



OPTIMA STEAMER **USER'S MANUAL**

Operating Instructions



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USER'S MANUAL

Includes Operating and Maintenance Instructions

Model: OPTIMA DM Series
<For DM(DMF), DM(DS), EST>
Ver. G2.3.00

Distributor's Contact Information:

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Introduction

The Optima Steamer represents the future of environmentally friendly and effective cleaning. Optima Steamer is focused on supporting your cleaning operations with high-quality green cleaning solutions.

Applications

The Optima Steamer is capable of providing ample amount of super-heated steam continuously in perfect pressure and temperature.

The Optima Steamer is designed to clean a wide variety of surfaces including cleaning machinery & components, washing vehicle exteriors, interiors, engine compartment, glass, metal surfaces, windows, wheel wells, vents, deodorizing bad odors, sanitizing hazardous food-borne bacteria from food processing equipment, removing weeds and more.

Product Specifications

Model Name	DM(DMF)	DM(DS)
Working Pressure	7~8.5 bar / Max 9.5 bar (101~123 psi / Max 137.7 psi)	
Temp. at Gun Tip	< 135°C (< 275°F)	
Steam Vessel Temp.	178°C / Max 200°C (352.4°F / Max 392°F)	
Preheating Time	2 ~ 3 minutes	
Electrical Power	290 Watts (max.)	
Voltage / Hertz	100V~240V, 50 / 60Hz (Customer configuration available)	
Water Tank Capacity	20 ℓ (5.3 gals)	N.A.
Water Consumption Rate*	300 ~ 1200cc/min. (0.08~0.32gpm)	
Fuel Tank Capacity	20 ℓ (5.3 gals)	17 ℓ (4.5 gals)
Fuel Nozzle	1.10 gallon/hour @ 10.0 bar	
Net Weight (kgs / lbs)	87 kgs (192 lbs)	93 kgs (205 lbs)
Product Dimensions [L] x [W] x [H]	1090 x 700 x 900 mm (43 x 28.3 x 35.4 inch)	780 x 500 x 760 mm (30.7 x 19.7 x 30 inch)

* Water consumption per car wash is subject to change depending on the use of the Moisture Control Valve. (See page 14, "Moisture Control")



For user's safety, DO NOT modify factory settings for steam pressure and temperature.

Product Specifications

Model Name	EST (05K, 12K, 18K, 27K)			
Electrical Power Display	05K	12K	18K	27K
Working Pressure	7~8.5 bar / max 9.5 bar (101~123 psi / Max 137.7 psi)			
Temp. at Gun Tip	< 135°C (< 275°F)			
Steam Vessel Temp.	174°C / max. 180°C (346°F / Max 356°F)			
Preheating Time	20~21 min.	8~9 min.	6~7 min.	6~7 min.
Max. Electrical Power	5.2 kW	12.2 kW	18.2 kW	27.2 kW
Voltage / Hertz (Customization available in the specified range)	200 ~ 240V, 1Ph 50/60 Hz	200 ~ 480V, 3Ph, 50/60 Hz		
Water Tank Capacity	40 l (10.6 gals)			
Water Consumption Rate*	300 ~ 1200cc/min (0.08~0.32gpm)			
Net Weight (kgs / lbs)	74 kgs (163 lbs)			83 kgs (183 lbs)
Product Dimensions [L] x [W] x [H]	1090 x 700 x 900 mm (43 x 28.3 x 35.4 inch)			

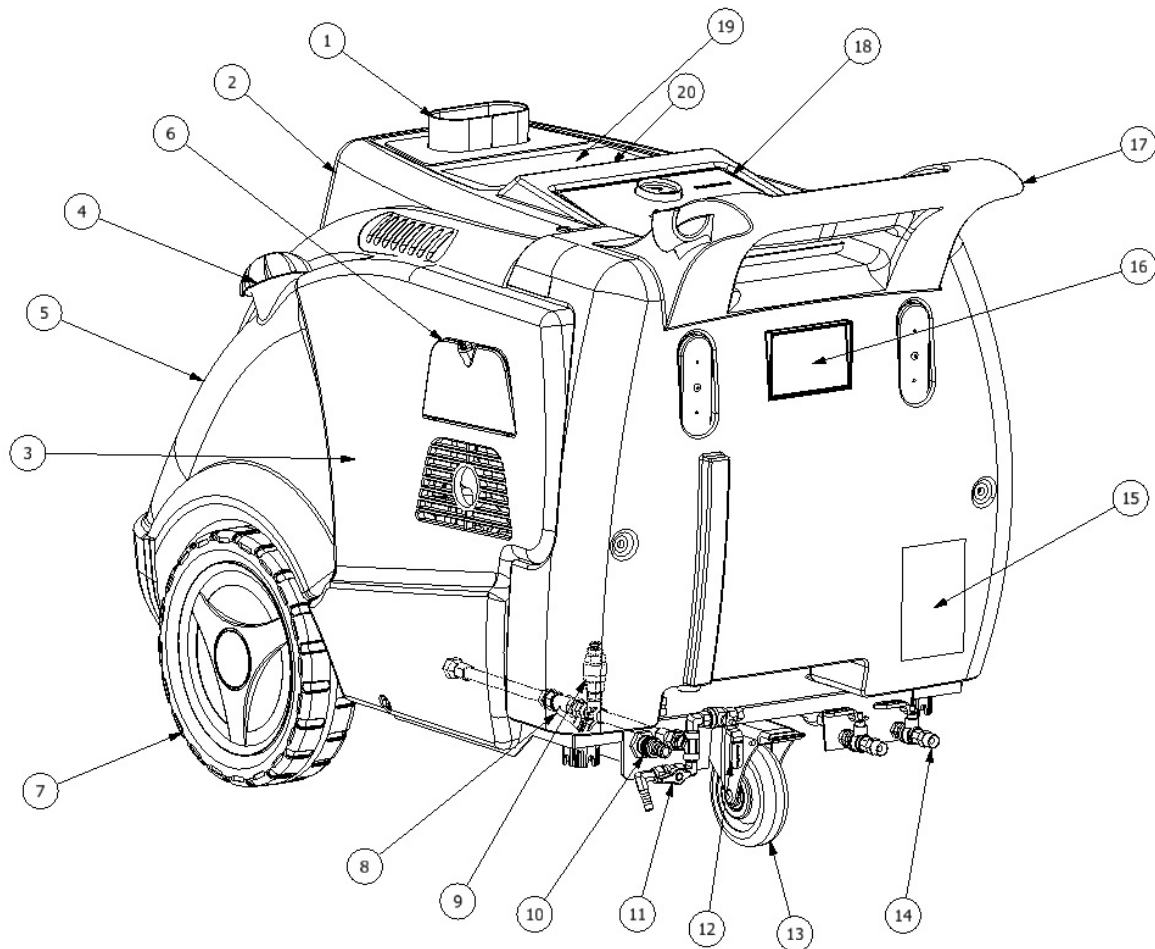
* Water consumption per car wash is subject to change depending on the use of the Moisture Control Valve. (See page 14, "Moisture Control")



For user's safety, DO NOT modify factory settings for steam pressure and temperature.

Exterior Description

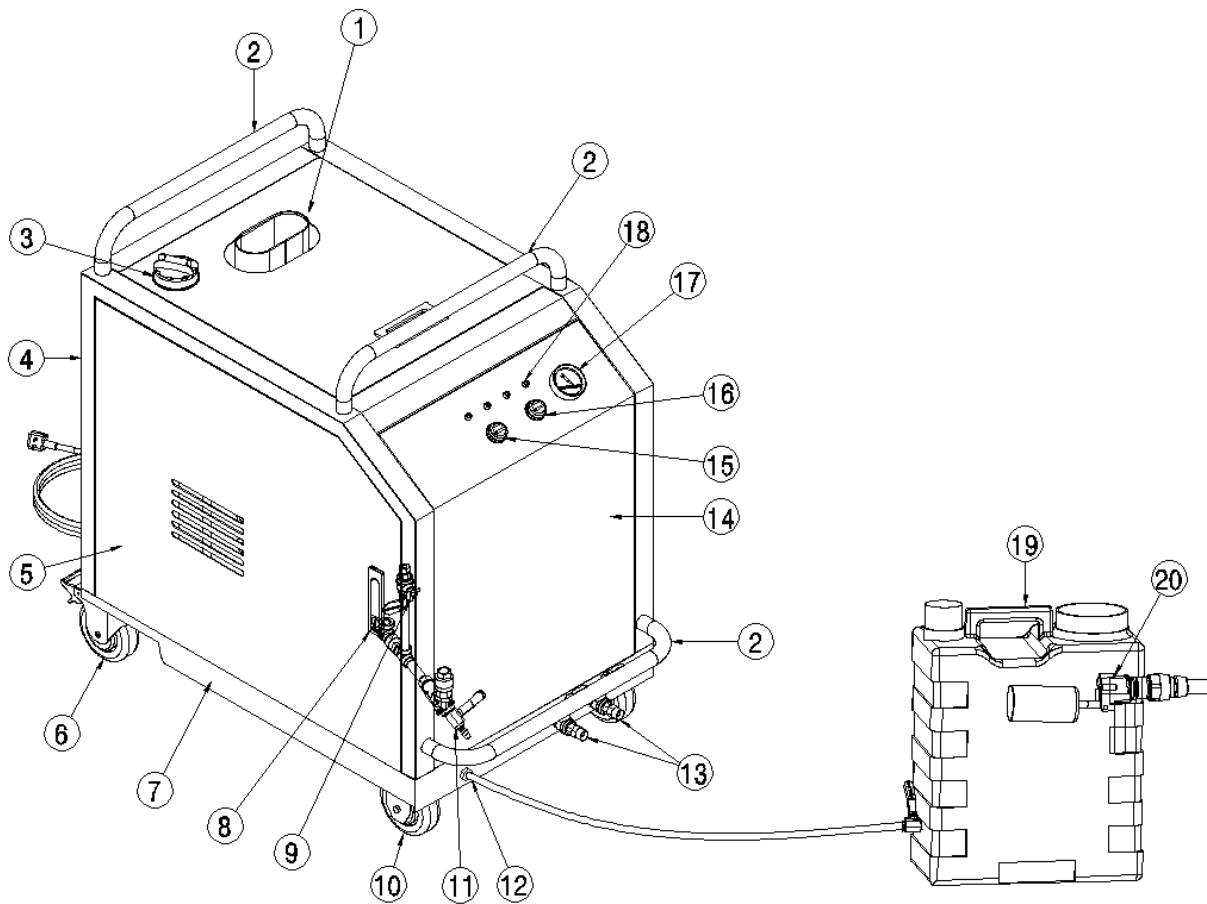
Model: DM(DMF)



- | | |
|-------------------------------|-----------------------------------|
| 1. Exhaust Flue | 11. Drain Valve |
| 2. Top Cover | 12. Moisture Control Valve |
| 3. Lateral/Side Panel | 13. Swivel Caster |
| 4. Tank Cap | 14. Steam Outlet Valve |
| 5. Water Tank | 15. Warning Sticker |
| 6. Throttle Door | 16. Specification Sticker |
| 7. 12" Rigid Wheel | 17. Handle |
| 8. Y-strainer | 18. Control Box |
| 9. Non-Return Valve | 19. Operating Instruction Sticker |
| 10. Quick Plug for Feed-Water | 20. System Status LED Indicators |

Exterior Description

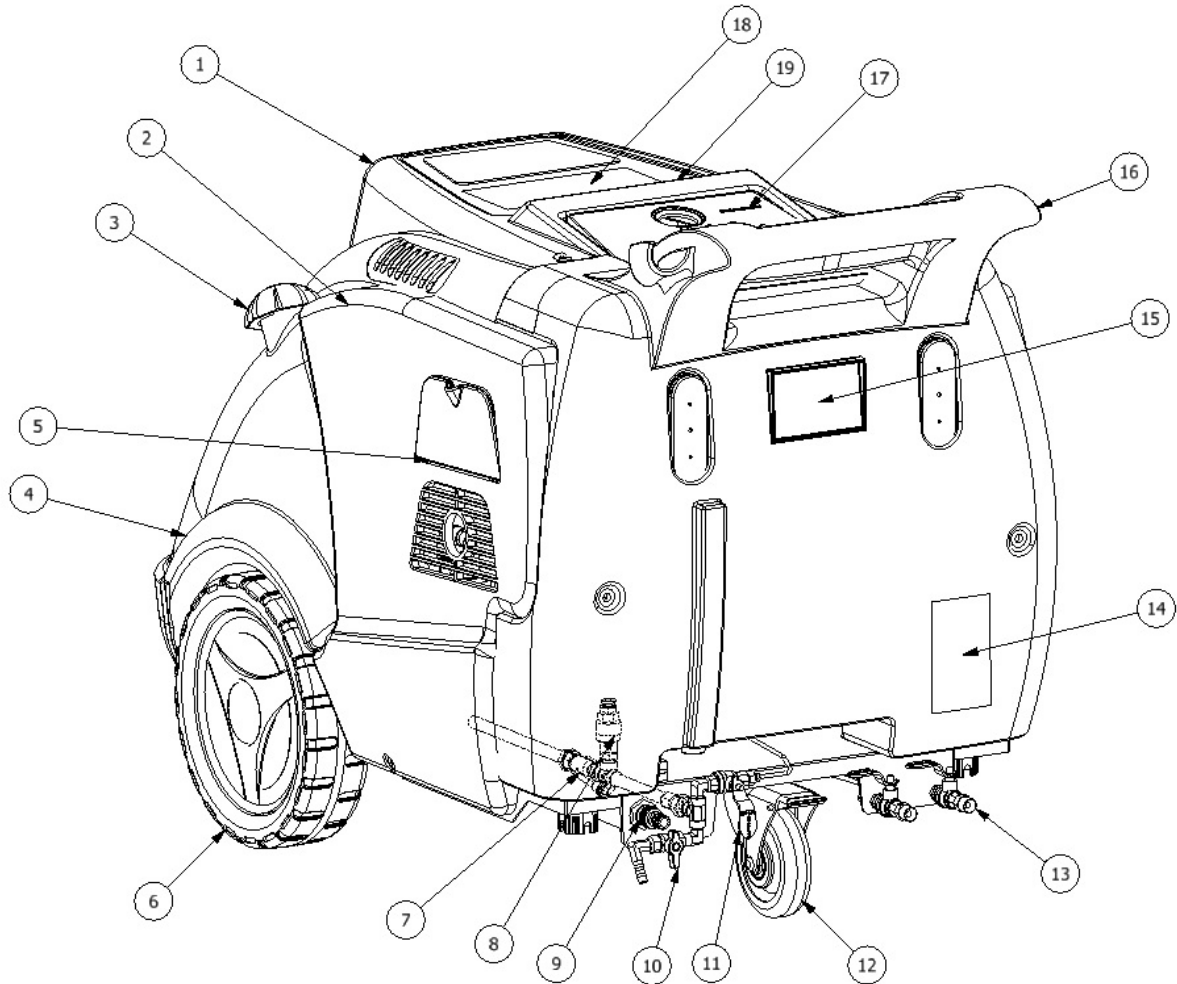
Model: DM(DS)



- | | |
|---------------------------|-------------------------------|
| 1. Exhaust Flue | 11. Drain Valve |
| 2. Handle | 12. Quick Plug for Feed-Water |
| 3. Fuel Tank Cap | 13. Steam Outlet Valve |
| 4. Frame | 14. Front Cover |
| 5. Lateral/Side Door | 15. POWER Switch |
| 6. Swivel Caster | 16. STEAM Switch |
| 7. Chassis | 17. Pressure Gauge |
| 8. Door Lock/Knob | 18. LED Status Indicators |
| 9. Moisture Control Valve | 19. Portable Water Tank |
| 10. Rigid Caster | 20. Floater |

Exterior Description










Model: EST(05K, 12K, 18K, 27K)



- | | |
|------------------------------|-----------------------------------|
| 1. Top Cover | 11. Moisture Control Valve |
| 2. Lateral/Side Panel | 12. Swivel Caster |
| 3. Tank Cap | 13. Steam Outlet Valve |
| 4. Water Tank | 14. Warning Sticker |
| 5. Throttle Door | 15. Specification Sticker |
| 6. 12" Rigid Wheel | 16. Handle |
| 7. Y-strainer | 17. Control Box |
| 8. Non-Return Valve | 18. Operating Instruction Sticker |
| 9. Quick Plug for Feed-Water | 19. System Status LED Indicators |
| 10. Drain Valve | |

Safety Precautions

Visual Symbols

	To ensure correct and safe usage with a full understanding of the product's performance, please be sure to read through this User's Manual completely and store it in a safe location. The contents of this User's Manual and the product specifications are subject to change without prior notice.		
	Caution		Warning!
	Risk of Electric shock		Risk of Burns
	Risk of Suffocation		Slippery Surface
	DO NOT operate on an incline		Wear appropriate protective gear (Goggles, ear plugs, gloves)



The manufacturer assumes no responsibility for any consequential losses or damages including but not limited to injury of persons, loss of business or properties which may occur through use of this product without consulting the User's Manual, regardless of any failure to perform on the part of this product.

GENERAL SAFETY RULES

DO NOT direct air or discharge the steam jet at itself, persons, animals or live electricity.



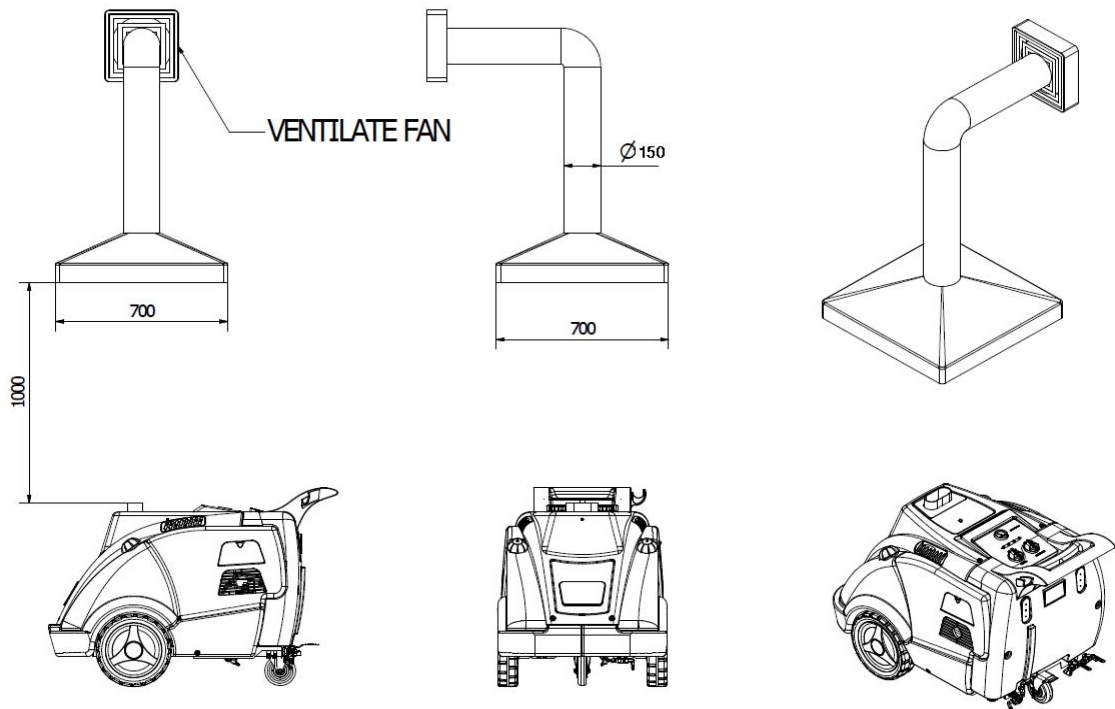
- Use and store the machine on a level ground (surface) only.
- DO NOT use the machine if any parts, power cord, safety devices, hoses or spray guns are visually damaged or suspected of being damaged.
- DO NOT use the machine in a rainy or snowy weather outdoors. The machine is not weather-proof or water-proof.
- NEVER leave the machine unattended while operating.
- Make sure to comply with safety rules in the event of operating in a danger area.
- NEVER use the machine in an area where a fire and explosion hazard exists.
- DO NOT use the machine below 0°C (32°F) or in extremely cold weather.
- DO NOT allow water sit in the water pipes and steam vessel if leaving the machine non-operational in cold weather.
- Store the machine at a room temperature(See page 20, "Freeze Prevention")
- Heavy object! Be cautious when carrying or lifting. (See page 1, "Product Specifications")
- Unplug the machine from its power source and release steam pressure from the machine before carrying.

- Use only "Clean" and "Soft" water in the machine.
 - Use of a water softener is recommended to prevent scale build-up
 - Using any kind of boiler water treatment (solution) can help decrease scale build-up.
 - DO NOT add detergent, wax or any cleaning additives in the water tank or steam vessel.
 - DO NOT use distilled water or filtered water below 15 ppm.
 - Connect to electrical power according to the product specifications. (See page 1, "Product Specifications")
 - Connect to the electrical power outlet installed in accordance with IEC 60364.
 - Be cautious of the risk of electric shock in the event of connecting to electrical power.
 - Ensure the ground connection of Grounding Chain and Ground Wire attached on the machine to prevent the risk of damage from Electro Static Discharge.
 - Users about to use the machine should carry out a visual check for insecure cable at entry to a plug, evidence of poor wire connections or evidence of appliance or plug overheating.
 - Make sure that all the switches on the machine are off before plug-in power cables.
 - In the event of using extension wire/extension cord, ensure that both ends of electric wires are securely attached and properly insulated.
 - Make sure to use right extension cord depending on the electrical parameters and the length of extension cord. (Contact manufacturer or local distributors)
-
- Keep out of reach of children and pets.
 - The machine is not intended for use by children, or by persons with reduced physical, sensory or mental capabilities, or by person lacking experience with the machine or knowledge of the machine's use, unless they have been given supervision or instruction concerning the use of the machine.
 - Wear appropriate protective gear to protect users' ears, eyes and hands.
 - Noise can be reached to 95 decibel(dB) but subject to differ depending on steam pressure.
 - DO NOT use the machine within the range of persons who are not wearing any protective gear.
 - HOT SURFACE. DO NOT touch steam vessel, steam valves, steam hoses and guns in operation.
 - Replace steam hoses immediately if ruptured.
 - Use manufacturer approved spare parts and accessories including steam hoses, steam guns and power cables.
-
- Unplug the machine from its power source and allow it to cool before carrying out any maintenance.
 - NEVER disable sensors in order to bypass an alarm signal.
-
- Open the drain valve and release all remaining water from the steam vessel after users shut down the machine completely. (See page 15, "Shutdown Procedures")
 - NEVER spray steam over cleaning hazardous materials or surfaces containing hazardous substance including asbestos.

SAFETY RULES for OPTIMA DMF & DS

- Use clean diesel only.
- Ensure switches of the machine are off before refilling fuel.
- BURN HAZARD. DO NOT touch exhaust flue in operation.
- DO NOT operate the machine in a confined space.
- DO NOT breathe in smoke from the exhaust flue to avoid smoke inhalation.
- Use the machine in well-ventilated indoor area and install exhaust duct system if necessary. (See page 8, "Ventilation set-up")

[Sample of Ventilation set-up for Optima DMF & DS]



Users about to use the OPTIMA DMF or OPTIMA DS indoors should carry out installation of exhaust duct system.



Included Items and Accessories

		
OPTIMA DM(DMF)	OPTIMA DM(DS)	OPTIMA EST
		
A70015 Steam Gun with nozzle 3.5 – 1ea	A70274 Steam Gun with quick coupler – 1ea	A70030 Steam hose 10m – 1ea
		
A70026 Steam Nozzle – 1ea A71607 Silence steam nozzle – 1ea	70612 Couplings – 1ea	70066 L-wrench 3.0mm – 1ea
		
70007 T wrench 10mm– 1ea 70008 T wrench 12mm – 1ea 15-55002 T wrench 14mm–1ea	70004 Screwdriver(+) - 1ea	25-55001 Multi spanner - 1ea
		
70175 Water probe sensor – 3ea	70911 O-ring D.22 – 1ea	70917 O-ring D.17 – 1ea
		
71370 Water Filter – 1ea	82-24006 Fuel filter with silicon – 1ea (OPTIMA DMF/DS)	71301 towel FBZ – 1ea 71302 towel Warp knitted – 1ea 71303 towel Wool – 1ea



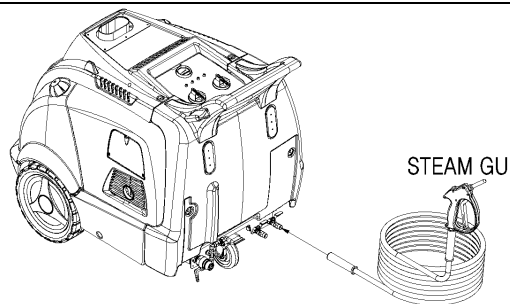
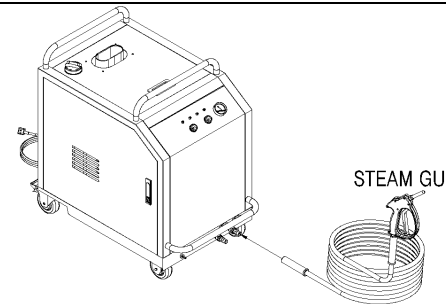
Included items and accessories are subject to change without prior notice.

Pre-Start Procedure

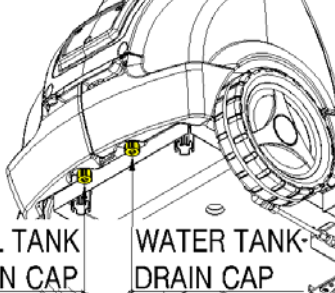
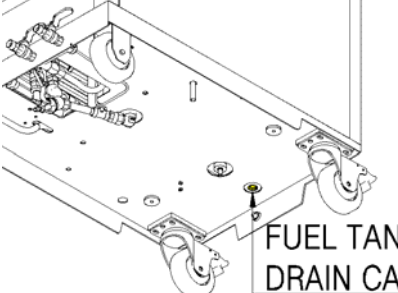
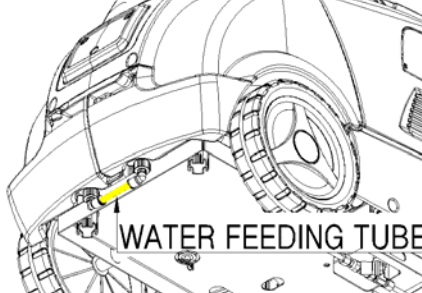
	<p>Wear appropriate protective gear before using the machine.</p>
	<p>Surface of exhaust flue and valves may be hot. Take precautions when users resume operations.</p>

Steps:

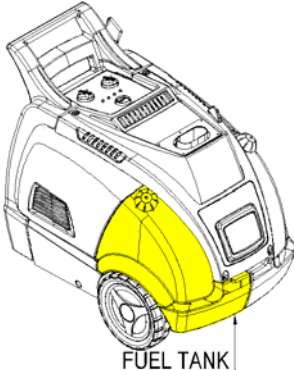


1. Connect steam hoses and guns to the steam outlet valves. Ensure a tight connection using appropriate tools.
2. Ensure that valves including drain valve, steam outlet valves are fully closed.

OPTIMA DM(DMF) / EST	OPTIMA DM(DS)
	

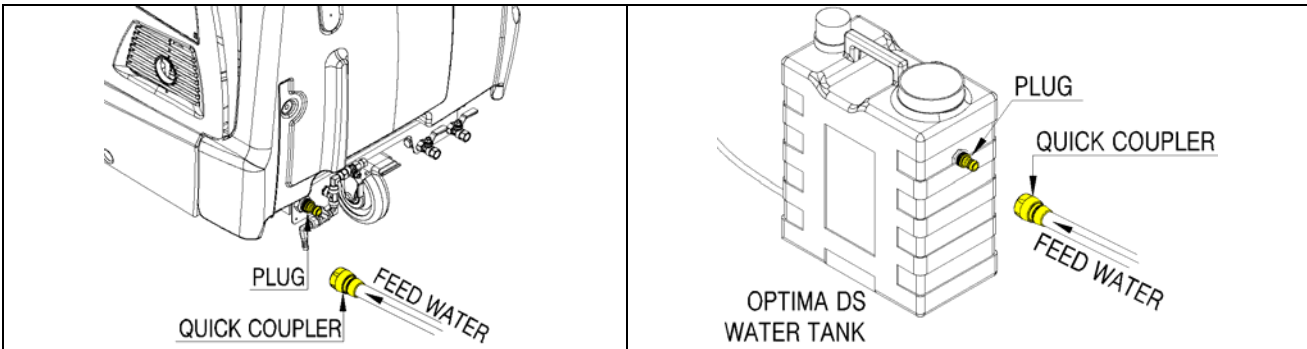
3. Ensure that tank drain cap and water feeding tube are connected firmly.
(See illustrations below)

OPTIMA DM(DMF)	OPTIMA DM(DS)	OPTIMA EST
 <p>FUEL TANK DRAIN CAP WATER TANK DRAIN CAP</p>	 <p>FUEL TANK DRAIN CAP</p>	 <p>WATER FEEDING TUBE</p>

4. Fill the fuel tank.

OPTIMA DM(DMF)	OPTIMA DM(DS)	
 <p>FUEL TANK</p>	 <p>FUEL TANK CAP</p>	 <p>Ensure the location of fuel tank before fuel replenishment.</p>

5. Fill the water tank with clean water. When tap water or hard water is used, use of a water softener is recommended to prevent scale build-up.



Continuous Water Supply

In the event of using continuous water supply, connect water hose attached with Quick Coupler to the Plug of the machine.



Water pressure needs to be below 2bar from the tap for Floater to run effectively.

Water Quality Matters!

Water quality can greatly affect the machine's life span and performance. It is important to use SOFT WATER. If tap water or hard water is used, use of a water softener is recommended in order to prevent scale build-up.



DO NOT use distilled water.

DO NOT add any detergent, wax or cleaning additives into the water tank or steam vessel.

The use of water temperature above 5°C (40°F) recommended.

Use filtered water above 15 ppm.

6. Check for electrical specifications before connecting to electrical power outlet. In the event of using extension cords, take waterproof measures on the electrical sockets and plugs.

OPTIMA DM(DMF) / DS	OPTIMA EST	
	Single Phase 5K	3 Phase 12K, 18K, 27K

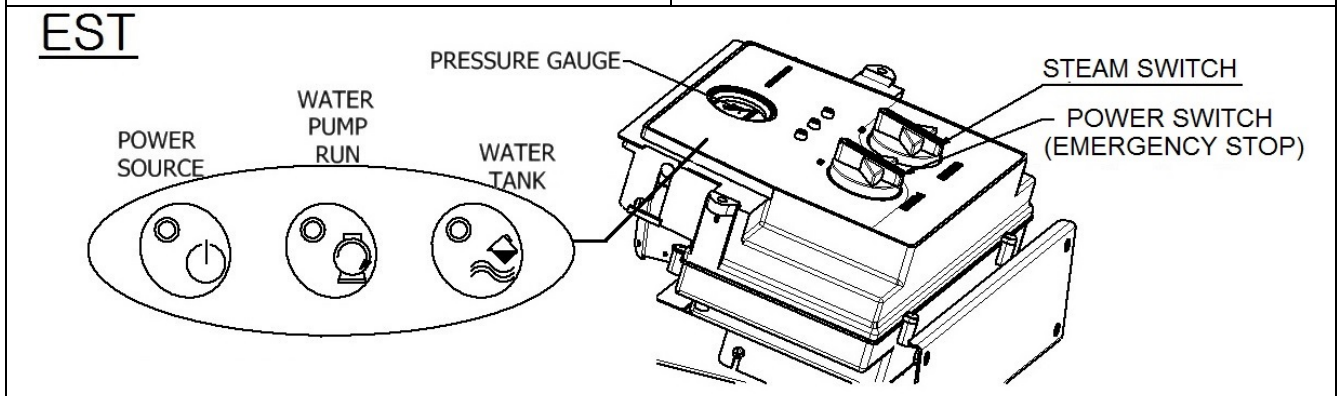
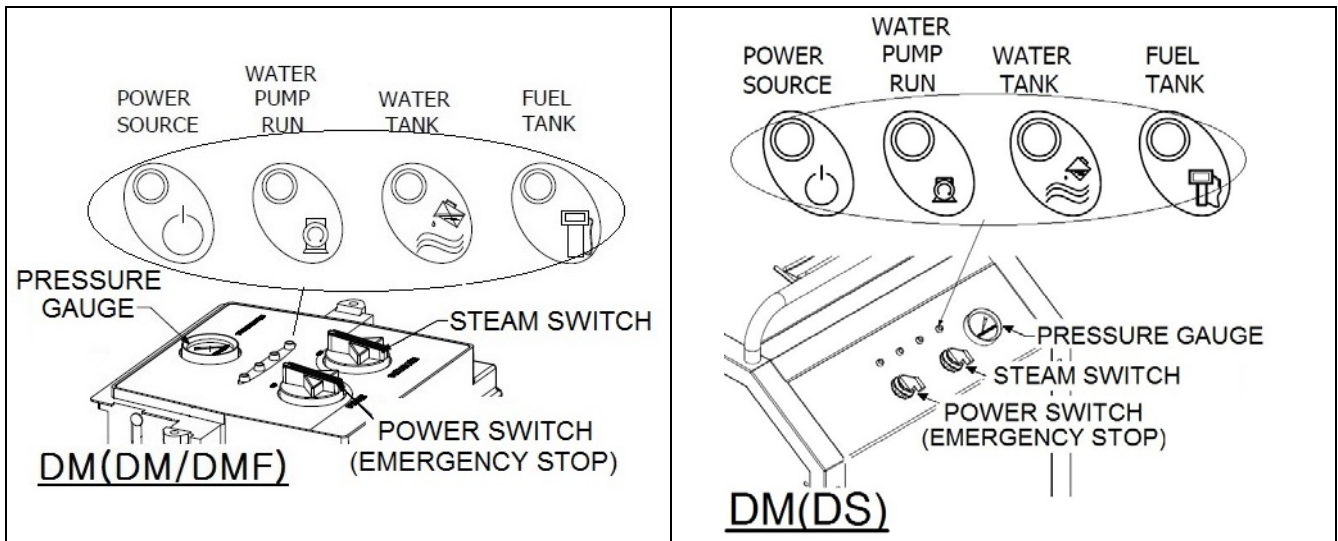
Alert users to the presence of "dangerous electrical voltage" inside the machine that might cause bodily harm or electric shock.



For the use of OPTIMA EST, make sure to connect the GROUND WIRE(G) to GROUND TERMINAL. DO NOT connect GROUND WIRE to NEUTRAL(N) TERMINAL.

Standard Operating Procedure

Make sure to advance the steps of Pre-Start Procedure before users follow Standard Operating Procedure. (See page 10, "Pre-Start Procedure")



Wear appropriate protective gear before using the machine.













NEVER leave the machine unattended while operating.
Surface of an exhaust flue or valves may be HOT.
 Take precautions while operating.



DO NOT apply any physical impact to the control panel box or leave any objects on it.

LED ICON LEGEND

	POWER		WATER
	WATER PUMP		FUEL
	OFF		SOLID
	BLINKING		SOLID or OFF
	ALARM BEEPS ONCE		ALARM BEEPS CONTINUOUSLY

Standard Operating Procedure

step	Description
1	Turn on the POWER (EMERGENCY STOP) switch and then turn on the STEAM switch. You will see one of the following signal indications.
2	POWER and WATER PUMP Indicators are turned to the on position. The water pump supplies water to the steam vessel. (Programmed feed-water time: DMF/DS – 180 sec, EST – 300 sec)
3	When the low water probe sensor detects water level in the steam vessel, ignition system functions.
4	When the high water probe sensor detects water level in the steam vessel, water pump stops.
5	When internal pressure reaches the operating pressure (8.5 bar), ignition stops and steam spraying is ready.

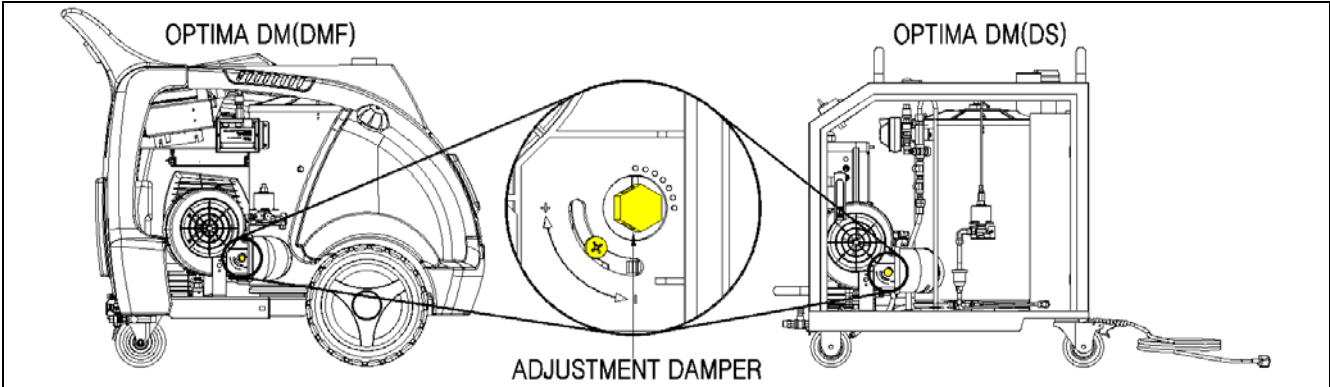


Repeat "Standard Operating Procedure" if users drain water from the steam vessel completely and resume the operation.

Air Adjustment

Amount of **air intake can be subject** to differ depending on ambient environment.

Combustion gas should be visually transparent.



1. Open the plastic cover on the right side.
2. Slightly untighten air adjustment damper using a screw driver(+) and adjust an amount of air intake manually.
3. Retighten the screw of air adjustment damper

<p>Black Smoke from exhaust flue : Move air adjustment damper clockwise</p>	<p>Whitish Smoke from exhaust flue : Move air adjustment damper counter-clockwise</p>
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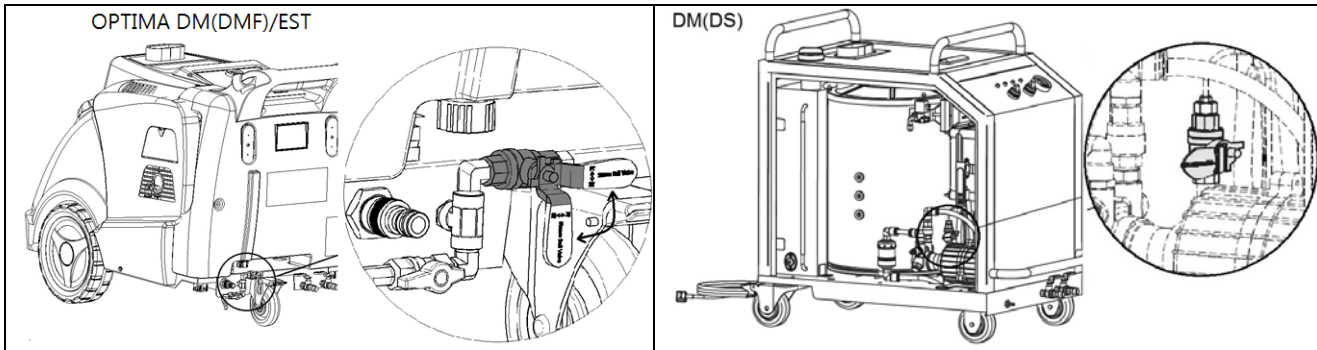
	<p>DO NOT breathe in combustion gas from the exhaust flue.</p>
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Moisture Control

Users can spray moisturized steam (wet steam) by opening the moisture control valve.

In the event of cleaning interior surfaces or water sensitive areas, ensure that the moisture control valve is fully closed to minimize surface moisture.

	<p>Using two steam guns with the moisture control valve open continuously may consume steam faster than what can be replenished. Open the moisture control valve by 1/3 allowing pressure to build up.</p>
--	---



Pause Operation

1. Switch off the STEAM.
2. Close the steam outlet valves and release all the remaining steam from the hoses by pulling the gun trigger. It prevents remaining of condensed water residue in the steam hoses afterwards and increases the life span of the steam hoses and guns.

Shutdown Operation

1. Switch off the STEAM.
2. After blower fan stops automatically (applied to DMF model), switch off the POWER.
3. Release steam from the steam vessel by pulling the gun trigger until the pressure drops down to 1~2 kg/cm²(28.4 psi).
4. Close the steam outlet valves and release all the remaining steam from the hoses by pulling the gun trigger.
5. Release remaining steam from the steam vessel by opening the drain valve.



In the event of draining water from the steam vessel, ensure to keep your workspace area including steam hoses and power cable neat and tidy.

Leave the drain valve open until the next use









BURN HAZRD. Hot steam and water in the event of opening drain valve.

6. In cold weather, take precautionary measures to keep water pipes from freezing and bursting. (See page 20, "Freeze Prevention").

Maintenance

Must-do before carrying out maintenance

	Allow the machine to cool down.
	Release pressure from the machine.
	Wear appropriate protective gear.
	Unplug to shut down the power.
	Caution of burn
	Comply with the Maintenance Schedule below.

Maintenance Schedule

	Maintenance items	Daily	Monthly	Every 3months	Every 6months
A	Drain water from the steam vessel	✓			
B	Drain water tank / fuel tank		✓		
C	Replace filters		✓		
D	Check water probe sensors. Clean or replace if necessary		✓		
E	Check electrodes and fuel nozzle. Clean if necessary (Contact local distributor)			✓	
F	De-scale vessel (Contact local distributor)				✓
G	Remove soot build-up from the vessel and inner cylinder (Contact local distributor)				✓

A. Drain Water from the Steam Vessel

1. Reduce pressure below 2 kg/cm² (28.4 psi)
2. Open the drain valve and drain out all the remaining water.
3. Leave drain valve open until the next use.



Steam is extremely hot. Wear appropriate protective gear to protect users' eyes and hands.



In the event of vessel drain, ensure to keep your workspace area including steam hoses and power cable neat and tidy.

Leave the drain valve open until the next use.

OPTIMA DM(DMF) / EST	OPTIMA DM(DS)

B. Drain Water tank / Fuel tank

Open drain cap underneath the tank or pull the water feeding tube.

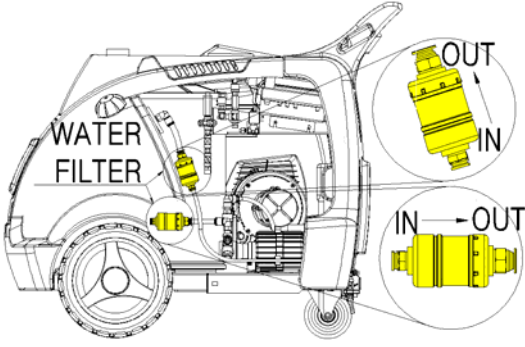
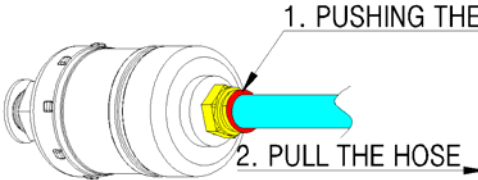
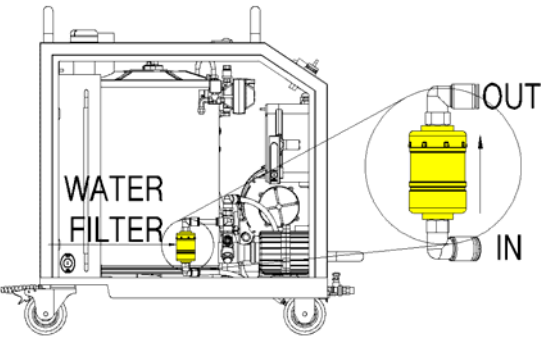



Caution : Slippery When Wet

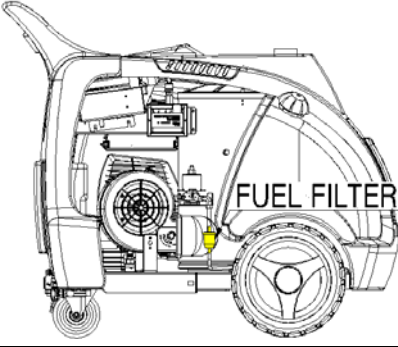
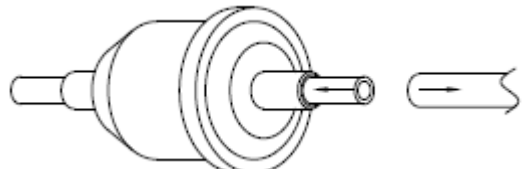
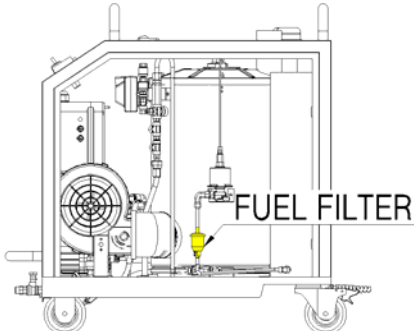

<p>OPTIMA DM(DMF)</p>	<p>Open drain cap underneath the tank.</p>	
<p>OPTIMA EST</p>		
<p>Pull the water feeding tube while pressing down the the blue plastic part of One-Touch Nipple.</p>		

C. Replace Filters

Check water filters regularly and replace if necessary.

OPTIMA DM(DMF) / EST	How to replace water filters
	<ol style="list-style-type: none"> 1. Drain out all water from water tank. (Refer P. 18) 2. Push the fitting(red part) and pull the hose out(sky blue part).  <ol style="list-style-type: none"> 1. PUSHING THE FITTING 2. PULL THE HOSE
OPTIMA DM(DS)	3. Replace with new filters.
	<p>Ensure the position of filters when replacing. (See illustration on the left)</p>  <ol style="list-style-type: none"> 4. Insert hose to filter's housing and push until it connects completely.

Check fuel filters regularly and replace if necessary.

OPTIMA DM(DMF)	How to replace fuel filter
	<ol style="list-style-type: none"> 1. Drain out all fuel from fuel tank by opening drain cap underneath the tank. (Refer P. 18) 2. Grasp the fuel filter firmly and pull of the hosing from both ends. 
OPTIMA DM(DS)	
	<p>Check the direction of filter. (See illustration on the left)</p>  <ol style="list-style-type: none"> 3. Attach a new fuel filter to the both hose ends.

D. How to check and clean water probe sensors

Three water probe sensors (high/common/low) detect the water level in the steam vessel and trigger the running and stopping of the water pump.

Minerals or various foreign substances in the water become hardened and are highly likely to cause water level detection failure.

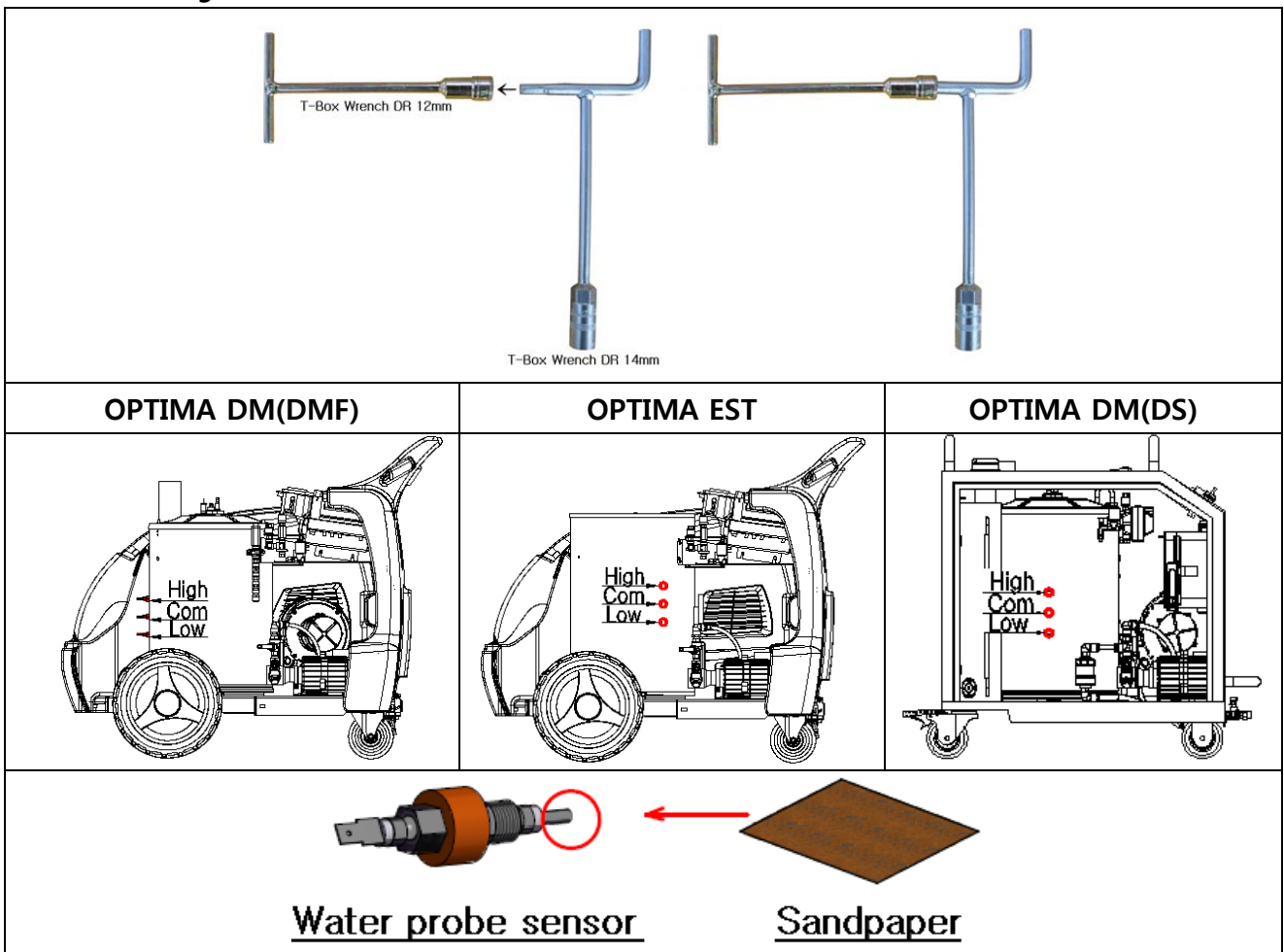
Requirements: Screw driver(+), 14mm long box wrench or Spanner, Sand paper, Teflon tape.

Steps:

1. Unplug the power plug and then remove pressure completely by opening steam outlet valves.
2. Open the drain valve and drain out all water from steam vessel.
3. Detach top cover and front cover. Then detach all electric wires from water probe sensors.
4. Remove water probe sensors from steam vessel using 14mm T-Box Wrench.
5. Clean scale build-up from the tip of the water probe sensors with sand paper. Replace them if necessary.
6. Wrap the sensor thread at least 6 times with Teflon tape.
7. Hand-turn the sensors in for the first 2-3 turns, then use a 14mm T-Box Wrench to hand-tighten.



The sensors are not meant to be tightened like fastener bolts. Tightening with power tools is NOT recommended. Over-tightening may strip the thread and result in permanent damage to the steam vessel.



Freeze Prevention



In cold winter weather, it is necessary to store the machine at a room temperature indoors. Follow the steps to protect your machine from freeze rupture.

Steps:

1. Drain the Steam Vessel

Reduce steam pressure below 2 kg/cm²(28.4 psi) and then drain out water from the steam vessel by opening a drain valve. Leave the drain valve open until the next use.

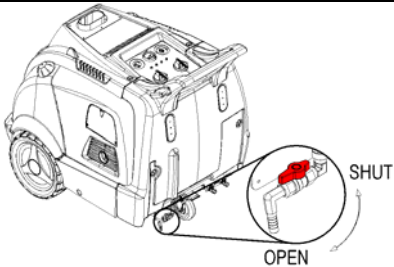
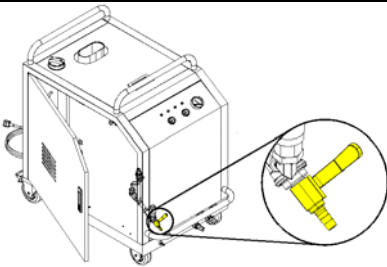


Steam is extremely hot. Wear appropriate protective gear to protect users' eyes and hands.



In the event of vessel drain, ensure to keep your workspace area including steam hoses and power cable neat and tidy

Leave drain valve open until next use.

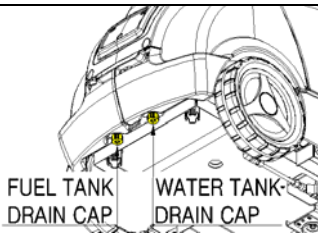
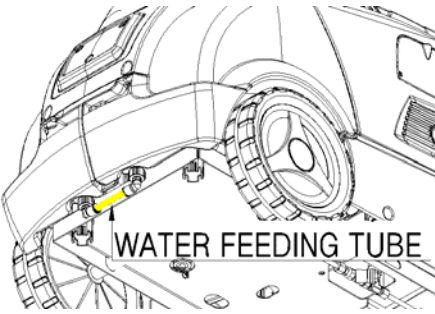
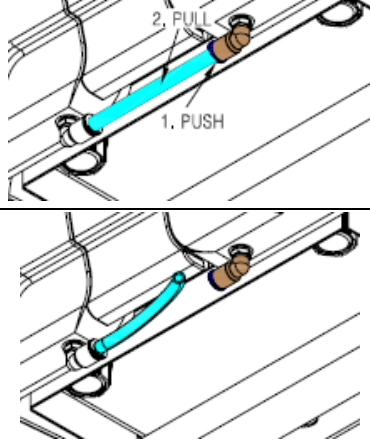
OPTIMA DM(DMF) / EST	OPTIMA DM(DS)
	

2. Drain Water Tank

Open a drain cap or water feeding tube underneath the water tank.

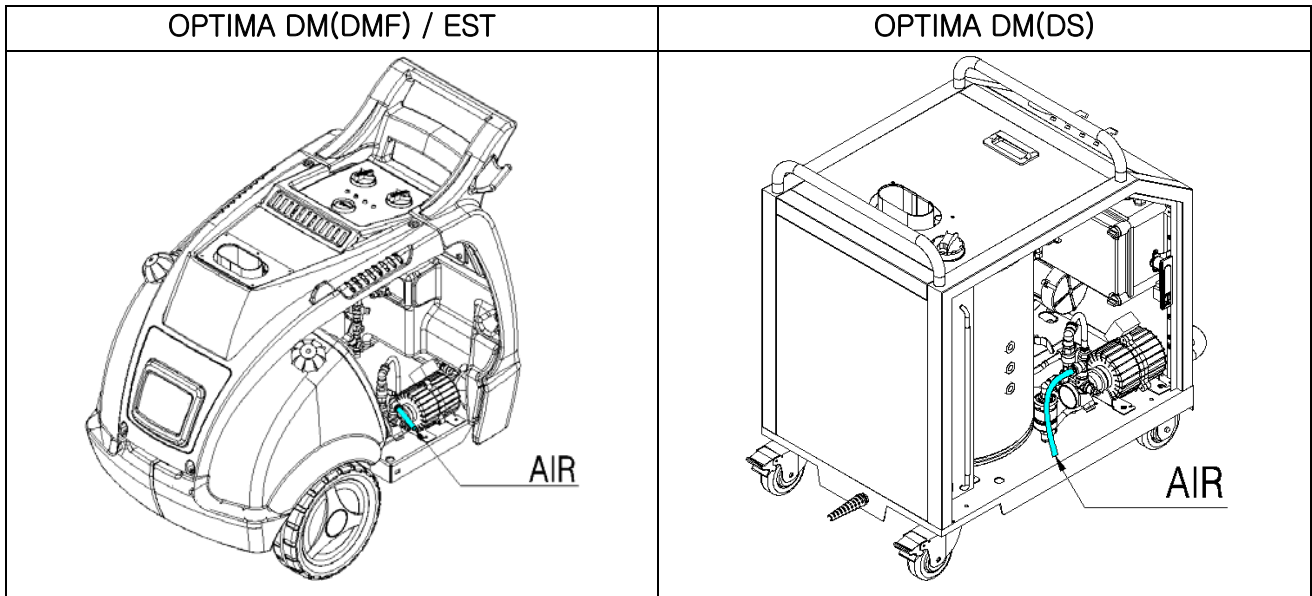


Caution : Slippery When Wet

<p>OPTIMA DM(DMF)</p>	<p>Open Drain Cap underneath the tank.</p>  <p>FUEL TANK DRAIN CAP WATER TANK DRAIN CAP</p>	
<p>OPTIMA EST</p>	 <p>WATER FEEDING TUBE</p>	 <p>2. PULL 1. PUSH</p>
<p>Pull the water feeding tube while pressing the blue plastic part of One-Touch Nipple.</p>		

3. Drain Water from the Water Pipes and the Water Pump

Open the drain valve and detach water pipes as illustrated below. Drain out remaining water using compressed air. Leave the drain valve open until next use.



4. Storage

Store the machine at a room temperature indoors for freeze prevention.



Cold winter weather can cause water pipes to freeze and possibly burst, causing freeze rupture of internal parts and malfunction of the machine. If the machine does freeze, NEVER turn it on. Let it thaw slowly in a warm place. Carry out a visual check for freeze rupture of water pipes and evidence of internal parts damages.

If the machine is visually damaged or malfunctions, turn it off immediately and contact your local distributor or manufacturer.

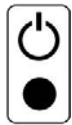
Troubleshooting Guide

Many malfunctions and failures that can occur in daily operation can be easily remedied. In the following Problem Solving Guide, you can find possible causes for a malfunction or failure and information on how to resolve it.

If the solutions presented here do not assist you any further or if you can't find a matching description to your problem, please contact your local distributor or manufacturer.

LED ICON LEGEND

○ off  Blinking ● Solid ◐ Solid or off  Alarm beeps once  Alarm beeps continuously



POWER ON



WATER PUMP RUNNING



**WATER LEVEL DETECTION
FAILURE OF LOW WATER
PROBE SENSOR**



FLAME SENSOR ERROR



ALARM BEEPS ONCE



**WATER PUMP OVER-RUNNING
ERROR**



WATER SHORTAGE



FUEL SHORTAGE



ALARM BEEPS CONTINUOUSLY






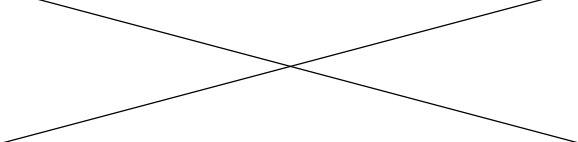
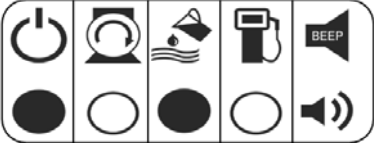

DROP IN PRESSURE

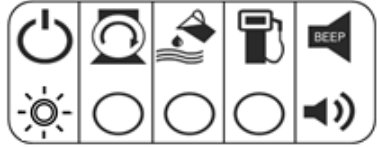
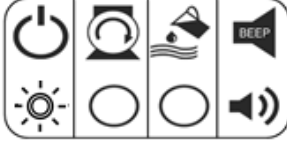
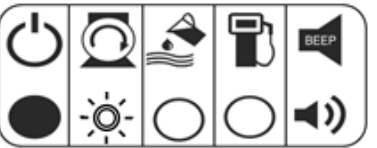
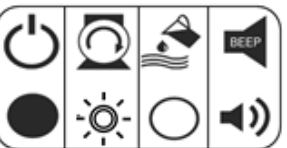
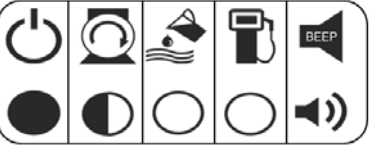
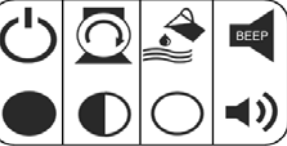


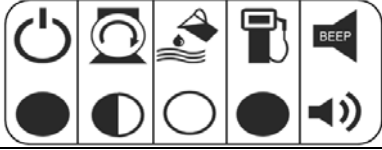
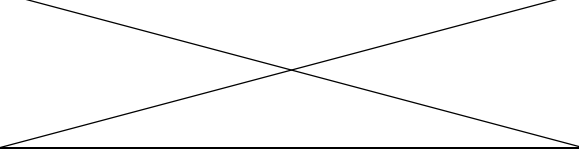

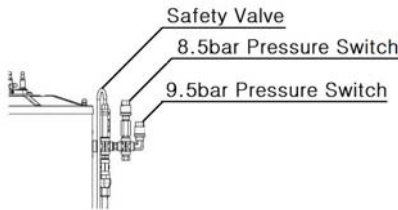
**RISE IN PRESSURE ABOVE 8.5
BAR (123.2 PSI)**

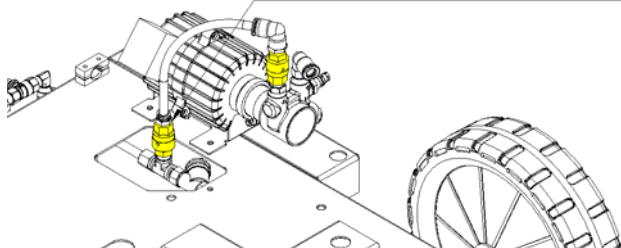
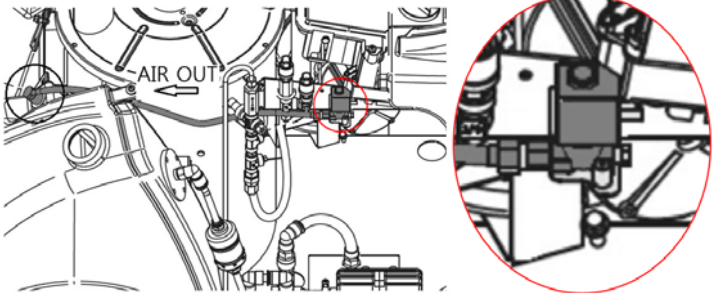
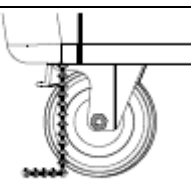
Problem Solving Guide

1	Description	None of LED Indicators and alarm is working when POWER & STEAM switches are turned to the on position.	
	Cause & Remedy	1) No external power supply to the machine	→ Check for power plug connection or wiring connection to a circuit breaker
		2) Blown fuse	→ Replace the fuse.

2	LAMP	OPTIMA DM(DMF) / DS 	OPTIMA EST 	
	Description	Water shortage in the water tank		
	Cause & Remedy	1) Water shortage. ----- 2) Malfunction of the floater level switch in the water tank.	→ Refill water to the water tank. ----- → Disconnect one of the wires to the floater level switch. If the related alarm stops and the machine operates, replace the floater level switch and reconnect wires in position.	
3	LAMP	OPTIMA DM(DMF) / DS 		
	Description	Fuel shortage in the fuel tank		
	Cause & Remedy	1) Fuel shortage. ----- 2) Malfunction of the floater level switch in the fuel tank.	→ Refill fuel to the fuel tank. ----- → Disconnect one of the wires to the floater level switch. If the related alarm stops and the machine operates, replace the floater level switch and reconnect wires in position.	
4	LAMP	OPTIMA DM(DMF) / DS 	OPTIMA EST 	
	Description	– Water level in the steam vessel is low. – Water probe sensors fail to detect the water level in the steam vessel.		
	Cause & Remedy	1) Water filter clogging. ----- 2) Malfunction of the water pump. ----- 3) Malfunction of the water probe sensors.	→ Check or replace the water filter. ----- → Check or replace the water pump. ----- → Clean scale build-up from the tip of the water probe sensors with sand paper or replace if necessary.	

5	LAMP	OPTIMA DM(DMF) / DS 	OPTIMA EST 
	Description	Malfunction of the pressure switches	
	Cause & Remedy	1) Pressure switch error ----- 2) Malfunction of the water probe sensors	→ Let the pressure switches thaw in a warm place and try to run the machine. If the problem persists, replace both pressure switches ----- → Clean scale build-up from the tip of the water probe sensors with sand paper or replace if necessary.
6	LAMP	OPTIMA DM(DMF) / DS 	OPTIMA EST 
	Description	Water pump over-running	
	Cause & Remedy	1) Water filter clogging ----- 2) Malfunction of the water pump ----- 3) Malfunction of the water probe sensors	→ Check or replace the water filter. ----- → Check or replace the water pump. ----- → Clean scale build-up from the tip of the water probe sensors with sand paper or replace if necessary.
7	LAMP	OPTIMA DM(DMF) / DS 	OPTIMA EST 
	Description	Temperature detection of the Thermistor Temp. Sensor triggered in subzero temp. (below 0°C/32°F) or high temp. (above 200°C/392°F).	
	Cause & Remedy	1) Subzero temp. detection after experiencing freeze damage to the machine ----- 2) Malfunction of the thermistor temp. sensor ----- 3) Malfunction of the pressure switches	→ Let the machine thaw in a warm place and try to run it again ----- → Replace the thermistor temp. sensor ----- → Check the pressure switches and replace if necessary







		OPTIMA DM(DMF) / DS	OPTIMA EST
8	LAMP		
	Description	Flame sensor error	
	Cause & Remedy	1) Flame sensor does not detect a flame	→ Check for any damage to the flame sensor and replace if necessary.
		2) Fuel filter clogging or fuel pump malfunction	→ Check the fuel filter for any settled/floating debris and replace. Check for fuel injection from the fuel pump and replace if necessary.
3) Malfunction of the electrodes/fuel nozzle or blower fan		→ Carry out a visual check and replace if necessary	
		4) Malfunction of the pressure switches	→ Check for any damage to the pressure switches and replace if necessary.
9	Description	Rise in pressure above 8.5 bar (123.2 psi)	
	Cause & Remedy	1) Malfunction of the pressure switches	→ Check for any damage to the pressure switches and replace if necessary.
		2) Malfunction of the water probe sensors	→ Clean scale build-up from the tip of the water probe sensors with sand paper or replace if necessary.
3) Use of deionized water or reverse osmosis water (below 15 ppm)		→ Use of normal tap water (above 15 ppm)	
10	Description	Steam or hot water bursting underneath the steam vessel	
	Cause & Remedy	1) Safety valve open and depressurizing the steam vessel.	→ Check for the cause of over-pressurizing and replace if necessary.
		2) Freeze rupture of internal parts in cold winter weather	→ Replace related parts if ruptured
		3) Freeze rupture of water pipes	→ Carry out a visual check for freeze rupture of water pipes and replace if necessary.
			

11	Description	Water pump and water feeding tube are getting hot or melted
	Cause & Remedy	1) Malfunction of the non-return valve → Replace the non-return valve.
	<p>NON RETURN VALVE</p> 	
12	Description	Surface of the water tank becomes hot
	Cause & Remedy	1) Malfunction of the air purge valve → Clean the inside of the air purge valve or replace if necessary. ----- 2) Malfunction of the Thermistor Temp. Sensor → Replace the Thermistor Temp. Sensor.
		
13	Description	Experiencing Electro Static Discharge from the spray gun or surface of the machine
	Cause & Remedy	1) Wrong ground connection of the grounding chain → Ensure proper connection of the grounding chain to the machine and conductive chain makes contact with ESD/antistatic flooring.
	 <p>Grounding Chain</p>	

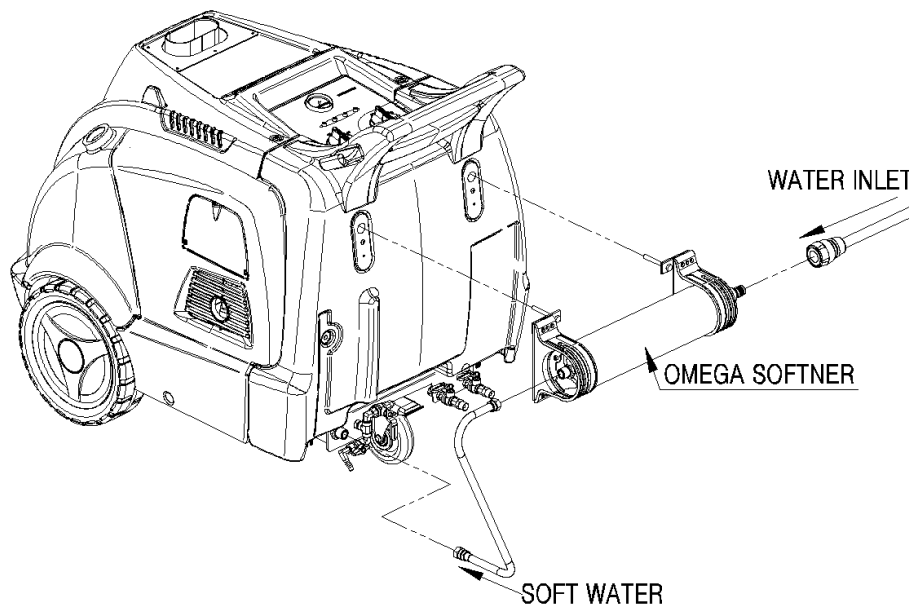
Optional Items

OPTIMA STEAMER is designed to use with a wide variety of optional accessories to cater to customers' cleaning needs.

1. Optional Accessories

		
<p>Turbo Steam Nozzle with Quick Plug</p>	<p>Hand Tool</p>	<p>Floor Spinner with lance</p>
		
<p>Spray bottle 350ml with quick plug</p>	<p>Barrel wand with bimetal thermometer</p>	<p>MOP WAND</p>

2. Omega Softener (Portable Water Softener)



Optional items are subject to change or discontinue without prior notice.

For more details on Optional Items, visit our website at <http://www.sjecorp.com>

Service Request



Your machine has a defect or broke down?

Simply register your service requirement by scanning here and SJE

Service center will contact you as quickly as possible to provide further information.

OPTIMA STEAMER™ Limited Warranty

SJE Corporation Ltd. hereby warrants that new Optima Steamers purchased directly from SJE Corporation Ltd., headquartered in Busan, South Korea will be free from defects in material and workmanship for the period of time stated below, subject to certain limitations.

OUR WARRANTY POLICY

This warranty is not transferable and covers replacement parts only. This warranty does not cover any consequential damages or business loss.

THE PERIOD OF WARRANTY

The warranty on your Optima Steamer is twelve(12) months from the date of purchase by the original owner against defects in material and workmanship.

GENERAL EXCLUSIONS

General exclusions from this warranty shall include any failures caused by:

- a. Installation of parts, attachments or accessories that are not original to the unit or genuine Optima Steamer parts.
(i.e. external aftermarket attachments such as exhaust duct extension)
- b. Abnormal strain, neglect, or abuse.
- c. Lack of proper maintenance.
- d. Accident or collision damage.
- e. Changing or altering factory settings without consulting with an authorized technician.
- f. Damage or malfunctions resulting from natural calamity, freezing, theft, accident, vandalism, abuse due to misapplication and/or improper site conditions.
- g. Water damage
- h. Electrical damage from including, but not limited to improper use of extension cords, failure to meet proper voltage requirements, incorrect or insufficient amperage circuit.
- i. Insufficient unobstructed distance on exhaust

Items not covered under warranty include:

- a. Parts replaced due to normal wear or routine maintenance including, but not limited to sensors, filters, fuses, valves, pipes, electrodes, cables and fittings (i.e. nipples, couplings, o-rings, etc)
- b. Consumable or wearing items requiring replacement as part of normal operation including, but not limited to steam hoses and guns.
- c. Any transportation or travel costs.
- d. Reimbursement for rental units while repairing warranty items.

- e. Normal maintenance items such as: draining tanks and vessel, descaling, filter and sensor changes, vessel cleaning, tightening and sealing bolts and fittings and others stated in the User's Manual.
- f. Failure caused by water scale problem due to local water conditions.
- g. Warranty work completed after 30 days from discovery.
- h. Damage, problems or failure caused by factors external to the Product including, but not limited to, faulty or poor external electrical wiring, incorrect or faulty power supply, voltage fluctuations, over voltage transients or electromagnetic interference, inadequate or faulty water or fuel.

CUSTOMER'S RESPONSIBILITY

Under this warranty, the customer's responsibility shall be to:

- a. Operate and maintain the machine as specified in the User's Manual.
- b. Give notice to authorized Optima Steamer distributors or SJE Corporation Ltd. of apparent defects within ten (10) days after discovery of initial malfunction.
- c. Provide proof of purchase, purchase date, and serial number of the warranty product(s).
- d. Make the unit available for inspection and repairs at distributor's place or service center. If shipped, transit costs should be prepaid.

For warranty service request, please e-mail at tech@sjecorp.com or call +82 51 521 3200.



[Head Office]

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[US Office - Steamericas, Inc]

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