



## ***HUMIDIFIERS***

**Steam p03**

**Steam p06**

**Steam p12**

***EASY STEAM***

***CUSTOMER MANUAL 01-2010***



Thank you for choosing a sunk-electrode EASYSTEAM humidifier.

Read this manual carefully: doing so will ensure that installation is carried out correctly and that the machine is used properly and efficiently.

You are therefore advised to store the manual near the humidifier so that it can be consulted for maintenance and/or modification purposes as and when necessary.

How to read the manual.

To aid comprehension the manual contains the following symbols:



Note to be read carefully.



Indicates procedures that must be followed with due care and attention so as to prevent damage to the humidifier, injury or malfunctions.



Indicates forbidden practices and procedures which could cause damage to the humidifier, injury or malfunctions.



Useful tip.



Indicates that the customer service centre.

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## CHAP. 1 INTRODUCTION

### 1.1

#### GENERAL

EASYSYSTEM sunk-electrode humidifiers are the latest family of humidifiers to be released onto the market: they are characterised by outstanding completeness of performance and extremely simple maintenance.

The range includes 3 Kg/h humidifiers with single-phase power supply and 6 Kg/h and 12 Kg/h humidifiers with 3-phase + neutral power supply; they all feature proportional control mode (with 0 – 10 V signal).

EASYSYSTEM humidifiers feature software with an extensive programming range, full personalisation and completely automatic operation.

This means that the user can set steam output to maximum or some intermediate percentage, regulate de-concentration emptying frequency or have all the water emptied automatically when the machine has been idle for a set time.

The EASYSYSTEM line also features a display that shows real-time room humidity, the current being absorbed by the electrodes, working hours, various warnings/alarms, water filling/emptying status and a full range of user-friendly programming parameters.

EASYSYSTEM humidifiers also incorporate a buzzer to warn the user of any faults; the internal software evaluates the seriousness of the problems and shuts down or continues steam generation accordingly.

A key advantage of the EASYSYSTEM range is that the cylinder with the stainless steel electrodes is easily changed when normal wear makes such replacement necessary.

### 1.2

#### WARRANTY

EASYSYSTEM humidifiers are covered by a 12-month warranty against all manufacturing defects, valid from date of delivery. If the system malfunctions as a result of tampering, impact or improper installation the warranty will automatically be rendered null and void. It is strongly recommended that you observe all instructions/information regarding the technical characteristics of the device.



Any modifications made to wiring and/or internal components or any tasks carried out in a way that fails to comply with the information/instructions in this manual shall render the warranty null and void immediately. Such modifications/tasks may cause malfunctions, irreparable damage, serious injury or put persons/objects in danger.

**Tecnomac** declines any responsibility for possible errors or inaccuracies written in this manual as a result of printing or transcription errors.

**Tecnomac** reserves the right to modify its products as it deems necessary without altering its main characteristics. Each new release of a user manual replaces previous ones.

## 1.3

## OPERATING PRINCIPLE

The sunk-electrode humidifiers in the EASYSTEAM range use the conductivity of potable water to produce steam by boiling.

The cylinder electrodes are sunk in the water: a current is generated between the electrodes and this heats the water to boiling point.

Current intensity (expressed in amperes) varies according to the quantity of in-cylinder water that is in contact with the electrode surfaces and the conductivity of the water.

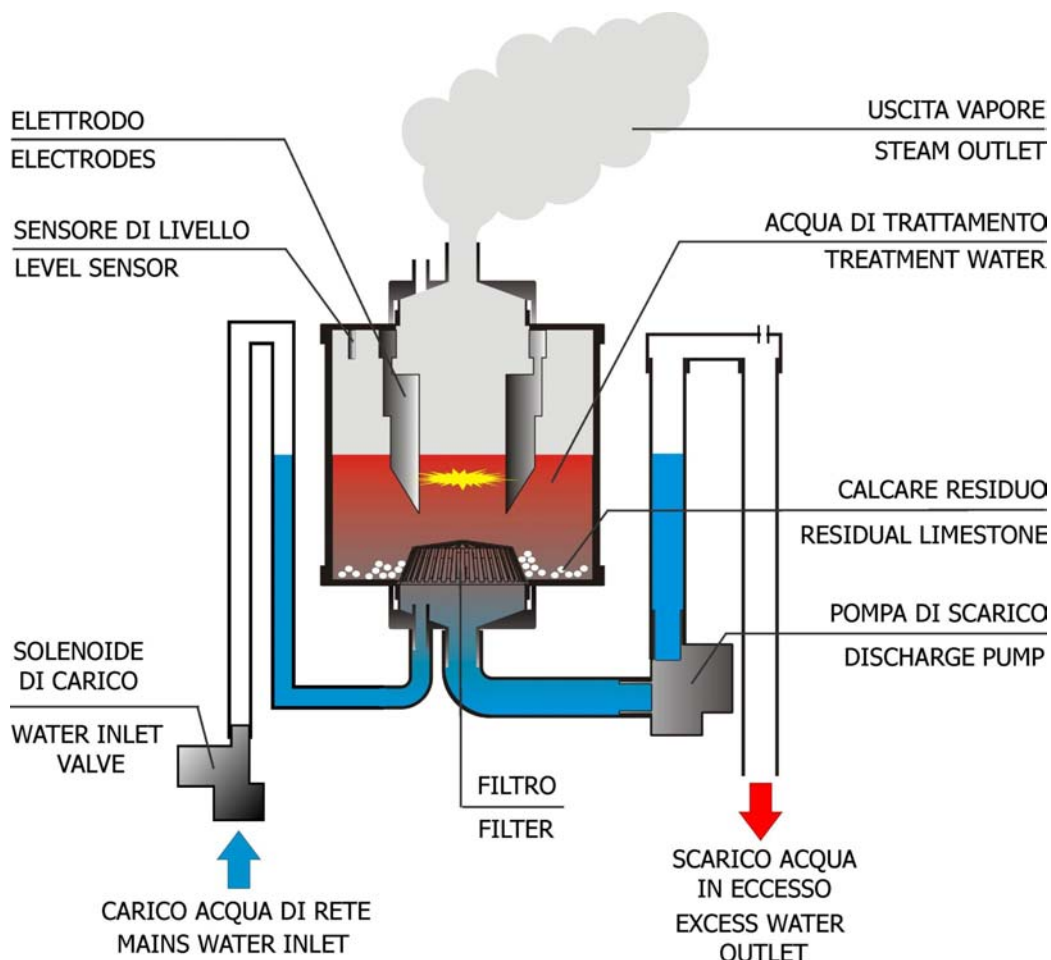
The electronic controller measures, via an amperometric transformer, current intensity and controls the water inlet valve (to raise the water level) or the discharge valve (to lower it) accordingly. This system is fully automatic.

Combined use of the microprocessor also makes it possible to effect proportional control: this optimises water and electricity consumption according to required humidity levels.

In addition to ensuring that the humidifier works properly the discharge pump also empties the cylinder completely when the unit had been idle for a set time: this prevents limescale or other particles created during the boiling process from depositing.

The humidifiers in the EASYSTEAM range are fully automatic and require only replacement of the cylinder when the electrodes are worn.

The diagram below illustrates the operating cycle.





To ensure proper humidifier performance use only mains drinking water; this is because it is free from any harmful content and is compatible with the conductivity range needed for optimal humidifier performance.

Note that in some areas mains water may be unsuitable for optimal performance owing to very low conductivity; the following table summarises the parameters required for correct humidifier operation.

OPERATING RANGE		LIMITS	
PARAMETER	UNIT OF MEASURE	MIN	MAX
* Conductivity of water at 20° C	µS/cm	200	1300
Hardness	mg/l CaCO <sub>3</sub>	160	450
Chlorine	mg/l Cl	0	0,2
Chlorides	ppm Cl	0	25
Calcium sulphate	mg/l CaSO <sub>4</sub>	0	95

\* Stated conductivity refers to water at 20° C; bear in mind that conductivity diminishes as water temperature falls and so water may not be very conductive in winter when mains water is particularly cold.



To avoid this inconvenience, diminish the produced steam percentage described in chapter 2 PROGRAMMING of this manual.



Do not fill the humidifier with water from wells or water that has been treated with softening purifiers.

**1.4**

**HUMIDIFIER ID CODES**

- 81563520/0** three-phase covered humidifier with steam output capacity of 36 Kg/h
- 81563521/0** three-phase covered humidifier with steam output capacity of 6 Kg/h
- 81563522/0** three-phase covered humidifier with steam output capacity of 12 Kg/h
- 81563526/0** single-phase covered humidifier with steam output capacity of 3 Kg/h

**1.5**

**HUMIDIFIERS TECHNICAL DATA**

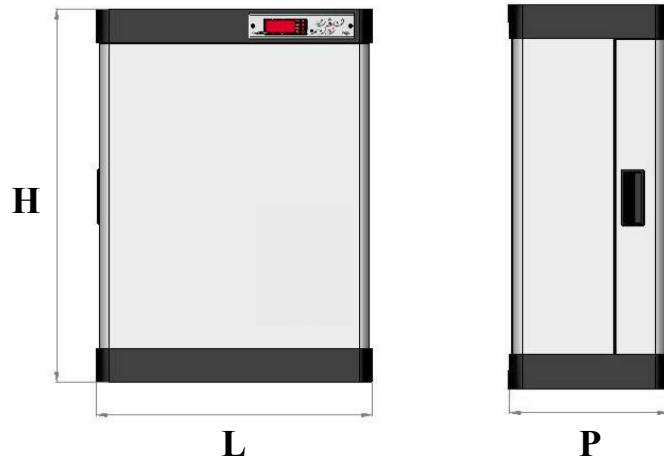
<b>TECHNICAL DATA</b>	<b>81563526/0</b>	<b>81563520/0</b>	<b>81563521/0</b>	<b>81563522/0</b>
STEAM PRODUCTION (Kg/h)	3	3	6	12
ELECTRICAL POWER SUPPLY	220V	400V 3/N 50-60HZ		
POWER (kW)	2	2	4,5	9
ABSORBED CURRENT (A)	9	3,5	6,5	13
TYPE OF CONTROL	SLIM STEAM			
ELECTRONIC CONTROL POWER SUPPLY	230V			
STEAM OUTLET DIAMETER (mm)	25	25	25	25
NUMBER OF CYLINDERS	1	1	1	1
WEIGHT (EMPTY) (Kg)	10	10	10	12
WEIGHT WHEN WORKING (Kg)	12	13	13	18
WATER SUPPLY PRESSURE	1-10 bar			



**1.6**

**OVERALL DIMENSIONS**

**SERIE STEAM**



TIPO	81563520/0	81563521/0	81563522/0	81563526/0
<b>L</b>	430	430	430	430
<b>P</b>	240	240	240	240
<b>H</b>	525	525	625	525

**1.7**

**IDENTIFICATION DATA**

The unit described in this manual has, on its side, an ID plate showing all the relevant identification data:

- Name of Manufacturer
- Unit model
- Serial number
- Power supply voltage
- Rated current

**1.8**

**STANDARD ASSEMBLY KIT**

EASYSTEAM humidifiers come complete with:

N° 1 oil for a better cylinder insertion.

N° 1 instruction complete with wiring diagram

**CHAP. 2 PROGRAMMING**

**2.1**

**DESCRIPTION OF SLIM CONTROLLER**

1. The SLIM CONTROLLER is the control unit on the front of the humidifier. It consists of an 8-LED display to visually check values (fig. 25) and 6 keys to adjust display and modify settings (fig. 26).

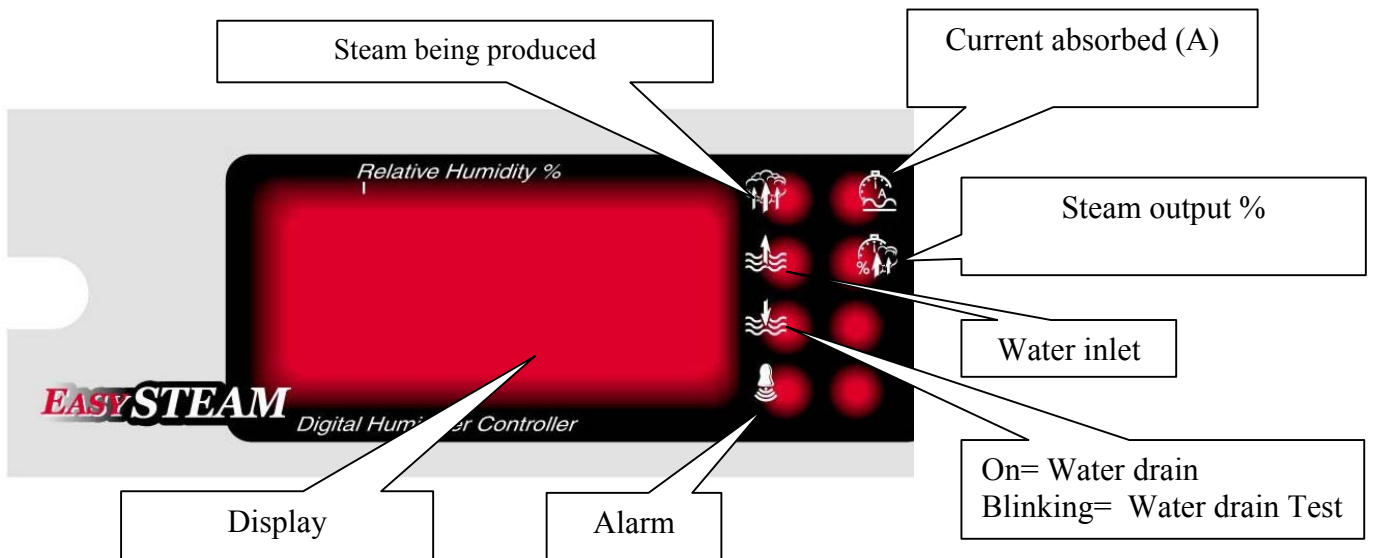


Fig. 25

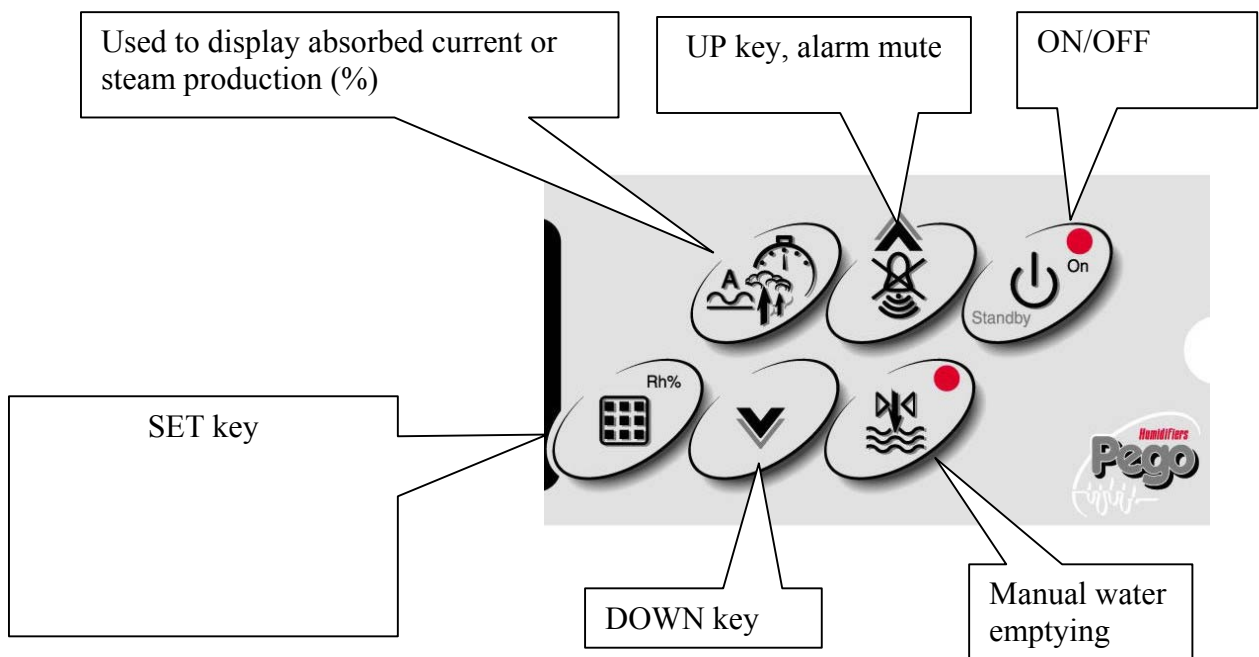


Fig. 26

1. Level 1 programming allows the user to modify the steam production percentage Pr

VARIABLE	MEANING	VALUES	DEFAULT P03	DEFAULT P06 – P12
<b>Pr</b>	<b>Steam production percentage</b>	20 ÷ 100 %	50%	100%
<b>Bp</b>	<b>Not used</b>	---	---	---
<b>StC</b>	<b>Not used</b>	---	---	---
<b>r0</b>	<b>Not used</b>	---	---	---
<b>UrC</b>	<b>Not used</b>	---	---	---

The steam percentage value Pr is the value the humidifier is able to reach at maximum output. For example, leaving the setting at 100% on an ES6 rated at 6 Kg/h will give 6 Kg/h of steam output; if the Pr setting is reduced to 50% the humidifier will produce 3 Kg/h at most.



The **Pr** variable is highly useful where water conductivity is poor and when you need to make the most of the cylinder when it is nearing replacement.

2. To gain access to the Level 1 programming menu proceed as follows:

- Press the (▲) and (▼) keys simultaneously and keep them pressed for a few seconds until the first programming variable appears on the display.
- Release the (▲) and (▼) keys.
- Select the variable to be modified using the (▲) or (▼) key.
- When the variable has been selected it is possible:
  - to display the setting by pressing SET
  - to modify the setting by pressing the SET key and the(▲) or (▼) keys.
- When configuration values have been set you can exit the menu by pressing the (▲) and (▼) keys simultaneously for a few seconds until the parameter shown before programming was accessed (e.g. steam production or absorbed current) reappears.
- The new settings are saved automatically when you exit the configuration menu.

**CHAP. 3 SWITCHING ON THE HUMIDIFIER****3.1****INITIAL START-UP**

1. Check that default setting is compatible with signal connection; if it is different, set the jumpers correctly before powering up as described on page 14 of SERVICE MANUAL (paragraph 2.3).
2. Before powering up the humidifier check for correct connection of phases and signal type (0 - 10V); check for correct connection of the water mains, excess water discharge and steam pipes.



If the mains water feed line consists of piping that might contain oily residues or other foam-generating substances it is essential that it be washed out by letting water flow through for several minutes.

3. Power up the humidifier.
4. The humidifier will carry out a water discharge for several seconds as it emits a prolonged beep.
5. At this point the humidifier is in STAND-BY mode.

## CHAP. 4 MAINTENANCE

### 4.1

#### ROUTINE MAINTENANCE



To ensure working safety, correct functioning and an optimal output of EASYSTEAM humidifiers, it is necessary to execute maintenance operations according to following instructions.

### 4.2

#### WATER DRAIN TROUBLESHOOTING AND UNSCHEDULED MAINTENANCE

EASYSTEAM humidifiers series has a self-diagnostics test to periodically verify water drain functionality.

Every 10 hours of humidifier functioning (10 hr total of activated electrodes) test is started and it's signaled by a "water drain" blinking led.

A negative test result (drain not functioning) generates an E5 pre-alarm that still allows humidifier using. Led and alarm relay are also activated, and buzzer that can be muted anyway. E5 pre-alarm keep displayed and it's re-setted by a positive result on the next test or switching off the humidifier.

A negative test result, if E5 pre-alarm is already present, generates an E6 alarm that stops humidifier functioning (stand-by) to avoid damages. Led and alarm relay are also activated, and buzzer that CANNOT be muted this time.

It's not possible to exit stand-by mode with E6 alarm activated. Reset of alarm E6, that's considered serious (and requires obligatorily maintenance intervention or cylinder substitution), can be made only by switching off and then switchin on again the humidifier.



**In case of E5 and E6 alarm please verify that humidifier discharge or cylinder back are not obstructed and pump is not damaged or disconnected.**



**WARNING!! WARNING!!** If the humidifier is switched in stand-by mode during "water drain test" this could be misstated and be positive even with obstructed discharge. It will be necessary to wait next test to see an eventual anomaly.



To minimise this phenomenon it is advisable to reduce the time between one de-concentration discharge and another by reducing the value of variable S2.

**4.3**

**CYLINDER REPLACEMENT**



The only part of the humidifier subject to wear is the electrode cylinder (fig. 1). This wears according to how much the machine is used.

The EASYSTEAM range features stainless steel electrodes to maximise durability: however, durability will largely depend on the quality of the water (conductivity and hardness) and on how much the machine is used.

When the electrodes are worn the water level will rise excessively and trip the maximum level alarm **E1** several times: the cylinder must, at this point, be replaced.

Once you have checked that this alarm does not have other causes change the cylinder.

**4.4**

**SPARE PARTS**

1. Description of STEAM series spare parts.

Rif.	Code	Description
2 + 9	400UMSIF01	siphon kit water drain for P03 e P06 380/3/50-60Hz
	400UMSIF02	siphon kit water drain for P12 380/3/50-60Hz e P03,P06 230/3/50-60Hz
	400UMSIF03	siphon kit water drain for P12 230/3/50-60Hz
3 + 3A	UMICO25	DN25 steam output flange higher (3A) and lower (3)
4	400UMCL01	Complete electrode cylinder for P03-P06 380/3/50-60 Hz
	400UMCL02	Complete electrode cylinder for P12 380/3/50-60 Hz
	400UMCL04	Complete electrode cylinder for P03 230/1/50-60 Hz
	CT81563532	Complete electrode cylinder for P03-P06 230/3/50-60 Hz
	CT81563533	Complete electrode cylinder for P12 230/3/50-60 Hz
	CT81563570	Low conductivity electrode cylinder for P03-P06 380/3/50-60 Hz
	CT81563571	Low conductivity electrode cylinder for P12 380/3/50-60 Hz
	CT81563572	Low conductivity electrode cylinder for P03-P06 230/3/50-60 Hz
CT81563573	Low conductivity electrode cylinder for P12 230/3/50-60 Hz	
6	UMITUBO10-2	Cylinder water inlet hose (L=1250mm) for P03 e P06
	UMITUBO10-3	Cylinder water inlet hose (L=1600mm) for P12
7	400UMIVALV	230V 50/60 Hz solenoid valve for water filling
8	400POMPA943	Asynchronous discharge rotor pump with max flow rate of 30 l/m
11+13	7CTUMKITSLIM	Complete electronic kit complete with Slim controller(13), Master 100 (11)
12	CON10161AP01	Contactore
14	UMIOR1	O-Ring diametro88,49 X 3,53 SILICONE 60Sh.
16	26116031/0	Steam output connection
---	PUMITA5712	Amperometric controller

