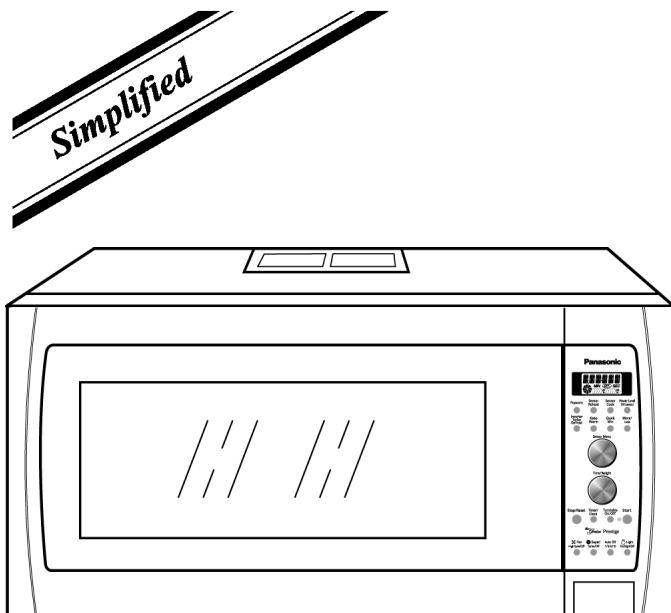


Service Manual

Microwave Oven



NN-SD297S
NN-SD277S
NN-SD277B
NN-SD277W
NN-SA247S
NN-P295WFX
NN-S255WFX
NN-S245WFX

APH(USA)

CPH(CANADA)

Please file and use this manual together with the service manual for Model NN-S262SF (Order No.SIMMC0203005C1)

Specifications for APH:

Specifications:	Model:	SD297S	SD277S/B/W
Power Source:		120V AC Single Phase, 60Hz	
Power Requirement:		1490W	1490W
Output:		1200W	1200W
Microwave Frequency:		2450MHz	
Timer:		30min. / Stage (HIGH Power) ~ 5 Stage Maximum 90min.00sec / Stage (Other Power Levels) ~ 5 Stage Maximum	
Outside Dimensions:		29 7/8"(W) x 15 1/2"(D) x 16 7/16"(H) 759mm(W) x 393mm(D) x 418mm(H)	29 7/8"(W) x 15 "(D) x 16 7/16"(H) 759mm(W) x 391mm(D) x 418mm(H)
Oven Cavity Dimensions:		23 1/4"(W) x 14 7/16"(D) x 9 1/2"(H) 591mm(W) x 367mm(D) x 242mm(H)	
Weight:		Approx. 55 lbs. /25.0 Kg	
PbF		This product with PbF	
Specifications subject to change without notice.			

Specifications for CPH:

Specifications:	Model:	SD297S	P295WFX	SA247S	S245WFX	SD277S/B/W	S255WFX
Power Source:		120V AC Single Phase, 60Hz					
Power Requirement:		1490W	1490W	1490W	1490W	1490W	1490W
Output:		1100W	1100W	1100W	1100W	1100W	1100W
Microwave Frequency:		2450MHz					
Timer:		30min. / Stage (HIGH Power) ~ 5 Stage Maximum 90min.00sec / Stage (Other Power Levels) ~ 5 Stage Maximum					
Outside Dimensions:		29 7/8"(W) x 15 1/2"(D) x 16 7/16"(H) 759mm(W) x 393mm(D) x 418mm(H)	29 7/8"(W) x 15 "(D) x 16 7/16"(H) 759mm(W) x 381mm(D) x 418mm(H)			29 7/8"(W) x 15 "(D) x 16 7/16"(H) 759mm(W) x 391mm(D) x 418mm(H)	
Oven Cavity Dimensions:		23 1/4"(W) x 14 7/16"(D) x 9 1/2"(H) 591mm(W) x 367mm(D) x 242mm(H)					
Weight:		Approx. 55 lbs. /25.0 Kg	Approx. 55 lbs. /25.0 Kg	Approx. 53 lbs. /24.0 Kg	Approx. 53 lbs. /24.0 Kg	Approx. 55 lbs. /25.0 Kg	Approx. 53 lbs. /24.0 Kg
PbF		This product with PbF					
Specifications subject to change without notice.							

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WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

WARNING

1. This product should be serviced only by trained, qualified personnel.
2. Though this product has been manufactured in compliance with:
 "Federal Performance Standard 21 CFR Subchapter J"(D.H.H.S): U.S.A. models
 or "Radiation Emitting Devices Act"(Health and Welfare Canada): Canadian models
 it is very important all repairs should be made in accordance with procedures described in this manual to avoid being exposed to excessive microwave radiation.
3. Check for radiation leakage before and after every servicing according to the "procedure for measuring radiation leakage."
4. If the unit cannot be repaired on site, advise the customer not to use until unit is repaired.
5. Any serviceman who learns of any accident pertaining to microwave radiation leakage including the oven operating with open door should immediately notify the appropriate address listed below and Center for Devices and Radiological Health, DHHS.

IN U.S.A. Panasonic Services Company
 (PSTC) 50 Meadowland Parkway,
 Secaucus, New Jersey 07094
 Attention: Technical Service Division.
 (201)348-7000

IN PUERTO RICO PSC
 (PSC) San Gabriel Industrial Park
 65th Infantry Ave. Km.9.5
 Carolina, Puerto Rico 00985
 (787)750-4300

IN CANADA Panasonic Canada Inc.
 (PCI) 5770 Ambler Drive, Mississauga,
 Ontario, L4W2T3
 (905)624-5010

6. There are special components used in the microwave oven which are important for safety. These parts are marked with a  on the replacement parts list. It is essential that these critical parts should be replaced only with the manufacture's specified parts to prevent microwave leakage, shock, fire, or other hazards. Do not modify the original design.

PRECAUTIONS TO BE OBSERVED BEFORE AND DURING SERVICING TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

- | | |
|--|---|
| <p>(A) Do not operate or allow the oven to be operated with the door open.</p> <p>(B) Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary:</p> <ol style="list-style-type: none"> (1) Interlock operation (2) Proper door closing (3) Seal and sealing surfaces (arcing, wear, and other damage) (4) Damage to or loosening of hinges and latches. (5) Evidence of dropping or abuse <p>(C) Before turning on microwave power for any service test or</p> | <p>inspection within the microwave generating compartments, check the magnetron, waveguide or transmission line, and cavity for proper alignment, integrity and connections.</p> <p>(D) Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.</p> <p>(E) A microwave leakage check to verify compliance with the Federal Performance Standard should be performed on each oven prior to release to the owner.</p> |
|--|---|

CAUTION

About lead free solder (PbF)

Distinction of PbF PCB: PCBs (manufactured) using lead free solder will have a PbF stamp on the PCB.

Caution: ● Pb free solder has a higher melting point than standard solder; Typically the melting point is 30 - 40°C higher. Please use a high temperature soldering iron. In case of the soldering iron with temperature control, please set it to 370 ± 10°C.

● Pb free solder will tend to splash when heated too high (about 600°C).

DANGER OF HIGH VOLTAGE AND HIGH TEMPERATURE (HOT/LIVE) OF THE INVERTER POWER SUPPLY (U)

INVERTER WARNING

This Inverter board looks like a regular PCB. However, this PCB drives the magnetron tube with extremely high voltage and high current.

NEW H.V.

IT HAS: 1. Very high voltage and high current circuits.

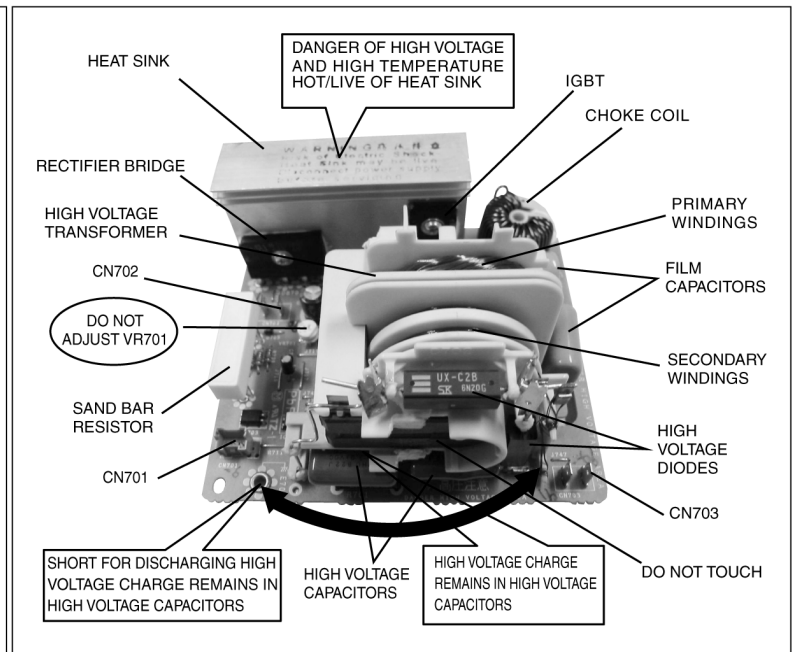
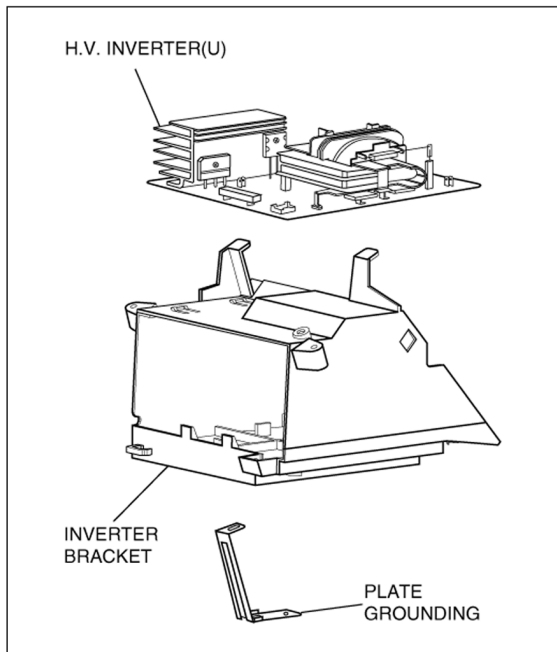
It functions the same as the high voltage transformer and high voltage capacitor in ordinary microwave ovens.

2. Aluminum heat sink that is energized with very high voltage and high heat energy.
3. Very high voltage which may remain in circuitry even when oven is off. High voltage charge may remain in the capacitors on the board.

DO NOT:

- * 1. Do not touch circuitry because it has very hot (high voltage) circuitry. Even when replacing board, extreme care should be taken to avoid possible electric shock hazards. High voltage charge may remain in circuits.
- * 2. Do not touch aluminum heat sink because it is energized with very high voltage and is also very hot in high heat energy.
- * 3. Do not try to adjust or tamper with preset control on the Inverter board because it is very dangerous to adjust without proper test equipment.
- * 4. Do not test oven while Inverter grounding plate or screws are loose. It is very dangerous to operate H.V. Inverter Circuit (U) with loose mounting screws or if improperly grounded.
- * 5. For USA only:
Do not try to repair Inverter PCB because it is very dangerous to repair. Replace as a complete High Voltage Inverter Circuit unit and return fully re-packed in original shipping box and shipping materials.

INVERTER POWER SUPPLY

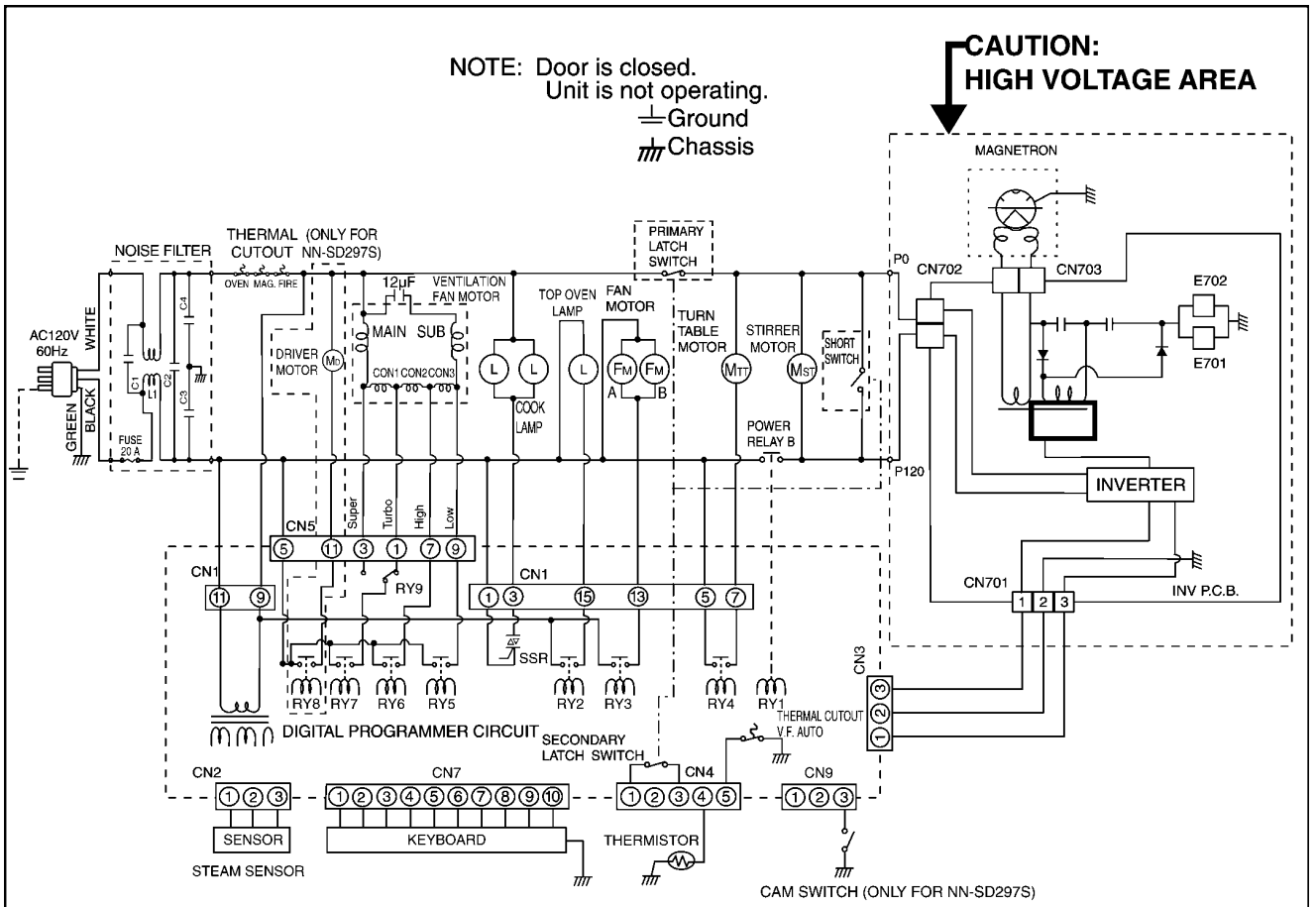


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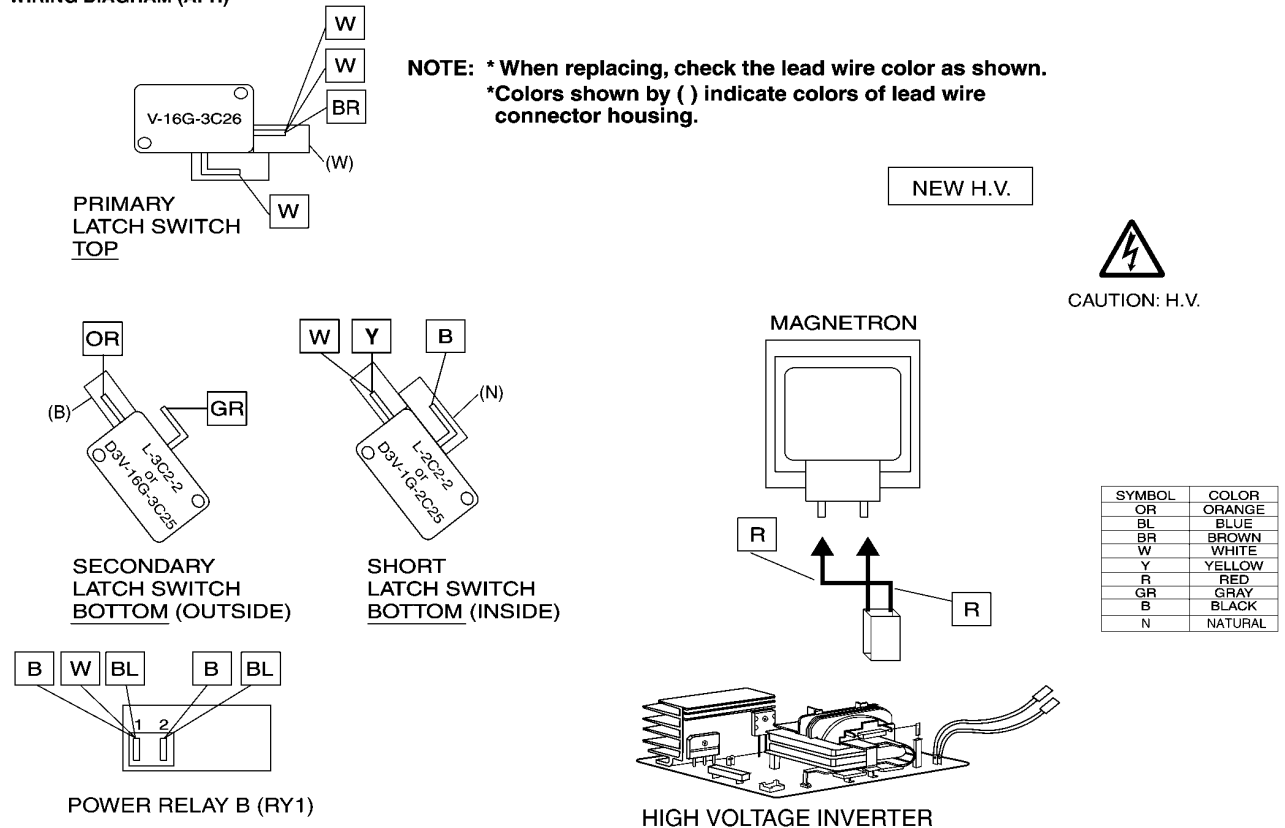
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1 SCHEMATIC DIAGRAM

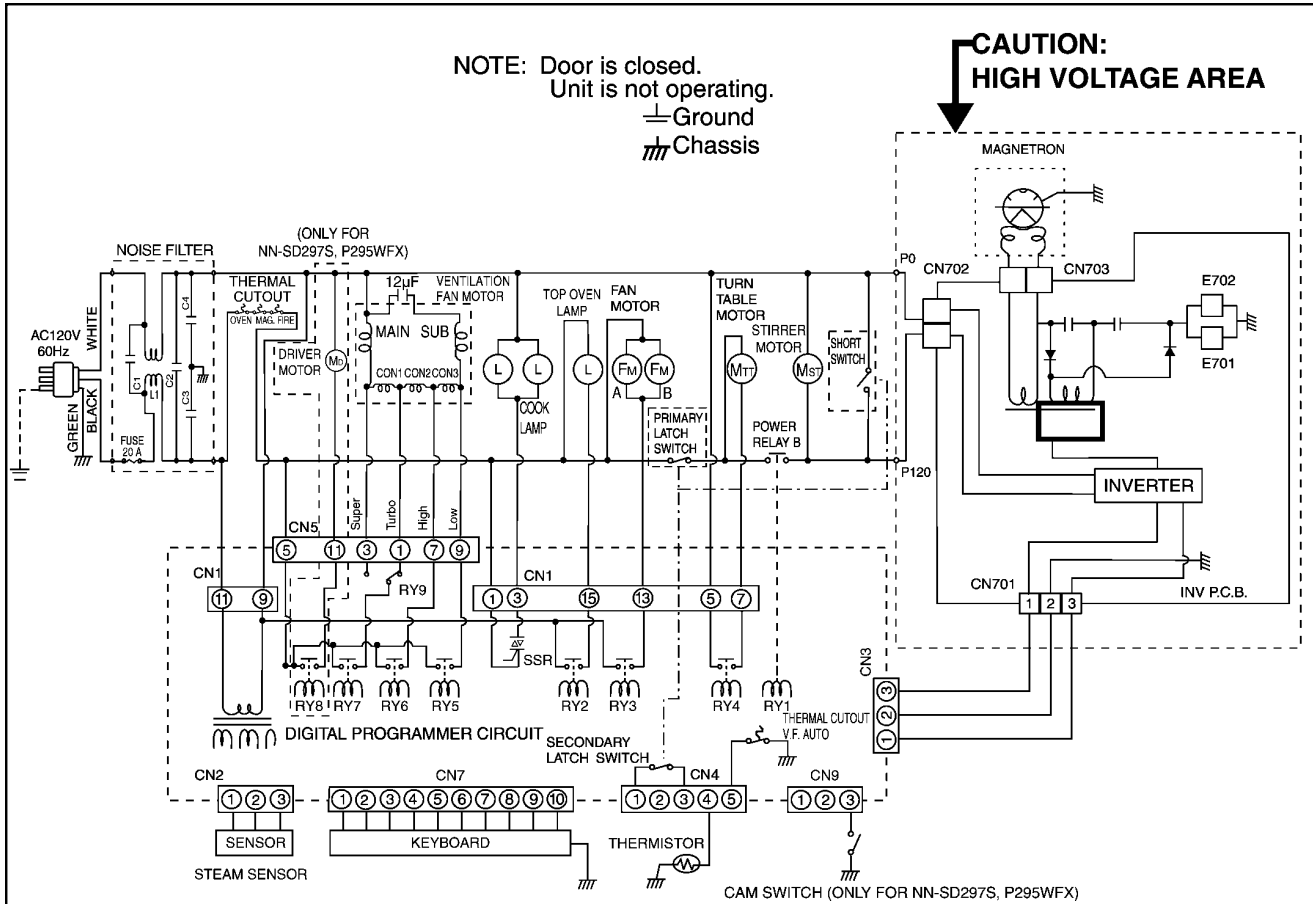
1.1. APH (NN-SD297S, SD277S/B/W)



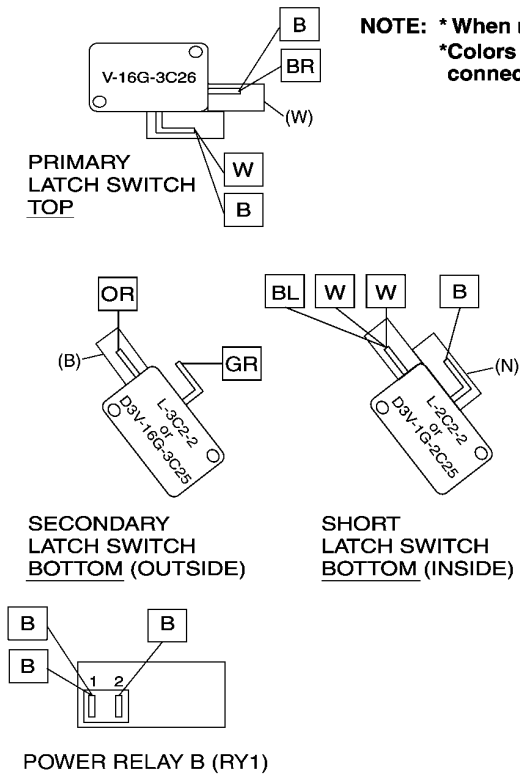
WIRING DIAGRAM (APH)



1.2. CPH (NN-SD297S, SD277S/B/W, P295WFX)



WIRING DIAGRAM (CPH)

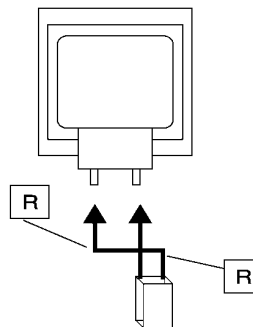


NEW H.V.

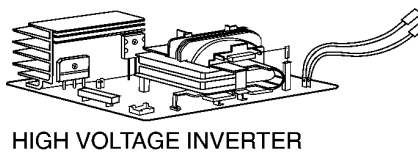


CAUTION: H.V.

MAGNETRON

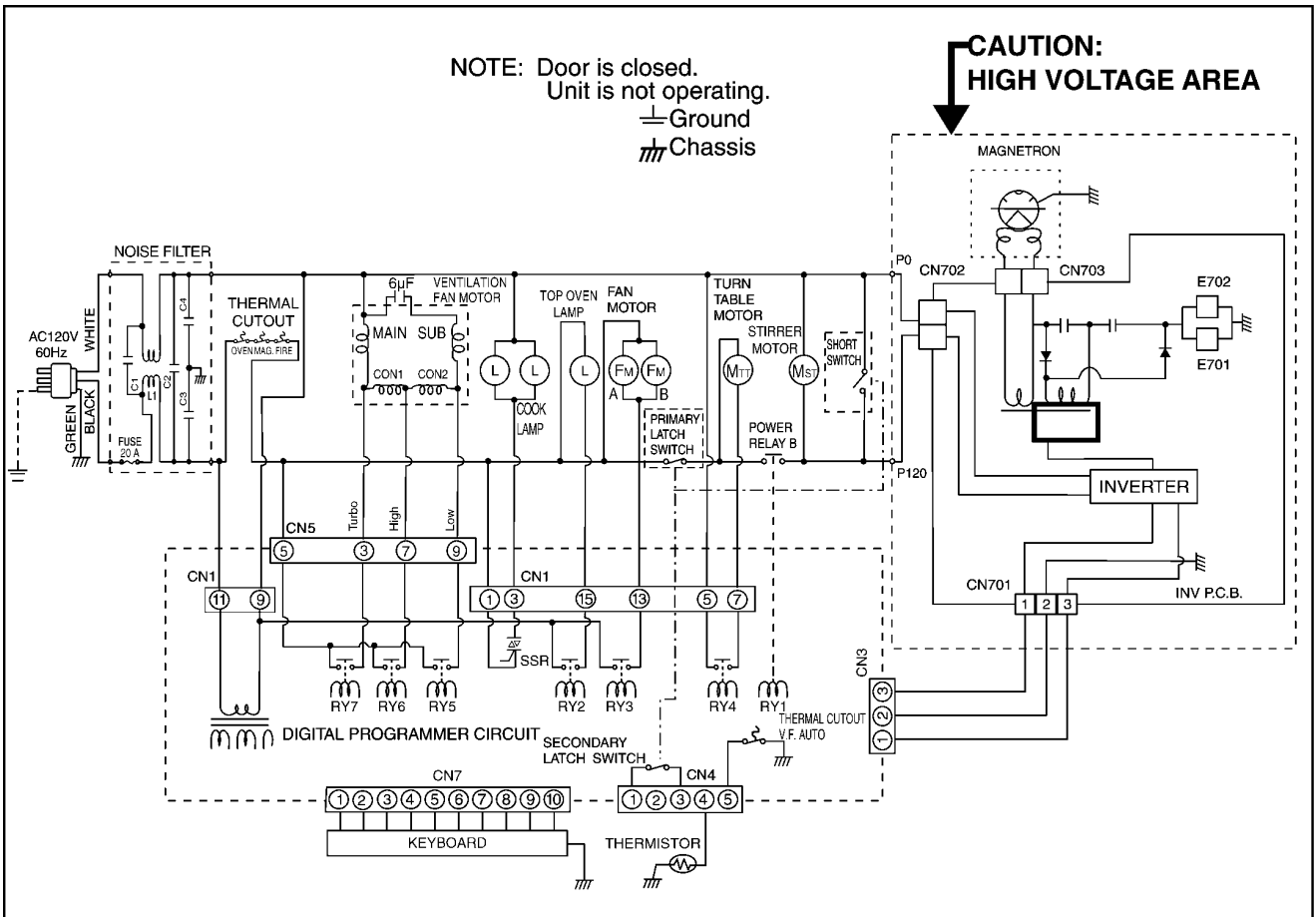


SYMBOL	COLOR
OR	ORANGE
BL	BLUE
BR	BROWN
W	WHITE
Y	YELLOW
R	RED
GR	GRAY
B	BLACK
N	NATURAL

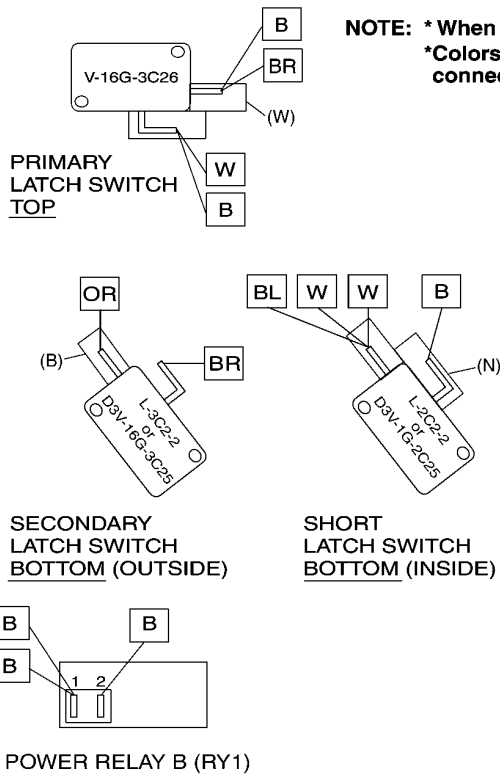


HIGH VOLTAGE INVERTER

1.3. CPH (NN-SA247S, S255WFX, S245WFX)



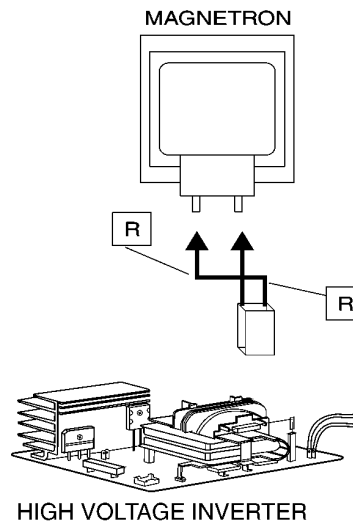
WIRING DIAGRAM (CPH)



NEW H.V.



CAUTION: H.V.



SYMBOL	COLOR
OR	ORANGE
BL	BLUE
BR	BROWN
W	WHITE
Y	YELLOW
R	RED
GR	GRAY
B	BLACK
N	NATURAL

2 MEASUREMENTS AND ADJUSTMENTS

WARNING

- * For continued protection against radiation hazard, replace only with identical replacement parts (For touch models Part No. J61424T00AP, Type No. V-15G-3C25 for Primary latch switch; Part No. J61414T00AP, Type No. D3V-16G-3C25 for Secondary latch switch and Part No. J61784T00AP, Type No. D3V-1G-2C25 for short switch.)
- * When the 20 Amp. fuse is blown due to the operation of the short switch, you must replace power relay B (Part No. AEGG5G1A18, Type No. G5G-1A12VDC), Primary latch switch and the short switch. Then follow the installation procedures below.
- * Interlock switch replacement In replacing faulty switches, be sure mounting tabs are not bent, broken or otherwise deficient in their ability to hold the switches.
- * Refer to schematic diagram to ensure proper connection.

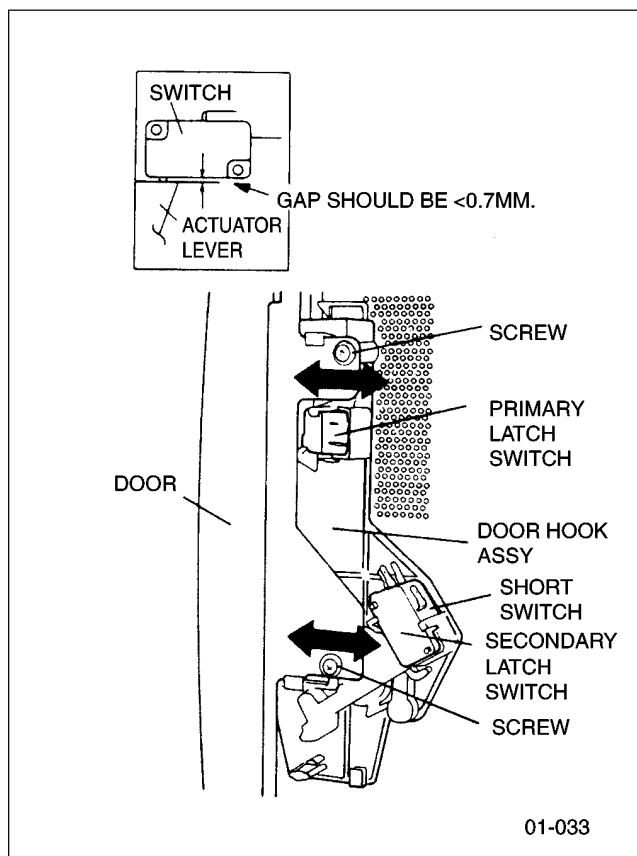
2.1. Adjustment of primary latch switch, secondary latch switch and short switch.

1. Mount the Primary latch switch, the Secondary latch switch and the short switch to the door hook assembly as shown in ILL.

NOTE:

No specific individual adjustments during installation of the Primary latch switch, Secondary latch switch or Short switch to the door hook are required.

2. When mounting the door hook assembly to the oven assembly, adjust the door hook assembly by moving it in the direction of the arrows in the illustration so that the oven door will not have any play in it. Check for play in the door by pulling the door assembly. Make sure that the latch keys move smoothly after adjustment is completed. Completely tighten the screws holding the door hook assembly to the oven assembly.
3. Reconnect the short switch and check the continuity of the monitor circuit and all latch switches again by following the component test procedures.



01-033

2.2. Measurement of microwave output

The output power of the magnetron can be determined by performing IEC standard test procedures. However, due to the complexity of IEC test procedures, it is recommended to test the magnetron using the simple method outlined below.

Necessary Equipment:

- *1 liter beaker
- *Glass thermometer
- *Wrist watch or stopwatch

NOTE:

Check the line voltage under load. Low voltage will lower the magnetron output. Take the temperature readings and heating time as accurately as possible.

1. Fill the beaker with exactly one liter of tap water. Stir the water using the thermometer and record the water's temperature. (recorded as T1).
2. Place the beaker on the center of glass tray. Set the oven for High power and heat it for exactly one minute.
3. Stir the water again and read the temperature of the water. (recorded as T2).
4. The normal temperature rise at High power level for each model is as shown in table.

TABLE (1L-1min.test)

RATED OUTPUT	TEMPERATURE RISE
1100W	Min. 16.9°F(9.4°C)
1200W	Min. 18.5°F(10.3°C)

3 PROCEDURE FOR MEASURING MICROWAVE ENERGY LEAKAGE

WARNING

Check for radiation leakage after every servicing. Should the leakage be more than 2 mW/cm² (1mW/cm² for Canada) inform PSTC, PSC, or PCI immediately. After repairing or replacing any radiation safety device, keep a written record for future reference, as required by D.H.H.S. and Health and Welfare Canada regulation. This requirement must be strictly observed. In addition, the leakage reading must be recorded on the service repair ticket while in the customer's home.

NOTE:

The U.S. Government standard is 5 mW/cm² while in the customer's home. 2mW/cm² stated here is our own voluntary standard. (1mW/cm² for Canada)

3.1. Equipment

- Electromagnetic radiation monitor
- Glass thermometer 212°F or 100°C
- 600cc glass beaker

3.2. Procedure for measuring radiation leakage

Note before measuring.

- Do not exceed meter full scale deflection. Leakage monitor should initially be set to the highest scale.
 - To prevent false readings the test probe should be held by the grip portion of the handle only and moved along the shaded area in Figure no faster than 1 inch/sec (2.5cm/sec).
 - Leakage with the outer panel removed less than 5mW/cm².
 - Leakage for a fully assembled oven with door normally closed less than 2mW/cm² (1mW/cm² for Canada).
 - Leakage for a fully assembled oven [Before the latch switch (primary) is interrupted] while pulling the door less than 2mW/cm².
1. Pour 275 ± 15cc (9ozs ± 1/2oz) of 20°C ± 5°C (68° ± 9°F) water in a beaker which is graduated to 600cc, and place in the center of the oven.
 2. Set the radiation monitor to 2450MHz and use it following the manufacturer's recommended test procedure to assure correct results.
 3. When measuring the leakage, always use the 2 inch (5cm) spacer supplied with the probe.
 4. Tap the start pad or set the timer and with the magnetron oscillating, measure the leakage by holding the probe perpendicular to the surface being measured.

3.2.1. Measurement with the outer panel removed.

Whenever you replace the magnetron, measure for radiation leakage before the outer panel is installed and after all necessary components are replaced or adjusted. Special care should be taken in measuring around the magnetron.

WARNING

Avoid contacting any high voltage parts.

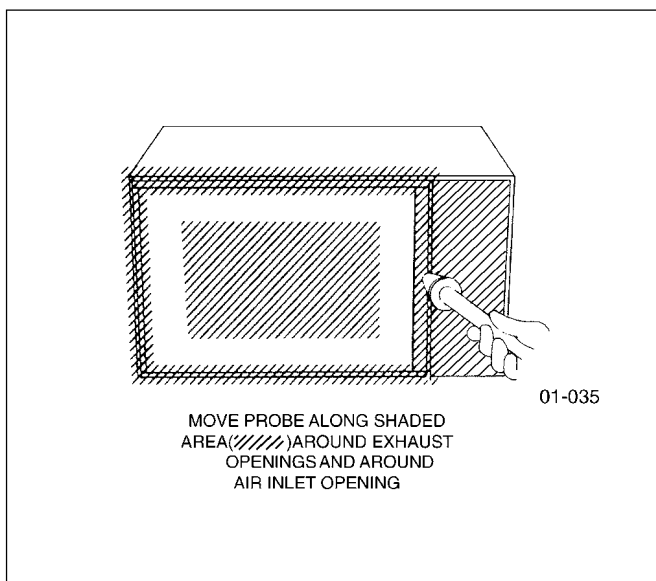
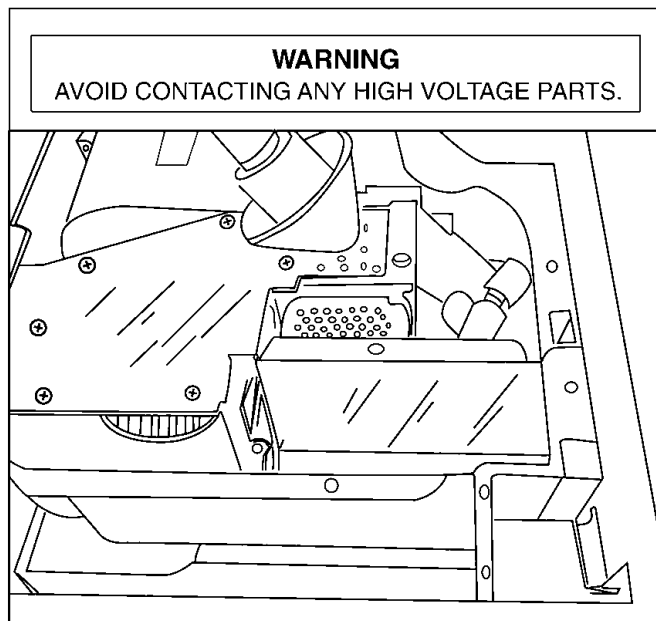
3.2.2. Measurements with a fully assembled oven.

After all components, including outer panel are fully assembled, measure for radiation leakage around the door periphery, the door viewing window, the exhaust opening, control panel and air inlet openings.

3.3. Record keeping and notification after measurement

- After any adjustment or repair to a microwave oven, a leakage reading must be taken. Record this leakage reading on the repair ticket even if it is zero.
- A copy of this repair ticket and the microwave leakage reading should be kept by repair facility.
- Should the radiation leakage be more than 2 mW/cm² (1mW/cm² for Canada) after determining that all parts are in good condition, functioning properly, and genuine replacement parts as listed in this manual have been used, immediately notify PSTC, PSC or PCI.

3.4. At least once a year, have the radiation monitor checked for calibration by its manufacturer.



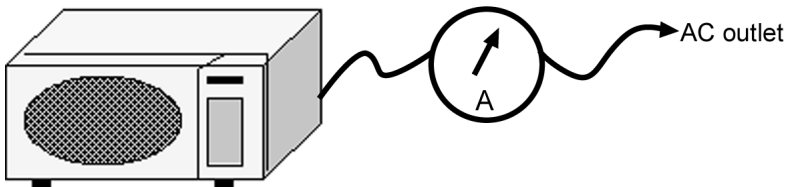
4 SIMPLE WAY OF H.V. INVERTER/MAGNETRON TROUBLESHOOTING

Purpose:

Simple way (**3/37 seconds rule**) of identifying whether it's Magnetron, Inverter, or others.

Set-up:

The unit under question is connected through the Ammeter as shown below.



Procedure:

Follow the matrix table below to identify the problem source.

Note:

Do not replace both Inverter board and Magnetron simultaneously and automatically without going through this procedure.

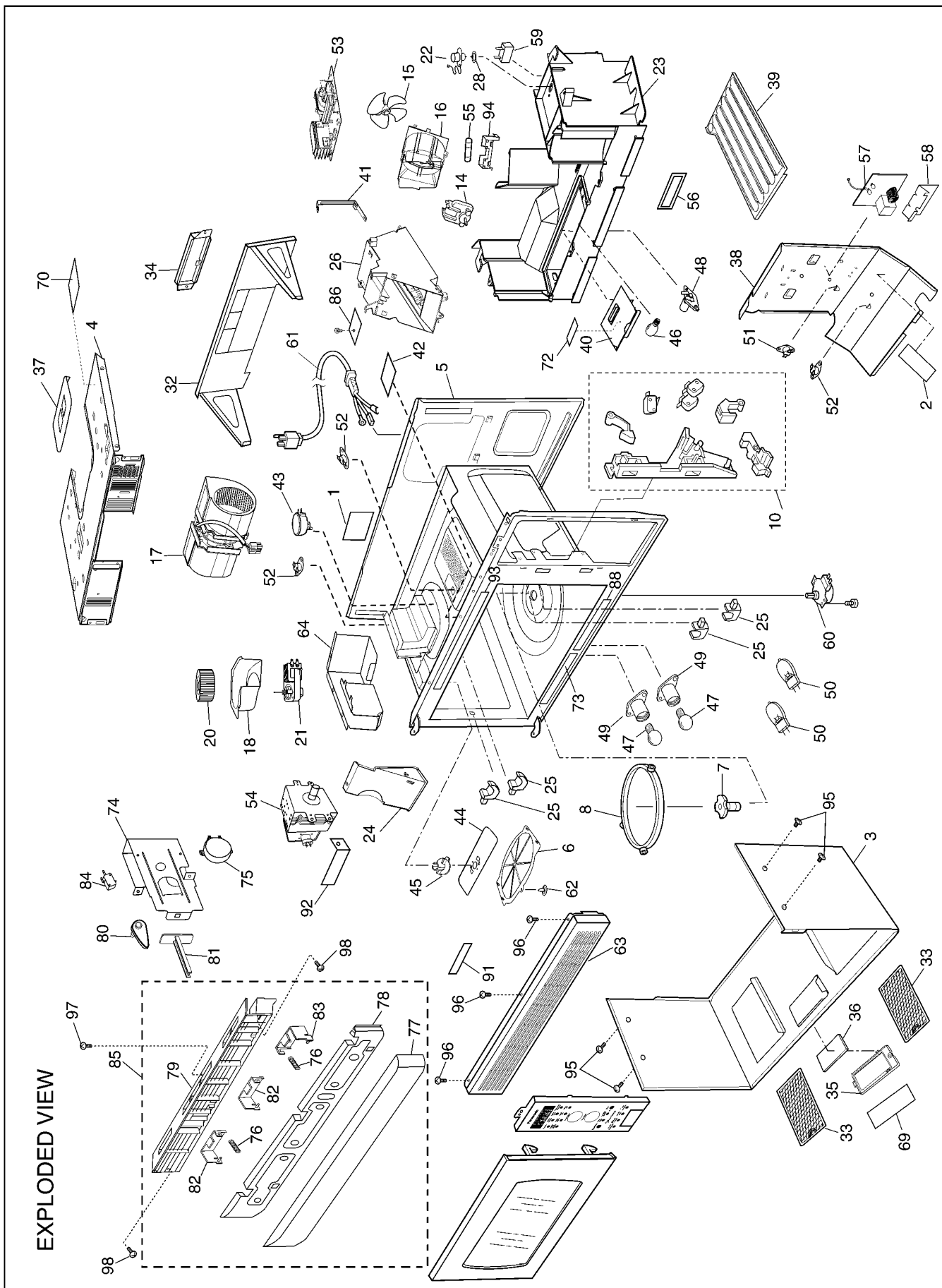
Power will:	Ammeter reading is:	To do:	Remedy:
Shut off in 37 seconds after "Start".	1. Between 0.5A and 1.0A.	Check and repair open magnetron circuit	Open magnetron wiring between Inverter and magnetron terminal.
	2. Between 1.0A and 2.0A.	Check continuity of D702 in Inverter PCB.	
		↓	
		1. D702 shorted	Replace H.V.Inverter (F606Y8M00AP)
		2. D702 is OK	Replace magnetron
Shut off in 3 seconds after "Start"	1. Less than 0.5A	Check open circuit: Latch Switch, DPC, Power Relay and CN701	Replace defective component(s), or correct switch, cables and connectors.

5 H.V.INVERTER BOARD MAIN PARTS LIST (F606Y8M00AP)

Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
DB701	B0FBBS000001	BRIDGE DIODE	1	20A, 600V
L701	F50206G00AP	CHOKE COIL	1	
Q701	B1JAGV000015	TRANSISTOR SI	1	1000V
T701	⚠ A609A8M00AP	H.V. TRANSFORMER	1	(INCLUDING D701,D702,C706,C707)
C701	ECWF5284N300	CAPACITOR	1	0.28μF/500V
C702	ECWF2455N644	CAPACITOR	1	4.5μF/250V

6 EXPLODED VIEW AND PARTS LIST

6.1. EXPLODED VIEW



6.2. PARTS LIST

NOTE:

1. When ordering replacement part(s), please use part number(s) shown in this part list.

Do not use description of the part.

2. Important safety notice:

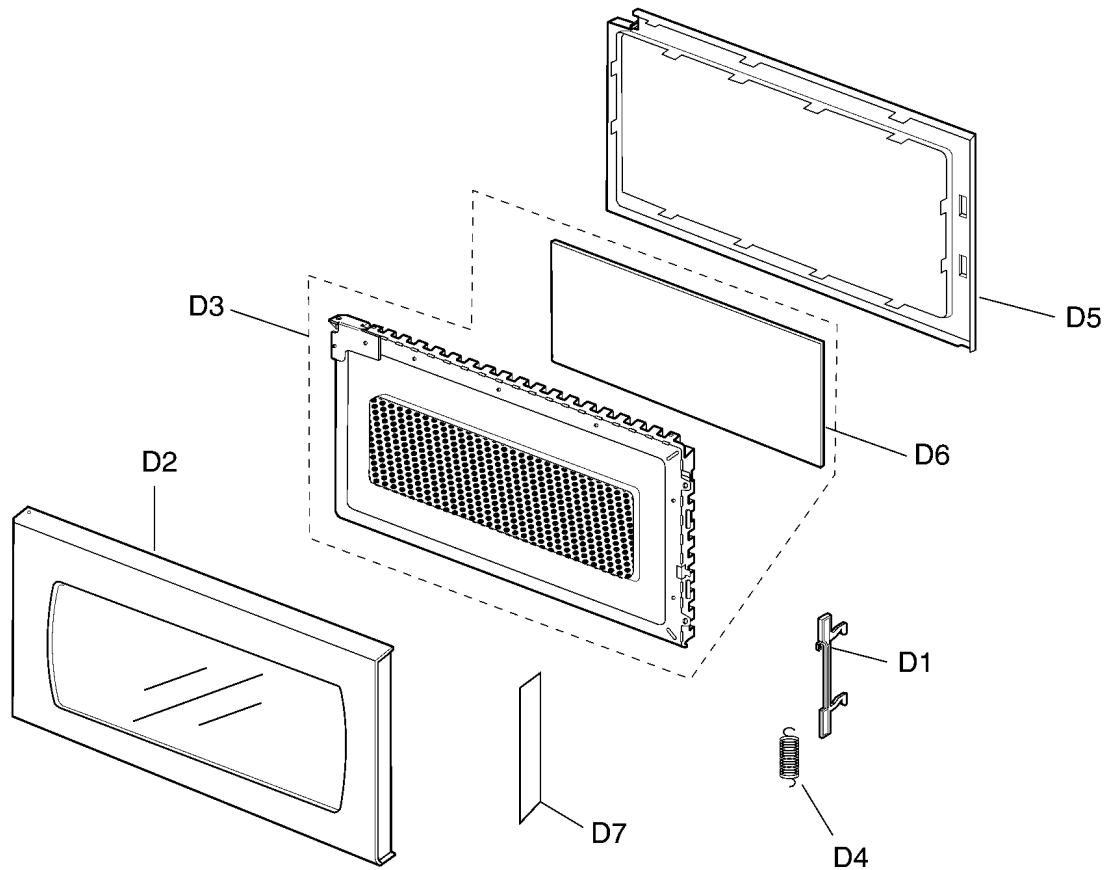
Components identified by $\triangle$ mark have special characteristics important for safety.

When replacing any of these components, use only manufacture's specified parts.

Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
1		F00205H00AP	CAUTION LABEL	1	APH
1		F00067600CP	CAUTION LABEL	1	CPH
2		F00336Z20AP	FUSE LABEL	1	
3		F110D6Z00SAP	CABINET BODY (U)	1	SD297S APH
3		F110D6Z00SCP	CABINET BODY (U)	1	SD297S CPH
3		F110D8Q00BAP	CABINET BODY (U)	1	SD277S APH/CPH,SD277B APH/CPH,SA247S CPH
3		F110D8Q00HAP	CABINET BODY (U)	1	SD277W APH/CPH,P295WFX CPH, S255WFX CPH,S245WFX CPH
4		F100D6Z00AP	BASE PLATE (U)	1	SD297S APH/CPH,P295WFX CPH
4		F100D6Z80AP	BASE PLATE (U)	1	EXCEPT SD297S APH/CPH & P295WFX CPH
5	$\triangle$	F201A6F10AP	OVEN (U)	1	
6		F20115H00AP	COVER	1	
7		F21314Y00XN	PULLY SHAFT	1	
8		F290D5Q00AP	ROLLER RING (U)	1	
10	$\triangle$	E393C6Z00AP	DOOR HOOK (U)	1	APH
10	$\triangle$	E393C6Z00CP	DOOR HOOK (U)	1	CPH
14		F40016Z00AP	FAN MOTOR A	1	FOR INVERTER (U) COOLING
15		F40085H00AP	FAN BLADE	1	FOR INVERTER (U) COOLING
16		F40256Z80AP	ORIFICE	1	
17		F401W6Z00AP	BLOWER MOTOR (U)	1	SD297S APH/CPH,SD277 APH/CPH,P295WFX CPH
17		F401W6Z60AP	BLOWER MOTOR (U)	1	SA247S CPH,S255WFX CPH,S245WFX CPH
18		F42486Z00AP	FAN CASE C	1	
20		F42505H00AP	SIROCCO FAN C	1	
21		F42676Z80AP	FAN MOTOR B	1	FOR MAGNETRON COOLING
22		F601L6F00AP	SENSOR (BU)	1	SD297S APH/CPH,SD277 APH/CPH,P295WFX CPH
23		F40246Z00AP	EXHAUST GUIDE A	1	
24		F44775H00AP	EXHAUST GUIDE	1	
25		F20025H00AP	RACK SUPPORT	4	
26		F65856Z00AP	INVERTER BRACKET	1	
27		F62386Z00AP	WASHER	1	
28		F62386F00AP	WASHER	1	
32		F100T5H00APG	BACK PLATE (BU)	1	
33		F400B6Z00AP	FILTER (U)	2	
34		F400K5H00APG	EXHAUST ADAPTER	1	
35		F63175H00SAP	LAMP HOLDER	1	SD297S APH
35		F63176F00SAP	LAMP HOLDER	1	SD297S CPH
35		F63175H10BAP	LAMP HOLDER	1	SD277S APH/CPH,SD277B APH/CPH,SA247S CPH
35		F63175H10HAP	LAMP HOLDER	1	SD277W APH/CPH,P295WFX CPH, S255WFX CPH,S245WFX CPH
36		F64375H00AP	GLASS PLATE	1	
37		F41576Z00APG	FAN INSTALLATION PLATE	2	
38		F42176Z00APG	COVER PLATE	1	
39		F42205H00APG	COVER PLATE B	1	
40		F607V6Z00APG	LAMP COVER (U)	1	
41		F61846Z00AP	GROUNDING PLATE	1	
42		F60405H00AP	LAMP MEMBRANE	1	
43		F61446Z00AP	STIRRER MOTOR	1	
44		F20155H00AP	STIRRER	1	
45		F20165H00AP	ANTENNA SUPPORT	1	
46		F60305H00AP	INCANDESCENT LAMP	1	
47		F60305H00AP	INCANDESCENT LAMP	2	EXCEPT SD297S APH/CPH & P295WFX CPH
48		F61525H00AP	SOCKET	1	
49		F61525H00AP	SOCKET	2	EXCEPT SD297S APH/CPH & P295WFX CPH
50		F67536Z00AP	HALOGEN LAMP	2	SD297S APH/CPH,P295WFX CPH
51		F61456F20AP	THERMAL CUTOUT	1	

Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
52		F61456N60AP	THERMAL CUTOUT	3	
53	△	F606Y8M00AP	H.V.INVERTER (U)	1	
54	△	2M261-M32KLP	MAGNETRON	1	APH
54	△	2M261-M32JP	MAGNETRON	1	CPH
55	△	F62308F00AP	FUSE	1	20A/125V
56		F400B6Z20AP	CARBON FILTER (U)	1	
57		F692Y8F20AP	NOISE FILTER (U)	1	
58		F82605H00AP	NOISE FILTER BRACKET	1	
59		F66986Z30AP	MOTOR CAPACITOR	1	SD297S APH/CPH,SD277 APH/CPH,P295WFX CPH
59		F66986Z80AP	MOTOR CAPACITOR	1	SA247S CPH,S255WFX CPH,S245WFX CPH
60		F63266Z80AP	TURNTABLE MOTOR	1	
61	△	F900C6Z80AP	AC CORD W/PLUG	1	APH
61	△	F900C6Z80CP	AC CORD W/PLUG	1	CPH
62		F90804W00AP	CANOE CLIP	1	FOR COVER
63		F101V6Z20SAP	VENT GRILLE (U)	1	SD277S APH/CPH
63		F101V6Z30BAP	VENT GRILLE (U)	1	SD277B APH/CPH
63		F101V6Z30HAP	VENT GRILLE (U)	1	SD277W APH/CPH,S255WFX CPH
63		F101V6F10BAP	VENT GRILLE (U)	1	SA247S CPH
63		F101V6F10HAP	VENT GRILLE (U)	1	S245WFX CPH
64		F48436Z00APG	INHALE GUIDE A	1	
69		F01725H00AP	CAUTION LABEL	1	
70		F00565H00AP	CAUTION LABEL	1	
72		F00725H00AP	CAUTION LABEL	1	
73		F03346Z20AP	MENU LABEL	1	SD297S APH,SD277S/B/W APH
73		F03346Z20CP	MENU LABEL	1	SD297S CPH,SD277S/B/W CPH
74		F66396F00AP	MOTOR INSTALLATION BRACKET	1	SD297S APH/CPH,P295WFX CPH
75		F63266F00AP	DRIVE MOTOR	1	SD297S APH/CPH,P295WFX CPH
76		F11736F00AP	SPRING	2	SD297S APH/CPH,P295WFX CPH
77		F11196F00SAP	VENT GRILLE OSTENTATIOUS COVER	1	SD297S APH/CPH
77		F11196Z00HAP	VENT GRILLE OSTENTATIOUS COVER	1	P295WFX CPH
78		F11206F00APG	VENT GRILLE INSTALLATION BRACKET	1	SD297S APH/CPH,P295WFX CPH
79		F11176F00SAP	VENT GRILLE	1	SD297S APH/CPH
79		F11176Z00HAP	VENT GRILLE	1	P295WFX CPH
80		F48236F00AP	CAM	1	SD297S APH/CPH,P295WFX CPH
81		F48246Z00AP	SHAFT	1	SD297S APH/CPH,P295WFX CPH
82		F111B6F00APG	BACKSTOP AU	2	SD297S APH/CPH,P295WFX CPH
83		F111C6F00APG	BACKSTOP BU	1	SD297S APH/CPH,P295WFX CPH
84		J61415G10XN	MICRO SWITCH	1	SD297S APH/CPH,P295WFX CPH
85		F101V6Z00SAP	VENT GRILLE (U)	1	SD297S APH/CPH
85		F101V6Z00HAP	VENT GRILLE (U)	1	P295WFX CPH
86		F90356Z00AP	AC CORD FIXING PLATE	1	
87		A66135H00AP	BRACKET A	3	
88		F04468Q00AP	FUNCTION LABEL	1	SD297S APH
88		F04468Q00CP	FUNCTION LABEL	1	SD297S CPH
88		F04466Z20AP	FUNCTION LABEL	1	SD277S/B/W APH
88		F04466Z20CP	FUNCTION LABEL	1	SD277S/B/W CPH
91		F01956F10AP	CAUTION LABEL	1	SD297S APH
91		F01956F10CP	CAUTION LABEL	1	SD297S CPH,P295WFX CPH
92		F40316Z00APG	AIR BAFFLE C	1	SD297S APH/CPH,SD277* APH/CPH,P295WFX CPH
93		F00067C50AP	CAUTION LABEL	1	APH
93		F00067C50CP	CAUTION LABEL	1	CPH
94		F62315G10XN	FUSE HOLDER	1	
95		XTC4+12BC	SCREW	4	EXCEPT SD277B APH/CPH
95		XTC4+12BB	SCREW	4	SD277B APH/CPH
96		TCTTH4+10BCB	SCREW	3	SD277S APH/CPH,SD277B APH/CPH,SA247S CPH
96		TCTTH4+10BC	SCREW	3	SD277W APH/CPH,S255WFX CPH,S245WFX CPH
97		XTC4+10AFZ	SCREW	1	SD297S APH/CPH
97		XTC4+10AFC	SCREW	1	P295WFX CPH
98		XTTFA4+8BFZ	SCREW	2	SD297S APH/CPH
98		XTTFA4+8BCR	SCREW	2	P295WFX CPH

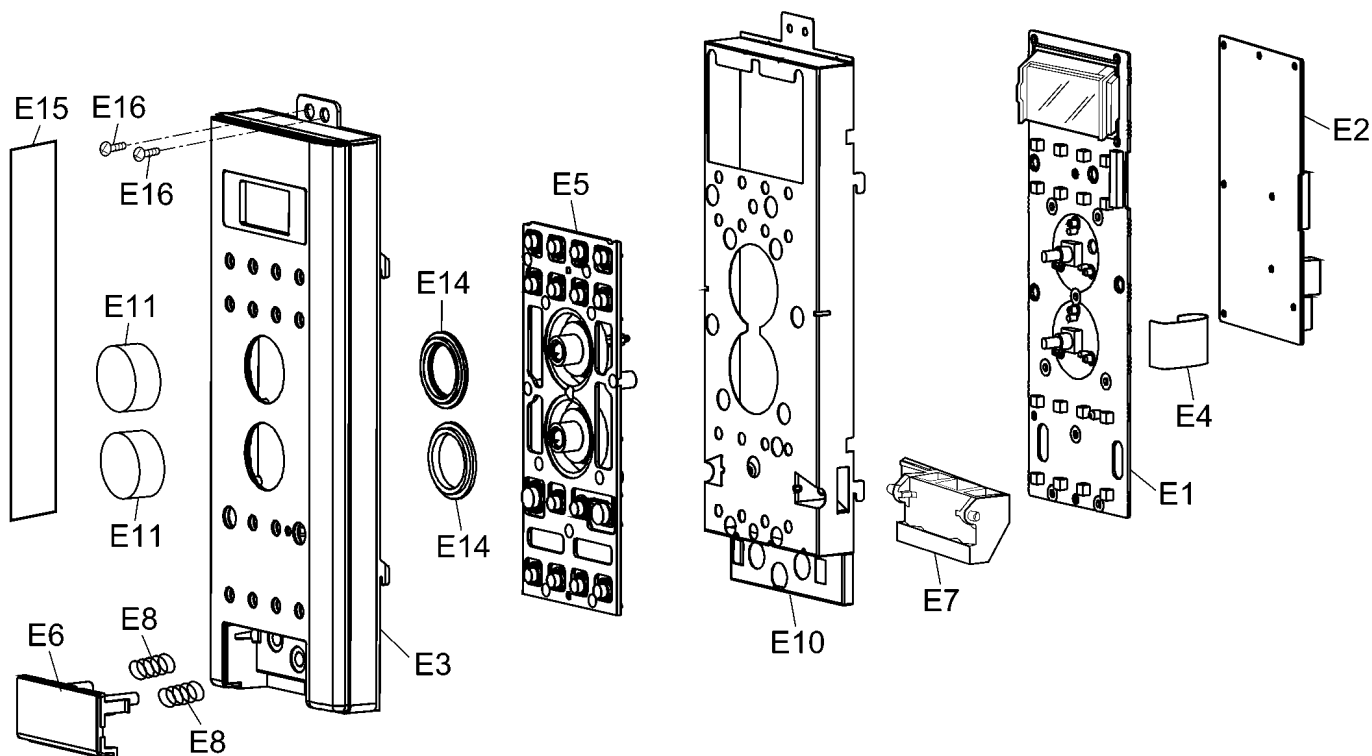
6.3. DOOR ASSEMBLY



Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
D1		F3018-1200	DOOR KEY A	1	
D2	⚠	F302A8Q00SAP	DOOR A (U)	1	SD297S APH/CPH
D2	⚠	F302A8Q50HAP	DOOR A (U)	1	P295WFX CPH
D2	⚠	F302A8Q10SAP	DOOR A (U)	1	SD277S APH/CPH
D2	⚠	F302A8Q10BAP	DOOR A (U)	1	SD277B APH/CPH
D2	⚠	F302A8Q10HAP	DOOR A (U)	1	SD277W APH/CPH, S255WFX CPH
D2	⚠	F302A8Q90SCP	DOOR A (U)	1	SA247S CPH
D2	⚠	F302A8Q90HCP	DOOR A (U)	1	S245WFX CPH
D3	⚠	F302K5H00AP	DOOR E (U)	1	
D4		F30215G10XN	DOOR KEY SPRING	1	
D5	⚠	F30855H00AP	DOOR C	1	
D6	⚠	F31455H00AP	DOOR SCREEN A	1	
D7		F02459660AP	DHHS LABEL	1	APH
D7		F04114180CP	HC LABEL	1	CPH

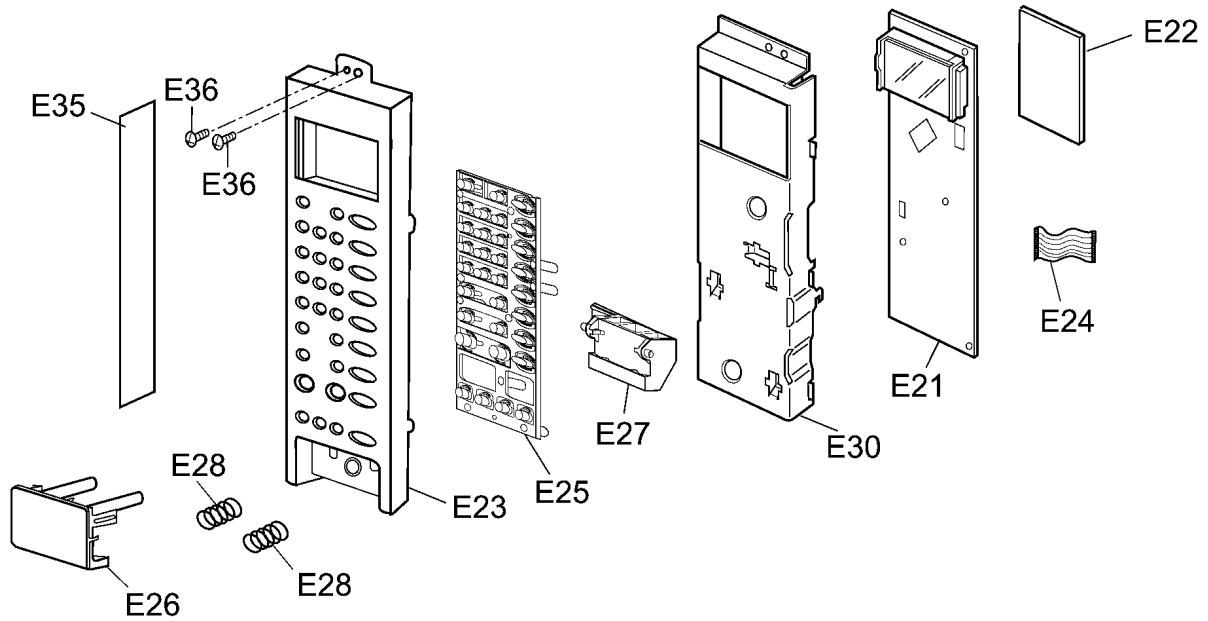
6.4. ESCUTCHEON BASE ASSEMBLY

6.4.1. NN-SD297S APH/CPH



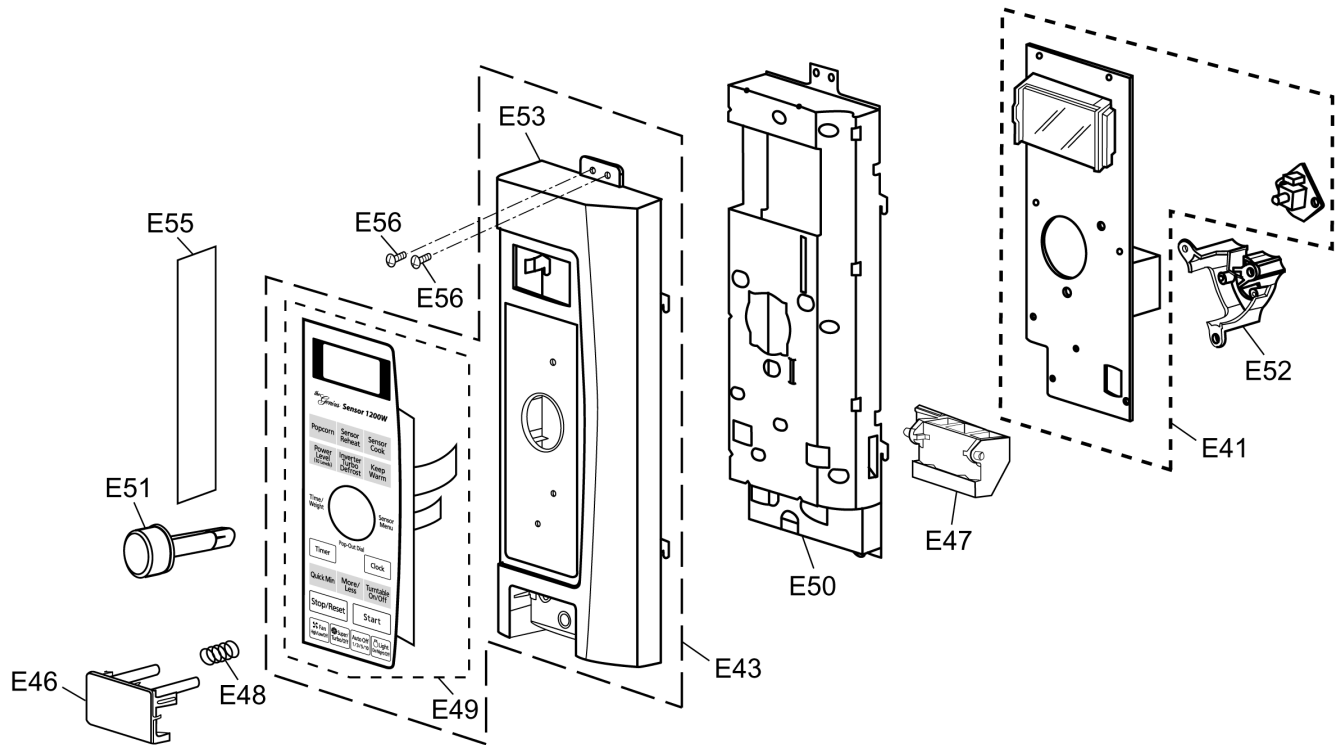
Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
E1	F603L8Q00AP	D.P.CIRCUIT (AU)	1	SD297S APH
E1	F603L8Q00CP	D.P.CIRCUIT (AU)	1	SD297S CPH
E2	F603Y6Z00AP	D.P.CIRCUIT (DU)	1	SD297S APH
E2	F603Y6Z00CP	D.P.CIRCUIT (DU)	1	SD297S CPH
E3	F800L8Q00SAP	ESCUTCHEON BASE (U)	1	SD297S APH/CPH
E4	F66166Z00AP	FLAT CABLE	1	SD297S APH/CPH
E5	F82988Q00SAP	BUTTON	1	SD297S APH/CPH
E6	F891P6F00SAP	DOOR OPENING BUTTON (U)	1	SD297S APH/CPH
E7	F82566F00AP	DOOR OPENING LEVER	1	SD297S APH/CPH
E8	F80375950AP	COOK BUTTON SPRING	2	
E10	F81278Q00APG	BACK PANEL	1	SD297S APH/CPH
E11	F83928P00KAP	DIAL	2	SD297S APH/CPH
E14	F80098P00AP	LED COVER A	2	SD297S APH/CPH
E15	F00078Q00SAP	NAME PLATE	1	SD297S APH
E15	F00078Q00SCP	NAME PLATE	1	SD297S CPH
E16	XTWFNE4+12P	SCREW	2	SD297S APH/CPH

6.4.2. NN-P295WFX CPH



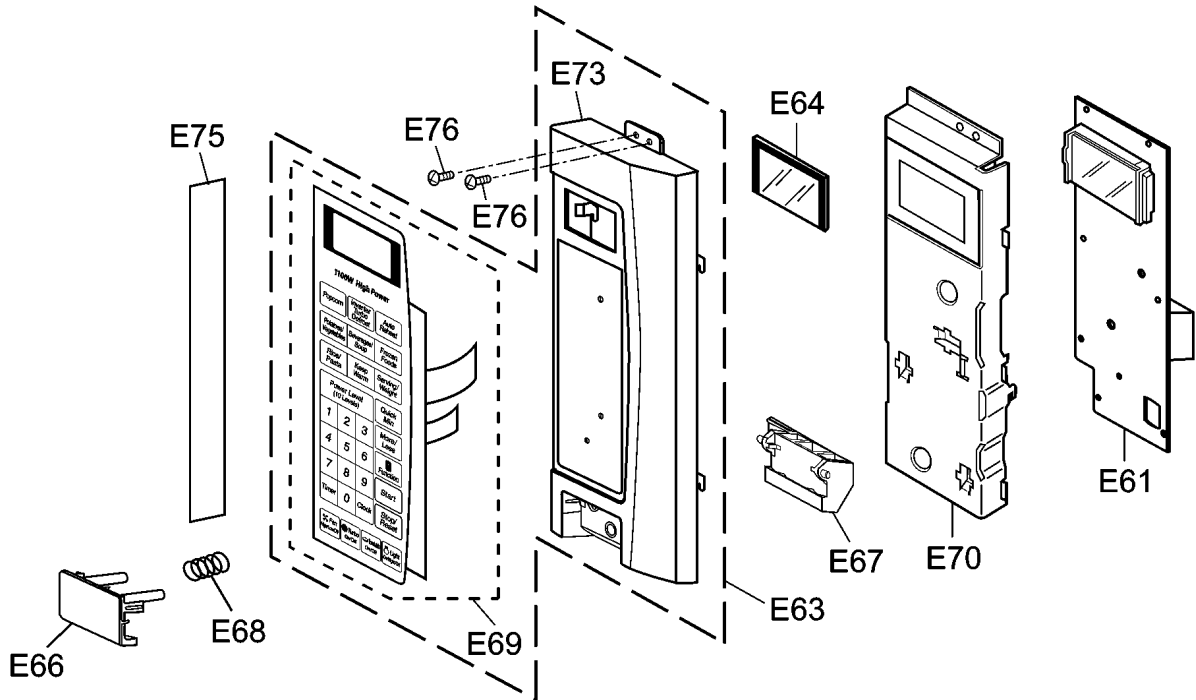
Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
E21	F603L8Q50CP	D.P.CIRCUIT (AU)	1	P295WFX CPH
E22	F603Y6Z00CP	D.P.CIRCUIT (DU)	1	P295WFX CPH
E23	F800L6Z00HCP	ESCUTCHEON BASE (U)	1	P295WFX CPH
E24	F66166Z00AP	FLAT CABLE	1	P295WFX CPH
E25	F82986Z00HAP	BUTTON	1	P295WFX CPH
E26	F891P6Z00HAP	DOOR OPENING BUTTON	1	P295WFX CPH
E27	F82566F00AP	DOOR OPENING LEVER	1	P295WFX CPH
E28	F80375950AP	COOK BUTTON SPRING	2	
E30	F81276F00APG	BACK PANEL	1	P295WFX CPH
E35	F00078Q50HCP	NAME PLATE	1	P295WFX CPH
E36	XTWFNE4+12FW	SCREW	2	P295WFX CPH

6.4.3. NN-SD277S/B/W APH, NN-SD277S/B/W CPH



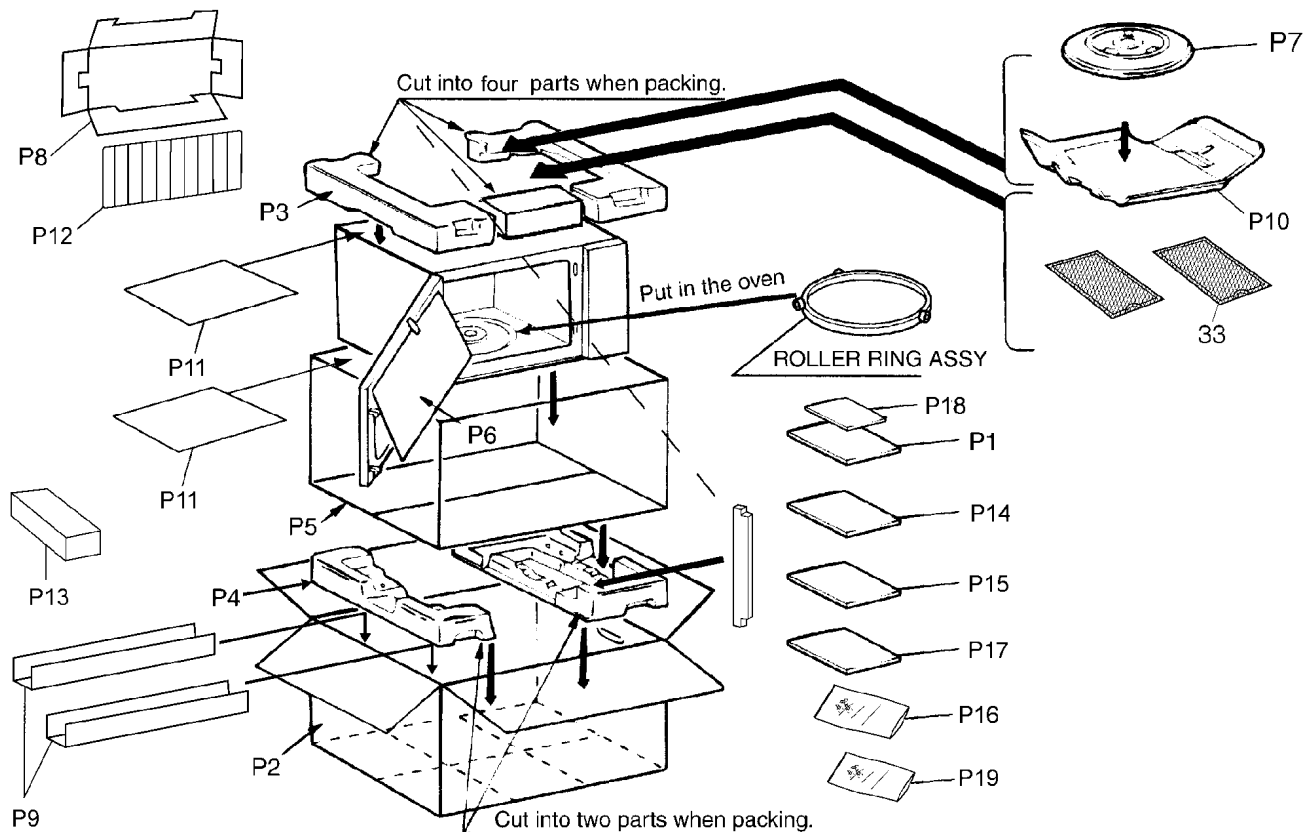
Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
E41	F603L8Q10AP	D.P.CIRCUIT (AU)	1	SD277S/B/W APH
E41	F603L8Q10CP	D.P.CIRCUIT (AU)	1	SD277S/B/W CPH
E43	F800L8Q10SAP	ESCUTCHEON BASE (U)	1	SD277S APH
E43	F800L8Q10SCP	ESCUTCHEON BASE (U)	1	SD277S CPH
E46	F891P6Z20SAP	DOOR OPENING BUTTON (U)	1	SD277S APH/CPH
E46	F80726Z30BAP	DOOR OPENING BUTTON	1	SD277B APH/CPH
E46	F80726Z30HAP	DOOR OPENING BUTTON	1	SD277W APH/CPH
E47	F82566F00AP	DOOR OPENING LEVER	1	SD277S/B/W APH,SD277S/B/W CPH
E48	F80375950AP	COOK BUTTON SPRING	1	
E49	F630Y8Q10SAP	MEMBRANE SWITCH (U)	1	SD277S APH
E49	F630Y8Q10SCP	MEMBRANE SWITCH (U)	1	SD277S CPH
E49	F630Y8Q10BAP	MEMBRANE SWITCH (U)	1	SD277B APH
E49	F630Y8Q10BCP	MEMBRANE SWITCH (U)	1	SD277B CPH
E49	F630Y8Q10HAP	MEMBRANE SWITCH (U)	1	SD277W APH
E49	F630Y8Q10HCP	MEMBRANE SWITCH (U)	1	SD277W CPH
E50	F81276Z20APG	BACK PANEL	1	SD277S/B/W APH,SD277S/B/W CPH
E51	F803G8Q10BAP	POP-UP DIAL (U)	1	SD277S/B APH,SD277S/B CPH
E51	F803G8Q10HAP	POP-UP DIAL (U)	1	SD277W APH,SD277W CPH
E52	F80186Z20AP	BACKSTOP	1	SD277S/B/W APH,SD277S/B/W CPH
E53	F80346Z30BAP	ESCUTCHEON BASE	1	SD277B APH/CPH
E53	F80346Z30HAP	ESCUTCHEON BASE	1	SD277W APH/CPH
E55	F00078Q10SAP	NAME PLATE	1	SD277S APH
E55	F00078Q10SCP	NAME PLATE	1	SD277S CPH
E55	F00078Q10BAP	NAME PLATE	1	SD277B APH
E55	F00078Q10BCP	NAME PLATE	1	SD277B CPH
E55	F00078Q10HAP	NAME PLATE	1	SD277W APH
E55	F00078Q10HCP	NAME PLATE	1	SD277W CPH
E56	XTWFNE4+12P	SCREW	2	SD277S APH/CPH,SD277B APH/CPH
E56	XTWFNE4+12PW	SCREW	2	SD277W APH/CPH

6.4.4. NN-SA247S CPH, S255WFX CPH, S245WFX CPH



Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
E61	F603L8Q60CP	D.P.CIRCUIT (AU)	1	S255WFX CPH
E61	F603L8Q90CP	D.P.CIRCUIT (AU)	1	SA247S CPH, S245WFX CPH
E63	F800L8Q90SCP	ESCUTCHEON BASE (U)	1	SA247S CPH
E64	F80025H00AP	ESCUTCHEON B	1	SA247S CPH, S245WFX CPH
E66	F80725H00SAP	DOOR OPENING BUTTON	1	SA247S CPH
E66	F80726Z30HAP	DOOR OPENING BUTTON	1	S255WFX CPH
E66	F80725H10HAP	DOOR OPENING BUTTON	1	S245WFX CPH
E67	F82566F00AP	DOOR OPENING LEVER	1	S255WFX CPH
E67	F82565H00AP	DOOR OPENING LEVER	1	SA247S CPH, S245WFX CPH
E68	F80375950AP	COOK BUTTON SPRING	1	
E69	F630Y8Q90BCP	MEMBRANE SWITCH (U)	1	SA247S CPH
E69	F630Y6Z60HCP	MEMBRANE SWITCH (U)	1	S255WFX CPH
E69	F630Y8Q90HCP	MEMBRANE SWITCH (U)	1	S245WFX CPH
E70	F81276Z60APG	BACK PLATE	1	S255WFX CPH
E70	F81275H00APG	BACK PLATE	1	SA247S CPH, S245WFX CPH
E73	F80346Z60HAP	ESCUTCHEON BASE	1	S255WFX CPH
E73	F80345H10HAP	ESCUTCHEON BASE	1	S245WFX CPH
E75	F00078Q90SCP	NAME PLATE	1	SA247S CPH
E75	F00078Q60HCP	NAME PLATE	1	S255WFX CPH
E75	F00078Q90HCP	NAME PLATE	1	S245WFX CPH
E76	XTWFNE4+12P	SCREW	2	SA247S CPH
E76	XTWFNE4+12PW	SCREW	2	S255WFX CPH, S245WFX CPH

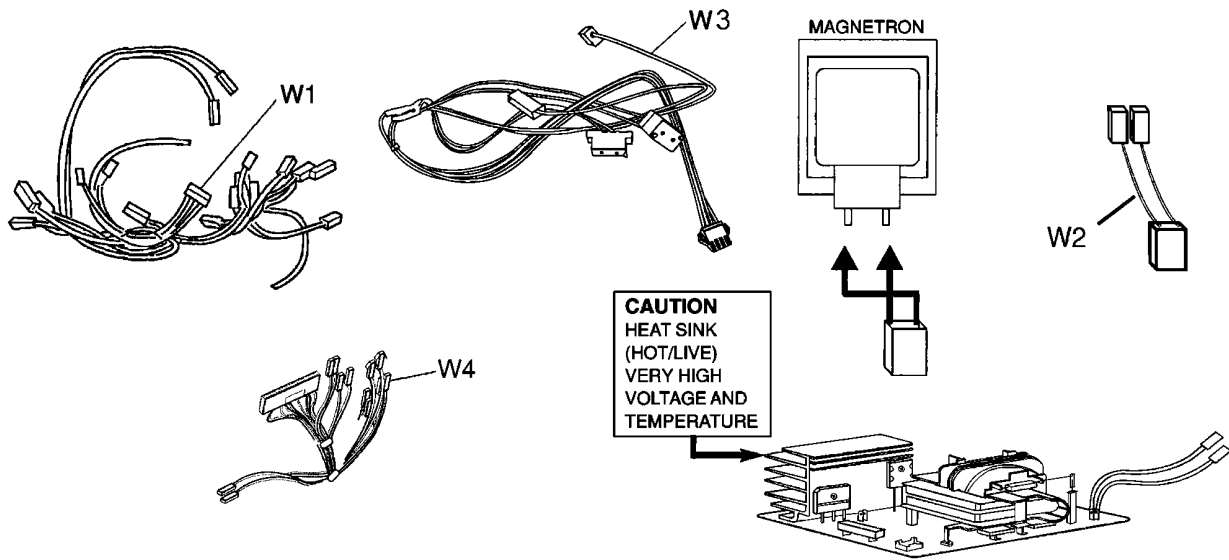
6.5. PACKING AND ACCESSORIES



Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
P1	F00038Q00AP	INSTRUCTION MANUAL	1	SD297S APH
P1	F00038Q00CP	INSTRUCTION MANUAL	1	SD297S CPH
P1	F00038Q10AP	INSTRUCTION MANUAL	1	SD277S/B/W APH
P1	F00038Q10CP	INSTRUCTION MANUAL	1	SD277S/B/W CPH
P1	F00038Q50CP	INSTRUCTION MANUAL	1	P295SFX CPH
P1	F00038Q60CP	INSTRUCTION MANUAL	1	S255WFX CPH
P1	F00038Q90CP	INSTRUCTION MANUAL	1	SA247S CPH,S245WFX CPH
P2	F01028Q00SAP	PACKING CASE ,PAPER	1	SD297S APH
P2	F01028Q00SCP	PACKING CASE ,PAPER	1	SD297S CPH
P2	F01028Q10SAP	PACKING CASE ,PAPER	1	SD277S APH
P2	F01028Q10SCP	PACKING CASE ,PAPER	1	SD277S CPH
P2	F01028Q10BAP	PACKING CASE ,PAPER	1	SD277B APH
P2	F01028Q10BCP	PACKING CASE ,PAPER	1	SD277B CPH
P2	F01028Q10HAP	PACKING CASE ,PAPER	1	SD277W APH
P2	F01028Q10HCP	PACKING CASE ,PAPER	1	SD277W CPH
P2	F01028Q50HCP	PACKING CASE ,PAPER	1	P295WFX CPH
P2	F01028Q60HCP	PACKING CASE ,PAPER	1	S255WFX CPH
P2	F01028Q90SCP	PACKING CASE ,PAPER	1	SA247S CPH
P2	F01028Q90HCP	PACKING CASE ,PAPER	1	S245WFX CPH
P3	F01045H00AP	UPPER FILLER	1	SD297S APH/CPH,P295WFX CPH, SA247S CPH,S245WFX CPH
P3	F01046Z20AP	UPPER FILLER	1	SD277S/B/W APH,SD277S/B/W CPH,S255WFX CPH
P4	F01055H00AP	LOWER FILLER	1	SD297S APH/CPH,P295WFX CPH, SA247S CPH,S245WFX CPH
P4	F01056Z20AP	LOWER FILLER	1	SD277S/B/W APH,SD277S/B/W CPH,S255WFX CPH
P5	F01066Z20AP	P.E.BAG	1	
P6	F01075H00AP	DOOR SHEET	1	
P7	A06015H00AP	COOKING TRAY	1	
P8	F01175H00AP	TRAY PACKING B	1	EXCEPT SA247S CPH & S245WFX CPH
P9	F01485H00AP	REINFORCE BRACKET	2	
P10	F01085H00AP	TRAY PACKING	1	
P11	F01925H00AP	SHEET	2	
P12	F06025H00AP	OVEN RACK	1	
P13	F02185H00AP	PROTECTOR PACKING	1	
P14	F03138Q00AP	INSTALLATION INSTRUCTION	1	APH

Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
P14	F03138Q00CP	INSTALLATION INSTRUCTION	1	CPH
P15	F04318Q00AP	UPPER-CABINET TEMPLATE	1	APH
P15	F04318Q00CP	UPPER-CABINET TEMPLATE	1	CPH
P16	F011F6Z00AP	ATTACHMENT	1	
P17	F04845V10AP	FILTER PURCHASE NOTICE	1	APH
P18	F04458Q00SCP	OVERLAY	1	SD297S CPH
P18	F04458Q10SCP	OVERLAY	1	SD277S CPH
P18	F04458Q10BCP	OVERLAY	1	SD277B CPH
P18	F04458Q10HCP	OVERLAY	1	SD277W CPH
P18	F04456Z00HCP	OVERLAY	1	P295WFX CPH
P18	F04456F20BCP	OVERLAY	1	SA247S CPH
P18	F04456Z60HCP	OVERLAY	1	S255WFX CPH
P18	F04456F20HCP	OVERLAY	1	S245WFX CPH
P19	F011G6Z00AP	ATTACHMENT B	1	
33	F400B6Z00AP	FILTER (U)	2	

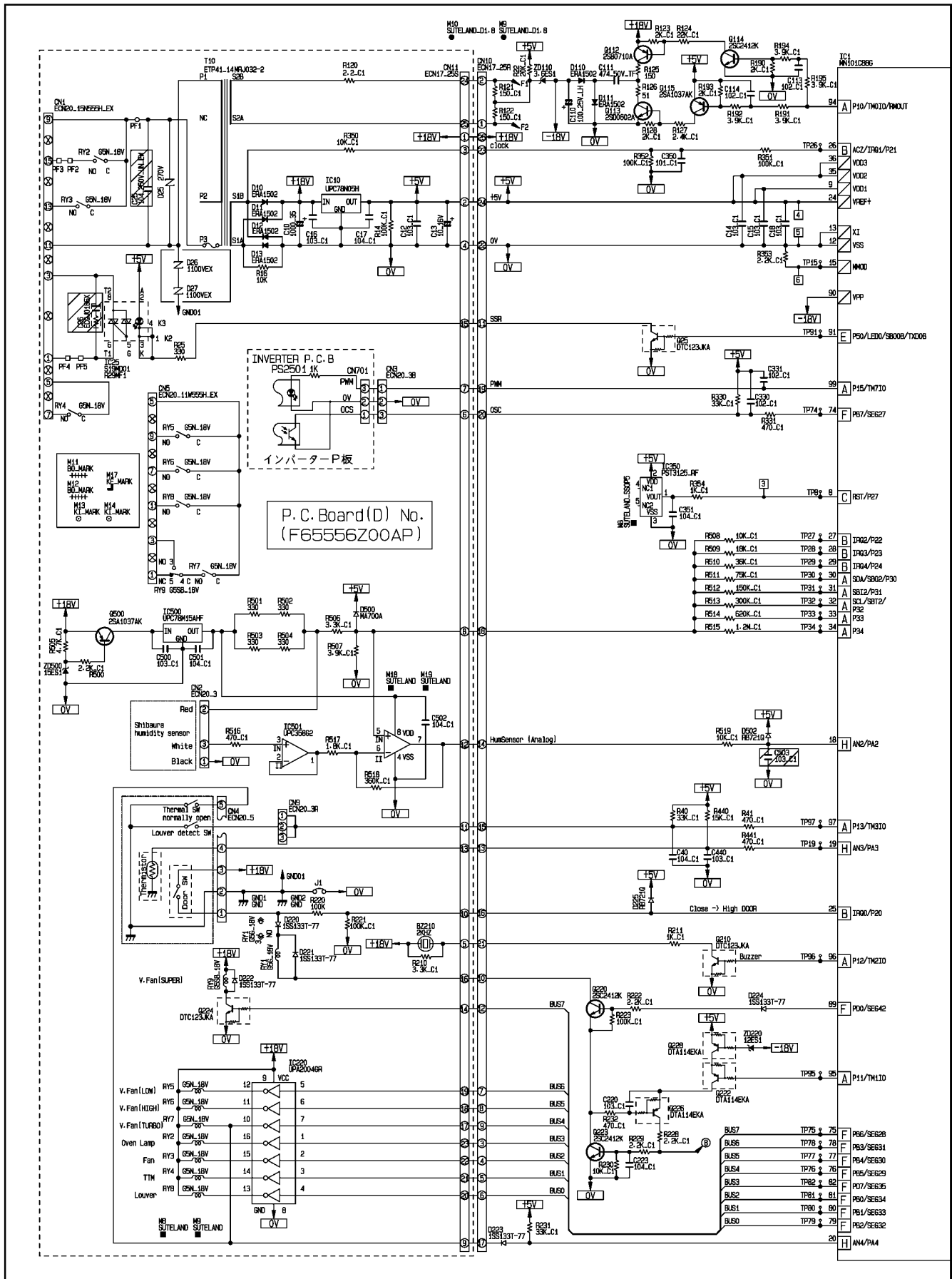
6.6. WIRING MATERIALS

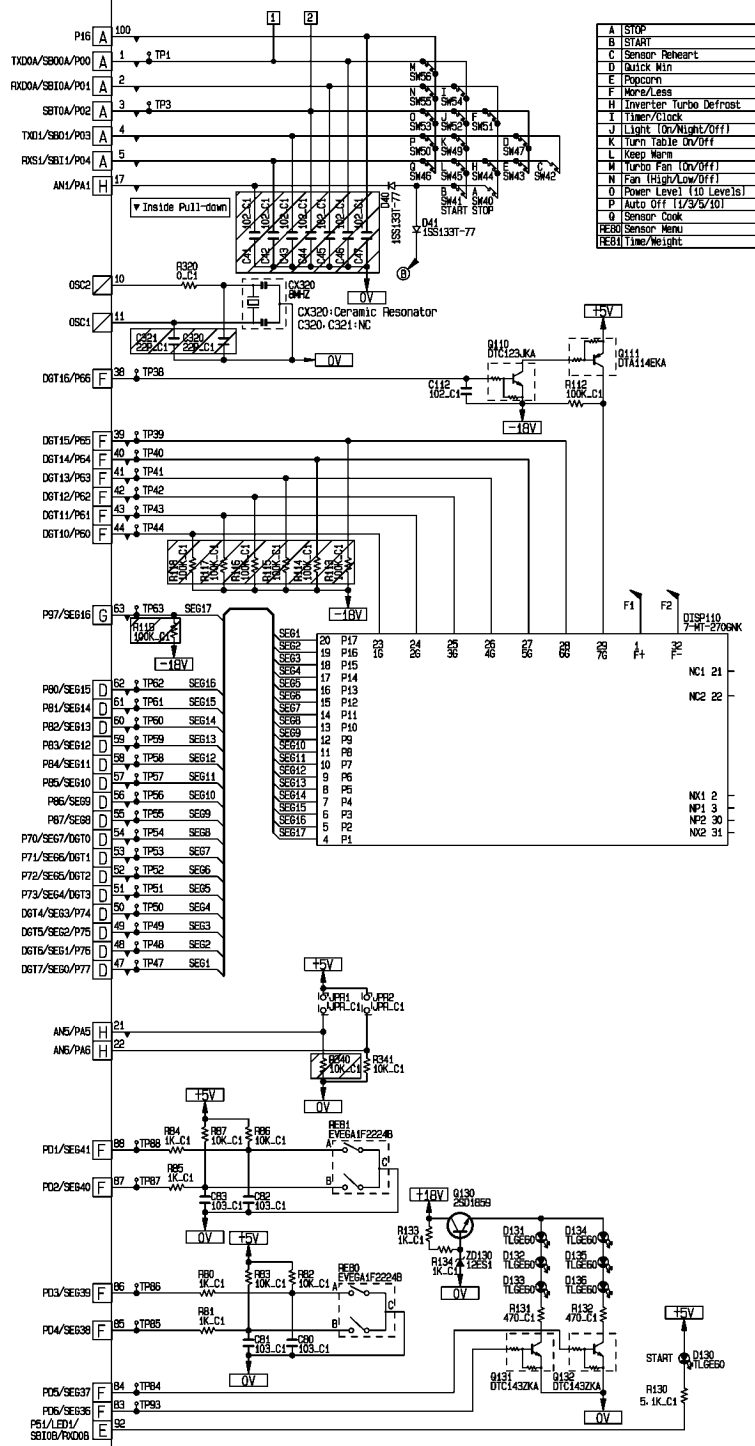


Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
W1	F030A6Z00AP	LEAD WIRE HARNESS	1	SD297S APH
W1	F030A6Z00CP	LEAD WIRE HARNESS	1	SD297S CPH, P295WFX CPH
W1	F030A6Z20AP	LEAD WIRE HARNESS	1	SD277S/B/W APH
W1	F030A6Z20CP	LEAD WIRE HARNESS	1	SD277S/B/W CPH
W1	F030A6Z60CP	LEAD WIRE HARNESS	1	S255WFX CPH
W1	F030A6Y90CP	LEAD WIRE HARNESS	1	SA247S CPH, S245WFX CPH
W2	F030E5H00AP	H.V.LEAD WIRE	1	APH
W2	F030E5H00CP	H.V.LEAD WIRE	1	CPH
W3	F03536F00AP	LEAD WIRE HARNESS U	1	(INCLUDING CABEL CONNECTOR CN4)
W4	F03556Z00AP	LEAD WIRE HARNESS	1	SD297S APH/CPH, P295WFX CPH (INCLUDING SOCKET)
W4	F03556Z20AP	LEAD WIRE HARNESS	1	EXCEPT SD297S APH/CPH, P295WFX CPH

7 DIGITAL PROGRAMMER CIRCUIT

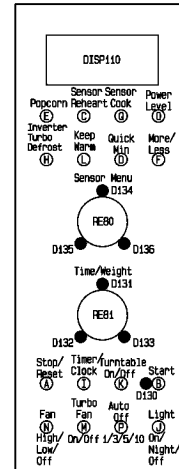
7.1. NN-SD297S APH/CPH





A	STOP
B	START
C	Sensor Reheat
D	Quick Min
E	Popcorn
F	More/Less
H	Inverter Turbo Defrost
I	Timer/Clock
J	Light On/Night/Off
K	Turn Table On/Off
L	Keep Warm
M	Turbo Fan On/Off
N	Fan High/Low/Off
O	Power Level (10 Levels)
P	Auto Off (12/3/5/10)
Q	Sensor Cook
REB0	Sensor Menu
REB1	Time/Weight

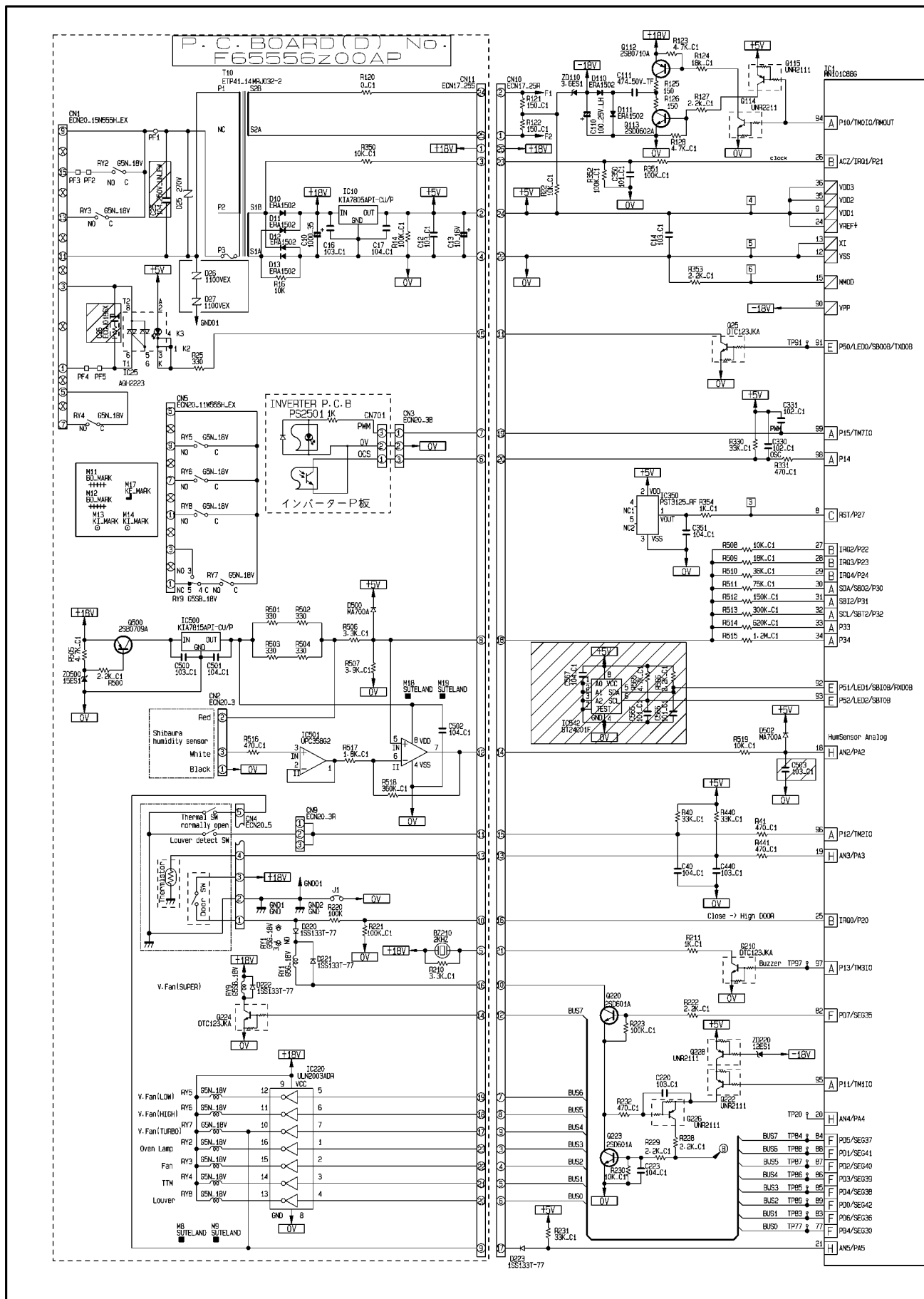
LOCATION

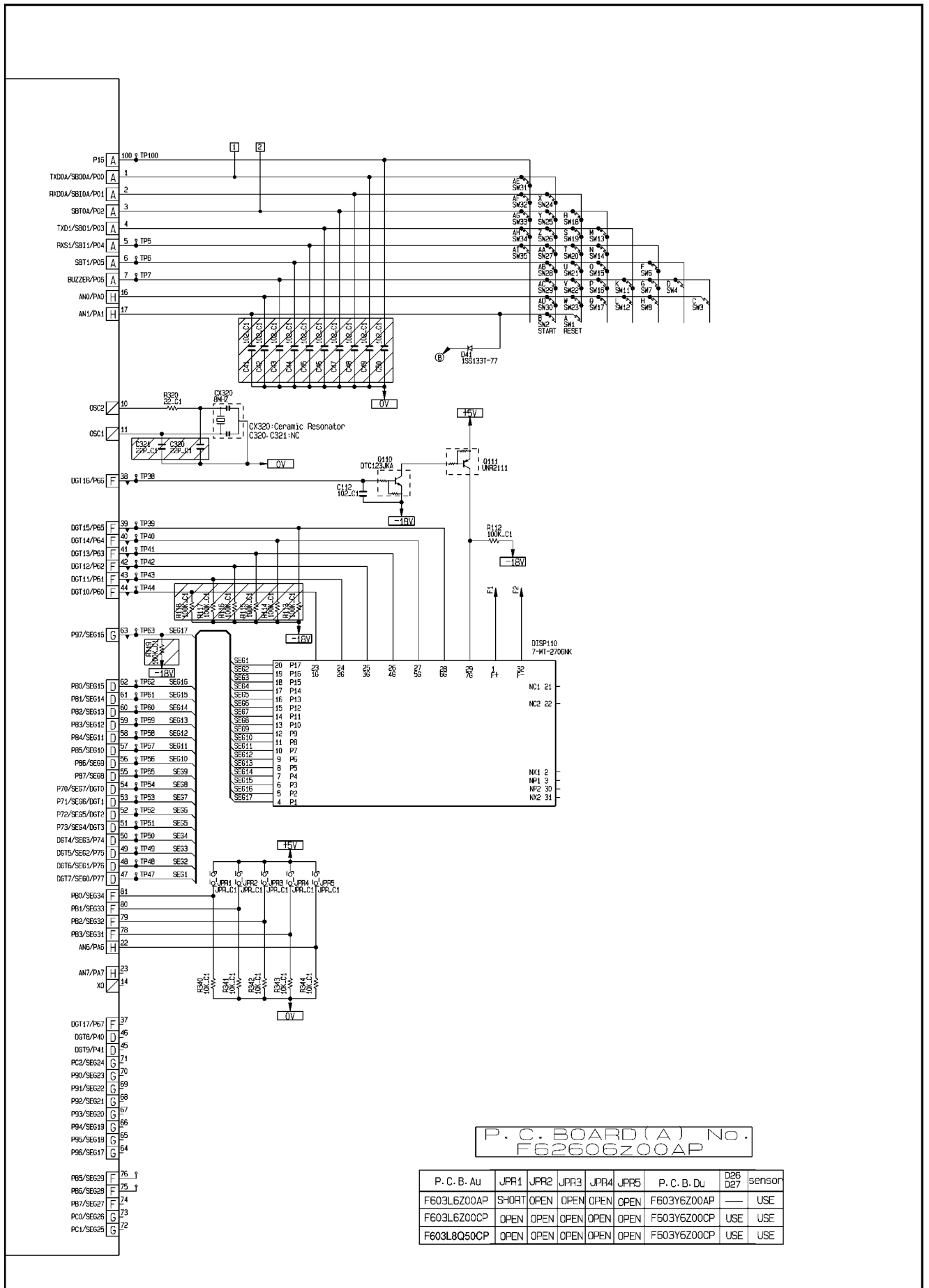


P.C. Board (A) No.
(F62608Q00AP)

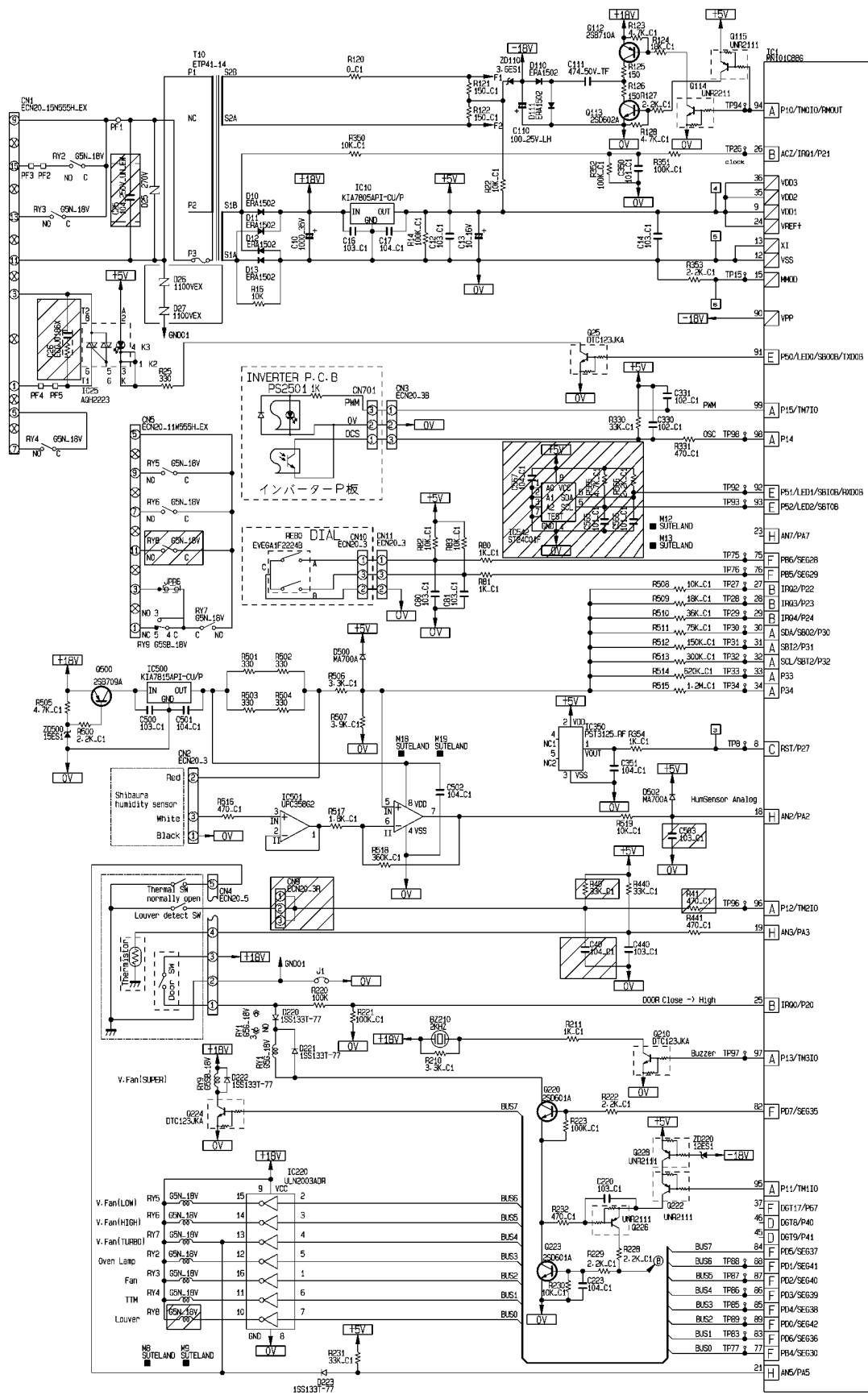
P. C. B. Au	JPR1	JPR2	P. C. B. Du	D26 D27
F603L8Q00AP	SHORT	OPEN	F603Y6Z00AP	—
F603L8Q00CP	OPEN	OPEN	F603Y6Z00CP	USE

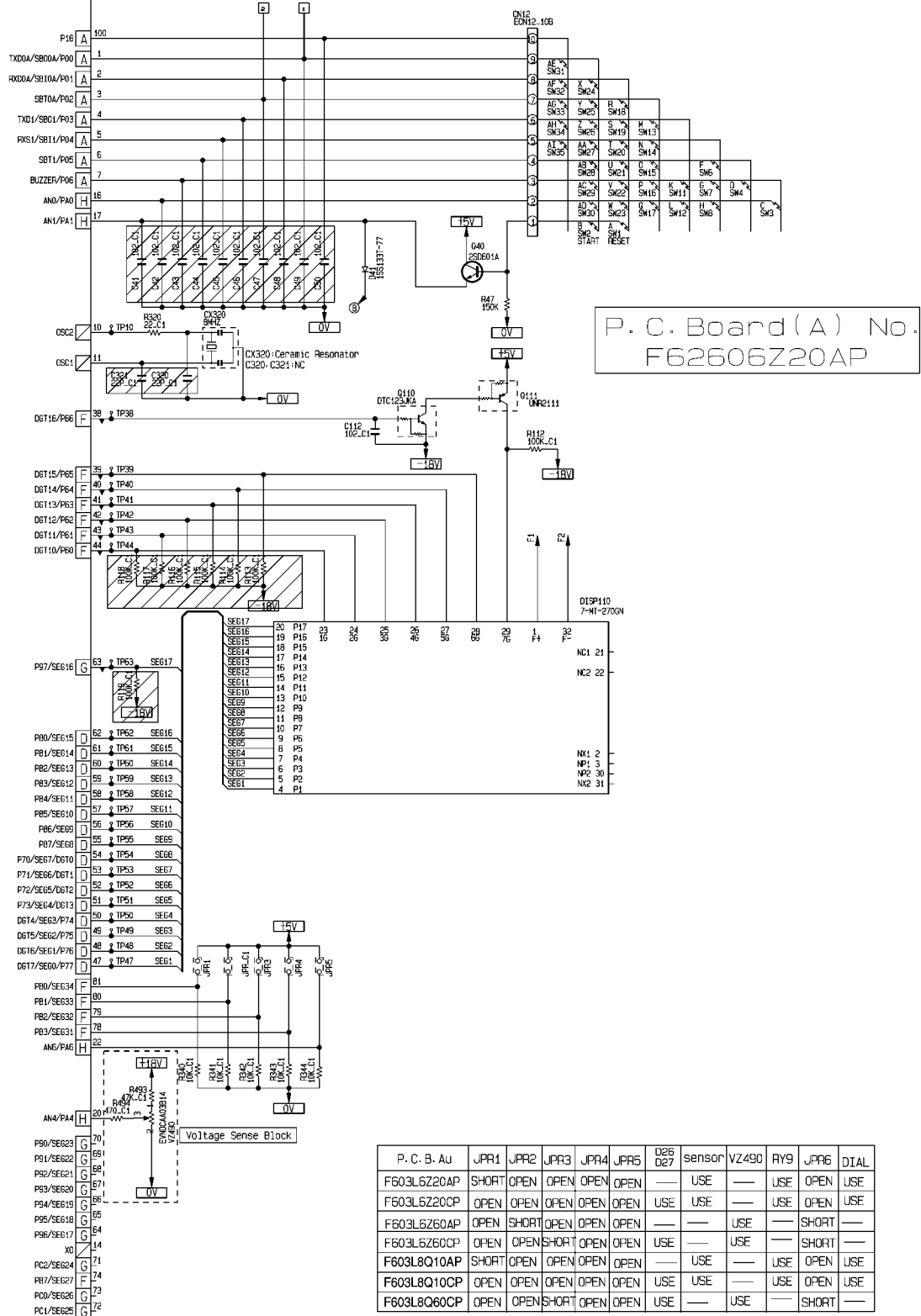
7.2. NN-P295WFX CPH



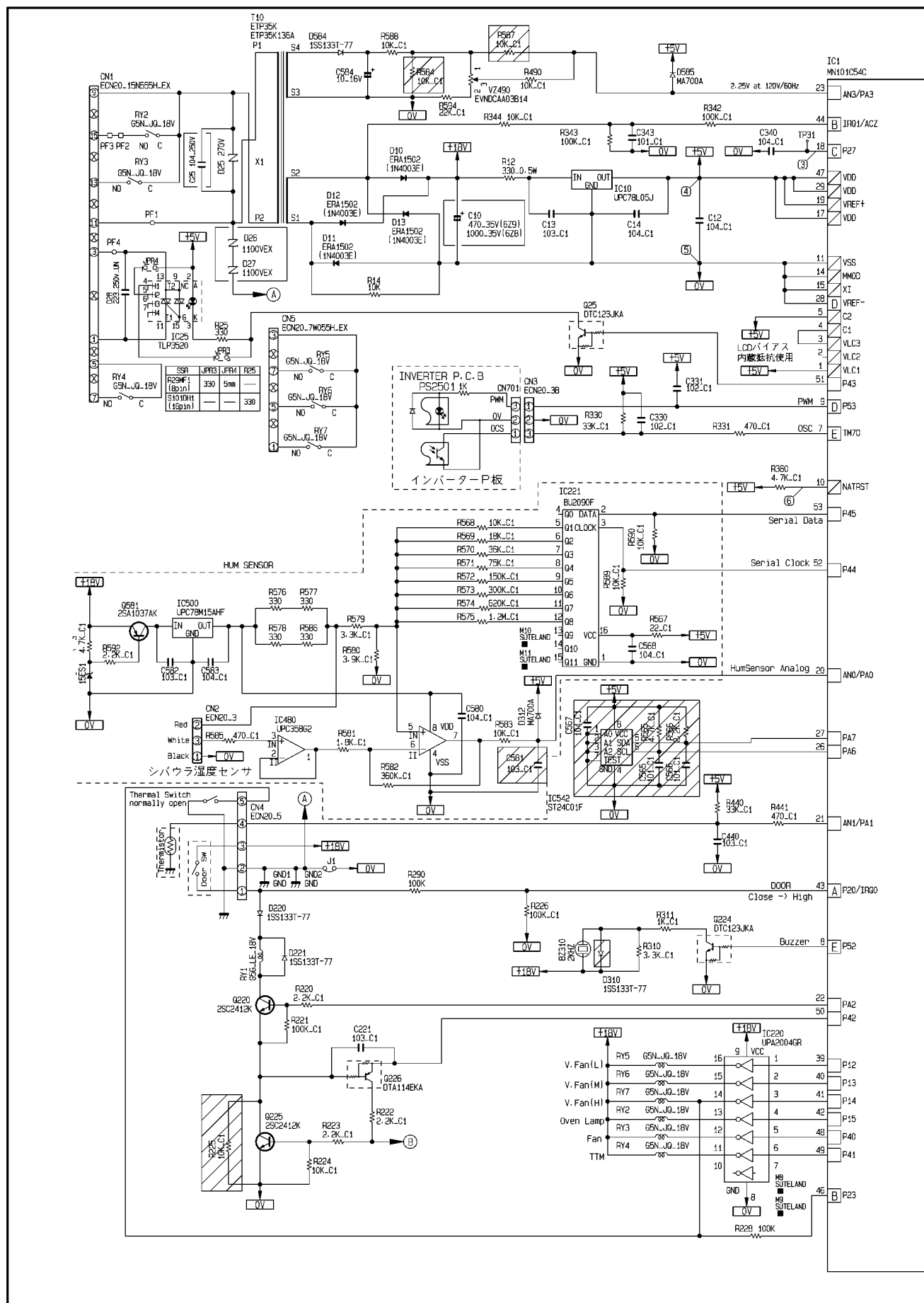


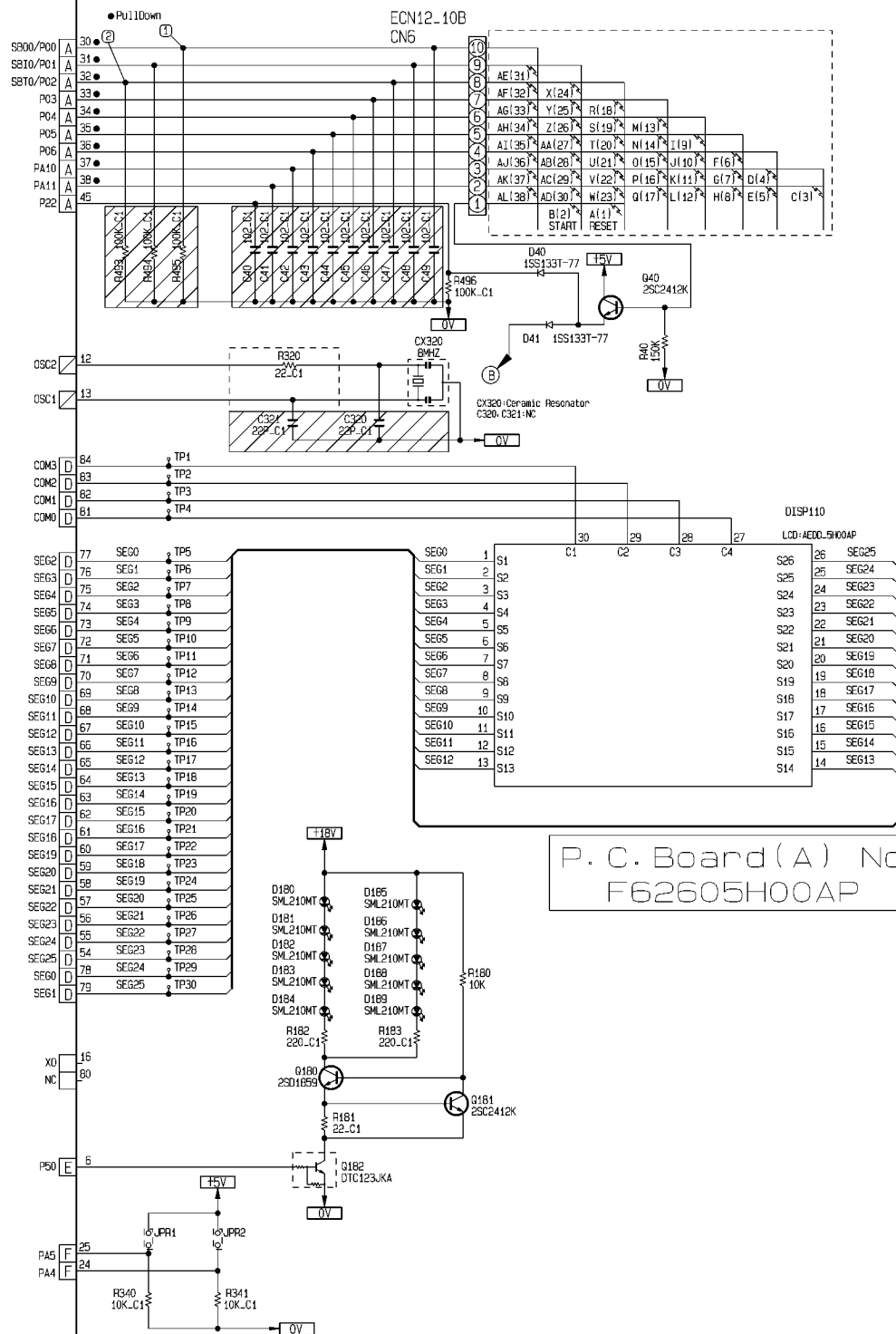
7.3. NN-SD277 APH/CPH, NN-S255WFX CPH





7.4. NN-SA247S CPH, S245WFX CPH





P. C. B. Au	D26 D27	JPR1	JPR2	HUM SENSOR	C10	C25
F603L6Z80AP	—	OPEN	OPEN	USE	1000uF	—
F603L6Z90AP	—	SHORT	OPEN	—	470uF	—
F603L6Y90CP	USE	OPEN	SHORT	—	470uF	—
F603L8Q90CP	USE	OPEN	OPEN	—	470uF	—

7.5. PARTS LIST

7.5.1. NN-SD297S APH/CPH

Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
BZ210	L0DDEA000014	BUZZER	1	2.0KHz
C110	ECEA1EKS101I	AL CHEM CAPACITOR	1	100µF/25V
C111	ECQV1H474JL2	CAPACITOR	1	0.47µF/50V
C10	AECETK1V102B	AL CHEM CAPACITOR	1	1000µF/35V
C13	AECETS1C220B	AL CHEM CAPACITOR	1	22µF/16V
CX320	EFOEC8004A4	CERAMIC RESONATOR	1	8.0MHz
DISP	A2BB00000150	VACUUM FLUORESCENCE DISPLAY	1	
DISP HOLDER	F66176Z00AP	LCD HOLDER	1	
	F64578P00AP	DIFFUSION SHEET	1	
D40,D41,D220-D222	MA2C19600E	DIODE	5	
D10-D13,D110,D111	B0EAKT000025	DIODE	6	
D224,D500,D502	MA2C700A0F	DIODE	3	
D130-D133	AE3294UBCA7	LED	4	
IC1	MN101C88ADA	L.S.I.	1	
IC10	C0CAADG00060	IC	1	
IC25	B3PAC0000060	IC	1	
IC220	B1HBGFF00007	IC	1	
IC350	C0EBH0000264	IC	1	
IC501	C0ABBA000230	IC	1	
IC550	C0CAALG00023	IC	1	
Q130	B1BAAJ000003	TRANSISTOR	1	
D25	D4EAY271A036	ZENER RESISTOR	1	270V
D26,D27	D4EAY112A036	ZENER RESISTOR	2	1100V (CPH)
RY1	K6B1AZA00005	POWER RELAY	1	18V
RY2-RY8	K6B1AZA00011	POWER RELAY	7	
RY9	K6B1CZA00004	POWER RELAY	1	
T10	G4C4AAD00006	LOW VOLTAGE TRANSFORMER	1	120V
RE80,RE81	EVEJ1HF2224B	REVOLVING ENCODER	2	
SW40-SW47,SW49-SW56	EVQ11L05R	SWITCH	16	
ZD110	B0BA3R500006	ZENER DIODE	1	
ZD130,ZD220	B0BA01100004	ZENER DIODE	2	
ZD500	B0BA01400009	ZENER DIODE	1	

7.5.2. NN-P295WFX CPH

Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
BZ210	L0DDEA000014	BUZZER	1	2.0KHz
C110	ECEA1EKS101I	AL CHEM CAPACITOR	1	100µF/25V
C111	ECQV1H474JL2	CAPACITOR	1	0.47µF/50V
C10	AECETK1V102B	AL CHEM CAPACITOR	1	1000µF/35V
C13	AECETS1C220B	AL CHEM CAPACITOR	1	22µF/16V
CX320	EFOEC8004A4	CERAMIC RESONATOR	1	8.0MHz
DISP	A2BB00000150	VACUUM FLUORESCENCE DISPLAY	1	
DISP HOLDER	F66176Z00AP	LCD HOLDER	1	
D41,D220-D223	MA2C19600E	DIODE	5	
D10-D13,D110,D111	B0EAKT000025	DIODE	6	
D224,D500,D502	MA2C700A0F	DIODE	3	
IC1	MN101C88ADF	L.S.I.	1	
IC10	C0CAADG00060	IC	1	
IC25	B3PAC0000060	IC	1	
IC220	B1HBGFF00007	IC	1	
IC350	C0EBH0000264	IC	1	
IC501	C0ABBA000230	IC	1	
IC550	C0CAALG00023	IC	1	
D25	D4EAY271A036	ZENER RESISTOR	1	270V
D26,D27	D4EAY112A036	ZENER RESISTOR	2	1100V (CPH)
RY1	K6B1AZA00005	POWER RELAY	1	18V
RY2-RY8	K6B1AZA00011	POWER RELAY	7	
RY9	K6B1CZA00004	POWER RELAY	1	
T10	G4C4AAD00006	LOW VOLTAGE TRANSFORMER	1	120V
SW1-SW4,SW6-SW8,SW11-SW35	EVQ11L05R	SWITCH	32	
ZD110	B0BA3R500006	ZENER DIODE	1	
ZD220	B0BA01100004	ZENER DIODE	1	
ZD500	B0BA01400009	ZENER DIODE	1	

7.5.3. NN-SD277* APH/CPH,S255WFX CPH

Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
BZ210	L0DDEA000014	BUZZER	1	2.0KHz
C110	ECEA1EKS101I	AL CHEM CAPACITOR	1	100µF/25V
C111	ECQV1H474JL2	CAPACITOR	1	0.47µF/50V
C10	AECETK1V102B	AL CHEM CAPACITOR	1	1000µF/35V
C13	AECETS1C220B	AL CHEM CAPACITOR	1	22µF/16V
CX320	EFOEC8004A4	CERAMIC RESONATOR	1	8.0MHz
DISP	A2BB00000150	VACUUM FLUORESCENCE DISPLAY	1	
DISP HOLDER	F66176Z00AP	LCD HOLDER	1	
D41,D220-D223	MA2C19600E	DIODE	5	
D10-D13,D110,D111	B0EAKT000025	DIODE	6	
D224	MA2C700A0F	DIODE	1	
D500,D502	MA2C700A0F	DIODE	2	SD277* APH/CPH
IC1	MN101C88ADE	L.S.I.	1	SD277* APH/CPH
IC1	MN101C88ADF	L.S.I.	1	S255WFX CPH
IC10	C0CAADG00060	IC	1	
IC25	B3PAC0000060	IC	1	
IC220	B1HBGFF00007	IC	1	
IC350	C0EBH0000264	IC	1	
IC501	C0ABBA000230	IC	1	SD277* APH/CPH
IC550	C0CAALG00023	IC	1	SD277* APH/CPH
D25	D4EAY271A036	ZENER RESISTOR	1	270V
D26,D27	D4EAY112A036	ZENER RESISTOR	2	1100V (CPH)
RY1	K6B1AZA00005	POWER RELAY	1	18V
RY2-RY7	K6B1AZA00011	POWER RELAY	6	
RY9	K6B1CZA00004	POWER RELAY	1	SD277* APH/CPH
T10	G4C4AAD00006	LOW VOLTAGE TRANSFORMER	1	120V
RE80	EVEJ1HF2224B	REVOLVING ENCODER	1	SD277* APH/CPH
VZ490	D3BB6103A006	VARISTOR	1	S255WFX CPH
ZD110	B0BA3R500006	ZENER DIODE	1	
ZD220	B0BA01100004	ZENER DIODE	1	
ZD500	B0BA01400009	ZENER DIODE	1	SD277* APH/CPH

7.5.4. NN-SA247S CPH,S245WFX CPH

Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
BZ210	L0DDEA000014	BUZZER	1	2.0KHz
C584	AECETS1C100B	AL CHEM CAPACITOR	1	10µF/16V
C10	AECETK1V471B	AL CHEM CAPACITOR	1	470µF/35V
CX320	EFOEC8004A4	CERAMIC RESONATOR	1	8.0MHz
DISP110	L5AAAFD00025	VACUUM FLUORESCENCE DISPLAY	1	
DISP HOLDER	F66175E40AP	LCD HOLDER	1	
	F67525E40XN	DIFFUSION SHEET	1	
D40,D41,D220,D221,D584	MA2C19600E	DIODE	5	
D10-D13	B0EAKT000025	DIODE	4	
D585	MA2C700A0F	DIODE	1	
IC1	MN101C54CHP	L.S.I.	1	
IC10	C0CAADG00060	IC	1	
IC25	B3PAC0000060	IC	1	
IC220	B1HBGFF00007	IC	1	
Q180	B1BAAJ000003	TRANSISTOR	1	
D25	D4EAY271A036	ZENER RESISTOR	1	270V
D26,D27	D4EAY112A036	ZENER RESISTOR	2	1100V
RY1	K6B1AZA00005	POWER RELAY	1	18V
RY2-RY7	K6B1AZA00011	POWER RELAY	6	
T10	G4C4AAD00006	LOW VOLTAGE TRANSFORMER	1	120V
VZ490	D3BB6103A006	VARISTOR	1	