PIONEER

Service Manual

CIRCUIT DESCRIPTIONS
REPAIR & ADJUSTMENTS

ORDER NO.
ARP1055 - 0

STEREO DOUBLE CASSETTE TAPE DECK AMPLIFIER

DC-X55Z(BK)
DC-X55Z

MODEL DC-X55Z(BK) AND DC-X55Z COMES IN SEVEN VERSIONS DISTINGUISHED AS FOLLOWS:

Type	Applicable model		Power requirement	Destination
	DC-X55Z(BK)	DC-X55Z		
HB	O	O	AC220V, 240V*(Switchable)	United Kingdom
HEZ	O	—	AC220V, 240V*(Switchable)	West Germany
KC	O	—	AC120V only	Canada
YP	O	—	AC240V only	Australia
HE	O	O	AC220V, 240V*(Switchable)	European continent
KU	O	—	AC120V only	U.S.A
S	O	—	AC110V, 120V, 220V, 240V (Switchable)	General market

- **This service manual is applicable to the HB type.** * Change the primary wiring of the power transformer.
- **As to the other types, please refer to the additional service manual.**
- **Ce manual d'instruction se fefère au mode de réglage en français.**
- **Este manual de servicio trata del método ajuste escrito en español.**

CONTENTS

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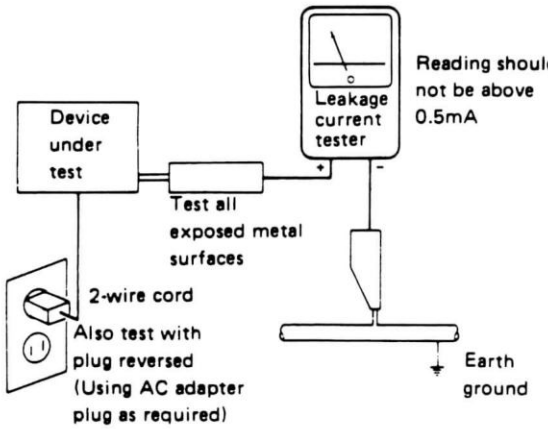
1. SAFETY INFORMATION

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

2. SPECIFICATIONS

AMPLIFIER SECTION

Continous Average Power Output is 40 Watts* per channel, min., at 8 ohms from 40 Hertz to 20,000 Hertz, with no more than 0.3% total harmonic distortion.

**Measured pursuant to the Federal Trade Commission's Trade Regulation rules on Power Output Claims for Amplifiers.*

Continuous Power Output
- 40 to 20,000Hz ..... 40 W + 40 W (T.H.D. 0.3% 8 ohms)
- 1 kHz (DIN) ..... 50 W + 50 W (T.H.D. 1% 8 ohms)
- 1 kHz (DIN music power) ..... 70 W + 70 W (T.H.D. 1% 8 ohms)
- PMPO ..... 140 W + 140 W

Hum and Noise (IHF, short-circuited, A network)
- PHONO ..... 72 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)
- 20 Watts per channel power output ..... No more than 0.2%

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 2 speed motor x 2
Wow and Flutter ..... No more than 0.09% (WRMS)
Fast Winding Time ..... Approximately 100 seconds (C-60 tape)

Frequency Response
- −20 dB recording:
  - Normal tape ..... 35 Hz to 14,000 Hz ±6 dB
  - CrO_2 ..... 35 Hz to 15,000 Hz ±6 dB
  - Metal tape ..... 35 Hz to 16,000 Hz ±6 dB

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

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

Furnished Parts

Operating Instructions 1
Turntable legs parts 2

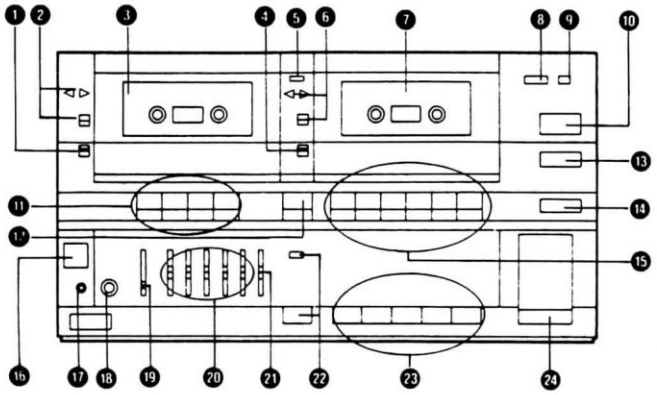
Miscellaneous

Power requirements
U.S., Canadian models ..... AC 120 V, 60 Hz
European model ..... AC 220 V, 50/60Hz
U.K. and Australian models ..... AC 240 V, 50/60 Hz
Other destination models
..... AC 110/120/220/240 V (switchable) 50/60 Hz

Power Consumption

U.S., Canadian models ..... 230 W (CSA 260 VA)
European model ..... 380 W
U.K. and Australian models ..... 380 W
Other destination models ..... 230 W
Dimensions ..... 360(W) x 190(H) x 283 (D) mm
14-3/16(W) x 7-7/16(H) x 11-1/8(D) in
Weight (without package) ..... 7.4 kg (16 lb 5 oz)

3. FRONT PANEL FACILITIES



[CASSETTE TAPE DECK]

- This unit is provided with an automatic tape selector function.
- This unit is a forward mode priority auto-reverse deck. Both recording and playback always start in the forward direction.
  If you press the STOP/EJECT (■/⏏) switch during reverse playback, the head for forward playback will be reselected automatically.

❶ REVERSE MODE switch

Sets the reverse mode for the playback-only deck.

Switch positions:	Play
	Continuous play
	Reverse play

Continuous playback is automatically stopped after 8 round trips. Note that it will be counted as one reversal if the tape direction is changed using the direction switch. (One round trip will be counted if the switch is pressed twice.)

❷ Direction switch/indicator (DIRECTION)

Depress to set the playback direction of the playback-only deck. Direction change can only be performed during playback.

▷ Lights when forward mode is selected.
◁ Lights when reverse mode is selected.

❸ Cassette compartment (Playback only)

❹ REVERSE MODE switch

Sets the reverse mode for the record/play deck.

Switch positions	Play	Record
	Continuous play	Double-side recor[illegible]
	Reverse play	Single-side recor[illegible]

Continuous playback is automatically stopped after 8 round trips. Note [illegible] will be counted as one reversal if the tape direction is changed using the [illegible] tion switch. (One round trip will be counted if the switch is pressed two[illegible]

❺ Recording indicator (REC)

▭ Lights during recording. Flashes during tape copying. (DC-X55Z[illegible] DC-555Z only)

❻ Direction switch/indicator (DIRECTION)

Depress to set the recording and playback direction of the record/play[illegible] Direction change can be performed during recording, playback or pause

▷ Lights when forward mode is selected. Flashes if tape travel is [illegible] during reverse recording.
◁ Lights when reverse mode is selected.

❼ Cassette compartment (Recording and playback)

❽ TAPE COUNTER (Record/play deck.)

3-digit display measures tape travel on record/play deck.

❾ TAPE COUNTER RESET button

⑩ COPY SPEED switch

Press to set the copy mode.

■ NORMAL ... Permits you to listen to playback normally during dubbing (normal speed copying)
■ HIGH ... High speed dubbing (double-speed, half-time copying)

⑪ Playback-only switches

◁▷ (PLAY) ... Forward or reverse mode playback.
◀◀ (FAST) ..... Rewind in forward mode, fast forward in reverse mode.
▶▶ (FAST) ..... Fast forward in forward mode, rewind in reverse mode.
■/⏏ (STOP/EJECT) ... Stops tape travel. Ejects cassette if pressed when tape is stopped.

⑫ Synchronized copy switch (SYNCHRO COPY)

Press to start copying from Deck I to Deck II. Set the copying speed (NORMAL or HIGH) using the COPY SPEED switch.

- Press this switch only after you have set the COPY SPEED switch as desired. If this switch is pressed first, the speed cannot afterwards be changed, even if the COPY SPEED switch position is later changed.

⑬ Dolby NR switch

Press to activate noise reduction system. Use to play back tapes recorded using Dolby B NR noise reduction.

- Tapes recorded using Dolby B NR noise reduction should always be played back with the noise reduction system on. Sound quality will be adversely affected if they are played back with the system off, or if tapes recorded using a different noise reduction system are played back with the Dolby B NR system on.
- It is recommeded that tapes recorded using Dolby B NR be so marked on the label. This will help to prevent incorrect setting of the noise reduction switch during playback.

Noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"Dolby" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

⑭ Recording mute switch (REC MUTE)

Use to create blank intervals on a tape during recording. Works only while held depressed.

⑮ Record/Playback switches

● (REC) ..... Record
◁▷ (PLAY) .. Playback in forward or reverse mode.
◀◀ (FAST) ..... Rewind in forward mode, fast forward in reverse mode.
▶▶ (FAST) ..... Fast forward in forward mode, rewind in reverse mode.
■/⏏ (STOP/EJECT) .. Stops tape travel. Ejects cassette if pressed when tape is stopped.
▮▮ (PAUSE) .... Temporarily stops tape travel. Cancels pause mode when pressed again.

[AMPLIFIER/GRAPHIC EQUALIZER]

⑯ Power switch (POWER)

⑰ Headphone jack (PHONES)

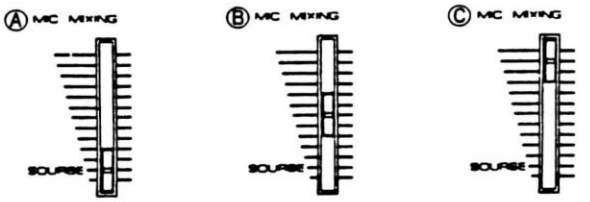
For miniature stereo phone plug.

⑱ Microphone jack (MIC)

For standard phone plug.

⑲ Mic Mixing Controls (MIC MIXING)

Adjusts balance between mic volume and volume of other input sources.



Source input emphasized	To listen to the sound from a microphone mixed with that of a radio broadcast or tape playback:	Mic input emphasized

NOTE:

- *Set the control to the SOURCE position as shown in Fig. A when not using a microphone.*
- *Source volume is cut by about 1/100 when control is set to the MIC position.*

⑳ Graphic equalizer controls (GRAPHIC EQUALIZER)

Fine adjustments in sound quality are possible using the 5 controls on the graphic equalizer.

㉑ BALANCE control

㉒ SURROUND/STEREO WIDE switch/indicator

By using this function, the sounds from stereo sources will be given new breadth, reproducing the effect of concert hall presence.

NOTE:
Stereo Wide sound has no effect on monaural sources (AM broadcasts, etc.).

㉓ Function switches (FUNCTION)

Press the button corresponding to the desired program source.

TUNER ..... Press to listen to radio.
VIDEO ..... Press to listen to component (Hi-Fi VCR, laser disc player, etc.) connected to the auxiliary input jacks.
CD ..... Press to listen to CD player.
PHONO ..... Press to listen to turntable.
TAPE ..... Press to listen to tape playback.

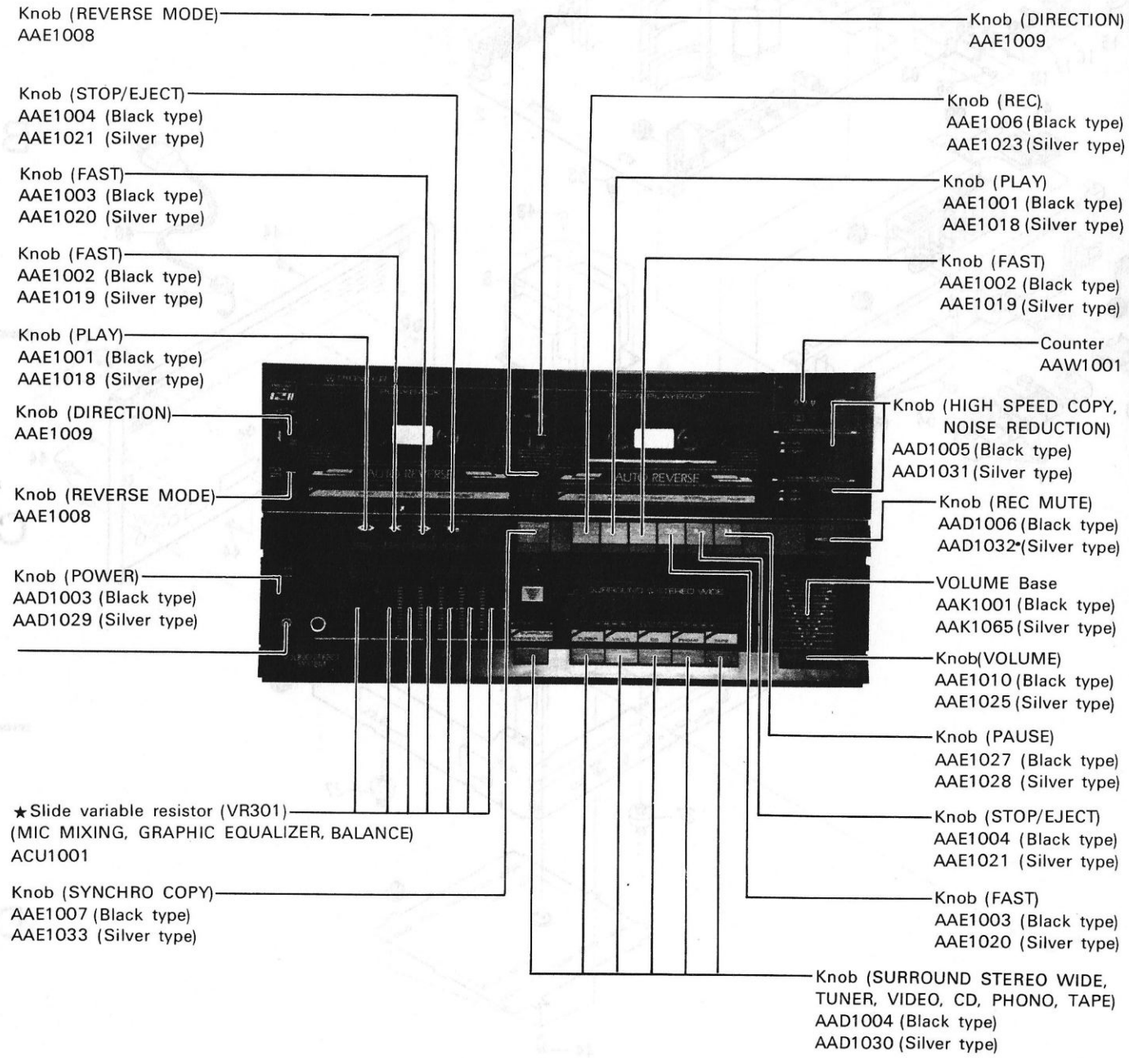
㉔ Volume Control (VOLUME)

4. PARTS LOCATION

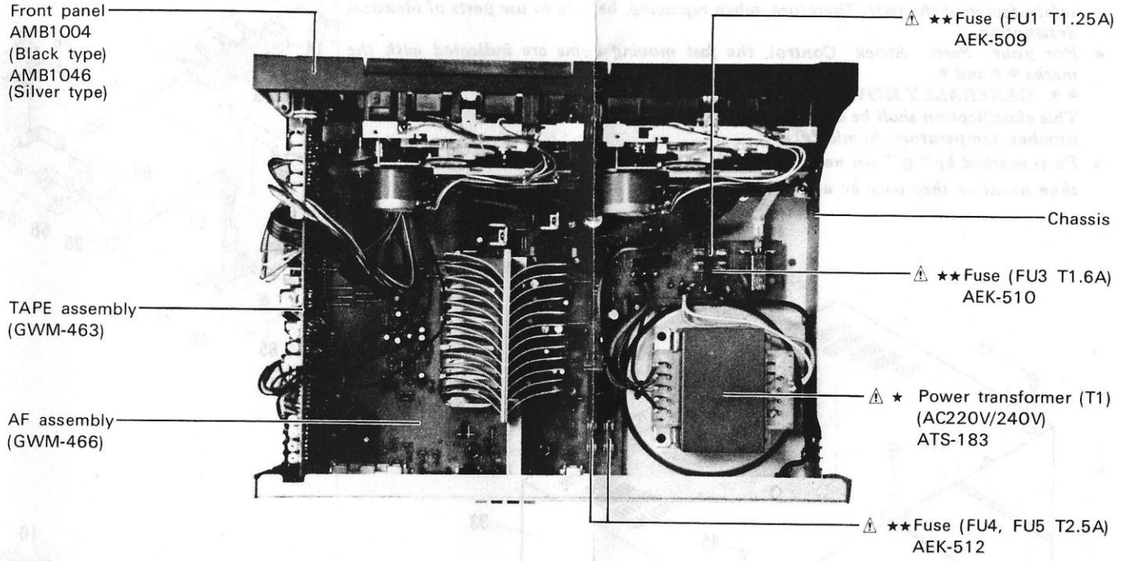
NOTES:

- *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.*

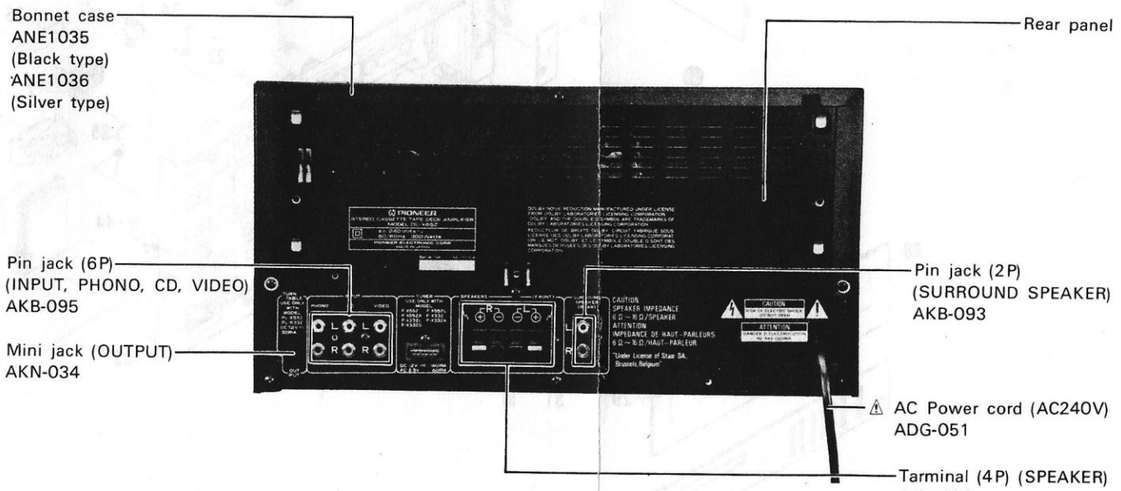
Front Panel View



Top View with Bonnet Case Removed



Rear Panel View



5. EXPLODED VIEWS

5.1 Exterir

NOTES:

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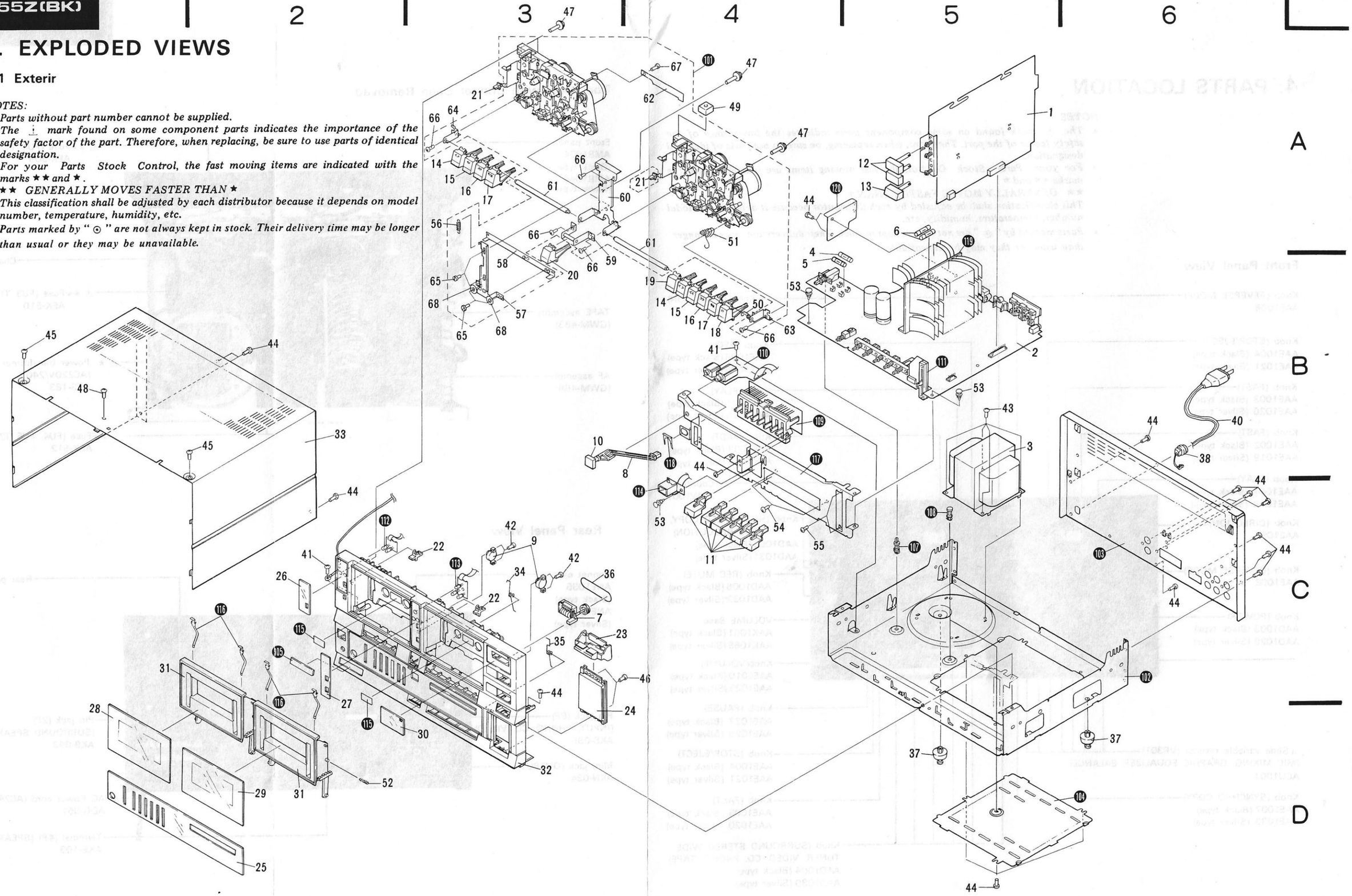
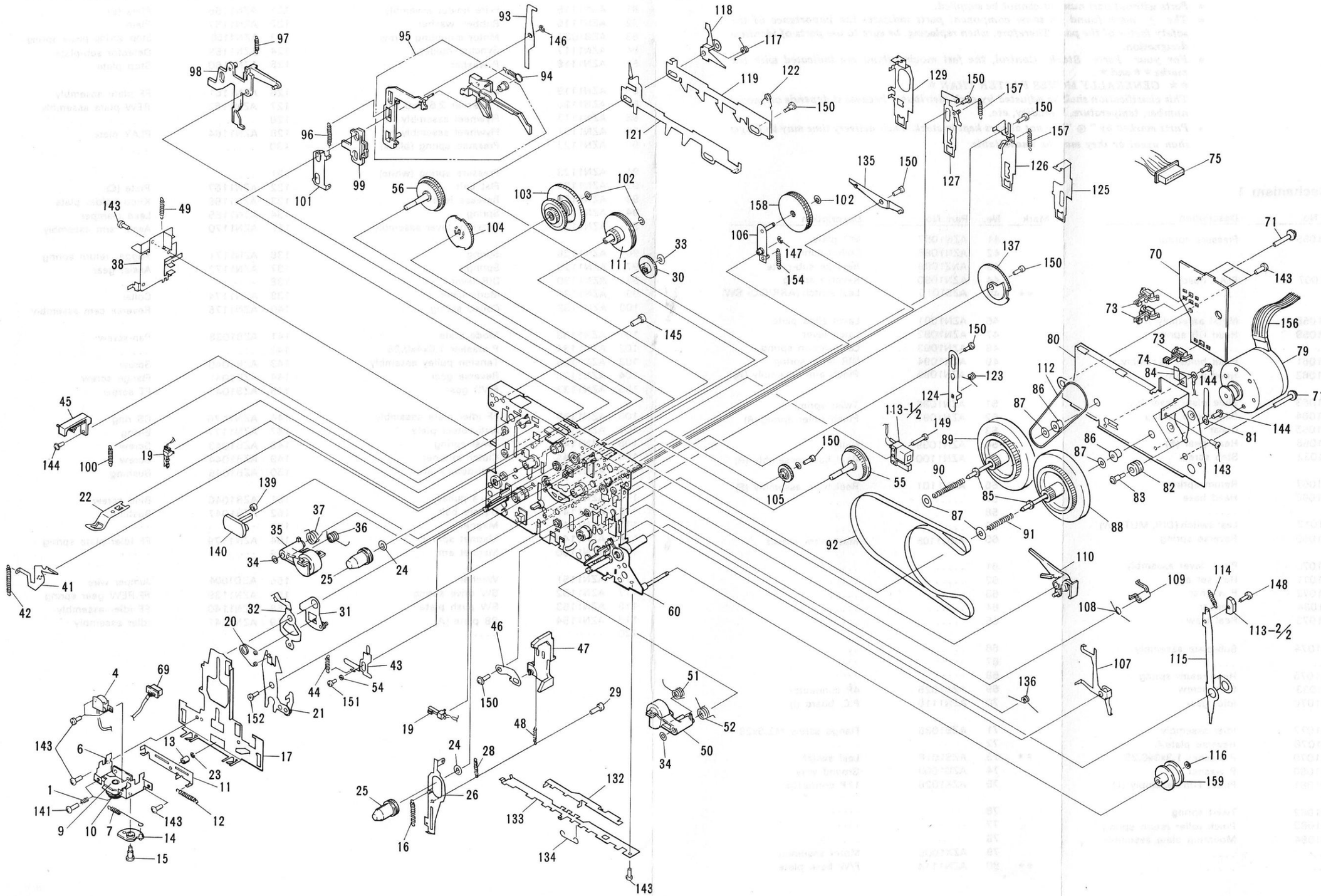


5.2 Mechanism 1



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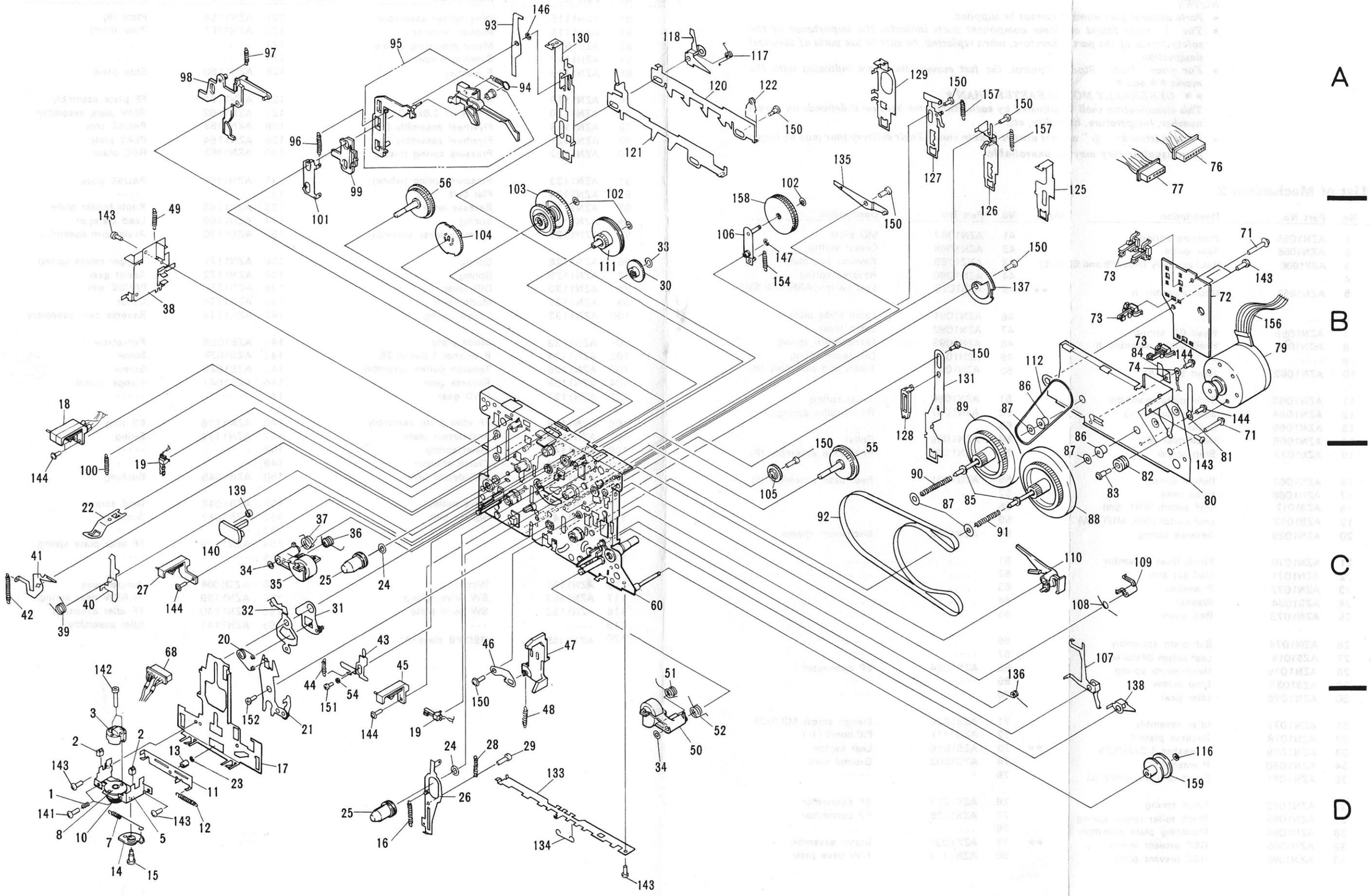
Parts List of Mechanism 1

Mark	No.	Part No.	Description
	1	AZN1055	Pressure spring
	2	.....	.....
	3	.....	.....
★★	4	AZP1007	PLAY head
	5	.....	.....
	6	AZN1058	Metal assembly I
	7	AZN1059	Head GR spring
	8	.....	.....
	9	AZN1061	Head holder assembly I
	10	AZN1062	Head gear (A)
	11	AZN1063	Slide plate assembly
	12	AZN1064	Slide plate spring
	13	AZN1065	Collar
■	14	AZN1066	Head gear (B)
	15	AZB1032	Step screw
	16	AZN1067	Return spring
	17	AZN1068	Head base
	18	.....	.....
★★	19	AZS1013	Leaf switch (DIR, MUT SW)
	20	AZN1069	Reverse spring
	21	AZN1070	Pincl lever assembly
	22	AZN1071	Half set arm
	23	AZN1072	P washer
	24	AZB1034	Washer
	25	AZN1073	Reel claw
	26	AZN1074	Sub-plate assembly
	27	.....	.....
	28	AZN1075	Head-return spring
■	29	AZB1033	Step screw
	30	AZN1076	Idler gear
	31	AZN1077	Idler assembly
	32	AZN1078	Reverse plate A
	33	AZN1079	P washer 1.3x3x0.25
	34	AZN1080	P washer
	35	AZN1081	Pinch arm assembly (L)
	36	AZN1082	Twist spring
	37	AZN1083	Pinch roller return spring
	38	AZN1084	Mounting plate assembly
	39	.....	.....
	40	.....	.....
	41	AZN1087	MO plate
	42	AZN1088	Coiled spring
	43	ANZ1089	Reverse sub-plate
	44	AZN1090	Reverse spring
★★	45	AZS1015	Leaf switch (ARR/C_1O_2 SW)
	46	AZN1091	Latch slide plate
	47	AZN1092	Latch lever
	48	AZN1093	Latch-return spring
	49	AZN1094	DIR lever spring
	50	AZN1095	Pinch arm assembly (R)
	51	AZN1096	Twist spring
	52	AZN1097	Pinch roller spring (R)
	53	.....	.....
	54	AZN1099	Collar
	55	AZN1100	Reel base assembly (R)
	56	AZN1101	Reel base assembly (F)
	57	.....	.....
	58	.....	.....
	59	.....	.....
	60	AZN1105	Mechanism chassis
	61	.....	.....
	62	.....	.....
	63	.....	.....
	64	.....	.....
	65	.....	.....
	66	.....	.....
	67	.....	.....
	68	.....	.....
	69	AZK1025	4P connector
	70	AEN1110	P.C. board (I)
	71	AZB1036	Flange screw M2.6x28
	72	.....	.....
★★	73	AZS1016	Leaf switch
	74	AZD1003	Ground wire
	75	AZK1026	11P connector
	76	.....	.....
	77	.....	.....
	78	.....	.....
	79	AZX1005	Motor assembly
★★	80	AZN1114	F/W base plate
	81	AZN1115	Wire holder assembly
	82	AZN1116	Rubber washer
	83	AZB1037	Motor mounting screw
	84	AZN1117	Synchro holder
	85	AZN1118	P washer
	86	AZN1119	Metal
	87	AZN1120	P washer 2.6x8x0.13
	88	AZN1113	Flywheel assembly (R)
	89	AZN1121	Flywheel assembly (L)
	90	AZN1122	Pressure spring (black)
	91	AZN1123	Pressure spring (white)
	92	AZN1124	Flat belt
	93	AZN1125	Rerease lever
	94	AZN1126	Spring
	95	AZN1127	Detector lever assembly
	96	AZN1128	Spring
	97	AZN1129	Spring
	98	AZN1130	DIR lever
	99	AZN1131	Mode lever
	100	AZN1132	Coiled spring
	101	AZN1133	Mode plate
	102	AZN1134	P washer 1.6x4x0.25
	103	AZN1135	Tension pulley assembly
	104	AZN1136	Reverse gear
	105	AZN1137	FWD gear
	106	AZN1138	FF idler plate assembly
	107	AZN1142	Anti-detect plate
	108	AZN1143	Twist spring
	109	AZN1144	Clutch stopper
	110	AZN1145	Anti-detect lever
	111	AZN1146	Drive pulley
	112	AZN1147	Square belt
	113	AZN1148	Magnet
	114	AZN1149	Magnet spring
	115	AZN1150	Magnet arm
	116	AZN1151	Washer
	117	AZN1152	SW drive spring
	118	AZN1153	SW push plate
	119	AZN1154	PB plate (A)
	120	.....	.....
	121	AZN1156	Plate (B)
	122	AZN1157	Plate
	123	AZN1158	Stop spring pause spring
	124	AZN1159	Detector sub-plate
	125	AZN1160	Stop plate
	126	AZN1161	FF plate assembly
	127	AZN1162	REW plate assembly
	128	.....	.....
	129	AZN1164	PLAY plate
	130	.....	.....
	131	.....	.....
	132	AZN1167	Plate (C)
	133	AZN1168	Knob holder plate
	134	AZN1169	Lead clamper
	135	AZN1170	Assist arm assembly
	136	AZN1171	Trigger return spring
	137	AZN1172	Assist gear
	138	.....	.....
	139	AZN1174	Collar
	140	AZN1175	Reverse cam assembly
	141	AZB1038	Pan-screw
	142	.....	.....
	143	AZB1040	Screw
	144	AZB1041	Flange screw
	145	AZB1042	FT screw
	146	AZN1176	CS ring
	147	AZN1177	E-ring
	148	AZB1043	Screw
	149	AZB1044	Screw
	150	AZB1045	Bushing
	151	AZB1046	Bind screw
	152	AZB1047	Bushing
	153	.....	.....
	154	AZN1179	FF idler plate spring
	155	.....	.....
	156	AZD1004	Jumper wire
	157	AZN1139	FF.REW gear spring
	158	AZN1140	FF idler assembly
	159	AZN1141	Idler assembly

5.3 Mechanism 2



NOTES:

- *Parts without part number cannot be supplied.*
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  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
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Parts List of Mechanism 2

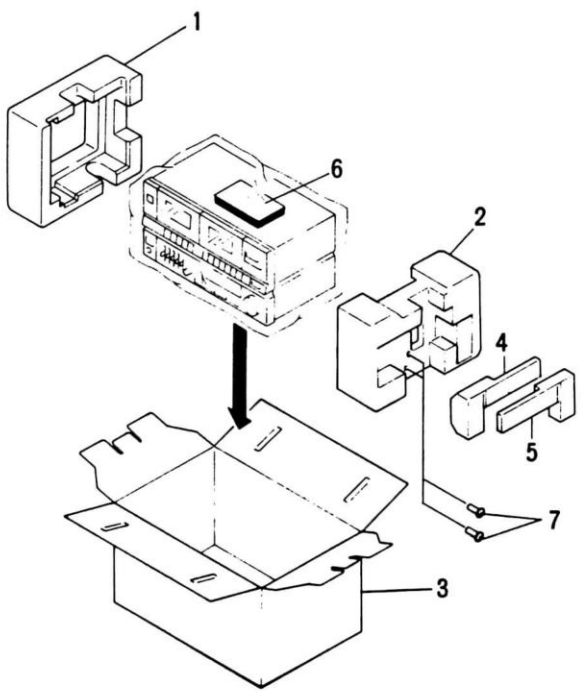
Mark	No.	Part No.	Description
	1	AZN1055	Pressure spring
	2	AZN1056	Tape guide
★★	3	AZP1006	Head assembly (REC/PB and ERACE)
	4	.....	.....
	5	AZN1057	Metal assembly II
	6	.....	.....
	7	AZN1059	Head GR spring
	8	AZN1060	Haed holder assembly II
	9	.....	.....
	10	AZN1062	Head gear (A)
	11	AZN1063	Slide plate assembly
	12	AZN1064	Slide plate spring
	13	AZN1065	Collar
	14	AZN1066	Head gear (B)
	15	AZB1032	Step screw
	16	AZN1067	Return spring
	17	AZN1068	Head base
★★	18	AZS1012	Leaf switch (ARF SW)
★★	19	AZS1013	Leaf switch (DIR, MUT SW)
	20	AZN1069	Reverse spring
	21	AZN1070	Pinch lever assembly
	22	AZN1071	Half set arm
	23	AZN1072	P washer
	24	AZB1034	Washer
	25	AZN1073	Reel claw
	26	AZN1074	Sub-plate assembly
★★	27	AZS1014	Leaf switch (Metal sw)
	28	AZN1075	Head-return spring
	29	AZB1033	Step screw
	30	AZN1076	Idler gear
	31	AZN1077	Idler assembly
	32	AZN1078	Reverse plate A
	33	AZN1079	P washer 1.3x3x0.25
	34	AZN1080	P washer
	35	AZN1081	Pinch arm assembly (L)
	36	AZN1082	Twist spring
	37	AZN1083	Pinch roller return spring
	38	AZN1084	Mounting plate assembly
	39	AZN1085	REC prevent spring
	40	AZN1086	REC prevent plate
	41	AZN1087	MO plate
	42	AZN1088	Coiled spring
	43	ANZ1089	Reverse sub-plate
	44	AZN1090	Reverse spring
★★	45	AZS1015	Leaf switch (ARR/CrO_2 SW)
	46	AZN1091	Latch slide plate
	47	AZN1092	Latch lever
	48	AZN1093	Latch-return spring
	49	AZN1094	DIR lever spring
	50	AZN1095	Pinch arm assembly (R)
	51	AZN1096	Twist spring
	52	AZN1097	Pinch roller spring (R)
	53	.....	.....
	54	AZN1099	Collar
	55	AZN1100	Reel base assembly (R)
	56	AZN1101	Reel base assembly (F)
	57	.....	.....
	58	.....	.....
	59	.....	.....
	60	AZN1105	Mechanism chassis
	61	.....	.....
	62	.....	.....
	63	.....	.....
	64	.....	.....
	65	.....	.....
	66	.....	.....
	67	.....	.....
	68	AZK1024	8P connector
	69	.....	.....
	70	.....	.....
	71	AZB1036	Flange screw M2.6x28
	72	AZN1111	P.C.board (II)
★★	73	AZS1016	Leaf switch
	74	AZD1003	Ground wire
	75	.....	.....
	76	AZK1027	8P connector
	77	AZK1028	5P connector
	78	.....	.....
★★	79	AZX1005	Motor assembly
	80	AZN1114	F/W base plate
	81	AZN1115	Wire holder assembly
	82	AZN1116	Rubber washer
	83	AZB1037	Motor mounting screw
	84	AZN1117	Synchro holder
	85	AZN1118	P washer
	86	AZN1119	Metal
	87	AZN1120	P washer 2.6x8x0.13
	88	AZN1113	Flywheel assembly (R)
	89	AZN1121	Flywheel assembly (L)
	90	AZN1122	Pressure spring (black)
	91	AZN1123	Pressure spring (white)
	92	AZN1124	Flat belt
	93	AZN1125	Rerease lever
	94	AZN1126	Spring
	95	AZN1127	Detector lever assembly
	96	AZN1128	Spring
	97	AZN1129	Spring
	98	AZN1130	DIR lever
	99	AZN1131	Mode lever
	100	AZN1132	Coiled spring
	101	AZN1133	Mode plate
	102	AZN1134	P washer 1.6x4x0.25
	103	AZN1135	Tension pulley assembly
	104	AZN1136	Reverse gear
	105	AZN1137	FWD gear
	106	AZN1138	FF idler plate assembly
	107	AZN1142	Anti-detect plate
	108	AZN1143	Twist spring
	109	AZN1144	Clutch stopper
	110	AZN1145	Anti-detect lever
	111	AZN1146	Drive pulley
	112	AZN1147	Square belt
	113	.....	.....
	114	.....	.....
	115	.....	.....
	116	AZN1151	Washer
	117	AZN1152	SW drive spring
	118	AZN1153	SW push plate
	119	.....	.....
	120	AZN1155	REC/PB plate (A)
	121	AZN1156	Plate (B)
	122	AZN1157	Plate spring
	123	.....	.....
	124	.....	.....
	125	AZN1160	Stop plate
	126	AZN1161	FF plate assembly
	127	AZN1162	REW plate assembly
	128	AZN1163	PAUSE arm
	129	AZN1164	PLAY plate
	130	AZN1165	REC plate
	131	AZN1166	PAUSE plate
	132	.....	.....
	133	AZN1168	Knob holder plate
	134	AZN1169	Lead clamper
	135	AZN1170	Assist arm assembly
	136	AZN1171	Trigger return spring
	137	AZN1172	Assist gear
	138	AZN1173	PAUSE arm
	139	AZN1174	Collar
	140	AZN1175	Reverse cam assembly
	141	AZB1038	Pan-screw
	142	AZB1039	Screw
	143	AZB1040	Screw
	144	AZB1041	Flange screw
	145	.....	.....
	146	AZN1176	CS ring
	147	AZN1177	E-ring
	148	.....	.....
	149	.....	.....
	150	AZB1045	Bushing
	151	AZB1046	Bind screw
	152	AZB1047	Bushing
	153	.....	.....
	154	AZN1179	FF idler plate spring
	155	.....	.....
	156	AZD1004	Jumper wire
	157	AZN1139	FF.REW gear spring
	158	AZN1140	FF idler assembly
	159	AZN1141	Idler assembly

Parts List of Exterir

Mark	No.	Part No.	Description
	1	GWM-463	TAPE assembly
	2	GWM-466	AF assembly
⚠ ★	3	ATS-183	Power transformer (T1) (AC 220V/240V)
	4	AEK-509	Fuse (FU1 T1.25A)
	5	AEK-510	Fuse (FU3 T1.6A)
	6	AEK-512	Fuse (FU4, FU5 T2.5A)
	7	AAW1001	Counter
	8	AMR1003	Power joint
	9	AMR1006	Damper assembly
	10	AAD1003 (Black type) AAD1029 (Silver type)	Knob (POWER)
	11	AAD1004 (Black type) AAD1030 (Silver type)	Knob (SURROUND, STEREO WIE, TUNER, CD, PHONO, TAPE)
	12	AAD1005 (Black type) AAD1031 (Silver type)	Knob (HIGH SPEED COPY, ON/OFF)
	13	AAD1006 (Black type) AAD1032 (Silver type)	Knob (REC MUTE)
	14	AAE1001 (Black type) AAE1018 (Silver type)	Knob (PLAY)
	15	AAE1002 (Black type) AAE1019 (Silver type)	Knob (FAST)
	16	AAE1003 (Black type) AAE1020 (Silver type)	Knob (FAST)
	17	AAE1004 (Black type) AAE1021 (Silver type)	Knob (STOP/EJECT)
	18	AAE1027 (Black type) AAE1028 (Silver type)	Knob (PAUSE)
	19	AAE1006 (Black type) AAE1023 (Silver type)	Knob (REC)
	20	AAE1007 (Black type) AAE1024 (Silver type)	Knob (SYNCHRO COPY)
	21	AAE1008	Knob (REVERSE MODE, REC/PLAY)
	22	AAE1009	Knob (DIRECTION)
	23	AAE1010 (Black type) AAE1025 (Silver type)	Knob (VOLUME)
	24	AAK1001 (Black type) AAK1065 (Silver type)	VOLUME base
	25	AAK1002	AMP panel
	26	AAK1003 (Black type) AAK1066 (Silver type)	Deck panel (A)
	27	AAK1004	Deck panel (B)
	28	AAK1005	Door panel (L)
	29	AAK1006	Door panel (R)
	30	AAK1008 (Black type) AAK1067 (Silver type)	Counter panel
	31	AAN1001	Door
	32	AMB1004 (Black type) AMB1046 (Silver type)	Front panel
	33	ANE1035 (Black type) ANE1036 (Silver type)	Bonnet case
	34	ABH1001	Coil spring (L)
	35	ABH1002	Coil spring (R)
	36	AEB-197	Counter belt
	37	AEC-847	Leg assembly
⚠	38	AEC-882	AC Cord stopper
	39	ABA1003	Screw
⚠	40	ADG-051	AC Power cord (AC 240V)
	41	BBT30P080FMC	Screw
	42	BBZ20P100FMC	Screw
	43	BBZ30P060FZK	Screw
	44	BBZ30P080FZK	Screw
	45	VPZ30P080FZK (Black type) VPZ30P080FUC (Silver type)	Screw
	46	BPZ30P080FZK	Screw
	47	VPZ30P100FMC	Screw
	48	BBZ30P120FZK (Black type) BBZ30P120FUC (Silver type)	Screw
	49	AEB1013	Rubber
	50	ABH1008	PAUSE spring
	51	ABH1010	Sub-spring
	52	ABH1009	Coil spring
	53	AEC-525	Nylon rivet
	54	VMZ30P060FMC	Screw
	55	PMZ20P030FZK	Screw
	56	AZN1109	Synchro spring
	57	AZN1108	Synchro operation plate
	58	AZN1107	Synchro plate
	59	AZN1104	Synchro axis

Mark	No.	Part No.	Description
	60	AZN1102	Docking plate
	61	AZN1103	Knob axis
	62	AZN1112	Rein forcement plate
	63	ANZ1098	Knob holder (R)
	64	ANZ1106	Knob holder (L)
	65	AZB1035	Screw
	66	AZB1042	Screw
	67	AZB1040	Screw
	68	AZN1178	Washer
	101		Cassette mechanism assembly
	102		Chassis
	103		Rear panel
	104		Bottom plate
	105		AMP bage
	106		Bainder
	107		P.C.B Holder
	108		P.C.B Support
	109		EQ assembly
	110		MIC assembly
	111		VR assembly
	112		LED assembly (C)
	113		LED assembly (B)
	114		LED assembly (A)
	115		Remain display paper
	116		Half pressure spring
	117		Unit stay
	118		Mount plate
	119		Heat sink
	120		Heat sink holder

6. PACKING



Mark	No.	Part No.	Description
	1	AHA1001	Side pad (L)
	2	AHA1002	Side pad (R)
	3	AHD1001 (Black type) AHD1055 (Silver type)	Packing case
	4	AMR1060 (Black type) AMR1062 (Silver type)	Player stand (L)
	5	AMR1061 (Black type) AMR1063 (Silver type)	Player stand (R)
	6	ARB1001	Operating instruction (English)
	7	ABA1003	Screw

7. 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 longe than usual or they may be unavailable.*

Miscellaneous Parts

P.C BOARD ASSEMBLIES

Mark	Symbol & Description	Part No.
	TAPE assembly	GWM-463
	AF assembly	GWM-466
	EQ assembly	Non supply
	MIC assembly	Non supply
	VR assembly	Non supply
	LED assembly (A)	Non supply
	LED assembly (B)	Non supply
	LED assembly (C)	Non supply

OTHERS

Mark	Symbol & Description	Part No.
⚠ ★	T1 Power transformer (AC 220V/240V)	ATS-183
⚠ ★★	FU1 Fuse (T1.25A)	AEK-509
⚠ ★★	FU3 Fuse (T1.6A)	AEK-510
⚠ ★★	FU4, FU5 Fuse (T2.5A)	AEK-512
⚠	AC Power cord (AC 240V)	ADG-051

TAPE Assembly (GWM-463)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC501 PRE AMP	BA3416L
★★	IC502	BA3706
★★	IC701, IC702 TR-ARRAY	LB1214
★★	IC703 OP-AMP IC	M5218LF
★★	IC801 W-DECK CONTROL	PDE013
★★	IC601 DOLBY-B IC	TA7719P
★★	IC704 LOGIC IC	TC4052BP
★★	IC503 E-SW IC	μPC1290C
★	D805	RD5.1ESB
★	D701—D707, D801—D803, D806—D812	1SS131
★	D813	RD3.6ESB
★★	Q505, Q506, Q515, Q706, Q707, Q714, Q803—Q805, Q807	2SA1115 (2SA933S)
★★	Q801, Q802	2SA1515
★★	Q501—Q504, Q507—Q512, Q514, Q517, Q518, Q601, Q602, Q703—Q705, Q806, Q708—Q711, Q715—Q718	2SC2603 (2SC1740S)
★★	Q701, Q702	2SD438

COILS, TRANSFORMER AND FILTERS

Mark	Symbol & Description	Part No.
	F601, F602 DOLBY Filter	ATF-210
	L701 Inductor	ATH-094
	L704, L705 Inductor	ATH-108
	L702, L703 Inductor	ATH-119
	L706, L707 Trap coil	ATM-037
	T701 Bias oscillator transformer	ATX-043

SWITCHES

Mark	Symbol & Description	Part No.
★★	S701 Push switch (HIGH SPEED COPY ON/OFF, NOISE REDUCTION ON/OFF, REC MUTE ON/OFF)	ASG1001

CAPACITORS

Mark	Symbol & Description	Part No.
	C701	ACE-133
	C511—C514, C747, C748	CCCSL101J50 (CCDSL101J50)

Mark	Symbol & Description	Part No.
	C751	CCCSL221J50 (CKCSL221J50)
	C501, C502	CCCSL271J50 (CCDSL271J50)
	C803	CCCSL680J50 (CCDSL680J50)
	C705, C706	CCDSL101K500
	C752, C753	CCDSL560K500
	C619, C620	CEASR33M50
	C529, C530, C533, C749	CEASR47M50
	C531, C617, C618	CEASOR1M50
	C505—C508, C601, C602, C730, C731, C750, C804, C806	CEAS010M50
	C532, C613, C614, C625, C746, C801, C536	CEAS100M25
	C535	CEAS101M10
	C534	CEAS101M16
	C623, C624, C711, C712, C732, C733	CEAS2R2M50
	C517, C518	CEAS220M16
	C509, C510, C622	CEAS221M10
	C715, C723	CEAS330M16
	C524, C525, C603, C604, C710	CEAS4R7M50
	C521, C537, C538, C621, C703, C704, C728, C729, C802	CEAS470M16
	C754	CEAS101M10
	C526, C527, C713, C714, C503, C504	CKCYB681K50 (CKDYB681K50)
	C605, C606	CKCYB821K50 (CKDYB821K50)
	C528, C745	CKDYF473Z50
	C707, C709, C735, C736	CQMA103J50
	C702	CQMA123K50
	C717, C722	CQMA123J50
	C522, C523, C708, C741, C742	CQMA153J50
	C609, C610	CQMA182J50
	C716, C738	CQMA183J50
	C519, C520	CQMA273J50
	C724, C725	CQMA332J50
	C515, C516, C607, C608	CQMA333J50
	C611, C612	CQMA472J50
	C615, C616, C718, C719, C720, C721	CQMA473J50
	C539, C540, C734, C737	CQMA682J50
	C726, C727	CQMA683J50
	C734, C737	CQMA822J50

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.
★	VR703, VR704 Semi-fixed	VRTB6VS223
★	VR802, VR803 Semi-fixed	VRTM6H103
★	VR701, VR702 Semi-fixed	VRTM6H104
★	VR501—VR504 Semi-fixed	VRTM6H202
★	VR801, VR804 Semi-fixed	VRTM6H203
	R703, R825, R718	RD1/2PM□□□J
	R521, R540, R621, R733 R787	RD1/4PM□□□J
	Other resistors	RD1/8PM□□□J

AF Assembly (GWM-466)

SEMICONDUCTORS

Mark		Symbol & Description	Part No.
	★★	IC101, IC102 OP-AMP IC	M5218P
⚠	★★	IC401 AUDIO IC	STK4171
⚠	★★	IC402, IC403 REGURATOR IC	μPC78M12H
	★★	Q401	2SB1015
	★★	Q101—Q108, Q402, Q403	2SC1740S (2SC2603)
	★★	Q404	2SD438
	★	D401	KZL150
	★	D402	RD13EB
⚠	★	D407—D412	S5566 (11E2)
	★	D417	RD5.1EB
	★	D102, D103, D415	1SS131
	★	D403	1S2471
⚠	★	D413	4D4B44
	★	D416	RD15ESB
		D414	RD16ES

SWITCHES AND RELLY

Mark		Symbol & Description	Part No.
⚠	★★	S103 Push switch (POWER)	ASG-551
	★★	S102 Push switch (STEREO WIDE)	ASG1002
	★★	S101 Push switch (PHONO, CD, VIDEO, TUNER, TAPE)	SUJ8L22226L
⚠	★	RY401 Relly	ASR-111

COILS

Mark	Symbol & Description	Part No.
	L401, L402 AF Choke coil	ATH-053

CAPACITORS

Mark	Symbol & Description	Part No.
⚠	C433 (0.01μF/AC400V)	ACG1002
⚠	C430, C435	ACG-019
⚠	C431, C432	ACH-252
	C101, C103, C110, C112, C405, C406	CCCSL101J50
	C141, C142	CCCSL121J50
	C424	CEASR47M100
	C117, C118, C128, C135, C136	CEAS010M50
	C119, C120, C130, C411, C413, C416, C426, C428, C310, C317	CEAS100M50
	C412, C434	CEAS101M50

Mark	Symbol & Description	Part No.
	C403, C404	CCCSL221J50
	C102, C107, C111, C115, C121, C122, C125, C126, C131, C132, C137, C138, C401, C402	CEAS2R2M50
	C310, C317	CEAS220M16
	C407—C410, C423, C425	CEAS221M25
⚠	C427	CEAS332M25
	C106, C116, C129, C420, C421	CEAS470M16
	C414, C429, C415, C417	CEAS470M25
	C422	CEAS471M6
	C127, C440	CKCYF473Z50 (CKDYF473Z50)
	C139, C140	CKCYB681K50
	C123, C124	CKCYX103M25
	C104, C113	CQMA242J50
	C418, C419	CQMA473K50
	C105, C114	CQMA822J50
	C133, C134	CKCYB391K50
	C108, C109	CEAS470M10

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.
⚠	R441, R442	RD1/2PMFL100J
	R432, R437, R438	RD1/2PM□□□J
⚠	R419, R420	RD1/4PMFL100J
⚠	R435	RFA1/4PL101J
⚠	R421, R422	RD1/4PMF100J
⚠	R413	RD1/4PMFL222J
	R403—R411, R414, R415	RD1/4PM□□□J
	R416—R418, R424, R425, R426, R428, R429, R430, R434	
⚠	R412	RFA1/4PL101J
⚠	R433	RF1/2PS221J
⚠	R423	RS1LMF681J
	R443, R444	RS2LMF271J
⚠	R431, R436	RS2LMF4R7J
	Other resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	2P Pin jack (OUTPUT)	AKB-093
	6P Pin jack (INPUT, PHONO, CD, VIDEO)	AKB-095
	4P Terminal (SPEAKER)	AKE-109
	Mini jack	AKN-034
	Rivet	AEC-940
	Screw	ABA-271
	Rivet	ACE-525
	Screw (3x8)	BBZ30P080FZK
	Screw (3x6)	PBZ30P060FMC
	Screw (2x3)	PMZ20P030FZK
	Screw (3x6)	VBZ30P060FMC
	Screw (3x8)	VBZ30P080FMC
	Screw (3x6)	VMZ30P060FMC

EQ Assembly

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC301, IC302 AUDIO IC	BA3812L

CAPACITORS

Mark	Symbol & Description	Part No.
	C313, C326	CEASR15M50
	C315, C328	CEASR68M50
	C308, C323	CEAS101M10
	C301, C302	CEAS4R7M50
	C309	CEAS470M16
	C305, C318	CKCYB182K50 (CKDYB182K50)
	C307, C322	CKCYB331K50 (CKDYB331K50)
	C303, C320	CKCYB391K50 (CKDYB391K50)
	C312, C325	CKCYB392K50 (CKDYB392K50)
	C304, C321	CKCYB682K50 (CKDYB682K50)
	C306, C319	CKCYX153M25 (CKDYX153M25)
	C314, C327	CKCYX183M25 (CKDYX183M25)
	C316, C329	CKCX393M25 (CKCX393M25)
	C311, C324	CKCYX683M25 (CKDYX683M25)

RESISTORS

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

Mark	Symbol & Description	Part No.
★	VR301 Slide variable resistor	ACU1001
	Other resistors	RD1/8PM□□□J

MIC Assembly

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	Q202	2SA933S
★★	Q201	2SC1740S

CAPACITORS

Mark	Symbol & Description	Part No.
	C202	CEASR47M50
	C206	CEAS101M25
	C204	CEAS220M16

Mark	Symbol & Description	Part No.
	C205	CEAS470M25
	C201	CKCYB102K50 (CKDYB102K50)
	C203	CKCYB472K50 (CKDYB472K50)
	C207, C208	CKCYF473Z50 (CKDYF473Z50)

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

OTHERS

Mark	Symbol & Description	Part No.
	MIC jack (MIC)	AKN-060
	Mini jack (PHONES)	AKN1001

VR Assembly

Mark	Symbol & Description	Part No.
★	VR401 (VOLUME)	ACU1002

LED Assembly (A)

SEMICONDUCTOR

Mark	Symbol & Description	Part No.
★★	D101 LED	AEL-443

LED Assembly (B)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	Q901	2SC2603 (2SC1740S)
★	D904 LED	AEL-382
★	D902, D903 LED	AEL-424
★	D901	1SS131

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

LED Assembly (C)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★	D905, D907 LED	AEL-424
★	D906	1SS131

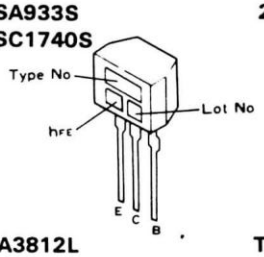
RESISTORS

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

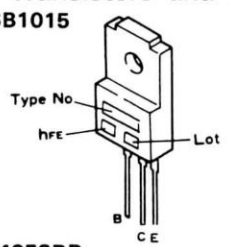
Mark	Symbol & Description	Part No.
	All resistors	RD1/8PM□□□J

External Apperance of Transistors and ICs

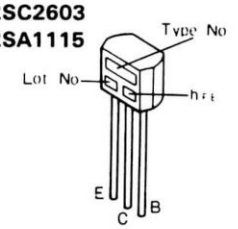
2SA933S
2SC1740S



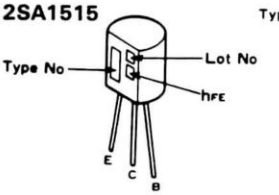
2SB1015



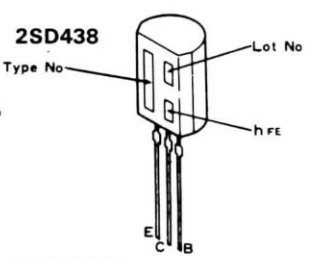
2SC2603
2SA1115



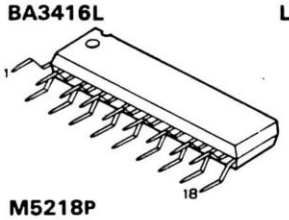
2SC2878
2SA1515



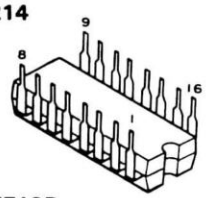
2SD438



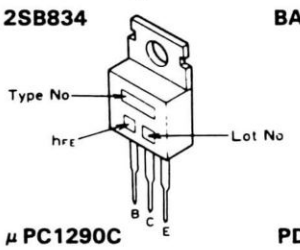
BA3812L
BA3416L



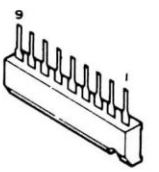
TC4052BP
LB1214



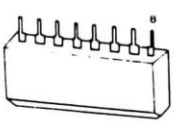
2SB834



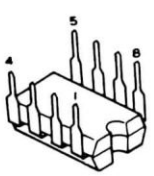
BA3706



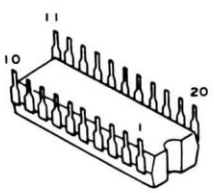
M5218LF



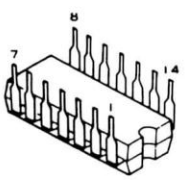
M5218P



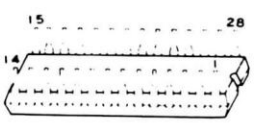
TA7719P



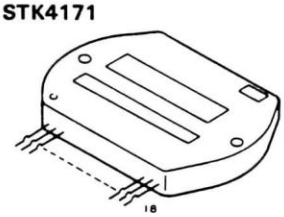
μPC1290C



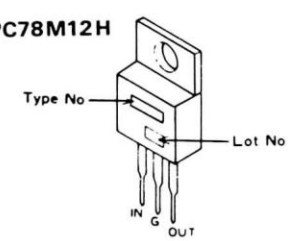
PDE013



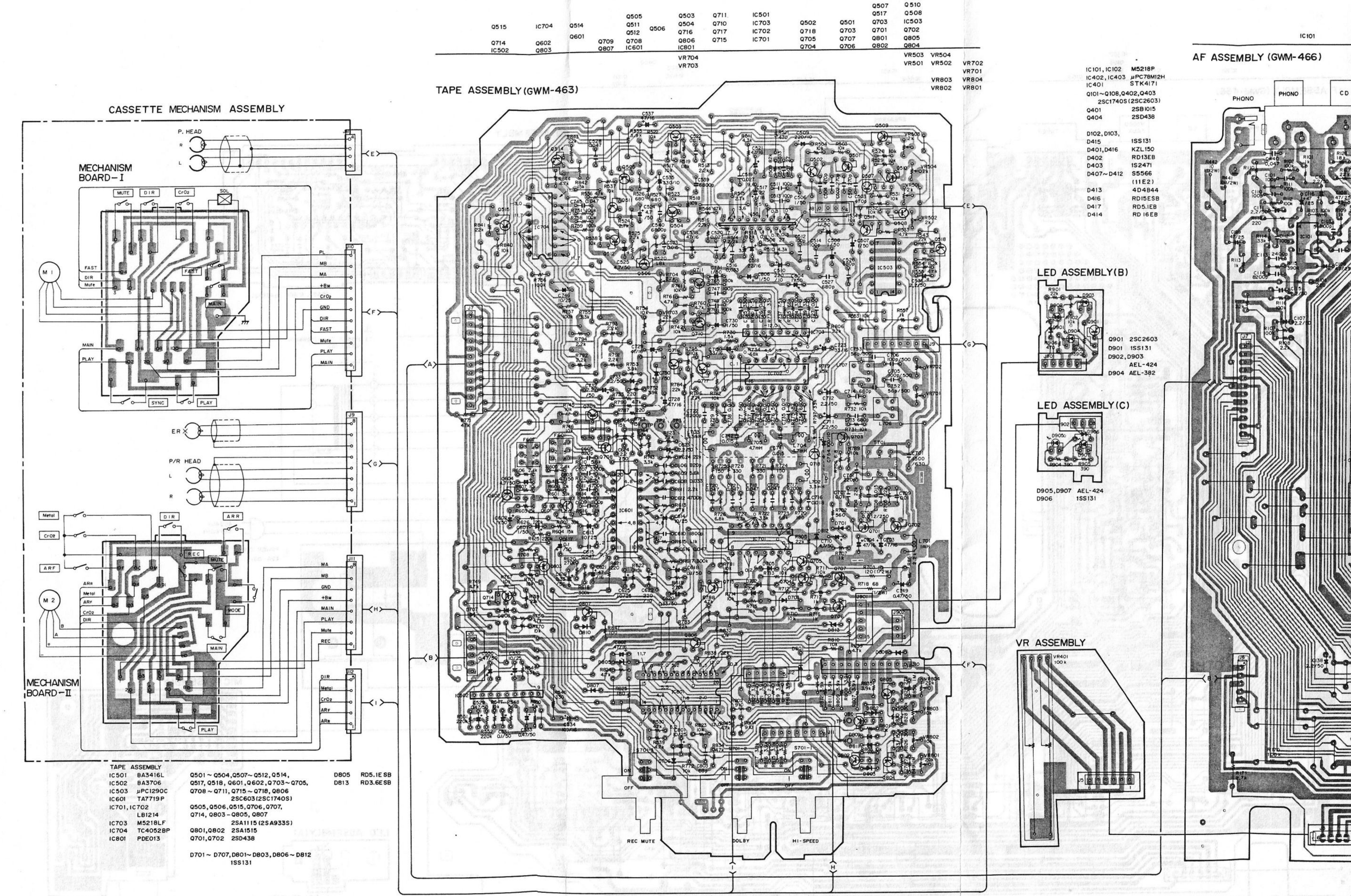
STK4171



μPC78M12H



8. P.C. BOARDS CONNECTION DIAGRAM



TAPE ASSEMBLY	
IC501	BA3416L
IC502	BA3706
IC503	μPC1290C
IC601	TA7719P
IC701, IC702	LB1214
IC703	M5218LF
IC704	TC4052BP
IC801	PDE013

Q501 ~ Q504, Q507 ~ Q512, Q514, Q517, Q518, Q601, Q602, Q703 ~ Q705, Q708 ~ Q711, Q715 ~ Q718, Q806	2SC603(2SC1740S)
Q505, Q506, Q515, Q706, Q707, Q714, Q803 - Q805, Q807	2SA1115 (2SA933S)
Q801, Q802	2SA1515
Q701, Q702	2SD438
D701 ~ D707, D801 ~ D803, D806 ~ D812	1SS131
D805	RD5.1ESB
D813	RD3.6ESB

IC101, IC102	M5218P
IC402, IC403	μPC78M12H
IC401	STK4171
Q101 ~ Q108, Q402, Q403	2SC1740S (2SC2603)
Q401	2SB1015
Q404	2SD438
D102, D103, D415	1SS131
D401, D416	KZL150
D402	RD13EB
D403	1S2471
D407 ~ D412	S5566 (11E2)
D413	4D4B44
D416	RD15ESB
D417	RD5.1EB
D414	RD16EB

Q901	2SC2603
D901	1SS131
D902, D903	AEL-424
D904	AEL-382

D905, D907	AEL-424
D906	1SS131

7 8 9 10 11 12

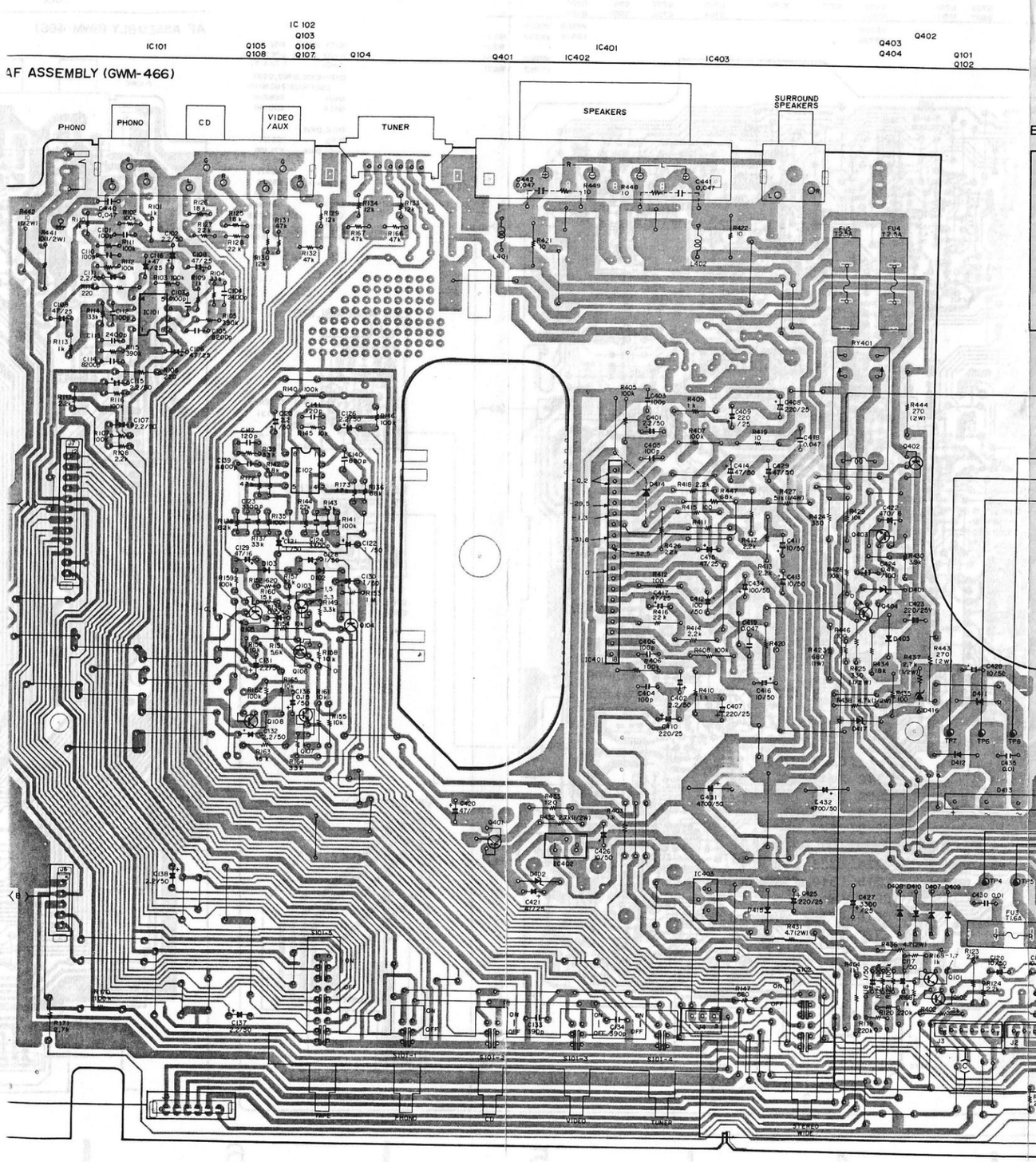
A

B

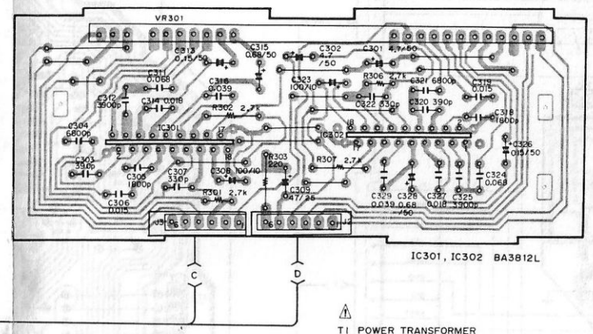
C

D

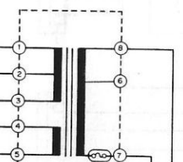
AF ASSEMBLY (GWM-466)



EQ ASSEMBLY

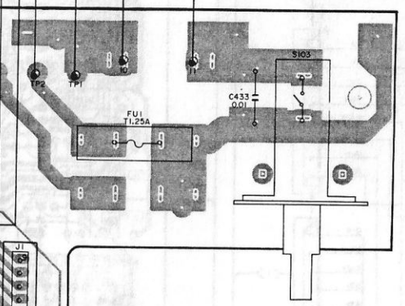


⚠ T1 POWER TRANSFORMER ATS-183

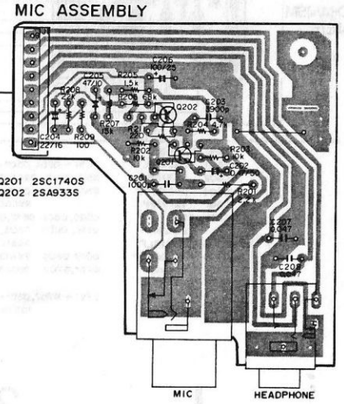


AC 240V 50/60Hz

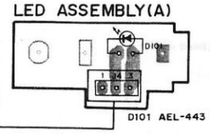
⚠ POWER CORD ADG-051



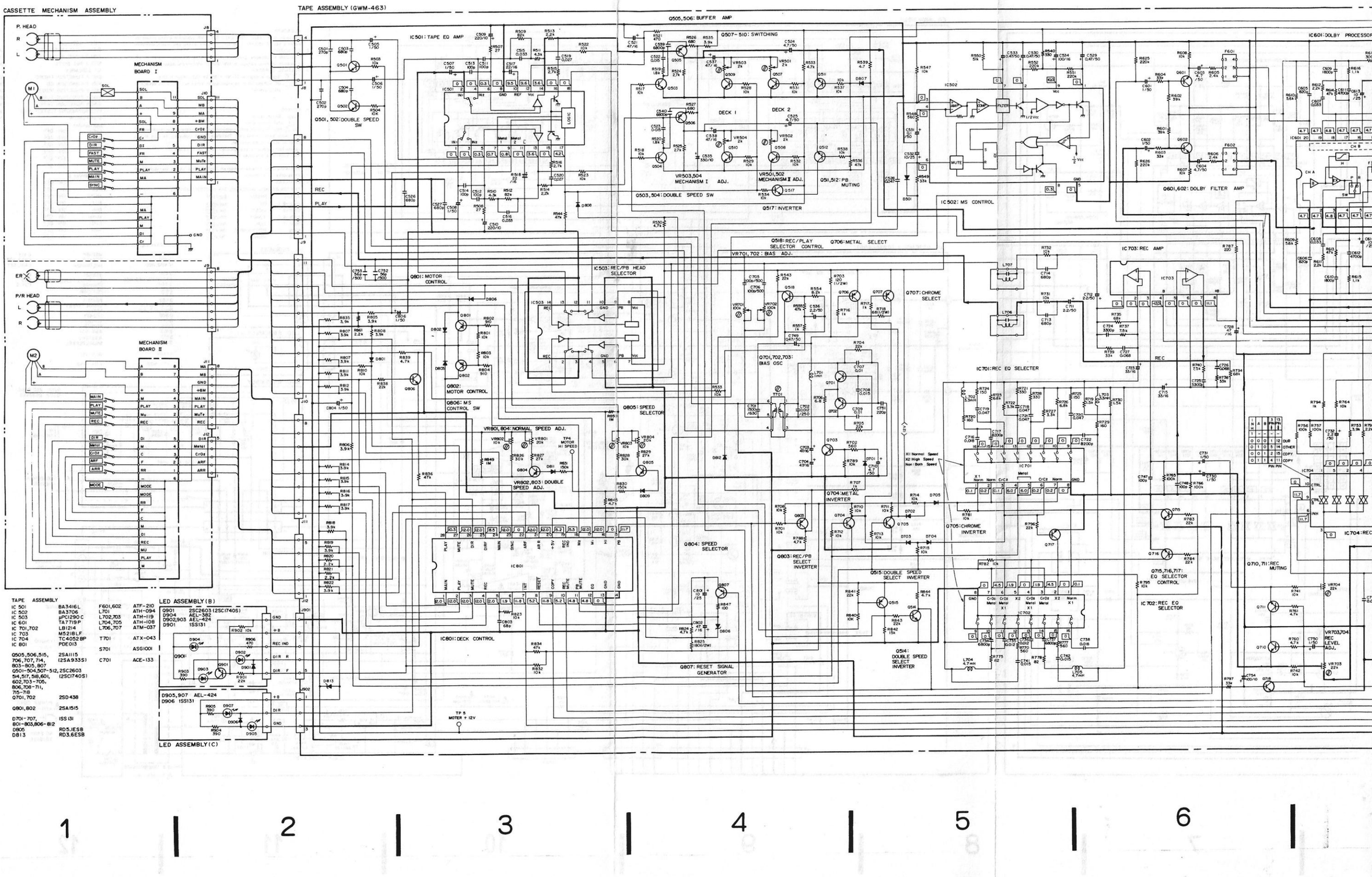
MIC ASSEMBLY



LED ASSEMBLY(A)

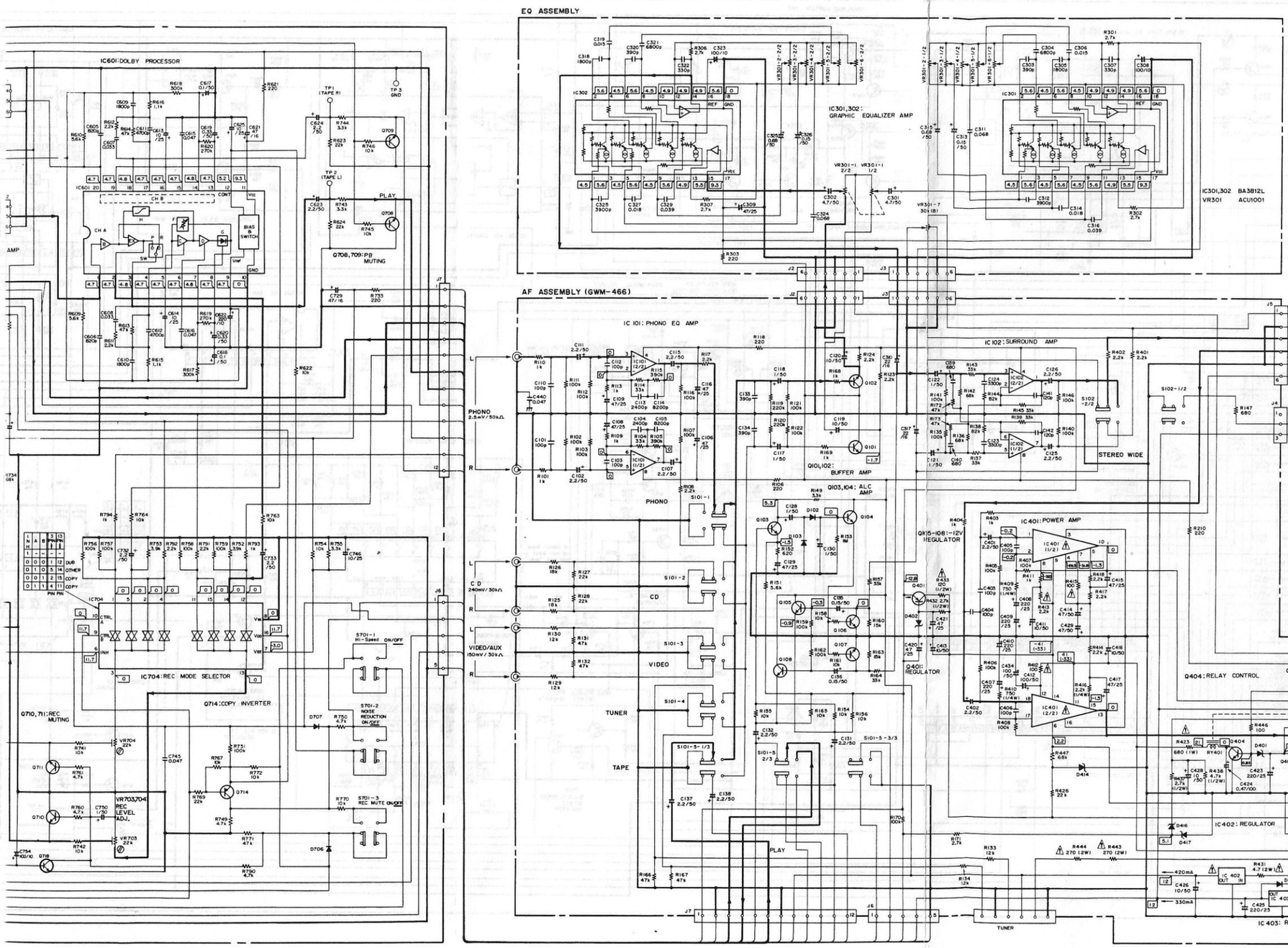


9. SCHEMATIC DIAGRAM



TAPE ASSEMBLY			
IC 501	BA3416L	F601,602	ATF-210
IC 502	BA3706	L701	ATH-094
IC 503	μPC1290 C	L702,703	ATH-119
IC 601	TA7719P	L704,705	ATH-108
IC 701,702	LB1214	L706,707	ATM-037
IC 703	M52181LF	T701	ATX-043
IC 704	TC4052BP		
IC 801	PDE013	S701	ASG1001
Q505,506,515, 706,707,714, 803~805,807	2SA1115 (2SA933S)	C701	ACE-133
Q501~504,507~512, 514,517,518,601, 602,703~705, 806,706~711, 715~718	2SC2603 (2SC1740S)		
Q701,702	2SD438		
Q801,802	2SA1515		
D701~707, 801~803,806~812	ISS131		
D805	RD5.1ESB		
D813	RD3.6ESB		

NOTE:
The indicated semiconductors are representative ones only. Other alternative semiconductors may be used and are listed in the parts list.



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:
V: Signal voltage at 50 W + 50 W, 8Ω output (1 kHz)
: DC voltage (V) at no input signal Value in ( ) is DC voltage at rated power.
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

S101-1 :	PHONO	ON/OFF
S101-2 :	CD	ON/OFF
S101-3 :	VIDEO	ON/OFF
S101-4 :	TUNER	ON/OFF
S101-5 :	TAPE	ON/OFF
S102 :	STEREO WIDE	ON/OFF
S103 :	POWER	ON/OFF

TAPE ASSEMBLY	
S701-1 HIGH SPEED COPY	ON-OFF
S701-2 NOISE REDUCTION	ON-OFF
S701-3 REC MUTE	ON-OFF
AF ASSEMBLY	
S101-1 FUNCTION PHONO	ON OFF
S101-2 FUNCTION CD	ON-OFF
S101-3 FUNCTION VIDEO	ON-OFF
S101-4 FUNCTION TUNER	ON-OFF
S101-5 FUNCTION TAPE	ON-OFF
S102 SURROUND STEREO WIDE	ON-OFF
S103 POWER	ON-OFF
MECHANISM I	
CrO2	ON-OFF
DIR	ON-OFF
FAST	ON-OFF
MUTE	ON-OFF
PLAY	ON-OFF
MAIN	ON-OFF
MECHANISM II	
MAIN	ON-OFF
PLAY	ON-OFF
MUTE	ON-OFF
REC	ON-OFF
DIR	ON-OFF
Metal	ON-OFF
CrO2	ON-OFF
AR#	ON-OFF
AR#	ON-OFF

AF ASSEMBLY

IC101,102	M5218P	C433	ACG1002
IC401	STK4171	C430,435	ACG-019
IC402,403	μPC78M12H	C431,432	ACH-252
Q401	2SB1015	FU1	AEK-509
Q101-108, 402, 403	2SC1740S (2SC2603)	FU3	AEK-510
Q404	2SD1438	FU4,5	AEK-512
D416	RD15ESB	D417	RD5.1EB
D401	KZL150		
D402	RD13EB		
D407-D412	S5566 (11E2)		
D102,103, 415	1SS131		
D403	1S2471		
D413	4D4B44		
D414	RD16EB		
S103	ASG-551		
S102	ASG1002		
S101	SUJ8L22226L		
RY401	ASR-111		
L401, 402	ATH-053		

10. CIRCUIT DESCRIPTIONS

10-1. BASIC BLOCKS OF DC-X55Z AND DC-X33Z SIGNAL SYSTEMS

The difference of the two is mainly at the deck section. Table 10-1 indicates the comparative table. As the DC-X33Z is a lower model of DC-X55Z, description will be given mainly on the DC-X55Z.

The signal system basic block is herein indicated so as to comprehend the DC-X55Z signal system from 10-1-1 to 10-1-4.

Table. 10-1

		DC-X33Z	DC-X55Z	Remark
Mechanism structure		Single (Mechanism 2*1)	Double (Mechanism 1*2 and 2)	*1: Approximately similar to the mechanism 2 of DC-X55Z (REC/PB mechanism) *2: Playback only
Head		E.H and REC/PB H	E.H and REC/PB H . . . Mechanism 2 side PB H . . . . . Mechanism 1 side	
Motor		Rotation number is adjusted by the main body of motor.	Rotation number is adjusted on the board separate from the motor. (Double speed/normal speed)	
Main functions	Copy function	×	○(Double speed copy is enable)	
	Dubbing function	×	○	
	Relay play	×	○	
	REC MUTE	×	○	
Main IC	Control microcomputer	PDE013	PDE013	
	Dolby IC	TA7719	TA7719	
	Others	×	TC4052BP	IC704 is an IC provided for copy and dubbing functions.

* Is not the DC-X33Z model.

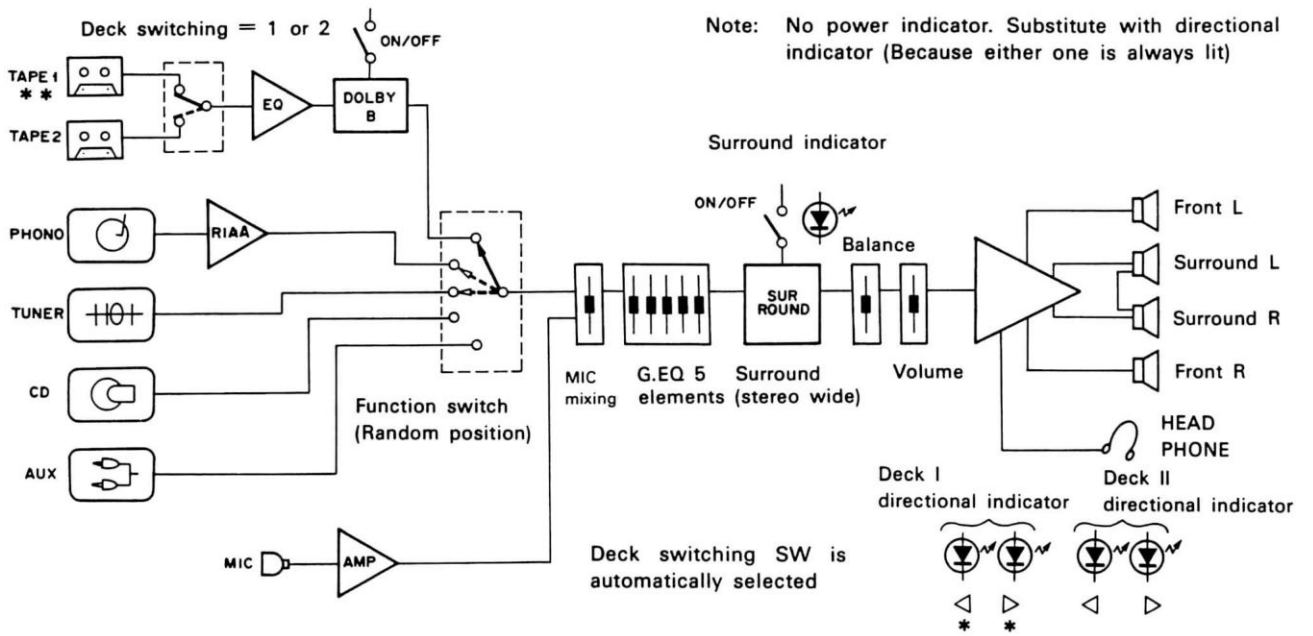


Fig. 10-1-1 Signal system basic block during playback (DC-X55Z, DC-X33Z)

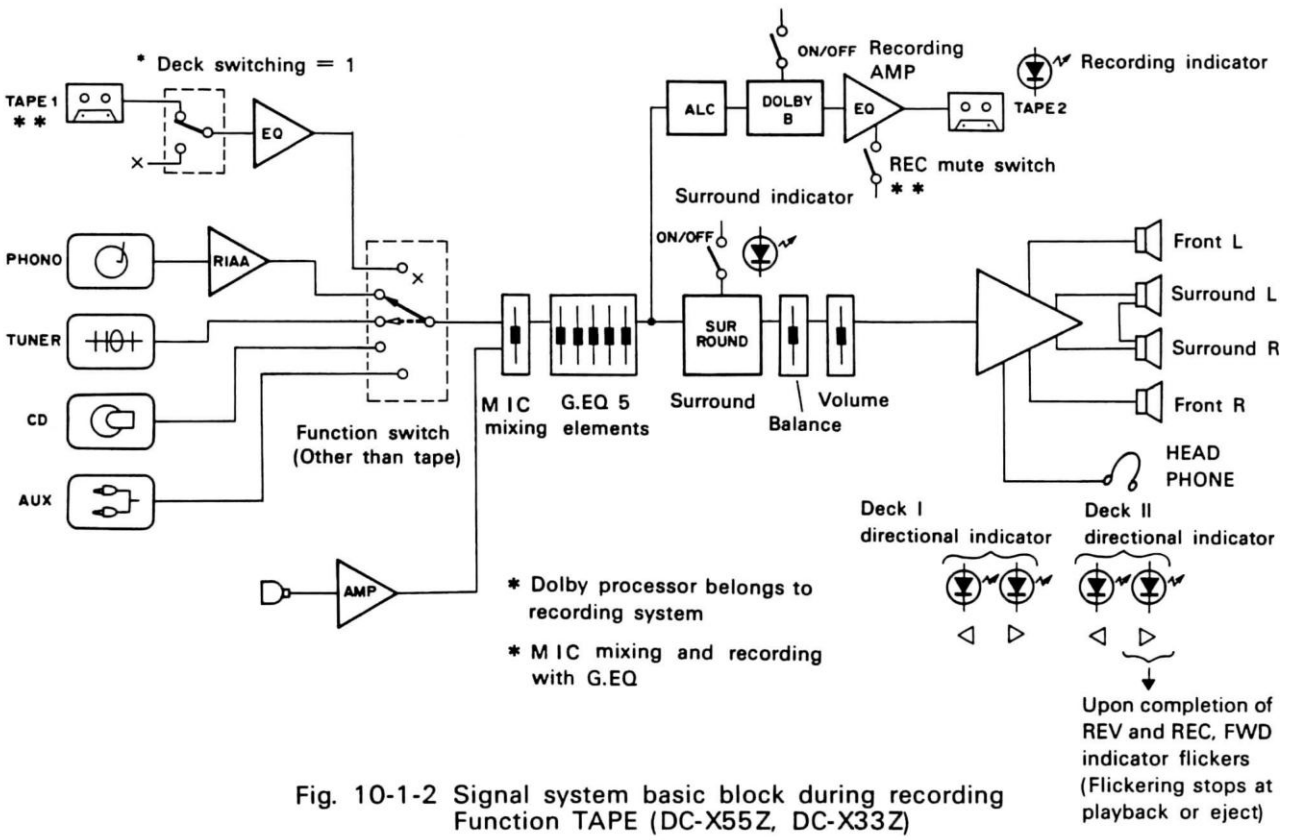


Fig. 10-1-2 Signal system basic block during recording Function TAPE (DC-X55Z, DC-X33Z)

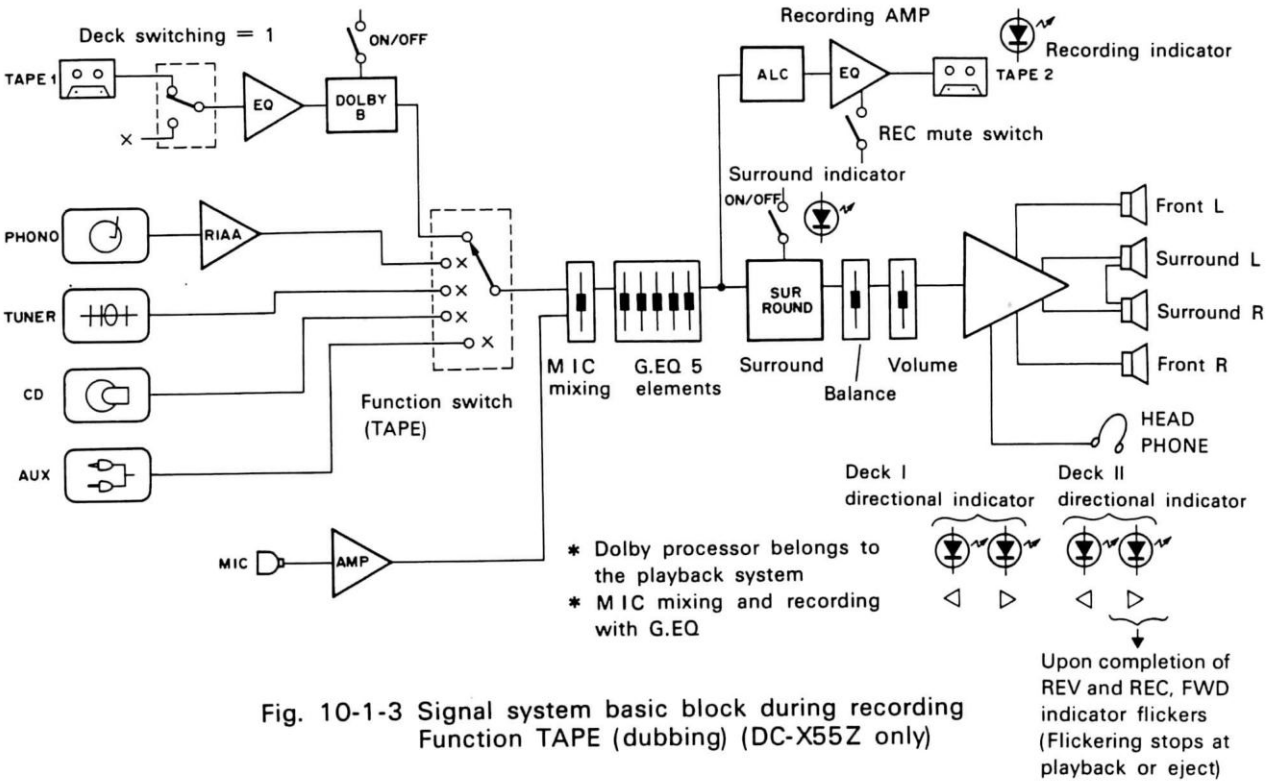


Fig. 10-1-3 Signal system basic block during recording Function TAPE (dubbing) (DC-X55Z only)

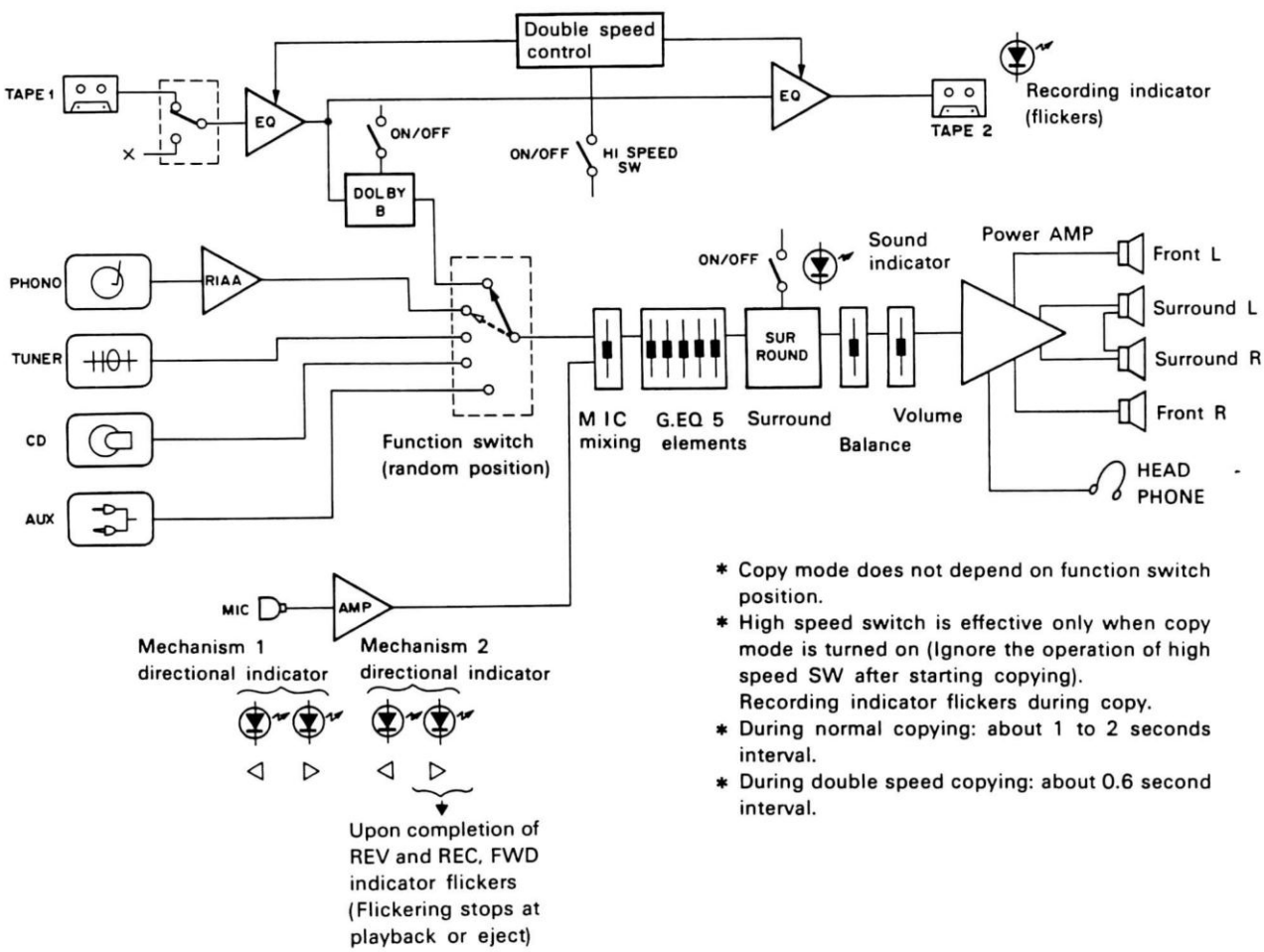
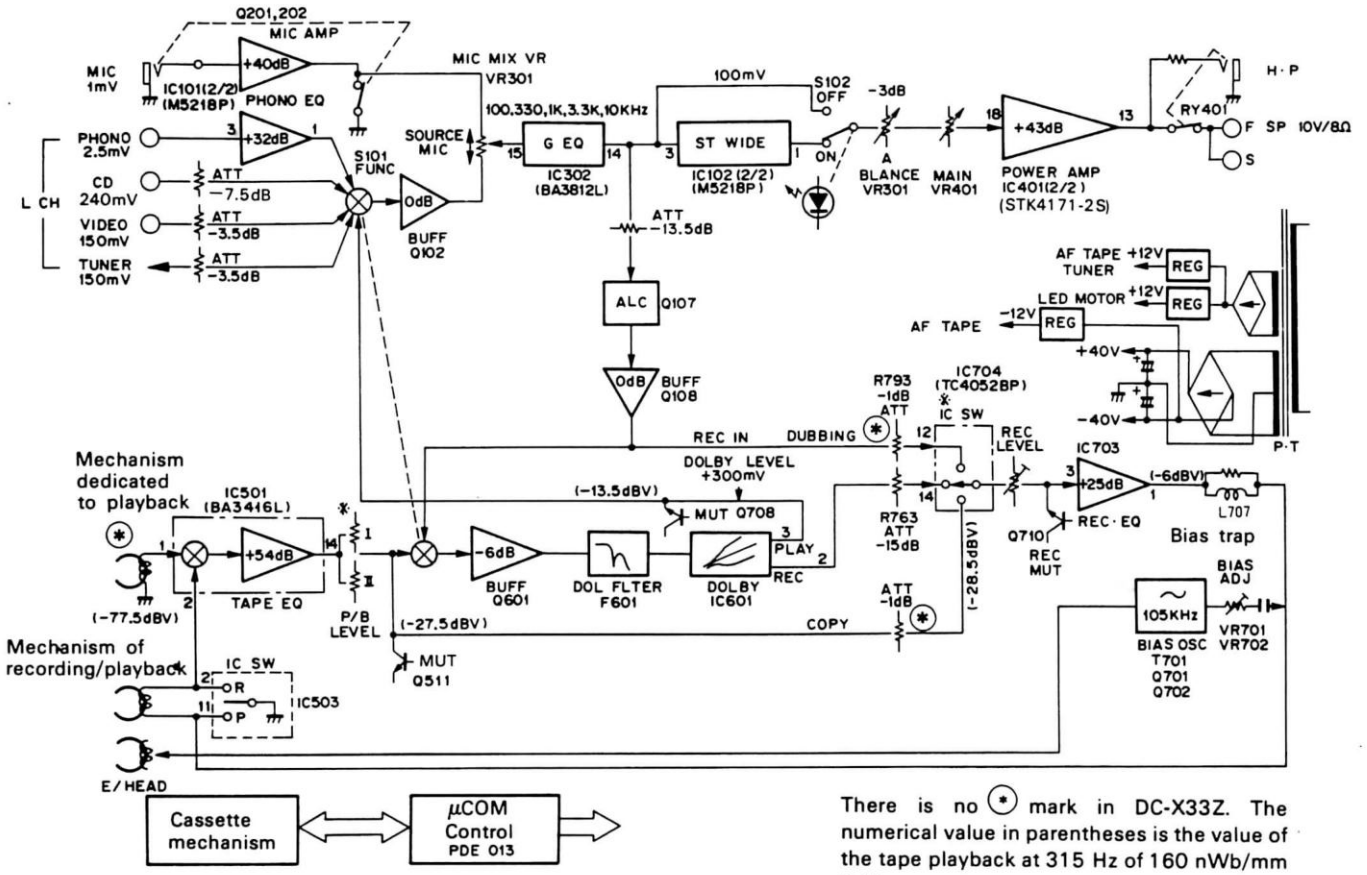


Fig. 10-1-4 Signal system basic block during copy (DC-X55Z only)

10-2. BLOCK DIAGRAM

Fig. 10-2-1 indicates the block diagram of DC-X55Z. Take note that there is no Ⓐ mark in the Fig. of DC-X33Z.



There is no Ⓐ mark in DC-X33Z. The numerical value in parentheses is the value of the tape playback at 315 Hz of 160 nWb/mm 0dB.

Fig. 10-2-1 Block diagram

The characteristic of this model is that it has only one system in the deck playback system and that this system uses the respective modes of operation separately so that the mechanism 1 does not overlap with the signal system of mechanism 2.

10-3. LEVEL DIAGRAM

Fig. 10-3-1 shows the level diagram.

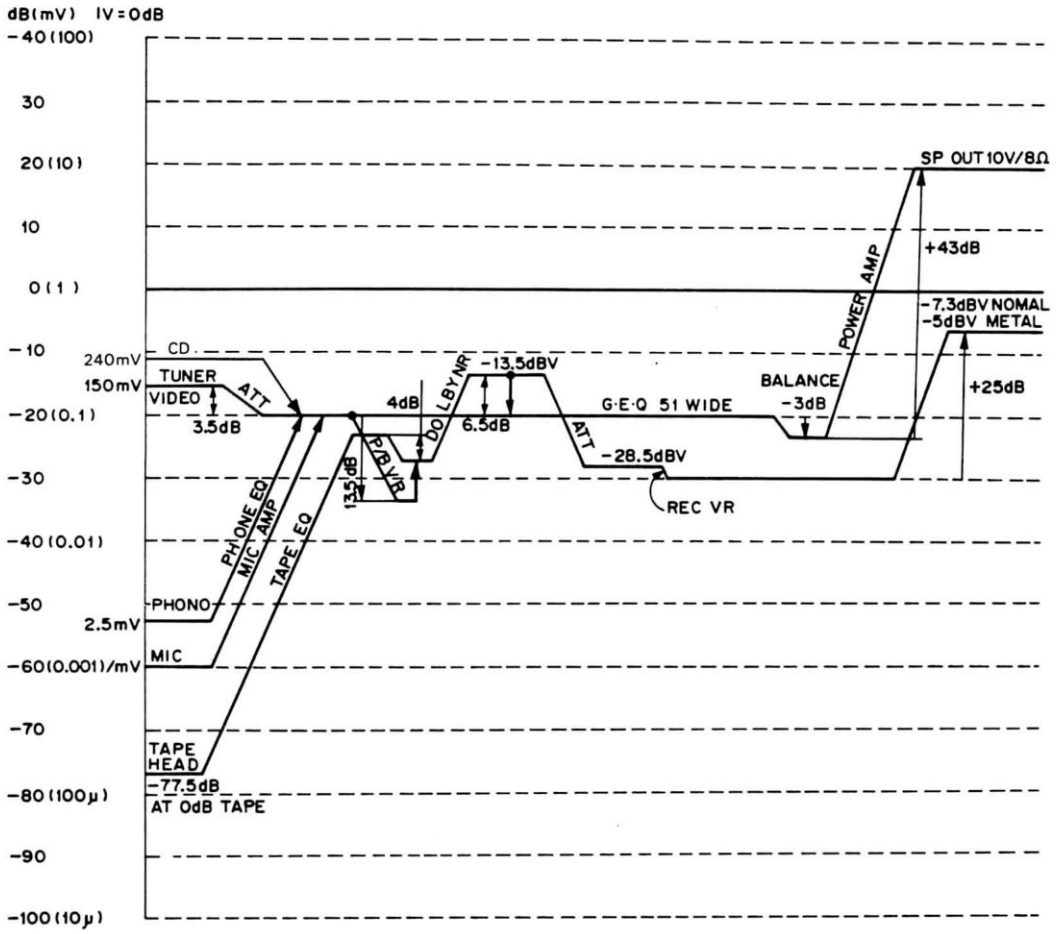


Fig. 10-3-1 Level diagram

10-4. SURROUND AND STEREO WIDE CIRCUIT

Fig. 10-4-1 shows the block diagram of the surround and stereo wide circuits.

This circuit leaves the normal component of the medium and low bands as is, and adds the inverse plase to the high and medium band components (There are many reverberal components and ambiance components). In this manner, the normal position of the bass, vocal, etc. become devoid of bad effects, and the sound is heard widening toward the left and right. Also, if a surround loudspeaker is used, one gets the feeling of being surrounded by the sound.

Regarding Fig. 10-4-1

1. The input signals of L and R go through a filter which suppresses the respective medium and high band components.
2. Creates an L and R signal component difference and perform addition to the L-ch and subtraction to the R-ch.
3. By performing such calculations, it emphasizes the differential signal components in the medium and high bands in the original source, and obtains a wide sound which is not unnatural (distorted feeling).

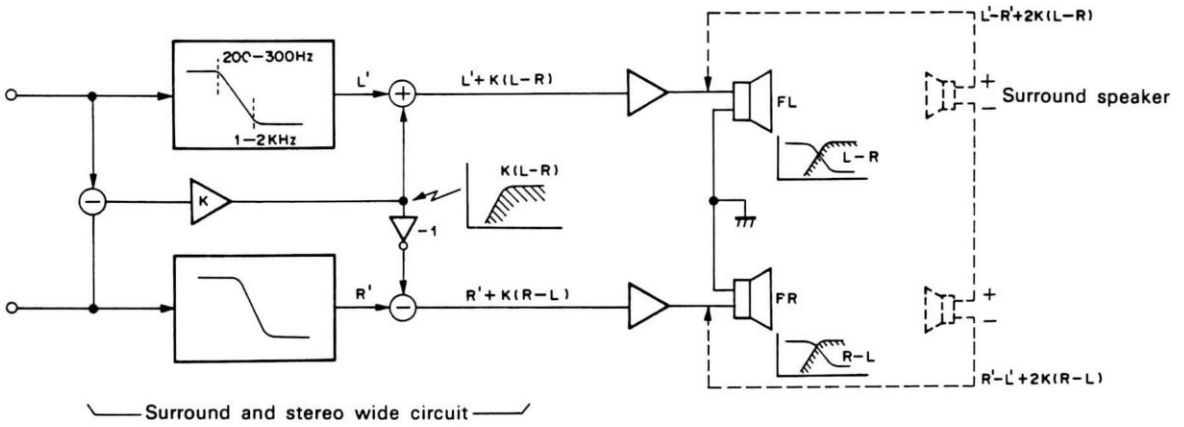
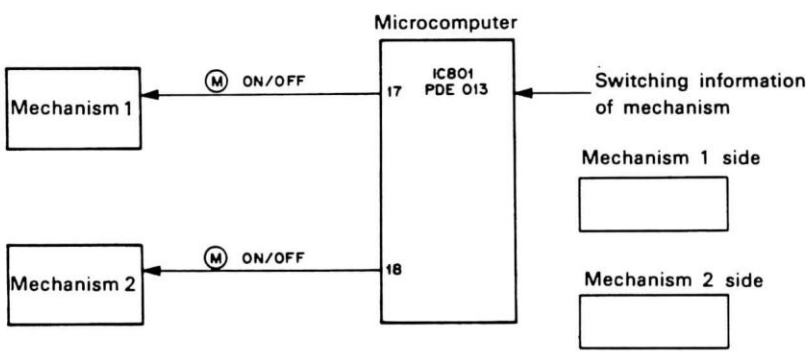


Fig. 10-4-1 Surround and stereo wide circuit block diagram

10-5. MICROCOMPUTER FOR CONTROL

The microcomputer IC801 (PDE013) of DC-X55Z gives the on-off commands of the motor only against the mechanism (mechanism 1 and mechanism 2). Also as input, it observes the switch information of the mechanism. The on-off operation of the motor is carried out with this switch information. See Fig. 10-5-1.

In addition, this microcomputer also controls the circuit block (See Fig. 10-5-2). In 2 10-5-3, there is a list of the typical timing chart, pin name and functions.



*** SW information on the mechanism 1 side**
Main SW→Same as mechanism 2
Play SW→Same as mechanism 2
Mute SW→Same as mechanism 2
First SW→On when the knob of FF or REW is being pressed
Direction SW→Same as mechanism 2
Chrome SW→Off when chrome or metal

*** SW information on the mechanism 2 side**
(Except stop or pause)
Main SW→On when knob is turned on
Play SW→On when the play knob is pressed
Mute SW→On when the head and tape is in contact
REC SW→On when REC knob is pressed
Direction SW→On when in reverse playback
Anti-REC A SW→Off when claw on A side is broken
Anti-REC B SW→Off when claw on B side is broken
Mode SW→Off when □ □ display is □→
Chrome SW→Off when chrome and metal
Metal SW→Off when metal

Fig. 10-5-1 Function of control microcomputer

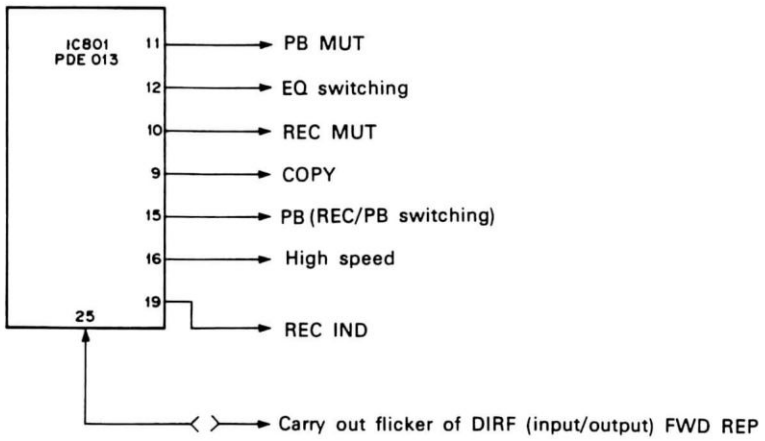


Fig. 10-5-2 Control of microcomputer circuit block dedicated to control

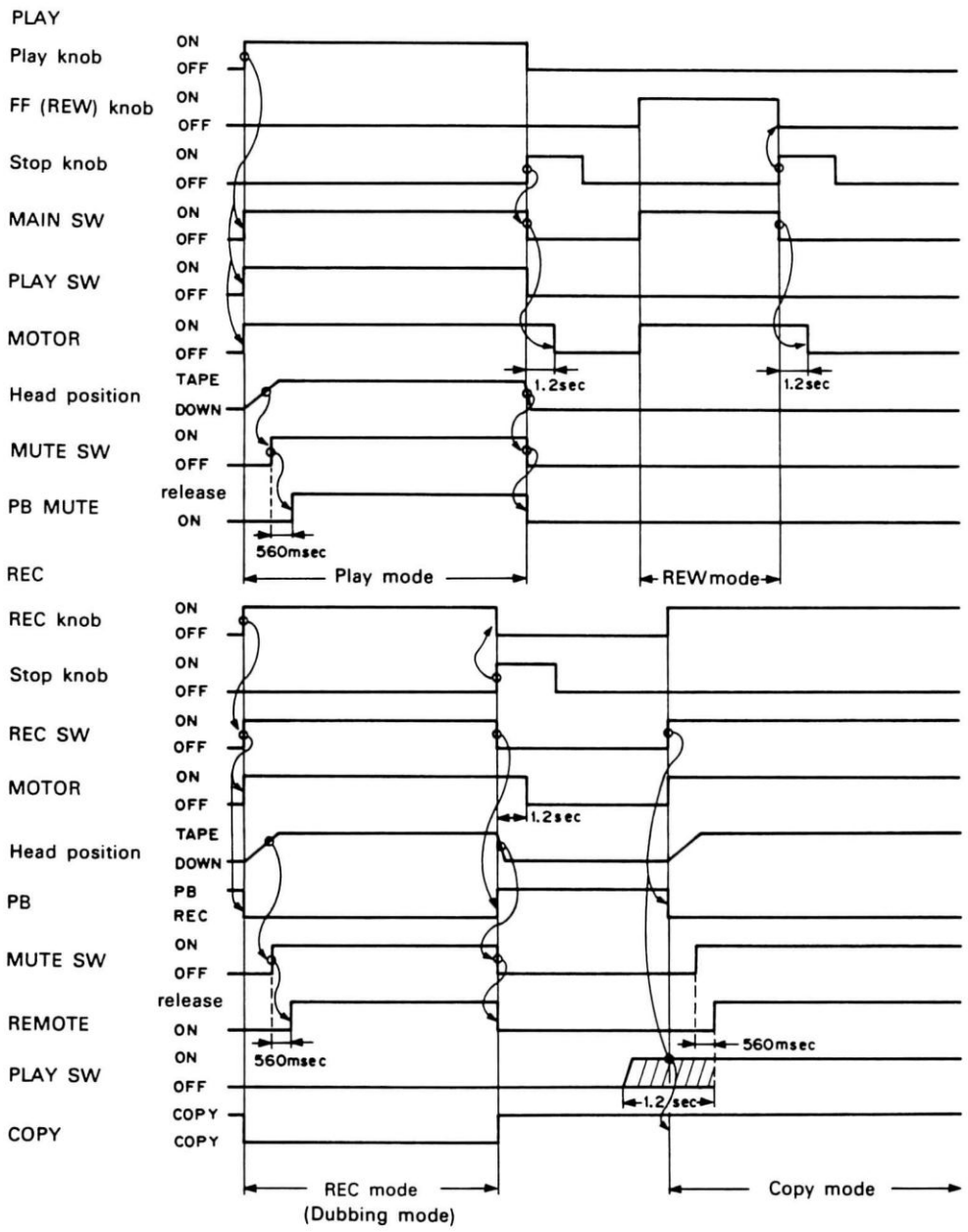


Fig. 10-5-3 (1/2) PDE013 timing chart

Pin name and functions

Pin No.	Pin name	Input/output of siganl	Function
21	ARR	Input	B side erroneous recording prevention claw SW input of mechanism II: "1" when bloken.
22	ARF	Input	A side erroneous recording prevention claw SW input of mechanism II: "1" when broken.
23	SYNC	Input	Sync SW input in common: "0" when sync knob is pressed[Note 1)]
24	MAIN (1)	Input	Main SW input of mechanism 1: "0" when all the knobs are pressed except stop
25	DIRF	Input/output	DIR SW input and flickering output of mechanism II: "0" when B side is running[Note 2)]
26	DIR	Input	DIR SW input and flickering output of mechanism I: "0" when B side is running
27	MUTE (1)	Input	Mute SW input of mechanism I: "0" when head is turned up
28	PLAY (1)	Input	Play SW input of mechanism I: "0" when play knob is pressed
1	MAIN (2)	Input	Main SW input of mechanism II: "0" when all the knobs are pressed except stop or pause
2	PLAY (2)	Input	Play SW input of mechanism II: "0" when play knob is pressed
3	MUTE (2)	Input	Mute SW input of mechanism II: "0" when head is turned up
4	REC	Input	REC SW input of mechanism II: "0" when REC knob is pressed
7	INT	Input	High speed SW input:[Note 3)]
8	RES	Input	Reset input
9	COPY	Output	Copy output ("0" during REC plus the fact that it is not in copy mode)
10	REC MUTE	Output	REC mute output ("0" when only REC mute is released)
11	MUTE	Output	PB mute output ("0" when only PB mute is released)
12	EQ	Output	EQ switching output ("1" during playback of mechanism I, "0" during playback of mechanism II)
15	PB	Output	Recording/playback switching of mechanism II ("1" during PB, "0" during REC)
16	HISPEED	Output	Double speed switching output ("1" during double speed, "0" during normal)
17	M1	Output	Motor control output of mechanism I ("0" during on)
18	M2	Output	Motor control output of mechanism II ("0" during on)
19	REC IND	Output	Recording IND output ("0" when lit)[Note 4)]

Fig. 10-5-3(2/2) PDE013 pin name and function

*** The output pins are all open collector outputs.**

Note 1: Sync SW is not used. In this case, PULL DOWN sync input.

Note 2: Only when DIRF input is 1 (During A side running), it may cause flickering output.
Flickering condition: When it is stopped during recording of REV side.
Flickering condition: When all the knobs are pressed except stop or pause, or when ejected.
Flickering ascertains that the running is in FWD, and does not have any connection with the ordinary operations.

Note 3: Immediately after start of copying, it instantaneously operates as input. The trigger is REC mute output.
During high speed REC mute INT
During normal High speed SW

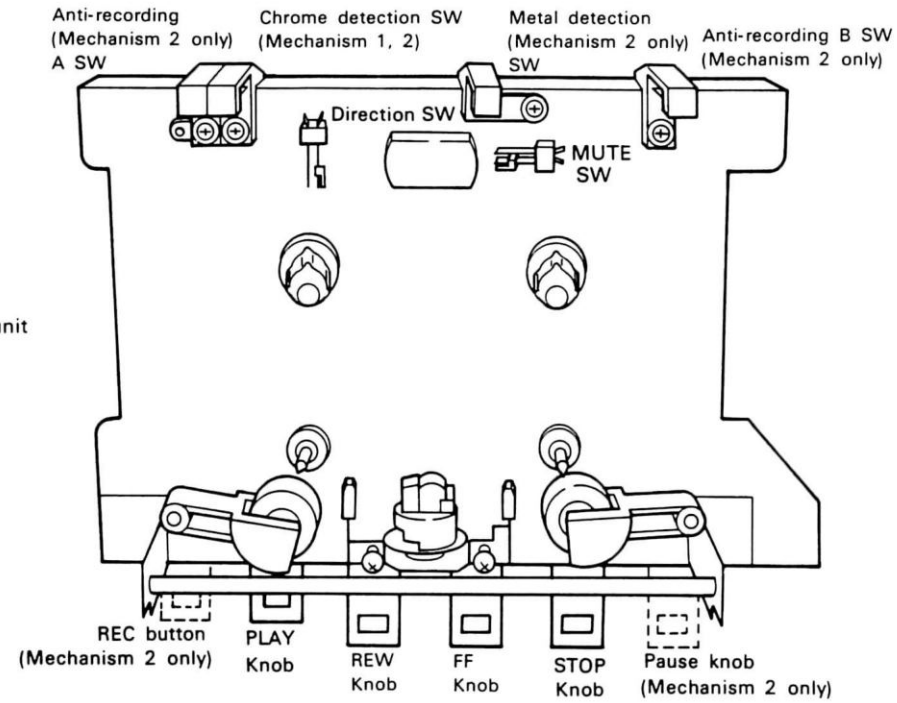
Note 4: During REC→lights
During copying
During normal→Repeats flickering at about 1.2 sec interval
During high speed→Repeats flickering at about 0.6 sec interval

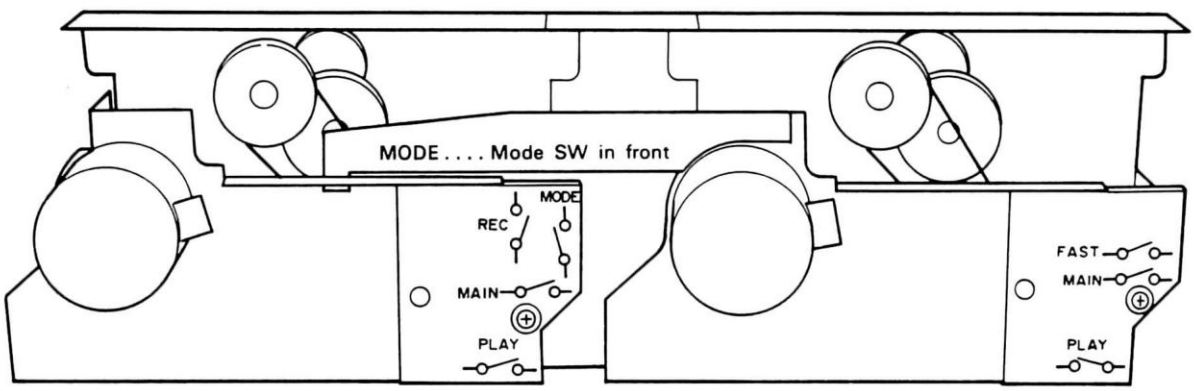
10-6. RELATIONSHIP BETWEEN MECHANISM OPERATION AND CONTROL MICROCOMPUTER

Before going into the main subject, Fig. 10-6-1 indicates the position and its role of the various SW on the mechanism.

In addition, as the names of "Mode" SW and "Direction" SW are used frequently in this manual, it is recommended that due notice be taken in their relation to the front panel.

a. Figure of mechanism unit seen from front side





b. Figure seen of mechanism from direction of arrow by opening of bonnet

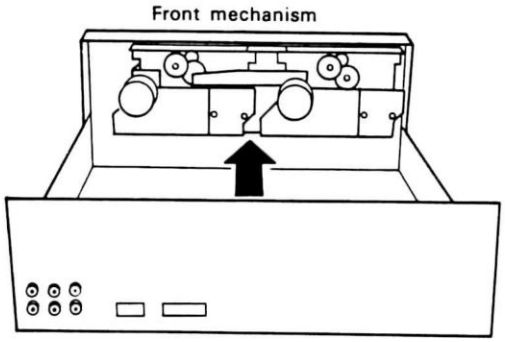


Fig. 10-6-1 Position and role of the various SW

10-6-1. When Mechanism 1 or Mechanism 2 Operates (Play) Independently

The microcomputer observes with the main switch, as indicated in Fig. 10-6-1(b), as to which knob of the mechanism has been pressed. Against the side of the mechanism of which this switch is on, the signal is output which turns the motor on.

Next, as explained in the block diagram 2, the DC-X55Z has only a single playback amp. Therefore it becomes necessary to make a loop in order to send to the playback amp. the playback signal obtained from the head on the selected mechanism side.
These functions are indicated in Fig. 10-6-2.

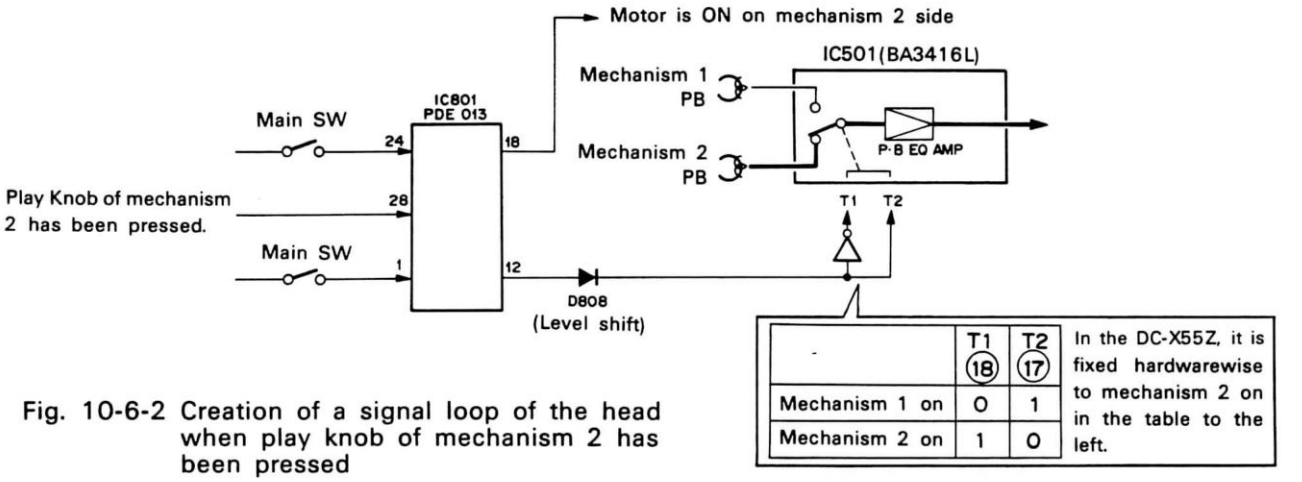


Fig. 10-6-2 Creation of a signal loop of the head when play knob of mechanism 2 has been pressed

10-6-2. When Mechanism 2 Side Performs REC Operation

Pin ⑫ output (EQ output) of IC801 (PDE013) is switched to playback of mechanism 1 at "H".

Make pin ⑮ (mechanism 2 recording/palyback switching output) into "L" and induce REC mode. By doing so,

- IC503 is switched to REC mode.
- Make into operation possible state the SW of IC704. (Make to enable)
- Operates the bias oscillator
- Lights the REC IND

The above-mentioned operate and mechanism 2 goes into REC operation.

Moreover, as to the judgment whether it enables the REC operation in practice is judged by the anti-REC SW [See Fig. 10-6-1(a)] alone. (This model is structured mechanically so that the REC knob may be pressed even when the tape erroneous erasure prevention claw is broken. In case the claw is broken, it is so structured that the motor does not rotate and recording may not be performed.)

When reading the anti-REC SW state, it is performed during the start of REC. (The microcomputer does not observe thereafter). These relationships are shown in Fig. 10-6-3.

In Fig. 10-6-3, when the erroneous erasure prevention claw is broken, pins ㉑ and ㉒ of the microcomputer become "H" due to the anti-REC SW being off, and therefore does not become into the REC state.

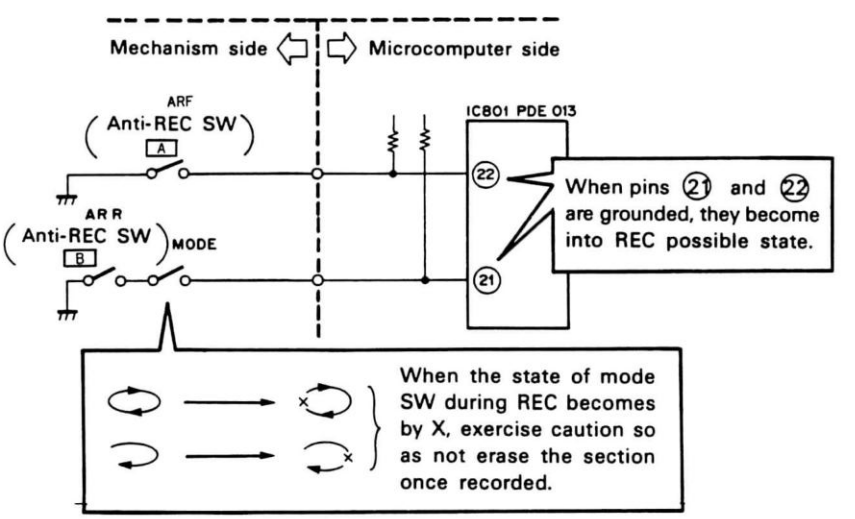


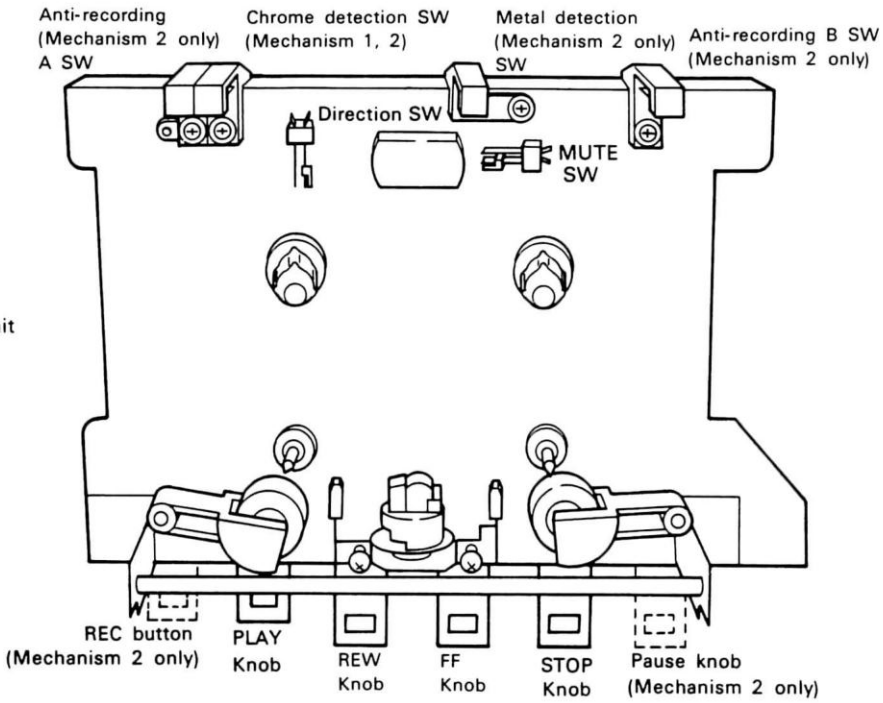
Fig. 10-6-3

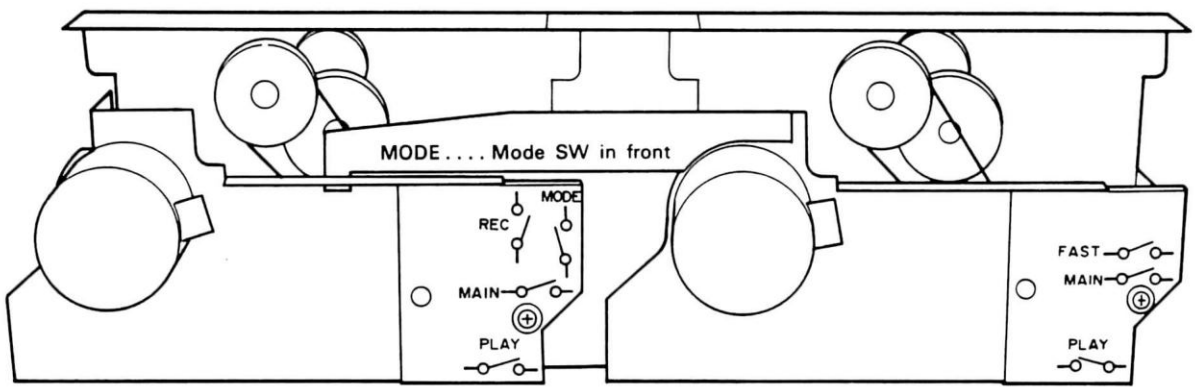
10-6. RELATIONSHIP BETWEEN MECHANISM OPERATION AND CONTROL MICROCOMPUTER

Before going into the main subject, Fig. 10-6-1 indicates the position and its role of the various SW on the mechanism.

In addition, as the names of "Mode" SW and "Direction" SW are used frequently in this manual, it is recommended that due notice be taken in their relation to the front panel.

a. Figure of mechanism unit seen from front side





b. Figure seen of mechanism from direction of arrow by opening of bonnet

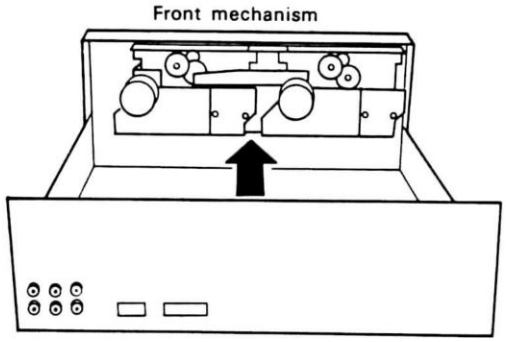
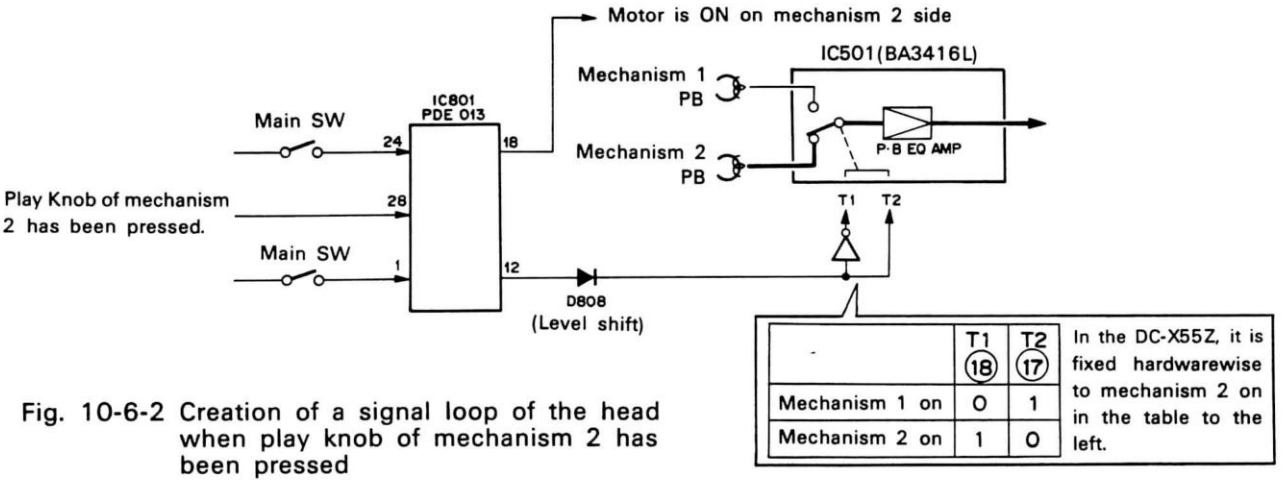


Fig. 10-6-1 Position and role of the various SW

10-6-1. When Mechanism 1 or Mechanism 2 Operates (Play) Independently

The microcomputer observes with the main switch, as indicated in Fig. 10-6-1(b), as to which knob of the mechanism has been pressed. Against the side of the mechanism of which this switch is on, the signal is output which turns the motor on.

Next, as explained in the block diagram 2, the DC-X55Z has only a single playback amp. Therefore it becomes necessary to make a loop in order to send to the playback amp. the playback signal obtained from the head on the selected mechanism side.
These functions are indicated in Fig. 10-6-2.



	T1 (18)	T2 (17)
Mechanism 1 on	0	1
Mechanism 2 on	1	0

Fig. 10-6-2 Creation of a signal loop of the head when play knob of mechanism 2 has been pressed

10-6-2. When Mechanism 2 Side Performs REC Operation

Pin (12) output (EQ output) of IC801 (PDE013) is switched to playback of mechanism 1 at "H".

Make pin (15) (mechanism 2 recording/palyback switching output) into "L" and induce REC mode. By doing so,

- IC503 is switched to REC mode.
- Make into operation possible state the SW of IC704. (Make to enable)
- Operates the bias oscillator
- Lights the REC IND

The above-mentioned operate and mechanism 2 goes into REC operation.

Moreover, as to the judgment whether it enables the REC operation in practice is judged by the anti-REC SW [See Fig. 10-6-1(a)] alone. (This model is structured mechanically so that the REC knob may be pressed even when the tape erroneous erasure prevention claw is broken. In case the claw is broken, it is so structured that the motor does not rotate and recording may not be performed.)

When reading the anti-REC SW state, it is performed during the start of REC. (The microcomputer does not observe thereafter). These relationships are shown in Fig. 10-6-3.

In Fig. 10-6-3, when the erroneous erasure prevention claw is broken, pins (21) and (22) of the microcomputer become "H" due to the anti-REC SW being off, and therefore does not become into the REC state.

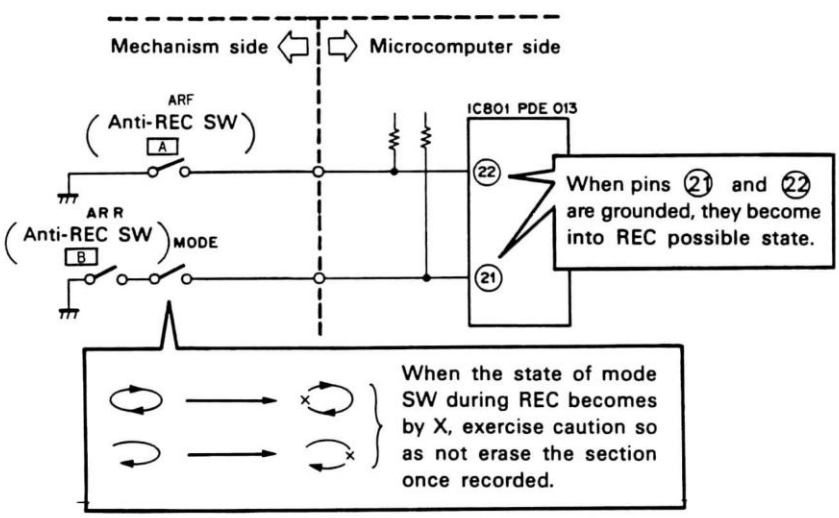


Fig. 10-6-3

10-6-3. Relay-play Operation

The DC-X55Z does not have this function.

In order to become into the relay-play operation, it is conditioned that both play switches are on of mechanisms 1 and 2.

It is also so structured that the first played mechanism is always played back on the [A] side. In addition, in accordance with the state of the tape playback mode SW on the front panel, the operation will become as shown in [2] 10-6-4 (According to the example set forth in [2], both mechanisms of 1 and 2 are in the auto-reverse mode.)

In Fig. 10-6-4, the signal which serves as a trigger by detection of tape end and changing tape from [B] to [A] is due to the direction switch which is shown in [2] 10-6-1. (Off when playing back [A] side and on when entering [B] side playback) In accordance with the information of this switch, pins (25) and (26) of the microcomputer change.

When mechanism 1 becomes from [A] side to [B] side and the [B] side becomes end, the microcomputer observes that it is in mechanism 2. At this point, if mechanism 2 awaits at play, make pin (17) from "L" to "H" and stop mechanism 1. Furthermore, make pin (18) from "H" to "L" and play mechanism 2.

((25) and (26) are pin numbers of the microcomputer)

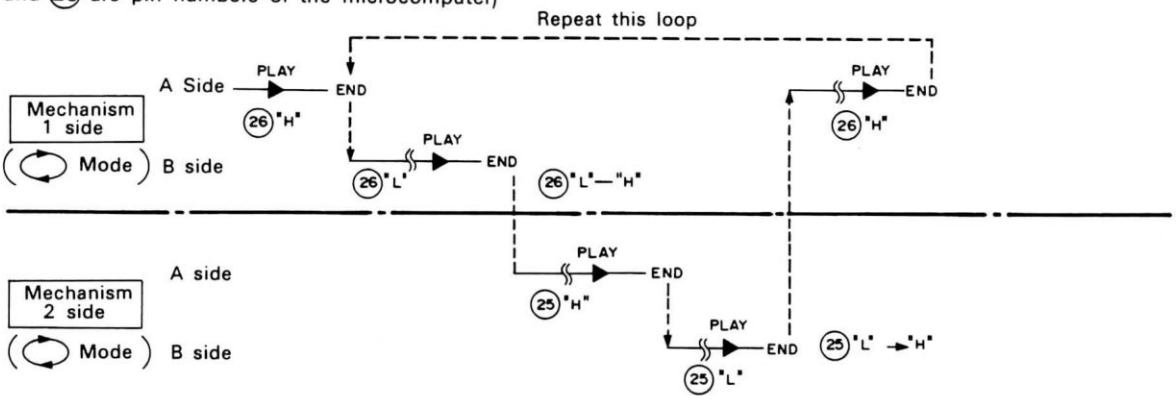


Fig. 10-6-4

10-6-4. Copy Operation

Not available for DC-X55Z.

By pressing the sync knob on the front, mechanism 1 becomes into play state and mechanism 2 into REC state. The microcomputer observes this state (When the play SW enters into about ±1.2 sec against the REC SW) and judges that it has become into copy mode.

When it becomes into this mode, the microcomputer makes a series of operations as follows:

1. Observes the state of the high speed SW.
   A pulse of approximately 20 μsec is output from pin (10). If this can be read at pins (7) it becomes into high speed recording mode.
2. Set to normal recording or high speed recording.
   High speed recording when pin (16) is "H".
   Normal speed recording when pin (16) is "L".
3. Flickers REC IND.
   0.6 sec cycle during high speed recording
   1.2 sec cycle during normal speed recording
4. Makes mechanism 1 into play, and mechanism 2 into REC. Makes pin (9) to "H".

10-6-5. Others

Warning against misrecording

In the DC-X55Z, when the recording is cut off on the midst of the [B] side, and then it is desired to continue the recording thereafter on the [B] side the following operation is performed.

1. Turn on PAUSE.
2. Provide for recording state.
3. Provide for [B] side with direction switch.
4. Release PAUSE.

Caution should be exercised because when the recording state is engaged outright, recording will be performed on the [A] side. In order to prompt this caution, this unit flickers the "▷" side of "◁▷" (Pin 25 output of microcomputer)

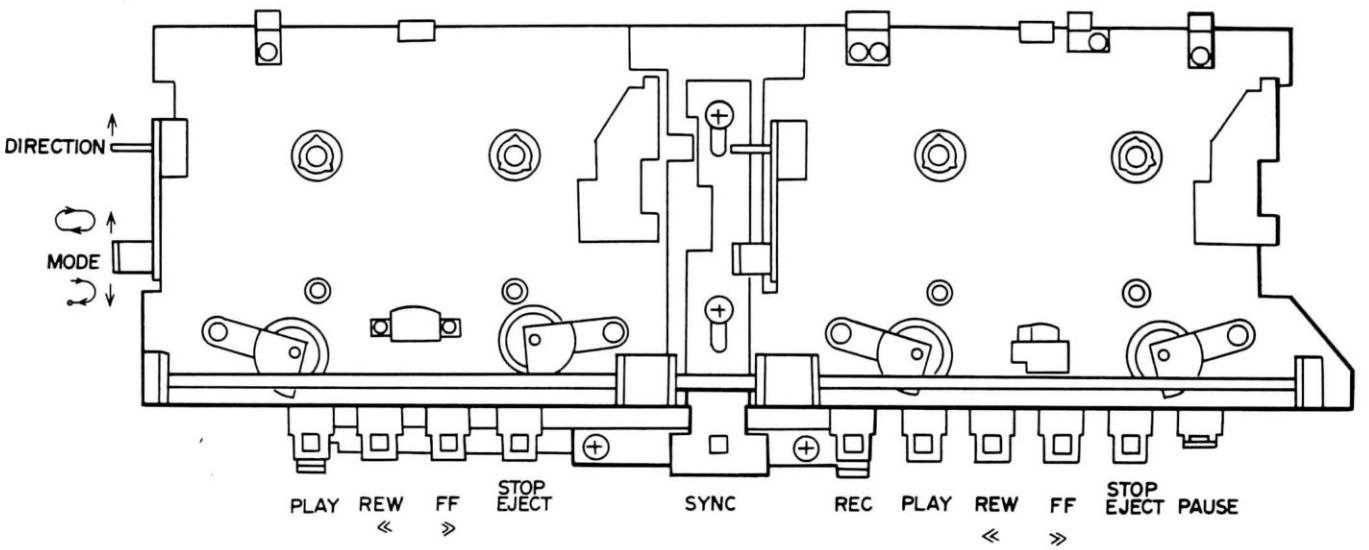
11. MECHANISM OUTLINE

11-1. MAJOR SPECIFICATIONS OF MECHANISM

Tape speed	4.76 cm/sec (9.5 cm/sec)
Wow and flutter	0.2% JIS WRMS at 4.76 cm/sec
FF and REW time	105 ±15 sec
Take up torque	40 +25—5 g·cm
FF and REW torque	Over 80 g·cm less than 200 g·cm
Back tension torque	3 +2—1 g·cm
Pinch roller pressing force	220 to 330g
Reverse time at the tape end	Less than 4 sec (PLAY)

11-2. OPERATION OUTLINE OF MECHANICAL SECTION

11-2-1. Operation Lever Arrangement



11-2-2. Play

It is put into play mode by the mechanical assist.

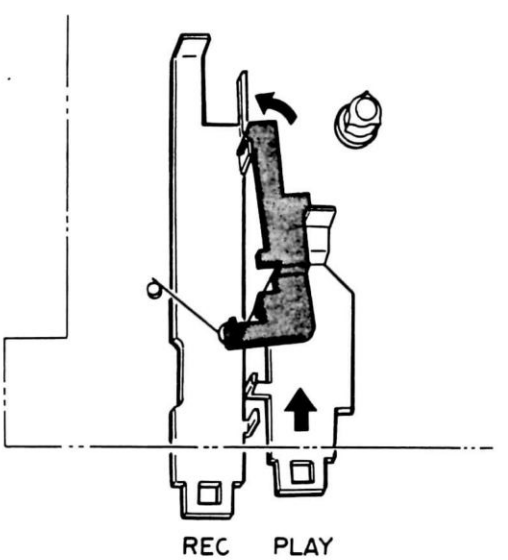
11-2-3. REC & Play

Play mechanism

1. In the play mode it becomes into <<(REW) or >>(FF), and REV or CUE operation. If it has been in the music selection mode (separate circuit) <<(REW) or >>(FF) is locked and it can be released by the solenoid switch being turned off.

REC mechanism

1. When the operation lever of the REC is pressed, that of play is also linked to operate.
2. When in the play mode, if the REC operation lever is pressed, it does not operate.
3. When in >>(REW) or <<(FF) mode, if the REC operation lever is pressed, it does not operate.
4. When in the play mode, if <<(REW) or >>(FF) operation lever is pressed, the play mode is released and it becomes into <<(REW) or >>(FF) single mode.

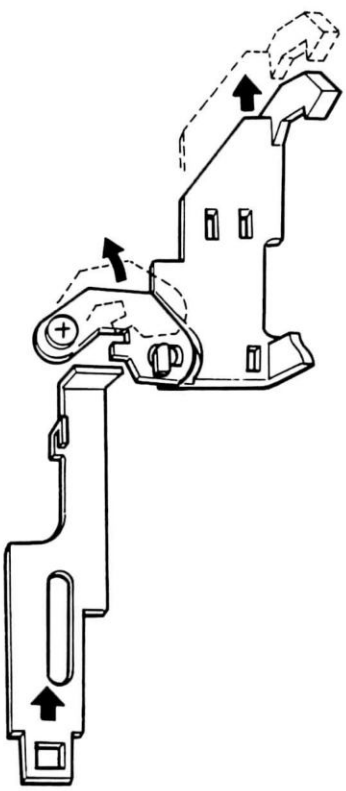


11-2-4. << & >> (REW & FF)

1. It becomes into the REW & FF against the FWD mode and becomes the FF & REW mode against the REV mode.
2. Direct lever pressing <<REW to >>(FF) or from >>(REW) to <<(FF) is not permissible. Be sure to press the lever once via the stop operation.

11-2-5. Stop/Eject

1. Releases the lock of other operation plates. (Except for PAUSE)
2. When the other operation plates are not locked, press the latch lever.
3. When the head board is in the suficiently advanced state, the STOP plate cannot be inserted even when the other operation plates are unlocked. (The above-mentioned situation is conceivable when the power switch becomes off during the play mode and thereafter the stop operation is performed and the carrying out of the eject operation is intended.)
4. The state of the PAUSE plate has no relations to the operation of the STOP/EJECT plate.



11-2-6. Pause

During the REC or play mode, it can be turned into the pause mode by pulling back the head board a little.

11-2-7. Direction

1. When the operation is performed dring the REC or play modes, the tape running direction changes to FWD → REV or REV → FWD.
2. This operation is prohibited when it is not in the REC or play mode.
   See the description of "DIRECTION ".

11-2-8. Mode

1. In the mode of ⮌, the tape running direction is automatically changed at the tape end of the FWD or REV and this operation is repeated.
2. In the mode of ⮌, the tape running direction becomes REV at the tape end of FWD and automatically released at the tape end of REV.
3. During << or >>, the tape running directions are automatically released at the respective tape ends.
   See the description of "MODE SELECTION".

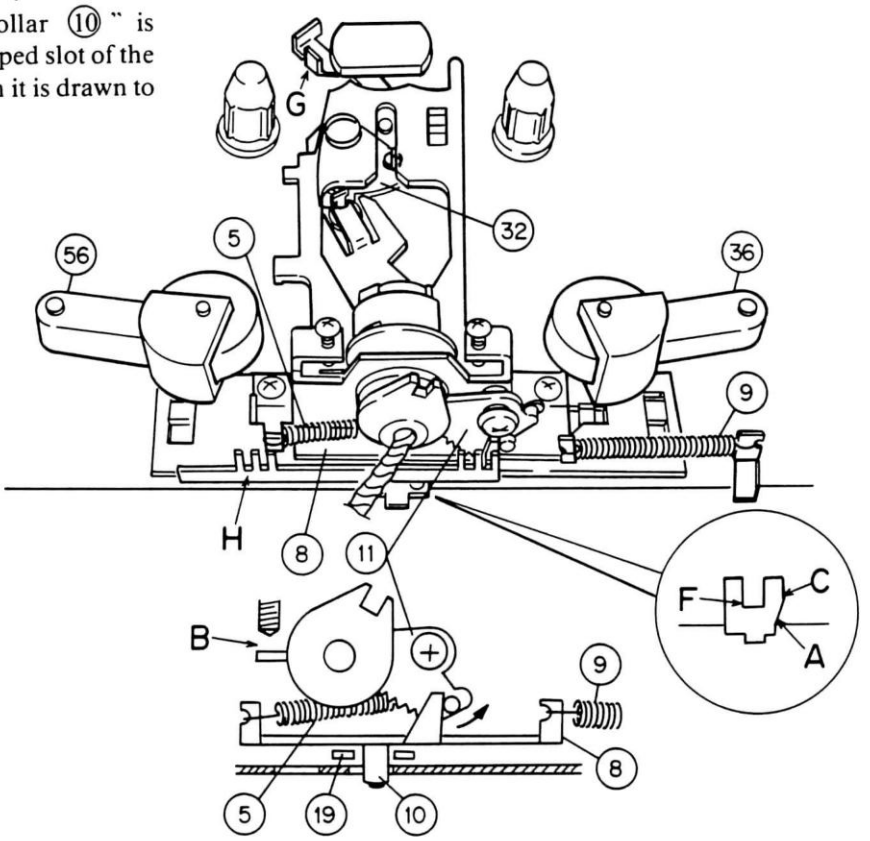
11-2-9. Head Rotation

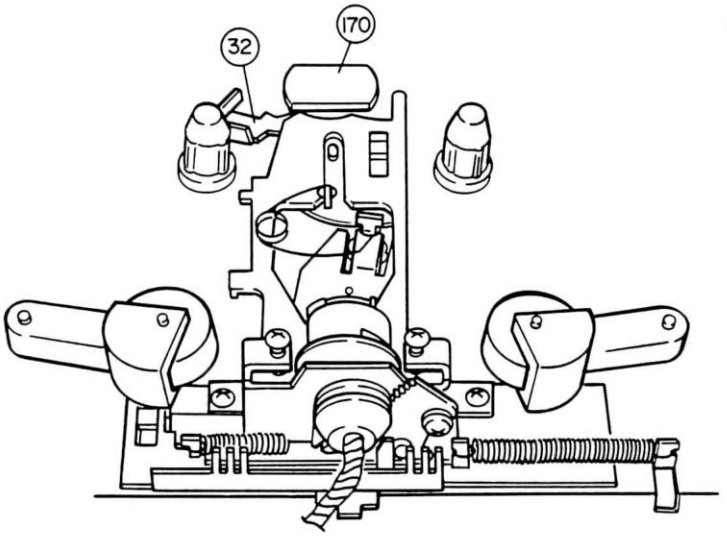
The deviation of the "slide plate ⑧" to the right or left corresponds to the head rotation and the selection of "pinch arm assembly R ⑯ " and "pinch arm assembly L ㊱ ".

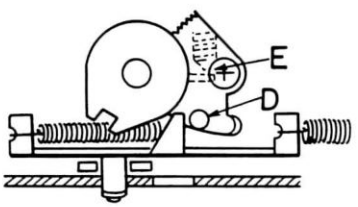
2. During the stop mode (the state in which none of the operations are being carried out), the head board is positioned at the furthermost back.
   The "slide plate ⑧" is drawn to the right direction by "spring ⑨". This is specified as the FWD standby state.
   The "collar ⑩ " of the slide plate contacts with the A section of the U shaped slot of the board. Therefore, the head does not rotate completely and, accordingly, it provides a clearance in the azimuth adjusting section B. This is provided to prevent the shock caused when switching of the REV → FWD mode.
3. When the head board is advanced the "collar ⑩ " moves to the C section of the U shaped slot. Since this section is larger than the A section, the "slide plate ⑧" is further pulled to the right direction and the head rotation is regulated by the azimuth adjusting section B via the "head gear B ⑪ ".
   At this point, there is a clearance provided between the "collar ⑩ " and the board C section.

4. When the "reverse A (32) " is rotated, the "collar (10) " is shifted to the left via the "pinch pressure lever caulking assembly (19) ". The shifting amount is in degree to the making of a clearance between the "slide plate (8)" and the projection D of the "head gear B (11) ". As a result, the head is rotated until it contacts with the azimuth adjusting section E by the pressure of the "head gear spring (5)".
As the head board advances, the "collar (10) " is supported by the F section of the U shaped slot of the board, and maintains the state in which it is drawn to the left, and becomes in REV mode.

5. In the stop mode, move the G section of the "reverse A (32) " in the direction of arrow by hand as shown in Fig., and the operation condition can be found. Moreover, the head board can be advanced to observe the condition with the H section.
Finally, be sure to confirm that the head board has completely been recoded.







11-2-10. FWD Priority

1. Once the stop operation is carried out, the next REC or play operation is started from the FWD mode. When pause is required in the process of REV mode, perform pause operation.
2. The aforementioned head rotation operation is carried out by every half rotation of the "reverse cam (170) ".
It becomes into the FWD mode after a short pin has passed through and the REV mode after a long pin has passed through.
3. If the stop operation is carried out from the REV mode, the head board is receded and it becomes into the FWD standby mode as mentioned previously.
4. The "reverse A (32) " is also returned at this point; however, the long pin of the "reverse cam (170) " is being pushed a little. Consequently, the "reverse cam (170) " turns a half rotation immediately or immediately after the motor is activated again to synchronize with the FWD mode related to the head board.

11-2-11. Play Assist

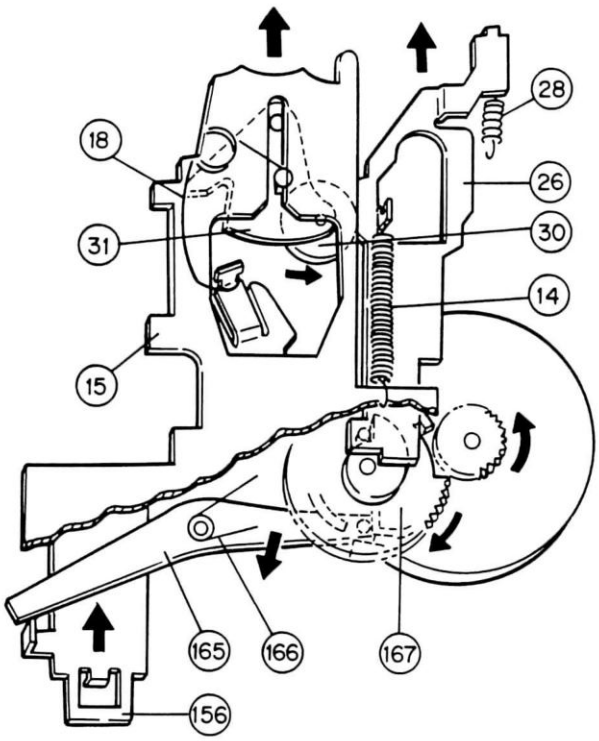
1. When the "play plate (156) " is inserted, it sets the "assist arm (165) " free and rotates the "assist gear (167) " a little by the force of the "trigger returning spring (166) ".
   The assist gear becomes engaged with the gear of the flywheel and it turns nearly one rotation and when it arrives at the notch of the gear, it is stopped by the top section of the assist arm.
   A cam is formed on the other side of the assist gear and the "auxiliary plate (26) " is pushed up alongside the cam face and pulls up the "head board (15) " through the "spring (14) ".
2. The "idler gear (30) " is attached to the "idler gear plate (31) " and the selection of the FWD and REV modes are capable by the "inverse spring (18) ". The transmission of the take-up torque to the reel table becomes possible by advaning the head board.
3. When the "play plate (156) " is returned by the stop operation, etc., the "assist arm (165) " is also returned and the "assist gear (167) " becomes free and it is receded together with the "head board (15) " and the "auxiliary plate (26) " by the head returning spring (28) "

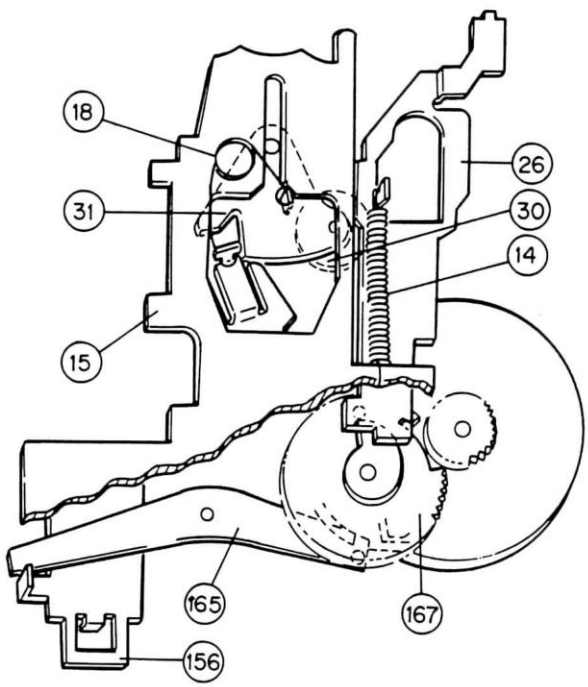
11-2-12. Reverse Auxiliary Plate

During the REV mode, the "idler (30) " receives the pushing back force in relation to the rotation direction. When the head board advances, the edge of the "idler plate (31) " is held to prevent it from being pushed back.

11-2-13. Direction

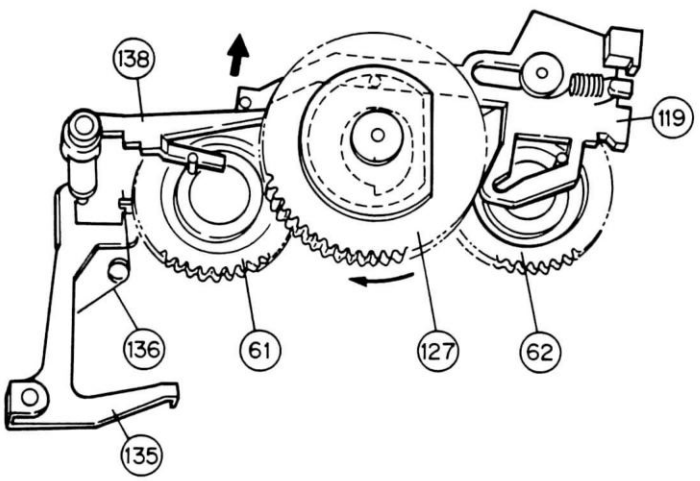
1. Switching of the FWD and REV is carried out by every half rotation of the "reverse cam (170) ". (Refer to item 9 and 10) The "reverse gear (129) " is connected to this across the board.
   There are two V shaped concave section which face each other at 180° on the cam face closer to the inner circumference of the "reverse gear (129) ". In addition, two V shaped convex sections face each other at 180° on the cam face closer to the outer circumference of the said gear. The outer circumference has 2 notch sections.
2. The tip pin section of the "DR lever (122) " is engaged with the concaved section of the reverse gear cam face by "spring (121) " to fix the gear position. At this position, due to gear notching section, it is not engaged with the "tension pulley (127) " which is always rotating at a low speed.
3. When the operating edge of the "DR lever (122) " is drawn toward you, the pin section comes out from the concaved section of the cam face and strikes against the sloped face of the concave and rotates this reverse gear a little.
4. Accordingly, the gear enchagement is started and the reverse gear rotates only by half rotation.
5. The shift operation of the "DR lever (122) " is so designed as to prohibit the play plate from being inserted relative to the A section and the "play plate (156) "

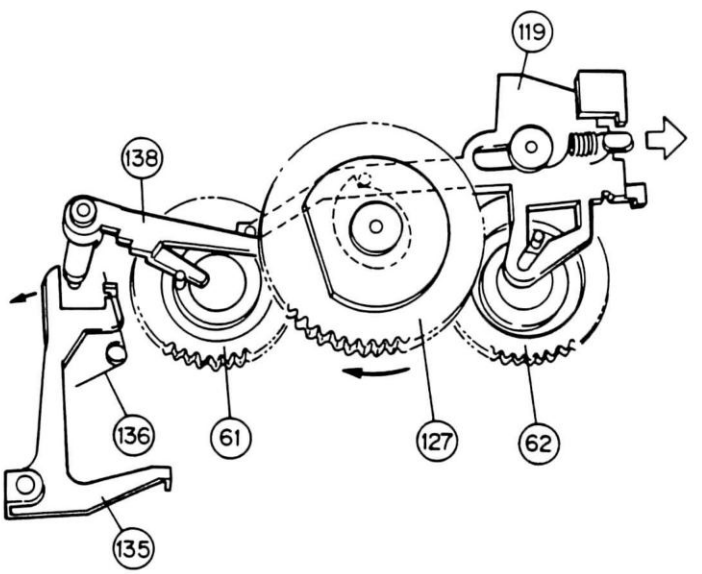




11-2-14. Automatic

1. On the lower part of the "reel tables (61) and (62) ", there is a pin which is connected to them by a small torque to rotate together.
2. The pin contacts against the short branch of the "detection prevention lever (138) ", and while the FWD side reel table is rotating in the FWD direction, it receives the force in the direction of arrow.
3. A pin is inserted into the square shaped slot of the "detection lever (119) ", and it is moved in the direction of arrow during the rotation to REV direction by this pin, and during the rotation to the FWD direction by the detection prevention lever.
4. To the "tension pulley (127) ", which is always rotating at a low speed, a stepped cam is provided close to the center and a eccentric circumferential shape cam is provided close to the outside. The wall section A in the top section of the "detection lever (119) " is inserted to the concave section between those two cams.
5. During rotation of the reel table the A section, within the cam groove, always totteringly tends to go outward alongside the 1 circumferential cam surface.
6. When the reel table is suspended, as the force to go outward becomes dormant, the A section is drawn inward by the outer circumference cam surface. Thereafter it stays as is and collides with the staircase of the inner cam. By moving it in the direction of →, it performs automatic operation.
7. The eccentric force is applied to the "detection prevention lever (138) " so that the automatic operation does not activate while the "detection prevention plate (135) " and "spring (136) " are in stop or pause modes.



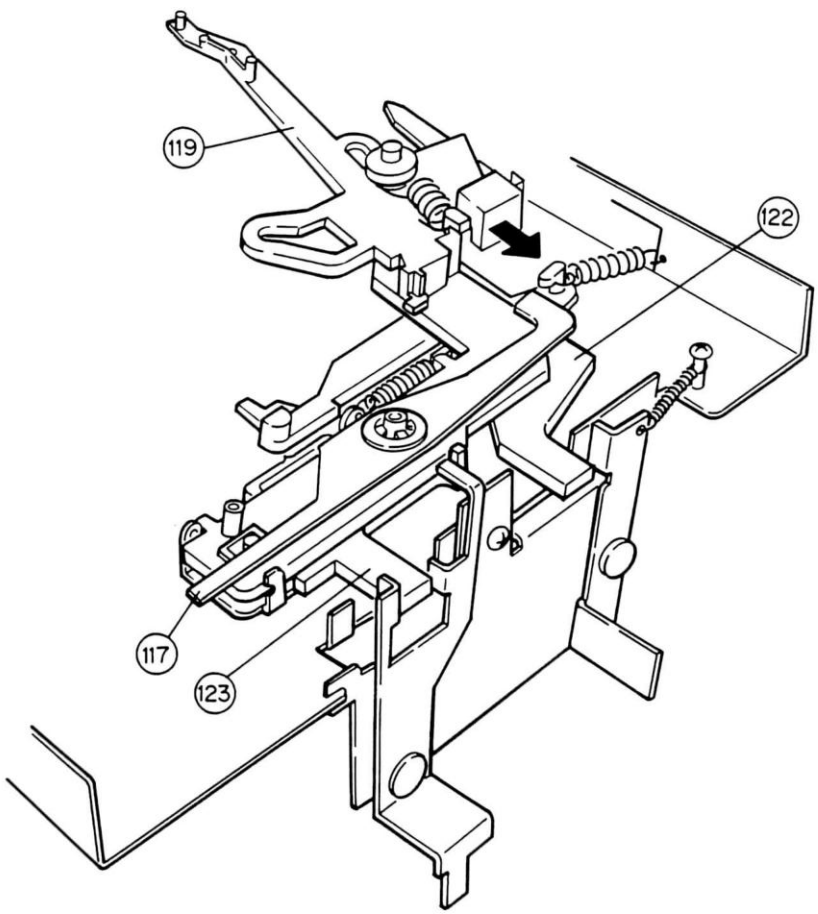


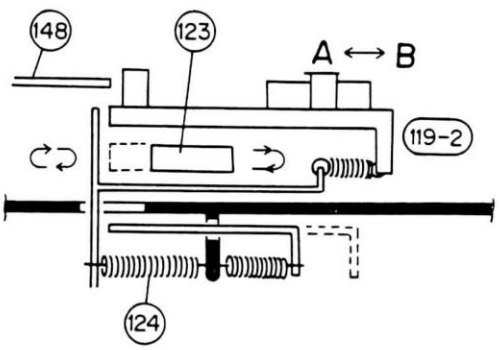
11-2-15. Mode Selection

1. The movement of the "detection lever (119) " in the arrow direction is transmitted selectively to the A section of the "DR lever (122) " or the B section of the "release lever (117) ". When it is transmitted ot the DR leverl. it becomes the direction selection and to release lever. it becomes into automation release.
2. The "detection lever (119) " is installed at the section of (119-2) . When (119-2) section slides to the A direction. it becomes the DIRECITON (continuous) and to the B direction. it becomes the automatic release (one round trip and then stops).
3. The "stopper plate B (148) " acts when in the << or >> operation and makes it into the end automatic release preferentially.
   When setting the "mode lever (123) " to ⟲. the next one becomes the DIRECTION selection (continuous mode) with first priority.
   When setting the "mode lever (123) " to ⟲. it becomes selection during the FWD mode and automatic release during the REV mode.
4. The "spring (124) " is a weak spring. It is required that the sliding is carried otu lightly.

11-2-16. Others

It the play operation is carried out when the power switch is turned off. there may be cases in which the assist gear is still engaged. When the power switch is turned on. it becomes the following mode after once passing through the play mode.





12. ADJUSTMENTS

Tape speed adjustment

1. Connect the frequency countr to the TP1 terminal (Dolby TP: R-ch) on the complex assembly.
2. Turn the tape switch on.
3. Mount the test tape STD-301 onto deck I.
4. Short-circuit between terminals TP4 and TP5 on the tape assembly and put the deck I into play mode. (STD-301 is play backed in double speed.)
5. Adjust with VR803 so that the playback signal frequency of deck I becomes 6020Hz ±10Hz.
6. Release the short-circuit between terminals TP4 and TP5.
7. Put the deck I into play mode and adjust with VR804 so that the playback signal frequency becomes 3010Hz ±5Hz.
   (Note 1: Be sure not to turn VR803 while performing the normal speed adjustment.)
8. At this point, be sure to confirm that the wow and flutter are within 0.3% both in the double and normal speeds.
9. Mount the test tape STD-301 onto deck II.
10. Short-circuit between terminals TP4 and TP5 on the tape assembly and put the deck II into play mode. (STD-301 is play backed in double speed.)
11. Adjust with VR802 so that the playback signal frequency of deck II becomes ±20Hz against that of deck I.
12. Release the short-circuit between terminals TP4 and TP5.
13. Put the deck II into play mode and adjust with VR801 so that the playback signal frequency of deck II becomes ±10Hz against that of deck I.
    (Note: Be sure not to turn VR802 while performing the normal speed adjustment.)
14. At this point, be sure to confirm that the wow and flutter are within 0.3% both in the double and normal speeds.

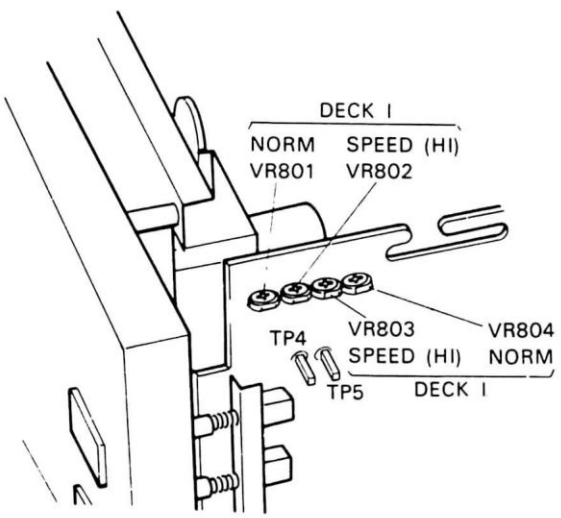


Fig. 12-1 Adjustment Point

Electrical system adjustment

Prior to the electrical system adjustment, be sure to confirm the following itesm.

1. The mechanical adjustment should be completed.
2. Perform cleaning of the head and the demagnetization of head with the head eraser.
3. The level during measurement is determined at 0dBv = 1V.
4. The specified tape should be used for adjustment. Since the test tape has A side and B side, use the A side with label.
   STD-331B: For playback system adjustment
   STD-608A: Normal blank tape
   STD-620: CrO_2 blank tape
   STD-610: Metal blank tape
5. Prepare the following measuring instruments. AC millivoltmeter, low frequency oscillatore, attenuator, and oscilloscope.
6. For the adjustment, perform both L and R channels unless otherwise specified.
7. Turn the Dolby NR switch to off unless otherwise specified.
8. Prior to the adjustment, be sure to perform aging of the set for several minutes. Especially prior to entering the adjustment of the recording and playback frequency characteristics, aging should be performed in REC/PLAY mode for 3 to 5 minutes.
9. The adjustment should be performed in accordance with the adjustment order. If the order is not kept, it may cause the failure of the complete adjustment which induces the inferior function of the unit.

Deck I

1. Head azimuth adjustment
2. Playback level adjustment

Deck II

1. Head azimuth adjustment
2. Playback level adjustment
3. Adjustment of recording and playback frequency characteristics
4. Adjustment of recording level

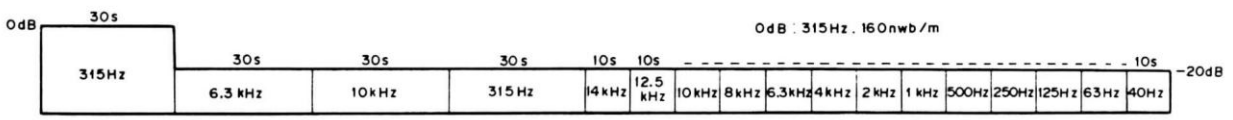


Fig. 12-2 Test tape STD-331B

Adjustment of Deck I

*This deck is provided with an auto-tape-selector mechanism.

1. Head azimuth adjustment * (Note) Do not select FWD and REV with the screwdriver being kept inserted.

Procedure	Tape selector (AUTO)	Mode	Input signal/test tape	Adjusting point	Measuring point	Adjustment value	Remark
1	NORM	PLAY	Play back 10kHz/ – 20dB on test tape STD-331B	Head azimuth adjusting screw (Fig. 12-3)	TP1 (R) TP2 (L)	Maximum playback signal level	After completion, lock the screw

2. Playback level adjustment * Perform this adjustment precisely since this adjustment is Dolby level setting during playback.

Procedure	Tape selector (AUTO)	Mode	Input signal/test tape	Adjusting point	Measuring point	Adjustment value	Remark
1	NORM	PLAY	Play back 315Hz/0dB on test tape STD-331B	VR504 (R) VR503 (L)	TP1 (R) TP2 (L)	– 13.5dBv ± 2dB	

Adjustment of Deck II

*This deck is provided with an auto-tape-selector mechanism.

1. Head azimuth adjustment * (Note) Do not select FWD and REV with the screwdriver being kept inserted.

Procedure	Tape selector (AUTO)	Mode	Input signal/test tape	Adjusting point	Measuring point	Adjustment value	Remark
1	NORM	PLAY	Play back 315Hz/0dB on test tape STD-331B	Head azimuth adjusting screw (Fig. 12-3)	TP1 (R) TP2 (L)	Maximum playback signal level	After completion, lock the screw.

2. Playback level adjustment * Perform this adjustment precisely since this adjustment is Dolby level setting during playback.

Procedure	Tape selector (AUTO)	Mode	Input signal/test tape	Adjusting point	Measuring point	Adjustment value	Remark
1	NORM	PLAY	Play back 315Hz/0dB on test tape STD-331B	VR502 (R) VR501 (L)	TP1 (R) TP2 (L)	−13.5 dBv ±0.5 dB	

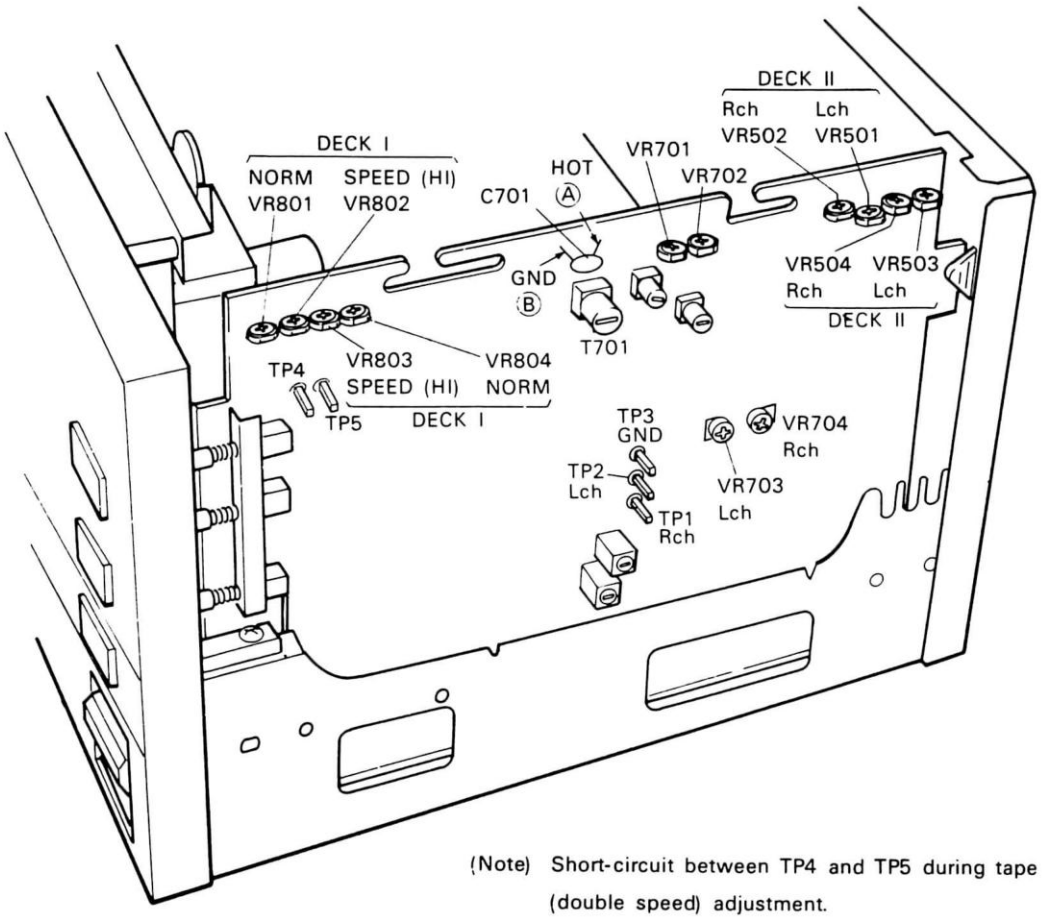
3. Adjustment of recording and playback frequency characteristics * This adjustment is performed in order to adjust the recording bias. Therefore, caution should be exercised not to worsen the distortion ratio due to under bias.

Procedure	Tape selector (AUTO)	Mode	Input signal/test tape	Adjusting point	Measuring point	Adjustment value	Remark
1	NORM	REC	STD-608A and put into REC mode.	Bias oscillator frequency T701	Between Ⓐ and Ⓑ in Fig. 12-2	Confirm that the oscillation frequency 105 kHz ±1 kHz.	When it is not within the standard, put it into the standard by adjusting T701.
2	NORM	REC	Apply the signal of 315Hz to the CD terminal and turn the CD switch on.	Input signal level	TP1 (R) TP2 (L)	−33.5 dBv ±0.5 dB	
3	NORM	PEC/PLAY	Record and play back 315Hz and 10kHz on test tape STD-608	VR702 (R) VR701 (L)	TP1 (R) TP2 (L)	Repeat recording and playback, and compensate so that the playback level of 10kHz against 315Hz becomes 0 ± 0.5dB.	

* Select the test tape, tape selector, and Dolby NR switch and satisfy the frequency characteristic zone as shown in Figs. 12-5 and 12-8.

4. Recording level adjustment * Set the graphic equalizer and balance volume to the center and the mike mixing volume to the source side.

Procedure	Tape selector (AUTO)	Mode	Input signal/test tape	Adjusting point	Measuring point	Adjustment value	Remark
1	NORM	REC	Apply the signal of 315Hz to the CD terminal and turn the CD switch on.	Input signal level	TP1 (R) TP2 (L)	−33.5 dBv (±0.5 dB)	
2	NORM	REC/PLAY	Record and play back 315Hz to the test tape STD-608A.	VR704 (R) VR703 (L)	TP1 (R) TP2 (L)	Repeat recording and playback, and compensate so that the playback level of 315Hz becomes −13.5 dBv (±0.5 dB).	
3	CrO_2	REC/PLAY	Record and play back 315Hz to the test tape STD-620.		TP1 (R) TP2 (L)	Confirm that the playback level of 315Hz becomes −13.5 dBv (±1.0 dB).	
4	METAL	REC/PLAY	Record and play back 315Hz to the test tape STD-610.		TP1 (R) TP2 (L)	Confirm that the playback level of 315 Hz becomes −13.5 dBv (±1.0 dB).	



(Note) Short-circuit between TP4 and TP5 during tape speed (double speed) adjustment.

Fig. 12-3 Arrangement diagram of adjusting parts

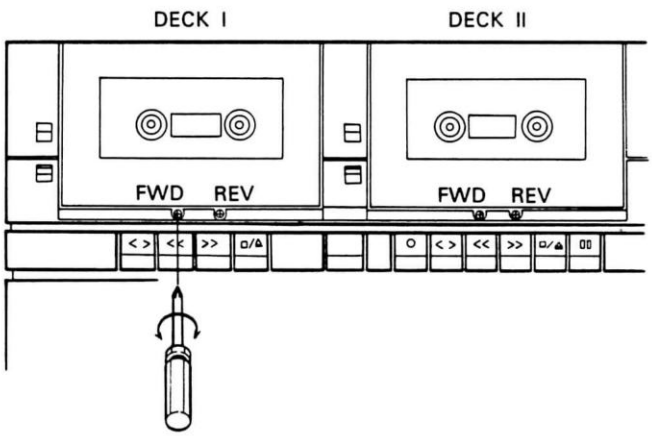


Fig. 12-4 Head azimuth adjustment

Test tape	STD-331B
DOLBY NR switch position	OFF

- The right channel is corrected by −0.5 at 125 Hz and −1 dB at 63 Hz to compensate for edge effect.

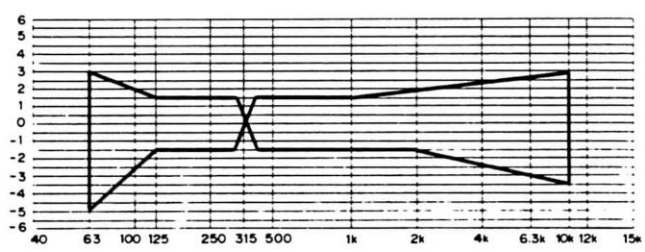


Fig. 12-5 Playback frequency response tolerance zone

Test tape	STD-608A	Test tape	STD-608A
DOLBY NR switch	OFF	DOLBY NR switch	ON

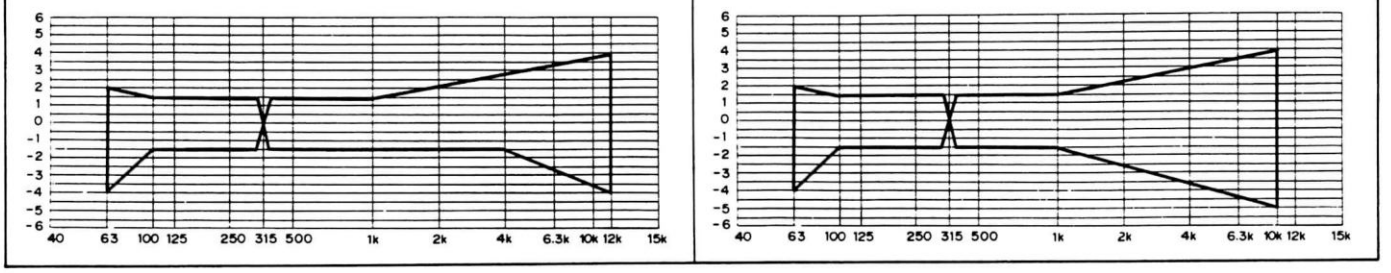


Fig. 12-6 Recording & playback frequency response tolerance zone (NORM)

Test tape	STD-620	Test tape	STD-620
DOLBY NR switch	OFF	DOLBY NR switch	ON

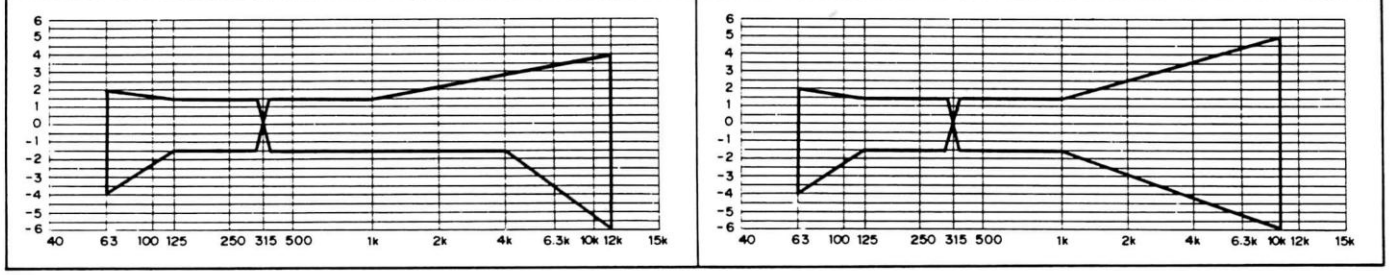


Fig. 12-7 Recording & playback frequency response tolerance zone (CrO2)

Test tape	STD-610	Test tape	STD-610
DOLBY NR switch	OFF	DOLBY NR switch	ON

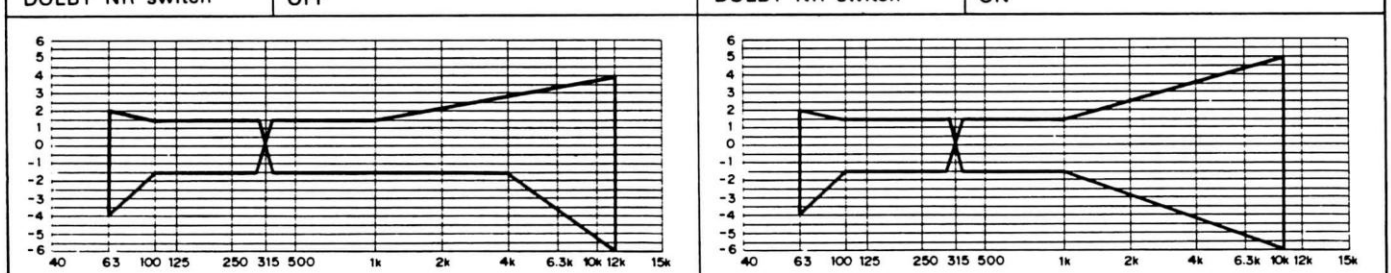
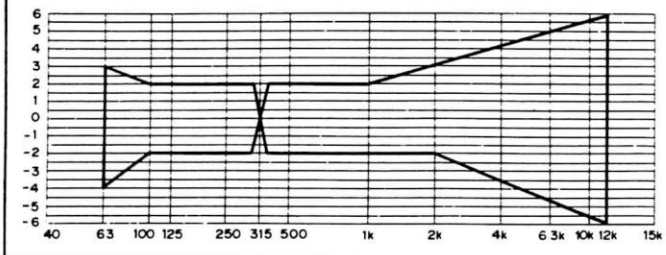
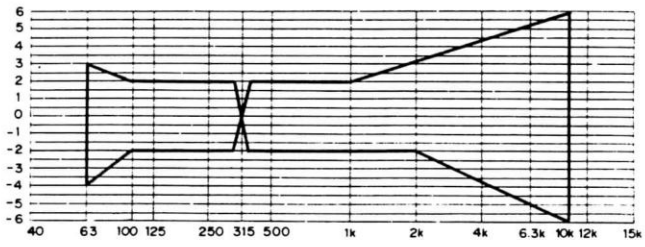


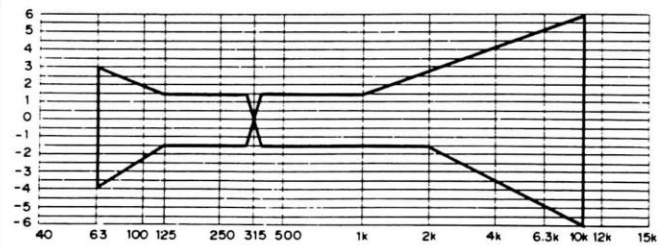
Fig. 12-8 Recording & playback frequency response tolerance zone (METAL)

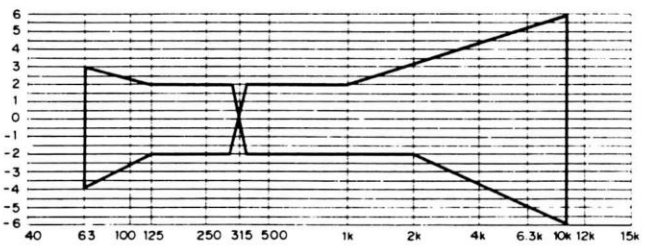
Test tape	STD-608A	Test tape	STD-608A (HIGH SPEED COPY)
DOLBY NR switch	OFF	DOLBY NR switch	OFF



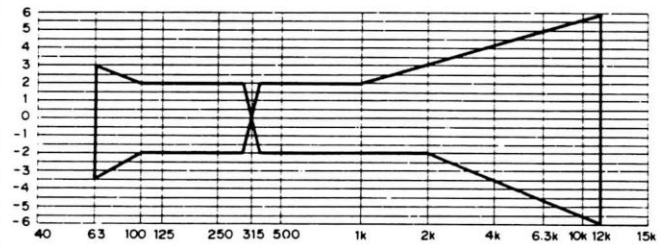


Test tape	STD-620	Test tape	STD-620 (HIGH SPEED COPY)
DOLBY NR switch	OFF	DOLBY NR switch	OFF





Test tape	STD-610	Test tape	STD-610 (HIGH SPEED COPY)
DOLBY NR switch	OFF	DOLBY NR switch	OFF



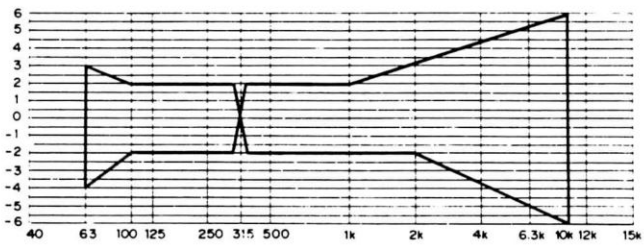


Fig. 12-9 Copy mode recording & playback frequency response (for reference purposes)

13. DISASSEMBLY

13-1. REMOVAL OF CASSETTE MECHANICAL UNIT

1. Remove 6 screws ❶.
2. Remove the bonnet case.
3. Remove 2 screws ❷.
4. Press the claw of the chassis bottom and remove the front panel (to which the cassette mechanical unit is attached) and pull out toward you.
5. Remove 4 tape assembly connectors (J9, J10, J11 and J12) and 2 parallel jumpers (J901 and J902) from the wiring connectors which are extended from the cassette mechanical unit.

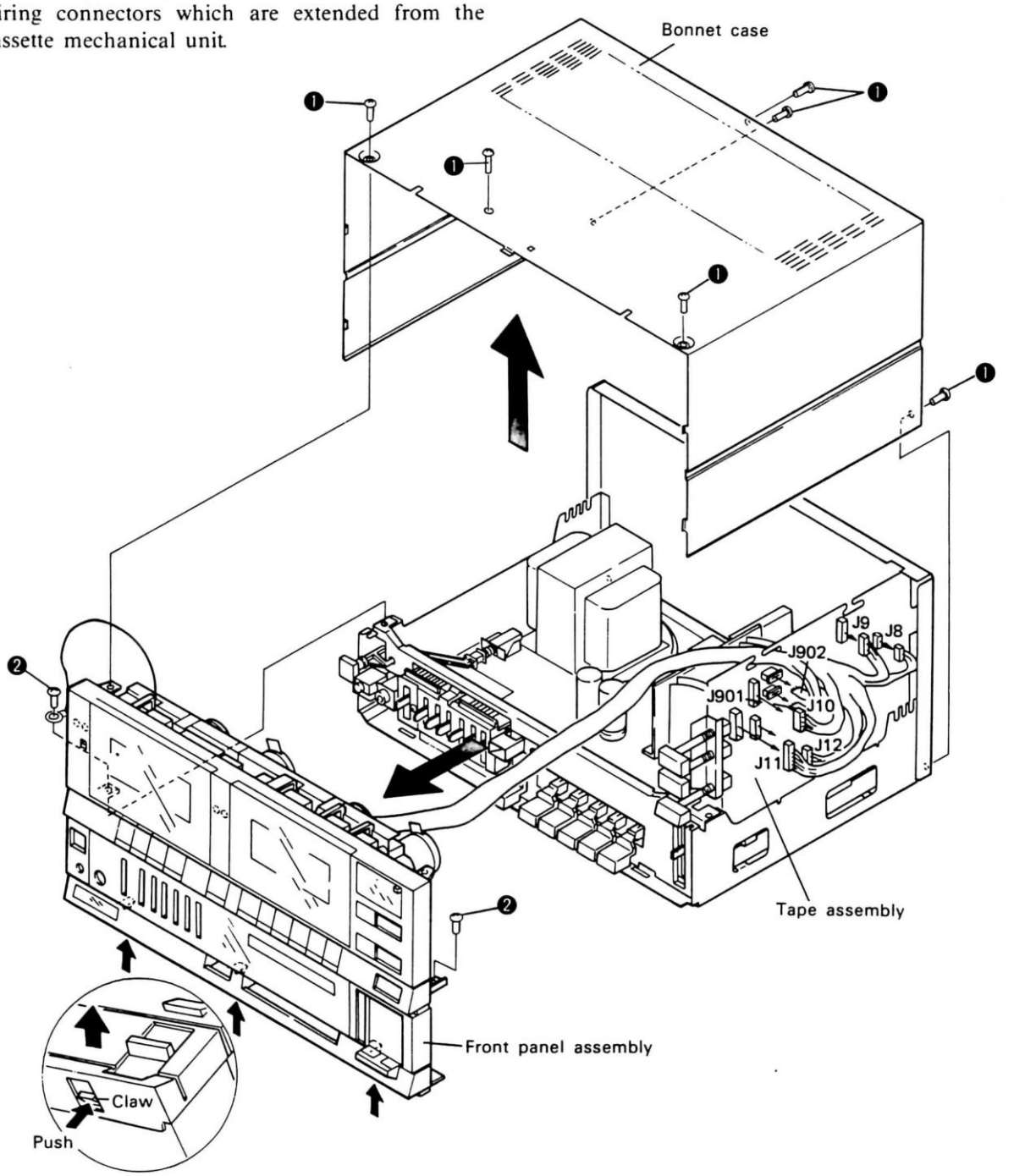


Fig. 13-1 Removal of the front panel assembly

6. Since J8 has been soldered from the rear side, remove the shield wire (the head shield wire of the mechanism I) by using a soldering iron and cut the binders B11 and B12 with a nipper, and then remove the front panel (to which the cassette mechanical unit is attached) from the main body.
7. Remove the counter belt from the counter and apply it to the cassette mechanical unit.
8. Remove 6 screws ❸ and remove the cassette mechanical unit from the front panel.

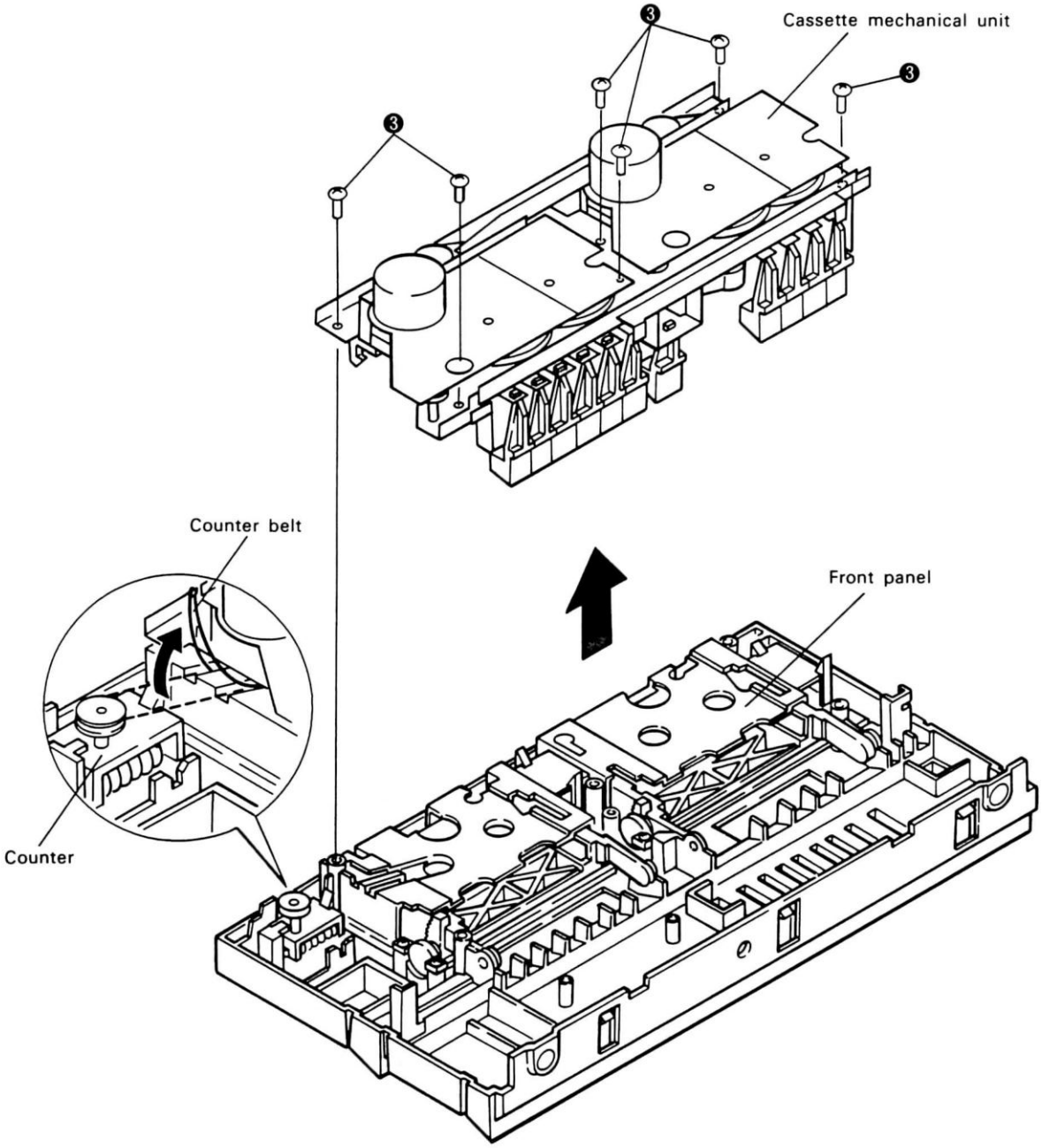


Fig. 13-2 Appliance of belt

13-2. REMOVAL OF BELT

1. Remove the cassette mechanical unit from the main body.
   (See Removal of mechanical unit)
2. Cut the binder which bundles the head lead wires.
3. Remove 4 screws ❶ and remove the FW receiving plate from the mechanical chassis.
4. Remove the belt.

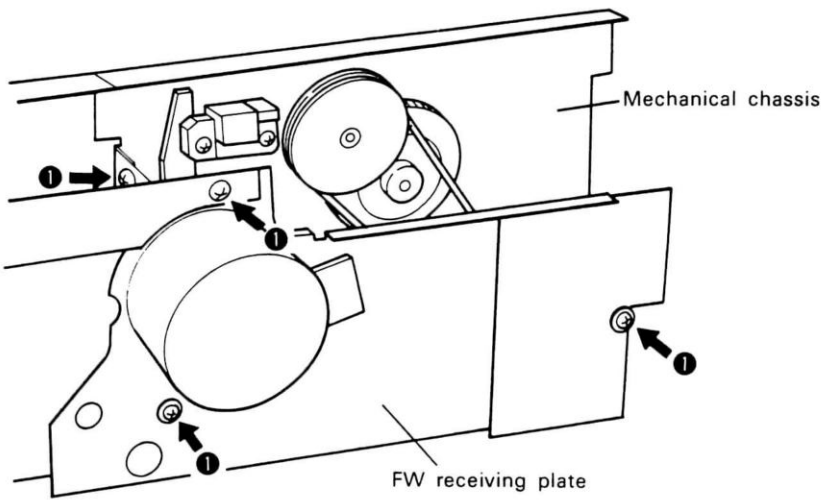


Fig. 13-3 Removal of belt

13-3. APPLIANCE OF BELT

1. Apply the flat belt as shown in the broken lines through Ⓐ section (belt temporary holding shaft) in the Fig.13-4.
2. Apply the square belt as shown Ⓒ in Fig.13-4.
3. Install the FW receiving plate to the mechanical chassis and transfer the flat belt, which has been held temporary at Ⓐ section. to the motor pulley.

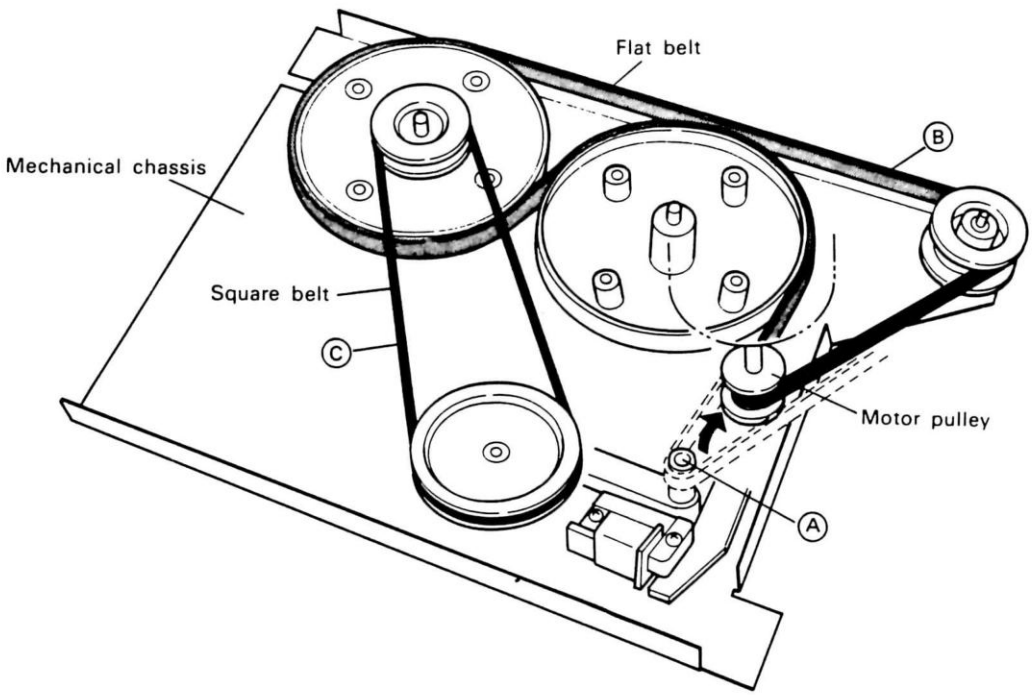


Fig. 13-4 Appliance of belt

13-4. REMOVAL OF MOTOR

1. Remove the mechanical unit from the main body. (See Removal of mechanical unit)
2. Remove the lead wires of the motor from motor. (See Fig.13-5)
3. Remove the FW receiving plate. (See Removal of belt)
4. Remove 2 screws ❶ and remove the motor. (See Fig.13-6)

Note 1: Care should be taken to the motor installation direction and attaching position of the motor lead wires when the motor is replaced.

Note 2: Perform the tape speed adjustment (See Fig.13-6) when the motor is replaced.

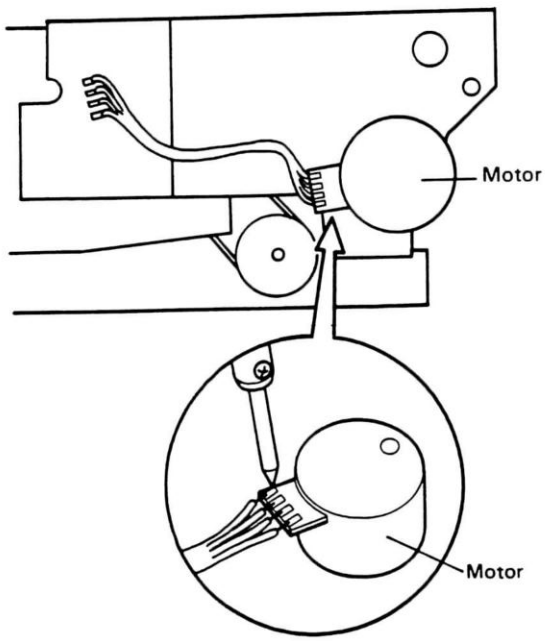


Fig. 13-5 Removal of motor lead wires

13-5. REPLACEMENT OF HEAD

1. Remove the mechanical unit from the main body. (See Removal of mechanical unit)
2. Remove 2 screws ❶ for head installation and pull out the head assembly. (See Fig.13-7)
3. Remove the lead wires from the head section board by using a soldering iron.
4. Solder the new lead wires to the new head. (See Fig.13-7)

Note 1: At this point, be sure to make the soldering of the lead wires to their respective positions without fail.

Note 2: Be sure to perform the mechanical adjustment and electrical adjustment when the head is replaced.

Note 3: When replacing the head, be sure lock the screws which have been used for the head installation.

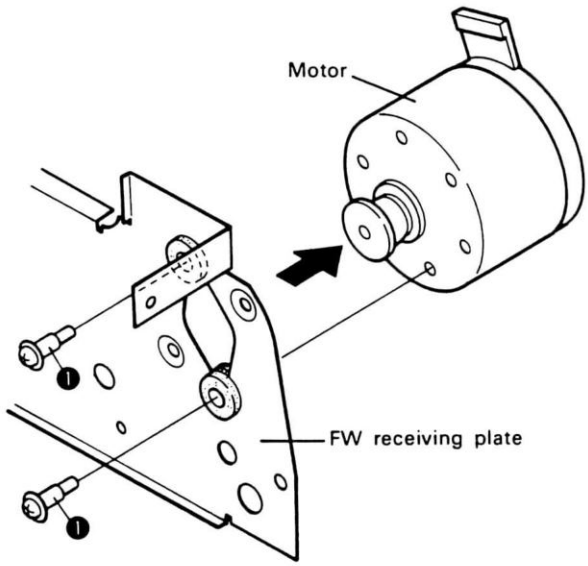


Fig. 13-6 Removal of motor

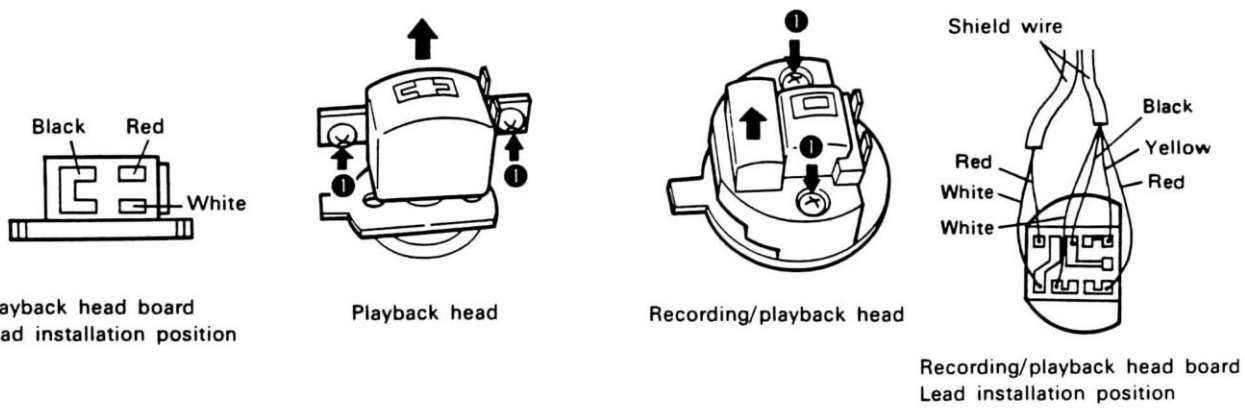


Fig. 13-7 Removal of head assembly