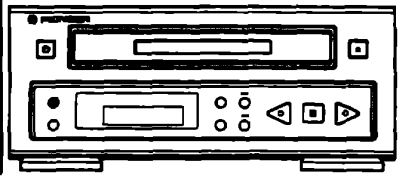
PIONEER®
The Art of Entertainment

Service Manual



ORDER NO.
RRV1732

STEREO CASSETTE DECK

T-F21

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Type	Model	Power Requirement	Remarks
	T-F21		
MY	O	AC220V-230V	
NV	O	AC230V	

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T-SZK JAN. 1997 Printed in Japan

1. SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING
Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).
When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

NOTICE
(FOR CANADIAN MODEL ONLY)
Fuse symbols (fast operating fuse) and/or (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

REMARQUE
(POUR MODÈLE CANADIEN SEULEMENT)
Les symboles de fusible (fusible de type rapide) et/ou (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

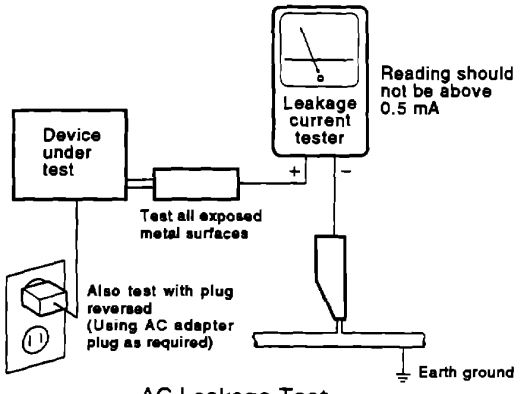
(FOR USA MODEL ONLY)

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 60 Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5 mA.



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.

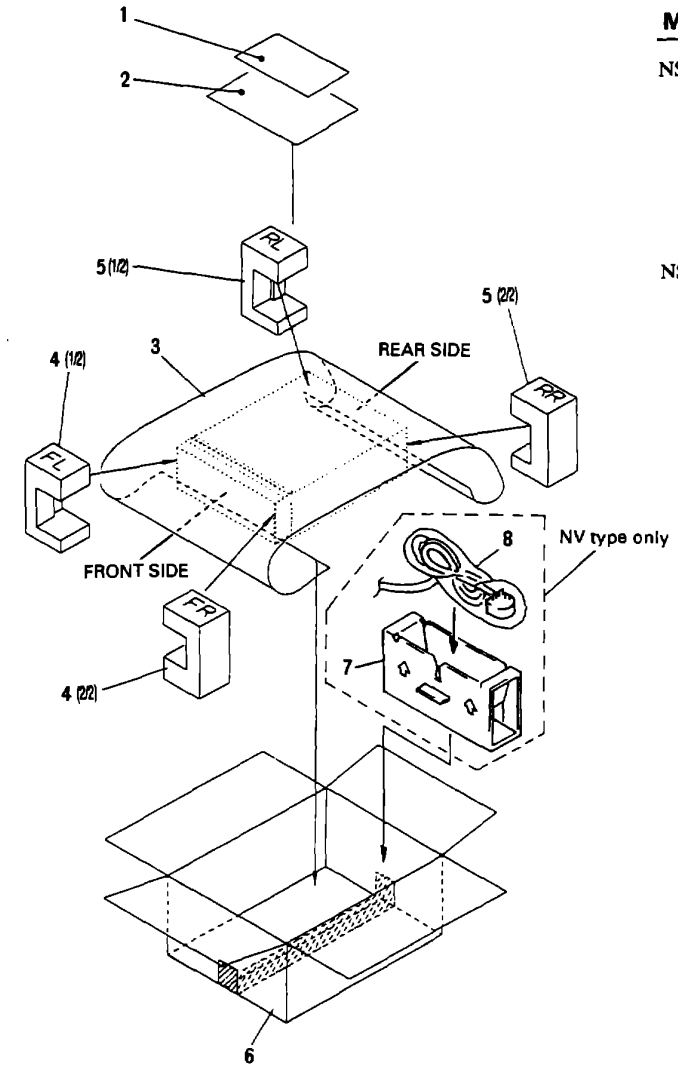
Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.
The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts 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. EXPLODED VIEWS AND PARTS LIST

NOTES: • *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
• *The ⚠ mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.*
• *Screws adjacent to ▼ mark on the product are used for disassembly.*

2.1 PACKING



(1) PARTS LIST

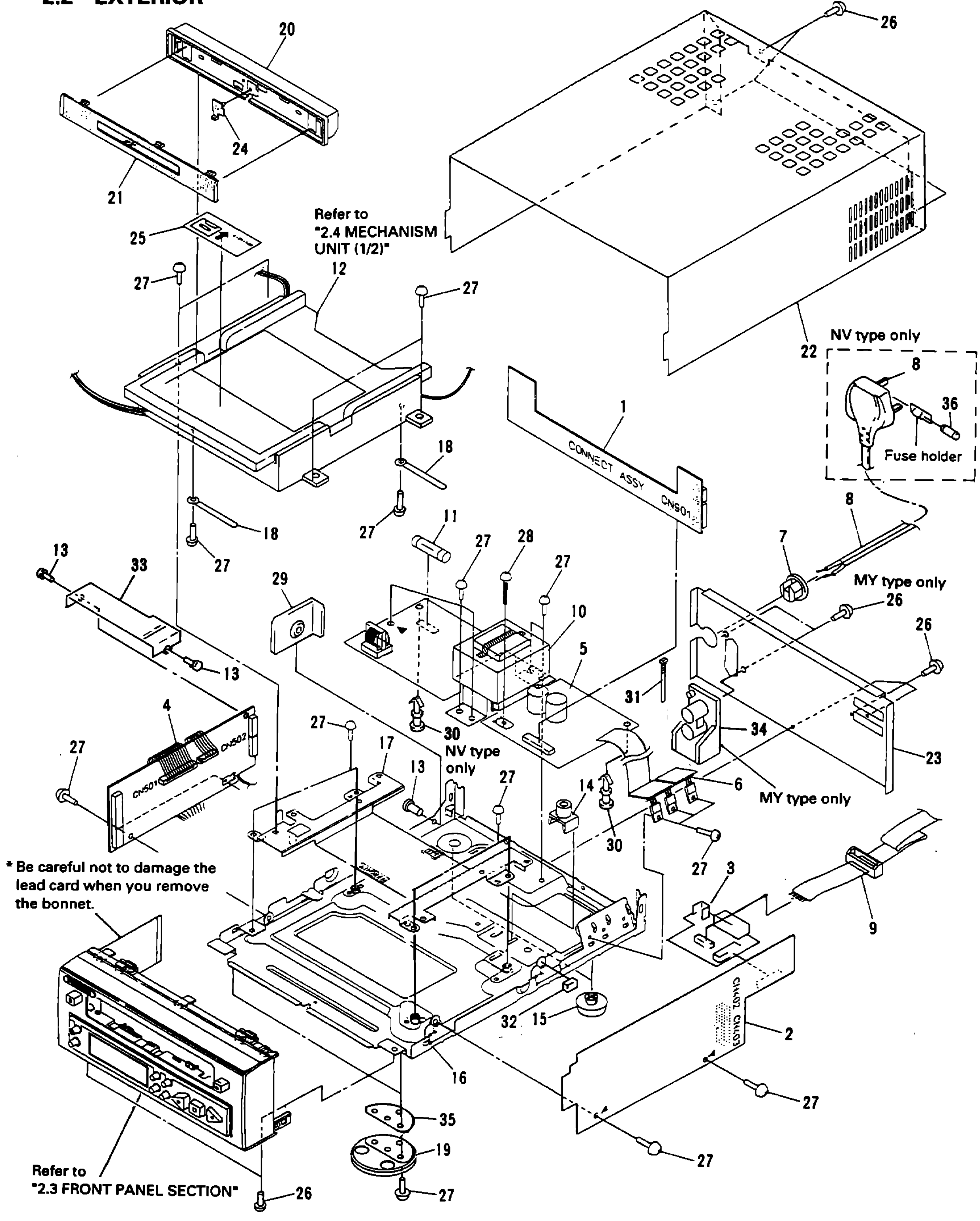
Mark	No.	Description	Parts No.
NSP	1	Warranty Card	ARY7008
	2	Supplementary Operating Instructions	See Contrast table (2)
	3	Mirror Mat Sheet	DHL1050
	4	Pad F MTCD	RHA1222
	5	Pad R MTCD	RHA1223
	6	Packing Case	See Contrast table (2)
	7	Spacer	See Contrast table (2)
NSP	8	Poly. Bag	See Contrast table (2)

(2) CONTRAST TABLE

T-F21/MY and NV have the same construction except for the following :

Mark	No.	Symbol & Description	Part No.		Remarks
			MY type	NV type	
	2	Supplementary Operating Instructions (English/French/ German/Italian/Dutch/Swedish/Spanish/Portuguese)	RRE1158	Not used	
	2	Supplementary Operating Instructions (English)	Not used	RRB1183	
	6	Packing Case	RHG1830	RHG1833	
	7	Spacer	Not used	RHG1836	
NSP	8	Poly. Bag	Not used	RHL1021	

2.2 EXTERIOR



Refer to
"2.4 MECHANISM UNIT (1/2)"
NV type only
Fuse holder
CONNECT ASSY
CN901
MY type only
NV type only
CN501
CN502
MY type only
* Be careful not to damage the lead card when you remove the bonnet.
CN402
CN403
Refer to
"2.3 FRONT PANEL SECTION"

(1) PARTS LIST

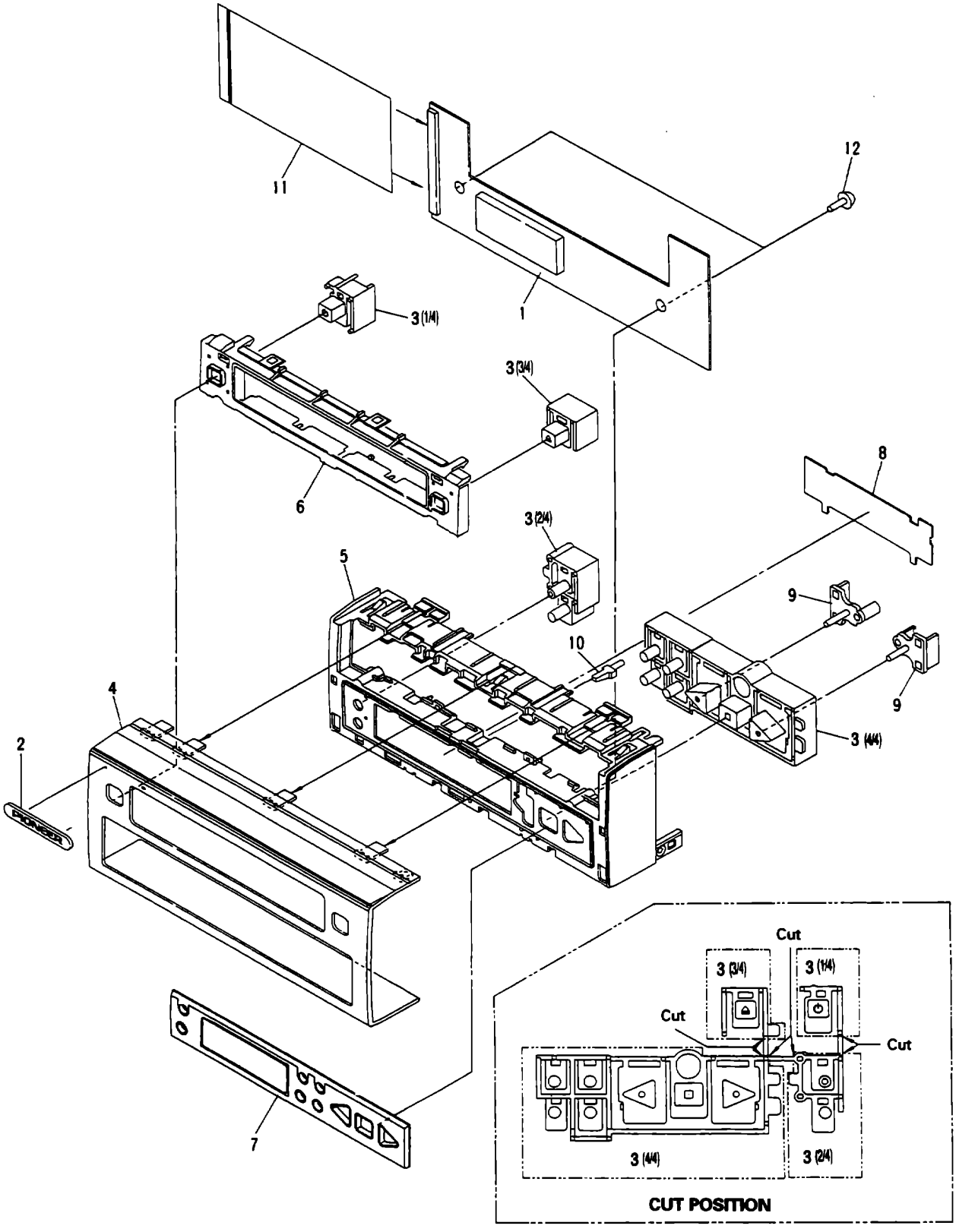
Mark	No.	Description	Parts No.
	1	CONNECT ASSY	RWZ4058
	2	AF ASSY	RWZ4074
	3	I/O ASSY	RWZ4080
	4	U-COM ASSY	RWZ4209
	5	POWER ASSY	RWZ4078
	6	REG ASSY	RWZ4079
	7	Strain Relief	CM-22B
⚠	8	AC Power Cord	See Contrast table (2)
	9	Cord with Connector	RDE1049
⚠	10	Power Transformer (T101)	RTT1332
⚠	11	Fuse (FU101: T2.5A)	AEK1058
	12	Mechanism Unit	RYM1264
	13	Nylon Rivet	AEC-525
NSP	14	PCB Mold	AMR2115
	15	Foot	REC-434
NSP	16	Chassis MTCD	RNB1123
NSP	17	Mecha Stay TC	RNE1900
	18	Cord Clamper	RNH-184
	19	Insulator ASSY	RNK2231
	20	TC Tray Panel	RAH2774
	21	TC Tray Plate	RAH2775
	22	Bonnet MTCD	REA1266
	23	Rear Panel	See Contrast table (2)
	24	Tray Lens	RNK2263
NSP	25	Tray Label	RRW1162
	26	Screw	BBT30P080FNI
	27	Screw	BBZ30P080FMC
	28	Screw	ABA1024
	29	Bracket	RNE1938
NSP	30	PCB Spacer	AEC1372
	31	Binder	ZCA-SKB90BK
	32	Spacer T5	REB1314
	33	PCB Holder	REC1301
⚠	34	AC Socket 1-P	See Contrast table (2)
	35	Plate	RNM1050
⚠	36	Fuse (T5A)	See Contrast table (2)

(2) CONTRAST TABLE

T-F21/MY and NV have the same construction except for the following :

Mark	No.	Symbol & Description	Part No.		Remarks
			MY type	NV type	
⚠	8	AC Power Cord	PDG1008	PDG1055	
	23	Rear Panel	RNA2112	RNA2115	
⚠	34	AC Socket 1-P	AKP1034	Not used	
⚠	36	FUSE (T5A)	Not used	REK1003	

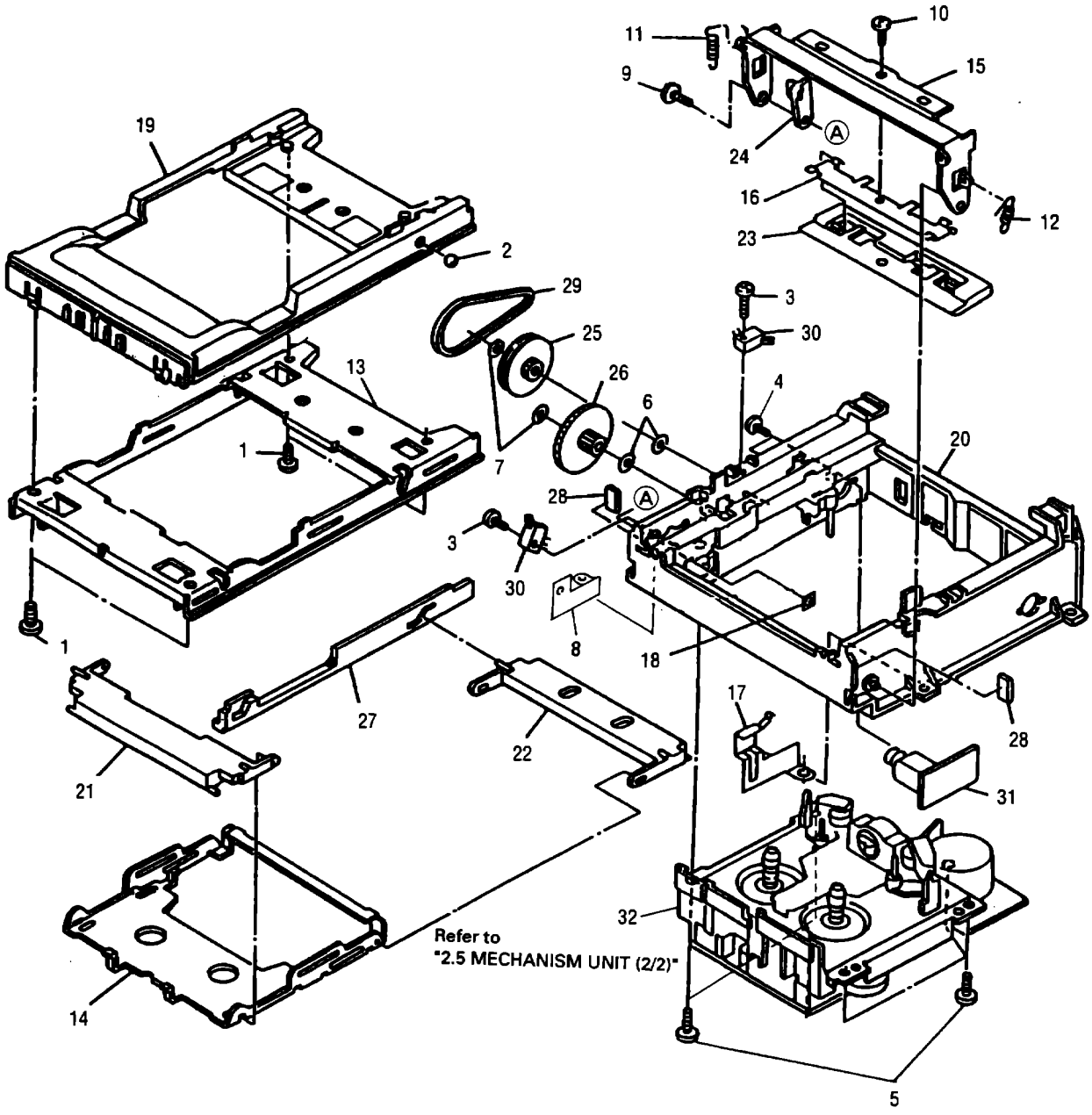
2.3 FRONT PANEL



• PARTS LIST

Mark	No.	Description	Parts No.
	1	FRONT ASSY	RWZ4075
	2	Name Plate	AAM1002
	3	Operate Button TC	RAC2143
	4	Front Panel	RAH2765
	5	Panel Base MTCD	RAH2767
	6	Front Kit TC	RAH2769
	7	Display Panel TC	RAH2772
	8	FL Filter TC	REC1289
	9	Play Lenz (ABS)	RNK2232
	10	Indicator Lenz TC	RNK2234
	11	Lead Card 35P	RDD1382
	12	Screw	BBZ30P080FMC

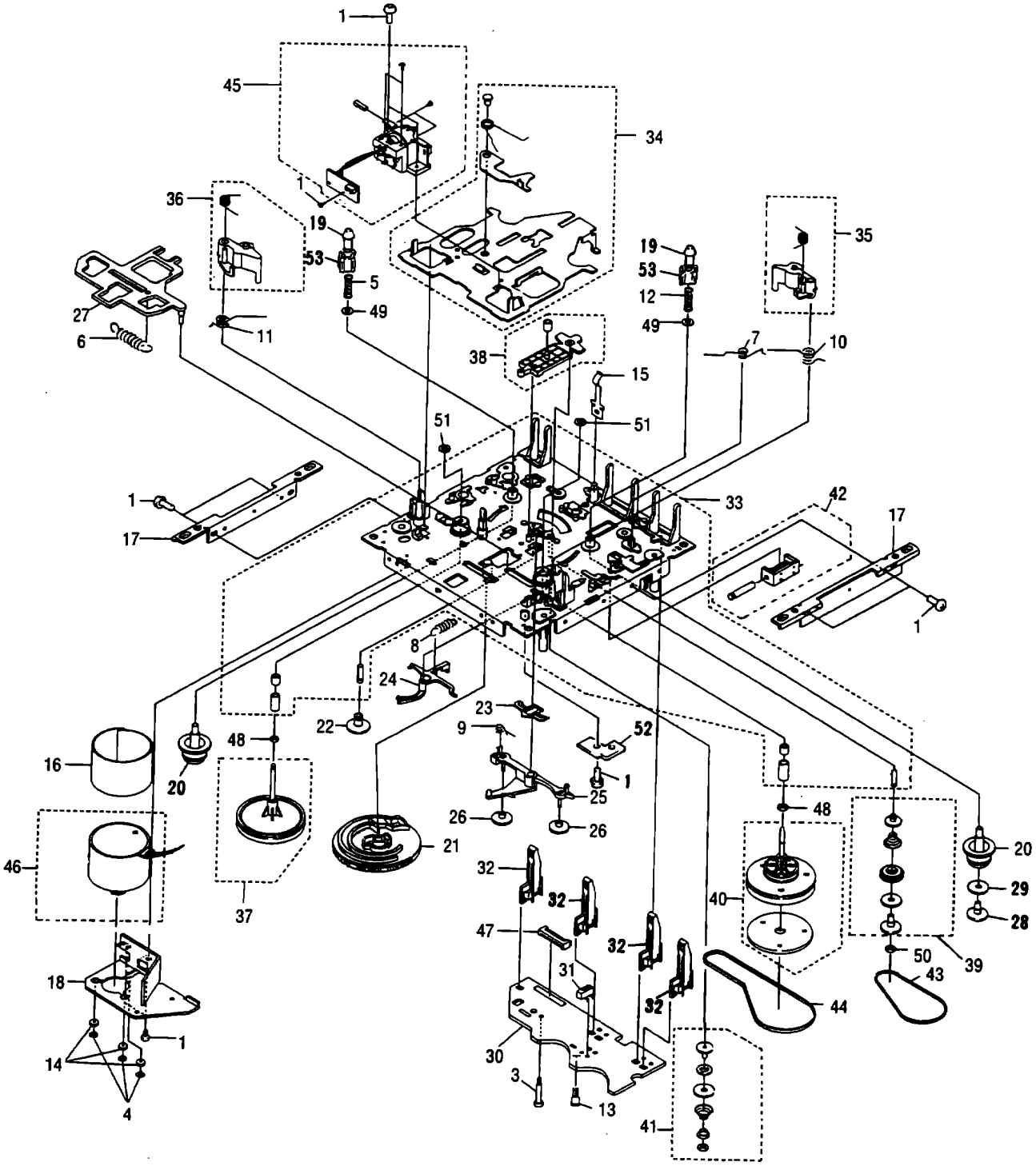
2.4 MECHANIZM UNIT (1/2)



• PARTS LIST

Mark	No.	Description	Parts No.
	1	SCREW	BBZ26P050FZK
	2	BEARING 5ø	PBP-007
	3	SCREW	PBZ20P080FMC
	4	SCREW	PMZ20P040FZK
	5	SCREW	PPZ30P060FMC
	6	WASHER	WA21D040D050
	7	WASHER	WT16D040D050
	8	PLATE EARTH B	RNE1937
	9	SCREW M1.7X8.2-7	RBA1124
	10	SCREW M1.4X2BK	RBA1125
	11	SPRING A	RBH1451
	12	SPRING B	RBH1452
	13	CHASSIS 576	RNE1915
	14	HOLDER ASSY	RNE1916
	15	ARM-576	RNE1917
	16	RETAINER	RNE1918
	17	PLATE EARTH	RNE1919
	18	NUT	RNE1920
	19	TRAY-578	RNK2265
	20	FLAME ASSY	RNK2266
	21	ARM A	RNK2267
	22	ARM C	RNK2268
	23	PLATE	RNK2269
	24	ARM	RNK2270
	25	PULLEY (B) 576	RNK2271
	26	GEAR	RNK2272
	27	GEAR LUCK	RNK2273
	28	BUFFER	RNK2274
	29	BELT-49.2	REB1312
	30	SWITCH MSS-8B	RSG1045
	31	MOTOR PCB ASSY	RXM1089
	32	C. DECK ADR2178TB	RYM1260

2.5 MECHANIZM UNIT (2/2)

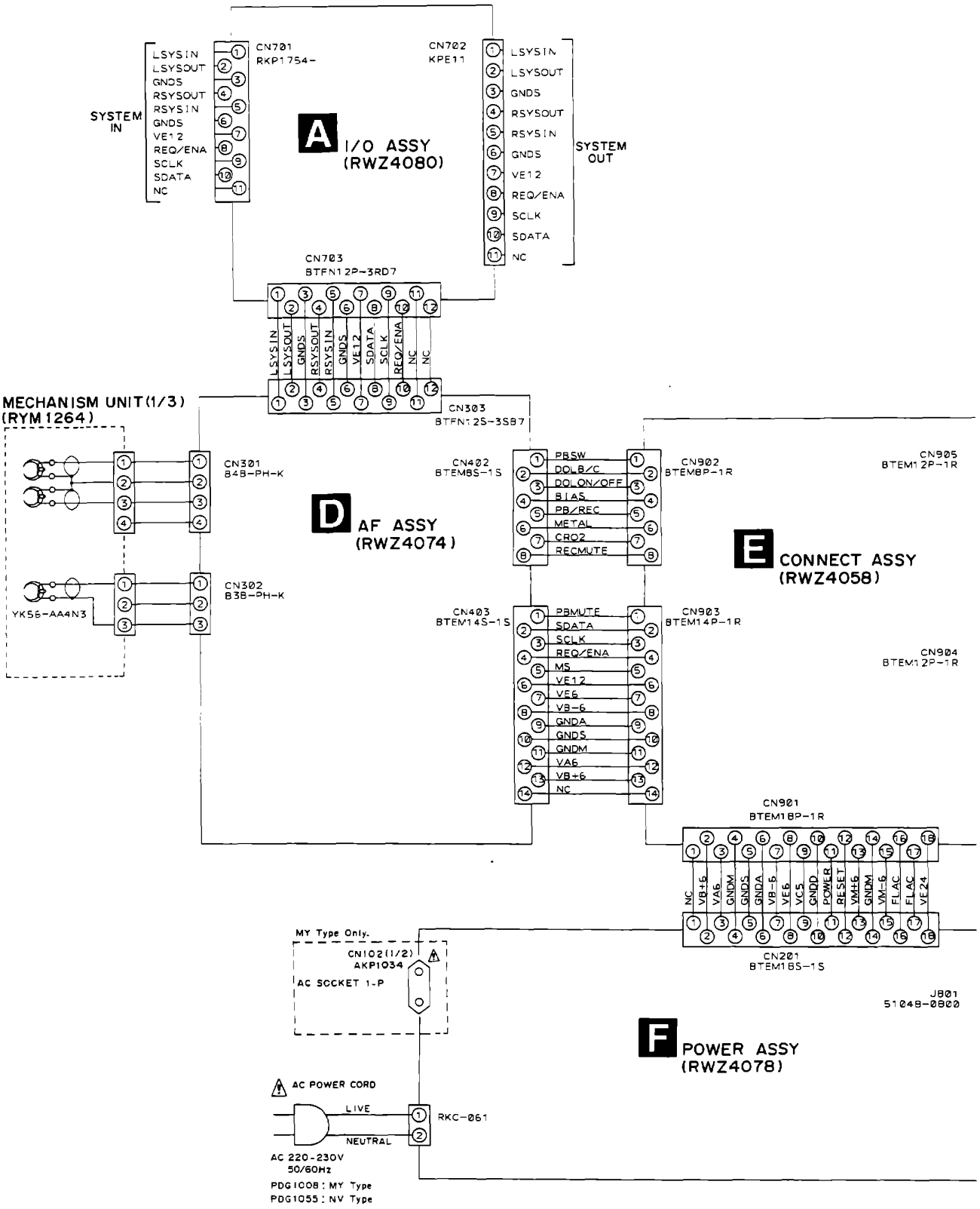


• PARTS LIST

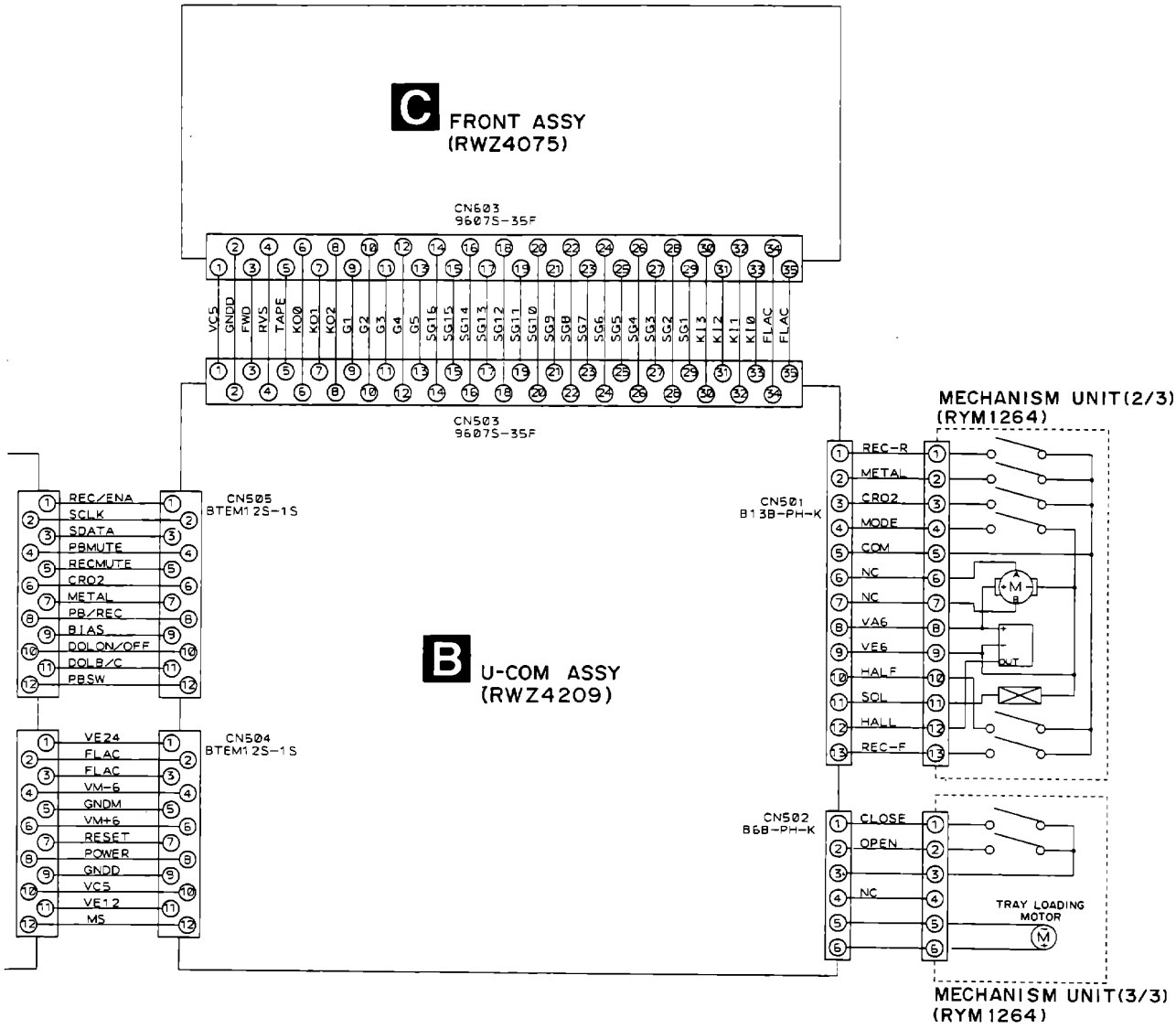
Mark	No.	Description	Parts No.
	1	SCREW	BCZ20P040FMC
	2	.....	
	3	SCREW S	RBA1122
	4	SCREW M	RBA1123
	5	SPRING-B/T R	RBH1443
	6	SPRING-LEVER AC	RBH1444
	7	SPRING-BASE HEAD	RBH1445
	8	SPRING-CAM LOCK	RBH1446
	9	SPRING-ARM RF	RBH1447
	10	SPR-PINCH RETURN F	RBH1448
	11	SPR-PINCH RETURN R	RBH1449
	12	SPRING-B/T F	RBH1450
	13	HALL IC	REA1262
	14	CUSHION MOTOR	REB1311
	15	PLATE-SPRING	RNE1910
	16	PLATE SHIELD	RNE1911
	17	BRKT SIDE	RNE1912
	18	BRKT M/T TOP	RNE1913
	19	BUSH REEL	RNK2283
	20	BASE-REEL	RNK2253
	21	GEAR-CAM	RNK2254
	22	GEAR-IDLER	RNK2255
	23	LEVER-BRAKE	RNK2256
	24	ARM-CAM LOCK	RNK2257
	25	ARM-RF	RNK2258
	26	GEAR-RF	RNK2259
	27	LEVER-AC	RNK2260
	28	CAP-MAGNET	RNK2261
	29	PLATE MAGNET	RNK2262
	30	PCB CONTROL 2102	RNP1707
	31	SWITCH MODE	RSG1044
	32	SWITCH DETECT	RSN1026
	33	CHASSIS (OS) ASSY	RXA1756
	34	CHASSIS (HEAD) ASSY	RXA1757
	35	PINCH ROLLER ASSY (F)	RXA1758
	36	PINCH ROLLER ASSY (R)	RXA1759
	37	FLYWHEEL (R) ASSY	RXA1760
	38	ARM (PLAY) ASSY	RXA1761
	39	CLUTCH FAST ASSY	RXA1763
	40	FLYWHEEL (F) ASSY	RXA1764
	41	CLUTCH PLAY ASSY	RXA1765
	42	SOLENOID	RXP1022
	43	BELT SUB	REB1308
	44	BELT MAIN	REB1309
	45	R/P HEAD ASSY	RXA1766
	46	DC MOTOR ASSY	RXM1088
	47	CONNECTOR	S13B-PH-K-S
	48	WASHER	WA26D045D025
	49	WASHER	WA62D095D025
	50	WASHER	WT10D035D025
	51	WASHER	WT15D040D050
	52	PLATE LOADER	RNE1939
	53	CAP REEL	RNK2284

3. SCHEMATIC DIAGRAM

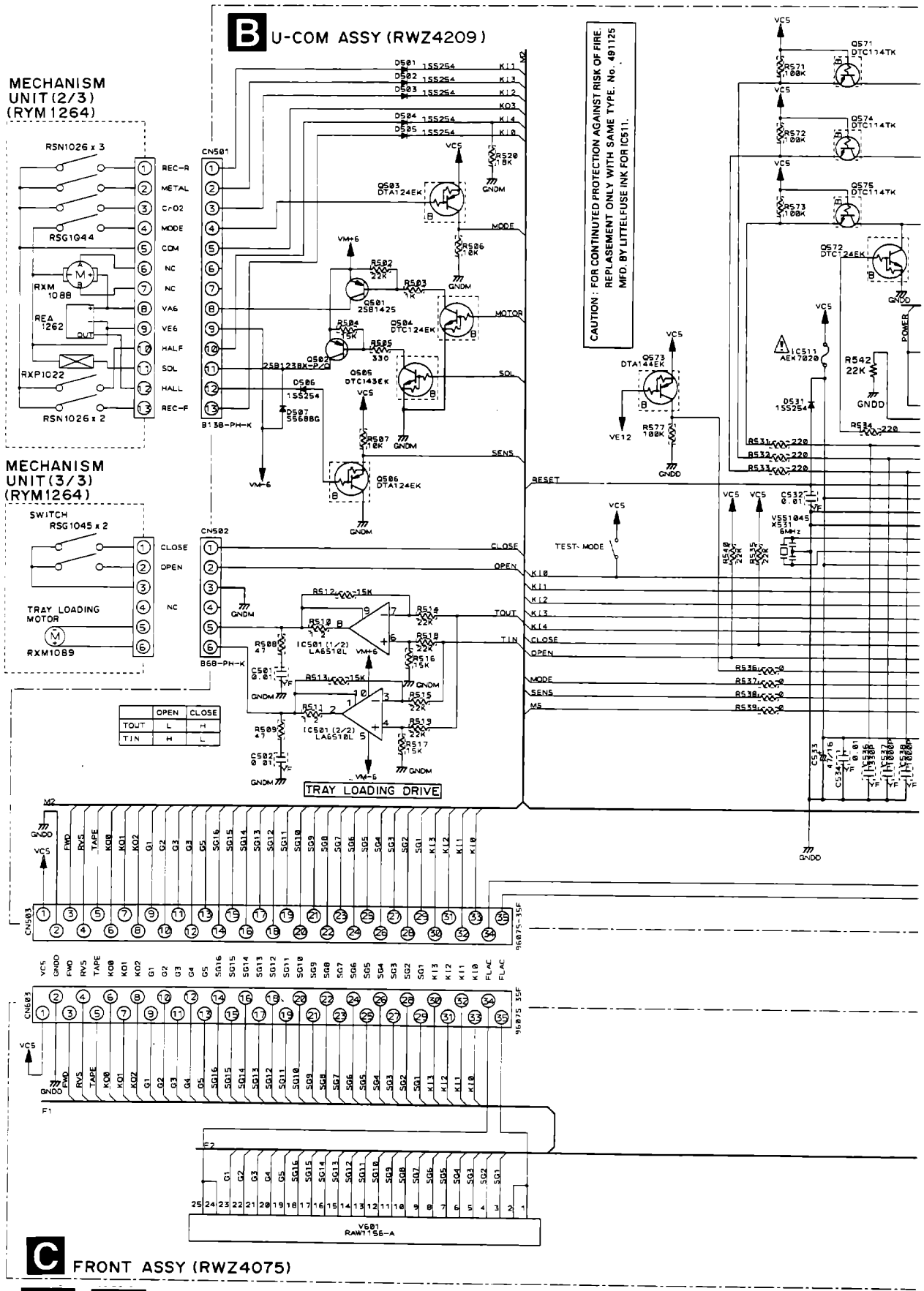
3.1 OVERALL WIRING DIAGRAM

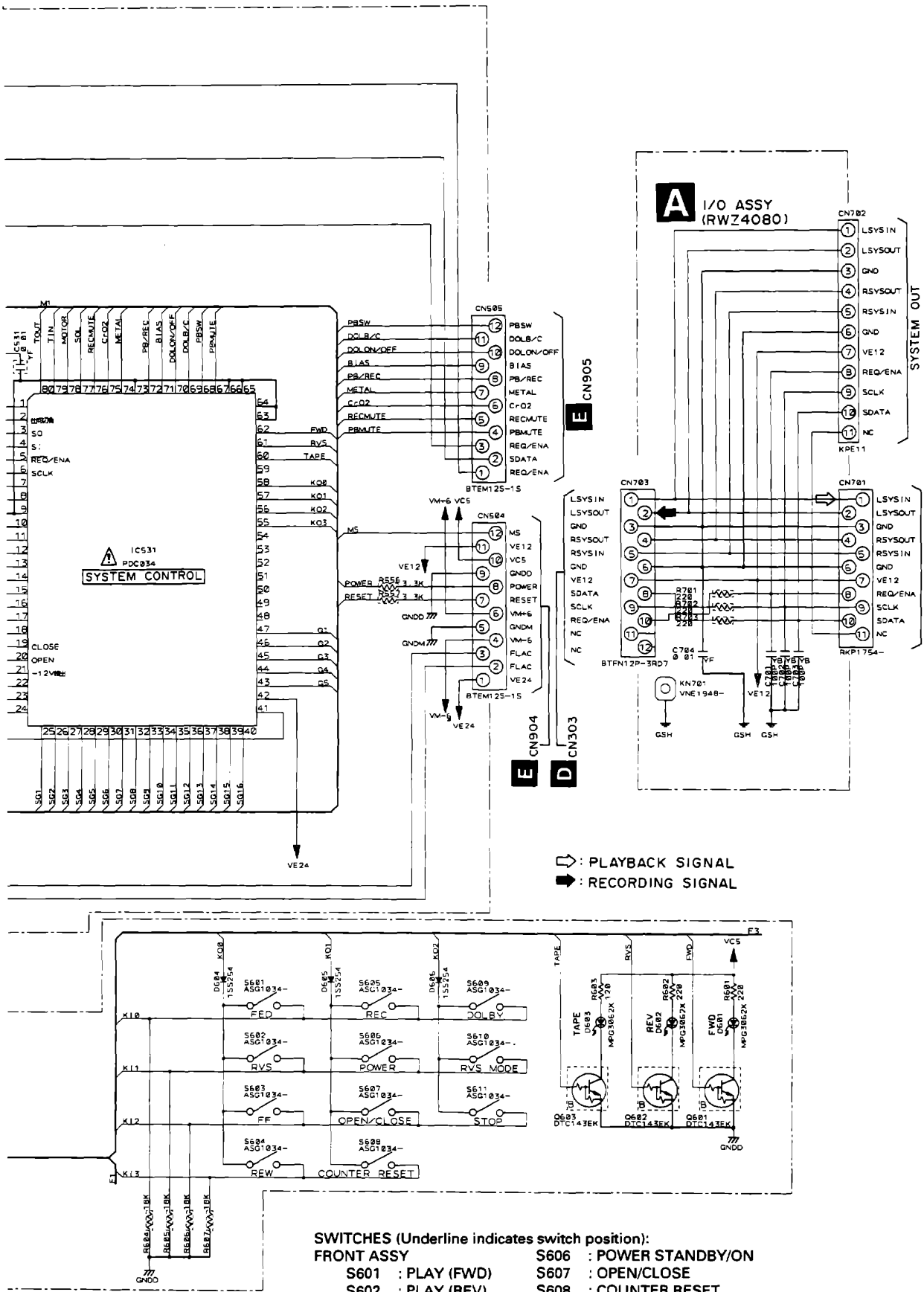


- **When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".**



3.2 I/O ASSY, U-COM ASSY, FRONT ASSY



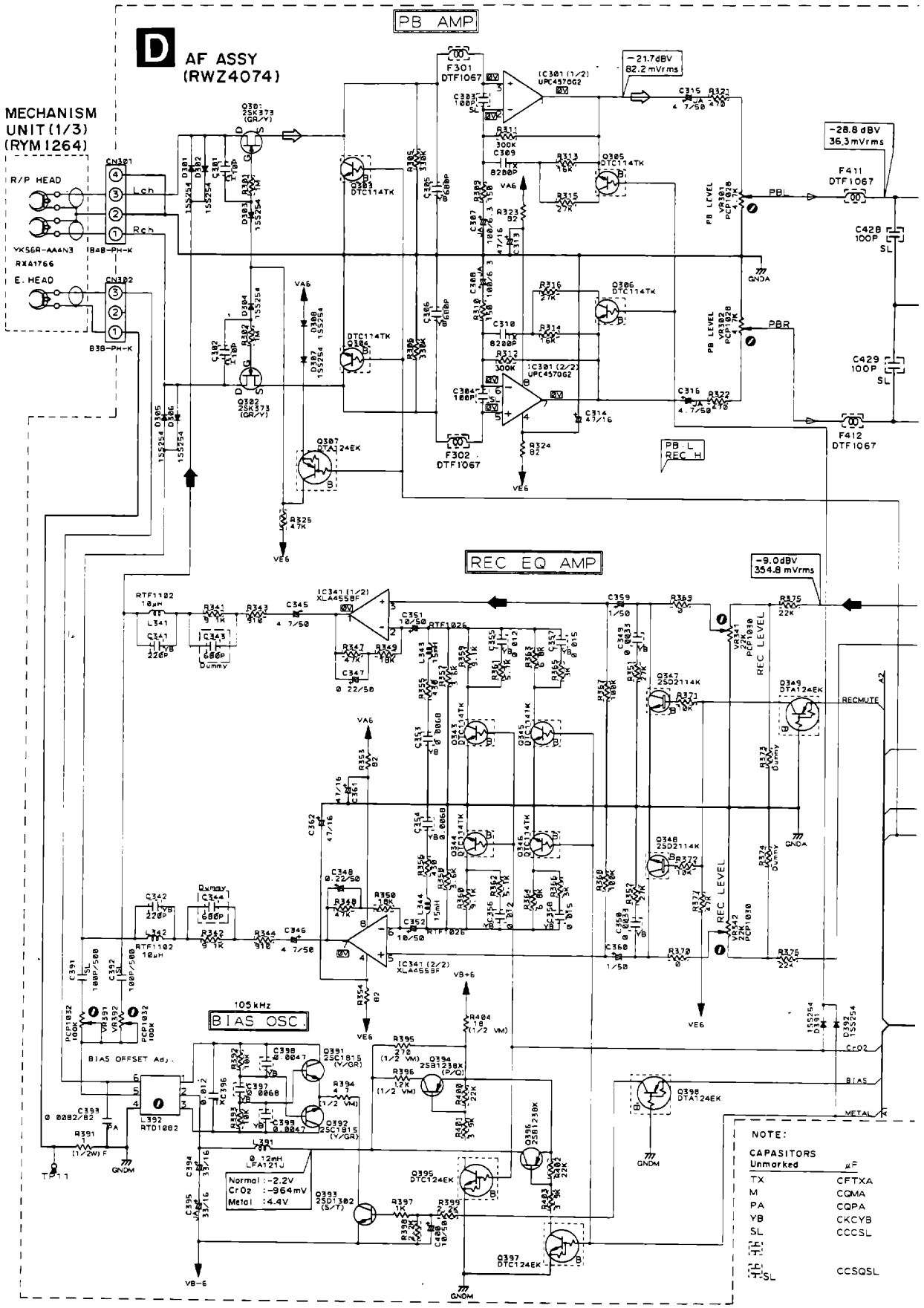


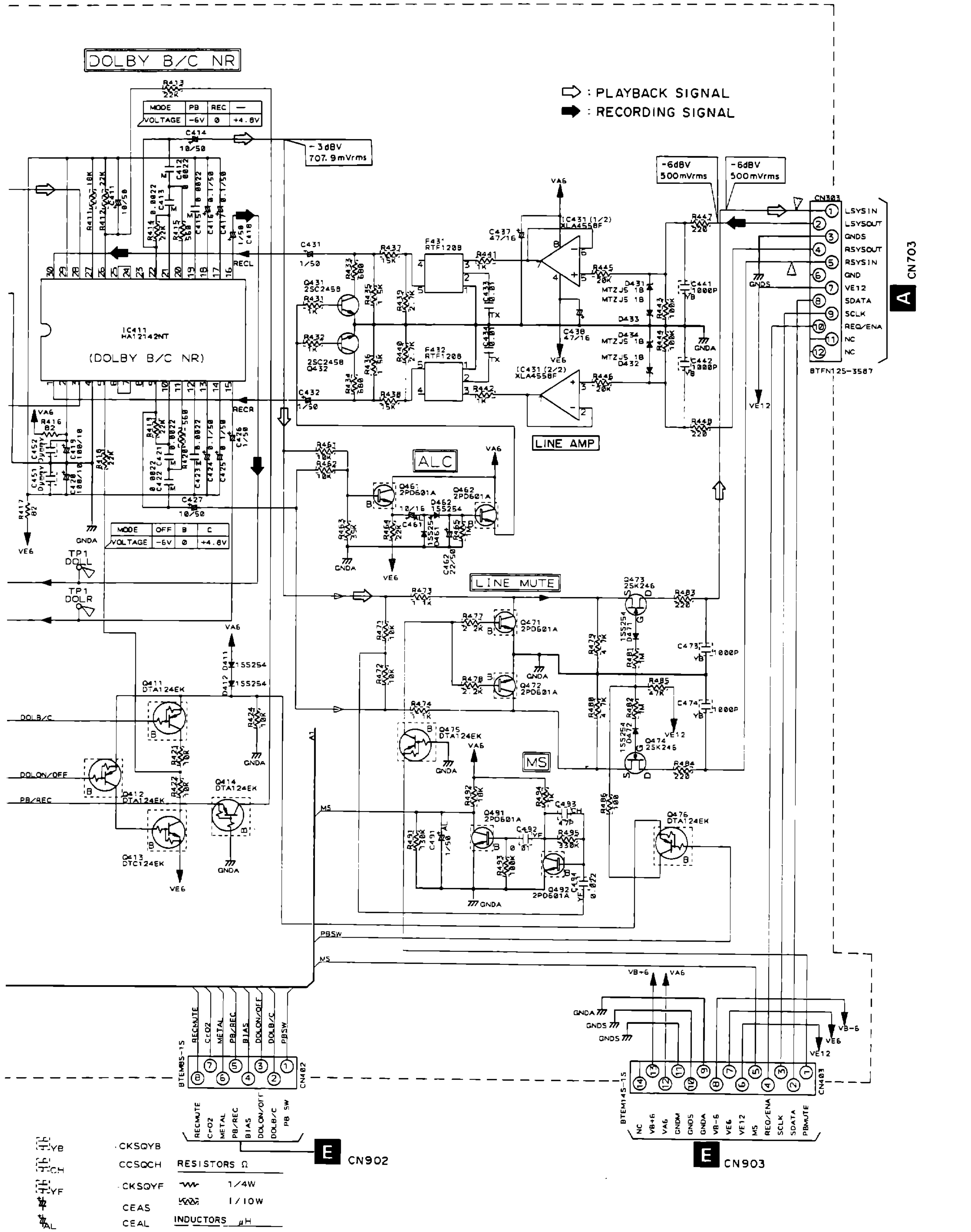
SWITCHES (Underline indicates switch position):

FRONT ASSY

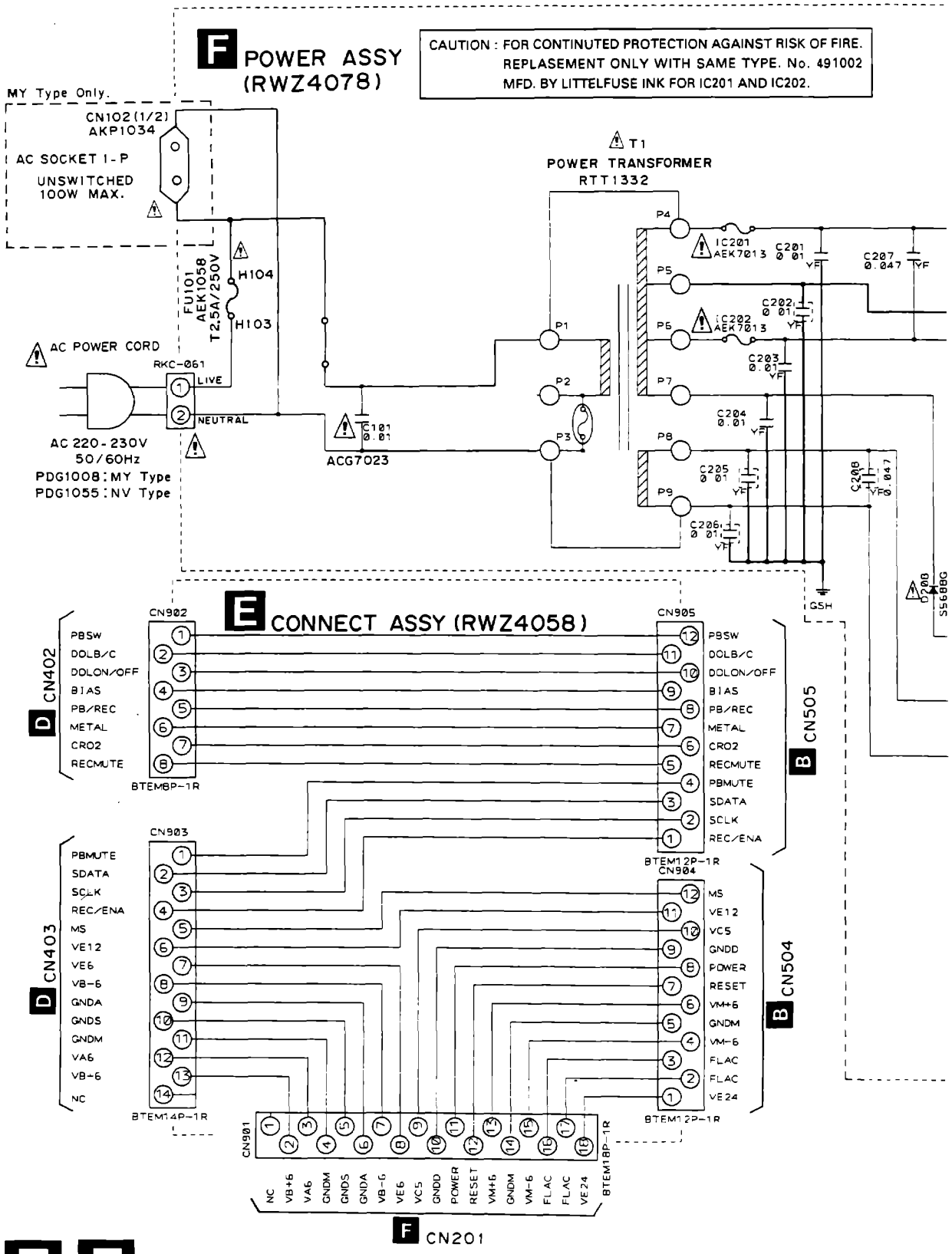
- S601 : PLAY (FWD)
- S602 : PLAY (REV)
- S603 : ►►
- S604 : ◄◄
- S605 : REC PAUSE
- S606 : POWER STANDBY/ON
- S607 : OPEN/CLOSE
- S608 : COUNTER RESET
- S609 : DOLBY NR
- S610 : REV MODE
- S611 : ■ (STOP)

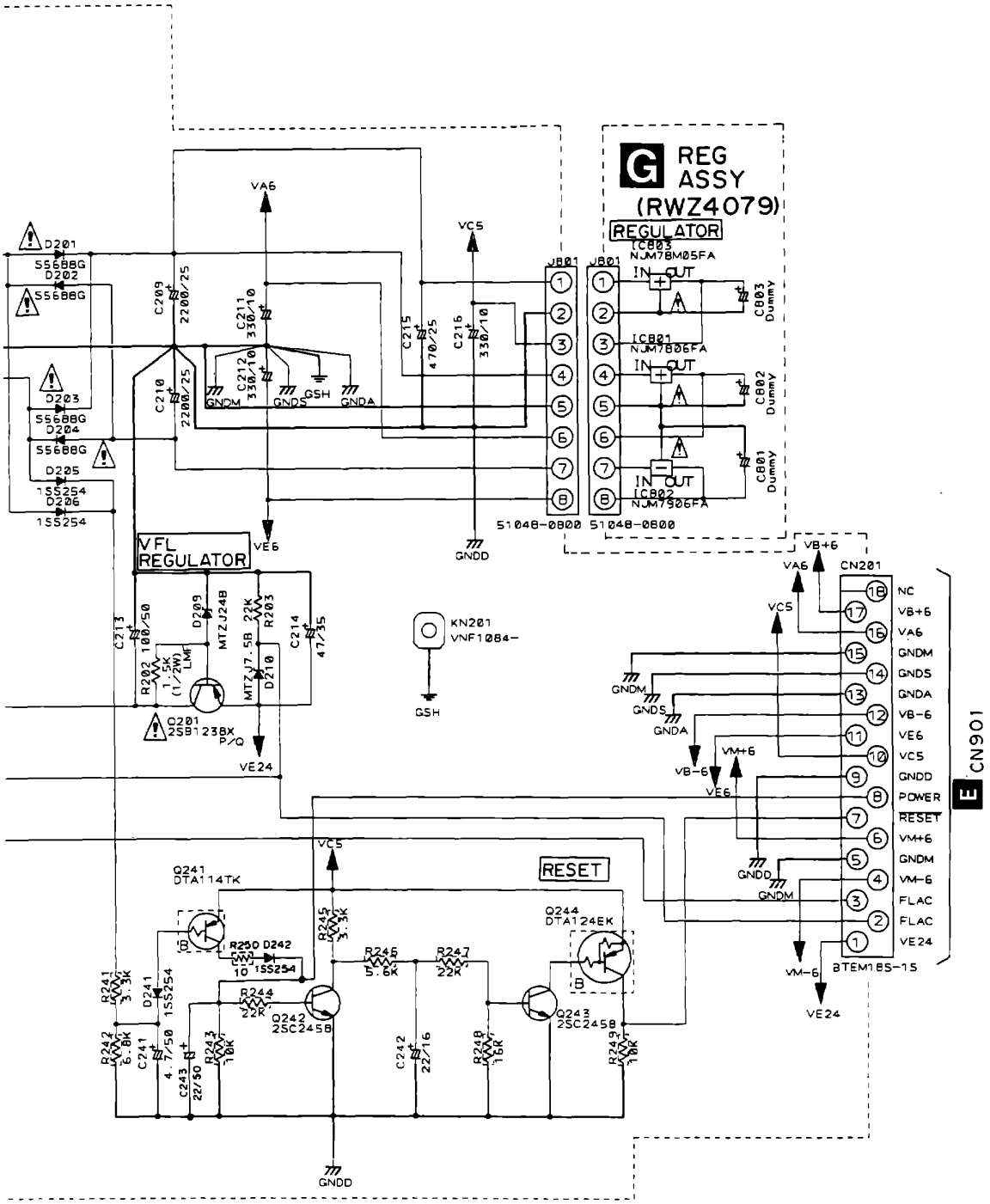
3.3 AF ASSY


D
AF ASSY
(RWZ4074)
PB AMP
REC EQ AMP
BIAS OSC.
MECHANISM
UNIT (1/3)
(RYM1264)
R/P HEAD
E. HEAD
-21.7dBV
82.2 mVrms
-28.8 dBV
36.3mVrms
-9.0dBV
354.8 mVrms
PB
PBR
PB L
REC H
RECMUTE
REC LEVEL
PB LEVEL
BIAS OFFSET Adj.
105kHz
Normal :-2.2V
CrO2 :-964mV
Metal :4.4V
NOTE:
CAPASITORS
Unmarked μF
TX CFTXA
M CQMA
PA CQPA
YB CKCYB
SL CCCSL
SL CCSQSL


DOLBY B/C NR
: PLAYBACK SIGNAL
: RECORDING SIGNAL
IC411 HA12142NT
(DOLBY B/C NR)
ALC
LINE MUTE
LINE AMP
MS
CN703
CN902
CN903
RESISTORS Ω
1/4W
1/10W
INDUCTORS μH
CKSQYB
CCSQCH
CKSQYF
CEAS
CEAL

3.4 CONNECT ASSY, POWER ASSY, REG ASSY




G REG ASSY (RWZ4079)
REGULATOR
IC803 NJM78M05FA
IC801 NJM7806FA
IC802 NJM7906FA
CB03 Dummy
CB02 Dummy
CB01 Dummy
JB01
51048-0800
VFL REGULATOR
KN201 VNF1084-
RESET
Q241 DTA114TK
Q242 2SC2458
Q243 2SC2458
Q244 DTA124EK
CN201
8TEM18S-1S
E CN901
NC
VB+6
VA6
GNDM
GNDS
GNDA
VB-6
VE6
VC5
GNDD
POWER
RESET
VM+6
GNDM
VM-6
FLAC
FLAC
VE24

4. PCB CONNECTION DIAGRAM

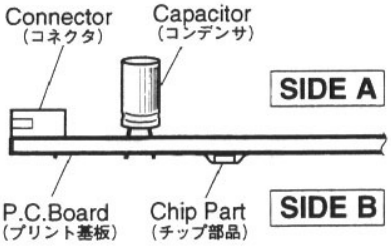
4.1 I/O ASSY, U-COM ASSY

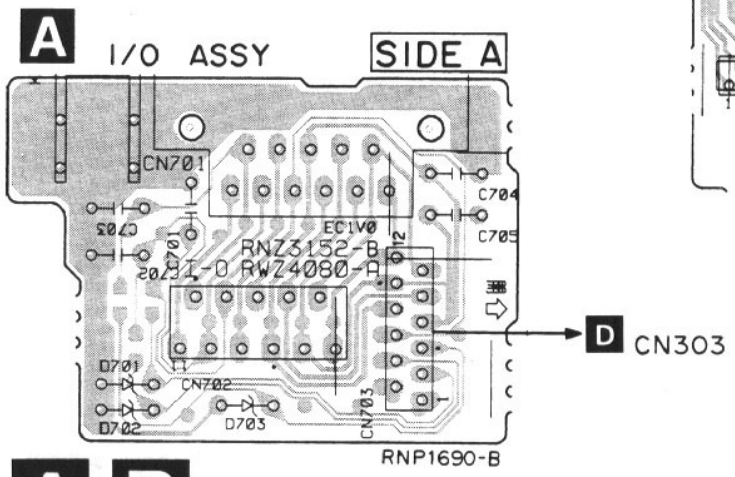
NOTE FOR PCB DIAGRAMS:

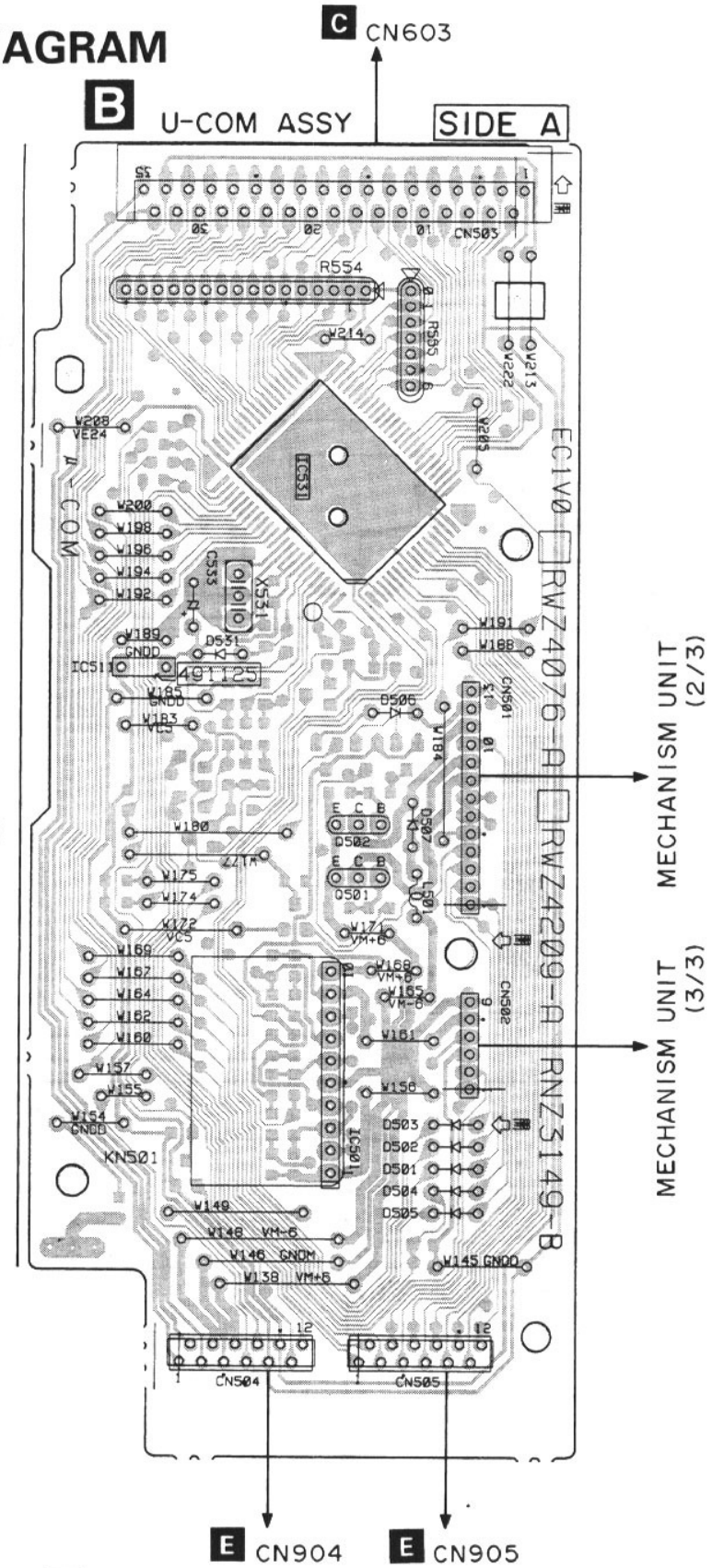
1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

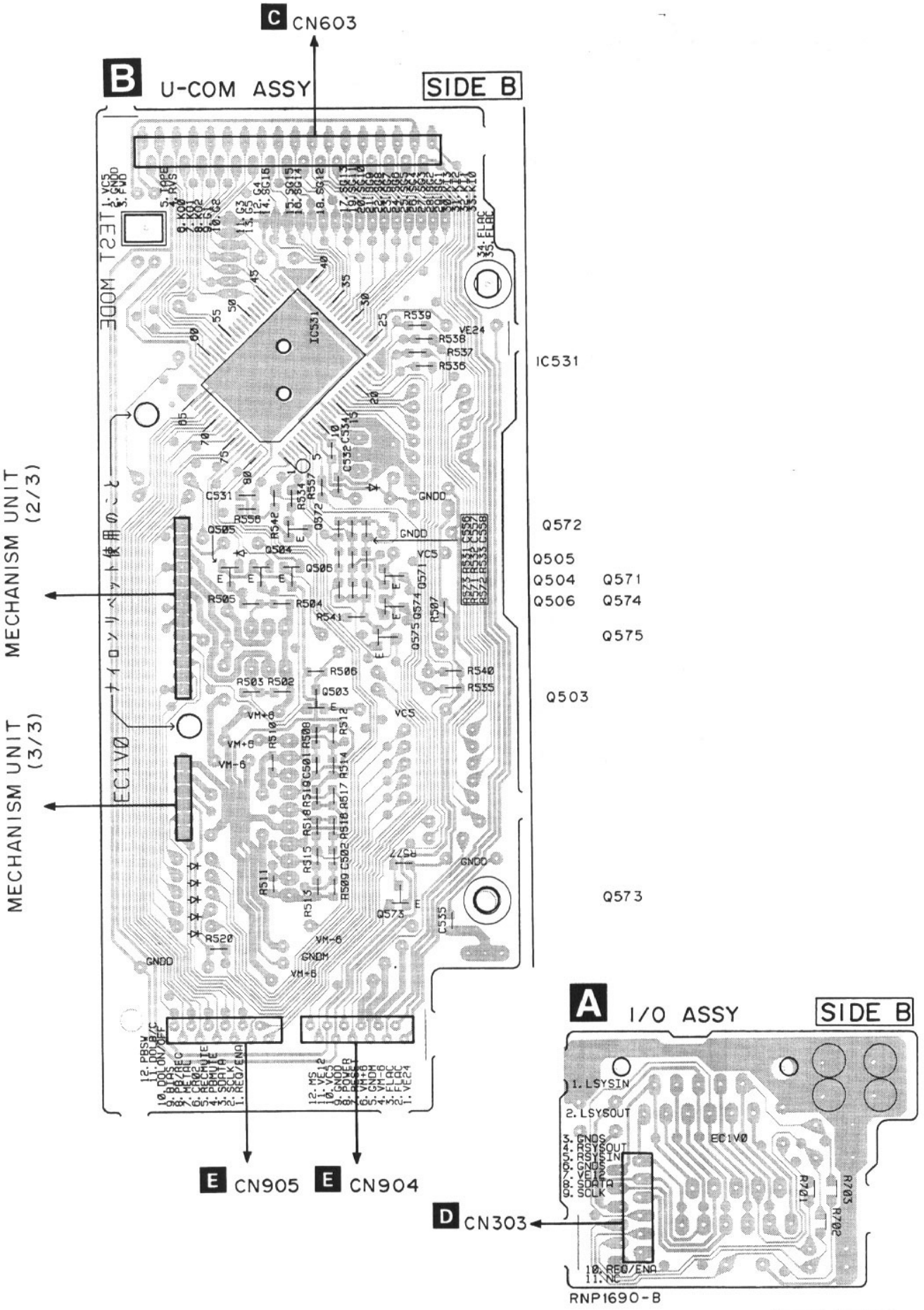
Symbol in PCB Diagrams	Symbol in Schematic Diagrams	Part Name
B C E	B C E B C E	Transistor
B C E	B C E B C E	Transistor with resistor
D G S	D G S D G S	Field effect transistor
		Resistor array
		3-terminal regulator

3. The parts mounted on this PCB include all necessary parts for several destinations.
   For further infromation for respective destinations, be sure to check with the schematic diagram.
4. Viewpoint of PCB diagrams

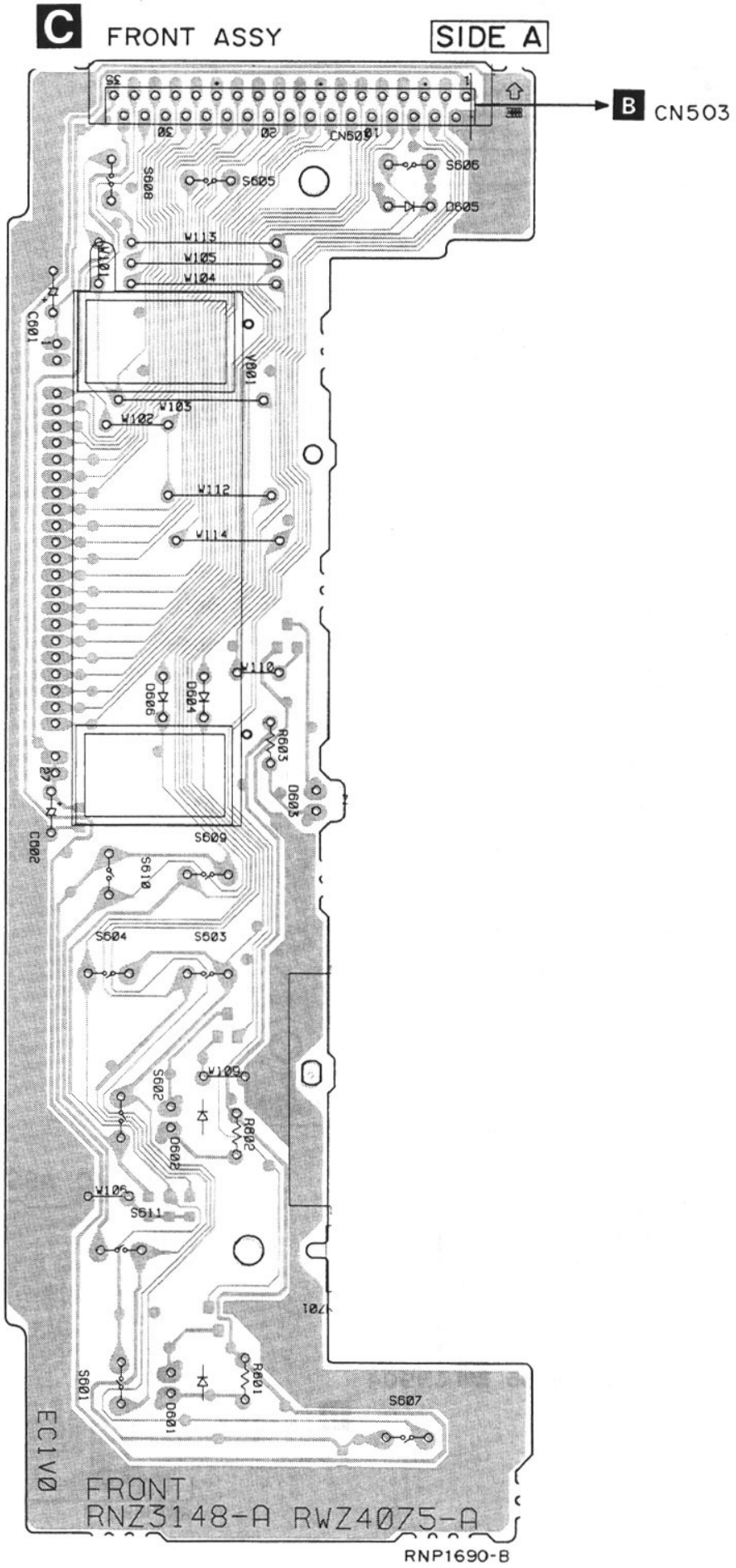




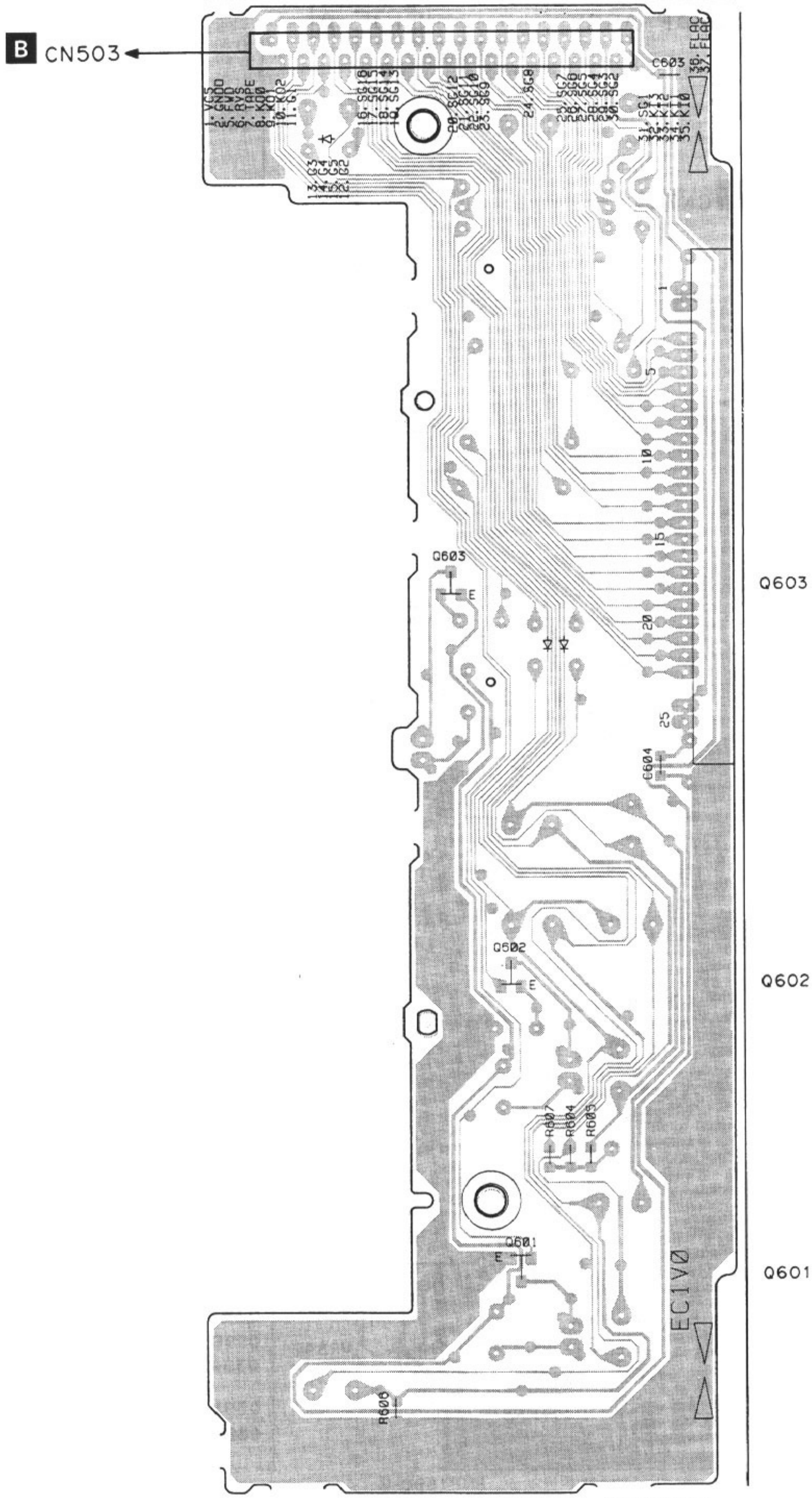



C CN603
B U-COM ASSY
SIDE B
IC531
Q572
Q505
Q504
Q506
Q571
Q574
Q575
Q503
Q573
MECHANISM UNIT (2/3)
MECHANISM UNIT (3/3)
EC1V0
E CN905
E CN904
D CN303
A I/O ASSY
SIDE B
RNP1690-B

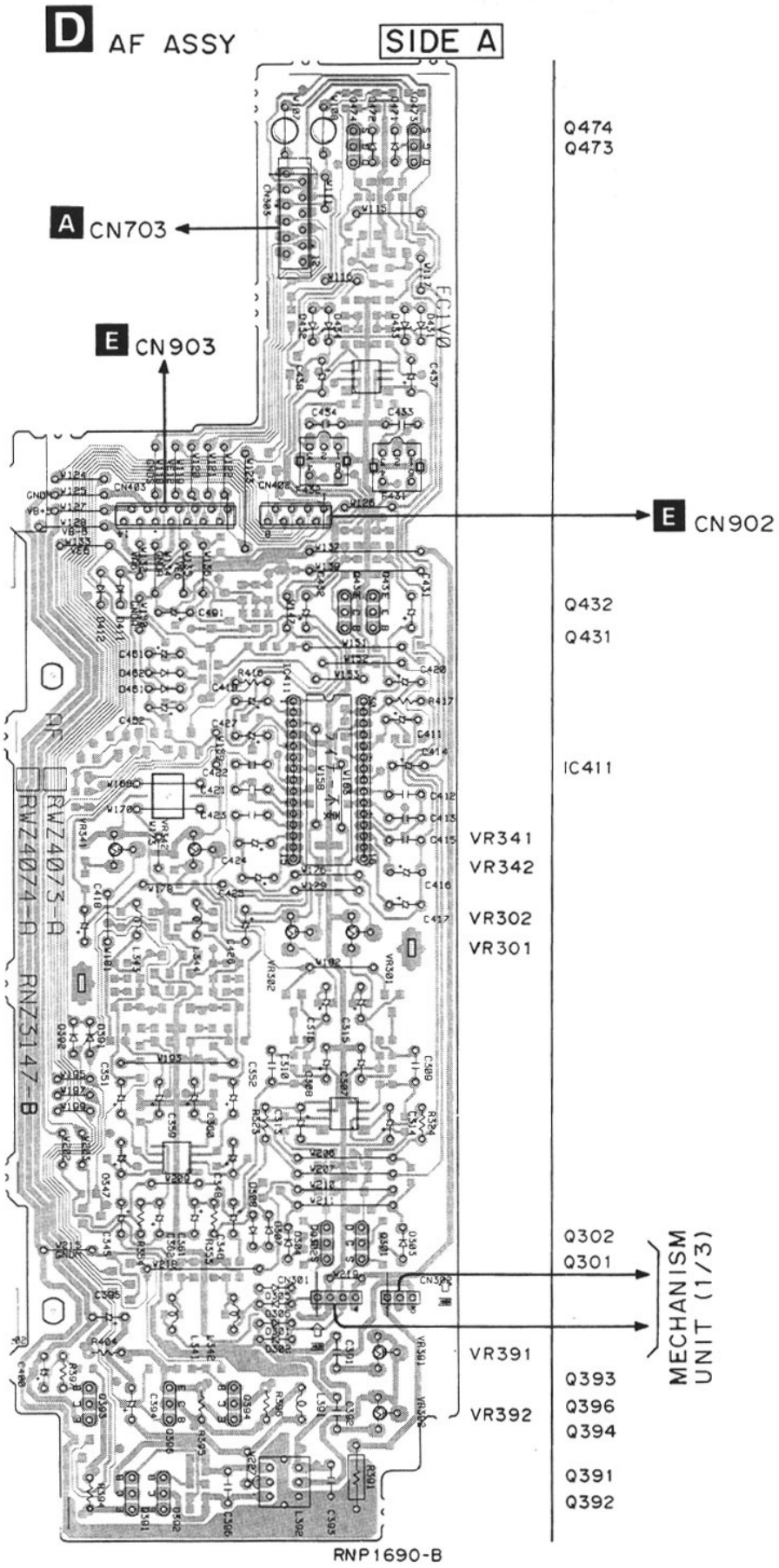
4.2 FRONT ASSY

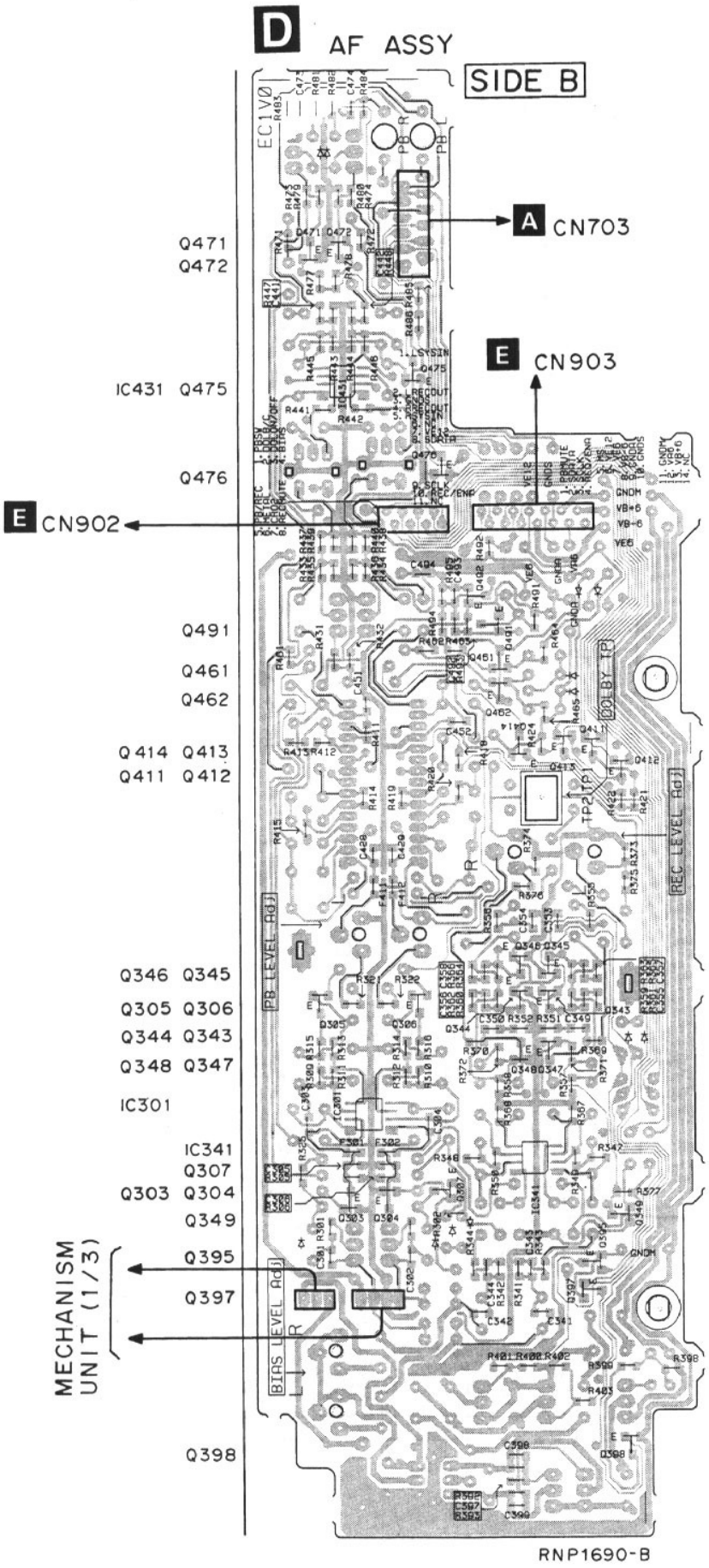


C FRONT ASSY SIDE B

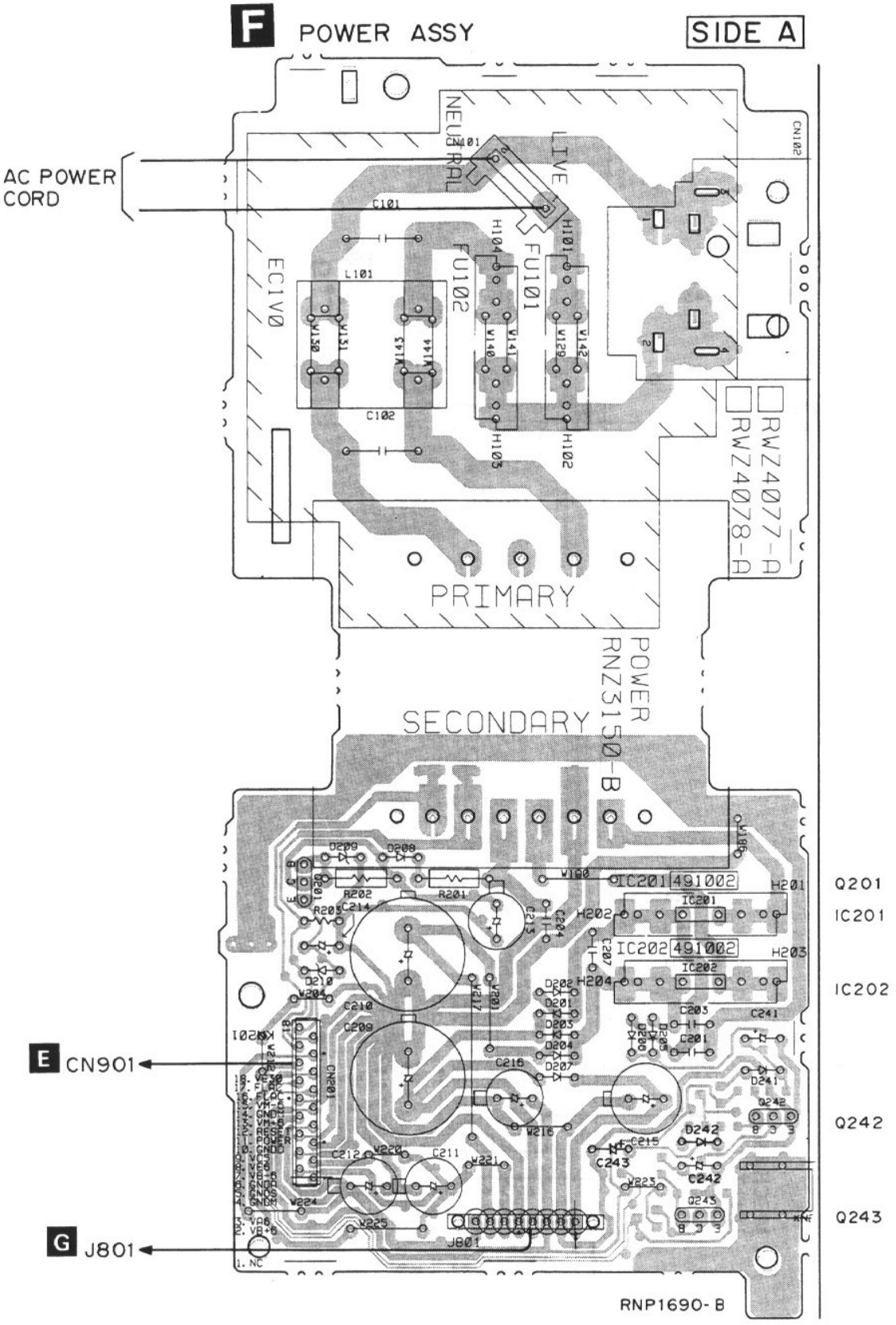


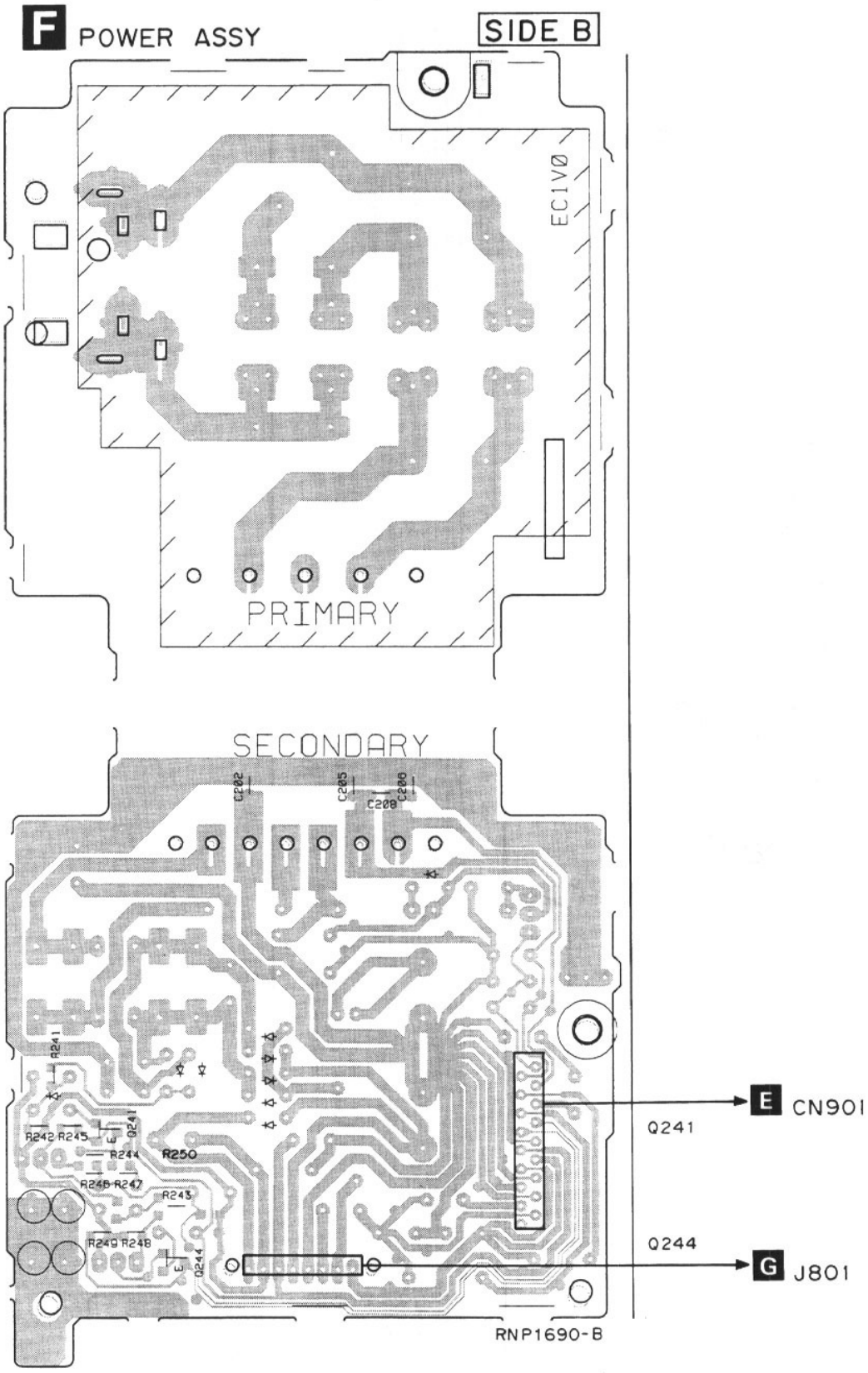
4.3 AF ASSY


D AF ASSY
SIDE A
A CN703
E CN903
E CN902
Q474
Q473
Q432
Q431
IC411
VR341
VR342
VR302
VR301
Q302
Q301
MECHANISM UNIT (1/3)
VR391
VR392
Q393
Q396
Q394
Q391
Q392
RWZ4073-A
RWZ4074-A
RNZ3147-B
RNP1690-B

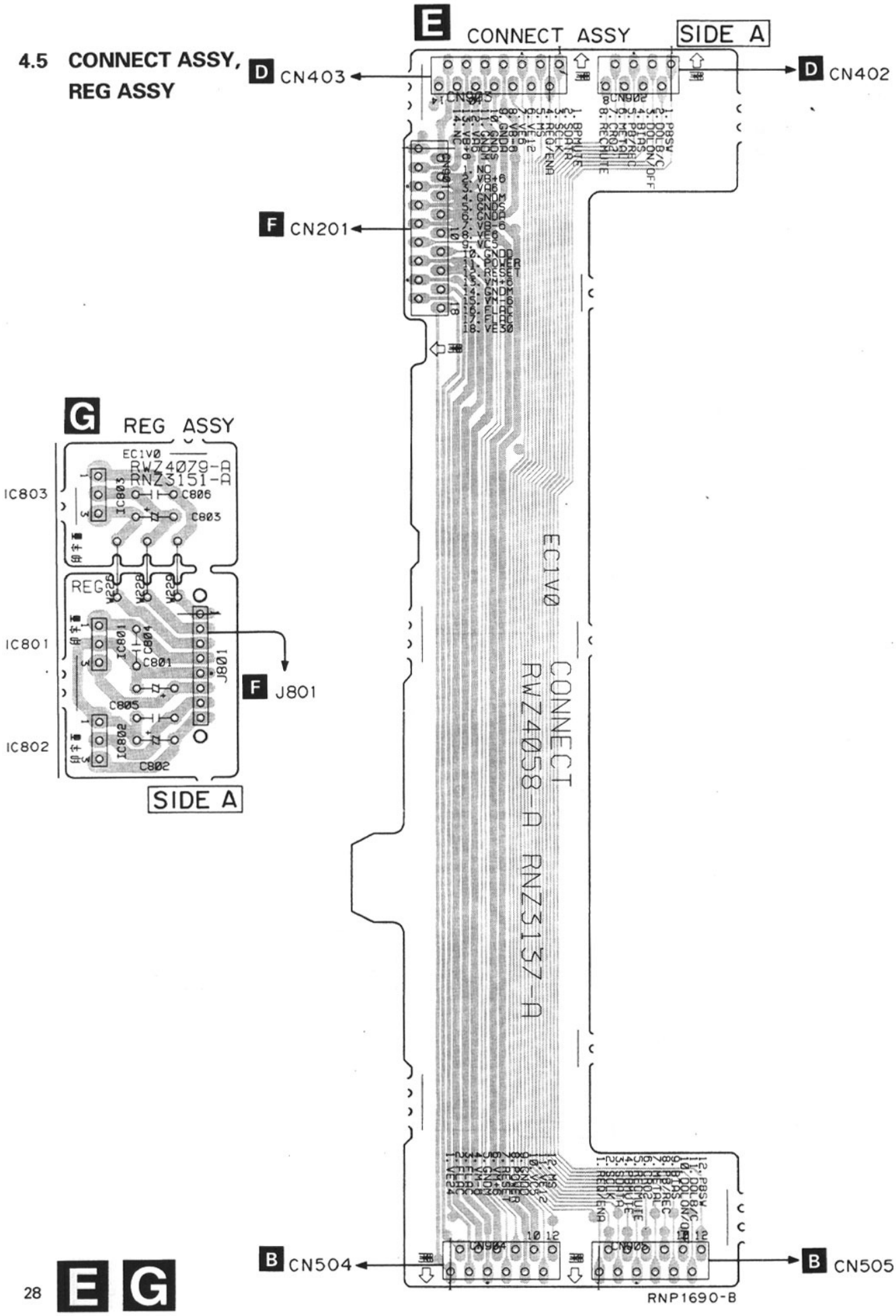

D
AF ASSY
SIDE B
A CN703
E CN903
E CN902
Q471
Q472
IC431 Q475
Q476
Q491
Q461
Q462
Q414 Q413
Q411 Q412
Q346 Q345
Q305 Q306
Q344 Q343
Q348 Q347
IC301
IC341
Q307
Q303 Q304
Q349
Q395
Q397
Q398
MECHANISM UNIT (1/3)
PB LEVEL Adj
BIAS LEVEL Adj
REC LEVEL Adj
DOLBY TP
TP2(TP)
RNP1690-B

4.4 POWER ASSY




F POWER ASSY
SIDE B
EC1V0
PRIMARY
SECONDARY
C202
C205
C208
C206
R241
Q241
R242 R245
R244
R250
R246 R247
R243
R249 R248
Q244
E CN901
Q241
Q244
G J801
RNP1690-B

4.5 CONNECT ASSY, REG ASSY



5. PCB PARTS LIST

NOTES:
- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *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.*
- *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%).

560 Ω → 56 × 10¹ → 561 ..... RD1/4PU 561 J
47 kΩ → 47 × 10³ → 473 ..... RD1/4PU 473 J
0.5 Ω → R50 ..... RN2H R50 K
1 Ω → 1R0 ..... RS1P 1R0 K

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

5.62 kΩ → 562 × 10¹ → 5621 ..... RN1/4PC 5621 F

Mark	No.	Description	Parts No.
LIST OF ASSEMBLIES			
NSP		TC MAIN ASSY	RWM1979
		├ CONNECT ASSY	RWZ4058
		├ AF ASSY	RWZ4074
		├ FRONT ASSY	RWZ4075
		├ POWER ASSY	RWZ4078
		├ REG ASSY	RWZ4079
		├ I/O ASSY	RWZ4080
		└ U-COM ASSY	RWZ4209
E CONNECT ASSY			
OTHERS			
	CN904 ,CN905	B TO B CONNECTOR 12P	BTEM12P-1R
	CN903	B TO B CONNECTOR 14P	BTEM14P-1R
	CN901	B TO B CONNECTOR 18P	BTEM18P-1R
	CN902	B TO B CONNECTOR 8P	BTEM8P-1R
D AF ASSY			
SEMICONDUCTORS			
	IC411		HA12142NT
	IC301		UPC4570G2
	IC341 ,IC431		XLA4558F-P
	Q461 ,Q462 ,Q471 ,Q472		2PD601A
	Q491 ,Q492		2PD601A
	Q394 ,Q396		2SB1238X
	Q391 ,Q392		2SC1815
	Q431 ,Q432		2SC2458
	Q393		2SD1302
	Q347 ,Q348		2SD2114K
	Q473 ,Q474		2SK246
	Q301 ,Q302		2SK373
	Q307 ,Q349 ,Q398 ,Q411 ,Q412		DTA124EK
	Q414 ,Q475 ,Q476		DTA124EK
	Q303 -Q306 ,Q343 -Q346		DTC114TK
	Q395 ,Q397 ,Q413		DTC124EK
	D301 -D308 ,D391 ,D392		1SS254
	D411 ,D412 ,D461 ,D462		1SS254
	D471 ,D472		1SS254
	D431 -D434		MTZ5.1B
COILS AND FILTERS			
	F301 ,F302 ,F411 ,F412		DTF1067
	L391		LFA121J
	L392		RTD1082
	L343 ,L344 (15mH)		RTF1026
	L341 ,L342 (10mH)		RTF1102
	F431 ,F432		RTF1217
CAPACITORS			
	C391 ,C392		CCCSL101K2H
	C301 ,C302		CCSQCH100D50
	C493		CCSQCH470J50
	C303 ,C304 ,C428 ,C429		CCSQSL101J50
	C461		CEAL100M16
	C351 ,C352 ,C400 ,C411		CEAS100M50
	C419 ,C420		CEAS101M10
	C359 ,C360 ,C426		CEAS1R0M50
	C462		CEAS220M50
	C394		CEAS330M16
	C313 ,C361 ,C362 ,C437 ,C438		CEAS470M16
	C345 ,C346		CEAS4R7M50
	C416 ,C417 ,C424 ,C425		CEASR10M50
	C347 ,C348		CEASR22M50
	C307 ,C308		CEJA101M6R3
	C418 ,C431 ,C432 ,C491		CEJA1R0M50
	C395		CEJA330M16
	C314		CEJA470M16
	C315 ,C316		CEJA4R7M50
	C414 ,C427		CEZA100M50
	C433 ,C434		CFTXA103J50
	C396		CFTXA123J50
	C441 ,C442 ,C473 ,C474		CKSQYB102K50
	C355 ,C356		CKSQYB123K50
	C357 ,C358		CKSQYB153K50
	C341 ,C342		CKSQYB221K50
	C349 ,C350		CKSQYB332K50
	C398 ,C399		CKSQYB472K50
	C305 ,C306		CKSQYB681K50
	C353 ,C354 ,C397		CKSQYB682K50
	C492		CKSQYF103Z50
	C494		CKSQYF223Z50
	C412 ,C413 ,C415 ,C421 -C423		CQMA222J50
	C309 ,C310		CQMZA822J50
	C393		CQPA822J2A
RESISTERS			
	R391		RD1/2PMF1R0J
	R396		RD1/2VM122J
	R404		RD1/2VM180J
	R395		RD1/2VM271J
	R394		RD1/2VM4R7J
	R397		RD1/4PU102J
	R323 ,R324 ,R353 ,R354		RD1/4PU820J

Mark	No.	Description	Parts No.
	R416 ,R417		RD1/4PU820J
	VR301 ,VR302 (4.7KΩ)		PCP1028
	VR341 ,VR342 (22KΩ)		PCP1030
	VR391 ,VR392 (100KΩ)		PCP1032
	Other Resistors		RS1/10S□□□J
OTHERS			
	CN302	CONNECTOR POST 3P	B3B-PH-K-S
	CN301	CONNECTOR POST 4P	B4B-PH-K-S
	CN403	B TO BCONNECTOR POST 14P	BTEM14S-1S
	CN402	B TO BCONNECTOR POST 8P	BTEM8S-1S
	CN303	CONNECTOR 12P	BTFN12S-3SB7
		BINDER	VEF1040

C FRONT ASSY

Mark	No.	Description	Parts No.
SEMICONDUCTORS			
	Q601 -Q603		DTC143EK
	D604 -D606		1SS254
	D601 -D603	LED (GREEN)	MPG3062X
SWITCHES AND RELAYS			
	S601 -S611		VSG1009
RESISTORS			
	R603		RD1/4PU121J
	R601 ,R602		RD1/4PU221J
	Other Resistors		RS1/10S□□□J
OTHERS			
	CN603		9607S-35F
	V601		RAW1156

F POWER ASSY

Mark	No.	Description	Parts No.
SEMICONDUCTORS			
⚠	IC201 ,IC202	PROTECTOR (2A)	AEK7013
⚠	Q201		2SB1238X
	Q242 ,Q243		2SC2458
	Q241		DTA114TK
	Q244		DTA124EK
	D205 ,D206 ,D241 ,D242		1SS254
	D209		MTZJ24B
	D210		MTZJ7.5B
⚠	D201 -D204 ,D208		S5688G
CAPACITORS			
⚠	C101 (0,01μF/250V)		ACG7023
	C213		CEAS101M50
	C242		CEAS220M16
	C243		CEAS220M50
	C209 ,C210		CEAS222M25
	C211 ,C212 ,C216		CEAS331M10
	C214		CEAS470M35
	C215		CEAS471M25
	C241		CEAS4R7M50
	C201 ,C203 ,C204		CKCYF103Z50
	C207		CKCYF473Z50
	C202 ,C205 ,C206		CKSQYF103Z50
	C208		CKSQYF473Z50
RESISTORS			
	R202		RD1/2LMF152J
	R203		RD1/4PU223J
	Other Resistors		RS1/10S□□□J

Mark	No.	Description	Parts No.
OTHERS			
	J801	8P HOLDER	51048-0800
	H101 ,H102	FUSE CLIP	AKR1003
	CN201	B TO B CONNECTOR 18P	BTEM18S-1S
⚠		TERMINAL	RKC-061
	KN201	EARTH METAL FITTING	VNF1084

G REG ASSY

Mark	No.	Description	Parts No.
SEMICONDUCTORS			
⚠	IC801		NJM7806FA
⚠	IC803		NJM78M05FA
⚠	IC802		NJM7906FA
OTHERS			
	J801	8P HOLDER	51048-0800

A I/O ASSY

Mark	No.	Description	Parts No.
CAPACITORS			
	C701 -C703		CKCYB102K50
	C704		CKCYF103Z50
RESISTORS			
	All Resistors		RS1/10S□□□J
OTHERS			
	CN703	B TO B B CONNECTOR 12P	BTFN12P-3RD7
	CN702	CONNECTOR 11P	KPE11
	CN701	SOCKET 11P	RKP1754
	KN701	SCREW PLATE	VNE1948

B U-COM ASSY

Mark	No.	Description	Parts No.
SEMICONDUCTORS			
⚠	IC511	PROTECTOR (125mA)	AEK7020
	IC501		LA6510L
⚠	IC531		PDC034B
	Q502		2SB1238X
	Q501		2SB1425
	Q505		DTC143EK
	Q503 ,Q506		DTA124EK
	Q573		DTA144EK
	Q571 ,Q574 ,Q575		DTC114TK
	Q504 ,Q572		DTC124EK
	D501 -D506 ,D531		1SS254
	D507		S5688G
CAPACITORS			
	C556		CCSQCH331J50
	C533		CEAS470M16
	C557 ,C558		CKSQYB102K50
	C501 ,C502 ,C531 ,C532 ,C534		CKSQYF103Z50
RESISTORS			
	All Resistors		RS1/10S□□□J
OTHERS			
	CN503		9607S-35F
	CN501		B13B-PH-K-S
	CN502		B6B-PH-K-S
	CN504 ,CN505		BTEM12S-1S
	X531	CERAMIC RESONATOR (6.00MHz)	VSS1045

6. ADJUSTMENT

6.1 Test Mode

6.1.1 Outline of test mode

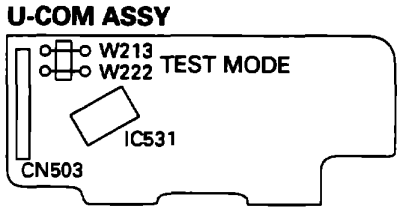
When the system bus cable is not connected (–12V is not supplied with the bus), the unit is set in the stand alone mode and operates independently.

There are two test modes. One is test mode 1 in which special operations are tested, and the other is test mode 2 whose line muting has the same specification as that of the stand alone deck.

6.1.2 Test mode 1

(1) Entering test mode 1

While short-circuiting jumper wires W213 and W222 on the U-COM ASSY, turn ON the power, then remove the short-circuited jumper wires.



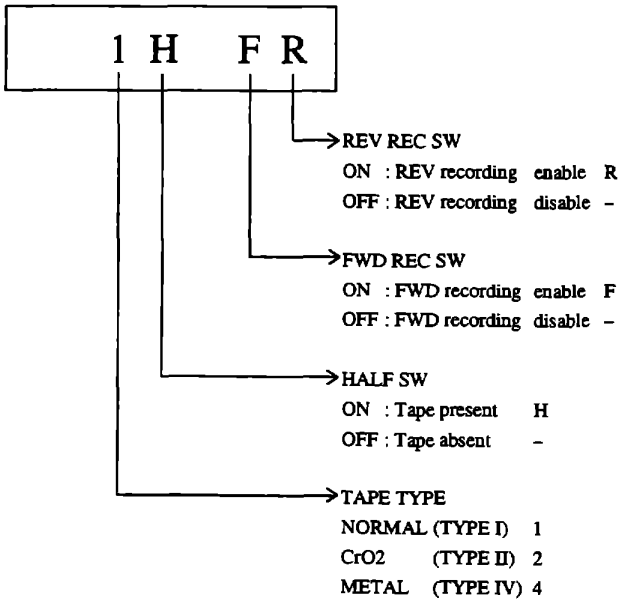
(2) Operations of test mode 1

① When the test mode is set, the FL all-lit mode is set.

② Each time the Dolby NR key is pressed, all-lit, all-go-off, grid-check, and segment-check modes are switched cyclically.

③ When the REV MODE key is pressed, the cassette mechanical SW check mode is set.

In the cassette mechanical SW check mode, the following are displayed on the FL display.

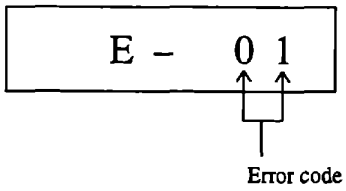


④ When the COUNTER RESET key is pressed, the auto recording/playback operation mode is set, and the following operations are executed.

1. FWD recording is executed for four seconds.
2. REV recording is executed for four seconds.
3. FWD playback is executed for four seconds, and the unit stops.

⑤ When FWD, REV, REC, FF, REW, STOP keys are pressed, their specific operations are executed. However, line muting is executed in "REC/REC PAUSE" state.

⑥ When a defect operation is detected, its code is displayed on the FL display for servicing.



01 ..... Heads do not rise.
02 ..... Heads do not lower.
03 ..... Tray does not close.
04 ..... Tray does not open.

Note) ⏻ blinks on the FL display in modes other than ① and ② modes.

(3) Exiting test mode 1

Press the POWER key two times in the stop state, test mode 1 is canceled and the normal operation is restored. When the POWER key is pressed once, test mode 1 is changed to test mode 2.

6.1.3 Test mode 2

(1) Entering the test mode 2

Press the POWER key once in test mode 1.

(2) Operations of test mode 2

① ⏻ is blinks on the FL display at faster intervals than test mode 1.

② Line muting is executed in the REC/REC PAUSE mode.

③ When a defect operation is detected, its code is displayed on the FL display for servicing.

In other case, normal operation and display are executed.

(3) Exiting test mode 2

Press the POWER key once, or pull out the power cord from the outlet.

6.2 Electrical Adjustment

- The adjustment should be performed in test mode 2.
- Grounding position during the adjustment is W134 (See Fig. 6-4).

6.2.1 Adjustment conditions

(1) Tape speed adjustment should be completed.
(2) Clean and demagnetize (with a head eraser) the heads.
(3) Measuring level should be 0 dBV=1 Vrms.
(4) Connect a load resistance of 10 kΩ (9.5 kΩ to 10.5 kΩ) to Pins 1 and 5 of CN701.
(5) The specified tape should be used for adjustment. Use the side labeled side A.
STD-331E : For playback adjustment
STD-631 or STD-632 : Standard blank tape
(6) The following measuring instruments should be prepared.
- AC millivolt meter
- Low frequency oscillator
- Attenuator
- Oscilloscope

(7) Unless otherwise specified, adjustment should be performed for both the right and left channels.
(8) Unless otherwise specified, the Dolby NR switch should be turned OFF.
(9) Before performing adjustment, the unit should be aged for several minutes. Especially before the recording/playback frequency characteristics adjustment, the unit should be aged for three to five minutes in the REC/PLAY mode.
(10) Be sure to follow the specified procedures, or the correct results may not be obtained.

6.2.2 Playback adjustment

(1) Head azimuth adjustment
(2) Playback level adjustment

6.2.3 Recording adjustment

(1) Recording bias adjustment
(2) Recording level adjustment

※ As the reference recording level is 250 nwb/m for STD-331E, the recording level will be higher by 4dB for STD-331B (160nwb/m). When adjusting, pay carefull attention to the type of tape used.

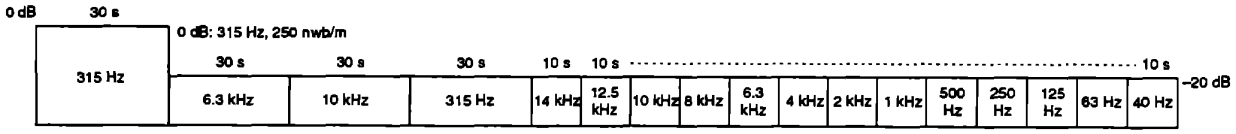


Fig. 6-1 Test Tape STD-331E

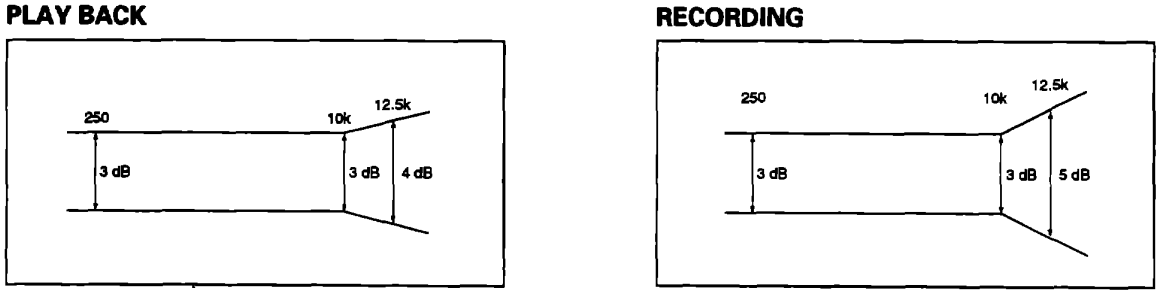


Fig. 6-2 Frequency Characteristics

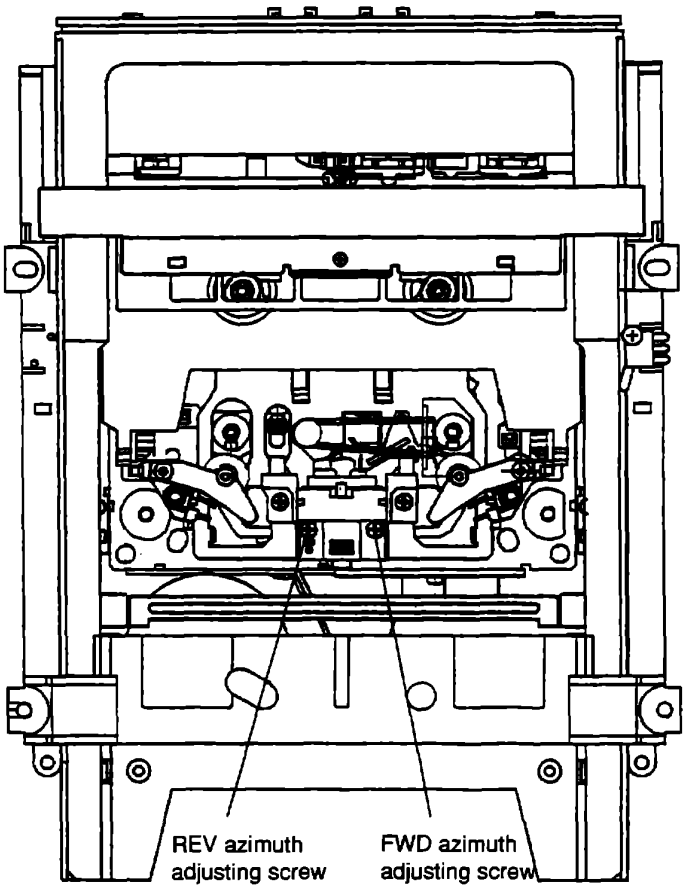


Fig. 6-3 Head Azimuth Adjustment

6.3 Playback adjustment

6.3.1 Head azimuth adjustment

- This unit is equipped with an auto tape selector mechanism.
- Do not switch FWD and REV with a screwdriver inserted.

No.	Tape selector (AUTO)	Mode	Input signal/ test tape	Adjusting point	Measuring point	Adjustment value	Remarks
1	NORMAL	PLAY	Playback the test tape STD-331E at 10 kHz and –20 dB.	Head azimuth adjusting screw (Fig. 6-3)	PB L W107 (L) PB R W108 (R) (AF ASSY)	Maximize the playback signal level.	After adjusting, apply a screw-locking compound to the head azimuth adjusting screw.

6.3.2 Playback level adjustment

- This adjustment is performed to determine the Dolby NR level during playback. It must therefore be performed carefully.

No.	Tape selector (AUTO)	Mode	Input signal/ test tape	Adjusting point		Measuring point	Adjustment value	Remarks
1	NORMAL	PLAY	Playback the test tape STD-331E at 315 Hz and 0 dB.	Lch	VR301	TP1 W166 (L) TP2 W170 (R) (AF ASSY)	–9.0 dBV	
				Rch	VR302			

6.4 Recording adjustment

6.4.1 Recording bias adjustment

● This adjustment as an effect on the recording level. Be careful not to increase distortion rate due to under bias.

No.	Tape selector (AUTO)	Mode	Input signal/ test tape	Adjusting point		Measuring point	Adjustment value	Remarks
1	NORMAL	REC/ PAUSE	Input a 315 Hz signal to Pins 2 and 4 of CN701.	Input signal level		PB L W107 (L) PB R W108 (R) (AF ASSY)	-26.0 dBV	
2	NORMAL	REC→ PLAY	Load the test tape STD-631 and record/ playback it at 315 Hz and 10 kHz. (See Note below.)	Lch	VR392		Repeat the adjustment until the playback level at 10 kHz becomes +0.5 dB ±0.5 dB in respect to 315 Hz.	
				Rch	VR391			

Note: The input signal level at 10 kHz should be the same as that at 315 Hz in step 1.

6.4.2 Recording level adjustment

No.	Tape selector (AUTO)	Mode	Input signal/ test tape	Adjusting point		Measuring point	Adjustment value	Remarks
1	NORMAL	REC/ PAUSE	Input a 315 Hz signal to Pins 2 and 4 of CN701.	Input signal level		PB L W107 (L) PB R W108 (R) (AF ASSY)	-10.0 dBV	
2	NORMAL	REC→ PLAY	Load the test tape STD-631 and record/play it back at 315 Hz.	Lch	VR341		Repeat the adjustment by recording and playing back until a 315 Hz signal becomes 10 dBV.	
				Rch	VR342			

AF ASSY

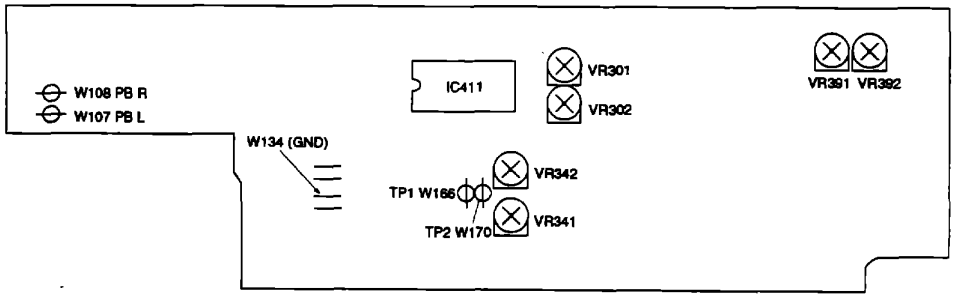


Fig. 6-4 Adjusting and Measuring Points

Main Unit Rear Panel

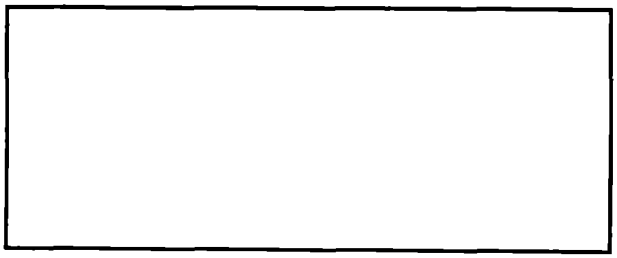


Fig. 6-5 Measuring and Signal Input Points

7. GENERAL INFORMATION

7.1. PARTS

7.1.1. IC

- The information shown in the list is basic information may not correspond exactly to that shown in the schematic diagrams.

■ PDC034B (U-COM ASSY : IC531) System Control

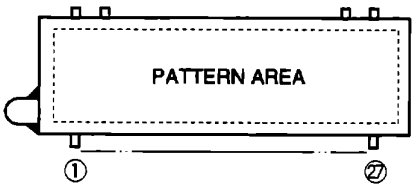
● Pin function

Pin No.	Pin Name	I/O	Pin Function
1	POWER	I	Power detection (AC present:L)
2	Destination selection	I	Destination selection (Domestic:H/Overseas:L)
3	SO	O	System bus data
4	SI	I	System bus data
5	SREQ	I/O	System bus request
6	SCLK	I	System bus clock
7	RESET	I	Reset
8	+5V	I	Not used.
9	GND	I	Not used.
10	GND	—	— pin of the power supply
11	6MHz	I	Ceramic oscillator
12		O	
13	+5V	I	+ pin of the power supply
14	KI0 (TEST)	I	Key scanning (Test mode:H)
15	KI1	I	Key scanning
16	KI2	I	
17	KI3	I	
18	KI4	I	
19	CLOSE	I	Loader mechanism closing SW
20	OPEN	I	Loader mechanism opening SW
21	—12V detection	I	System bus —12V detection (Present:H)
22	MODE	I	Cassette mechanism mode SW (Stop:L)
23	SENS	I	Cassette mechanism hall IC
24	MS	I	Audio signal detection for MS (No sound: H)
25	SG1	O	FL segments
26	SG2	O	
27	SG3	O	
28	SG4	O	
29	SG5	O	
30	SG6	O	
31	SG7	O	
32	SG8	O	
33	SG9	O	
34	SG10	O	
35	SG11	O	
36	SG12	O	
37	SG13	O	
38	SG14	O	
39	SG15	O	
40	SG16	O	FL segments
41	+5V	—	+ pin of the power supply
42	-30V	—	Power supply dedicated for FL drive output
43	G5	O	FL grids
44	G4	O	
45	G3	O	
46	G2	O	
47	G1	O	
48	—	O	Not used.
49	—	O	
50	—	O	
51	—	O	
52	—	O	
53	—	O	
54	—	O	
55	KO3	O	Key scanning
56	KO2	O	
57	KO1	O	
58	KO0	O	
59	—	O	Not used.
60	TAPE	O	LED for TAPE
61	RVS	O	LED for RVS
62	FWD	O	LED for FWD
63	—	O	Not used.
64	—	O	
65	—	O	
66	—	O	
67	PBMUTE	O	PB MUTE
68	PBSW	O	System output SW (OFF:H)
69	DOL B/C	O	Dolby NR B/C selection (B:H/C:L)
70	DOL ON/OFF	O	Dolby NR ON/OFF selection (ON:H)
71	BIAS	O	Bias ON/OFF selection (ON:H)
72	PB/REC	O	Dolby NR PB/REC selection (PB:L)
73	GND	—	—pin of the power supply
74	METAL	O	Metal tape (Metal:H)
75	CrO2	O	Chrome tape (Chrome:H)
76	RECMUTE	O	REC MUTE (ON:H)
77	SOL	O	Cassette mechanism solenoid (ON:H)
78	MOTOR	O	Cassette mechanism motor (ON:H)
79	TIN	O	Closes the loader mechanism motor.
80	TOUT	O	Opens the loader mechanism motor.

7.1.2 DISPLAY

■ RAW1156 (FRONT ASSY: V601)

FL Tube

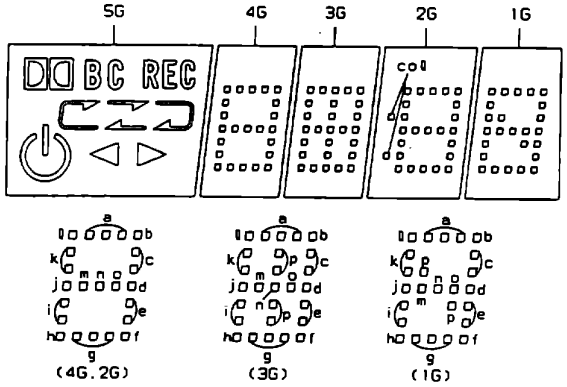


Pin Connection

PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
CONNECTION	F1	F1	NP	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	NP	5G	4G	3G	2G	1G	F2	F2

NOTE 1) F1,F2 --- Filament
2) NP ------ No pin
3) DL ------ Datum Line
4) 1G~5G --- Grid

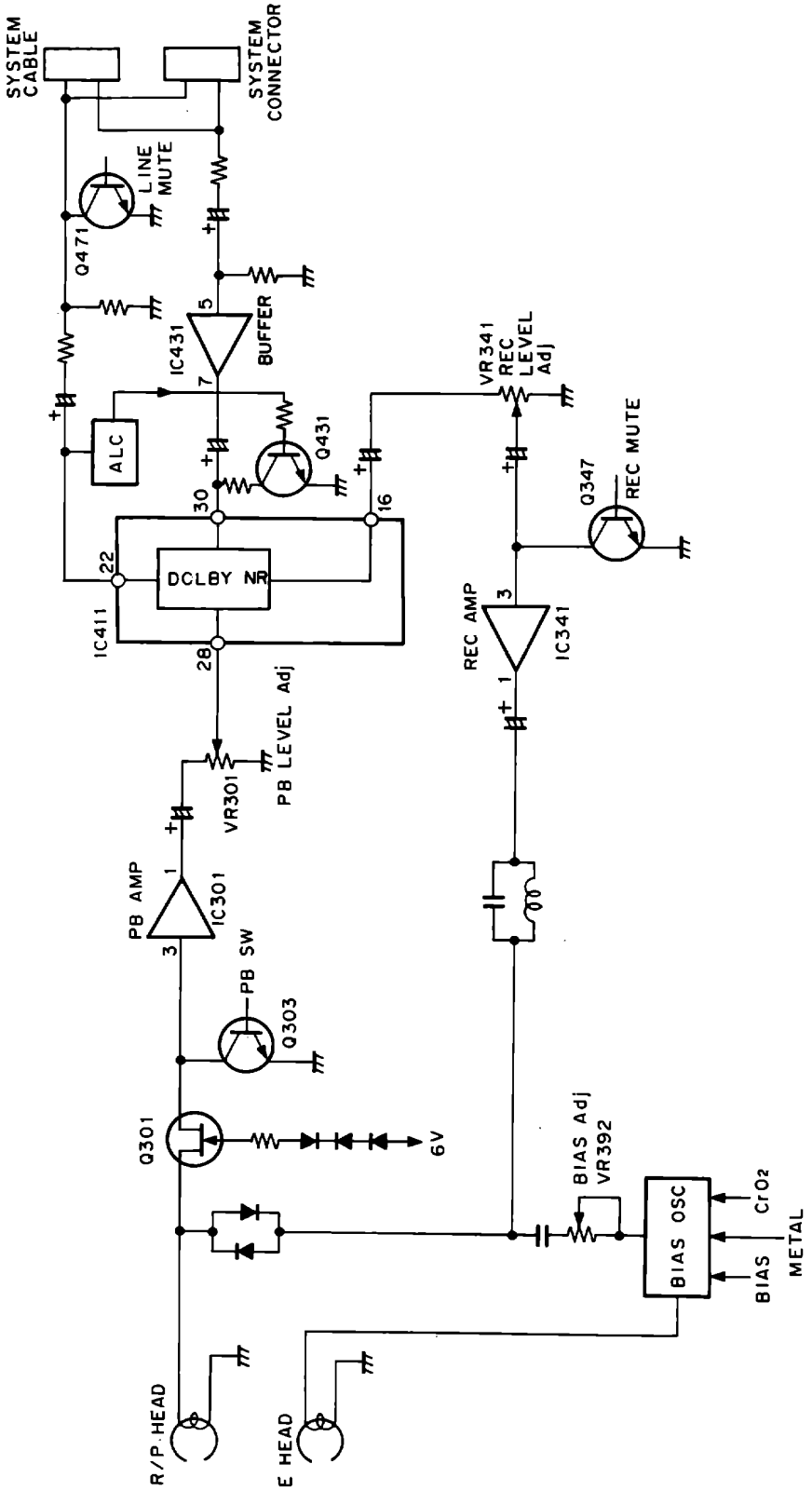
Grid Assignment



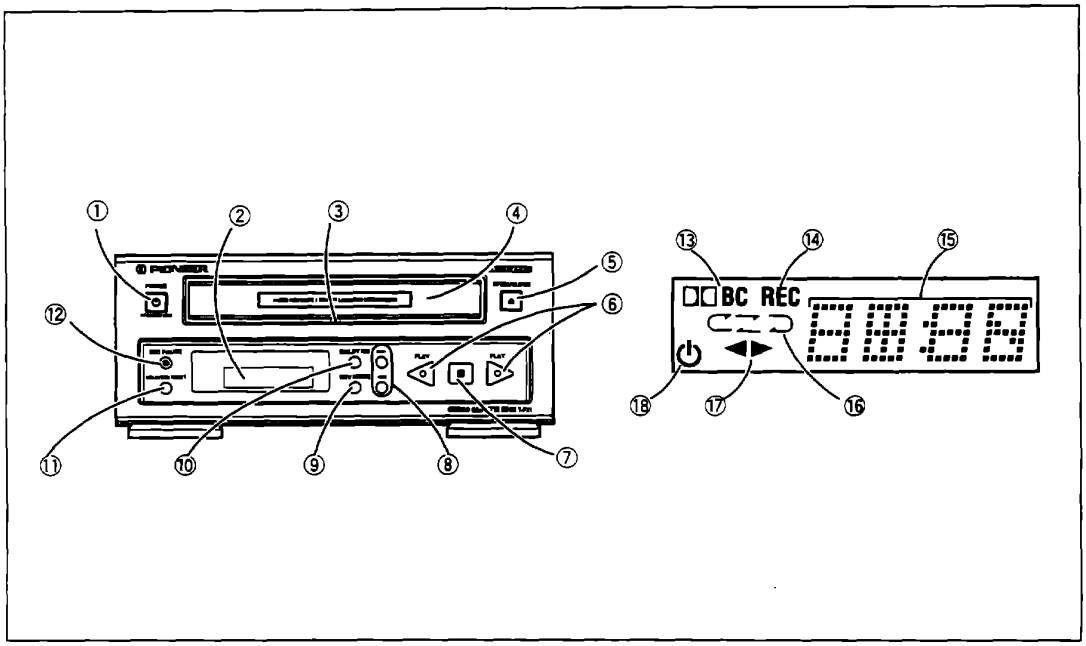
Anode Connection

	5G	4G	3G	2G	1G
P1	DC	a	a	a	a
P2	B	b	b	b	b
P3	C	c	c	c	c
P4	REC	d	d	d	d
P5	⏻	e	e	e	e
P6	⏎	f	f	f	f
P7	⏎	g	g	g	g
P8	⏎	h	h	h	h
P9	◁	i	i	i	i
P10	▷	j	j	j	j
P11	-	k	k	k	k
P12	-	l	l	l	l
P13	-	m	m	m	m
P14	-	n	n	n	n
P15	-	o	o	o	o
P16	-	-	p	col	p

7.2 BLOCK DIAGRAM



8. PANEL FACILITIES AND SPECIFICATIONS



STEREO CASSETTE DECK T-F21

① **POWER, STANDBY/ON switch**

② **Display Section**

③ **Tape indicator**
Lights when a tape is loaded

④ **Cassette tray**

⑤ **Cassette tray OPEN/CLOSE button (⏏)**

⑥ **PLAY buttons and indicators**

⑦ **Stop button (■)**

⑧ **Fast forward, rewind buttons (◄◄, ►►)**

⑨ **Reverse mode button (REV MODE)**

⑩ **DOLBY* NR (Dolby B-type NR/Dolby C-type NR/off) button**

⑪ **COUNTER RESET button**

⑫ **REC PAUSE button**

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

[DISPLAY SECTION]

⑬ Dolby NR indicator

⑭ Recording indicator

⑮ Tape counter

⑯ Reverse mode indicator

⑰ Recording/playback direction indicator

⑱ Standby indicator

SPECIFICATIONS

Stereo Cassette Deck: T-F21

System	4-track, 2-channel stereo
Heads	Recording/playback head x 1
	Erasing head x 1
Motor	DC Servo motor x 1
Frequency Response (–20dB recording)	
Type I (Normal) tape	20 Hz - 16,000 Hz ± 6dB
Type II (High/CrO_2) tape	20 Hz - 16,000 Hz ± 6dB
Type IV (Metal) tape	20 Hz - 17,000 Hz ± 6dB
Signal-to-Noise Ratio	55 dB
	(EIAJ, peak recording level, metal tape, audio compensation)
Noise Reduction Effect	
Dolby B-type NR ON	More than 10 dB (at 5 kHz)
Dolby C-type NR ON	More than 19 dB (at 5 kHz)
Wow and Flutter	0.07% WRMS (JIS)
Power Requirements	AC 230 V, 50/60 Hz
Power Consumption	12 W
Dimensions	190 (W) x 80.5 (H) x 268 (D) mm
Weight	2.5 kg

Accessories

Supplementary Operating Instructions	1
Warranty Card	1