Sawa PUMPEN

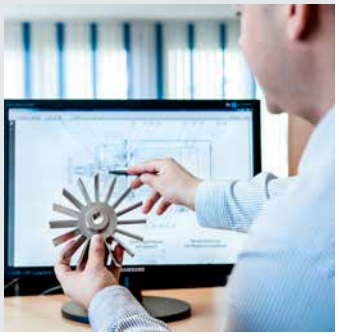
Product Catalogue

SAWA Pumpentechnik AG

Consultation, development and production
of high-quality stainless-steel pumps

CONTENTS

Quality and reliability



for over a century

Being an innovative Swiss family company we can look back on over a century of experience. We unite consultancy, development and production of high-quality pumps under one roof. This means that we are able to elaborate optimum solutions for your company at any time.

At the idyllic location of Degersheim in Switzerland we produce high-quality pumps in the fourth generation of our family. Our customers come from an extremely wide variety of sectors, such as the food industry, the beverage industry, the chemicals industry or the pharmaceuticals industry. But they all have one thing in common: they prefer to use the very highest-quality pump solutions to pump the various media. Stringent demands made of the material used, in-house quality assurance and precision machining ensure the endeavoured quality. Every pump-engineering challenge spurs us on to find the best possible solution for you.

Albert Schmidhauser Senior founded the SAWA company in 1911.

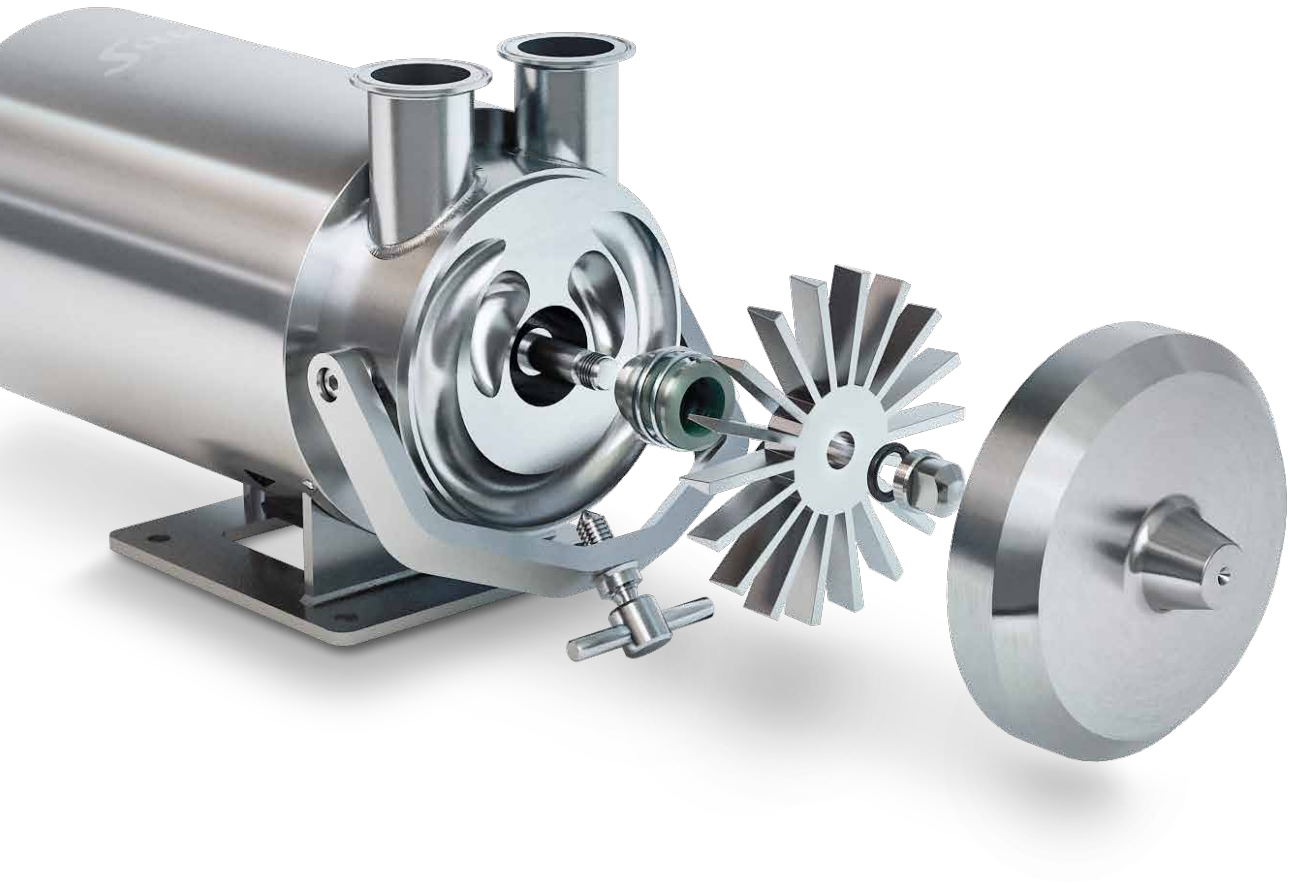
Albert Schmidhauser Junior took over as the second-generation CEO in 1954.

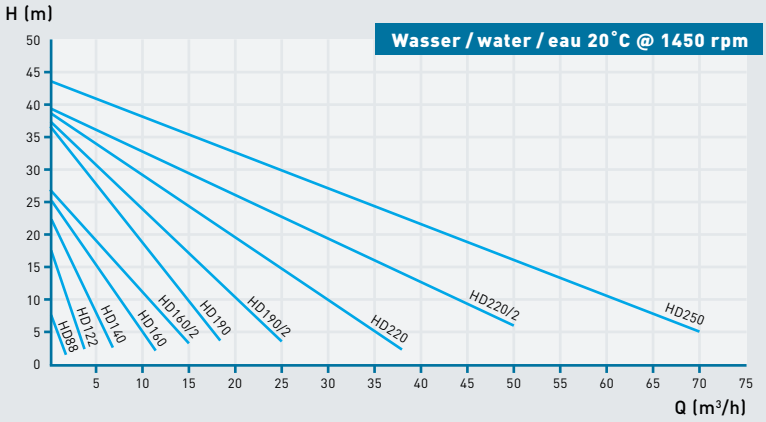
Since 1987 Fredy Schmidhauser has been running the company as third-generation CEO.

Ives Schmidhauser took over the post of fourth-generation CEO in 2015 and is guiding the company into the future.

Centrifugal pump HD – self-priming

Gentle and quiet product pumping are its strengths. The centrifugal pump features an impressive suction capacity (up to 7 m) and an excellent pumping behaviour with liquids containing gas. It can also be operated in both directions.





FEATURES

- self-priming (suction head up to 7 m)
- excellent pumping behaviour with liquids containing gas
- suitable for left and right rotation
- quiet operation
- dead space-free design (hygienic design)
- CIP and SIP compliant
- simple design and easy seal change
- low maintenance costs and long service life
- sturdy design comprising high-quality chromium-nickel-molybdenum stainless steel 1.4435/316 L with electropolished surfaces
- gentle milk pumping without damaging fat
- various mechanical seal systems available

OPTIONAL FORMS

- **ATEX**
  for zones 1, 2, 21 and 22
- **PHARMA DESIGN**
  for maximum safety, reliability and hygiene (surface roughnesses down to Ra < 0.4 µm)
- **MAGNETIC COUPLING**
  hermetically sealed version HDM for crystallising, toxic, flammable and environmentally hazardous liquids
- **BEARING HOUSING**
  for special requirements
- **MOBILE**
  with sturdy trolley and accessories to customer requirements
- **HEATABLE**
  with liquid or heating cartridge
- **COMPLETE DRAINING**
  complete draining at the lowest point of the pump

Officially confirmed by the Swiss Dairy Farming Research Institute: gentle milk pumping without fat damaging.

Foodstuffs

Beverages

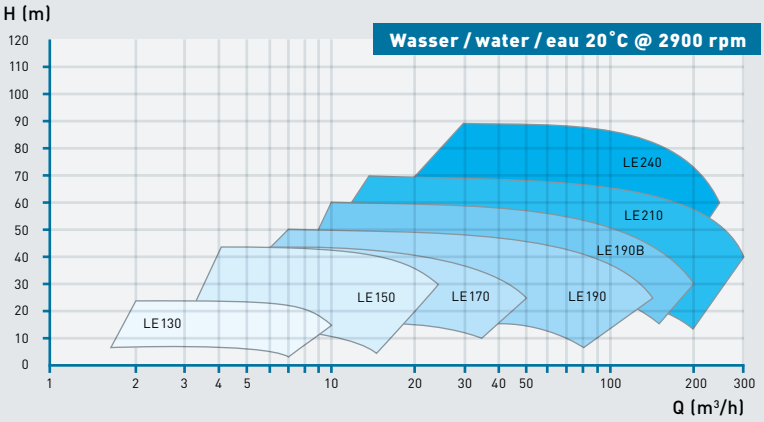
Pharmaceuticals / cosmetics

Chemicals / industry

Flow rate Q	max. 70 m³/h
Delivery head H	up to 43 m
Temperature range	minus 30 °C to 130 °C, max. 150 °C (SIP)
Viscosity	up to approx. 500 mPas
Nominal pressure	max. PN10

Centrifugal pump LE

Quiet, gentle and efficient product pumping thanks to optimised fluid-dynamics design of volute-casing and impeller geometry. The dead space-free design allows hygienic operation and fast pump cleaning.



FEATURES

- flow optimised volute casing and impeller designs with high efficiencies up to 75%
- dead space-free design (hygienic design)
- very quiet operation
- CIP and SIP compliant
- simple design/low maintenance costs
- sturdy design comprising high-quality chromium-nickel-molybdenum stainless steel 1.4435/316 L with electropolished surfaces
- pumping of solids-laden media with no risk of clogging
- ideal for fast temperature changes thanks to sturdy design
- the robust design allows handling of abrasive and corrosive media
- various mechanical seal systems available
- plug-in shaft for the use of norm motors

OPTIONAL FORMS

- **ATEX**
  for zones 1, 2, 21 and 22
- **PHARMA DESIGN**
  for maximum safety, reliability and hygiene (surface roughnesses down to Ra < 0.4 µm)
- **MAGNETIC COUPLING**
  hermetically sealed version LEM for crystallising, toxic, flammable and environmentally hazardous liquids
- **VERTICAL INSTALLATION**
  for simple residual drainage
- **BEARING HOUSING**
  for special requirements
- **INDUCER**
  for low $NPSH_a$ values < 1 m
- **MOBILE**
  with sturdy trolley and accessories to customer requirements
- **HEATABLE**
  with liquid or heating cartridge
- **COMPLETE DRAINING**
  complete draining at the lowest point of the pump

The product is bottled or filled into containers with whisper-quiet operation and gentle pumping action.

Foodstuffs

Beverages

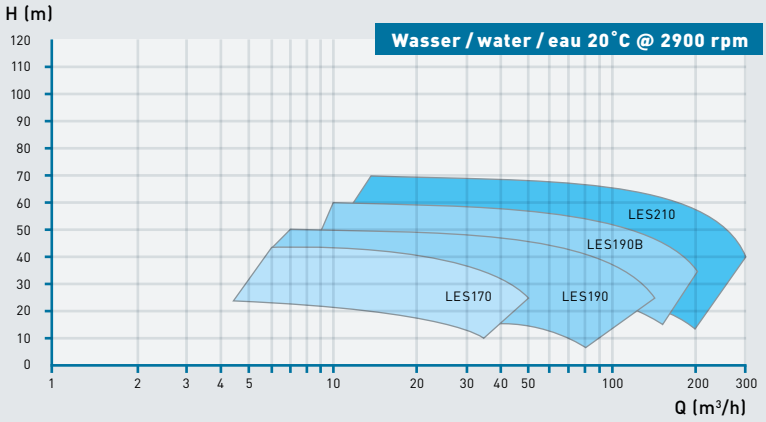
Pharmaceuticals / cosmetics

Chemicals / industry

Flow rate Q	max. 240 m³/h
Delivery head H	up to 90 m
Temperature range	minus 30 °C to 130 °C, max. 150 °C (SIP)
Viscosity	up to approx. 500 mPas
Nominal pressure	PN10 to PN160

Hybrid centrifugal pump LES

The stainless-steel hybrid centrifugal pump LES is an excellent alternative to the side channel pumps. It has a specially developed pump cover with an inducer and an integrated recirculation system, thus allowing it to be used successfully as a self-priming pump.



FEATURES

- flow optimised volute casing and impeller designs with high efficiencies up to 72 %
- dead space-free design (hygienic design)
- excellent behaviour with liquids containing high gas shares
- very quiet operation
- CIP and SIP compliant
- simple design/low maintenance costs
- sturdy design comprising high-quality chromium-nickel-molybdenum stainless steel 1.4435/316 L with electropolished surfaces
- ideal for fast temperature changes thanks to sturdy design
- option for various mechanical seal systems
- completely drainable
- with inducer
- plug-in shaft for the use of norm motors

OPTIONAL FORMS

- **ATEX**
  for zones 1, 2, 21 and 22
- **PHARMA DESIGN**
  for maximum safety, reliability and hygiene (surface roughnesses down to Ra < 0.4 µm)
- **MAGNETIC COUPLING**
  hermetically sealed version LESM for crystallising, toxic, flammable and environmentally hazardous liquids
- **BEARING HOUSING**
  for special requirements
- **MOBILE**
  with sturdy trolley and accessories to customer requirements
- **COMPLETE DRAINING**
  at the lowest point of the pump

Innovative recirculation system for pumping media containing gas.

Foodstuffs

Beverages

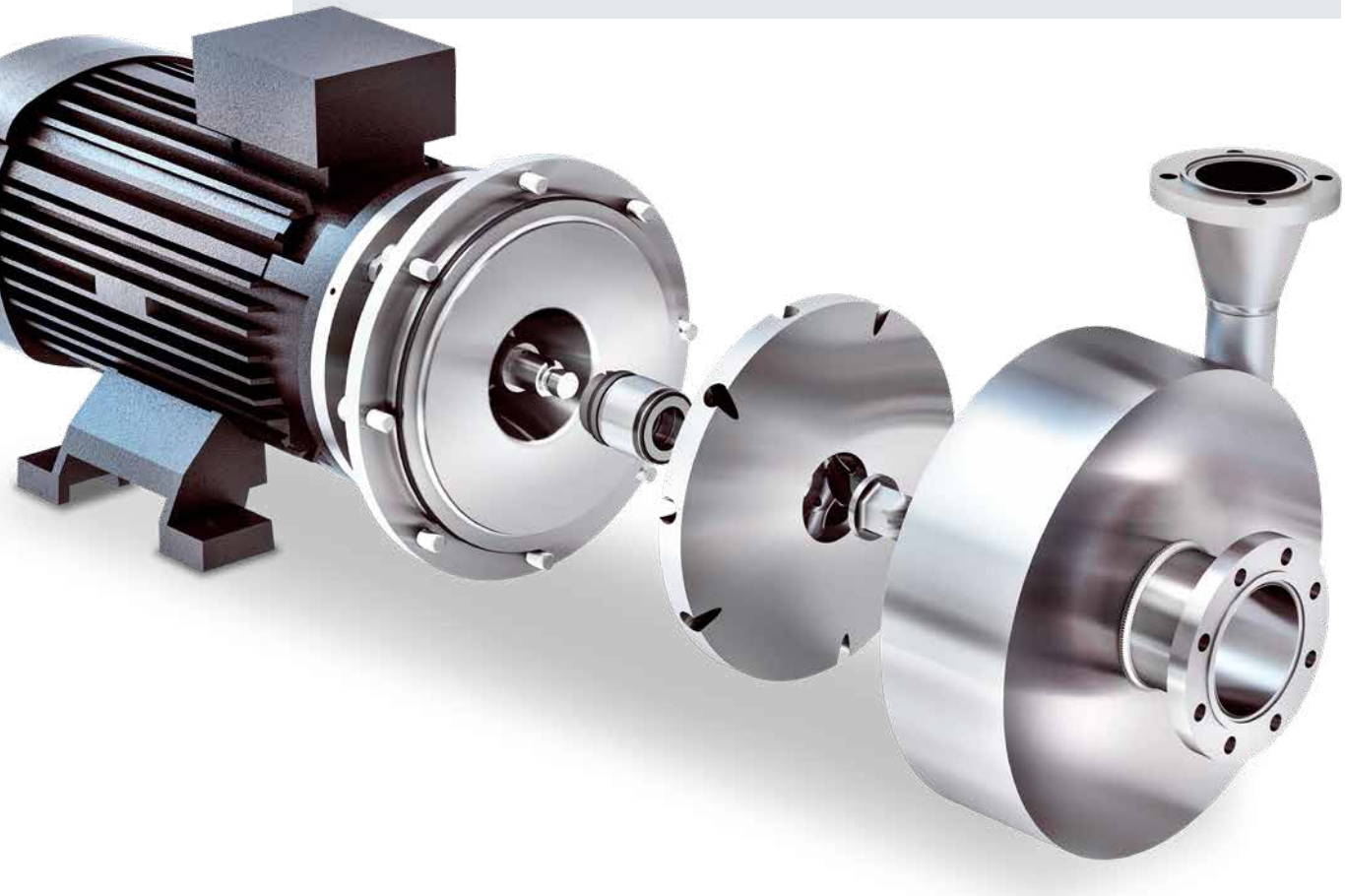
Pharmaceuticals / cosmetics

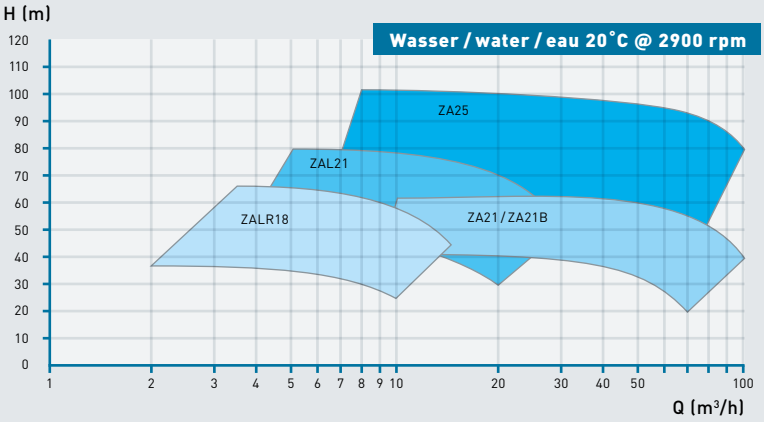
Chemicals / industry

Flow rate Q	max. 100 m³/h
Delivery head H	up to 70 m
Temperature range	minus 30 °C to 130 °C, max. 150 °C (SIP)
Viscosity	up to approx. 100 mPas
Nominal pressure	PN10 to PN63

Centrifugal pump ZA/ZAL

The pump type ZAL with its specially designed impeller achieves a maximum pressure of up to 10 bar with a single stage. It also ensures gentle and quiet product pumping. Due to the steep characteristic curve of the pump it can be controlled well with a frequency converter. The ZA pump is suitable for applications with high flow rates at high delivery pressures.





FEATURES

- dead space-free design (hygienic design)
- very quiet operation
- CIP and SIP compliant
- simple design/low maintenance costs
- sturdy design comprising high-quality chromium-nickel-molybdenum stainless steel 1.4435/316L with electropolished surfaces
- pumping of solids-laden media with no risk of clogging
- ideal for fast temperature changes thanks to sturdy design
- the sturdy design allows handling of abrasive and corrosive media
- option for various mechanical seal systems
- high delivery head with a single stage pump
- plug-in shaft for the use of norm motors

OPTIONAL FORMS

- **ATEX**
  for zones 1, 2, 21 and 22
- **PHARMA DESIGN**
  for maximum safety, reliability and hygiene (surface roughnesses down to Ra < 0.4 µm)
- **MAGNETIC COUPLING**
  hermetically sealed version ZALM and ZAM for crystallising, toxic, flammable and environmentally hazardous liquids
- **VERTICAL INSTALLATION**
  for simple residual drainage
- **BEARING HOUSING**
  for special requirements
- **MOBILE**
  with sturdy trolley and accessories to customer requirements
- **HEATABLE**
  with liquid or heating cartridge
- **COMPLETE DRAINING**
  at the lowest point of the pump

High-quality materials ensure that the media remains pure.

Foodstuffs

Beverages

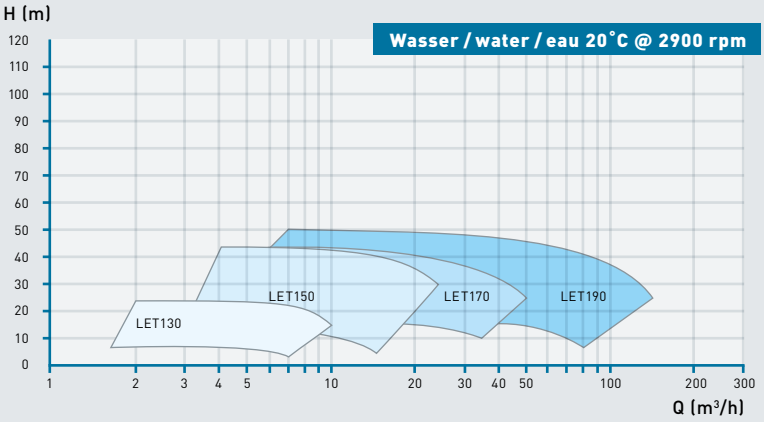
Pharmaceuticals / cosmetics

Chemicals / industry

Flow rate Q	max. 100 m³/h
Delivery head H	up to 100 m
Temperature range	minus 30 °C to 130 °C, max. 150 °C (SIP)
Viscosity	up to approx. 500 mPas
Nominal pressure	PN10 to PN160

Submersible centrifugal pump LET

The submersible centrifugal pump can be used for various liquids in all areas of industry. It is made of corrosionresistant stainless steel 1.4435 and is manufactured for submersion depths of 0.3 m to max. 3 m in a modular system. Its special strength is its application diversity since it can also be used for explosion-hazard liquids in EX zones 1 and 2. The pump is specifically suitable for chemicals, solvents, industrial effluents and alcohols. It is manufactured precisely to customer requirements.



FEATURES

- pumping of solids-laden media with no risk of clogging
- simple modular design
- sturdy design comprising high-quality stainless steel 1.4435/316 L
- low lifecycle costs and long service life
- for viscous liquids up to approx. 200 mPas
- sturdy, generously dimensioned slide bearings made of hard carbon or SSiC
- for maximum reliability even for liquids with highly abrasive action, e.g. bearing-free design (up to approx. 0.6 m)
- bearing assembly, sealing and connection facilities etc. are always matched to the specific customer requirements

OPTIONAL FORMS

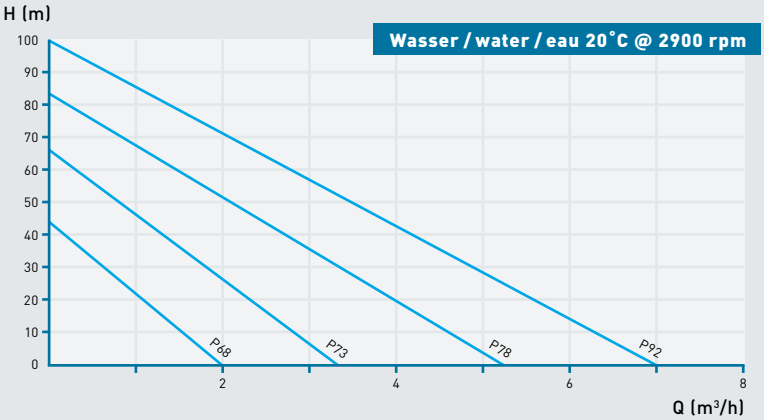
- **SUBMERSION DEPTH**
  Every pump is adapted to customer requirements, possible submersion depth down to 3 m.
- **ATEX**
  for zones 1, 2, 21 and 22
- **INTERMEDIATE BEARING ASSEMBLY**
  - slide bearings made of hard carbon or SSiC
  - up to 0.6 m submersion depth bearing-free with continuous shaft
- **DOME COVER**
  with or without dome cover and shape to customer requirements
- **FLUSHING OF INTERMEDIATE BEARINGS**
  flushing by means of pumped medium or by externally supplied flushing medium
- **SHAFT SEALING**
  radial shaft seal rings or optionally with back-to-back mechanical seal with external flushing
- **MOTOR PROTECTION (MECHANICAL PROTECTION**
  Frequent swivelling of the pump back and forth may cause mechanical damage to the motor. A protective cage may alleviate the situation.

Chemicals / industry

Flow rate Q	max. 100 m³/h
Delivery head H	up to 50 m
Temperature range	minus 30 °C to 100 °C
Viscosity	up to max. 200 mPas

Peripheral pump P/MP

The peripheral pump is the right choice for all applications in which low flow rates and pulsation-free pumping against high pressure are required. The symmetrical design is suitable for both left and right rotation.



FEATURES

- pumping small quantities against high pressures and free of pulsation
- good adjustability with frequency converter due to the steep, linear pump characteristic curve
- the symmetrical design is suitable for both left and right rotation
- sturdy design comprising high-quality chromium-nickel-molybdenum steel 1.4435/316 L with electropolished surfaces
- optional: SSiC bearings and ceramic shaft for low wear and avoiding abrasion
- option for various mechanical seal systems

OPTIONAL FORMS

- **ATEX**
  for zones 1, 2, 21 and 22
- **PHARMA DESIGN**
  for maximum safety, reliability and hygiene (surface roughnesses down to Ra < 0.4 µm)
- **MAGNETIC COUPLING**
  hermetically sealed version MP for crystallising, toxic, flammable and environmentally hazardous liquids
- **BEARING HOUSING**
  for special requirements
- **MOBILE**
  with sturdy trolley and accessories to customer requirements
- **COMPLETE DRAINING**
  complete draining at the lowest point of the pump

Pumps with magnetic coupling for safety in explosion-hazard environments.

Foodstuffs

Beverages

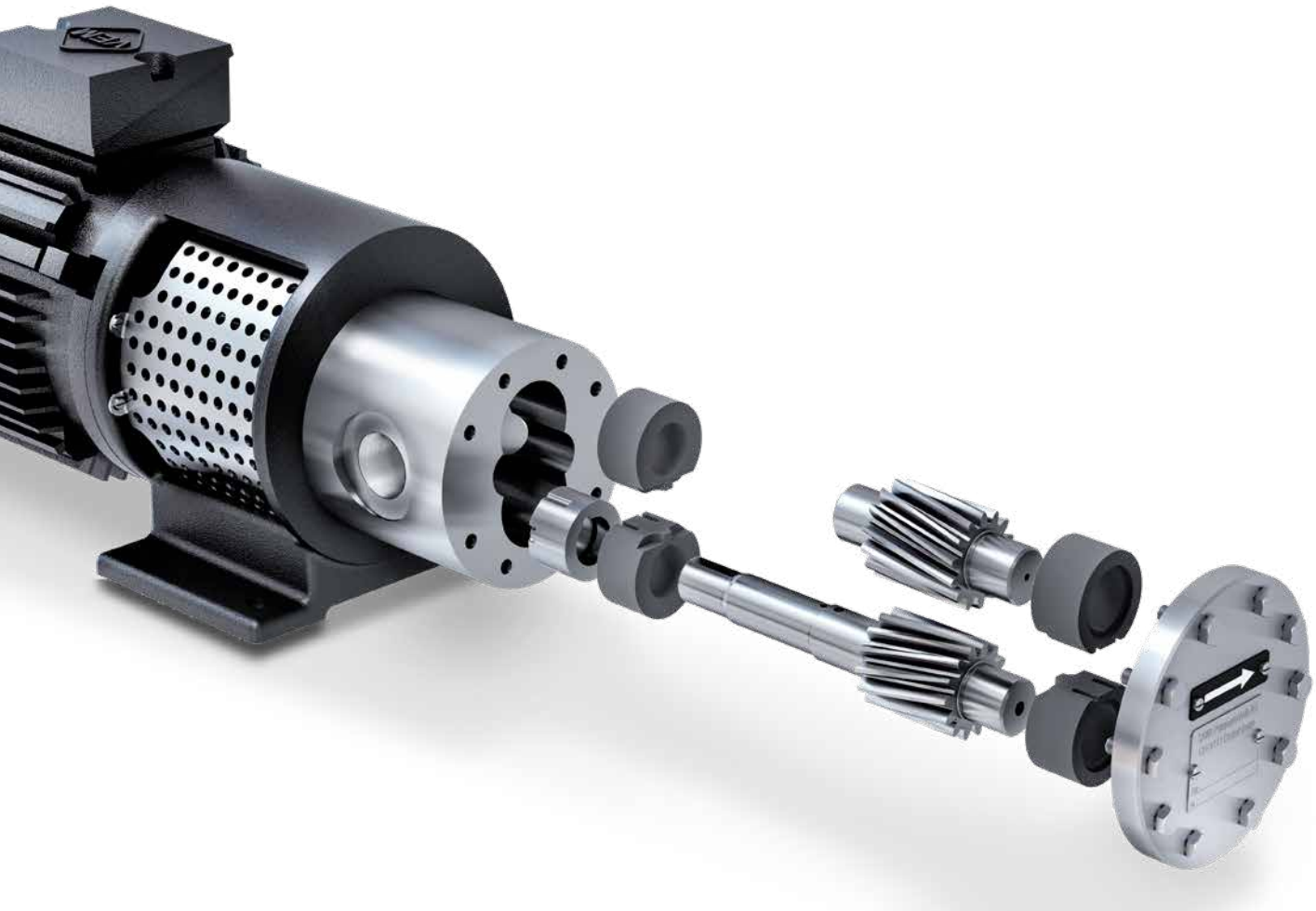
Pharmaceuticals / cosmetics

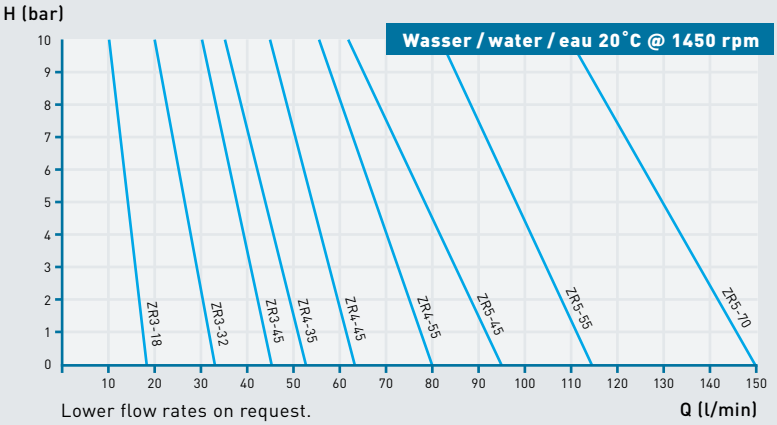
Chemicals / industry

Flow rate Q	max. 7 m³/h
Delivery head H	max. 100 m
Temperature range	minus 30 °C to 200 °C (version MP)
Viscosity	< 150 mPas
Nominal pressure	PN10 to PN63

Gear pump ZR

This pump type is the robust all-rounder for a broad range of industrial applications. It is suitable for pumping thin-bodied to viscous media (max. 3000 mPas).





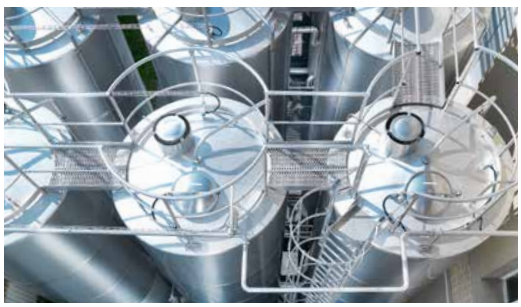
Lower flow rates on request.

FEATURES

- sturdy design comprising high-quality chromium-nickel-molybdenum stainless steel 1.4435/316 L
- helical-gears for quiet operation
- normal-priming gear pump
- pumping free of pulsation
- versatile ranges of application
- good adjustability with frequency converter due to the steep, linear pump characteristic curve
- option for various mechanical seal systems
- with proven chain coupling

OPTIONAL FORMS

- **ATEX**
  for zones 1, 2, 21 and 22
- **MAGNETIC COUPLING**
  hermetically sealed version ZRP3 for crystallising, toxic, flammable and environmentally hazardous liquids
- **MOBILE**
  with sturdy trolley and accessories to customer requirements



Diverse applications in tank filling and spraying of liquids via nozzles.

Foodstuffs

Fodder

Chemicals / industry

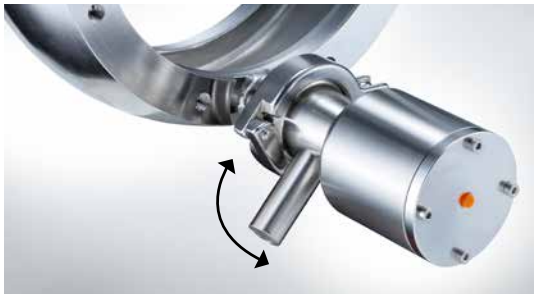
Flow rate Q	max. 9 m^3/h
Delivery head H	max. 100 m
Temperature range	minus 30 °C to 200 °C
Viscosity	max. 3000 mPas
Nominal pressure	up to PN16

Drain valve RE15

On the SAWA drain valve RE15 the sealing to the wetted inner part of the pump is done directly at the inside surface of the pump with an O-ring. This means that the RE15 is an absolutely dead space-free alternative to all conventional diaphragm valves.

FEATURES

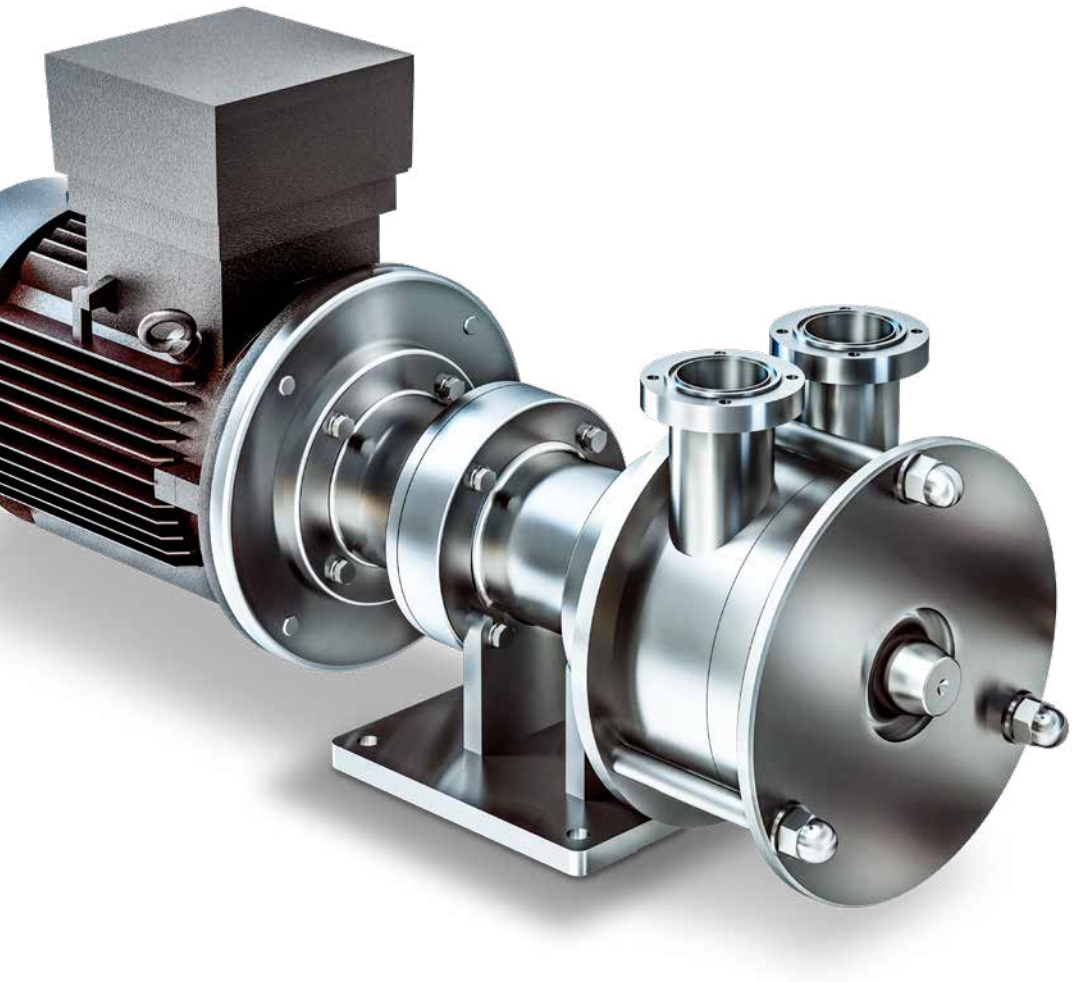
- absolutely dead space-free sealing
- also acts as a relief valve
- easy-to-install using tri clamp connection
- sealing with O-ring (EPDM, FKM or FFKM elastomer)
- manually operated or pneumatic
- variable position of the drainage connector (see illustration)
- visual or electronic position indicator (open / closed)
- CIP and SIP compliant
- max. operating pressure PN16
- stainless-steel version comprising 1.4435/316 L
- surfaces down to Ra < 0.2 µm, electropolished
- control pressure: 4 to 7 bar



The position of the drainage connector is variable can be selected in accordance to the needs with 5° inclination to the side or up to 90° vertically downwards for instance.

Pumps for ATEX zones

Pumps pose a potential source of ignition during operation. The essential sources of ignition are hot surfaces, mechanically triggered sparks or electrostatic discharge.
SAWA pumps of Categories 2 and 3 are designed to guarantee a high level of safety if operated within specifications.



FEATURES

The SAWA ATEX pumps comply with the ATEX Directives and are allowed for zones 1/21 and 2/22.

Running dry must be avoided at all costs since, otherwise, inadmissibly high temperatures may occur within a very short time.

The following measures may be taken to prevent inadmissible operating states (e.g. motor overload or running dry):

- current-consumption monitoring
- protection against dry running using Liquiphant
- temperature monitoring at the containment shell or at the slide bearings (on pumps with magnetic coupling) or at the mechanical seal
- use of double-acting mechanical seals in tandem or back-to-back arrangement
- pressure monitoring at the pressure discharge nozzle
- flow monitoring

OPTIONAL FORMS

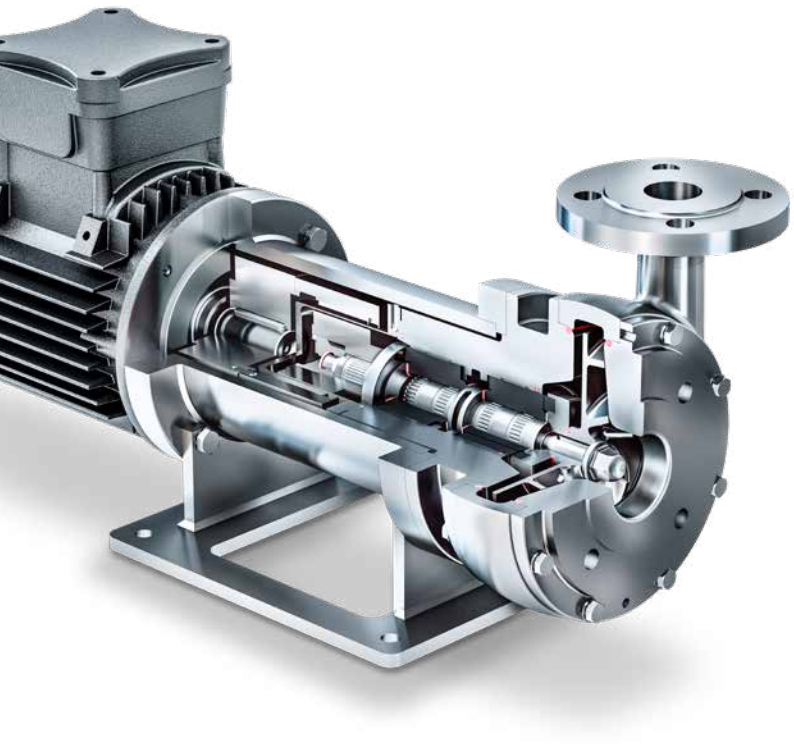
- **CATEGORY 2 – HIGH SAFETY**
  ATEX zone 1 and 21
  - bearing housing option with single-acting or double-acting mechanical seal
  - magnetic coupling
- **CATEGORY 3 – NORMAL SAFETY**
  ATEX zone 2 und 22
  - bearing housing option with single-acting or double-acting mechanical seal
  - block pump with plug-in shaft with single-acting or double-acting mechanical seal
  - magnetic coupling

  The ATEX identification of the SAWA pumps is as follows: II 2G cX or II 2G/3D cX
- **MOTORS**
  - with flameproof enclosure EEx de IIC T4 (e.g. for operation with frequency converter) for zones 1 and 2 or
  - EEx e II T3 for zones 1 and 2

  Other motor types are also available on request.

Pumps with magnetic coupling

Many of the pumps in the SAWA pump range feature hermetically sealed magnetic couplings. These pumps are also designed and manufactured so that they can be used easily for hygienic and sterile applications.

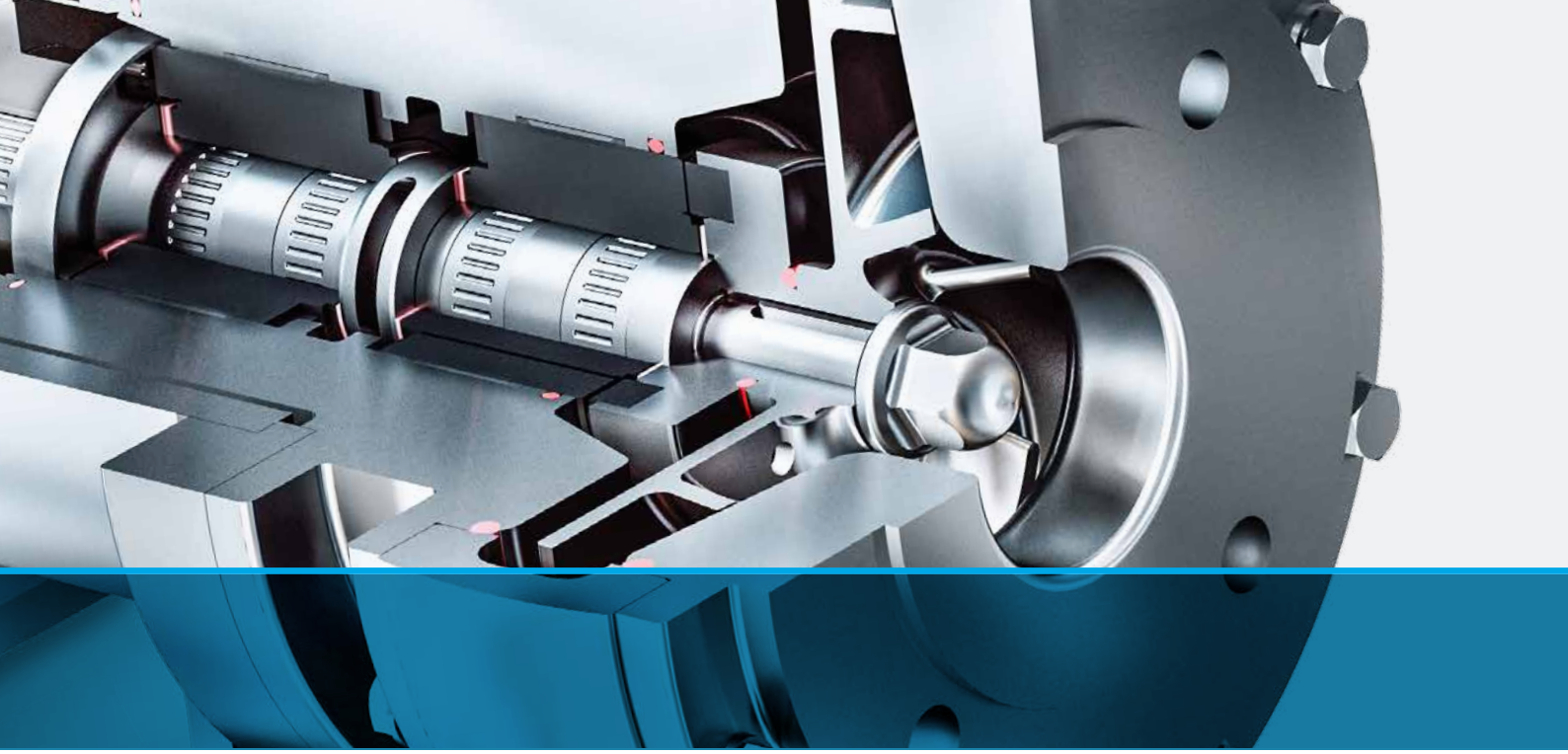


ADVANTAGES

Because of their hermetically sealed design, magnetically coupled pumps are ideal when used for crystallising, toxic, flammable and environmentally hazardous liquids. The containment shell between the two parts of the magnetic coupling seals off the pumped medium to the outside. A mechanical seal is thus not required. The magnetic coupling pumps are thus far more resistant to wear and consequently are generally entirely maintenance-free. A sealing-pressure system is therefore not necessary.

RESTRICTIONS

Media containing solids and viscous media cannot be pumped owing to the narrow gaps in the area of the SSiC bearings and the containment shell. Eddy-current losses in the magnetic field of the magnetic coupling reduce the overall efficiency slightly.



POSSIBLE APPLICATIONS

- In ATEX zones: thanks to the separation of the pump and motor by means of a magnetic coupling an additional flexible coupling is not necessary.
- TA-Luft (German Technical Guidelines on Air-Quality Control): use of the hermetically sealed magnetic coupling allows unproblematic pumping of toxic media relevant to TA-Luft. The pumps are also ideal for use with media with unpleasant odours, highly volatile, flammable and highly pure media and media which crystallise in contact with air.
- Hygienic and sterile applications: magnetic coupling pumps are suitable for CIP cleaning and SIP sterilisation.

PUMP MONITORING OPTIONS

- motor monitoring by means of PTC thermistor and/or safeguarding current consumption
- temperature monitoring, e.g. on the magnetic coupling containment shell by means of PT100
- protection against dry running by means of Liquiphant in the suction line or by means of level monitoring in the tank (inlet)
- monitoring the flow rate
- pressure monitoring
- vibration monitoring

PUMP TYPES AVAILABLE WITH MAGNETIC COUPLING

- Typ HD: HDM88, HDM160, HDM190, HDM220
- Typ LE: LEM130, LEM150, LEM170, LEM190, LEM190B
- Typ LES: LESM170, LESM190, LESM190B
- Typ ZA/ZAL: ZALRM18, ZALM21, ZAM21, ZAM21B
- Typ MP: MP68, MP73, MP78, MP92
- Typ ZR: ZRP3

OPTIONAL FORMS

- including residual drainage in pump body or pump cover
- inducer on LE and ZA/ZAL
- temperature ranges from minus 30 °C to 200 °C
- system pressures up to max. PN 160
- viscosities up to max. 200 mPas

Sterile and pharmaceutical pumps

Sterile design for maximum biosafety, with Ra values down to Ra < 0.4 µm and complete draining.
The ideal pumps for applications requiring absolute sterility.

FEATURES

- dead space-free design throughout the entire pump interior including the area of the mechanical seal
- gapless design in the area of the impeller seal and cover gasket etc.
- The easy-clean design allows complete draining of the pump. The connections for draining are chosen to customer requirements, e.g.: tri clamp or diaphragm valve (manual or automatic). One option which we recommend is the dead space-free SAWA drain valve RE15 – see Page 20
- excellent CIP and SIP characteristics
- option for surface roughness of all pump components coming into contact with the medium (pump body, pump cover, impeller, pump shaft, impeller nut and mechanical seal) down to Ra < 0.4 µm, according to customer requirements
- manufactured from solid stainless steel 1.4435/316 L – others, see Page 30
- SAWA standard always electropolished, regardless of the required Ra values
- delta ferrite content < 1 %/BN2 < 0.5 %
- wide number of different connections available – see Page 30
- options for various mechanical seal systems or magnetic coupling available

ATEX FDA APPROVED ADI free CE ISO 9001:2015

SURFACE ROUGHNESS

The surfaces of the SAWA stainless-steel pumps are machined to customer requirements for pharmaceuticals or sterile applications, so that the pump components coming into contact with the product may have surface roughnesses of Ra < 0.4 µm.

As an option, the surface roughness can be certified by a measurement record.

The pump components are machined accordingly in order to achieve the required surface roughness:

- machining such as turning and milling
- mechanical processing such as grinding and polishing
- finishing of the pump components includes electropolishing as standard, regardless of the required Ra values

OPTIMISED FLUID DYNAMICS

The optimised fluid-dynamics design means efficient and quiet operation throughout the required range of application and allows very gentle pumping. It also ensures hygienic operation and fast pump cleaning. The generously dimensioned conical mechanical seal housing means optimum flushing of the CIP-compliant and sterilisable mechanical seal. In addition, the ideal flow conditions guarantee wetting of the O-rings.

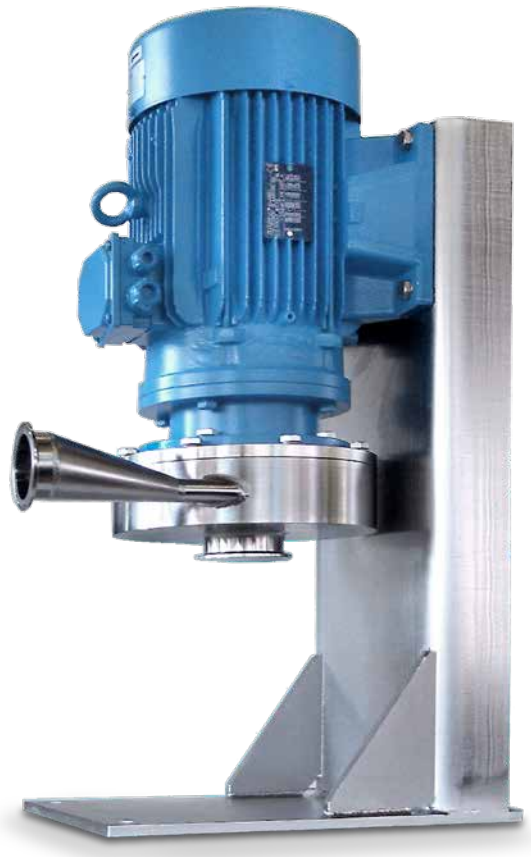
Sterile and pharmaceutical pumps

OPTIONAL FORMS

- **ATEX**
  for zones 1, 2, 21 and 22
- **MAGNETIC COUPLING**
  hermetically sealed design for crystallising, toxic, flammable and environmentally hazardous liquids
- **VERTICAL INSTALLATION**
  for simple residual drainage
- **BEARING HOUSING**
  for special requirements
- **INDUCER**
  for low $NPSH_a$ values < 1 m
- **MOBILE**
  mobile version with sturdy trolley

AVAILABLE DOCUMENTATION

- Operating and maintenance manual
- SAWA test report
- Available certificats for elastomers: FDA, USP Cl. VI, EU 1935/2004, ADI-free, phtalat-free, BPA (Bisphenol A)-free
- 2.2 DIN EN 10204 certificate of conformity
- 3.1 DIN EN 10204 inspection certificate
- Measurement reports for surface roughness, delta ferrite content and noise levels
- Welding record respectively documentation
- CE certificate of conformity
- Confirmation of electropolishing
- Cleaning protocol
- Dye penetrent test protocol
- Protocol of radiagraphic examination of the welding seems (x-ray)
- Pump test protocol according to ISO9906
- Vibration test protocol
- Hydrostatic test protocol
- **AVAILABLE TYPES**
  - HDP and HDMP
  - LEP/LESP/LEMP
  - ZAP/ZALP/ZAMP/ZALMP
  - MPP



Inducers

In order to ensure perfect pumping of liquid with low NPSH values of the installation (< 2 m), SAWA offers inducers of various sizes and diameters for numerous pump types. They are made of stainless steel 316L as are the other pump components coming into contact with the medium. Inducers can be fitted in all optional forms of all available pump types.

FEATURES

An inducer is an axial pump impeller. It is fitted in front of the actual pump impeller. The purpose of the inducer is to boost the pressure at the pump impeller slightly and thus minimise the risk of cavitation. Applications typically requiring an inducer are all applications in which the pressure at the pump inlet is near the vapour pressure of the liquid.

Using an inducer may bring benefits if a very good suction capacity is required or when pumping liquids with high gas content. The inducer must be very well matched to the required capacity range. Ideally, it is possible to achieve a pump NPSH value of < 1 m.

- MATERIAL

  stainless steel (316L)

- AVAILABLE FOR THE FOLLOWING PUMP TYPES
  - LE130, LE150, LE190, LE190B, LE210 and LE240
  - ZALR18, ZAL21, ZA21, ZA21B and ZA25

Technical data

MATERIALS

- PUMPS
  for the wetted pump parts: 1.4435 (316L), duplex 1.4462, super-duplex 1.4501 and 1.4507, 1.4539 and Hastelloy, others on request
- MECHANICAL SEALS
  hard carbon, chromium steel, tungsten carbide, SSiC or ceramic material
- AUXILIARY SEALS AND GASKETS
  FPM/FKM, FFKM, EPDM, PTFE and FEP
- PLAIN BEARINGS
  hard carbon and SSiC

CONNECTION OPTIONS

In accordance with DIN, ISO, ASME and other commercially available types

- threads
- flanges
- tri-clamp
- sterile connections (threads, flanges and clamp)


MOTORS

- IE3, IE4 and IE5
- synchronous or ansynchronous motor
- NEMA and cUL
- with built-on frequency converter
- EEx e II T3 and EEx de IIC T4 – T6
- brake motors
- hydraulic motors for pump type HD
- hybrid drive (electric motor and hydraulic motor) for pump type HD
- pneumatic motors
- stainless-steel motors
- washdown motors
- fanless motors

IMPELLERS

FOR PUMP TYPE LE / ZA / ZAL

- open
- half-open
- closed
- inducer DN50/65/100/125

ATEX VERSIONS

- for zones 1, 2, 21 and 22
- versions with magnetic couplings or with mechanical seal in bearing housing design with flexible coupling or plug-in shaft
- type-tested ATEX motors
- various monitoring options (PT100 and protection against running dry etc.)

AVAILABLE DOCUMENTATION

- Operationg and maintenance manual
- SAWA test report
- Available certificats for elastomers: FDA, USP Cl. VI, EU 1935/2004, ADI-free, phtalat-free, BPA (Bisphenol A)-free
- 2.2 DIN EN 10204 certificate of conformity
- 3.1 DIN EN 10204 inspection certificate
- measurement reports for surface roughness, delta ferrite content and noise levels
- welding record respectively documentation
- CE certificate of conformity
- Confirmation of electropolishing
- Cleaning protocol
- Dye penetrent test protocol
- Protocol of radiagraphic examination of the welding seems (x-ray)
- Pump test protocol according to ISO9906
- Vibration test protocol
- Hydrostatic test protocol

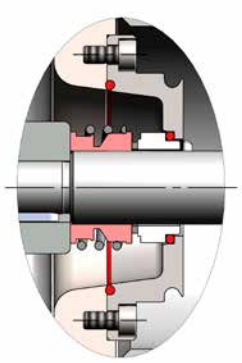
ACCESSORIES

- trolley
- bypass
- residual-drainage valve
- motor protection switch and electrical accessories
- suction filter for HD pump types
- sealing-pressure systems (e.g. thermo-siphon system) for double-acting mechanical seals (tandem and back-to-back)
- heating cartridge for heatable pump bodies
- filling systems for type HD
- customised accessories

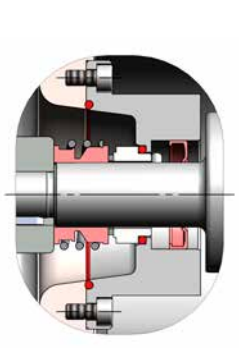
Technical data

OPTIONAL FORMS	HD	LE/LES	P/MP	ZR	ZA/ZAL
ATEX	×	×	×	×	×
pharma design	×	×	×		×
magnetic coupling	×	×	×	×	×
trolley	×	×	×	×	×
bearing housing	×	×	×		×
MECHANICAL SEALS	**HD**	**LE/LES**	**P/MP**	**ZR**	**ZA/ZAL**
single-acting	×	×	×	×	×
double-acting (mechanical seal and radial shaft seal)	×	×	×	×	×
double-acting (tandem/back-to-back)	×	×	×		×
sterile mechanical seal	×	×	×		×
without seals (magnetic coupling)	×	×	×	×	×

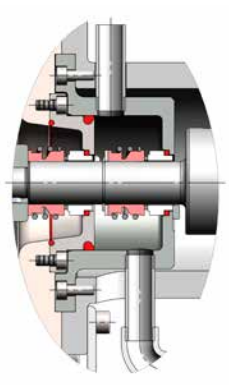
1. single-acting



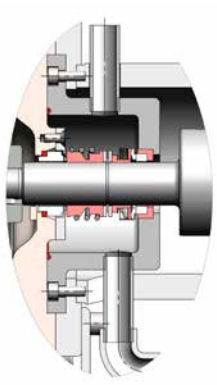
2. double-acting



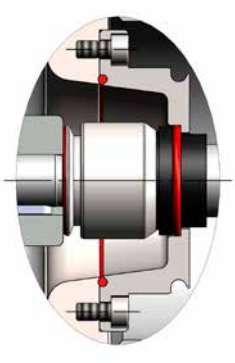
3. tandem



4. back-to-back

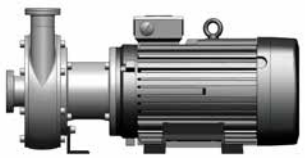


5. sterile

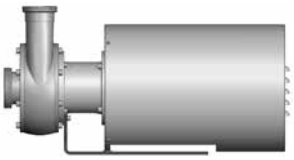


MODULE SUBASSEMBLIES / VARIANTS			HD	LE/LES	P/MP	ZR	ZA/ZAL
version I	–	foot motor without shroud	×	×	×	×	×
version M	–	stainless-steel shroud and chrome-steel foot	×	×	×		×
version K	–	stainless-steel shroud with calotte feet	×				
version T	–	stainless-steel shroud and chrome-steel foot with 4 machine feet	×	×	×		×
version W	–	bearing housing	×	×	×		×

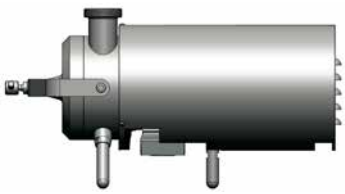
version I



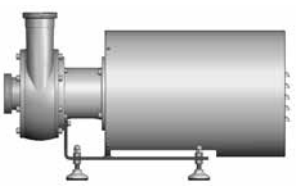
version M



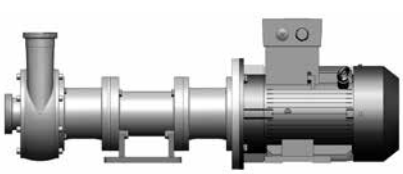
version K



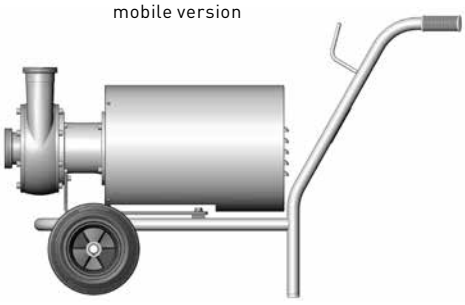
version T



version W



mobile version



Very well-prepared for all challenges

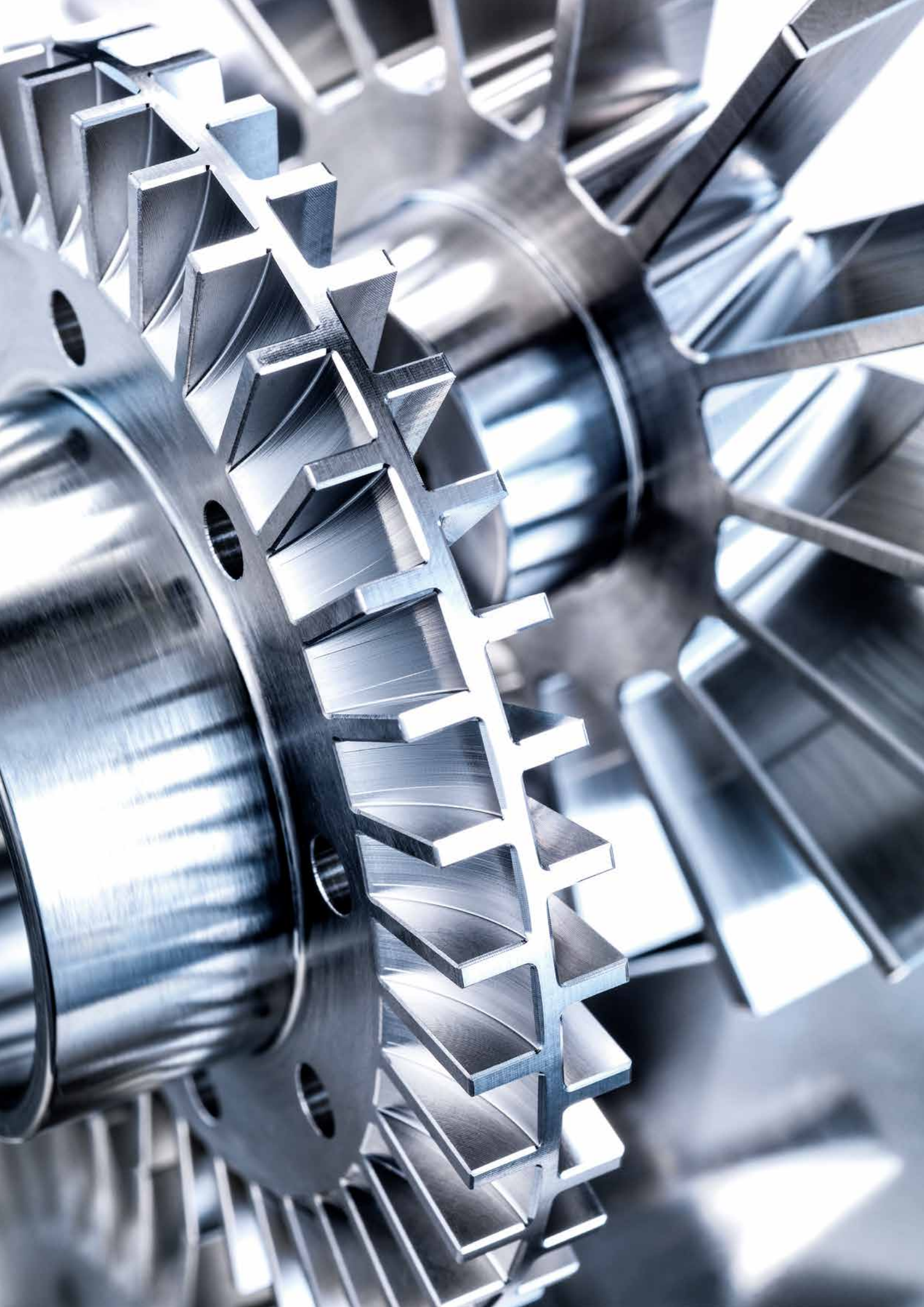
A flexible team and a well-stocked pump and spare-part warehouse await you to meet your needs – reliable and able to meet deadlines.

Our staff who have been with the company for many years are proven specialists in your sector. They and their know-how are at your service. From the initial consultation through to deadline-compliant delivery and from precise production through to documented quality inspection. We look forward to working together with you successfully in the long term. Rely on us.

The high quality of SAWA pumps is in demand the world over. That is why we have an extensive network of sales and servicing outlets. They assist our customers with their know-how and spread our company's good reputation throughout the world – with competent consultancy and a level of reliability in line with the philosophy of our family company.

Ives Schmidhauser, CEO of the SAWA Pumpentechnik AG, together with his father, Fredy Schmidhauser, the company's Chairman of the Board of Directors, defines the strategic targets of the new generation with foresightedness. The well-considered focus on continual expansion of the company with the emphasis on acquiring clients and client-relationship management on a partnership basis and targeted staff advancement is considered by both of them to be the greatest asset and is appreciated as such. We would like to thank you ALL who place their trust in our SAWA Pumpentechnik AG company.

Fredy Schmidhauser, Chairman of the Board, with its son, Ives Schmidhasuer, CEO of the SAWA Pumpentechnik AG, are leading the way with visions and goal-oriented leadership.



Sawa
PUMPEN

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1. Dimension sheets, attached in the catalogue

Show the pump execution with electric motors of efficiency class IE1 unless otherwise noted.

Together with the offers the available dimensions sheets are sent.
3D- CAD files can be provided on request.

2. Use of the electric motors off efficiency class IE2 and IE3

Acc. to European directive 2005/32/EC

Level 1 **Use from June 16, 2011**
Electric motors IE2 (High Efficiency)
for motors ≥ 0.75 kW drive power

Level 2 **Use from January 1, 2015**
Electric motors IE3 (Premium Efficiency)
for motors ≥ 7.5 kW drive power

alternatively

Electric motors IE2 /High Efficiency
Use with frequency converter speed controlled

Level 3 **Use from January 1, 2017**
Electric motors IE3 (Premium Efficiency)
for motors ≥ 0.75 kW drive power

alternatively

Electric motors IE2 /High Efficiency
Use with frequency converter speed controlled

Level 4 **Use of the electric motors IE4** (Super Premium Efficiency)
(more ambitious than IE3)
Use of asynchronous motors, synchronous reluctance or permanent magnet motors with frequency converter speed controlled

Level 5 **Use of the electric motors IE5** (Supreme-Motor Efficiency)
The Supreme-Motor meets the highest energy efficiency classification IE5 (IEC/TS 60034-30-2) for variable speed electric motors and has up to 20% less loss than IE4 motors.

General To achieve the highest possible efficiency in the pump operation with electric motors, SAWA Pumpentechnik AG recommends the use of a frequency converter in all cases. This allows the adjust the operating point to the desired conditions.

Pump - Inquiry

Nummer : F 0018
Seite 1 / 1

company: .....

name: ..... function: .....

address: .....

postal code / city: .....

phone ..... fax: ..... email: .....

pumping medium

description: .....

.....

features:	solids contens	☐	yes	☐	no		
	crystallizing out	☐	yes	☐	no		
	risk of past up	☐	yes	☐	no		
	abrasiv behavior	☐	yes	☐	no		
concentration:	.....	%		pH value:	.....		
density:	.....	kg/m3		viscosity:	.....	mPa s	
temperature:	.....	°C		short term:	.....	°C	

data

flow rate: ..... ☐ l/min ☐ m^3/h ☐ kg/h

discharge pressure: ..... ☐ bar ☐ m

Inlet height: ..... m NPSH available: ..... m

self priming: ☐ yes ☐ no suction lift: ..... m

suction line:	DN: ..... mm	hight: ..... m	lenght: ..... m	bow: ..... pce.	valves: ..... pce.
Discharge line:	DN: ..... mm	hight: ..... m	lenght: ..... m	bow: ..... pce.	valves: ..... pce.

pump details

materials : ☐ 1.4435 (316L) ☐ .....

shaft sealing: ☐ mechanical seal ☐ magnetic coupling ☐ .....

connections: .....

drive

power: ..... kW

rotating speed:	☐	3000 rpm	☐	1500 rpm	☐	rpm
voltage:	☐	230 / 400 Volt	☐	400 / 690 Volt	☐	Volt
frequency:	☐	50 Hz	☐	60 Hz	☐	Hz
PTC sensor:	☐	yes	☐	no		
Ex- protection:	☐	EEx e ll T3	☐	EEx de llc T4	☐	

remarks

date: ..... **signature:** .....

SAWA Pumpentechnik AG
CH - 9113 Degersheim

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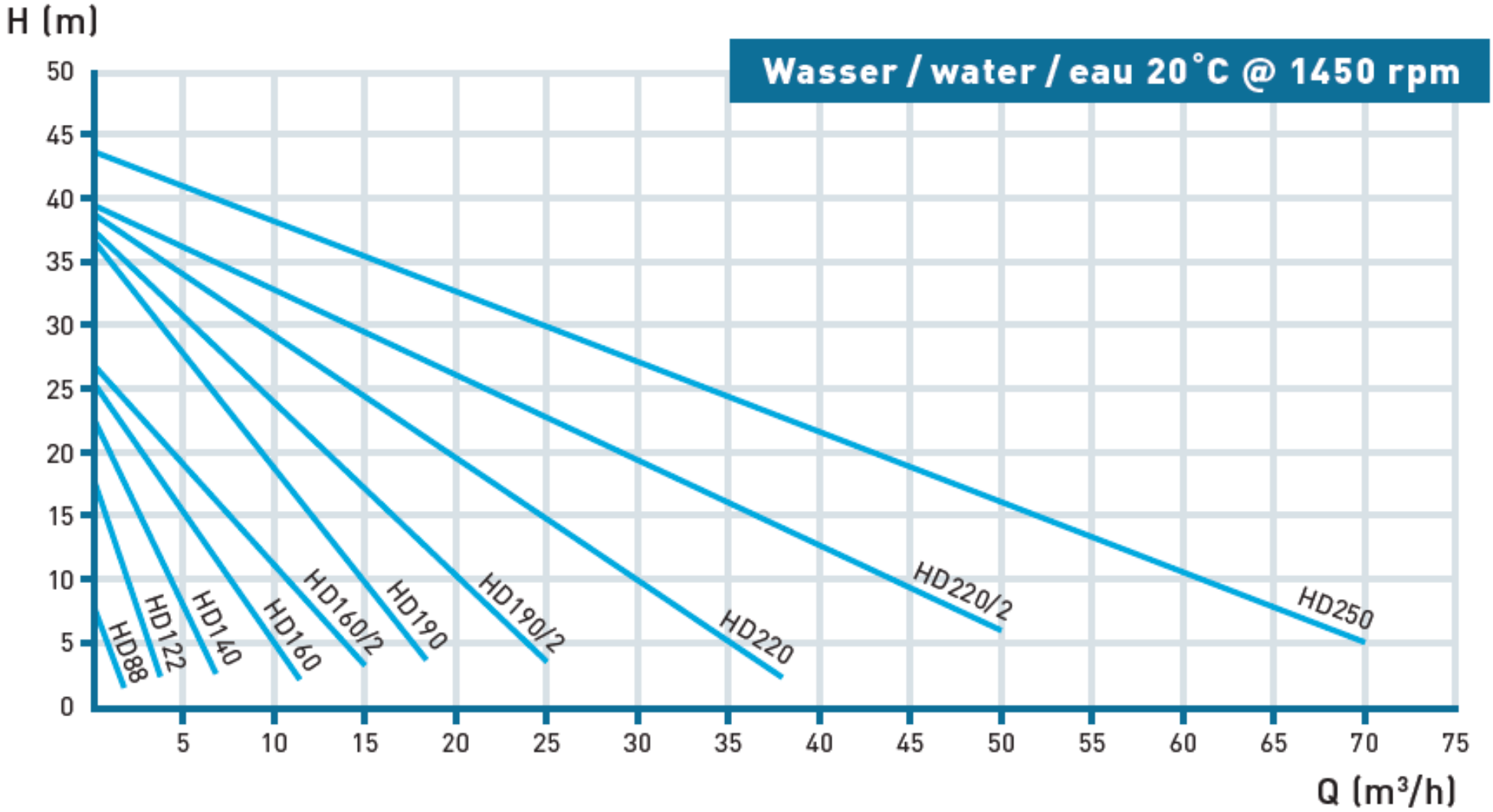
Fax +41 71 372 08 09
Email info@sawa.ch
Internet www.sawa.ch

Sawa PUMPEN	**Leistungsbereich** **Kreiselpumpe HD** selbstsaugend	**Performance range** **centrifugal pump HD** self-priming	Nummer : KL Revision : I / 09.16 Seite 1 / 1



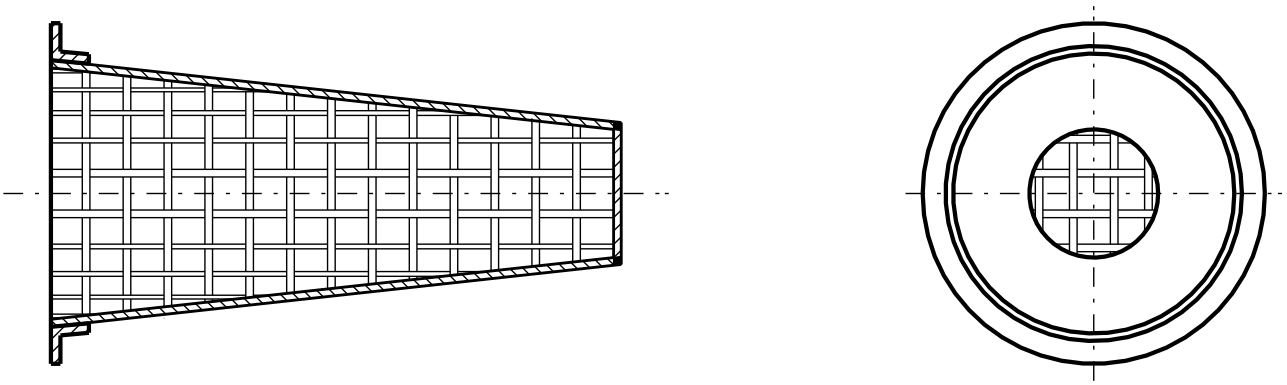
Suction Filter

for SAWA centrifugal pump type HD

Number : PR 0160
Edition : B / 11.99
Sheet 1 / 1

Material : Chrome-nickel-molybdenum-steel 1.4435

Mesh width : 3,5 x 3,5 mm



Nominal widths	**25**	**32**	**40**	**50**	**65**	**80**
Pump types	HD122	HD140	HD160	HD190	HD220	HD250
		HD11	HD12	HD13		
			HD180			

Applikation

The SAWA suction filter of chrome-nickel-molybdenum-steel 1.4435 protects the pump against solids which may be contained in the medium.

Installation

The SAWA suction filter is installed on the intake side in the opening of the intake port. By tigthening the union nut the suction filter will be pressed against the seal of the port.

SAWA - Pumpentechnik AG
CH - 9113 Degersheim

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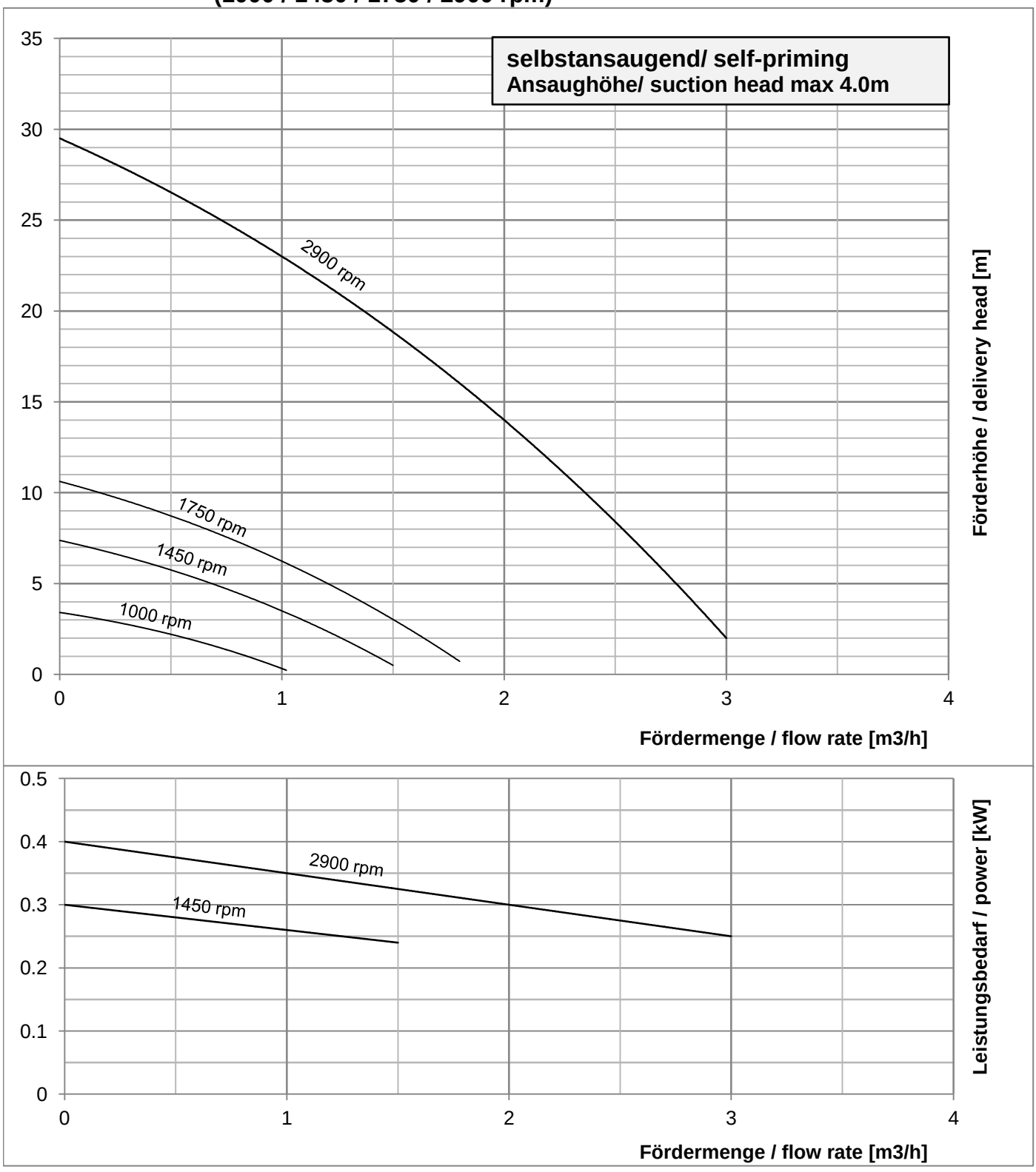
Fax **++41 / (0)71 / 372 08 09**
e-mail **info@sawa.ch**
Internet **www.sawa.ch**

Sawa PUMPEN	**Kreiselpumpe** **Typ: HD88**	**Centrifugal Pump** **Type: HD88**	Nummer: KL Revision: B/ 08.2016 Seite 1/1

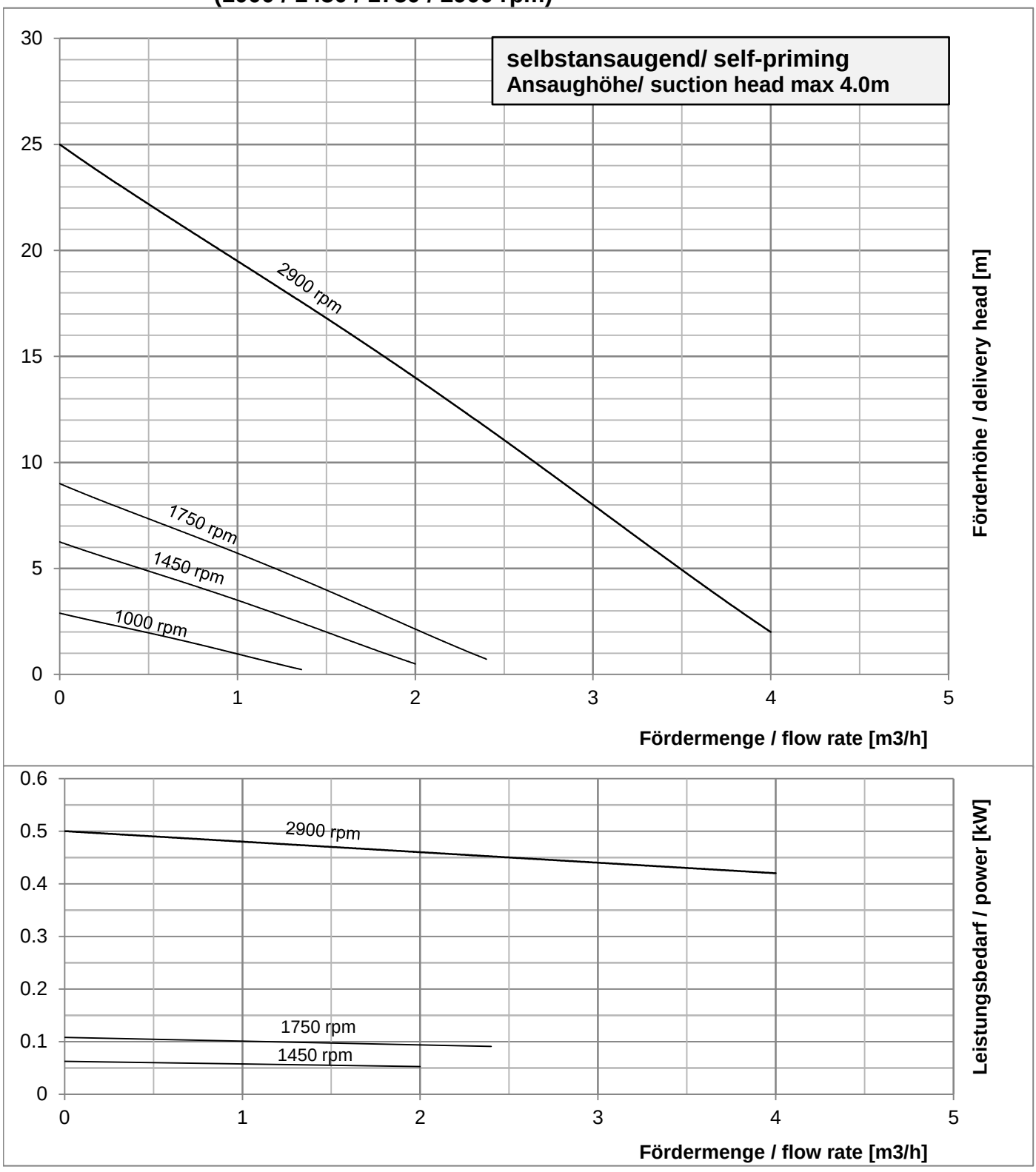
Wasser / water bei 20°C
(1000 / 1450 / 1750 / 2900 rpm)



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**HD88-8000-4X**	

Sawa PUMPEN	**Kreiselpumpe** **Typ: HD88/2**	**Centrifugal Pump** **Type: HD88/2**	Nummer: KL Revision: B/ 06.2020 Seite 1/1

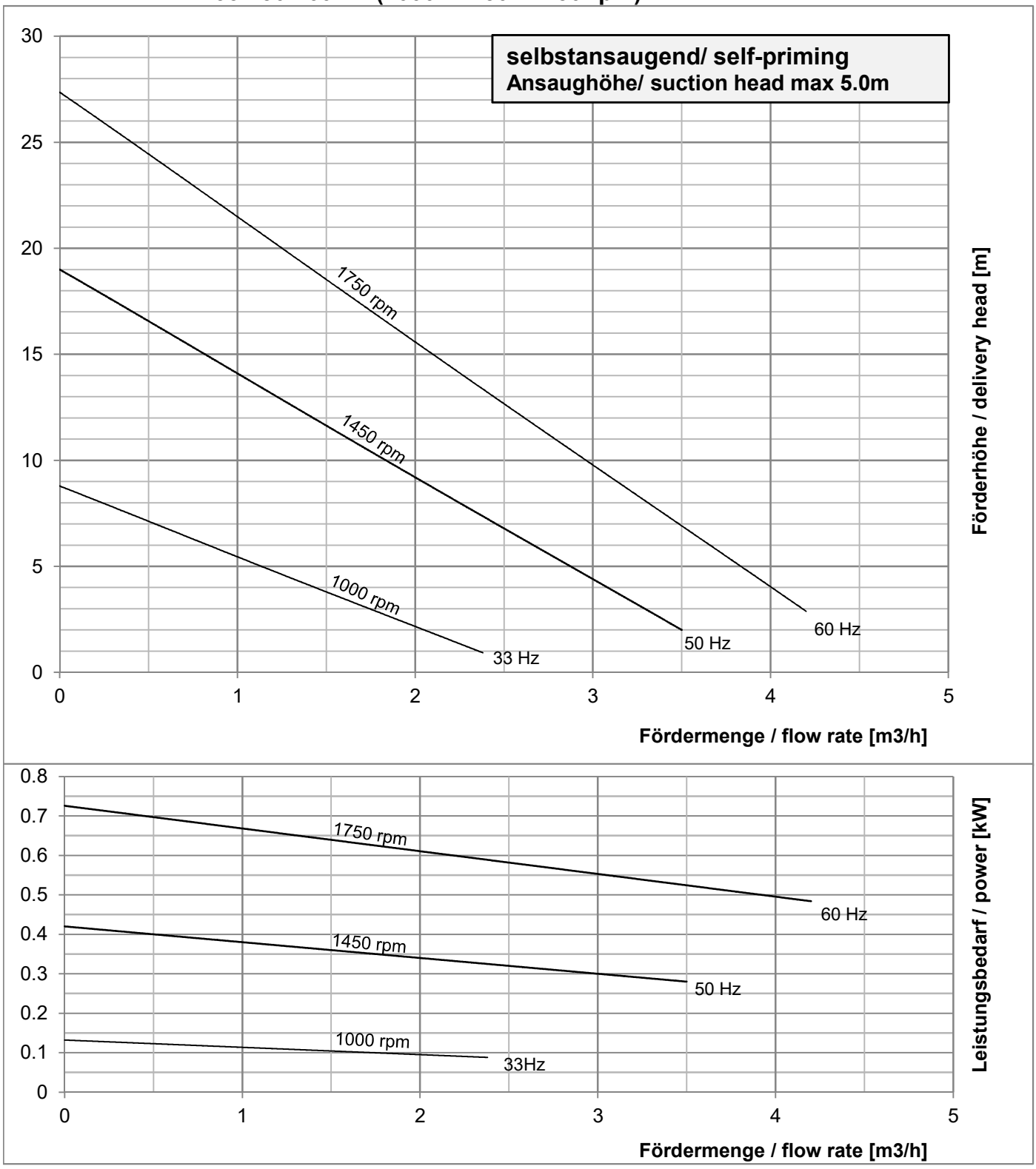
Wasser / water bei 20°C
(1000 / 1450 / 1750 / 2900 rpm)



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**HD88-2-8000-4X**	

Sawa PUMPEN	**Kreiselpumpe** **Typ: HD122**	**Centrifugal Pump** **Type: HD122**	Nummer: KL Revision: A/ 01.2010 Seite 1/1

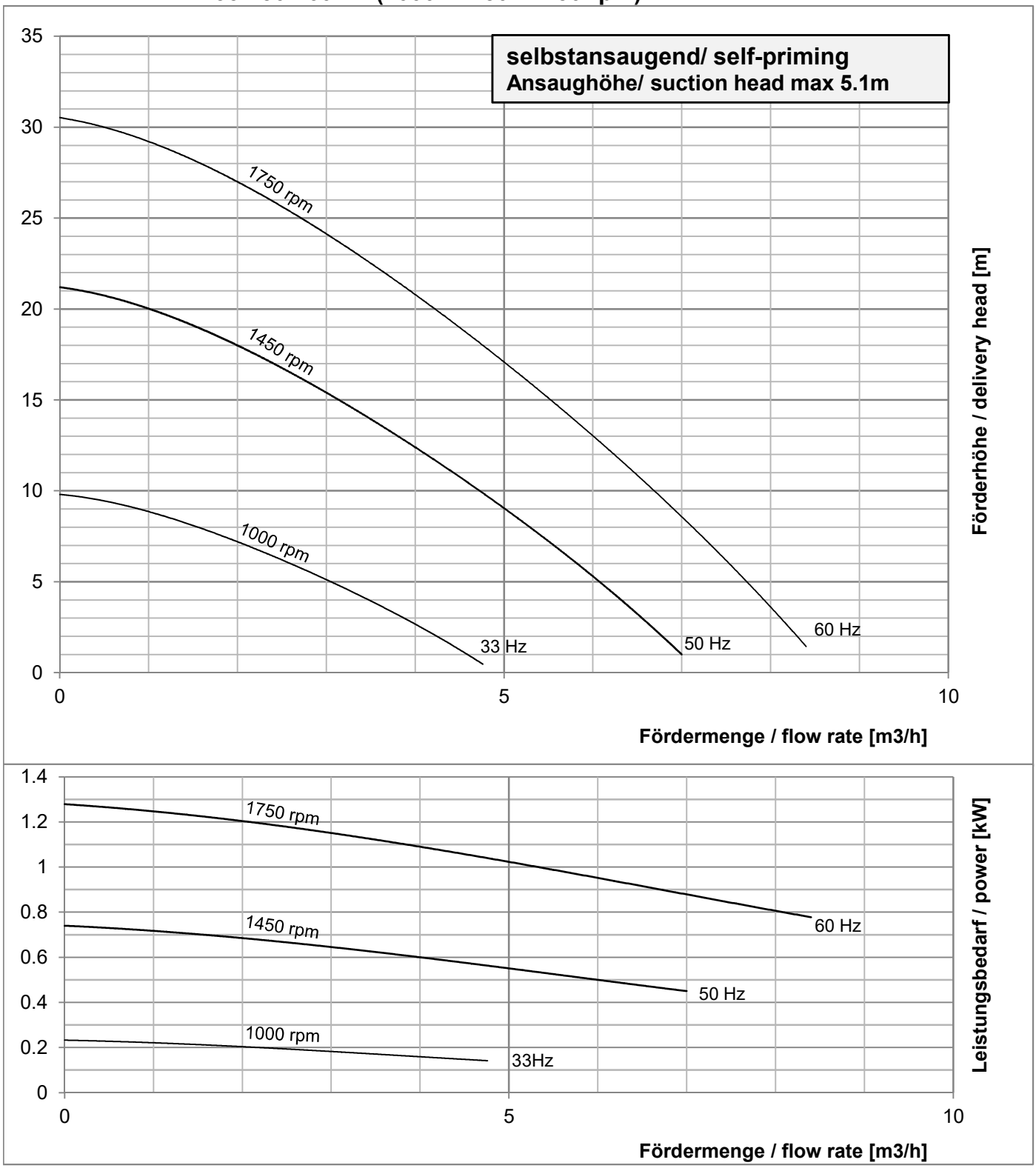
Wasser / water bei 20°C
33 / 50 / 60 Hz (1000 / 1450 / 1750 rpm)



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**HD122-8001-4X**	

Sawa PUMPEN	**Kreiselpumpe** **Typ: HD140**	**Centrifugal Pump** **Type: HD140**	Nummer: KL Revision: A/ 01.2010 Seite 1/1

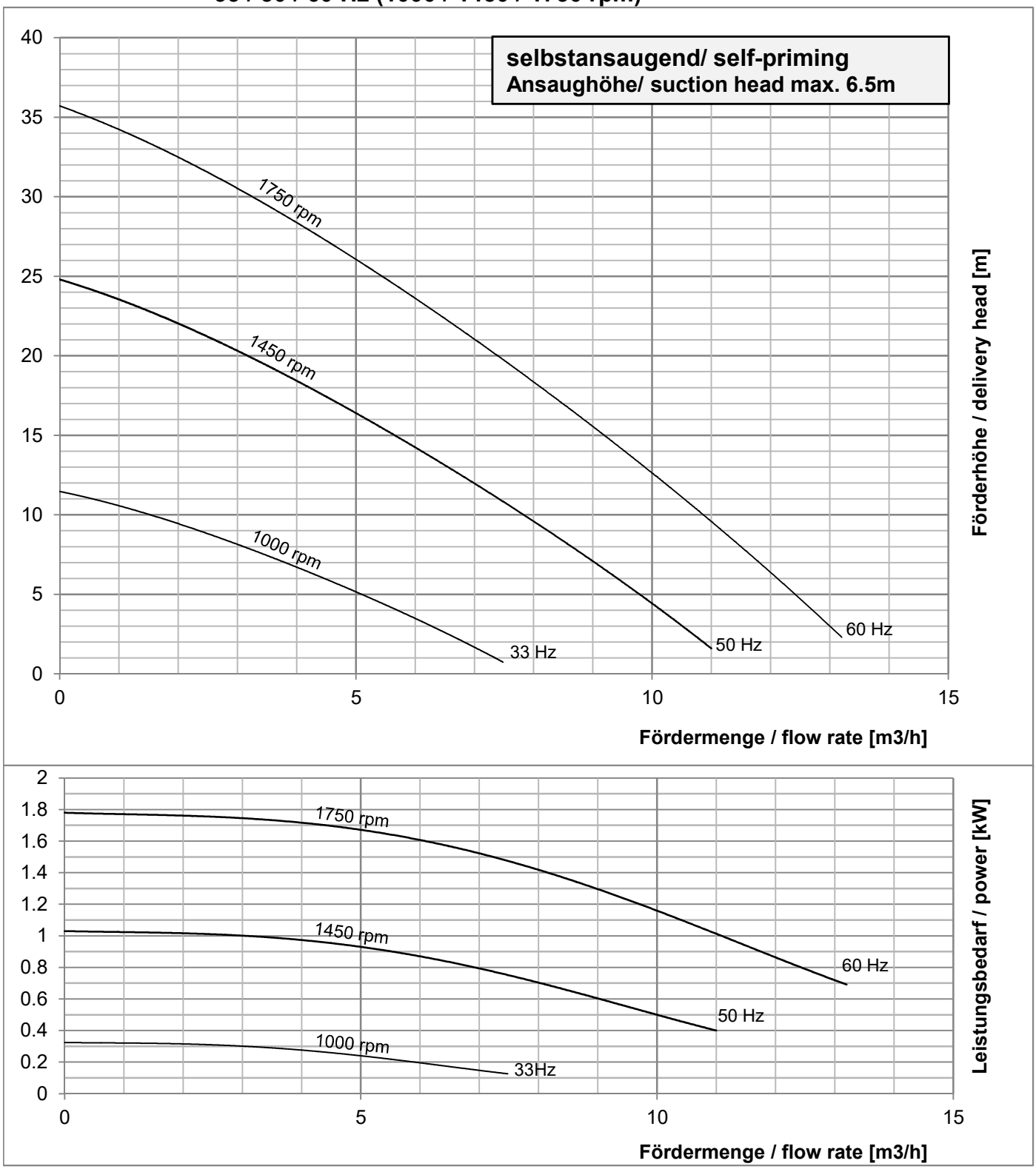
Wasser / water bei 20°C
33 / 50 / 60 Hz (1000 / 1450 / 1750 rpm)



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**HD140-8001-4X**	

Sawa PUMPEN	**Kreiselpumpe** **Typ: HD160**	**Centrifugal Pump** **Type: HD160**	Nummer: KL Revision: A/ 01.2010 Seite 1/1

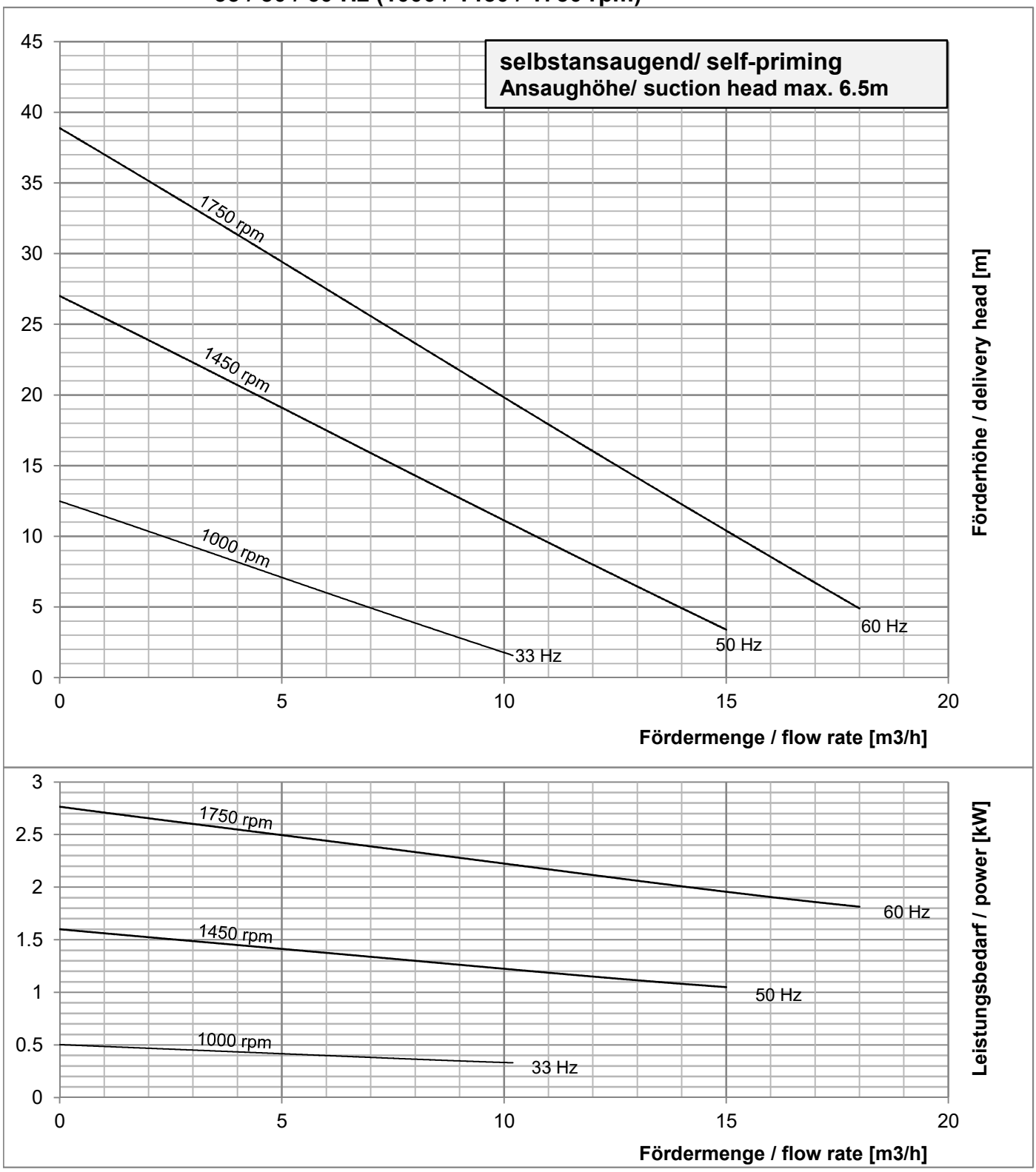
Wasser / water bei 20°C
33 / 50 / 60 Hz (1000 / 1450 / 1750 rpm)



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**HD160-8001-4X**	

Sawa PUMPEN	**Kreiselpumpe** **Typ: HD160/2**	**Centrifugal Pump** **Type: HD160/2**	Nummer: KL Revision: A/ 01.2010 Seite 1/1

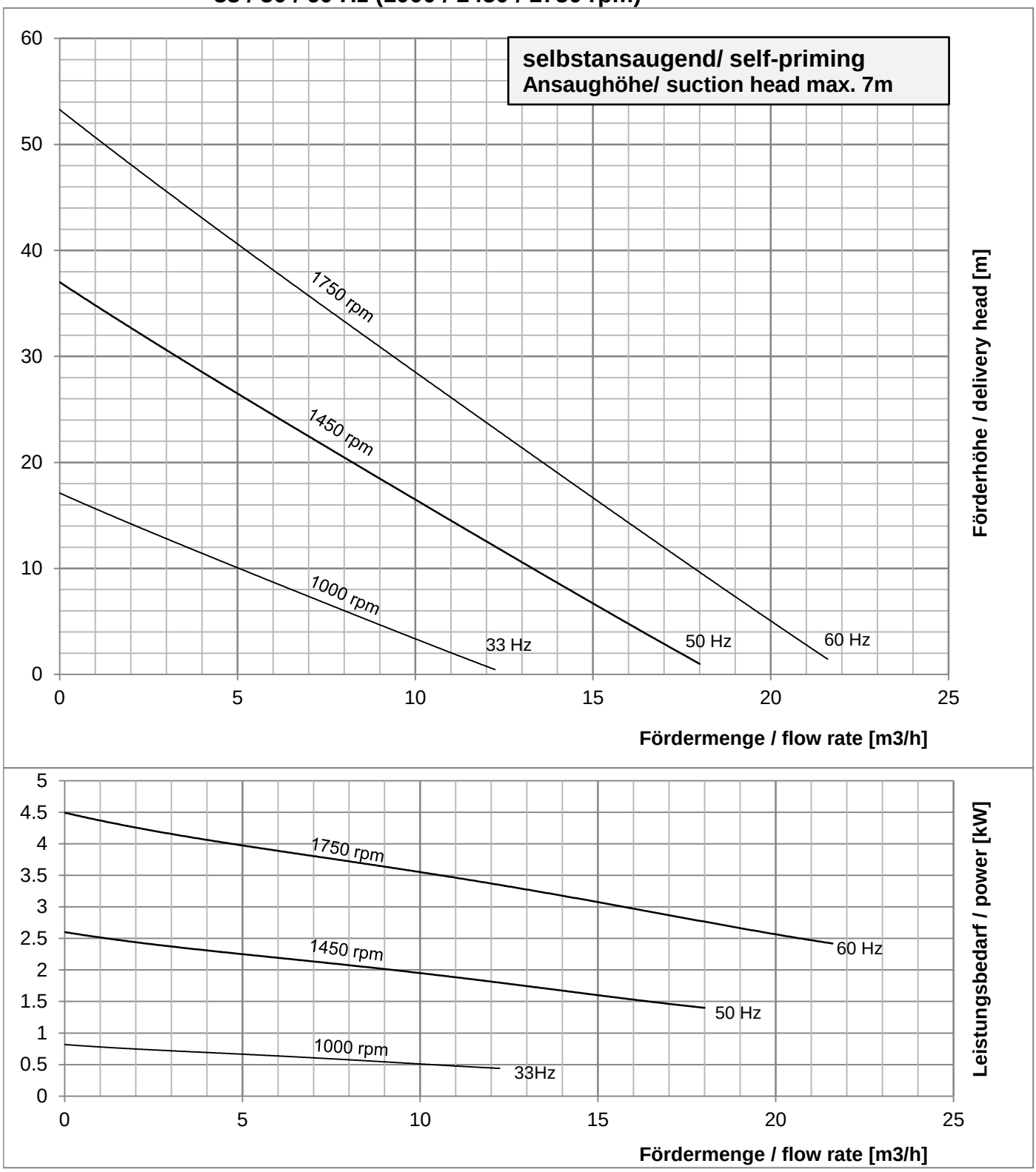
Wasser / water bei 20°C
33 / 50 / 60 Hz (1000 / 1450 / 1750 rpm)



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**HD160/2-8002-4X**	

Sawa PUMPEN	**Kreiselpumpe** **Typ: HD190**	**Centrifugal Pump** **Type: HD190**	Nummer: KL Revision: A/ 01.2021 Seite 1/1

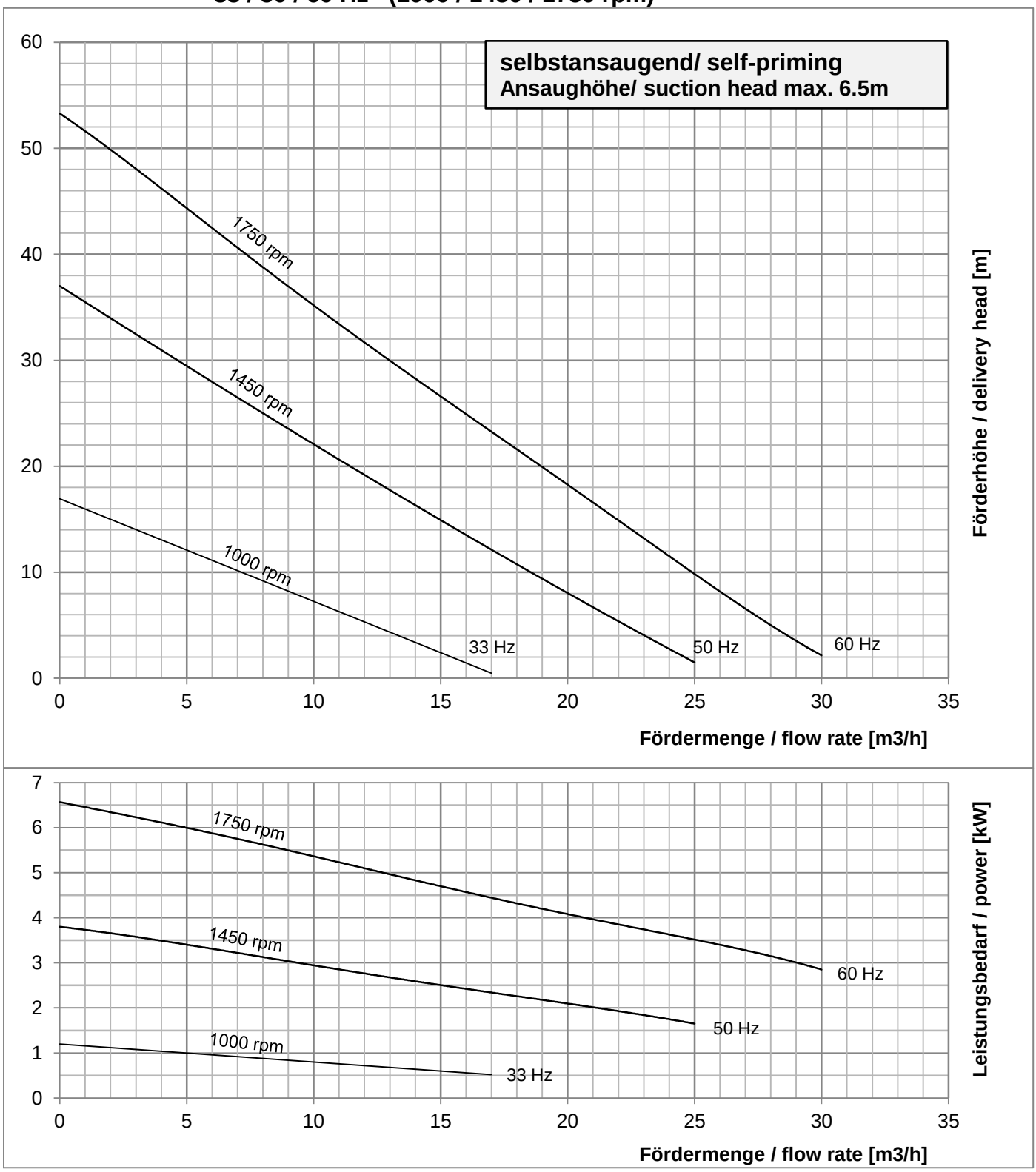
Wasser / water bei 20°C
33 / 50 / 60 Hz (1000 / 1450 / 1750 rpm)



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**HD190-8001-4X**	2021

Sawa PUMPEN	**Kreiselpumpe** **Typ: HD190/2**	**Centrifugal Pump** **Type: HD190/2**	Nummer: KL Revision: A/ 01.2021 Seite 1/1

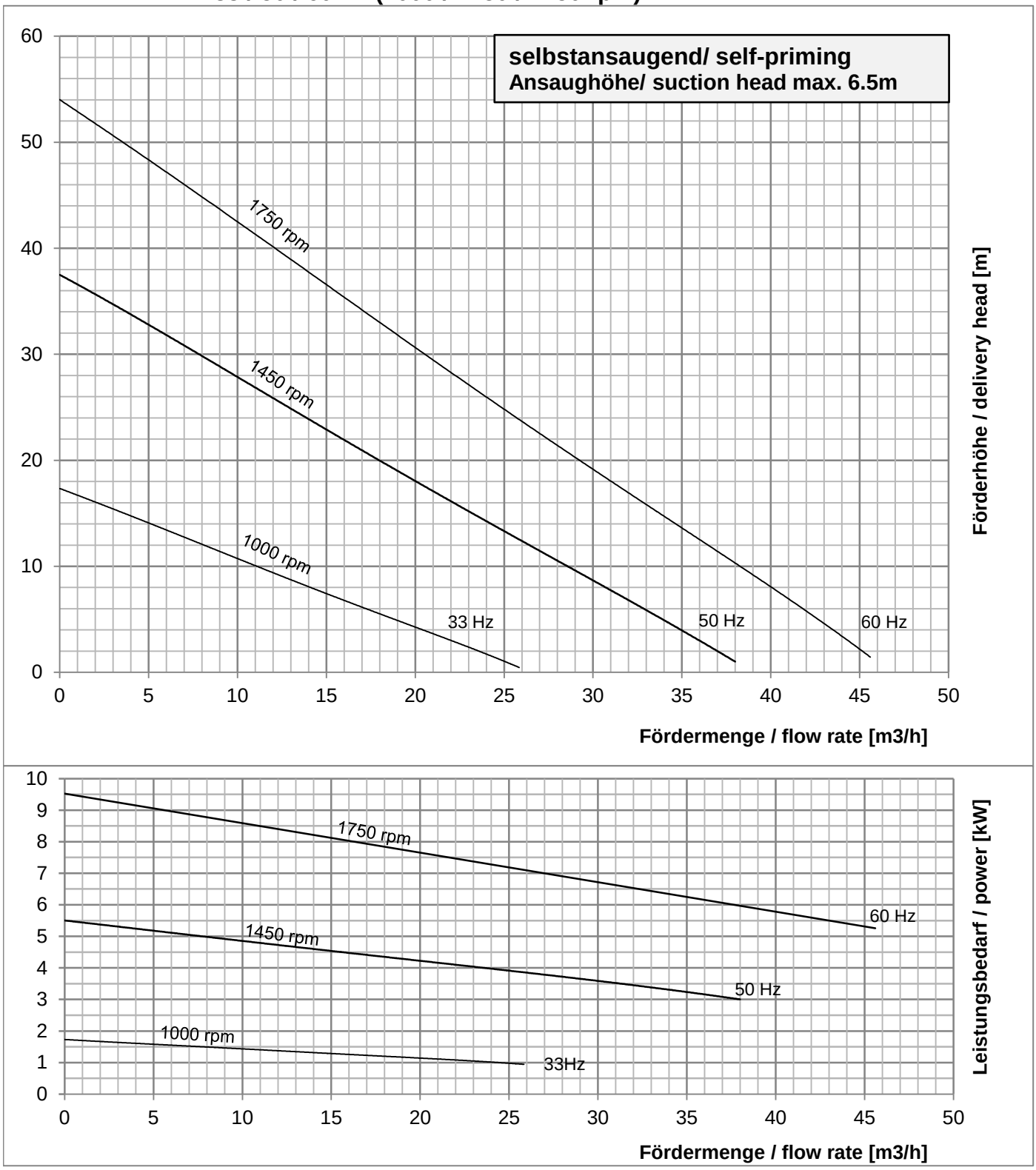
Wasser / water bei 20°C
33 / 50 / 60 Hz (1000 / 1450 / 1750 rpm)



SAWA Pumpentechnik AG **CH-9113 Degersheim**	**www.sawa.ch**	**HD190/2-8002-4X**	2021

Sawa PUMPEN	**Kreiselpumpe** **Typ: HD220**	**Centrifugal Pump** **Type: HD220**	Nummer: KL Revision: A/ 01.2021 Seite 1/1

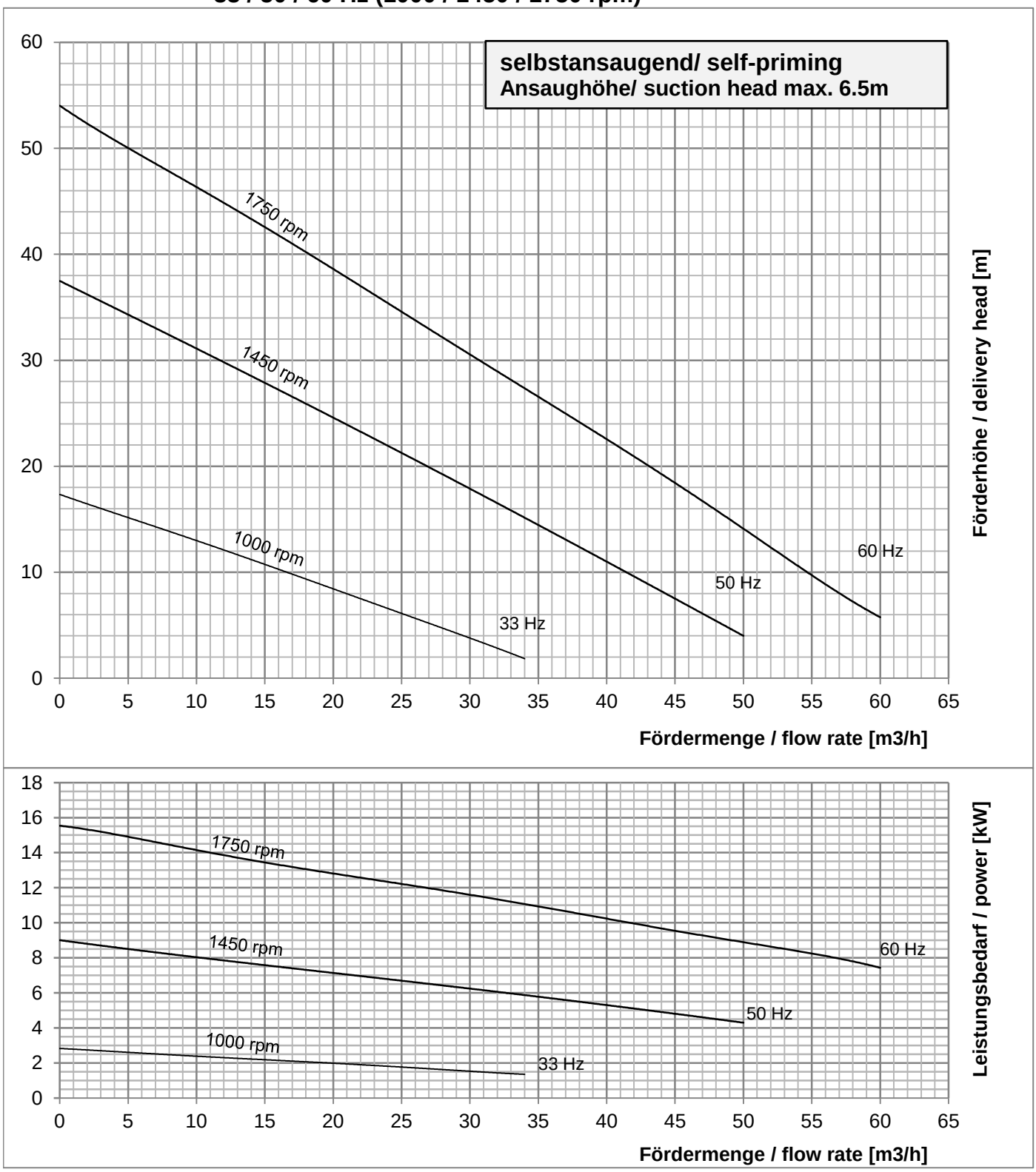
Wasser / water bei 20°C
33 / 50 / 60 Hz (1000 / 1450 / 1750 rpm)



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**HD220-8001-4X**	2021

Sawa PUMPEN	**Kreiselpumpe** **Typ: HD220/2**	**Centrifugal Pump** **Type: HD220/2**	Nummer: KL Revision: A/ 01.2021 Seite 1/1

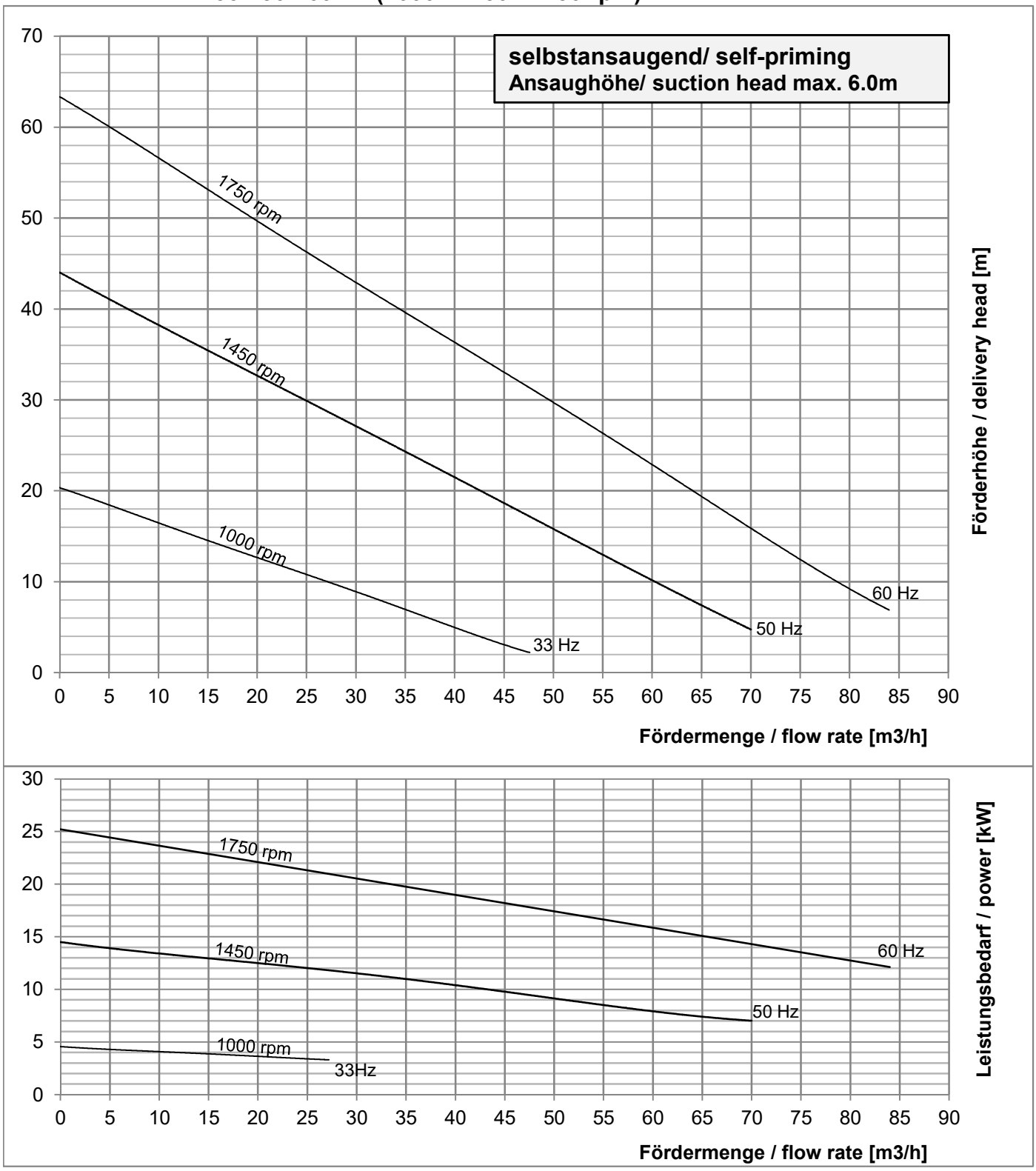
Wasser / water bei 20°C
33 / 50 / 60 Hz (1000 / 1450 / 1750 rpm)



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**HD220/2-8002-4X**	2021

Sawa PUMPEN	**Kreiselpumpe** **Typ: HD250/2**	**Centrifugal Pump** **Type: HD250/2**	Nummer: KL Revision: A/ 01.2010 Seite 1/1

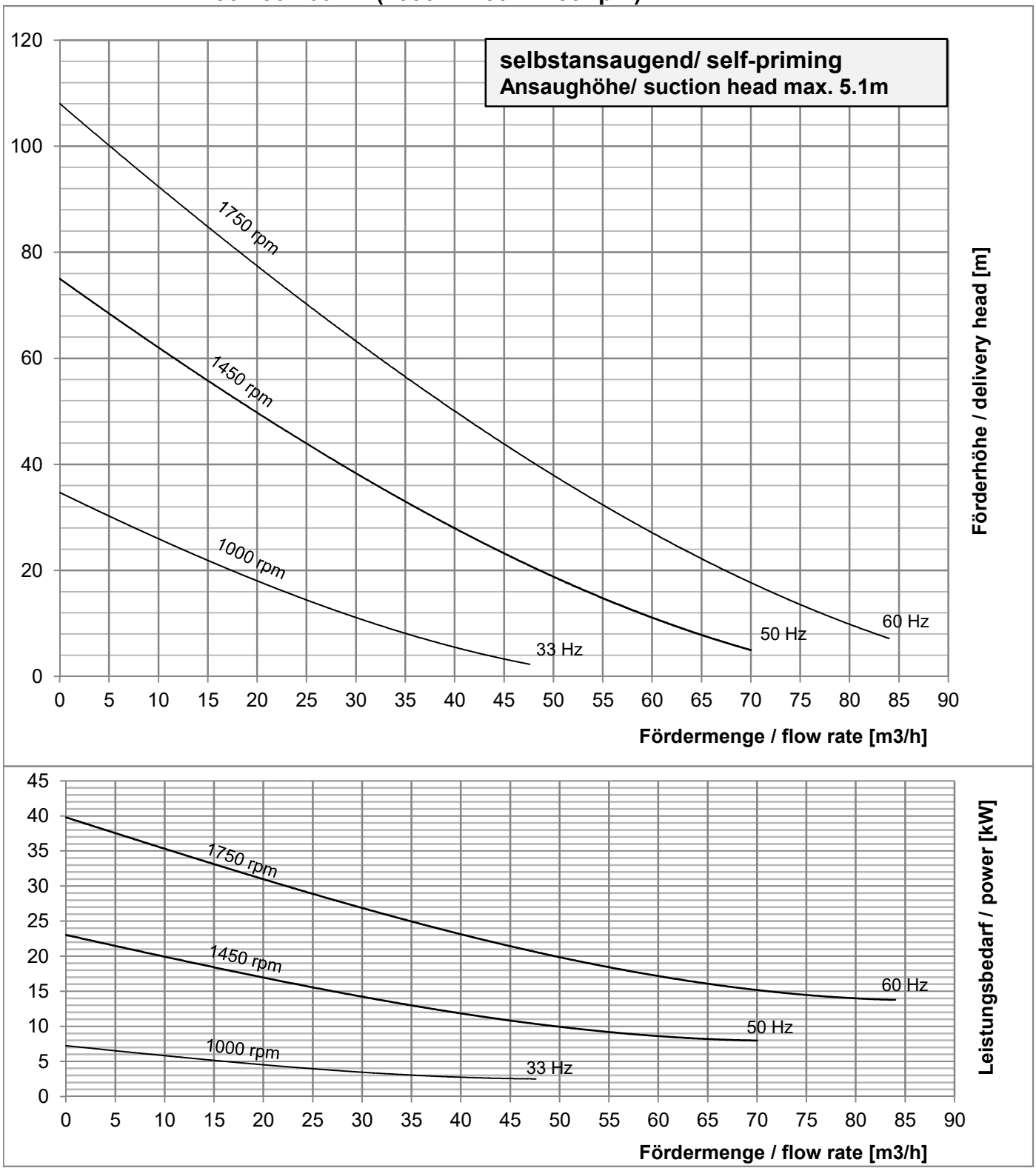
Wasser / water bei 20°C
33 / 50 / 60 Hz (1000 / 1450 / 1750 rpm)



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**HD250-8001-4X**	

Sawa PUMPEN	**Kreiselpumpe** **Typ: HD250/2P**	**Centrifugal Pump** **Type: HD250/2P**	Nummer: KL Revision: A/ 01.2010 Seite 1/1

Wasser / water bei 20°C
33 / 50 / 60 Hz (1000 / 1450 / 1750 rpm)



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**HD250-8002-4X**	

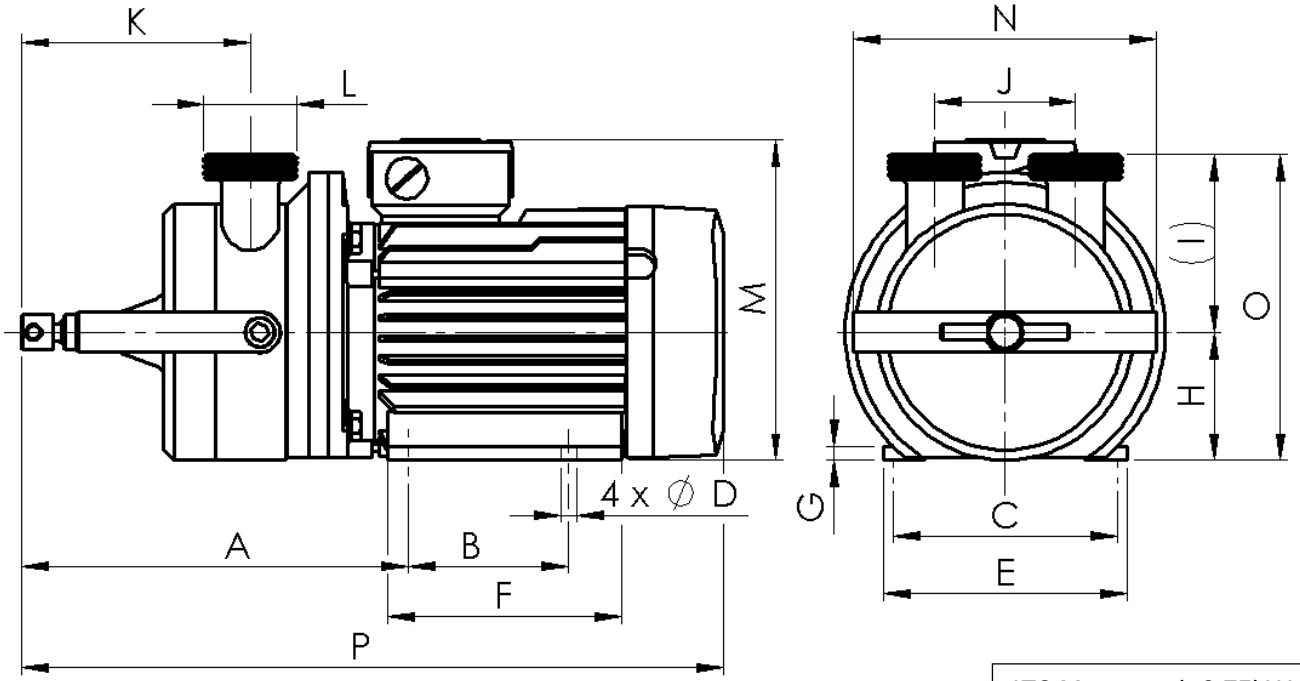
Kreiselpumpe

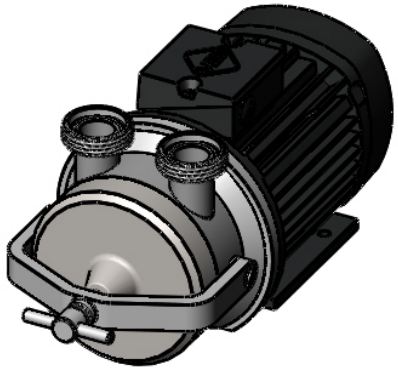
Typ : HD88-MI – HD122-MI – HD140-MI

Centrifugal Pump

Type : HD88-MI – HD122-MI – HD140-MI

Nummer : MB
Revision : C / 08.16





IE2 Motoren ab 0.75kW	Anschlüsse: Rundgewinde DIN11851

	IE2/IE3	Motorentyp	P [kW]	n [rpm]	Ausführung	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
HD88	-	K21R 71 G4	0.37	1450	B35 / Ø160	196	90	112	8	138	116	11	71	90	48	111	DN15	176	128	161	355
HD88	-	K21R 71 G2	0.55	2900	B35 / Ø160	191	90	112	7	135	114	8	71	90	48	111	DN15	183	128	161	322
HD122	-	K21R 80 K4	0.55	1450	B35 / Ø200	233	100	125	10	152	124	9	80	111	72	125	DN25	200	164	191	368
HD122	IE2	WE1R 80 G4	0.75	1450	B35 / Ø200	233	100	125	10	152	146	9	80	111	72	125	DN25	200	164	191	390
HD122	IE3	W41R 80 GX4																			
HD140	IE2	WE1R 80 G4	0.75	1450	B35 / Ø200	242	100	125	10	152	146	9	80	111	88	143	DN32	200	189	191	438
HD140	IE3	W41R 80 GX4																			
HD140	IE2	WE1R 90 S4	1.1	1450	B35 / Ø200	277	125	167	10	167	150	10	90	111	88	143	DN32	218	189	201	501
HD140	IE3	W41R 90 S4	1.1	1450	B35 / Ø200	277	125	167	10	167	150	10	90	111	88	143	DN32	218	189	201	531
HD140	IE2	WE1R 90 L4	1.5	1450	B35 / Ø200	248	125	140	10	178	155	10	90	111	88	143	DN32	218	189	191	532

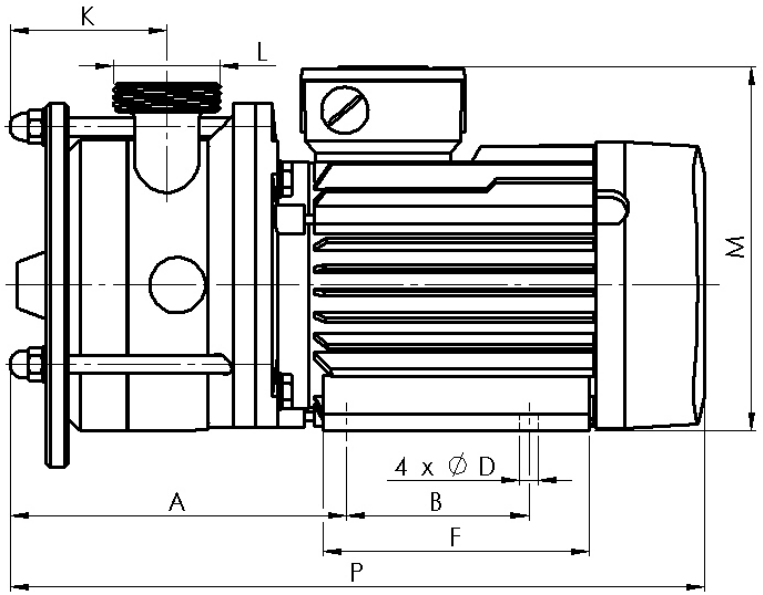
Kreiselpumpe

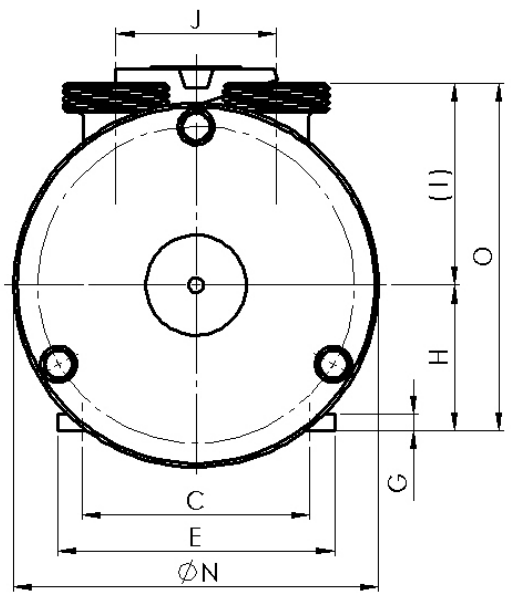
Typ : HD88-MI – HD122-MI – HD140-MI

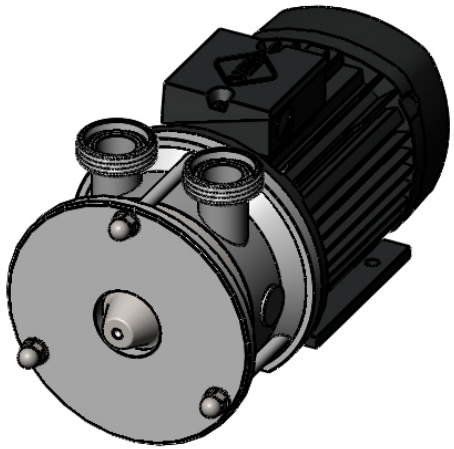
Centrifugal Pump

Type : HD88-MI – HD122-MI – HD140-MI

Nummer : MB
Revision : C / 08.16



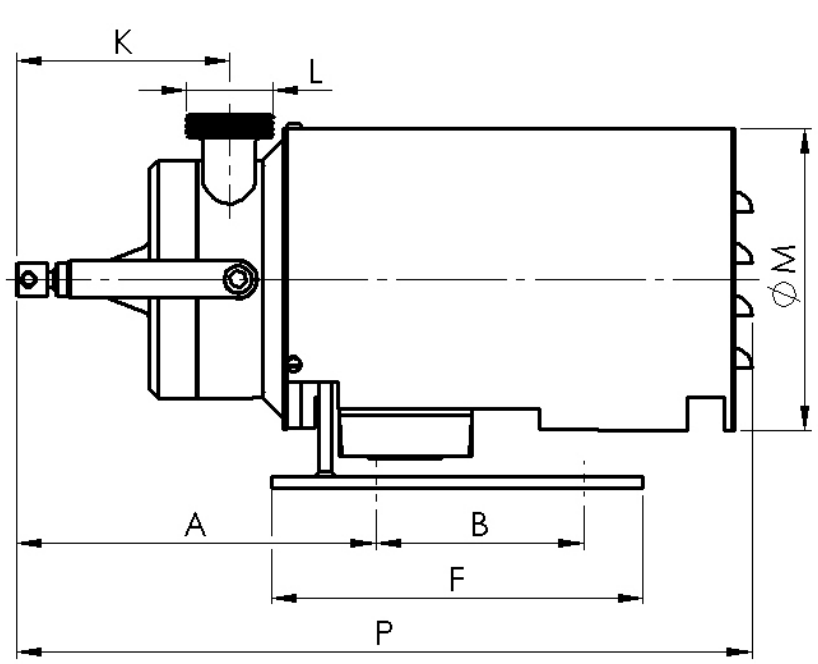


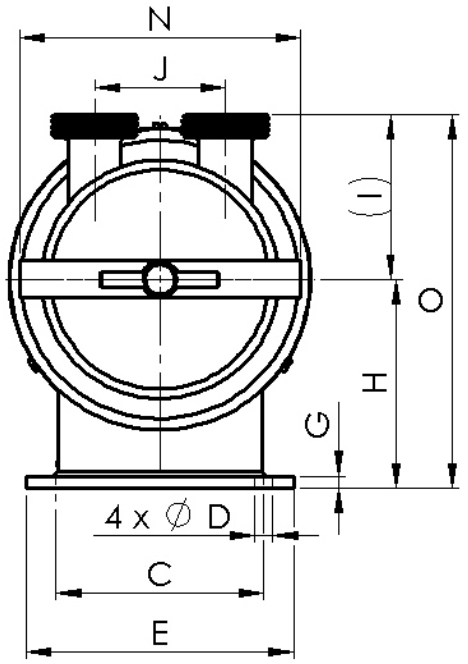


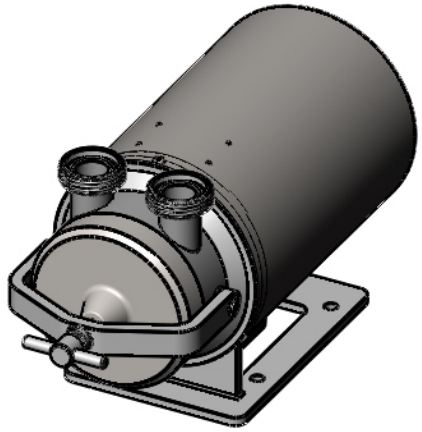
IE2 Motoren ab 0.75kW | Anschlüsse: Rundgewinde DIN11851

	IE2/IE3	Motorentyp	P [kW]	n [rpm]	Ausführung	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
HD88	-	K21R 71 G4	0.37	1450	B35 / Ø160	150	90	112	8	138	118	11	71	90	48	65	DN15	176	140	161	309
HD88	-	K21R 71 G2	0.55	2900	B35 / Ø160	145	90	112	7	135	114	8	71	90	48	65	DN15	183	140	161	276
HD122	-	K21R 80 K4	0.55	1450	B35 / Ø200	193	100	125	10	152	125	9	80	110	72	85	DN25	200	200	191	368
HD122	IE2	WE1R 80 G4	0.75	1450	B35 / Ø200	193	100	125	10	152	166	9	80	110	72	85	DN25	200	200	191	390
HD122	IE3	W41R 80 GX4																			
HD140	IE2	WE1R 80 G4	0.75	1450	B35 / Ø200	185	100	125	10	152	146	9	80	111	88	85	DN32	200	200	191	381
HD140	IE3	W41R 80 GX4																			
HD140	IE2	WE1R 90 S4	1.1	1450	B35 / Ø200	220	125	167	10	167	150	10	90	111	88	85	DN32	218	200	201	444
HD140	IE3	W41R 90 S4	1.1	1450	B35 / Ø200	220	125	167	10	167	150	10	90	111	88	85	DN32	218	200	201	474
HD140	IE2	WE1R 90 L4	1.5	1450	B35 / Ø200	191	125	140	10	178	155	10	90	111	88	85	DN32	218	200	201	475

Sawa PUMPEN	**Kreiselpumpe** Typ : HD88-MM – HD122-MM – HD140-MM	**Centrifugal Pump** Type : HD88-MM – HD122-MM – HD140-MM	Nummer : MB Revision : C / 08.16 Seite 1 / 1







IE2 Motoren ab 0.75kW

Anschlüsse: Rundgewinde DIN11851

	IE2/IE3	Motorentyp	P [kW]	n [rpm]	Ausführung	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
HD88	-	K21R 71 G4	0.37	1450	B5/Ø160	161	120	120	9	140	168	8	120	90	48	111	DN15	148	128	210	361
HD88	-	K21R 71 G2	0.55	2900																	
HD122	-	K21R 80 K4	0.55	1450	B5/Ø200	233	140	140	12	180	250	8	140	110	72	125	DN25	203	164	250	487
HD122	IE2	WE1R 80 G-4	0.75																		
HD122	IE3	W41R 80 GX4	0.75																		
HD140	IE2	WE1R 80 G4	0.75	1450	B5/Ø200	242	140	140	12	180	250	8	140	111	88	143	DN32	203	189	251	495
HD140	IE3	W41R 80 GX4	0.75																		
HD140	IE2	WE1R 90 S-4	1.1	1450	B5/Ø200	242	140	140	12	180	250	8	140	111	88	143	DN32	203	189	251	545
HD140	IE3	W41R 90 S-4	1.1																		
HD140	IE2	WE1R 90 L-4	1.5																		

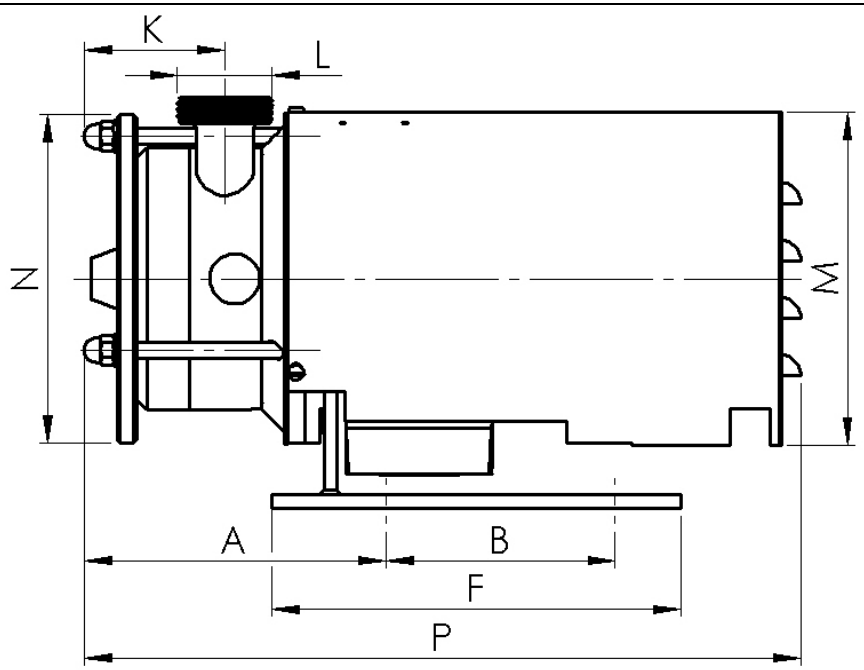
Kreiselpumpe

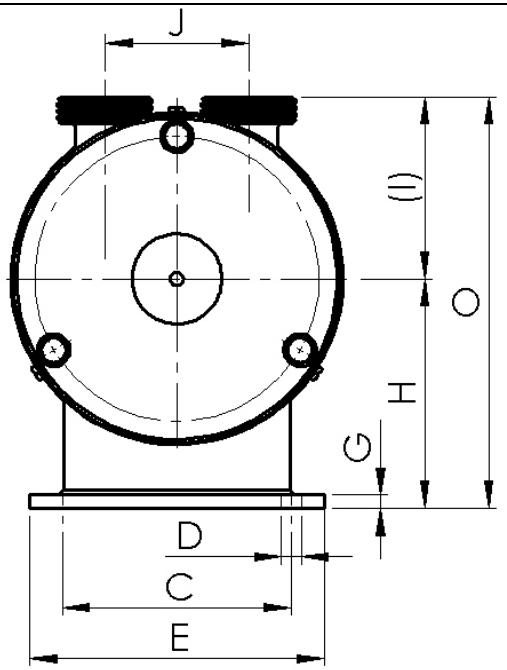
Typ : HD88-MM – HD122-MM – HD140-MM

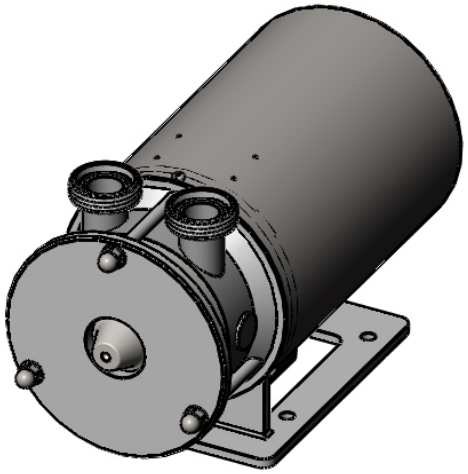
Centrifugal Pump

Type : HD88-MM – HD122-MM – HD140-MM

Nummer : MB
Revision : C / 08.16





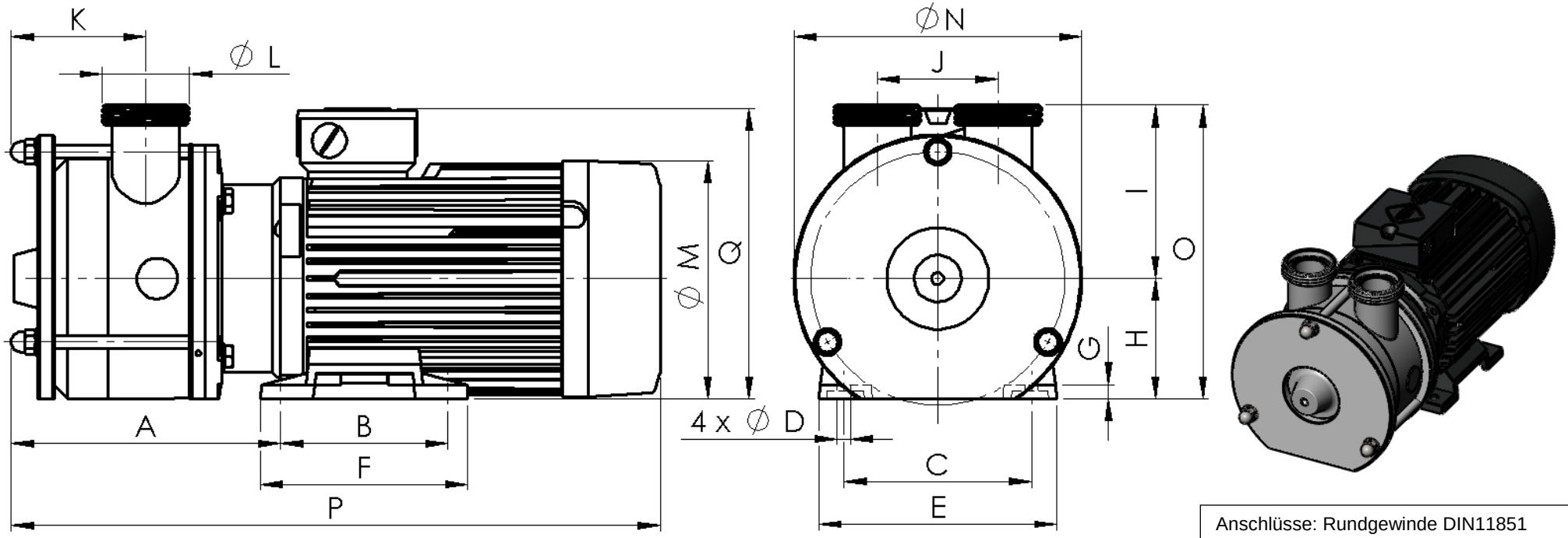


Anschlüsse: Rundgewinde DIN11851

IE2 Motoren ab 0.75kW

	IE2/IE3	Motorentyp	P [kW]	n [rpm]	Ausführung	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
HD88	-	K21R 71 G4	0.37	1450	B5/Ø160	112	120	120	9	140	168	8	120	90	48	62	DN15	148	140	210	312
HD88	-	K21R 71 G2	0.55	2900																	
HD122	-	K21R 80 K4	0.55	1450	B5/Ø200	193	140	140	12	180	250	8	140	110	72	85	DN25	203	175	250	447
HD122	IE2	WE1R 80 G4	0.75																		
HD122	IE3	W41R 80 GX4	0.75																		
HD140	IE2	WE1R 80 G4	0.75	1450	B5/Ø200	185	140	140	12	180	250	8	140	111	88	86	DN32	203	200	251	438
HD140	IE3	W41R 80 GX4	0.75																		
HD140	IE2	WE1R 90 S-4	1.1	1450	B5/Ø200	185	140	140	12	180	250	8	140	111	88	86	DN32	203	200	251	588
HD140	IE3	W41R 90 S-4	1.1																		
HD140	IE2	WE1R 90 L-4	1.5																		

Sawa PUMPEN	**Kreiselpumpe** Typ : HD160-MI – HD190-MI – HD220-MI	**Centrifugal Pump** Type : HD160-MI – HD190-MI – HD220-MI	Nummer : MB Revision : C / 08.16 Seite 1 / 1



Anschlüsse: Rundgewinde DIN11851

	IE2/IE3	Motorentyp	P [kW]	n [rpm]	Ausführung	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
HD160	IE2	WE1R 90 L-4	1.5	1450	B35 / Ø200	201	125	140	10	177	154	11	90	130	90	101	DN40	178	215	220	484	217
HD160	IE2	WE1R 100 L-4	2.2	1450	B35 / Ø250	208	140	160	12	188	205	11	100	150	90	101	DN40	196	215	250	477	237
HD160	IE2	WE1R 100 LX4	3.0	1450	B35 / Ø250	208	140	160	12	192	175	15	100	150	90	101	DN40	198	215	250	507	237
HD160	IE3	W41R 100 LZ4	3.0	1450	B35 / Ø250	208	140	160	12	193	175	18	100	150	90	101	DN40	196	215	250	546	236
HD190	IE2	WE1R 100 LX4	3.0	1450	B35 / Ø250	232	140	160	12	192	175	15	100	160	105	125	DN50	198	250	260	531	237
HD190	IE3	W41R 100 LZ4	3.0	1450	B35 / Ø250	232	140	160	12	193	175	18	100	160	105	125	DN50	196	250	260	571	236
HD190	IE2	WE1R 112 M-4	4.0	1450	B35 / Ø250	239	140	190	12	225	180	18	112	160	105	125	DN50	210	250	272	571	248
HD220	IE2	WE1R 132 M-4	5.5	1450	B35 / Ø300	278	140	216	12	256	180	16	132	180	120	138	DN65	260	300	312	638	330
HD220	IE2	WE1R 132 S-4	7.5	1450	B35 / Ø300	278	178	216	12	256	218	16	132	180	120	138	DN65	260	300	312	638	330
HD220	IE2	WE1R 160 M-4	11.0	1450	B35 / Ø350	300	210	254	15	296	257	18	160	200	120	138	DN65	320	300	360	652	401

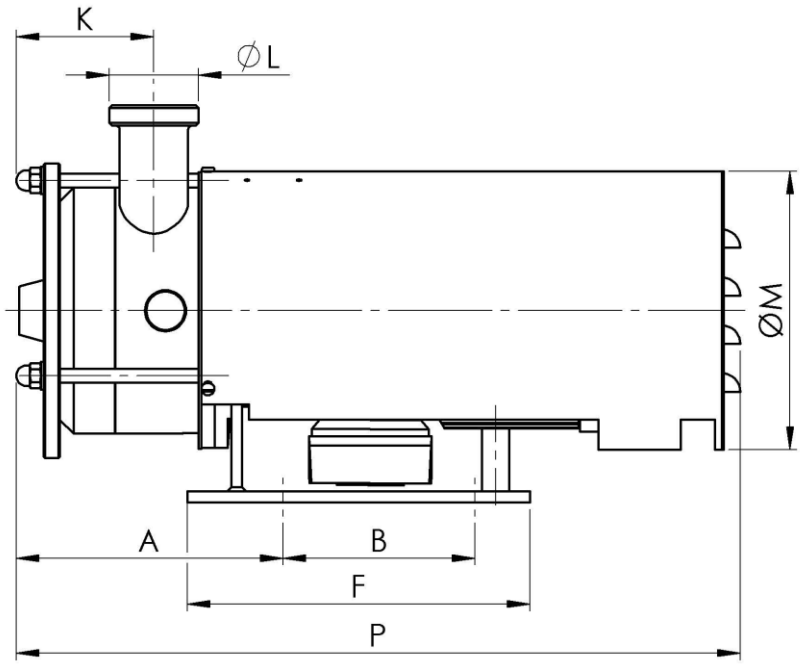
Kreiselpumpe

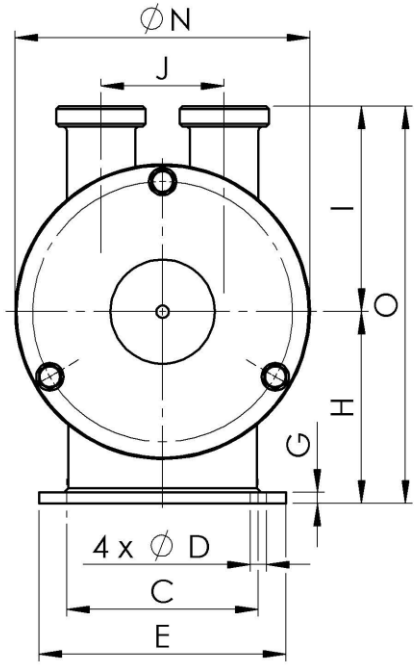
Typ : HD160-MM – HD190-MM – HD220-MM

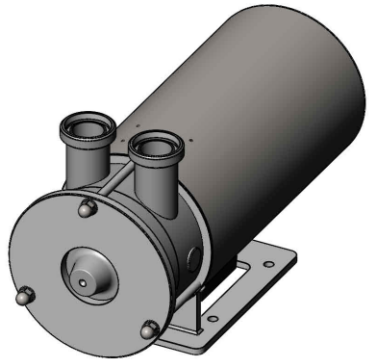
Centrifugal Pump

Type : HD160-MM – HD190-MM – HD220-MM

Nummer : MB
Revision : C / 08.16
Seite 1 / 1



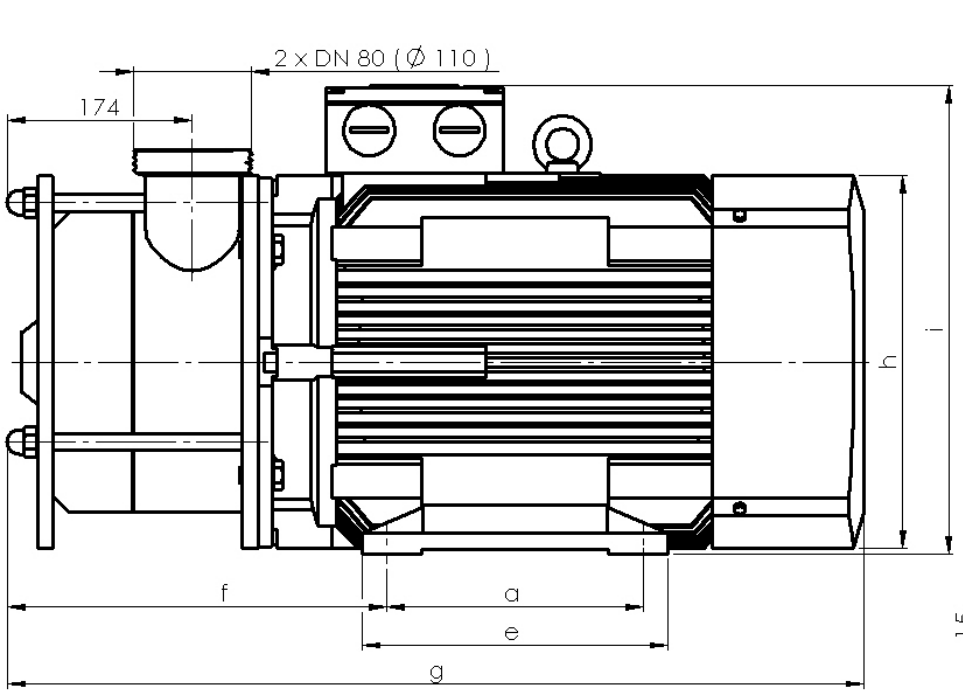


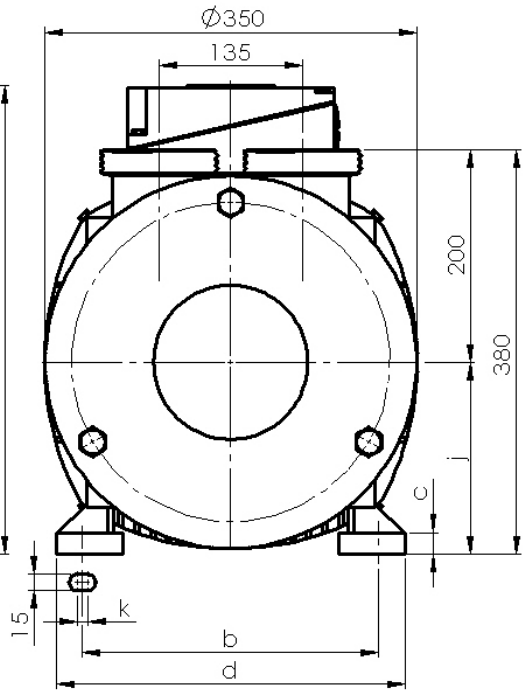


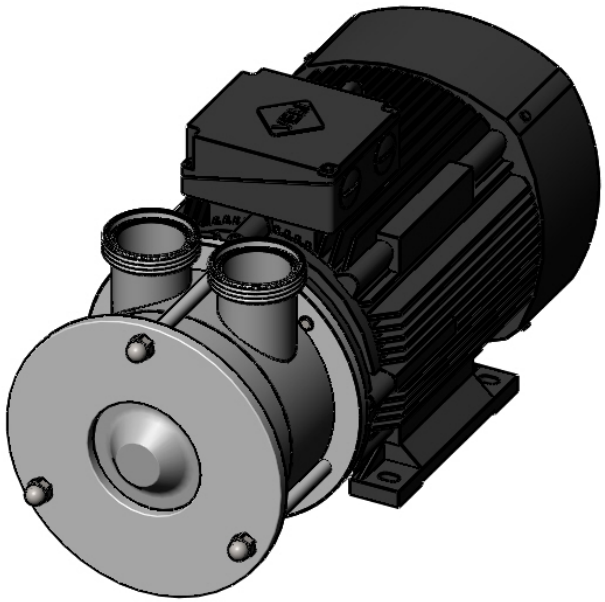
Anschlüsse: Rundgewinde DIN11851

	IE2/IE3	Motorentyp	P [kW]	n [rpm]	Ausführung	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
HD160	IE2	WE1R 90 L-4	1.5	1450	B5 / Ø200	195	140	140	12	180	250	8	140	130	90	101	DN40	203	215	270	529
HD160	IE2	WE1R 100 L-4	2.2	1450	B5 / Ø250	128	180	180	14	220	230	8	160	150	90	101	DN40	253	215	310	583
HD160	IE2	WE1R 100 LX4	3.0																		
HD160	IE3	W41R 100 LZ4	3.0																		
HD190	IE2	WE1R 100 LX4	3.0	1450	B5 / Ø250	152	180	180	14	220	230	8	160	160	105	125	DN50	253	250	320	608
HD190	IE3	W41R 100 LZ4	3.0																		
HD190	IE2	WE1R 112 M-4	4.0																		
HD220	IE2	WE1R 132 M-4	5.5	1450	B5 / Ø300	208	200	200	14	250	300	8	230	180	120	138	DN65	303	300	410	702
HD220	IE2	WE1R 132 S-4	7.5																		
HD220	IE2	WE1R 160 M-4	11.0	1450	B5 / Ø350	208	250	200	14	250	350	8	277	200	120	138	DN65	353	300	477	724

Sawa PUMPEN	**Kreiselpumpe** Typ : HD250-MI	**Centrifugal Pump** Type : HD250-MI	Nummer : MB Revision : C / 08.16 Seite 1 / 1

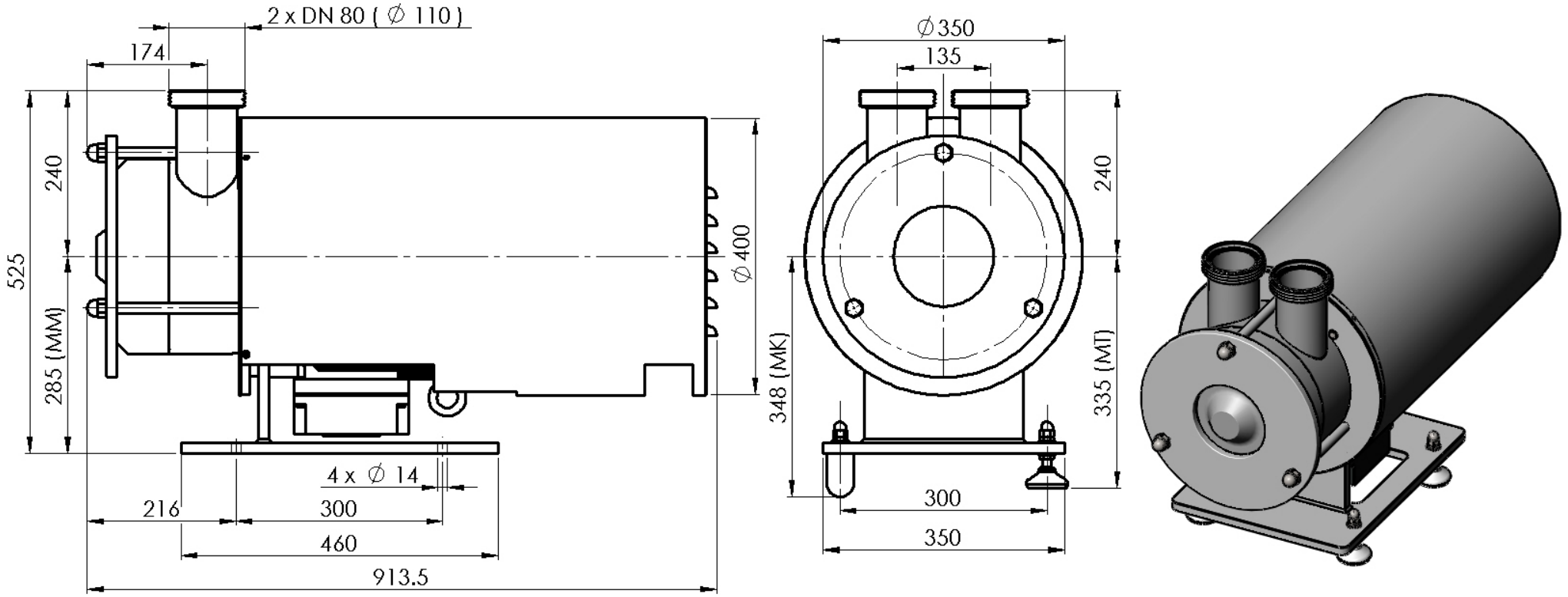






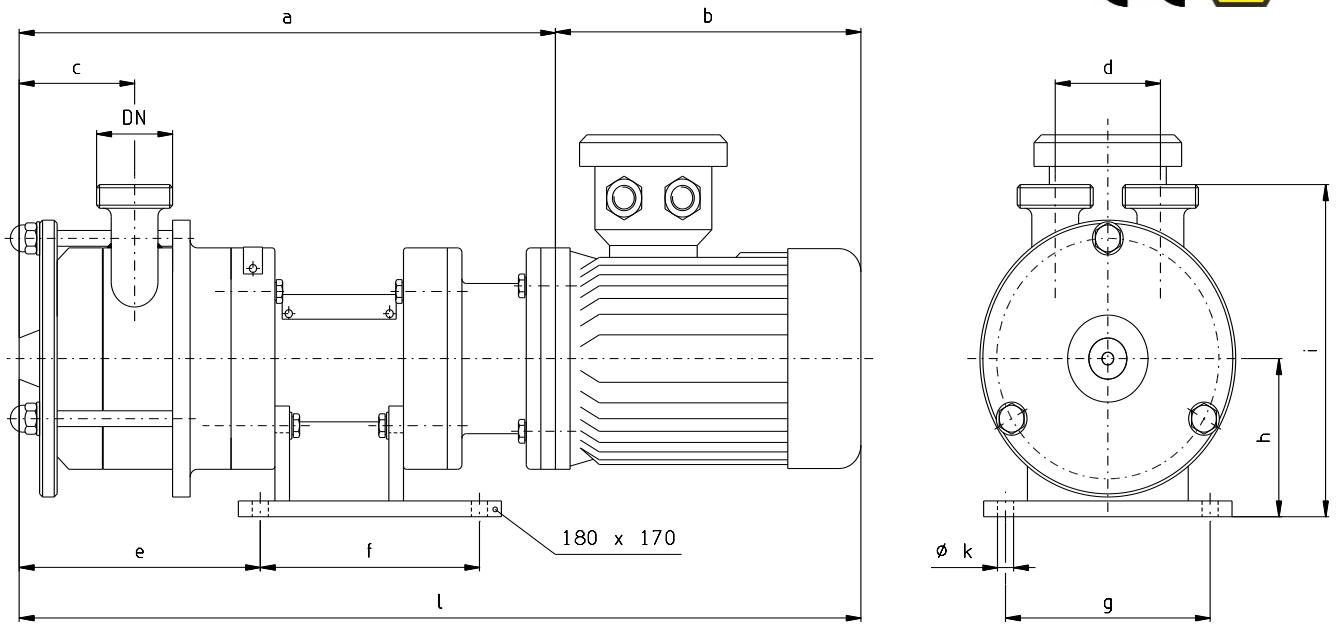
Motorentyp	P [kW]	n [rpm]	Ausführung	a	b	c	d	e	f	g	h	i	j	k
IE2 - WE1R 160 M4	11	1450	B35 / Ø350	210	254	18	296	257	344	297	313	401	160	5
IE2 - WE1R 160 L4	15	1450	B35 / Ø350	254	254	18	296	301	344	793	313	401	160	5
IE2 - WE1R 180 M4	18.5	1450	B35 / Ø350	254	279	20	328	288	344	806	351	440	180	10
Anschlüsse	DN80 (Ø110) Rundgewinde DIN11851													

Sawa PUMPEN	**Kreiselpumpe** Typ : HD250-MM /-MT /-MK	**Centrifugal Pump** Type : HD250-MM /-MT /-MK	Nummer : MB Revision : D / 08.16 Seite 1 / 1



Motorentyp	P [kW]	n [rpm]	Ausführung
IE2 - WE1R 180 M4	18.5	1450	B5 / Ø350
IE2 - WE1R 160 L4	15	1450	B5 / Ø350
IE2 - WE1R 160 M4	11	1450	B5 / Ø350
Anschlüsse	DN80 (Ø110) Rundgewinde DIN11851		

Sawa PUMPEN	**Kreiselpumpe** Typ : HD-MW-ATEX	**Centrifugal Pump** Type : HD-MW-ATEX	Nummer : MB Revision : B / 08.16 Seite 1 / 1

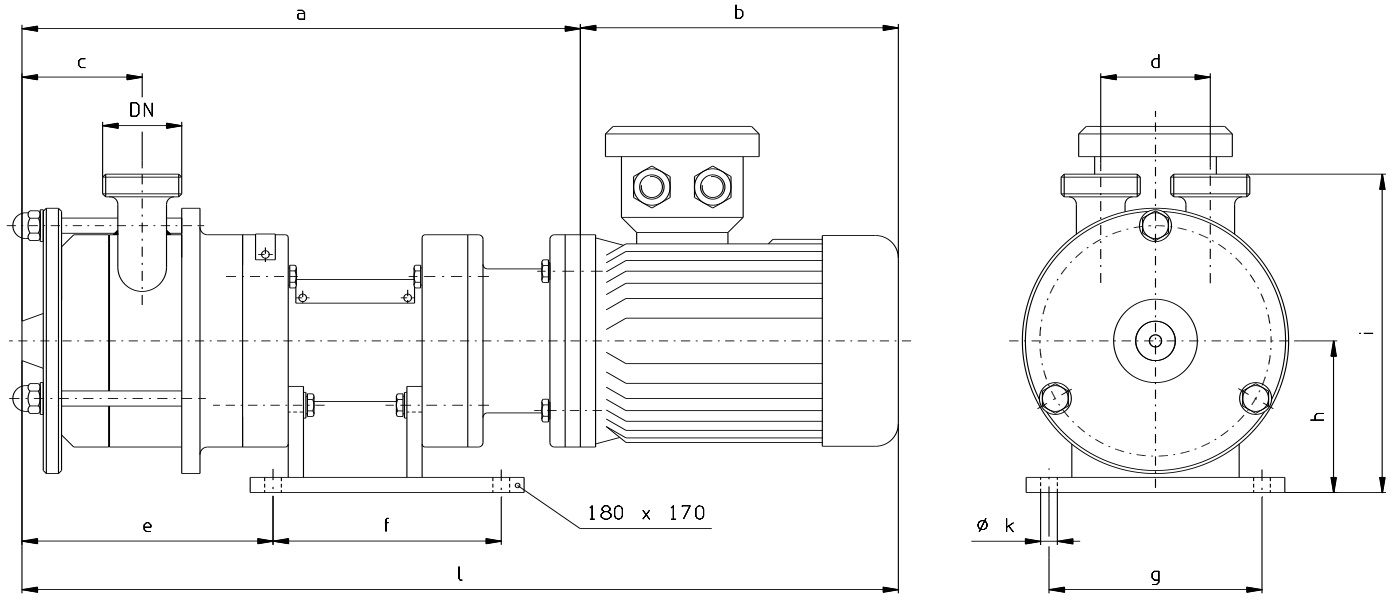


Pumpen-Ausführung / pump execution: CE Ex II 2G Ex c X

Typ	DN	a	b[1]	c	d	e	f	g	h	i	k	l[1]	P [kW]	n [rpm]	Motoren Daten
HD88	Rundgewinde DIN11851 DN15	306	176	65	48	124	150	140	100	190	11	492	0.37	1450	EEx e II T3
		316	209									525	0.55	2900	
													0.75	3500	
HD122	Rundgewinde DIN11851 DN25	367	209	79	72	165	150	140	100	210	11	576	0.55	1450	EEx e II T3
													0.75	1450	
		377	225									602	1.0	1750	

[1] kann je nach Motorenlieferant variieren! (Basisdaten KPER)

Sawa PUMPEN	**Kreiselpumpe** Typ : HD-MW-ATEX	**Centrifugal Pump** Type : HD-MW-ATEX	Nummer : MB Revision : B / 08.16 Seite 1 / 1



Pumpen-Ausführung / pump execution: CE Ex II 2G Ex c X

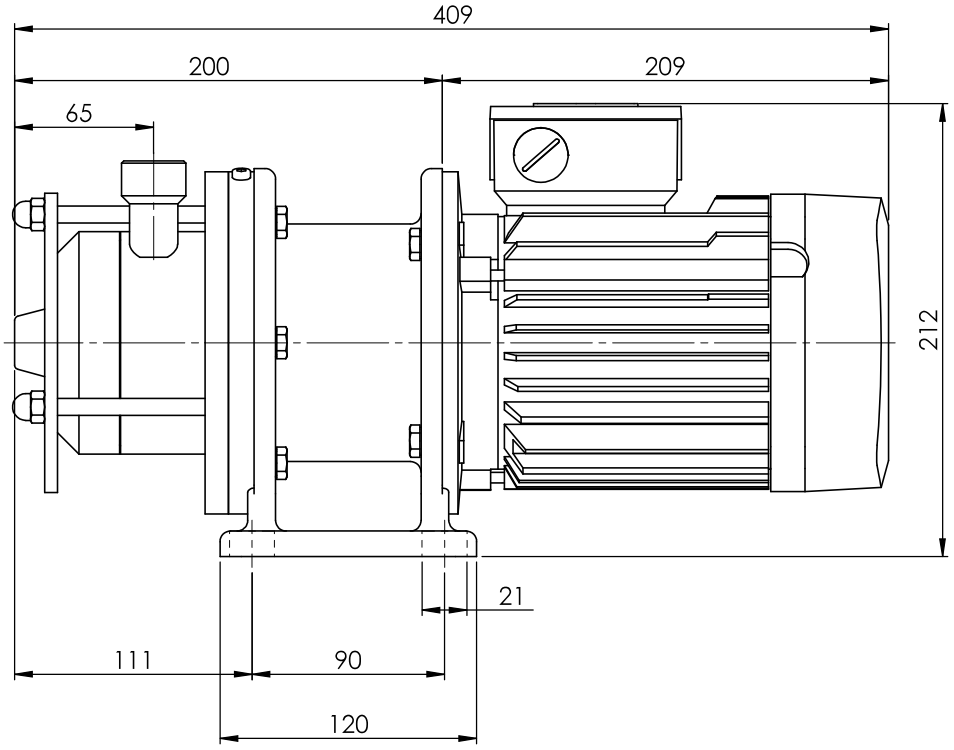
Typ	DN	a	b[1]	c	d	e	f	g	h	i	k	l[1]	P [kW]	n [rpm]	Motoren Daten
HD140	Rundgewinde DIN11851 DN32	407	209	82	88	144	245	185	132	242	13.5	616	1.0	1450	EEx e II T3
			225									632	1.35		
		422	271									693	2.5		
HD160	Rundgewinde DIN11851 DN32	443	225	99	90	181	245	185	132	262	13.5	668	1.35	1450	EEx e II T3
		458	271									729	2		
			331									789	3.6		
HD190	Rundgewinde DIN11851 DN32	466	271	177	105	188	245	185	132	292	13.5	737	2.5	1450	EEx e II T3
			331									797	3.6		
			350									816	4.0	1450	EEx e II T4

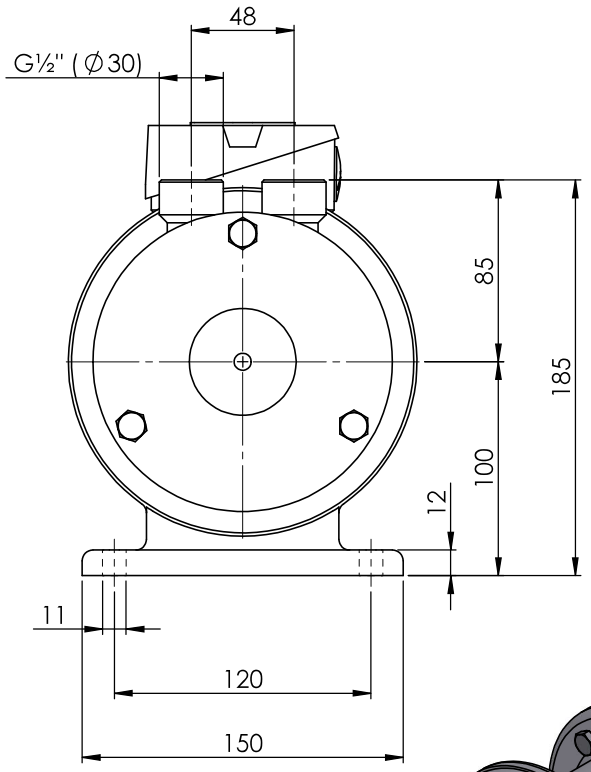
[1] kann je nach Motorenlieferant variieren! (Basisdaten KPER)

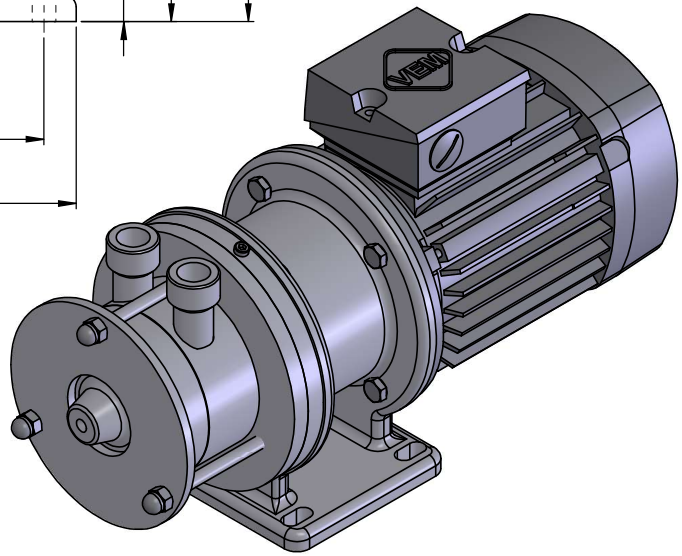
Kreiselpumpe
Typ: HDM88-ZZ

centrifugal pump
Type: HDM88-ZZ

Massblatt Dimension sheet		
	Name	Datum
Erstellt	CM	15.09.2020
Freigegeben	RE	16.09.2020

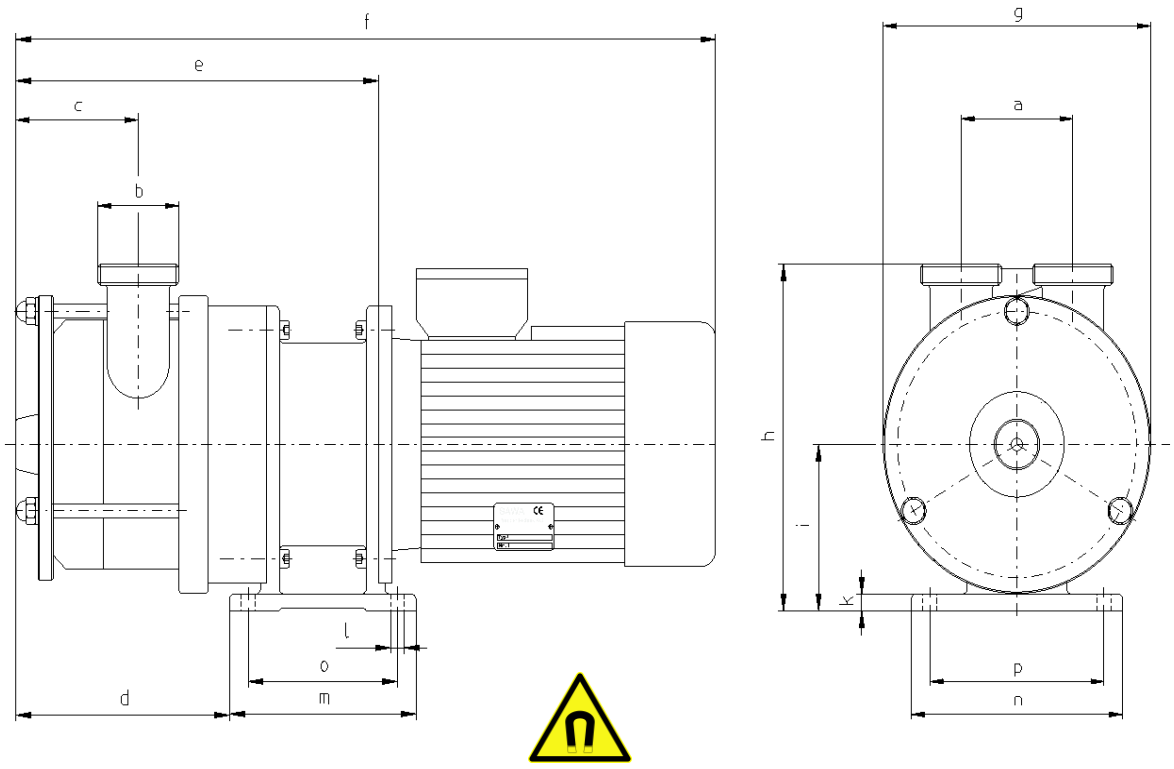






Motorentyp / Motor type	P [kW]	n [rpm]	Ausführung / Execution
KPER 80 K2	0.75	2810	B14 / Ø160
Anschlüsse / Connections	Zoll Innengewinde G½"		
Restentleerung / Draining			

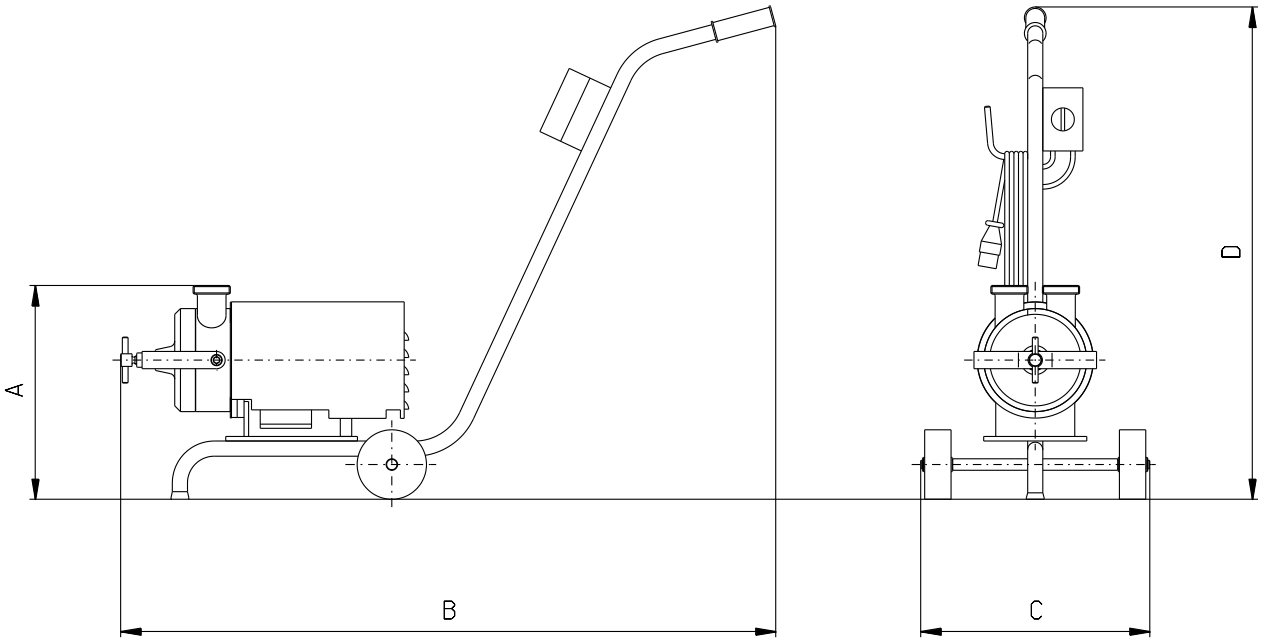
Sawa PUMPEN	**Kreiselpumpe mit Magnetkupplung** Typ : HDM160/2-MZ (21Nm)	**Centrifugal Pump with Magnet Coupling** Type : HDM160/2-MZ (21Nm)
	Nummer : MB Revision : E / 08.16 Seite 1 / 1	



Typ	a	b	c	d	e	f	g	h	i	k	l	m	n	o	p		P [kW]	n [rpm]
HDM160/2	90	Rd 65x1/6" / NW40	98.5	172	292	563	215	250	120	12	11	150	170	120	140		1.50 2,20	1000 1450

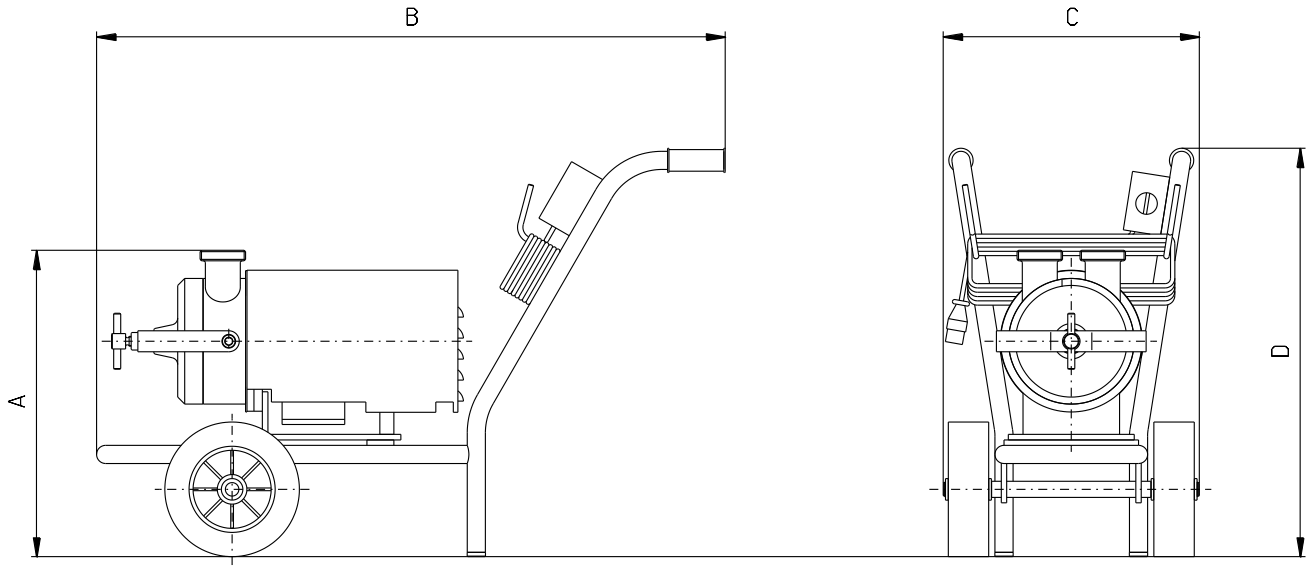
SAWA Pumpentechnik AG	**CH - 9113 Degersheim**	**HDM160-5002-4X**

Sawa PUMPEN	**Kreiselpumpe** Typ : HD-MM (fahrbar)	**Centrifugal Pump** Type : HD-MM (on Trolley)	Nummer : MB Revision : E / 06.92 Seite 1 / 1



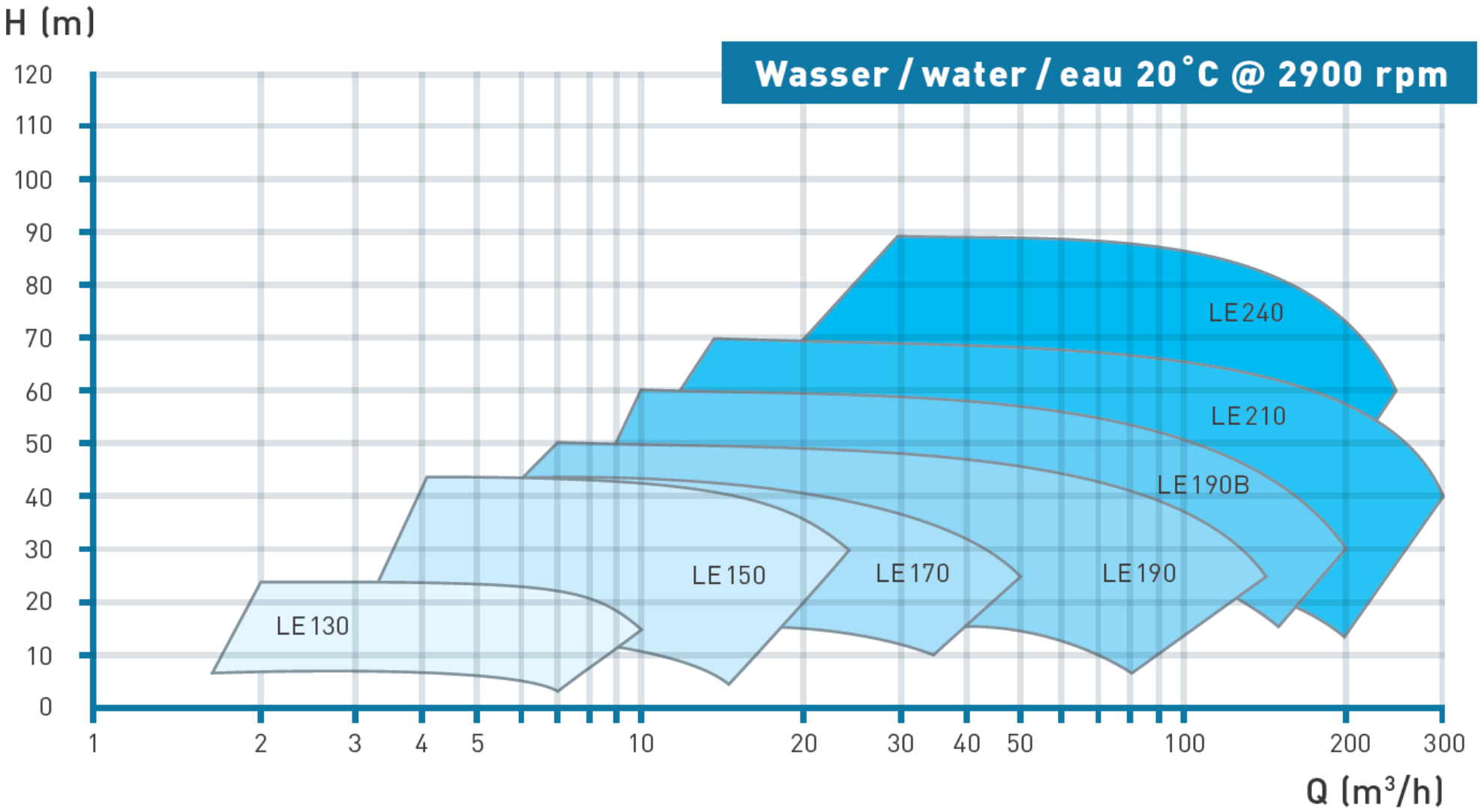
Typ	P [kW]	n [1/min]	A	B	C	D
HD88	0,37 - 0,55	1450 / 2900	315	1057	320	895
HD122	0,55	1450	345	1080	320	895
HD140	0,75 - 1,50	1450	355	1090	320	895

Sawa PUMPEN	**Kreiselpumpe** Typ : HD-MM (fahrbar)	**Centrifugal Pump** Type : HD-MM (on Trolley)	Nummer : MB Revision : B / 04.07 Seite 1 / 1



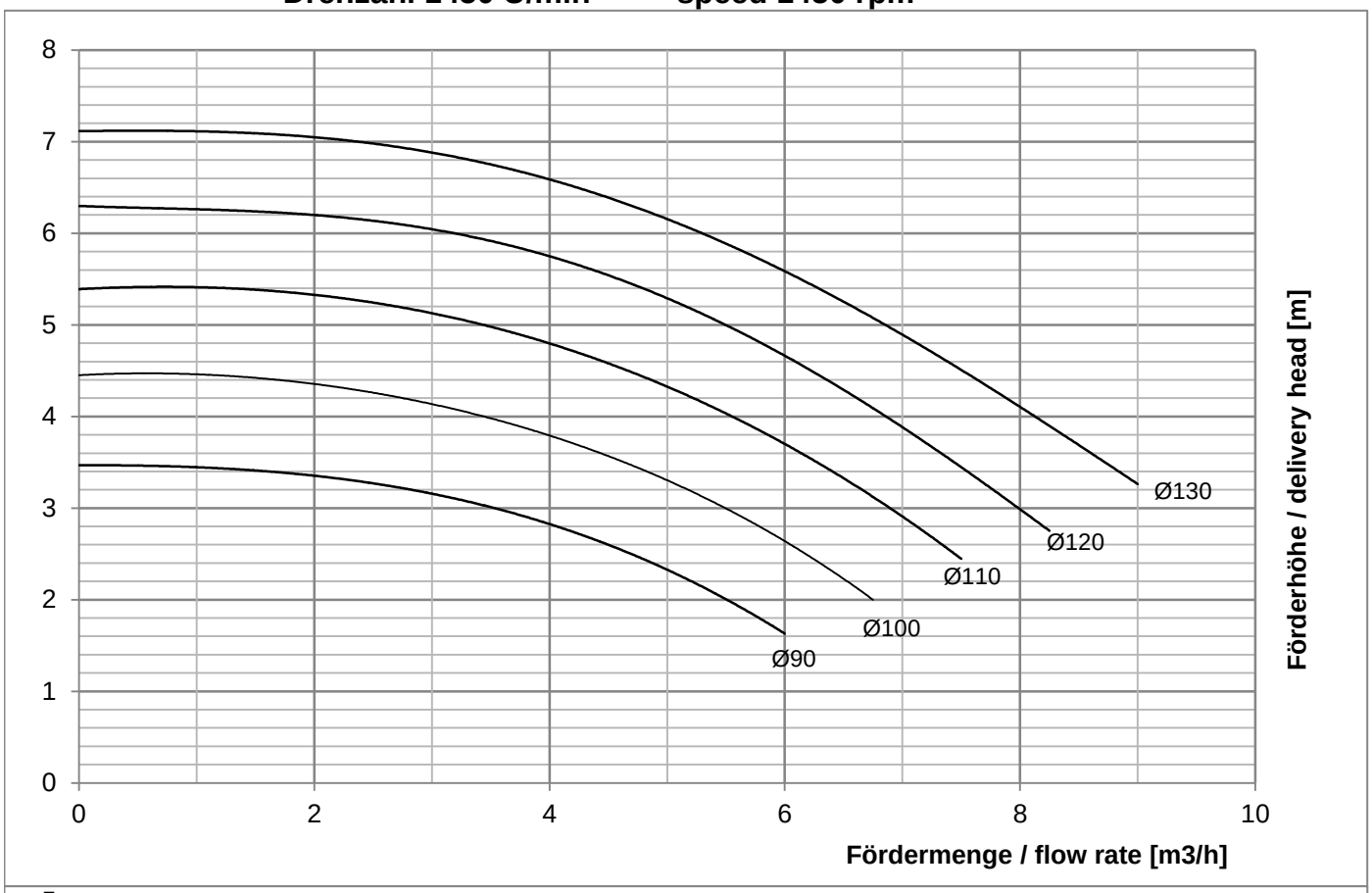
Typ	P [kW]	n [1/min]	A	B	C	D
HD140	0,75 - 1,50	1450	470	ca. 1200	450	770
HD160	1,50 - 2,20	1450	490	ca. 1200	450	770
HD190	3,00 - 4,00	1450	540	ca. 1200	450	770
HD220	5,50 - 11,00	1450	630	ca. 1200	450	770

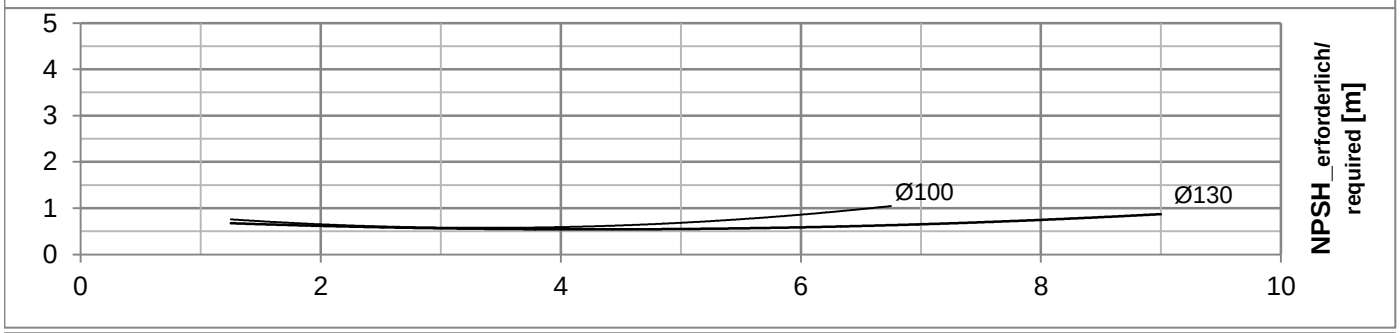
Sawa PUMPEN	**Kreiselpumpe** (normalsaugend) **Typ : LE**	**Centrifugal Pump** (normal priming) **Type : LE**	Nummer : KL Revision : B / 09.16 Seite 1 / 1

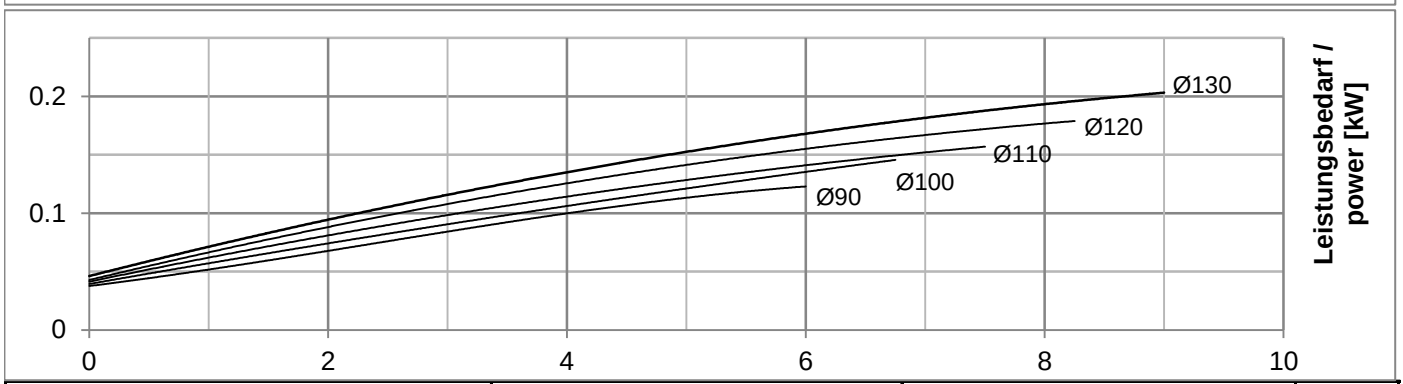


Sawa PUMPEN	**Kreiselpumpe** **Typ: LE130-32/20**	**Centrifugal Pump** **Type: LE130-32/20**	Nummer: KL Revision: D/ 3.2020 Seite 1/1

Wasser bei 20°C **water at 20°C**
Drehzahl 1450 U/min **speed 1450 rpm**



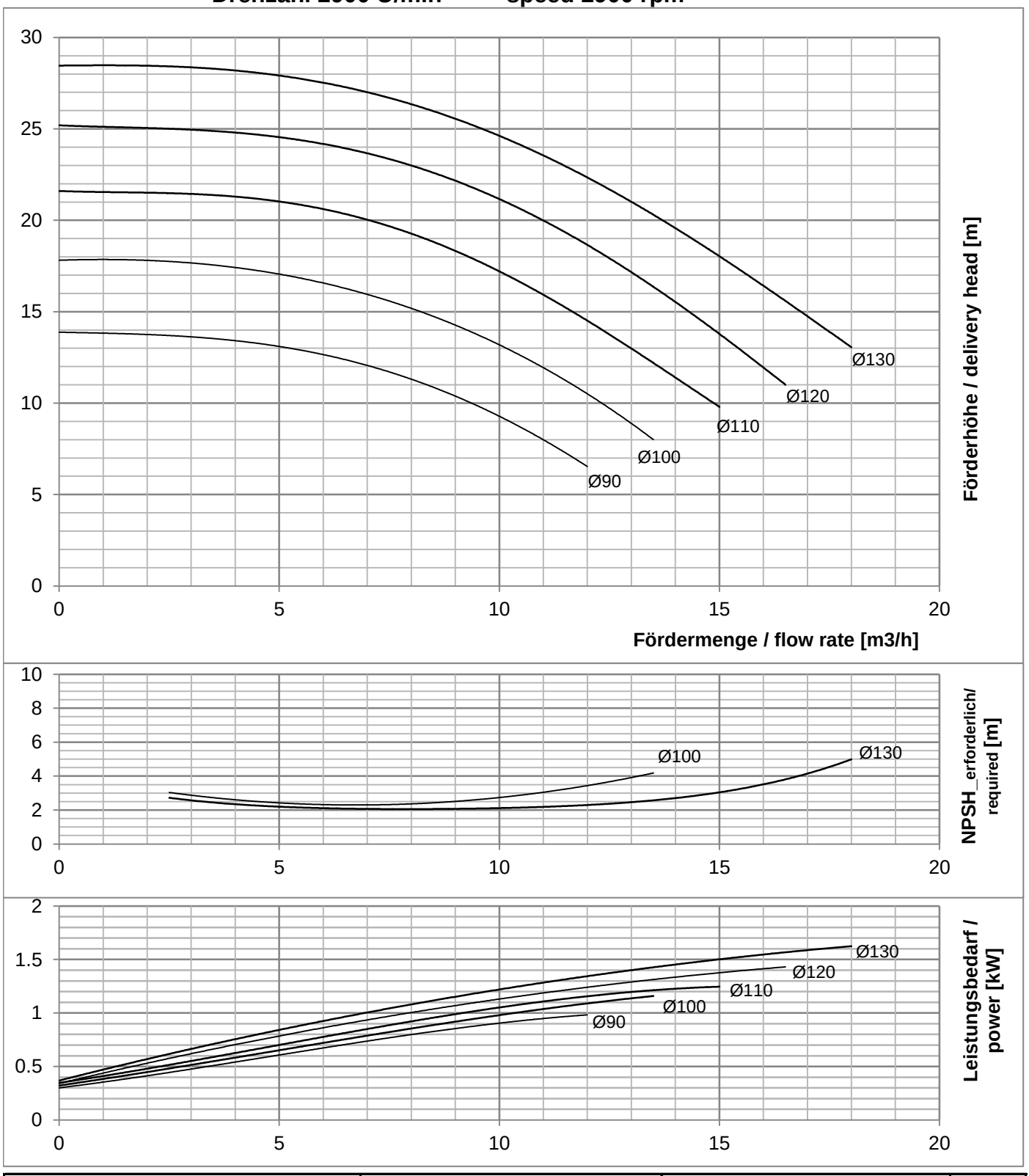




SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LE130-8002-4X**	25Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ: LE130-32/20**	**Centrifugal Pump** **Type: LE130-32/20**	Nummer: KL Revision: D/ 3.2020 Seite 1/1

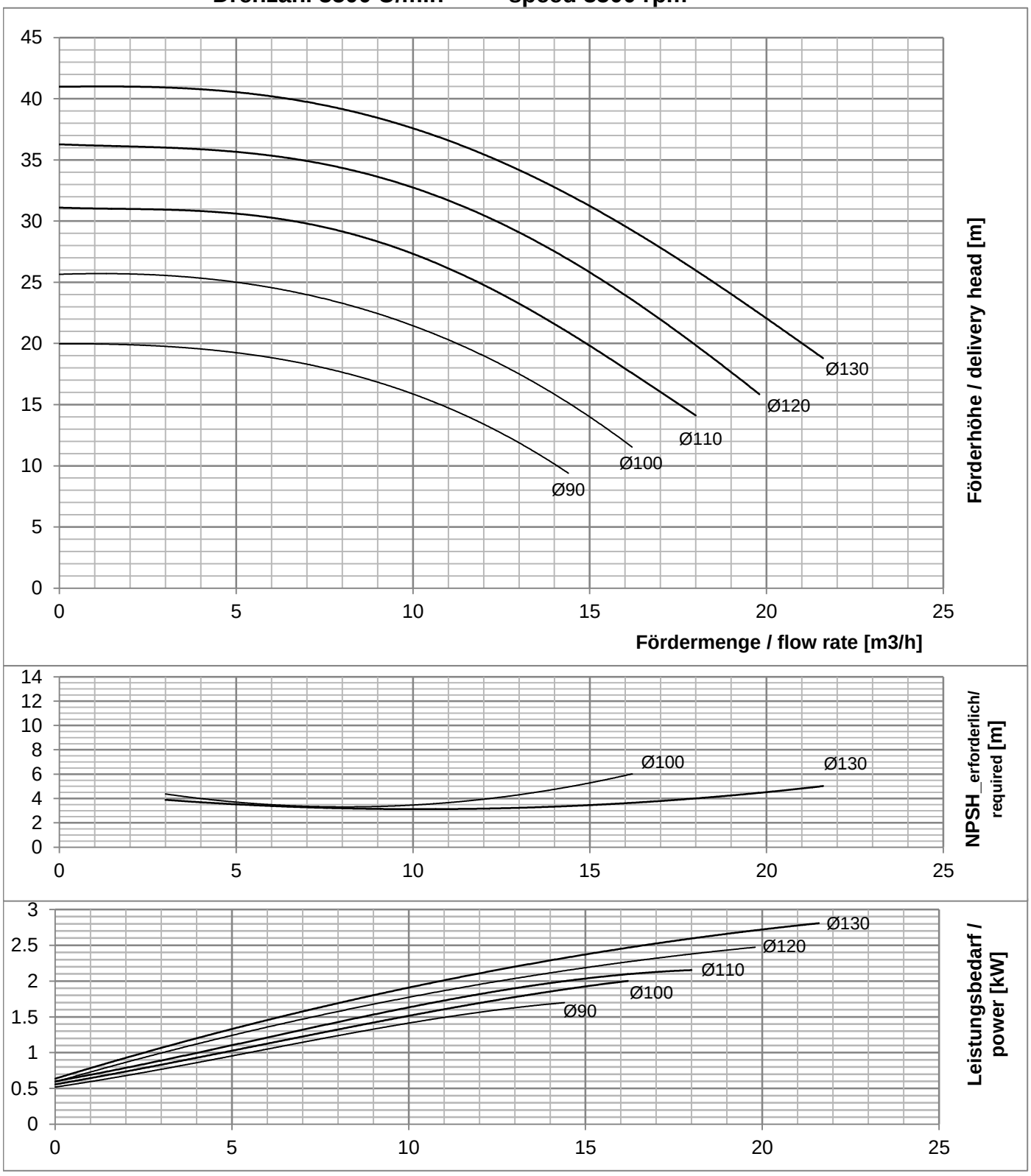
Wasser bei 20°C **water at 20°C**
Drehzahl 2900 U/min **speed 2900 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LE130-8001-4X**	50Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ: LE130-32/20**	**Centrifugal Pump** **Type: LE130-32/20**	Nummer: KL Revision: D/ 3.2020 Seite 1/1

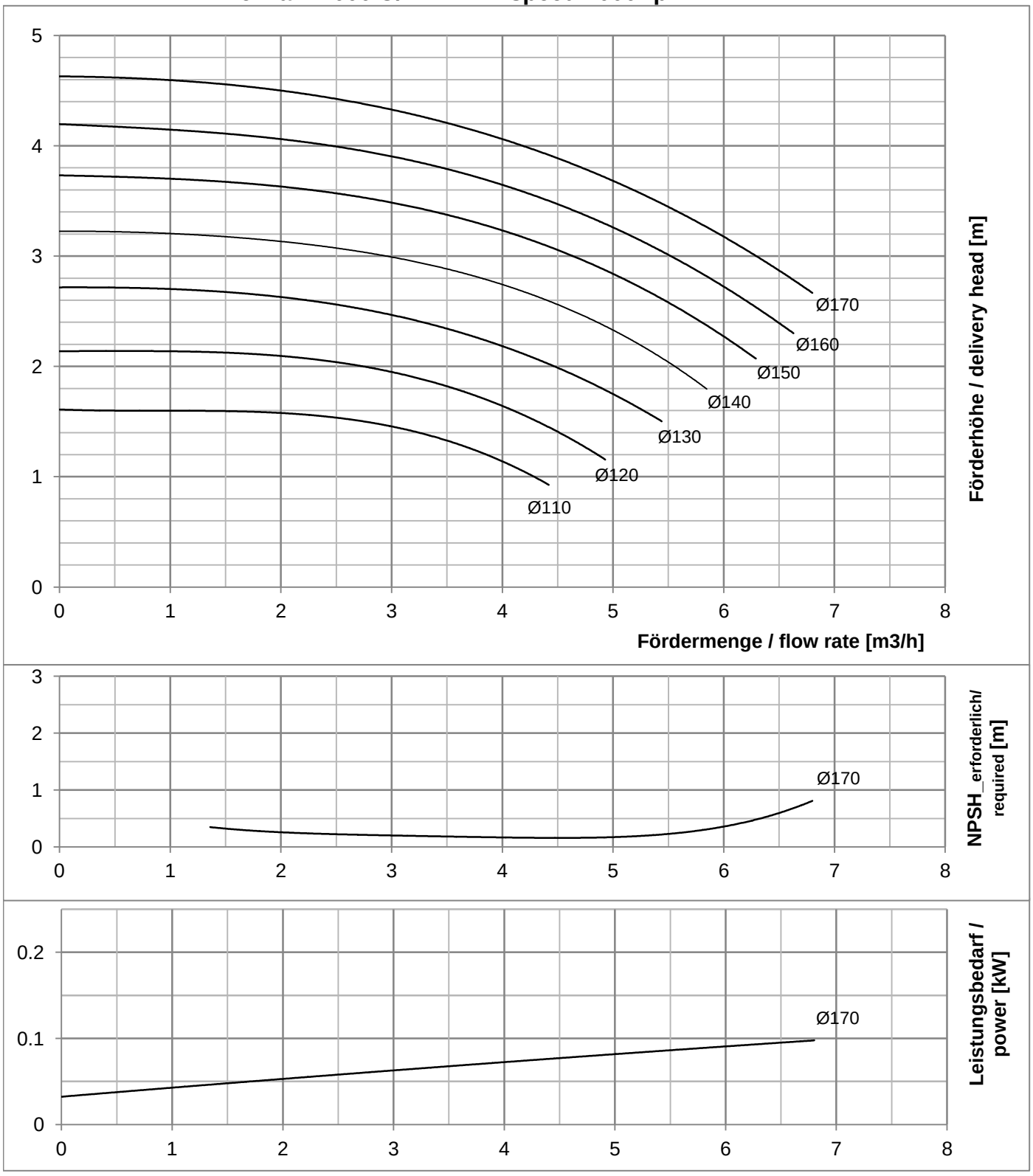
Wasser bei 20°C **water at 20°C**
Drehzahl 3500 U/min **speed 3500 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LE130-8003-4X**	60Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ: LE150-50/25**	**Centrifugal Pump** **Type: LE150-50/25**	Nummer: KL Revision: A/ 08.2016 Seite 1/1

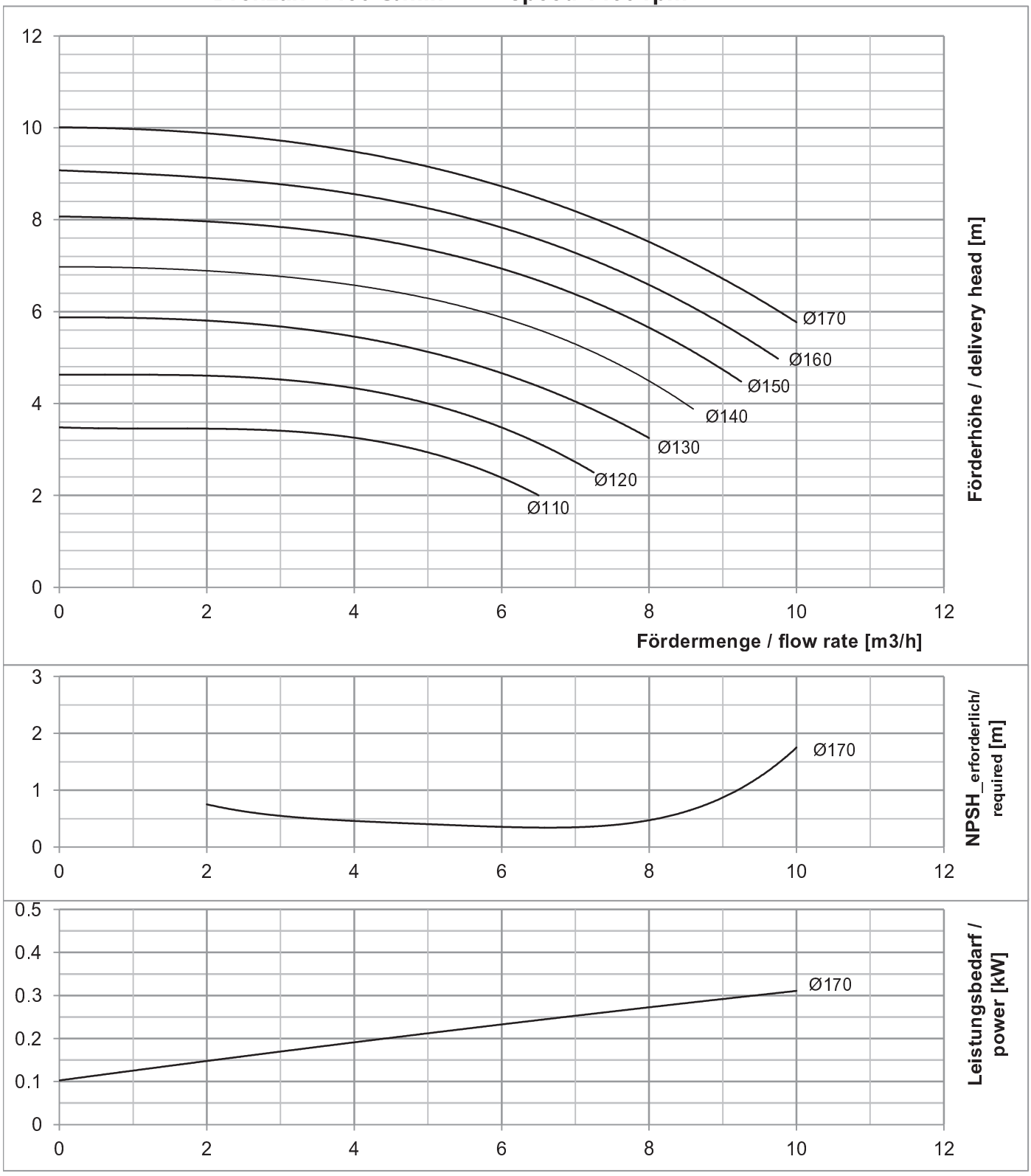
Wasser bei 20°C **water at 20°C**
Drehzahl 1000 U/min **speed 1000 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LE150-8004-4X**	17Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ: LE150-50/25**	**Centrifugal Pump** **Type: LE150-50/25**	Nummer: KL Revision: A/ 04.2016 Seite 1/1

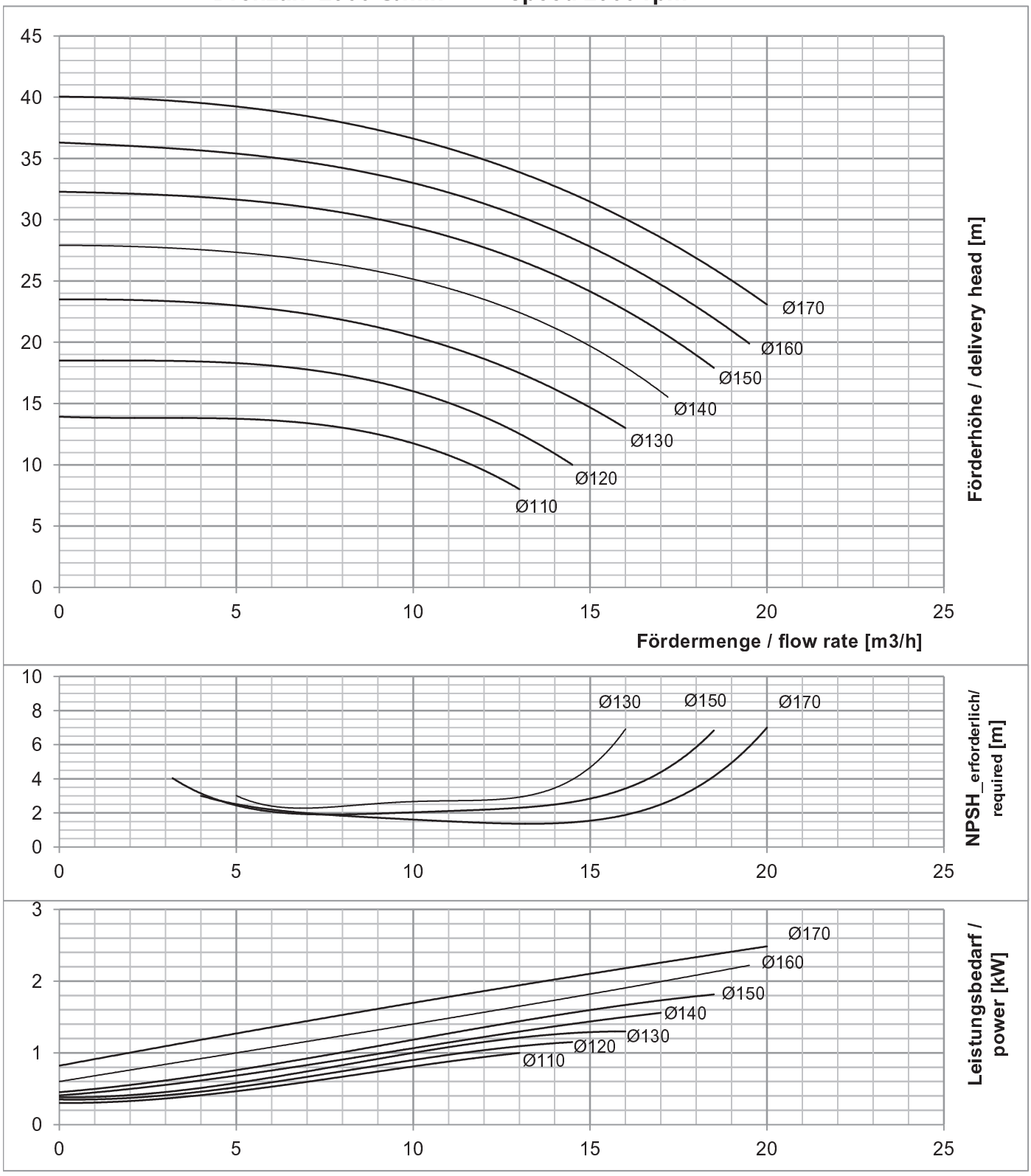
Wasser bei 20°C **water at 20°C**
Drehzahl 1450 U/min **speed 1450 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LE150-8002-4X**	25Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ: LE150-50/25**	**Centrifugal Pump** **Type: LE150-50/25**	Nummer: KL Revision: A/ 04.2016 Seite 1/1

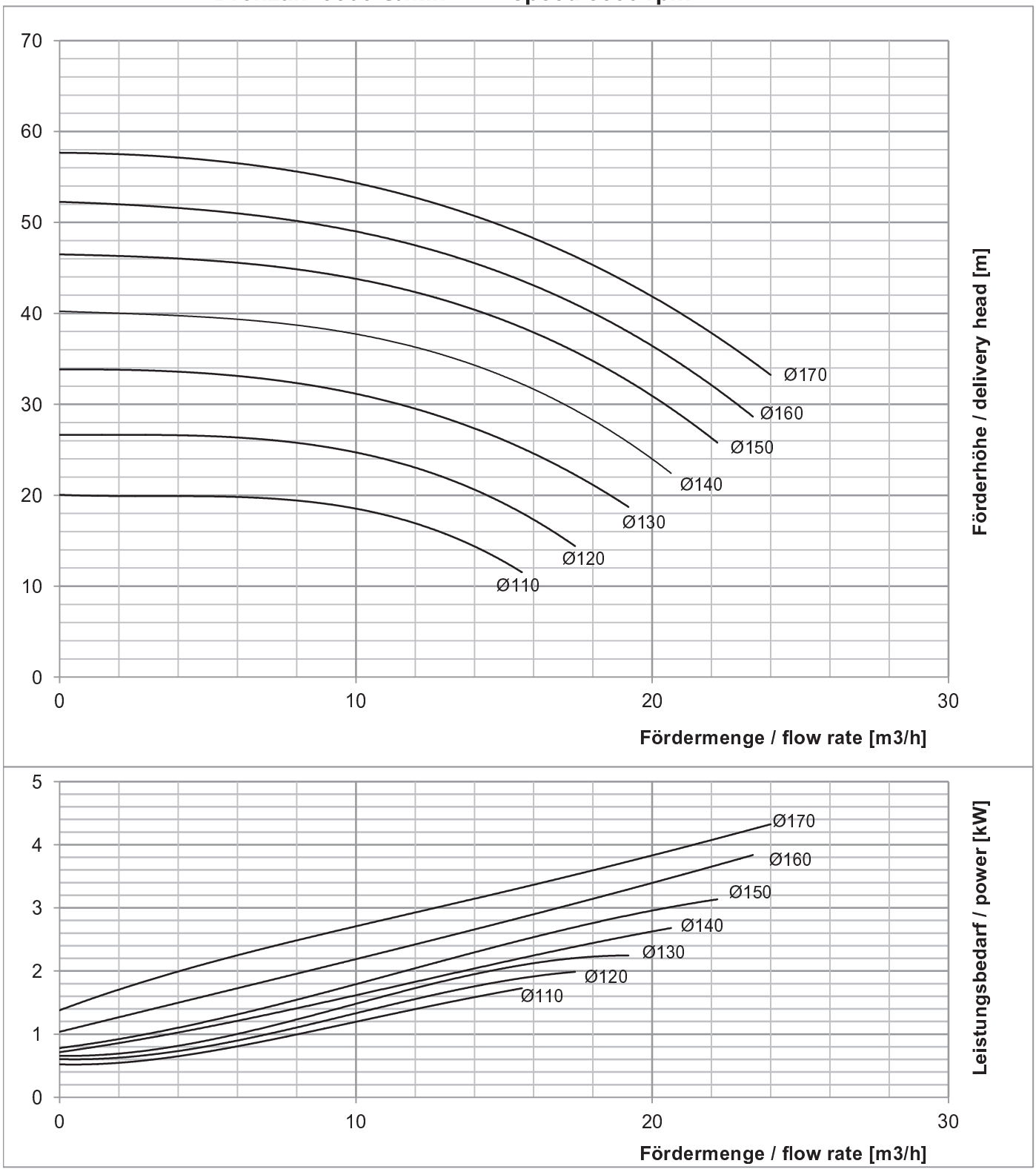
Wasser bei 20°C **water at 20°C**
Drehzahl 2900 U/min **speed 2900 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LE150-8001-4X**	50Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ: LE150-50/25**	**Centrifugal Pump** **Type: LE150-50/25**	Nummer: KL Revision: A/ 04.2016 Seite 1/1

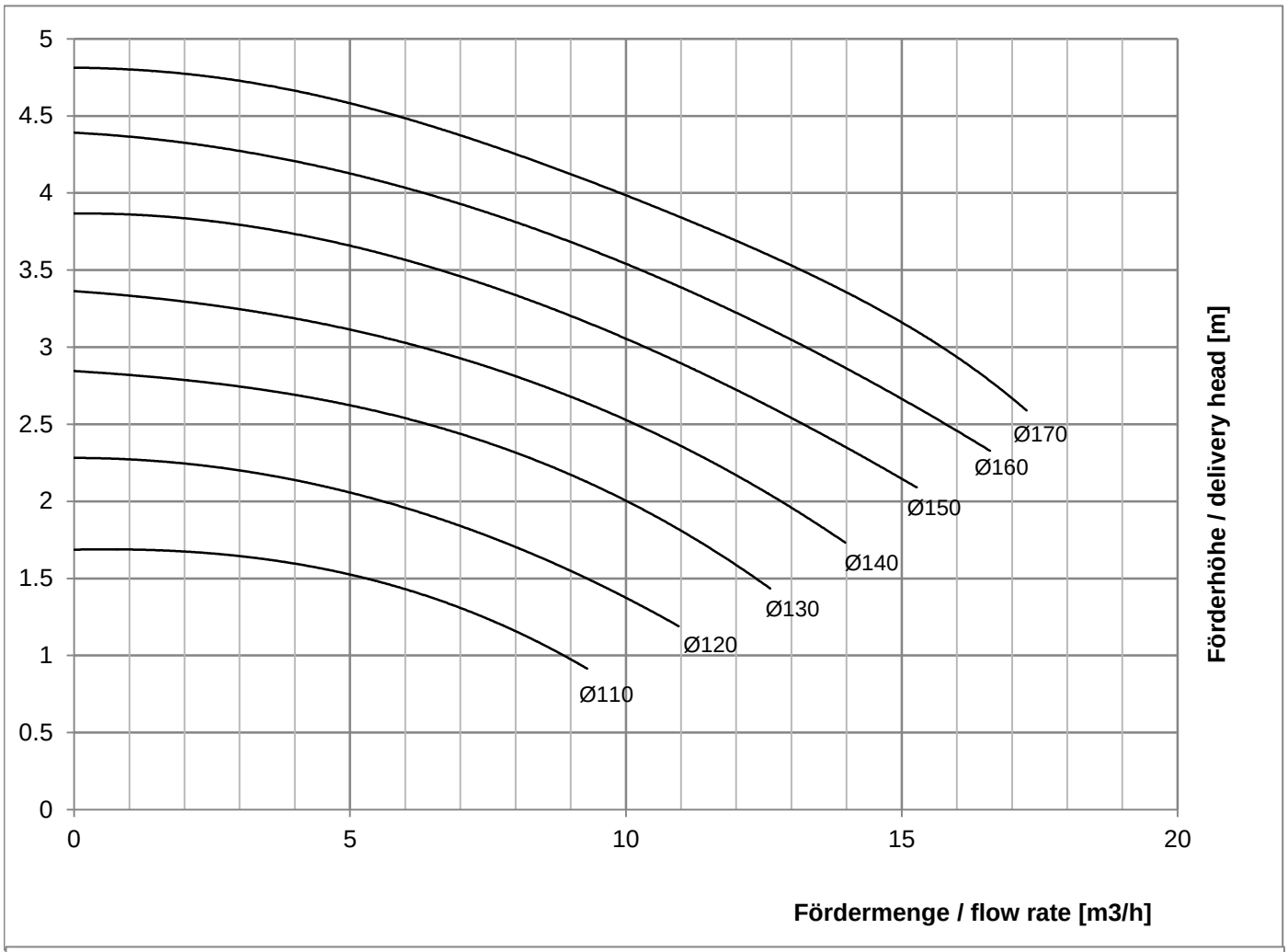
Wasser bei 20°C **water at 20°C**
Drehzahl 3500 U/min **speed 3500 rpm**

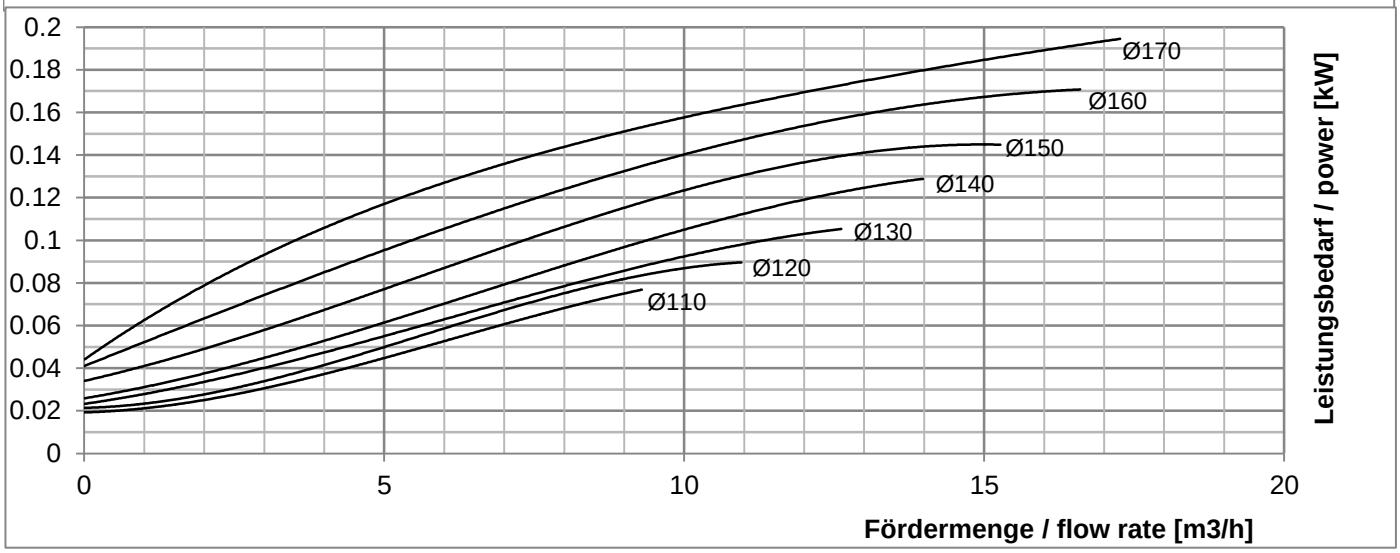


SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LE150-8003-4X**	60Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ: LE170-50/40**	**Centrifugal Pump** **Type: LE170-50/40**	Nummer: KL Revision: B/ 02/2021 Seite 1/1

Wasser bei 20°C **water at 20°C**
Drehzahl 1000 U/min **speed 1000 rpm**

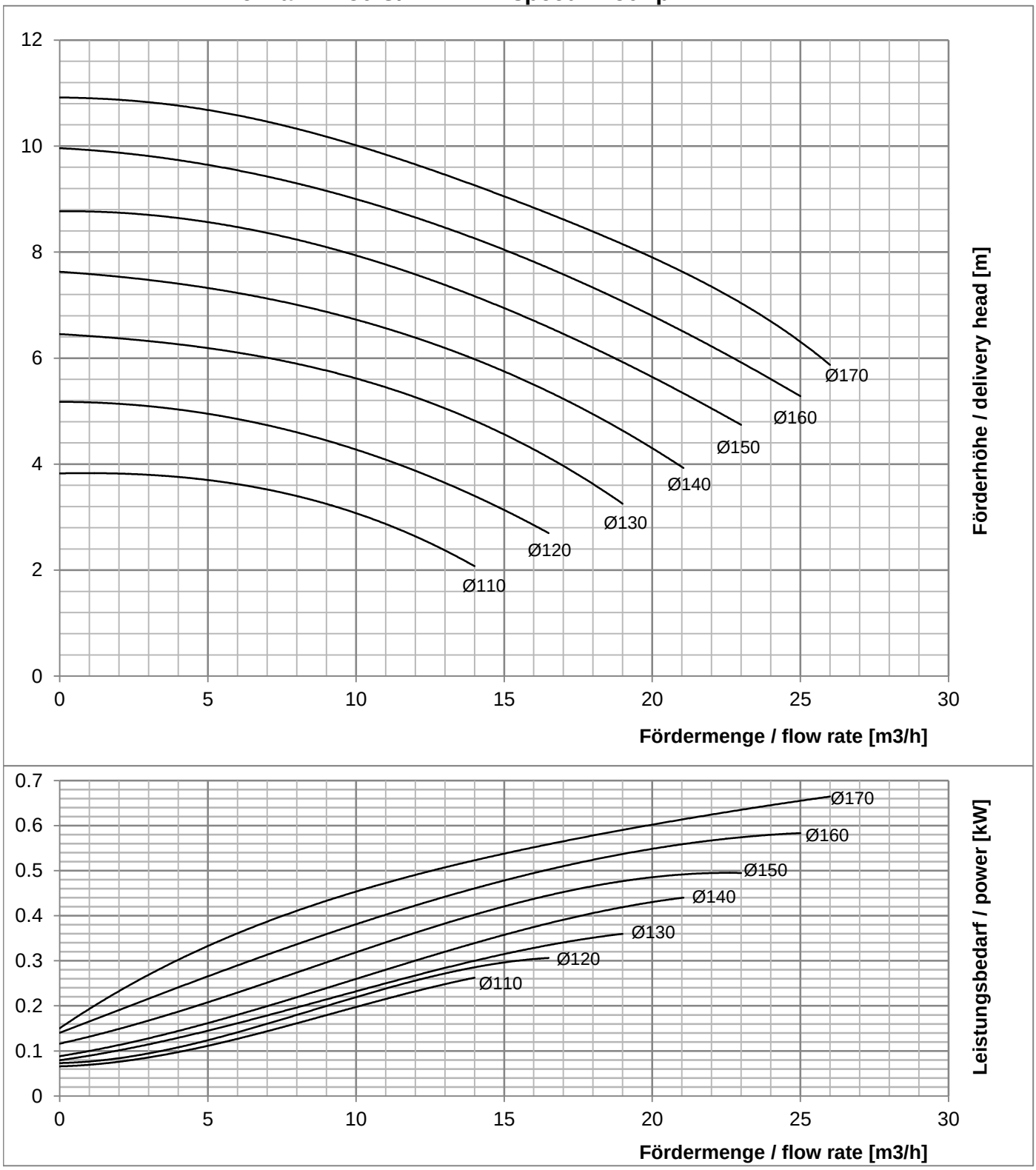




SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LE170-8010-4X**	16Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ: LE170-50/40**	**Centrifugal Pump** **Type: LE170-50/40**	Nummer: KL Revision: A/ 07.2012 Seite 1/1

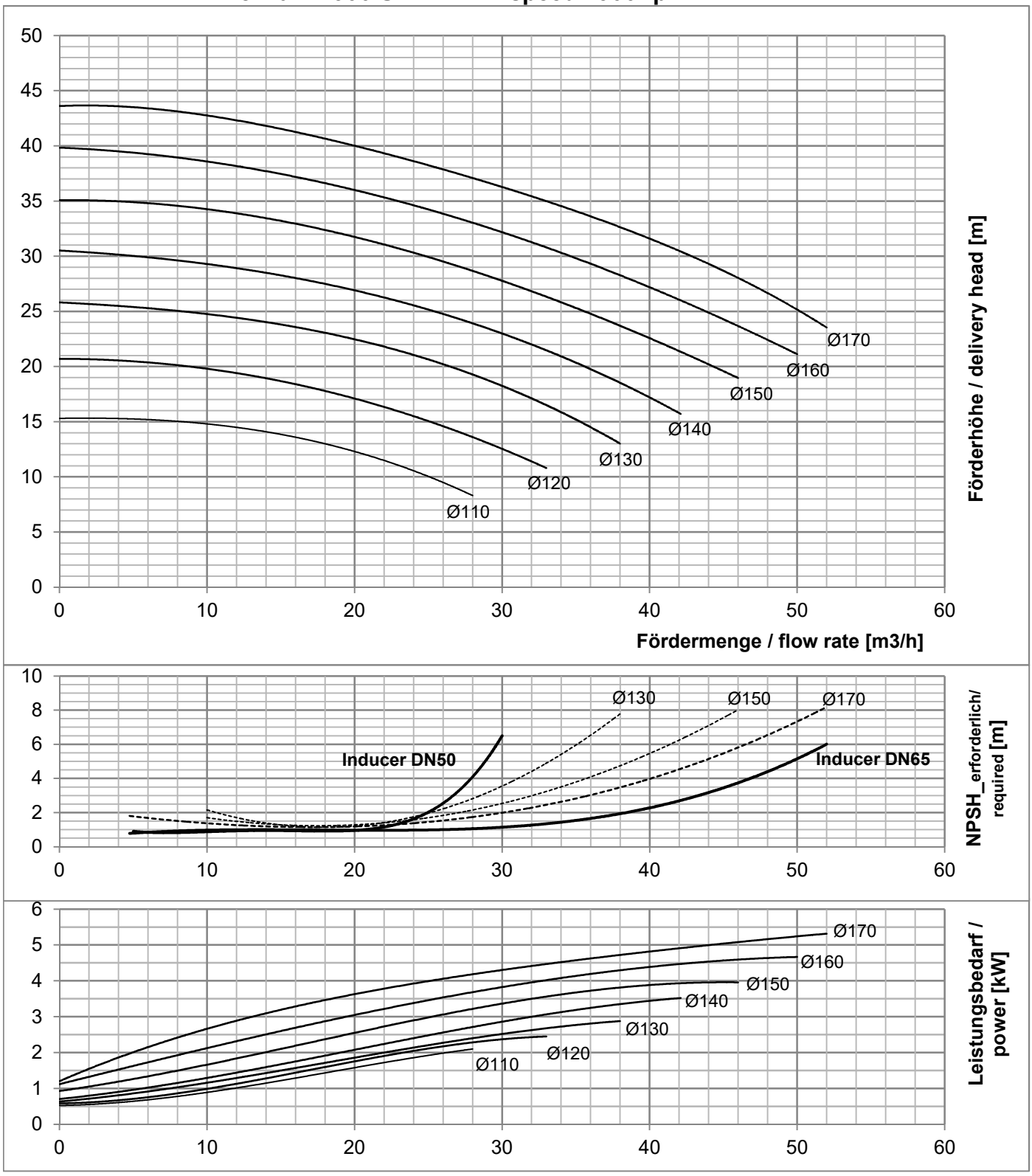
Wasser bei 20°C **water at 20°C**
Drehzahl 1450 U/min **speed 1450 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LE170-8002-4X**	25Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ: LE170-50/40**	**Centrifugal Pump** **Type: LE170-50/40**	Nummer: KL Revision: C/ 09.2013 Seite 1/1

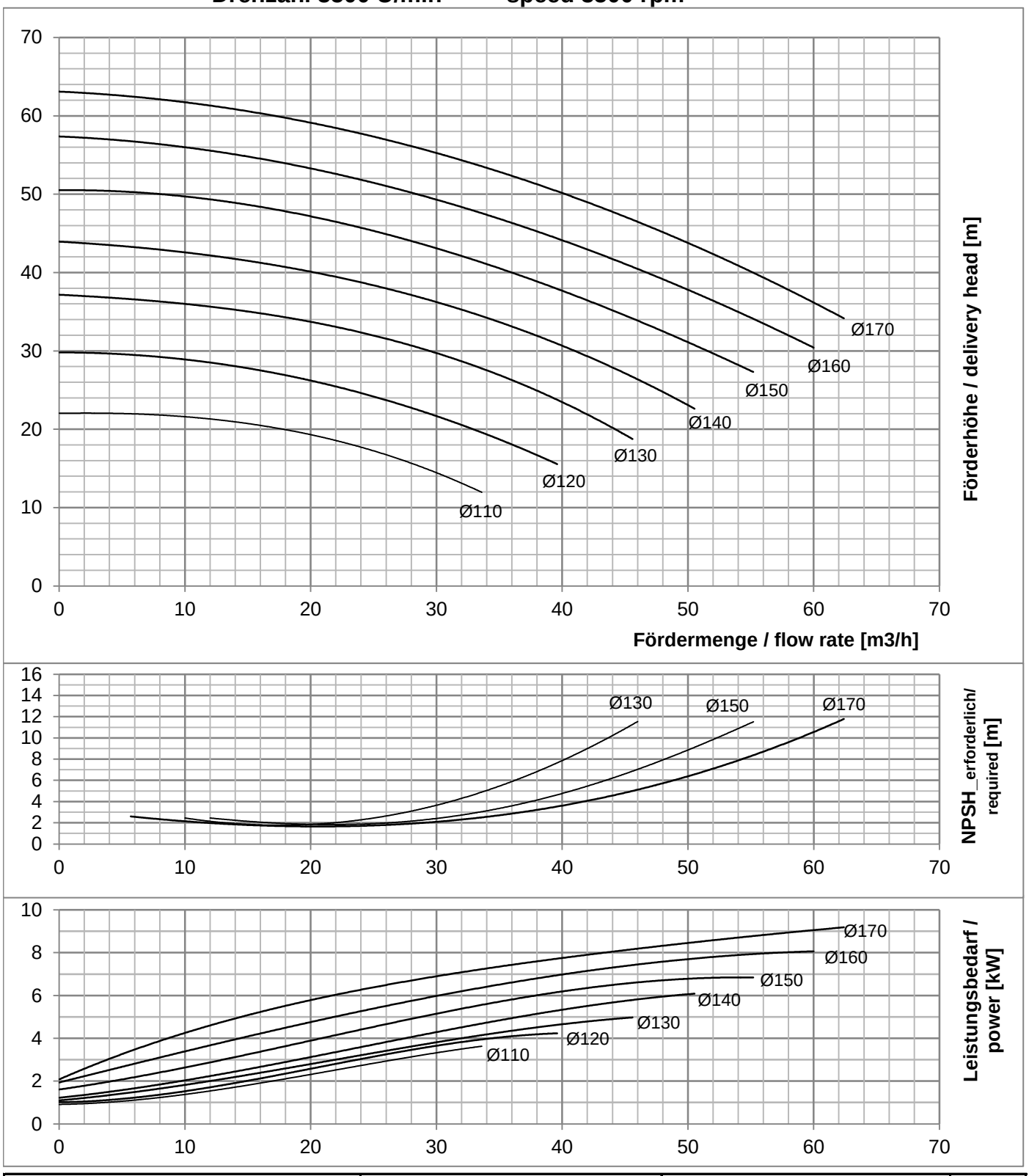
Wasser bei 20°C **water at 20°C**
Drehzahl 2900 U/min **speed 2900 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LE170-8001-4X**	50Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ: LE170-50/40**	**Centrifugal Pump** **Type: LE170-50/40**	Nummer: KL Revision: C/ 03.2013 Seite 1/1

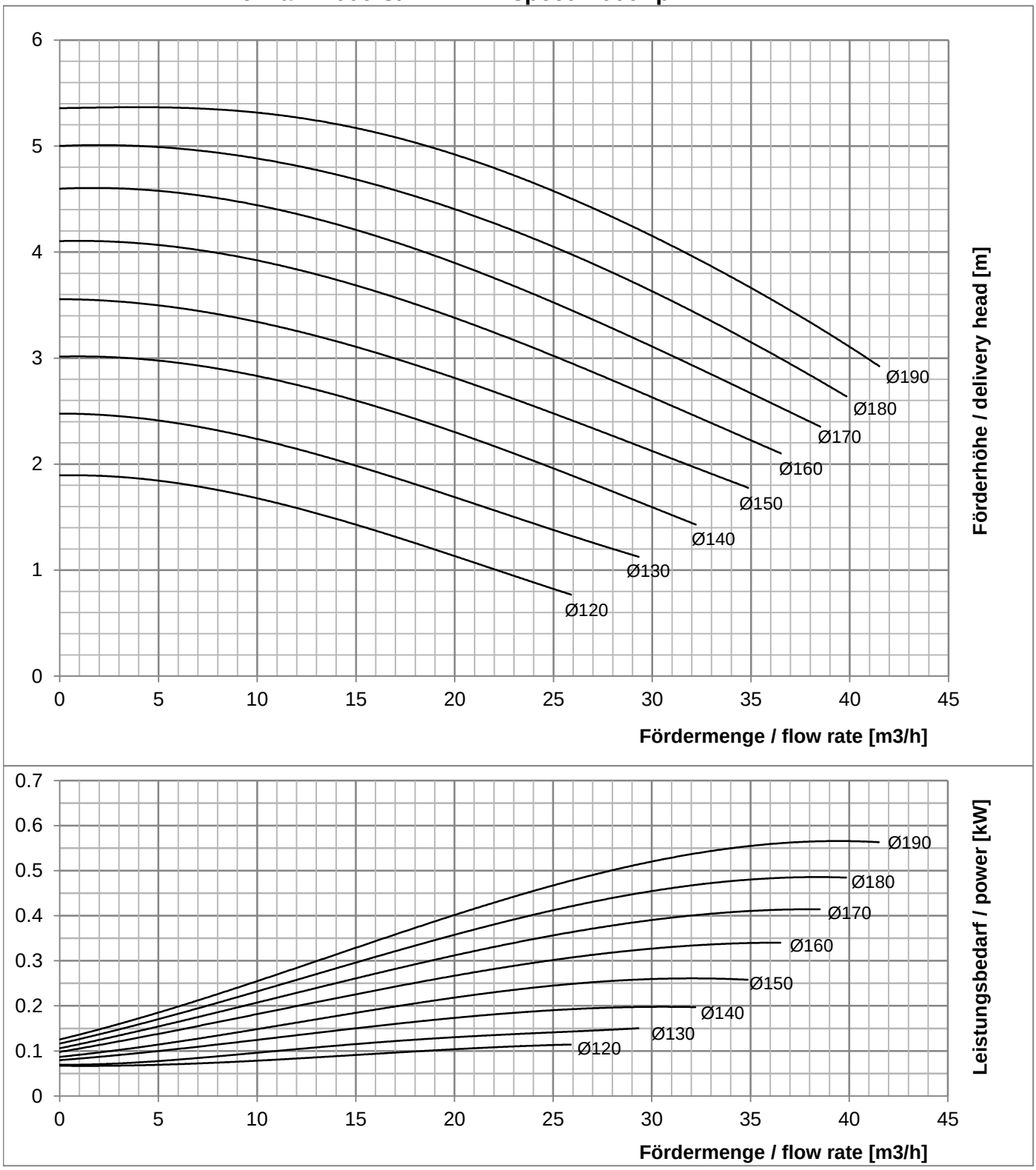
Wasser bei 20°C **water at 20°C**
Drehzahl 3500 U/min **speed 3500 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LE170-8003-4X**	60Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ: LE190-80/65**	**Centrifugal Pump** **Type: LE190-80/65**	Nummer: KL Revision: B/ 01.2021 Seite 1/1

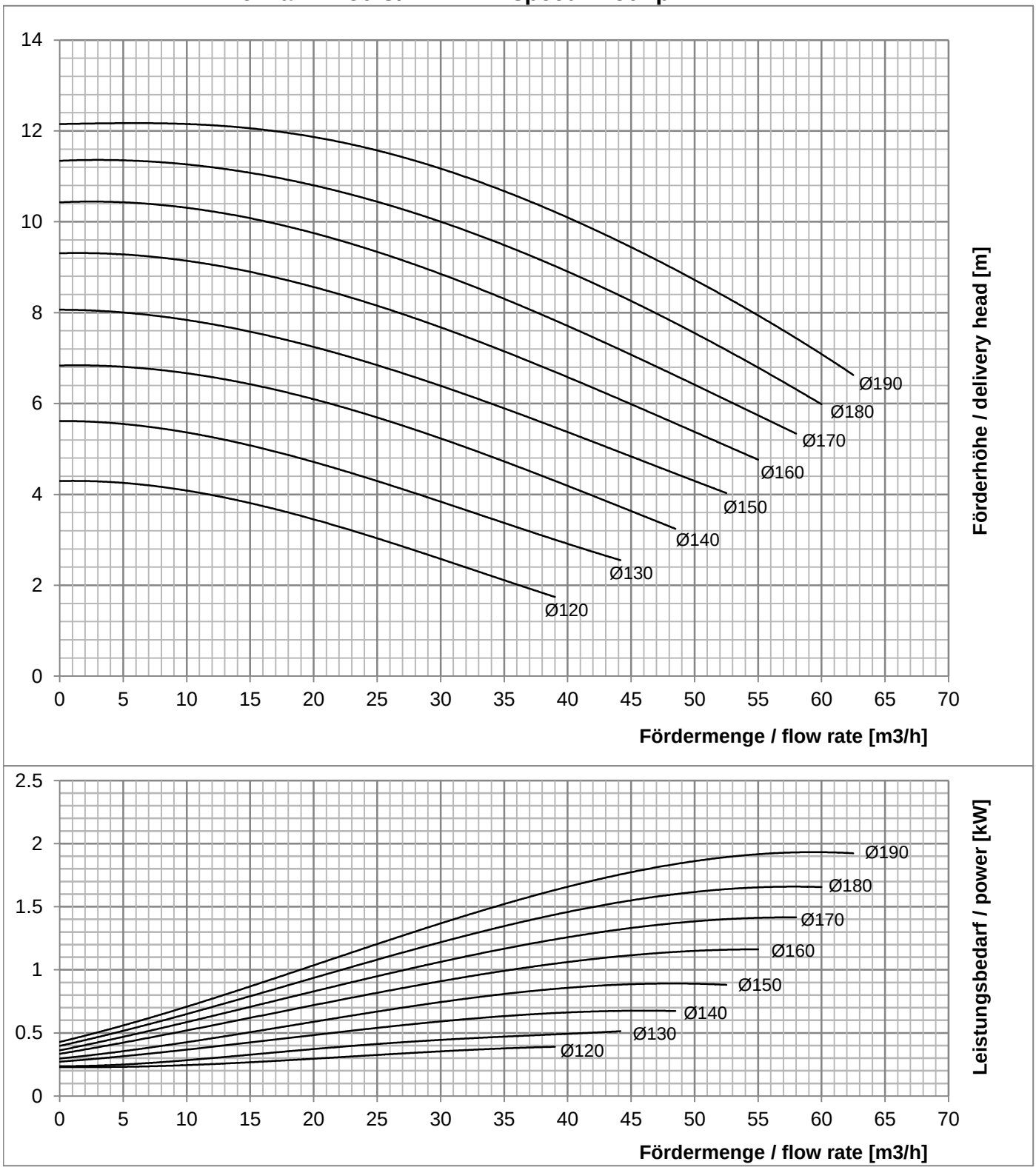
Wasser bei 20°C **water at 20°C**
Drehzahl 1000 U/min **speed 1000 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LE190-8010-4X**	16Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ: LE190-80/65**	**Centrifugal Pump** **Type: LE190-80/65**	Nummer: KL Revision: C/ 01.2021 Seite 1/1

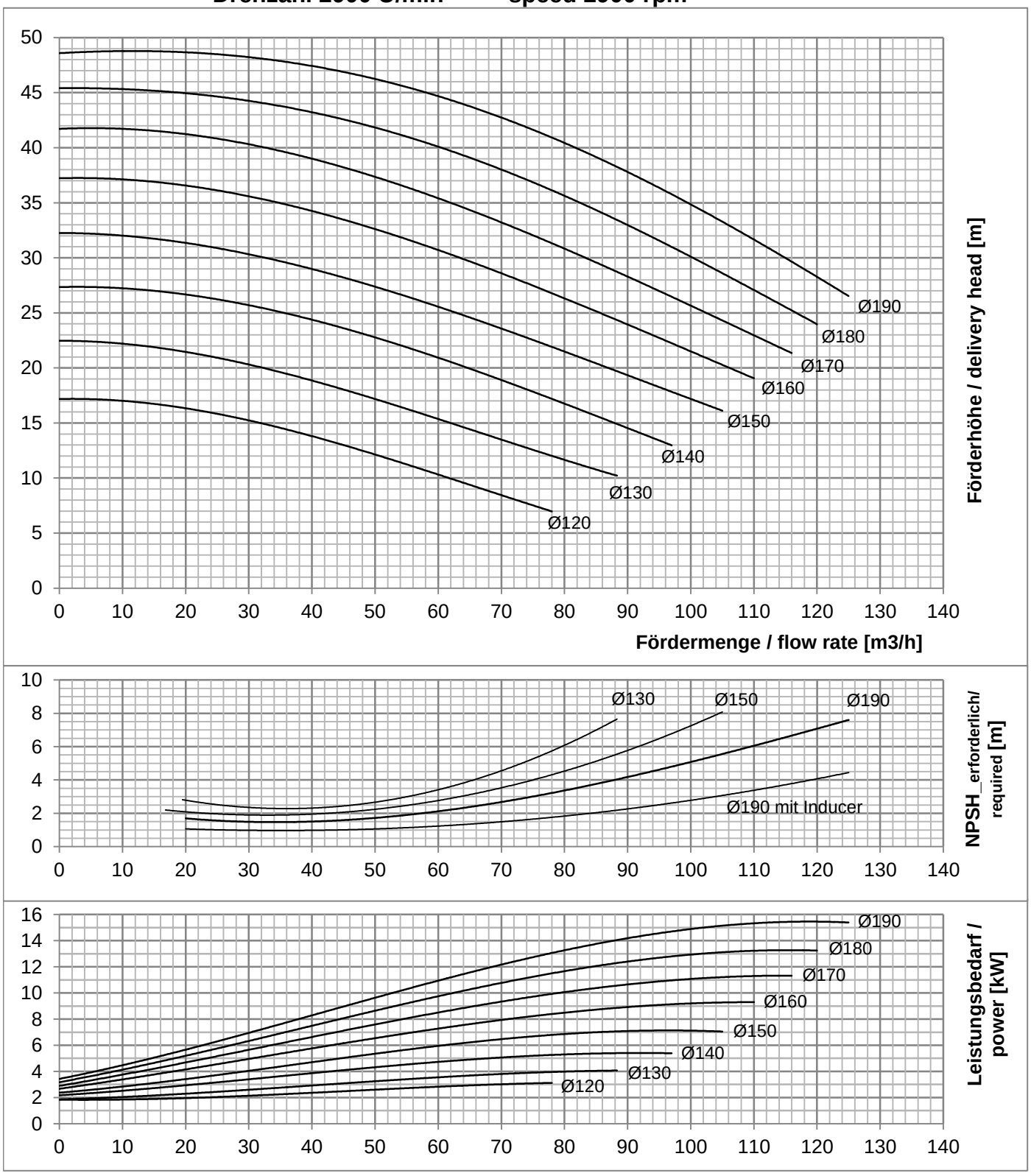
Wasser bei 20°C **water at 20°C**
Drehzahl 1450 U/min **speed 1450 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LE190-8002-4X**	25Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ: LE190-80/65**	**Centrifugal Pump** **Type: LE190-80/65**	Nummer: KL Revision: D/ 01.2021 Seite 1/1

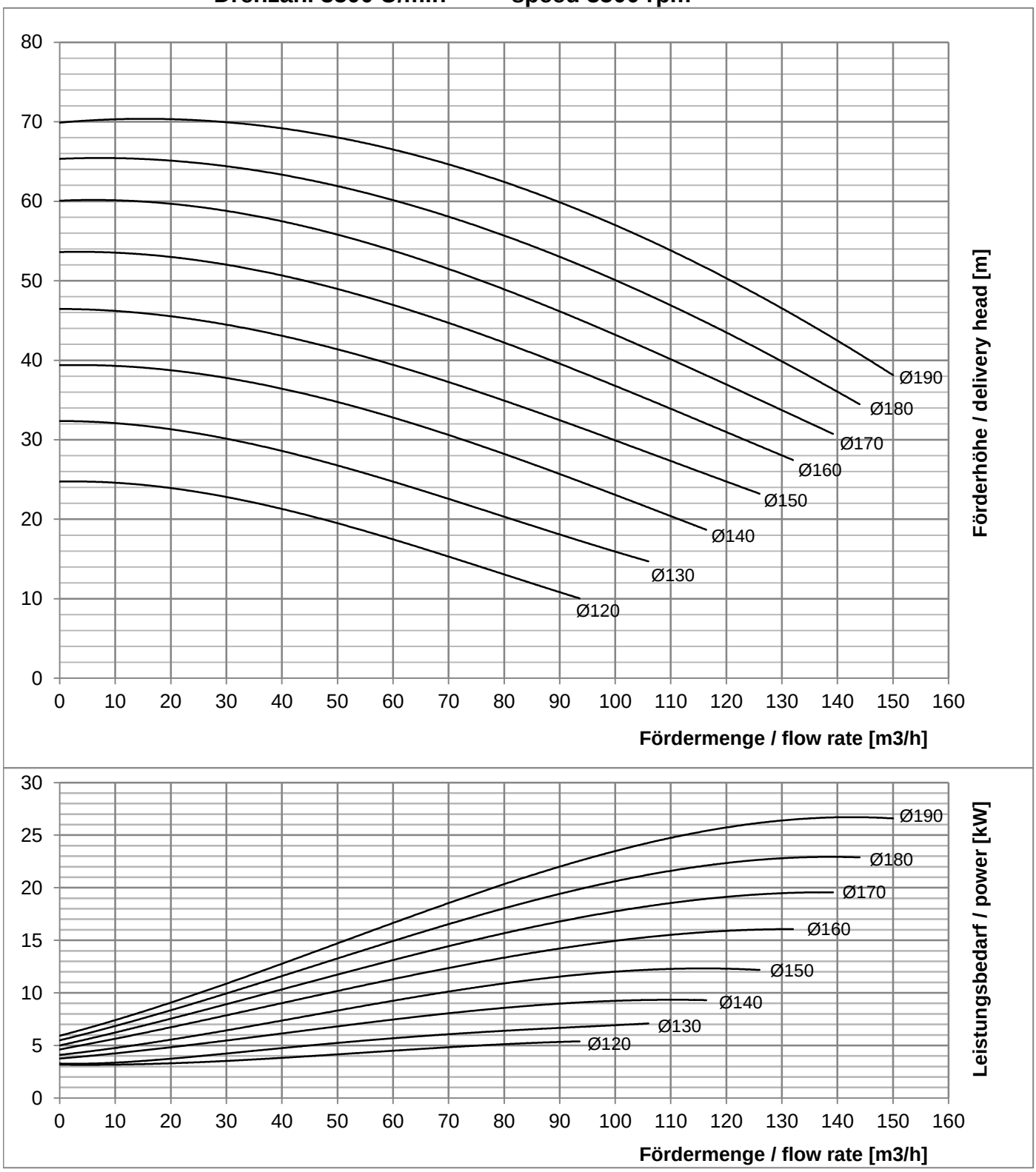
Wasser bei 20°C **water at 20°C**
Drehzahl 2900 U/min **speed 2900 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LE190-8001-4X**	50Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ: LE190-80/65**	**Centrifugal Pump** **Type: LE190-80/65**	Nummer: KL Revision: B/ 08.2012 Seite 1/1

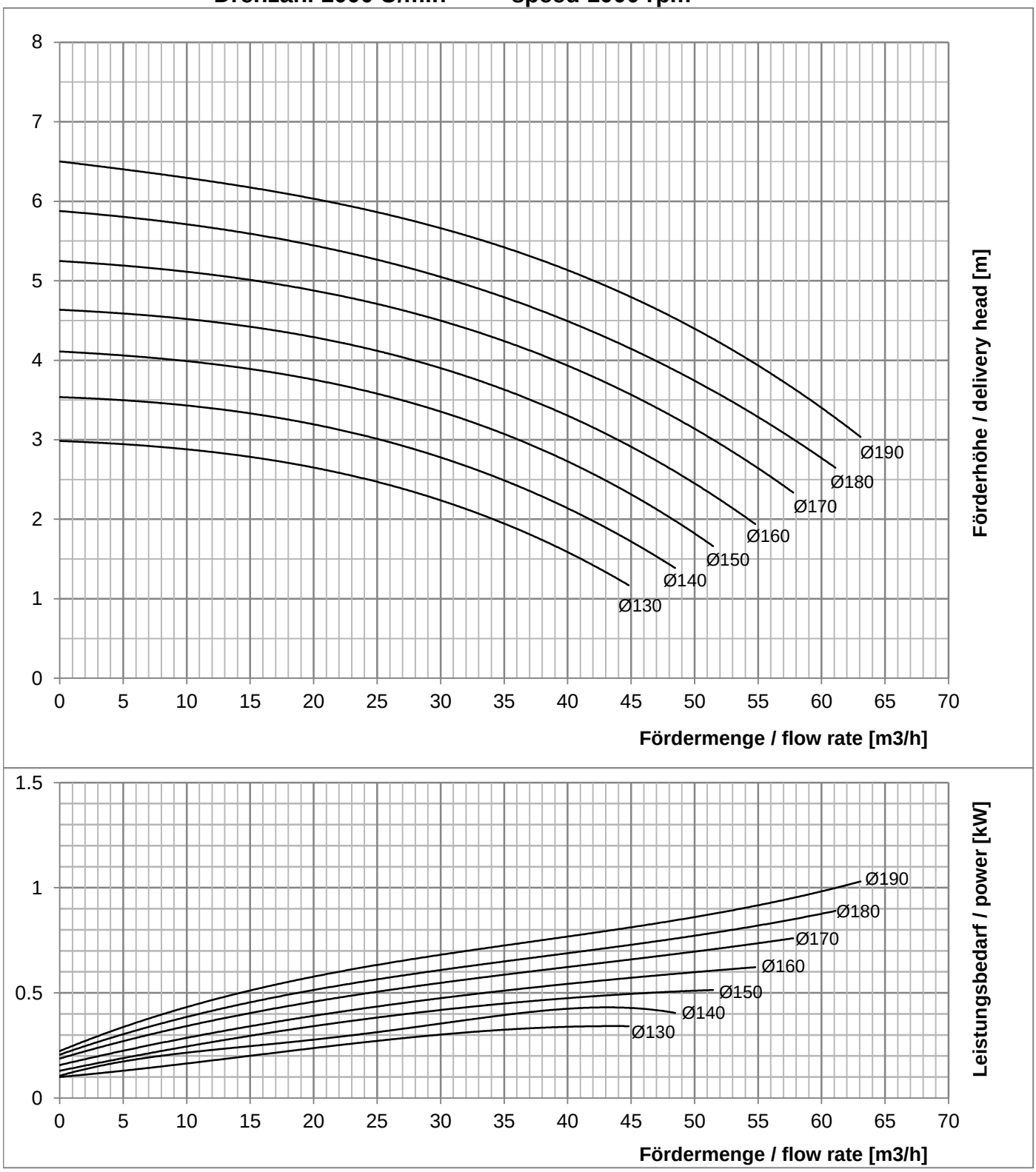
Wasser bei 20°C **water at 20°C**
Drehzahl 3500 U/min **speed 3500 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LE190-8003-4X**	60Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ: LE190B-125/100**	**Centrifugal Pump** **Typ: LE190B-125/100**	Nummer: KL Revision: A/ 09.2015 Seite 1/1

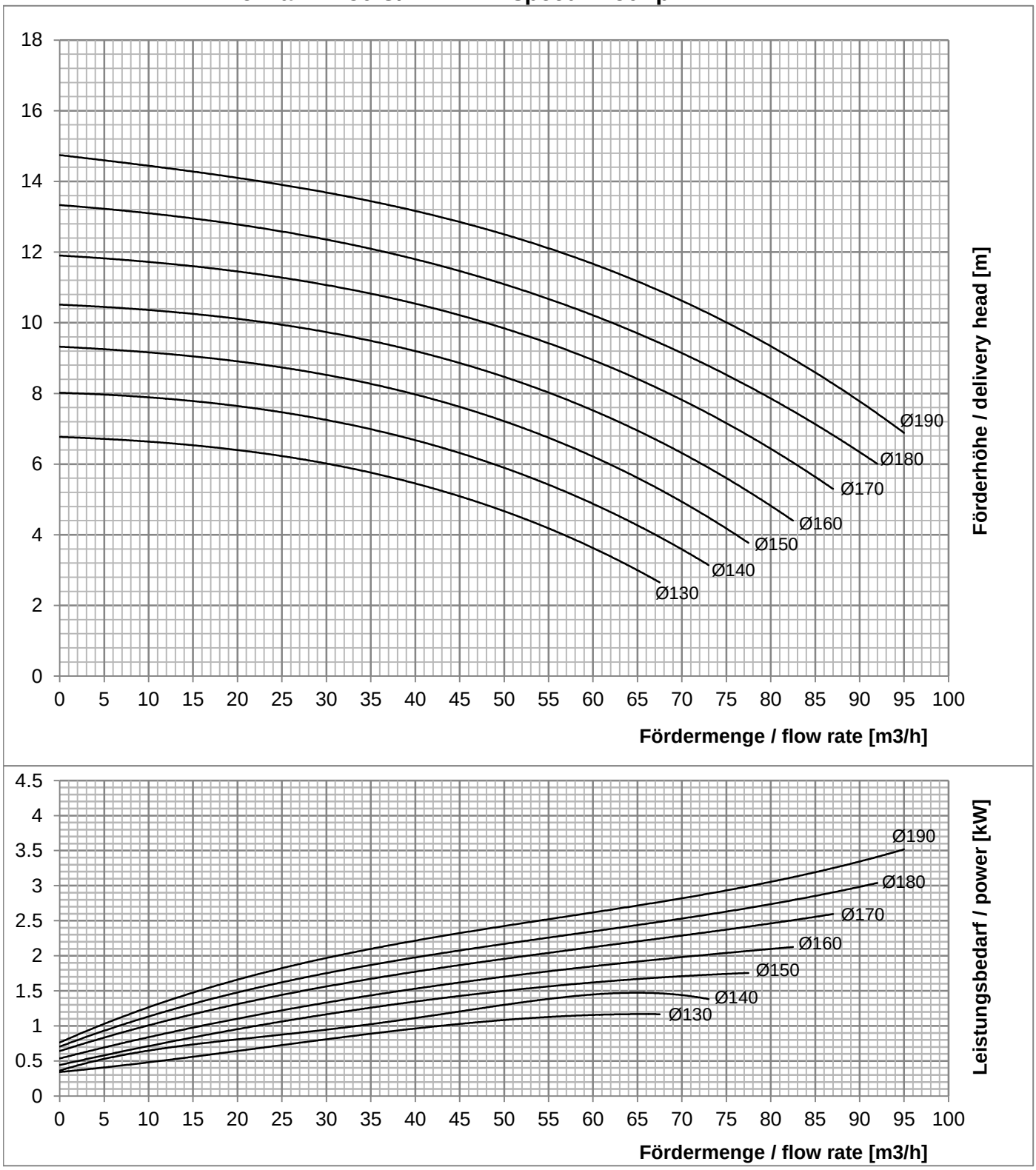
Wasser bei 20°C **water at 20°C**
Drehzahl 1000 U/min **speed 1000 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LE190B-8010-4X**	16Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ: LE190B-125/100**	**Centrifugal Pump** **Typ: LE190B-125/100**	Nummer: KL Revision: D/ 12.2019 Seite 1/1

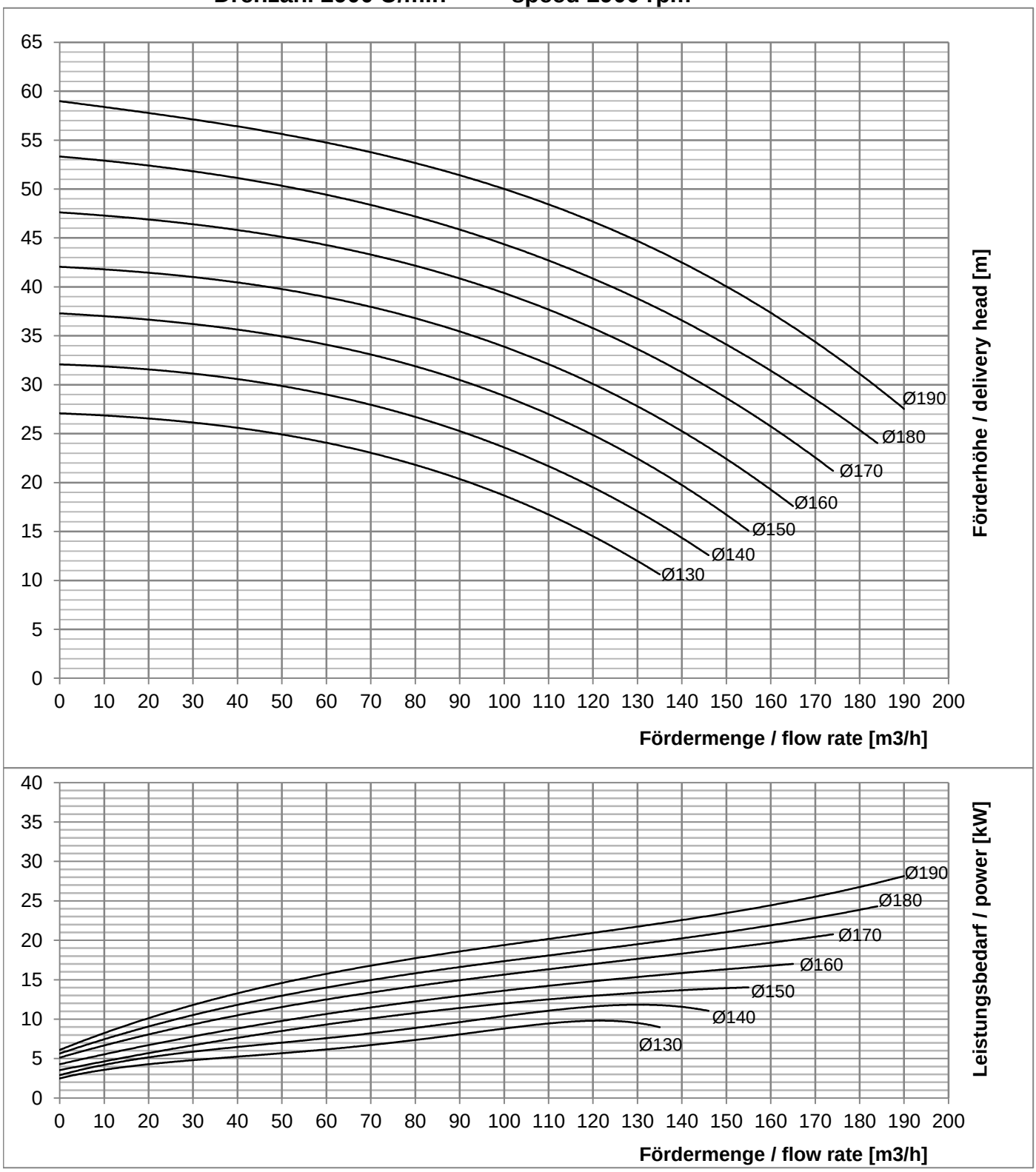
Wasser bei 20°C **water at 20°C**
Drehzahl 1450 U/min **speed 1450 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LE190B-8002-4X**	25Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ: LE190B-125/100**	**Centrifugal Pump** **Type: LE190B-125/100**	Nummer: KL Revision: C/ 12.2013 Seite 1/1

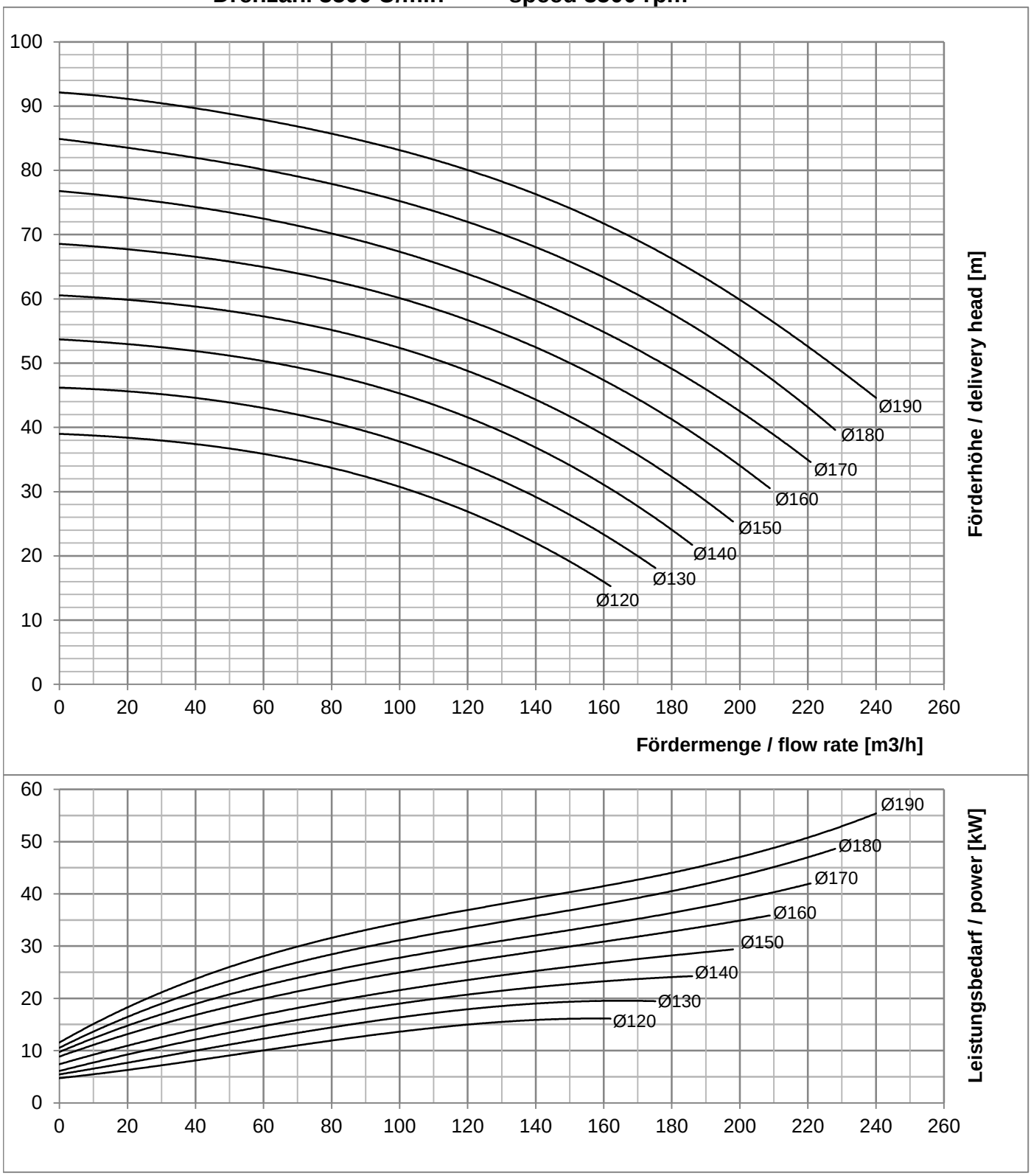
Wasser bei 20°C **water at 20°C**
Drehzahl 2900 U/min **speed 2900 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LE190B-8000-4X**	50Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ: LE190B-80/65**	**Centrifugal Pump** **Type: LE190B-80/65**	Nummer: KL Revision: B/02.2021 Seite 1/1

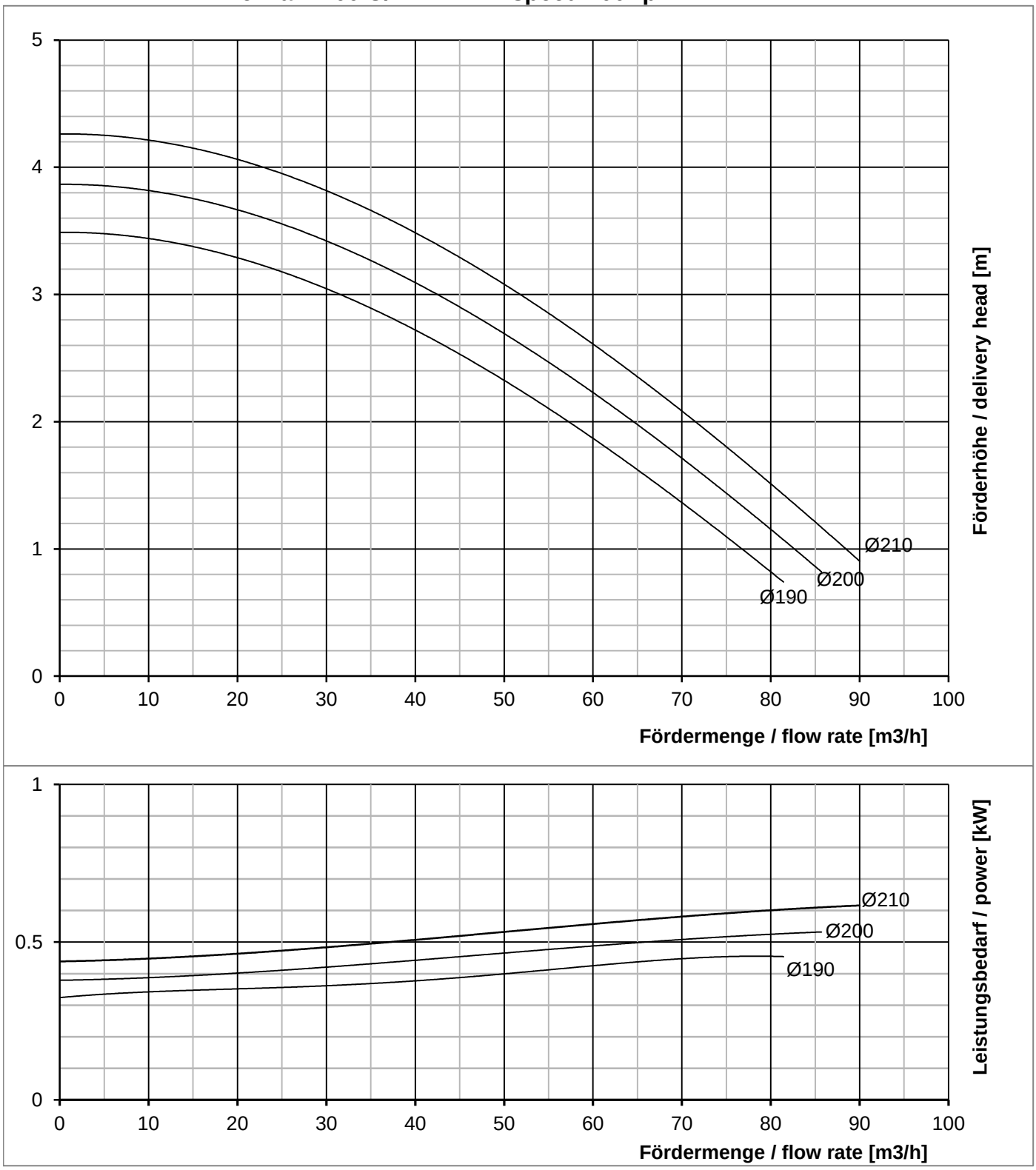
Wasser bei 20°C **water at 20°C**
Drehzahl 3500 U/min **speed 3500 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LE190B-8003-4X**	60Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ: LE210-125/100**	**Centrifugal Pump** **Type: LE210-125/100**	Nummer: KL Revision: D/ 11.2019 Seite 1/1

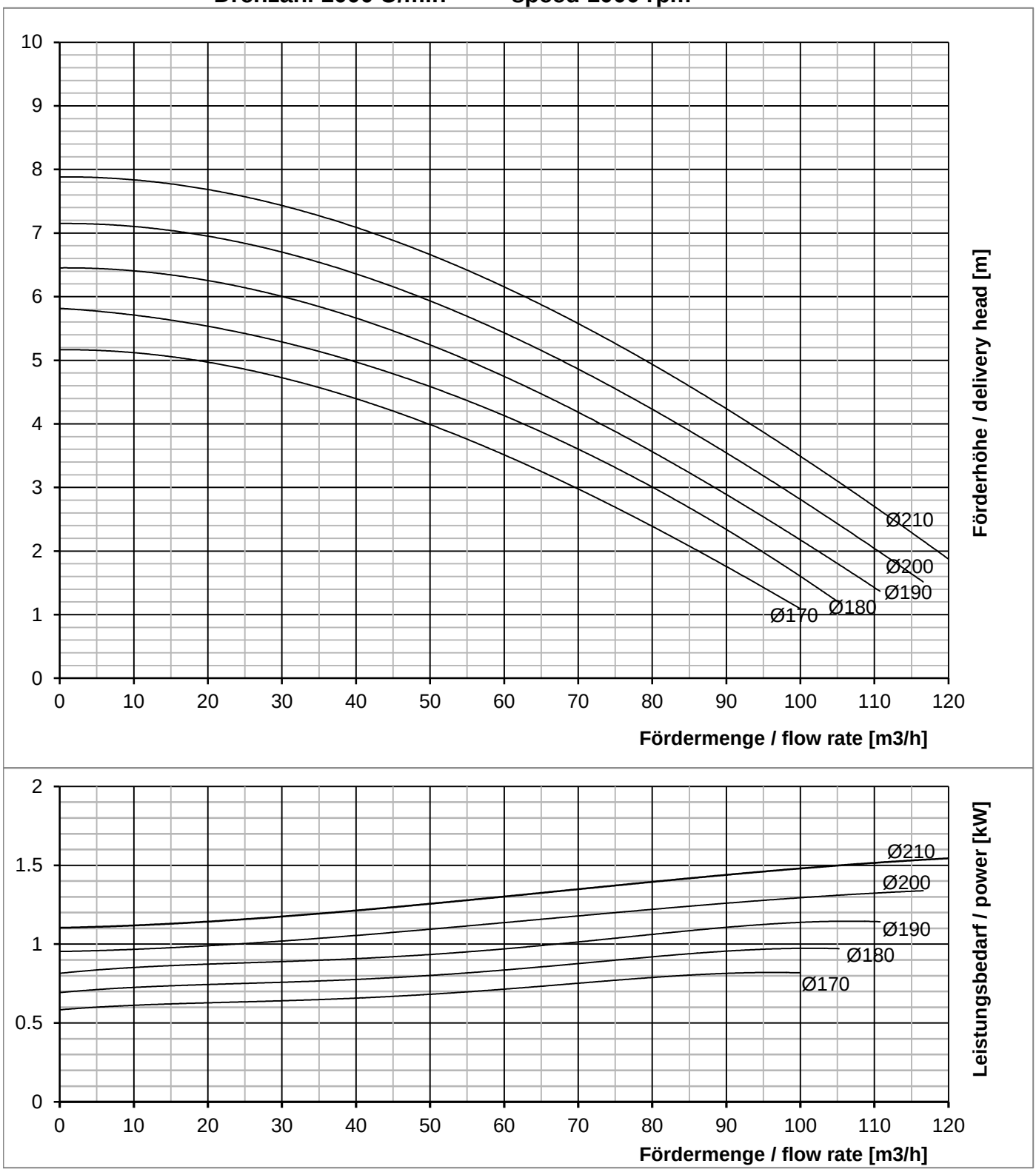
Wasser bei 20°C **water at 20°C**
Drehzahl 700 U/min **speed 700 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LE210-8005-4X**	

Sawa PUMPEN	**Kreiselpumpe** **Typ: LE210-125/100**	**Centrifugal Pump** **Type: LE210-125/100**	Nummer: KL Revision: E/ 11.2019 Seite 1/1

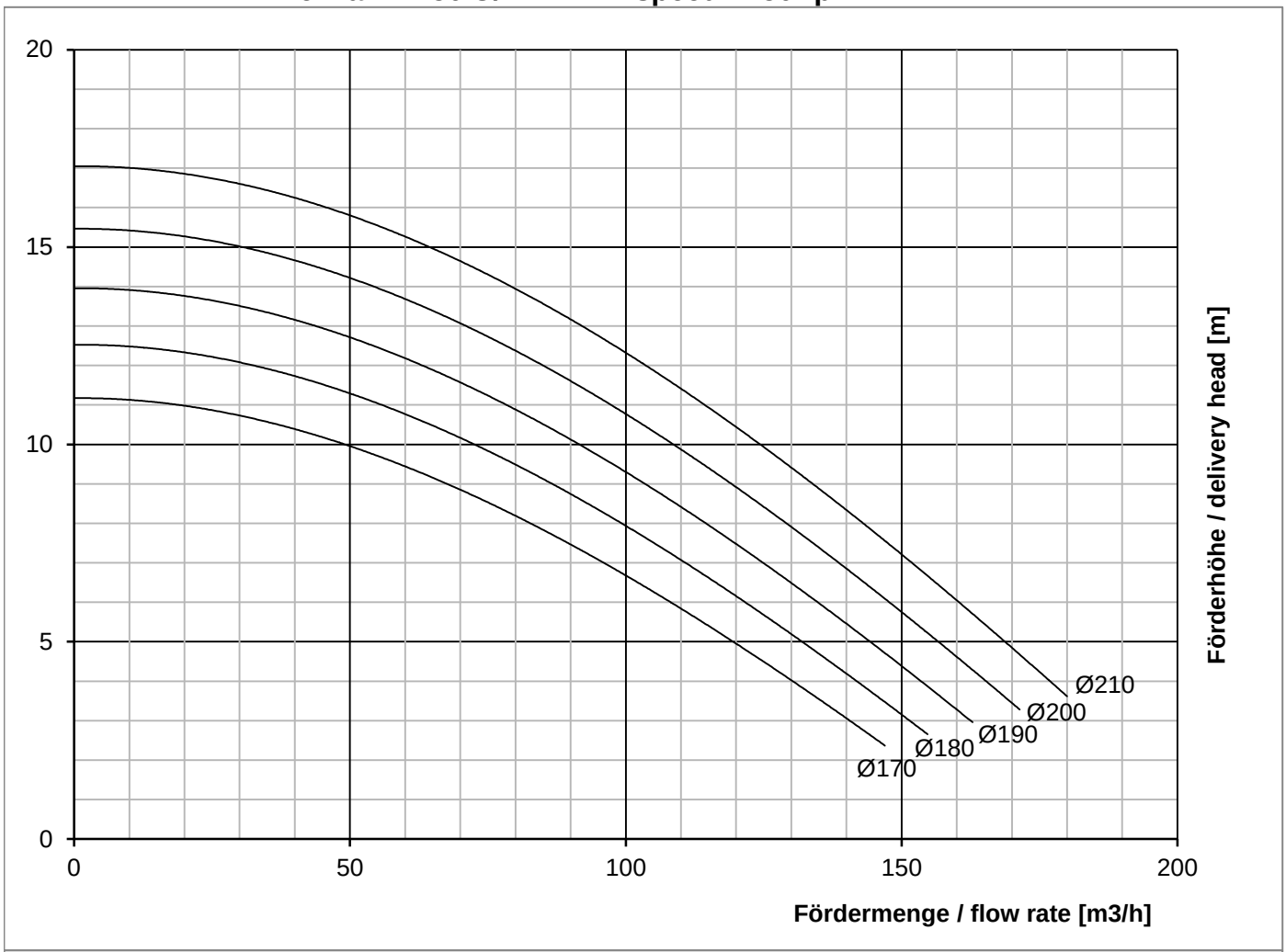
Wasser bei 20°C **water at 20°C**
Drehzahl 1000 U/min **speed 1000 rpm**

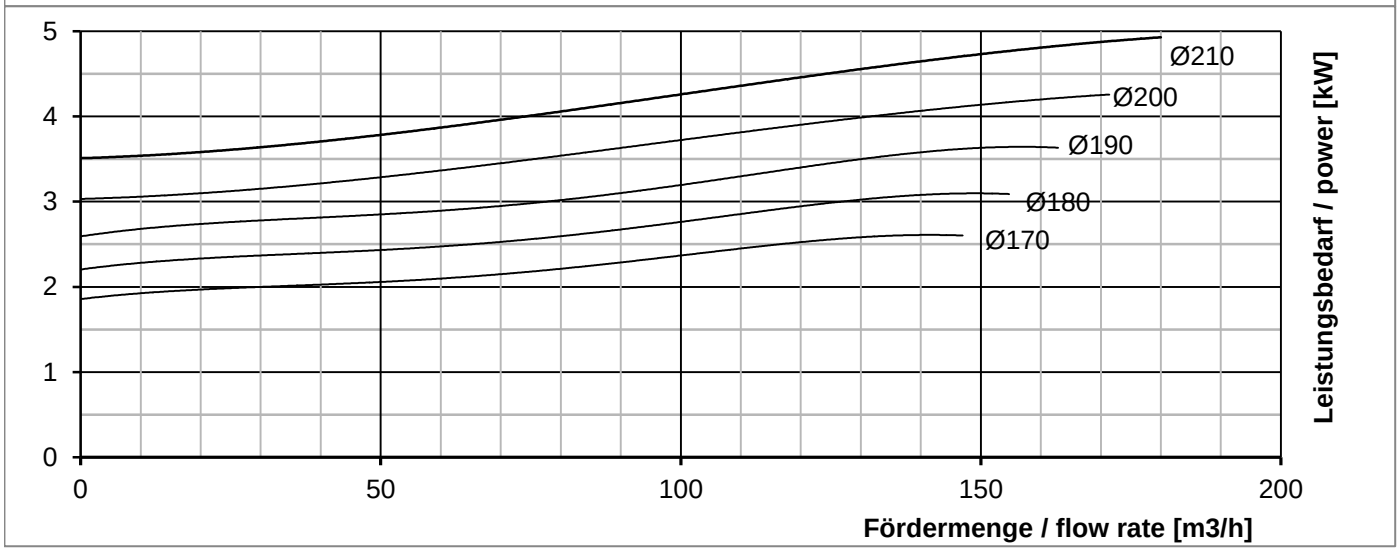


SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LE210-8004-4X**	

Sawa PUMPEN	**Kreiselpumpe** **Typ: LE210-125/100**	**Centrifugal Pump** **Type: LE210-125/100**	Nummer: KL Revision: E/ 11.2019 Seite 1/1

Wasser bei 20°C **water at 20°C**
Drehzahl 1450 U/min **speed 1450 rpm**

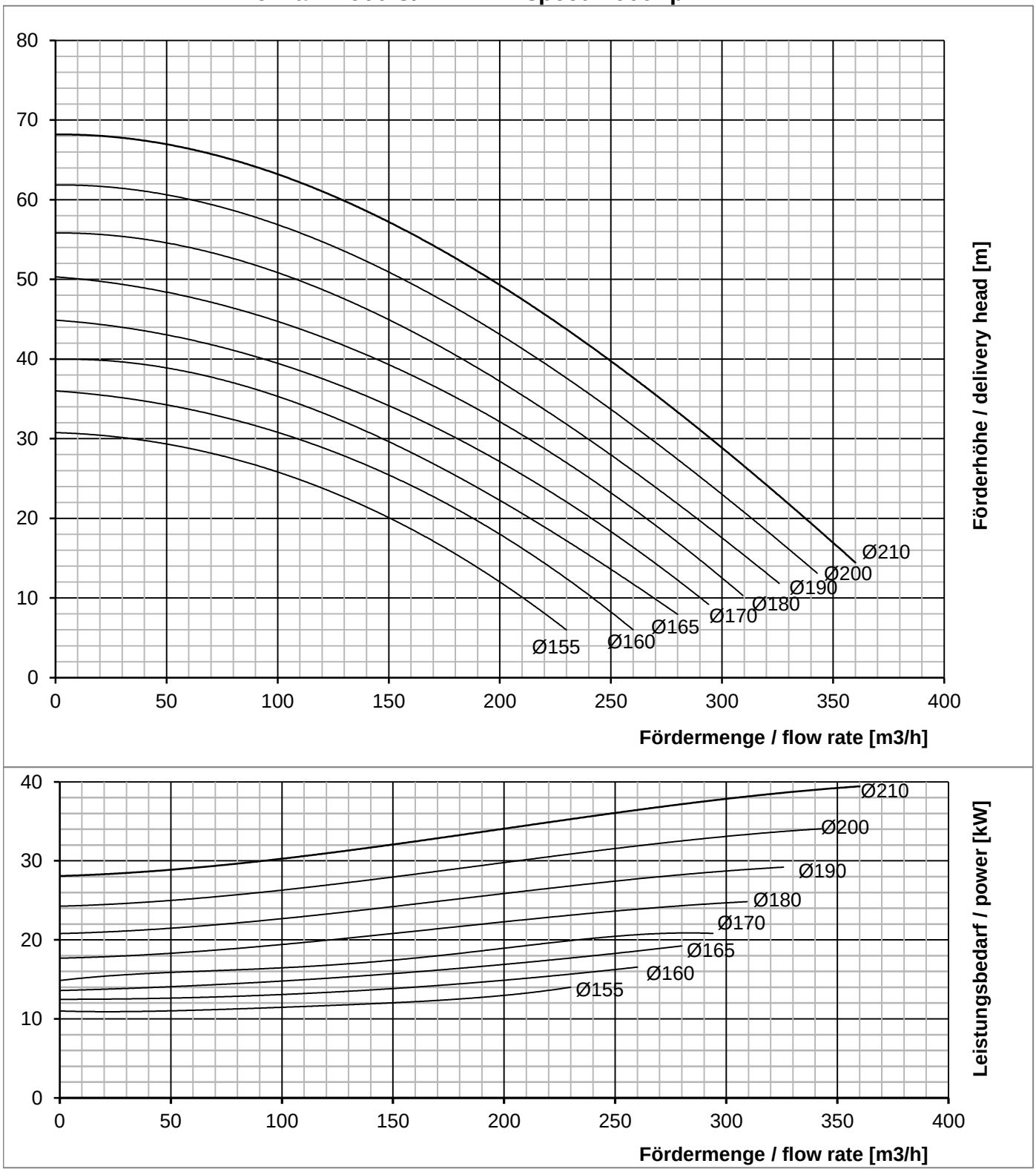




SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LE210-8001-4X**	

Sawa PUMPEN	**Kreiselpumpe** **Typ: LE210-125/100**	**Centrifugal Pump** **Type: LE210-125/100**	Nummer: KL Revision: E/ 09.2020 Seite 1/1

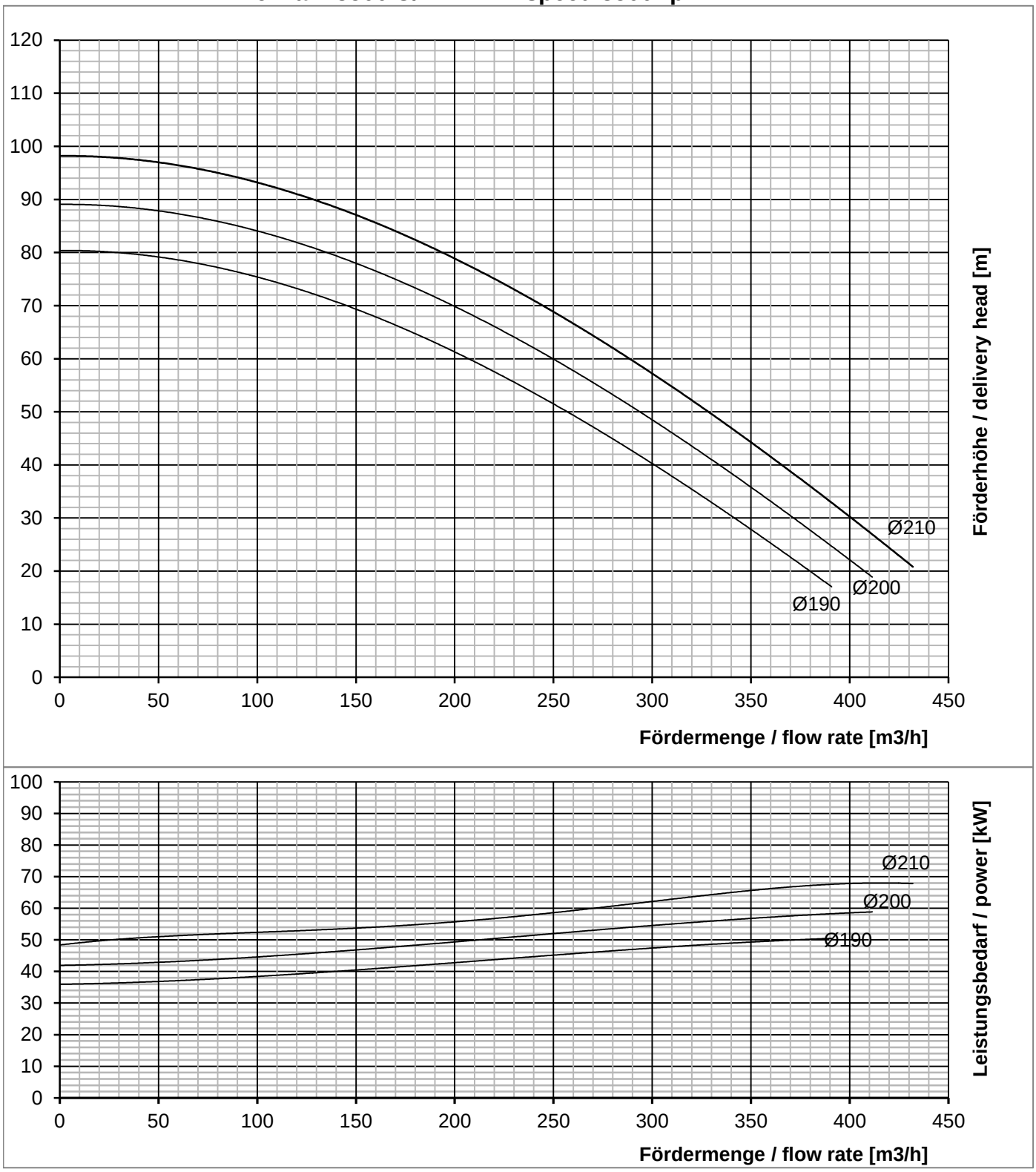
Wasser bei 20°C **water at 20°C**
Drehzahl 2900 U/min **speed 2900 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LE210-8002-4X**	

Sawa PUMPEN	**Kreiselpumpe** **Typ: LE210-125/100**	**Centrifugal Pump** **Type: LE210-125/100**	Nummer: KL Revision: D/ 11.2019 Seite 1/1

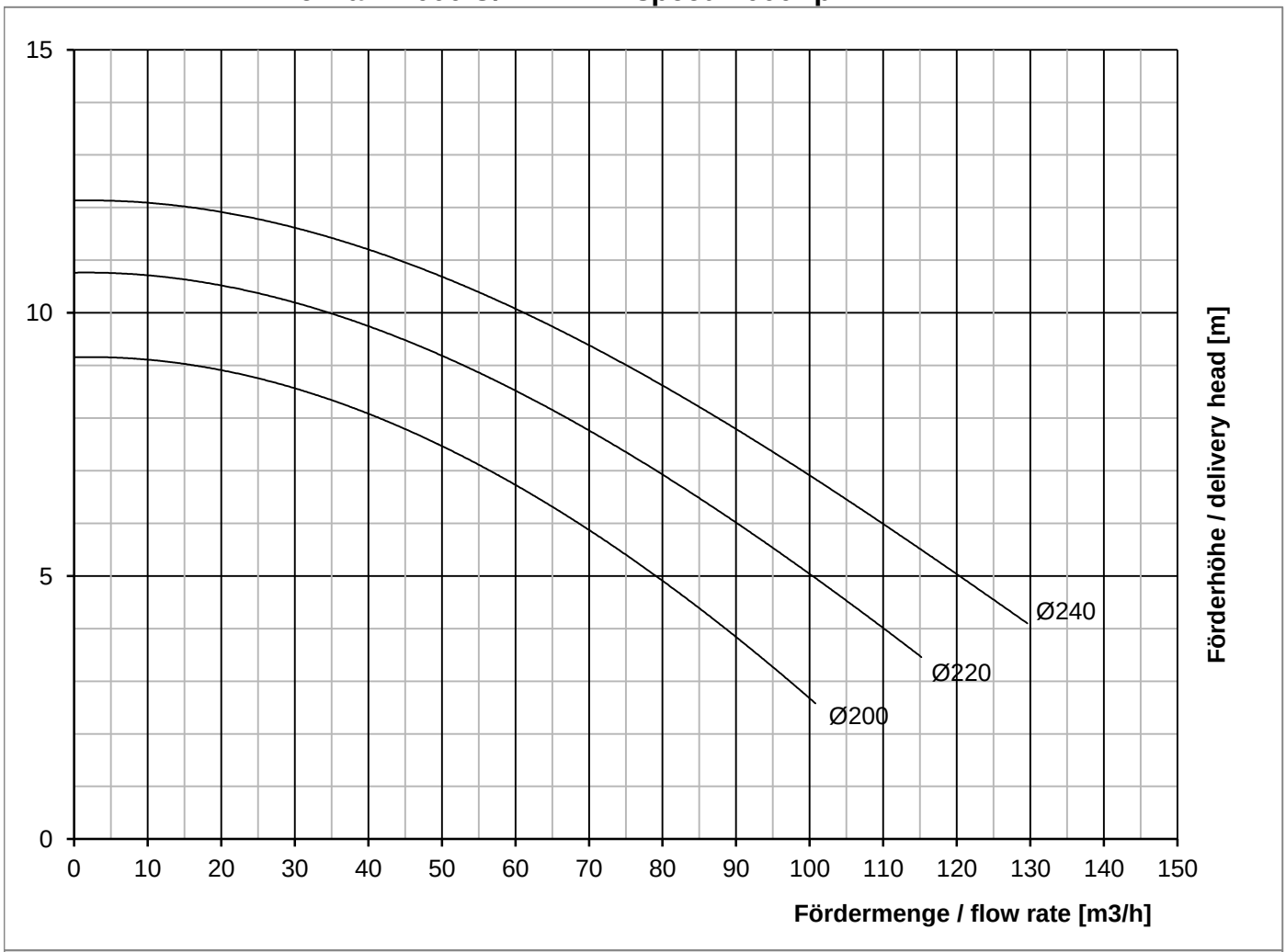
Wasser bei 20°C **water at 20°C**
Drehzahl 3500 U/min **speed 3500 rpm**

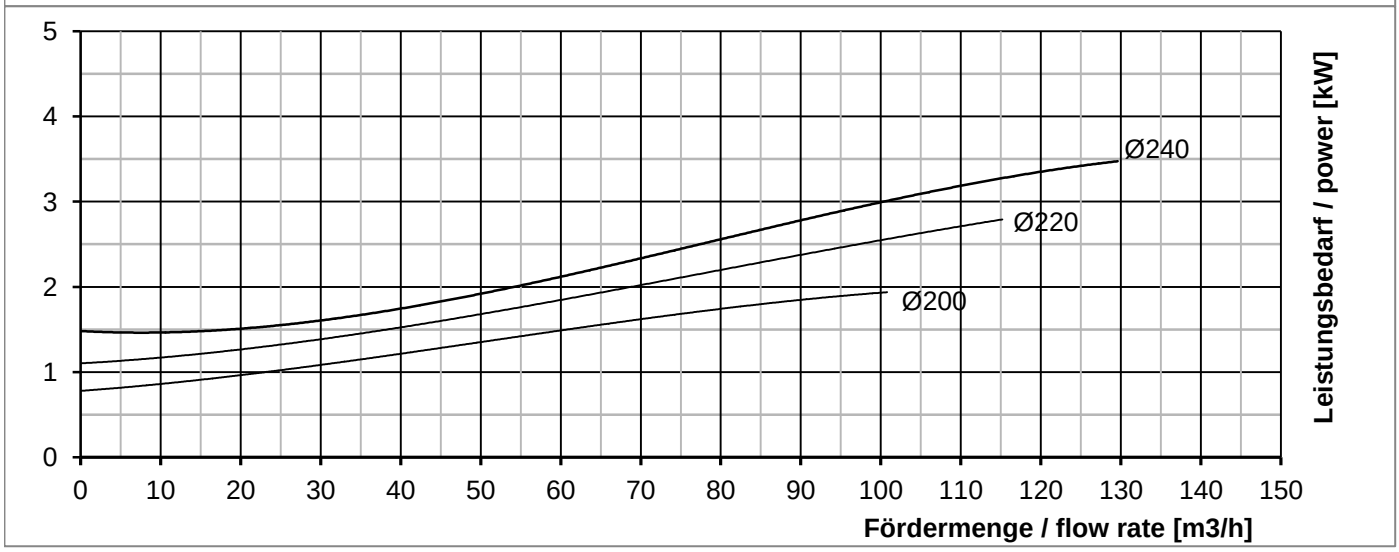


SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LE210-8003-4X**	

Sawa PUMPEN	**Kreiselpumpe** **Typ: LE240-125/100**	**Centrifugal Pump** **Type: LE240-125/100**	Nummer: KL Revision: A/ 08.2016 Seite 1/1

Wasser bei 20°C **water at 20°C**
Drehzahl 1000 U/min **speed 1000 rpm**

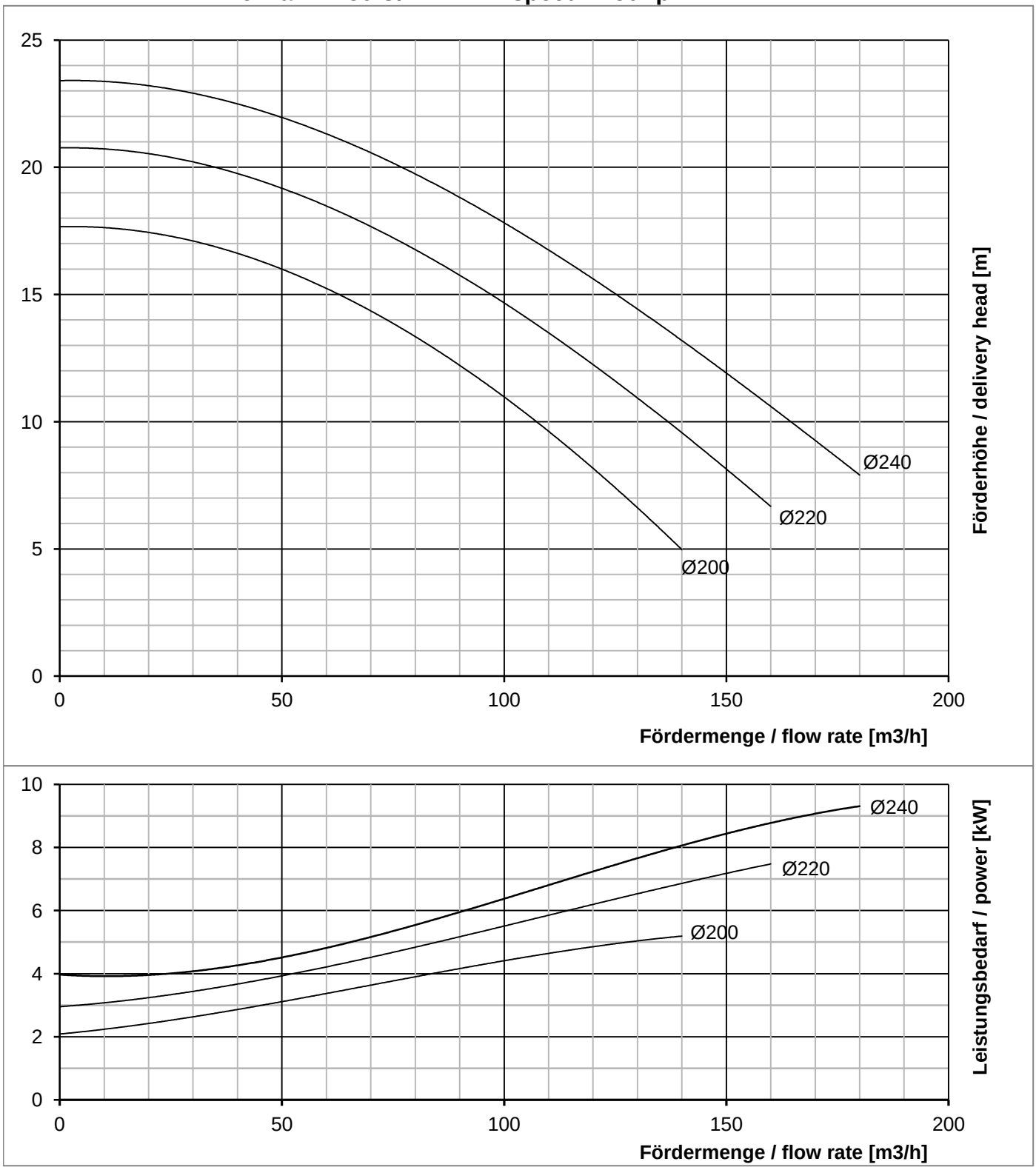




SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LE240-8004-4X**	

Sawa PUMPEN	**Kreiselpumpe** **Typ: LE240-125/100**	**Centrifugal Pump** **Type: LE240-125/100**	Nummer: KL Revision: B/ 05.2016 Seite 1/1

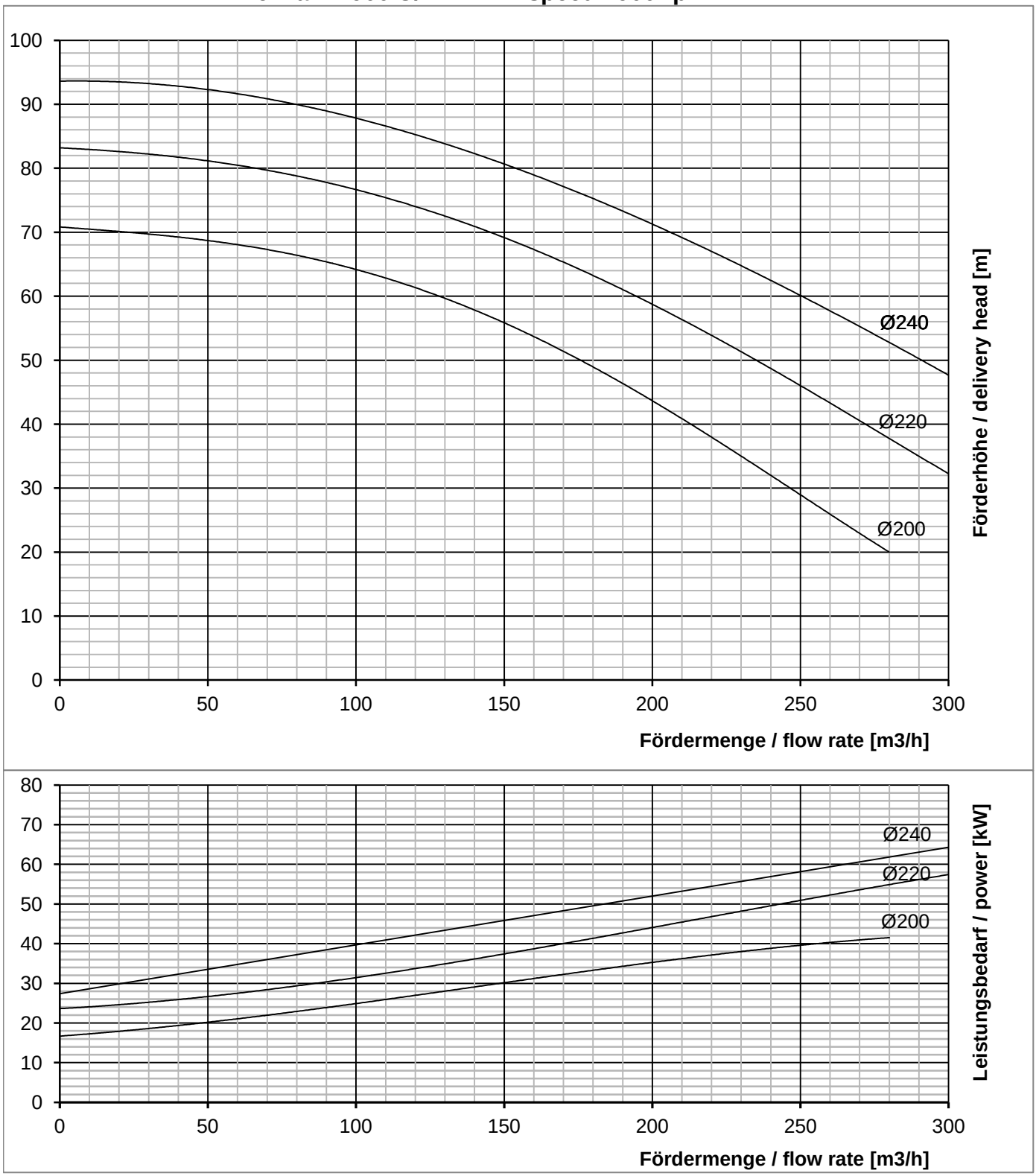
Wasser bei 20°C **water at 20°C**
Drehzahl 1450 U/min **speed 1450 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LE240-8001-4X**	

Sawa PUMPEN	**Kreiselpumpe** **Typ: LE240-125/100**	**Centrifugal Pump** **Type: LE240-125/100**	Nummer: KL Revision: A/ 03.2016 Seite 1/1

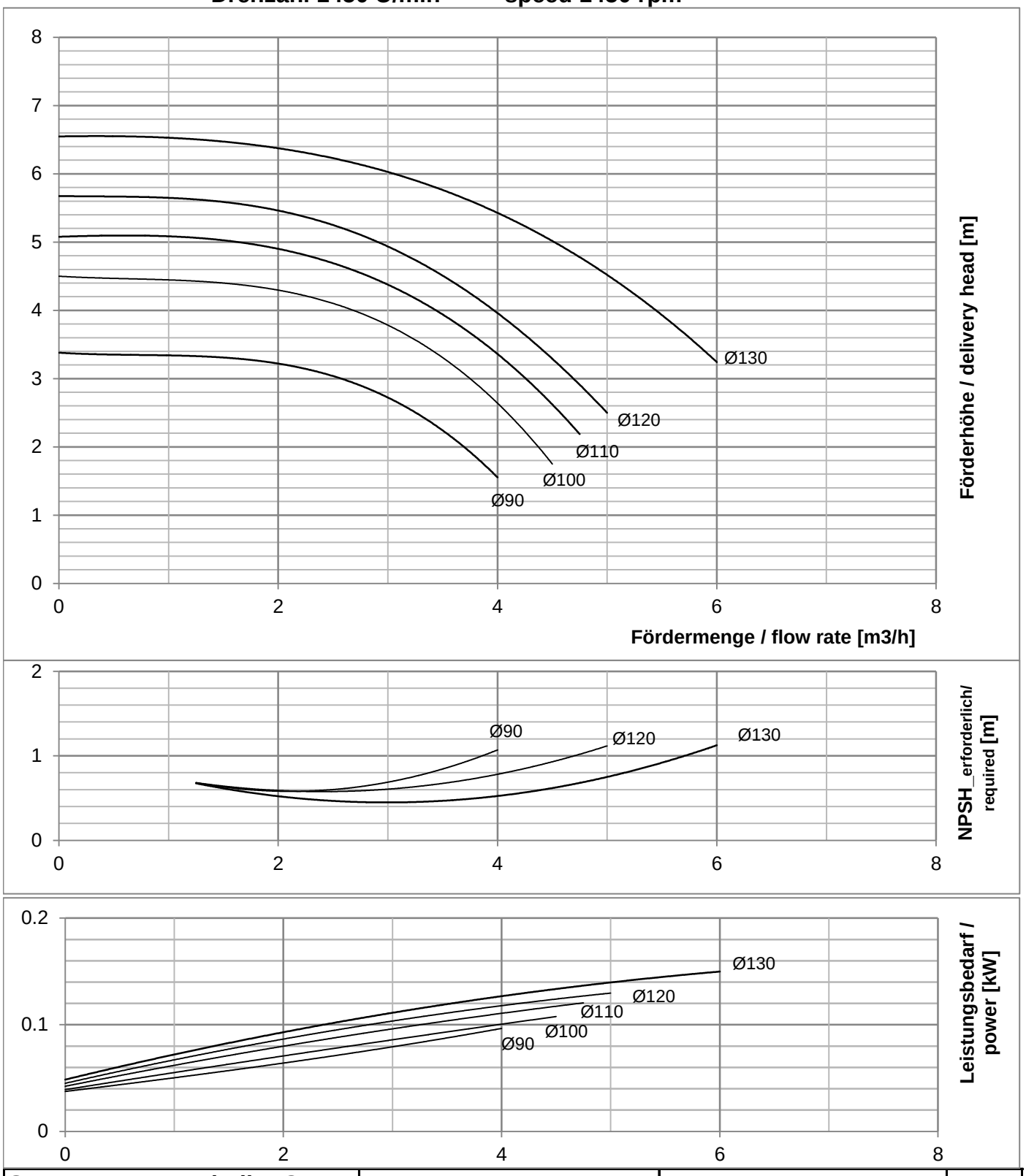
Wasser bei 20°C **water at 20°C**
Drehzahl 2900 U/min **speed 2900 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LE240-8002-4X**	

Sawa PUMPEN	**Kreiselpumpe** **Typ: LEP130-32/20**	**Centrifugal Pump** **Type: LEP130-32/20**	Nummer: KL Revision: A/ 11.2020 Seite 1/1

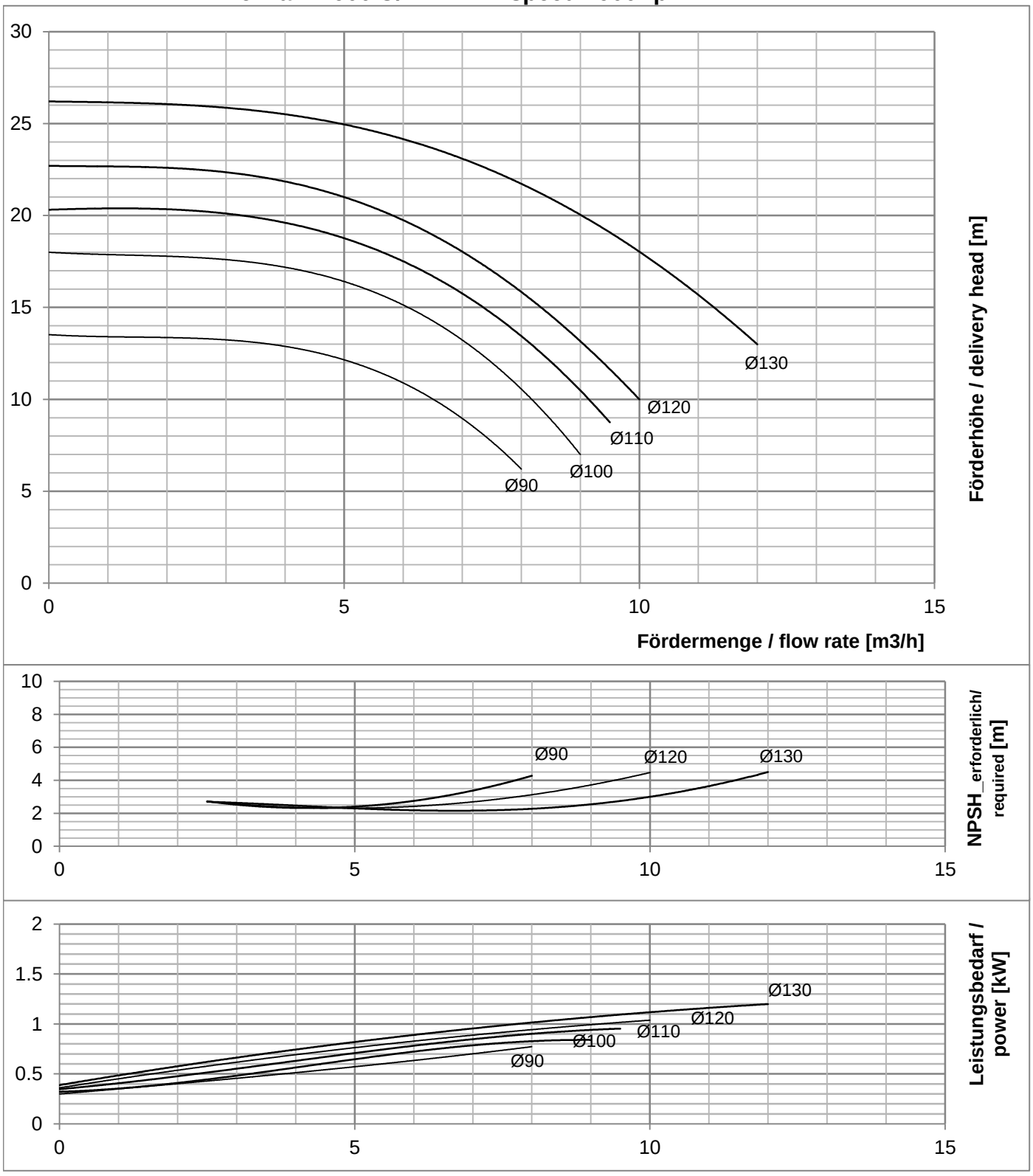
Wasser bei 20°C **water at 20°C**
Drehzahl 1450 U/min **speed 1450 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LEP130-8002-4X**	25Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ: LEP130-32/20**	**Centrifugal Pump** **Type: LEP130-32/20**	Nummer: KL Revision: A/ 11.2020 Seite 1/1

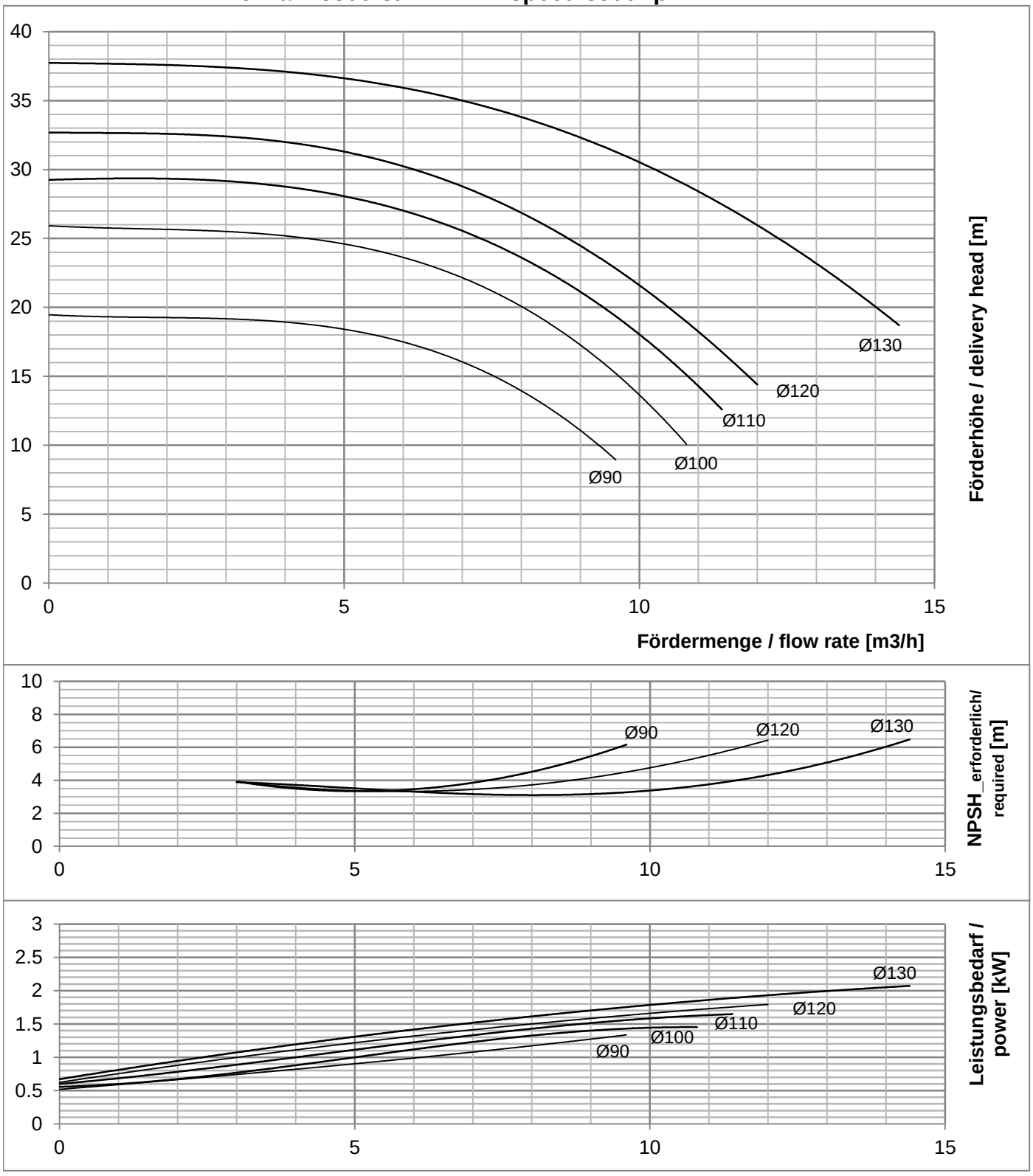
Wasser bei 20°C **water at 20°C**
Drehzahl 2900 U/min **speed 2900 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LEP130-8001-4X**	50Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ: LEP130-32/20**	**Centrifugal Pump** **Type: LEP130-32/20**	Nummer: KL Revision: A/ 11.2020 Seite 1/1

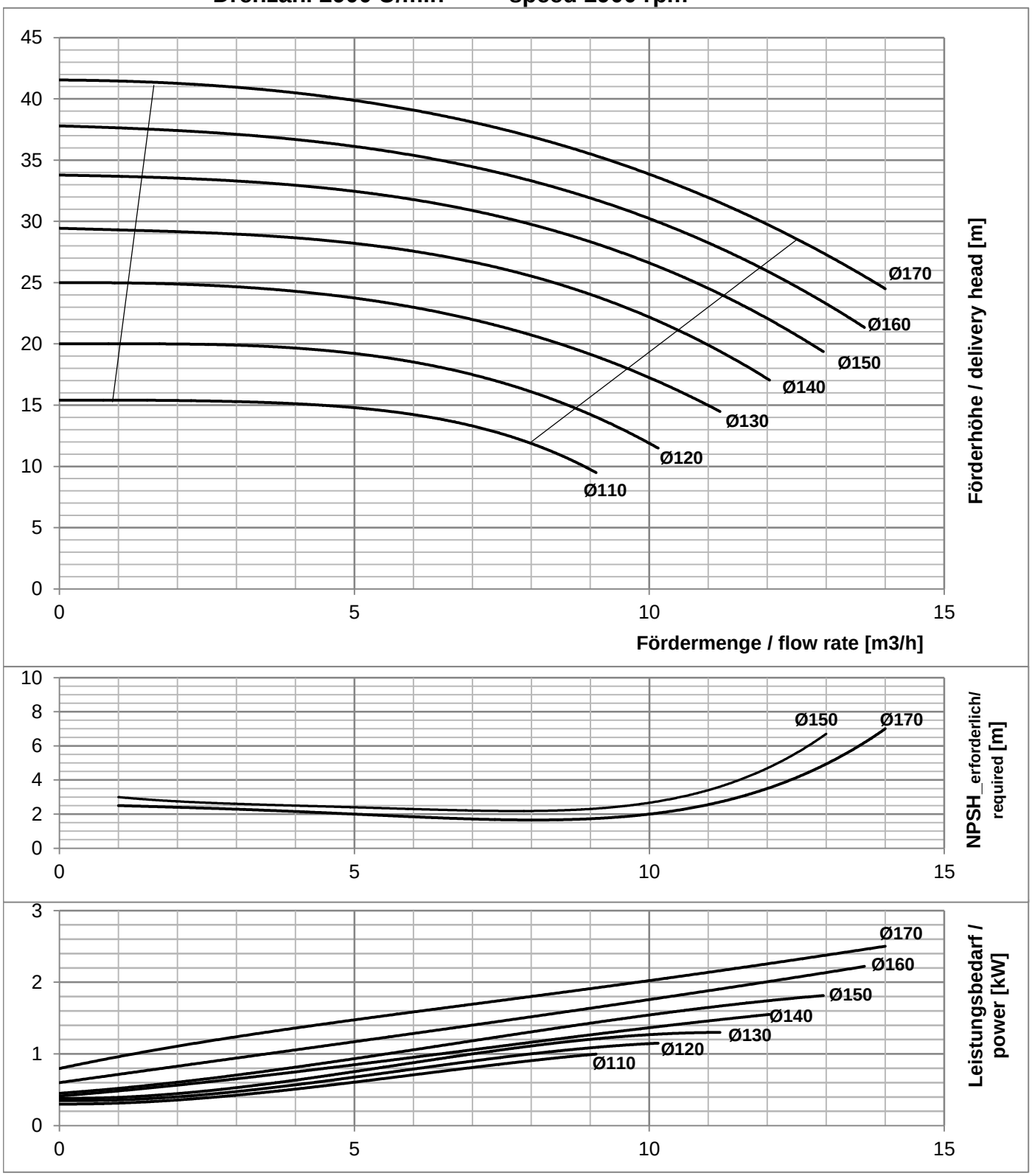
Wasser bei 20°C **water at 20°C**
Drehzahl 3500 U/min **speed 3500 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LEP130-8001-4X**	60Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ: LEP150-50/25**	**Centrifugal Pump** **Type: LEP150-50/25**	Nummer: KL Revision: A/ 10.2019 Seite 1/1

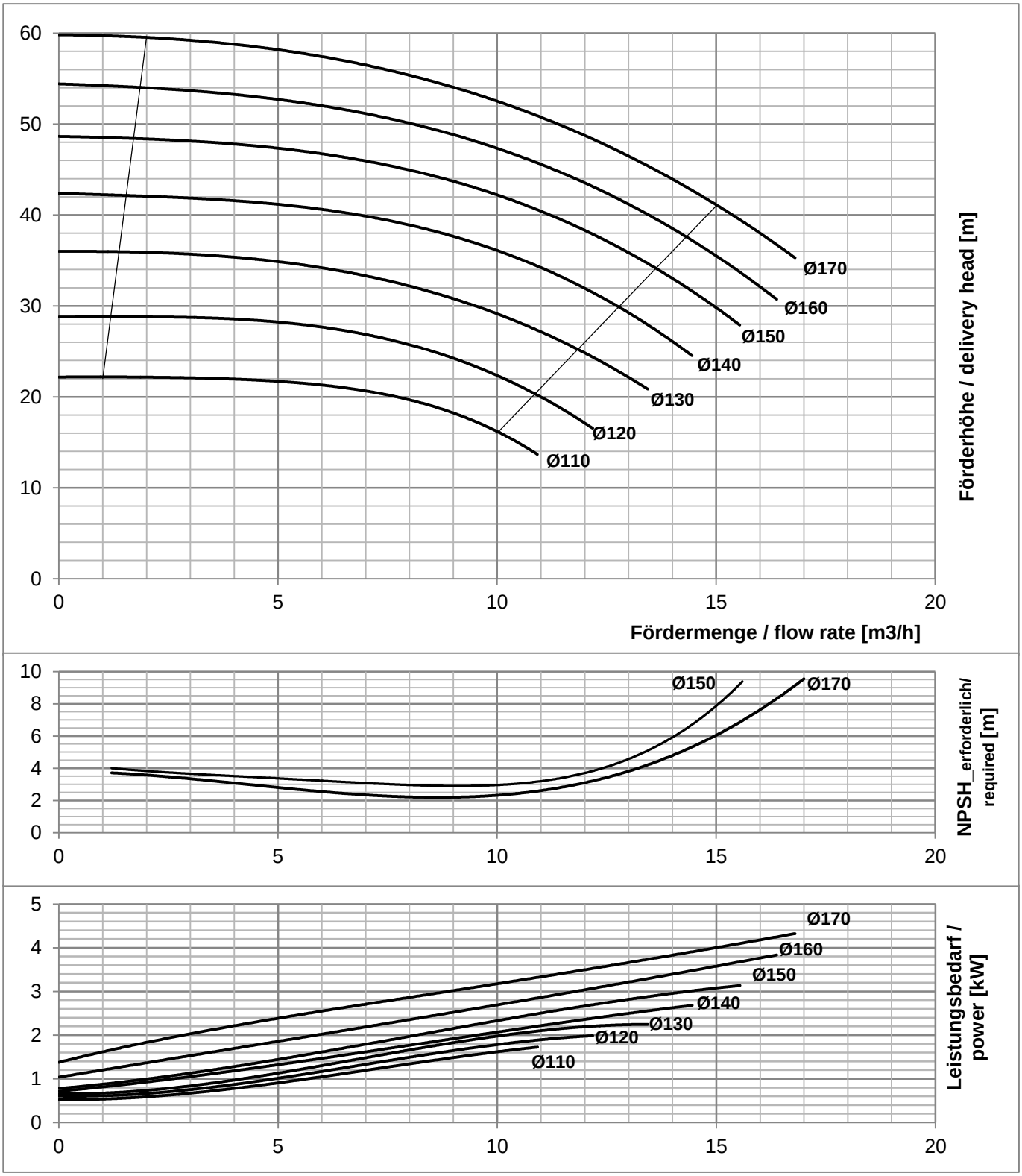
Wasser bei 20°C **water at 20°C**
Drehzahl 2900 U/min **speed 2900 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LEP150-8001-4X**	50Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ: LEP150-50/40**	**Centrifugal Pump** **Type: LEP150-50/40**	Nummer: KL Revision: A/ 05.2020 Seite 1/1

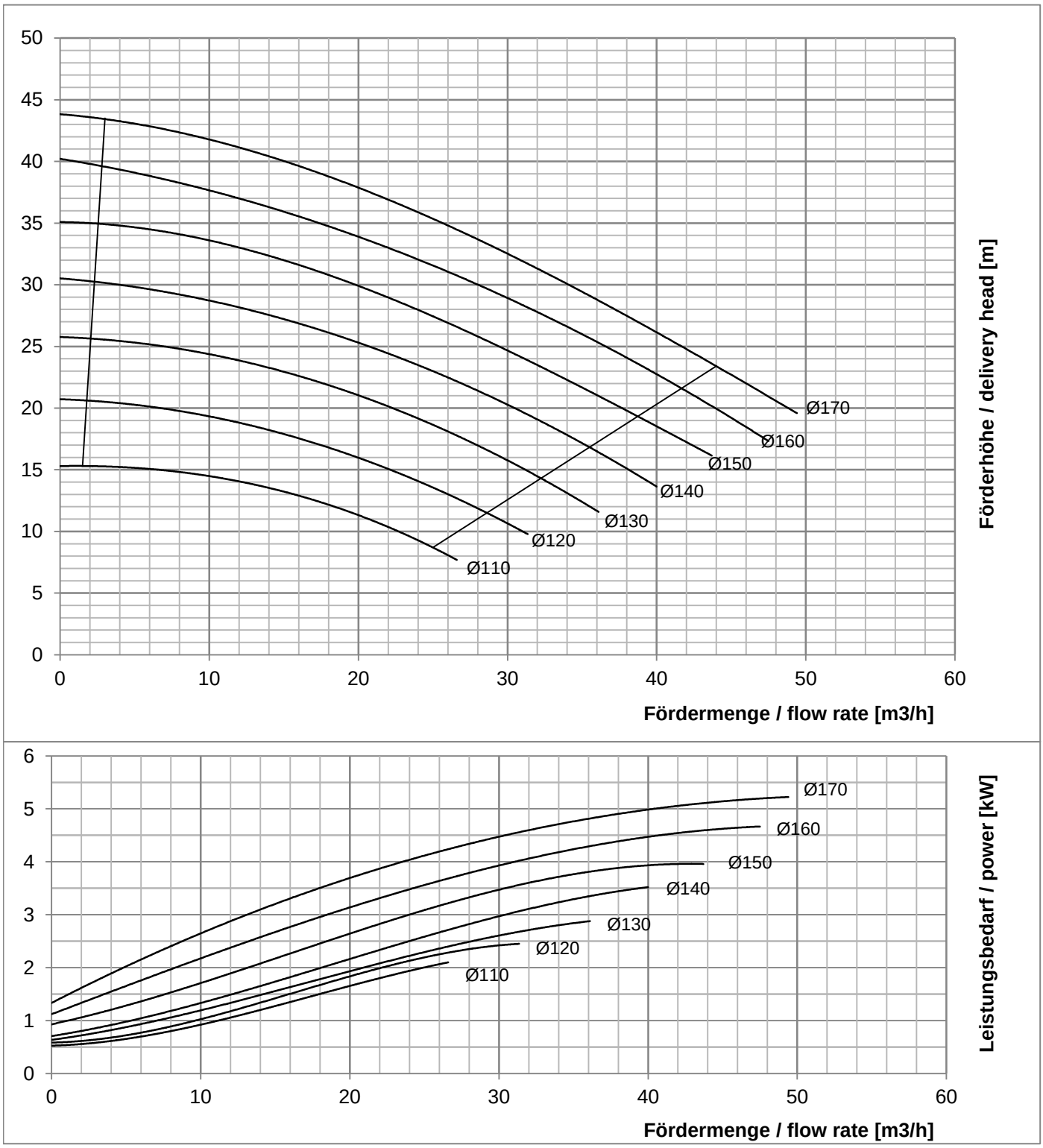
Wasser bei 20°C **water at 20°C**
Drehzahl 3500 U/min **speed 3500 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LEP150-8003-4X**	60Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ: LEP170-50/40**	**Centrifugal Pump** **Type: LEP170-50/40**	Nummer: KL Revision: B/ 04.2020 Seite 1/1

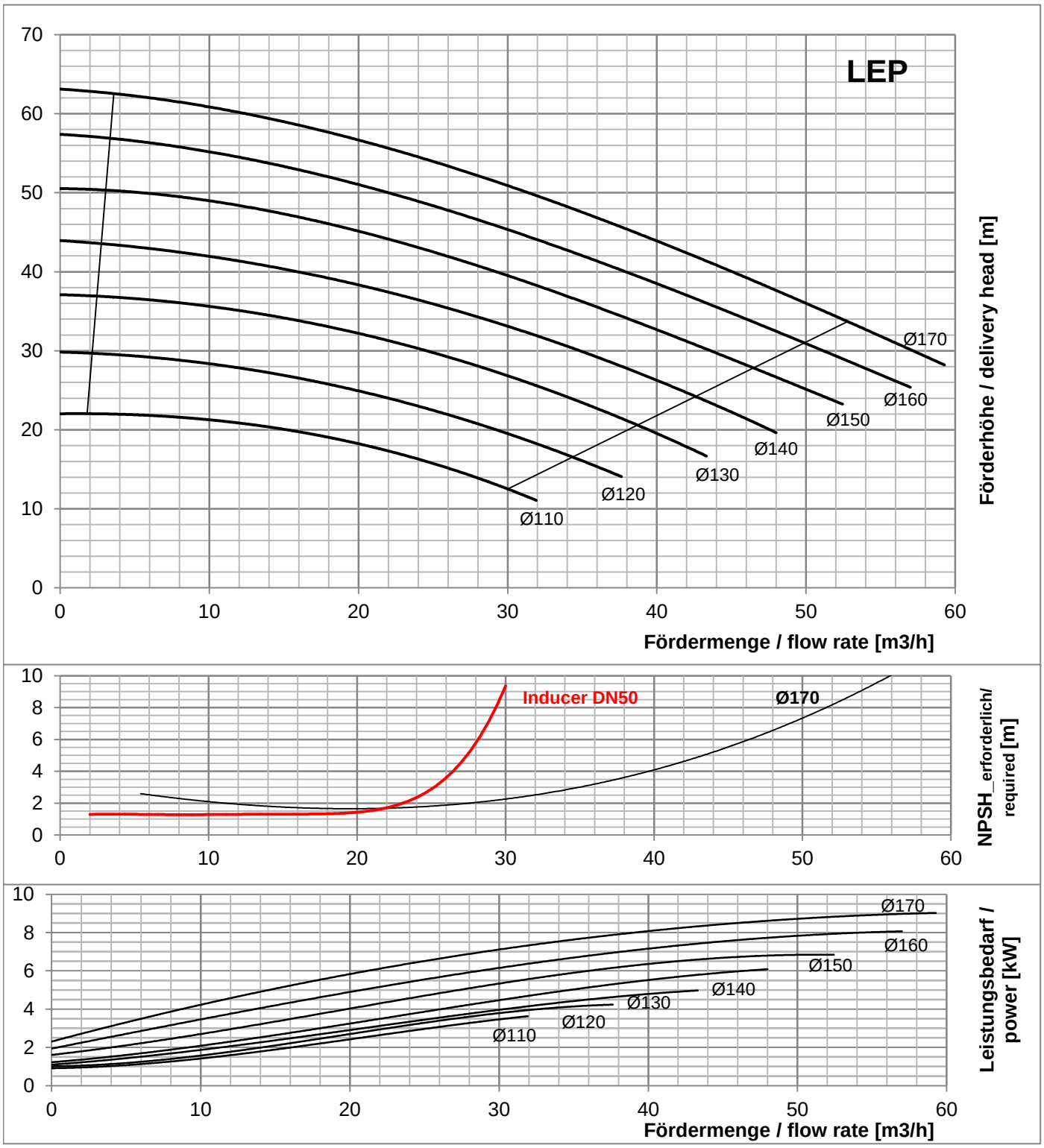
Wasser bei 20°C **water at 20°C**
Drehzahl 2900 U/min **speed 2900 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LEP170-8000-4X**	50Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ: LEP170-50/40**	**Centrifugal Pump** **Type: LEP170-50/40**	Nummer: KL Revision: A/ 03.2020 Seite 1/1

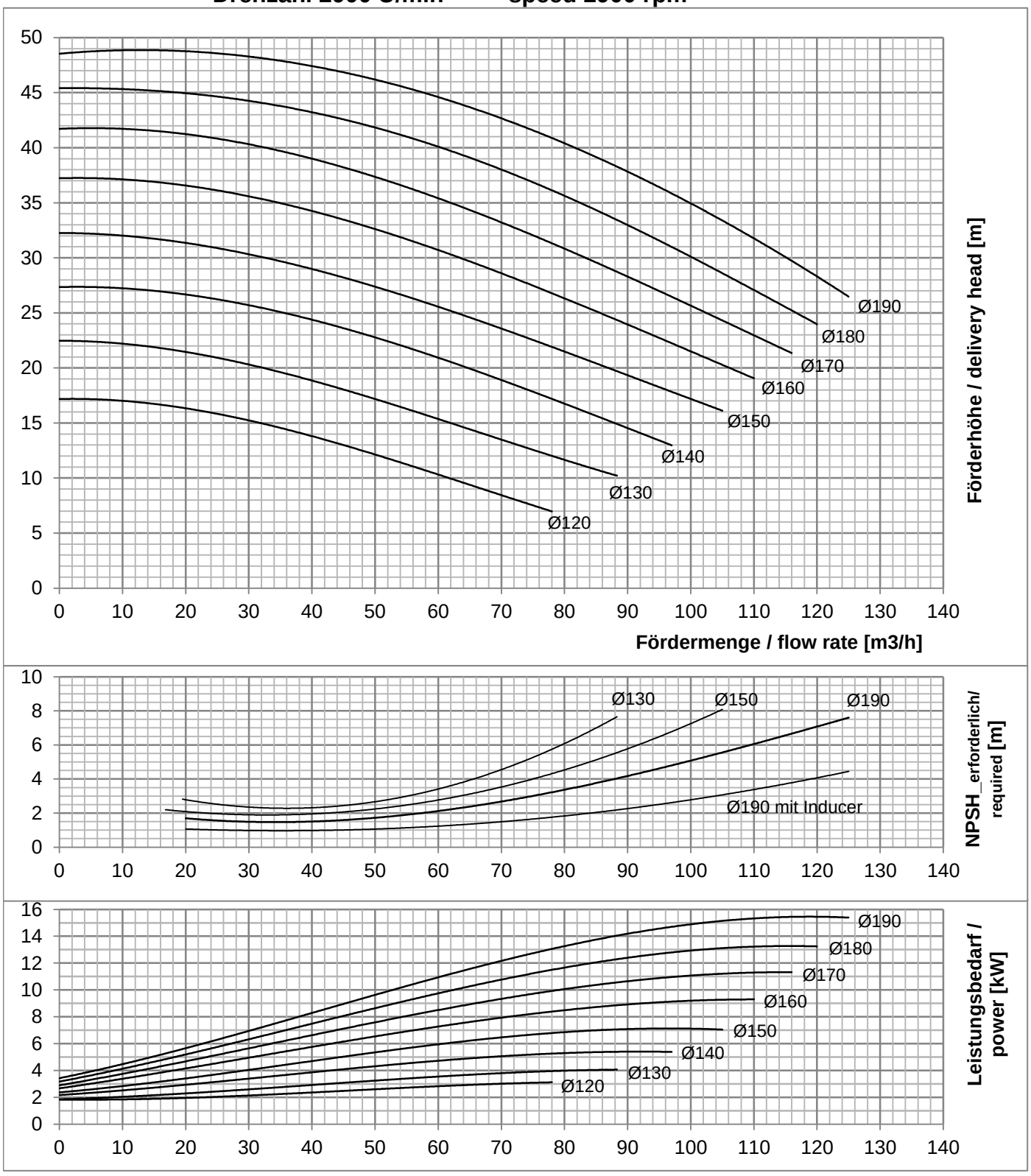
Wasser bei 20°C **water at 20°C**
Drehzahl 3500 U/min **speed 3500 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LEP170-8098-4X**	60Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ: LEP190-80/65**	**Centrifugal Pump** **Type: LEP190-80/65**	Nummer: KL Revision: A/ 04.2020 Seite 1/1

Wasser bei 20°C **water at 20°C**
Drehzahl 2900 U/min **speed 2900 rpm**

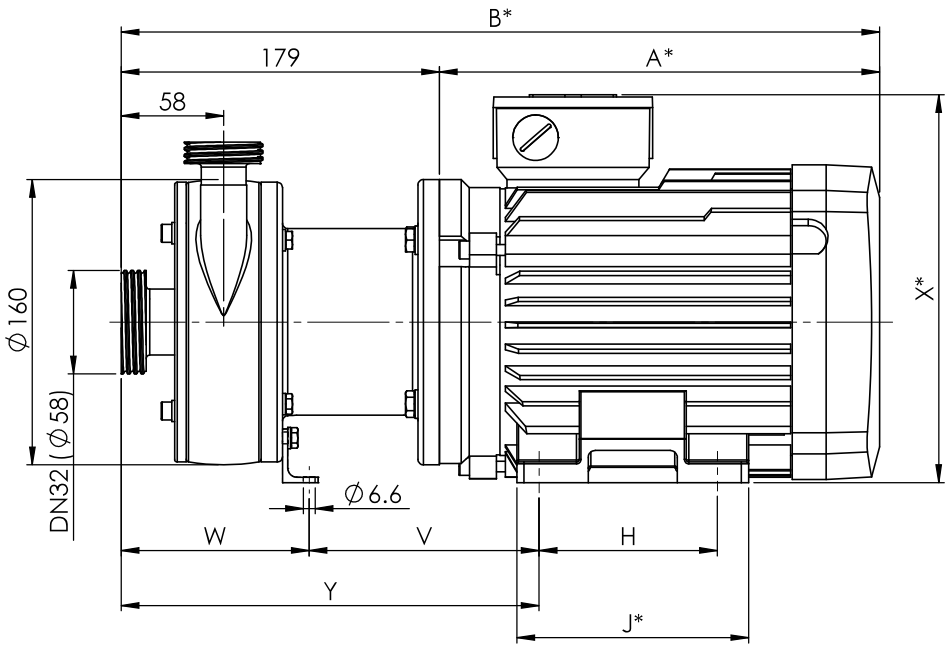


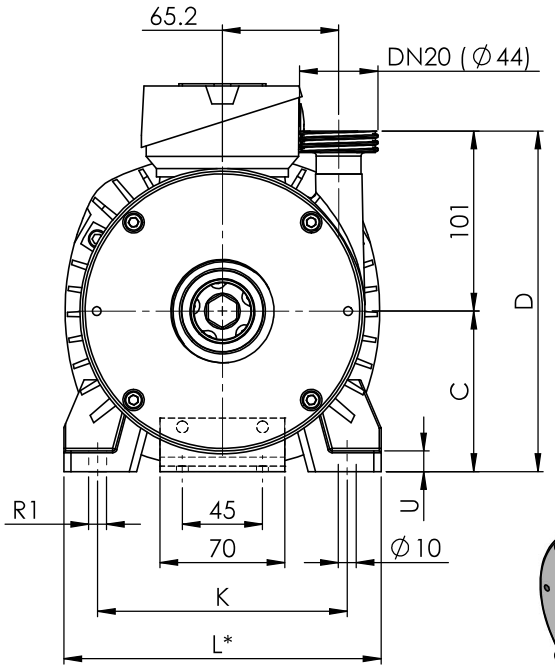
SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LEP190-8001-4X**	50Hz

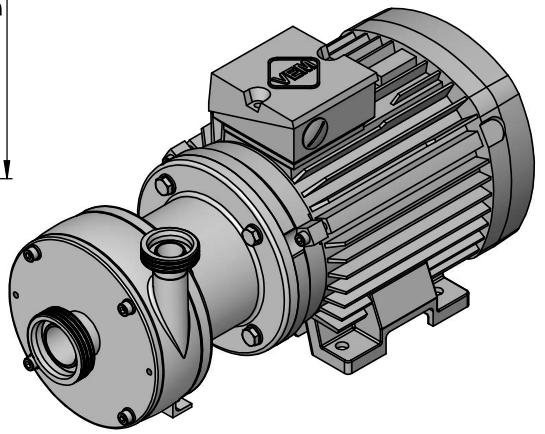
Kreiselpumpe
Typ: LE130-32/20-MI

Centrifugal Pump
Type: LE130-32/20-MI

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	10.06.2020
Freigegeben	AF	07.09.2020







*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

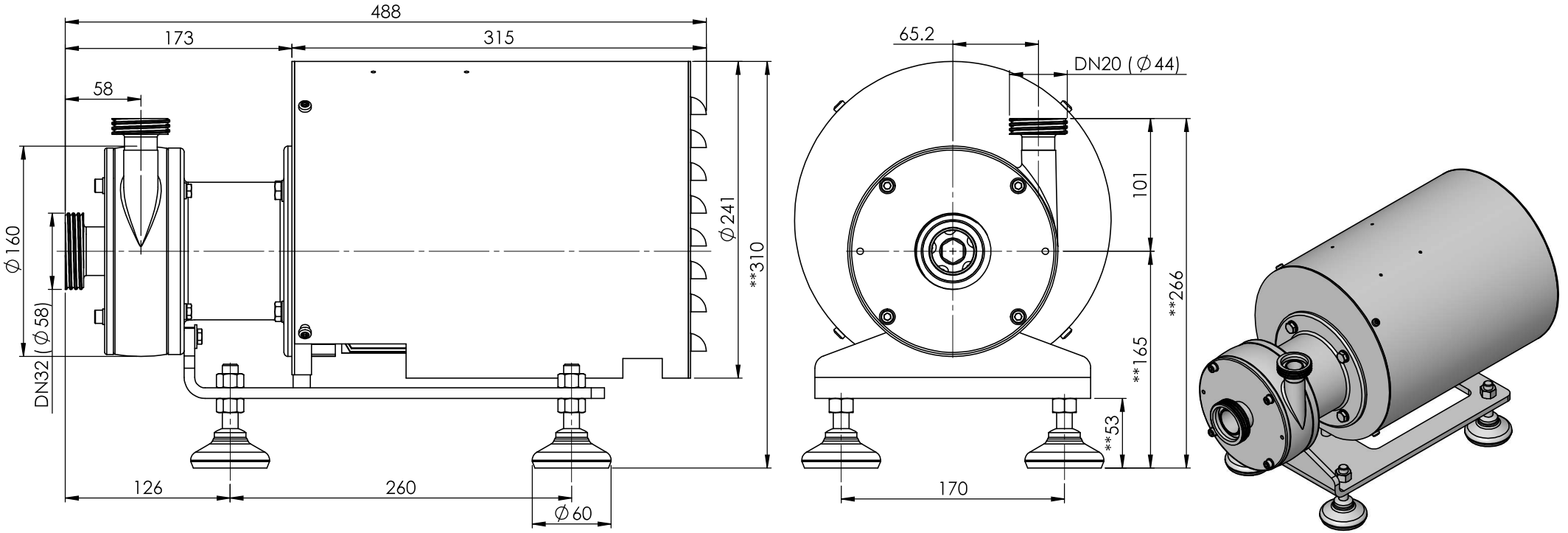
Saugstutzen / Suction Branch: Gewindestutzen/Threaded port DN32 / DIN 11851 **Druckstutzen / Pressure Branch:** Gewindestutzen/Threaded port DN20 / DIN 11851

Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG80 B34/Ø160	0.75 / 2900	209	388	80	181	-	-	-	100	125	125	168	-	-	-	-	10	-	-	-	12	113	116	191	229	-
IE3-2P-BG80 B34/Ø160	1.1 / 2900	225	404	80	181	-	-	-	100	125	125	152	-	-	-	-	10	-	-	-	9	113	116	200	229	-
IE3-2P-BG90 B34/Ø160	1.5 / 2900	247	426	90	191	-	-	-	100	130	140	178	-	-	-	-	10	-	-	-	14	129	106	210	235	-
IE3-2P-BG90 B34/Ø160	2.2 / 2900	271	450	90	191	-	-	-	125	155	140	178	-	-	-	-	10	-	-	-	11	129	106	217	235	-

Kreiselpumpe
Typ: LE130-32/20-MT

Centrifugal Pump
Type: LE130-32/20-MT

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	11.06.2020
Freigegeben	AF	07.09.2020



*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

**** Verstellbar / adjustable +5mm/-10mm**

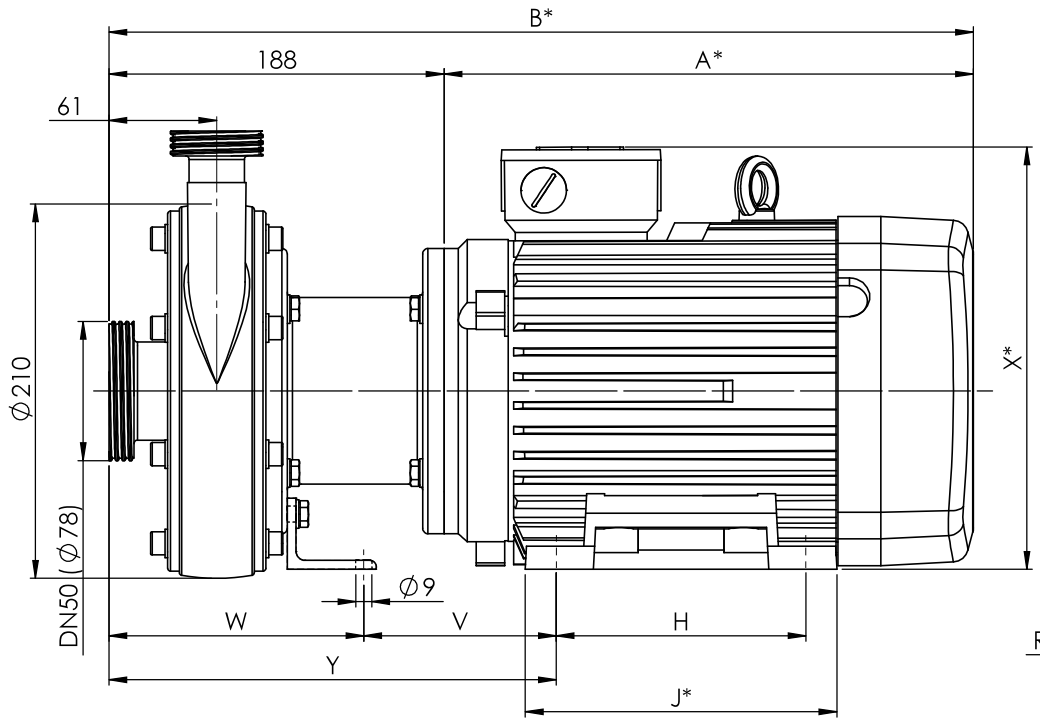
Saugstutzen / Suction Branch: Gewindestutzen/Threaded port DN32 / DIN 11851 **Druckstutzen / Pressure Branch:** Gewindestutzen/Threaded port DN20 / DIN 11851

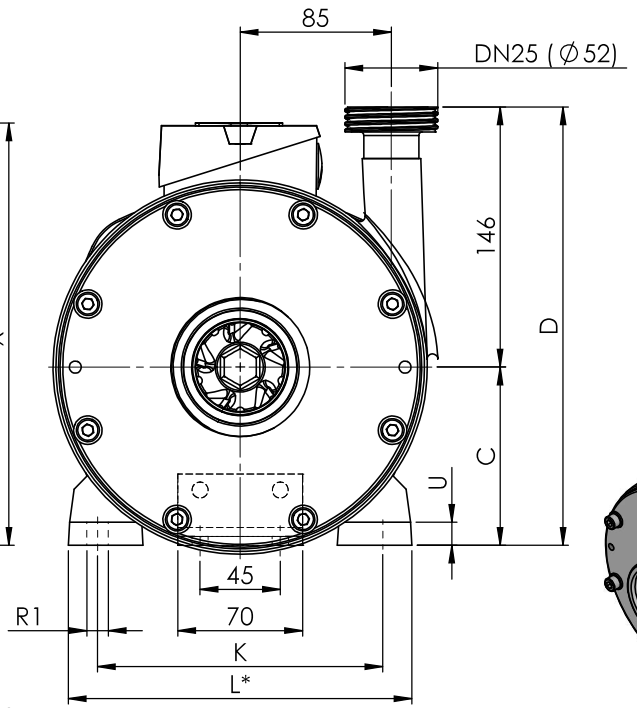
Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG80 B14/Ø160	0.75 / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IE3-2P-BG80 B14/Ø160	1.1 / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IE3-2P-BG90 B14/Ø160	1.5 / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IE3-2P-BG90 B14/Ø160	2.2 / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

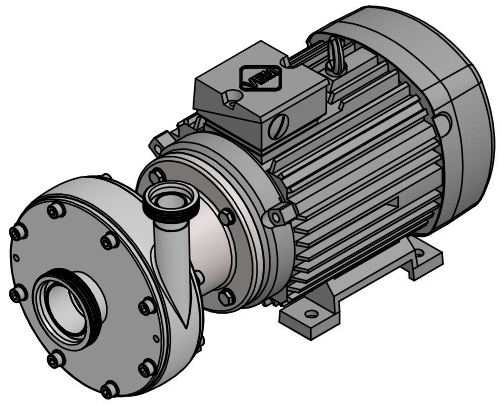
Kreiselpumpe
Typ: LE150-50/25-MI

Centrifugal Pump
Type: LE150-50/25-MI

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	11.06.2020
Freigegeben	AF	07.09.2020







*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

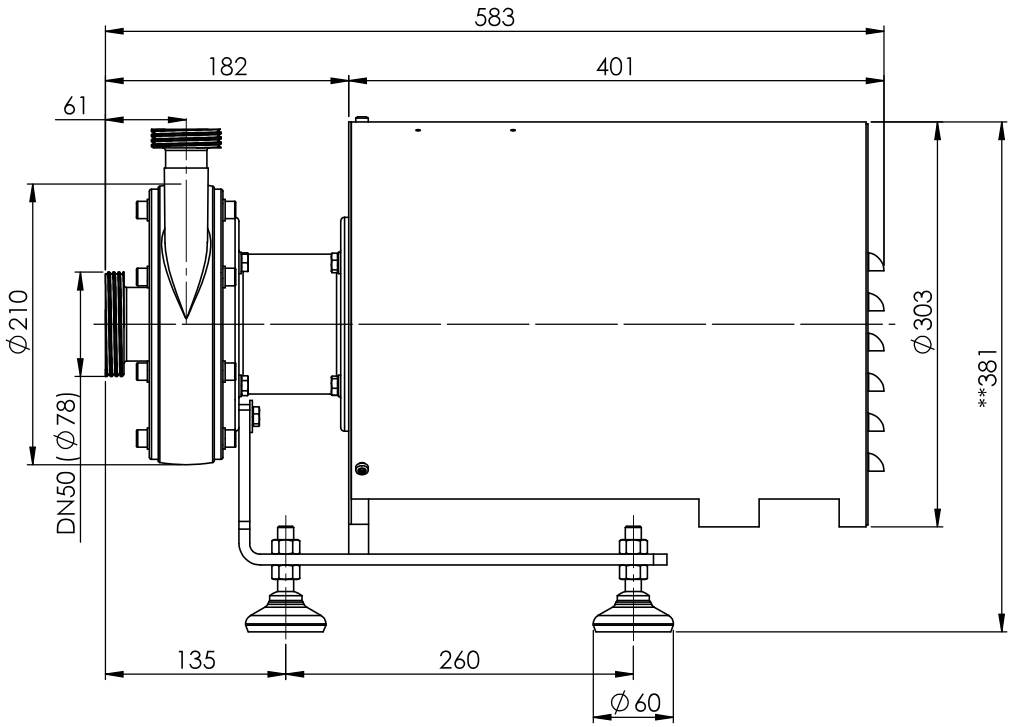
Saugstutzen / Suction Branch: Gewindestutzen/Threaded port DN50 / DIN 11851 **Druckstutzen / Pressure Branch:** Gewindestutzen/Threaded port DN25 / DIN 11851

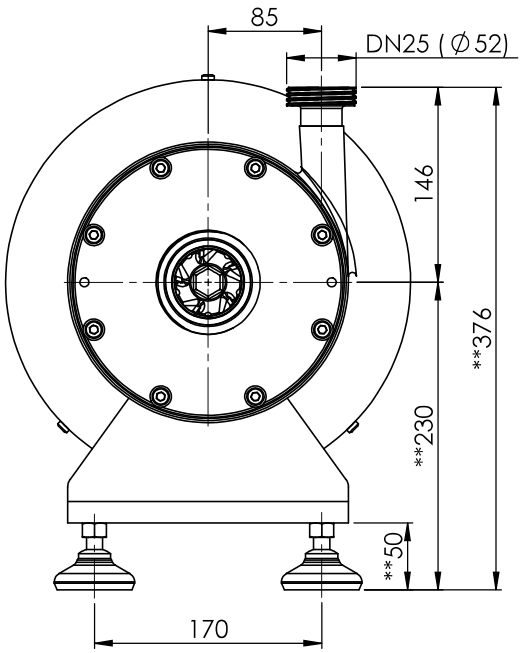
Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG80 B34/Ø160	0.75 / 2900	209	397	80	226	-	-	-	100	125	125	168	-	-	-	-	10	-	-	-	12	-	-	191	238	-
IE3-2P-BG80 B34/Ø160	1.1 / 2900	225	413	80	226	-	-	-	100	125	125	152	-	-	-	-	10	-	-	-	9	-	-	200	238	-
IE3-2P-BG90 B34/Ø160	1.5 / 2900	247	435	90	236	-	-	-	100	130	140	178	-	-	-	-	10	-	-	-	14	123	121	210	244	-
IE3-2P-BG90 B34/Ø160	2.2 / 2900	271	459	90	236	-	-	-	125	155	140	178	-	-	-	-	10	-	-	-	11	123	121	217	244	-
IE3-2P-BG100 B34/Ø160	3.0 / 2900	297	485	100	246	-	-	-	140	175	160	193	-	-	-	-	12	-	-	-	13	108	143	236	251	-

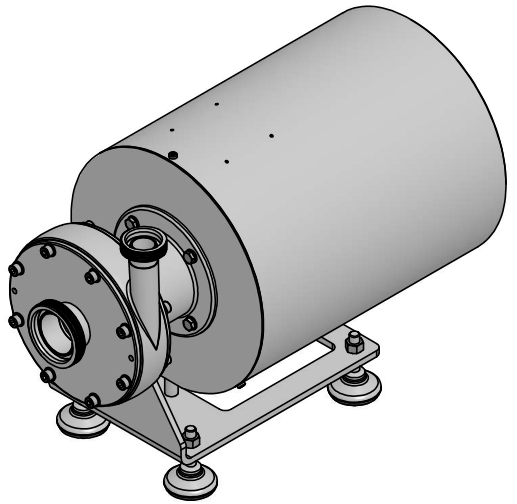
Kreiselpumpe
Typ: LE150-50/25-MT

Centrifugal Pump
Type: LE150-50/25-MT

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	12.06.2020
Freigegeben	AF	07.09.2020







*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

**** Verstellbar / adjustable +10mm/-8mm**

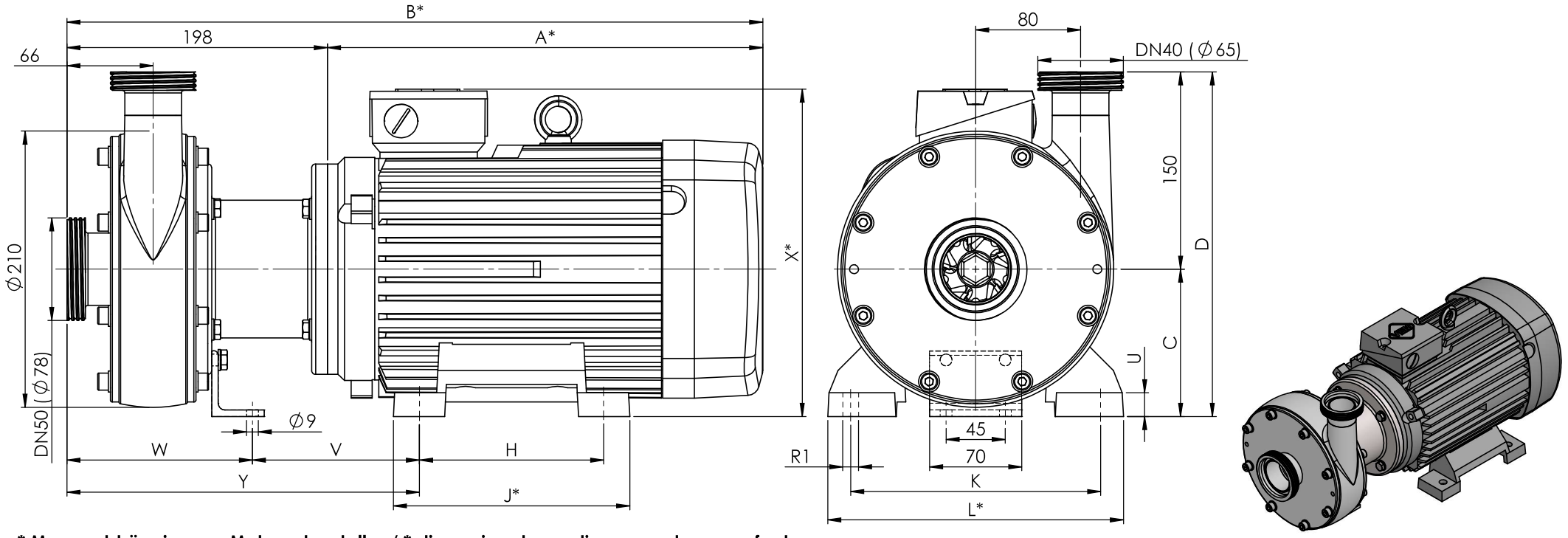
Saugstutzen / Suction Branch: Gewindestutzen/Threaded port DN50 / DIN 11851 **Druckstutzen / Pressure Branch:** Gewindestutzen/Threaded port DN25 / DIN 11851

Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG80 B14/Ø160	0.75 / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IE3-2P-BG80 B14/Ø160	1.1 / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IE3-2P-BG90 B14/Ø160	1.5 / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IE3-2P-BG90 B14/Ø160	2.2 / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IE3-2P-BG100 B14/Ø160	3.0 / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Kreiselpumpe
Typ: LE170-50/40-MI

Centrifugal Pump
Type: LE170-50/40-MI

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	12.06.2020
Freigegeben	AF	07.09.2020



*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

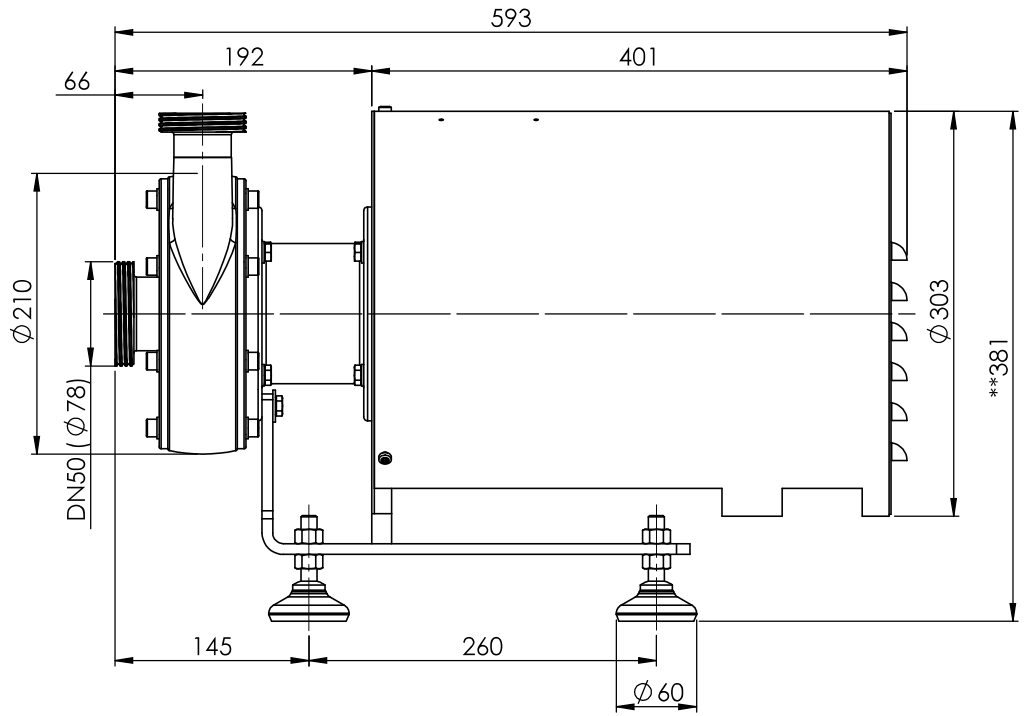
Saugstutzen / Suction Branch: Gewindestutzen/Threaded port DN50 / DIN 11851 **Druckstutzen / Pressure Branch:** Gewindestutzen/Threaded port DN40 / DIN 11851

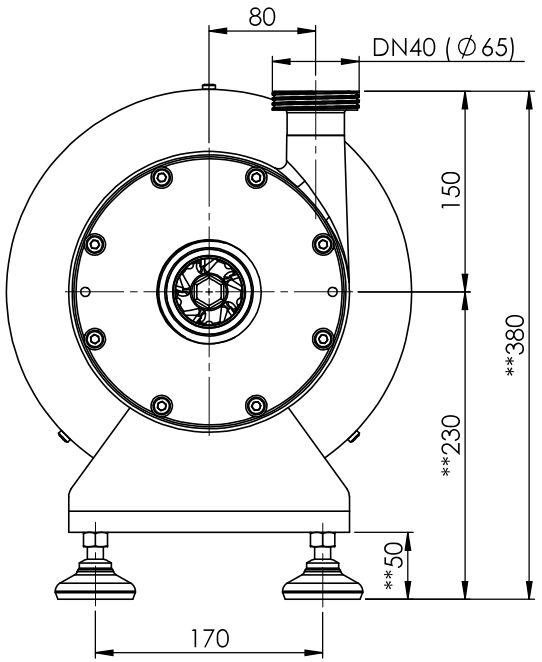
Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG90 B34/Ø160	1.5 / 2900	247	445	90	240	-	-	-	100	130	140	178	-	-	-	-	10	-	-	-	14	123	121	210	244	-
IE3-2P-BG90 B34/Ø160	2.2 / 2900	271	469	90	240	-	-	-	125	155	140	178	-	-	-	-	10	-	-	-	11	123	121	217	244	-
IE3-2P-BG100 B34/Ø160	3.0 / 2900	297	495	100	250	-	-	-	140	175	160	193	-	-	-	-	12	-	-	-	13	108	143	236	251	-
IE3-2P-BG112 B34/Ø160	4.0 / 2900	331	529	112	262	-	-	-	140	180	190	225	-	-	-	-	12	-	-	-	18	127	141	248	268	-
IE3-2P-BG112 B34/Ø160	5.5 / 2900	361	559	112	262	-	-	-	140	180	190	225	-	-	-	-	12	-	-	-	18	127	141	248	268	-

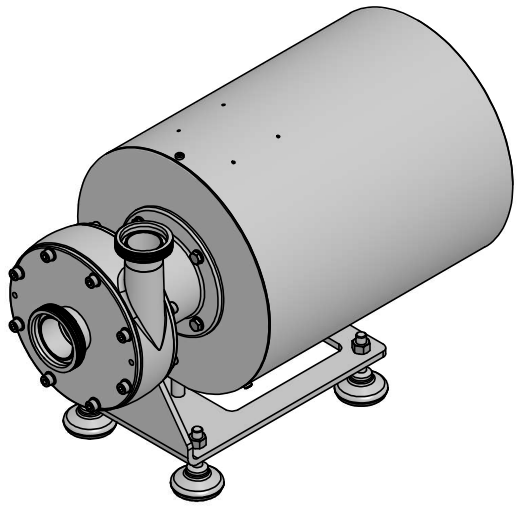
Kreiselpumpe
Typ: LE170-50/40-MT

Centrifugal Pump
Type: LE170-50/40-MT

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	12.06.2020
Freigegeben	AF	07.09.2020







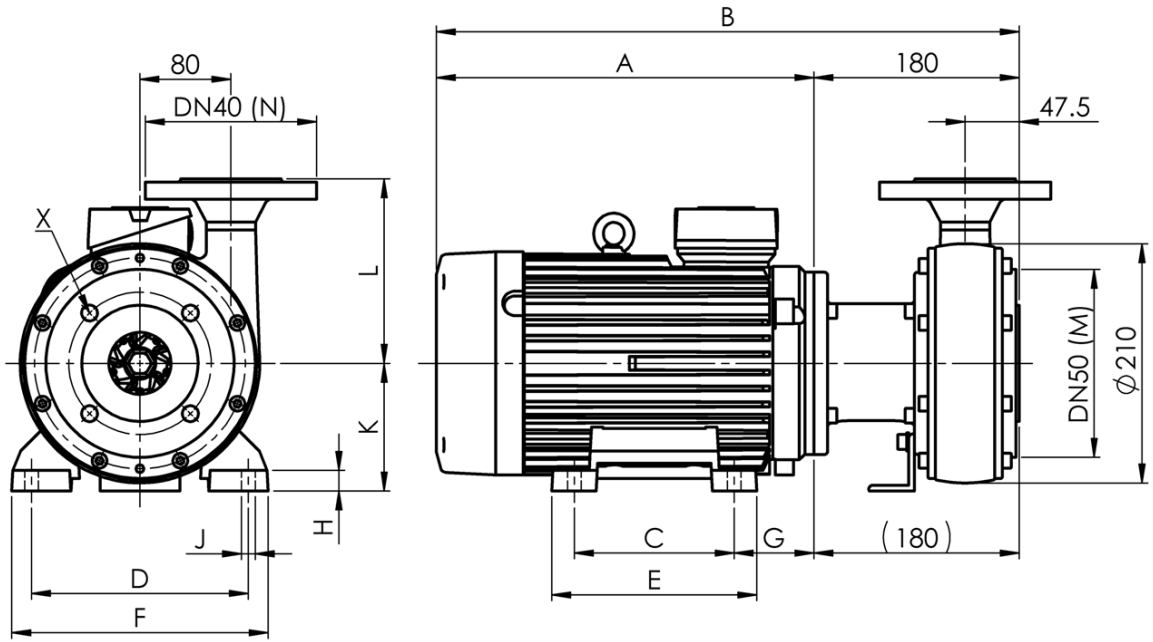
*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

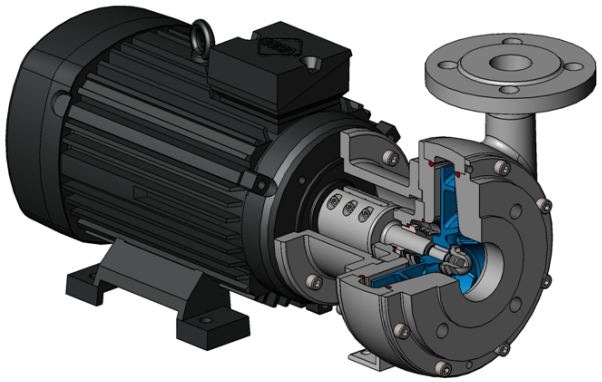
**** Verstellbar / adjustable +10mm/-8mm**

Saugstutzen / Suction Branch: Gewindestutzen/Threaded port DN50 / DIN 11851 **Druckstutzen / Pressure Branch:** Gewindestutzen/Threaded port DN40 / DIN 11851

Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG90 B14/Ø160	1.5 / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IE3-2P-BG90 B14/Ø160	2.2 / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IE3-2P-BG100 B14/Ø160	3.0 / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IE3-2P-BG112 B14/Ø160	4.0 / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IE3-2P-BG112 B14/Ø160	5.5 / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Sawa PUMPEN	**Kreiselpumpe** Typ : LE170-50/40-FI	**Centrifugal Pump** Type : LE170-50/40-FI	Nummer : MB Revision : B / 08.16 Seite 1 / 1

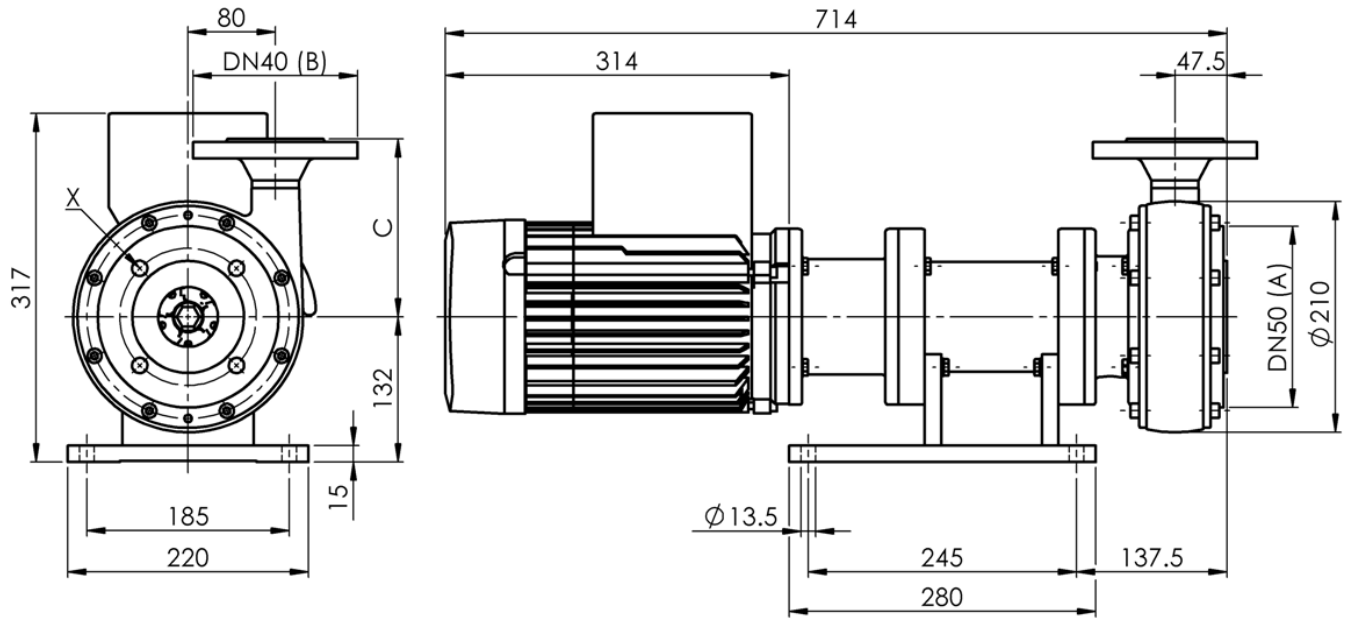


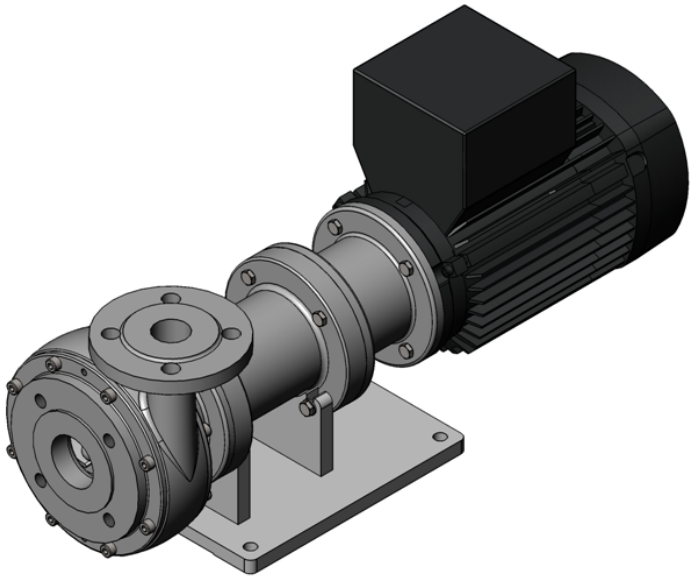


Anschlüsse	L	M	N	X (Lochbild + Innengewinde)
Vorschweissflansch nach DIN2633	162	Ø165	Ø150	TK-Ø125 / 4 x M16
Vorschweissflansch nach ANSI B16.5 (150lbs RF)	179	Ø152.4	Ø127	TK-Ø120.7 / 4 x M16

Motoren-Typ	Artikel-Nr.	kW / rpm	A	B	C	D	E	F	G	H	J	K
WE1R 90 S2 B3/B14 / Ø160	-	1.5 / 2900	271	451	100	140	150	167	56	9.5	10	90
WE1R 90 L2 B3/B14 / Ø160	000959	2.2 / 2900	271	451	125	140	150	167	56	9.5	10	90
WE1R 100 L2 B3/B14c / Ø160	014655	3.0 / 2900	298	478	140	160	171	188	63	11	12	100
WE1R 112 MX2 B3/B14 / Ø160	013552	4.0 / 2900	331	511	140	190	180	225	70	18	12	112

SAWA PUMPEN	**Kreiselpumpe** Typ : LE170-50/40-FW	**Centrifugal Pump** Type : LE170-50/40-FW	Nummer : MB Revision : B / 08.16 Seite 1 / 1



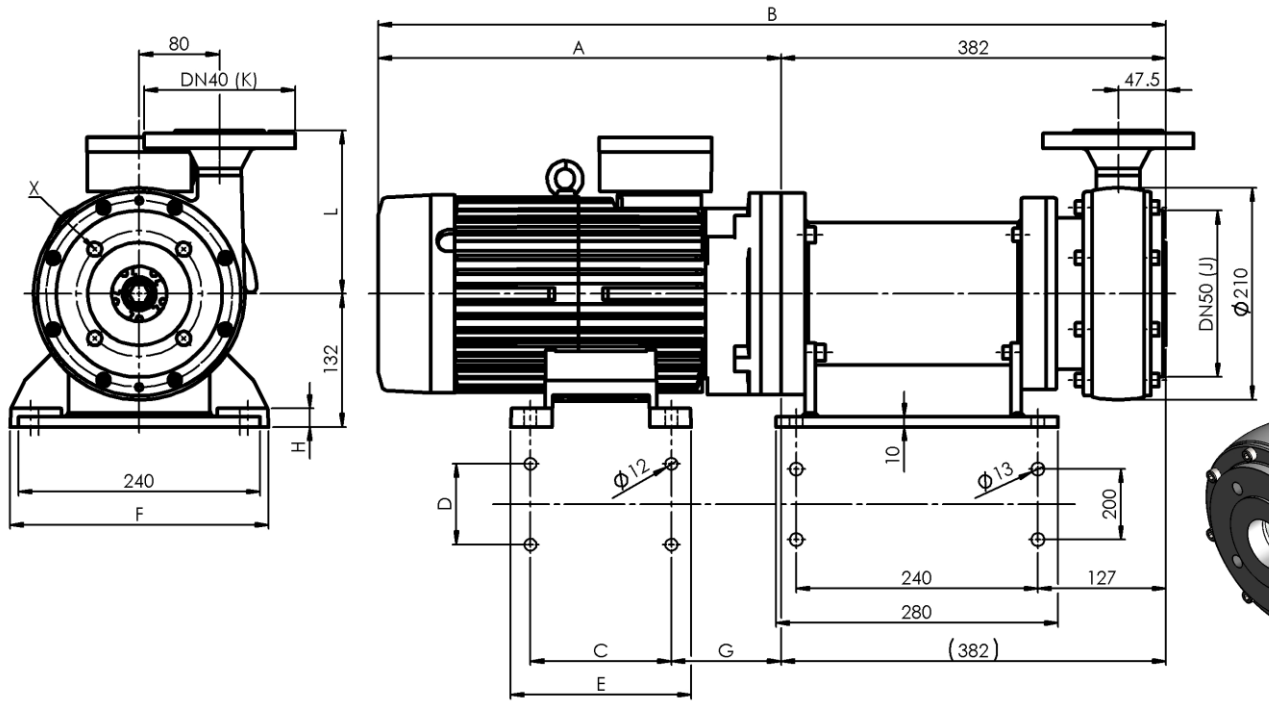


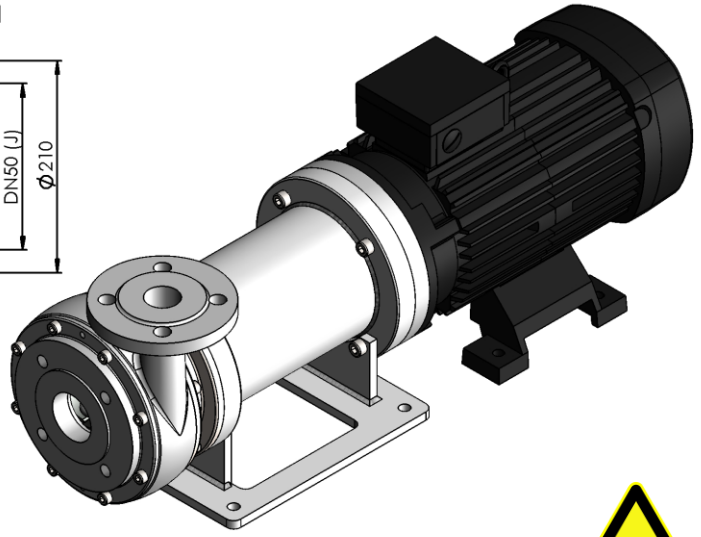
CE Ex **II2G Ex c X**

Anschlüsse	A	B	C	X (Lochbild + Innengewinde)
Vorschweissflansch nach DIN2633	Ø165	Ø150	162	TK-Ø125 / 4 x M16
Vorschweissflansch nach ANSI B16.5 (150lbs RF)	Ø152.4	Ø127	179	TK-Ø120.7 / 4 x M16

Motorentyp	P [kW]	n [rpm]	Ausführung
K82R 90L2	2.2	2900	B14 / Ø160

Sawa PUMPEN	**Kreiselpumpe** Typ : LEM170-50/40-FF	**Centrifugal Pump** Type : LEM170-50/40-FF	Nummer : MB Revision : B / 08.16 Seite 1 / 1





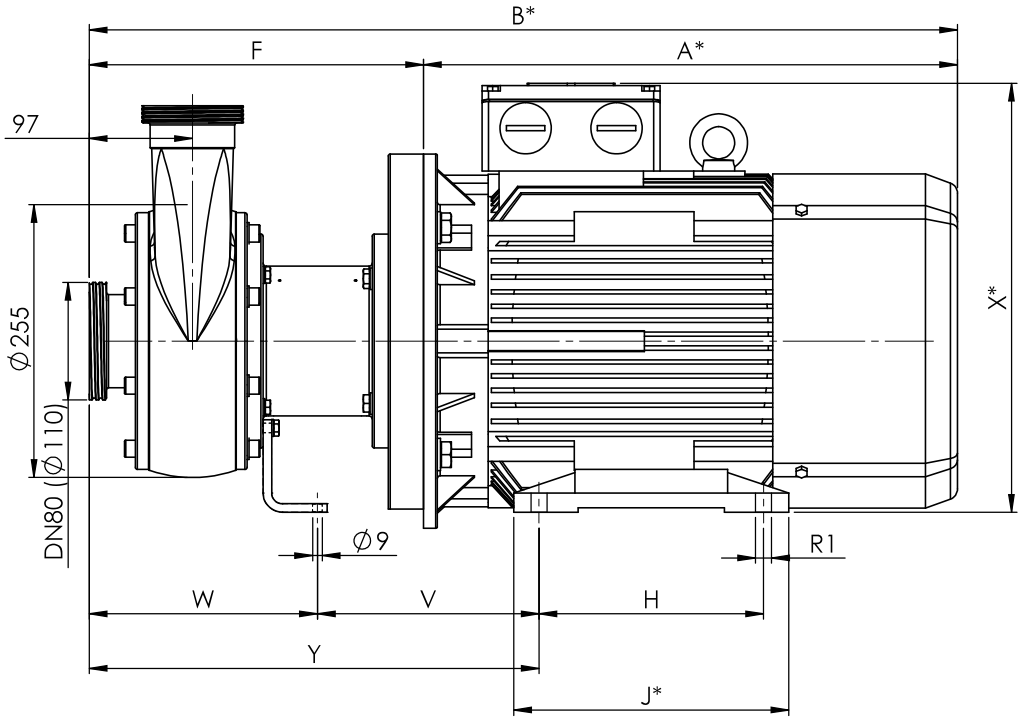
Anschlüsse	J	K	L	X (Lochbild + Innengewinde)
Vorschweissflansch nach DIN2633	Ø165	Ø150	162	TK-Ø125 / 4 x M16
Vorschweissflansch nach ANSI B16.5 (150lbs RF)	Ø152.4	Ø127	179	TK-Ø120.7 / 4 x M16

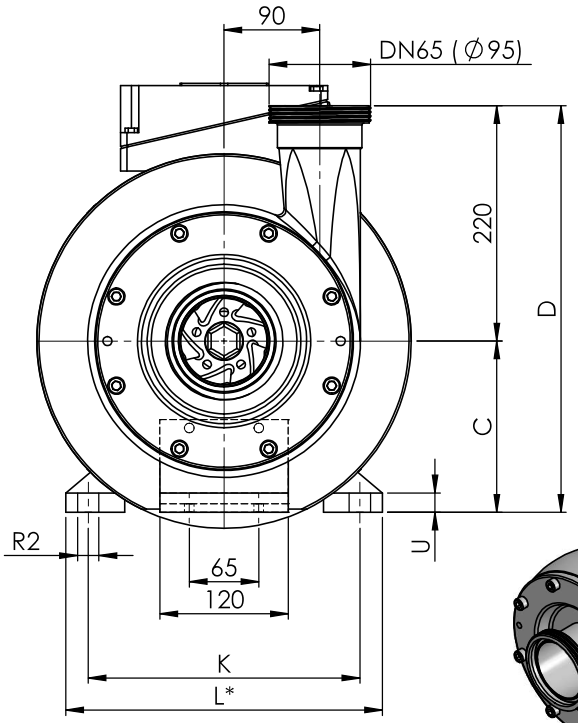
Motoren-Typ	Artikel-Nr.	kW / rpm	A	B	C	D	E	F	G	H
WE1R 100 L-2 B14 / Ø200	005650	3.0 / 2900	298	680	Kein Motorenfuss					
WE1R 112 MX-2 B14 / Ø200	013665	4.0 / 2900	331	713						
WE1R 132 S-2T B3/B14 / Ø200	014035	5.5 / 2900	400	782	140	216	180	256	109	18.5

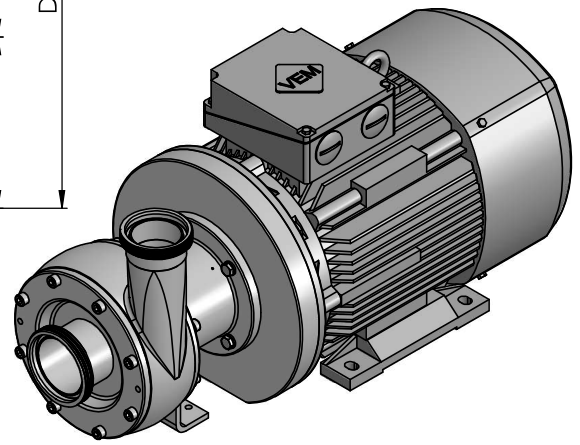
Kreiselpumpe
Typ: LE190-80/65-MI

Centrifugal Pump
Type: LE190-80/65-MI

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	17.06.2020
Freigegeben	AF	07.09.2020







*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

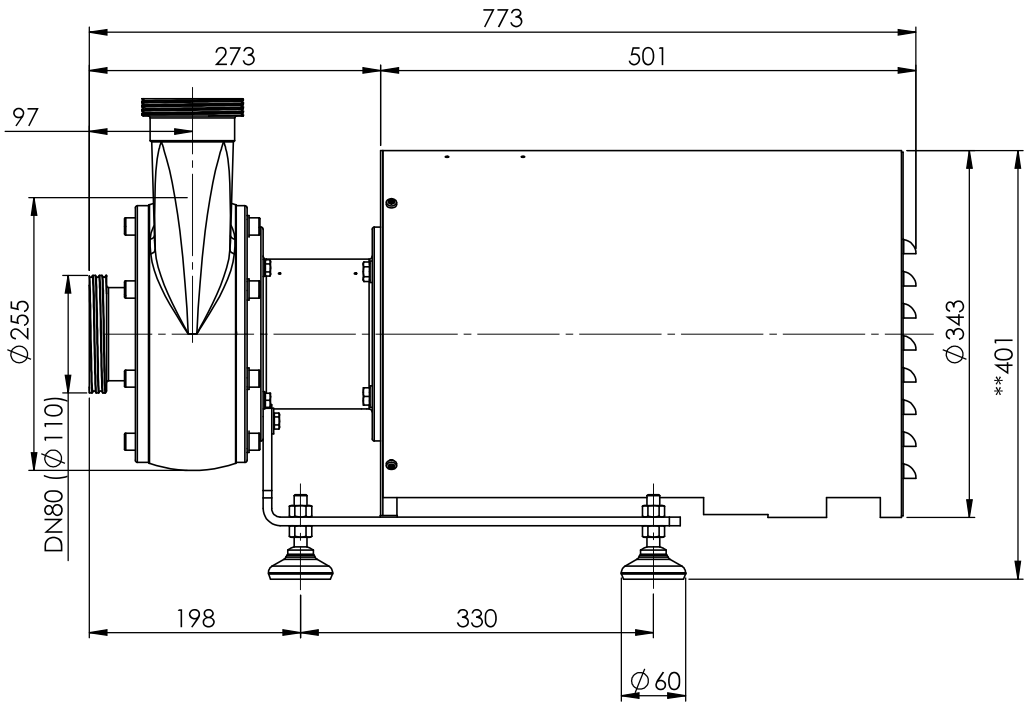
Saugstutzen / Suction Branch: Gewindestutzen/Threaded port DN80 / DIN 11851 **Druckstutzen / Pressure Branch:** Gewindestutzen/Threaded port DN65 / DIN 11851

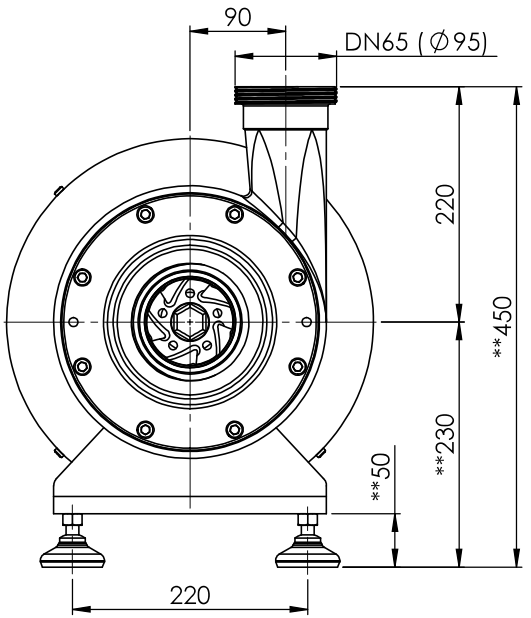
Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG100 B34/Ø200	3.0 / 2900	297	577	100	320	-	280	-	140	175	160	193	-	-	-	-	12	12	-	-	13	-	-	236	343	-
IE3-2P-BG112 B34/Ø200	4.0 / 2900	331	611	112	332	-	280	-	140	180	190	225	-	-	-	-	12	12	-	-	18	136	213	248	359	-
IE3-2P-BG132 B34/Ø200	5.5 / 2900	380	660	132	352	-	280	-	140	180	216	256	-	-	-	-	12	12	-	-	19	175	193	287	368	-
IE3-2P-BG132 B34/Ø200	7.5 / 2900	401	681	132	352	-	280	-	140	180	216	256	-	-	-	-	12	12	-	-	15	175	193	331	368	-
IE3-2P-BG160 B35/Ø350	11.0 / 2900	499	812	160	380	-	313	-	210	257	254	296	-	-	-	-	15	20	-	-	18	207	213	374	420	-
IE3-2P-BG160 B35/Ø350	15.0 / 2900	461	774	160	380	-	313	-	210	257	254	296	-	-	-	-	15	20	-	-	18	207	213	402	420	-
IE3-2P-BG160 B35/Ø350	18.5 / 2900	499	812	160	380	-	313	-	254	301	254	296	-	-	-	-	15	20	-	-	18	207	213	402	420	-

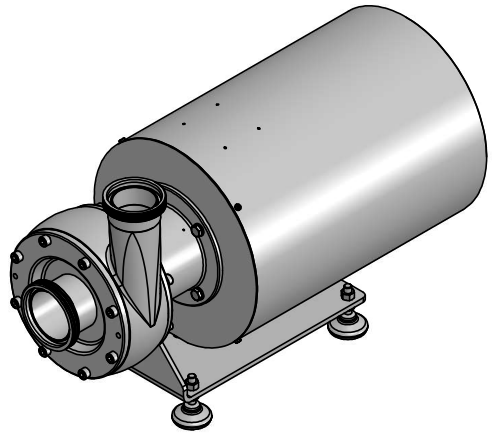
Kreiselpumpe
Typ: LE190-80/65-MT

Centrifugal Pump
Type: LE190-80/65-MT

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	17.06.2020
Freigegeben	AF	07.09.2020







*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

**** Verstellbar / adjustable +10mm/-8mm**

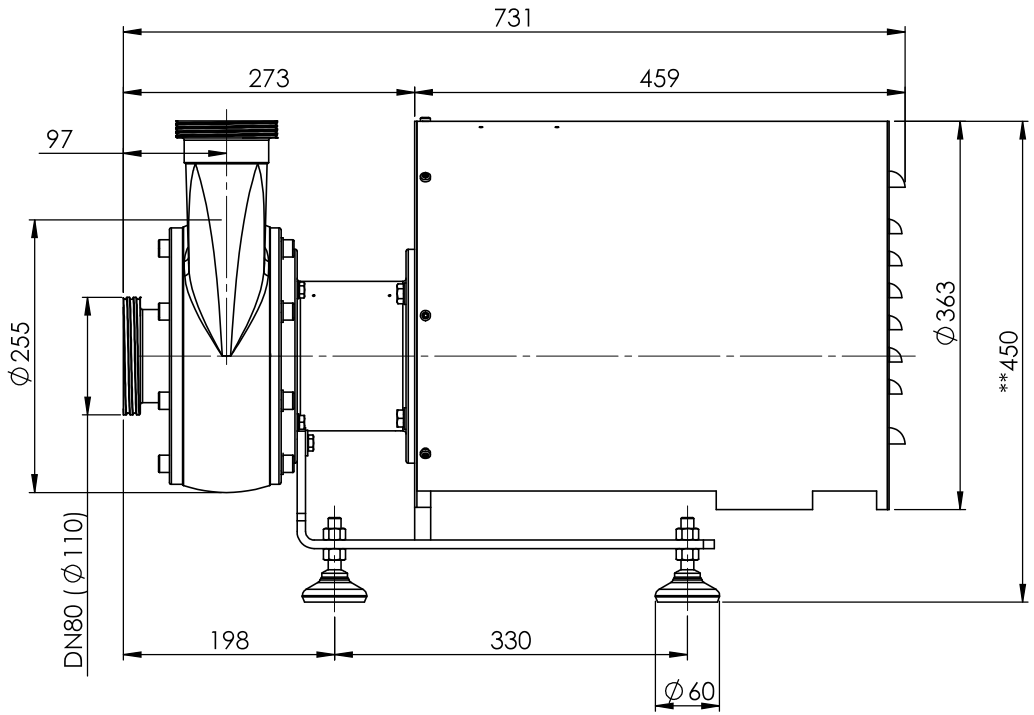
Saugstutzen / Suction Branch: Gewindestutzen/Threaded port DN80 / DIN 11851 **Druckstutzen / Pressure Branch:** Gewindestutzen/Threaded port DN65 / DIN 11851

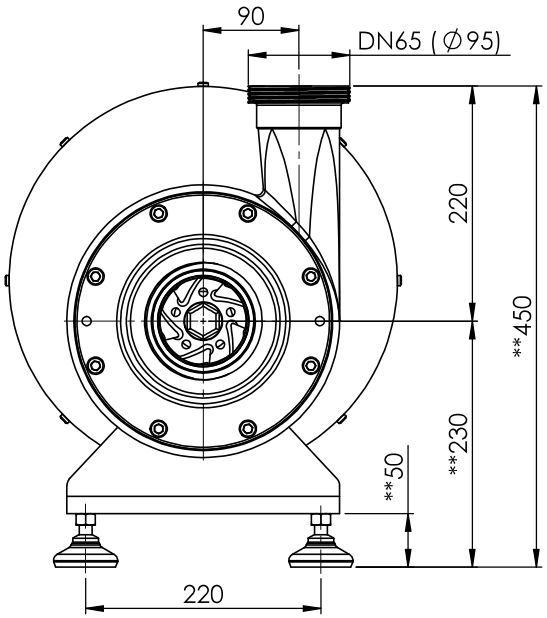
Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG100 B14/Ø200	3.0 / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IE3-2P-BG112 B14/Ø200	4.0 / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IE3-2P-BG112 B14/Ø200	5.5 / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

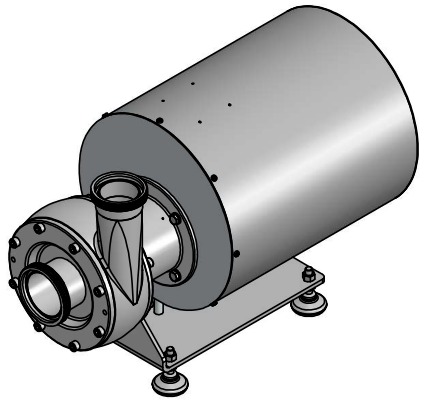
Kreiselpumpe
Typ: LE190-80/65-MT

Centrifugal Pump
Type: LE190-80/65-MT

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	17.06.2020
Freigegeben	AF	07.09.2020







*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

**** Verstellbar / adjustable +10mm/-8mm**

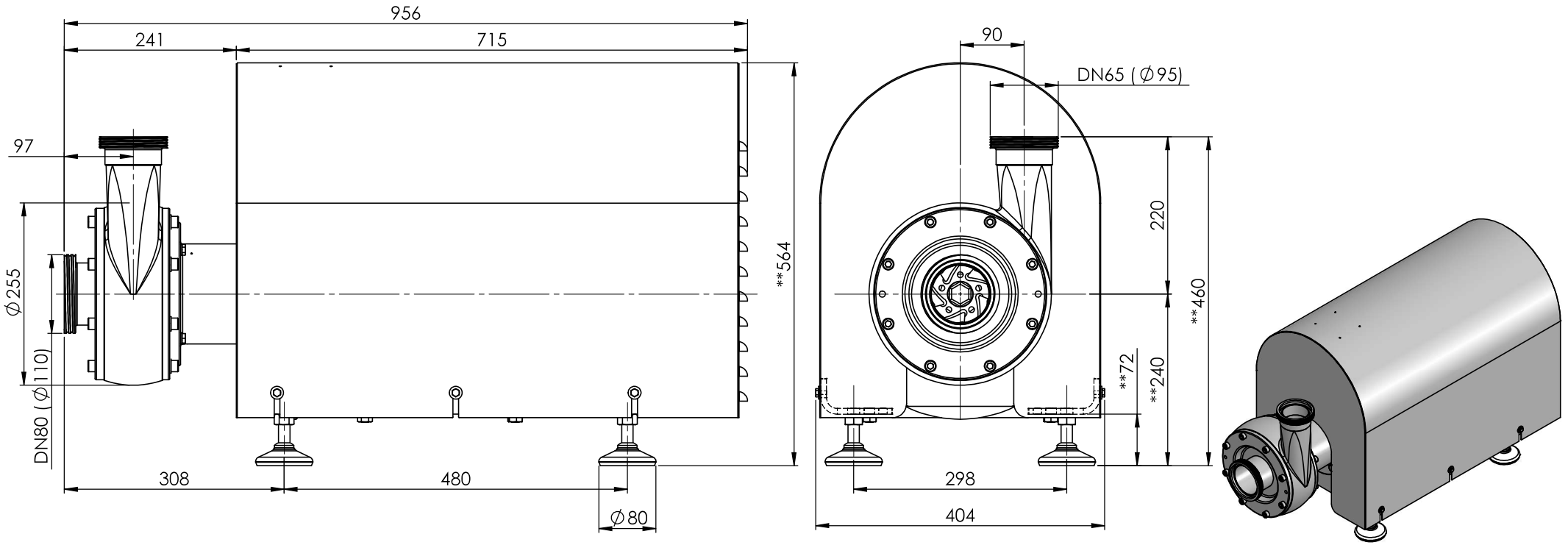
Saugstutzen / Suction Branch: Gewindestutzen/Threaded port DN80 / DIN 11851 **Druckstutzen / Pressure Branch:** Gewindestutzen/Threaded port DN65 / DIN 11851

Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG132 B14/Ø200	5.5 / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IE3-2P-BG132 B14/Ø200	7.5 / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Kreiselpumpe
Typ: LE190-80/65-MT

Centrifugal Pump
Type: LE190-80/65-MT

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	17.06.2020
Freigegeben	AF	07.09.2020



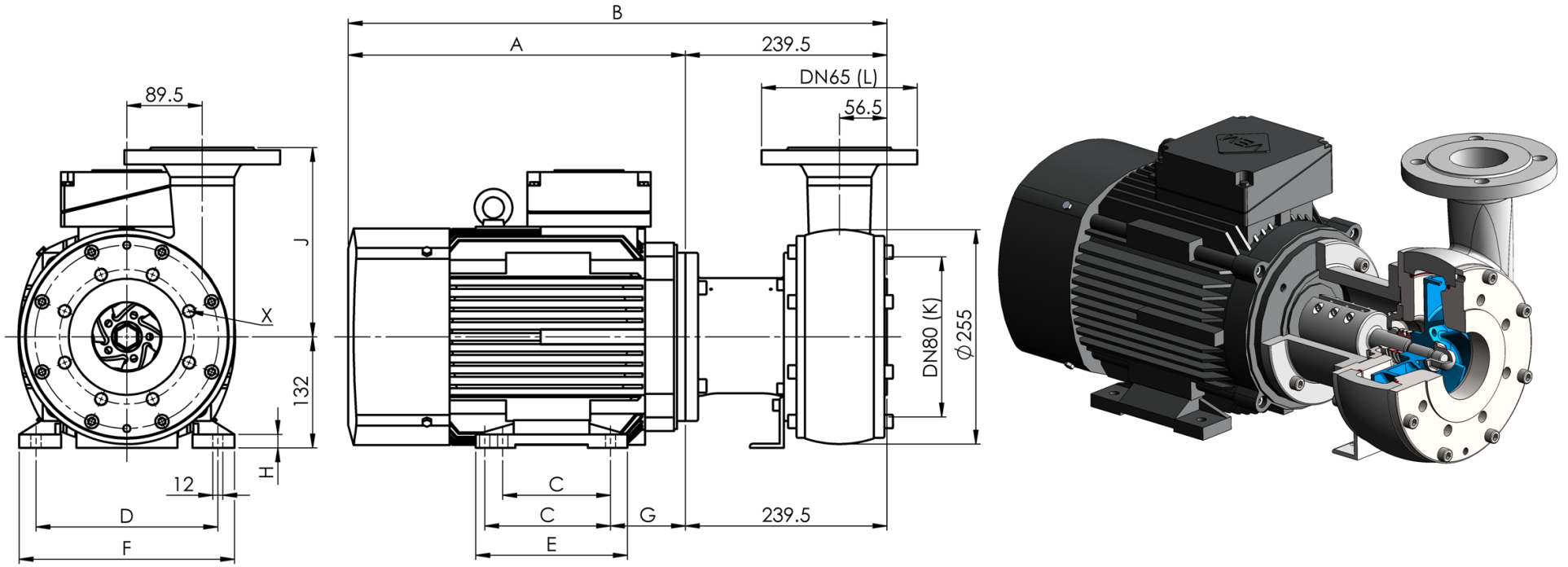
*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

**** Verstellbar / adjustable +35mm/-25mm**

Saugstutzen / Suction Branch: Gewindestutzen/Threaded port DN80 / DIN 11851 **Druckstutzen / Pressure Branch:** Gewindestutzen/Threaded port DN65 / DIN 11851

Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG160 B35/Ø350	11.0 / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IE3-2P-BG160 B35/Ø350	15.0 / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IE3-2P-BG160 B35/Ø350	18.5 / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

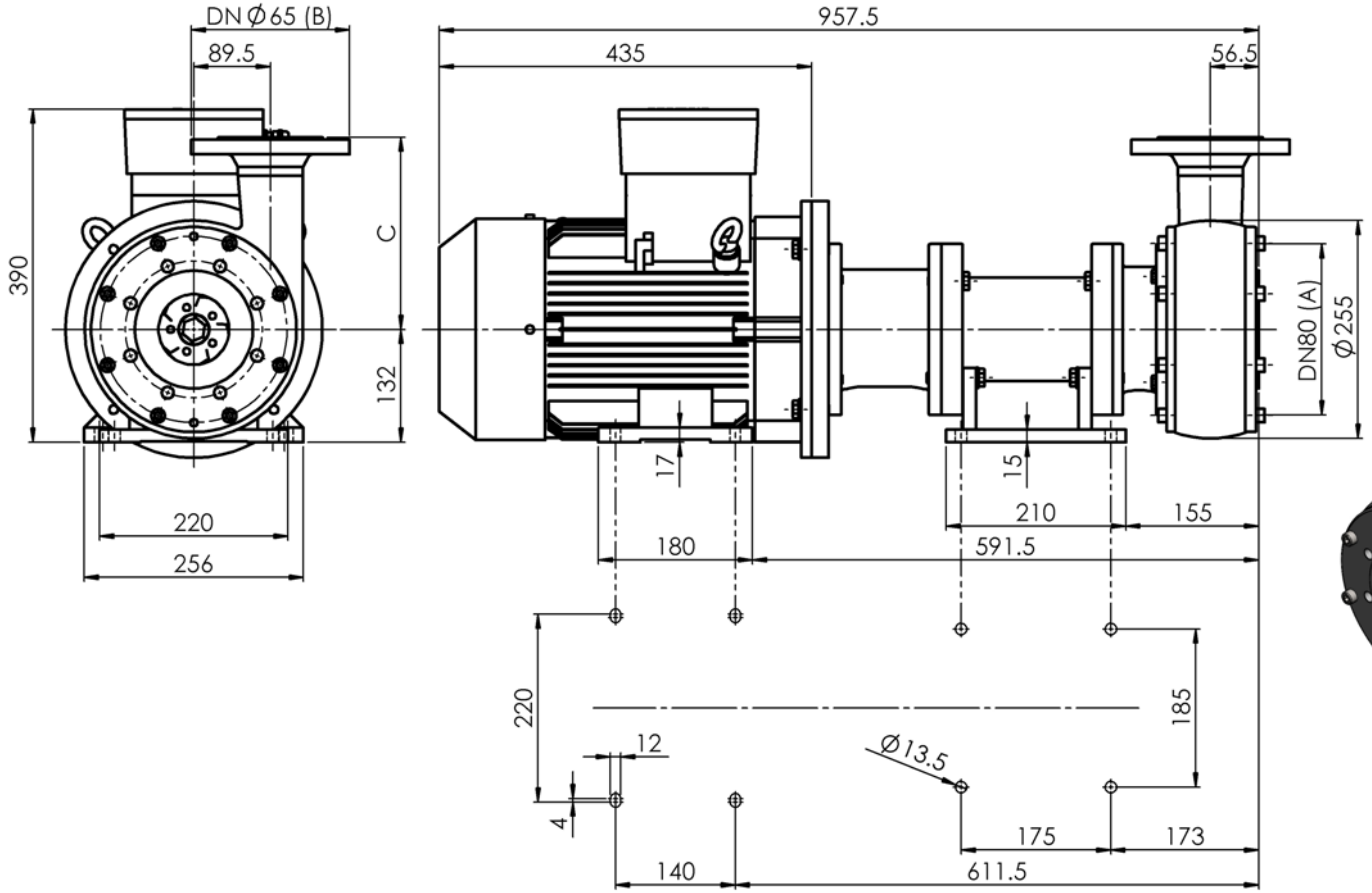
Sawa PUMPEN	**Kreiselpumpe** Typ : LE190-80/65-FI	**Centrifugal Pump** Type : LE190-80/65-FI	Nummer : MB Revision : B / 08.16 Seite 1 / 1

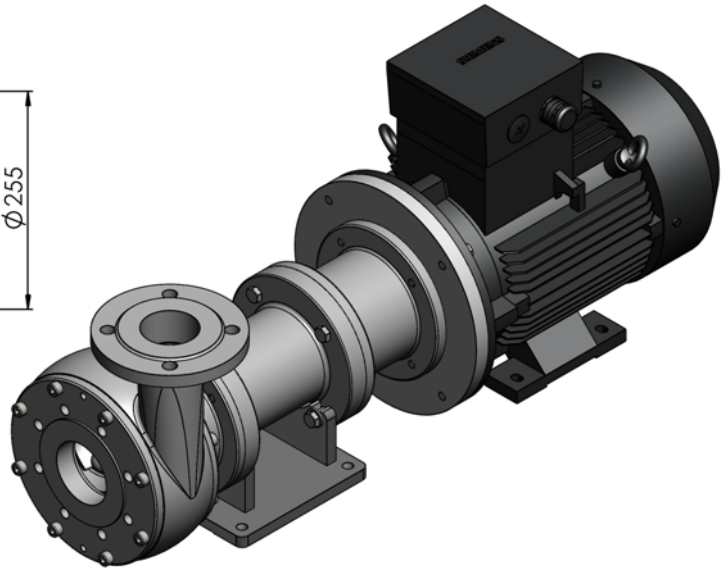


Anschlüsse	J	K	L	X (Lochbild + Innengewinde)
Vorschweissflansch nach DIN2633	225	Ø200	Ø185	TK-Ø160 / 8 x M16
Vorschweissflansch nach ANSI B16.5 (150lbs RF)	247	Ø190.5	Ø177.8	TK-Ø152.4 / 4 x M16

Motoren-Typ	Artikel-Nr.	kW / rpm	A	B	C	D	E	F	G	H
WE1R 132 S-2T B3/B14 / Ø200	014035	5.5 / 2900	380	619.5	140	216	180	256	89	18.5
WE1R 132 SX-2 B3/B14 / Ø200	013685	7.5 / 2900	401	640.5	140	216	180	256	89	16
LSES 132 M B3/B14 / Ø200	013955	11.0 / 2900	385	624.5	140/178	216	208	250	89	15

SAWA PUMPEN	**Kreiselpumpe** Typ : LE190-80/65-FW	**Centrifugal Pump** Type : LE190-80/65-FW	Nummer : MB Revision : B / 08.16 Seite 1 / 1



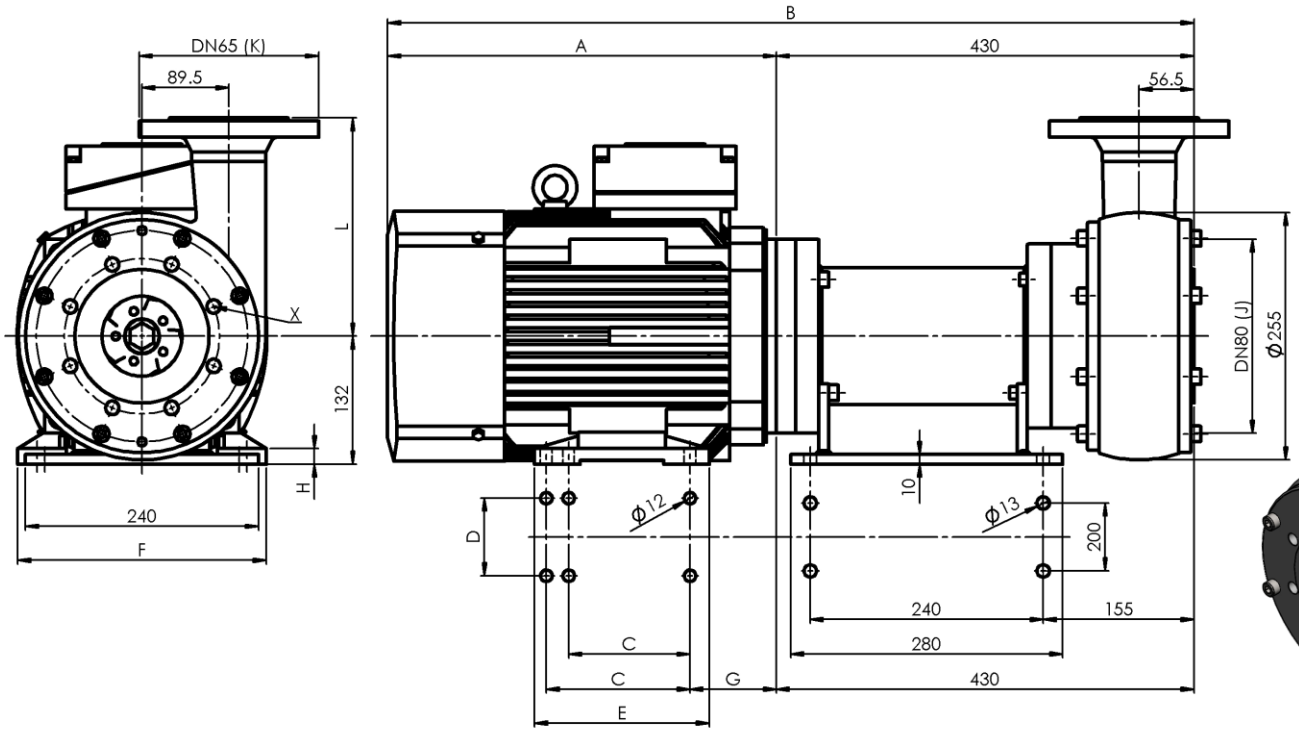


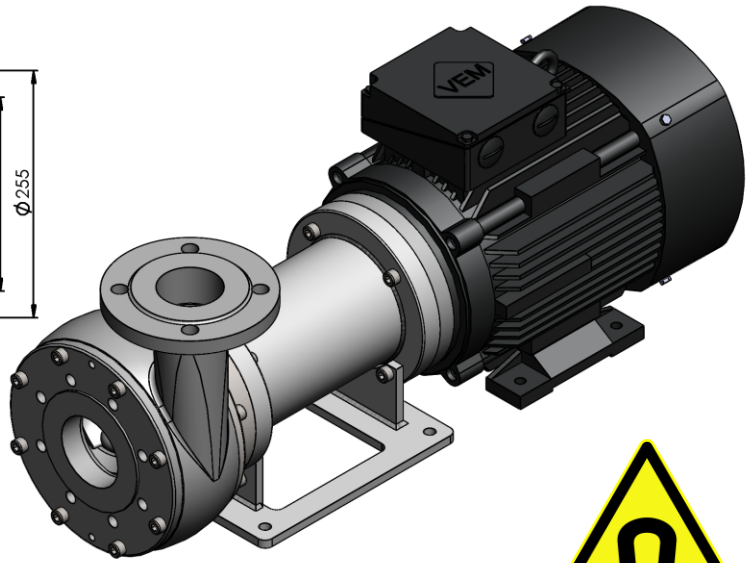
CE Ex **II2G Ex c X**

Anschlüsse	A	B	C	X (Lochbild + Innengewinde)
Vorschweissflansch nach DIN2633	Ø200	Ø185	225	TK-Ø160 / 8 x M16
Vorschweissflansch nach ANSI B16.5 (150lbs RF)	Ø190.5	Ø177.8	247	TK-Ø152.4 / 4 x M16

Motorentyp	P [kW]	n [rpm]	Ausführung
1MJ6130-2CA66	5.5	2900	B35 / Ø300

Sawa PUMPEN	**Kreiselpumpe** Typ : LEM190-80/65-FF	**Centrifugal Pump** Type : LEM190-80/65-FF	Nummer : MB Revision : B / 08.16 Seite 1 / 1





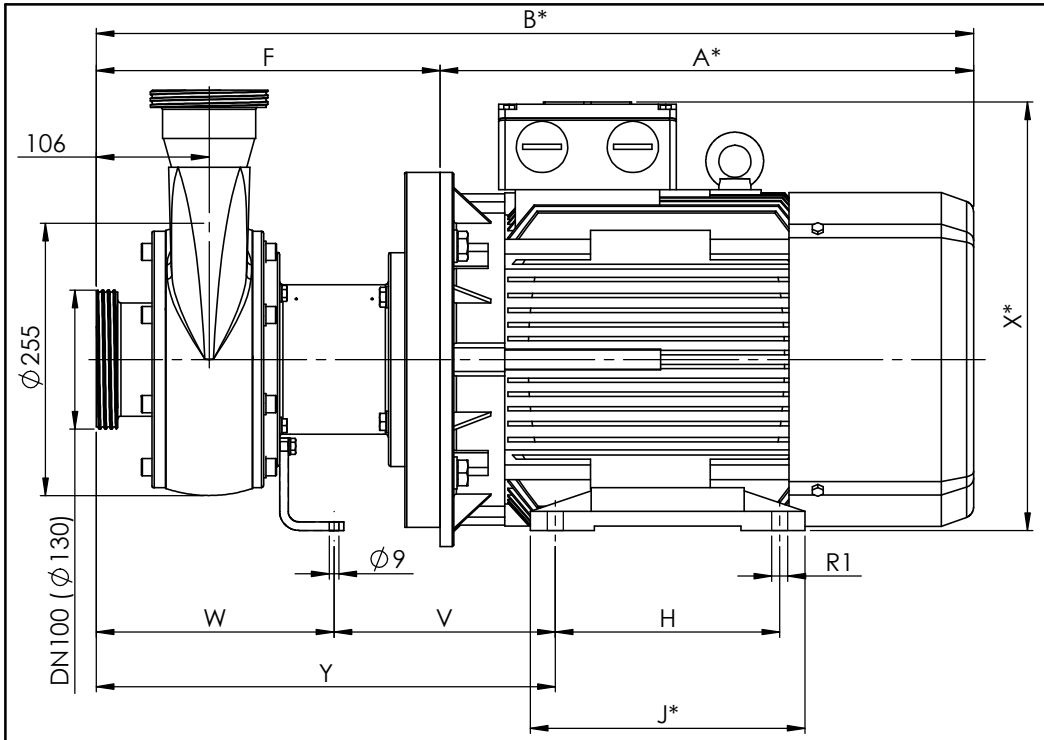
Anschlüsse	J	K	L	X (Lochbild + Innengewinde)
Vorschweissflansch nach DIN2633	Ø200	Ø185	225	TK-Ø160 / 8 x M16
Vorschweissflansch nach ANSI B16.5 (150lbs RF)	Ø190.5	Ø177.8	247	TK-Ø152.4 / 4 x M16

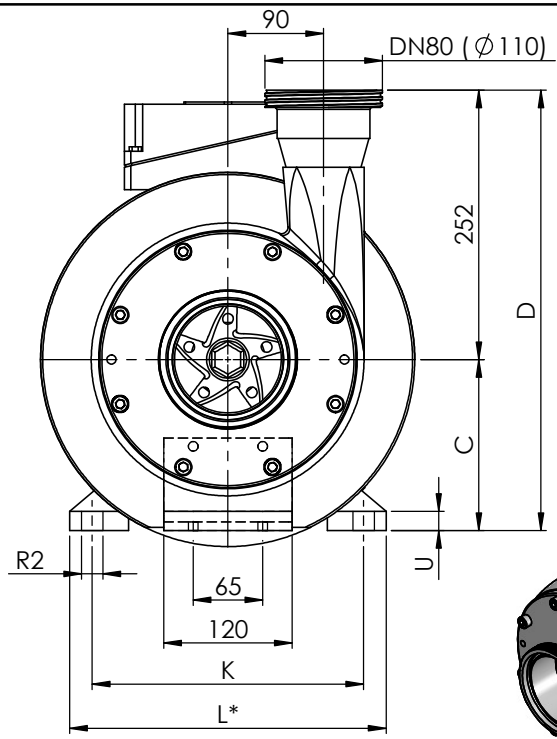
Motoren-Typ	Artikel-Nr.	kW / rpm	A	B	C	D	E	F	G	H
WE1R 132 S-2T B3/B14 / Ø200	014035	5.5 / 2900	380	810	140	216	180	256	89	18.5
WE1R 132 SX-2 B3/B14 / Ø200	013685	7.5 / 2900	401	831	140	216	180	256	89	16
LSES 132 M B3/B14 / Ø200	013955	11.0 / 2900	385	815	140/178	216	208	250	89	15

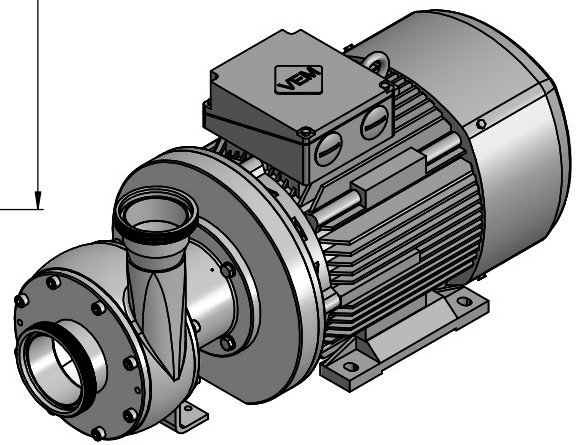
Kreiselpumpe
Typ: LE190B-100/80-MI

Centrifugal Pump
Type: LE190B-100/80-MI

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	27.07.2020
Freigegeben	AF	07.09.2020







*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

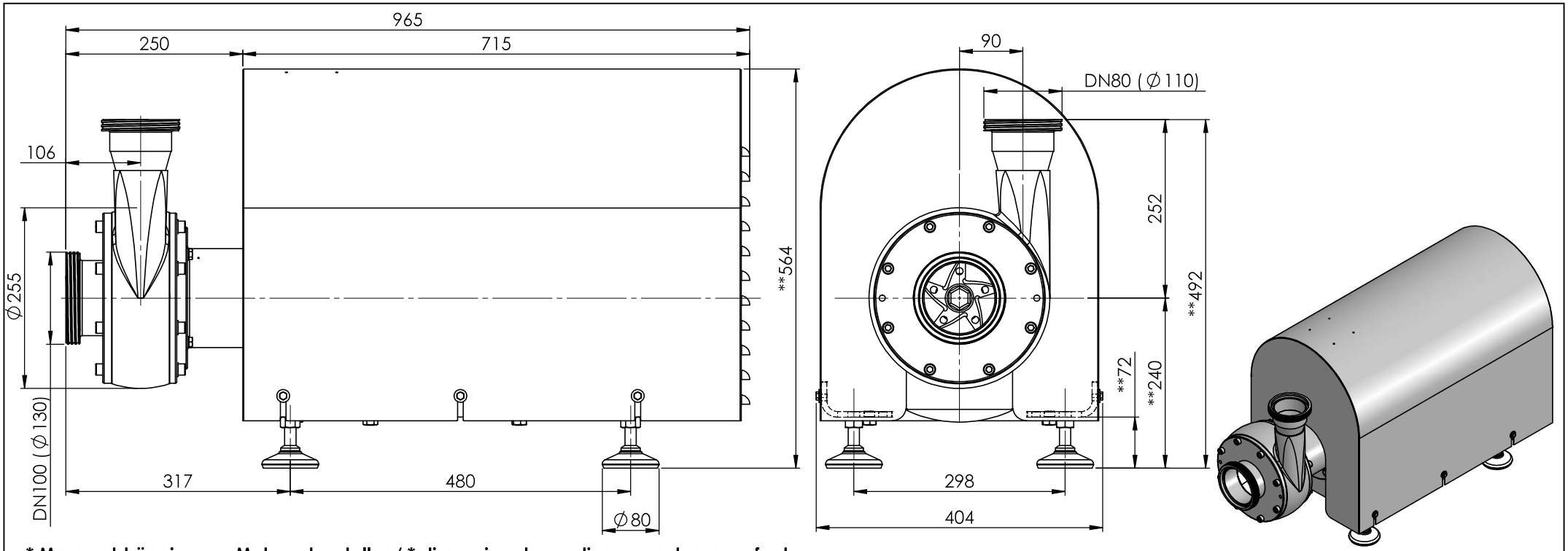
Saugstutzen / Suction Branch: Gewindestutzen/Threaded port DN100 / DIN 11851 **Druckstutzen / Pressure Branch:** Gewindestutzen/Threaded port DN80 / DIN 11851

Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG160 B35/Ø350	11.0 / 2900	499	820	160	412	-	321	-	210	257	254	296	-	-	-	-	15	20	-	-	18	207	222	374	429	-
IE3-2P-BG160 B35/Ø350	15.0 / 2900	461	782	160	412	-	321	-	210	257	254	296	-	-	-	-	15	20	-	-	18	207	222	402	429	-
IE3-2P-BG160 B35/Ø350	18.5 / 2900	499	820	160	412	-	321	-	254	301	254	296	-	-	-	-	15	20	-	-	18	207	222	402	429	-

Kreiselpumpe
Typ: LE190B-100/80-MT

Centrifugal Pump
Type: LE190B-100/80-MT

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	27.07.2020
Freigegeben	AF	07.09.2020



*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

**** Verstellbar / adjustable +35mm/-25mm**

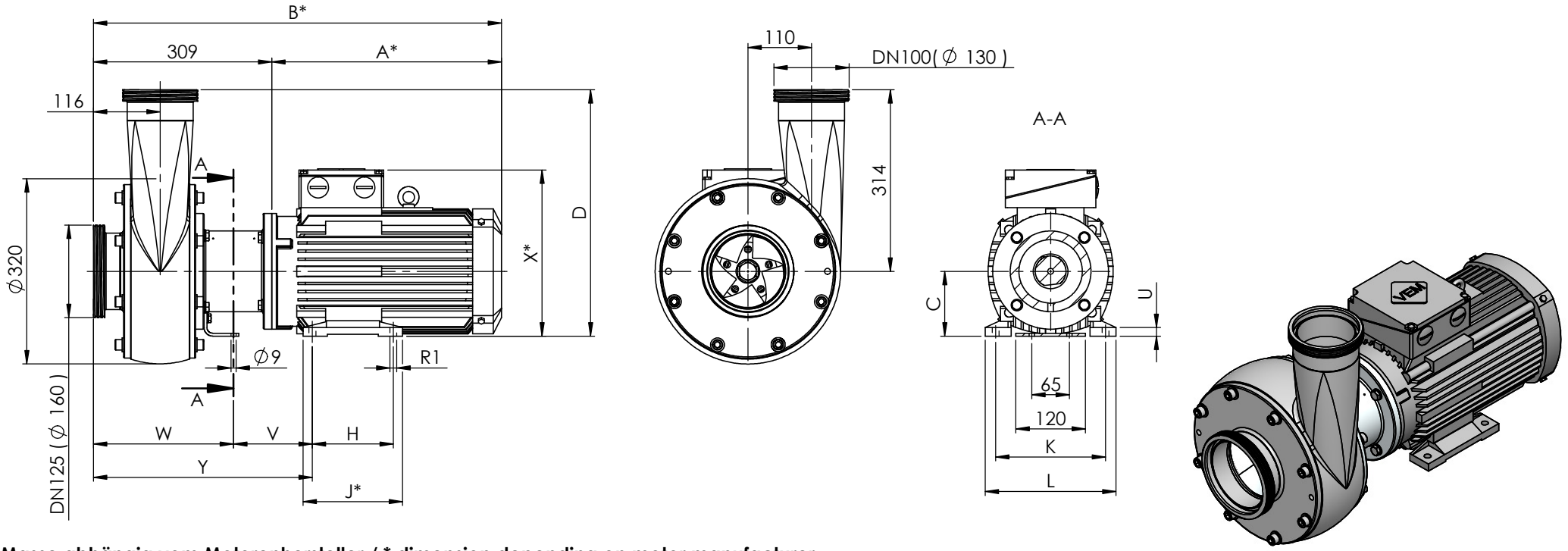
Saugstutzen / Suction Branch: Gewindestutzen/Threaded port DN80 / DIN 11851 **Druckstutzen / Pressure Branch:** Gewindestutzen/Threaded port DN65 / DIN 11851

Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG160 B35/Ø350	11.0 / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IE3-2P-BG160 B35/Ø350	15.0 / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IE3-2P-BG160 B35/Ø350	18.5 / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Kreiselpumpe
Typ: LE210-125/100-MI

Centrifugal Pump
Type: LE210-125/100-MI

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	30.07.2020
Freigegeben	AF	10.09.2020



*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

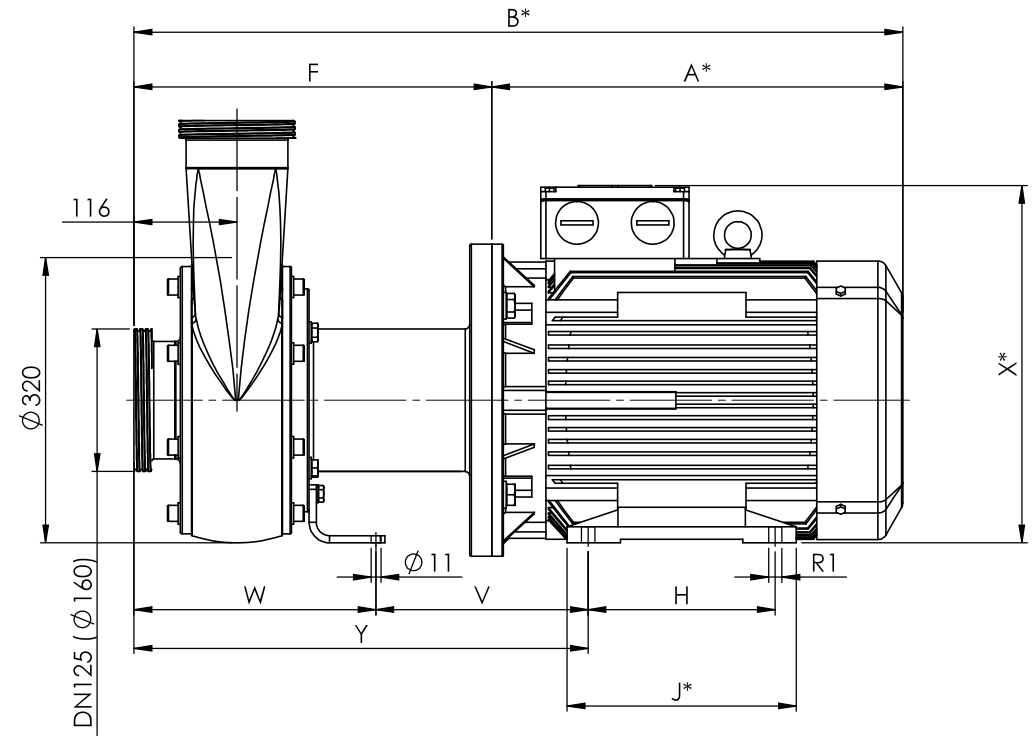
Saugstutzen / Suction Branch: Gewindestutzen/Threaded port DN125 / DIN 11851 **Druckstutzen / Pressure Branch:** Gewindestutzen/Threaded port DN100 / DIN 11851

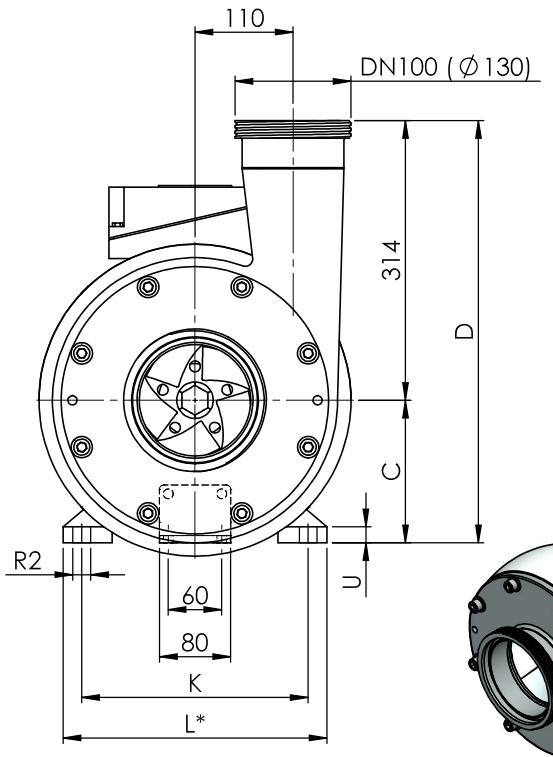
Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-4P-BG112 B34/Ø200	4.0 / 1500	397	706	112	426	-	-	-	140	172	190	226	-	-	-	-	12	-	-	-	15	136	242	289	-	-
IE3-4P-BG132 B34/Ø200	5.5 / 1500	401	710	132	446	-	-	-	140	180	216	256	-	-	-	-	12	-	-	-	15	175	222	332	-	-
IE3-4P-BG132 B34/Ø200	7.5 / 1500	449	758	132	446	-	-	-	178	218	216	256	-	-	-	-	12	-	-	-	15	175	222	330	-	-

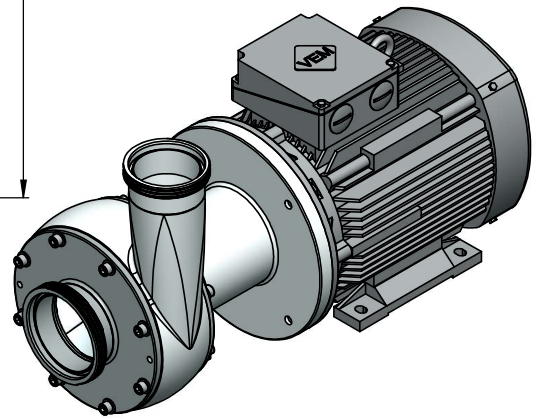
Kreiselpumpe
Typ: LE210-125/100-MI

Centrifugal Pump
Type: LE210-125/100-MI

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	27.07.2020
Freigegeben	AF	07.09.2020







*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

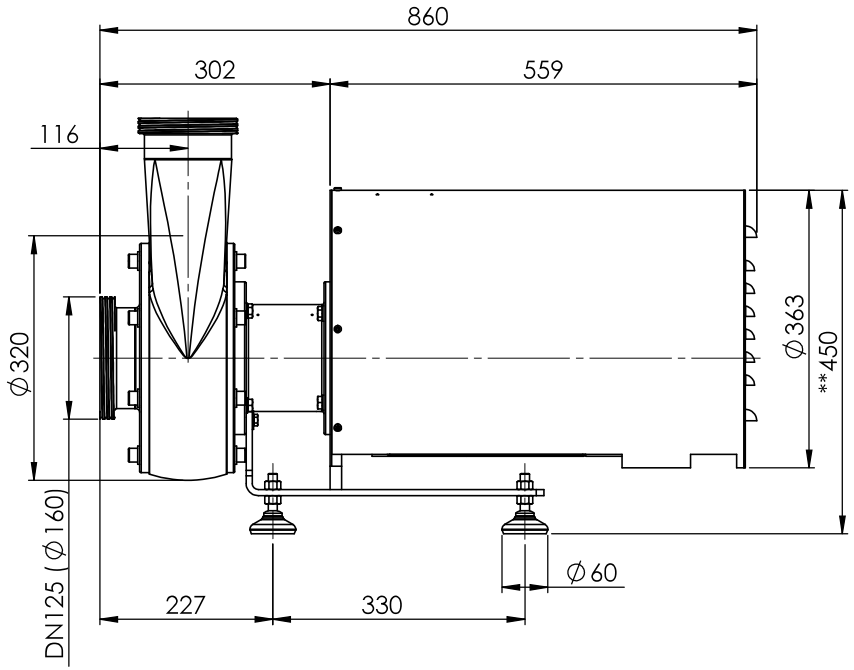
Saugstutzen / Suction Branch: Gewindestutzen/Threaded port DN125 / DIN 11851 **Druckstutzen / Pressure Branch:** Gewindestutzen/Threaded port DN100 / DIN 11851

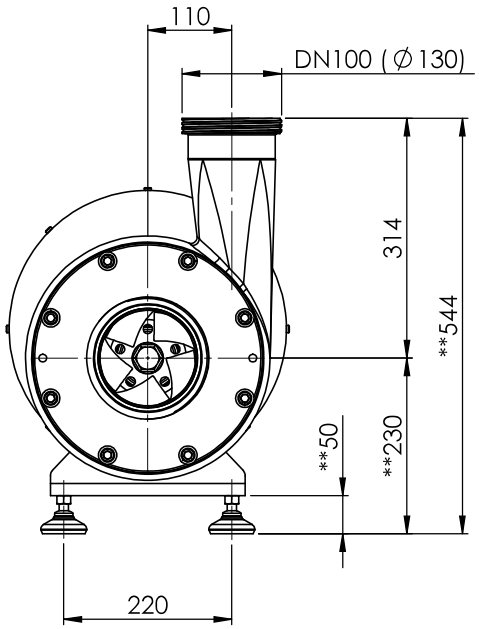
Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG160 B35/Ø350	15.0 / 2900	461	863	160	474	-	402	-	210	257	254	296	-	-	-	-	15	20	-	-	18	238	272	401	510	-
IE3-2P-BG160 B35/Ø350	18.5 / 2900	500	902	160	474	-	402	-	254	301	254	296	-	-	-	-	15	20	-	-	18	238	272	402	510	-
IE3-2P-BG180 B35/Ø350	22.0 / 2900	549	951	180	494	-	402	-	241	288	279	328	-	-	-	-	15	20	-	-	20	272	252	422	523	-
IE3-2P-BG200 B35/Ø400	30.0 / 2900	570	972	200	514	-	402	-	305	360	318	372	-	-	-	-	19	25	-	-	22	226	309	461	535	-
IE3-2P-BG200 B35/Ø400	37.0 / 2900	656	1058	200	514	-	402	-	305	360	318	372	-	-	-	-	19	25	-	-	22	226	309	500	535	-

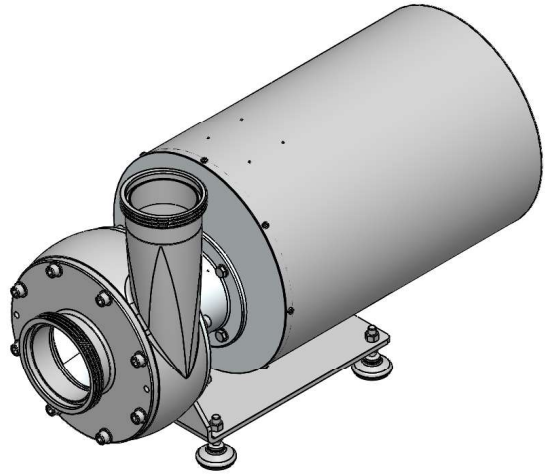
Kreiselpumpe
Typ: LE210-125/100-MT

Centrifugal Pump
Type: LE210-125/100-MT

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	03.08.2020
Freigegeben	AF	07.09.2020







*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

****verstellbar / ** adjustable +10mm/-8mm**

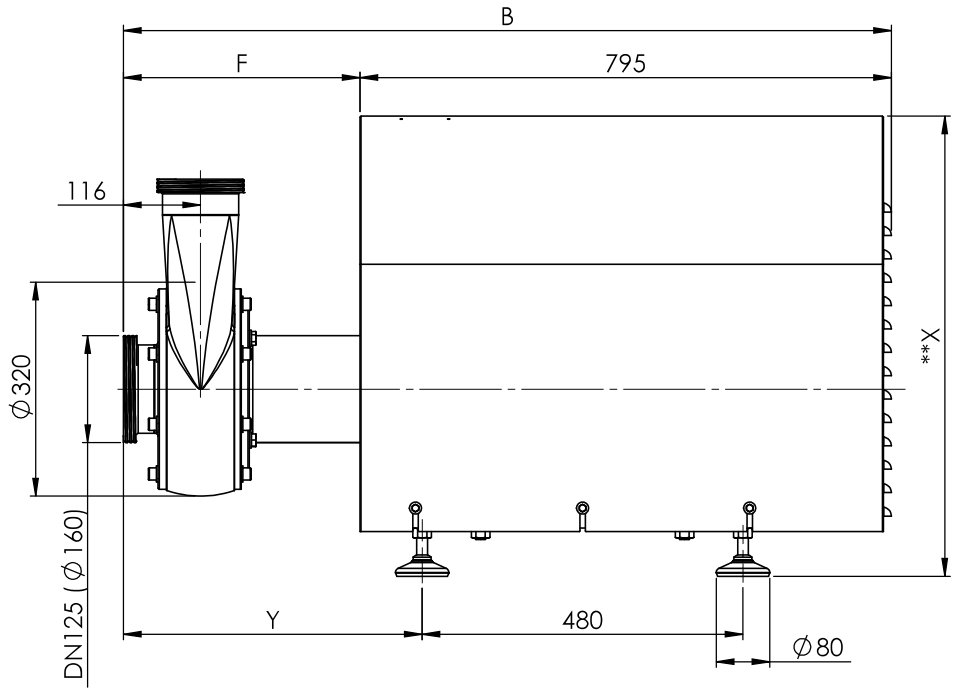
Saugstutzen / Suction Branch: Gewindestutzen/Threaded port DN125 / DIN 11851 **Druckstutzen / Pressure Branch:** Gewindestutzen/Threaded port DN100 / DIN 11851

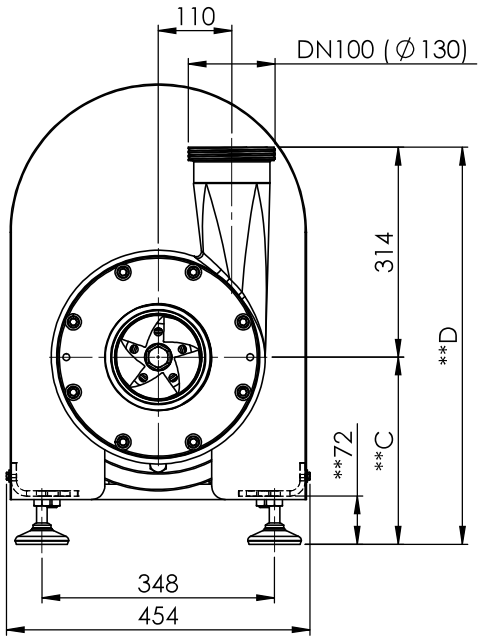
Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-4P-BG112 B14/Ø200	4.0 / 1500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IE3-4P-B132 B14/Ø200	5.5 / 1500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IE3-4P-B132 B14/Ø200	7.5 / 1500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

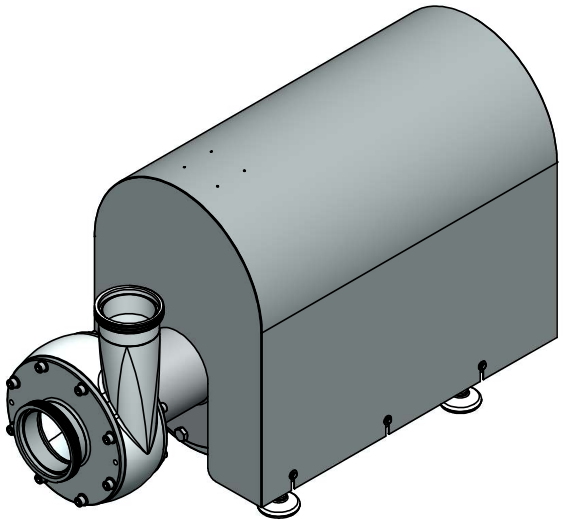
Kreiselpumpe
Typ: LE210-125/100-MT

Centrifugal Pump
Type: LE210-125/100-MT

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	29.07.2020
Freigegeben	AF	07.09.2020







*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

**** Verstellbar / adjustable +35mm / -25mm**

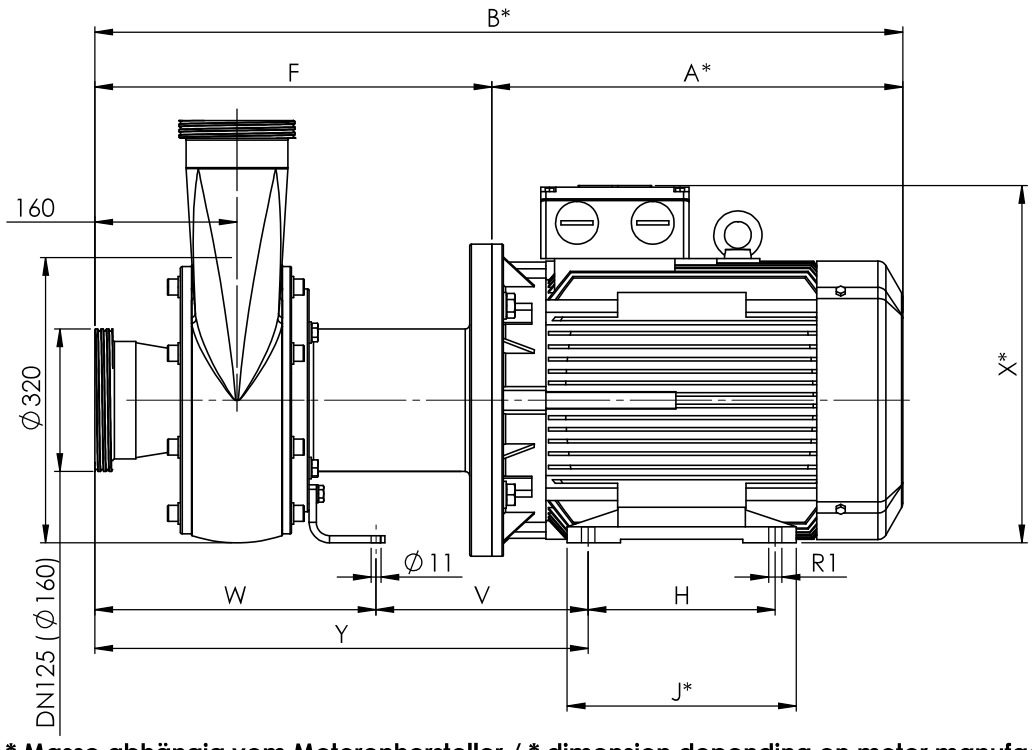
Saugstutzen / Suction Branch: Gewindestutzen/Threaded port DN125 / DIN 11851 **Druckstutzen / Pressure Branch:** Gewindestutzen/Threaded port DN100 / DIN 11851

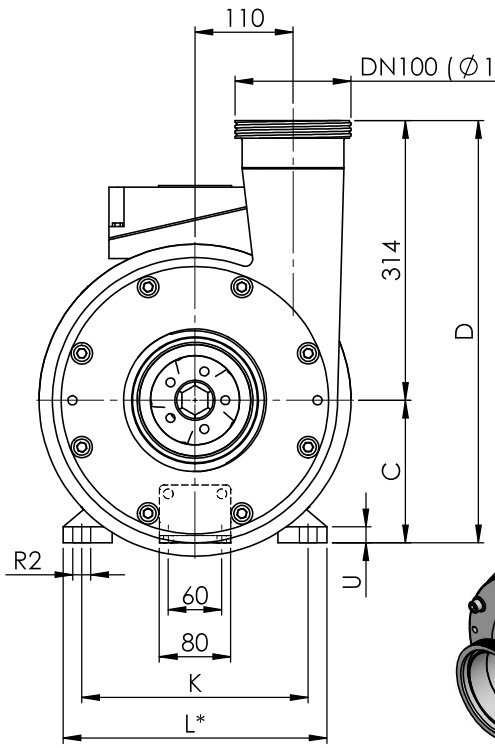
Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG180 B35/Ø350	22.0 / 2900	-	1099	260	574	-	304	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	669	397	-
IE3-2P-BG200 B35/Ø400	30.0 / 2900	-	1149	280	594	-	354	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	689	447	-
IE3-2P-BG200 B35/Ø400	37.0 / 2900	-	1149	280	594	-	354	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	689	447	-

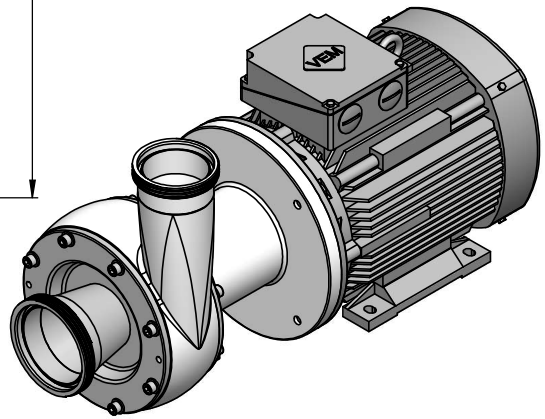
Kreiselpumpe
Typ: LE240-125/100-MI

Centrifugal Pump
Type: LE240-125/100-MI

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	04.08.2020
Freigegeben	AF	07.09.2020







*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

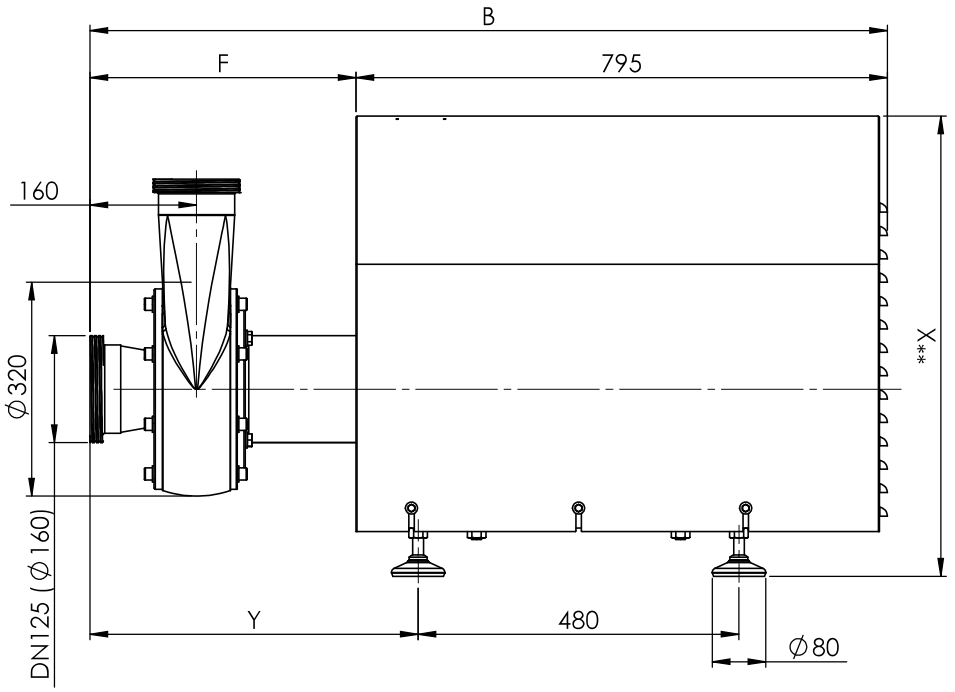
Saugstutzen / Suction Branch: Gewindestutzen/Threaded port DN125 / DIN 11851 **Druckstutzen / Pressure Branch:** Gewindestutzen/Threaded port DN100 / DIN 11851

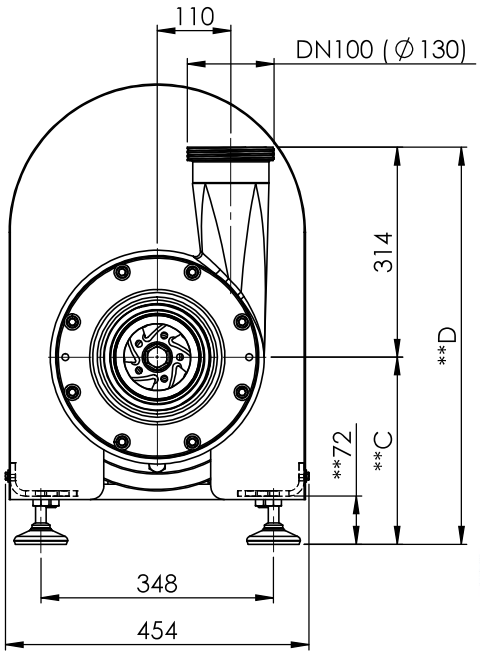
Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG160 B35/Ø350	15.0 / 2900	461	907	160	474	-	446	-	210	257	254	296	-	-	-	-	15	20	-	-	18	238	316	401	554	-
IE3-2P-BG160 B35/Ø350	18.5 / 2900	500	946	160	474	-	446	-	254	301	254	296	-	-	-	-	15	20	-	-	18	238	316	402	554	-
IE3-2P-BG180 B35/Ø350	22.0 / 2900	549	995	180	494	-	446	-	241	288	279	328	-	-	-	-	15	20	-	-	20	272	296	422	561	-
IE3-2P-BG200 B35/Ø400	30.0 / 2900	570	1016	200	514	-	446	-	305	360	318	372	-	-	-	-	19	25	-	-	22	226	353	461	579	-
IE3-2P-BG200 B35/Ø400	37.0 / 2900	656	1102	200	514	-	446	-	305	360	318	372	-	-	-	-	19	25	-	-	22	226	353	500	579	-

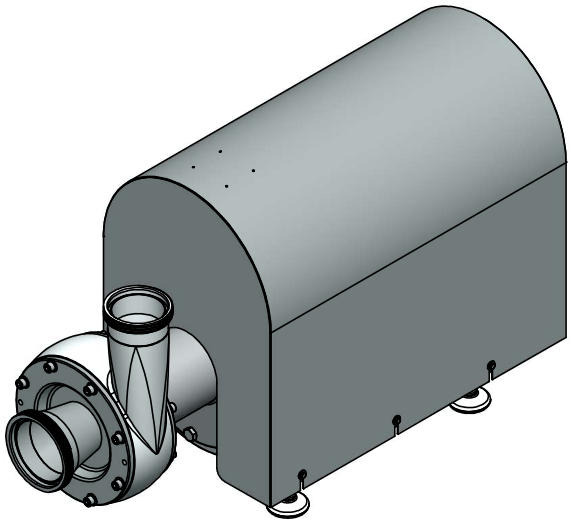
Kreiselpumpe
Typ: LE240-125/100-MT

Centrifugal Pump
Type: LE240-125/100-MT

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	04.08.2020
Freigegeben	AF	07.09.2020







*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

**** Verstellbar / adjustable +35mm / -25mm**

Saugstutzen / Suction Branch: Gewindestutzen/Threaded port DN125 / DIN 11851 **Druckstutzen / Pressure Branch:** Gewindestutzen/Threaded port DN100 / DIN 11851

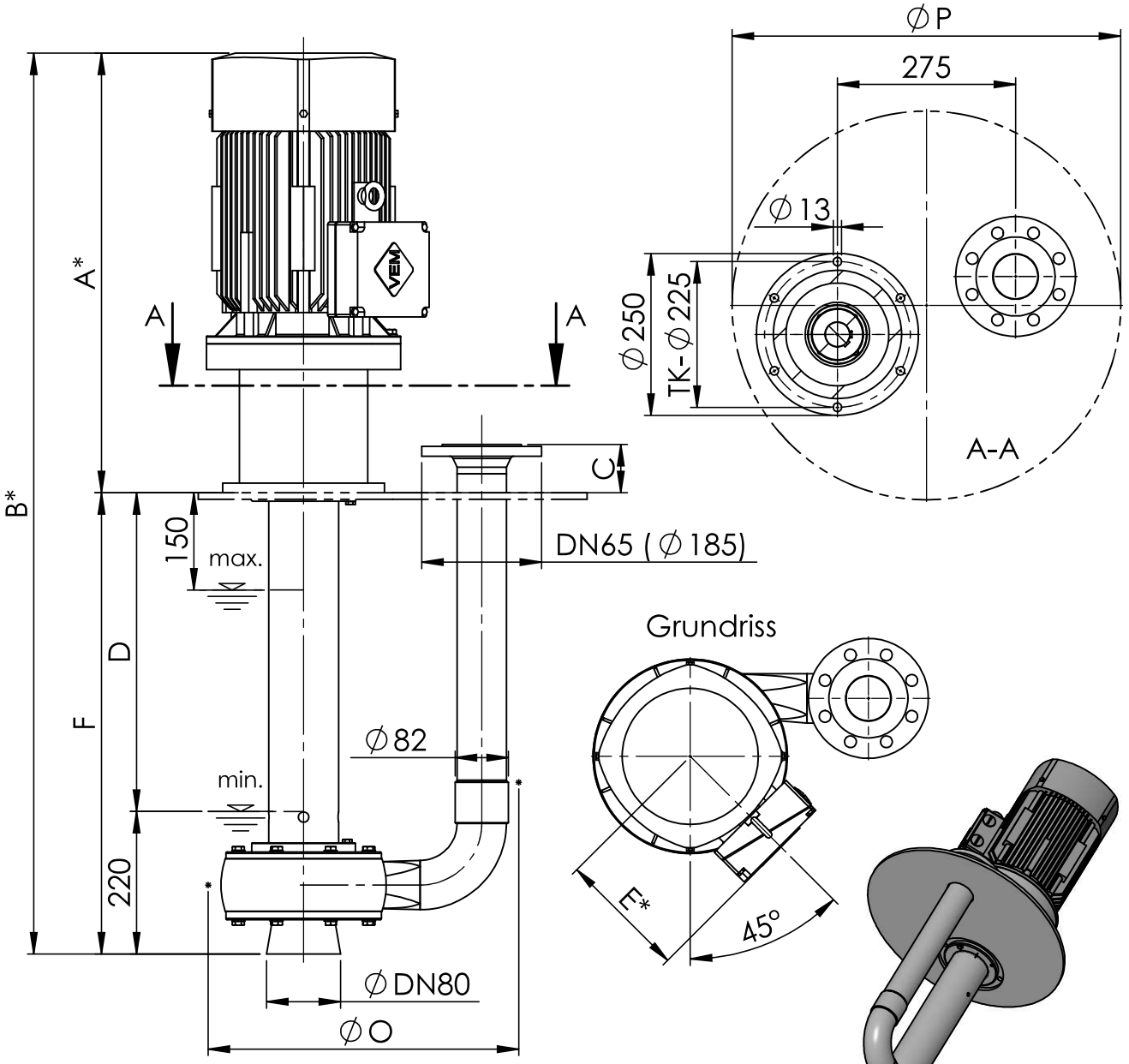
Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG180 B35/Ø350	22.0 / 2900	-	1143	260	574	-	348	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	669	441	-
IE3-2P-BG200 B35/Ø400	30.0 / 2900	-	1193	280	594	-	398	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	689	491	-
IE3-2P-BG200 B35/Ø400	37.0 / 2900	-	1193	280	594	-	398	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	689	491	-

SAWA Pumpentechnik AG | **CH - 9113 Degersheim** | **102805** | **Rev. -**

Kreiselpumpe / Centrifugal Pump

Type: LET190-80/65-F

Massblatt Dimension sheet		
	Name	Datum
Erstellt	CM	31.07.2020
Freigegeben	AF	07.01.2021



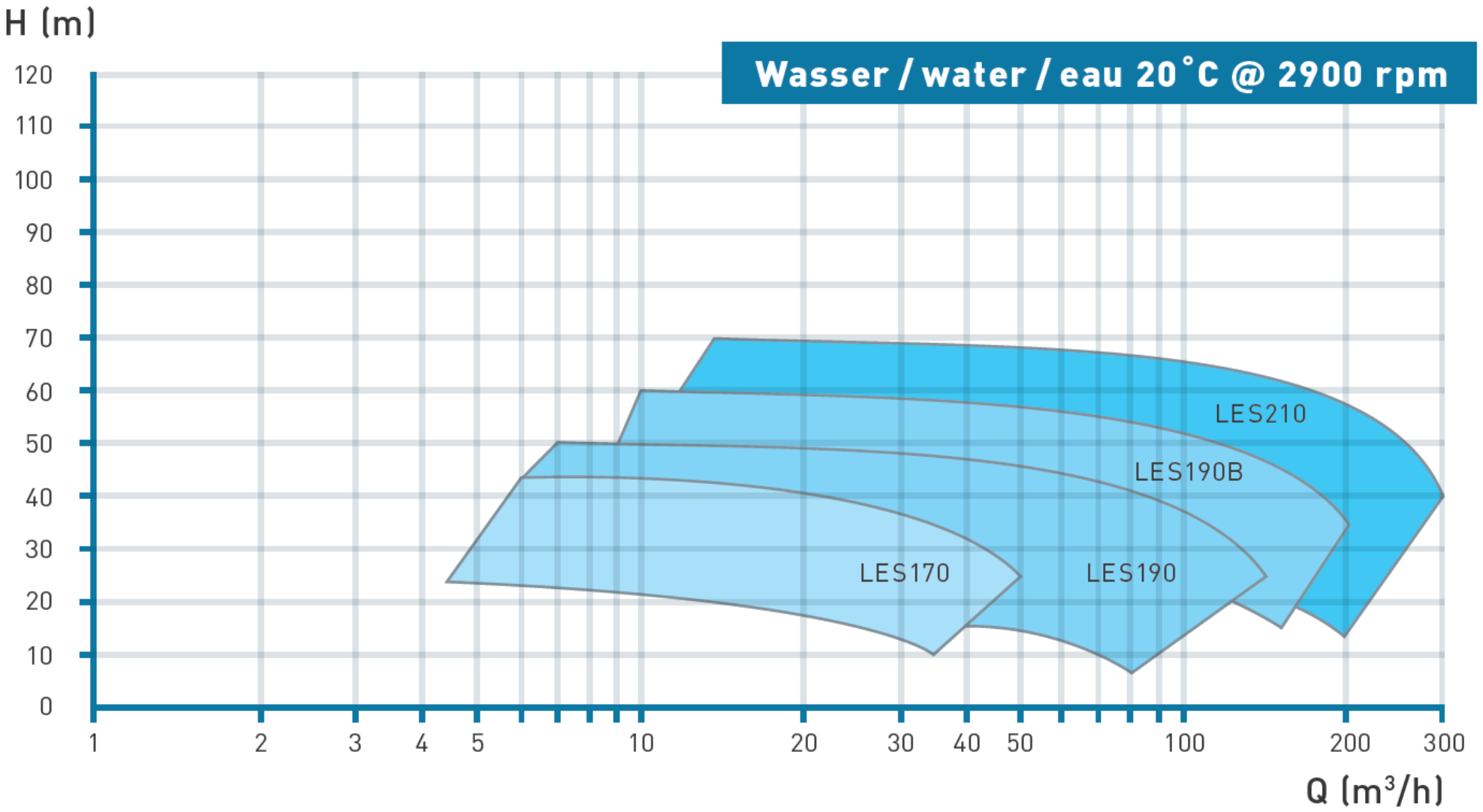
*** Masse abhängig vom Motorenhersteller**
*** dimension depending on motor manufacturer**

Pumpe:	
Kommission:	

A	B	C	D	E	F	G	H	K	L	M	N	O	P

Motor / drive:	
Laufrad / impeller:	
BP / duty point:	
Medium:	
Material:	
Lager:	
Notizen / notes:	

Sawa PUMPEN	**Hybrid-Kreiselpumpe** **(selbstsaugend) Typ : LES**	**Hybrid Centrifugal Pump** **(self priming) Type : LES**	Nummer : KL Revision : A / 09.16 Seite 1 / 1



LES170 and LES190
Recommended suction pipe layout

➢ **Suction from tank bottom, e.g. CIP return**
Suction line should, if possible, installed with a slight slope (for example 2%) towards the pump.
Aim: complete emptying of the tank and the suctions line!

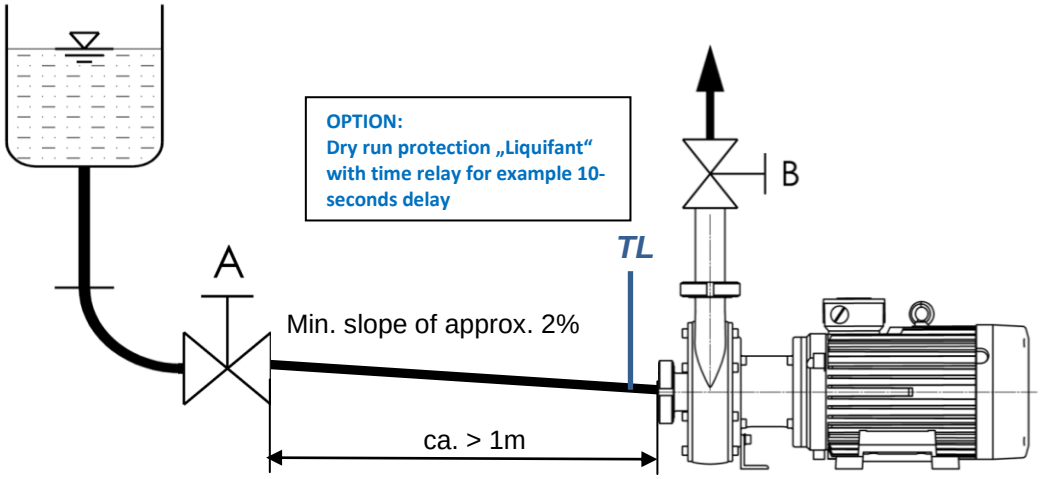


Figure 1: excellent upstream conditions

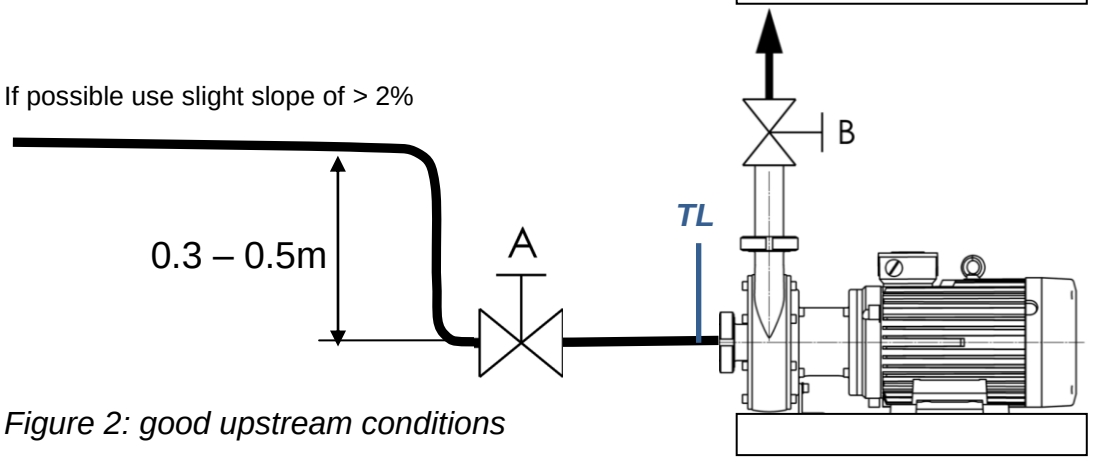


Figure 2: good upstream conditions

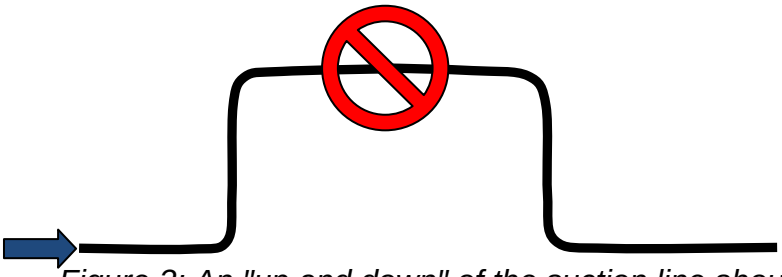


Figure 3: An "up and down" of the suction line should be avoided!

➢ suction from top of the tank

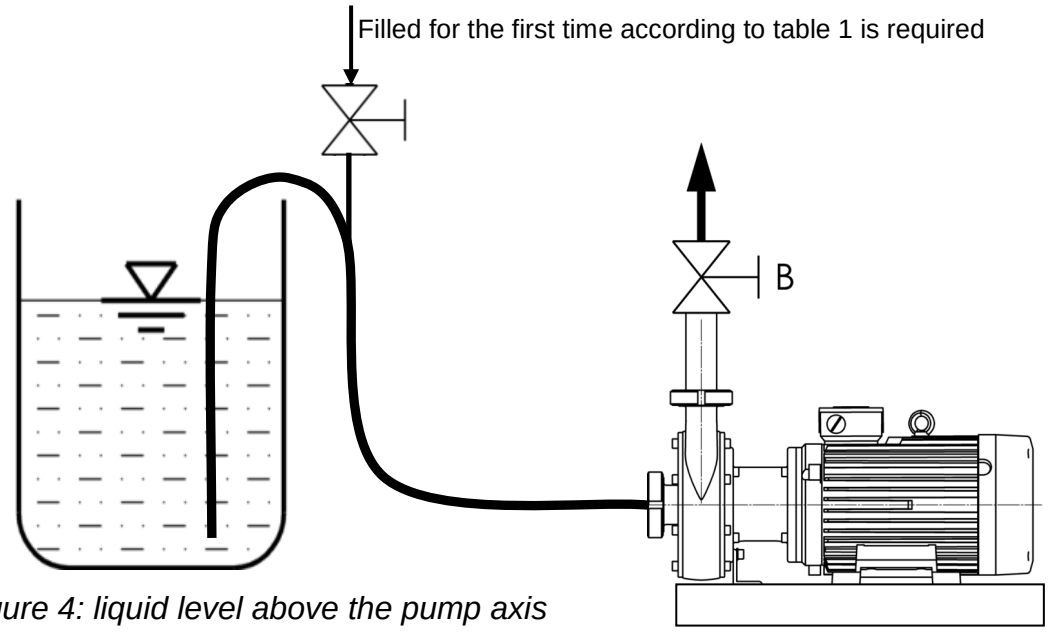


Figure 4: liquid level above the pump axis

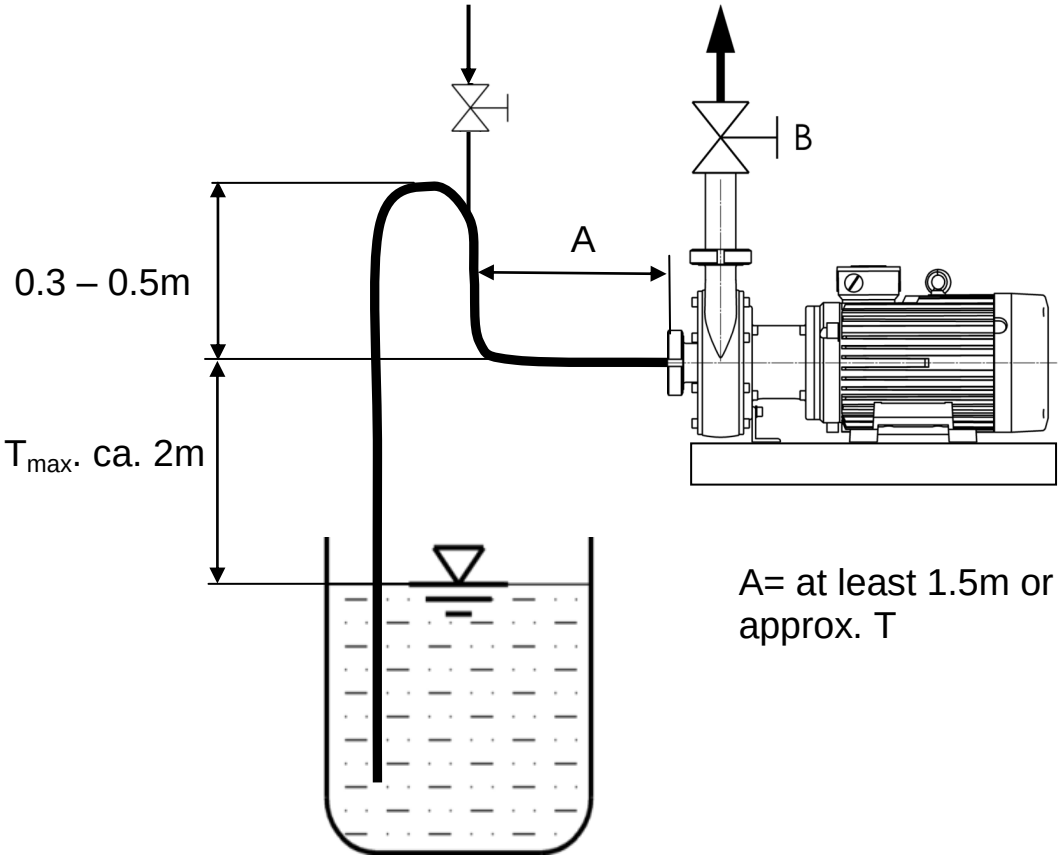


Figure 5: liquid level below the pump axis

The **recommended minimum filling volume V** in the suction line should be selected so, that the pump as well as approx. 2-3m of the suction line are completely filled with liquid:

DN	mm	50	65	80	100
V/m	liter/m	2	3.3	5.0	7.9
Length filled	m	2.5	2.5	2	2
filling volume V	liter	>5	>8	>10	>16

Table 1:

As a guide:
Available volume of liquid should be approx. 1.5 - 2.5 times larger than the volume of air in the suction line. Figures 4 and 5: if the suction line is for example 6m long, 3-4m of the suction line and the pump should be filled with liquid.

Recommended sizes of suction line:
Example: flow rate approx. 27m^3/h ➔ DN65 preferred

Q m^3/h	<20	<30	<50	<80	
	Flow velocity				
DN 50	2.8				m/s
DN 65	1.7	2.5	4.2		m/s
DN 80	1.1	1.7	2.8		m/s
DN 100				2.8	m/s

Table 2:

If a large amount of air is to be conveyed during suction, it is important to ensure that a sufficiently high flow velocity is reached in the suction line. This flow velocity can then also be greater than usual.
Otherwise, an accumulation of air in the upper half of the line cross-section threatens to prevent a friction-free operation

A suction flow velocity of <1.5 m/s is still the reference value for standard applications.

Example for the eccentric reduction or extension of the suction line to DN80 (DN80 is the standard diameter for the LES170 and LES190 to 60m3/h):

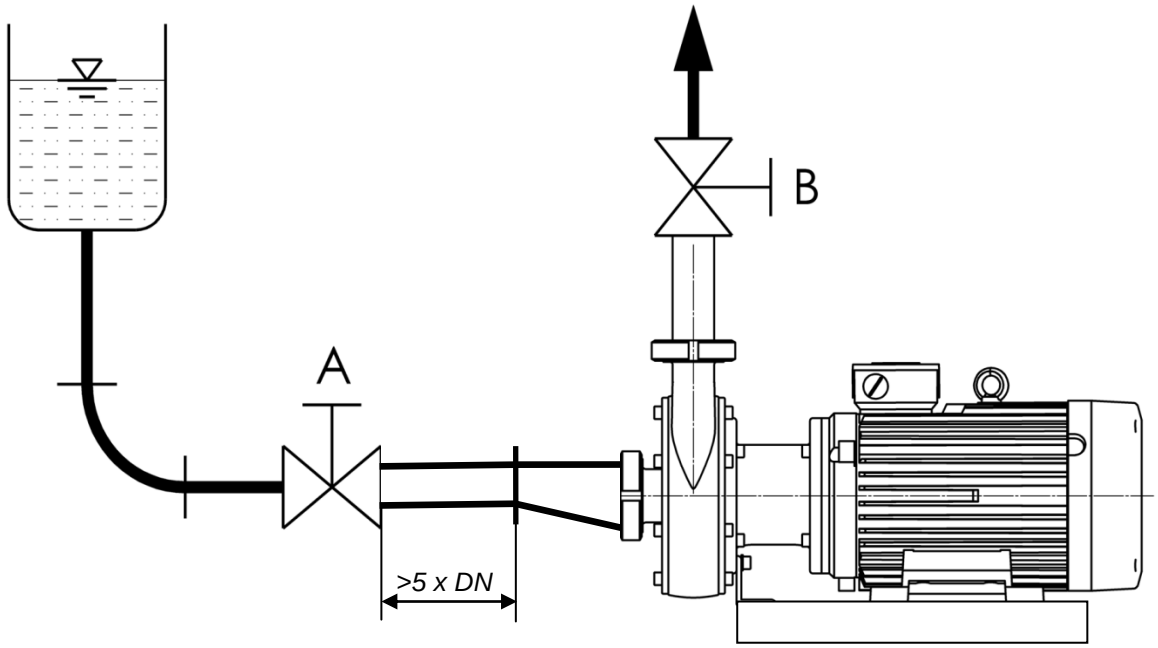


Figure 6: the eccentric cone should open downwards

For flow rates higher than 60m^3/h a suction nozzle DN100 should use resp. DN125 for flow rates > 90m^3/h.

A bad suction pipe arrangement is shown below with Figure 7.

e.g. unloading of tank tracks

Bad situation:

A suction line below the pump axis is very bad especially at the end of the pumping process when a large proportion of air is present in the flow because the pump is going to drain/ emptying itself.

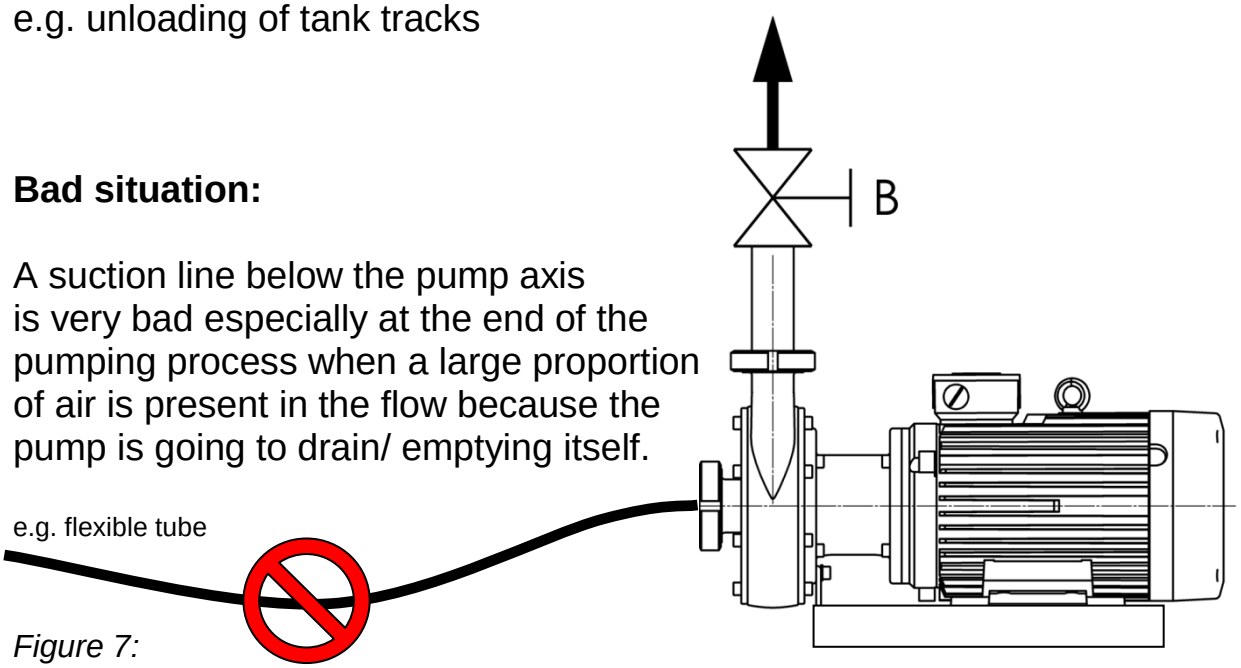


Figure 7:

Better:

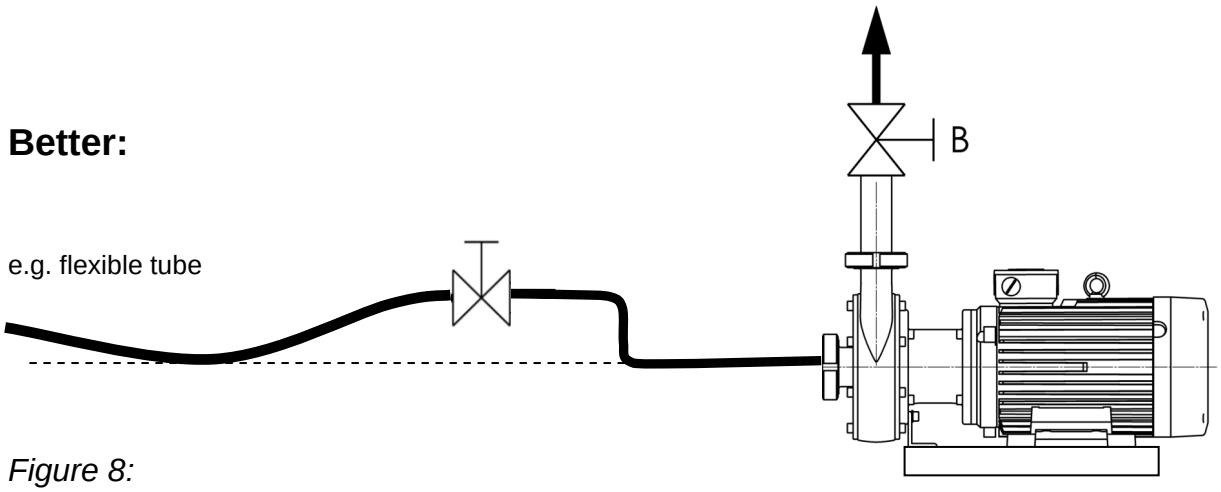
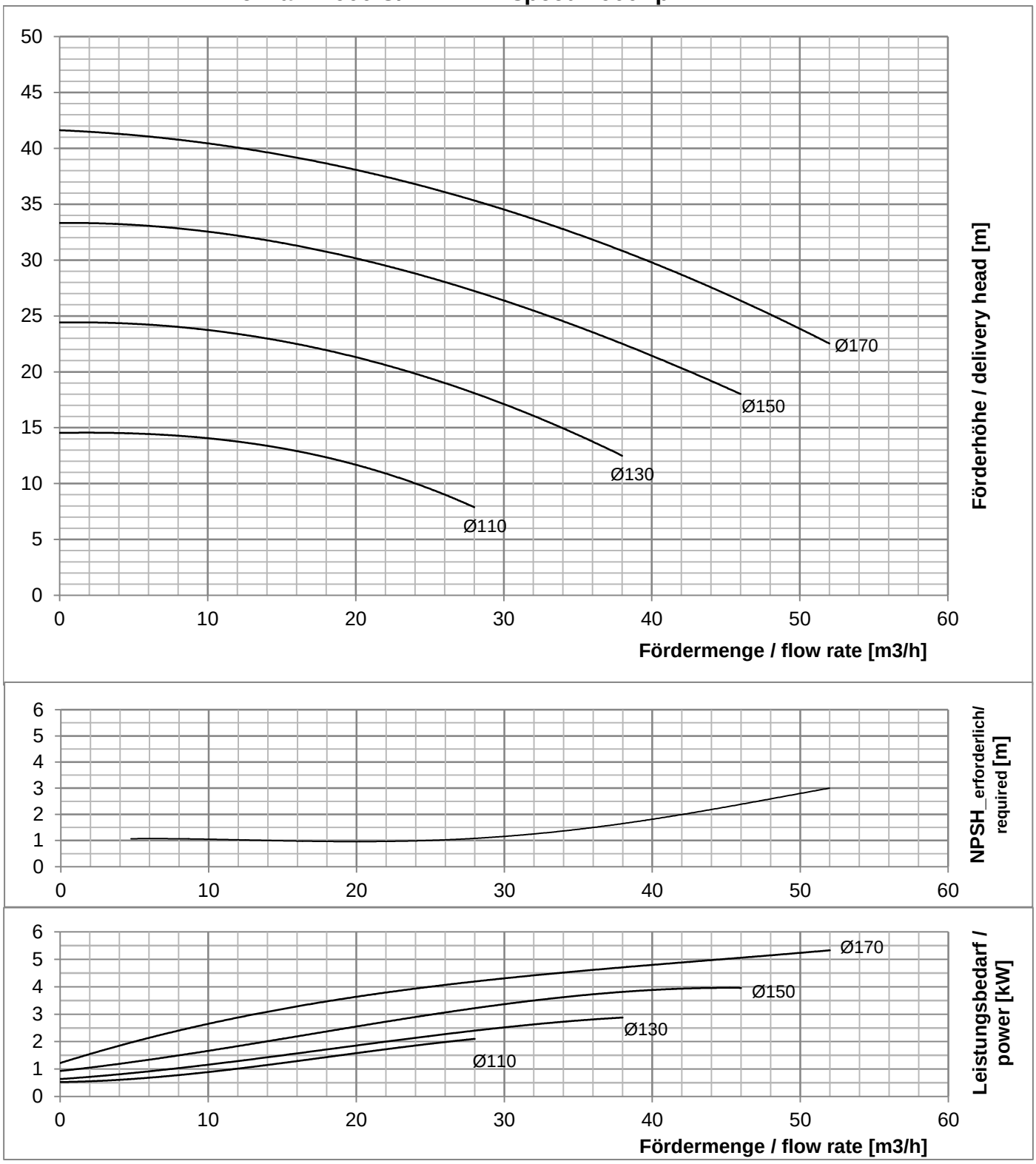


Figure 8:

The flexible tube should be stretched as far as possible and should not lie below the pump axis. If this is not possible, a certain pipe section above the pump axis should be installed directly in front of the pump.

Sawa PUMPEN	**Kreiselpumpe** **Typ: LES170-80/40**	**Centrifugal Pump** **Type: LES170-80/40**	Nummer: KL Revision: B/ 06.2020 Seite 1/1

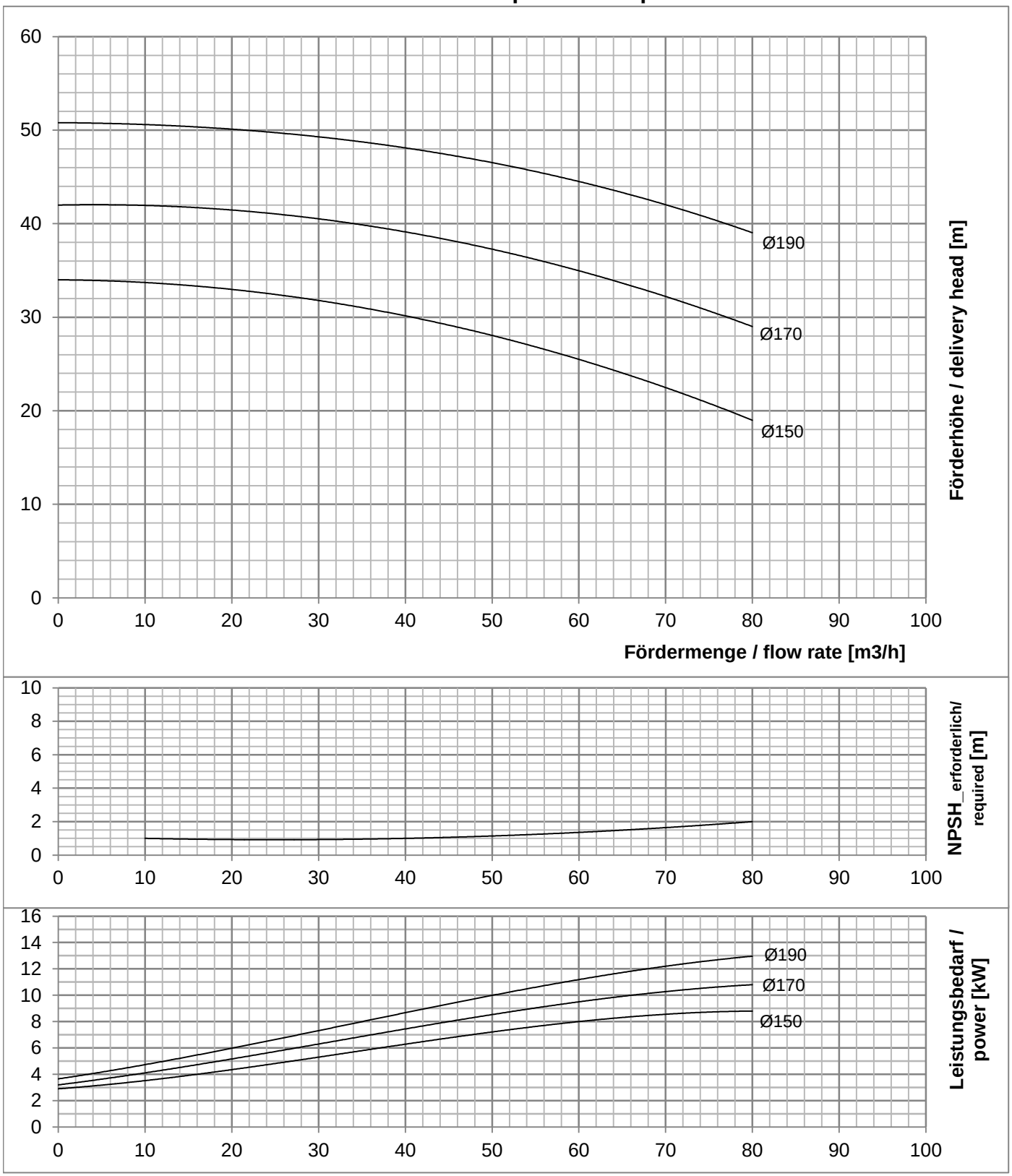
Wasser bei 20°C **water at 20°C**
Drehzahl 2900 U/min **speed 2900 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LES170-8000-4X**	50Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ: LES190-80/65**	**Centrifugal Pump** **Type: LES190-80/65**	Nummer: KL Revision: B/ 06.2020 Seite 1/1

Wasser bei 20°C **water at 20°C**
Drehzahl 2900 U/min **speed 2900 rpm**

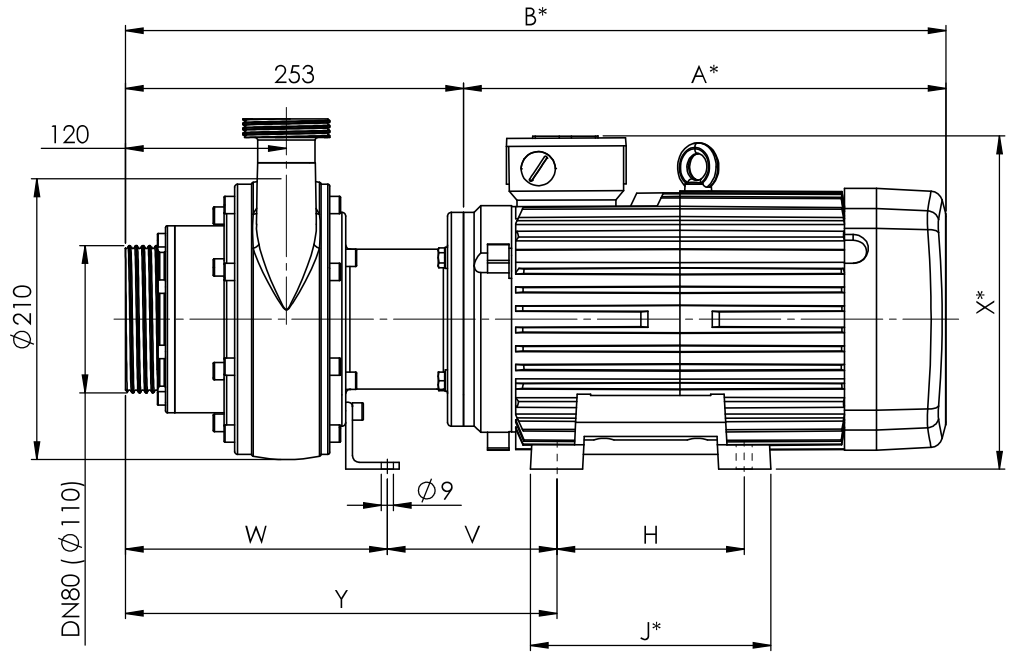


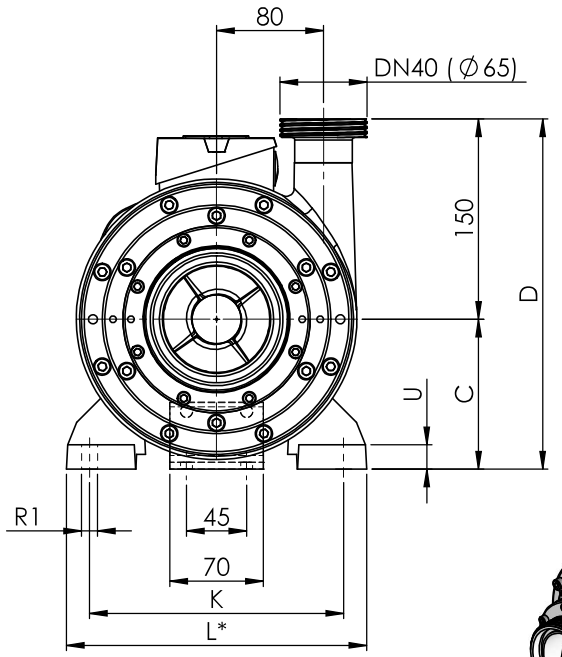
SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**LES190-8001-4X**	

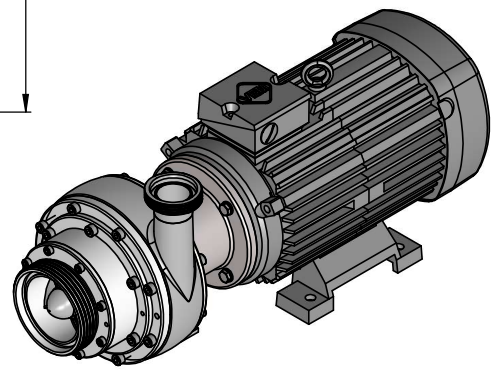
Kreiselpumpe
Typ: LES170-80/40-MI

Centrifugal Pump
Type: LES170-80/40-MI

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	24.08.2020
Freigegeben	AF	07.09.2020







*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

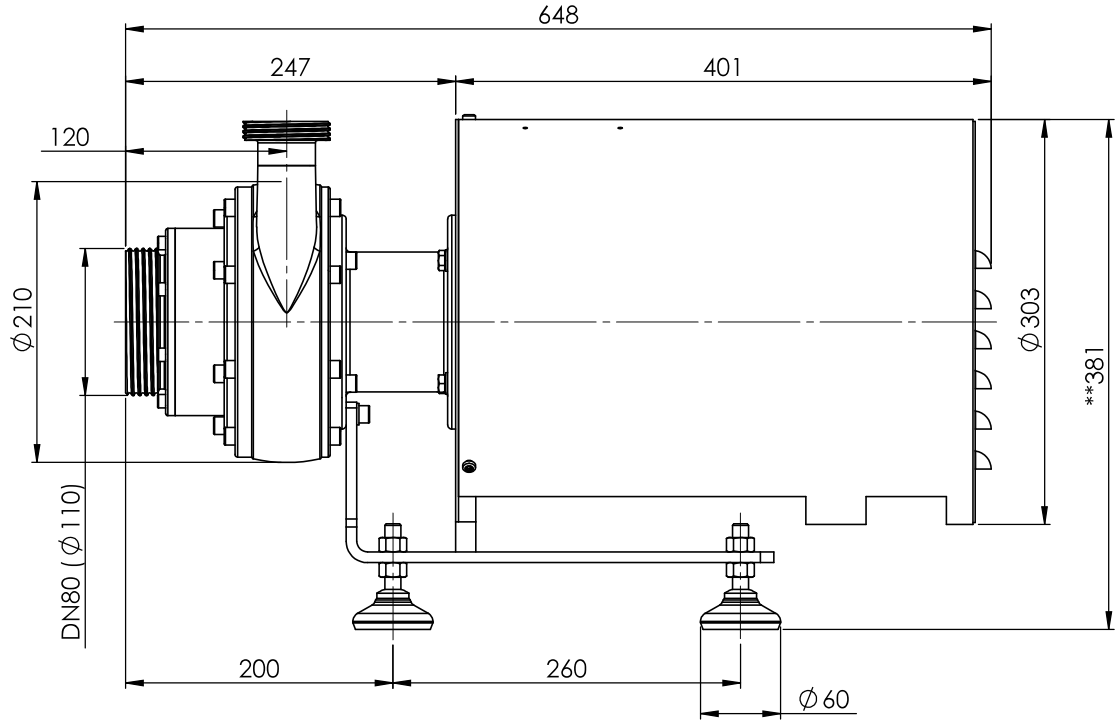
Saugstutzen / Suction Branch: Gewindestutzen/Threaded port DN80 / DIN 11851 **Druckstutzen / Pressure Branch:** Gewidestutzen/Threaded port DN40 / DIN 11851

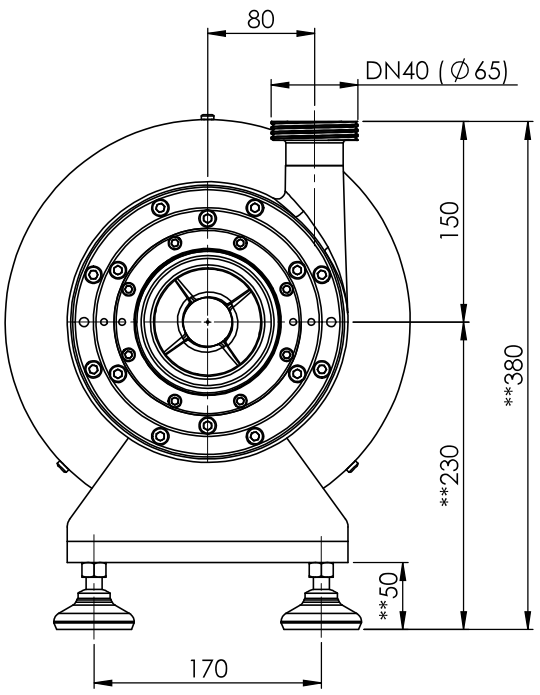
Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG100 B34 / Ø160	3.0 / 2900	297	550	100	250	-	-	-	140	175	160	193	-	-	-	-	12	-	-	-	13	108	208	236	316	-
IE3-2P-BG112 B34 / Ø160	4.0 / 2900	331	584	112	262	-	-	-	140	180	190	225	-	-	-	-	12	-	-	-	18	127	196	248	444	-
IE3-2P-BG112 B34 / Ø160	5.5 / 2900	361	614	112	262	-	-	-	140	180	190	225	-	-	-	-	12	-	-	-	18	127	196	248	444	-

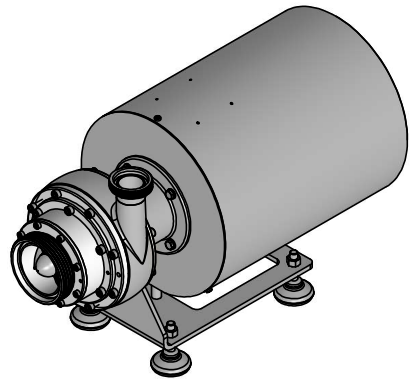
Kreiselpumpe
Typ: LES170-80/40-MT

Centrifugal Pump
Type: LES170-80/40-MT

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	24.08.2020
Freigegeben	AF	07.09.2020







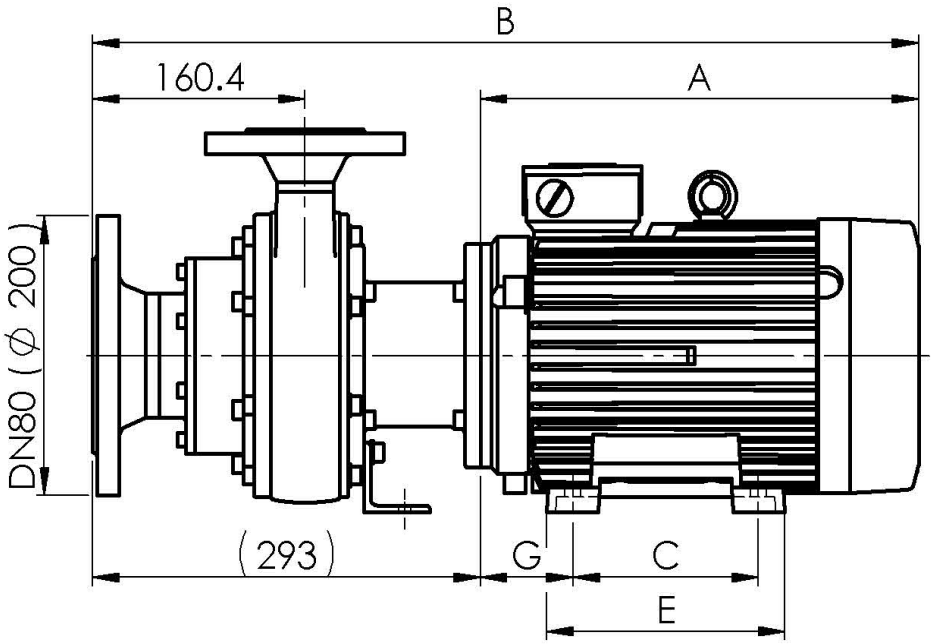
*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

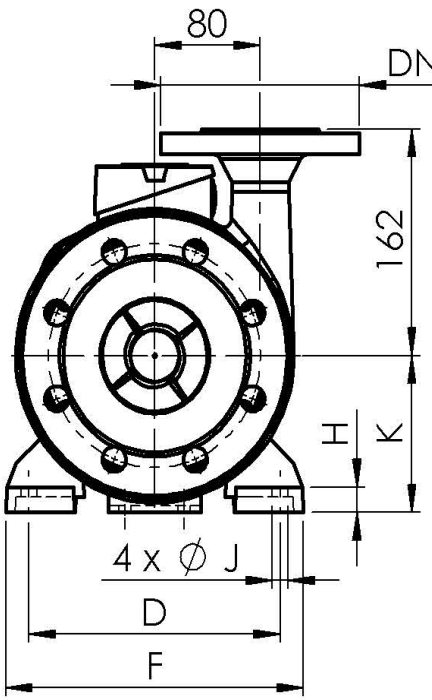
**** Verstellbar / adjustable +10mm/-8mm**

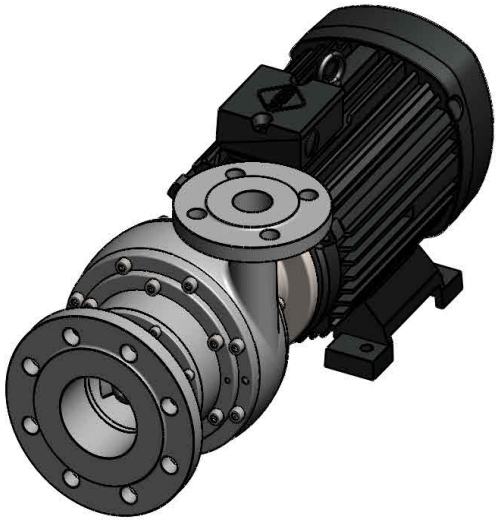
Saugstutzen / Suction Branch: Gewindestutzen/Threaded port DN80 / DIN 11851 **Druckstutzen / Pressure Branch:** Gewidestutzen/Threaded port DN40 / DIN 11851

Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG100 B14 / Ø160	3.0 / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IE3-2P-BG112 B14 / Ø160	4.0 / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IE3-2P-BG112 B14 / Ø160	5.5 / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Sawa PUMPEN	**Hybrid-Kreiselpumpe** Typ : LES170-80/40-FI	**Hybrid Centrifugal Pump** Type : LES170-80/40-FI	Nummer : MB Revision : B / 08.16 Seite 1 / 1





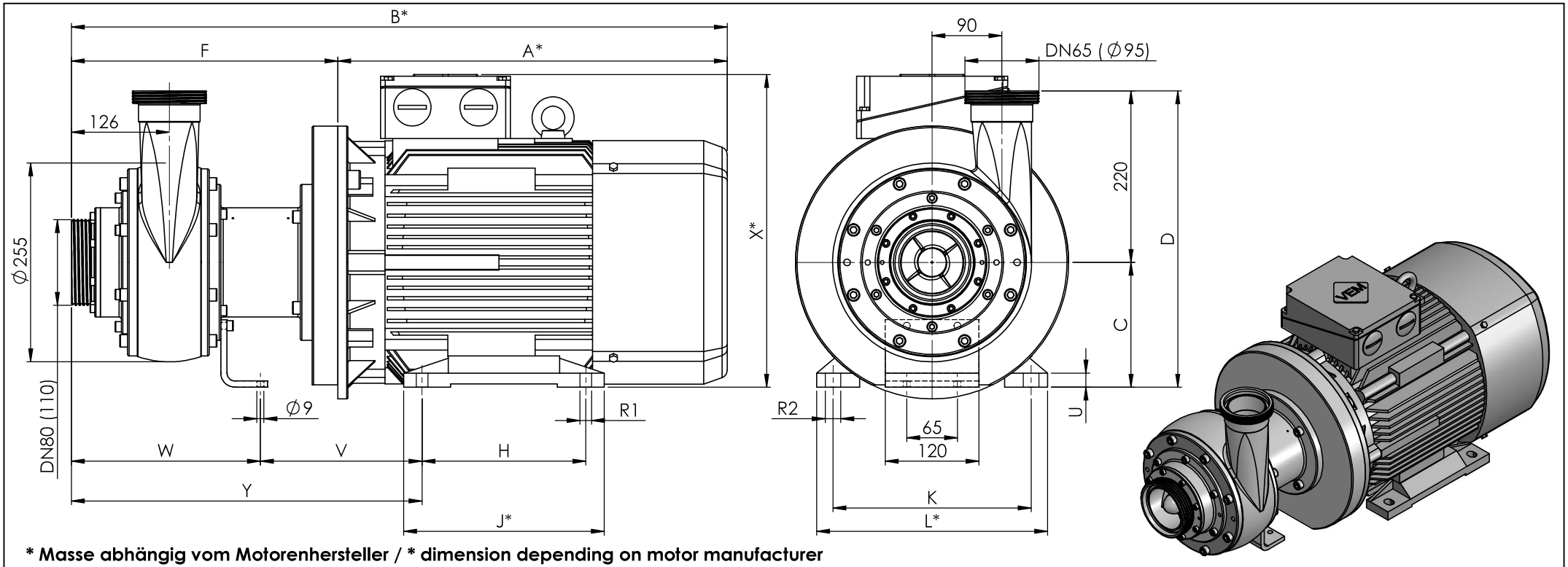


Motoren-Typ	Artikel-Nr.	kW / rpm	A	B	C	D	E	F	G	H	J	K
WE1R 90 S2 B3/B14 / Ø160	-	1.5 / 2900	271	564	100	140	150	167	56	9.5	10	90
WE1R 90 L2 B3/B14 / Ø160	000959	2.2 / 2900	271	564	125	140	150	167	56	9.5	10	90
WE1R 100 L2 B3/B14 / Ø160	013730	3.0 / 2900	298	591	140	160	171	188	63	11	12	100
WE1R 112 MX2 B3/B14 / Ø160	013552	4.0 / 2900	331	624	140	190	180	225	70	18	12	112
Anschlüsse	Vorschweissflansch DN80 / DN40 nach DIN2633											

Kreiselpumpe
Typ: LES190-80/65-MI

Centrifugal Pump
Type: LES190-80/65-MI

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	24.08.2020
Freigegeben	AF	07.09.2020



*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

Saugstutzen / Suction Branch: Gewindestutzen/Threaded port DN80 / DIN 11851 **Druckstutzen / Pressure Branch:** Gewindestutzen/Threaded port DN65 / DIN 11851

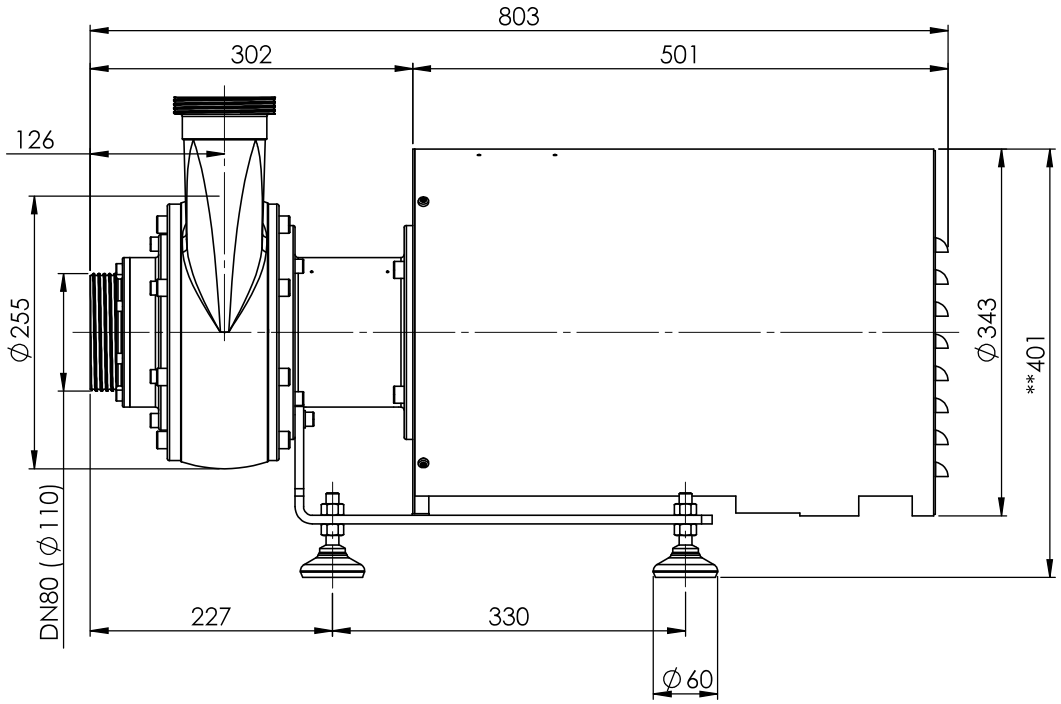
Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG112 B34/Ø200	4.0 / 2900	331	640	112	332	-	309	-	140	180	190	225	-	-	-	-	12	12	-	-	18	136	242	248	378	-
IE3-2P-BG132 B34/Ø200	5.5 / 2900	380	689	132	352	-	309	-	140	180	216	256	-	-	-	-	12	12	-	-	19	175	222	287	397	-
IE3-2P-BG132 B34/Ø200	7.5 / 2900	401	710	132	352	-	309	-	140	180	216	256	-	-	-	-	12	12	-	-	15	175	222	331	397	-
IE3-2P-BG160 B35/Ø350	11.0 / 2900	499	841	160	380	-	342	-	210	257	254	296	-	-	-	-	15	20	-	-	18	207	242	374	449	-

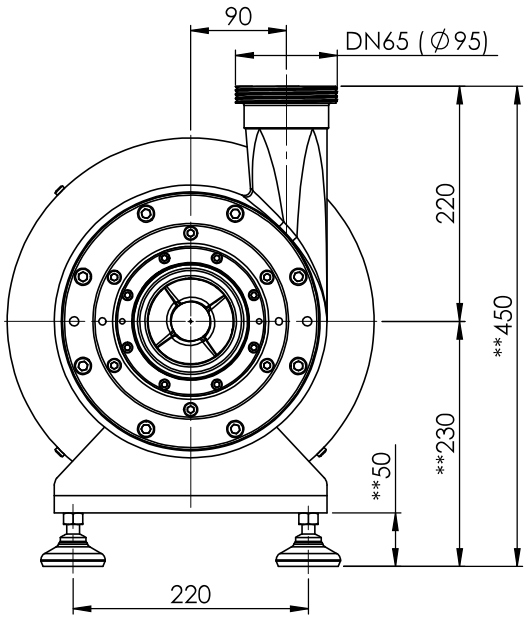
SAWA Pumpentechnik AG	CH - 9113 Degersheim	102856	Rev. -

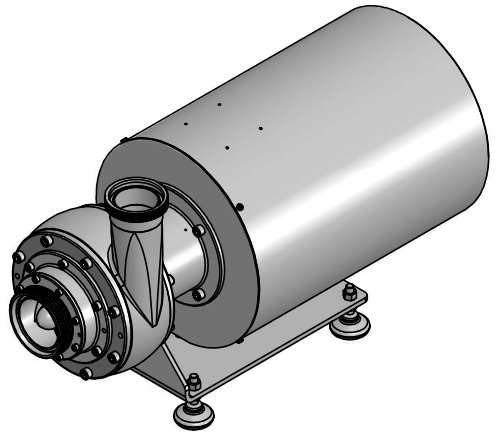
Kreiselpumpe
Typ: LES190-80/65-MT

Centrifugal Pump
Type: LES190-80/65-MT

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	25.08.2020
Freigegeben	AF	07.09.2020







*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

**** Verstellbar / adjustable +10mm/-8mm**

Saugstutzen / Suction Branch: Gewindestutzen/Threaded port DN80 / DIN 11851 **Druckstutzen / Pressure Branch:** Gewindestutzen/Threaded port DN65 / DIN 11851

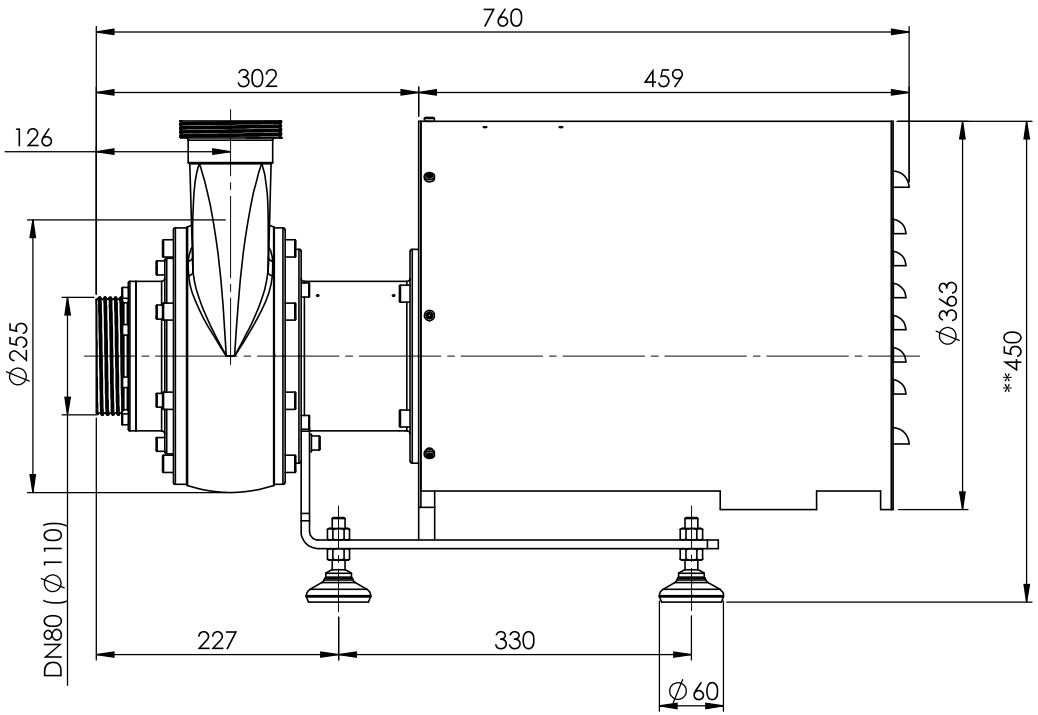
Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG112 B14/Ø200	4.0 / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IE3-2P-BG112 B14/Ø200	5.5 / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

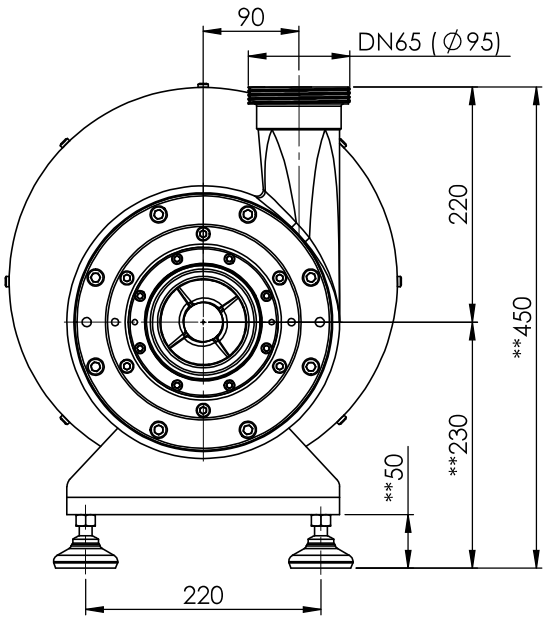
SAWA Pumpentechnik AG	CH - 9113 Degersheim	102857	Rev. -

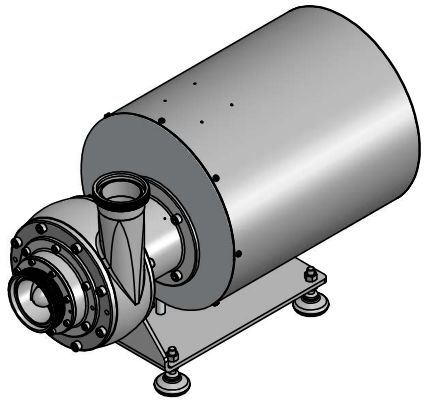
Kreiselpumpe
Typ: LES190-80/65-MT

Centrifugal Pump
Type: LES190-80/65-MT

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	26.08.2020
Freigegeben	AF	07.09.2020







*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

**** Verstellbar / adjustable +10mm/-8mm**

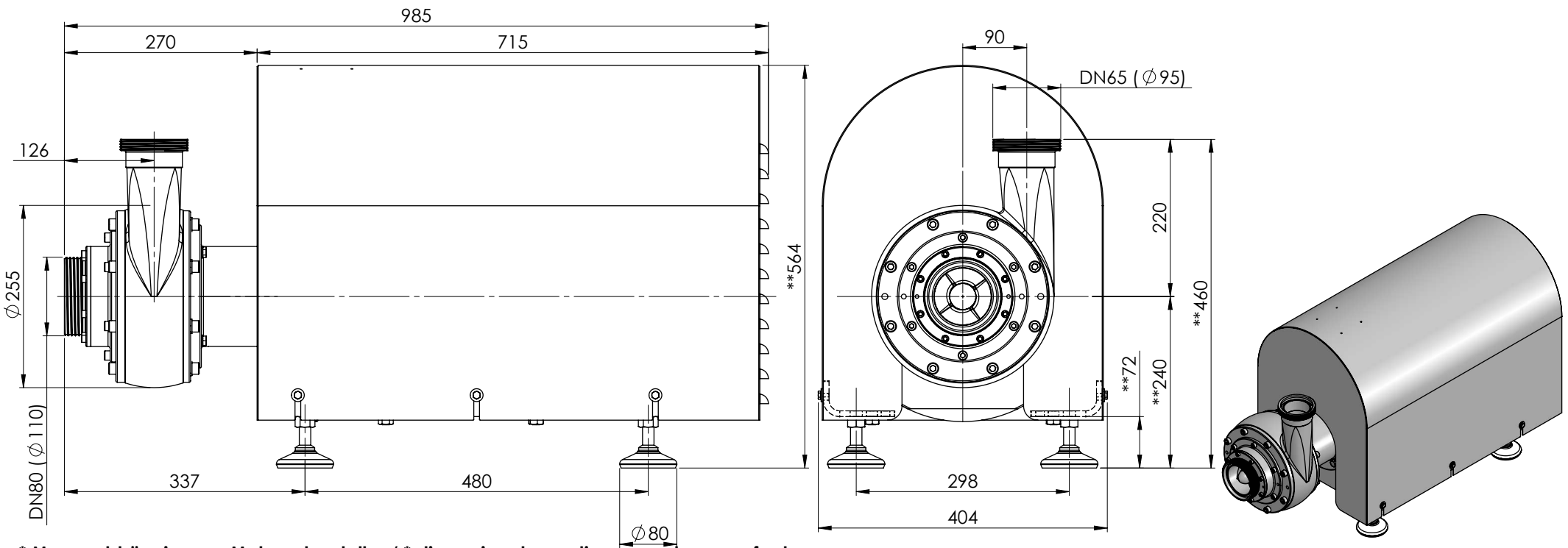
Saugstutzen / Suction Branch: Gewindestutzen/Threaded port DN80 / DIN 11851 **Druckstutzen / Pressure Branch:** Gewindestutzen/Threaded port DN65 / DIN 11851

Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG132 B14/Ø200	5.5 / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IE3-2P-BG132 B14/Ø200	7.5 / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Kreiselpumpe
Typ: LES190-80/65-MT

Centrifugal Pump
Type: LES190-80/65-MT

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	26.08.2020
Freigegeben	AF	07.09.2020



*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

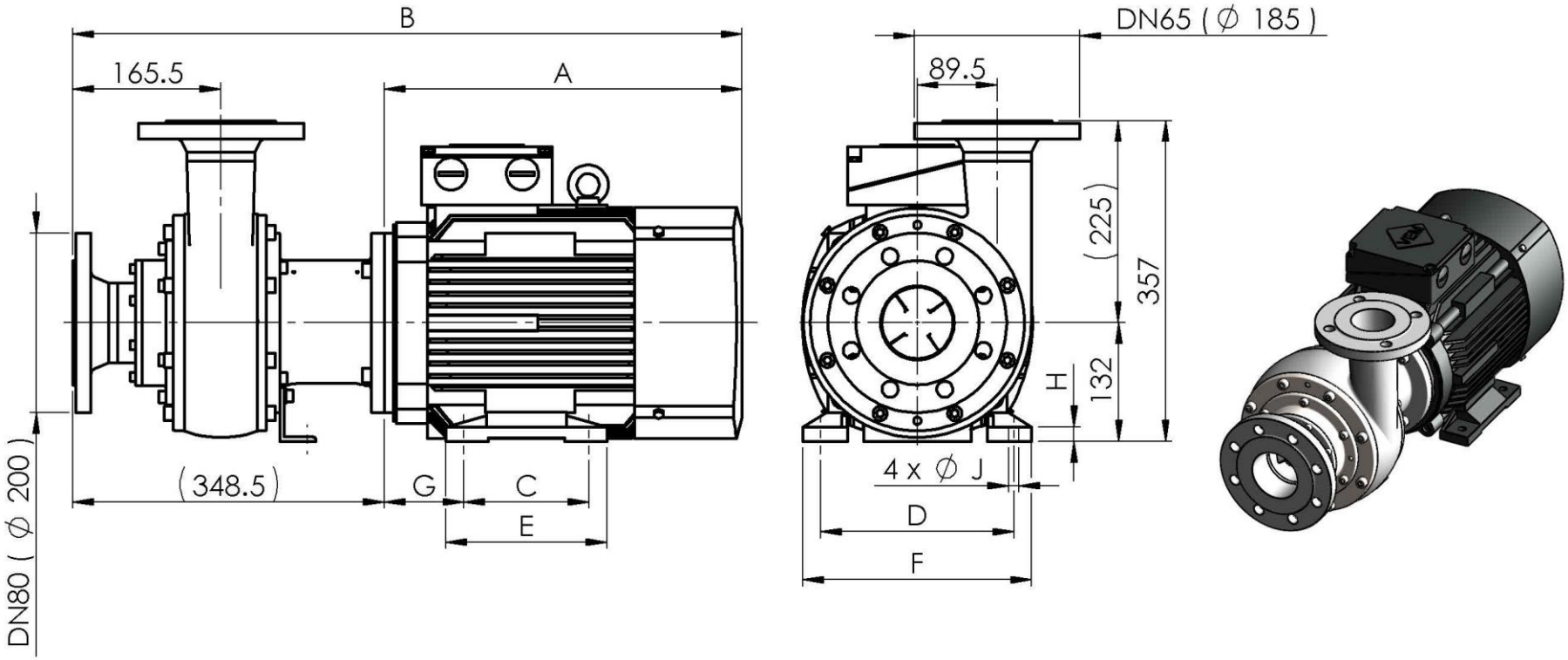
**** Verstellbar / adjustable +35mm/-25mm**

Saugstutzen / Suction Branch: Gewindestutzen/Threaded port DN80 / DIN 11851 **Druckstutzen / Pressure Branch:** Gewindestutzen/Threaded port DN65 / DIN 11851

Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG160 B35/Ø350	11.0 / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

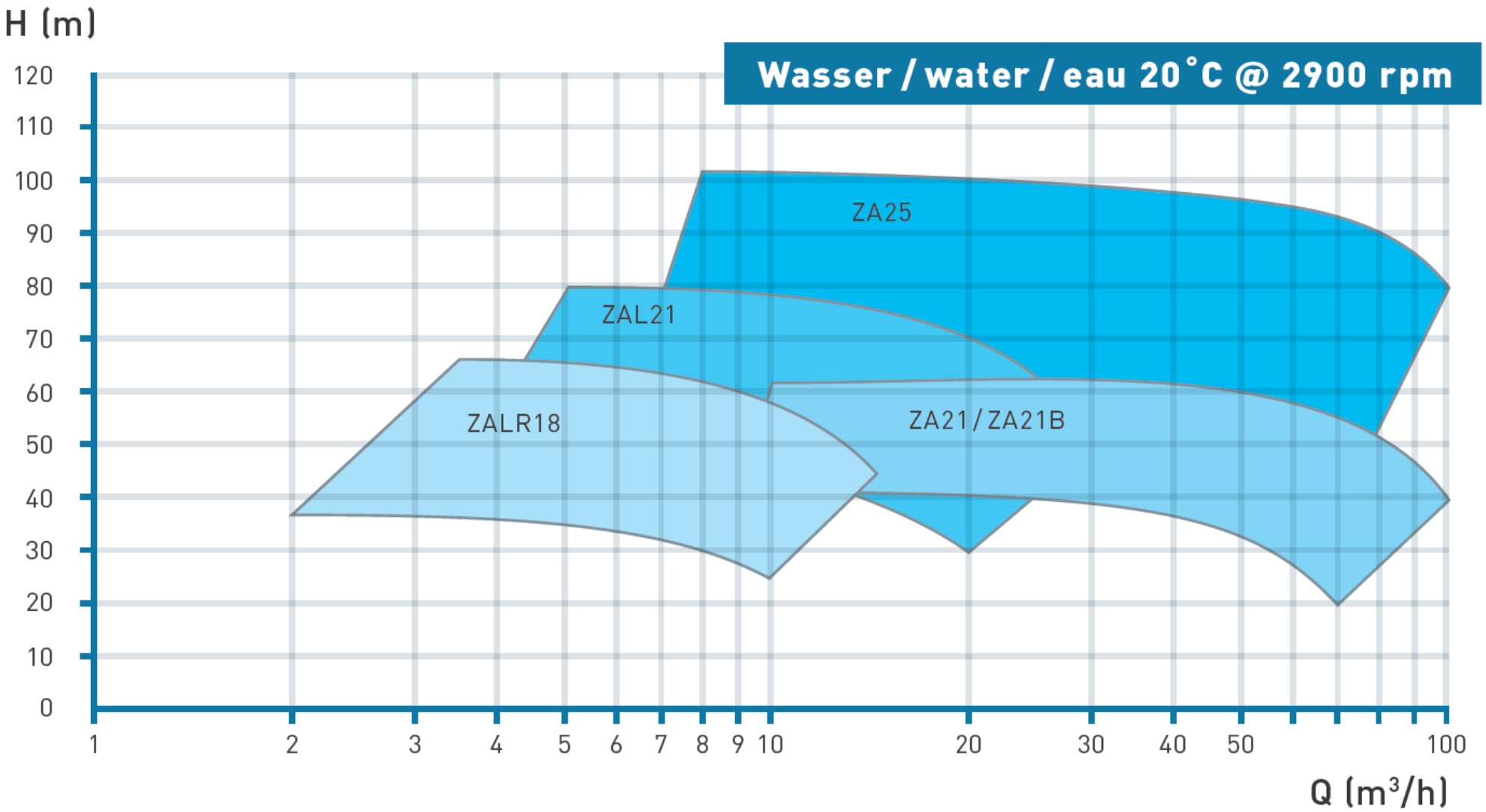
SAWA Pumpentechnik AG	CH - 9113 Degersheim	102863	Rev. -

Sawa PUMPEN	**Hybrid-Kreiselpumpe** Typ : LES190-80/65-FI	**Hybrid Centrifugal Pump** Type : LES190-80/65-FI	Nummer : MB Revision : B / 08.16 Seite 1 / 1



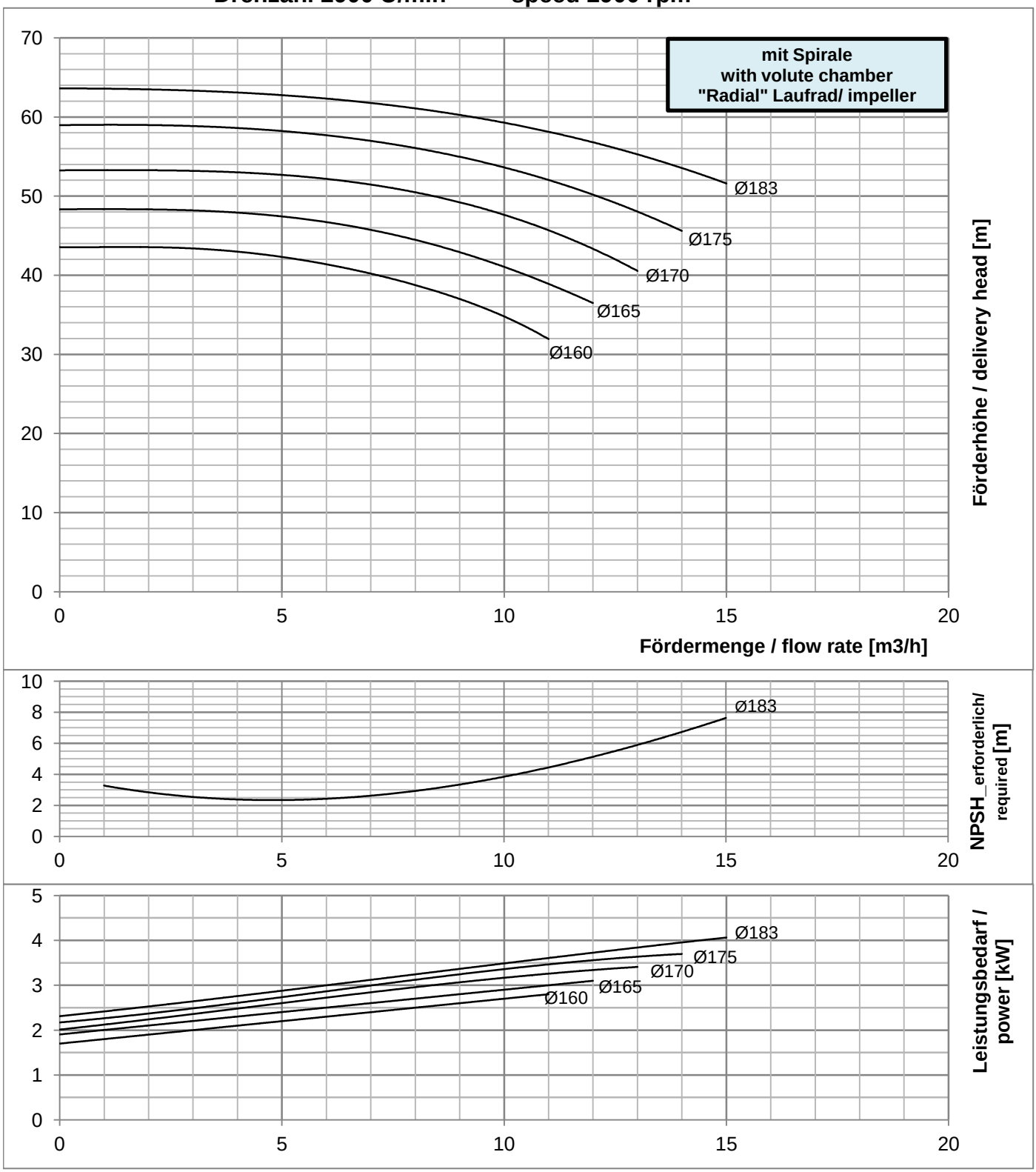
Motoren-Typ	Artikel-Nr.	kW / rpm	A	B	C	D	E	F	G	H
WE1R 132 S-2T B3/B14 / Ø200	014035	5.5 / 2900	380	729	140	216	180	256	89	18.5
WE1R 132 SX-2 B3/B14 / Ø200	013685	7.5 / 2900	401	750	140	216	180	256	89	16
LSES 132 M B3/B14 / Ø200	013955	11.0 / 2900	385	734	140/178	216	208	250	89	15
Anschlüsse	Vorschweissflansch DN80 / DN65 nach DIN2633									

Sawa PUMPEN	**Kreiselpumpe** (normalsaugend) **Typ : ZA**	**Centrifugal Pump** (normal priming) **Type : ZA**	Nummer : KL Revision : I / 09.16 Seite 1 / 1



Sawa PUMPEN	**Kreiselpumpe** **Typ: ZALR18-32/25**	**Centrifugal Pump** **Type: ZALR18-32/25**	Nummer: KL Revision: B/ 08.2016 Seite 1/1

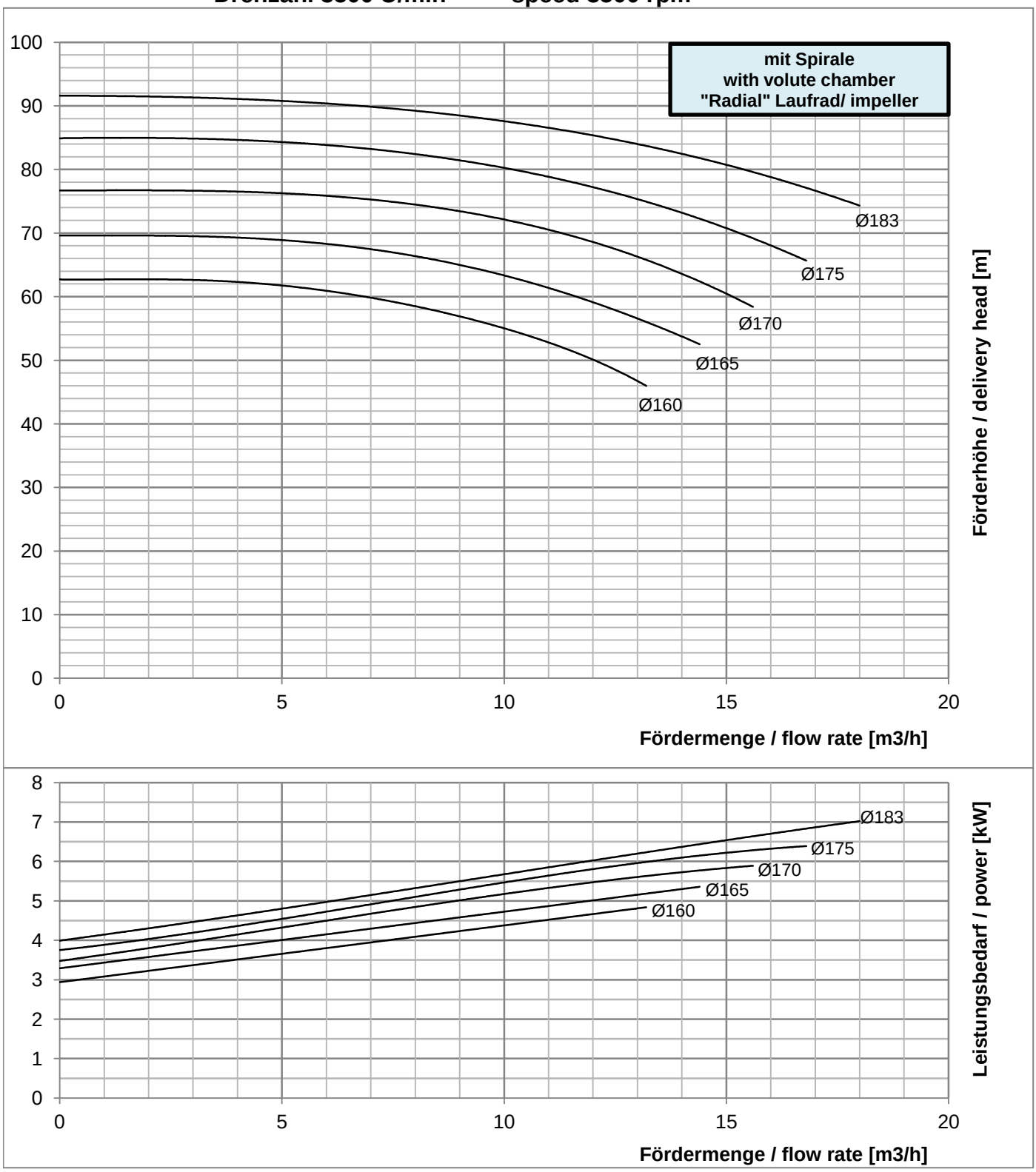
Wasser bei 20°C **water at 20°C**
Drehzahl 2900 U/min **speed 2900 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**ZALR18-8000-4X**	50Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ: ZALR18-32/25**	**Centrifugal Pump** **Type: ZALR18-32/25**	Nummer: KL Revision: B/ 8.2016 Seite 1/1

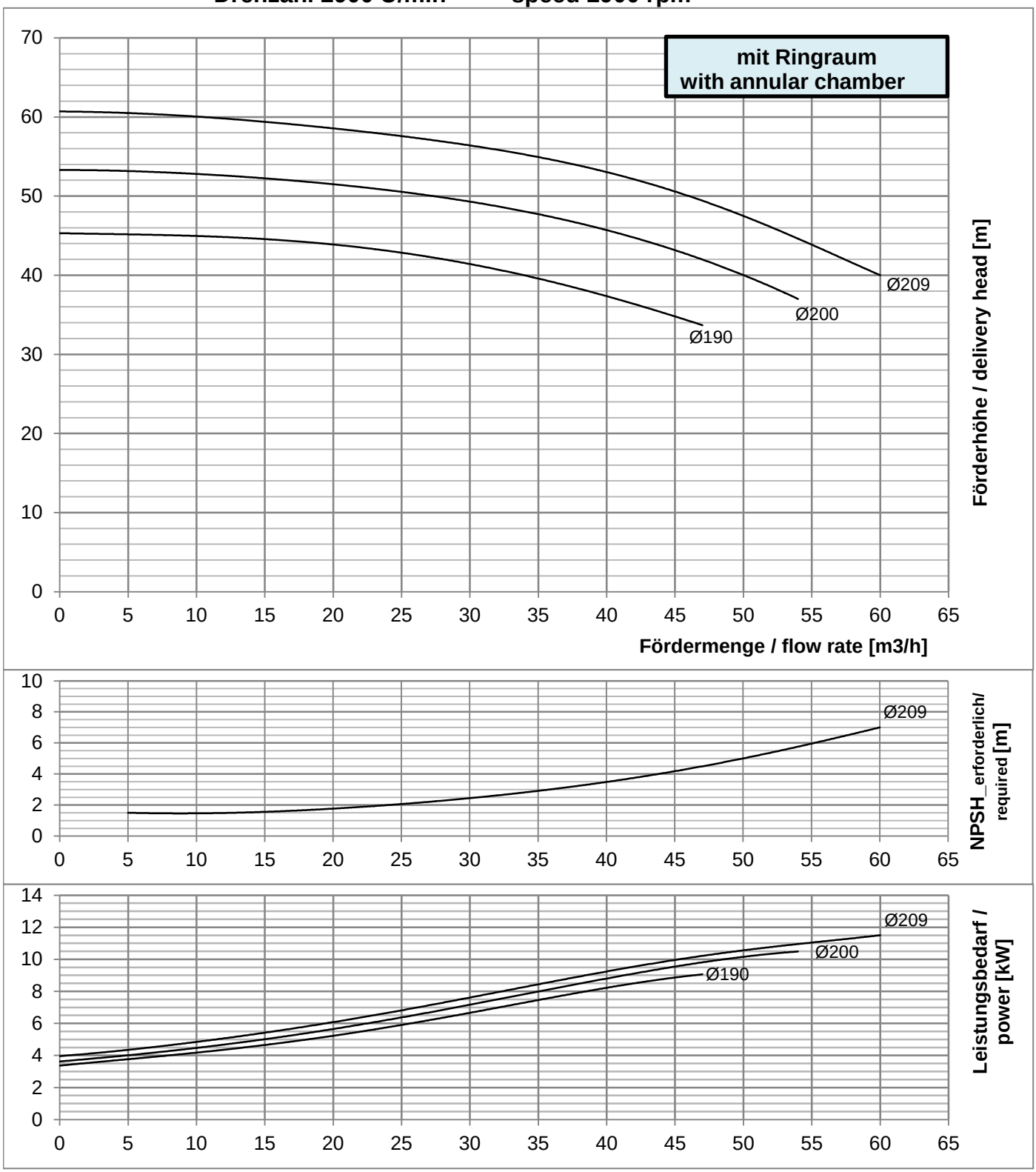
Wasser bei 20°C **water at 20°C**
Drehzahl 3500 U/min **speed 3500 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**ZALR18-8002-4X**	60Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ: ZA21-100/80**	**Centrifugal Pump** **Type: ZA21-100/80**	Nummer: KL Revision: B/ 01.2021 Seite 1/1

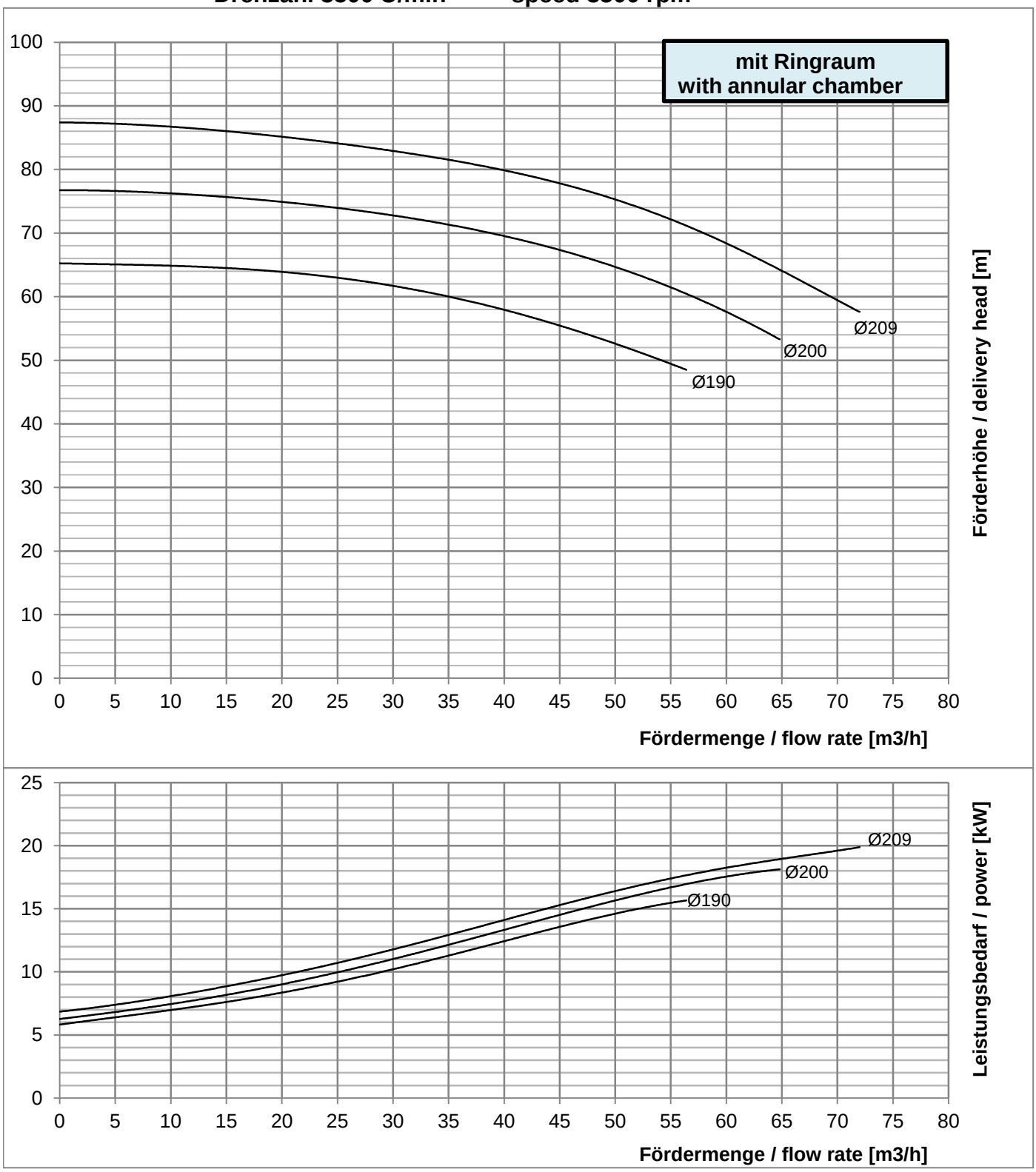
Wasser bei 20°C **water at 20°C**
Drehzahl 2900 U/min **speed 2900 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**ZA21-8000-4X**	50Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ: ZA21-100/80**	**Centrifugal Pump** **Type: ZA21-100/80**	Nummer: KL Revision: B/ 01.2021 Seite 1/1

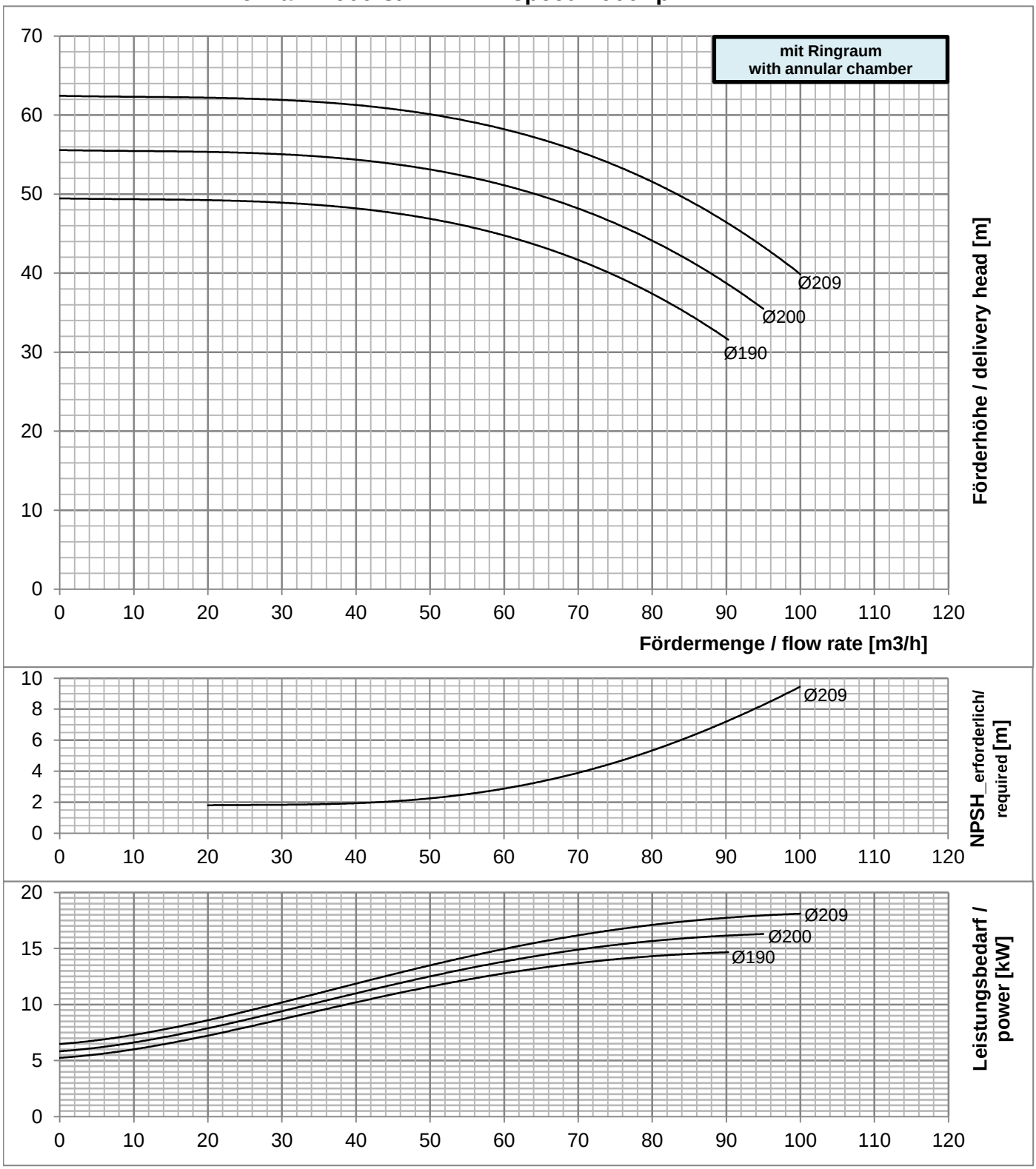
Wasser bei 20°C **water at 20°C**
Drehzahl 3500 U/min **speed 3500 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**ZA21-8002-4X**	60Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ: ZA21B-100/80**	**Centrifugal Pump** **Type: ZA21B-100/80**	Nummer: KL Revision: B/ 7.2013 Seite 1/1

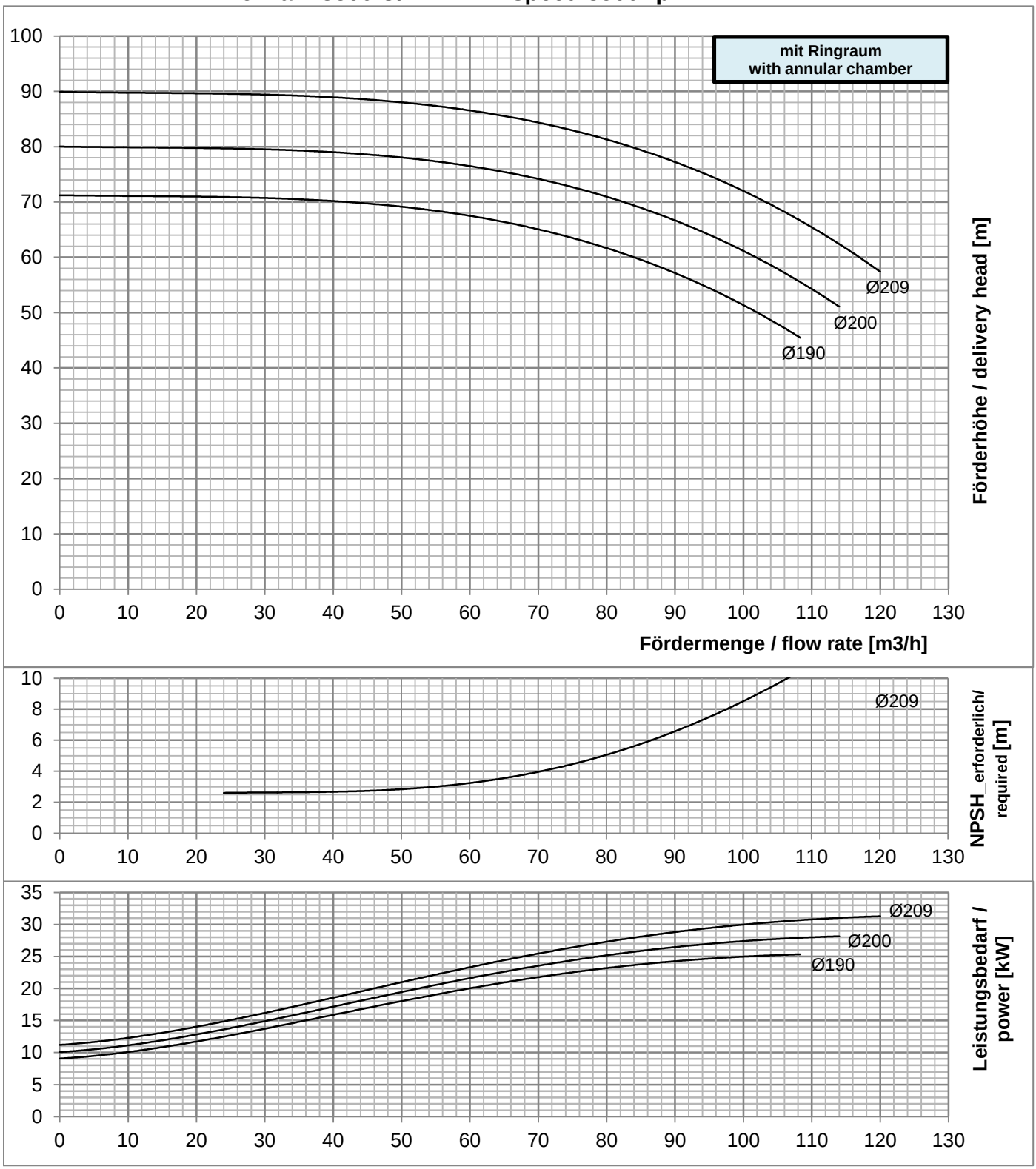
Wasser bei 20°C **water at 20°C**
Drehzahl 2900 U/min **speed 2900 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**ZA21B-8000-4X**	50Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ: ZA21B-100/80**	**Centrifugal Pump** **Type: ZA21B-100/80**	Nummer: KL Revision: A/ 8.2016 Seite 1/1

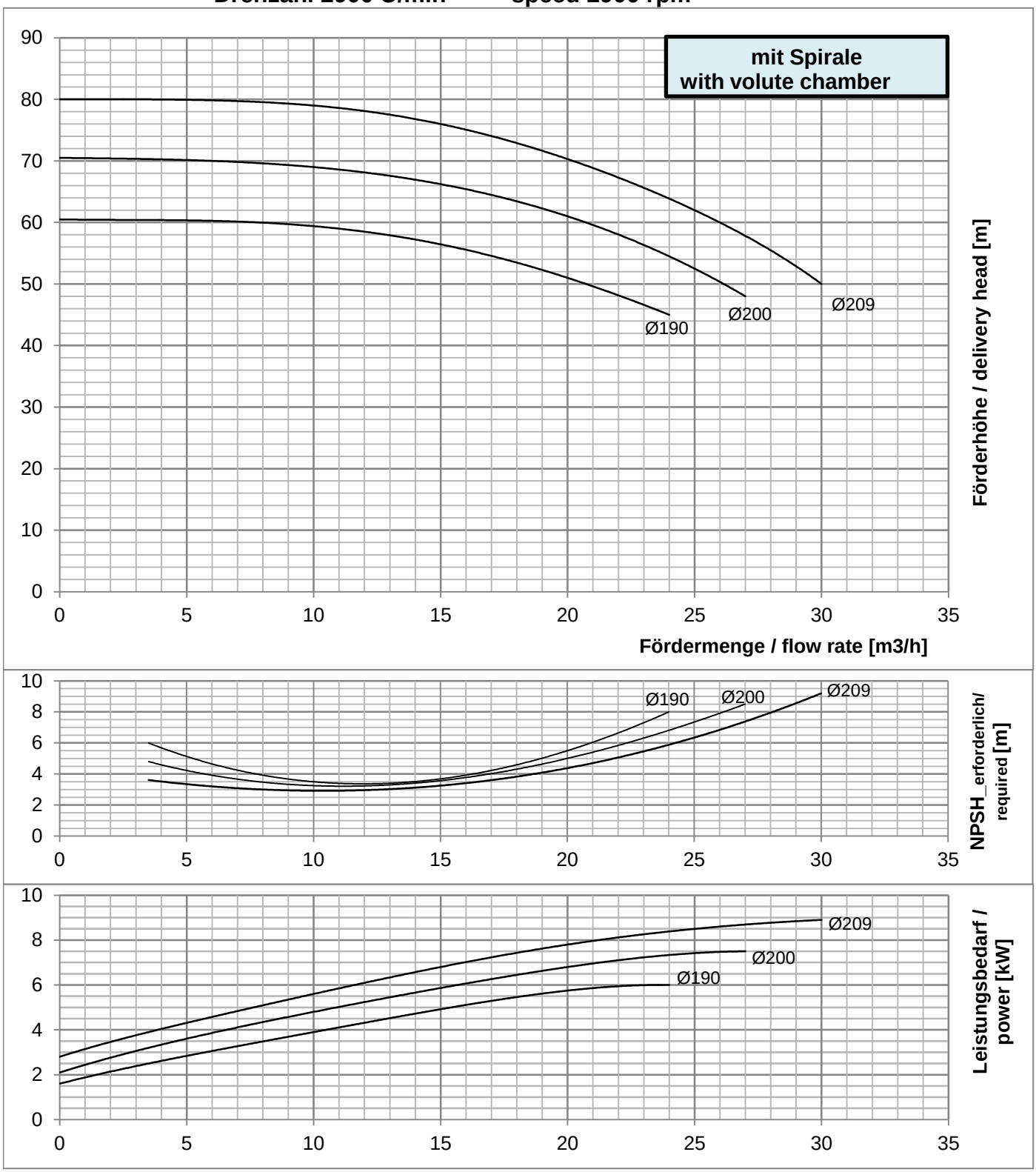
Wasser bei 20°C **water at 20°C**
Drehzahl 3500 U/min **speed 3500 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**ZA21B-8010-4X**	60Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ: ZAL21-50/32**	**Centrifugal Pump** **Type: ZAL21-50/32**	Nummer: KL Revision: C/ 01.2021 Seite 1/1

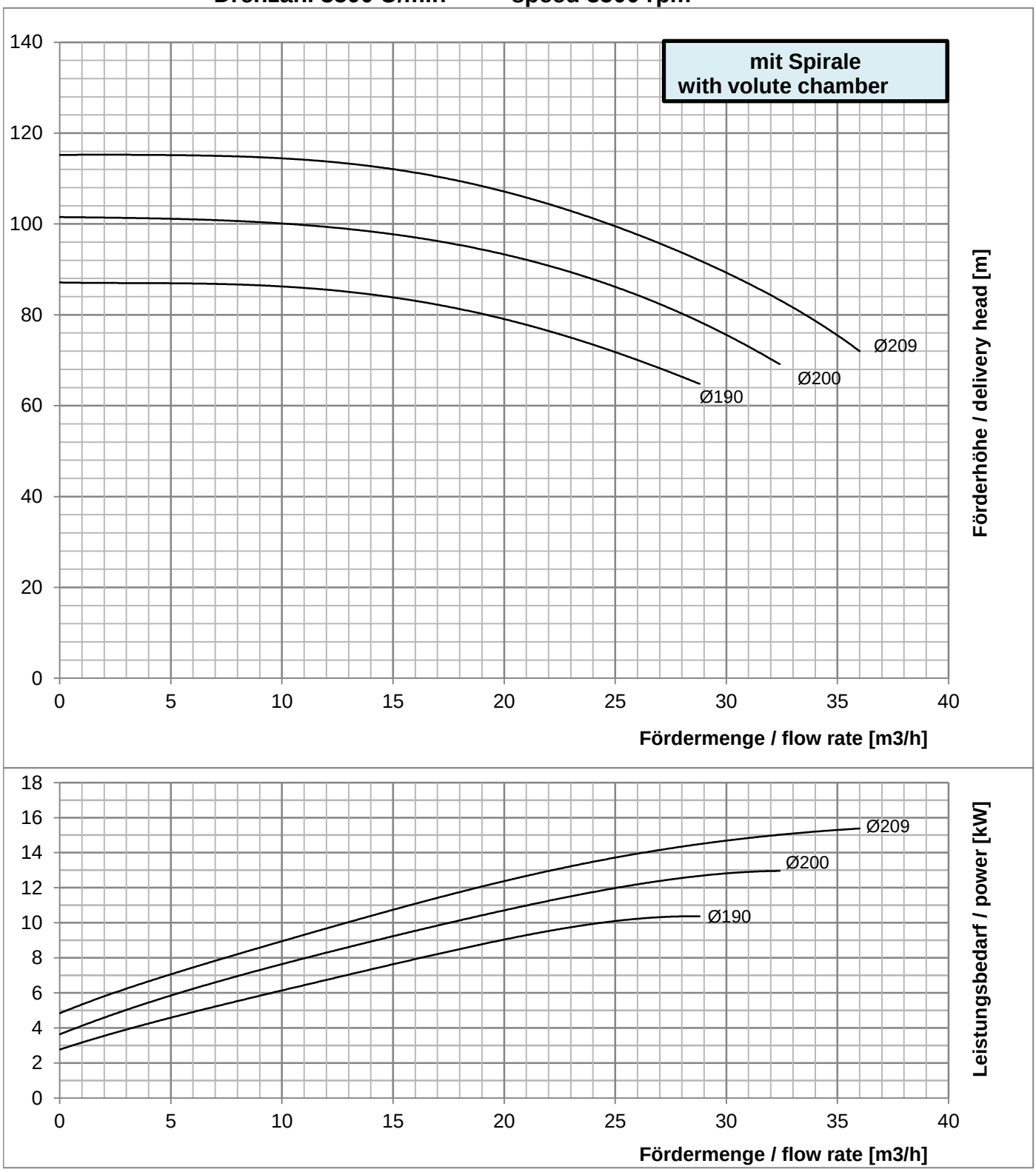
Wasser bei 20°C **water at 20°C**
Drehzahl 2900 U/min **speed 2900 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	**www.sawa.ch**	**ZAL21-8000-4X**	50Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ: ZAL21-50/32**	**Centrifugal Pump** **Type: ZAL21-50/32**	Nummer: KL Revision: A/ 01.2010 Seite 1/1

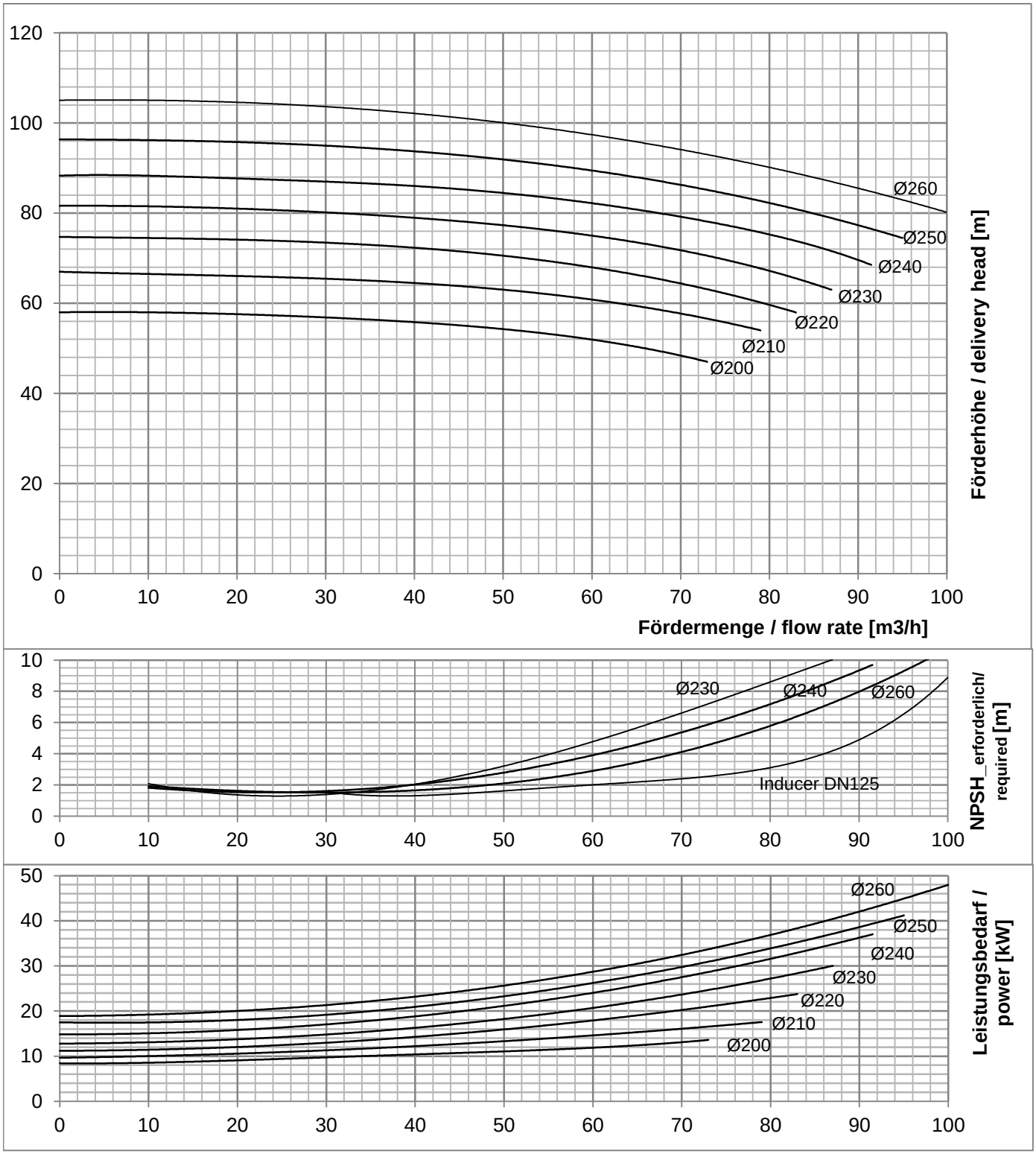
Wasser bei 20°C **water at 20°C**
Drehzahl 3500 U/min **speed 3500 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	**www.sawa.ch**	**ZAL21-8002-4X**	60Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ : ZA25-100/100**	**Centrifugal Pump** **Type: ZA25-100/100**	Nummer: KL Revision: D/ 01.2021 Seite 1/1

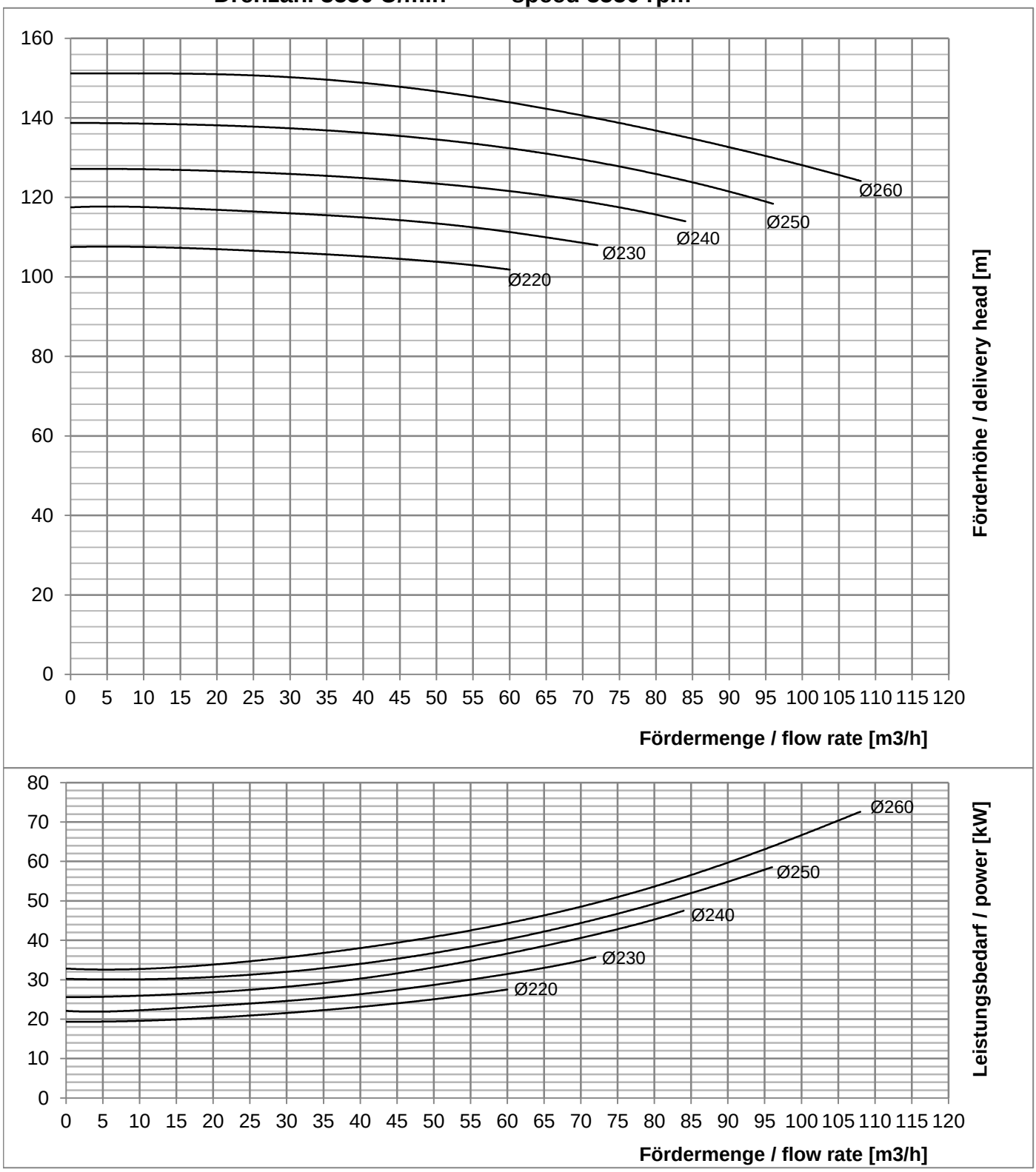
Wasser bei 20°C **water at 20°C**
Drehzahl 2900 U/min **speed 2900 rpm**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**ZA25-8001-4X**	50Hz

Sawa PUMPEN	**Kreiselpumpe** **Typ: ZA25-100/100**	**Centrifugal Pump** **Type: ZA25-100/100**	Nummer: KL Revision:B/ 01.2021 Seite 1/1

Wasser bei 20°C **water at 20°C**
Drehzahl 3550 U/min **speed 3550 rpm**

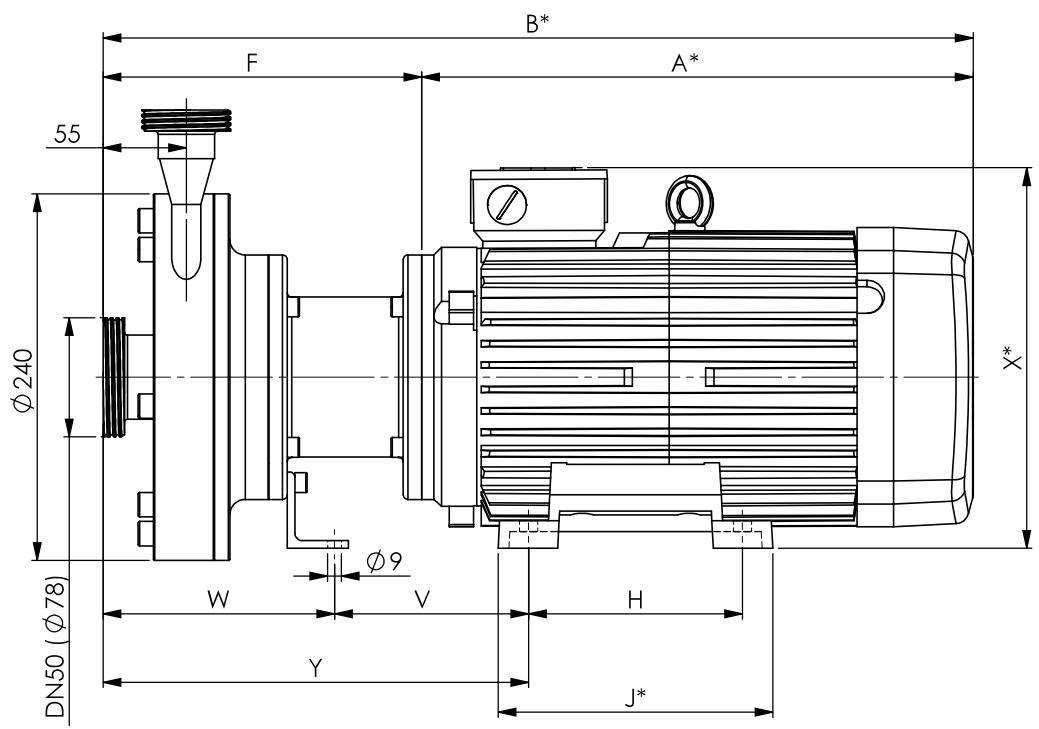


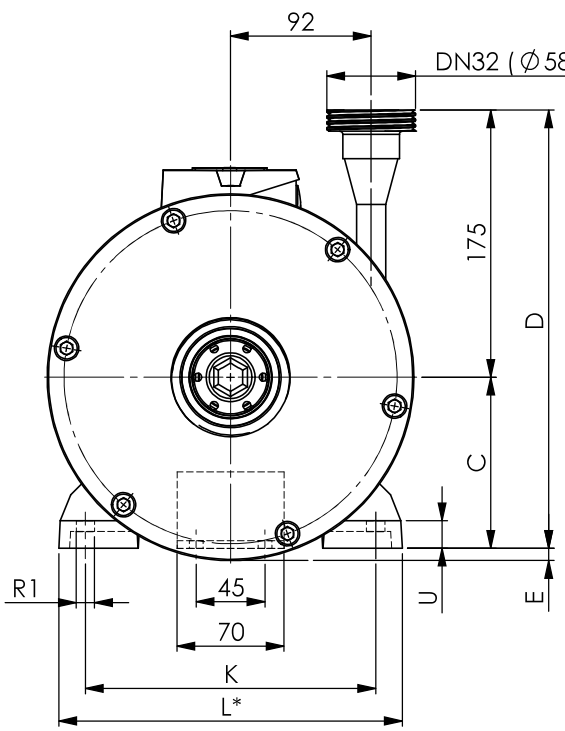
SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**ZA25-8003-4X**	60Hz

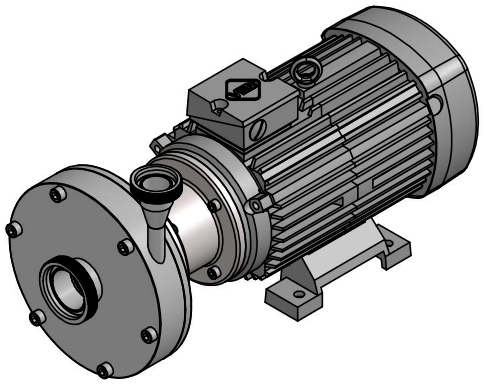
Kreiselpumpe
Typ: ZALR18-50/32-MI

Centrifugal Pump
Type: ZALR18-50/32-MI

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	04.08.2020
Freigegeben	AF	07.09.2020







*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

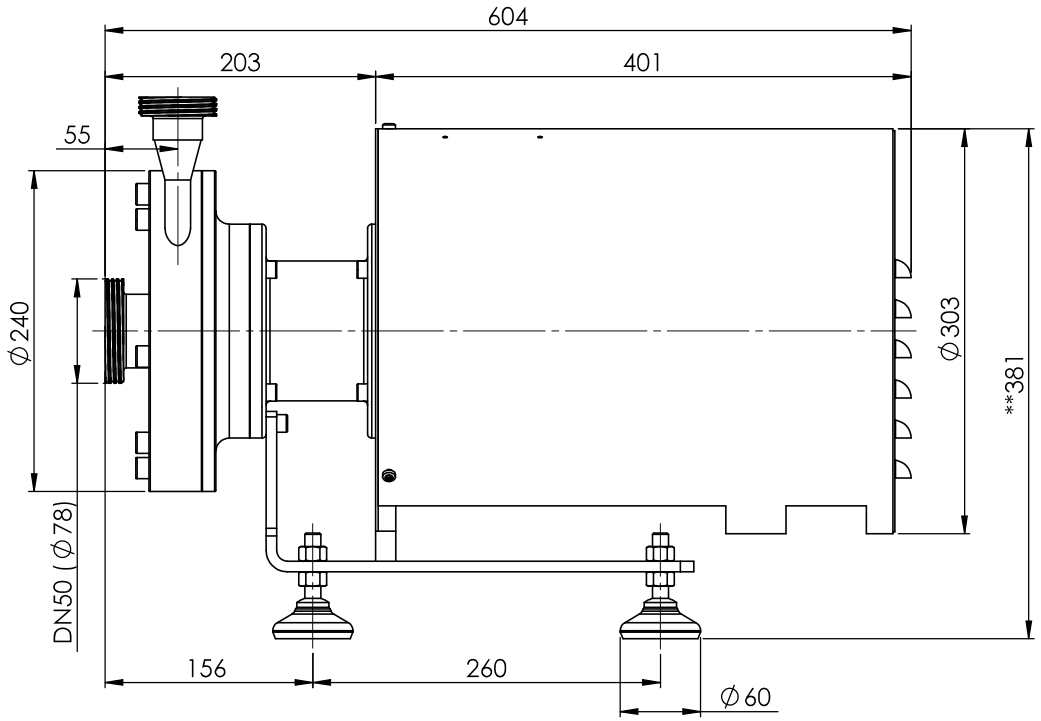
Saugstutzen / Suction Branch: Gewindestutzen / Threaded port DN50 / DIN 11851 **Druckstutzen / Pressure Branch:** Gewindestutzen / Threaded port DN32 / DIN 11851

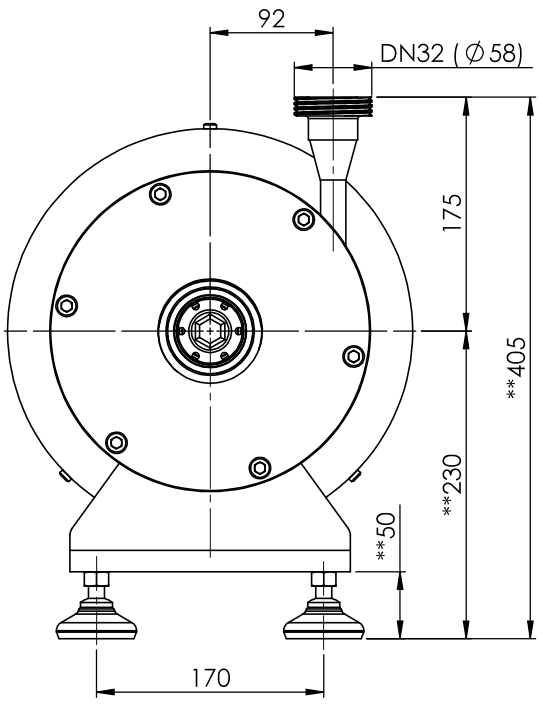
Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG90 B34 / Ø160	2.2kW / 2900	271	480	90	265	30	209	-	125	155	140	178	-	-	-	-	10	-	-	-	10.5	56	141.5	217	279	-
IE3-2P-BG100 B34 / Ø160	3.0kW / 2900	297	506	100	275	20	209	-	140	175	160	193	-	-	-	-	12	-	-	-	13	63	163.5	236	279	-
IE3-2P-BG112 B34 / Ø160	4.0kW / 2900	331	540	112	287	8	209	-	140	180	190	225	-	-	-	-	12	-	-	-	18	70	151.5	248	279	-
IE3-2P-BG112 B34 / Ø160	5.5kW / 2900	361	570	112	287	8	209	-	140	180	190	225	-	-	-	-	12	-	-	-	18	70	151.5	248	279	-
IE3-2P-BG132 B34 / Ø200	7.5kW / 2900	401	635	132	307	-	234	-	140	180	216	256	-	-	-	-	12	-	-	-	16	159	264	330	323	-

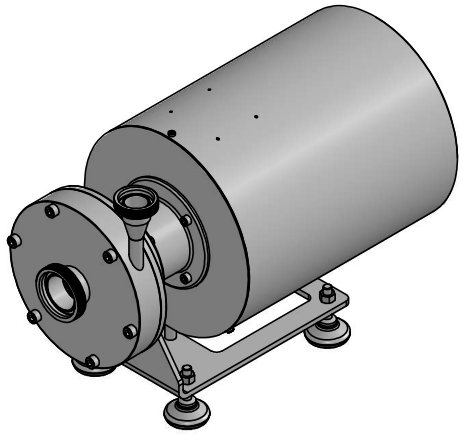
Kreiselpumpe
Typ: ZALR18-50/32-MT

Centrifugal Pump
Type: ZALR18-50/32-MT

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	05.08.2020
Freigegeben	AF	07.09.2020







*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

**** Verstellbar / adjustable +10mm/-8mm**

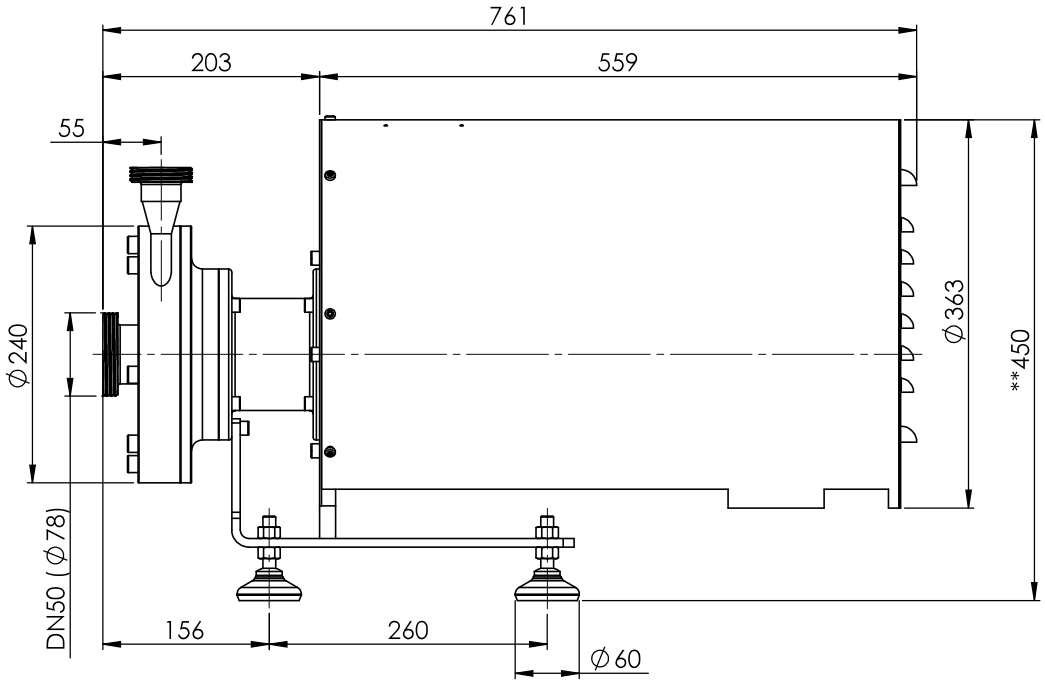
Saugstutzen / Suction Branch: Gewindestutzen / Threaded port DN50 / DIN 11851 **Druckstutzen / Pressure Branch:** Gewindestutzen / Threaded port DN32 / DIN 11851

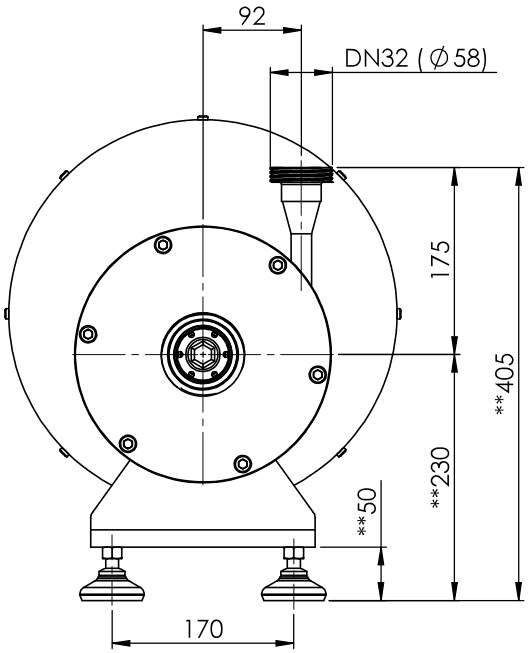
Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG90 B14 / Ø160	2.2kW / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IE3-2P-BG100 B14 / Ø160	3.0kW / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IE3-2P-BG112 B14 / Ø160	4.0kW / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IE3-2P-BG112 B14 / Ø160	5.5kW / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

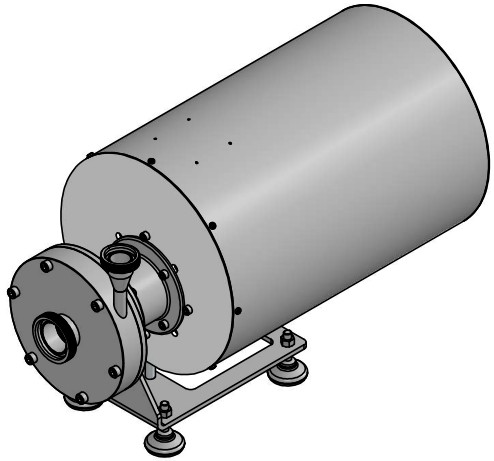
Kreiselpumpe
Typ: ZALR18-50/32-MT

Centrifugal Pump
Type: ZALR18-50/32-MT

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	05.08.2020
Freigegeben	AF	07.09.2020







*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

**** Verstellbar / adjustable +10mm/-8mm**

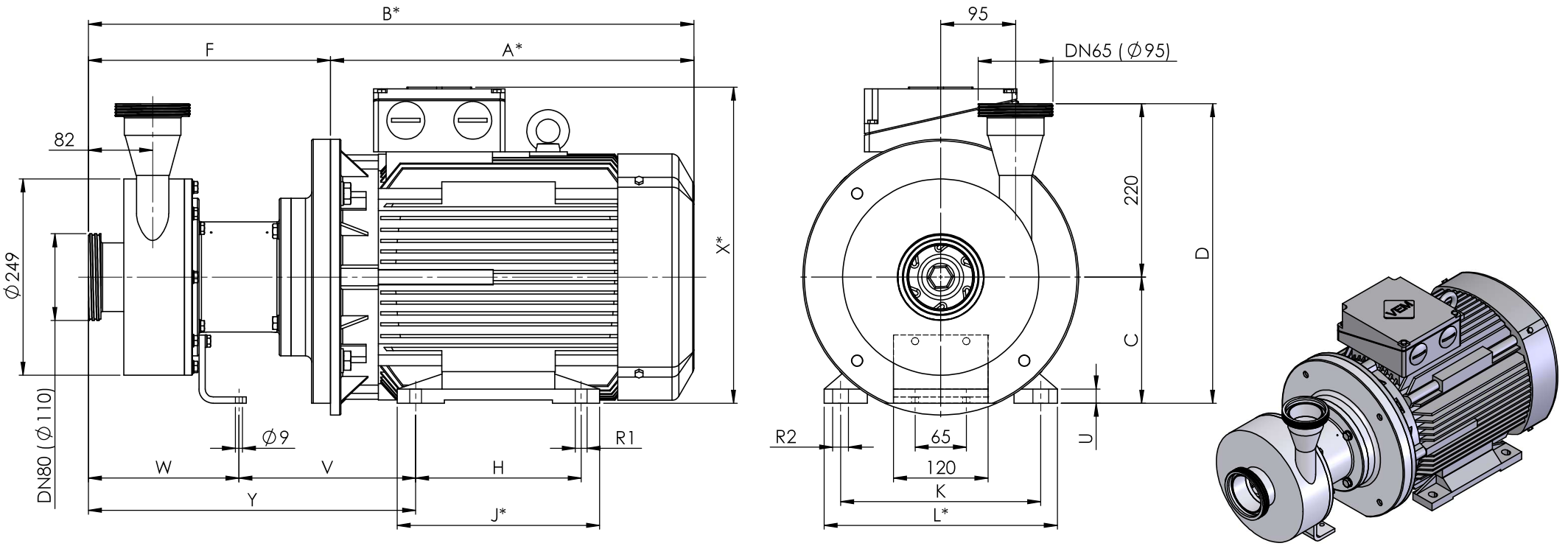
Saugstutzen / Suction Branch: Gewindestutzen / Threaded port DN50 / DIN 11851 **Druckstutzen / Pressure Branch:** Gewindestutzen / Threaded port DN32 / DIN 11851

Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG132 B14 / Ø200	5.5kW / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IE3-2P-BG132 B14 / Ø200	7.5kW / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Kreiselpumpe
Typ: ZA21-80/65-MI

Centrifugal Pump
Type: ZA21-80/65-MI

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	17.09.2020
Freigegeben	AF	02.10.2020



*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

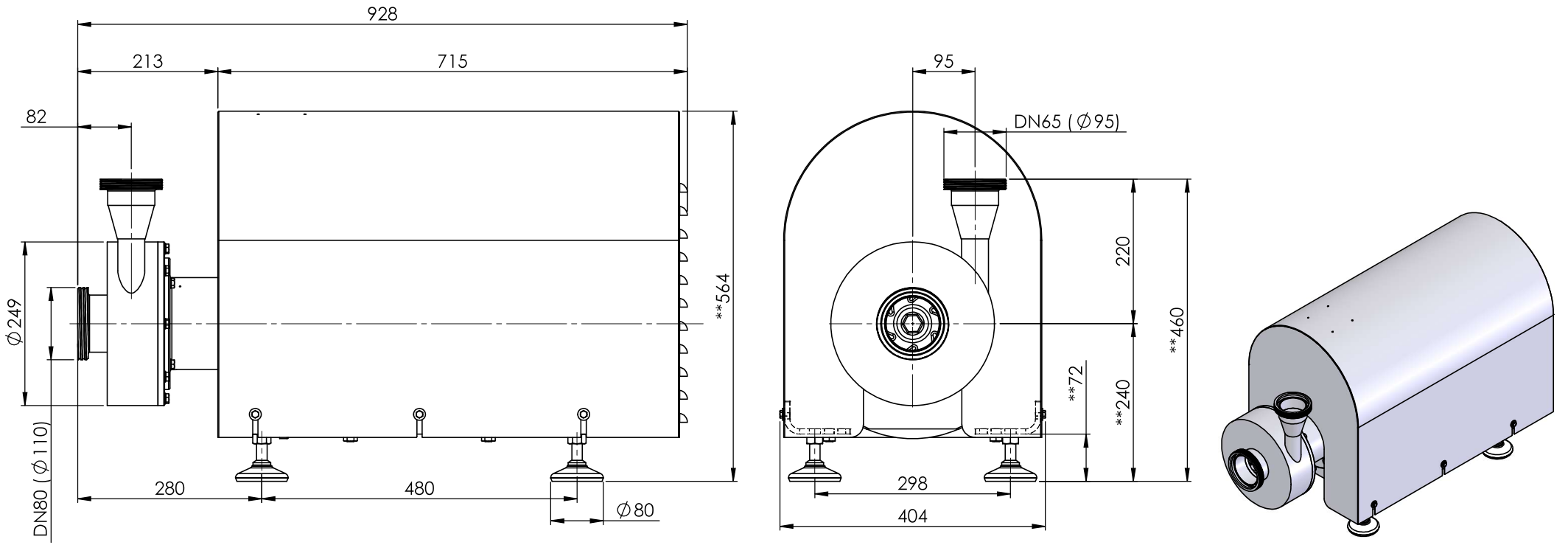
Saugstutzen / Suction Branch: Gewindestutzen / Threaded port DN80 / DIN11851 **Druckstutzen / Pressure Branch:** Gewindestutzen / Threaded port DN65 / DIN11851

Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG132 B34 / Ø200	7.5kW / 2900	401	658	132	352	-	257	-	140	180	216	256	-	-	-	-	12	-	-	-	16	175	171	248	346	-
IE3-2P-BG160 B35 / Ø350	11.0kW / 2900	499	806	160	380	-	307	-	210	257	254	296	-	-	-	-	15	20	-	-	18	224	191	374	415	-
IE3-2P-BG160 B35 / Ø350	15.0kW /2900	461	768	160	380	-	307	-	210	257	254	296	-	-	-	-	15	20	-	-	18	224	191	402	415	-

Kreiselpumpe
Typ: ZA21-80/65-MT

Centrifugal Pump
Type: ZA21-80/65-MT

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	17.09.2020
Freigegeben	AF	02.10.2020



*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

**** Verstellbar / adjustable +35mm/-25mm**

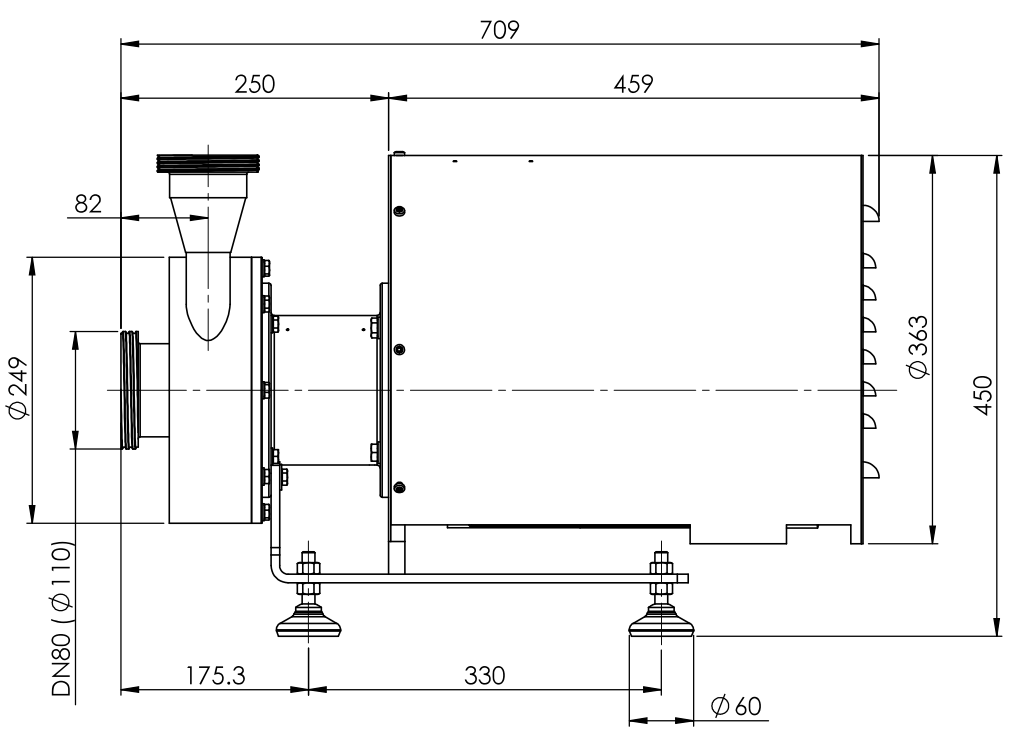
Saugstutzen / Suction Branch: Gewindestutzen / Threaded port DN80 / DIN11851 **Druckstutzen / Pressure Branch:** Gewindestutzen / Threaded port DN65 / DIN11851

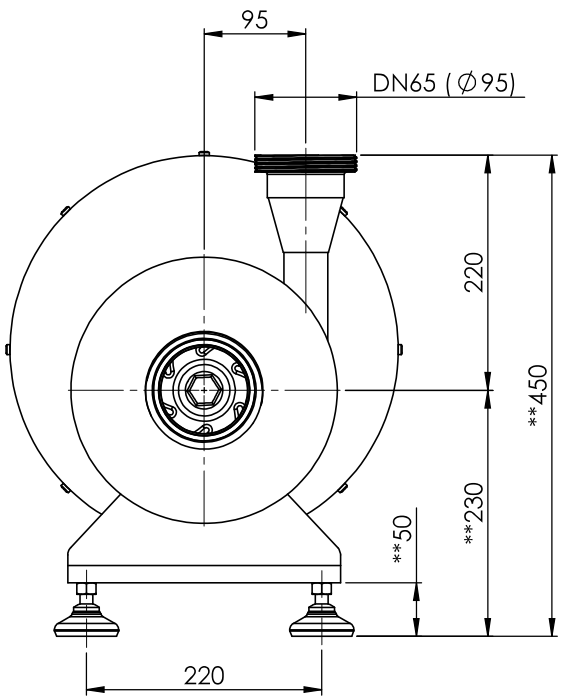
Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG160 B35 / Ø350	11.0kW / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IE3-2P-BG160 B35 / Ø350	15.0kW /2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

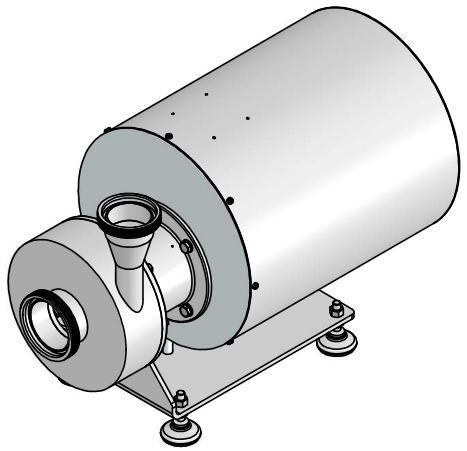
Kreiselpumpe
Typ: ZA21-80/65-MT

Centrifugal Pump
Type: ZA21-80/65-MT

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	17.09.2020
Freigegeben	AF	02.10.2020







*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

*** * Verstellbar / adjustable +10mm/-8mm**

Saugstutzen / Suction Branch: Gewindestutzen / Threaded port DN80 / DIN11851 **Druckstutzen / Pressure Branch:** Gewindestutzen / Threaded port DN65 / DIN11851

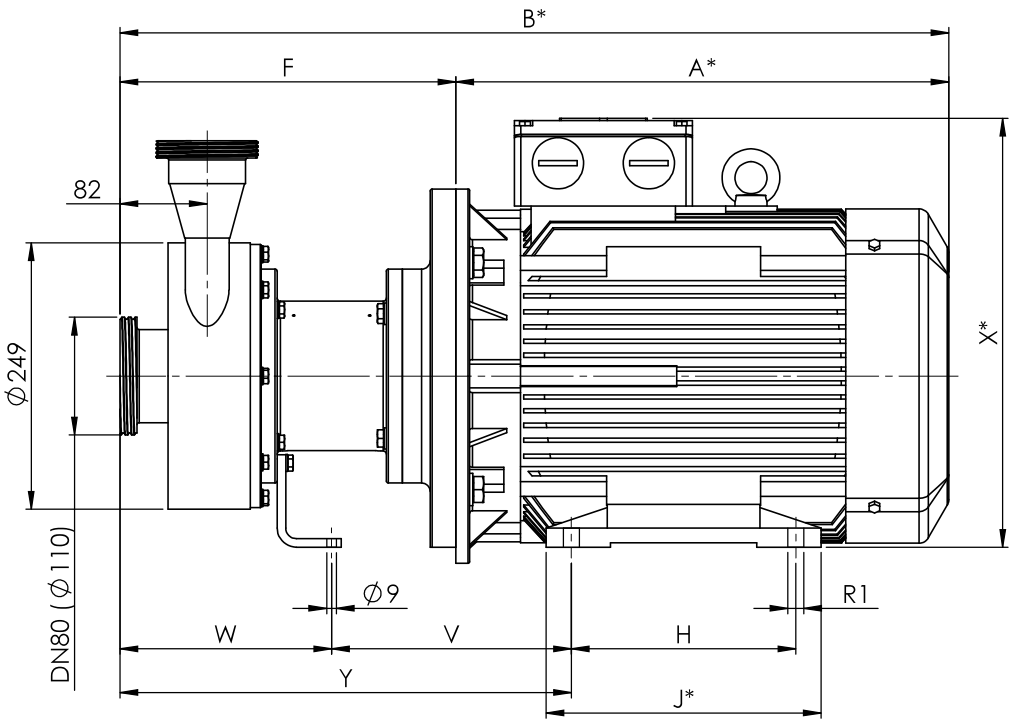
Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG132 B14 / Ø200	7.5kW / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

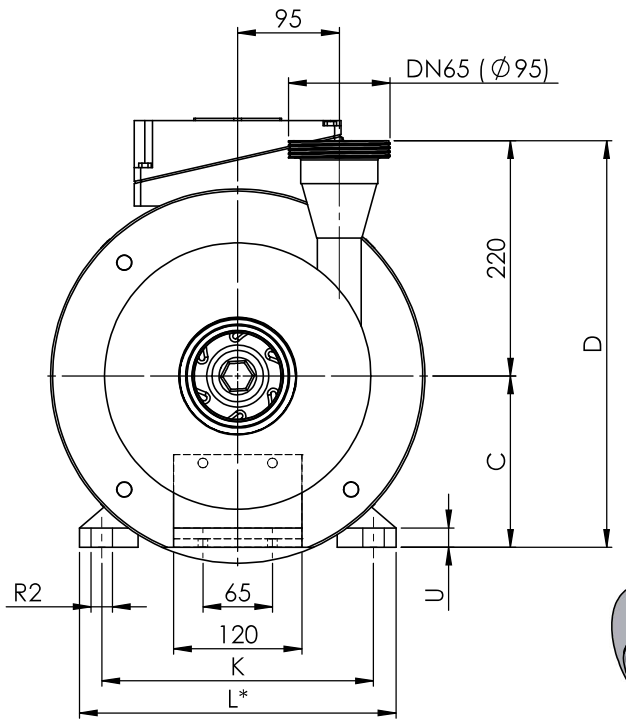
SAWA Pumpentechnik AG	CH - 9113 Degersheim	103001	Rev. -

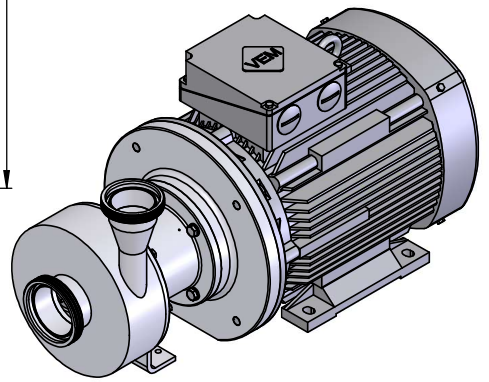
Kreiselpumpe
Typ: ZA21B-80/65-MI

Centrifugal Pump
Type: ZA21B-80/65-MI

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	12.08.2020
Freigegeben	AF	02.10.2020







*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

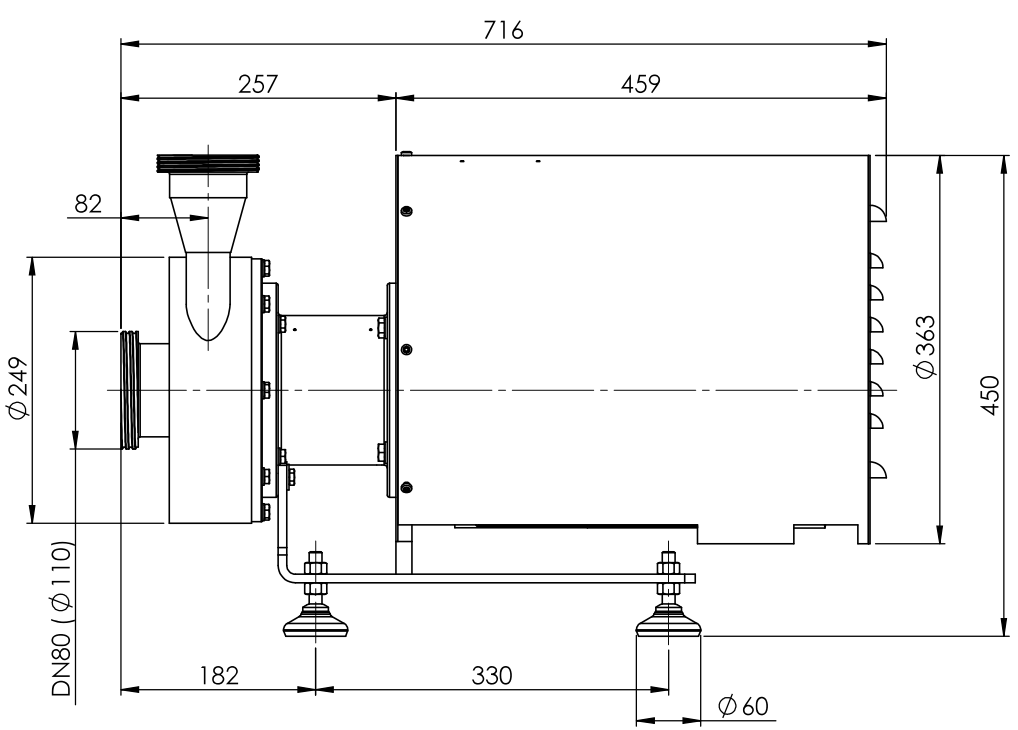
Saugstutzen / Suction Branch: Gewindestutzen / Threaded port DN80 / DIN11851 **Druckstutzen / Pressure Branch:** Gewindestutzen / Threaded port DN65 / DIN11851

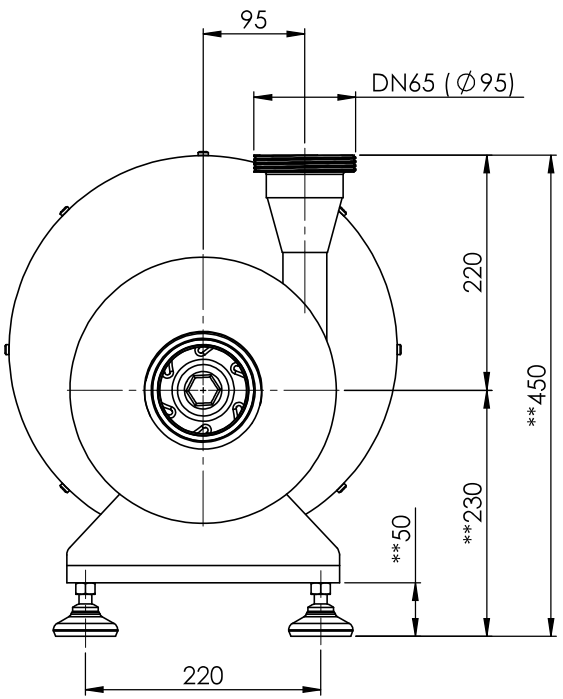
Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG132 B34 / Ø200	7.5kW / 2900	401	665	132	352	-	264	-	140	180	216	256	-	-	-	-	12	-	-	-	16	175	178	248	353	-
IE3-2P-BG160 B35 / Ø350	11.0kW / 2900	499	813	160	380	-	314	-	210	257	254	296	-	-	-	-	15	20	-	-	18	224	198	374	422	-
IE3-2P-BG160 B35 / Ø350	15.0kW /2900	461	775	160	380	-	314	-	210	257	254	296	-	-	-	-	15	20	-	-	18	224	198	402	422	-

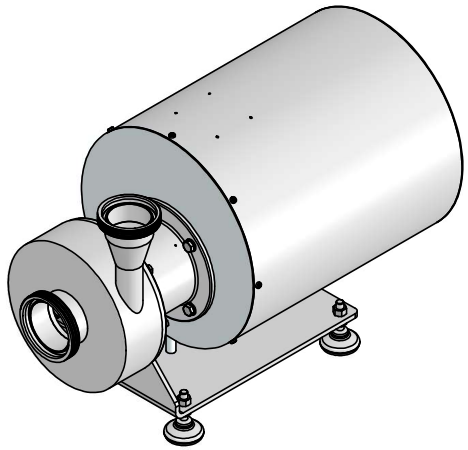
Kreiselpumpe
Typ: ZA21B-80/65-MT

Centrifugal Pump
Type: ZA21B-80/65-MT

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	12.08.2020
Freigegeben	AF	02.10.2020







*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

*** * Verstellbar / adjustable +10mm/-8mm**

Saugstutzen / Suction Branch: Gewindestutzen / Threaded port DN80 / DIN11851 **Druckstutzen / Pressure Branch:** Gewindestutzen / Threaded port DN65 / DIN11851

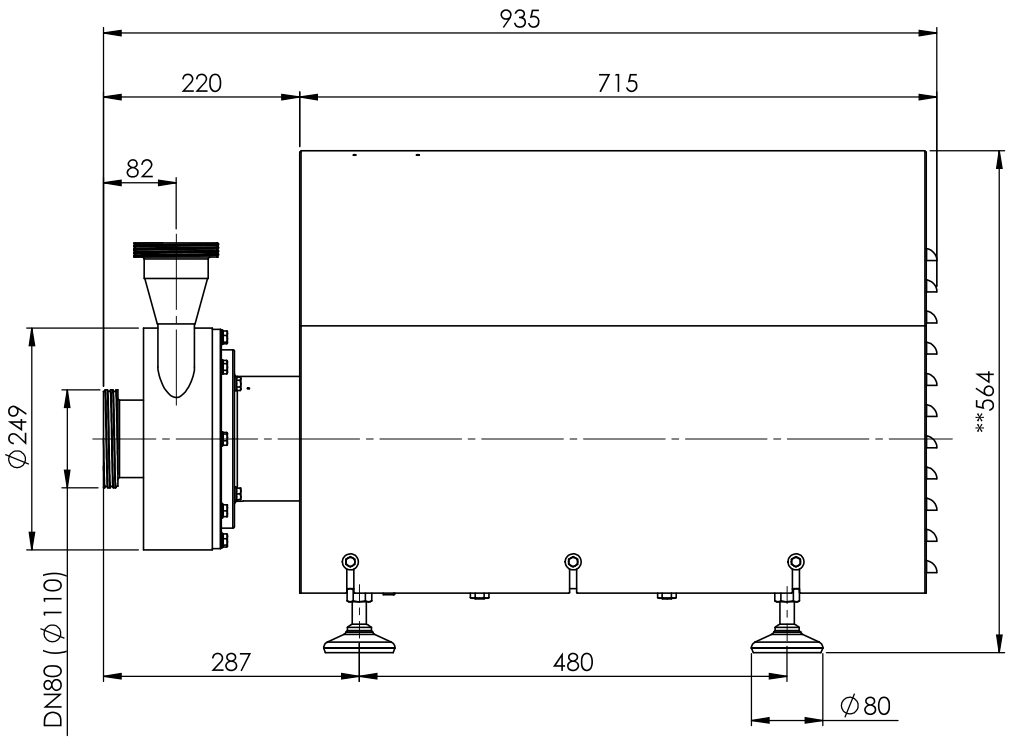
Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG132 B14 / Ø200	7.5kW / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

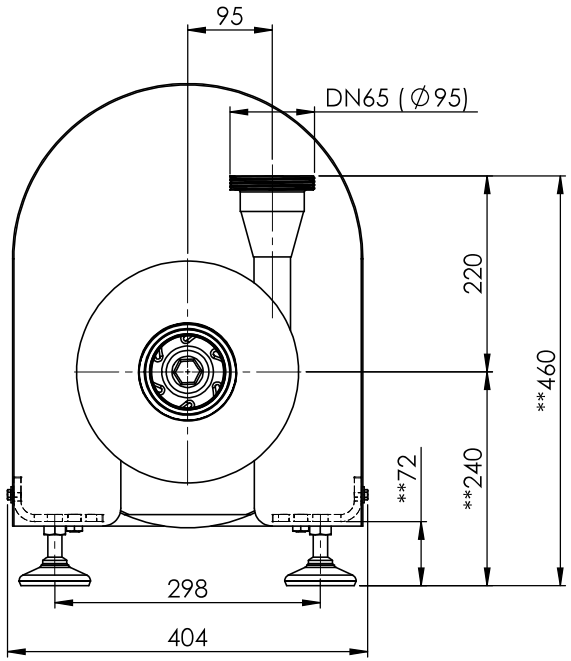
SAWA Pumpentechnik AG	CH - 9113 Degersheim	102840	Rev. -

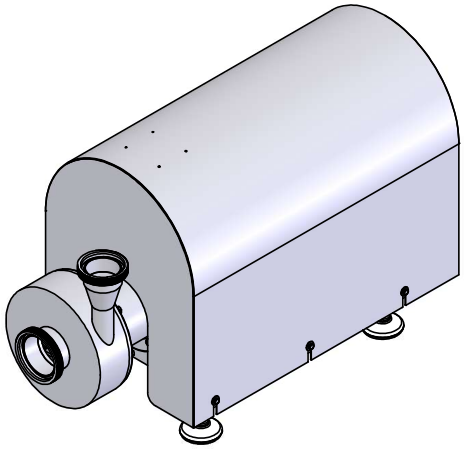
Kreiselpumpe
Typ: ZA21B-80/65-MT

Centrifugal Pump
Type: ZA21B-80/65-MT

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	12.08.2020
Freigegeben	AF	02.10.2020







*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

**** Verstellbar / adjustable +35mm/-25mm**

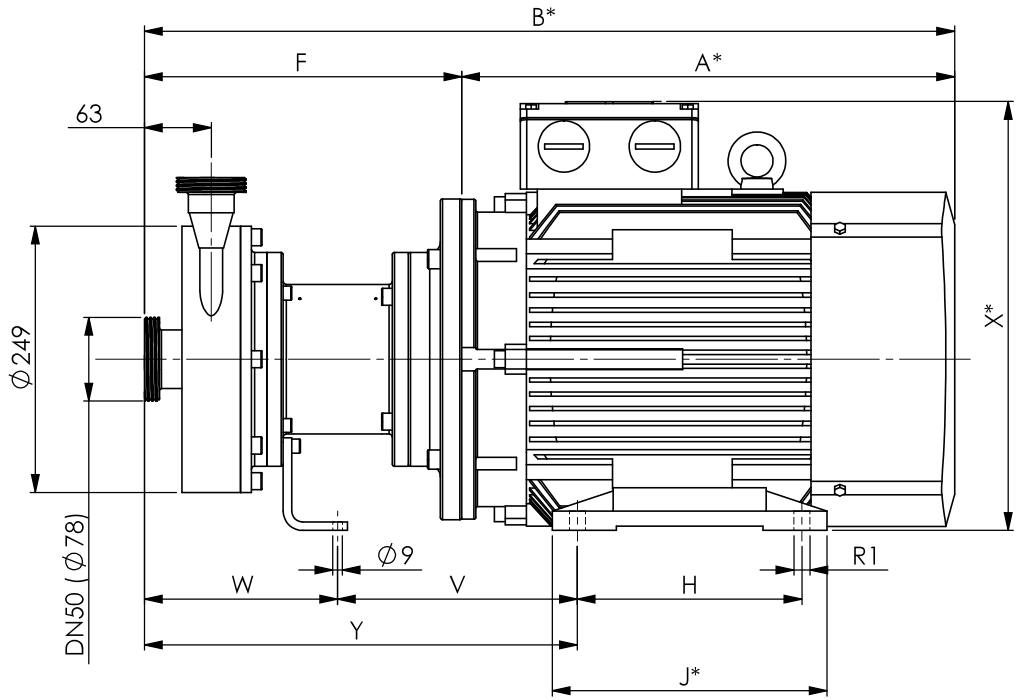
Saugstutzen / Suction Branch: Gewindestutzen / Threaded port DN80 / DIN11851 **Druckstutzen / Pressure Branch:** Gewindestutzen / Threaded port DN65 / DIN11851

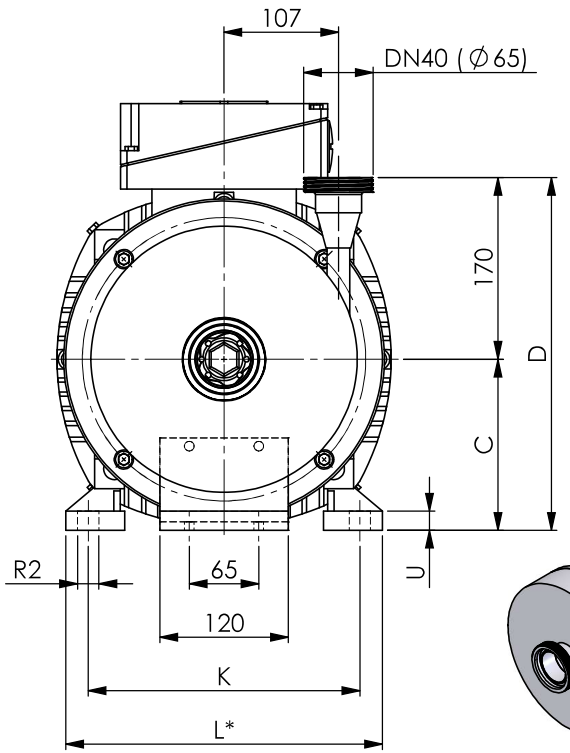
Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG160 B35 / Ø350	11.0kW / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IE3-2P-BG160 B35 / Ø350	15.0kW /2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

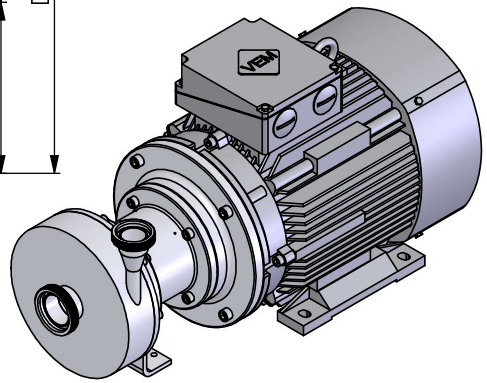
Kreiselpumpe
Typ: ZAL21-50/40-MI

Centrifugal Pump
Type: ZAL21-50/40-MI

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	06.08.2020
Freigegeben	AF	07.09.2020







*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

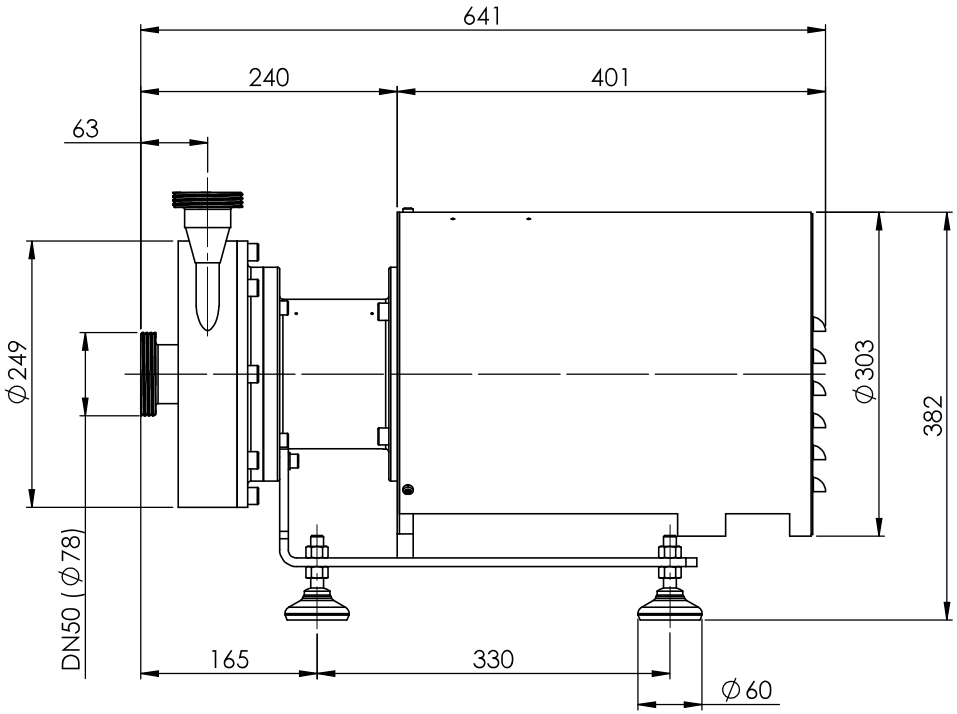
Saugstutzen / Suction Branch: Gewindestutzen / Threaded port DN50 / DIN11851 **Druckstutzen / Pressure Branch:** Gewindestutzen / Threaded port DN40 / DIN11851

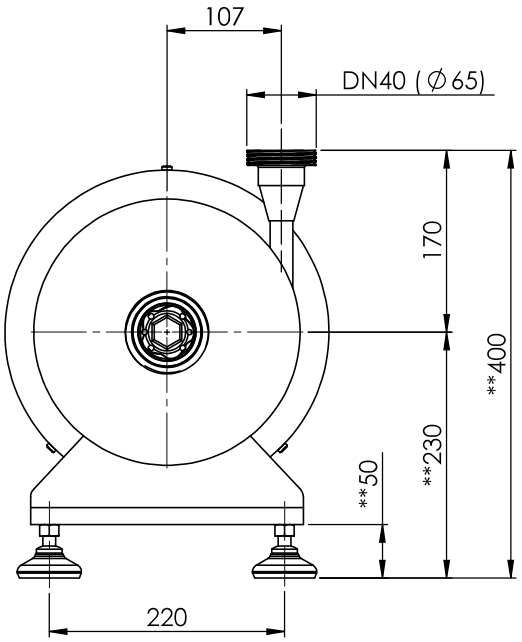
Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG112 B34 / Ø200	4.0kW / 2900	331	578	112	282	-	247	-	140	180	190	225	-	-	-	-	12	-	-	-	18	136	181	248	317	-
IE3-2P-BG112 B34 / Ø200	5.5kW / 2900	361	608	112	282	-	247	-	140	180	190	225	-	-	-	-	12	-	-	-	18	136	181	248	317	-
IE3-2P-BG132 B34 / Ø200	7.5kW / 2900	401	648	132	302	-	247	-	140	180	216	256	-	-	-	-	12	-	-	-	16	175	161	330	336	-
IE3-2P-BG160 B34 / Ø300	11.0kW / 2900	499	796	160	330	-	297	-	210	257	254	296	-	-	-	-	15	20	-	-	18	224	181	374	405	-

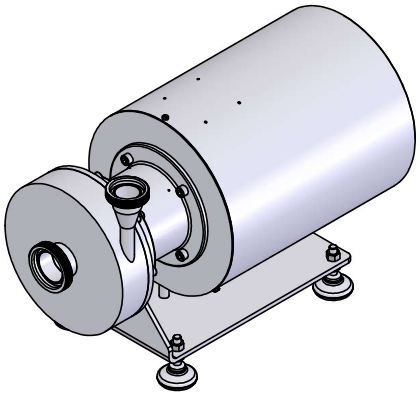
Kreiselpumpe
Typ: ZAL21-50/40-MT

Centrifugal Pump
Type: ZAL21-50/40-MT

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	10.08.2020
Freigegeben	AF	07.09.2020







*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

**** Verstellbar / adjustable +10mm/-8mm**

Saugstutzen / Suction Branch: Gewindestutzen / Threaded port DN50 / DIN11851 **Druckstutzen / Pressure Branch:** Gewindestutzen / Threaded port DN40 / DIN11851

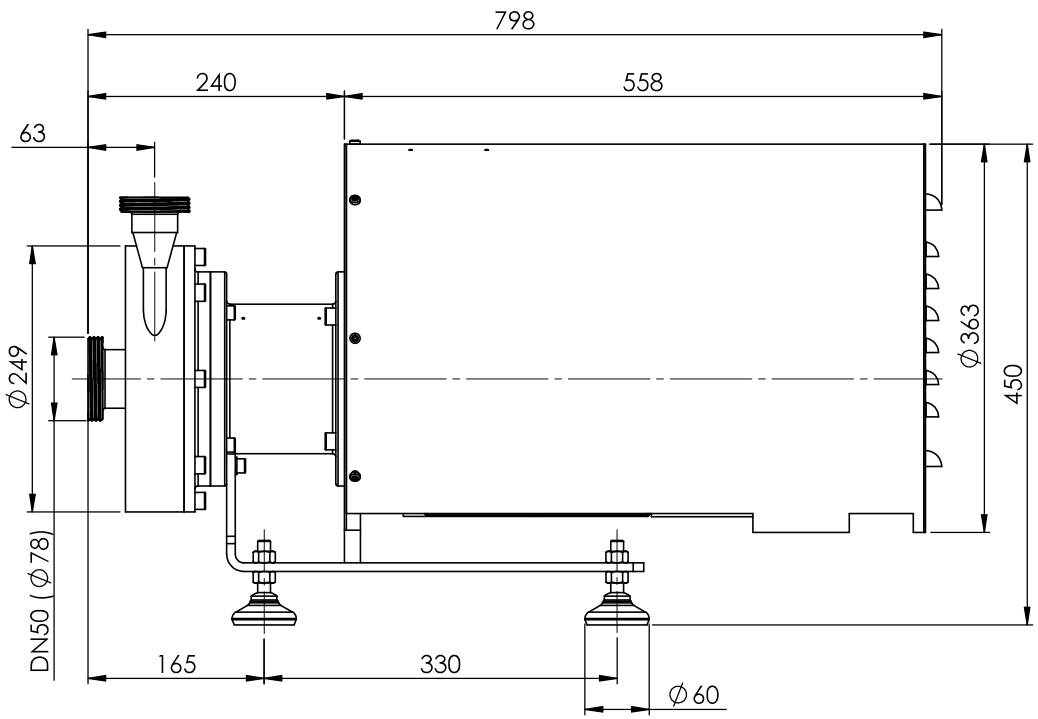
Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG112 B14 / Ø200	4.0kW / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IE3-2P-BG112 B14 / Ø200	5.5kW / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

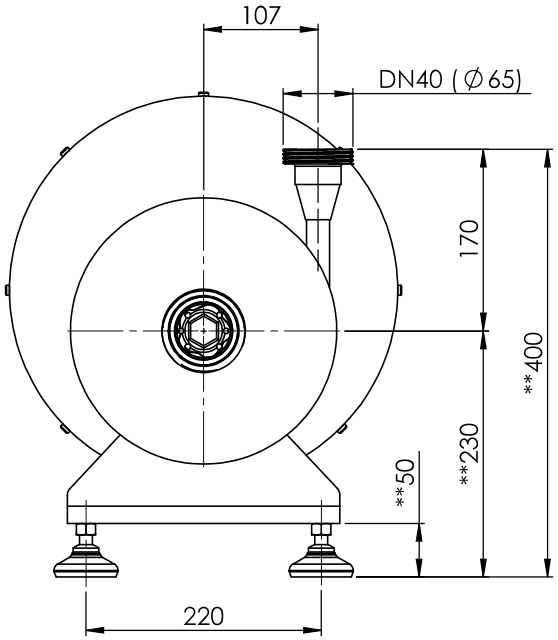
SAWA Pumpentechnik AG	CH - 9113 Degersheim	102827	Rev. -

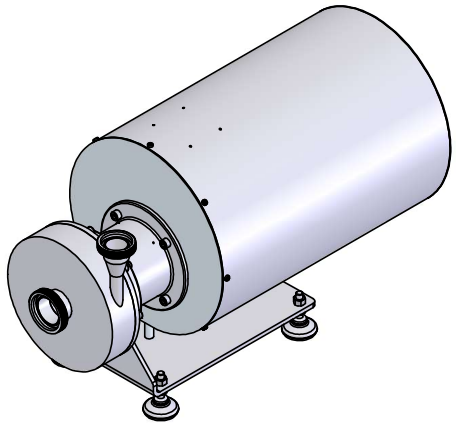
Kreiselpumpe
Typ: ZAL21-50/40-MT

Centrifugal Pump
Type: ZAL21-50/40-MT

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	10.08.2020
Freigegeben	AF	07.09.2020







*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

**** Verstellbar / adjustable +10mm/-8mm**

Saugstutzen / Suction Branch: Gewindestutzen / Threaded port DN50 / DIN11851 **Druckstutzen / Pressure Branch:** Gewindestutzen / Threaded port DN40 / DIN11851

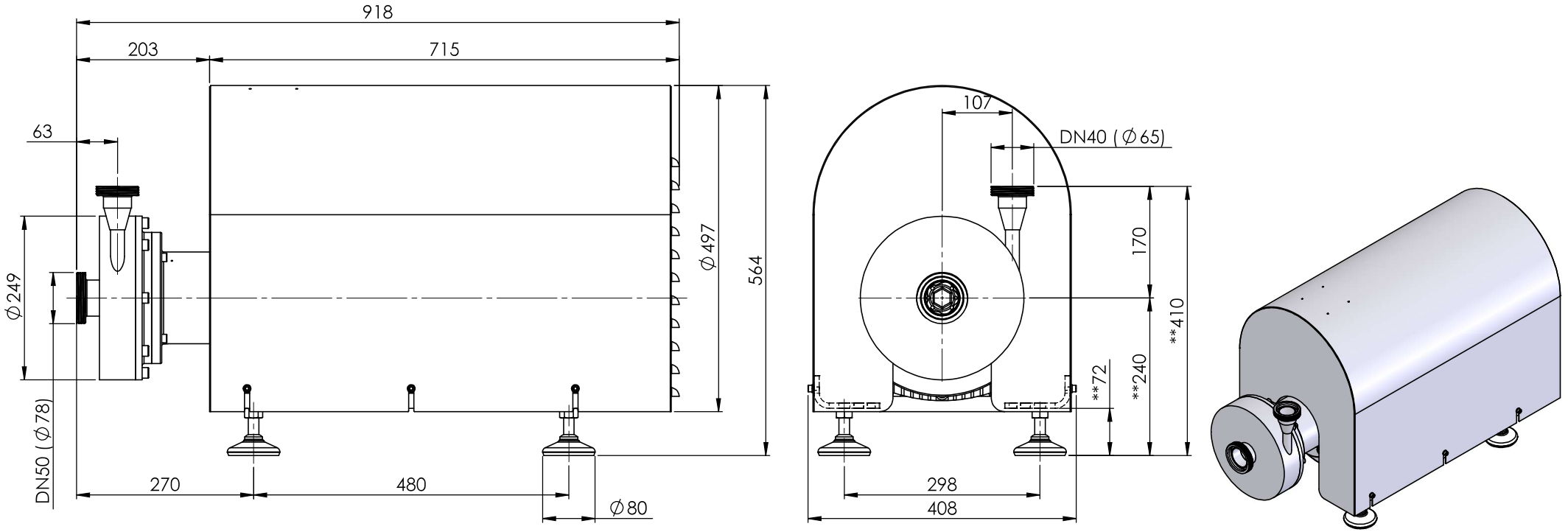
Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG132 B14 / Ø200	7.5kW / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SAWA Pumpentechnik AG	CH - 9113 Degersheim	102831	Rev. -

Kreiselpumpe
Typ: ZAL21-50/40-MT

Centrifugal Pump
Type: ZAL21-50/40-MT

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	10.08.2020
Freigegeben	AF	07.09.2020



*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

**** Verstellbar / adjustable +35mm/-25mm**

Saugstutzen / Suction Branch: Gewindestutzen / Threaded port DN50 / DIN11851 **Druckstutzen / Pressure Branch:** Gewindestutzen / Threaded port DN40 / DIN11851

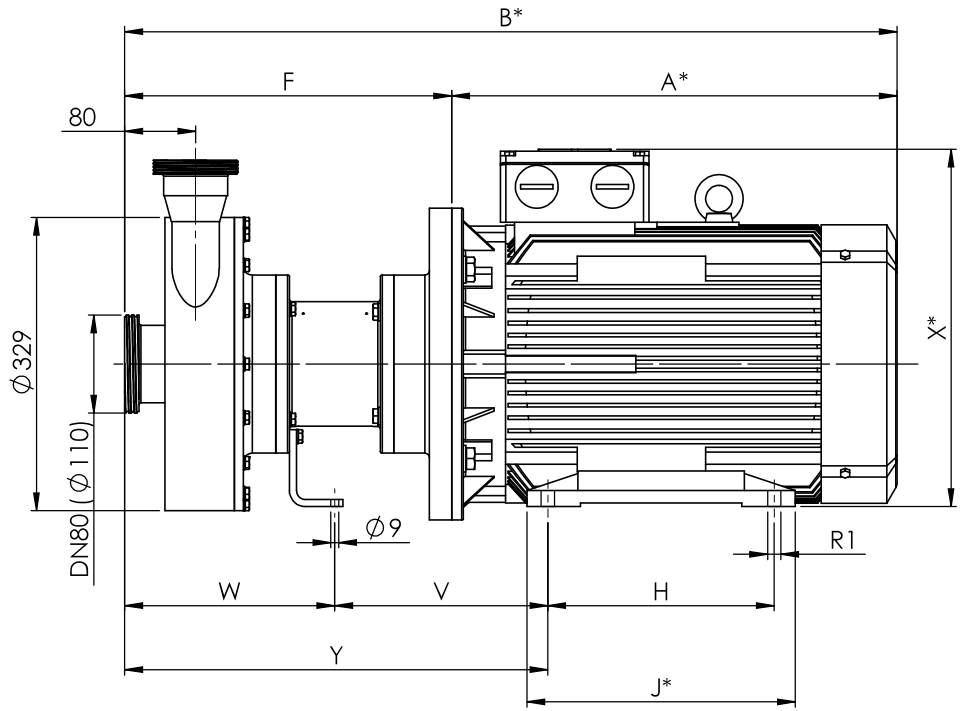
Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG160 B34 / Ø300	11.0kW / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

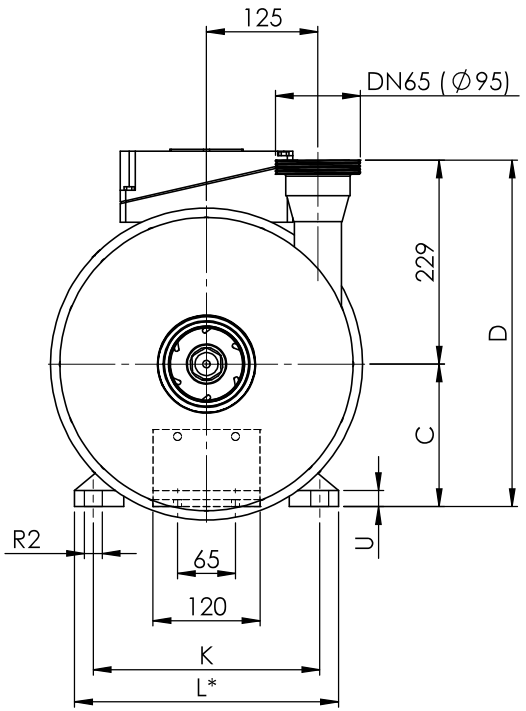
SAWA Pumpentechnik AG	CH - 9113 Degersheim	102833	Rev. -

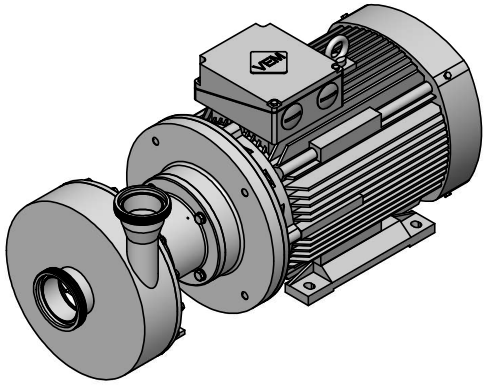
Kreiselpumpe
Typ: ZA25-80/65-MI

Centrifugal Pump
Type: ZA25-80/65-MI

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	28.08.2020
Freigegeben	AF	02.10.2020







*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

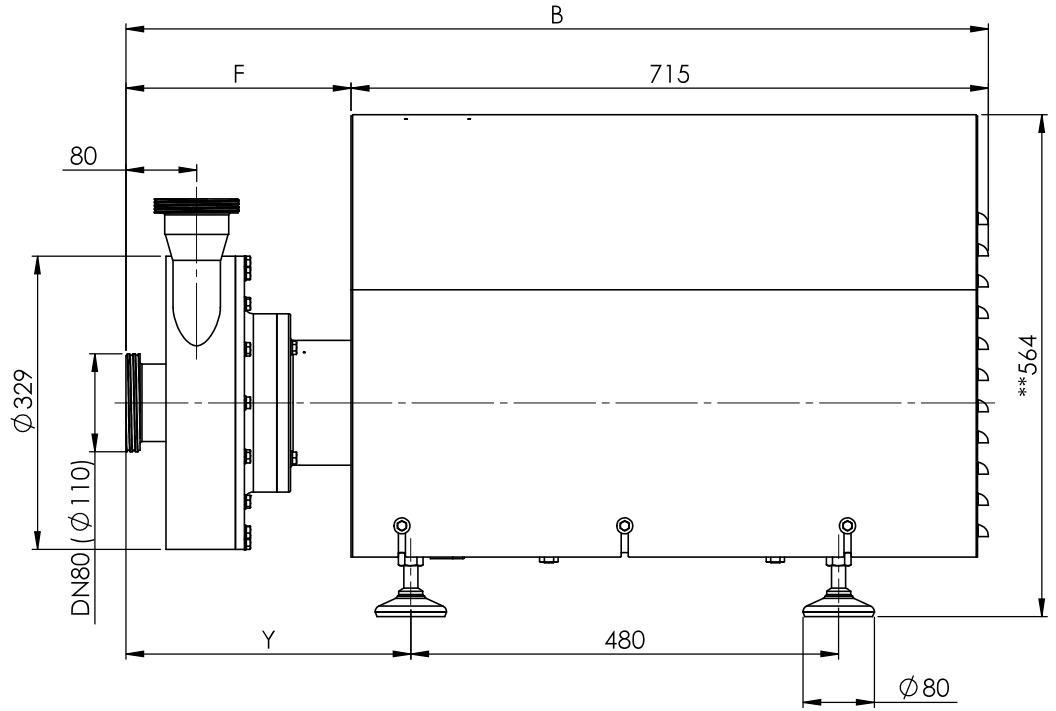
Saugstutzen / Suction Branch: Gewindestutzen/Threaded port DN80 / DIN 11851 **Druckstutzen / Pressure Branch:** Gewindestutzen/Threaded port DN65 / DIN 11851

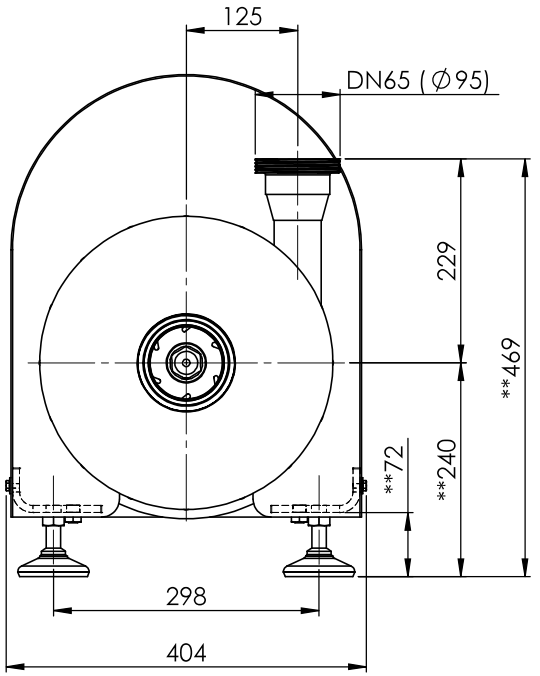
Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG160 B35 / Ø350	15.0kW / 2900	461	828	160	389	-	367	-	210	257	254	296	-	-	-	-	15	20	-	-	18	239	236	402	475	-
IE3-2P-BG160 B35 / Ø350	18.5kW / 2900	500	867	160	389	-	367	-	254	301	254	296	-	-	-	-	15	20	-	-	18	239	236	402	475	-
IE3-2P-BG180 B35 / Ø350	22.0kW / 2900	549	925	180	409	-	367	-	241	288	279	328	-	-	-	-	15	20	-	-	20	178	304	422	482	-

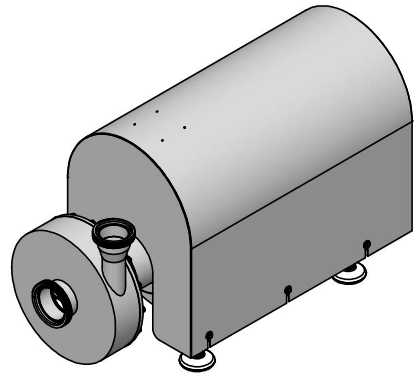
Kreiselpumpe
Typ: ZA25-80/65-MT

Centrifugal Pump
Type: ZA25-80/65-MT

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	17.09.2020
Freigegeben	AF	02.10.2020







*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

**** Verstellbar / ** adjustable +35mm/-25mm**

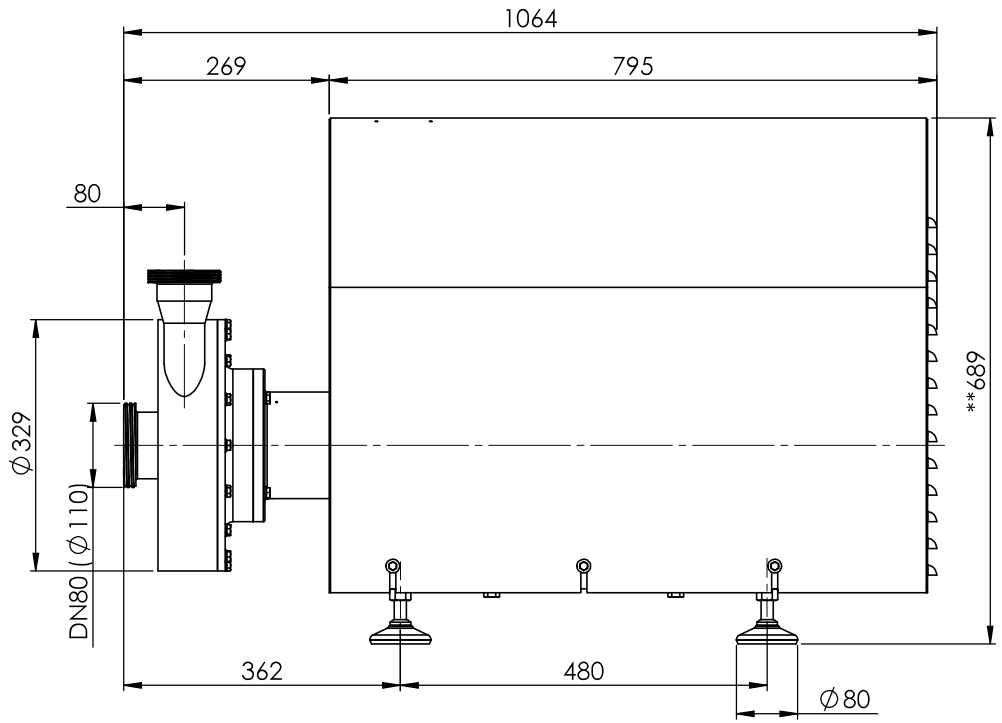
Saugstutzen / Suction Branch: Gewindestutzen/Threaded port DN80 / DIN 11851 **Druckstutzen / Pressure Branch:** Gewindestutzen/Threaded port DN65 / DIN 11851

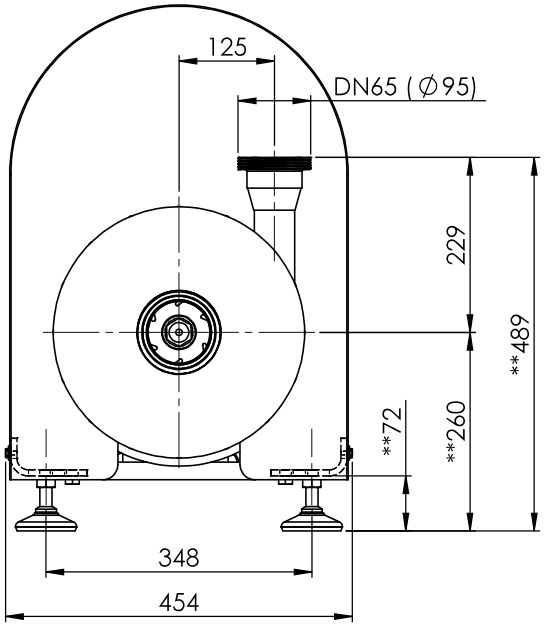
Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG160 B35 / Ø350	15.0kW / 2900	-	944	-	-	-	229	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	296	-
IE3-2P-BG160 B35 / Ø350	18.5kW / 2900	-	968	-	-	-	253	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	320	-

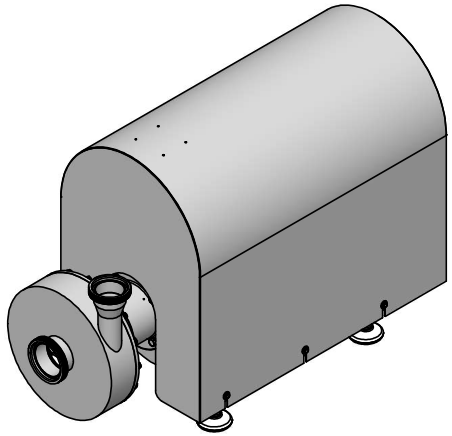
Kreiselpumpe
Typ: ZA25-80/65-MT

Centrifugal Pump
Type: ZA25-80/65-MT

Massblatt Dimension sheet		
	Name	Datum
Erstellt	PN	17.09.2020
Freigegeben	AF	02.10.2020







*** Masse abhängig vom Motorenhersteller / * dimension depending on motor manufacturer**

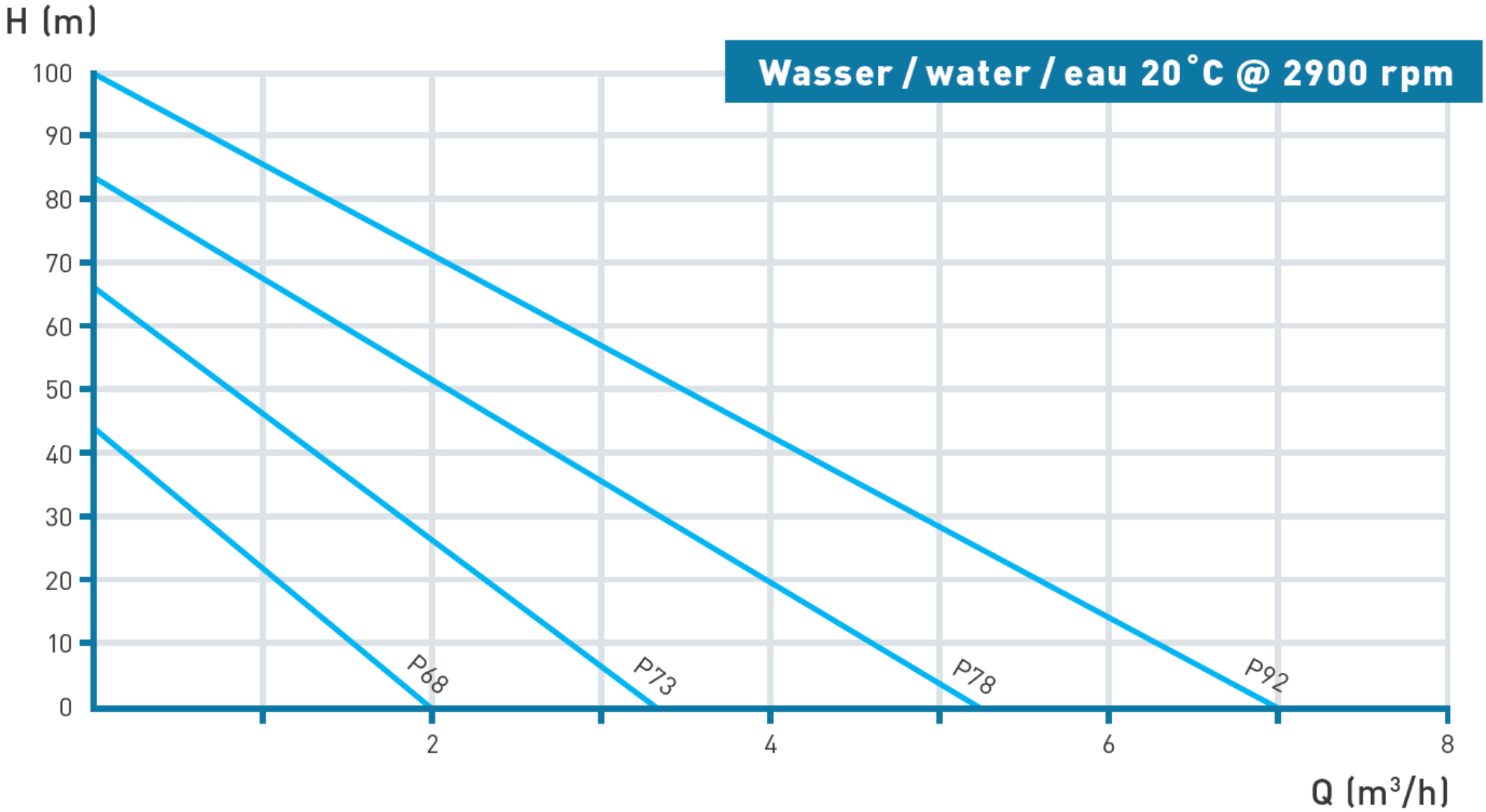
**** Verstellbar / ** adjustable +35mm/-25mm**

Saugstutzen / Suction Branch: Gewindestutzen/Threaded port DN80 / DIN 11851 **Druckstutzen / Pressure Branch:** Gewindestutzen/Threaded port DN65 / DIN 11851

Motor	kW / rpm	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R1	R2	S	T	U	V	W	X	Y	Z
IE3-2P-BG180 B35 / Ø350	22.0kW / 2900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

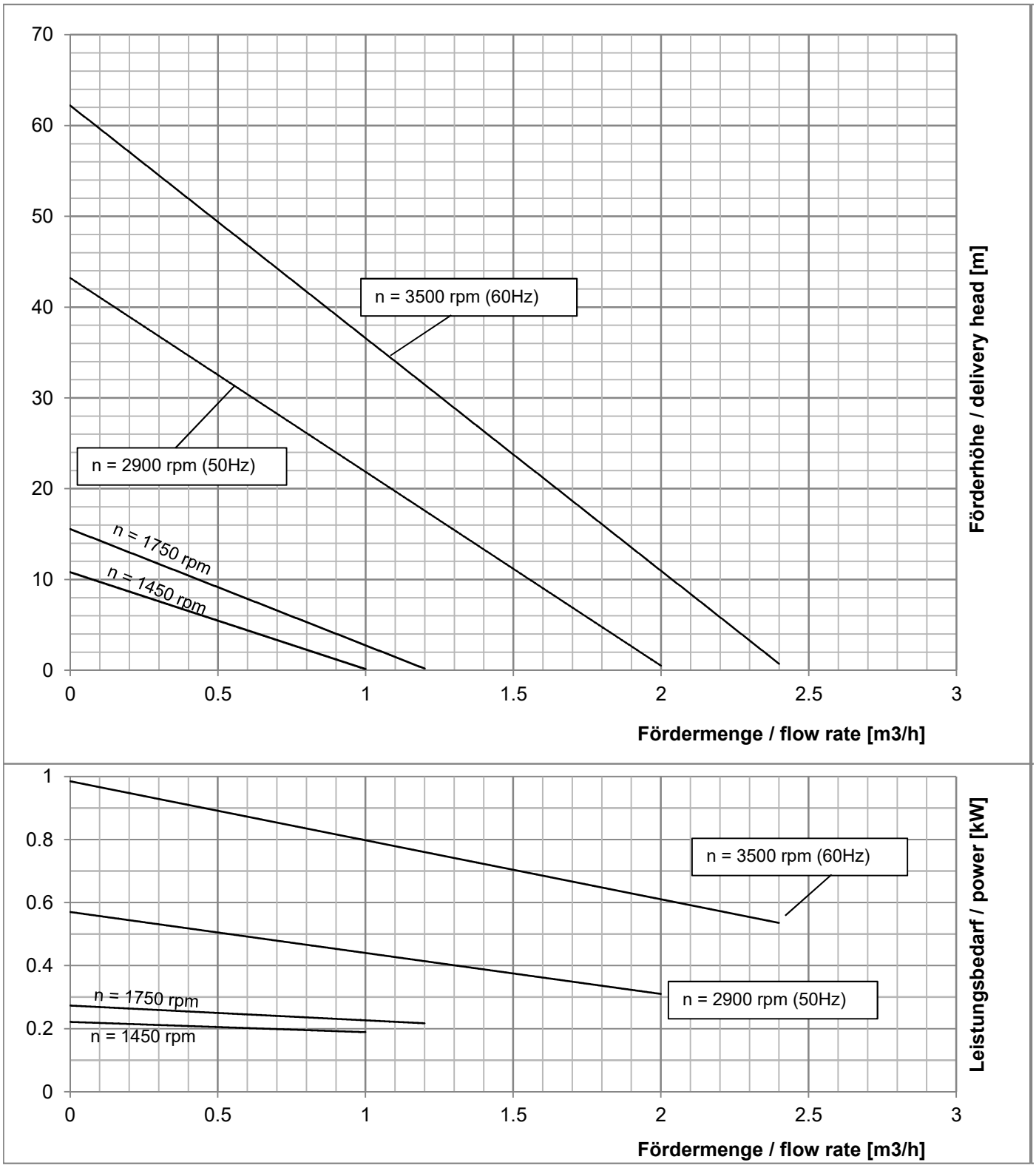
SAWA Pumpentechnik AG	CH - 9113 Degersheim	103003	Rev. -

Sawa PUMPEN	**Leistungsbereich** **Peripheralradpumpe P/ MP**	**Performance range** **Peripheral Pump P/MP**	Nummer : KL Revision : H / 04.20 Seite 1 / 1



Sawa PUMPEN	**Peripheralradpumpe** Typ: P-MP68-R	**Peripheral Pump** Type: P-MP68-R	Nummer: KL Revision: A/ 01.2010 Seite 1/1

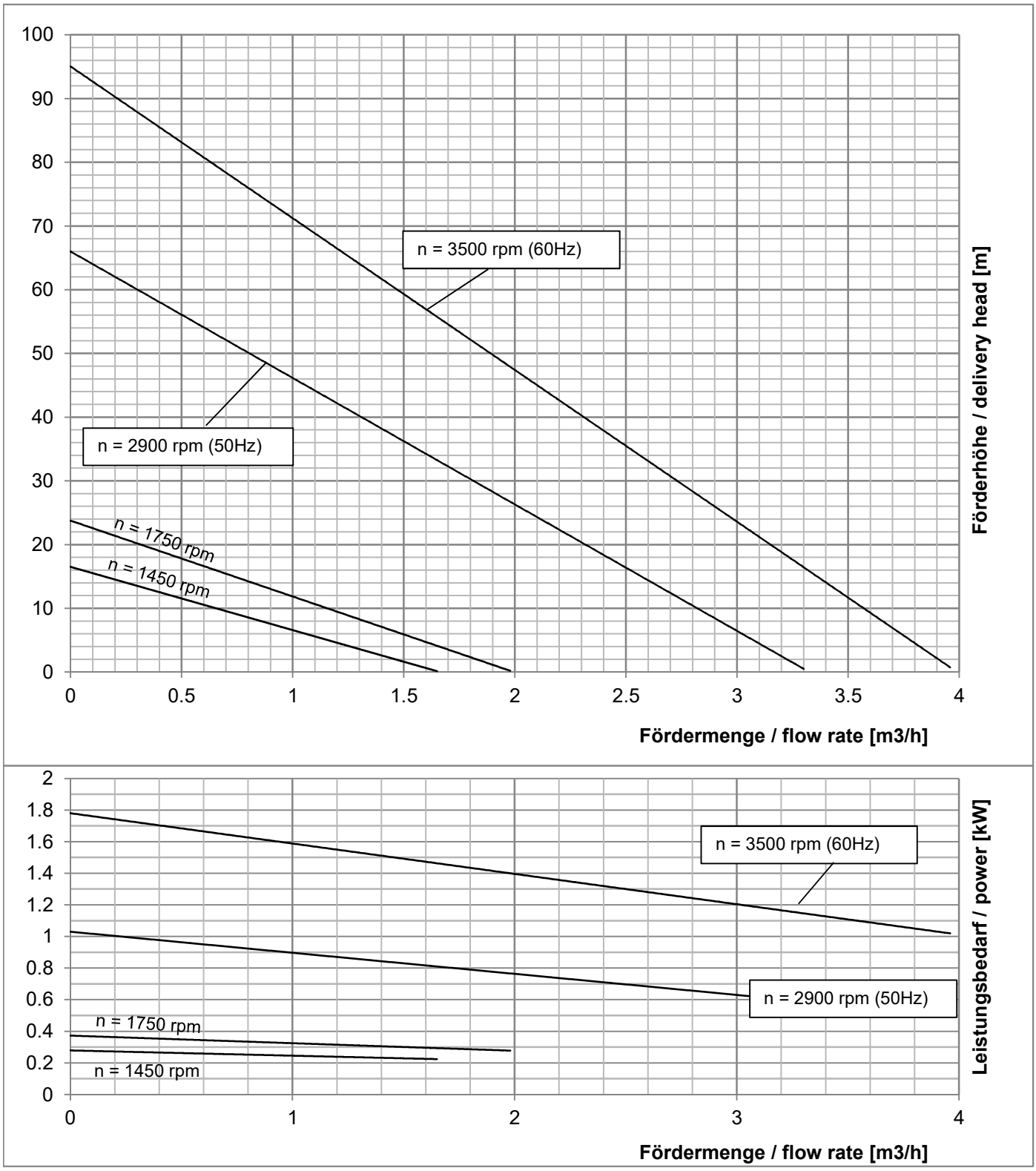
Wasser bei 20°C **water at 20°C**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**PP-8017-4X**	

Sawa PUMPEN	**Peripheralradpumpe** Typ: P-MP73-R	**Peripheral Pump** Type: P-MP73-R	Nummer: KL Revision: A/ 01.2010 Seite 1/1

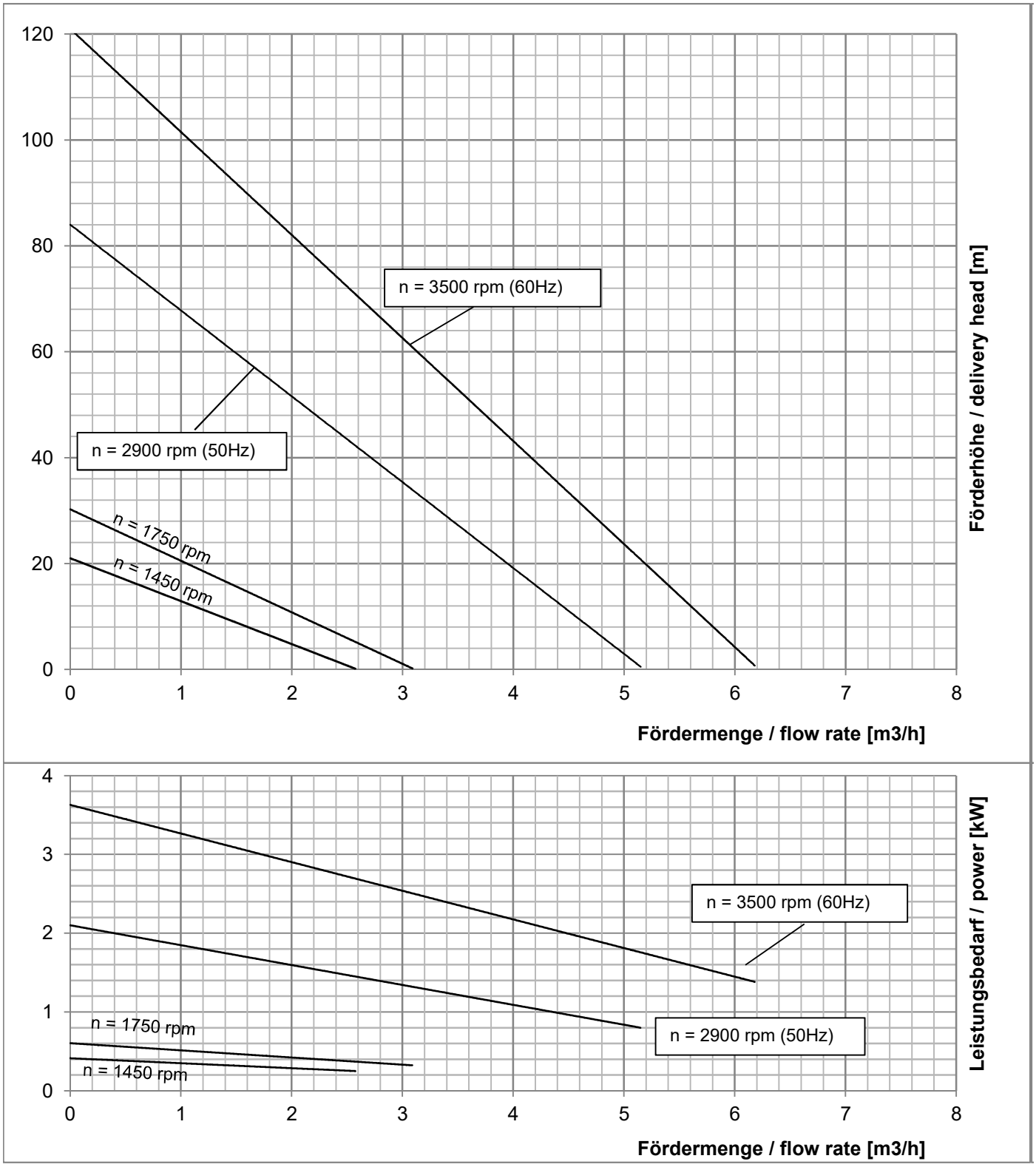
Wasser bei 20°C **water at 20°C**



SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**PP-8018-4X**	

Sawa PUMPEN	**Peripheralradpumpe** Typ: P-MP78-R	**Peripheral Pump** Type: P-MP78-R	Nummer: KL Revision: A/ 01.2010 Seite 1/1

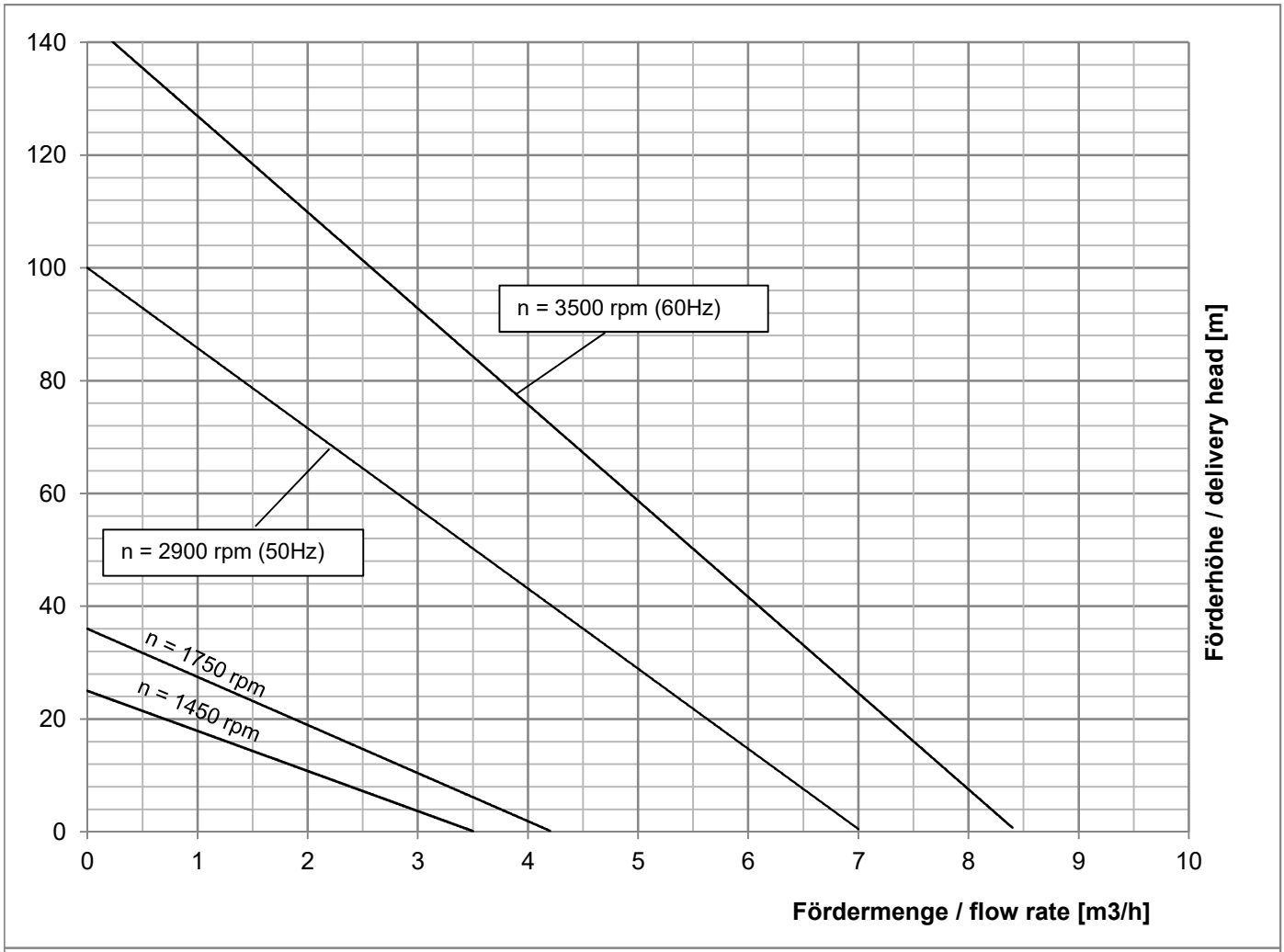
Wasser bei 20°C **water at 20°C**

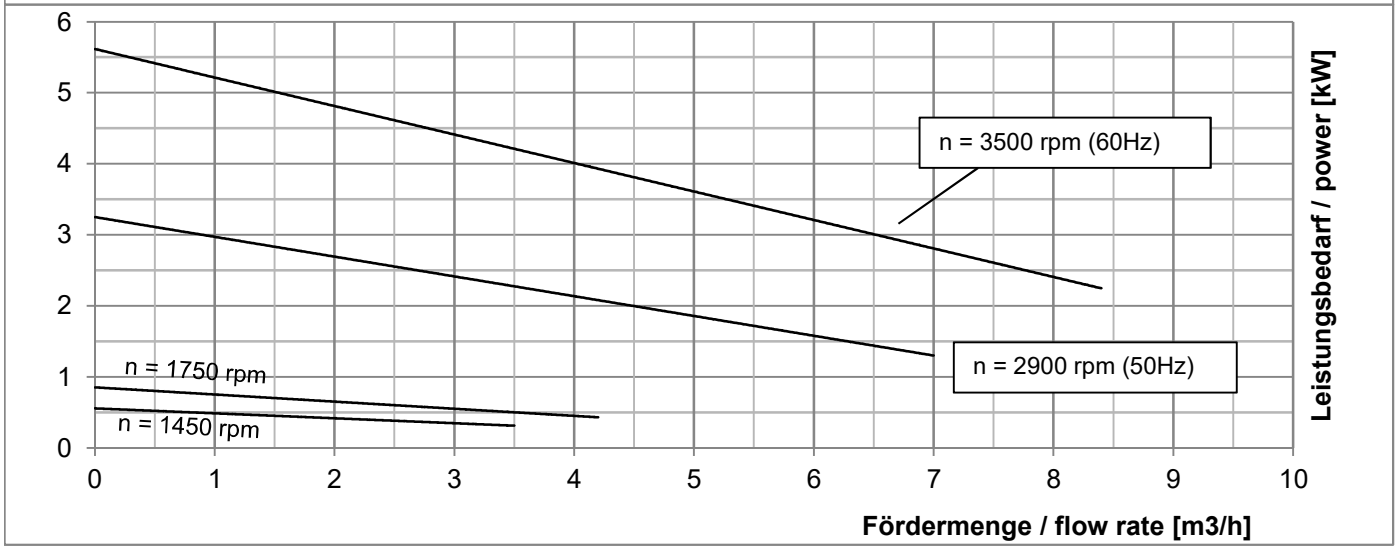


SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**PP-8008-4X**	

Sawa PUMPEN	**Peripheralradpumpe** Typ: P-MP92-R	**Peripheral Pump** Type: P-MP92-R	Nummer: KL Revision: A/ 01.2010 Seite 1/1

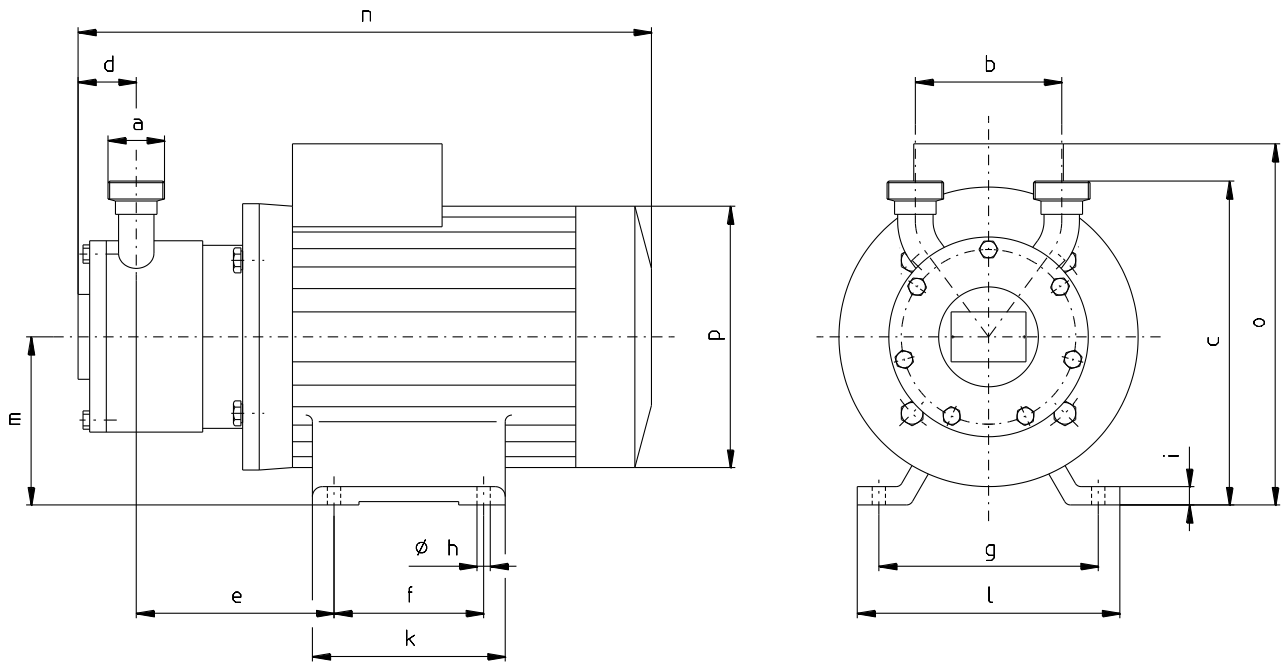
Wasser bei 20°C **water at 20°C**





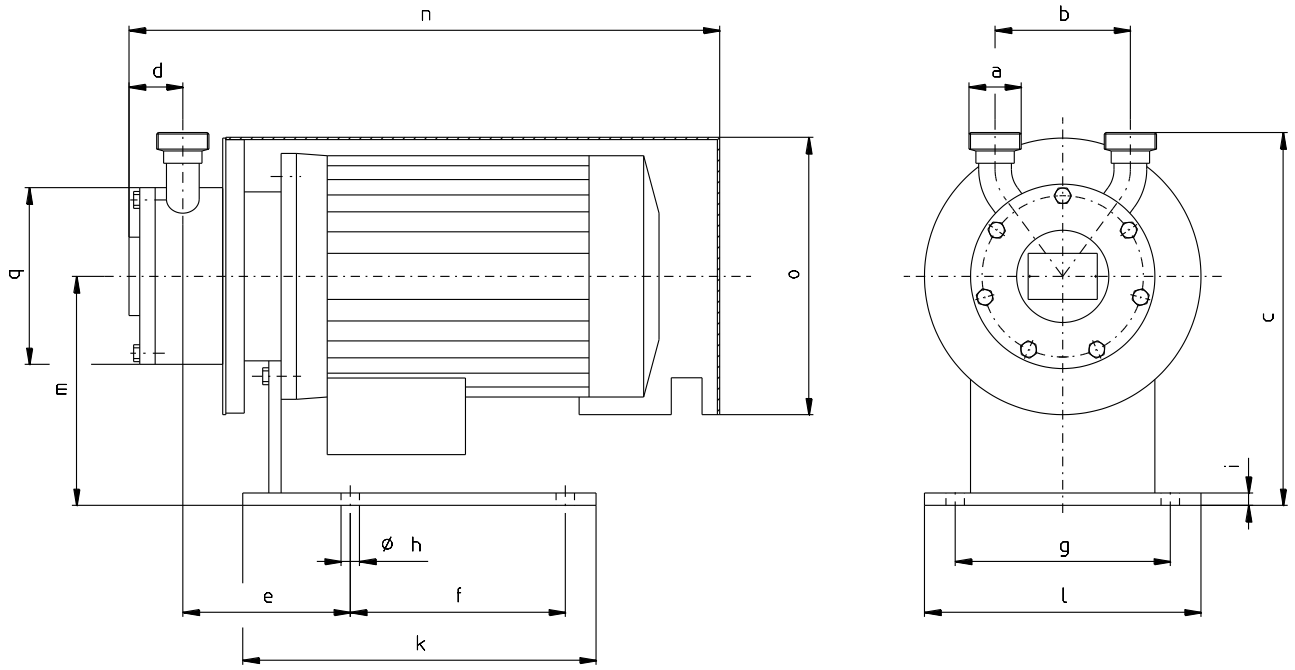
SAWA Pumpentechnik AG **CH-9113 Degersheim**	www.sawa.ch	**PP-8015-4X**	

Sawa PUMPEN	**Peripheralradpumpe** Typ : P-..-RKMI **Peripheral Pump** Type : P-..-RKMI	Nummer : MB Revision : A / 09.98 Seite 1 / 1



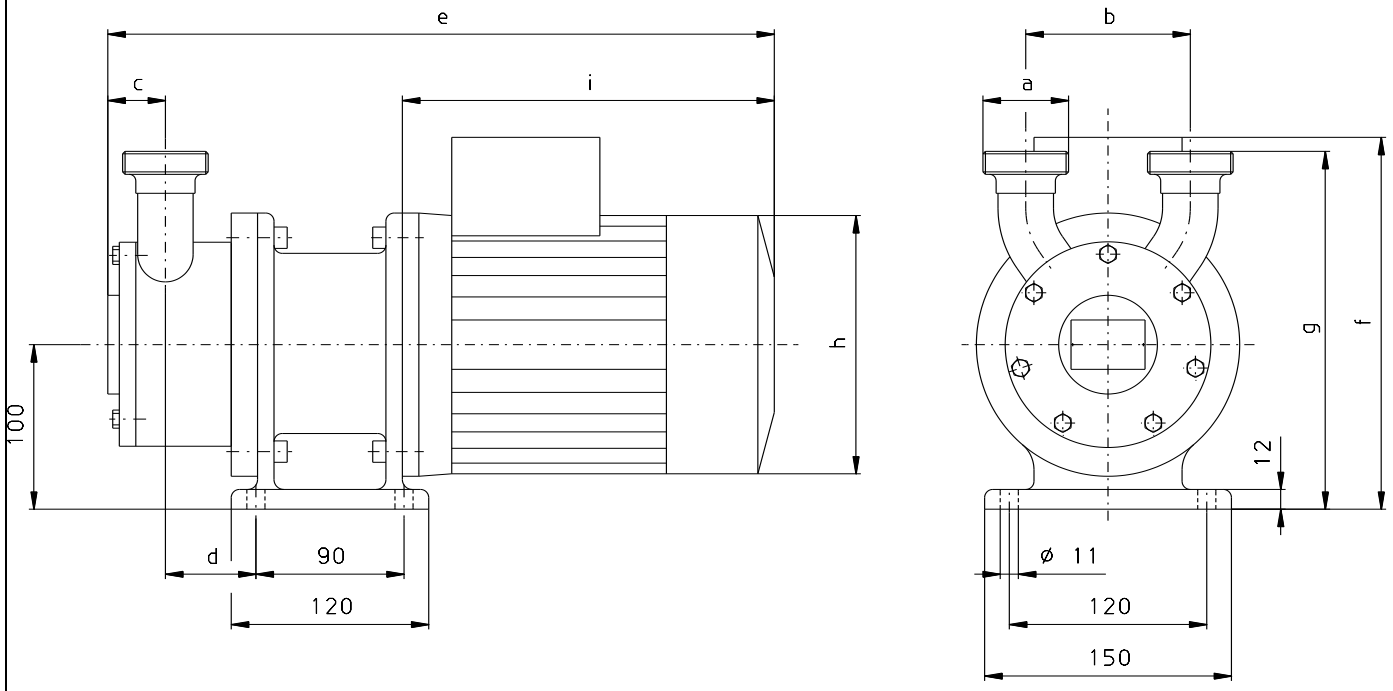
Typ	a	b	c	d	e	f	g	h	i	k	l	m	n	o	p	q	P [kW]	n [1/min]
P68	NW 15	90	175	34	127	100	125	10	12	125	168	80	320	191	139		0,75 - 1,10	2900
P73	NW 15	90	175	34	127	100	125	10	12	125	168	80	319	191	139		0,75 - 1,10	2900
P73	NW 15	90	185	34	133	100	140	10	14	130	178	90	336	211	157		1,50	2900
P78	NW 20	90	180	35	126	100	125	10	12	125	168	80	319	191	139		1,10	2900
P78	NW 20	90	190	35	132	100	140	10	14	130	178	90	336	211	157		1,50	2900
P78	NW 20	90	190	35	132	125	140	10	14	155	178	90	358	211	157		2,20	2900
P92	NW 25	100	210	35	132	125	140	10	14	155	178	90	359	211	157		2,20	2900
P92	NW 25	100	220	35	139	140	160	12	15	175	192	100	383	228	177		3,00	2900
P92	NW 25	100	232	35	146	140	190	12	18	180	224	112	410	250	196		4,00	2900

SAWA PUMPEN	**Peripheralradpumpe** Typ : P-..-RKMM **Peripheral Pump** Type : P-..-RKMM	Nummer : MB Revision : C / 12.04 Seite 1 / 1



Typ	a	b	c	d	e	f	g	h	i	k	l	m	n	o	p	q	P [kW]	n [1/min]
P68	NW 15	90	225	34	113	140	140	12	8	230	180	130	384	181		115	0.75 - 1.10	2900
P73	NW 15	90	225	34	113	140	140	12	8	230	180	130	384	181		120	0.75 - 1.50	2900
P78	NW 20	90	230	35	112	140	140	12	8	230	180	130	384	181		125	1.10 - 2.20	2900
P92	NW 25	100	250	35	112	140	140	12	8	230	180	130	409	203		140	2.20 - 3.00	2900

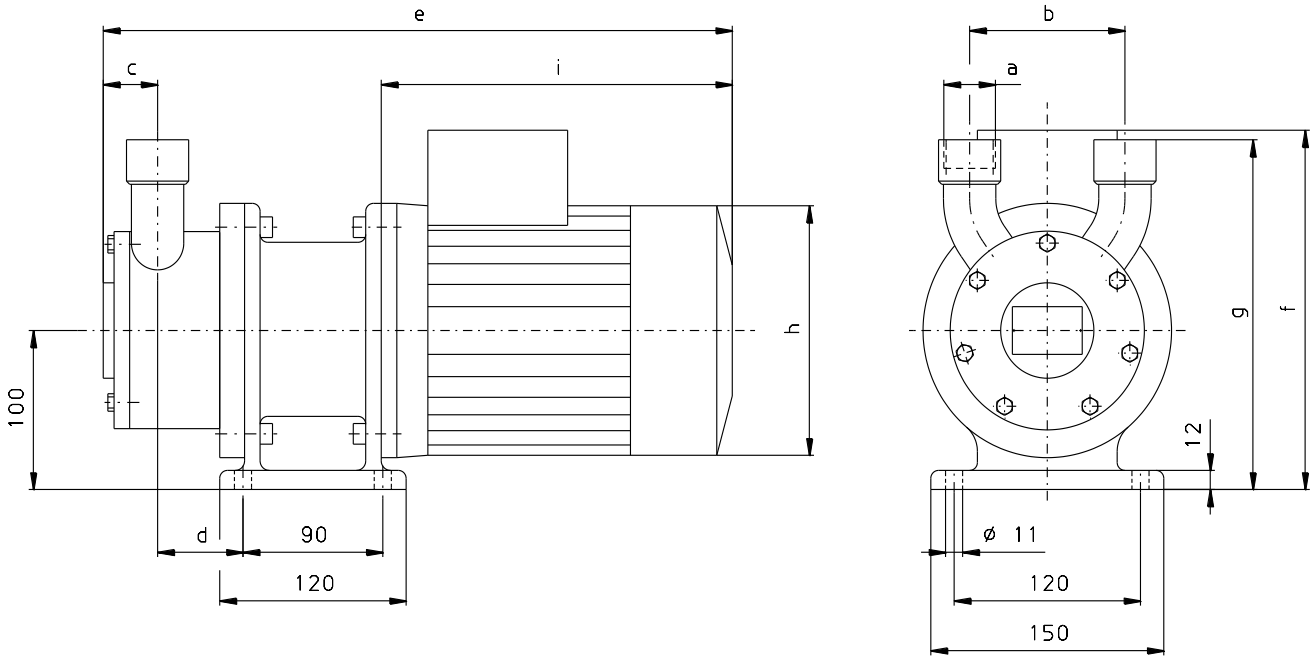
SAWA PUMPEN	**Peripheralradpumpe mit Magnetkupplung** Typ : MP-..-RKME	**Peripheral Pump with Magnet Coupling** Type : MP-..-RKME	Nummer : MB Revision : B / 06.02 Seite 1 / 1



Typ	a	b	c	d	e	f	g	h	i	k	P [kW]	n [1/min]
MP68	NW 15	90	34	54	384	211	195	139	209		0,75 - 1,10	2900
MP73	NW 15	90	34	54	384	211	195	139	209		0,75 - 1,10	2900
MP73	NW 15	90	34	54	401	221	195	157	226		1,50	2900
MP78	NW 20	90	35	53	384	211	200	139	209		1,10	2900
MP78	NW 20	90	35	53	401	221	200	157	226		1,50	2900
MP78	NW 20	90	35	53	423	221	200	157	248		2,20	2900
MP92	NW 25	100	35	53	423	221	220	157	248		2,20	2900
MP92	NW 25	100	35	53	457	228	220	177	272		3,00	2900
MP92	NW 25	100	35	53	484	238	220	196	299		4,00	2900

SAWA PUMPEN	**Peripheralradpumpe mit Magnetkupplung** Typ : MP-..-RKZE	**Peripheral Pump with Magnet Coupling** Type : MP-..-RKZE

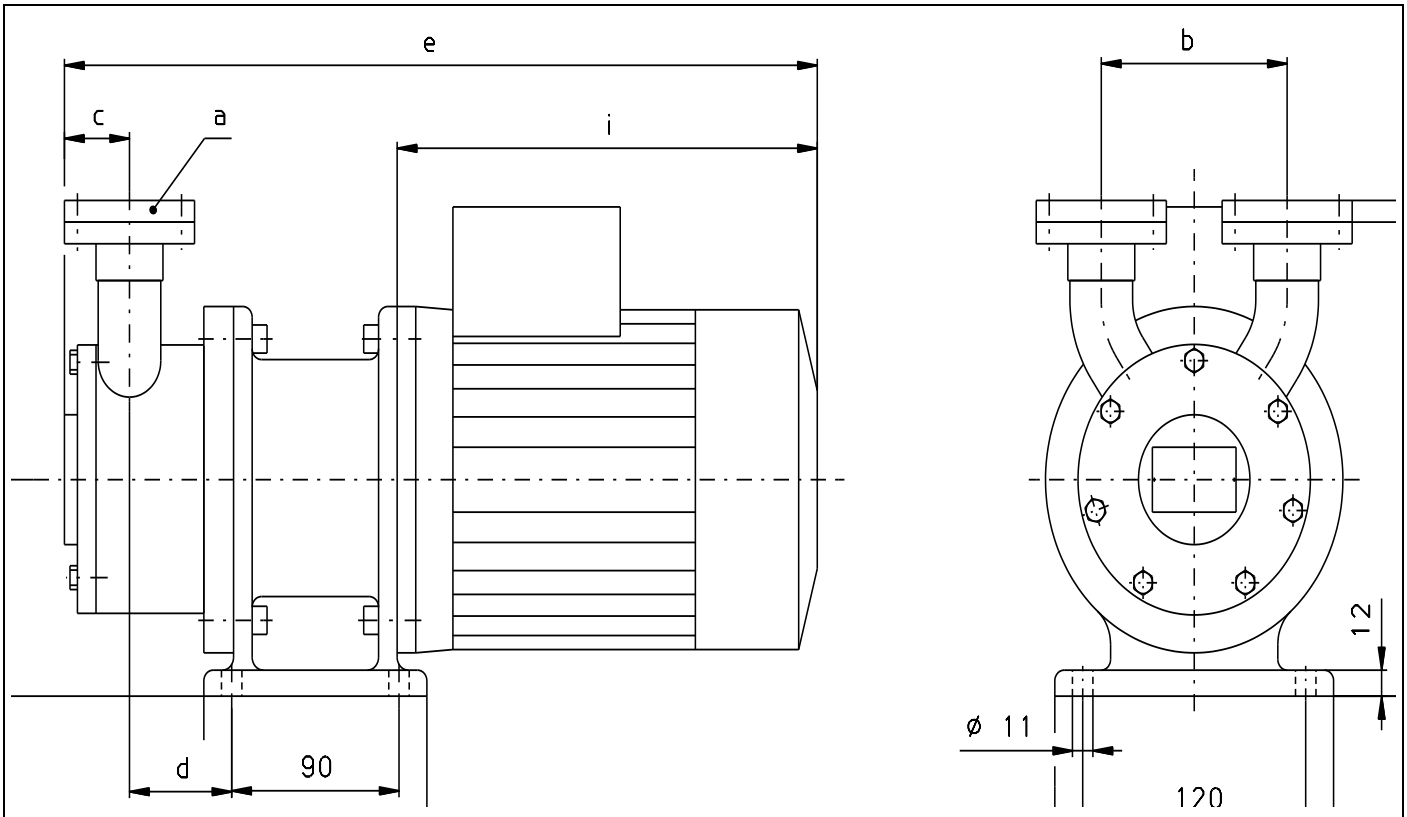
Nummer : MB
Revision : B / 06.02



Typ	a	b	c	d	e	f	g	h	i	k	P [kW]	n [1/min]
MP68	G ½“	90	34	54	384	211	195	139	209		0,75 - 1,10	2900
MP68	G ½“	90	34	54	401	221	195	157	226		1,50	2900
MP73	G ½“	90	34	54	384	211	195	139	209		0,75 - 1,10	2900
MP73	G ½“	90	34	54	401	221	195	157	226		1,50	2900
MP78	G ¾“	90	35	53	384	211	205	139	209		1,10	2900
MP78	G ¾“	90	35	53	401	221	205	157	226		1,50	2900
MP78	G ¾“	90	35	53	423	221	205	157	248		2,20	2900
MP92	G 1“	100	35	53	423	221	220	157	248		2,20	2900
MP92	G 1“	100	35	53	457	236	220	177	272		3,00	2900
MP92	G 1“	100	35	53	484	238	220	196	299		4,00	2900

Sawa PUMPEN	**Peripheralradpumpe mit Magnetkupplung** Typ : MP-..-RKFE	**Peripheral Pump with Magnet Coupling** Type : MP-..-RKFE

Nummer : MB
Revision : C / 08.10



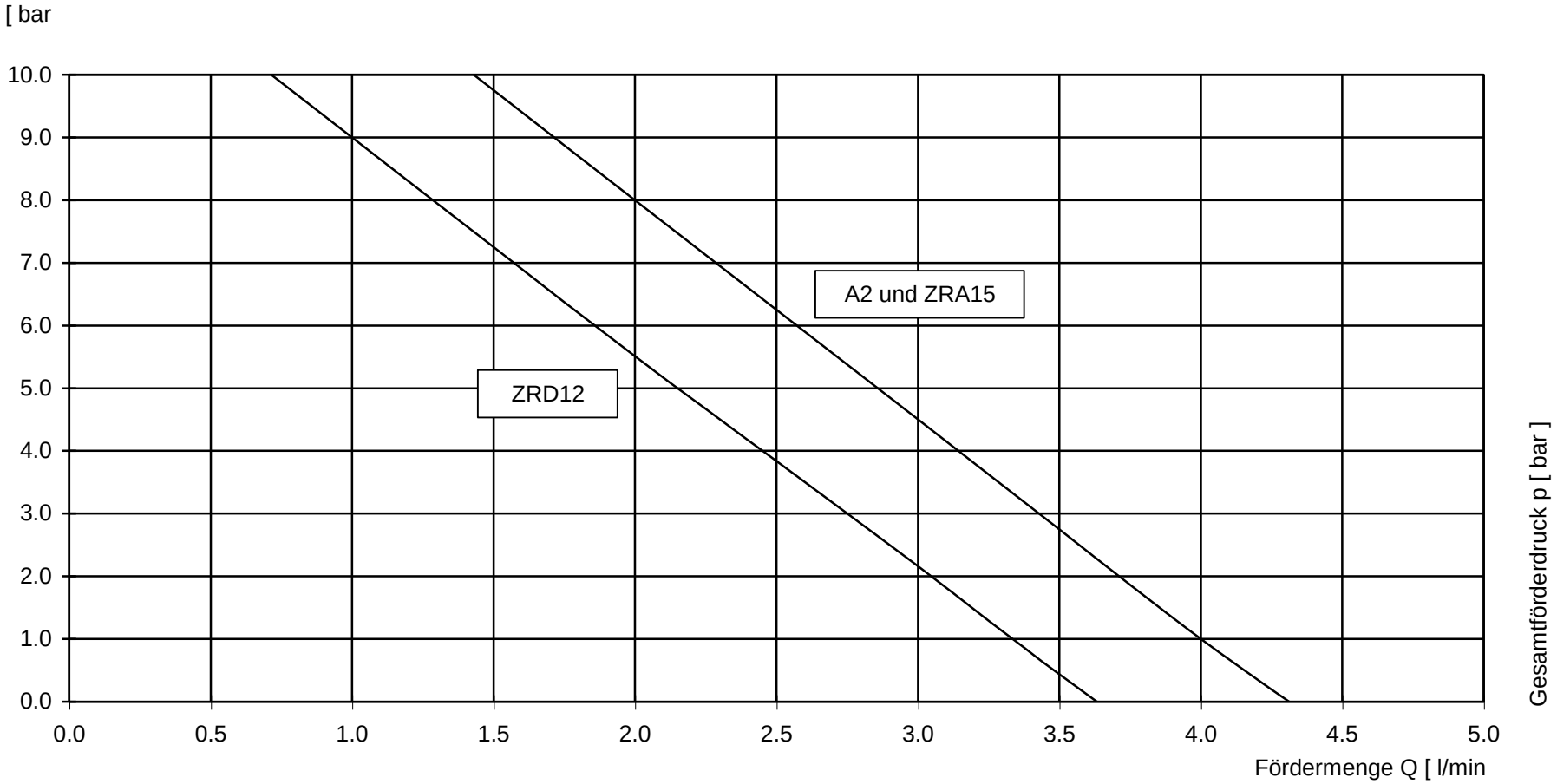
Typ	a	b	c	d	e *	f	g	h	i *	k	P [kW]	n [1/min]
MP68	DN 15	90	34	54	384	205	195	205	209		0.75 - 1.10	2900
MP73	DN 15	90	34	54	384	205	195	205	209		0.75 - 1.10	2900
MP73	oder / or	90	34	54	384	205	195	205	209		0.75 - 1.10	2900
MP73	DN 25	90	34	54	401	205	195	205	226		1.50	2900
MP78		90	35	53	384	210	200	210	209		1.10	2900
MP78		90	35	53	401	210	200	210	226		1.50	2900
MP78	DN 25	90	35	53	423	210	200	210	248		2.20	2900
MP78		90	35	53	457	210	200	210	272		3.00	2900
MP92		100	35	53	423	230	220	230	248		2.20	2900
MP92	DN25	100	35	53	457	230	220	230	272		3.00	2900
MP92		100	35	53	484	230	220	230	299		4.00	2900

Masse * abhängig von Motorentyp / Lieferant Measure * depend on motor type / supplier

Sawa PUMPEN	**Zahnradpumpen** Typ : ZRD1-12, ZRA15 und A2	**Gear pumps** Type : ZRD1-12, ZRA15 and A2	Nummer : KL Revision : B / 01.21 Seite 1 / 1

Wasser bei 20 °C
Drehzahl 1450 1/min

Water at 20 °C
Speed 1450 1/min

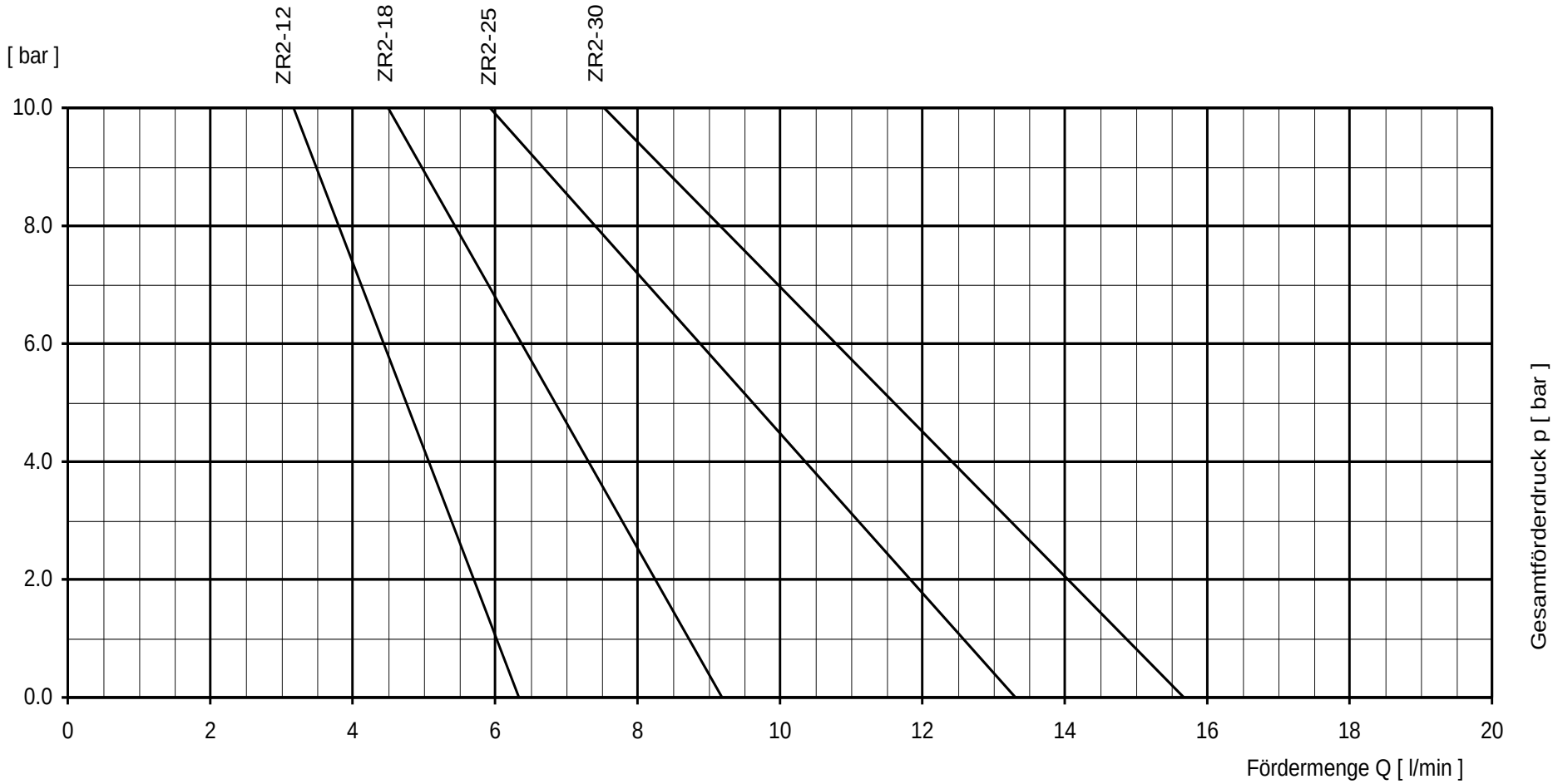


SAWA - Pumpentechnik AG	**CH - 9113 Degersheim**	**DP1-8001-4X**	

Sawa PUMPEN	**Zahnradpumpen** Typ : ZR2	**Gear Pumps** Type : ZR2	Nummer : KL Revision : B / 01.21 Seite 1 / 1

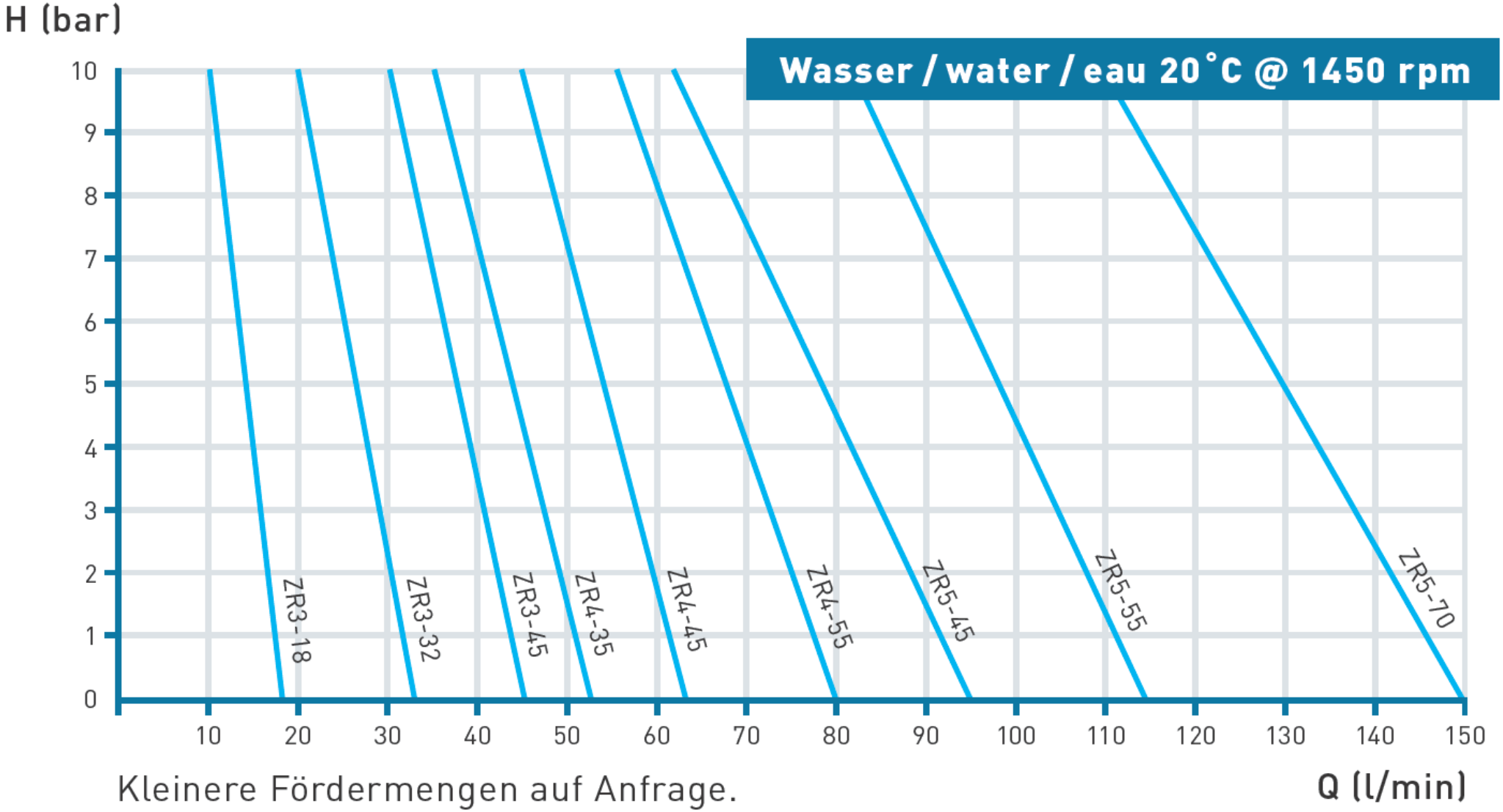
Wasser bei 20°C
Drehzahl 1450 1/min

Water at 20°C
Speed 1450 rpm



SAWA - Pumpentechnik AG	**CH - 9113 Degersheim**	**ZR2-8001-4X**	

Sawa PUMPEN	**Leistungbereich** **Zahnradpumpe ZR3 / ZR4 / ZR5**	**Performance range** **gear pump ZR3 / ZR4 / ZR5**	Nummer : KL Revision : E / 09.16 Seite 1 / 1



Sawa PUMPEN	**Flowrate of gear pumps** Type : ZR and ZRP	Number : KL 0136 Edition : D / 03.03 Sheet 1 / 1

Gear pumps with mechanical seal

Type of pump / Size	Flowrate l / min. measured without counter pressure at different speed			Material		
	750 1 / min	1000 1 / min	1450 1 / min	GG	1.4435	
ZRA - 5 ZRA – 8 ZRD1 - 08 ZRD1 - 12 ZRA - 15	0.6 1.0 1,5 1.8 2.1	0.8 1.3 2 2.4 2.8	1.2 2 3 3.6 4.2	x	x x x x	
ZR 2 - 12 ZR 2 - 18 ZR 2 - 25 ZR 2 - 30	3 5 7 8	4 7 9 11	6 9 13 15	x x x x	 x x	
ZR 3 - 18 ZR 3 - 32 ZR 3 - 45	9 15 22	12 20 30	18 30 45	x x x	x x x	
ZR 4 - 35 ZR 4 - 45 ZR 4 - 55	26 32 40	35 43 53	52 65 80	x x x	x x x	
ZR 5 - 45 ZR 5 - 55 ZR 5 - 70	47 57 75	66 80 105	95 115 150	x x x	x x x	

Gear pumps with permanent magnetic coupling

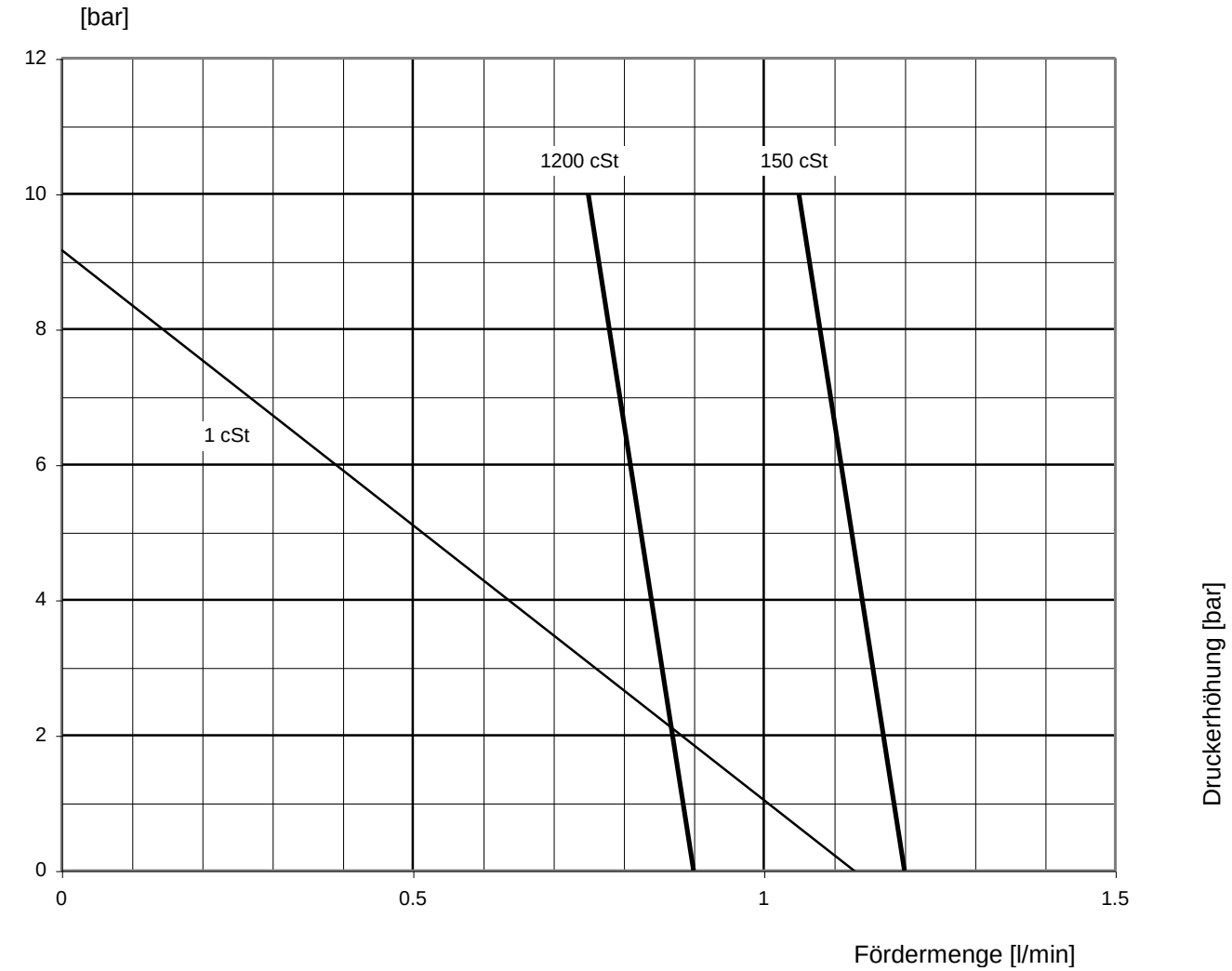
Type of pump / Size	Flowrate l / min. measured without counter pressure at different speed			Material		
	750 1 / min	1000 1 / min	1450 1 / min	GG	1.4435	
ZRP3 - 18 ZRP3 - 32 ZRP3 - 45	9 15 22	12 20 30	18 30 45	x x x	x x x	

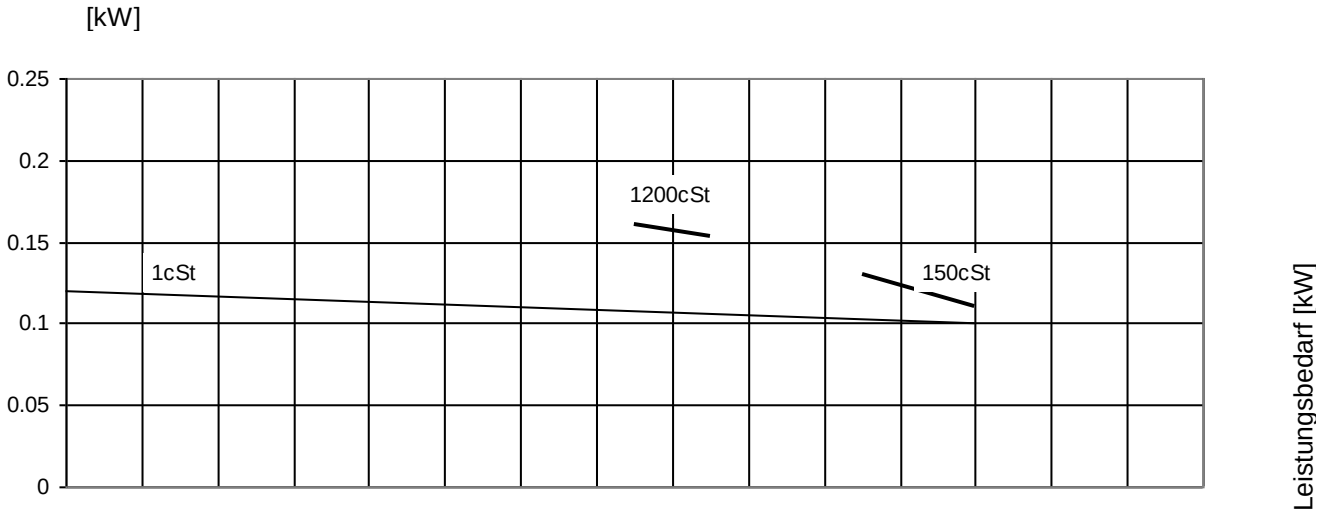
SAWA - Pumpentechnik AG
CH - 9113 Degersheim

Telefon **++41 / (0)71 / 372 08 08**
Fax **++41 / (0)71 / 372 08 09**
e-mail **info@sawa.ch**
Internet **www.sawa.ch**

SAWA PUMPEN	**Zahnradpumpe** **Gear pump** **Typ : ZRA- 5** **Type : ZRA- 5**	Nummer : KL Revision : E / 06.02 Seite 1 / 1

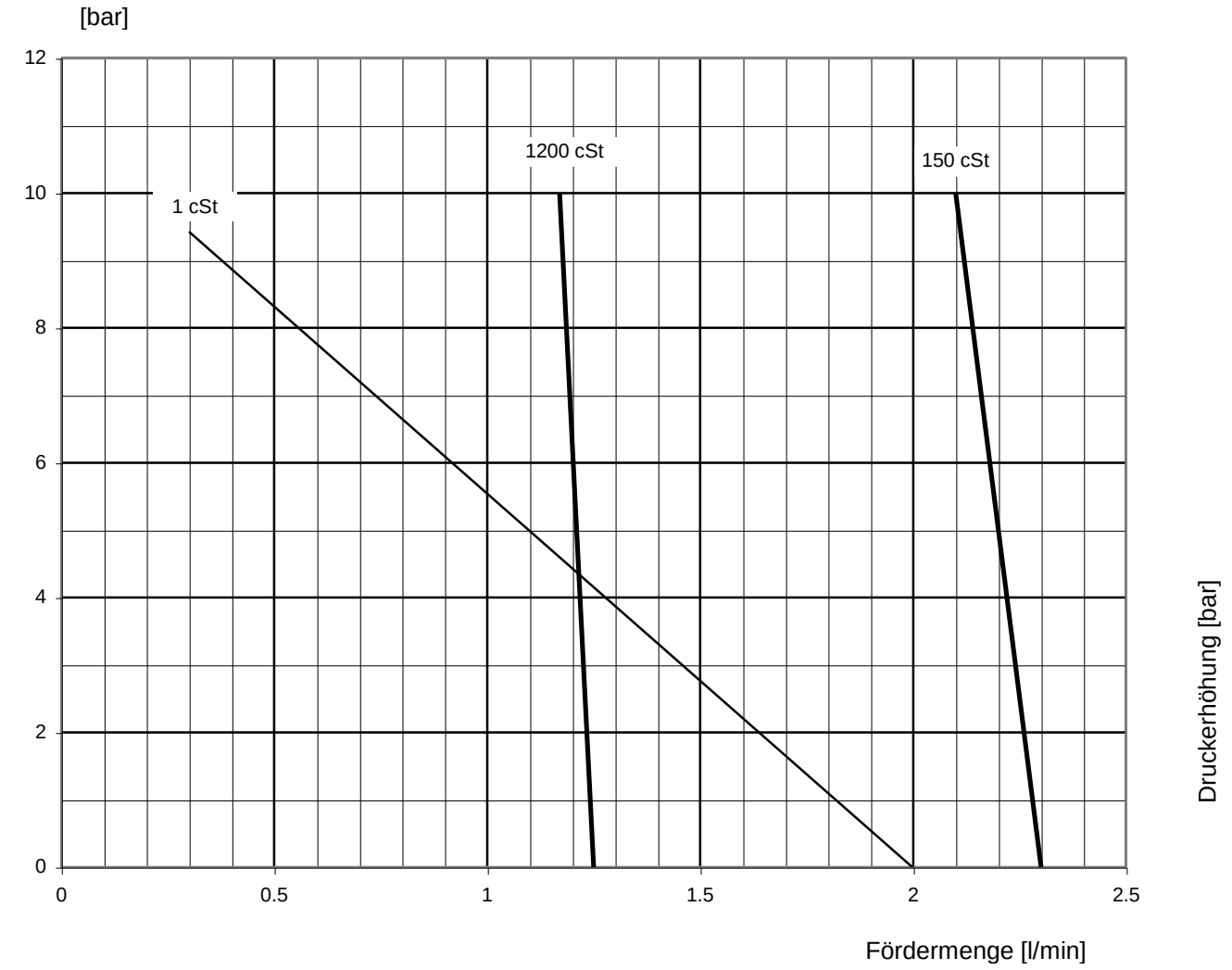
Drehzahl / speed : 1450 1/min
Viskosität / viscosity : 1 / 150 / 1200 mm²/s

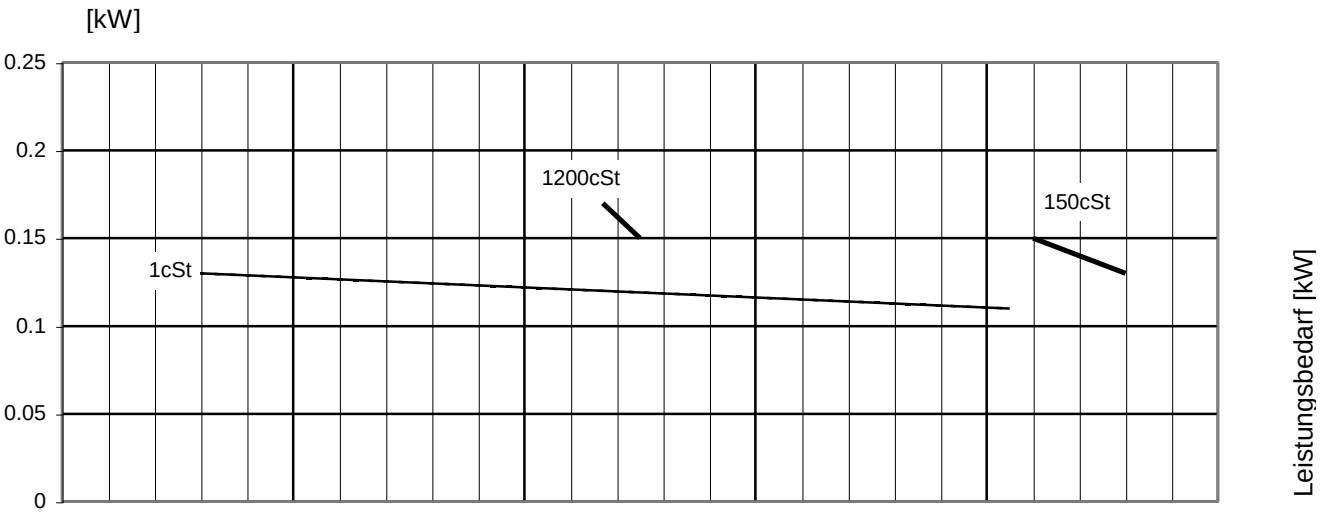




Sawa PUMPEN	**Zahnradpumpe** **Gear pump** **Typ : ZRA- 8** **Type : ZRA- 8**	Nummer : KL Revision : E / 06.02 Seite 1 / 1

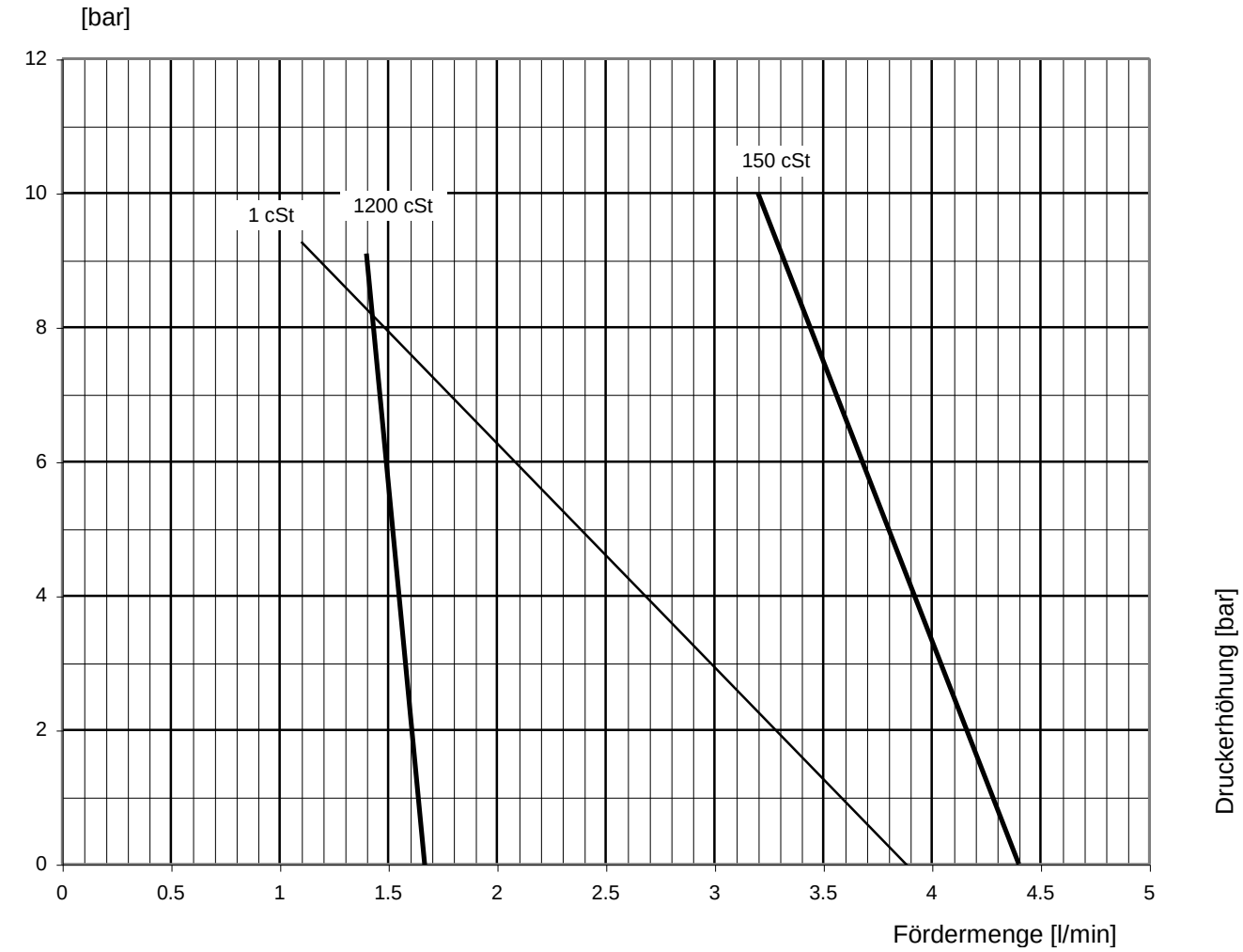
Drehzahl / speed : 1450 1/min
Viskosität / viscosity : 1 / 150 / 1200 mm²/s

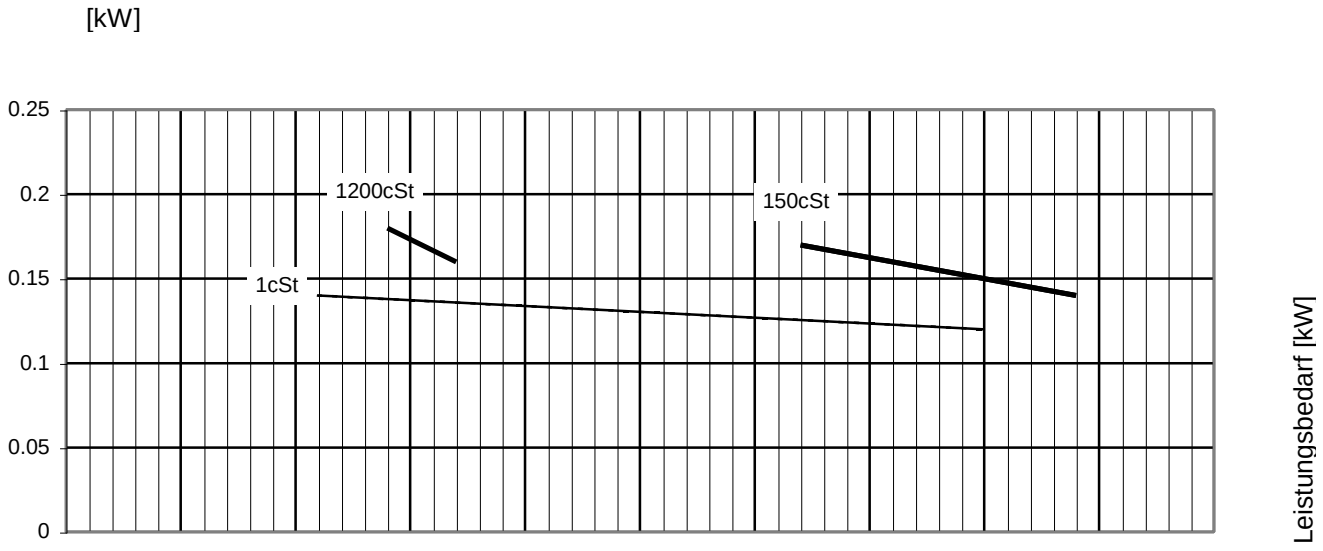




SAWA PUMPEN	**Zahnradpumpe** **Gear pump** **Typ : ZRA- 15** **Type : ZRA- 15**	Nummer : KL Revision : E / 06.02 Seite 1 / 1

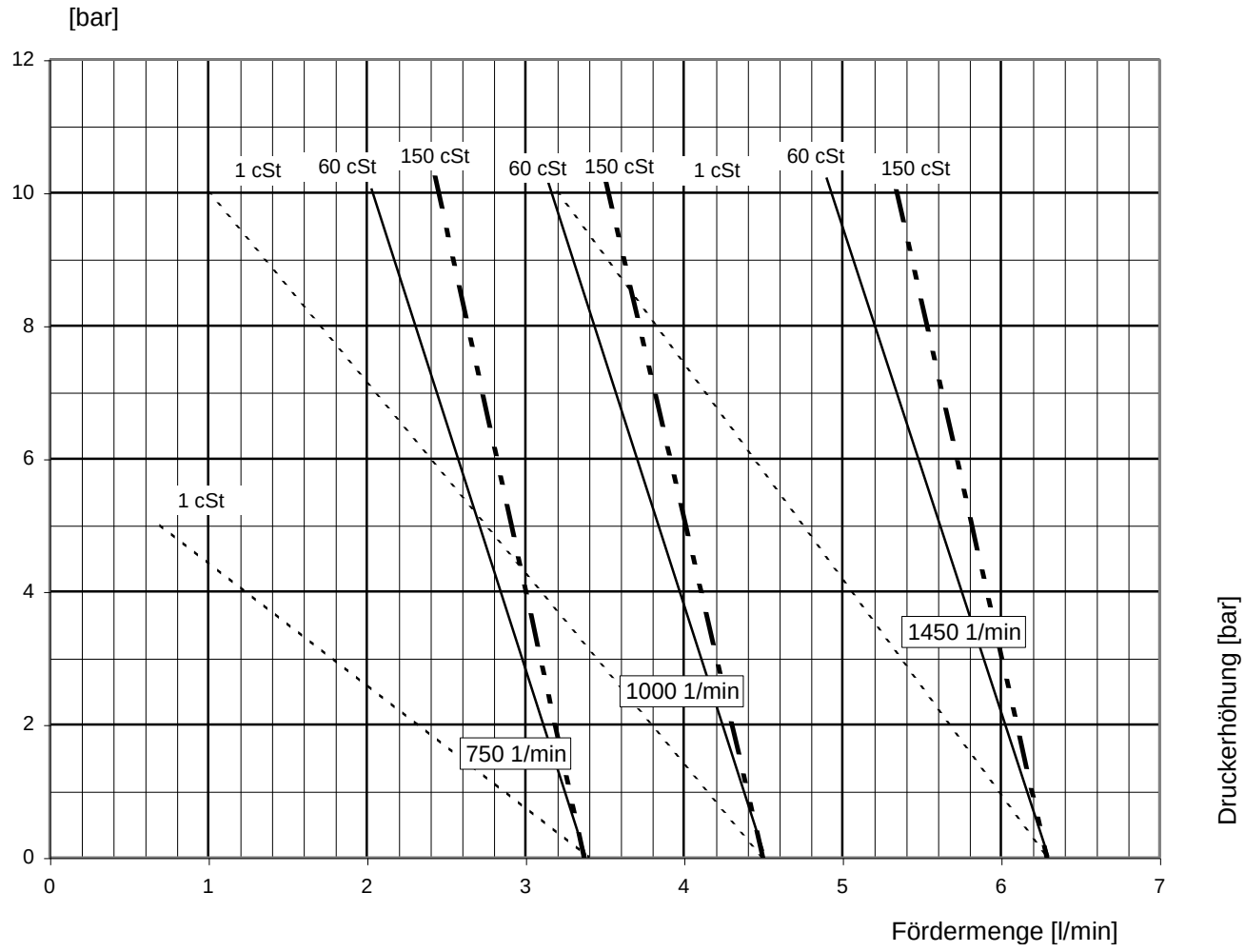
Drehzahl / speed : 1450 1/min
Viskosität / viscosity : 1 / 150 / 1200 mm²/s

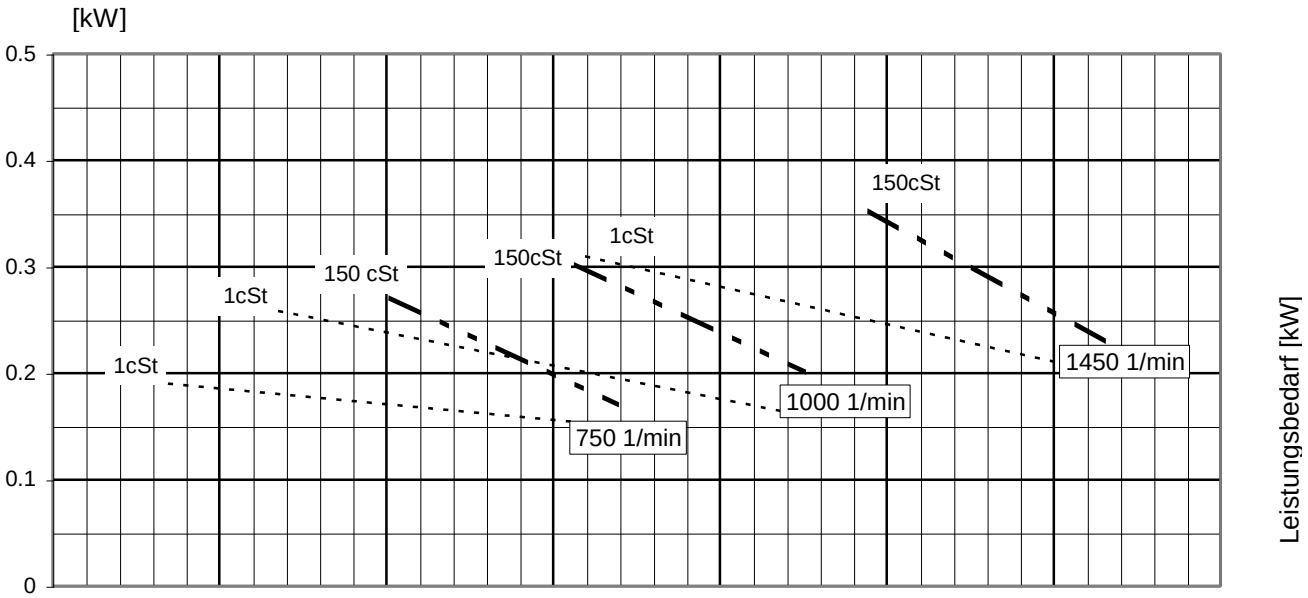




Sawa PUMPEN	**Zahnradpumpe** **Gear pump** **Typ : ZR2 - 12** **Type : ZR2 - 12**	Nummer : KL Revision : E / 06.02 Seite 1 / 1

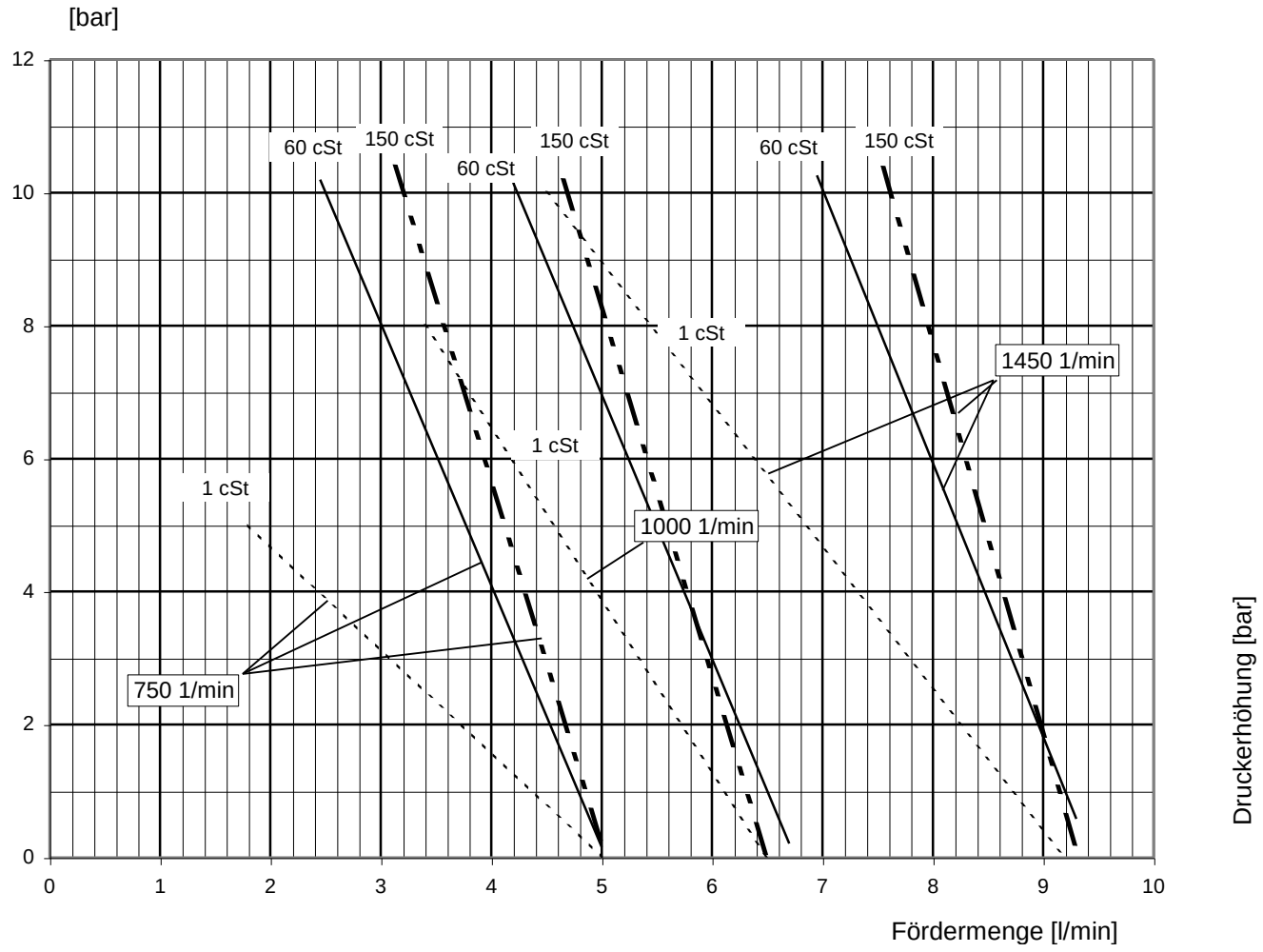
Drehzahl / speed : 1450 / 1000 / 750 1/min
Viskosität / viscosity : 1 / 60 / 150 mm²/s

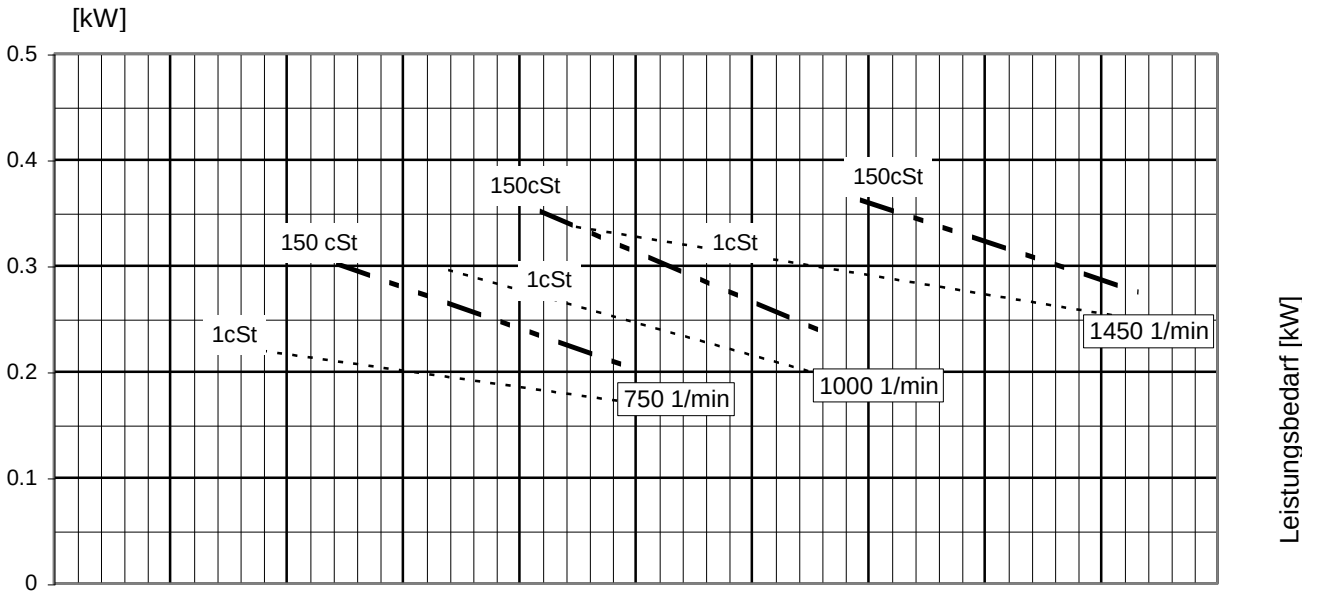




Sawa PUMPEN	**Zahnradpumpe** **Gear pump** **Typ : ZR2 - 18** **Type : ZR2 - 18**	Nummer : KL Revision : E / 06.02 Seite 1 / 1

Drehzahl / speed : 1450 / 1000 / 750 1/min
Viskosität / viscosity : 1 / 60 / 150 mm²/s

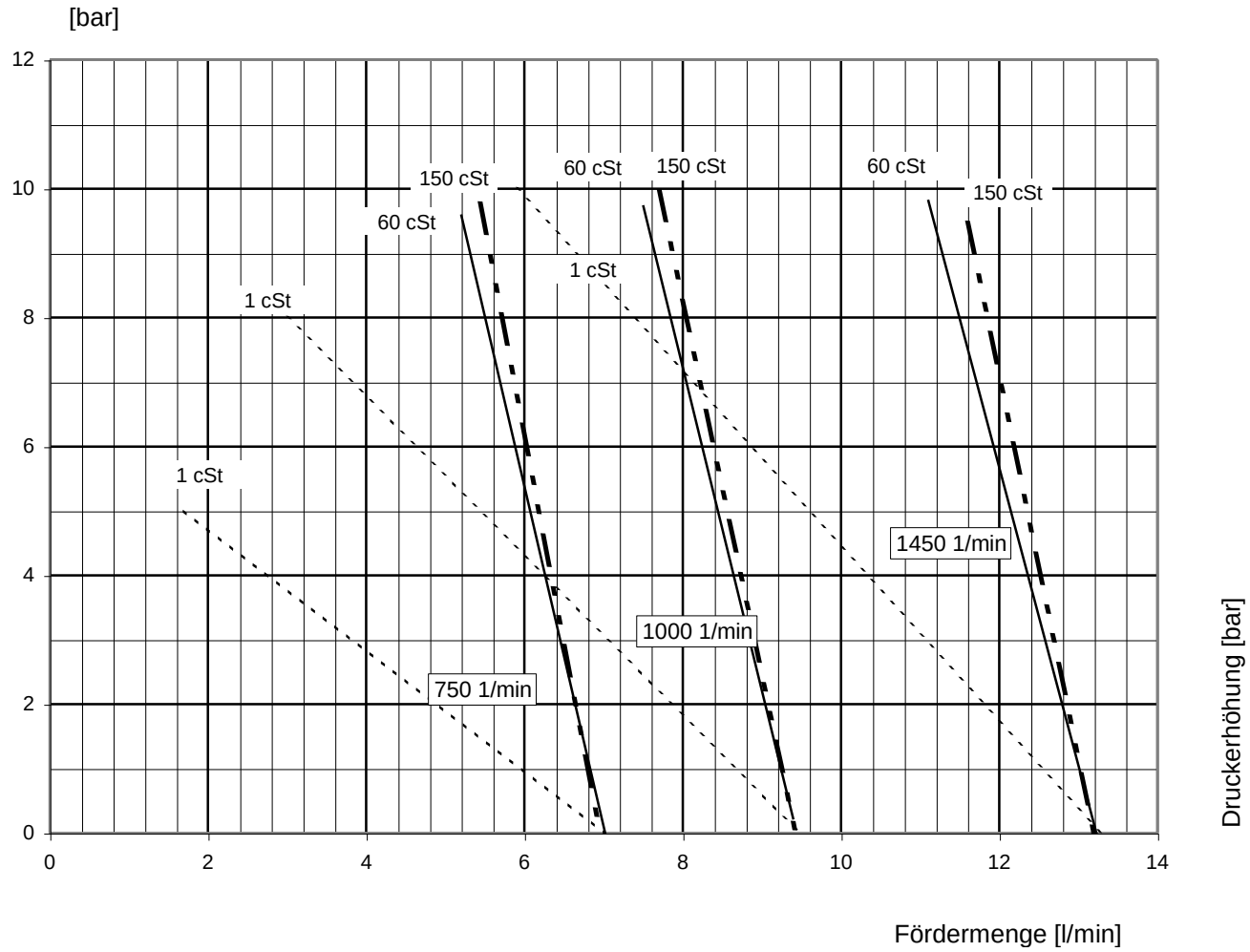


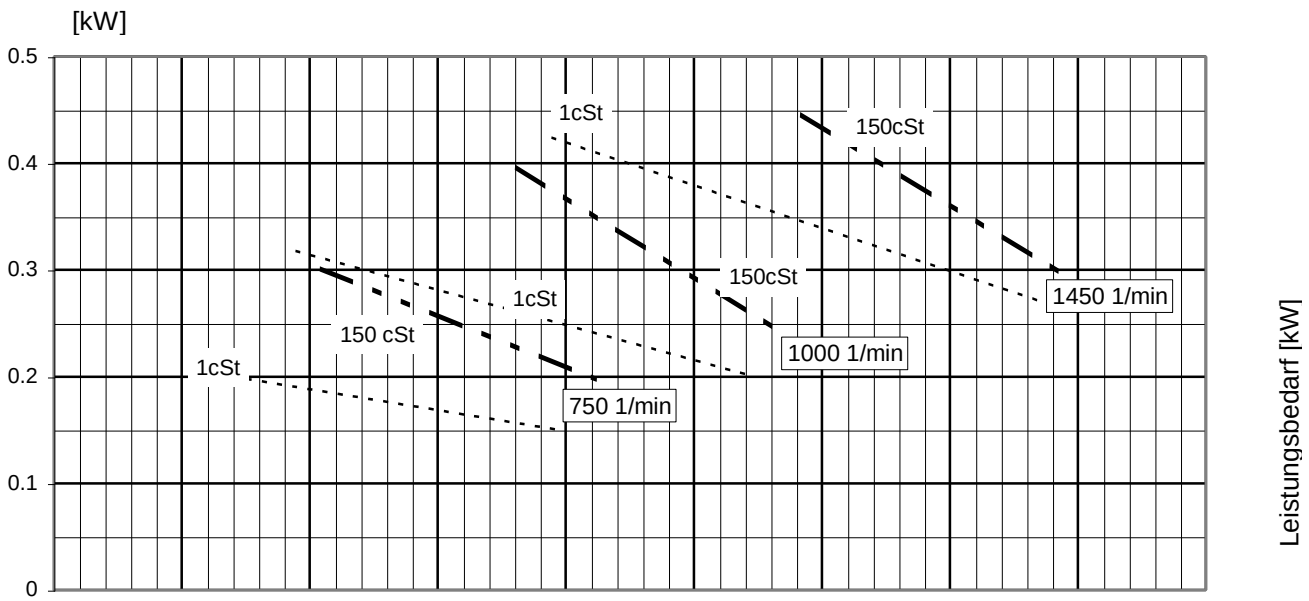


SAWA Pumpentechnik AG	**CH - 9113 Degersheim**	**ZR2-18-8000-4X**

Sawa PUMPEN	**Zahnradpumpe** **Gear pump** **Typ : ZR2 - 25** **Type : ZR2 - 25**	Nummer : KL Revision : E / 06.02 Seite 1 / 1

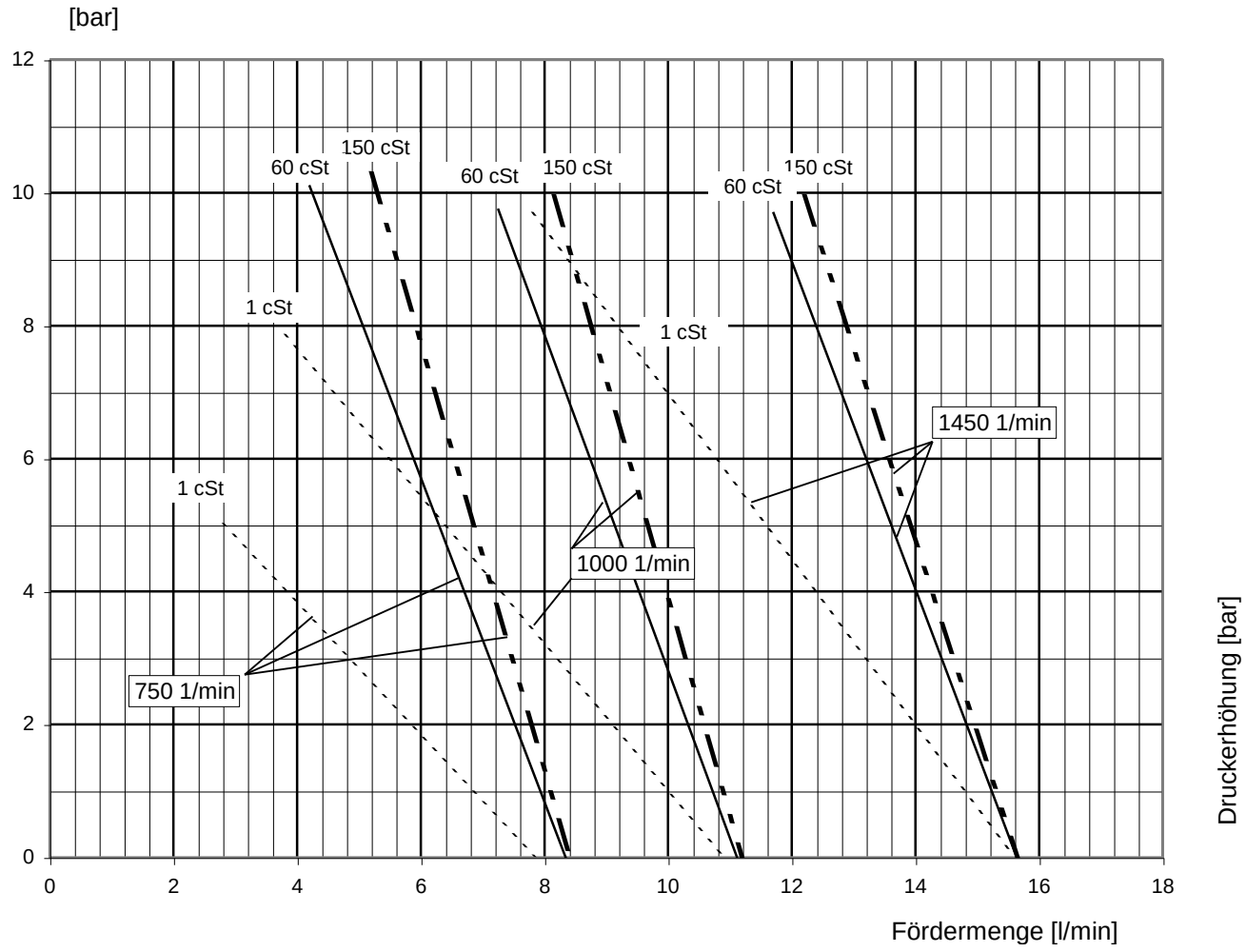
Drehzahl / speed : 1450 / 1000 / 750 1/min
Viskosität / viscosity : 1 / 60 / 150 mm²/s

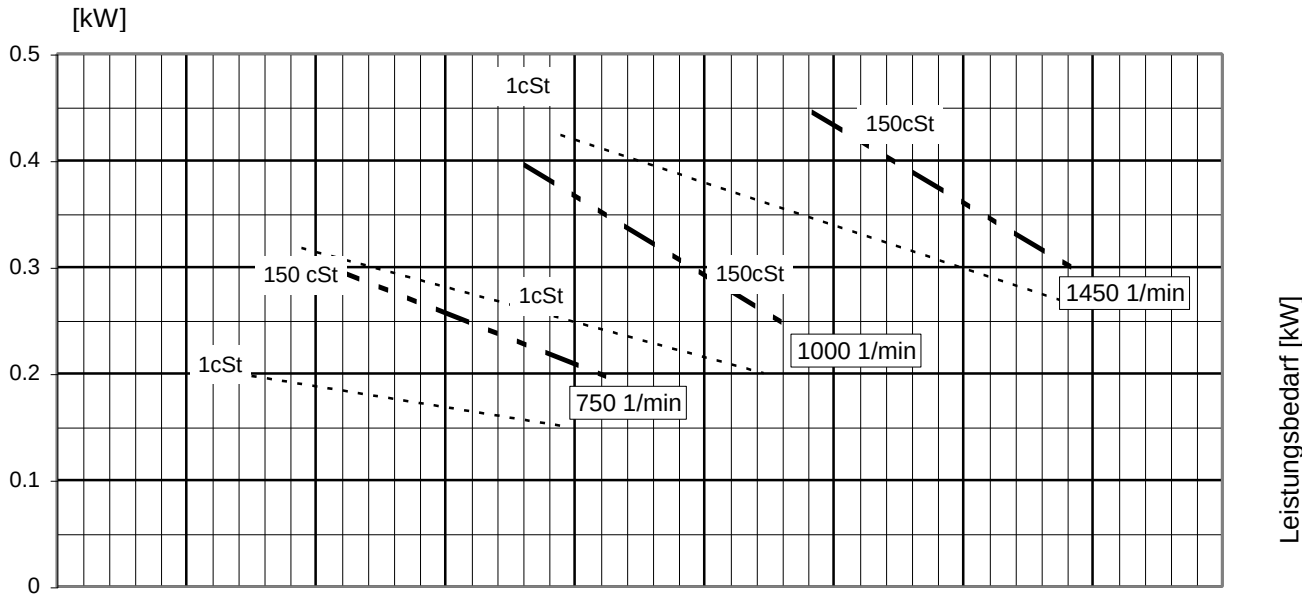




Sawa PUMPEN	**Zahnradpumpe** **Gear pump** **Typ : ZR2 - 30** **Type : ZR2 - 30**	Nummer : KL Revision : E / 06.02 Seite 1 / 1

Drehzahl / speed : 1450 / 1000 / 750 1/min
Viskosität / viscosity : 1 / 60 / 150 mm²/s

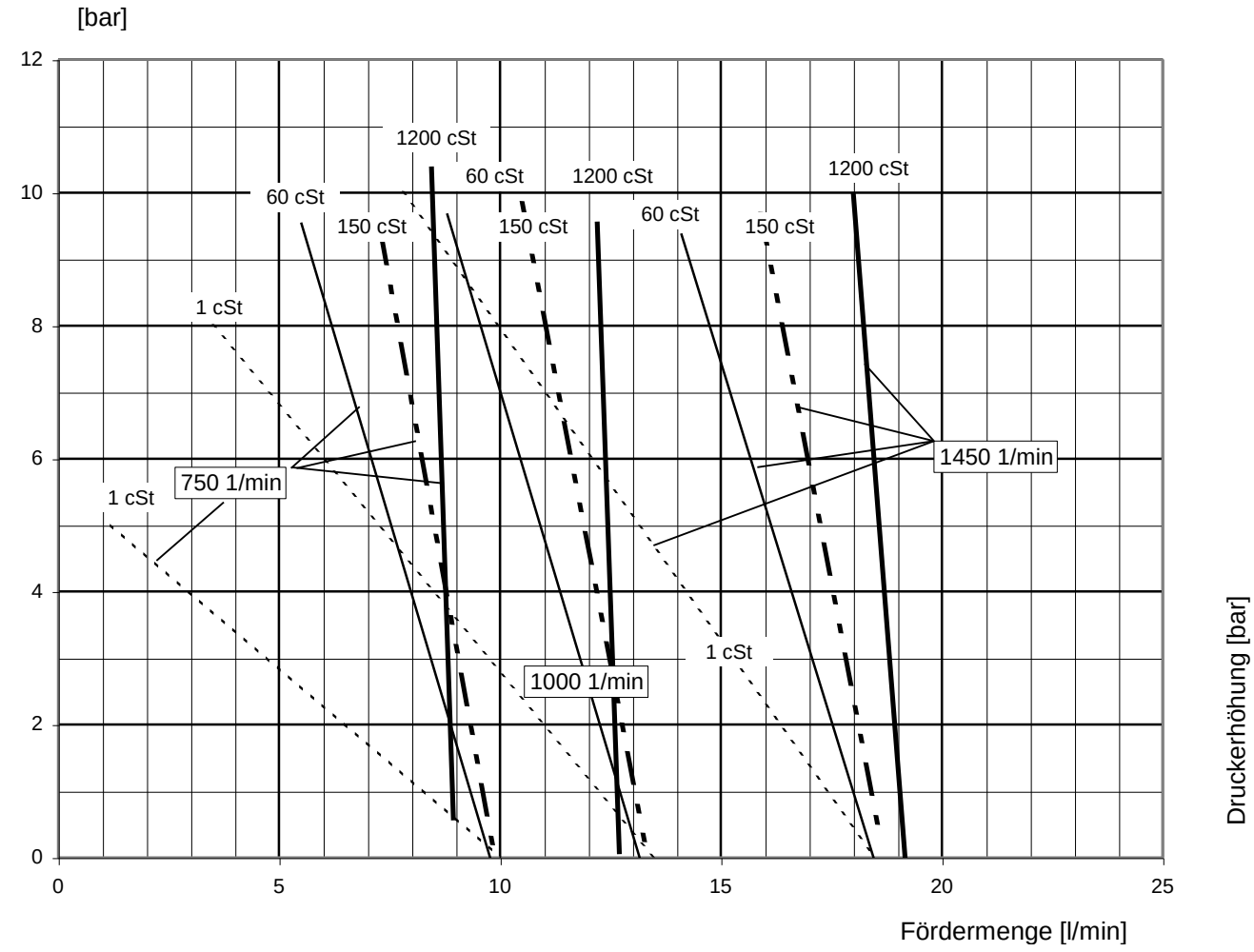


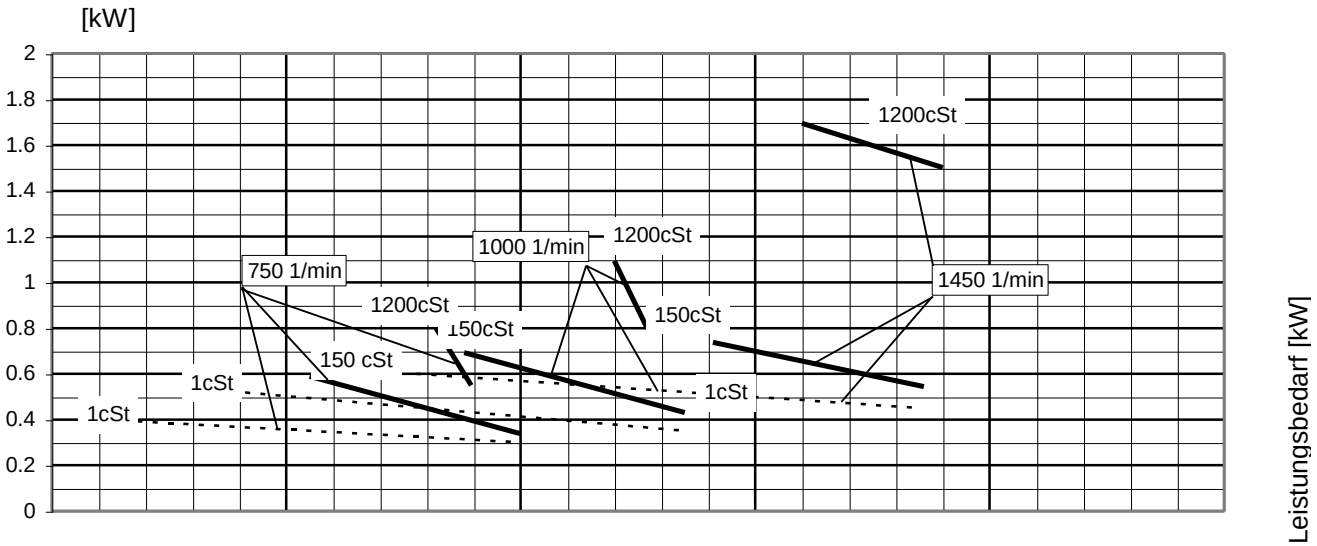


SAWA Pumpentechnik AG	**CH - 9113 Degersheim**	**ZR2-30-8000-4X**

Sawa PUMPEN	**Zahnradpumpe** **Gear pump** **Typ : ZR3 - 18** **Type : ZR3 - 18**	Nummer : KL Revision : E / 06.02 Seite 1 / 1

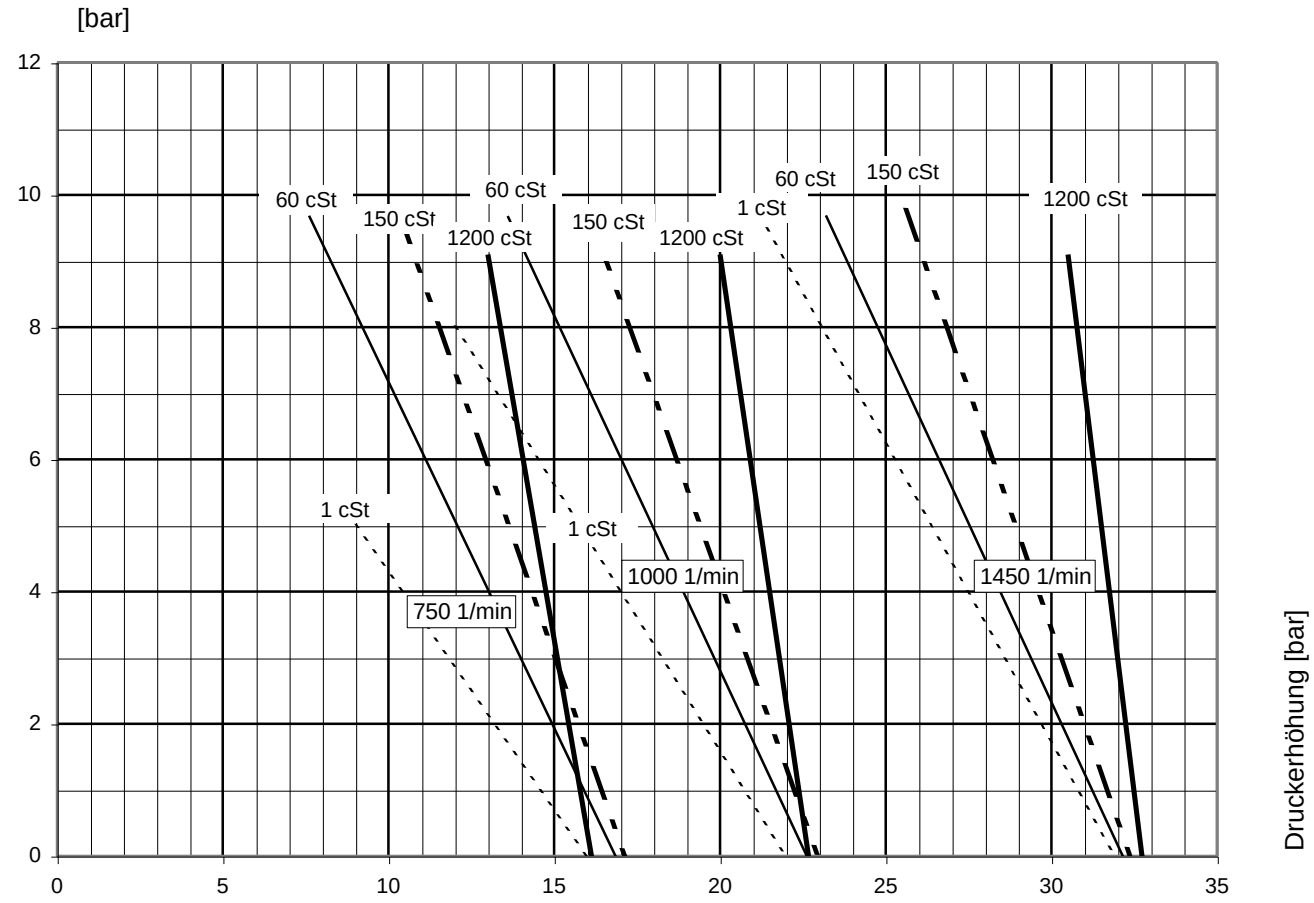
Drehzahl / speed : 1450 / 1000 / 750 1/min
Viskosität / viscosity : 1 / 60 / 150 / 1200 mm²/s

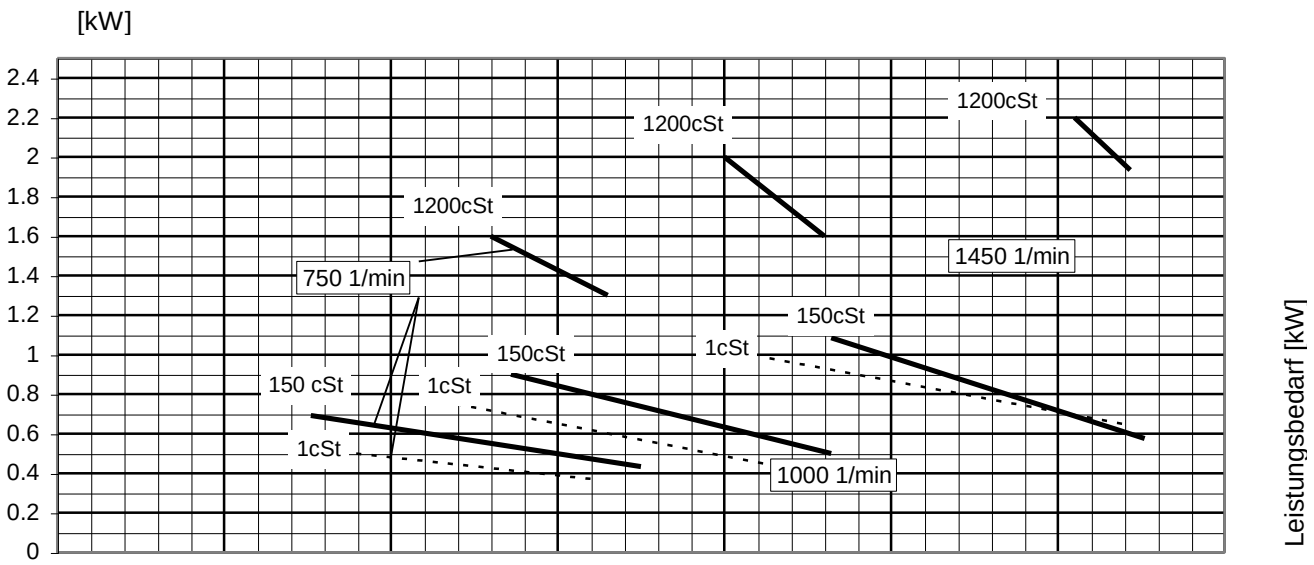




Sawa PUMPEN	**Zahnradpumpe** **Gear pump** **Typ : ZR3 - 32** **Type : ZR3 - 32**	Nummer : KL Revision : E / 06.02 Seite 1 / 1

Drehzahl / speed : 1450 / 1000 / 750 1/min
Viskosität / viscosity : 1 / 60 / 150 / 1200 mm²/s

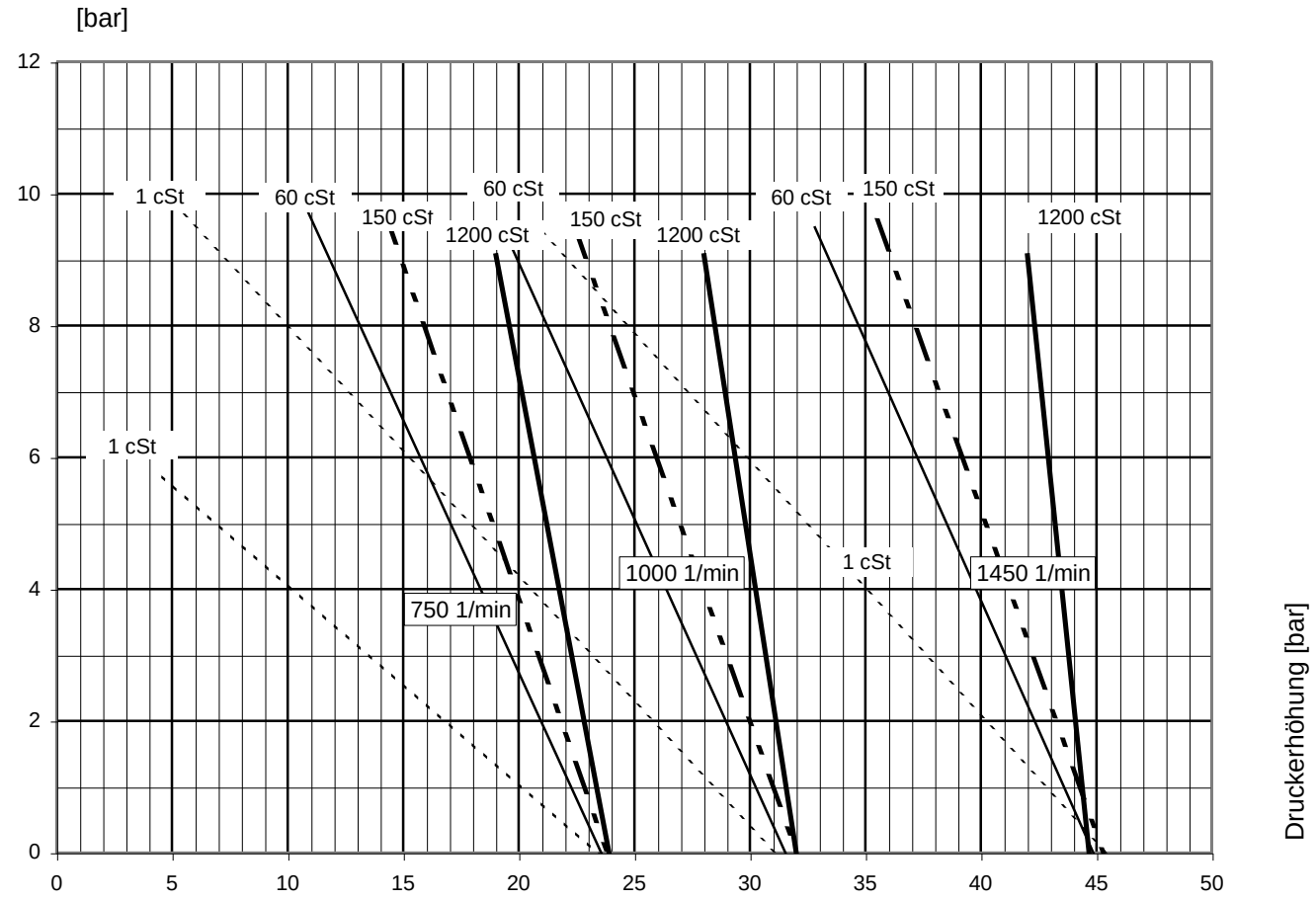


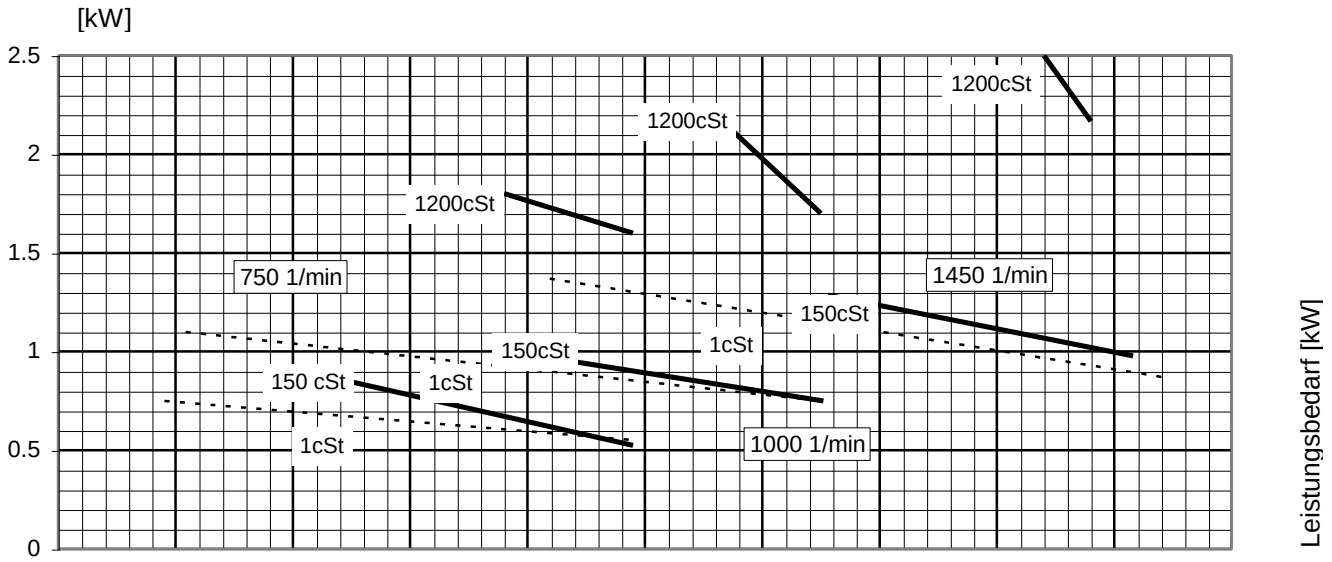


SAWA Pumpentechnik AG	**CH - 9113 Degersheim**	**ZR3-32-8000-4X**

SAWA PUMPEN	**Zahnradpumpe** **Gear pump** **Typ : ZR3 - 45** **Type : ZR3 - 45**	Nummer : KL Revision : E / 06.02 Seite 1 / 1

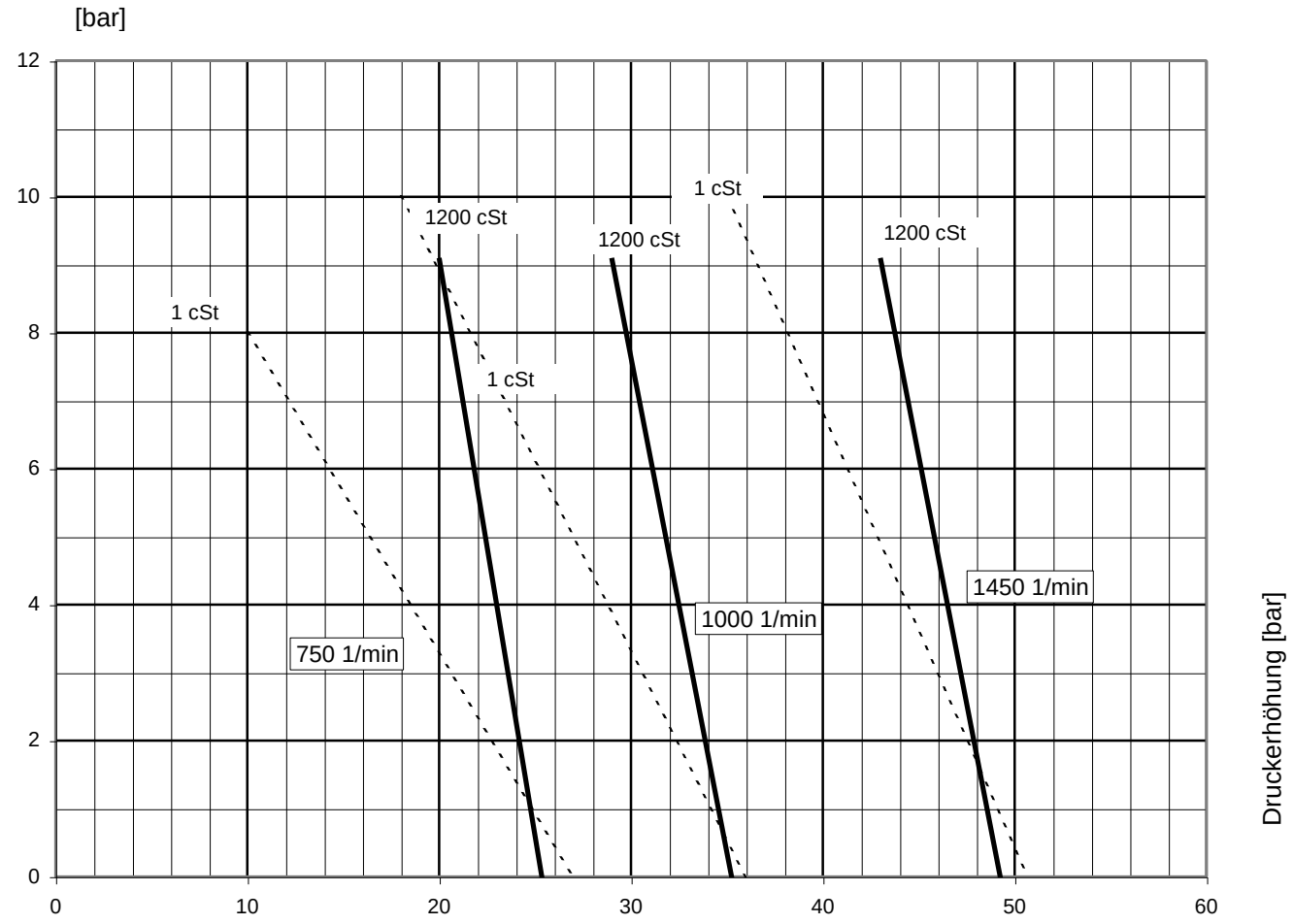
Drehzahl / speed : 1450 / 1000 / 750 1/min
Viskosität / viscosity : 1 / 60 / 150 / 1200 mm²/s

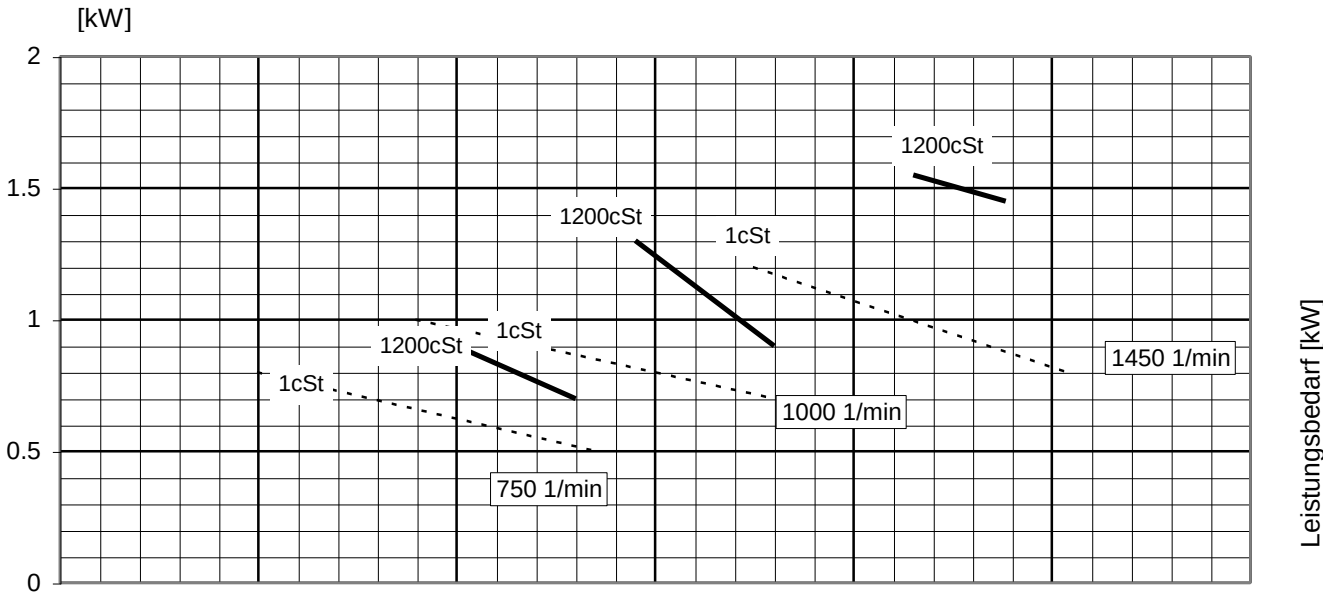




Sawa PUMPEN	**Zahnradpumpe** **Gear pump** **Typ : ZR4 - 35** **Type : ZR4 - 35**	Nummer : KL Revision : E / 06.02 Seite 1 / 1

Drehzahl / speed : 1450 / 1000 / 750 1/min
Viskosität / viscosity : 1 / 1200 mm²/s

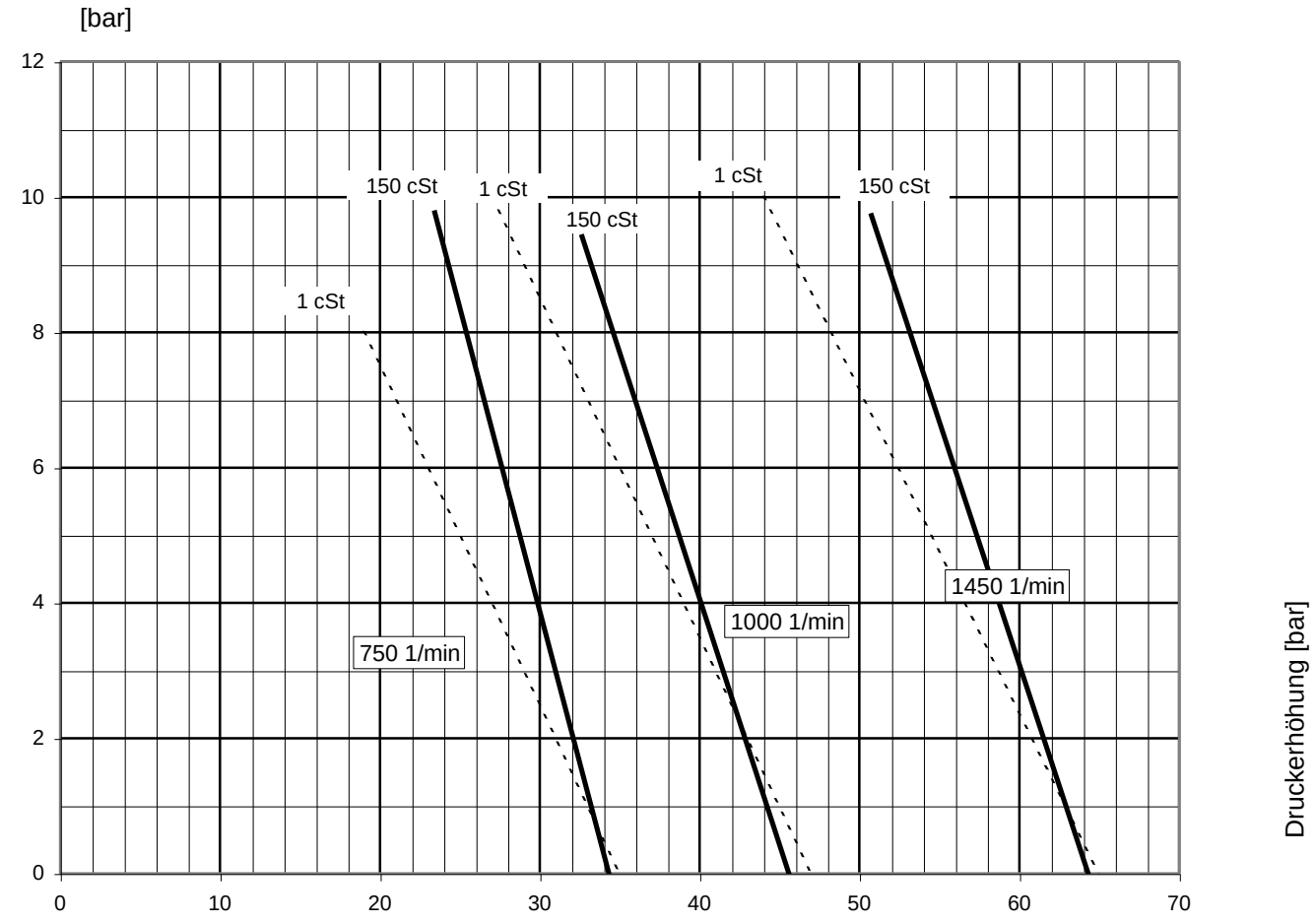


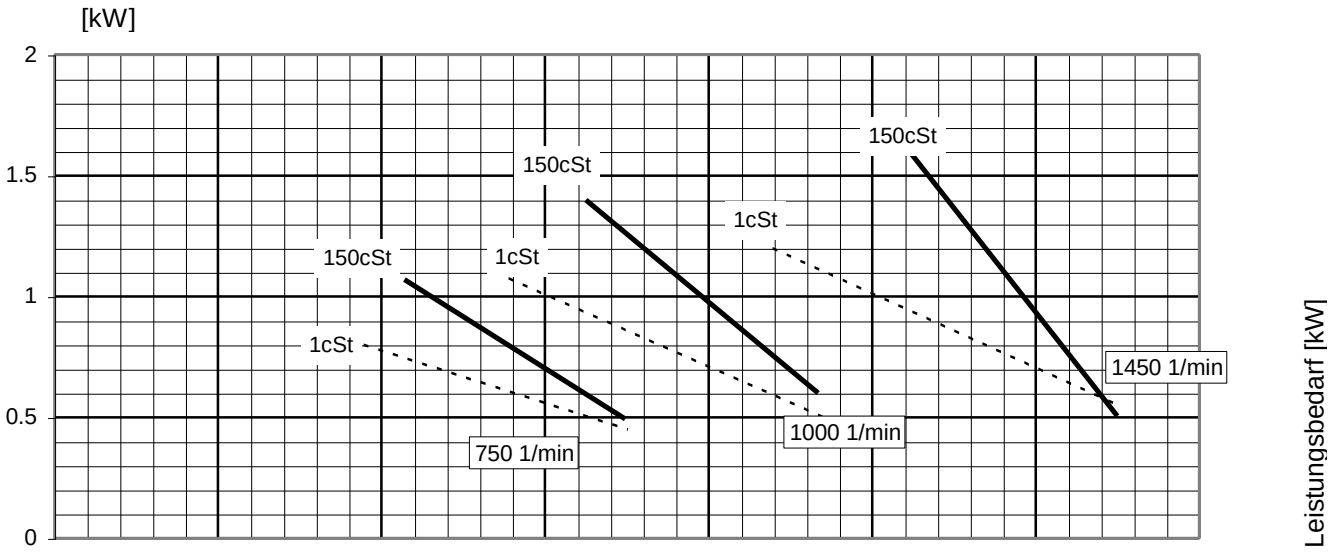


SAWA Pumpentechnik AG	**CH - 9113 Degersheim**	**ZR4-35-8001-4X**

SAWA PUMPEN	**Zahnradpumpe** **Gear pump** **Typ : ZR4 - 45** **Type : ZR4 - 45**	Nummer : KL Revision : E / 06.02 Seite 1 / 1

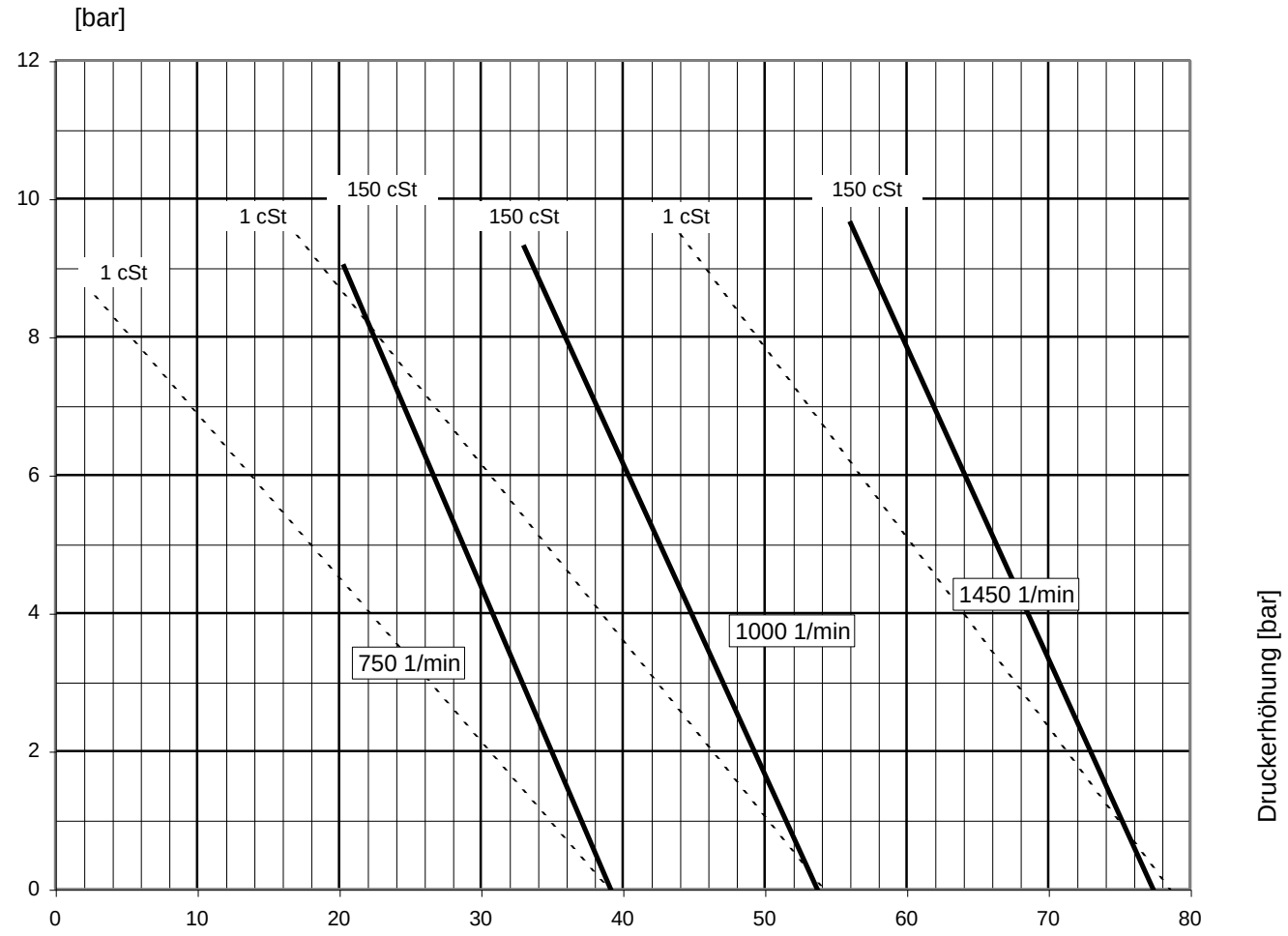
Drehzahl / speed : 1450 / 1000 / 750 1/min
Viskosität / viscosity : 1 / 150 mm²/s

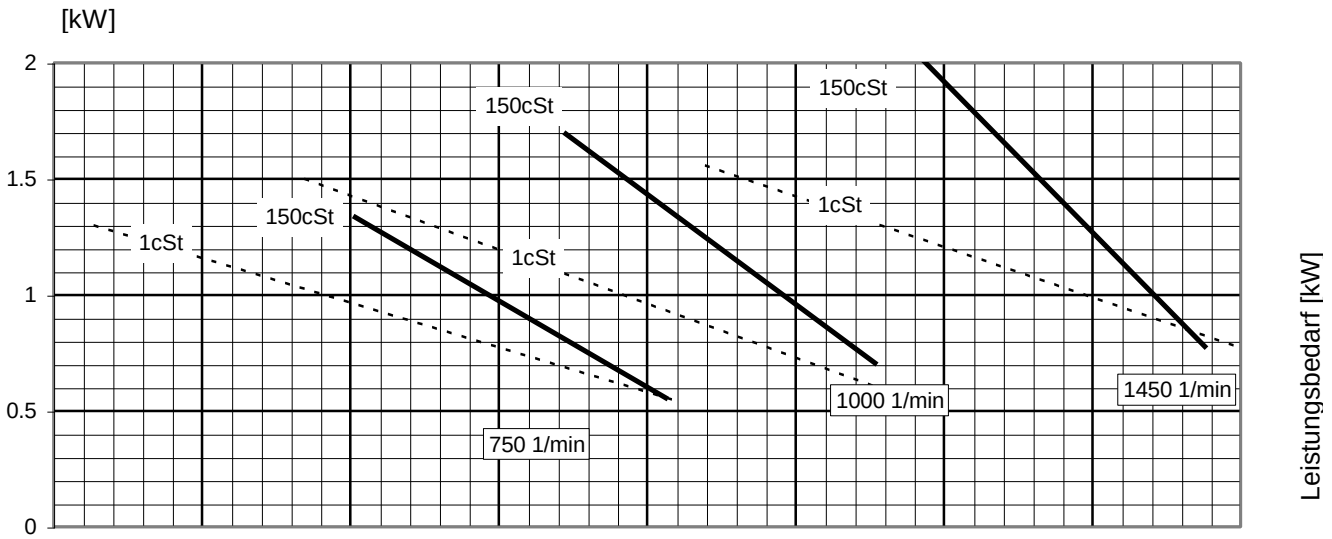




Sawa PUMPEN	**Zahnradpumpe** **Gear pump** **Typ : ZR4 - 55** **Type : ZR4 - 55**	Nummer : KL Revision : E / 06.02 Seite 1 / 1

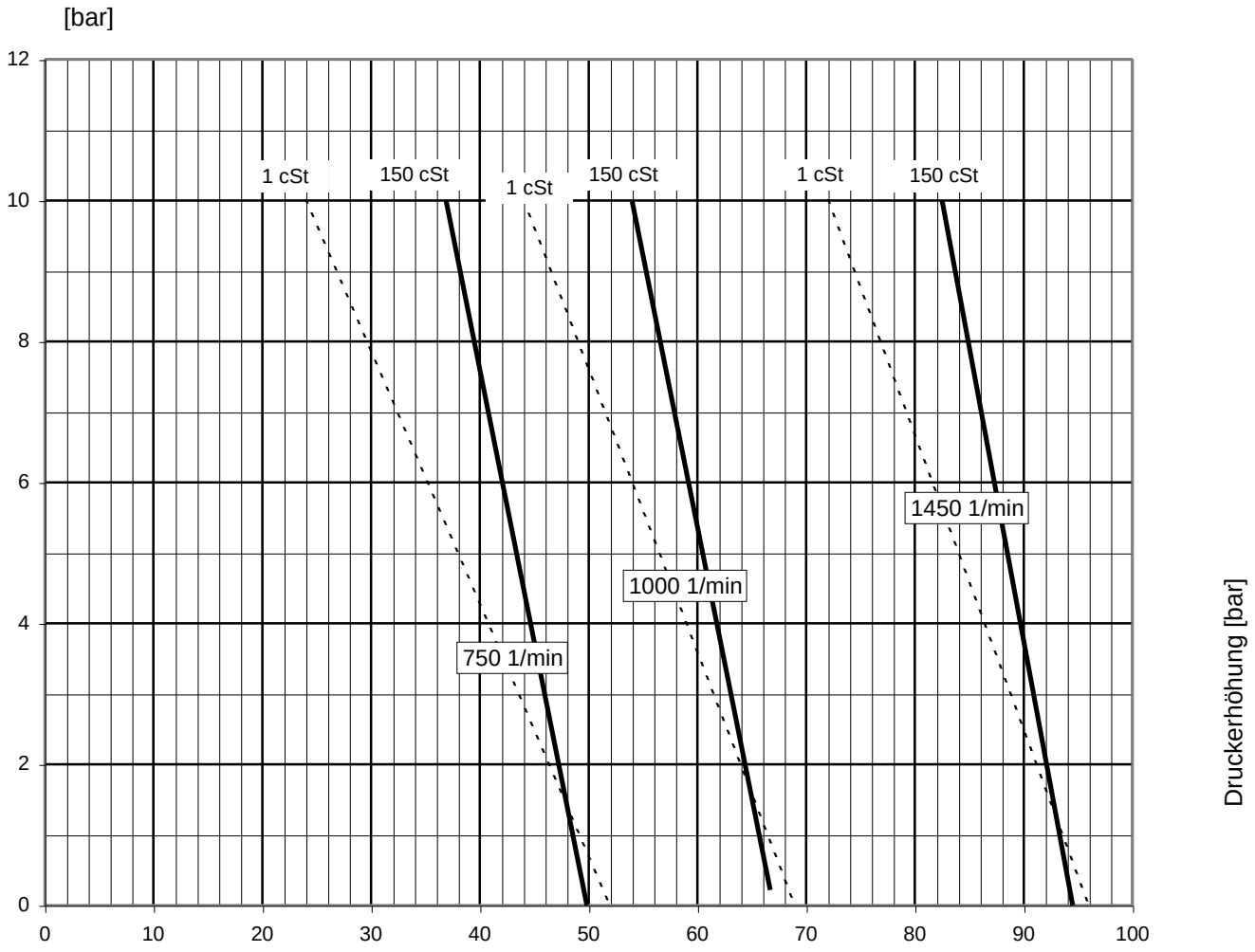
Drehzahl / speed : 1450 / 1000 / 750 1/min
Viskosität / viscosity : 1 / 150 mm²/s

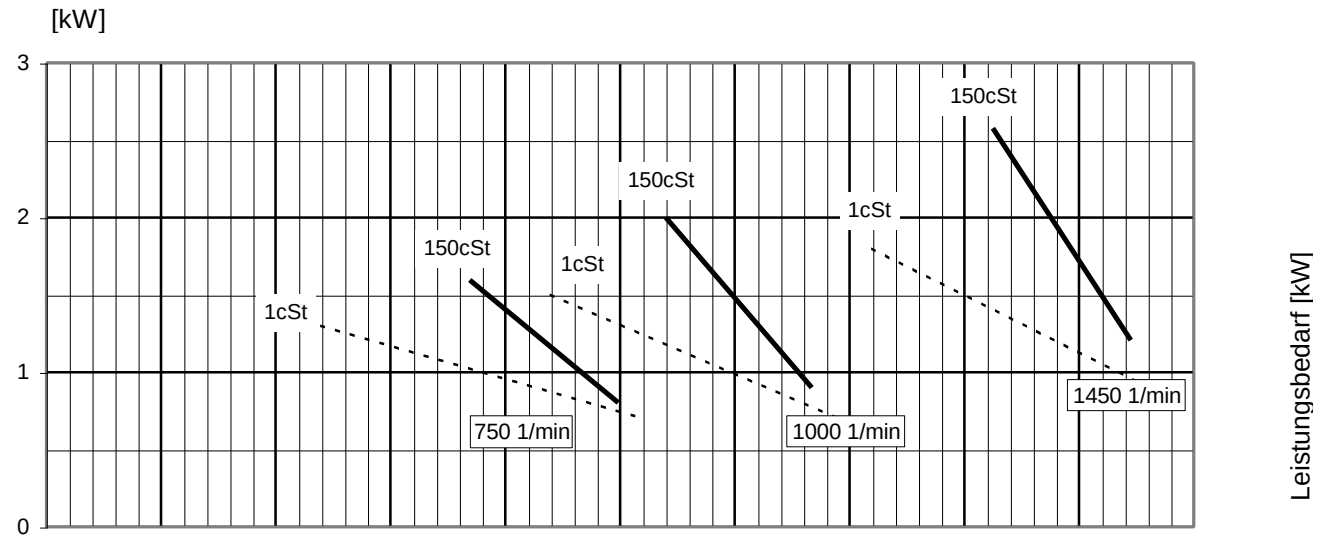




Sawa PUMPEN	**Zahnradpumpe** **Gear pump** **Typ : ZR5 - 45** **Type : ZR5 - 45**	Nummer : KL Revision : E / 06.02 Seite 1 / 1

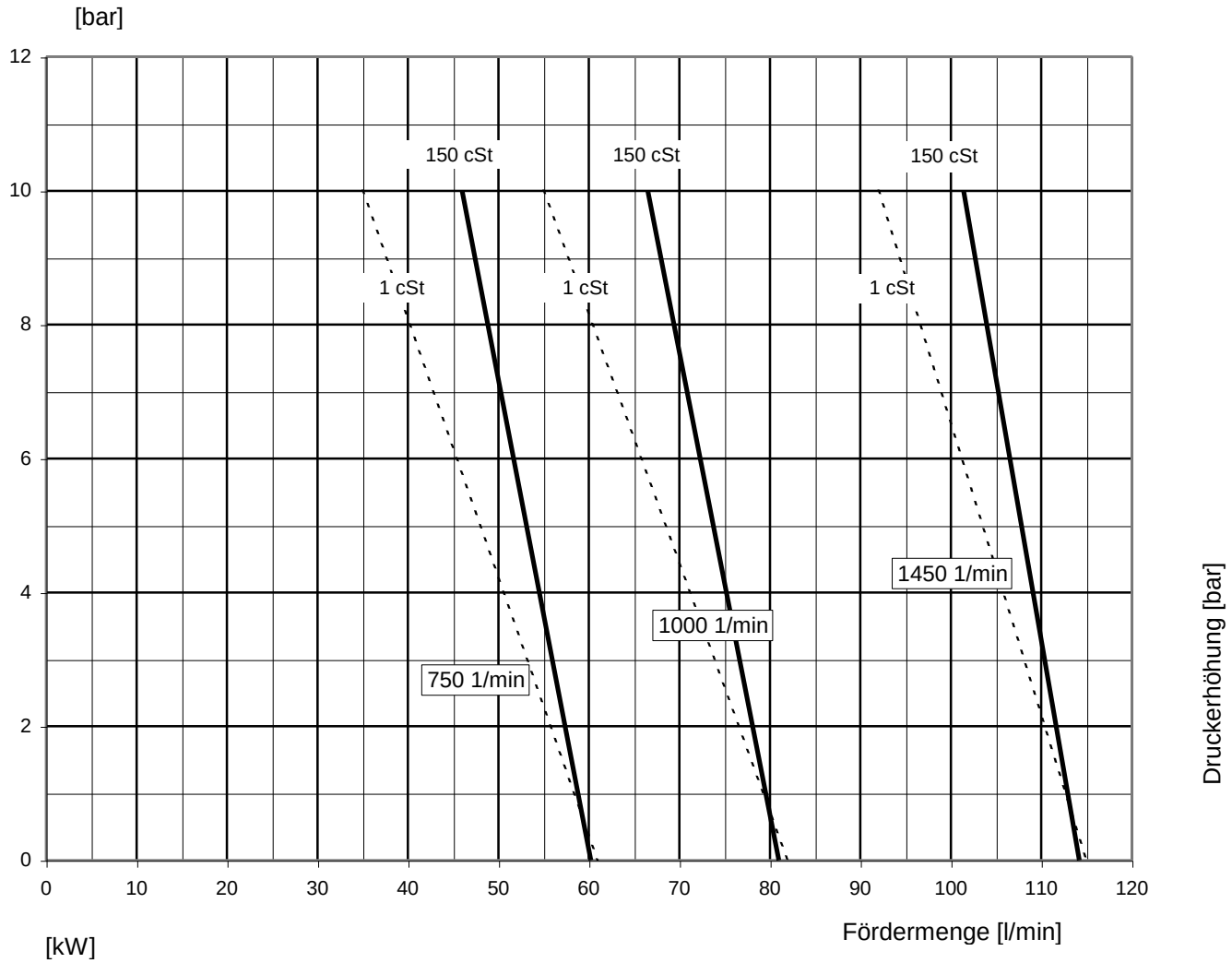
Drehzahl / speed : 1450 / 1000 / 750 1/min
Viskosität / viscosity : 1 / 150 mm²/s

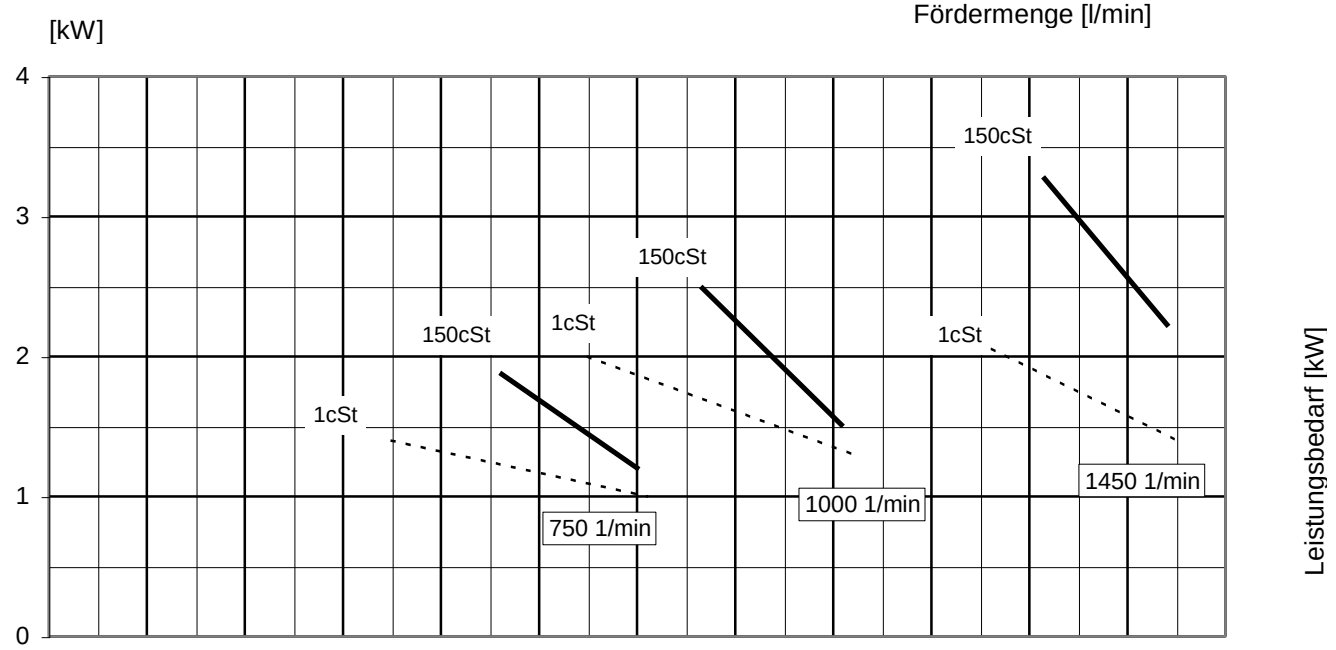




Sawa PUMPEN	**Zahnradpumpe** **Gear pump** **Typ : ZR5 - 55** **Type : ZR5 - 55**	Nummer : KL Revision : E / 06.02 Seite 1 / 1

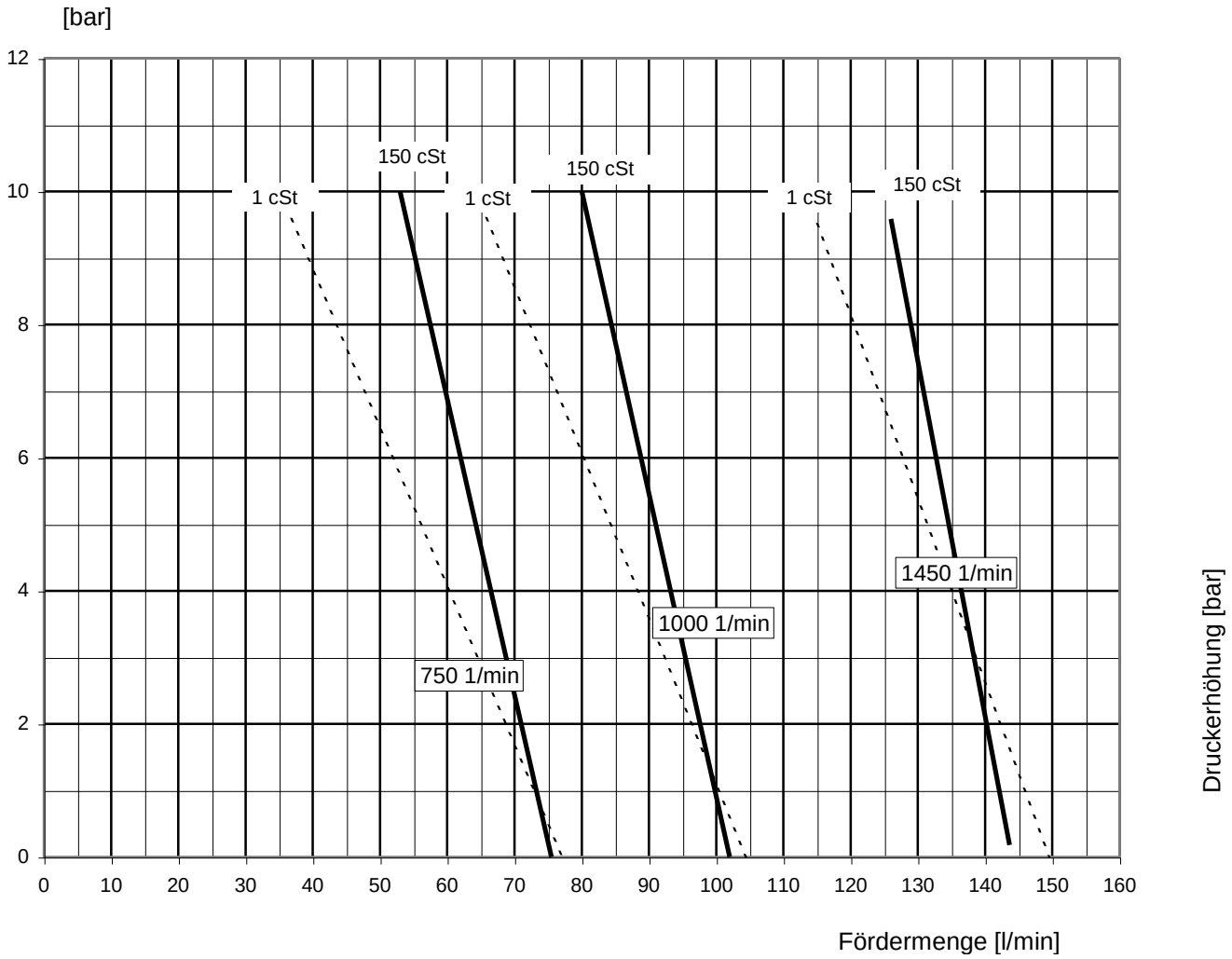
Drehzahl / speed : 1450 / 1000 / 750 1/min
Viskosität / viscosity : 1 / 150 mm²/s

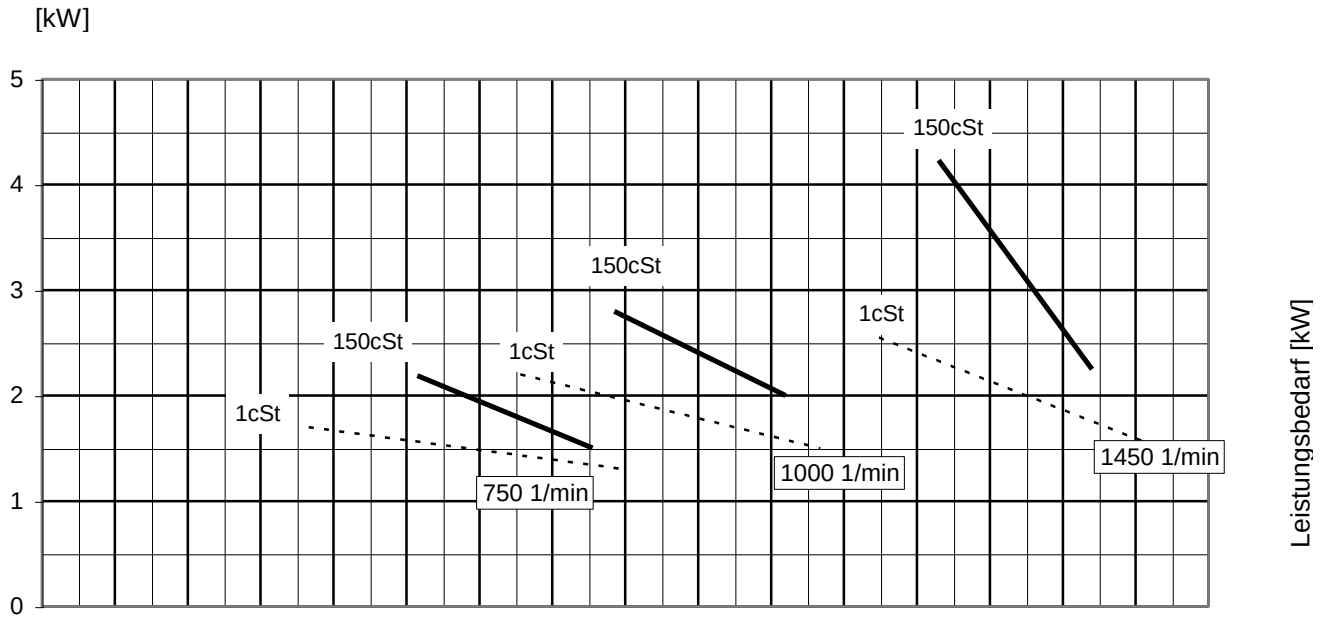




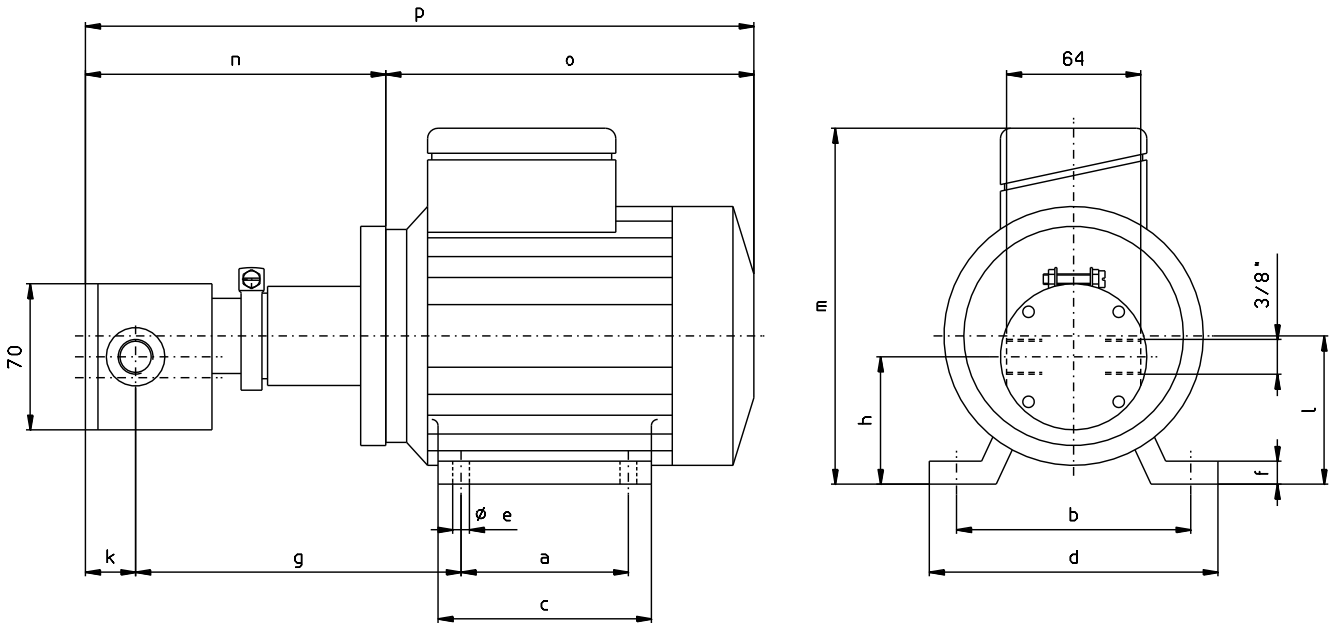
Sawa PUMPEN	**Zahnradpumpe** **Gear pump** **Typ : ZR5 - 70** **Type : ZR5 - 70**	Nummer : KL Revision : E / 06.02 Seite 1 / 1

Drehzahl / speed : 1450 / 1000 / 750 1/min
Viskosität / viscosity : 1 / 150 mm²/s





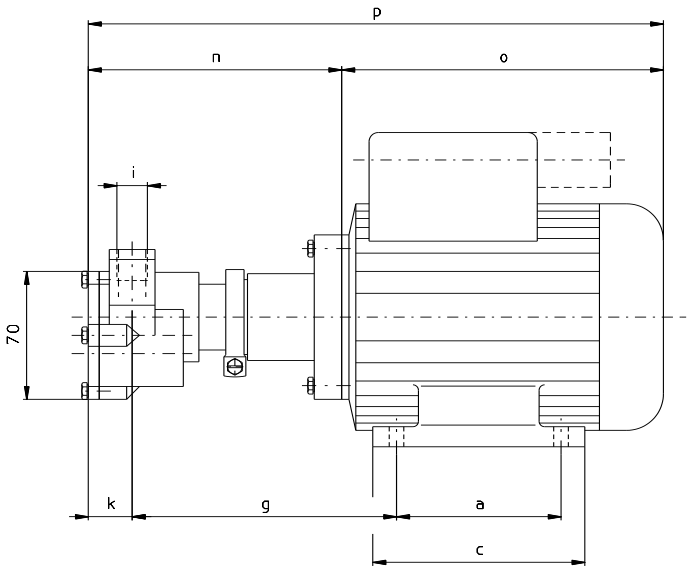
Zahnradpumpe Typ : ZRA-....-RRZE ZRA 5 , ZRA 8 und ZRA 15	**Gear Pump** Type : ZRA-....-RRZE ZRA 5 , ZRA 8 and ZRA 15	Nummer : MB Revision : C / 07.03 Seite 1 / 1

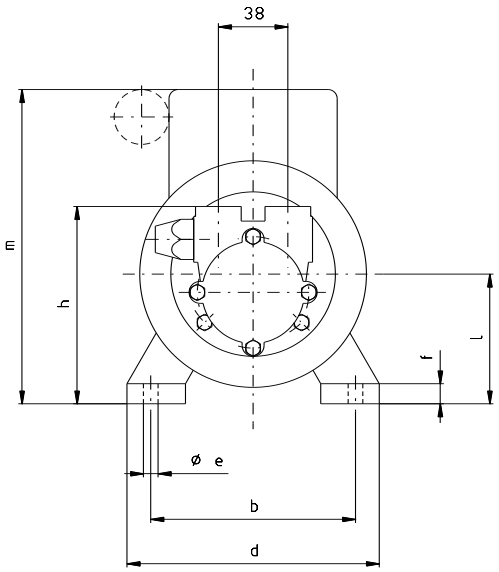


Typ	a	b	c	d	e	f	g	h	i	k	l	m	n	o	p	P [kW]	n [1/min]
ZRA - 5	90	112	116	138	8	11	164,5	61	Rp 3/8“	24	71	175	144	176	320	0,37	1450
ZRA – 5	**80**	**110**	**98**	**134**	**9**	**15**	**145.6**	**48**	**Rp 3/8“**	**24**	**58**	**200**	**170**	**320**	**490**	**0.25**	**141**
ZRA - 8	90	112	116	138	8	11	164,5	61	Rp 3/8“	24	71	175	144	176	320	0,37	1450
ZRA -15	90	112	116	138	8	11	164,5	61	Rp 3/8“	24	71	175	144	176	320	0,37	1450

Fettgedruckt = mit Stirnradgetriebemotor

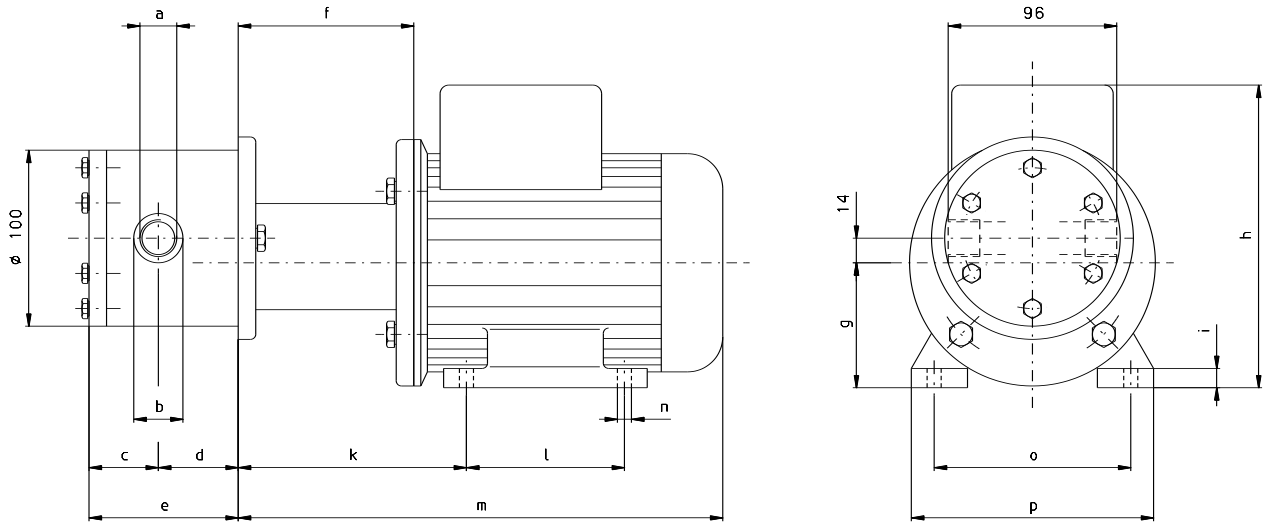
SAWA PUMPEN	**Zahnradpumpe** Typ : A2-MRZE	**Gear Pump** Type : A2-MRZE	Nummer : MB Revision : B / 06.02 Seite 1 / 1





Typ	a	b	c	d	e	f	g	h	i	k	l	m	n	o	p	P [kW]	n [1/min]
A2	90	112	116	138	8	11	164,5	117,5	Rp 3/8“	24	71	175	144	176	320	0,55	2900
A2	100	125	125	168	10	12	187,5	126,5	Rp 3/8“	24	80	191	167	209	376	1,10	2900
A2	100	140	130	178	10	14	187,5	136,5	Rp 3/8“	24	90	211	167	226	393	1,50	2900
A2	90	112	116	138	8	11	164,5	117,5	Rp 3/8“	24	71	175	144	176	320	0,37	1450
A2	125	140	155	178	10	14	187,5	136,5	Rp 3/8“	24	90	211	167	248	415	0,55	700
A2	90	112	116	132	7	11	164,5	117,5	Rp 3/8“	24	71	189	144	260	404	0,37	1450 (1 x 230V)

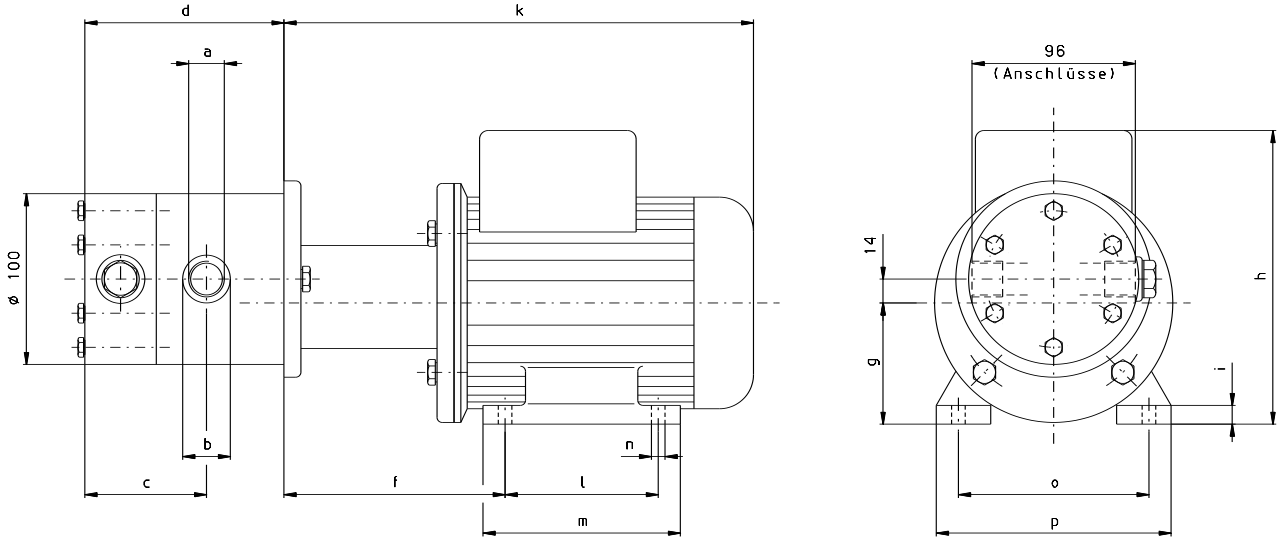
Sawa PUMPEN	**Zahnradpumpe** Typ : ZRW2-GRZE **Gear Pump** Type : ZRW2-GRZE	Nummer : MB Revision : C / 06.02 Seite 1 / 1



Typ	a	b	c	d	e	Gewicht [kg]
ZRW2-12	Rp 3/8“	22,5	33	39	72	4,0
ZRW2-18	Rp 3/8“	22,5	36	42	78	4,4
ZRW2-25	Rp ½“	27,5	39,5	45,5	85	4,9
ZRW2-30	Rp ½“	27,5	42	48	90	5,2

Motor	P [kW]	n [1/min]	f	g	h	i	k	l	m	n	o	p	q	r	s	Gewicht [kg]
71K-4	0,25	1450	100	71	175	11	145	90	276	8	112	138				11.0
71G-4	0,37		100	71	175	11	145	90	276	8	112	138				12.0
80K-4	0,55		110	80	191	12	160	100	319	10	125	168				15.0
80G-4	0,75		110	80	191	12	160	100	319	10	125	168				16.0
80K-6	0,37	1000	110	80	191	12	160	100	319	10	125	168				15.0
80G-6	0,55		110	80	191	12	160	100	319	10	125	168				17.0
90S-6	0,75		120	90	211	14	176	100	346	10	140	178				22.0
90L-6	1,10		120	90	211	14	176	125	368	10	140	178				25.0
80G-8	0,25	750	110	80	191	12	160	100	319	10	125	168				17.0
90S-8	0,37		120	90	211	14	176	100	346	10	140	178				21.0
90L-8	0,55		120	90	211	14	176	125	368	10	140	178				24.0
100L-8	0,75		130	100	228	15	193	140	402	12	160	192				30.0

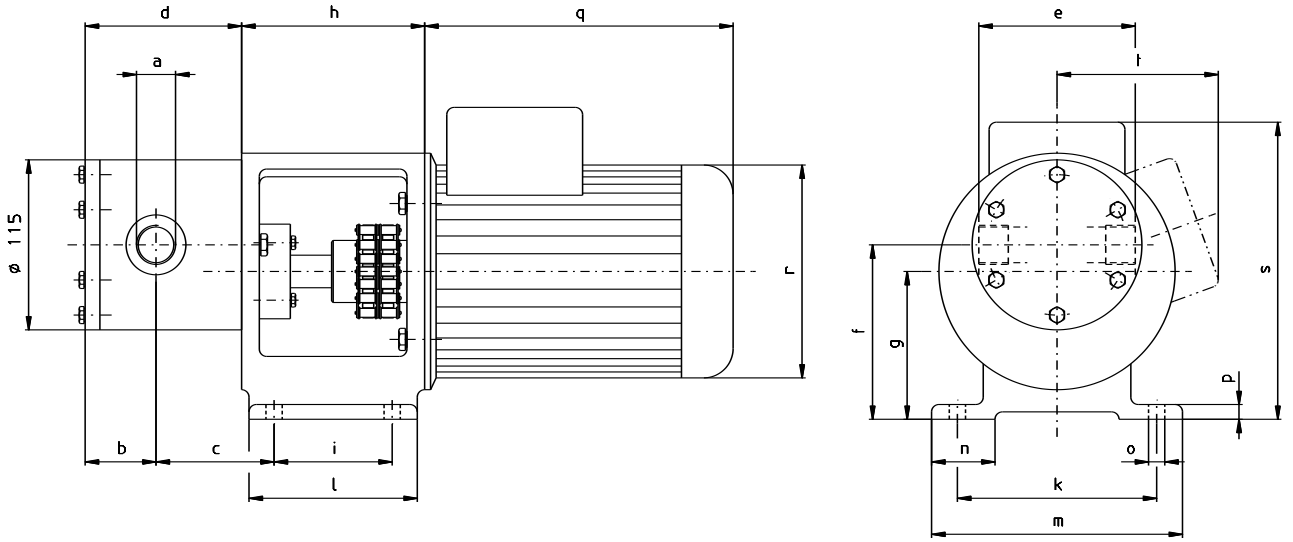
Sawa PUMPEN	**Zahnradpumpe** Typ : ZRW2-GRZE mit Überdruckventil	**Gear Pump** Type : ZRW2-GRZE with excess pressure valve	Nummer : MB Revision : A / 09.98 Seite 1 / 1



Typ	a	b	c	d	Gewicht [kg]
ZRW2-12	Rp 3/8“	22,5	65	104	5,6
ZRW2-18	Rp 3/8“	22,5	68	110	6,0
ZRW2-25	Rp ½“	27,5	71,5	117	6,5
ZRW2-30	Rp ½“	27,5	74	122	6,8

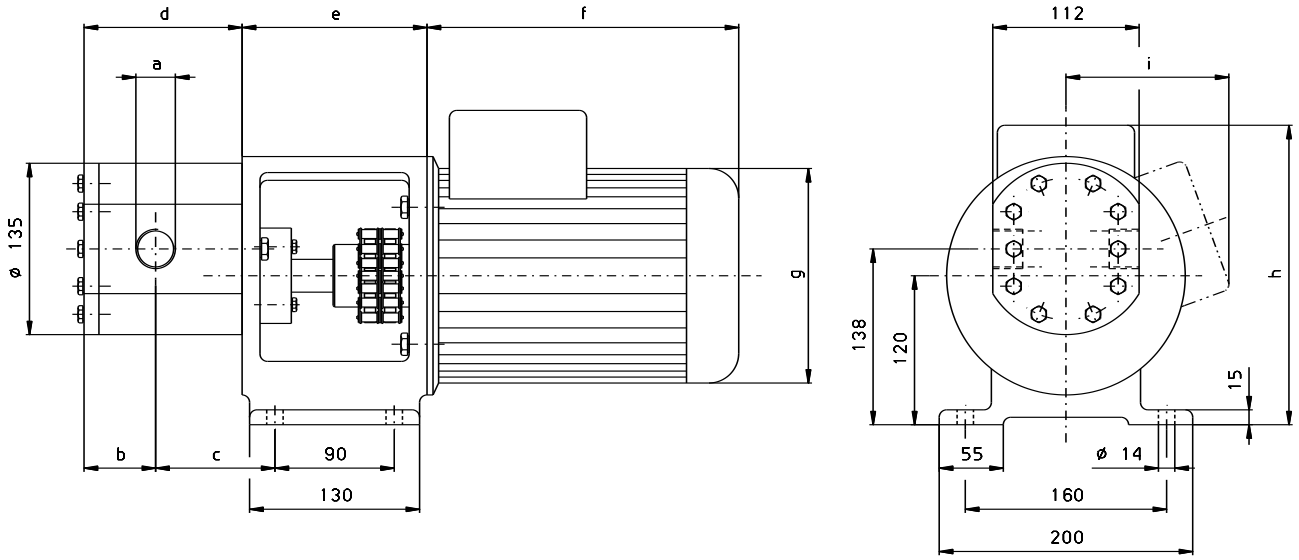
Motor	P [kW]	n [1/min]	f	g	h	i	k	l	m	n	o	p	q	r	s	Gewicht [kg]
71K-4	0,25	1450	145	71	175	11	276	90	116	8	112	138				11,0
71G-4	0,37		145	71	175	11	276	90	116	8	112	138				12,0
80K-4	0,55		160	80	191	12	319	100	125	10	125	168				15,0
80G-4	0,75		160	80	191	12	319	100	125	10	125	168				16,0
80K-6	0,37	1000	160	80	191	12	319	100	125	10	125	168				15,0
80G-6	0,55		160	80	191	12	319	100	125	10	125	168				17,0
90S-6	0,75		176	90	211	14	346	100	130	10	140	178				22,0
90L-6	1,10		176	90	211	14	368	125	130	10	140	178				25,0
80G-8	0,25	750	160	90	191	12	319	100	125	10	125	168				17,0
90S-8	0,37		176	100	211	14	346	100	130	10	140	178				21,0
90L-8	0,55		176	100	211	14	368	125	130	10	140	178				24,0
100L-8	0,75		193	112	228	15	402	140	175	12	160	192				30,0

Zahnradpumpe Typ : ZRF3 und ZRM3	**Gear Pump** Type : ZRF3 and ZRM3	Nummer : MB Revision : E / 06.02 Seite 1 / 1



Typ	a	b	c	d	e	Gewicht [kg]
ZRF/M3-18	Rp ¾“	43	73	94	106	7,0
ZRF/M3-32	Rp ¾“	50	80	108	106	8,0
ZRF/M3-45	Rp 1“	56	87	121	102	8,7

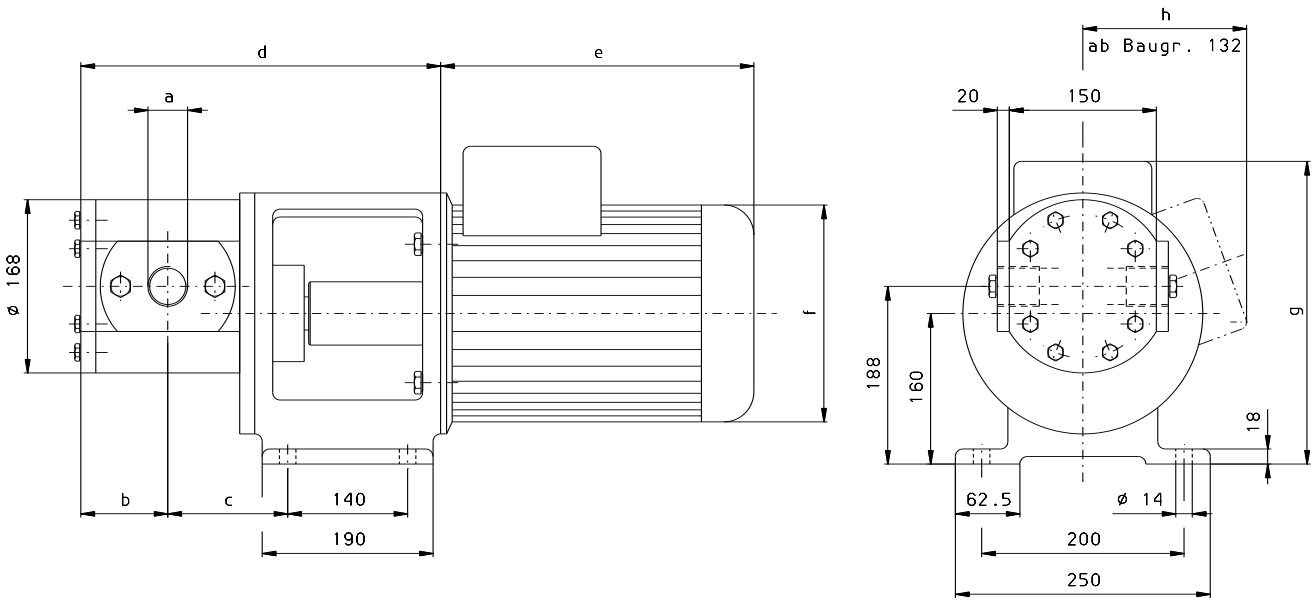
Motor	P [kW]	n [1/min]	f	g	h	i	k	l	m	n	o	p	q	r	s	t	Gewicht [kg]
80G-4	0,75		118	100	124	80	135	114	170	43	11	10	209	139	211	--	18
90S-4	1,10		118	100	134	80	135	114	170	43	11	10	226	157	221	--	23
90L-4	1,50	1450	118	100	134	80	135	114	170	43	11	10	248	157	221	--	26
100L-4	2,20		138	120	144	90	160	130	200	55	14	15	272	177	248	--	35
100LX-4	3,00		138	120	144	90	160	130	200	55	14	15	299	196	258	--	41
112M-4	4,00		138	120	144	90	160	130	200	55	14	15	333	196	258	--	48
90S-6	0,75		118	100	134	80	135	114	170	43	11	10	226	157	221	--	24
90L-6	1,10		118	100	134	80	135	114	170	43	11	10	248	157	221	--	27
100L-6	1,50	1000	138	120	144	90	160	130	200	55	14	15	272	177	248	--	35
112M-6	2,20		138	120	144	90	160	130	200	55	14	15	299	196	258	--	45
112M-6	3,00		138	120	144	90	160	130	200	55	14	15	351	255	--	200	56
132M-6	4,00		138	120	164	90	160	130	200	55	14	15	441	280	--	218	92
100L-8	0,75		138	120	144	90	160	130	200	55	14	15	272	177	248	--	34
100LX-8	1,10		138	120	144	90	160	130	200	55	14	15	299	196	258	--	39
112M-8	1,50	750	138	120	144	90	160	130	200	55	14	15	299	196	258	--	45
112M-8	2,20		138	120	144	90	160	130	200	55	14	15	351	255	--	200	56
132M-8	3,00		138	120	164	90	160	130	200	55	14	15	441	280	--	218	91
132M-8	4,00		138	120	164	90	160	130	200	55	14	15	441	280	--	218	92



Pumpentyp	a	b	c	d	Gewicht [kg]
ZRF/M4-35	Rp 1“	58,5	87,5	124	10,5
ZRF/M4-45	Rp 1“	63,5	92,5	134	11,5
ZRF/M4-55	Rp 1 ¼“	68,5	97,5	144	12,0

Motor	P [kW]	n [1/min]	e	f	g	h	i		Gewicht [kg]
90S-4	1,10	1450	134	226	157	241	--		26
90L-4	1,50		134	248	157	241	--		29
100L-4	2,20		144	272	177	248	--		37
100LX-4	3,00		144	299	196	258	--		43
112M-4	4,00		144	333	196	258	--		51
90L-6	1,10	1000	134	248	157	241	--		31
100L-6	1,50		144	272	177	241	--		38
112M-6	2,20		144	229	196	258	--		47
112M-6	3,00		144	351	255	--	200		59
132M-6	4,00		164	441	280	--	218		95
100LX-8	1,10	750	144	299	196	258	--		42
112M-8	1,50		144	299	196	258	--		47
112M-8	2,20		144	351	255	--	200		58
132M-8	3,00		164	441	280	--	218		94
132M-8	4,00		164	441	280	--	218		95

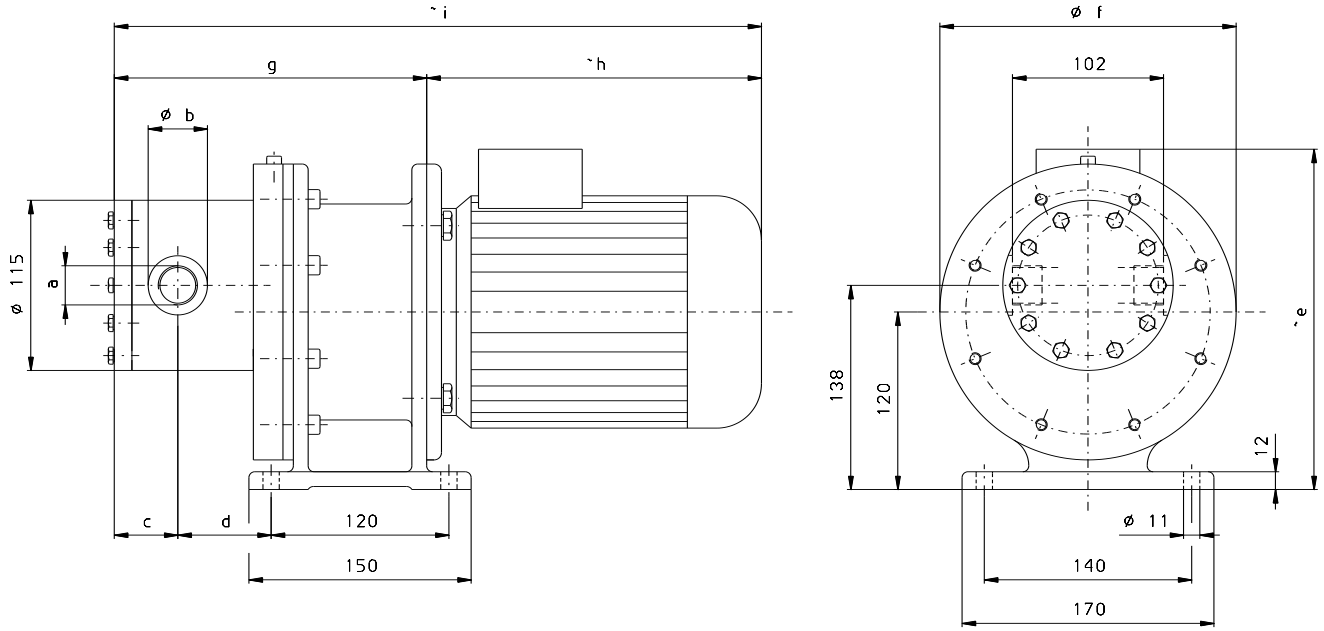
Zahnradpumpe Typ : ZRF5 und ZRM5	**Gear Pump** Type : ZRF5 and ZRM5	Nummer : MB Revision : E / 06.02 Seite 1 / 1



Pumpentyp	a	b	c	d	Gewicht [kg]
ZRF/M5-45	Rp 1 ¼“	72,5	104,5	347	24
ZRF/M5-55	Rp 1 ½“	77,5	109,5	357	25
ZRF/M5-70	Rp 1 ½“	85	117	372	27

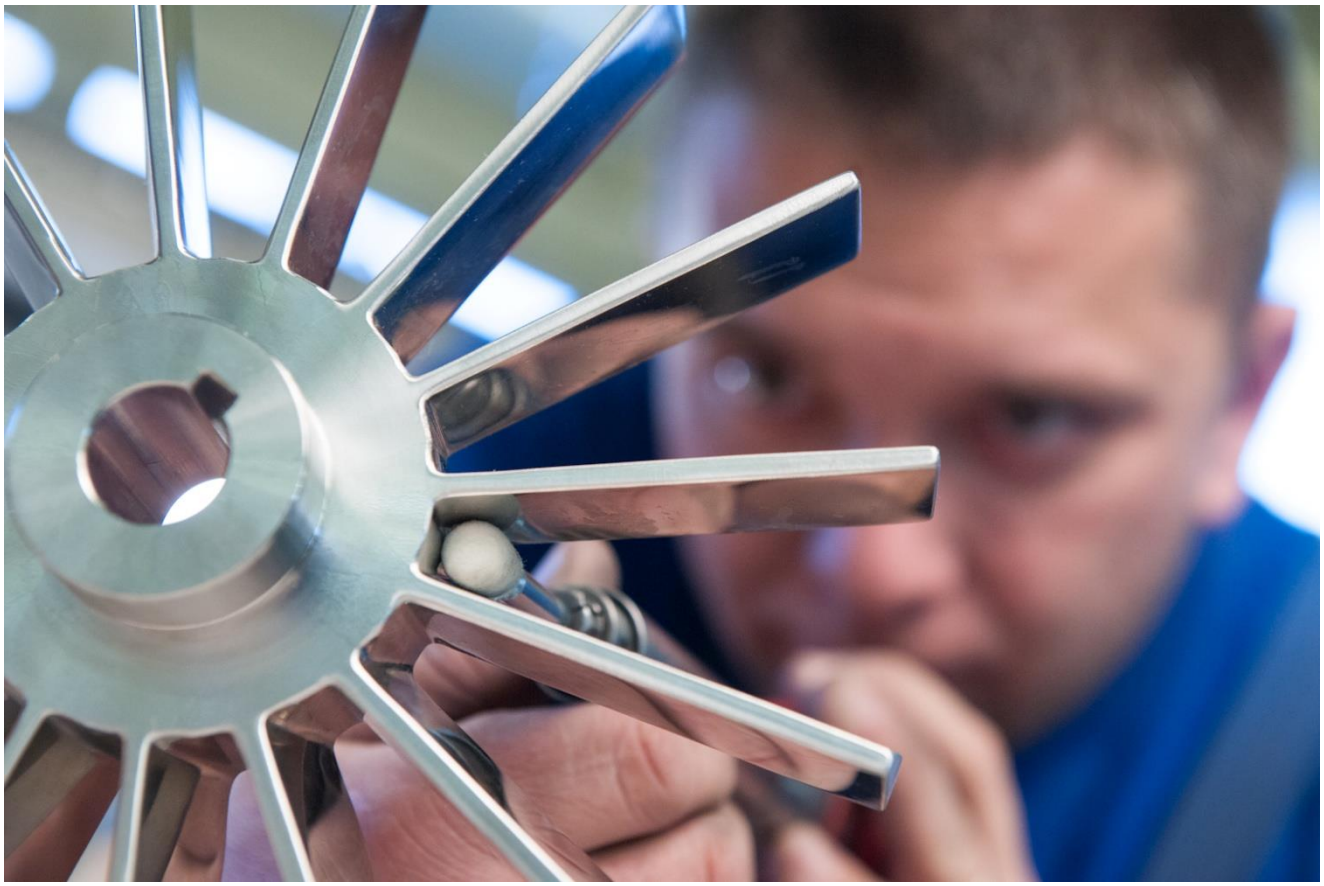
Motor	P [kW]	n [1/min]	e	f	g	h			Gewicht [kg]
100L - 4	2,20	1450	272	177	288	--			43
100LX - 4	3,00		299	196	298	--			50
112M - 4	4,00		333	196	298	--			57
132S - 4	5,50		403	280	300	218			85
100L - 6	1,50	1000	272	177	288	--			44
112M - 6	2,20		299	196	298	--			53
132S - 6	3,00		403	280	300	218			83
132M - 6	4,00		441	280	300	218			97
132M - 6	5,50		441	280	300	--			97
112M - 8	1,50	750	299	196	298	--			53
132S - 8	2,20		403	280	300	218			83
132M - 8	3,00		441	280	300	218			96
132M - 8	4,00		441	280	300	218			96

SAWA PUMPEN	**Zahnradpumpe mit Magnetkupplung** Typ : ZRP3-RRZE	**Gear Pump with Magnet Coupling** Type : ZRP3-RRZE	Nummer : MB Revision : E / 06.02 Seite 1 / 1



Typ	a	b	c	d	e	f	g	h	i	k	l	m	n	o	P [kW]	n [1/min]
ZRP3-18	Rp 3/4“	40,5	43	63	239	200	211	227	438						0,75	1450
ZRP3-32	Rp 3/4“	40,5	50	70	239	200	225	227	452						0,75	1450
ZRP3-32	Rp 3/4“	40,5	50	70	241	200	225	248	473						0,55	700
ZRP3-45	Rp 1“	50	56,5	76,5	259	200	238	243	481						1,10	1450
ZRP3-45	Rp 1“	50	56,5	76,5	259	200	238	299	537						1,50	700

Contents



1. SAWA pumps for the pharmaceutical industry

As guidelines for the developement of pumps for the pharmaceutical industry dienen die directives of the *Food and Drug Administration FDA*, the *Good Manufacturing Practices GMP*, the *European Hygienic Engineering and Design Group EHEDG, the 3-A Sanitary Standards* etc. as well as consultations with manufacturers of mechanical seals and aseptic connections.

Particular attention is paid at SAWA pumps for the pharmaceutical industry on the follwing features:

+ Used materials
+ Surface roughness
+ Dead space free / Gap-free design
+ Flow optimisation
+ Complete draining
+ Cleanability
+ Documentaton

Illustration 1 – Self-priming centrifugal pump HDP190 in pharmaceutical design with complete draining velve.

SAWA pharmaceutical pumps are used in various application areas of the pharmaceutical industry, for example for the manufacturing of infusion solutions, for serum and vaccines and for pumping of fluids for example „Water for Injection“. The pumps are made of solid stainless steel 1.4435 / 316 or Duplex 1.4462.

Additional areas of application are covered with the SAWA pump type HDP (self-priming centrifugal pump - illustration 1) i.a. as CIP return pump. In this use are an excellent suction capacity and an insensitiveness of the cavitation very important.

The pumps are characterised by their gentle delivery, simplicity of construction, reliability and thus very low life cycle costs.

Illustration 2 – Centrifugal pump LEP190 in pharmaceutical design

Options:
+ ATEX: for zones 1, 2, 21, 22
+ Magnetic coupling: hermetically sealed design for crystallising, toxic, flammable and environmentally hazardous liquids
+ vertical option: for easy draining
+ Bearing support option: for special requirements
+ Inducer: for low NPSH values < 1 m
+ Mobile: version with sturdy trolley

2. Material - stainless steel 1.4435 / 316L

SAWA pumps for using in the pharmaceutical industry are made of solid austenitic Cr-Ni-Mo-steel (EN WNr. 1.4435 / AISI 316L / Designation X2CrNiMo18-14-3).

+ Good sterilization
+ Good resistance in using of cleaning agents
+ Medically harmless
+ Good surface quality achievable
+ ideal for fast temperature changes due to robust execution (e.g. for CIP cleaning)

The composition of this material is similar to the widely spread material 1.4404 and differ in the elevated content of Mo and Ni substance:

+ The generation of δ-ferrite in the structure is reduced, content < 1%
+ Smaller risk of „rouging“
+ Not magnetizable
+ Higher resistance to pitting

Comparison of the chemical composition:

Material	C max.	Si max.	Mn max.	S max.	Cr	Ni	Mo	Ti	P max.	N max.	Fe
MNu. 1.4404 AISI 316L	0.03	1.00	2.00	0.03	16.5 - 18.5	10.0 - 13.0	2.0 - 2.5				
MNu. 1.4435 AISI 316L	0.03	1.00	2.00	0.025	17.0 - 18.5	12.5 - 14.0	2.5 - 3.0		0.045	0.10	BN II <0.5
MNu. 1.4571 AISI 316 Ti	0.07	1.00	2.00	0.03	16.5 - 18.5	10.0 - 13.0	2.0 - 2.5	0.5x% C	0.045	0.10	
MNu. 1.4539 AISI 316	0.02	0.70	2.00	0.010	19.0 - 21.0	24.0 - 26.0	4.0 - 5.0	0.5x% C		0.15	
MNu. 1.4462 AISI 318 LN	0.03	1.00	2.00	0.015	21.0 - 23.0	4.5 - 6.5	2.5 - 3.5	0.5x% C	0.035	0.10	

At customer requests the material characteristics can be certified by the test certificate 3.1 DIN EN 10204.

3. Sealing materials

In the selection of static and dynamic seals the requirement is matched to the FDA compliance. This will ensure that only materials are used which have no negative impact on the liquid. In addition in the choice of the sealing material the resistance, the sterilization and the abrasion resistance will be considered.

Static sealings (gasket) – FDA compliant elastomers

+ EPDM
+ PTFE
+ FEP
+ FFKM (e.g. Kalrez) / FPM / FKM
+ According customer‘s specifications

Dynamic seals (mechanical seals):

The choice of the mechanical seals is made on the liquid or on the customer's specifications for e.g. SiC/SiC, Carbon/SiC, Hm/SiC, Hm/Hm, etc.

+ Single mechanical seal (see illustration 3)
+ Double-acting mechanical seal with flushing, with static or pressure overlay
+ Choice of material pairing
+ Ferrite content < 1 %
+ Surface roughness < 0.8 µm

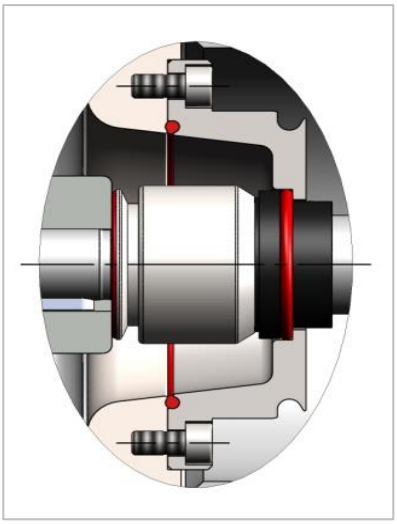


Illustration 3 – Sterile mechanical seal

4. Surface roughness

The surfaces of the SAWA stainless steel pumps for the pharmaceutical and sterile technology are treated to customer requirements, so that the parts which are in contact with the product can have a surface roughness of up to Ra < 0.4 µm. SAWA stainless steel pumps for the pharmaceutical and sterile technology have standard a surface roughness of Ra < 0.8 µm.

Optionally, the surface roughness can be attested by a measurement protocol (see illustration 4)

To achieve the required surface roughness, the pump parts are treated according to:

Illustration 4 – Measurement of the surface roughness

1. Machine processing as turning and milling
2. Mechanical processing as grinding and polishing – avoide errors such as cracks and scratches.
3. Irrespective of the requirement of the Ra-value, the pump parts in the finishing are standard electropolished.

5. Dead space / Gap-free design

SAWA pumps are designed that no dead spaces in the pump inerior are available:

+ Dead space free design in the mechanical seal area
+ Gap-free design including the impeller seal, cover gasket etc.

6. Flow optimization

The aerodynamically optimized design results in an efficient and quiet liquid in the required application and a gentle pumping. The design ensures hygienic operation and a quick cleaning of the pump. The conical seal housing is generous in size and meets optimum flushing of the CIP-compliant and sterilizable mechanical seal. In addition, the ideal flow conditions ensure flushing of the O-rings.

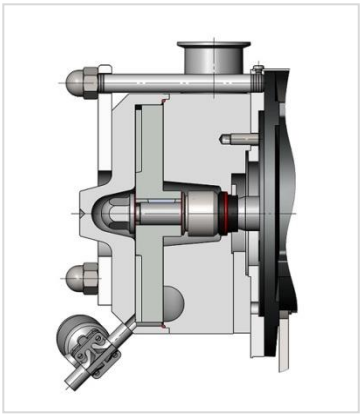


Illustration 5 – Centrifugal pump HDP with draining valve

7. Draining and new design without dead space

7.1 Classic draining

The pump design is easy to clean and guarantees a complete draining of the pump. The liquid flows to the lowest point of the pump and can be emptied there through a valve (see illustration 5). The connections for the complete draining are selected according to customer's requirement, e.g. tri-clamp or diaphragm valve manually or automatically.

7.2 Redefining residual draining - revolutionary design invented by SAWA

As the leading supplier of 316 L / 1.4435 stainless steel pumps for hygienic and sterile applications in recent years, SAWA Pumpentechnik AG has been frequently asked about to the possibility to offer an aseptic and space-free drainage valve.

Our long-time technical director, Roger Egger, has taken up this challenge. SAWA Pumpentechnik AG is now able to offer an interesting solution. Developed internally, the drainage valve is made of a solid 1.4435 stainless steel block and can be mounted directly on the body of our pumps. The sealing of the valve seat is made inside the pump body via an O-ring, which is in contact with the liquid. By this type of construction, the dead space between to the pump body and the drain valve can be completely eliminated (see illustration 6 and 8).

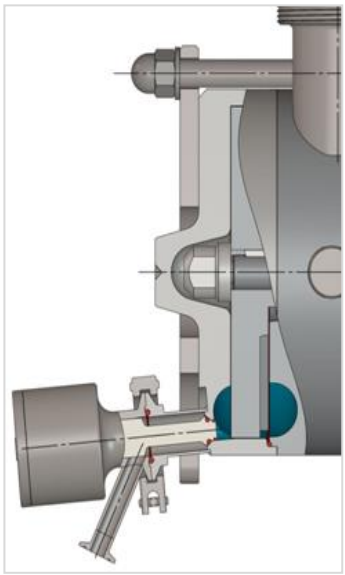


Illustration 6 - Centrifugal Pump HDP190 with new aseptic and revolutionary drain valve without dead space

Positioning of the drainage valve
The position of the residual drainage valve is variable. It can be chosen between a 5 ° inclination on the side, or up to 90 ° downwards (see illustration 7).

Illustration 7 - LEP170 Centrifugal pump with new aseptic and revolutionary drainage valve without dead space

The main advantages

+ Execution designed for CIP / SIP cleaning
+ PN16 operating pressure (pump side)
+ Made of solid material 1.4435 / 316 L
+ Surface roughness down to < Ra 0.2 µm
+ All surfaces are electropolished
+ Variable mounting positions (see illustration 7 and 8)
+ Low maintenance
+ Very easy change of O-rings
+ O-rings in all common materials
  for example EPDM, FFKM, FPM, FKM
+ Pneumatic visual position indicator or
  electronically with 4 LEDs
+ Easy integration with existing control (relay)

Illustration 8 – sealing without dead space

7.3 Other drain solution

Vertical installation

In the vertical installation, the internal circulation acts to the sliding surfaces on the mechanical seal.

This achieves a clean CIP and SIP cleaning.

The pump in vertical installation can be drained down through the suction port.

8. Cleanability

SAWA pharmaceutical and sterile pumps are easy and fast to clean due to the excellent CIP and SIP.

9. Aseptic pipe connection

The sterile connections are chosen according to customer, e.g.:

+ DIN 11864-1: Aseptic screw connection
+ DIN 11864-2: Aseptic flange
+ DIN 11864-3: Aseptic clamp (see Illustration 10)
+ Customized connections

Illustration 10 – Aseptic clamp

10. Documentations, Certificates

A complete documentation is indispensable to be validated, a pharmaceutical plant.

The following documents are components of the scope of delivery:

+ Operating and maintenance manual
+ SAWA test data sheet
+ FDA certificate of conformity of the elastomers
+ Factory report 2.2 DIN EN 10204

Illustration 11 – Comprehensive documentation

The following documents are as an option available:

+ Acceptance test certificate 3.1 DIN EN 10204
+ Measurement report for surface roughness
+ δ-ferrite measurement report
+ USP Cl VI confirmation
+ Welding protocol
+ Protocol „Electropolishing“
+ customer specific requirements to the documentation

In SAWA each pump passed a function control test run before leaving the factory. The dates are recorded in the database and the test data sheet enclosed with the operating instructions.