

Pompe multistadio verticali in-line
Vertical multi-stage in-line pumps
Vertikale, mehrstufige Inline-Pumpen
Pompes multicellulaires verticales in-line
Bombas multicelulares verticales in-line
Vertikal flerstegs in-line pump
Verticale meertraps in-line pompen
Κάθετης πολυβάθμιας αντλίας in-line
Многорядные вертикальные многоступенчатые насосы
立式多级管道泵

MXV-B, MXV(L), MXV(L)4

ISTRUZIONI ORIGINALI PER L'USO
OPERATING INSTRUCTIONS
BETRIEBSANLEITUNG
INSTRUCTIONS POUR L'UTILISATION
INSTRUCCIONES DE USO
DRIFT/INSTALLATIONSANVISNINGAR
BEDIENINGSVOORSCHRIFT
ΟΔΗΓΙΕΣ ΧΕΙΡΙΣΜΟΥ
Инструкции по эксплуатации
安装使用手册

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 **calpeda®**

SUMMARY

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1. GENERAL INFORMATION

Before using the product carefully read the information contained in this instruction manual, the manual 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 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, alterations or modifications made to the product or part of it, not authorized 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 6.8).
- The type of electrical protection to be installed (Chapter 6.8).


1.1. Symbols


To improve the understanding of the manual, below are indicated the symbols used with the related meaning.


 Information and warnings that must be observed, otherwise there is a risk that the machine could damage or compromise personnel safety.


 The failure to observe electrical information and warnings, could damage the machine or compromise personnel safety.


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


 Operations that could be performed by the final user. After carefully reading of the instructions, is responsible for maintenance under normal conditions. They are authorized to affect standard maintenance operations.

 Operations that must be performed by a qualified electrician. Specialized technician authorised to affect all electrical operations including maintenance. They are able to operate with in the presence of high voltages.

 Operations that must be done performed by a qualified technician. Specialized technician able to install the device, under normal conditions, working during "maintenance", and allowed to do electrical and mechanical interventions for maintenance. They must be capable of executing simple electrical and mechanical operations related to the maintenance of the device.

 Indicates that it is mandatory to use individual protection devices.

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

 Operations that must be done 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. Authorized operators

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

i It's forbidden, for the end user, carry out operations which must be done only by specialized 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.

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

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 authorization of the manufacturer.
- In case of technical interventions executed by a non-authorized personnel.
- In case of failing to carry out adequate maintenance.

1.5. Technical assistance

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

2. TECHNICAL DESCRIPTION

Vertical multi-stage pumps with suction and delivery connections of the same diameter and arranged along the same axis (in-line).

Corrosion-resistant bearing sleeves lubricated by the pumped liquid.

MXV: A pump with thrust bearing and sleeve coupling for use of any standard motor with IM V1 construction.

MXV-B: Vertical Multi-Stage Close Coupled Pumps.

2.1. Intended use

For clean liquids: non-explosive and non-flammable, non-hazardous for health or the environment, non-aggressive for pump materials, not containing abrasives, solid or fibrous particles.

With seal rings in EPDM the pump is not suitable for use with oil.

Liquid temperature from - 15 °C to + 110 °C.

2.2. Improper use

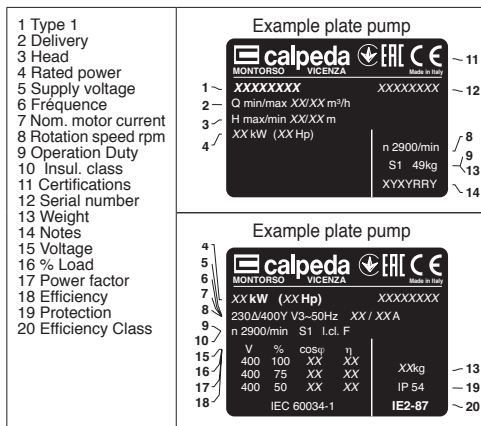
The device is designed and built only for the purpose described in paragraph 2.1.

! 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 responsible for failure or accident due to improper use.

2.3. Marking

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



GB

3. TECHNICAL FEATURES

3.1. Technical data

Dimensions and weight (see technical catalogue).

Nominal speed 1450/1750 rpm for MXV(L)4;
2900/3450 rpm for MXV(L), MXV-B.

Protection IP55 (IP 54 for MXV-B)

Supply voltage / Frequency

- up to 240V 1~ 50/60 Hz

- up to 480V 3~ 50/60 Hz

Check that the mains frequency and voltage correspond to the electrical characteristics shown on the indicator plate.

The electric data marked on the label are referred to the nominal power of the motor.

Rated motor power

MXV(B)(L) (2900 1/min)	up to kW:	0,75	2,2	4	7,5	22
MXV(L)4 (1450 1/min)	up to kW:	1,1	3			
Sound pressure	dB (A) max:	65	65	67	68	82
Starts/hour	max:	35	30	20	15	15

Maximum final pressure in the pump casing: 250 m (25 bar) for MXV(L) and MXV(L)4, 160 M (16 bar) for MXV-B.

3.2. Operating conditions

Installation in well ventilated location protected from the weather, with a maximum ambient temperature of 40 °C.

4. SAFETY

4.1. General provisions

! 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 specialized 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. The 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 name-plate and in these instructions.



Follow the routine maintenance schedules and the promptly replace damaged parts, this will allow the device to work in the best conditions. Use only original spare parts provided from Calpeda S.p.A or from an authorized distributor.



Don't 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 done only after disconnection from the supply.

4.2. Safety devices

The device has an external case that prevents any contact with internal parts.

4.3. Residual risks

The appliance, designed for use, when used in-line with the design and safety rules, doesn't have residual risks.

4.4. Information and Safety signals

For this kind of product there will not be any signals on the product.

4.5. Individual protection devices

During installation, starting and maintenance it is suggested to the authorized operators to consider the use of individual protection devices suitable for described activities.

During ordinary and extraordinary maintenance interventions, safety gloves are required.

Signal individual protection device
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 to stack excessive weights. Ensure that during the 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 technical catalogue dimensions and weights).

5.1. Handling

Handle with care, the packages must not receive impacts.

Avoid to impact onto the package materials that could damage the pump.

If the weight exceeds 25 Kg the package must be handled by two person at the same time.

Raise and transport the pump and pump-motor unit (without packaging) as indicated in fig. 1. Raise the pump-motor unit slowly (fig.1c), making sure it does not move from side to side in an uncontrolled way, to avoid the risk of imbalance and tipping up. For horizontal raising, brace the pump in a sling close to the centre of gravity.

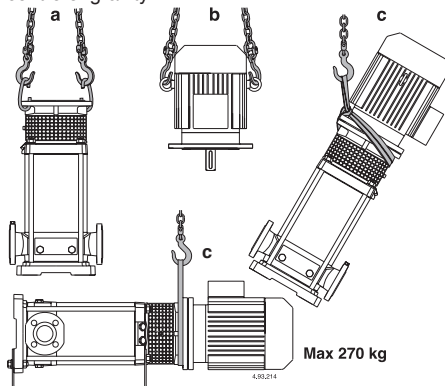


Fig.1 a Raising pump without the motor
b Raising motor without the pump
c Raising pump with motor

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 the right installation and in order to fulfill the device requirements (electrical supply, etc...). The place where the device will be installed must fulfill the requirements in the paragraph 3.2.

It's Absolutely forbidden to install the machine in an environment with potentially explosive atmosphere.

6.3. Unpacking

i Inspect the device in order to check any damages which may have occurred during transportation.

Package material, once removed, must be discarded/ recycled according to local laws of the destination country.

6.4. Installation

The **MXV-B, MXV** standard version pumps must be installed with the rotor axis in the vertical position and with the base under the pump.

The **MXV 50-16, 65-32 and 80-48** They can also be installed in the horizontal position, using the appropriate support feet, which are supplied on request (see section 6.6.).

Install the pump as close as possible to the suction

source (with consideration given to the NPSH value).
Provide space around the pump for motor ventilation, to allow for checking of shaft rotation, for filling and draining the pump and to allow for collection of the liquid to be removed (especially for draining liquids which are harmful or have to be removed at temperatures higher than 60 °C).

⚠ Make sure prolonged accidental leakage of liquid does not cause damage to persons or property.

Leakage may develop as a result of surge pressure or water hammer, erroneous operations (such as failing to close a plug or valve) or other functional disorders. Allow for the possibility of channeling away any leaked liquid or for an automatic drainage system against flooding.

Mount the pump on a flat horizontal surface (using a level gauge) such as a solid cement base or a rigid supporting structure in metal.

To ensure stability, insert, if necessary, small pieces of calibrated metal plate next to the 4 anchoring screws.

6.5. Connecting the motor (only MXV(L), MXV(L)4)

The MXV(L), MXV(L)4 pumps are designed for use with standard electric motors with (IEC 34-7) IM V1 construction form and dimensions and output ratings in accordance with IEC 72.

If a pump is supplied without the motor, check the rated power and rpm indicated on the name plate and technical data given in the data sheet.

ATTENTION: the motors must have two lifting points in diametrically opposite positions for vertical lifting with the shaft end downwards (fig.1 b)

Before installation clean the motor shaft extension, the key and contact surfaces of the flanges to remove any protective paint, dirt or oxydation.

Lubricate the motor shaft extension with a graphite-base, dripfree, anti-friction product.

Do not use oil as it can harm the mechanical seal below (see section 8.4.).

With the pump in the vertical position, insert the motor shaft in the coupling, aligning the key with the key slot and resting the motor flange on the lantern flange.

Turn the motor, adjusting the position of the terminal box as required and aligning the holes on the flanges.

ATTENTION: the 4 flange screws (70.18) with nut must be uniformly tightened with alternated crossover tightening procedure in diametrically opposite positions (see section 9.1.).

Before and after tightening the screws (70.18), make sure the coupling with pump shaft and motor shaft can be freely turned by hand (remove and then replace the guard 32.30).

ATTENTION: for removing or replacing the motor see section 8.3.

6.6. Horizontal installation MXV(L) 50-65-80, MXV(L)4 50-65-80

6.6.1. Connection of support feet

For the mounting of the support feet all four nuts (61.04) on the tie-bolts (61.02) must be removed (see cross-section drawing in section 14.).

ATTENTION: do not loosen only the two nuts on the side of the upper cover to which the support foot is to be attached.

To remove the 4 nuts (61.04) the lantern bracket (32.00) must be removed. With the pump in the vertical position, carry out dismantling sequences 1 - 6 in section 9.

Remove the washers (61.03) and attach the support foot (61.30) on the side of the upper cover (34.02) in the appropriate position depending on the directional arrangement of the pump casing (14.00) suitable for the system: suction on the left and delivery on the right, or vice-versa (fig.2).

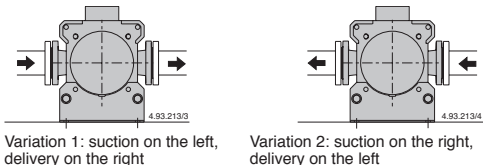


Fig.2 Orientation of the ports in a horizontally-fitted pump

Do not insert the two washers (61.03) on the support foot when the tie-bolts (61.02) do not protrude from the nuts (61.04).

The 4 nuts must be uniformly tightened with alternated crossover tightening procedure in diametrically opposite positions. Tightening torque as per section 9.1.

Mount the lantern bracket (32.00) with the coupling (64.22) and position the pump shaft as indicated in section 9.2.

Mount the motor as indicated in section 6.5, and orientate the terminal board with respect to the support foot (61.30) in the position most suitable for the system. After setting the pump in the horizontal position, fix the second support (61.30) to the base (61.00), with the screws (61.30), washers (61.34) and nuts (61.36), and check for accurate levelling of the installation with respect to the first foot.

6.7. Pipes

Provide a diameter assuring a liquid flow velocity not higher than 1.5 m/s for suction, and 3 m/s for delivery. The pipe diameters must never be smaller than the pump connection ports.

The arrows on the pump casing (14.00) indicate the inlet (suction) and outlet (delivery) ports.

Ensure the internal pipe surface is clean before connection.

Secure all pipes to their rests close to the pump and connect them so that they are not subjected to stress and do not transmit vibration or flexion strain to the pump (see fig.3).

Provide for the possibility of draining the pump without having to drain the entire system.

Install correctly any compensators for absorption of expansion or impeding noise transmission.

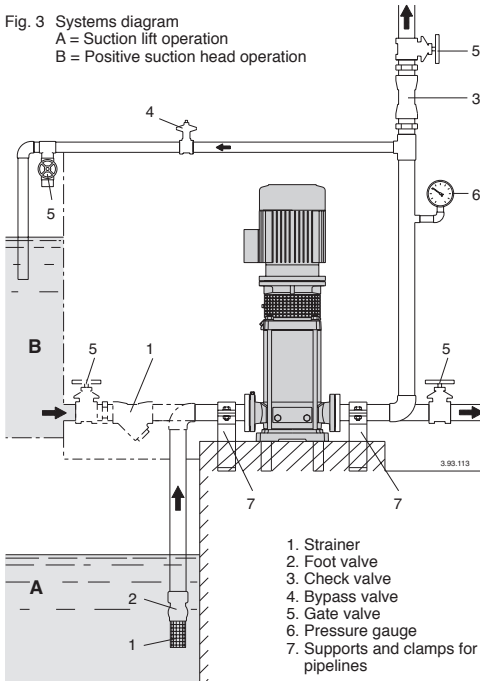
Make sure gaskets do not protrude inside the pipes for the pump types MXV-B, MXV(L) 25,32,40 and

MXV(L)4 25,32,40 screw the union couplings or the flanges into the **threaded ports** (ISO 228) by inserting in the joint a suitable sealing material.

Tighten the pipes or union couplings only to the extent sufficient to ensure a tight seal. Excessive torque may damage the pump.

With **flanged ports** make sure the gaskets do not protrude inside the pipes.

Fig. 3 Systems diagram
A = Suction lift operation
B = Positive suction head operation



6.7.1. Suction pipe

When a **pump is located above the water level** (suction lift operation, **fig. 3 A**), fit a foot valve with a strainer, which must always remain immersed.

The suction pipe must be perfectly airtight and be led upwards in order to avoid air pockets.

When the **liquid level on the suction side is above the pump** (inflow under positive suction head, **fig. 3 B**), fit a gate valve.

Follow local specifications if increasing network pressure.

Install a strainer on the suction side of the pump to prevent foreign particles from entering the pump.

6.7.2. Delivery pipe

Install a gate valve in the delivery pipe to regulate flow-rate, head and absorbed power.

Install a pressure gauge between the pump and the gate valve.

ATTENTION: install a check valve between the pump and the gate valve in order to avoid reverse flow after switching off the pump unit and to protect the pump from water hammering.

With servo-operated shut-off devices, provide an air vessel or other protection device against surge of pressure in the case of sudden changes of flow rate.

6.8. Electrical connection



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

Follow all safety standards.

The unit must be properly earthed (grounded).

Connect the earthing (grounding) conductor to the terminal with the ⊕ marking.

Compare the frequency and mains voltage with the name-plate data and connect the supply conductors to the terminals in accordance with the appropriate diagram inside the terminal box cover.



ATTENTION: never allow washers or other metal parts to fall into the internal cable opening between the terminal box and stator. If this occurs, dismantle the motor to recover the object which has fallen inside.



ATTENTION: with motor power rating ≥ 5.5 kW avoid direct starting. Provide a control panel with star-delta starting or an other starting device.

If the terminal box is provided with an inlet gland, use a flexible power supply cord of the H07 RN-Ftype with section of cable not less than (par. 16 TAB 1).

If the terminal box is provided with an inlet bushing, connect the power supply cord through a conduit.

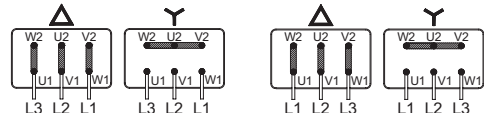
For use in swimming pools (not when persons are in the pool), garden ponds and similar places, a **residual current device** with I_{ΔN} not exceeding 30 mA must be installed in the supply circuit.

Install a **device for disconnection from the mains** (switch) with a contact separation of at least 3 mm in all poles.

With a three-phase motor install an overload protection device with curve D appropriate for the rated current of the pump.

Single-phase **MXV-BM**, are supplied with a capacitor connected to the terminals and (for 220-240 V - 50 Hz) with an incorporated thermal protector.

Electrical diagram (only for Calpeda motors)



MXV-B 25,32,40
MXV(L), MXV(L)4 25,32,40

MXV-B 50
MXV(L), MXV(L)4 50-65-80

Refer to any other instructions (if supplied) for use of the motor.



ATTENTION: When the pump is fed by a frequency converter, the minimum frequency should not fall below 25Hz and in any case the total head of the pump should never be lower than 3 m.

7. STARTUP AND OPERATION

7.1. Preliminary checks before start-up of the pump

Do not start-up the device in case of damaged parts. Make sure the coupling with the pump shaft turns freely when rotated by hand (see **section 6.5.**). Make sure the screws (64.25) of the coupling are tightened (see **section 9.2.**).

 **Make sure the coupling guard (32.30) is fastened on the lantern bracket.**

For MXV-B Make sure the shaft turns freely when rotated by hand. For this purpose use the screwdriver notch on the shaft end ventilation side.

7.2. First starting



ATTENTION: never run the pump dry, not even for a short trial run.

Start the pump after filling it completely with liquid.

When the pump is located above the water level (suction lift operation, **fig. 3A**) or with a positive suction head which is too low (less than 1 m) to open the non-return valve, fill the suction pipe and the pump through the priming hole (1) (**fig. 4**).

To facilitate this operation use a flexible tube (or elbow) and a funnel.

MXV-B, MXV(L) 25-32-48, MXV(L)4 25-32-48
During filling, the needle screw (14.17) in the drainage plug (14.12) must be kept loose so as to allow a free passage between the pressure chamber and the suction chamber (**Fig.4a**).

MXV-B, MXV 25-32-48

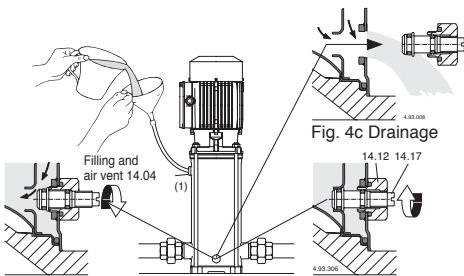


Fig. 4a Filling: internal passage open Fig. 4b Operating: internal passage closed

MXV(L) 50-65-80, MXV(L)4 50-65-80

In the case of vertical installation, remove the plug (2) during the filling operation to vent the suction side. After the liquid has been released, replace the plug (2). Proceed with filling until the liquid spills out of the venting hole (1) in the upper cover. Top up until the pump is completely vented before replacing the plugs (1). In the case of horizontal installation, fill and vent through the holes (1) in the pump casing (14.00).

MXV.. 50-65-80

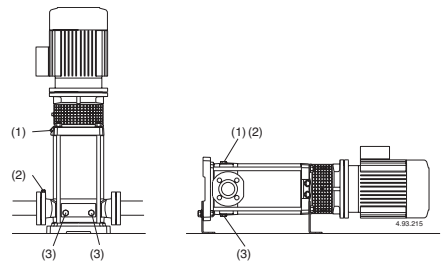



Fig.4 (1) Filling and air vent
(2) Suction side air vent
(3) Draining

When the liquid level on the suction side is above the pump (inflow under positive suction head, **fig. 3B**), fill the pump by slowly and completely opening the inflow gate valve while keeping the delivery gate valve and air vent holes (1), (2) (**fig.4**) open to release the air.

 **During filling, keep the air vent holes (1)(2) open only if the inflowing liquid presents no possible danger on account of its nature, temperature or pressure.**

Only for MXV(L)50-65-80, MXV(L)4 50-65-80, If necessary, install joints with a tap/valve device to holes 1 and 2, to control the outflow of the liquid and its direction of flow.

With a delivery pipe arranged horizontally, or lower than the pump, keep the delivery gate valve closed during the filling operation.

7.3. Starting and checking operations

Close the air vent holes (1), (2) (**fig.4**), for MXV-B, MXV(L) 25-32-40 e MXV(L)4 25-32-40 Tighten the needle screw (14.17) in the drainage plug (14.12) (**fig. 4b**) and close the air vent hole (14.04).

Start the pump with the delivery gate valve closed and with the suction gate valve fully open. Immediately afterwards, gradually open the delivery gate valve, adjusting the point of operation within the limits indicated on the name plate.

Check that the direction of rotation is as shown by the arrow: i.e. counter-clockwise when viewing the motor from the fan end for MXV-B 50, MXV(L)50-65-80, i.e. clockwise when viewing the motor from the fan end for MXV-B 25-32-40, MXV(L) 25-32-40 e MXV(L) 100; Otherwise disconnect electrical power and reverse the connections of two phases.

Check that the pump works within its field of performance and that the absorbed current shown on the name-plate is not exceeded. Otherwise adjust the delivery gate valve or the setting of any pressure switches.

If a priming loss occurs (interruption of delivery flow, despite opened gate valves) or if a pressure oscillation is indicated on the pressure gauge, repeat the venting operation on the suction side (2), make sure all the suction pipe couplings are perfectly sealed and tighten the air vent plug (2) and the draining plugs (3) on the suction side (**fig.4**).

ATTENTION: when the pump is located above the water level (suction lift operation, **fig. 3A**), **after a long idle period, before restarting the unit, check that the pump is still filled with liquid and vented.**

Otherwise, check for proper operation (opening and closing) of the foot valve and fill the pump with liquid (see **section 7.2.**).



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.

In systems in which it may be possible to operate with a closed delivery gate valve, install a bypass valve (**fig. 3**) to ensure a **minimum flow** of about:

0,3 m³/h	for MXV(B) 25, MXV(L) 25, MXV(L)4 25,
0,4 m³/h	for MXV(B) 32, MXV(L) 32, MXV(L)4 32,
0,5 m³/h	for MXV(B) 40, MXV(L) 40, MXV(L)4 40,
1,0 m³/h	for MXV-B 50, MXV(L) 50, MXV(L)4 50
1,5 m³/h	for MXV(L) 65, MXV(L)4 65
2,6 m³/h	for MXV(L) 80, MXV(L)4 80
2,9 m³/h	for MXV(L) 100

When the water is overheated due to prolonged operation with a closed port, stop the pump before opening the gate valve.

To avoid any risk of danger to users and the creation of harmful thermal stress in the pump and system due to large temperature differentials, wait until the water has cooled inside the pump before starting again or before opening the drainage and filling plugs.



Care must be taken when the pumped fluid has a high temperature. Do not touch the fluid when its temperature is higher than 60 °C. Do not touch the pump or motor when their surface temperature is higher than 80 °C.

7.4. Switch off of the pump



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

The product is designed for a continuous duty, the switch off is performed by disconnecting the power supply by means the expected disconnecting devices. (see paragraph "6.5 Electrical connection").

8. MAINTENANCE

Before any operations it's necessary to disconnect the power supply.

If required ask to an electrician or to an expert technician.



Every maintenance operations, cleaning or repairation executed with the electrical system under voltage, it could cause serious injuries to people.



If the supply cord 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 part-removing, the operator must be a qualified technician able to read schemes and drawings.

It is suggest to register all maintenance operation executed.



During maintenance keep particular attention in order to avoid the introduction of small external parts, that could compromise the device safety.



It is forbidden to execute any operations with the direct use of 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 made only by special personnel authorized by Calpeda S.p.A.

For further technical information regarding the use or the maintenance of the device, contact Calpeda S.p.A.

8.1. Routine maintenance



Before every maintenance operations disconnect the power supply and make sure that the device could not accidentally operate.

Under normal operating conditions the pump-motor unit will not require maintenance.

Conduct routine inspection on the pump and connected parts to check for a perfect seal.

Check the seal on the shaft from the outside through the coupling guard.

The special funnel-shaped upper cover is designed to contain any small initial leaks.

Keep the pump and surrounding part clean so as to be able to immediately detect any outward leakage.

Clean the filter in the suction pipe and/or foot valve at regular intervals; check performance and absorbed current.

The ball bearings in the motor and the ball bearing in the pump (66.00 - see **section 8.5**) have permanent lubrication.

No regreasing is necessary.

See the operating instructions of the motor (if supplied). Remove any excess grease expelled from the ball-bearing (66.00) after the first period of operation.

In the case of water containing chloride (chlorine or sea water) the risk of corrosion increases in stagnant water conditions (also with an increase in temperature and decrease of pH value). In these cases, if the pump remains inactive for long periods, it must be emptied completely.

For good measure, as for temporary operation with dirty liquids, run the pump briefly with clean water to remove deposits.

Or, after draining, perform the washing operation, inserting clean water (at least 40 litres) into the filling hole (1) on the delivery side and allowing it to come out of the draining hole (3) on the suction side (**fig.4**).

When the pump remains inactive it must be emptied completely if there is a risk of freezing.

Before starting the motor again fill the pump completely with liquid (see **section 7.2.**) and make sure the shaft is not jammed by encrustation, sticking of the faces of the mechanical seal or other causes. In the event that the shaft cannot be moved by hand, the pump has to be dismantled and cleaned.



Disconnect electrical power before any servicing operation and make sure the pump cannot be accidentally switched on.

8.2. Dismantling the system

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

8.3. Dismantling the pump



Before dismantling, close the gate valves in the suction and delivery pipes and empty the pump casing (fig. 4). For dismantling and re-assembly refer to the section drawing (section 14.) and figures 5, 6. Dismantling and inspection of all internal parts can be carried out without removing the pump casing (14.00) from the pipeline.

Sequence for dismantling MXV-B:

By removing the nuts (61.04) from the tiebolts (61.02) the motor can be taken out complete (99.00), with all internal parts of the pump without removing the pump casing (external jacket 14.02) from the pipeline.

Sequence for dismantling MXV(L), MXV(L)4:

1. Mark the position of the motor on the lantern bracket (32.00), and the position of the lantern bracket on the upper cover (34.02), ... on the external jacket (14.02), ... on the pump casing (14.00).
2. Remove the screw (32.32) with the washer (32.31) and the coupling guard (32.30).
3. Loosen the screws (64.25) of the coupling (64.22).

ATTENTION: to avoid compressing the spring of the mechanical seal (36.00) because of axial shifting of the shaft (64.00), we recommend to loosen the screws (64.25) of the coupling (64.22) **even only for removing or replacing the motor.**

Afterward reposition the shaft (64.00) as indicated in section 9.2.

4. Disconnect the power cable from the terminal box, remove the screws (70.18) with the nuts (70.19) and **remove the motor** away from the coupling (64.22) (fig.5a).

For MXV(L) 25-32-40, MXV(L)4 25-32-40:

5. Remove the nuts (61.04) from the tiebolts (61.02).
6. Remove the lantern bracket (32.00), complete with bearing (66.00) and coupling (64.22) from the shaft (64.00) and from the external jacket (14.02).

Once the lantern bracket (32.00) has been removed, all the internal parts can be extracted with the shaft (64.00) from the external jacket (14.02).

7. Remove the upper cover (34.02) with the o-ring (14.20) and then the delivery casing (20.00).

For MXV(L) 50-65-80, MXV(L)4 50-65-80:

5. Remove the screws (61.07) and **remove the lantern bracket** (32.00), complete with bearing (66.00) and coupling (64.22) from the upper cover (34.02) and from the shaft (64.00) (fig.5a).
6. Remove the nuts (61.04) and washers (61.03) from the tiebolts (61.02).
7. **Remove the upper cover** (34.02) from the shaft (64.00) and from the external jacket (14.02) - or with the external jacket from the pump casing (14.00) - with the aid of a mallet or lever, exercising pressure in alternate operations, from diametrically opposite positions.

Once the upper cover (34.02) has been removed, all the internal parts can be extracted from the pump

casing (14.00).

8.4. Replacing the mechanical seal

Make sure the spring of the new mechanical seal is set with the direction of the winding suitable for the direction of rotation of the shaft.

Make sure that all parts with which the mechanical seal comes into contact are perfectly clean and free from any burr or cutting edges.

The seal rings in EPDM (Ethylene-Propylene) must never come into contact with oil or grease. To facilitate the mounting of the mechanical seal, lubricate the shaft, the seating of the stationary part and the seal rings with clean water or any other lubricant compatible with the material in which the seal rings are made.

Use every precaution so as not to damage the seal surfaces with blows or angular impact.

Only for MXV(L)4 25,32,40,50,65,80

Remove the mechanical seal (36.00), the rotating part from the shaft (64.00), making sure the shaft is not scratched, and then the fixed part from the upper cover (34.02).

Push the rotating part as far as the shoulder ring (36.52) on the shaft (64.00), without compressing the spring. Check the length before and after insertion and raise the rotating ring as far as the initial length (L1 in fig.5).

In this way, correct compression of the spring will be ensured when the fixed part is mounted and after the shaft is locked in the coupling (L2 in fig.6b).

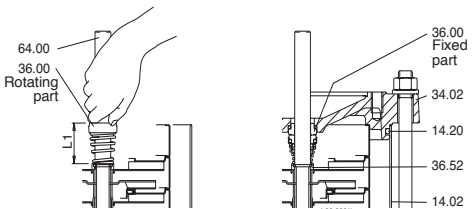


Fig.5 Inserting the mechanical seal

Only for MXV(L) 100, MXV(L)4 100 (see section 16. page. 131)

8.5. Replacing the ball bearing MXV(L), MXV(L)4

If the ball bearing (66.00) has to be replaced, use a 2RS1 C3-type, of the size marked on the ball bearing to be replaced and containing grease lubricant suitable for the operating temperature.

The size of the bearing depends on the size of the motor:

motor size	ball bearing
80	6206, 2RS1, C3
90	6207, 2RS1, C3
100-112	6208, 2RS1, C3
132	6310, 2RS1, C3
160-180	6313, 2RS1, C3

8.6. First-stage bearing and intermediate bearing

The MXV 50-16, 65-32 and 80-48 pumps have a bearing sleeve (64.10) on the shaft (64.00) and a bearing in the stage casing (25.03) behind the first impeller (according to the order of suction).

Starting with the **MXV.. 25-212, MXV.. 32-412 e MXV.. 40-811, MXV 50-1611, MXV 65-3208 and MXV 80-**

4806 units, there is also an intermediate bearing (see section 15.).

If they are to be dismantled, first number the position of each stage casing and the single spacer sleeves (see lengths and positions of sleeves in section 15.) so as to be able to remount the components correctly.

9. REMOUNTING

To remount the components follow the dismantling procedure in inverse order (see section 8.3.).

Check the state of the o-rings (14.20) and replace them if they are damaged.

Make sure that the o-rings (14.20) are correctly inserted on their seats on the pump casing (14.00) and upper cover (34.02). Lubricate the seal rings with clean water or any other compatible lubricant.

9.1. Tightening torque

Type	MXV-B 25-32-40-50	MXV... 25-32-40	MXV... 50-65-80
impeller nuts (28.04)	8 Nm	8 Nm	35 Nm
nuts (61.04) on tie-bolts	50 Nm	50 Nm	50 Nm
screws (61.07) lantern upp. cov	-	-	60 Nm
screws (64.25) in the coupling	-	22 Nm	50 Nm
screws (70.18) with nuts (70.19)	-	40 Nm	40 Nm

When tightening the nuts (28.04), be careful not to scratch the shaft with the second wrench used on the opposite side.

ATTENTION: the nuts (61.04) on the tie-bolts (61.02), the screws (61.07) on the upper cover and the screws (70.18) with the nuts (70.19) on the lantern bracket must be uniformly tightened with alternated crossover tightening procedure in diametrically opposite positions.

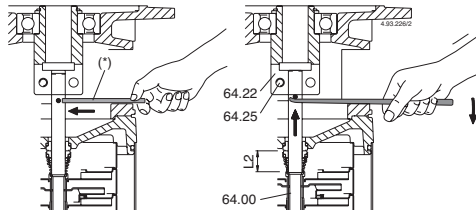


Fig. 6a
Rotor rested, with shaft not locked in the coupling.
(*) Pin for raising the shaft.

Fig. 6b
Rotor raised, position for locking the shaft in the coupling.

9.2. Axial position of the pump rotor MXV(L), MXV(L)4

In the vertical position and from the resting position (fig.6a), raise the rotor, levering on a pin inserted in the hole in the shaft, until the pin can be rested under the coupling (64.22).

In this position (fig. 6b), by tightening the screws (64.25) uniformly, the shaft (64.00) is locked tight in the coupling.

Remove the pin.

Mount the motor as indicated in section 6.5..

10. DISPOSAL



The final disposal of the device must be done by specialized company.

Make sure the specialized company follows the classification of the material parts for the separation. Observe the local regulations and dispose the device accordingly with the international rules for environment protection.

11. SPARE PARTS

11.1. Spare-parts request

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 shall be sent to CALPEDA S.p.A. by phone, fax, e-mail.

12. DESIGNATION OF PARTS

Nr.	Designation
13.60	Flange with adapter
14.00	Pump casing
14.02	External jacket
14.04	Plug with washer
14.06	O-ring
14.12	Plug with washer
14.16	O-ring
14.17	Screw
14.18	O-ring
14.19	O-ring
14.20	O-ring
14.42	Plug with washer
14.54	Wear ring (1)
25.01	First stage casing
25.02	Stage casing
25.03	Stage casing with bearing
25.05	Last stage casing
28.00	Impeller
28.04	Impeller nut
28.08	Washer
32.00	Lantern bracket
32.30	Guard
32.31	Washer
32.32	Screw
34.01	Lower cover
34.02	Upper cover
36.00	Mechanical seal
36.51	Retaining ring, split
36.52	Shoulder ring
61.00	Base
61.02	Tie-bolt
61.03	Washer
61.04	Nut
61.07	Screw
61.30	Support foot
61.32	Screw
61.34	Washer
61.36	Nut
64.00	Shaft
64.10	Bearing sleeve
64.13	Upper spacer sleeve
64.14	Lower spacer sleeve
64.15	Spacer sleeve
64.18	bearing spacer sleeve (upper)
64.19	bearing spacer sleeve (lower)
64.22	Coupling
64.25	Screw
66.00	Ball bearing
66.18	Circlip
66.19	Shoulder ring (3)
70.18	Screw
70.19	Nut
99.00	Motor, complete

(1) Inserted in the stage casing (cannot be supplied separately)

(2) See section 15.

(3) Only for motor size 132

Changes reserved.

13. 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.

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PROBLEM	PROBABLE CAUSES	POSSIBLE REMEDIES
1) The motor does not start	1a) Unsuitable power supply 1b) Incorrect electrical connections 1c) Engine overload protective device cuts in. 1d) Blown or defective fuses 1e) Shaft blocked 1f) If the above causes have already been checked, the engine may be malfunctioning	1a) Check that the mains frequency and voltage correspond to the electrical characteristics shown on the indicator plate 1b) Connect the power supply cable to the terminal board correctly. Check that the thermal overload protection is set correctly (see data on the engine indicator plate) and make sure that the fuseboard upline of the engine has been properly connected 1c) Check the power supply and make sure that the pump shaft is turning freely. Check that the thermal overload protection has been set correctly (see engine indicator plate) 1d) Replace the fuses, check the electric power supply and points a) and c) 1e) Remove the cause of blockage as indicated in the "Blocked pump" instruction booklet 1f) Repair or replace the engine by applying to 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 rotor 2c) Bearings siezed	2a) Rotation may be started directly from the pump shaft or from the joint (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 rotor, 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 functions 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	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.
4) Insufficient flow	4a) Pipes and accessories with diameter too small causing excessive loss of head 4b) Presence of deposits or solid bodies in the internal passages of the rotor 4c) Rotor deteriorated 4d) Worn rotor and pump case 4e) Excessive viscosity of the liquid pumped (if other than water) 4f) Incorrect direction of rotation 4g) Suction head excessive in relation to the suction capacity of pump 4h) Suction pipe too long	4a) Use pipes and accessories suitable for the specific application 4b) Clean the rotor and install a suction filter to prevent other foreign bodies from entering 4c) Replace the rotor, if necessary, contact an authorised service centre 4d) Replace the rotor and the pump casing 4e) The pump is unsuitable 4f) Invert the electrical connections on the terminal board or control panel 4g) Try to close the feeder gate partially and/or reduce the difference in level of the pump and the liquid being aspirated 4h) Bring the pump closer to the suction tank so as to use a shorter pipe. If necessary use a pipe of a wider diameter
5) Noise and vibrations from the pump	5a) Rotating part unbalanced 5b) Worn bearings 5c) Pump and pipes not firmly attached 5d) Flow too strong for the diameter of the delivery pipe 5e) Functioning in cavitation 5f) Unbalanced power supply 5g) Incorrect alignment of pump-motor unit	5a) Check that no solid bodies are obstructing the rotor 5b) Replace the bearings 5c) Anchor the delivery and suction piping as needed 5d) Use bigger diameters or reduce the pump flow 5e) Reduce the flow by adjusting the feeder gate and/or using pipes with a bigger internal diameter. See point 4g) too 5f) Check that the mains voltage is right 5g) If necessary, the unit must be re-aligned
6) Leakage from the mechanical seal	6a) The mechanical seal has functioned when dry or has stuck 6b) Mechanical seal scored by presence of abrasive parts in the liquid pumped 6c) Mechanical seal unsuitable for the type of application 6d) Slight initial drip during filling or on first start-up	In cases 6a), 6b) and 6c), replace the seal, if necessary contact an authorised service centre 6a) 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 5 e) too. 6b) Install a suction filter and use a seal suited to the characteristics of the liquid being pumped. 6c) Choose a seal with characteristics suitable for the specific application 6d) Wait for the seal to adjust to the rotation of the shaft. If the problem persists, see points 6a), 6b) or 6c) or contact an authorised service centre.

M.. V1

OPERATING INSTRUCTIONS

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1. Example plate motor

Example plate motor 50Hz

calpeda		EAC		CE	
MONITORSO VICENZA		Made in Italy		13	
M132 V1-7.5T		0204123345		14	
5.5kW (7.5 hp)		3-Δ/Y 400/690V 50Hz 7.5/3.2A			
2850 rpm S1 I.C.L. F					
V	%	cos φ	η		
400	100	0.86	88.5		
400	75	0.81	89.3		
400	50	0.71	89.2	55.7 kg	15
IEC 60034-1		IE2-88.1		IP 54	16
					17

- 1 Type
- 2 Nominal power
- 3 Power voltage
- 4 Frequency
- 5 Current
- 6 Nominal speed
- 7 Service type
- 8 Insul. class
- 9 Voltage
- 10 % load
- 11 cos φ
- 12 yield
- 13 Certifications
- 14 Serial number
- 15 Weight
- 16 Protection
- 17 Efficiency rating

2. Lifting


All CALPEDA motors that weigh more than 25 kg are equipped with lifting eyebolts.

Only the main lifting eyebolts must be used to lift the motor, but they must not be used when the motor is connected to the pump. The centre of balance of motors with the same axis height can vary according to the different powers, the assembly layout and the auxiliary equipment. Damaged eyebolts must not be used. Make sure the eyebolts are not damaged before lifting the motor.

The lifting eyebolts must be shut before being used.


Make sure suitable lifting equipment is used, and that the lifting hook size is adequate for the eyebolts. Be careful not to damage the auxiliary equipment and the cables connected to the motor.

3. Installation and starting

 Disconnect the motor before working on it or on the equipment it moves.

3.1 Insulation resistance check

Check insulation resistance before starting the machine and when you suspect that humidity is forming in the windings.

 Disconnect the motor before working on it or on the equipment it moves.

Insulation resistance, correct at 25°, must exceed the reference value of 100 MΩ (measured at 500 VDC). The insulation resistance value halves every time the room temperature increases by 20 °C.



The motor casing must be earthed and the windings must be discharged immediately after measuring to prevent risks of electric shock.

Windings soaked in sea water usually need to be redone.

3.2 Motor fitting and alignment

Make sure there is enough space around the motor to guarantee air circulation. Correct alignment is essential for preventing bearing faults, vibrations and possible shaft breakage.

Align the motor using suitable methods. Re-check alignment after tightening the bolts or stud bolts for the last time.

Do not exceed the load values permitted for the bearings, which are given in the product catalogues.

3.3 Machines with condensate discharge tap

Make sure the discharge holes and taps are turned downwards. All the discharge holes must be closed in dusty areas.

If there are condensation drain holes present, open these at regular intervals, depending on climatic conditions.



The winding can be damaged if objects are introduced into the condensation holes (optional). This can lead to death, serious injury or material damage.

Note the following to maintain the degree of protection:

- Switch off the machine so that it is in a no-voltage condition before you open the condensation drain holes.
- Close the condensation drain holes, e.g. using T-plugs, before commissioning the machine.



Reduction of the degree of protection

If condensation drain holes are not closed, then this can result in material damage to the motor.

In order to maintain the degree of protection, after the condensation has been drained, you must close all of the drain holes.

3.4 Wiring and electrical connections

The terminal box of standard single speed motors normally contains 6 winding terminals and at least one earth terminal.

In addition to these, the terminal box can also contain the thermistor connections, anti-condensation resistors, or other auxiliary devices.

Suitable cable terminals must be used for connecting. The auxiliary device cables must be connected directly to the relative terminals. The machines cannot be moved once they have been positioned. Unless otherwise indicated, the cable input threads are expressed in metric units. The cable glands must have the same protection level and IP rating as the terminal boxes. With cable inputs, use cable glands and seals that are compliant with the protection type and the type and diameter of the cable.

Earthing must be carried out in compliance with local laws before connecting the motor to the mains.

Make sure the protection level of the motor is suitable for the environmental and climatic conditions; for example make sure water cannot enter the motor or the terminal boxes.

The terminal box seals must be inserted correctly into their respective seats to guarantee the correct IP rating.

3.4.1 Connection for different starting methods

The terminal box of standard single speed motors normally holds six winding terminals and at least one earth terminal, which allow DOL or Y/D starting. Refer to the Figure.

1 .Wiring drawing (only for Calpeda motors)

4. Operation conditions

4.1 Use

Unless indicated otherwise on the nominal data plate, the motors are designed for the following environmental conditions.

- Maximum surrounding temperature from -20°C to +40°C.
- Maximum altitude 1,000 m above sea level.
- Power supply tolerance $\pm 5\%$ and frequency $\pm 2\%$ in compliance with EN / IEC 60034-1.

The motor can only be used for the applications it has been designed for. The nominal values and operation conditions are indicated on the motor plates. All the indications given in this manual and in other instructions must be respected.

If these limits are exceeded, check the motor data and the construction characteristics. Contact CALPEDA for more information.



Non-compliance with the instructions or not carrying out maintenance on the equipment can compromise safety and prevent the machine from being used.

4.2 Cooling

Make sure the motor is sufficiently aired. Make sure that close objects or direct sunlight do not create additional heat to that of the motor.

5. Motors working at variable speed

Variable speed drives cause higher voltage stress than sinusoidal supply for the motor winding, so request a motor that is suitable for use with a frequency variator.

5.1 Thermal protector

The motors can come equipped with PTC thermistors in the stator windings if present. We advise connecting the thermistors to the frequency converter using suitable means.

5.2 Starting variable speed applications

Variable speed applications must be started in compliance with the frequency converter instructions and local laws and regulations.

The requirements and limitations set by the application must also be considered.

All the parameters needed for setting the converter must be taken from the motor plates.

The requested parameters, in general, are:

- Nominal motor voltage
- Nominal motor current
- Nominal motor frequency
- Nominal motor speed
- Nominal motor power

NOTE If the required information is missing or imprecise, do not start the motor without having checked the correct settings.

CALPEDA recommends using all the protection characteristics supplied by the converter to improve application safety.

The converters generally guarantee characteristics such as (the characteristic names and availability depend on the producer and the converter model):

- Minimum speed
- Maximum speed
- Acceleration and deceleration times
- Maximum current
- Maximum torque
- Protection against accidental stops

6. Maintenance



There may be current used for powering resistors or heating the winding directly inside the terminal box while the motor is stopped.



The capacitor in single-phase motors can maintain a charge that appears between the motor terminals, even when the motor itself has stopped.



A motor with frequency converter can be powered even with the motor stopped.

6.1 General inspection

1. Inspect the motor at regular intervals, minimum at least every year. Control frequency depends, for example, on the level of humidity in the environment and the specific climatic conditions. Determined initially in an experimental manner, it must then be respected with extreme precision.
2. Keep the motor clean and guarantee good ventilation. If the motor is used in a dusty environment, the ventilation system must be cleaned and checked regularly.
3. Check the shaft seal conditions (for example V-ring or radial shaft seal) and replace the seals if necessary.
4. Check the state of the connections
5. Check the state of the bearings, checking for strange noises, vibrations, temperature.

When signs of wear appear, dismantle the motor, check the worn parts and make the necessary replacements. When replacing the bearings, use ones that are identical to those used originally. When replacing the bearings, replace also the shaft seals with ones of the same quality and characteristics as the originals.

6.1.1 Motor in standby

If the motor remains in standby for a long period in places with vibrations, follow these precautions:

1. The shaft must be rotated periodically every 2 weeks (record when this is done) by starting the system. If starting is not possible for any reason, rotate the shaft manually once a week so that it takes on different positions. The vibrations caused by other equipment can cause bearing pitting, which can be reduced to a minimum with normal operation or manual rotation.

6.2 Bearings



The maximum working temperature of the grease and the bearings, +110°C, must not be exceeded.

The maximum nominal motor speed must not be exceeded either.

Bearing size depends on the motor size:

Motor size	Bearing on projection side	Bearing on fan side
80-90	6205 2Z/C3 WT	6204 2Z/C3 WT
100-112	E2 6306 2Z/C3	E2 6206 2Z/C3
132	E2 6208 2Z/C3	E2 6207 2Z/C3
160	E2 6310 2Z/C3	E2 6308 2Z/C3
180	E2 6310 2Z/C3	E2 6309 2Z/C3

7. Servicing

7.1 Spare parts

When ordering spare parts for a motor, indicate the serial number, the complete name of the product type and code as indicated on the motor plate.

7.2 Rewinding

Rewinding must always and only be carried out by an authorised workshop.

7.3 Bearings

Bearings require special care.

They must be removed using extractors and fitted hot or using suitable instruments.

Changes reserved.

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1. 总则

使用本产品前请仔细阅读此操作手册的内容，并保留此操作手册以供参考。

此操作手册为意大利语，如有翻译偏差以意大利语为准。

此操作手册是安全保障必不可少的一部分，在产品最终达到正常工作前请牢记本手册。

万一用户不慎遗失本手册，可以向CALPEDA S.P.A.或其代理商要求一份复印件，请详述产品铭牌上的资料（见2.3 标记）

未经制造商认可的有关其产品或部件的任何更改变化，将撤消“CE 声明”和质保。

此产品不应让8岁以下的未成年、身体有缺陷、心智不全或无任何经验的人操作，除非在充分的指导或监督下让相关人员知道如何安全的使用，并且通过一个负责人来让相关人员了解到可能会产生的危险。

不得让儿童接触本产品。

用户有义务清洁和维护本产品。

除非在有人监督的情况下，否则儿童不应清洁和维护本产品。

不要使用在池塘、水箱或泳池等人为可以进入或接触的水环境中。

仔细阅读安装部分的规定：

-最大允许的结构工作压力详见3.1

-电源线的类型及剖面详见6.8

-所安装电器设备的防护类型详见6.8

1.1. 符号标记

为了便于理解本操作手册，下面给出常用标记符号的含义。



一定要注意通告和警告的标记，否则可能导致产品损坏或人身安全的风险。



忽略有关电气的警告，可能导致产品损坏或人身安全的风险



提示和警告正确操作处理产品及其部件



最终用户可以进行的操作

终端用户：仔细阅读本操作手册后，产品使用者可以负责正常状态下的维护工作。他们可以进行产品的清洁和长期停滞后的重新启动此类标准维护工作。



必须由有资格的专业电工才能进行的操作

专业电工：有资格的专业电工，负责所有电气设备的运行包括维护，应具有高压电资格。



必须由有专业技术资格的人才能进行的操作

专业技术人员：正常状态下，具有产品安装和维护能力的专业技术人员，可以从事电气和机械方面的维护工作。能够从事简单的与设备维护相关的电气和机械方面的操作。



指示必须使用个别的保护装置



必须关断电源并断开与电源的连接才能进行的操作



必须接通电源才能进行的操作

1.2. 制造商名称和地址

制造商名称：CALPEDA S.P.A.

地址：Via Roggia di Mezzo, 39

36050 Montorso Vicentino - Vicenza / Italia

www.calpeda.it

1.3. 授权操作者

本产品只能由有经验的终端用户和专业技术人员操作



禁止终端用户操作那些只能由专业技术人员操作的工作，对未按本规章执行而引起的损害制造商不负任何责任

1.4. 质保

质保参见总则和销售条款



质保期内将更换或维修有问题的产品部件（由制造商验证的）。

下面因素不在质保范围：

- 由于产品使用者没有按照说明及本手册的通告信息操作造成的损坏

- 未经制造商认可的对产品的任何改变而造成的损坏

- 由非专业人员操作造成的损坏

- 由不当的维修造成的损坏

1.5. 技术支持

任何技术支持、备件及更多的产品信息均可联系：
Calpeda S.p.A. (附件1.2章)。

2. 技术说明

进出水口位于同一轴线（管道型）且口径相同的立式多级泵。

耐腐蚀的轴承衬套由所泵送的介质自润滑。

MXV：带有推力轴承和联轴节衬套的泵可适配任何 IM V1 结构的标准电机。

MXV-B:立式多级直联泵

2.1.

2.2. 预期用途


适用于清洁的介质：不含易燃易爆、对健康或环境有害、对泵材质有腐蚀性的介质，不含有研磨性、固体颗粒及纤维状物质的介质。

密封环采用丁腈橡胶，本泵不适于含油介质

液体温度:对MXV (L) 和MXV (L) 4为 -15°C+110°C，对MXV-B为-15°C+90°C。

2.3. 不当使用

本产品只用于2.1中所述用途

 除了本说明手册中指示的用途外,严禁其他不当用途

不当使用将降低本产品的安全性和效率,由于不当使用而造成的损坏和意外,CALPEDA不承担责任

标记

下面给出的是泵外壳上的标签的图片

1 型号	 <p>泵标牌图示</p>	11
2 流量		12
3 扬程		8
4 额定功率		9
5 电源电压		13
6 频率		14
7 电流		
8 转速rpm		
9 运行工作制		
10 绝缘等级		
11 认证	 <p>电机标牌图示</p>	13
12 序列号		19
13 重量		20
14 注释		
15 电压		
16 %负荷		
17 功率因数		
18 效率		
19 保护等级		
20 能效等级		

3. 技术特性

3.1. 技术参数

尺寸和重量（详见产品样本）

额定转速 1450/1750 rpm 对 MXV(L)4;

2900/3450 rpm 对 MXV(L), MXV-B.

保护等级 IP 55 (IP 54 对 MXV-B)

电压/频率:

- 高达 240V 1~ 50/60 Hz

- 高达 480V 3~ 50/60 Hz

检查主电源的电压、频率等参数是否符合电机铭牌所标示牌的电气数据依据电机的正常功率而标出。

额定电机功率

MXV(B)(L) (2900 转/分) 直至 KW: 0,75 2,2 4 7,5 22

MXV(L)4 (1450 转/分) 直至 KW: 1,1 3


噪音等级 dB (A) 最大: 65 65 67 68 82

启动次数/小时 最大: 35 30 20 15 15


泵体内终端最大压力为: 对MXV (L) 和MXV (L) 4为 250m(25bar),对MXV-B为160m(16bar)。


4. 安全性


4.1. 总则

 使用本产品前应了解有关安全的指示
仔细阅读所有的操作说明和从搬运到处理的每一步指示专业技术人员必须认真遵从所有的适用标准和法律，包括产品应用地当地的规章
产品安装使用应符合现行的安全法规
不当的使用可能会对人身、动物和其他对象造成损害
制造商对于由于不当使用或未按本操作手册和标牌的标示使用所造成的损坏不负责任

中文

 按照日程维护计划表操作并及时更换损坏的部件可使产品在最佳状态
使用CALPEDA S.P.A或其指定代理商提供的原厂配件

 不要撕下或改变产品上的标识
当产品有问题或部件有损坏的情况下不要启动产品

 由于维修时会全部或部分的拆开产品,因此之前务必须断开供电电源

4.2. 安全装置

本产品具有全外部壳体,可防止与内部部件的任何接触

4.3. 剩余风险

当按照本产品的的设计功能和所有安全规则使用本产品时没有剩余风险


4.4. 通告和安全警示

没有任何安全警示在此类产品上面

4.5. 个别的保护装置

在安装、使用和维修期间，建议操作人员使用适合此操作的个别保护装置或手段当进行日常或个别的维修工作时

标示的个别保护装置

 手的保护
(防热、化学品和机械损害的手套)

5. 搬运操作

货物应包装完好

运输过程中应避免超重，并确保货物不会移动。确保运输车辆和所运货物尺寸相符合

无需特殊车辆运输

运输车辆应与被运货物的尺寸重量相符合(尺寸和重量详见产品样本)。

5.1. 搬运

小心搬运，轻拿轻放

避免冲撞包装材料以免损坏泵的外套

对于重量超过25公斤的包装物需由两人同时搬抬

吊运与运输水泵与水泵泵组(无包装)如图1所示，应缓慢提升泵组(图1C)，确保其不会以不可控方式左右移动，避免不平衡和碰撞。对卧式安装的泵应在重心处起吊。

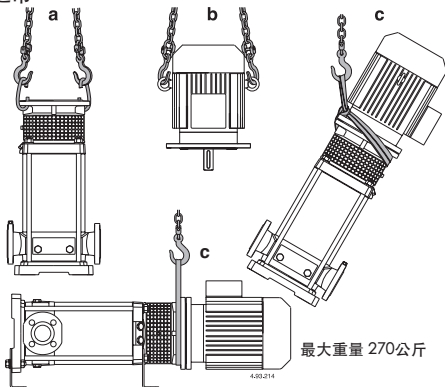


图 1 a 泵的提升
b 电机的提升
c 泵组的提升

6. 安装

6.1. 尺寸

设备的外形尺寸(详见产品样本)

6.2. 环境要求和安装位置的尺寸

客户应将本产品适当的安装于适当位置以满足设备的要求(供电需要等)

安装位置应满足章节3.2中的要求

禁止将产品安装于有潜在易燃易爆危险的环境中

6.3. 拆箱

i 开箱检查产品是否因运输而损坏

拆开的包装材料应根据产品使用当地法律规定遗弃或再利用

6.4. 安装

安装MXV-B,MXV标准形式泵时，应确保其转轴处于垂直位置，底座在泵下方。

MXV50-16.65-32和80-48使用配套的支脚也可以水平安装。支脚可按要求提供(详见6.6)。

安装泵时，必须尽可能靠近吸入水源处(出于对气蚀余量的考虑)。

尽量提供较大空间以便于电机通风，也利于对轴旋转情况的检查，对泵进行注水及排水以及清扫积水(特别是对于有害的液体或温度超过60度的液体)。



确定长期的意外泄漏事故不会对人或财产造成损害。

泄漏可能是由于巨大的压力或水锤，或者错误的操作(例如错误的关闭水堵或阀门)，或其它功能错位引起，可以采用适当的渠道或自动排水系统排除泄漏的液体。

把泵安装在平坦的水平表面上(用水水平仪测量)，例如结实的水泥基座或金属支撑结构上。为保证安装的稳定性，如有必要时应该在基座的四个地脚螺栓边插入调整金属小片。

6.5. 电机的连接(只针对MXV(L),MXV(L)4)

MXV(L),MXV(L)4 泵设计使用标准电机结构形式(IEC34—7)IM V1 标准，其尺寸及输出额定功率按IEC 72标准。

如果所供泵不带电机，请核对铭牌上所示的额定功率和转数以及数据表中的技术数据。

注意:电机直径相对侧应有两个吊装环,以便使轴头垂直向下的提升电机。

在安装电机前，清理电机的延长轴，键和法兰的接触表面，清除保护漆，脏物及氧化层。

用脂基的，固体状减摩剂来润滑电机延长轴，

不要用润滑油以免损坏下面的机械密封(见剖面图8.4)。

泵处于垂直位置，把电机轴插入联轴节，键对齐键槽，把电机法兰放置于泵的支座法兰上。

转动电机，调整接线盒到所需位置，并且使两法兰上螺钉过孔对齐。

注意：插入四个螺钉(70.18)到法兰过孔，拧上螺母，顺次对角地拧紧(见9.1)。

在拧紧螺栓(70.18)前后，确定连接水泵轴和电机轴的联轴器能够手动自如(拆下护板32.30)。

注意：拆除和安装电机时，请参照剖面图8.3。

6.6. 水平安装 MXV(L)50-65-80, MXV(L)4 50-65-80

6.6.1. 支撑地脚的连接

为了便于安装支撑地脚，必须将连接螺栓(61.02)上的全部螺母(61.04)拆下(见14章节的截面图)

注意：不要仅拧松安装地脚所需的2个上端盖的螺母。

先取下笼形支架(32.00)后，再拆下4个螺母(61.04)。将泵位于垂直位置，按第8.3章节1-6步骤循序进行拆卸。

拆下垫圈(61.03)，安装支撑地脚(61.30)在上端盖(34.02)侧面，具体位置取决于水泵泵体(14.00)在系统中的位置:吸入口在左边，出水口在右边,或相反，(见图2)



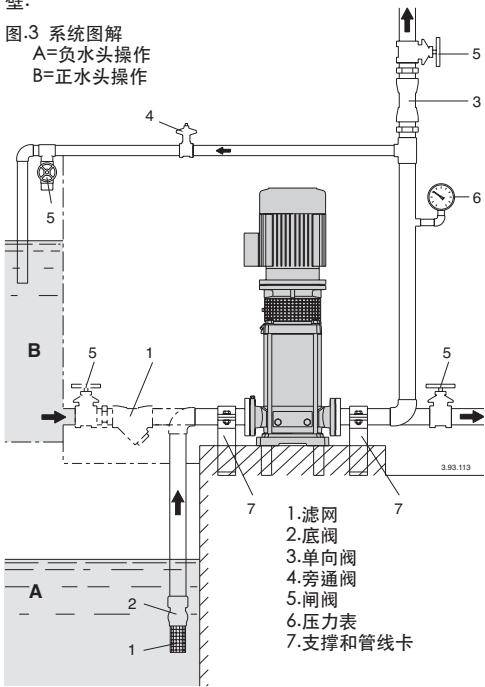
变化1:进口在左,出口在右 变化2:进口在右,出口在左
图.2 泵水平安装时的接口方向

当水泵联接螺栓(61.02)没有从螺母(61.04)中突出时,不要在支撑地脚上插入两个垫圈(61.03).
 在安装过程中,4个螺母应按直径对角线位置均匀交替上紧.拧紧力矩见9.1章节。
 将带联轴器(64.22)的笼型支架(32.00)安装到轴上,参照第9.2章节的介绍。
 按照第6.5章节的指示安装电机,电机接线盒的位置可参照系统要求确定地脚支撑(61.30)位置后确定。
 当水泵置于水平位置后,用螺丝(61.30),垫圈(61.34)和螺母(61.36)校正第二支撑地脚(61.30)于底座上(61.00),并检查确保与第一个地脚位置水平。

6.7. 管路

使用的管道直径应能够保证水泵入口管路液体流速不超过1.5m/s,出口管路液体流速不超过3m/s。
 管道的直径永远不能小于水泵接口直径。
 泵的底座上的箭头标明了吸水口及出水口。
 在管道连接前确保管子内部的清洁。
 确保所有管子在靠近泵的位置得到支撑,这些管子不会处于应力状态,也不会把振动和弯曲变形传给泵(见图.3)。
 应该保证能够排空泵内液体而不需要排空整个系统内的液体。
 应正确安装任何吸收膨胀或阻止噪音传输的补偿装置。
 确保垫片不会突出于管道内壁。
 对MXV-B, MXV (L) 25, 32, 40和MXV (L) 4 25, 32, 40, 在泵的螺纹接口(ISO 228)内拧入联接器或法兰时应加入适当的密封材料。
 应适度地拧紧管子或联接器,只要能保证密封就够了.过大的扭矩会损坏泵。
 对于泵接口为法兰时,应确保垫片不会突出于管道内壁。

图.3 系统图解
 A=负水头操作
 B=正水头操作



6.7.1. 吸入管

当泵位于水位面之上(图3A所示吸上状态)安装一带有过滤器的底阀,该底阀应该随时浸入水中。
 吸入管必须有良好的气密性并向上倾斜,以避免窝气。
 当吸入端外的液面高于泵时(图3B所示正水头状态)应安装一闸阀。
 如果泵用于水网增压,则必须遵守当地规范。
 在泵的吸入端必须安装一个过滤器,以防止外来颗粒进入泵内。

6.7.2. 出水管

在出水管道中安装一个闸阀,以调节流量,扬程和轴功率。
 在泵与闸阀之间安装一个压力表。

注意:在泵与闸阀之间安装一个单向阀是为了防止水泵系统关闭时水的回流对水泵系统的冲击。

应提供一个关断装置,配备气压罐及其它保护装置,防止流量的变化引起的压力的突然变化。

6.8. 电气联接



必须由合格电工根据当地规范进行电气联接。
 必须遵守安全标准。
 泵-电机机组必须可靠地接地。

把接地导线接到标有记号的端子上Ⓢ。
 请对照电源电压和铭牌上所标数值,根据接线盒内盖上的电路图联接电源。

注意:绝对不允许将垫片等金属部件掉入电机接线盒的定子线圈中.如果发生此种问题,必须拆开电机,取出部件。

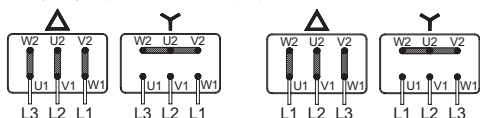
注意:额定功率大于等于5.5kw的水泵电机应避免直接启动,而应采用星-三角或其他降压启动装置。

如果接线盒的进线口为密封管,则应使用H07RN-F型柔软的电线电缆的剖面不低于表(章16)的相关规定。
 如果接线盒的进线口是套管,则应通过套管连接电线。
 安装一个使电源断开的装置,各电极之间至少有3mm的间隙。

对于三相电机,根据其额定电流一定要安装一个过载保护装置曲线D

对于单相的MXV-BM.泵,提供一个连接在接线柱上的电容,对于220-240V-50Hz的电源,还提供一个相连的热保护装置。

电气图(仅对CALPEDA电机而言)



MXV-B 25,32,40
 MXV(L), MXV(L)4 25,32,40
 MXV-B 50
 MXV(L), MXV(L)4 50-65-80

参照关于电机使用的其他指导书(如果提供)。
 注意:当泵由变频器控制的时候,频率不允许低于25Hz并且水泵总扬程在任何情况下都不能低于3m

7. 启动和运行

7.1. 启动前的预检

当存在有故障的部件时不要启动本产品
用手转动时(见6.5章节), 确保轴与联轴器都能自由转动.

确保联轴器上的螺丝(64.25)已拧紧(见9.2章节).

确保联轴器护罩(32.30)固定在支架上.



对MXV-B泵确保用手转动时泵轴能自由转动.
为此目的可用螺丝刀插在电机风扇侧轴末端的开槽处转动.

MXV.. 50-65-80

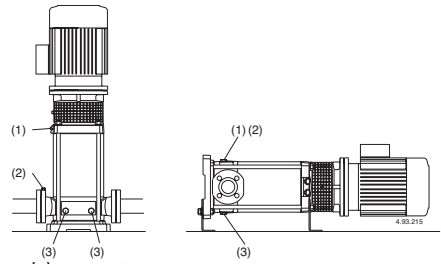


图.3 (1) 灌泵和空气排放

(2) 进口端排气

(3) 排放

7.2. 首次启动



注意: 永远不要让泵在干态运行一即使是短时间的试运行也不行.

液体完全灌满泵后才能启动.

当水泵位于液面以上(吸上操作, 图3A)或者入口正压头太小(少于1M)打开回阀, 通过注入孔(1)对泵及吸水管灌满液体(图.4).

为便于这一操作, 使用一软管(或弯头)以及一漏斗.

MXV-B, MXV(L)25-32-48, MXV(L)4 25-32-48

在注水的时候, 排水堵(14.12)上的针形螺丝(14.17)必须处于松开状态, 以便压力室和吸入室之间的沟通(图.3c).

MXV-B, MXV 25-32-48

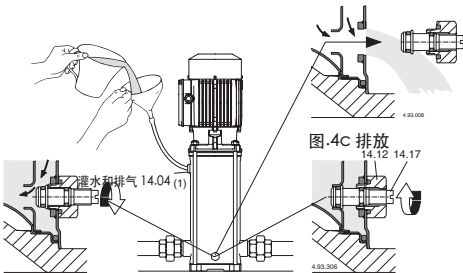


图.4a 灌水:
内部通道打开

图.4b 运行:
内部通道关闭

MXV(L) 50-65-80, MXV(L)4 50-65-80

对于立式安装, 灌泵时打开水堵(2)排出进口端空气, 当液体冒出后拧回水堵(2). 继续灌泵直到液体从上端盖上的通气孔(1)溢出. 将泵腔灌满直至空气完全排出拧回水堵(1). 对卧式安装, 通过在泵壳(14.00)上的孔(1)进行灌泵和排气.

当被吸水面高于吸入管(可流入吸水管, 图.3B), 慢慢地打开吸入端的闸阀直到完全打开以便向泵注水, 这时应保持出水口的闸阀和放气孔(1), (2)(图.4)处于开启状态以便排气.



灌泵时, 只有当流动的液体的性能, 温度, 压力均无害的情况下才允许保持放气孔(1)(2)处于打开状态.

对MXV(L)50-65-80, MXV(L)4 50-65-80 如有必要可在排放孔1和2上安装龙头/阀门等装置, 以便控制液体外流和它的流动方向.

如果出水管与泵处于同一水平或低于泵的情况下, 在灌泵操作期间, 必须使出水端的闸阀处于关闭状态.

7.3. 启动与检查

关闭排气孔(1), (2)(图.4), 对于MXV-B, MXV(L)25-32-40和MXV(L)4 25-32-40拧紧排水堵(14.12)(图.4b)上的针形螺丝(14.17)并关闭排气孔(14.04).

在出水端的闸阀关闭而吸入端的闸阀完全打开的情况下启动泵, 然后逐渐开启出水端闸阀调整工况点使其处于铭牌上显示的范围内.

按支架的箭头方向来检查其旋转方向: 对MXV-B 50, MXV(L)50-65-80从风扇端所在位置向电机望去应为逆时针旋转, 对MXV-B 25-32-40, MXV(L) 25-32-40和MXV(L)100从风扇端所在位置向电机望去应为顺时针旋转; 否则切断电源, 并更换两相接接线.

检查泵是否工作在其性能范围内, 铭牌上规定的电机电流没有被超过, 否则调节出水端的闸阀或压力开关的设定.

如果发生水流不足或中断(尽管闸阀打开, 出水口水流还是中断)或压力表显示压力波动, 在吸入端口(2)重复放气操作, 确保所有吸入水管接头均密封良好并拧紧排气堵(2)和吸入口端的排水堵(3)(图.4)

注意: 当水泵位于液面之上(负压头工作, 图.3A), 在长时间的停运后, 在重新启动泵组前, 应检查泵是否还充满液体及排过气, 否则, 检查底阀工作状态(开着和关着)并灌泵(见7.2章节).



警告：千万不能在闸阀关闭状态下工作超过五分钟。

泵在持续的闭阀工作时,会导致内部液体的温度及压力增加的危险。

在有可能闭阀工作的系统中, 请安装一个旁通阀(图.3), 以确保如下

最小流量:

0,3 m³/h	对	MXV(B) 25, MXV(L) 25, MXV(L)4 25,
0,4 m³/h	对	MXV(B) 32, MXV(L) 32, MXV(L)4 32,
0,5 m³/h	对	MXV(B) 40, MXV(L) 40, MXV(L)4 40,
1,0 m³/h	对	MXV-B 50, MXV(L) 50, MXV(L)4 50
1,5 m³/h	对	MXV(L) 65, MXV(L)4 65
2,6 m³/h	对	MXV(L) 80, MXV(L)4 80
2,9 m³/h	对	MXV(L) 100

当由于闭阀状态下长时间工作而导致水的过热, 在打开闸阀前先停止泵。

为了避免对使用者产生任何危险以及避免对泵及整个泵系统由于巨大的温差而产生的有害的热应力, 请等到泵内水温冷却后再重新启动泵或者再打开注水堵及排水堵。



当泵送的液体温度很高时必须小心。请不要接触温度超过60°C的液体。当泵和电机的表面温度超过80°C时请不要接触。

7.4. 泵的停车



当存在故障时必须关闭设备



本产品设计为连续工作, 当希望断开本产品时可断开供电电源停机(见章节6.5 电气连接)

8. 维修

任何维修操作前都应该先断开电源,必要时可由电工或专业技术人员操作

在带电情况下的任何类似清洁或维修的操作都可能对人身造成严重伤害



如果电源电缆出现损坏, 必须由厂商、厂商代理或相同资质的人员进行更换。

突发的维修或需要部分拆解零件的维修,都必须由能看懂结构图的专业人员来操作



建议记录所有的维修过程,在维修期间特别小心注意不要带入任何外部细小异物,这会对产品的造成损害



不要在无防护措施的情况下用手直接操作, 应带防水防割的手套进行过滤器的拆解清洁或其他维修工作



维修期间无关人员禁止入内

本操作手册中没有介绍的维修工作只能由CALPEDA授权的特别人员来完成

有关产品使用和维修的更多信息请联系CALPEDA S.P.A.

8.1. 日常维护



每次维修工作前都应先断开电源并确保设备不会意外接通运转

在正常操作情况下, 泵-电机机组不需要专门维修保养。

对泵及连接件进行常规检查其密封件是否处于良好状态。

从外部通过联轴器护罩检查轴的密封。

本泵特殊的漏斗状上端盖的设计用来容纳最初的小泄漏。

请保持泵及周边部件的清洁, 以便能立即发现任何向外的泄漏。

定期清洁吸入管的过滤器和(或)底阀;检查运行状态及电机电流。

电机及泵的轴承(66.00-见8.5章节)为永久性润滑。

不需要加注润滑脂。

按电机的使用说明书(如有提供),初次运行后将轴承(66.00)溢出的多余油脂清除。

当水中含有氯化物(氯气或海水), 那么在泵内存有滞留水时其腐蚀的危险更大些(当温度升高或PH值降低时也是这种情况)。因此如果泵处于长期不使用的情况必须要把泵彻底排空。

泵送过肮脏液体后,一个好办法是用清水短时间运转以清除沉积物。

或者,排空泵后进行清洗作业,向出水口端注水孔(1)注入清水(至少40升),让水从进水口端的排放孔(3)流出(图.3)。

如果有结冰的危险,当泵不使用时,则必须把泵内存水排空。打开两个放水堵(14.12)。(位置3,图.4)。

在再次启动电机前请在泵体内注满液体(见7.2章节),并确保轴没有因机械密封表面所沉积的固体物粘连或者其他原因而卡住。如果发生了轴用手无法转动的情况,则必须要拆卸并进行清洗。



警告: 在任何检修操作前, 必须切断电源,并确保泵不会因意外而接通电源。

8.2. 系统的分解

分解前, 关闭进出口隔栅。

8.3. 泵的拆解



在拆卸前, 关闭吸入管及出水管上的闸阀并排空泵内积水(图.4)。

在拆卸与重新组装前, 参照剖面图(见14章节)和图5.6..拆卸并检查所有内部零件时, 他们可以直接抽出而无

需从管道上拆下泵壳(14.00)。

拆卸MXV-B的顺序:

从长杆螺栓(61.02)上拧下螺母(61.04),电机(99.00)即可带着泵的全部内部零件被完整拆出,而不用从管路上拆除泵壳(外套14.02)

拆卸 MXV(L),MXV(L)4的顺序:

1. 标示出电机在笼型支架(32.00)上的位置和笼型支架在上端盖上的位置(34.02),...依次类推在外套上(14.02),...在泵壳上(14.00)。
2. 取下螺钉(32.32)以及垫片(32.31)及联轴器护罩(32.30)。
3. 松开联轴器(64.22)上的螺丝(64.25)。

注意: 为了避免由于主轴(64.00)的轴向移动对机械密封弹簧(36.00)的挤压,我们建议拧松联轴器(64.22)的螺丝(64.25),即使仅为了拆出或安装电机。而后,按照9.2章节指示将主轴复位。

4. 从接线盒上卸下电源电缆,取下螺丝(70.18)及螺母(70.19)并从联轴器(64.22)上拆下电机(图.4a)。

对 MXV(L)25-32-40,MXV(L)4 25-32-40:

5. 从长杆螺栓(61.02)上拧下螺母(61.04)。
6. 将笼型支架(32.00)及轴承(66.00)和联轴器(64.22)顺泵轴(64.00)和外套(14.02)整体拆出。一旦拆出笼型支架,其他所有内部零件都可以随着轴从外套里抽出。
7. 拆下上端盖(34.02)和O-形圈(14.20),然后就是出口端壳体(20.00)了。

对MXV(L)50-65-80,MXV(L)4 50-65-80:

5. 拆下螺丝(61.07)和笼型支架(32.00),其和轴承(66.00)及联轴器(64.22)作为整体从上端盖(34.02)顺轴(64.00)抽出(图.5)。
6. 从长杆螺栓(61.02)上拆下螺母(61.04)和垫片(61.03)。
7. 借助于长木棍或杠杆,沿外套直径对角线位置交替撬动或敲动上端盖,将上端盖(34.02)从外套(14.02)顺轴(64.00)拆下,或连同外套一起从泵壳(14.00)上拆下。一旦拆下上端盖(34.02),其他所有内部零件都可以从泵壳(14.00)中抽出。

8.4. 更换机械密封

确保新机械密封的弹簧适合主轴的旋转方向。

应确保与机械密封相接触的所有零件都是彻底清洁并没有任何毛刺和尖锐边沿。

密封环为EPDM(乙稀-丙稀),应确保其与油类或脂类相接触。为了便于机械密封的安装,用清水或与密封环材料相适应的润滑剂来润滑轴,静环座和密封环。避免撞击或尖角划伤机械密封的摩擦面。

只针对MXV(L)4 25,32,40,50,65,80

拆下机械密封(36.00),从轴(64.00)上拆下动环时应确保轴上没有划痕,然后从上端盖(34.02)上拆下静环。把机械密封的动环尽量往轴(64.00)的肩环(36.52)处推,但不要压缩弹簧。

检查安装前后的长度并把动环升起到与原始长度(L1 图5)一致。

这样,当静环安装时和轴被固定在联轴器(L2 图6b)上后,机封弹簧能有一个准确的压缩量。

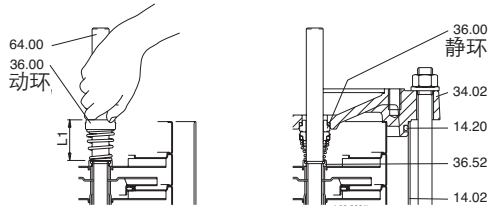


图.5 插入机械密封

只针对 MXV(L) 100, MXV(L)4 100 按照16. 页码131

8.5. 更换球轴承 MXV(L),MXV(L)4

如果需要更换滚珠轴承(66.00),使用型号为2RS1, C3 轴承,该型号标示在被更换滚珠轴承上,使用适合于工作温度的润滑脂。

轴承的型号取决于电机的型号:

电机尺寸	轴承型号
80	6206, 2RS1, C3
90	6207, 2RS1, C3
100-112	6208, 2RS1, C3
132	6310, 2RS1, C3
160-180	6313, 2RS1, C3

8.6. 第一级轴承和中间轴承 MXV(L),MXV(L)4

MXV50-16,65-32,80-48 泵的轴(64.00)上都有一个轴承套(64.10),在第一级叶轮后面的导叶(25.03)里有一轴承(根据吸入要求)。

从MXV..25-212, MXV..32-412到MXV..40-811,MXV50-1611, MXV65-3208和MXV80-4806,都有一中间轴承(见15章节)。

在它们被拆卸前,首先对每一级导叶和单独的隔套都按位置编号上号(在15章节可看到隔套的长度和位置),以便能够正确地重新安装这些组件。

9. 重新安装

在重新安装组件时,须按拆卸时相反的程序进行(见8.3 章节)。

检查O-形圈(14.20)的状态,若有损坏,请及时更换。

确保O-形圈(14.20)正确的放置在泵壳(14.00)和上端盖(34.02)的相应位置上,使用纯净水或其它兼容的液体润滑密封圈。

9.1. 紧固扭矩

型号	MXV-B 25-32-40-50	MXV... 25-32-40	MXV... 50-65-80
叶轮锁母(28.04)	8 Nm	8 Nm	35 Nm
联接螺栓锁母(61.04)	8 Nm	50 Nm	50 Nm
上端盖螺丝(61.07)	-	-	60 Nm
联轴器螺丝(64.25)	-	22 Nm	50 Nm
带螺母(70.19)的螺栓(70.18)	-	40 Nm	40 Nm

当紧固螺母(28.04)时，请注意别让反向使用的第二个扳手擦伤轴。

注意：联接螺栓(61.02)上的螺母(61.04)紧固上端盖的螺丝(61.07)和紧固笼型支架上的螺母(70.19)及螺丝(70.18)时必须按照次序按直径对角线位置均匀上紧。

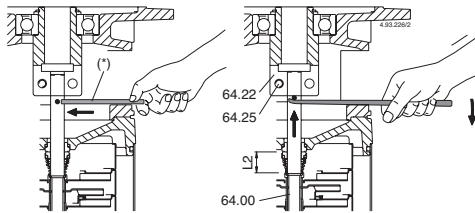


图.6a
转子静止,和轴一起均未被联轴器锁住
(*)提升轴用的销

图.6b
转子提升,把轴固定在联轴器的位置。

9.2. 泵转子的轴向位置 MXV(L),MXV(L)4

把转子沿着垂直方向从其静止位置提升起来(图.6a),把一个销子插入轴的孔内,利用一撬棍把销子撬到联轴节(64.22)的底面不动。

在这个位置上(图.6b)均衡地拧紧螺丝(64.25),轴(64.00)就牢牢地锁在联轴器内。

拿掉销子。

按第6.5章节说明,安装电机。

10. 处理



产品的最终处理应由专业公司操作
确保专业公司是按照材料分类方式处理
按照当地的法规和有关环境保护的国际准则处理

11. 备件

11.1. 订购备件

订购备件时请根据剖面图提供备件的名称和位置编号及泵铭牌上的数据(型号、参数和序列号)

备件需求请电话、传真、邮件给CALPEDA S.P.A

12. 部件名称

名称	
13.60	法兰盘(带调节)
14.00	泵壳
14.02	外壳
14.04	带垫片的注水堵
14.06	O形圈
14.12	带垫片的放水堵
14.16	O形圈
14.17	螺钉
14.18	O形圈
14.19	O形圈
14.20	壳体垫圈
14.42	带垫片的水堵
14.54	防磨环(1)
25.01	首级导叶
25.02	各级导叶
25.03	带滑动轴承的导叶
25.05	末级导叶
28.00	叶轮
28.04	叶轮锁母
28.08	垫片
32.00	笼形支架
32.30	护网
32.31	垫圈
32.32	螺钉
34.01	下端盖
34.02	上端盖
36.00	机械密封
36.51	两半保持圈
36.52	轴肩挡圈
61.00	底座
61.02	紧固螺栓
61.03	垫圈
61.04	螺母
61.07	螺钉
61.30	支撑地脚
61.32	螺钉
61.34	垫圈
61.36	螺母
64.00	泵轴
64.10	轴承套
64.13	上隔套
64.14	下隔套
64.15	内部隔套
64.18	轴承隔套(上)
64.19	轴承隔套(下)
64.22	联轴器
64.25	螺丝
66.00	滚珠轴承
66.18	弹性挡圈
66.19	轴肩环(3)
70.18	螺钉
70.19	螺母
99.00	电机总成

(1):嵌进导叶(不能单独提供)

(2):见第15章节。

(3):只有132的电机才有。

保留更改权利

13. 常见故障和解决方法

OFF



警告: 任何操作之前均应断开电源.
决不允许泵组干转,即使是短时间的.
严格按照使用说明书操作,如有必要请联系授权服务中心.

故障现象	故障的可能原因	解决办法
1) 电机不启动	1a) 电源供应不匹配 1b) 接线错误 1c) 电机过载保护装置动作 1d) 保险丝故障 1e) 轴卡死 1f) 若上述原因已检查确认,那可能是电机故障	1a) 检查供电电源的电压、频率是否符合电机铭牌所示 1b) 正确连接主电源线到接线端子,检查热过载保护装置的正确设置(见电机铭牌上的数据)务必保证电机保险丝安装正确。 1c) 检查供电电源并确保泵轴可自如的转动。检查热过载保护是否被正确的设定(看电机铭牌数据) 1d) 更换保险丝,检查主电源重复a)和c)的步骤 1e) 见2) 泵卡阻 1f) 向授权的服务中心申请维修或更换电机
2) 泵卡阻	2a) 设备长时间的停放使泵内部生锈 2b) 泵转子内部有固体异物 2c) 轴承损坏	2a) 从泵轴或联轴器处直接盘泵(盘泵前首先要切断电源),或者联系授权服务中心 2b) 如果可能,请拆除泵壳并除去内部转子中的异物。如有需要请联系授权服务中心 2c) 如果轴承受损请更换或联系授权服务中心
3) 泵工作但不出水	3a) 可能入口管路连接处漏气、或是排/灌水堵处、入口管路垫片处 3b) 底阀堵塞或吸入管没有完全浸入在液体中 3c) 入口过滤器堵塞	3a) 检查哪里没拧紧连接到位并正确连接 3b) 清洁或更换底阀并使用适合于工况的进口管路 3c) 清洁过滤器,或更换。同时参见2a)
4) 流量不足	4a) 管路及其附件直径过小导致水头损失过大 4b) 流道内有沉积物或固体异物 4c) 转子腐蚀损坏 4d) 转子和泵壳磨损 4e) 泵送介质粘度过高(不同于水) 4f) 旋转方向错误 4g) 吸程超过了泵的自吸能力 4h) 入口管路过长	4a) 请使用符合工况的管路及其附件 4b) 清洁转子并安装入口过滤器以防止外部固体异物进入 4c) 更换转子,如果需要请联系授权服务中心 4d) 更换转子和泵壳 4e) 泵不适用 4f) 在控制柜内或电机接线盒内对调任意两根接线 4g) 请尝试部分关闭供水阀门和/或降低泵的安装高度,液体将被吸入。 4h) 使泵尽量靠近入口水箱以便缩短进口管路。如有必要应选用大口径进水管。
5) 泵的噪音和震动	5a) 转子不平衡 5b) 轴承磨损 5c) 泵和管路未固定到位 5d) 输送管路直径过小 5e) 发生汽蚀 5f) 供电电源不平衡 5g) 泵与电机不同心	5a) 检查转子中是否有固体异物 5b) 更换轴承 5c) 将进水管路固定到位 5d) 使用更大直径的管路或降低泵的流量 5e) 通过调节供水阀门降低流量,并且/或 使用内径更大的管路。参考4g) 5f) 检查供电电压是否正确 5g) 再次校正同心度
6) 机封漏水	6a) 机封干转或粘连 6b) 泵送介质中有磨蚀性物质导致机封划伤 6c) 机封不适用于当前工况 6d) 在第一次启动或灌泵时的轻微滴漏	对于6a), 6b) 和 6c) 的情况,更换机封,如果需要请联系授权服务中心 6a) 务必保证泵壳体内(如为非自吸泵,吸入管道内)充满液体,且空气已被完全排出,参见5e)。 6b) 安装入口过滤器,使用与泵送介质特点匹配的机封 6c) 选用适用于此工况的机封 6d) 待泵运行一会儿机封自行调整,如果问题依旧请参考6a), 6b), 6c)或联系授权服务中心。

中文

M.. V1

使用说明书

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5. 电机变速工作.....	120
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1. 电机标牌实例

电机标牌图示 50Hz

1 ~ M132 V1-7.5T 0204123345 ~ 13
 2 ~ 5.5kW (7.5 hp) ~ 14
 3,4,5 ~ 3-Δ/Y 400/690V 50Hz 7.5/3.2A
 6,7,8 ~ 2850 rpm S1 I.C.L. F
 9,10,11,12 ~

V	%	cos φ	η	
400	100	0.86	88.5	55.7 kg ~ 15 IP 54 ~ 16
400	75	0.81	89.3	
400	50	0.71	89.2	

IEC 60034-1 ~ 17 IE2-88.1 ~ 17

- | | |
|--------|---------|
| 1 类型 | 10 负载% |
| 2 标称功率 | 11 功率因数 |
| 3 电源电压 | 12 效率 |
| 4 频率 | 13 认证 |
| 5 电流 | 14 序列号 |
| 6 标称转速 | 15 重量 |
| 7 工作类型 | 16 保护等级 |
| 8 绝缘等级 | 17 能效等级 |
| 9 电压 | |

2. 吊装

所有重量超过25公斤的CALPEDA电机都装配有吊装环。

吊装电机时应该使用主吊装环，但吊装一体的电机-泵组时不能使用该吊装环。具有同等轴高的电机其中心平衡点的位置也会因不同的功率，不同的装配布局，不同的辅助设备而不同的。

决不能使用有问题的吊装环。吊装电机前务必确认吊装环是好的。

吊升前吊装环必须扣好。如有必要，可使用合适的垫片调整吊装环的位置。

必须使用合适的吊装设备，吊钩和吊环的尺寸应配合。注意不要损坏辅助设备和与电机相连的电线。

3. 安装和启动

当你怀疑电机受潮时，在开机前先检查绝缘阻值。



3.1 检查绝缘阻值

当你怀疑电机受潮时，在开机前先检查绝缘阻值。



在电机或与电机相连的设备继续工作前断开线路的连接。

25°C时，绝缘阻值应大于100MΩ的参考值(在500DC下测量)。房间温度每上升20°C绝缘阻值顺次递减一半。



电机外壳应可靠接地，测量后线圈应立即放电以避免电击的危险。

如果线圈被海水浸泡，则应重缠。

3.2 电机的装配和校准

确保电机周围有足够的空间以便空气流通。准确的校正电机以避免轴承的损坏、震动及轴的损伤。

用适当的方法校正电机，边上紧螺栓边不断检查校正情况。

不要超过产品目录上给出的轴承许可的负载值。

3.3 冷凝物排放装置

确保冷凝物排放孔和塞向下。

在满是灰尘的环境中，所有排放孔应关闭。

如果电机上有冷凝水口，请根据气候情况定期打开口。

如果杂物进入了冷凝水开口(可选)中，会损坏绕组，这可能导致人员伤亡和财产损失！



为符合防护等级，请注意以下提示：

- 在打开冷凝水开口前，先将电机断电。
- 在调试电机前，将冷凝水开口密封(如使用T形塞)。

降低防护等级

冷凝水开口不密封可导致电机损坏。

为确保防护等级，排出冷凝水后必须再次关闭所有开口。



3.4 布线及电气连接

标准的单速电机接线盒通常有6个绕组端子和至少一个接地端子。

除此之外，接线盒也能连接热敏电阻，防凝结水电阻(辅助加热)或其他辅助装置。

连接时应使用合适的电线接头。辅助装置的导线应直接连接到相应的端子上。设备一旦就位则不应移动。除非特别说明，电缆输入线都是以公制来表示的。电缆密封套必须与接线盒具有相同的保护水平和IP等级。就输入电缆所使用的密封套和密封件应符合电缆的线径类型和保护类型的要求。

将电机接入主电网前，接地操作必须按本地法规执行。确保电机的保护水平是适合环境和气候条件的；例如，确保电机或接线盒不会进水。接线盒密封应安装良好准确嵌入各自位置以保证达到准确的IP等级。

3.4.1 不同的启动方式的连接

标准的单速电机的接线盒通常有6个绕组端子和至少一个接地端子，允许直接启动或星三角启动。参照图.1 接线图(只对CALPEDA电机)

4. 操作条件

4.1 使用

除非在标牌上特别指明，正常电机依如下环境条件设计：-最大环境温度从-20°C到+40°C。

- 最大海拔高度1.000米。
- 电源偏差±5%,频率偏差±2%,符合EN/IEC60034-1。

电机只能被用于原设计的用途。电机标牌给出了名义数据和操作条件。应遵守本手册和其他指南上的指示。如果超过说明的极限,检查电机数据和构造特性。联系CALPEDA以获得更多信息。



没有遵循操作指南或没有对设备维护保养都可能降低设备的安全性和影响设备的使用。

4.2 冷却

确保电机通风良好。确保贴近的物品或直射的阳光不会造成电机额外受热。

5. 变速工作的电机

变速运行将造成电机绕组比正弦波形更高的电压,因此需要一个适合变频使用的电机。

5.1 热保护器

按要求电机可以内置PTC热敏电阻于定子绕组。我们建议使用适当的方法将热敏电阻连接到变频器上。

5.2 启动变速应用

变速操作应遵照变频器的说明并符合当地的法律法规。

认真考虑依实际应用设定条件和限制。

设定变频器所需要的参数应按照电机标牌所示。

-通常需要的参数是:

- 电机的额定电压
- 电机的额定电流
- 电机的额定频率
- 电机的额定转速
- 电机的额定功率

注意:如果找不到或不确定这些必须的信息,则不要启动电机,除非确认设置是准确的。

CALPEDA建议使用变频器提供的所有保护参数设定以增加使用的安全性。

变频器通常保证如下参数(参数和可用性基于变频器的生产商和型号的不同而不同):

- 最小转速
- 最大转速
- 加速减速时间
- 最大电流
- 最大扭矩
- 意外停车保护

6. 维护



当电机停止运转时,残存的电流可能会导致接线盒内部的线圈发热。



即使单相电机已停止运转,但电容器内会储存电力,将导致接线端子带电。



带有变频器的电机停止运转时,应注意它有可能会自动恢复运转。

6.1 常规检查


1. 定期检查电机,至少每年一次。检修频率可依使用条件的不同而不同,例如环境中的湿度和特别的气候条件。最初可依照实践来确定检修频率,但确定应严格遵循。
 2. 应保持电机的清洁并保证良好的通风。如果电机的工作环境灰尘较大,必须定期检查并清洁通风系统。
 3. 检查轴封的状态(例如V形密封圈或径向轴封),如有必要及时更换。
 4. 检查电线接点的状态。
 5. 检查轴承状态,异常的声音,震动,温度等。
- 当发现有磨损的迹象时,拆开电机,检查磨损的部件如有必要及时更换。更换轴承时必须使用与原轴承一样的轴承。更换轴承的同时也要更换轴密封件,同样要使用与原密封件质量和性能参数一样的密封件。

6.1.1 电机在备用状态

如果电机在一个震动的环境下长期不用,则应遵循如下措施:

1. 每隔两周开机运转设备让轴转动一下(做好记录)。如因任何原因无法开机运转,则应当每隔一周人工手动盘车以使轴能变换一下位置。其他设备引起的震动可能导致电机轴承上出现麻坑,用定期运转或定期手动盘车的方式可以最大限度的减轻这种损害。

6.2 轴承

 润滑脂和轴承的最大工作温度是+110℃,决不允许超温。也不允许超过最大的电机额定转速。

轴承型号依据电机型号,如下:

电机尺寸	负载侧轴承	风扇侧轴承
80-90	6205 2Z/C3 WT	6204 2Z/C3 WT
100-112	E2 6306 2Z/C3	E2 6206 2Z/C3
132	E2 6208 2Z/C3	E2 6207 2Z/C3
160	E2 6310 2Z/C3	E2 6308 2Z/C3
180	E2 6310 2Z/C3	E2 6309 2Z/C3

7. 维修

7.1 备件

订购电机备件时,请说明序列号,产品型号的全称和电机铭牌上的编码。

7.2 重绕电机

必须由经授权的修理厂重绕电机。

7.3 轴承

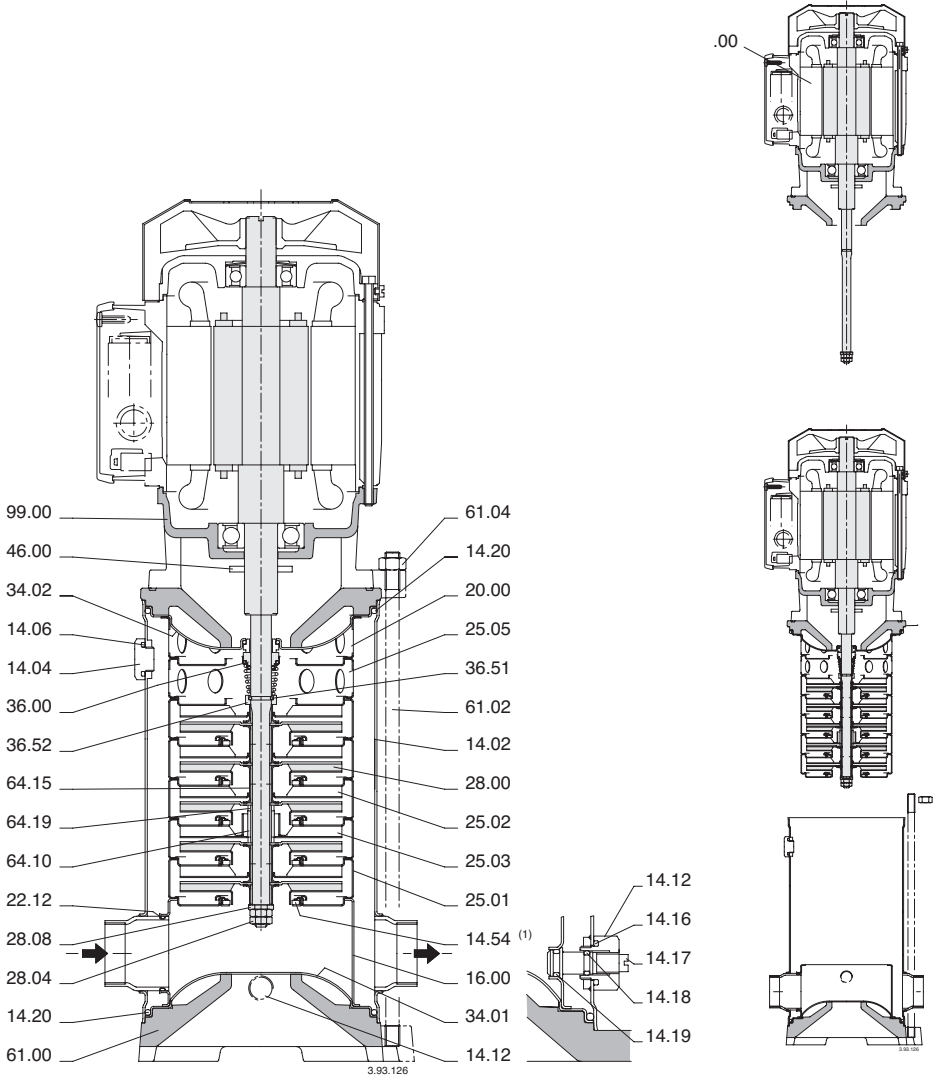
轴承应特别注意。

应使用专用的拔出器拆卸轴承,使用适当的机械安装轴承或热装配。

保留更改权利

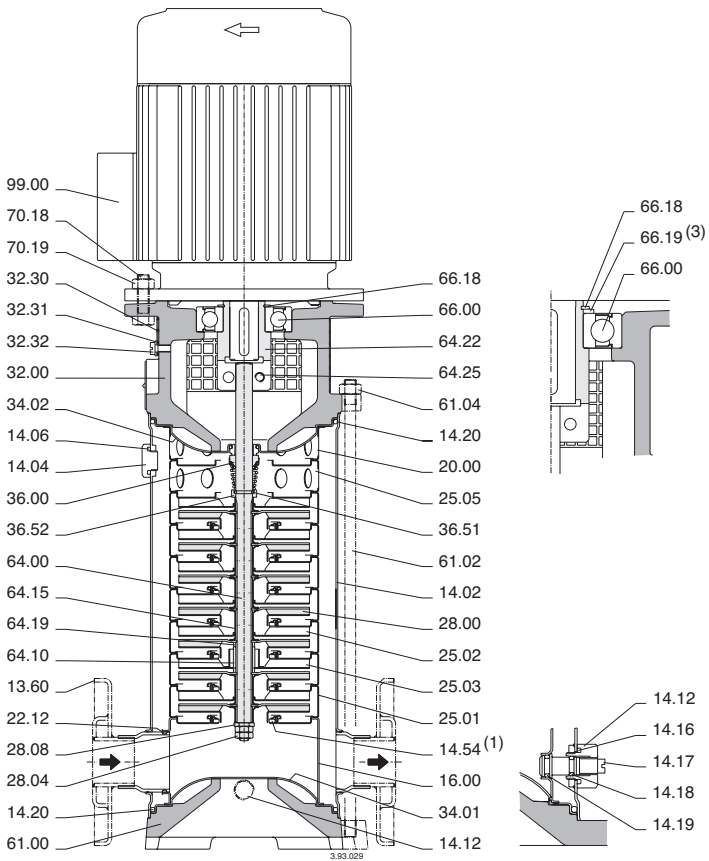
14. Disegno per lo smontaggio ed il rimontaggio
 Drawing for dismantling and assembly
 Zeichnung für Demontage und Montage
 Dessin pour démontage et montage
 Dibujo para desmontaje y montaje
 Ritning för demontering och montering
 Onderdelentekening
 Чертеж для демонтажа и сборки
 组装与分解图

MXV-B 25-32-40-50



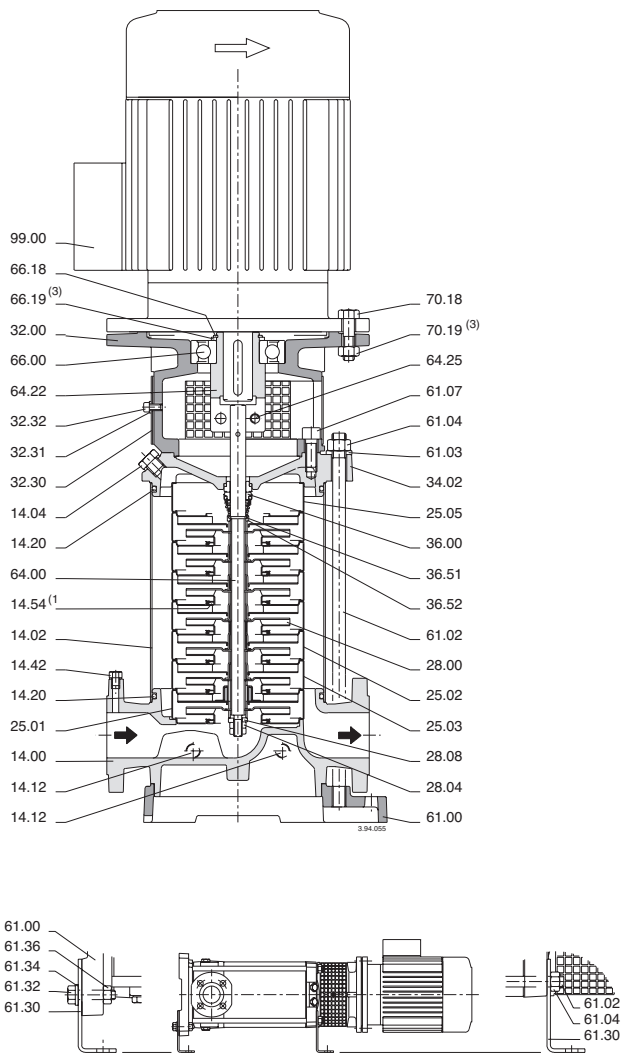
14. Disegno per lo smontaggio ed il rimontaggio
 Drawing for dismantling and assembly
 Zeichnung für Demontage und Montage
 Dessin pour démontage et montage
 Dibujo para desmontaje y montaje
 Ritning för demontering och montering
 Onderdelentekening
 Чертеж для демонтажа и сборки
 组装与分解图

MXV(L) 25-32-40, MXV(L)4 25-32-40



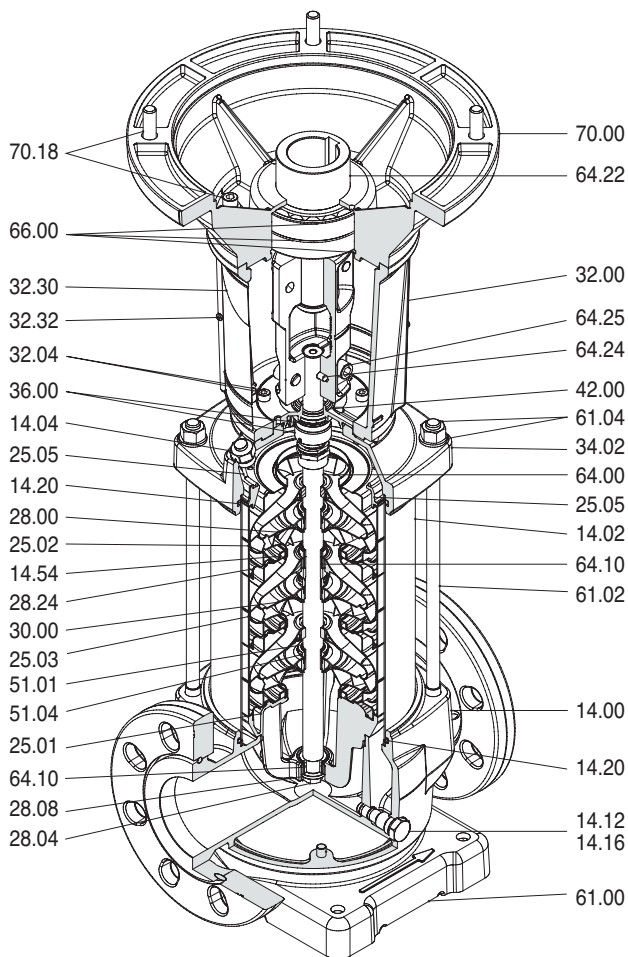
14. Disegno per lo smontaggio ed il rimontaggio
 Drawing for dismantling and assembly
 Zeichnung für Demontage und Montage
 Dessin pour démontage et montage
 Dibujo para desmontaje y montaje
 Ritning för demontering och montering
 Onderdelentekening
 Чертеж для демонтажа и сборки
 组装与分解图

MXV(L) 50-65-80, MXV(L)4 50-65-80





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


MXV(L) 100





15. Composizione stadi, giranti e bussole
Stages, Impellers and sleeves composition
Stufen-, Laufräder- und Hülzenszusammensetzung
Composition des étages, roues et entretoises
Composición elementos, rodetes y distanciadores
Mellandelarnas, pumphjulen och slitringarnas sammansättning
Trappen-, waaiers-, en bussensamenstelling
Οδηγά πτερύγια, πτερωτές και χιτώνια σύνθεσης
Состав ступеней, Рабочее колесо и втулок
級数，叶轮和衬套结构图

20.00  Corpo premente
 Delivery casing
 Druckgehäuse
 Corps de refoulement
 Cuerpo impulsión
 Pumphuis, trycksida
 Pershuis
 Σώμα κατάθλιψης
 Корпус подающей части

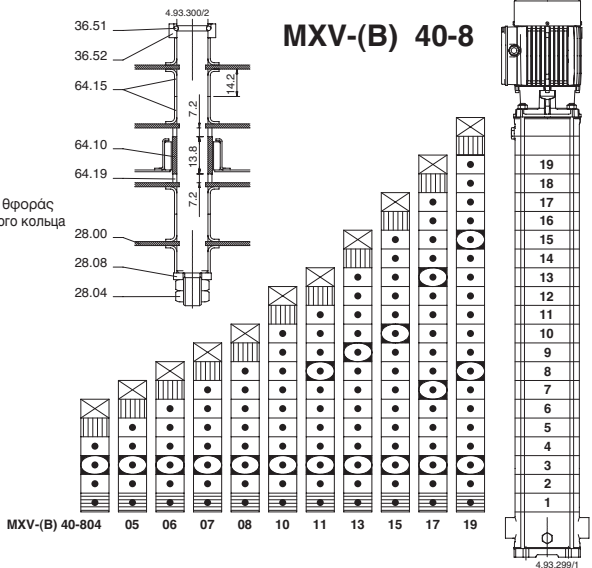
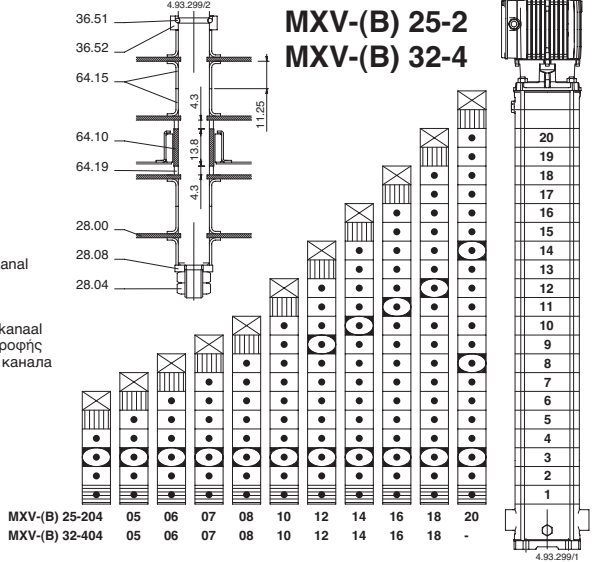
25.01  Corpo primo stadio, senza canale di ritorno
 First stage casing, without return channel
 Stufengehäuse erste Stufe, ohne Rückführkanal
 Corps premier étage, sans canal de retour
 Cuerpo primera etapa, sin canal de retorno
 Mellandel första steget, utan returkanal
 Waaierhuis eerste trap, zonder terugstroomkanaal
 Πρώτο οδηγό πτερύγιο χωρίς κανάλι επιστροφής
 Корпус первой ступени, без возвратного канала

25.02  Corpo stadio con canale di ritorno
 Stage casing with return channel
 Stufengehäuse mit Rückführkanal
 Corps d'étage avec canal de retour
 Cuerpo elemento con canal de retorno
 Mellandel med returkanal
 Waaierhuis, met terugstroomkanaal
 Οδηγό πτερύγιο με κανάλι επιστροφής
 Корпус ступени с возвратным каналом


25.03  Corpo stadio con cuscinetto
 Stage casing with bearing
 Stufengehäuse mit Lager
 Corps d'étage avec coussinet
 Cuerpo elemento con cojinete
 Mellandel med lager
 Waaierhuis met lager
 Οδηγό πτερύγιο με τριβείς
 Корпус ступени с подшипником


25.05  Corpo ultimo stadio senza anello di tenuta
 Last stage casing without wear ring
 Stufengehäuse letzte Stufe ohne Spaltring
 Corps dernier étage sans bague d'usure
 Cuerpo ultimo elemento sin anillo cierre
 Mellandel sista steget utan slitring
 Waaierhuis laatste trap, zonder slitring
 Τελευταίο οδηγό πτερύγιο χωρίς δακτύλιο θφώρας
 Корпус последней ступени без уплотнительного кольца


28.00  Girante
 Impeller
 Laufrad
 Roue
 Rodete
 Pumphjul
 Waaier
 Πτερωτή
 Рабочее колесо





15. Composizione stadi, giranti e bussole
Stages, impellers and sleeves composition
Stufen-, Laufräder- und Hülsenzusammensetzung
Composition des étages, roues et entretoises
Composició elementos, rodetes y distanciadores
Mellandelarnas, pumphjulen och slirringarnas sammansättning
Trappen-, waaier-, en bussensamenstelling
Οδηγά πτερύγια, πτερωτές και χιτώνια σύνθεσης
Состав ступеней, Рабочее колесо и втулок
級数・叶轮和衬套结构图

20.00  Corpo premente
 Delivery casing
 Druckgehäuse
 Corps de refoulement
 Cuerpo impulsión
 Pumphus, trycksida
 Pershuis
 Σώμα κατάθλιψη
 Корпус подающей части

25.01  Corpo primo stadio, senza canale di ritorno
 First stage casing, without return channel
 Stufengehäuse erste Stufe, ohne Rückführkanal
 Corps premier étage, sans canal de retour
 Cuerpo primera etapa, sin canal de retorno
 Mellandel första steget, utan returkanal
 Waaierhuis eerste trap, zonder terugstroomkanaal
 Πρώτο οδηγό πτερύγιο χωρίς κανάλι επιστροφής
 Корпус первой ступени, без возвратного канала

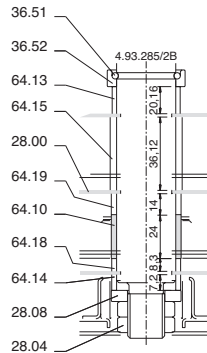
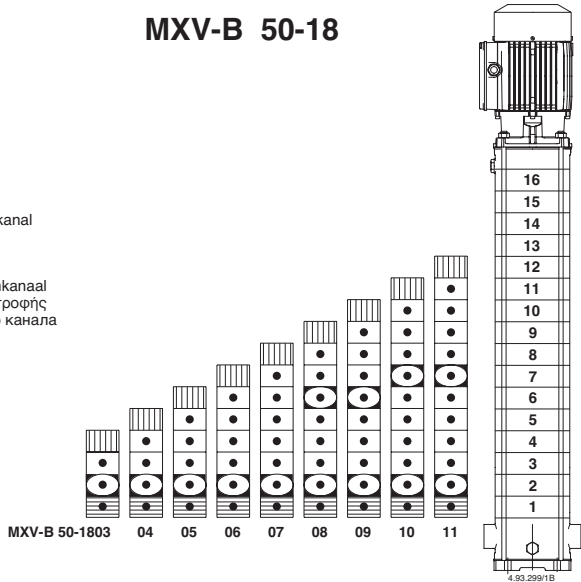
25.02  Corpo stadio con canale di ritorno
 Stage casing with return channel
 Stufengehäuse mit Rückführkanal
 Corps d'étage avec canal de retour
 Cuerpo elemento con canal de retorno
 Mellandel med returkanal
 Waaierhuis, met terugstroomkanaal
 Οδηγό πτερύγιο με κανάλι επιστροφής
 Корпус ступени с возвратным каналом

25.03  Corpo stadio con cuscinetto
 Stage casing with bearing
 Stufengehäuse mit Lager
 Corps d'étage avec coussinet
 Cuerpo elemento con cojinete
 Mellandel med lager
 Waaierhuis met lager
 Οδηγό πτερύγιο με τριβείς
 Корпус ступени с подшипником

25.05  Corpo ultimo stadio senza anello di tenuta
 Last stage casing without wear ring
 Stufengehäuse letzte Stufe ohne Spaltring
 Corps dernier étage sans bague d'usure
 Cuerpo ultimo elemento sin anillo cierre
 Mellandel sista steget utan slirring
 Waaierhuis laatste trap, zonder slirring
 Τελευταίο οδηγό πτερύγιο χωρίς δακτύλιο θφώρας
 Корпус последней ступени без уплотнительного кольца

28.00  Girante
 Impeller
 Laufrad
 Roue
 Rodete
 Pumphjul
 Waaier
 Πτερωτή
 Рабочее колесо

MXV-B 50-18



15. Composizione stadi, giranti e bussole
Stages, impellers and sleeves composition
Stufen-, Laufräder- und Hülsenzusammensetzung
Composition des étages, roues et entretoises
Composición elementos, rodetes y distanciadores
Mellandelarnas, pumphjulen och slirringarnas sammansättning
Trappen-, waaiers-, en bussensamenstelling
Οδηγά πτερύγια, πτερωτές και χιτώνια σύνθεσης
Состав ступеней, Рабочее колесо и втулок
级数·叶轮和衬套结构图

MXV 50-16

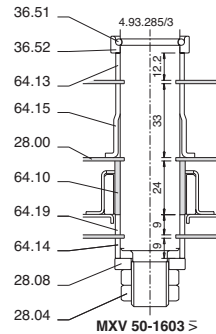
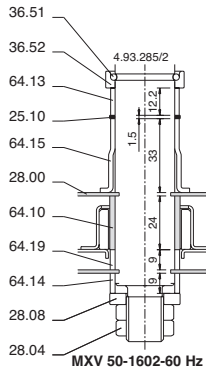
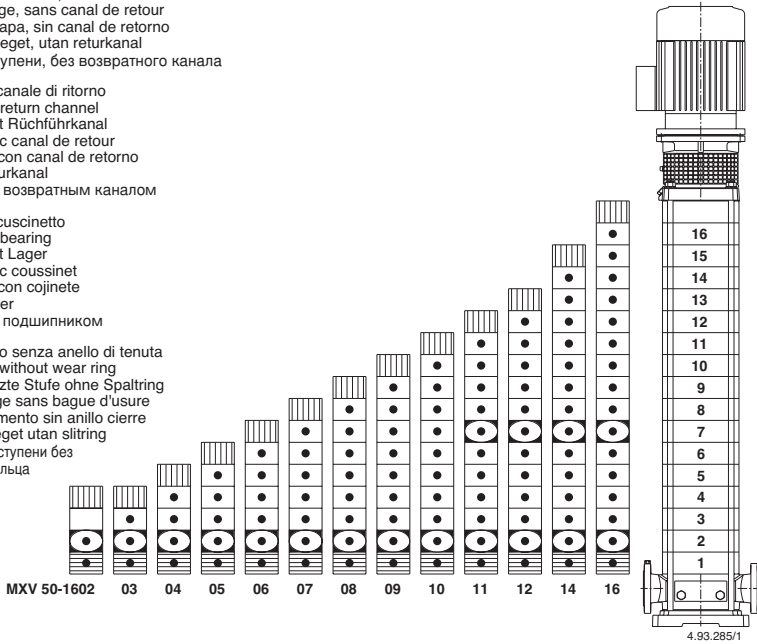
25.01 Corpo primo stadio, senza canale di ritorno
 First stage casing, without return channel
 Stufengehäuse erste Stufe, ohne Rückführkanal
 Corps premier étage, sans canal de retour
 Cuerpo primera etapa, sin canal de retorno
 Mellandel första steget, utan returkanal
 Корпус первой ступени, без возвратного канала

25.02 Corpo stadio con canale di ritorno
 Stage casing with return channel
 Stufengehäuse mit Rückführkanal
 Corps d'étage avec canal de retour
 Cuerpo elemento con canal de retorno
 Mellandel med returkanal
 Корпус ступени с возвратным каналом

25.03 Corpo stadio con cuscinetto
 Stage casing with bearing
 Stufengehäuse mit Lager
 Corps d'étage avec coussinet
 Cuerpo elemento con cojinete
 Mellandel med lager
 Корпус ступени с подшипником

25.05 Corpo ultimo stadio senza anello di tenuta
 Last stage casing without wear ring
 Stufengehäuse letzte Stufe ohne Spaltring
 Corps dernier étage sans bague d'usure
 Cuerpo ultimo elemento sin anillo cierre
 Mellandel sista steget utan slirring
 Корпус последней ступени без уплотнительного кольца

28.00 Girante
 Impeller
 Laufrad
 Roue
 Rodete
 Pumphjul
 Рабочее колесо



15. Composizione stadi, giranti e bussole
Stages, impellers and sleeves composition
Stufen-, Laufräder- und Hülsenzusammensetzung
Composition des étages, roues et entretoises
Composición elementos, rodetes y distanciadores
Mellandelarnas, pumphjul och slitrिंगarnas sammansättning
Trappen-, waaiers-, en bussensamenstelling
Οδηγά πτερύγια, πτερωτές και χιτώνια σύνθεσης
Состав ступеней, Рабочее колесо и втулок
级数·叶轮和衬套结构图

MXV 65-32

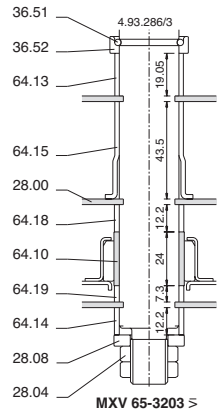
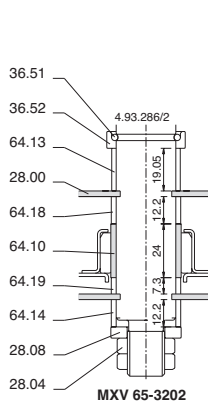
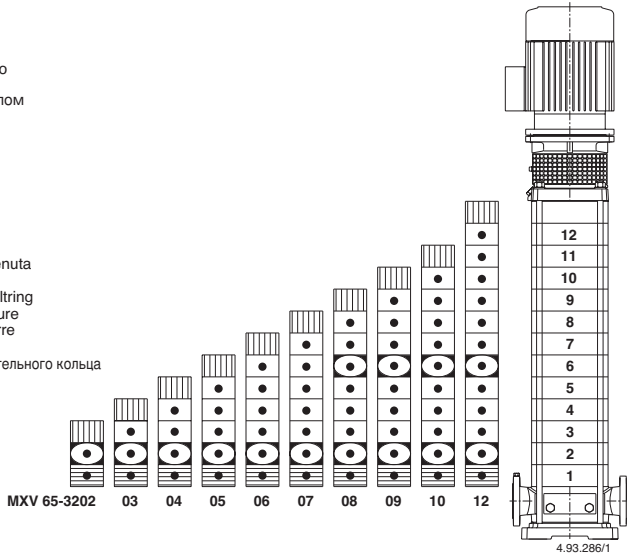
25.01 Corpo primo stadio, senza canale di ritorno
 First stage casing, without return channel
 Stufengehäuse erste Stufe, ohne Rückführkanal
 Corps premier étage, sans canal de retour
 Cuerpo primera etapa, sin canal de retorno
 Mellandel första steget, utan returkanal
 Корпус первой ступени, без возвратного канала

25.02 Corpo stadio con canale di ritorno
 Stage casing with return channel
 Stufengehäuse mit Rückführkanal
 Corps d'étage avec canal de retour
 Cuerpo elemento con canal de retorno
 Mellandel med returkanal
 Корпус ступени с возвратным каналом

25.03 Corpo stadio con cuscinetto
 Stage casing with bearing
 Stufengehäuse mit Lager
 Corps d'étage avec coussinet
 Cuerpo elemento con cojinete
 Mellandel med lager
 Корпус ступени с подшипником






25.05 Corpo ultimo stadio senza anello di tenuta
 Last stage casing without wear ring
 Stufengehäuse letzte Stufe ohne Spaltring
 Corps dernier étage sans bague d'usure
 Cuerpo ultimo elemento sin anillo cierre
 Mellandel sista steget utan slitring
 Корпус последней ступени без уплотнительного кольца

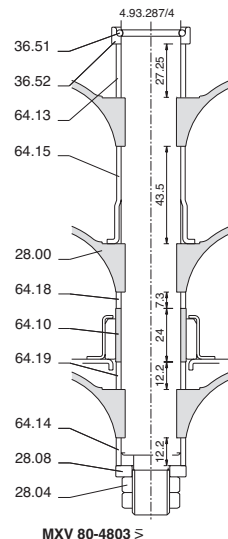
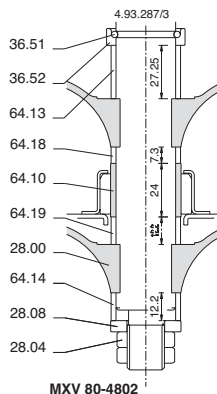
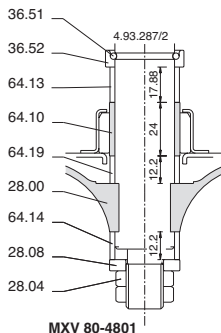
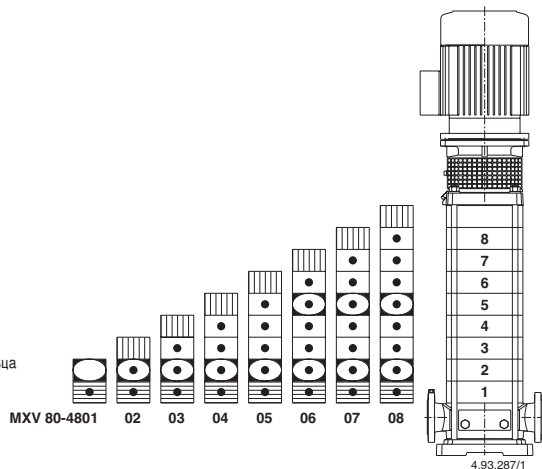
28.00 Girante
 Impeller
 Laufrad
 Roue
 Rodete
 Pumphjul
 Рабочее колесо



15. Composizione stadi, giranti e bussole
Stages, impellers and sleeves composition
Stufen-, Laufräder- und Hülsenzusammensetzung
Composition des étages, roues et entretoises
Composición elementos, rodetes y distanciadores
Mellandelarnas, pumphjulen och slirringarnas sammansättning
Trappen-, waaiers-, en bussensamenstelling
Οδηγά πτερύγια, πτερωτές και χιτώνια σύνθεσης
Состав ступеней, Рабочее колесо и втулок
级数 · 叶轮和衬套结构图

MXV 80-48

- 25.01  Corpo primo stadio, senza canale di ritorno
 First stage casing, without return channel
 Stufengehäuse erste Stufe, ohne Rückführkanal
 Corps premier étage, sans canal de retour
 Cuerpo primera etapa, sin canal de retorno
 Mellandel första steget, utan returkanal
 Корпус первой ступени, без возвратного канала
- 25.02  Corpo stadio con canale di ritorno
 Stage casing with return channel
 Stufengehäuse mit Rückführkanal
 Corps d'étage avec canal de retour
 Cuerpo elemento con canal de retorno
 Mellandel med returkanal
 Корпус ступени с возвратным каналом
- 25.03  Corpo stadio con cuscinetto
 Stage casing with bearing
 Stufengehäuse mit Lager
 Corps d'étage avec coussinet
 Cuerpo elemento con cojinete
 Mellandel med lager
 Корпус ступени с подшипником
- 25.05  Corpo ultimo stadio senza anello di tenuta
 Last stage casing without wear ring
 Stufengehäuse letzte Stufe ohne Spaltring
 Corps dernier étage sans bague d'usure
 Cuerpo ultimo elemento sin anillo cierre
 Mellandel sista steget utan slirring
 Корпус последней ступени без уплотнительного кольца
- 28.00  Girante
 Impeller
 Laufrad
 Roue
 Rodete
 Pumphjul
 Рабочее колесо

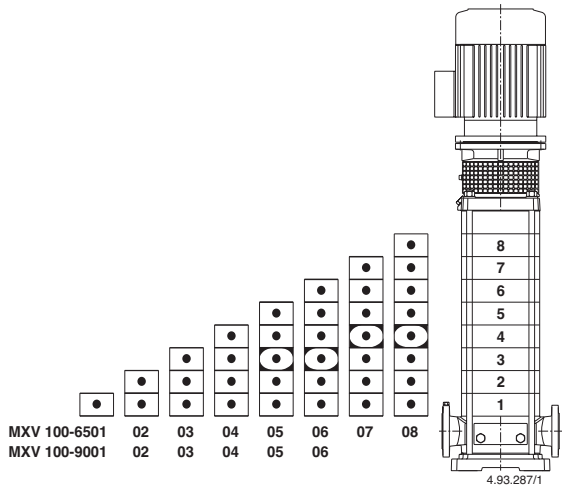


15. **Composizione stadi, giranti e bussole**
Stages, impellers and sleeves composition
Stufen-, Laufräder- und Hülsenzusammensetzung
Composition des étages, roues et entretoises
Composició elementos, rodets y distanciadores
Mellandelarnas, pumphjul och sliringarnas sammansättning
Trappen-, waaiers-, en bussensamenstelling
Οδηγά πτερύγια, περωτές και χιτώνια σύνθεσης
Состав ступеней, Рабочее колесо и втулок
级数 · 叶轮和衬套结构图

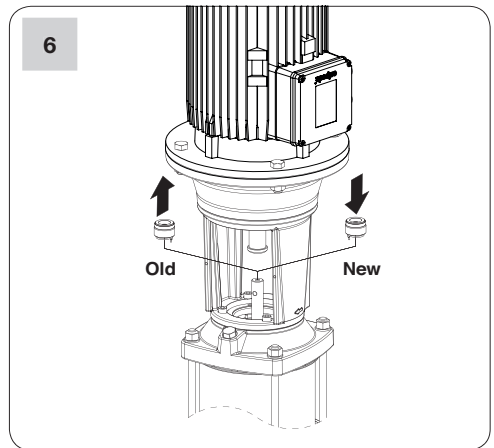
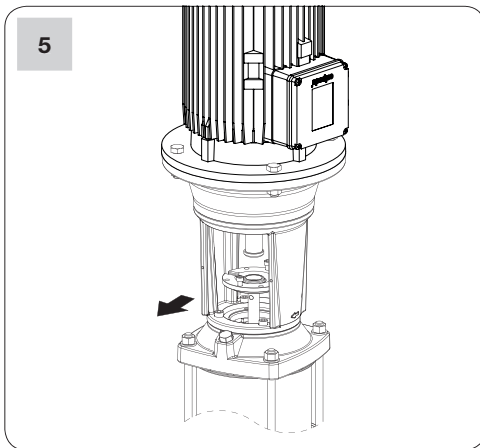
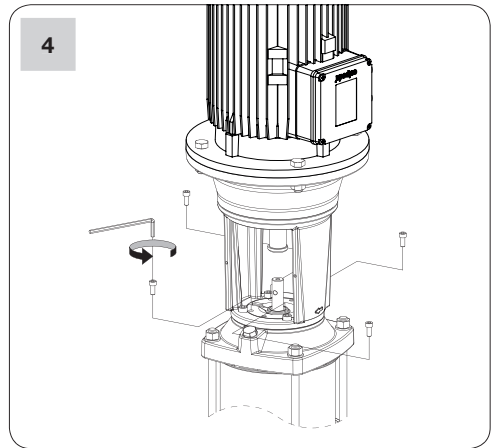
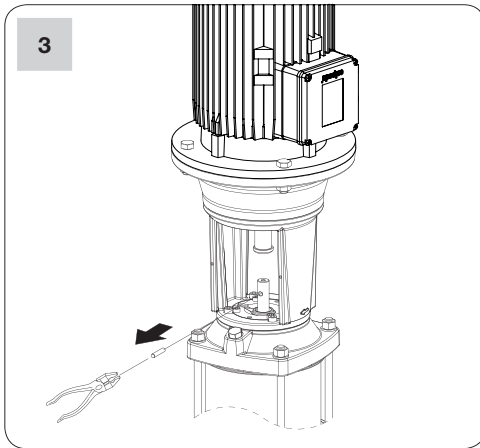
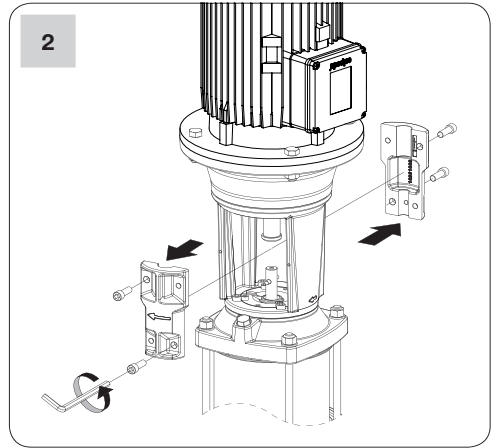
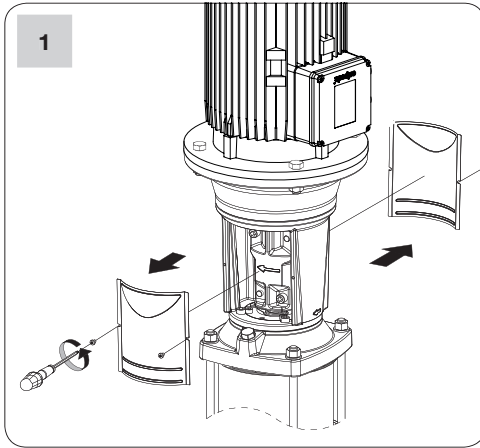
MXV 100-65
MXV 100-90

25.03 Corpo stadio con cuscinetto
 Stage casing with bearing
 Stufengehäuse mit Lager
 Corps d'étage avec coussinet
 Cuerpo elemento con cojinete
 Mellandel med lager
 Корпус ступени с подшипником

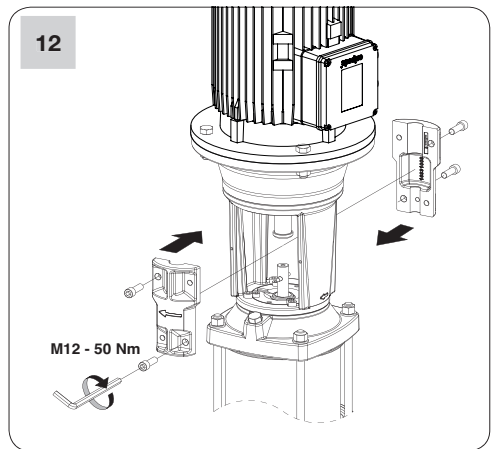
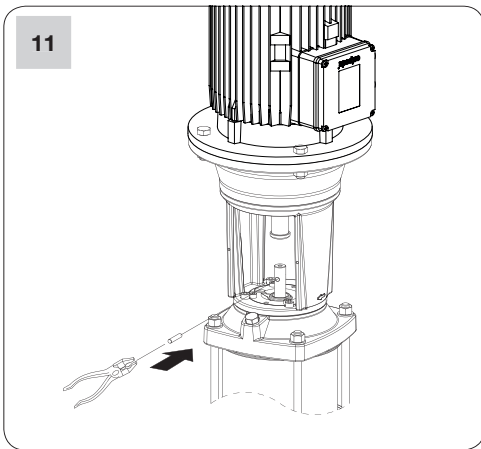
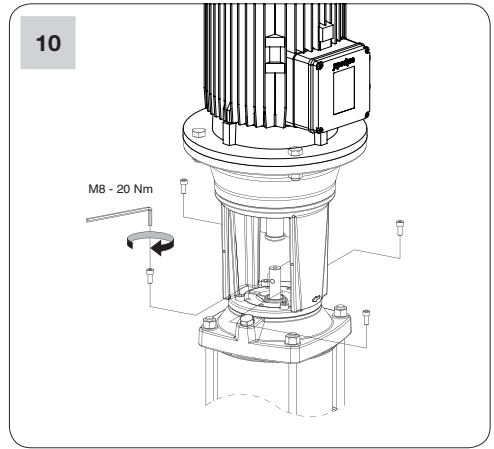
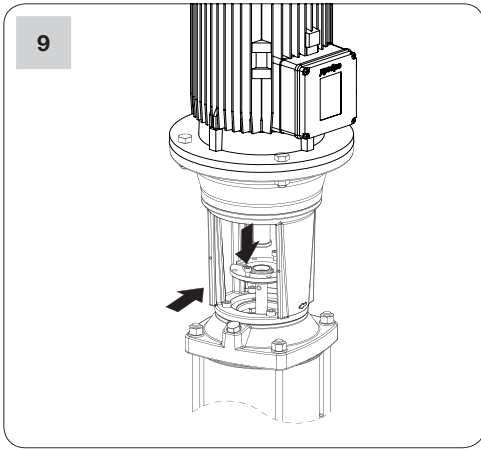
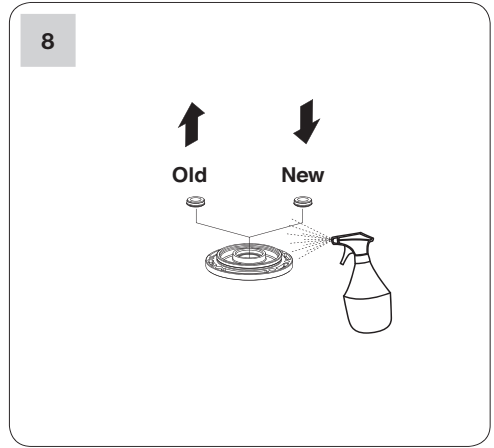
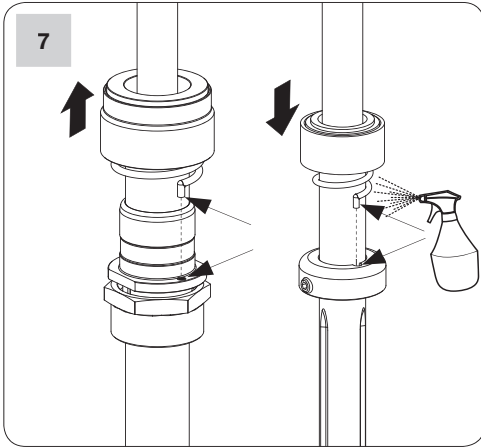
28.00 Girante
 Impeller
 Laufrad
 Roue
 Rodete
 Pumphjul
 Рабочее колесо



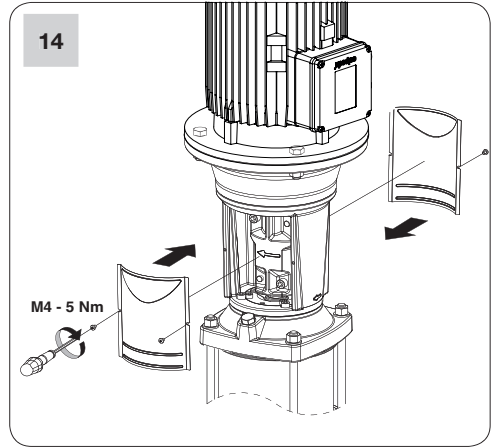
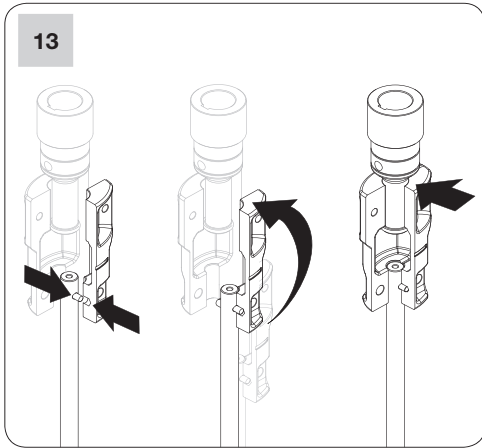
MXV(L) 100



MXV(L) 100



MXV(L) 100



16. Sezione minima dei conduttori
Minimum cross-sectional area of conductors

Tab. 1

TAB 1IEC 60335-1

Corrente nominale dell'apparecchio Rated current of appliance A	Sezione nominale Nominal cross-sectional area mm ²
>0,2 ÷ ≤3	0,5 ^a
>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

^a Questi cavi possono essere usati solo se la loro lunghezza non supera 2 m tra il punto in cui il cavo o la sua protezione entra nell'apparecchio e l'entrata nella spina.

These cords may only be used if their length does not exceed 2 m between the point where the cord or cord guard enters the appliance and the entry to the plug.

IT**DICHIARAZIONE DI CONFORMITÀ**

Noi CALPEDA S.p.A. dichiariamo sotto la nostra esclusiva responsabilità che le Pompe MXV-B, MXV, MXVL, MXV4, MXVL4, tipo e numero di serie riportati in targa, sono conformi a quanto prescritto dalle Direttive 2006/42/CE, 2009/125/CE, 2014/30/EU, 2014/35/EU e dalle relative norme armonizzate. Regolamento della Commissione N. 547/2012, 640/2009.

GB**DECLARATION OF CONFORMITY**

We CALPEDA S.p.A. declare that our Pumps MXV-B, MXV, MXVL, MXV4, MXVL4, with pump type and serial number as shown on the name plate, are constructed in accordance with Directives 2006/42/EC, 2009/125/EC, 2014/30/EU, 2014/35/EU and assume full responsibility for conformity with the standards laid down therein. Commission Regulation No. 547/2012, 640/2009.

D**KONFORMITÄTSERKLÄRUNG**

Wir, das Unternehmen CALPEDA S.p.A., erklären hiermit verbindlich, daß die Pumpen MXV-B, MXV, MXVL, MXV4, MXVL4, Typbezeichnung und Fabrik-Nr. nach Leistungsschild den EG-Vorschriften 2006/42/EG, 2009/125/EG, 2014/30/EU, 2014/35/EU entsprechen. ErP-Richtlinie N. 547/2012, 640/2009.

F**DECLARATION DE CONFORMITE**

Nous, CALPEDA S.p.A., déclarons que les Pompes MXV-B, MXV, MXVL, MXV4, MXVL4, modèle et numero de série marqués sur la plaque signalétique sont conformes aux Directives 2006/42/CE, 2009/125/CE, 2014/30/EU, 2014/35/EU. Règlement de la Commission N° 547/2012, 640/2009.

E**DECLARACION DE CONFORMIDAD**

En CALPEDA S.p.A. declaramos bajo nuestra exclusiva responsabilidad que las Bombas MXV-B, MXV, MXVL, MXV4, MXVL4, modelo y numero de serie marcados en la placa de características son conformes a las disposiciones de las Directivas 2006/42/CE, 2009/125/CE, 2014/30/EU, 2014/35/EU. Reglamento de la Comisión n.º 547/2012, 640/2009.

DK**OVERENSSTEMMELSESERKLÆRING**

Vi CALPEDA S.p.A. erklærer hermed at vore pumper MXV-B, MXV, MXVL, MXV4, MXVL4, pumpe type og serie nummer vist på typeskiltet er fremstillet i overensstemmelse med bestemmelserne i Direktiv 2006/42/EC, 2009/125/EC, 2014/30/EU, 2014/35/EU og er i overensstemmelse med de heri indeholdte standarder. Kommissionens forordning nr. 547/2012, 640/2009.

NL**CONFORMITEITSVERKLARING**

Wij CALPEDA S.p.A. verklaren hiermede dat onze pompen MXV-B, MXV, MXVL, MXV4, MXVL4, pomptype en serienummer zoals vermeld op de typeplaat aan de EG-voorschriften 2006/42/EU, 2009/125/EU, 2014/30/EU, 2014/35/EU voldoen. Verordening van de commissie nr. 547/2012, 640/2009.

SF**VAKUUTUS**

Me CALPEDA S.p.A. vakuutamme että pumpppumme MXV-B, MXV, MXVL, MXV4, MXVL4, malli ja valmistusnumero tyypikkilvcstä, ovat valmistettu 2006/42/EU, 2009/125/EU, 2014/30/EU, 2014/35/EU direktiivien mukaisesti ja CALPEDA ottaa täyden vastuun siitä, että tuotteet vastaavat näitä standardeja. Komission asetus (EY) N:o 547/2012, 640/2009.

S**EU NORM CERTIFIKAT**

CALPEDA S.p.A. intygat att pumpar MXV-B, MXV, MXVL, MXV4, MXVL4, pumptyp och serienummer, visade på namnplåten är konstruerade enligt direktiv 2006/42/EC 2009/125/EC, 2014/30/EU, 2014/35/EU. Calpeda åtar sig fullt ansvar för överensstämmelse med standard som fastställts i dessa avtal. Kommissionens förordning nr 547/2012, 640/2009.

GR**ΔΗΛΩΣΗ ΣΥΜΦΩΝΙΑΣ**

Εμείς ως CALPEDA S.p.A. δηλώνουμε ότι οι αντλίες μας αυτές MXV-B, MXV, MXVL, MXV4, MXVL4, με τύπο και αριθμό σειράς κατασκευής όπου αναγράφεται στην πινακίδα της αντλίας, κατασκευάζονται σύμφωνα με τις οδηγίες 2006/42/ΕΟΚ, 2009/125/ΕΟΚ, 2014/30/ΕΥ, 2014/35/ΕΥ και αναλαμβάνουμε πλήρη υπευθυνότητα για συμφωνία (συμμόρφωση), με τα στάνταρς των προδιαγραφών αυτών. Κανονισμός Αρ. 547/2012, 640/2009 της Επιτροπής.

TR**UYGUNLUK BEYANI**

Bizler CALPEDA S.p.A. firması olarak MXV-B, MXV, MXVL, MXV4, MXVL4, Pompalarımızın, 2006/42/EC, 2009/125/EC, 2014/30/EU, 2014/35/EU, direktiflerine uygun olarak imal edildiklerini beyan eder ve bu standartlara uygunlug'una dair tüm sorumlulug'u uestleniriz. 547/2012, 640/2009 sayılı Komisyon Yonetmeliği.

RU**ДЕКЛАРАЦИЯ СООТВЕТСТВИЯ**

Компания "Calpeda S.p.A." заявляет с полной ответственностью, что насосы серий MXV-B, MXV, MXVL, MXV4, MXVL4, тип и серийный номер которых указывается на заводской табличке соответствуют требованиям нормативов 2006/42/CE, 2009/125/CE, 2014/30/EU, 2014/35/EU. Постановление Комиссии № 547/2012, 640/2009.

中文**声明**

我们科沛达泵业有限公司声明我们制造的MXV-B, MXV, MXVL, MXV4, MXVL4(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,2009/125/EC,2014/30/EU,2014/35/EU.本公司遵循其中的标准并承担相应的责任.委员会条例 No.547/2012, 640/2009

Montorso Vicentino, 09.2017

Il Presidente
Marco Mettifofo



CONSERVARE QUESTE ISTRUZIONI
SAVE THESE INSTRUCTIONS
DIESE BETRIEBSANLEITUNG AUFBEWAHREN
CONSERVER CES INSTRUCTIONS
CONSERVAR ESTAS INSTRUCCIONES
SPARA DENNA INSTRUKTIONEN
DIT BEDIENINGSVOORSCHRIFT BEWAAREN
ΦΥΛΑΞΤΕ ΑΥΤΕΣ ΤΙΣ ΟΔΗΓΙΕΣ
СОХРАНЯЙТЕ ДАННЫЕ ИНСТРУКЦИИ !



Calpeda s.p.a. - Via Roggia di Mezzo, 39 - 36050 Montorso Vicentino - Vicenza / Italia
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