

AIWA®**AD-F370, S37
AD-R470, R40****SERVICE
MANUAL**

• BASIC TAPE MECHANISM : X-3

• TYPE. H, U, C, E, K, G, Z

SPECIFICATIONS

Type	Stereo cassette tape deck
Track format	4 tracks 2 channels
Power supply	AD-R470 E, Z, AD-F370 E, Z AC 220 V, 50/60 Hz AD-R470 K, G, AD-F370 K, G AC 240 V, 50/60 Hz AD-R470 C, AD-R40 U AD-F370 C, AD-S37 U AC 120 V, 60 Hz AD-R470 H, AD-F370 H AC 110—120 V/220—240 V switchable, 50/60 Hz
Power consumption	17 W
Frequency response	METAL tape: 20—18,000 Hz CrO ₂ position tape: 20—17,000 Hz NORMAL tape: 20—16,000 Hz
Signal-to-noise ratio	73 dB (METAL tape DOLBY C NR ON)
Wow and flutter	According to DIN 45 500 0.15% 0.065% (WRMS)
Tape speed	4.8 cm/sec. (1-7/8 ips)
Rewind time	90 sec. (C-60)
Fast forward time	90 sec. (C-60)
Recording system	AC bias (frequency 85 kHz)
Erase system	AC erase
Motor	DC Servomotor × 1
Head	Record/playback head × 1 (AD-F370, S37) Erase head × 1 (AD-F370, S37) Record/playback/Erase head × 1 (AD-R470, R40)

Inputs	LINE IN maximum input sensitivity: 50 mV (over 50 kΩ) DIN max sensitivity (Z model only): 0.3 mV/kΩ (3.3 kΩ)
Outputs	LINE OUT standard output level: 0.36 V (0 VU) (AD-R470, R40) 0.35 V (0 VU) (AD-F370, S37); suitable load impedance: over 50 kΩ; DIN standard level (Z model only): 0.36 V (0 VU) (AD-R470, R40) 0.35 V (0 VU) (AD-F370, S37) Headphones: 8 Ω—1 kΩ 430(W)×127.5(H)×233.4(D) mm
Dimensions	
Weight	AD-R470, R40 3.3 kg AD-F370, S37 3.2 kg

- Design and specifications are subject to change without notice.
- Dolby noise reduction and HX Pro headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX Pro originated by Bang & Olufsen.
- "DOLBY" the double-D symbol and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.

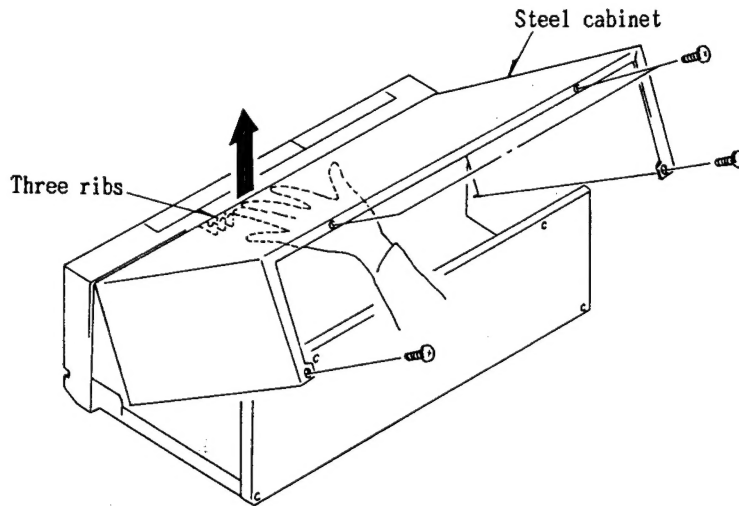
AIWA Co., Ltd.

Tokyo Japan

Printed in Japan

DISASSEMBLY INSTRUCTIONS

1. Remove the four screws and raise the steel cabinet by approx. 45° as shown in the figure. Insert your hand from behind and raise the steel cabinet from the three-ribs block manually in the direction indicated by arrow and remove it.



ELECTRICAL MAIN PARTS LIST (AD-R470,R40, AD-F370,S37)

REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
---IC---			---MAIN CIRCUIT BOARD SECTION---		
	87-001-143-019	IC,CX20187	PCB-A	*	MAIN CIRCUIT BOARD
	87-020-840-010	IC,ICP-N20	C1	*87-010-389-019	CAP,ELECT 2200-25V SME
	87-001-164-019	IC,LB1408	C2	*87-010-237-019	CAP,ELECT 1000-16V SME
	87-001-334-010	IC,LB9051A	C3	*87-010-565-019	CAP,ELECT 470-12V SME
	82-236-620-010	IC,LC6543H-3715	C4	*87-010-263-019	CAP,ELECT 100-10V
	87-020-680-019	IC,NJM2068S	C5	*87-010-644-019	CAP,ELECT 470-16 MUSE
	87-020-758-019	IC,NJM2068SD	C7	*87-010-263-019	CAP,ELECT 100-10V
			C9	*87-010-384-019	CAP,ELECT 100-25V
---TRANSISTOR---			C31	*87-010-405-019	CAP,ELECT 10-50V SME
	89-502-235-019	FET,2SK223E	C32	*87-010-405-019	CAP,ELECT 10-50V SME
	89-110-155-019	TRANSISTOR,2SA1015GR	C101	*87-018-121-019	CAP,CERA-SOL SS 150P
	89-112-965-019	TRANSISTOR,2SA1296GR(C,E,K,G,Z)	C102	*87-018-121-019	CAP,CERA-SOL SS 150P
	89-106-837-019	TRANSISTOR,2SA683S(H)	C103	*87-018-122-019	CAP,CERA-SOL SS 180P(R470 E,K,G,Z)
	89-109-521-019	TRANSISTOR,2SA952K	C103	*87-018-124-019	CAP,CERA-SOL SS 270P(R470 H,C,R40)
	89-318-156-019	TRANSISTOR,2SC1815BL	C103	*87-018-125-019	CAP,CERA-SOL SS 330P(F370 H,C,S37)
	89-318-155-019	TRANSISTOR,2SC1815GR	C103	*87-018-039-019	CAP,CERA-SOL SS 390P(F370 E,K,G,Z)
	89-322-405-019	TRANSISTOR,2SC2240BL(Z)	C104	*87-018-122-019	CAP,CERA-SOL SS 180P(R470 E,K,G,Z)
	89-331-130-019	TRANSISTOR,2SC3113	C104	*87-018-124-019	CAP,CERA-SOL SS 270P(R470 H,C,R40)
	89-413-023-019	TRANSISTOR,2SD1302S	C104	*87-018-125-019	CAP,CERA-SOL SS 330P(F370 H,C,S37)
	89-414-065-019	TRANSISTOR,2SD1406GR	C104	*87-018-039-019	CAP,CERA-SOL SS 390P(F370 E,K,G,Z)
---DIODE---			C109	*87-018-125-019	CAP,CERA-SOL SS 330P
	82-596-799-019	DIODE,1N4002	C110	*87-018-125-019	CAP,CERA-SOL SS 330P
	87-020-465-019	DIODE,1SS133	C113	*87-010-405-019	CAP,ELECT 10-50V SME
	87-020-123-019	DIODE,DS446	C114	*87-010-405-019	CAP,ELECT 10-50V SME
	87-027-686-019	DIODE,ZENER HZ-12A1	C115	*87-010-405-019	CAP,ELECT 10-50V SME
	87-027-301-019	DIODE,ZENER HZ-3A1	C116	*87-010-405-019	CAP,ELECT 10-50V SME
	87-027-286-019	DIODE,ZENER HZ5C1	C117	*87-010-384-019	CAP,ELECT 100-25V
			C201	*87-018-121-019	CAP,CERA-SOL SS 150P
			C202	*87-018-121-019	CAP,CERA-SOL SS 150P
			C203	*87-018-132-019	CAP,CERA-SOL SS 2200P
			C204	*87-018-132-019	CAP,CERA-SOL SS 2200P
			C205	*87-010-404-019	CAP,ELECT 4.7-50V SME
			C206	*87-010-404-019	CAP,ELECT 4.7-50V SME

REF.NO.	PART NO.	DESCRIPTION		
S831	87-036-135-019	SLIDE SW(DOLBY B/C NR)	Combination circuit board A 82-235-601-019 PCB-A 82-235-602-019 PCB-B 82-235-603-019 PCB-C 82-235-604-019 PCB-D 82-235-605-019	
S832	87-036-135-019	SLIDE SW(REVERSE MODE)(R470/R40)		
S833	87-036-135-019	SLIDE SW(TIMER)		
S835	87-031-893-010	TACT SW QVDO4M(▶▶)		
S836	87-031-893-010	TACT SW QVDO4M(▶)	Combination circuit board B 86-535-628-019 PCB-E 86-535-629-019 PCB-F 86-535-630-019	
S837	87-031-893-010	TACT SW QVDO4M(◀)(R470/R40)		
S838	87-031-893-010	TACT SW QVDO4M(◀◀)		
S839	87-031-893-010	TACT SW QVDO4M(▯ PAUSE)		
S840	87-031-893-010	TACT SW QVDO4M(● REC MUTE)		
S841	87-031-893-010	TACT SW QVDO4M(■ STOP)		
S842	87-031-893-010	TACT SW QVDO4M(● REC)		
VR451	87-024-151-019	VR,250KB(BIAS FINE)		
VR631	87-024-149-019	VR,2GANG,50KA(REC LEVEL)		
VR632	87-024-150-019	VR,100KB(BALANCE)		

===JACK CIRCUIT BOARD SECTION===

PCB-C	*	JACK CIRCUIT BOARD
△C8	*87-019-113-019	CAP, SPARK-GAP 0.0022E
△J661	*87-009-043-010	JACK 6.3(PHONES)
△S1	87-036-015-019	AC SW SDDLDI(POWER)

===POWER CIRCUIT BOARD SECTION===

△PCB-D	*	POWER CIRCUIT BOARD
△PT1	82-236-603-019	POWER TRANSFORMER(E,Z)
△PT1	82-236-601-019	POWER TRANSFORMER(H)
△PT1	82-236-604-019	POWER TRANSFORMER(K,G)
△PT1	82-236-602-019	POWER TRANSFORMER(R470C,R40/F370C,S37)
△S2	87-031-780-019	SLIDE SW(AC VOLTAGE)(H)

===DECK CIRCUIT BOARD SECTION===

PCB-E	*	DECK CIRCUIT BOARD
SFR921	*87-021-966-019	SFR 4.7K(F370,S37)
SOL921	86-535-611-110	SOLENOID,X-3,PL(PLAY)
SOL922	86-535-612-110	SOLENOID,X-3,FR(FR)
SW921	87-036-110-010	PUSH SW(CRO2)
SW922	87-036-040-010	PUSH SW(CST)
SW923	87-036-110-010	PUSH SW(DIR)(R470/R40)
SW951	87-036-110-010	PUSH SW(REA)
SW952	87-036-109-010	PUSH SW(MT)
SW953	87-036-109-010	PUSH SW(REB)(R470/R40)

===SENSOR CIRCUIT BOARD SECTION===

PCB-F	*	SENSOR CIRCUIT BOARD(R470/R40)
CP951	87-001-367-019	PHOTO SENSOR ST1-315-05CD(R470/R40)

===MISCELLANEOUS===

△	*82-187-797-019	AC CORD(E,Z)
△	*82-187-795-019	AC CORD(G)
△	*87-034-749-019	AC CORD(H)
△	*82-187-796-019	AC CORD(K)
△	*87-034-583-019	AC CORD(R470C,R40/F370C,S37)
△	*87-085-199-010	CORD BUSHING 2271
EH	87-046-196-019	E.HEAD(F370/S37)
M921	87-045-296-019	MOTOR
RPEH	87-046-324-019	RPEH(R470 H,C,R40)
RPEH	87-046-289-019	RPEH(R470 E,K,G,Z)
RPH	87-046-322-019	RPH(F370 H,C,S37)
RPH	87-046-323-019	RPH(F370 E,K,G,Z)



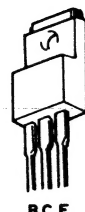
ECB
2SA683



ECB
2SA952
2SA1015
2SA1296
2SC1815
2SC2240
2SD1302



BCE
2SC3113



BCE
2SD1406



SGD
2SK223

IC DESCRIPTION

IC, LC6543H-3715

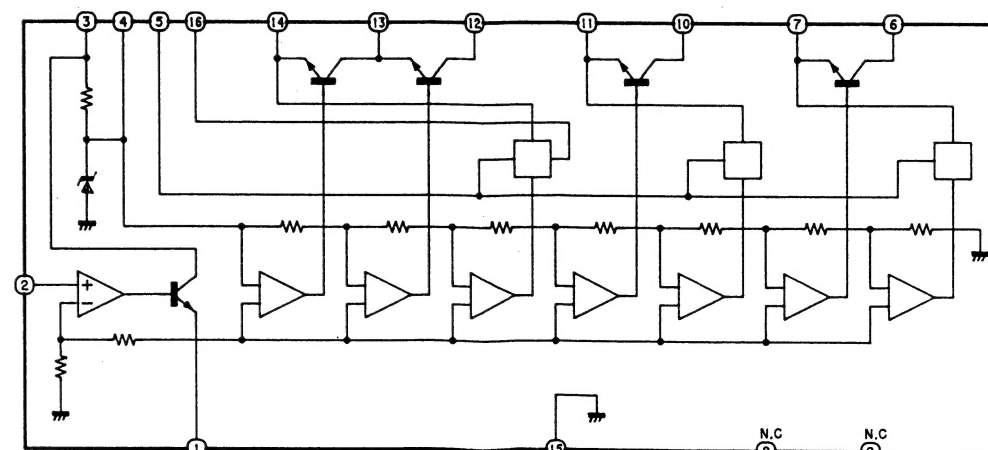
Pin No.	Pin name	Description
1	I-DIRECT	Head direction detection SW input: Low at side A.
2	VDD	Power: 4.5 to 5.5V
3	KS1	Data 0 to 5: KEY MATRIX SCAN output
4	KSO	
5	DATA5	
6	DATA4	
7	DATA3	
8	DATA2	
9	DATA1	
10	DATA0	Data 0 to 5: LED SCAN output
11	DISP	
12	O-LMT	LINE MUTE control: Goes low in PLAY, CUE, REV, REC, REC & PLAY, REC & PAUSE, and RMT modes.
13	O-BIAS	Bias oscillation control: Oscillated in low. Goes low in REC mode and high in reverse mode.

KS1="L"	KSO="L"	DISP="L" lights in low
key ►►	key STOP	LED PLAY
key ►	key REC	LED ►
key ◀	key Timer Rec	LED ◀
key ◀◀	key Repeat Timer PLAY	LED REC
key	key	LED
key RMT	key	LED RMT

Indicates a CD sync in reverse mode for AD-R470/R40.

Pin No.	Pin name	Description
14	O-REC	Dolby IC REC/PB selection: Enters the REC mode in low.
15	OSC-2	Clock input
16	OSC-1	Clock input
17	TEST	Test pin: 0V
18	VSS	Power: 0V
19	RESET	Reset control
20	O-RMT	RBC MUTE control: Goes high in REC & PLAY mode and low in reverse mode.
21	I-ONE WAY	MODE selection: Low using AD-R470/R40 Open/high using AD-F370/S37.
22	I/O SYNC	CD SYNC input and output: CD SYNC with CBRS. A low signal is output in REC's QUICK REV mode. When recording is started in low, the set is put into the PAUSE mode.
23	O-MOTOR	Mechanism power control: A motor is rotated in low. Mechanical switch, quick sensor, and auto stop sensor are then activated.
24	O-SOL·FRP	FRP solenoid control: Controlled in low
25	O-SOL·PB	PB solenoid control: Controlled in low
26	I-AUTO	Reel pulse input: Two pulses are input when a take-up reel (at side A) is rotated once. When the input is not changed for more than 4 seconds in PLAY mode and for 0.5 seconds in FF/REW/CUE/REV mode, auto stop is done.
27	I-QUICK	Quick sensor input: Quickened in high. Eight-second input after the mode is changed from FWD PLAY to REV PLAY or PLAY to PAUSE requires no adjustment.
28	I-CST	Cassette detection SW input: Goes low during cassette insertion.
29	I-RE A	Accidental erasure protection SW input (at side A): Can be recorded in low.
30	I-RE B	Accidental erasure protection SW input (at side B): Can be recorded in low.

IC BLOCK DIAGRAM-1 IC, LB1408



SCHEMATIC DIAGRAM-1 (AD-R470,R40, AD-F370,S37)

A

MODEL	TYPE	R107	R109	R115	C103	C107
AD-R470	H.C	JP	1.2K	6.8K	270P	0200PJ
AD-R40	E.K.G.Z	22K	NC	6.2K	180P	NC
AD-F370	H.C	JP	2.2K	6.8K	330P	0.01J
AD-S37	U	JP	4.7K	6.8K	390P	3300PJ

B

MODEL	TYPE	C211	C215	C217	R201	R217	R227
AD-R470	H.C	0.01J	0.015J	NC	4.7K	10K	NC
AD-R40	U	0.01J	0.015J	NC	4.7K	10K	NC
AD-F370	E.K.G.Z	0.01J	NC	0.015J	10K	NC	NC
AD-S37	U	0.01J	3300PJ	3900PJ	10K	JP	3900PJ

C

MODEL	TYPE	R225	R215	R209	R231	C213
AD-R470	H.C	10K	270	33K	15K	1800P
AD-R40	E.K.G.Z	18K	220	33K	15K	3300P
AD-F370	H.C	10K	270	33K	15K	1800P
AD-S37	U	10K	220	33K	10K	1800P

D

MODEL	TYPE	R305	R307	R311	R323
AD-R470	H.C	1.8K	8.2K	220K	100K
AD-R40	U	1.8K	8.2K	220K	100K
AD-F370	H.C	1.8K	8.2K	47K	100K
AD-S37	U	3.9K	18K	47K	100K

E

MODEL	TYPE	Q1	R1	R9-R10
AD-R470	H	2SA6835	560 / 1/2W	220
AD-R40	C	2SA1296GR	560 / 1/4W	330
AD-F370	E.K.Z	2SA1296GR	560 / 1/4W	220
AD-S37	U	2SA6835	560 / 1/2W	220

F (CIAT REC NO SIGNAL)

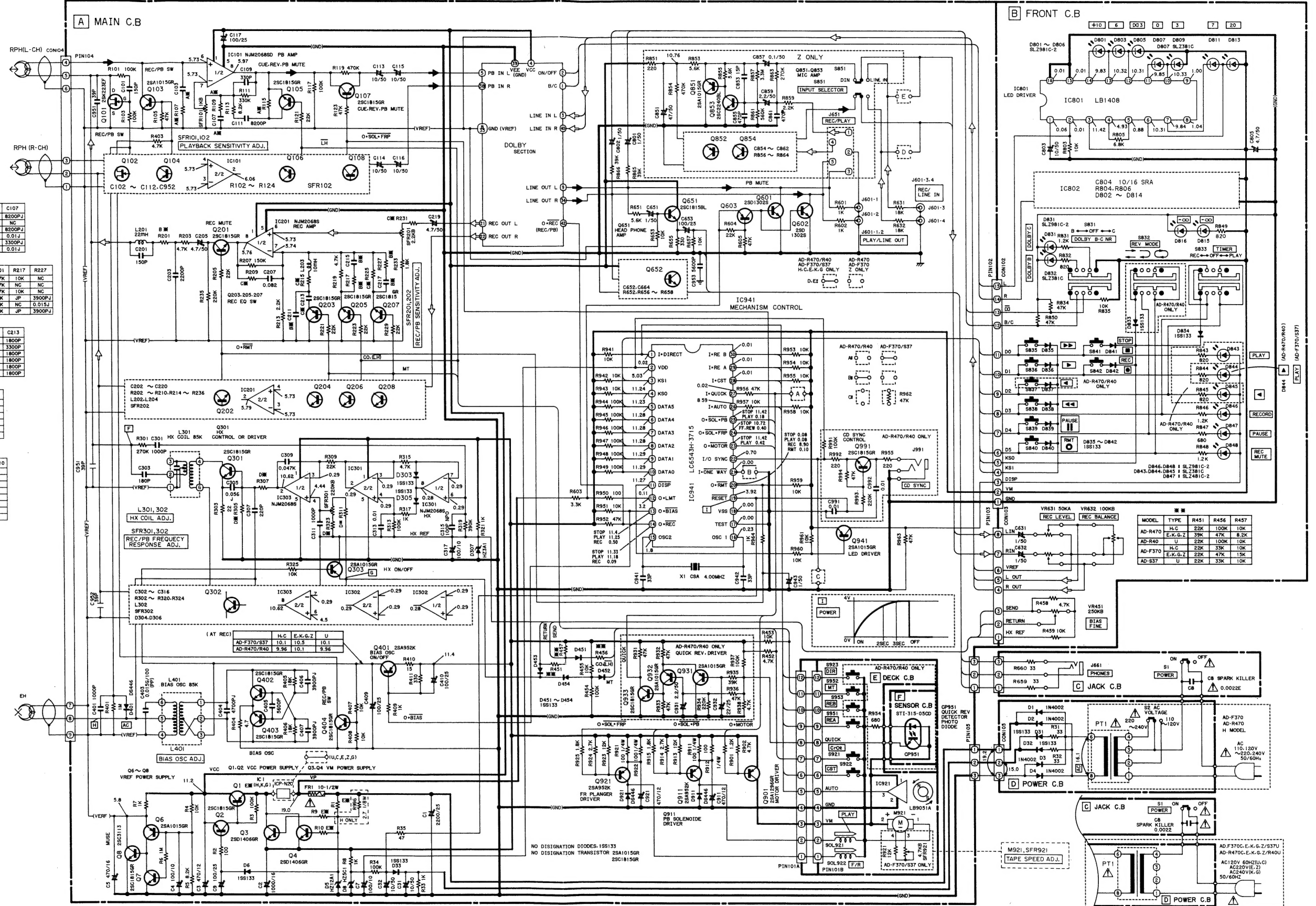
MODEL	H.C	E.K.G.Z	U
AD-F370/S37	15.5	17.6	15.3
AD-R470/R40	20.0	22.9	20.0
	28.0	27.3	28.0
	14.5	13.6	14.3
	24.4	17.8	24.4

G (AT REC)

MODEL	H.C	E.K.G.Z	U
AD-F370/S37	LH 5.46	LH 5.27	LH 5.48
	CO 6.25	CO 6.00	CO 6.25
	MT 8.88	MT 9.21	MT 8.88
AD-R470/R40	LH 6.30	LH 6.36	LH 6.30
	CO 6.84	CO 7.00	CO 6.84
	MT 9.12	MT 9.15	MT 9.12

H

MODEL	H.C	E.K.G.Z	U
AD-F370/S37	26.4	27.5	26.4
AD-R470/R40	31.0	29.8	31.0



B FRONT C.B.

MODEL	TYPE	R451	R456	R457
AD-R470	H.C	22K	100K	10K
AD-R40	U	22K	47K	8.2K
AD-F370	H.C	22K	33K	10K
AD-S37	U	22K	47K	15K

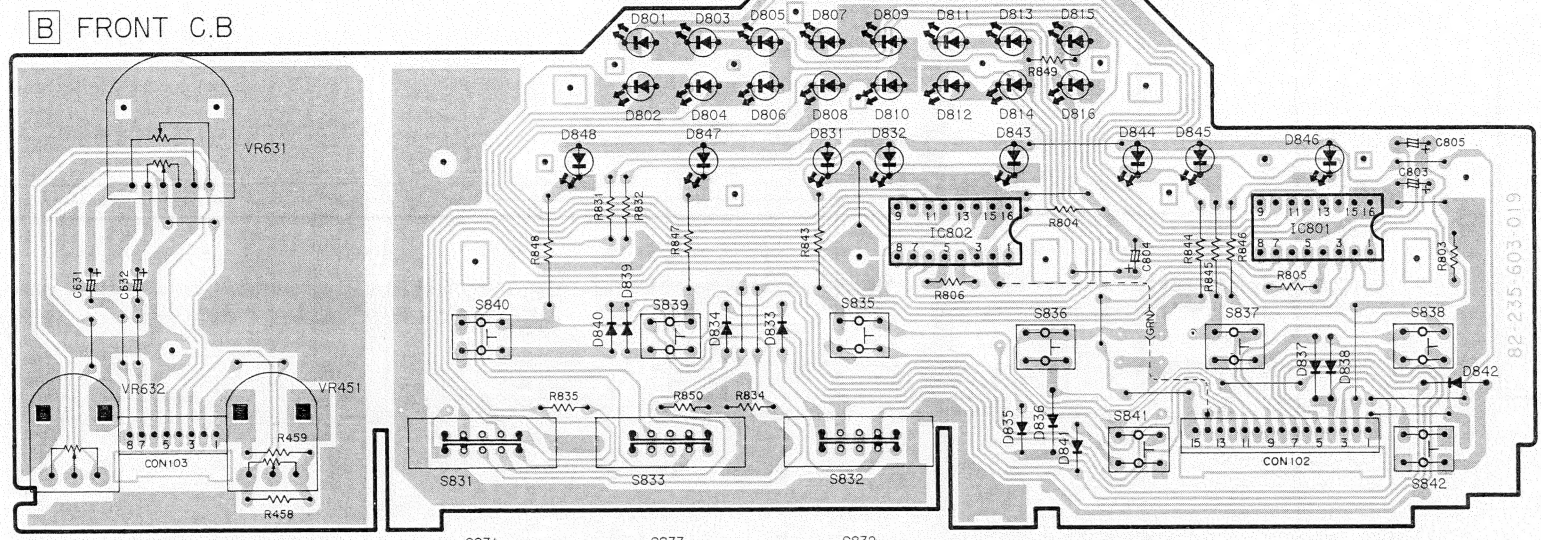
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MODEL	TYPE	R451	R456	R457
AD-R470	H.C	22K	100K	10K
AD-R40	U	22K	47K	8.2K
AD-F370	H.C	22K	33K	10K
AD-S37	U	22K	47K	15K

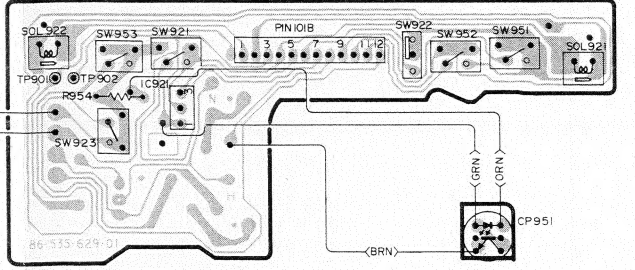
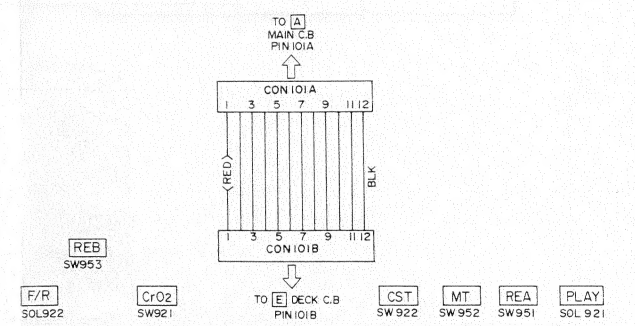
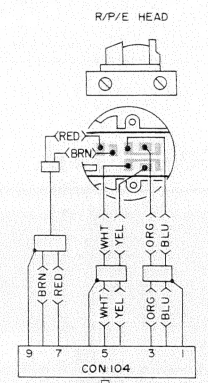
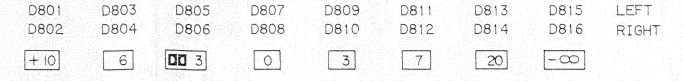
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NO DESIGNATION TRANSISTOR 2SA1015GR 2SC1815GR

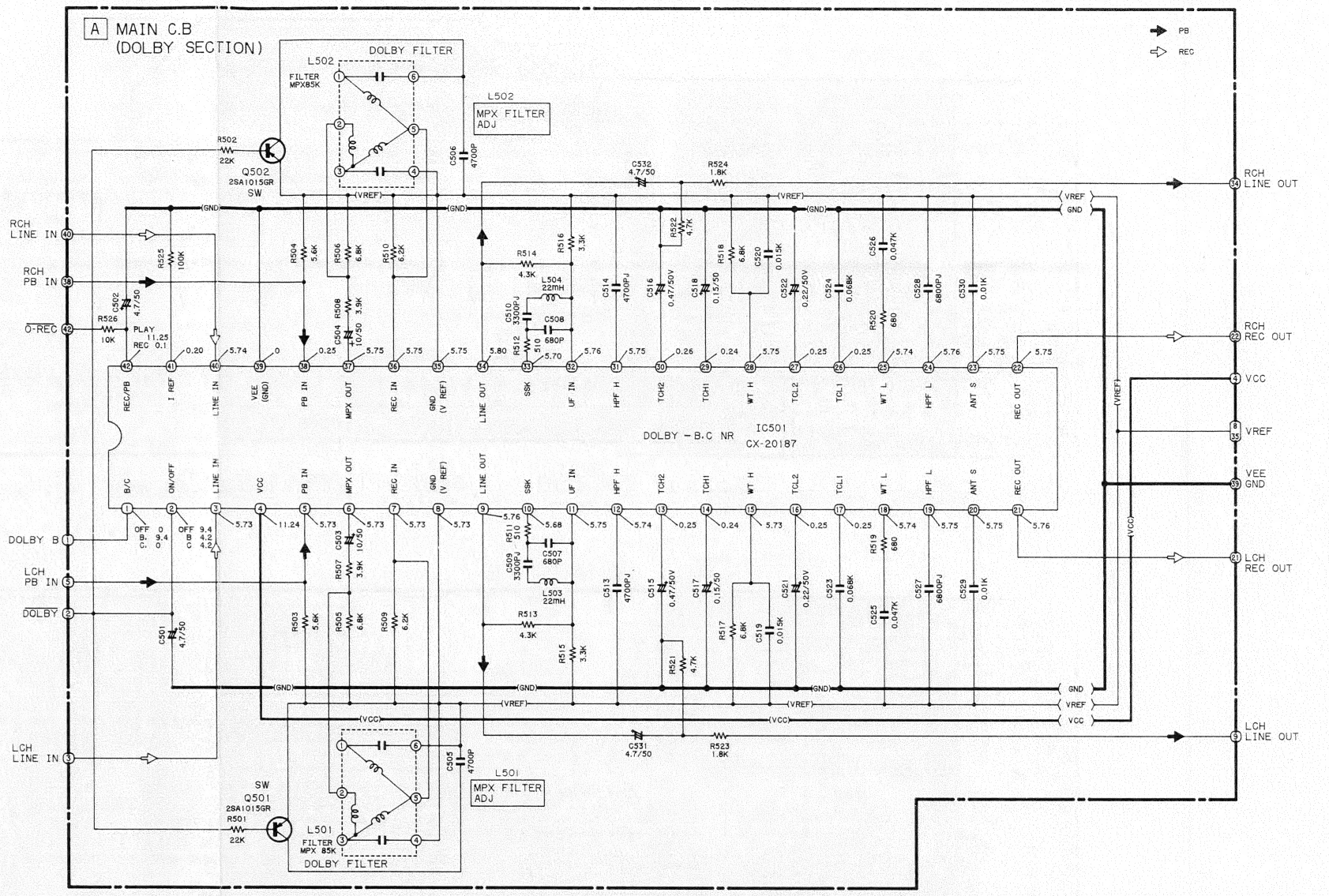
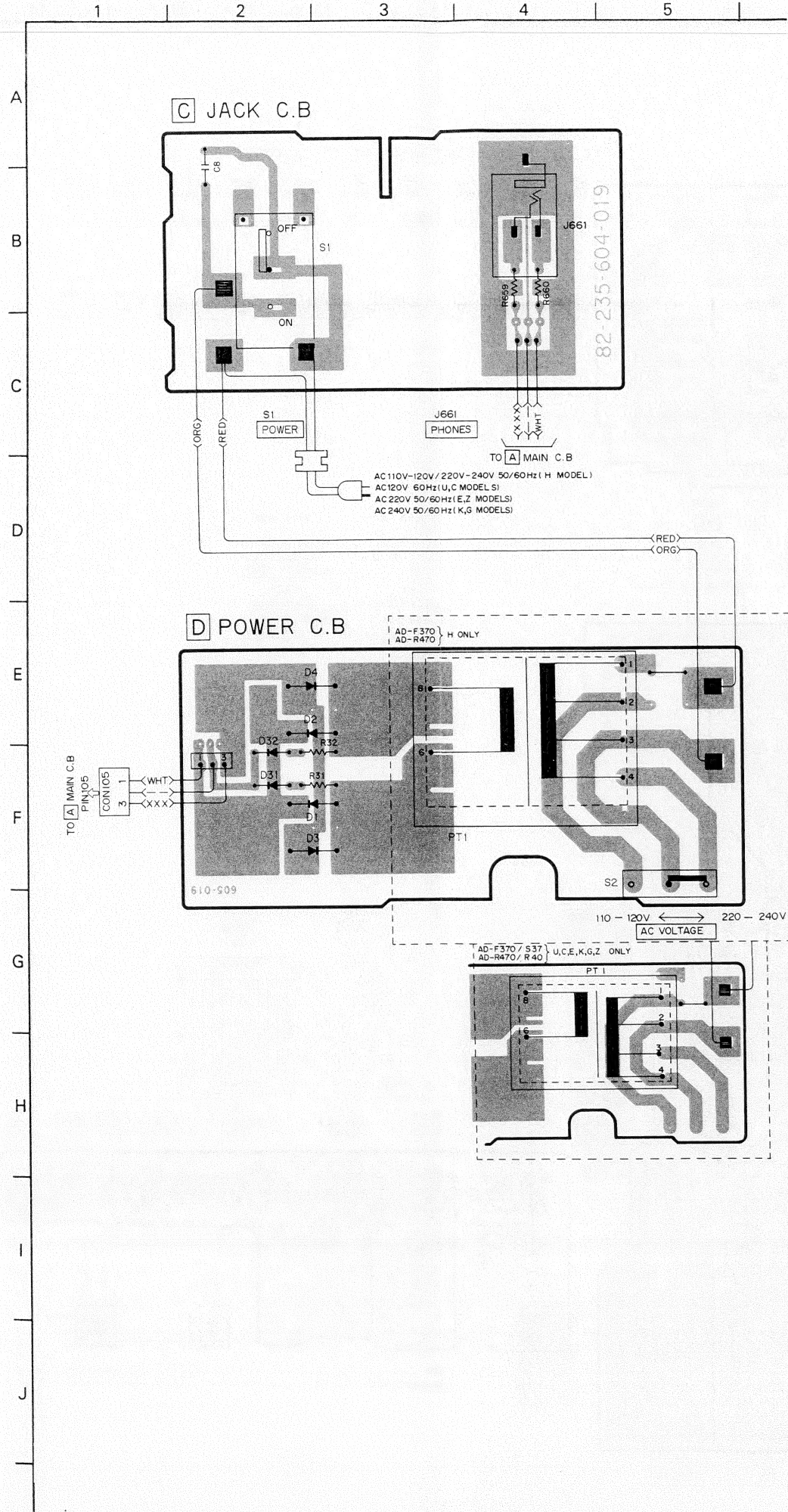
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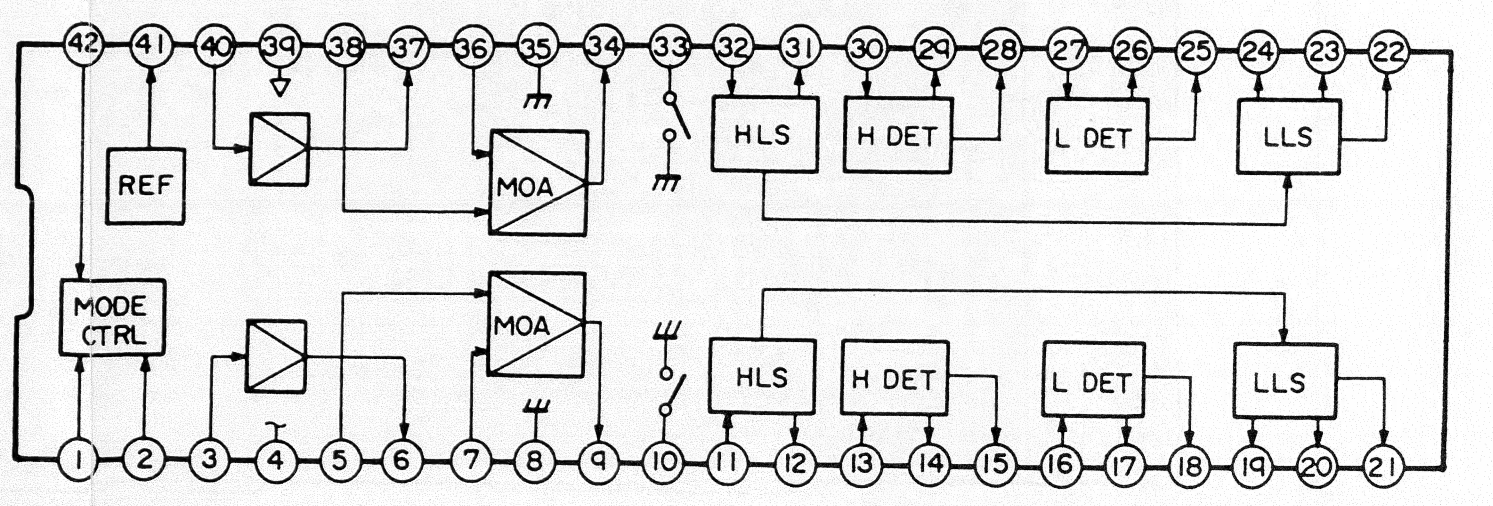


8 POINT PEAK LEVEL METER



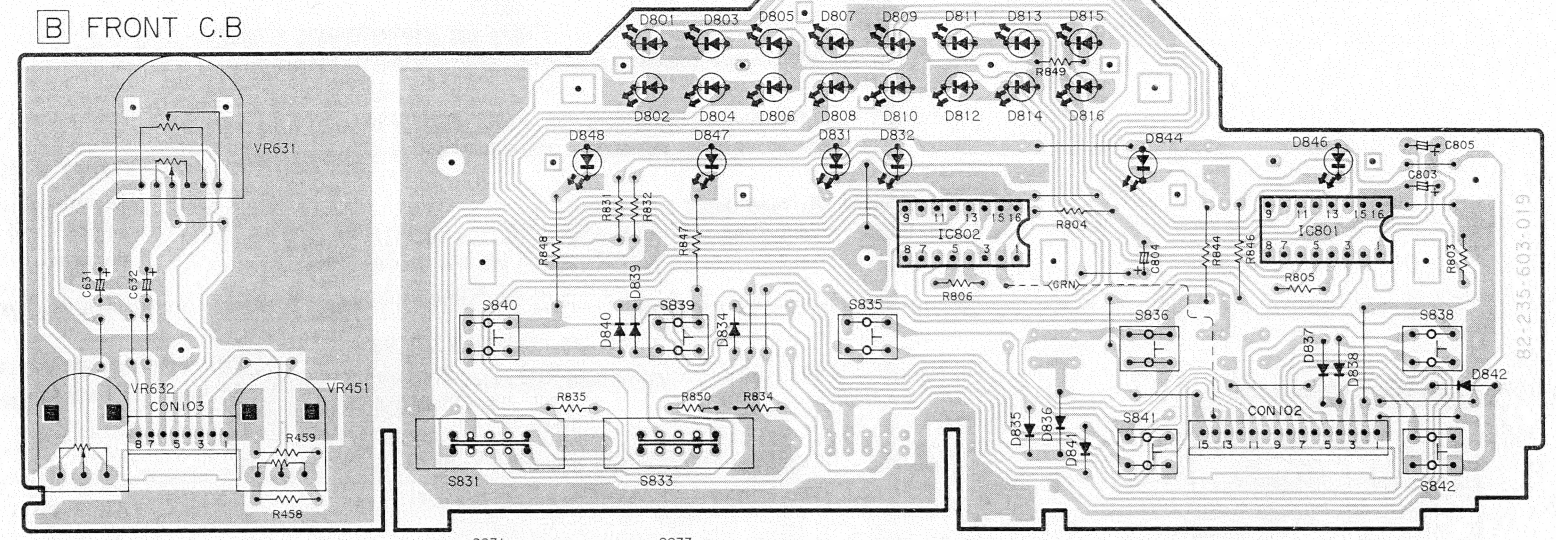


IC BLOCK DIAGRAM-2 IC, CX20187

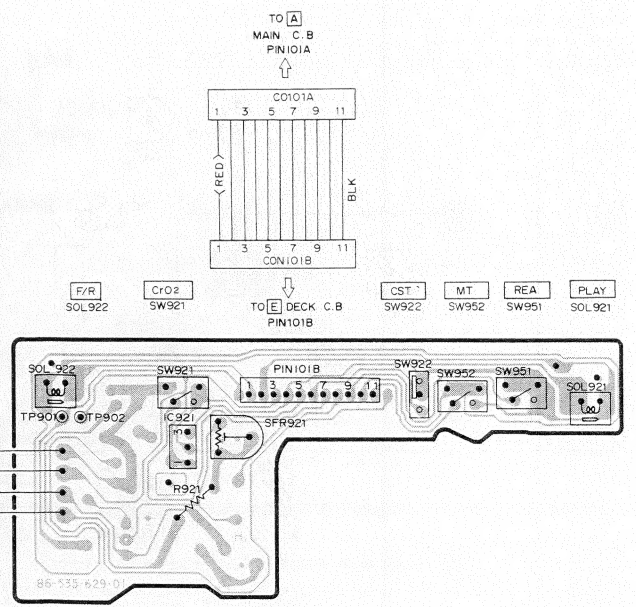
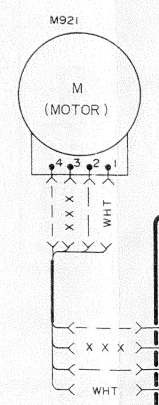
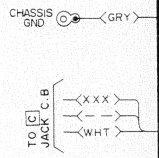
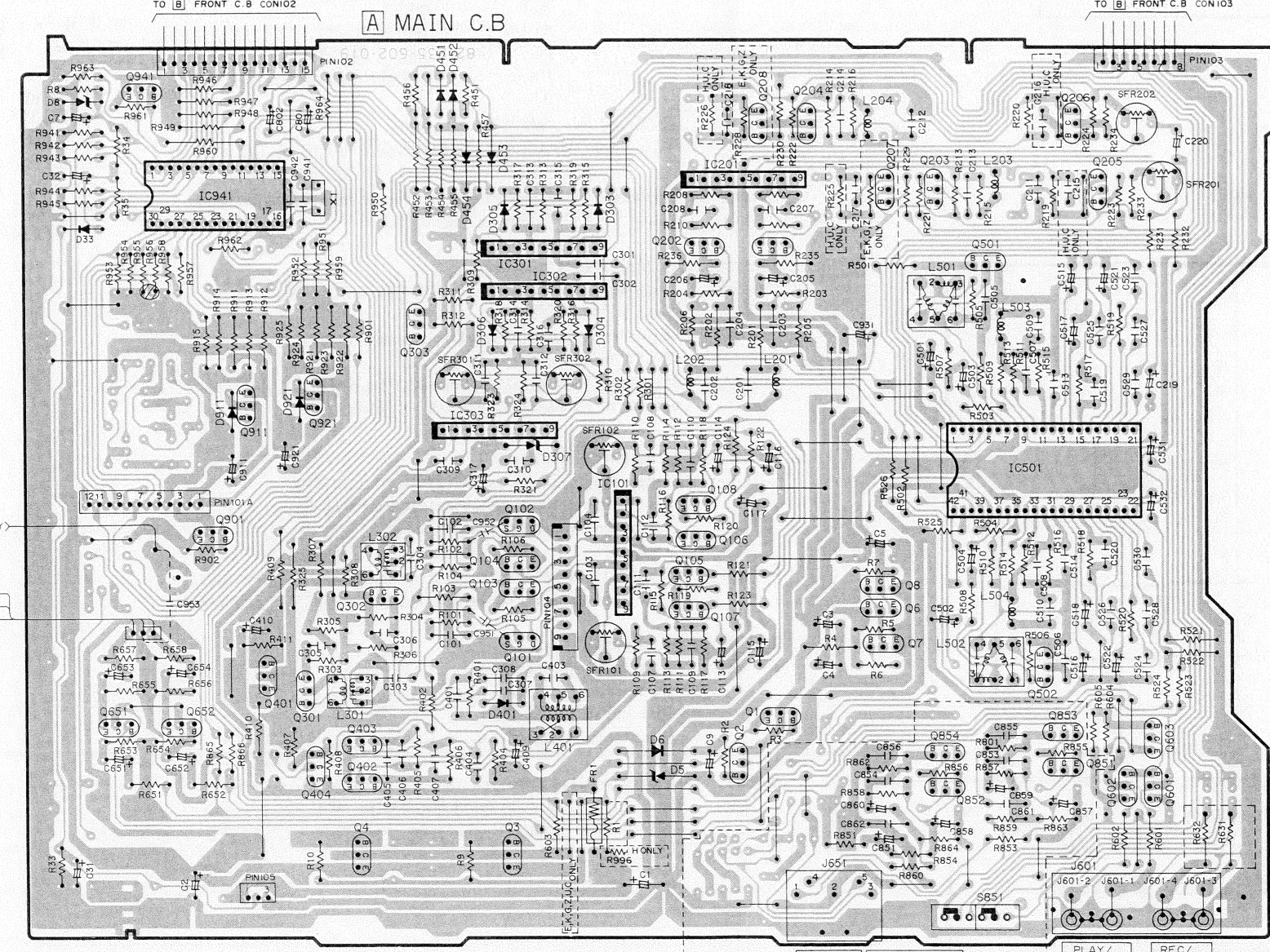
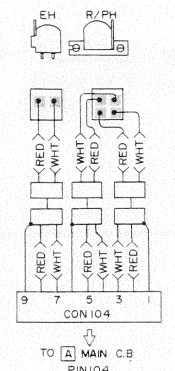
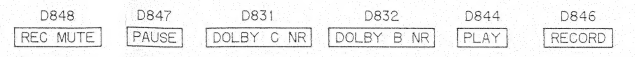
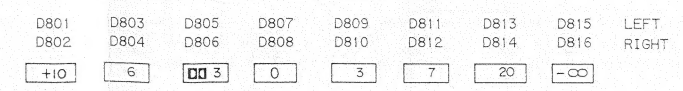


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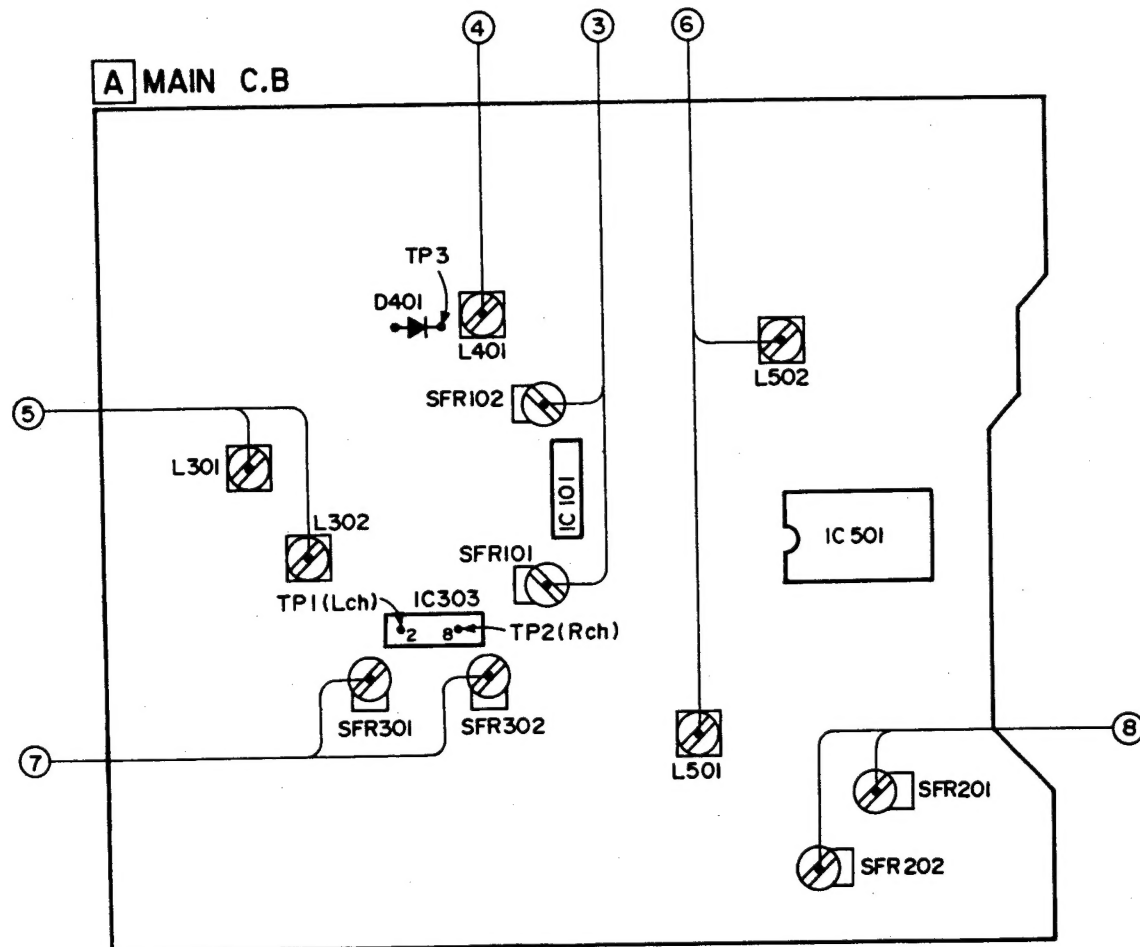
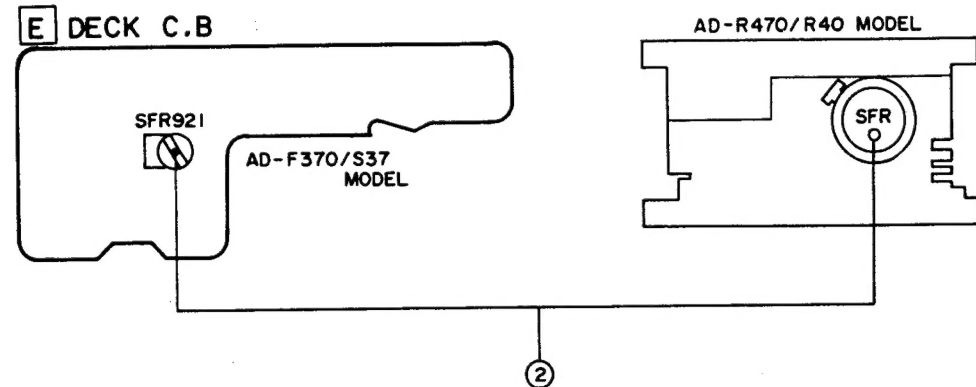
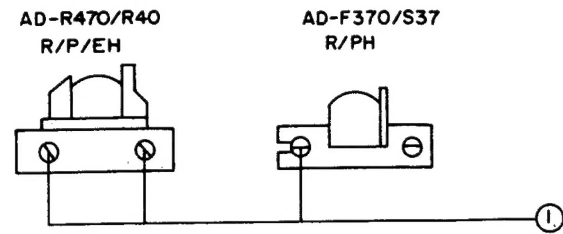
8 POINT PEAK LEVEL METER



DECK C.B.

REC/PLAY INPUT SELECTOR DIN LINE IN PLAY / LINE OUT REC / LINE IN

ADJUSTMENT (AD-R470,R40, AD-F370,S37)



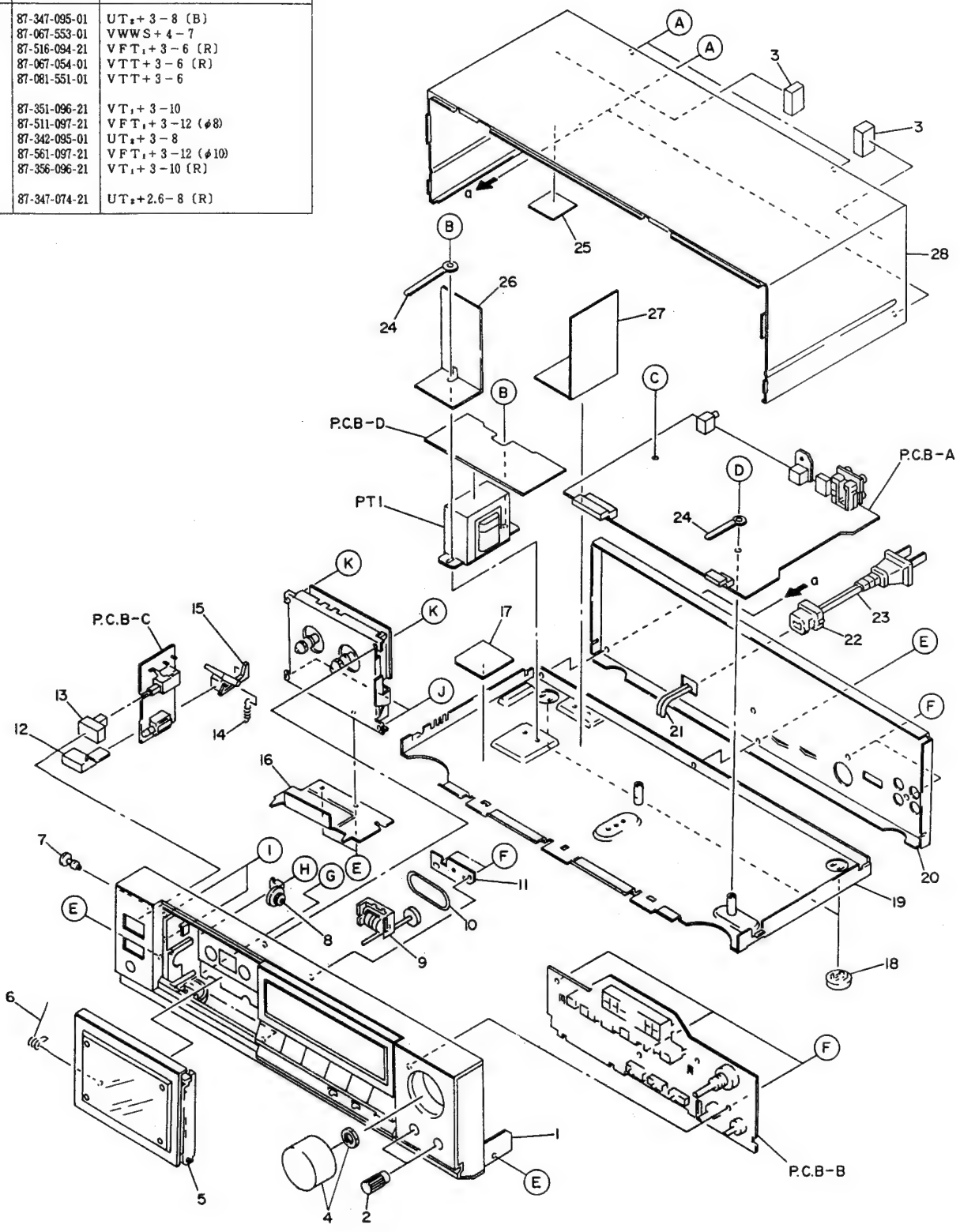
1. Azimuth Adjustment
 - Settings : • Test tape : TTS-310 (TTA-317E)
 - Test point : LINE OUT (AD-F370/S37, AD-R470/R40 H, C, E, K, G ONLY)
 - DIN OUT (AD-F370/R470 Z ONLY)
 - Adjustment location : Azimuth adjustment screw
 - Method : Playback the 10kHz signals of the test tape, and adjust the screw for maximum output.
2. Tape Speed Adjustment
 - Settings : • Test tape : TTA-100 (TTA-111S)
 - Test point : LINE OUT (AD-F370/S37, AD-R470/R40 H, C, E, K, G ONLY)
 - DIN OUT (AD-F370/R470 Z ONLY)
 - Adjustment location : SFR921 (AD-F370/S37) MOTOR SFR (AD-R470/R40)
 - Method : Playback the test tape and adjust the SFR for frequency of 3,000Hz.
3. Playback Sensitivity Adjustment
 - Settings : • Test tape : TTS-200 (TTA-161, TCC-130)
 - Test point : LINE OUT (AD-F370/S37, AD-R470/R40 H, C, E, K, G ONLY)
 - J601-1 (L-CH)
 - J601-2 (R-CH)
 - DIN OUT (AD-F370/R470 Z ONLY)
 - J651
 - DOLBY NR SW : OFF
 - Adjustment location : SFR101 (L-CH) SFR102 (R-CH)
 - Method : Playback the test tape and adjust so that output is $490 \pm 1\%$ mV.
4. Bias OSC. Coil Adjustment
 - Settings : • Test tape : TTA-620 (TTA-119MP)
 - Test point : TP3
 - Adjustment location : L401
 - DOLBY NR SW : OFF
 - Method : Adjust so that the frequency at the test points is $85\text{kHz} \pm 200\text{Hz}$.
5. HX Coil Adjustment
 - Settings : • Test tape : TTA-600 (TTA-119K)
 - Test point : IC303 (HX comparator), pin 2,8
 - Adjustment location : L301 (L-CH) L302 (R-CH)
 - Method : Adjust so that the DC voltage at the test point is minimized in the REC STANDBY mode.
6. MPX Filter Adjustment
 - Settings : • Test tape : Blank tape
 - Input signal : 19kHz signal at LINE IN
 - Test point : LINE OUT
 - Adjustment location : L501 (L-CH) L502 (R-CH)
 - Method : Record the test tape, and adjust so that the output DOLBY B/C SW ON becomes up to 27dB for the output at DOLBY B/C SW OFF.
7. REC/PB Frequency Response Adjustment
 - Settings : • Test tape : TTA-600 (TTA-119K)
 - Test point : LINE OUT (AD-F370/S37, AD-R470/R40 H, C, E, K, G ONLY)
 - J601-1 (L-CH)
 - J601-2 (R-CH)
 - DIN OUT (AD-F370/R470 Z ONLY)
 - J651
 - Adjustment location : SFR301 (L-CH) SFR302 (R-CH)
 - DOLBY NR SW : OFF
 - Method : Record and playback the 1kHz and 10kHz signals and adjust so the output difference becomes $+0.5 \pm 8\frac{1}{2}\text{dB}$ (AD-F370/S37, AD-R470/R40 H, C, E, K, G ONLY)
 - $-3 \pm 3\text{dB}$ (AD-F370/R470 Z ONLY)
8. REC/PB Sensitivity Adjustment
 - Settings : • Test tape : TTA-600 (TTA-119K) (AD-F370/S37, AD-R470/R40 H, C, E, K, G ONLY)
 - TTA-610 (TTA-119H) (AD-F370/R470 Z ONLY)
 - Test point : LINE OUT (AD-F370/S37, AD-R470/R40 H, C, E, K, G ONLY)
 - J601-1 (L-CH)
 - J601-2 (R-CH)
 - DIN OUT (AD-F370/R470 Z ONLY)
 - J651
 - DOLBY NR SW : OFF
 - Adjustment location : SFR201 (L-CH) SFR202 (R-CH)
 - Method : Record and Playback a 1kHz (AD-F370/S37, AD-R470/R47, H, C, E, K, G ONLY), 400Hz (AD-F370/R470 Z ONLY) signal and adjust so that the LINE, DIN output difference became $0 \pm 0.3\text{dB}$ (AD-F370/S37, AD-R470/R40 H, C, E, K, G ONLY), $355 \pm 50\text{mV}$ (AD-F370/R470 Z ONLY)

PRACTICAL SERVICE FIGURE (AD-R470,R40, AD-F370,S37)

Playback output: (TTS-200(TTA-161, TCC-130))	EXCEPT Z 470 ± 50mV (LINE OUT) Z ONLY 490 ± 50mV (DIN OUT)	(Weighted)	More than 44/52/62dB (DOLBY-NR OFF/B/C with NORM. tape) More than 46/54/64dB (DOLBY-NR OFF/B/C with CrO ₂ , MT. tapes)
PB/REC output: (TTA-600(TTA-119K))	EXCEPT Z 340mV ± 1.5dB (LINE OUT) Z ONLY 340mV ± 1.5dB (DIN OUT)	Recording bias frequency:	85kHz
		Tape speed: (TTA-100(TTA-111S))	3kHz ± 1.5%
PB/REC distortion:	AD-R470, R40 AD-F370, S37 Less than 2.0% (NORM) AD-R470, R40 Less than 2.2% (CrO ₂) AD-F370, S37 Less than 2.0% (CrO ₂) AD-R470, R40 AD-F370, S37 Less than 2.0% (MT)	Wow & flutter: (W. R. M. S)	Less than 0.065%
		Take-up torque:	45 ± 10g-cm (0.44 ± 0.1mN·m)
		Fast forward torque:	120 ± 30g-cm (1.18 ± 0.29mN·m)
		Rewind torque:	120 ± 30g-cm (1.18 ± 0.29mN·m)
		Back-tension:	3 ± 1g-cm (0.03 ± 0.02mN·m)
Playback noise:	AD-R470, R40 AD-F370, S37 Less than 4.0mV (DOLBY-B NR OFF, with NORM. tape) AD-R470, R40 AD-F370, S37 Less than 3.0mV (DOLBY-B NR OFF, with CrO ₂ tape) AD-R470, R40 Less than 2.0/1.8mV (DOLBY-B/C NR ON, with NORM. tape) AD-F370, S37 Less than 2.2/2.0mV (DOLBY-B/C NR ON, with NORM. tape) AD-R470, R40 AD-F370, S37 Less than 2.0/1.8mV (DOLBY-B/C NR ON, with CrO ₂ tape) More than 60dB	Test tape:	METAL TTA-620(TTA-119MP) CrO ₂ TTA-610(TTA-119H) NORMAL TTA-600(TTA-119K)
Erase ratio: (125Hz)	More than 60dB		
PB/REC SN ratio: (Unweighted)	More than 38/44/44dB (DOLBY-NR OFF/B/C with NORM. tape) More than 40/46/46dB (DOLBY-NR OFF/B/C with CrO ₂ , MT. tapes)		

EXPLODED VIEW-1

REF. NO.	PART NO.	DESCRIPTION
A	87-347-095-01	UT _z +3-8 (B)
B	87-067-553-01	VWWS+4-7
C	87-516-094-21	VFT ₁ +3-6 (R)
D	87-067-054-01	VTT+3-6 (R)
E	87-081-551-01	VTT+3-6
F	87-351-096-21	VT ₁ +3-10
G	87-511-097-21	VFT ₁ +3-12 (φ8)
H	87-342-095-01	UT _z +3-8
I	87-561-097-21	VFT ₁ +3-12 (φ10)
J	87-356-096-21	VT ₁ +3-10 (R)
K	87-347-074-21	UT _z +2.6-8 (R)

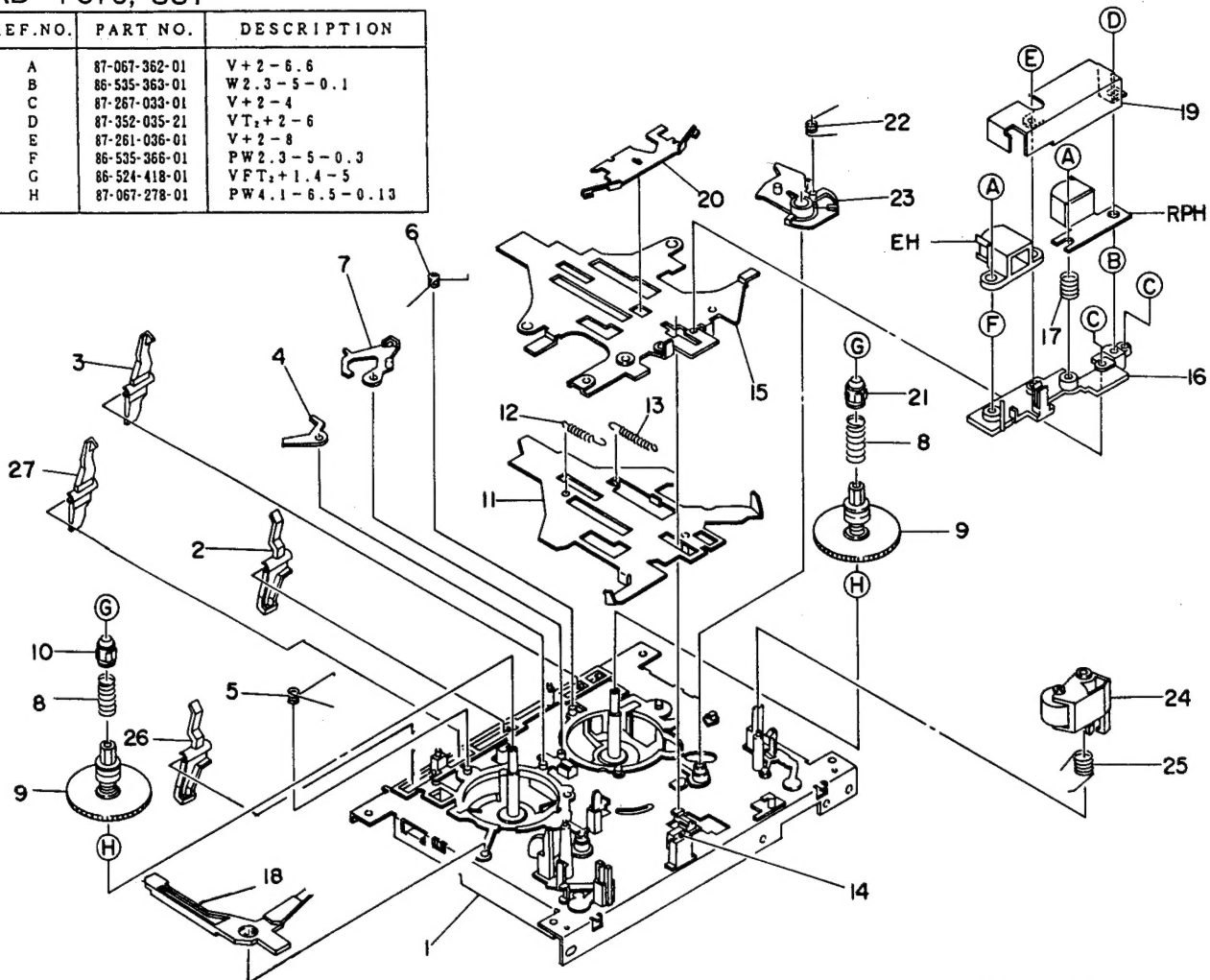


MECHANICAL PARTS LIST

PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q'TY
	1-1	★09-047-383-010	CABINET FRONT ASSY (F370)	※	1
	1-1	★09-047-384-010	CABINET FRONT ASSY (S37)	※	1
	1-1	★09-047-398-010	CABINET FRONT ASSY (R470)	※	1
	1-1	★09-047-399-010	CABINET FRONT ASSY (R40)	※	1
	1-2	★82-234-018-010	KNOB, BIAS		2
	1-3	★84-711-306-019	G CUSHION 10-5-5		2
	1-4	★82-235-014-019	KNOB, REC	※	1
	1-5	09-047-385-010	CASSETTE BOX ASSY (H, C ONLY) (F370)	※	1
	1-5	09-047-387-010	CASSETTE BOX ASSY (U ONLY) (S37)	※	1
	1-5	09-047-386-010	CASSETTE BOX ASSY (E, K, G, Z ONLY) (F370)	※	1
	1-5	09-047-395-010	CASSETTE BOX ASSY (H, C ONLY) (R470)	※	1
	1-5	09-047-397-010	CASSETTE BOX ASSY (U ONLY) (R40)	※	1
	1-5	09-047-396-010	CASSETTE BOX ASSY (E, K, G, Z ONLY) (R470)	※	1
	1-6	★82-235-208-019	T-SPRING, EJECT	※	1
	1-7	★87-084-077-019	NYLON RIVET 3.5-4.5		1
	1-8	★87-063-143-010	OIL DAMPER 75		1
	1-9	★87-040-194-010	COUNTER		1
	1-10	★82-235-207-010	BELT, COUNTER	※	1
	1-11	★82-205-208-010	HOLDER, COUNTER		1
	1-12	★82-234-015-010	PUSH-KEY, EJECT		1
	1-13	★84-721-023-010	PUSH-BUTTON, POWER		1
	1-14	★82-235-206-019	E-SPRING, EJECT	※	1
	1-15	★82-235-202-019	LEVER, EJECT	※	1
	1-16	★82-235-209-010	PLATE, SHIELD HEAD (R470, R40)	※	1
	1-17	★82-231-615-010	SILICON STEEL 43-43 (F370, S37)		1
	1-18	★87-055-059-010	FOOT B		2
	1-19	---	CHASSIS, AMP.		1
	1-20	★82-236-005-019	PANEL, REAR (H ONLY) (F370)	※	1
	1-20	★82-236-006-019	PANEL, REAR (U ONLY) (S37)	※	1
	1-20	★82-236-007-019	PANEL, REAR (C ONLY) (F370)	※	1
	1-20	★82-236-008-019	PANEL, REAR (E ONLY) (F370)	※	1
	1-20	★82-236-009-019	PANEL, REAR (K ONLY) (F370)	※	1
	1-20	★82-236-010-019	PANEL, REAR (G ONLY) (F370)	※	1
	1-20	★82-236-011-019	PANEL, REAR (Z ONLY) (F370)	※	1
	1-20	★82-235-016-019	CHASSIS, REAR (H ONLY) (R470)	※	1
	1-20	★82-235-018-019	CHASSIS, REAR (U ONLY) (R40)	※	1
	1-20	★82-235-019-019	CHASSIS, REAR (C ONLY) (R470)	※	1
	1-20	★82-235-020-019	CHASSIS, REAR (E ONLY) (R470)	※	1
	1-20	★82-235-021-019	CHASSIS, REAR (K ONLY) (R470)	※	1
	1-20	★82-235-022-019	CHASSIS, REAR (G ONLY) (R470)	※	1
	1-20	★82-235-024-019	CHASSIS, REAR (Z ONLY) (R470)	※	1
	1-21	★87-830-814-019	TUBE UL 8φ-140mm (H, U, C ONLY)		1
	1-22	★87-085-199-010	CORD BUSHING		1
	1-23	★87-034-749-019	AC CORD (H ONLY) (F370, R470)		1
	1-23	★87-034-583-019	AC CORD (U, C ONLY) (F370, S37, R470, R40)		1
	1-23	★82-187-797-019	AC CORD (E, Z ONLY) (F370, R470)		1
	1-23	★82-187-796-019	AC CORD (K ONLY) (F370, R470)		1
	1-23	★82-187-795-019	AC CORD (G ONLY) (F370, R470)		1
	1-24	---	WIRE BINDER		2
	1-25	★82-226-274-010	DUMPER 80-60-3 (E, K, Z ONLY)		1
	1-26	★82-235-620-010	SILICON BOARD A2 (R470, R40)	※	1
	1-27	★82-104-212-010	SILICON BOARD A (R470, R40)		1
	1-28	★82-235-002-019	CABINET, STEEL	※	1

EXPLODED VIEW-2 (X-3 SR1UN, SR2UN)
AD-F370, S37

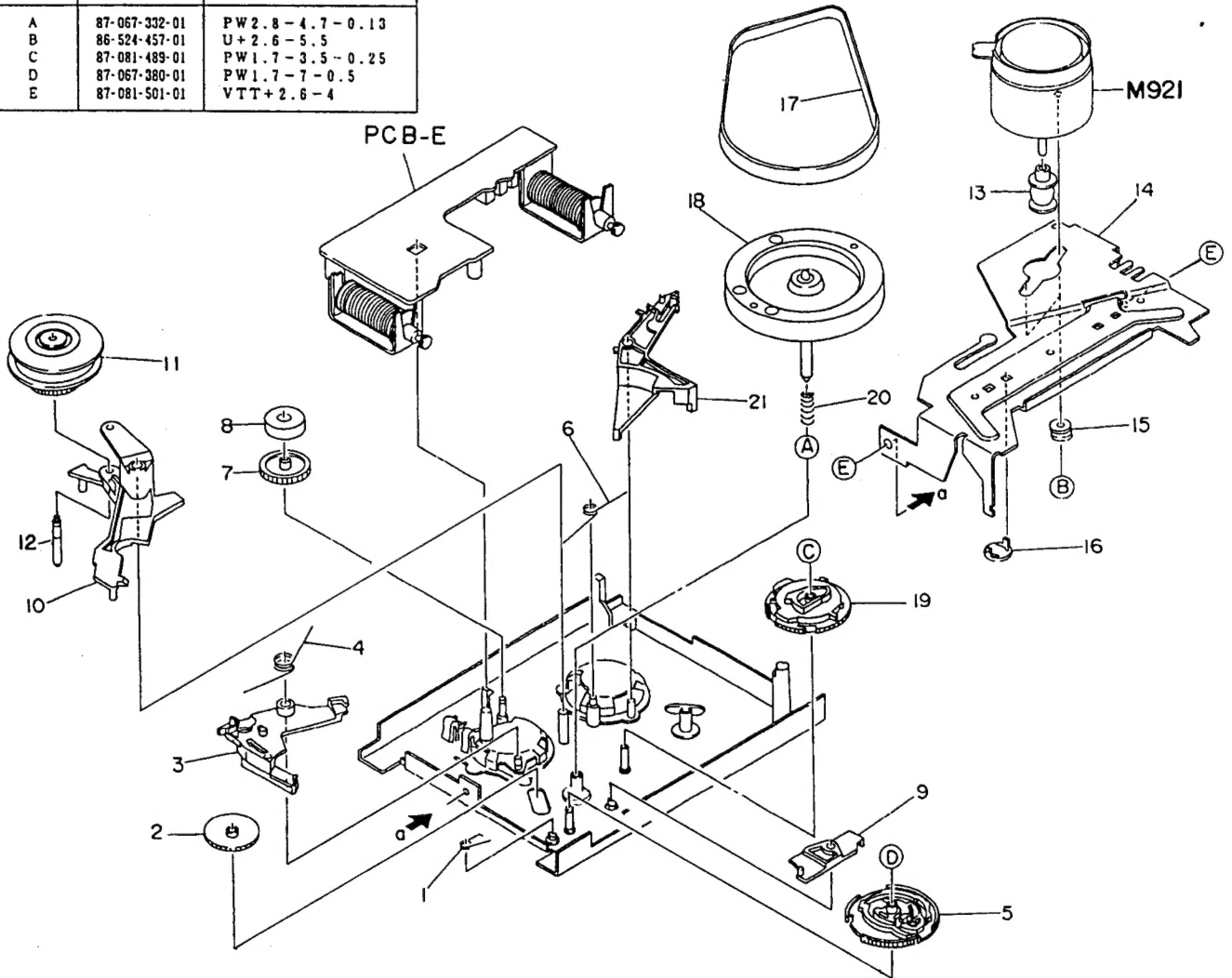
REF.NO.	PART NO.	DESCRIPTION
A	87-067-362-01	V+2-6.6
B	86-535-363-01	W2.3-5-0.1
C	87-267-033-01	V+2-4
D	87-352-035-21	VT ₂ +2-6
E	87-261-036-01	V+2-8
F	86-535-366-01	PW2.3-5-0.3
G	86-524-418-01	VFT ₂ +1.4-5
H	87-067-278-01	PW4.1-6.5-0.13



PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q'TY
	2-1	★86-535-339-310	MECHANISM CHASSIS ASSY S		1
	2-2	★86-535-249-110	LEVER, CASSETTE S		1
	2-3	★86-535-254-110	LEVER, CHROME		1
	2-4	★86-535-252-210	LEVER, BRAKE R		1
	2-5	★86-535-371-019	T-SPRING, BRAKE R		1
	2-6	★86-535-370-019	T-SPRING, BRAKE F		1
	2-7	★86-535-251-010	LEVER, BRAKE F		1
	2-8	★86-535-293-019	C-SPRING, REEL PLATFORM		2
	2-9	86-535-240-110	REEL PLATFORM A ASSY		2
	2-10	★86-524-218-119	STOPPER S, REEL PLATFORM		1
	2-11	★86-535-385-210	SLIDE PLATE S ASSY		1
	2-12	★86-535-285-019	E-SPRING, SLIDE		1
	2-13	★86-535-286-019	E-SPRING, ACTUATING		1
	2-14	★86-535-353-010	FELT 5-4-2		1
	2-15	★86-535-311-310	ACTUATING CHASSIS S		1
	2-16	★86-535-314-010	BASE, HEAD		1
	2-17	★86-535-359-010	C-SPRING, AZIMUTH S		1
	2-18	★82-235-204-010	LEVER, PROTECT		1
	2-19	★86-535-362-010	PLATE, HEAD SHIELD		1
	2-20	★86-535-289-010	P-SPRING, ACTUATING		1
	2-21	★86-524-233-119	STOPPER T, REEL PLATFORM		1
	2-22	★86-535-282-019	T-SPRING, PLAT GEAR F		1
	2-23	★86-535-238-110	LEVER, PLAY F		1
	2-24	86-535-226-110	PINCH LEVER F ASSY		1
	2-25	★86-535-312-010	T-SPRING, PINCH S		1
	2-26	★86-535-247-210	LEVER, REC A		1
	2-27	★86-535-250-010	LEVER, METAL		1

EXPLODED VIEW-3 (X-3 SR1UN, SR2UN)
AD-F370, S37

REF.NO.	PART NO.	DESCRIPTION
A	87-067-332-01	PW 2.8-4.7-0.13
B	86-524-457-01	U+2.6-5.5
C	87-081-489-01	PW 1.7-3.5-0.25
D	87-067-380-01	PW 1.7-7-0.5
E	87-081-501-01	VTT+2.6-4



PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q'TY
	3-1	★86-535-291-110	T-SPRING, FR CAM		1
	3-2	86-535-259-310	GEAR, PLAY		1
	3-3	★86-535-230-210	LEVER, TRIGGER FR		1
	3-4	★86-535-278-019	T-SPRING, FR		1
	3-5	★86-535-261-310	CAM, FR P		1
	3-6	★86-535-279-010	T-SPRING, MAIN		1
	3-7	86-535-258-310	GEAR, IDLER		1
	3-8	★86-535-614-010	RING, MAGNET (4P)		1
	3-9	★86-535-223-310	LEVER, PAUSE		1
	3-10	★86-535-233-010	LEVER, FR		1
	3-11	★86-535-301-010	SLIPDISC ASSY		1
	3-12	★86-535-235-010	SHAFT, FR		1
	3-13	★86-535-389-110	PULLEY, MOTOR C		1
	3-14	---	HOLDER, MOTOR		1
	3-15	★86-513-441-110	COLLAR		2
	3-16	★86-535-255-010	FLYWHEEL TABLE		1
	3-17	86-535-391-110	BELT SC		1
	3-18	86-535-264-010	FLYWHEEL F ASSY		1
	3-19	★86-535-260-310	CAM, MAIN		1
	3-20	★86-535-288-019	C-SPRING, FLYWHEEL		1
	3-21	★86-535-231-210	LEVER, TRIGGER PLAY		1

See the X-3 Mechanism Guide (Supplement of Service Manual) for the exploded views.
The following parts have been changed for this model.

AD-R470,R40 ALTERATION PARTS LIST

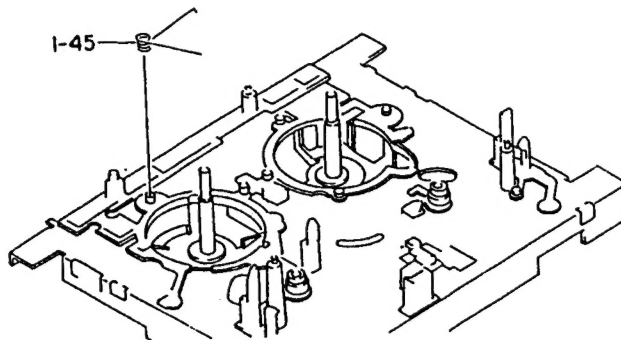
PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q'TY
	1-11	★86-535-370-019	T-SPRING, BRAKE F		1
	1-20	★86-535-351-310	HEAD CHASSIS PH ASSY		1
	1-23	★86-535-356-010	HEAD HOUSING PH ASSY		1
	1-44	★86-535-353-010	FELT SQ 5-4-2		1
	2-13	★86-535-389-010	PULLY MOTOR C 1		1
	2-17	86-535-390-010	BELT RC		1

The following REF. NOS are not used in this model.
1-4, 1-35, 2-9

ADDITIONAL PARTS LIST

PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q'TY
	1-45	★86-535-371-019	T-SPRING, BRAKE R		1

EXPLODED VIEW



ACCESSORIES/PACKAGE LIST

AD-F370,S37

PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q'TY
	1	★82-236-904-019	INSTRUCTION BOOKLET	※	1
	2	★87-032-845-019	SIEMENS PLUG (H ONLY)		1
	3	★87-034-773-010	CORD PIN, R-237W-1M		2

AD-R470,R40

PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q'TY
	1	★82-235-904-019	INSTRUCTION BOOKLET	※	1
	2	★87-032-845-019	SIEMENS PLUG (H ONLY)		1
	3	★87-034-773-010	CORD PIN, R-237W-1M		2