Service Manual

CIRCUIT & MECHANISM DESCRIPTIONS
REPAIR & ADJUSTMENTS

PIONEER

RTV servis Horvat
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ORDER NO.
ARP-986-0

COMPACT MUSIC SYSTEM

DC-X303Z(BK)

MODEL DC-X303Z(BK) COMES IN SEVEN VERSIONS DISTINGUISHED AS FOLLOWS:

Type	Power requirement	Destination
KU	AC120V only	U.S.A
HE	AC220V, 240V (Switchable)	European continent
HEZ	AC220V, 240V (Switchable)	West Germany
HB	AC220V, 240V (Switchable)	United Kingdom
S	AC110V, 120V, 220V, 240V (Switchable)	General market
YP	AC240V only	Australia
KC	AC120V only	Canada

- **This service manual is applicable to the HE, HB and S types.**
- **As to the HB, S types, please refer to pages 94.**
- **As to the KC and YP types, please refer to the additional service manual (ARP1088-0).**
- **As to the HEZ type please refer to the additional service manual (ARP1087-0).**
- **As to the KU type, please refer to the additional service manual (ARP1081-0).**
- **Ce manual d'instruction se fefère au mode de réglage en français (P78-P82).**
- **Este manual de servicio trata del método ajuste escrito en español (P83–P87).**

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1. SPECIFICATIONS

Amplifier Section

Continuous Power Output
- 40 to 20,000 Hz ..... 50 W + 50 W (T.H.D. 0.5% 8 ohms)
- 1 kHz (DIN) ..... 32 W + 32 W (T.H.D. 1% 8 ohms)
- 1 kHz (DIN music power) ..... 45 W + 45 W (T.H.D. 1% 8 ohms)

Hum and Noise (IHF, short-circuited, A network)
- PHONO ..... 72 dB
- MIC ..... 50 dB
- CD, VDP/VIDEO ..... 80 dB

Graphic equalizer frequency band .....
100 Hz, 330 Hz, 1kHz, 3.3 kHz 10 kHz, ±8 dB

Hum and Noise (DIN continous Power/50 mV)
- PHONO ..... 68 dB/60 dB

Total Harmonic Distortion (40 Hz to 20,000 Hz, 8 ohms), from CD
- 16 Watts per channel power output ..... No more than 0.3%

Tape Deck Section

Systems ..... 4 track, 2-channel stereo
Heads ..... "Hard Permalloy" recording/playback head x 1
"Hard Permalloy" playback head x 1
"Ferrite" erasing head x 1
Motor ..... DC servo capstan motor x 2
DC reel motor x 2
Wow and Flutter.....No more than 0.06% (WRMS)
No more than ±0.16% (DIN)
Fast Winding Time ..... Approximately 80 seconds (C-60 tape)
Frequency Response
- −20 dB recording:
  - Normal tape ..... 35 to 14,000 Hz
  - Chrome tape ..... 35 to 15,000 Hz
  - Metal tape.....35 to 16,000 Hz

Signal-to-Noise Ratio
- Dolby NR OFF ..... More than 56 dB

Noise Reduction Effect
- Dolby NR B type ON ..... More than 10 dB (at 5 kHz)
- Dolby NR C type ON ..... More than 18 dB (at 5 kHz)

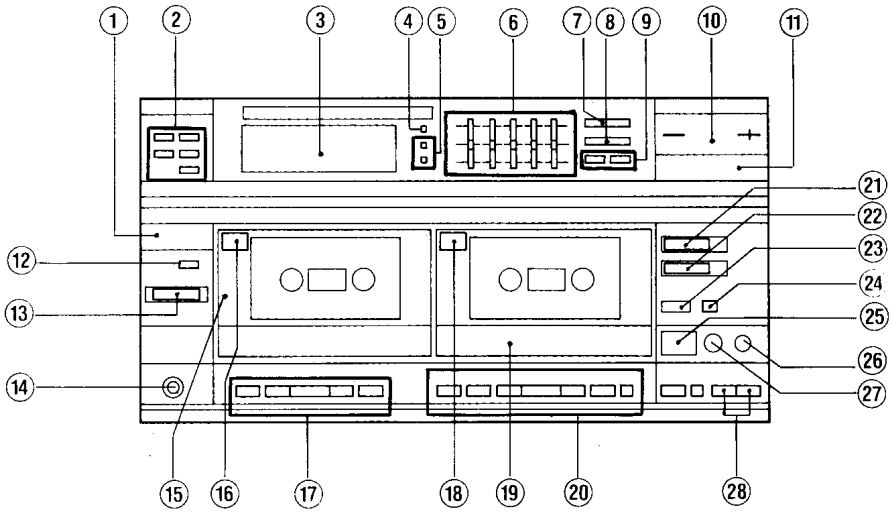
Furnished Parts

Remote control unit 1
Dry batteries, size "AAA" (IEC R03 1.5 V, UM-4) 2
Operating Instructions 1

Miscellaneous

Power requirements
European model ..... AC 220 V, 50/60Hz
U.K. model ..... AC 240 V, 50/60 Hz
Power Consumption ..... 250 W
Dimensions ..... 447(W) x 269(H) x 413 (D) mm
17-11/16(W) x 10-5/8(H) x 16-5/16(D) in
Weight (without package) ..... 8.5 kg (18 lb 12 oz)

2. FRONT PANEL FACILITIES



[Amplifier section]

① POWER STAND-BY/ON switch

By pressing this switch ON, the POWER indicator will light, and power will be supplied to the main circuit of the deck amplifier.
By pressing this switch once again, the amplifier will go into the standby mode.

② TIMER SET switches

START TIME:	Used to set the start time of the timer.
STOP TIME:	Used to set the stop time of the timer.
− (minus):	Used to reduce the numerical value when setting the time.
+ (plus):	Used to increase the numerical value when setting the time.
CLOCK ADJUST:	Used to adjust the time.
SET/NEXT:	Used to set the time or timer or to move to the next operation.

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③ Central display

This indicates the main operating modes (functions, time, volume, balance, etc.).

④ POWER indicator

This lights up when the power is switched on.

⑤ SOUND EFFECT indicators

STEREO WIDE: Used to add a stereo wide effect to the stereo sound source such as music.

SIMULATED STEREO: Used to add a simulated stereo effect to a monaural sound source with ordinary radio and other programs.

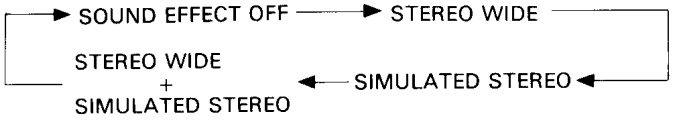
NOTE:
In the case of a monaural source, a STEREO WIDE effect cannot be obtained. In such a case, operate the SOUND EFFECT switch so that both the STEREO WIDE and SIMULATED STEREO indicators light.

⑥ 5-BAND GRAPHIC EQUALIZER

This allows the sound quality to be varied.

⑦ SOUND EFFECT switch

Every time this is pressed, the sound modes are selected alternately as follows:



⑧ MUTING switch

This temporarily cancels out the sound.

⑨ BALANCE switches

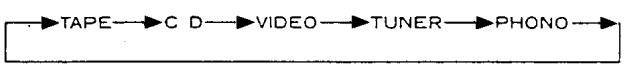
L: Used to reduce the sound from the right speaker.
R: Used to reduce the sound from the left speaker.
L/R: When both switches are pressed, the sound is instantly returned to its normal (center) setting.

⑩ VOLUME control switch

Push the "–" or "+" switch to control the volume.
+: Used to increase the volume.
–: Used to reduce the volume.

⑪ FUNCTION switch

This is used to select the sound source which is to be delivered through the speakers or the source which is to be recorded. Every time it is pressed, the functions are selected successively as follows:



TAPE: Used to listen to tapes.
CD: Used to listen to compact discs.
VIDEO: Used to listen to a video component (LaserVision player or hi-fi VCR) connected to the rear panel VDP/VIDEO jacks.
TUNER: Used to listen to radio broadcasts.
PHONO: Used to listen to records on a turntable.

⑫ TIMER STAND-BY switch

Press this when using the built-in timer for unattended recording or wake-up playback.

⑬ TIMER STAND-BY MODE selector switch

TAPE PLAY: Used for wake-up playback.
TAPE REC: Used for unattended recording.
TUNER: Used when waking up to radio broadcasts instead of an alarm clock.

⑭ PHONES jack

This is a stereo mini jack for connecting the headphones.

⑮ Cassette door I

⑯ EJECT (deck I)

Push the [⏏] mark to open the cassette door.

⑰ PLAYBACK function switches (deck I)

◄◄ (FAST): This switch is used for rewinding when the unit is in the forward mode; for fast forwarding a tape in the reverse mode.
◄ (PLAY): For playing back a tape in the reverse mode.
■ (STOP): For stopping the tape run.
► (PLAY): For playing back a tape in the forward mode.
►► (FAST): This switch is used for fast forwarding when the unit is in the forward mode; for rewinding a tape in the reverse mode.

⑱ EJECT (deck II)

Push the [⏏] mark to open the cassette door.

⑲ Cassette door II

⑳ REC/PLAYBACK function switches (deck II)

● REC (RECORD): For recording material onto a tape.
◄◄ (FAST): For rewinding a tape in the forward mode; for fast forwarding a tape in the reverse mode.
◄ (PLAY): For playing back a tape in the reverse mode.
■ (STOP): For stopping the tape run.
► (PLAY): For playing back a tape in the forward mode.
►► (FAST): For fast forwarding a tape in the forward mode; for rewinding a tape in the reverse mode.
▬ SYNCHRO PHONO/CD: This switch is used to put the unit into the "synchronized recording" mode in which recording starts as soon as a turntable or CD player is started.
▮▮ PAUSE: For temporarily stopping the tape run.
O REC MUTE: For creating the blanks of the appropriate length between tape programs or for cutting out unnecessary parts of a program being recorded.

NOTE:
The SYNCHRO function can be used only with PIONEER components which have a CONTROL IN jack.

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㉑ REVERSE MODE switch

Switch position	During playback	During recording
RELAY I►II	deck I → deck II	
⇄	Single-sided playback	Single-sided recording
⇉	Double-sided playback	Double-sided recording
↻	Continuous playback	Double-sided recording

㉒ DOLBY NR* switch

The DOLBY NR switch can be set to Dolby B NR, Dolby C NR, or Dolby NR OFF. (Normally set it to Dolby NR OFF.)
The Dolby NR B system serves to reduce noise in the treble range, it cuts tape hiss and expands the dynamic range. The Dolby NR C system is even more effective than the B in reducing noise as it cuts the noise from the mid-range on.

- If material has been recorded using the Dolby NR system, make sure that it is played back using the same system. Playing back a tape, which was recorded with the Dolby NR system, at the Dolby NR OFF position or playing back a tape, which was recorded at the Dolby NR OFF position or recorded using a different system to the Dolby system will not yield a sound faithful to the original one.
- It is therefore recommended that you make a note of the fact on the tape's label that the recording was made using the Dolby NR system. This will safeguard against its playback in a different switch position.

*

- The Dolby noise reduction system is manufactured based on enforcement rights obtained from the Dolby Laboratories Licensing Corporation.
- "Dolby" and the "double D" symbol are registered trademarks of the Dolby Laboratories Licensing Corporation.

㉓ TAPE COUNTER

This indicates in 3 digits how far the tape in deck II has run.

㉔ TAPE COUNTER RESET button

㉕ Remote control sensor window

㉖ MIC MIX control

This is used to adjust the proportion of the microphone volume and volume of the other sound source for mixing.

㉗ MIC jack

This is a standard jack for connecting the microphone.

㉘ SYNCHRO COPY switches

NORMAL SPEED: Used to copy a tape while listening to the tape's playback (normal-speed copying).
HIGH SPEED: Used to copy a tape at approximately double the normal speed (this takes about half the time which is normally required).

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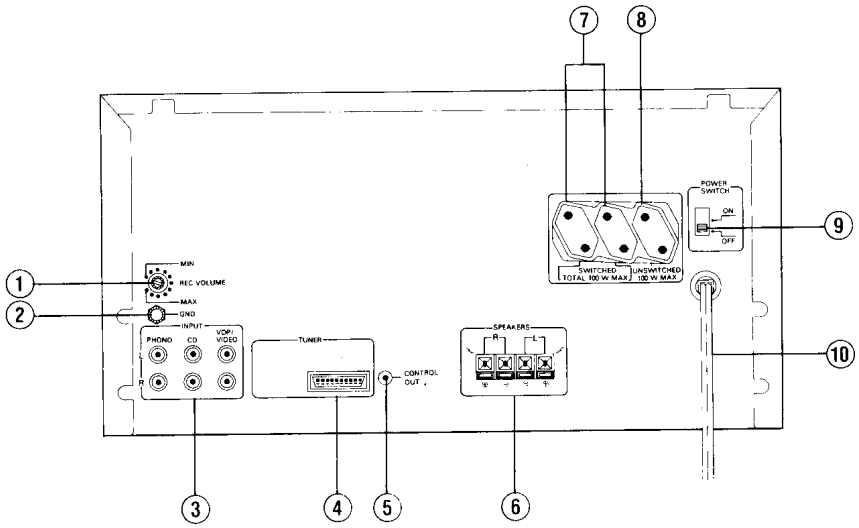
3. REAR PANEL FACILITIES



① REC VOLUME control

Normally, this is not touched. However, when recording material onto a cassette tape, it is adjusted when the recording level is either too high or too low.
To raise the level, turn the control clockwise ( ).
To lower the level, turn the control counterclockwise ( ).

② Ground terminal (GND)

Connect this to the ground terminal on the turntable.

③ Input jacks

PHONO: Connect the output cord on the turntable to these jacks.
CD: Connect the output cord on the compact disc player to these jacks.
VDP/VIDEO: Connect the audio output cord of the LaserVision player (Video disc player) or hi-fi VCR to these jacks.

④ Tuner jacks

Connect the F-X303ZL FM/AM tuner to the unit using the accessory tuner input/output cord.

⑤ Remote control output jack

Connect this jack to the CONTROL IN jack of a CD player or turntable provided with a PIONEER CONTROL IN jack.

- This jack enables the CU-DC002 remote control unit provided with the deck amplifier to exercise central control over the turntable and CD player.

⑥ Speaker terminals

L: Connect the left speaker system as seen from the listening position.
R: Connect the right speaker system as seen from the listening position.

NOTE:
Speaker impedance:
Connect a speaker system having a nominal impedance ranging from 6 ohms to 16 ohms.

⑦ AC OUTLETS (SWITCHED)

Power supplied through these outlets is turned on and off by the deck amplifier's POWER switch. Total electrical power consumption of connected equipment should not exceed 100 W.

⑧ AC OUTLET (UNSWITCHED)

Power flows continually to this outlet, regardless of whether the deck amplifier is switched ON or OFF. Electrical power consumption of the connected equipment should not exceed 100 W.
The equipment should be disconnected by removing the main plug from the wall socket when not in regular use, e.g. when on vacation.

⑨ MAIN POWER SWITCH

[ON]
While this unit is in a standby status and the power cord is connected to the wall socket, the circuit of the unit will operate continuously. When not using the unit for a long period, either switch the unit OFF, or remove the power cord from the power socket.
[OFF]
When the switch is OFF, the power to the unit will be cut off.

⑩ Power cord

Connect this to the AC wall socket.

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4. DISASSEMBLY

■ Removal of Bonnet Case

1. Remove 7 screws ❶
2. Remove the bonnet case.

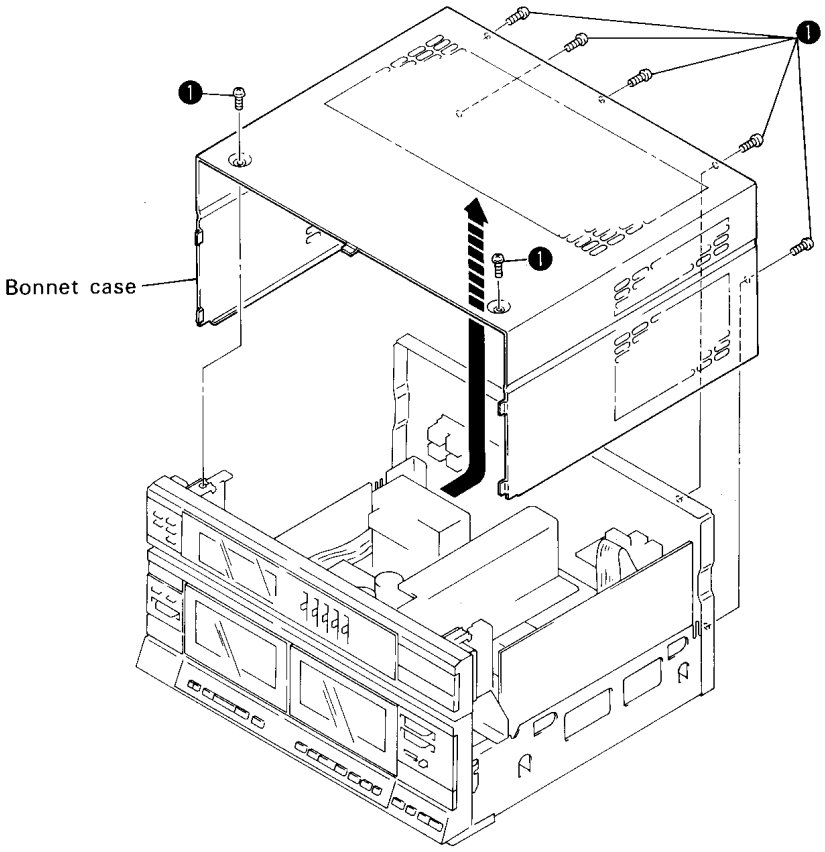
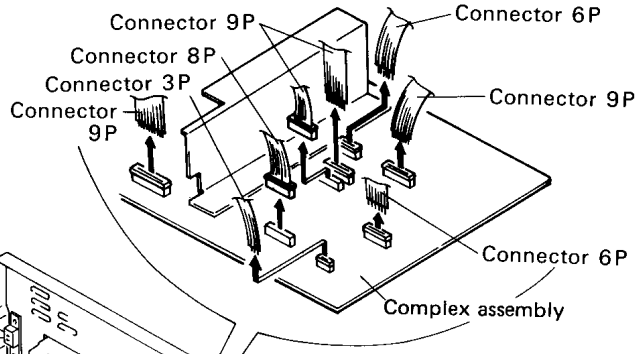


Fig. 4-1 Removal of bonnet case

■ Removal of Front Panel Assembly

1. Remove 2 connectors namely, connectors 9P and 8P, and 6 connectors namely, 3P, 6P, 6P, 9P, 9P and 9P from the complex assembly (Fig. 4-2)
2. Remove 2 screws ❶ and the belt. Apply that belt to the claw.
3. Disengage the 2 positions of claws. (Fig. 4-2-1)
4. Disengage the 3 positions of claws. (Fig. 4-2-2)
5. Remove the front panel from the chassis.
   Note: If the door is opened, the front panel assembly cannot be removed.



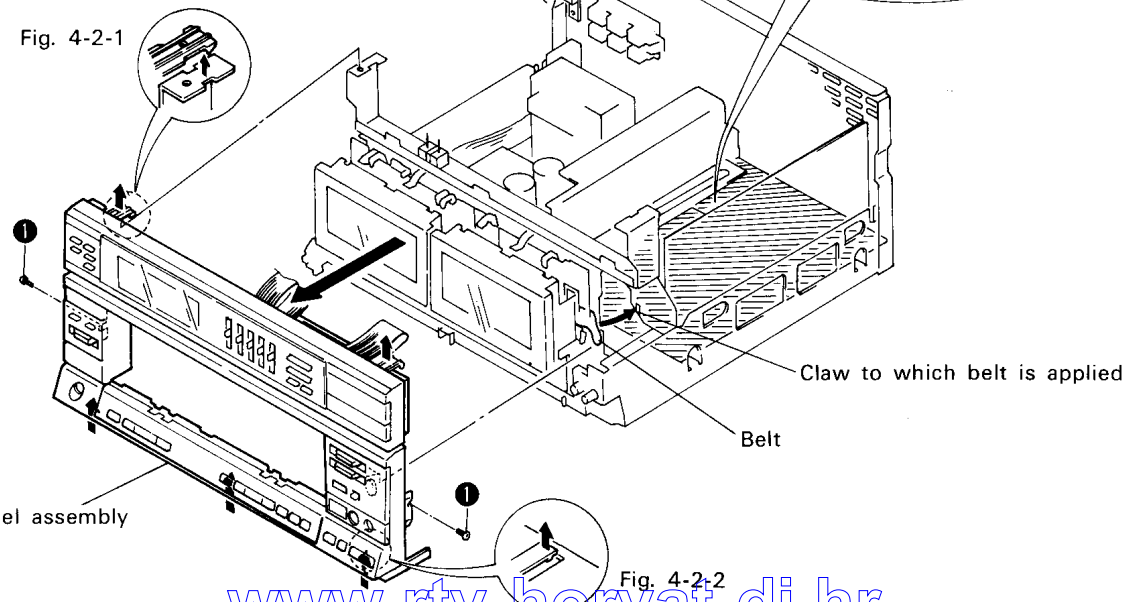


Fig. 4-2 Removal of front panel assembly

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■ Removal of Display Assembly, GE, E-VR Assembly, Timer SW assembly, Tact SW Assembly, REV Mode SW Assembly, and Receive Assembly

1. Remove 3 slide knobs.
2. Remove 3 positions of PCB holders (Fig. 4-3-1) and remove the E-VR section of the GE, E-VR assembly.
3. Remove 9 screws ❶ and connector 10P from the timer SW, and remove the display assembly.
4. Remove the timer SW assembly.
5. Remove 4 positions of claws (Fig. 4-3-2), and remove GE section of the GE, E-VR assembly.
6. Remove 6 screws ❷ and remove the tact SW assembly.
7. Remove a screw ❸ and remove the REV mode assembly.
8. Disengage 2 positions of claws (Fig. 4-3-3) and remove the receive assembly.

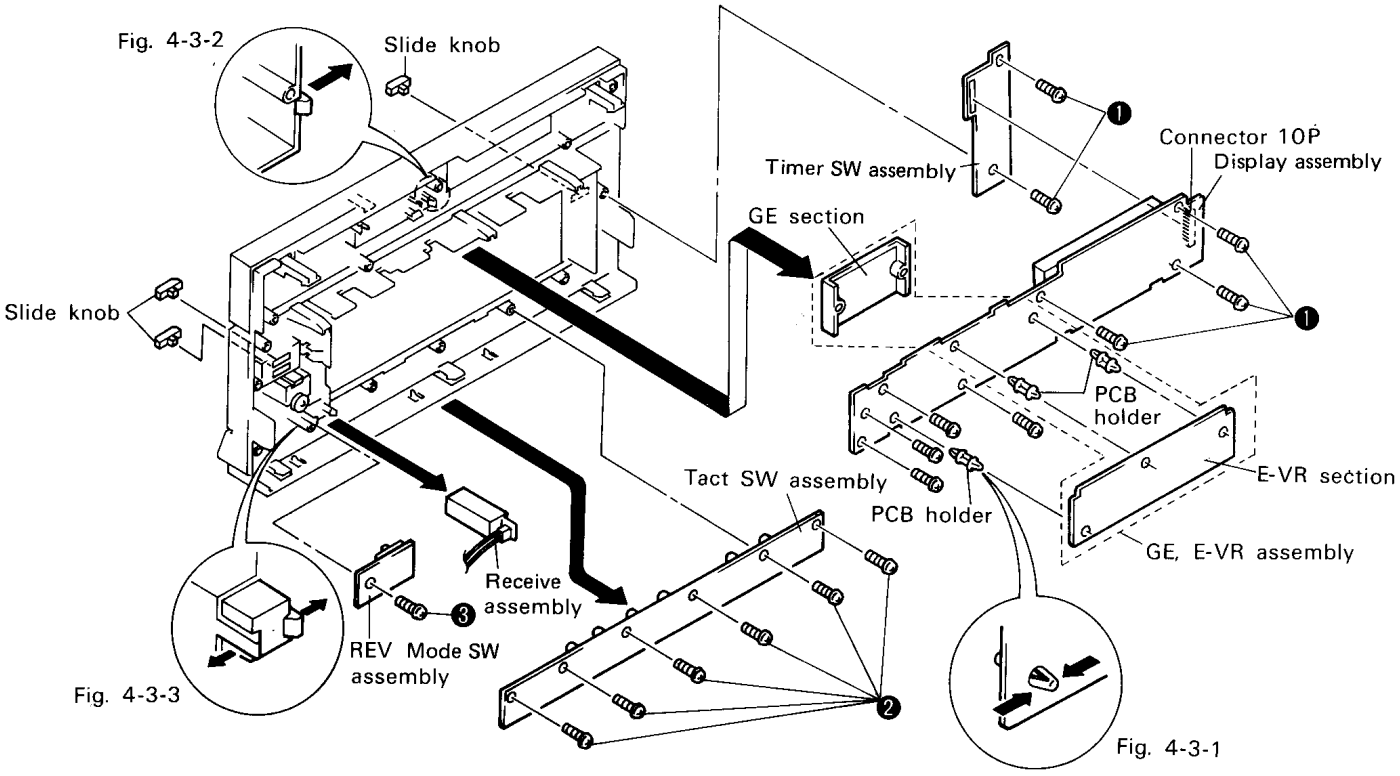

Fig. 4-3 Removal of individual sections of assembly

■ Removal of Cassette Mechanism Unit

1. Open the binder and remove the cord.
2. Remove 7 screws ❶ and remove the panel stay.
3. Remove 2 screws ❷ .
4. Remove 2 screws ❸ .
5. Remove 6 connectors; namely, 3P, 8P, 4P, 6P, 8P and 8P.
6. Remove the cassette mechanism unit from the chassis.

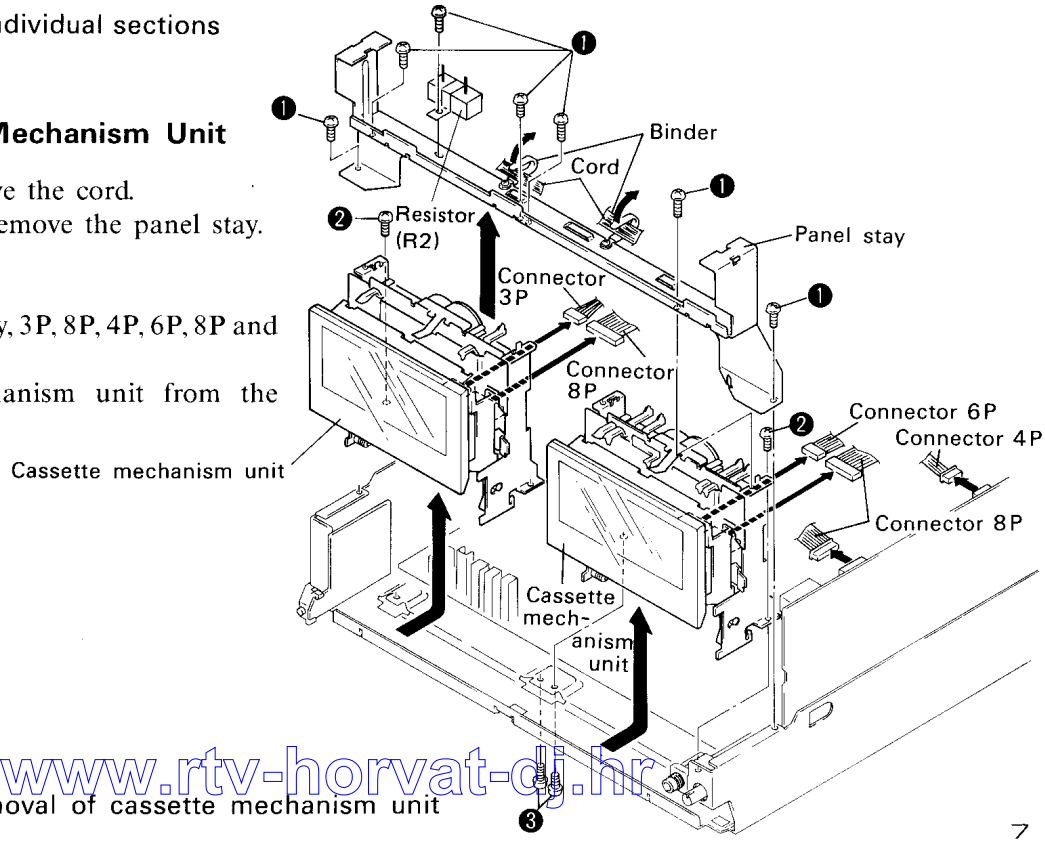

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Fig. 4-4 Removal of cassette mechanism unit

■ Removal of Tape Assembly, Dolby Assembly, MIC AMP Assembly, Phones Assembly, Complex Assembly, and Power Transformer

1. Remove 3 nylon rivets of the tape assembly.
2. Remove 2 connectors of 12P and remove the tape assembly from the complex assembly.
3. Remove a connector of 6P and a connector of 9P, and remove the dolby assembly from the tape assembly.
4. Remove a connector of 5P from the complex assembly.
5. Remove the mounting plate and remove the MIC AMP assembly.
6. Remove a screw ❶ and remove the phones assembly.
7. Remove 4 screws ❷, 2 screws ❺ and 2 screws ❻.
8. Remove 4 screws ❸.
9. Remove the complex assembly from the chassis.
10. Remove 4 screws ❹ and remove the power transformer.

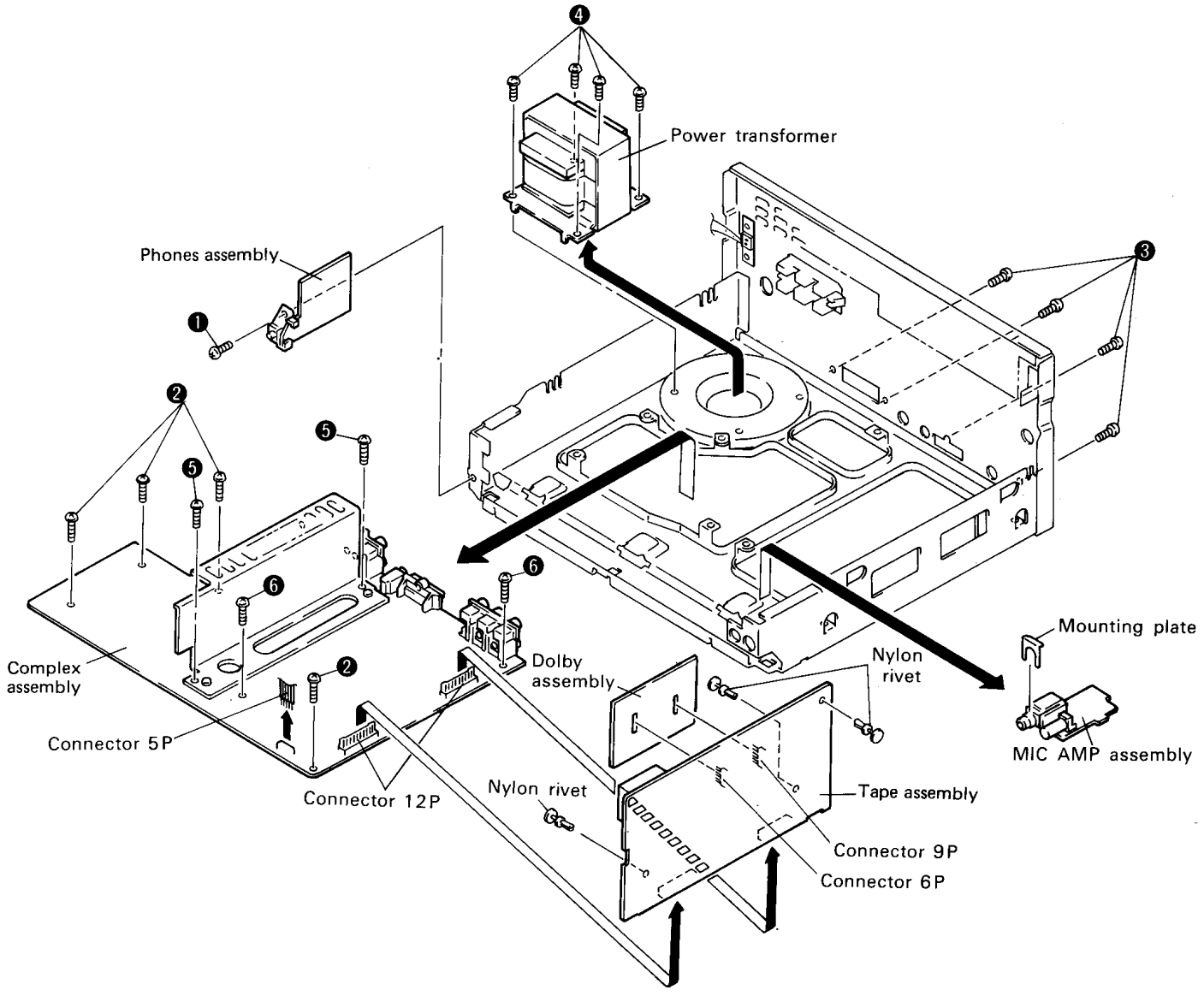

Fig. 4-5 Removal of individual assemblies and power transformer

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5. PARTS LOCATION

NOTES:

- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts marked by " ⊙ " are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

Front Panel View

Push knob (SET/NEXT) AAY-355

Push knob (TIME +) AAY-355

Push knob (STOP TIME) AAY-355

Push knob (START TIME) AAY-355

Push knob (TIME −) AAY-355

Knob (CLOCK ADJ.) AAY-362

Push knob (TIMER STAND-BY) AAY-355

Mini jack (PHONES) AKN-208

Slide knob (TIMER STAND-BY MODE) AAY-360

TAPE display ANZ-342

★ Variable resistor (VR701, 30kB) (5 BAND GRAPHIC EQUALIZER) ACX-316

Knob (SOUND EFFECT) AAY-353

Knob (MUTING) AAY-353

Knob (BALANCE L-CENTER-R) AAY-354

Slide knob (REVERSE MODE) AAY-360

Slide knob (DOLBY NR OFF-B-C) AAY-360

Knob (MIC MIX MIN-MAX) AAB-411

Mic jack AKN-060

TAPE counter AAW-142

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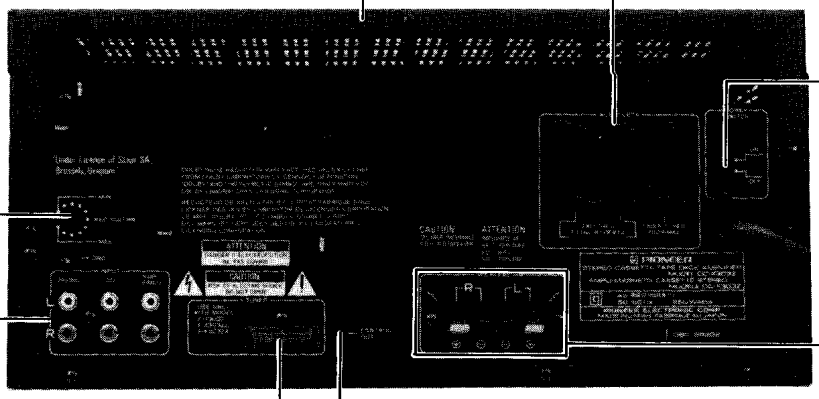
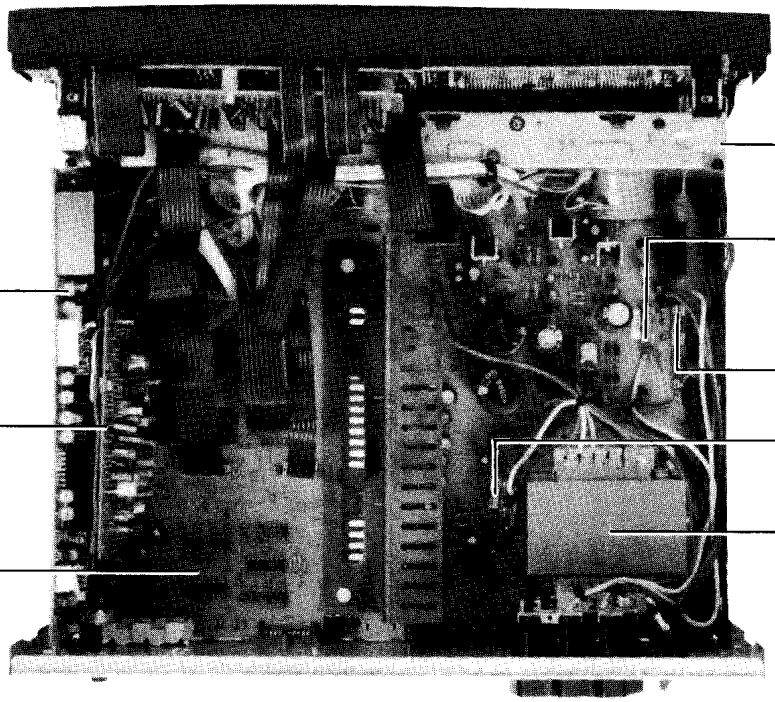
Rear Panel View



Top View with Bonnet Removed



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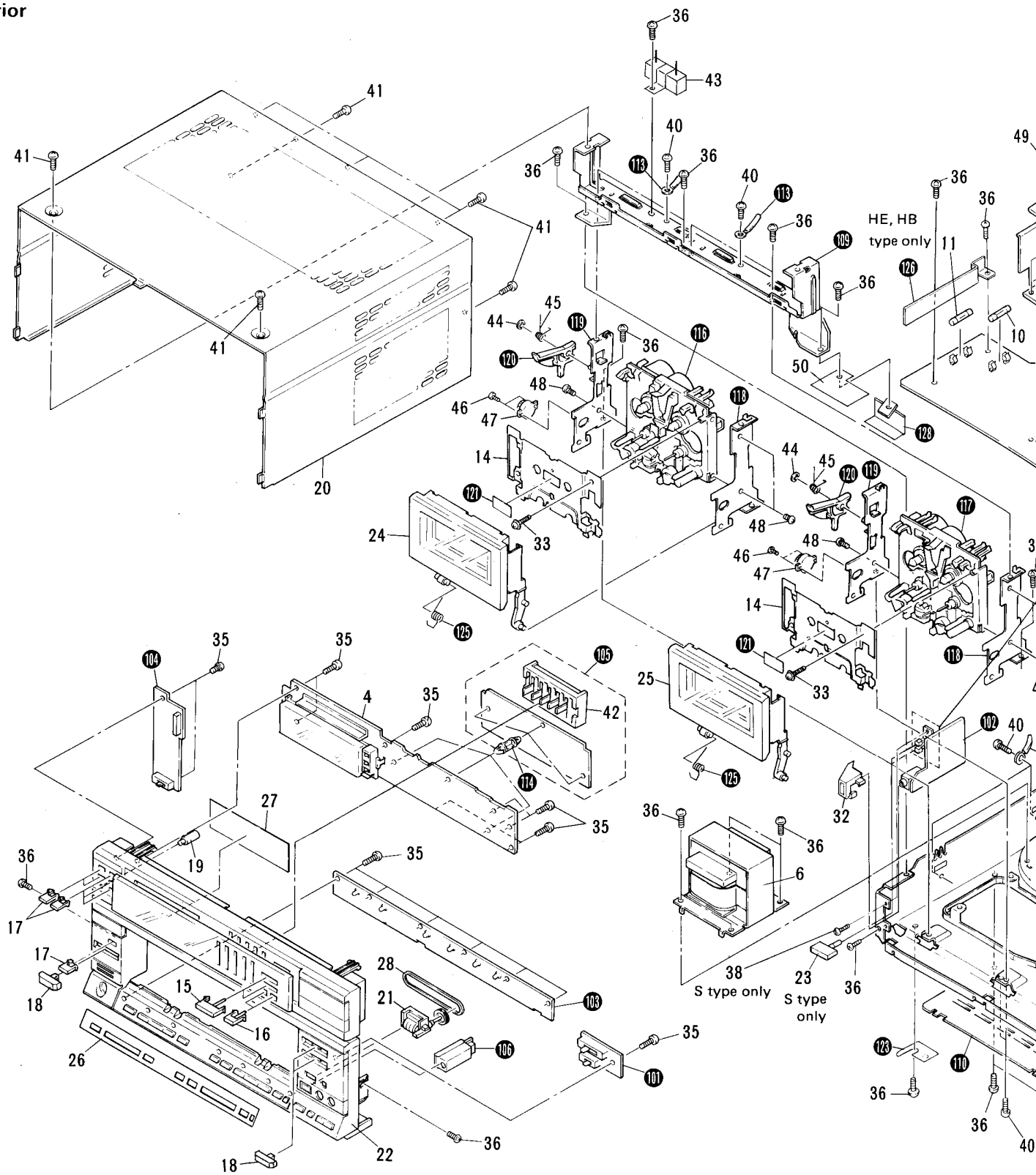
6. EXPLODED VIEW

Exterior



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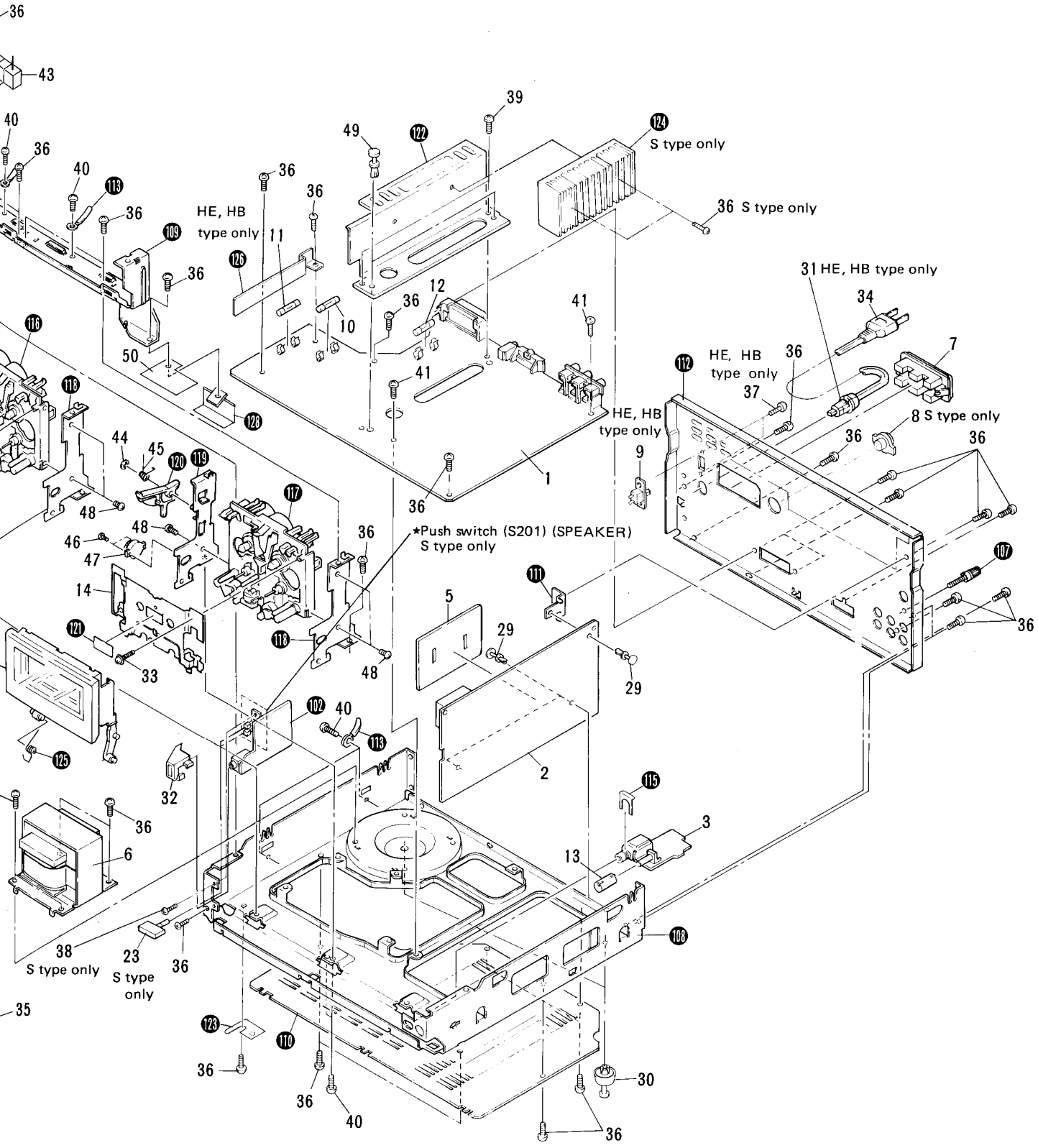

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NOTES:

- ***Parts without part number cannot be supplied.***
- ***The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.***
- ***For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.***
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  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts marked by " ⊙ " are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

Parts List

Mark		No.	Part No.	Description
		1	GWM-461	Complex assembly
		2	GWF-172	TAPE assembly
		3	GWF-173	MIC AMP assembly
		4	GWV-129	DISPLAY assembly
		5	AWX-337	DOLBY (B/C) assembly
⚠	**	6	ATS-290	T1 Power transformer (AC 220/240V)
⚠		7	AKP-502	AC socket (AC outlet)
⚠	**	8	AKX-507	S1 Voltage selector (S type only)
	**	9	ASH-501	S1 Slide switch (POWER SWITCH) (HE, HB type only)
⚠	**	10	AEK-402	FU1 Fuse (T1A)
⚠	**	11	AEK-403	FU2 Fuse (T 2.5A)
⚠	**	12	AEK-017	FU101 Fuse (T 2A)
		13	AAB-411	Knob (MIC MIX MIN-MAX)
		14	AAP-144	Cassette mechanism cover
		15	AAY-353	Push knob (A) (SOUND EFFECT, MUTING)
		16	AAY-354	Push knob (B) (BALANCE L-CENTER-R)
		17	AAY-355	Push knob (C) (START TIME, STOP TIME TIME−, TIME+, SET/NEXT, TIMER STAND-BY)
		18	AAY-360	Slide knob (TIMER STAND-BY MODE REVERSE MODE, DOLBY NR OFF-B-C)
		19	AAY-362	Knob (CLOCK ADJ.)
		20	ANE-615	Bonnet case
		21	AAW-142	Tape counter
		22	ANY-204	Front panel assembly
		23	AAY-403	Knob (SPEAKER) (S type only)
		24	ANZ-280	Door panel (L)
		25	ANZ-281	Door panel (R)
		26	ANZ-342	TAPE display
		27	AAK-050	F.L filter
		28	AEB-308	Counter belt
		29	AEC-525	Nylon rivet
		30	AEC-847	Leg assembly
		31	AEC-882	Strain relief (HE, HB type only)
		32	AEP-330	Jack holder
		33	ATZ26P120FZK	Screw
⚠		34	ADG-041	AC Power cord
		35	BBZ26P080FMC	Screw
		36	BBZ30P080FZK	Screw
		37	VMZ30P060FZK	Screw (HE, HB type only)
		38	VMZ30P060FMC	Screw (S type only)
		39	BBZ30P100FZK	Screw
		40	VCZ30P060FMC	Screw
		41	BBT30P080FZK	Screw
	★	42	ACX-316	5 slide variable (30kB)
		43	ACN-147	R2 Resistors (75Ω, 10W)
		44	YE20FUC	Washer
		45	ANZ1006	Cam spring
		46	PBZ20P030FMC	Screw
		47	ANZ1008	Damper
		48	PCZ30P040FMC	Screw
		49	AEP-230	Rivet
		50	AWP1001	Control assembly
		101		REV MODE SW assembly
		102		PHONES assembly
		103		Tact SW assembly
		104		TIMER SW assembly
		105		GE, E-VR assembly
		106		RECEIVE assembly
		107		Terminal (GND)
		108		Chassis
		109		Panel stay
		110		Bottom plate
		111		F.E holder
		112		Rear panel
		113		Binder
		114		PCB holder
		115		Mount plate
		116		Cassette mechanism unit I
		117		Cassette mechanism unit II
		118		Mounting plate (R)
		119		Mounting plate (L)
		120		Eject cam
		121		Shine paper
		122		Heat sink
		123		Hole cover
		124		Heat sink (S type only)
		125		Spring
		126		Barrier (HE, HB type only)
		127		.....
		128		P.C.B Holder

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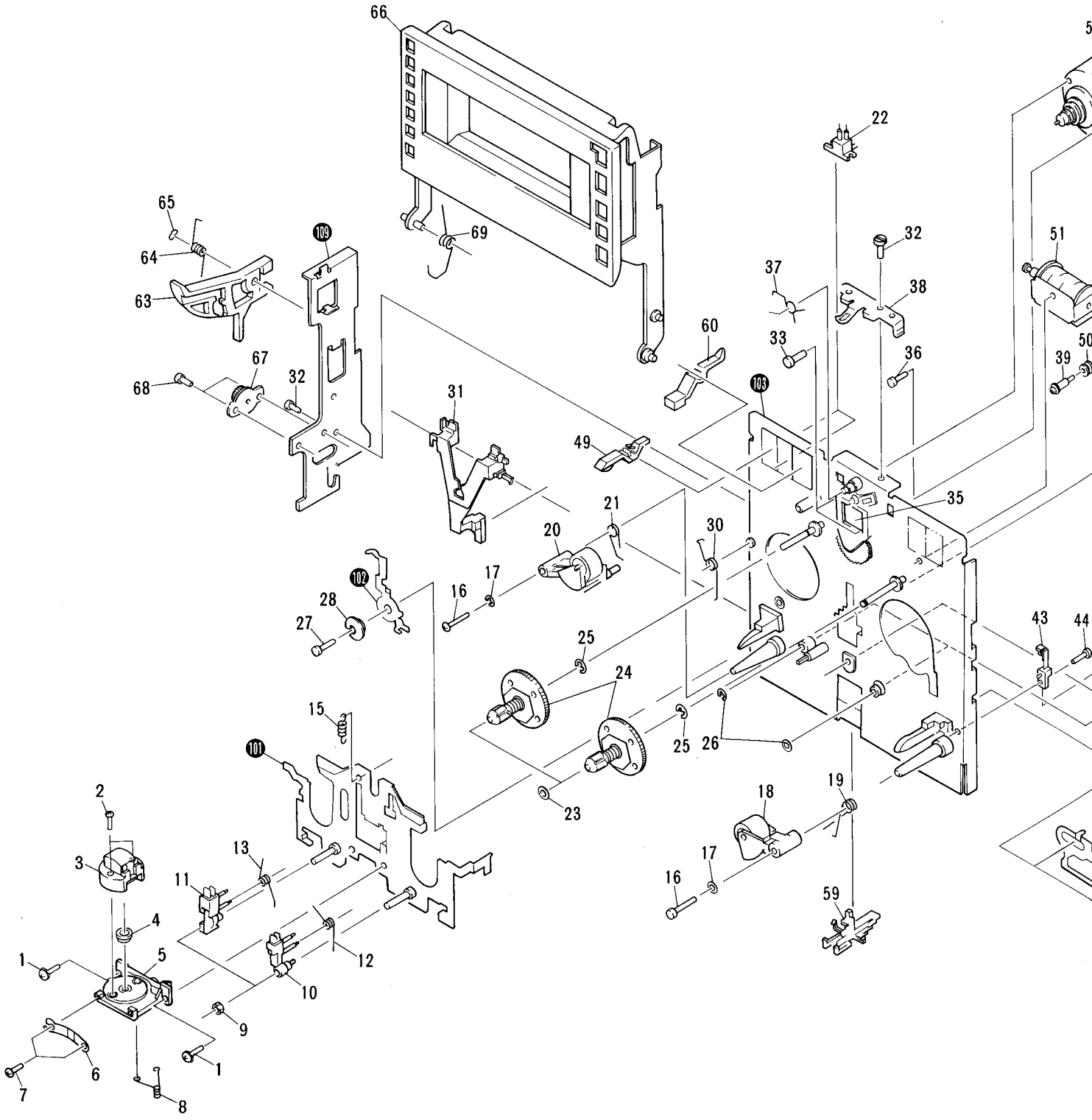

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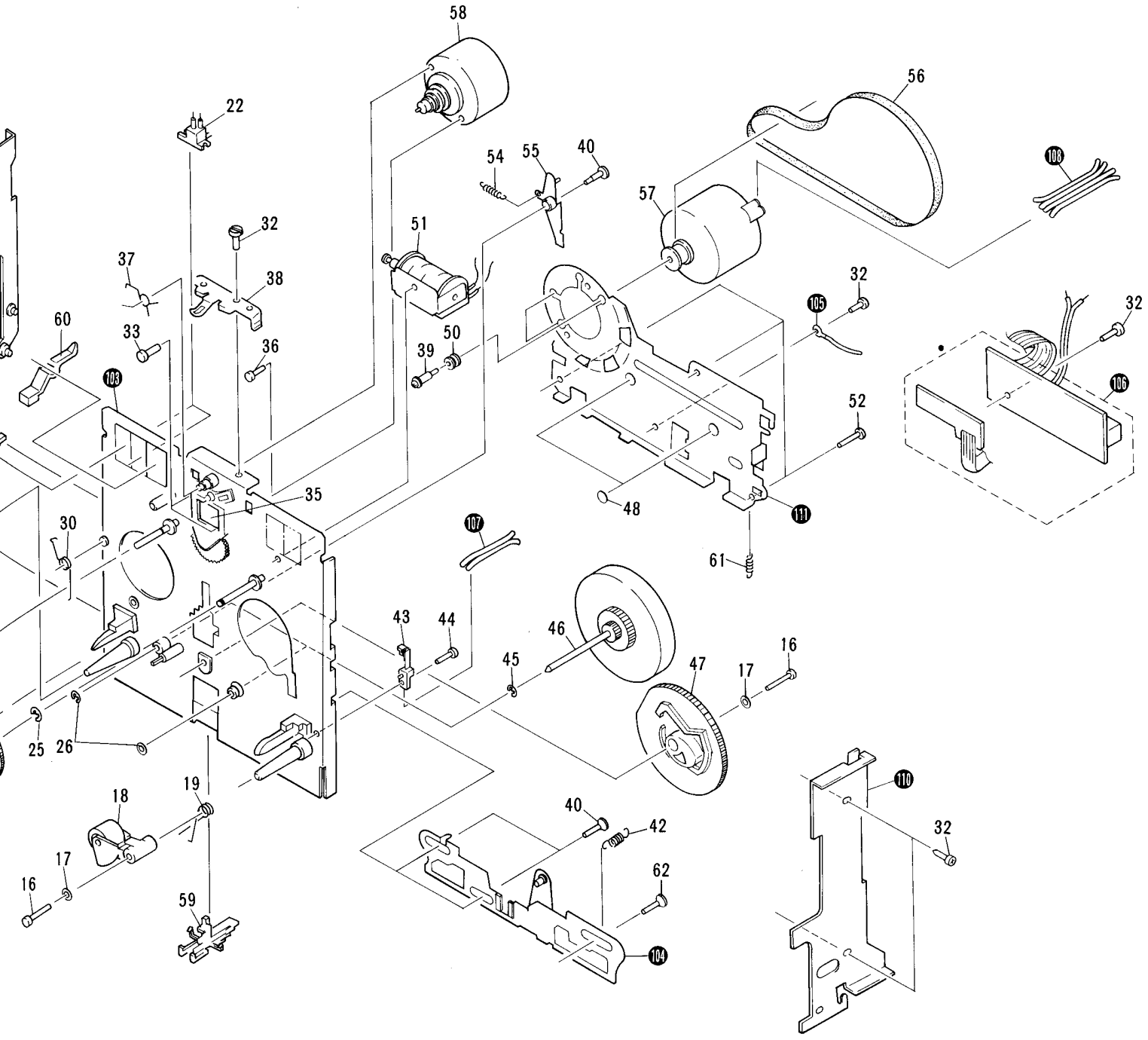

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NOTES:

- ***Parts without part number cannot be supplied.***
- ***The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.***
- ***For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.***
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

Parts List of Mechanism I

Mark	No.	Part No.	Description
	1	AXT-010	Screw with washer
	2	ATX-015	Screw
★★	3	AXN-040	PLAY head
	4	AXS-123	Cushion
	5	AXP-049	HD base
	6	AXV-120	Spring
	7	AXT-016	Screw
	8	AXV-121	Spring
	9	AXS-109	Adjustment nut
	10	AXS-110	Tape guide
	11	AXS-111	Sensor holder
	12	AXV-107	Adjustment spring (L)
	13	AXV-108	Adjustment spring (R)
	14		.....
	15	AXV-109	Head base sp
	16	PBZ20P130FMC	Screw
	17	WB20FMC	Washer
	18	AXP-043	Pinch roller assembly (R)
	19	AXV-110	Pinch roller spring (R)
	20	AXP-044	Pinch roller assembly (L)
	21	AXV-111	Pinch roller spring (L)
★★	22	AXN-035	Push switch
	23	WA16D040D020	Washer
	24	AXP-045	Reel assembly
	25	WA21D040D030	Washer
	26	AXW-039	Washer
	27	PBZ30P080FMC	Screw
	28	AXS-112	Spacer
	29		.....
	30	AXV-112	Eject protector spring (L)
	31	AXS-113	Holder lever
	32	PCZ30P040FMC	Screw
	33	AXT-011	Screw with washer
	34		.....
	35	AXP-046	Idler assembly
	36	PBA26P035FMC	Screw
	37	AXV-113	Hold spring
	38	AXV-114	Spring
	39	ATX-012	Motor set screw
	40	AXS-114	Cap

Mark	No.	Part No.	Description
	41		.....
	42	AXV-115	Slide spring
★★	43	AXN-036	Leaf switch
	44	AZB1001	Screw
	45	AZB1003	Washer
	46	AXP-047	F/W assembly
	47	AXS-115	Cam gear
	48	AXS-120	Spacer
	49	AXS-116	PACK detector lever
	50	AXW-038	Motor cusion
★	51	AZS1002	Solenoid
	52	AZB1002	Screw
	53		.....
	54	AXV-116	Play arm spring
	55	AXP-048	Play arm assembly
★★	56	AXW-040	Main belt
★★	57	AXN-038	Motor assembly (MAIN)
★★	58	AXN-039	Motor assembly (REEL)
	59	AXS-117	Lead holder
	60	AXS-121	Chrome detector lever
	61	AXV-117	Earth spring
	62	AXT-013	Cap
	63	AZN1003	Eject cam
	64	AZN1006	Cam spring
	65	YE20FUC	Nut
★★	66	AZN1007	Fram door assembly
	67	AZN1008	Damper assembly
	68	PBZ20P030FMC	Scrrew
	69	AZN1002	Eject spring
	101		Head plate
	102		Eject protector spring
	103		Chassis
	104		Slide plate
	105		Lug
	106		Control PC assembly
	107		Wire connector
	108		Wire connector
	109		Mounting plate (R)
	110		Mounting plate (L)
	111		F/W BRACKET

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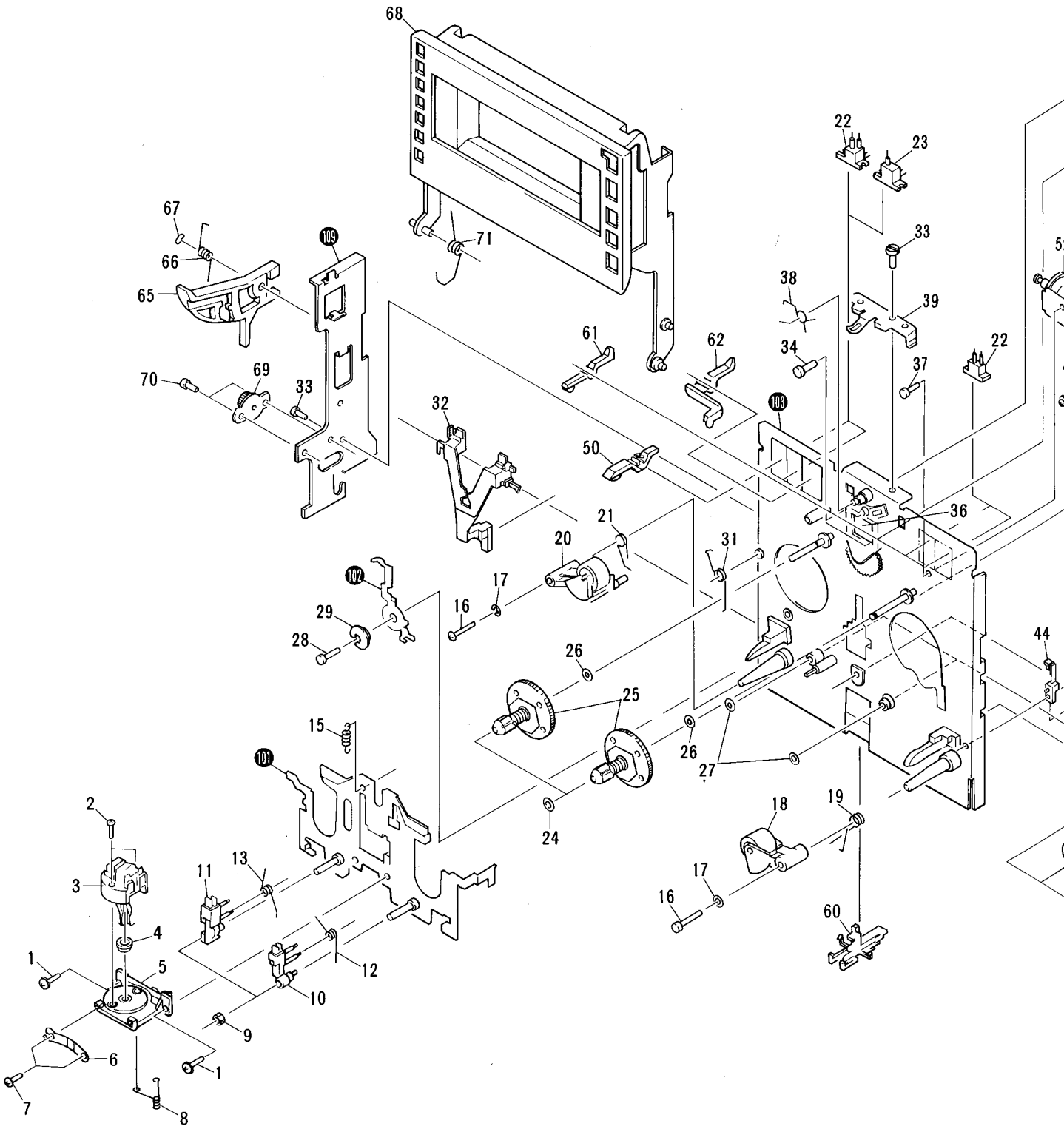
Mechanism 2



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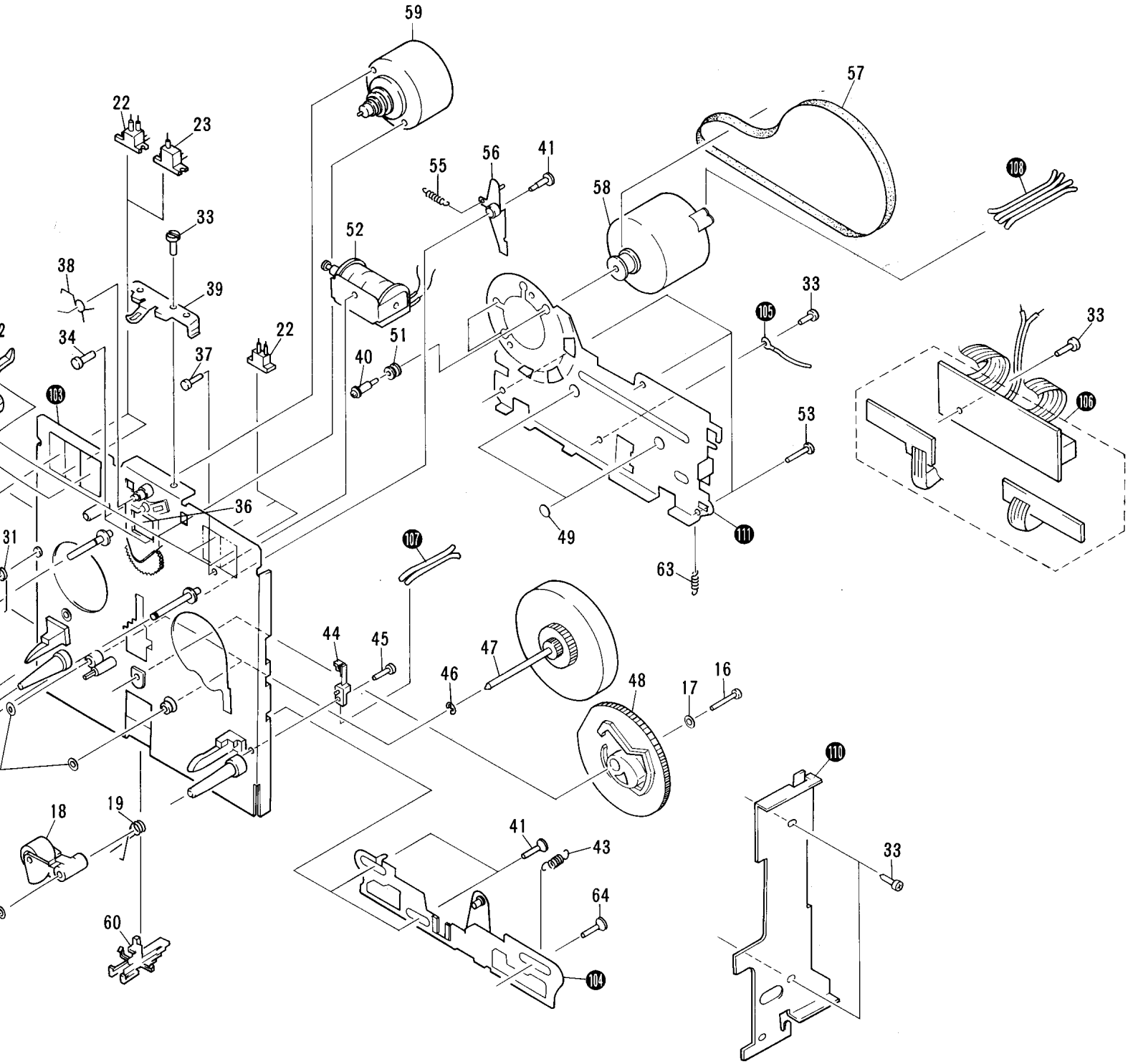

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NOTES:

- ***Parts without part number cannot be supplied.***
- ***The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.***
- ***For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.***
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts marked by " ⊙ " are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

Parts List of Mechanism II

Mark	No.	Part No.	Description
	1	AXT-010	Screw with washer
	2	ATX-015	Screw
★★	3	AXN-034	REC/PLAY head
	4	AXS-123	Cushion
	5	AXP-049	HD base
	6	AXV-120	Spring
	7	AXT-016	Screw
	8	AXV-121	Spring
	9	AXS-109	Adjustment nut
	10	AXS-110	Tape guide
	11	AXS-111	Sensor holder
	12	AXV-107	Adjustment spring (L)
	13	AXV-108	Adjustment spring (R)
	14		.....
	15	AXV-109	Head base sp
	16	PBZ20P130FMC	Screw
	17	WB20FMC	Washer
	18	AXP-043	Pinch roller assembly (R)
	19	AXV-110	Pinch roller spring (R)
	20	AXP-044	Pinch roller assembly (L)
	21	AXV-111	Pinch roller spring (L)
★★	22	AXN-035	Push switch
★★	23	AZS1001	Push switch
	24	WA16D040D020	Washer
	25	AXP-045	Reel assembly
	26	WA21D040D030	Washer
	27	AXW-039	Washer
	28	PBZ30P080FMC	Screw
	29	AXS-112	Spacer
	30		.....
	31	AXV-112	Eject protector spring (L)
	32	AXS-113	Holder lever
	33	PCZ30P040FMC	Screw
	34	AXT-011	Screw with washer
	35		.....
	36	AXP-046	Idler assembly
	37	PBA26P035FMC	Screw
	38	AXV-113	Hold spring
	39	AXV-114	Spring
	40	ATX-012	Motor set screw
	41	AXS-114	Cap
	42		.....
	43	AXV-115	Slide spring
★★	44	AXN-036	Leaf switch
	45	AZB1001	Screw
	46	AZB1003	Washer
	47	AXP-047	F/W assembly
	48	AXS-115	Cam gear (B)
	49	AXS-120	Spacer
	50	AXS-116	PACK detector lever
	51	AXW-038	Motor cusion
★	52	AZS1002	Solenoid
	53	AZB1002	Screw
	54		.....
	55	AXV-116	Play arm spring
	56	AXP-048	Play arm assembly
★★	57	AXW-040	Main belt
★★	58	AXN-038	Motor assembly (MAIN)
★★	59	AXN-039	Motor assembly (REEL)
	60	AXS-117	Lead holder
	61	AXS-121	REC detector lever
	62		Metal detector lever
	63	AXV-117	Earth spring
	64	AXT-013	Cap
	65	AZN1003	Eject cam
	66	AZN1006	Cam spring
	67	YE20FUC	Nut
★★	68	AZN1007	Fram door assembly
	69	AZN1008	Damper assembly
	70	PBZ20P030FMC	Screw
	71	AZN1002	Eject spring
	101		Head plate
	102		Eject protector spring
	103		Chassis
	104		Slide plate
	105		Lug
	106		Control PC assembly
	107		Wire connector
	108		Wire connector
	109		Mounting plate (R)
	110		Mounting plate (L)
	111		F/W BRACKET

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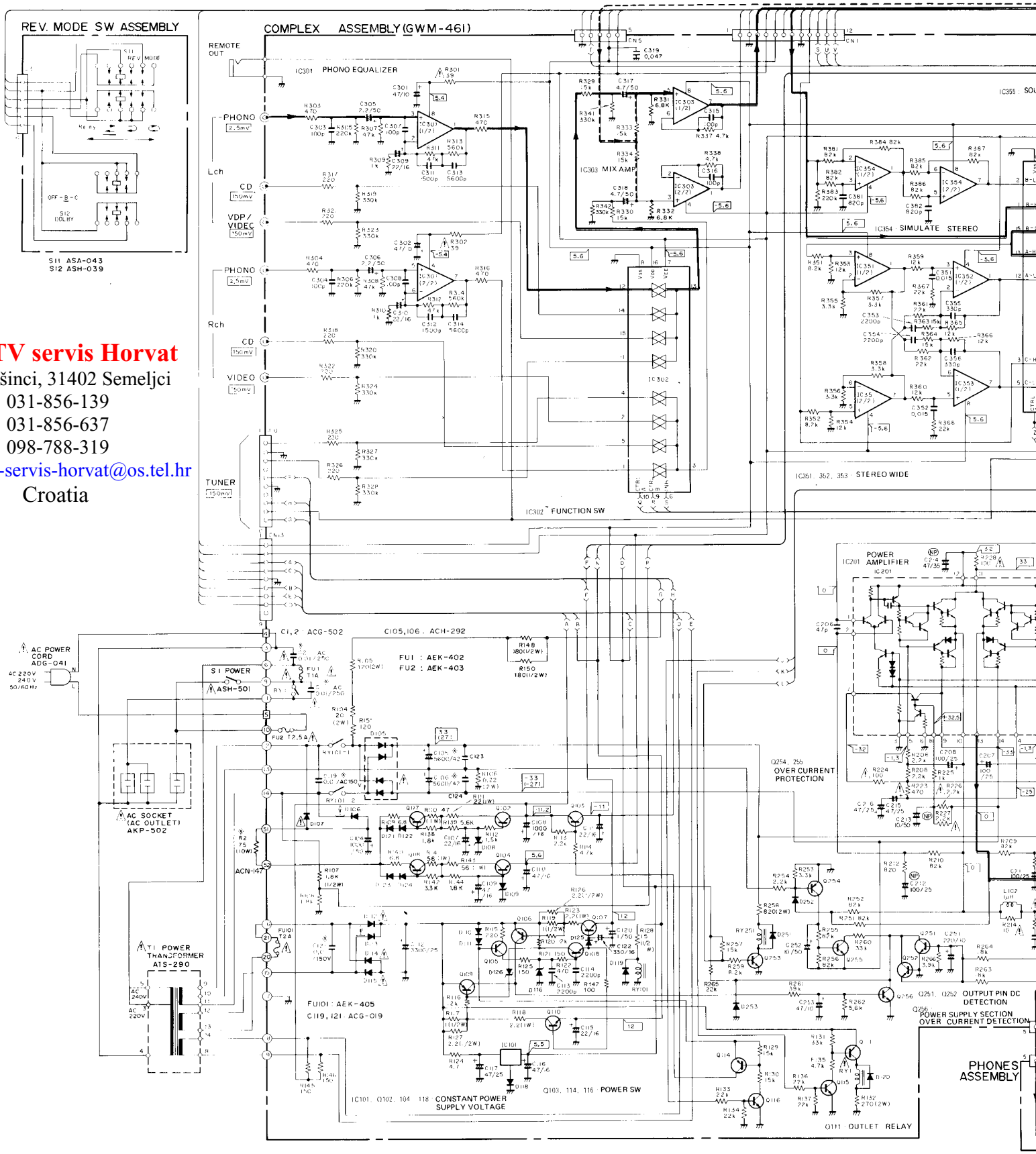
CHEMATIC DIAGRAM FOR S TYPE



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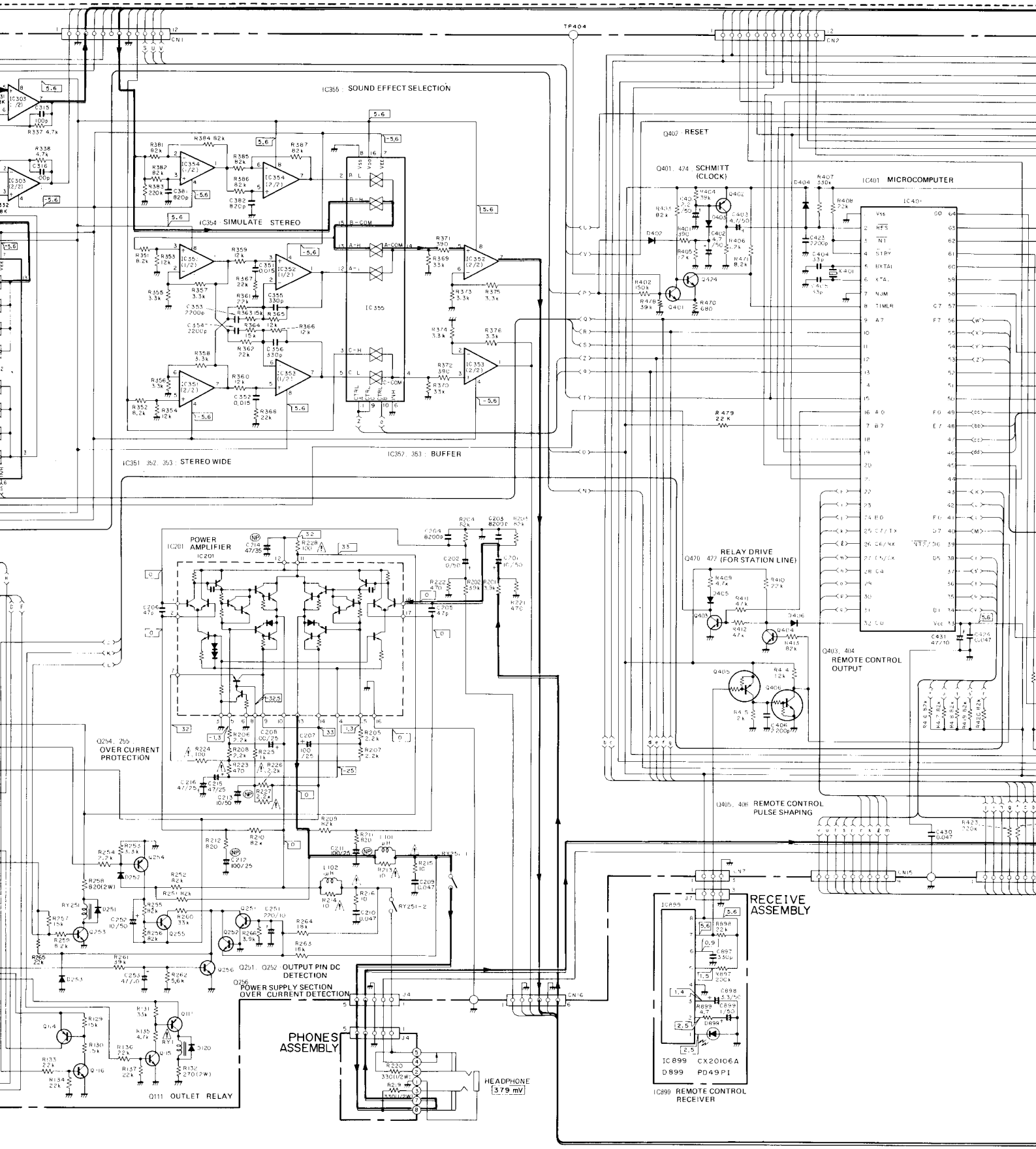

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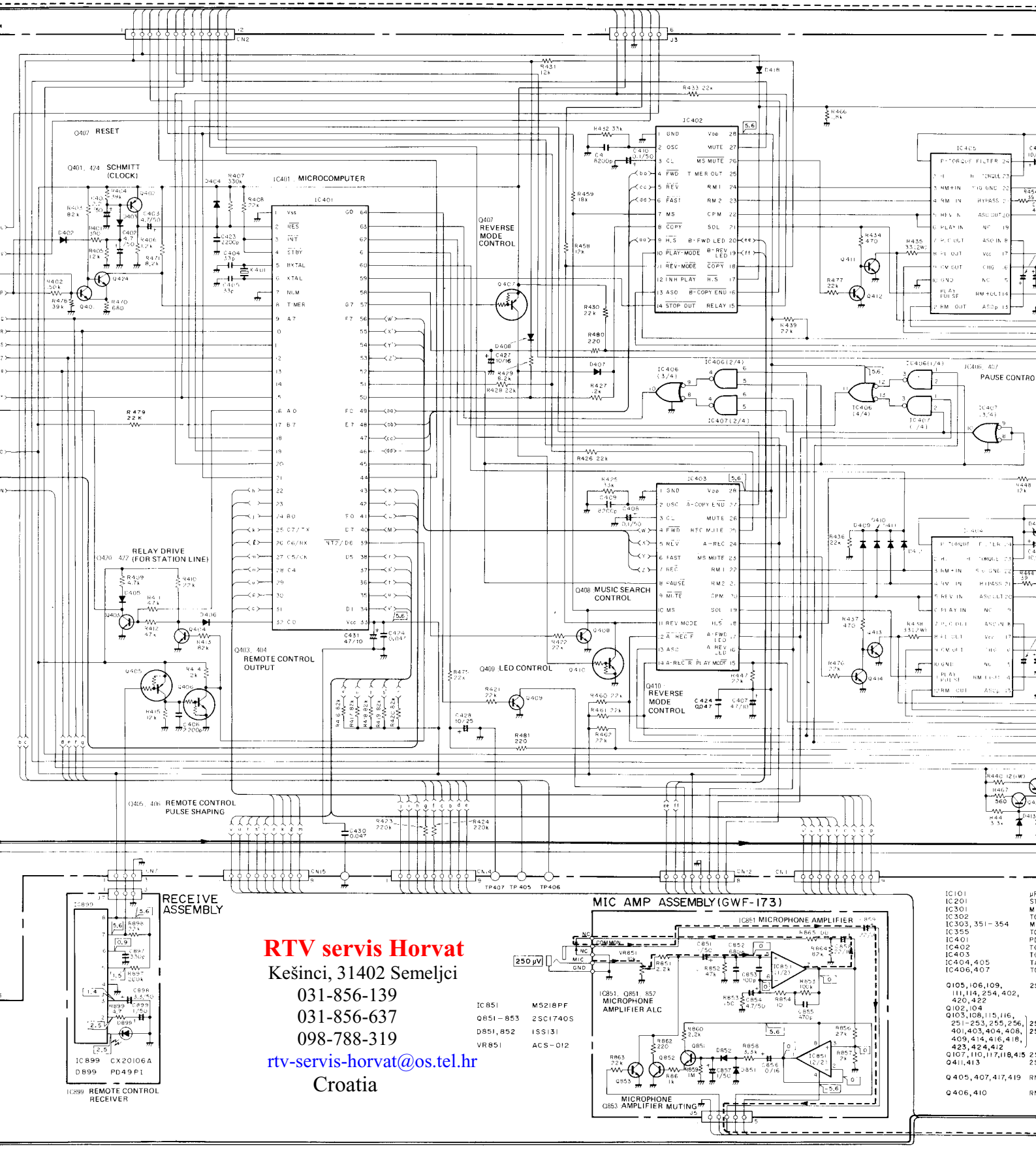

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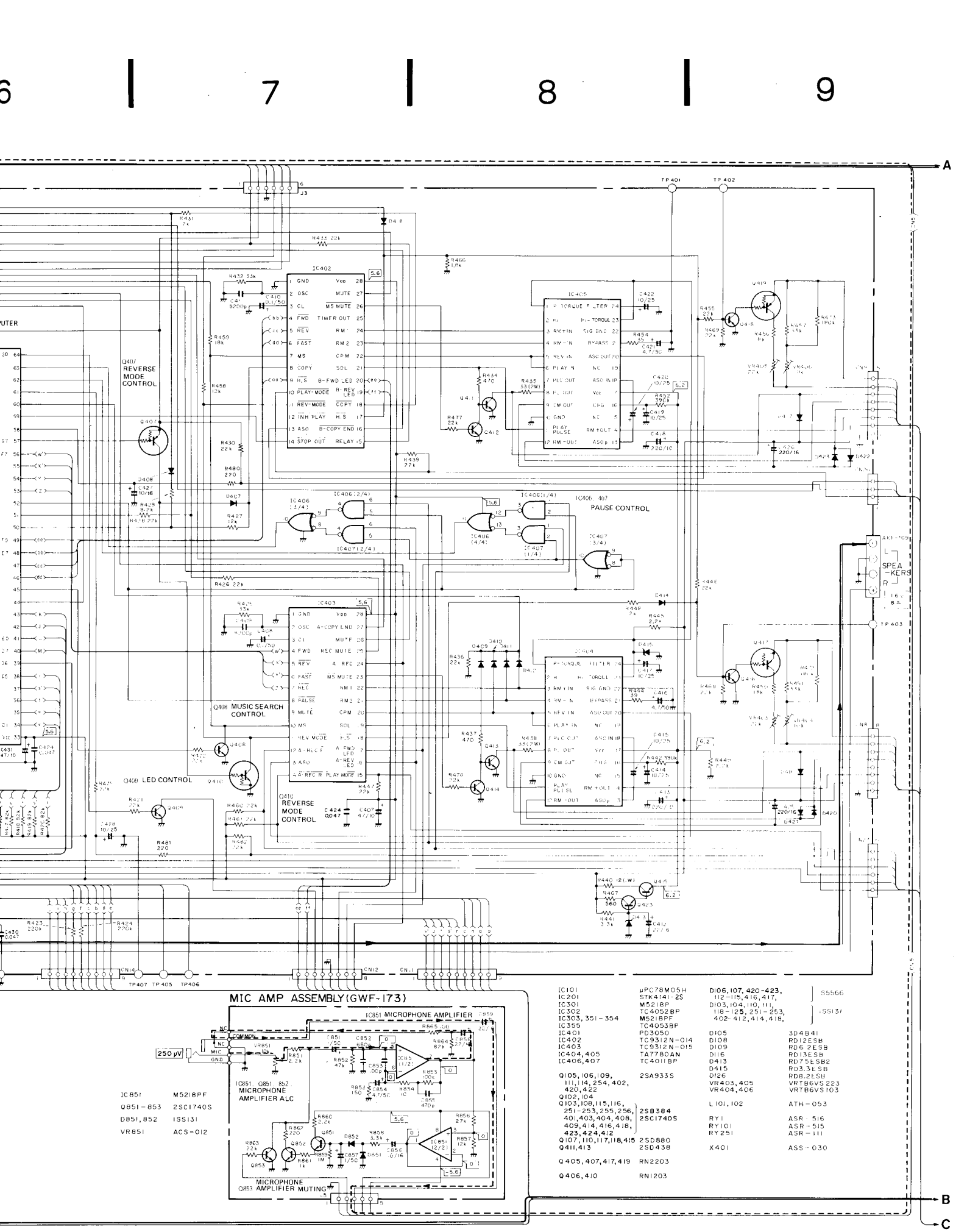

IC101	μPC78M05H	D106,107,420-423, 112-115,416,417,	S5566
IC201	STK4141-2S	D103,104,110,111, 118-125,251-253, 402-412,414,418,	ISS131
IC301	M5218P		
IC302	TC4052BP		
IC303,351-354	M5218PF		
IC355	TC4053BP		
IC401	PD3050	D105	3D4B41
IC402	TC9312N-014	D108	RD12ESB
IC403	TC9312N-015	D109	RD6.2ESB
IC404,405	TA7780AN	D116	RD13ESB
IC406,407	TC4011BP	D413	RD75ESB2
		D415	RD3.3ESB
Q105,106,109, 111,114,254,402, 420,422	2SA933S	D126	RD8.2ESB
		VR403,405	VRTB6VS223
		VR404,406	VRTB6VS103
Q102,104			
Q103,108,115,116, 251-253,255,256, 401,403,404,408, 409,414,416,418, 423,424,412	2SB384 2SC1740S	L101,102	ATH-053
		RY1	ASR-516
		RY101	ASR-515
		RY251	ASR-111
Q107,110,117,118,415	2SD880	X401	ASS-030
Q411,413	2SD438		
Q405,407,417,419	RN2203		
Q406,410	RN1203		

IC851	M5218PF
Q851-853	2SC1740S
D851,852	ISS131
VR851	ACS-012

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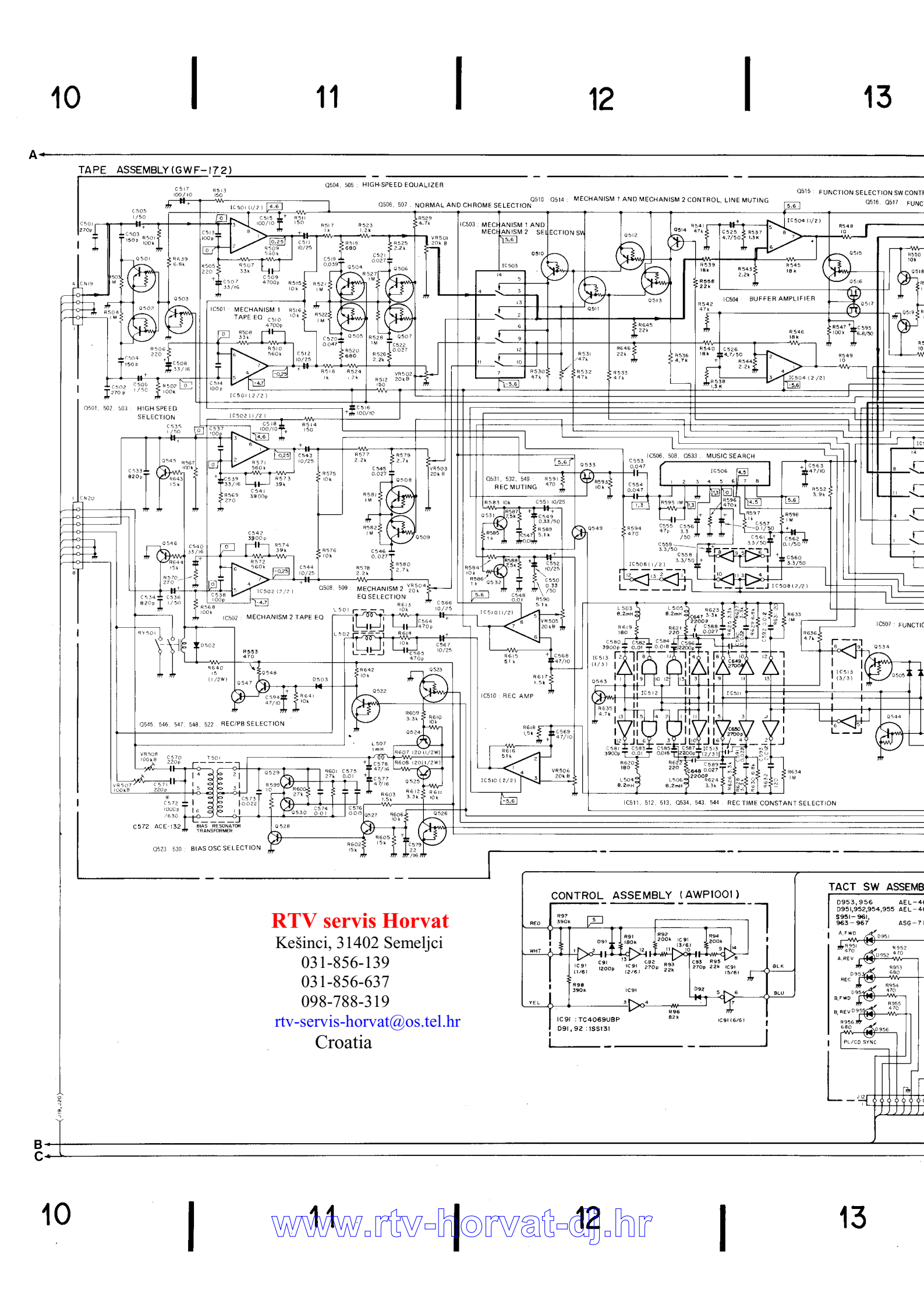

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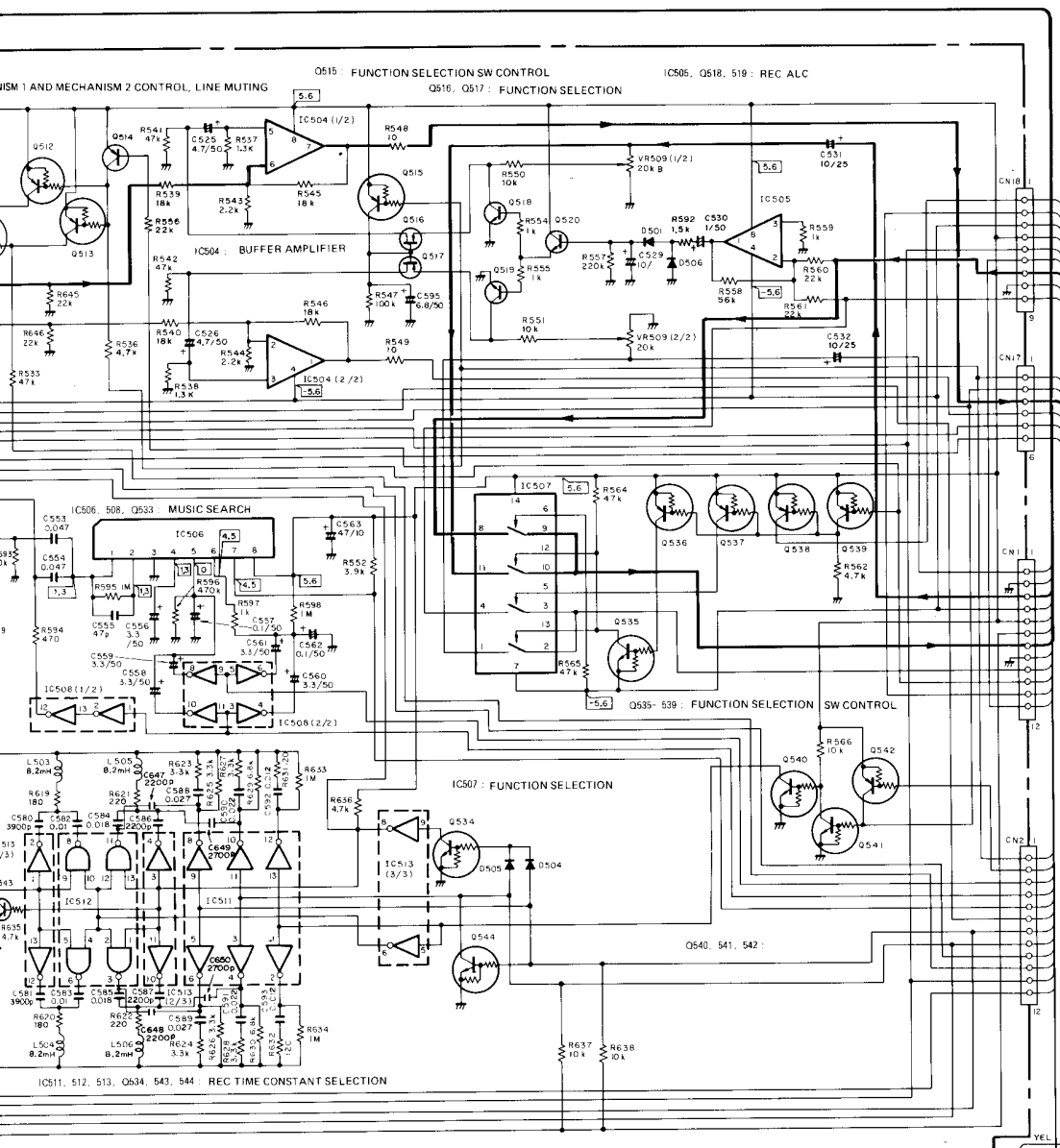

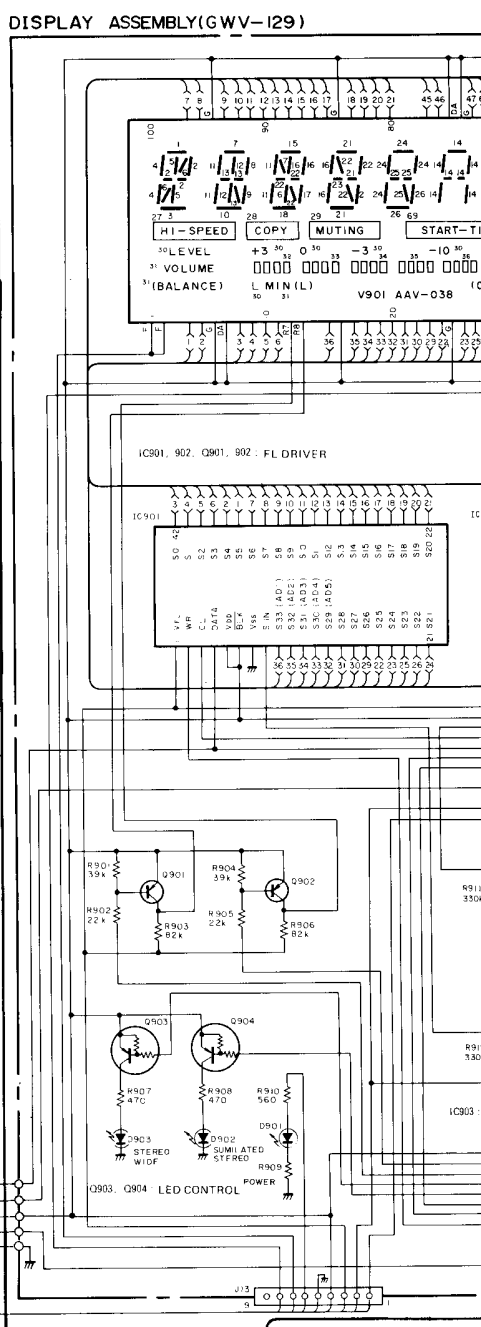

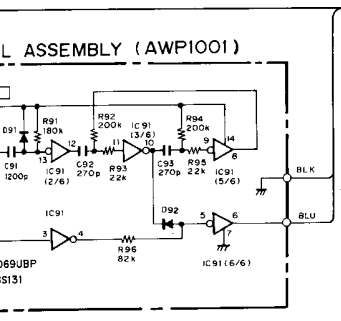

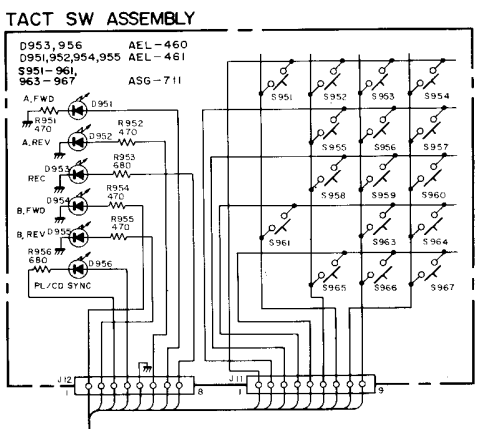

IC501,502 504,510	μPC4570HA
IC503, 507	TC4066BP
IC505	M5218L
IC506	M5114 3AL
IC508, 511, 513	M74LS05P
IC512	M74LS03P
Q501-509 522,523,526 541	RN1201
Q524, 525	JA101
Q512, 513, 536, 537 538, 539	RN2201
Q510, 515, 542, 511	RN2203
Q516, 517, 533	2SJ103
Q518-520, 531 532, 543 545-549	2SC1740S
Q527, 528	JC501
Q529, 530	2SD438
Q534, 535, 540, 544	RN1203
Q514	2SA933S
D501-506	ISS131
VR509	ACT-701
VR501-506	VRTM6H203
VR507, 508	VRTM6H104
L507	ATH-094
L503, 504	ATH-134
L501, 502	ATM-037
T501	ATX-042
RY501	ASR-074

IC901, 902	LC7570
IC903	M5218PF
Q901, 902	2SA933S
Q903, 904	RN2203
D901	AEL-429
D902, 903	AEL-459
D905, 906	RD33ESB
D907-910	ISS131
S901-907	ASG-711
V901	AAV-038

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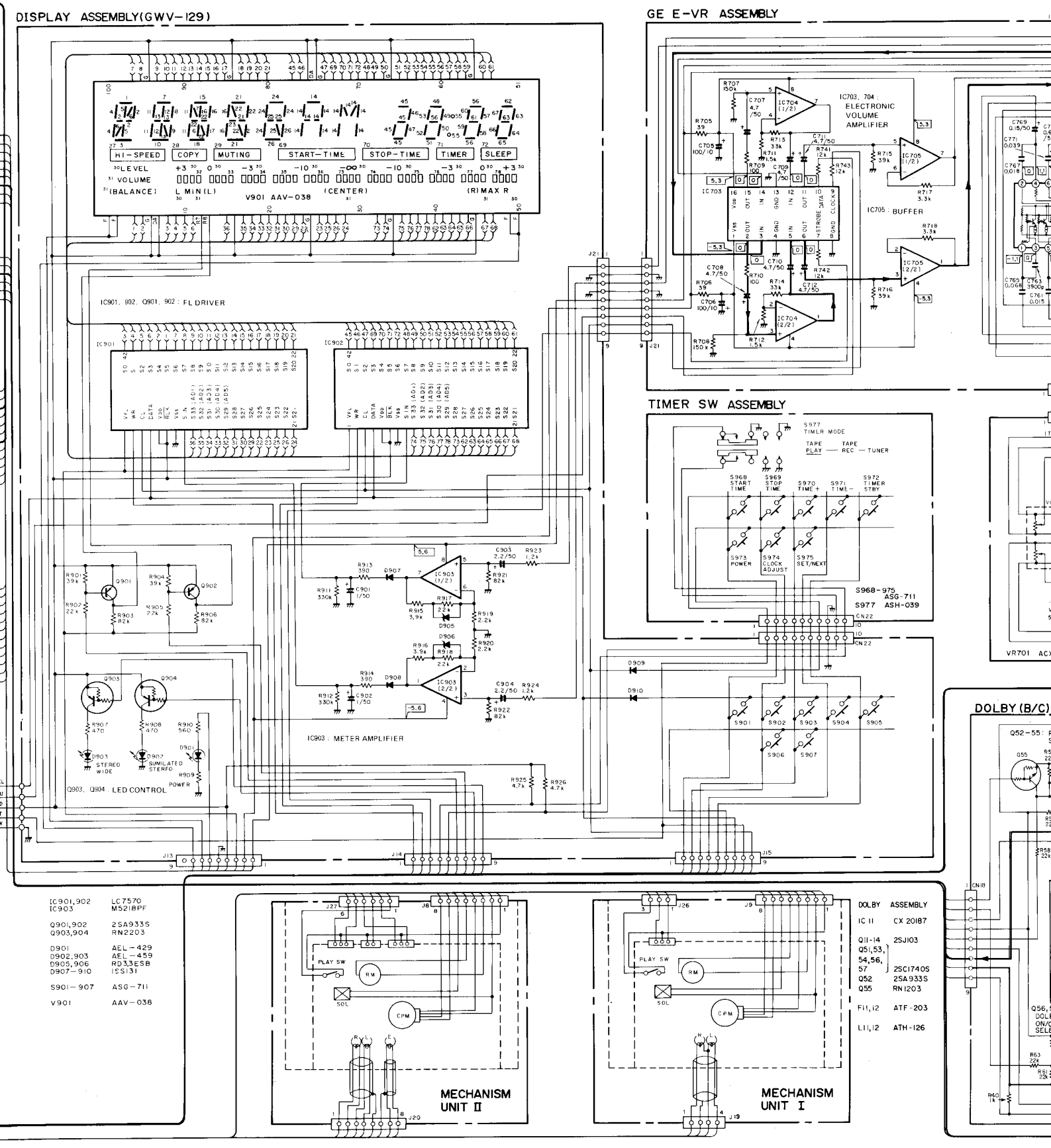

IC901,902	LC7570
IC903	MS218PF
Q901,902	2SA933S
Q903,904	RN2203
D901	AEL-429
D902,903	AEL-459
D905,906	RD3.3ESB
D907-910	1SS131
S901-907	ASG-711
V901	AAV-038

DOLBY	ASSEMBLY
IC 11	CX 20187
Q11-14	2SJ103
Q51,53, 54,56, 57	2SC1740S
Q52	2SA933S
Q55	RN1203
F11,12	ATF-203
L11,12	ATH-126

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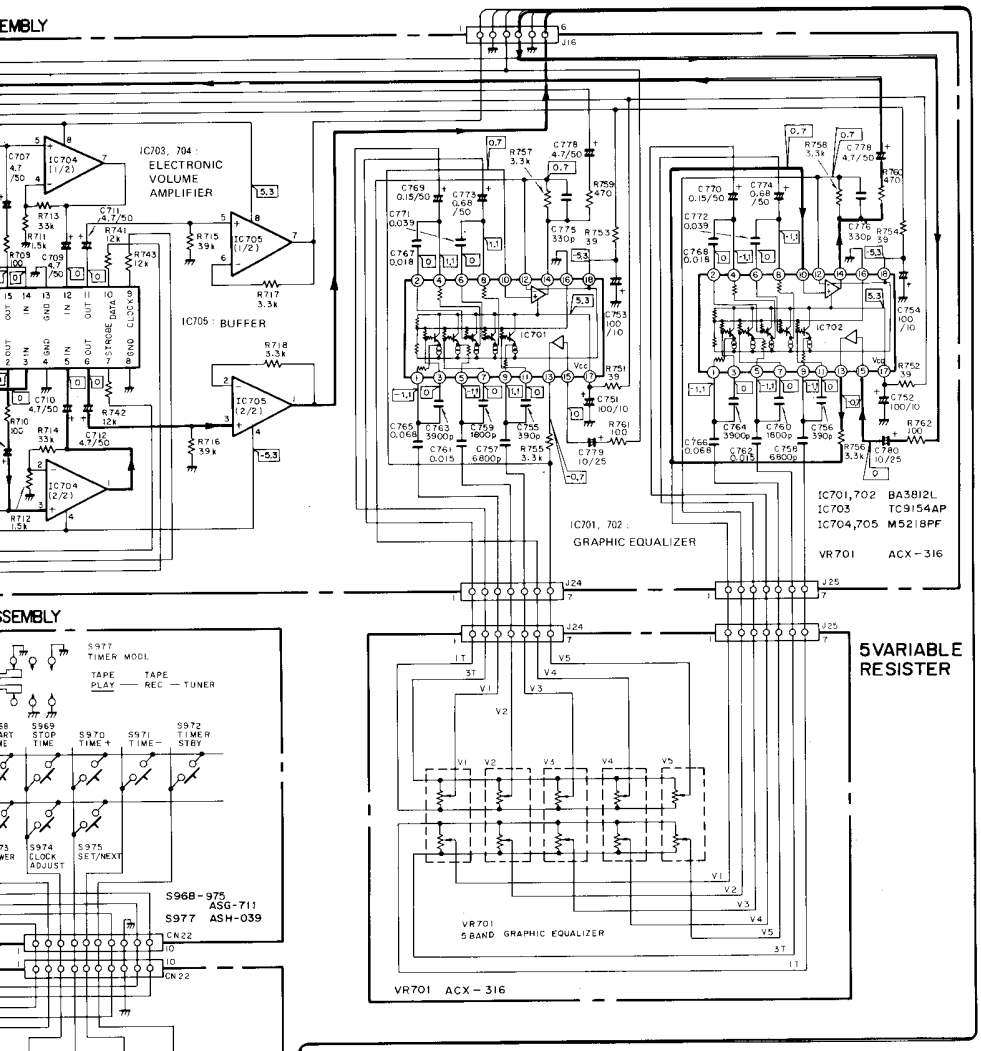

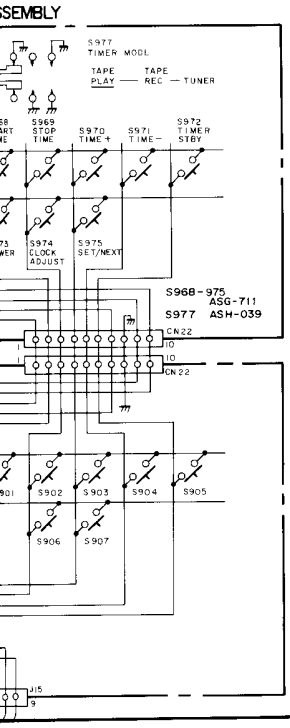

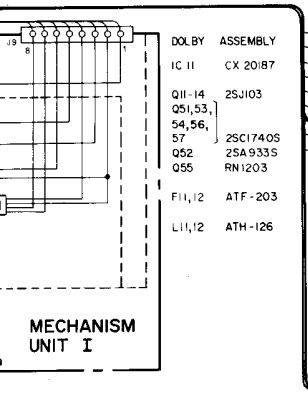

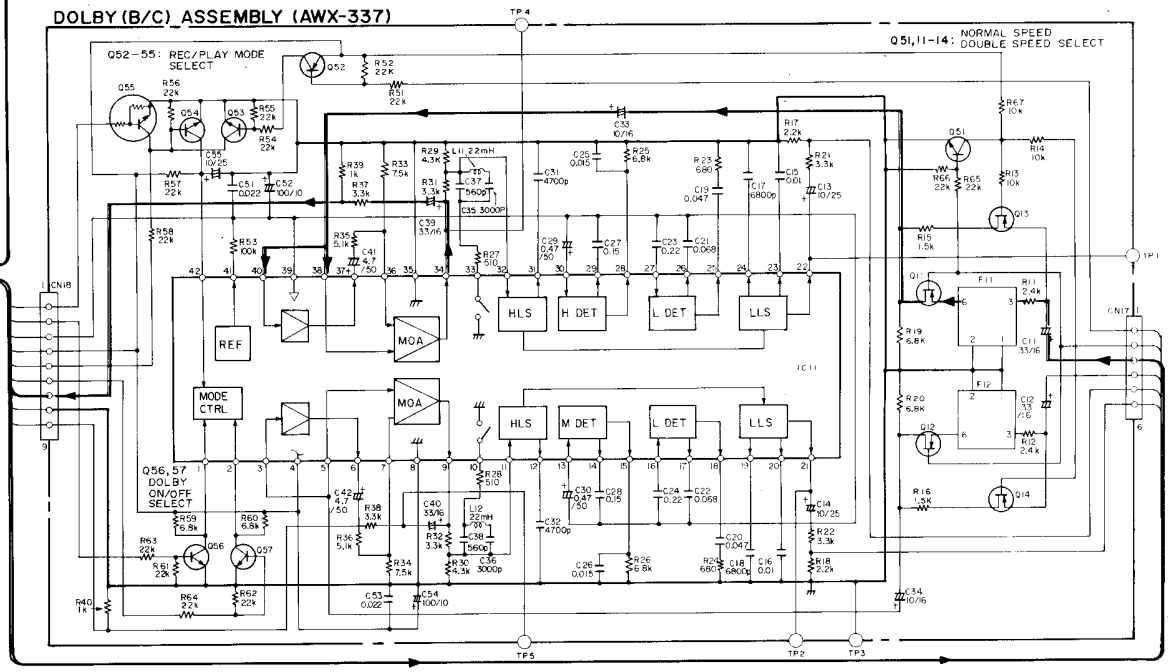

1. RESISTORS:
Indicated in Ω, 1/4W, 1/6W and 1/8W, ±5% tolerance unless otherwise noted k: kΩ, M: MΩ, (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% tolerance
2. CAPACITORS:
Indicated in capacity (μF)/voltage (V) unless otherwise noted p: pF. Indication without voltage is 50V except electrolytic capacitor.
3. VOLTAGE, CURRENT:
: DC voltage (V) at no input signal Value in ( ) is DC voltage at rated power.
mA: DC current at no input signal
4. OTHERS:
: Signal route.
: Adjusting point.
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
X marked capacitors and resistors have parts numbers.
This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.
5. SWITCHES:

DISPLAY ASSEMBLY
S901 VOL UP
S902 VOL DOWN
S903 BAL L
S904 BAL R
S905 MUTING
S906 SOUND (EFFECT)
S907 FUNCTION

TACT SW ASSEMBLY
S951 H.S. COPY
S952 COPY
S953 PAUSE
S954 REC MUTE
S955 REC
S956 A.PLAY (REV)
S957 A.PLAY (FWD)
S958 A.STOP
S959 A.FAST (REV)
S960 A.FAST (FWD)
S961 PHONO/CD SYNC
S963 B.PLAY (REV)
S964 B.PLAY (FWD)
S965 B.STOP
S966 B.FAST (REV)
S967 B.FAST (FWD)

TIMER SW ASSEMBLY
S968 START TIME
S969 STOP TIME
S970 TIME +
S971 TIME −
S972 TIMER STBY
S973 POWER
S974 CLOCK ADJUST
S975 SET/NEXT
S977 TIMER MODE

THE UNDERLINED INDICATES THE SWITCH POSITION

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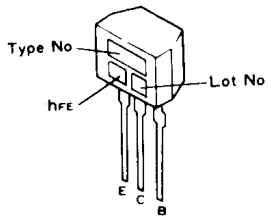
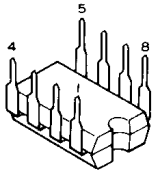
External Appearance of Transistors and ICs

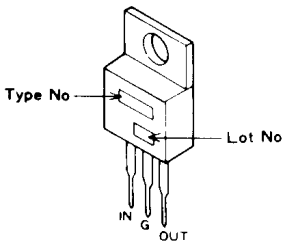
2SA933S
2SC1740S



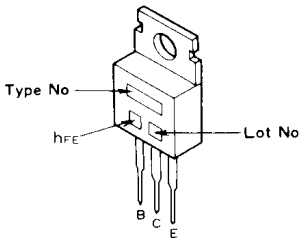
M5218P
M5218PF



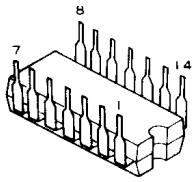
μPC78M05H



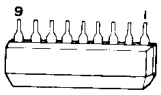
2SB834
2SD880



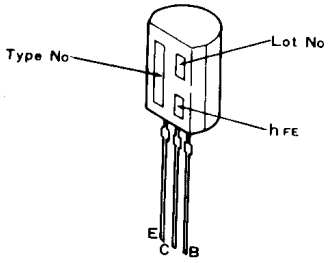
M74LS03P
M74LS05P
TC4001BP
TC4011BP
TC4066BP
TC4069UBP



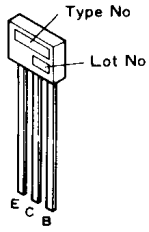
μPC4570HA



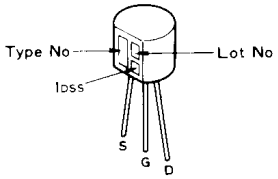
2SD438



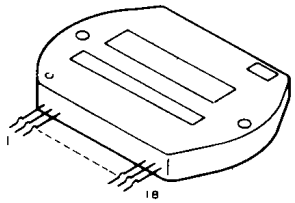
RN1201
RN1203
RN2201
RN2203



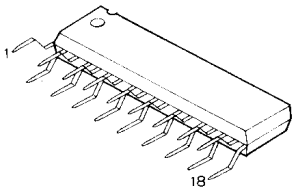
2SJ103



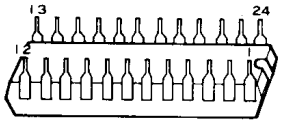
STK4141



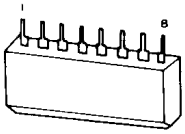
BA3812L



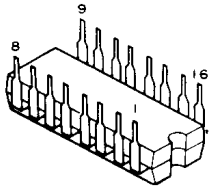
TA7780AN



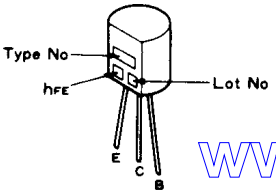
CX20106A
M5218L
M51143AL



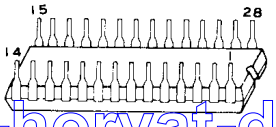
TC4052BP
TC4053BP



JA101
JC501



TC9312N



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9. ELECTRICAL PARTS LIST

NOTES:

- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*
  Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560Ω	*56 × 10¹*	*561*	*RD¼PS* 5 6 1	*J*
47kΩ	*47 × 10³*	*473*	*RD¼PS* 4 7 3	*J*
0.5Ω	*0R5*		*RN2H* 0 R 5	*K*
1Ω	*010*		*RS1P* 0 1 0	*K*

  Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	*562 × 10¹*	*5621*	*RN¼SR* 5 6 2 1	*F*

- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★ .*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts marked by " ⊙ " are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

Miscellaneous Parts

P.C BOARD ASSEMBLIES

Mark	Symbol & Description	Part No.
	Complex assembly	GWM-461
	TAPE assembly	GWF-172
	MIC AMP assembly	GWF-173
	DISPLAY assembly	GWV-129
	Dolby (B/C) assembly	AWX-337
	REV MODE SW assembly	Non supply
	PHONES assembly	Non supply
	Tact SW assembly	Non supply
	TIMER SW assembly	Non supply
	GE, E-VR assembly	Non supply
	RECEIVE assembly	Non supply
	Control assembly	AWP1001

OTHERS

Mark	Symbol & Description	Part No.
⚠ ★	T1 Power transformer (AC220/240V)	ATS-290
⚠	AC socket (AC outlet)	AKP-502
⚠ ★★	S1 Slide switch (POWER)	ASH-501
⚠ ★★	FU1 Fuse (T1A)	AEK-402
⚠ ★★	FU2 Fuse (T2.5A)	AEK-403
⚠ ★★	FU101 Fuse (T2A)	AEK-405
⚠	AC Power cord	ADG-041
	R2 Cement resistor (75Ω)	ACN-147

Complex Assembly (GWM-461)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC101 REGURATOR IC	μPC78M05H
★★	IC201 AUDIO IC	STK4141
★★	IC301 OP-AMP IC	M5218P
★★	IC302 LOGIC IC	TC4052BP
★★	IC303, IC351—IC354 OP-AMP IC	M5218P
★★	IC355 LOGIC IC	TC4053BP
★★	IC401 T1 DECK AMP CONTORL	PD3050
★★	IC402 Programable ROM array	TC9312N-014
★★	IC403 Programable ROM array	TC9312N-015
★★	IC404, IC405 Mechanism driver IC	TA7780AN
★★	IC406, IC407 LOGIC IC	TC4011BP
★★	Q105, Q106, Q109, Q111, Q114, Q254, Q402	2SA933S
★★	Q102, Q104	2SB834
★★	Q103, Q108, Q115, Q116, Q251—Q253, Q255, Q256, Q401, Q403, Q404, Q408, Q409, Q414, Q416, Q418, Q423, Q424, Q412	2SC1740S
★★	Q107, Q110, Q117, Q118, Q415	2SD880
★★	Q411, Q413	2SD438
★★	Q405, Q407, Q417, Q419	RN2203
★★	Q406, Q410	RN1203
⚠ ★	D106, D107, D112—D115, D416, D417, D420—D423	S5566
★	D110, D111, D118—D125, D251—D253, D402—D412, D414, D418	1SS131
⚠ ★	D105	3D4B41
★	D108	RD12ESB
★	D126	RD8.2ESB
★	D109	RD6.2ESB
★	D116	RD13ESB
★	D413	RD7.5ESB2
★	D415	RD3.3ESB

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RELAIES

Mark	Symbol & Description	Part No.
⚠ ★★	RY1 AC OUTLET relay	ASR-516
★★	RY101 Protection relay	ASR-515
★★	RY251 Muting relay	ASR-111

COILS

Mark	Symbol & Description	Part No.
	L101, L102 AF Choke coil (1μH)	ATH-053

CAPACITORS

Mark	Symbol & Description	Part No.
⚠	C1, C2 (0.01/AC250V)	ACG-502
	C119, C121 (0.01/AC150V)	ACG-019
	C105, C106 (5600/42V)	ACH-292
	C404, C405	CCCCH330J50
	C303, C304, C307, C308, C315, C316	CCCSL101J50
	C201, C202	CEYA100M50
	C317, C318	CEYA4R7M50
	C116	CEYA470M16
	C117	CEYA470M25
	C205, C206	CCCSL470J50
	C214	CEANP470M35
	C408, C410	CEAS0R1M50
	C120	CEAS010M50
	C414, C415, C417, C419, C420, C422, C428	CEAS100M25
	C213	CEANP100M50
	C211, C212	CEANP101M25
	C207, C208	CEYA101M25
	C305, C306, C401	CEAS2R2M50
	C107, C111, C115, C309, C310, C412	CEAS220M16
	C251, C413, C418	CEAS221M10
	C112	CEAS332M25
	C402, C403, C416, C421	CEAS4R7M50
	C253, C301, C302, C407, C431	CEAS470M10
	C122	CEHAQ331M16
	C425, C426	CEAS221M16
	C215, C216	CEAS470M25
	C108	CEAS102M16
	C104	CEYA102M50
	C427	CEJA100M16
	C311, C312	CKCYB152K50
	C113, C114, C353, C354, C406, C423	CKCYB222K50
	C355, C356	CKCYB331K50
	C203, C204	CQMA822K50
	C313, C314	CKCYB562K50
	C381, C382	CKCYB821K50
	C409, C411	CKCYB822K50
	C209, C210	CKCYF473Z50
	C351, C352	CKCYX153M25
	C424, C430	CKCYX473M25
	C123, C124	CQMA474K50
	C109, 110	CEHAQ470M16
	C252	CEAS100M50
	C319	CKDYX473M25

RESISTORS

NOTE: When ordering resistors, convert the resistanc into code form, and then rewrite the part no. as

Mark	Symbol & Description	Part No.
★	VR404, VR406 Semi-fixed (10k)	VRTB6VS103
★	VR403, VR405 Semi-fixed (22k)	VRTB6VS223
	R107, R117, R119, R126—R128, R148, R150	RD1/2PM□□I
⚠	R223, R226—R228, R224	RD1/4PMFL□I
⚠	R213—R216, R301, R302	RD1/4PMF□□
	R108, R145, R146, R205—R208, R225	RD1/4PM□□I
	R124	RFA1/4PS4R7J
	R110, R111, R118, R123, R141, R143, R440	RS1LMF□□□
	R104—R106, R132, R435, R438, R258, R151	RS2LMF□□□
	Other resistors	RD1/8PM□□I

OTHERS

Mark	Symbol & Description	Part No.
	6P Terminal (PHONO, CD, VDP/VIDEO)	AKB-095
	4P Speaker terminal (SPEAKER)	AKE-109
	Mini jack (CONTROL OUT)	AKN-207
★	X401 Ceramic resonator	ASS-030

REV MODE SW Assembly

SWITCHES

Mark	Symbol & Description	Part No.
★★	S11 Slide switch (REVERSE MODE)	ASH-043
★★	S12 Slide switch (DOLBY NR)	ASH-039

PHONES Assembly

RESISTORS

NOTE: When ordering resistors, convert the resistanc into code form, and then rewrite the part no. as

Mark	Symbol & Description	Part No.
	All resistors	RD1/2PM□□[

OTHERS

Mark	Symbol & Description	Part No.
	Mini jack (PHONE)	AKN-208

TAPE Assembly (GWF-172)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC501, IC502, IC504, IC510 OP-AMP IC	μPC4570HA

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Mark	Symbol & Description	Part No.
**	IC503, IC507 LOGIC IC	TC4066BP
**	IC505 OP-AMP IC	M5218L
**	IC506	M51143AL
**	IC508, IC511, IC513 LOGIC IC	M74LS05P
**	IC512 LOGIC IC	M74LS03P
**	Q501—Q509, Q522, Q523, Q526, Q541	RN1201
**	Q524, Q525	JA101
**	Q512, Q513, Q536—Q539	RN2201
**	Q515, Q542, Q510, Q511	RN2203
**	Q516, Q517, Q533	2SJ103
**	Q518—Q520, Q531, Q532, Q543, Q545—Q549	2SC1740S
**	Q514	2SA933S
**	Q527, Q528	JC501
**	Q529, Q530	2SD438
**	Q534, Q535, Q540, Q544	RN1203
*	D501—D506	1SS131

RELAY

Mark	Symbol & Description	Part No.
**	RY501 Read relay (REC/PB)	ASR-074

COILS, TRANSFORMERS

Mark	Symbol & Description	Part No.
	T501 Bias oscillator transformer (105kHz)	ATX-042
	L501, L502 Trap coil (105kHz)	ATM-037
	L503—L506 Inductor (8.2mH)	ATH-134
	L507 Inductor (1mH)	ATH-094

CAPACITORS

Mark	Symbol & Description	Part No.
	C572 (0.001/630V)	ACE-132
	C513, C514, C537, C538	CCCSL101J50
	C501, C502	CCCSL271J50
	C503, C504	CCCSL151J50
	C570, C571	CCCSL221K500
	C555	CCCSL470J50
	C505, C506, C535, C536	CEANL010M50
	C549, C550	CEASR33M50
	C557, C562	CEAS0R1M50
	C530, C579	CEAS010M50
	C511, C512, C531, C532, C543, C544, C551, C552, C566, C567	CEAS100M25
	C529	CEAS100M50
	C515—C518	CEAS101M10
	C556, C558—C561	CEAS3R3M50
	C507, C508, C539, C540	CEAS330M16
	C525, C526	CEAS4R7M50
	C563, C568, C569, C594	CEAS470M10
	C577, C578	CEAS470M16
	C595	CEAS6R8M50
	C533, C534	CKCYB821K50
	C564, C565	CKCYB471K50
	C553, C554	CKCYX473M2
	C547, C548, C574, C575, C582—C585	CQMA103J50
	C592, C593	CQMA123J50
	C576	CQMA153J50
	C573, C590, C591	CQMA223J50
	C521, C522, C545, C546, C588, C589	CQMA273J50
	C647, C648, C586, C587	CQMA222J5C
	C519, C520	CQMA473J5C
	C509, C510	CQMA472J5C
	C580, C581, C541, C542	CQMA392J5C
	C649, C650	CQMA272J5C

RESISTORS

NOTE: When ordering resistors, convert the resistan into code form, and then rewrite the part no. a

Mark	Symbol & Description	Part No.
*	VR501—VR506 Semi-fixed (20kB)	VRTM6H203
*	VR507, VR508 Semi-fixed (100kB)	VRTM6H104
*	VR509 Variable resistor (Slide type, 20kB) (REC VOLUME MIN-MAX)	ACT-701
	R607, R608, R640	RD1/2PM□□
	R553	RD1/4PM□□
	Other resistors	RD1/8PM□□

MIC AMP Assembly (GWF-173)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
**	IC851 OP-AMP IC	M5218PF
**	Q851—Q853	2SC1740S
*	D851, D852	1SS131

CAPACITORS

Mark	Symbol & Description	Part No.
	C853	CCCSL101J5(
	C851	CEAS010M5(
	C858, C859	CEAS220M1(
	C854	CEAS4R7M5(
	C857	CEJA010M5(
	C856	CEJA100M1(
	C855	CKCYB471K5
	C852	CKCYB681K5

RESISTORS

NOTE: When ordering resistors, convert the resistar into code form, and then rewrite the part no. a

Mark	Symbol & Description	Part No.
*	VR851 Variable resistor (Slide type, 10kB) (MIC MIX MAX-MIN)	ACS-012
	Other resistors	RD1/8PM□[illegible]

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OTHERS

Mark	Symbol & Description	Part No.
	Mic jack	AKN-060

Tact SW Assembly

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
*	D951, D952, D954, D955 LED (A-FWD, A-REV B-FWD, B-REV)	AEL-461
*	D953, D956 LED (REC, PL/CD SYNC)	AEL-460

SWITCHES

Mark	Symbol & Description	Part No.
**	S951—S961, S963—S967 Tact Switch (HIGH SPEED COPY, NORMAL SPEED COPY, PAUSE, REC MUTE, REC, A-PLAY REV, A-PLAY FWD, A-STOP, A-FAST REV, A-FAST FWD, PL/CD SYNC, B-PLAY REV, B-PLAY FWD, B-STOP, B-FAST FWD, B-FAST REV)	ASG-711

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
	All resistors	RD1/8PM□□□J

TIMER SW Assembly

SWITCHIS

Mark	Symbol & Description	Part No.
**	S968—S975 Tact switch (START TIME, STOP TIME, TIME−, TIME+ TIMER STAND-BY, POWER, SET/NEXT, CLOCK ADJUST)	ASG-711
**	S977 Slide switch (TAPE PLAY-TAPE REC-TUNER)	ASH-039

DISPLAY Assembly (GWV-129)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
**	IC901, IC902 FL STATIC DRIVER IC	LC7570
**	IC903 OP-AMP IC	M5218PF
**	Q901, Q902	2SA933S
**	Q903, Q904	RN2203
*	D901 LED (POWER)	AEL-429
*	D902, D903 LED (STEREO WIDE, SIMULATED STEREO)	AEL-459
*	D905, D906	RD3.3ESB
*	D907—D910	1SS131

SWITCHES

Mark	Symbol & Description	Part No.
**	S901—S907 Tact switch (VOLUME UP, VOLUME DOWN, BALANCE L, BALANCE R, MUTING, SOUND EFFECT, FUNCTION)	ASG-711

CAPACITORS

Mark	Symbol & Description	Part No.
	C901, C902	CEAS010M50
	C903, C904	CEAS2R2M50

RESISTORS

NOTE: When ordering resistors, convert the resistance val into code form, and then rewrite the part no. as befo

Mark	Symbol & Description	Part No.
	All resistors	RD1/8PM□□□J

OTEHRS

Mark	Symbol & Description	Part No.
*	V901 Fluorescent Indicator Indicator tube	AAV-038

GE, E-VR Assembly

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
**	IC701, IC702 AUDIO IC	BA3812L
**	IC703 E-VR IC	TC9154AP
**	IC704, IC705 OP-AMP IC	M5218PF

CAPACITORS

Mark	Symbol & Description	Part No.
	C705, C706, C751—C754	CEAS101M10
	C707—C712, C777, C778	CEAS4R7M50
	C755, C756	CKCYB391K50
	C757, C758	CKCYB682K50
	C761, C762	CKCYX153M25
	C759, C760	CKCYB182K50
	C763, C764	CKCYB392K50
	C765, C766	CKCYX683M25
	C767, C768	CKCYX183M25
	C769, C770	CEASR15M50
	C771, C772	CKCYX393M25
	C773, C774	CEASR68M50
	C775, C776	CKCYB331K50
	C779, C780	CEAS100M25

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RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
★	VR701 Variable resistor (Slide type, 30kB) (5 BAND GRAPHIC EQUALIZER)	ACX-316
	R705, R706, R751—R754	RD1/4PM□□□J
	Other resistors	RD1/8PM□□□J

RECEIVE Assembly

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC899	CX20106A
★	D899	PD49PI

CAPACITORS

Mark	Symbol & Description	Part No.
	C897	CKDYB331K50
	C898	CEJA3R3M50
	C899	CEJA010M50

RESISTORS

Mark	Symbol & Description	Part No.
	R897	RN1/4PQ2003F
	R898	RD1/8PM223J
	R899	RD1/8PM4R7J

Dolby (B/C) Assembly (AWX-337)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC11 DOLBY-B, C IC	CX20187
★★	Q55	RN1203
★★	Q52	2SA933S
★★	Q51, Q53, Q54, Q56, Q57	2SC1740S
★★	Q11—Q14	2SJ103

COILS AND FILTERS

Mark	Symbol & Description	Part No.
	F11, F12 DOLBY filter	ATF-203
	L11, L12 Inductor	ATH-126

CAPACITORS

Mark	Symbol & Description	Part No.
	C29, C30	CEASR47M50
	C13, C14, C55	CEAS100M25
	C52, C54	CEAS101M10
	C41, C42	CEAS4R7M50
	C33, C34	CEYA100M16
	C11, C12, C39, C40	CEYA330M16
	C37, C38	CKCYB561K50
	C51, C53	CKDYF223Z50
	C15, C16	CQMA103J50
	C25, C26	CQMA153J50
	C27, C28	CQMA154J50
	C23, C24	CQMA224J50
	C35, C36	CQMA302J50
	C31, C32	CQMA472J50
	C19, C20	CQMA473J50
	C17, C18	CQMA682J50
	C21, C22	CQMA683J50

RESISTORS

NOTE: When ordering resistors, convert the resistance into code form, and then rewrite the part no. as

Mark	Symbol & Description	Part No.
	All resistors	RD1/8PM□□□

Control Assembly (AWP1001)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC91	TC4069BP
★	D91, D92	1SS131

CAPACITORS

Mark	Symbol & Description	Part No.
	C92, C93	CCCSL271J50
	C91	CKCYB122K50

RESISTORS

NOTE: When ordering resistors, convert the resistance into code form, and then rewrite the part no. as

Mark	Symbol & Description	Part No.
	All resistors	RD1/8PM□□□

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- **Stop Mode**

The cam drive system as seen from behind is outlined in Fig. 10-3 . The cam gear is stopped when no. 1 cam gear stopper is engaged with the play arm pin (the position shown in the diagram).

(1) No. 3 cam is in the position indicated in the diagram with the head base and pinch rollers (FWD, REV) dropped down.

(2) The slide plate is shifted over to the left (the position shown in the diagram) with the revolving head set in the FWD drirction.

(3) No. 4 cam is in the position shown in the diagram, and the two prongs of the hold lever (brake) are disengaged from the reel drive gears which are thus left free to rotate in either direction.

- **Change from Stop Mode to FWD Playback Mode**

(1) When the FWD PLAY button is pressed, current is passed to the capstan motor and the solenoid which is activated (current applied for 60ms) to turn the play arm counter clockwise.

(2) Since the play arm is thus disengaged from the no. 1 cam gear stopper, the cam gear is forced counter clockwise by the hold lever to engage and consequently be driven by the capstan gear.

(3) As a result of the rotational vovement of the play arm and cam gear, the slide plate plate pin moves along route no. 1 (.....>).

(4) Cam gear rotation also results in no. 3 cam pushing the head base drive claw upwards.

(5) When the cam gear has been rotated by about 235°, no. 2 stopper on the cam gear meets the play arm pin and is subsequently stopped with the deck now in forward playback mode (see Fig. 10-4).In this condition,

(a) The FWD pinch roller is lifted together with the head base, and is pressed against the capstan. The REV pinch roller, on the other hand, is kept in position by the slide base.

(b) The brake is released by no. 4 cam.

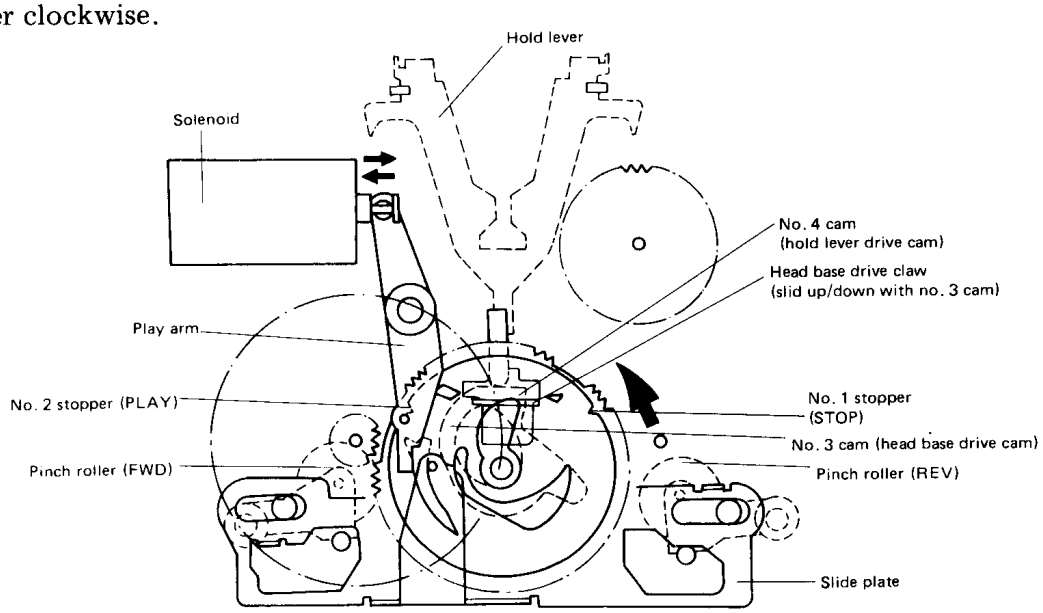

Fig. 10-4 Change from stop to forward playback mode

- **Change from Stop Mode to REV Playback Mode**

(1) When the REV PLAY button is pressed, current is passed to the capstan motor and the solenoid which is activated (current applied for 320ms) to turn the play arm counter clockwise.

(2) Since the play arm is thus disengaged from the no. 1 cam gear stopper, the cam gear is forced counter clockwise by the hold lever to engage and consequently be driven by the capstan gear.

(3) As a result of the rotational movement of the play arm and cam gear, the slide plate pin moves along route no. 2 (.....>).

(4) The slide plate is shifted over to the right by cam gear no. 2 cam (a), and the revolving head is switched around to the REV direction.

(5) Cam gear rotation also results in no. 3 cam pushing the head base drive claw upwards.

(6) When the cam gear has been rotated by about 235°, no. 2 stopper on the cam gear meets the play arm pin and is subsequently stopped with the deck now in reverse playback mode. In this condition,

(a) The REV pinch roller is lifted together with the head base, and is pressed against the capstan. The FWD pinch roller, on the other hand, is kept in position by the slide base.

(b) The brake is released by no. 4 cam.

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- **Change from FWD/REV Playback Mode to Music Search (Cue/Review) Mode**

(1) When the FF or REW key is pressed during forward or reverse playback mode, the solenoid is activated (current applied continuously during music search mode) and the play arm pin is disengaged from no. 2 cam gear stopper. The cam gear is thus forced counter clockwise by the head base.

(2) The cam gear rotation results in the head base being lowered to the MS position no. 3 cam.

(3) After the cam gear is rotated through about 20° no. 3 cam gear stopper meets play arm pin, thereby stopping the cam gear to put the deck into music search mode (see Fig. 10-5). In this condition,
(a) The pinch roller is lowered together with the head base away from the capstan.
(b) The brake is released by no. 4 cam.

(4) High speed rotation of the reel motor in the forward or reverse direction is commenced approximately 60ms after the solenoid is activated, and as a result of lateral oscillating action of the F/R gear the reel drive gear (FWD or REV) is engaged to commence take-up of the tape.

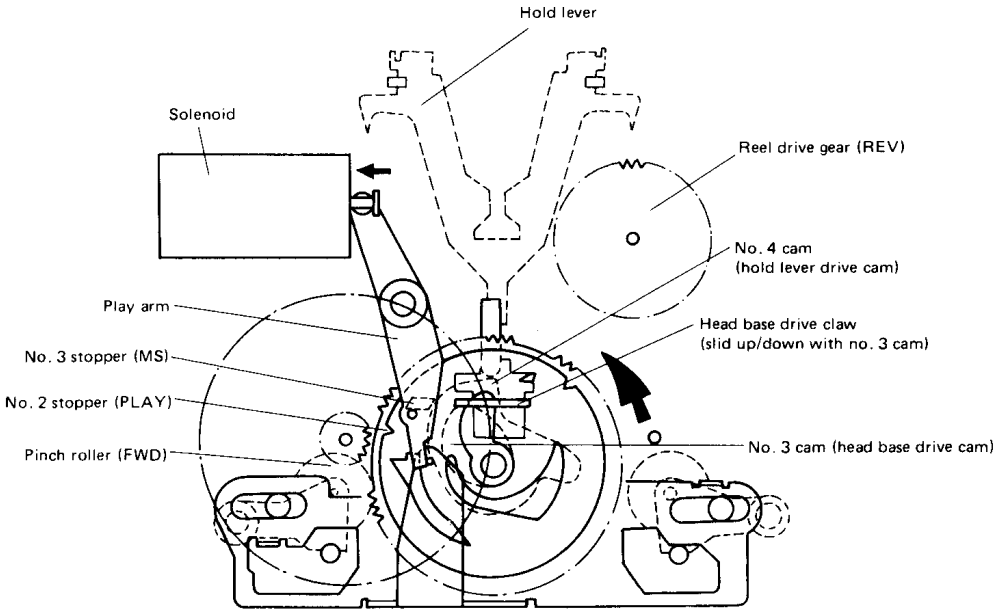

Fig. 10-5 Change from forward palyback to music search mode

- **Change from (FWD Playback) Music Search Mode to Stop Mode**

(1) If the STOP key is pressed when changing from forward, playback to music search mode, the solenoid is deactivated and the play arm pin is disengaged from no. 3 cam gear stopper, resulting in the cam gear being forced counter clockwise by the head base.

(2) Since the hold lever is released from no. 4 cam when the cam gear is rotated, the hold lever is dropped suddenly resulting in the two hold lever prongs engaging the reel drive gear (FWD, REV) to apply the brake.

(3) The cam gear rotation also results in the head base and pinch roller being dropped to the STOP position by no. 3 cam.

(4) After the cam gear has been rotated by about 105°, the play arm pin meets no. 1 stopper bringing the cam gear to a stop and putting the deck into stop mode (see Fig. 10-4). In this condition, the brake is released by no. 4 cam.

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- **Change from (REV Playback) Music Search Mode to Stop Mode**

(1) If the STOP key is pressed when changing from reverse playback to music search mode, the solenoid is deactivated and the play arm pin is disengaged from no. 3 cam gear stopper, resulting in the cam gear being forced counter clockwise by the head base.
(2) Since the hold lever is released from no. 4 cam when the cam gear is rotated, the hold lever is dropped suddenly resulting in the two hold lever prongs engaging the reel drive gear (FWD, REV) to apply the brake.
(3) The cam gear rotation also results in the head base and pinch roller being dropped to the STOP position by no. 3 cam.
(4) The slide plate is shifted across to the left by no. 2 cam (b) of the cam gear, and the revolving head is reverted to the FWD direction.
(5) After the cam gear has been rotated by about 105°, the play arm pin meets no. 1 stopper bringing the cam gear to a stop and putting the deck into stop mode (see Fig. 10-3).In this condition, the brake is released by no. 4 cam.

- **Change from FWD/REV Playback Mode to Stop Mode**

(1) When the STOP key is pressed during forward or reverse playback mode, the solenoid is activated (current passed for 60ms) and the play arm pin is disengaged from no. 2 cam gear stopper. As a result, the cam gear is forced counter clockwise by the head base.
(2) As a result of the cam gear rotation, the deck is switched temporarily to music search mode.
(3) Operations following activation of the solenoid are the same as described above under "Change from (FWD Playback) Music Search Mode to Stop Mode" and "Change from (REV Playback) Music Search Mode to Stop Mode".

- **Pause Mode**

Since pause mode is identical in mechanical terms to stop mode, it is not described separately here.

- **Revolving Head Switching**

(1) When the slide plate is slid across to the right as indicated in Fig.10-6,the end of the revolving head switching lever is caught by a slit in the switching slide and is shifted across to the right as well. The fan-shape gear is consequently rotated counter clockwise, and the revolving head coupled to this gear is rotated by 180° to set the head in the FWD recording/playback position.
(2) The slide plate is shifted across to the left to set the head in the reverse recording/playback position.
(3) A spring is used to set the head into position by snap action and thereby ensure that head is always set in the correct position.

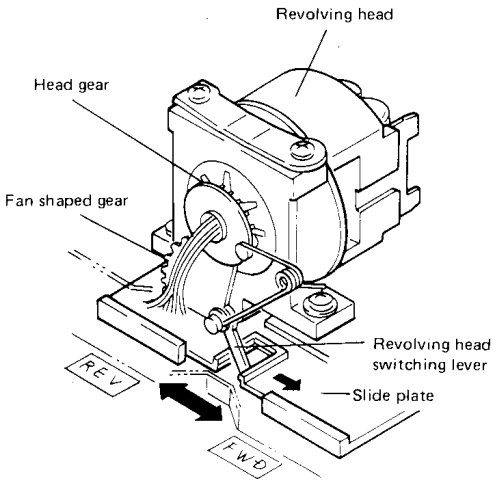

Fig. 10-6 Revolving head switching

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Mechanism I (Playback Mechanism) Mode Table

MODE \ INPUT			STOP	FF	REW	F.PLAY	R.PLAY	Normal Speed dubbing	Double speed dubbing	ASO	ASO	ASO	ASO	ASC
										⇄	⊃	↻ (1~4)	↻Fifth time	Continu
1	STOP			FF	REW	F.PLAY	R.PLAY	Normal Speed dubbing	Double speed dubbig					
2	FF	→	STOP		REW	F.PLAY	R.PLAY			STOP	STOP	STOP		STOP
3	REW	←	STOP	FF		F.PLAY	R.PLAY			STOP	STOP	STOP		STOP
4	F.PLAY	→	STOP	F.CUE	F.REVIEW		R.PLAY			STOP	R.PLAY	R.PLAY	R.PLAY	R.PLA
5	R.PLAY	←	STOP	R.CUE	R.REVIEW	F.PLAY				STOP	STOP	F.PLAY	STOP	STOP
														No.2mecha F.PLAY
6	F.CUE	→	STOP		F.REVIEW	F.PLAY	R.PLAY			STOP	STOP	STOP		STOP
		▷Blinking												
7	F.REVIEW	←	STOP	F.CUE		F.PLAY	R.PLAY			STOP	STOP	STOP		STOP
		▷Blinking												
8	R.CUE	→	STOP		R.REVIEW	F.PLAY	R.PLAY			STOP	STOP	STOP		STOP
		◁Blinking												
9	R.REVIEW	←	STOP	R.CUE		F.PLAY	R.PLAY			STOP	STOP	STOP		STOP
		◁Blinking												
10	Normal speed F. dubbing	→	STOP							STOP	Normal speed R.dubbing	Normal speed R.dubbing		Normal sp R.dubbing
			No.2mechanism STOP							No.2mechanism STOP				
11	Normal speed R. dubbing	←	STOP							STOP	STOP	STOP		STOP
			No.2mechanism STOP							No.2mechanism STOP	No.2mechanism STOP	No.2mechanism STOP		No.2mecha STOP
12	Double speed F. dubbing	→	STOP							STOP	Double speed R.dubbing	Double speed R.dubbing		Double sp R.dubbing
			No.2mechanism STOP							No.2mechanism STOP				
13	Double speed R. dubbing	←	STOP							STOP	STOP	STOP		STOP
			No.2mechanism STOP							No.2mechanism STOP	No.2mechanism STOP	No.2mechanism STOP		No.2mecha STOP
14	Initialize													

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ASO	ASO	No.2mechanism	MODE SW	MODE SW	MS
⟲ Fifth time	Continuous	dubbing→ STOP	OFF	ON	
				Initialize	
	STOP			Initialize	
	STOP			Initialize	
R.PLAY	R.PLAY				
STOP	STOP				
	No.2mechanism F.PLAY				
	STOP				F.PLAY
	STOP				F.PLAY
	STOP				R.PLAY
	STOP				R.PLAY
	Normal speed R.dubbing	STOP			
	STOP	STOP			
	No.2mechanism STOP				
	Double speed R.dubbing	STOP			
	STOP	STOP			
	No.2mechanism STOP				

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Mechanism II (Playback Mechanism) Mode Table

MODE \ INPUT			STOP	FF	REW	F.PLAY	R.PLAY	PAUSE	REC	REC	REC	REC	Normal speed dubbing	Double speed dubbing
										withoutA.REC	F.PLAY	R.PLAY		
									A.REC.F	withA.REC.R	A.REC.F	A.REC.R	A.REC.F	A.REC.F
1	STOP			FF	REW	F.PLAY	R.PLAY	PAUSE	REC.PAUSE	REC.PAUSE	REC.F.PLAY	REC.R.PLAY	Normal speed F.dding	Double speed F.dubbing
								▷ Blinking	◁Lights out	◁Lights out				
2	FF	→	STOP		REW	F.PLAY	R.PLAY							
				FF										
3	REW	←	STOP	FF		F.PLAY	R.PLAY							
4	F.PLAY	→	STOP	F.CUE	F.REVIEW		R.PLAY	PAUSE						
								(▷)						
5	R.PLAY	←	STOP	R.CUE	R.REVIEW	F.PLAY		PAUSE						
								(◁)						
6	F.CUE	→	STOP		F.REVIEW	F.PLAY	R.PLAY							
		▷ Blinking												
7	F.REVIEW	←	STOP	F.CUE		F.PLAY	R.PLAY							
		▷ Blinking												
8	R.CUE	→	STOP		R.REVIEW	F.PLAY	R.PLAY							
		◁ Blinking												
9	R.REVIEW	←	STOP	R.CUE		F.PLAY	R.PLAY							
		◁ Blinking												
10	PAUSE	▷ Blinking	STOP	FF	REW		◁		REC.PAUSE▷		REC.F.PLAY	REC.R.PLAY	Normal speed dubbing	Double speed dubbing
		◁ Blinking				▷			// ◁ withA. REC.R	REC.PAUSE◁				
11	REC.PAUSE	▷ Blinking	STOP	FF	REW		◁				REC.F.PLAY	REC.R.PLAY		R
		▷ Blinking				▷								R
12	REC.F.PLAY	→	STOP	FF	REW			REC.PAUSE						R
								▷ Blinking						R
13	REC.R.PLAY	←	STOP	FF	REW			REC.PAUSE						R
								◁ Blinking						R
14	Normal speed F.dubbing	→	STOP											
			No. I mechanism STOP											
15	Normal speed R.dubbing	←	STOP											
			No. I mechanism STOP											
16	Double speed F.dubbing	→	STOP											
			No. I mechanism STOP											
17	Double speed R.dubbing	←	STOP											
18	Initialize													

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·mal speed ıbing	Double speed dubbing	MUTE	ASO	ASO	ASO	ASO	ASO	No.1 mechanism	MODE SW	MODE SW	MS
			⇄	⤻	⟲ (1~4)	⟲ Fifth time	Continuous	STOP	ON	OFF	
ı.REC.F	A.REC.F		Non-continuous	Non-continuous	Non-continuous	Non-continuous	⤻⟲				
·mal speed ding	Double speed F.dubbing								Initialize		
			STOP	STOP	STOP		STOP		Initialize		
			STOP	STOP	STOP		STOP		Initialize		
			STOP	R.PLAY	R.PLAY	R.PLAY	R.PLAY				
			STOP	STOP	F.PLAY	STOP	STOP				
			STOP	STOP	STOP		STOP				F.PLAY
			STOP	STOP	STOP		STOP				F.PLAY
			STOP	STOP	STOP		STOP				R.PLAY
			STOP	STOP	STOP		STOP				R.PLAY
mal speed bing	Double speed dubbing								Initialize		
		REC.MUTE							Initialize		
		REC.PAUSE									
		REC.MUTE	STOP	REC.R.RAY	REC.R.PLAY		REC.R.PLAY				
		REC.PAUSE		withA.REC.R	withA.REC.R		withA.REC.R				
		REC.MUTE	STOP	STOP	STOP		STOP				
		REC.PAUSE									
			STOP	Normal speed R.dubbing	Normal speed R.dubbing		Normal speed R.dubbing	STOP			
			No.1 mechanism STOP	withA.REC.R	withA.REC.R		withA.REC.R				
			STOP	STOP	STOP		STOP	STOP			
			No.1 mechanism STOP	No.1 mechanism STOP	No.1 mechanism STOP		No.1 mechanism STOP				
			STOP	Double speed R.dubbing	Double speed R.dubbing		Double speed R.dubbing	STOP			
			No.1 mechanism STOP	withA.REC.R	withA.REC.R		withA.REC.R				
			STOP	STOP	STOP		STOP	STOP			
			No.1 mechanism STOP	No.1 mechanism STOP	No.1 mechanism STOP		No.1 mechanism STOP				

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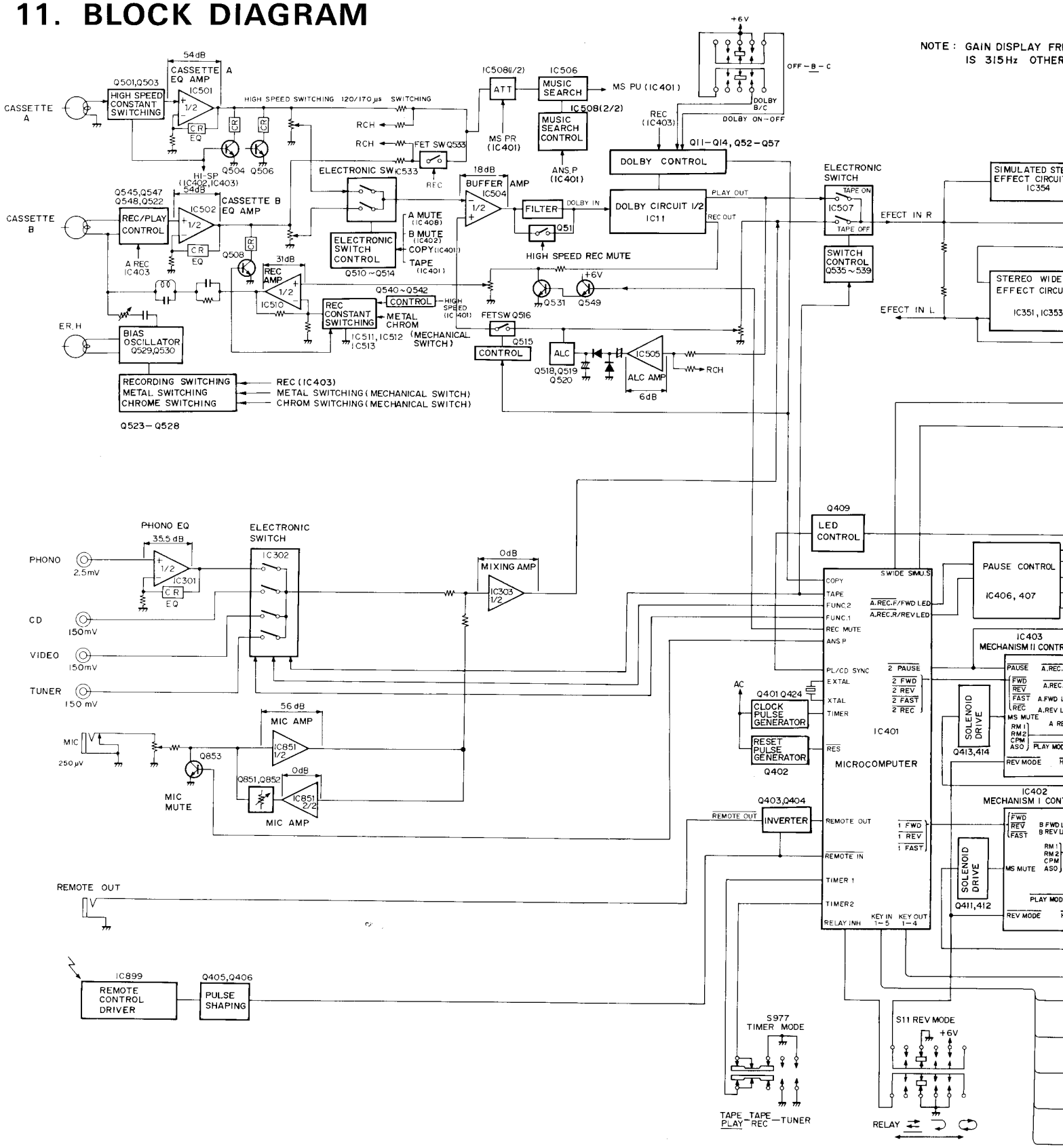
11. BLOCK DIAGRAM



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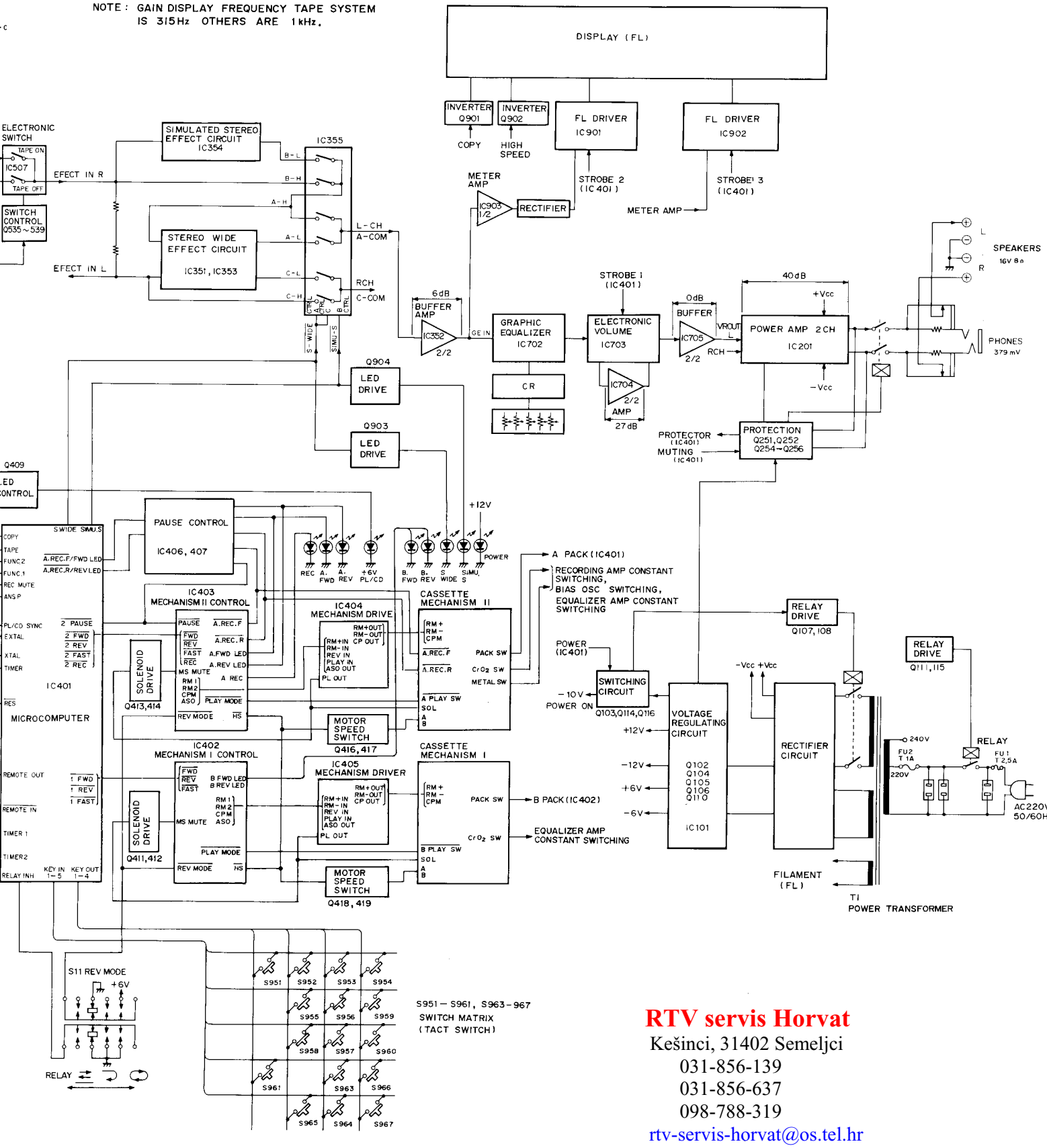

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12. CIRCUIT DESCRIPTIONS

12-1. Pause control

Pause control is a system in which pause is released be twice depressing PAUSE push-button switch.

As long as pin (52) of IC401 stays in "L", if the mechanism moves in the reverse direction, "H" is input into pin (63) of IC401. If the mechanism moves in the forward direction, "H" is input into pin (62) of IC401 and the direction is memoried by the mircocomputer, while pin (52) of IC401 is set to "L" and IC403 is put in the pause state. If the PAUSE push-button is twice depressed again, depending upon the direction memoried in the microcomputer, either pin (55) or pin (56) is set to "L" and pause is released. Pin (52) of IC401 is normally set to "H" and the stae in which the contact point between $\overline{\text{A-REC-R}}$ and $\overline{\text{A-REC-F}}$ is "H" or "L" is input into pins (62) and (63) or microcomputer IC401.

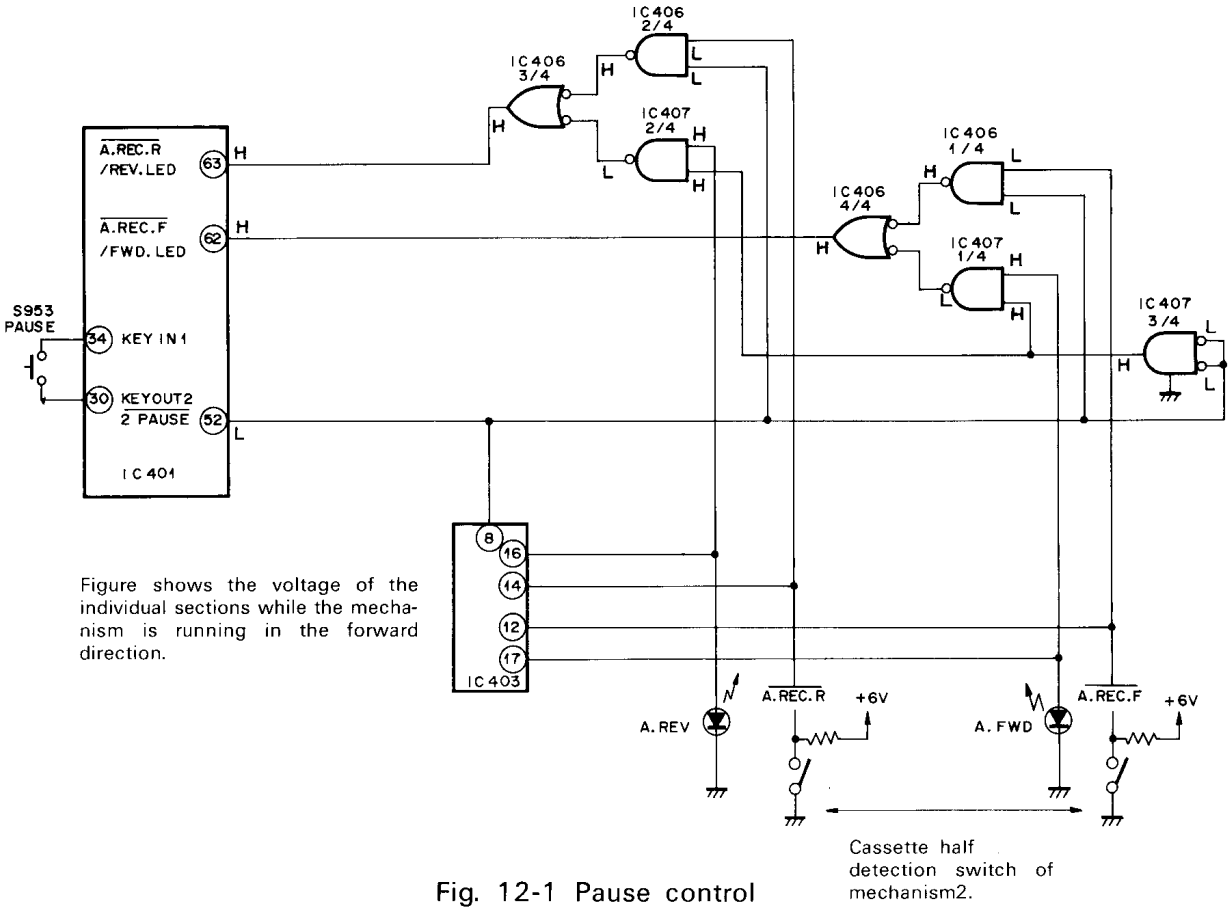

Figure shows the voltage of the individual sections while the mechanism is running in the forward direction.

Fig. 12-1 Pause control

12-2. Reverse mode control

This circuit acts in such a way that only one-way playback is operated during the program playing, program copying. In the above-cited state, with pin (37) of IC401 in "L", if Q407 and Q410 are turned on, pin (11) of IC402 and IC403 becomes "L". Consequently, mechanism 1 and mechanism 2 become one-way playback only.

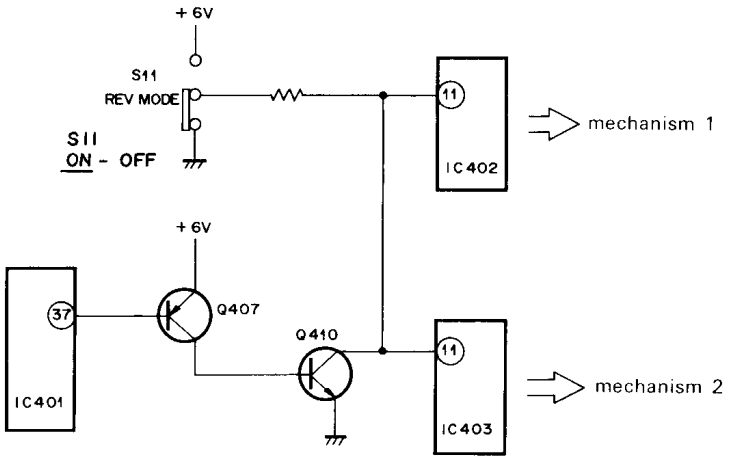

Fig. 12-2 Reverse mode control

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12-3. Reset circuit

1. When power supply is ON (See Fig. 12-3-1 and Fig. 12-3-2):
   Since R401 and C402 time constants charge time is shorter than the time which +6V voltage is raised, D403 is inversely biased. Until C401 and R404 charges are completed, Q402 is kept ON, with Q402 collector in "H".
   Consequently, electric potentials are identical at both ends of C403, and pin ② of IC401 is set to "H".
   At the completion of electric charge, Q402 is turned off and R406 discharges C403. Since, here, it is set at R406<<R407, pin ② of IC401 is set to "L" and microcomputer is reset.
2. When on/off cycle is repeated:
   With C402 charge completed, R405 discharge causes electric potential at Point A to drop. When the electric potential drops, Q402 is turned ON and the collector voltage becomes 6V so that the electric charge accumulated in C403 is diecharged through D404.

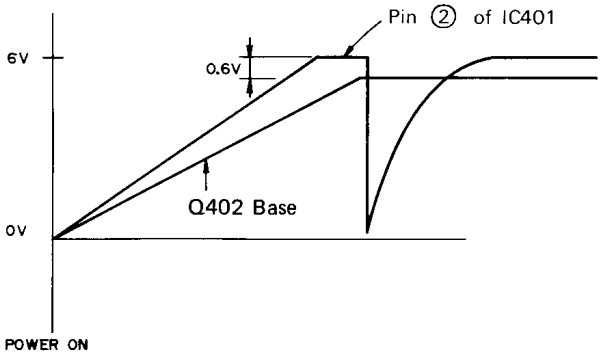

Fig. 12-3-1 Voltage is raised when power supply is ON

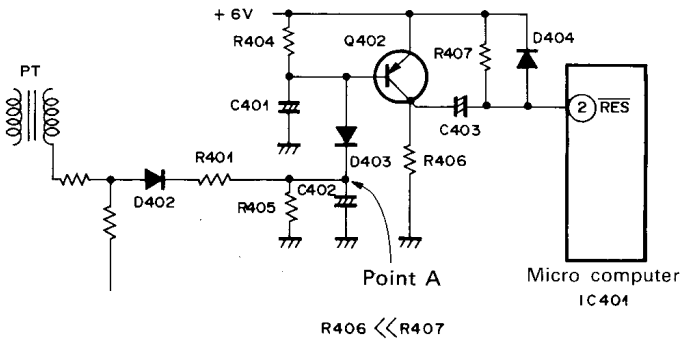

Fig. 12-3-2 Reset circuit

12-4. Music search

In the course of program selection, pin (44) of IC401 becomes "H". Input level should be raised by means of IC508 (1/2) and by switching the inter-office time constants every two seconds. If the program selection is not performed, pin (45) of IC401 becomes "H" and Q408 is ON while pin (7) of IC402 and (10) of IC403 are "L".

In the course of music search, Q408 is OFF. When the inter-office has been detected, H pulse is input in to IC402 and IC403 so that mechanism 1 and mechanism 2 are stopped. During the mechanism 2 recording, pin (24) of IC403 becomes "H", Q533 if off, and malfunction is prevented.

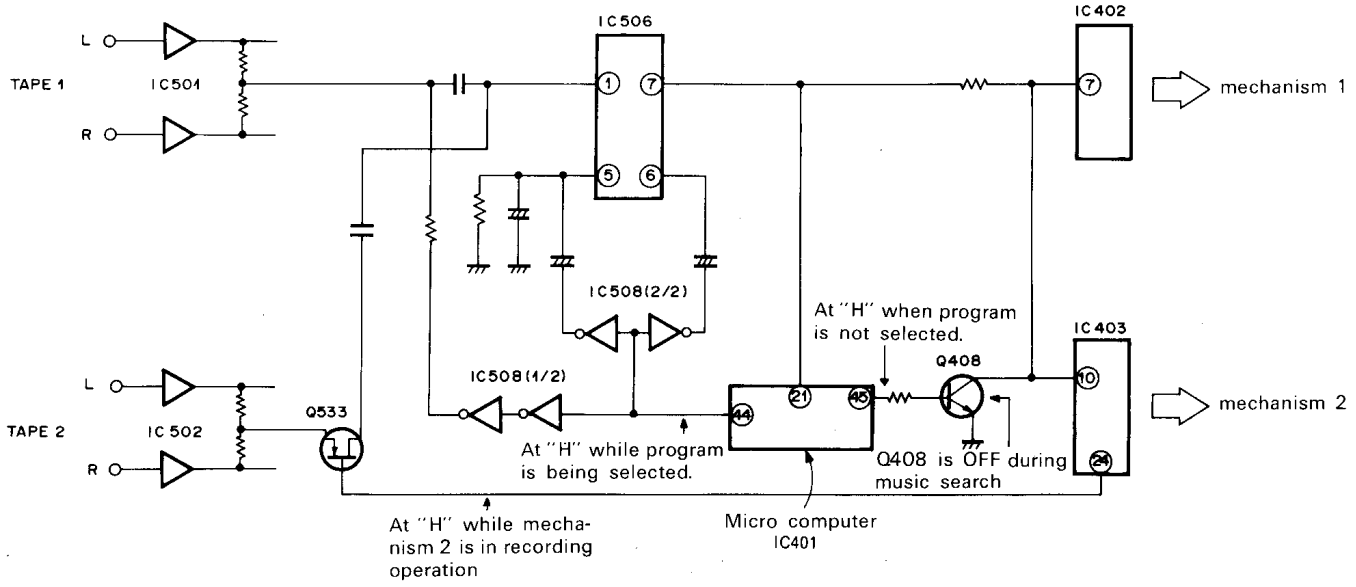

Fig. 12-4 Music serch circuit

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12-5. Volume

Each pressure on VOLUME UP/DOWN KEY causes ATT to vary by 2 dB. The following illustrates the ATT variation and relationship between ATT value and DISPLAY when the key is kept depressed. If the KEY is released from finger pressure, the DISPLAY becomes the LEVEL indication in five seconds.

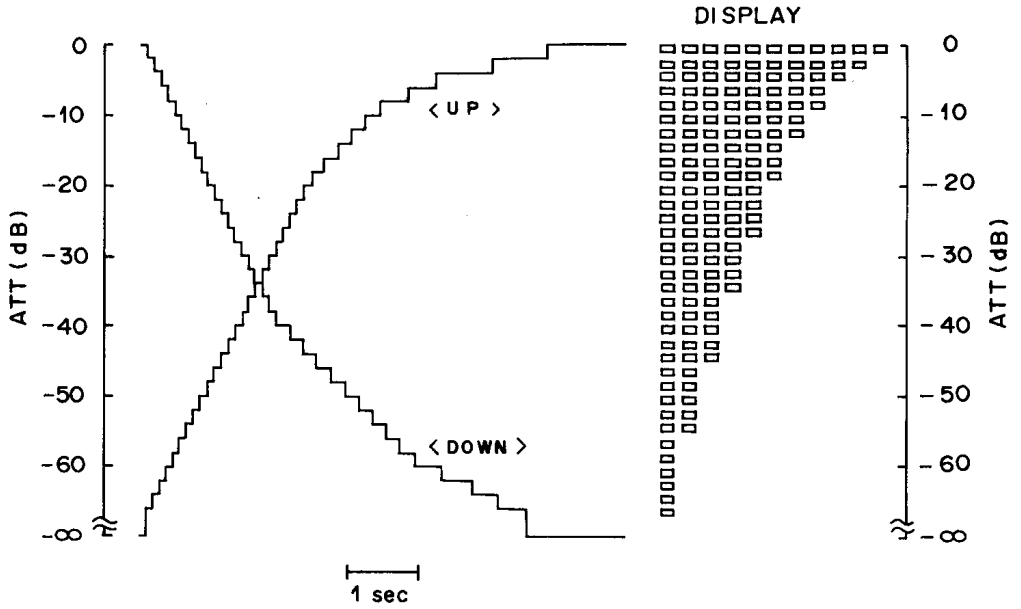

Fig. 12-5 Volume operation

12-6. Balance

The following illustrates the relationship between the times in which BALANCE L/R KEY is depressed and the ATT variation and the relationship between the depression times and DISPLAY. If the KEY is released from finger pressure, the DISPLAY becomes the LEVEL indication in five seconds.

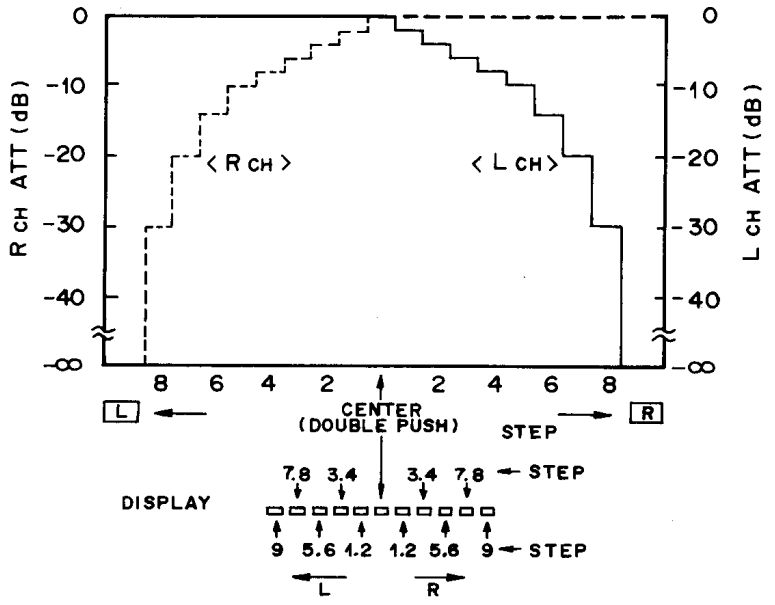

Fig. 12-6 Balance operation

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PIN DESCRIPTION OF IC

1. Pin Functions (PD3050)

Pin No.	Name	I/O	Description
1	Vss		GND
2	$\overline{RES}$		"H" leads to initialize operation at "L".
3	$\overline{INT}$		Not in use
4	$\overline{STBY}$		Not in use
5	EXTAL		Connect 4.0 MHz ceramic oscillator (X401; ASS-030) between pins.
6	XTAL		
7	NUM		GND
8	TIMER		50/60 Hz clock input (Synchronized AC pulse)
9	A7	I	TIMER operation mode 1 (explained later)
		O	FUNCTION mode 1 (explained later)
10	A6	I	TIMER operation mode 2 (explained later)
		O	FUNCTION mode 2 (explained later)
11	A5	O	FUNCTION mode 3 (explained later)
12	A4	O	SOUND EFFECT mode 1 (explained later)
13	A3	O	SOUND EFFECT mode 2 (explained later)
14	A2		Not in use
15	A1		Not in use
16	A0	O	Remote control data input by Compo code "A6" are converted into each component's compo code and is output as remote control data.
17	B7		Always necessary. (+5.5V)
18	B6	I	When DECK-II is stopped at the TAPE END during COPY operation, "L" is input, with DECK-I also stopped.
19	B5	I	When DECK-I is stopped at the TAPE END during COPY operation, "L" is input, with DECK-II also stopped.
20	B4	I	When DECK-I is stopped at the TAPE END during the RELAY PLAY operation, "H" is input, with DECK-II put in play.
21	B3	I	When the music is detected either during MUSIC SEARCH or during PLAY operation of the program selection, "H" is input.
22	B2	I	Strobe output to electron VR (IC703; TC9154AP). STROBE on at "H".
23	B1	O	Output of strobe to FL driver (IC901; LC7570) of FUNCTION system. STROBE on at "H".
24	B0	O	Output of strobe to FL driver (IC902; LC7570) in TIMER system. STROBE on at "H".
25	C7/TX	O	KEY SCAN STROBE output 7. STROBE on at "L".
		O	Output of serial data to TC9154AP and LC7570. (48 bits for TC9154AP; 40 bits for LC7570).
26	C6/RX	O	KEY SCAN STROBE output 6. STROBE on at "L".
27	C5/$\overline{CK}$	O	KEY SCAN STROBE output 5. STROBE on at "L". When the serial data is transterred to the TC9154AP and LC7570, it outputs the serial clock.
28	C4	O	KEY SCAN STROBE output 4. STROBE on at "L".
29	C3	O	KEY SCAN STROBE output 3. STROBE on at "L".
30	C2	O	KEY SCAN STROBE output 2. STROBE on at "L".
31	C1	O	KEY SCAN STROBE output 1. STROBE on at "L".
32	C0	O	"L" is output only when input is remote control data other than compo code "A6". Here, remote control data are not converted but output at they are.
33	Vcc		+5.5V
34	D1	I	KEY input 1. KEY on at "L".
35	D2	I	KEY input 2. KEY on at "L".
36	D3	I	KEY input 3. KEY on at "L".
37	D4	I	KEY input 4. KEY on at "L".

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Pin No.	Name	I/O	Description
38	D5	I	KEY input 5. KEY on at "L".
39	D6/$\overline{INT2}$	I	Remote control data are input.
40	D7	I	PROTECTION input. Power turns off following continuation of one-second "L".
41	E0	O	Control of POWER AMP MUTING relay (RY251). Relay is on at "H" and off at "L".
42	E1	O	Control of the inside POWER relay (RY101). Relay is on at "H" and off at "L".
43	E2	O	Control of OUTLET relay (RY1). Relay is on at "H" and off at "L".
44	E3	O	MS time constant switchover. "L" during MUSIC SEARCH operation. Otherwise, "H".
45	E4	O	During the program selection, this is used for music search. Turning this pin to "H" disables the input of between the music MS pulses to enter PRA.
46	E5	O	"L" is output when DECK-I is set to FF, REW or MS mode.
47	E6	O	"L" is output when DECK-I is put into REVERSE PLAY, REVERSE direction MS, REW or STOP mode.
48	E7	O	"L" is output when DECK-I is put into FORWARD PLAY, FORWARD direction MS, FF or STOP mode.
49	F0	O	"L" is output when set to HIGH SPEED COPY mode.
50	F1	O	"L" is output when set to COPY and HIGH SPEED COPY mode.
51	F2	O	"H" is output when DECK-II is put into REC MUTE operation.
52	F3	O	"L" is output when DECK-II is put into PAUSE mode.
53	F4	O	"L" is output when DECK-II is shifted from STOP to REC mode or REC KEY is depressed in the STOP mode.
54	F5	O	"L" is output when DECK-II is put in FF, REW or MS mode.
55	F6	O	"L" is output when DECK-II is put into REVERSE PLAY, REVERSE REC, reverse direction MS, REW or STOP mode.
56	F7	O	"L" is output when DECK-II is put into FORWARD PLAY, FORWARD REC, forward direction MS, FF or STOP mode.
57	G7	O	"L" is output during program play or copy to avoid auto-reverse.
58	G6	I	Detects the presence of cassette half of deck-I. Presence of half leads to "L".
59	G5	I	Detects whether DECK-I is in STOP mode. STOP mode leads to "L".
60	G4	I	Detects whether DECK-II is in STOP mode. STOP mode leads to "L".
61	G3	I	Detects the presence of DECK-II cassette half. Presence of half leads to "L".
62	G2	I	Detects the erroneous erasure prevention claw on the FORWARD side of DECK-II cassette half. Presence of the claw leads to "L".
		I	Detects the DECK-II FORWARD LED on/off. LED on leads to "H".
63	G1	I	Detects the erroneous erasure prevention claw on the reverse side of DECK-II cassette half. Presence of the claw leads to "L".
		I	Detects the DECK-II reverse LED on/off. LED on leads to "H".
64	G0	O	Control of PHONO/CD SYNCHRO LED on/off. LED on leads to "H" and LED off to "L".

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2. KEY MATRIX

	C1	C2	C3	C4	C5	C6	C7
D1	⏸ REC MUTE	⏸ PAUSE	NORMAL COPY	HI-SPEED COPY	POWER	START TIME	VOLUME +
D2	⏸ REW	⏸ REVERSE	⏸ REC	EFFECT	CLOCK ADJUST	STOP TIME	VOLUME −
D3	⏸ FF	⏸ FORWARD	⏸ STOP	FUNCTION	SET/ NEXT	TIME +	BALANCE L
D4	⏮ REW	⏮ REVERSE		PHONO/CD SYNCHRO	(SLEEP)	TIME −	BALANCE R
D5	⏭ FF	⏭ FORWARD	⏭ STOP			TIMER STANDBY	MUTING

(ALL keys are tact switch)

3. TIMER OPERATION MODE

	A7	A6
TIMER REC	0	1
TIMER PLAY	1	0
TIMER TUNER	0	0

4. SOUND EFFECT MODE

	A4	A3
SOUND EFFECT OFF	1	1
STEREO WIDE	0	1
SIMULATED STEREO	1	0
S. WIDE and S.S.	0	0

As cited above, mode is switched over by the output from pin⑫ of IC401 to pins⑨ and⑪ of IC355 or from pin⑬ of IC401 to 10-1(H) or 0(L) of IC355.

5. FUNCTION MODE

	A7	A6	A5
TAPE	0	0	1
CD	1	0	0
VIDEO	0	1	0
TUNER	1	1	0
PHONO	0	0	0

As cited above, function is switched over by the output from pins ⑨, ⑩ or ⑪ of IC401 and to 1H or 0(L) to the respective pins⑩,⑨ and⑥ of IC302.

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Tape logic control section

1. PRA

◪Input port ..... With the exception of MS, MODE and ASO, "L" is active.
◪Clock frequency ..... 6.4 kHz
◪Pin description

[TC9312N-014] IC402

Pin No.	Name	I/O	Description
2	OSC		Generates clock of 6.4kHz at externally attached C (8200pF) and R(33kΩ).
3	Clearing	I	Perform programming of 0 address at "L→H". Perform initializing operation (mentioned later).
4	$\overline{\text{FWD}}$	I	FWD PLAY input port Becomes STOP by pressing twice.
5	$\overline{\text{REV}}$	I	REV PLAY input port Becomes STOP by pressing twice.
6	$\overline{\text{FAST}}$	I	By pressing twice with FWD or REV, they respectively become FF or REW.
7	MS	I	Receives MS pulse between music only during MS, and shifts to PLAY mode.
8	$\overline{\text{COPY(X1)}}$	I	Similar to issuing of output that shifts to PLAY mode to 1 mechanism driver IC (IC405), it outputs "L" during COPY only for the switching of the signal path (pin (18)).
9	$\overline{\text{COPY(X2)}}$	I	Identical with operation of COPY(X1). However, the X2 pin of pin (17) is "L".
10	$\overline{\text{PLAY SW}}$	I	An input port to determine whether the cassette mechanism is in PLAY mode or not. By rising of the head base, the leaf SW is closed and this port is set at "L".
11	MODE	I	Reverse mode setting port. = POS. "L" RELAY POS. NC ⊃ POS. NC ↻ POS. "H" } Set by means of S11
12	$\overline{\text{INH PLAY}}$	I	Not in use
13	ASO	I	It is an abbreviation of Auto Stop Output, and by the pulse of ASO becoming nonexistent in the mechanism driver IC, it shifts to STOP during = or inverse direction during ⊃↻ operation (Except FF/REW).(See timing chart No.3)
14	$\overline{\text{STOP OUT}}$	O	It is "L" only during 1 mechanism STOP, and the others output "H".
15	RELAY OUT	O	Generates approx. 440 msec "H" pulse during PLAY → STOP by the ASO at tape end.
16	$\overline{\text{COPY END}}$	O	Generates approx. 440 msec "L" pulse in the COPY → STOP mode (mechanism 1), so that mechanism 2 may be simultaneously stopped if mechanism 1 is stopped during the copy mode (See timing chart No. 4 $\overline{\text{DUB END}}$.)
17	$\overline{\text{X2}}$	O	When COPY(X2) is input, this port becomes "L" after approximately 830msec and is supplied to the motor speed control circuit (On the 1 mechanism side). (See $\overline{\text{D SPEED}}$ of Timing chart No.12)
18	$\overline{\text{COPY}}$	O	When COPY(X1) or (X2) is input, this port becomes "L" after approximately 260msec, and is used as a signal for switching the signal path.(See $\overline{\text{DUBBING}}$ of timing chart No.10 or 12)
19	REV IND	O	Output for REV IND
20	FWD IND	O	Output for FWD IND
21	SOL	O	Output for solenoid drive
22	CPM	O	It is an output port for capstan motor control, and is input to pins (5) and (6) of driver IC405 (TA7780AN). As the condition for the capstan motor to rotate, one of CPM pin, RM1 pin or RM2 pin of PRA becomes "H" or during "L" of pin (16) of driver IC.
23	RM2	O	It is a reel motor control signal and with output at "H", it is taken up in the REV direction.
24	RM1	O	It is a reel motor control signal and with output at "H", it is taken up in the FWD direction.
25	TIMER	O	Not in use

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Pin No.	Name	I/O	Description
26	MS MUTE	O	"H" output only in the MS mode, ensuring the MS operation (See timing chart No. 9 MS mute). "H" is attained after 130 msec because of the possibility of MS malfunction before the mechanism enters the operation stability domain.
27	MUTE 1	O	Perform muting to 1 mechanism playback EQ output when the 1 mechanism is at "H" output except during PLAY.
28	VDD		5.0V

[TC9312N-015] IC403

Pin No.	Name	I/O	Description
2	OSC		Generates clock of 6.4kHz at externally attached C (8200pF) and R(33kΩ).
3	Clearing	I	Perform programming of 0 address at "L→H". Perform initializing operation (mentioned later).
4	$\overline{\text{FWD}}$	I	FWD PLAY input port Becomes STOP by pressing twice.
5	$\overline{\text{REV}}$	I	REV PLAY input port Becomes STOP by pressing twice.
6	$\overline{\text{FAST}}$	I	By pressing twice with FWD or REV, they respectively become FF or REW.
7	$\overline{\text{REC}}$	I	It becomes into REC PAUSE mode by KEY IN, and generates "H" output to pin (24) However, it depends on the state of pins (12) and (14). (mentioned later)
8	$\overline{\text{PAUSE}}$	I	It becomes into the PAUSE mode by KEY IN (2 mechanism only), and the PLAY IND blinks.
9	$\overline{\text{MUTE}}$	I	Not in use
10	MS	I	Receives MS pulse between music only during MS, and shifts to PLAY mode.
11	MODE	I	REVERSE mode setting port: ⇄ POS. "L" RELAY POS. NC ⇉ POS. NC ⇆ POS. "H" Set by S11
12	$\overline{\text{A. REC F}}$	I	In the sense of ANTI REC, examine the existence of the accidental erasure prevention claws on the FWD side of the cassette half. "L" at the existence of claws.
13	ASO	I	It is an abbreviation of Auto Stop Output, and by the pulse of ASO becoming nonexistent in the mechanism driver IC, it shifts to STOP during ⇄ or inverse direction during ⇉⇆ operation (REC • PLAY/PLAY) (See timing chart No.16)
14	$\overline{\text{A. REC R}}$	I	Examine the existence of the accidental erasure prevention claws on the REV side. "L" at the existence of claws.
15	$\overline{\text{PLAY SW}}$	I	An input port to determine whether the cassette mechanism is in PLAY mode or not. By rising of the head base, the leaf SW is closed and this port is set at "L".
16	REV IND	O	Output for REV IND
17	FWD IND	O	Output for FWD IND
18	$\overline{\text{Double speed}}$	O	Output at "L" in the REC mode, and with the OR of the X2 output of 1 mechanism PRA, control the 2 mechanism speed switching circuit. (See $\overline{\text{D SPEED}}$ of timing chart No. 27 and 26)
19	SOL	O	Output for solenoid drive
20	CPM	O	It is an output port for capstan motor control, and is input to pins (5) and (6) of driver IC404 (TA7780AN). As the condition for the capstan motor to rotate, one of CPM pin, RM1 pin or RM2 pin of PRA becomes "H" or during "L" of pin (16) of driver IC.
21	RM2	O	It is a reel motor control signal and with output at "H", it is taken up in the REV direction.
22	RM1	O	It is a reel motor control signal and with output at "H", it is taken up in the FWD direction.
23	MS MUTE	O	"H" output is ensured only in MS mode, permitting MS operation (See timing chart No. 25 MS mute). "H" is restored after 130 msec because of possible MS maloperation until the mechanism operation stability domain is attained.

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Pin No.	Name	I/O	Description
24	REC	O	Output at "H" in the REC and REC PAUSE modes, and supply to bias oscillation, REC IND, etc.
25	REC MUTE	O	"H" output provides REC MUT on the REC AMP (IC510) input side. (See timing charts 14, 15, 17 to 32)
26	MUTE2	O	Other than when performing play with mechanism 2, muting is applied to the mechanism 2 playback EQ output with "H" output.
27	COPY END	O	Approx. 440 mesc "L" pulse is generated in the copy → stop mode (mechanism 2) (so that mechanism 1 may be stopped when mechanism 2 is stopped in the copy mode).

2. Operating key explanation

DECK-I

Only in the case of pin ⑤⑧ of IC401 being "L" (Deck-I cassette half present).

Key operation	Description
STOP (S965)	"L" is output from pins ④⑦ and ④⑧ of IC401 and stop mode is attained, with pins ④ and ⑤ of IC402 at "L".
FWD.PLAY (S964)	"L" is output from pin ④⑧ of IC401 and FWD play mode is attained, with pin ④ of IC401 at "L".
REV.PLAY (S963)	"L" is output from pin ④⑦ of IC401 and REV play mode is attained, with pin ⑤ of IC402 at "L".
FF (S967)	"L" is output from pins ④⑥ and ④⑧ of IC401. FF mode is attained, with pins ④ and ⑥ of IC402 at "L".
REW (S966)	"L" is output from pins ④⑥ and ④⑦ of IC401 and REW mode is attained with pins ⑤ and ⑥ of IC402 at "L".

DECK-II

Only in the case of pin ⑥① of IC401 being "L" (Deck-II cassette half present).

Key operation	Description
STOP (S958)	"L" is output from pins ⑤⑤ and ⑤⑥ of IC401 and stop mode is attained, with pins ④ and ⑤ of IC403 at "L".
FWD.PLAY (S957)	"L" is output from pin ⑤⑥ of IC401 and FWD play mode is attained, with pin ④ of IC403 at "L".
REV.PLAY (S956)	"L" is output from pin ⑤⑤ of IC401 and REV play mode is attained, with pin ⑤ of IC403 at "L".
FF (S960)	"L" is output from pins ⑤④ and ⑤⑥ of IC401 and FF mode is attained, with pins ④ and ⑥ of IC403 at "L".
REW (S959)	"L" is output from pins ⑤④ and ⑤⑤ of IC401 and REW mode is attained, with pins ⑤ and ⑥ of IC403 at "L".
PAUSE (S953)	(Only when DECK-II is in PLAY, REC and PAUSE mode) In PLAY and REC mode, "L" is output from pin ⑤② of IC401 and PAUSE mode is attained, with pin ⑧ of IC403 at "L". In PAUSE mode, "L" is output from pins ⑤⑤ or ⑤⑥ of IC401, and PAUSE mode is released.
REC (S955)	(Only when pin ⑥⓪ of IC401 is at "L" and at least either pins ⑥② or ⑥③ is at "L".) "L" is output from pin ⑤③ of IC401 and REC standby mode is attained with pin ⑦ of IC403 at "L". In PAUSE mode, prossing of S955 leads to REC PAUSE mode.
REC MUTE (S954)	(Only when DECK-II is in REC or REC PAUSE mode.) "L" is output for 4 sec from pin ⑤① of IC401. If KEY is kept depressed after an elapse of 4 sec, "H" is output until the KEY is released. Release of key leads to REC PAUSE mode, with pins ⑤① and ⑤② at "L". Unless key is depressed after an elapse of 4 sec, "L" is output from pins ⑤① and ⑤② of IC401 and REC PAUSE mode is attained.

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DECK-I and II

Key operation	Description
	Only when pins ⑱, ⑲, ⑳, ㉑ and ㉒ of IC401 are all at "L", (DECK-I half, STOP mode, DECK-II half, FWD side erroneous erasure prevention claw and STOP mode present.)
Constant speed COPY (S952)	"L" is output from pins ㊽, ㊿, ㊸ and ㊻ of IC401, and, with pins ④ and ⑧ of IC402 and pins ④ and ⑦ of IC403 at "L", DECK-I is put into FWD PLAY mode and DECK-II into FWD REC mode.
Double speed COPY (S951)	"L" is output from pins ㊽, ㊾, ㊿, ㊸ and ㊻ of IC401, and, with pins ④, ⑧, ⑨ of IC402 and pins ④ and ⑦ of IC403 at "L", DECK-I is put into double speed FWD and PLAY mode and DECK-II into double speed FWD and REC mode.
REV.MODE (S11)	GND (⏚), NC(RELAY ⊃), and VDD (⇨) to pin ⑪ of IC402 and IC403 with S11. If S11 is in the play position, RELAY out signal is input into pin ⑳ of IC401 from pin ⑮ of IC402, and, RELAY play is ensured only when half is entered into DECK-II.
TIMER MODE (S977)	Connect the respective VDD, GND (TAPE PLAY), GND, VDD (TAPE REC) and GND, GND (TURN) with S977 to pins ⑨ and ⑩ of IC401. During timer standby, when the time presently becomes start time the power turns on, and by making pins ⑨ and ⑩ of IC401 into input port and after detecting timer mode, they go into their respective operations. TAPE PLAY: Set function to tape. If pin ㊽ of IC401 is at "L", "L" is output from pin ㊽ and DECK-I is set into FWD. PLAY mode. If pin ㊽ of IC401 is at "H" and pin ㉑ is at "L", "L" is output from pin ㊻ and DECK-II is put into FWD PLAY mode. If both pins ㊽ and ㉑ of IC401 are at "H", neither DECK-I nor DECK-II is operable. TAPE REC: Only when both pins ㉑ and ㉒ of IC401 are at "L", DECK-II is put into FWD REC mode with pins ㊸ and ㊻ at "L". Record the SOURCE of FUNCTION with TIMER STANDBY set. TUNER: Set FUNCTION to TUNER.
COPY END	During constant or double speed copy operation, if DECK-I (DECK-II) is stopped at the tape end, "L" is output from pin ⑯ of IC402 (pin ㉗ of IC403) and pin ⑲ (⑱ of IC401 is at "L". Here, "L" is output from pins ㊺ and ㊻ (㊼ and ㊽) of IC401 and DECK-II (DECK-I) is stopped with pins ④ and ⑤ of IC403 (IC402) at "L".

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IC DESCRIPTIONS

TC9312N

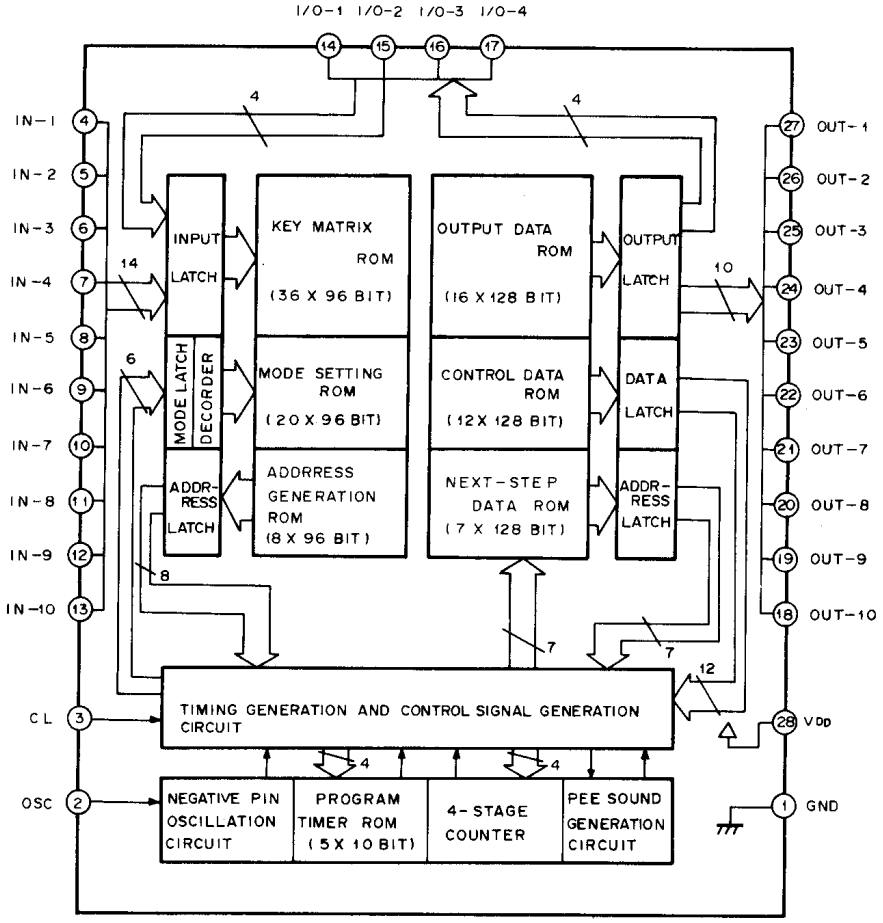

Fig. 12-7 TC9312N Block Diagram

TC9312N-014

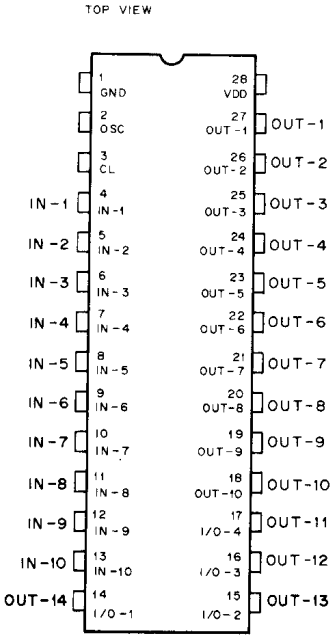

Fig. 12-8 TC9312N-014 Pin Alignment

TC9312N-015

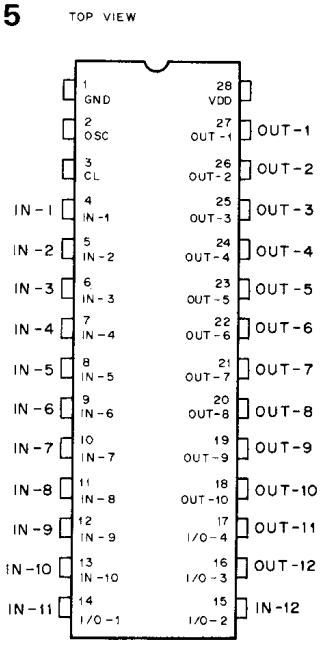

Fig. 12-9 TC9312N-015 Pin Alignment

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TC9154AP

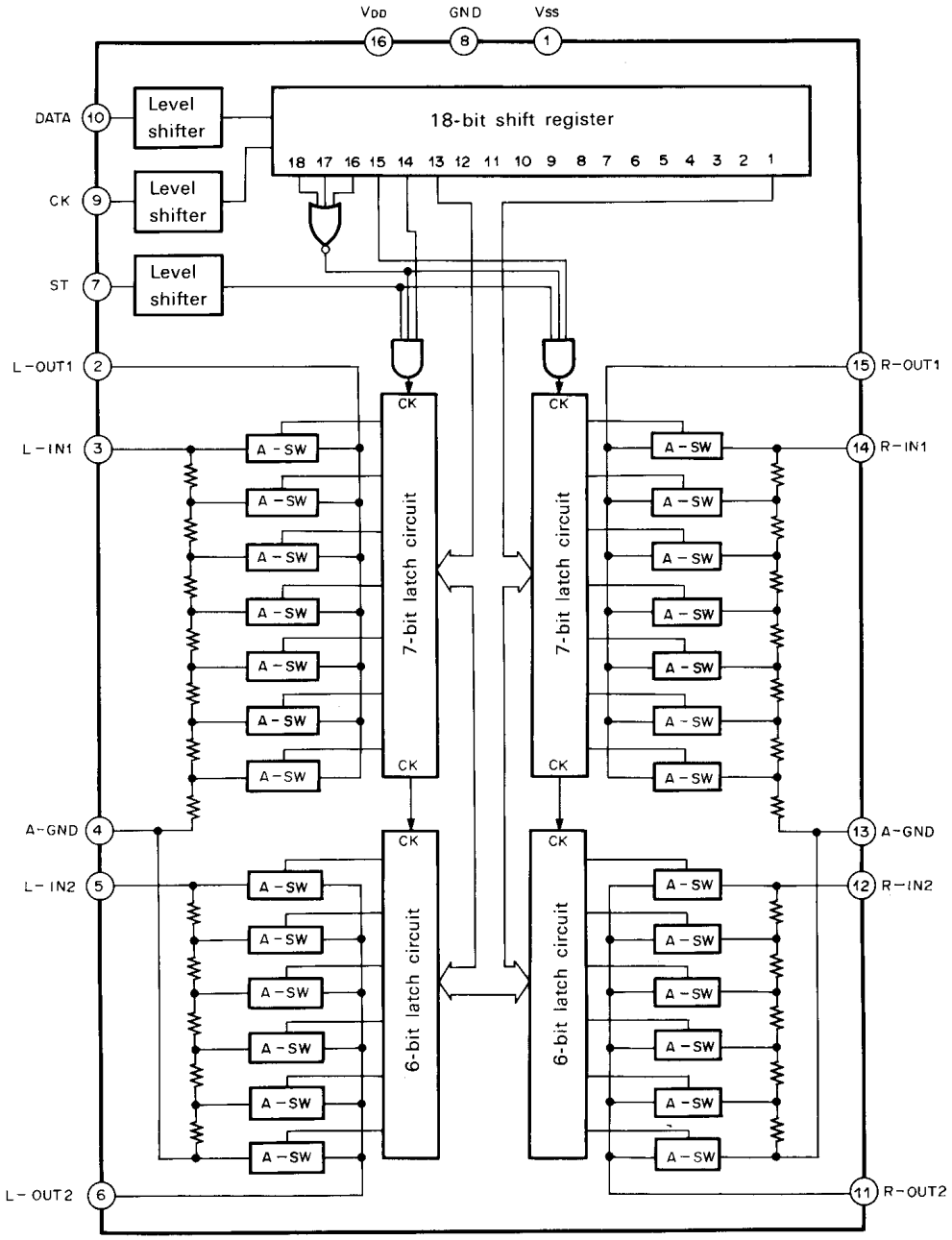

Fig. 12-10 TC9154AP Block Diagram

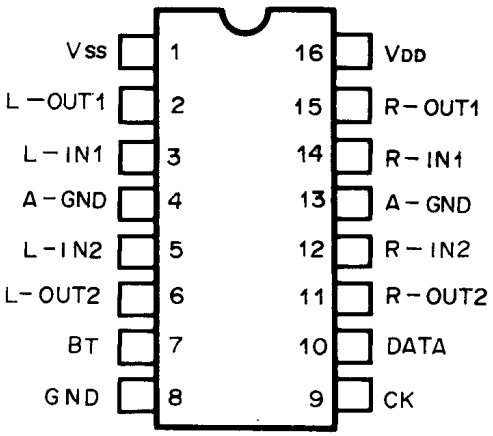

Fig. 12-11 TC9154AP Pin Alignment

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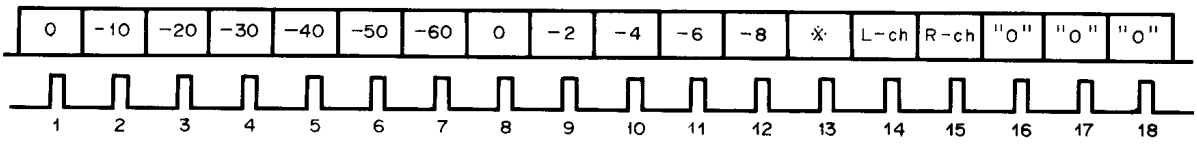
Data Format

TC9154AP inputs the arbitraily given data of attenuation from DATA, CK and ST pins.

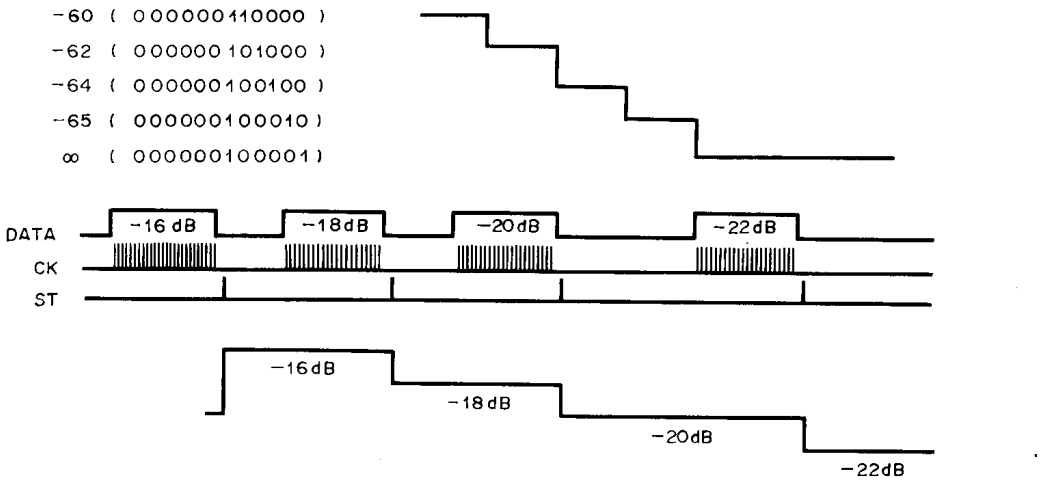
Data consist of 18 bits as follows.



If, for Example, input of data (000100001000011000) by CK from DATA pin leads to the display of attenuation −32 dB.

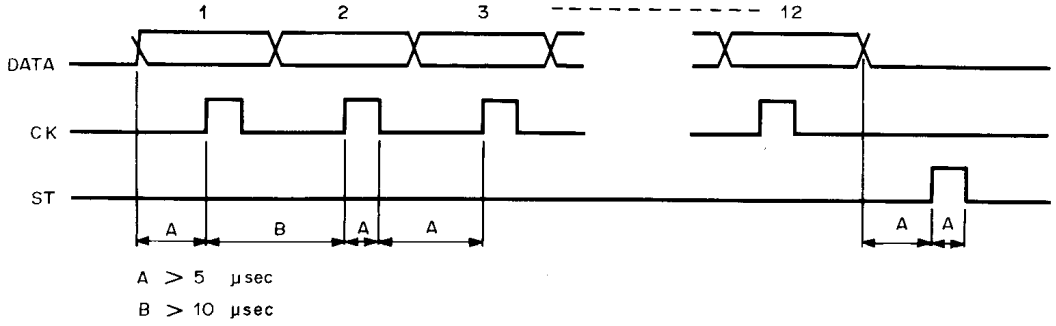
Data bits 1 to 7 are set to 10 dB/step and 8 to 12 to 2 dB/step. Bit 13 may be either "1" or "0". Bits 14 and 15 are selected in accordance with the right or left channel, where "1", "0"=Lch, "0", "1"=Rch and "1", "1"=L & Rch. Bits 16 to 18 are fixed at "0".

Infinite Attenuation is carried out by means of −68 dB dats; hence, one stepup from th infinite number leads to −66 dB.



Alteration to the data fetched will entirely be synchronized with ST signals.

DATA CK ST timing



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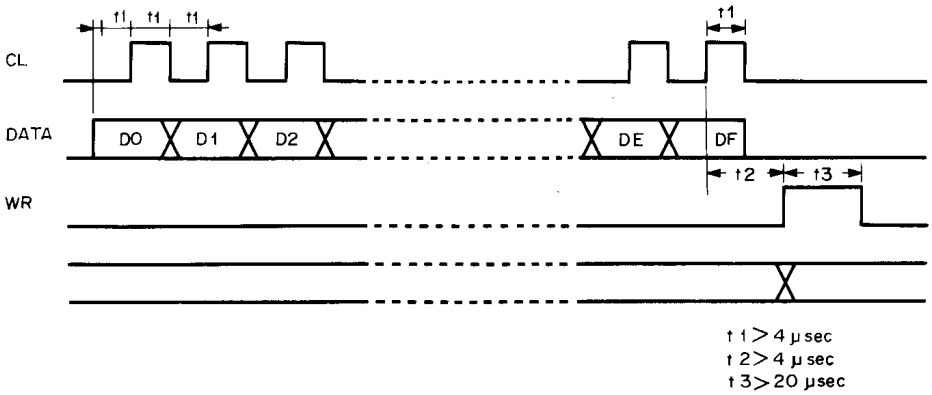
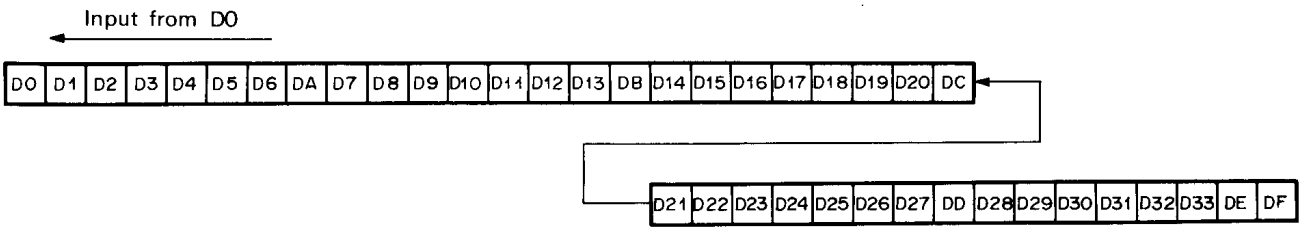
LC7570 data input





D0 to 33 : Display data
DA to DE : Dummy data
DF : S29 to S33 switchover

Dm="1" : Sn="1" (=V_{DD})
Dn="0" : Sn="0" (=VFL)
DF="0" : D29~D33→S29~S33
AD1→S33
AD2→S32
AD3→S31
AD4→S30
AD5→S29

M51143AL

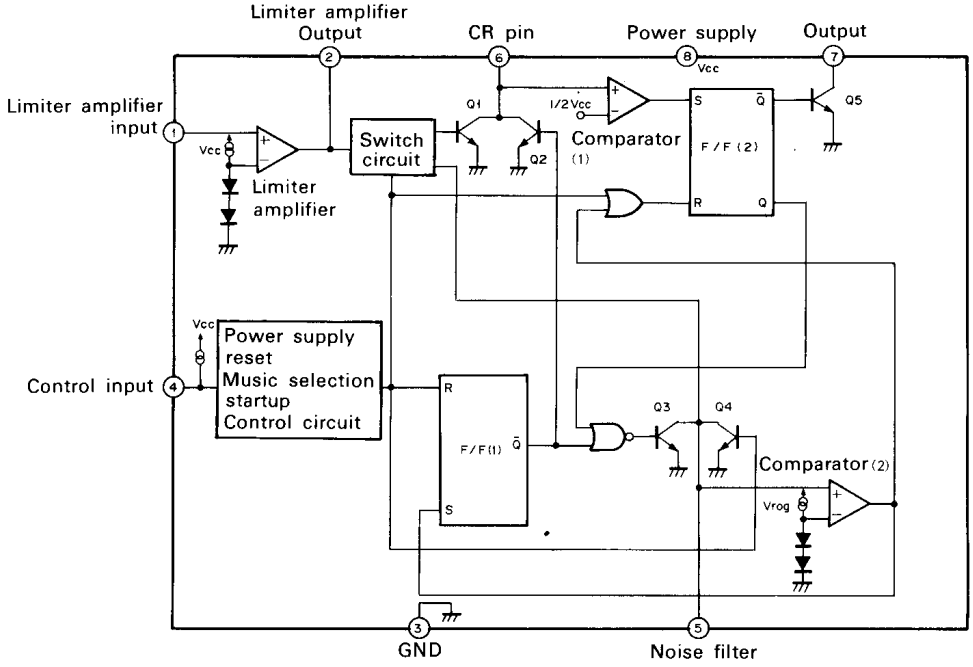


Fig. 12-12 M51143AL Block diagram

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LC7570

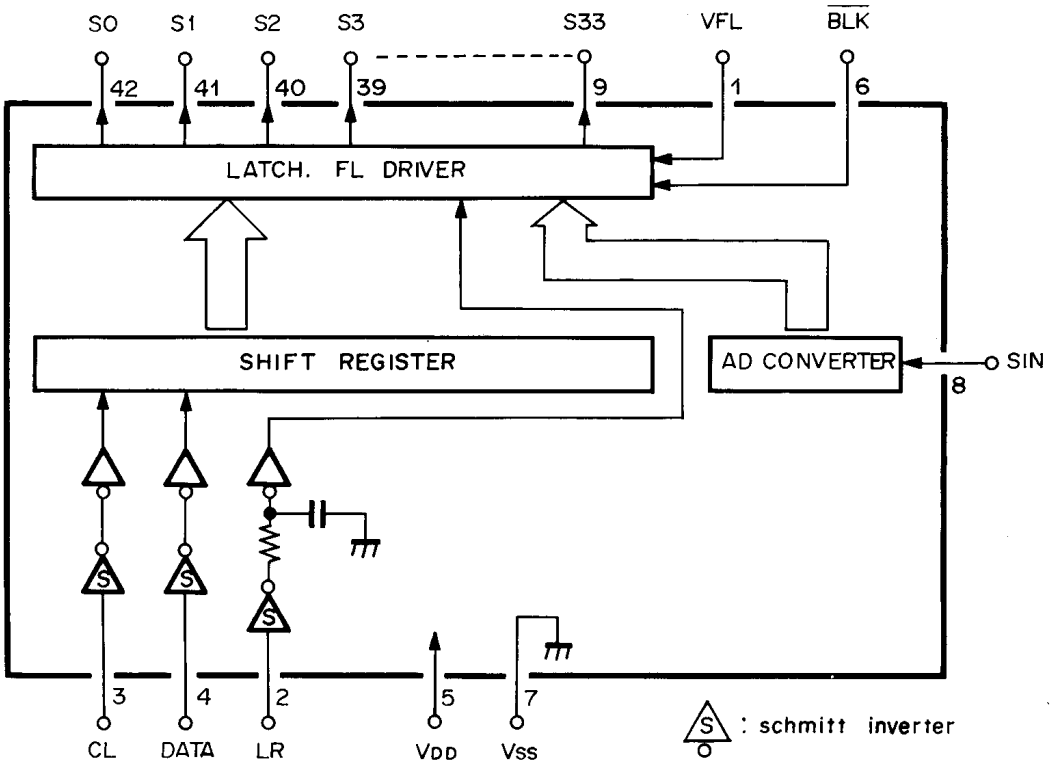

Fig. 12-13 LC7570 Block Diagram

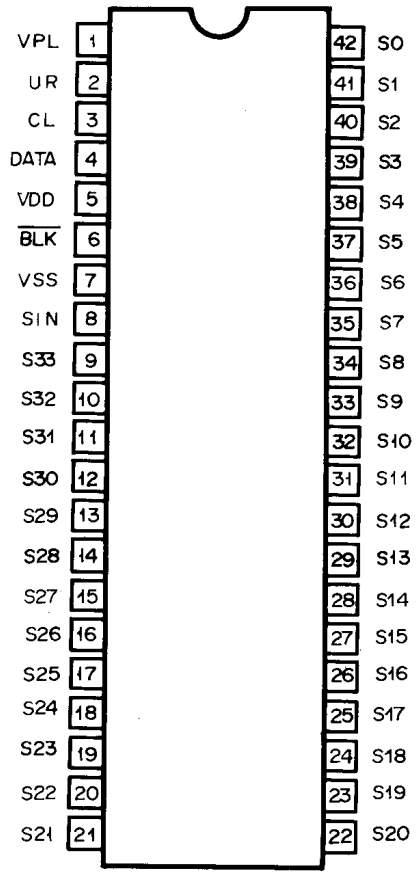

Fig. 12-14 LC7570 Pin Alignment

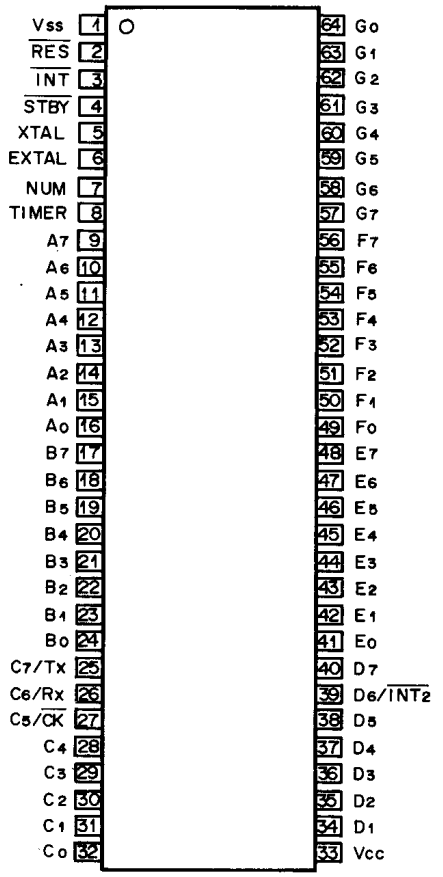

Fig. 12-15 PD3050 Pin Alignment

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CX20187

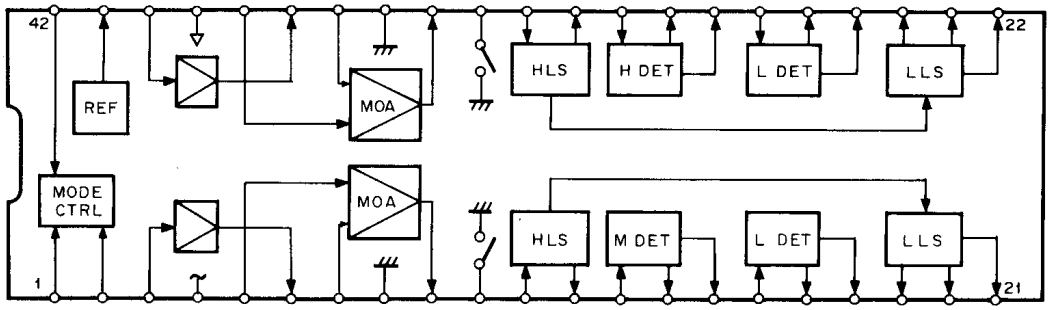

Fig. 12-16 CX20187 Block diagram

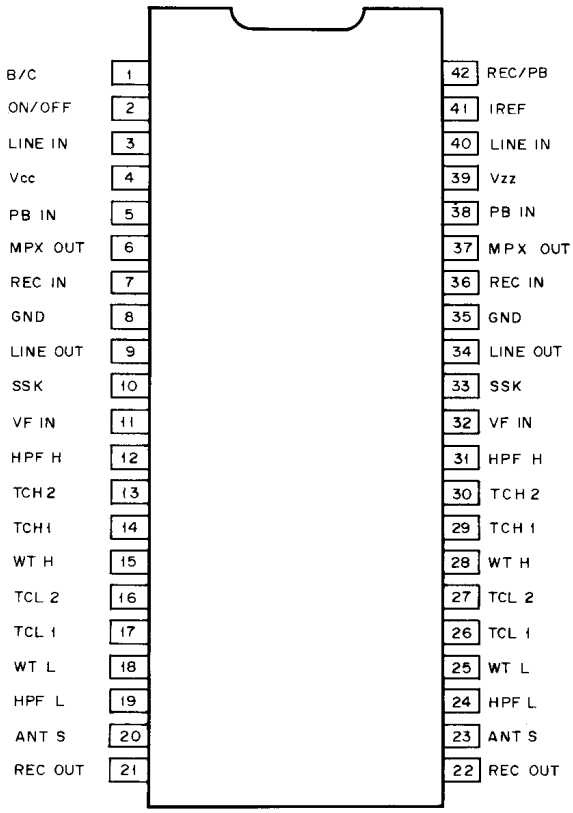

Fig. 12-17 CX20187 Pin Alignment

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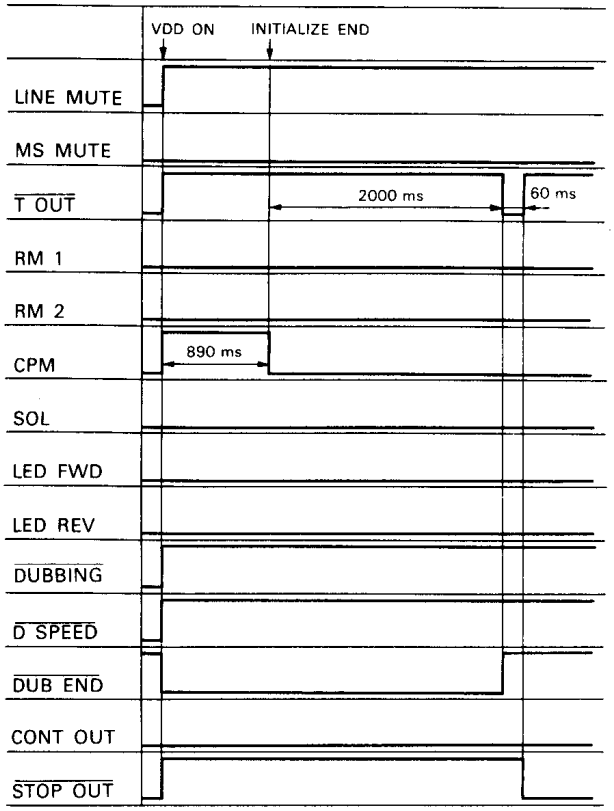
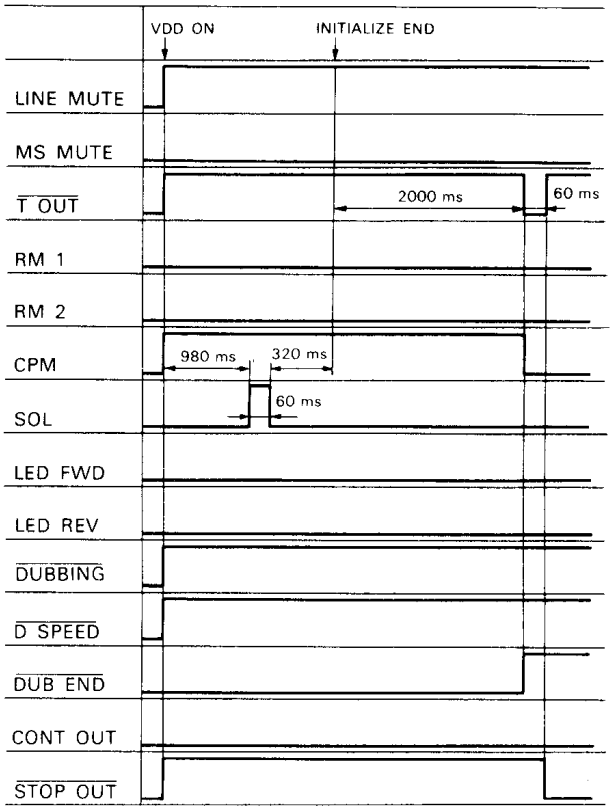
Timing Chart

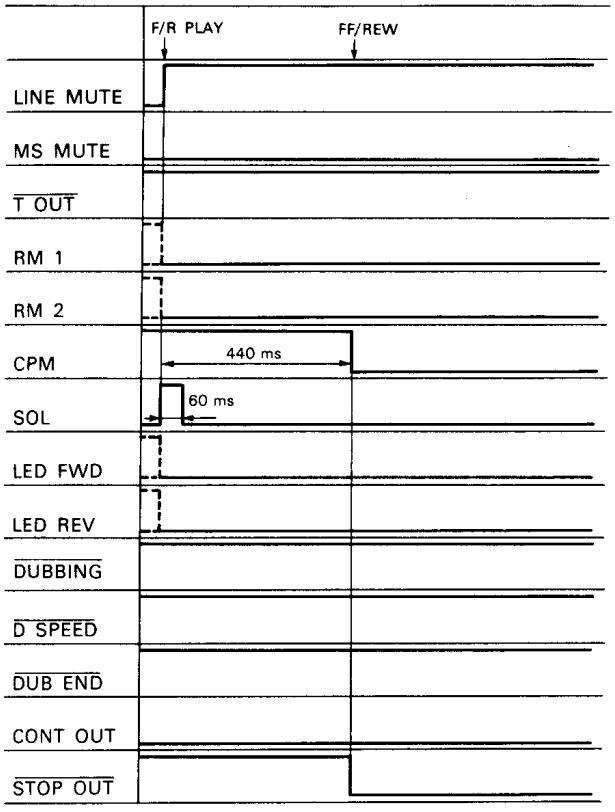
1. When cassette mechanism is in STOP mode.
(When the head base is downed.) (Mechanism 1)



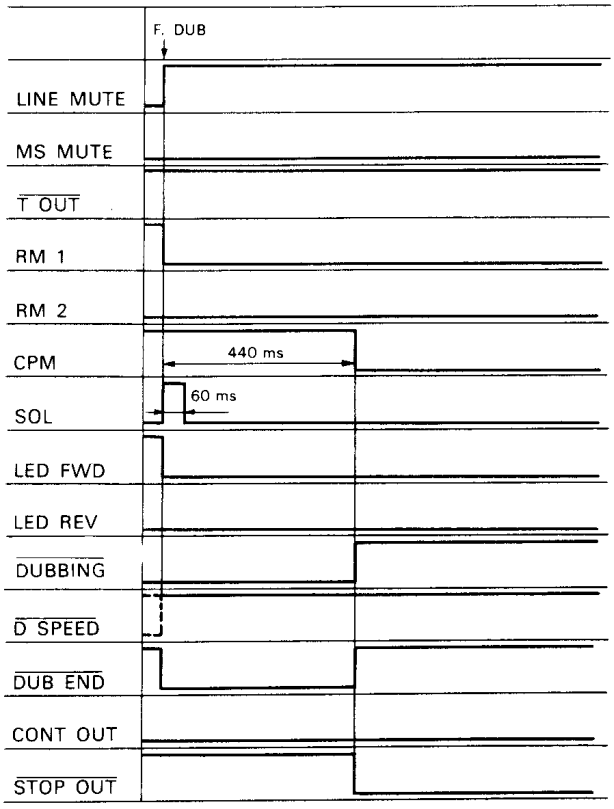
2. When cassette mechanism is in PLAY mode.
(When the head base is raised.) (Mechanism 1)



3. PLAY→STOP (Mechanism 1)



4. COPY→STOP (Mechanism 1)



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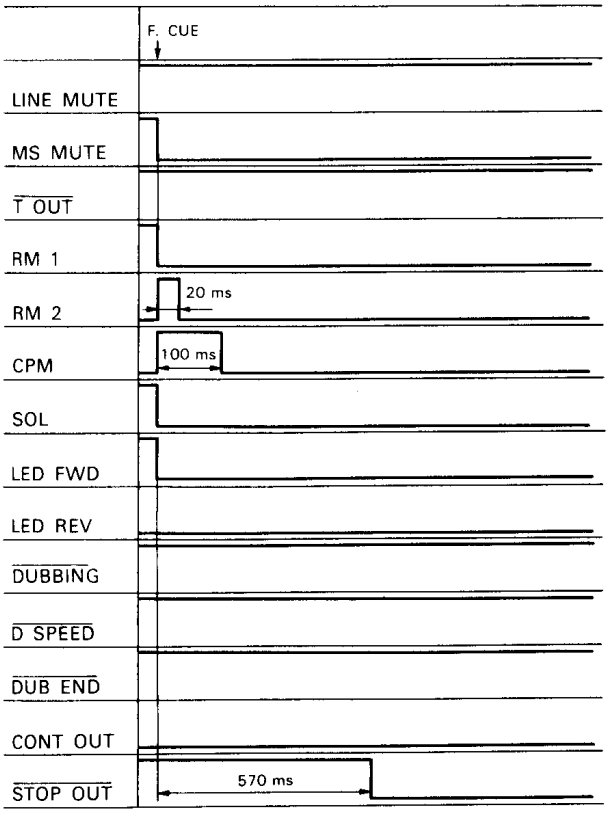
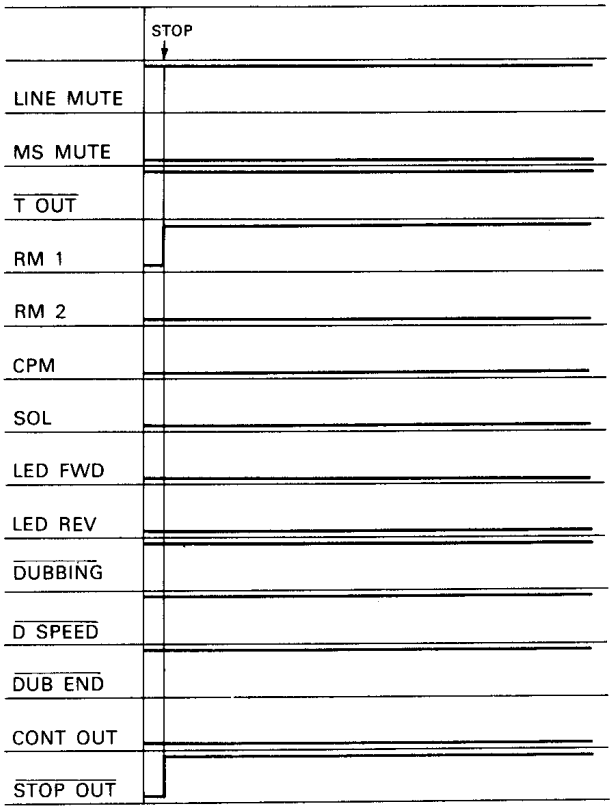
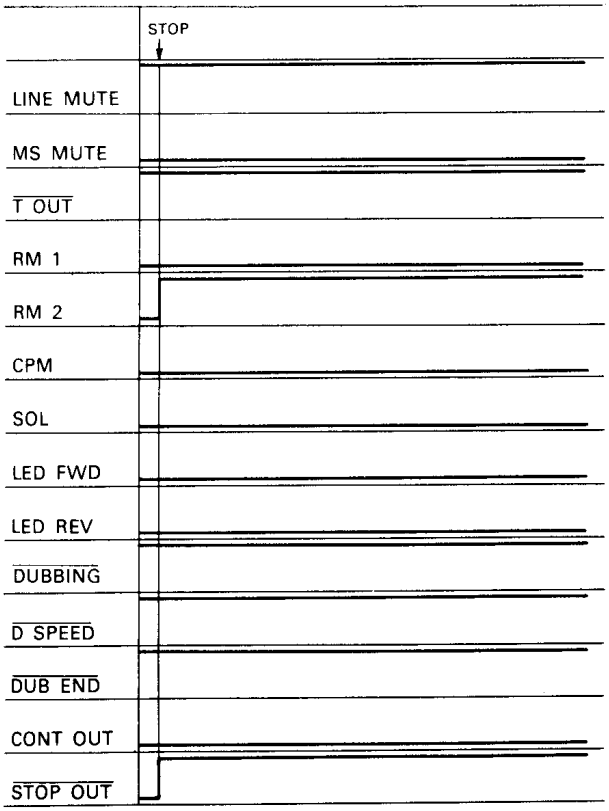
5. CUE. REVIEW→STOP (Mechanism 1)



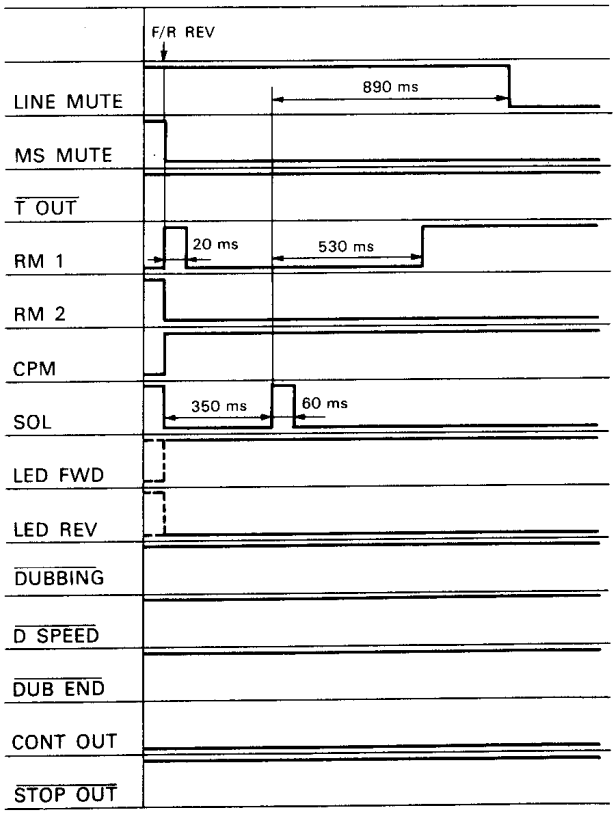
6. STOP→FF (Mechanism 1)



7. STOP→REW (Mechanism 1)



8. CUE. REVIEW→PLAY (Mechanism 1)



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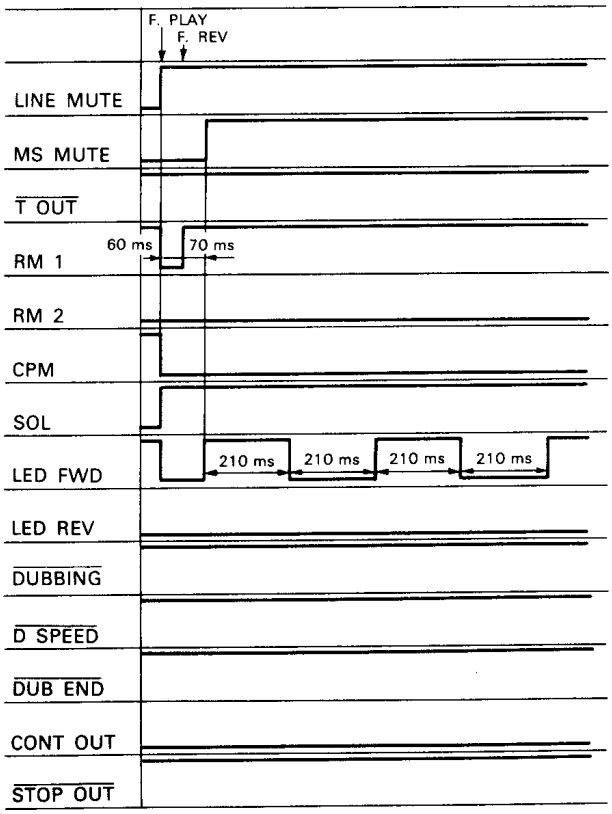
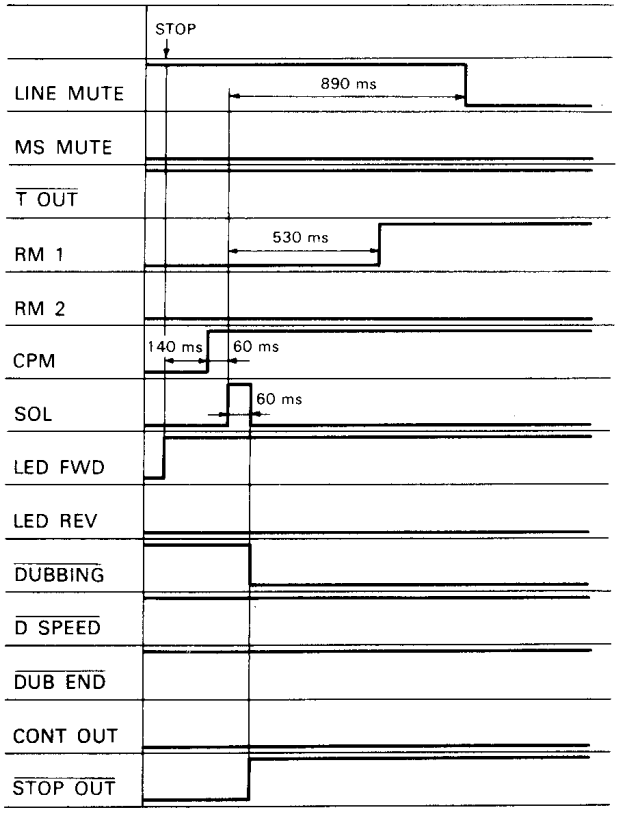
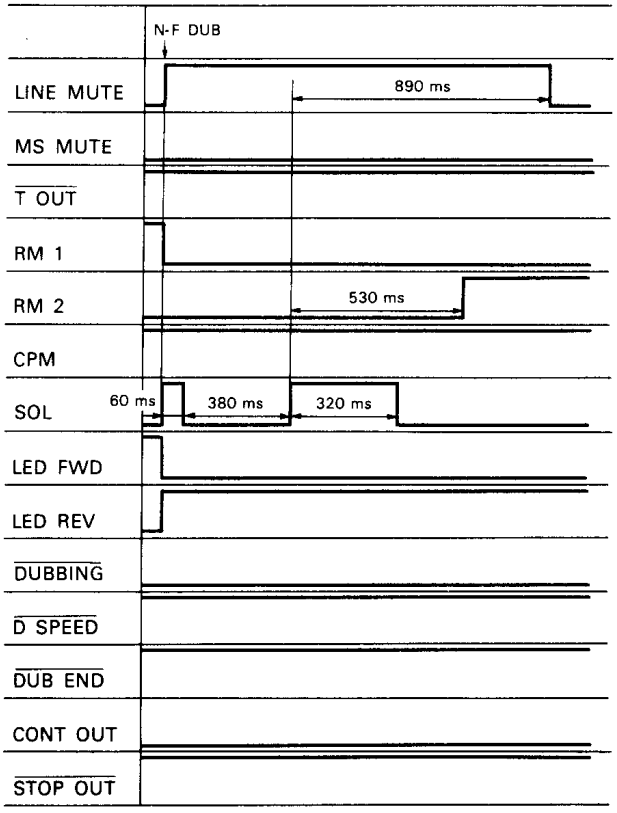
9. PLAY→F. CUE R. CUE (Mechanism 1)



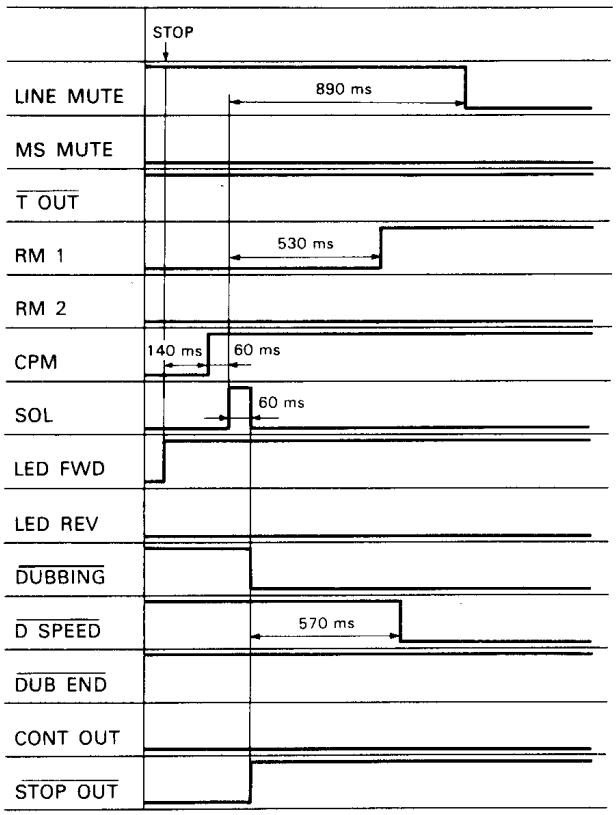
10. STOP→COPY (Mechanism 1)



11. NOR FWD COPY→REW COPY (Mechanism 1)



12. STOP→HIGH SPEED COPY (Mechanism 1)



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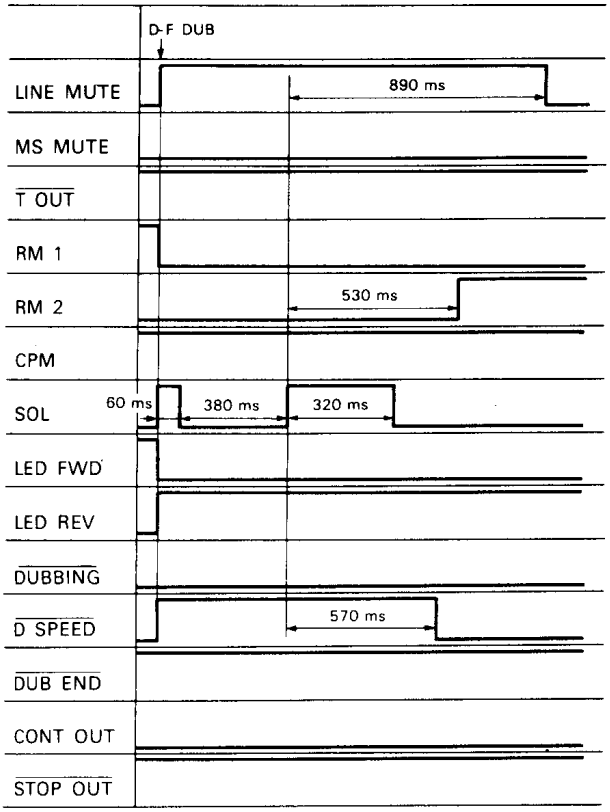
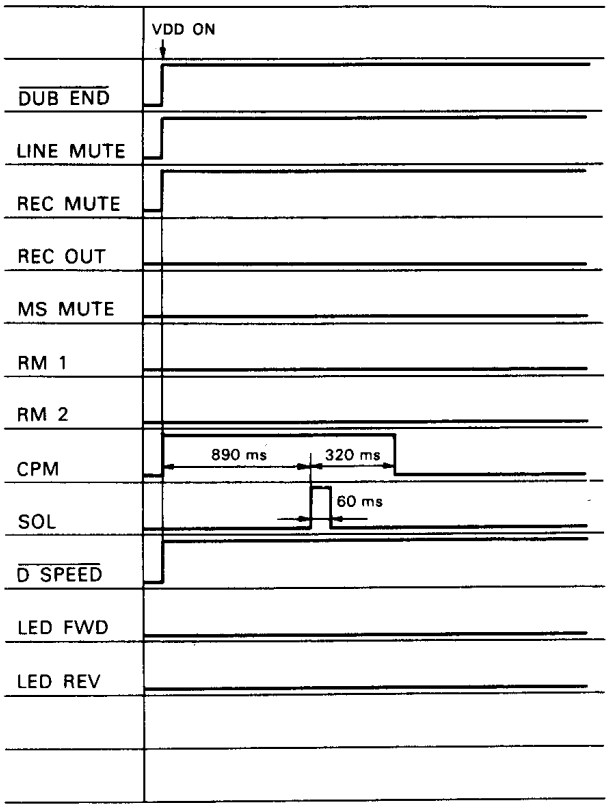
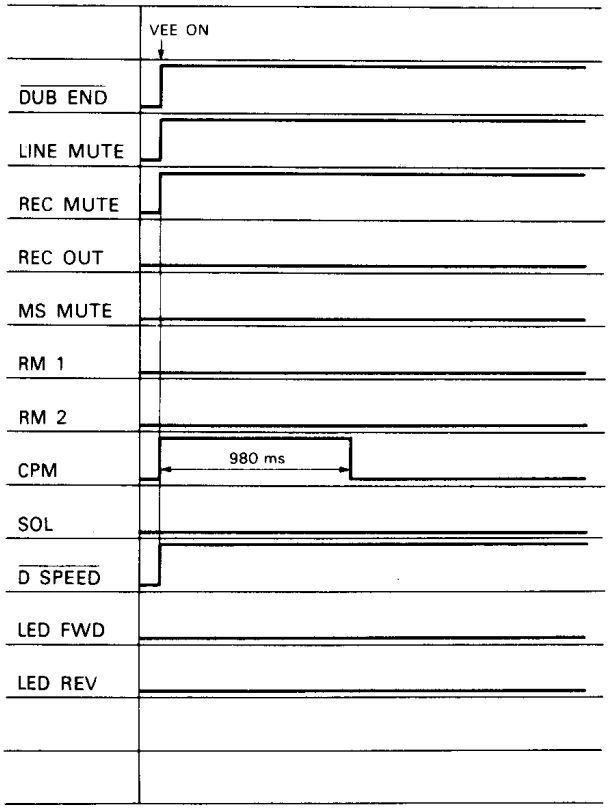
13. HIGH SPEED FWD COPY→
HIGH SPEED REV COPY (Mechanism 1)



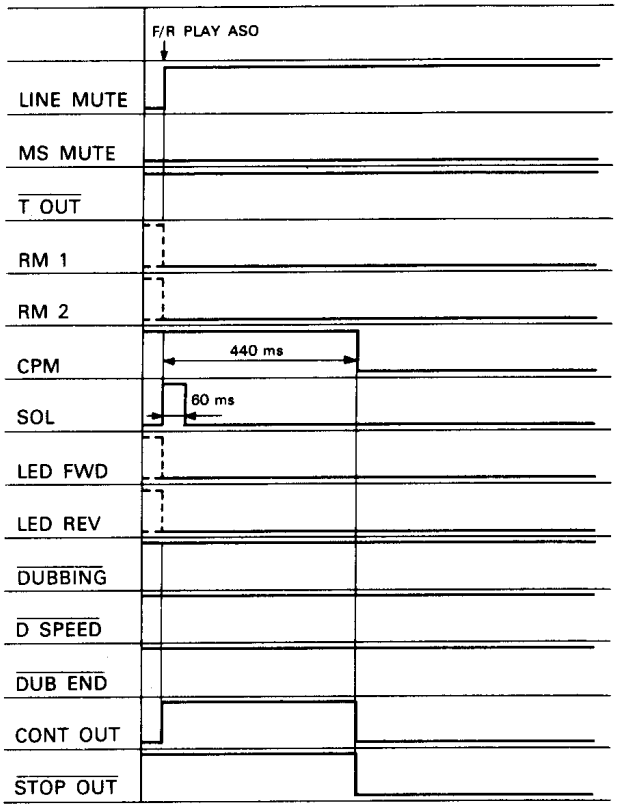
14. PLAY MODE (Mechanism 2)



15. STOP MODE (Mechanism 2)



16. PLAY → STOP (Mechanism 1)



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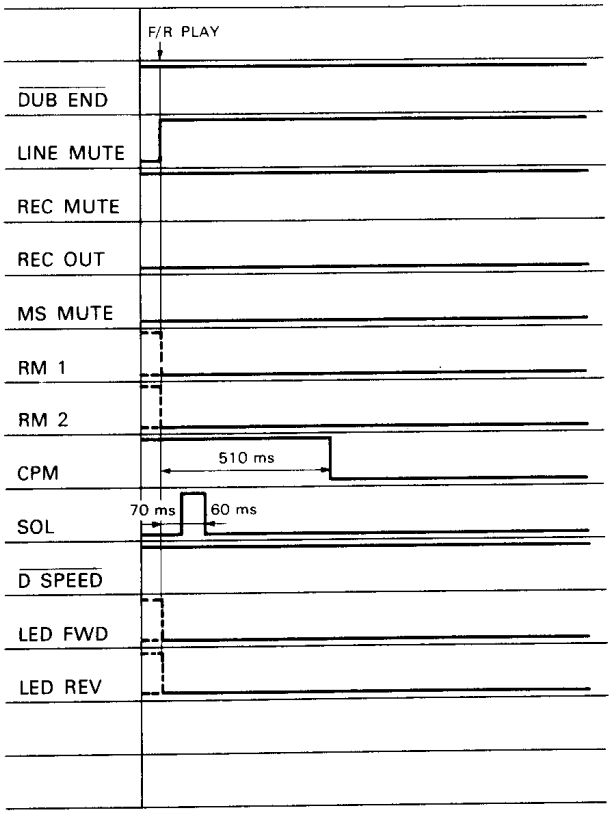
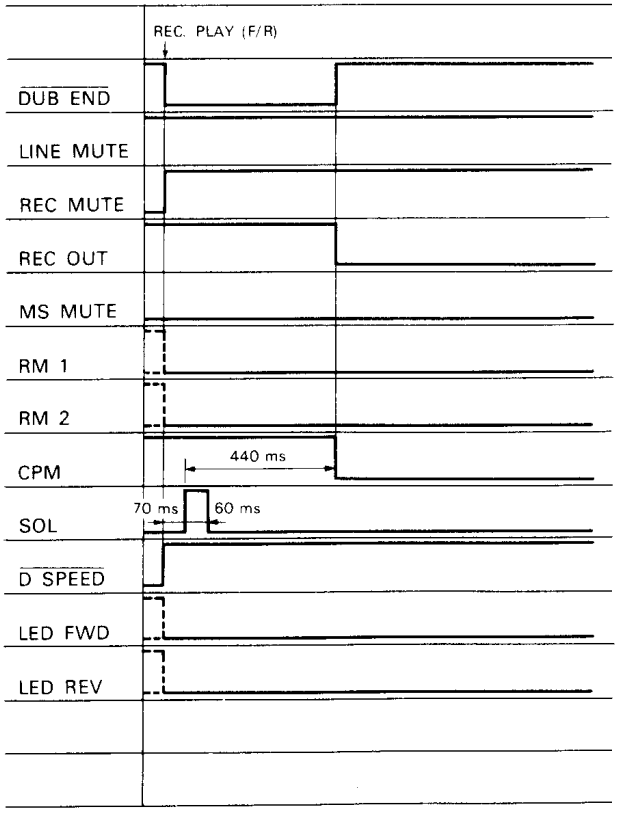
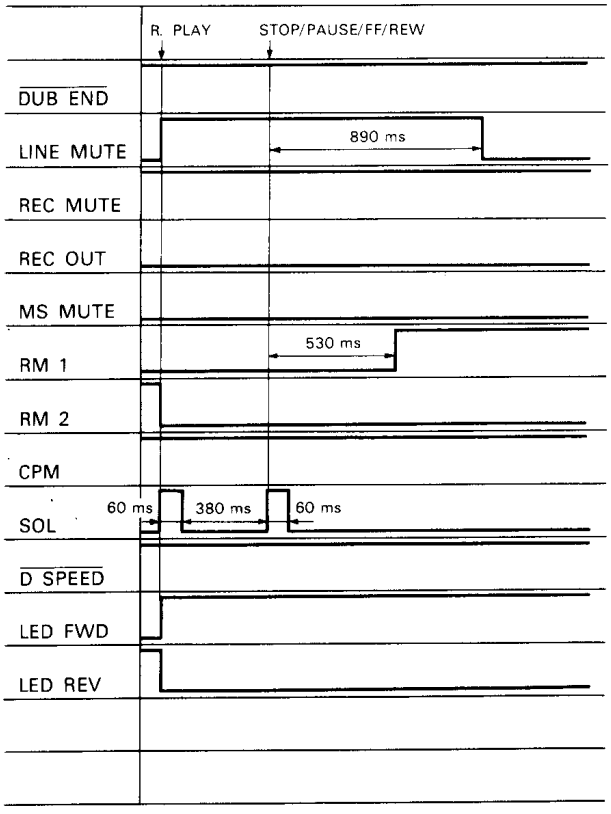
17. PLAY→STOP (Mechanism 2)



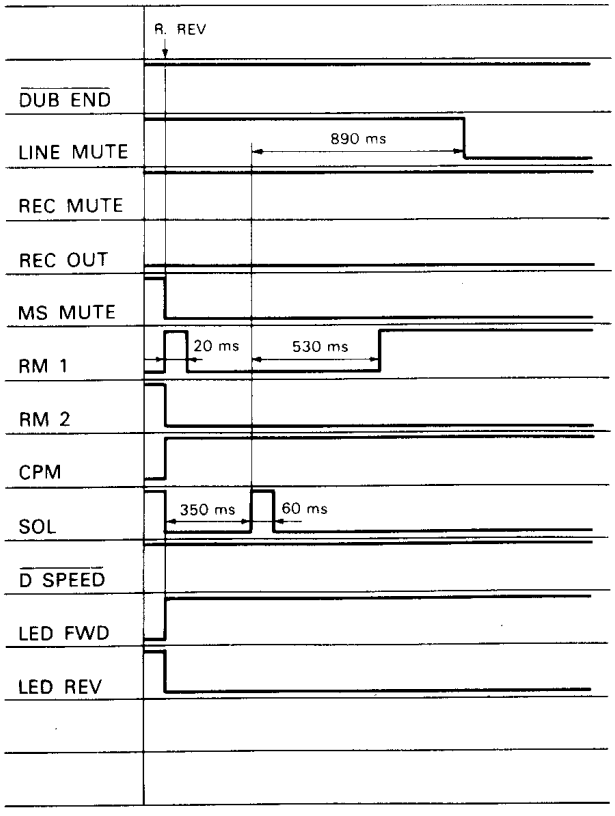
18. REC→STOP (Mechanism 2)



19. STOP→PLAY (Mechanism 2)



20. REV PLAY→FWD PLAY (Mechanism 1 and 2)



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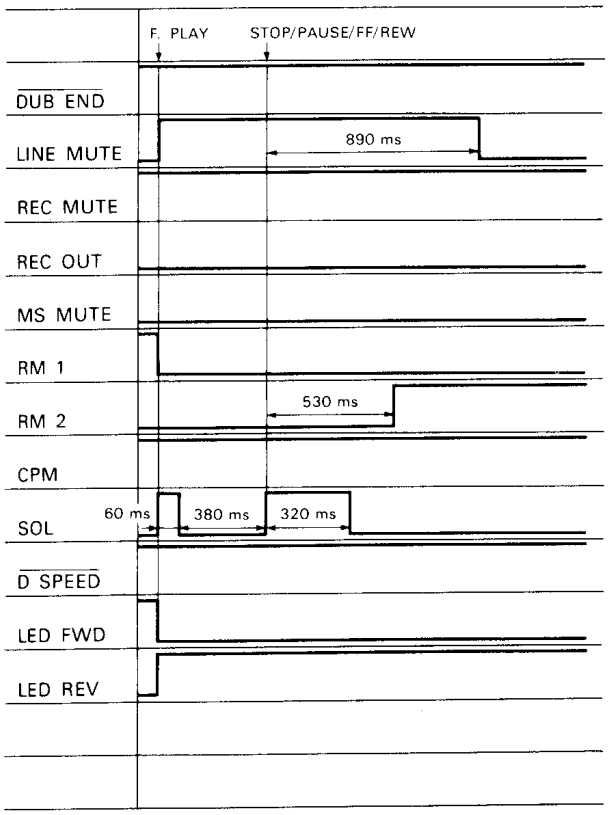
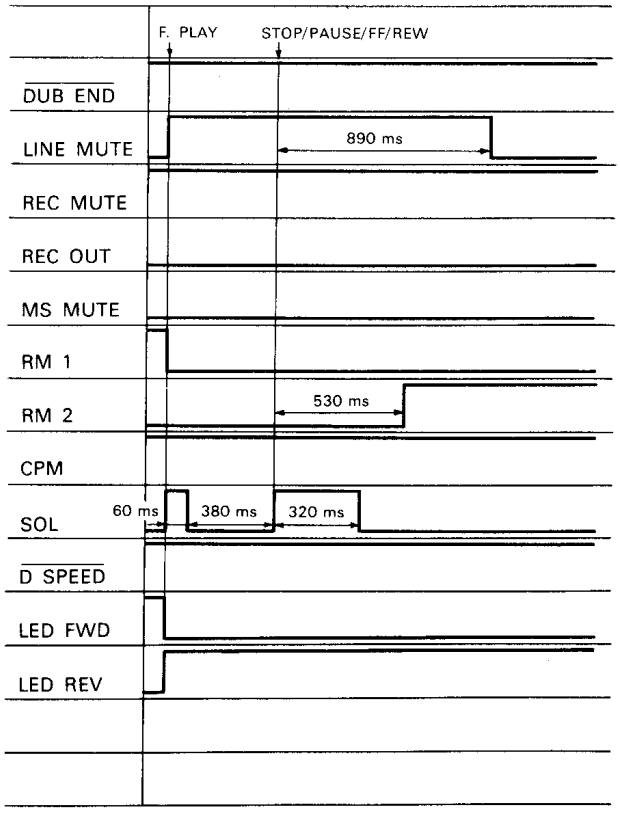
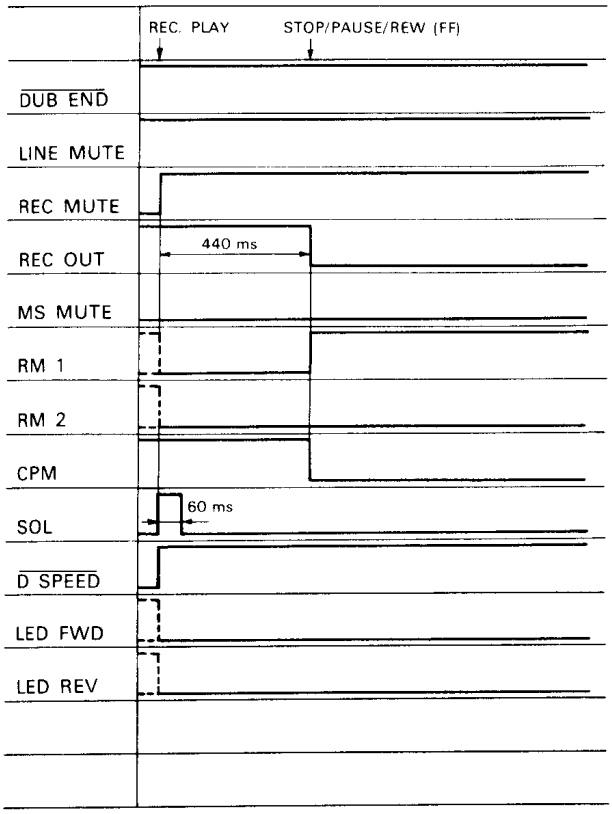
21. STOP→REV PLAY (Mechanism 2)



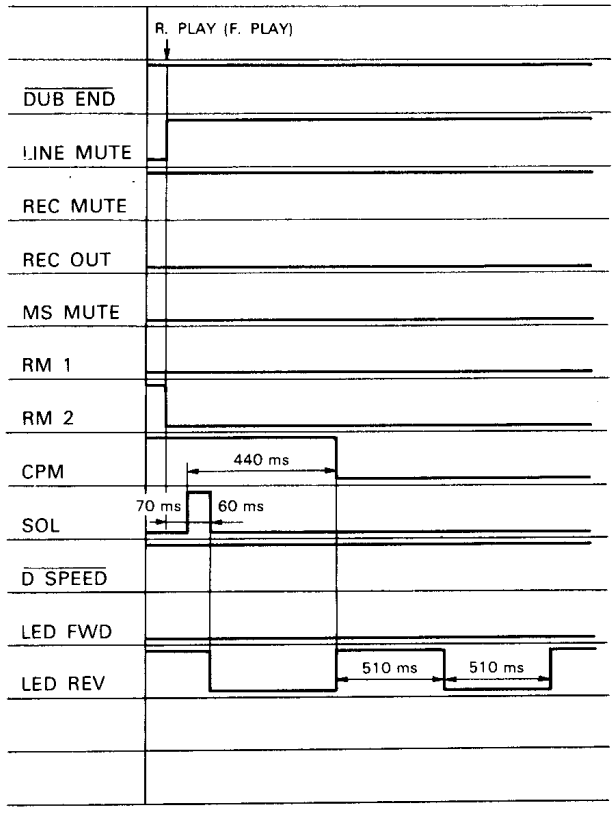
22. FWD PLAY→REV PLAY (Mechanism 1 and 2)



23. REC→FF REW (Mechanism 2)



24. PLAY→PAUSE (Mechanism 2)



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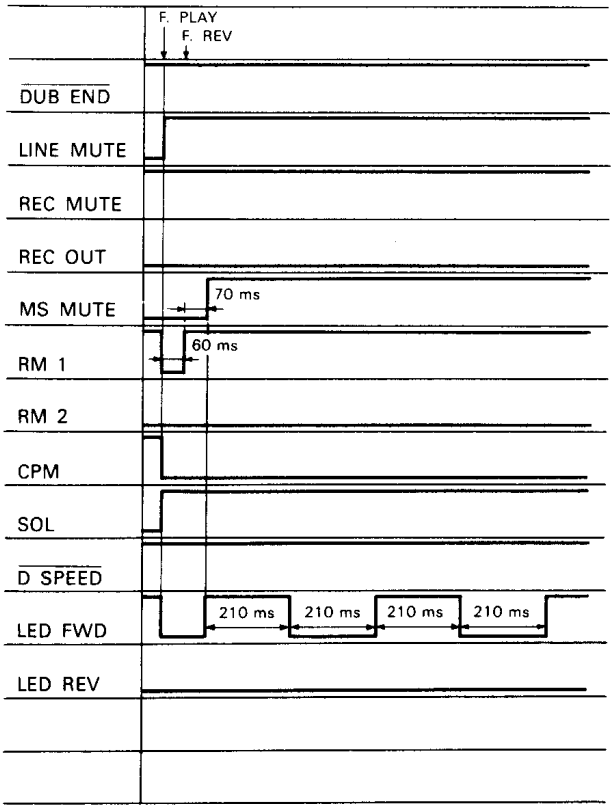
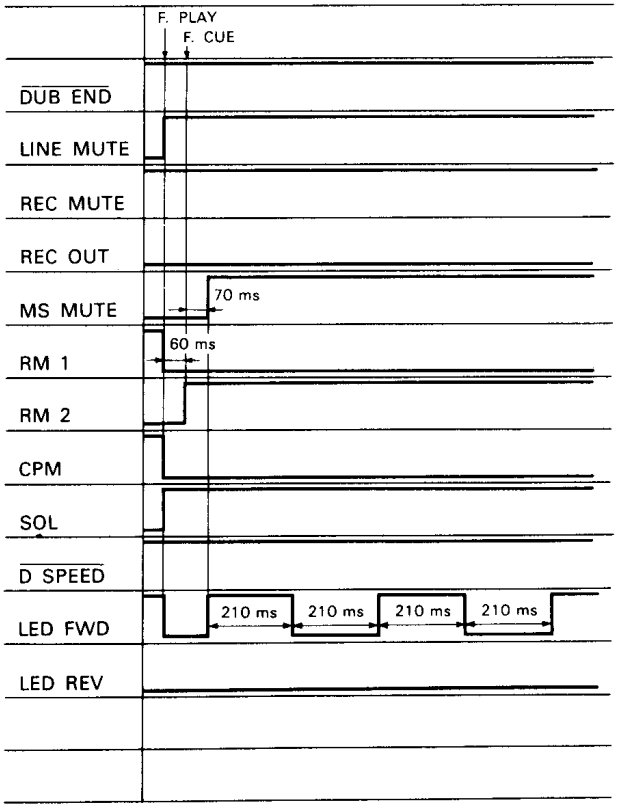
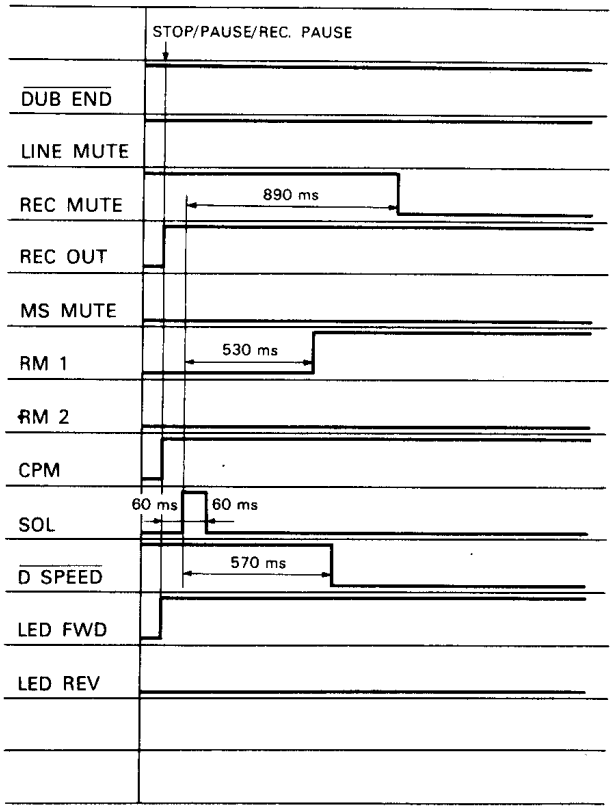
25. PLAY→FF (Mechanism 1 and 2)



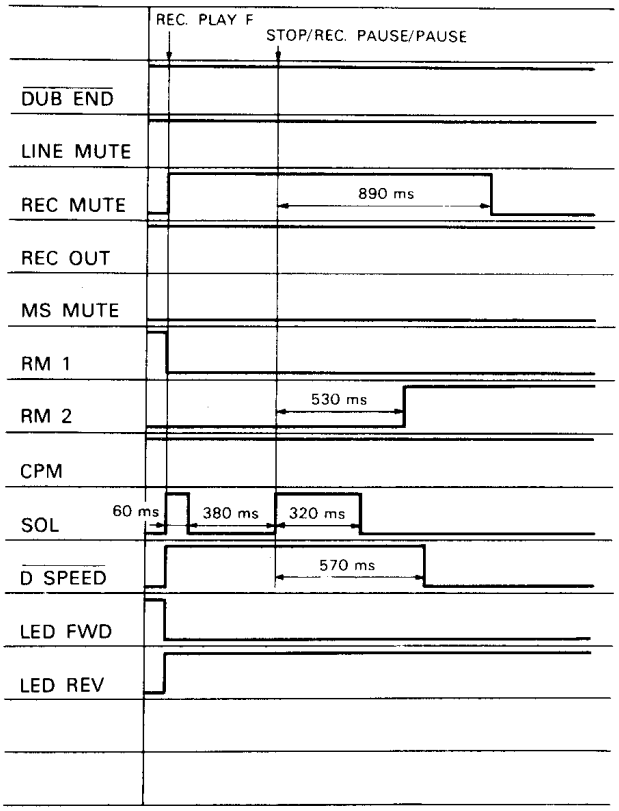
26. PLAY→REVIEW (Mechanism 1 and 2)



27. REC/PAUSE→FWD REC (Mechanism 2)



28. REC/PAUSE→REV REC (Mechanism 2)



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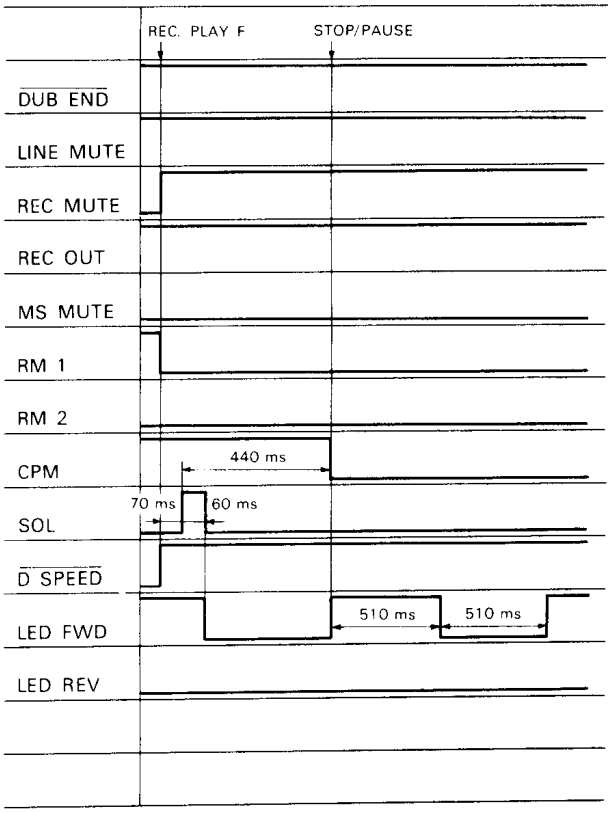
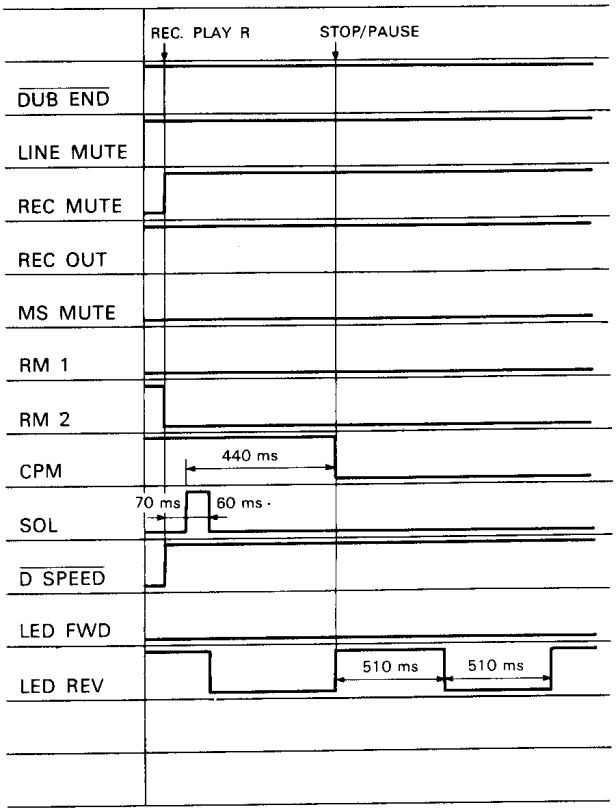
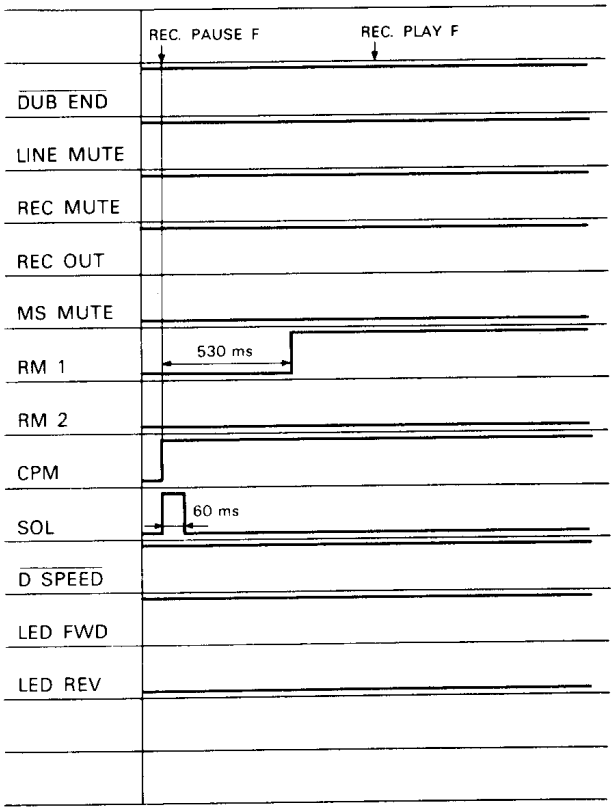
29. STOP→REC/PAUSE (Mechanism 2)



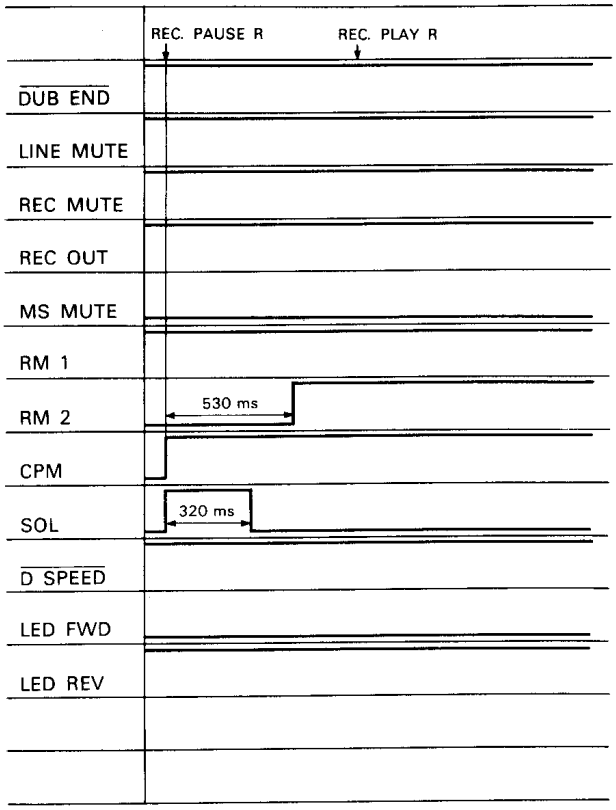
30. REC→REC/PAUSE (Mechanism 2)



31. FWD REC→FWD REC MUT (Mechanism 2)



32. REV REC→REV REC MUT (Mechanism 2)



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13. ADJUSTMENTS

13.1 MECHANICAL ADJUSTMENT

1. Tape Speed Adjustment (Normal speed adjustment should be carried out after double speed adjustment.)			
Mode	**Test tape**	**Adjustment position**	**Specification rating (playback frequency)**
PLAY	Play the STD-301 tape (3kHz)	Variable resistor control	3000Hz ± 5Hz
Play	Play the STD-301 tape (3 kHz) (DECK I)	VR406 (Double speed)	Adjust so that it becomes 6075 Hz. (Short circuit TP401 and TP402 after PLAY button has been pushed.)
		VR405 (Normal speed)	Adjust so that it becomes 3045 Hz. (Push PLAY SW.)
	Play the STD-301 tape (3 kHz) (DECK II)	VR404 (Double speed)	Adjust so that it becomes 6030 Hz. (Short circuit TP401 and TP402 after PLAY button has been pushed.)
		VR403 (Normal speed)	Adjust so that it becomes 3015 Hz. (Push PLAY SW after PLAY button has been pushed.)

2. Tape Transport Adjustment		
Mode	**Adjustment position**	**Specifications**
FWD	FWD azimuth adjustment screw	Play back 10 kHz at −20 dB with STD-331B test tape. Adjust so that the signal output at the individual test points of TP1 and TP2 become maximum.
REV	REV azimuth adjustment screw	
Load a mirror-equipped cassette half, and lift the head base by hand so that the tape touches the tape guide.		
STOP	Height adjustment screws (both left and right)	Check (visually) that the tape is located in the center of the tape guide.
FWD PLAY	FWD height adjustment screw	Adjust the first tape guide to ensure that there is no tape curling.
REV PLAY	REV height adjustment screw	

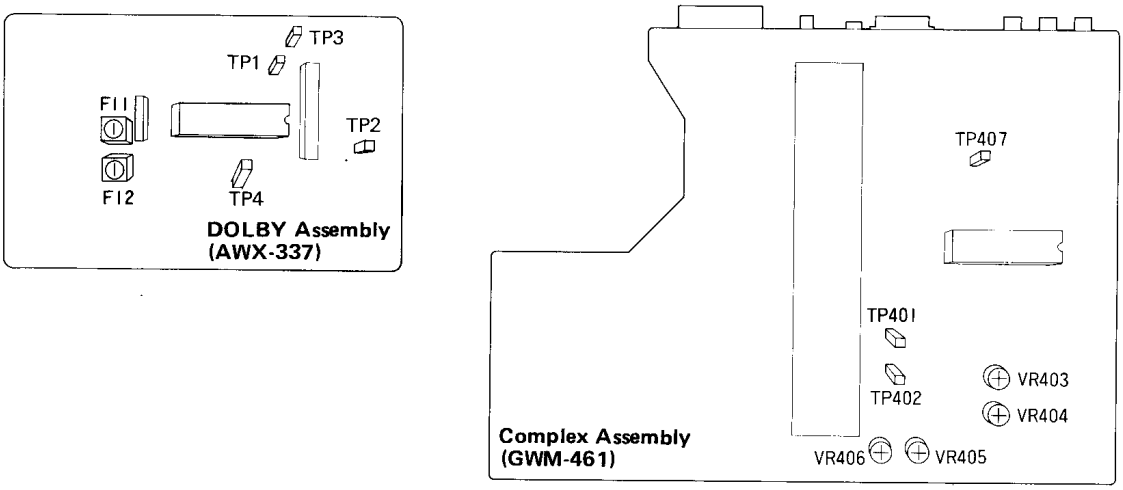

Fig. 13-1 Tape speed adjustment

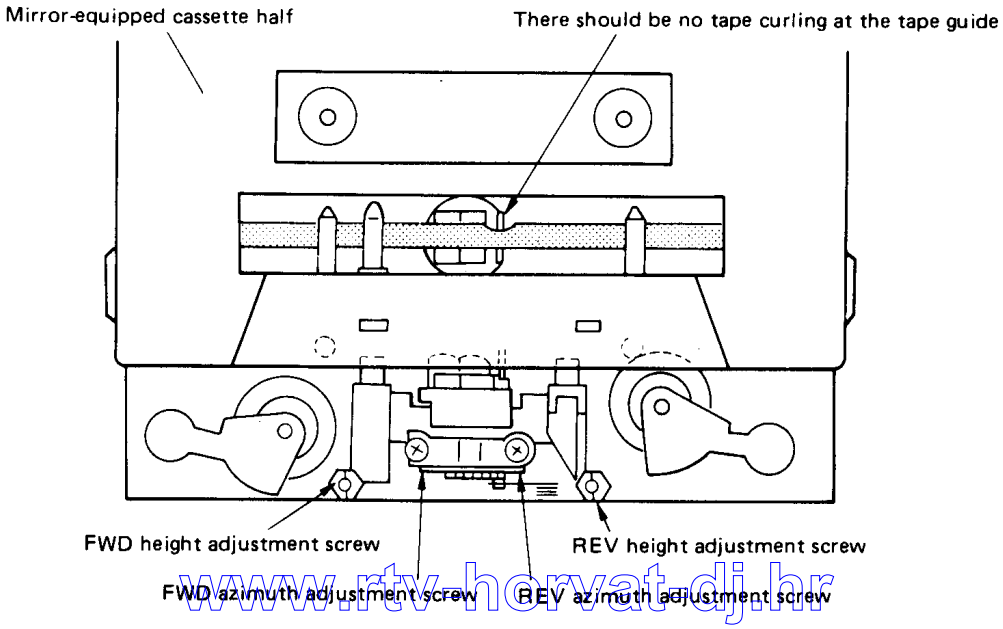

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Fig. 13-2 Tape pass adjustment

13.2 ELECTRICAL ADJUSTMENT

Adjustment Conditions

1. The mechanical adjustments must be completed first.
2. The head must be cleaned and demagnetized.
3. Allow the deck to age for at least a few minutes before commencing any electrical adjustments.
4. The reference signal is 0dB=1Vrms.
5. Unless otherwise specified, the switches listed below are left in the positions indicated.
   DOLBY NR : OFF

Test Tapes

STD-331B : Playback adjustments (See Fig. 13-3)
STD-608A : NORMAL tape
STD-620 : CrO_2 tape
STD-610 : METAL tape

Adjustment Procedure

Deck I

1. Head azimuth adjustment
2. Playback level adjustment

Deck II

1. Head azimuth adjustment
2. Playback level adjustment
3. Recording/Playback frequency response
4. Recording level adjustment

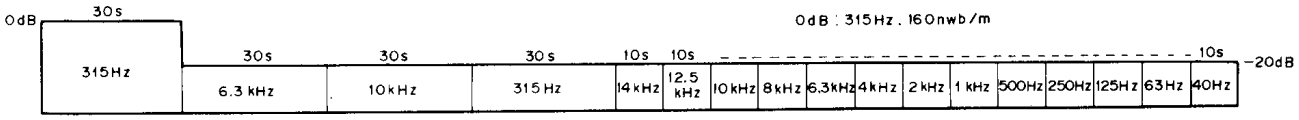

Fig. 13-3 Test tape STD-331B

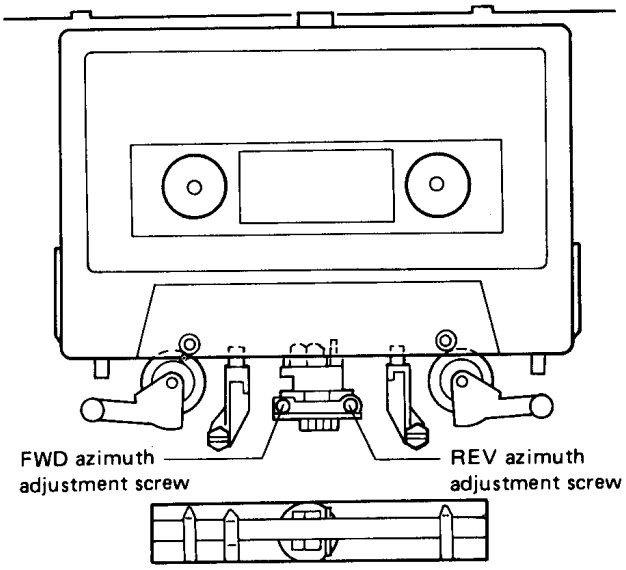

Fig. 13-4 Head azimuth adjustment

Test tape	STD-331B
DOLBY NR switch position	OFF

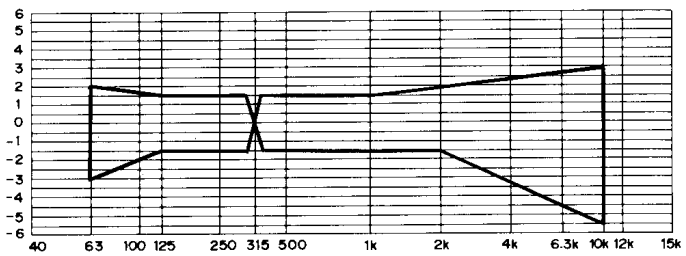

Fig. 13-5 Allowable playback frequency response zone

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• DECK I ADJUSTMENT (with auto tape selector function)

1. Head Azimuth Adjustment • Set VR501 and VR502 (playback level adjustment) to MAX positions (turn fully clockwise)

Tape selector	Mode	Input signal/test tape	Adjustment location	Measuring location	Adjustment value	Remarks
NORM	PLAY	Play 10kHz—20dB portion of STD-331B test tape.	Head azimuth adjustment screw. (Fig. 13-4)	TP1 (L) TP2 (R)	Maximum playback signal level.	Apply "screw-lock" after Completing adjustment.

2. Playback Level Adjustment • Adjust precisely since this adjustment sets the playback Dolby level.

Tape selector	Mode	Input signal/test tape	Adjustment location	Measuring location	Adjustment value	Remarks
NORM	PLAY	Play the 315Hz 0dB portion of the STD-331B test tape.	VR501 (L) VR502 (R)	TP1 (L) TP2 (R)	−13 dBm (175 mV)	

• DECK II ADJUSTMENT (with auto tape selector function)

1. Head Azimuth Adjustment • Set VR503 and VR504 (playback level adjustment) to MAX positions (turn fully clockwise)

Tape selector	Mode	Input signal/test tape	Adjustment location	Measuring location	Adjustment value	Remarks
NORM	PLAY	Play 10kHz—20dB portion of STD-331B test tape.	Head azimuth adjustment screw. (Fig. 13-4)	TP1 (L) TP2 (R)	Maximum playback signal level.	Apply "screw-lock" after completing adjustment.

2. Playback Level Adjustment • Adjust precisely since this adjustment sets the playback Dolby level.

Tape selector	Mode	Input signal/test tape	Adjustment location	Measuring location	Adjustment value	Remarks
NORM	PLAY	Play the 315 Hz 0dB portion of the STD-331B test tape.	VR503 (L) VR504 (R)	TP1 (L) TP2 (R)	−13 dBm (175 mV)	

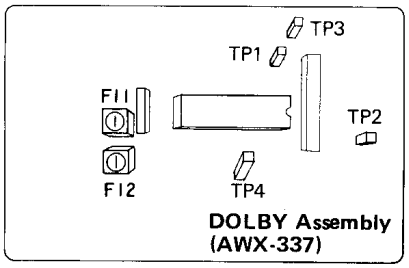
3. Recording/Playback Frequency Response Adjustment • As this adjustment adjusts the recording bias, care should be exercised so as not to deteriorate the distortion factor by under bias.

Tape selector	Mode	Input signal/test tape		Adjustment location	Measuring location	Adjustment value	Remarks
NORM	REC	Apply a 315 Hz signal to the CD terminals.	1	Input signal level	TP1 (L) TP2 (R)	−33 dBm (17.5 mV)	Set the INPUT level control to the center position (rear panel).
NORM	REC/PLAY	Record 315Hz and 10 kHz signals on the STD-608A test tape, and then playback signals.	2	VR507 (L) VR508 (R)	TP1 (L) TP2 (R)	Repeat the recording and palyback processes and adjust accordingly until the 10 kHz playback level is within 0 ± 0.5dB of the 315Hz level.	

• Change the test tape and the DOLBY NR switch position and check that the frequency response zone indicated in Fig. 13-7 is satisfied.

4. Recording Level Adjustment

Tape selector	Mode	Input signal/test tape		Adjustment location	Measuring location	Adjustment value	Remarks
NORM	REC	Apply a 315 Hz signal to the CD terminals.	1	Input signal level	TP1 (L) TP2 (R)	−13 dBm (175 mV)	
NORM	REC/PLAY	Record the 315Hz signal onto the STD-608A test tape, and then paly the signal back.	2	VR505 (L) VR506 (R)	TP1 (L) TP2 (R)	Repeat the recording the playback processes, and adjust accordingly until a playback level of −13 dBm (175 mV) is obtained.	
METAL	REC/PLAY	Record the 315Hz signal onto the STD-610 test tape, and then play the signal back.	3		TP1 (L) TP2 (R)	Check that the 315Hz playback level is −13 dBm ± 2dB.	



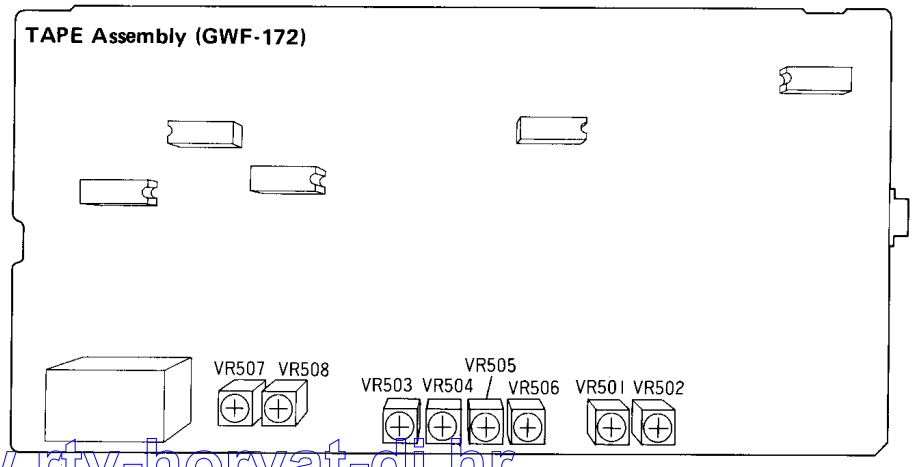


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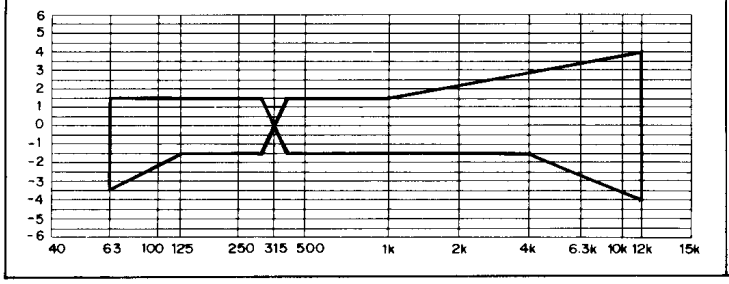
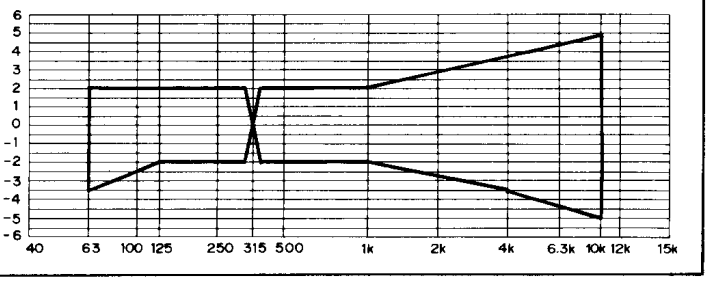
Fig. 13-6 Adjustment of Deck I and II.

Test tape	STD-608A
DOLBY NR switch	OFF



Test tape	STD-608A
DOLBY NR switch	B



Test tape	STD-608A
DOLBY NR switch	C

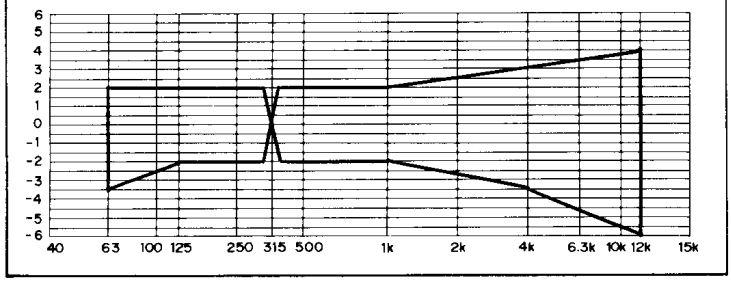
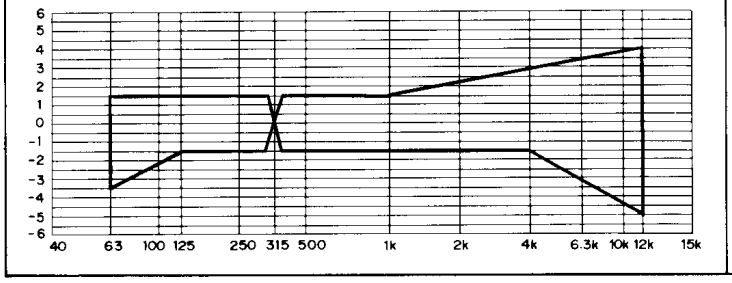
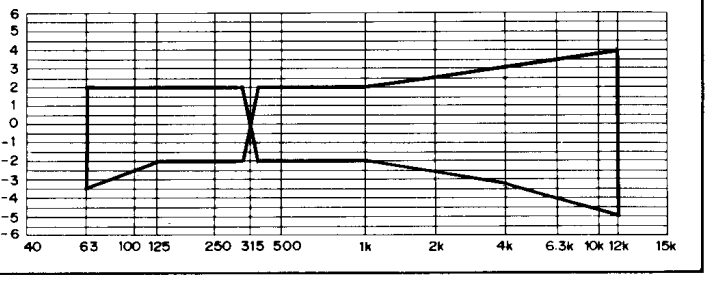


Fig. 13-7-1 Allowable recording and playback frequency response zone (NORM).

Test tape	STD-620
DOLBY NR switch	OFF



Test tape	STD-620
DOLBY NR switch	B



Test tape	STD-620
DOLBY NR switch	C

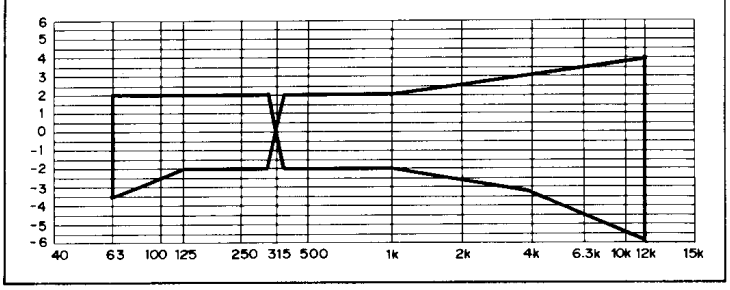


Fig. 13-7-2 Allowable recording and palyback frequency response zone (CrO_2).

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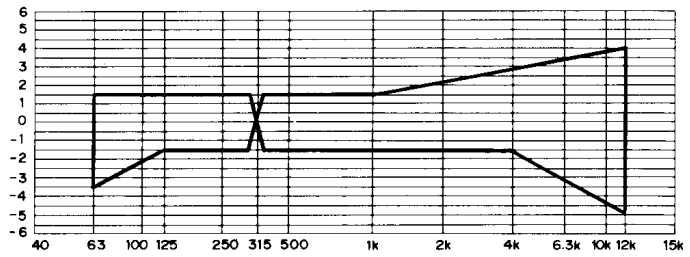
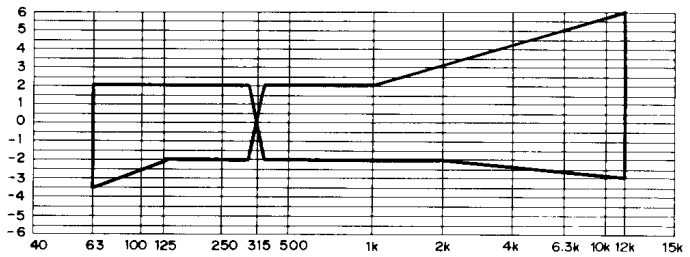
Test tape	STD-610
DOLBY NR switch	OFF



Test tape	STD-610
DOLBY NR switch	B



Test tape	STD-610
DOLBY NR switch	C

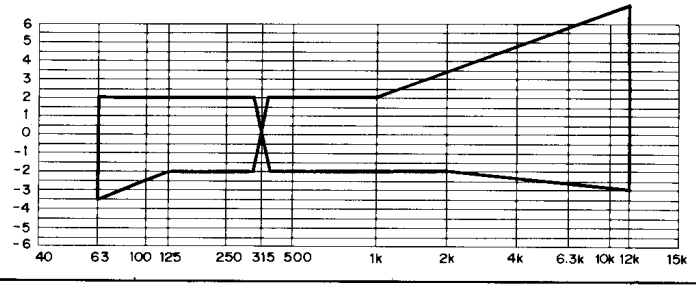


Fig. 13-7-3 Allowable recording and playback frequency response zone (METAL).

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13. RÉGLAGE

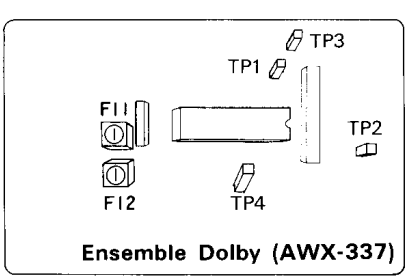
13.1 RÉGLAGES MÉCANIQUES

1. Réglage de la vitesse de défilement de la bande (Régler la vitesse normale après avoir réglé la vitesse double.)

Mode	Bande d'étalonnage	Position de réglage	Spécifications nominales (fréquence de lecture)
LECTURE	Lire la bande STD-301 (3kHz)	Contrôle à résistance variable	3000Hz±5Hz
Utiliza	Utiliza la cinta STD-301 (3 kHz) (Deck I)	VR406 (Vitesse double)	Régler pour obtenir 6075 kHz. (Appuyer sur le bouton PLAY et court-circuiter TP401 et TP402.)
		VR405 (Vitesse normale)	Régler pour obtenir 3045 kHz. (Appuyer sur SW PLAY.)
	Utiliza la cinta STD-301 (3 kHz) (Deck II)	VR404 (Vitesse double)	Régler pour obtenir 6030 kHz. (Appuyer sur le bouton PLAY et court-circuiter TP401 et TP402.)
		VR403 (Vitesse normale)	Régler pour obtenir 3015 kHz. (Appuyer sur le bouton PLAY puis sur SW PLAY.)

2. Réglage de transport de bande

Mode	Position de réglage	Spécifications nominales
Avant	Vis de réglage d'azimut en avance rapide.	Effectuer une écoute 10 kHz à −20 dB avec la bande d'essai STD-331B. Régler de sorte de que le signal de sortie aux points d'essai individuels de TP1 et TP2 soit mamimum.
Arrière	Vis de réglage d'azimut en retour rapide.	
Charger une demi-cassette à miroir et soulever l'embase de la tête pour que la bande touche le guide de bande.		
ARRÊT	Vis de réglage de hauteur (droite et gauche).	Effectuer un contrôle (visuel) pour s'assurer que la bande est placée au centre du guide de bande.
AVANCE RAPIDE LECTURE	Vis de réglage de hauteur en avance rapide.	Ajuster le premier guide de bande pour qu'aucun froissement de la bande ne se produise.
RETOUR RAPIDE LECTURE	Vis de réglage de hauteur en retour rapide.	



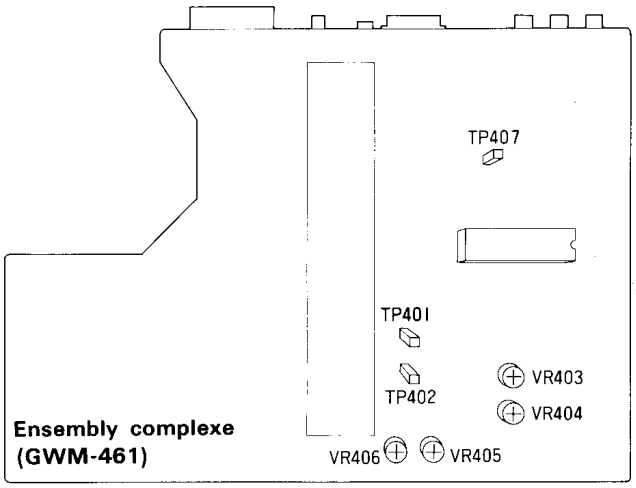


Fig. 13-1 Réglage de la vitesse de défilement

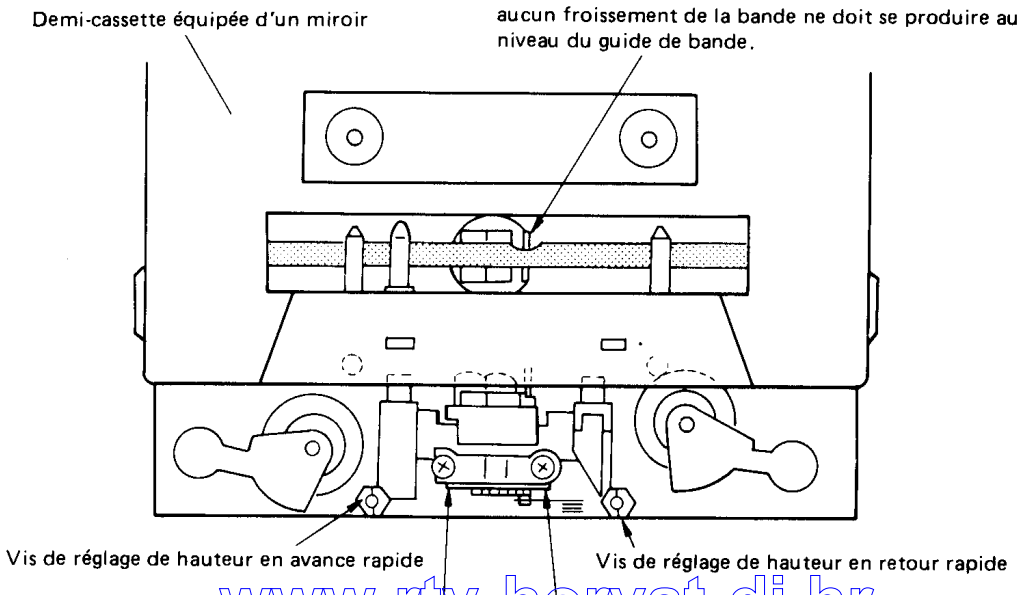


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Fig. 13-2 Réglage du passage de la bande

13.2 RÉGLAGES ÉLECTRIQUES

Conditions nécessaires pour effectuer les réglages

1. Les réglages des mécanismes doivent avoir été faits avant.
2. La tête magnétique doit être propre et démagnétisée.
3. La platine-cassette doit avoir fonctionnée pendant quelques minutes avant de commencer les réglages électriques.
4. Le signal de référence est de 0dB=1V effi.
5. A moins d'une indication contraire, les commutateurs mentionnés ci-dessous doivent se trouver dans la position indiquée.
   DOLBY NR : Sur OFF

Bandes de mesure

STD-331B : Réglage de lecture (See Fig. 13-1)
STD-608A : Bande vierge ordinaire (NORMAL)
STD-620 : Bande vierge au chrome (CrO_2)
STD-610 : Bande vierge au fer (METAL)

Procédure de réglage

Platine I

1. Réglage de l'azimutage de la tête.
2. Réglage du niveau de reproduction.

Platine II

1. Réglage de l'azimutage de la tête.
2. Réglage du niveau de reproduction.
3. Réponse en fréquences enregistrement/reproduction.
4. Réglage du niveau d'enregistrement.

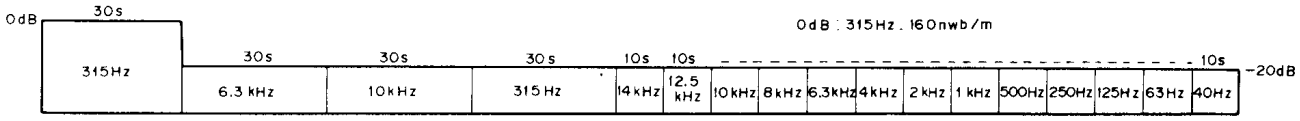

Fig. 13-3 Band déssai STD-331B

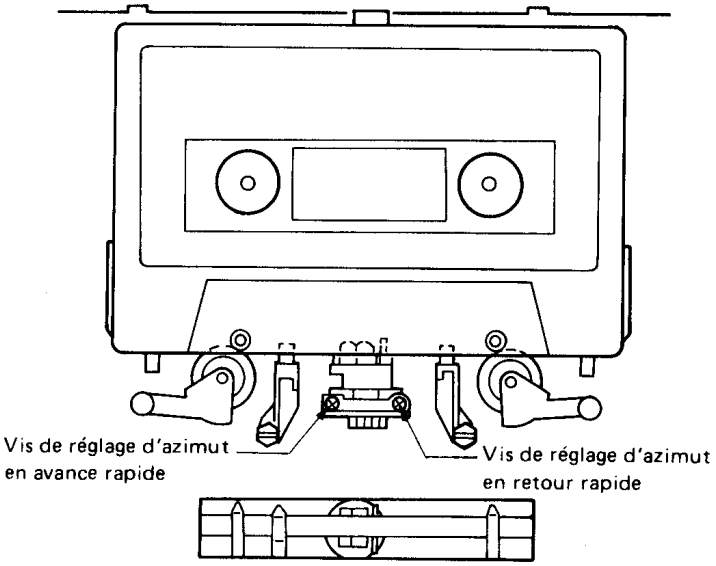

Fig. 13-4 Réglage dázimut de tête magnétique

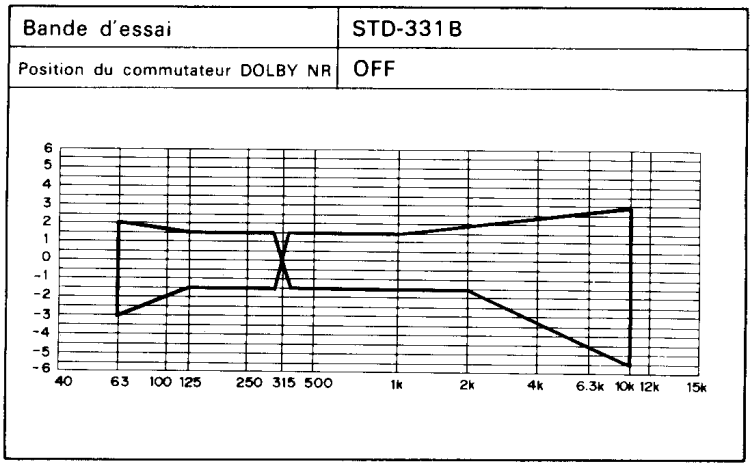

Fig. 13-5 Réponse en fréquence admissible en lecture

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• RÉGLAGE DE LA PLATINE I • (Avec sélecteur automatique de bande)

1. Réglage de l'azimutage de la tête • Placer le VR501 et le VR502 (Réglage du niveau de reproduction) sur la position maximale MAX (tourner complètement dans le sens des aiguilles d'une montre).

Sélecteur de bande	Mode	Signal d'entrée/bande d'essai	Emplacement du réglage	Emplacement de mesure	Valeur de réglage	Remarques
Normal (NORM)	Reproduction (PLAY)	Reproduire la portion 10kHz −20dB de la bande d'essai STD-331B.	Vis de réglage de l'azimutage de la tête. (Fig. 13-4)	TP1 (L) TP2 (R)	Niveau de signal de reproduction maximal.	Mettre en place "l'arrêt de vis" après avoir terminé ce réglage.

2. Réglage du niveau de reproduction • Procéder à cet réglage avec précision car celui-ci détermine le niveau de reproduction du DOLBY.

Sélecteur de bande	Mode	Signal d'entrée/bande d'essai	Emplacement du réglage	Emplacement de mesure	Valeur de réglage	Remarques
Normal (NORM)	Reproduction (PLAY)	Reproduire la portion 315Hz 0dB de la bande d'essai STD-331B.	VR501 gauche (L) VR502 droit (R)	TP1 (L) TP2 (R)	−13 dBm (175 mV)	

• RÉGLAGE DE LA PLATINE II (Avec sélecteur automatique de bande)

1. Réglage de l'azimutage de la tête • Placer le VR503 et le VR504 (Réglage de niveau de reproduction) sur la position maximale (tourner complètement dans le sens des aiguilles d'une montre).

Sélecteur de bande	Mode	Signal d'entrée/bande d'essai	Emplacement du réglage	Emplacement de mesure	Valeur de réglage	Remarques
Normal (NORM)	Reproduction (PLAY)	Reproduire la portion 10kHz −20dB de la bande d'essai STD-331B.	Vis de réglage de l'azimutage de la tête. (Fig. 13-4)	TP1 (L) TP2 (R)	Niveau de signal de reproduction maximal.	Mettre en place "l'arrêt de vis" après avoir effectué ce réglage.

2. Réglage du niveau de reproduction • Procéder à ce réglage avec précision car celui-ci détermine le niveau de reproduction du DOLBY.

Sélecteur de bande	Mode	Signal d'entrée/bande d'essai	Emplacement du réglage	Emplacement de mesure	Valeur de réglage	Remarques
Normal (NORM)	Reproduction (PLAY)	Reproduire la portion 315Hz 0dB de la bande d'essai STD-331B.	VR503 gauche (L) VR504 droit (R)	TP1 (L) TP2 (R)	−13 dBm (175 mV)	

3. Réglage de la réponse en fréquences d'enregistrement et de reproduction • Cette commande permet de régler la polarisation d'enregistrement et doit être manipulée avec précaution de manière à ne pas dérégler le facteur de distorsion par une sous-polarisation.

Sélecteur de bande	Mode	Signal d'entrée/bande d'essai		Emplacement du réglage	Emplacement de mesure	Valeur de réglage	Remarques
Normal (NORM)	Enregistrement (REC)	Appliquer un signal 315 Hz aux bornes CD.	1	Entrer le signal de niveau.	TP1 (L) TP2 (R)	−33 dBm (17.5 mV)	Amener la commande de niveau d'entrée sur la position centrale (panneau arrière).
Normal (NORM)	Enregistrement/reproduction (REC/PLAY)	Enregistrer des signaux de 315Hz et 10 kHz sur la bande d'essai STD-608A, et reproduire ensuite les signaux.	2	VR507 gauche (L) VR508 droit (R)	TP1 (L) TP2 (R)	Recommencer les procédures d'enregistrement et de reproduction, et procéder au réglage en conséquence jusqu' à ce que le niveau de reproduction du 10 kHz soit compris entre 0 ±0,5dB du niveau du 315Hz.	

• Changer la bande d'essai et la position du commutateur de réducteur de bruit DOLBY, et vérifier que la courbe de réponse en fréquences indiquée sur la Fig. 13-7 est respectée.

4. Réglage du niveau d'enregistrement

Sélecteur de bande	Mode	Signal d'entrée/bande d'essai		Emplacement du réglage	Emplacement de mesure	Valeur de réglage	Remarques
Normal (NORM)	Enregistrement (REC)	Appliquer un signal 315 Hz aux bornes CD.	1	Entrer le signal de niveau.	TP1 (L) TP2 (R)	−13 dBm (175 mV)	
Normal (NORM)	Enregistrement/reproduction (REC/PLAY)	Enregistrer le signal de 315Hz sur la bande d'essai STD-608A, puis reproduire le signal.	2	VR505 (L) VR506 (R)	TP1 (L) TP2 (R)	Recommencer les procédures d'enregistrement et de reproduction, et procéder au réglage jusqu'à ce que un niveau de reproduction de −23 dBv (71 mV) soit obtenu.	
Métal (METAL)	Enregistrrement/reproduction (REC/PLAY)	Enregistrer le signal de 315Hz sur la bande d'essai STD-610, puis reproduire le signal.	3		TP1 (L) TP2 (R)	Vérifier que le niveau de reproduction du 315Hz est à −23dBV ± 2 dB	

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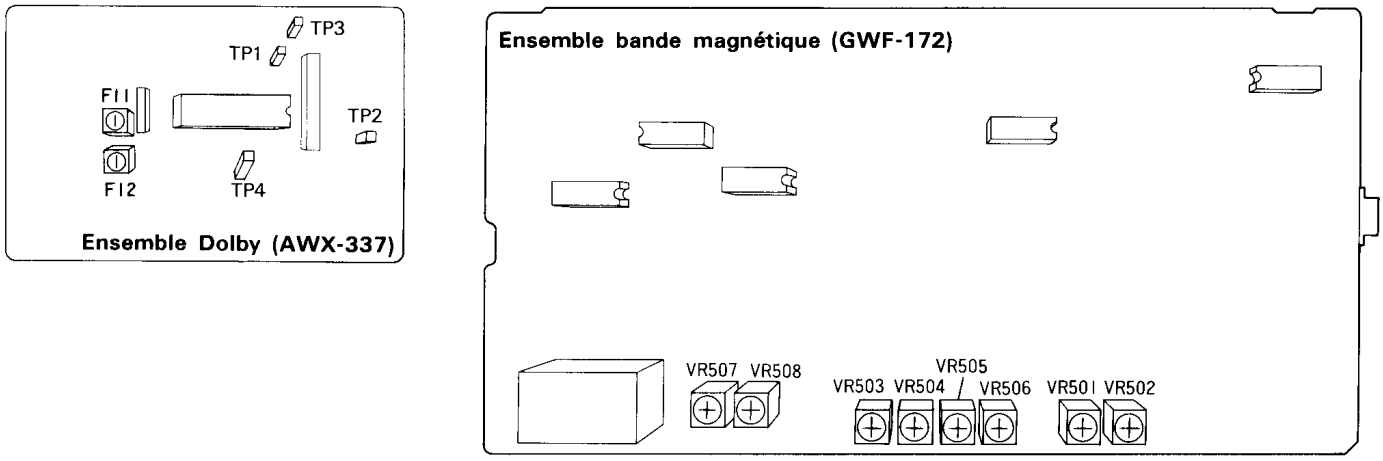

Fig. 13-6 Réglade de la Laplatine I et II.

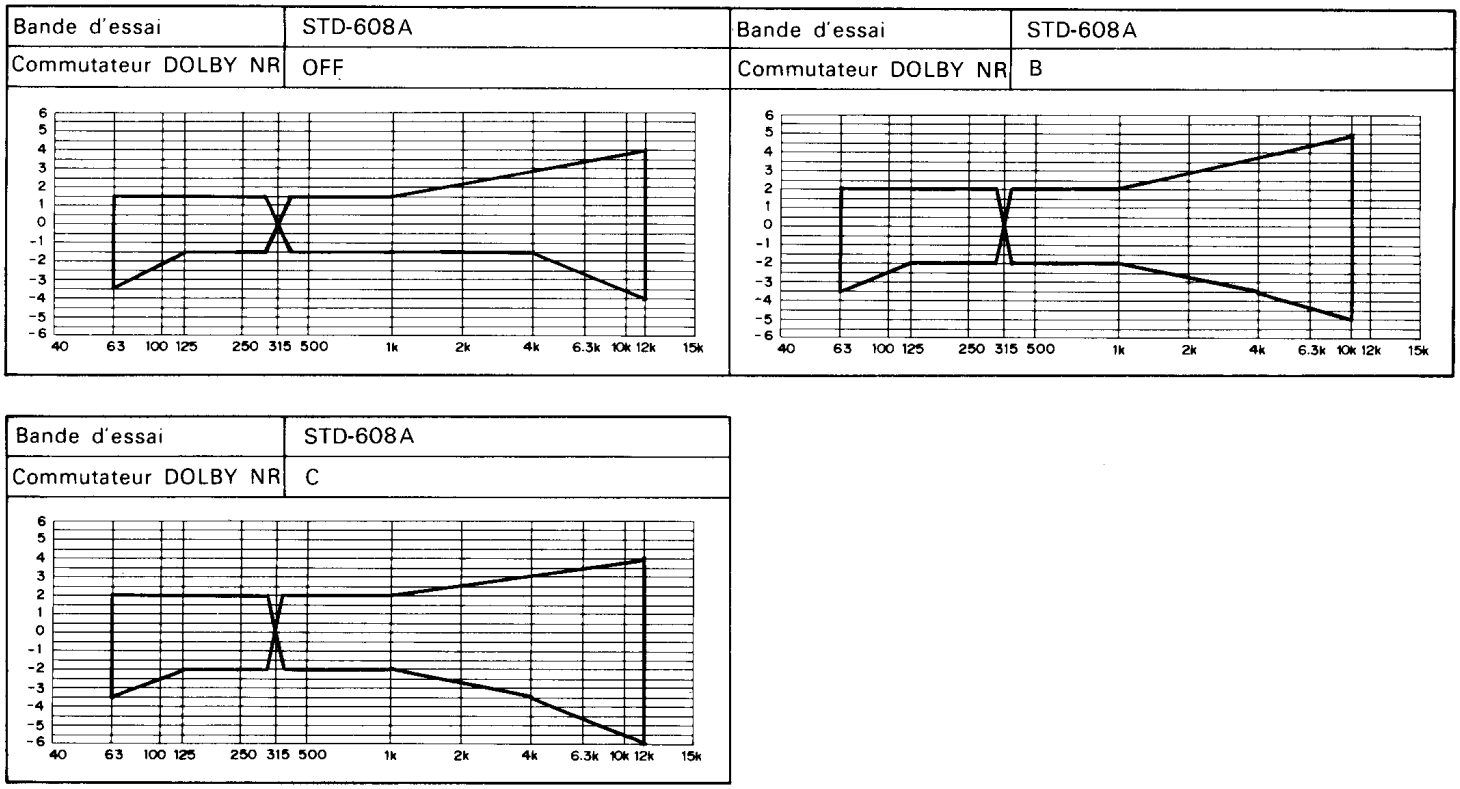

Fig. 13-7-1 Zone de résponse en fréquence admissible de lecture et dénregistrement (NORM).

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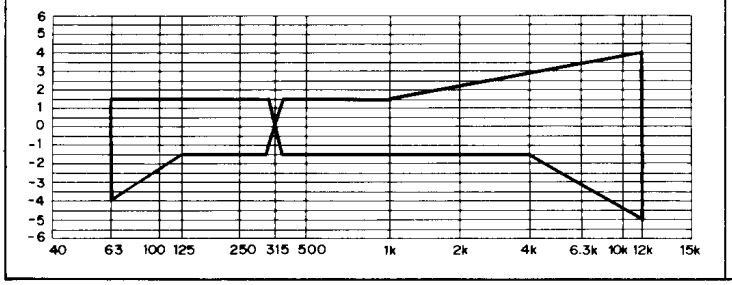
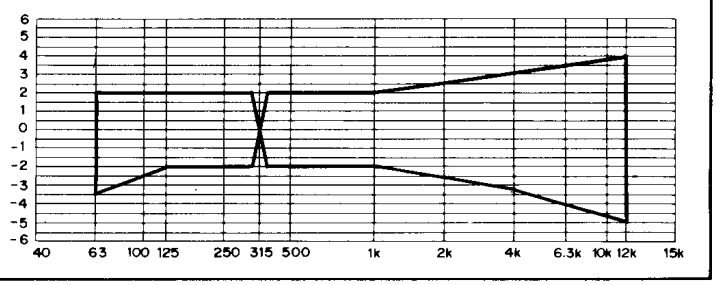
Bande d'essai	STD-620
Commutateur DOLBY NR	OFF



Bande d'essai	STD-620
Commutateur DOLBY NR	B



Bande d'essai	STD-620
Commutateur DOLBY NR	C

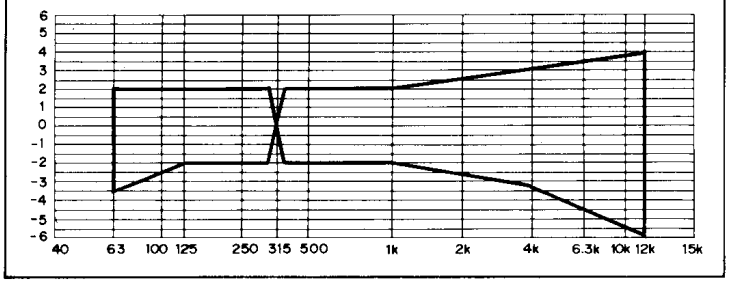
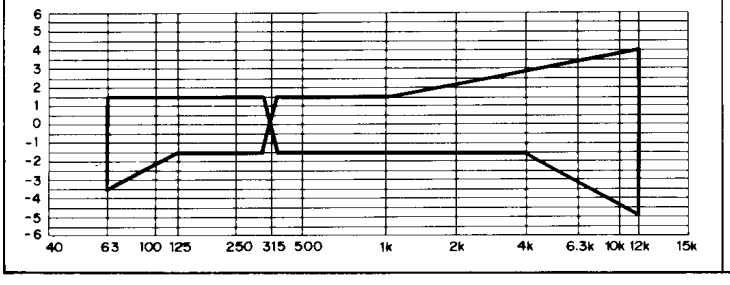
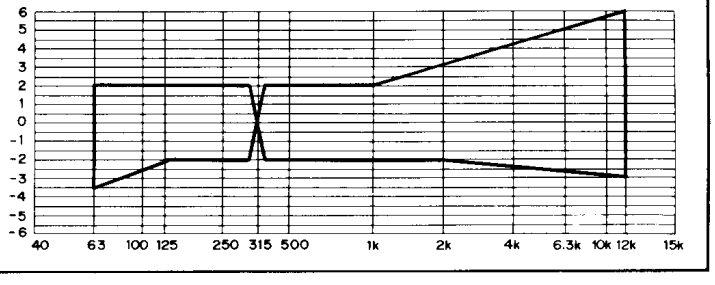


Fig. 13-7-2 Zone de résponse en fréquence admissible de lecture et dénregistrement (CrO_2).

Bande d'essai	STD-610
Commutateur DOLBY NR	OFF



Bande d'essai	STD-610
Commutateur DOLBY NR	B



Bande d'essai	STD-610
Commutateur DOLBY NR	C

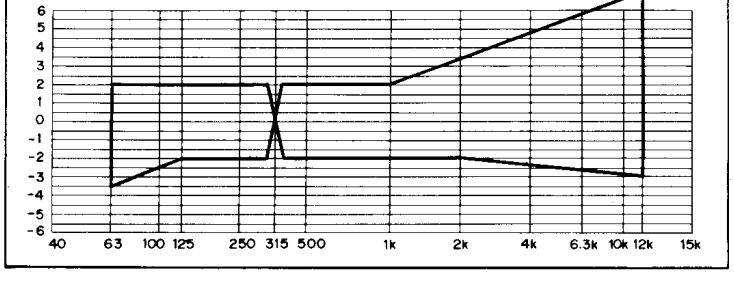


Fig. 13-7-3 Zone de résponse en fréquence admissible de lecture et denregistrement (METAL).

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13. AJUSTE

13.1 AJUSTE MECANICO

1. Ajuste de la velocidad de la cinta (El ajuste de la velocidad normal debrá ser llevado a cabo después del adjuste de la velocidad doble.)

Modo	Cinta de prueba	Posición de ajuste	Valor de especificación (frecuencia de reproducción)
PLAY	Reproducir la STD-301 (3kHz)	Control del resistor variable	3000Hz ± 5Hz
Utiliser	Utiliser la bande magnétique STD-301 (3 kHz) (APPARELL I)	VR406 (Velocidad doble)	Ajuste de modo que lleguen a ser 607 Hz. (Ponga en corto circuito TP401 y TP402 después de que el bolón de PLAY ha sido presionado.)
		VR405 (Velocidad normal)	Ajuste de modo que lleguen a ser 3045Hz.(Presione PLAY SW.)
	Utiliser la bande magnétique STD-301 (3 kHz) (APPARELL II)	VR404 (Velocidad doble)	Ajuste de modo que lleguen a ser 6030 Hz. (Ponga en corto circuito TP401 y TP402 después de que el botón de PLAY ha sido presionado.)
		VR403 (Velocidad normal)	Ajuste de modo que lleguen a ser 3015 Hz. (Presione PLAY SW. después de que el botón de PLAY ha sido presionado.)

2. Ajuste del transporte de la cinta

Modo	Posición de ajuste	Especificaciones
Hacia delante	Tornillo de ajuste del acimut de FWD.	Reproduzca 10 kHz a −20 dB con la cinta de prueba STD-331B Ajuste de modo que la señal de salida en las puntas de prueba individuales de TP1 y TP2 llegue al máximo.
Hacia atrás	Tornillo de ajuste del acimut de REV.	
Cargar un casete con espejo y levantar la base de las cabezas con la mano de modo que la cinta toque la guía de cinta.		
STOP	Tornillos de ajuste de la alture (izquierdo y derecho)	Comprobar (visualmente) que la cinta esté situada en el centro de la guía de cinta.
FWD PLAY	Tornillo de ajuste de la altura de FWD.	Ajustar la primera guía de cinta para asegurar que no hay desperfectos de la cinta.
REV PLAY	Tornillo de ajuste de la altura de REV.	

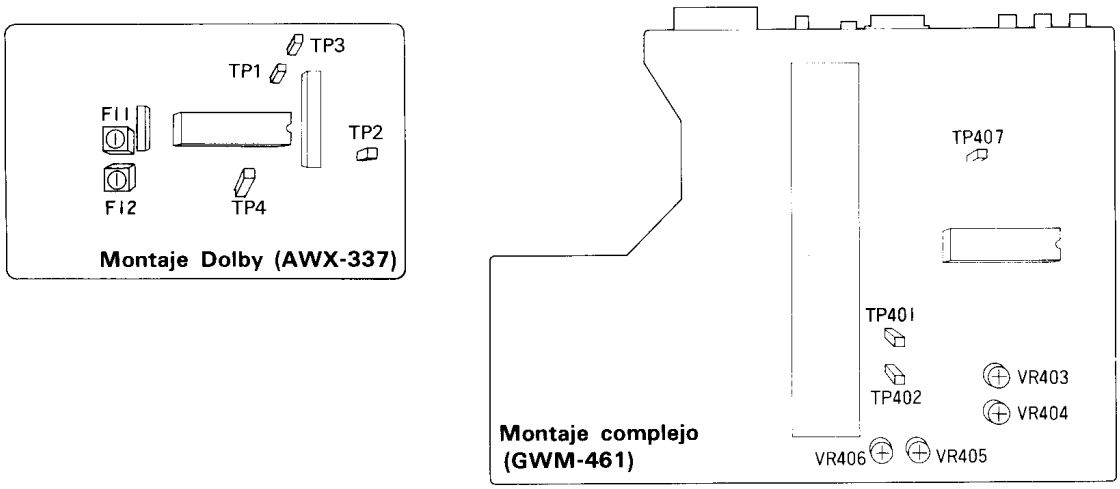

Fig. 13-1 Ajustamiento de la velocidad de cinta

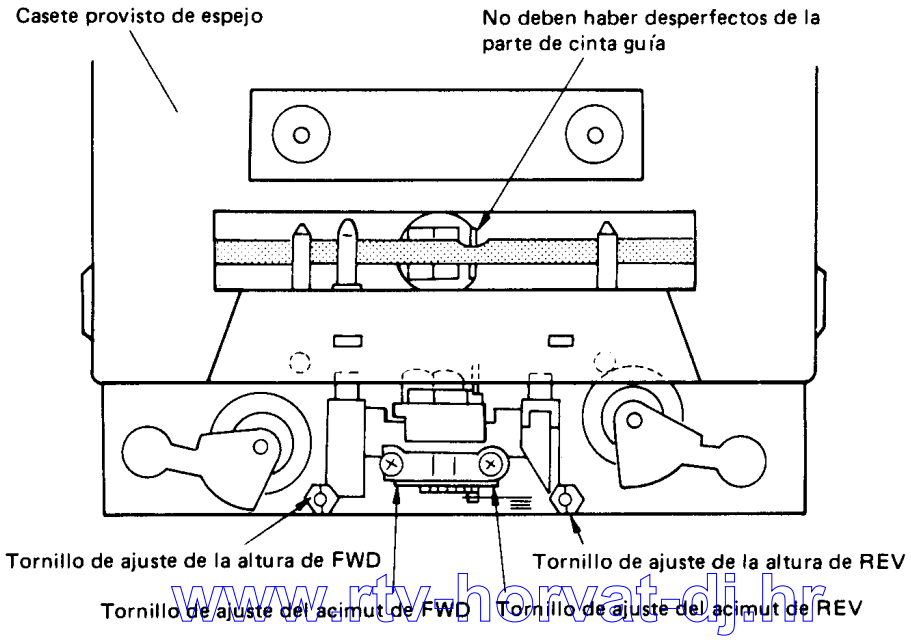

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Fig. 13-2 Ajustamiento del pase de cinta

13.2 AJUSTES ELECTRICOS

Condiciones de ajuste

1. Los ajustes mecánicos deben terminarse primero.
2. Limpiar y desimanar la cabeza de grabación.
3. Dejar que el magnetófono se precaliente por unos minutos antes de iniciar los ajustes eléctricos.
4. La señal de referencia es de 0dB=1Vrms.
5. A menos que se especifique de otra manera, los siguientes interruptores deben estar en las posiciones indicadas:
   DOLBY NR : OFF

Cintas de prueba

STD-331B : Para ajustes de reproducción (Referirse a la (See Fig. 13-1)
STD-608A : Cinta NORMAL en blanco.
STD-620 : Cinta CrO_2 en blanco.
STD-610 : Cinta de METAL en blanco.

Procedimientos de ajuste

Magnetófono I

1. Ajuste del acimut de la cabeza.
2. Ajuste del nivel de reproducción.

Magnetófono II

1. Ajuste del acimut de la cabeza.
2. Ajuste del nivel de repoducción.
3. Respuesta en frecuencia de grabación/reproducción.
4. Ajuste del nivel de grabación.

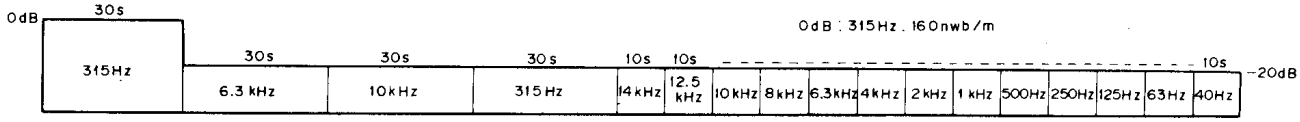

Fig. 13-3 Cinta de prueba STD-331B

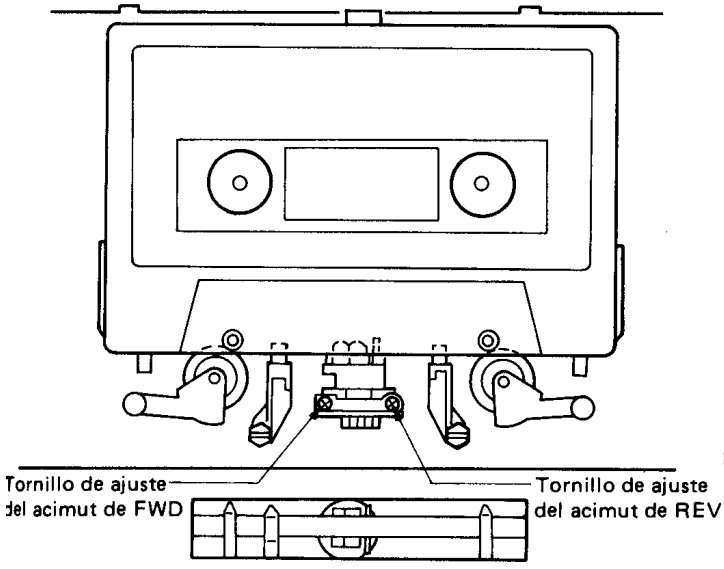

Fig. 13-4 Ajuste azimutal de la cabeza de grabación

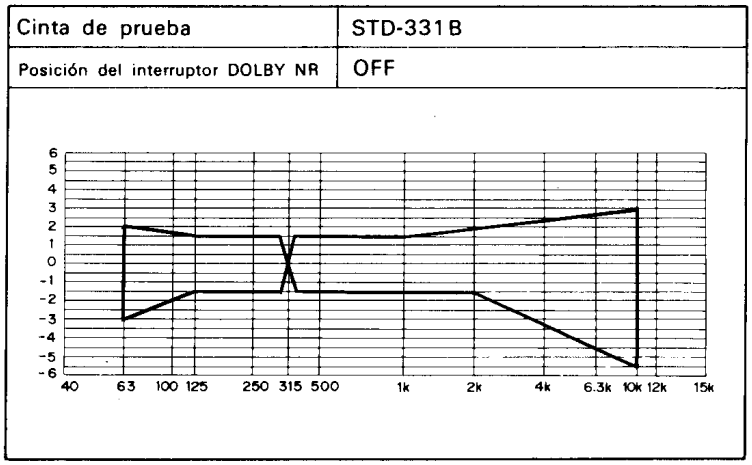

Fig. 13-5 Zona de respuesta de frecuencia de reproducción permisible

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• AJUSTE DEL MAGNETOFONO I (Sin la función del selector automático de cintas)

1. Ajuste del acimut de la cabeza • Ajustar VR501 y VR502 (Ajuste del nivel de reproducción) a las posiciones MAX (Girados completamente a la derecha)

Selector de cintas	Modo	Señal de entrada/cinta de prueba	Lugar de ajuste	Lugar de medición	Valor de ajuste	Observaciones
NORM	PLAY	Reproducir la parte de 10kHz −20dB de la cinta de prueba STD-331B.	Tornillo de ajuste del acimut de la cabeza. (Fig. 13-4)	TP1 (L) TP2 (R)	Nivel máximo de señal de reproducción.	Aplicar el "enclavamiento del tornillo" después de finalizar el ajuste.

2. Ajuste del nivel de reproducción • Ajustar con precisión porque este ajuste establece el nivel del sistema Dolby para reproducción.

Selector de cintas	Modo	Señal de entrada/cinta de prueba	Lugar de ajuste	Lugar de medición	Valor de ajuste	Observaciones
NORM	PLAY	Reproducir la parte de 315Hz 0dB de la cinta de prueba STD-331B.	VR501 (L) VR502 (R)	TP1 (L) TP2 (R)	−13 dBm (175 mV)	

• AJUSTE DEL MAGNETOFONO II (Con la función del selector automático de cintas)

1. Ajuste del acimut de la cabeza • Ajustar VR503 y VR504 (Ajuste del nivel de reproducción) a las posiciones MAX (Girados completamente a la derecha)

Selector de cintas	Modo	Señal de entrada/cinta de prueba	Lugar de ajuste	Lugar de medición	Valor de ajuste	Observaciones
NORM	PLAY	Reproducir la parte de 10kHz −20dB de la cinta de prueba STD-331B.	Tornillo de ajuste del acimut de la cabeza. (Fig. 13-4)	TP1 (L) TP2 (R)	Nivel máximo de la señal de reproducción.	Aplicar el "enclavamiento del tornillo "después de terminar el ajuste.

2. Ajuste del nivel de reproducción • Ajustar con precisión porque este aduste establece el nivel del sistema Dolby de reproducción.

Selector de cintas	Modo	Señal de entrada/cinta de prueba	Lugar de ajuste	Lugar de medición	Valor de ajuste	Observaciones
NORM	PLAY	Reproducir la parte de 315Hz 0dBv de la cinta de prueba STD-331B.	VR503 (L) VR504 (R)	TP1 (L) TP2 (R)	−13 dBm (175 mV)	

3. Ajuste de la respuesta en frecuencia para grabación/reproducción * Como esta regulación ajusta la polarización de grabación, se deberá tener cuidado para no deteriorar el factor de distorsión por la subpolarización.

Selector de cintas	Modo	Señal de entrada/cinta de prueba		Lugar de ajuste	Lugar de medición	Valor de ajuste	Observaciones
NORM	REC	Aplique una señal de 315 Hz a las terminales CD.	1	Nivel de señal de entrada.	TP1 (L) TP2 (R)	−33 dBm (17.5 mV)	Fije el control de nivel de entrada a la posición central (panel trasero).
NORM	REC/PLAY	Grabar las señales de 315Hz y de 10 kHz en la cinta de prueba STD-608A, y luego reproducirlas.	2	VR507 (L) VR508 (R)	TP1 (L) TP2 (R)	Repetir los procesos de grabación y reproducción y ajustar consecuentemente hasta que el nivel de reproducción de 10 kHz esté dentro de 0 ± 0,5dB del nivel de 315Hz.	

• Cambiar la cinta de prueba y la posición del interruptor DOLBY NR y comprobar que la zona de respuesta en frecuencia indicada en la Fig. 13-7 se satisfaga.

4. Ajuste del nivel de grabación

Selector de cintas	Modo	Señal de entrada/cinta de prueba		Lugar de ajuste	Lugar de medición	Valor de ajuste	Observaciones
NORM	REC	Aplique una señal de 315 Hz a las terminales CD.	1	Nivel de señal de entrada.	TP1 (L) TP2 (R)	−13 dBm (175 mV)	
NORM	REC/PLAY	Grabar la señal de 315Hz en la cinta de prueba STD-608A y reproducirlas.	2	VR505 (L) VR506 (R)	TP1 (L) TP2 (R)	Repetir los procesos de grabaación y ajustar coinsecuentemente hasta que se obtenga un nevel de reproducción de −23dBv (71 mV)	
METAL	REC/PLAY	Grabar la señal de 315Hz en la cinta de prueba STD-610 y reproducirla.	3		TP1 (L) TP2 (R)	Comprobar que el nivel de reproducción de 315Hz sea de −23dBv ± 2dB.	

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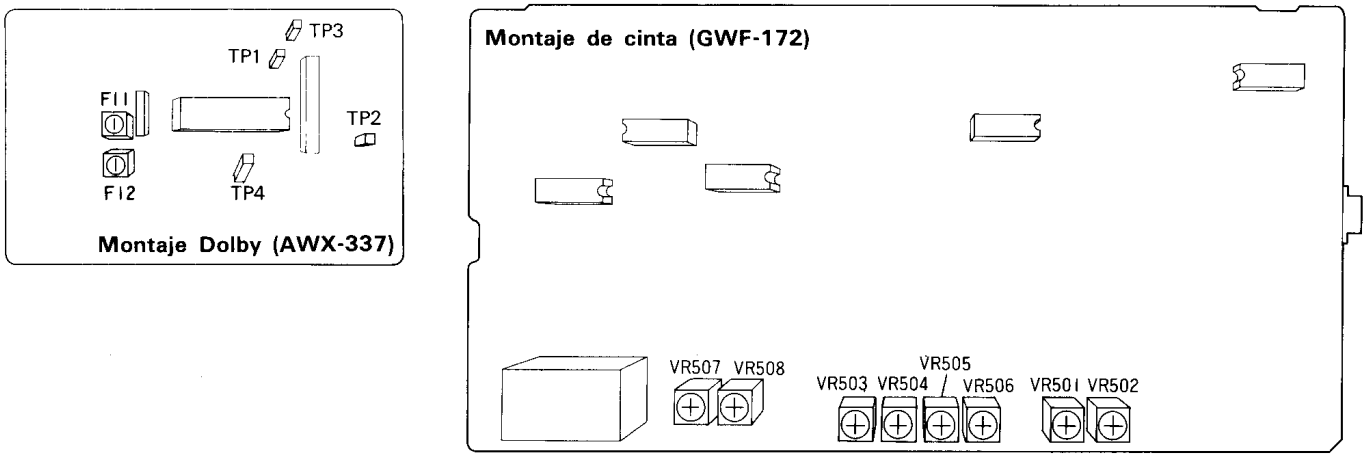
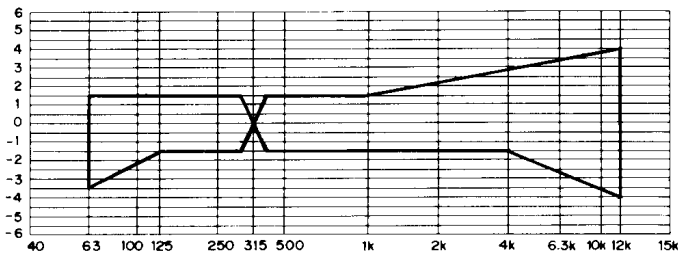
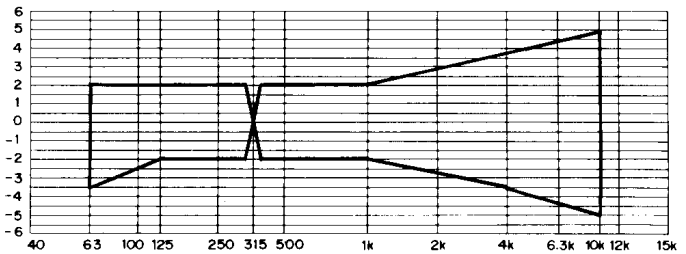


Fig. 13-6 Ajuste del magnetofono I y II.

Cinta de prueba	STD-608A
Interruptor DOLBY NR	OFF



Cinta de prueba	STD-608A
Interruptor DOLBY NR	B



Cinta de prueba	STD-608A
Interruptor DOLBY NR	C

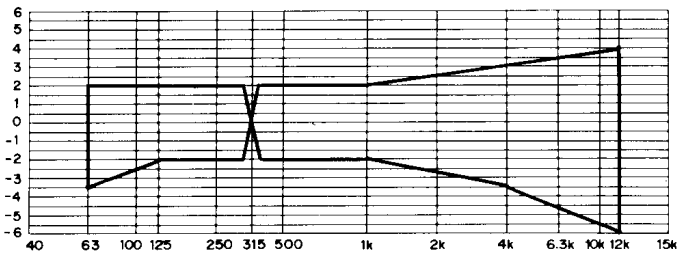


Fig. 13-7-1 Zona de respuesta de frecuencia de grabación y reproducción permisible (NORM)

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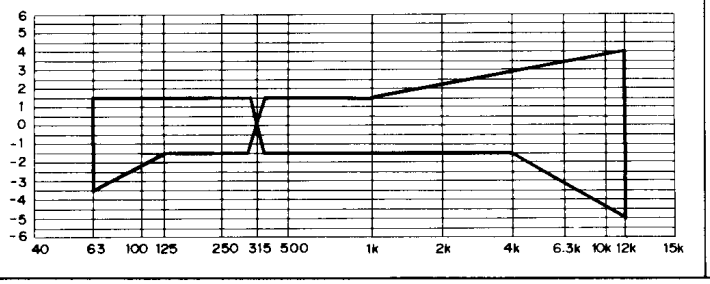
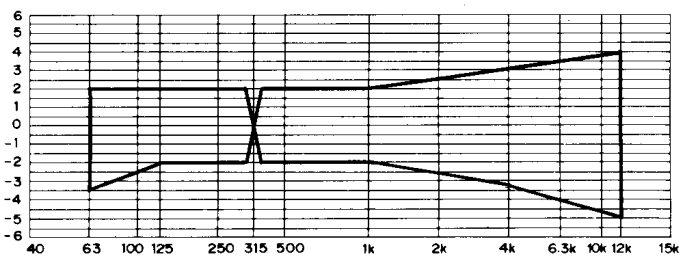
Cinta de prueba	STD-620
Interruptor DOLBY NR	OFF



Cinta de prueba	STD-620
Interruptor DOLBY NR	B



Cinta de prueba	STD-620
Interruptor DOLBY NR	C

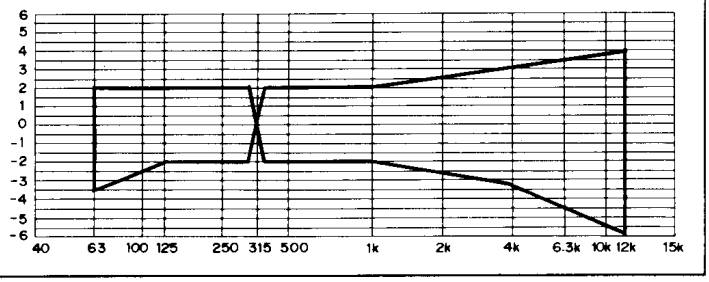
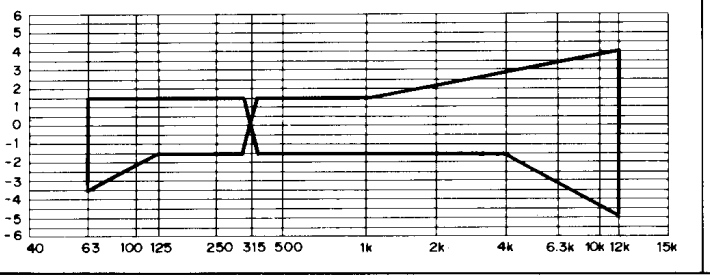
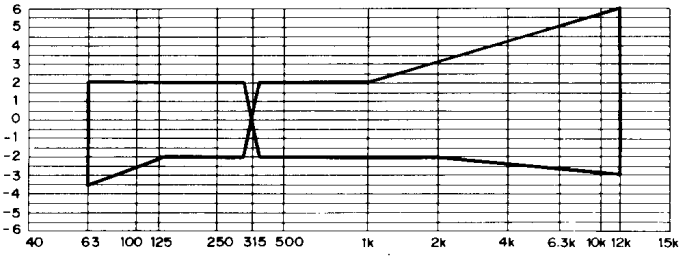


Fig. 13-7-2 Zona de respuesta de frecuencia de grabación y reproducción permisible (CrO_2)

Cinta de prueba	STD-610
Interruptor DOLBY NR	OFF



Cinta de prueba	STD-610
Interruptor DOLBY NR	B



Cinta de prueba	STD-610
Interruptor DOLBY NR	C

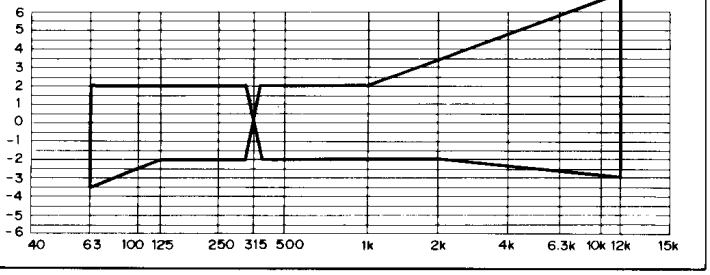


Fig. 13-7-3 Zona de respuesta de frecuencia de grabación y reproducción permisible (METAL)

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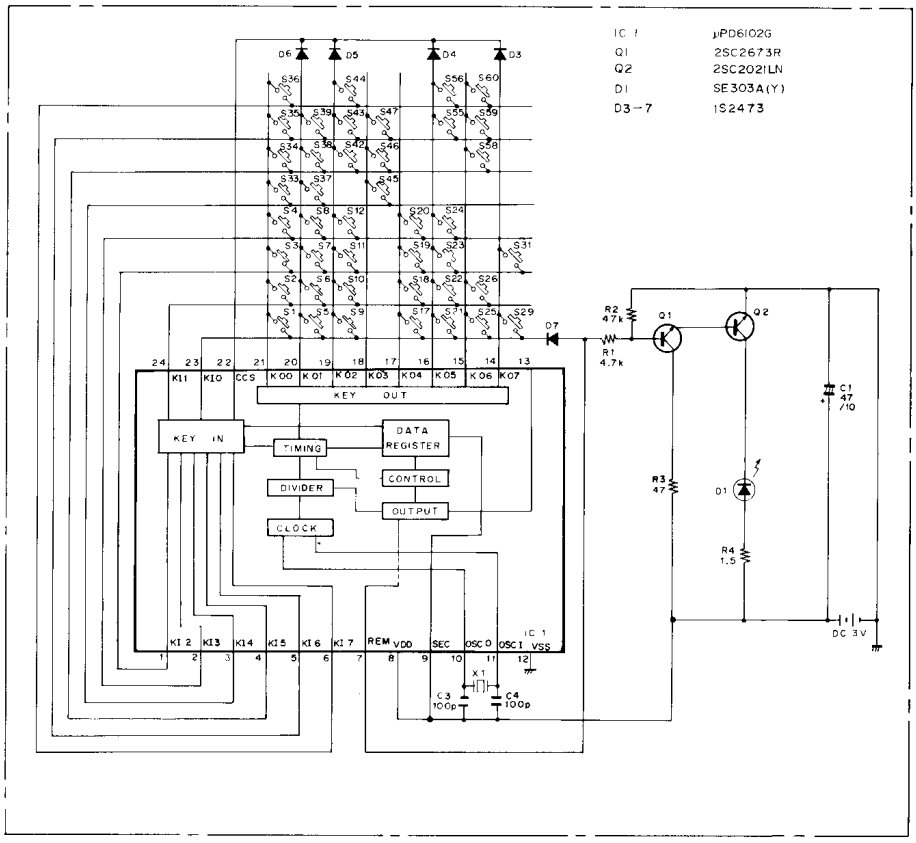
14. REMOTE CONTROL (AXD-015)

SCHEMATIC DIAGRAM



1. RESISTORS:
   Indicated in Ω, 1/4W, 1/6W and 1/8W, ±5% tolerance unless otherwise noted k; kΩ, M; MΩ, (F); ±1%, (G); ±2%, (K); ±10%, (M); ±20% tolerance
2. CAPACITORS:
   Indicated in capacity (μF)/voltage (V) unless otherwise noted p; pF. Indication without voltage is 50V except electrolytic capacitor.
3. VOLTAGE, CURRENT:
   ; DC voltage (V) at no input signal Value in ( ) is DC voltage at rated power.
   ⇦ mA; DC current at no input signal
4. OTHERS:
   ➡ : Signal route.
   ⊘ : Adjusting point.
   The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
   ※ marked capacitors and resistors have parts unmbers.
   The underlined indicates the switch position.

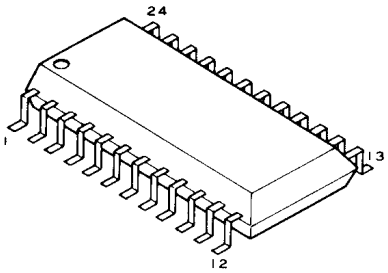
   This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.
5. SWITCHES:

THE UNDERLINED INDICATES THE SWITCH POSITION

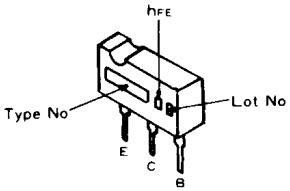
S1	CH 1	S31	MUTING
S2	CH 2	S33	CH 11
S3	CH 3	S34	CH 12
S4	CH 4	S35	CD STOP
S5	CH 5	S36	CD PAUSE
S6	CH 6	S37	CD PLAY
S7	CH 7	S38	CD TRACK SEARCH FWD
S8	CH 8	S39	CD TRACK SEARCH REV
S9	CH 9	S42	TUNER BAND
S10	CH 10	S43	+
S11	VOL-UP	S44	−
S12	VOL-DOWN	S45	FUNC VIDEO
S17	TAPE 2 F·F	S46	PLAYER STOP
S18	TAPE 2 REW	S47	PLAYER START
S19	TAPE 2 REC MUTE	S55	TAPE 1 REW
S20	TAPE 1 PROGRAM	S56	TAPE 1 F·F
S21	TAPE 2 REC	S58	TAPE 1 REV PLAY
S22	TAPE 2 REV. PLAY	S59	TAPE 1 FWD PLAY
S23	TAPE 2 STOP	S60	TAPE 1 STOP
S24	TAPE 2 FWD PLAY		
S25	TAPE 2 PAUSE		
S26	SLEEP		
S29	POWER		

External Appearance of Transistors and ICs

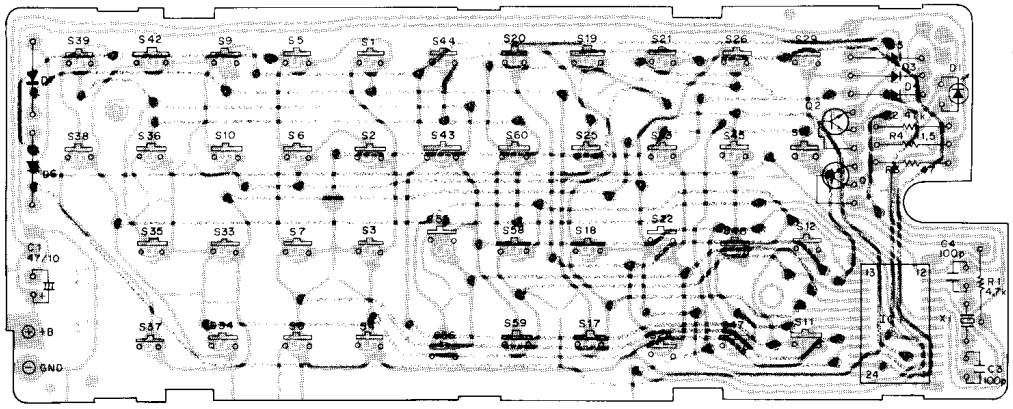
μPD6102G



2SC2673R



P.C. BOARD PATTERN



IC1 μPD6102G D1 SE303A(Y)

Q1 2SC2673R D3-7 1S2473

Q2 2SC2021LN

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ELECTRICAL PARTS LIST

NOTES:

- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*
  Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560Ω	*56 × 10¹*	*561 . . . . .*	*RD¼PS 5 6 1 J*
47kΩ	*47 × 10³*	*473 . . . . .*	*RD¼PS 4 7 3 J*
0.5Ω	*0R5 . . . . . .*		*RN2H 0 R 5 K*
1Ω	*010 . . . . . .*		*RS1P 0 1 0 K*

  Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	*562 × 10¹*	*5621 . . . .*	*RN¼SR 5 6 2 1 F*

- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★ .*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC1	μPD6102G
★★	Q1	2SC2673R
★★	Q2	2SC2021LN
★	D1 LED	SE303A (Y)
★	D3—D7	1S2473

CAPACITORS

Mark	Symbol & Description	Part No.
	C1	CEJA470M10
	C2, C3	CCDCH470J10

RESISTORS

NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
	All resistors	RD1/4PM□□□J

OTHER

Mark	Symbol & Description	Part No.
★	X1 Ceramic resonator	CSD500EB

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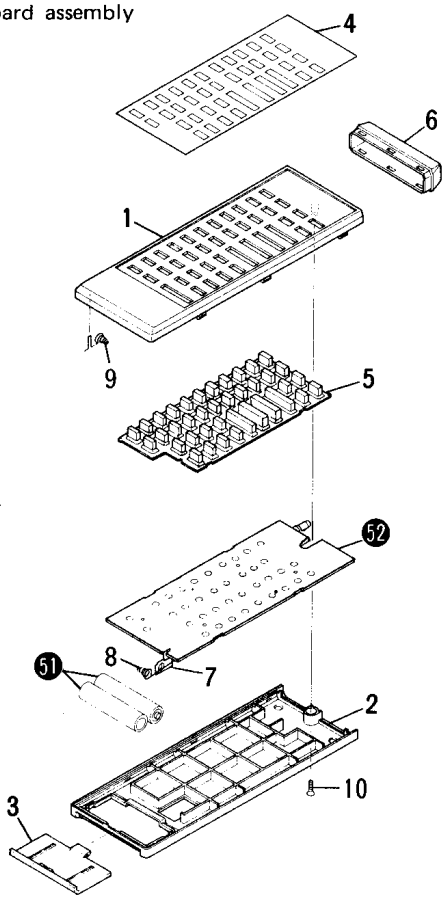
EXPLODED VIEW AND PARTS LIST

NOTES:

- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

Part List

Mark	No.	Part No.	Description
	1	PNY-434	Case (A)
	2	PNY-435	Case (B)
	3	VNK-548	Cover
	4	AZA1001	Aluminum plate
	5	AZA-063	Rubber sheet
	6	PNY-436	Filter
	7	AZK-005	Battery terminal
	8	AZK-006	Battery spring
	9	AZK-007	Battery spring
	10	CRZ20P080FZK	Screw
	51		Battery
	52		P.C. Board assembly



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Command Code Description

No.	Command Code	Description
1	IC 9C	POWER ON/OFF
2	IE 9E	MUTING
3	0A 8A	VOLUME UP
4	0B 8B	VOLUME DOWN
5	I9 99	SLEEP TIMER →90→60→30→OFF
6	4C	FUNCTION VIDEO
7	4D	PLAYER STOP
8	4E	PLAYER START
9	10	DECK-II FF
10	11	DECK-II REW
11	12	DECK-II REC MUTE
12	14	DECK-II REC
13	15	DECK-II REVERSE PLAY
14	16	DECK-II STOP
15	17	DECK-II FORWARD PLAY
16	18	DECK-II PAUSE
17	13	DECK-I PROGRAM
18	56	DECK-I REW
19	57	DECK-I FF
20	59	DECK-I REVERSE PLAY
21	5A	DECK-I FORWARD PLAY
22	5B	DECK-I STOP
23	00	TUNER ST-1, PROGRAM No-1
24	01	TUNER ST-2, PROGRAM No-2
25	02	TUNER ST-3, PROGRAM No-3
26	03	TUNER ST-4, PROGRAM No-4
27	04	TUNER ST-5, PROGRAM No-5
28	05	TUNER ST-6, PROGRAM No-6
29	06	TUNER ST-7, PROGRAM No-7
30	07	TUNER ST-8, PROGRAM No-8
31	08	TUNER ST-9, PROGRAM No-9
32	09	TUNER ST-10, PROGRAM No-10
33	40	TUNER ST-11, PROGRAM No-11
34	41	TUNER ST-12, PROGRAM No-12
35	49	TUNER BAND SELECT
36	4A	TUNER AM/FM FREQUENCY UP
37	4B	AM/FM FREQUENCY DOWN
38	42	CD STOP
39	43	CD PAUSE
40	44	CD PLAY

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No.	Command Code	Description
41	45	CD TRACK SEARCH FORWARD
42	46	CD TRACK SEARCH REVERSE

(No. merely serves as reference and is by no means related to the key arrangement in practice.)

Compo codes are all A6. Input to any Compo code other than above shall be sleeved with Co set to L.

As for keys of 7, 8, 23 to 42, data are re-transmitted after converted into compo code of corresponding component.

No.	Converted Compo Code
7, 8	A3
23 — 37	A4
38 — 42	A2

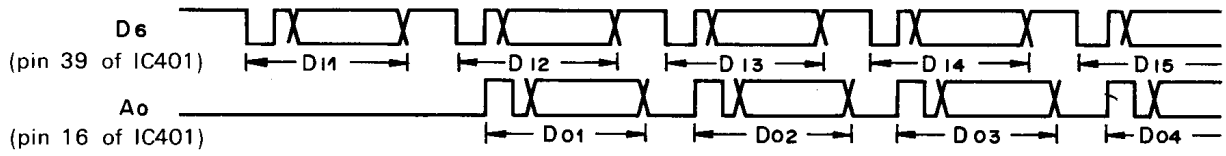
Also, the equipment is provided with AUTO FUNCTION thereby the function is modified by means of the following keys:

No.	Function
13, 15, 17, 20, 21	TAPE
40	CD
23 — 37	TUNER
8	PHONO

FUNCTION cannot be modified during the DECK-II recording. Also, KEY No.17 turns the FUNCTION display to "PROGRAM".

Remote control data re-transmission

If data DI1 received should be re-transmitted, and after the DI2 reader portion is detected, DI1 is converted and data D02, D03, . . . , which are the same as D01 which is a conversion of DI1, are kept transmitted.



CX20106A

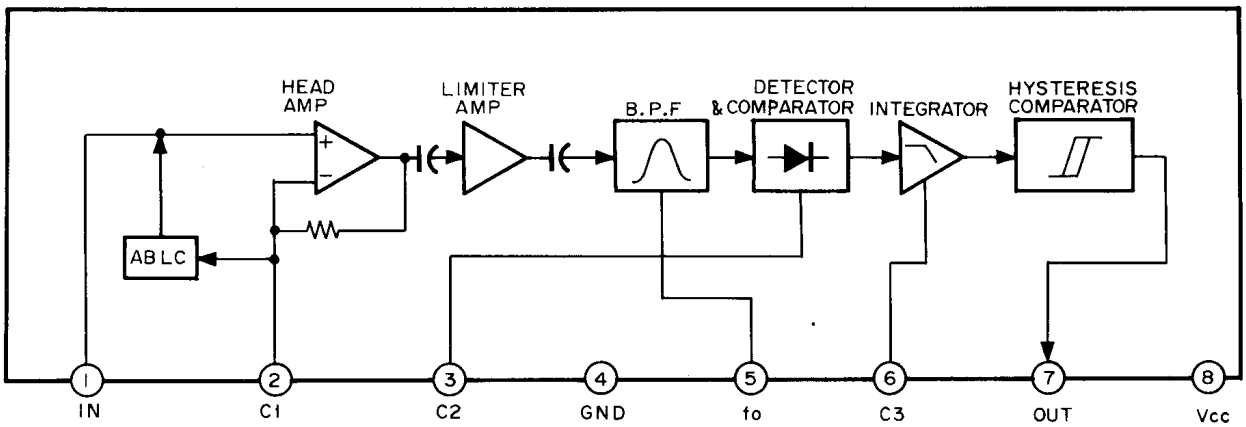


Fig. 14-1 CX20106A block diagram

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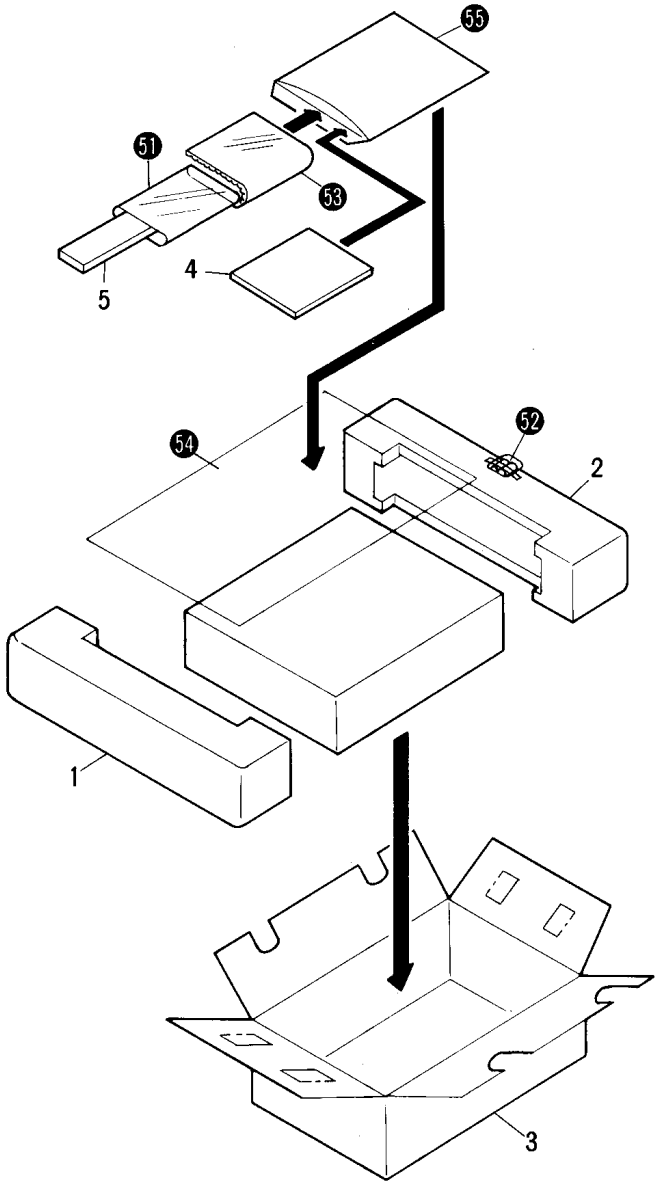
15. PACKING

Parts List

Mark	No.	Part No.	Description
	1	AHA-421	Front pad
	2	AHA-422	Rear pad
	3	AHE-694	Packing case
	4	ARE-160	Operating instruction (English/German/French/ Italian)
	5	AXD-015	Remote control
	51		Packing sheet
	52		Battery assembly
	53		Air cap
	54		Packing sheet
	55		Operating instructions bag



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16. FOR HB AND S TYPES

The DC-X303Z(BK)/S and HB types are the same as the DC-X303Z(BK)/HE type with the exception of the following sections.

Mark	Symbol & Description	Part No. DC-X303Z(BK) /HE type	Part No. DC-X303Z(BK) /S type	Part No. DC-X303Z(BK) /HB type	Remarks
	Complex assembly	GWM-461	GWM-460	GWM-461	
	PHONES assembly	Non supply	Non supply	Non supply	
	Dolby (B/C) assembly	AWX-337	AWX-337	AWX-337*	
⚠ ★	T1 Power transformer (AC220/240V)	ATS-290	.....	ATS-290	
⚠ ★	T1 Power transformer (AC110/120/220/240V)	.....	ATS-291	.....	
⚠	3P AC socket (AC outlet)	AKP-502	AKP-515	AKP-505	
⚠ ★★	S1 Voltage selector	.....	AKX-507	.....	
⚠ ★★	S1 Slide switch (Power)	ASH-501	.....	ASH-501	
⚠ ★★	FU1 Fuse (T 1A)	AEK-402	.....	AEK-508	
⚠ ★★	FU2 Fuse (T 2.5A)	AEK-403	.....	AEK-512	
⚠ ★★	FU1,FU2 Fuse (1.6A/125V)	.....	AEK-121	.....	
⚠ ★★	FU101 Fuse (T 2A)	AEK-017	.....	AEK-511	
⚠ ★★	FU101 Fuse (2A/125V)	.....	AEK-122	.....	
	R2 (75Ω, 10W)	ACN-147	.....	ACN-147	
	R2 (120Ω, 10W)	.....	ACN-134	....	
	Front panel assembly	ANY-204	ANY-206	ANY-204	
	Knob (SPEAKER)	.....	AAY-403	.....	
	Strain relief	AEC-882	.....	AEC-882	
⚠	AC power cord	ADG-041	ADG-087	ADG-051	
	Screw	VMZ30P060FZK	.....	VMZ30P060FZK	
	Operating instruction (English, German, French, Italian)	ARE-160	.....	.....	
	Operating instruction (English)	.....	ARB-726	.....	
	Operating instruction (Spanish – auxiliary)	.....	ARC-118	.....	
	Operating instruction (English)	.....	.....	ARB-718	

* Regarding the dolby (B/C) assembly (AWX-337), the board differs with the HE and HB types and the S type.

PHONES ASSEMBLY

The PHONES assembly (S type) is the same as the PHONES assembly (HE type) with the exception of the following sections.

Mark	Symbol & Description	Part No. HE and HB types	Part No. S types	Remarks
★★	S201 Push switch (SPEAKER)	.....	SUJ4LXYS	
	R217, R218	.....	RD1/2PM681J	
	R219, R220	RD1/2PM331J	RD1/2PM681J	
	Mini jack (PHONES)	AKN-208	AKN-211	

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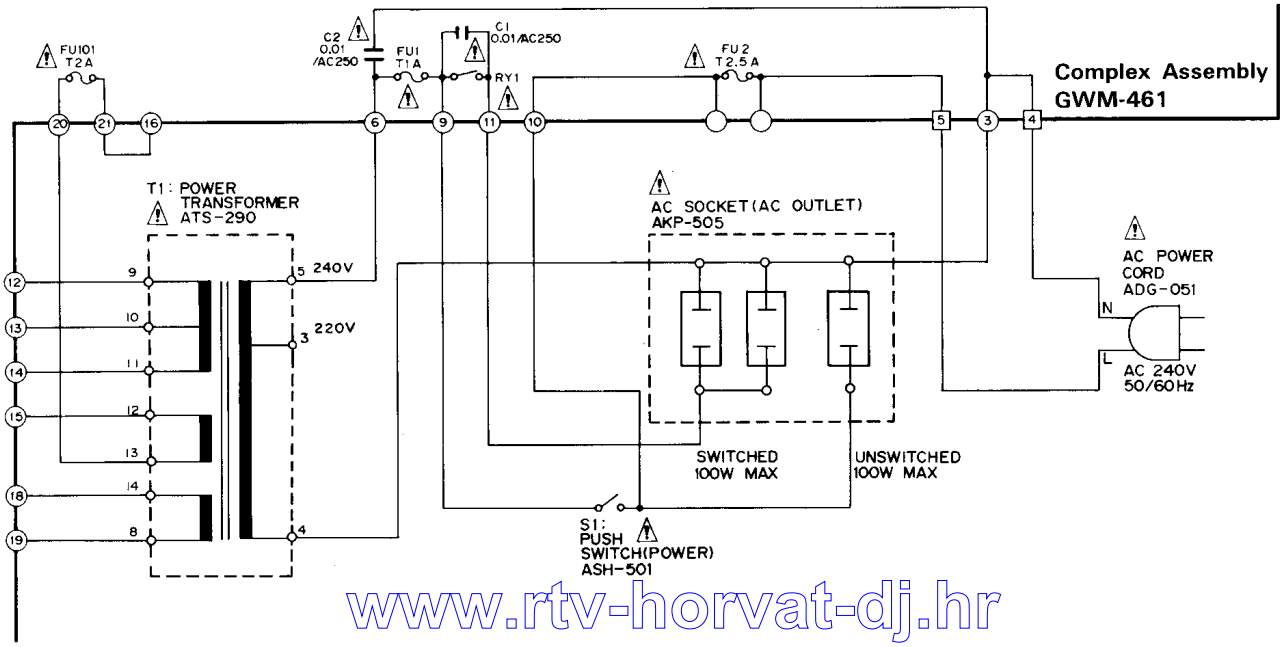
COMPLEX ASSEMBLY (GWM-460)

The complex assembly (GWM-460) is the same as the (GWM-461) with the exception of the following sections.

Mark	Symbol & Description	Part No.		Remarks
		GWM-461	GWM-460	
★★	IC201	STK4141-2S	STK4191-5S	
★★	Q425	.....	RN2203	
★★	Q420, Q422	.....	2SA933S	
★★	Q421	.....	2SC1740S	
★	D105	3D4B41	RB402	
★	D419	.....	ISS131	
	C105, C106 (5600/42V)	ACH-292	ACH-258	
	C108	CEAS102M16	CEAS222M16	
	C214	CEANP470M35	CEANP470M50	
	C215, C216	CEAS470M25	CEAS470M35	
	C429	.....	CEAS470M10	
	R1 (2.2MΩ)	.....	ACN-209	
	R104, R105	RS2LMF121J	RS2LMF181J	
	R254	RD1/8PM222J	RD1/8PM122J	
	R253	RD1/8PM332J	RD1/8PM823J	
	R209, R210	RD1/8PM823J	RD1/8PM104J	
	R151	RS2LMF121J	RS2LMF181J	
	R139	RD1/8PM562J	RD1/8PM472J	
	R138	RD1/8PM182J	RD1/8PM222J	
	R107	RD1/2PM182J	RD1/2PM272J	
	R209, R210	.....	RS2LMR22J	
	R339, R340, R465, R474, R463, R464, R335, R336	.....	RD1/8PM□□□J	
	R149	.....	RD1/2PM330J	
	R331, R332, R209, R210	RD1/8PM□□□J	.....	
	R148, R150	RD1/2PM181J	.....	
	8P Terminal (SPEAKER)	.....	AKE-111	
	4P Terminal (SPEAKER)	AKE-109	.....	

SCHEMATIC DIAGRAM FOR HB TYPE



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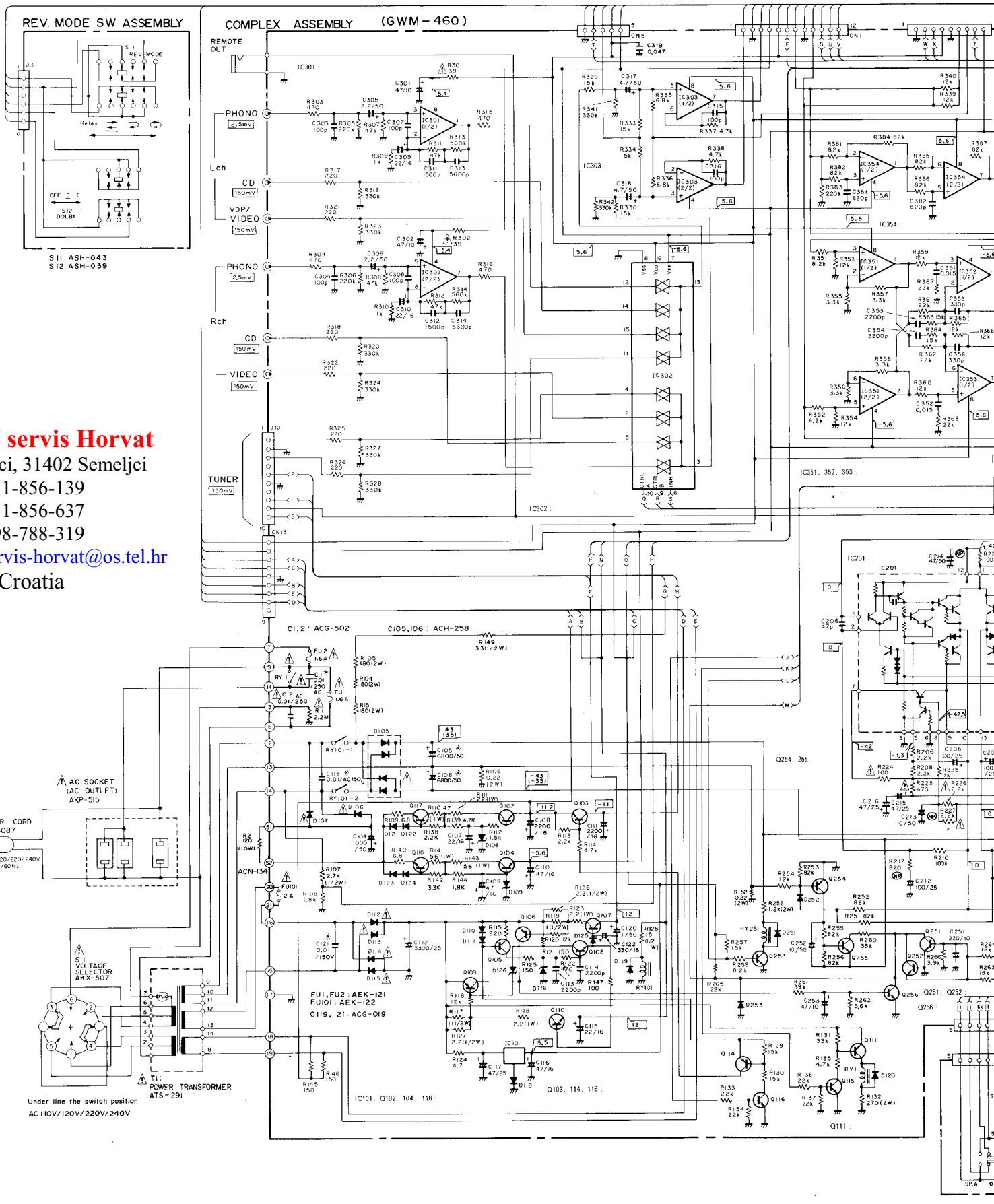
SCHEMATIC DIAGRAM FOR S TYPE



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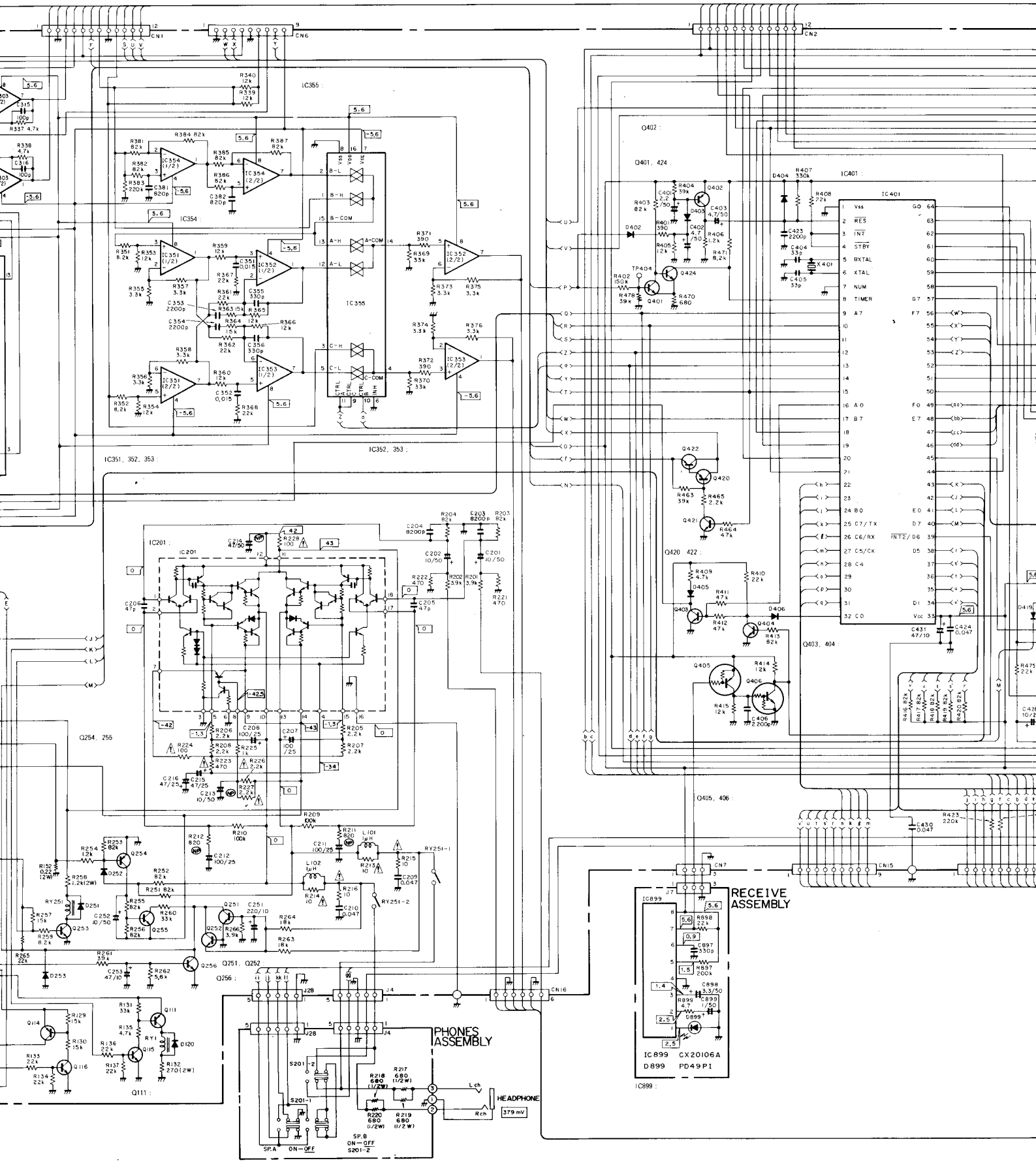

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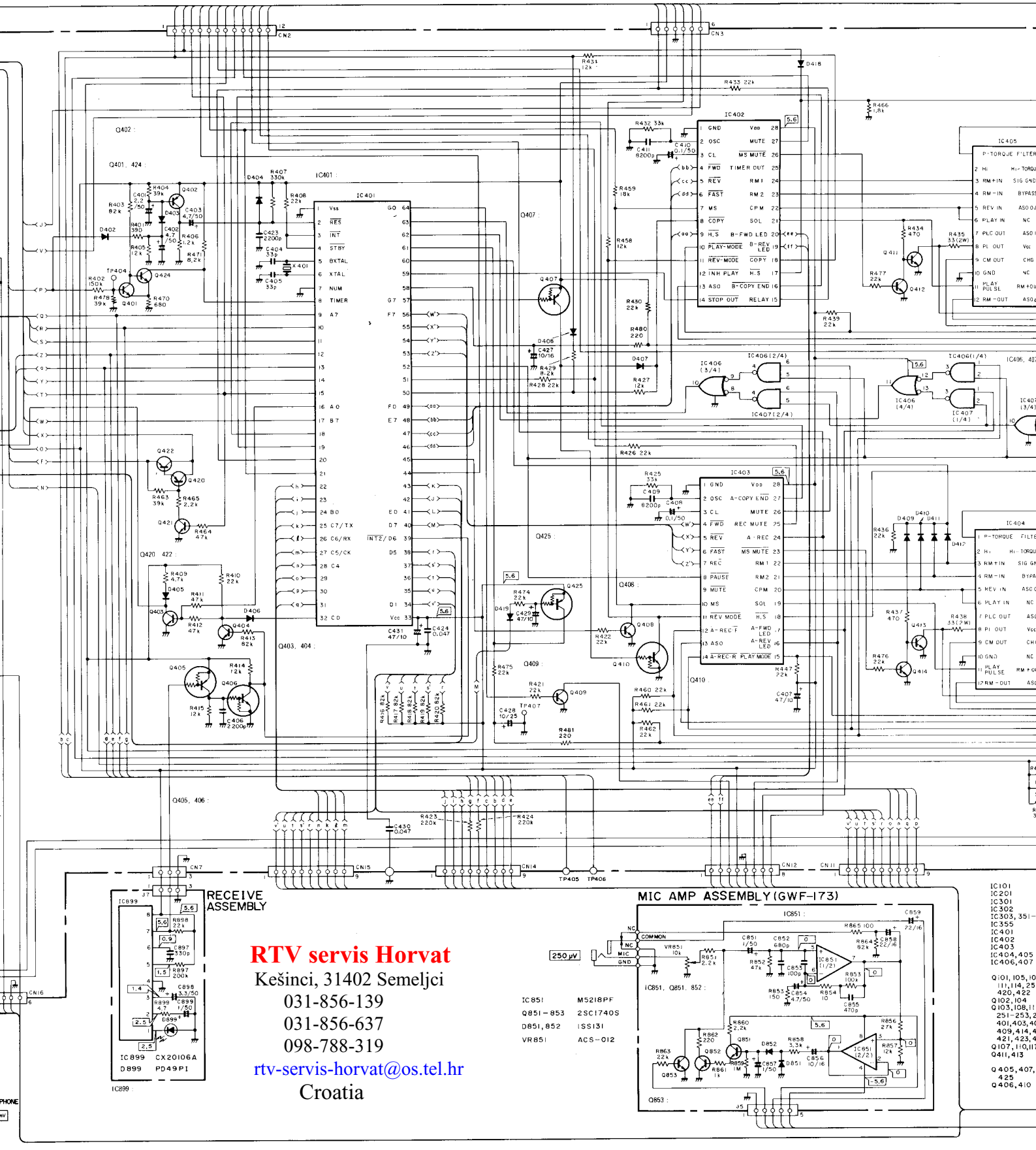

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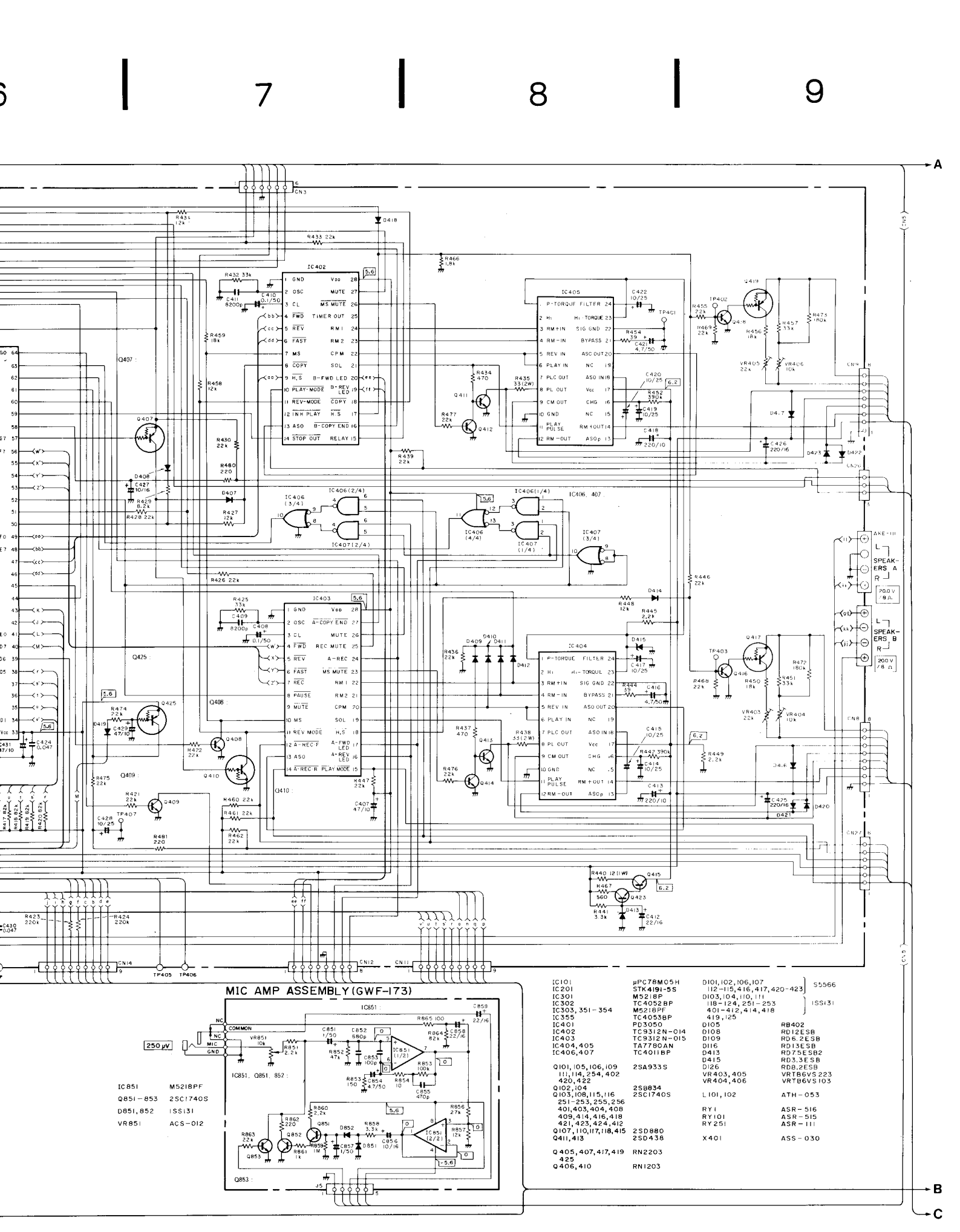

IC101	μPC78M05H	D101,102,106,107 112-115,416,417,420-423	S5566
IC201	STK4191-5S		
IC301	M5218P	D103,104,110,111 118-124,251-253 401-412,414,418 419,125	ISS131
IC302	TC4052BP		
IC303,351-354	M5218PF		
IC355	TC4053BP	D105	RB402
IC401	PD3050	D108	RD12ESB
IC402	TC9312N-014	D109	RD6.2ESB
IC403	TC9312N-015	D116	RD13ESB
IC404,405	TA7780AN	D413	RD75ESB2
IC406,407	TC4011BP	D415	RD3.3ESB
Q101,105,106,109 111,114,254,402 420,422	2SA933S	D126	RD8.2ESB
		VR403,405	VRT86VS223
		VR404,406	VRT86VS103
Q102,104	2SB834		
Q103,108,115,116 251-253,255,256 401,403,404,408 409,414,416,418 421,423,424,412	2SC1740S	L101,102	ATH-053
		RY1	ASR-516
		RY101	ASR-515
		RY251	ASR-111
Q107,110,117,118,415	2SD880		
Q411,413	2SD438	X401	ASS-030
Q405,407,417,419 425	RN2203		
Q406,410	RN1203		

IC851	M5218PF
Q851-853	2SC1740S
D851,852	ISS131
VR851	ACS-012

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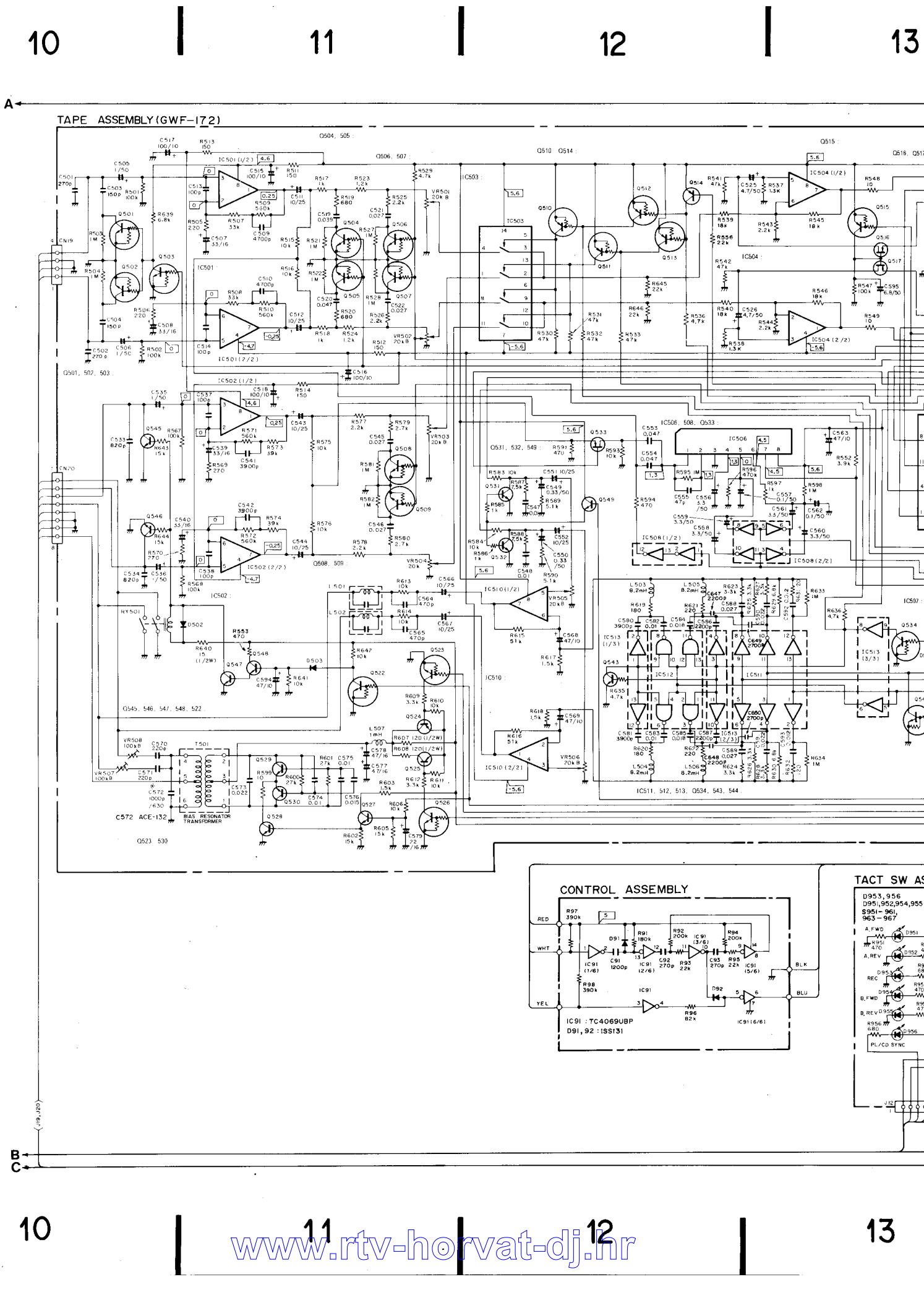
10
11
12
13
A
B
C
TAPE ASSEMBLY (GWF-172)
CONTROL ASSEMBLY
TACT SW AS
IC91 : TC4069UBP
D91, 92 : 1SS131
BIAS RESONATOR TRANSFORMER
C572 ACE-132
PL/CD SYNC
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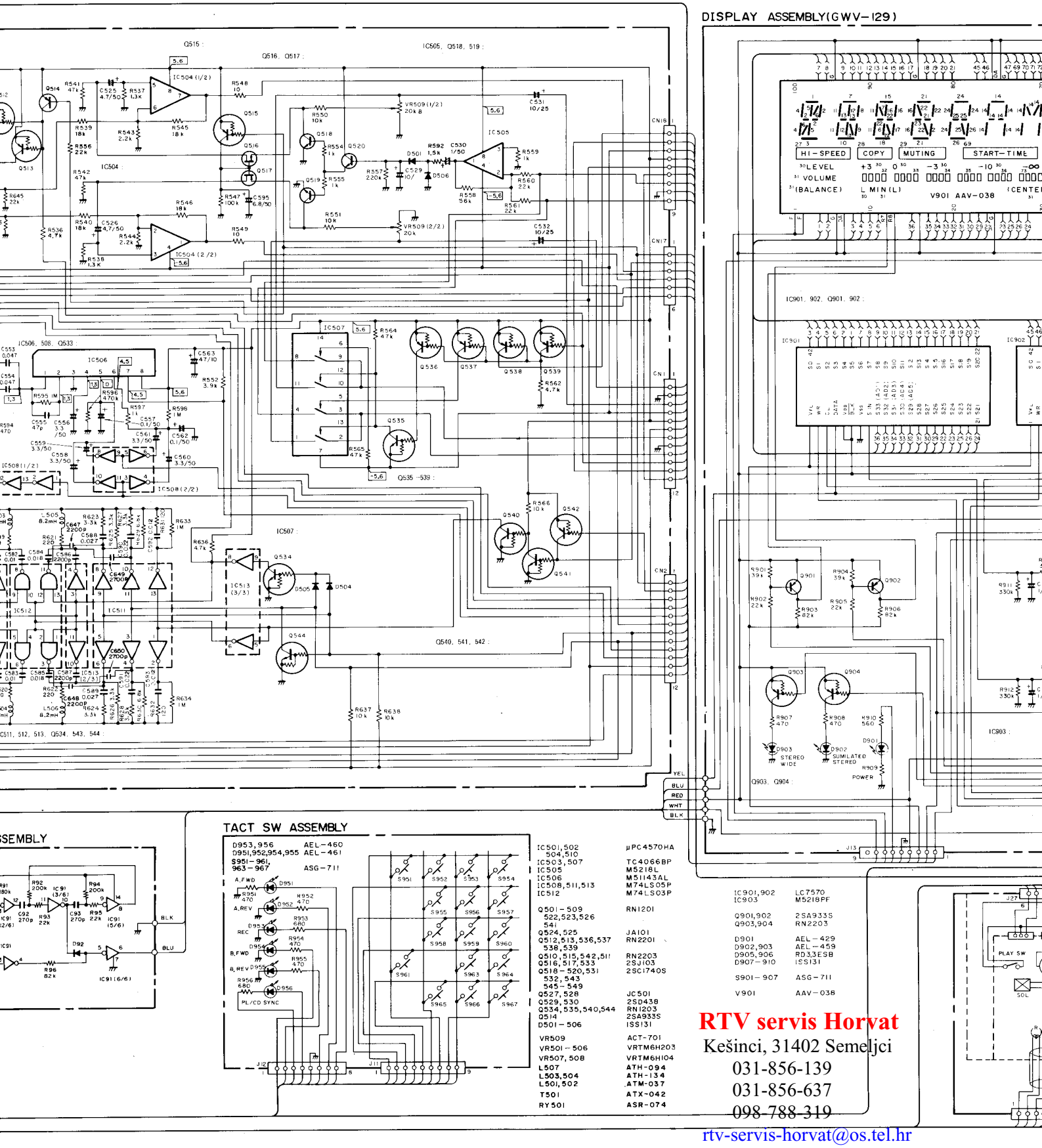

IC501, 502 504, 510	μPC4570HA
IC503, 507	TC4066BP
IC505	M5218L
IC506	M51143AL
IC508, 511, 513	M74LS05P
IC512	M74LS03P
Q501-509 522, 523, 526 541	RN1201
Q524, 525	JA101
Q512, 513, 536, 537 538, 539	RN2201
Q510, 515, 542, 511 Q516, 517, 533	RN2203 2SJ103
Q518-520, 531 532, 543 545-549	2SC1740S
Q527, 528	JC501
Q529, 530	2SD438
Q534, 535, 540, 544	RN1203
Q514	2SA933S
D501-506	ISS131
VR509	ACT-701
VR501-506	VRTM6H203
VR507, 508	VRTM6H104
L507	ATH-094
L503, 504	ATH-134
L501, 502	ATM-037
T501	ATX-042
RY501	ASR-074

IC901, 902 IC903	LC7570 M5218BP
Q901, 902 Q903, 904	2SA933S RN2203
D901 D902, 903 D905, 906 D907-910	AEL-429 AEL-459 RD33ESB ISS131
S901-907	ASG-711
V901	AAV-038

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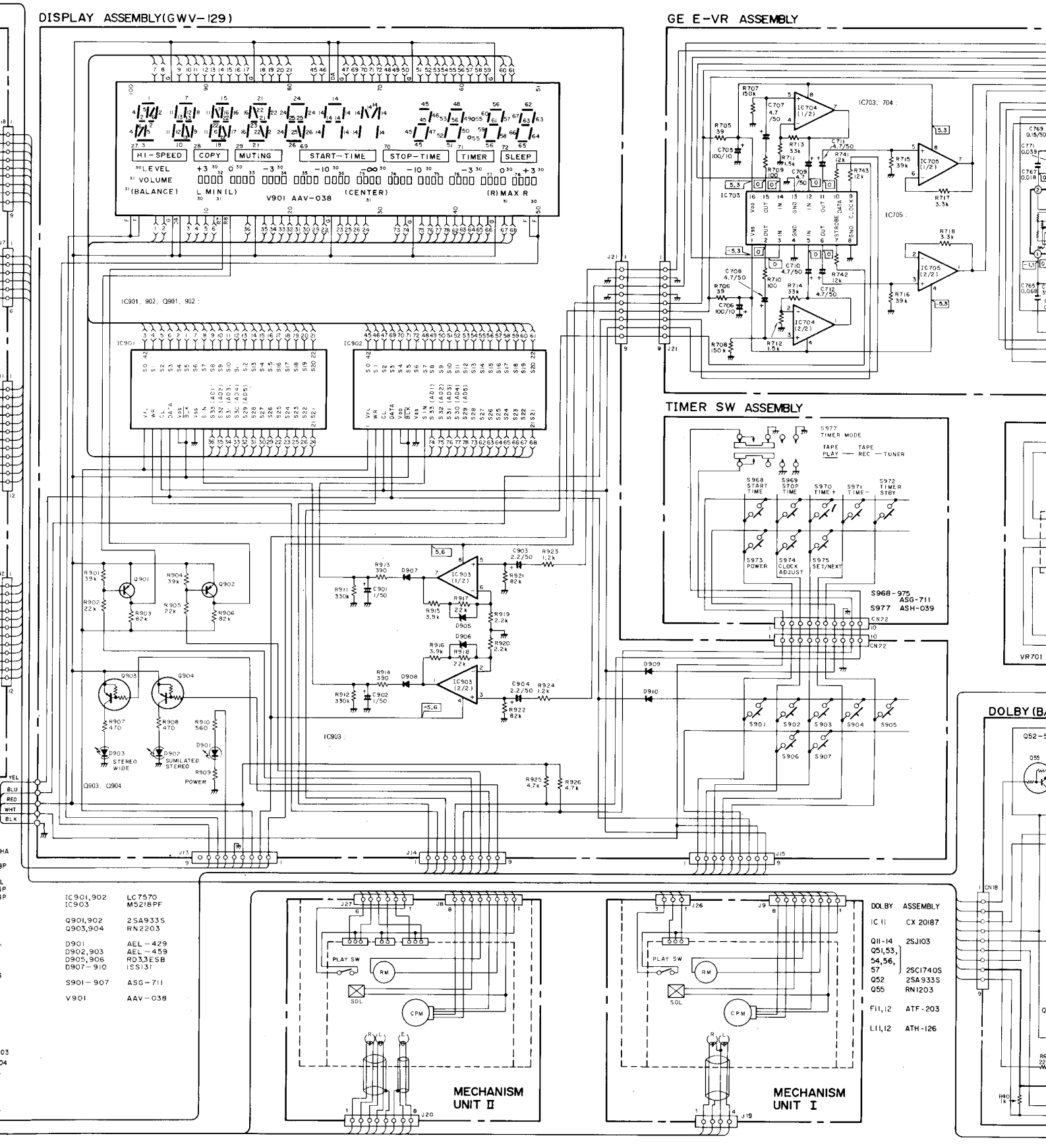

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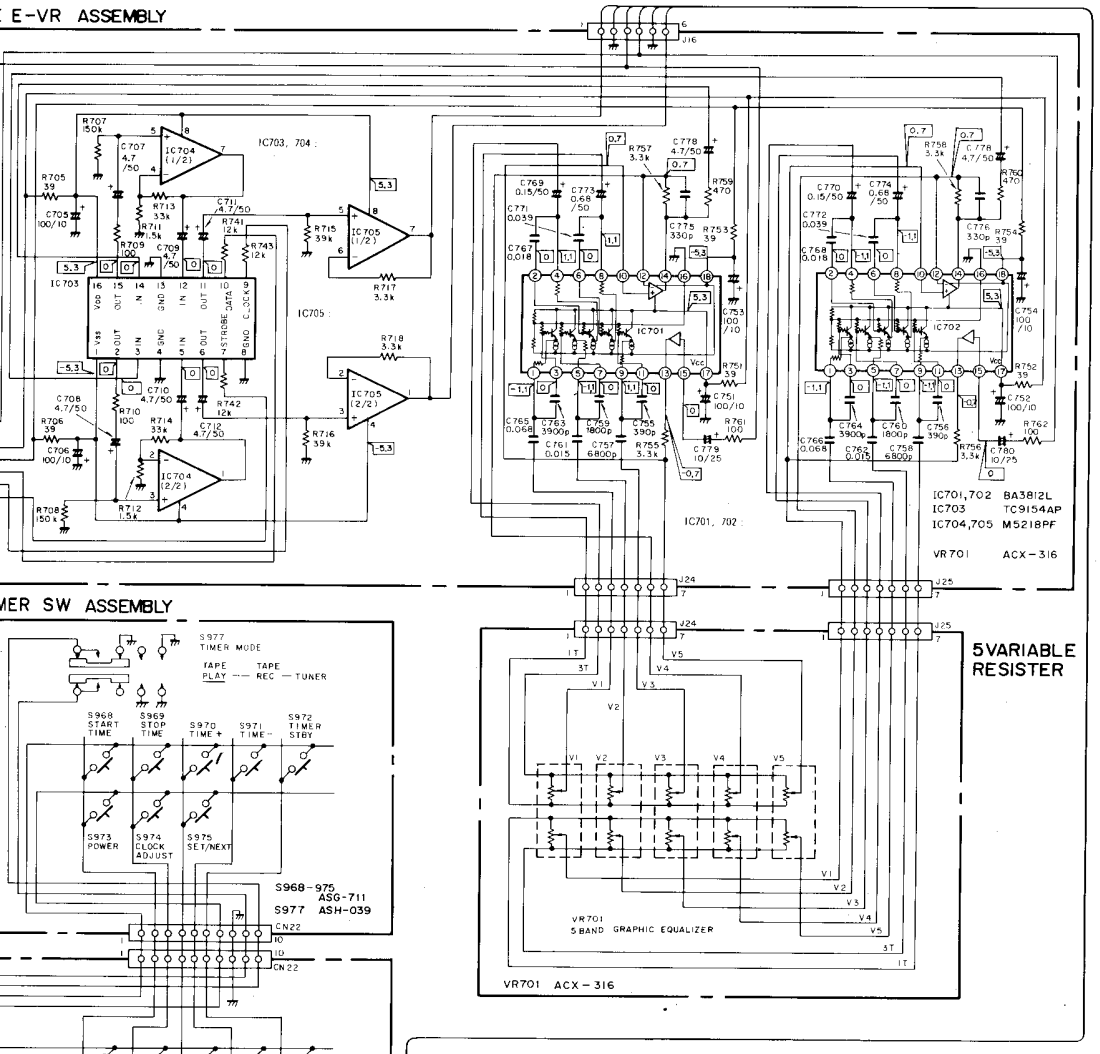

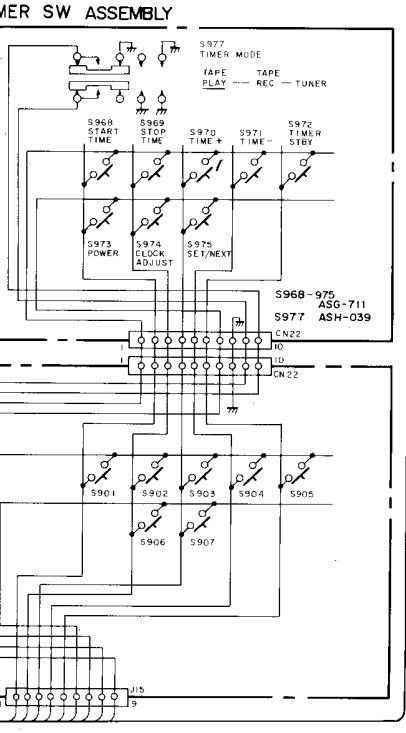

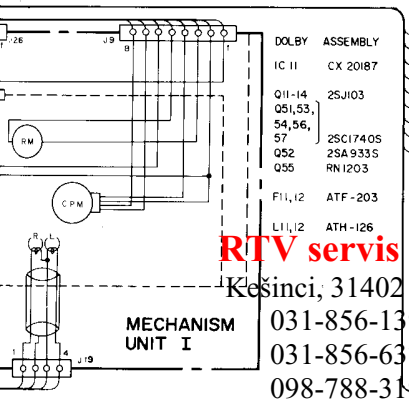

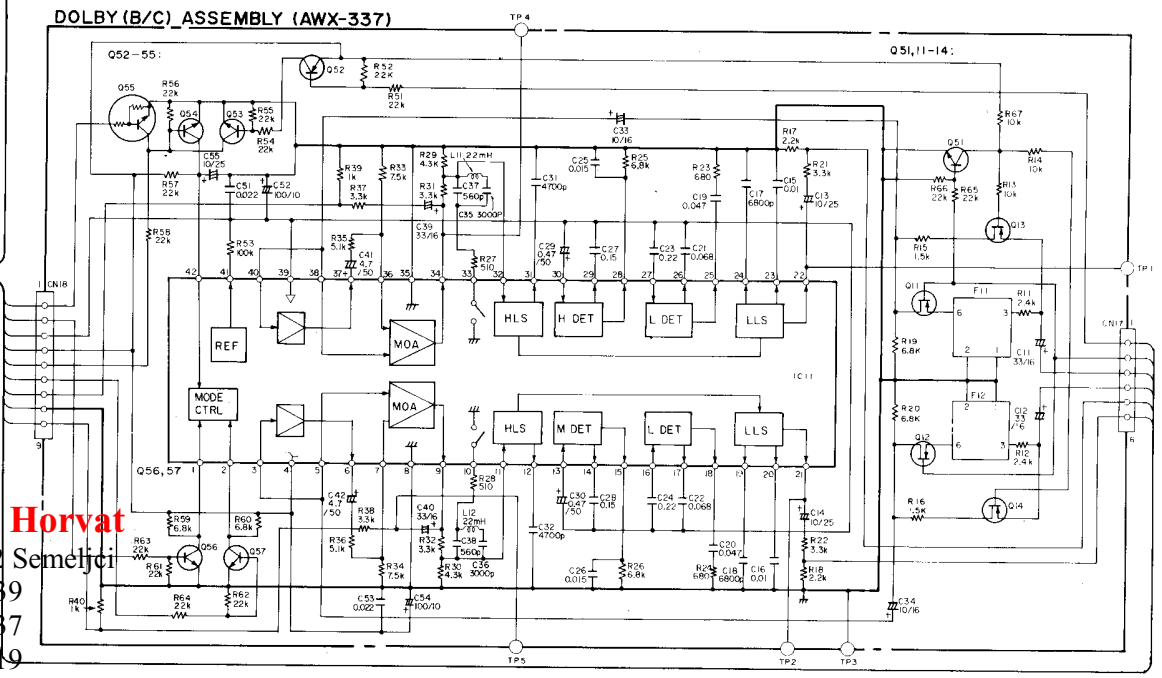

1. RESISTORS:
Indicated in Ω, 1/4W, 1/6W and 1/8W, ±5% tolerance unless otherwise noted k: kΩ, M: MΩ, (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% tolerance
2. CAPACITORS:
Indicated in capacity (μF)/voltage (V) unless otherwise noted: p: pF. Indication without voltage is 50V except electrolytic capacitor.
3. VOLTAGE, CURRENT:
[ ]: DC voltage (V) at no input signal Value in ( ) is DC voltage at rated power.
⇦ mA: DC current at no input signal
4. OTHERS:
➡ : Signal route.
⊘ : Adjusting point.
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
✕ marked capacitors and resistors have parts numbers.
This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.
5. SWITCHES:

DISPLAY ASSEMBLY
S901 VOL UP
S902 VOL DOWN
S903 BAL L
S904 BAL R
S905 MUTING
S906 SOUND (EFFECT)
S907 FUNCTION

TACT SW ASSEMBLY
S951 H.S. COPY
S952 COPY
S953 PAUSE
S954 REC MUTE
S955 REC
S956 A.PLAY (REV)
S957 A.PLAY (FWD)
S958 A.STOP
S959 A.FAST (REV)
S960 A.FAST (FWD)
S961 PHONO/CD SYNC
S963 B.PLAY (REV)
S964 B.PLAY (FWD)
S965 B.STOP
S966 B.FAST (REV)
S967 B.FAST (FWD)

TIMER SW ASSEMBLY
S968 START TIME
S969 STOP TIME
S970 TIME +
S971 TIME −
S972 TIMER STBY
S973 POWER
S974 CLOCK ADJUST
S975 SET/NEXT
S977 TIMER MODE

REV. MODE SW ASSEMBLY
S11 REV MODE ⇄ - ↻ - ↻
S12 DOLBY OFF - B - C
S1 POWER ON - OFF

PHONES ASSEMBLY
S201-1 SP A ON - OFF
S201-2 SP B ON - OFF

THE UNDERLINED INDICATES THE SWITCH POSITION

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