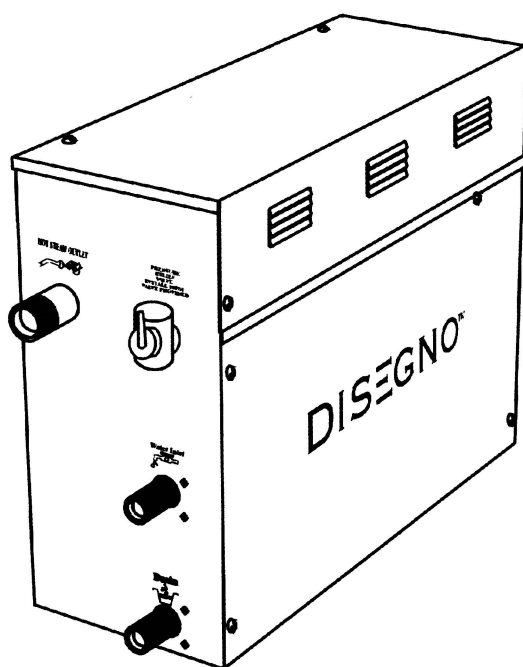


# DISEGNO™

## Operation & Instruction Manual DES1A



## DES1A

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# DES1A

## Prologue

Welcome to the DES1A series steam generator. This series contains a steam furnace and a controller in which you can adjust the temperature of the sauna room with and set the working time of the steam as you wish. The system contains an overheat/dry-burnt protection system and a security valve. It prevents overheating and ensures the steam furnace is working at a regular air pressure. It has a reasonable design and is very stable and convenient to install. DES1A is top grade sauna equipment for the modern family, hotel, restaurant, meeting venues and clubs. You will be satisfied with the noticeable effects on pain relief, weight control, skin stimulation and stress reduction due to an increased blood circulation from your steam bath.

DES1A series includes 10 types of machines in which the output of power varies.

## User Instructions

**CAUTION: We are not responsible for the malfunction and damage from any installation in which does not comply with this user manual.**

1. Ensure the model and the accessories are correct including the voltage input.
2. Ensure the steam power is matched with the sauna room dimensions. Pay close attention to the steam room square footage and construction. If you have any issues, please refer to the dimensions selected.
3. Ensure this manual is read carefully for secure and effective use.
4. We are not responsible for any product damage or malfunction caused by self-installation or the operation procedures which do not comply with the user instructions.
5. DES1A series are packaged carefully in a case. Once products are received, please check all items to ensure they are in proper condition. If any items are damaged in the package, immediately put in a claim with the delivering (courier) company for compensation.

## Choosing a Location

**IMPORTANT: An exhaust fan must be installed outside of the steam room to expel the excessive steam from the shower.**

Recommended installation locations:

1. Less than 6m from the steam room. The standard pipe which links the controller and the steam generator should be 6.5m.
2. The steam generator should not be installed in the steam room.
3. Do not install outdoors or in any place which will influence the security of the machine by the environment.
4. Do not install in the frigid loft or any place where the water can freeze.
5. Do not install near burnable or corrosive objects or chemicals (coal gas, dope thinner, etc.)
6. Do not apply any heat or source of flame to the intake/drain solenoids during installation. This can cause damage or malfunction to the components.

## DES1A

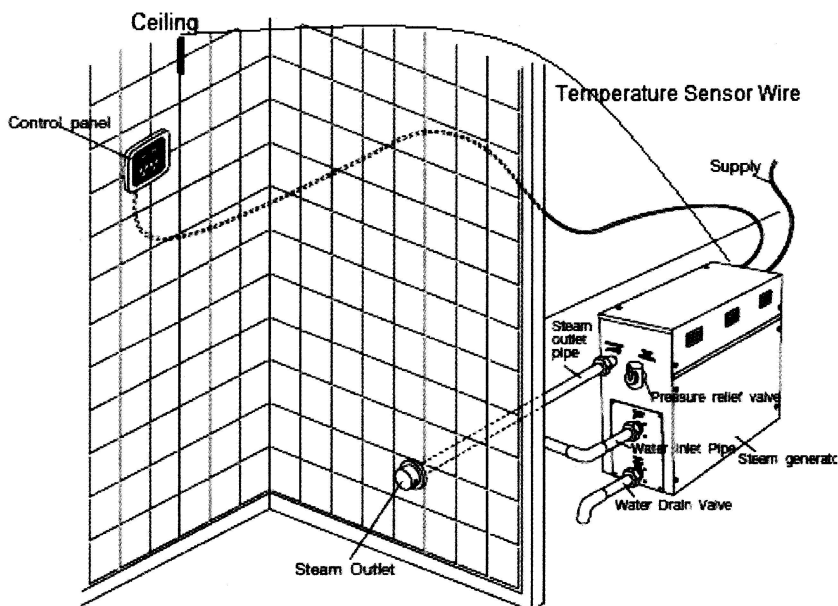
### Choosing a Location

7. The steam generator should be installed horizontally and stable and is equipped with a hanging groove for immobility.
8. There should be at least 12 inches of space on both sides and the top of the steam generator.
9. The installation location should be a place in which can be easily cleaned and convenient for disassembly of the machine.
10. The installation place must be convenient for the water drainage of the inner pot.
11. The steam tube, safety valve, drain valve, water tube, and steam outlet will still be very heated after the steam generator has been turned off for some time. Measure must be taken to prevent the damage of the hot tube and steam outlets away from body parts. For example, using the heat insulation tube. Bodily injury may occur if coming in contact or in the vicinity of the steam nozzles. Provide appropriate protection to avoid bodily injury.

**ATTENTION:** *The steam generator (including the controller) comply with the CE and UL certificate, and are adaptive.*

### Installation Drawing of the Steam Generator

**ATTENTION:** *This drawing is a sample only. Please consult with a qualified designer, architect or builder for practical design of the steam room.*





## DES1A

### Installation of Pipeline

**WARNING:** *The installation of all pipes should be completed by a qualified plumber with the corresponding operation certificate.*

1. Use joints when connecting pipes.
2. Use brass or copper hoses only.
3. Do not use black or galvanized or PVC pipes.

#### **Water Supply Pipe (1/2")**

1. Connect hot water or cold water pipes. Hot water pipe must not exceed temperatures more than 70°C.
2. Install stop valve in the water supply pipe. The stop valve should be installed in a place where it can be easily accessed in an emergency.
3. Clean the water supply pipe completely before connecting to the steam engine.
4. It is suggested to filter and to use anti-furring equipment in the water supply pipe.
5. The water pressure should be, at best, between 15 & 20 pounds per square inch. If necessary, decrease the pressure accordingly.

#### **Steam Pipe (3KW/4.5KW Pipe Size 1/2", 6KW & above: 3/4")**

1. Do not install any valves in the steam pipes. The steam can not be obstructed.
2. Install a brass pipe (3kW/4.5kW pipe size 1/2", 6kW & above: 3/4") as connector between the steam outlet and the steam nozzle.
3. The heat insulation material use to insulate the steam pipe should be resistant to temperatures as high as 120°C or higher.
4. The horizontal part of the steam pipe should be installed inclining to the steam outlet or in the direction of the steam engine. Do not bend it in half. This will ensure that the cooled water will not stay in the curve of the pipe.

**ATTENTION:** *Do not install the steam pipe in an upper or lower direction. It will affect the output of the steam.*

#### **Steam Nozzle (3KW.4.5KW Pipe Size: 1/2", 6KW & above: 3/4")**

Since the nozzle and steam outlet are very hot, try to avoid installation of the nozzle in the position which will easily come into contact with a person should the steam splash.

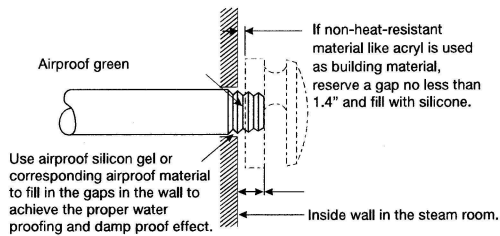
1. Install the steam nozzle 6-12 inches above the ground. If the steam bath is in a bathtub or bathroom, install the nozzle 6 inches above the bathtub. If the material in which the steam nozzle is being installed is made up of materials like acrylic or non-heat resistant substances, install an additional heat insulator.
2. The steam spray outlet should be installed face down with silicone around the whole of the steam pipe. Install the steam nozzle and tighten with hands.

**ATTENTION:** *In order to protect the steam nozzle, do not use any equipment to tighten. It can be cleaned with soap, water and a soft cloth.*

## Installation of Pipeline

### IMPORTANT

1. Please consult your distributors of building materials like acrylic, fiber glass or other non-heat resistant materials about the installation position of the steam nozzle. It is suggested that MS-103412 anti-heat material to be used.
2. In the entire steam room, it is required that the steam can not leak out. The pipes, accessories and any holes in the wall should be sealed by applying silicone to ensure that the steam will not escape.



### Drainpipe (1/2")

According to the nation or local rules, the steam engine drainage valve should be equipped with a drainpipe. The steam engine drains the water by using weight.

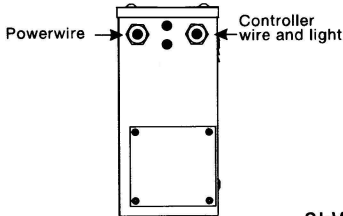
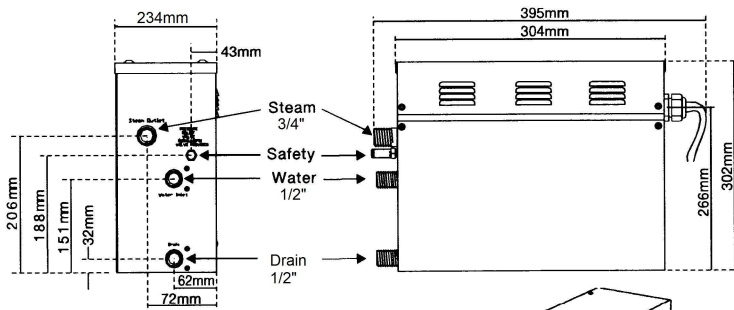
**ATTENTION:** *The drainpipe should not incline upwards so as to facilitate the drainage of water.*

### SAFETY VALVE

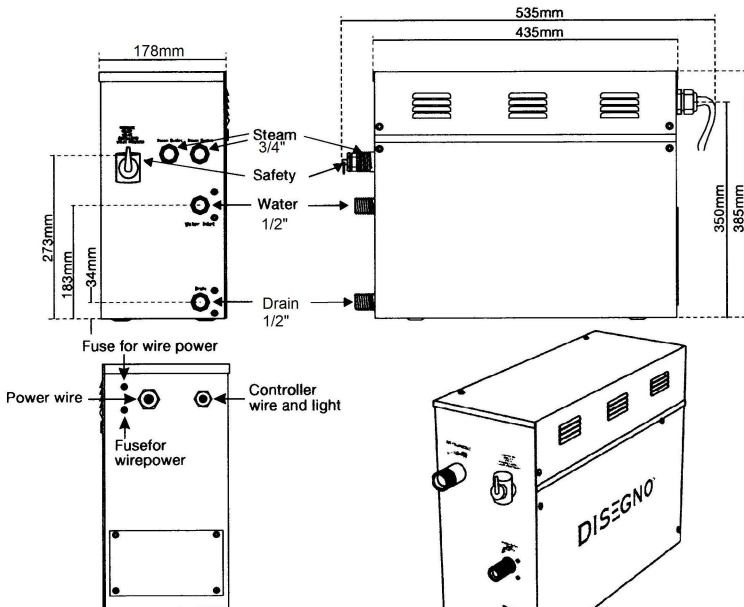
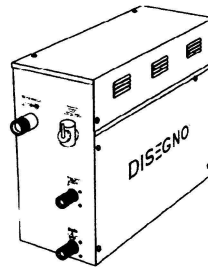
1. The safety valve is a piece of equipment used in order to prevent too much steam pressure in the interior steam engine due to various reasons.
2. The pressure limit range of the safety valve is 15PSI. The pressure will begin to decrease should the pressure come over this valve.
3. If permitted by local codes, provide the safety valve with the exterior drainpipe.
4. Do not dismantle the pressure decrease valve in any case.
5. To maintain the proper automatic operation of the safety valve, ensure the safety valve connection to the pipe is smooth.

# DES1A

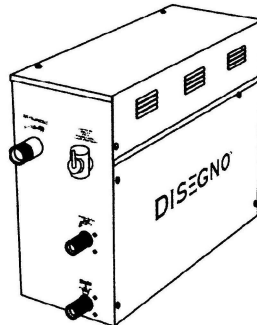
## Blueprint of Steam Engine



3kW/4.5kW

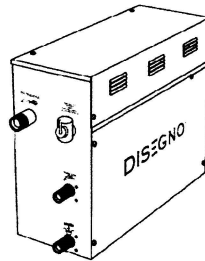
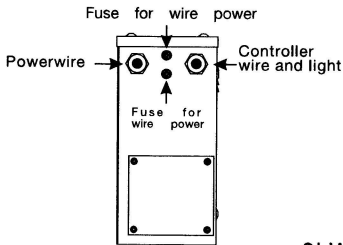
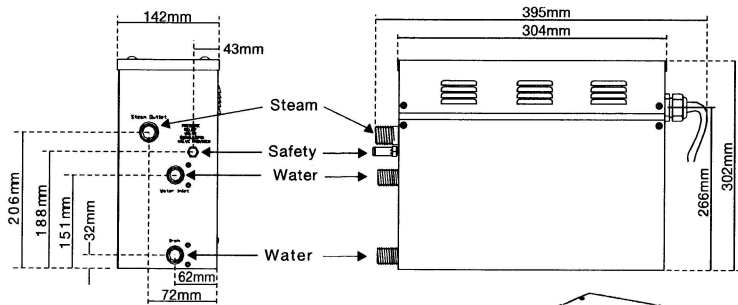


12kW/13.5kW

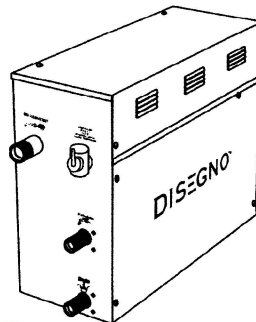
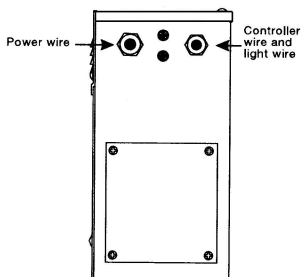
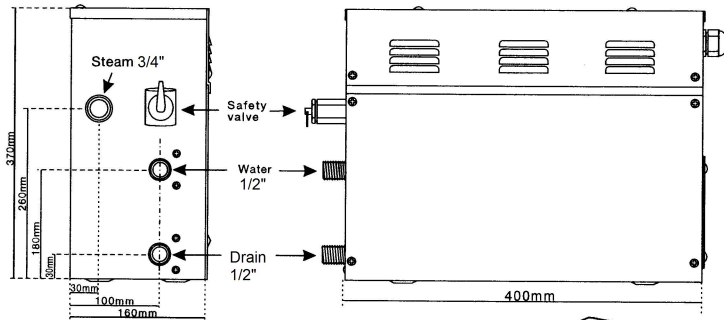


# DES1A

## Blueprint of Steam Engine

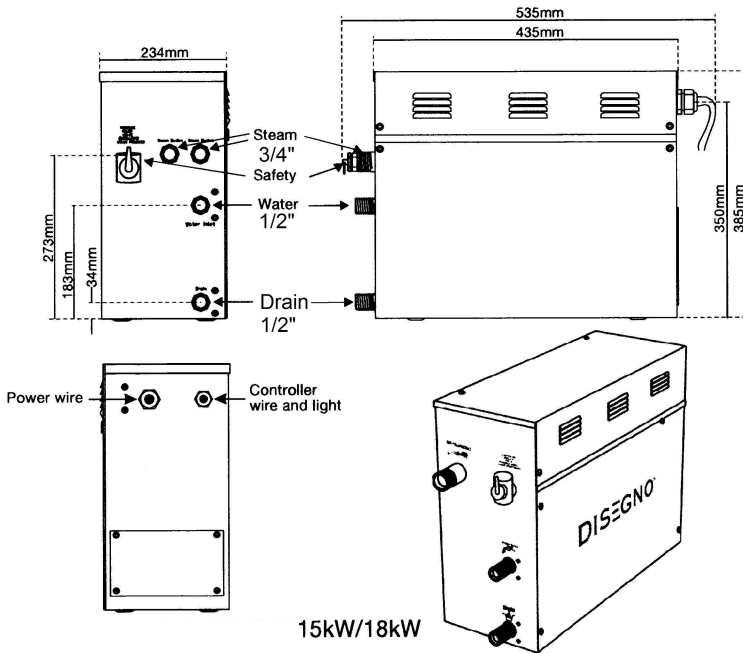


3kW/4.5kW



6kW/7.5kW/9kW/10.5kW

## DES1A



**ATTENTION:** To facilitate maintenance, keep the steam engine clean. If the information provided is limited, do not operate on the pipeline and electric equipment arbitrarily as shown in the figure for proportion.

**CAUTION:** To avoid damage to the equipment, do not connect strong electric current directly to the components.

### Electrical Information

#### ELECTRICITY SUPPLY CIRCUITRY:

1. Test the voltage of electricity supply and ensure the suitable electric voltage is being used.
2. Insulated copper wire should be used when an anti-heat temperature of 90°C and a specified voltage of 500V. Refer to national or local electricity consumption code for the specifications. Refer to the ammeter for the ampere.
3. Choose a steam engine with a suitable item number and plug the ground wire into the ground terminal.
4. Install an independent circuit breaker between the power supply and the steam engine to provide an electricity supply with overflow and leakage protection.

**ATTENTION:** All connections must be in accordance with national and local electricity consumption code and installed by a professional licensed electrician.

## DES1A

### Ampere Meter

Type	Applicable space of the room(m <sup>3</sup> )	Electricity	Max. Electric Current (A)	Specifications of Power Wire
DES1A-3kW	3~6	220-240V~(1PH/2PH)	13.7A	12# or 2.0mm <sup>2</sup>
DES1A-4.5kW	4~7	220-240V~(1PH/2PH)	20.5A	12# or 4.0mm <sup>2</sup>
DES1A-6kW	5~8	220-240V~(1PH/2PH)	27.3A	10# or 6.0mm <sup>2</sup>
		208V~3PH	16.7A	12# or 4.0mm <sup>2</sup>
		380-415V~3PH	9A	12# or 2.0mm <sup>2</sup>
DES1A-7.5kW	7~9	220-240V~(1PH/2PH)	34A	8# or 2.0mm <sup>2</sup>
		208V~3PH	21A	10# or 4.0mm <sup>2</sup>
		380-415V~3PH	11.4A	12# or 8.0mm <sup>2</sup>
DES1A-9kW	10~12	220-240V~(1PH/2PH)	41A	8# or 2.0mm <sup>2</sup>
		208V~3PH	25A	12# or 4.0mm <sup>2</sup>
		380-415V~3PH	13.7A	12# or 2.0mm <sup>2</sup>
DES1A-10.5kW	12~14	220-240V~(1PH/2PH)	48A	8# or 8.0mm <sup>2</sup>
		208V~3PH	29A	8# or 6.0mm <sup>2</sup>
		380-415V~3PH	16A	12# or 4.0mm <sup>2</sup>
DES1A-12kW	14~16	220-240V~(1PH/2PH)	55A	6# or 10.0mm <sup>2</sup>
		208V~3PH	33.3A	8# or 6.0mm <sup>2</sup>
		380-415V~3PH	18.2A	12# or 4.0mm <sup>2</sup>
DES1A-13.5kW	16~18	220-240V~(1PH/2PH)	55A	6# or 10.0mm <sup>2</sup>
		208V~3PH	33.3A	8# or 6.0mm <sup>2</sup>
		380-415V~3PH	18.2A	12# or 4.0mm <sup>2</sup>
DES1A-15kW	18~20	208V~3PH	42A	6# or 8.0mm <sup>2</sup>
		380-415V~3PH	22.8A	12# or 4.0mm <sup>2</sup>
DES1A-18kW	20~24	208V~3PH	50A	6# or 10.0mm <sup>2</sup>
		380-415V~3PH	27.3A	10# or 6.0mm <sup>2</sup>

The data provided above is for 220-240V(1PH/2PH), 208V(3PH) and 380-415V(3PH).

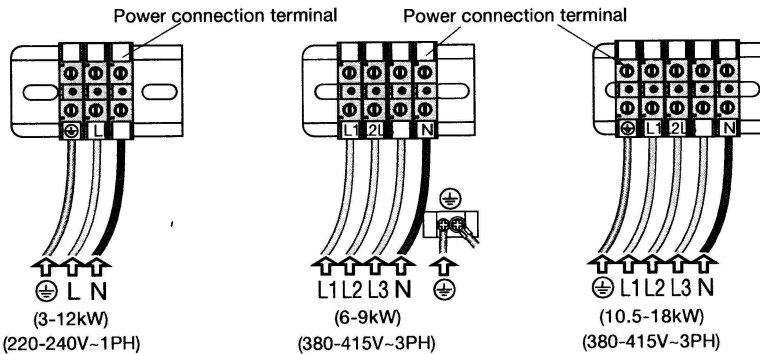
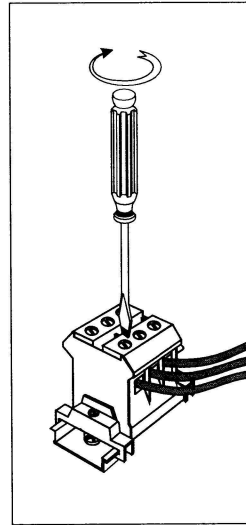
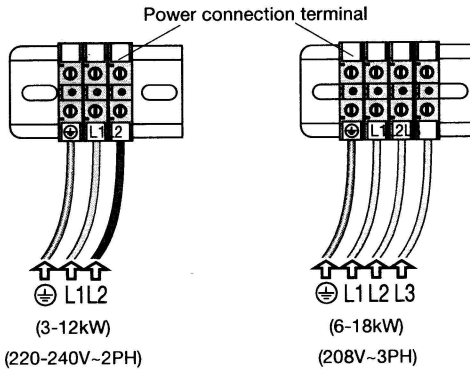
Within the eyeshot of the steam engine, install an independent circuit breaker so as to provide an electricity supply with overflow protection and electricity leakage protection (Ground Fault Interrupter)

# DES1A

## Assembly Graph for Power

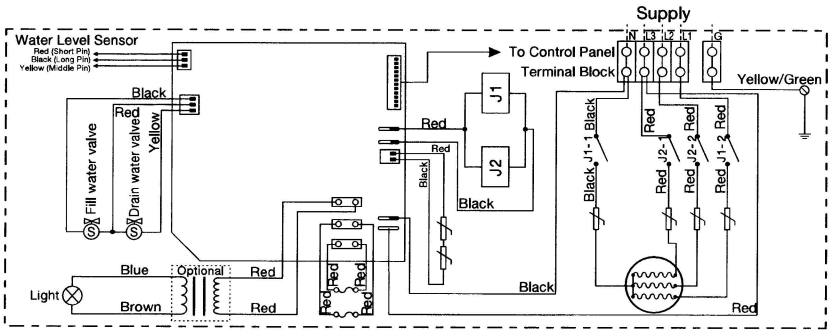
**ATTENTION:** To avoid damage to the equipment, do not connect strong electrical current to the component directly.

**WARNING:** This graph is for explanation only. For actual installation, refer to national and local electricity consumption codes by professional licensed electricians.

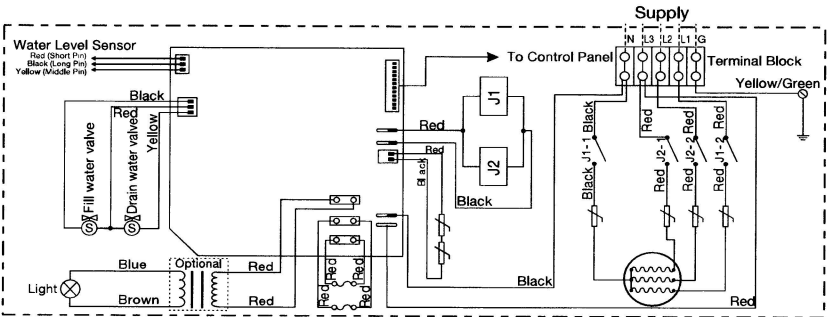


# DES1A

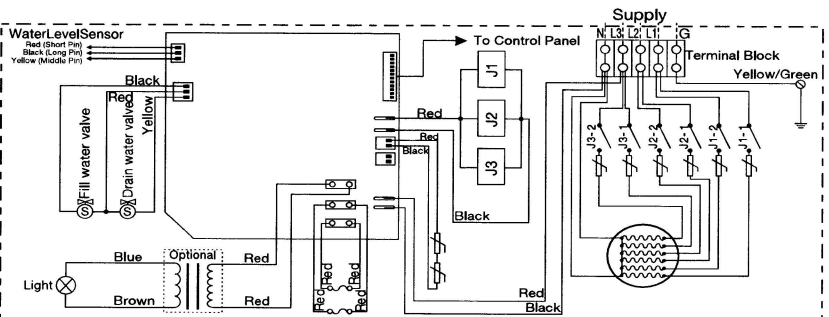
## Wiring Diagram 380 - 415V (3PH)



DES1A-6kW / 7.5kW / 9kW (380-415V~3PH)



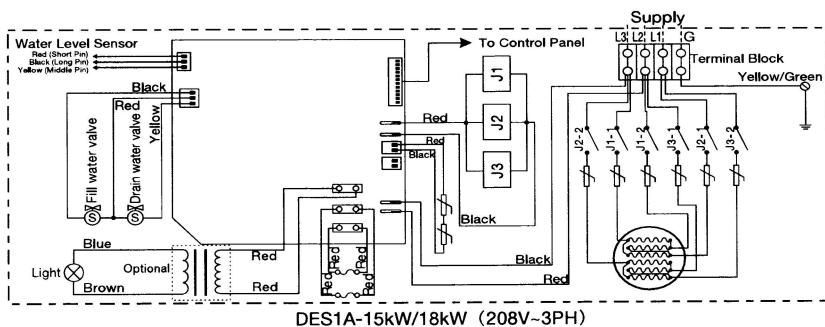
DES1A-10.5kW/12kW/13.5kW (380-415V~3PH)



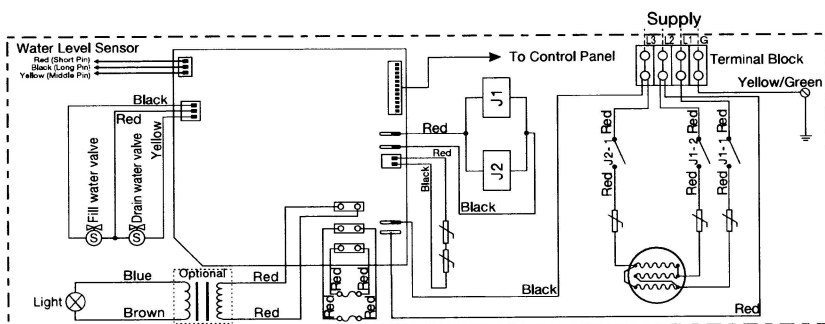
DES1A-15kW/18kW (380-415V~3PH)



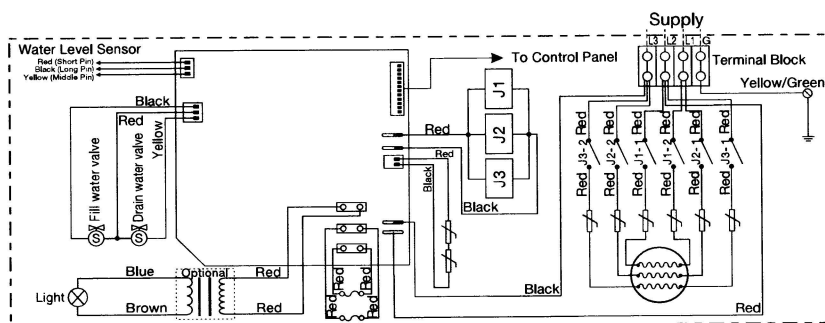
## Wiring Diagram 280V (3PH)



DES1A-15kW/18kW (208V~3PH)



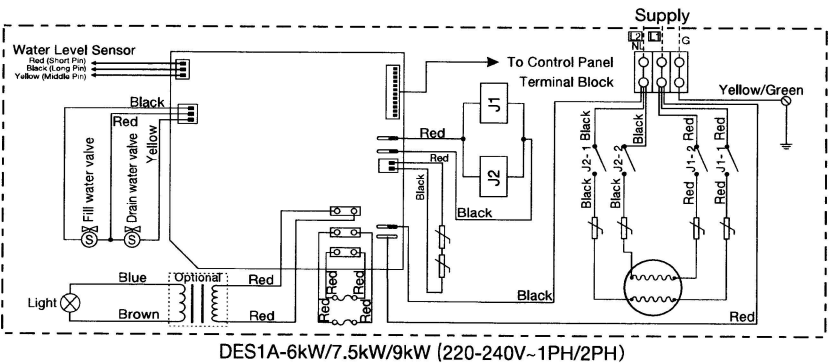
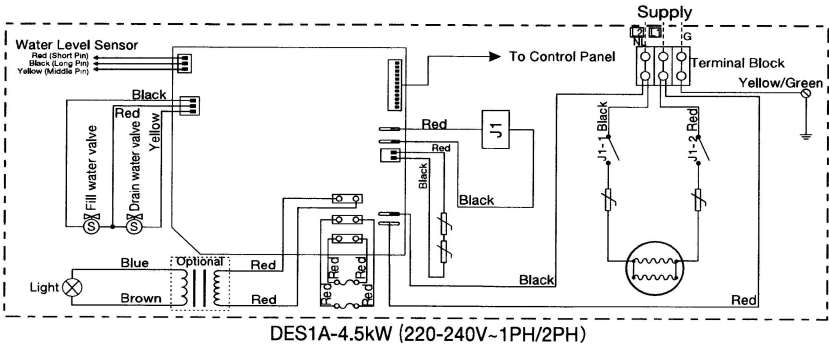
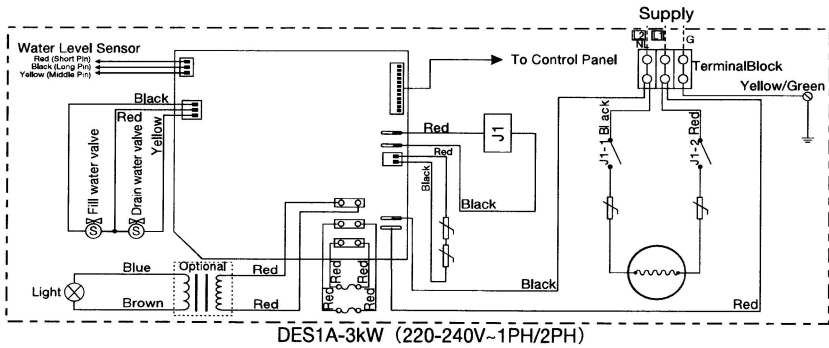
DES1A-6kW/9kW (208V~3PH)



DES1A-10.5kW/12kW/13.5kW (208V~3PH)

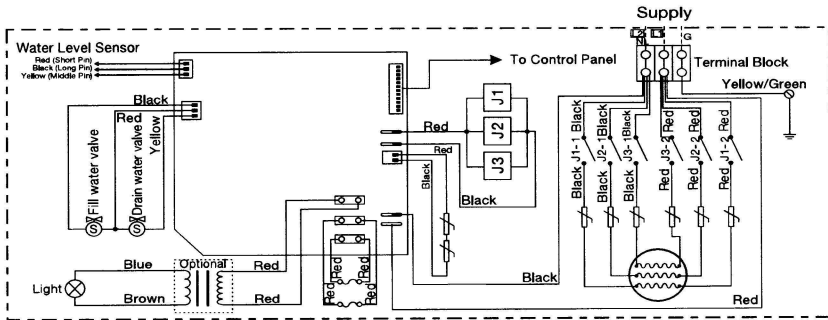
# DES1A

## Wiring Diagram 220 - 240v (1PH/2PH)



## DES1A

### Wiring Diagram 0V (1PH/2PH)



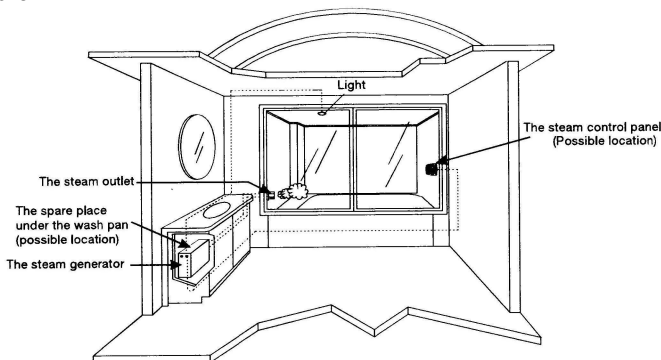
DES1A-10.5kW/12kW220-24 (0V~1PH/2PH)

### Installation of the Top Light

**CAUTION:** Light is available in 12V/220V/230V outputs. To avoid generator damage or danger, please consult with the manufacturer with the voltage of the light. If the light output is 12V, the power of the light should not be more than 35W, otherwise the transformer will burn out causing danger. If the light input is 220V~240V, the light power should not exceed more than 100W.

The light should be installed on top of the steam room or where there is not access by children.

**CAUTION:** Take moisture proof measures during the process of installation. The electrical components cannot be exposed to moisture. This will cause a short circuit.



**CAUTION:** This illustration is for explanation only. The practical installation must comply with the nation's electric criteria and be performed by a professional licensed electrician.

## DES1A

### Choosing The type of machine

Measure the length, width and height (in feet) of the current steam shower or bathtub room.

Example: L:7 x W:5 x H:8 = 280 cubic feet

You would need model s-900

However, if your shower materials are:

\*Natural Stone (granite or marble) ADD 75%

\*Exterior Walls ADD 25%

\*Ceiling Heights exceed 8FT ADD XX%

**IMPORTANT:** *The calculation formula for selecting the type of steam engine is for reference only Due to the variability of the building, the specifications and size illustration are used as guidelines only. If we have complete information, including actual blueprints, project instructions and building details, we can select the type of machine once again. Otherwise, the manufacturer will not be responsible.*

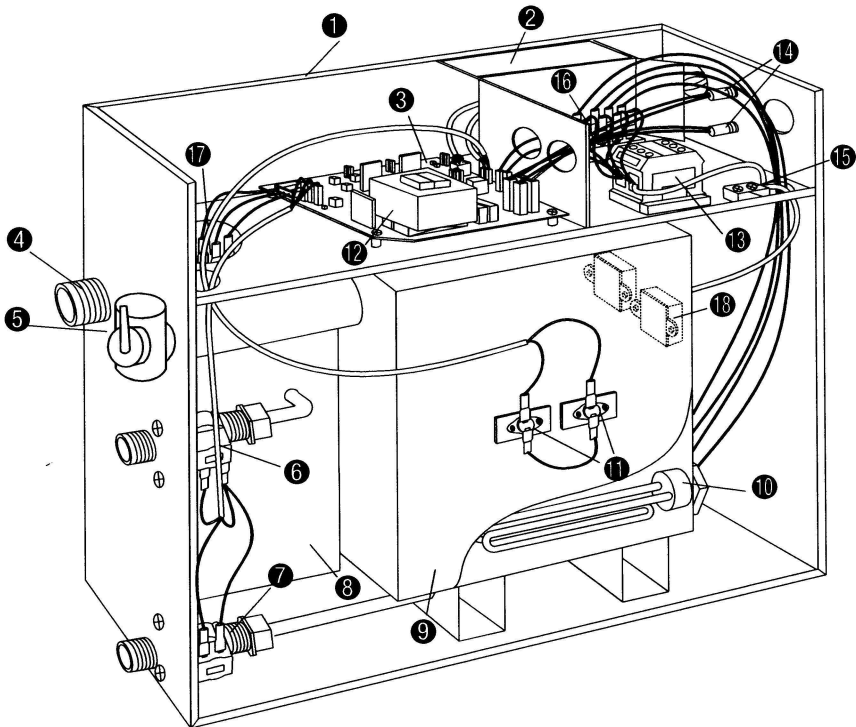
### Maintenance of the Steam Engine

**IMPORTANT:** *Perform water discharge operation after each use.*

1. Wait for the completion of the automatic water discharge after each use of the steam engine to ensure the water in the tank is discharged completely before cutting off the power supply.
2. There should not be any leakage or damage among the steam engine, steam nozzle, components and pipes. They should be checked and repaired annually.
3. Clean the water supply pipes of the steam engine once a year.
4. Check all connections, faucets and connection terminal to see whether they have become loose or have been damaged due to overheating.
5. Check the furring accumulated in the water tank and electric heating tube. If the furring is thick, dispose it in time (use diluted lemon acid and soak for 15-30 minutes).

## DES1A

### Configuration of the Steam Generator



- |                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| 1. Enclosure             | 7. Water drain valve     | 13. Terminal block       |
| 2. Insulation bracket    | 8. Subsidiary water tank | 14. Fuse                 |
| 3. Circuit board         | 9. Main water tank       | 15. Earth wire connector |
| 4. Steam outlet          | 10. Heating element      | 16. Relay                |
| 5. Pressure relief valve | 11. 105°C hi-limit       | 17. Water level sensor   |
| 6. Water fill valve      | 12. Transformer          | 18. 105°C hi-limit       |

# DES1A

## Trouble Shooting Methods

Issues	Causes	Trouble-Shooting Methods
The machine does not start when electrified.	<ol style="list-style-type: none"> <li>1. The fuse is burnt.</li> <li>2. The wire connection terminal became loose.</li> <li>3. The contact is not good between the controller and the steam engine.</li> </ol>	<ol style="list-style-type: none"> <li>1. Change the fuse (on the shell 0.8A/250V).</li> <li>2. Tightly plug in the wire connection terminal.</li> <li>3. Ensure the steam engine and controller come into good contact.</li> </ol>
Electricity leakage switch breaks automatically.	<ol style="list-style-type: none"> <li>1. The wire connector is dampened or damaged.</li> <li>2. The heating tube is broken.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check whether the wire connector is dampened or damaged. Dry with a dryer if damp.</li> <li>2. Change the heating tube.</li> </ol>
When the machine is started, hot water comes on with little or no steam.	<ol style="list-style-type: none"> <li>1. The water drainage valve is broken.</li> </ol>	<ol style="list-style-type: none"> <li>1. Change the water drainage valve.</li> </ol>
The display screen on the control panel.	<ol style="list-style-type: none"> <li>1. The power wire is not connected well or not in good contact. The connection plug between the control panel and the electrically-controlled box becomes loose.</li> <li>2. Trouble with plugboard.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check whether the connection plug between the control panel and the electrically-controlled box has become loose, and whether the power circuitry has good contact.</li> <li>2. Change the plugboard.</li> </ol>
Water leakage.	<ol style="list-style-type: none"> <li>1. The water pipe connector became loose or the pipe has broke.</li> <li>2. Water leakage in the water.</li> </ol>	<ol style="list-style-type: none"> <li>1. Tighten the loose connector and change the broken pipe.</li> <li>2. Change the water input valve or the water drainage valve.</li> </ol>
No steam when starting the machine.	<ol style="list-style-type: none"> <li>1. No electricity.</li> <li>2. No water.</li> <li>3. The set temperature is too low.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the power supply.</li> <li>2. Check the water input pipe and water input valve.</li> <li>3. Reset the temperature.</li> <li>4. Contact the distributor.</li> </ol>
The steam does not come out but there are water sounds in the machine.	<ol style="list-style-type: none"> <li>1. The steam pipe is jammed.</li> </ol>	<ol style="list-style-type: none"> <li>1. Cut power supply to check whether the steam pipe is smooth.</li> </ol>
The light cannot be turned on.	<ol style="list-style-type: none"> <li>1. The fuse is burnt.</li> <li>2. The light is broken.</li> <li>3. The wire is broken.</li> <li>4. The plug does not have good contact.</li> </ol>	<ol style="list-style-type: none"> <li>1. Change the fuse (on the shell 1A/250V).</li> <li>2. Change the light bulb.</li> <li>3. Change the wire.</li> <li>4. Enhance the contact.</li> </ol>
The display box displays normally with no steam input.	<ol style="list-style-type: none"> <li>1. Too much pressure inside the steam engine causing the system to break for heat protection.</li> <li>2. Wire is broken for heat protection.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the steam transport pipe and restore automatically after heat protection becomes cool.</li> <li>2. Check the heat protection wire to make sure the connection is good.</li> </ol>

# DES1A

## Technical Parameter

**IMPORTANT:** *The list above is for reference only. In actual checking and repairing, based on the national and local codes, ask a licensed electrician for service.*

Power Outlet	3kW	1.5kW	6kW	7.5kW	9kW	10.5kW	12kW	13.5kW	15kW	18kW
Potency Error	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Duration	>1500V	>1500V	>1500V	>1500V	>1500V	>1500V	>1500V	>1500V	>1500V	>1500V
Resistance	>20MΩ	>20MΩ	>20MΩ	>20MΩ	>20MΩ	>20MΩ	>20MΩ	>20MΩ	>20MΩ	>20MΩ
Steam Pressure	0.15MPa	0.12MPa	0.14MPa	0.14MPa	0.14MPa	0.16MPa	0.16MPa	0.16MPa	0.16MPa	0.16MPa
Steam Volume (ml/min)	140	160	180	220	260	300	360	400	450	500
Steam Production Time (s)	100-150	90-120	100-160	90-140	80-130	180-240	150-160	120-150	120-150	90-150
Water Tank Volume	2.5L	2.5LL	5.7L	5.7L	5.7L	12L	12L	12L	12L	12L
Applicable Space of the room (m3)	3~6	4~7	5~8	7~9	10~12	12~14	14~16	16~18	18~20	20~24

**IMPORTANT:** *The parameter listed in the table will be varied from different places and temperatures. Please consult a qualified designer and architect for the more detailed use.*

## Notes

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper appears to be a standard notebook page or a sheet of stationery. There is no handwriting or other markings on the page.