

# MHP50A | MHP75A MHP150A

USER MANUAL



It is the installer's responsibility to read, understand, and comply with these instructions.

# A Guide to Your RainFlo Pump

This system includes a pump and controller for on demand usage at a constant pressure. When the pump controller senses a drop in water pressure as a result of a valve or faucet in the water system opening, the pump is turned on. When the controller senses the water flow has stopped, the pump is turned off after a delay of about 5 seconds to prevent excessive cycling.

The user manual is designed to provide the necessary information to use and properly maintain your MHPA pump. With proper installation and maintenance, your pump should function for years to come. We strive to offer the highest quality pumps and products available. Please contact us with any questions.

## Please Note:

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

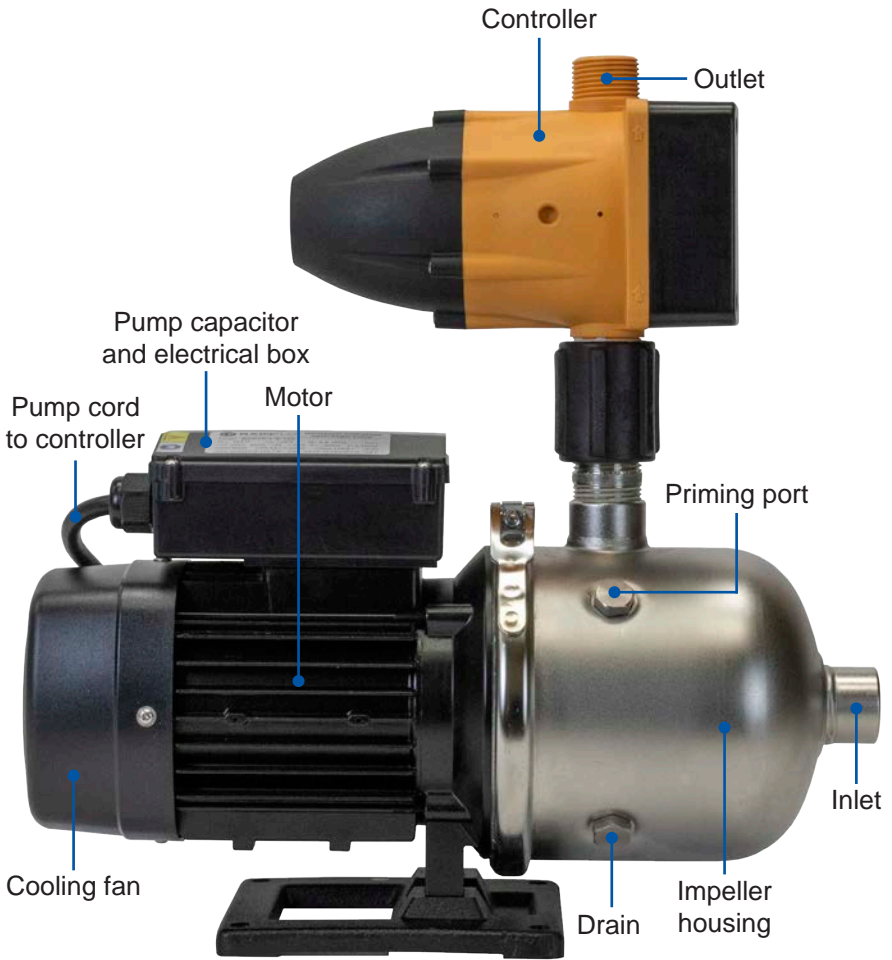
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# 1. MHPA PUMP DIAGRAM



# MHPA PUMP SIDE VIEW DIAGRAM



## 2. APPLICATIONS

The MHPA series of pumps and controller systems are intended for use in pumping, circulating, and boosting water, industrial fluids, and other weak chemical/industrial mediums. The electronic controller commands the starting and stopping of single-phase electric water pumps whenever a faucet or valve connected to the installation is opened or closed, respectively. When the pump is started, it keeps running as long as any connected tap remains open, supplying the network with the required flow at the related pressure.

- Rainwater harvesting systems
- Greywater systems
- Water treatment processes
- Water boosting applications
- Heating and cooling for industrial processes
- Water supply and boosting (drinking water, light chlorine water)
- Fertilization/metering system

## 3. PHYSICAL CHARACTERISTICS

- Inlet connection: 1" (1¼" for MHP150A)
- Outlet connection: 1"
- Non-water hammer check valve
- Dry-running protection system
- Pressure gauge
- Manual start button (RESET)
- AUTORESET function for automatic start after a failure
- Power supply LED (POWER)
- Pump switch-on LED (ON)
- Safety system activation LED (FAILURE)

### Motor

- 2-pole induction motor
- Single-phase: 110-125VAC/60Hz
- Input thermal protector
- Insulation class: F
- Protection: IP55

### Pump Controller

The MHPA includes a RainFlo PC115A pump controller to provide automatic multifunction control including start and stop control based on user demand (flow), demand-side pressure display via built-in pressure gauge, run-dry protection and a check valve (non-return valve) function. As with most pump controllers, the system high pressure is based on the pump output. The pump start pressure (low

pressure threshold and start trigger), is adjustable through a screw on the back side of the unit.

### Pressure Gauge

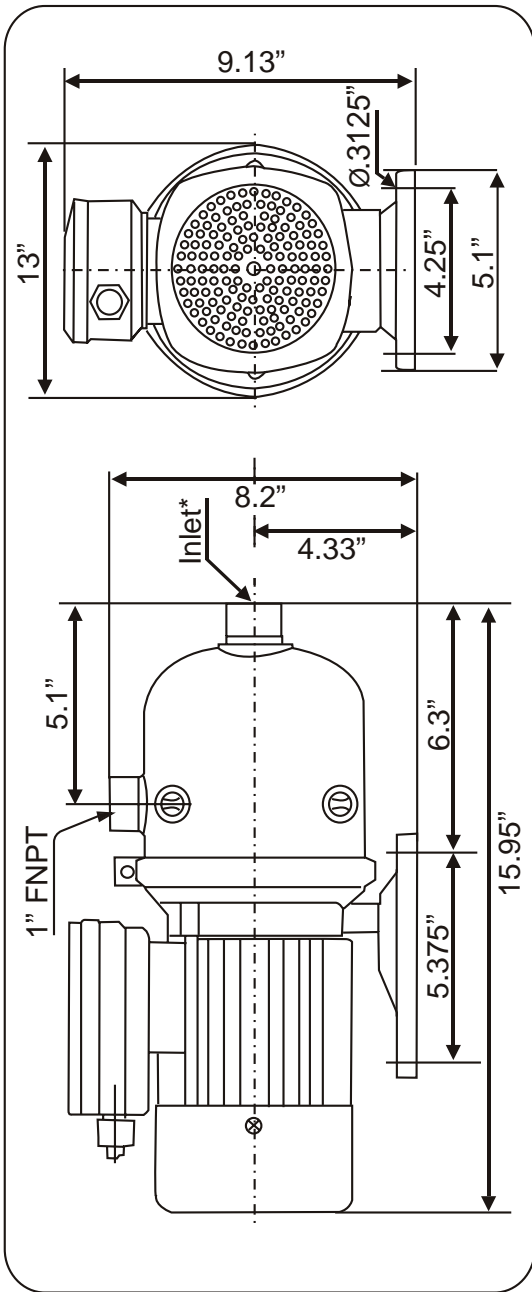
The pump controller features a built-in pressure gauge located on the right side of the unit. This gauge features measurement units in both PSI and bar. One bar is approximately equal to atmospheric pressure at sea level. In terms of water pressure, 1 bar = 14.5037 PSI.

Pressure Gauge (bar)	Pressure (psig)
2.0	29.0 PSI
3.0	43.5 PSI
4.0	58.0 PSI
5.0	72.5 PSI
6.0	87.0 PSI
7.0	101.5 PSI

### Automatic Reset Function

If the device goes into failure mode, the automatic reset function will execute a series of automatic starts to attempt to restore operation without any manual intervention via the RESET button. The system operates as follows: The appliance is in failure mode due to water failure, for example; after five minutes in this condition the system will do a 25-second RESET, attempting to prime the pump. If the system is able to prime the pump, the failure will disappear and the pump will be ready to operate. However, if the failure persists, the system will do another RESET after thirty minutes, and will continue in this manner systematically every thirty minutes for 24 hours. If the failure still persists after all these attempts, the system will remain in this condition until the problem has been resolved by manual intervention or when power is recycled.

## 4. DIMENSIONS



\*MHP50A, MHP75A inlets are 1" FNPT. MHP150A inlet is 1.25" FNPT.



## 5. OPERATING CONDITIONS

- Liquid temperature: 0°C-70°C (32°F-158°F)
- Maximum environmental temperature: 50°C (122°F)
- Maximum operating pressure: 10 bar (145 PSI)
- Maximum suction pressure is limited by maximum operating pressure



Under no circumstances should the pump be exposed to freezing temperatures with water in the pump.

## 6. INSTALLATION

**Handle with care. Dropping and impact can damage the product.**

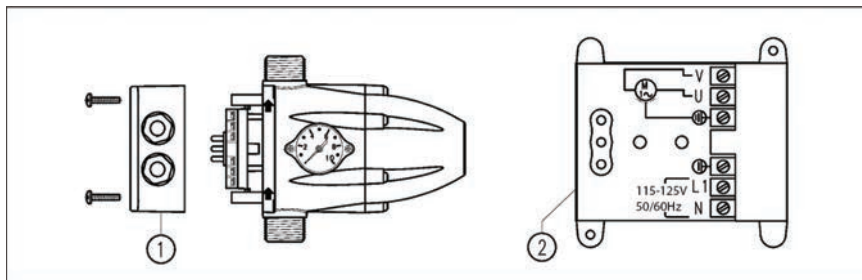
Before proceeding with installation, make sure the unit shows no visible signs of damage.

- This pump is made for indoor use only. If used outdoors, additional protection is required. An optional pump cover is available and highly recommended to extend the pump life in an outdoor environment. However, a pump cover will not protect against freezing.
- To prevent suction loss, install the pump as close to the water source as possible.
- Mount the pump securely using the base plate bolt holes.
- Minimize bending any attached pipes.
- Make sure the connections are water tight and ensure the pipes are supported independently.
- Install a pressure gauge in the discharge pipes to allow proper monitoring and diagnostics.

This device must be assembled and installed by personnel qualified in accordance with local laws, regulations and codes.

### Electrical Connection

- The pump includes the preinstalled required cords for operation, simply plug the power cord into a 115V receptacle. Ensure the input voltage (V), frequency (Hz), and phase (PH) matches the specifications marked on the label. When the voltage is greater than  $\pm 10V$ , the thermal protector will shut off the pump.
- Ensure the pump is reliably grounded with a circuit breaker.
- The power cord should be less than 15 feet and approved for the current delivered to this pump.
- Verify that you have made the correct electrical connections for the pump.



**WARNING: Power supply voltages other than those specified or improper connections can permanently damage the electronic components and will void the warranty.**



**H07RN-F3G1.5 type cables (9-12mm) are supplied and must be used in order to ensure IP65 protection.**

## 7. STARTING, OPERATING, AND STOPPING THE PUMP

1. To avoid burning the seal and damaging the pump, never let the pump run without liquid.
2. The fan should turn freely by hand when disconnected from power and water.
3. The fan should rotate clockwise when viewed from the back of the pump.
4. For proper start up: Remove priming plug, fill with water until it overflows and then replace plug tightly.
5. To begin the flow, turn on the pump and open the discharge valve.
6. Before stopping the pump and disconnecting the power, close the upstream discharge valve to avoid siphoning.
7. Avoid excessive start and stop operations.

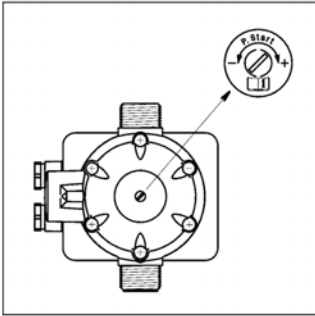
### Start Up

1. Check that the pump is primed properly, then partially open a faucet or valve within the plumbing circuit to purge air from the water system.
2. Plug the controller power cord into a 115V receptacle; the power LED will light up (POWER).
3. The pump will start up automatically and within 20 to 25 seconds the system should reach approximately the maximum pressure (see chart) delivered by the pump. While the pump is running, the corresponding LED (ON) will remain illuminated.
4. Close the faucet or valve mentioned under step (1). After 10-12 seconds the pump will stop running, but the power supply LED

(POWER) will remain lit. Any malfunctions occurring after these operations will be caused by improper priming or failure to prime.

### Starting Pressure Adjustment (P. Start):

The pump controller is factory set to start with a minimum pressure of 21.75 PSI (1.5 bar). This pressure can be increased up to 36.25 PSI (2.5 bar) by rotating the screw found at the back of the cone-shaped end of the device, (see illustration below).



### To Set the Pump Start Pressure:

1. Read the pressure indicated by the gauge when the pump is started.
2. Disconnect the power supply.
3. Open a faucet or valve to discharge the pressure.
4. Adjust the screw clockwise to increase (or counter-clockwise to decrease) the start pressure.
5. Supply power to the controller; if you are not satisfied with the adjustment, repeat the operations described above until you obtain the desired pressure value.

**NOTE:** The maximum pressure of the pump (closing contact pressure) and the minimum start pressure must comply with the values shown in the table otherwise the controller will go into FAILURE mode.

Start Pressure	Max. Operating Height	Max. Pump Pressure Greater Than
22 PSI	33 ft	44 PSI
29 PSI	49 ft	51 PSI
36 PSI	66 ft	58 PSI

## 8. PERFORMANCE SPECIFICATIONS

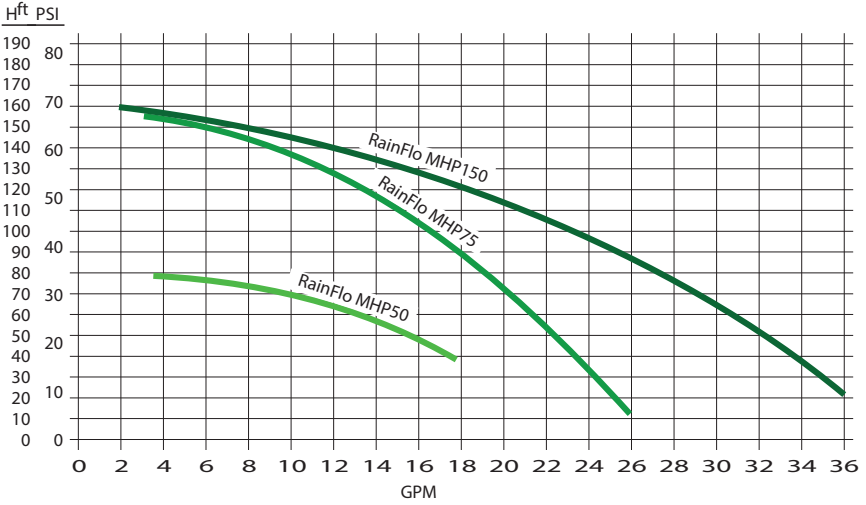
- Power supply voltage: (1) 110-125V
- Maximum current: 16A
- Max pump power: 1100W (1½ HP) at (1) 110-125V
- Frequency: 50/60Hz
- Protection class: IP55
- Ambient temperature: 0 /+140°F
- Liquid temperature: 0 /+140°F
- Max flow rate: 44 GPM
- Adjustable starting pressure: 20-35 PSI
- Max operating pressure: 145 PSI

### RainFlo Multi-Stage Centrifugal Pumps

Model No.	MHP50	MHP75	MHP150
Horsepower	½	¾	1½
Nominal voltage range	110-125 VAC, 60Hz, 8A max.	110-125 VAC, 60Hz, 12A max.	110-125 VAC, 60Hz, 14A max.
P1kW (Input)	0.55	1.04	1.5
P2kW (Output)	0.37	0.55	0.75
Impeller stages	2	4	4
Maximum flow	17.6 GPM	26 GPM	36 GPM
GPM at 60 PSI (0 Head)	11	9.2	12
GPM at 50 PSI (0 Head)	14.5	14	19.5
Maximum head	79 ft.	164 ft.	168 ft.
System pressure	up to 34 PSI	up to 65 PSI	up to 65 PSI
Inlet pressure	up to 145 PSI	up to 145 PSI	up to 145 PSI
Inlet/outlet size	1"FNPT/ 1"FNPT	1"FNPT/ 1"FNPT	1¼" FNPT/ 1" FNPT
Weight	19.65 lbs.	22 lbs.	25.5 lbs.
Dimensions	15.75"L x 6.5"W x 9"H	15.75"L x 6.5"W x 9"H	16"L x 6.5"W x 9.3"H
Thermal protection	yes	yes	yes
Operating liquid temp	32°-158°F	41°-158°F	41°-158°F
Max. environmental temp	122°F	122°F	122°F

<b>Model No.</b>	<b>MHP50</b>	<b>MHP75</b>	<b>MHP150</b>
Motor	2-pole induction, continuous duty	2-pole induction, continuous duty	2-pole induction, continuous duty
RPM	3450	3450	3450
Cooling	Air cooled	Air cooled	Air cooled
Insulation class	F	F	F
Protection	IP55	IP55	IP55
Certifications	TUV, CCC	TUV, CCC	TUV, CCC
Warranty	1 year	1 year	1 year

## 9. MHP PUMP CURVES



## 10. PERFORMANCE CHARTS

RainFlo MHP50 Performance Chart

TDH	PSI	GPM
79	34	3.5
77	33	5
74	32	6
70	30	8
67	29	8.5
64	28	9
61	26	11
58	25	11.5
56	24	12.5
53	23	13.5
50	22	14.5
46	20	15
44	19	16.5
39	17	17.6

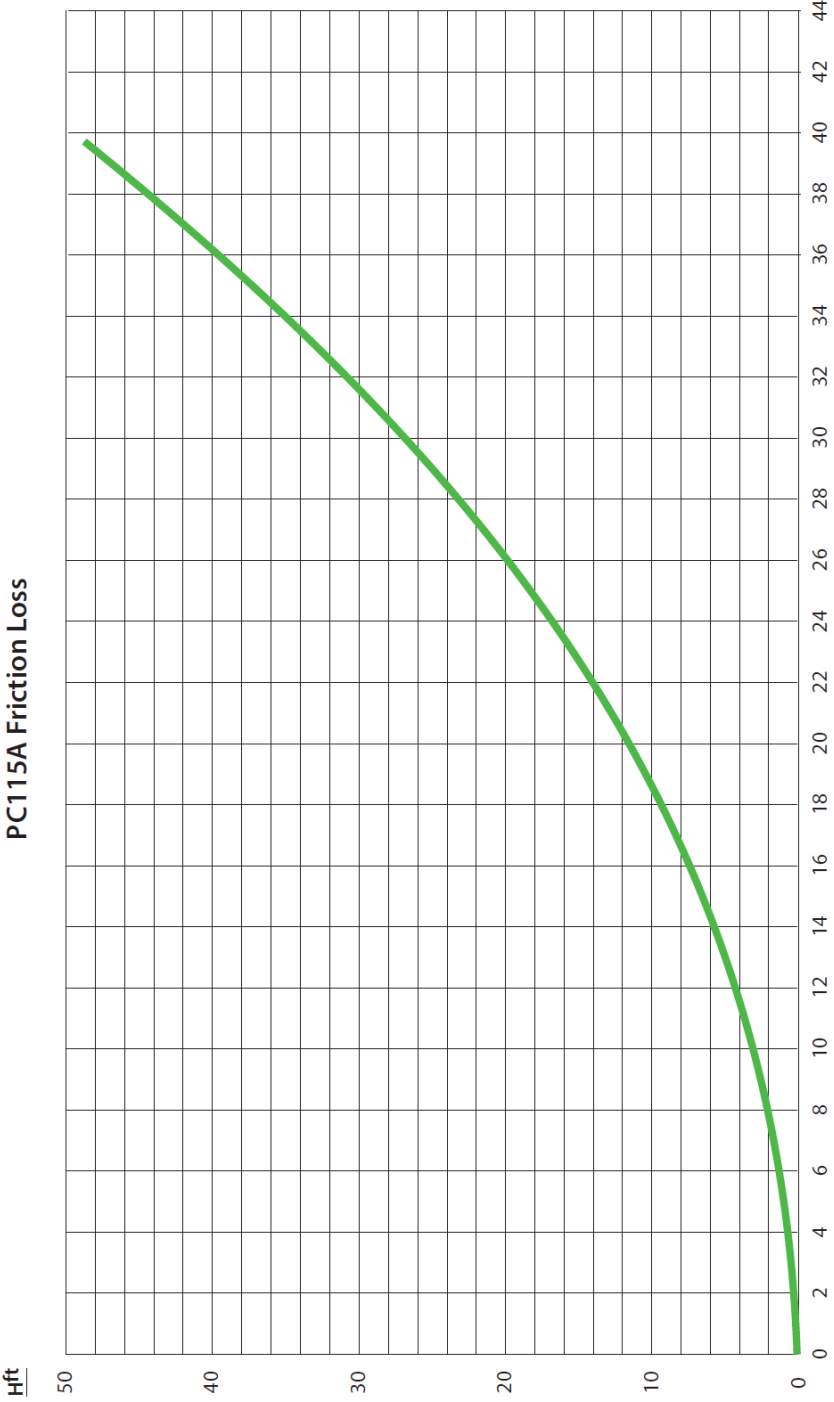
### RainFlo MHP75 Performance Chart

TDH	PSI	GPM
150	65	6.5
139	60	9.2
127	55	11.7
116	50	14.0
104	45	15.8
92	40	17.0
81	35	18.8
69	30	20.2
58	25	21.4
46	20	22.7
35	15	24.0
23	10	25.0
13	5.5	26.2

### RainFlo MHP150 Performance Chart

TDH	PSI	GPM
160	68	2
139	60	12
127	55	15.2
116	50	19.3
104	45	21.8
92	40	24.9
81	35	27.0
69	30	29.0
58	25	30.8
46	20	32.3
35	15	34.2
23	10	36
13	5.5	37

# 11. CONTROLLER FRICTION LOSS





## 12. MAINTENANCE

- Disconnect pump when power is interrupted or unstable.
- To avoid overheating, do not restrict the suction end to adjust flow.
- If there are any abnormal noises, stop the pump immediately and check the connections, hose clamps, mounting hardware, etc.
- If the pump will remain unused for an extended time, or to winterize, be sure to drain the water to prevent damage from freezing water. The best way to do this is to disconnect the power and plumbing lines, turn the pump upside down to fully drain the pump and controller.

## 13. TROUBLESHOOTING

Issue	Solution
The pump does not start	<ul style="list-style-type: none"><li>• Try pressing the manual reset button.</li><li>• Check the power supply. The POWER LED must be illuminated.</li><li>• Electronic board malfunction: disconnect the pump from the electrical mains and reconnect it; the pump should start, if it does not replace the controller board.</li></ul>
The pump does not run	<ul style="list-style-type: none"><li>• Check the voltage on the label and make sure the input voltage is within 10 volts of the value.</li><li>• Check the fuse or thermal protector for damage</li></ul>
The pump does not pump properly	<ul style="list-style-type: none"><li>• Make sure the head isn't too high</li><li>• Verify the suction head is in water</li><li>• Prime the pump</li></ul>
The pump runs but no water	<ul style="list-style-type: none"><li>• Check the suction side intake connection and ensure it is not blocked or damaged. If so, clean or replace the connection.</li><li>• Clean or replace intake screen, if present</li><li>• Ensure the pump is fully primed and no air exists in the suction side of the pump including the connection lines. This pump operates best with a flooded suction connection. If pump is located above the water source a loss of prime may occur. This pump is not self priming and may require manual repriming.</li></ul>

Issue	Solution
The flow reduces drastically	<ul style="list-style-type: none"> <li>• Clean or replace intake screen, if present</li> <li>• Check water level as it may be too low for pump operation.</li> </ul>
The pump keeps stopping and starting	<ul style="list-style-type: none"> <li>• There is a small leak in the delivery pipeline: check for any leaking taps or running toilets.</li> </ul>
The motor is overheating, or, stops soon after starting	<ul style="list-style-type: none"> <li>• Verify supply voltage under load is within 10 volts of the required voltage (110 volts)</li> <li>• Improve ventilation</li> </ul>
The pump does not stop	<ul style="list-style-type: none"> <li>• Water loss exceeding 0.8 GPM. Make sure that all the taps along the pipeline are closed and that there are no leaks.</li> <li>• The electrical connection is incorrect: refer to the instructions, pages 7-8.</li> <li>• Electronic board malfunction: replace the electronic board.</li> </ul>



