Service
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HD2173
HD2178

Philips Consumer Lifestyle

Service Manual

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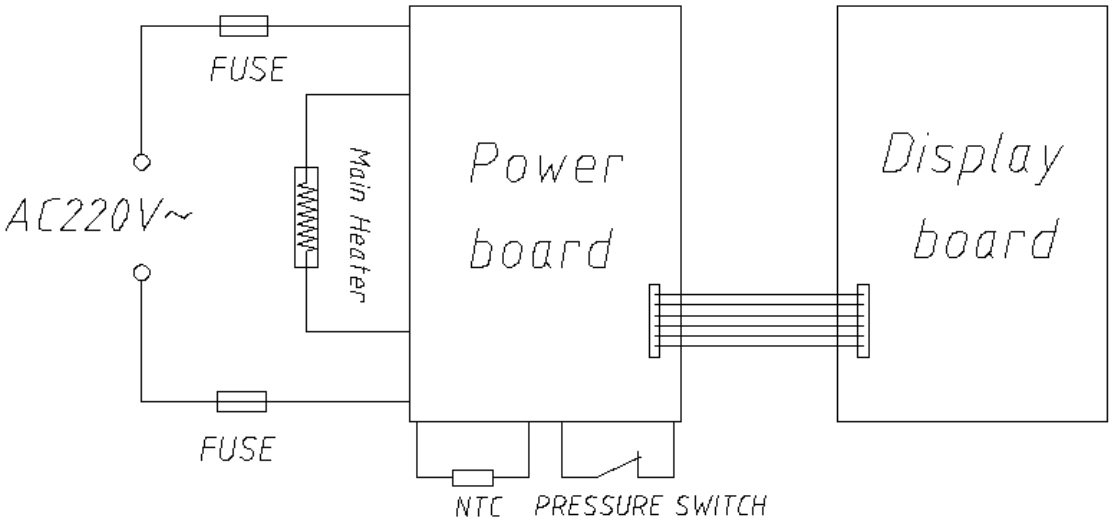
PHILIPS

EPC Working Principle

Cover the lid, close the lid and outer pot, and ensure that inner pot and lid are sealed by sealing ring. Heating plate starts when power is on, and the pressure inside increases as heat goes up. Pressure switch shuts up at a certain position due to the features of elastic outer pot. Heating plate stops heating and the pressure inside decreases accordingly. Heating plate resumes power when pressure switch closes by the features of elastic outer pot. It recycles likewise.

Fuzzy logic EPC circuit diagram

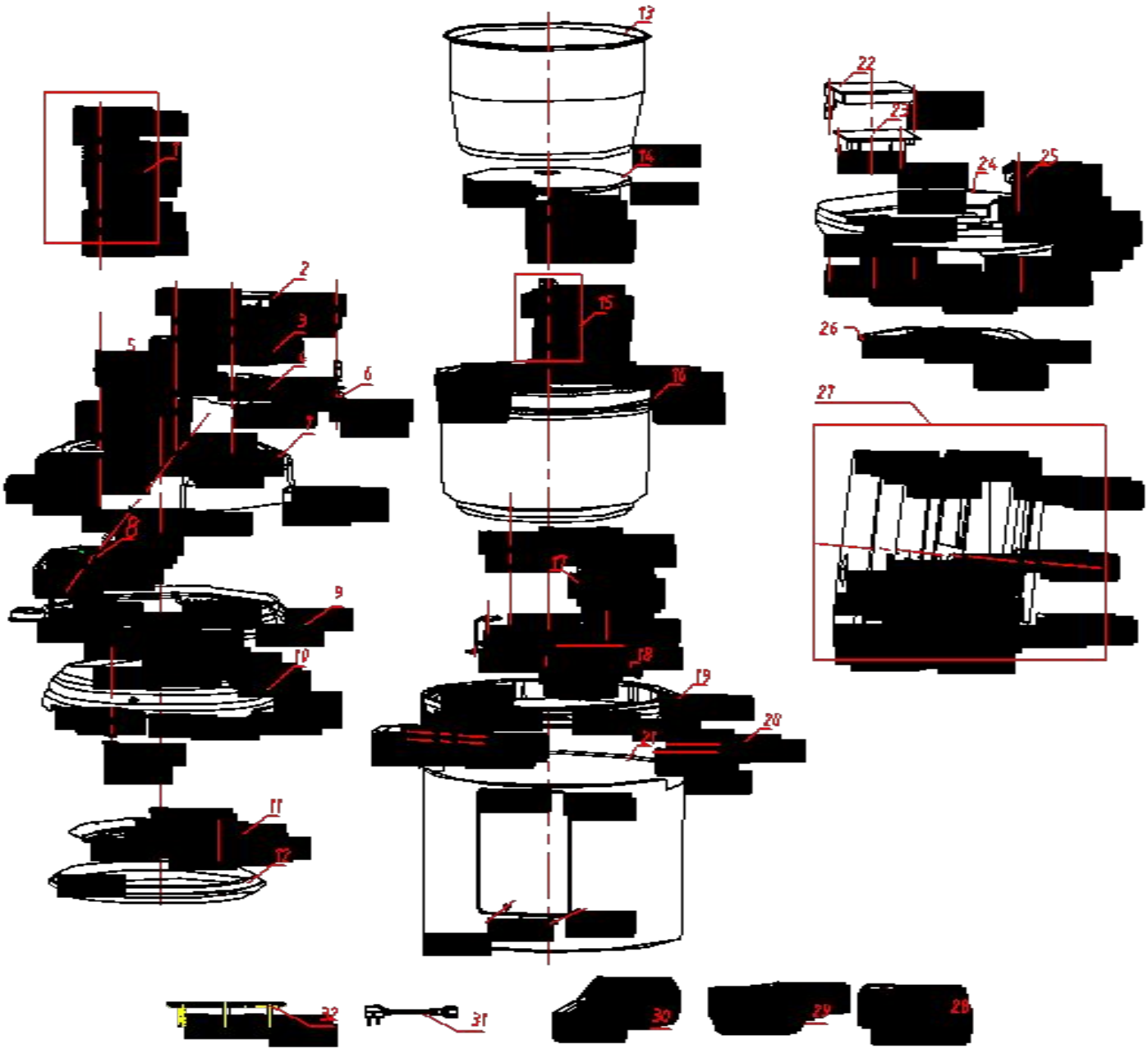


Exploding view (HD2173)

Parts List for HD2173

Ref No	12NC	Description	PCM
01	996510058701	HANDLE COVER	620202140036
02	996510058697	HANDLE BASE	620202140027
03	996510058712	PRESSER RELEASE VALVE ASSEMBLY	620203900058
04	996510058706	TOP COVER	620202050095
05	996510058705	TOP COVER BOX	620202050093
06	996510058714	ORNAMENT FOR TOP COVER BOX	620202100001
07	996510058708	ORNAMENT FOR TOP COVE	620202100127
08	996510058709	LID	620202040063
09	996510058687	TOP COVER LINING	620202050094
10	996510058686	LID SEALING RING	610206010061
11	996510058711	KEEP WARM BOARD	620203020047
12	996510058698	WARM KEEPING BOARD SEALRING	610206010060
13	996510058702	INNER POT	620203030138
14	996510052285	HEATING ELEMENT ASSY	620201030024
15	996510052254	SAUCER WASHER	610204020051
16	996510058696	TRC	610201560027
17	996510058707	CONTOL BOX ASSEMBLY	620202030419
18	996510052242	OUT PAN	620203030219
19	996510058689	PRESSURE SWITCH	610201120030
20	996510058699	TEMPERATURE LIMITER	620201520029
21	996510058691	OUTER SHELL COVER	620202120052
22	996510058693	OUR SHELL	620203040144
23	996510058713	POWER BOARD ASSEMBLY	610201510118
24	996510052303	HOUSE BASE	620202110105
25	996510052267	HOUSE BASE COVER	620202110072
26	996510058695	SOCKT	610201570001
27	996510051778	MEASURE CUP	620202070021
28	996510051777	RICE SPOON	620202070020
29	996510051789	SOAP SPOON	620202080007
30	996510058704	POWER CORD	610201530019
31	996510058688	STEAMER	620202090002
32	996510058692	DFU	610205510293
33	996510058694	F-BOX	610202510296
34	996510058703	OUTER BOX	610202520295
35	996510058358	SILICON GLOVES	610207900029

Exploding view(HD2178)



Parts List for HD2178

Ref No	12NC	Description	PCM
01	996510052304	PRESSURE LIMITER ASSY	620203900062
02	996510052323	HANDLECOVER	620202140030
03	996510052329	AL HANDLE	610204900027
04	996510052331	HANDLE BASE	620202140031
05	996510052265	POLE FOR SPRAYING STEAM	610204900034
06	996510058723	FLOAT VALVE ASSEMBLY	620203900084
07	996510052428	PANEL	620202050108
08	996510058721	STOP PLATE	620203900082
09	996510052324	COVER INSIDE	620202050107
10	996510055019	PAN COVER ASSY	610204100074
11	996510058711	KEEP WARM BOARD	620203020047
12	996510058686	LID SEALING RING	610206010061
13	996510058722	INNER POT	620203030139
14	996510052313	HEATING ELEMENT ASSY	620201030026
15	996510058696	TRC	610201560027
16	996510052276	OUT PAN	620203030216
17	996510058689	PRESSURE SWITCH	610201120030
18	996510058699	TEMPERATURE LIMITER	620201520029
19	996510052322	HOUSE COVER	620202120058
20	996510052327	AL HANDLE FOR CARRY	610204900026
21	996510052328	HOUSE	620203040150
22	996510052291	PCBA BRACKET	620202100090
23	996510058719	POWER BOARD ASSEMBLY	610201510084
24	996510052315	HOUSE BASE	620202110108
25	996510058695	SOCKT	610201570001
26	996510052267	HOUSE BASE COVER	620202110072
27	996510058717	CONTOL BOX ASSEMBLY	620202030422
28	996510051778	MEASURE CUP	620202070021
29	996510051777	RICE SPOON	620202070020
30	996510051789	SOAP SPOON	620202080007
31	996510058704	POWER CORD	610201530019
32	996510058688	STEAMER	620202090002
33	996510058716	DFU	610205510292
34	996510058718	F-BOX	610202510297
35	996510058715	OUTER BOX	610202520296
36	996510058358	SILICON GLOVES	610207900029

Disassemble Steps

1st step: dismantle the handle cover (Cut some bumps on rice spoon in order that it can insert into the gap between handle and handle cover to pry the cover)

2rd step: dismantle three fixed screw on handle base and disassemble handle base.

3rd step: dismantle fixed screw on pressure release valve core with 14-inch spanner.

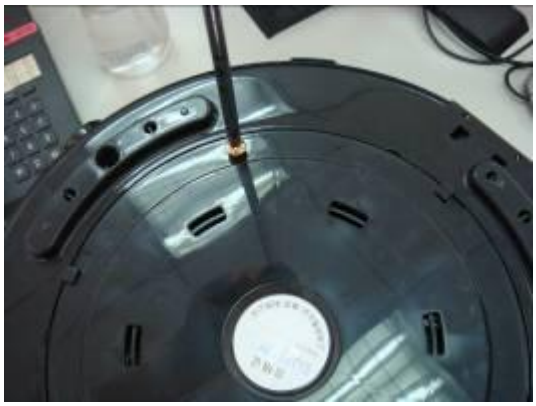
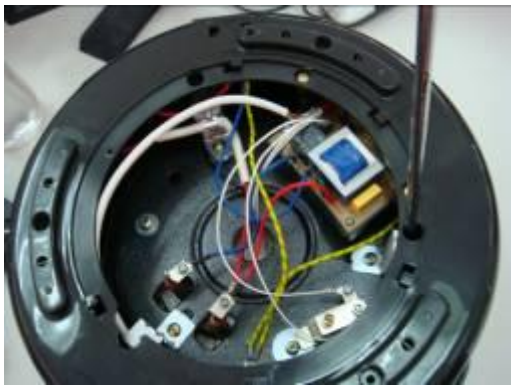
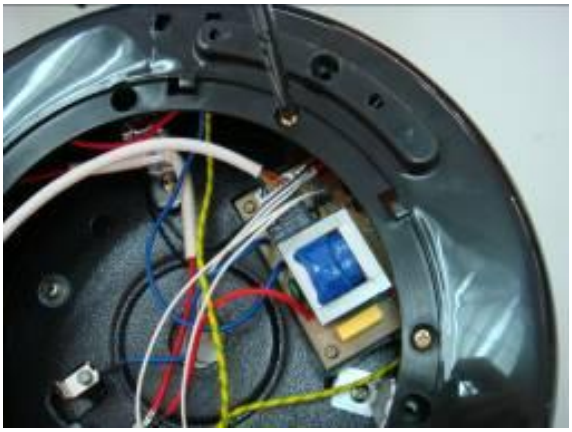
4th: dismantle pressure release valve base and core.

5th: put it flat, and press the cover lid assembly to separate it from plastics

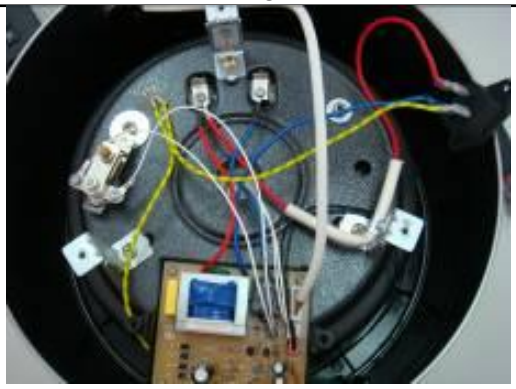
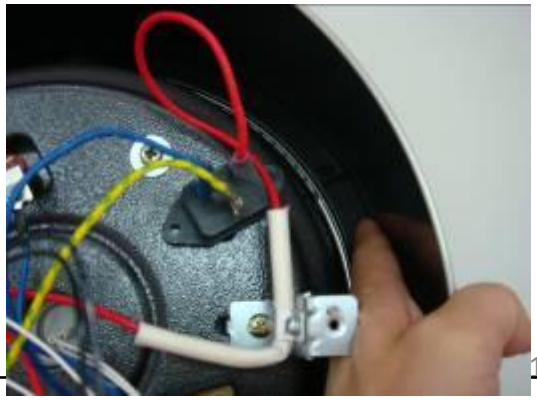
Disassemble Steps

6th step: take cover lid assembly	7th step: insert rice spoon in cover lining and pry it gently
	
8th step: separate cover lining and cover and dismantle pushrod assembly	
	
Remark: the rice spoon we use has been disposed with a thinner corner in order to insert into the gap of plastics. Please be cautious about your force to prevent plastics scratch.	

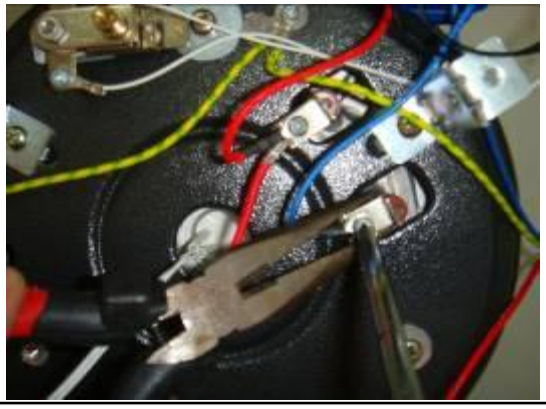
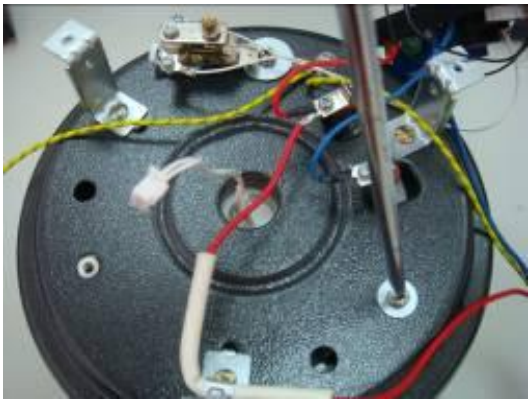
Disassemble method for mechanical EPC body

1. Reverse the body and take lower bottom base cover after removing cross self-drilling screw by cross screwdriver.	2. Take three screws fixed on bottom base by cross screwdriver.
	
3. Take screws fixed on PCB board holder by cross screwdriver.	4. Remove bottom base.
	

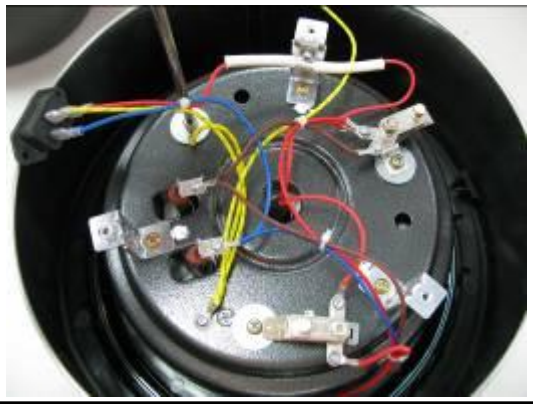
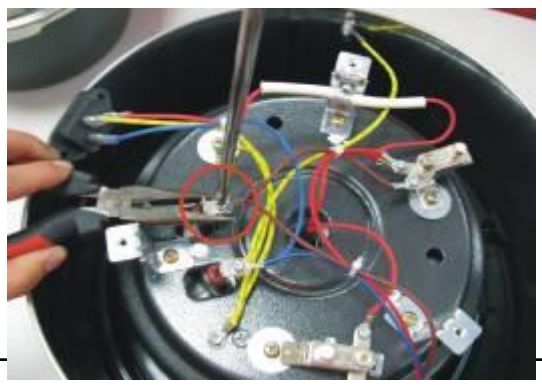
Disassemble Steps

5.Take cross countersunk screw by screwdriver.	6. Remove power plug from bottom base.
	
7. Take screws fixed on control box by screwdriver.	8.Remove control box from outer shell and 5 screws on control box cover, then control board assembly can be exchanged.
	
9. Take out reed pipe assembly. Note: EO protection will occur when reed pipe assembly doesn't work in normal. It means that the cover isn't positioned correctly. reed pipe assembly can be exchanged if the above-mentioned problems happen again.	10.Put your hand between outer pot and outer shell to pull to separate outer shell from outer shell cover button.
	

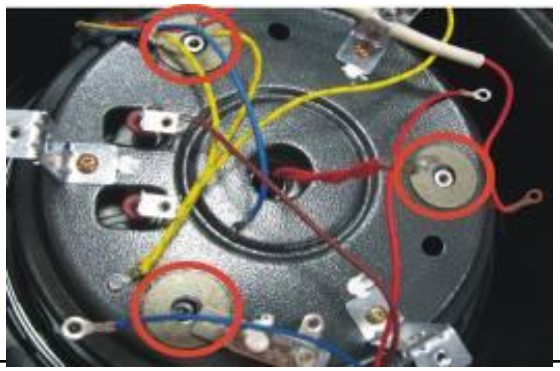
Disassemble Steps

11. Remove cross countersunk screw on outer pot and press down outer shell cover with hands so as to take out outer shell cover. Remark: screw hole on outer shell cover and that on outer pot should be aligned in case that outer shell cover cannot be assembled.	12. It's better to put inner pot inside outer pot when dismantling heating plate.
	
13. Clamp the wire end of heating plate to prevent damage when dismantling the wiring on heating plate.	14.Remove three screws fixed on heating plate by screwdriver.
	

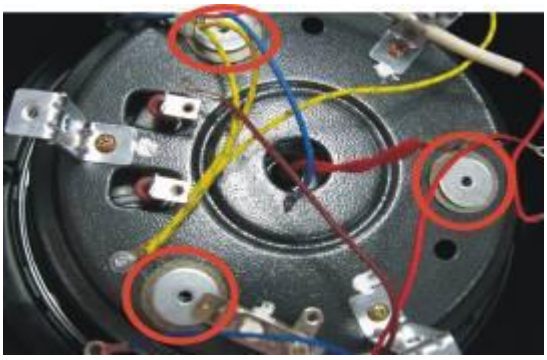
Installment on EPC heating plate

1.Loose screw after the body reverses.	2.Separate bottom cover of the body from fastener position
	
3. Loose screws on bottom base	4. Remove bottom base
	
5. Clamp the wire end of heating plate and loose screws by cross screwdriver . Loose screws fixed on heating plate by cross screwdriver .	6. Put pad1 stick on heating plate and then put disc spring.
	

Installment on EPC heating plate

7.Pay attention when placing disc spring: Put pad on concave	8. Location
	
9. Put the other disc spring convex and the prior one convex together	10. Put pad 2 on disc spring after disc spring has been placed.(pad 2 is much thicker than pad 1)
	
11. Place 3 micas on pad respectively	12.Put mica on outer pot after heating plate fixed foot and outer pot opening are aligned.
	

Installment on EPC heating plate

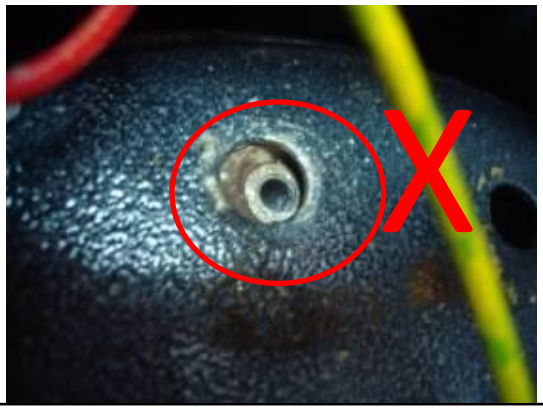
13.Place pad 3 after micas has been ready.	14.Touch by finger to see whether main thermostat goes smooth after heating plate are assembled.
	
15. Pressure adjustment methods for mechanical EPC as follows: A. Add 1/5 water in inner pot and put voltmeter on cover pressure release valve core to test pressure. B. set pressure keeping time as 5 mins. C. With power's on, test to see whether the value goes between 50~55kpa when pressure switch shuts up.(heating light off and warm keeping light on). Stop heating and exhaust air to adjust if the value is below 50kpa or above 55kpa.	D. Cut the power, reverse the pot and open bottom board. E. If the value is below 50kpa, adjust pressure switch and screw counter clockwise by small screwdriver. Leave it for re-testing until the value stays between 50-55kpa.
	

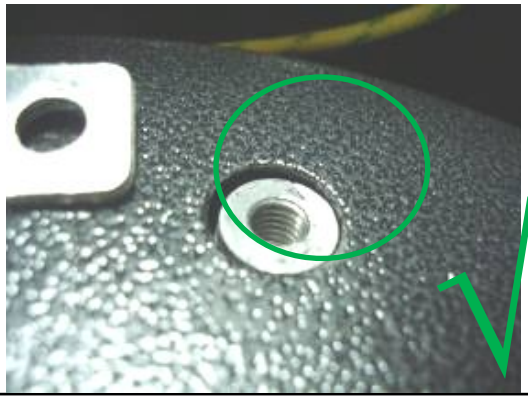
the Do's and don'ts on EPC maintenance and installment

Dish gasket is crucial to pressure balance of EPC and cannot be replaced by ordinary pads. If the gasket is happen to rust and needs exchange, be sure to apply exchange for original ones.

Item 1:

Three fixed feet on heating plate has to penetrate outer pot. Heating plate move downwards until it can push pressure switch to work if pressure inside pot produces. If as shown in the left chart, heating plate pushes against outer pot and fails to move downwards, it will cause outer pot deformation and pressure abnormal of the whole unit which is rather had hazardous. Therefore, the above-mentioned issues needs more attention when installing heating plate.





Item 2:

Dish gasket on heating plate cannot be replaced by others. If it happens to rust or deform, be sure to apply for exchange from headquarter.

Common malfunction analysis and troubleshooting

Self-checking function	Malfunction	Cover-open protection	Bottom sensor circuit open	Bottom sensor circuit short	Temperature over 200 ℃	Pressure switch shuts up when the temperature is below 80℃(no detection in pressure keeping process)
	LED display code	E0	E1	E2	E3	E4

Phenomenon	Inspection	Maintenance
Air leakage of float valve	1. Food residual leaves on float sealing ring and round nut.	1. Visual inspection and cleaning by purified water.
	2. float sealing ring is broken.	2. Visual inspection and exchange for a new one
	3. Float valve is locked by push rod board	3. Adjust the position of push rod board (float has t be in the center)
Air leakage of lid(overbrimming)	1. Food residual leaves on lid sealing ring	1. Visual inspection and cleaning by purified water.
	2.Lid sealing ring is broken.	2. Visual inspection and exchange for a new one
	3. Imbalance of steel ring rim on lid sealing ring	3. Visual inspection and balance adjustment of steel ring rim by hand
	4. Deformation of inner cover base causes non-sealing due to pressure release of lid rim	4.Put into inner pot and press the bottom by hand; measure the gap between inner cover and inner pot by callipers. A new inner cover is needed if the value goes beyond normal range.
		5. Pad heating plate by 8mm
Air leakage of pressure release valve(or air exhausting)	1. Controller failure makes continuous heating inside pot and exhaust pressure limiting at 90kpa	1. Display board and PCB failure
	2. Inside pot pressure soars to 90kpa when control working pressure shuts up due to insufficiency of food and water	2. Add food and water as required (equal to or over 1/5 of inner pot and no more than 4/5 of inner pot)
	3. Up control pressure of pressure switch is too high.	3. Adjust up control pressure of pressure switch as per the following method

Common malfunction analysis and troubleshooting

Phenomenon	Inspection	Maintenance
Air leakage of pressure release valve(or air exhausting)	4. Pressure release valve failure(damage)	4.Exchang for a new pressure release valve with the same model if possible. If it resumes to work, it shows that there are some errors on pressure release valve, which needs to be exchanged .
	5. Exhausting pipe or pressure release valve thimble damage	
	6.Exhausting pipe isn't in the center and pressure release valve isn't under free condition (adjust)	
	7. Loose round nut of exhausting pipe or broken sealing ring of exhausting pipe	
Difficult upper lid closing	1. Sealing ring on lid isn't placed right.	1.After visual, use hand to put seal around aperture, back and forth rotating a few times
	2. Push rod isn't flexible.	2、With the hand push rod end out, with big parallel-jaw vice clamp rod and force to pull to the direction of the open cover, then snap up
Difficult upper lid opening	1. Floating fails to fall after air exhausting.	1. Visual inspection and press floating gently by chopstick or others until the floating fully falls.
	2. Push rod doesn't work flexibly.	2. Top one end of push rod by hand, clamp push rod tightly by pinchers and pull in the direction of lid open, then stir upwards.
	2. Rather low up control pressure of pressure switch	2. Pressure switch keeps in standard range of pressure
	3. Sensor failure(rather low sensor temperature)	
floating failure to lift	1. Floating sealing ring is missing	1. Put Floating sealing ring
	2. Air leakage of lid rim	2. Check lid and lid sealing ring
	3. Lid sealing ring is missing	3. Put lid sealing ring
	4、push rod board bracing float	4. Adjust push rod board
scorched rice	1. Air leakage of EPC	1. Floating valve air leakage, lid air leakage(overbriming , pressure release valve air leakage(or air exhausting). Maintenance as the above-mentioned.
PLFE series	1. Sensor circuit is open and beeps for 10 times; warm-keeping and rice indicator will light.	1. Open circuit of sensor is checked by multimeter and exchange for a new one.

Common malfunction analysis and troubleshooting

Phenomenon	Inspection	Maintenance
PLFE series	2.Sensor circuit is short and beeps for 10 times; warm-keeping and congee indicator will light.	2. Short circuit of sensor is checked by multimeter and exchange for a new one.
	3. It beeps 10 times when the temperature is over 200℃ and warm-keeping, beans/tendons indicator will light.	1.Don't connect power on again until the temperature inside pot falls. 2. Abnormal in sensor 3. Abnormal in PCB board and display board
	4. It beeps 10 times due to pressure switch mis-operation and warm-keeping and pressure indicator light.	1. Exchange pressure switch
PLFN,PLFG series	1. Bottom sensor circuit is open and E1 displays	1. Open circuit of sensor is checked by multimeter and exchange for a new one.
	2. Bottom sensor circuit is short and E2 displays	1. Short circuit of sensor is checked by multimeter and exchange for a new one.
	1. E3 displays when the temperature is over ℃	1.Don't connect power on again until the temperature inside pot falls. 2. Abnormal in sensor 3. Abnormal in PCB board and display board
	1. Pressure switch is open and E4 displays when the temperature is below 80 ℃(no such inspection in pressure keeping process)	1. Exchange pressure switch