

SHARP SERVICE MANUAL

SY307KSH777DW



COMMERCIAL RICE COOKER

MODEL KSH-777DW

In the interests of user-safety (Required by safety regulations in some countries) the unit should be restored to its original condition and only parts identical to those specified should be used.

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SHARP CORPORATION

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The contents are subject to change without notice.

IMPORTANT SAFEGUARDS

When using electrical appliances, basic safety precautions should always be observed, including the following:

1. Read all instructions.
 2. Do not touch hot surfaces. Use handles or knobs.
 3. To protect against electrical shock, do not immerse cord, plug, and body in water or other liquid.
 4. Close supervision is necessary when the appliance is used by or near children.
 5. Unplug from outlet when not in use and before cleaning. Allow to cool before putting on or taking off parts.
 6. Do not operate the appliance with a damaged cord or plug or after the appliance malfunctions or has been damaged in any manner.
 7. The use of accessory attachments not recommended by SHARP may cause injuries.
 8. Do not use outdoors.
 9. Do not let cord hang over edge of table or counter or touch hot surfaces.
 10. Do not place on or near heat sources such as gas or electric ranges or in a heated oven.
 11. Extreme caution must be used when moving an appliance containing hot food, water or other hot liquids.
 12. Do not use the appliance for other than intended use.
- A. A short power supply cord is provided to reduce the risk of becoming entangled in or tripping over a longer cord.
- B. Extension cords are available and may be used if care is exercised in their use.
- C. If an extension cord is used:
- (1) The marked electrical rating of the extension cord should be at least as great as the electrical rating of the appliance.
 - (2) The cord should be arranged so that it will not drape over the counter top or table top where it can be pulled on by children or tripped over unintentionally.

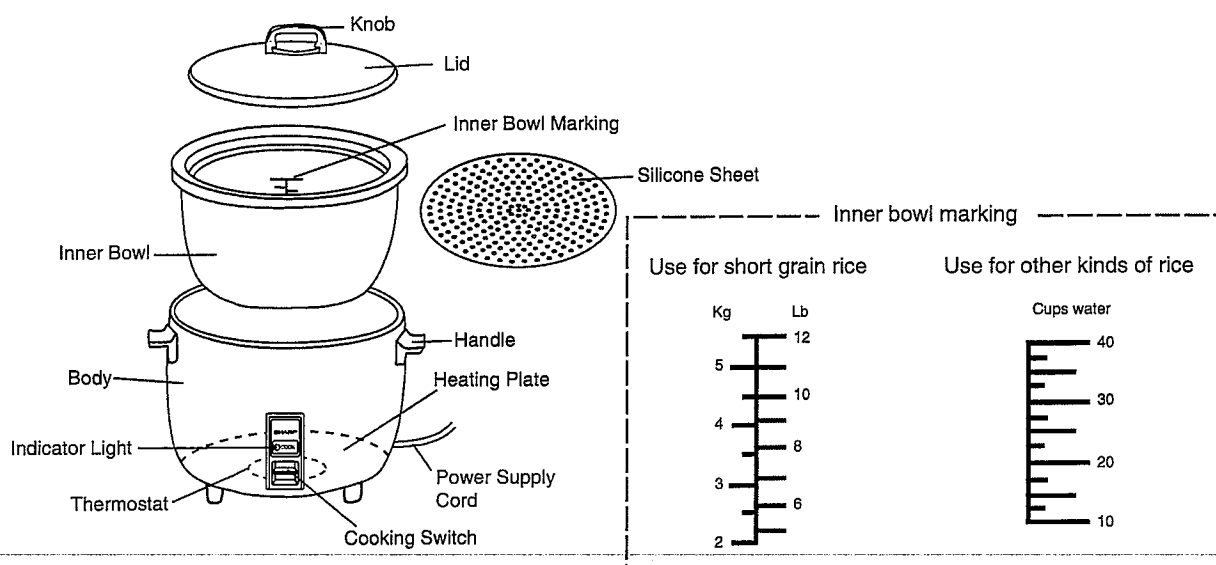
PRECAUTIONS

1. Use the rice cooker on a 15 ampere, 120 volt, 60Hz, AC only protected electrical supply.
Insert the plug firmly to ensure safe operation.
2. Do not use the rice cooker on a wet floor, an unstable surface or near flammable materials.
3. Use the inner bowl only in the rice cooker; never on the range top or in the microwave oven.
4. Do not turn the rice cooker on without both rice and water in the inner bowl. Avoid using the rice cooker to heat just water.
5. Never connect the plug or touch the switch or body with wet hands.
6. Do not bend or hit the inner bowl as the cooking results may be affected. Replace the inner bowl if it gets damaged.
7. The cooking switch should be depressed only once for the entire cook/keep warm cycle.
Never insert any object into the switch.
8. Always keep the bottom of the inner bowl, the heating plate and the thermostat clean so that no rice or other foreign matter accumulates.

SPECIFICATIONS

Rated voltage	120V, 60Hz, AC only
Power Consumption	1700 W
Outside dimensions	19 11/16"(W) X 17 11/16"(D) X 13 3/4"
Weight	Approx. 20 lb.
Plug	3-Prong Plug (5-15P)
Receptacle	3-Prong Receptacle (5-15R)

PART NAMES



HOW TO USE

METHOD FOR SHORT GRAIN RICE COOKING

To ensure success with short grain rice, be sure to:

1. Put the silicone sheet on the bottom of inner bowl to prevent sticking and browning.
2. Check that outside of inner bowl is dry and then put into the rice cooker.
To ensure that the inner bowl is correctly positioned on the heating plate, turn the inner bowl left and right.
3. Measure desired amount of rice to be cooked.
4. Carefully wash rice in separate bowl under running water until the water is clear; not cloudy.
Drain. Put rice into inner bowl.
5. Add water to appropriate inner bowl level.
If you use 8 pounds of rice, add water to the 8 lb level.
6. Cover with the lid and let rice soak approximately 30 minutes.
7. Plug into outlet.
8. Press down on the cooking switch. The indicator light will come on and cooking will start.
9. When cooking is finished, the switch pops up and the indicator light goes out.
10. After the cooking cycle ends, leave the lid closed for at least 15 minutes to steam the rice.
Then stir well being careful not to dislodge the silicone sheet.
11. Serve rice or recover to keep warm. See below for keep warm suggestions.
12. After using, unplug from the outlet.

METHOD FOR OTHER KINDS OF RICE COOKING

To ensure success with other kinds of rice, be sure to:

1. Put the silicone sheet on the bottom of inner bowl to prevent sticking and browning.
2. Check that outside of inner bowl is dry and then put into the rice cooker.
To ensure that the inner bowl is correctly positioned on the heating plate, turn the inner bowl left and right.

3. Check chart on page 4 for rice/water ratio or follow package or recipe directions to determine the water amount. Pour the water until the correct amount is indicated on the Cups Water marking on the inner bowl.
4. Measure rice using a standard cup measure and put rice into the water that was measured in the inner bowl in step 3. Stir well being careful not to dislodge the silicone sheet.
5. Cover with the lid and let rice soak approximately 30 minutes.
6. Plug into outlet.
7. Press down on the cooking switch. The indicator light will come on and cooking will start.
8. When cooking is finished, the switch pops up and the indicator light goes out.
9. After the cooking cycle ends, leave the lid closed for at least 15 minutes to steam the rice. Then stir well being careful not to dislodge the silicone sheet.
10. Serve rice or recover to keep warm. See below for keep warm suggestions.
11. After using, unplug from the outlet.

KEEP WARM

- If the rice cooker is left plugged in, the indicator light will come on occasionally to keep the rice at a serving temperature.
- Rice quality is optimum at the end of the cooking and 15 minute standing time and should be served as soon as possible.
- Do not keep warm for more than five hours.

COOKING CHART

Kind of Rice	Quantity of Raw Rice Cups	Rice Water Ratio	Cooking Time Range Approximately in Minutes
Short grain	10 – 28 cups	1 cup rice to 1 ^{1/4} cups water	25 – 55
Medium grain	10 – 24 cups	1 cup rice to 1 ^{1/4} cups water	30 – 45
Long grain	10 – 24 cups	1 cup rice to 1 ^{1/4} cups water	30 – 45
Converted long grain	10 – 24 cups	1 cup rice to 1 ^{1/4} cups water	45 – 65
Brown	10 – 24 cups	1 cup rice to 1 ^{1/2} cups water	45 – 85

- Always measure accurately.
- Adding too much water may cause the rice to boil over.
- If boil over occurs, it may be necessary to reduce rice and water quantity in the future.
- Cooking time will vary depending on the kind and/or volume of rice as well as added ingredients, room temperature, water temperature, voltage etc.

CLEANING AND CARE

- Always keep the rice cooker clean.
- Always unplug from outlet and allow the rice cooker to cool completely before cleaning.

Body

- * Do not immerse the rice cooker in water.
- * Clean the outside with a damp cloth and polish dry with a soft cloth.
- * Do not use any harsh cleanser or a scrubbing brush as it could crack the surface and rusting could occur.

Lid

- * Wash thoroughly with warm soapy water, rinse and polish dry with a soft cloth.

Heating Plate / Thermostat

- * Clean with a damp cloth and polish dry with a soft cloth.
- * Should there be any remainder, use fine sandpaper to polish very lightly.

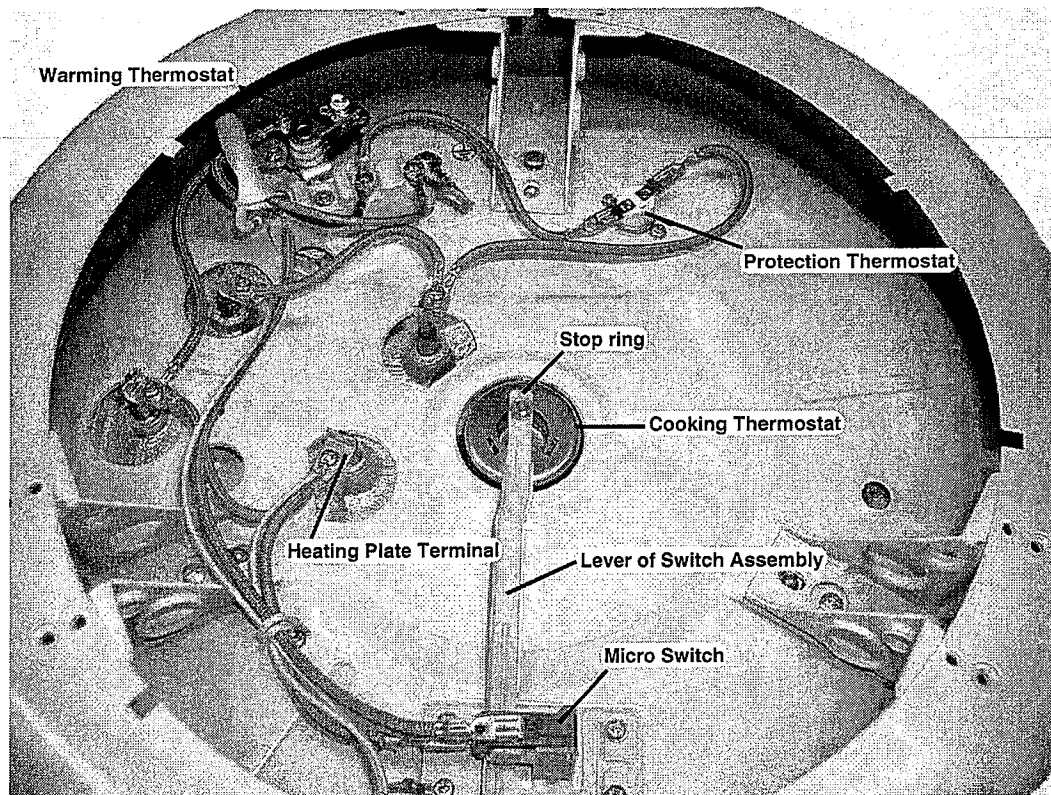
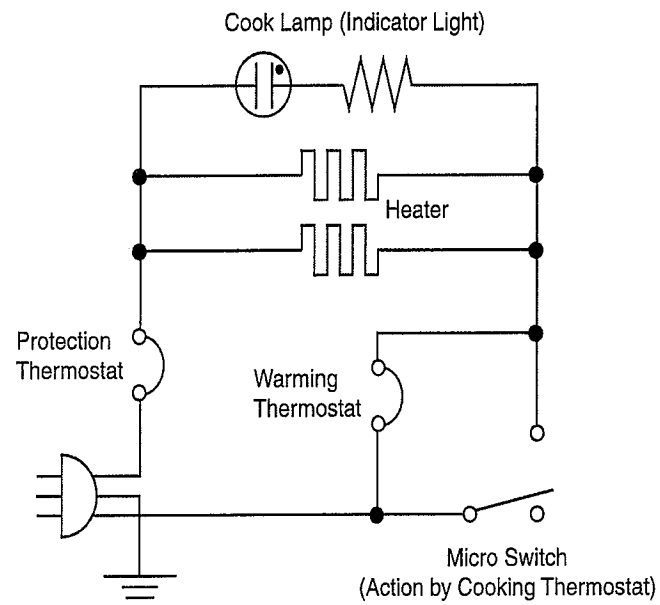
Inner Bowl

- * Remove the cooked rice as soon as possible using a utensil that will not scratch or mar.
- * Remove the bowl from the body of the cooker.
- * Soak the bowl in hot water to loosen any remaining rice.
- * Wash in hot soapy water, rinse well with clear water and polish dry. Do not use an abrasive cleaner or steel wool.

Silicone Sheet

- * Remove any remaining rice using a rubber/plastic spatula.
- * Soak in warm soapy water and gently squeeze to be sure that sheet is clean.
- * Rinse thoroughly with cool water and lay flat to dry.

SCHEMATIC DIAGRAM



TROUBLESHOOTING

Those marked with black spots (★) are often confused with troubles. Give the customers proper operating instructions.

1. Trouble during Cooking

PROBLEM		POSSIBLE CAUSE	CORRECTIVE ACTION
Unable to cook	Indicator light will not go ON.	★ Cooking switch kept "OFF".	★ Cooking switch "ON".
		★ Disconnected plug cap.	★ Plugged into the outlet.
		Broken power cord assembly.	Repair or replace power cord assembly.
	Indicator light will go ON.	Faulty or loose wiring.	Repair or replace faulty parts.
		Maladjustment switch assembly.	Repair or replace it.
		Burn out of heating plate wire.	Replace heating plate.
Capable of cooking but insufficient.	Poor finish of cooked rice (Local unevenness of cooked rice is excessive. Core is left in rice grain due to early switch OFF.	Faulty wiring.	Repair or replace faulty parts.
		★ Improper quantity of rice or water.	★ Advise proper operating instruction.
		★ Faulty tightness due to deformed heating plate or inner bowl bottom.	Replace inner bowl or faulty parts.
		★ Faulty tightness due to contaminants, etc. deposited on heating plate or inner bowl bottom.	Remove contaminants or replace parts having contaminant deposits.
		★ Faulty in setting lid.	★ Advise proper operating instruction.
		Faulty thermostat	Replace thermostat.
	Excessively overdone bottom layer or rice mass. (Overdone layer in light brown is not regarded as abnormal.)	★ Malfunction of thermostat due to vibration or impact.	★ Advise proper operating instruction.
		★ Faulty interlocking of switch assembly and thermostat.	Repair.
		★ Insufficient maintenance of inner bowl or washing of rice.	★ Advise proper operating instruction.
		Improper operating temperature of thermostat.	Replace thermostat. (No adjustment of operating temperature is made possible.)
		Maladjustment switch assembly (Cooking will not go OFF.)	Repair or replace faulty parts.
		★ Cooking has been carried on by depressing the switch button forcibly with chopsticks, etc.	★ Advise proper operating instruction.

2. Trouble during Warm-keeping (Capable of cooking)

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
Unable to keep warm	★ Disconnected plug cap.	★ Plug into the outlet.
	Maladjustment switch assembly.	Repair or replace.
	Faulty or loose wiring.	Repair or replace faulty parts.
	Faulty warm thermostat assembly.	Replace warm thermostat assembly.

3. Other Trouble

Indicator light flickers.	Faulty receptacles. (Contact failure with plugs).	Repair receptacles.
	Nearly broken or contact after breakage of cord.	Replace power cord supply.
	Loose wiring.	Repair.
	Faulty indicator light or resistor.	Replace faulty parts.
	Maladjustment switch assembly.	Adjustment switch assembly.
Affected by electric shock from cooker body at a touch	Faulty insulation of heater plate assembly, micro switch assembly, power supply cord, etc.	Replace faulty parts.
	Water soaked, cooker body, etc.	Replace faulty parts after drying.

COMPONENT REPLACEMENT PROCEDURE

PANEL REMOVAL

1. Remove the one screw holding the panel and take off the panel from the body.
2. Remove the stop ring holding the lamp assembly and take off the lamp assembly from the panel. (Fig. C-1)
4. Remove the panel from the body.

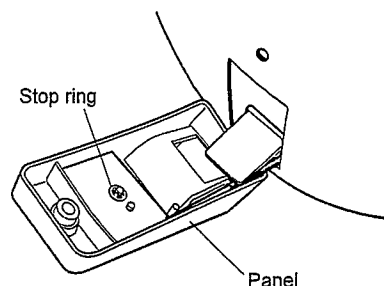


Fig. C-1

COOKING THERMOSTAT REMOVAL

After removing the thermostat, when the thermostat is removed, the inner bowl should be set.

1. Remove the one screw holding the bottom lid. Remove the two screws holding the leg, then remove the bottom lid. (Fig. C-2)
2. Remove the stop ring from the switch lever to take off

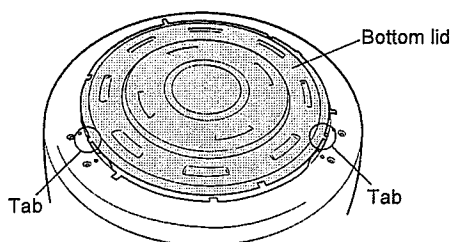


Fig. C-2

- the thermostat rod. (Fig. C-3)
3. Stretch the three tabs holding the body holder.
4. Now, the thermostat is free, and at the same time, the thermo spring will be free.

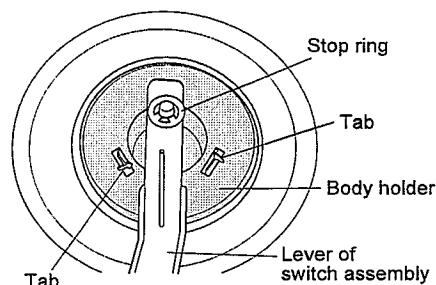


Fig. C-3

SWITCH ASSEMBLY REMOVAL

1. Remove the panel, refer to "PANEL REMOVAL".
2. Remove the thermostat (spring), refer to "THERMOSTAT REMOVAL".
3. Remove the two wire leads from the terminal of micro switch.

4. Remove the four screws holding the switch assembly, and take off the switch assembly from the body.

NOTE Installing the switch assembly, the switch should be placed so that the switch button is not touched to the panel.

HEATING PLATE REMOVAL

1. Remove the bottom lid, refer to "THERMOSTAT REMOVAL".
2. Remove the four screws from the heating plate terminal.
3. Remove the screws from the warning thermostat and ground terminal.
4. Remove the three screws holding the body, and remove the heating plate from the body.

NOTE Removing and installing the screw holding the heating plate terminal, the terminal should be nipped tightly using long-nose player. (Fig C-4)

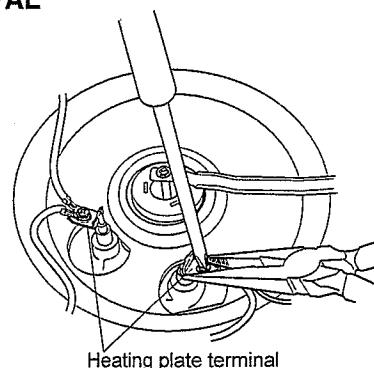


Fig. C-4

POWER SUPPLY CORD REMOVAL

1. Remove the three nuts from the terminal of the fixed for power supply cord.
2. Remove the cord stopper holder from the body.

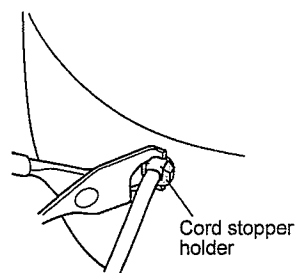


Fig. C-5

ADJUSTMENT OF SWITCH LEVER AND CONTACTS

1. Turn over the outer pot with inner bowl inside, disclose its bottom cover. Push "Cook" switch, adjust switch lever and switch contacts.

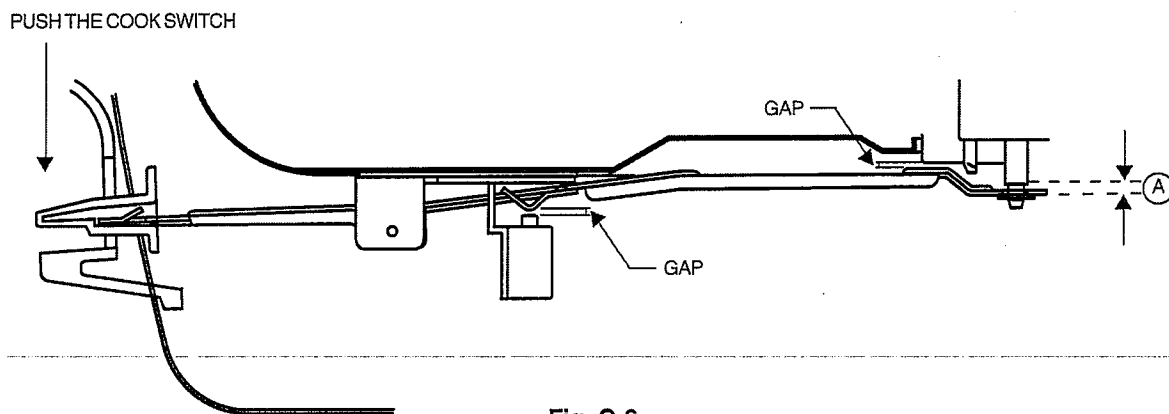


Fig. C-6

- Ⓐ Thermostat rod must not be pressed or drew up by switch lever. It should be moving up and down easily.
2. As soon as inner bowl is lifted up from outer pot, switch lever must spring-up. Without inner pot, switch contacts must touch each other when push switch "Cook".

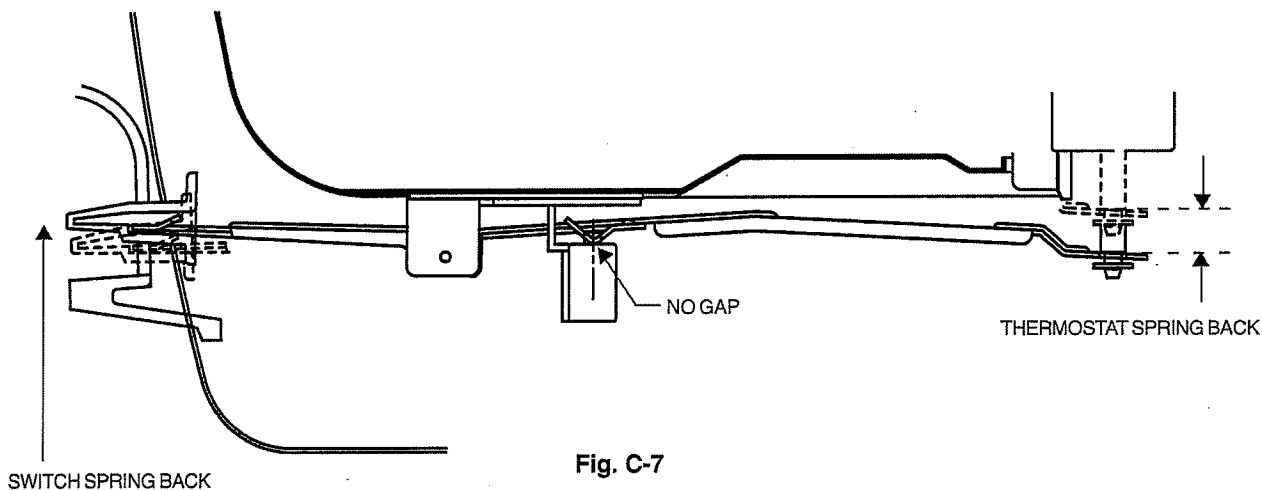


Fig. C-7

3. Ensure the capability of up-down movement of switch lever.

SIMPLIFIED TESTING METHOD

In case satisfactory cooking of rice is not accomplished (excessively overdone), conduct the temperature test in accordance with the following procedure.

Simplified Testing Method (Simulated Rice-Cooking)

1. Testing conditions
 - a. Power voltage 120V.
 - b. Fill inner bowl with 500 ml of water (Water temperature to be the same as ambient temperature.)
 - c. Ambient temperature to be 20°C to 30°C.
 - d. RICE COOKER to be sufficiently kept cooled (Cooker body temperature to be the same as ambient temperature.)
2. Testing procedure
 - a. Fill the inner bowl with 500 ml of water, turn ON the cooking switch (for cooking purpose) to energize the cooker, and measure the time for cooking.
 - b. When steam comes out, open the lid and check the bubbling state on the bottom of inner bowl. (Check if the inner bowl is allowed to be in close and stable contact with the heating plate.
Conduct checking within a short period of time so as not to influence be over the operating time.)
 - c. Where the bubbling state is satisfactorily, close the lid again and energize the cooker.
3. Judgement criteria

During the course of the simulated cooking with water conducted under the conditions as above, the rice cooker, if meeting the following requirements, will be considered acceptable.

 - a. If the bubbling state is such that bubbles occur evenly around the bottom of inner bowl as shown in Fig. S-1(A), the inner bowl is satisfactorily in contact with the heating plate.
Where bubbles do not occur more than 1/3 of the bottom periphery as shown in Figure S-1(B), contaminant deposits on the heating plate or deformation or damage on the inner bowl may be existing.
(Though such contaminant deposits can be removed by cleaning, the inner bowl deformed to the extent hardly rectified should be replaced with new one.
The same applies to the heating plate deformed.)

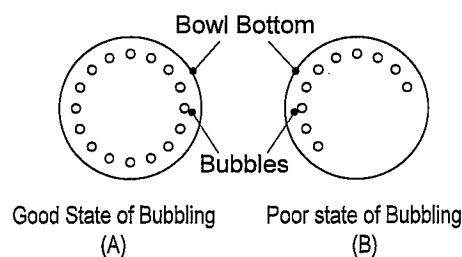


Fig. S-1

NOTE: As this test is nothing but a simplified procedure, it should be noted that operating time varies depending on different conditions such as difference between water temperature and ambient temperature, variations in the quantity of water, etc.
Where any delicate non-conformance such as the operating time being slightly higher than approx. 20 minutes is observed as a result of the test.
It is recommended to conduct practical rice-cooking test.

Practical Rice-Cooking Test

1. Testing conditions
 - a. Power voltage 120V.
 - b. Cooking 10 - 24 cups of rice.
 - c. Ambient temperature to be 20°C to 30°C
 - d. Water to be maintained at standard level on the level gauge. Based on how to use (See page 3)
2. Judgement criteria
 - a. Indicator light and switch will turn as follows.
Cook indicator light goes ON.
Cooking switch goes OFF (after 30 - 45 minutes). Based on cooking chart. (See page 4)
 - b. Check the rice layer on the bowl bottom for the overdone degree.
Light overdone layer: Normal.
Heavy overdone layer: Replace thermostat.

INSPECTION AFTER REPAIRING

Basic requirement for cooking is to maintain the close contact of inner bowl bottom with heating plate and thermostat. As the RICE COOKER is of direct heating type, when the temperature of inner bowl bottom reaches 145°C to 155°C, the thermostat wick operate to provide change-over to warm-keeping automatically.

Therefore, the cooker can be put in use in an excellent condition if the bowl bottom is kept contact closely with the heating plate and put in a stable, state.

It is the basic requirement for direct heating type cooking.

Accordingly, if the cooker is used under the unstable state of close contact, it will become the causes of early power OFF, discoloration and deformation of heating plate, or other troubles.

Also, any deformed or contaminant-deposited inner bowl and heating plate may lead to early power OFF or other troubles. Further to the above, this RICE COOKER is so designed that the cooking switch will not be put in "Cook" position whenever the inner bowl taken off or not set into the cooker before use, hence this point must be well noted when adjusting the switch. Upon completion of preparing work, inspect the cooker as to the following points without fail.

Inner bowl to be normally in contact with the heating plate

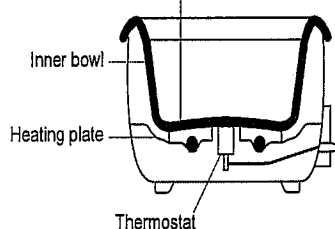


Fig. I-1

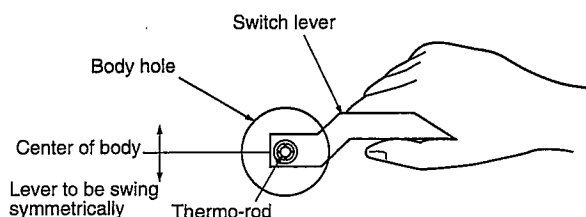


Fig. I-2

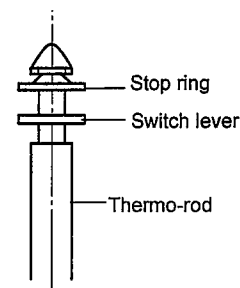


Fig. I-3

Center adjustment and confirmation of lever

1. For the center adjustment, align not with the thermo rod, but with the hole of the body. (Carry out this work with the greatest care).
2. Adjust in such a manner that, when the switch lever held by hand as in Fig. I-2 is lightly swung to the left and right, it moves in a perfect symmetry with respect to the hole of the body.
3. This switch button should be at the center of the control panel hole.

Verification of Work and Function

1. Is there any part left uninstalled or any wrong wiring ?
2. Is the center adjustment of the switch lever as specified ?
3. Finally, energize for confirmation (RICE COOKER should be checked in a horizontal position)
 - a. Is the state "Switch-Off" achieved when the inner bowl is detached, with the cooking switch set to "Cook" ?
 - b. Does indicator light not flicker when the switch button is gently vibrated, with the switch set to "Cook"?
 - c. Is there no possibility that the cooking switch is turned ON, even when the switch button is depressed without placing the inner bowl ?
 - d. Is the thermostat functioning perfectly ?
 - e. Does the indicator light come on normally ?

Measurement of Insulation Resistance

1. Insulation resistance should be more than 1MΩ upon measurement by a D.C.500V merger (to be effected before and immediately after the temperature test).
2. Dielectric strength should be free from defects at AC 1000V for one min. (to be carried out after the insulation resistance measurement which is taken immediately after the temperature test).
Stop to be measured with the cooking switch set to "Cook", take measurements on the blades of the plug socket and heating plate.

Temperature Test

Based on the testing method explained earlier, ensure proper performance for "Cook".

REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	Q'TY	CODE
ELECTRICAL PARTS				
1- 1	99Y1K417U////	Power supply cord	1	AY
1- 2	99Y1K251USET/	Heater plate set	1	BL
1- 3	99Y1K2021SET/	Thermostat Set	1	AK
1- 4	99Y1K212UASY/	Warm thermostat Set	1	BM
1- 5	99Y1K491UASY/	Neon lamp assembly	1	AN
1- 6	99Y1K213UASY/	Protection thermostat assembly	1	AT
1- 7	99Y7D2101ASY/	Micro switch assembly	1	AS
1- 8	99Y1R111SET//	Ground conductor set	1	AG
1- 9	99YB13A060GG/	Heater plate lead wire 1 assembly	2	AF
1-10	99YB13A120GB/	Heater plate lead wire 2 assembly	1	AG
1-11	99YB13A240GB/	Micro switch lead wire assembly	1	AH
1-12	99YB13A130GG/	Warm thermostat lead wire 1 assembly	1	AG
1-13	99YB13A050GG/	Warm thermostat lead wire 2 assembly	1	AF
MECHANICAL PARTS				
5- 1	99Y1K103UASY/	Lid assembly	1	BD
5- 2	99Y1K105U////	Inner bowl	1	BM
5- 3	99Y1K401UASY/	Outer pot set	1	BG
5- 4	99Y1K402UASY/	Handle assembly	2	AM
5- 5	99Y1K403UASY/	Panel assembly	1	AM
5- 6	99Y1K429U////	Cord stopper holder	1	AF
5- 7	99Y1B203/////	Thermostat spring	1	AF
5- 8	99Y1K220/////	Body holder	1	AD
5- 9	99Y1K411UASY/	Leg assembly	3	AN
5-10	99Y1K415UASY/	Terminal assembly	1	AH
5-11	99Y1K391ASET/	Switch set	1	AH
5-12	99Y1K4101ASY/	Bottom lid assembly	1	AL
MISCELLANEOUS, ACCESSORIES AND PACKING				
90- 1	99Y1K507U////	Operation manual	1	AG
90- 2	99Y1K603U////	Packing case	1	AT
90- 3	99Y1K412U////	Name plate	1	AD
90- 4	99Y1K611U////	Outer pot caution label	1	AF
90- 5	99Y1K615U////	Lid caution label	1	AD
90- 6	99Y1K701U////	Silicone sheet	1	AY
90- 7	99Y1K609/////	Upper pad	1	AL
90- 8	99Y1K6051/////	Bottom pad	1	AF
90- 9	99Y1K672U////	Inner bowl protection sheet	1	AF

HOW TO ORDER REPLACEMENT PARTS

To have your order filled promptly and correctly, please furnish the following information.

1. MODEL NUMBER
2. REF. NO.
3. PART NO.
4. DESCRIPTION

Order Parts from the authorized SHARP parts Distributor for your area.
Defective parts requiring return should be returned as indicated in the Service Policy.

