

Service Manual

PIONEER®
The Art of Entertainment

ORDER NO.
ARP2610

AUTOCHANGER COMMANDER

CO-V200

CO-V100

CO-V200 AND CO-V100 HAVE THE FOLLOWING:

Type	Model		Power Requirement	Remarks
	CO-V200	CO-V100		
KUC	○	—	AC120V only	
SEM	—	○	AC110V, 120V, 220 – 230V, 240V (Switchable)	

- This manual is applicable to the following : CO-V200/KUC ; CO-V100/SEM.
- Ce manuel pour le service comprend les explications de réglage en français.
- Este manual de servicio trata del método ajuste escrito en español.

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SI SEPT. 1992 Printed in Japan

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.

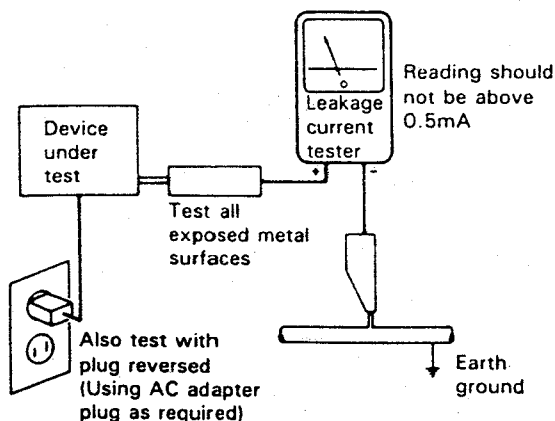
(FOR USA MODEL ONLY)

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 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 Δ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does 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.

1. EXPLODED VIEWS AND PARTS LIST

NOTES:

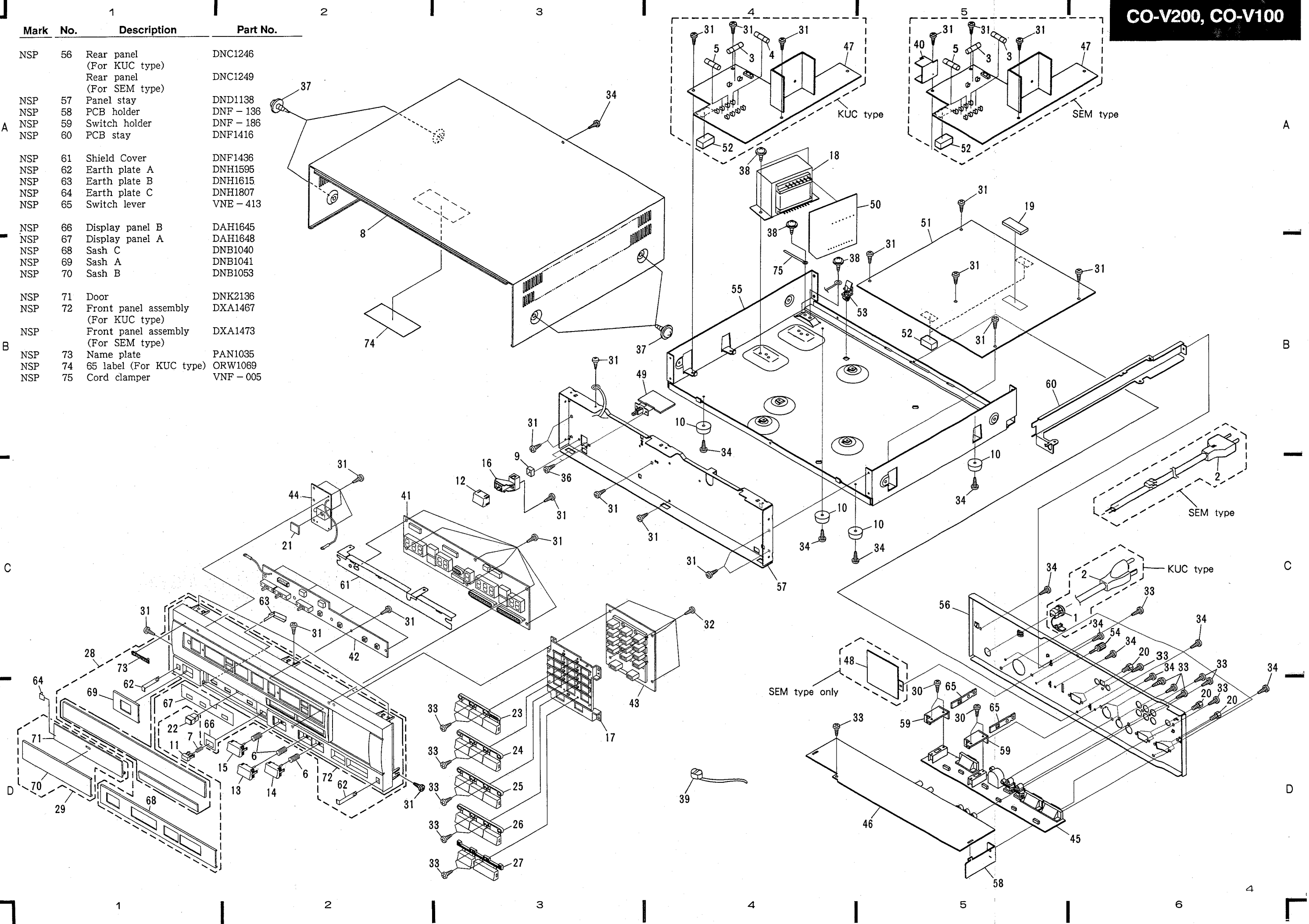
- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

1.1 EXTERIOR

Parts List

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	AC cord stopper (For KUC type)	VEC - 201		31	Screw	BBZ30P080FMC
Δ	2	AC power cord (For KUC type)	DDG1050		32	Screw	BBZ30P120FMC
Δ		AC power cord (For SEM type)	DDG1051		33	Screw	BBZ30P080FZK
Δ	3	FU906, 907 (400mA) Fuse (For KUC type)	DEK1007		34	Screw	BBZ30P060FZK
Δ		FU901, 906, 907 (400mA) Fuse (For SEM type)	REK - 096		35	Screw	ABZ40P080FMC
Δ	4	FU901 (500mA) Fuse (For KUC type)	DEK1008		36	Screw	PMA30P060FMC
Δ	5	FU904, 905 (1A) Fuse (For KUC type)	DEK1011		37	Screw	BBZ40P080FZK
Δ		FU904, 905 (630mA) Fuse (For SEM type)	REK - 098		38	Screw	PMB40P080FMC
	6	Spring A	DBH1002		39	Cord clammer	VEC - 067
	7	Spring B	DBH1003		40	Side barrier (For SEM type)	DNH1772
	8	Bonnet	DNE1067	⊙	41	DISP unit	DWG1324
	9	Flexible ring	VEC - 151	NSP	42	MODE unit	DWS1144
	10	Leg cap	VEC - 119	NSP	43	KEYB unit	DWS1186
	11	Select knob	DAC1009	NSP	44	IRAB unit	DWX1319
	12	Switch	DAC1607	NSP	45	IOJB unit (For KUC type)	DWX1295
	13	Switch	DAC1459	NSP		IOJB unit (For SEM type)	DWX1299
	14	Switch	DAC1460	⊙	46	AVCB unit (For KUC type)	DWX1296
	15	Memory check switch	DAC1458	⊙		AVCB unit (For SEM type)	DWX1300
	16	PWSW joint	DNK2135	⊙	47	POWB unit (For KUC type)	DWR1136
	17	Key holder	DNK2137	⊙		POWB unit (For SEM type)	DWR1137
Δ	18	Power transformer	DTT1078	NSP	48	PSEL unit (For SEM type)	DWS1172
	19	IC2 (ROM)	DYW1195	NSP	49	PSWB unit (For KUC type)	DWS1171
	20	Bolt # 4 - 40/M3	DBA1038	NSP		PSWB unit (For SEM type)	DWS1175
	21	Sensor cover	DEC1182	NSP	50	PTCB unit (For KUC type)	DWX1297
	22	Latch (NS - 2)	DXA1356	NSP		PTCB unit (For SEM type)	DWX1298
	23	Key assembly (1, 2, 3)	DXA1337	NSP	51	UCOM unit (For KUC type)	DWG1307
	24	Key assembly (4, 5, 6)	DXA1338	⊙		UCOM unit (For SEM type)	DWG1308
	25	Key assembly (7, 8, 9)	DXA1339	NSP	52	Cushion	DEB1211
	26	Key assembly (O, A, B)	DXA1340	NSP	53	PC support	DEC1486
	27	Key assembly (E, C)	DXA1476	NSP	54	Ground terminal	DKE - 102
	28	Front panel assembly (For KUC type)	DXX1837	NSP	55	Chassis	DNA1116
		Front panel assembly (For SEM type)	DXX1868				
	29	Door assembly	DXX1867				
	30	Screw	PMA26P050FMC				

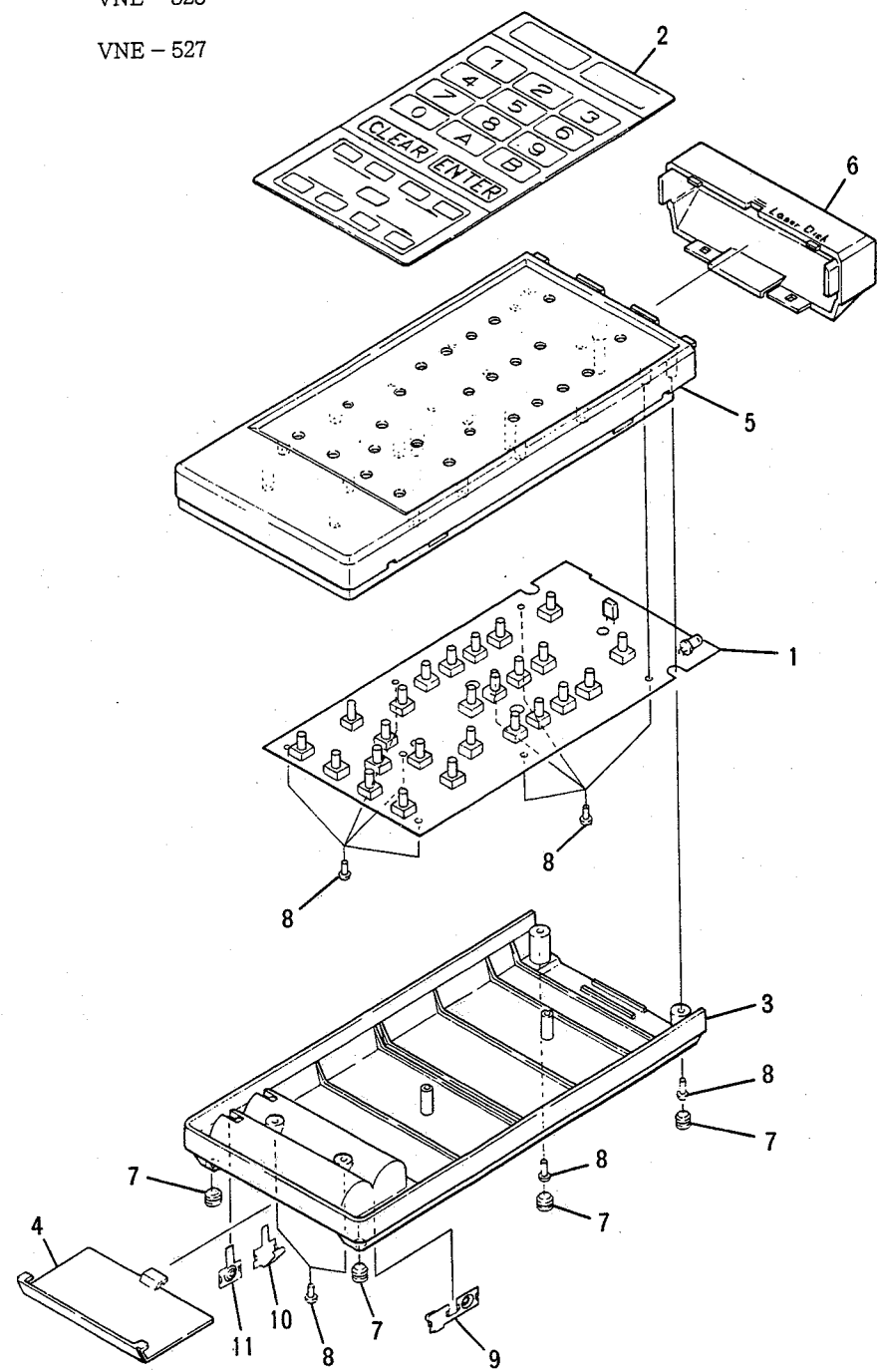
Mark	No.	Description	Part No.
A	NSP 56	Rear panel (For KUC type)	DNC1246
		Rear panel (For SEM type)	DNC1249
	NSP 57	Panel stay	DND1138
	NSP 58	PCB holder	DNF - 136
	NSP 59	Switch holder	DNF - 186
	NSP 60	PCB stay	DNF1416
NSP	61	Shield Cover	DNF1436
	62	Earth plate A	DNH1595
	63	Earth plate B	DNH1615
	64	Earth plate C	DNH1807
	65	Switch lever	VNE - 413
NSP	66	Display panel B	DAH1645
	67	Display panel A	DAH1648
	68	Sash C	DNB1040
	69	Sash A	DNB1041
	70	Sash B	DNB1053
NSP	71	Door	DNK2136
	72	Front panel assembly (For KUC type)	DXA1467
NSP		Front panel assembly (For SEM type)	DXA1473
B	NSP 73	Name plate	PAN1035
	NSP 74	65 label (For KUC type)	ORW1069
	NSP 75	Cord clamber	VNF - 005



1.2 REMOTE CONTROL UNIT (CU-V132)

Parts List

Mark	No.	Description	Part No.
	1	RMTC unit	DWX1291
	2	Operation sheet	DAH1643
	3	Under case	DMA - 148
	4	Battery cover	DMA - 149
	5	Upper case	DNK2443
	6	IR filter	DNK1047
	7	Rubber foot	VEB - 074
	8	Screw	PPZ20P060FMC
NSP	9	Terminal	VNE - 529
NSP	10	Terminal	VNE - 528
NSP	11	Terminal	VNE - 527



2. PACKING AND PARTS LIST

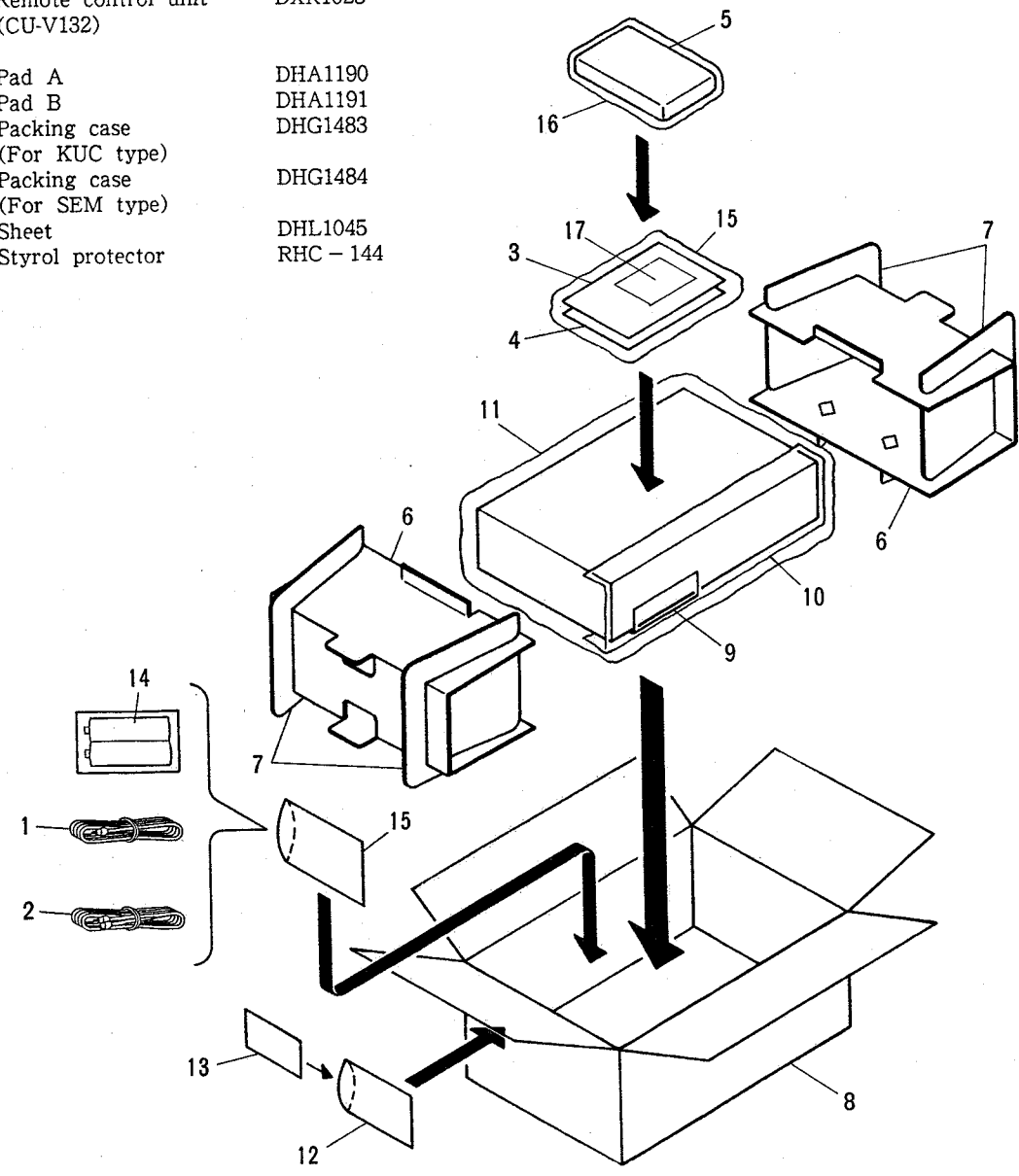
NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
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Parts List

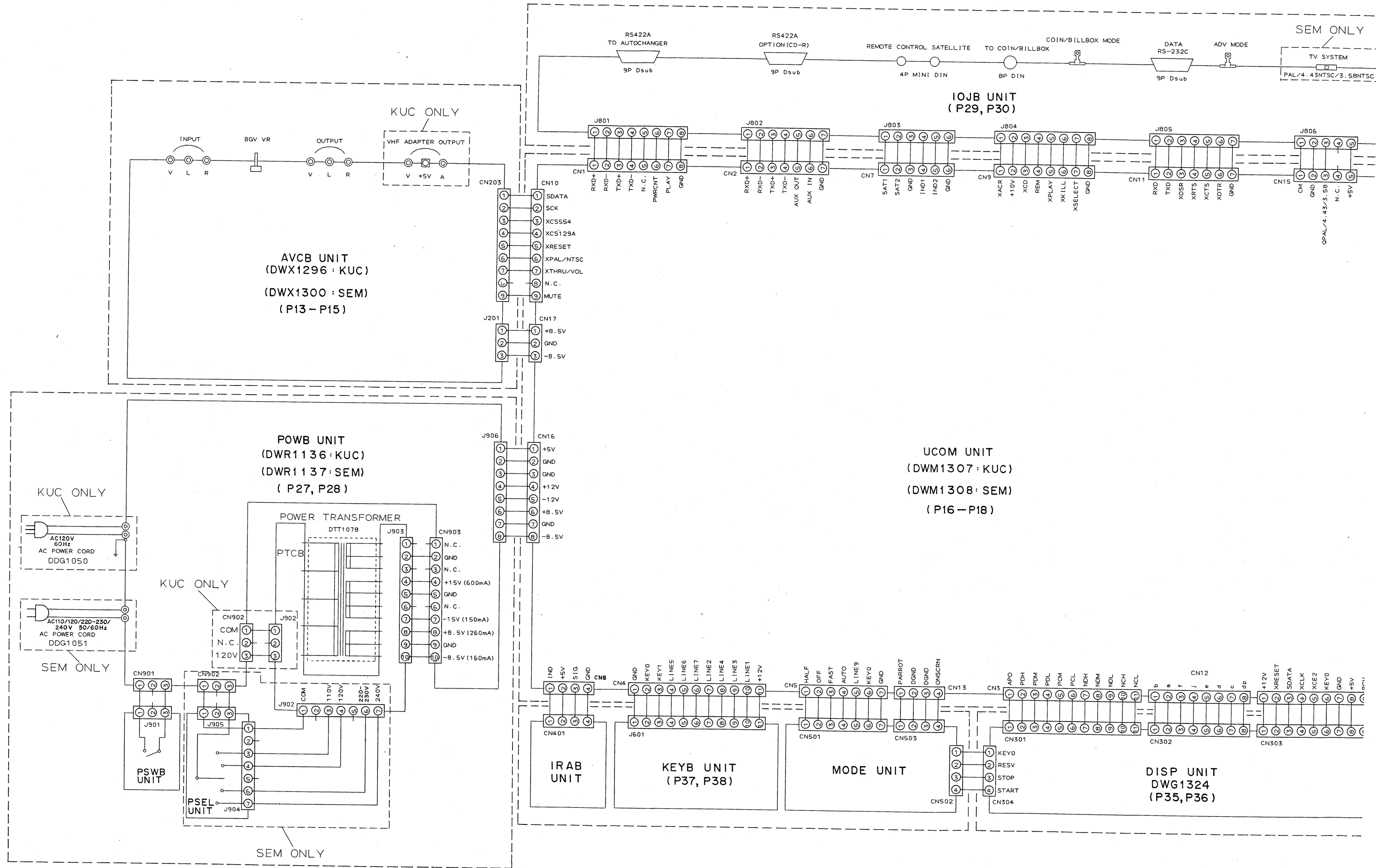
Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Cord with plug	DDE1013		11	Vinyl sheet B	RHX - 030
	2	Cord with plug	DDE1015	NSP	12	Vinyl bag	DHL1011
	3	Operating instructions (English) (For KUC type)	DRB1085	NSP	13	Follow-up card (For KUC type)	DRY1032
		Operating instructions (German/Italian/Spanish) (For SEM type)	DRB1120	NSP	14	Battery (R6P, AA)	VEM - 013
	4	Operating instructions (English/French) (For SEM type)	DRE1015	NSP	15	Vinyl bag	VHL - 014
	5	Remote control unit (CU-V132)	DXR1025	NSP	16	Bag	DHL - 113
					17	Caution	DRM1098
	6	Pad A	DHA1190				
	7	Pad B	DHA1191				
	8	Packing case (For KUC type)	DHG1483				
		Packing case (For SEM type)	DHG1484				
	9	Sheet	DHL1045				
	10	Styrol protector	RHC - 144				

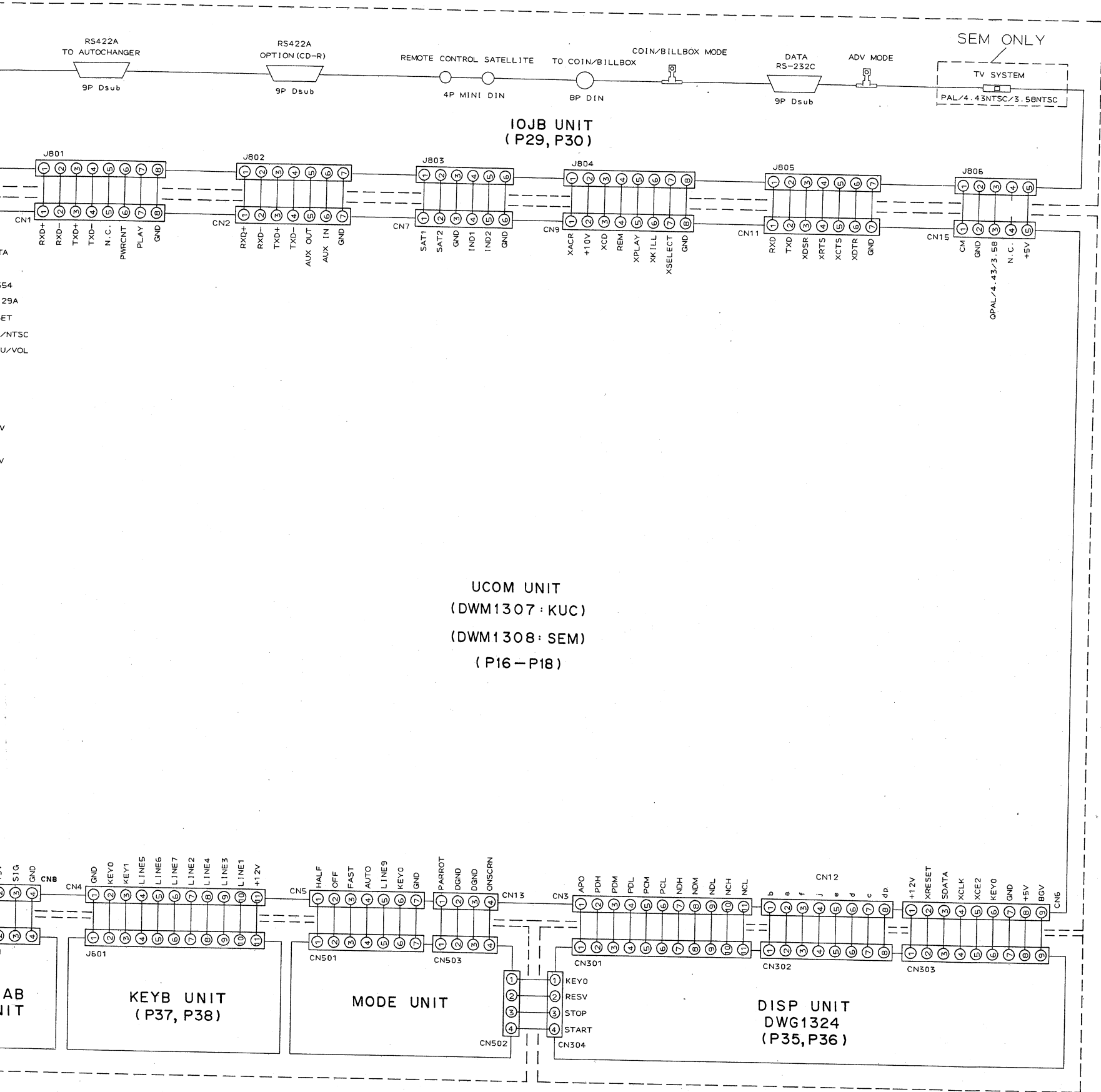
A
B
C
D



3. SCHEMATIC AND PCB CONNECTIONS DIAGRAMS

3.1 OVERALL WIRING DIAGRAM





Note: (Type 2)

1. When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".
2. Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.
3. RESISTORS:
Unit: k:kΩ, M:MΩ, or Ω unless otherwise noted.
Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.
Tolerance: (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% or ±5% unless otherwise noted.
4. CAPACITORS:
Unit: p:pF or μF unless otherwise noted.
Ratings: capacitor (μF)/ voltage (V) unless otherwise noted.
Rated voltage: 50V except for electrolytic capacitors.
5. COILS:
Unit: m:mH or μH unless otherwise noted.
6. VOLTAGE AND CURRENT:
□ : DC voltage (V) at no input signal unless otherwise noted.
⊕ mA or - mA : DC current at no input signal unless otherwise noted.
7. OTHERS:
• → : Signal route.
• ⊙ : Adjusting point.
• ▼ (Red) : Measurement point.
• The Δ 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.
8. SWITCHES (Underline indicates switch position):
MODE UNIT
S501 : PLAY MODE SELECTION
S502 : "BETWEEN SONGS" DISPLAY
S503 : BGV MODE

KEYB UNIT
S601 : 1
S602 : 2
S603 : 3
S604 : 4
S605 : 5
S606 : 6
S607 : 7
S608 : 8
S609 : 9
S610 : 0
S611 : A
S612 : B
S613 : CANCELED
S614 : MEMORY

IOJB UNIT
S801 : COIN/BILLBOX MODE ON-OFF
S802 : TV SYSTEM
S803 : ADV MODE ON-OFF

POWB UNIT
S901 : POWER ON-OFF

A
B
C
D

3.2 AVCB UNIT

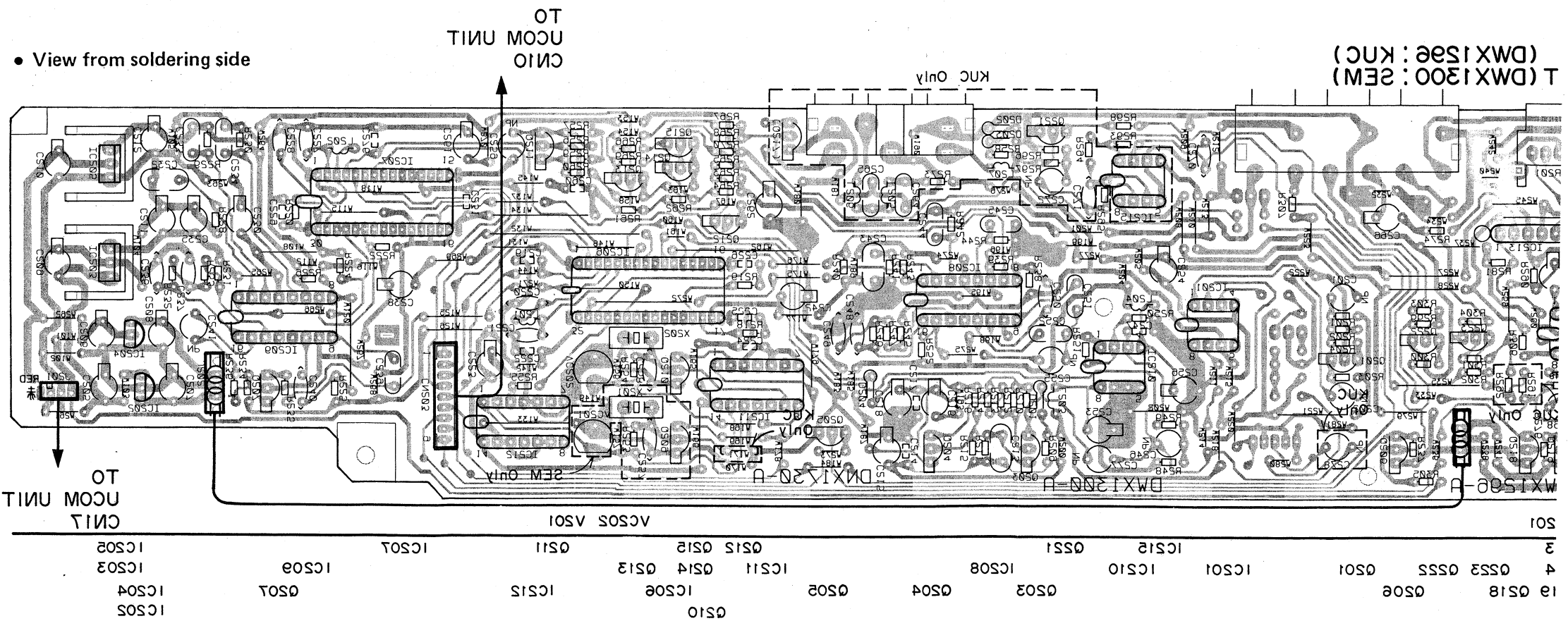
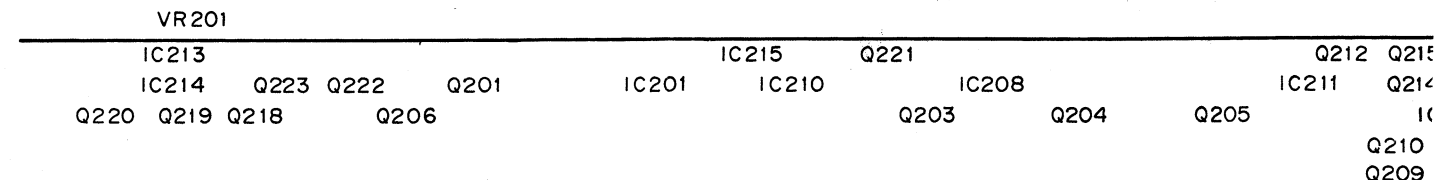
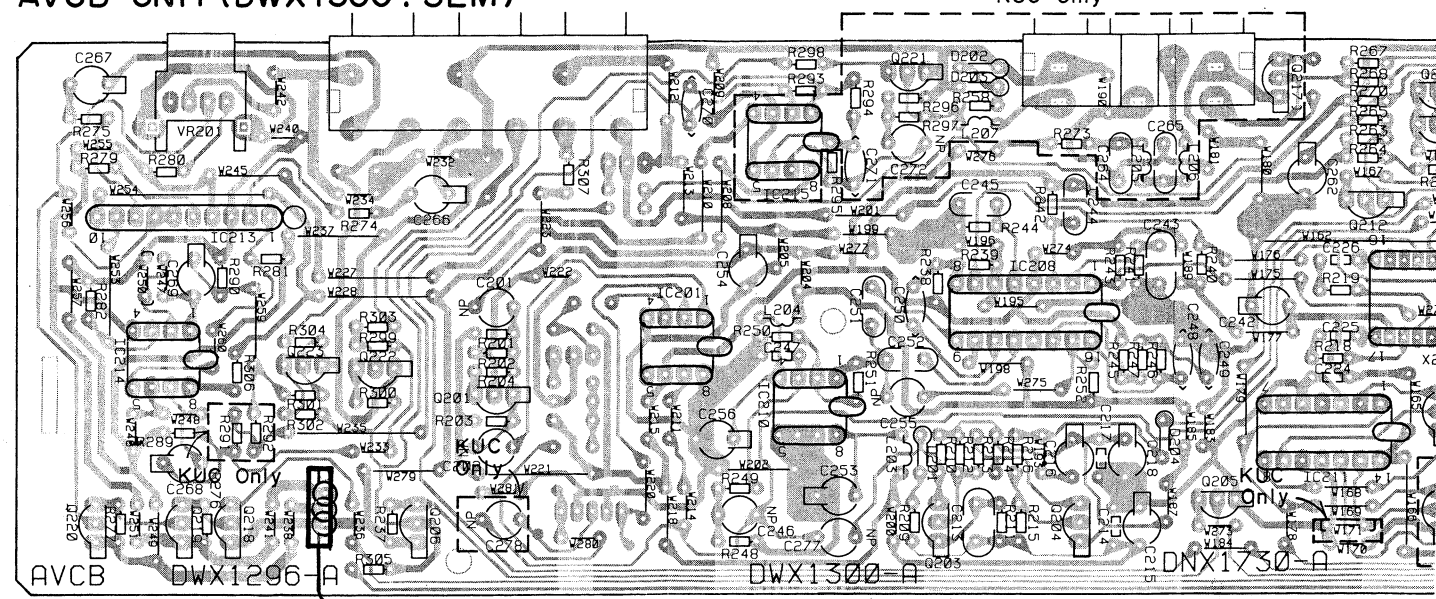
P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor
		FET
		Diode
		Zener diode
		LED
		Varactor
		Tact switch
		Inductor
		Coil
		Transformer
		Filter
		Ceramic capacitor
		Mylar capacitor
		Styrol capacitor
		Electrolytic capacitor (Non polarized)
		Electrolytic capacitor (Noiseless)
		Electrolytic capacitor (Polarized)
		Power capacitor
		Semi-fixed resistor
		Resistor array
		Resistor
		Resonator
		Thermistor

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with shows negative terminal.
4. The diode marked with shows cathode side.
5. The transistor terminal marked with shows emitter.

IC201 NJM2246D	IC206 M50554-132SP	IC207 PD0129A	IC208 PA0009	IC209 PA0009
Pin No.	Pin No.	Pin No.	Pin No.	Pin No.
Volts (V)	Volts (V)	Volts (V)	Volts (V)	Volts (V)
1 2.20	1 10.7mV	1 9.4mV	1 21.2mV	1 4.86
2 44.8mV	2 3.32	2 2.61	2 975mV	2 1.94
3 2.28	3 4.30	3 2.63	3 7.0mV	3 -3.72
4 14.1mV	4 2.77	4 4.29	4 5.06	4 5.07
5 2.27	5 2.55	5 5.01	5 1.93	5 1.94
6 5.06	6 4.99	6 1.42	6 13.4mV	6 9.4mV
7 1.61	7 875mV	7 3.39	7 5.06	7 4.95
8 14.3mV	8 1.37	8 5.06	8 118mV	8 114mV
	9 21.1mV	9 5.07	9 13.7mV	9 2.46
	10 5.01	10 5.07	10 -4.9	10 -4.91
	11 11.9mV	11 9.5mV	11 1.34	11 1.14
	12 960mV	12 9.5mV	12 -1.77	12 -130mV
	13 1.61	13 1.74	13 632mV	13 633mV
	14 656mV	14 708mV	14 20.4mV	14 4.18
	15 2.04	15 20.8mV	15 749mV	15 4.75
	16 654mV	16 654mV	16 152mV	16 4.21

IC210 BA1521B	IC211 TC74HCU04AP	IC212 TC74HC00AP	IC213 M5241L	IC214 NJM4558DX	IC215 NJM4558DX
Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.
Volts (V)	Volts (V)	Volts (V)	Volts (V)	Volts (V)	Volts (V)
1 7.6mV	1 4.99	1 5.06	1 0.9mV	1 169mV	1 9.2mV
2 4.9mV	2 2.2mV	2 2.64	2 555mV	2 169mV	2 0.41mV
3 4.7mV	3 1.2mV	3 1.2mV	3 0.1mV	3 167mV	3 0.03mV
4 -4.9	4 5.06	4 5.06	4 -5.09	4 -5.07	4 -5.08
5 2.1mV	5 1.2mV	5 1.2mV	5 -4.58	5 154mV	5 0.03mV
6 2.1mV	6 5.06	6 5.07	6 -1.74	6 156mV	6 0.23mV
7 2.1mV	7 1.2mV	7 1.2mV	7 -1.70	7 156mV	7 -8.96
8 5.0	8 2.7	8 5.06	8 555mV	8 3.79	8 5.04
	9 2.53	9 1.2mV	9 0.9mV		
	10 5.06	10 1.2mV	10 5.08		
	11 1.2mV	11 5.06			
	12 5.06	12 1.2mV			
	13 3.2mV	13 1.2mV			
	14 5.06	14 5.07			

(DWX1296 : KUC)
AVCB UNIT (DWX1300 : SEM)



IC208 PA0009

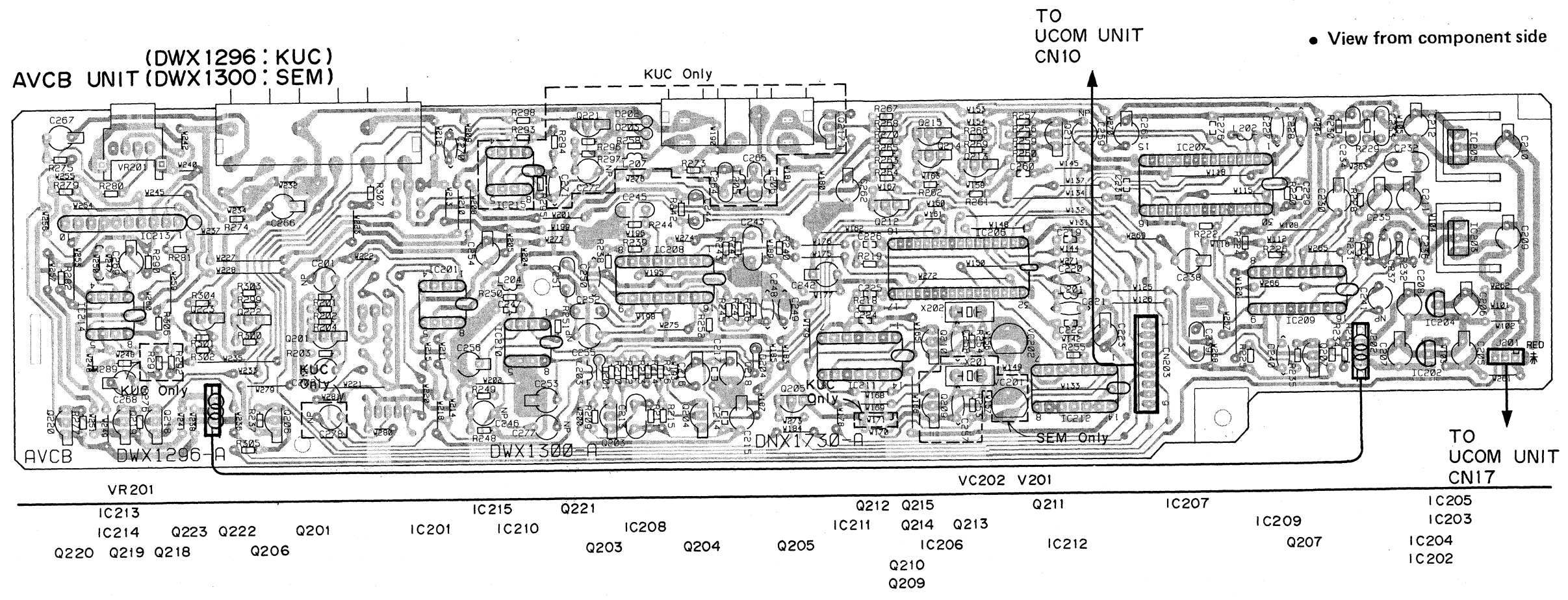
Pin No.	Volts (V)
1	21.2mV
2	975mV
3	7.0mV
4	5.06
5	1.93
6	13.4mV
7	5.06
8	118mV
9	13.7mV
10	-4.9
11	1.34
12	-1.77
13	632mV
14	20.4mV
15	749mV
16	152mV

IC209 PA0009

Pin No.	Volts (V)
1	4.86
2	1.94
3	-3.72
4	5.07
5	1.94
6	9.4mV
7	4.95
8	114mV
9	2.46
10	-4.91
11	1.14
12	-130mV
13	633mV
14	4.18
15	4.75
16	4.21

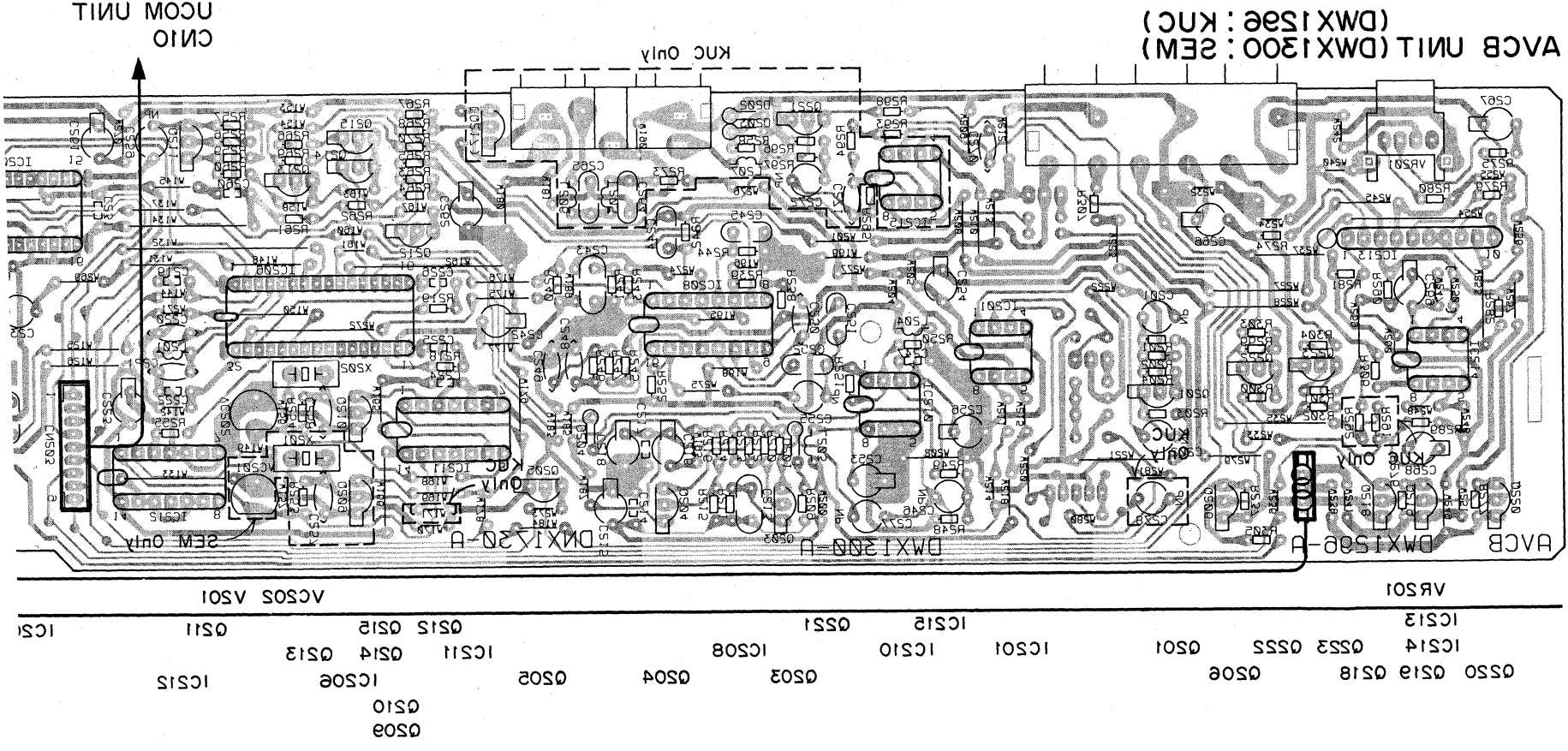
IC215 NJM4558DX

Pin No.	Volts (V)
1	9.2mV
2	0.41mV
3	0.03mV
4	-5.06
5	0.03mV
6	0.23mV
7	-8.96
8	5.04



View from component side

TO UCOM UNIT CN10



IC208 PA0009	IC209 PA0009	IC213 NJM4558DX	IC214 NJM4558DX	IC215 NJM4558DX	IC207	IC209	IC205	IC203	IC204	IC202
Pin No. 1	Pin No. 1	Pin No. 1	Pin No. 1	Pin No. 1	Pin No. 1	Pin No. 1	Pin No. 1	Pin No. 1	Pin No. 1	Pin No. 1
Volts (V) 21.2mV	Volts (V) 4.86	Volts (V) 9.2mV	Volts (V) 0.41mV	Volts (V) 0.03mV	Volts (V) 1.08	Volts (V) 4.86	Volts (V) 10.7	Volts (V) 3.72	Volts (V) 4.86	Volts (V) 4.86
Pin No. 2	Pin No. 2	Pin No. 2	Pin No. 2	Pin No. 2	Pin No. 2	Pin No. 2	Pin No. 2	Pin No. 2	Pin No. 2	Pin No. 2
Volts (V) 975mV	Volts (V) 1.94	Volts (V) 0.41mV	Volts (V) 0.03mV	Volts (V) 0.03mV	Volts (V) 1.08	Volts (V) 4.86	Volts (V) 10.7	Volts (V) 3.72	Volts (V) 4.86	Volts (V) 4.86
Pin No. 3	Pin No. 3	Pin No. 3	Pin No. 3	Pin No. 3	Pin No. 3	Pin No. 3	Pin No. 3	Pin No. 3	Pin No. 3	Pin No. 3
Volts (V) 7.0mV	Pin No. 3	Pin No. 3	Pin No. 3	Pin No. 3	Pin No. 3	Pin No. 3	Pin No. 3	Pin No. 3	Pin No. 3	Pin No. 3
Pin No. 4	Pin No. 4	Pin No. 4	Pin No. 4	Pin No. 4	Pin No. 4	Pin No. 4	Pin No. 4	Pin No. 4	Pin No. 4	Pin No. 4
Volts (V) 5.06	Pin No. 4	Pin No. 4	Pin No. 4	Pin No. 4	Pin No. 4	Pin No. 4	Pin No. 4	Pin No. 4	Pin No. 4	Pin No. 4
Pin No. 5	Pin No. 5	Pin No. 5	Pin No. 5	Pin No. 5	Pin No. 5	Pin No. 5	Pin No. 5	Pin No. 5	Pin No. 5	Pin No. 5
Volts (V) 1.93	Pin No. 5	Pin No. 5	Pin No. 5	Pin No. 5	Pin No. 5	Pin No. 5	Pin No. 5	Pin No. 5	Pin No. 5	Pin No. 5
Pin No. 6	Pin No. 6	Pin No. 6	Pin No. 6	Pin No. 6	Pin No. 6	Pin No. 6	Pin No. 6	Pin No. 6	Pin No. 6	Pin No. 6
Volts (V) 13.4mV	Pin No. 6	Pin No. 6	Pin No. 6	Pin No. 6	Pin No. 6	Pin No. 6	Pin No. 6	Pin No. 6	Pin No. 6	Pin No. 6
Pin No. 7	Pin No. 7	Pin No. 7	Pin No. 7	Pin No. 7	Pin No. 7	Pin No. 7	Pin No. 7	Pin No. 7	Pin No. 7	Pin No. 7
Volts (V) 5.06	Pin No. 7	Pin No. 7	Pin No. 7	Pin No. 7	Pin No. 7	Pin No. 7	Pin No. 7	Pin No. 7	Pin No. 7	Pin No. 7
Pin No. 8	Pin No. 8	Pin No. 8	Pin No. 8	Pin No. 8	Pin No. 8	Pin No. 8	Pin No. 8	Pin No. 8	Pin No. 8	Pin No. 8
Volts (V) 118mV	Pin No. 8	Pin No. 8	Pin No. 8	Pin No. 8	Pin No. 8	Pin No. 8	Pin No. 8	Pin No. 8	Pin No. 8	Pin No. 8
Pin No. 9	Pin No. 9	Pin No. 9	Pin No. 9	Pin No. 9	Pin No. 9	Pin No. 9	Pin No. 9	Pin No. 9	Pin No. 9	Pin No. 9
Volts (V) 13.7mV	Pin No. 9	Pin No. 9	Pin No. 9	Pin No. 9	Pin No. 9	Pin No. 9	Pin No. 9	Pin No. 9	Pin No. 9	Pin No. 9
Pin No. 10	Pin No. 10	Pin No. 10	Pin No. 10	Pin No. 10	Pin No. 10	Pin No. 10	Pin No. 10	Pin No. 10	Pin No. 10	Pin No. 10
Volts (V) -4.9	Pin No. 10	Pin No. 10	Pin No. 10	Pin No. 10	Pin No. 10	Pin No. 10	Pin No. 10	Pin No. 10	Pin No. 10	Pin No. 10
Pin No. 11	Pin No. 11	Pin No. 11	Pin No. 11	Pin No. 11	Pin No. 11	Pin No. 11	Pin No. 11	Pin No. 11	Pin No. 11	Pin No. 11
Volts (V) 1.34	Pin No. 11	Pin No. 11	Pin No. 11	Pin No. 11	Pin No. 11	Pin No. 11	Pin No. 11	Pin No. 11	Pin No. 11	Pin No. 11
Pin No. 12	Pin No. 12	Pin No. 12	Pin No. 12	Pin No. 12	Pin No. 12	Pin No. 12	Pin No. 12	Pin No. 12	Pin No. 12	Pin No. 12
Volts (V) -1.77	Pin No. 12	Pin No. 12	Pin No. 12	Pin No. 12	Pin No. 12	Pin No. 12	Pin No. 12	Pin No. 12	Pin No. 12	Pin No. 12
Pin No. 13	Pin No. 13	Pin No. 13	Pin No. 13	Pin No. 13	Pin No. 13	Pin No. 13	Pin No. 13	Pin No. 13	Pin No. 13	Pin No. 13
Volts (V) 632mV	Pin No. 13	Pin No. 13	Pin No. 13	Pin No. 13	Pin No. 13	Pin No. 13	Pin No. 13	Pin No. 13	Pin No. 13	Pin No. 13
Pin No. 14	Pin No. 14	Pin No. 14	Pin No. 14	Pin No. 14	Pin No. 14	Pin No. 14	Pin No. 14	Pin No. 14	Pin No. 14	Pin No. 14
Volts (V) 20.4mV	Pin No. 14	Pin No. 14	Pin No. 14	Pin No. 14	Pin No. 14	Pin No. 14	Pin No. 14	Pin No. 14	Pin No. 14	Pin No. 14
Pin No. 15	Pin No. 15	Pin No. 15	Pin No. 15	Pin No. 15	Pin No. 15	Pin No. 15	Pin No. 15	Pin No. 15	Pin No. 15	Pin No. 15
Volts (V) 749mV	Pin No. 15	Pin No. 15	Pin No. 15	Pin No. 15	Pin No. 15	Pin No. 15	Pin No. 15	Pin No. 15	Pin No. 15	Pin No. 15
Pin No. 16	Pin No. 16	Pin No. 16	Pin No. 16	Pin No. 16	Pin No. 16	Pin No. 16	Pin No. 16	Pin No. 16	Pin No. 16	Pin No. 16
Volts (V) 152mV	Pin No. 16	Pin No. 16	Pin No. 16	Pin No. 16	Pin No. 16	Pin No. 16	Pin No. 16	Pin No. 16	Pin No. 16	Pin No. 16

• View from component side

IC12 TC74HC573AF

Pin No.	Volts (V)
1	15.2mV
2	2.34
3	1.32
4	1.34
5	1.58
6	1.07
7	2.60
8	1.78
9	3.02
10	4.83mV
11	6.52mV
12	4.58mV
13	34.2mV
14	34.1mV
15	34.1mV
16	4.57mV
17	34.1mV
18	34.1mV
19	251mV
20	5.07

IC6 SN74LS390NS

Pin No.	Volts (V)
1	2.13
2	5.06
3	141mV
4	6.97mV
5	125mV
6	127mV
7	126mV
8	7.44mV
9	777mV
10	3.96
11	1.59
12	2.56
13	3.97
14	7.02
15	782mV
16	5.07

IC1 HD6415108F - 8

Pin No.	Volts (V)	Pin No.	Volts (V)	Pin No.	Volts (V)	Pin No.	Volts (V)
1	4.28	29	5.06	57	56.6mV	85	5.07
2	6.76mV	30	4.04	58	5.01	86	5.05
3	6.76mV	31	3.34	59	167mV	87	5.07
4	5.06	32	5.07	60	12.1mV	88	5.07
5	5.04	33	1.07	61	3.32	89	434mV
6	7.08	34	1.04	62	5.04	90	4.01
7	5.06	35	439mV	63	5.07	91	4.01
8	13.25mV	36	433mV	64	6.73mV	92	5.07
9	3.53mV	37	6.75mV	65	5.07	93	4.26
10	5.06	38	491mV	66	5.07	94	5.06
11	5.07	39	481mV	67	2.94mV	95	4.27
12	3.02	40	6.81mV	68	2.97mV	96	5.06
13	1.77	41	6.82mV	69	5.07	97	6.79mV
14	2.60	42	6.83mV	70	38.1mV	98	2.50
15	1.06	43	6.82mV	71	38.4mV	99	2.50
16	1.58	44	6.81mV	72	38.5mV	100	6.75mV
17	1.34	45	6.81mV	73	38.5mV	101	2.11
18	1.32	46	6.77mV	74	265mV	102	2.50
19	2.34	47	0 or 5	75	265mV	103	1.99
20	6.73mV	48	433mV	76	38.6mV	104	2.26
21	2.70	49	420mV	77	38.6mV	105	4.94
22	2.72	50	31.9mV	78	38.6mV	106	5.06
23	2.84	51	555mV	79	38.6mV	107	5.06
24	2.40	52	8.65mV	80	38.6mV	108	5.07
25	2.31	53	18.5mV	81	6.74mV	109	5.07
26	2.34	54	8.54mV	82	6.72mV	110	5.07
27	1.91	55	5.08	83	3.69	111	6.72mV
28	1.99	56	5.07	84	5.04	112	5.07

IC8 TC74HC138AF

Pin No.	Volts (V)
1	434mV
2	498mV
3	498mV
4	3.92mV
5	3.93mV
6	5.07
7	5.07
8	3.94mV
9	4.53
10	5.07
11	5.07
12	5.07
13	5.02
14	4.49
15	981mV
16	5.07

(DWG1307: KUC) UCOM UNIT (DWG1308: SEM)

TO IRAB UNIT CN401

TO DISP UNIT CN303

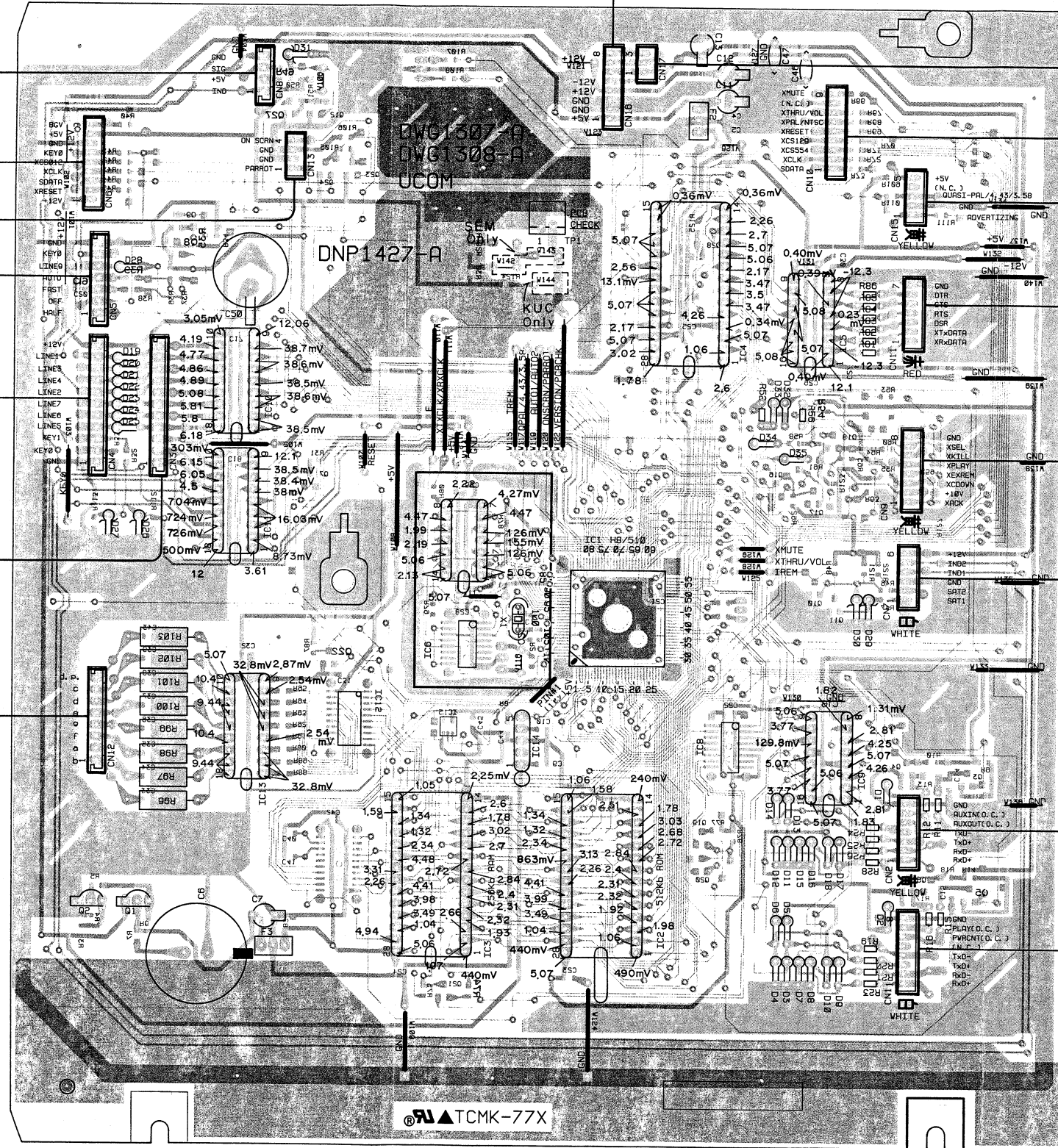
TO MODE UNIT CN503

TO MODE UNIT CN501

TO KEYB UNIT J601

TO DISP UNIT CN301

TO DISP UNIT CN302



TO POWB UNIT J906

TSO S10

ASD ES0

EO BS0

IC4 IC5

IC10

810

TO S10

IC11 T10

IC7

O10

F10 IC1

SS0

IC13

210 IC8 IC9

40 80

TO IOJB UNIT J802

E10

IC3 IC2 80

Q2 Q1 OS0 80

TSO

TO AVCB UNIT J201

TO AVCB UNIT CN203

TO IOJB UNIT J806

TO IOJB UNIT J805

TO IOJB UNIT J804

TO IOJB UNIT J803

TO IOJB UNIT J802

TO IOJB UNIT J801

TO IOJB UNIT J801

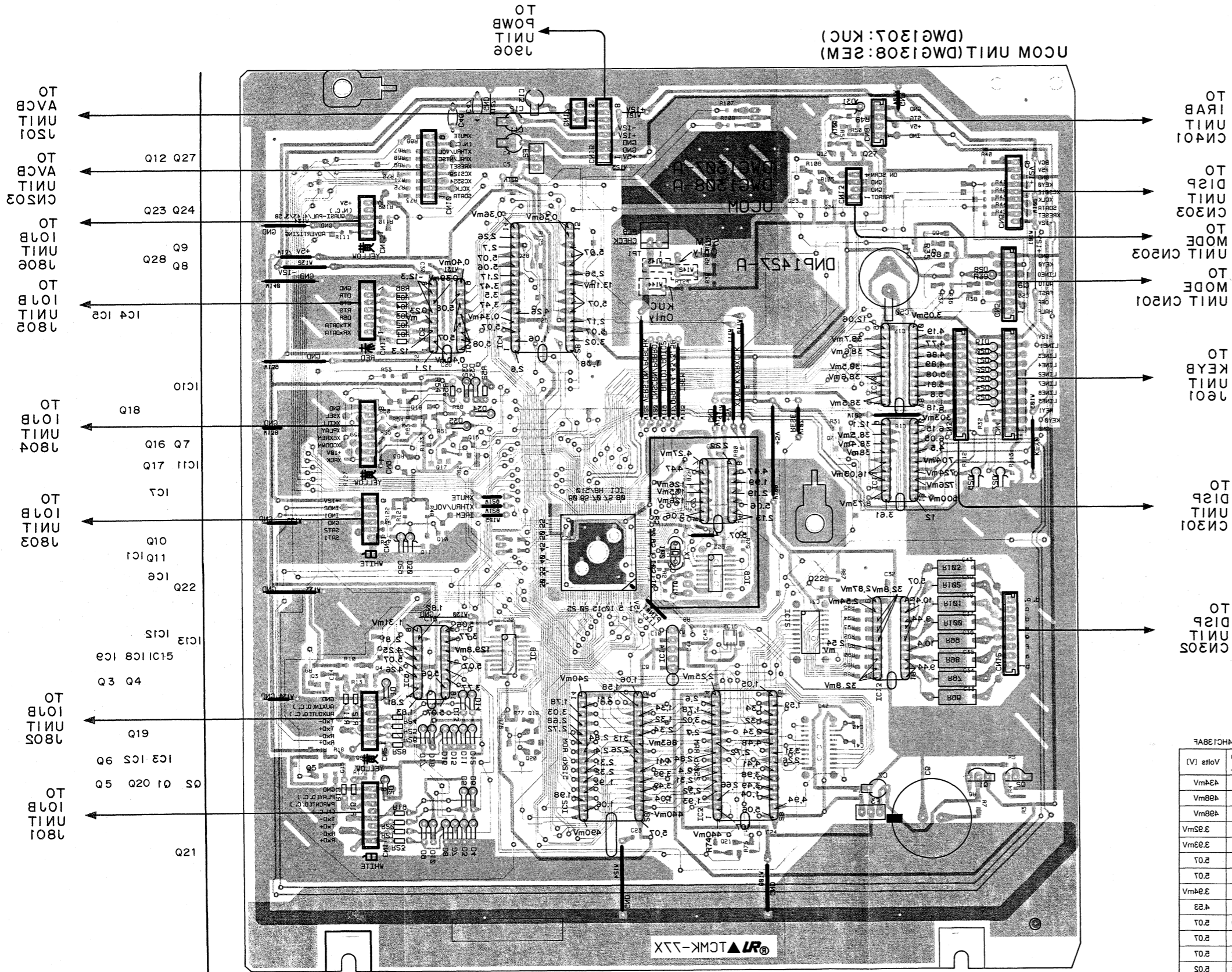
TO IOJB UNIT J801

TO IOJB UNIT J801

TO IOJB UNIT J801

TO IOJB UNIT J801

● View from soldering side



IC8
2N14238012

Pin No.	Volts (V)
1	2.13
2	2.08
3	1.41Vm
4	2.87Vm
5	1.28Vm
6	1.27Vm
7	1.28Vm
8	1.4Vm
9	1.17Vm
10	3.88
11	1.28Vm
12	1.28Vm
13	3.03Vm
14	1.28Vm
15	1.28Vm
16	2.07Vm

IC15
TCT4HC23AF

Pin No.	Volts (V)
1	1.28Vm
2	1.28Vm
3	1.35Vm
4	1.34Vm
5	1.28Vm
6	1.28Vm
7	1.28Vm
8	1.28Vm
9	1.28Vm
10	1.28Vm
11	1.28Vm
12	1.28Vm
13	1.28Vm
14	1.28Vm
15	1.28Vm
16	1.28Vm
17	1.28Vm
18	1.28Vm
19	1.28Vm
20	1.28Vm

IC8
TCT4HC138AF

Pin No.	Volts (V)
1	1.28Vm
2	1.28Vm
3	1.28Vm
4	1.28Vm
5	1.28Vm
6	1.28Vm
7	1.28Vm
8	1.28Vm
9	1.28Vm
10	1.28Vm
11	1.28Vm
12	1.28Vm
13	1.28Vm
14	1.28Vm
15	1.28Vm
16	1.28Vm
17	1.28Vm
18	1.28Vm

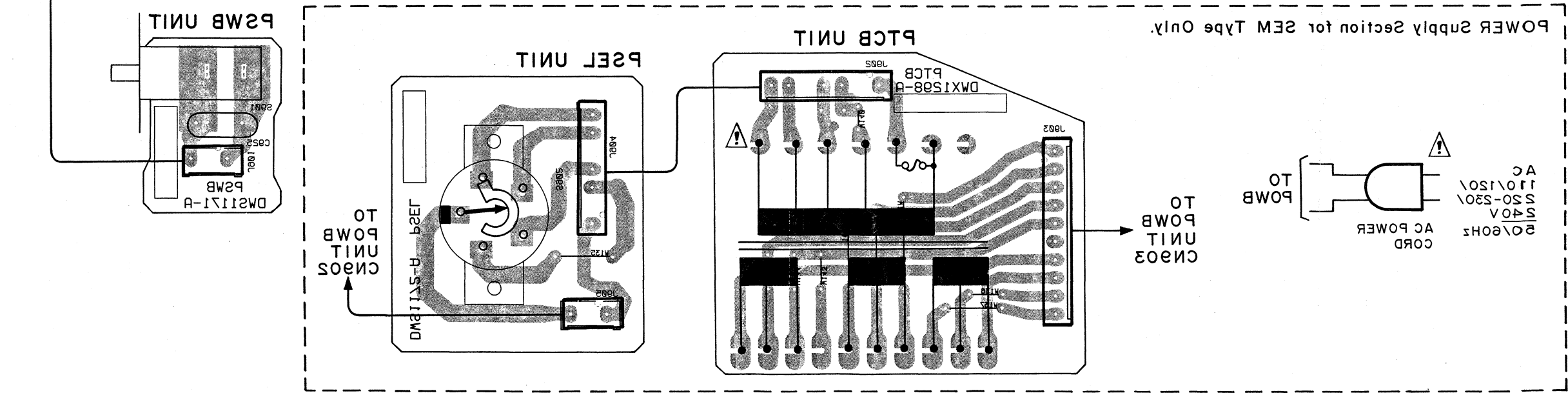
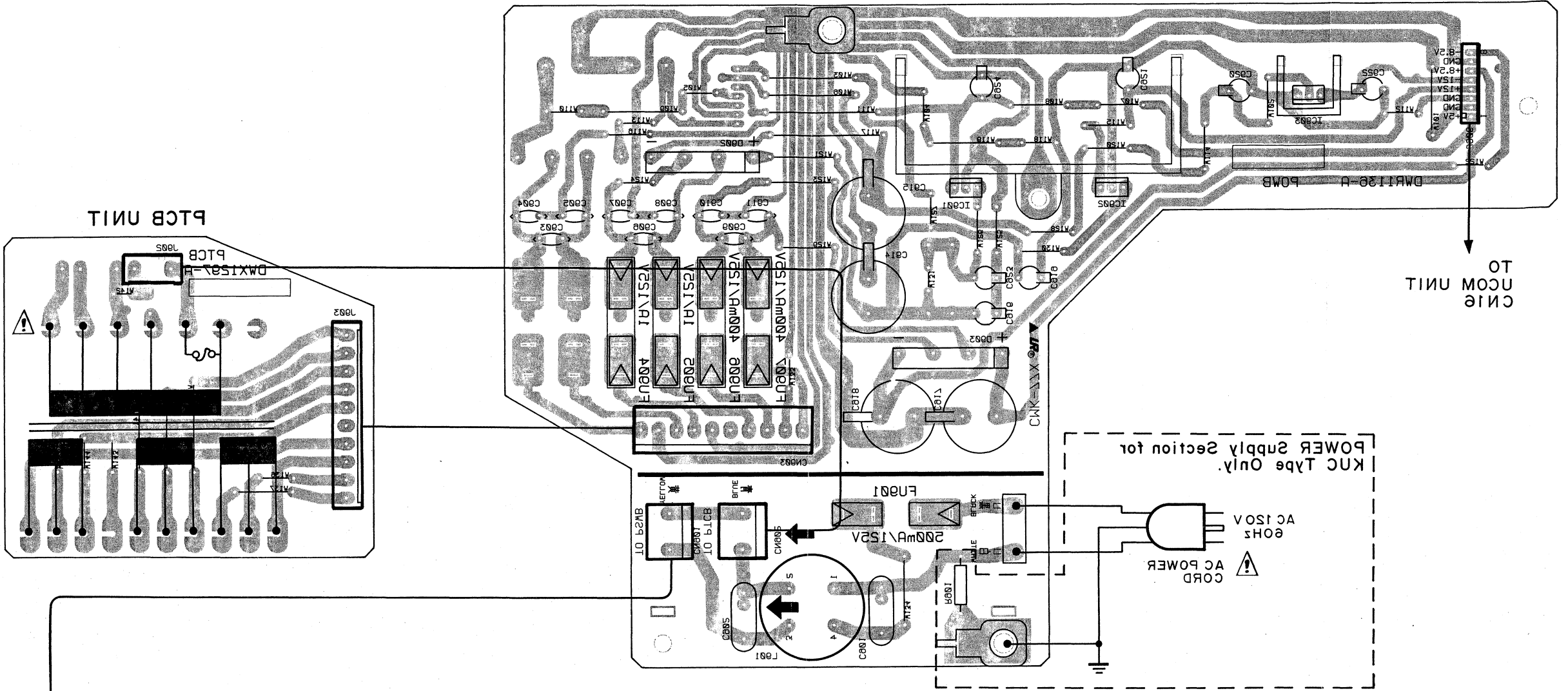
IC1
HD845108F - 8

Pin No.	Volts (V)	Pin No.	Volts (V)
1	1.28Vm	29	1.28Vm
2	1.28Vm	30	1.28Vm
3	1.28Vm	31	1.28Vm
4	1.28Vm	32	1.28Vm
5	1.28Vm	33	1.28Vm
6	1.28Vm	34	1.28Vm
7	1.28Vm	35	1.28Vm
8	1.28Vm	36	1.28Vm
9	1.28Vm	37	1.28Vm
10	1.28Vm	38	1.28Vm
11	1.28Vm	39	1.28Vm
12	1.28Vm	40	1.28Vm
13	1.28Vm	41	1.28Vm
14	1.28Vm	42	1.28Vm
15	1.28Vm	43	1.28Vm
16	1.28Vm	44	1.28Vm
17	1.28Vm	45	1.28Vm
18	1.28Vm	46	1.28Vm
19	1.28Vm	47	1.28Vm
20	1.28Vm	48	1.28Vm
21	1.28Vm	49	1.28Vm
22	1.28Vm	50	1.28Vm
23	1.28Vm	51	1.28Vm
24	1.28Vm	52	1.28Vm
25	1.28Vm	53	1.28Vm
26	1.28Vm	54	1.28Vm
27	1.28Vm	55	1.28Vm
28	1.28Vm	56	1.28Vm
29	1.28Vm	57	1.28Vm
30	1.28Vm	58	1.28Vm
31	1.28Vm	59	1.28Vm
32	1.28Vm	60	1.28Vm

3.4 POWB, PSWB, PSCB AND PSEL UNIT

• View from soldering side

POWB UNIT(DWR1137:SEM)
(DWR1136:KUC)



A

B

C

D

A

B

C

D

e

2

4

3

5

e

2

4

3

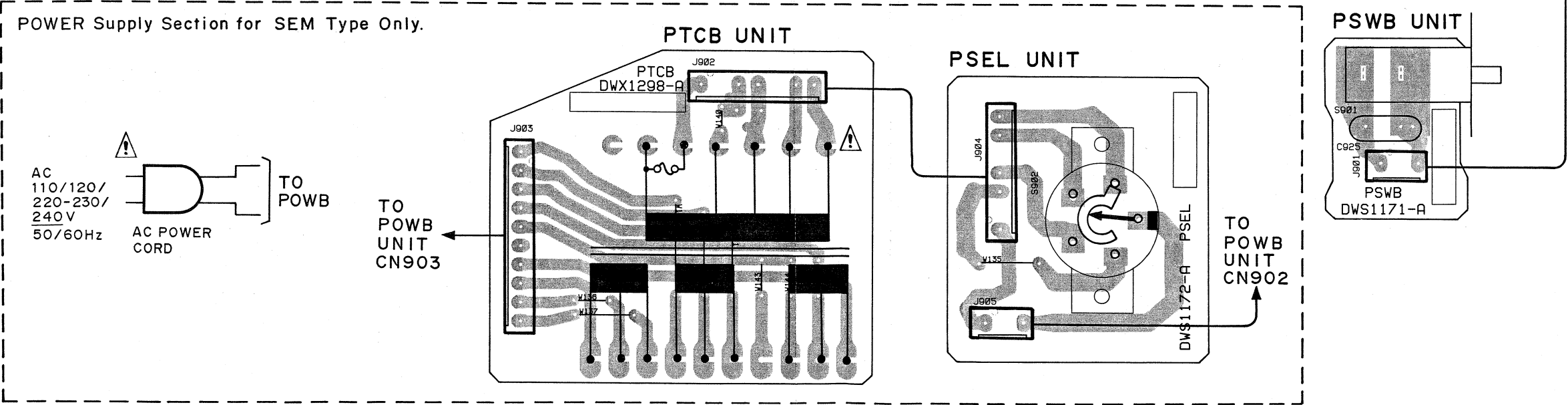
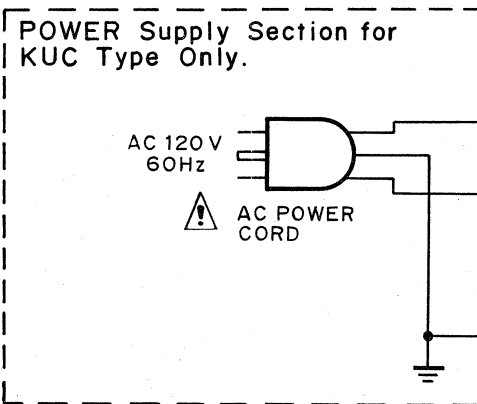
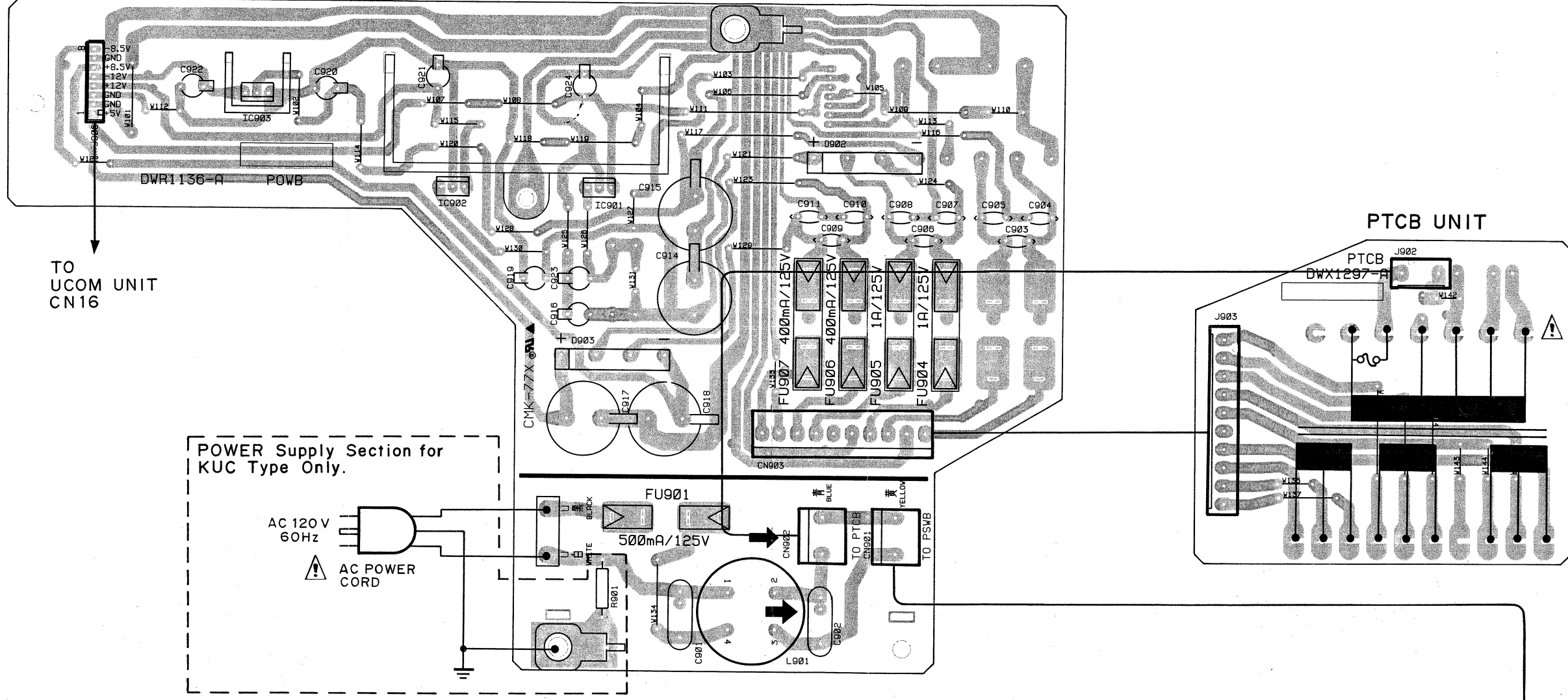
5

3.4 POWB, PSWB, PSCB AND PSEL UNIT

• View from component side

(DWR1136:KUC)

POWB UNIT (DWR1137:SEM)



A

B

C

D

A

B

C

D

A

B

C

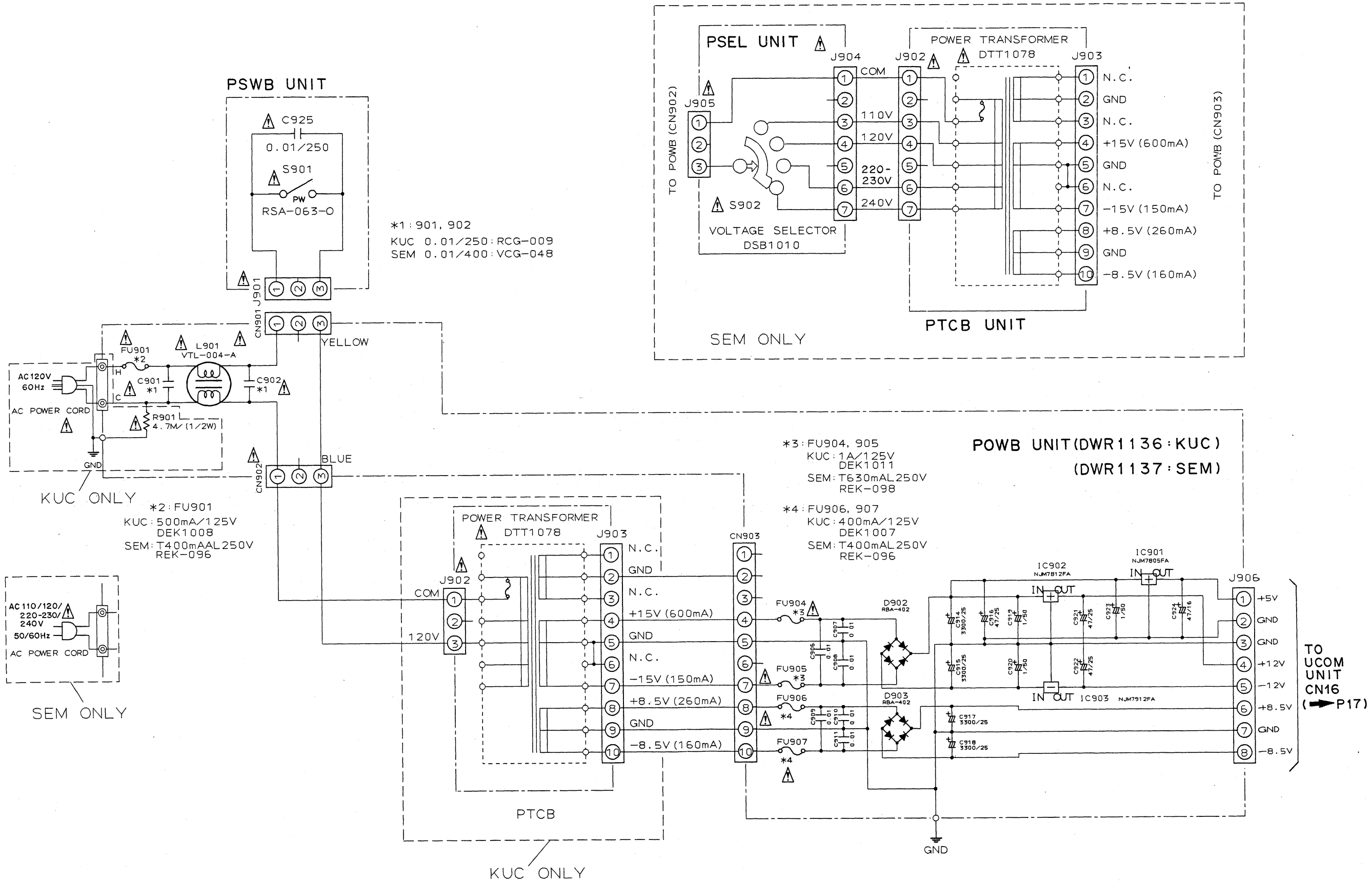
D

A

B

C

D



3.5 IOJB UNIT

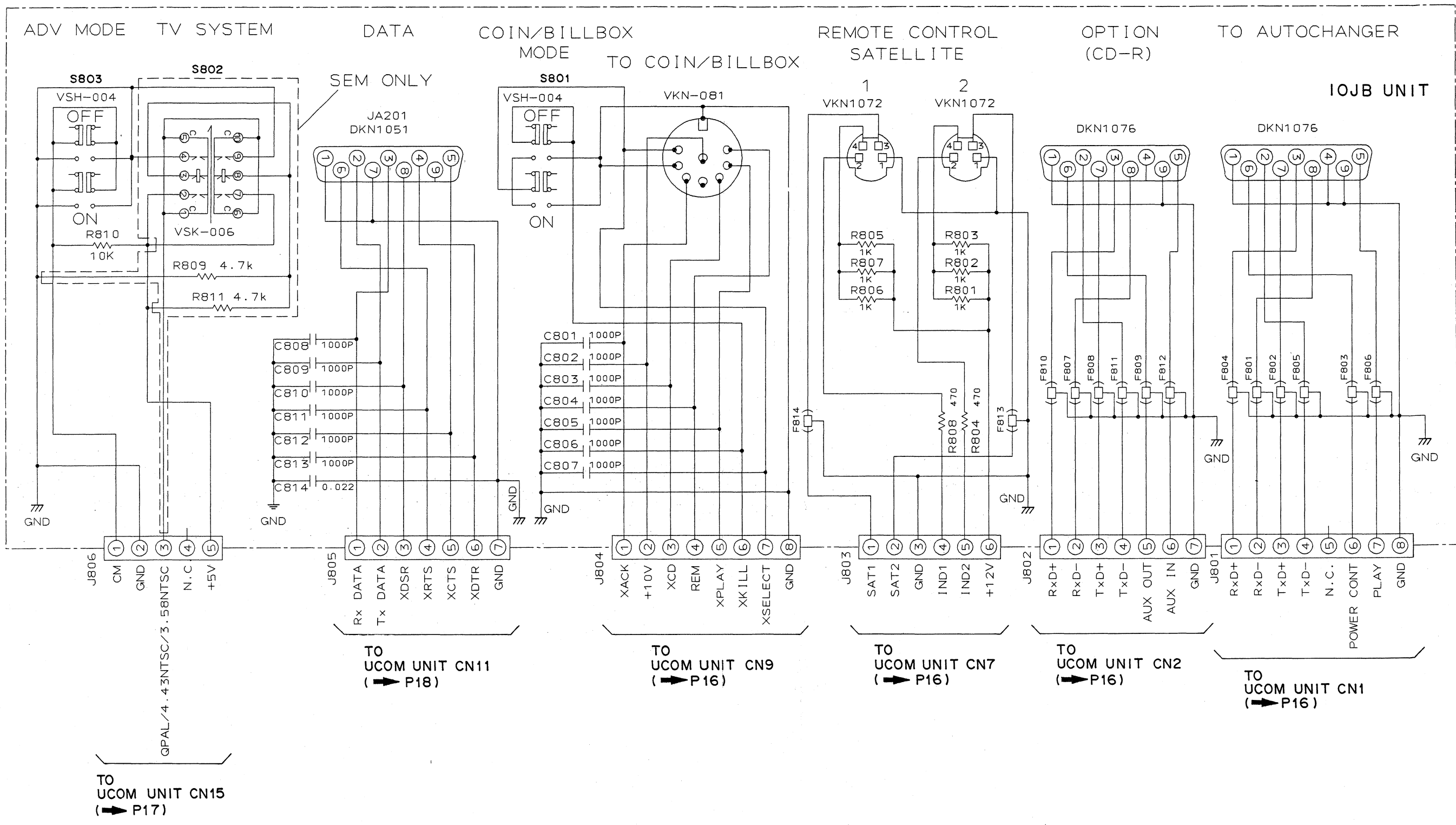
2

3

4

5

6



A

B

C

D

1

2

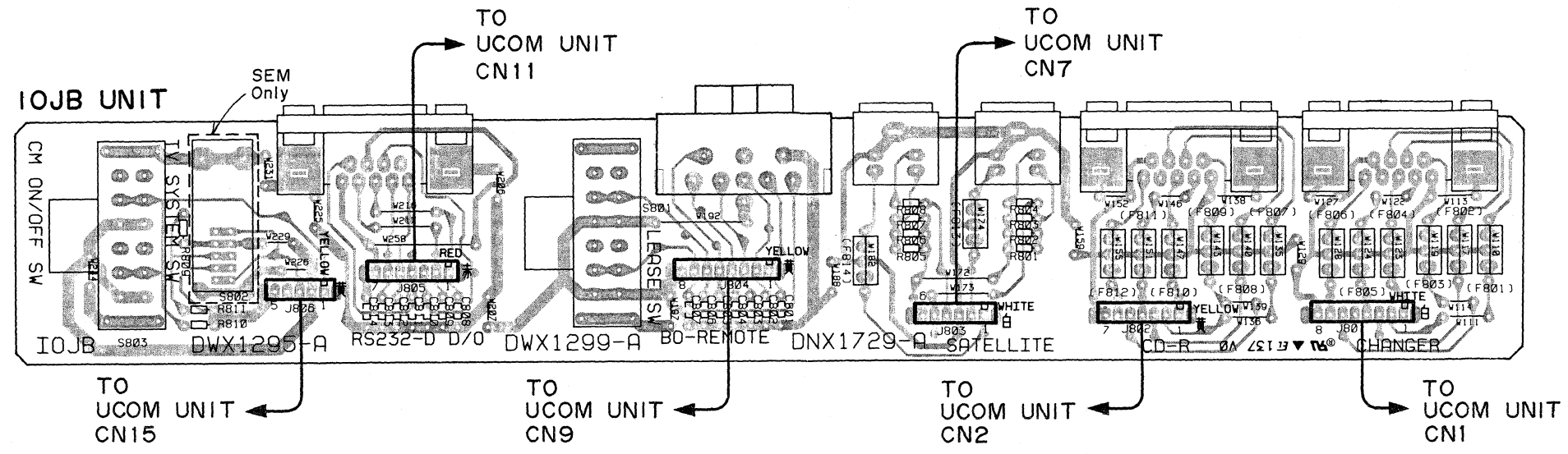
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4

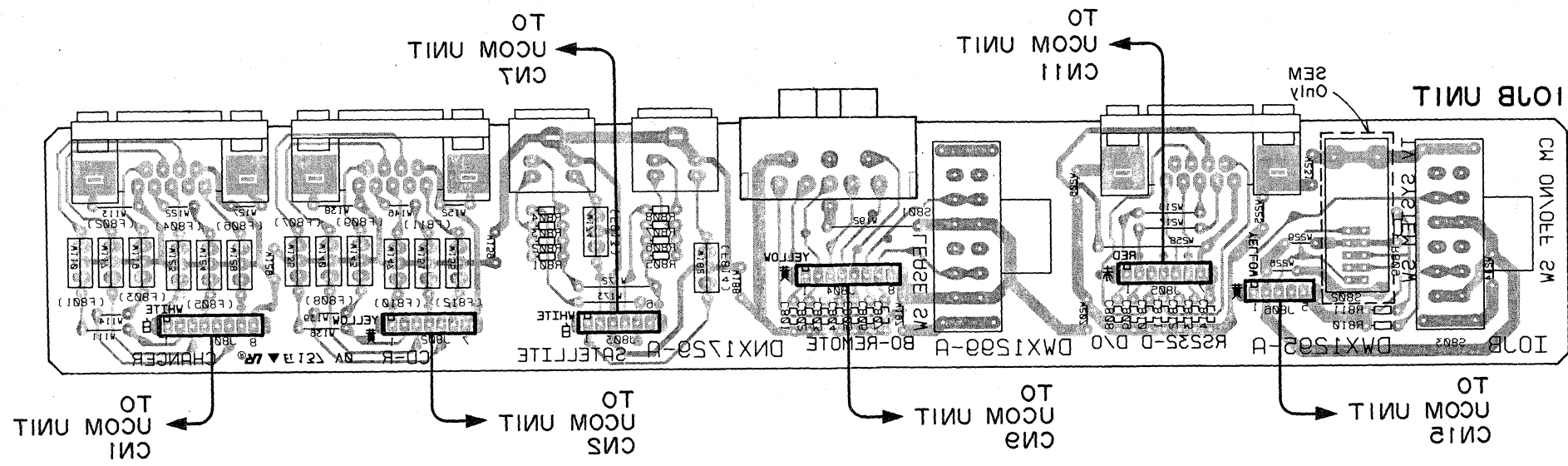
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6

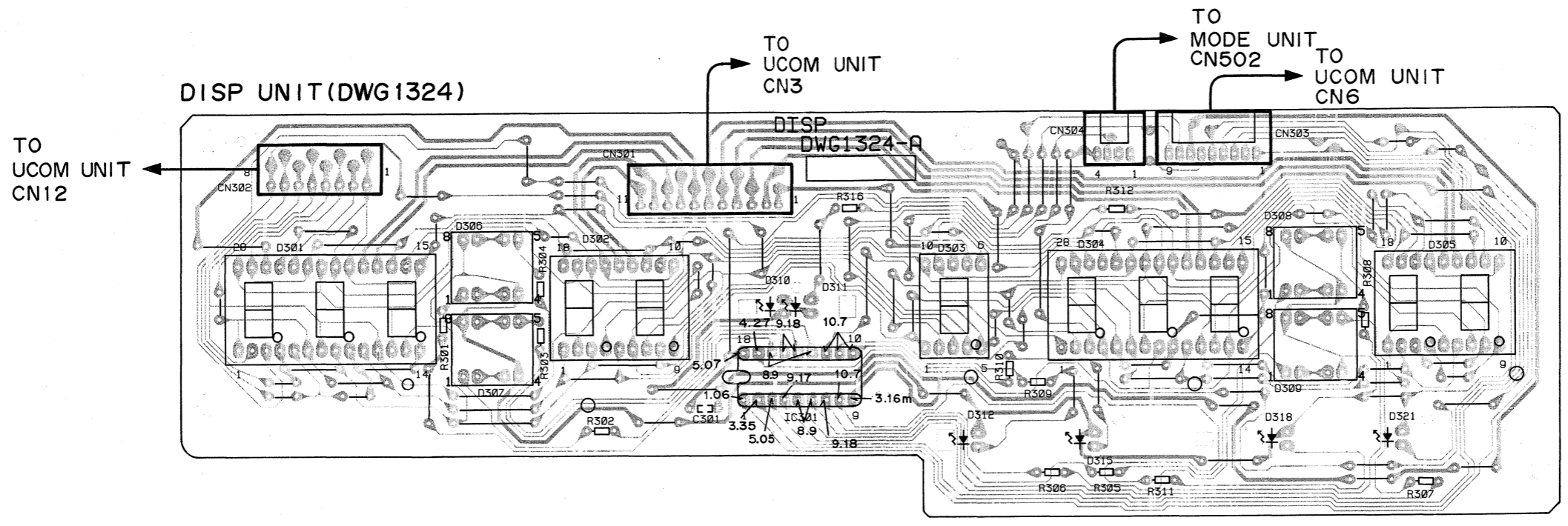
• View from component side



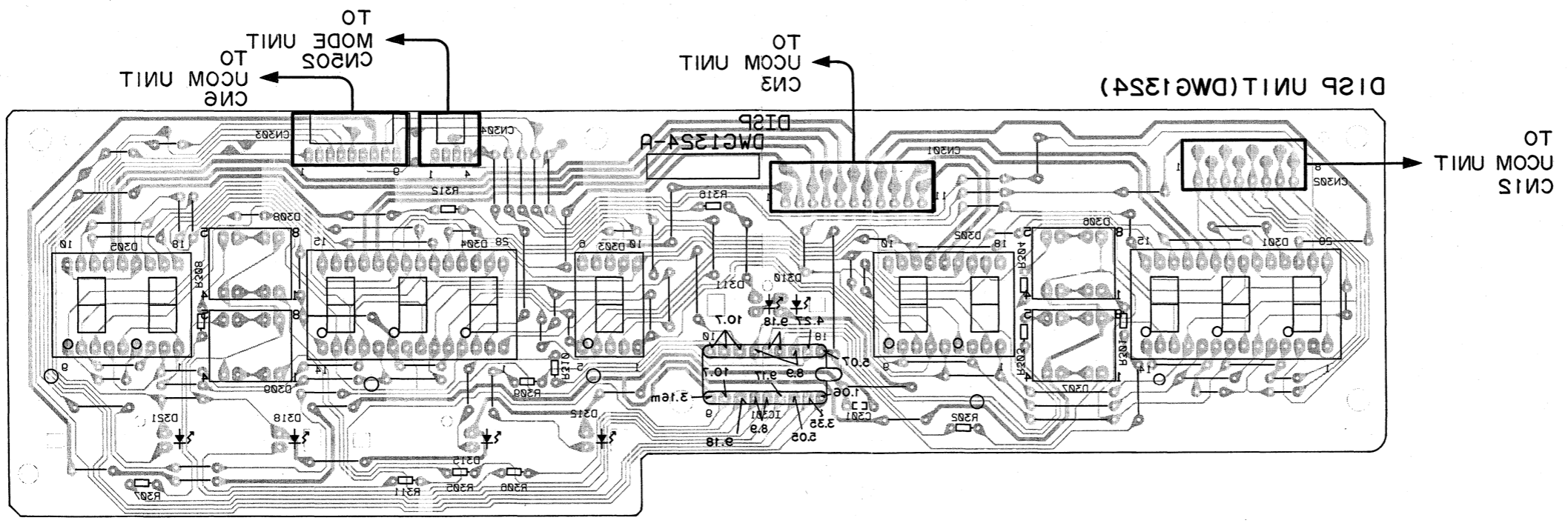
• View from soldering side

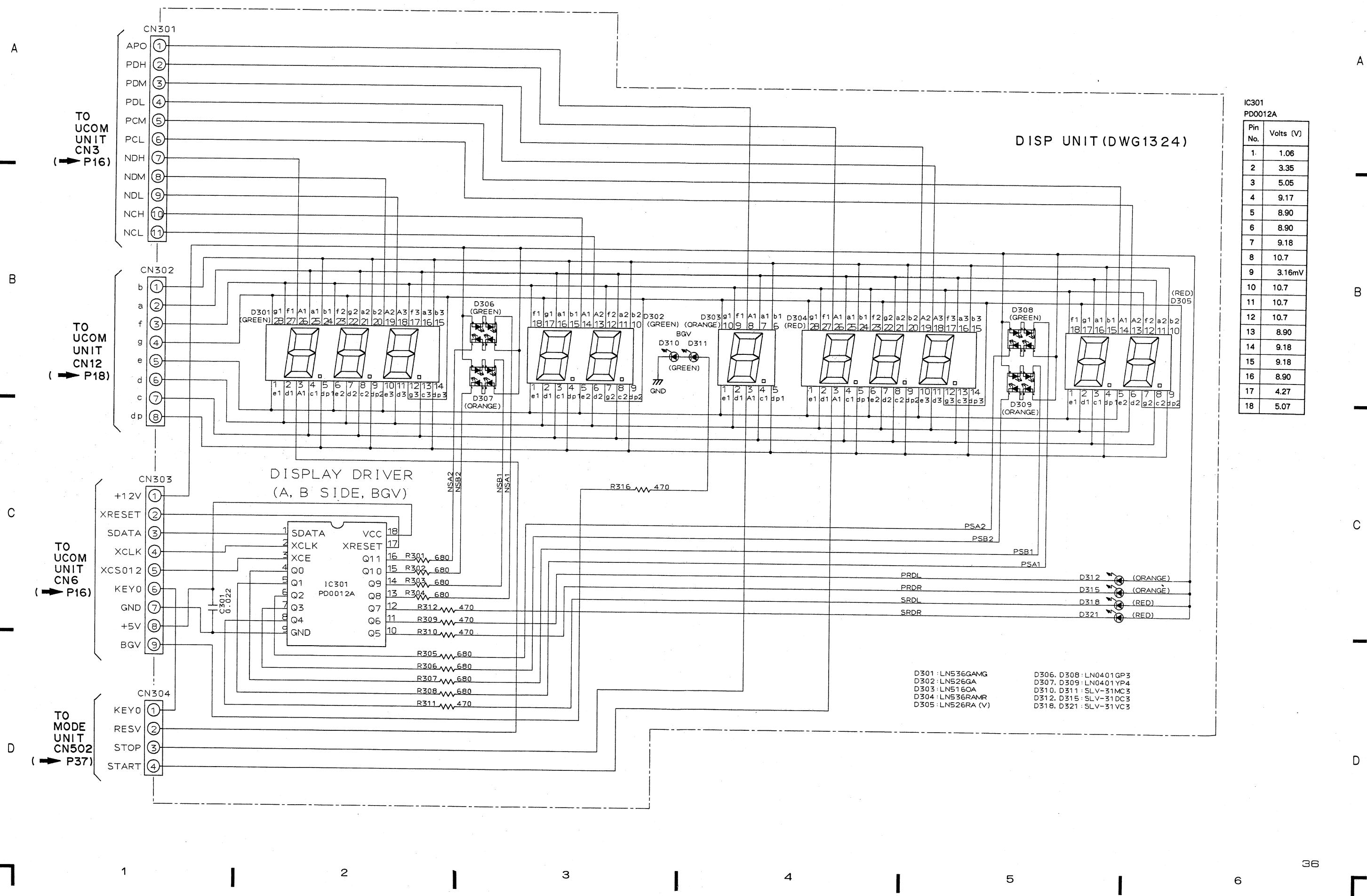


3.6 DISP UNIT
 • View from component side



• View from soldering side



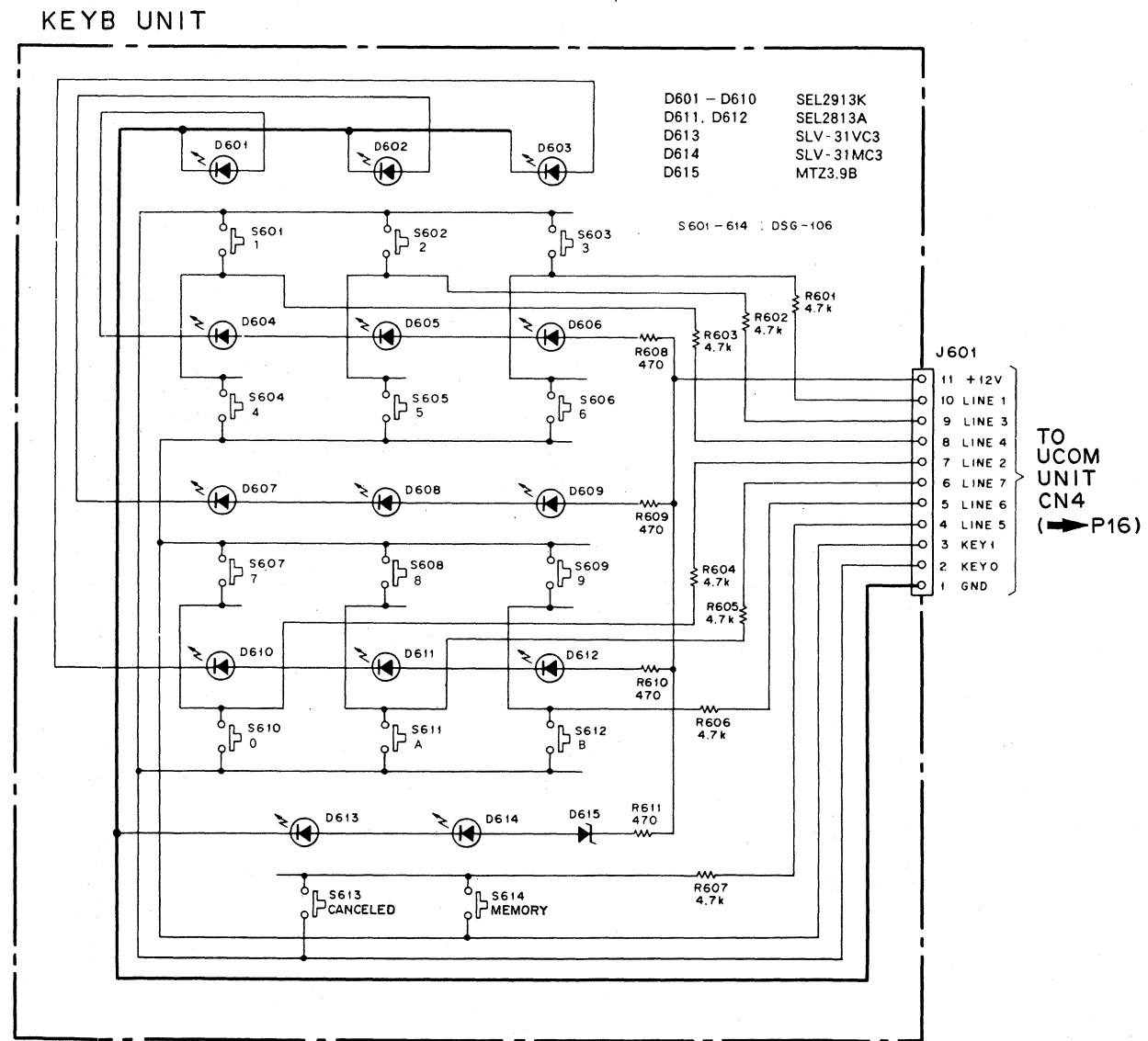
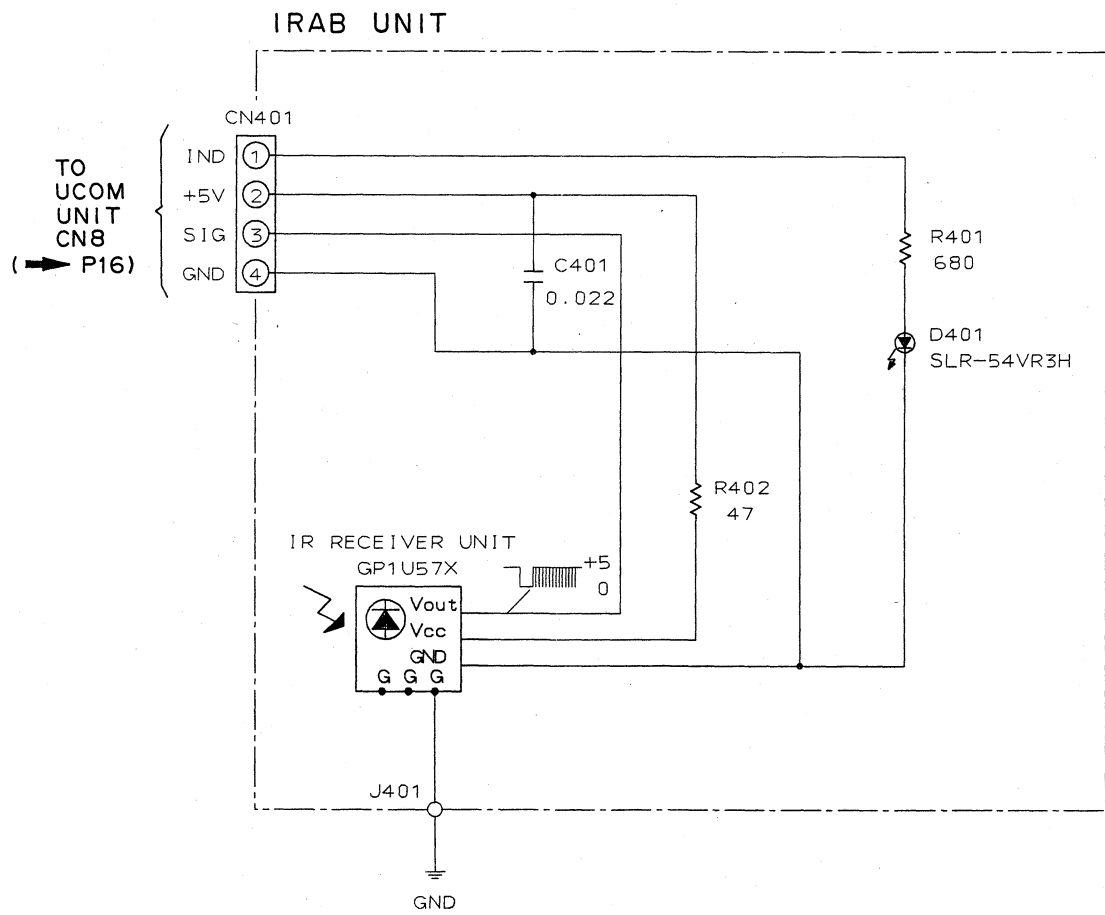
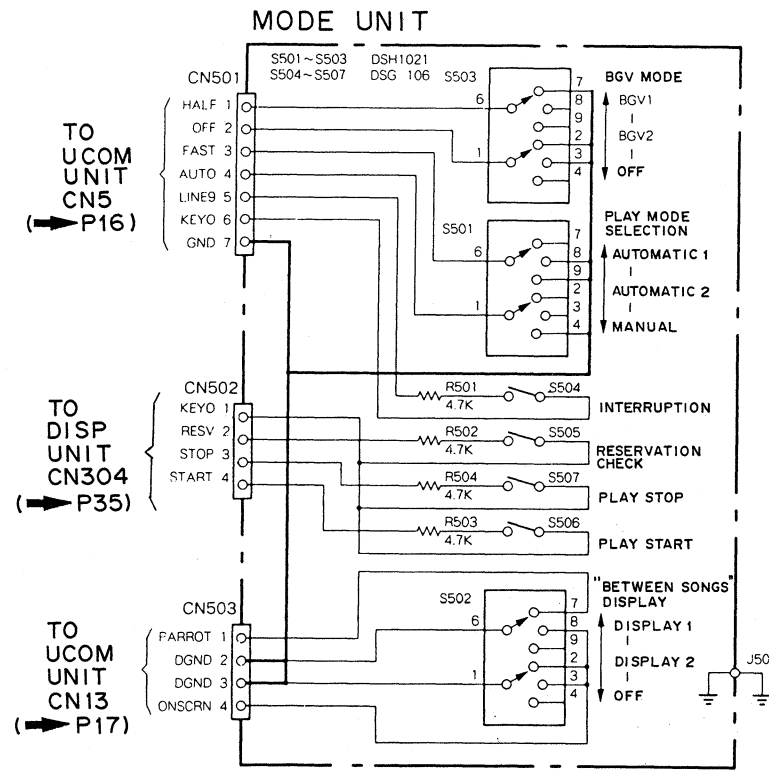


IC301
PDO012A

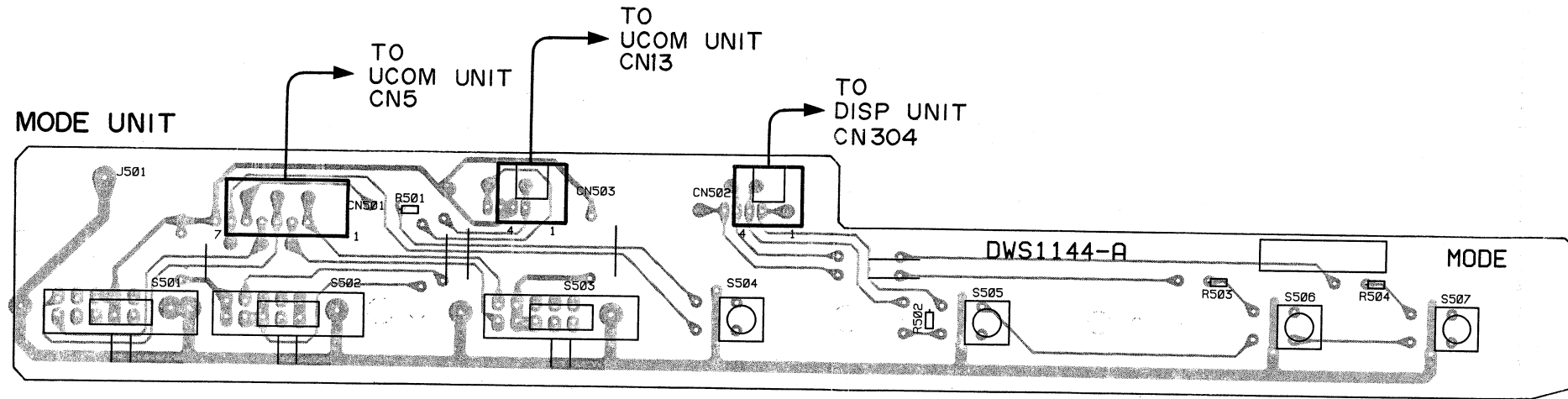
Pin No.	Volts (V)
1	1.06
2	3.35
3	5.05
4	9.17
5	8.90
6	8.90
7	9.18
8	10.7
9	3.16mV
10	10.7
11	10.7
12	10.7
13	8.90
14	9.18
15	9.18
16	8.90
17	4.27
18	5.07

- D301 : LNS36GAMG
- D302 : LNS26GA
- D303 : LNS160A
- D304 : LNS36RAMR
- D305 : LNS26RA (V)
- D306, D308 : LN0401GP3
- D307, D309 : LN0401YP4
- D310, D311 : SLV-31MC3
- D312, D315 : SLV-31DC3
- D318, D321 : SLV-31VC3

3.7 MODE, KEYB AND IRAB UNIT

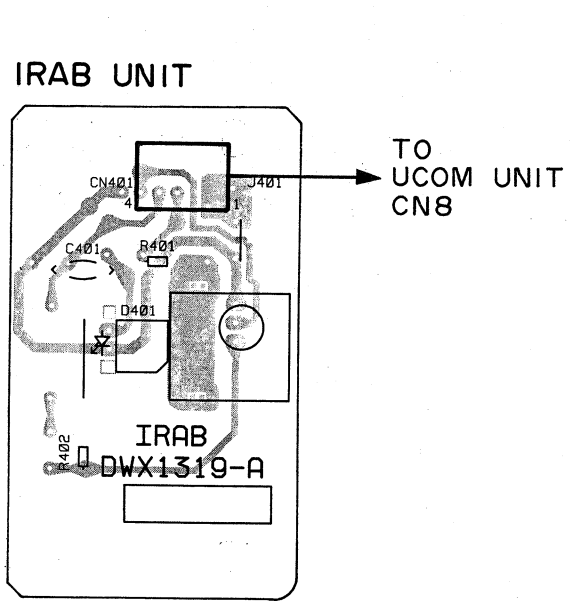


A



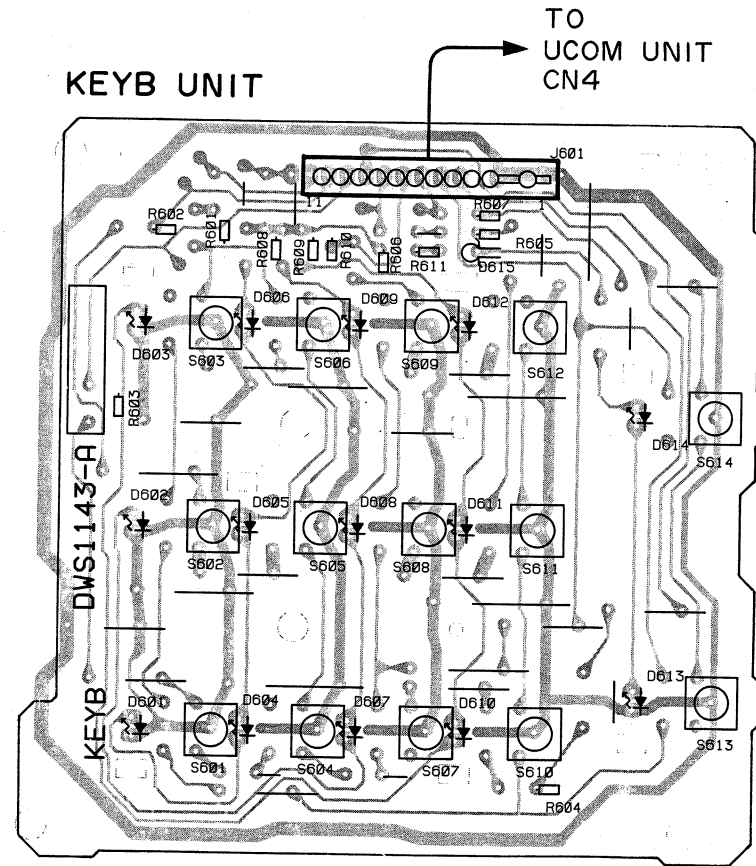
A

B



B

C

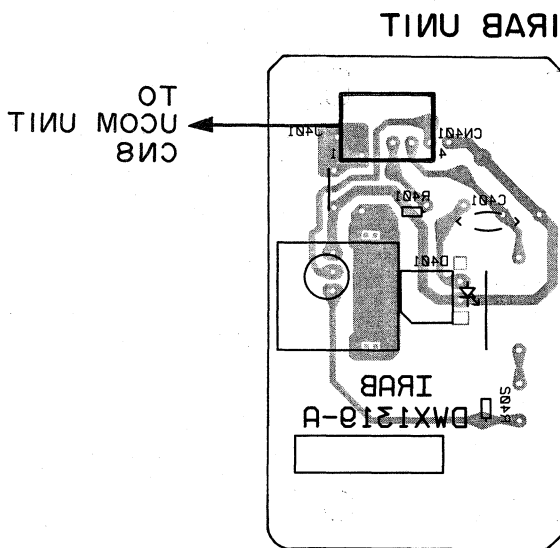
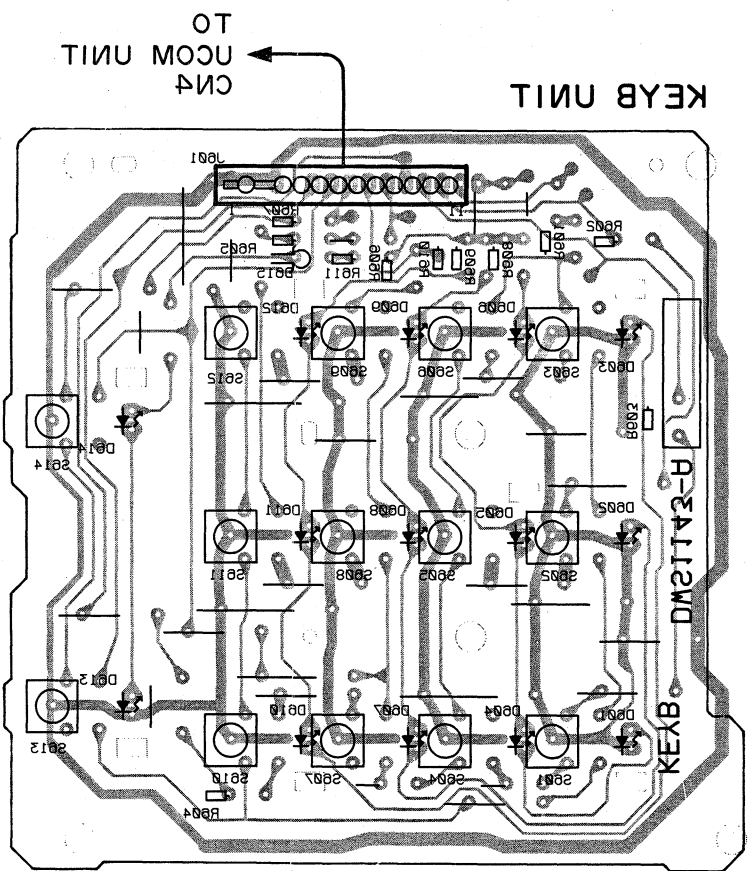
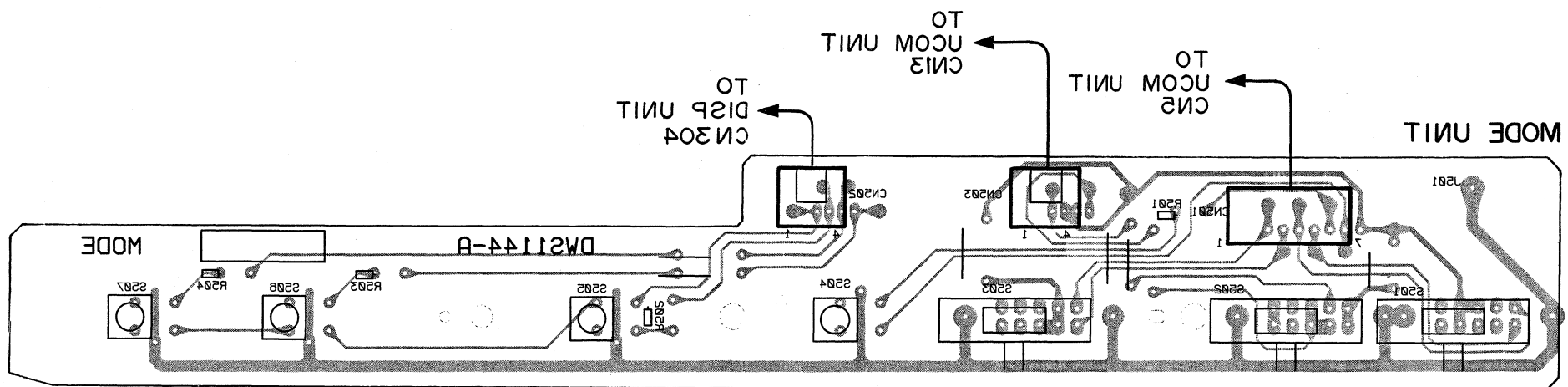


C

D

D

• View from soldering side



4. PCB PARTS LIST

NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- The Δ 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	$\rightarrow 56 \times 10^1 \rightarrow 561$	RD1/4PS	$\begin{matrix} 5 & 6 & 1 \\ \hline & & \end{matrix}$	J
47k Ω	$\rightarrow 47 \times 10^3 \rightarrow 473$	RD1/4PS	$\begin{matrix} 4 & 7 & 3 \\ \hline & & \end{matrix}$	J
0.5 Ω	$\rightarrow 0R5$	RN2H	$\begin{matrix} 0 & R & 5 \\ \hline & & \end{matrix}$	K
1 Ω	$\rightarrow 010$	RS1P	$\begin{matrix} 0 & 1 & 0 \\ \hline & & \end{matrix}$	K

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

5.62k Ω	$\rightarrow 562 \times 10^1 \rightarrow 5621$	RN1/4SR	$\begin{matrix} 5 & 6 & 2 & 1 \\ \hline & & & \end{matrix}$	F
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Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
LIST OF ASSEMBLIES				IC12			
CO-V200/KUC TYPE				TC74HC573AF			
⊙		UCOM UNIT	DWG1307	Q1			2SA1015
⊙		DISP UNIT	DWG1324	Q2			2SC1740S
NSP		MODE UNIT	DWS1144	Q4, Q6, Q16, Q17, Q19-Q21			2SC2412K
NSP		KEYB UNIT	DWS1186	D1-D25, D28, D32-D35			1SS254
NSP		IRAB UNIT	DWX1319	D29, D30			MTZ11B
				D31			MTZ5. 1A
NSP		IOJB UNIT	DWX1295	D26, D27			MTZ5. 6A
⊙		AYCB UNIT	DWX1296	COILS/TRANSFORMERS			
⊙		POWB UNIT	DWR1136	F2, F3			VTH1001
NSP		PSWB UNIT	DWS1171	CAPACITORS			
NSP		PTCB UNIT	DWX1297	C1, C2			CCSQCH150J50
CO-V100/SEM TYPE				C50			CEAS332M25
⊙		UCOM UNIT	DWG1308	C11-C13			CEAS470M25
⊙		DISP UNIT	DWG1324	C7			CEAS4R7M50
NSP		MODE UNIT	DWS1144	C46, C47			CKCYF473Z50
NSP		KEYB UNIT	DWS1186	C14, C15			CKSQYF103Z50
NSP		IRAB UNIT	DWX1319	C3-C5, C8, C16-C39, C43			CKSQYF223Z50
NSP		IOJB UNIT	DWX1299	C9, C10, C44, C45			CKSQYF473Z50
⊙		AYCB UNIT	DWX1300	C6			DCH1004
⊙		POWB UNIT	DWR1137	RESISTORS			
NSP		PSWB UNIT	DWS1175	R9, R14, R109			RS1/10S000J
NSP		PTCB UNIT	DWX1298	R29, R30, R118			RS1/10S332J
NSP		PSEL UNIT	DWS1172	R124			(For SEM type only)
				R2, R3, R7, R61, R88-R95, R105, R106, R123, R127			RS1/10S103J
				R96-R103			(For KUC type only)
				OTHER RESISTORS			RS1/10S□□□J
							RS2LMF□□□J
							RD1/6PM□□□J
UCOM UNIT				OTHERS			
SEMICONDUCTORS				X1 CRYSTAL RESONATOR (F=12.288)			DSS1030
IC1			HD6415108F-8	SOCKET			VKH1001
IC13			LB1720	DISP UNIT			
IC10, IC11			LB1740	SEMICONDUCTORS			
IC14			M51953BL	IC301			PD0012A
IC9			M5M34051P	D306, D308			LN0401GP3
IC4			MB89251A-P	D307, D309			LN0401YP4
IC2			DYW1195				
IC5			MC145406P				
IC7			SN74LS00N				
IC6			SN74LS390NS				
IC3			TC55257BPL10				
IC8			TC74HC138AF				
IC15			TC7S02F				

Mark No.	Description	Part No.
D303 D302		LN5160A LN526GA
D305 D301 D304 D312, D315 D310, D311		LN526RA(V) LN536GAMG LN536RAMR SLV-31DC3-G SLV-31MC3-H
D318, D321		SLV-31VC3-G
CAPACITORS C301		CKPUYF223Z25
RESISTORS ALL RESISTORS		RD1/6PM□□□J
POWB UNIT		
SEMICONDUCTORS IC901 IC902 IC903 D902, D903		NJM7805FA NJM7812FA NJM7912FA RBA-402
COILS/TRANSFORMERS △ L901		VTL-004
CAPACITORS C919, C920, C923 C914, C915, C917, C918 C924 C916, C921, C922 C903-C911		CEAS010M50 CEAS332M25 CEAS470M16 CEAS470M25 CKCYF103Z50
△ C901, C902 (0.01/250)		RCG-009 (For KUC type)
△ C901, C902 (0.01/400)		VCG-048 (For SEM type)
RESISTORS △ R901		RD1/2PM225J (For KUC type only)
OTHERS △ TERMINAL		RKC-061
MODE UNIT		
SWITCHES S504-S507 S501-S503		DSG-106 DSH1021
RESISTORS ALL RESISTORS		RD1/6PM□□□J
PSWB UNIT		
SWITCHES △ S901		RSA-063
CAPACITORS △ C925 (0.01/250) △ C925 (0.01/400)		RCG-009 (For KUC type) VCG-048 (For SEM type)

Mark No.	Description	Part No.
KEYB UNIT		
SEMICONDUCTORS D615 D611, D612 D601-D610 D614 D613		
		MTZ3.9B SEL2813A-CD SEL2913K-R-CD SLV-31MC3-H SLV-31VC3-G
SWITCHES S601-S614		
		DSG-106
RESISTORS ALL RESISTORS		
		RD1/6PM□□□J
IOJB UNIT		
SWITCHES SWITCH SWITCH		
		VSH-004 VSK-006 (For SEM type only)
CAPACITORS C801-C813 C814		
		CKPUYB102K50 CKPUYF223Z25
RESISTORS R809, R811		
		RD1/6PM472J (For SEM type only) RD1/6PM□□□J
OTHERS JA D-SUB SOCKET 9P JA D-SUB SOCKET 9P JA SOCKET JA SOCKET		
		DKN1051 DKN1076 VKN-081 VKN1072
AVCB UNIT		
SEMICONDUCTORS IC210 IC206 IC213 IC201 IC214 IC215 IC203 IC202 IC205 IC204 IC208, IC209 IC207 IC212 IC211 Q201, Q203, Q207, Q214, Q222, Q223 Q215, Q221 Q204, Q211, Q212 Q213 Q209 Q206, Q218, Q220		
		BA15218 M50554-132SP M5241L NJM2246D NJM4558DX NJM4558DX (For KUC type only) NJM7805FA NJM78L05A NJM7905FA NJM79L05A PA0009 PD0129A TC74HC00AP TC74HCU04AP 2SA933S 2SA933S (For KUC type only) 2SC1740S 2SC1740S (For KUC type only) DTC124ES (For SEM type only) DTA124ES

Mark No.	Description	Part No.
Q205, Q210, Q219 D201, D204 D202, D203		DTC124ES 1SS254 1SS254 (For KUC type only)
COILS/TRANSFORMERS		
F201 L203, L204 L202 L201 L205		DTH1122 LAU100K LAU120J LAU390J LAU390J (For KUC type only)
L206, L207		VTH1024 (For KUC type only)
CAPACITORS		
C220, C221 C258 C228 C227 C270, C271		CCCCH100D50 CCCCH150J50 CCCCH470J50 CCCCH680J50 CCCCL100D50 (For KUC type only)
C240, C250 C236, C237, C248, C249 C202, C241, C246, C277 C259 C278		CCCCL101J50 CCCCL471J50 CEANP010M50 CEANP100M16 CEANP100M16 (For KUC type only)
C201 C255 C272		CEANP470M16 CEANPR47M50 CEANPR47M50 (For KUC type only)
C215, C218, C223, C230 C266, C267		CEAS101M10 CEAS2R2M50
C253, C256 C205-C212, C235, C238, C242, C254 C261, C262 C268, C269 C216		CEAS330M16 CEAS470M16 CEAS471M10 CEAS4R7M50 CEASR10M50
C279 C247 C219, C222, C224-C226, C229, C231, C276 C214, C217, C260 C264, C265		CKDYF473Z50 CKPUYB561K50 CKPUYF103Z25 CKPUYF223Z25 CQMA103J50 (For KUC type only)
C239, C251, C252 C213 C233, C234, C244, C245 C232, C243 VC201 (20p)		CQMA153J50 CQMA473J50 CQMA681K50 CQMA823J50 VCM-008 (For SEM type only)
VC202 (20p) C257		VCM-008 CCCCH270J50 (For SEM type only)
RESISTORS		
▲ R261, R270 (470/10) VR201		DCN1001 DCS1022

Mark No.	Description	Part No.
R253		RD1/6PM105J (For SEM type only)
R258		RD1/6PM103J (For KUC type only)
R266-R268		RD1/6PM151J (For KUC type only)
R269		RD1/6PM271J (For KUC type only)
R273		RD1/6PM620J (For KUC type only)
R291, R292		RD1/6PM473J (For KUC type only)
R293		RD1/6PM303J (For KUC type only)
R294, R295, R297, R298		RD1/6PM471J (For KUC type only)
R296		RD1/6PM104J (For KUC type only)
R309		RD1/6PM102J (For SEM type only)
OTHER RESISTORS		RD1/6PM□□□J

OTHERS

JA JACK	DKB1026
JA JACK	VKB1029 (For KUC type only)
X202 CRYSTAL RESONATOR (14.318MHz)	VSS1029
X201 CRYSTAL RESONATOR (17.734MHz)	VSS1019 (For SEM type only)

PTCB UNIT

There is no supply parts in this unit.

IRAB UNIT

SEMICONDUCTORS

D401	SLR-54VR3H
------	------------

CAPACITORS

C401	CKPUYF223Z25
------	--------------

RESISTORS

ALL RESISTORS	RD1/6PM□□□J
---------------	-------------

OTHERS

REMOTE SENSOR	GP1U50X
---------------	---------

PSEL UNIT (SEM only)

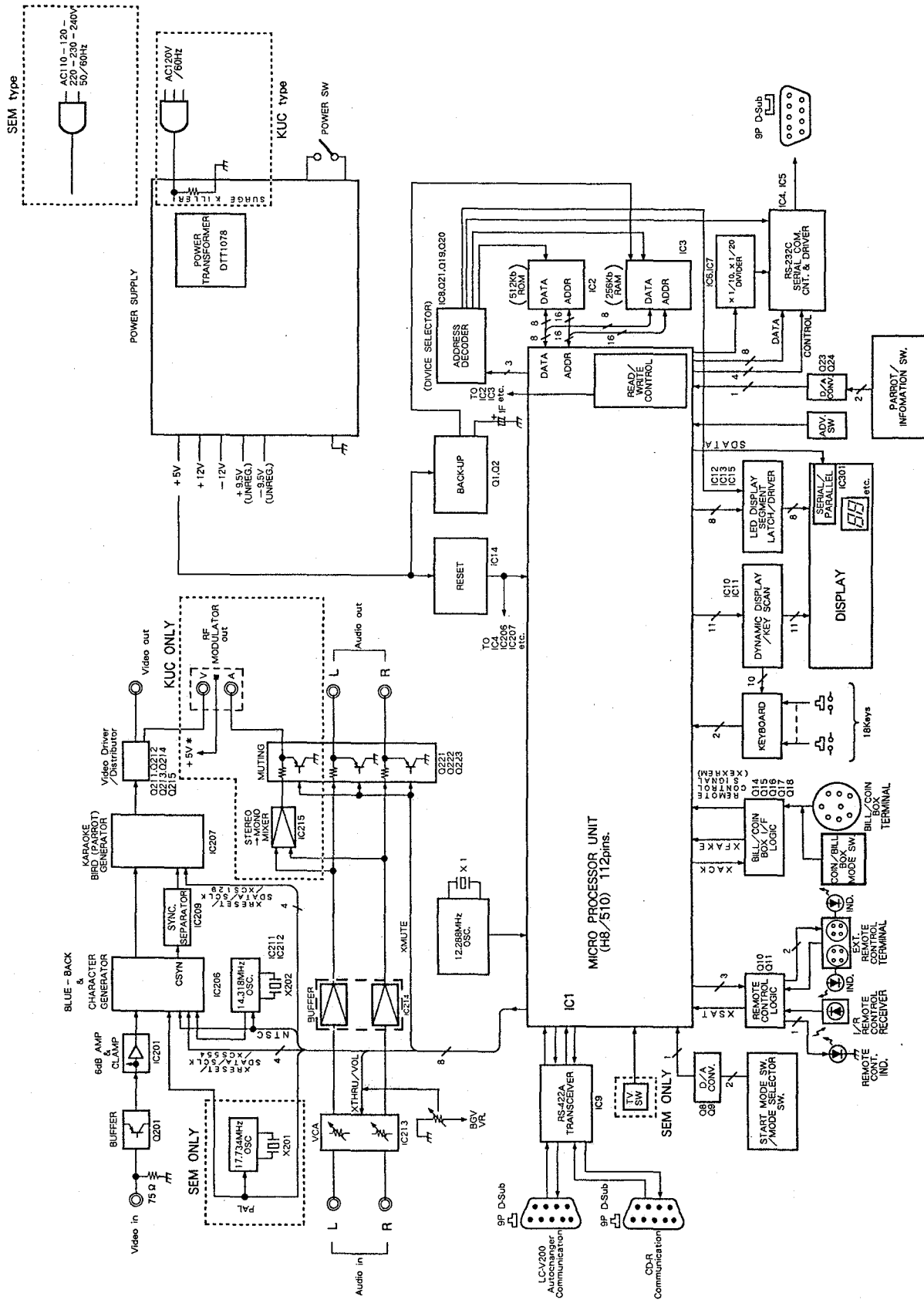
SWITCHES

S902 VOLTAGE SELECTOR	DSB1010
-----------------------	---------

OTHERS

SW INSTALL PLATE	VNE1211
------------------	---------

5. BLOCK DIAGRAM



6. ADJUSTMENTS

Step	Adjustment name	Adjustment point	Adjustment
1	NTSC 4fsc adjustment (*1)	VC202	Adjust so that the frequency of Pin ③ of IC212 becomes 14.318180 MHz \pm 90 Hz.
2	PAL 4fsc adjustment (*2)	VC201	Adjust so that the frequency of Pin ③ of IC212 becomes 17.734475 MHz \pm 110 Hz.

(*1): When adjusting the SEM model, solder between Pin ⑥ of CN203 and Pin ⑭ of IC212 with a 2.2 k Ω to 4.7 k Ω resistor and adjust after pulling it up to +5V. Be sure to remove the resistor after adjusting.

(*2): SEM model only

6. REGLAGES

Etape	Dénomination du réglage	Point de réglage	Réglage
1	Réglage NTSC 4fsc (*1)	VC202	Régler de sorte que la fréquence à la broche ③ de IC212 soit de 14.318180 MHz \pm 90 Hz.
2	Réglage PAL 4fsc (*2)	VC201	Régler de sorte que la fréquence à la broche ③ de IC212 soit de 17.734475 MHz \pm 110 Hz.

(*1): Au réglage sur le modèle SEM, souder entre la broche ⑥ de CN203 et la broche ⑭ de IC212 avec une résistance de 2.2 k Ω à 4.7 k Ω , et régler après l'avoir amené à +5V. Ne pas oublier de déposer la résistance après le réglage.

(*2): Modèle SEM seulement

6. AJUSTES

Paso	Nombre del ajuste	Punto de ajuste	Ajuste
1	Ajuste 4fsc NTSC (*1)	VC202	Ajuste en forma tal que la frecuencia de la Patilla ③ de IC212 sea igual a 14.318180 MHz \pm 90 Hz.
2	Ajuste 4fsc PAL (*2)	VC201	Ajuste en forma tal que la frecuencia de la Patilla ③ de IC212 sea igual a 17.734475 MHz \pm 110 Hz.

(*1): Cuando ajuste con el modelo SEM, suelde entre la patilla ⑥ de CN203 y la Patilla ⑭ de IC212 con un resistor de 2.2 k Ω a 4.7 k Ω y ajuste después de tirarlo hasta +5V. Confirme que se ha retirado el resistor después del ajuste.

(*2): Modelo SEM solamente.

AVCB UNIT

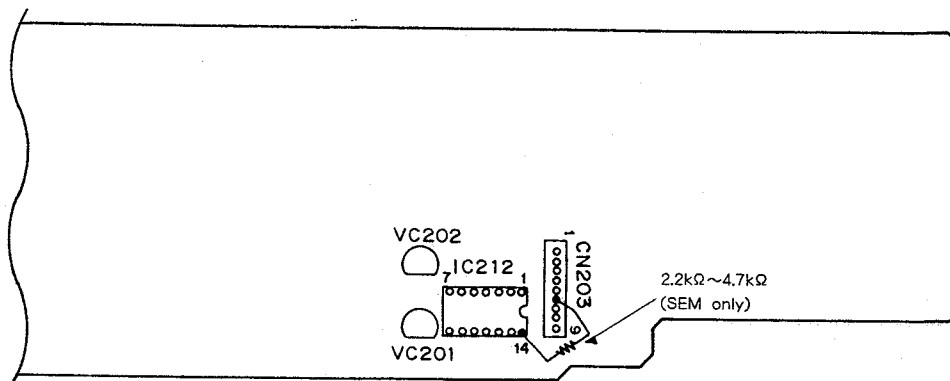


Fig. 6-1. Adjustment location
Emplacement du réglage
Ubicación del ajuste

7. SERVICE MODE

1. OUTLINE

In this service mode, parts related to the hardware are checked together. The tester can carry out the tests separately or continuously together.

For the tester's convenience, test items and results are displayed on the monitor by the onscreen function. The monitor is therefore always required.

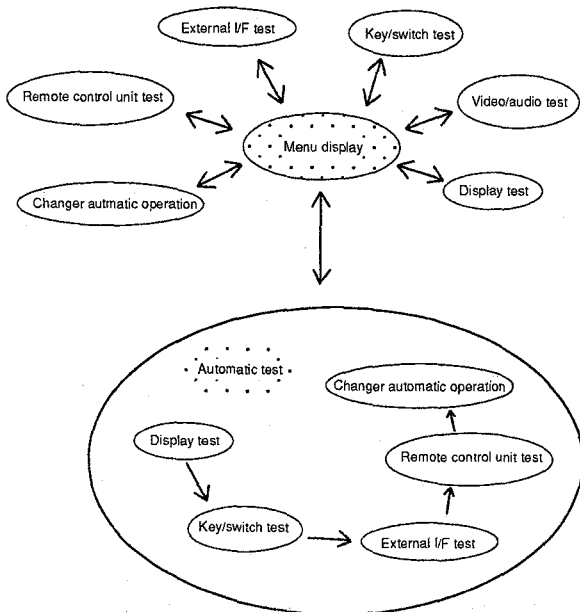


Fig. 1-1. Order of Execution

1-1. SWITCHING AND RELEASING MODES

To set this mode, turn on the power supply while pressing the intercept key on.

When it is set, the power supply must be turned off if setting other modes of the commander.

1-2. INITIAL DISPLAY

When the service mode is set, the commander displays the model name "SERVICE MODE" and version number, as shown in the following figure, using the onscreen function. The latter indicates that the service mode is being set. This display will be shown for five seconds unless a key on the commander is pressed.

In this example, the CO-V200 of the KUC model is shown. CO-V100/1000 will be displayed for the SEM model.

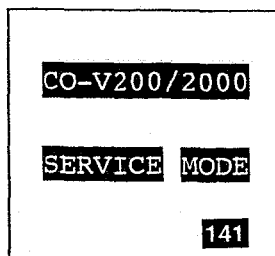


Fig. 1-2. Initial Display of Service Mode

1-3. MENU DISPLAY AND BACKUP RESULTS

(1) Menu Display

After the initial display of the service mode is shown, the menu of test items shown in the following figure will be displayed. The item blinking is the item currently selected.

The first line shows the title indicating that it is the service mode, the second line shows the results of the memory backup. The third, and fifth to tenth lines show the test items.

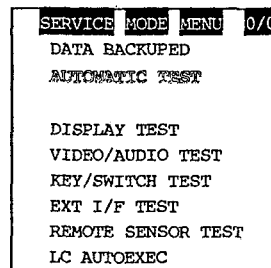


Fig. 1-3. Menu Display

(2) Backup

The memory of the commander stores the data with the backup circuit. The results are shown on the second line. Fig. 1-3 shows when the data has been backed up and Fig. 1-4 shows when it has not.

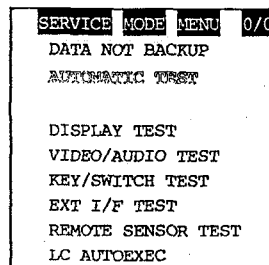


Fig. 1-4. Data Not Backed Up

The following are several precautions for this result display. The built-in memory can backup data for several minutes even if the memory backup circuit is not operating. Therefore, these results must be checked by:

Turning off the power supply for more than ten minutes, and then turning on the power supply switch while pressing the intercept key to set the service mode.

After performing a certain test, the backup result will not be displayed as shown in Fig. 1-5.

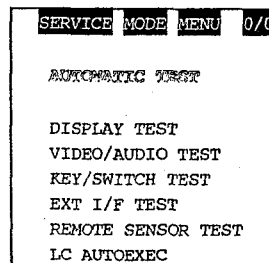


Fig. 1-5. Menu After Executing Tests

1-4. SELECTING AND EXECUTING TEST ITEMS

(1) Selecting

Test items are selected using key "2" or "8" on the front panel of the commander or the same keys of the accompanying remote control unit. Pressing key "2" selects items above the test item currently blinking. The selected item will start to blink. (Fig. 1-6, Left ← Center)

Pressing key "8" selects those below. The selected item will start to blink. (Fig. 1-6, Center → Right)

If the top item is currently blinking, pressing key "2" selects the

bottom item and displays it blinking. If the bottom item is currently blinking, pressing key "8" selects the top item and displays it blinking.

(2) Executing

Press the enter key of the front panel on the commander or the accompanying remote control unit to test items that are blinking. When pressed, the screen display changes and the tests are executed.

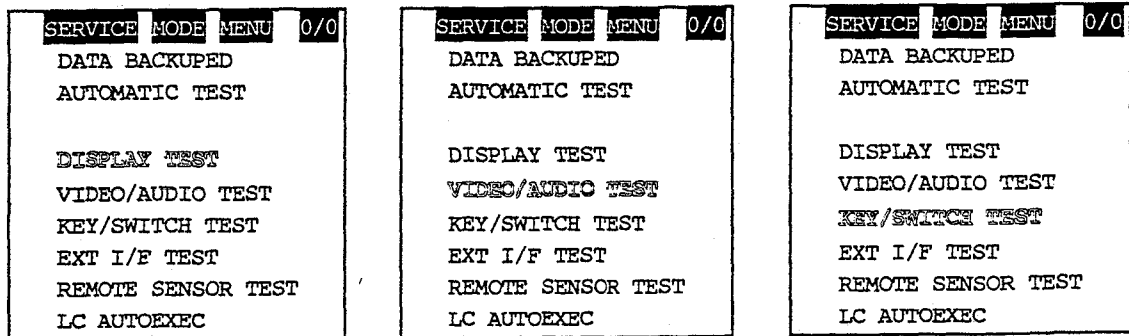


Fig. 1-6. Selecting Items

1-5. REMOTE CONTROL UNIT INDICATOR

The commander must be installed at locations not affected by the noises produced by the remote control unit. If it is installed in these locations, inputs from the remote control unit may be disabled.

When noises from the remote control unit sensor are detected, the commander lights up the remote control unit indicator in the service mode. For this reason, when installing it, in the service mode, check that the remote control unit indicator is turned off without any remote control unit inputs and that the commander has not been affected by noises before installing.

The remote control unit indicator does not light up by the noises in modes other than the service mode.

2 DISPLAY TEST

At this item, the front panel display and display system by the onscreen function are tested.

The commander is made to stop before each test is executed. To execute them, either a key on the front panel or on the accompanying remote control unit must be pressed. However, the following tests are executed automatically at the automatic test.

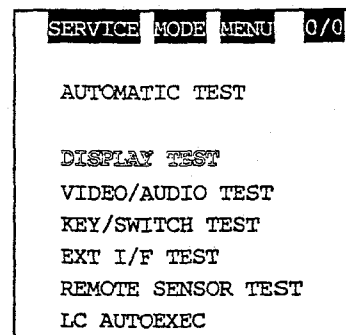


Fig. 2-1. Display Test Selection Screen

2-1. 8 SEGMENT LEDS

First the 8 segment LEDs on the front panel are tested. All these LEDs will turn off when the display in the left figure of Fig. 2-2 is shown. After this, by pressing a key on the front panel or accompanying remote control unit, these LEDs will light up for approximately one second from the left in the order of

"0123456789A". Next, all the LEDs will each display for approximately 0.5 second "0", "1"...."9". (Fig. 2-3.) These figures will also be shown on the screen at the same time. After "9" is displayed, all the LEDs will turn off, indicating the test has completed.

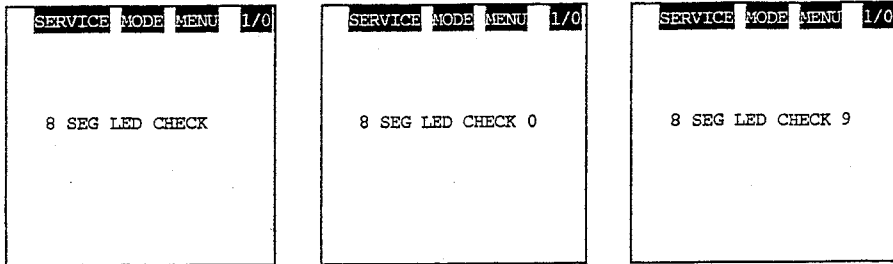


Fig. 2-2. 8 Segment LED Test (Monitor Screen)

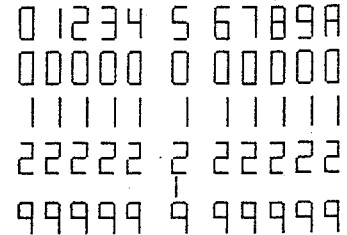


Fig. 2-3. 8 Segment LED Display

2-2. LED

In the following test, the LEDs displays excluding the remote control unit indicator on the front panel are tested.

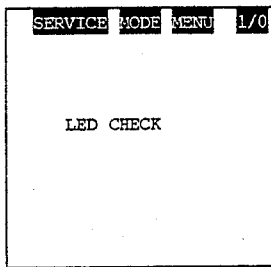


Fig. 2-4. LED Test (Monitor Screen)

When the display shown in Fig. 2-4 is shown, all LEDs excluding the remote control unit indicator on the front panel will turn off. By pressing a key on the front panel or the accompanying remote control unit, all the LEDs excluding the remote control unit indicator will light up for approximately one second. After this, they will turn off one by one at intervals of approximately 0.5 seconds in the order shown in Fig. 2-5. All the LEDs excluding the remote control unit indicator will be turned off and this test completed. The tester must take note that the indicator showing the side of the disk uses two LEDs.

2-3. ONSCREEN

The commander is equipped with two onscreen ICs (M50554, PD0129). They display the characters and the Karaoke bird respectively.

These parts are tested after the LED display test.

(1) Character Display

The display shown in the left figure of Fig. 2-6 changes to the one shown in the right figure when a key on the front panel or the accompanying remote control unit is pressed.

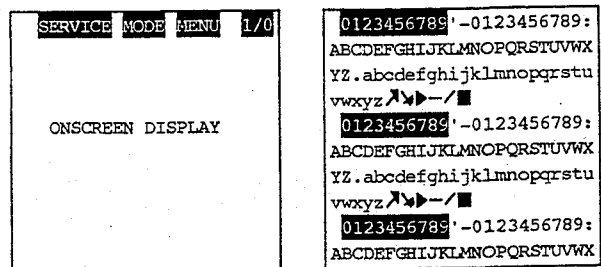


Fig. 2-6. Onscreen Test (Character Display)

(2) Karaoke Bird

After the characters are displayed, the Karaoke bird is displayed. The figures in Fig. 2-7 are shown in order when a key on the front panel or accompanying remote control unit is pressed.

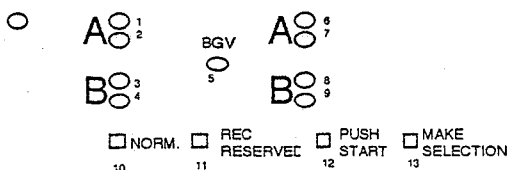


Fig. 2-5. Order in which LEDs turn off

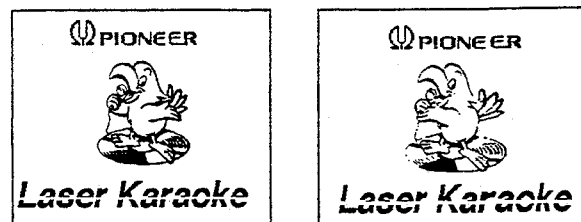


Fig. 2-7. Onscreen Test (Karaoke Bird Display)

(3) SEM Model

The CO-V100/SEM model has the following additional functions for its onscreen display, as compared to the KUC model.

In the hardware, onscreen display is possible not only for the PAL format but for the NTSC format as well. These formats are selected in the setting mode and the selections made are stored even after the power supply has been turned off. At factory setting, the PAL format will be selected.

To test this function in this part test, the characters and the Karaoke bird are displayed in the format not set after they are displayed in the format set.

This procedure is shown in the following figure.

When NTSC is set	Character Display NTSC	Character Display PAL	Character Display NTSC	Karaoke Bird (Open, Close) NTSC	Karaoke Bird (Close) PAL	Karaoke Bird (Close) NTSC
When PAL is set	Character Display PAL	Character Display NTSC	Character Display PAL	Karaoke Bird (Open, Close) PAL	Karaoke Bird (Close) NTSC	Karaoke Bird (Close) PAL

Fig. 2-8. Onscreen Display Format

2-4. ALL LEDS ON

Finally, the message shown in Fig. 2-9 is displayed. It is displayed until a key on the front panel or accompanying remote control unit is pressed. When pressed, all the 8 segment LEDs and all the LEDs excluding the remote control unit indicator will light up. The screen will display the Karaoke Bird with its wings spread out (Left figure of Fig. 2-7).

All the 8 segment LEDs and the LEDs excluding the remote control unit indicator will remain lit after this display test has been completed.

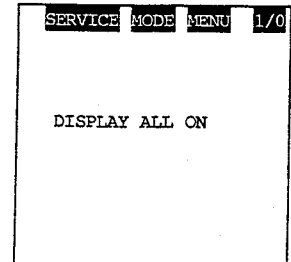


Fig. 2-9. Display All On Message

3. VIDEO/AUDIO TEST

In this test, the video/audio circuit of the commander is tested. The commander is set to stop before each test is executed. To execute the tests, a key on the front panel or the accompanying remote control unit must be pressed.

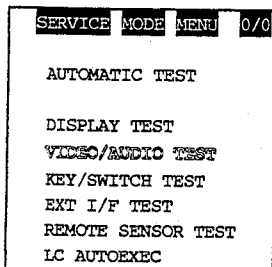


Fig. 3-1. Video/Audio Test Selection Display

Only this test is different from the others in that it is not performed by the automatic test. When performing in the automatic test, the video/audio circuit of the commander must be tested in the changer/CD-R automatic drive test.

This test item has been added so that countermeasures can be carried out easily when a fault has been located in the video/audio circuit.

The message in the top left figure of Fig. 3-2 is displayed by selecting/executing this test. After this, by pressing a key on the front panel or the accompanying remote control unit, the signal input to the video/audio input terminal of the commander will be output to the video/audio output terminal as it is. This condition continues until a key on the front panel or the accompanying remote control unit is pressed.

Next, the message shown in the top right figure of Fig. 3-3 is shown. At the same time, mute is imposed by the mute circuit of the commander. (Mute-on) Therefore, even if the audio signal is input to the audio input terminal of the commander, nothing is output to the audio output terminal.

The message shown in the bottom left figure of Fig. 3-3 is displayed by pressing a key on the front panel or the accompanying remote control unit. This time, the mute is released by the mute circuit of the commander. (Mute-off) If the audio signal has been input to the audio input terminal of the commander, it will be output to the audio output terminal with the current volume.

The message shown in the bottom right figure of Fig. 3-3 is displayed by pressing a key on the front panel or the accompanying remote control unit. At this time, if the audio signal has been input to the audio input terminal, it is output to the audio output terminal in the volume controlled by the BGV volume control on the rear panel via the audio circuit of the commander.

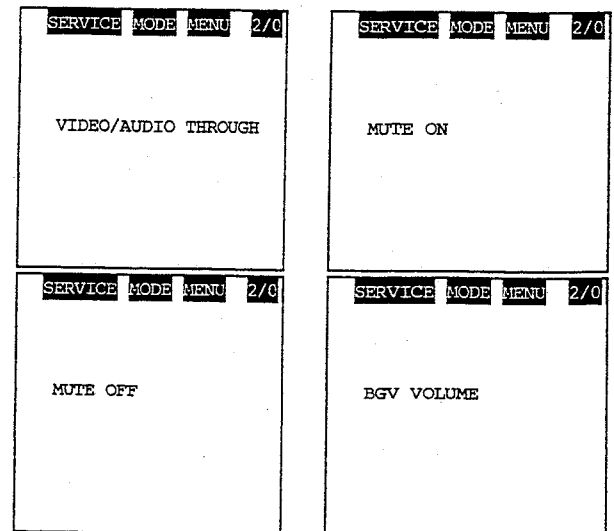


Fig. 3-2. Video/Audio Test Message

4 Key/Switch Test

In this test, the keys and switches on the commander are tested in order. In addition to the switches on the front panel and rear panel, the switch inside the commander can also be tested.

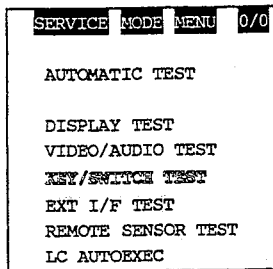


Fig. 4-1. Key/Switch Test Selection Screen

4-1. KEYS

The screen display changes as shown in the left figure of Fig. 4-2 when this test is selected. When the keys on the front panel of the commander are pressed in this condition, the corresponding key names will be displayed. The right figure of Fig. 4-2 shows when all keys on the front panel have been pressed.

To move onto the next switch test, the following conditions must be satisfied. In the individual test mode, (not the automatic test), it can be set by either pressing all keys first and then any one key, or approximately 15 seconds after the key test has started. In the automatic test mode, it can be set only by pressing all keys and then any one key.

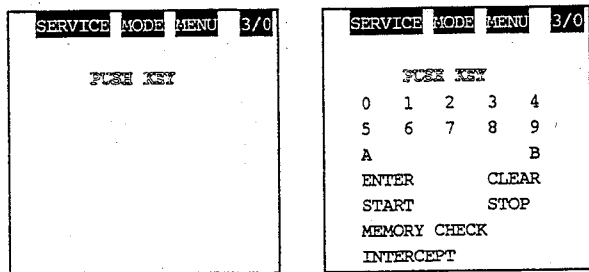


Fig. 4-2. Key Test Display

4-2. SWITCHES

After the key test has been completed, the switch test is set and the conditions of the switches on the commander are displayed as shown in Fig. 4-3. The displays change in connection to the conditions of the switches.

To complete this test, press a key on the front panel of the commander or the accompanying remote control unit.

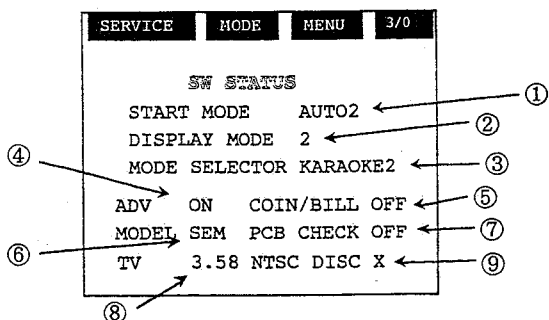


Fig. 4-3. Switch Test Screen Display

(1) START MODE (①)

Displays the condition of the start mode switch on the front panel of the commander. Displays "AUTO1", "AUTO2" or "MANUAL".

(2) DISPLAY MODE (②)

Displays the conditions of the display mode switch on the front panel of the commander. Displays "1", "2" or "OFF".

(3) MODE SELECTOR (③)

Displays the conditions of the mode selector switch on the front panel of the commander.

Displays "KARAOKE1", "KARAOKE2" or "NORMAL".

(4) ADV (④)

Displays the conditions of the ADV switch on the rear panel of the commander. Displays "OFF" when the switch is pressed and "ON" when not.

(5) COIN/BILL (⑤)

Displays the conditions of the coin/bill box switch on the rear panel of the commander. Displays "OFF" when the switch is pressed and "ON" when not.

(6) MODEL (⑥)

Displays the model of the commander. Displays "KUC" if it is CO-V200 and "SEM" if CO-V100.

Displays the conditions of the switches for discriminating the model inside the commander.

(7) PCB CHECK (⑦)

Displays the conditions of the board check program switch inside the commander. Displays "ON" when it is short-circuited and turned on, and "OFF" when turned off in the open condition.

Due to hardware restrictions, conditions of the three switches-MODEL, TV, NTSC DISC cannot be read when these switches are on. Therefore, "-" will be displayed for these three switches.

(8) TV (⑧)

Displays the conditions of the TV system switch on the rear panel of the SEM model. Displays "3.58", "4.43" or "QPAL".

The CO-V200 which is a KUC model does not have this switch. Therefore "-" is displayed.

(9) NTSC DISC (⑨)

Displays the conditions of the NTSC disc playback switch (NTSC INHIBIT switch and NTSC ENABLE switch) inside the SEM model. When the NTSC INHIBIT switch is on and the NTSC ENABLE switch is off, "X" is displayed. "O" is displayed in the reverse case. (When NTSC INHIBIT switch is off and NTSC ENABLE switch is on.)

The CO-V200 which is a KUC model does not have this switch. Therefore "-" is displayed.

5 EXTERNAL I/F TEST

In this test, the changer, CD-R, data retrieval RS-232C and coin/bill box interfaces on the rear panel of the commander are tested.

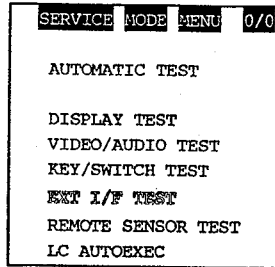


Fig. 5-1. External I/F Test Selection Screen

5-1. CONNECTION

To execute this test, the loopback tool for testing must be set to the respective terminals of the changer, CD-R, data retrieval RS-232C. If not, errors will occur in the results of the tests and "NG" will be displayed. (Right figure of Fig. 5-3.)

The input terminal of the loopback tool must be connected to the output terminal of each terminal. As the changer and CD-R loopback tools are the same, TxD+ (7*) and RxD+ (3), TxD - (2) and RxD - (8) must be connected to each. On the other hand, PLAY (5) and Power control (6) must be connected for the tool of the changer, AUX IN (5) and PLAY (6) for the tool of CD-R and TxD (2) and RxD (3), DTR (4) and DSR (8), and RTS (5) and CTS (5) for the loopback tool of the data retrieval RS-232C. In addition, the coin/bill box or an equivalent tool must be set to the terminal of the coin/bill box. Furthermore, the single LD player must be connected to the coin/bill box and played in some cases according to the BGV mode.

*: Indicates the pin number of the connection terminal. Hereafter the same.

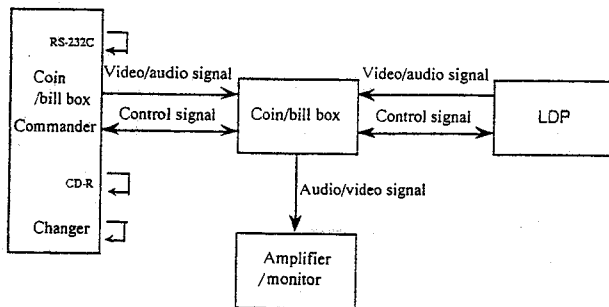


Fig. 5-2. External I/F Test Connection

5-2. SERIAL COMMUNICATION

First, the interfaces of the serial communication system of the changer, CD-R and data retrieval RS-232C are tested. The test of the control lines of the PLAY signal, DTR, etc. and the test of the signal line TxD+ and RxD, etc. related to communication data are carried out in order separately. The control line test changes the condition of the output terminal and checks if the input terminal connected to this output terminal changes accordingly. The signal line test outputs data from 0 to 255 and checks if the data has been input. (Loopback test)

Tests the communication interface of the changer. These results are displayed in the third line.

When "NG" is displayed at the right of the "CTRL" message, it indicates that there is a fault in the hardware related to the PLAY signal from the changer or the power control signal from the commander. If "NG" is displayed at the right of the "COM" message, it indicates that there is a fault in TxD+, RxD+, TxD - , or RxD - related to the communication data.

Next, the communication interface of the CD-R is tested. Results are displayed in the fourth line. When "NG" is displayed at the right of the "CTRL" message, it indicates that there is a fault in the hardware related to the PLAY signal for the CD-R or the AUX IN signal (input signal). If "NG" is displayed at the right of the "COM" message, it indicates that there is a fault in TxD+, RxD+, TxD - , or RxD - related to the communication data.

Finally, the communication interface for the data retrieval is tested. Results are displayed in the fifth line.

When "NG" is displayed at the right of the "CTRL" message, it indicates that there is a fault in the hardware related to the DTR, DSR, RTS or CTS (control lines). If "NG" is displayed at the right of the "COM" message, it indicates that there is a fault in TxD or RxD related to the communication data. Test is carried out at 1200 bps or 2400 bps for communication.

The left figure of Fig. 5-3 shows when all serial communication systems have been tested successfully and the right figure shows when they have not.

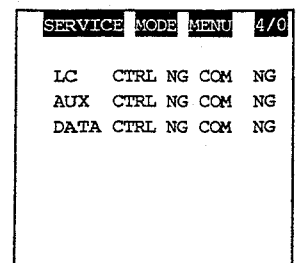
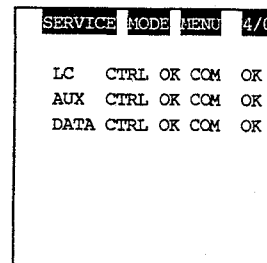


Fig. 5-3. Serial Communication Test

5-3. COIN/BILL BOX INTERFACE

After the serial communication system is tested, the interface to the coin/bill box is tested automatically.

First, the condition of the coin/bill box switch on the rear panel of the commander is tested. However, if it is off (pressed), the interface cannot be tested and the following message in the left figure of Fig. 5-4 will be shown. In this case, wait until it turns on. The message will not be shown if it is on.

(1) ACK, SELECT Signal

First, the ACK signal for subtracting the coin/bill box credit is operated. This subtracts the credit displayed on the coin/bill box. Next, the following procedure is repeated three times. The ACK signal is set to "Low" for 15 milliseconds. After this, it is set to "High" for two seconds. This takes away 3 credits. During this

operation, the condition of the SELECT signal from the coin/bill box will be displayed. (Center figure of Fig. 5-4.)

Therefore, before beginning this test, put money for two credits in the coin/bill box. The tester must also check that the display of the SELECT signal turns from "ON" to "OFF" and the credit display becomes "0" by the test.

(2) FAKE Signal

Next, the FAKE signal controlling the video/audio output of the coin/bill box is operated. This causes the video/audio from the coin/bill box to switch and be displayed on the monitor.

The following is repeated twice. The FAKE signal is set to "Low" for three seconds. After this, it is set to "High" for three seconds. This causes the video/audio of the LDP and the display of the commander (Right figure of Fig. 5-4) to switch.

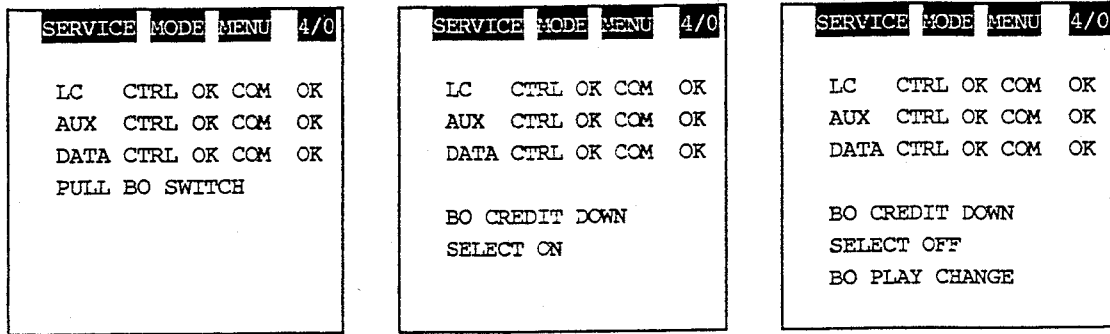


Fig. 5-4. Coin/Bill Box Interface Test

5-4. SERIAL COMMUNICATION WITH CHANGER (Note 2)

When the loop back tool is not set in the connecting terminal for the changer and the changer is connected to the main unit properly in this test, the test of the serial communication with changer should be performed instead of the tests in 5-2 and 5-3.

In this test, the commander outputs data from 0 to 255 to the changer. The changer receives them and transmits them back to the commander as they are. The commander compares the data it transmitted and the ones it received and checks if they are the same. It continues testing until the intercept key is pressed. When this key is pressed, this test is ended and the menu is displayed or the remote control signal test (during automatic test) is set.

As compared to the serial communication test in 5-2 which tests

only the input/output circuit of the serial communication of the commander with the use of a testing tool (loop back tool), this test tests serial communication circuits including the changer which is actually used.

This test has been added to determine if the communication between the commander and changer is being carried out properly.

The display shown while this test is being carried out is shown in the left figure of Fig. 5-5. The 5th line shows, in hexadecimal numerals, the number of times the test has been carried out, while the 6th line shows, in hexadecimal numerals, the number of times errors occurred during these tests. When errors occur, the data transmitted by the commander and those received from the changer are shown at the 7th line, as shown in the right figure of Fig. 5-5.

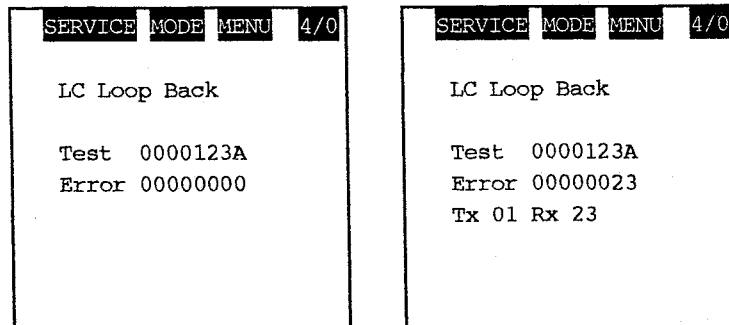


Fig. 5-5. Test of serial communication with changer

6 REMOTE CONTROL SIGNAL TEST

In this test, the remote control unit signal is tested.

The commander receives the remote control unit signal from the accompanying remote control unit or the coin/bill box, and starts operating. In this test, the remote control unit code and name

received are displayed until the intercept key is pressed. (Left figure of Fig. 6-2.)

When a remote control unit code not processable by the commander is received, this code and the message "Unknown" will be displayed. (Right figure of Fig. 6-2.)

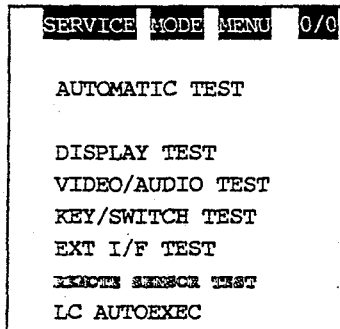


Fig. 6-1. Remote Control Unit Signal Test Selection Display

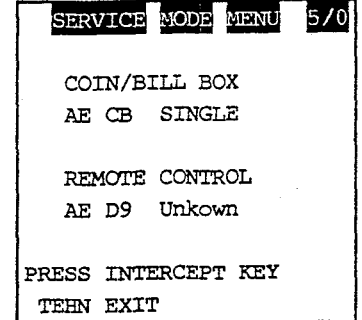
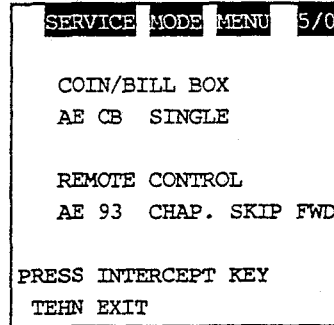


Fig. 6-2. Remote Control Unit Signal Test Display

6-1. COIN/BILL BOX

The remote control unit codes and names from the coin/bill box including those during Karaoke alternate driving (when the coin/bill box and sole LD player are combined) are as shown in the following table. However, in this test, all remote control unit

codes cannot be tested because the commander turns on the FAKE signal for the coin/bill box at all times.

In addition, the coin/bill box switch on the rear panel of the commander must be pulled out and turned on.

Code	Name	Description
A8 18	PAUSE	Command for external LDP. Need not be processed by the commander.
A8 42	SERCH	Command for external LDP. Need not be processed by the commander.
A8 49	KARAOKE	Command for external LDP. Need not be processed by the commander.
A8 4B AE 4B	BGV	The commander connected to CH2 of the coin/bill box. (Connection error) Must be connected to CH1.
AE C7	ESC LD	External LDP stopped playing. Within 30 seconds after play starts.
AE C8	PLY LD	External LDP started playing.
AE C9	ERASE	Songs selected by the commander and external LDP at the same time, although there is only one credit in the coin/bill box. Song selected erased.
AE CA	ACK LD	Song selected by external LDP.
AE CB	SINGLE	During external LDP connection, the mode switch of the coin/bill box changed from Karaoke to BGV. When external LDP not connected.
AE CC	AWAKE	The playing stopped by the SLEEP command from the coin/bill box started by this command.
AE CD	DUAL	During external LDP connection, the mode switch of the coin/bill box changed from BGV to Karaoke. When external LDP connected.
AE CE	END LD	The external LDP ended playing. More than 30 seconds after play starts.
AE CF	SLEEP	The song set by the commander started during external LDP playing. The playing by the commander stopped. Standing by for the AWAKE command.

Table 6-1. Coin/Bill Box Remote Control Unit Codes

6-2. REMOTE CONTROL UNIT

The remote control unit codes and names that can be displayed in this test are shown in the following table. Amongst these, some do not exist in the accompanying remote control unit. In addition, when the remote control unit satellite is connected to

the commander, inputs from the remote control unit satellite are possible. However, inputs from the remote control unit sensor of the front panel on the commander and those from the remote control unit satellite cannot be differentiated.

Code	Name	Code	Name
AE80-AE89	0-9	AE90	SCAN FWD
AE DA	A	AE 91	SCAN REV
AE DB	B	AE 93	CHAP. SKIP FWD
AE 97	START	AE 94	CHAP. SKIP REV
AE 98	STOP	AE C0	DISPLAY ON/OFF
AE DC	ENTER	AE 8C	PAUSE ON
AEDD	CLEAR	AE 8D	PAUSE OFF
AE C1	DIGITAL/ANALOG	AE 98	PAUSE ON/OFF
AE C2	AUDIO ST/L/R	AE 8E	MUTE ON
		AE 8F	MUTE OFF
		AE 92	MUTE ON/OFF

Table 6-2. Remote Control Unit Code

7. CHANGER/CD-R AUTOMATIC DRIVE

In this test, the interfaces of the changer and CD-R and the video/audio circuit of the commander are tested.

The commander can perform normal operations by itself, without anyone having to perform song selection operations and aims to realize aging.

Although special operations are not required for the changer, the power supply must be turned on while pressing the internal switch and the automatic drive mode set for the CD-R.

(1) Changer

The third to sixth lines on the screen shows the conditions of the connection of the changer. The first item shows the model name of the changer. The character shown next is the number of players allowed for the changer to operate.

If it is not connected, "NONE" is displayed. In some cases "Unknown" and 2 digit hexadecimal numbers are displayed until the initialize operations of the changer have been completed.

(2) CD-R

The seventh to tenth lines on the screen shows the conditions of the connection of the CD-R. When "EXIST" is displayed, it indicates that the CD-R exists. When "NONE" is displayed, it indicates that the CD-R is not connected. When nothing is displayed, it indicates that the CD-R is being initialized or that there is a fault.

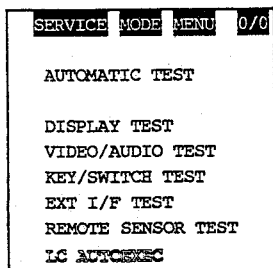


Fig. 7-1. Changer/CD-R Automatic Drive Selection Display

7-1. INITIAL DISPLAY

When this test is executed, first, the conditions of the changer connected and of the CD-R are displayed as shown in Fig. 7-2.

Automatic drive is performed only when all devices connected are operating normally. If any one is not, this display remains. To return the menu display, press the intercept key.

If the contents displayed and the device actually connected are different, press the intercept key and return the menu display. Then check the condition of the device connected.

SERVICE	MODE	MENU	6/0
LC	1	LC-V200	2
LC	2	LC-V100	1
LC	3	NONE	
LC	4	NONE	
CD-R	1	EXIST	
CD-R	2	NONE	
CD-R	3	NONE	
CD-R	4	EXIST	

Fig. 7-2. Changer/CD-R Automatic Drive Initial Display

7-2. AUTOMATIC DRIVE

(1) Display

The song number to be played back is input to the selection number indicator one by one as if someone was actually selecting songs. In addition, the song number currently played back will be blinking on this indicator and the memory indicator.

The song number played back next will be displayed on the next number indicator.

Even when the mode of the song re-selected is set because there is no disk, the start key will be pressed automatically and the song number selected next played back.

Between songs, the character string of the "SERVICE MODE" will be scrolled sideways. (Fig. 7-3.)

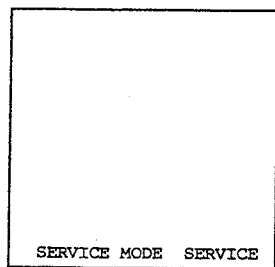


Fig. 7-3. Changer/CD-R Automatic Drive Display

(2) Song Number

The song number to be played back is set automatically by the connected changer. The 5th disc of the changer connected with the smallest device number will be played back first. The next song played back will be the 5th disc of the changer with the next smallest device number. This process is repeated. At the 25th disc, the process is repeated from the beginning again with the changer with the smallest device number. Finally, the 45th disc will be played back in the same way.

Both sides A and B are repeated during playback. The chapter/track number is fixed at 5.

For example, if changers 1, 3, and 4 are connected and disks that can be played back are set at their proper positions, songs are played back in the following order.

5A5, 105B5, 155A5, 25B5, 125A5, 175B5, 45A5, 145B5, 195A5, 5B5, 105A5,...

7-3. KEY/SWITCH

In this automatic drive mode, the keys/switches on the front panel of the commander and the keys of the remote control unit will not function as they usually do. Those other than the keys/switches described in the following will not operate at all.

The mode selector switch is used for switching the audio circuit of the commander. At "KARAOKE1", the songs will be output at the volume controlled by the BGV volume control on the rear panel. At "KARAOKE2", the songs are output in the usual volume, and at "NORMAL", the MUTE circuit is operated and the songs are not output to the audio output terminal.

The intercept key is used for suspending this automatic drive. The display shown in Fig. 7-4 is shown for approximately 2 seconds by pressing it, after which the menu display is returned.

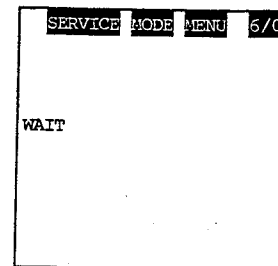


Fig. 7-4. Changer/CD-R Automatic Drive Completion Display

8. AUTOMATIC TEST

In this test, each test item is continued.

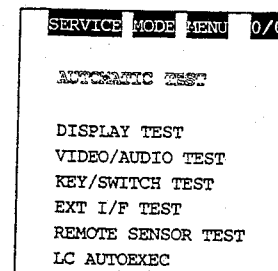


Fig. 8-1. Automatic Test Selection Display

By selecting and executing this test, the display test, key/switch test, external I/F test, remote control unit signal test, changer/CD-R automatic drive are performed in sequence.

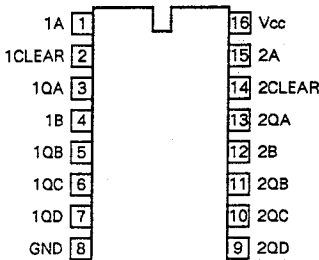
As the parts related to the video/audio test can be tested during the changer/CD-R automatic drive, the video/audio test is excluded in the automatic test.

8. IC INFORMATION

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

8.1 SN74LS390NS (IC6)

• **Pin Assignment**



• **Truth Table**

Decimal count sequence *1

Count	Output			
	QD	QC	QB	QA
0	L	L	L	L
1	L	L	L	H
2	L	L	H	L
3	L	L	H	H
4	L	H	L	L
5	L	H	L	H
6	L	H	H	L
7	L	H	H	H
8	H	L	L	L
9	H	L	L	H

Binary - quinary count sequence *2

Count	Output			
	QA	QD	QC	QB
0	L	L	L	L
1	L	L	L	H
2	L	L	H	L
3	L	L	H	H
4	L	H	L	L
5	H	L	L	L
6	H	L	L	H
7	H	L	H	L
8	H	L	H	H
9	H	H	L	L

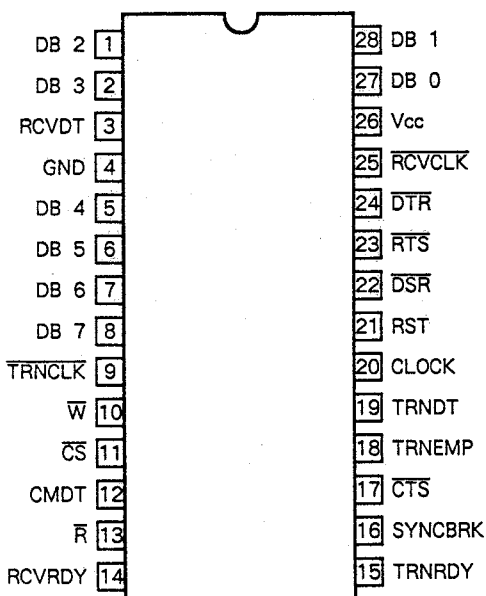
Mode	Input	Output
		CLEAR
Reset	H	L
Clear	L	Count

*1 To switch to the decimal count, connect QA to B.

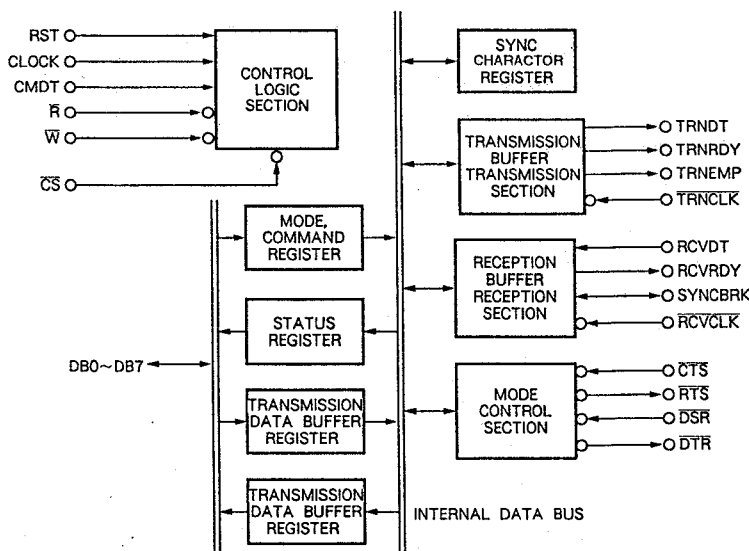
*2 To switch to the quinary count, connect QD to A.

8.2 MB89251A-P (IC4)

• **Pin Assignment**

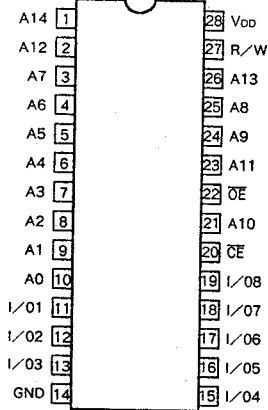


• **Block Diagram**



8.3 TC55257BPL-10

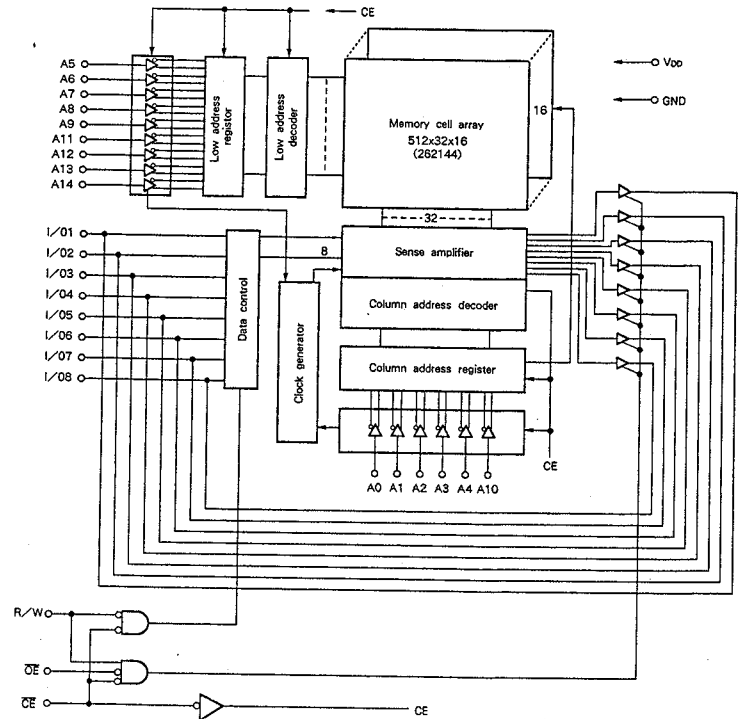
• Pin Assignment



• Pin Names

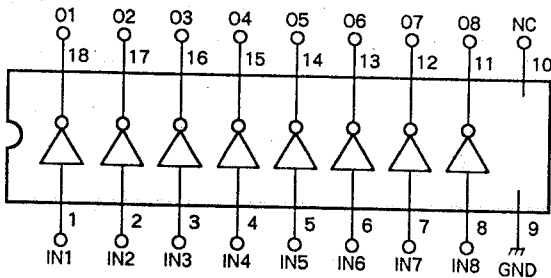
A0~A14	Address input
R/W	Read/Write input
OE	Output enable
CE	Chip enable input
I/O1~I/O8	Data input/Output
VDD	Power supply pin (+ 5V)
GND	Ground

• Block Diagram



8.4 LB1720 (IC13)

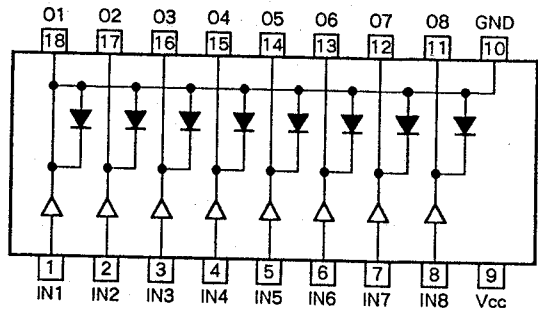
• Block Diagram



Note) Do not use the NC Pin.

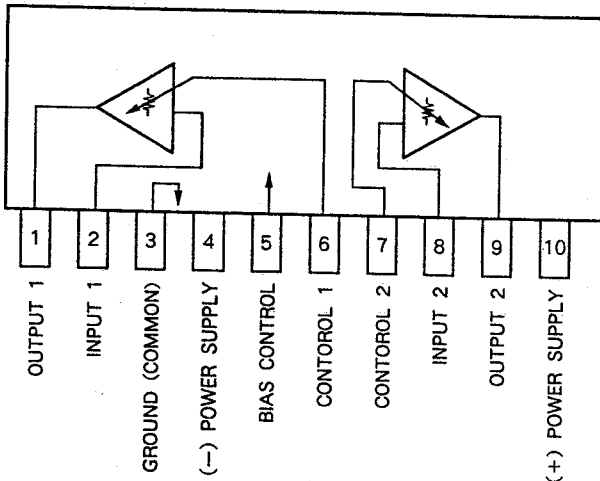
8.5 LB1740 (IC10, IC11)

• Pin Assignment



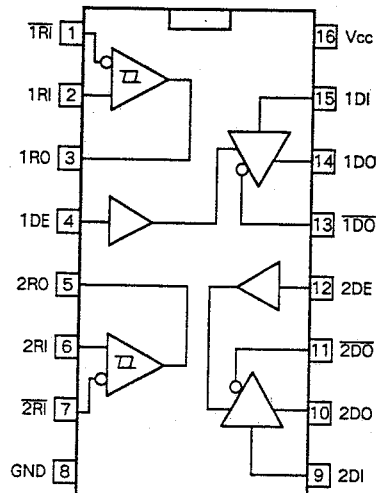
8.6 M5241L (IC213)

• Block Diagram



8.7 M5M34051P (IC9)

• Block Diagram



9. PANEL FACILITIES

CO-V200

FRONT PANEL

POWER switch (ON, OFF)

Pressing the switch turns the power on, and releasing the switch turns the power off.

REMOTE indicator

Lights up when the REMOTE SENSOR receives a signal from the remote control unit.

REMOTE SENSOR

Receives a signal from the remote control unit at a distance up to 5 m. See page 12 for battery installation and use of the remote control unit.

NEXT NUMBER indicator

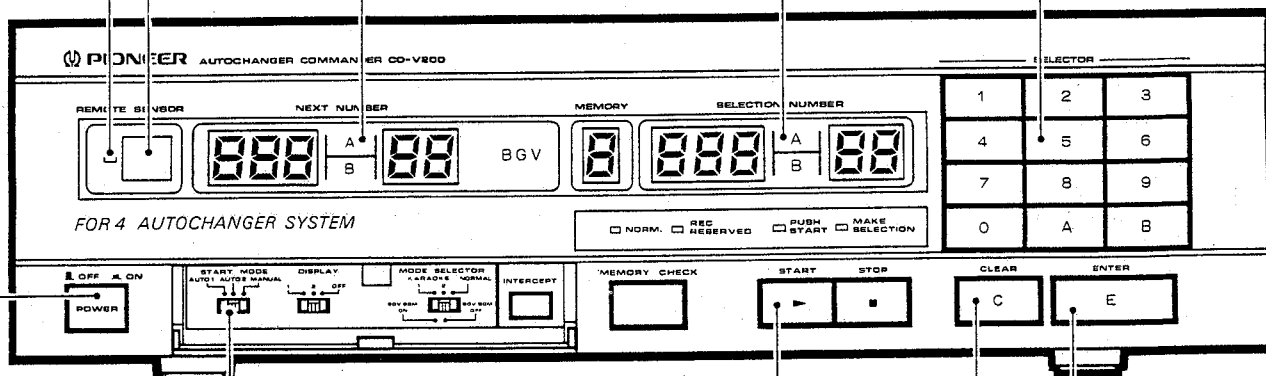
Shows the song number to be played next. If the ENTER (E) button is pressed when the first song is memorized (shown by the SELECTION NUMBER indicator), the number is shown on the indicator. When playing of the indicated song starts, the number of the next song to be played is shown.

SELECTION NUMBER indicator

Pressing a SELECTOR button shows the selected song number.

In memory check mode, it indicates the memorized song numbers.

SELECTOR buttons (0 to 9, A, B)



START MODE switch

- **AUTO 1** — Automatically plays memorized songs at intervals of about 5 seconds.
- **AUTO 2** — Automatically plays memorized songs at intervals of 20 seconds.
- **MANUAL** — Requires pressing the START button to start playing the next song after playback of the prior song ends.

START button

- Use to start playback when the MANUAL mode is specified by the START MODE switch.
- The START button can be used as reset button during playback (within 30 seconds after starting playback, up to three times consecutively).

ENTER (E) button

- To memorize songs.
- When in the reserve confirm mode, used together with the CLEAR (C) button, it serves to clear reserved tunes.

CLEAR (C) button

If this button is pressed prior to pressing the ENTER button after a song number has been selected, the song number can be canceled. The song number blinking on the NEXT NUMBER indicator can be canceled in reselection mode.

MODE SELECTOR switch

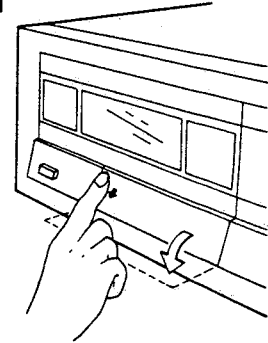
- **KARAOKE 1** — Outputs both images and sound during BGV disc playback.
- **KARAOKE 2** — No BGV disc playback.
- **NORMAL** — Plays back discs when the system is used in the free-of-charge mode. Plays back karaoke discs as well as discs other than karaoke.

BGV indicator

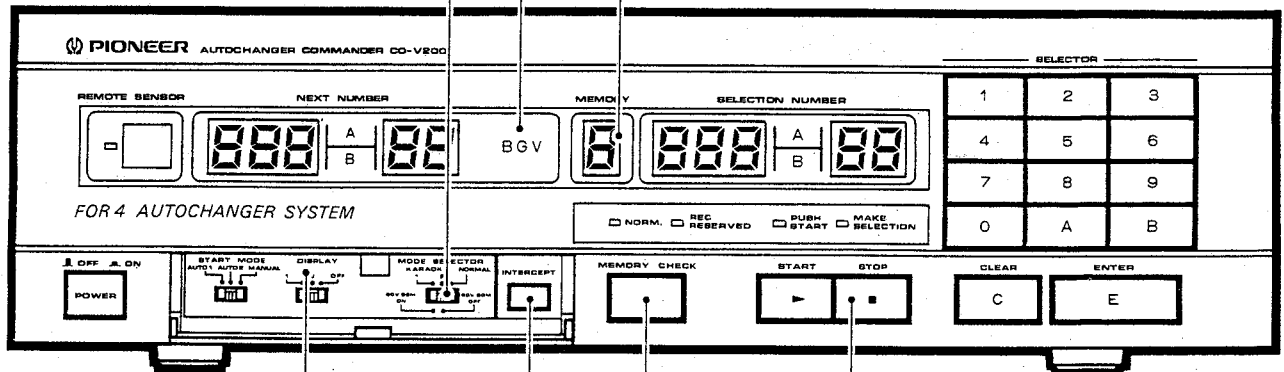
Lights up during BGV disc playback.

[How to open]

Push the upper space of the door label
PUSH TO OPEN

**MEMORY indicator**

Displays the sequential number of memorized songs. Up to eight songs can normally be memorized. However, up to nine songs are memorized if the interrupt selection is executed. The memory sequence is shown in memory check mode.

**DISPLAY switch**

- **DISPLAY 1** — The system displays information input by operator and the karaoke bird symbol alternately appearing on the monitor during intervals — after playback of a song is completed and until the next song begins.
- **DISPLAY 2** — The system display information input by operator on the monitor after playing a song and until the playback of the next song begins.
- **OFF** — No display (the screen is black).

INTERCEPT button

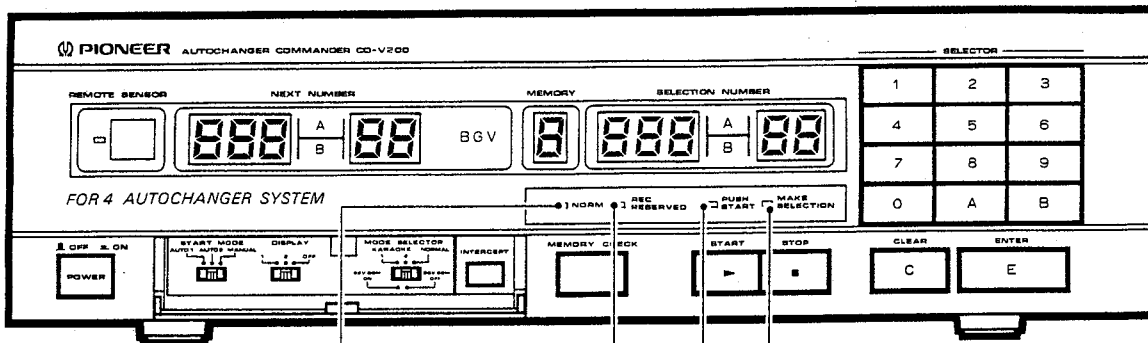
To intercept the memorized song sequence and play another song before the next memorized song.

STOP button

Press to stop a song during playback. The system enters the reselection mode if the STOP button is pressed within 30 seconds of playback start. * If a COIN/BILL BOX is used, a song is assumed to have ended when 30 seconds or more have elapsed since the screen was displayed.

MEMORY CHECK button

Each time this button is pressed, the memorized song number is shown by the SELECTION NUMBER indicator and the memory sequence is displayed by the MEMORY indicator.



NORM (NORMAL) indicator
 Lights up when the MODE SELECTOR switch is set to NORMAL.

REC RESERVED indicator
 Lights up when an optional recording equipment is connected to the system and recording has been reserved for one of the tunes assigned for playback.

MAKE SELECTION indicator
 Lights up when song selection can be operated.

PUSH START indicator
 The indicator blinks to inform that the system is in standby mode.
 If there is a reserved song, the indicator displays blinking "MAKE SELECTION" and "PUSH START" messages to inform that a song can be reselected for the reservation, or the next reservation can be made without reselecting a song.

CO-V100

FRONT PANEL

POWER switch ( ON,  OFF)

Pressing the switch turns the power on, and releasing the switch turns the power off.

REMOTE indicator

Lights up when the REMOTE SENSOR receives a signal from the remote control unit.

REMOTE SENSOR

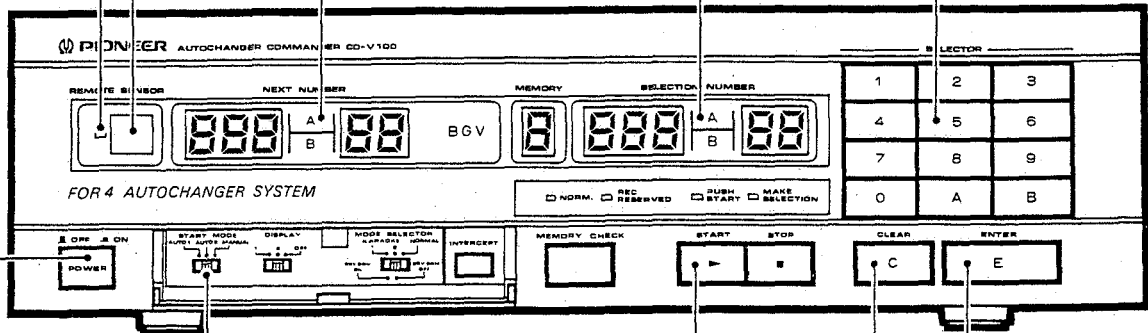
Receives a signal from the remote control unit at a distance up to 5 m. See page 12 for battery installation and use of the remote control unit.

NEXT NUMBER indicator

Shows the song number to be played next. If the ENTER (E) button is pressed when the first song is memorized (shown by the SELECTION NUMBER indicator), the number is shown on the indicator. When playing of the indicated song starts, the number of the next song to be played is shown.

SELECTION NUMBER indicator

Pressing a SELECTOR button shows the selected song number. In memory check mode, it indicates the memorized song numbers.

SELECTOR buttons (0 to 9, A, B)**START MODE switch**

- **AUTO 1** — Automatically plays memorized songs at intervals of about 5 seconds.
- **AUTO 2** — Automatically plays memorized songs at intervals of 20 seconds.
- **MANUAL** — Requires pressing the START button to start playing the next song after playback of the prior song ends.

START button

- Use to start playback when the MANUAL mode is specified by the START MODE switch.
- The START button can be used as reset button during playback (within 30 seconds after starting playback, up to three times consecutively).

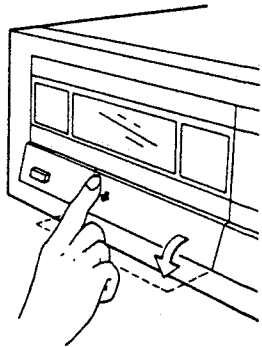
ENTER (E) button

- To memorize songs.
- When in the reserve confirm mode, used together with the CLEAR (C) button, it serves to clear reserved tunes.

CLEAR (C) button

If this button is pressed prior to pressing the ENTER button after a song number has been selected, the song number can be canceled. The song number blinking on the NEXT NUMBER indicator can be canceled in reselection mode.

[How to open]



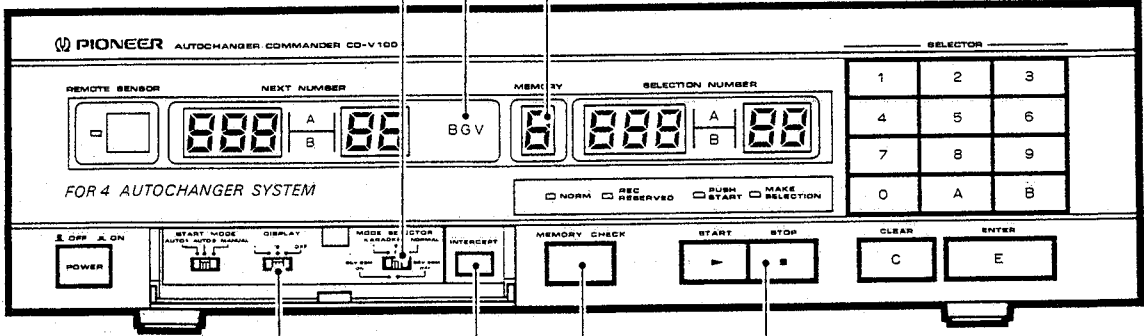
Push the upper space of the door label
PUSH TO OPEN

MODE SELECTOR switch

- **KARAOKE 1** — Outputs both images and sound during BGV disc playback.
- **KARAOKE 2** — No BGV disc playback.
- **NORMAL** — Plays back discs when the system is used in the free-of-charge mode. Plays back karaoke discs as well as discs other than karaoke.

BGV indicator
Lights up during BGV disc playback.

MEMORY indicator
Displays the sequential number of memorized songs. Up to eight songs can normally be memorized. However, up to nine songs are memorized if the interrupt selection is executed. The memory sequence is shown in memory check mode.



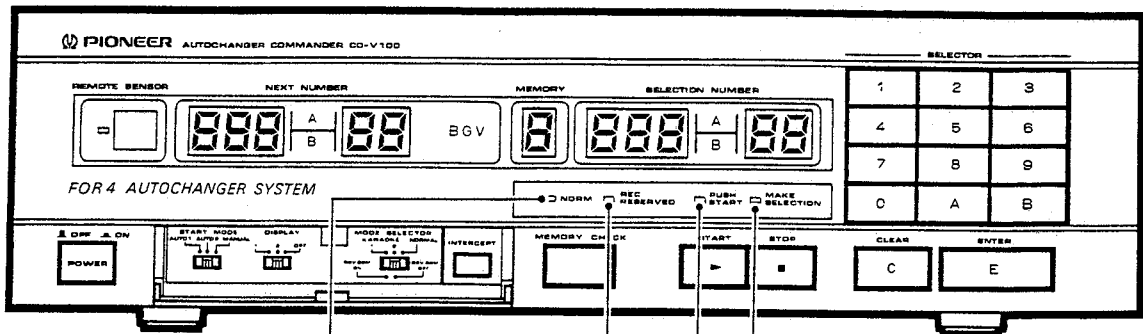
DISPLAY switch

- **DISPLAY 1** — The system displays information input by operator and the karaoke bird symbol alternately appearing on the monitor during intervals — after playback of a song is completed and until the next song begins.
- **DISPLAY 2** — The system display information input by operator on the monitor after playing a song and until the playback of the next song begins.
- **OFF** — No display (the screen is black).

STOP button
Press to stop a song during playback. The system enters the reselection mode if the STOP button is pressed within 30 seconds of playback start. * If a COIN/BILL BOX is used, a song is assumed to have ended when 30 seconds or more have elapsed since the screen was displayed.

MEMORY CHECK button
Each time this button is pressed, the memorized song number is shown by the SELECTION NUMBER indicator and the memory sequence is displayed by the MEMORY indicator.

INTERCEPT button
To intercept the memorized song sequence and play another song before the next memorized song.



NORM (NORMAL) indicator

Lights up when the MODE SELECTOR switch is set to NORMAL.

REC RESERVED indicator

Lights up when an optional recording equipment is connected to the system and recording has been reserved for one of the tunes assigned for playback.

MAKE SELECTION indicator

Lights up when song selection can be operated.

PUSH START indicator

The indicator blinks to inform that the system is in standby mode.

If there is a reserved song, the indicator displays blinking "MAKE SELECTION" and "PUSH START" messages to inform that a song can be reselected for the reservation, or the next reservation can be made without reselecting a song.

10. SPECIFICATIONS

AUTOCHANGER COMMANDER CO-V200

General

Power requirements	120 V AC, 50/60 Hz
Power consumption	30 W
Weight (without package)	5.5 kg (11 lb 11 oz)
Dimensions	420 (W) × 348 (D) × 120 (H) mm 16-9/16 (W) × 13-11/16 (D) × 4-3/4 (H) in
Operating temperature	+5°C to +35°C
Operating humidity	5% to 90%

Video input/output

INPUT terminal	RCA jack
OUTPUT terminal	RCA jack

Audio input/output

INPUT terminals	RCA jack
OUTPUT terminals	RCA jack

Other terminals

TO COIN/BILL BOX	8-pin DIN
REMOTE CONTROL SATELLITE	4-pin MINI DIN
TO AUTOCHANGER	9-pin D-sub
OPTION	9-pin D-sub
DATA	9-pin D-sub
VHF ADAPTER OUTPUT	Both RCA jack with DC jack

Functions

- BILL BOX mode ON/OFF switchable
- Program selection Up to eight songs
- Program change and cancellation Within 30 seconds from playback start
- START mode AUTO/MANUAL switchable, INTERCEPTION play available
- BGV mode VIDEO-AUDIO OFF switchable
- ADV mode ON/OFF switchable

Accessories

• Video cable	1
• Audio cable	1
• Remote control unit (CU-V132)	1
• Size "AA" battery (R6/UM-3)	2
• Operating instructions	1

NOTE:

- Specifications and design subject to possible modifications without notice, due to improvement.

AUTOCHANGER COMMANDER CO-V100

General

Power requirements	AC 110 V/120 V/220 – 230 V/240 V (Switchable), 50/60 Hz
Power consumption	30 W
Weight (without package)	5.5 kg (11 lb 11 oz)
Dimensions	420 (W) × 348 (D) × 120 (H) mm 16-9/16 (W) × 13-11/16 (D) × 4-3/4 (H) in
Operating temperature	+5°C to +35°C
Operating humidity	5% to 90%

Video input/output

INPUT terminal	RCA jack
OUTPUT terminal	RCA jack

Audio input/output

INPUT terminals	RCA jack
OUTPUT terminals	RCA jack

Other terminals

TO COIN/BILL BOX	8-pin DIN
REMOTE CONTROL SATELLITE	4-pin MINI DIN
TO AUTOCHANGER	9-pin D-sub
OPTION	9-pin D-sub
DATA	9-pin D-sub
VHF ADAPTER OUTPUT	Both RCA jack with DC jack

Functions

- BILL BOX mode ON/OFF switchable
- Program selection Up to eight songs
- Program change and cancellation Within 30 seconds from playback start
- START mode AUTO/MANUAL switchable, INTERCEPTION play available
- BGV mode VIDEO-AUDIO OFF switchable
- ADV mode ON/OFF switchable

Accessories

• Video cable	1
• Audio cable	1
• Remote control unit (CU-V132)	1
• Size "AA" battery (R6/UM-3)	2
• Operating instructions	2

NOTE:

- Specifications and design subject to possible modifications without notice, due to improvement.