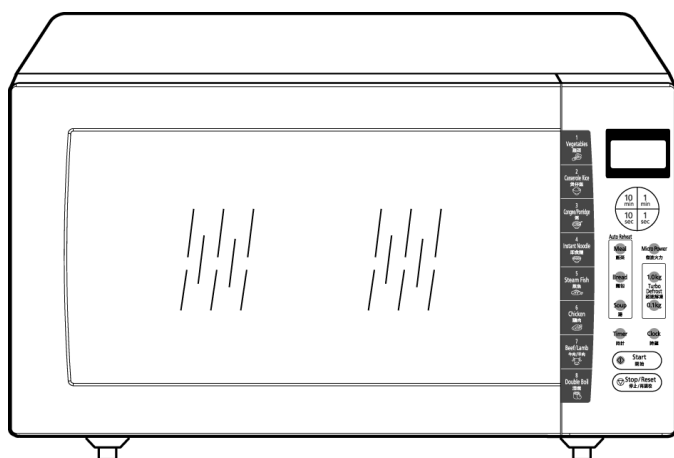


Service Manual

Microwave Oven



NN-ST557M NN-ST557W

HPE(Hong Kong)

YPQ(Singapore)

MPQ(Malaysia)

TPE(Thailand, Indonesia)

YTE(Others)

Please file and use this manual together with the service manual for Model NN-S553/K593/K573/K543 (ORDER NO. SIMMC0306022C3).

Specification

Model		NN-ST557M	NN-ST557W
Power Source:		240V AC Single Phase, 50HzFor MPQ, YPQ Models 220V AC Single Phase, 50HzFor HPE, YTE, TPE Models	
Power Requirement:	Microwave	1000W	1000W
Output:	Microwave	1100W	1100W
Microwave Frequency:		2450MHz	
Timer:		99min.99sec	
Outside Dimensions:		510mm(W) x 380mm(D) x 304mm(H)	
Oven Cavity Dimensions:		359mm(W) x 352mm(D) x 217mm(H)	
Weight:		11.5kg	
PbF		This product with PbF	
Specifications subject to change without notice.			

Panasonic®

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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. Check for radiation leakage before and after every servicing according to the "procedure for measuring radiation leakage."
3. If the unit cannot be repaired on site, advise the customer not to use until unit is repaired.
4. 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 be replaced only with the manufacture's specified parts to prevent microwave leakage, shock, fire, or other hazards. Do not modify the original design.

This service manual covers products for following markets.

When troubleshooting or replacing parts, please refer to the country/area identifications shown below for your applicable product specification.

HPE For Hongkong
 YPQ For Singapore
 MPQ For Malaysia
 TPE For Thailand, Indonesia
 YTE For Others

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 $370 \pm 10^{\circ}\text{C}$.
 - 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.

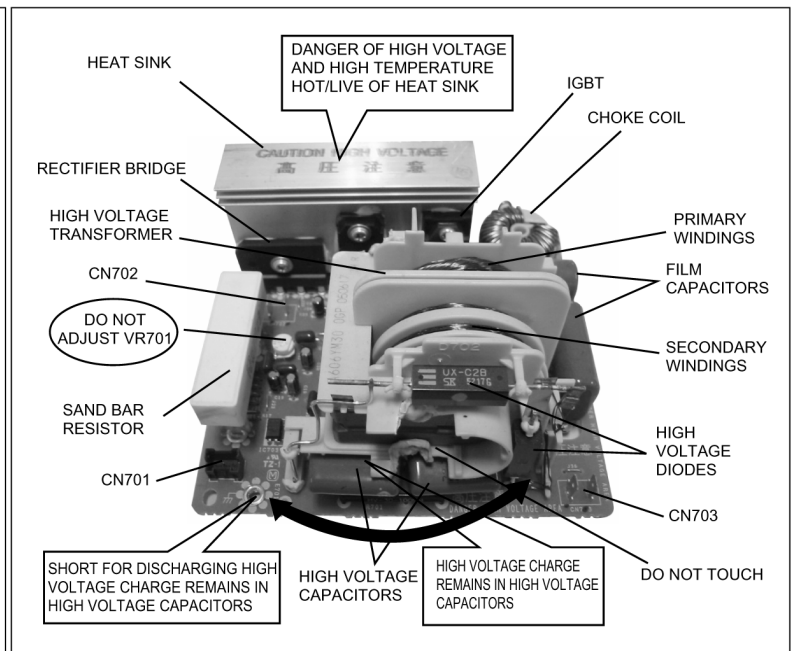
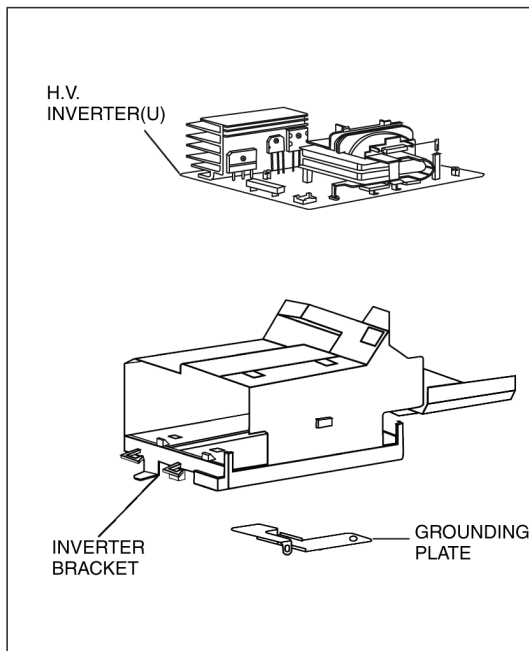
IT HAS: 1. Very high voltage and high current circuits.

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:

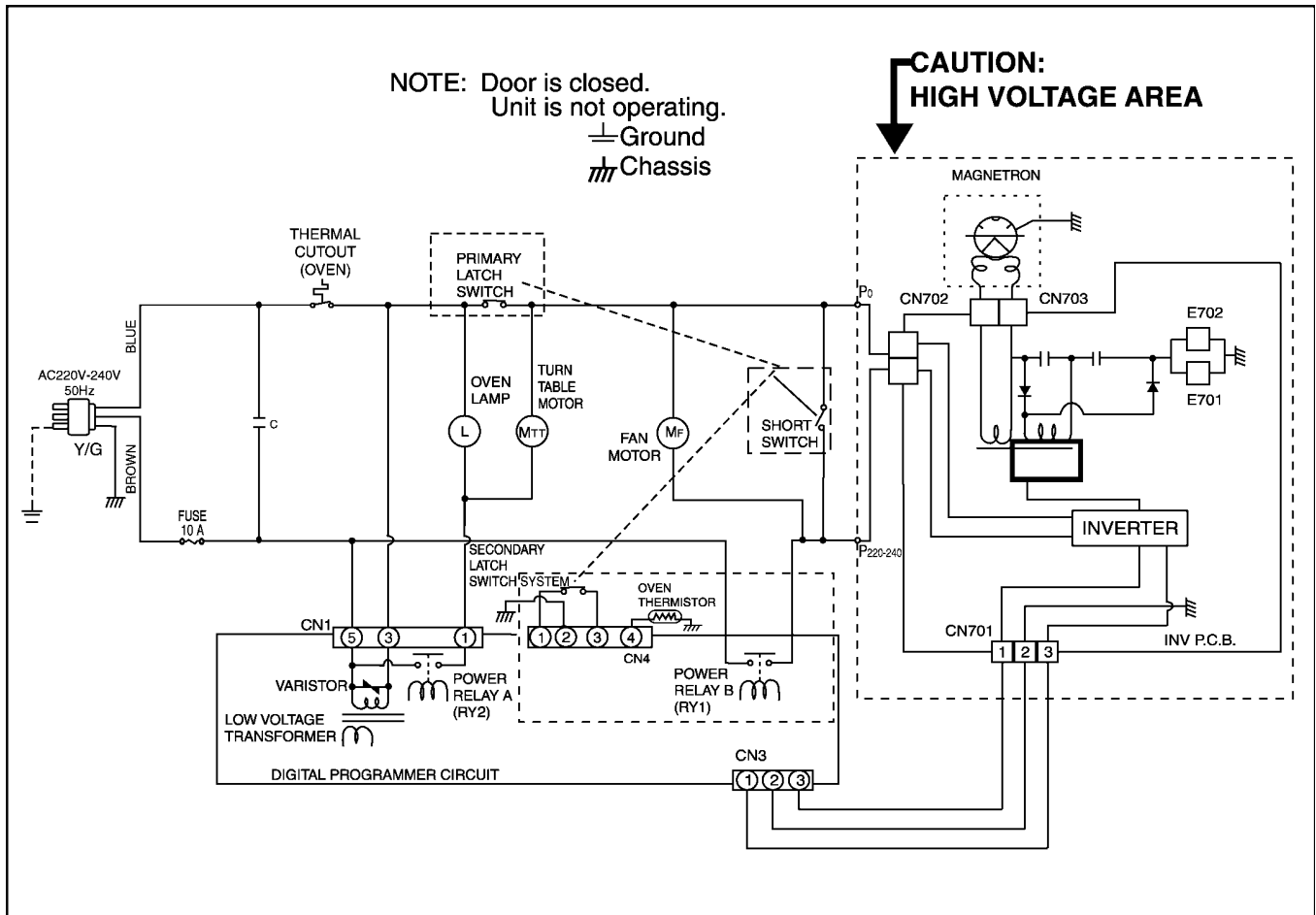
- * 1. Do not touch circuitry because it has very hot (high voltage) circuitry. Even when replacing board, extreme care should be taken to avoid possible electric shock hazards. High voltage charge may remain in circuits.
- * 2. Do not touch aluminum heat sink because it is energized with very high voltage 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.

INVERTER POWER SUPPLY

CONTENTS

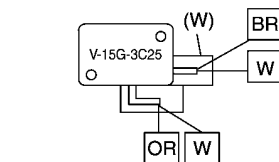
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1 SCHEMATIC DIAGRAM

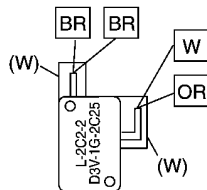


WIRING DIAGRAM

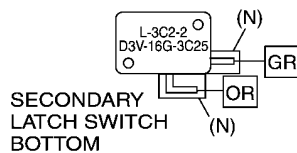
NOTE: * When replacing, check the lead wire color as shown.
* Colors shown by () indicate colors of lead wire connector housing.



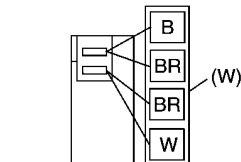
PRIMARY LATCH SWITCH
TOP



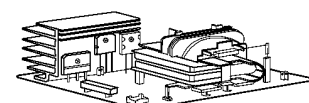
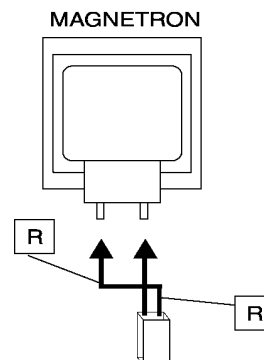
SHORT SWITCH
MIDDLE



SECONDARY LATCH SWITCH
BOTTOM



POWER RELAY B(RY1)



HIGH VOLTAGE INVERTER(U)

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

(S-8C2)

2 CAUTIONS TO BE OBSERVED WHEN TROUBLESHOOTING

Unlike many other appliances, the microwave oven is a high voltage, high current device. It is free from danger in ordinary use, though extreme care should be taken during repair.

CAUTION

Servicemen should remove their watches whenever working close to or replacing the magnetron.

2.1. Check the grounding

Do not operate on a two wire extension cord. The microwave oven is designed to be grounded when used. It is imperative, therefore, to ensure the appliance is properly grounded before beginning repair work.

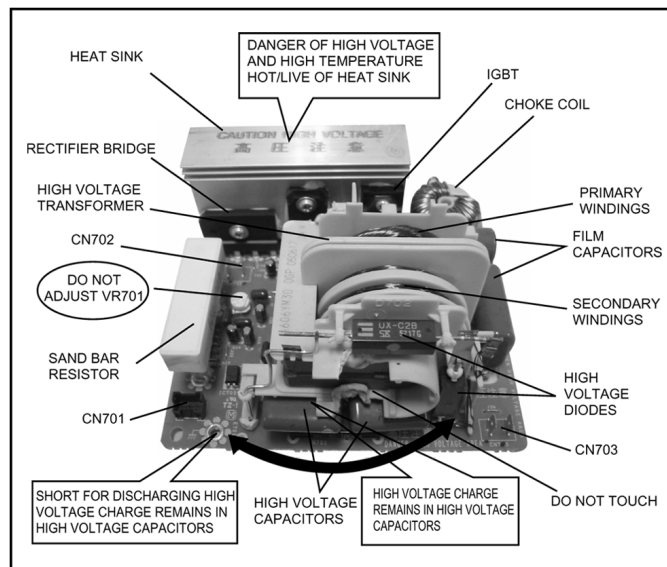
2.2. Inverter warnings

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

The high voltage inverter power supply handles very high voltage and current for the magnetron tube. Though it is free from danger in ordinary use, extreme care should be taken during repair.

The aluminum heat sink is also energized with high voltage (HOT), do not touch when the AC input terminals are energized. The power device Collector is directly connected to the aluminum heat sink.

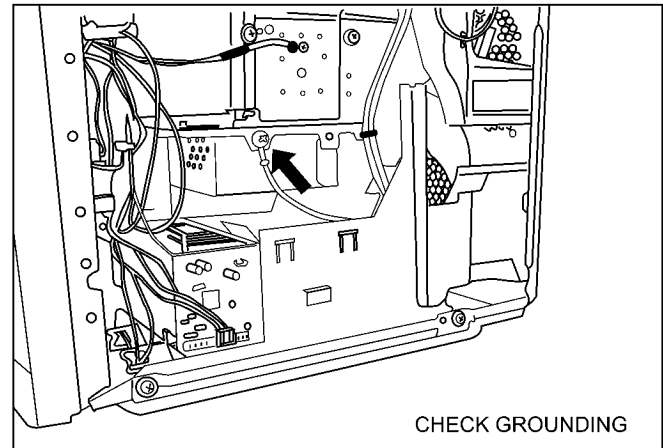
The aluminum heat sink may be HOT due to heat energy, therefore, extreme care should be taken during servicing.



H.V. Inverter warning

WARNING FOR INVERTER POWER SUPPLY (U) GROUNDING

Check the high voltage inverter power supply circuit grounding. The high voltage inverter power supply circuit board must have a proper chassis ground. The inverter grounding bracket must be connected to the chassis. If the inverter board is not grounded it will expose the user to very high voltages and cause extreme DANGER! Be sure that the inverter circuit is properly grounded via the inverter earth bracket.

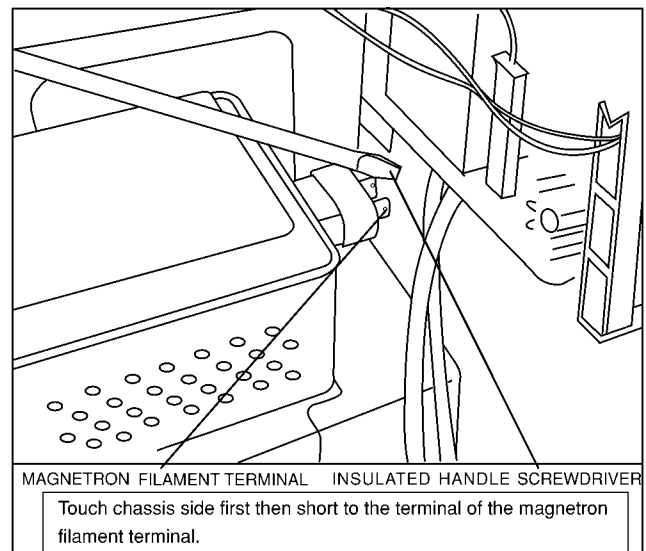


Grounding of the inverter circuit board

WARNING! DISCHARGE THE HIGH VOLTAGE CAPACITORS

For about 30 seconds after the oven is turned off, an electric charge remains in the high voltage capacitors in the inverter power supply circuit board.

When replacing or checking parts, remove the power plug from the outlet and short the inverter output terminal of the magnetron filament terminals to the chassis ground with an insulated handle screwdriver to discharge. Please be sure to touch the chassis ground side first and then short to the output terminals.



Discharging the high voltage capacitors

WARNING

There is high voltage present with high current capabilities in the circuits of the primary and secondary windings, choke coil and heat sink of the inverter. It is extremely dangerous to work on or near these circuits with the oven energized. DO NOT measure the voltage in the high voltage circuit including the filament voltage of the magnetron.

WARNING

Never touch any circuit wiring with your hand or with an insulated tool during operation.

2.3. Part replacement.

When any part or component is to be replaced, always ensure that the power cord is removed from the wall outlet.

2.4. When the 10A fuse is blown due to the operation of the short switch:

WARNING

When the 10A 250V fuse is blown due to the operation of the interlock monitor switch, replace all of the components (primary latch switch, secondary latch switch, short switch and power relay B (RY1)).

1. This is mandatory. Refer to "adjustments and measurements" for the location of these switches.
2. When replacing the fuse, confirm that it has the appropriate rating for these models.
3. When replacing faulty switches, be sure the mounting tabs are not bent, broken or deficient in their ability to hold the switches.

2.5. Avoid inserting nails, wire etc. through any holes in the unit during operation.

Never insert a wire, nail or any other metal object through the lamp holes on the cavity or any holes or gaps, because such objects may work as an antenna and cause microwave leakage.

2.6. Confirm after repair

1. After repair or replacement of parts, make sure that the screws of the oven, etc. are neither loose nor missing. Microwaves might leak if screws are not properly tightened.
2. Make sure that all electrical connections are tight before inserting the plug into the wall outlet.
3. Check for microwave energy leakage. (Refer to procedure for measuring microwave energy leakage).

CAUTION MICROWAVE RADIATION

USE CAUTION NOT TO BECOME EXPOSED TO RADIATION FROM THE MICROWAVE MAGNETRON OR OTHER PARTS CONDUCTING MICROWAVE ENERGY

IMPORTANT NOTICE

The following components have potentials above 2000V while the appliance is operated.

- Magnetron
- High voltage transformer (Located on inverter (U))
- High voltage diodes (Located on inverter (U))
- High voltage capacitors (Located on inverter (U))

Pay special attention to these areas.

When the appliance is operated with the door hinges or magnetron installed incorrectly, the microwave leakage can exceed more than 5mW/cm². After repair or exchange, it is very important to check if the magnetron and the door hinges are correctly installed.

2.7. Sharp edges

CAUTION

Please use caution when unpacking, installing or moving the unit, as some exposed edges may be sharp to the touch and cause injury if not handled with care.

3 MEASUREMENTS AND ADJUSTMENTS

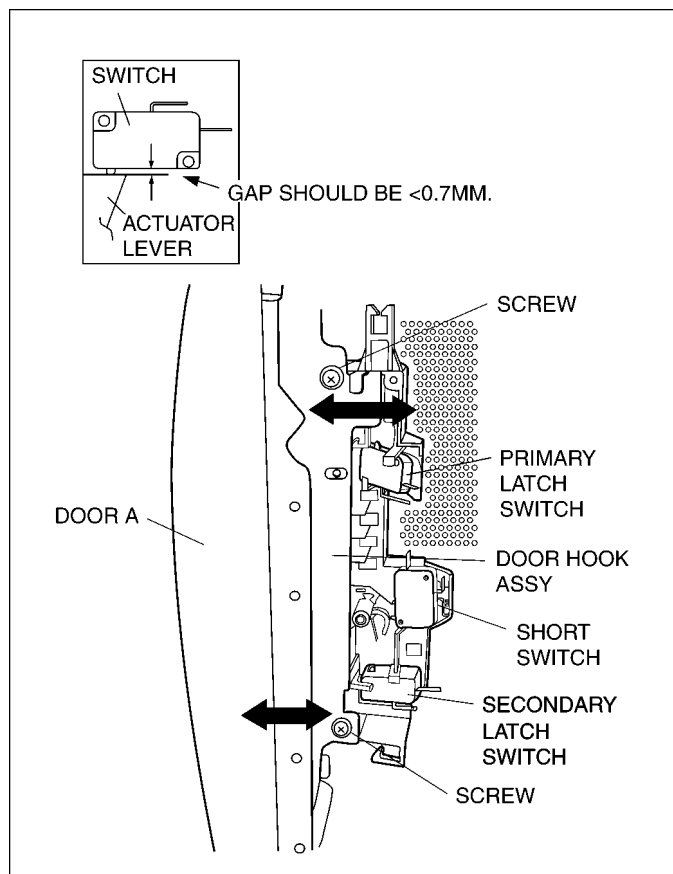
3.1. Adjustment of primary latch switch, secondary latch switch and short switch.

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.



3.2. 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.

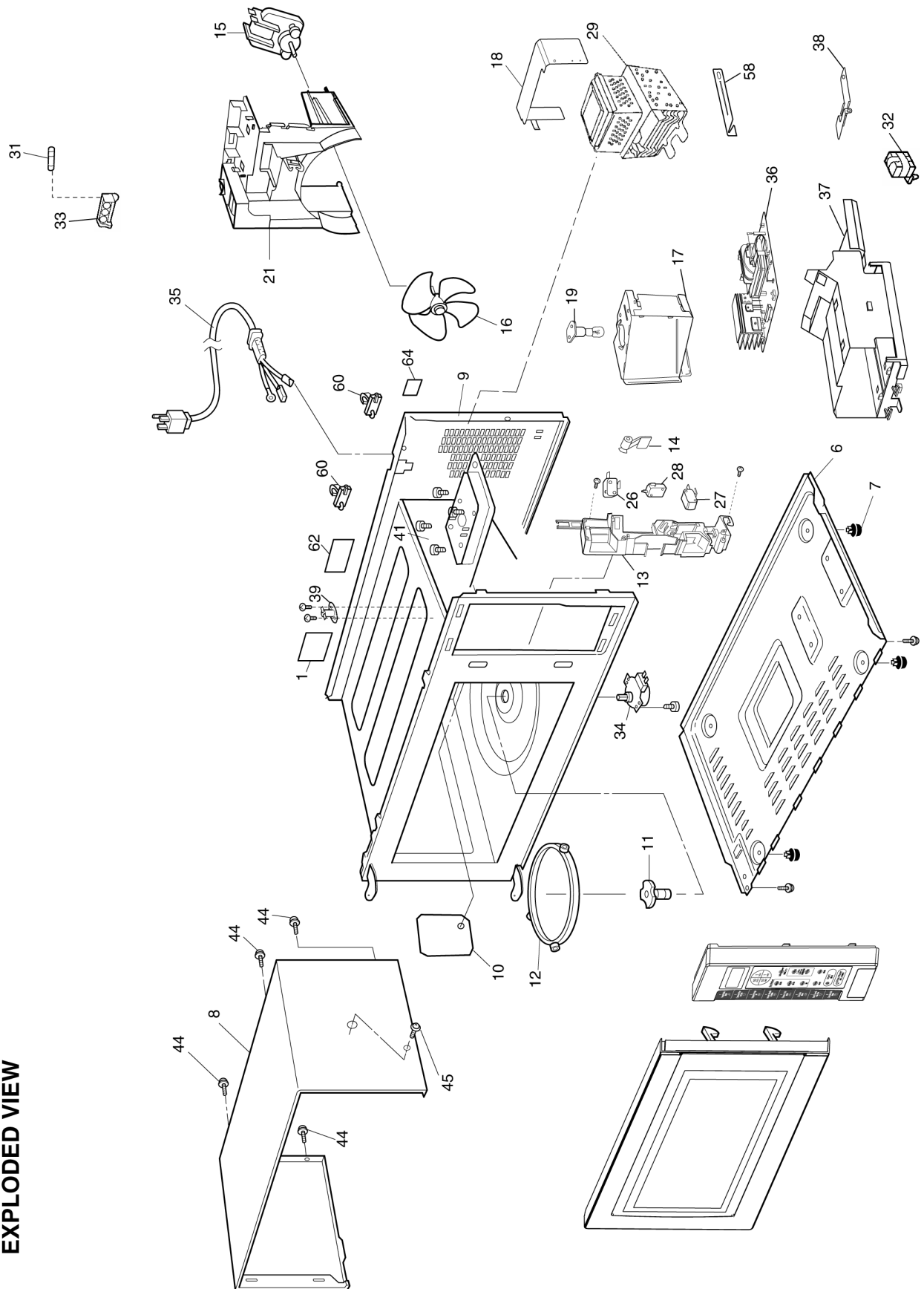
TABLE (1L-1min.test)

RATED OUTPUT	TEMPERATURE RISE
1100W	Min. 9.4°C

4 EXPLODED VIEW AND PARTS LIST

4.1. EXPLODED VIEW

EXPLODED VIEW



4.2. 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.

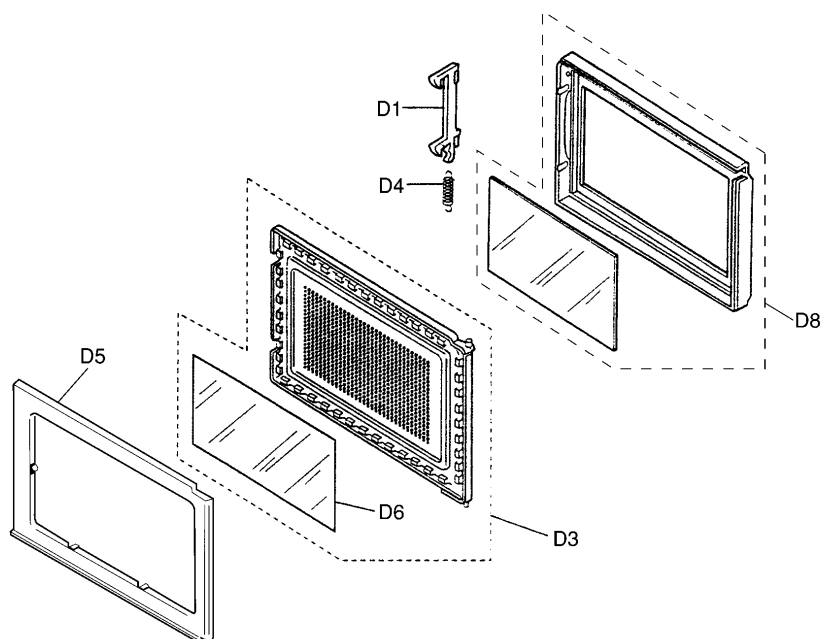
2. Important safety notice:

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

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

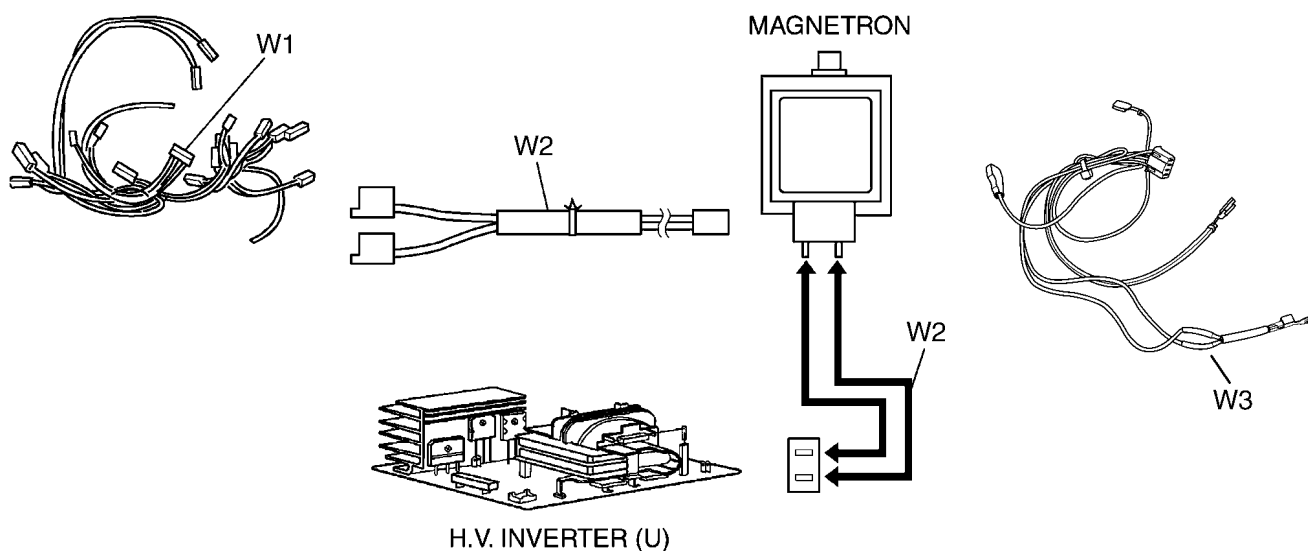
Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
1		F00066V00HP	CAUTION LABEL	1	
6		F10016M60APG	BASE	1	
7		F10084T00AP	RUBBER FOOT	4	
8		F110D8G80SZP	CABINET BODY	1	ST557M (HPE, YPQ, YTE)
8		F110D6W80SMP	CABINET BODY	1	ST557M (MPQ)
8		F110D8U00HXP	CABINET BODY	1	ST557W (HPE, YTE)
8		F110D8U00HMP	CABINET BODY	1	ST557W (MPQ)
9	$\triangle$	F200A6D60SXP	OVEN	1	
10		F20555Q00BP	COVER	1	
11		F21315G10XN	PULLY SHAFT	1	
12		F290D5Q00AP	ROLLER RING (U)	1	
13	$\triangle$	F30205Q00AP	DOOR HOOK	1	
14		F31365Q00AP	HOOK LEVER A	1	
15		F400A5U00XN	FAN MOTOR	1	
16		F40085G10XN	FAN BLADE	1	
17		F40255Q00AP	AIR GUIDE A	1	
18		F40425Q00APG	AIR GUIDE F	1	
19		F612E8F60QP	INCANDESCENT LAMP (U)	1	
21		F41445Q00AP	UPPER ORIFICE	1	
26	$\triangle$	F61425U30XN	MICRO SWITCH	1	V-15G-3C25 (PRIMARY LATCH SWITCH)
27	$\triangle$	F61415U30XN	MICRO SWITCH	1	D3V-16G-3C25 (SECONDARY LATCH SWITCH)
28	$\triangle$	F61785U30XN	MICRO SWITCH	1	D3V-1G-2C25 (SHORT SWITCH)
29	$\triangle$	2M261-M32KLP	MAGNETRON	1	
31	$\triangle$	F62306V60BP	FUSE	1	(10A)
32		MKFX2335K	CAPACITOR	1	
33		F62315G10XN	FUSE HOLDER	1	
34		F63265U30XN	TURNTABLE MOTOR	1	
35	$\triangle$	F900C5Q00YK	AC CORD W/PLUG	1	HPE, MPQ, YTE
35	$\triangle$	F900C8G60ZP	AC CORD W/PLUG	1	TPE
35	$\triangle$	F900C5Q00YP	AC CORD W/PLUG	1	YPQ
36		F606YM300BP	H.V. INVERTER (U)	1	
37		F65856M60AP	INVERTER BRACKET	1	
38		F66626H60AP	GROUNDING PLATE	1	
39		F61458B80ZP	THERMAL CUTOUT	1	
41		XTWFA4+12T	SCREW	4	FOR MAGNETRON
44		XTWFA4+12D	SCREW	4	FOR CABINET BODY
45		XTCAFA4+12AFS	SCREW	1	FOR CABINET BODY SIDE (ST557M)
45		XTCAFA4+12AFW	SCREW	1	FOR CABINET BODY SIDE (ST557W)
58		F20345Q00CP	REINFORCE BRACKET	1	
60		F11404J60XN	STOPPER	2	
62		F00066W10MP	CAUTION LABEL	1	YPQ
62		F00068H00YT	CAUTION LABEL	1	YTE
64		F0005-6S10	EARTH LABEL	1	TPE

4.3. DOOR ASSEMBLY



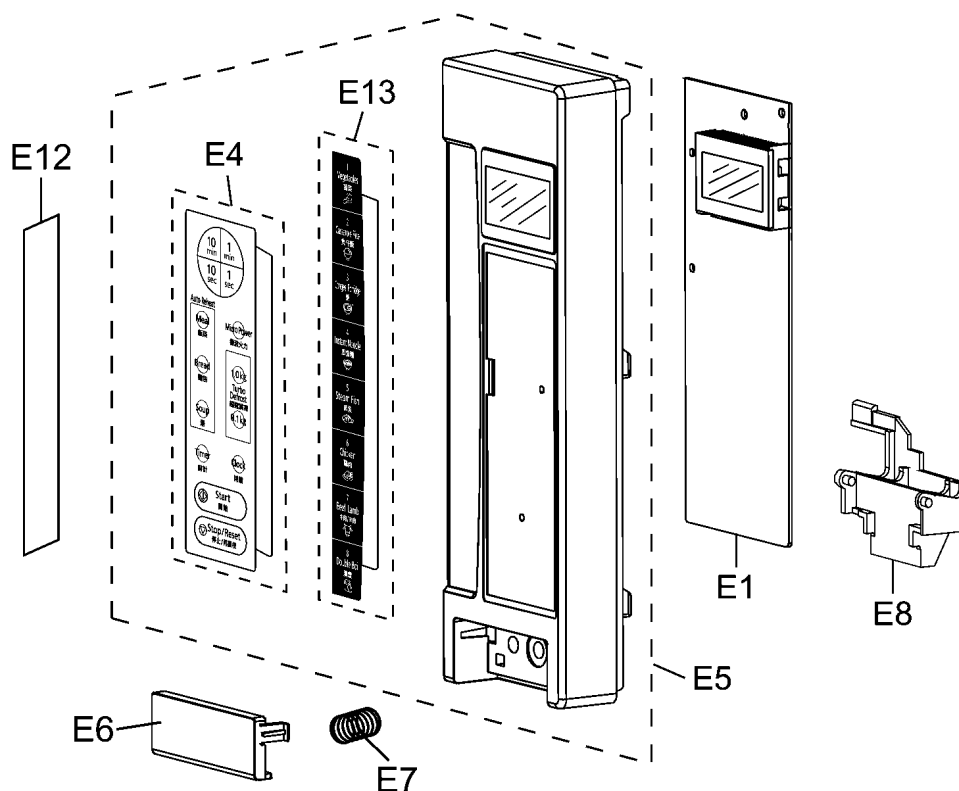
Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
D1		F30185Q00AP	DOOR KEY A	1	
D3	⚠	F302K5Q00AP	DOOR E (U)	1	
D4		F30215G10XN	DOOR KEY SPRING	1	
D5	⚠	F30855Q00AP	DOOR C	1	
D6		F31456V60XP	DOOR SCREEN A	1	
D8	⚠	F302A8U20SXP	DOOR A (U)	1	ST557M
D8	⚠	F302A8U20HXP	DOOR A (U)	1	ST557W

4.4. WIRING MATERIALS



Ref. No.		Part No.	Part Name & Description	Pcs/Set	Remarks
W1		F030A8B90HP	LEAD WIRE HARNESS	1	
W2		F030E5Q00AP	H.V. LEAD WIRE	1	
W3		F03538U00XP	LEAD WIRE HARNESS U	1	(INCLUDING THERMISTOR)

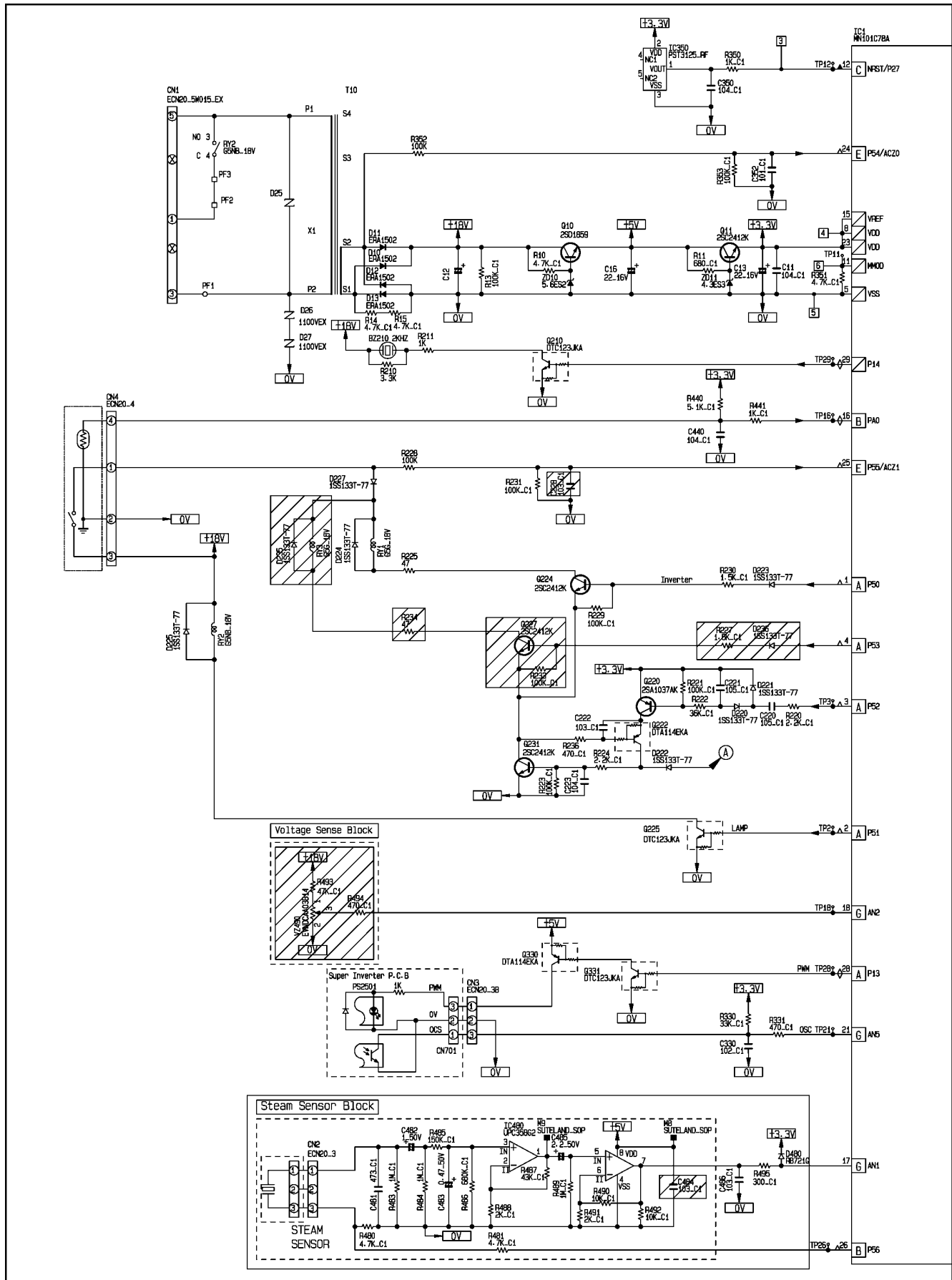
4.5. ESCUTCHEON BASE ASSEMBLY

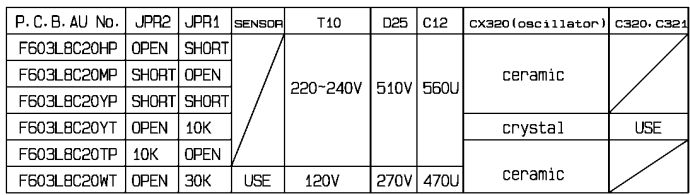


Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
E1	F603L8C20HP	D.P. CIRCUIT (AU)	1	
E4	F630Y8C20SHP	MEMBRANE SWITCH (AU)	1	ST557M
E4	F630Y8C20HHP	MEMBRANE SWITCH (AU)	1	ST557W
E5	F800L8C20SHP	ESCUTCHEON BASE (U)	1	ST557M
E5	F800L8C20HHP	ESCUTCHEON BASE (U)	1	ST557W
E6	F80728U10SXP	DOOR OPENING BUTTON	1	ST557M
E6	F80728U10HXP	DOOR OPENING BUTTON	1	ST557W
E7	F80375K00AP	COOK BUTTON SPRING	1	
E8	F82565Q00AP	DOOR OPENING LEVEL	1	
E12	F00078C20SHP	NAME PLATE	1	ST557M HPE
E12	F00078C20SMP	NAME PLATE	1	ST557M MPQ
E12	F00078C20SYP	NAME PLATE	1	ST557M YPQ
E12	F00078C20STP	NAME PLATE	1	ST557M TPE
E12	F00078C20HHP	NAME PLATE	1	ST557W HPE
E12	F00078C20HMP	NAME PLATE	1	ST557W MPQ
E12	F00078C20HYT	NAME PLATE	1	ST557W YTE
E13	F630N8C20HP	MEMBRANE SWITCH (BU)	1	

5 DIGITAL PROGRAMMER CIRCUIT

5.1. SCHEMATIC DIAGRAM





5.2. PARTS LIST

Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
BZ210	L0DDEA000014	BUZZER	1	2.0KHz
C12	AECETK1V561B	AL CHEM CAPACITOR	1	560 μ F/35V
C13,C16	AECETS1C220B	AL CHEM CAPACITOR	2	22 μ F/16V
CX320	EFOEC8004A4	CERAMIC RESONATOR	1	8.0MHz
DISP110	L5AAAE000057	LCD	1	
DISP1 HOLDER	F66174U20AP	LCD HOLDER	1	
D10-D13	B0EAKT000025	DIODE	4	
D41,D220-D225,D227	MA2C19600E	DIODE	8	
D25	D4EAY511A036	VARISTOR	1	510V
D26,D27	D4EAY112A036	VARISTOR	2	1100V
IC1	MN101C78AEX	L.S.I.	1	
IC350	C0EBE0000401	IC	1	
Q10,Q180	B1BAAJ000003	TRANSISTOR	2	
R225	D0AE470JA155	CARBON RESISTOR	1	47 Ω , 1/4W, 5%
R211	D0AE102JA155	CARBON RESISTOR	1	1K, 1/4W, 5%
R210	D0AE332JA155	CARBON RESISTOR	1	3.3K, 1/4W, 5%
R228,R352	D0AE104JA155	CARBON RESISTOR	2	100K, 1/4W, 5%
RY1	AEBGJQC25F18	POWER RELAY	1	
RY2	K6B1AZA00011	POWER RELAY	1	
T10	G4C3AAH00008	LOW VOLTAGE TRANSFORMER	1	
ZD10	B0BA5R600016	ZENER DIODE	1	
ZD11	B0BA4R400002	ZENER DIODE	1	