

General

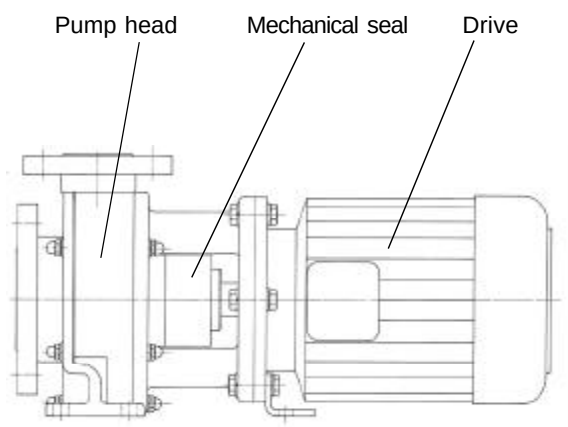
Pump

BN-type motor pump units are normal-priming, single-stage, plastic centrifugal pumps in block design with horizontal axis. Their dimensions and flow rates mainly correspond to DIN/EN 22858.

The pumps of this series were developed to meet the requirements of the chemical industry and are therefore especially suited to pump pure or solid matter containing, acid or alkaline, low-viscosity liquids.

As the materials getting in contact with the pumped medium are physiologically harmless, the pumps can also be used in the food industry.

The extended shaft of the drive motors directly carries the impeller. The pump head is flanged to the drive motor using an intermediate piece.



Position of connections, flanges

The suction connection is positioned axially, the pressure flange radially in upward direction. As a standard the suction and pressure connections are fitted with flanges according to DIN 2501/PN 10.

Shaft seals

The shafts are sealed by means of maintenance-free mechanical seals. Depending on the operating conditions, internal, single-acting or double-acting versions are used. Double-acting mechanical seals require a sealing liquid.

Sliding materials in silicon carbide (SiC), bellows and secondary seals of EPDM or FPM, metallic parts of stainless steel (1.4571) or Hastelloy C-4 (2.4610) are standard combinations and cover a large range of applications.

The space available in the sealing area allows to use standard seals.

Special versions on request.

Drive

Surface-cooled three-phase motors with extended rotor shaft and reinforced bearing, otherwise according to IEC standard, 1450min-1 or 2900min-1, enclosure IP 55, insulation class F, mounting IM B5.

Pump head, impeller

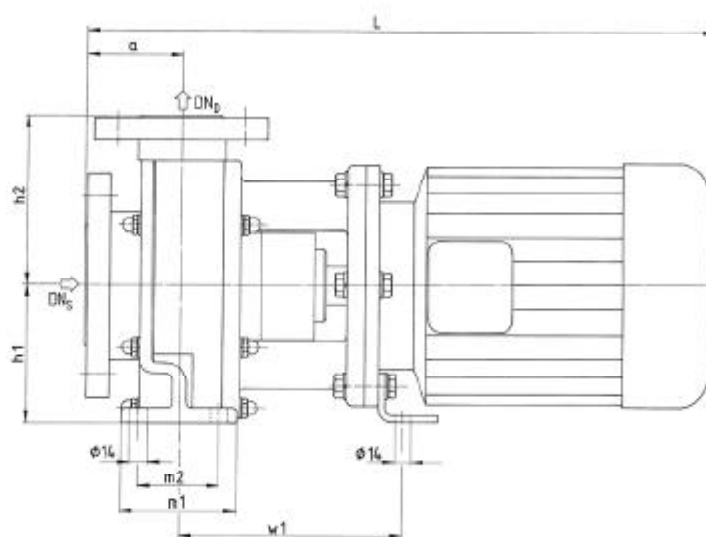
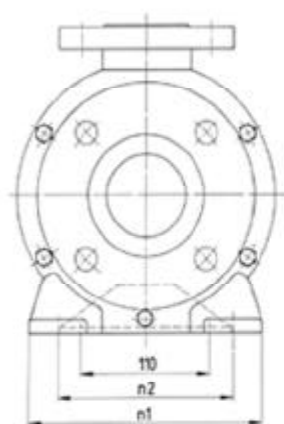
All wetted-end parts are made of high-quality materials such as PP, PVDF, hard carbon, EPDM or FPM elastomers. The external metallic parts are protected against corrosion by a chemically resistant varnish coat. For all pump sizes, closed impellers with relief borings for compensation of the axial thrust are used. The transmission of the torque is form-locking.

Nominal pump capacities according to DIN/EN 22 858

Pump size BN ...	Output at 1450 min-1		Output at 2900 min-1	
	Nominal flow rate [m³/h]	Nominal head [m]	Nominal flow rate [m³/h]	Nominal head [m]
50-32-125	6.3	5	12.5	20
50-32-160		8		32
50-32-200		12.5		50
65-40-125	12.5	5	25	20
65-40-160		8		32
65-40-200		12.5		50
80-50-125	25	5	50	20
80-50-160		8		32
80-50-200		12.5		---
100-65-125	50	5	100	20
100-65-160		8		---

Dimensions

Pump



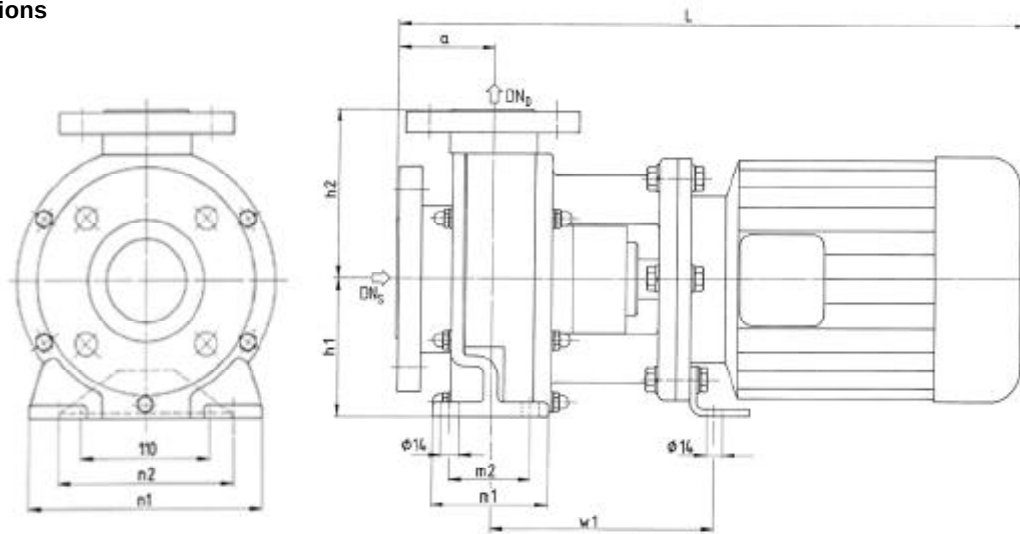
Chemical Motor Pump Unit BN

Chemical Motor Pump Unit BN

Pump size BN ...	Power in kW at		Motor size	L	Approx. weight kg (PP)	
	1450min-1	2900min-1			1450min-1	2900min-1
50-32-125	1,1	1,5	90S	490	28	32
	-	2,2	90L	510	-	34
	-	3	100L	550	-	41
	-	4	112	560	-	61
50-32-160	1,1	1,5	90S	500	37	37
	1,5	2,2	90L	520	39	39
	-	3	100L	560	-	46
	-	4	112	570	-	52
	-	5,5+7,5+11	132	640	-	79/85/85
50-32-200	1,1	-	90S	500	44	-
	1,5	2,2	90L	520	46	46
	2,2	3	100	560	50	53
	-	4	112	570	-	73
	-	5,5+7,5+11	132	640	-	86/92/92
65-40-125	1,1	-	90S	490	33	-
	1,5	2,2	90L	510	35	35
	-	3	100	550	-	42
	-	4	112	560	-	62
65-40-160	1,1	-	90S	500	38	-
	1,5	2,2	90L	520	40	40
	2,2	3	100	560	47	47
	-	4	112	570	-	67
	-	5,5+7,5+11	132	640	-	80/86/86
65-40-200	1,1	-	90S	520	38	-
	1,5	2,2	90L	540	50	50
	2,2	3	100	580	57	57
	-	4	112	590	-	77
	-	5,5+7,5+11	132	660	-	90/96/96
80-50-125	1,5	2,2	90L	540	36	36
	2,2	3	100	580	43	43
	-	4	112	590	-	63
	-	5,5+7,5+11	132	660	-	76/82/82
80-50-160	1,5	-	90L	540	41	-
	2,2	-	100	580	48	-
	3	-	100	580	52	-
	-	5,5+7,5+11	132	660	-	81/87/87
80-50-200	1,5	-	90L	540	54	-
	2,2 + 3	-	100	580	61/63	-
	4	-	112	590	81	-
	5,5	-	132	660	100	-
100-65-125	1,5	-	90L	560	42	-
	2,2 + 3	-	100	590	49/51	-
	4	-	112	610	69	-
	-	5,5+7,5+11	132	680	-	74/80/80
100-65-160	1,5	-	90L	560	47	-
	2,2 + 3	-	100	590	54/56	-
	4	-	112	610	74	-

Dimensions

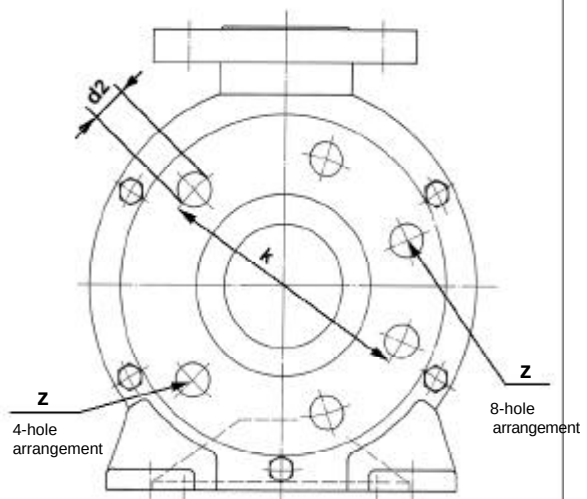
Pump



Pump size BN ...	Flange connection dimensions according to DIN 2501, Part1 f. PN10		Pump dimensions							
	DN _s Inlet	DN _p Outlet	a	h1	h2	m1	m2	n1	n2	w1
50-32-125	50	32	80	112	140	100	70	190	140	190
50-32-160			80	132	160	100	70	240	190	220
50-32-200			80	160	180	100	70	240	190	220
65-40-125	65	40	80	112	140	100	70	210	160	190
65-40-160			80	132	160	100	70	240	190	220
65-40-200			100	160	180	100	70	265	212	220
80-50-125	80	50	100	132	160	100	70	240	190	220
80-50-160			100	160	180	100	70	265	212	220
80-50-200			100	160	200	100	70	265	212	220
100-65-125	100	65	100	160	180	125	95	280	212	220
100-65-160			100	160	200	125	95	280	212	220

Flanges

Flanges according to DIN 2501			
DN	k	d2	z
32	100	18	4
40	110	18	4
50	125	18	4
65	145	18	4
80	160	18	8
100	180	18	8



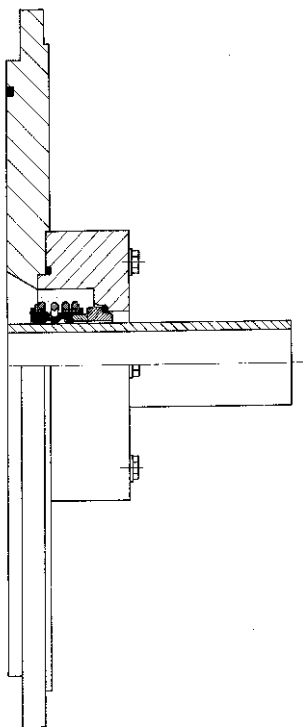
Mechanical seals

General

Mechanical seals basically consist of two perfectly plane surfaces. One surface rotates with the shaft, while the other one is stationary. The sealing effect is achieved by the direct contact between the two plane surfaces. The stationary counter-ring is normally fixed in position. The sliding ring is able to move axially and radially in

order to compensate the shaft deflections during operation. This axial mobility enables mechanical seals to be fitted within practicable manufacturing tolerances, the accuracy required being dependent on the design of the seal.

Type B2I

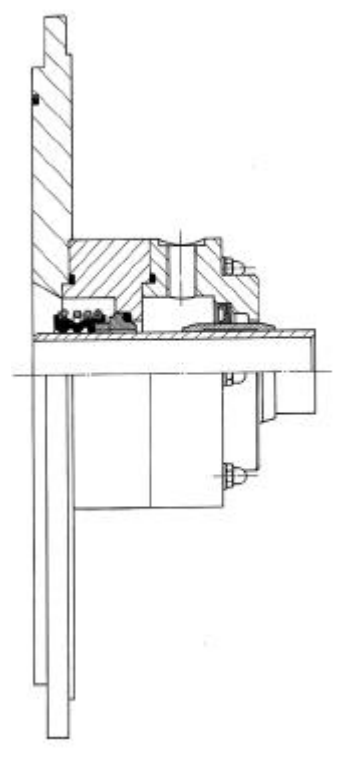


Single-acting, loaded, internal seal, independent of direction of rotation.

Combination of sliding materials in silicon carbide (SiC). Bellows and secondary seals of EPDM and FPM. Metallic parts of stainless steel or Hastelloy C-4.

Suitable for application with neutral and aggressive media which do not crystallize out and are free from solid matter.

Type B2Q



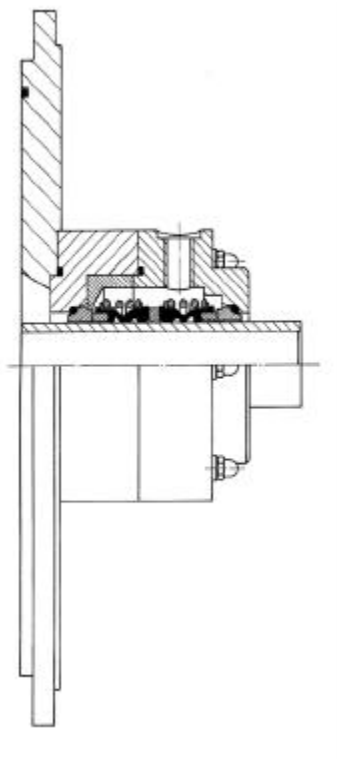
Single-acting, loaded, internal seal, independent of direction of rotation, with quenching chamber. The quenching chamber is sealed from the atmosphere by a shaft sealing ring to prevent deposits and/or reduction of the temperature in the area of the mechanical seal.

Combination of sliding materials in silicon carbide (SiC). Bellows and secondary seals of EPDM and FPM. Metallic parts of stainless steel or Hastelloy C-4.

Suitable for application with aggressive media tending to crystallize out.

Function of quenching:

- Prevention of crystallizing rings (air seals)
- Absorption of leakage
- Cooling of sliding rings
- Monitoring of leakage rate
- Lubricating film stabilization during vacuum operation

Type B2D

Double-acting, loaded, internal seal, independent to direction of rotation, arranged back-to-back with sealing chamber. This arrangement is the most usual form of double-acting seals used for difficult, chemically particularly aggressive media.

Combination of sliding materials in silicon carbide (SiC). Bellows and secondary seals of EPDM and FPM. Metallic parts of stainless steel.

Suitable for application with aggressive and abrasive media.

Function of sealing:

- Prevention of contact between pumped liquid and atmosphere
- Formation of lubricating film between the sliding rings
- Cooling of sliding rings
- Monitoring of leakage rate

Chemical Motor Pump Unit BN

Performance curves

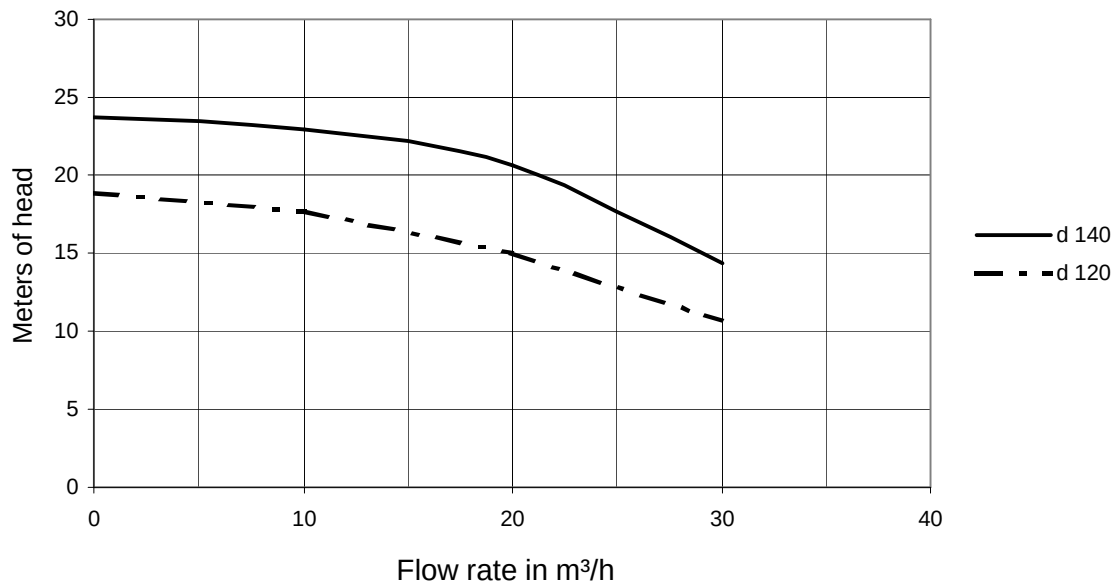
The following diagrams show the Q-H curves in dependence of the impeller diameter as well as the power consumption in kW, the efficiency and the NPSH value (only for nominal speed of 2900 min⁻¹).

Flow rate and efficiency guarantees according to DIN 1944.

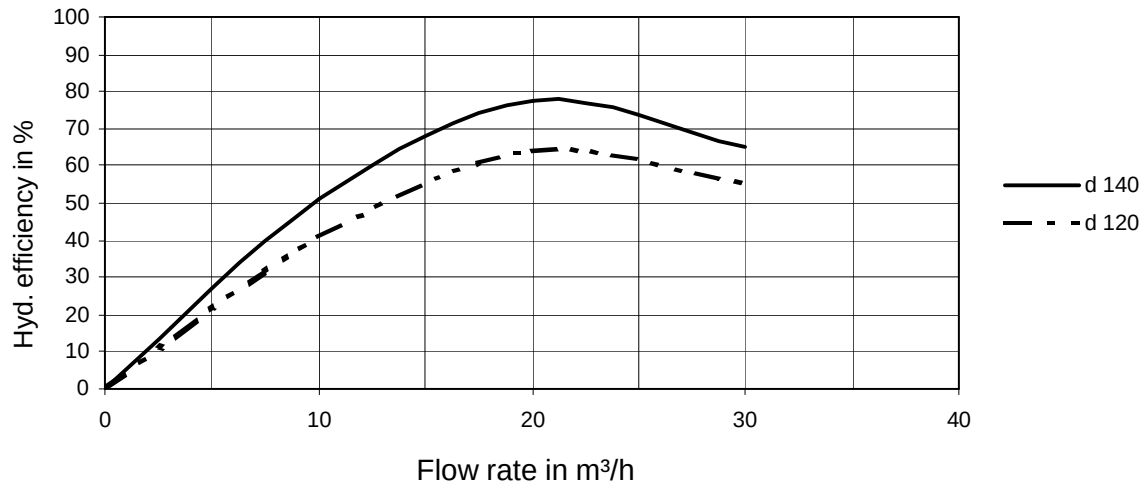
Type BN 50 - 32 - 125

Motor kW: 2.2
Speed: 2900

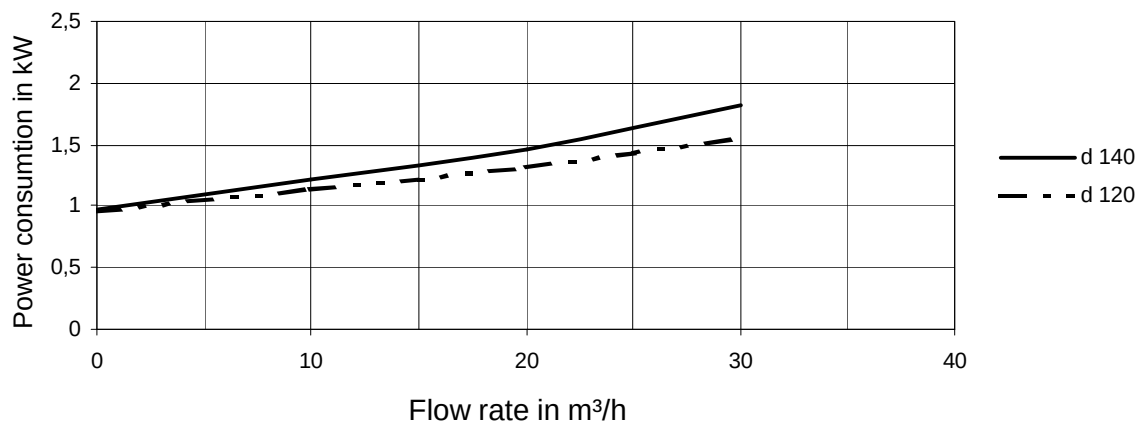
Flow rate



Efficiency

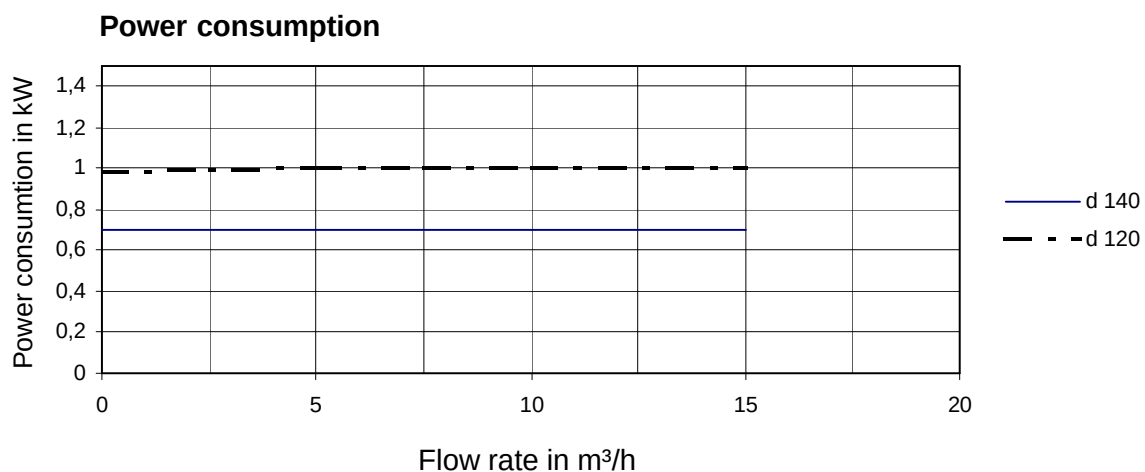
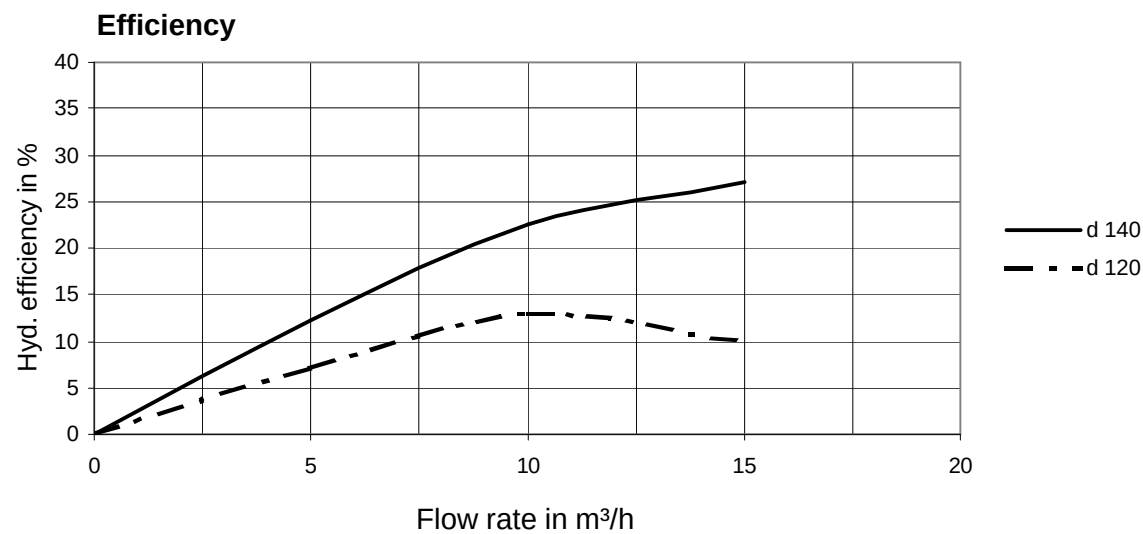
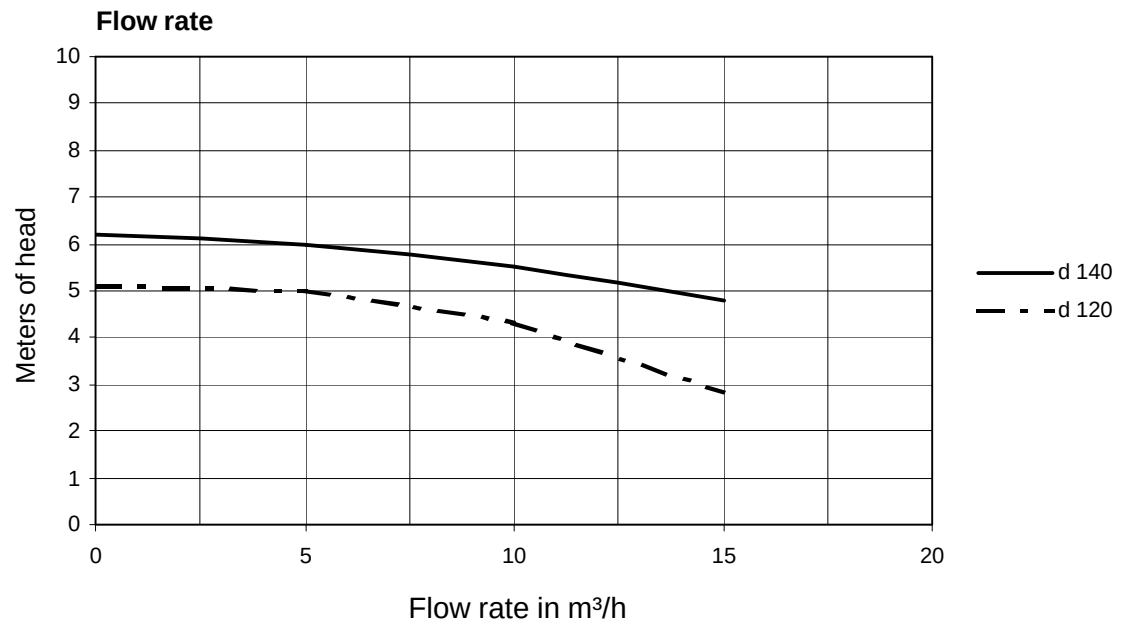


Power consumption



Type BN 50 - 32 - 125

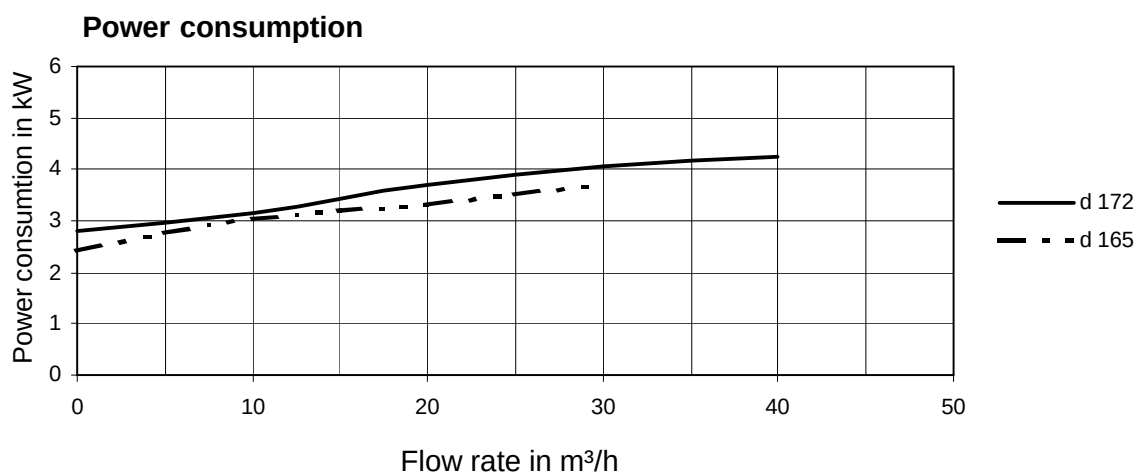
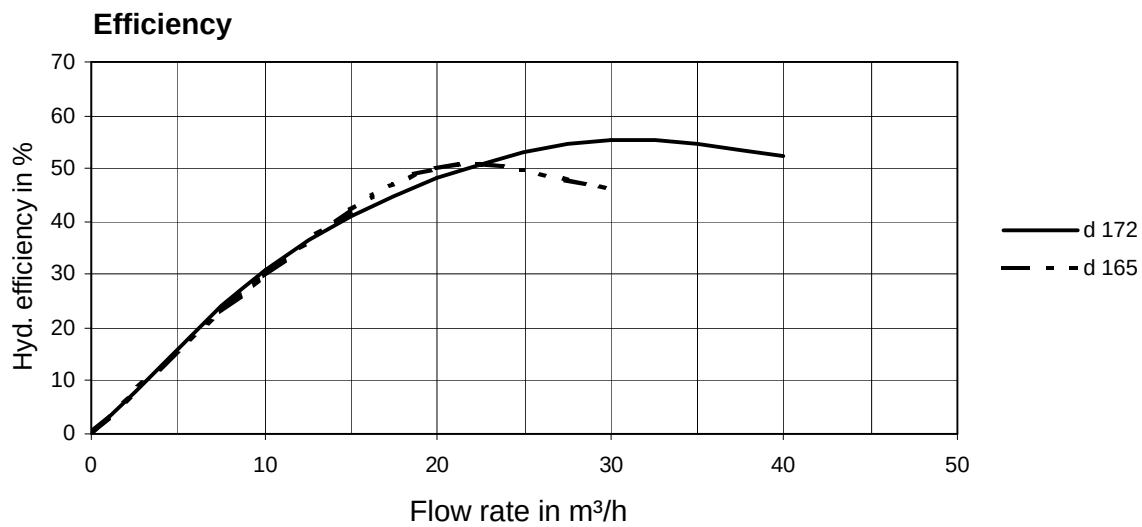
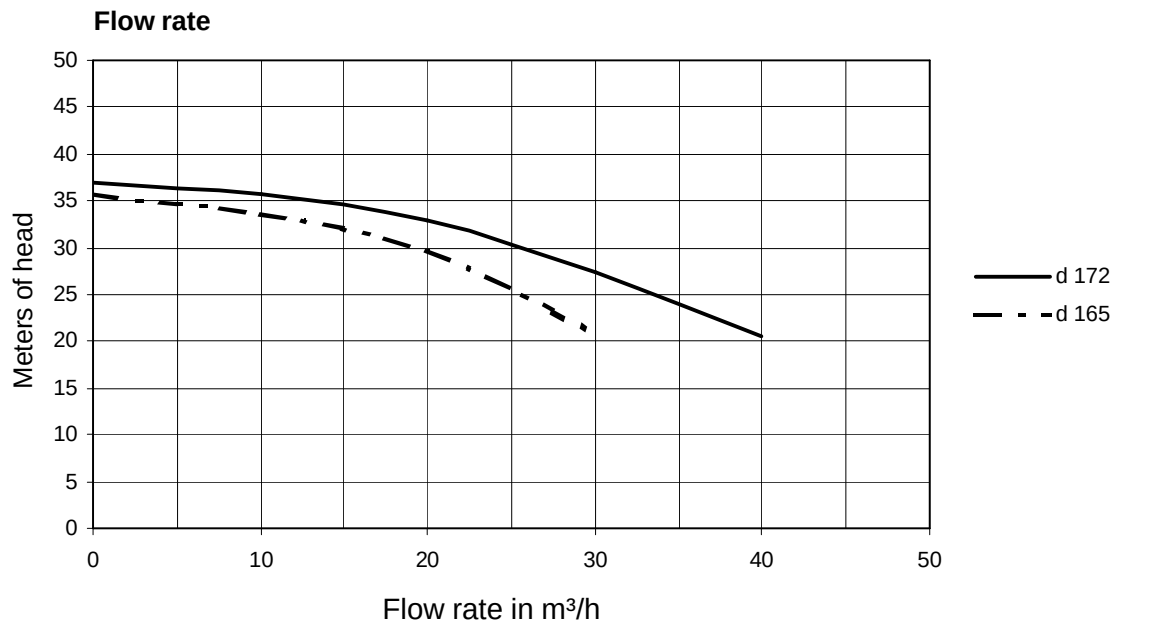
Motor kW: 1.1
Speed: 1450



Type BN 50 - 32 - 160

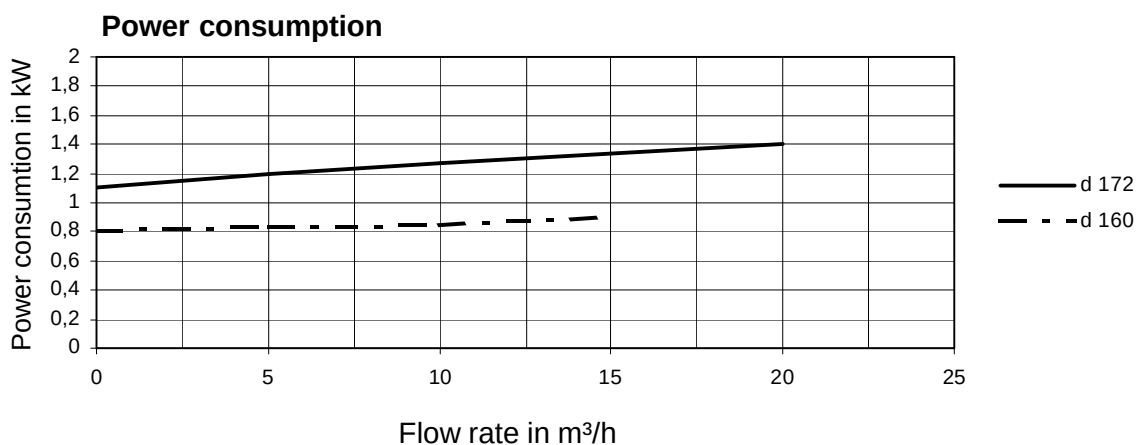
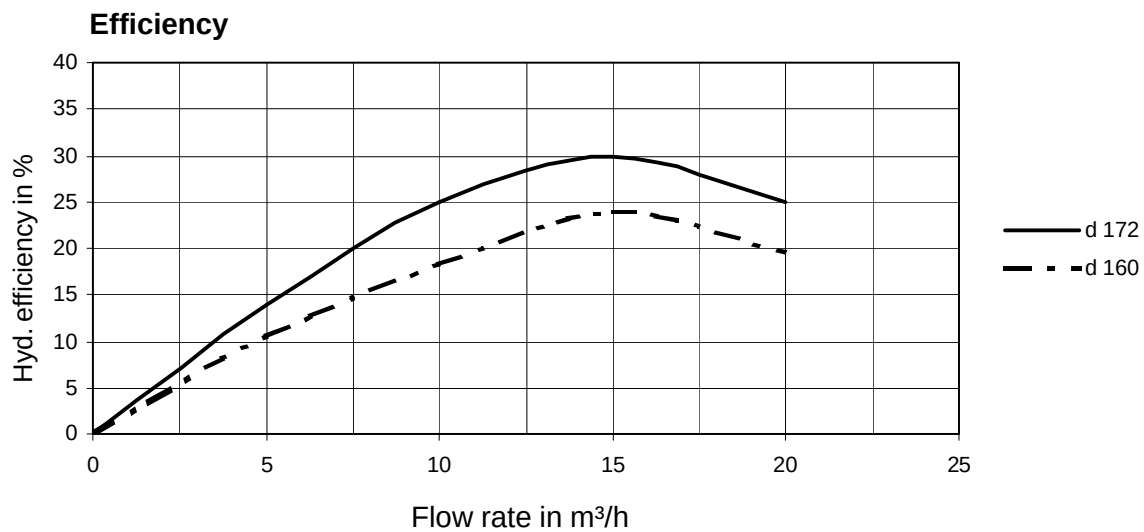
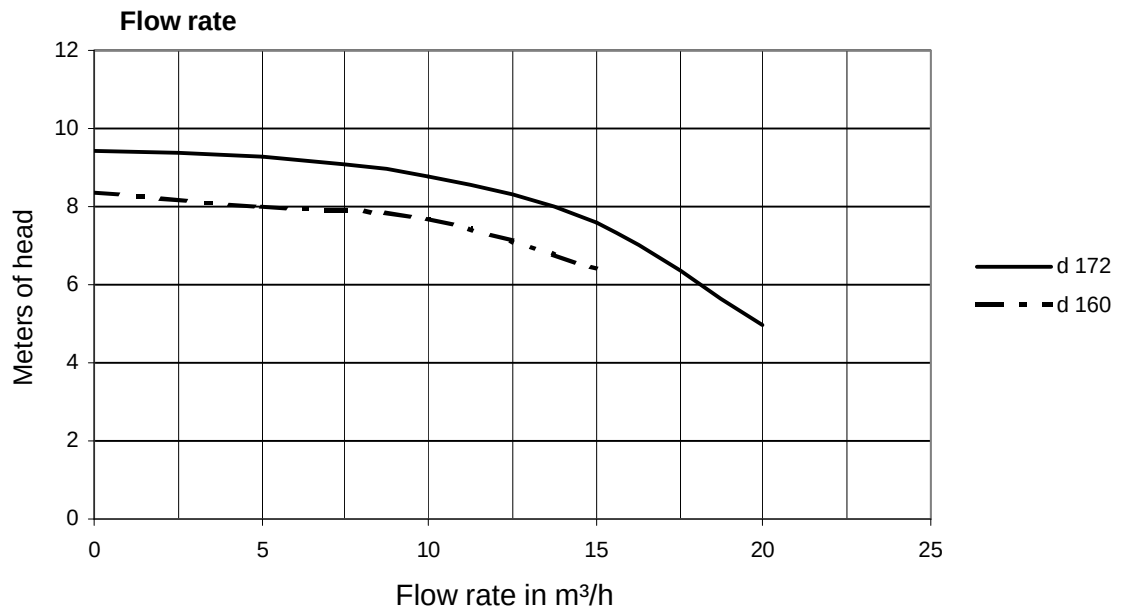
Motor kW: 4
Speed: 2900

Chemical Motor Pump Unit BN



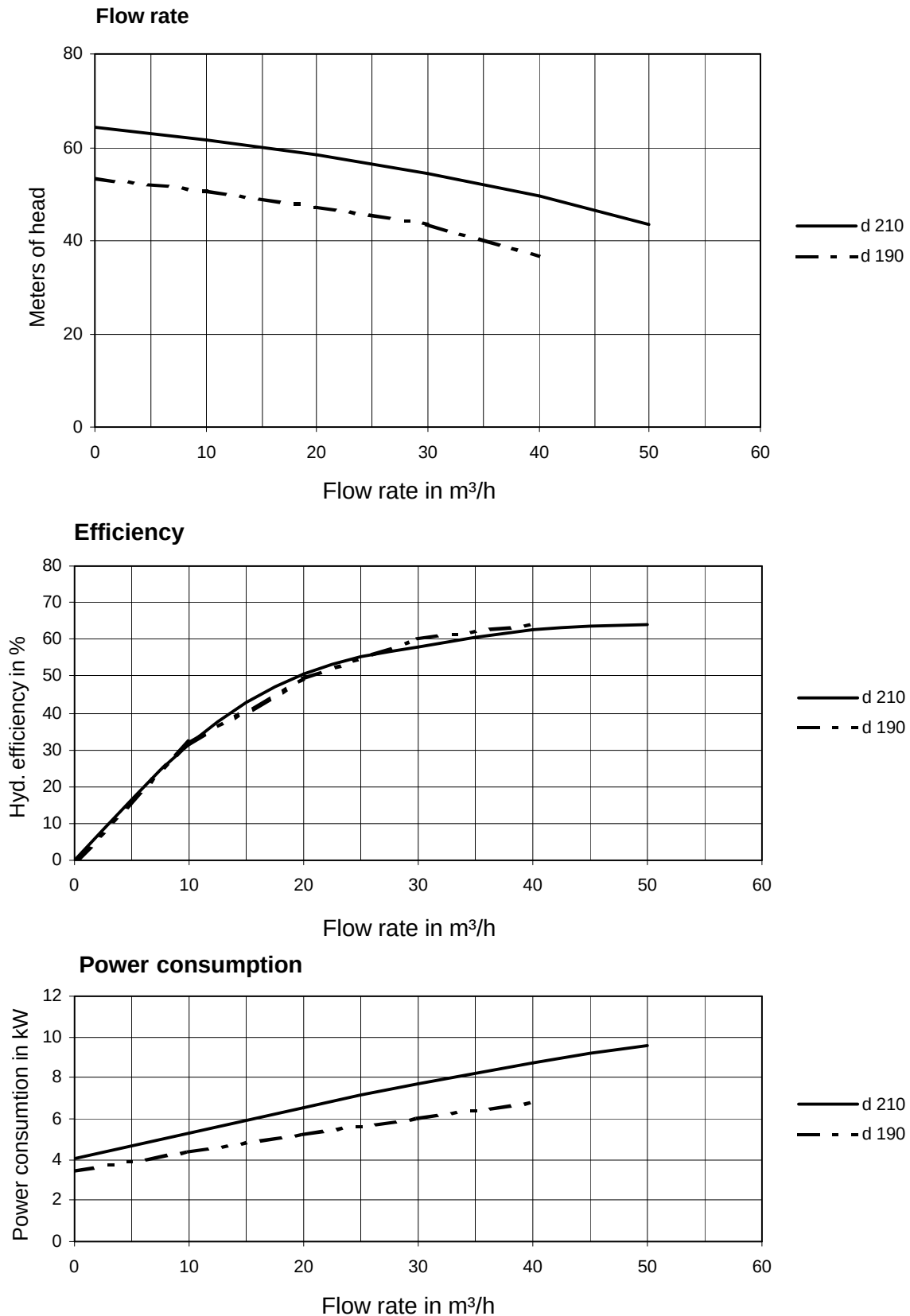
Type BN 50 - 32 - 160

Motor kW: 1.5
Speed: 1450



Type BN 50 - 32 - 200

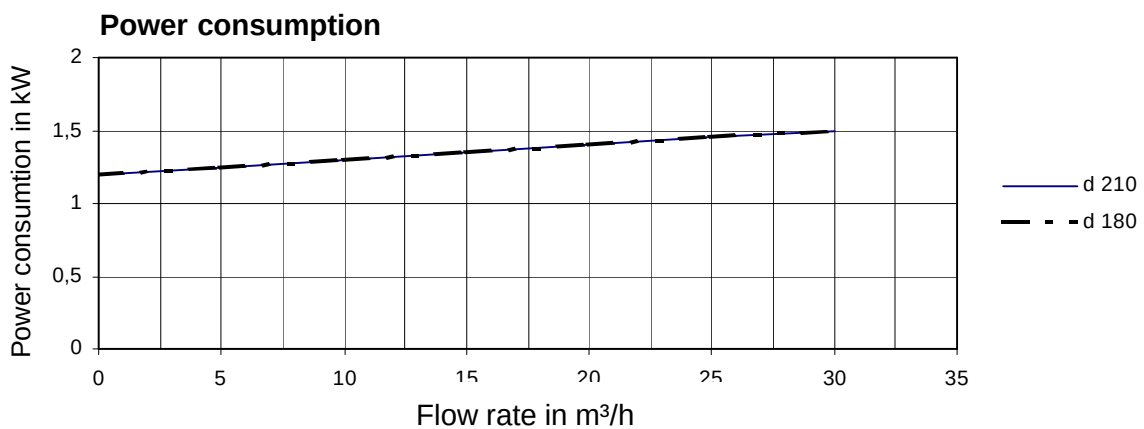
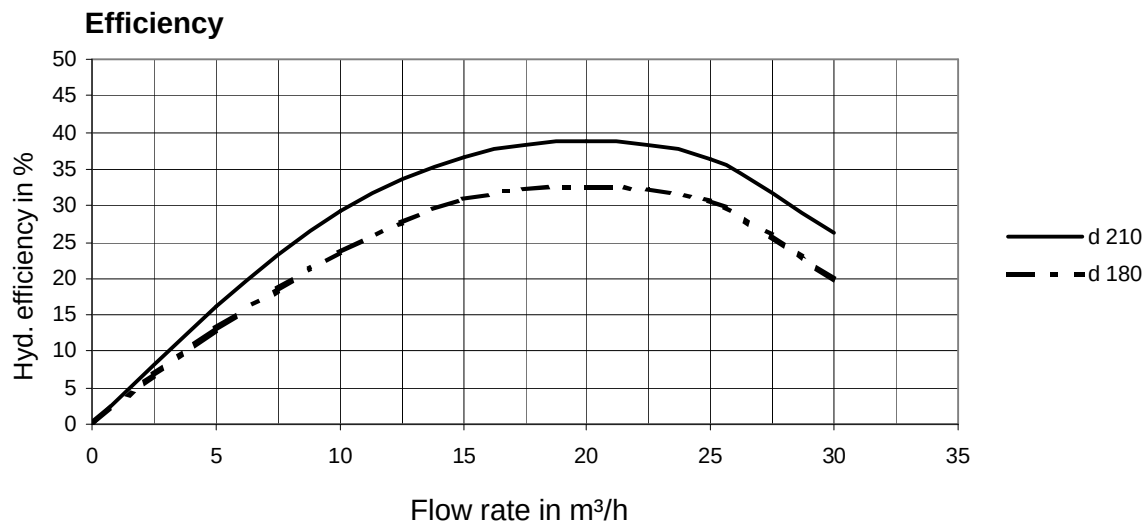
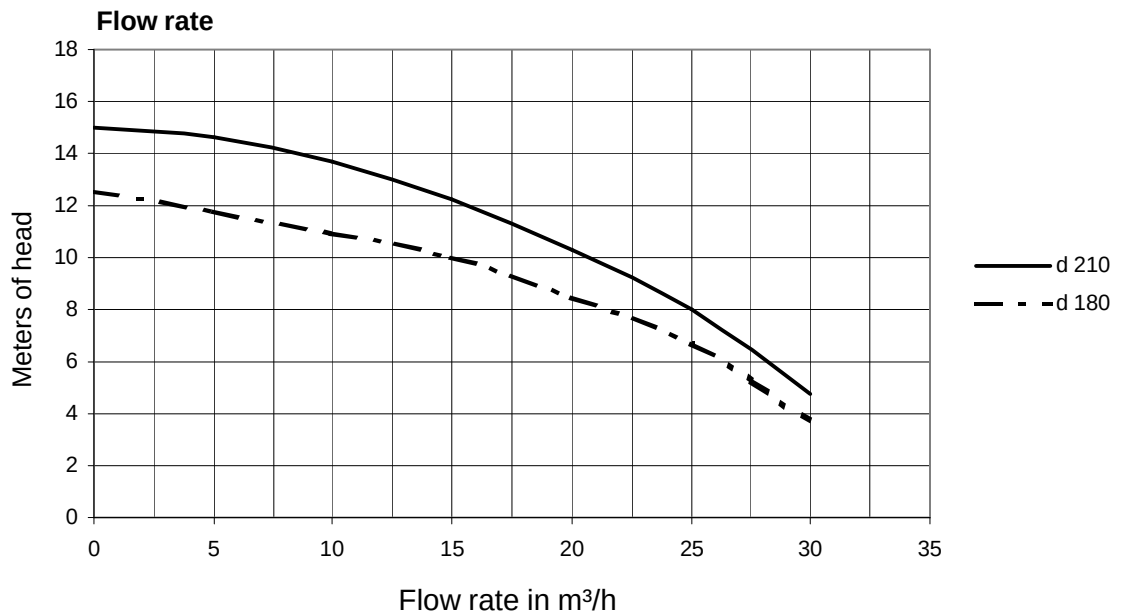
Motor kW: 7.5
Speed: 2900



Type BN 50 - 32 - 200

Motor kW: 1.5
Speed: 1450

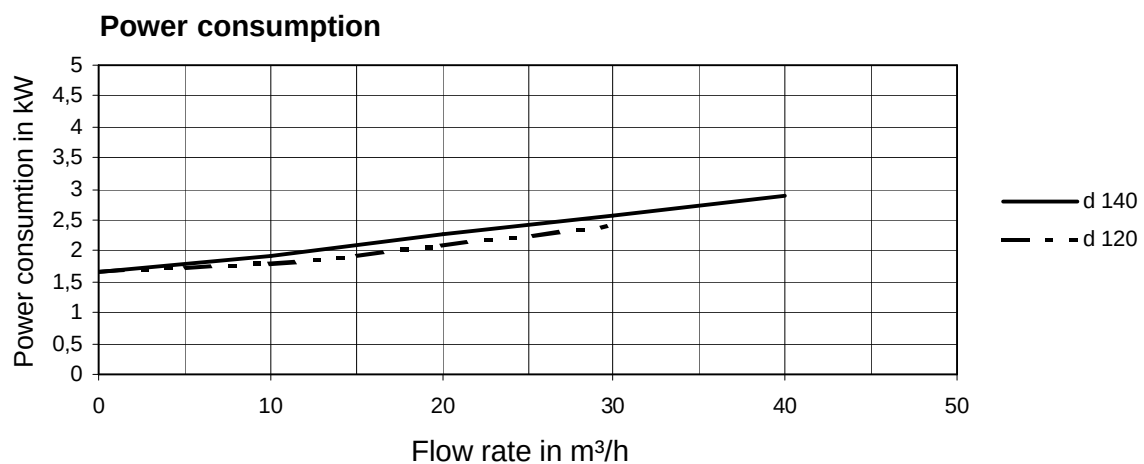
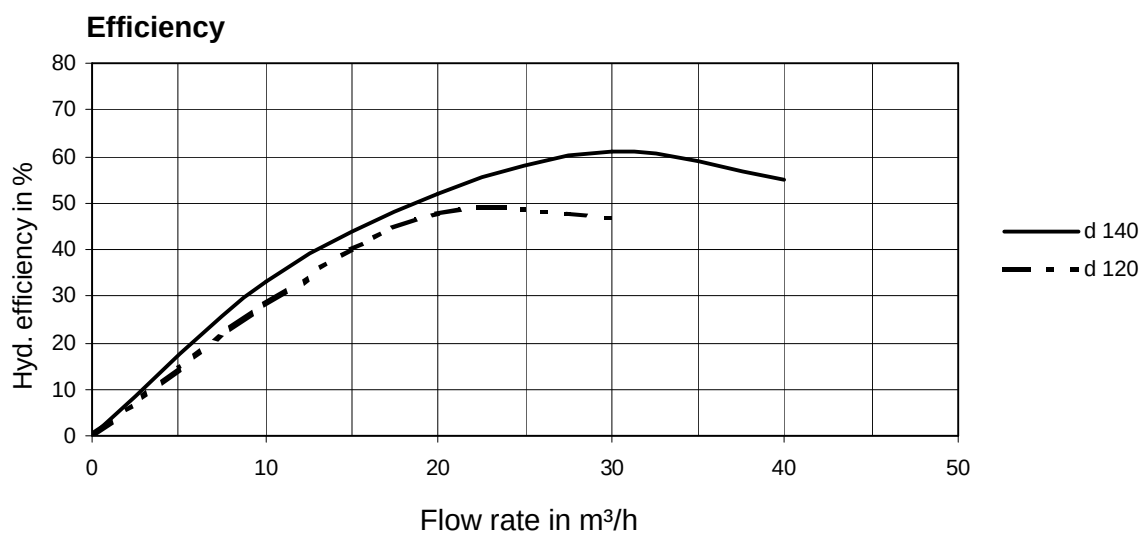
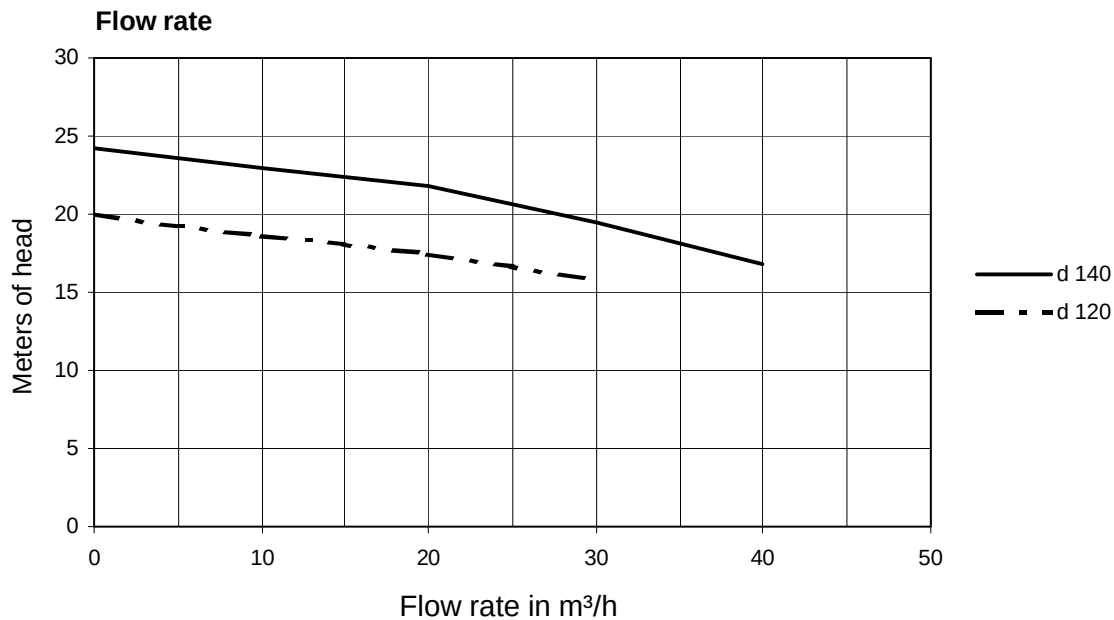
Chemical Motor Pump Unit BN



Type BN 65 - 40 - 125

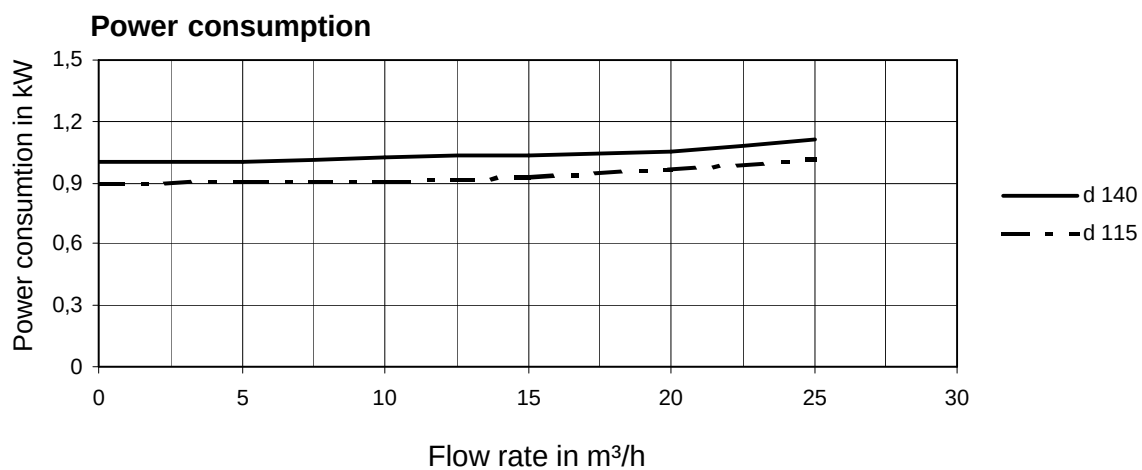
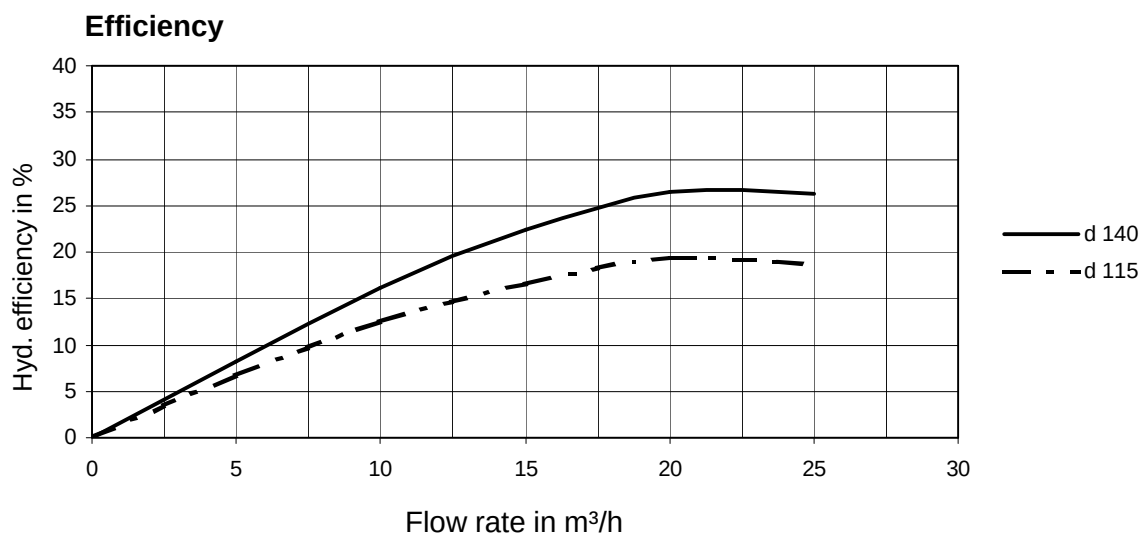
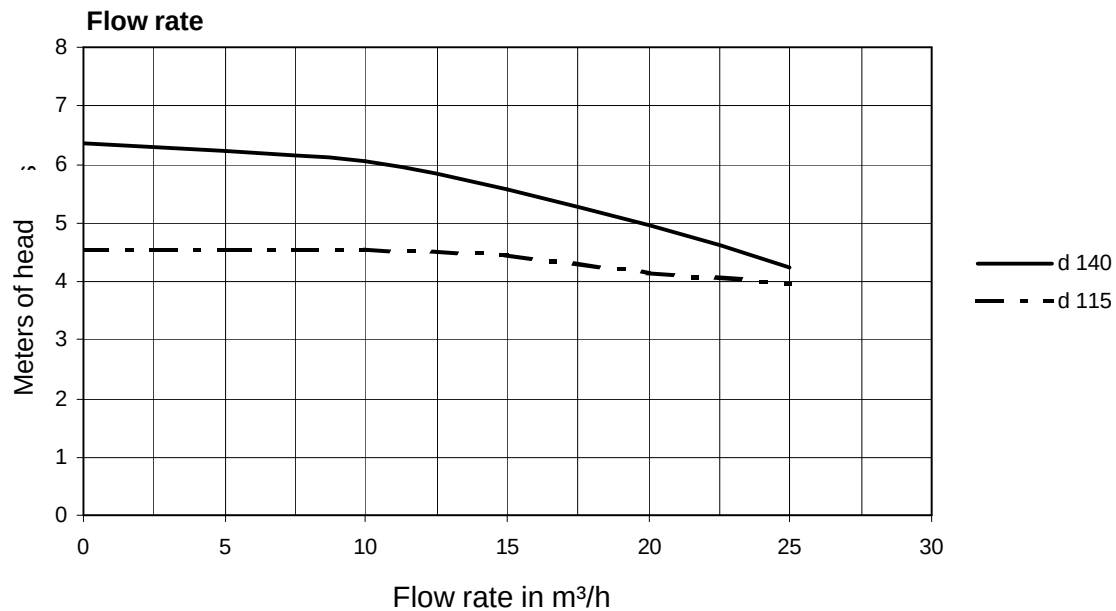
Motor kW: 3
Speed: 2900

Chemical Motor Pump Unit BN



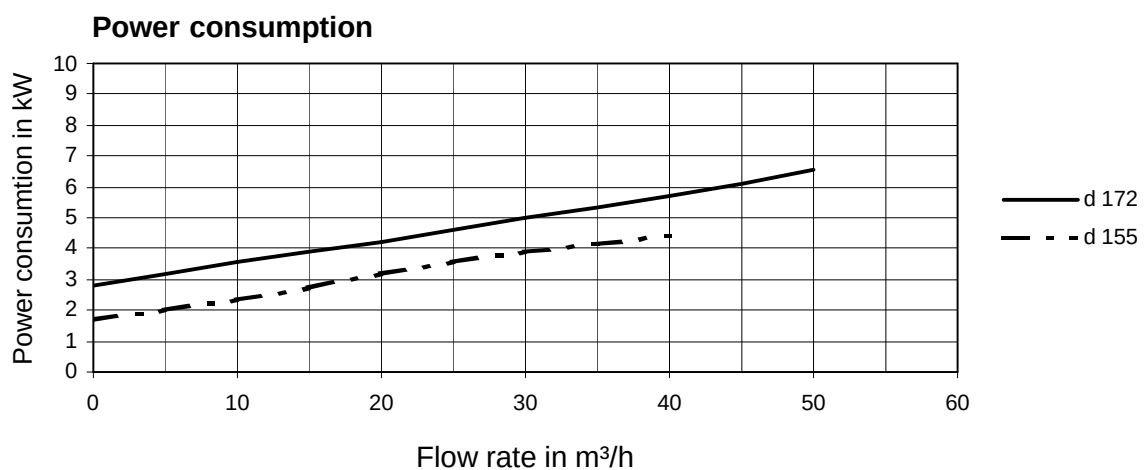
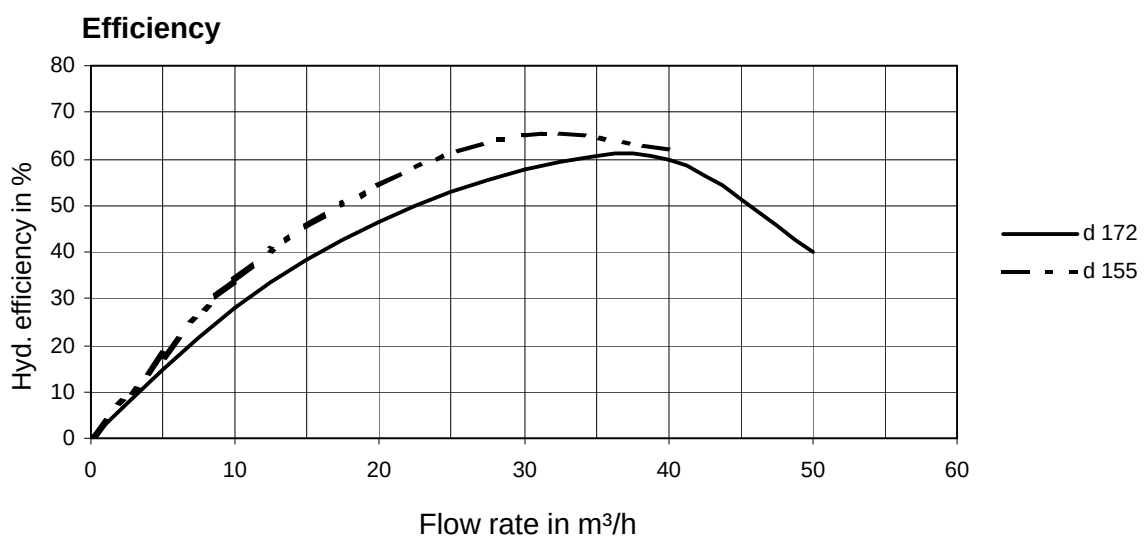
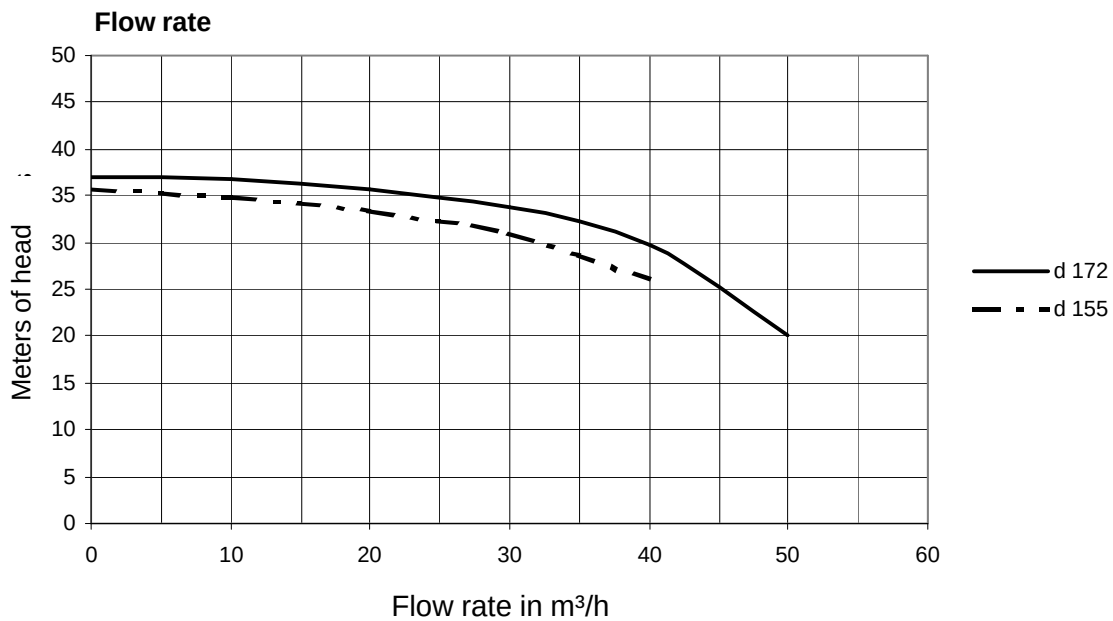
Type BN 65 - 40 - 125

Motor kW: 1.5
Speed: 1450



Type BN 65 - 40 - 160

Motor kW: 7.5
Speed: 2900

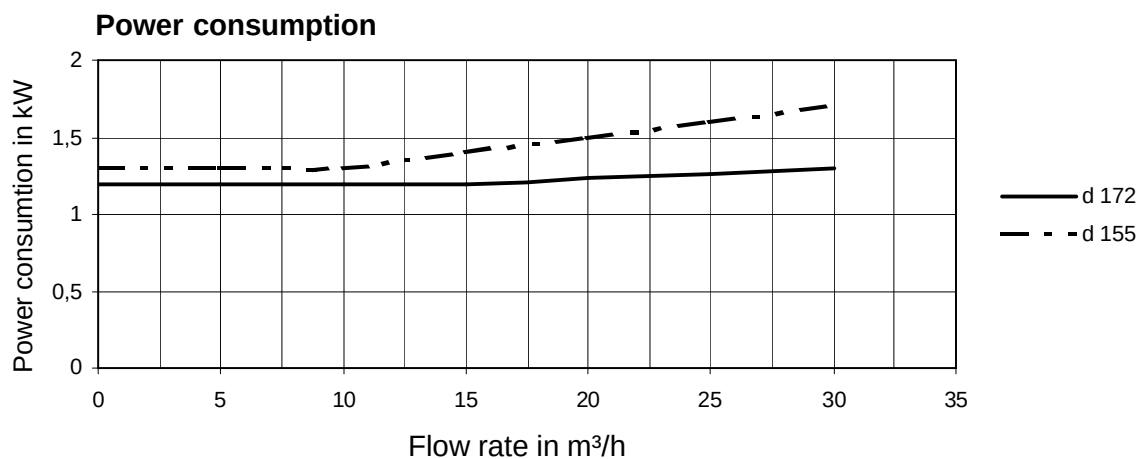
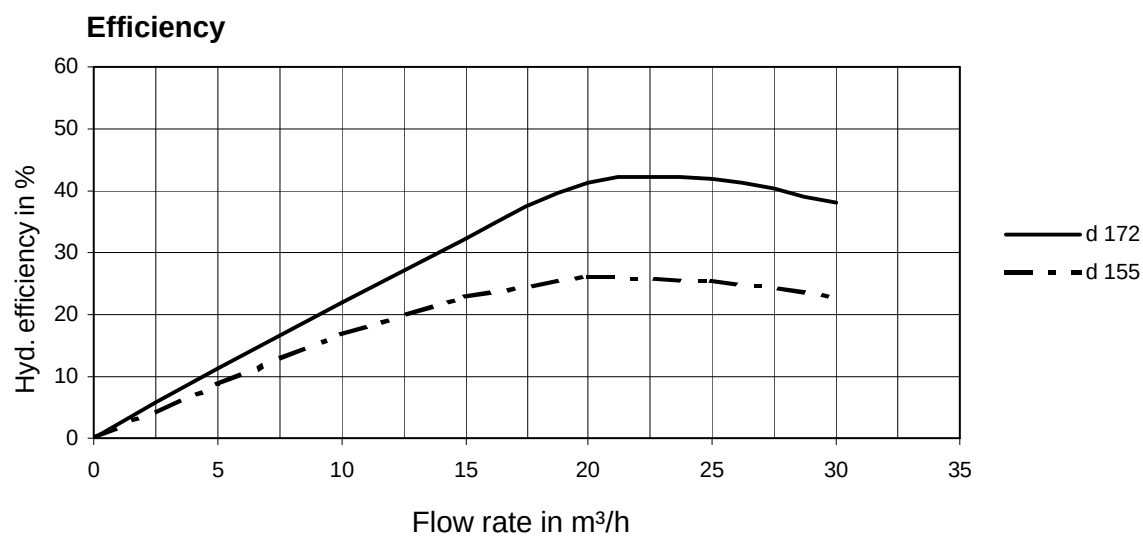
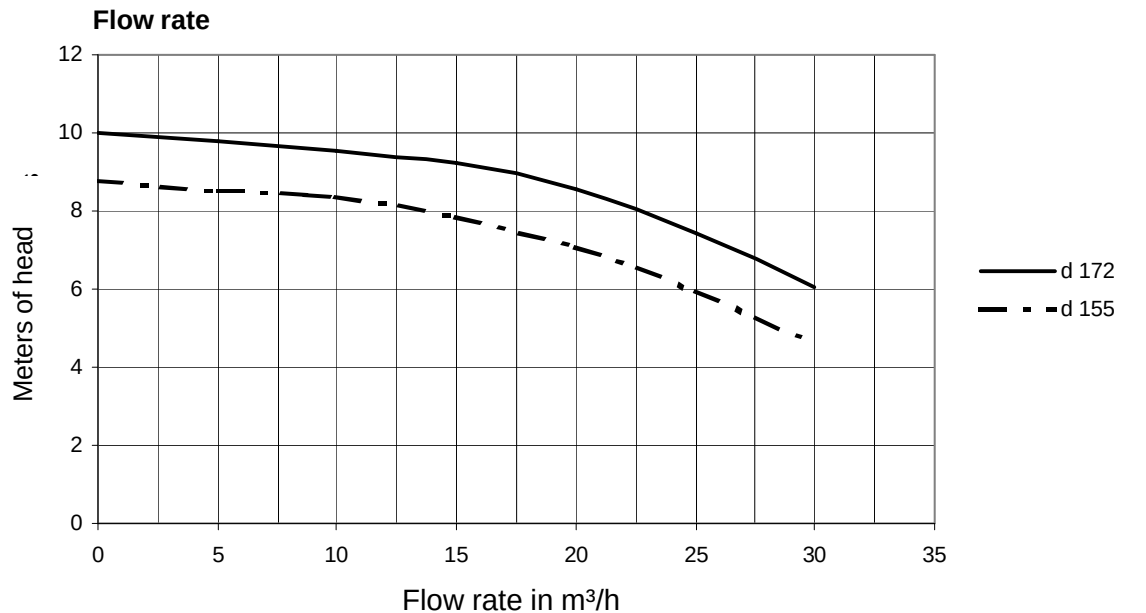


Chemical Motor Pump Unit BN

Type BN 65 - 40 - 160

Motor kW: 2.2
Speed: 1450

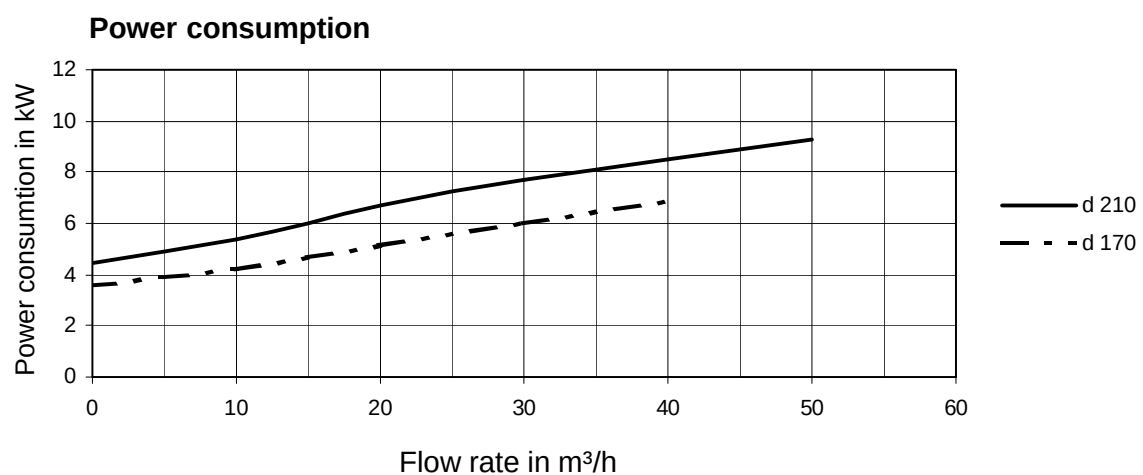
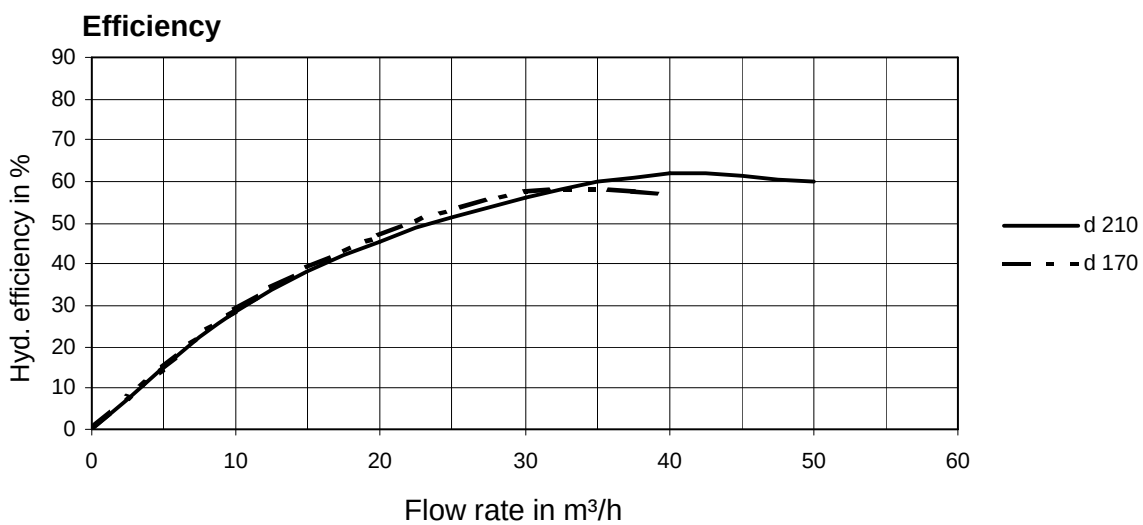
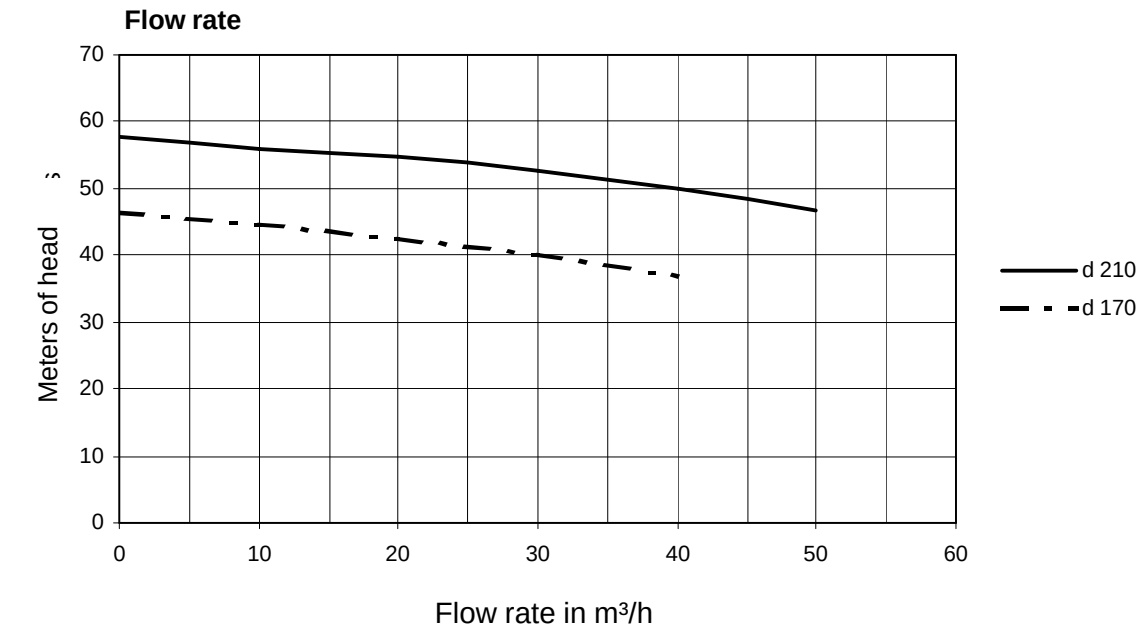
Chemical Motor Pump Unit BN



Type BN 65 - 40 - 200

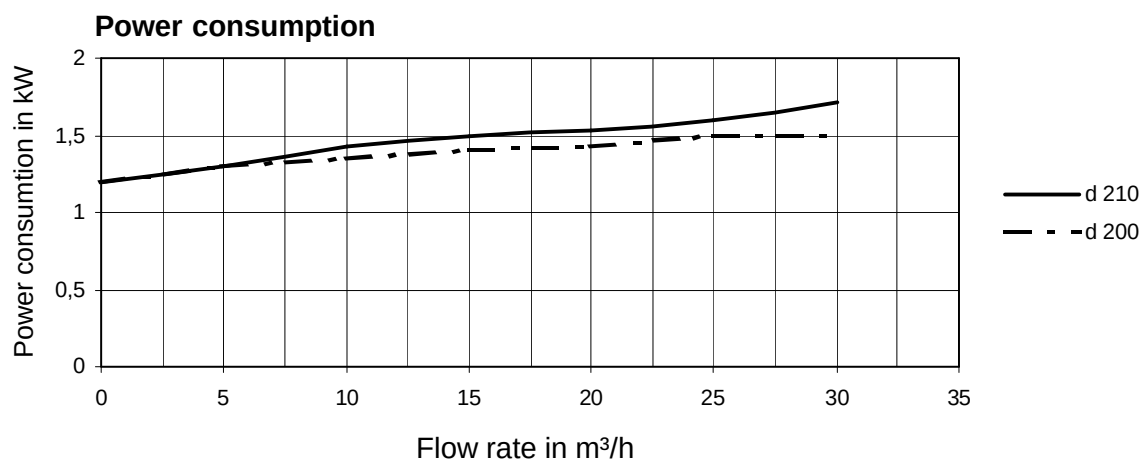
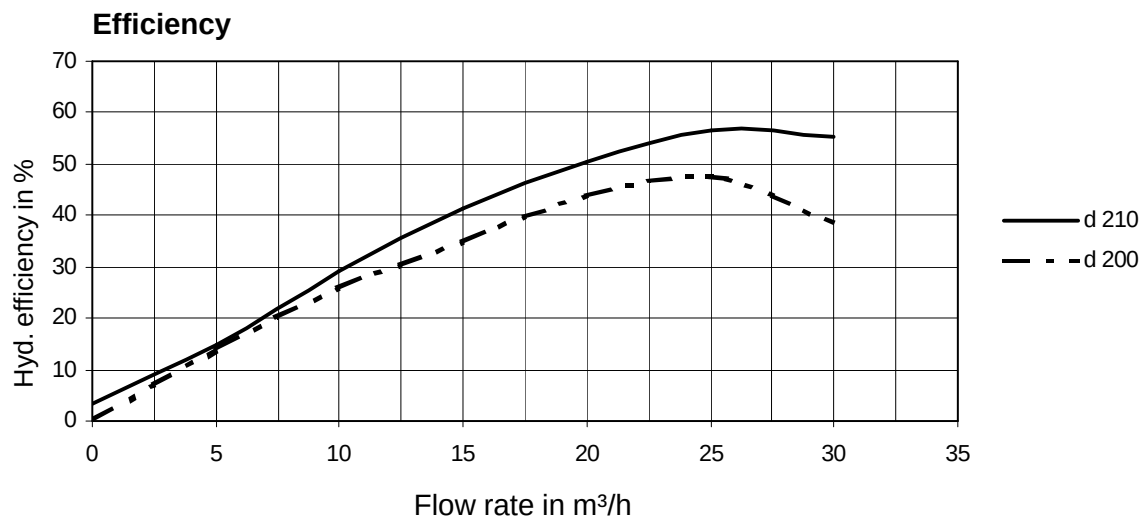
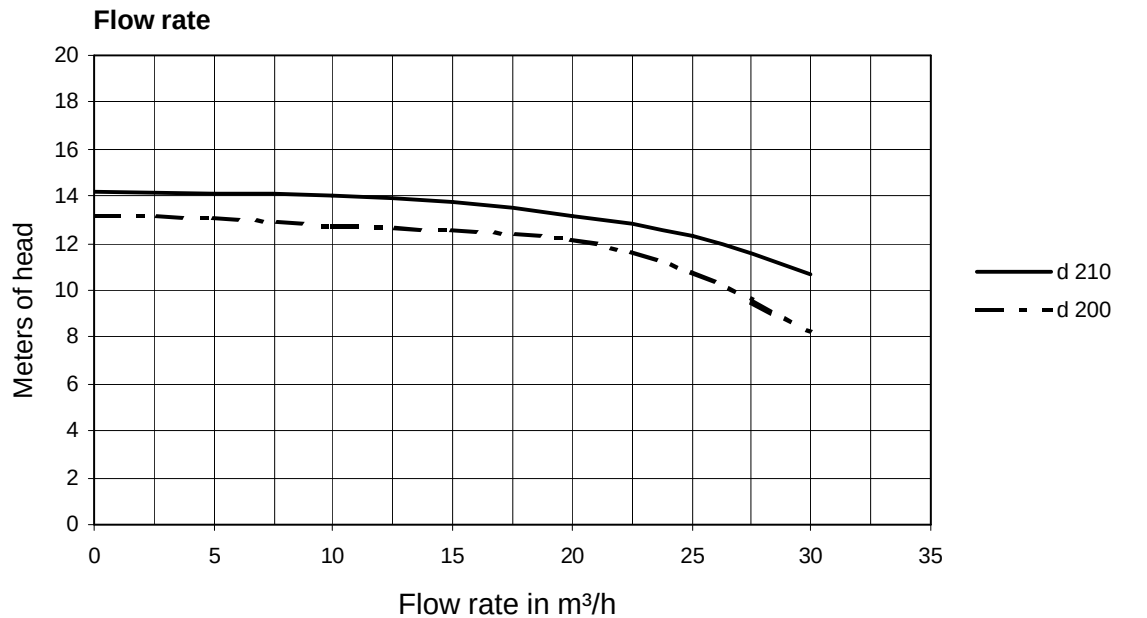
Motor kW: 7.5
Speed: 2900

Chemical Motor Pump Unit BN



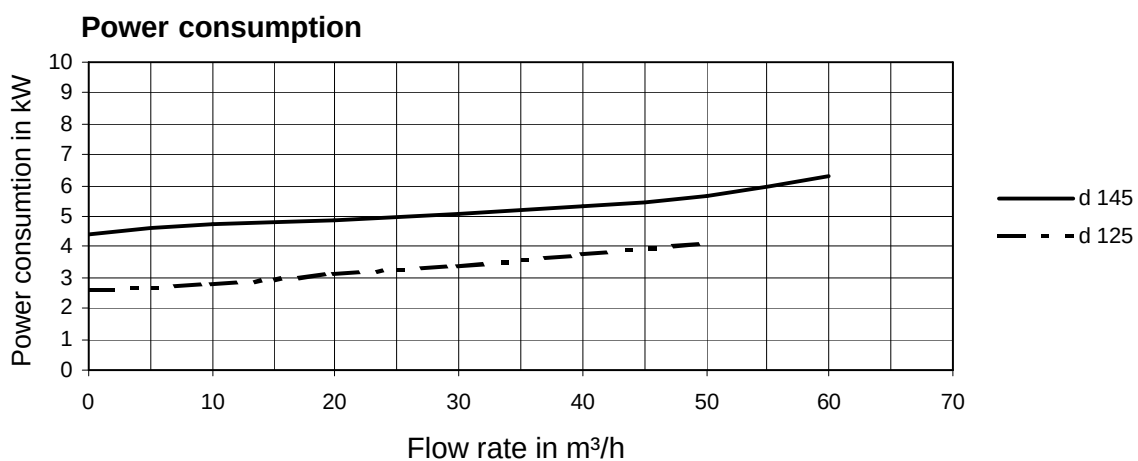
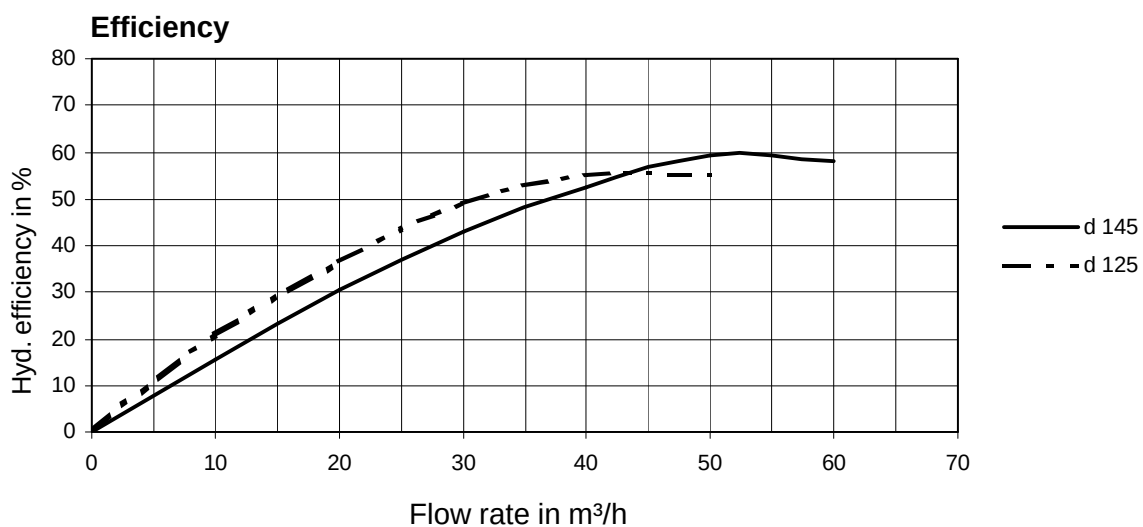
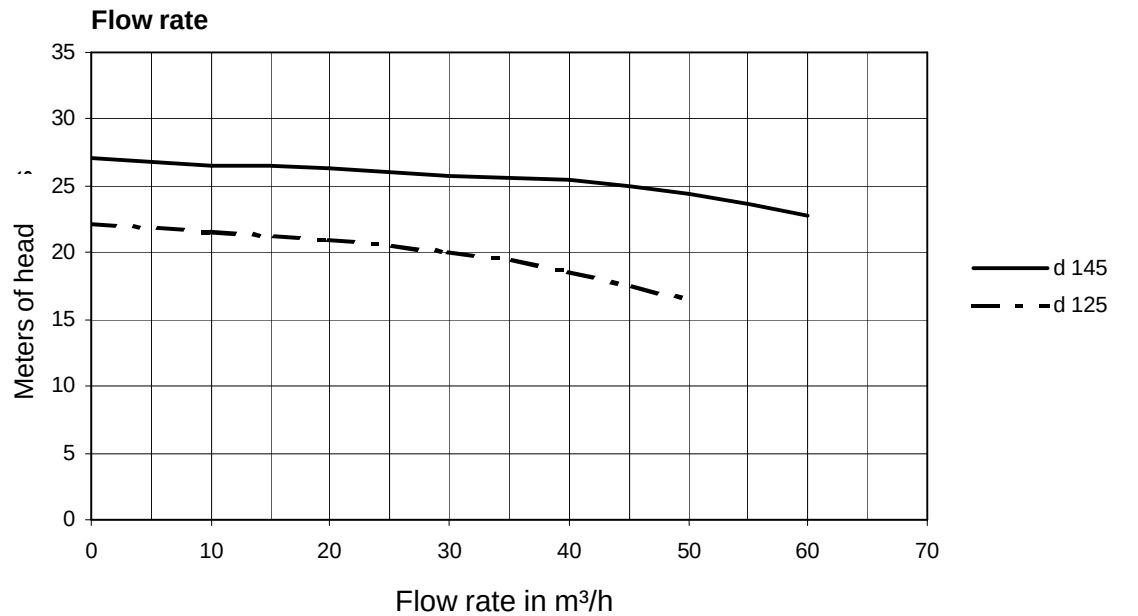
Type BN 65 - 40 - 200

Motor kW: 2.5
Speed: 1450



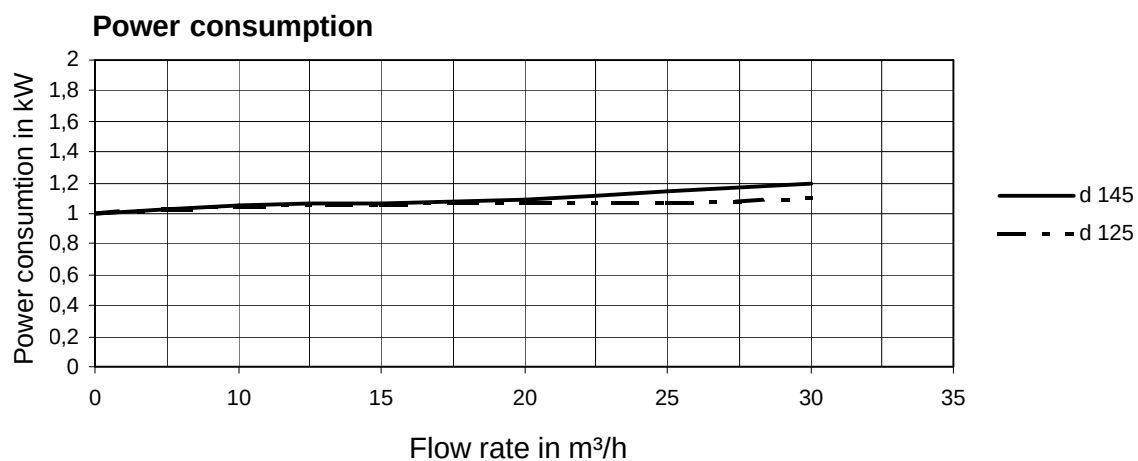
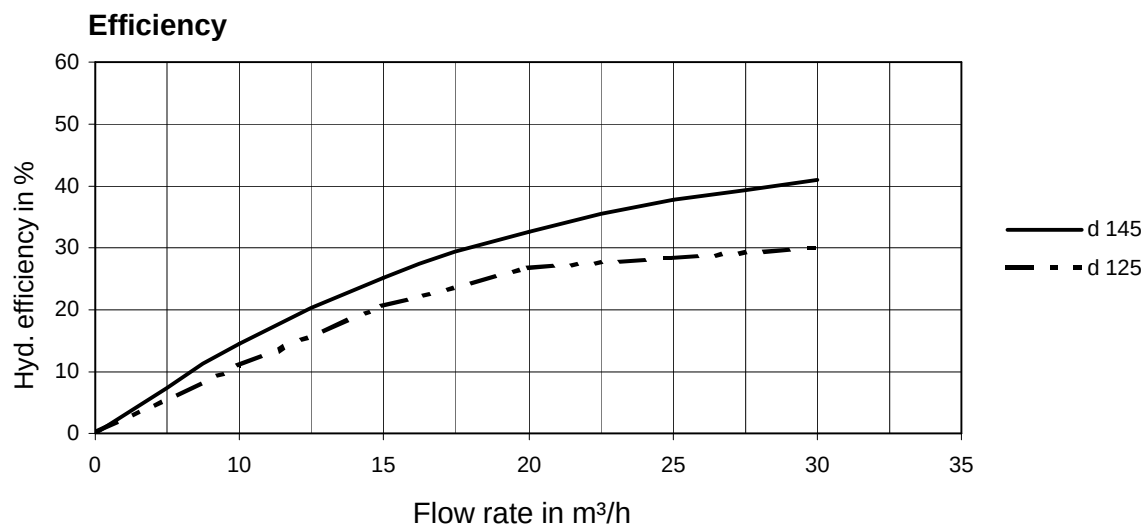
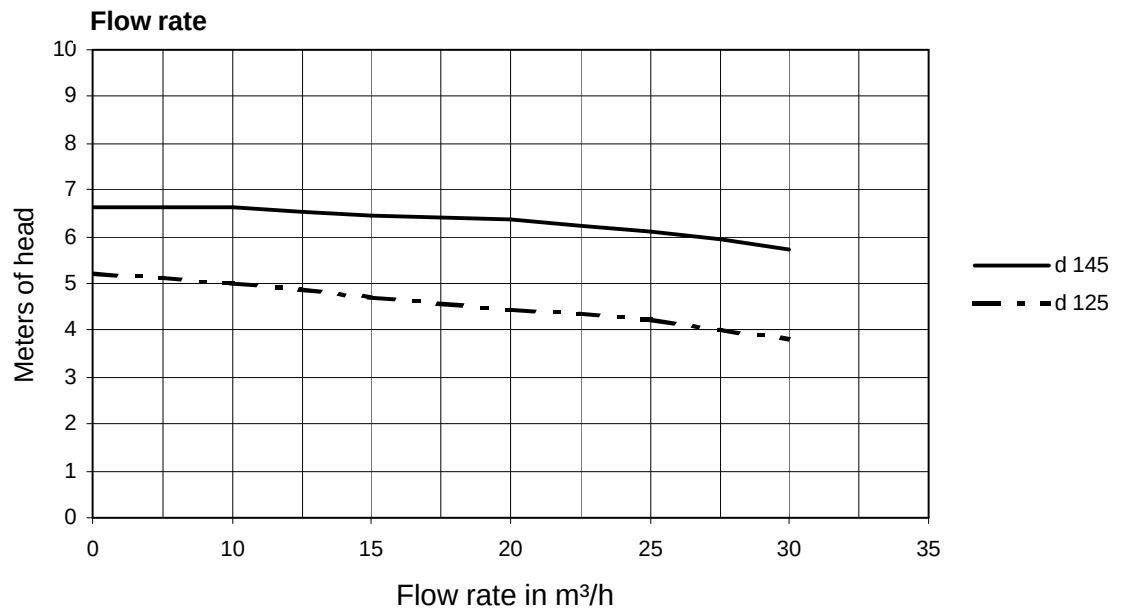
Typ BN 80 - 50 - 125

Motor kW: 7.5
Speed: 2900



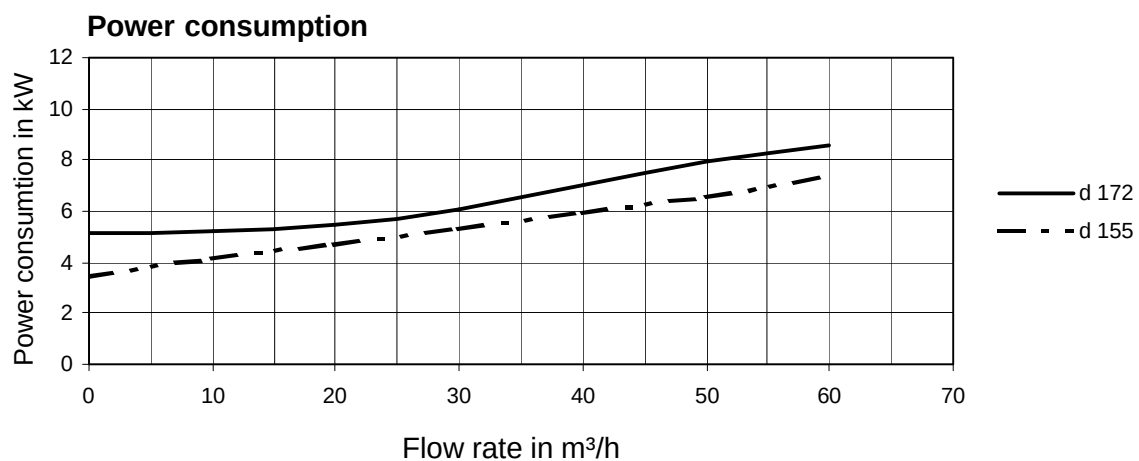
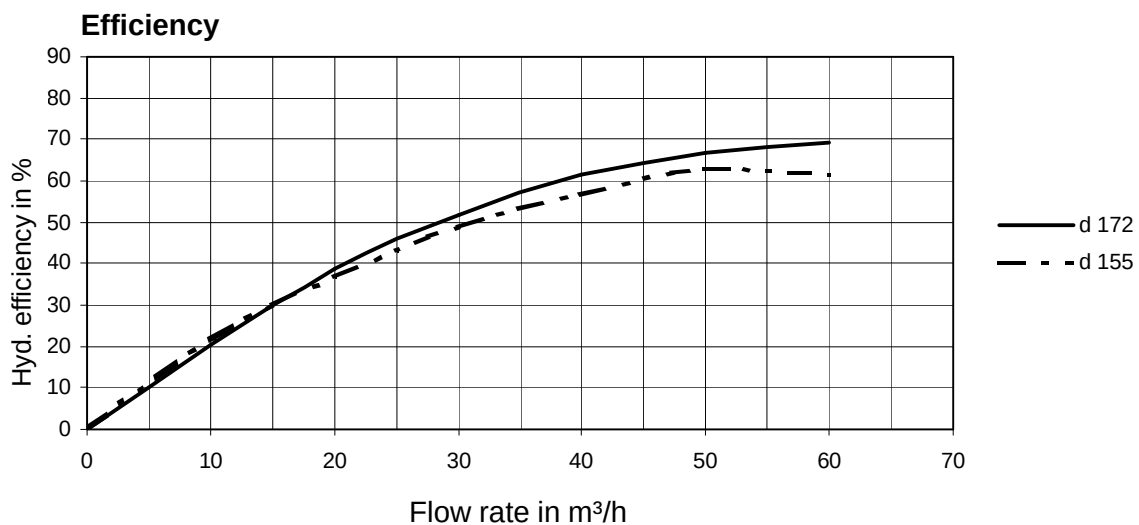
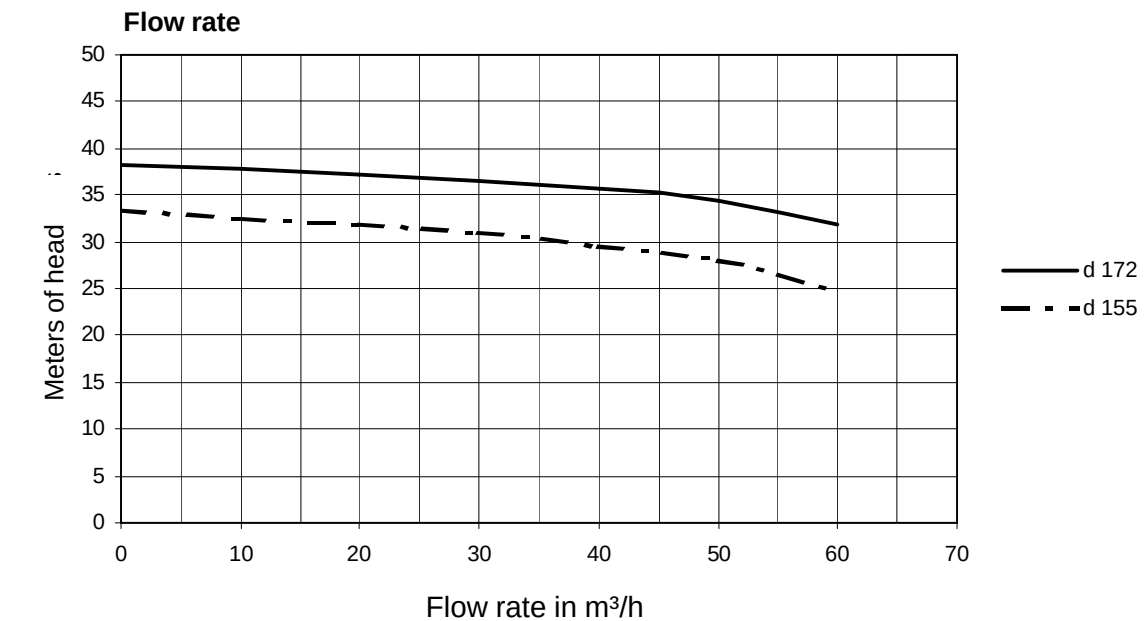
Type BN 80 - 50 - 125

Motor kW: 1.5
Speed: 1450



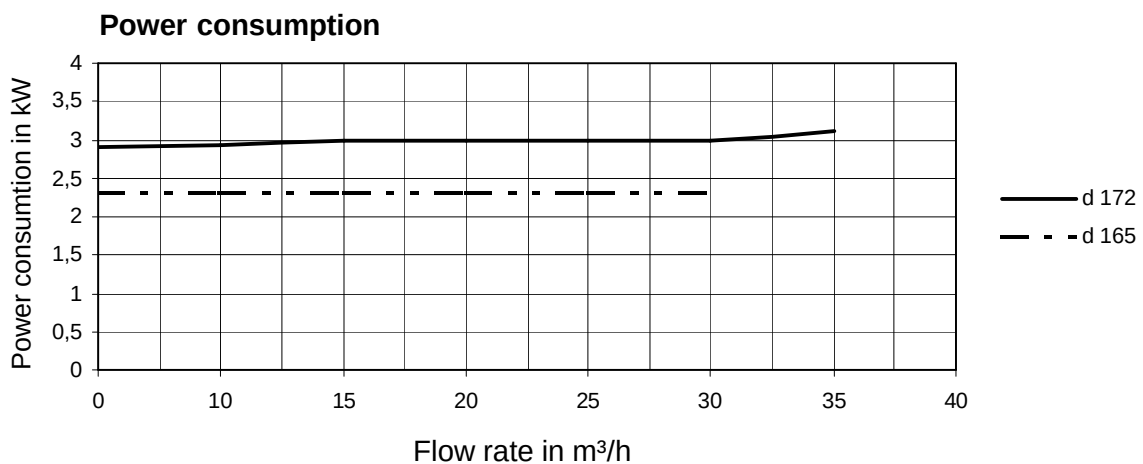
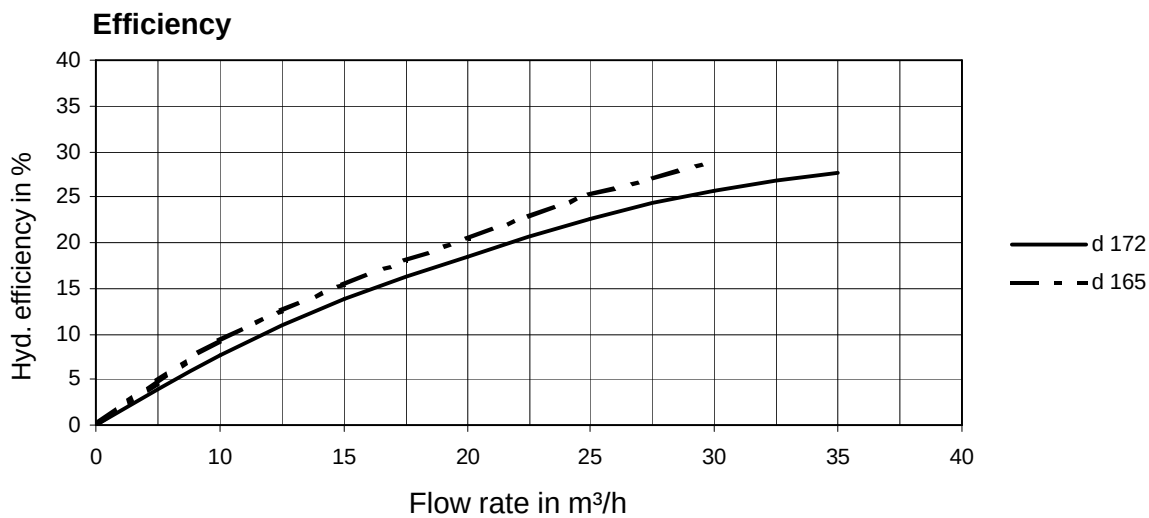
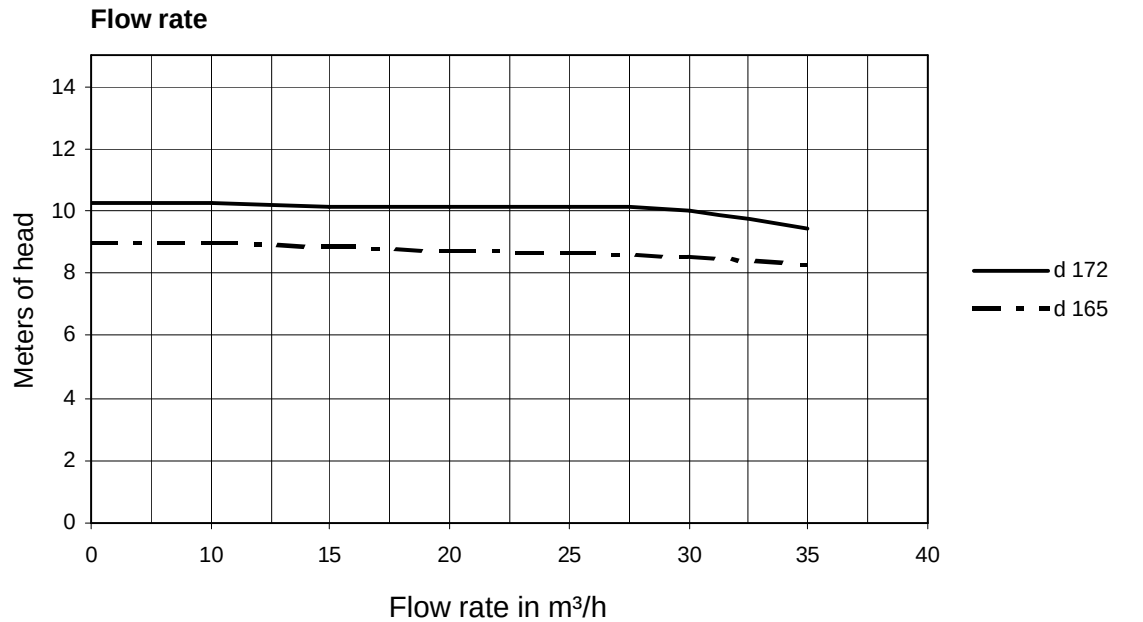
Type BN 80 - 50 - 160

Motor kW: 11
Speed: 2900



Type BN 80 - 50 - 160

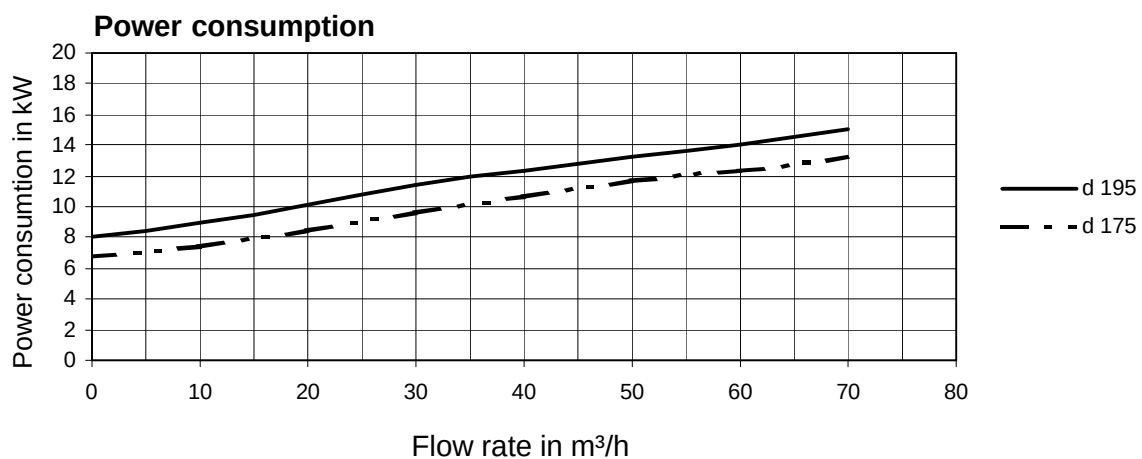
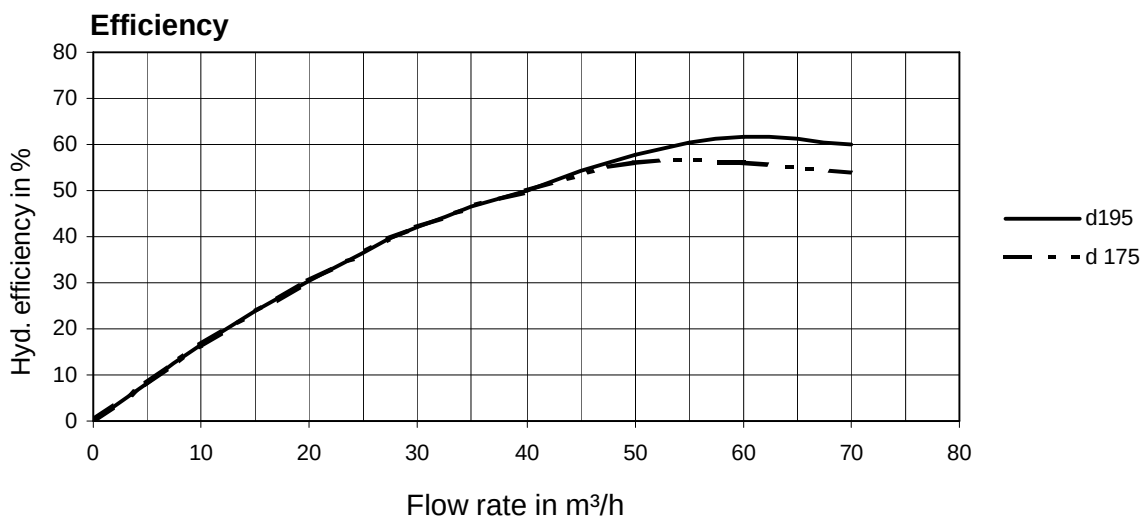
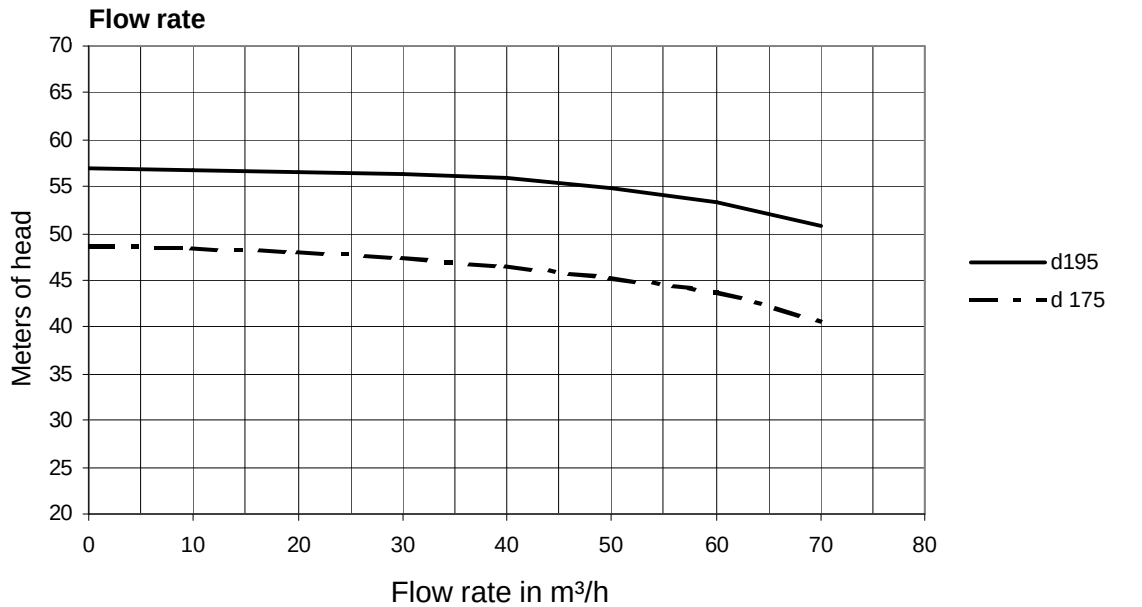
Motor kW: 4
Speed: 1450



Chemical Motor Pump Unit BN

Type BN 80 - 50 - 200

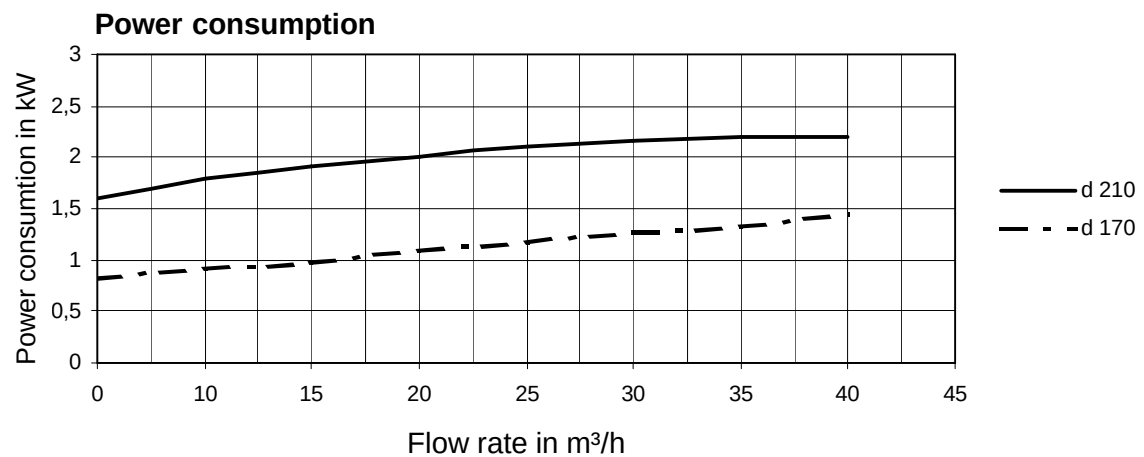
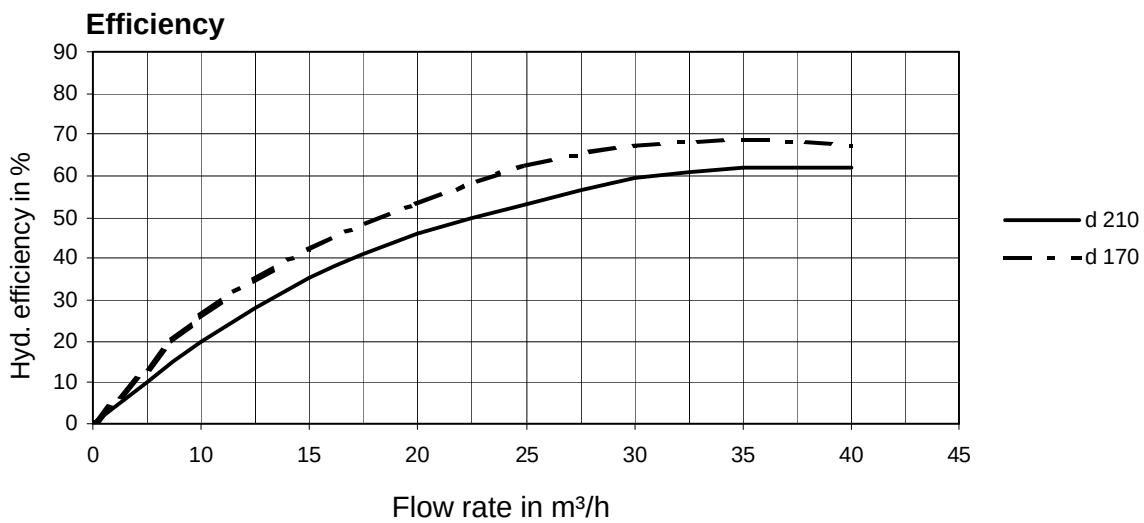
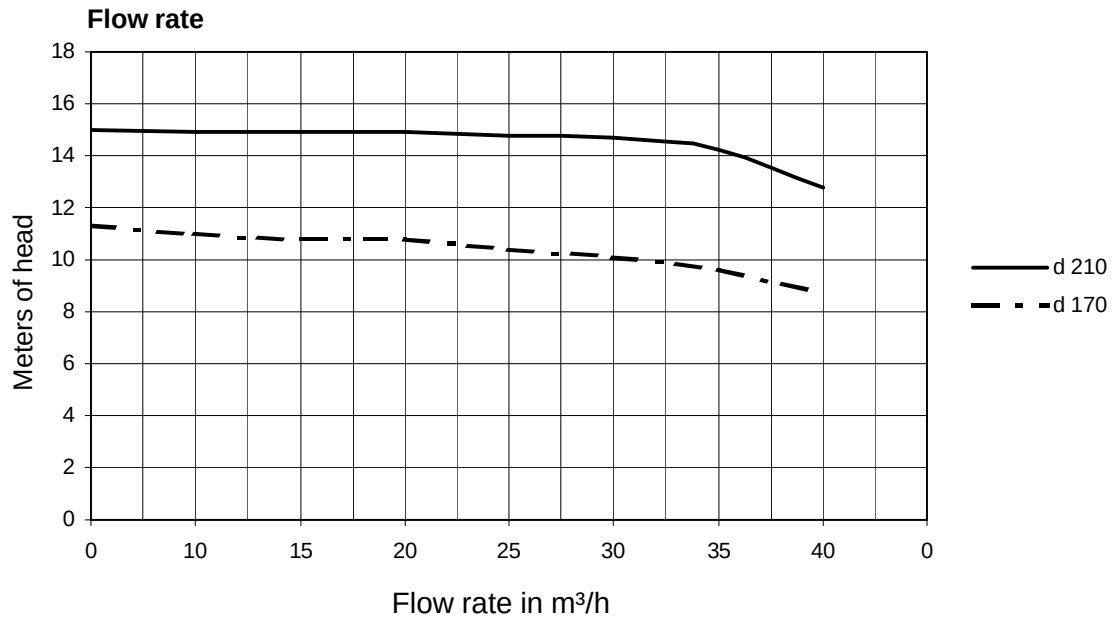
Motor kW: 15
Speed: 2900



Chemical Motor Pump Unit BN

Type BN 80 - 50 - 200

Motor kW: 3
Speed: 1450

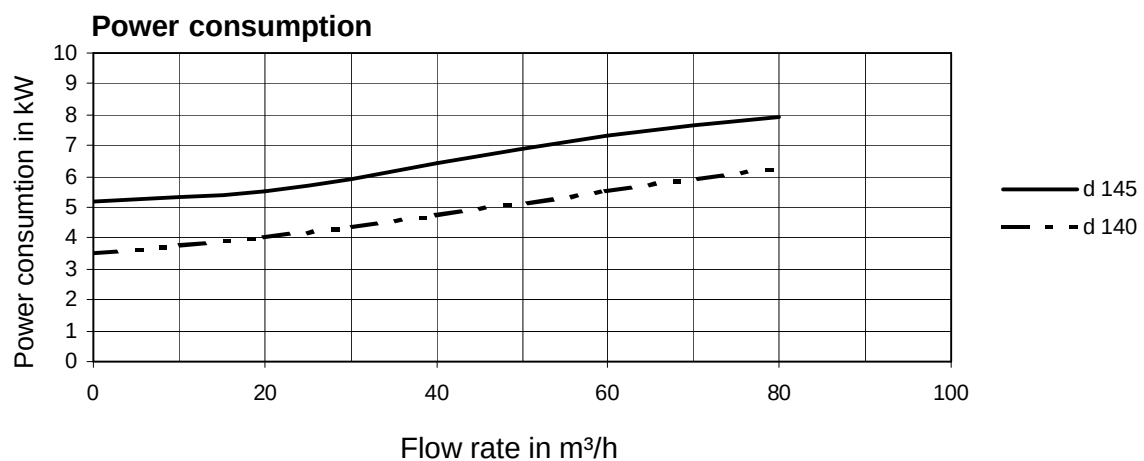
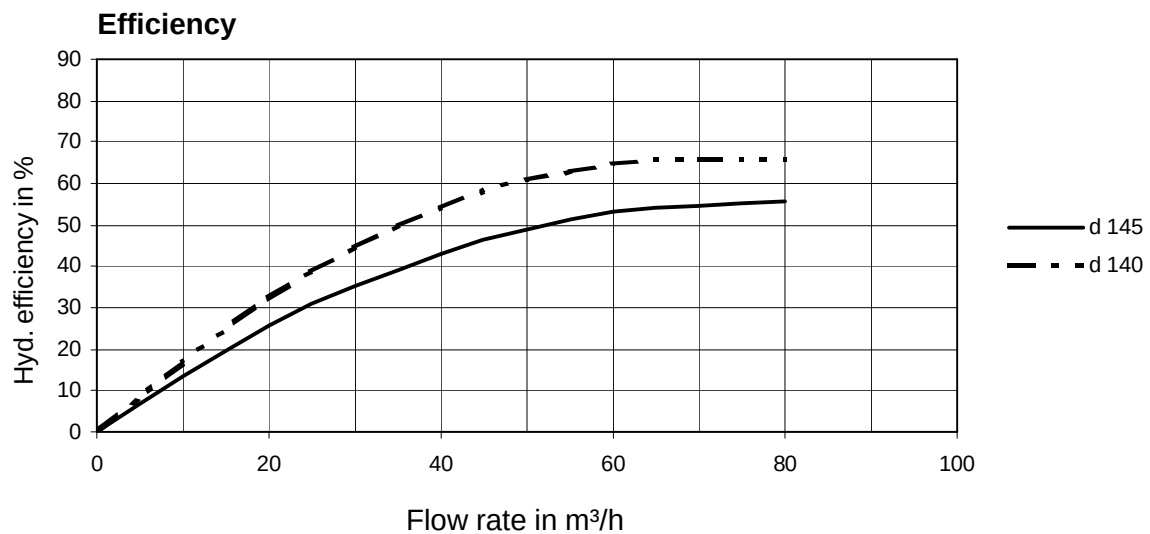
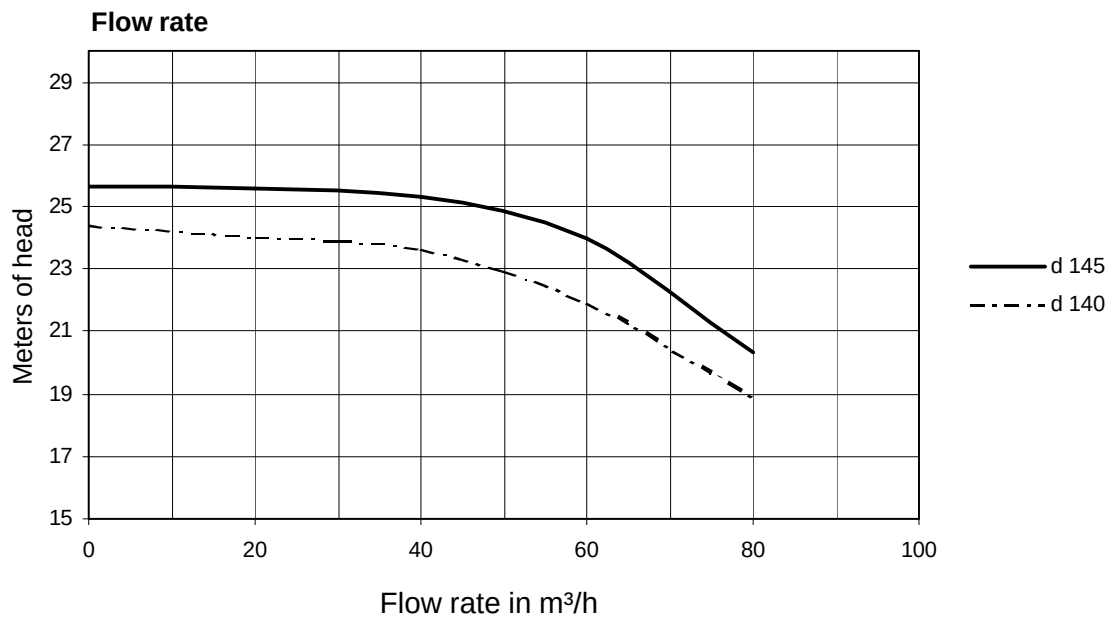


Chemical Motor Pump Unit BN

Type BN 100 - 65 - 125

Motor kW: 11
Speed: 2900

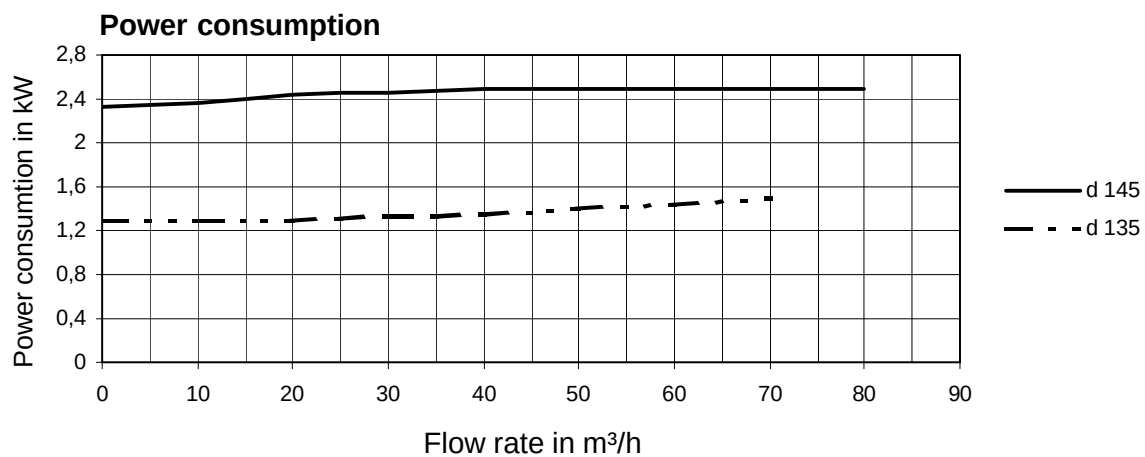
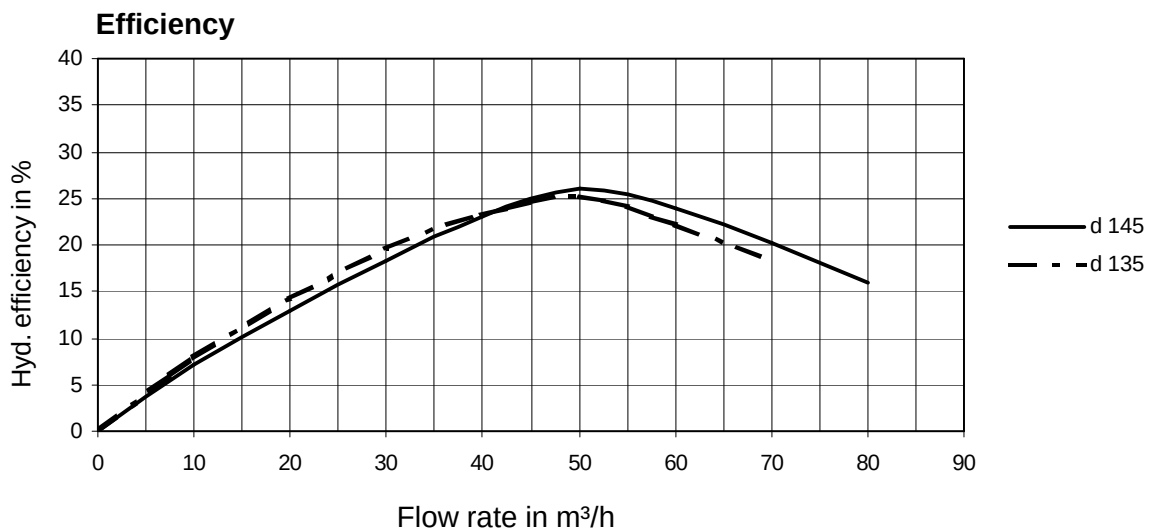
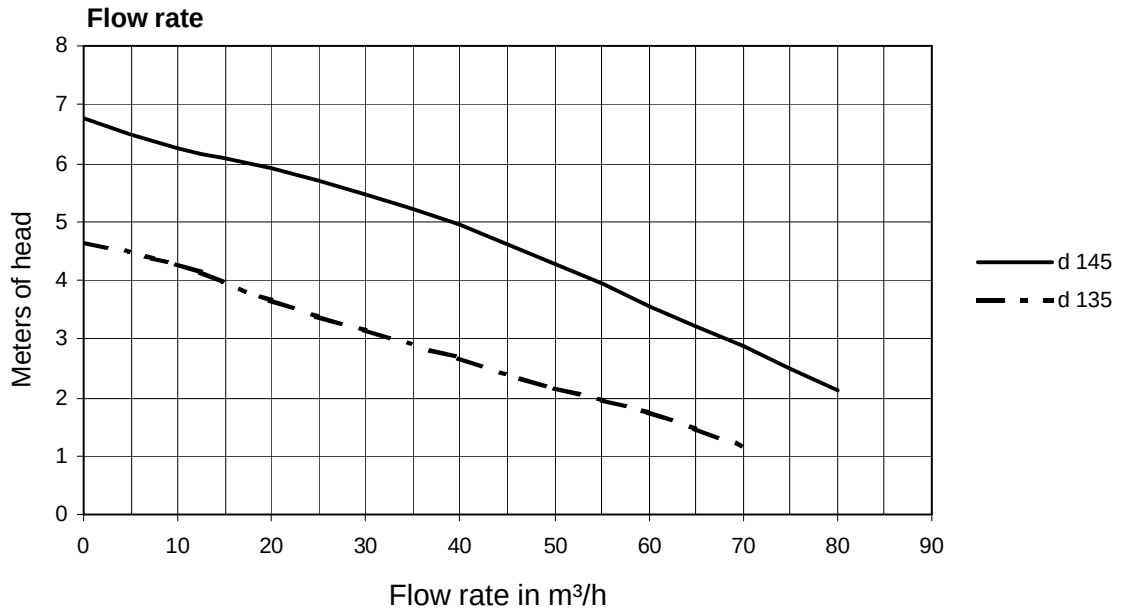
Chemical Motor Pump Unit BN



Type BN 100 - 65 - 125

Motor kW: 5.5
Speed: 1450

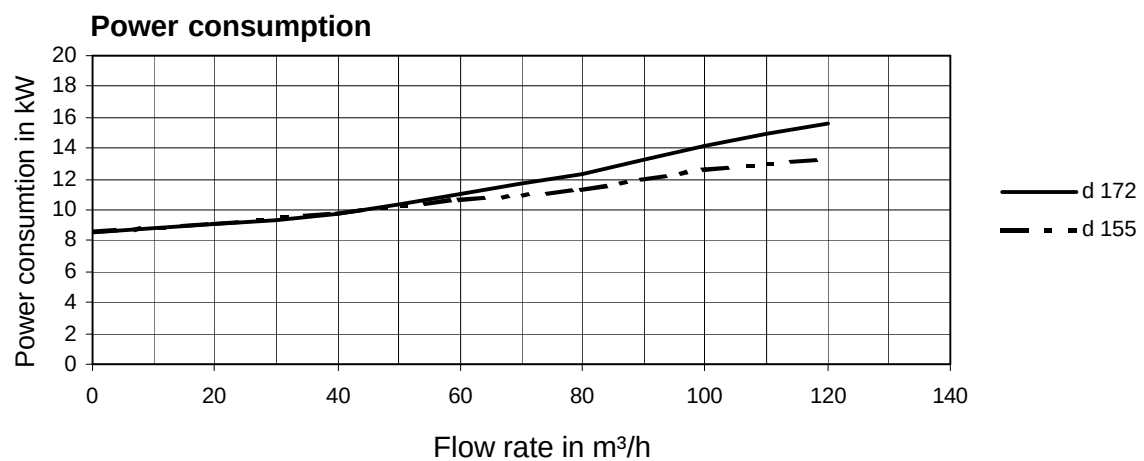
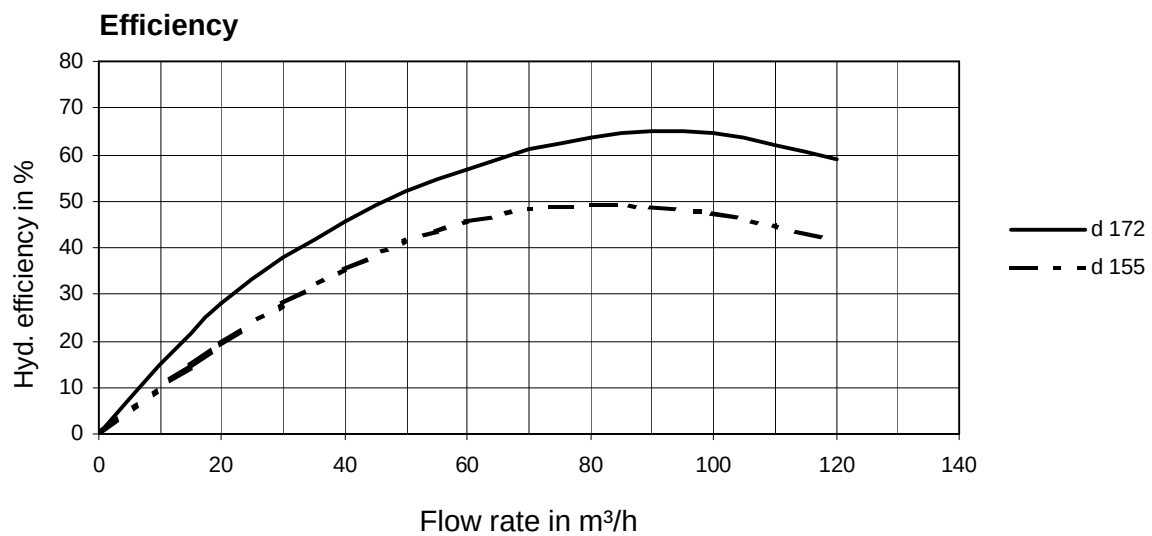
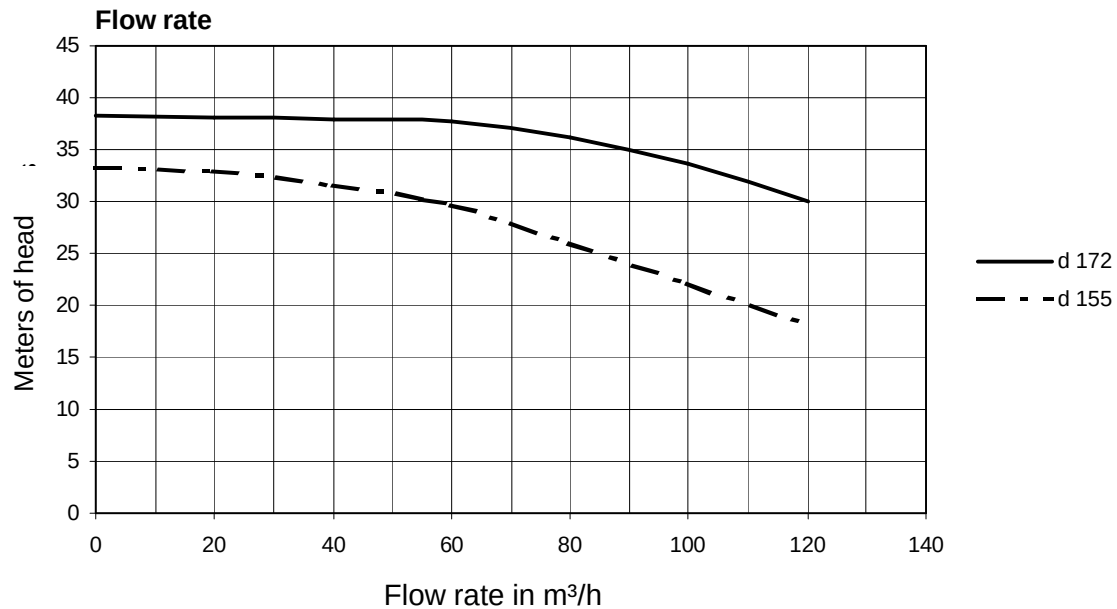
Chemical Motor Pump Unit BN



Type BN 100 - 65 - 160

Motor kW: 15
Speed: 2900

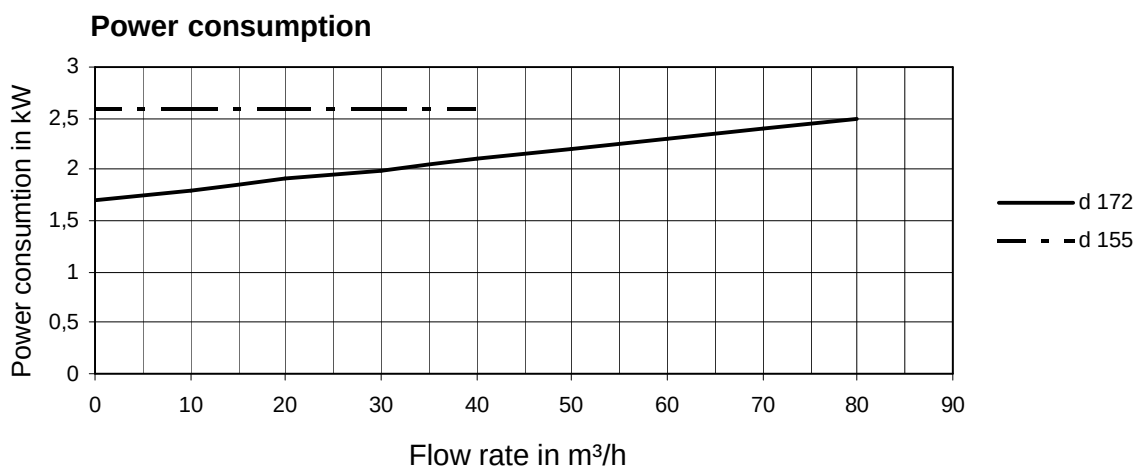
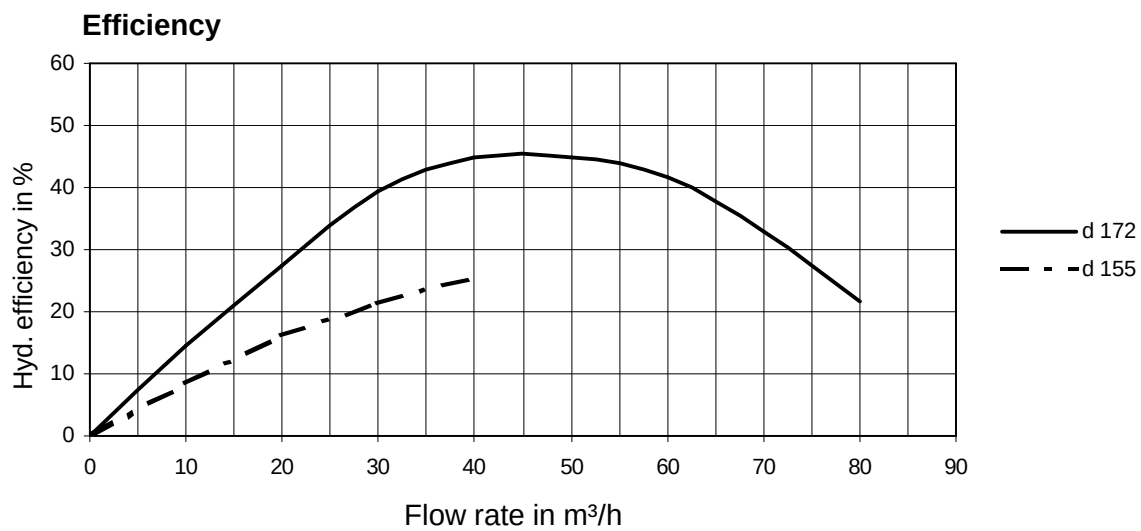
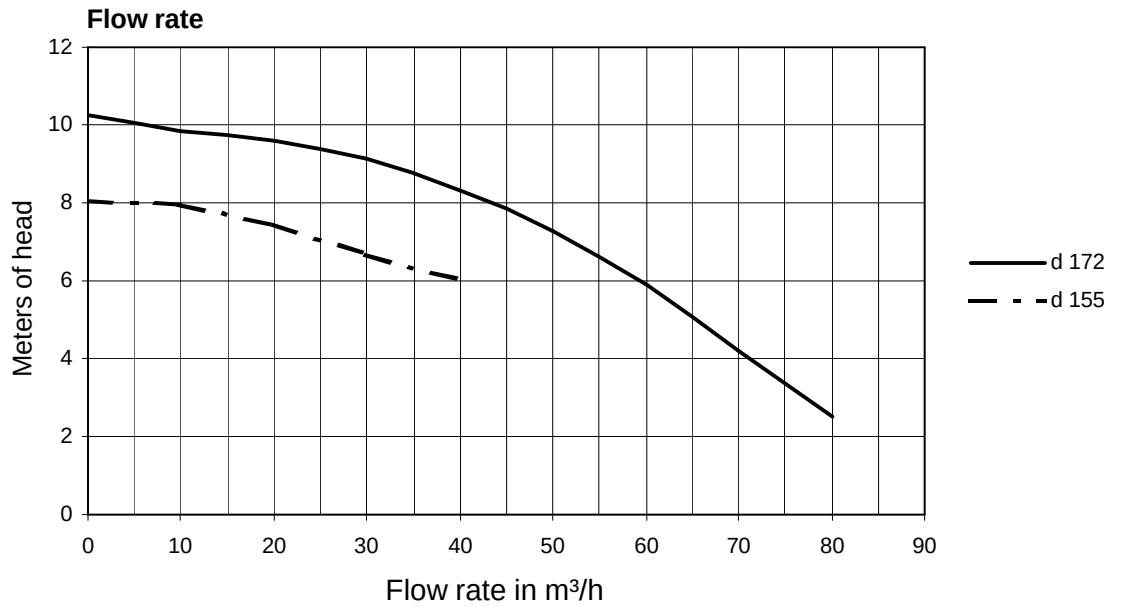
Chemical Motor Pump Unit BN



Type BN 100 - 65 - 160

Motor kW: 3
Speed: 1450

Chemical Motor Pump Unit BN



The operating instructions of the centrifugal pump and the accessories should be located close to the pump.

These instructions should be read carefully before installing and commissioning the pump. Every JESCO pump is dimensioned, tested and supplied according to the data of the order. If the operating conditions change at a later date (e.g. different medium, viscosity, temperature, feed conditions, etc.) we must check and confirm, if necessary, in the specific case whether the pump can be operated correspondingly. We cannot accept any liability for damage caused by misuse or failure to observe the operating instructions.

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General

Description of the pump

Centrifugal chemical pumps are used for pumping acids and alkalis and other low-viscosity, aggressive liquids and neutral media.

Before each pump is dispatched, it undergoes a thorough functional test, including measurement of the discharge rate, the pump head and the power consumption of the drive motor.

Each pump has a nameplate showing the type designation and rating, and a corresponding plate for the motor data. In the event of queries, please refer to these plates.

Description of mechanical seal

Mechanical seals basically consist of two perfectly plane surfaces. One surface rotates with the shaft, while the other is stationary. The sealing effect is achieved by the direct contact between the two plane surfaces. The stationary counter-ring is normally fixed in position.

The sliding ring is able to move axially and radially in order to compensate the shaft deflections during operation. This axial mobility enables mechanical seals to be fitted within practicable manufacturing tolerances, the accuracy required being dependent on the design of the seal.

Type B2I

Single-acting, loaded, internal seal, independent of direction of rotation. Combination of sliding materials in silicon carbide (SiC). Bellows and secondary seals of EPDM or FPM. Metallic parts of stainless steel (1.4571) or Hastelloy C4.

Type B2Q

Single-acting, loaded, internal seal, independent of direction of rotation, with quenching chamber. The chamber is sealed from the atmosphere by a shaft

sealing ring to prevent deposits and/or reduction of the temperature in the area of the mechanical seal.

Combination of sliding materials in silicon carbide (SiC). Bellows and secondary seals of EPDM or FPM. Metallic parts of stainless steel (1.4571) or Hastelloy C4.

Type B2D

Double-acting, loaded, internal seal, independent of direction of rotation, arranged back-to-back with sealing chamber. This arrangement is the most usual form of double-acting seals used with difficult, chemically particularly aggressive media. Combination of sliding materials in silicon carbide (SiC). Bellows and secondary seals of EPDM or FPM. Metallic parts of stainless steel (1.4571).

Quenching fluid

A clean, usually cold liquid is used for quenching, which must be highly compatible with the medium in order to prevent any chemical reaction. The quenching pressure should not exceed 0.5 bar.

Function of quenching:

- Prevention of crystallizing rings (air seal)
- Absorption of leakage
- Cooling of sliding rings
- Monitoring of leakage rate
- Lubricating film stabilization in vacuum operation

Important:

In order to avoid dry running of the radial seal on the atmosphere side, sealing systems fitted with a quenching chamber must always be supplied with quenching liquid (see installation of quenching fluid, BW 5 02 01/2).

Sealing liquid

For their operation back-to-back double acting seals require a sealing liquid under pressure flowing through the sealing space from bottom to top. The sealing pressure must be 1 to 2 bar higher than the pressure of the medium to be sealed, so that both seals only have to seal against the neutral sealing liquid. The sealing liquid must have good compatibility with the pumped medium.

Function of sealing:

- Prevention of contact between pumped liquid and atmosphere
- Formation of lubricating film between the sliding rings
- Cooling of sliding rings
- Monitoring of leakage rate

Important:

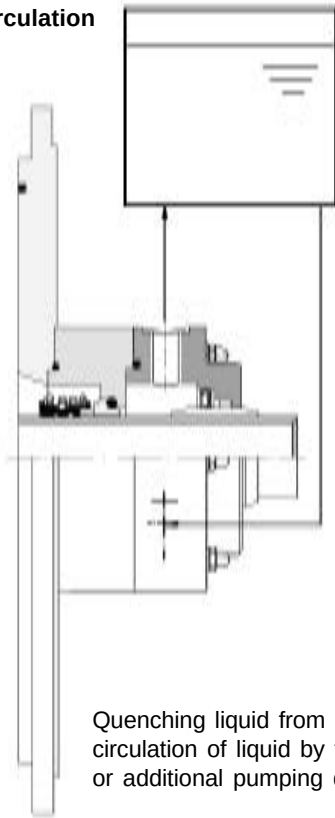
To avoid dry running of the mechanical seal on the atmosphere side, sealing systems provided with a sealing chamber must always be supplied with sealing liquid (see installation of sealing liquid, BW 5 02 01/3).

Supply systems for mechanical seals

Quenching fluid installation

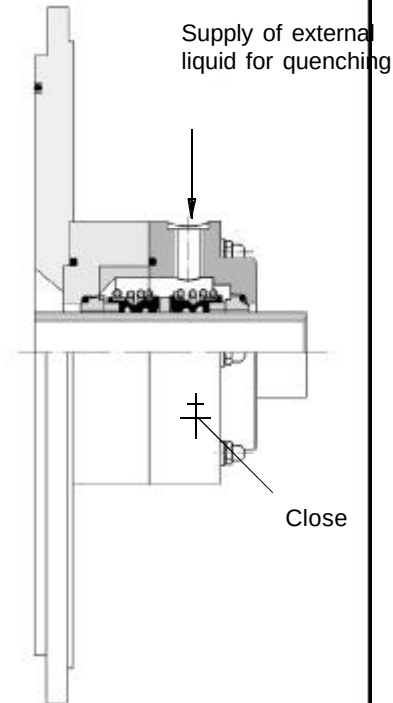
The quenching chamber can be supplied as follows:

Circulation



Quenching liquid from high level tank;
circulation of liquid by thermo-siphon action
or additional pumping device.

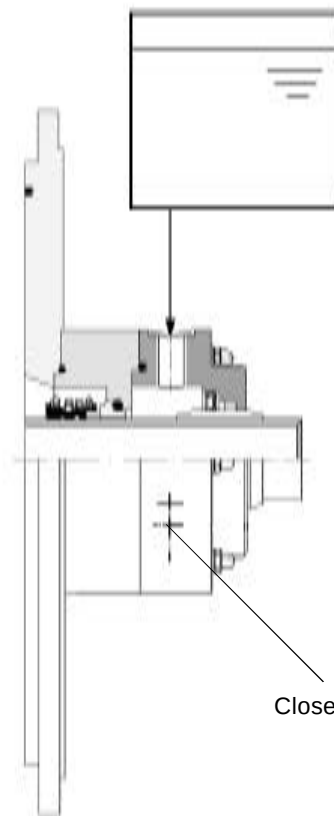
Dead-end priming



Quenching liquid from
high-level tank

Requirements for quenching fluid:

- Compatible with medium to be sealed
- Suitable regarding corrosion resistance of all parts contacted
- Free from solid matter
- Must not tend to form deposits
- Good lubricating properties
- High specific thermal capacity
- High evaporation temperature
- Not affecting the environment
- Easy procurement and high availability
- Quenching pressure should not exceed 0.5 bar



Sealing liquid installation

Double-acting mechanical seals basically need a sealing system, which meets the following requirements:

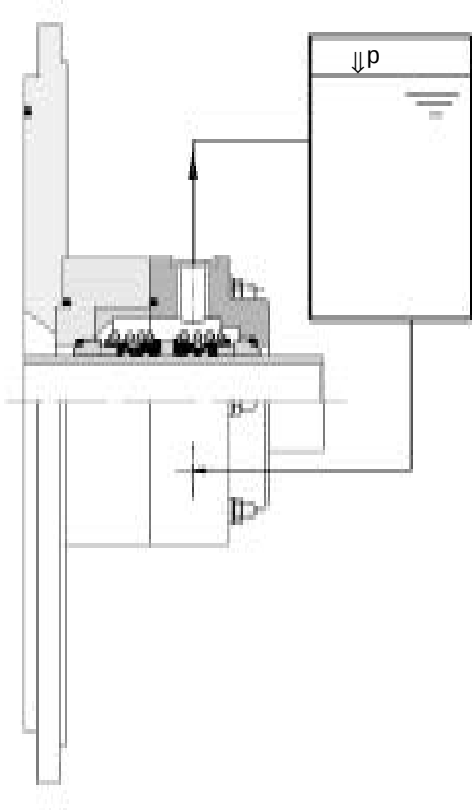
- The space between the mechanical seal on the product and atmosphere side must be filled with clean sealing liquid.
- During operation the pressure of the sealing liquid must always be 1.0 to 2.0 bar higher than the pressure to be sealed.
- A continuous exchange of liquid should take place to prevent overheating in the sealing chamber (by thermo-siphon action or additional circulating device.)

The following functions of the sealing system result from these basic conditions:

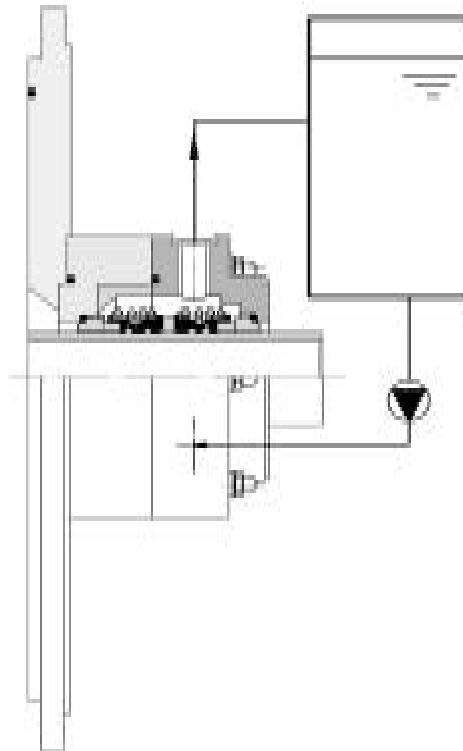
- Pressure build-up in the sealing chamber
- Leakage compensation
- Circulation of the sealing liquid

Installation diagram for sealing chambers:

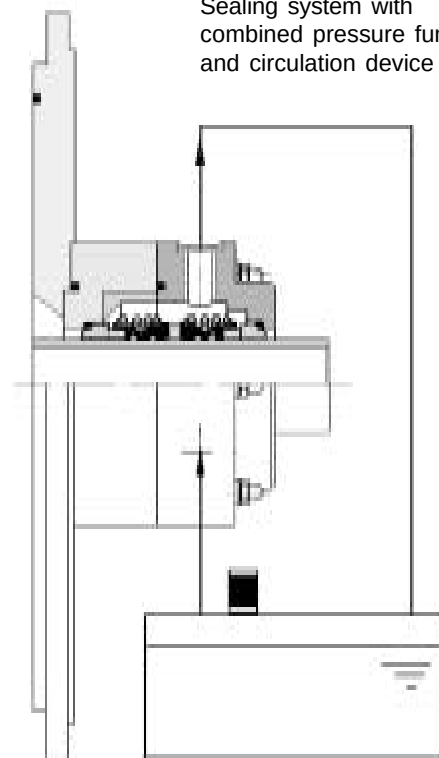
Sealing system with thermo-siphon circuit



Sealing system with circulation device outside the mechanical seal



Sealing system with combined pressure function and circulation device

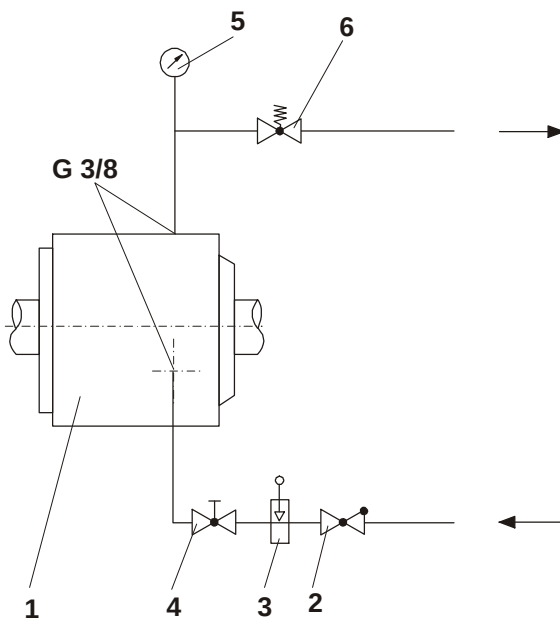


Regulation of the sealing pressure

The sealing pressure can be regulated according to the following diagram:

Legend

- 1 Sealing chamber
- 2 Non-return valve
- 3 Float-type flow meter
- 4 Flow control valve
- 5 Pressure gauge (0-10 bar)
- 6 Backpressure valve



Requirements for sealing liquid:

- Compatible with medium to be sealed
- Suitable regarding corrosion resistance of all parts contacted
- Free from solid matter
- Must not tend to form deposits
- Good lubricating properties
- High specific thermal capacity
- High evaporation temperature
- Not affecting the environment
- Easy procurement and high availability
- During operation the sealing pressure must always be 1.0 to 2.0 bar higher than the pressure to be sealed

Note on temperature:

The outlet temperature must not exceed 60°C and should lie approx. 40°C below the evaporation temperature of the sealing liquid.

Transportation and storage of pump

No special precautions are necessary for transportation and storage of plastic centrifugal pumps under normal ambient conditions. At ambient temperatures below -10°C, however, it must be ensured in particular that especially cast metal parts are protected against impact stress by suitable packing. The pump connectors must be closed.

When putting a pump into service after several years of storage, the following measures must be taken:

- Check elastomer seals for elastic properties
 - replace if necessary.
- Check if the mechanical seals can be turned
 - otherwise fill the pump head with water and check after a few minutes if they can be turned. If still not, you should repair the mechanical seal.

Warranty

Every pump is given a functional test before dispatch with measurement of rate of delivery, pump head and power consumption of the drive motor. A warranty for durability of materials can only be provided if the exact operating conditions were known when the system was designed.

Excluded from the warranty are all sealing elements and damage resulting from non-observance of these operating and maintenance instructions.

Our "General Sales Conditions" have over-riding priority.

General technical safety information

The operating safety of the pump is only guaranteed if used for the intended purpose (according to the test certificate).

Removal of environmentally hazardous leaking media conveyed must comply with the statutory regulations. Avoid danger of accidents during installation and disassembly.

Ensure the stability of the pump during installation. Secure installation parts against falling. Support or underlay loose components. Connecting flanges, tapped holes and other openings on pumps must be closed during transportation and storage.

Caution:

Eye-bolts on pump components and motors must not be used for lifting the completely fitted pump or even the entire assembly. The eye-bolts are only provided for raising individual components during installation and dismantling. Use eyes on base plate, if present, for crane suspension of the assembly or place ropes around casing (connectors, bearing bodies).

EC machine guidelines

- Any work done on the whole pump arrangement may only be carried out by authorized and trained personnel.
- According to the Machine Guidelines 89/392/EEC, these products are not regarded as machines; they can, however, be built into installations which are regarded as machines. In this case, please observe the following note!



Note

We distinctly emphasize that operation is prohibited until it has been confirmed that the machine (plant) into which these products have been built corresponds to the conditions of the EC Machine Guidelines 89/392/EEC. A respective declaration of conformity is supplied with the product on request.

Installation

Fixing the pump

The pump should be mounted on a stable, flat supporting surface, using the appropriate screws at the base of the pump.

Laying of pipes

Nominal widths

The nominal widths of the pipes should not be smaller than those of the pump connections. The width of short pipes should be large enough to ensure that the resistance to flow is as small as possible, especially in the suction pipe. For long pipes the economical width should be determined from case to case.

Changes in cross-section and direction

Abrupt changes in cross-section and direction, as well as unduly sharp bends should be avoided. Flange seals must not project internally.

Supporting and flange mounting

Pipes should be connected to the pump without stress. They should be supported close to the pump and screwed on easily so as to avoid distortion. After releasing the screws the flanges must neither be inclined nor spring or press against each other.

Stress possibly applied to the piping (e.g. due to temperature influences, etc.) must be kept away from the pump body by appropriate measures, e.g. installation of compensators.

Cleaning of piping

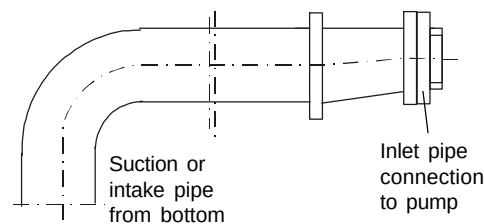
Before mounting, all piping parts and fittings must be cleaned thoroughly.

Suction or intake pipe

Direction and cross-section of pipes

Suction or intake pipes should generally be layed as short as possible and without sharp changes in direction (e.g. arches instead of angles). The pipe cross-section must be selected so that flow speeds of max. 2.0 m/s are not exceeded.

Unequal nominal widths of suction connection and horizontal suction pipes must be compensated for by eccentric spacers (see drawing).



The installation of suction pipes must be absolutely tight. To prevent the formation of air pockets, the suction pipe must rise towards the pump, the intake line being layed with a slight downward gradient. "Priming over the mountain" should be avoided. If local conditions do not allow the suction pipe to rise continuously, a venting device should be provided at its highest point.

Fittings in the suction or intake pipe

If the pump is operated without priming chamber in the case of suction operation, a foot valve (non-return valve) must be installed at the end of the suction pipe to prevent the pump and pipe from emptying during standstill. For dirty media a suction filter must be mounted so that dirt from swamp or air from the liquid cannot enter the pipe (see installation examples). In the case of intake operation, a low-loss shutoff valve should be integrated in the intake pipe so that the pump can be removed (e.g. for revision) without having to empty the supply tank.

Pressure pipe

Pressure pipe cross-sections

Pressure pipe cross-sections should be dimensioned so that the flow speed is in the range of 1-3 m/s. The optimum pipe width within this tolerance must be defined from case to case.

Fittings in the pressure pipe

Shutoff valve

A shutoff valve must be installed in the pressure line close to the pump to regulate the flow of the pumped medium.

Prevention of reverse flow

When long pressure pipes or high pressures are involved a backstop must be installed. In the case of standstill the pump is mechanically relieved, and siphoning, i.e. flowing back of the pumped medium is prevented. Thus harmful pressure surges on the pump and foot valve can be avoided.

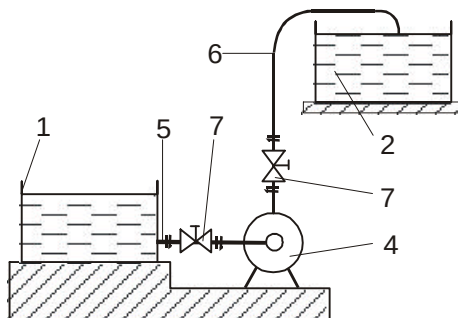
Suction action

In general chemical motor pump units of the BN series are not self-priming. If the media are free from solid matter the pump can operate in the suction mode by using a foot valve (non-return valve at the end of the suction pipe). It is essential that the basic physical conditions are fulfilled and that suction pipe is completely filled with liquid before startup (see examples of installation). If a priming chamber is provided a normal-priming centrifugal pump is able to evacuate the suction pipe itself, i.e.: under these conditions the medium can be primed from a lower level (see examples of installation). Also in this case correct operation depends on adherence to the basic physical conditions.

Examples of installation

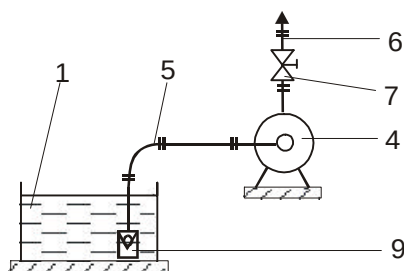
Flooded suction

As long as the level of the tank liquid is maintained above the height of the pump head, the pump will not run dry. The level can be controlled by a suitable level switch.



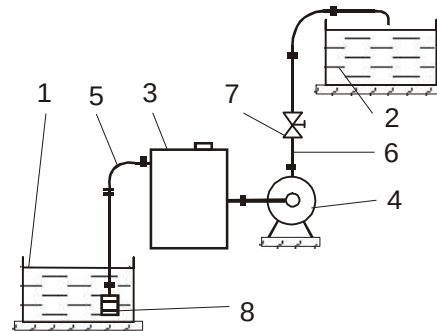
Suction with non-return valve

The use of this suction mode is only recommended with clean media ensuring safe functioning of the non-return valve.



Suction with priming chamber

The priming chamber must be filled before starting. The level in the priming chamber is maintained when the pump is running, because the medium is primed into the priming chamber due to the vacuum formed in the suction pipe. The volume of the priming chamber must match the capacity of the centrifugal pump and the volume of the suction pipe.



Legend

- | | | |
|--------------------|------------------|--------------------------------|
| 1 Supply tank | 2 Receiving tank | 3 Priming chamber |
| 4 Centrifugal pump | 5 Suction pipe | 6 Pressure pipe |
| 7 Shutoff valve | 8 Suction filter | 9 Foot valve, non-return valve |

Commissioning

Measures to be taken before startup

- ✓ Remove impurities (solid matter) from the piping, resulting from installation.
- ✓ Check piping for tightness (compression test).
- ✓ Check if piping connections to pump are under stress (see supporting and flange mounting).
- ✓ Fill and vent pump and system correctly (see filling and venting of the pump).
- ✓ Check direction of rotation of whole unit (see direction of rotation).

Filling and venting of the pump

The pump is filled and vented at the same time as the system. While filling, it is advisable to turn the pump shaft slowly by hand.

Direction of rotation

The motor must rotate in the direction indicated by the arrow on the motor casing. To check the direction of rotation the motor may be briefly switched on. Rotation in the wrong direction affects the discharge capacity and can result in damage to the pump.

Starting

Before startup check once more if the system and the pump are filled and vented correctly. If the mechanical seal is operated with quenching or sealing chamber it must be checked if the supply of the quenching fluid or sealing liquid is ensured.

Shutoff valves

The shutoff valve in the pressure pipe must be closed, the shutoff valve on the suction side must be opened.

Switching on the motor

Shutoff valve on the pressure side

Directly after startup the shutoff valve on the pressure side must be slightly opened.

Insufficient venting

If the discharge head does not rise with increasing speed, switch off the pump and re-vent the unit.

Adjusting the discharge values

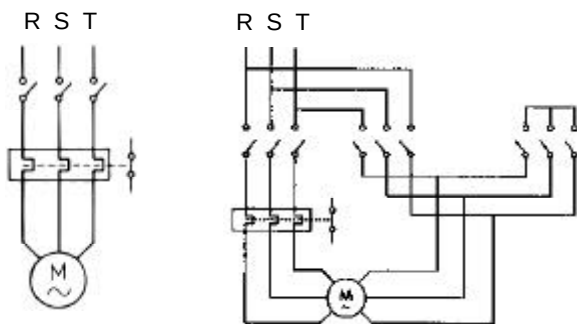
After reaching the operating speed, the shutoff valve on the pressure side should be opened to such an extent that the necessary discharge values are attained. The shutoff valve on the suction side must not be used for adjusting the discharge flow. The discharge flow can be increased provided that the maximum load of the motor is taken into account.

Operating against a closed shutoff valve

It is essential to avoid operation for any length of time against the closed shutoff valve on the pressure side, because apart from the pumped fluid becoming warm, the pump might be damaged.

Electrical connection

The electric motor mounted on the pump should be connected according to the instructions printed inside the terminal box cover. In addition to the usual fuses, each pump motor must be protected by a thermal motor protection switch (see fig. 1). The external electrical connection should be made by a qualified electrician in accordance with local regulations.



direct starting
Fig.1

star-delta starting

Motor data

Surface-cooled 3-phase motor with extended rotor shaft and reinforced bearings; otherwise according to IEC standards, speed 1450 rpm or 2900 rpm, voltage 3x230/400V or 3x400/690V, frequency 50Hz, enclosure IP55, insulation class F, mounting IM B3.

Motor data

Motor output [kW]	Rated current [A] at	
	1450 rpm	2900 rpm
1,1	2,7	2,4
1,5	3,5	3,3
2,2	4,8	4,6
3,0	6,6	6,2
4,0	8,8	7,9
5,5	11,5	10,5
7,5	---	14,0
11,0	---	21,5

Dry running

It is also essential to ensure that the mechanical seal does not run dry - even for a short time - as this can damage the sliding faces and prevent the shaft seal from functioning correctly.

Switching off the pump

Pressure pipe

If a non-return valve is fitted in the pressure pipe, the shutoff valve may remain open. If there is no non-return valve in the pressure pipe, the shutoff valve must be kept closed.

Motor

Switch off the motor.

Switching the pump on again

Before switching on again, make sure that the pump shaft is not rotating.

If the shutoff valve in the pressure pipe is leaking or not fully closed, it is possible that the pump shaft rotates backwards due to the reverse flow of the pumped medium.

Changing the operating data

Higher density of the pumped medium

If the density of the pumped medium is higher than assumed when ordering, or when the pump was originally dimensioned, it is essential to make sure that the motor is not overloaded.

Higher flow rate

If the flow rate is higher than mentioned in the order or originally dimensioned, it is important to ensure that the head is still adequate. If it is not, this could result in cavitation and thus damage to the pump.

Measures to be taken in the case of longer standstills

If the concentration of the pumped liquid is likely to change, or if it may crystallize when the pump is out of operation for a longer time, the pump must be emptied and flushed with a conserving liquid.

Maintenance

Chemical motor pump units of the BN series require hardly any maintenance. As a standard, they are fitted with a high-quality, maintenance-free mechanical seal which is automatically adjusted by spring action. The bearings of the electric motor are permanently lubricated. Therefore maintenance of the complete pump unit is reduced to a mere inspection of the following points at regular intervals:

- Does the pump attain the desired capacity (discharge flow/head)?
- Is any unusual noise or vibration of the pump or motor observed?
- Is the mechanical seal perfectly tight?
- Is the temperature rise of the motor normal?

Mounting and dismantling

JESCO centrifugal pumps should only be dismantled with reference to the sectional drawings provided.

Spiral casing

- Loosen fixing screws.
- Remove spiral housing forwards.

Impeller

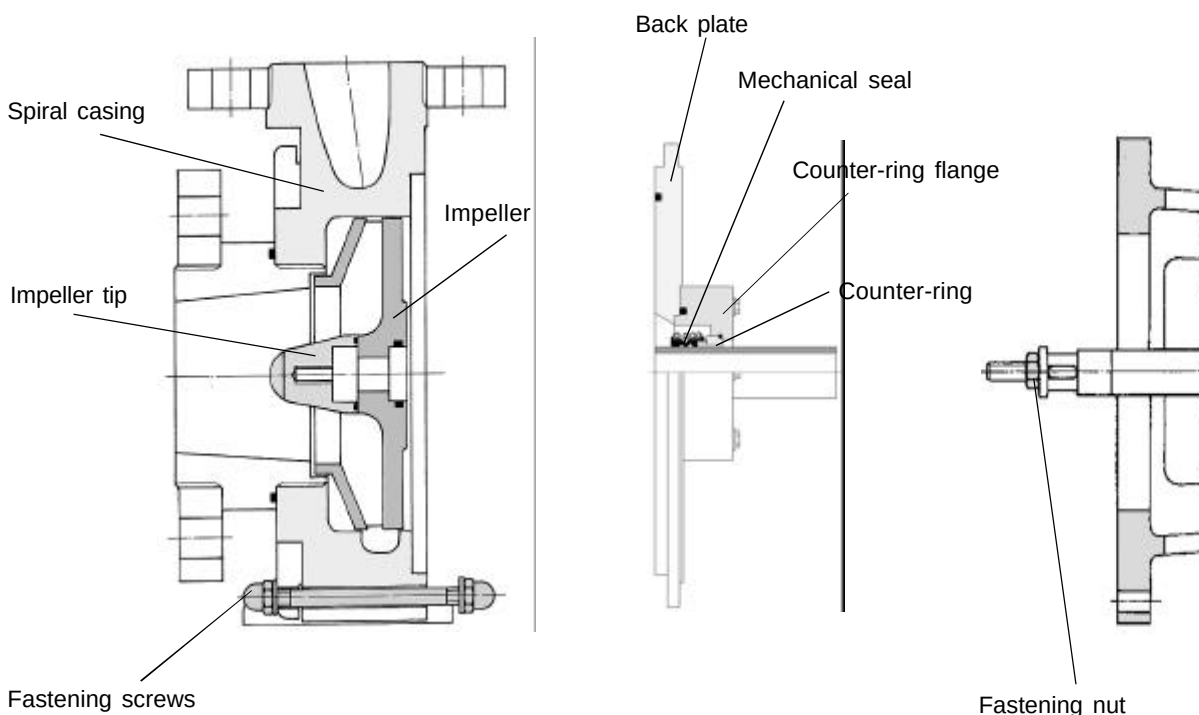
- Unscrew impeller cap.
(Caution: left-hand thread).
- Release fastening nut.
- Remove impeller forwards from the motor shaft.

Mechanical seal

- Carefully remove back plate forwards, together with the mechanical seal.
- In order to dismantle the counter-ring of the mechanical seal, detach the counter-ring flange or quenching/sealing chamber from the back plate. The counter-ring can now be pressed out carefully of the counter-ring flange.

Measures to be taken when mounting new mechanical seals

- During mounting make sure that everything is absolutely clean and that sealing faces and O-rings are not damaged. A possibly existing sliding face protection must be removed immediately without leaving residues on the faces.
- Never use lubricants for sliding faces but mount them absolutely dry, free of dust and clean.
- When pressing counter-rings ensure that the stress is distributed evenly.



Mounting aids

Mechanical seals with elastomer bellows are fitted on the shaft using normal or relieved water (with detergent additive). Sealing seat and shaft must be wetted thoroughly. Never use oil or grease! After mounting check whether the angle rings, the spring and the slide ring are seated correctly and firmly.

Replacement of carbon shaft sleeves before installation of the shaft sleeve

Remove old shaft sleeve by heating. Clean shaft thoroughly using an abrasive cloth (grain size 400) and a solvent. Remove grease residues.

Mounting of the new shaft sleeve

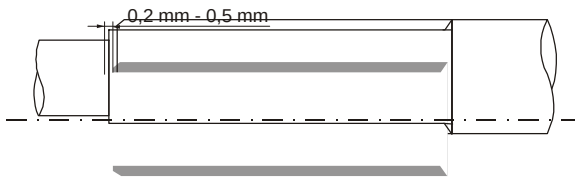
Caution: Shaft must be visible by 0.2 to 0.5 mm with the corresponding sleeve (see drawing). Clean the shaft once more (remove dust).

Caution: Use protective glasses during gluing!

Coat the relevant shaft section uniformly with the adhesive. Slide shaft sleeve in one operation onto the shaft.

Remove adhesive residues.

Drying time according to the user instructions (attached to the adhesive).



Mounting the pump

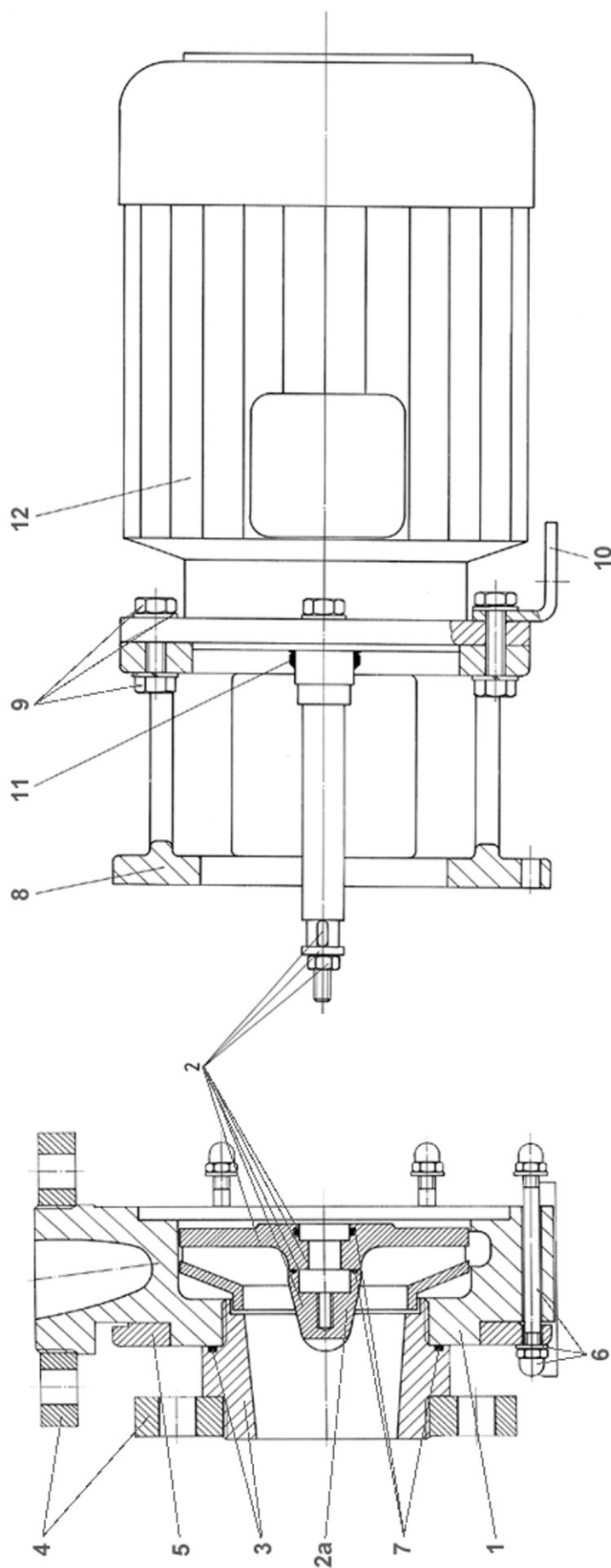
- The pump is assembled in reverse order.
- Ensure that the O-rings are firmly seated. (Use new O-rings, if possible.)
- It is essential that assembly is stress-free.

Troubleshooting

In the event of faults that occur the following table may be treated as instructions on how to determine their possible causes. If faults occur that are not mentioned

here, or if they cannot be traced back to the causes listed and remedied, consult the supplier.

Fault	Cause	Remedy
Pump not pumping	Motor rotating in wrong direction	Exchange 2 mains leads
	Pump primes in air	Check suction pipe, foot valve and mechanical seal for leakage
	Pump not adequately filled	Fill pump to pressure connection
	Suction pipe contains air pockets	Lay the piping to that air can escape
	Existing back-pressure higher than maximum pump pressure	Use a larger pump
Pump discharge insufficient	Stop valve in suction and pressure pipe not fully open	Fully open the stop valve
	Piping or impeller blocked	Clean piping and the impeller
	Geodetic head too large	Use a larger pump
	Piping resistance greater than assumed	Lay pipes with larger cross-section or use a larger pump.
	Suction head too high (formation of steam in the pump, cavitation)	Clean suction strainer, foot valve and suction pipe, enlarge cross-section, or mount pump at a lower position.
	Viscosity of the pumped medium higher than assumed	Dilute or preheat (to observe max. operating temp.)
	Priming of air	Check suction pipe and mechanical seal for leakage Seal suction pipe, replace seal
Pump discharge too high	The head in the installation is lower than that of the pump	Throttle the stop valve on the pressure side Possibly install a smaller pump
Motor overloaded	Pump pumping too much	See above "Pump discharge too high"
	Solids in the pump	Open the pump and clean it
	Impeller fouling casing; Causes: - Impeller not fixed tight enough - Impeller deformed by excessive-temperature	- Examine impeller fixing and tighten up if necessary - Replace impeller and eliminate reason for excess temperature
	Pump distorted	Connect piping free from stress
	Density or viscosity of medium too high	Check discharge data, fit a larger motor
Unsteady or noisy running	Pump discharge too high	See under "Pump discharge too high"
	Suction head too high	See under "Pump discharge insufficient"
	Cross section of suction pipe too small	Enlarge cross-section of suction pipe
	Stop valve on suction side throttled too severely	Open stop valve
	Motor bearing damaged	Examine bearing, renew if necessary
Shaft seal (mechanical seal) dripping	Mechanical seal worn	Install a new mechanical seal
	Mechanical seal unsuitable for the medium handled	Consult the supplier - install the appropriate mechanical seal
Pump dripping from casing	Piping does not fit into the pipe connections	Adjust the piping to match
	Sealing material unsuitable	Use correct sealing material
	Spiral casing leaking	Tighten up connections and fixing screws Examine O-ring and replace if necessary



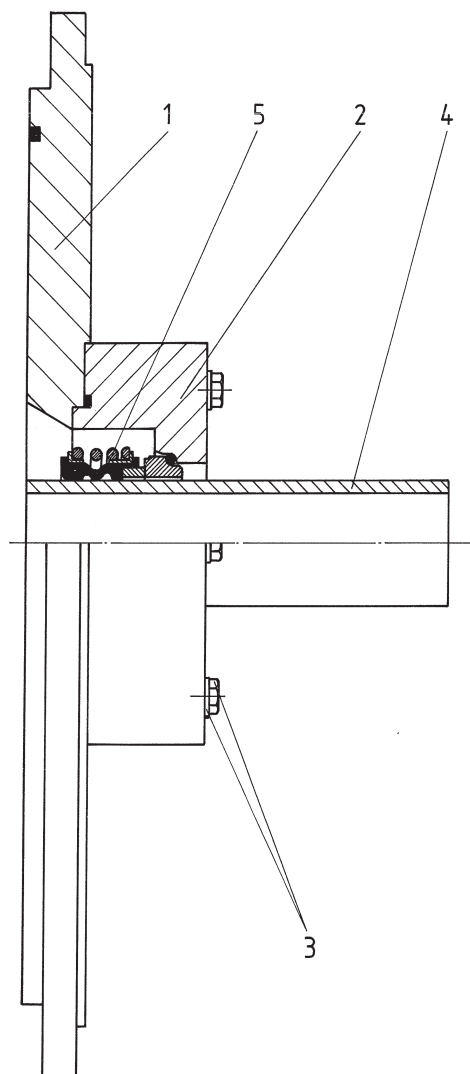
Chemical Motor Pump Unit BN

Chemical Motor Pump Unit BN

Item	Description		Material	Part Nos. for pump type...					
				50/32-125	50/32-160	50/32-200	65/40-125	65/40-160	65/40-200
1	Spiral housing		PP	50191	50193	50195	50199	50201	50203
			PVDF	50192	50194	50196	50200	50202	50204
*2	Impeller kit		PP/EPDM	68101	68103	68105	68109	68111	68113
			PP/FPM	69049	69050	69051	69052	69053	69054
			PVDF/EPDM	68102	68104	68106	68110	68112	68114
			PVDF/FPM	69072	69073	69074	69075	69076	69077
3	Suction connection with O-ring		PP/EPDM	68133	68134	68134	68135	68136	68137
			PP/FPM	69010	69011	69011	69012	69013	69014
			PVDF/EPDM	68142	68143	68143	68144	68145	68146
			PVDF/FPM	69030	69031	69031	69032	69033	69034
4	Flange kit		GFK	68151	68151	68151	68152	68152	68152
5	Casing flange		cast iron	50316	50317	50319	50316	50317	50319
6	Threaded bolt kit		A4	69095	68155	68158	69095	68155	68158
7	O-ring kit		EPDM	68051	68052	68053	68054	68055	68056
			FPM	68061	68062	68063	68064	68065	68066
8	Intermediate piece		cast iron	50324	50325	50326	50324	50325	50326
9	Screw kit		A4	68159	68160	68160	68159	68160	68160
10	Support base		steel	50329	50330	50331	50329	50330	50331
11	V-ring			Specify pump type and motor size when ordering					
12	Electric motor 1450 rpm	1.1 kW	misc.	50334	50336	50336	50334	50336	50336
		1.5 kW	misc.	---	50337	50337	50335	50337	50337
		2.2 kW	misc.	---	---	50338	---	50338	50338
		3.0 kW	misc.	---	---	---	---	---	---
		4.0 kW	misc.	---	---	---	---	---	---
		5.5 kW	misc.	---	---	---	---	---	---
	Electric motor 2900 rpm	1.1 kW	misc.	50342	---	---	---	---	---
		1.5 kW	misc.	50343	50347	---	---	---	---
		2.2 kW	misc.	50344	50348	50348	50344	50348	50348
		3.0 kW	misc.	50345	50349	50349	50345	50349	50349
		4.0 kW	misc.	50346	50350	50350	50346	50350	50350
		5.5 kW	misc.	---	50351	50351	---	50351	50351
		7.5 kW	misc.	---	50352	50352	---	50352	50352
		11.0 kW	misc.	---	52438	52438	---	52438	52438
* Impeller tip can also be ordered separately.									
2a	Impeller tip		PP	50287	50289	50289	50287	50289	50289
			PVDF	50288	50290	50290	50288	50290	50290

Spare & Wear Parts

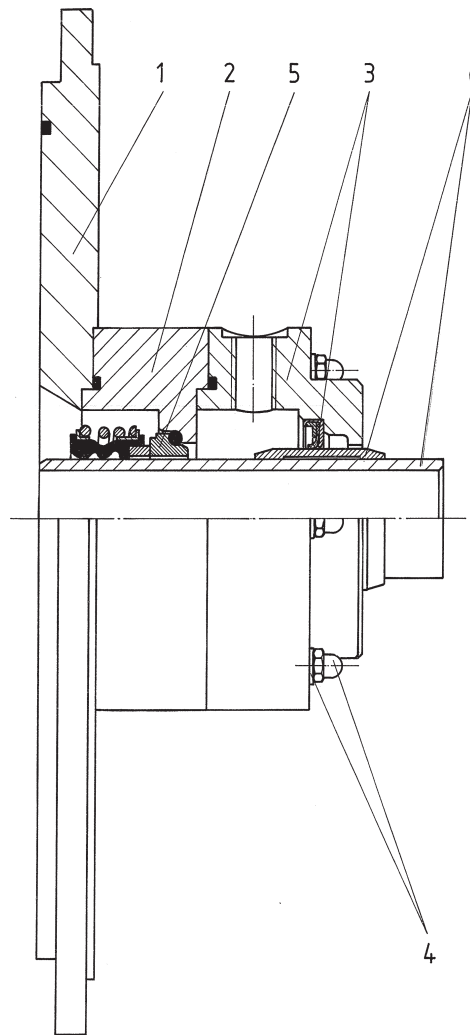
Item	Description		Material	Part Nos. for pump type..				
				80/50-125	80/50-160	80/50-200	100/65-125	100/65-160
1	Sprial casing		PP	50209	50211	50213	50219	50221
			PVDF	50210	50212	50214	50220	50222
*2	Impeller kit		PP/EPDM	68119	68121	68123	68129	68248
			PP/FPM	69055	69056	69057	69058	69158
			PVDF/EPDM	68120	68122	68124	68130	68249
			PVDF/FPM	69078	69079	69080	69081	69159
3	Suction connection with O-ring		PP/EPDM	68138	69000	68139	68140	68141
			PP/FPM	69015	69016	69017	69018	69025
			PVDF/EPDM	68147	69005	68148	68149	68150
			PVDF/FPM	69035	69036	69037	69038	69044
4	Flange kit		GFK	68153	68153	68153	68154	68154
5	Casing flange		cast iron	50317	50319	50319	50319	50319
6	Threaded bolt kit		A4	68155	68156	68156	68157	69096
7	O-ring kit		EPDM	68057	68059	68059	69097	69097
			FPM	68067	68069	68069	69098	69098
8	Intermediate piece		cast iron	50325	50326	50326	50326	50326
9	Screw kit		A4	68160	68160	68160	68160	68160
10	Support base		steel	50330	50331	50331	50331	50331
11	V-ring			Specify pump type and motor size when ordering				
12	Electric motor 1450 rpm	1.1 kW	misc.	---	---	---	---	---
		1.5 kW	misc.	50337	50337	50337	50337	50337
		2.2 kW	misc.	50338	50338	50338	50338	50338
		3.0 kW	misc.	---	50339	50339	50339	50339
		4.0 kW	misc.	---	---	50340	50340	50340
		5.5 kW	misc.	---	---	50341	---	---
	Electric motor 2900 rpm	1.1 kW	misc.	---	---	---	---	---
		1.5 kW	misc.	---	---	---	---	---
		2.2 kW	misc.	50348	---	---	---	---
		3.0 kW	misc.	50349	---	---	---	---
		4.0 kW	misc.	50350	---	---	---	---
		5.5 kW	misc.	50351	50351	---	50351	---
		7.5 kW	misc.	50352	50352	---	50352	---
		11.0 kW	misc.	52438	52438	---	52438	---
* Impeller tip can also be ordered separately.								
2a	Impeller tip		PP	50289	50289	50289	50289	50289
			PVDF	50290	50290	50290	50290	50290



Item	Description	Material	Part No. for pump type ...		
			50-32-125 65-40-125	50-32-160 65-40-160 80-50-125	50-32-200 65-40-200 80-50-160 80-50-200 100-65-125 100-65-160
1	Back plate	PP	50353	50355	50357
		PVDF	50354	50356	50358
2	Counter-ring flange	PP	50069	51750	51750
		PVDF	50070	51751	51751
3	Screw kit	A4	68162	68453	68453
4	Shaft sleeve	Impreg. carbon	50361	50362	50362
5	Mechanical seal	EPDM/A4	60002	60006	60006
		FPM/A4	60003	60007	60007
		EPDM/HC-4	60004	60008	60008
		FPM/HC-4	60005	60009	60009

O-ring kit see ET 5 02 01 / 1

Mechanical Seal with Quenching Chamber B2Q

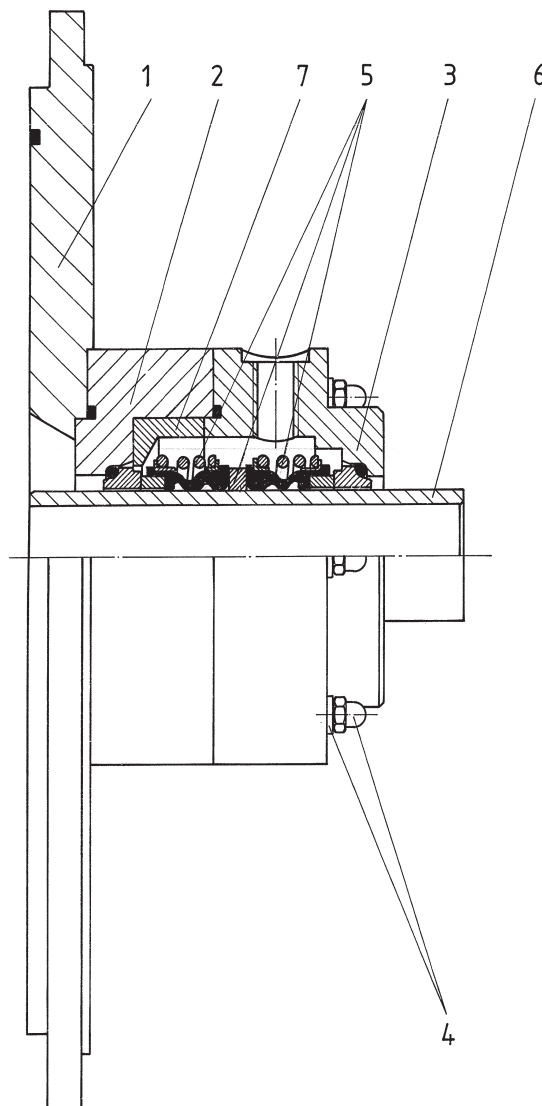


Item	Description	Material	Part No. for pump type...		
			50-32-125 65-40-125	50-32-160 65-40-160 80-50-125	50-32-200 65-40-200 80-50-160 80-50-200 100-65-125 100-65-160
1	Back plate	PP	50353	50355	50357
		PVDF	50354	50356	50358
2	Counter-ring flange	PP	50069	51750	51750
		PVDF	50070	51751	51751
3	Quenching chamber with shaft sealing	PP	52890	52892	52892
		PVDF	52891	52893	52893
4	Screw kit	A4	68176	68177	68177
5	Mechanical seal	EPDM/A4	60002	60006	60006
		FPM/A4	60003	60007	60007
		EPDM/HC-4	60004	60008	60008
		FPM/HC-4	60005	60009	60009
6	Shaft sealing ring with ball race	Impreg. carbon	52896	52897	52897
		PVDF	---	---	---

O-ring kit see ET 5 02 01 / 1

Chemical Motor Pump Unit BN

Chemical Motor Pump Unit BN



Item	Description	Material	Part No. for pump type...		
			50-32-125 65-40-125	50-32-160 65-40-160 80-50-125	50-32-200 65-40-200 80-50-160 80-50-200 100-65-125 100-65-160
1	Back plate	PP	50353	50355	50357
		PVDF	50354	50356	50358
2	Counter-ring flange	PP	51697	50378	50378
		PVDF	51698	50379	50379
3	Sealing chamber	PP	50082	50380	50380
		PVDF	50083	50381	50381
4	Screw kit	A4	68176	68177	68177
5	Mechanical seal	EPDM/A4	68567	68568	68568
		FPM/A4	68565	68566	68566
6	Shaft sleeve	Impreg. carbon	50361	50362	50362
7	Disengagement lock	PVDF	51701	51694	51694

O-ring kit see ET 5 02 01 / 1

EU-Konformitätserklärung

Der Unterzeichnete Lutz-Jesco GmbH, Am Bostelberge 19, 30900 Wedemark, bestätigt, dass die nachfolgend bezeichneten Geräte in der von uns in Verkehr gebrachten Ausführung die Anforderungen der harmonisierten EU-Richtlinien, EU-Sicherheitsstandards und produktspezifischen Standards erfüllen. Bei einer nicht mit uns abgestimmten Änderung der Geräte verliert diese Erklärung ihre Gültigkeit.

(EN) EU Certificate of Conformity

The undersigned Lutz-Jesco GmbH, Am Bostelberge 19, 30900 Wedemark, hereby certifies that, when leaving our factory, the units indicated below are in accordance with the harmonised EU guidelines, EU standards of safety and product specific standards. This certificate becomes void if the units are modified without our approval.

(FR) Certificat de conformité aux directives européennes

Le constructeur, soussigné: Lutz-Jesco GmbH, Am Bostelberge 19, 30900 Wedemark, déclare qu'à la sortie de ses usines le matériel neuf désigné ci-dessous était conforme aux prescriptions des directives européennes énoncées ci-après et conforme aux règles de sécurité et autres règles qui lui sont applicables dans le cadre de l'Union européenne. Toute modification portée sur ce produit sans l'accord express de Jesco supprime la validité de ce certificat.

(ES) Declaración de conformidad de la UE

El que subscribe Lutz-Jesco GmbH, Am Bostelberge 19, 30900 Wedemark, declara que la presente mercancía, objeto de la presente declaración, cumple con todas las normas de la UE, en lo que a normas técnicas, de homologación y de seguridad se refiere, En caso de realizar cualquier modificación en la presente mercancía sin nuestra previa autorización, esta declaración pierde su validez.

(NL) EU-overeenstemmingsverklaring

Ondergetekende Lutz-Jesco GmbH, Am Bostelberge 19, 30900 Wedemark, bevestigt, dat het volgende genoemde apparaat in de door ons in de handel gebrachte uitvoering voldoet aan de eis van, en in overeenstemming is met de EU-richtlijnen, de EU-veiligheidsstandaard en de voor het product specifieke standaard. Bij een niet met ons afgestemde verandering aan het apparaat verliest deze verklaring haar geldigheid.

(HU) EG (EK)– Egyezőségi nyilatkozat

A Lutz-Jesco GmbH, Am Bostelberge 19, 30900 Wedemark ezúton kijelenti, hogy a szóban forgó termék annak tervezése és szerkezeti módja, valamint forgalomba hozott kivitele alapján a vonatkozó alapvető biztonság technikai és egészségügyi követelményeknek és az alábbi felsorolt EG –irányelveknek minden szempontból megfelel. A terméken engedélyünk nélkül végrehajtott módosítások következtében jelen nyilatkozat érvényét veszíti.

Bezeichnung des Gerätes:	Chemie-Kreiselpumpe
Description of the unit:	Chemical Centrifugal Pump
Désignation du matériel:	Pompes centrifuges
Descripción de la mercancía:	Bombas centrifugas
Omschrijving van het apparaat:	Centrifugaalpompen
A termék megnevezése:	Vegyipari centrifugálszivattyúk

Typ / Type / Tipo / Típusjelölés:

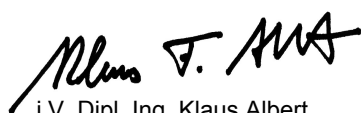
BN
N
VTP

EU-Richtlinie / EU directives/
Directives européennes / Normativa UE /
EU-richtlijnen / Vonatkozó EG-irányelvek

2006/95/EG
98/37/EG

Harmonisierte Normen / harmonized
standards / Normes harmonisées /
Estándares acordemente / Toegepaste
normeringen / Hatályos normák

EN ISO 12100-1 : 2003
EN ISO 12100-2 : 2003
EN 809 : 1998
EN 50081-1 : 01.92
EN 50081-2 : 08.93
EN 50082-1 : 01.92
EN 50082-2 : 03.95
EN 733:1995-08
EN 22858:1993-07



i.V. Dipl. Ing. Klaus Albert
Lutz-Jesco, Wedemark, 01.06.2008

Technische Leitung / Technical Departement Manager / Direction technique /
Dirección Técnica / Hoofd technische dienst / Műszaki irodavezető

UK Declaration of Conformity

We hereby certify that the device described in the following complies with the relevant fundamental safety and sanitary requirements and the listed UK regulations due to the concept and design of the version sold by us.

If the device is modified without our consent, this declaration loses its validity.

Description of the unit:

Chemical Centrifugal Pump

Type:

BN, N

Directives:

2016 No. 1101, The Electrical Equipment (Safety) Regulations 2016
2008 No. 1597, The Supply of Machinery (Safety) Regulations 2008

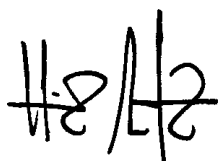
The protective aims of the Low Voltage Directive 2016 No. 1101 were adhered to in accordance with Annex I, No. 1.5.1 of the Machinery Directive 2006/42/EC.

Harmonized standards:

BS EN 1092-1, BS EN 10216-2, BS EN 10253-2

Authorized person for documentation:

Lutz-Jesco GB Ltd.
Unit C1, Loades Ecoparc, Blackhorse Road
Exhall, Coventry
CV7 9FW
Great Britain



Heinz Lutz
Chief Executive Officer
Lutz-Jesco GmbH
Wedemark, 28.07.2022

Lutz-Jesco GmbH
Am Bostelberge 19
30900 Wedemark
Germany

Declaration of Harmlessness

Please fill out a separate form for each appliance!

We forward the following device for repairs:

Device and device type:

Part-no.:

Order No.:

Date of delivery:

Reason for repair:

.....

.....

Dosing medium

Description:

Irritating: ☐ Yes ☐ No

Properties:

Corrosive: ☐ Yes ☐ No

We hereby certify, that the product has been cleaned thoroughly inside and outside before returning, that it is free from hazardous material (i.e. chemical, biological, toxic, flammable, and radioactive material) and that the lubricant has been drained.

If the manufacturer finds it necessary to carry out further cleaning work, we accept the charge will be made to us.

We assure that the aforementioned information is correct and complete and that the unit is dispatched according to the legal requirements.

Company / address:

Phone:

.....

Fax:

.....

Email:

Customer No.:

Contact person:

Date, Signature:

Warranty Application

Please copy and send it back with the unit!

If the device breaks down within the period of warranty, please return it in a cleaned condition with the complete warranty application, filled out.

Sender

Company: Phone: Date:

Address:

Contact person:

Manufacturer order no.: Date of delivery:

Device type: Serial number:

Nominal capacity / nominal pressure:

Description of fault:.....

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Service conditions of the device

Point of use / system designation:.....

.....

.....

Accessories used (suction line etc.):.....

.....

.....

.....

.....

Commissioning (date):

Duty period (approx. operating hours):

Please describe the specific installation and enclose a simple drawing of the chemical feed system, showing materials of construction, diameters, lengths and heights of suction and discharge lines.