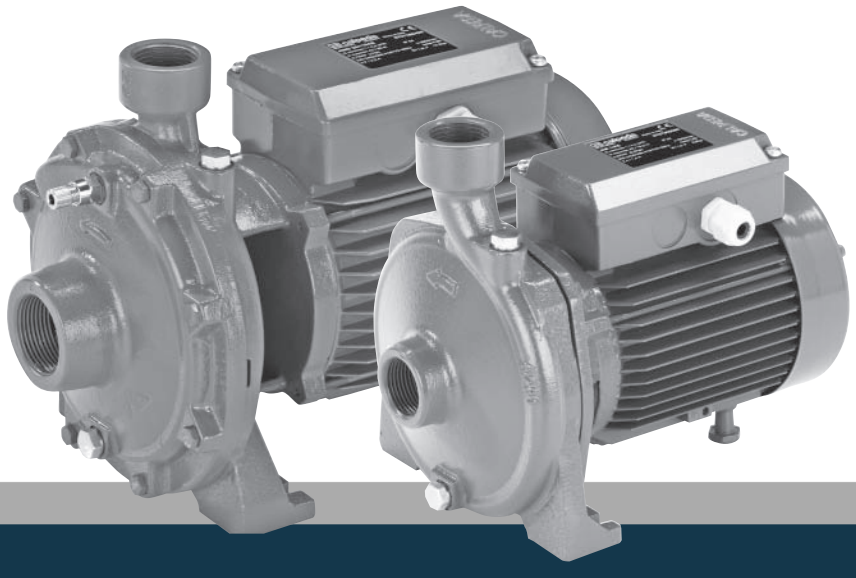
BEDU POMPEN

*Close coupled pumps with threaded ports

NM, NMD, C



OPERATING INSTRUCTIONS

made for your process

GB

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 BV 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 6.5).
- The type of electrical protection to be installed (chapter 6.5).

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 B.V.
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).

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.

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
Close-coupled, centrifugal pumps; electric motor with extended shaft directly connected to the pump.
NM, NM4 25: single-impeller
NMD: with two back-to-back impellers (with axial thrust balancing).
C: with open impeller
C 16/1E: Free-flow impeller (vortex or recessed impeller).
Connections: threaded ports ISO 228/1 (BS 2779).
NM, NMD, C: version with pump casing and lantern bracket in cast iron.
B-NM, B-NMD, B-C: version with pump casing and lantern bracket in bronze.
(the pumps are supplied fully painted).

2.1. Intended use
NM, NMD, NM4 25: for clean liquids without abrasives, non-explosive, non-aggressive for the pump materials, with a maximum temperature of 90 °C.
C: for moderately dirty liquids (maximum size of solids: 4 mm), non-explosive, non-aggressive for the pump materials, with a maximum temperature of 90 °C.

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

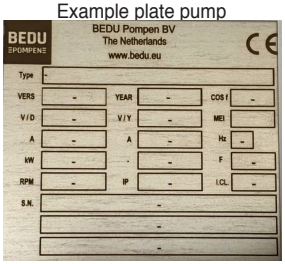
Improper use of the device is forbidden, as is use under conditions other than those indicated in these instructions.

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 (see Pic.1) that is on the external case of the pump.

1 Pump type
2 Delivery
3 Head
4 Rated power
5 Tension nominale
6 Nom. motor current
7 Notes
8 Fréquence
9 Operation Duty
10 Insulation class
11 Weight
12 Power factor
13 Rotation speed rpm
14 Protection
15 Serial number
16 Certifications

Example plate pump



3. TECHNICAL FEATURES

3.1. Technical data
Dimensions and weight (see technical catalogue).
Nominal speed 2900/3450 rpm (1450/1750 rpm for NM4 25)
Protection IP54
Supply voltage / Frequency
230 V1~50 Hz
220 V1~60 Hz
230/400 - 400/690 V3~50 Hz
220/380 - 380/660 V3~60 Hz
The electric data marked on the label are referred to the nominal power of the motor.
Sound pressure: up to 2.2 kW: ≤ 70 dB (A);
from 3 to 9.2 kW: ≤ 85 dB (A).
Max. starts per hour: 30 at regular intervals.

Maximum permissible working pressure:

NM, NMD 20, NM4 25	100 m (10 bar)
NMD 25, 32 ,40	160 m (16 bar)
C	60 m (6 bar)

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 allows the device to work in the best conditions.

Use only original spare parts provided from Bedu Pompen BV 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.

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
See installation examples, par. 12.3 fig. 1 and 2.
The pumps must be installed with the rotor axis in the horizontal position and with the feet under the pump.
Place the pump as close as possible to the suction source.
Provide space around the pump for motor ventilation, to allow for checking of shaft rota-tion, for filling and draining the pump and to allow for collection of the liquid to be removed.

6.4.1. Pipes
Ensure the insides of pipes are clean and unobstructed before connection.
ATTENTION: The pipes connected to the pump should be secured to rest clamps so that they do not transmit stress, strain or vibrations to the pump.
The inside diameter of the pipe-work depends on the desired flow.
Provide a diameter assuring a liquid flow not greater 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.

6.4.2. Suction pipe
The suction pipe must be perfectly airtight and be led upwards in order to avoid air pockets.
Use an eccentric transition piece to join the suction connection with a horizontal pipe of larger diameter (fig. 2).
With a pump located above the water level (suction lift operation), fit a foot valve with strainer which must always remain immersed or a check valve on the suction connection.
With a pump located below water level (inflow under positive suction head) install a gate valve.

6.4.3. Delivery pipe
Fit a gate valve in the delivery pipe to adjust delivery, head, and absorbed power.
Install a pressure gauge.
With a geodetic head of over 15 m fit a check valve between the pump and the gate valve in order to protect the pump from water hammering.

6.5. 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-F type with section of cable not less than 11 TAB IEC 60335-1.

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 IΔN not exceeding 30 mA must be installed in the supply circuit.

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

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

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

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.

7.2. First starting

ATTENTION: never run the pump dry. Start the pump after filling it completely with liquid.

When the pump is located above the water level (suction lift operation par. 12.3 fig. 2) or with a positive suction head which is too low (less than 1 m) to open the non-return valve, fill the pump through the priming hole (par. 12.3 fig. 3).

When the liquid level on the suction side is above the pump (inflow under positive suction head par. 12.3 fig. 1), fill the pump by opening the suction gate valve slowly and completely, keeping the delivery gate valve (and the air valve with the NMD pumps) open to release the air.

Before starting, check that the shaft turns by hand. For this purpose use the screwdriver notch on the shaft end on the ventilation side.

When starting, with a three-phase motor, check that the direction of rotation is as shown by the arrow on the pump casing, 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.

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.

7.3. 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 reparation executed with the electrical system under voltage, it could cause serious injuries to people.

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.

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 Pompen

8.1. Routine maintenance

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

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

When the pump remains inactive it must be emptied completely if there is a risk of freezing (par. 12.3 **fig. 4).**
To empty completely the NMD and C 16 pumps it is also necessary to take out the delivery casing (20.00/14.00) by removing the screws (20.12/14.24).
Before restarting the unit, check that the shaft is not jammed and fill the pump casing completely with liquid.

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

Close the suction and delivery gate valves and drain the pump casing before dismantling the pump.
For dismantling and re-assembly see construction in the cross section drawing.
With the NM, C, pumps the motor can be taken out, by removing the screws (14.24), complete with impeller without removing the pump casing and the pipes.
With NMD pumps it is also necessary to take out the pump casing (suction casing 16.00 or delivery casing 20.00) by removing the screws (20.12).

9. 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.

10. SPARE PARTS

10.1. 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.

11. ESIGNATION OF PARTS

Nr.	Designation
14.00	Pump casing
14.04	Plug (filling)
14.12	Plug (draining)
14.20	O-ring
14.24	Screw
16.00	Suction casing
16.04	Plug with washer
16.12	Air release plug with washer
16.20	Casing gasket
18.00	Interstage plate
20.00	Delivery casing
20.04	Plug with washer
20.12	Screw
28.00	Impeller
28.04	Impeller nut
28.12	Circlip
28.20	Impeller key
30.00	Impeller
32.00	Lantern bracket
32.30	Guard
32.32	Screw
32.33	Caged Nut
36.00	Mechanical seal
36.50	Shoulder ring
46.00	Deflector
70.00	Lantern bracket
70.18	Screw
70.19	Nut
70.20	Screw
73.00	Pump-side bearing
76.00	Motor casing with winding
76.04	Cable gland
76.16	Support
76.20	Pin
76.54	Terminal box, set
78.00	Shaft with rotor packet
81.00	Fan-side bearing
82.00	Motor end shield, fan side
82.04	Compensating spring
88.00	Motor fan
90.00	Fan cover
90.04	Screw
92.00	Tie-bolt
94.00	Capacitor
94.02	Capacitor gland
98.00	Terminal box cover
98.04	Screw
98.08	Gasket
99.00	Motor, complete

Changes reserved.

12. 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.

12.3.

Installation examples

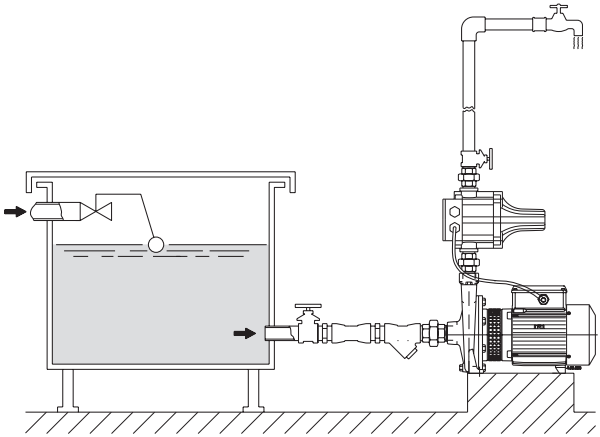


Fig. 1
Positive suction head operation
Zulaufbetrieb

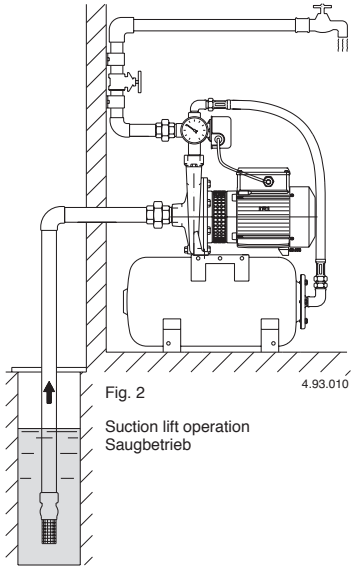


Fig. 2

Suction lift operation
Saugbetrieb

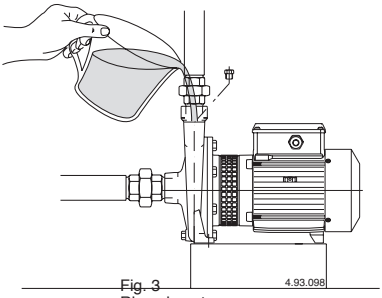


Fig. 3
Riempimento
Filling
Auffüllung
Remplissage
Llenado
灌泵

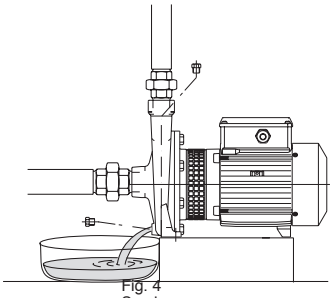
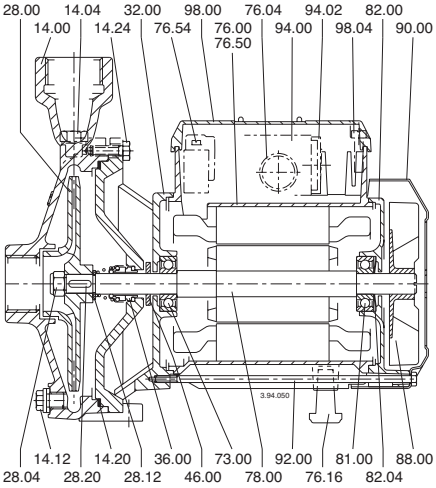


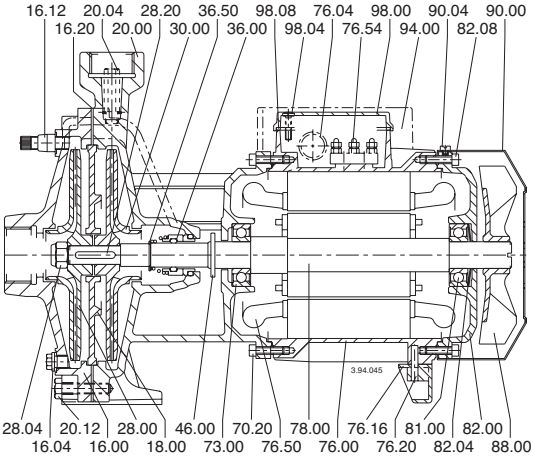
Fig. 4
Scarico
Draining
Entleerung
Vidange
Vaciado
排空

12.4.

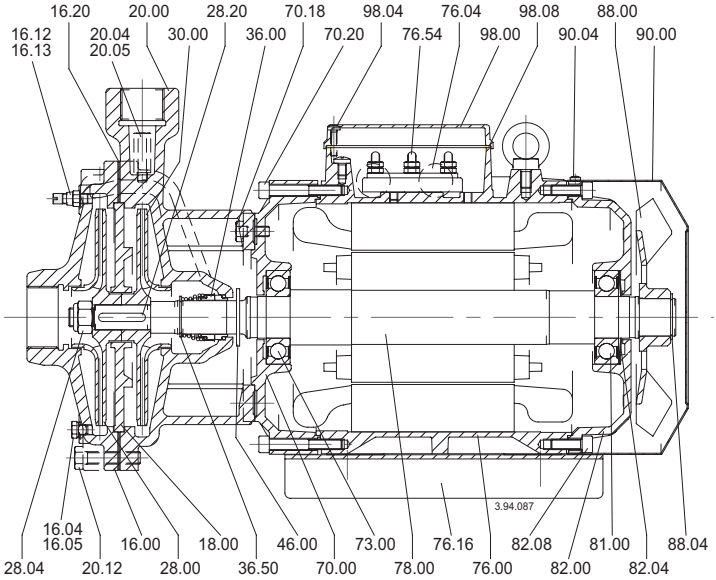
Drawing for dismantling and assembly



NM, NM4 25



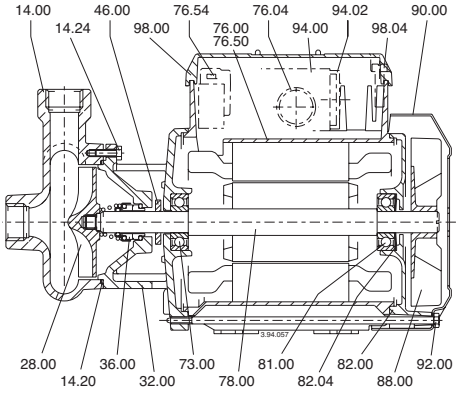
NMD



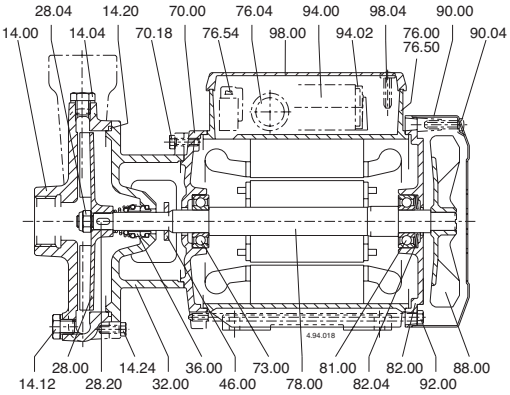
NMD 32, NMD 40

12.4.

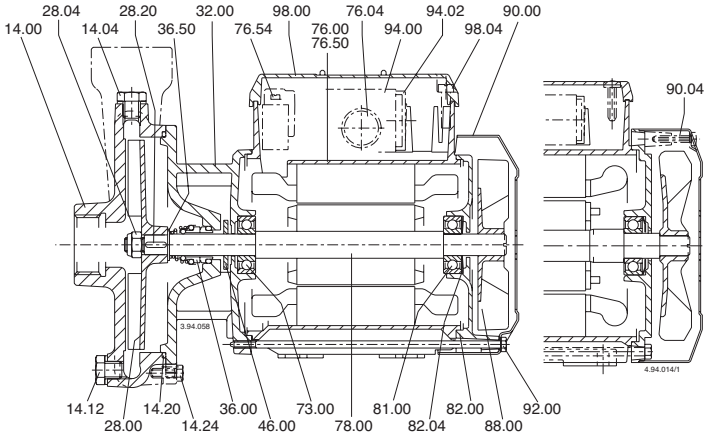
Drawing for dismantling and assembly



C 16



B-C 20
B-C 22/1
B-C 22



C 20
C 22/1
C 22

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
NM, NMD, C series

Applicable Standards Details

Directives	Standards
2006/42/EC (Machinery Directive)	EN-ISO 12100:2010
2014/35/EU (Low Voltage Directive)	EN-IEC 60204-1:2006
2014/30/EU (Electromagnetic compatibility)	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**/ 2024

Marco van Damme

Signature of representative(s)

BEDU Pompen BV
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