

**BEDU**  
≡ POMPEN ≡

\*Vertical multi-stage in-line pumps

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



OPERATING INSTRUCTIONS

**made for your process**



## 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 Bedu Pompen 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

Bedu Pompen BV

Poort van Midden Gelderland Rood 10

6666 LT HETEREN, The Netherlands

### 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: Bedu Pompen BV (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

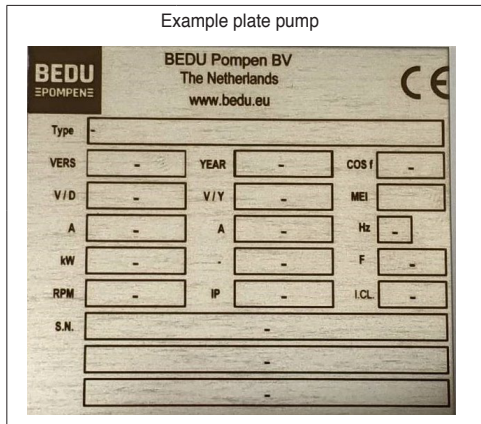
The device is designed and built only for the purpose described in paragraph 2.1.

**!** 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, Bedu 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 Bedu Pompen 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.

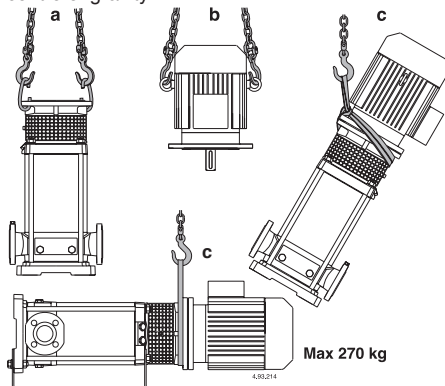


Fig.1 a Raising pump without the motor  
b Raising motor without the pump  
c Raising pump with motor

#### 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



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).

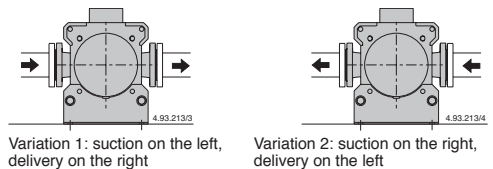


Fig.2 Orientation of the ports in a horizontally-fitted pump

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.

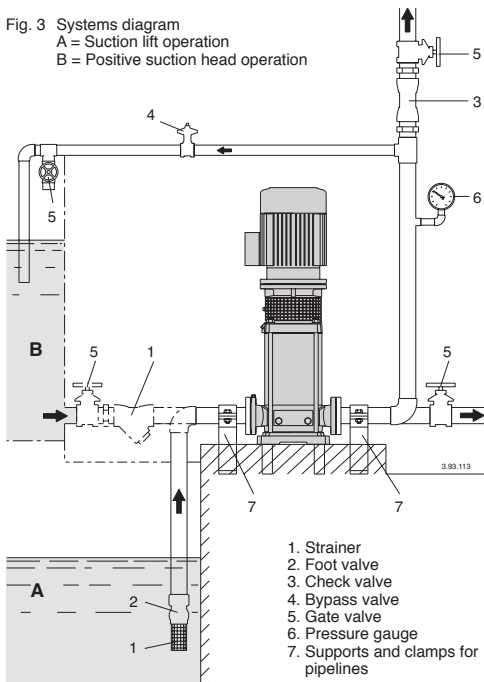
Make sure gaskets do not protrude inside the pipes for the pump types MXV-B, MXV(L) 25,32,40 and

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



1. Strainer
2. Foot valve
3. Check valve
4. Bypass valve
5. Gate valve
6. Pressure gauge
7. Supports and clamps for pipelines

### 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  $\geq 5.5$  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.

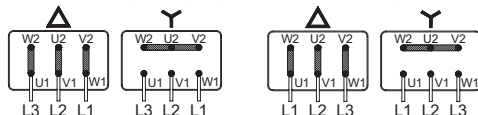
For use in swimming pools (not when persons are in the pool), garden ponds and similar places, **a residual current device** with I<sub>ΔN</sub> not exceeding 30 mA must be installed in the supply circuit.

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 Bedu 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

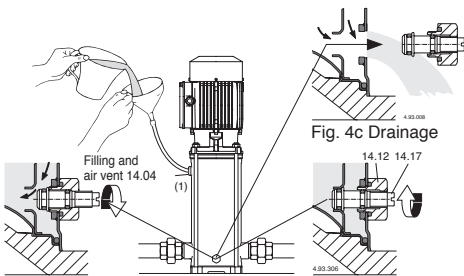


Fig. 4a Filling: internal passage open      Fig. 4b Operating: internal passage closed

#### 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

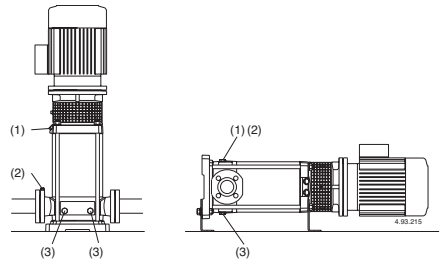


Fig.4 (1) Filling and air vent  
(2) Suction side air vent  
(3) Draining

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 Bedu Pompen BV

For further technical information regarding the use or the maintenance of the device, contact Bedu.

## 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).

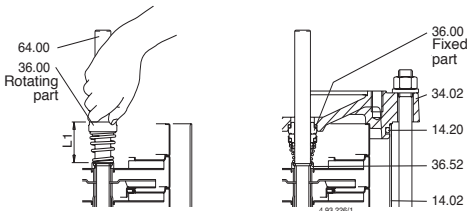


Fig.5 Inserting the mechanical seal

**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.**

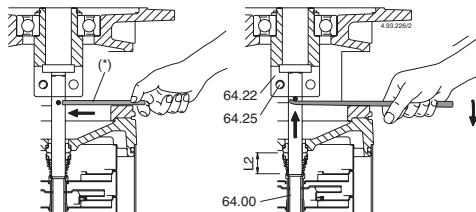


Fig. 6a  
Rotor rested, with shaft not locked in the coupling.  
(\*) Pin for raising the shaft.

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 Bedu Pompen BV 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.

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

GB

### Table of contents

#### Subject

1. Example plate motor
2. Lifting
3. Installation and starting
4. Operation conditions
5. Motors working at variable speed
6. Maintenance
7. Servicing

### 1. Example plate motor

Example plate motor 50Hz


1		M132 V1-7.5T		CE		13																			
2		5.5kW (7.5 hp)		0204123345		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		<table border="1"> <thead> <tr> <th>V</th> <th>%</th> <th>cos φ</th> <th>η</th> <th></th> </tr> </thead> <tbody> <tr> <td>400</td> <td>100</td> <td>0.86</td> <td>88.5</td> <td></td> </tr> <tr> <td>400</td> <td>75</td> <td>0.81</td> <td>89.3</td> <td>55.7 kg</td> </tr> <tr> <td>400</td> <td>50</td> <td>0.71</td> <td>89.2</td> <td>IP 54</td> </tr> </tbody> </table>		V	%	cos φ	η		400	100	0.86	88.5		400	75	0.81	89.3	55.7 kg	400	50	0.71	89.2	IP 54	15	
V	%	cos φ	η																						
400	100	0.86	88.5																						
400	75	0.81	89.3	55.7 kg																					
400	50	0.71	89.2	IP 54																					
		IEC 60034-1		IE2-88.1		16																			
						17																			

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

### 2. Lifting


All Bedu 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 Bedu 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 ±5% and frequency ±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 Bedu Pompen 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.

Bedu 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.

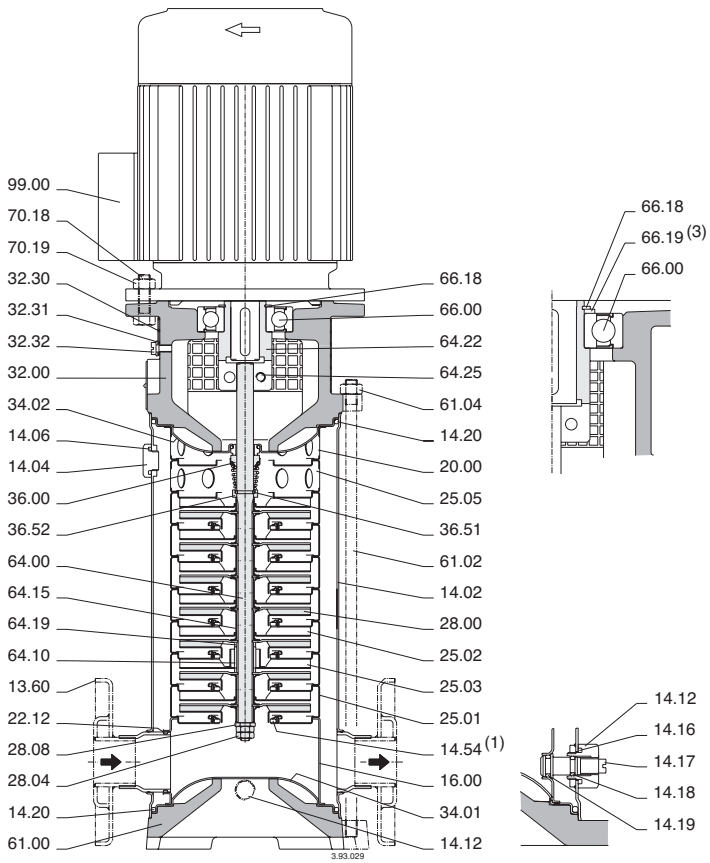
They must be removed using extractors and fitted hot or using suitable instruments.

Changes reserved.



14. Drawing for dismantling and assembly

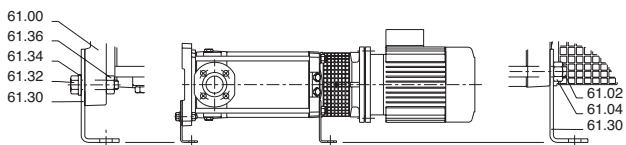
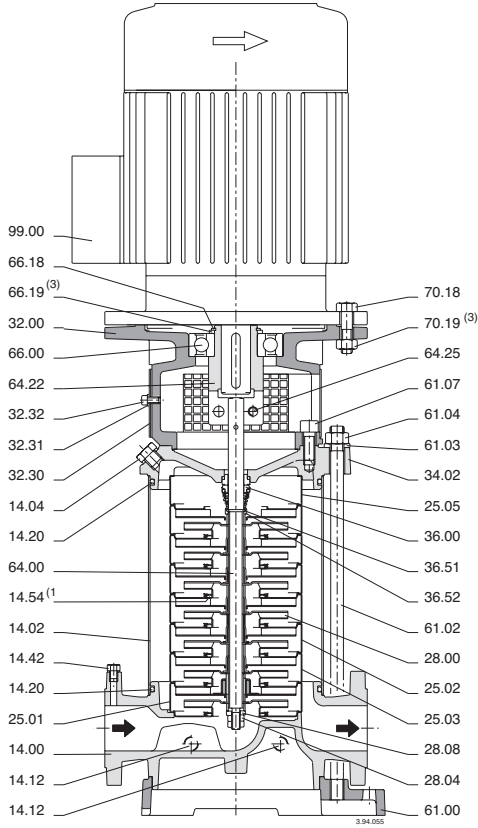
MXV(L) 25-32-40, MXV(L)4 25-32-40





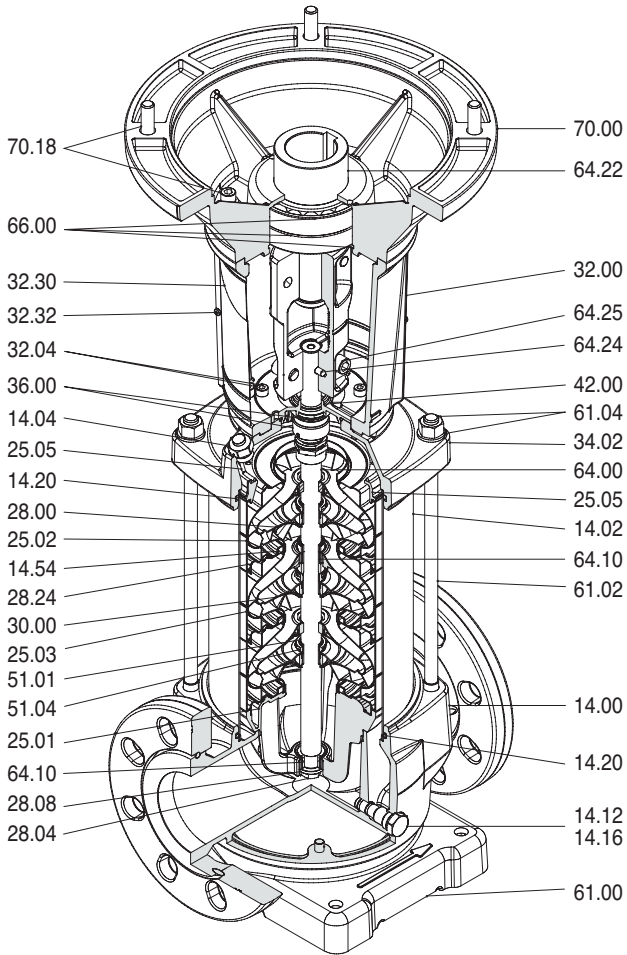
14. Drawing for dismantling and assembly

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



14. Drawing for dismantling and assembly

MXV(L) 100



15.

Stages, impellers and sleeves composition



20.00 Delivery casing



25.01 First stage casing, without return channel I



25.02 Stage casing with return channel



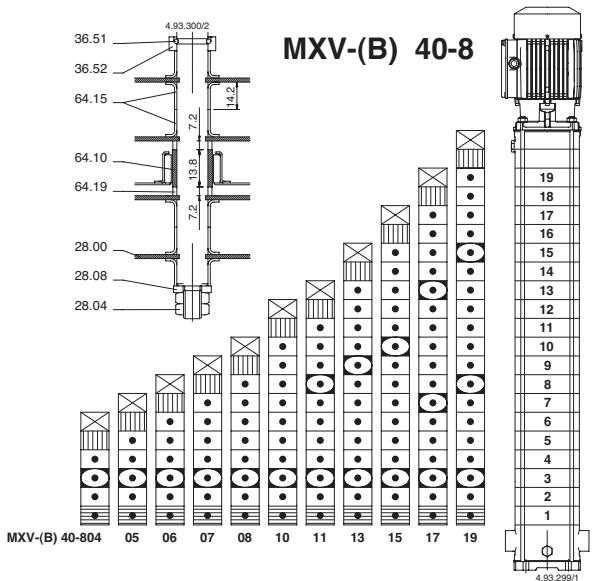
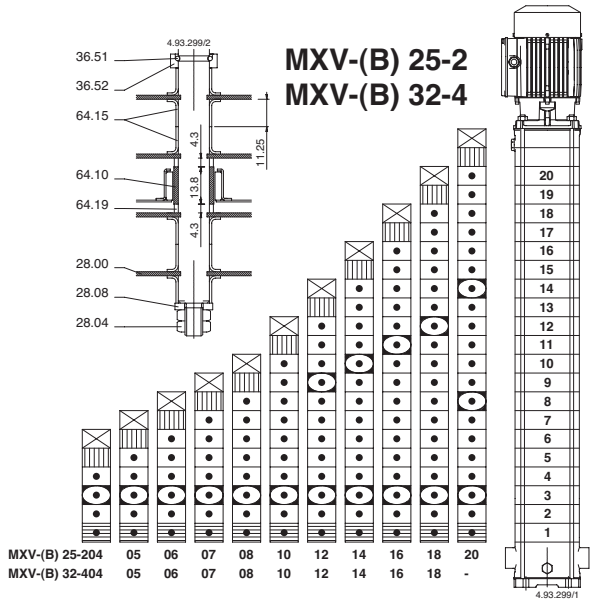
25.03 Stage casing with bearing



25.05 Last stage casing without wear ring





28.00 Impeller  
Laufrad  
Waaier





15.


## Stages, impellers and sleeves composition

20.00  Corpo premente  
Delivery casing  
Druckgehäuse  
Corps de refoulement  
Cuerpo impulsión  
Pumphus, 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 etage, 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

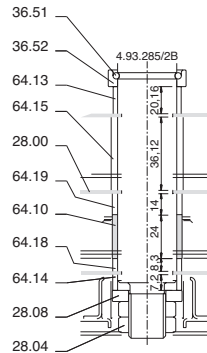
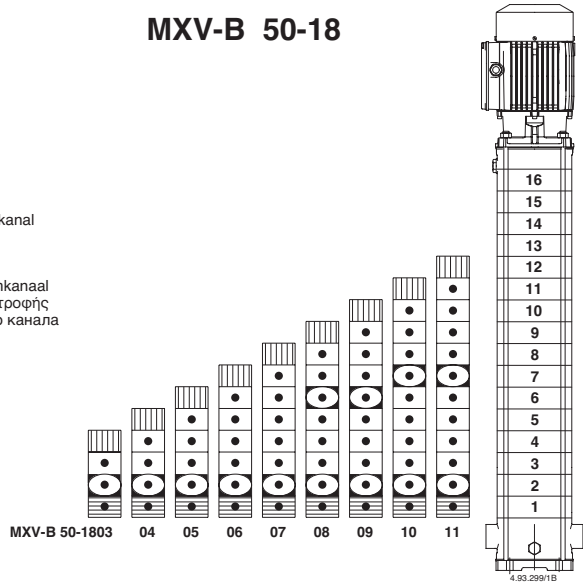
25.02  Corpo stadio con canale di ritorno  
Stage casing with return channel  
Stufengehäuse mit Rückführkanal  
Corps d'étage avec canal de retour  
Cuerpo elemento con canal de retorno  
Mellandel med returkanal  
Waaierhuis, met terugstroomkanaal  
Οδηγό πτερύγιο με κανάλι επιστροφής  
Корпус ступени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

28.00  Girante  
Impeller  
Laufrad  
Roue  
Rodete  
Pumphjul  
Waaier  
Πτερωτή  
Рабочее колесо

## MXV-B 50-18



25.01



First stage casing, without return channel  
Stufengehäuse erste Stufe, ohne Rückführkanal

25.02



Stage casing with return channel  
Stufengehäuse mit Rückführkanal

25.03



Stage casing with bearing  
Stufengehäuse mit Lager

25.05

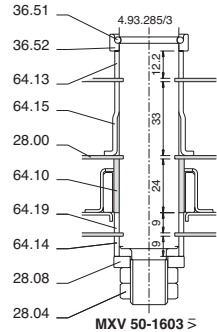
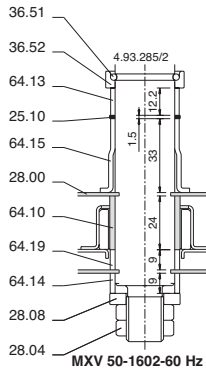
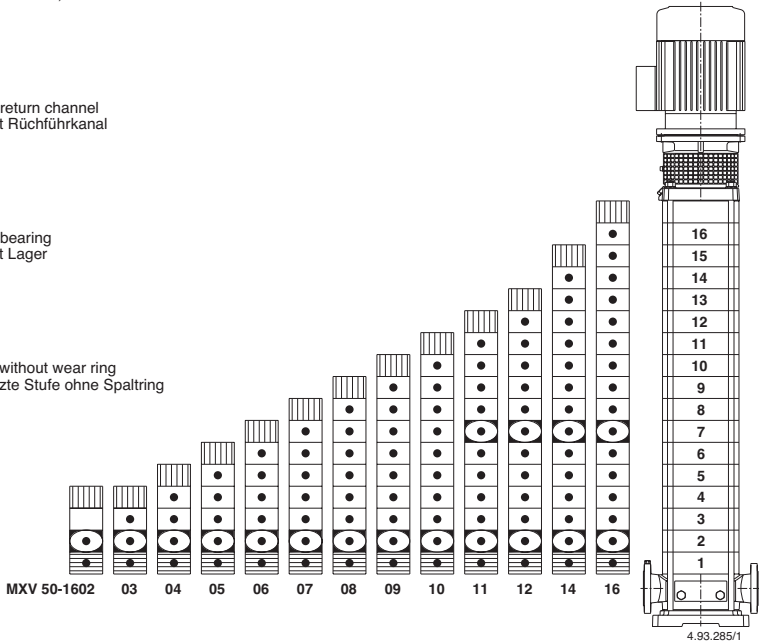


Last stage casing without wear ring  
Stufengehäuse letzte Stufe ohne Spaltring

28.00



Impeller



25.01



First stage casing, without return channel  
Stufengehäuse erste Stufe, ohne Rückführkanal

25.02



Stage casing with return channel  
Stufengehäuse mit Rückführkanal

25.03



Stage casing with bearing  
Stufengehäuse mit Lager

25.05

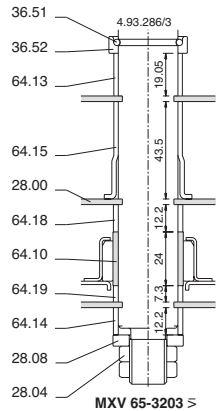
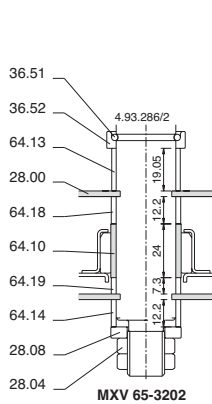
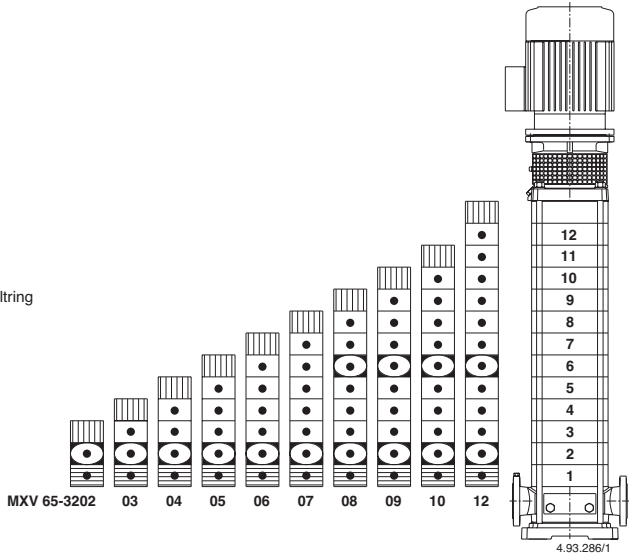


Last stage casing without wear ring  
Stufengehäuse letzte Stufe ohne Spaltring

28.00



Impeller  
Laufrad



25.01 First stage casing, without return channel  
Stufengehäuse erste Stufe, ohne Rückführkanal



25.02 Stage casing with return channel  
Stufengehäuse mit Rückführkanal



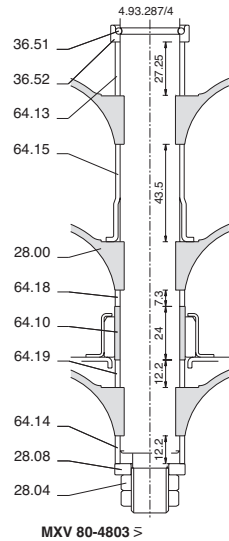
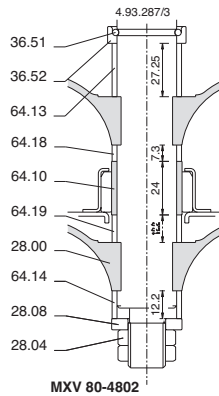
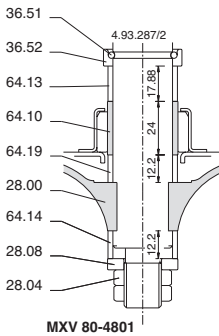
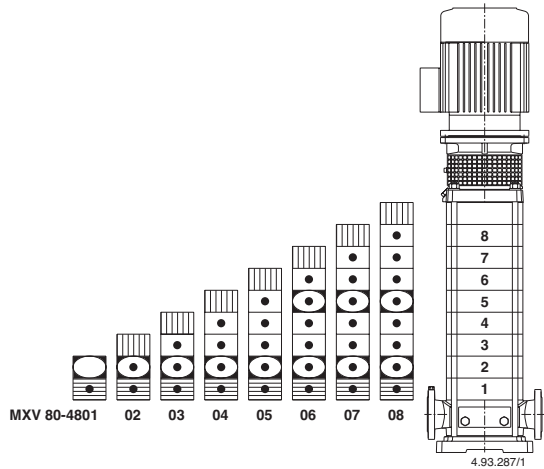
25.03 Stage casing with bearing  
Stufengehäuse mit Lager



25.05 Last stage casing without wear ring  
Stufengehäuse letzte Stufe ohne Spaltring





28.00 Impeller  
Laufblad

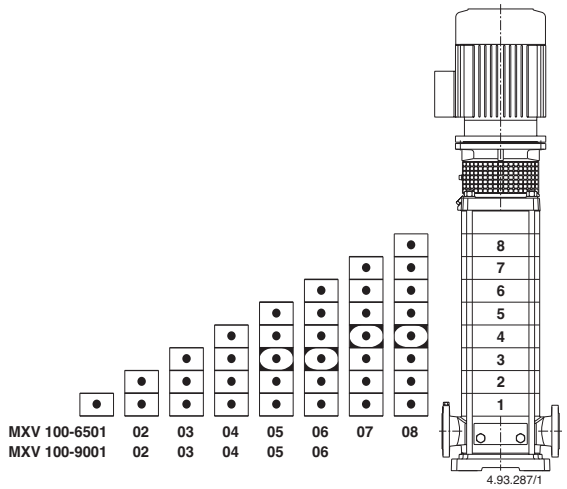


15. Stages, impellers and sleeves composition

**MXV 100-65**  
**MXV 100-90**

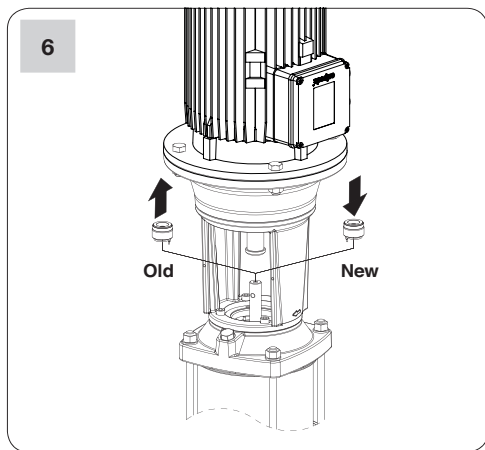
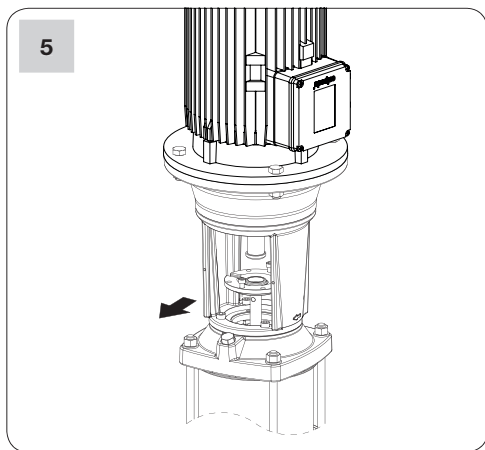
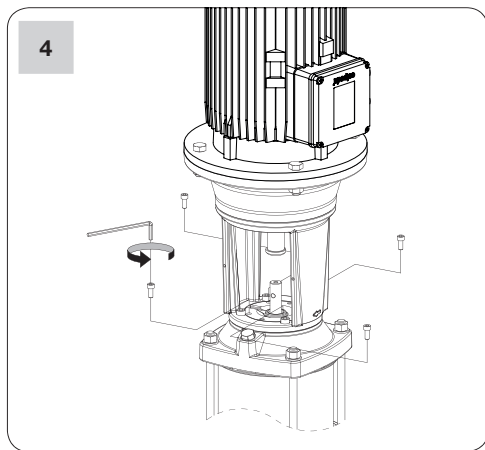
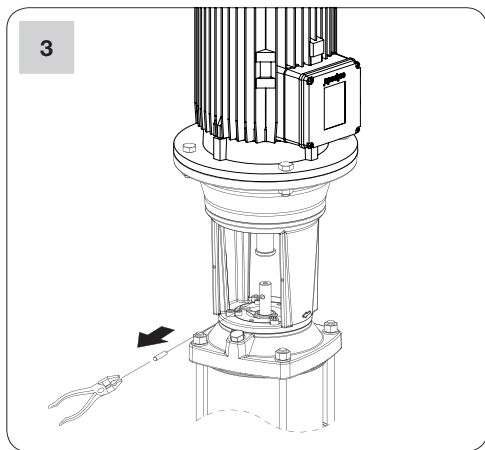
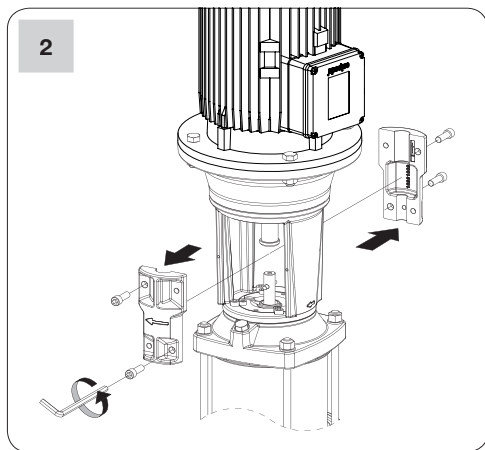
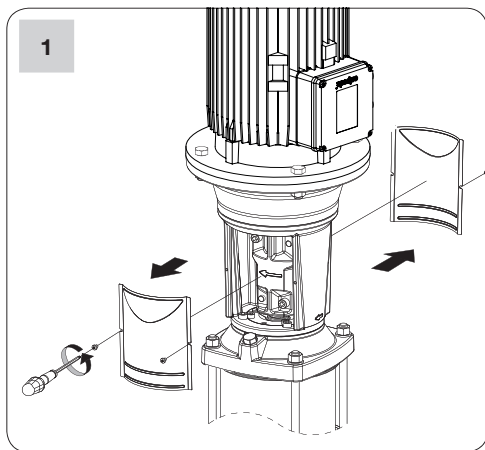
25.03  Stage casing with bearing

28.00  Impeller

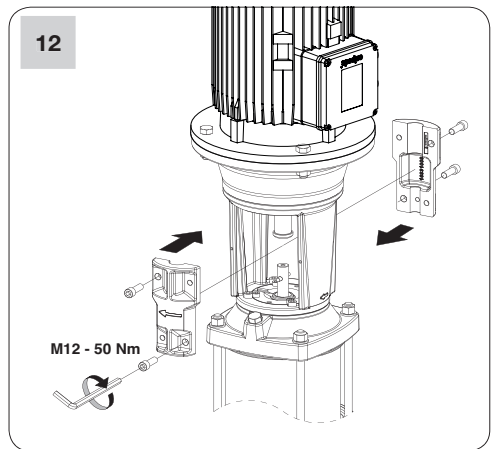
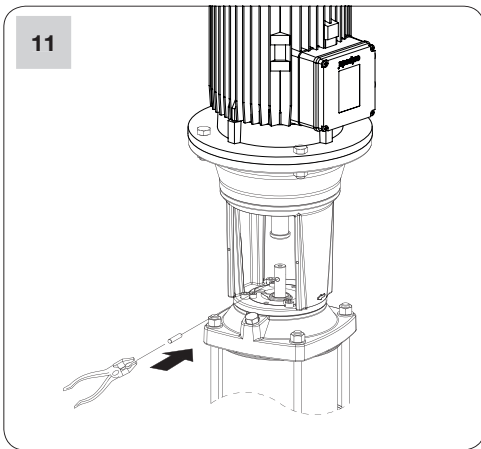
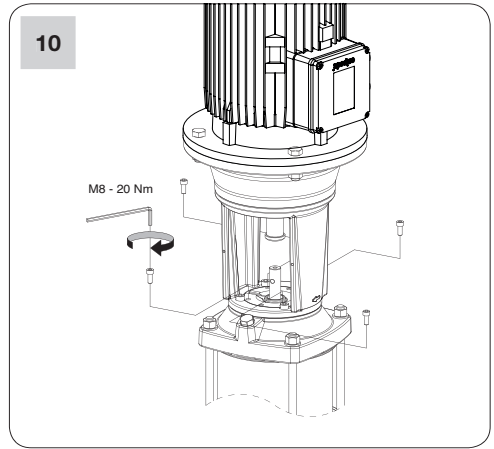
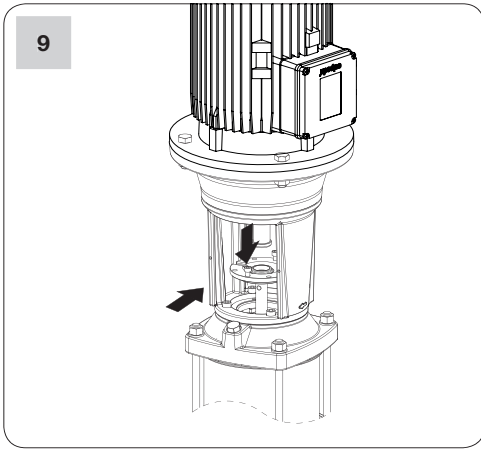
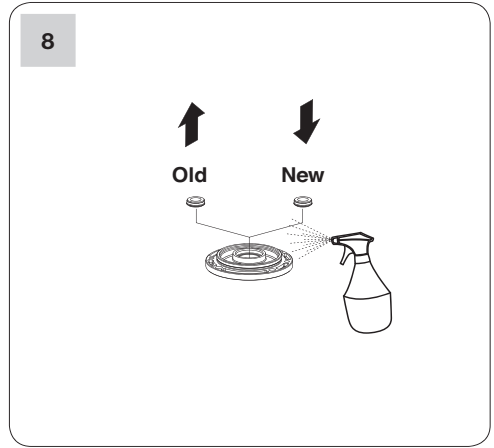
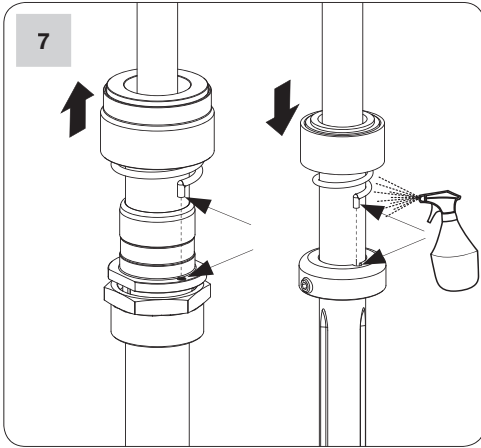




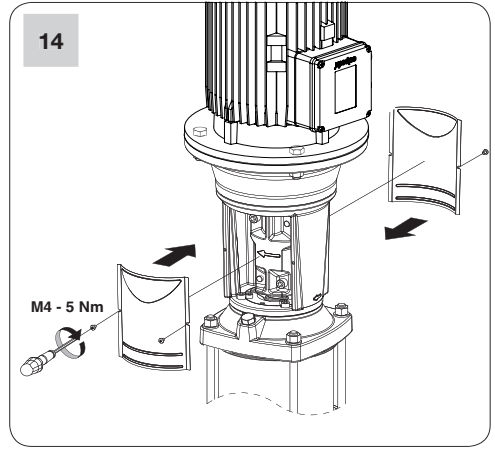
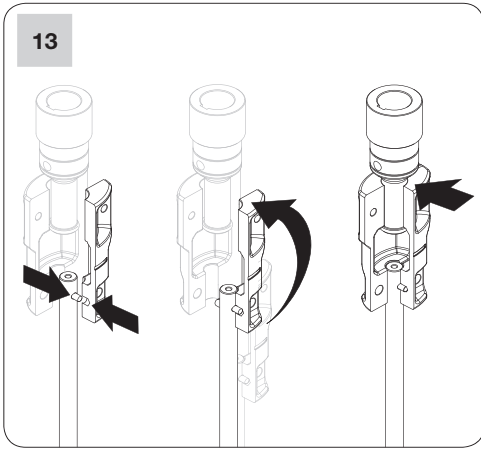
# MXV(L) 100



# MXV(L) 100



# MXV(L) 100



16. Minimum cross-sectional area of conductors

Tab. 1

TAB 1IEC 60335-1

Rated current of appliance A	Nominal cross-sectional area mm <sup>2</sup>
>0,2 ÷ ≤3	0,5 <sup>a</sup>
>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

<sup>a</sup> 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.



# EC - Declaration of Conformity

## Manufacturer Details

### Tradename

Bedu Pompen BV

### Address

Poort van Midden Gelderland Rood 10, 6666 LT, Heteren, Netherlands

## Product Details

### Product Name

Centrifugal pumps

### Model (+series) Name

MXV-B, MXV L , MXV L 4 series

## Applicable Standards Details

### Directives

2006/42/EC (Machinery Directive)  
2014/35/EU (Low Voltage Directive)  
2014/30/EU (Electromagnetic compatibility)

### Standards

EN-ISO 12100:2010  
EN-IEC 60204-1:2006  
EN 809+A1/C1

## Additional information

No further details.

## Declaration

We hereby declare under our sole responsibility that the product(s) mentioned above to which this declaration relates complies with the above mentioned standards and Directives.

Business Unit Manager: Issued Date:

01/10 2014

## BEDU Pompen BV

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6666 LT Heteren

Tel : +31 (0)88 - 4802 900

Fax : +31 (0)88 - 4802 901

E-mail : info@bedu.nl

Website : www.bedu.eu

Marco Breunissen

Signature of representative(s)



The logo consists of the word "BEDU" in a large, bold, white sans-serif font, with "POMPEN" in a smaller, white sans-serif font below it. The text is centered within a dark teal square, which is itself centered within a white square border.

**BEDU**  
POMPEN

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- Breakdownservice, 24 hours a day, 7 days a week
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- A fast and appropriate solution for all your issues
- Wide range of liquid pumps
- Repair, maintenance and revision

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