ③ (REC)

20 μs/div.
20mV/div.



C610 pin ⑮ (REC)

20 μs/div.
50mV/div.



PIN702

1	B REC +5V	TO
2	PB +5V	V AUDIO C.B
3	REG +12V	PIN703
4	REG GND	VIA
		CON702

WS601

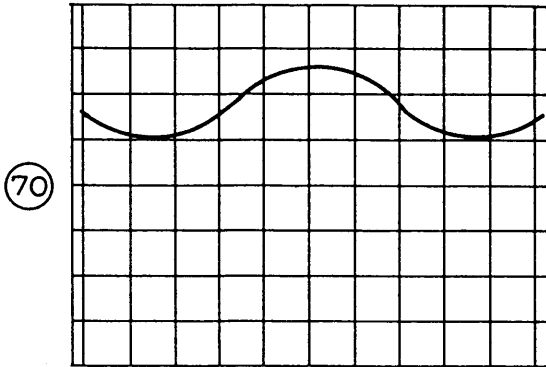
1	PB +5V	TO
2	REG +12V	B SERVO/SYSCON
3	REG GND	C.B
4	B REC	CN202
5	REC +12V	

PIN602

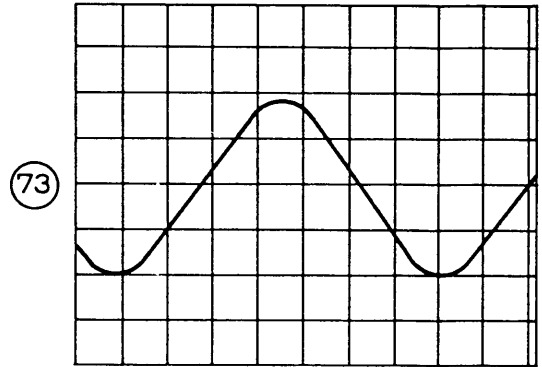
1	PB C SL	TO
2	VI GND	A MAIN C.B
3	REC C SL	(Y/CHROMA
4	RF SW P	SECTION)
5	REC Y FM	PIN402
6	VI GND	VIA
7	PB Y FM	CON402

WAVE FORM – 4 (AUDIO WAVE FORM)

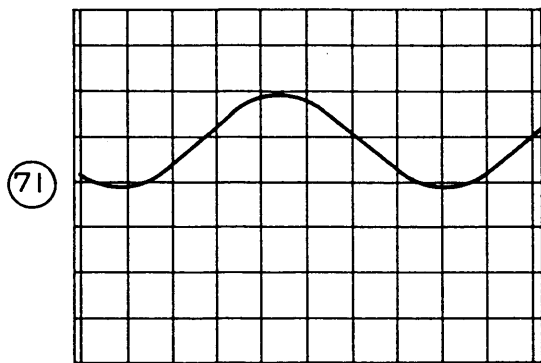
T701 pin ①
5V/div.
2 μ s/div.



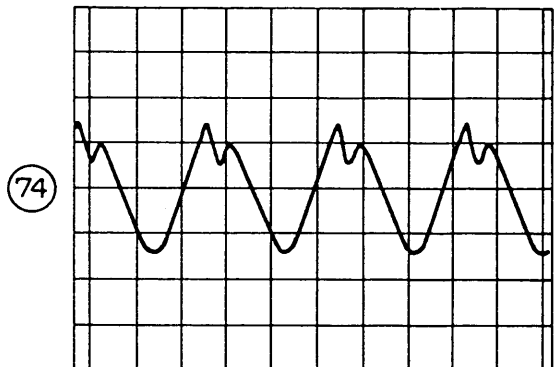
T701 pin ⑥
20V/div.
2 μ s/div.



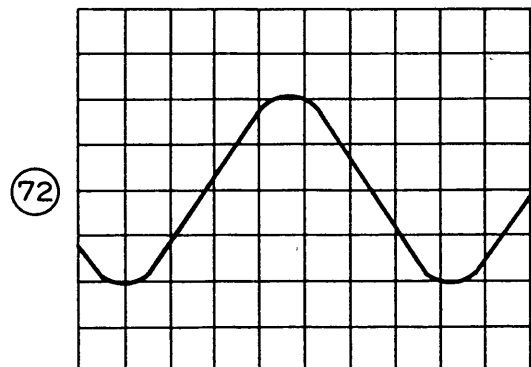
T701 pin ③
10V/div.
2 μ s/div.



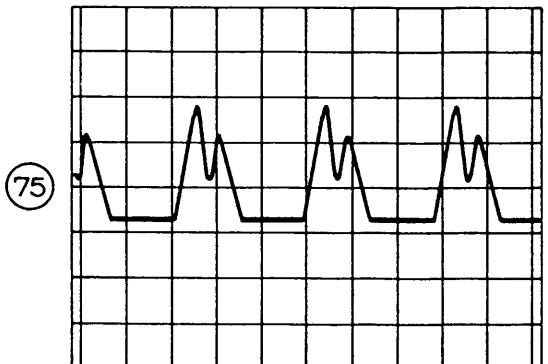
Q701 BASE
1V/div.
5 μ s/div.



T701 pin ⑤
10V/div.
2 μ s/div.



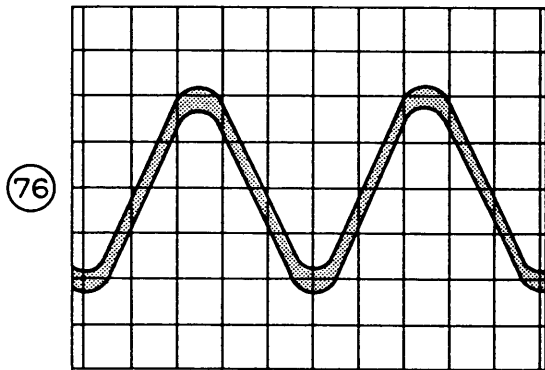
Q701 emitter
500mV/div.
5 μ s/div.



IC701 pins ⑦ and ⑧

20mV/div.

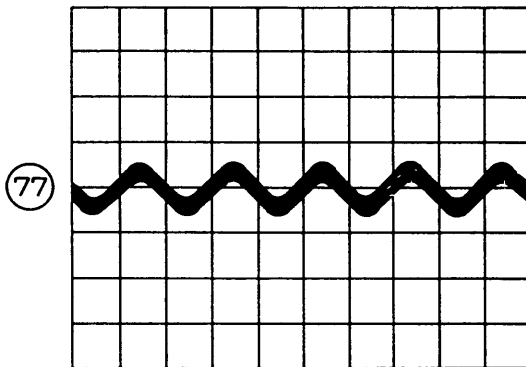
200 μ s/div.



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

20mV/div.

500 μ s/div.

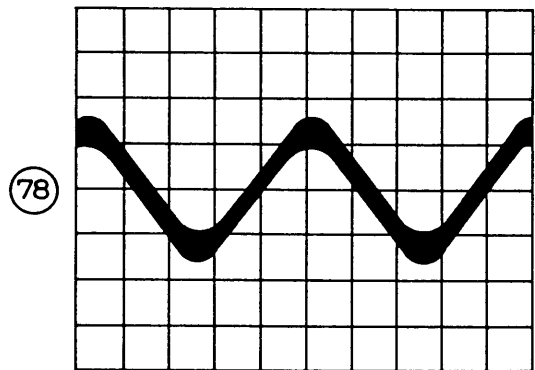


- The wave form shown in the illustration on the left is at pins ②① and ②③ of IC701.

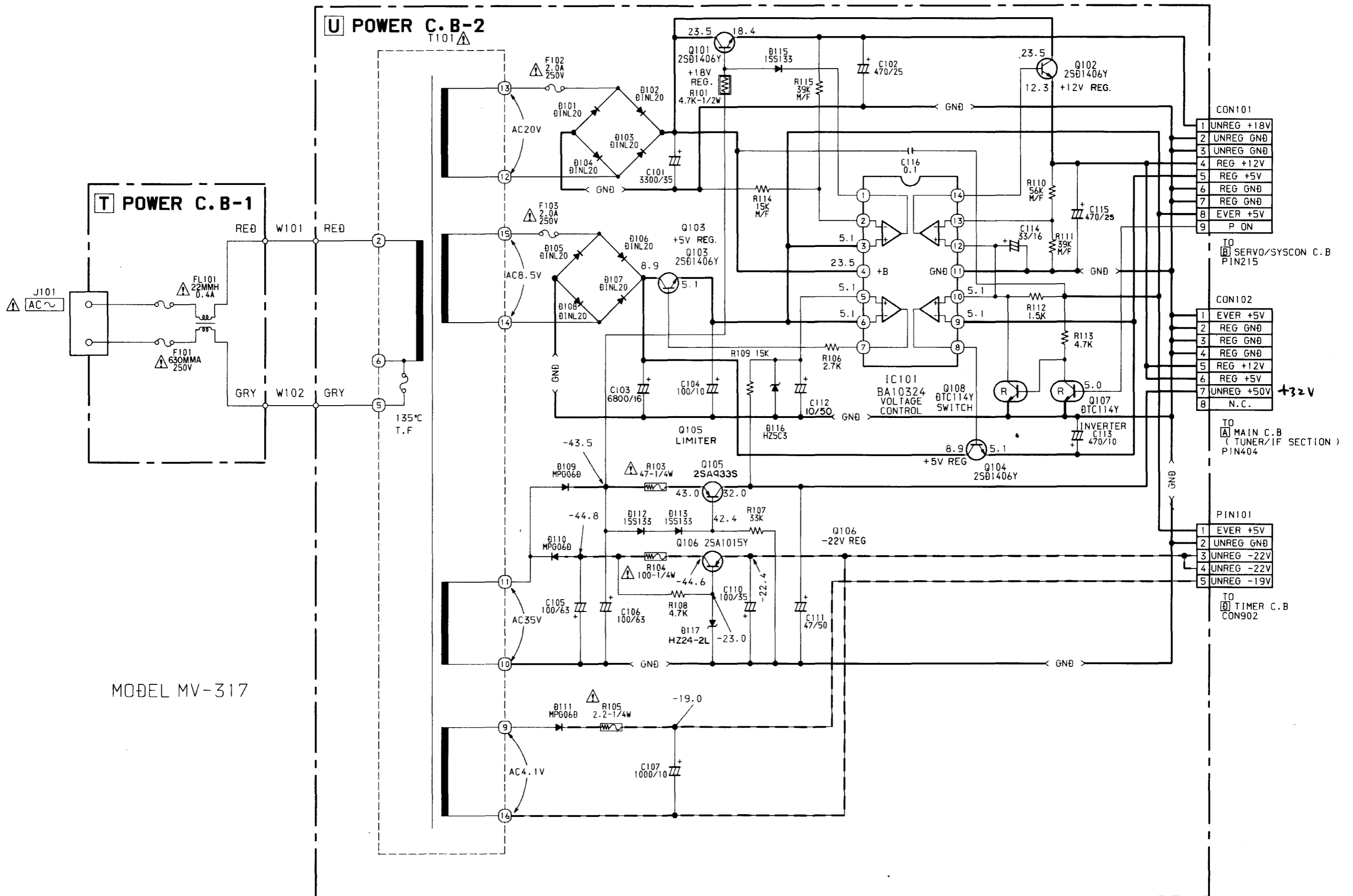
- IC701 pin ②⑤ is 1.53Vp - p.

50mV/div.

200 μ s/div.



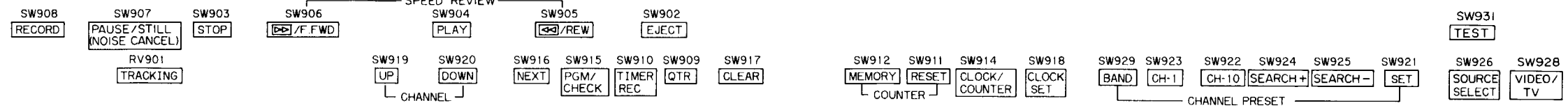
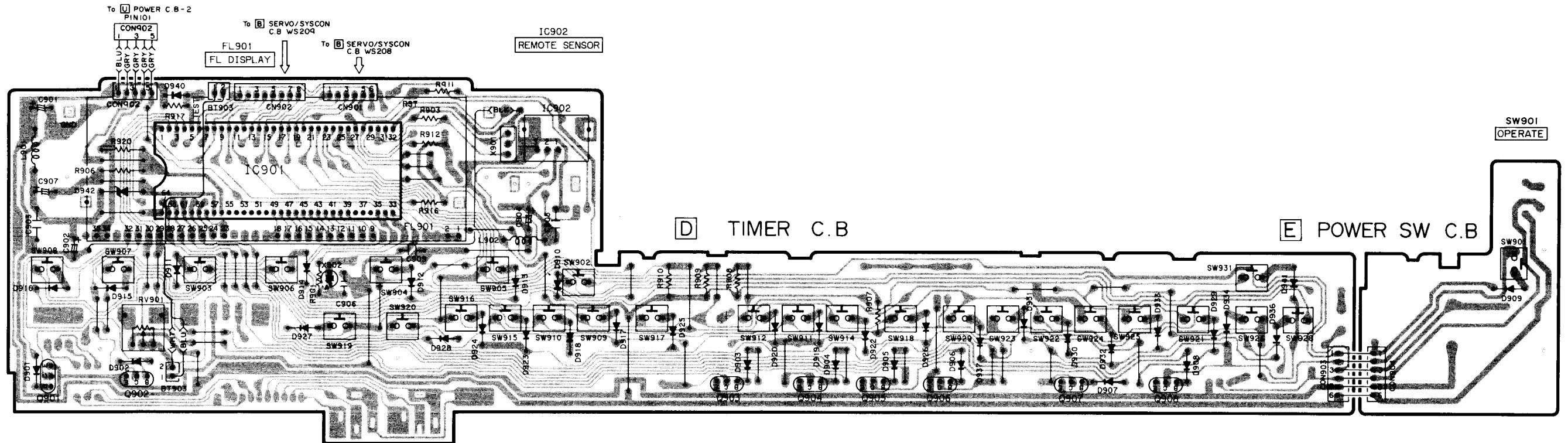
SCHEMATIC DIAGRAM - 6 (POWER SECTION)



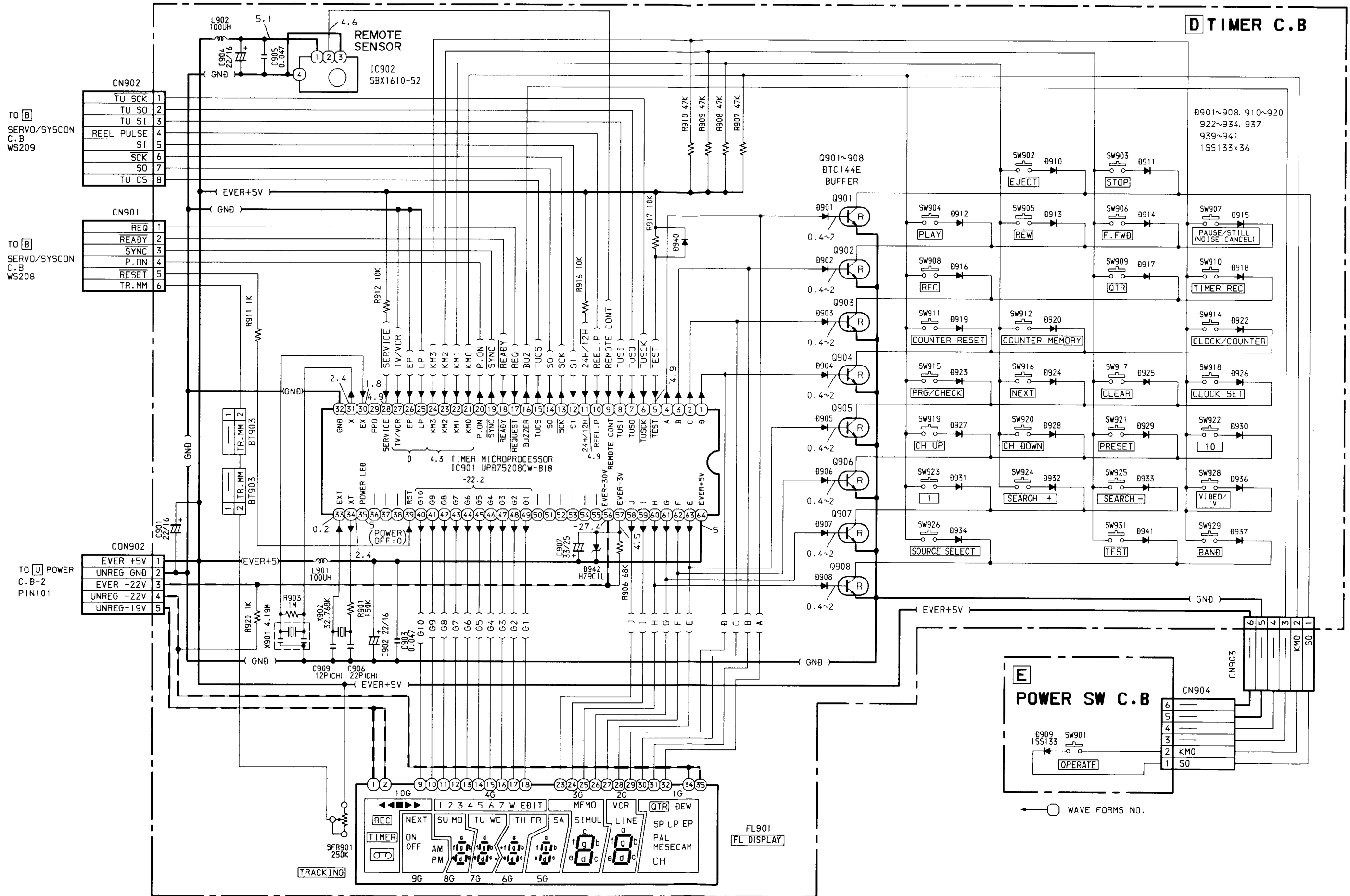
WIRING - 3 (TIMER/POWER SW SECTION)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A
B
C
D
E
F
G
H
I
J
K



SCHEMATIC DIAGRAM - 7 (TIMER/POWER SW SECTION)

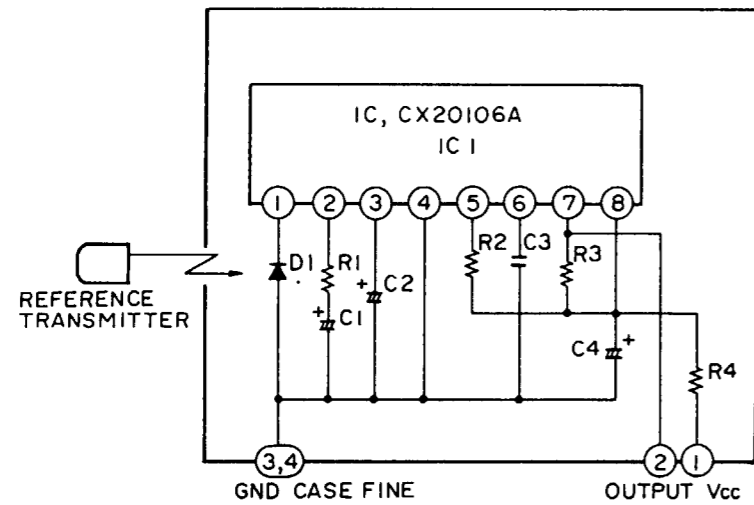


D TIMER C.B

E POWER SW C.B

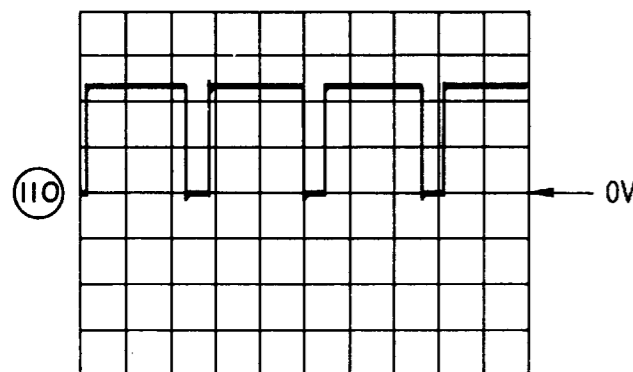
WAVE FORMS NO.

IC, SBX1610

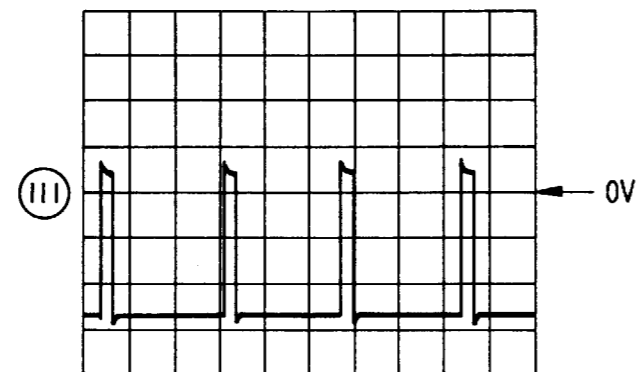


WAVE FORM - 5 (TIMER WAVE FORM)

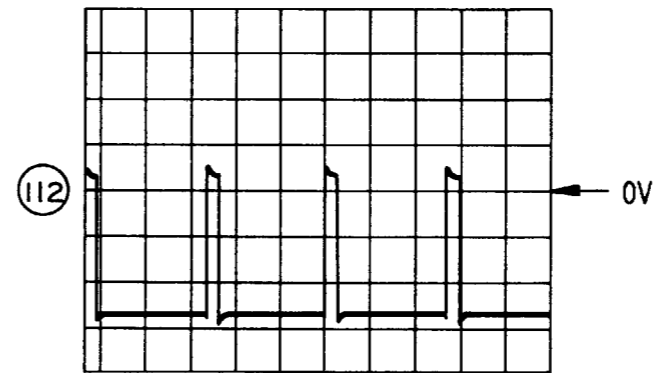
Q901 DTC144E Base
2ms/div.
2V/div.



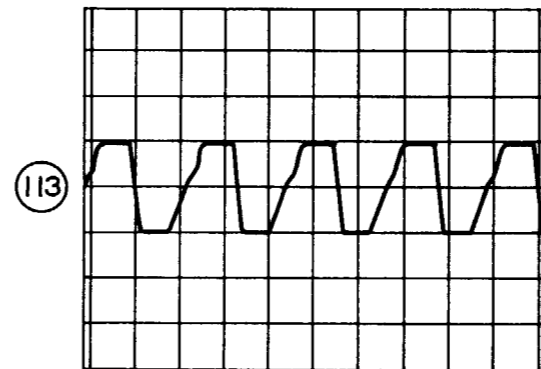
Anode voltage
IC901 pin 58 : S9
2ms/div.
10V/div.



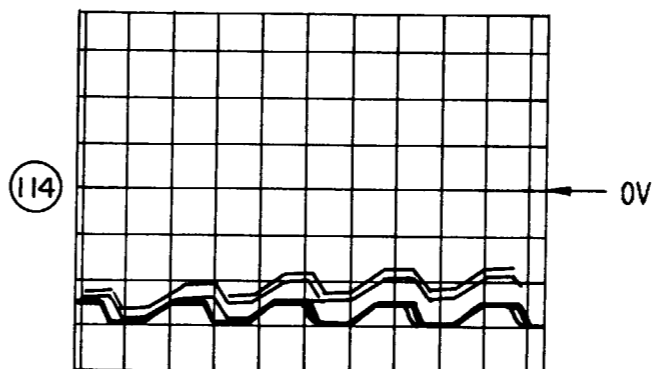
Grid voltage
IC901 pin 40 : T0
2ms/div.
10V/div.



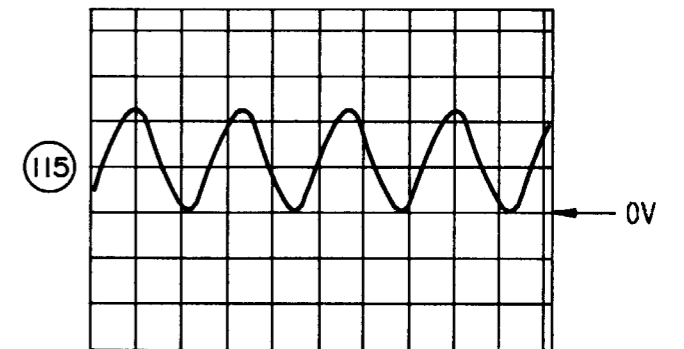
Filament voltage
CON902 pin 5 : AC 4V
AC range
2 μs/div.
5V/div.



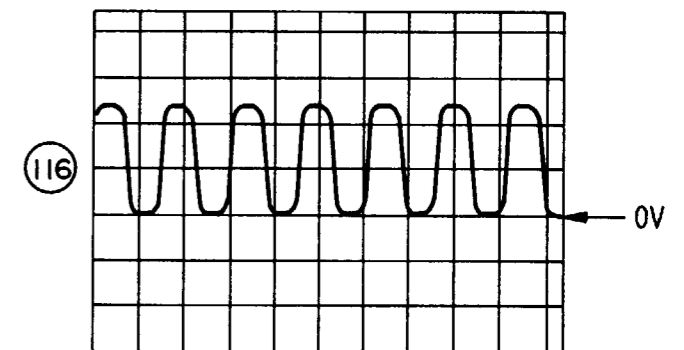
Filament voltage
CON902 pin 5 : AC 4V
DC range
2 μs/div.
10V/div.



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.



IC DESCRIPTION

IC,MB88525 - 205M

Pin No.	Pin Name	I/O	Description	Active																
1	TOP - SENSOR (START)	I	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.	H																
2	END - SENSOR	I	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.	H																
3	RF - SWP	I	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.	Pulse																
4	REEL - SENSOR	I	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.	Pulse																
5	CASSETTE - OUT	I	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.	L																
6	CASSETTE - START	I	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.	L																
7	CASSETTE - IN	I	The cassette-in switch in the cassette loading mechanism is connected to detect the cassette-in state.	L																
8	—	—	Unused (pulled up).	—																
9 10 11 12	MODE SW 1 MODE SW 2 MODE SW 3 MODE SW 4	I	These pins detect the position of the tape sledding mechanism.	H or L																
13 14	LP • EP - H EP - H	I	Tape speed detection inputs. <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>NTSC/PAL</th> <th>LP • EP-H</th> <th>EP-H</th> </tr> </thead> <tbody> <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> </tbody> </table>		NTSC/PAL	LP • EP-H	EP-H	SP	2H/3H	L	L	LP	4H/3H	H	L	EP	6H/6H	H	H	H
	NTSC/PAL	LP • EP-H	EP-H																	
SP	2H/3H	L	L																	
LP	4H/3H	H	L																	
EP	6H/6H	H	H																	
15 16	MESECAM/PAL NTSC/PAL	I	Video system discrimination inputs. <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>NTSC/PAL</th> <th>MESECAM/PAL</th> <th>MODE</th> </tr> </thead> <tbody> <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> </tbody> </table> <p style="text-align: right;">*: DON'T CARE</p>	NTSC/PAL	MESECAM/PAL	MODE	H	*	NTSC	L	H	MESECAM	L	L	PAL	H or L				
NTSC/PAL	MESECAM/PAL	MODE																		
H	*	NTSC																		
L	H	MESECAM																		
L	L	PAL																		
17	—	—	Unused (pulled up).	—																
18	—	—	Unused (pulled up).	—																
19	DEW - SENSOR (fixed at "H")	I	Receives a signal from the dew sensor circuit and prevents mechanical operation in the high humidity state.	L																
20	REC - PROOF	I	Detects the presence/absence of the mis-erasure prevention tab. "H" : No tab "L" : Tab	L																

Pin No.	Pin Name	I/O	Description	Active																	
21	—	—	Unused.	—																	
22	VCR/TV	O	Switches the RF signal output of the VCR. "H" : Built-in RF converter signal output "L" : External antenna signal output	H or L																	
23	LINE/TUNER (AUDIO)	O	Switches the audio output. "H" : Line input audio "L" : Tuner audio	H or L																	
24	LINE/TUNER (VIDEO)	O	Switches the video output. "H" : Line input video "L" : Tuner video	H or L																	
25	EX	I	A ceramic oscillator which generates the system clock signal (6MHz) is connected to these pins.																		
26	X	O																			
27	RST	I	System reset input.	L																	
28	—	—	Unused.	—																	
29	—	—	Unused (pulled up).	—																	
30	SCK	I	Receives a pulse to time writing/reading of the serial data to/ from the timer microprocessor.	Pulse																	
31	SI	I	Signal for receiving serial data from the timer microprocessor.	H or L																	
32	GND	—	GND.	—																	
33	SO	O	Signal to output serial data to the timer microprocessor.	H or L																	
34	DRUM - ON	O	Drum motor rotation/stop control.	L																	
35	DELAYED - REC	O	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.	H																	
36	—	—	Unused.	—																	
37	A - MUTE	O	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).	H																	
38	CM - R	O	Capstan motor rotation/stop and rotation direction control outputs.	H or L																	
39	CM - F																				
					<table border="1"> <thead> <tr> <th>CM-F</th> <th>CM-R</th> <th>State</th> </tr> </thead> <tbody> <tr> <td>L</td> <td>L</td> <td>Motor 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> </tbody> </table>	CM-F	CM-R	State	L	L	Motor stopped	H	L	Rotates forward	L	H	Rotates in reverse	H	H	Braking stopped	
CM-F	CM-R	State																			
L	L	Motor stopped																			
H	L	Rotates forward																			
L	H	Rotates in reverse																			
H	H	Braking stopped																			
40	TLM - R	O	Tape sledding motor rotation/stop and rotation direction control outputs.	H or L																	
41	TLM - F																				
						<table border="1"> <thead> <tr> <th>TLM-F</th> <th>TLM-R</th> <th>State</th> </tr> </thead> <tbody> <tr> <td>L</td> <td>L</td> <td>Motor 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> </tbody> </table>	TLM-F	TLM-R	State	L	L	Motor stopped	H	L	Rotates forward	L	H	Rotates in reverse	H	H	Braking stopped
TLM-F	TLM-R				State																
L	L	Motor stopped																			
H	L	Rotates forward																			
L	H	Rotates in reverse																			
H	H	Braking stopped																			

Pin No.	Pin Name	I/O	Description	Active
42	CAPSTAN - SPEED · HOLD	O	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.	H
43	FF/REW	O	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.	H
44	REV	O	Unused. Outputs "H" during REVIEW. Controls the review speed of the servo circuit.	H
45	CUE	O	Unused. Outputs "H" during CUE. Controls the cue speed of the servo circuit.	H
46	STILL - ADVANCE	O	Unused. Outputs "H" during STILL ADVANCE.	H
47	STILL /PAUSE	O	Unused. Outputs "H" during STILL, REC PAUSE and S-ADV.	H
48	PLAY	O	Unused. Outputs "H" during PLAY, STILL, CUE, REV and S-ADV.	H
49	REC	O	Unused. Outputs "H" during REC and REC PAUSE.	H
50	REW	O	Unused. Outputs "H" during REW and REV.	H
51	FF	O	Unused. Outputs "H" during FF and CUE.	H
52	---	-	Unused.	-
53	DELAYED - PLAY	O	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.	H
54	REQUEST	O	Signal to request serial communications to the timer microprocessor.	L
55	READY	O	Signal to inform the timer microprocessor that the standby for serial data reception is completed.	L
56	S · CLK	O	Outputs a pulse to time the writing of serial data to the servo IC.	Pulse
57	S · DAT	O	Signal to output serial data to the servo IC.	H or L
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	SYNC	I	Signal to synchronize serial communications with the timer microprocessor.	L
63	---	-	Unused.	-
64	EVER +5V	-	Positive power supply pin.	-

IC,UPD75208CW - B18 (IC901)

Pin No.	Pin Name	I/O	Description	Active
1	D	O	Anode and key matrix signals for the fluorescent display tube.	Pulse
2	C			
3	B			
4	A			
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/ $\overline{12h}$	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	KM 0	I	Key matrix scan input.	Pulse
22	KM 1			
23	KM 2			
24	KM 3			
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	EX	I	A ceramic oscillator which generates a main system clock pulse (4.19MHz) is connected.	
31	X	O		

Pin No.	Pin Name	I/O	Description	Active
32	GND	-	GND.	-
33	EXT	I	A crystal oscillator which generates a sub-system clock pulse (32.768kHz) is connected.	
34	XT	O		
35	POWER LED	O	Outputs "H" when power is turned on.	H
36	—	-	Unused.	-
37				
38				
39	RST	I	System reset input.	L
40	G10	O	Grid signals of the fluorescent display tube.	Pulse
41	G9			
42	G8			
43	G7			
44	G6			
45	G5			
46	G4			
47	G3			
48	G2			
49	G1			
50	—	-	Unused.	-
51				
52				
53				
54				
55				
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	J	O	Anode signals of the fluorescent display tube.	Pulse
59	I			
60	H	O	Anode and key matrix signals for the fluorescent display tube.	Pulse
61	G			
62	F			
63	E			
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	MOD 0	O	Record mode output.													
9	MOD 1			<table border="1"> <thead> <tr> <th></th> <th>MODE 0</th> <th>MODE 1</th> </tr> </thead> <tbody> <tr> <td>SP mode 3H</td> <td>"L"</td> <td>"L"</td> </tr> <tr> <td>LP mode 3H</td> <td>"H"</td> <td>"L"</td> </tr> <tr> <td>EP mode 6H</td> <td>"H"</td> <td>"H"</td> </tr> </tbody> </table>				MODE 0	MODE 1	SP mode 3H	"L"	"L"	LP mode 3H	"H"	"L"	EP mode 6H
	MODE 0	MODE 1														
SP mode 3H	"L"	"L"														
LP mode 3H	"H"	"L"														
EP mode 6H	"H"	"H"														
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.													
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.													

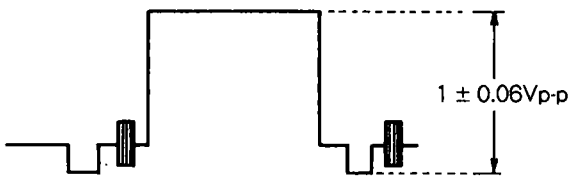
IC,UPD1730CT (IC881)

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	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	RESET	I	Goes "H" at the program start.															
25	TUSI	I	Serial data input (output from the tuner).															
26	TUSCK	O	Serial data clock.															
27	ROMCLK	O	E ² PROM clock.															
28	BAND 1	O	These pins assign the tuner band.	<table border="1"> <thead> <tr> <th>BAND</th> <th>BAND 1</th> <th>BAND 2</th> </tr> </thead> <tbody> <tr> <td>VH</td> <td>1</td> <td>0</td> </tr> <tr> <td>VL</td> <td>0</td> <td>1</td> </tr> <tr> <td>U</td> <td>1</td> <td>1</td> </tr> </tbody> </table>			BAND	BAND 1	BAND 2	VH	1	0	VL	0	1	U	1	1
BAND	BAND 1			BAND 2														
VH	1	0																
VL	0	1																
U	1	1																
29	BAND 2																	
30	—	-	Unused.															

ELECTRICAL ADJUSTMENT

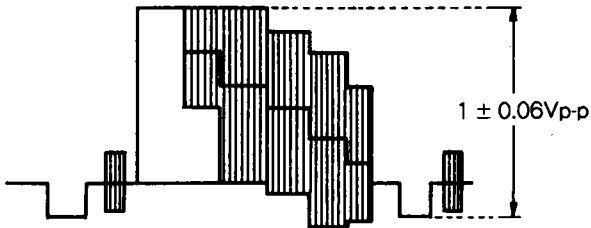
Preparation for adjustment

Input signal (100% white)



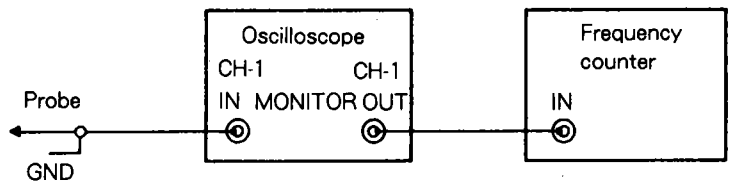
※Note : Voltage measured with a signal generator connected to the VCR

Input signal (color bar)

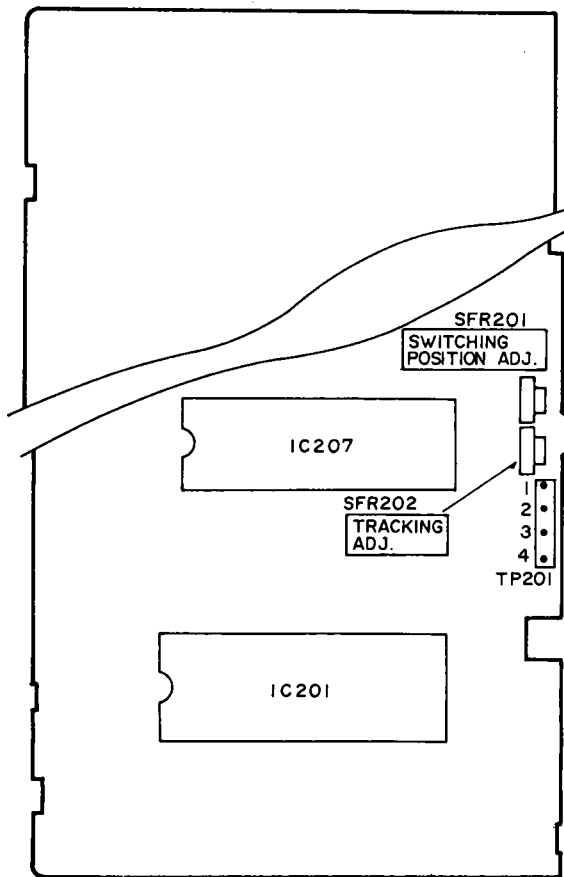


※Note : Voltage measured with a signal generator connected to the VCR

Connections of test equipment



B SERVO/SYSCON C.B
(COMPONENT SIDE)

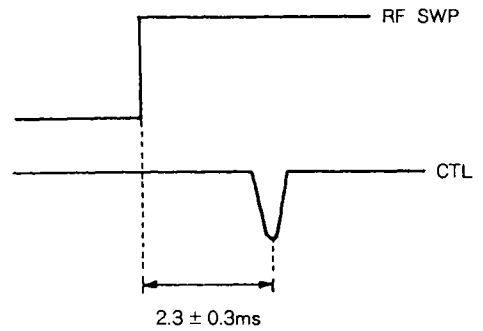


1. Servo circuit adjustment

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

Oscilloscope CH - 1 : TP201 pin ② (RF SWP)
CH - 2 : TP201 pin ④ (CTL)

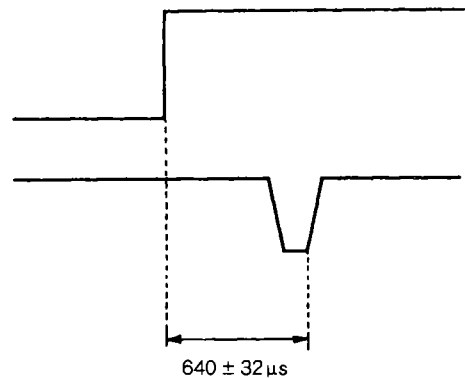
- 1) Set RV901 (tracking VR) to the center position.
- 2) Play alignment tape TTV - P1.
- 3) Adjust SFR202 so that the position of the CTI signal is as shown in the figure below.



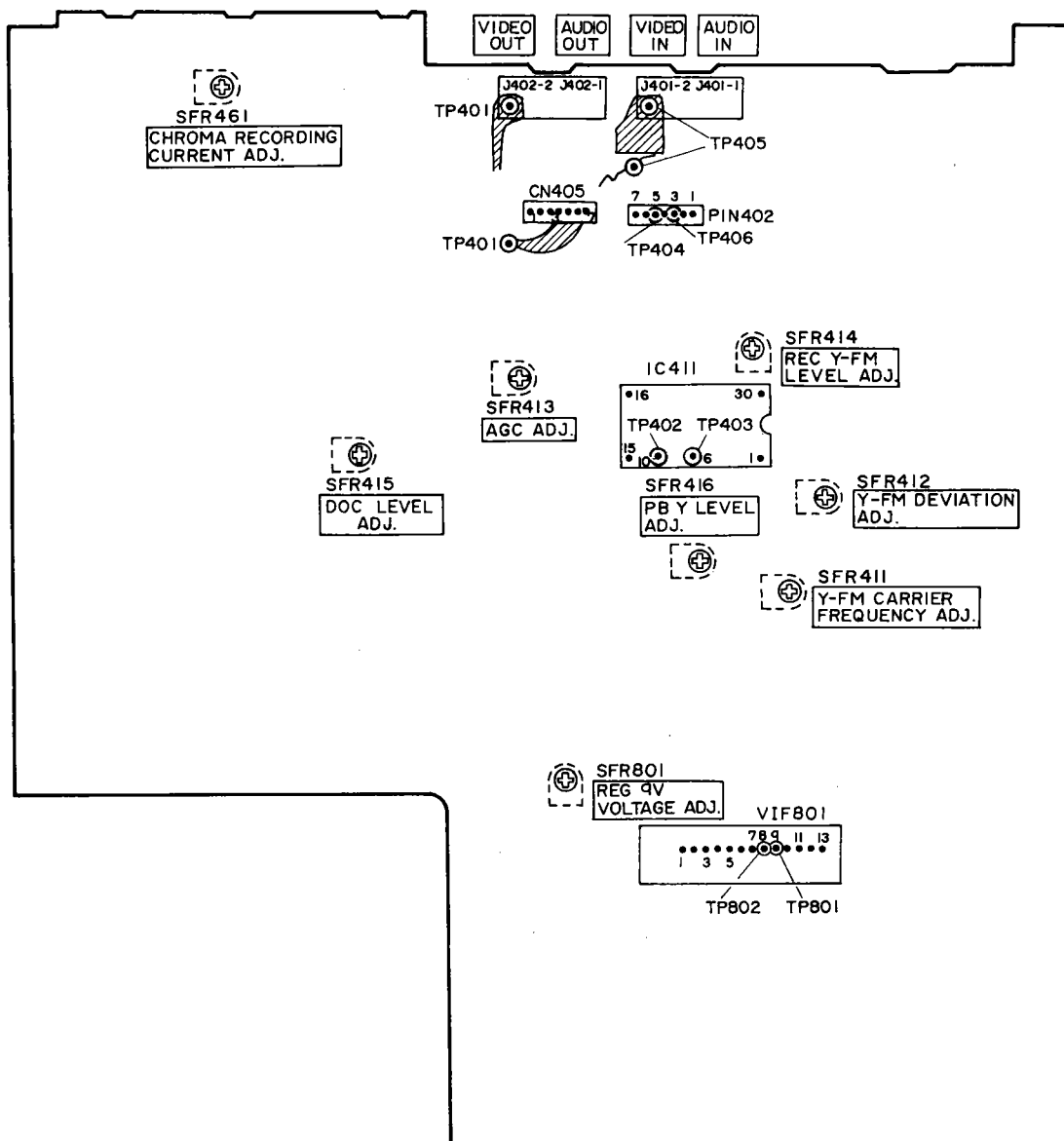
(2) Switching Position Adjustment (**B** SERVO/SYSCON C.B)

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.



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, $9.00 \pm 0.05V$.

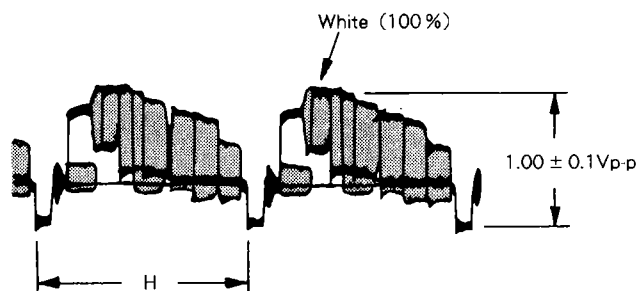
3. Video circuit adjustment

(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.



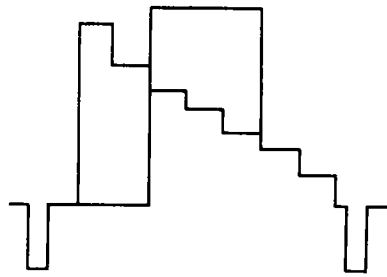
(2) DOC Level Adjustment (A MAIN C. B)

Oscilloscope CH - 1 : IC411 Pin ⑩ (TP402)
 CH - 2 : IC411 Pin ⑨

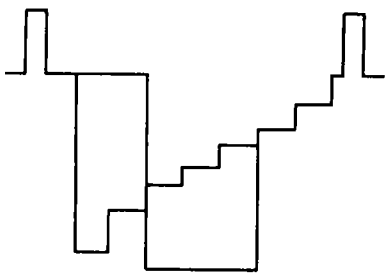
- 1) Play back the test tape TTV - P1.
- 2) Turn the oscilloscope CH - 2 INV switch on.
- 3) Turn the oscilloscope VERT MODE ADD switch on.
- 4) Adjust SFR415 so that the waveform becomes minimum as shown in the figure.

* Leave the oscilloscope power range the same as that of the CH - 1 and CH - 2 range.

CH-1



CH-2
INV.



ADD

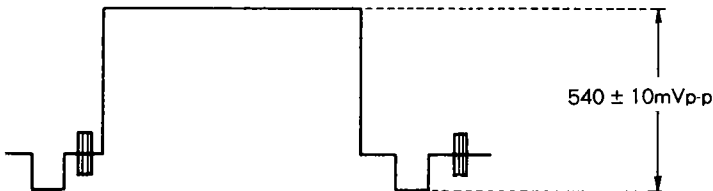


Adjust so that this become minimum

(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 $3.8\text{MHz} \pm 0.05\text{MHz}$.

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

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

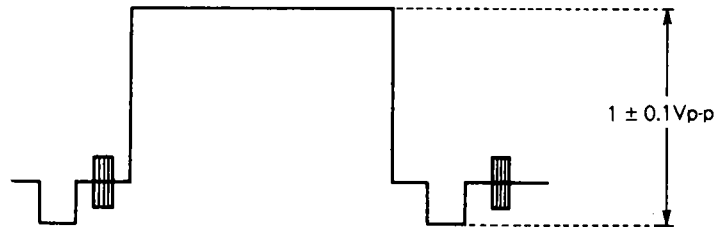
Oscilloscope : VIDEO OUT (TP401)

- 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.

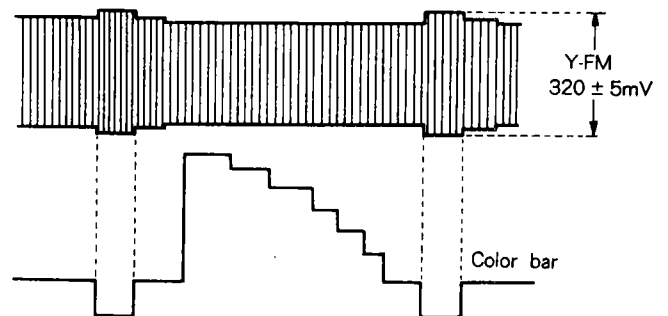


(6) REC Y-FM Level Adjustment ([A] MAIN C.B)

Oscilloscope CH-1 : PIN402 pin (5) (TP404)

CH-2 : VIDEO IN (TP405)

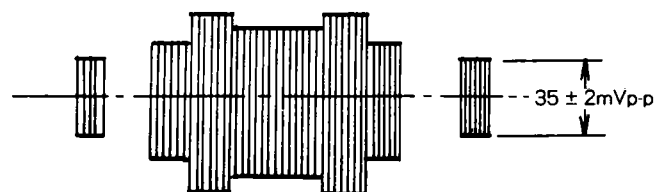
- 1) Switch the input selector to LINE.
- 2) Apply a color bar signal or 100% white signal to the VIDEO IN jack.
- 3) Adjust SFR414 so that the synchro signal level of the Y FM level is as shown in the figure below in the E-E mode.



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

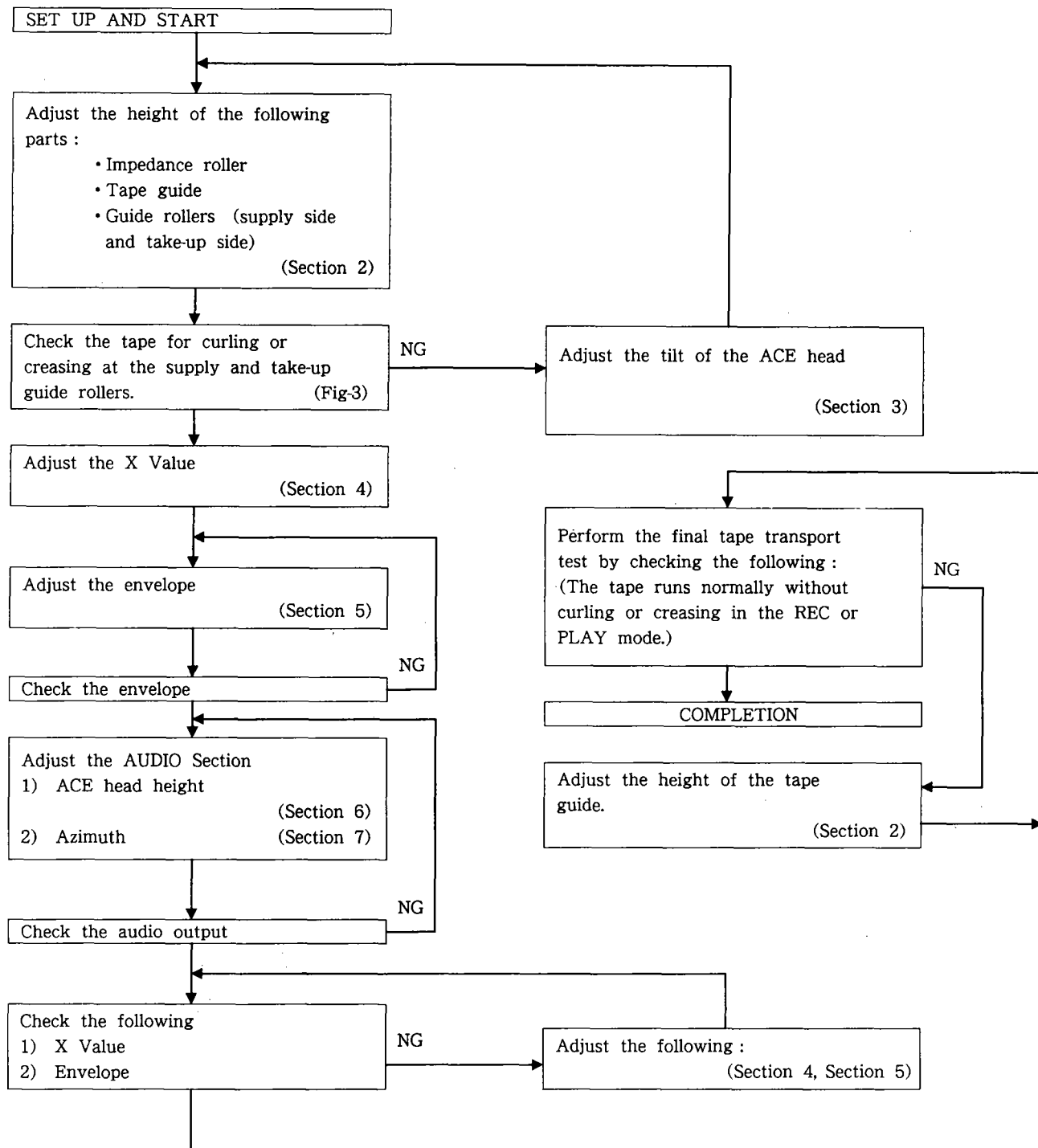
Oscilloscope : PIN402 pin (3) (TP406)

- 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.



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

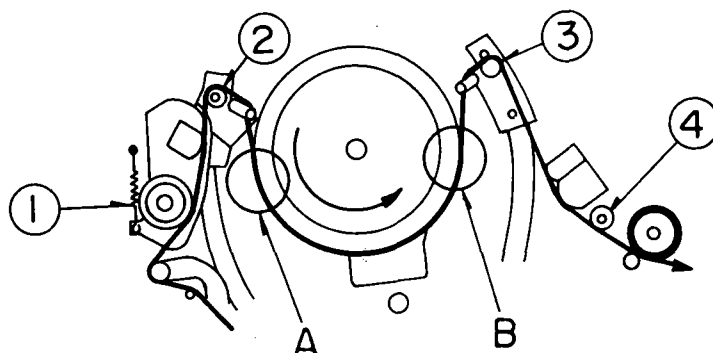


Fig-1

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)

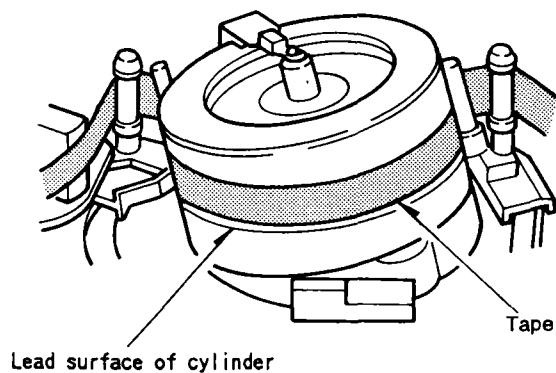


Fig-2

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.

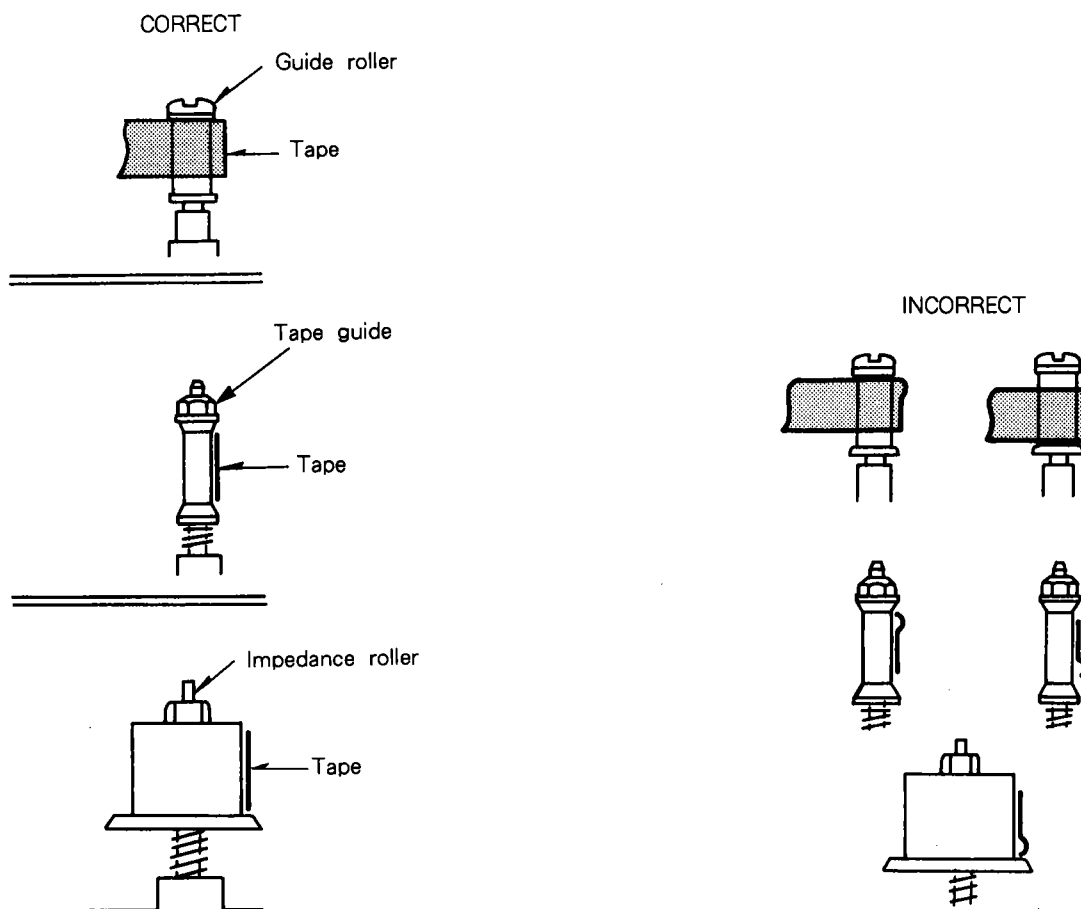


Fig-3

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.

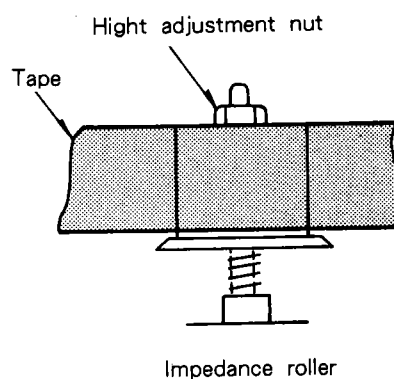


Fig-4

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".

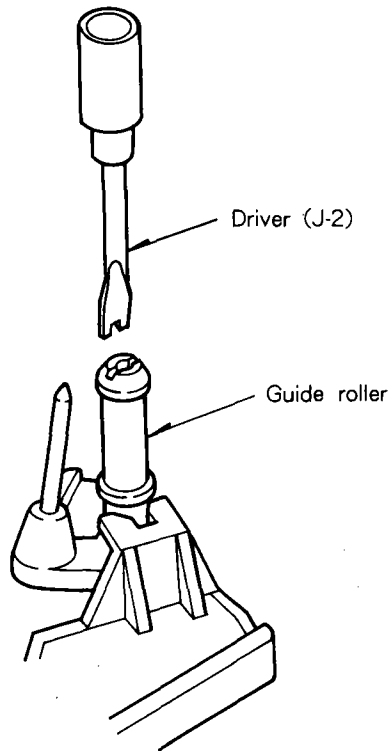


Fig-5

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.

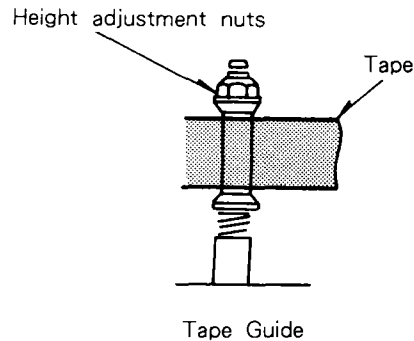


Fig-6

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 (A) and the "Tilt adjustment screw" (C) so that the tape transport is smooth at the "Take-up guide pole". Align the "Audio control head" height. (See Figure-7)

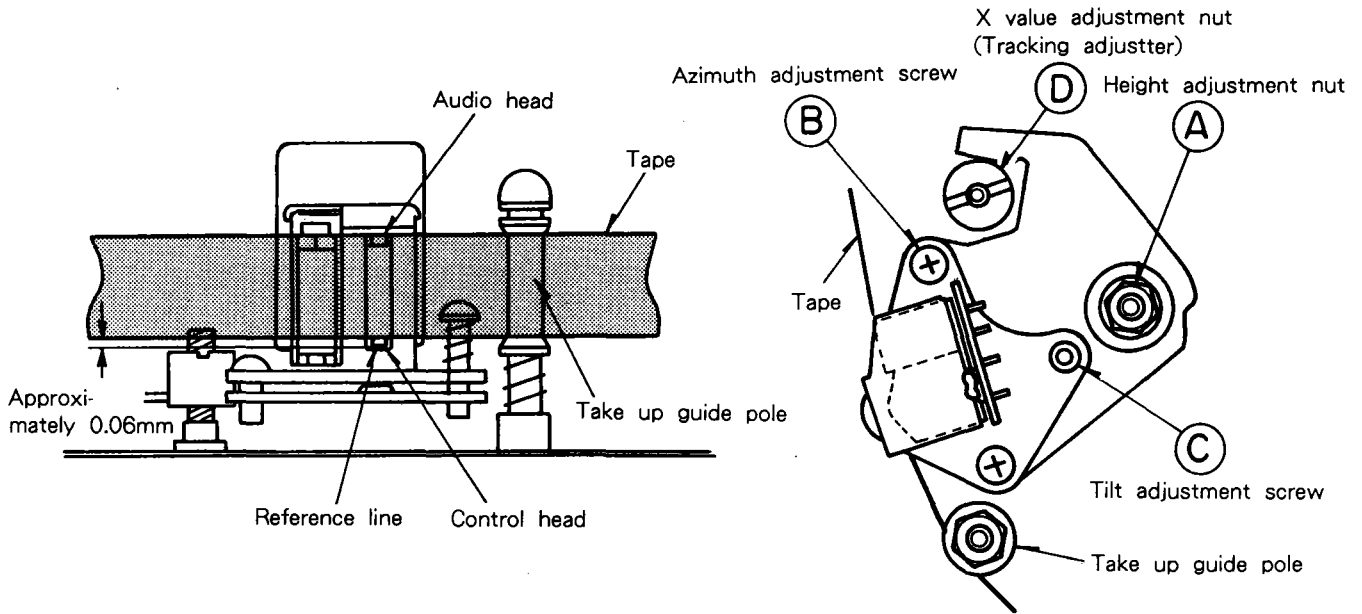


Fig-7

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

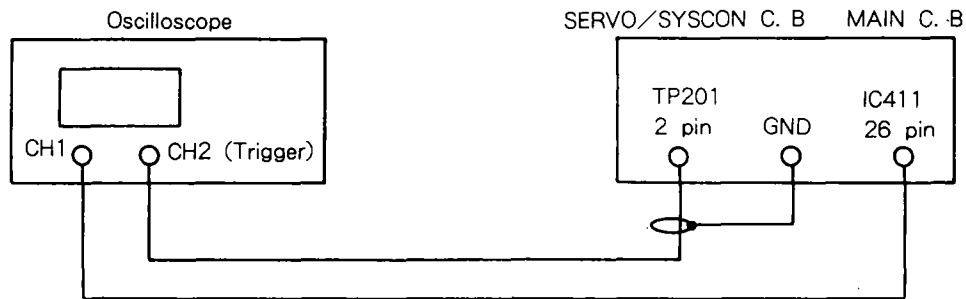


Fig-8

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" (D) 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).

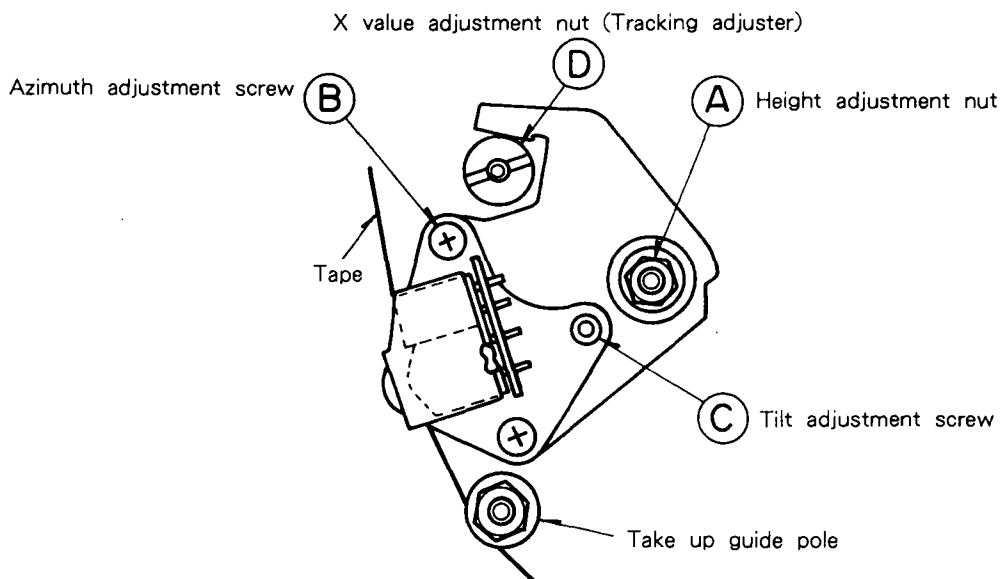


Fig-9

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

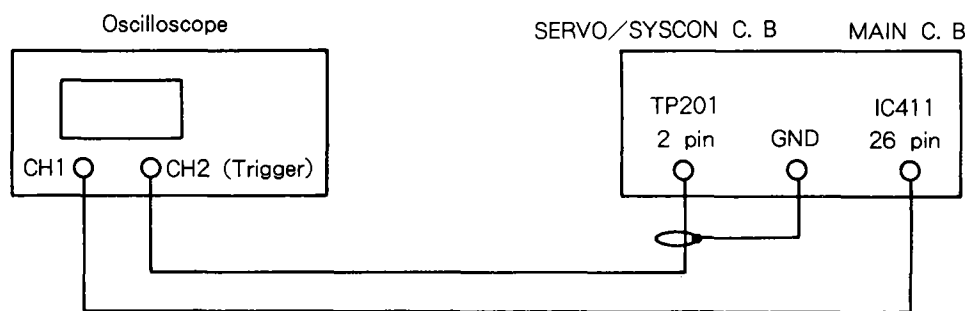


Fig.-10

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". Finally 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)

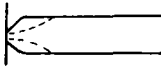
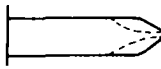
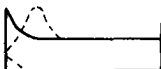
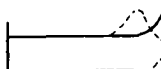
	Tape is too high	
	Supply side	Take-up side
When the tracking volume is rotated counterclockwise and clockwise directions.		
		
Adjustment	Supply side "Guide roller" rotated clockwise direction (lowers "Guide roller") to flatten envelope.	Take-up side "Guide roller" rotated clockwise direction (lowers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

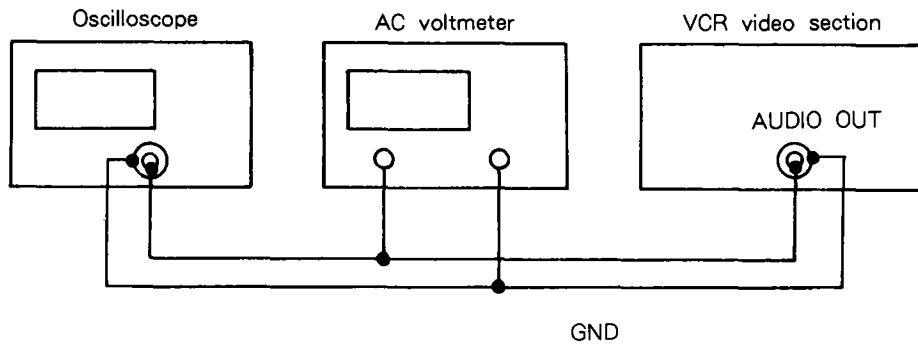


Fig-13

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 (C)". (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 (A)" so that the AC voltmeter's reading is brought to its maximum level. (See Figure-7)
4. Adjust the "Azimuth adjustment screw (B)" 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 (B)" so that the AC voltmeter's reading or oscilloscope wave form is brought to its maximum level. (See Figure-15)

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

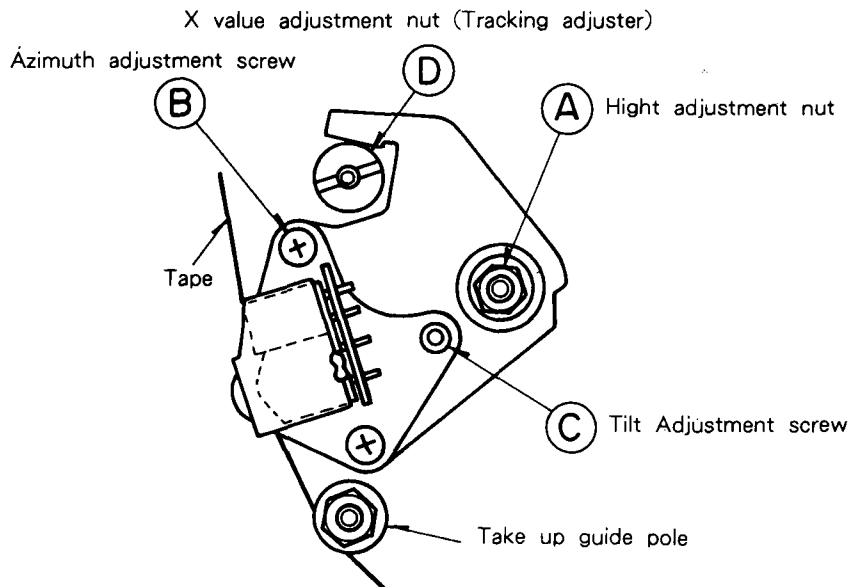
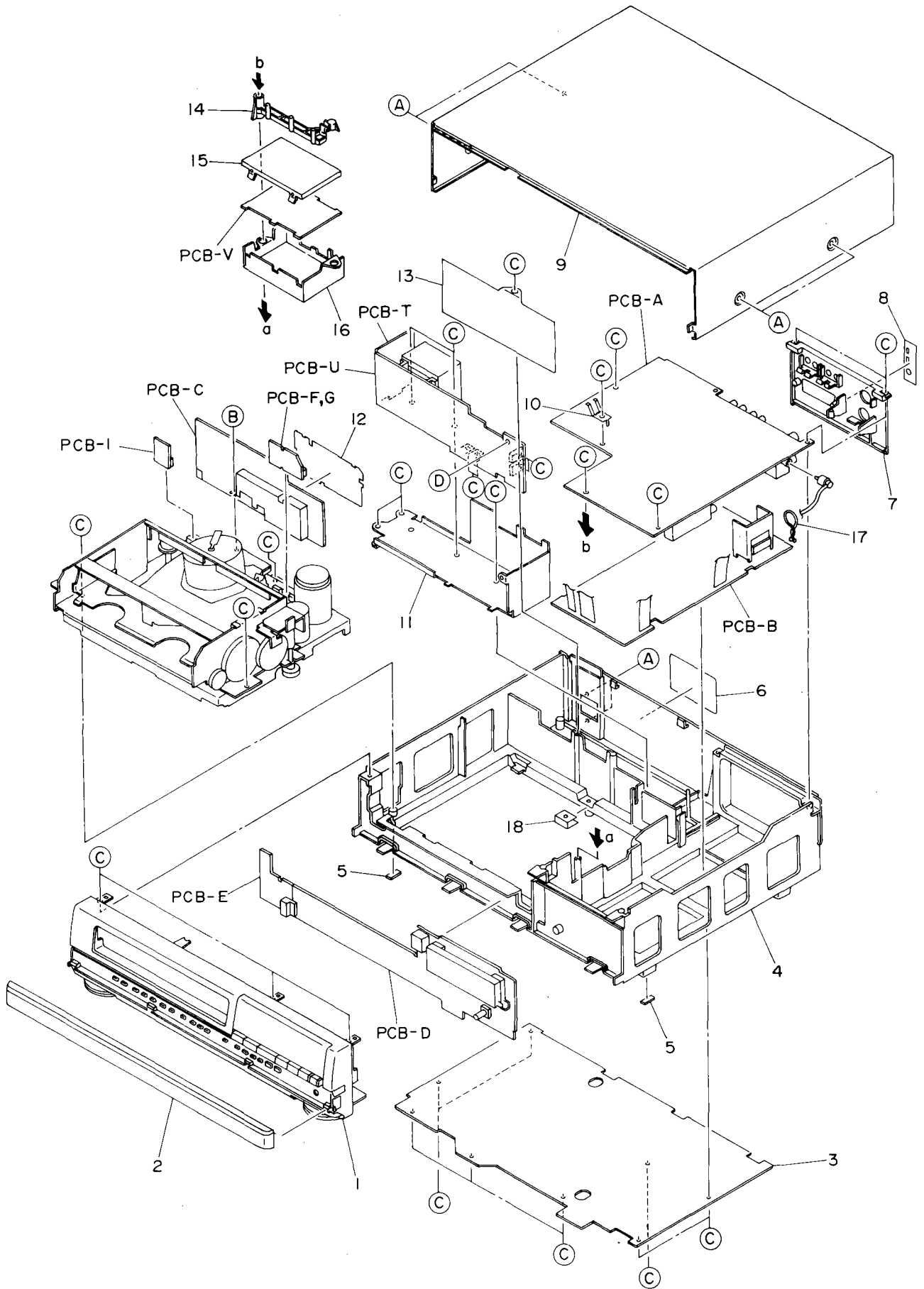


Fig-15

EXPLODED VIEW - 1

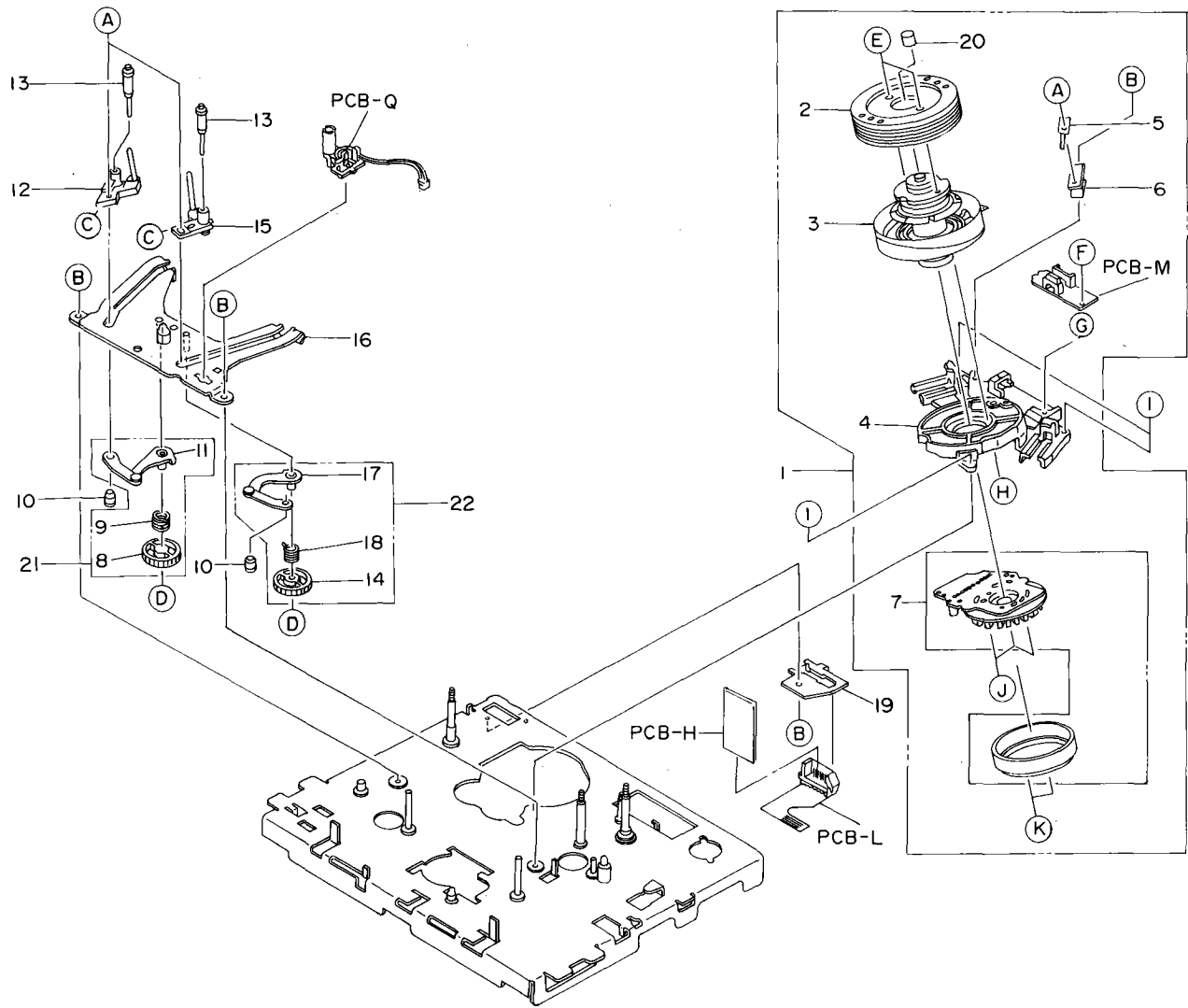


EXPLODED VIEW..(1) CABINET PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
I-1	*9A03363600	CABINET FRONT ASSY,	
I-2	*9A03340700	DOOR, T	
I-3	*9A03339000	BOTTOM 2	
I-4	- - - - -	CAB, MAIN 2	
I-5	*9A02424400	FELT, FOOT	
I-6	*9A03340200	PLATE, SPEC T	
I-7	*9A03340900	PANEL, JACK G	
I-8	*9A02426000	PLATE, JACK (G)	
I-9	*9A03339100	CAB, STEEL	
I-10	- - - - -	PLATE, EARTH	
I-11	*9A03347900	HLD, PS	
I-12	- - - - -	SHIELD, RP2	
I-13	- - - - -	SHLD, S1	
I-14	*9A03340800	HLD, AU	
I-15	- - - - -	SHLD, AU2	
I-16	- - - - -	SHLD, AU1	
I-17	- - - - -	WIRE, CLIP DIA8	
I-18	*9A02424600	CLAMP, EARTH	
PCB-A	- - - - -	MAIN PCB ASSY	
PCB-B	- - - - -	SERVO/SYSCON PCB ASSY	
PCB-C	- - - - -	PRE AMP PCB ASSY	
PCB-D	- - - - -	TIMER PCB ASSY	
PCB-E	- - - - -	POWER SW PCB ASSY	
PCB-F	- - - - -	RELAY PCB-1 ASSY	
PCB-G	- - - - -	RELAY PCB-2 ASSY	
PCB-I	- - - - -	RELAY PCB-4 ASSY	
PCB-T	- - - - -	POWER PCB-1 ASSY	
PCB-U	- - - - -	POWER PCB-2 ASSY	
PCB-V	- - - - -	AUDIO PCB ASSY	
(A)	9A02426800	BVT2+3-8W/O SLOT BLK	
(C)	9A02426900	BVIT3B+3-10	
(C)	9A02427000	BVIT3+2,6-8	
(D)	9A03451700	VFT2+3-10	

Parts marked with * require longer delivery time

EXPLODED VIEW - 2

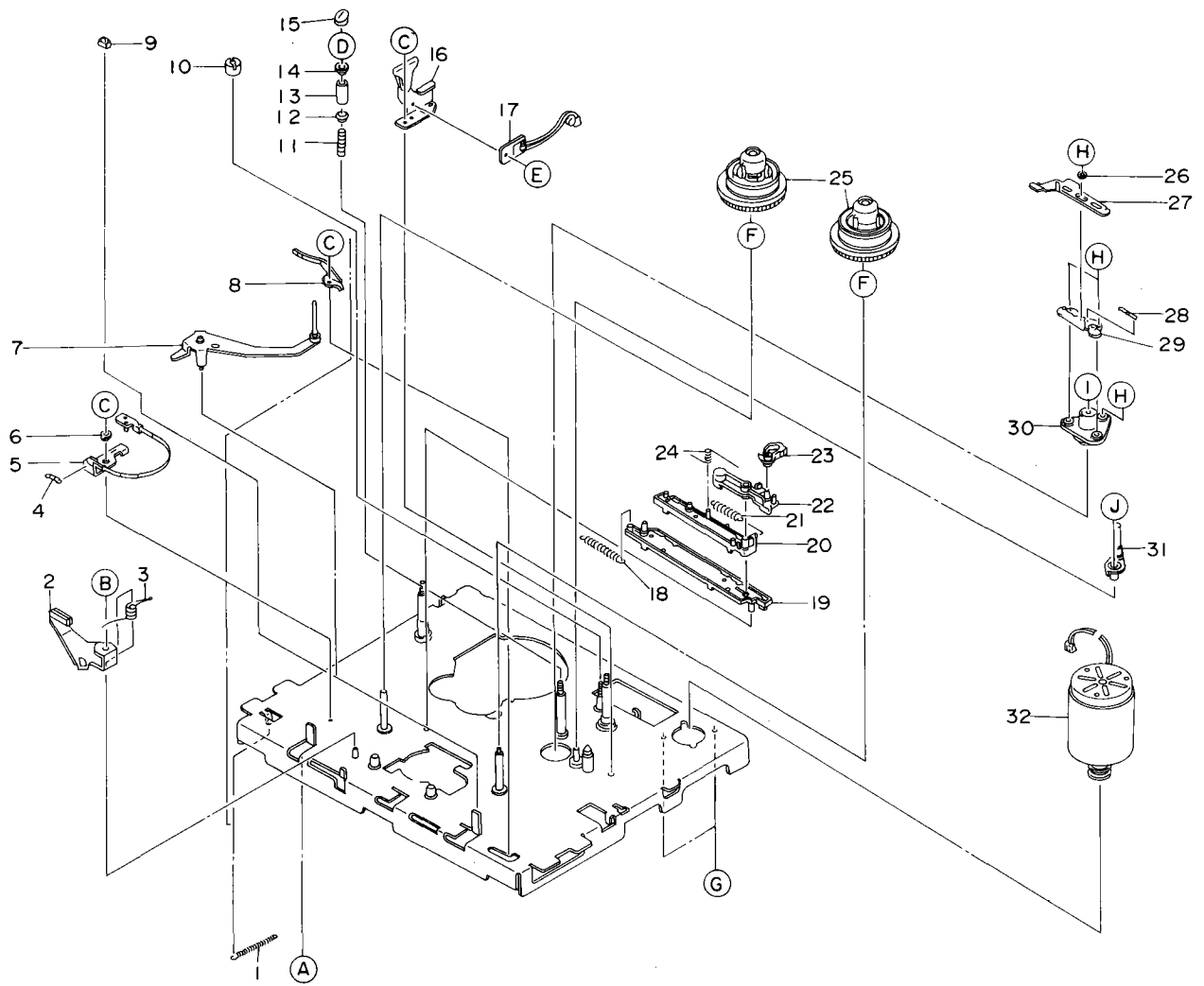


EXPLODED VIEW..(2) MECHANICAL PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
	*9A03341040	TN5900P2SRN 142D MV-317	
2- 1	*9A03451900	CYLINDER ASSY	
2- 2	*9A03452000	UPPER DRUM	
2- 3	*9A02493000	DRUM ASSY, LOWER	
2- 4	*9A02493100	CYLINDER MOUNT	
2- 5	*9A03452100	DRUM EARTH	
2- 6	*9A02493300	DRUM EARTH BRACKET	
2- 7	*9A03452200	MOTOR 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	*9A03452300	DRUM EARTH	
2-21	*9A03452400	LOADING GEAR L ASSY	
2-22	*9A03452500	LOADING GEAR R ASSY	
PCB-H	- - - - -	RELAY PCB-3 ASSY	
PCB-L	- - - - -	RELAY PCB-5 ASSY	
PCB-M	- - - - -	RELAY PCB-6 ASSY	
PCB-Q	- - - - -	LED PCB ASSY	
(A)	9A02491700	SCREW, CUP M2.6X3	
(B)	9A02491800	SCREW, C TAPPING M2.6X5	
(C)	9A02491900	SCREW, SET M2.0X3 (PLANE)	
(D)	9A02492000	PW CUT 2.6X6X0.5	
(E)	9A02492100	SCREW, BIND TAMS M3X8	
(F)	9A02492200	SCREW, W TAMS M2.6X6	
(G)	9A02492300	WASHER, 2.6	
(H)	9A02492400	SCREW, (FOR CAMERA) M2X5	
(I)	9A02492500	SCREW, C TAPPING M3X10	
(J)	9A02492600	SCREW, M2.6X2.0	
(K)	9A02492700	SCREW, TAMS M2.6X6	

Parts marked with * require longer delivery time

EXPLODED VIEW - 3

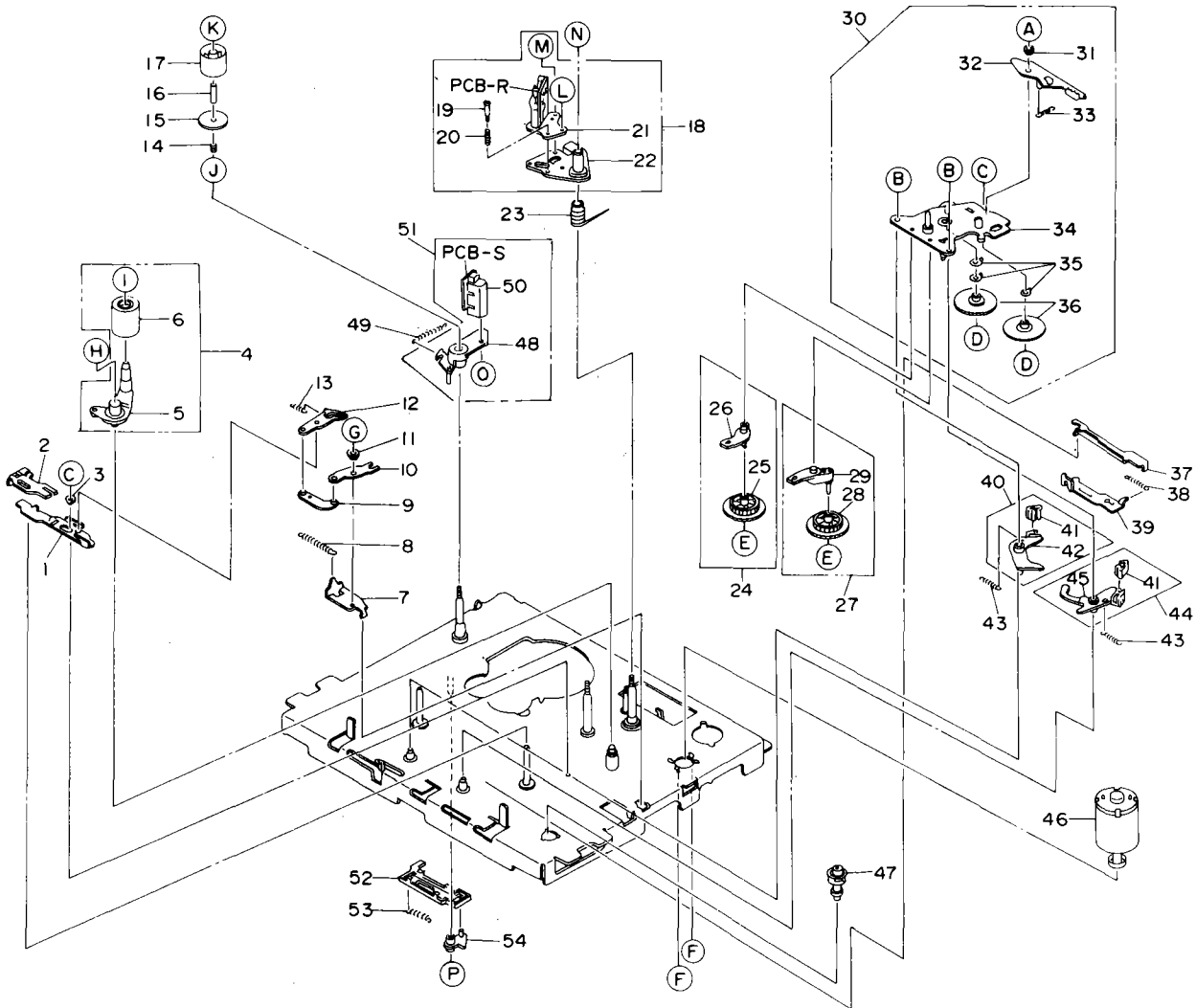


EXPLODED VIEW..(3) MECHANICAL PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
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-SIOR	
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,	
(A)	9A02494600	PW CUT 2.1X4X0.5	
(B)	9A02494700	PW CUT 2.1X5X0.5	
(C)	9A02494800	SCREW, C TAPPING M2.6X4	
(D)	9A02494900	NUT, 3.0	
(E)	9A02495000	SCREW, TAMS M2.6X4	
(F)	9A02495100	PW 3.1X6X0.5	
(G)	9A02495200	SCREW, TAMS M3X4	
(H)	9A02495300	SCREW, C TAPPING M2.6X8	
(I)	9A02495400	WASHER, NYLON 2.92X5X0.5	
(J)	9A02492000	PW CUT 2.6X6X0.5	

Parts marked with * require longer delivery time

EXPLODED 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 SPRING SCREW	
4-20	- - - - -	AZIMUTH SPRING	

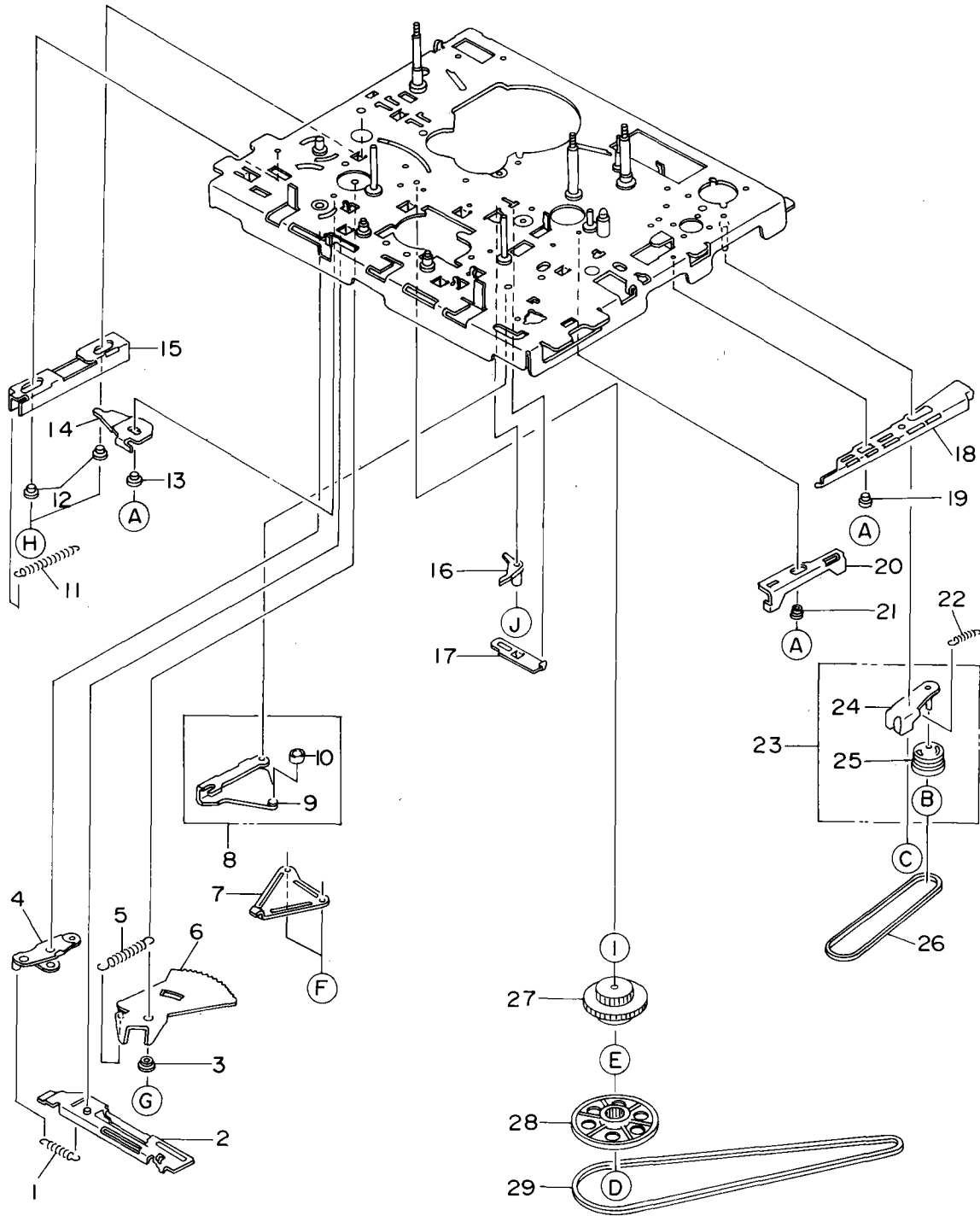
Parts marked with * require longer delivery time

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	- - - - -	PLAY GEAR	
4-26	*9A02501700	P GEAR ARM ASSY	
4-27	*9A03452600	RF GEAR ASSY	
4-28	- - - - -	FF GEAR	
4-29	*9A02502000	RF GEAR ARM ASSY	
4-30	*9A03452700	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	*9A03452800	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	- - - - -	ERASE HEAD PCB ASSY	
(A)	9A02498700	SCREW, SL FH M2X3	
(B)	9A02498800	SCREW, TAMS M2X4	
(C)	9A02491800	SCREW, C TAPPING M2.6X5	
(D)	9A02498900	E RING SI.5	
(E)	9A02499000	PW CUT 1.6X3.8X0.3	
(F)	9A02495200	SCREW, TAMS M3X4	
(G)	9A02495000	SCREW, TAMS M2.6X4	
(H)	9A02499100	PW CUT 5X8X0.5	
(I)	9A02499200	SCREW, M2.6X4	
(J)	9A02499300	WASHER, PLANE 3X8X0.5	
(K)	9A02499400	NUT, NYLON M3	
(L)	9A02499500	SCREW, M3.6 (SHAPE TYPE)	
(M)	9A02499600	SCREW, LONG LOCK M2.6X7	
(N)	9A02499400	NUT, NYLON M3	
(O)	9A02539500	SCREW, FLANGE M2X3	
(P)	9A02494700	PW CUT 2.1X5X0.5	

Parts marked with * require longer delivery time

EXPLODED VIEW - 5

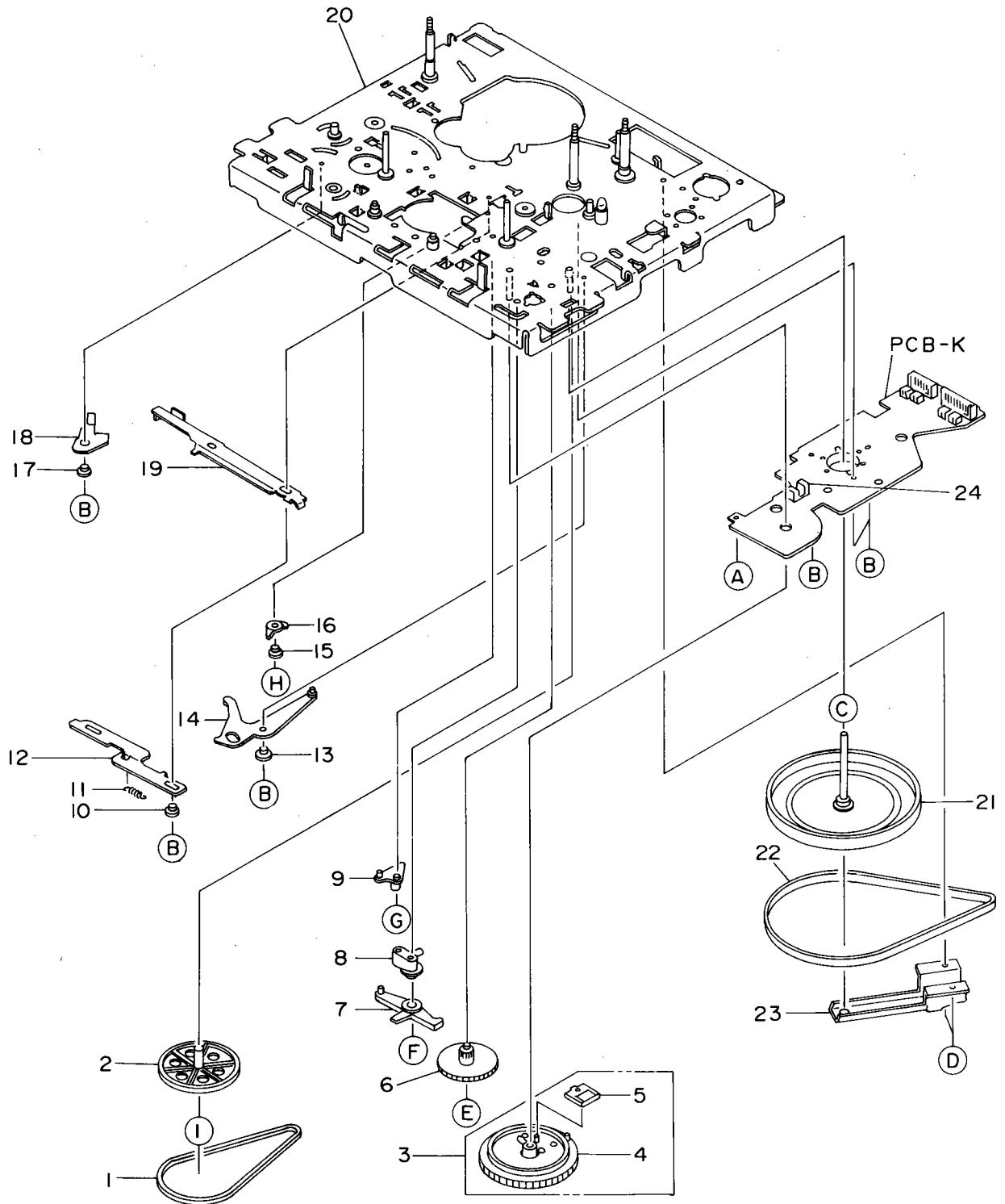


EXPLODED VIEW..(5) MECHANICAL PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
5- 1	*9A02504900	LOADING ACTUATOR SPRING	
5- 2	*9A02505000	LOADING ACTUATOR SEMI ASY	
5- 3	*9A02505100	L GEAR PLATE COLLAR	
5- 4	*9A02505200	LOAD.ACTUA.LEVER SEMI ASY	
5- 5	*9A02505300	L GEAR PLATE SPRING	
5- 6	*9A02505400	L GEAR PLATE	
5- 7	*9A02505500	LOAD.LEVER REINFORC.PLATE	
5- 8	*9A02505600	LOADING LEVER ASSY	
5- 9	- - - - -	LOADING LEVER SEMI ASSY	
5-10	- - - - -	CAM ROLLER	
5-11	*9A02505700	BACK TENSION SPRING	
5-12	*9A02505800	BT ACTUATE PLATE COLLAR	
5-13	*9A02499900	COLLAR	
5-14	*9A02505900	BT ACTUATE LEVER	
5-15	*9A02512100	BT ACTUATE PLATE	
5-16	*9A02506000	RG ACTUATE ARM	
5-17	*9A02506100	RG ACTUATE	
5-18	*9A02506200	L BRAKE PLATE	
5-19	*9A02499900	COLLAR	
5-20	*9A02506300	EJECT ACTUATOR	
5-21	*9A02499900	COLLAR	
5-22	*9A02506400	IDLER ARM SPRING	
5-23	*9A02506500	E.IDLER ARM ASSY,	
5-24	- - - - -	E IDLER ARM ASSY	
5-25	- - - - -	EJECT PULLEY	
5-26	*9A02506600	FL BELT	
5-27	*9A03452900	CLUTCH ASSY	
5-28	*9A02506800	MIDDLE PULLEY ASSY	
5-29	*9A02506900	DRIVE BELT,	
(A)	9A02491800	SCREW, C TAPPING M2.6X5	
(B)	9A02499000	PW CUT 1.6X3.8X0.3	
(C)	9A02494700	PW CUT 2.1X5X0.5	
(D)	9A02492000	PW CUT 2.6X6X0.5	
(E)	9A02504400	WASHER, NYLON 2.98X6X0.3	
(F)	9A02504500	SCREW, TAMS M2X5	
(G)	9A02504600	SCREW, C TAPPING M3X6	
(H)	9A02504700	SCREW, S TAPPING M2.6X3.5	
(I)	9A02504800	WASHER, NYLON 3.1X6X0.3	
(J)	9A02494700	PW CUT 2.1X5X0.5	

Parts marked with * require longer delivery time

EXPLODED VIEW - 6

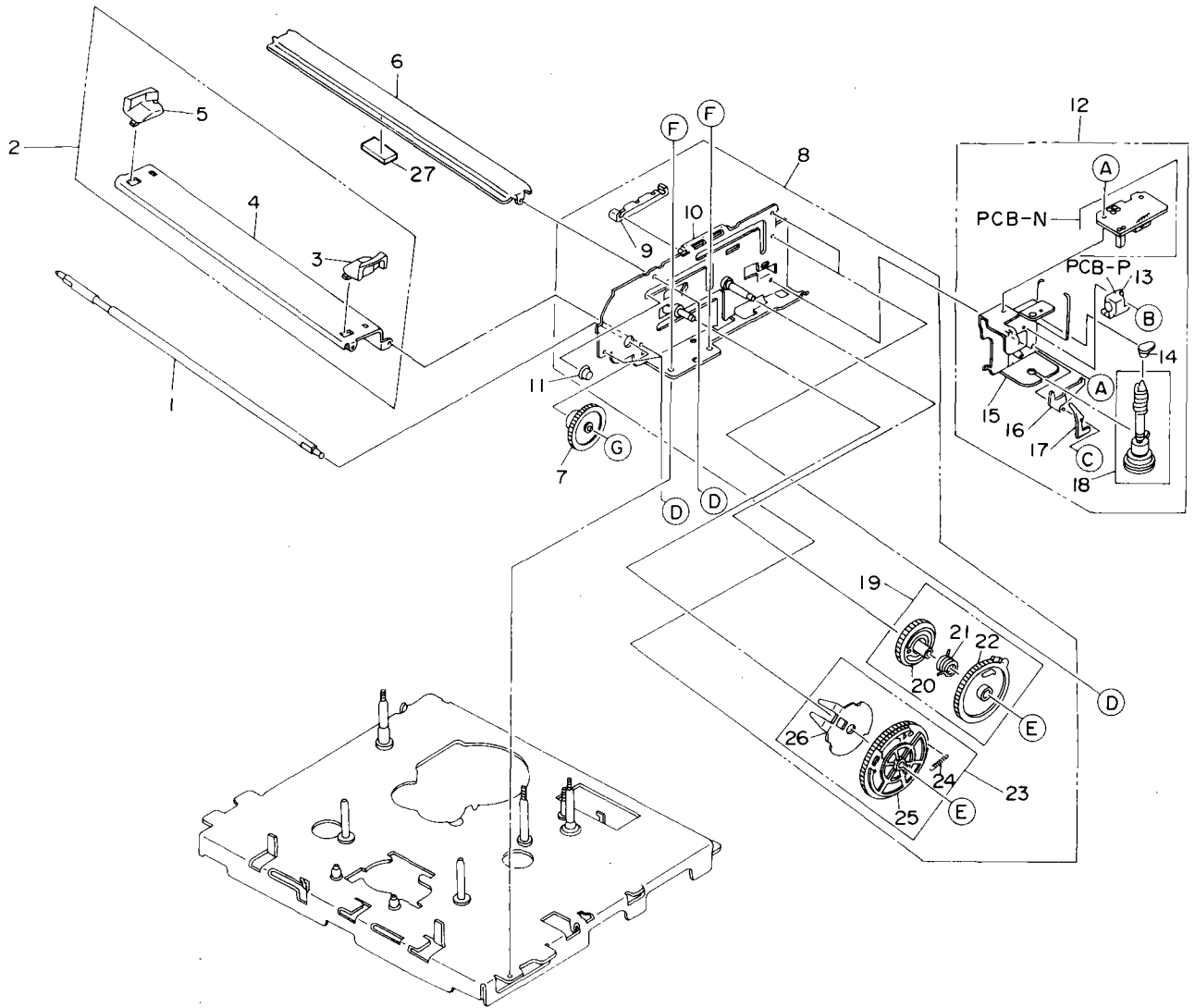


EXPLODED VIEW..(6) MECHANICAL PARTS LIST

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 BRUSH	
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	*9A02509100	MAIN BELT,	
6-23	*9A02509200	FL ANGLE ASSY	
6-24	*9A02509300	PHOTO(REEL) SENSOR,CN1385	
PCB-K	- - - - -	BASE PCB ASSY	
(A)	9A02507000	SCREW, S TAPPING M2.6X5	
(B)	9A02491800	SCREW, C TAPPING M2.6X5	
(C)	9A02495100	PW 3.1X6X0.5	
(D)	9A02507100	SCREW, C TAPPING M3X5	
(E)	9A02494700	PW CUT 2.1X5X0.5	
(F)	9A02507200	PW CUT 2.6X8X0.5	
(G)	9A02492000	PW CUT 2.6X6X0.5	
(H)	9A02507300	SCREW, C TAPPING FH	
(I)	9A02499000	PW CUT 1.6X3.8X0.3	

Parts marked with * require longer delivery time

EXPLODED VIEW - 7

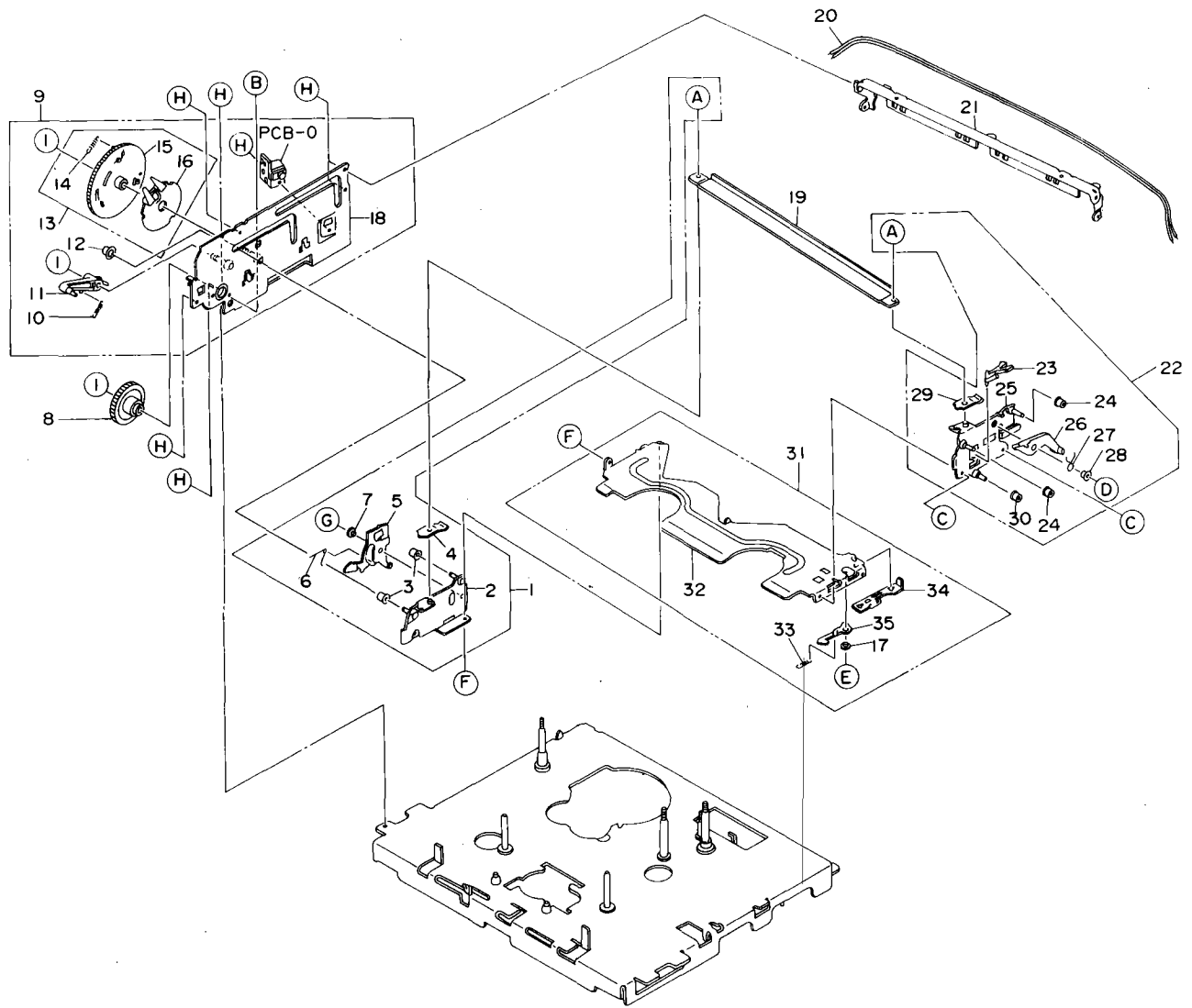


EXPLODED VIEW..(7) MECHANICAL PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
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	*9A03453000	UPPER PLATE	
7- 7	*9A02510000	SYNCHRONIZE GEAR A	
7- 8	*9A02510100	FRAME R ASSY	
7- 9	- - - - -	OPEN LEVER GUIDE	
7-10	- - - - -	FRAM 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 LOAD BRACKET SEMI ASSY	
7-16	- - - - -	IN SW LEVER	
7-17	- - - - -	S SW LEVER	
7-18	*9A02510300	F.LOAD.CLUTCH ASSY,	
7-19	*9A02510400	WORM WHEEL ASSY,	
7-20	- - - - -	FRICTION GEAR	
7-21	- - - - -	FRICTION SPRING	
7-22	- - - - -	WORMWHEEL	
7-23	*9A02510500	LIFT GEAR R ASSY	
7-24	- - - - -	LP SPRING	
7-25	- - - - -	LIFT GEAR R	
7-26	- - - - -	LIFT ARM	
7-27	*9A03453100	DAMPER MAT	
PCB-N	- - - - -	SW PCB ASSY	
PCB-P	- - - - -	END SENSOR PCB ASSY	
(A)	9A02495000	SCREW, TAMS M2.6X4	
(B)	9A02504500	SCREW, TAMS M2X5	
(C)	9A02499000	PW CUT 1.6X3.8X0.3	
(D)	9A02495000	SCREW, TAMS M2.6X4	
(E)	9A02509400	E RING S2.5	
(F)	9A02491800	SCREW, C TAPPING M2.6X5	
(G)	9A02509400	E RING S2.5	

Parts marked with * require longer delivery time

EXPLODED VIEW - 8



EXPLODED VIEW..(8) MECHANICAL PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
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 SPRING L	
8- 7	- - - - -	LOCK PLATE COLLAR	
8- 8	*9A02510000	SYNCHRONIZE GEAR A	
8- 9	*9A03453200	FRAME L ASSY	
8-10	*9A03453300	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 SEMI ASSY	
8-19	*9A02511600	TOP STAY	
8-20	- - - - -	END SENSOR WIRE	
8-21	*9A02511700	REAR ANGLE	
8-22	*9A02511800	SIDE PLATE R ASSY	
8-23	- - - - -	LOCK RELEASE LEVER	
8-24	- - - - -	GUIDE ROLLER	
8-25	- - - - -	SIDE PLATE R SEMI ASSY	
8-26	*9A02511900	OPEN LEVER	
8-27	- - - - -	OPEN LEVER SPRING	
8-28	- - - - -	OPEN LEVER COLLAR	
8-29	- - - - -	CASSETTE PUSH PLATE	
8-30	- - - - -	GUIDE ROLLER	
8-31	*9A02512000	CASSE.HOLDER ASSY,	
8-32	- - - - -	CASSETTE HOLDER	
8-33	- - - - -	LOCK SPRING	
8-34	- - - - -	SLIDE PLATE	
8-35	- - - - -	C LOCK PLATE A	
PCB-0	- - - - -	STRAT SENSOR PCB ASSY	
(A)	9A02510600	SCREW, M2.3X2	
(B)	9A02491800	SCREW, C TAPPING M2.6X5	
(C)	9A02510700	SCREW, M2.6X3	
(D)	9A02510800	SCREW, SL M2X4	
(E)	9A02510900	SCREW, SL M2.6X3	
(F)	9A02511000	SCREW, M2.3X2.5	
(G)	9A02511100	SCREW, SL M2X2.5	
(H)	9A02495000	SCREW, TAMS M2.6X4	
(I)	9A02509400	E RING S2.5	

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