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MÈTA

Variable speed pressure boosting system with integrated control

e-ido® products
Reg. U.S. Pat. and TM. Off.

calpeda®

QUICK START

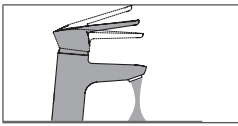
ENGLISH

Before starting the system, read the mèta instruction manual
for installation (chap.6), startup and operation (chap.8) .


1. Set parameter AP01 as defined in paragraph 8.3.
After starting, with the pump fully primed and running (see paragraph 8.4), carry out the following check.

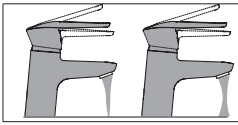
2 Check that the following conditions are met:

2.1. Open a tap to get half of the flow rate (≃ 4-5 litres per minute); in these conditions, the pump must work continuously.

	½ opened tap (≃ 4-5 l/min)	Continuous operation	

If the pump has an intermittent operation (discontinuous flow) decrease the parameter AP06 by 0,1bar steps as long as the operation is continuous.

2.2. Close the tap at ¼ of the flow rate (≃ 2 litres per minute); in these conditions, the pump must work intermittently.

	¼ opened tap (≃ 2 l/min)	Intermittent operation	

If the pump has a continuous operation (continuous flow) increase the parameter AP06 by 0,1bar steps as long as the operation is intermittent.

3. Once step 2.2 has been verified, check step 2.1 again to ensure that both steps are satisfied with the same value of parameter AP01.


If errors appear during the procedure, see chap. 12, 13 and 14 of the instruction manual.

SUMMARY

1. GENERAL INFORMATION

Before using the product carefully read the warnings and the instructions contained in this instruction manual, which should be kept for future reference.
Italian is the original language of this instruction manual, this language is the reference language in case of discrepancies in the translations.
This manual is part of the essential safety requirement of the appliance and must be retained until the product is finally de-commissioned.
The customer, in case of loss, can request a copy of the manual by contacting Calpeda S.p.A. or their agent, specifying the type of product data shown on the label of the machine (see 2.3 Marking)
Any changes, tampering or modifications made to the product or part of it, not authorised by the manufacturer, will revoke the “CE declaration” and warranty.

This appliance should not be operated by children younger than 8 years, people with reduced physical, sensory or mental capacities, or inexperienced people who are not familiar with the product, unless they are given close supervision or instructions on how to use it safely and are made aware by a responsible person of the dangers its use might entail.
Children must not play with the appliance.
It is the user's responsibility to clean and maintain the appliance. Children should never clean or maintain it unless they are given supervision.
Do not use in ponds, tanks or swimming pools or where people may enter or come into contact with the water.
Read carefully the installation section which sets forth:
- The maximum permissible structural working pressure (chapter 3.1).
- The type and section of the power cable (chapter 6.5).
- The type of electrical protection to be installed (chapter 6.5).

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1.1. Symbols

To improve the understanding of the manual, the symbols/pictograms indicated below, with their meanings, are used.


Information and warnings that must be observed, otherwise the machine could be damaged or personnel safety could be compromised.


Electrical information and warnings that must be observed, otherwise the machine could be damaged or personnel safety could be compromised.


Notes and warnings for the correct management of the machine and its parts.


Operations that can be performed by the final user. After carefully reading the instructions, they are responsible for maintenance under normal conditions. They are authorised to perform routine maintenance operations.


Operations that must be performed by a qualified electrician authorised to perform all electrical maintenance and repair operations including maintenance. They are able to operate in the presence of high voltages.


Operations that must be done performed by a qualified technician capable of using the appliance correctly under normal conditions, authorised to perform all mechanical maintenance, adjustment and repair operations.


Indicates that it is mandatory to use personal protective equipment - hand protection.

Operations that must be performed with the device switched off and disconnected from the power supply.

Operations that must be performed with the device switched on.

1.2. Manufacturer name and address

Manufacturer name: Calpeda S.p.A.
Address: Via Roggia di Mezzo, 39
36050 Montorso Vicentino - Vicenza / Italia
www.calpeda.it

1.3. Authorised operators

The product is intended for use by expert operators divided into end users and specialised technicians. (see the symbols above).


It is forbidden, for the end user, to carry out operations which must be performed only by specialised technicians. The manufacturer declines any liability for damage related to the non-compliance of this warning.

1.4. Warranty

For the product warranty refer to the general terms and conditions of sale.


The warranty covers only the replacement and the repair of the defective parts of the goods (recognised by the manufacturer).

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The Warranty will not be considered in the following cases:
- Whenever the use of the device does not conform to the instructions and information described in this manual.
- In case of changes or variations made without Manufacturer's authorisation
- In case of technical interventions carried out by a non-authorised personnel.
- In case of failure to carry out adequate maintenance.

1.5. Technical assistance
Any further information about the documentation, technical assistance and spare parts, can be requested from: Calpeda S.p.A. (paragraph 1.2).

2. TECHNICAL DESCRIPTION
Variable speed pressure boosting system with integrated control, complete with integrated pressure transducer that allows to maintain the system pressure even with variation of consumption.

For protection of the pump:
- against dry running;
- against the risk of operation without water at the inlet (caused by a lack of water inflow in the inlet pipe under the positive suction head, by a non-immersed suction pipe, by excessive suction lift or by air entering the suction pipe);

Version with self-priming multistage pumps with AISI 304 pump casing and impellers.

2.1. Intended use
For liquids that are clean, non-explosive and non-flammable, non-hazardous for health or the environment, non-aggressive for pump materials, not containing abrasives, solid or fibrous particles.
Liquid temperature from 0 °C to + 35 °C.

2.2. Reasonably foreseeable misuse
The device is designed and built only for the purpose described in paragraph 2.1.

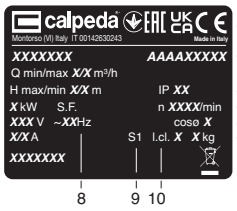
Improper use of the device is forbidden, as is use under conditions other than those indicated in these instructions.
Improper use of the product reduces the safety and the efficiency of the device, Calpeda shall not be held responsible for failure or accidents due to improper use.

Do not use in ponds, tanks or swimming pools when there are people in the water.

2.3. Marking
The following picture is a copy of the name-plate that is on the external case of the pump.

1 Pump type
2 Flow rate
3 Head
4 Maximum absorbed power
5 Supply voltage
6 Rated current
7 Notes
8 Frequency
9 Operation Duty
10 Insulation class
11 Weight
12 cosø
13 Rated speed
14 Protection
15 AAAA Year of manufacture
15 XXXX Serial number
16 Certifications

Example of pump plate



3. TECHNICAL FEATURES

3.1. Technical data
Dimensions and weight (see technical catalogue).
Rated speed 4500 rpm (5800 rpm for MÈTA SMALL)
Protection IP X4
Supply voltage / Frequency:
220-240V~50Hz/220V~60Hz
Check that the mains frequency and voltage correspond to the electrical characteristics shown on the plate.
The electric data marked on the plate to the rated power of the motor.
Sound pressure: < 70 dB (A).
Max. starts per hour: 90 at regular intervals.
Maximum permissible pressure in the pump casing: 80 m (8 bar).
Max. inlet water pressure: PN (Pa) - Hmax (Pa) [1bar = 100.000 Pa].
Maximum suction lift : 4 m (3 m for MÈTA SMALL)

3.2. Pushbutton functions
The user interface consists of a keyboard with 6 pushbuttons has a specific function described in the following table.

Use this button to start the pump.

Use this button to stop the pump.

Use this button to access the product programming parameters. If already on the programming screen, press this button to go back to the previous menu

Use this button to access programming parameters. If you changed a parameter, by pushing this button you can confirm the indicated value.
Use this button to reset the errors.

Use this button to decrease parameters or to change the displayed parameter.

Use this button to increase parameters or to change the displayed parameter.

3.3. Operating conditions
Installation in a well-ventilated location protected from adverse weather conditions, with a maximum ambient temperature of 40 °C.

4. SAFETY

4.1. General rules of conduct
Before using the product it is necessary to know all the safety indications.

Carefully read all operating instructions and the indications defined for the different steps: from transportation to disposal.
The specialised technicians must carefully comply with all applicable standards and laws, including local regulations of the country where the pump is sold.
The device has been built in conformity with the current safety laws. Improper use could damage people, animals and objects.
The manufacturer declines any liability in the event of damage due to improper use or use under conditions other than those indicated on the nameplate and in these instructions.

Follow the routine maintenance schedules and promptly replace damaged parts, this will allow the device to work in the best conditions.

Use only original spare parts provided by Calpeda S.p.A or by an authorised distributor.

Do not remove or change the labels placed on the device.

Do not start the device in case of defects or damaged parts.

Maintenance operations, requiring full or partial disassembly of the device, must be performed only after disconnecting the device from the power supply.

4.2. Safety devices
The device has an external case that prevents any contact with internal and live parts.

4.3. Residual risks
The appliance, when used according to its intended use and safety regulations, does not have any residual risks.

4.4. Information and Safety signs
For this kind of product there will not be any signs on the product.

4.5. Personal protective equipment
During installation, startup and maintenance the authorised operators are advised to consider. to consider the use of personal protective equipment suitable for the described activities.
During ordinary and extraordinary maintenance interventions, safety gloves are required.

Sign — personal protective equipment
HAND PROTECTION
(gloves for protection against chemical, thermal and mechanical risks).

5. TRANSPORTATION AND HANDLING
The product is packed to maintain the content intact.
During transportation avoid stacking excessive weights. Ensure that during transportation the box cannot move.
It is not necessary to use any special vehicle to transport the packaged device.
The transport vehicles must comply, for the weight and dimensions, with the chosen product (see overall dimensions in technical catalogue).

5.1. Handling
Handle with care, the packages must not be subject to shocks.
Avoid placing other material on the packages that could damage the pump.
If the weight exceeds 25 kg the package must be handled by two people at the same time.

6. INSTALLATION

6.1. Dimensions
For the dimensions of the device (see technical catalogue).

6.2. Ambient requirements and installation site dimensions
The customer has to prepare the installation site in order to guarantee correct installation and in order to fulfill the device requirements (electrical supply, etc...).
The place where the device will be installed must fulfill the requirements indicated in paragraph 3.3.
It is strictly forbidden to install the machine in an environment with a potentially explosive atmosphere.

6.3. Unpacking
Check the device for any damage that may have occurred during transportation.

The packaging materials, once removed, must be discarded/recycled according to local laws in the country of destination of the device.

6.4. Installation
See installation examples, chap. 14 fig. 1 and 2.
The pumps must be installed with the rotor axis in the horizontal position and with the feet under the pump.
Place the pump as close as possible to the suction source.
Provide space around the pump for motor ventilation, for checking the direction of rotation of the shaft, for filling and draining the pump and to allow for the collection of the liquid to be removed.

6.4.1. Pipes
Make sure that the insides of the pipes are clean and unobstructed before connection.
ATTENTION: the pipes should be secured to their supports and connected in such a way that they do not transmit stress, strain or vibrations to the pump (par. 14 fig. 3).
Tighten the pipes or union coupling to the extent sufficient to ensure a tight seal.
Excessive tightening may cause damage to the pump.
The pipe diameters must not be smaller than the pump connections.

6.4.2. Suction pipe
The suction pipe must be perfectly airtight and be led upwards in order to avoid air pockets.
With the pump located above the water level (suction lift operation, chap. 14. fig. 2) fit a foot valve with strainer which must always remain immersed.
If operating with flexible hoses use a reinforced spiral suction hose, in order to prevent the hose from narrowing due to suction vacuum.
With the liquid level on the suction side above the pump (inflow under positive suction head, chap. 14. fig. 1) fit an inlet gate valve.

ATTENTION: the pump is equipped with non-return valve built into the pump suction, in order to fill the suction pipe there must be a filling system on the suction pipe (chap. 14 fig. 4).
Follow local specifications if increasing network pressure.
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Install a filter on the suction side of the pump to prevent foreign particles from entering the pump.

6.4.3. Delivery pipe
Fit a gate valve in the delivery pipe to adjust delivery and head.
when the geodetic difference in level in the delivery section is over 15 m fit a check valve between the pump and the gate valve in order to protect the pump from water hammering.
ATTENTION It is necessary to check that the restart pressure (subtraction between UP01-UP02) is compatible with the actual pressure of the pump and of the water column of the system.

6.5. Electrical connection


The electrical connection must be carried out only by a qualified electrician in accordance with local regulations.

Follow all safety standards.
Make sure that the frequency and mains voltage correspond to the values indicated on the plate.
For use in swimming pools (only when there are no people in the pool), garden ponds and similar places, **an F-type residual current device** with IΔN not exceeding 30 mA must be installed in the supply circuit.
Install a **device for disconnection from the mains** (switch) with a contact separation of at least 3 mm in all poles.
The pumps are supplied with with a built-in thermal protector and with a plug.
Connect the plug to a socket with an earth lead.
The motor will stop if overheating is detected.
When the windings cool down, the thermal protector enables re-starting.
The pumps are supplied with power supply type H07RN-F with plug and cable section equal to or greater than the value defined in table 1 in paragraph 14.2.
When extension cables are used, make sure the cable wires are of adequate size to avoid voltage drops.

6.5.1. Operation with frequency converter
ATTENTION: never power the pump with a frequency converter.

7. PROGRAMMING GUIDE

7.1. Parameters
The following information is displayed:
- Pump status parameters
- Programming parameters
- Alarms

7.2. Pump status parameters
They allow you to view:
- Initial screen (rUn, OFF, StB, Err)
- Motor operating frequency
- Delivery pressure measured by the transducer
- Supply current input
- Supply electrical power input
- Supply voltage

Starting from the main screen, press the arrows (plus) or (minus) to view the other parameters

7.3. Programming parameters
To view the programming parameters, select (menu).
The following are displayed in succession:
UP – User settings: these are the basic settings that the user may change.
AP - Advanced settings: these settings are available only to qualified personnel. To enter, a password is required (see paragraph 7.6.).
GP – booster unit settings: to be set only if there is a booster unit.
Err - Last 5 alarms. In case of no error, nOnE appears.
AE - By means of the AE menu, you can identify the firmware installed. Firmware=AE01+AE02+AE03

7.4. Parameters
The following parameters are available and programmable:

7.4.1. UP – User settings

Par.	Description	Values	Standard
UP01	Set-point pressure (bar)	1,8÷4,7 (META) 1,8÷5 (META SMALL)	3,5
UP02	Restart fall pressure set-up (bar)	0,5÷3,4 (META) 0,5÷3,7 (META SMALL)	1
UP03	Select one of the two dry-run modes available	0,1	0

7.4.2. AP – Advanced settings

Par.	Description	Values	Standard
AP01	Pump suction pressure (bar)	-0.6÷3	0
AP02	Reset to factory set-up	nO, yES	nO
AP03	Low Power operating Time Threshold	0÷240 (minutes)	0
AP04	Safe-start mode activation time	1÷30 (minutes)	0
AP05	System dynamics	0 Standard 1 Slow 2 Fast	0
AP06	Pressure drop allowed to consider all taps closed (bar)	0,01÷0,5	0,30
AP07	Adjusting the switch off attempt	5÷30 (META) 3÷52 (META SMALL)	18 (META) 12 (META SMALL)

7.4.3. GP – Booster sets settings

Par.	Description	Values	Standard
GP01	Mode	0 = single pump 1 = booster set with random starts	0

7.4.4. Booster set with random starts
To activate the mode booster set with random starts (which consists of the single pump behavior with the addition of a random delay both when the pump is turned on and off) follow the procedure.
1. Operation to be performed for each pump:
1.1 Turn on the pump and set it to STOP
1.2 Access the GP menu
1.3 Set GP01=1
The settings of the stop pressure and restart pressure remain enabled by parameters UP01 and UP02 as for normal single pump mode.
For correct booster set mode operation UP01 must be the same for both pumps, also UP02 must be the same for both pumps.

Booster set mode provides a random delay in switching on (0-5s) and a random delay with respect to the timing of the switch-off attempt (0-10s).
If using booster set mode, check the Mèta booster set instruction manual available on the website www.calpeda.com

7.5. Operating modes
The operating mode allows you to keep the system pressure constant at a setpoint value adjustable with the UP01 parameter. The restart pressure can be calculated by subtracting UP01 – UP02, the latter defined as pressure hysteresis. The product is equipped with a membrane that works as an expansion vessel.
The AP06 parameter is the pressure drop at which all taps are considered closed and so the pump is switched off.
The AP07 parameter allows you to adjust the switch off attempt.

7.5.1. Warning for high number of starts/hour
The TANK symbol will light up, due to a warning for a high number of starts and stops, if the pump achieves at least 20 starts in a short time (cycle time less than 5 seconds).
Press (enter) to reset the warning.
If the pump starts more than 150 times in 1 hour, Er05 will be displayed.

7.5.2. Dry-run settings management
In case of pump not primed and without water inside the pump casing:
UP03=0 (default)
In normal operating conditions, i.e. after the first start (15s), the warning Er01 is displayed so the pump will try to start again every 10 minutes for 5 seconds for maximum 5 times.
In the case that all these attempts fail, Er01 is kept displayed until the error is reset or the pump is switched off and back on again.
UP03=1
Alternative management, i.e. after the first attempt (15s), Er01 is displayed and the pump will try to start again every 10 minutes for 5 seconds, after that the pump will try to start again every 24h for 5s (there is no limit of attempts in this case). However, it is still possible to manually reset or restart the pump.
Obviously, manual reset is possible even by switching the pump off and back on.
In case of pump not primed with water inside the pump casing.
The first priming attempt lasts 120s and the next ones last for 30s for maximum 5 times.
If UP03=1 the attempts continue every 24h lasting 30s.

7.5.3. Forced start
To avoid any mechanical blocks, if the pump is on stand-by for more than 24 hours, the pump starts running for a minimum time of 5 seconds, and then until the stop pressure UP01 has been reached. A forced start does not take place if the pump has been manually turned OFF.

7.5.4. Forced stop
By means of the parameter AP03 it is possible to set a timer that forces the pump to stop if it works in lower power consumption conditions. In this way it is possible to prevent the pump from not stopping when there is no water demand from the final users.
AP03 is disabled by default but values from 0 to 240 minutes can be entered.

7.5.5. Enabling safe-start
The safe-start function can be enabled. This function prevents pressure peaks in the pipework The Safe-start function is triggered whenever the power-supply is cut off.
To enable this function, it is necessary to set the parameter AP04 with a value other than zero (default).
At every interruption of the voltage supply, when the voltage supply is restored, the pressure value will reach 70% of the set-point value (UP01) for a time defined by the parameter AP04. After that time the pressure reaches the set-point value as in normal mode.

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7.5.6. Operation with external tank
We recommend installing an external tank of maximum 8 litres when:
- the pump works for prolonged periods at low flow rates (2 litres / min or less), see paragraph. 8.6.
- Er05 or the TANK symbol appears

For systems with external membrane tank it is recommended to set AP05 = 1.
If pressure fluctuations are detected in the system (intermittent operation) it is necessary to set AP05 = 1.

7.6. PASSWORD entry
To enter a menu with password, four numbers appear on the display, the number to enter is blinking.
By pushing buttons (plus) or (minus) you can change the blinking value. If you confirm with (enter) the next number starts blinking.
If the password is correct you can enter the MENU, if the password is incorrect the first number will start blinking again.
To exit the program, push (menu) until you arrive on the parameter page, when you exit programming mode, the icon disappears.

password 1959

8. START-UP AND OPERATION

8.1. Preliminary checks before start-up
Do not start-up the device in case of damaged parts.

8.2. Parameters to be set at the start-up
The electric pump is already set with all the operating parameters, therefore it is not necessary to modify any parameters for operation.
ATTENTION: at the first start-up check that with all the taps closed the system stops. If the pump does not stop change the stop pressure (UP01) according to the system needs, check that there are no suction leaks and check that there is no air inside the pipes.

8.3. Suction pressure set-up
The system allows to set the pump suction pressure. To set the pump suction pressure, parameter AP01 must be changed.
For correct operation, it is necessary to set a suitable suction pressure value (negative if operating with suction lift, positive if operating under positive suction head).
ATTENTION: once the parameter AP01 has been modified it is necessary to modify the parameters UP01 and UP02 so that they are suitable for the application and guarantee the correct start and stop of the system (during programming the product will suggest the values of the first attempt).
ATTENTION: the maximum values that can be set in parameter AP01 are limited in order to never exceed the maximum allowable pressure of the product.

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8.4. First start-up

ATTENTION: never run the pump dry. Start the pump after filling it completely with liquid and after adjusting the membrane pressure (chap. 8.6).
When the pump is located above the water level (suction lift operation chap. 14 fig. 2) or with a positive suction head which is too low (less than 1 m) to open the non-return valve, fill the pump through the priming hole (chap. 14 fig. 4).
ATTENTION: the pump is equipped with a non-return valve built into the pump suction, in order to fill the suction pipe it is necessary to prepare a filling system on the suction pipe (chap.14 fig.4).
When the liquid level on the suction side is above the pump (inflow under positive suction head chap. 14 fig. 1), fill the pump by opening the suction gate valve slowly and completely, keeping the delivery gate valve open to release the air.
Before starting, check that the shaft turns by hand. For this purpose use the screwdriver notch on the shaft end on the ventilation side.

8.5. Self-priming

(Capability to clear the air in the suction pipe when starting with **the pump located above the water level**).
Conditions for self-priming:
- suction pipe with connections perfectly airtight and properly immersed in the water to be lifted;
- allow 0,6 m minimum of straight vertical pipe above the discharge port, before a non-return valve or a bend chap. 14 fig. 4.
- **pump casing completely filled with clean cold water berfore start-up.**

The pump is not self-priming with liquids containing oil, alcohol or foaming substances.
The integrated check valve prevents reverse siphoning through the pump when the pump is stopped and retains water in the pump for the next start-up.

ATTENTION: avoid prolonged operation with the pump not primed, without water delivery from the completely opened outlet. If the pump does not prime in 5 minutes: stop the motor, remove the filler cap and add more water.

If necessary, repeat the priming operation after the pump has been first emptied and then completely filled with clean cold water.

ATTENTION: When self-priming for the first time, once the pump has been primed, it may be necessary to stop the pump, wait a few seconds and then restart it with all taps opened, in order to eliminate the air inside the pump casing completely.

During the self-priming time, if the pump does not prime within 2 minutes (5 minutes for META SMALL), Er07

“not primed” appears. Press the enter button for the reset and the start button to restart the pump.

8.6. Vessel pressure

Once the new re-start pressure is entered (parameter UP01-UP02), the membrane pre-charge pressure must be changed to 0,5 bar lower than the re-start pressure (i.e. 2,9 bar re-start pressure, membrane at 2.4 bar) par. 14 chap. 6.
ATTENTION: Do not pre-inflate the tank membrane over 3,5 bar; if a higher pressure is required, install an external tank.

If the pump works for long periods of time with a flow rate of 2 litres/min or lower it is necessary to install a tank of maximum 8 litres.

8.7. Gate valve adjustment

With the gate valve completely open or with an outlet pressure lower than the minimum pressure shown on the nameplate, the pump may be noisy. To reduce noise adjust the delivery gate valve.

8.8. Abnormal operation

Never run the pump for more than five minutes with a closed gate valve.

Prolonged operation without a change of water in the pump causes dangerous increases of temperature and pressure.
Prolonged operation with a closed delivery port causes breakage or damage to parts of the pump.
When the water is overheated due to prolonged operation with a closed port, stop the pump before opening the gate valve.
Do not touch the fluid when its temperature is higher than 60 °C.
Do not touch the pump when the surface temperature is higher than 80 °C.
Wait until the water has cooled inside the pump before starting again or opening the draining and filling plugs.

8.9. SWITCH-OFF

The appliance must be switched off every time there are faults. (see troubleshooting).

The product is designed for continuous operation, the switch off is performed by disconnecting the power supply by means of the dedicated disconnecting devices. (see paragraph “6.5 Electrical connection”).

9. MAINTENANCE

Before any operations it is necessary to disconnect the power supply.
If required ask an electrician or an expert technician.

All maintenance operations, cleaning or repairs performed with the electrical system connected could cause serious injuries to people.

If the power cable is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

In case of extraordinary maintenance, or maintenance operations that require removing parts, the operator must be a qualified technician able to read diagrams and drawings.
It is advisable to keep a record of all maintenance operations performed.

During maintenance, be very careful not to allow foreign bodies to enter the circuit, even if very small, as the safety of the device could be compromised.

It is forbidden to perform any operations using your bare hands. Use water-resistant, anti-cut gloves to disassemble and clean the filter or in other particular cases.

During maintenance operations external personnel is not allowed.

Maintenance operations that are not described in this manual must be performed only by specialised personnel authorised by Calpeda S.p.A.
For further technical information regarding the use or the maintenance of the device, contact Calpeda S.p.A.

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9.1. Routine maintenance

Before all maintenance operations disconnect the power supply and make sure that the device cannot be accidentally connected.
In the case of water containing chloride (chlorine, sea water), the risk of corrosion increases in stagnant water conditions (also with an increase in temperature and decrease in pH value). In these cases, **if the pump remains inactive for long periods, it must be emptied completely and, preferably, dried.**
If possible, as in the case of **temporary operation with dirty liquids**, run the pump briefly with clean water to remove deposits.

When the pump remains inactive it must be emptied completely if there is a risk of freezing (chap.14 **fig. 5).**
Before restarting the pump, check that the shaft is not jammed and fill the pump casing completely with liquid.

9.2. Vessel maintenance

Periodically check the pre-charge pressure of the membrane inside the pump (chap. 14 fig. 6)

9.3. Dismantling the system

Close the suction and delivery gate valves and drain the pump casing before dismantling the pump.

9.4. Dismantling the pump

Close the suction and delivery gate valves and drain the pump casing before dismantling the pump (chap. 14 fig. 5).

10. DISPOSAL

European Directive 2012/19/EU (WEEE)

The final disposal of the device must be entrusted to a company specialised in the disposal of scrap metal, so that they can carefully define how to proceed.
For disposal, comply with the laws in force in the Country where the device is dismantled, as well as the international laws for the protection of the environment

11. SPARE PARTS

11.1. How to order spare parts

When ordering spare parts, please quote their designation, position number in the cross section drawing and rated data from the pump name plate (type, date and serial number).
The spare parts request can be sent to CALPEDA S.p.A. by phone or email.

11.2. DESIGNATION OF PARTS

Nr.	Designation
14.00	Pump casing
14.04	Plug
14.06	O-ring
14.12	Plug
14.16	O-ring
14.20	O-ring
14.24	Screw
14.47	O-ring
14.64	Valve, set
14.66	Retaining ring
16.00	Suction casing
16.02	Suction casing adapter
16.14	Plunger
16.15	Spring
16.16	O-ring
16.17	Valve
17.00	Membrane
17.04	Valve casing
17.06	Nut
17.08	Valve casing plug
17.10	Tank cover
17.20	Membrane cap
22.12	O-ring
22.16	O-ring
25.01	First stage casing
25.02	Stage casing (complete)
25.05	Last stage casing
25.07	Last stage casing adapter
28.00	Impeller
28.04	Impeller nut
28.08	Washer
34.00	Casing cover
36.00	Mechanical seal
36.51	Retaining ring, split
36.52	Shoulder ring
36.54	Spacer sleeve
46.00	Deflector
64.13	Spacer sleeve
64.15	Spacer sleeve
70.00	Lantern bracket
73.00	Ball bearing
76.00	Motor casing with winding
76.06	Nut
76.16	Support
78.00	Shaft with rotor packet
81.00	Ball bearing
82.00	Motor end shield
82.02	Screw
82.04	Compensating spring
82.08	Screw
88.00	Motor fan
90.00	Fan cover
90.04	Screw
92.00	Tie-bolt
96.02	Cable with plug
98.00	Terminal box cover
98.04	Screw
98.08	Gasket
98.20	Screw
98.51	Transducer
98.52	Signals cable
98.54	Display cable
98.55	Terminal box cover / board
98.56	Transducer stop fork
98.57	Transducer connection fitting
98.58	Transducer connection o-ring
98.60	Control board + Input signal board
98.63	Power board
98.64	Control card / input / power signals
98.70	Screw
98.71	Screw
98.72	Shoulder washer
98.74	Thermal pad
98.75	Thermal pad

12. ALARMS

Error reset can be automatic or manual, depending on the error that occurs. Manual reset is carried out using the enter button and then start to restart the pump.

EN

Code	Description	Reset ERR	Causes
Er01	Blockage due to no water. No water in the suction tank.	MAN	No water in the suction tank. The unit stops and then restarts automatically. An attempt is made every 10 minutes for a total of 5 attempts
Er02	Faulty pressure sensor – Max. pressure exceeded	MAN	Faulty pressure sensor
Er03	Blockage due to low supply voltage	AUT	Supply voltage lower than 185V. - The system restarts automatically when the supply voltage is higher than 190V.
Er04	Blockage due to high supply voltage	AUT	Supply voltage higher than 255V. - The system restarts automatically when the supply voltage is lower than 250V.
Er05	Blockage due to excessive number of starts	MAN	The system has started more than 150 times in 1 hour. An attempt to restart after 5 min for a total of 6 attempts.
Er06	Blockage due to overcurrent in the electro pump motor	MAN	The system tries to restart automatically and makes one attempt every 10 seconds for a total of 3 attempts.
Er07	Pump not fully primed	MAN	The system tries to restart automatically and makes one attempt every 10 minutes for a total of 5 attempts
Er08	Blockage due to internal overheating	AUT	Overtemperature detected on the board. The error is restored when the temperature drops.
Er09	Blockage due to overpressure	MAN	Pressure higher than 8,3 bar.
Er10	Thermal-protector intervention detected	MAN	Motor overheating
Er11	Blockage due to presence of air	MAN	Presence of air inside the pump casing.
From Er26 to Er31	Internal hardware error	MAN	

In case of internal hardware error contact an authorised service centre.

13. WARNING

The Warning remains active until the cause is no longer present. In the Warning condition, the pump can still operate normally but it may be near the limits of the Error condition.

Code	Symbol	Causes	Possible remedies
W1		20 restarts with stand-by time less than 5s	Check the membrane pressure, if necessary install a tank of maximum 8 litres
W2		The pump is not properly primed or there is air inside the pump casing. The pump restarts whenever the system pressure is under the restart pressure threshold.	Make sure that the pump casing is full of liquid and that all the air has been expelled.
W3		20 restarts with pump RUN time less than 30s	Check if there are small leaks in the system
W4		The pump is running on the left part of the performance curve	
W5		The pump is running on the right part of the performance curve	

14. TROUBLESHOOTING

WARNING: Turn off the power supply before performing any operations.
Do not allow the pump or motor to run when dry even for a short period.
Strictly follow the user instructions and if necessary contact an authorised service centre.

EN

PROBLEM	PROBABLE CAUSES	POSSIBLE REMEDIES
1) The motor does not start	1a) Unsuitable power supply 1b) Shaft blocked 1c) If the above causes have already been checked, the motor may be malfunctioning	1a) Check that the mains frequency and voltage correspond to the electrical characteristics shown on the plate 1b) Remove the cause of blockage as indicated in the “Blocked pump” instruction booklet 1c) Repair or replace the motor by contacting an authorised service centre
2) Pump blocked	2a) Prolonged periods of inactivity with formation of rust inside the pump 2b) Presence of solid bodies in the pump impeller 2c) Bearings siezed	2a) Unblock the pump by using a screw driver to turn the relevant notch on the back of the shaft (remember to turn off the electricity supply first) or contact an authorised service centre 2b) If possible, dismantle the pump casing and remove any solid foreign bodies inside the impeller, if necessary contact an authorised service centre 2c) If the bearings are damaged replace them or if necessary contact an authorised service centre
3) The pump works but no water comes out	3a) Possible infiltration of air from suction tube connections, drain plugs or filling of pump or from the gaskets of the suction pipe 3b) Foot valve blocked or suction pipe not fully immersed in liquid 3c) Suction filter blocked 3d) Non-return valve blocked	3a) Check which part is not tight and seal the connection adequately 3b) Clean or replace the bottom valve and use a suction pipe suitable for the application 3c) Clean the filter, if necessary, replace it . See point 2a) also. 3d) Verify that the integrated non-return valve is working properly.
4) The pump does not stop	4a) Non-return valve broken, blocked or clogged with solid parts. 4b) Stop pressure (parameter UP01) too high. 4c) Insufficient pump performance 4d) Incorrect membrane pressure, empty or broken membrane	4a) Check the operation of the integrated non-return valve and remove the solid parts present in the valve. 4b) Check the value of parameter UP01 and if necessary reduce it. 4c) Contact an authorised service centre. 4d) Check the membrane pressure, if necessary install a tank of maximum 8 litres.
5) intermittent operation	5) Resonances between pump and hydraulic system control dynamics	5) Set AP05 = 1
6) Insufficient flow	6a) Pipes and accessories with diameter too small causing excessive loss of head 6b) Presence of deposits or solid bodies in the internal passages of the impeller 6c) Impeller deteriorated 6d) Worn impeller and pump casing 6e) Excessive viscosity of the liquid pumped (if other than water) 6f) Suction head excessive in relation to the suction capacity of the pump 6g) Suction pipe too long	6a) Use pipes and accessories suitable for the specific application 6b) Clean the impeller and install a suction filter to prevent other foreign bodies from entering 6c) Replace the impeller, if necessary, contact an authorised service centre 6d) Replace the impeller and the pump casing 6e) The pump is unsuitable 6f) Try to close the delivery gate valve partially and/or reduce the difference in level of the pump and the liquid being sucked 6g) Bring the pump closer to the suction tank so as to use a shorter pipe. If necessary use a pipe of a wider diameter
7) Noise and vibrations from the pump	7a) Rotating part unbalanced 7b) Worn bearings 7c) Pump and pipes not firmly attached 7d) Flow too strong for the diameter of the delivery pipe 7e) Operation in cavitation 7f) Unbalanced power supply	7a) Check that no solid bodies are obstructing the impeller 7b) Replace the bearings 7c) Anchor the delivery and suction piping as needed 7d) Use bigger diameters or reduce the pump flow 7e) Reduce the flow by adjusting the delivery gate valve and/or using pipes with a bigger internal diameter. See point 6g) too 7f) Check that the mains voltage is suitable
8) Leakage from the mechanical seal	8a) The mechanical seal has operated when dry or has stuck 8b) Mechanical seal scored by presence of abrasive parts in the liquid pumped 8c) Mechanical seal unsuitable for the type of application 8d) Slight initial drip during filling or on first start-up	In cases 8a), 8b) and 8c), replace the seal, if necessary contact an authorised service centre 8a) Make sure that the pump casing (and the suction pipe if the pump is not self-priming) are full of liquid and that all the air has been expelled. See point 6e) too. 8b) Install a suction filter and use a seal suitable for the characteristics of the liquid being pumped. 8c) Choose a seal with characteristics suitable for the specific application 8d) Wait for the seal to adjust to the rotation of the shaft. If the problem persists, see points 8a), 8b) or 8c) or contact an authorised service centre.

Changes reserved.

14. Esempi di installazione
Installation examples
Einbaubeispiele
Exemples d'installation
Ejemplos de instalaciones
Installationsexempel
Installatievoorbeelden
Παραδείγματα εγκαταστάσεων
Примеры установки
安装示意图

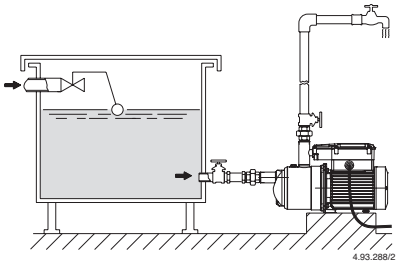

Fig. 1
Funzionamento sotto battente
Positive suction head operation
Zulaufbetrieb
Fonctionnement en charge
Funcionamiento bajo carga
Tillrinning sugsidan
Toeloopsituatie
Θέση λειτουργίας με θετική αναρρόφηση
Работа под гидравлическим напором
正吸上水头的操作

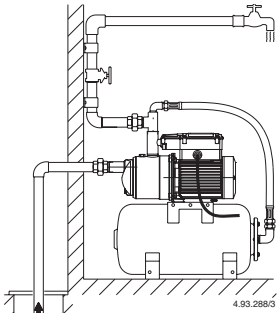

Fig. 2
Funzionamento in aspirazione
Suction lift operation
Saugbetrieb
Fonctionnement en aspiration
Funcionamiento en aspiración
Sugande funktion
Zuigsituatie
Θέση λειτουργίας με κάθετη αναρρόφηση
Работа выше уровня жидкости
负吸水头工作

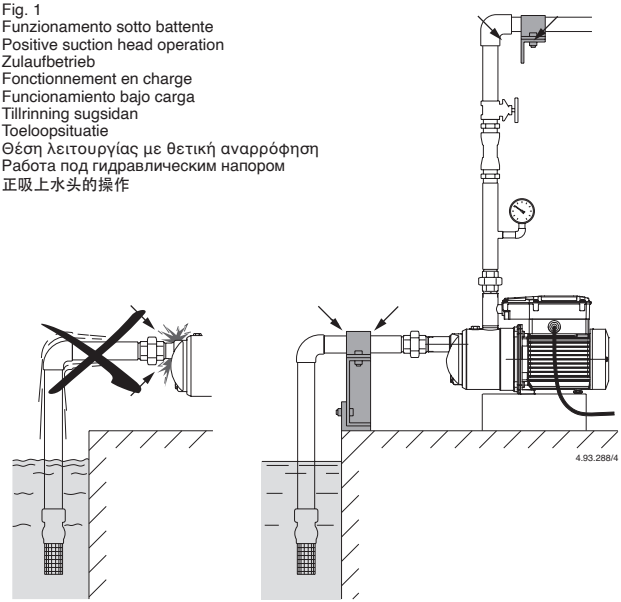

Fig. 3
Sostegni ed ancoraggi delle tubazioni
Supports and clamps for pipelines
Stützen und Verankerungen der Rohrleitungen
Soutien et ancrage des tuyaux
Sostén y anclaje de la instalación
Konsoll samt klämmor för rör
Steunen voor leidingen
Υποστήριξη και σφίξιμο σωληνώσεων
Опоры и крепления труб
管路的支撑及夹具

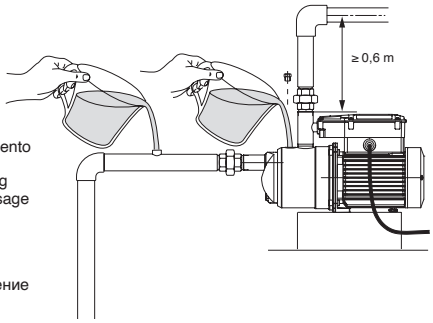

Fig. 4
Riempimento
Filling
Auffüllung
Remplissage
Llenado
Fyllning
Vullen
Γέμισμα
Наполнение
灌泵

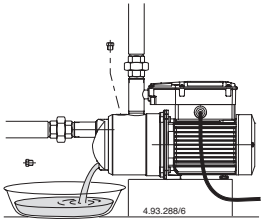

Fig. 5
Scarico
Draining
Entleerung
Vidange
Vaciado
Avtappning
Aftappen
Αποστράγγιση
Слив
排空

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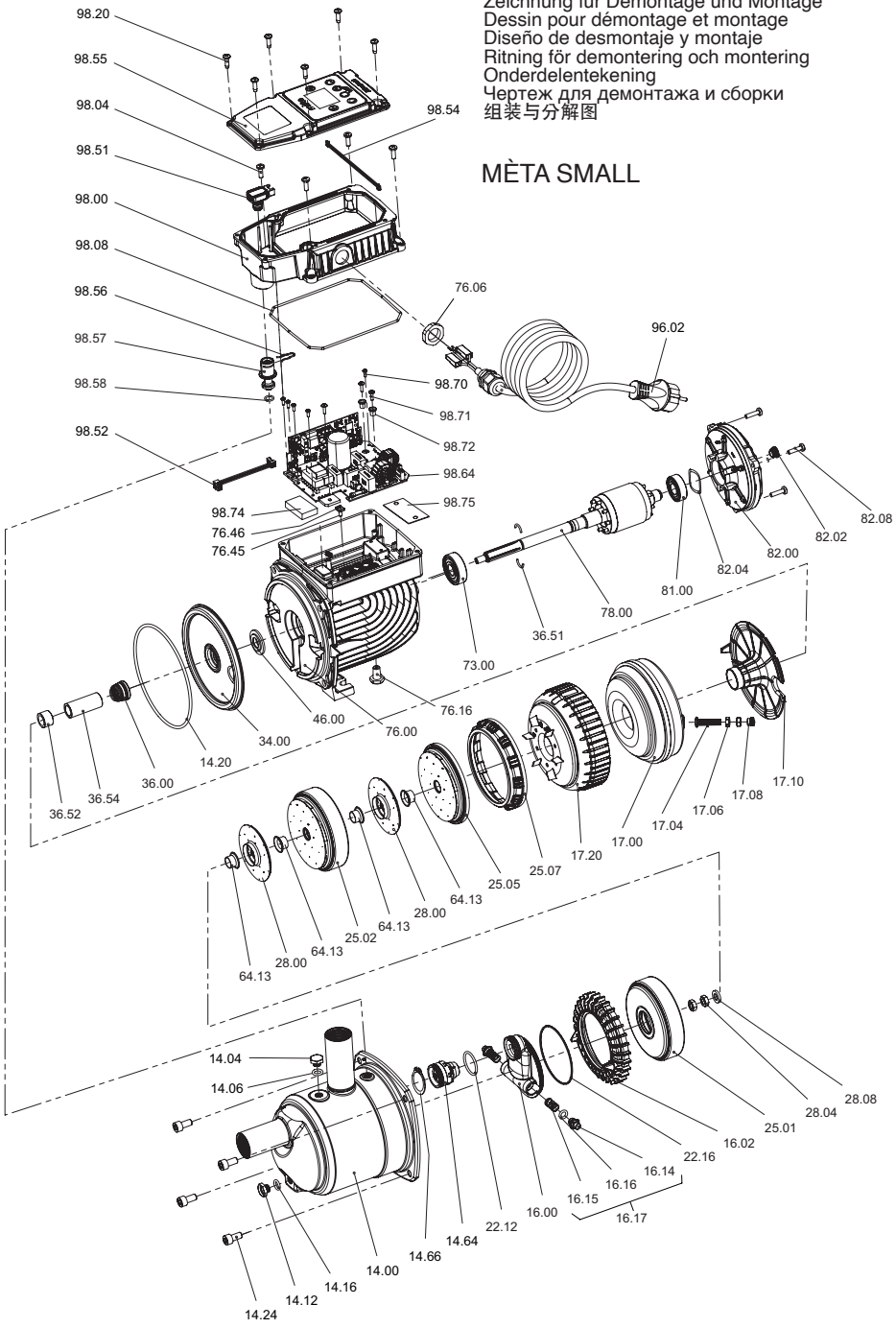
Fig. 6
Pressione serbatoio
Vessel pressure
Behälter Vordruck
Pression du réservoir
Presión del acumulador
Hydrotubens tryck
Давление в баке
容器压力

14.1. Disegno per lo smontaggio ed il rimontaggio
Drawing for dismantling and assembly
Zeichnung für Demontage und Montage
Dessin pour démontage et montage
Diseño de desmontaje y montaje
Ritning för demontering och montering
Onderdelentekening
Чертеж для демонтажа и сборки
组装与分解图

MÈTA SMALL



14.1. Disegno per lo smontaggio ed il rimontaggio
Drawing for dismantling and assembly
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Dessin pour démontage et montage
Dibujo para desmontaje y montaje
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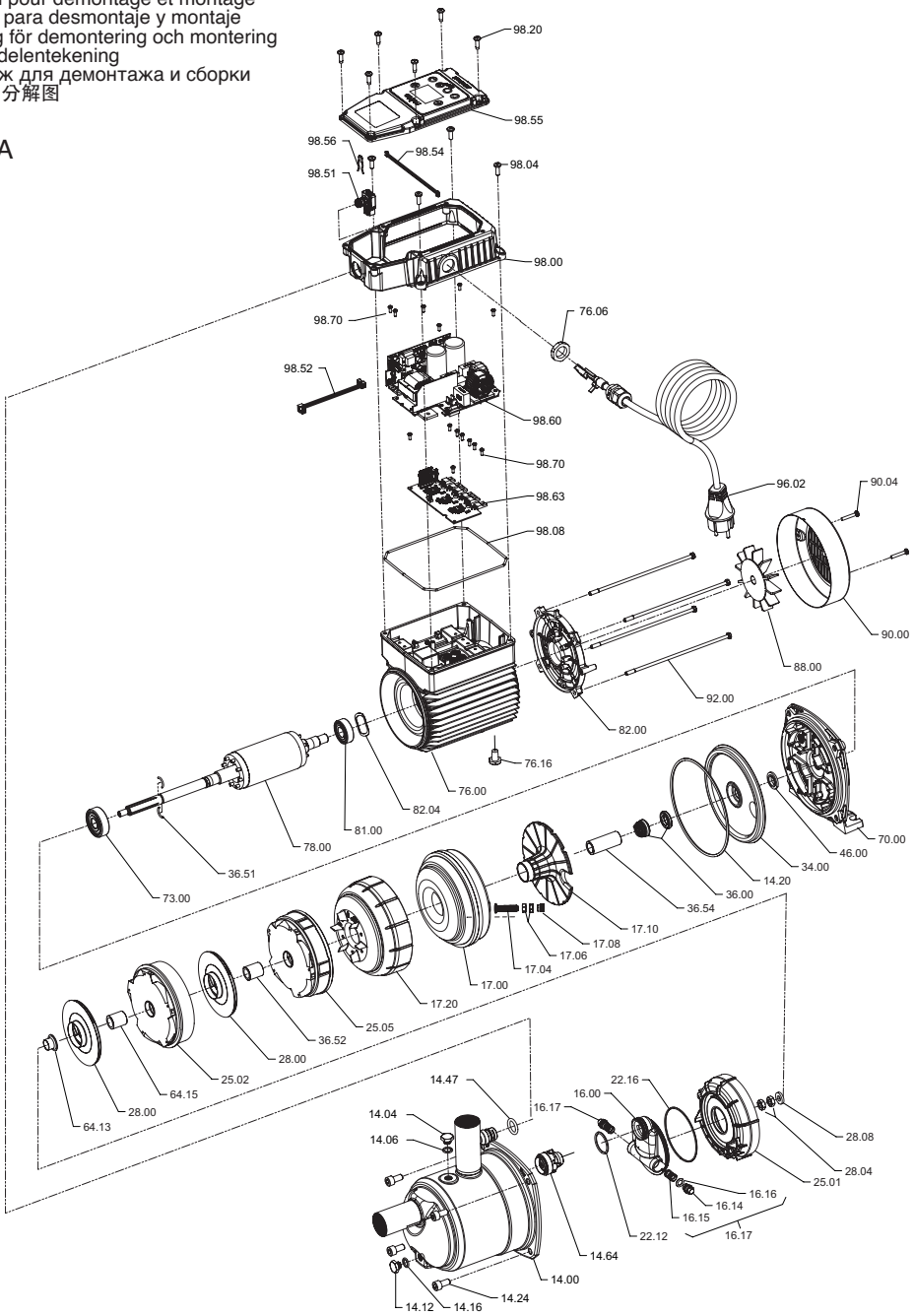
Onderdelentekening
Чертеж для демонтажа и сборки
组装与分解图

MÈTA



14.2. Sezione minima dei conduttori
Minimum cross-sectional area of conductors
Kleinster Querschnitt der Leiter
Área mín. de sección transversal de los conductores
Минимальное сечение проводников
导体最小截面积

Tab. 1 TAB 1IEC 60335-1

Corrente nominale dell'apparecchio Rated current of appliance Bemessungsstrom des Gerätes Courant nominal de l'appareil Corriente nominal del aparato Enhetens nominella ström Dimensiestroom van apparat Номинальный ток прибора 设备额定运行电流 A	Sezione nominale Nominal cross-sectional area Nennquerschnitt Section nominale Sección nominal Nominellt tvärsnittsområde Nominale dwarsdoorsnede Номинальное сечение 导体额定截面积 mm^2
>3 ÷ ≤6	0,75
>6 ÷ ≤10	1,0
>10 ÷ ≤16	1,5
>16 ÷ ≤25	2,5
>25 ÷ ≤32	4
>32 ÷ ≤40	6
>40 ÷ ≤63	10

UK DECLARATION OF CONFORMITY

Manufacturer's Name: Calpeda S.P.A.

Address: Via Roggia di Mezzo 39, 36050 Montorso Vicentino (VI) Italy

We Calpeda S.P.A. declare that:
the undersigned company certifies under its sole responsibility that the pumps specified below satisfy the following requirements of UK regulations.

Pump Models : MÈTA, MÈTA SMALL

UK Regulations:
Supply of Machinery (Safety) Regulations 2008
Electrical Equipment (Safety) Regulations 2016
Electromagnetic Compatibility Regulations 2016
The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

Applicable designated standards:
BS ISO 12100:2010; BS 809:1998+A1:2009
BS 60335-1:2012/A2:2019; BS 60335-2-41:2003/A2:2010
BS 55014-1:2017; BS 55014-2:2015; BS 61000-3-2:2014; BS 61000-3-3:2013/A1:2019

Person authorised to compile the technical file:
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Via Roggia di Mezzo 39, 36050 Montorso Vicentino (VI) Italy

Montorso Vicentino - Italy – 02 February 2023

CALPEDA S.p.A.
Amministratore Delegato
Federico De Angelis

IT **DICHIARAZIONE DI CONFORMITÀ**

Noi CALPEDA S.p.A. dichiariamo sotto la nostra esclusiva responsabilità che le Pompe MÈTA, MÈTA SMALL, tipo e numero di serie riportati in targa, sono conformi a quanto prescritto dalle Direttive 2006/42/CE, 2011/65/EU, 2014/30/EU, 2014/35/EU e dalle relative norme armonizzate.

GB **DECLARATION OF CONFORMITY**

We CALPEDA S.p.A. declare that our Pumps MÈTA, MÈTA SMALL, with pump type and serial number as shown on the name plate, are constructed in accordance with Directives 2006/42/EC, 2011/65/EU, 2014/30/EU, 2014/35/EU and assume full responsability for conformity with the standards laid down therein.

D **KONFORMITÄTSERKLÄRUNG**

Wir, das Unternehmen CALPEDA S.p.A., erklären hiermit verbindlich, daß die Pumpen MÈTA, MÈTA SMALL, Typbezeichnung und Fabrik-Nr. nach Leistungsschild den EG-Vorschriften 2006/42/EG, 2011/65/EU, 2014/30/EU, 2014/35/EU entsprechen.

F **DECLARATION DE CONFORMITE**

Nous, CALPEDA S.p.A., déclarons que les Pompes MÈTA, MÈTA SMALL, modèle et numero de série marqués sur la plaque signalétique sont conformes aux Directives 2006/42/CE, 2011/65/EU, 2014/30/EU, 2014/35/EU.

E **DECLARACION DE CONFORMIDAD**

En CALPEDA S.p.A. declaramos bajo nuestra exclusiva responsabilidad que las Bombas MÈTA, MÈTA SMALL, modelo y numero de serie marcados en la placa de caracteristicas son conformes a las disposiciones de las Directivas 2006/42/CE, 2011/65/EU, 2014/30/EU, 2014/35/EU.

DK **OVERENSSTEMMELSESERKLÆRING**

Vi CALPEDA S.p.A. erklærer hermed at vore pumper MÈTA, MÈTA SMALL, pumpe type og serie nummer vist på typeskiltet er fremstillet i overensstemmelse med bestemmelserne i Direktiv 2006/42/EC, 2011/65/EU, 2014/30/EU, 2014/35/EU og er i overensstemmelse med de heri indeholdte standarder.

NL **CONFORMITEITSVERKLARING**

Wij CALPEDA S.p.A. verklaren hiermede dat onze pompen MÈTA, MÈTA SMALL, pomptype en serienummer zoals vermeld op de typeplaat aan de EG-voorschriften 2006/42/EU, 2011/65/EU, 2014/30/EU, 2014/35/EU voldoen.

SF **VAKUUTUS**

Me CALPEDA S.p.A. vakuutamme että pumppumme MÈTA, MÈTA SMALL, malli ja valmistusnumero tyyppikilvcstä, ovat valmistettu 2006/42/EU, 2011/65/EU, 2014/30/EU, 2014/35/EU direktiivien mukaisesti ja CALPEDA ottaa täyden vastuun siitä, että tuotteet vastaavat näitä standardeja.

S **EU NORM CERTIFIKAT**

CALPEDA S.p.A. intygar att pumpar MÈTA, MÈTA SMALL, pumptyp och serienummer, visade på namnplåten är konstruerade enligt direktiv 2006/42/EC, 2011/65/EU, 2014/30/EU, 2014/35/EU. Calpeda åtar sig fullt ansvar för överensstämmelse med standard som fastställts i dessa avtal.

GR **ΔΗΛΩΣΗ ΣΥΜΦΩΝΙΑΣ**

Εμείς ως CALPEDA S.p.A. δηλώνουμε ότι οι αντλίες μας αυτές MÈTA, MÈTA SMALL, με τύπο και αριθμό σειράς κατασκευής όπου αναγράφετε στην πινακίδα της αντλίας, κατασκευάζονται σύμφωνα με τις οδηγίες 2006/42/ΕΟΚ, 2011/65/EU, 2014/30/EU, 2014/35/EU και αναλαμβάνουμε πλήρη υπευθυνότητα για συμφωνία (συμμόρφωση), με τα στάνταρς των προδιαγραφών αυτών.

TR **UYGUNLUK BEYANI**

Bizler CALPEDA S.p.A. firması olarak MÈTA, MÈTA SMALL, Pompalarımızın, 2006/42/EC, 2011/65/EU, 2014/30/EU, 2014/35/EU, direktiflerine uygun olarak imal edildiklerini beyan eder ve bu standartlara uygunlug˘una dair tüm sorumlulug˘u üstleniriz.

RU **ДЕКЛАРАЦИЯ СООТВЕТСТВИЯ**

Компания “Calpeda S.p.A.” заявляет с полной ответственностью, что насосы серий MÈTA, MÈTA SMALL, тип и серийный номер которых указывается на заводской табличке соответствуют требованиям нормативов 2006/42/CE, 2011/65/EU, 2014/30/EU, 2014/35/EU.

中文 声明

我们科沛达泵业有限公司声明我们制造的 MÈTA, MÈTA SMALL, (在标牌上的泵型号和序列号)均符合以下标准的相应目录:2006/42/EC,2011/65/EU,2014/30/EU,2014/35/EU.本公司遵循其中的标准并承担相应的责任.

Montorso Vicentino, 02.2023

CALPEDA S.p.A.
Amministratore Delegato
Federico De Angelis

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