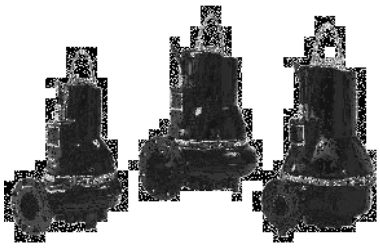
Submittal Data

PROJECT:		UNIT TAG:		QUANTITY:	
		TYPE OF SERVICE:			
REPRESENTATIVE:		SUBMITTED BY:		DATE:	
ENGINEER:		APPROVED BY:		DATE:	
CONTRACTOR:		ORDER NO.:		DATE:	

SL1.80.100.75.4.50B.C



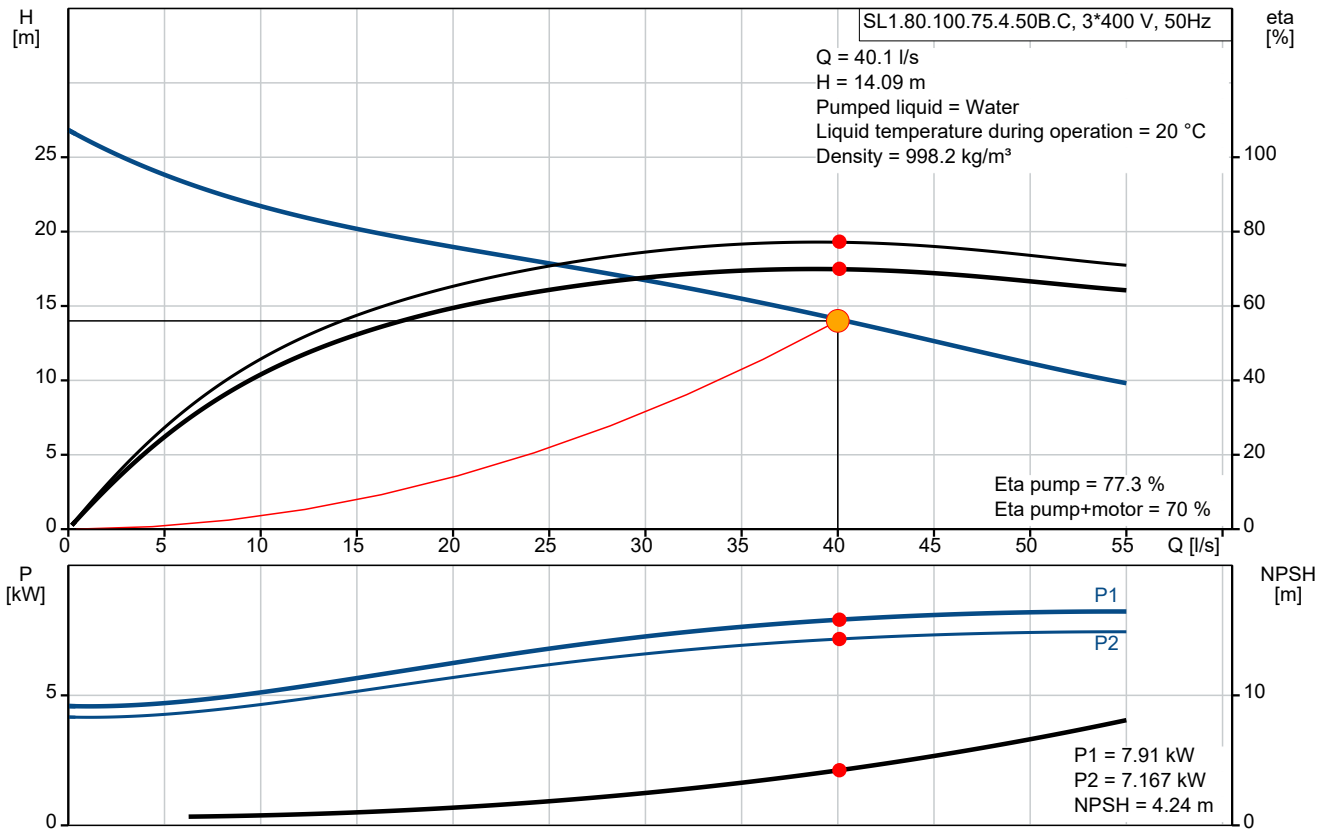
Submersible Grundfos SL sewage pumps (1.1-11 kW) are fitted with an S-tubeÂ® impeller. The free passage through the pump varies from 50-100 mm depending on size.

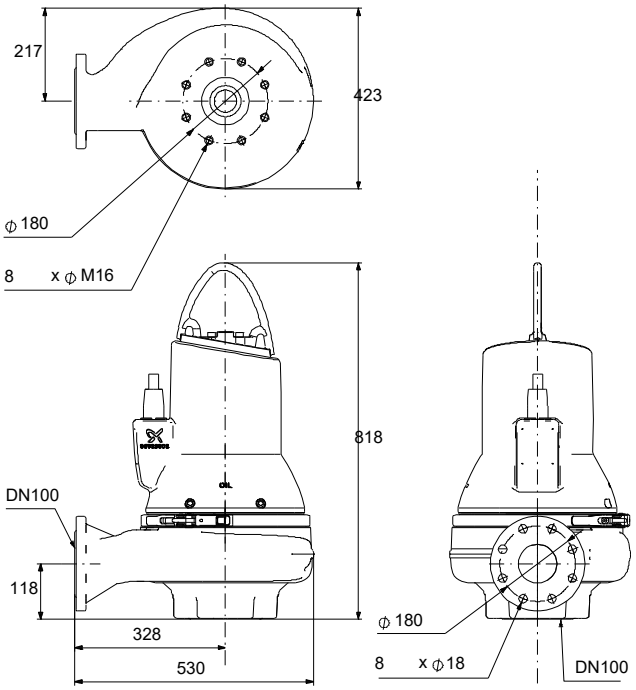
Note! Product picture may differ from actual product

Conditions of Service	
Flow:	40.1 l/s
Head:	14.09 m
Efficiency:	70.0 %
Liquid:	Water
Temperature:	20 °C
NPSH required:	4.2 m
Specific Gravity:	1.000

Pump Data	
Maximum liquid temperature:	40 °C
Maximum ambient temperature:	40 °C
Approvals:	CE, EN12050-1
Flange standard:	DIN
Product number:	On request

Motor Data	
Rated voltage:	400-415 V
Mains frequency:	50 Hz
Number of poles:	4
Enclosure class:	IP68
Insulation class:	H
Motor protection:	THERMAL SWITCH
Eta 1/1:	90.5 %





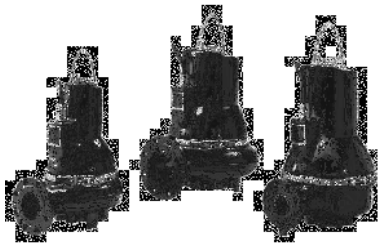
Materials:

Pump housing:	Cast iron
Pump housing:	EN 5.1301 EN-GJL-250
Impeller:	Cast iron
Impeller:	EN 5.1301 EN-GJL-250
Motor:	EN-GJL-250

Company name:
Created by:
Phone:

Date: 25/05/2021

Qty.	Description
1	**SL1.80.100.75.4.50B.C**



Note! Product picture may differ from actual product

Product No.: On request

Non-self-priming, single-stage, centrifugal pump designed for handling wastewater, process water and unscreened raw sewage.

The pump is designed for intermittent and continous operations in submerged installation. The revolutionary S-tube® impeller provides free spherical passage of solids up to 80 mm and is suitable for wastewater with a dry matter content of up to 3 %. A unique stainless-steel clamp assembling system enables quick and easy disassembly of the pump from the motor unit for service and inspection. No special tools are required. Pipework connection is via a DIN flange.

Further product details

The pump is suitable for both temporary and permanent installation either as free-standing on ring stand or on an auto-coupling system.

Pump

The pump housing, motor top and impeller are made of cast iron (EN-GJL-250).

All surfaces of the cast iron parts are protected with cataphoresis coating.

The surface of the cast iron pump parts is afterwards painted with environmental friendly powder coating (type NCS 9000N (black), gloss code 30, thickness 100 µm) which ensures high impact and corrosion protection.

The final pump is assembled from already painted parts which ensures that no rust or scale can be formed in grooves between parts, etc.

The S-tube® impeller is providing free spherical passage through the impeller and pump housing and creates a natural extension of the pipework connected to the pump.

The S-tube® impeller is a wet-balanced and tube-shaped channel impeller placed in a pump housing that matches the smooth tube shape leaving no obstructions or dead zones.

The key to the S-tube® design is simplicity, with no cutting or moving functions that can get worn over time, thereby ensuring constant, superior efficiency. The simple design means lower life cycle costs because abrasive wear is reduced and there are fewer clogging incidents.

The shaft seal consists of two mechanical seals that ensure a reliable sealing between the pumped liquid and motor. The shaft seals are incorporated in a single-unit cartridge shaft seal system that is easy to replace in the field without use of special tools.

The combination of the primary and secondary seals in a cartridge shaft seal system results in a shorter assembly length compared to conventional shaft seals.

- Primary seal: Silicon carbide/silicon carbide (SiC/SiC)
- Secondary seal: Carbon/Ceramics

The shaft seal is bidirectional, meaning it operates correctly in case of backflow through the pump.

The pump is approved according to CE, EN12050-1.

Motor

The motor is a watertight, totally encapsulated motor supplied with a 10 m power cable. The stainless steel plug is fastened with a union nut. This nut and the O-rings provide sealing against ingress of the liquid.

The plug is polyurethane-embedded, ensuring a watertight and durable seal around the leads of the cable. This prevents the ingress of water into the motor through the cable in case of cable breakage or adverse handling in connection with installation or service.

A compact motor construction with a short shaft reduces vibrations, resulting in an increased efficiency and lifetime of the shaft seal and ball bearings.

The motor features built-in thermal protection to protect the motor against overheating and ensure the reliability.

The pump is equipped with the following sensor(s):

- A digital moisture switch that is fitted in the motor chamber monitors whether water enters the motor chamber. If moisture is detected in the motor chamber, the switch will trip and send a warning to the sensor module.

The pump is designed for speed-controlled operation to keep the energy consumption at a minimum.

To avoid the risk of sedimentation in the pipes, we recommend that you operate the speed-controlled pump within a speed range of 30 % to 100 % and at a flow rate above 1 m/s.

Controls:	
Moisture sensor:	with moisture sensors
Water-in-oil sensor:	without water-in-oil sensor
Liquid:	
Pumped liquid:	Water
Maximum liquid temperature:	40 °C

Company name:
Created by:
Phone:

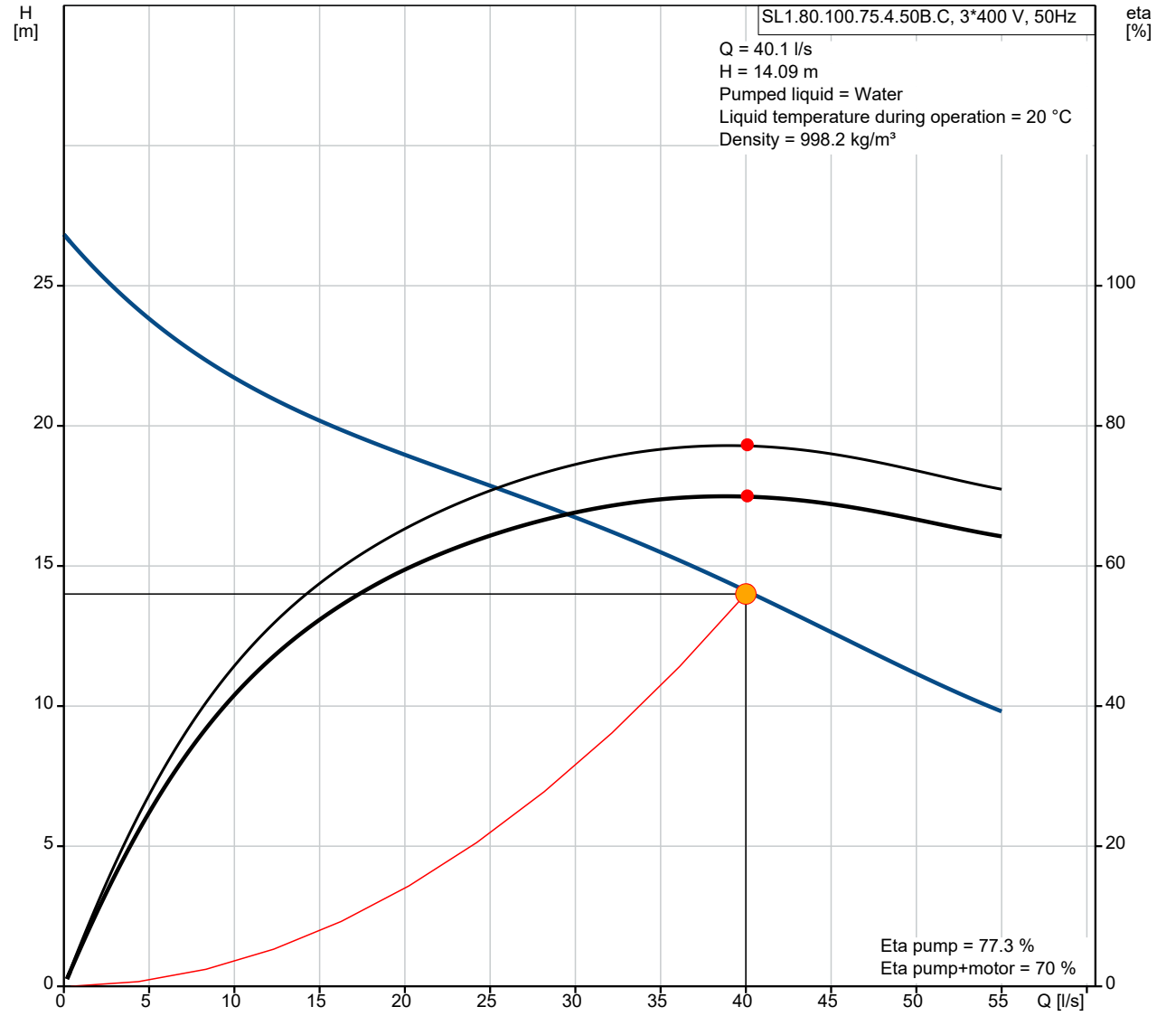
Date: 25/05/2021

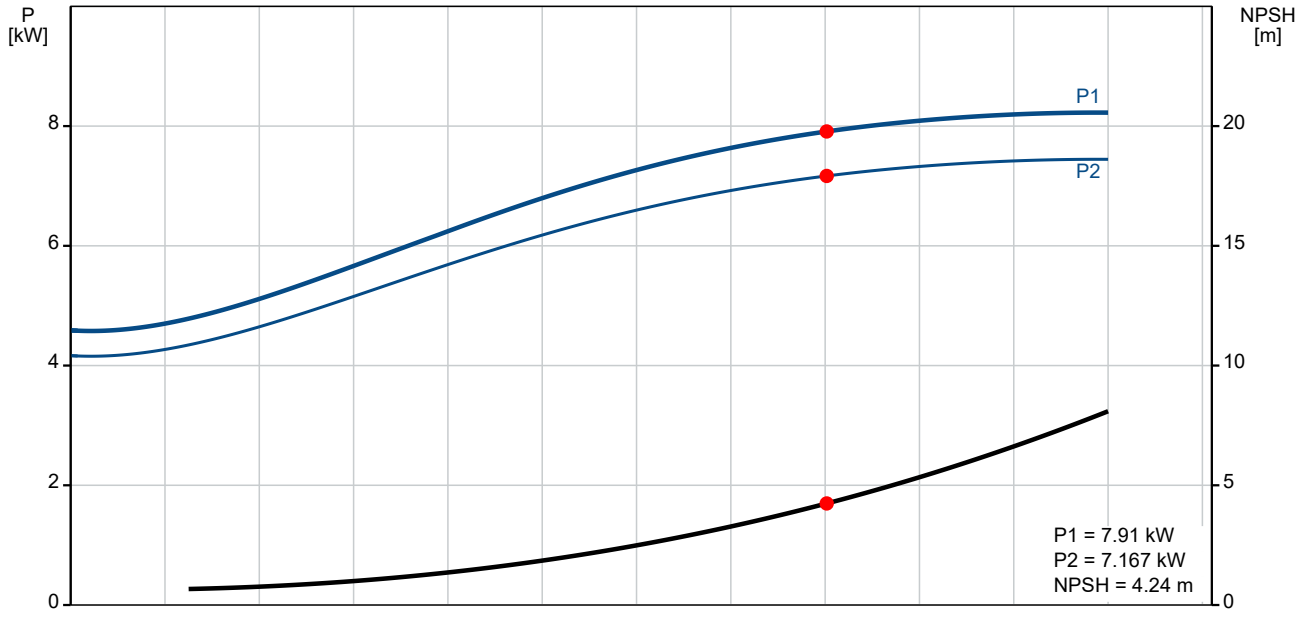
Qty.	Description	
	Selected liquid temperature:	20 °C
	Density:	998.2 kg/m³
	Technical:	
	Actual calculated flow:	40.1 l/s
	Resulting head of the pump:	14.09 m
	Type of impeller:	S-TUBE
	Maximum particle size:	80 mm
	Primary shaft seal:	SIC/SIC
	Secondary shaft seal:	CARBON/CERAMICS
	Approvals on nameplate:	CE, EN12050-1
	Curve tolerance:	ISO9906:2012 3B2
	Materials:	
	Pump housing:	Cast iron EN 5.1301 EN-GJL-250
	Impeller:	Cast iron EN 5.1301 EN-GJL-250
	Motor:	EN-GJL-250
	Installation:	
	Maximum ambient temperature:	40 °C
	Flange standard:	DIN
	Pump inlet:	100
	Pump outlet:	100
	Pressure rating:	PN 10
	Maximum installation depth:	20 m
	Auto-coupling:	96090994
	Electrical data:	
	Power input - P1:	8.4 kW
	Rated power - P2:	7.5 kW
	Mains frequency:	50 Hz
	Rated voltage:	3 x 400-415 V
	Voltage tolerance:	+10/-10 %
	Max starts per. hour:	20
	Rated current:	17.2-15.1 A
	Starting current:	111 A
	Cos phi - power factor:	0.83
	Cos phi - p.f. at 3/4 load:	0.78
	Cos phi - p.f. at 1/2 load:	0.68
	Rated speed:	1462 rpm
	Motor efficiency at full load:	90.5 %
	Motor efficiency at 3/4 load:	91.1 %
	Motor efficiency at 1/2 load:	90.7 %
	Number of poles:	4
	Start. method:	direct-on-line
	Enclosure class (IEC 34-5):	IP68
	Insulation class (IEC 85):	H
	Explosion proof:	no
	Length of cable:	10 m
	Cable type:	LYNIFLEX
	Others:	
	Net weight:	195 kg

Company name:
Created by:
Phone:

Date: 25/05/2021

On request SL1.80.100.75.4.50B.C 50 Hz

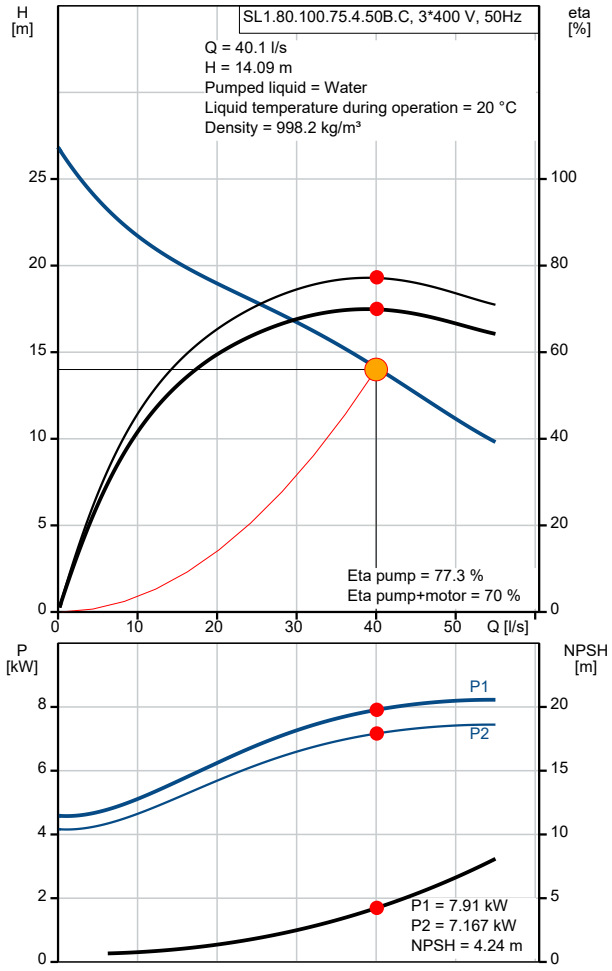




Company name:
Created by:
Phone:

Date: 25/05/2021

Description	Value
General information:	
Product name:	SL1.80.100.75.4.50B.C
Product No:	On request
EAN number:	On request
Price:	
Technical:	
Actual calculated flow:	40.1 l/s
Maximum flow:	55 l/s
Max flow:	55 l/s
Resulting head of the pump:	14.09 m
Head max:	25.6 m
Type of impeller:	S-TUBE
Maximum particle size:	80 mm
Primary shaft seal:	SIC/SIC
Secondary shaft seal:	CARBON/CERAMICS
Approvals on nameplate:	CE, EN12050-1
Curve tolerance:	ISO9906:2012 3B2
Cooling jacket:	without cooling jacket
Materials:	
Pump housing:	Cast iron
Pump housing:	EN 5.1301 EN-GJL-250
Impeller:	Cast iron
Impeller:	EN 5.1301 EN-GJL-250
Motor:	EN-GJL-250
Installation:	
Maximum ambient temperature:	40 °C
Flange standard:	DIN
Pump inlet:	100
Pump outlet:	100
Pressure rating:	PN 10
Maximum installation depth:	20 m
Inst dry/wet:	SUBMERGED
Installation:	Vertical
Auto-coupling:	96090994
Liquid:	
Pumped liquid:	Water
Maximum liquid temperature:	40 °C
Selected liquid temperature:	20 °C
Density:	998.2 kg/m³
Electrical data:	
Power input - P1:	8.4 kW
Rated power - P2:	7.5 kW
Mains frequency:	50 Hz
Rated voltage:	3 x 400-415 V
Voltage tolerance:	+10/-10 %
Max starts per. hour:	20
Rated current:	17.2-15.1 A
Starting current:	111 A
Cos phi - power factor:	0.83
Cos phi - p.f. at 3/4 load:	0.78
Cos phi - p.f. at 1/2 load:	0.68
Rated speed:	1462 rpm
Motor efficiency at full load:	90.5 %
Motor efficiency at 3/4 load:	91.1 %
Motor efficiency at 1/2 load:	90.7 %
Number of poles:	4
Start. method:	direct-on-line
Enclosure class (IEC 34-5):	IP68



Company name:
Created by:
Phone:

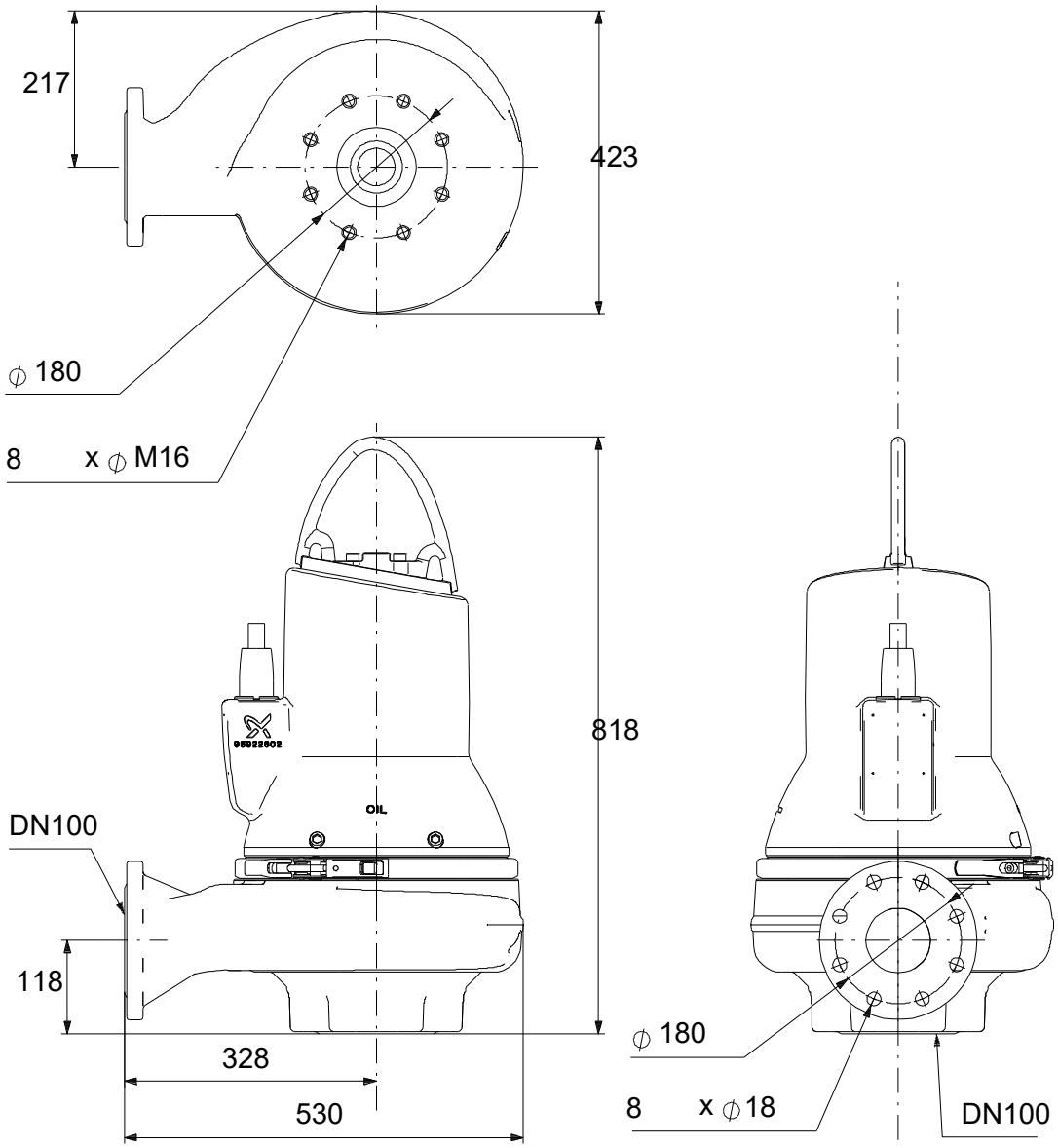
Date: 25/05/2021

Description	Value
Insulation class (IEC 85):	H
Explosion proof:	no
Motor protec:	THERMAL SWITCH
Length of cable:	10 m
Cable type:	LYNIFLEX
Controls:	
Control box:	not included
Moisture sensor:	with moisture sensors
Water-in-oil sensor:	without water-in-oil sensor
Others:	
Net weight:	195 kg

Company name:
Created by:
Phone:

Date: 25/05/2021

On request SL1.80.100.75.4.50B.C 50 Hz

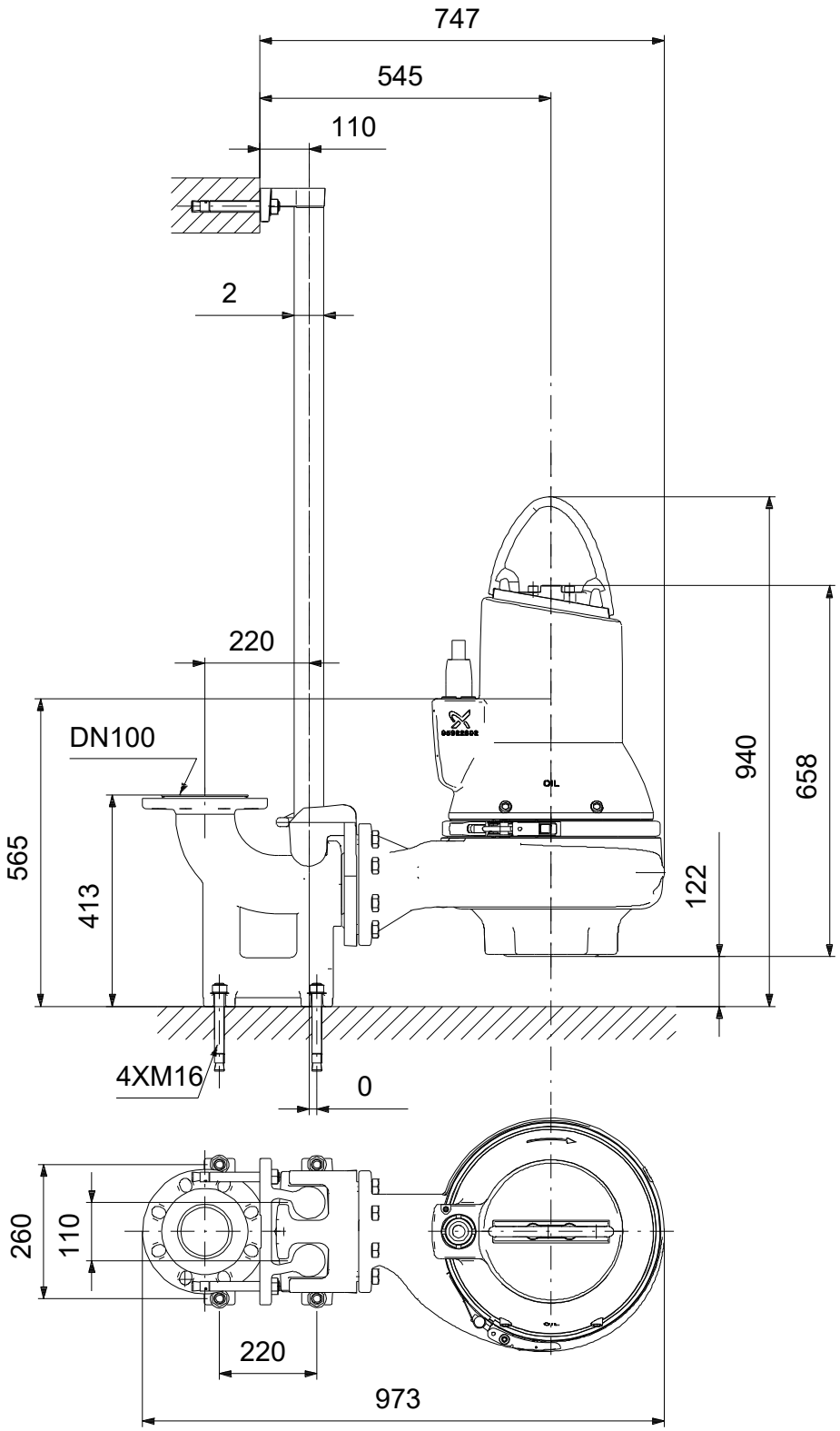


Note! All units are in [mm] unless others are stated.
Disclaimer: This simplified dimensional drawing does not show all details.

Company name:
Created by:
Phone:

Date: 25/05/2021

On request SL1.80.100.75.4.50B.C 50 Hz

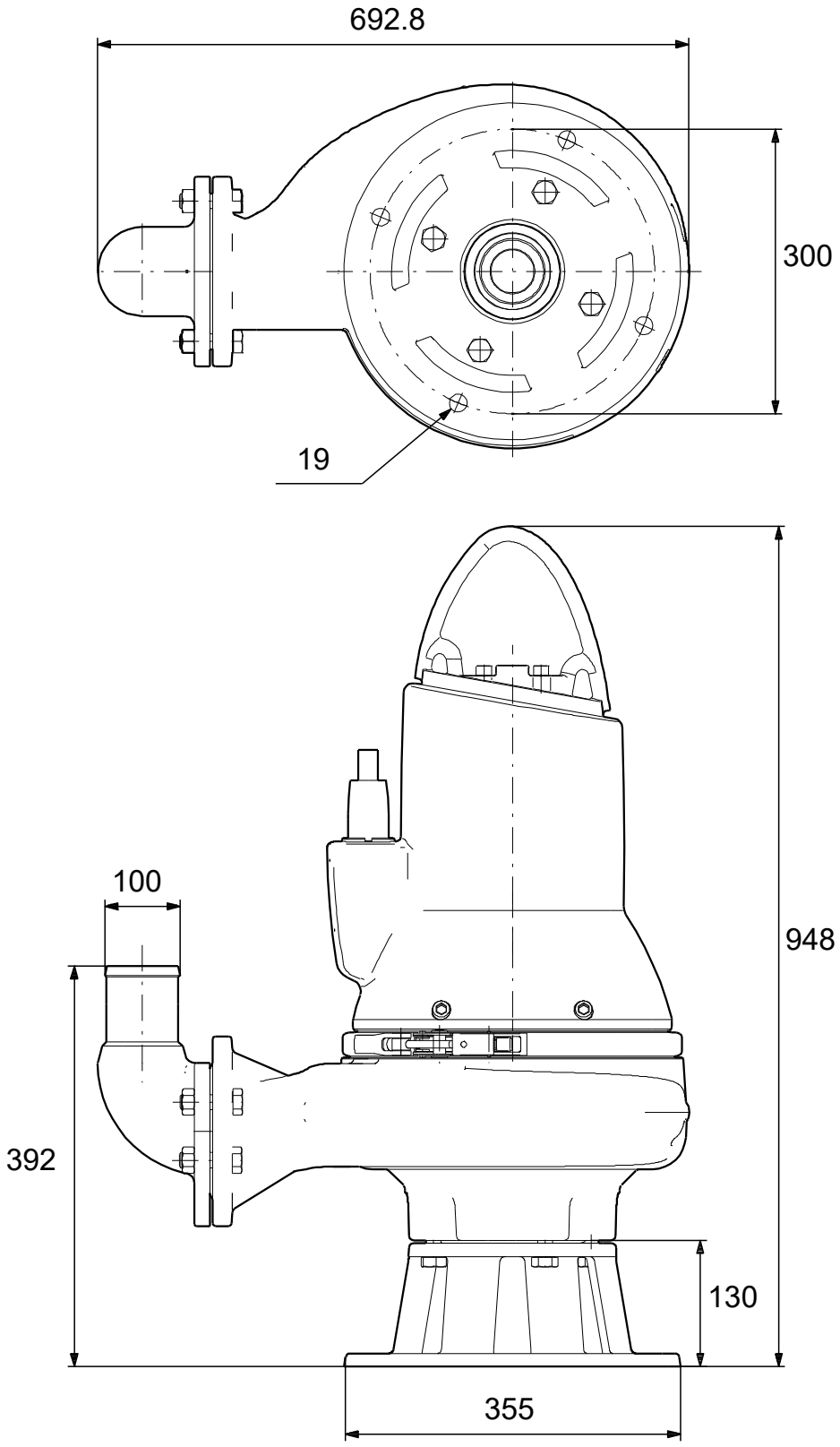


Note! All units are in [mm] unless others are stated.
Disclaimer: This simplified dimensional drawing does not show all details.

Company name:
Created by:
Phone:

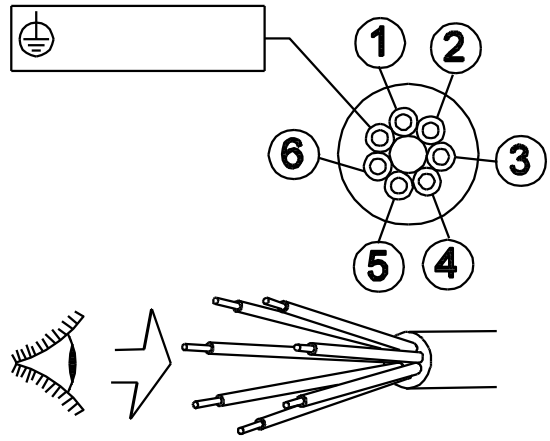
Date: 25/05/2021

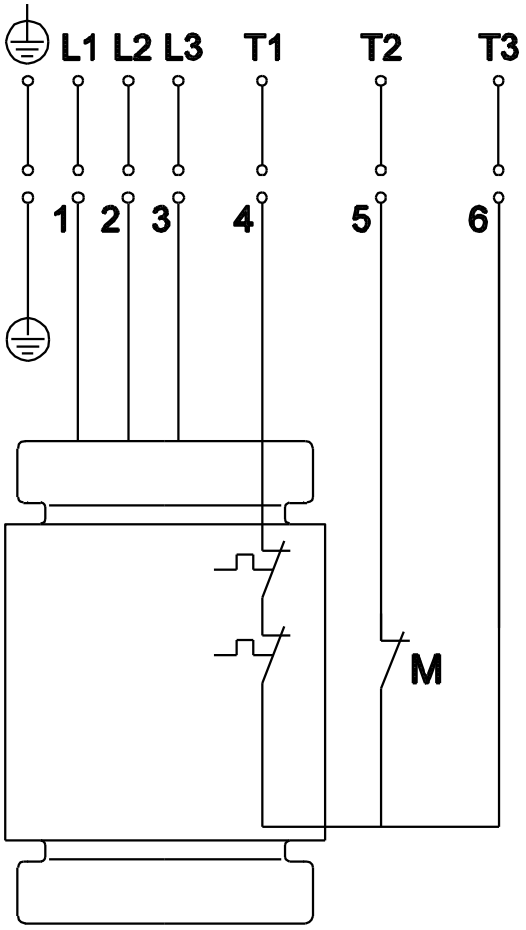
On request SL1.80.100.75.4.50B.C 50 Hz



Note! All units are in [mm] unless others are stated.
Disclaimer: This simplified dimensional drawing does not show all details.

On request SL1.80.100.75.4.50B.C 50 Hz





Note! All units are in [mm] unless others are stated.

Company name:
Created by:
Phone:

Date: 25/05/2021

On request SL1.80.100.75.4.50B.C 50 Hz

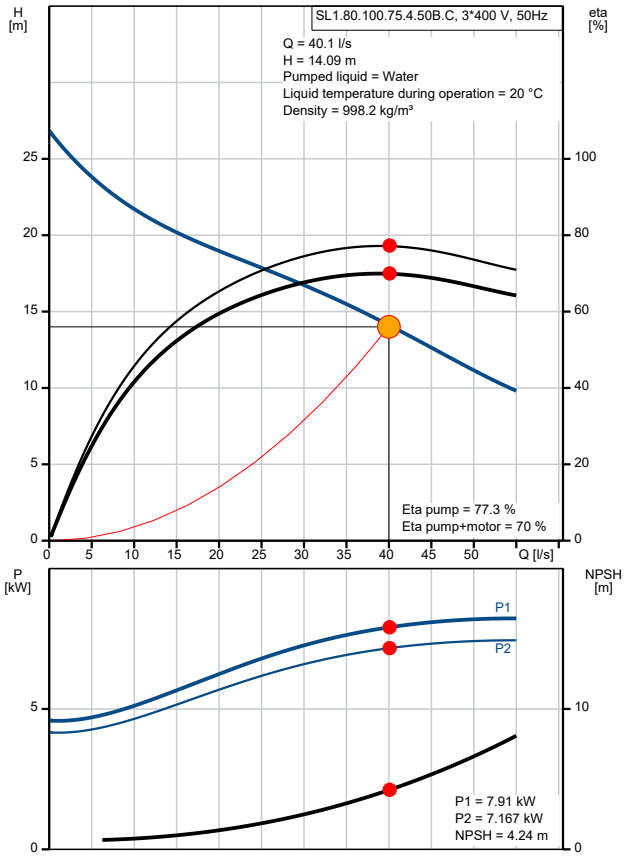
Input

Load Profile

	1	
Flow	100	%
Time	1000	h/a

Sizing result

Flow	40.1	l/s
Head	14.09	m
Power P1	7.91	kW
Power P2 required in the duty point	7.167	kW
Eta pump	77.3	%
Eta pump+motor	70.0	% =Eta pump * Eta motor
Energy consumption	7884	kWh/Year
Life cycle cost	25063	EUR /10Years



Company name:
Created by:
Phone:

Date: 25/05/2021

Installation and Input

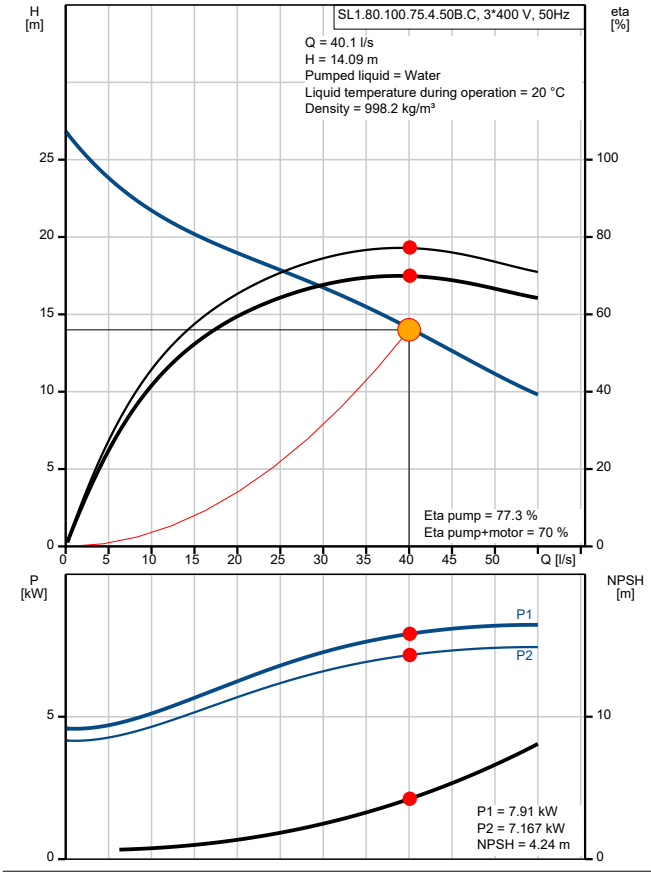
Sizing Results

Product number:	On request
Flow:	40.1 l/s
Head:	14.09 m
Power P1:	7.91 kW
Eta pump:	77.3 %
Eta pump+motor:	70.0 % =Eta pump * Eta motor
Energy consumption:	7884 kWh/Year

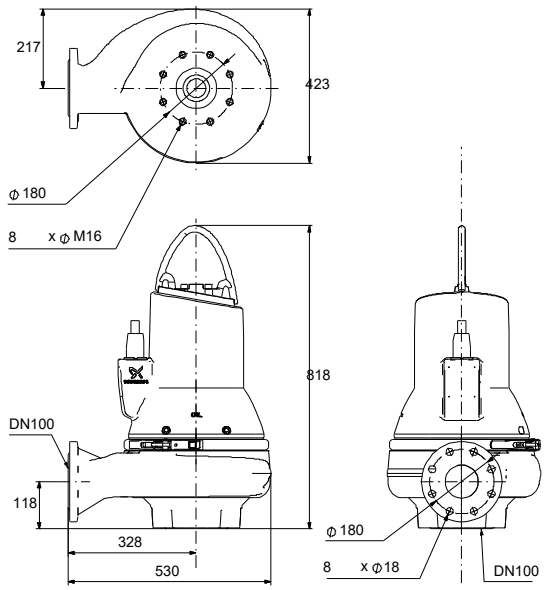
Load profile

	1	
Flow	100	%
Time	1000	h/a

Pump Curve



Dimensional Drawing



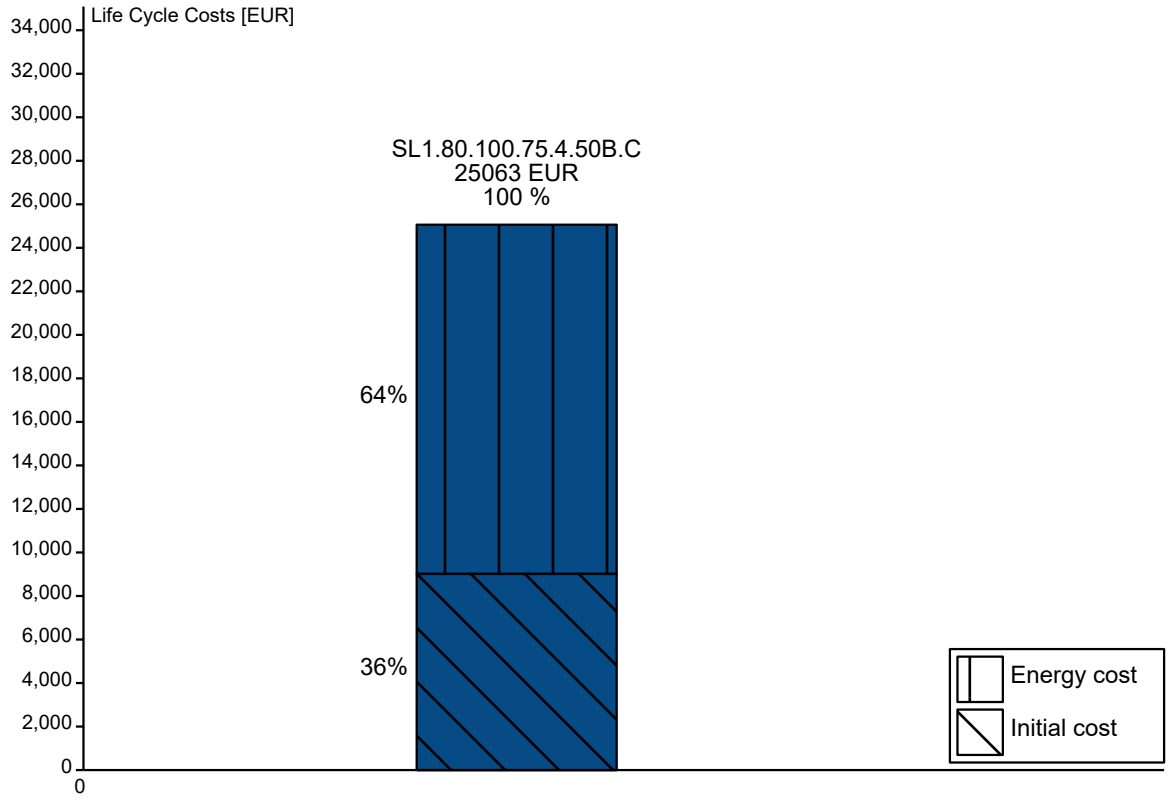
Installation illustration

Zeta Values

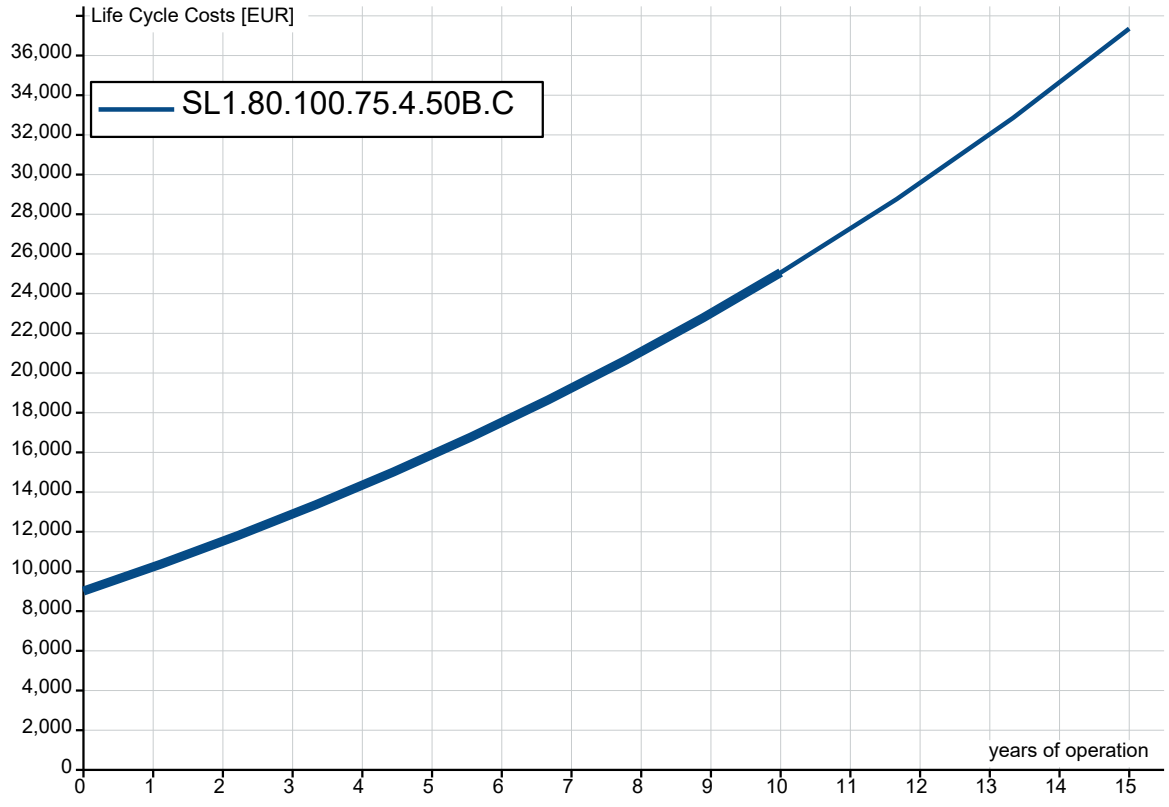
Company name:
Created by:
Phone:

Date: 25/05/2021

Life Cycle Costs - 10 years of operation



Payback Time



Company name:
Created by:
Phone:

Date: 25/05/2021

Life Cycle Cost Report

Requirements:	*General inputs:*	
Flow: 40.1 l/s	Energy price (high tariff): 0.15 EUR/kWh	n - Life in years: 10
Capacity per year: ----		i - Interest rate: 0 %
Head: ----		p - Inflation rate: 6 %

Inputs:	A:	
System:	SL1.80.100.75.4.50B.C	
	per year	total (life)
Initial investment cost [EUR]		
Pump system [EUR]		
Further investment [EUR]		
Installation and commissioning cost [EUR]		
Reduction of investments in the grid [EUR]		
Energy cost [EUR]	**1183**	**16051**
Energy consumption [kWh/Year]	7884	
Specific Energy [kWh/m³]		
Change of efficency per year [%/Year]		
Operating cost [EUR/Year]		
[EUR/Year]		
Routine maintenance cost [EUR/Year]		
Repair cost [EUR/Year]		
Other yearly costs [EUR/Year]		
Downtime and loss of production cost [EUR/Year]		
Environmental cost [EUR]		
Decommisioning and disposal cost [EUR]		

Output:

Net present LCC-value [EUR]		**25063**
of which present energy cost is [EUR]		16051
and maintenance cost is [EUR]		
of which net present energy cost % is [%]		64.0
and maintenance cost % is [%]		0.0

Company name:
Created by:
Phone:

Date: 25/05/2021

Order Data:

Product name: SL1.80.100.75.4.50B.C
Amount: 1
Product No: On request
Price:

Total: Price on request

Submittal Data

PROJECT:		UNIT TAG:		QUANTITY:	
		TYPE OF SERVICE:			
REPRESENTATIVE:		SUBMITTED BY:		DATE:	
ENGINEER:		APPROVED BY:		DATE:	
CONTRACTOR:		ORDER NO.:		DATE:	

Note! Product picture may differ from actual product

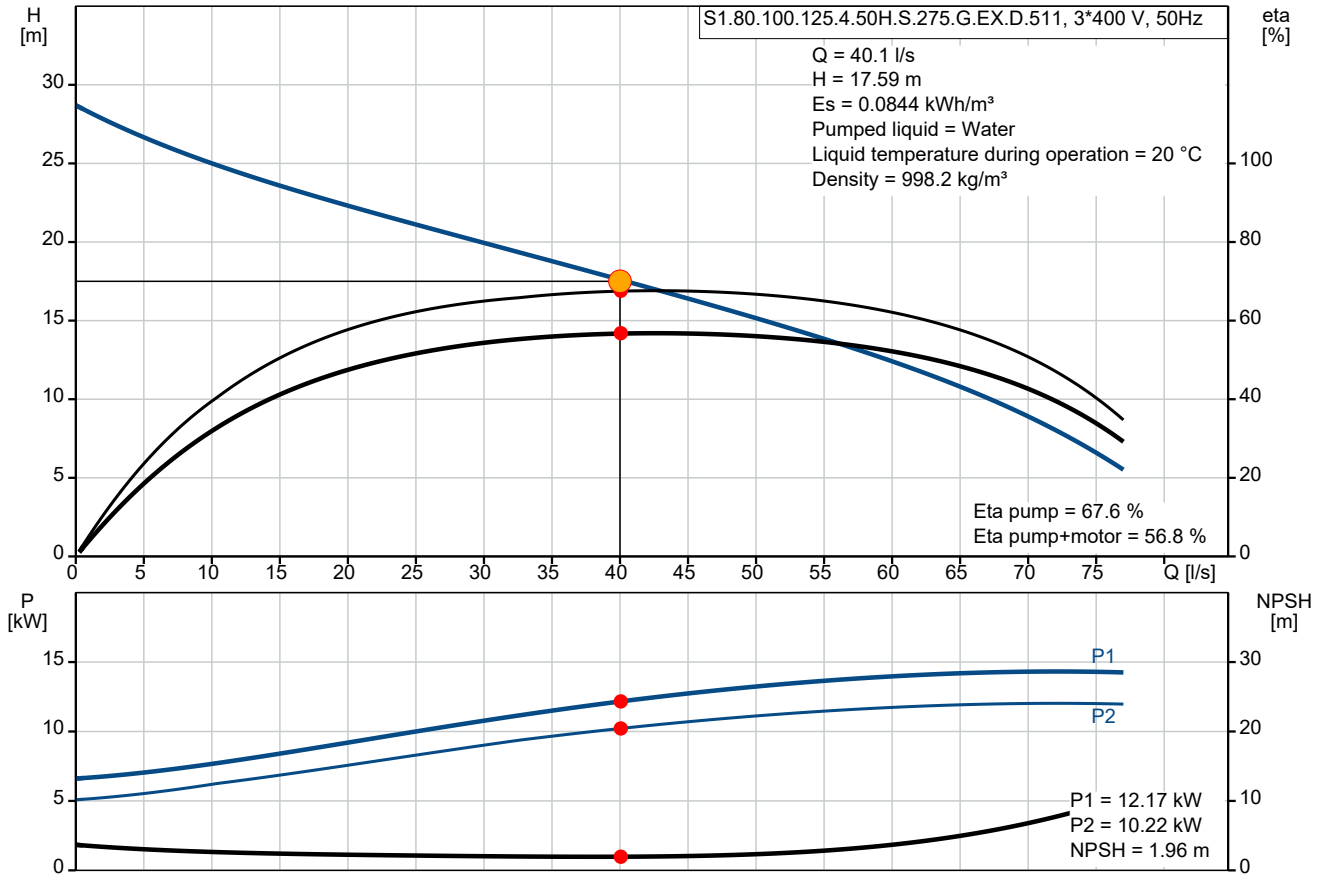
S1.80.100.125.4.50H.S.275.G.EX.D.511

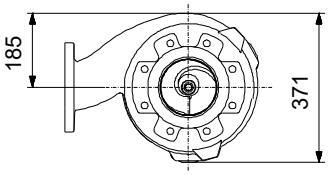
The S pumps are a range of free-flow channel impeller pumps specifically designed for pumping sewage and wastewater in a wide range of municipal and industrial applications

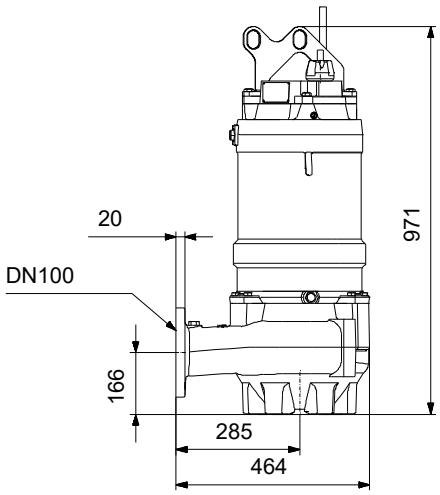
Conditions of Service	
Flow:	40.1 l/s
Head:	17.59 m
Efficiency:	56.8 %
Liquid:	Water
Temperature:	20 °C
NPSH required:	2 m
Specific Gravity:	1.000

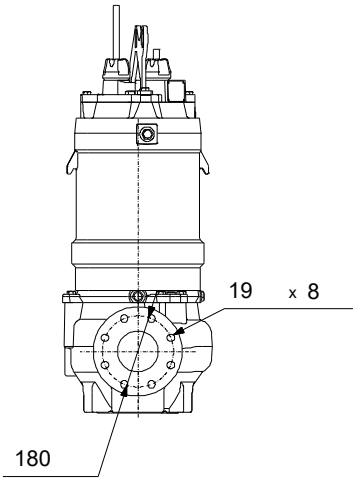
Pump Data	
Liquid temperature range:	0 .. 40 °C
Maximum ambient temperature:	40 °C
Approvals:	CE,EAC,ATEX,IECEx
Product number:	95113802

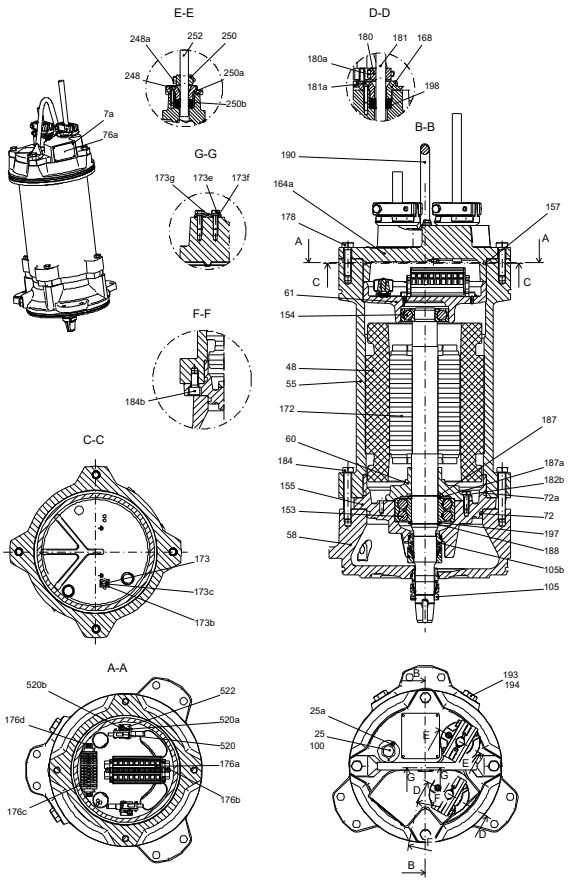
Motor Data	
Rated voltage:	400 V
Mains frequency:	50 Hz
Number of poles:	4
Enclosure class:	IP68
Insulation class:	F
Motor protection:	KLIXON
Eta 1/1:	84 %











Materials:

Pump housing:	Cast iron
Pump housing:	EN 1561 EN-GJL-250
Pump housing:	AISI A48 30
Impeller:	Cast iron
Impeller:	EN 1561 EN-GJL-250
Impeller:	AISI A48 30
Motor:	Cast iron
Motor:	EN 1561 EN-GJL-250
Motor:	AISI A48 30

Company name:
Created by:
Phone:

Date: 25/05/2021

Qty.	Description
1	**S1.80.100.125.4.50H.S.275.G.EX.D.511**

Note! Product picture may differ from actual product

Product No.: 95113802

Non-self-priming, single-stage, centrifugal pump designed for handling wastewater, process water and unscreened raw sewage.

The pump is designed for intermittent and continous operation in submerged installation. The single-channel impeller handles solids up to 80 mm in size.

A SmartTrim impeller clearance adjustment system makes it possible to maintain maximum performance throughout the lifetime of the pump.

To facilitate easy transportation as well as installation on-site, the pump is fitted with a robust lifting bracket. For installation on auto coupling, the Grundfos SmartSeal gasket system provides a leak-proof connection. Pipework connections are via a DIN flange. The pump is explosion-proof.

Further product details

Typical application is transfer of liquids, such as:

- large quantities of drainage and surface water
- domestic wastewater with discharge from toilets
- wastewater from commercial buildings without discharge from toilets
- sludge-containing industrial wastewater.

The pump is ideal for the pumping of the above liquids from for instance:

- municipal network pumping stations
- public buildings
- blocks of flats
- factories/industry
- wastewater treatment plants.

Pump

The channel impeller is of a semi-axial design with extra long vanes. This provides maximum performance and prevents fibres and rags from getting caught in the impeller.

The bottom part of the channel impeller features specially designed auxiliary vanes which keep the impeller clean at all time. These vanes are designed to create a powerful flow that keeps the clearance between the impeller and the pump housing free from solids or fibres.

This pump is equipped with the unique SmartTrim impeller clearance adjustment system that enables easy restoring of factory-set impeller clearance.

By tightening the adjustment screws on the exterior of the pump housing, peak pumping efficiency can be maintained.

This can be done on site, quickly and easily, without dismantling the pump and without using special tools.

The shaft seal consists of two mechanical seals that ensure a reliable sealing between the pumped liquid and motor.

- Primary seal: silicon carbide/silicon carbide (SiC/SiC)
- Secondary seal: silicon carbide/carbon

The shaft seals have no springs or other parts in direct contact with the pumped liquid that prevents rags and fibres from getting caught.

Furthermore, the shaft seals are bidirectional, meaning that they can operate in either direction thus allowing for opposite rotation caused by backflow of liquid through the pump.

The pump is equipped with heavy-duty, maintenance-free, greased-for-life bearings. The main bearings consist of double-row angular contact ball bearings whereas the support bearings are single-row deep-groove ball bearings.

Qty.	Description

The pump discharge flange is mounted with the Grundfos SmartSeal auto-coupling gasket, that provides a completely leak-proof connection between the pump and the base unit of the auto-coupling system. This optimises the efficiency of the entire pumping system and keeps operating costs at a minimum.

The pump is approved and tested by Baseefa (notified body) and holds the following examination certificate:

- Baseefa 09ATEX0020X

The pump has the following explosion protection classifications:

Direct drive, 50 or 60 Hz: CE 1180 II2 G Ex bc d IIB T4

Frequency converter drive: CE 1180 II2 G Ex bc d IIB T3

Note: Explosion-proof pumps must always be fully submerged.

Motor

The motor is supplied with a 10 m power cable with protection sleeve and a free cable end. The pump is equipped with the following motor protection and sensors:

- Three thermal switches (Klixon) for protection against overheating, one incorporated in each motor winding.
- Two moisture switches are fitted in the terminal block for continuous monitoring of the motor. If moisture is detected in the stator housing, the switch will automatically cut off the power supply.
- A sensor fitted in the oil chamber to measure the water content in the oil. The sensor sends a signal if the water content is outside the normal range (warning), or if there is air in the oil chamber (alarm).

All sensor signals are sent via a separate sensor cable that can be connected to the Grundfos IO 113 sensor module which is delivered together with the pump.

Controls:	
Moisture sensor:	with moisture sensors
Water-in-oil sensor:	with water-in-oil sensor
Liquid:	
Pumped liquid:	Water
Liquid temperature range:	0 .. 40 °C
Selected liquid temperature:	20 °C
Density:	998.2 kg/m³
Technical:	
Actual calculated flow:	40.1 l/s
Resulting head of the pump:	17.59 m
Actual impeller diameter:	275 mm
Type of impeller:	1-CHANNEL
Maximum particle size:	80 mm
Primary shaft seal:	SIC-SIC
Secondary shaft seal:	SIC-CARBON
Approvals on nameplate:	CE,EAC,ATEX,IECEx
Curve tolerance:	ISO9906:2012 3B
Materials:	
Pump housing:	Cast iron EN 1561 EN-GJL-250 AISI A48 30
Impeller:	Cast iron EN 1561 EN-GJL-250 AISI A48 30
Motor:	Cast iron EN 1561 EN-GJL-250 AISI A48 30
Installation:	
Maximum ambient temperature:	40 °C
Type of connection:	DIN
Size of outlet connection:	DN 100
Pressure rating:	PN 10

Company name:
Created by:
Phone:

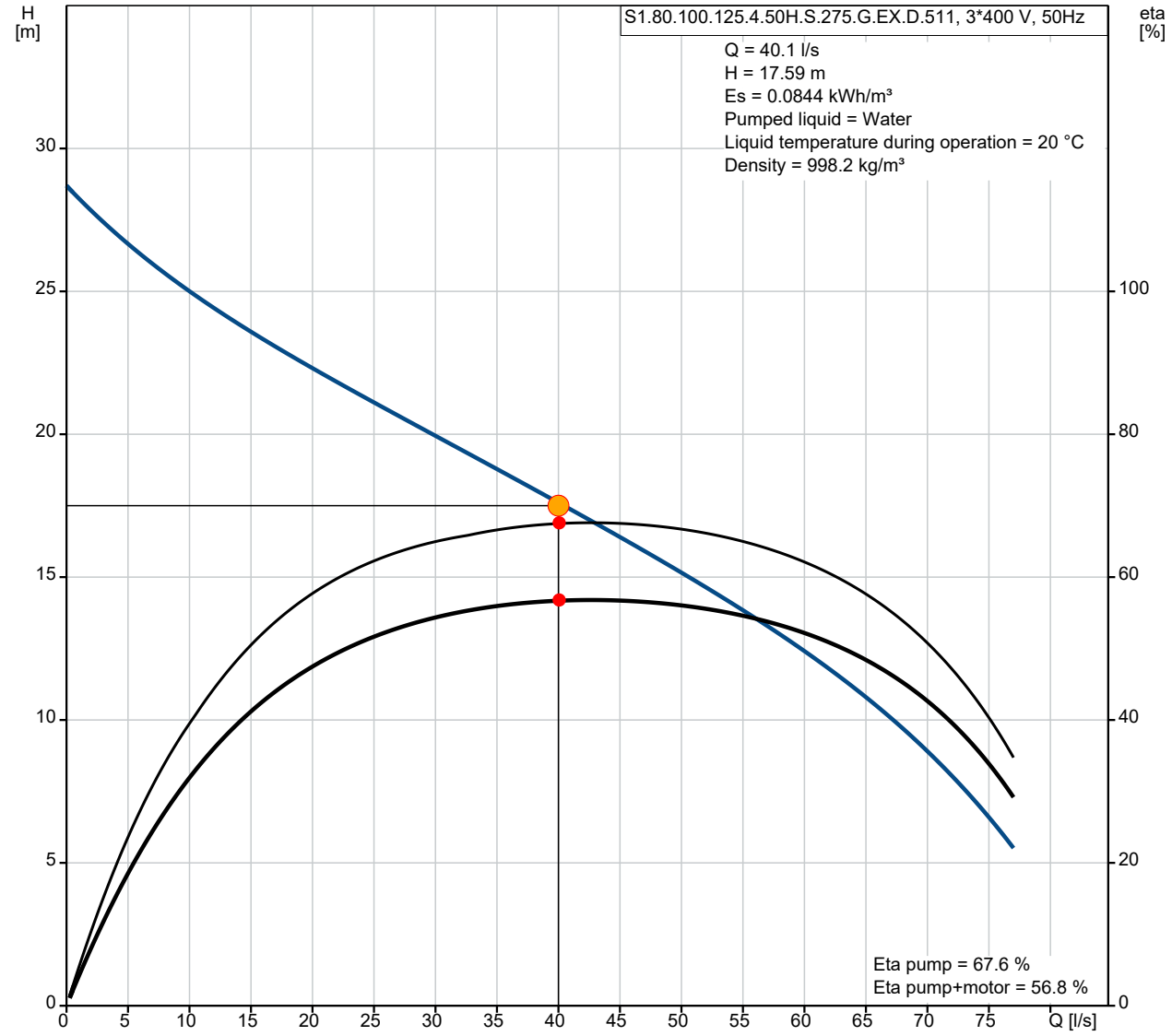
Date: 25/05/2021

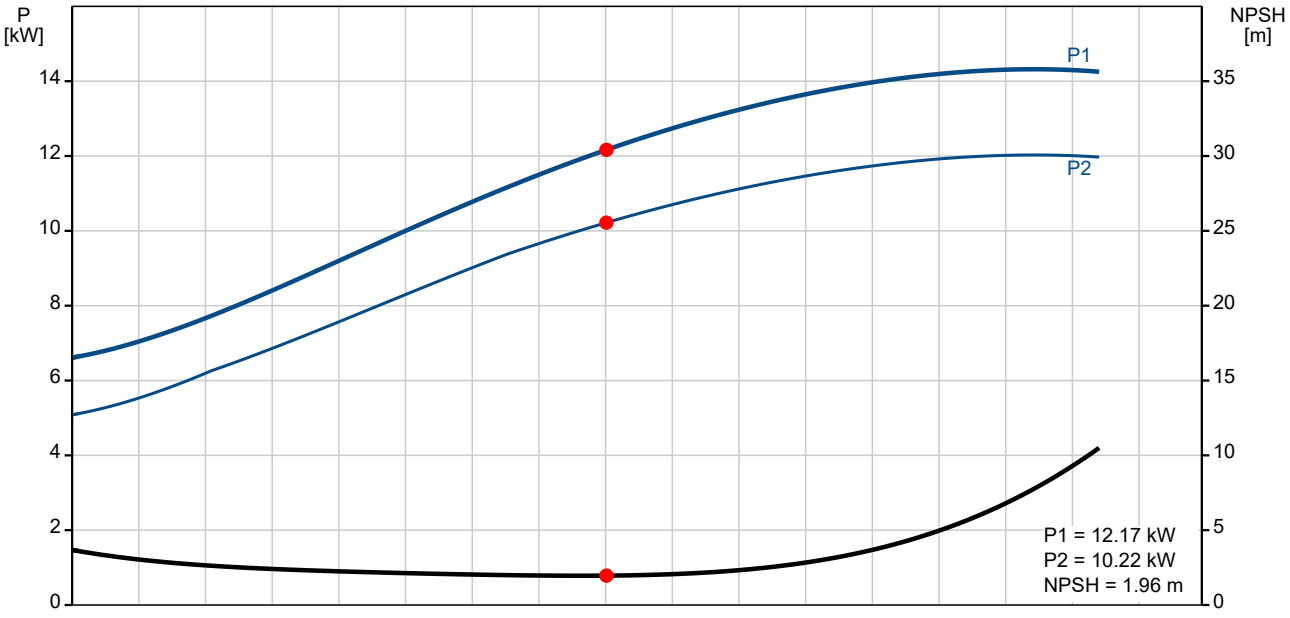
Qty.	Description	
	Maximum installation depth:	20 m
	Auto-coupling:	96090994
	Base stand:	96102255
	Frame range:	50
	Electrical data:	
	Power input - P1:	15 kW
	Rated power - P2:	12.5 kW
	Mains frequency:	50 Hz
	Rated voltage:	3 x 400 V
	Voltage tolerance:	+10/-10 %
	Max starts per. hour:	20
	Rated current:	26/15 A
	Maximum current consumption:	26 A
	Starting current:	207 A
	Rated current at no load:	13.4 A
	Rated speed:	1441 rpm
	Motor efficiency at full load:	84 %
	Motor efficiency at 3/4 load:	84 %
	Motor efficiency at 1/2 load:	81 %
	Number of poles:	4
	Start. method:	star/delta
	Enclosure class (IEC 34-5):	IP68
	Insulation class (IEC 85):	F
	Explosion proof:	yes
	Ex-protection standard:	60079-0
	Length of cable:	10 m
	Cable type:	H07RN-F AT
	Winding resistance:	0.999 Ohm
	Cos phi 1/1:	0.84
	Cos phi 1/2:	0.66
	Cos phi 3/4:	0.78
	Others:	
	Net weight:	200 kg
	Gross weight:	221 kg

Company name:
Created by:
Phone:

Date: 25/05/2021

95113802 S1.80.100.125.4.50H.S.275.G.EX.D.511 50 Hz

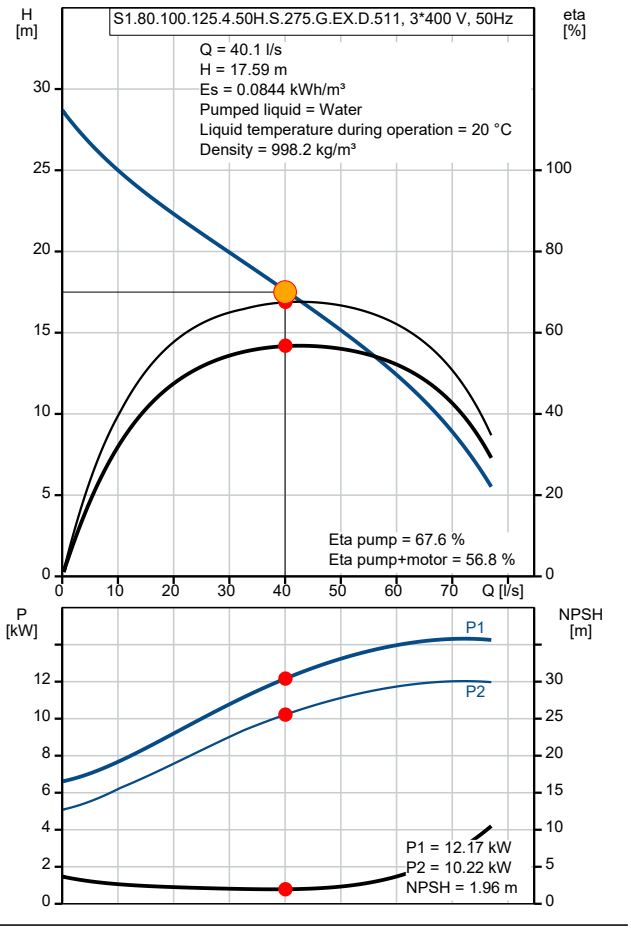


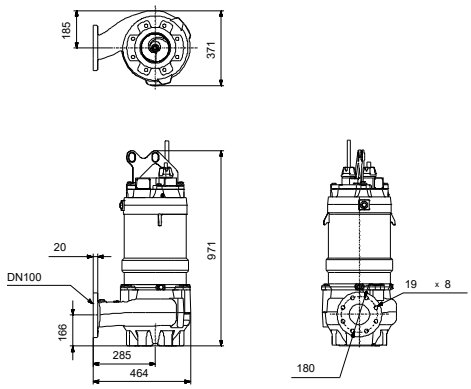


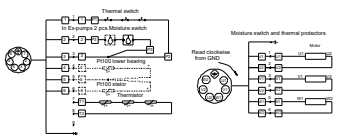
Company name:
Created by:
Phone:

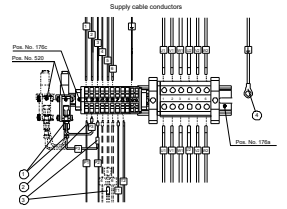
Date: 25/05/2021

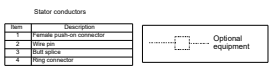
Description	Value
General information:	
Product name:	S1.80.100.125.4.50H.S.275.G.EX .D.511
Product No:	95113802
EAN number:	5700310150772
Price:	
Technical:	
Actual calculated flow:	40.1 l/s
Maximum flow:	75 l/s
Max flow:	75 l/s
Resulting head of the pump:	17.59 m
Head max:	28.7 m
Actual impeller diameter:	275 mm
Type of impeller:	1-CHANNEL
Maximum particle size:	80 mm
Primary shaft seal:	SIC-SIC
Secondary shaft seal:	SIC-CARBON
Approvals on nameplate:	CE,EAC,ATEX,IECEx
Curve tolerance:	ISO9906:2012 3B
Cooling jacket:	without cooling jacket
Materials:	
Pump housing:	Cast iron
Pump housing:	EN 1561 EN-GJL-250
Pump housing:	AISI A48 30
Impeller:	Cast iron
Impeller:	EN 1561 EN-GJL-250
Impeller:	AISI A48 30
Motor:	Cast iron
Motor:	EN 1561 EN-GJL-250
Motor:	AISI A48 30
Installation:	
Maximum ambient temperature:	40 °C
Type of connection:	DIN
Size of outlet connection:	DN 100
Pressure rating:	PN 10
Maximum installation depth:	20 m
Installation:	S
Inst dry/wet:	S
Installation:	vertical
Auto-coupling:	96090994
Base stand:	96102255
Frame range:	50
Liquid:	
Pumped liquid:	Water
Liquid temperature range:	0 .. 40 °C
Selected liquid temperature:	20 °C
Density:	998.2 kg/m³
Electrical data:	
Power input - P1:	15 kW
Rated power - P2:	12.5 kW
Mains frequency:	50 Hz
Rated voltage:	3 x 400 V
Voltage tolerance:	+10/-10 %
Max starts per. hour:	20
Rated current:	26/15 A
Maximum current consumption:	26 A
Starting current:	207 A
Rated current at no load:	13.4 A











Company name:
Created by:
Phone:

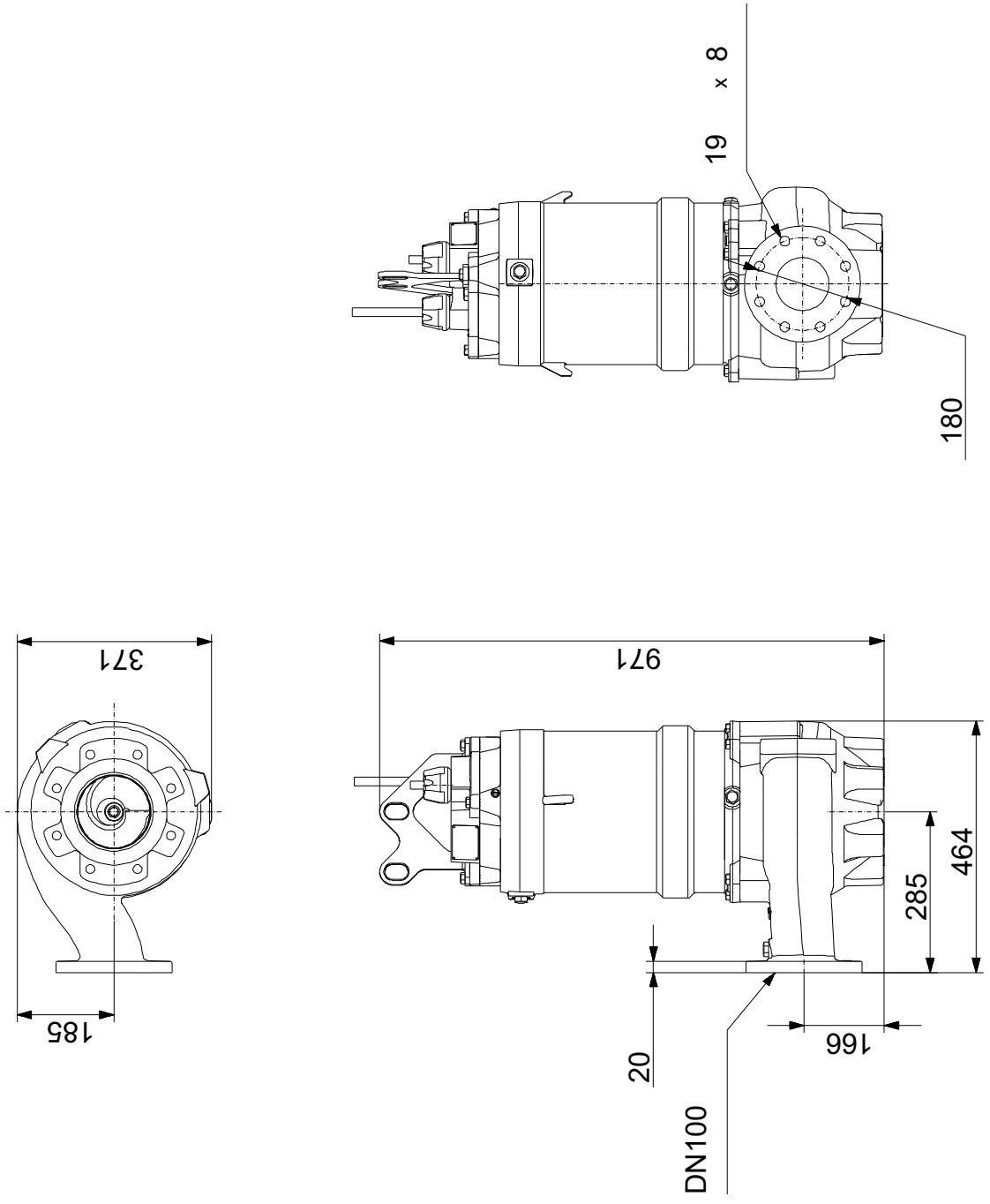
Date: 25/05/2021

Description	Value
Rated speed:	1441 rpm
Motor efficiency at full load:	84 %
Motor efficiency at 3/4 load:	84 %
Motor efficiency at 1/2 load:	81 %
Number of poles:	4
Start. method:	star/delta
Enclosure class (IEC 34-5):	IP68
Insulation class (IEC 85):	F
Explosion proof:	yes
Ex-protection standard:	60079-0
Motor protec:	KLIXON
Length of cable:	10 m
Cable type:	H07RN-F AT
Cable size:	1X7X2,5MM2+1X7X1,5MM2
Cable resistance:	7.98 mOhm/m
Winding resistance:	0.999 Ohm
Cos phi 1/1:	0.84
Cos phi 1/2:	0.66
Cos phi 3/4:	0.78
Controls:	
Moisture sensor:	with moisture sensors
Water-in-oil sensor:	with water-in-oil sensor
Others:	
Net weight:	200 kg
Gross weight:	221 kg

Company name:
Created by:
Phone:

Date: 25/05/2021

95113802 S1.80.100.125.4.50H.S.275.G.EX.D.511 50 Hz

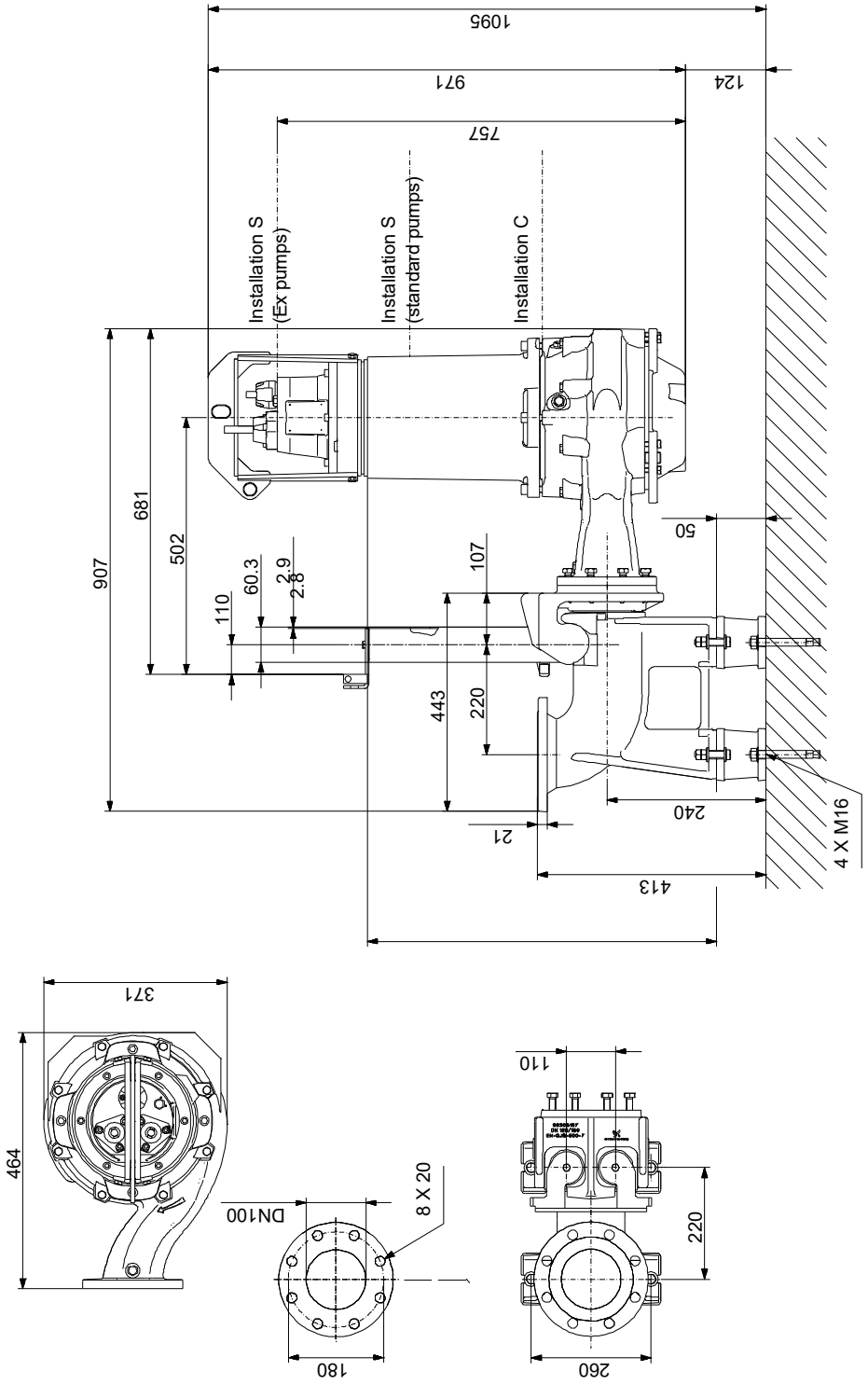


Note! All units are in [mm] unless others are stated.
Disclaimer: This simplified dimensional drawing does not show all details.

Company name:
Created by:
Phone:

Date: 25/05/2021

95113802 S1.80.100.125.4.50H.S.275.G.EX.D.511 50 Hz



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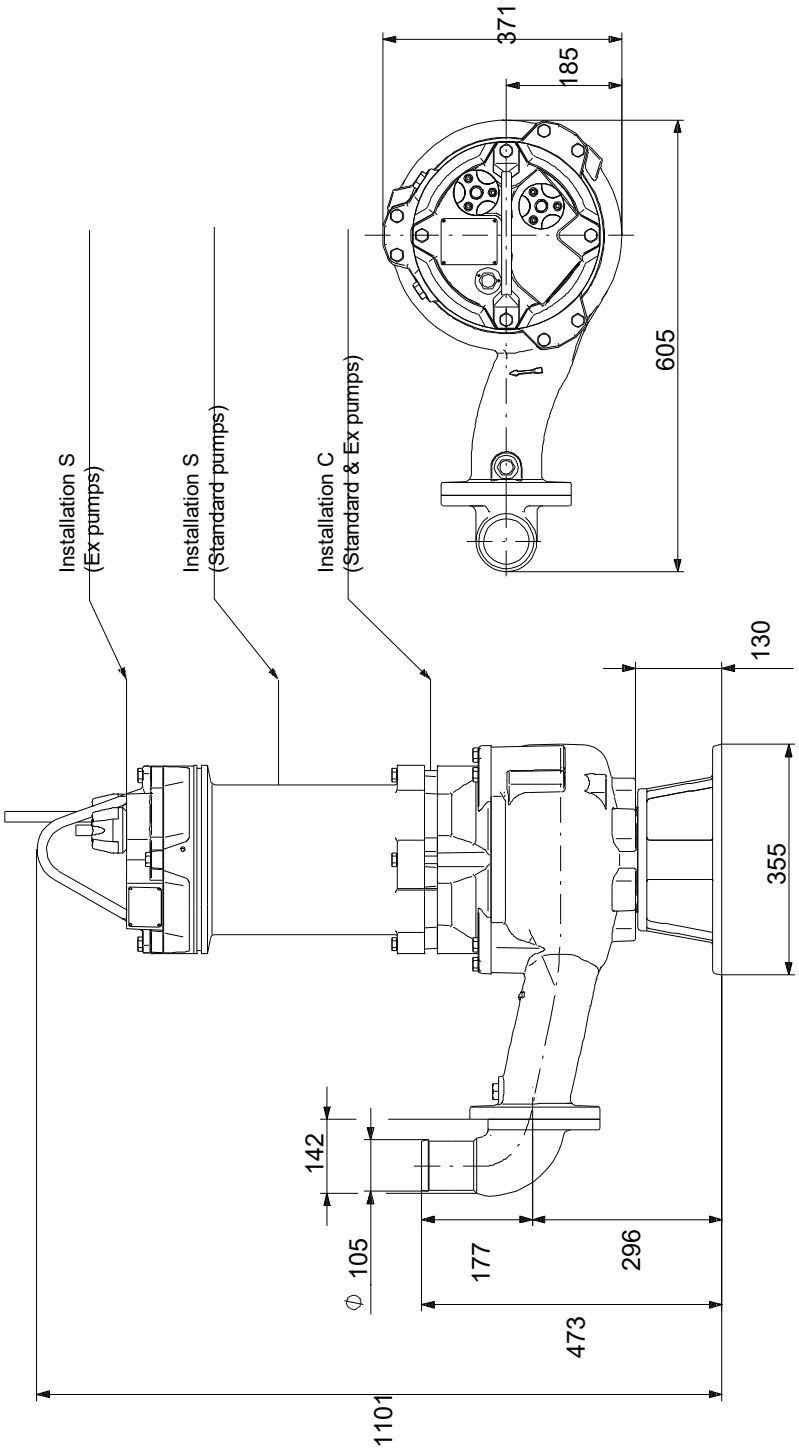
Disclaimer: This simplified dimensional drawing does not show all details.

Company name:
Created by:
Phone:

Date: 25/05/2021

95113802 S1.80.100.125.4.50H.S.275.G.EX.D.511 50 Hz

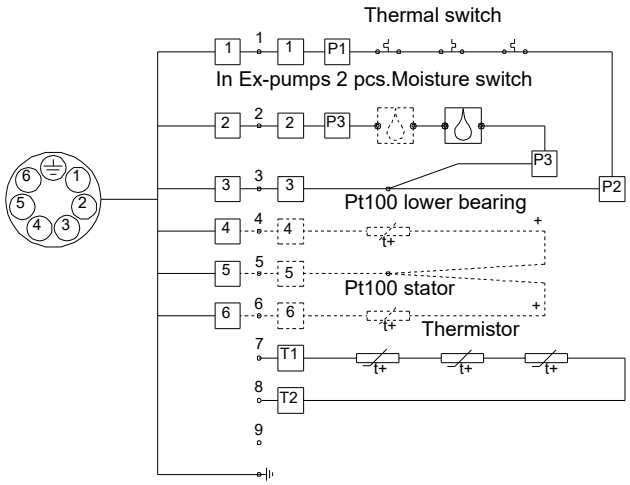


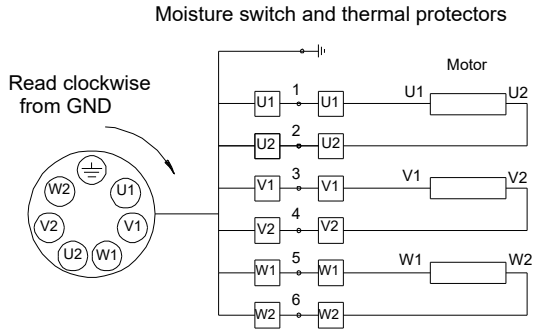
Note! All units are in [mm] unless others are stated.
Disclaimer: This simplified dimensional drawing does not show all details.

Company name:
Created by:
Phone:

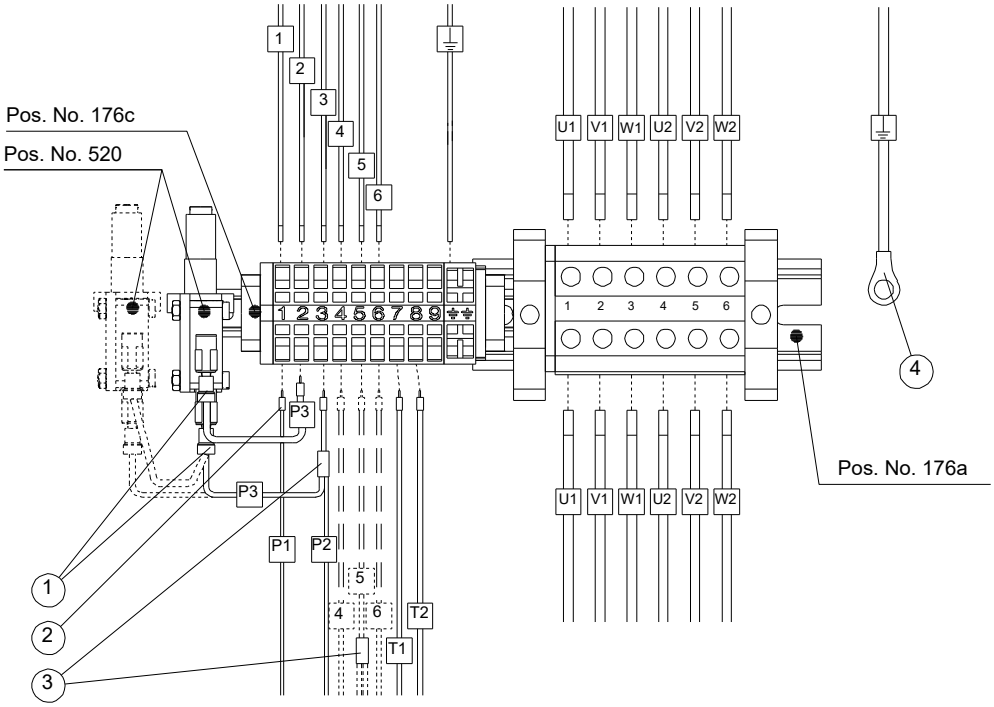
Date: 25/05/2021

95113802 S1.80.100.125.4.50H.S.275.G.EX.D.511 50 Hz





Supply cable conductors



Stator conductors

Item	Description
1	Female push-on connector
2	Wire pin
3	Butt splice
4	Ring connector

Optional equipment

Note! All units are in [mm] unless others are stated.

Company name:
Created by:
Phone:

Date: 25/05/2021

95113802 S1.80.100.125.4.50H.S.275.G.EX.D.511 50 Hz

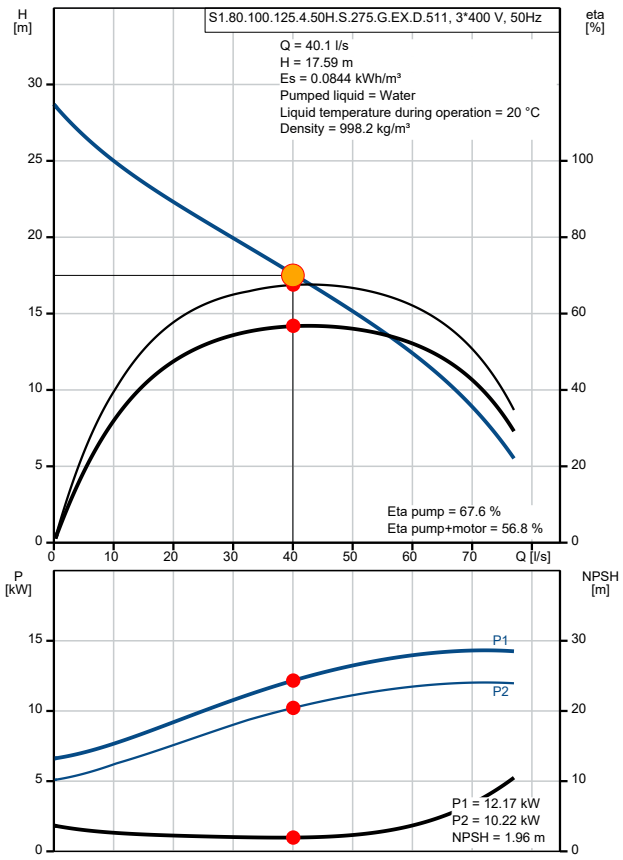
Input

Load Profile

	1	
Flow	100	%
Time	1000	h/a

Sizing result

Flow	40.1	l/s
Head	17.59	m
Power P1	12.17	kW
Power P2 required in the duty point	10.22	kW
Eta pump	67.6	%
Eta pump+motor	56.8	% =Eta pump * Eta motor
Energy consumption	12133	kWh/Year
Life cycle cost	43747	EUR /10Years



Company name:
Created by:
Phone:

Date: 25/05/2021

Installation and Input

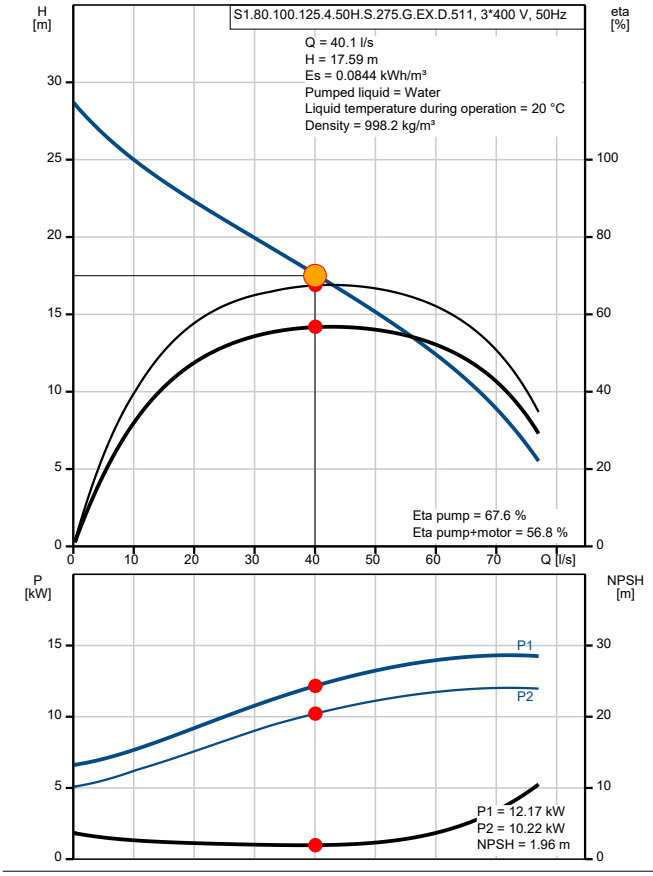
Sizing Results

Product number:	95113802
Flow:	40.1 l/s
Head:	17.59 m
Power P1:	12.17 kW
Eta pump:	67.6 %
Eta pump+motor:	56.8 % =Eta pump * Eta motor
Energy consumption:	12133 kWh/Year

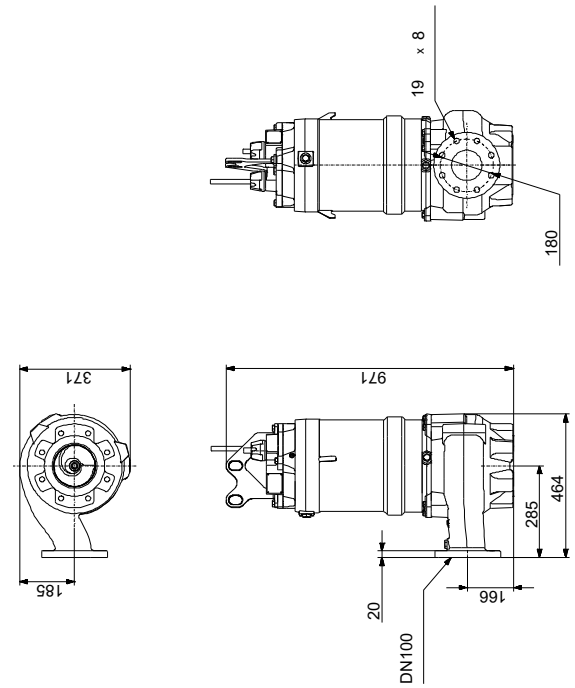
Load profile

	1	
Flow	100	%
Time	1000	h/a

Pump Curve



Dimensional Drawing



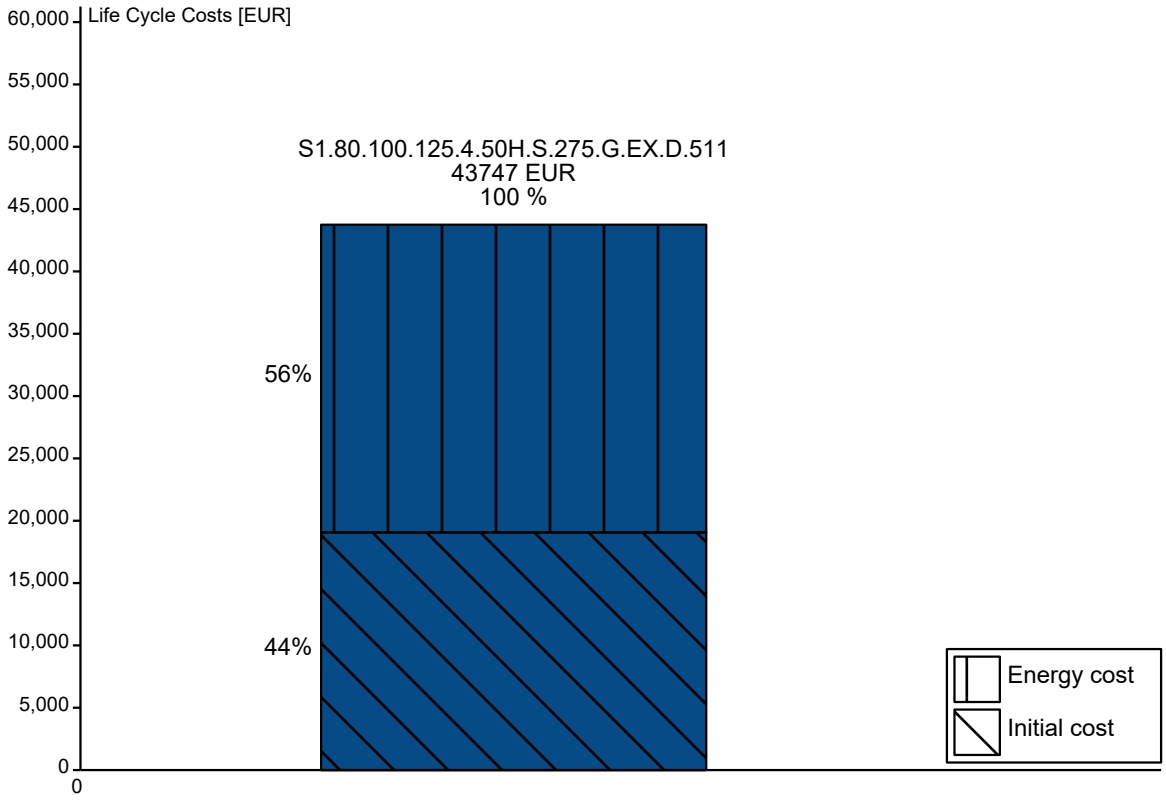
Installation illustration

Zeta Values

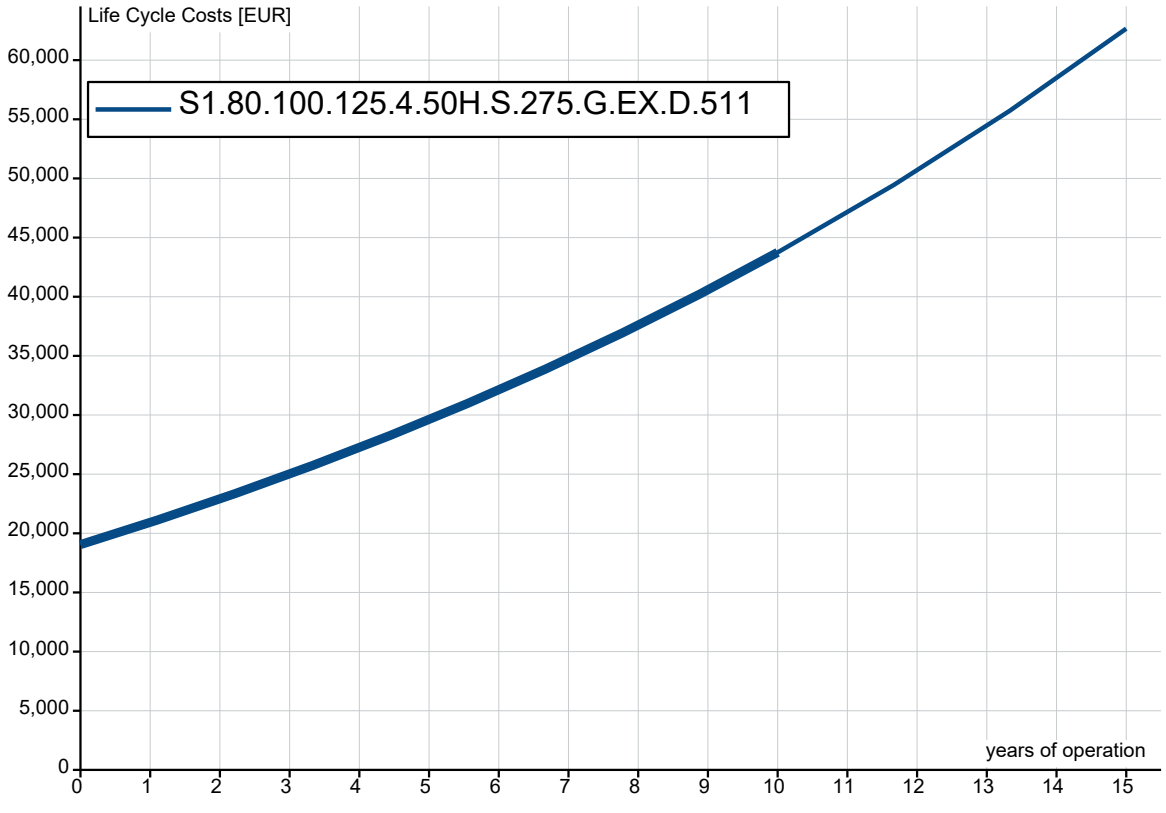
Company name:
Created by:
Phone:

Date: 25/05/2021

Life Cycle Costs - 10 years of operation



Payback Time



Company name:
Created by:
Phone:

Date: 25/05/2021

Life Cycle Cost Report

Requirements:	*General inputs:*	
Flow: 40.1 l/s	Energy price (high tariff): 0.15 EUR/kWh	n - Life in years: 10
Capacity per year: ----		i - Interest rate: 0 %
Head: ----		p - Inflation rate: 6 %

Inputs:	A:	
System:	S1.80.100.125.4.50H.S.275.G.EX.D.511	
	per year	total (life)
Initial investment cost [EUR]		
Pump system [EUR]		
Further investment [EUR]		
Installation and commissioning cost [EUR]		
Reduction of investments in the grid [EUR]		
Energy cost [EUR]	**1820**	**24700**
Energy consumption [kWh/Year]	12133	
Specific Energy [kWh/m³]		
Change of efficency per year [%/Year]		
Operating cost [EUR/Year]		
[EUR/Year]		
Routine maintenance cost [EUR/Year]		
Repair cost [EUR/Year]		
Other yearly costs [EUR/Year]		
Downtime and loss of production cost [EUR/Year]		
Environmental cost [EUR]		
Decommisioning and disposal cost [EUR]		

Output:

Net present LCC-value [EUR]		**43747**
of which present energy cost is [EUR]		24700
and maintenance cost is [EUR]		
of which net present energy cost % is [%]		56.5
and maintenance cost % is [%]		0.0

Company name:
Created by:
Phone:

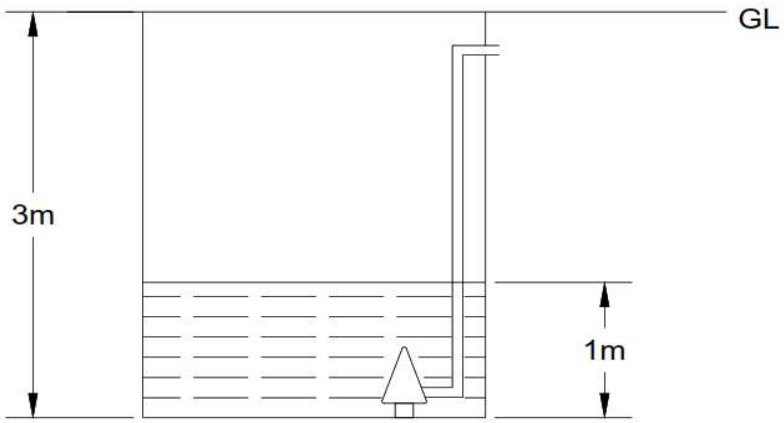
Date: 25/05/2021

Order Data:

Product name: S1.80.100.125.4.50H.S.275.G.EX.D.511
Amount: 1
Product No: 95113802
Price:

Total: Price on request

Net positive suction head calculations



$NPSH_A$ depends on the particular pipeline system

$NPSH_A = (\frac{\rho_{atm}}{\rho_g} - H_{Ls} - Z_s) - \frac{P_v}{\rho_g}$

H_{Ls} ⟶ Headloss at suction end is minor, can be ignored

Z_s ⟶ Given the system has submerged pump, Z_s will be positive

P_v ⟶ 2.34 kPa @ 20°C

P_{atm} ⟶ 101.3 kPa

$$NPSH_A = \left(\frac{101.5 * 10^3}{992 * 9.81} - 0 + 1\right) - \frac{2.34 * 10^7}{992 * 9.81}$$

$$= (10.4 + 1) - 0.24$$

$$= 11.16$$

Based on pump modes

Pump Type 2 $NPSH_R = 1.96 \approx 2m$

Pump Type 1 $NPSH_R = 4.2m$

To prevent cavitation

$NPSH_R \leq NPSH_A$

$2 \leq 11.16$

$4.2 \leq 11.16$