

2010

DSSY-MP SERIES



Diko Elektrikli Cihazlar San. ve Tic. A.Ş

www.dikomarine.com

01.01.2010



DSSY-MP SERIE



MARINE TYPE
STAINLESS STEEL
ELECTRIC WATER HEATERS WITH
max. 30KW HEATING CAPACITY

[GENERAL SPECIFICATIONS](#)
[OPTIONAL REQUESTS](#)
[PRODUCT DESCRIPTION](#)
[PLACE OF USAGE](#)
[HEATING TIME](#)
[KW SELECTION CHART](#)
[TECHNICAL TABLE](#)
[INSTALLATION SCHEMATIC](#)
[PRODUCT DIMENSIONS](#)
[CALCULATING HEATER POWER](#)
[HOT WATER PREPARATION TIME](#)

www.dikomarine.com
info@dikomarine.com



GENERAL SPECIFICATIONS

- Different fitting options
- Command panel with user friendly design
- Capacity range between 125 liter - 500 liter
- [Digital thermostat - thermometer \(25-65\)°C](#)
- [Safety thermostat](#)
- [Life Protection System \(Leakage Current Relay\)](#)
- [Protection System against waterless operation](#)
- Power capacity up to max. 30KW
- Manual power steps control
- [T&P Temperature and Pressure relief valve](#)
- [Warning system with light against waterless operation.](#)
- [Warning system with light against over heating.](#)
- Production up on different Voltage & Frequency requests
- CFC-Free polyurethane insulation
- Kathodic protection with Mg Anode
- ASTM 304 Quality Stainless Steel Inner Tank
- ASTM 316 Quality Stainless Steel Outer Jacket
- Pressure display manometer
- Hallogen Free Cables and Cable Cannels,
- [Deck Stabilizer Special Mounting System](#)
- Special wrench for heating element (easy assemble / disassamble)
- Smart Appearance
- 2 year product guarantee

OPTIONAL REQUESTS

- Special design for different and special operating pressure,
- Production up on special capacity request,
- Full Stainless Steel (ASTM 304 or ASTM 316),
- Longevous Incolloy heating elements for aggressive and hard water,
- Special technical requirements up on your project,

Please contact us to get further information and assistance regarding to above mentioned optional requests.

[up▲](#)



ASTM 304L Stainless Steel inner tank
&
ASTM 316L Stainless Steel outer jacket





GENERAL SPECIFICATIONS

Digital thermostat - thermometer (25-65)°C



Usage purpose of this digital thermostatic thermometer is to adjust the desired water temperature value. Integer or decimal temperature value can be read directly from the screen.

[up▲](#)

Safety thermostat

Provides tank protection via breaking electric circuit of the heaters unless tank water temperature level passes over operating temperature value. Factory adjusted and sealed. This adjustment is inconvertible.

[up▲](#)

Life Protection System (Leakage Current Relay)

Heaters leaks current as miliamper as time goes by. This leakage current relay protects system and human life against short circuits and touchings.

[up▲](#)

Protection System against waterless operation



This system stops the operation and starts to warn the operator with light to protect the heating elements incase the tank is empty or water level of the tank is low.

[up▲](#)

T&P Temperature and Pressure relief valve



T&P valve is a mechanical safety accessory against excessive heat and pressure. It discharges at max. 99°C and/or at max. 10,4bars.

[up▲](#)

Visual Warning System Against Over Heating

Safety Thermostat will break the circuit incase the tank water temperature level will pass over the limits, thus heating will stop. In this case this warning system will warn the operator with light.

[up▲](#)

www.dikomarine.com
info@dikomarine.com



Deck stabilizer special mounting foot

Deck stabilizer special mounting foot minimizes the risk of hazardous vibrations which can be occur on board&off shore platforms.

[up▲](#)

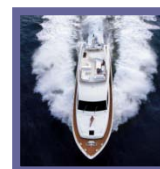
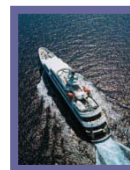
PRODUCT DESCRIPTION

Diko DSSY-MP serie marine type electric water heaters are specially designed for yachts and ships and are being manufactured with a suitable command panel with suitable power in accordance with the requested heating time. Capacity range is between 125-500 liter. DSSY-MP serie floor standing water heaters has digital thermostat – thermometer and provides top-level safe operation. Double protection against over heating provided with its' imported safety thermostat. T&P Temperature and Pressure Relief Valve controls two parameters at the same time and protects the water heater against excessive pressure and heat.

[up▲](#)

PLACE OF USAGE

- Mega Yachts
- Ships
- Tug Boats
- For naval applications
 - ✓ Assault Boats
 - ✓ Corvettes
 - ✓ Support Ships
 - ✓ Amphibious ship group
 - ✓ Coast Guard Vessel
 - ✓ Patrol Boat
 - ✓ Rapid Reaction Boat
 - ✓ Sailing School Ship
 - ✓ Recovery and back-up Ships
 - ✓ Procurement Ships
 - ✓ Coast Guard, Search and Rescue Ships



[up▲](#)

www.dikomarine.com
info@dikomarine.com



DSSY-MP SERIE



HEATING TIME FOR MARINE WATER HEATERS

MODEL	DSSY-125MP	DSSY-150MP	DSSY-200MP	DSSY-250MP	DSSY-300MP	DSSY-400MP	DSSY-500MP
CAPACITY	125 L	150 L	200 L	250 L	300 L	400 L	500 L
TOTAL HEATER POWER	6KW	9KW	12KW	15KW	18KW	20KW	22,5KW
HEATING TIME	53,8 min	43,0 min	43,0 min	43,0 min	43,0 dak	51,6 min	57,4 min

up▲



DSSY-MP SERIE



KW SELECTION TABLE REGARDING TO HEATING TIME

POWER \ MODEL	DSSY-125MP	DSSY-150MP	DSSY-200MP	DSSY-250MP	DSSY-300MP	DSSY-400MP	DSSY-500MP
3KW	107,6 min.	129,1 min.					
4KW	80,7 min.	96,8 min.	129,1 min.				
5KW	64,5 min.	77,4 min.	103,3 min.	129,1 min.			
6KW	53,8 min.	64,5 min.	86,0 min.	107,6 min.	129,1 min.	172,1 min.	215,1 min.
9KW	35,9 min.	43,0 min.	57,4 min.	71,7 min.	86,0 min.	114,7 min.	143,4 min.
10 KW	32,3 min.	38,7 min.	51,6 min.	64,5 min.	77,4 min.	103,3 min.	129,1 min.
12KW	26,9 min.	32,3 min.	43,0 min.	53,8 min.	64,5 min.	86,0 min.	107,6 min.
15KW	21,5 min.	25,8 min.	34,4 min.	43,0 min.	51,6 min.	68,8 min.	86,0 min.
18KW		21,5 min.	28,7 min.	35,9 min.	43,0 min.	57,4 min.	71,7 min.
20KW			25,8 min.	32,3 min.	38,7 min.	51,6 min.	64,5 min.
22,5KW			22,9 min.	28,7 min.	34,4 min.	45,9 min.	57,4 min.
30KW				21,5 min.	25,8 min.	34,4 min.	43,0 min.

Temperature difference between cold water inlet & hot water outlet assumed as 37°C without consumption.

www.dikomarine.com
info@dikomarine.com



DSSY-MP SERIE

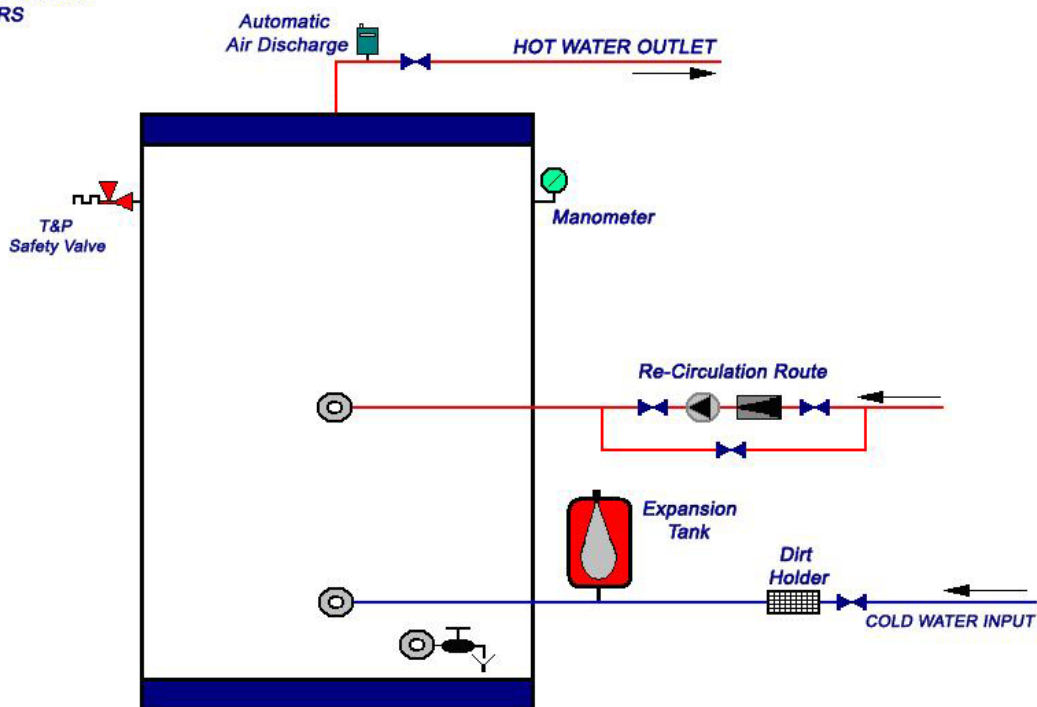


TECHICAL TABLE FOR MARINE WATER HEATERS

MODEL	DSSY-125MP	DSSY-150MP	DSSY-200MP	DSSY-250MP	DSSY-300MP	DSSY-400MP	DSSY-500MP
CAPACITY	125 L	150 L	200 L	250 L	300 L	400 L	500 L
UNIT HEATER POWER	2KW / 6KW	3KW / 9KW	6KW	7,5KW	6KW	10KW	7,5KW
HEATER QUANTITY	3 / 1	3 / 1	2	2	3	2	3
TOTAL HEATER POWER	6KW	9KW	12KW	15KW	18KW	20KW	22,5KW
TOTAL HEAT CAPACITY	5160 kcal/h	7740 kcal/h	10320 kcal/h	12900 kcal/h	15480 kcal/h	17200 kcal/h	19350 kcal/h
CONSUMPTION WATER FLOW	139,5 lt/h	209,2 lt/h	278,9 lt/h	348,6 lt/h	418,4 lt/h	464,9 lt/h	523,0 lt/h
VOLTAGE / FREQUENCY	220-380V, 50Hz, 3P						
WATER TEMP. ADJUSTMENT	Digital Thermostat / Thermometer						
THERMOSTAT ADJUST. RANGE	(25-65)°C						
max OPERATING PRESSURE	6 bar						
TEST PRESSURE	12 bar						
PROTECTION AGAINST HUMIDITY	IP X4						
WATER INLET / OUTLET	¾"	¾"	¾"	¾"	1"	1"	1"
RE-CIRCULATION	¾"	¾"	¾"	¾"	¾"	¾"	¾"
PACKING DIMENSION	58x71x125 cm	58x71x145 cm	68x81x128 cm	68x81x153 cm	68x81x179 cm	80x93x153 cm	80x93x184 cm
GROSS WEIGHT	75 kg	89 kg	99 kg	115 kg	132 kg	143 kg	170 kg

Diko reserves the right of changing models and dimensions without announcing. Safety valve opening pressure is 10bar. Consumption water flow data is given for 37°C temperature difference. Please contact us to get technical support and pricing information incase your project requires special dimension, model and material.

**ADVISED INSTALLATION SCHEMATIC
FOR FLOOR STANDING - VERTICAL
ELECTRIC WATER HEATERS**



All the accessories mentioned in advised installation schematic are **OPTIONAL**.

T&P or P relief valve is a safety accessory which protects the tank against excessive heat and/or excessive pressure. It discharges hot water incase of excessive heat or excessive pressure. Hot water is dangerous and may cause injuries or scaldings. To provide protection against this discharged hot water, it must be connected to floor channel with an installation pipe.

Do not change the settings of safety valve and do not ever use it as an hot water valve. Do not disassemble and cancel it. Do not connect it to another installation. Otherwise the guarantee clause will be invalid.

[up▲](#)





DSSY-MP SERIE DIMENSIONS OF MARINE WATER HEATERS

MODEL	DSSY-125MP	DSSY-150MP	DSSY-200MP	DSSY-250MP	DSSY-300MP	DSSY-400MP	DSSY-500MP
CAPACITY	125 L	150 L	200 L	250 L	300 L	400 L	500 L
BODY DIAMETER	480 mm	480 mm	580 mm	580 mm	580 mm	700 mm	700 mm
DEPTH	610 mm	610 mm	710 mm	710 mm	710 mm	830 mm	830 mm
HEIGHT	1110 mm	1310 mm	1140 mm	1390 mm	1650 mm	1390 mm	1700 mm

DIKO reserves the right of changing the models and dimensions without announcing.





CALCULATING THE HEATING ELEMENT POWER OF THE ELECTRIC WATER HEATER

Electric Water Heaters are the most safe, reliable and comfortable products to supply hot water. Storage type electric water heaters can supply 23liters water with 1kWh electric energy for 18°C cold water input and 55°C hot water output. Heating element power for electric water heaters with %98 heat efficiency can be calculated with below formula.

$$Q = m.C.\Delta T \quad (1)$$

$$P = \frac{m.C.\Delta T}{860} \quad (2)$$

$$P = \frac{V.C.\Delta T}{t.860} \quad (3)$$

Q	Heat Capacity	kcal/h
P	Heating Element power of the EWH	kW
m	Flow of Consumption Water	L/h
C	Specific Heat of Water	kcal/L°C
ΔT	Temperature Difference of Consumption Water	°C
V	Water Capacity of the EWH	L (liter)
T	Heating Time	h (hour)

Example :

To calculate suitable heating element power to heat 200L water with 15°C input, 55°C output in 1 hour without consumption;

V	Water Capacity of the EWH.....	200 Liter
T ₁	Cold Water input temperature.....	15°C
T ₂	Hot Water output temperature.....	55°C
t	Heating Time.....	1 Hour
ΔT	Temperature Difference of the consumption water.....	40°C
C	Specific Heat of Water.....	1 kcal / lt°C



$$P = \frac{200 \cdot 1 \cdot 40}{1 \cdot 860} = 9,3 \text{ kW}$$

Minimum heating element power will be 9,3 kW. A suitable heating element over than this value must be chosen for production.

Example

To calculate suitable heating element power to heat 300L water with 30°C consumption water temperature difference, in 20 minutes, without consumption;

- V Water Capacity of the EWH.....300 Liter
- ΔT Temperature Difference of the consumption water.....30°C
- t Heating Time.....20/60=1/3 h (hour)
- C Specific Heat of Water.....1 kcal / It°C

$$P = \frac{300 \cdot 1 \cdot 30}{1/3 \cdot 860} = 31,4 \text{ kW}$$

Minimum heating element power will be 31,4 kW' dir. A suitable heating element over than this value must be chosen for production.

Suitable heating element power will be calculated as P=10,5kW if the heating time will be 1 hour for above mentioned example. A suitable heating element over than this value must be chosen for production.

[up▲](#)



HOT WATER PREPARATION TIME

Heating time of the EWH depends on different parameters like capacity, cold water input temperature, hot water output temperature and heating element power. Heating time can be calculated with below mentioned Formula (4)

$$P = \frac{V.C.\Delta T}{t.860} \quad (3)$$

$$t = \frac{V.C.\Delta T}{P.860} \quad (4)$$

Example :

To calculate the heating time for an EWH with 500 liter capacity, 24 kW heating element, 15°C cold water input, 55°C hot water input;

V	Water Capacity of the EWH.....	500 Liter
P	Heating Element power of the EWH.....	24kW
T ₁	Cold Water input temperature.....	15°C
T ₂	Hot Water output temperature.....	55°C
ΔT	Temperature Difference of the consumption water.....	40°C
C	Specific Heat of Water.....	1kcal/lit°C

$$t = \frac{500 \cdot 1 \cdot 40 \cdot 60}{24 \cdot 860} = 58 \text{ min.}$$

[up▲](#)



İmes San. Sitesi A Blok 101. Sok. No:8
Y. Dudullu-Ümraniye / İstanbul

Tel: 00 90 216 314 26 26
Fax: 00 90 216 420 49 01