SE1, SEV

1.1 to 11 kW
50 Hz

be
think
innovate

GRUNDFOS

Table of contents

1. Introduction

1.1 Introduction

This data booklet deals with Grundfos submersible wastewater and sewage pumps.

Two types of pumps are available:

- SE1 pumps with S-**tube**® impeller
- SEV pumps with SuperVortex (free-flow) impeller.

TM048007

*SE1 (S-**tube**®) and SEV (SuperVortex) pumps*

The S-**tube**® impeller is the only impeller available in the wastewater market that does not compromise either efficiency or free passage through the pump.

The SuperVortex or S-**tube**® impeller pumps are specifically designed for pumping sewage and wastewater in a wide range of municipal, private and industrial applications.

The pumps are made of wear-resistant materials, such as cast iron and stainless steel. These materials ensure long and reliable operation.

The pumps are fitted with IEC IE1 premium efficiency motors from 1.1 kW up to and including 11 kW. The motors are either 2- or 4-pole motors, depending on the motor size.

The free passage (spherical) in the pumps is 50 to 100 mm, depending on the pump type. All pump housings have a cast iron, PN 10 outlet flange, size DN 65 to DN 150, according to EN 1092-2.

The pumps are available for the following installation types:

- dry installation, vertical or horizontal
- submerged installation on auto-coupling system
- submerged installation, free-standing on ring stand.

1.2 Applications

Typical application is transfer of liquid including:

- wastewater with a high fibre content
- drainage and surface water
- domestic wastewater
- municipal wastewater
- industrial wastewater
- process and cooling water.

The pumps can be used in locations such as:

- municipal network pumping stations
- inlet pumping stations in wastewater treatment plants
- primary clarification pits in wastewater treatment plants
- secondary clarification pits in wastewater treatment plants
- stormwater pumping stations
- public buildings
- residential buildings
- factories and industry.

1.3 Smartdesign®

smartdesig®n describes the functional design of our products that combines elegant appearance with smart features, created with customer needs in mind.

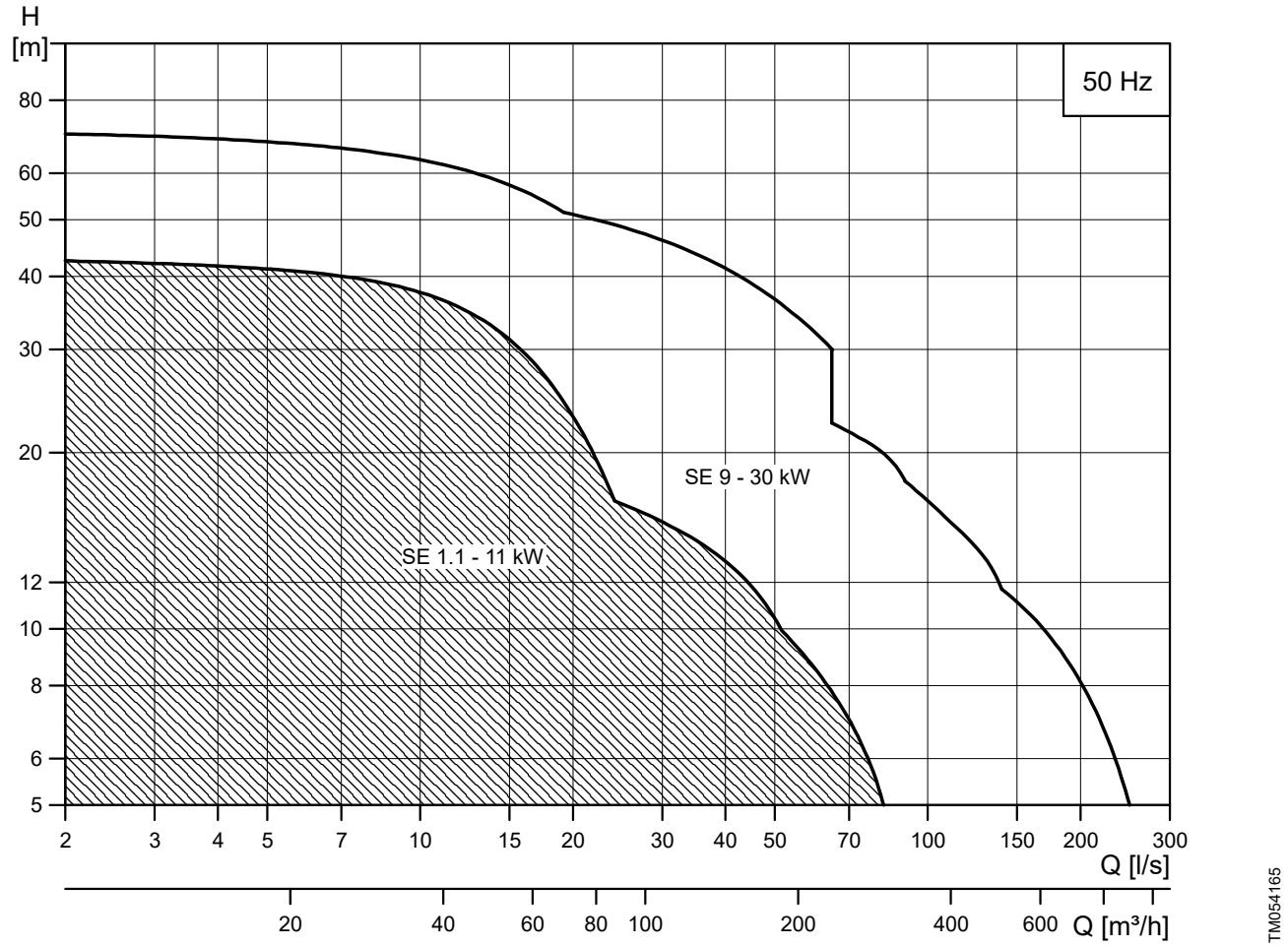
smartdesign® does not only look good; the design also makes installation, operation and maintenance of the product easier and more user-friendly.

The following **smart**design® features are included in the SE1 and SEV pumps:

- cooling jacket for internal cooling of the motor which makes the pumps suitable for dry and submerged installation without the need for external cooling
- moisture-proof cable plug connection made of corrosion-resistant stainless steel with conductors embedded in polyethane sealant
- stainless steel clamp connection between motor housing and pump housing for easy service
- double mechanical cartridge shaft seal for easy service and perfect seal face alignment
- power cable incorporating wires for thermal sensors in the motor windings
- no additional cable required for sensors in pumps with sensors
- monitoring of operating conditions for pumps with sensors
- moisture detector for continuous monitoring of motor enclosure and automatic cut-out in case of leakage
- heavy-duty bearings greased for life
- built for frequency converter operation
- smooth pump surface preventing dirt and impurities from sticking to the pump
- self-cleaning S-tube® impeller with a long vane reducing the risk of jamming or clogging, or SuperVortex impeller with high pumping efficiency and less downtime
- explosion-proof motors for potentially explosive environments
- motor insulation class F (155 °C)
- enclosure class IP68 with one thermal sensor in each phase.

2. Performance range

2.1 Performance overview



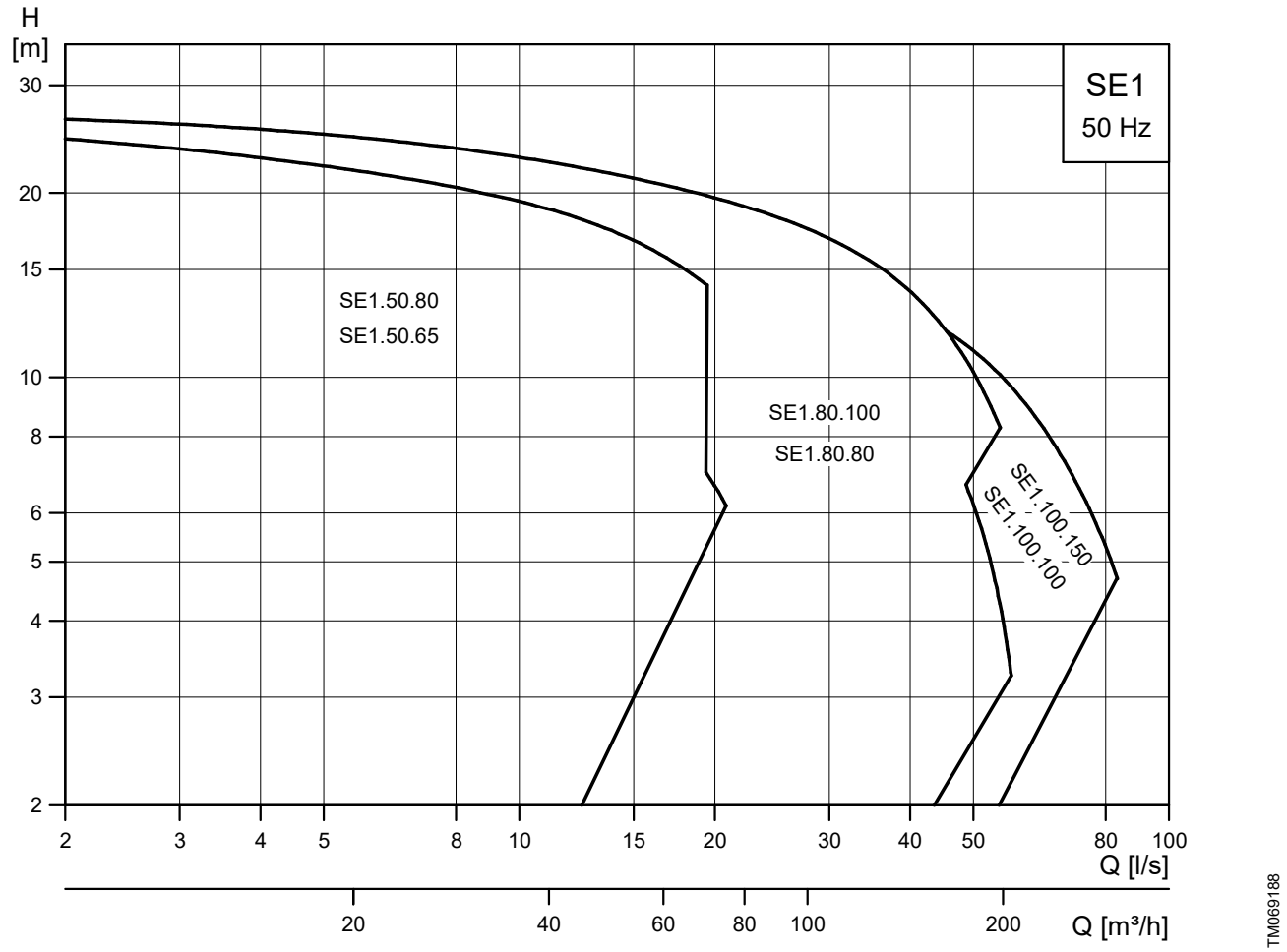
Performance overview

Related information

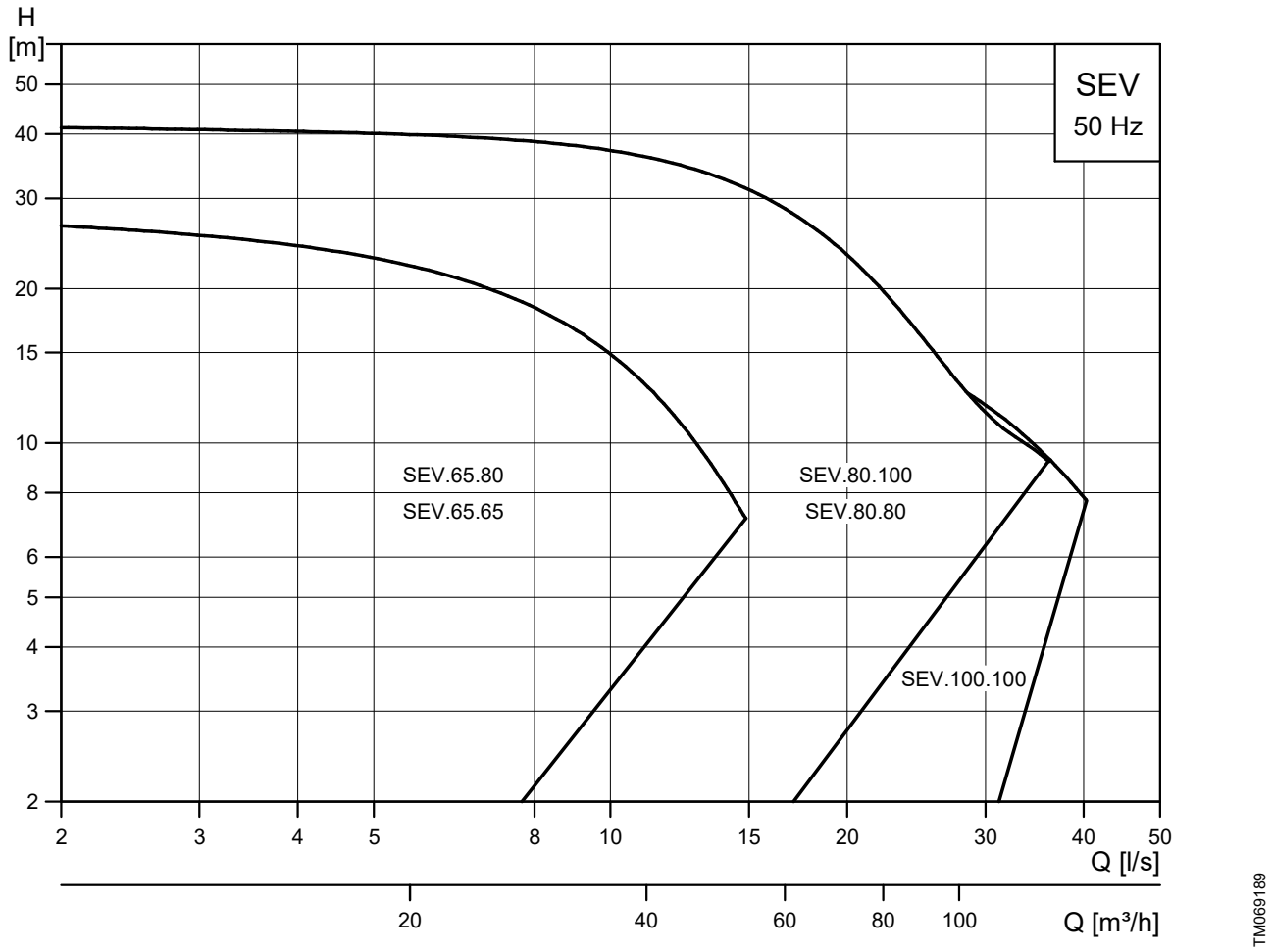
2.2 Performance range

2.2 Performance range

The figure below gives an overview of the various sizes and impeller types.



Performance range of SE1 pumps



Performance range of SEV pumps

Note: For information about the performance range of each individual pump, see *9. Performance curves and technical data*. If your required duty point exceeds the grey performance range below, see the data booklets of the SL (1/V), SE (1/V) and S range in the Grundfos Product Center.

2.2.1 Performance curves and technical data

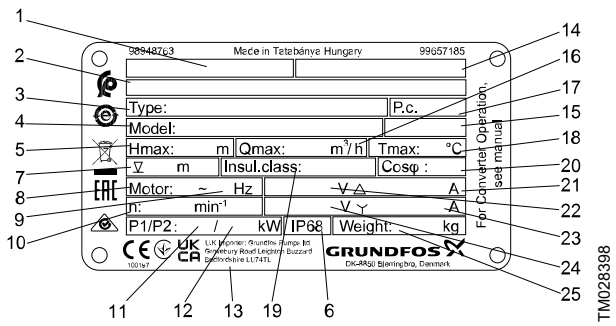
SE1		SEV		SEV	
SE1.50.65.22.(Ex).2	*SE1.50.65.22.(Ex).2*	SEV.65.65.22.(Ex).2	*SEV.65.65.22.(Ex).2*	SEV.80.100.92.(Ex).2	*SEV.80.100.92.(Ex).2*
SE1.50.65.30.(Ex).2	*SE1.50.65.30.(Ex).2*	SEV.65.65.30.(Ex).2	*SEV.65.65.30.(Ex).2*	SEV.80.100.110.(Ex).2	*SEV.80.100.110.(Ex).2*
SE1.50.65.40.(Ex).2	*SE1.50.65.40.(Ex).2*	SEV.65.65.40.(Ex).2	*SEV.65.65.40.(Ex).2*	SEV.100.100.30.(Ex).4	*SEV.100.100.30.(Ex).4*
SE1.50.80.22.(Ex).2	*SE1.50.80.22.(Ex).2*	SEV.65.80.22.(Ex).2	*SEV.65.80.22.(Ex).2*	SEV.100.100.40.(Ex).4	*SEV.100.100.40.(Ex).4*
SE1.50.80.30.(Ex).2	*SE1.50.80.30.(Ex).2*	SEV.65.80.30.(Ex).2	*SEV.65.80.30.(Ex).2*	SEV.100.100.55.(Ex).4	*SEV.100.100.55.(Ex).4*
SE1.50.80.40.(Ex).2	*SE1.50.80.40.(Ex).2*	SEV.65.80.40.(Ex).2	*SEV.65.80.40.(Ex).2*	SEV.100.100.75.(Ex).4	*SEV.100.100.75.(Ex).4*
SE1.80.80.15.(Ex).4	*SE1.80.80.15.(Ex).4*	SEV.80.80.11.(Ex).4	*SEV.80.80.11.(Ex).4*		
SE1.80.80.22.(Ex).4	*SE1.80.80.22.(Ex).4*	SEV.80.80.13.(Ex).4	*SEV.80.80.13.(Ex).4*		
SE1.80.80.30.(Ex).4	*SE1.80.80.30.(Ex).4*	SEV.80.80.15.(Ex).4	*SEV.80.80.15.(Ex).4*		
SE1.80.80.40.(Ex).4	*SE1.80.80.40.(Ex).4*	SEV.80.80.22.(Ex).4	*SEV.80.80.22.(Ex).4*		
SE1.80.80.55.(Ex).4	*SE1.80.80.55.(Ex).4*	SEV.80.80.40.(Ex).4	*SEV.80.80.40.(Ex).4*		
SE1.80.80.75.(Ex).4	*SE1.80.80.75.(Ex).4*	SEV.80.80.40.(Ex).2	*SEV.80.80.40.(Ex).2*		
SE1.80.100.15.(Ex).4	*SE1.80.100.15.(Ex).4*	SEV.80.80.60.(Ex).2	*SEV.80.80.60.(Ex).2*		

SE1		SEV	SEV
SE1.80.100.22.(Ex).4	*SE1.80.100.22.(Ex).4*	SEV.80.80.75.(Ex).2	*SEV.80.80.75.(Ex).2*
SE1.80.100.30.(Ex).4	*SE1.80.100.30.(Ex).4*	SEV.80.80.92.(Ex).2	*SEV.80.80.92.(Ex).2*
SE1.80.100.40.(Ex).4	*SE1.80.100.40.(Ex).4*	SEV.80.80.110.(Ex).2	*SEV.80.80.110.(Ex).2*
SE1.80.100.55.(Ex).4	*SE1.80.100.55.(Ex).4*	SEV.80.100.11.(Ex).4	*SEV.80.100.11.(Ex).4*
SE1.80.100.75.(Ex).4	*SE1.80.100.75.(Ex).4*	SEV.80.100.13.(Ex).4	*SEV.80.100.13.(Ex).4*
SE1.100.100.40.(Ex).4	*SE1.100.100.40.(Ex).4*	SEV.80.100.15.(Ex).4	*SEV.80.100.15.(Ex).4*
SE1.100.100.55.(Ex).4	*SE1.100.100.55.(Ex).4*	SEV.80.100.22.(Ex).4	*SEV.80.100.22.(Ex).4*
SE1.100.100.75.(Ex).4	*SE1.100.100.75.(Ex).4*	SEV.80.100.40.(Ex).4	*SEV.80.100.40.(Ex).4*
SE1.100.150.40.(Ex).4	*SE1.100.150.40.(Ex).4*	SEV.80.100.40.(Ex).2	*SEV.80.100.40.(Ex).2*
SE1.100.150.55.(Ex).4	*SE1.100.150.55.(Ex).4*	SEV.80.100.60.(Ex).2	*SEV.80.100.60.(Ex).2*
SE1.100.150.75.(Ex).4	*SE1.100.150.75.(Ex).4*	SEV.80.100.75.(Ex).2	*SEV.80.100.75.(Ex).2*

3. Identification

3.1 Nameplate

Fix the extra nameplate supplied with the pump at the installation site or keep it in the cover of this booklet.



Nameplate

Pos.	Description
1	Notified body and explosion protection classification
2	Explosion protection mark
3	Type designation
4	Product number
5	Maximum head [m]
6	Enclosure class
7	Maximum installation depth [m]
8	Number of phases
9	Frequency [Hz]
10	Speed [min^{-1}]
11	Motor input power P1 [kW]
12	Motor output power P2 [kW]
13	Country of production
14	Explosion protection certificate number
15	Standard for wastewater lifting stations for buildings and installation sites
16	Maximum flow rate [m^3/h]
17	Production code (year/week)
18	Maximum liquid temperature [°C]
19	Insulation class
20	Power factor
21	Rated current [A], delta connection
22	Rated voltage [V], delta connection
23	Rated current [A], star connection
24	Rated voltage [V], star connection
25	Net weight [kg]

3.2 Type key

Example: **SE1.80.80.40.A.Ex.4.51D.B**

Code	Explanation	Designation
SE	Sewage and wastewater pump	Pump type
1	S-tube® impeller	Impeller type
V	SuperVortex impeller	
80	Maximum solids size [mm]	Pump passage
80	Nominal diameter [mm]	Pump outlet
40	Output power P2/10	Power [kW]
[ ]	Standard (without sensor)	Sensor version
A	Sensor version	
[ ]	Non-explosion-proof pump (standard)	Pump version
Ex	Explosion-proof pump	
2	2-pole	Number of poles
4	4-pole	
50	50 Hz	Frequency [Hz] [1]
0B	400-415 V, DOL	Voltage and starting method
0D	380-415 V, DOL	
1D	380-415 V, Y/D	
0E	220-240 V, DOL	
1E	220-240 V, Y/D	
[ ]	First generation	Generation [2]
B	Second generation	
[ ]	Cast iron impeller, pump housing and top cover	Pump materials
Q	Stainless steel impeller, cast iron pump housing and top cover	
R	Entire pump of stainless steel	
S	Stainless steel pump housing, impeller and intermediate flange and cast iron top cover (on request)	
D	Stainless steel	
Z	Custom-built products	Customisation

1 Maximum frequency in case of frequency-converter operation.

2 The generation code distinguishes between pumps of different design but with the same power rating.

4. Selection of product

4.1 Ordering the product

When ordering a pump, take these aspects into consideration:

- pump type
- custom-built variation (optional)
- explosion-proof version
- accessories
- pump controller.

4.1.1 Pump type

Use the table below to identify the pump type that best fulfils your needs. The table is for guidance only.

Description	SE1	SEV
Liquid and operating characteristics		
Dry solids content up to 3 %	•	•
Dry solids content up to 5 %		•
Relatively low content of fibres and solids	•	•
Relatively high content of fibres and solids		•
Relatively low number of operating hours	•	•
Relatively high number of operating hours	•	
Applications		
Stormwater	•	•
Groundwater	•	•
Drainage and surface water	•	•
Drainage and surface water with small impurities	•	•
Abrasive surface water	•	•
Wastewater with long fibres e.g. from laundries	•	•
Domestic wastewater with discharge from toilets	•	•
Municipal sewage	•	•
Sewage from commercial buildings	•	•
Industrial process water with fibres/solids		•
Industrial process water with solids	•	•
Industrial process water without solids and fibres	•	

After selecting the pump type, use *Product range* and *Type key* to identify the pump that best fulfils your needs.

The list below is a detailed description of the received product when this pump is ordered:

Pump	Product No
SE1.80.80.40.A.Ex.4.51D.B	96177682

- pump as specified in the type key
- 10 m cable
- paint: NCS 9000N black (RAL 9005), gloss code 30, thickness 100 µm
- thermal switch in motor windings
- tested according to ISO 9906:2012, grade 3B.

See section *Performance curves and technical data*.

Note: Product-specific data for the pump can be seen in the Grundfos Product Center, using the product number 96177682.

Related information

3.2 Type key

5. Product range

4.1.2 Custom-built variants

The pumps can be customised to meet individual requirements. Many pump features and options are available for customisation, such as explosion-proof versions, various cable lengths and special materials.

Variants can be seen in the List of variants on page List of variants.

For requirements or designs not included in the list, please contact Grundfos.

Related information

6.1 List of variants

4.1.3 Explosion-proof version

The entire range is available in explosion-proof versions.

For further information about explosion-proof pumps, see Approvals.

Related information

8.4 Approvals

4.1.4 Accessories

Depending on installation type and pump variant, accessories my need to be ordered. See *Accessories*.

Note: Ordered accessories are not factory-fitted.

4.1.5 Control options

The following Grundfos pump controllers are available:

- Grundfos Dedicated Controls (DC)
- Grundfos LC controllers.

The Grundfos Dedicated Controls is a control system designed for installation in either commercial buildings or network pumping stations with one to six pumps.

As standard, the system is supplied with application-optimised software and can be configured to meet specific pumping needs.

5. Product range

5.1 Standard pumps

5.1.1 SE1 pumps

5.1.1.1 Cast-iron impeller, pump housing and top cover

Pump type	Sensor		Number of poles	Voltage [V]				
				3 × 400-415 DOL	3 × 380-415 DOL	3 × 220-240 DOL	3 × 380-415 Y/D	3 × 220-240 Y/D
	Yes	No		[0B]	[0D]	[0E]	[1D]	[1E]
SE1.50.65.22		•	2	96048364	96047509	96047513		
	•		2	96177735	96177629	96338698		
SE1.50.65.30		•	2	96048368	96047517	96047521		
	•		2	96177736	96177630	96338699		
SE1.50.65.40		•	2	96048372			96047525	96047529
	•		2	96177737			96177631	96338700
SE1.50.80.22		•	2	96047399	96047981	96047985		
	•		2	96177738	96177632	96338701		
SE1.50.80.30		•	2	96047395	96047989	96047993		
	•		2	96177739	96177633	96338702		
SE1.50.80.40		•	2	96047391			96047997	96048001
	•		2	96177740			96177634	96338703
SE1.80.80.15		•	4	96048376	96047533	96047541		
	•		4	96177741	96177635	96338704		
SE1.80.80.22		•	4	96048384	96047549	96047557		
	•		4		96177636	96338705		
SE1.80.80.30		•	4	96048392	96047565	96047581		
	•		4	96177743	96177637	96338706		
SE1.80.80.40		•	4	96048408			96047597	96047605
	•		4	96177744			96177638	96338707
SE1.80.80.55		•	4	96048416			96047613	96047621
	•		4	96177745			96177639	96338708
SE1.80.80.75		•	4	96048424			96047627	96047635
	•		4	96177746			96177640	96338709
SE1.80.100.15		•	4	96047387	96048005	96048013		
	•		4	96177747	96177641	96338710		
SE1.80.100.22		•	4	96047379	96048021	96048029		
	•		4	96177748	96177642	96338711		
SE1.80.100.30		•	4	96047371	96048037	96048061		
	•		4	96177749	96177643	96338712		
SE1.80.100.40		•	4	96047355			96048069	96048077
	•		4	96177750			96177644	96338713
SE1.80.100.55		•	4	96047347			96048085	96048093
	•		4	96177751			96177645	96338714
SE1.80.100.75		•	4	96047339			96048099	96048107
	•		4	96177752			96177646	96338715
SE1.100.100.40		•	4	96048432			96047641	96047649
	•		4	96177753			96177647	96338716
SE1.100.100.55		•	4	96048440			96047657	96047665
	•		4	96177754			96177648	96338717

Pump type	Sensor		Number of poles	Voltage [V]				
				3 × 400-415 DOL	3 × 380-415 DOL	3 × 220-240 DOL	3 × 380-415 Y/D	3 × 220-240 Y/D
	Yes	No		[0B]	[0D]	[0E]	[1D]	[1E]
SE1.100.100.75		•	4	96048448			96047671	96047679
	•		4	96177755			96177649	96338718
SE1.100.150.40		•	4	96047331			96048113	96048121
	•		4	96177756			96177650	96338719
SE1.100.150.55		•	4	96047323			96048129	96048137
	•		4	96177757			96177651	96782341
SE1.100.150.75		•	4	96047315			96048143	96048151
	•		4	96177758			96177652	96338721

5.1.2 SEV

5.1.2.1 Pump with cast-iron impeller, pump housing and top cover

Pump type	Sensor		Number of poles	Voltage [V]				
				3 × 400-415 DOL	3 × 380-415 DOL	3 × 220-240 DOL	3 × 380-415 Y/D	3 × 220-240 Y/D
	Yes	No		[0B]	[0D]	[0E]	[1D]	[1E]
SEV.65.65.22		•	2	96048462	96047697	96047705		
	•		2	96177759	96177653	96338746		
SEV.65.65.30		•	2	96048470	96047713	96047721		
	•		2	96177760	96177654	96338747		
SEV.65.65.40		•	2	96048478			96047729	96047737
	•		2				96177655	96338748
		•	2	96177761			96177655	96338748
SEV.65.80.22		•	2	96047301	96048169	96048177		
	•		2	96177762	96177656	96338749		
SEV.65.80.30		•	2	96047293	96048185	96048193		
	•		2	96177763	96177657	96338750		
SEV.65.80.40		•	2	96047285			96048201	96048209
	•		2	96177764			96177658	96338751
SEV.80.80.11		•	4	96048486	96047745	96047751		
	•		4	96177765	96177659	96338752		
SEV.80.80.13		•	4	96048492	96047757	96047763		
	•		4	96177766	96177660	96338753		
SEV.80.80.15		•	4	96048498	96047769	96047775		
	•		4	96177767	96177661	96338754		
SEV.80.80.22		•	4	96047497	96047781	96047789		
	•		4	96177768	96177662	96338755		
SEV.80.80.40		•	2	96047473			96047829	96047837
		•	4	96047489			96047797	96047813
	•		2	96177770			96177664	96338757
	•		4	96177769			96177663	96338756
SEV.80.80.60		•	2	96047465			96047845	96047853
	•		2	96177771			96177665	96338758
SEV.80.80.75		•	2	96047457			96047861	96047869
	•		2	96177772			96177666	96338759
SEV.80.80.92		•	2	96047201			96047207	96047195
	•		2	96177773			96177667	96338760
SEV.80.80.110		•	2	96047449			96047877	96047885
	•		2	96177774			96177668	96338761
SEV.80.100.11		•	4	96780761	96780674	96780675		
	•		4	96780774	96780694	96780695		
SEV.80.100.13		•	4	96780762	96780676	96780677		
	•		4	96780775	96780696	96780697		
SEV.80.100.15		•	4	96780763	96780678	96780679		
	•		4	96780776	96780698	96780699		
SEV.80.100.22		•	4	96780760	96780680	96780681		
	•		4	96780777	96780700	96780701		
SEV.80.100.40		•	2	96780758			96780684	96780685
		•	4	96780759			96780682	96780683
	•		2	96780779			96780704	96780705
	•		4	96780778			96780702	96780703

Pump type	Sensor		Number of poles	Voltage [V]				
				3 × 400-415 DOL	3 × 380-415 DOL	3 × 220-240 DOL	3 × 380-415 Y/D	3 × 220-240 Y/D
	Yes	No		[0B]	[0D]	[0E]	[1D]	[1E]
SEV.80.100.60		•	2	96780757			96780686	96780687
	•		2	96780780			96780706	96780707
SEV.80.100.75		•	2	96780756			96780688	96780689
	•		2	96780781			96780708	96780709
SEV.80.100.92		•	2	96780754			96780690	96780691
	•		2	96780782			96780710	96780711
SEV.80.100.110		•	2	96780755			96780692	96780693
	•		2	96780783			96780712	96780713
SEV.100.100.30		•	4	96047443	96047893	96047909		
	•		4	96177775	96177669	96338762		
SEV.100.100.40		•	4	96047427			96047925	96047933
	•		4	96177776			96177670	96338763
SEV.100.100.55		•	4	96047419			96047941	96047949
	•		4	96177777			96177671	96338764
SEV.100.100.75		•	4	96047411			96047957	96047965
	•		4	96177778			96177672	96338765

Note: The range is also available with trimmed impeller to meet a specific duty point. Contact Grundfos for more information.

5.1.2.2 Entire pump of stainless steel (R version)

Pump type	Sensor		Number of poles	Voltage [V]				
				3 × 400-415 DOL	3 × 380-415 DOL	3 × 220-240 DOL	3 × 380-415 Y/D	3 × 220-240 Y/D
	Yes	No		[0B]	[0D]	[0E]	[1D]	[1E]
SEV.65.65.22		•	2	96962858	98489849	98489861		
	•		2	96966549	98489871	98489873		
SEV.65.65.30		•	2	96962859	98489850	98489862		
	•		2	96966550	98489872	98489874		
SEV.65.65.40		•	2	96962860			98489863	98489864
	•		2	96966551			98489875	98489876
SEV.65.80.22		•	2	96962867	98489865	98489867		
	•		2	96966642	98489877	98489879		
SEV.65.80.30		•	2	96962868	98489866	98489868		
	•		2	96966643	98489878	98489880		
SEV.65.80.40		•	2	96962869			98489869	98489870
	•		2	96966644			98489881	98489882
SEV.80.80.11		•	4	96962883	96889323	97679507		
	•		4	96966646	96962192	97683044		
SEV.80.80.13		•	4	96962885	96889324	97679508		
	•		4	96966648	96962193	97683045		
SEV.80.80.15		•	4	96962886	96889325	97679509		
	•		4	96966649	96962194	97683046		
SEV.80.80.22		•	4	96962887	96889326	97679510		
	•		4	96966650	96962195	97683047		
SEV.80.80.40		•	2	96962888			96889328	97679512
		•	4	96962889			96889327	97679511
	•		2	96966651			96962197	97683049
	•		4	96966652			96962196	97683048
SEV.80.80.60		•	2	96962890			96889329	97679513
	•		2	96966653			96962198	97683050
SEV.80.80.75		•	2	96980890			96889330	97679514
	•		2	96966654			96962199	97683051
SEV.80.80.92		•	2	96962891			96889331	97679515
	•		2	96966655			96962200	97683052
SEV.80.80.110		•	2	96962892			96889332	97679516
	•		2	96966656			96962201	97683053
SEV.80.100.11		•	4	96962934	96889333	97679517		
	•		4	96966658	96970539	97683054		
SEV.80.100.13		•	4	96962935	96889334	97679518		
	•		4	96966660	96970540	97683055		
SEV.80.100.15		•	4	96962936	96889335	97679519		
	•		4	96966661	96970541	97683056		
SEV.80.100.22		•	4	96980821	96889336	97679520		
	•		4	96966662	96970582	97683057		
SEV.80.100.40		•	2	96962937			96889338	97679522
		•	4	96962938			96889337	97679521
	•		2	96966663			96970584	97683059
	•		4	96966664			96970583	97683058
SEV.80.100.60		•	2	96962939			96889339	97679523
	•		2	96966665			96970585	97683060
SEV.80.100.75		•	2	96962940			96889340	97679524
	•		2	96966666			96970586	97683061
SEV.80.100.92		•	2	96962941			96889341	97679525
	•		2	96966667			96970587	97683062

Pump type	Sensor		Number of poles	Voltage [V]				
				3 × 400-415 DOL	3 × 380-415 DOL	3 × 220-240 DOL	3 × 380-415 Y/D	3 × 220-240 Y/D
	Yes	No		[0B]	[0D]	[0E]	[1D]	[1E]
SEV.80.100.110		•	2	96962942			96889342	97679526
	•		2	96966659			96970588	97683063
SEV.100.100.30		•	4	96965899	96889343	97679527		
	•		4	96966668	96962223	97683064		
SEV.100.100.40		•	4	96965900			96889344	97679528
	•		4	96966669			96962224	97683065
SEV.100.100.55		•	4	96965901			96889345	97679529
	•		4	96966670			96962225	97683066
SEV.100.100.75		•	4	96965932			96889346	97679530
	•		4	96966671			96962226	97683067

Note: The range is also available with trimmed impeller to meet a specific duty point. Contact Grundfos for more information.

5.1.2.3 Stainless steel impeller, cast-iron pump housing and top cover (Q version)

Pump type	Sensor		Number of poles	Voltage [V]				
				3 × 400-415 DOL	3 × 380-415 DOL	3 × 220-240 DOL	3 × 380-415 Y/D	3 × 220-240 Y/D
	Yes	No		[0B]	[0D]	[0E]	[1D]	[1E]
SEV.65.65.22		•	2	98451161	98450865	98450867		
	•		2	98451178	98450897	98450899		
SEV.65.65.30		•	2	98451162	98450866	98450868		
	•		2	98451179	98450898	98450900		
SEV.65.65.40		•	2	98451163			98450869	98450870
	•		2	98451180			98450931	98450932
SEV.65.80.22		•	2	98451164	98450871	98450873		
	•		2	98451181	98450933	98450935		
SEV.65.80.30		•	2	98451165	98450872	98450874		
	•		2	98451182	98450934	98450936		
SEV.65.80.40		•	2	98451166			98450875	98450876
	•		2	98451183			98450937	98450938
SEV.80.80.11		•	4	97638245	97637756	97679037		
	•		4	97638154	97638036	97679100		
SEV.80.80.13		•	4	97638246	97637757	97679038		
	•		4	97638155	97638037	97679101		
SEV.80.80.15		•	4	97638247	97637758	97679039		
	•		4	97638156	97638038	97679102		
SEV.80.80.22		•	4	97638248	97637759	97679040		
	•		4	97638157	97638039	97679103		
SEV.80.80.40		•	2	97638250			97637761	97679042
		•	4	97638249			97637760	97679041
	•		2	97638159			97638051	97679105
	•		4	97638158			97638040	97679104
SEV.80.80.60		•	2	97638251			97637762	97679043
	•		2	97638160			97638052	97679106
SEV.80.80.75		•	2	97638252			97637763	97679044
	•		2	97638161			97638053	97679107
SEV.80.80.92		•	2	97638253			97637764	97679045
	•		2	97638162			97638054	97679108
SEV.80.80.110		•	2	97638254			97637765	97679046
	•		2	97638163			97638055	97679109
SEV.80.100.11		•	4	97638255	97637766	97679047		
	•		4	97638164	97638056	97679110		
SEV.80.100.13		•	4	97638256	97637767	97679048		
	•		4	97638165	97638057	97679111		
SEV.80.100.15		•	4	97638257	97637768	97679049		
	•		4	97638166	97638058	97679112		
SEV.80.100.22		•	4	97638258	97637769	97679050		
	•		4	97638167	97638059	97679113		
SEV.80.100.40		•	2	97638260			97637771	97679052
		•	4	97638259			97637770	97679051
	•		2	97638169			97638061	97679115
	•		4	97638168			97638060	97679114
SEV.80.100.60		•	2	97638261			97637772	97679053
	•		2	97638170			97638062	97679116
SEV.80.100.75		•	2	97638262			97637773	97679054
	•		2	97638171			97638063	97679117
SEV.80.100.92		•	2	97638263			97637774	97679055
	•		2	97638172			97638064	97679118

Pump type	Sensor		Number of poles	Voltage [V]				
				3 × 400-415 DOL	3 × 380-415 DOL	3 × 220-240 DOL	3 × 380-415 Y/D	3 × 220-240 Y/D
	Yes	No		[0B]	[0D]	[0E]	[1D]	[1E]
SEV.80.100.110		•	2	97638264			97637775	97679056
	•		2	97638173			97638065	97679119
SEV.100.100.30		•	4	97638265	97637776	97679057		
	•		4	97638174	97638066	97679120		
SEV.100.100.40		•	4	97638266			97637777	97679058
	•		4	97638175			97638067	97679121
SEV.100.100.55		•	4	97638267			97637778	97679059
	•		4	97638176			97638068	97679122
SEV.100.100.75		•	4	97638268			97637779	97679060
	•		4	97638177			97638069	97679123

Note: The above range is also available with trimmed impeller to meet a specific duty point. Contact Grundfos for more information.

5.2 Explosion-proof pumps

5.2.1 SE1

5.2.1.1 Cast-iron impeller, pump housing and top cover

Pump type	Sensor		Number of poles	Voltage [V]				
				3 × 400-415 DOL	3 × 380-415 DOL	3 × 220-240 DOL	3 × 380-415 Y/D	3 × 220-240 Y/D
	Yes	No		[0B]	[0D]	[0E]	[1D]	[1E]
SE1.50.65.22		•	2	96102066				
	•		2		96177673	96338722		
SE1.50.65.30		•	2	96102068				
	•		2		96177674	96338723		
SE1.50.65.40		•	2	96102071				
	•		2				96177675	96338724
SE1.50.80.22		•	2	96102073				
	•		2		96177676	96338725		
SE1.50.80.30		•	2	96102075				
	•		2		96177677	96338726		
SE1.50.80.40		•	2	96102078				
	•		2				96177678	96338727
SE1.80.80.15		•	4	96102080				
	•		4		96177679	96338728		
SE1.80.80.22		•	4	96102081				
	•		4		96177680	96338729		
SE1.80.80.30		•	4	96102082				
	•		4		96177681	96338730		
SE1.80.80.40		•	4	96102084				
	•		4				96177682	96338731
SE1.80.80.55		•	4	96102087				
	•		4				96177683	96338732
SE1.80.80.75		•	4	96102090				
	•		4				96177684	96338733
SE1.80.100.15		•	4	96102092				
	•		4		96177685	96338734		
SE1.80.100.22		•	4	96102093				
	•		4		96177686	96338735		
SE1.80.100.30		•	4	96102094				
	•		4		96177687	96338736		
SE1.80.100.40		•	4	96102096				
	•		4				96177688	96338737
SE1.80.100.55		•	4	96102099				
	•		4				96177689	96338738
SE1.80.100.75		•	4	96102102				
	•		4				96177690	96338739
SE1.100.100.40		•	4	96102105				
	•		4				96177691	96338740
SE1.100.100.55		•	4	96102108				
	•		4				96177692	96338741
SE1.100.100.75		•	4	96102111				
	•		4				96177693	96338742
SE1.100.150.40		•	4	96102114				
	•		4				96177694	96338743

Pump type	Sensor		Number of poles	Voltage [V]				
				3 × 400-415 DOL	3 × 380-415 DOL	3 × 220-240 DOL	3 × 380-415 Y/D	3 × 220-240 Y/D
	Yes	No		[0B]	[0D]	[0E]	[1D]	[1E]
SE1.100.150.55		•	4	96102117				
	•		4				96177695	96338744
SE1.100.150.75		•	4	96102120				
	•		4				96177696	96338745

5.2.2 SEV

5.2.2.1 Cast-iron impeller, pumps housing and top cover

Pump type	Sensor		Number of poles	Voltage [V]				
				3 × 400-415 DOL	3 × 380-415 DOL	3 × 220-240 DOL	3 × 380-415 Y/D	3 × 220-240 Y/D
	Yes	No		[0B]	[0D]	[0E]	[1D]	[1E]
SEV.65.65.22		•	2	96102122				
	•		2		96177697	96338766		
SEV.65.65.30		•	2	96102123				
	•		2		96177698	96338767		
SEV.65.65.40		•	2	96102125				
	•		2				96177699	96338768
SEV.65.80.22		•	2	96102127				
	•		2		96177700	96338769		
SEV.65.80.30		•	2	96102128				
	•		2		96177701	96338770		
SEV.65.80.40		•	2	96102130				
	•		2				96177702	96338771
SEV.80.80.11		•	4	96102132				
	•		4		96177703	96338772		
SEV.80.80.13		•	4	96102133				
	•		4		96177704	96338773		
SEV.80.80.15		•	4	96102134				
	•		4		96177705	96338774		
SEV.80.80.22		•	4	96102135				
	•		4		96177706	96338775		
SEV.80.80.40		•	2	96102138				
		•	4	96102136				
	•		2				96177708	96338777
	•		4				96177707	96338776
SEV.80.80.60		•	2	96102141				
	•		2				96177709	96338778
SEV.80.80.75		•	2	96102144				
	•		2				96177710	96338779
SEV.80.80.92		•	2	96102147				
	•		2				96177711	96338780
SEV.80.80.110		•	2	96102150				
	•		2				96177712	96338781
SEV.80.100.11		•	4	96780764				
	•		4		96780734	96780735		
SEV.80.100.13		•	4	96780765				
	•		4		96780736	96780737		
SEV.80.100.15		•	4	96780766				
	•		4		96780738	96780739		
SEV.80.100.22		•	4	96780767				
	•		4		96780740	96780741		
SEV.80.100.40		•	2	96780769				
		•	4	96780768				
	•		2				96780744	96780745
	•		4				96780742	96780743
SEV.80.100.60		•	2	96780770				
	•		2				96780746	96780747

Pump type	Sensor		Number of poles	Voltage [V]				
				3 × 400-415 DOL	3 × 380-415 DOL	3 × 220-240 DOL	3 × 380-415 Y/D	3 × 220-240 Y/D
	Yes	No		[0B]	[0D]	[0E]	[1D]	[1E]
SEV.80.100.75		•	2	96780771				
	•		2				96780748	96780749
SEV.80.100.92		•	2	96780772				
	•		2				96780750	96780751
SEV.80.100.110		•	2	96780773				
	•		2				96780752	96780753
SEV.100.100.30		•	4	96102152				
	•		4		96177713	96338782		
SEV.100.100.40		•	4	96102154				
	•		4				96177714	96338783
SEV.100.100.55		•	4	96102157				
	•		4				96177715	96338784
SEV.100.100.75		•	4	96102160				
	•		4				96177716	96338785

Note: The range is also available with trimmed impeller to meet a specific duty point. Contact Grundfos for more information.

Note: The range is also available in stainless steel variants, combined with Ex version with sensors. Contact Grundfos for more information.

6. Variants

6.1 List of variants

Motor		
Various cable lengths	**Note:** When you use a cable length different from the standard length, calculate a new cable cross section.	15 m
		20 m
		25 m
		30 m
		40 m
		50 m
EMC power cables	Screened power cables designed for frequency converter operation	10 m
		15 m
		20 m
		25 m
		30 m
		40 m
		50 m

Tests		
Note: Specify all requests regarding the testing when you order the pump.		
Test at specified duty on standard impeller curve		
Trimmed impeller for specified duty test [1]		
Additional test of entire QH curve (including report)	5-10 duty points from the pump performance curve	
Different test standard	Efficiency guaranteed by Grundfos	ISO 9906:2012, grade 1B tolerance
		ISO 9906:2012, grade 2B tolerance
Customer-requested duty point	Test according to the customer-specified duty point on standard pump curve. Contact Grundfos.	ISO 9906:2012, grades 1 and 2 tolerances
Vibration test (including report)	According to the Grundfos factory quality standard	
String test	Contact Grundfos.	
Witness test	Contact Grundfos.	

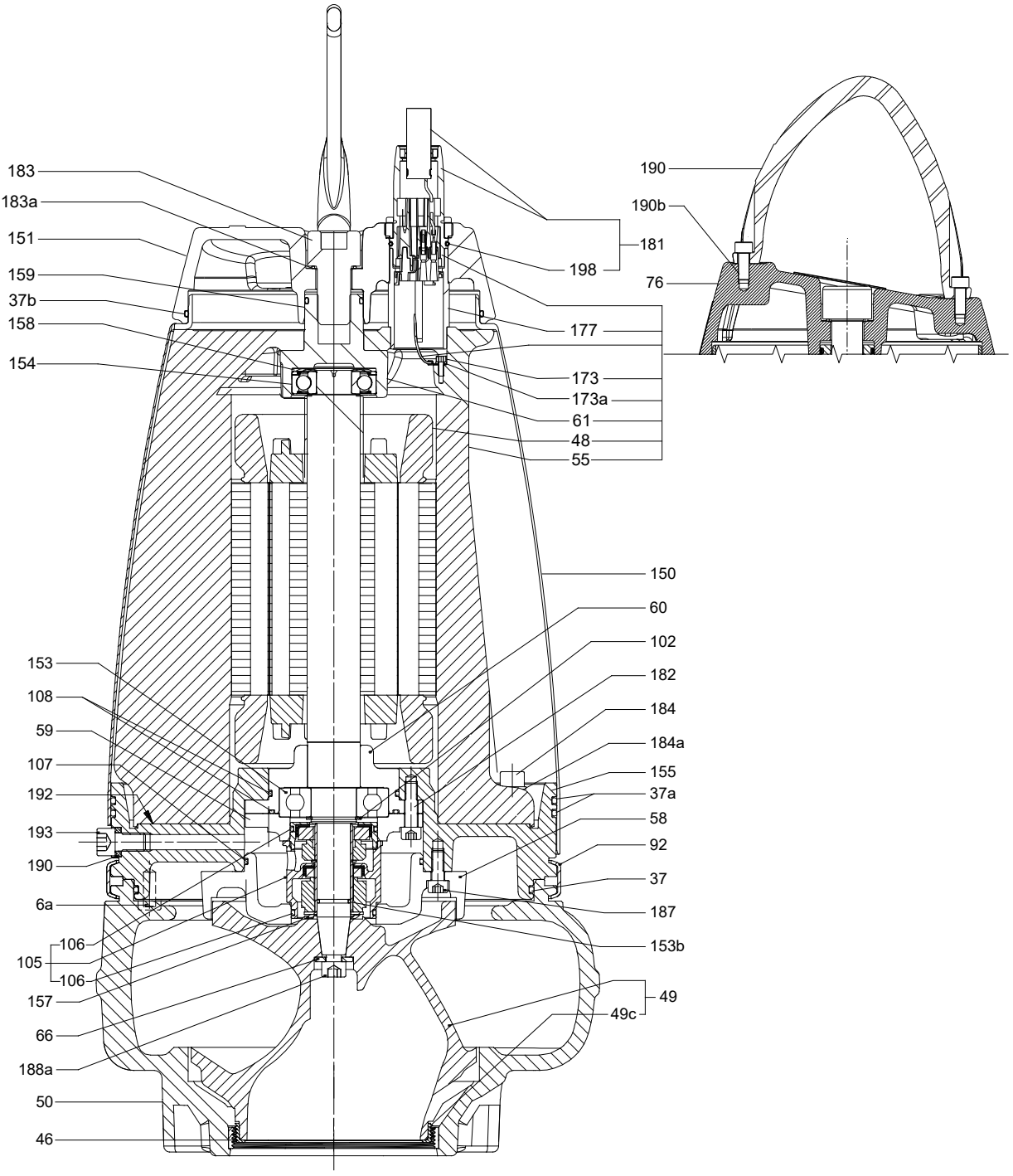
1 SEV impellers can be trimmed on request.

Certificates		
ATEX-approved pump report	Special Grundfos report. Contact Grundfos.	
Certificate of compliance with order	According to EN10204 2.1	According to ISO 9906:2012, grades 1, 2 and 3B.
Pump certificate	According to EN10204 2.2	According to ISO 9906:2012, grades 1, 2 and 3B.
Inspection certificate	According to EN10204 3.1	According to ISO 9906:2012, grades 1, 2 and 3B.
Material specification report	According to EN10204 3.1B	
Material report with certificate	According to EN10204 3.2	Material supplier information
Inspection certificate, Lloyds Register	According to EN10204 3.2	
Inspection certificate, DNV (Det Norske Veritas)	According to EN10204 3.2	
Inspection certificate, Germanischer Lloyd	According to EN10204 3.2	
Inspection certificate, American Bureau of Shipping	According to EN10204 3.2	
Inspection certificate, Bureau Veritas	According to EN10204 3.2	
Registro Italiano Navale Agenture	According to EN10204 3.2	
Other third-party test certificates	Contact Grundfos.	

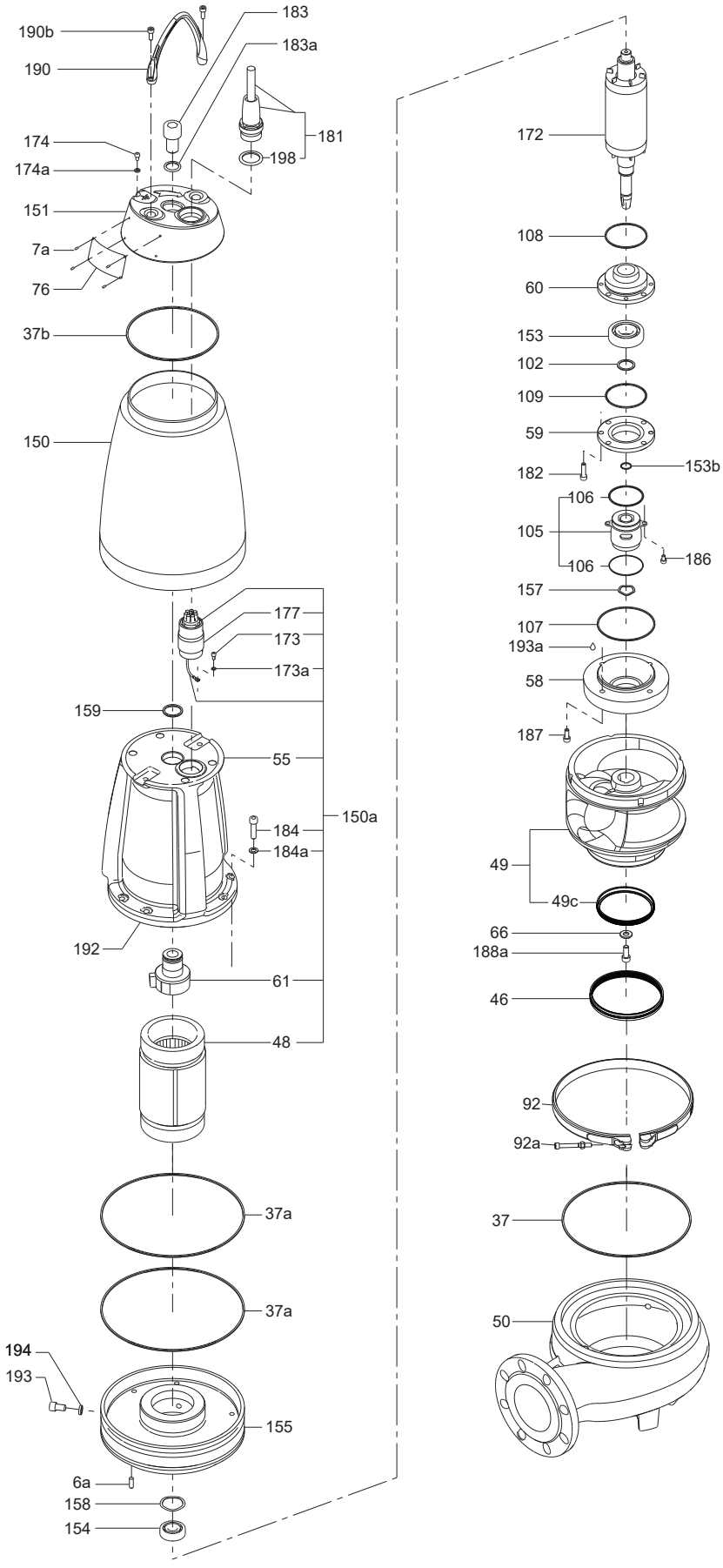
Miscellaneous		
Solution	Customer benefits	
FKM sealing (optional)	Resistant to acids Resistant to mineral oils and vegetable oils Resistant to most solvents (toluene, petrol, trichloroethylene)	Contact Grundfos.
Cable protection hose	Resistant to acids Resistant to most oils Resistant to most solvents	Contact Grundfos.
Heavy-duty wear ring kit	Wear and seal ring kit for the handling of abrasive media Increased wear resistance of impeller in abrasive applications Increased reliability and life of pump	Contact Grundfos.
Aluminium anodes	Increased life of pumps in aggressive environments such as maritime applications Increased corrosion resistance	Contact Grundfos.
Stainless steel SuperVortex impeller according to EN 1.4517	Increased wear resistance	Contact Grundfos.
Ceramic coating of impeller and pump housing	Reduced wear rate of cast-iron parts Increased corrosion resistance Beneficial in case of low number of operating hours	Contact Grundfos.
Extra epoxy coating, 300 µm		Contact Grundfos.
Top coating (black RAL9005, red RAL3000 and other colours)		Contact Grundfos.
Special packaging		Contact Grundfos.
Special nameplate		Contact Grundfos.
Other variants		Contact Grundfos.

7. Construction

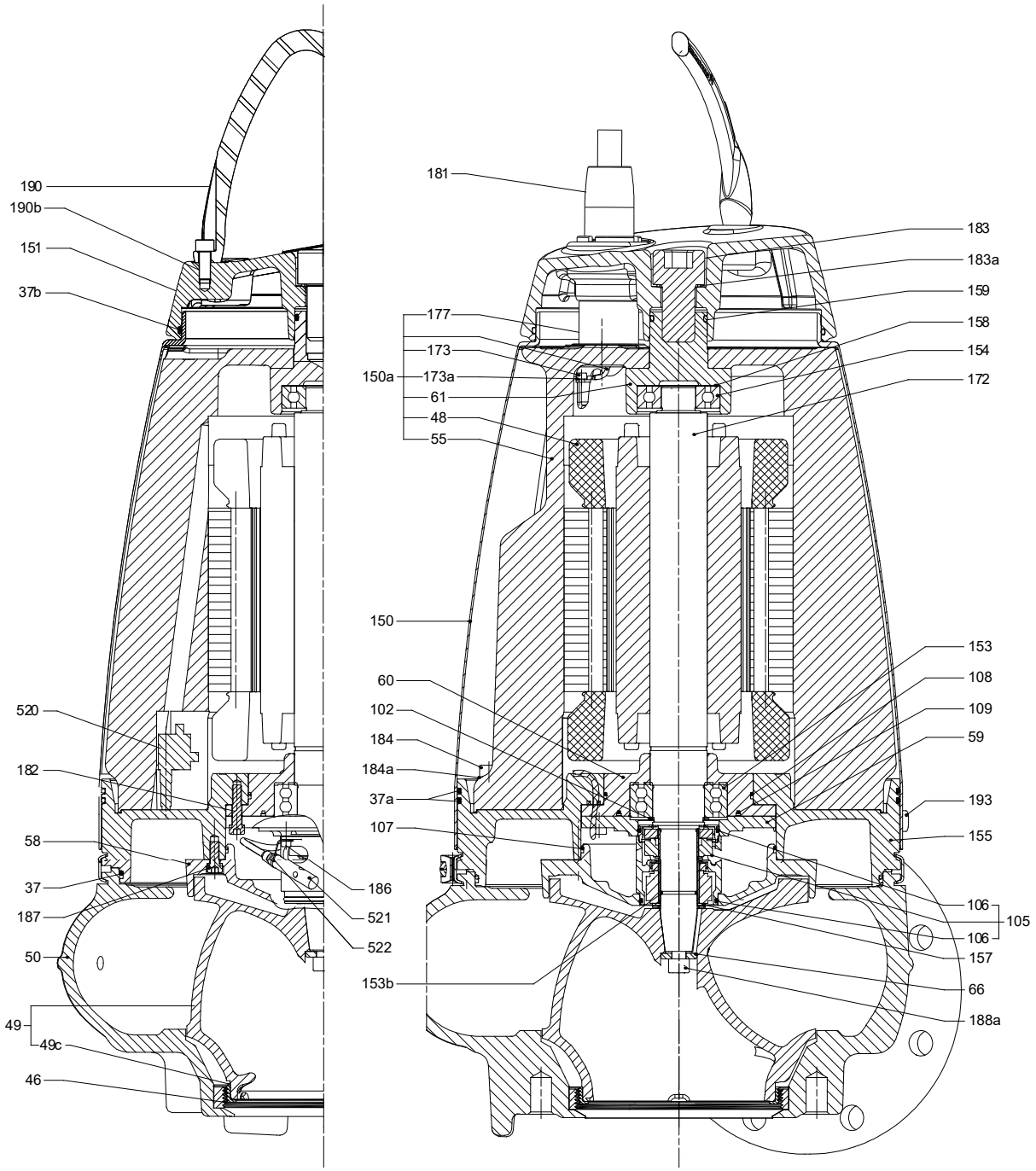
7.1 SE1



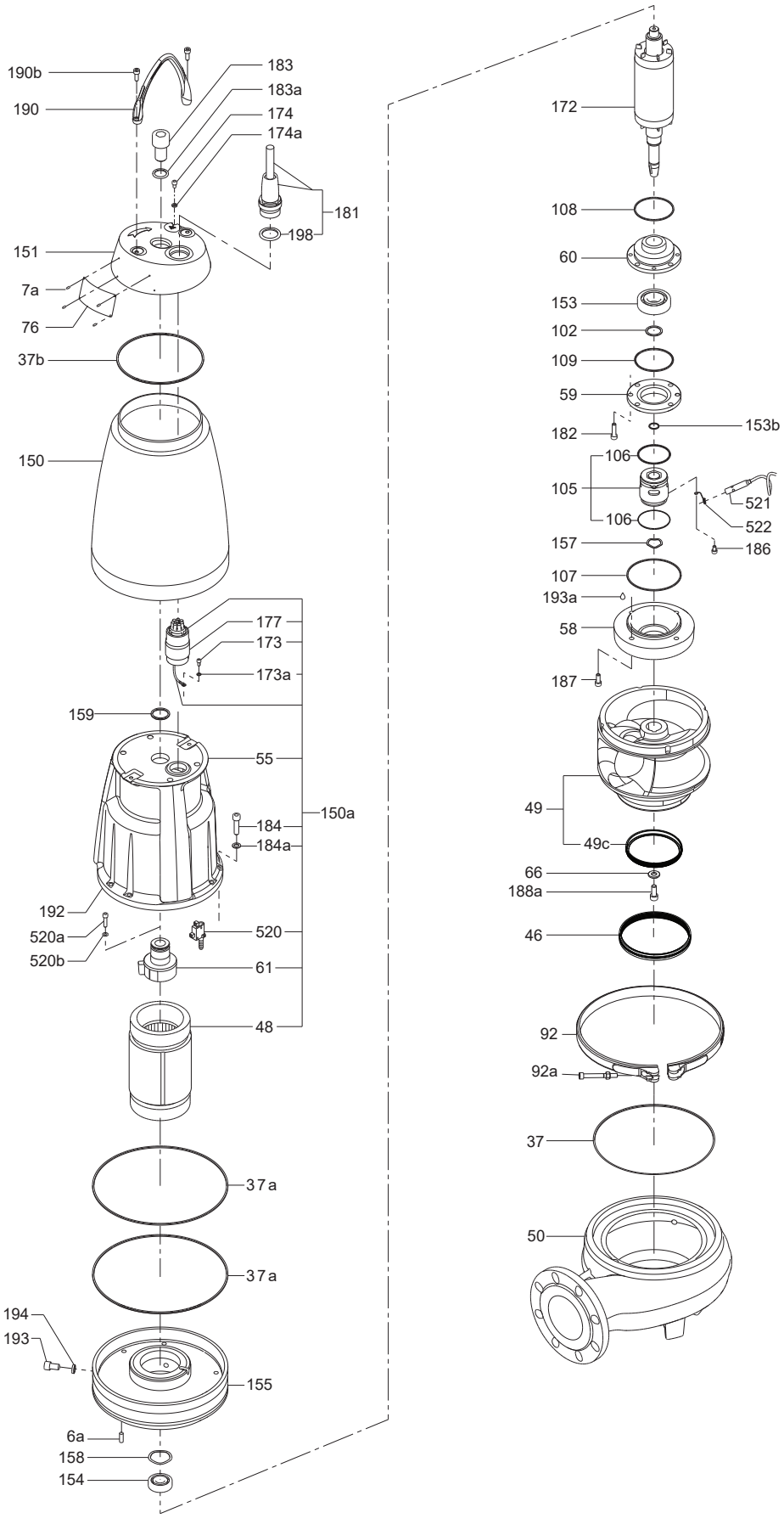
Sectional drawing, SE1 pump with S-tube® impeller



Exploded view, SE1 pump with S-tube® impeller

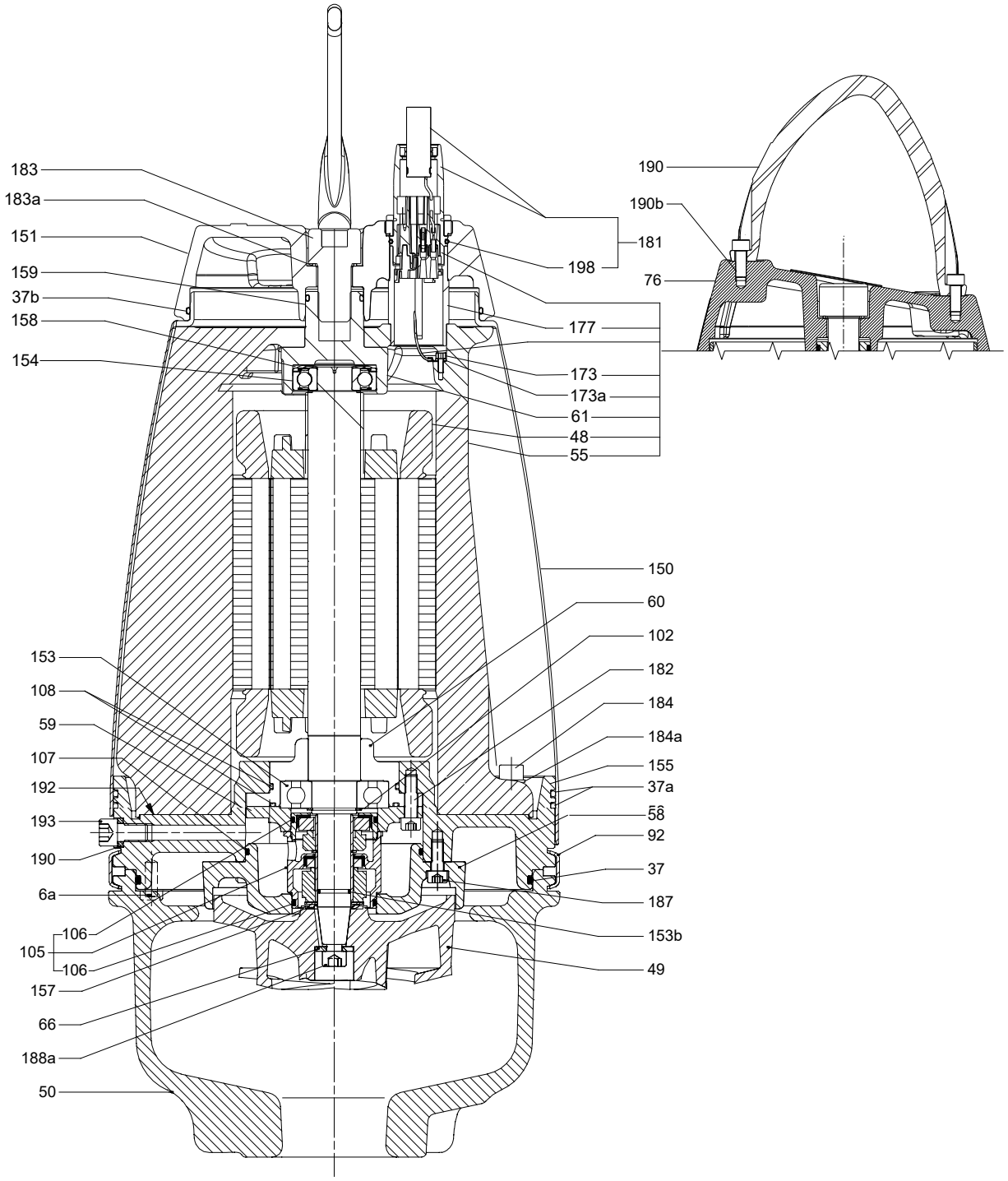


Sectional drawing, SE1 pump with S-tube® impeller, sensor version

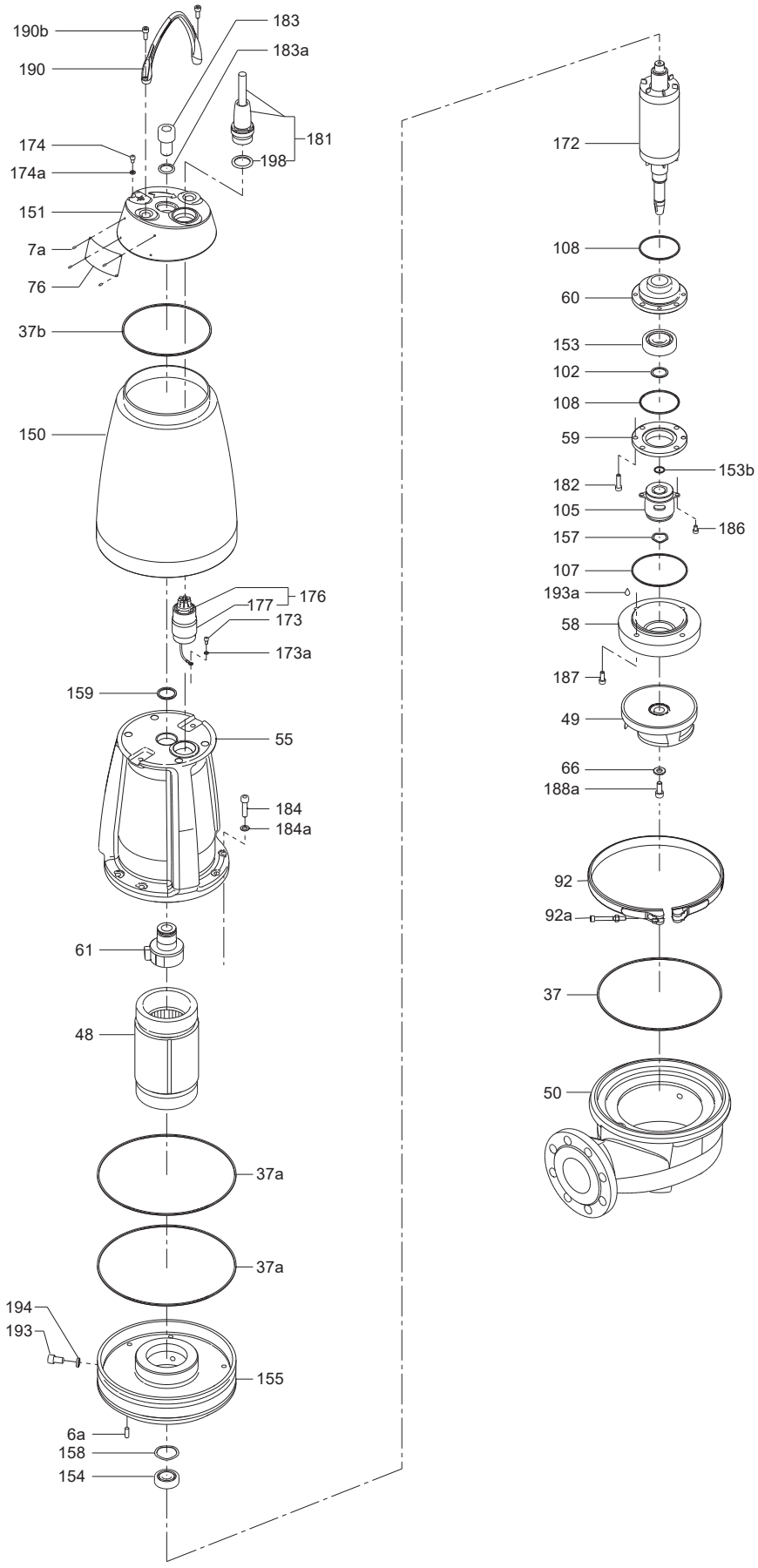


Exploded view, SE1 pump with S-tube® impeller, sensor version

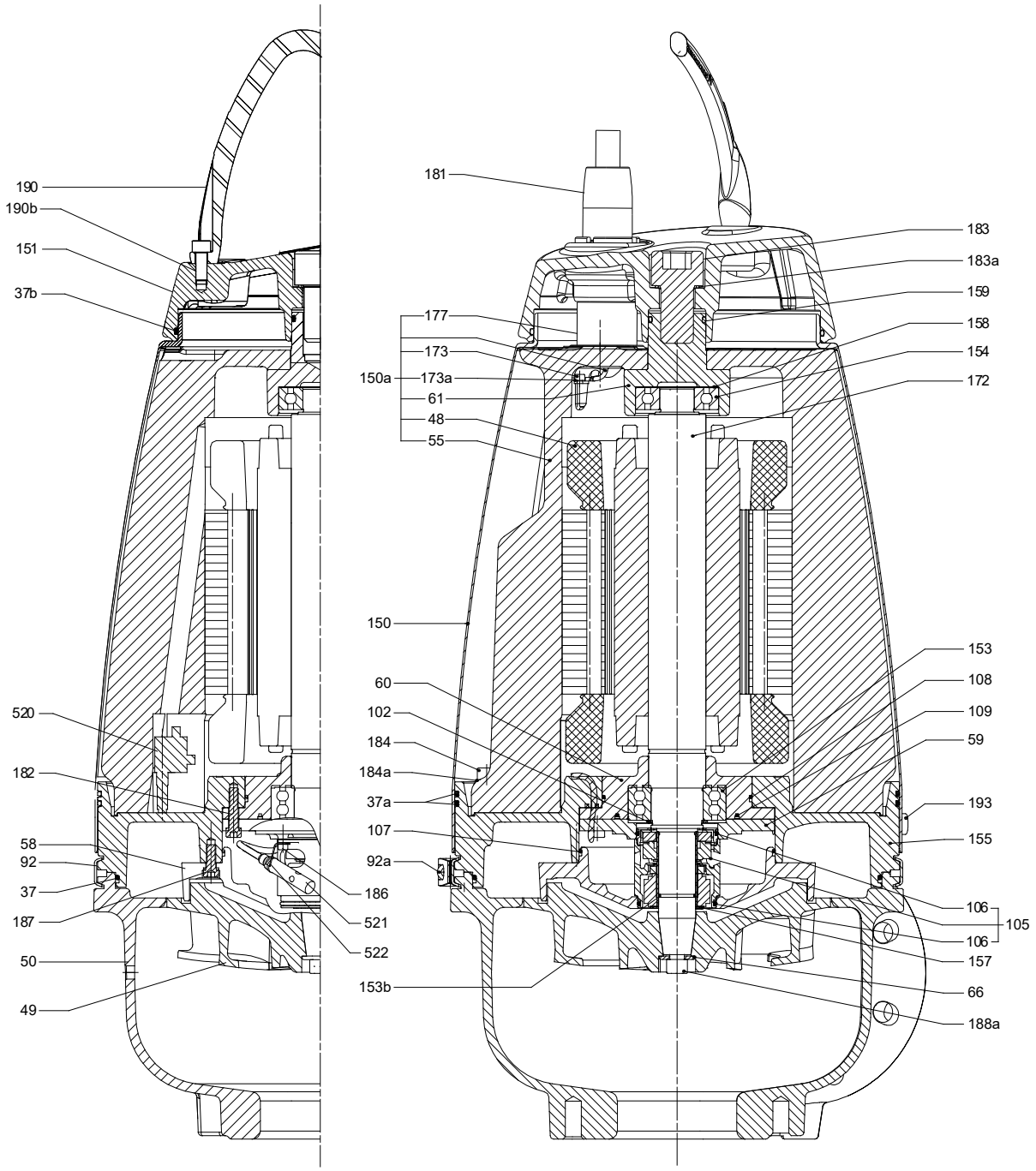
7.2 SEV



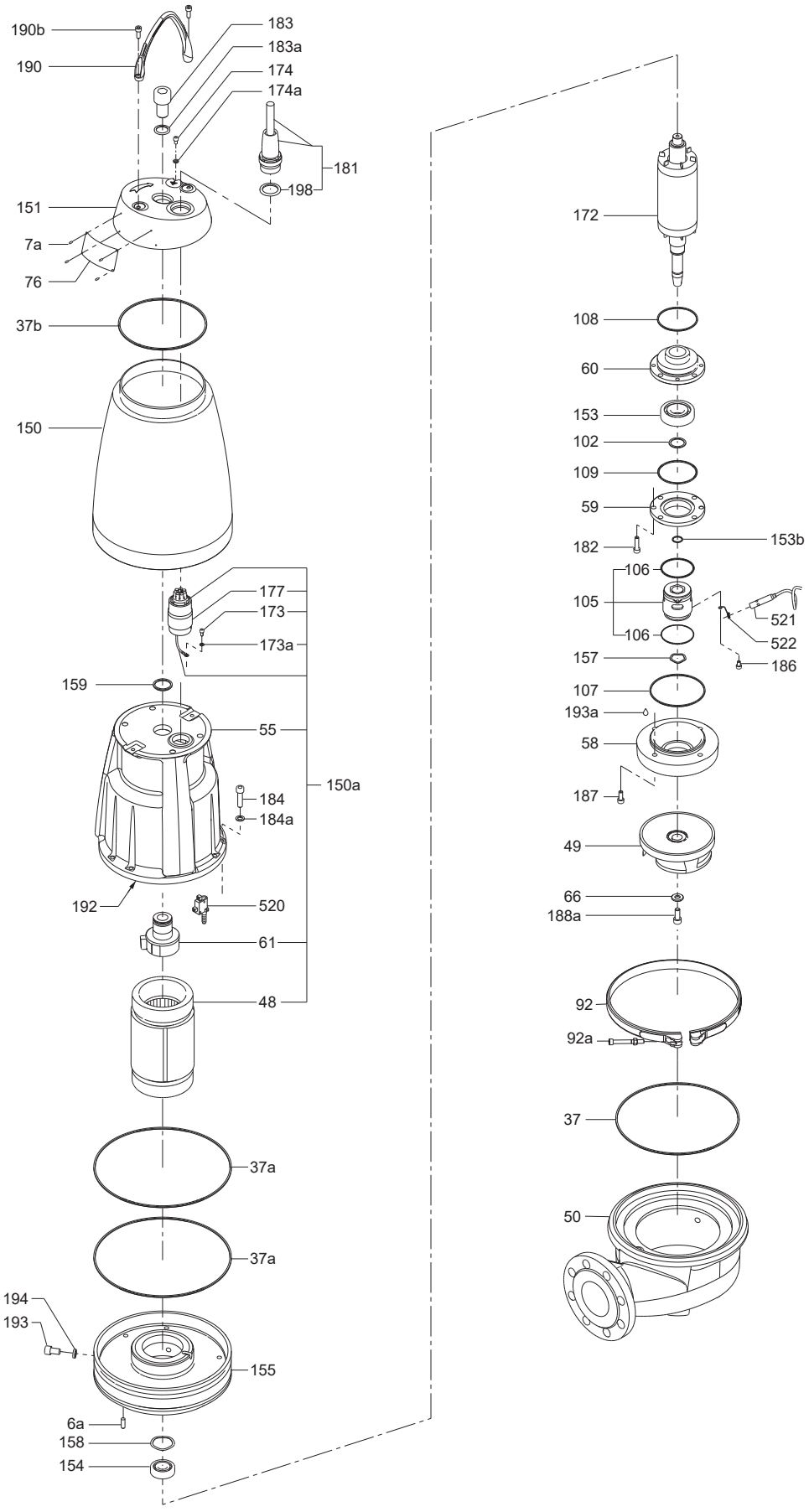
Sectional drawing, SEV pump with SuperVortex impeller



Exploded view, SEV pump with SuperVortex impeller



Sectional drawing, SEV pump with SuperVortex impeller, sensor version



Exploded view, SEV pump with SuperVortex impeller, sensor version

7.3 Material specification

Pos.	Designation		Material	DIN W.-Nr./ EN standard
6a	Tubular pin		Stainless steel	EN 1.4301
7	Lock washer		Stainless steel	EN 1.4401
7a	Blank rivet		Stainless steel	EN 1.4301
37	O-ring		NBR rubber	
37a	O-ring		NBR rubber	
37b	O-ring		NBR rubber	
46	Seal ring, inlet		Stainless steel	EN 1.4301
48	Stator package			
49	SuperVortex impeller		Cast iron/stainless steel	EN-GJL-250/ EN 1.4408
	S-tube® impeller		Cast iron	EN-GJL-250
49c	Wear ring		Stainless steel	EN 1.4301
50	Pump housing		Cast iron	EN-GJL-250
55	Stator housing		Aluminium	EN AB-AlSi 10 Mg
58	Cover for oil chamber		Cast iron	EN-GJL-250
59	Bearing cover		Cast iron	EN-GJL-250
60	Bearing retainer, lower		Cast iron	EN-GJL-250
61	Bearing retainer, upper		Cast iron	EN-GJS-450-10
66	Washer		Stainless steel	EN 1.4305
76	Nameplate		Stainless steel	EN 1.4301
92	Clamp		Stainless steel	EN 1.4401
92a	Screw		Stainless steel	EN 1.4401
102	Retaining ring			DIN 471
105	Shaft seal complete	Primary seal	SiC/SiC	
		Housing	Stainless steel	EN 1.4408
		Secondary seal	Carbon/ceramics	
106	O-ring		NBR rubber	
107	O-ring		NBR rubber	
108	O-ring		NBR rubber	
109	O-ring		NBR rubber	
150	Sleeve		Stainless steel	EN 1.4301
150a	Stator housing complete			
151	Motor top		Cast iron	EN-GJL-250
153	Ball bearing, lower		6306.2CS.C4	
153b	O-ring		NBR rubber	
154	Ball bearing, upper		6304.2Z.C3	
155	Intermediate flange		Cast iron	EN-GJL-250
157	Corrugated spring		Stainless steel	Inconel X750
158	Corrugated spring		Carbon steel	EN 1.1248
159	O-ring		NBR rubber	
172	Shaft with rotor		Carbon steel/ stainless steel	EN 1.0533/EN 1.4462
173	Earth screw		Stainless steel	EN 1.4301
173a	Lock washer		Stainless steel	EN 1.4301
174	Earth screw, external		Stainless steel	EN 1.4301
174a	Washer		Stainless steel	EN 1.4301
177	Plug protector		Stainless steel	EN 1.4408
181	Cable/outer plug part		H07RN-F / -	
182	Screw		Stainless steel	EN 1.4301
183	Screw		Stainless steel	DIN 912
183a	Washer		Copper Hard	
184	Screw		Stainless steel	DIN 912
184a	Washer		Stainless steel	
186	Screw		Stainless steel	DIN 912
188	Screw		Stainless steel	DIN 912
188a	Screw		Stainless steel	EN 1.4301
190	Lifting bracket		Stainless steel	EN 1.4301

Pos.	Designation	Material	DIN W.-Nr./ EN standard
190b	Screw		
192	Cooling paste		
193	Screw	Stainless steel	EN 1.4301
193a	Oil	Shell Ondina X420	
194	Gasket	Nylon	
198	O-ring	NBR rubber	
520	Moisture switch		
521	Water-in-oil sensor		
522	Bracket for WIO sensor		

Grey cast iron is manufactured according to EN 1561:2012.

Cast stainless steel is manufactured according to EN 10283:2010.

Conversion to other standards, such as AISI/ASTM, is normative, and products are not manufactured according to these.

Note: Q and R variants with SuperVortex impeller are available on request, including O-rings of FKM and intermediate flange of stainless steel.

8. Product description

8.1 Features

Ball bearings

The ball bearings are greased for life:

- Main bearings: Double-row angular contact ball bearing.
- Support bearings: Single-row deep-groove ball bearing.

Shaft seal

TM050015

Double mechanical cartridge shaft seal

The shaft seal consists of two mechanical seals and separates the motor from the pumped liquid.

The shaft seal is a cartridge seal that enables easy service. The combination of the primary and secondary seals in a cartridge results in a shorter assembly length compared to conventional shaft seals. The design minimises the risk of incorrect fitting.

The primary seal is SiC/SiC, while the secondary is carbon/ceramics.

Motor

The motor is watertight and completely encapsulated.

- Insulation class: F (155 °C)
- Temperature rise class: F (105 °C)
- Enclosure class: IP68.

For motor protection and sensors, see Sensors.

Surface treatment

As surface treatment, the SE1 and SEV pumps are powder painted: NCS 9000N (black), gloss code 30, thickness 100 µm.

Power supply cables

Standard cable

Cable type [mm²]	Outer cable diameter [mm]	Bending radius	
		Fixed [mm]	Free [mm]
Lyniflex 4 G 1.5 + 3 x 1	15.5 ± 0.5	64	96
Lyniflex 4 G 2.5 + 3 x 1	17.0 ± 0.5	70	105
Lyniflex 7 G 2.5 + 3 x 1	18.5 ± 0.5	98	114
Lyniflex 4 G 1.0 + 3 x 1	14.5 ± 0.5	62	93

EMC cable

Cable type [mm²]	Outer cable diameter [mm]	Bending radius	
		Fixed [cm]	Free [cm]
3G3GC3G - F3 x 1AiC + 4 G 2.5	17.5 ± 0.5	85	170

The standard cable length is 10 m. Other cable lengths are available on request. See *6.1 List of variants*.

The cable dimensions depend on the motor size.

Cable entry

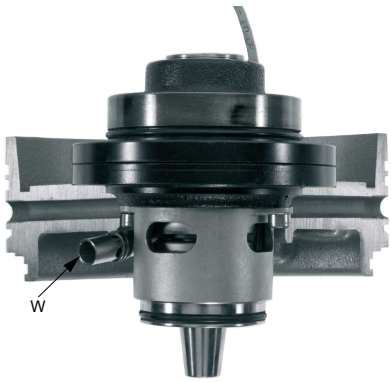
TM080062

Moisture-proof cable plug

The stainless steel plug is fastened with a union nut. The nut and O-rings provide sealing against liquid penetration.

The plug is filled with a polyamide material which is cast into the plug around the conductors of the cable to prevent moisture from penetrating into the motor via the cable core.

Sensors



TM079199

Analog water-in-oil sensor

Pos.	Description
W	WIO sensor

As standard, the pump has thermal switches in the stator windings.

Customised analog sensor options

- Pt1000 sensor in motor windings for stator temperature measurements

- The WIO sensor fitted in the oil chamber of the pump monitors if water enters the pump from the liquid side. The sensor measures the water content (0 to 20 %) in the oil and converts the value into an analog current signal which is sent to the IO 113 sensor module. It also sends a signal if the water content is outside the normal range (warning), or if there is air in the oil chamber (alarm). The sensor is fitted in a stainless-steel tube for mechanical protection. See fig. Analog water-in-oil sensor.
- The moisture switch fitted in the motor chamber monitors whether water enters the pump. If moisture is detected in the motor chamber, the moisture switch trips and sends a signal to the IO 113 sensor module.

IO 113 sensor module

GR-1014619

The IO 113 module is a protection module for Grundfos wastewater pumps.

The module has inputs for digital and analog pump sensors and can stop the pump if a sensor detects a pump fault.

It can be connected to the Grundfos Dedicated Controls system which provides advanced monitoring functions:

- stator temperature
- stator insulation resistance
- water-in-oil chamber
- moisture in motor.

Related information

6.1 List of variants

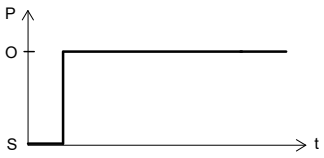
8.2 Operating mode

SE1 and SEV pumps are suitable for:

- dry installation without separate motor cooling
- submerged installation.

S1, continuous operation

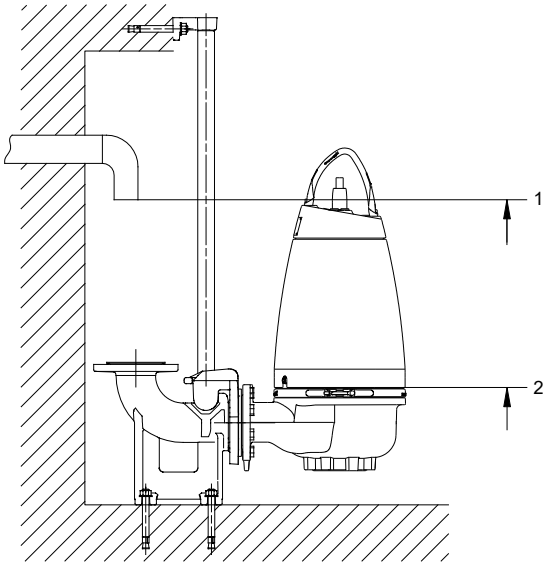
In this operating mode, the pump can operate continuously when the pump housing is completely submerged.



TM044528

S1 operation

Pos.	Description
O	Operation
S	Stop



TM065988

Start and stop levels

Pos.	Description
1	Max.
2	Min.

8.2.1 Pumped liquids

Pump type	Material variant	Installation	Material	pH value
SE1/SEV	Standard	Dry and submerged	Cast-iron pump housing and motor top.	6.5-14 **
SEV	Q	Dry and submerged	Stainless steel impeller. Cast-iron pump housing and motor top.	6-14 **
SEV	S [1]	Submerged	Stainless steel impeller and pump housing; cast-iron motor top.	5.5-14 **
		Dry		1-14
SEV	R	Dry and submerged	Complete pump in stainless steel	1-14
SEV	D [2]	Dry and submerged	Stainless steel pump according to EN 1.4517/1.4539	0-14

1 Material variants S and D are available on request.

2 For fluctuating pH values, the range is 4 to 14 pH.

Liquid temperature

0-40 °C.

When pumping liquids with a density and a kinematic viscosity higher than that of water, use motors with correspondingly higher outputs.

For short periods of maximum 1 hour, a temperature of up to 60 °C is permissible. This only applies to non-Ex versions.

Sound pressure level

The sound pressure level of the pump is lower than the limiting values stated in the EC Machinery Directive 2006/42/EC.

8.3 Motor range

Output power [kW]	Number of poles
1.1	4
1.3	4
1.5	4
2.2	2/4
3	2/4
4	2/4
5.5	4
6	2
7.5	2/4
9.2	2
11	2

8.4 Approvals

SE1 and SEV pumps have been tested by Dekra/KEMA. The explosion-proof version holds two examination certificates:

- ATEX(EU): KEMA 04ATEX2201X
- IECEx: IECEx DEK 21.0017X.

Both certificates are issued by Dekra. The standard versions of SE1 and SEV pumps are tested by VDE.

8.4.1 Approval standards

The standard variants are approved by TÜV Rheinland (LGA) notified body under the Construction Products Directive according to EN 12050-1 or EN 12050-2 as specified on the nameplate.

8.4.2 Explanation of the Ex approval

The SE1 and SEV pumps have the following explosion protection classifications:

- CE 0344  II 2 GD Ex db eb h mb IIB T4, T3 Gb; Ex h mb tb IIIC T135 °C, T200 °C Db.

Directive or standard	Code	Description
ATEX	CE 0344	CE marking of conformity according to the ATEX directive 2014/34/EU. 0344 is the number of the notified body which has certified the quality system for ATEX.
		The equipment conforms to harmonised European standard.
	II	Equipment group according to the ATEX directive, defining the requirements applicable to the equipment in this group
	2	Equipment category according to the ATEX directive, defining the requirements applicable to the equipment in this category
	G	Explosive atmosphere caused by gases, vapours or mists
	D	Explosive atmosphere caused by dust
Harmonised European standard	Ex	Marking of explosion protection
	h	Constructional safety (c) and Liquid immersion (k) according to EN ISO 80079-36 and EN ISO 80079-37
	db	Flameproof enclosure according to EN 60079-1
	eb	Protection according to EN 60079-7
	mb	Encapsulation according to EN 60079-18
	IIB	Classification of gases, see EN 60079-0. Gas group B includes gas group A.
	T4/T3	The maximum surface temperature is 135 °C (T4) in direct-drive pumps and 200 °C (T3) in pumps operated by frequency converter, according to EN 60079-0. [1]
	Gb	Suitable for use in explosive gas atmospheres in zone 1 and zone 2
	tb	Protection by enclosure EN 60079-31
	IIIC	Conductive dust
	T135 °C / T200 °C	Maximum surface temperature
	Db	Suitable for use in explosive dust atmospheres in zone 1 and zone 2

1 For motors connected to a frequency converter, the maximum surface temperature T3 is 200 °C.

8.4.3 Australia

Explosion-proof variants for Australia are approved as Ex nA II T3 according to IEC 60079-15 (corresponding to AS 2380.9).

Standard	Code		Description
IEC 60079-15:1987	Ex	=	Area classification according to AS 2430.1
	nA	=	Non-sparking according to AS 2380.9:1991, section 3 (IEC 79-15:1987)
	II	=	Suitable for use in explosive atmospheres (not mines)
	T3	=	Maximum surface temperature is 200 °C
	X		The letter X in the certificate number indicates that the equipment is subject to special conditions for safe use.

8.5 Controllers

The pumps must be connected to a control box with a motor protection relay with IEC trip class 10 or 15.

Note: Pumps for hazardous locations must be connected to a control box with a motor protection relay with IEC trip class 10.

8.5.1 Frequency converter, CUE/VFD

All pump types are designed for speed-controlled operation to keep the energy consumption at a minimum.

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

For more information, see the installation and operating instructions of the relevant frequency converter on www.grundfos.com (Grundfos Product Center).

Additional features

- anti-blocking
- automatic energy optimisation
- specific-energy test
- output frequency
- monitoring of:
  - voltage[1]
  - current[1]
  - phase sequence[1]
  - power[1]
  - energy[1]
  - torque.[1]
- reverse start
- run flushing
- stop flushing
- PID control.

1 These functions are only available with a Grundfos CUE.

8.5.2 DC and LC control units

Grundfos offers dedicated pump controllers for monitoring liquid levels in the wastewater collecting tanks to ensure correct operation and the protection of the pumps.

The following Grundfos pump controllers are available:

- Grundfos Dedicated Controls (DC)
- Grundfos LC controllers.

8.5.2.1 Grundfos DC Controllers

GR-10168086

Grundfos Dedicated Controls control cabinet

Grundfos Dedicated Controls (DC) is a control system designed for installation in municipal wastewater transport, commercial buildings or network pumping stations with up to six wastewater pumps and an optional mixer or a flush valve.

Advanced control and data communication are possible with the Grundfos Dedicated Controls system. The control cabinets are delivered with a built-in main switch and thermal-magnetic circuit breaker.

Features and benefits:

- advanced Flow Calculation
- automatic energy optimisation
- easy installation and configuration
- configuration wizard
- electrical overview
- advanced data communication
- advanced alarm and warning priority
- several languages
- daily emptying
- mixer control or flush valve
- user-defined functions
- anti-blocking
- start level variation
- advanced pump alternation with pump groups
- SMS scheduling
- communication to SCADA, BMS, GRM or cell phone.

Dedicated Controls is ordered either with or without a built-in communication interface module (CIM).

The communication module enables the possibility for fieldbus protocol (e.g. PROFIBUS DP, Modbus RTU and PROFINET IO/Modbus TCP) and the communication line.

For further information about Grundfos Dedicated Controls, see Grundfos Product Center:

- Grundfos Dedicated Controls, brochure http://net.grundfos.com/qr/i/96925597
- Grundfos iSolutions, brochure http://net.grundfos.com/qr/i/99249771
- Grundfos Controls Guide, product guide http://net.grundfos.com/qr/i/97954965
- Grundfos Dedicated Controls, data booklet net.grundfos.com/qr/i/98672840.

Additional features, CUE or VFD

The Grundfos variable frequency drive (CUE) or a general variable frequency drive (VFD) offers better pump protection and a steadier flow through the pipe system.

Features and benefits:

- anti-blocking
- automatic energy optimisation
- specific-energy test
- output frequency
- monitoring of:
  - voltage[1]
  - current*
  - phase sequence[1]
  - power[1]
  - energy[1]
  - torque[1]
- reverse start[2]
- run flushing
- stop flushing
- PID control.

1 These functions are only available with a Grundfos CUE.

2 Reversing at full speed is not recommended. When reduced reverse operation settings are applied, make sure that constant torque is enabled in VFD (Grundfos CUE, Siemens Simatic, ABB, Schneider Electric) to have maximum torque available when reversing.

TM074000

LC 231 and LC 241 controller units

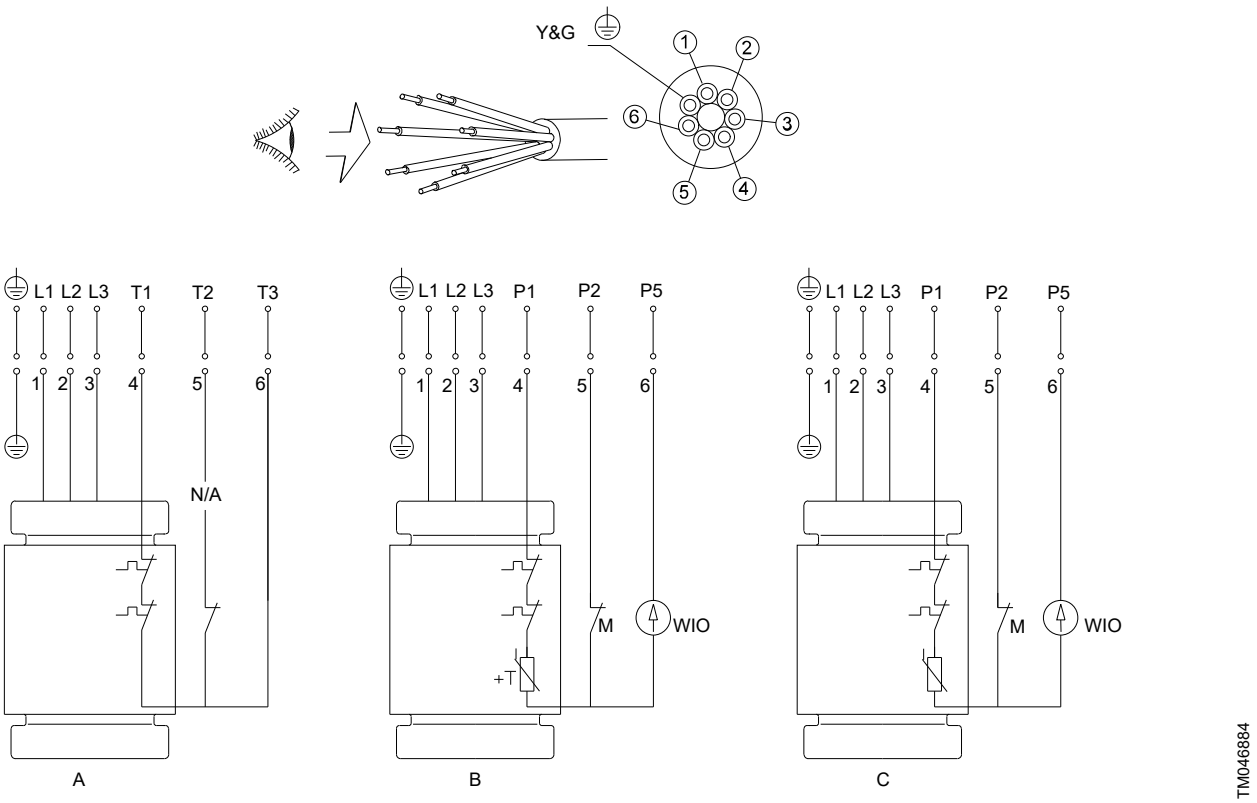
8.5.2.2 Grundfos LC controllers

The LC 231 pump controller is designed for level control, monitoring and protection of Grundfos pumping stations featuring one or two pumps, starting direct-on-line. The LC 231 controller is built into a polymer cabinet.

The LC 241 is a modular pump controller that has a metal or polymer cabinet and can be customised.

It is designed for level control, monitoring and protection of Grundfos pumping stations featuring one or two pumps, starting direct-on-line with 0-23 A, star-delta with 0-59 A or soft starter with 0-72 A.

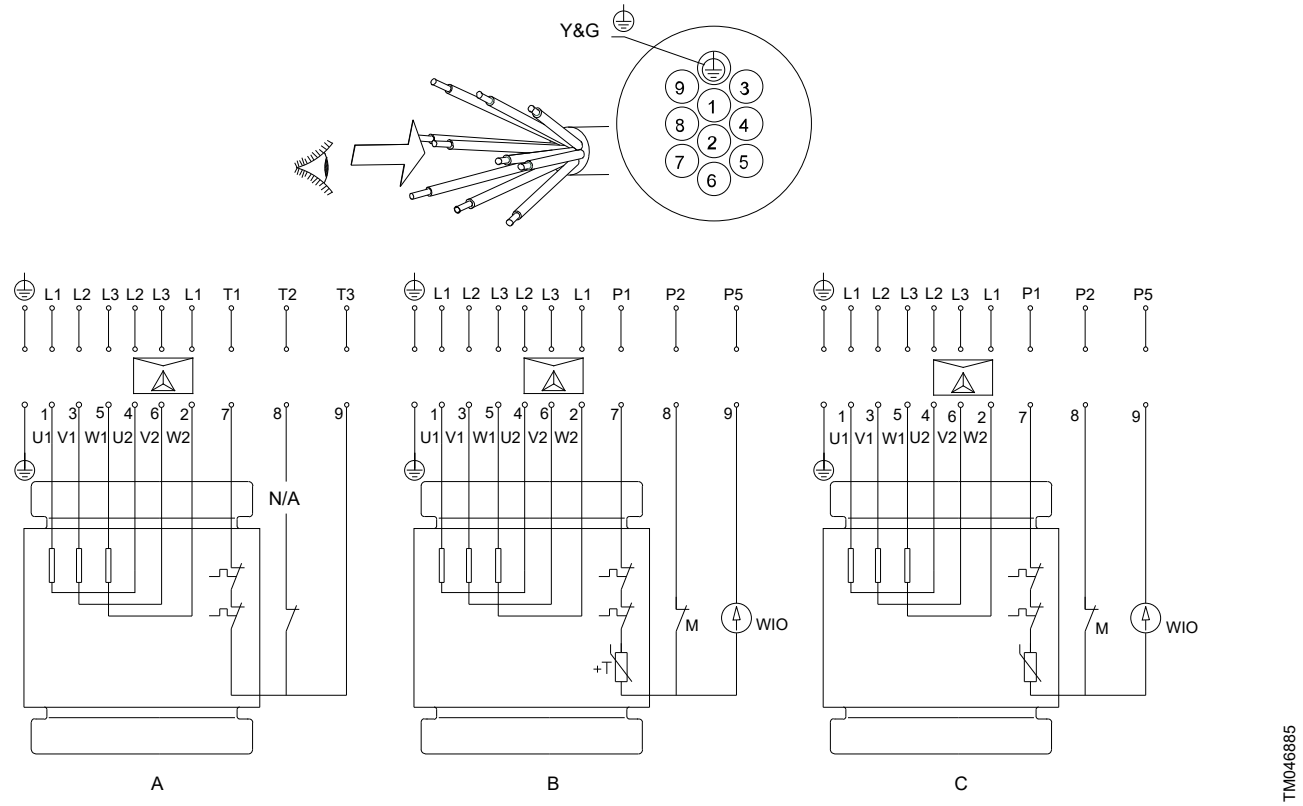
8.6 Wiring diagrams



Wiring diagram, 7-core cable, DOL

Pos.	Description
Y&G	Yellow and green
N/A	Not used
A	Standard version Thermal switches and moisture switches [1]
B	Sensor version Thermal switches, Pt1000 resistor, moisture switch and water-in-oil sensor
C	Sensor version Thermal switches, PTC, moisture switch and water-in-oil sensor [1]

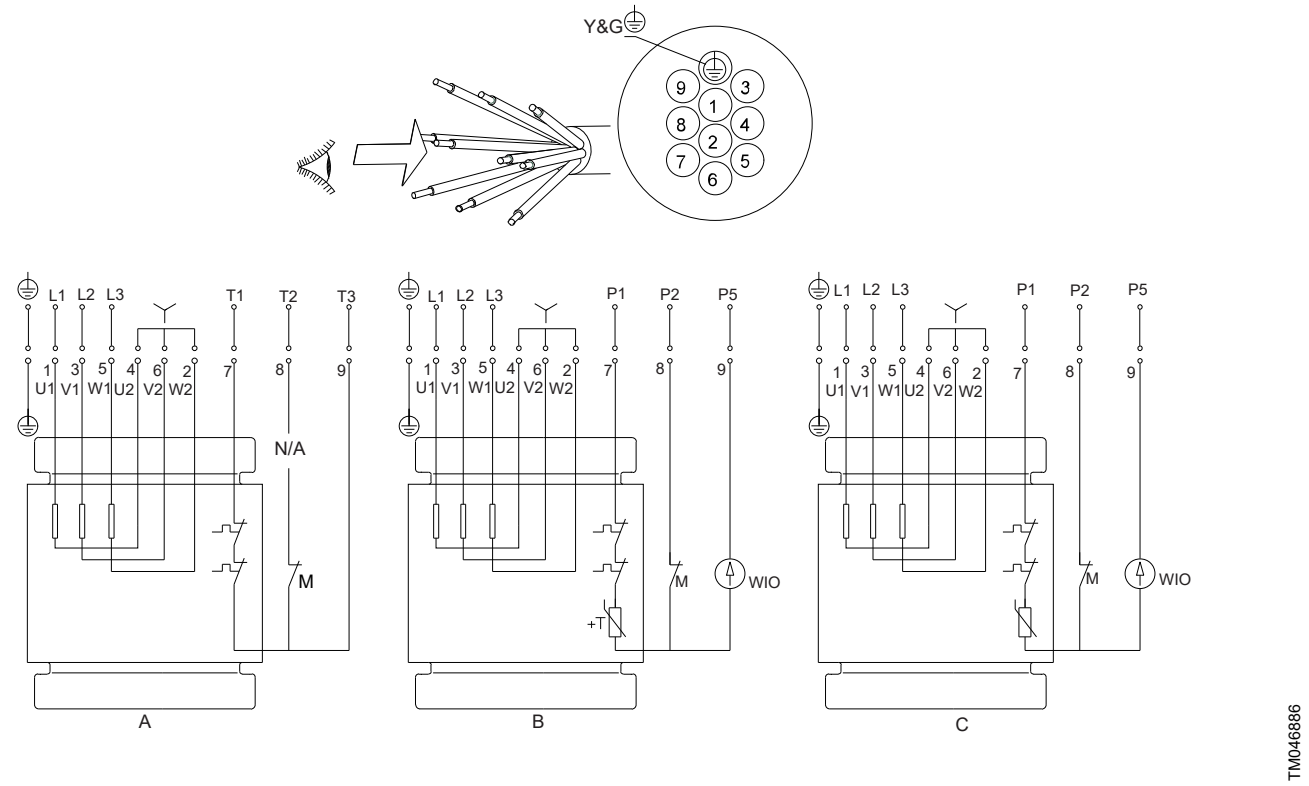
1 Pumps from 4 kW and up sold in Australia and New Zealand are fitted with a PTC thermistor.



Wiring diagram, 10-core cable, star/delta (Y/D)

Pos.	Description
Y&G	Yellow and green
N/A	Not used
A	Standard version Thermal switches and moisture switches *
B	Sensor version Thermal switches, Pt1000 resistor, moisture switch and water-in-oil sensor
C	Sensor version Thermal switches, PTC, moisture switch and water-in-oil sensor *

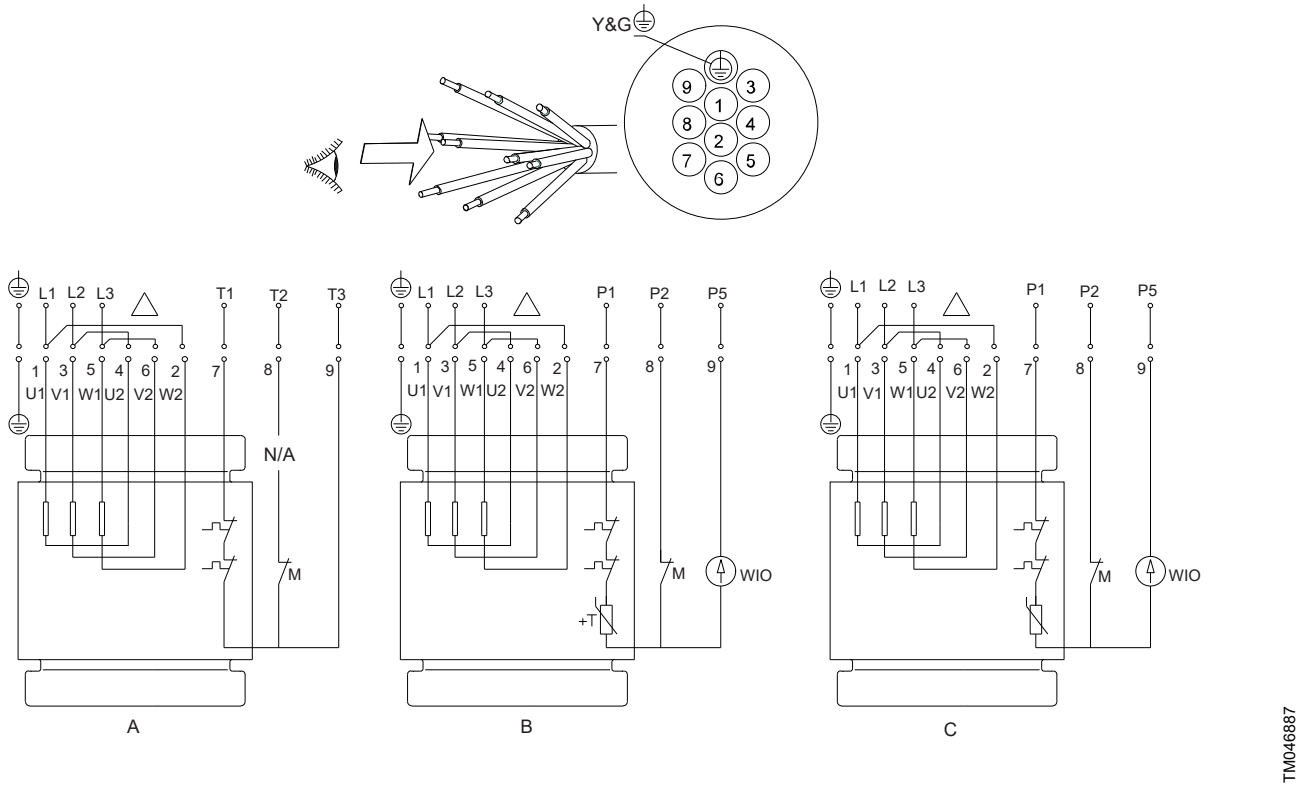
* Pumps from 4 kW and up sold in Australia and New Zealand are fitted with a PTC thermistor.



Wiring diagram, 10-core cable, star-connected (Y)

Pos.	Description
Y&G	Yellow and green
N/A	Not used
A	Standard version Thermal switches and moisture switches *
B	Sensor version Thermal switches, Pt1000 resistor, moisture switch and water-in-oil sensor
C	Sensor version Thermal switches, PTC, moisture switch and water-in-oil sensor *

* Pumps from 4 kW and up sold in Australia and New Zealand are fitted with a PTC thermistor.



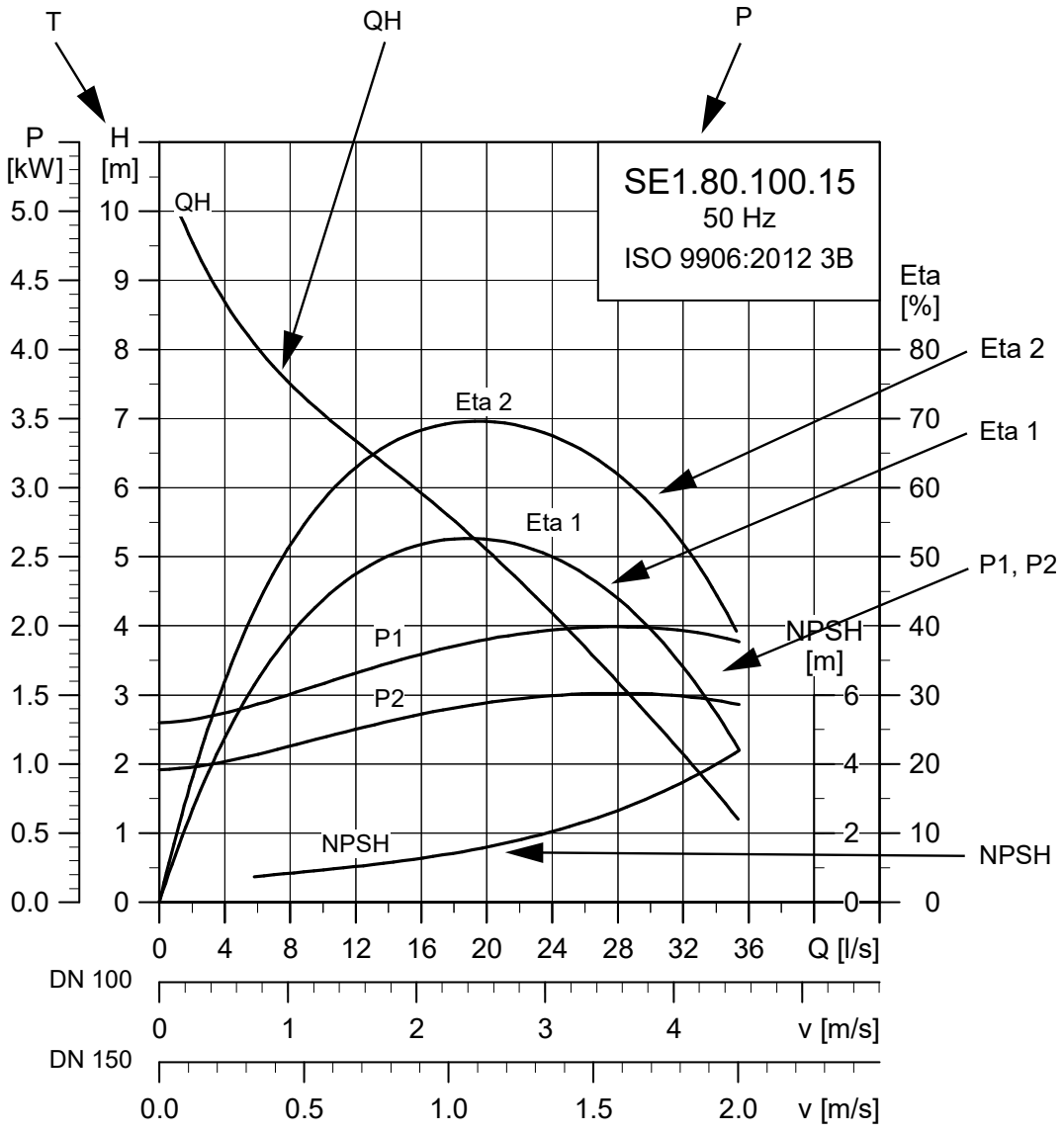
Wiring diagram, 10-core cable, delta-connected (D)

Pos.	Description
Y&G	Yellow and green
N/A	Not used
A	Standard version Thermal switches and moisture switches *
B	Sensor version Thermal switches, Pt1000 resistor, moisture switch and water-in-oil sensor
C	Sensor version Thermal switches, PTC, moisture switch and water-in-oil sensor *

* Pumps from 4 kW and up sold in Australia and New Zealand are fitted with a PTC thermistor.

9. Performance curves and technical data

9.1 How to read the performance curves



Pos.	Description
T	Total pump head $H = H_{total}$
QH	QH curve
P	Pump type
Eta 2	Eta 2 is the hydraulic efficiency (pump).
Eta 1	Eta 1 is the total efficiency (pump + motor).
P1, P2	Power curves indicating motor input power [P_1] and motor output power [P_2] of the pump
NPSH	NPSH curves. When sizing the pumps, add a safety margin of at least 0.5 m.

Note: The pumps are tested according to ISO 9906:2012, grade 3B tolerance. Testing equipment and measuring instruments are designed and calibrated according to the standards mentioned. The pumps are approved according to tolerances for entire curves, specified in grade 3B.

9.2 Curve conditions

The guidelines below apply to the curves in *9. Performance curves and technical data*.

- Tolerances are according to ISO 9906:2012, grade 3B.
- The curves show pump performance with different impeller diameters at the rated speed.
- The curves apply to the pumping of airless water at a temperature of +20 °C and a kinematic viscosity of 1 mm^2/s (1 cSt).
- The Eta curves show the efficiency of the pump for the different impeller diameters.
- The NPSH curves show average values measured under the same conditions as the performance curves. When sizing the pump, add a safety margin of at least 0.5 m.
- In the case of densities other than 1000 kg/m^3, the outlet pressure is proportional to the density.
- When pumping liquids with a density higher than 1000 kg/m^3, use motors with correspondingly higher outputs.

Calculation of total head

The total pump head consists of the height difference between the measuring points + the differential head + the dynamic head.

$H_{total} = H_{geo} + H_{stat} + H_{dyn}$

H_{geo}: height difference between measuring points.

H_{stat}: differential head across the pump.

H_{dyn}: calculated values based on the velocity of the pumped liquid on the suction and discharge sides of the pump.

9.3 Test types

Two types of performance tests are available:

- duty-point-verification test
- curve test.

9.4 Performance tests

All pumps are performance-tested before leaving the production site. The testers are all capable of performing hydraulic performance tests according to ISO 9906:2012 requirements.

The standard ISO 9906:2012 sets standards for "rotodynamic pumps, hydraulic performance acceptance tests, grades 1, 2 and 3". It specifies a performance test for one guarantee point. This guarantee point is defined by a minimum of five measured test points.

9.4.1 Duty point verification test

This test method offers the possibility to perform a duty point verification of flow, head, and optionally efficiency or power consumption (P1).

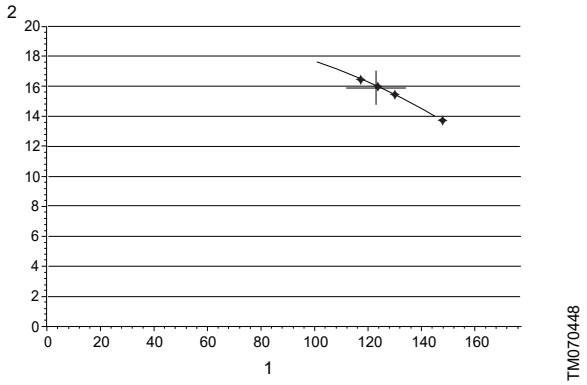
The requested duty point for each pump is tested according to ISO 9906:2012, providing five measured points.

Test grade 3B is standard. Grades 2B, 2U or 1B, 1E, 1U are available on request.

Grundfos performs all test grades for one guarantee point at full speed (50 or 60 Hz). The customer has to define which duty point to verify.

The test is saved for at least five years and can be traced using the pump's unique serial number.

Duty point verification, grade 3B



Duty point verification with grade 3B tolerances

Pos.	Description
1	Q [m^3/h]
2	H [m]

Duty point verification, grades 1B, 1E, 1U and 2B, 2U

If performance testing is required according to grades 1B, 1E, 1U or grades 2B, 2U, and optionally verification of efficiency (Eta) or power consumption (P1), a request must be submitted to the local customer service unit (CSU). The CSU clarifies whether testing according to the required grade can be performed and informs on guarantee values.

Grade 1E duty point verification

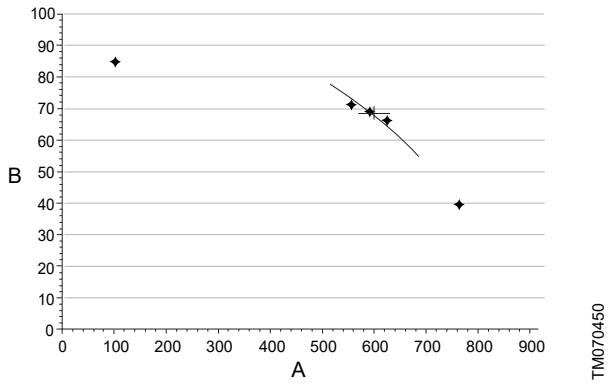
The following example illustrates performance testing according to grade 1E.

Flow and head are mandatory, while efficiency or power consumption (P1) is optional.

Tolerances for a grade 1E test are the following:

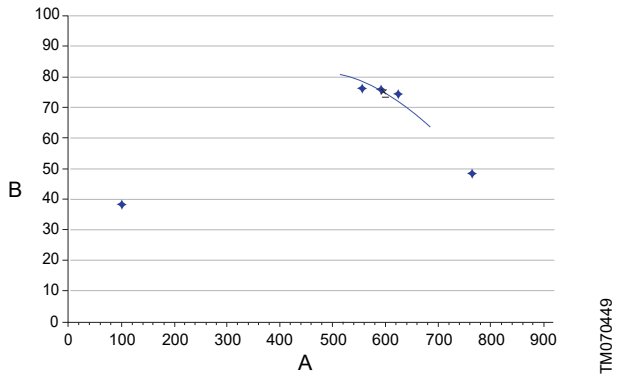
- Flow: + 5 %
- Head: + 3 %
- Efficiency: 0 %, only equal to or better than the guaranteed value
- P1: + 4 %

1. Q, H and Eta (efficiency) is tested and verified



Measured values for flow and head

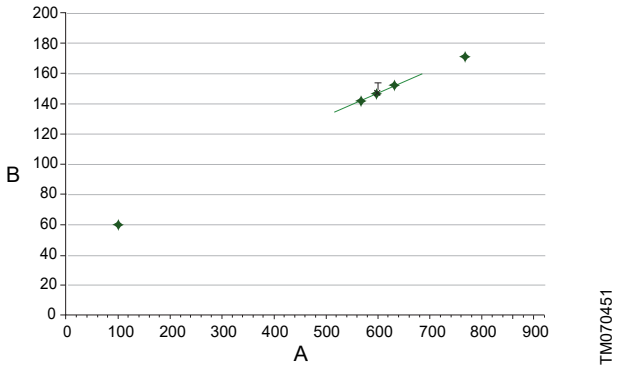
Pos.	Description
A	Q [m³/h]
B	H [m]



Measured values for efficiency

Pos.	Description
A	Q [m³/h]
B	Eta total [%]

2. Q, H and P1 is tested and verified



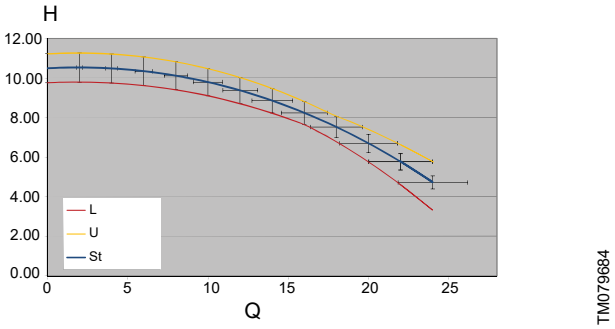
Measured values for power consumption

Pos.	Description
A	Q [m³/h]
B	P1 [kW]

Note: Other points than the guarantee point can be measured and displayed in a curve-test report according to grade 3B tolerances.

9.4.2 Curve test, grade 3B

This test method is developed by Grundfos and is based on ISO 9906:2012 performance acceptance grade 3B tolerances: Q = ± 9 %, H = ± 7 %.



Example of Q-H curve with tolerance crosses on complete performance range

Pos.	Description
Q	[m³/h]
H	[m]

Tolerance crosses according to grade 3B are distributed across the complete performance range of a pump. The upper and lower limit of the performance curve is generated by drawing two curves at the outlines of these crosses.

When the pump is tested and the measured point is located within the range between the upper and lower limit, it is qualified to ISO 9906:2012, grade 3B tolerances. This way of qualifying the pump performance is stricter than a duty point verification test for grade 3B.

9.4.3 Test curves

The following curve tests are available:

- reference curve test
- performance curve test.

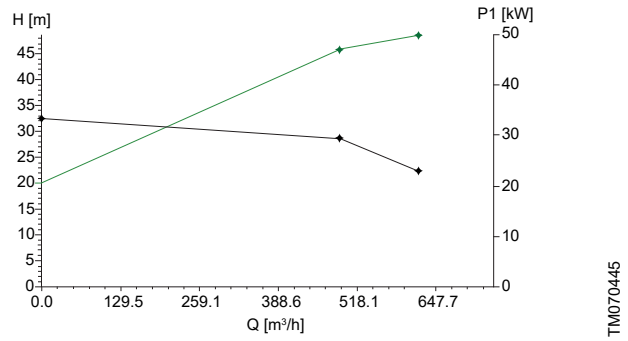
9.4.3.1 Reference curve test, grade 3B

A reference test is made when a curve test report is not specified in the order. Three or four test points are measured depending on the production site, test reports are not supplied with the pump.

Measurements are made to maintain and observe continuous quality and to ensure that the supplied pump is within test grade tolerances. Test grade tolerances are set for grade 3B but without certification.

The test results are preserved for at least five years and can be traced by using the pump's unique serial number.

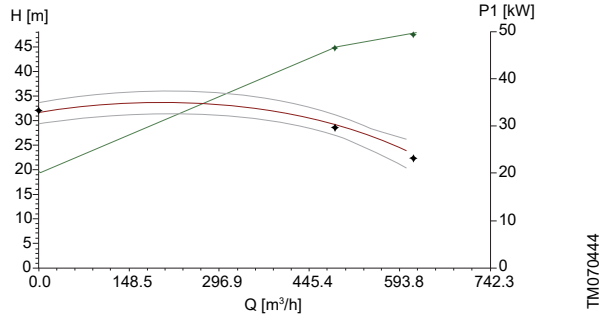
Reference curve test example



Measured values for tested pump

Pos.	Description
A	Q [m^3/h]
B	H [m]
C	P1 [kW]

Test results are compared to a reference performance curve.



Reference performance curve

Pos.	Description
A	Q [m^3/h]
B	H [m]
C	P1 [kW]

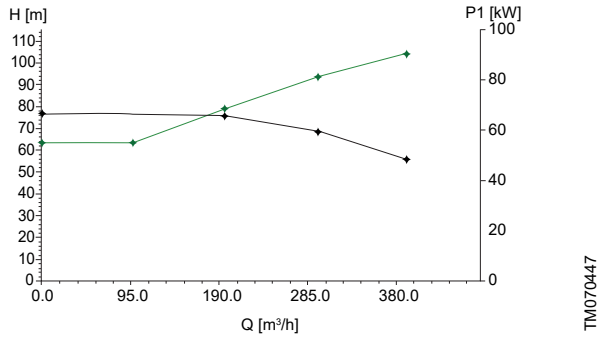
If a pump performance report is requested later, only reference test data are available.

9.4.3.2 Performance curve test, grade 3B

A performance curve test is performed when a curve test report is specified in the order.

The pump is tested at pre-specified flows, distributed over the full pump curve (a minimum of five points), and test grade tolerances are set for grade 3B but without certification.

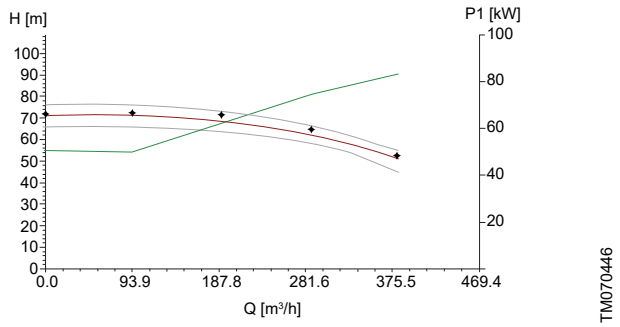
Performance curve test example



Measured values for tested pump

Pos.	Description
A	Q [m^3/h]
B	H [m]
C	P1 [kW]

Test results are compared to a reference performance curve.



Reference performance curve

Pos.	Description
A	Q [m^3/h]
B	H [m]
C	P1 [kW]

If more points on the performance curve need to be checked, individual measurements must be made. This is not part of the standard curve test report.

The test results are preserved for at least five years and can be traced by using the pump's unique serial number.

Note: It is not possible to change the acceptance grade on an already tested and supplied pump. If this is required, the pump must be re-tested.

9.4.4 Certificates

Certificates must be confirmed for each order and are available on request:

- certificate of compliance with the order (EN 10204 2.1)
- pump test sheet.

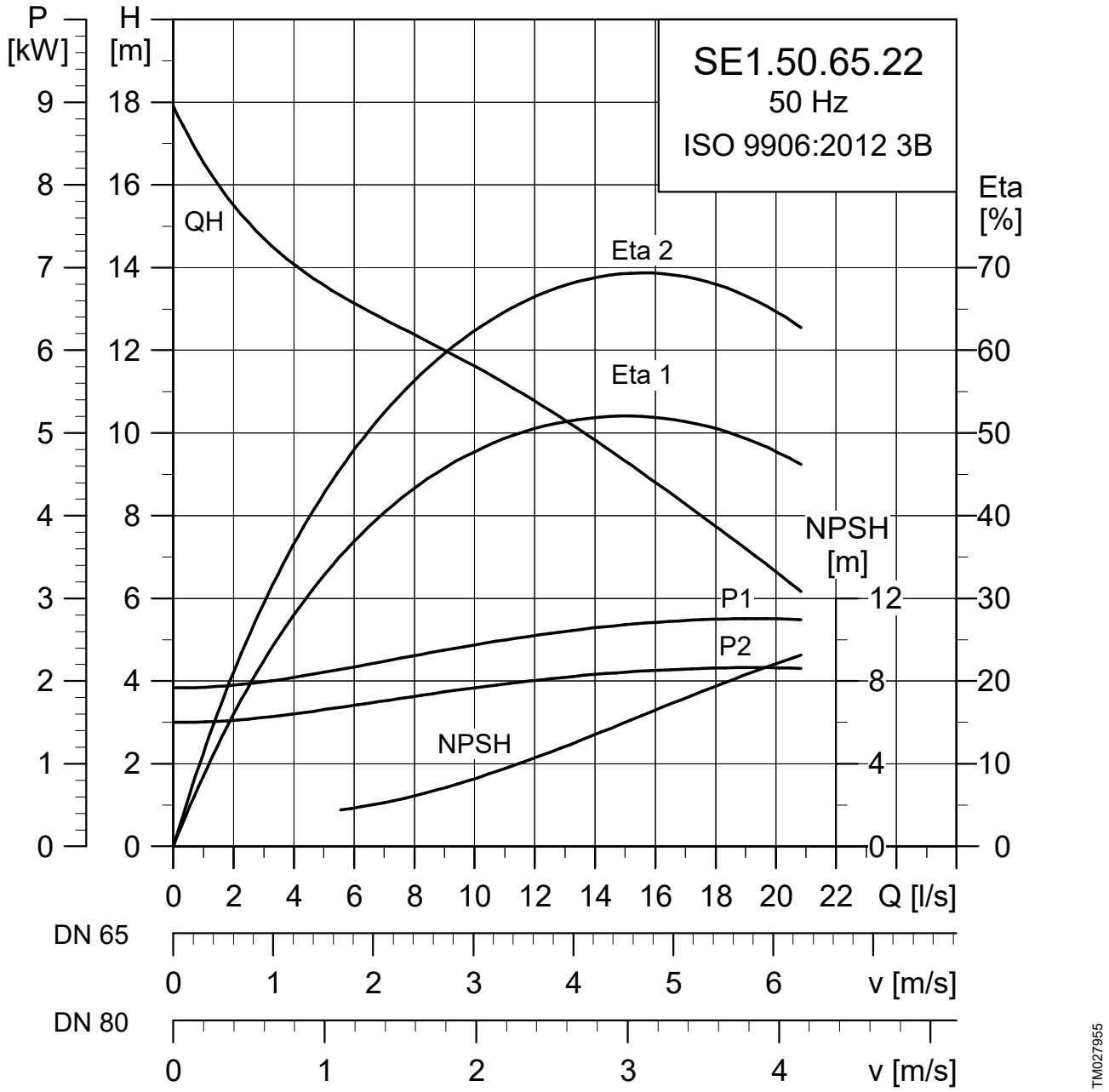
9.4.5 Witness test

The customer can witness the testing procedure according to ISO 9906:2012, grade 3B.

The witness test is the only guarantee that everything is carried out as prescribed in the testing procedure.

If a witness test is required, the request must be stated on the order.

9.5 SE1.50.65.22.(Ex).2



Electrical data

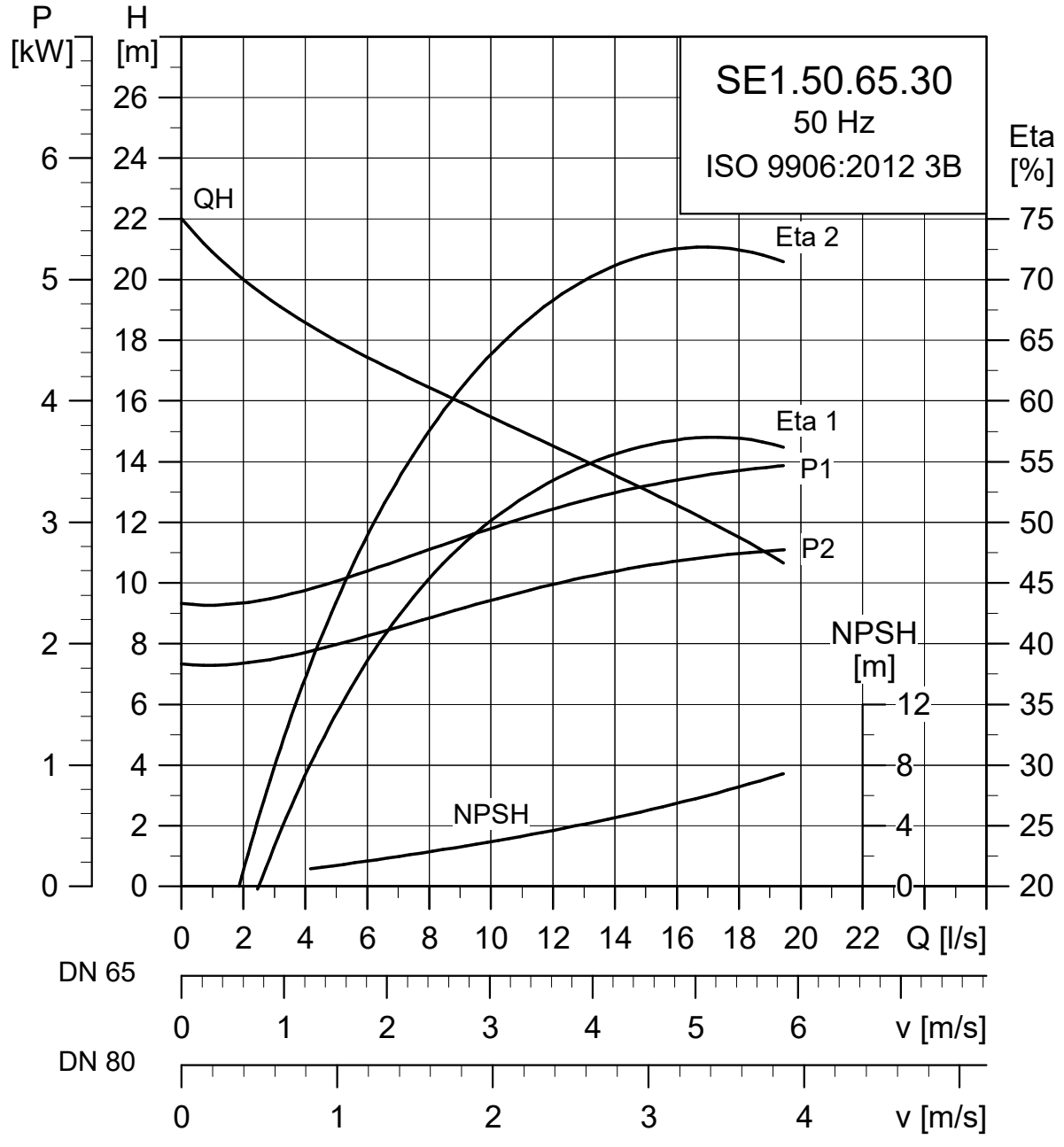
Pump type	Voltage [V]	P1 [kW]	P2 [kW]	Number of poles	RPM	Starting method	I_N [1] [A]	I_{start} [A]	η_{motor} [%] 1/2	η_{motor} [%] 3/4	η_{motor} [%] 1/1	Cos φ 1/2	Cos φ 3/4	Cos φ 1/1	Moment of inertia [kgm^2]	Breakdown torque M_{max} [Nm]
SE1.50.65.22.2.50D.B	3 × 380-415 Y	2.8	2.2	2	2895	DOL	5.1/5.0	37.00	73.50	76.60	77.00	0.72	0.81	0.86	0.01	23
SE1.50.65.22.2.50E.B	3 × 220-240 D	2.8	2.2	2	2895	DOL	8.9/8.7	64.00	73.50	76.60	77.00	0.72	0.81	0.86	0.01	23

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
S-tube®	50	20	20	IP68	F	40	4-14

9.6 SE1.50.65.30.(Ex).2



Electrical data

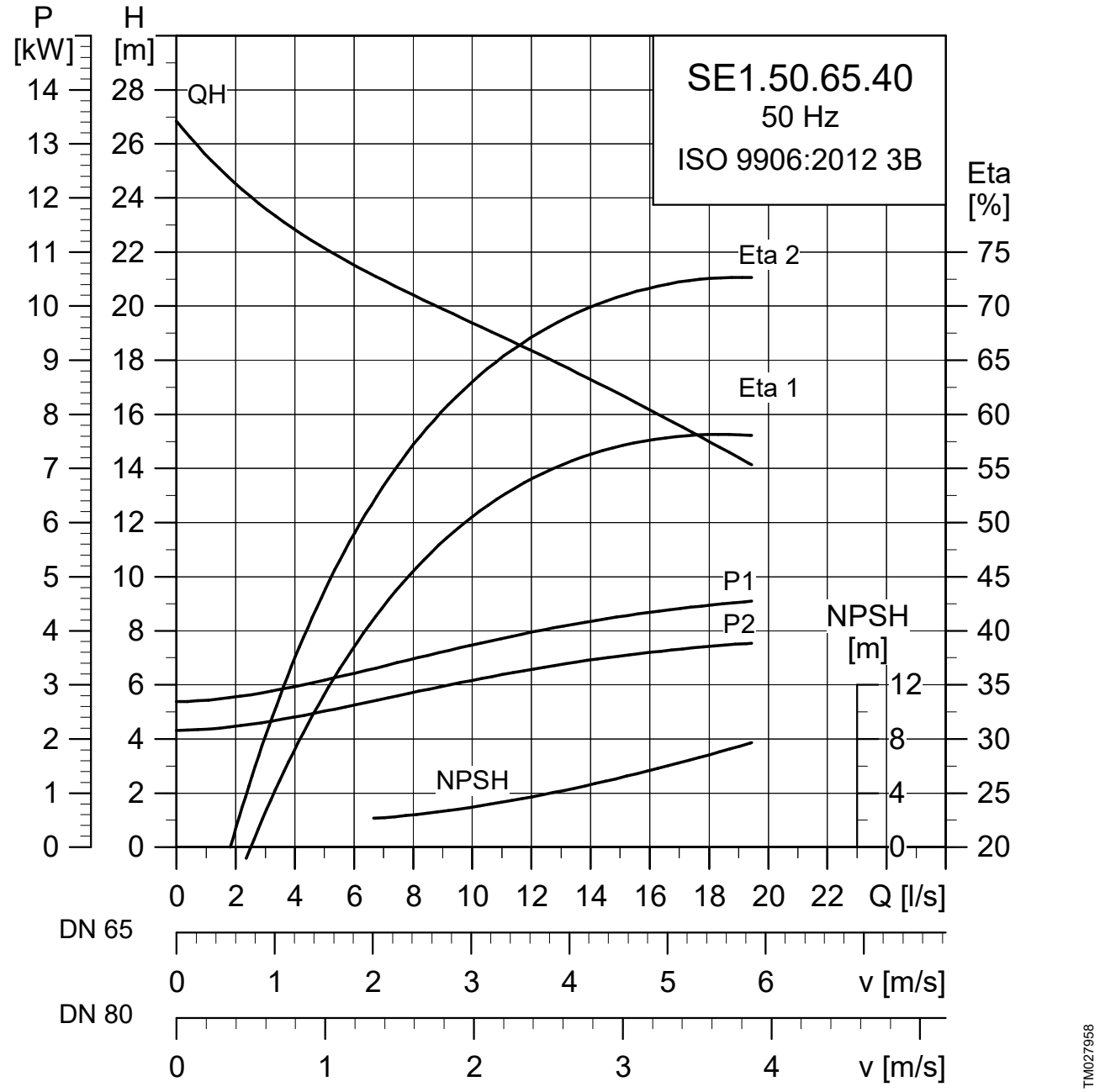
Pump type	Voltage [V]	P1 [kW]	P2 [kW]	Number of poles	RPM	Starting method	I_N [1] [A]	I_{start} [A]	η_{motor} [%]			Cos φ			Moment of inertia [kgm²]	Breakdown torque M_{max} [Nm]
									1/2	3/4	1/1	1/2	3/4	1/1		
SE1.50.65.30.2.50D.B	3 × 380-415 Y	3.8	3.0	2	2910	DOL	6.8/6.5	51.00	75.10	78.50	79.60	0.74	0.83	0.87	0.01	33
SE1.50.65.30.2.50E.B	3 × 220-240 D	3.8	3.0	2	2910	DOL	11.8/11.2	88.00	75.10	78.50	79.60	0.74	0.83	0.87	0.01	33

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
S-tube®	50	20	20	IP68	F	40	4-14

9.7 SE1.50.65.40.(Ex).2



Electrical data

Pump type	Voltage [V]	P1 [kW]	P2 [kW]	Number of poles	RPM	Starting method	I_N [1] [A]	I_{start} [A]	η_{motor} [%] 1/2	η_{motor} [%] 3/4	η_{motor} [%] 1/1	Cos φ 1/2	Cos φ 3/4	Cos φ 1/1	Moment of inertia [kgm²]	Breakdown torque M_{max} [Nm]
SE1.50.65.40.2.51D.B	3 × 380-415 D	4.8	4.0	2	2925	Y/D	8.7/8.5	71.00	79.20	82.40	83.30	0.68	0.78	0.84	0.02	54
SE1.50.65.40.2.51E.B	3 × 220-240 D	4.8	4.0	2	2925	Y/D	15.1/14.7	123.00	79.20	82.40	83.30	0.68	0.78	0.84	0.02	54

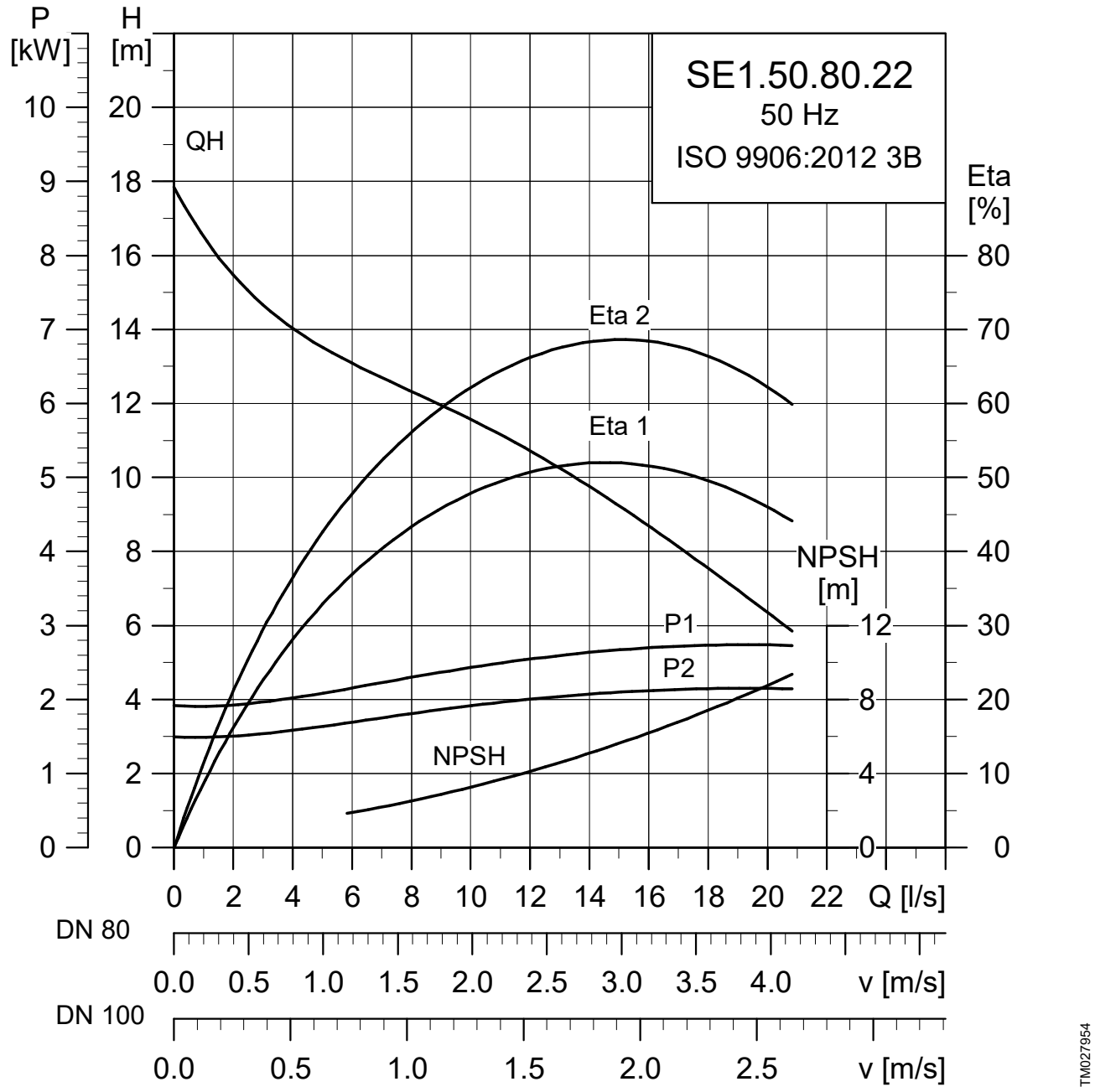
1 Low voltage - high voltage

* Low voltage - high voltage.

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
S-tube®	50	20	20	IP68	F	40	4-14

9.8 SE1.50.80.22.(Ex).2



Electrical data

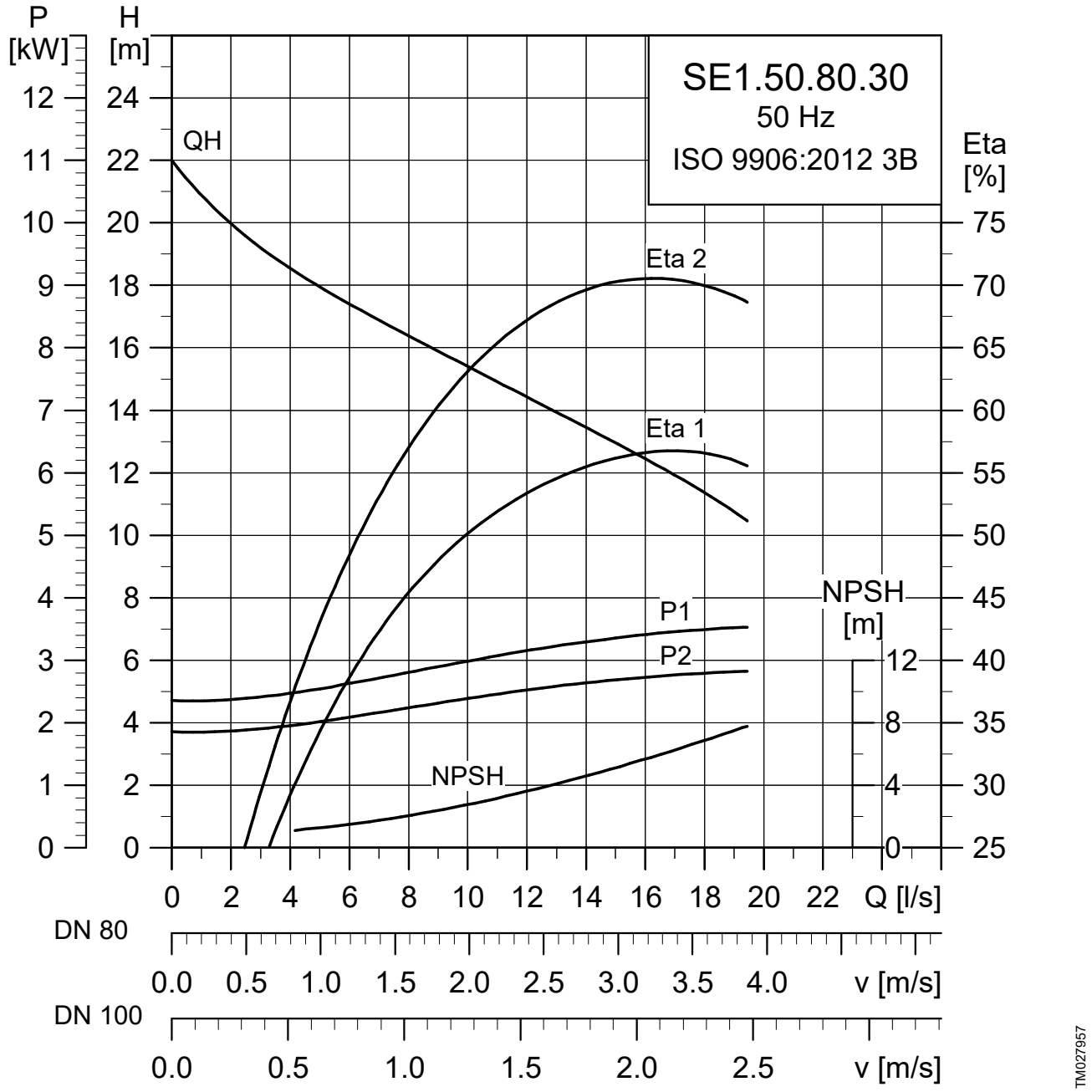
Pump type	Voltage [V]	P1 [kW]	P2 [kW]	No. of poles	RPM	Starting method	I_N [1] [A]	I_{start} [A]	η_{motor} [%]			Cos φ			Moment of inertia [kgm²]	Breakdown torque M_{max} [Nm]
									1/2	3/4	1/1	1/2	3/4	1/1		
SE1.50.80.22.2.50D.B	3 × 380-415 Y	2.8	2.2	2	2895	DOL	5.1/5.0	37.00	73.50	76.60	77.00	0.72	0.81	0.86	0.01	23
SE1.50.80.22.2.50E.B	3 × 220-240 D	2.8	2.2	2	2895	DOL	8.9/8.7	64.00	73.50	76.60	77.00	0.72	0.81	0.86	0.01	23

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
S-tube®	50	20	20	IP68	F	40	4-14

9.9 SE1.50.80.30.(Ex).2



Electrical data

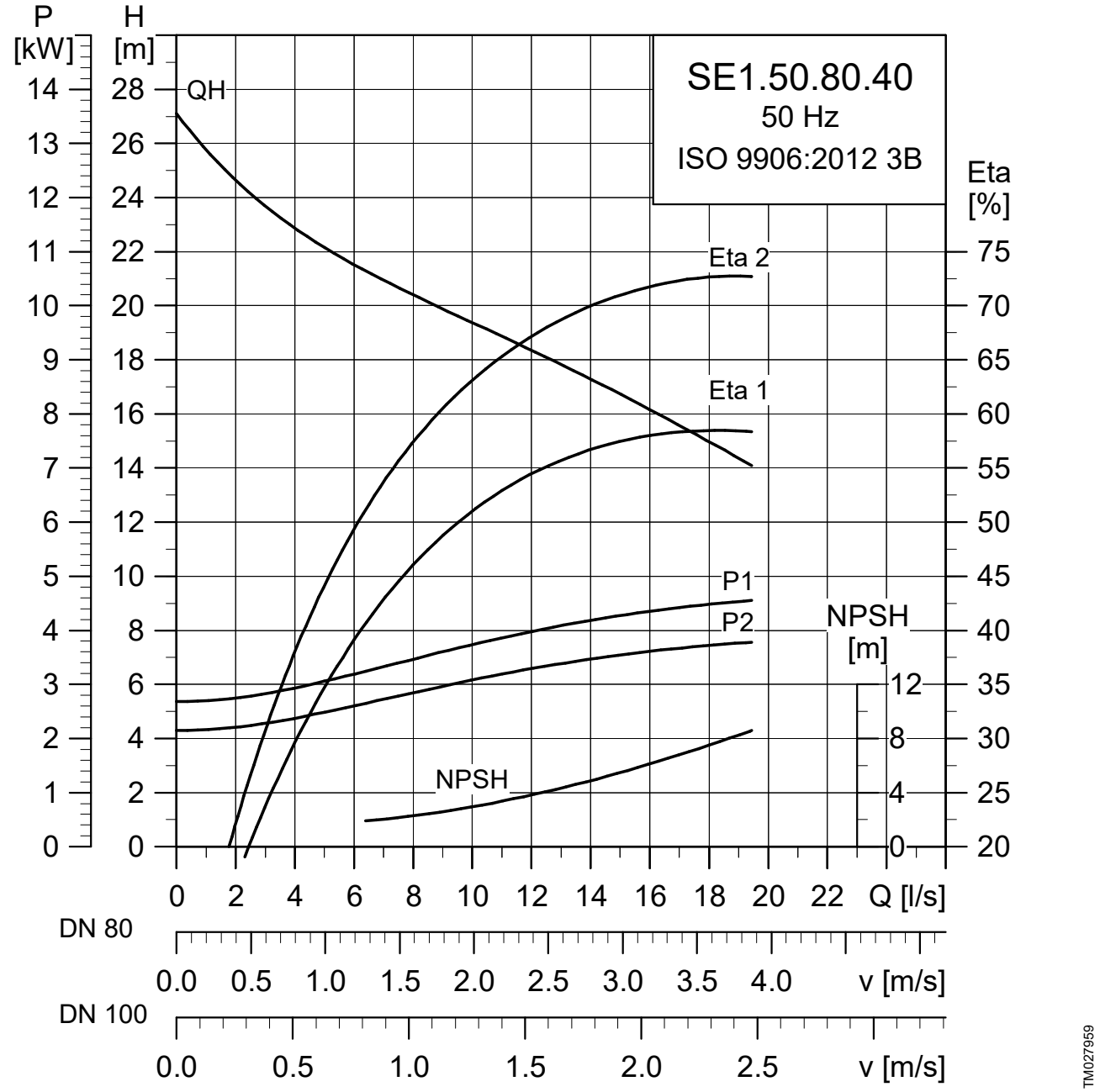
Pump type	Voltage [V]	P1 [kW]	P2 [kW]	Number of poles	RPM	Starting method	I_N [1] [A]	I_{start} [A]	η_{motor} [%]			Cos φ			Moment of inertia [kgm²]	Breakdown torque M_{max} [Nm]
									1/2	3/4	1/1	1/2	3/4	1/1		
SE1.50.80.30.2.50D.B	3 × 380-415 Y	3.8	3.0	2	2910	DOL	6.8/6.5	51.00	75.10	78.50	79.60	0.74	0.83	0.87	0.01	33
SE1.50.80.30.2.50E.B	3 × 220-240 D	3.8	3.0	2	2910	DOL	11.8/11.2	88.00	75.10	78.50	79.60	0.74	0.83	0.87	0.01	33

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
S-tube®	50	20	20	IP68	F	40	4-14

9.10 SE1.50.80.40.(Ex).2



Electrical data

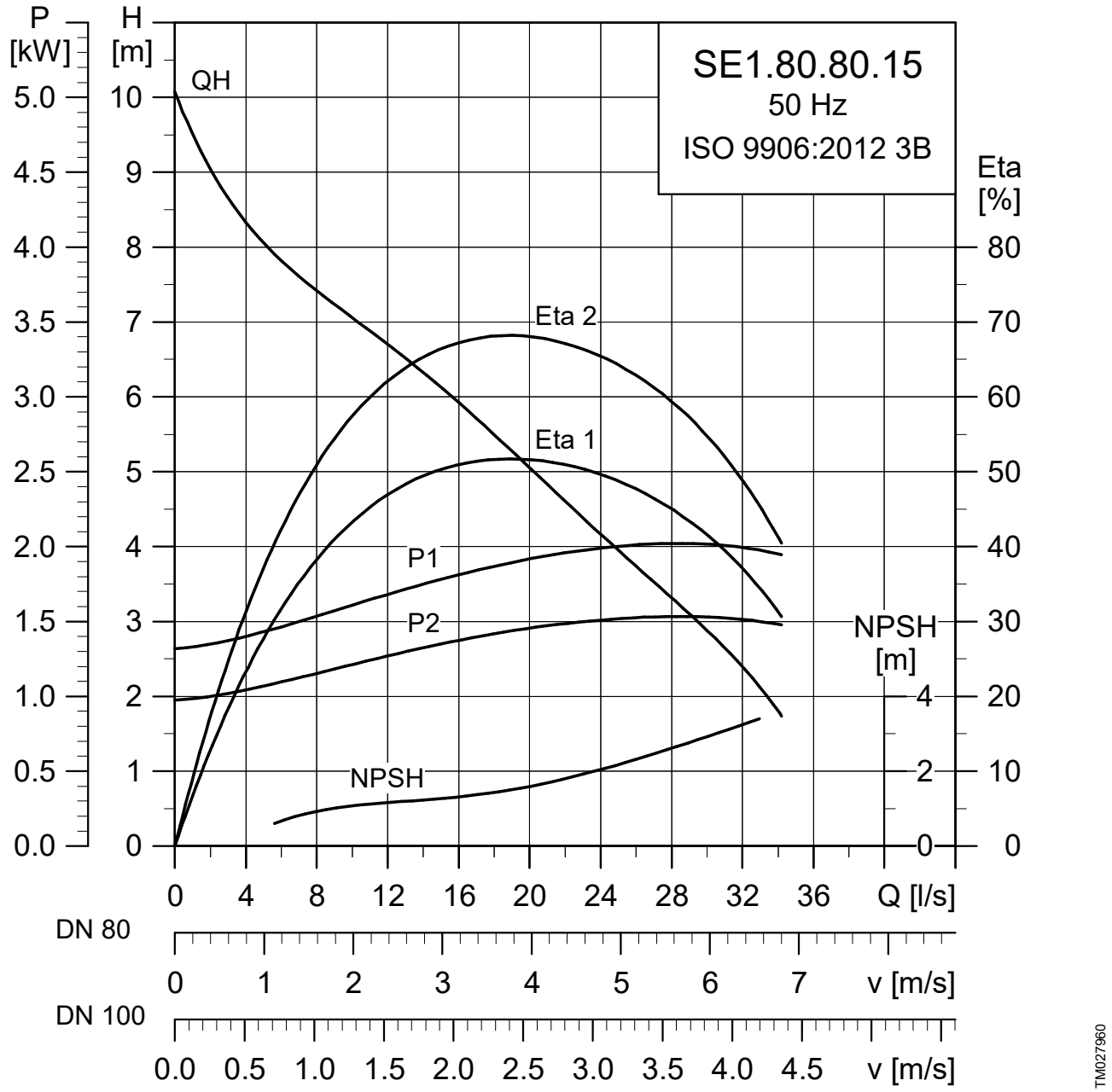
Pump type	Voltage [V]	P1 [kW]	P2 [kW]	Number of poles	RPM	Starting method	I_N [1] [A]	I_{start} [A]	η_{motor} [%]			Cos φ			Moment of inertia [kgm²]	Breakdown torque M_{max} [Nm]
									1/2	3/4	1/1	1/2	3/4	1/1		
SE1.50.80.40.2.51D.B	3 × 380-415 D	4.8	4.0	2	2925	Y/D	8.7/8.5	71.00	79.20	82.40	83.30	0.68	0.78	0.84	0.02	54
SE1.50.80.40.2.51E.B	3 × 220-240 D	4.8	4.0	2	2925	Y/D	15.1/14.7	123.00	79.20	82.40	83.30	0.68	0.78	0.84	0.02	54

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
S-tube®	50	20	20	IP68	F	40	4-14

9.11 SE1.80.80.15.(Ex).4



Electrical data

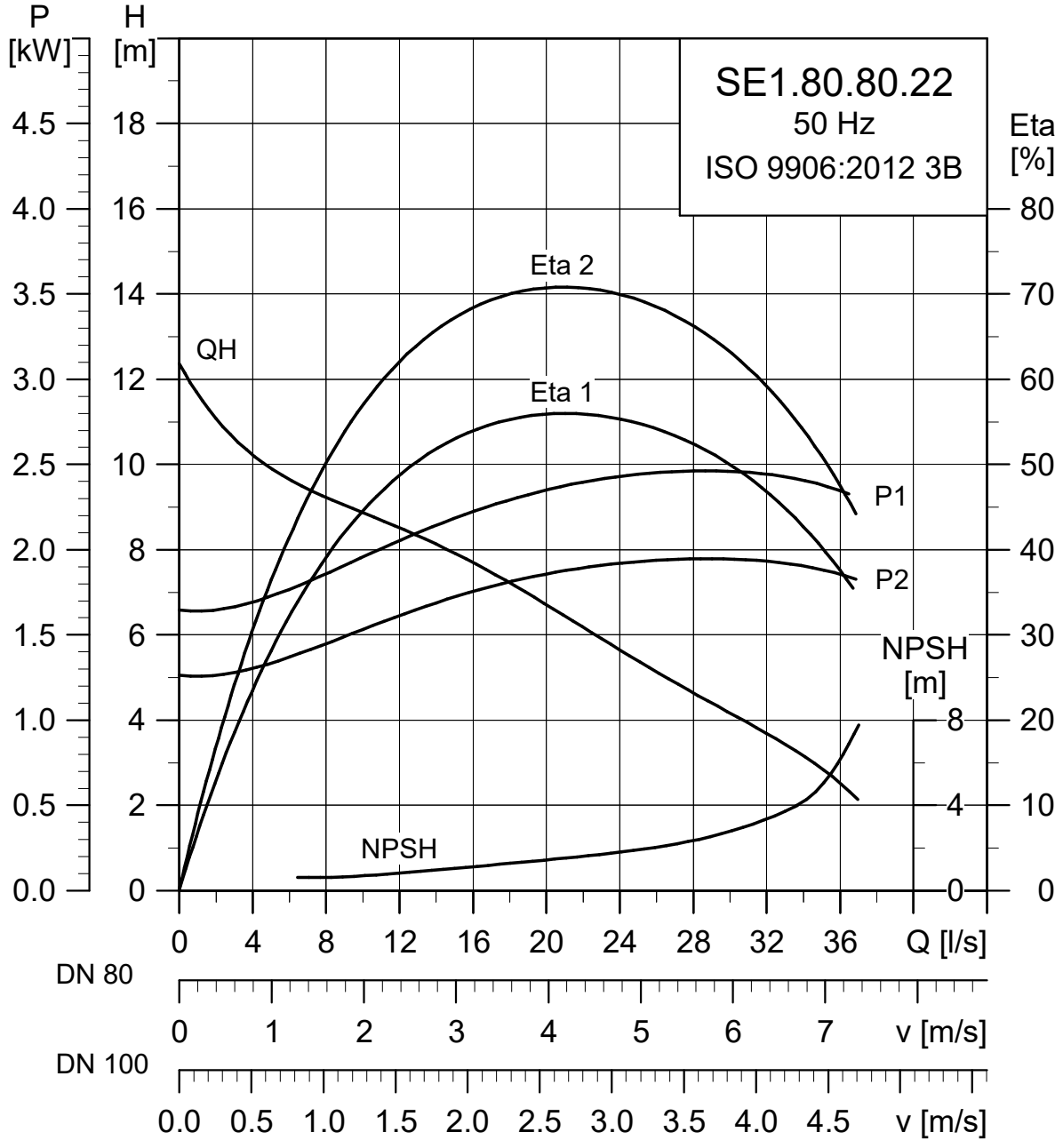
Pump type	Voltage [V]	P1 [kW]	P2 [kW]	Number of poles	RPM	Starting method	I_N [1] [A]	I_{start} [A]	η_{motor} [%]			Cos φ			Moment of inertia [kgm²]	Breakdown torque M_{max} [Nm]
									1/2	3/4	1/1	1/2	3/4	1/1		
SE1.80.80.15.4.50D.B	3 × 380-415 Y	2.1	1.5	4	1435	DOL	4.2/4.2	22.00	67.00	71.00	72.00	0.56	0.68	0.76	0.05	28
SE1.80.80.15.4.50E.B	3 × 220-240 D	2.1	1.5	4	1435	DOL	7.3/7.3	38.00	67.00	71.00	72.00	0.56	0.68	0.76	0.05	28

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
S-tube®	80	20	20	IP68	F	40	4-14

9.12 SE1.80.80.22.(Ex).4



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Electrical data

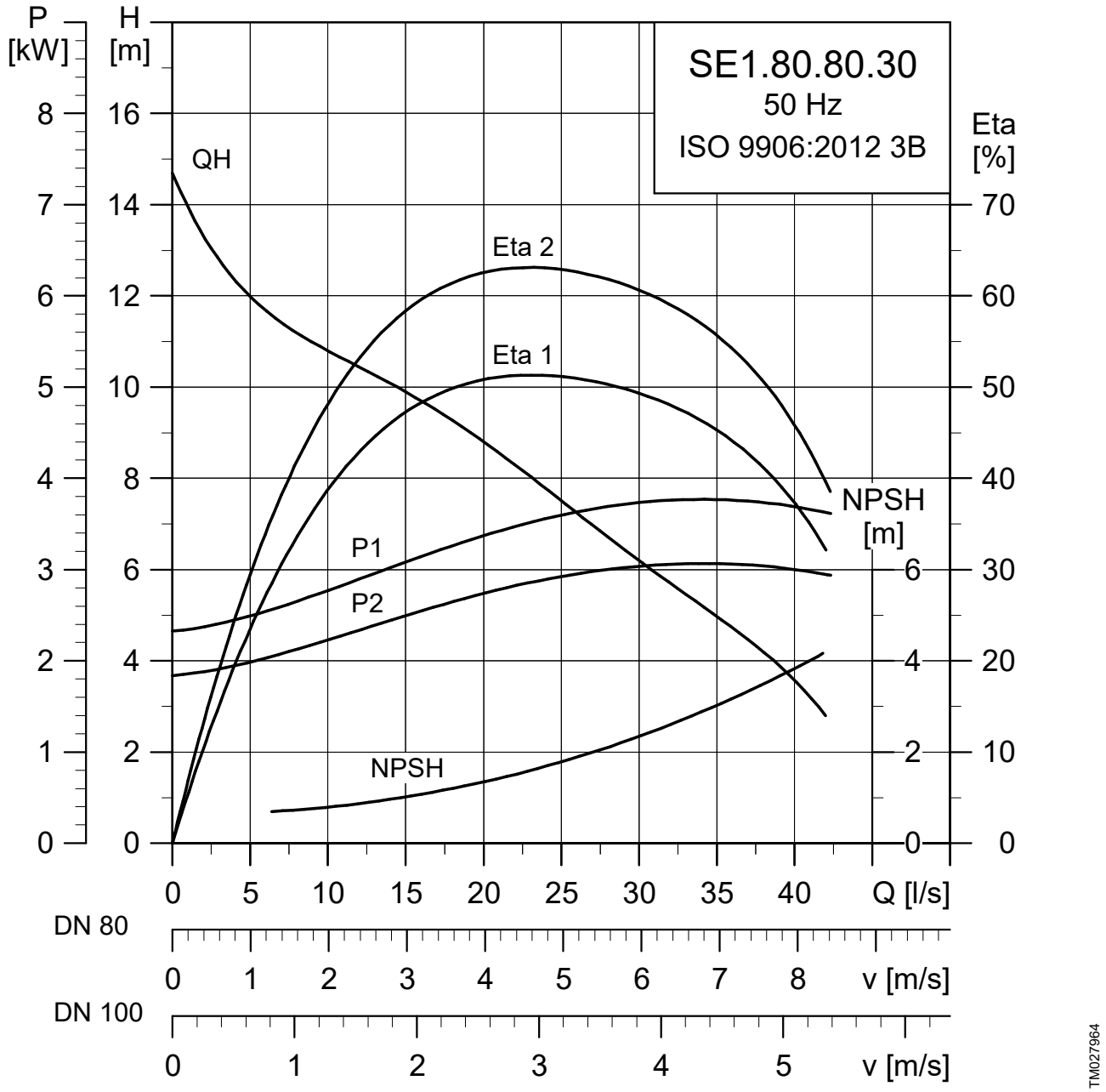
Pump type	Voltage [V]	P1 [kW]	P2 [kW]	Number of poles	RPM	Starting method	I_N [1] [A]	I_{start} [A]	η_{motor} [%] 1/2	η_{motor} [%] 3/4	η_{motor} [%] 1/1	Cos φ 1/2	Cos φ 3/4	Cos φ 1/1	Moment of inertia [kgm²]	Breakdown torque M_{max} [Nm]
SE1.80.80.22.4.50D.B	3 × 380-415 Y	2.9	2.2	4	1445	DOL	6.0/6.0	32.00	70.90	75.20	76.30	0.53	0.66	0.74	0.07	45
SE1.80.80.22.4.50E.B	3 × 220-240 D	2.9	2.2	4	1445	DOL	10.3/10.3	55.00	70.90	75.20	76.30	0.53	0.66	0.74	0.07	45

[1] Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
S-tube®	80	20	20	IP68	F	40	4-14

9.13 SE1.80.80.30.(Ex).4



Electrical data

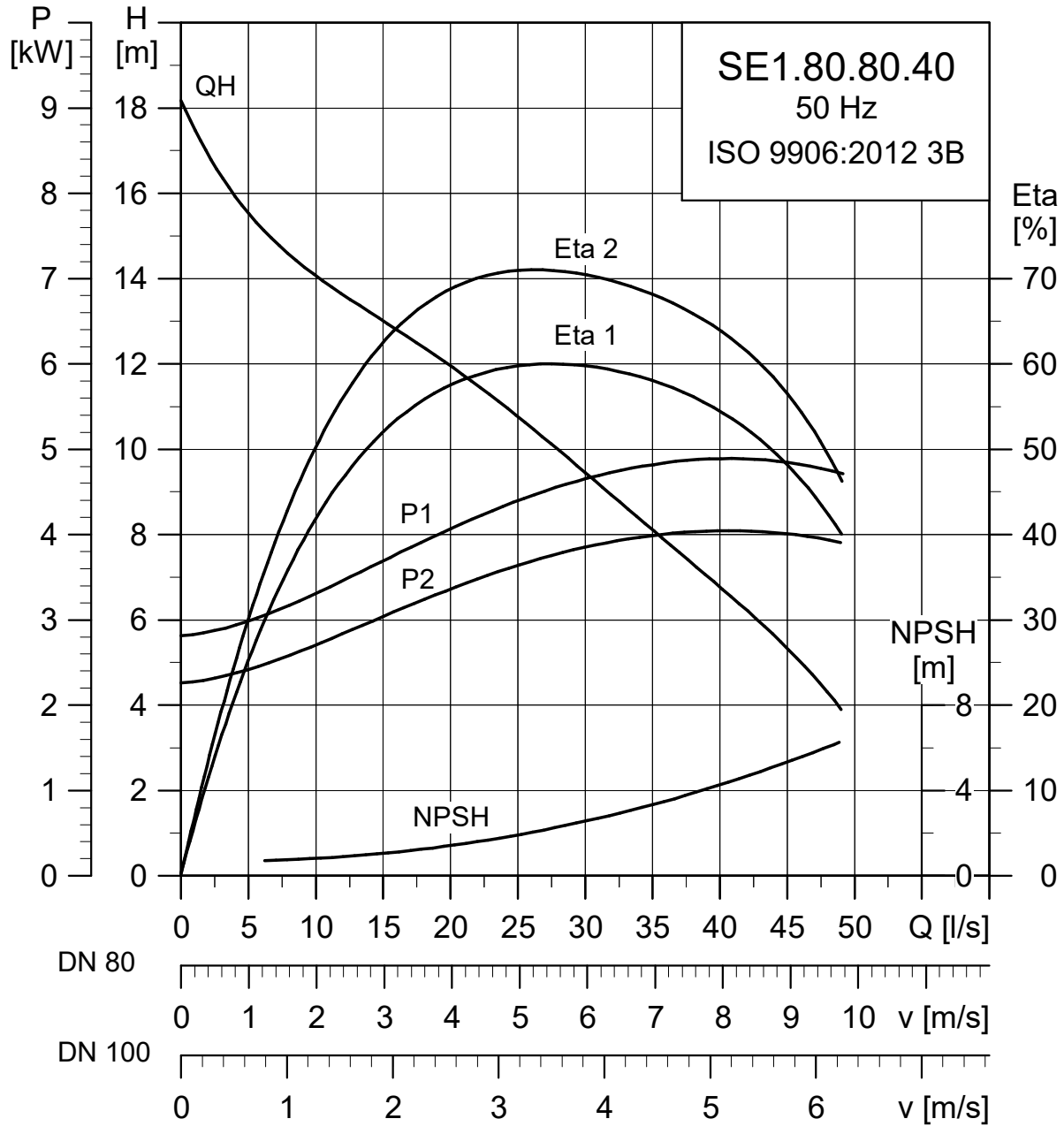
Pump type	Voltage [V]	P1 [kW]	P2 [kW]	Number of poles	RPM	Starting method	I_N [1] [A]	I_{start} [A]	η_{motor} [%]			Cos φ			Moment of inertia [kgm²]	Breakdown torque M_{max} [Nm]
									1/2	3/4	1/1	1/2	3/4	1/1		
SE1.80.80.30.4.50D.B	3 × 380-415 Y	3.7	3.0	4	1455	DOL	7.8/8.0	43.00	76.40	79.90	81.20	0.50	0.64	0.73	0.11	71
SE1.80.80.30.4.50E.B	3 × 220-240 D	3.7	3.0	4	1455	DOL	13.4/13.8	74.00	76.40	79.90	81.20	0.50	0.64	0.73	0.11	71

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
S-tube®	80	20	20	IP68	F	40	4-14

9.14 SE1.80.80.40.(Ex).4



Electrical data

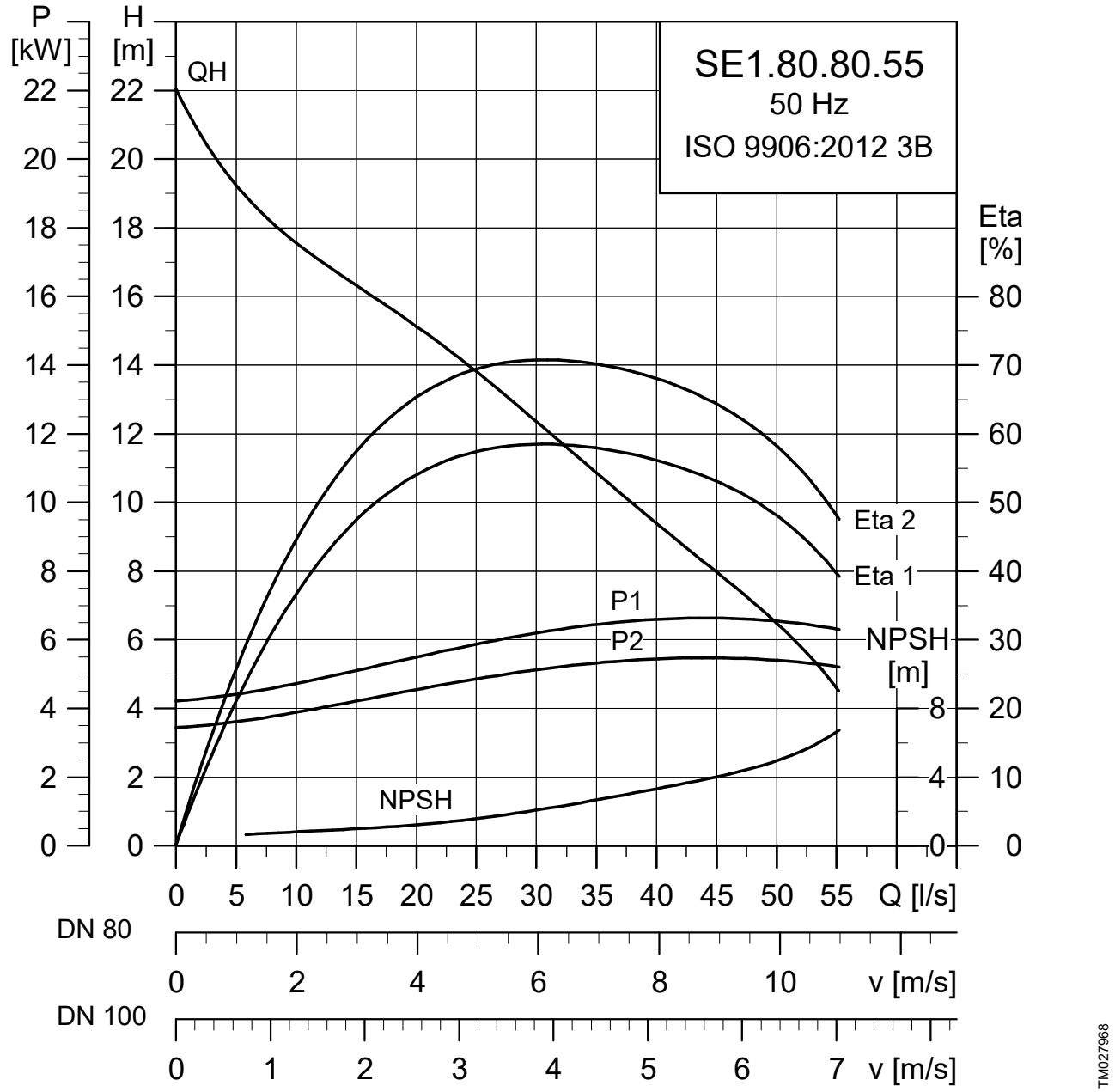
Pump type	Voltage [V]	P1 [kW]	P2 [kW]	Number of poles	RPM	Starting method	I_N [1] [A]	I_{start} [A]	η_{motor} [%]			Cos φ			Moment of inertia [kgm²]	Breakdown torque M_{max} [Nm]
									1/2	3/4	1/1	1/2	3/4	1/1		
SE1.80.80.40.4.51D.B	3 × 380-415 D	4.9	4.0	4	1460	Y/D	10.0/10.2	67.00	78.20	81.70	82.20	0.52	0.65	0.73	0.13	100
SE1.80.80.40.4.51E.B	3 × 220-240 D	4.9	4.0	4	1460	Y/D	17.2/17.6	116.00	78.20	81.70	82.20	0.52	0.65	0.73	0.13	100

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
S-tube®	80	20	20	IP68	F	40	4-14

9.15 SE1.80.80.55.(Ex).4



Electrical data

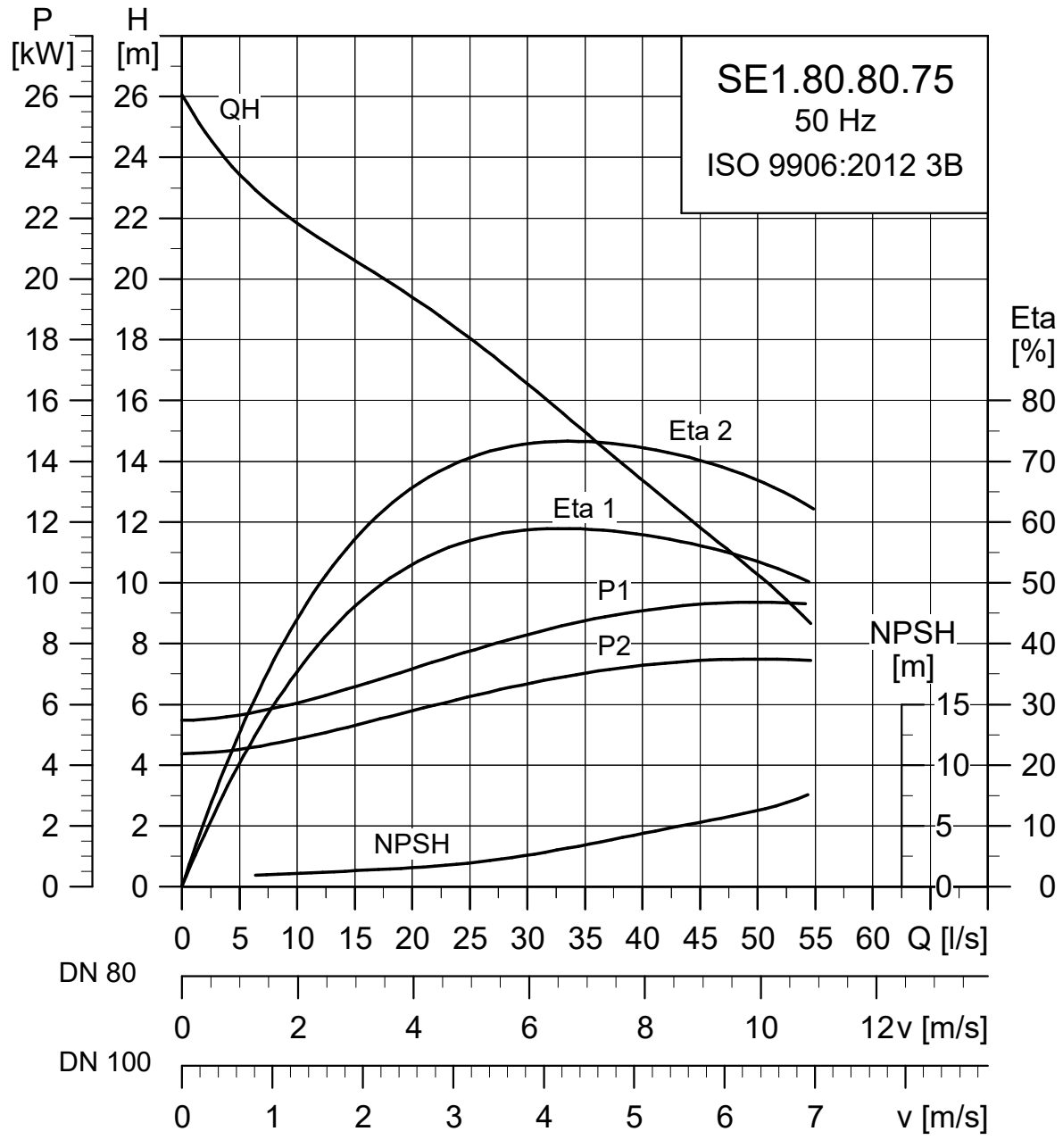
Pump type	Voltage [V]	P1 [kW]	P2 [kW]	Number of poles	RPM	Starting method	I_N [1] [A]	I_{start} [A]	η_{motor} [%]			Cos φ			Moment of inertia [kgm²]	Breakdown torque M_{max} [Nm]
									1/2	3/4	1/1	1/2	3/4	1/1		
SE1.80.80.55.4.51D.B	3 × 380-415 D	6.5	5.5	4	1455	Y/D	13.3/13.8	87.00	81.00	83.30	83.90	0.52	0.65	0.74	0.17	122
SE1.80.80.55.4.51E.B	3 × 220-240 D	6.5	5.5	4	1455	Y/D	23.0/23.8	150.00	81.00	83.30	83.90	0.52	0.65	0.74	0.17	122

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
S-tube®	80	20	20	IP68	F	40	4-14

9.16 SE1.80.80.75.(Ex).4



TM027970

Electrical data

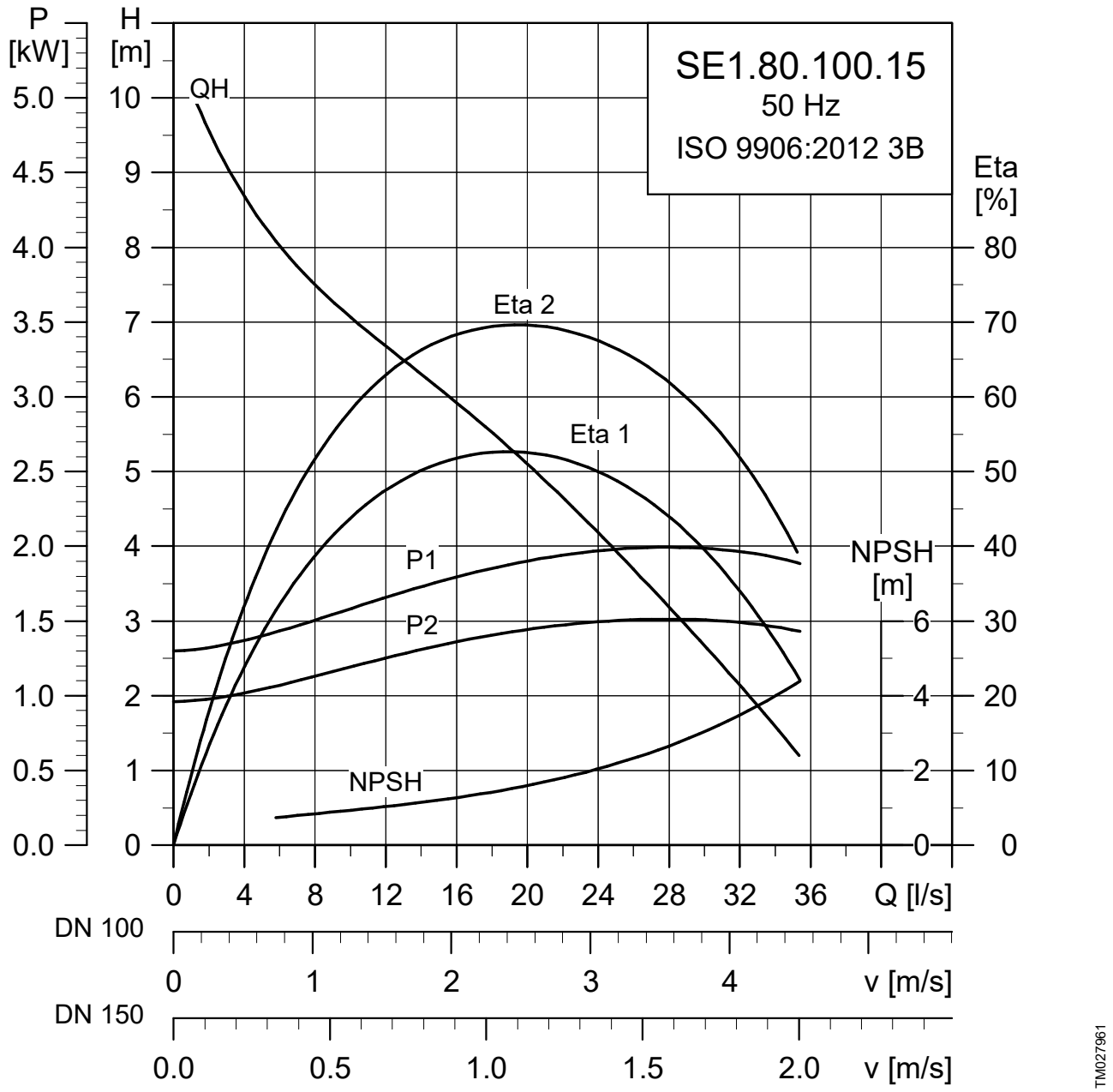
Pump type	Voltage [V]	P1 [kW]	P2 [kW]	Number of poles	RPM	Starting method	I_N [1] [A]	I_{start} [A]	η_{motor} [%] 1/2	η_{motor} [%] 3/4	η_{motor} [%] 1/1	Cos φ 1/2	Cos φ 3/4	Cos φ 1/1	Moment of inertia [kgm²]	Breakdown torque M_{max} [Nm]
SE1.80.80.75.4.51D.B	3 × 380-415 D	9	7.5	4	1455	Y/D	17.7/17.5	107.00	81.30	83.50	83.40	0.61	0.72	0.79	0.23	141
SE1.80.80.75.4.51E.B	3 × 220-240 D	9	7.5	4	1455	Y/D	30.7/30.3	185.00	81.30	83.50	83.40	0.61	0.72	0.79	0.23	141

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
S-tube®	80	20	20	IP68	F	40	4-14

9.17 SE1.80.100.15.(Ex).4



Electrical data

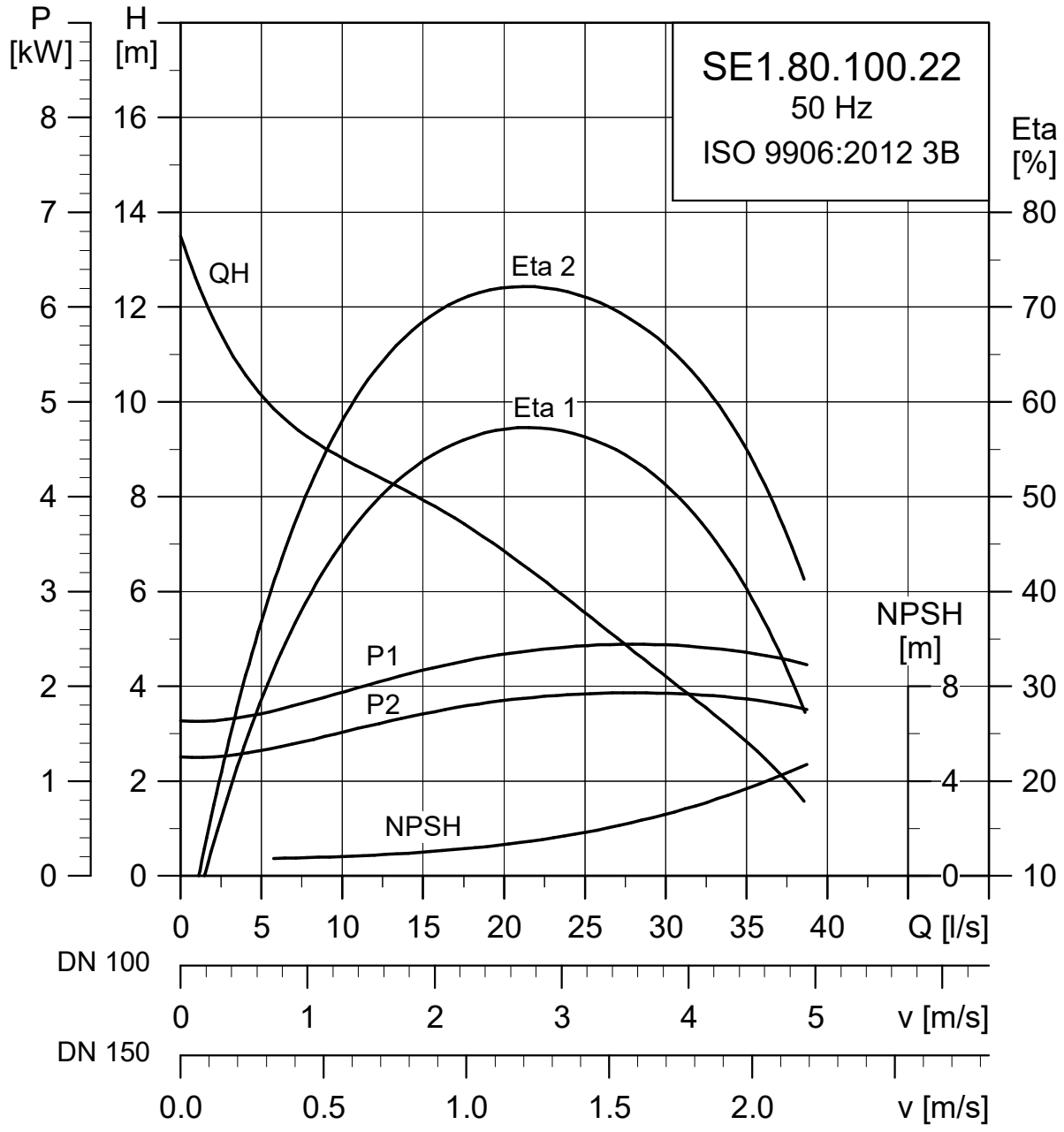
Pump type	Voltage [V]	P1 [kW]	P2 [kW]	Number of poles	RPM	Starting method	I_N [1] [A]	I_{start} [A]	η_{motor} [%]			Cos φ			Moment of inertia [kgm²]	Breakdown torque M_{max} [Nm]
									1/2	3/4	1/1	1/2	3/4	1/1		
SE1.80.100.15.4.50D.B	3 × 380-415 Y	2.1	1.5	4	1435	DOL	4.2/4.2	22.00	67.00	71.00	72.00	0.56	0.68	0.76	0.05	28
SE1.80.100.15.4.50E.B	3 × 220-240 D	2.1	1.5	4	1435	DOL	7.3/7.3	38.00	67.00	71.00	72.00	0.56	0.68	0.76	0.05	28

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
S-tube®	80	20	20	IP68	F	40	4-14

9.18 SE1.80.100.22.(Ex).4



Electrical data

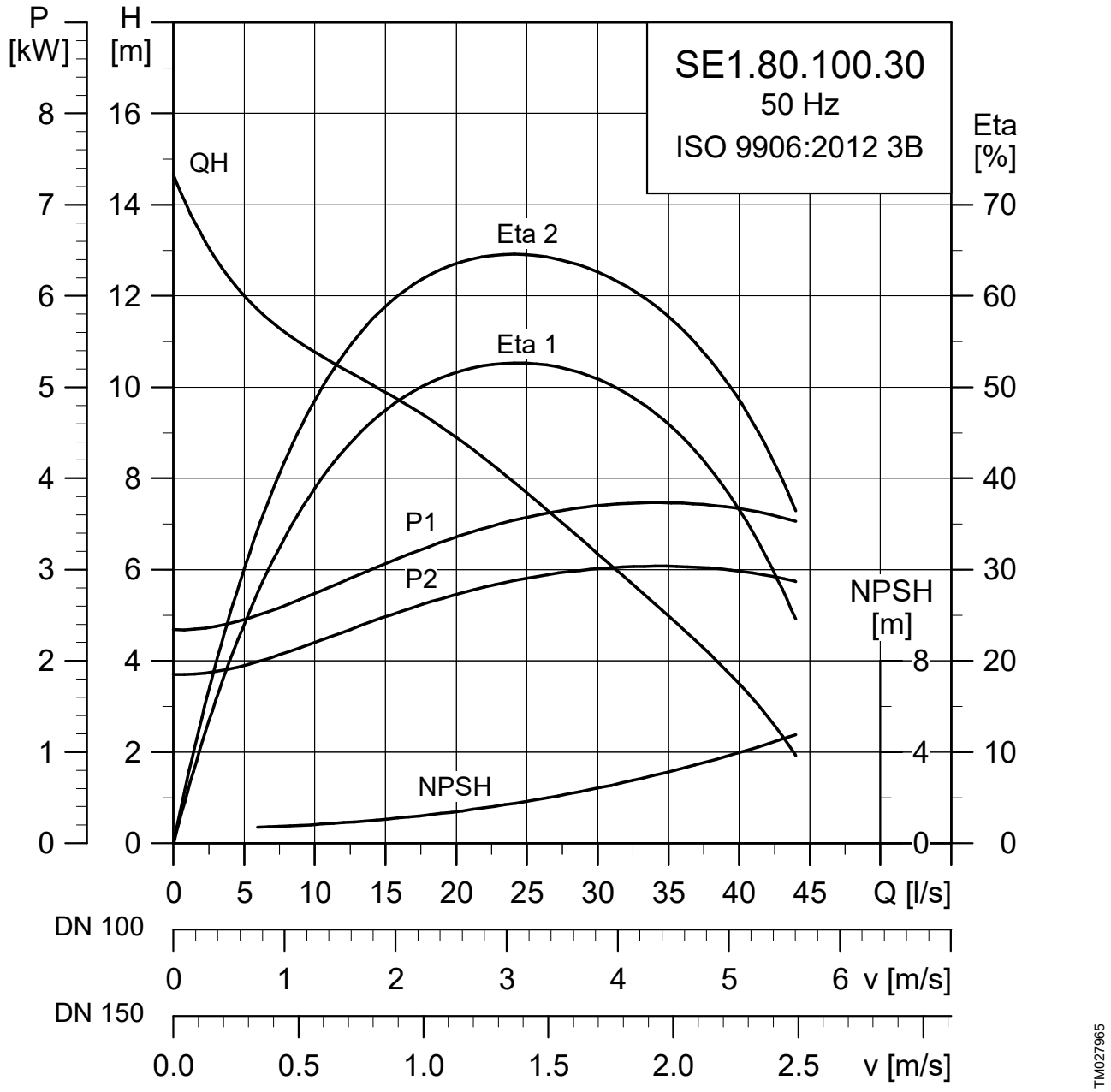
Pump type	Voltage [V]	P1 [kW]	P2 [kW]	Number of poles	RPM	Starting method	I_N [1] [A]	I_{start} [A]	η_{motor} [%]			Cos φ			Moment of inertia [kgm²]	Breakdown torque M_{max} [Nm]
									1/2	3/4	1/1	1/2	3/4	1/1		
SE1.80.100.22.4.50D.B	3 × 380-415 Y	2.9	2.2	4	1445	DOL	6.0/6.0	32.00	70.90	75.20	76.30	0.53	0.66	0.74	0.07	45
SE1.80.100.22.4.50E.B	3 × 220-240 D	2.9	2.2	4	1445	DOL	10.3/10.3	55.00	70.90	75.20	76.30	0.53	0.66	0.74	0.07	45

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
S-tube®	80	20	20	IP68	F	40	4-14

9.19 SE1.80.100.30.(Ex).4



Electrical data

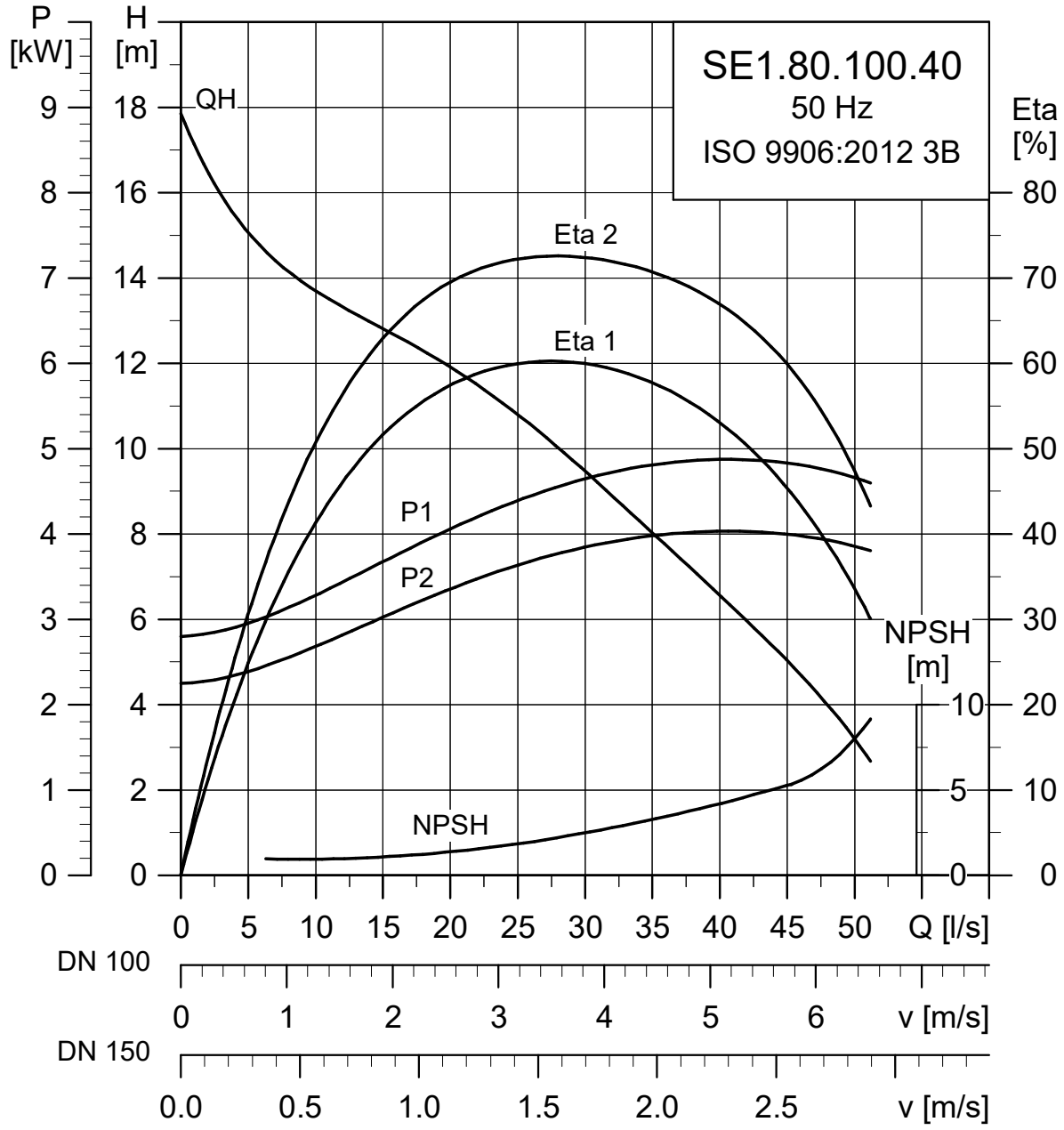
Pump type	Voltage [V]	P1 [kW]	P2 [kW]	Number of poles	RPM	Starting method	I_N [1] [A]	I_{start} [A]	η_{motor} [%]			Cos φ			Moment of inertia [kgm²]	Breakdown torque M_{max} [Nm]
									1/2	3/4	1/1	1/2	3/4	1/1		
SE1.80.100.30.4.50D.B	3 × 380-415 Y	3.7	3.0	4	1455	DOL	7.8/8.0	43.00	76.40	79.90	81.20	0.50	0.64	0.73	0.11	71
SE1.80.100.30.4.50E.B	3 × 220-240 D	3.7	3.0	4	1455	DOL	13.4/13.8	74.00	76.40	79.90	81.20	0.50	0.64	0.73	0.11	71

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
S-tube®	80	20	20	IP68	F	40	4-14

9.20 SE1.80.100.40.(Ex).4



Electrical data

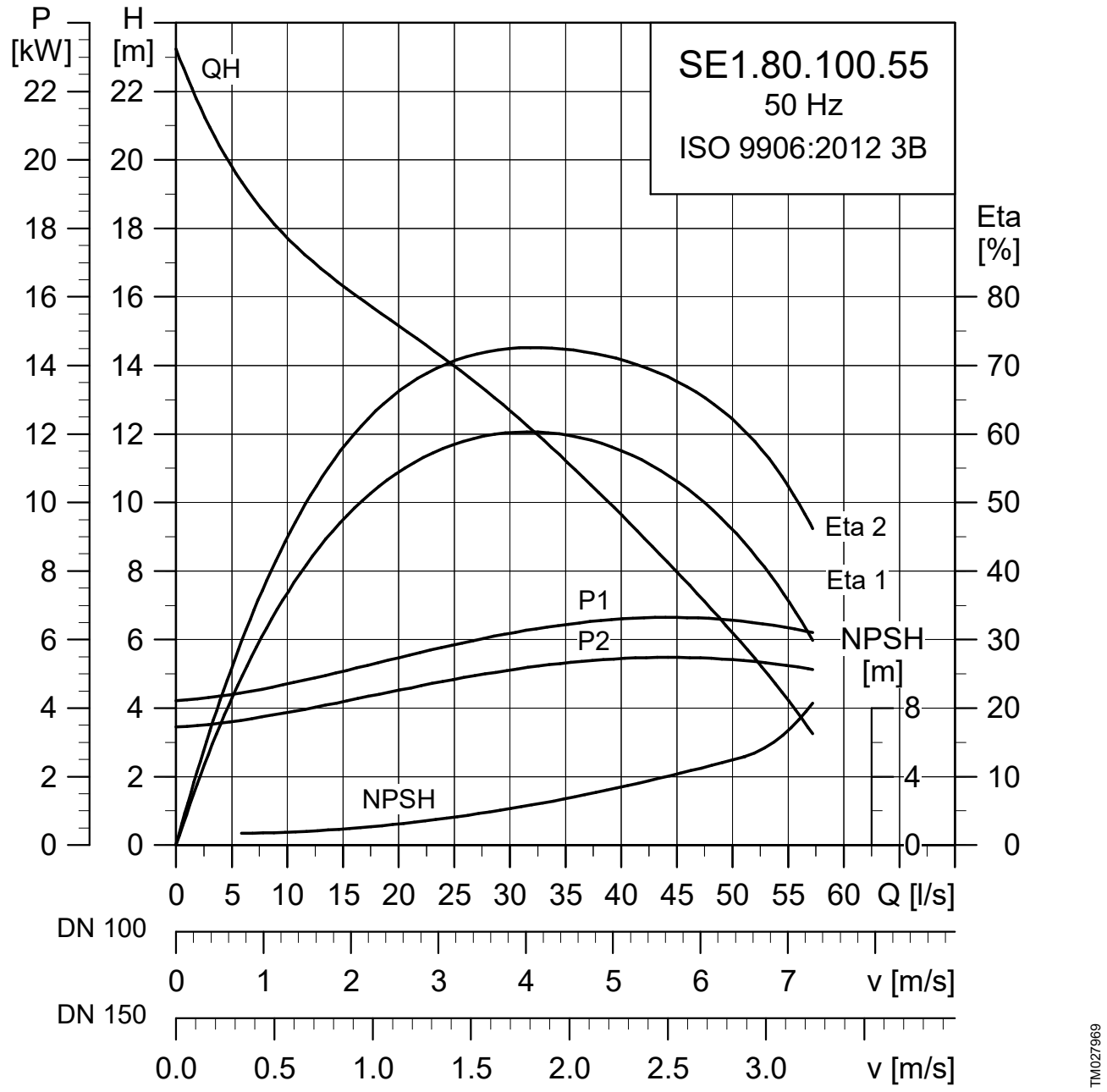
Pump type	Voltage [V]	P1 [kW]	P2 [kW]	Number of poles	RPM	Starting method	I_N [1] [A]	I_{start} [A]	η_{motor} [%]			Cos φ			Moment of inertia [kgm^2]	Breakdown torque M_{max} [Nm]
									1/2	3/4	1/1	1/2	3/4	1/1		
SE1.80.100.40.4.51D.B	3 × 380-415 D	4.9	4.0	4	1460	Y/D	10.0/10.2	67.00	78.20	81.70	82.20	0.52	0.65	0.73	0.13	100
SE1.80.100.40.4.51E.B	3 × 220-240 D	4.9	4.0	4	1460	Y/D	17.2/17.6	116.00	78.20	81.70	82.20	0.52	0.65	0.73	0.13	100

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
S-tube®	80	20	20	IP68	F	40	4-14

9.21 SE1.80.100.55.(Ex).4



Electrical data

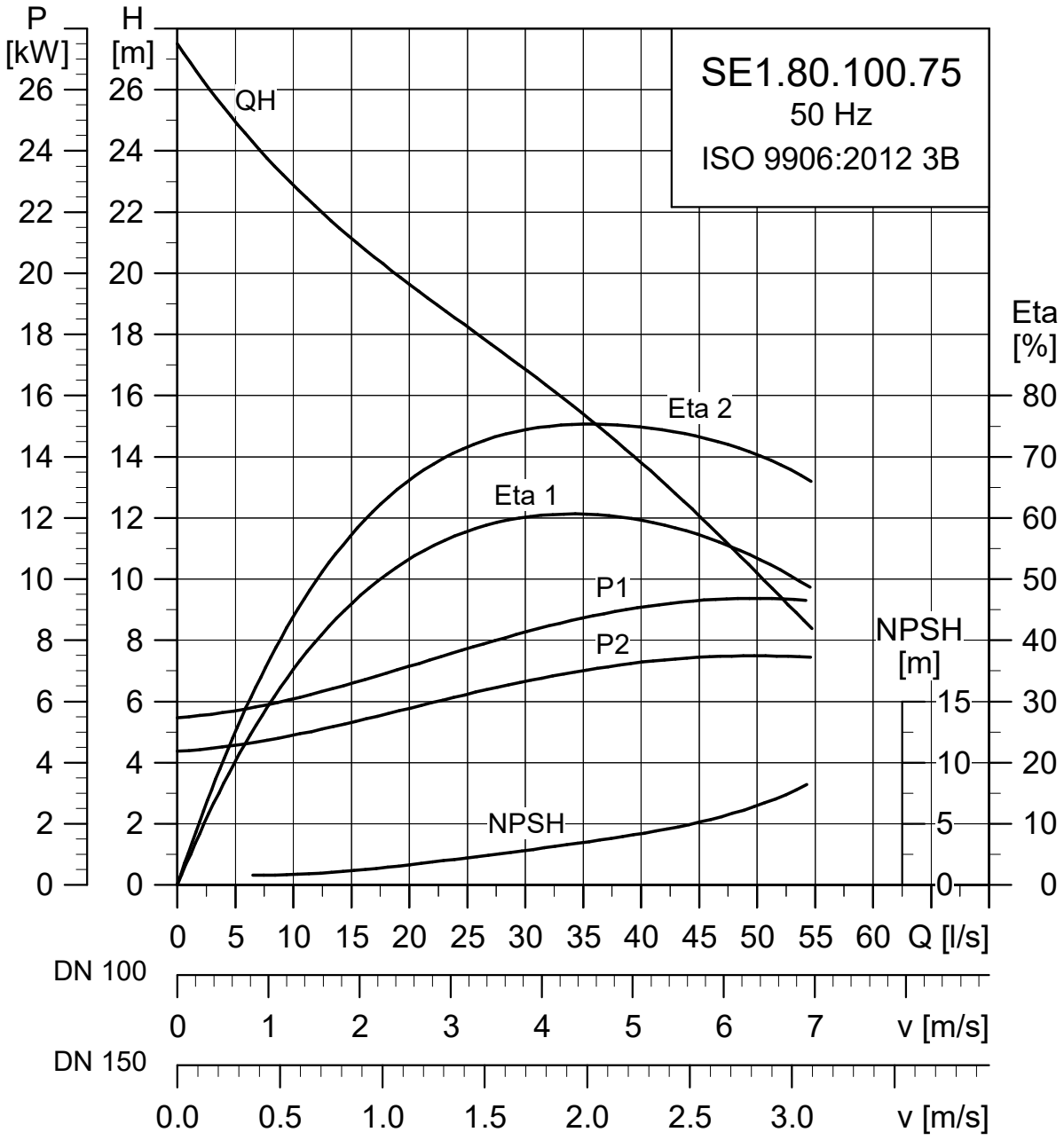
Pump type	Voltage [V]	P1 [kW]	P2 [kW]	Number of poles	RPM	Starting method	I_N [1] [A]	I_{start} [A]	η_{motor} [%]			Cos φ			Moment of inertia [kgm²]	Breakdown torque M_{max} [Nm]
									1/2	3/4	1/1	1/2	3/4	1/1		
SE1.80.100.55.4.51D.B	3 × 380-415 D	6.5	5.5	4	1455	Y/D	13.3/13.8	87.00	81.00	83.30	83.90	0.52	0.65	0.74	0.17	122
SE1.80.100.55.4.51E.B	3 × 220-240 D	6.5	5.5	4	1455	Y/D	23.0/23.8	150.00	81.00	83.30	83.90	0.52	0.65	0.74	0.17	122

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
S-tube®	80	20	20	IP68	F	40	4-14

9.22 SE1.80.100.75.(Ex).4



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Electrical data

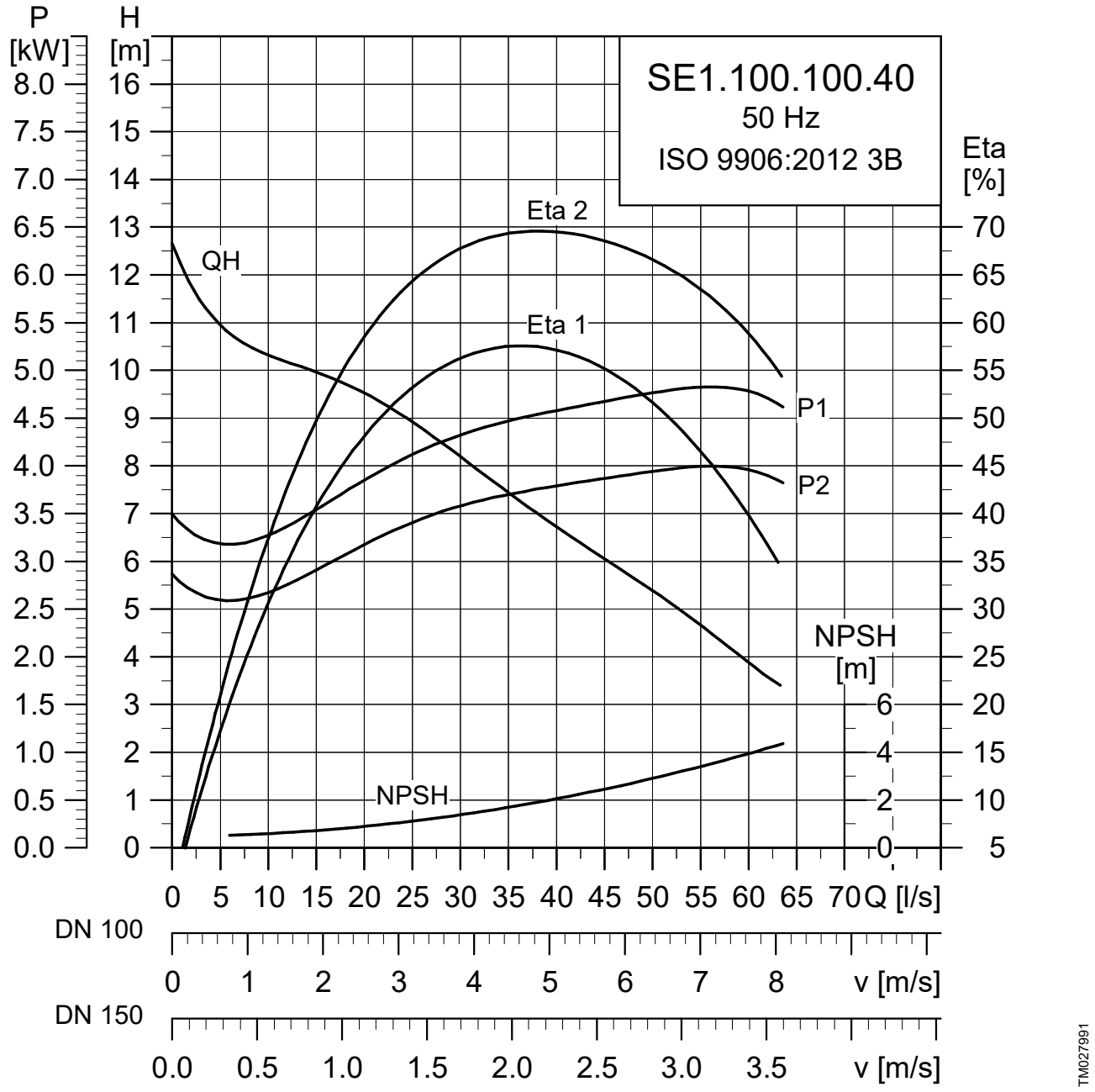
Pump type	Voltage [V]	P1 [kW]	P2 [kW]	Number of poles	RPM	Starting method	I_N [1] [A]	I_{start} [A]	η_{motor} [%]			Cos φ			Moment of inertia [kgm²]	Breakdown torque M_{max} [Nm]
									1/2	3/4	1/1	1/2	3/4	1/1		
SE1.80.100.75.4.51D.B	3 × 380-415 D	9	7.5	4	1455	Y/D	17.7/17.5	107.00	81.30	83.50	83.40	0.61	0.72	0.79	0.23	141
SE1.80.100.75.4.51E.B	3 × 220-240 D	9	7.5	4	1455	Y/D	30.7/30.3	185.00	81.30	83.50	83.40	0.61	0.72	0.79	0.23	141

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
S-tube®	80	20	20	IP68	F	40	4-14

9.23 SE1.100.100.40.(Ex).4



Electrical data

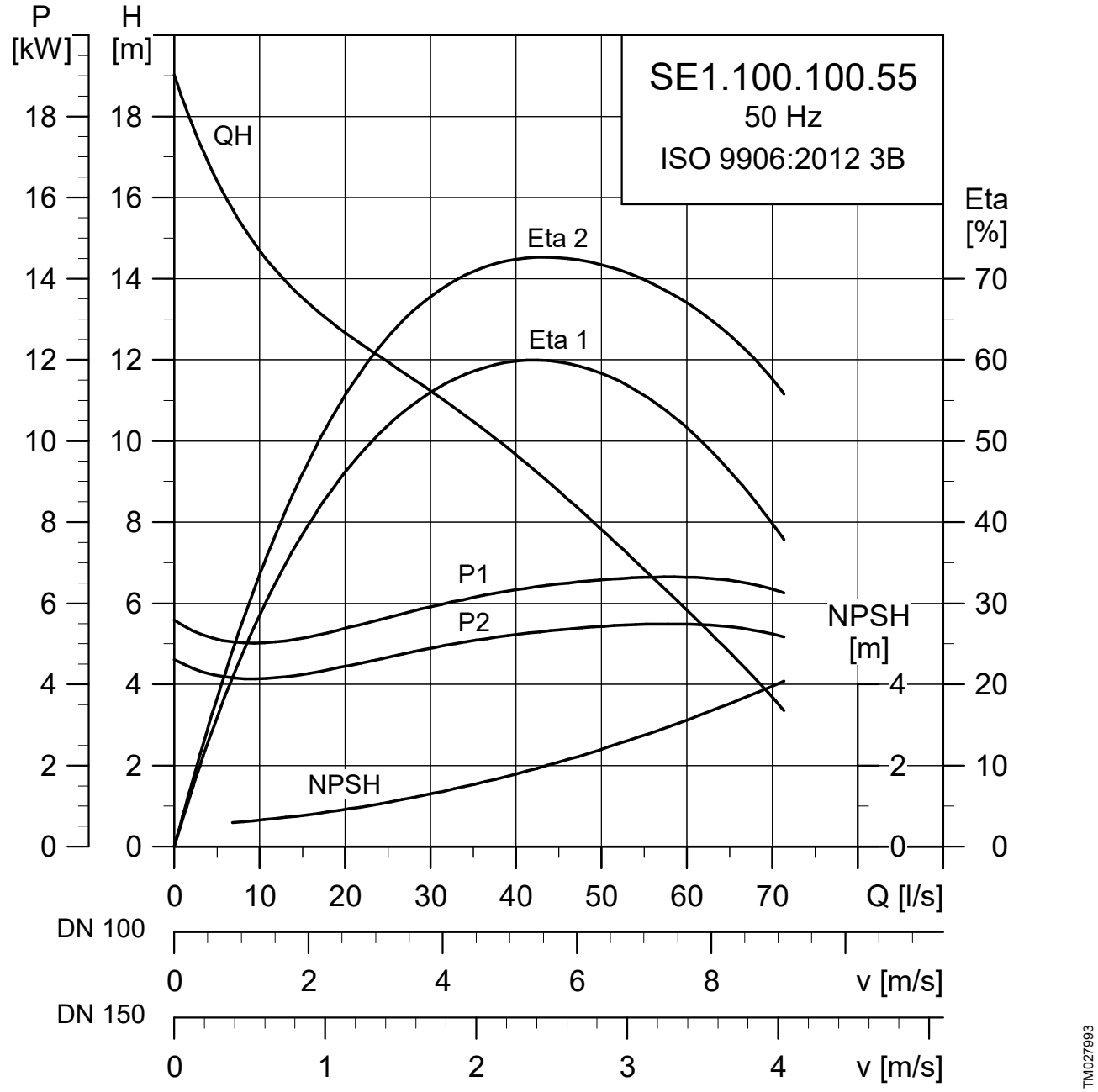
Pump type	Voltage [V]	P1 [kW]	P2 [kW]	Number of poles	RPM	Starting method	I_N [1] [A]	I_{start} [A]	η_{motor} [%]			Cos φ			Moment of inertia [kgm²]	Breakdown torque M_{max} [Nm]
									1/2	3/4	1/1	1/2	3/4	1/1		
SE1.100.100.40.4.51D.B	3 × 380-415 D	4.9	4.0	4	1460	Y/D	10.0/10.2	67.00	78.20	81.70	82.20	0.52	0.65	0.73	0.13	100
SE1.100.100.40.4.51E.B	3 × 220-240 D	4.9	4.0	4	1460	Y/D	17.2/17.6	116.00	78.20	81.70	82.20	0.52	0.65	0.73	0.13	100

[1] Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
S-tube®	100	20	20	IP68	F	40	4-14

9.24 SE1.100.100.55.(Ex).4



Electrical data

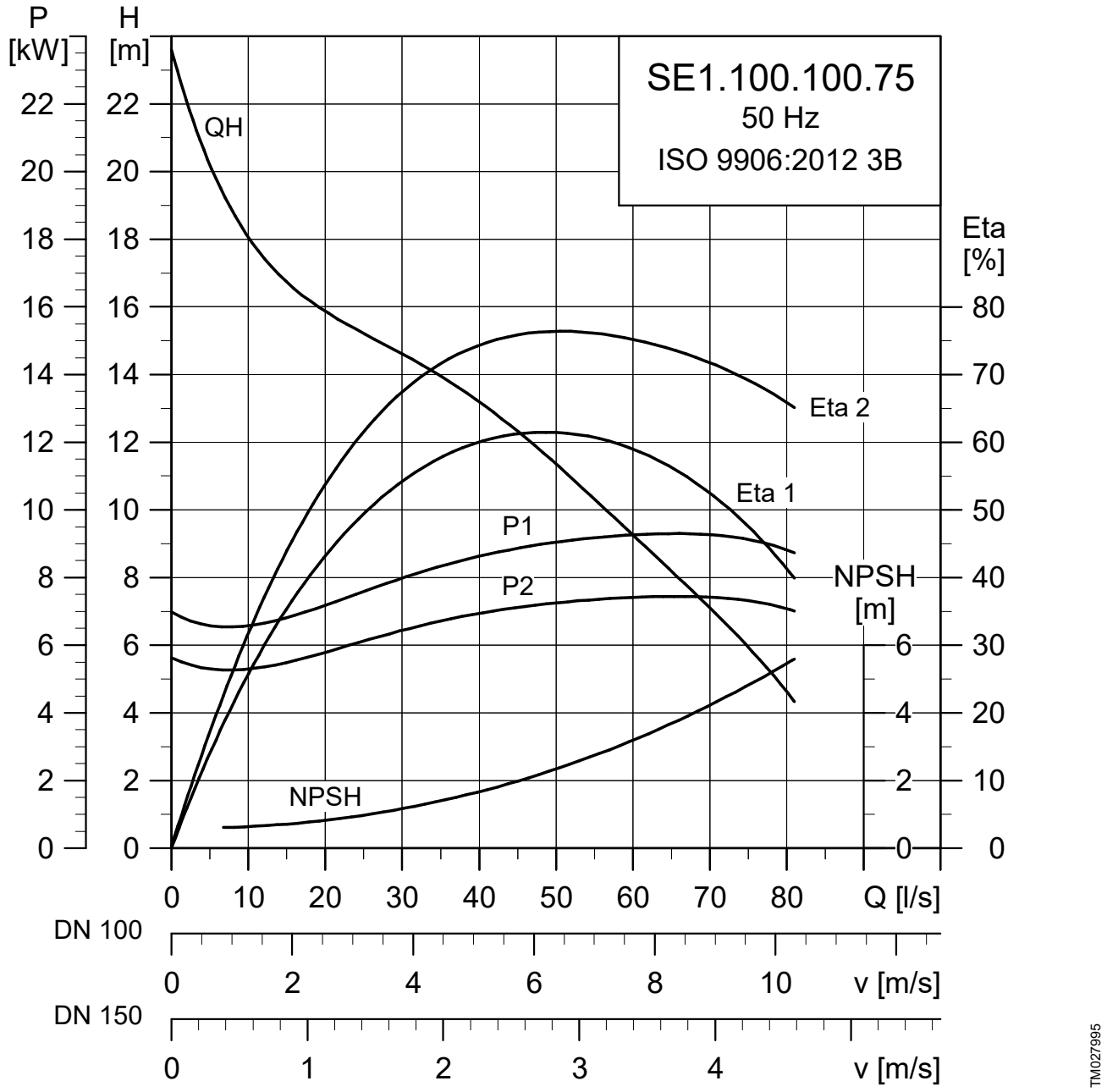
Pump type	Voltage [V]	P1 [kW]	P2 [kW]	Number of poles	RPM	Starting method	I_N [1] [A]	I_{start} [A]	η_{motor} [%]			Cos φ			Moment of inertia [kgm^2]	Breakdown torque M_{max} [Nm]
									1/2	3/4	1/1	1/2	3/4	1/1		
SE1.100.100.55.4.51D.B	3 × 380-415 D	6.5	5.5	4	1455	Y/D	13.3/13.8	87.00	81.00	83.30	83.90	0.52	0.65	0.74	0.17	122
SE1.100.100.55.4.51E.B	3 × 220-240 D	6.5	5.5	4	1455	Y/D	23.0/23.8	150.00	81.00	83.30	83.90	0.52	0.65	0.74	0.17	122

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
S-tube®	100	20	20	IP68	F	40	4-14

9.25 SE1.100.100.75.(Ex).4



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Electrical data

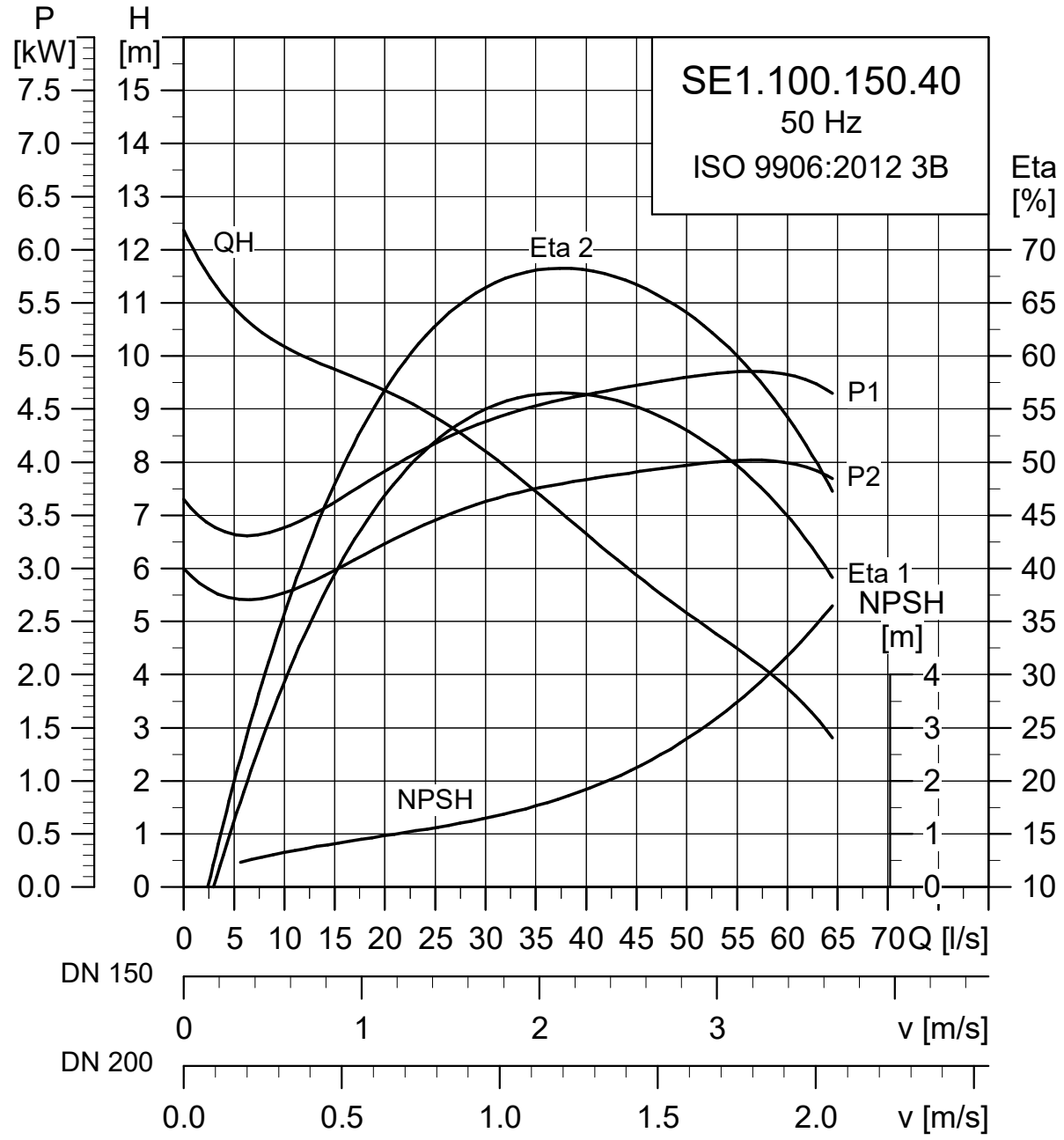
Pump type	Voltage [V]	P1 [kW]	P2 [kW]	Number of poles	RPM	Starting method	I_N [1] [A]	I_{start} [A]	η_{motor} [%]			Cos φ			Moment of inertia [kgm^2]	Breakdown torque M_{max} [Nm]
									1/2	3/4	1/1	1/2	3/4	1/1		
SE1.100.100.75.4.51D.B	3 × 380-415 D	9	7.5	4	1455	Y/D	17.7/17.5	107.00	81.30	83.50	83.40	0.61	0.72	0.79	0.22	141
SE1.100.100.75.4.51E.B	3 × 220-240 D	9	7.5	4	1455	Y/D	30.7/30.3	185.00	81.30	83.50	83.40	0.61	0.72	0.79	0.22	141

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
S-tube®	100	20	20	IP68	F	40	4-14

9.26 SE1.100.150.40.(Ex).4



Electrical data

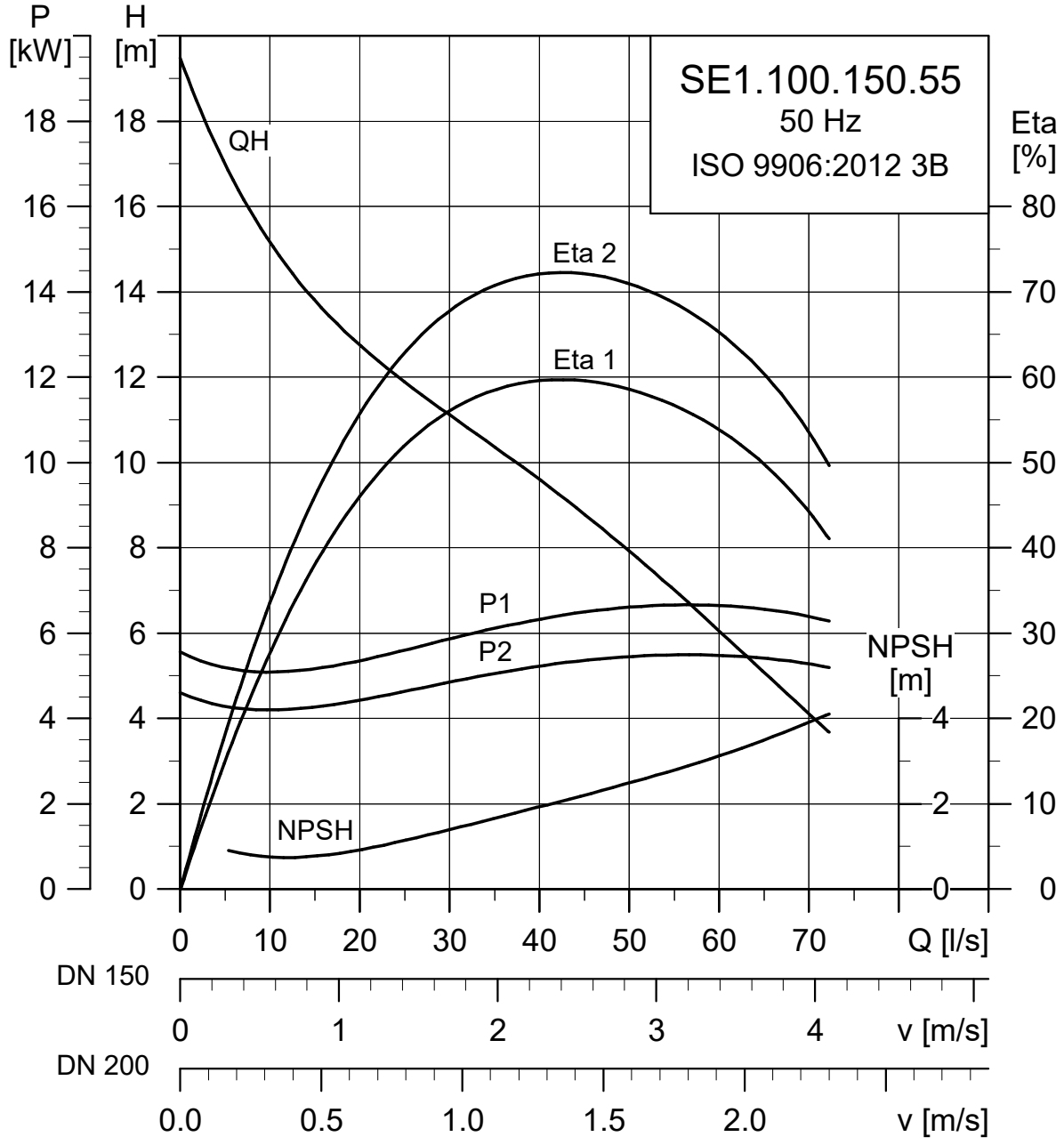
Pump type	Voltage [V]	P1 [kW]	P2 [kW]	Number of poles	RPM	Starting method	I_N [1] [A]	I_{start} [A]	η_{motor} [%]			Cos φ			Moment of inertia [kgm²]	Breakdown torque M_{max} [Nm]
									1/2	3/4	1/1	1/2	3/4	1/1		
SE1.100.150.40.4.51D.B	3 × 380-415 D	4.9	4.0	4	1460	Y/D	10.0/10.2	67.00	78.20	81.70	82.20	0.52	0.65	0.73	0.13	100
SE1.100.150.40.4.51E.B	3 × 220-240 D	4.9	4.0	4	1460	Y/D	17.2/17.6	116.00	78.20	81.70	82.20	0.52	0.65	0.73	0.13	100

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
S-tube®	100	20	20	IP68	F	40	4-14

9.27 SE1.100.150.55.(Ex).4



Electrical data

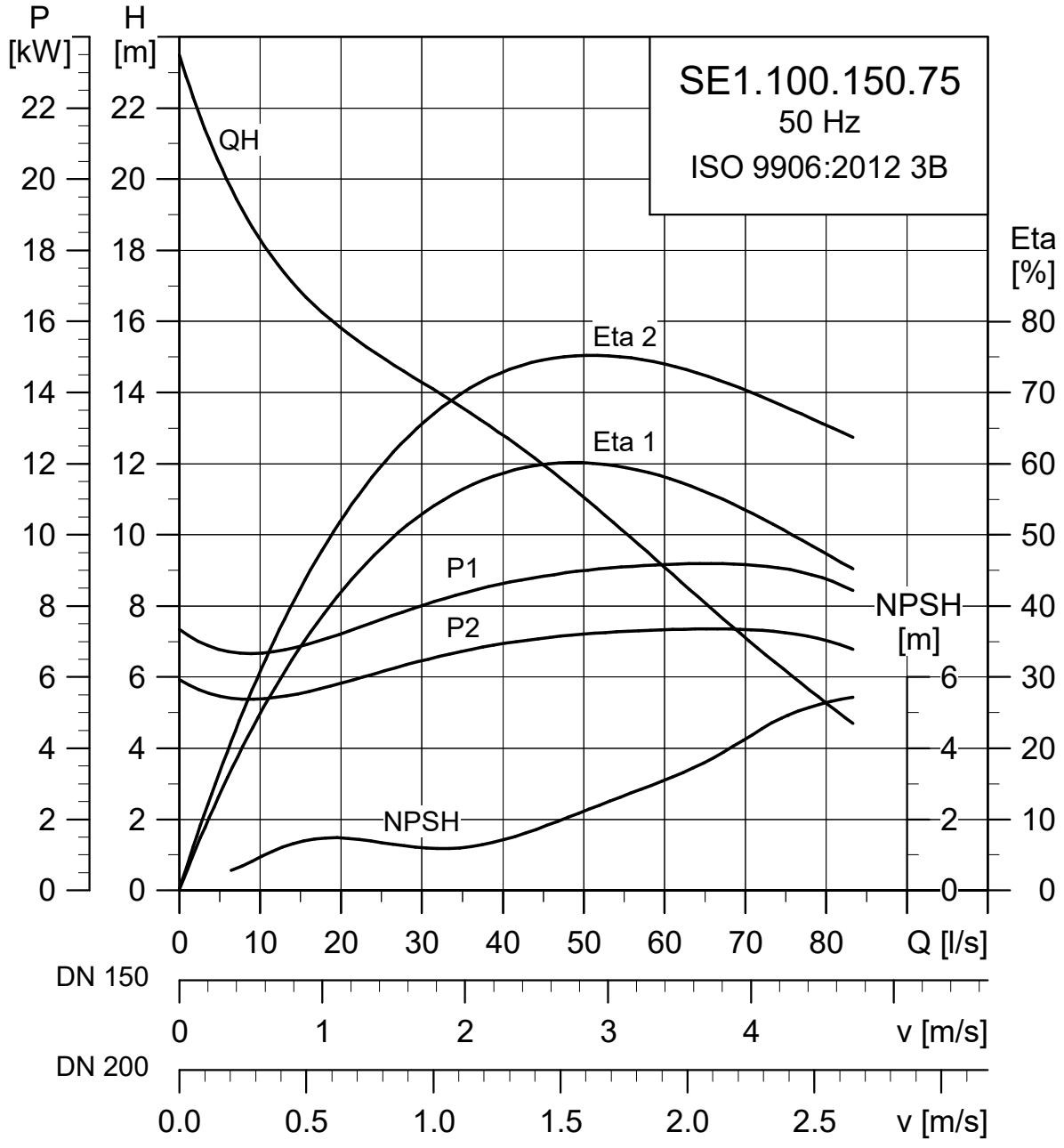
Pump type	Voltage [V]	P1 [kW]	P2 [kW]	Number of poles	RPM	Starting method	I_N [1] [A]	I_{start} [A]	η_{motor} [%]			Cos φ			Moment of inertia [kgm^2]	Breakdown torque M_{max} [Nm]
									1/2	3/4	1/1	1/2	3/4	1/1		
SE1.100.150.55.4.51D.B	3 × 380-415 D	6.5	5.5	4	1455	Y/D	13.3/13.8	87.00	81.00	83.30	83.90	0.52	0.65	0.74	0.17	122
SE1.100.150.55.4.51E.B	3 × 220-240 D	6.5	5.5	4	1455	Y/D	23.0/23.8	150.00	81.00	83.30	83.90	0.52	0.65	0.74	0.17	122

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
S-tube®	100	20	20	IP68	F	40	4-14

9.28 SE1.100.150.75.(Ex).4



TM027996

Electrical data

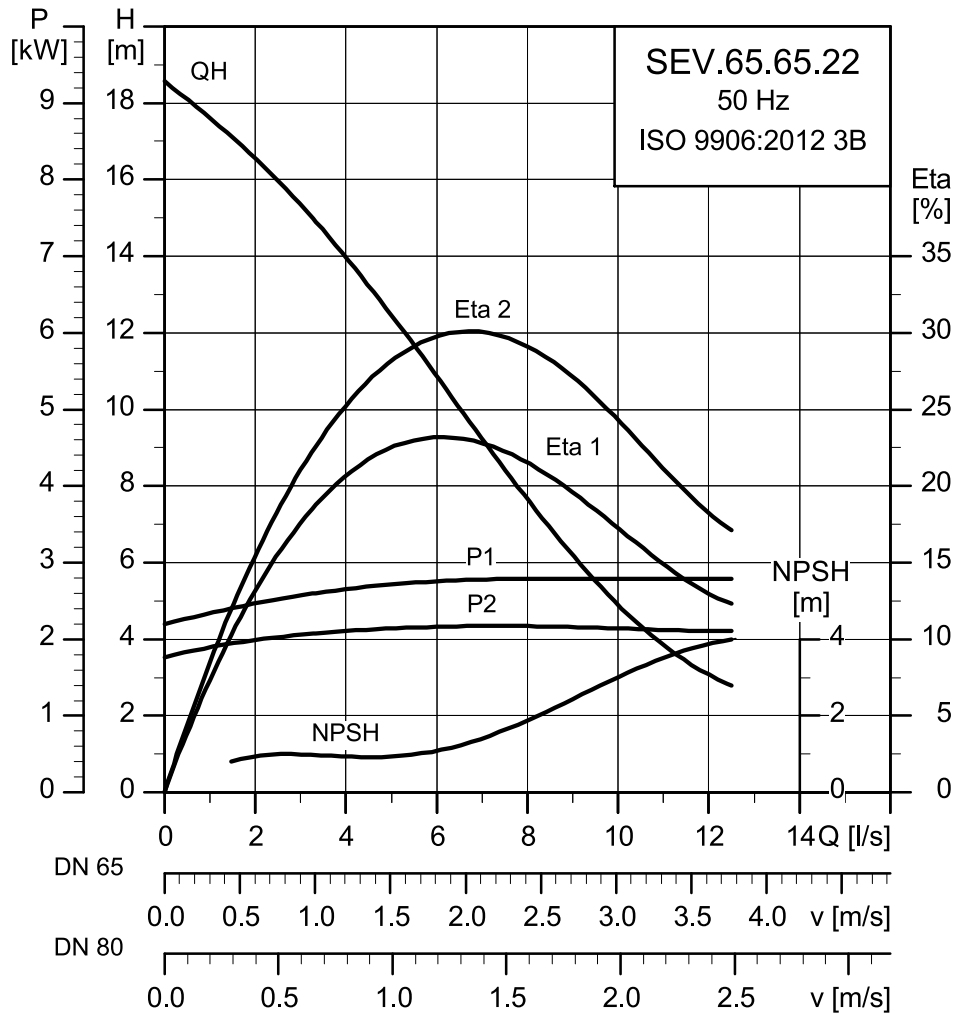
Pump type	Voltage [V]	P1 [kW]	P2 [kW]	Number of poles	RPM	Starting method	I_N [1] [A]	I_{start} [A]	η_{motor} [%]			Cos φ			Moment of inertia [kgm²]	Breakdown torque M_{max} [Nm]
									1/2	3/4	1/1	1/2	3/4	1/1		
SE1.100.150.75.4.51D.B	3 × 380-415 D	9	7.5	4	1455	Y/D	17.7/17.5	107.00	81.30	83.50	83.40	0.61	0.72	0.79	0.22	141
SE1.100.150.75.4.51E.B	3 × 220-240 D	9	7.5	4	1455	Y/D	30.7/30.3	185.00	81.30	83.50	83.40	0.61	0.72	0.79	0.22	141

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
S-tube®	100	20	20	IP68	F	40	4-14

9.29 SEV.65.65.22.(Ex).2



Electrical data

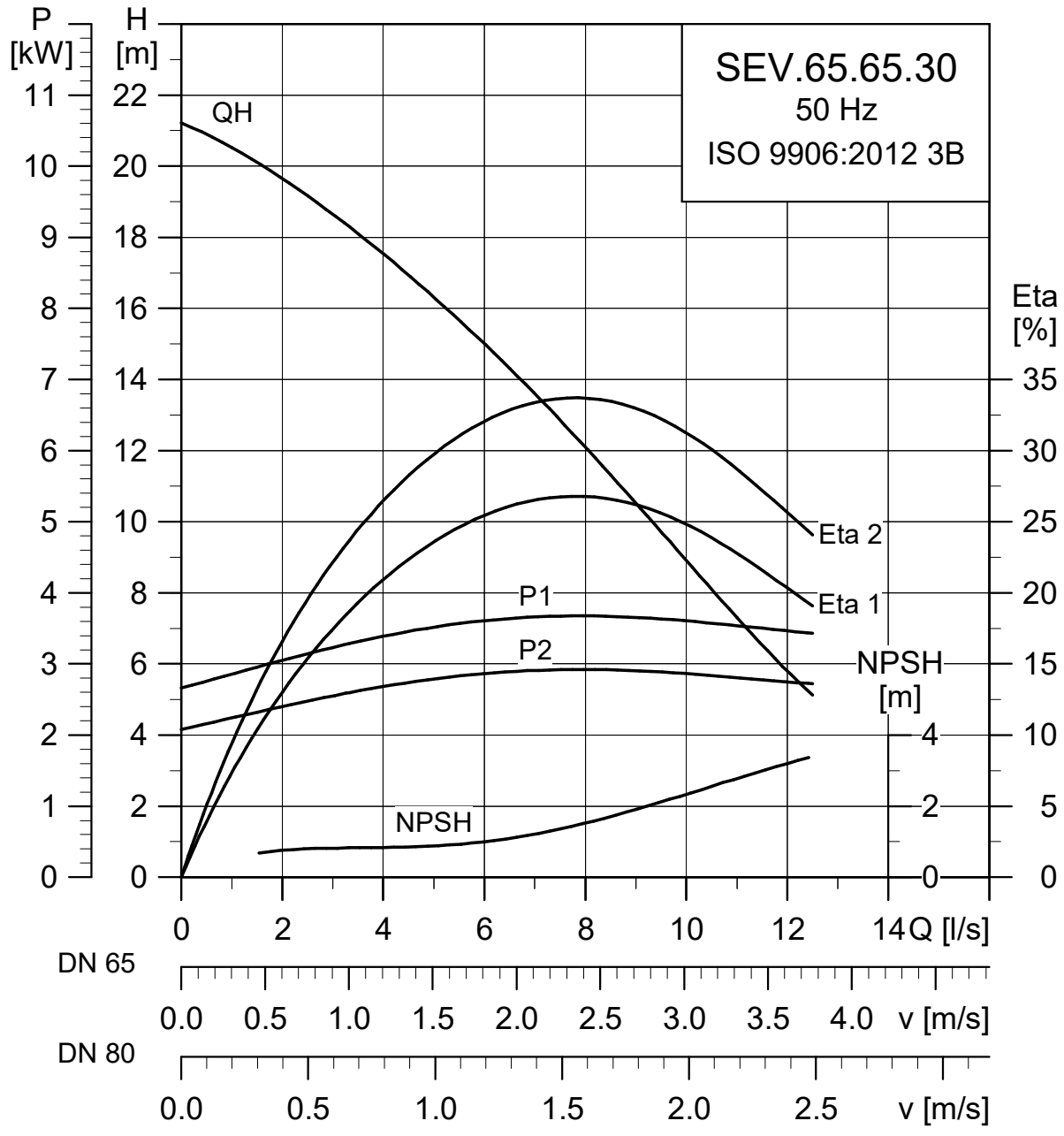
Voltage	P1	P2	Number of poles	Rpm	Starting method	I_N [1]	I_{start}	η_{motor} [%]			Cos φ			Moment of inertia	Breakdown torque $M_{max.}$
[V]	[kW]	[kW]				[A]	[A]	1/2	3/4	1/1	1/2	3/4	1/1	[kgm^2]	[Nm]
3 × 380-415	2.8	2.2	2	2895	DOL	5.1/5.0	37	73.5	76.6	77	0.72	0.81	0.86	0.0088	23

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
SuperVortex	65	20	20	IP68	F	40	4-14

9.30 SEV.65.65.30.(Ex).2



Electrical data

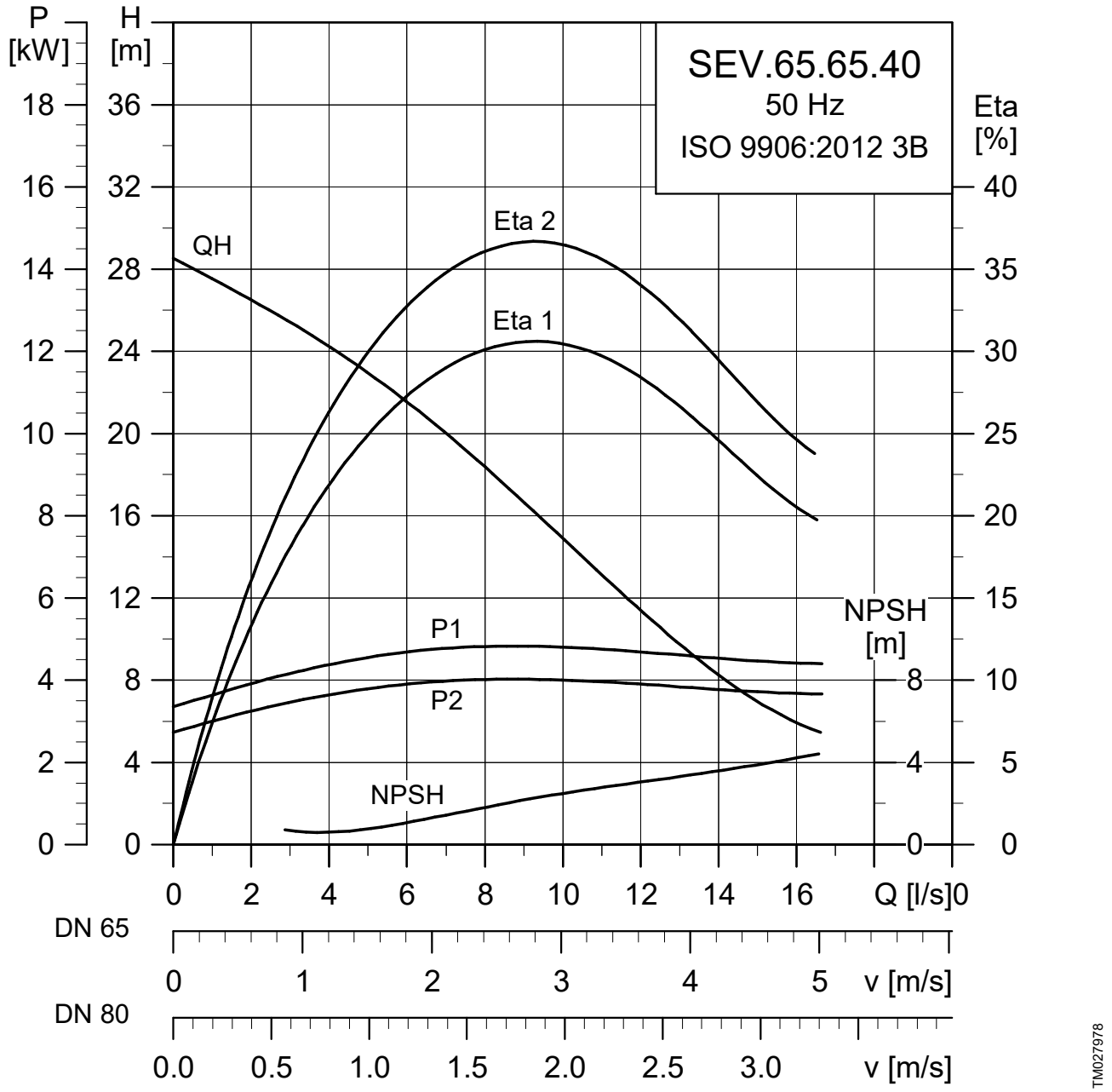
Voltage	P1	P2	Number of poles	Rpm	Starting method	I_N [1]	I_{start}	η_{motor} [%]			Cos φ			Moment of inertia	Breakdown torque $M_{max.}$
[V]	[kW]	[kW]				[A]	[A]	1/2	3/4	1/1	1/2	3/4	1/1	[kgm^2]	[Nm]
3 × 380-415	3.8	3.0	2	2910	DOL	6.8/6.5	51	75.1	78.5	79.6	0.74	0.83	0.87	0.0098	33

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
SuperVortex	65	20	20	IP68	F	40	4-14

9.31 SEV.65.65.40.(Ex).2



Electrical data

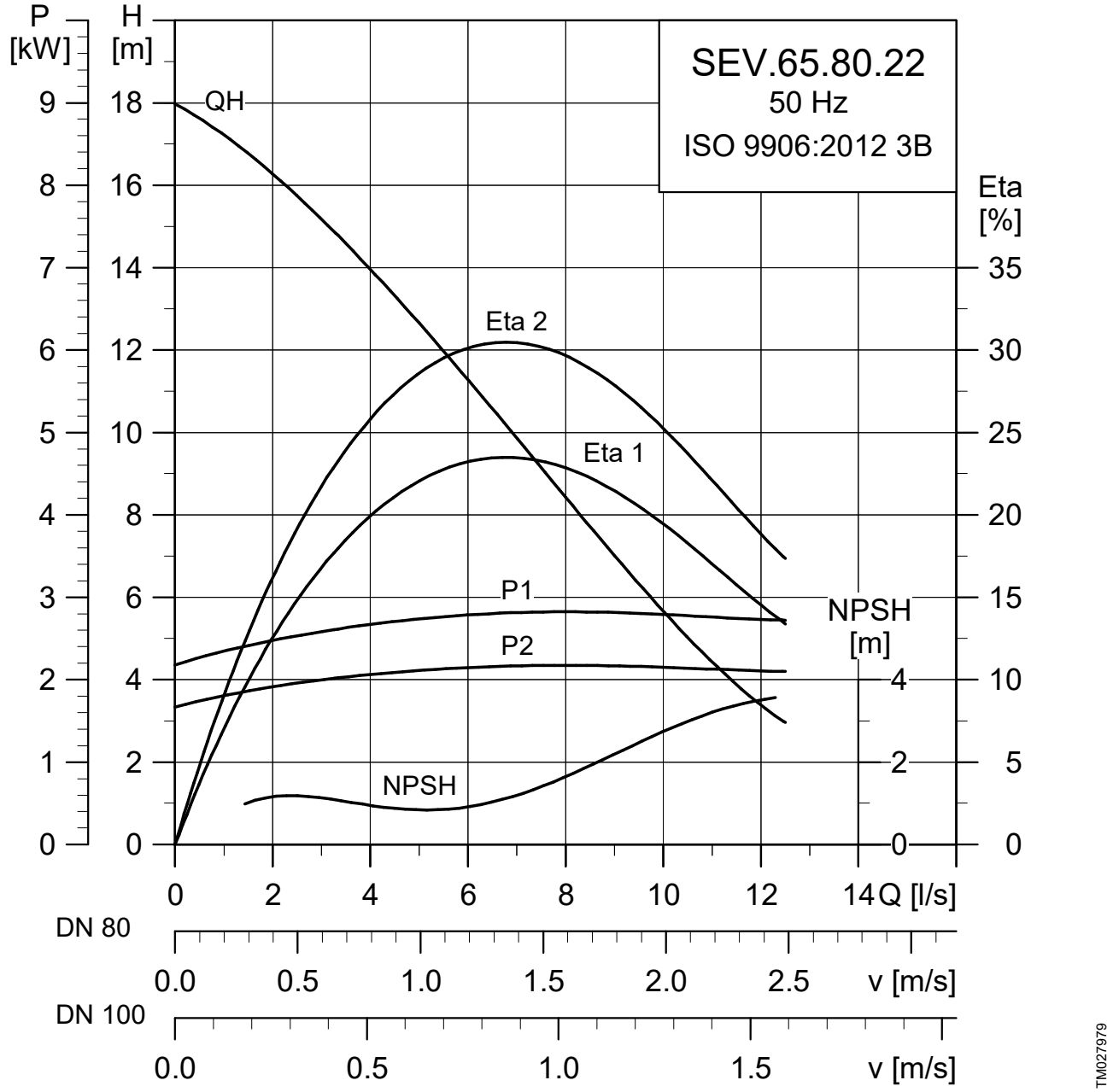
Voltage	P1	P2	Number of poles	Rpm	Starting method	I_N [1]	I_{start}	η_{motor} [%]			Cos φ			Moment of inertia	Breakdown torque $M_{max.}$
[V]	[kW]	[kW]				[A]	[A]	1/2	3/4	1/1	1/2	3/4	1/1	[kgm^2]	[Nm]
3 × 380-415	4.8	4.0	2	2925	Y/D	8.7/8.5	71	79.2	82.4	83.3	0.68	0.78	0.84	0.0126	54

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
SuperVortex	65	20	20	IP68	F	40	4-14

9.32 SEV.65.80.22.(Ex).2



Electrical data

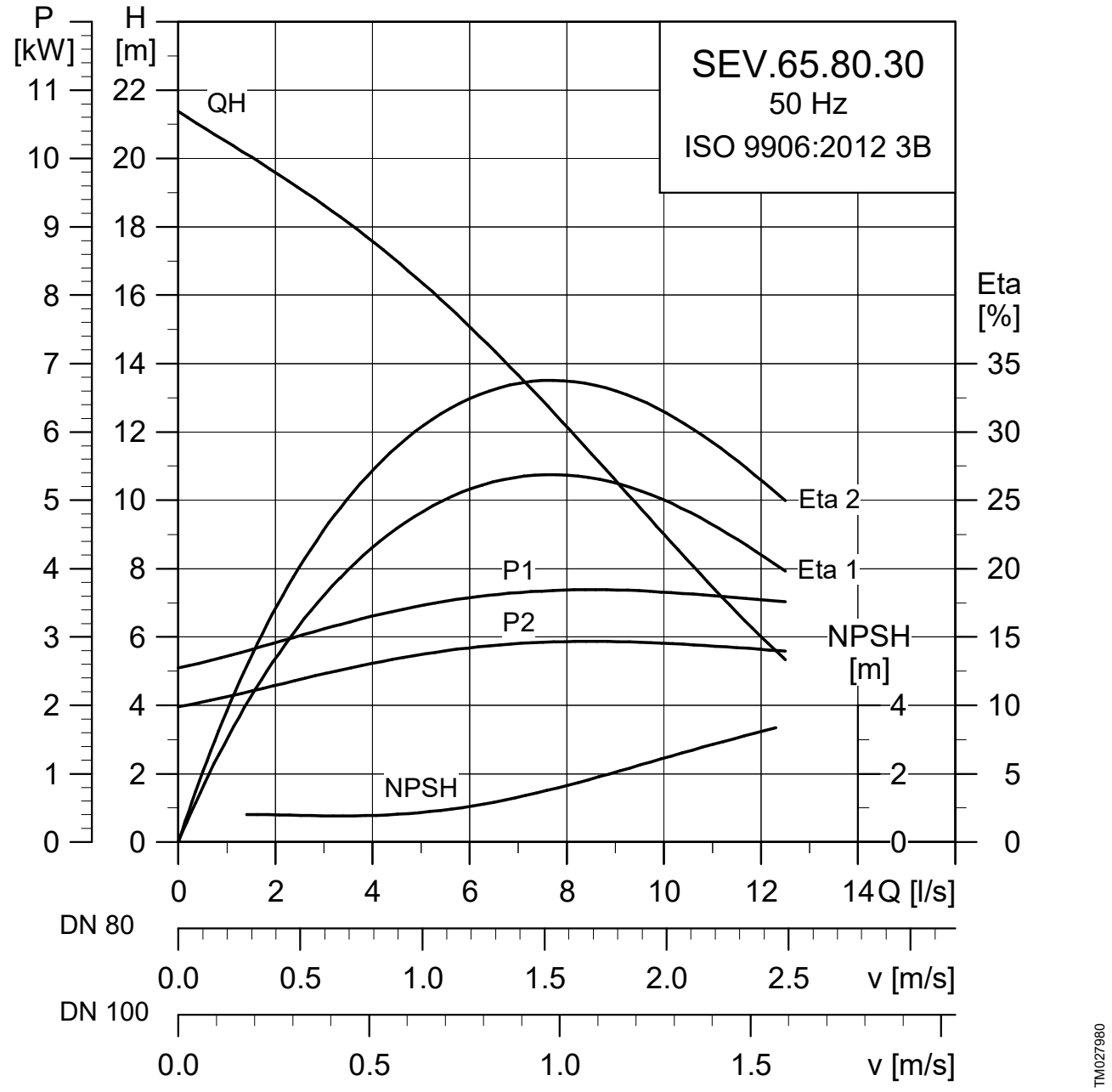
Voltage	P1	P2	Number of poles	Rpm	Starting method	I_N [1]	I_{start}	η_{motor} [%]			Cos φ			Moment of inertia	Breakdown torque $M_{max.}$
[V]	[kW]	[kW]				[A]	[A]	1/2	3/4	1/1	1/2	3/4	1/1	[kgm^2]	[Nm]
3 × 380-415	2.8	2.2	2	2895	DOL	5.1/5.0	37	73.5	76.6	77	0.72	0.81	0.86	0.0088	23

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
SuperVortex	65	20	20	IP68	F	40	4-14

9.33 SEV.65.80.30.(Ex).2



Electrical data

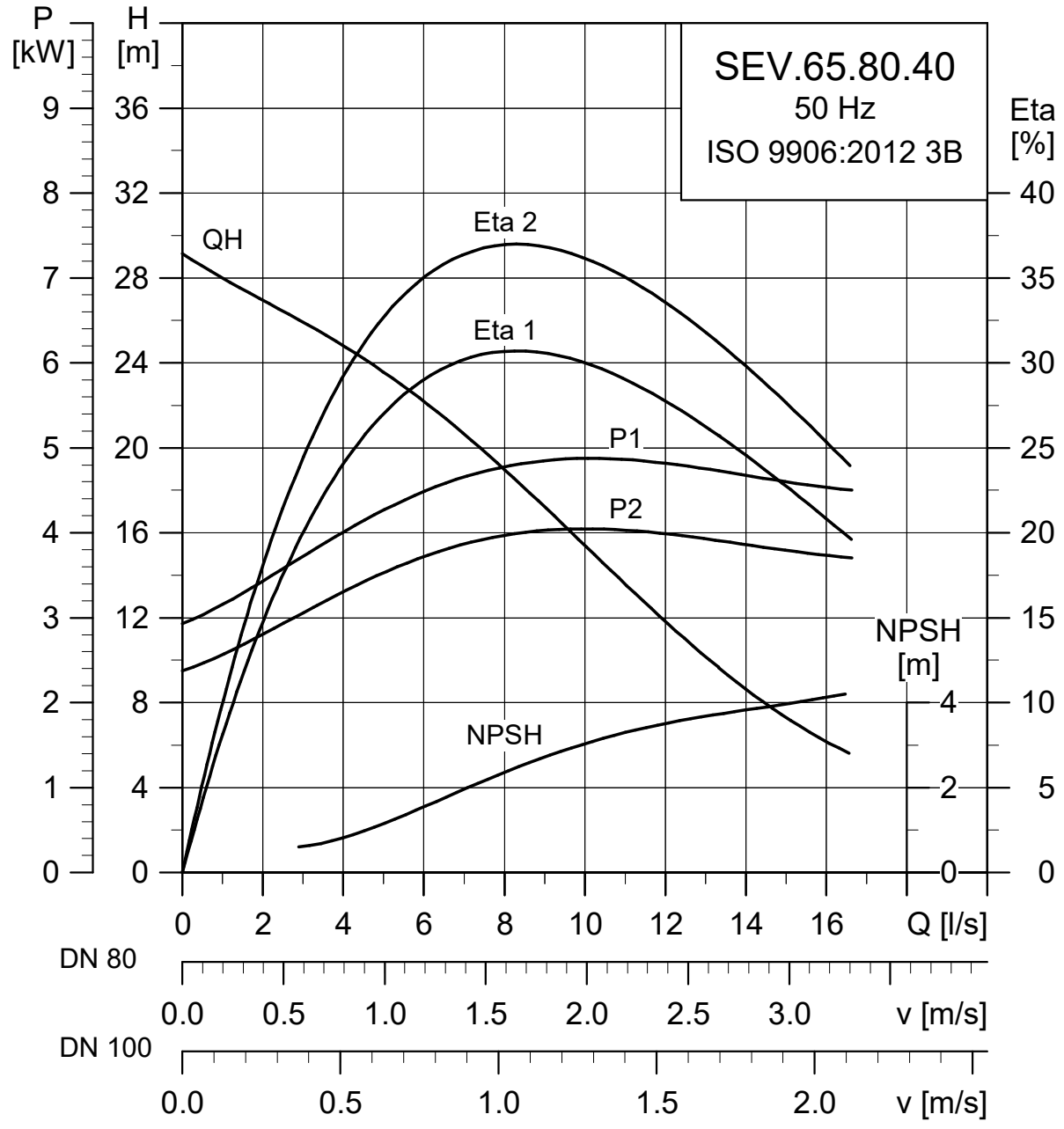
Voltage	P1	P2	Number of poles	Rpm	Starting method	I_N [1]	I_{start}	η_{motor} [%]			Cos φ			Moment of inertia	Breakdown torque $M_{max.}$
[V]	[kW]	[kW]				[A]	[A]	1/2	3/4	1/1	1/2	3/4	1/1	[kgm^2]	[Nm]
3 × 380-415	3.8	3.0	2	2910	DOL	6.8/6.5	51	75.1	78.5	79.6	0.74	0.83	0.87	0.0098	33

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
SuperVortex	65	20	20	IP68	F	40	4-14

9.34 SEV.65.80.40.(Ex).2



Electrical data

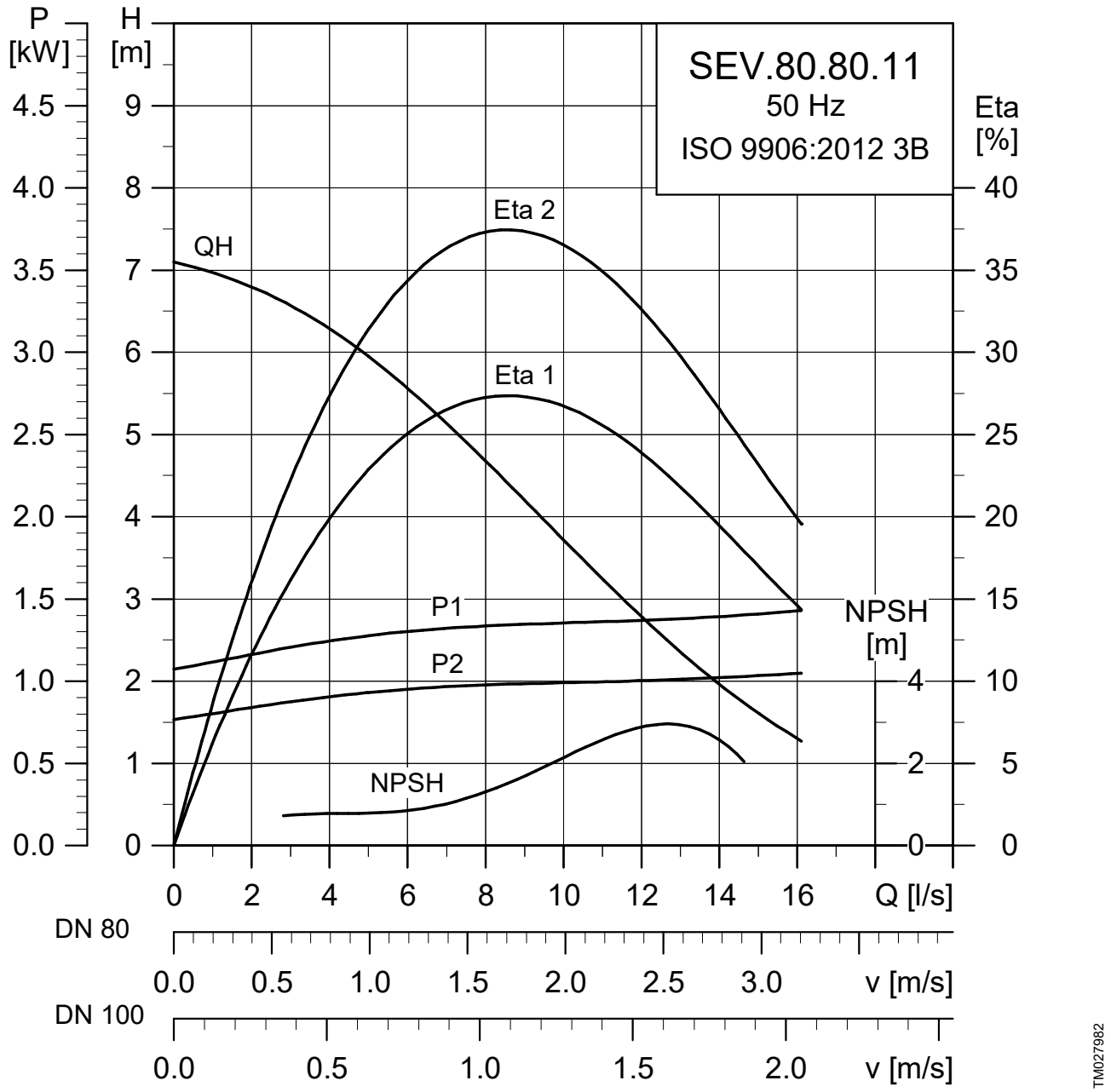
Voltage	P1	P2	Number of poles	Rpm	Starting method	I_N [1]	I_{start}	η_{motor} [%]			Cos φ			Moment of inertia	Breakdown torque $M_{max.}$
[V]	[kW]	[kW]				[A]	[A]	1/2	3/4	1/1	1/2	3/4	1/1	[kgm^2]	[Nm]
3 × 380-415	4.8	4.0	2	2925	Y/D	8.7/8.5	71	79.2	82.4	83.3	0.68	0.78	0.84	0.0126	54

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
SuperVortex	65	20	20	IP68	F	40	4-14

9.35 SEV.80.80.11.(Ex).4



Electrical data

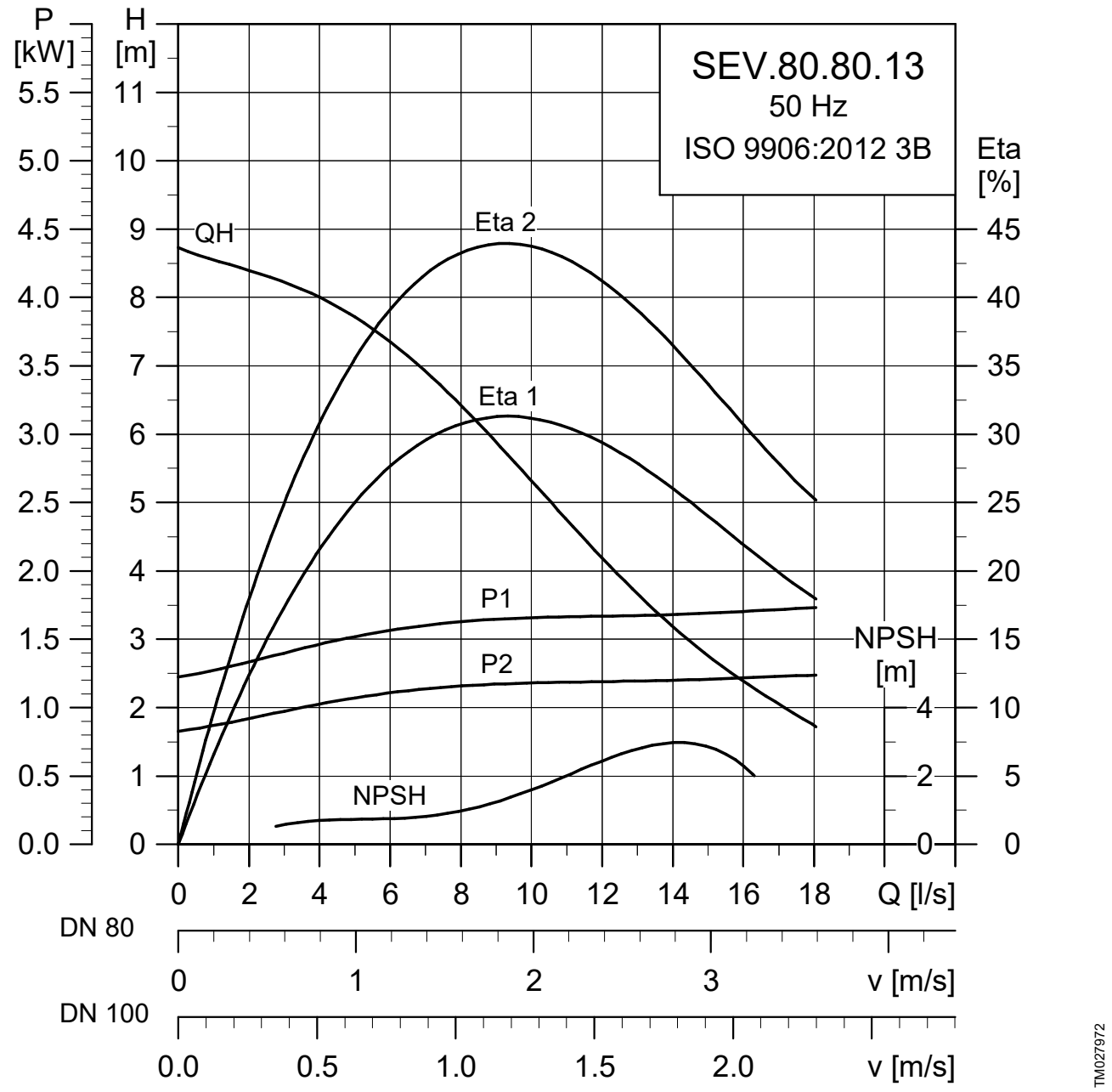
Voltage	P1	P2	Number of poles	Rpm	Starting method	I_N [1]	I_{start}	η_{motor} [%]			Cos φ			Moment of inertia	Breakdown torque $M_{max.}$
[V]	[kW]	[kW]				[A]	[A]	1/2	3/4	1/1	1/2	3/4	1/1	[kgm²]	[Nm]
3 × 380-415	1.5	1.1	4	1440	DOL	2.8/2.9	13	65.6	71.2	73.2	0.52	0.64	0.73	0.0142	21

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
SuperVortex	80	20	20	IP68	F	40	See *8.2.1 Pumped liquids*

9.36 SEV.80.80.13.(Ex).4



Electrical data

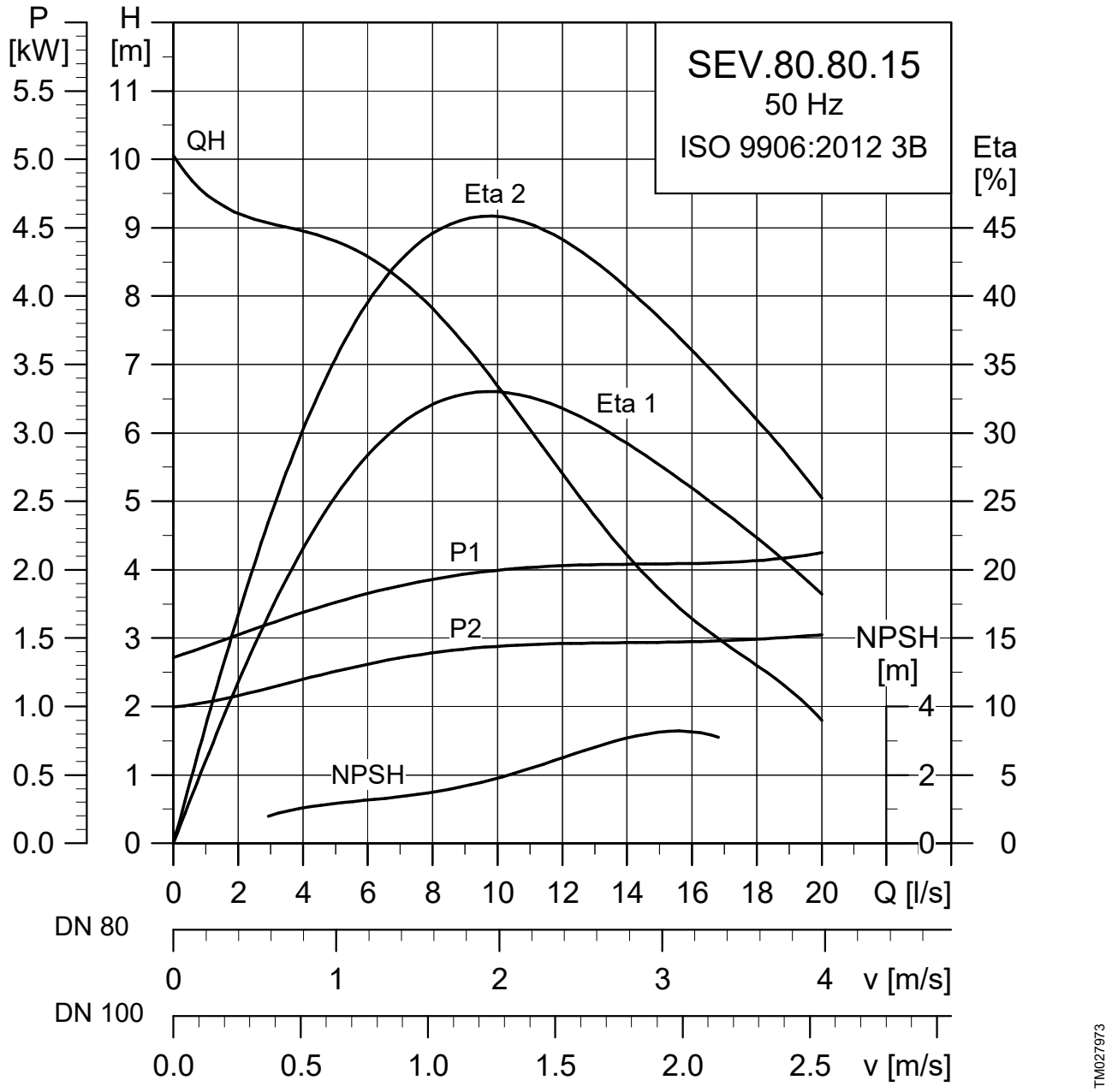
Voltage	P1	P2	Number of poles	Rpm	Starting method	I_N [1]	I_{start}	η_{motor} [%]			Cos φ			Moment of inertia	Breakdown torque $M_{max.}$
[V]	[kW]	[kW]				[A]	[A]	1/2	3/4	1/1	1/2	3/4	1/1	[kgm^2]	[Nm]
3 × 380-415	1.8	1.3	4	1440	DOL	3.8/3.9	22	63.9	69.6	71.7	0.51	0.63	0.72	0.0165	28

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
SuperVortex	80	20	20	IP68	F	40	See *8.2.1 Pumped liquids*

9.37 SEV.80.80.15.(Ex).4



Electrical data

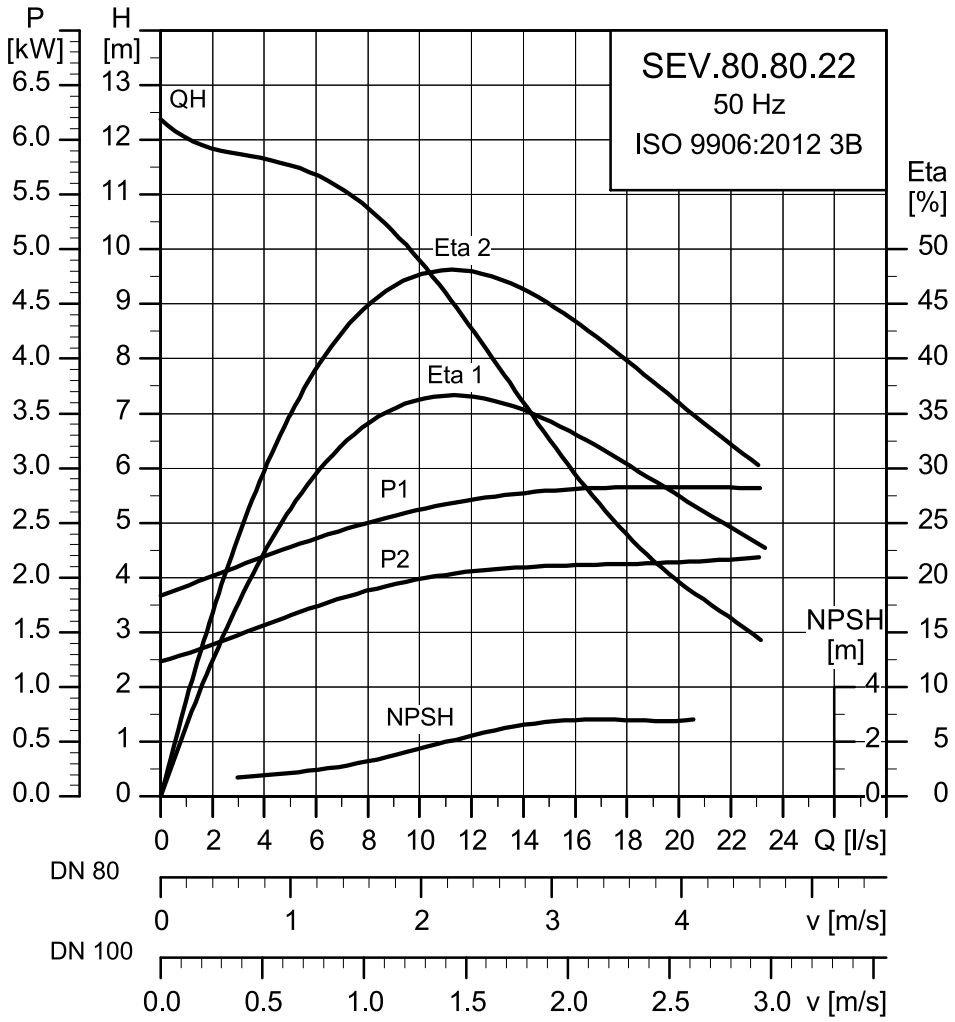
Voltage	P1	P2	Number of poles	Rpm	Starting method	I_N [1]	I_{start}	η_{motor} [%]			Cos φ			Moment of inertia	Breakdown torque $M_{max.}$
[V]	[kW]	[kW]				[A]	[A]	1/2	3/4	1/1	1/2	3/4	1/1	[kgm^2]	[Nm]
3 × 380-415	2.1	1.5	4	1435	DOL	4.2/4.2	22	67	71	72	0.56	0.68	0.76	0.0185	28

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
SuperVortex	80	20	20	IP68	F	40	See *8.2.1 Pumped liquids*

9.38 SEV.80.80.22.(Ex).4



TM027974

Electrical data

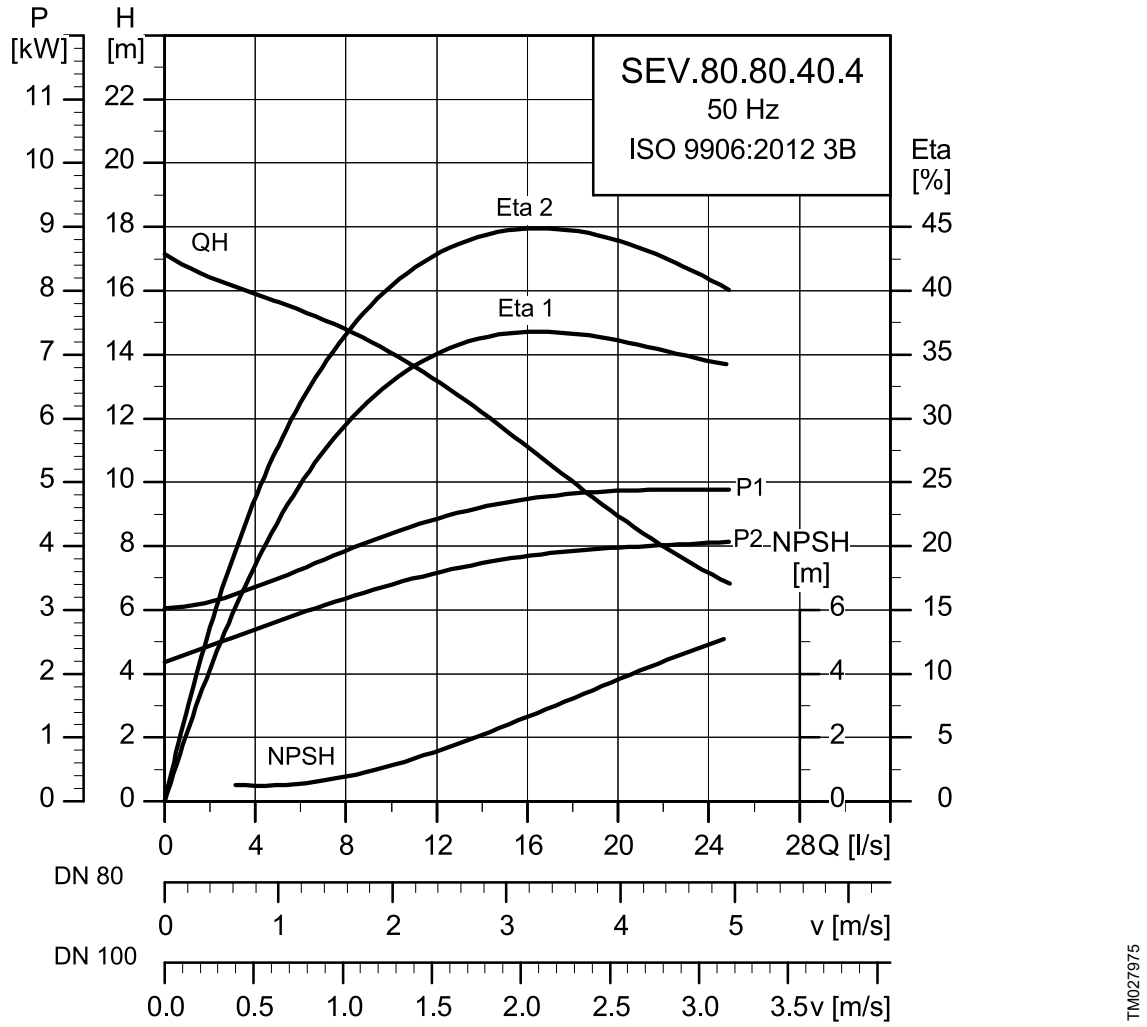
Voltage	P1	P2	Number of poles	Rpm	Starting method	I_N [1]	I_{start}	η_{motor} [%]			Cos φ			Moment of inertia	Breakdown torque $M_{max.}$
[V]	[kW]	[kW]				[A]	[A]	1/2	3/4	1/1	1/2	3/4	1/1	[kgm^2]	[Nm]
3 × 380-415	2.9	2.2	4	1445	DOL	6.0/6.0	32	70.9	75.2	76.3	0.53	0.66	0.74	0.0240	45

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
SuperVortex	80	20	20	IP68	F	40	See *8.2.1 Pumped liquids*

9.39 SEV.80.80.40.(Ex).4



Electrical data

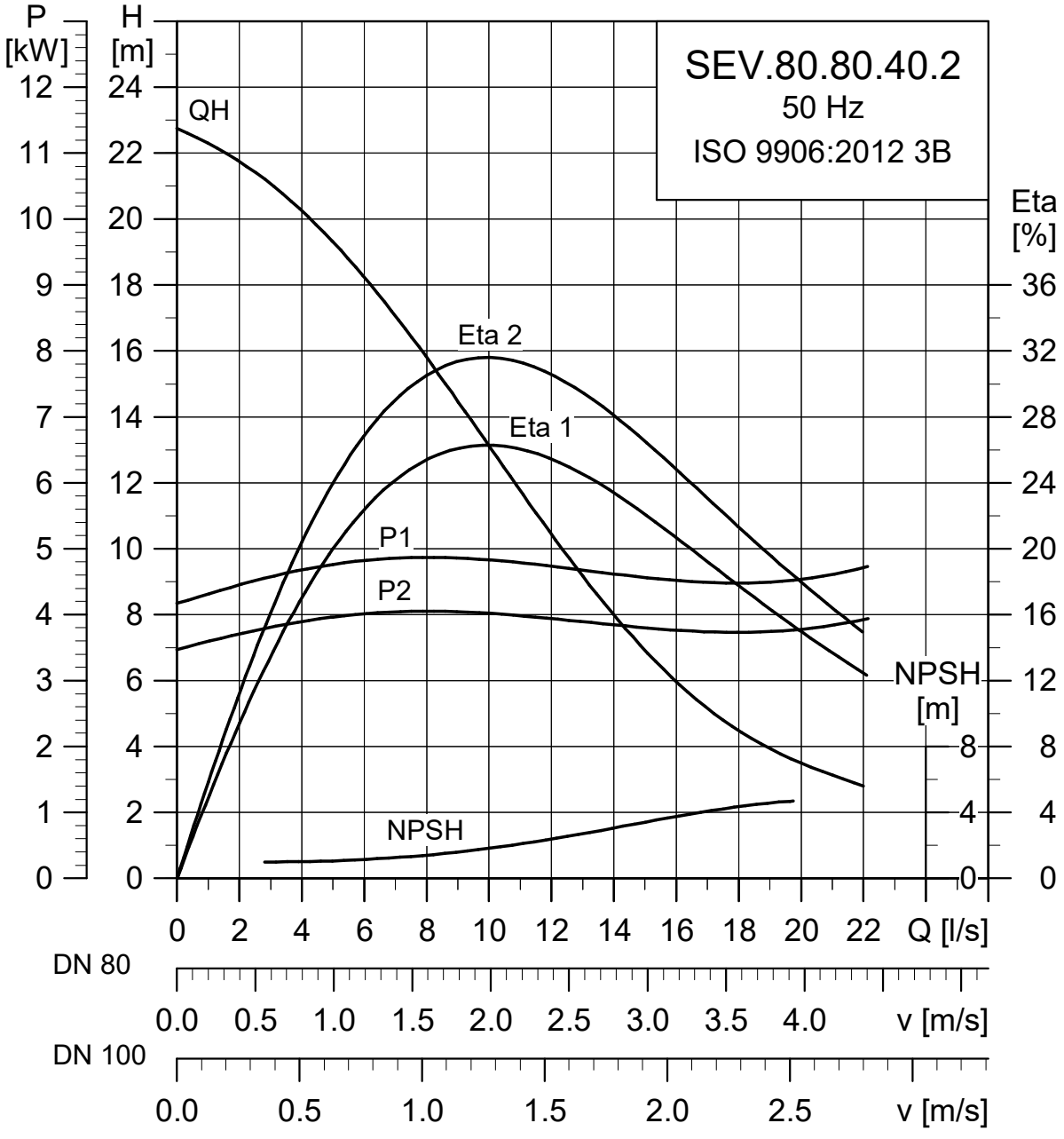
Voltage	P1	P2	Number of poles	Rpm	Starting method	I_N [1]	I_{start}	η_{motor} [%]			Cos φ			Moment of inertia	Breakdown torque $M_{max.}$
[V]	[kW]	[kW]				[A]	[A]	1/2	3/4	1/1	1/2	3/4	1/1	[kgm^2]	[Nm]
3 × 380-415	4.9	4.0	4	1460	Y/D	10.0/10.2	67	78.2	81.7	82.2	0.52	0.65	0.73	0.0479	100

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
SuperVortex	80	20	20	IP68	F	40	4-10

9.40 SEV.80.80.40.(Ex).2



Electrical data

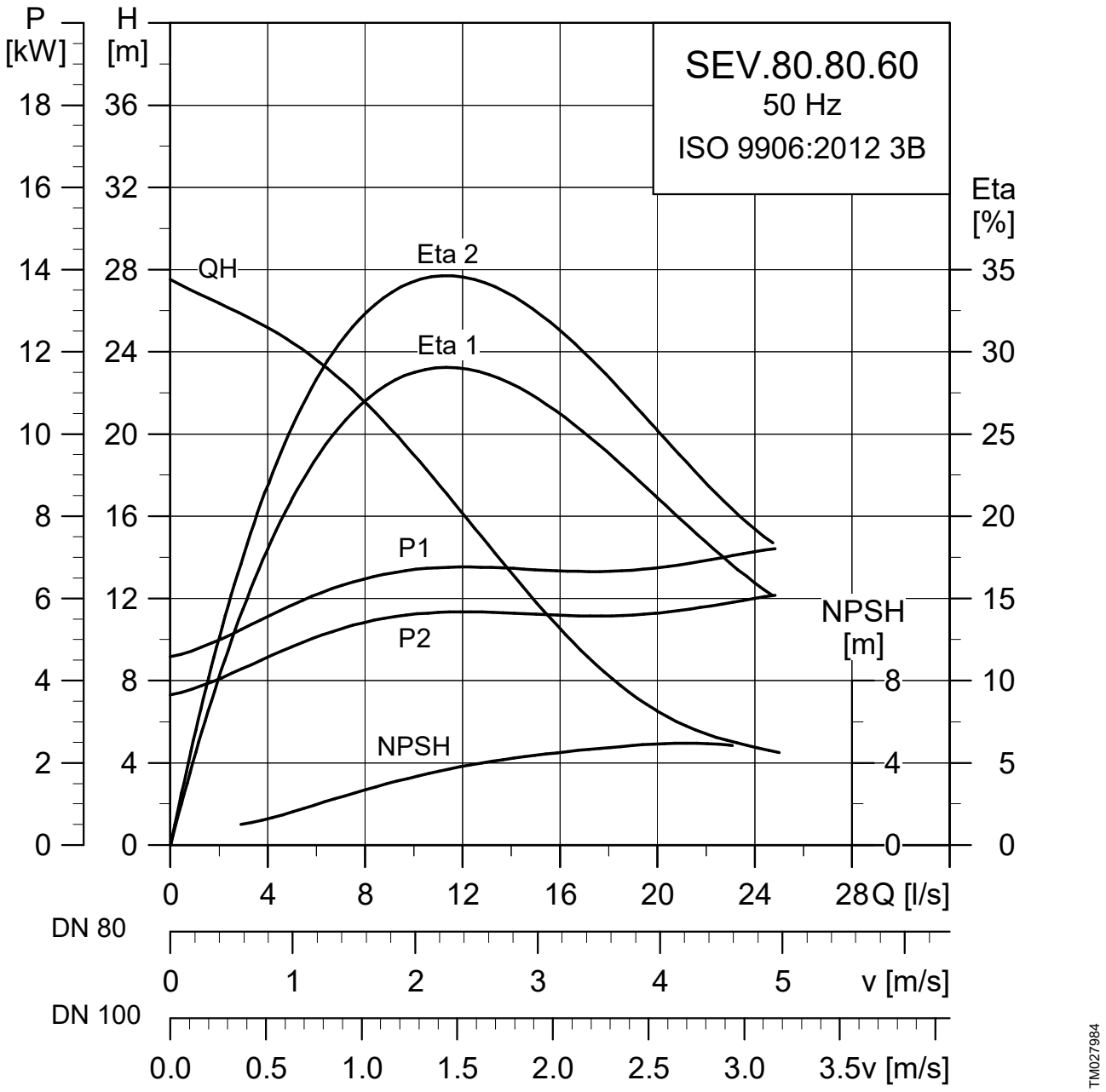
Voltage	P1	P2	Number of poles	Rpm	Starting method	I_N [1]	I_{start}	η_{motor} [%]			Cos φ			Moment of inertia	Breakdown torque $M_{max.}$
[V]	[kW]	[kW]				[A]	[A]	1/2	3/4	1/1	1/2	3/4	1/1	[kgm^2]	[Nm]
3 × 380-415	4.8	4.0	2	2925	Y/D	8.7/8.5	71	79.2	82.4	83.3	0.68	0.78	0.84	0.0127	54

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
SuperVortex	80	20	20	IP68	F	40	See *8.2.1 Pumped liquids*

9.41 SEV.80.80.60.(Ex).2



Electrical data

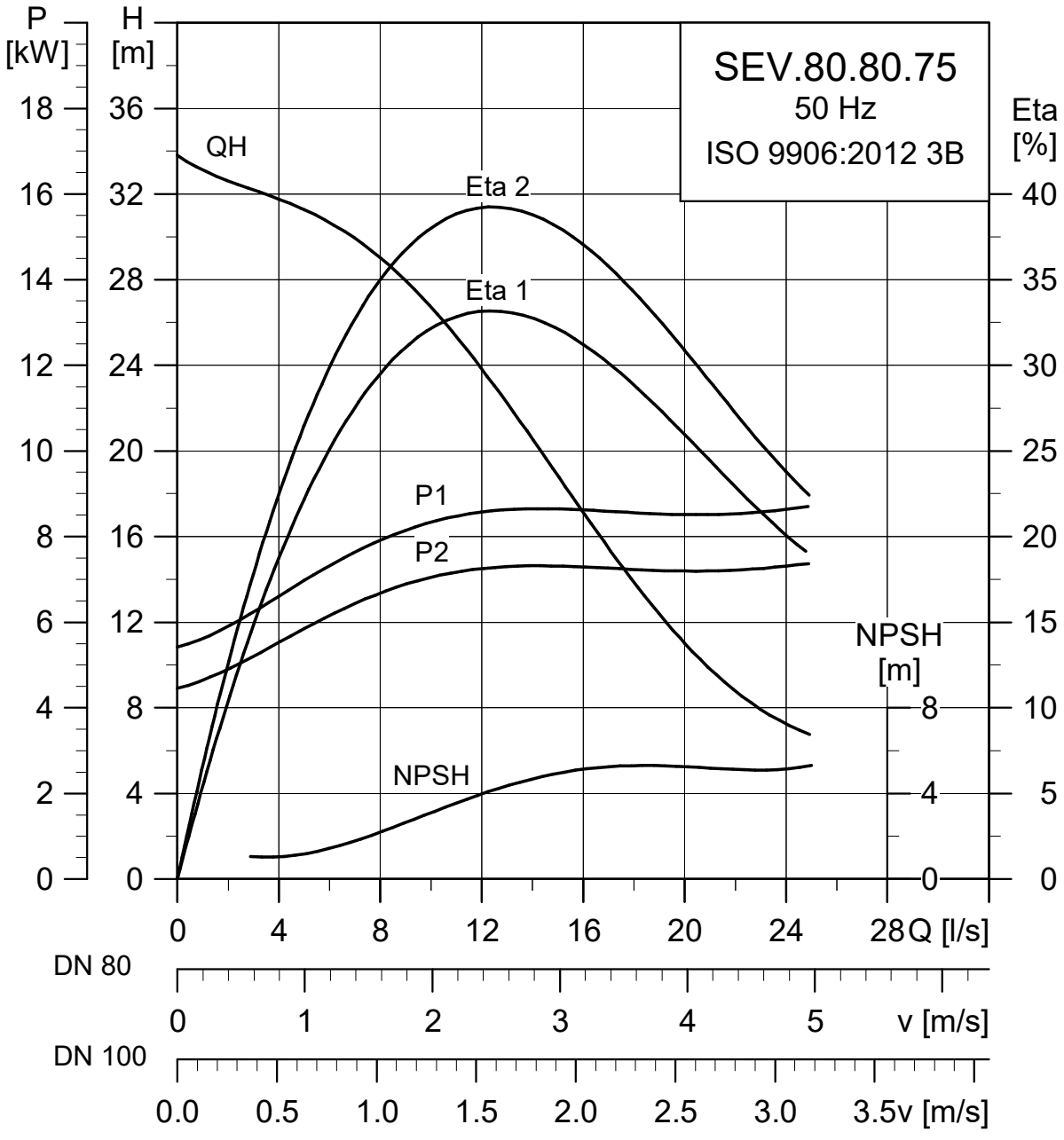
Voltage	P1	P2	Number of poles	Rpm	Starting method	I_N [1]	I_{start}	η_{motor} [%]			Cos φ			Moment of inertia	Breakdown torque $M_{max.}$
[V]	[kW]	[kW]				[A]	[A]	1/2	3/4	1/1	1/2	3/4	1/1	[kgm^2]	[Nm]
3 × 380-415	7.1	6.0	2	2945	Y/D	13.7/14.2	148	77.5	82.2	84.1	0.58	0.7	0.78	0.0190	112

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
SuperVortex	80	20	20	IP68	F	40	See *8.2.1 Pumped liquids*

9.42 SEV.80.80.75.(Ex).2



Electrical data

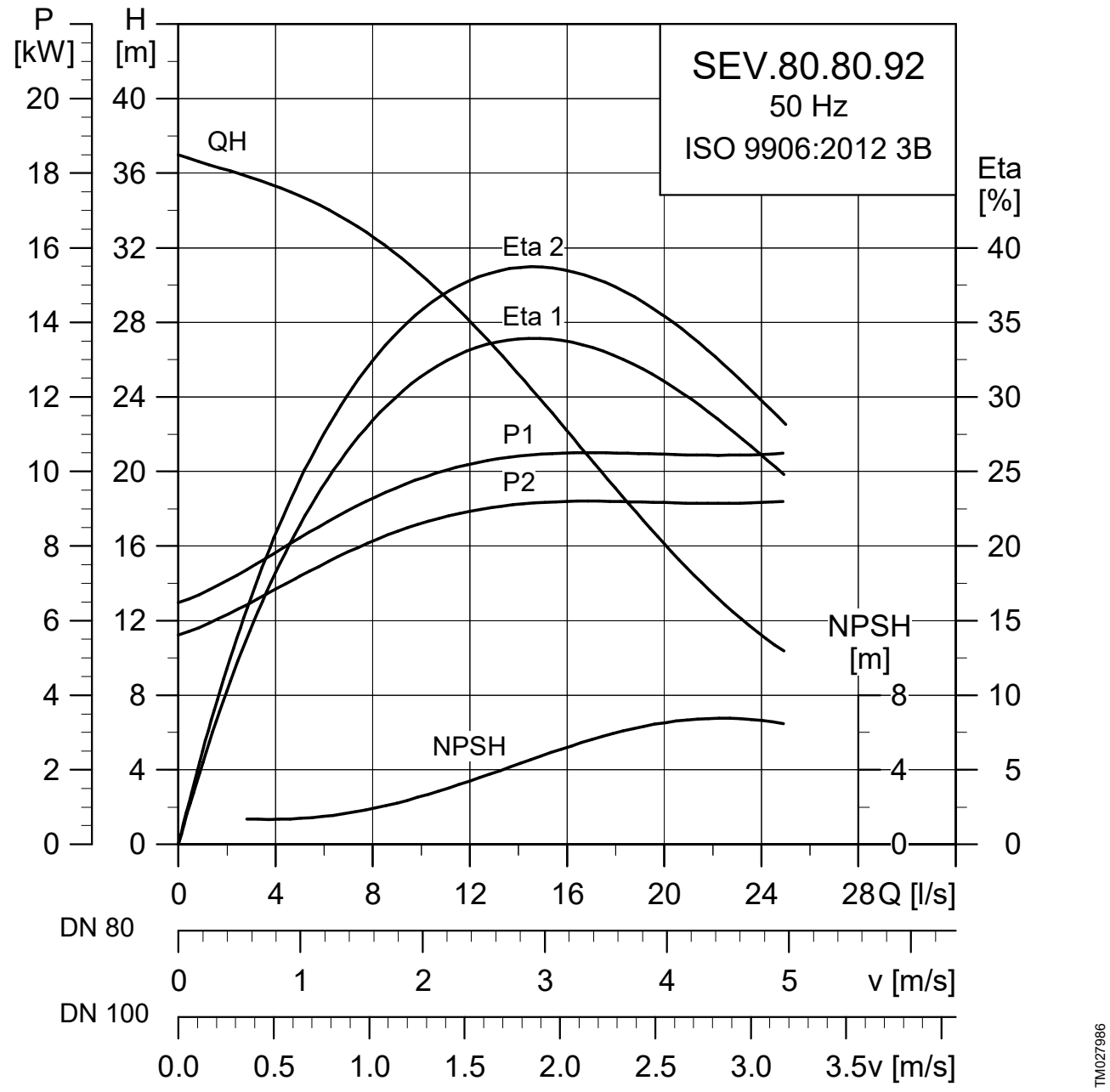
Voltage	P1	P2	Number of poles	Rpm	Starting method	I_N [1]	I_{start}	η_{motor} [%]			Cos φ			Moment of inertia	Breakdown torque $M_{max.}$
[V]	[kW]	[kW]				[A]	[A]	1/2	3/4	1/1	1/2	3/4	1/1	[kgm^2]	[Nm]
3 × 380-415	8.9	7.5	2	2940	Y/D	16.5/16.2	152	80.1	83.8	84.8	0.65	0.76	0.83	0.0215	112

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
SuperVortex	80	20	20	IP68	F	40	See *8.2.1 Pumped liquids*

9.43 SEV.80.80.92.(Ex).2



Electrical data

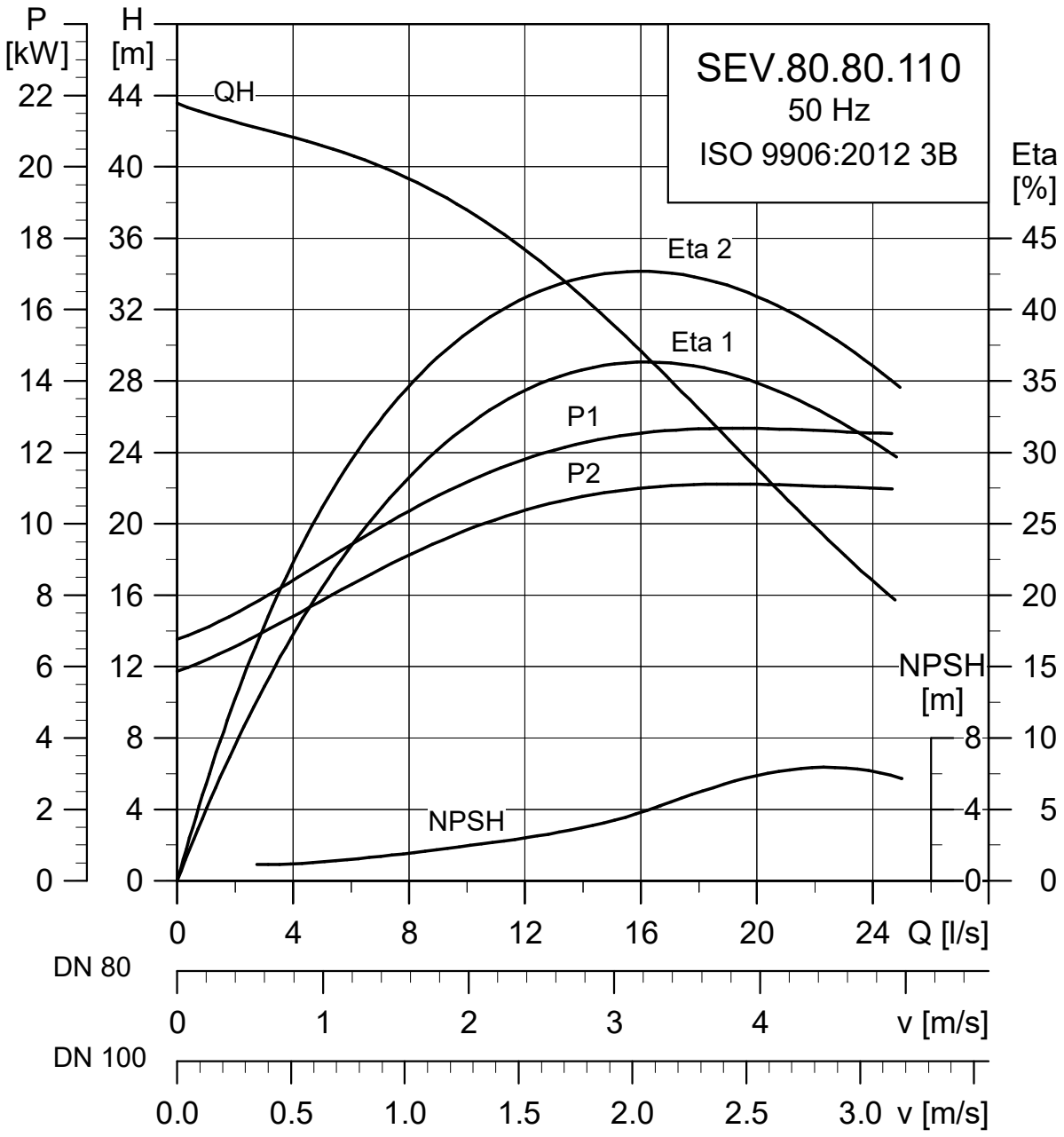
Voltage	P1	P2	Number of poles	Rpm	Starting method	I_N [1]	start	η_{motor} [%]			Cos φ			Moment of inertia	Breakdown torque $M_{max.}$
[V]	[kW]	[kW]				[A]	[A]	1/2	3/4	1/1	1/2	3/4	1/1	[kgm^2]	[Nm]
3 × 380-415	10.5	9.2	2	2935	Y/D	18.8/17.5	162	85.4	87.4	87.6	0.78	0.85	0.89	0.0334	99

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
SuperVortex	80	20	20	IP68	F	40	See *8.2.1 Pumped liquids*

9.44 SEV.80.80.110.(Ex).2



Electrical data

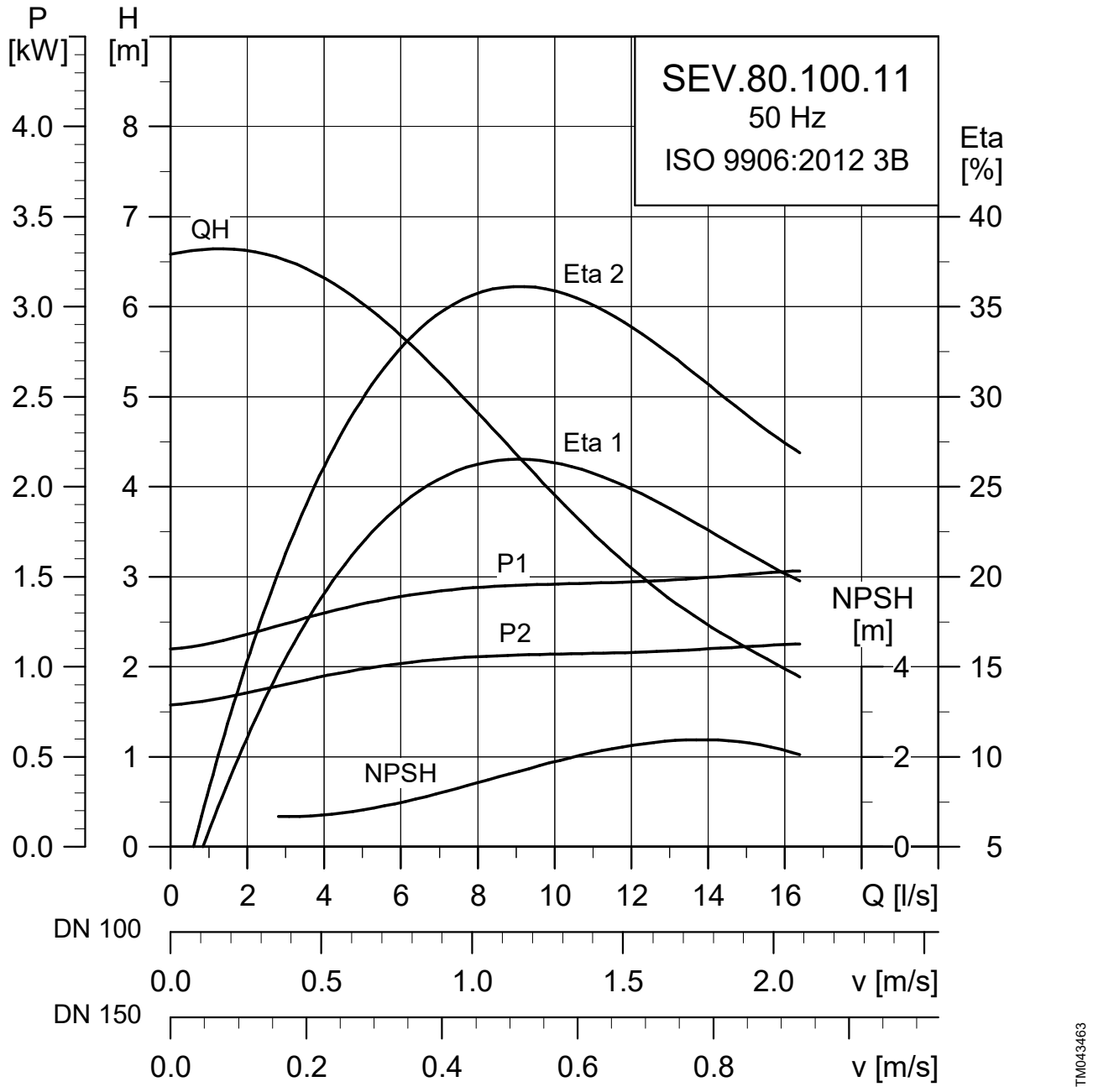
Voltage	P1	P2	Number of poles	Rpm	Starting method	I_N [1]	I_{start}	η_{motor} [%]			Cos φ			Moment of inertia	Breakdown torque $M_{max.}$
[V]	[kW]	[kW]				[A]	[A]	1/2	3/4	1/1	1/2	3/4	1/1	[kgm^2]	[Nm]
3 × 380-415	12.6	11.0	2	2935	Y/D	22.7/21.4	162	86.4	88.1	87.7	0.75	0.84	0.88	0.0368	118

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
SuperVortex	80	20	20	IP68	F	40	See *8.2.1 Pumped liquids*

9.45 SEV.80.100.11.(Ex).4



Electrical data

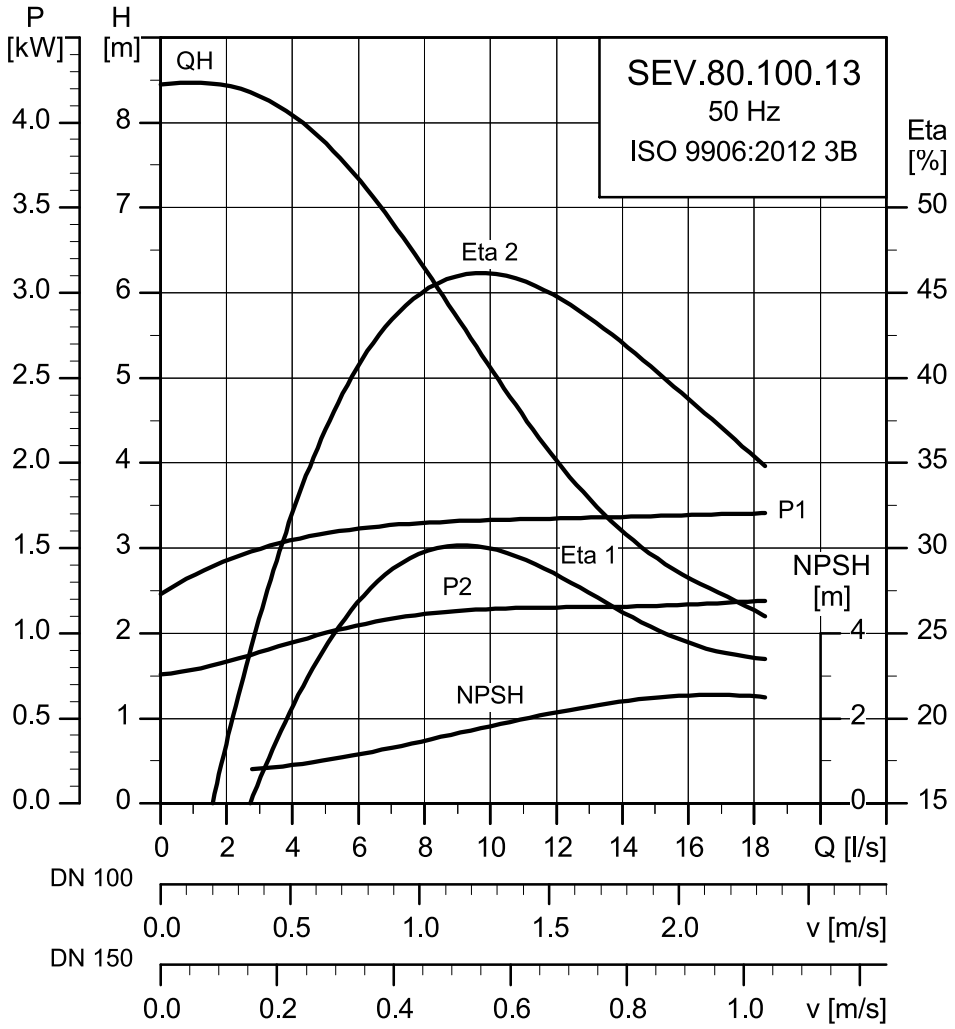
Voltage	P1	P2	Number of poles	Rpm	Starting method	I_N [1]	I_{start}	η_{motor} [%]			Cos φ			Moment of inertia	Breakdown torque $M_{max.}$
[V]	[kW]	[kW]				[A]	[A]	1/2	3/4	1/1	1/2	3/4	1/1	[kgm^2]	[Nm]
3 × 380-415	1.5	1.1	4	1440	DOL	2.8/2.9	12	65.6	71.2	73.2	0.52	0.64	0.73	0.0142	21

[1] Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
SuperVortex	80	20	20	IP68	F	40	See *8.2.1 Pumped liquids*

9.46 SEV.80.100.13.(Ex).4



Electrical data

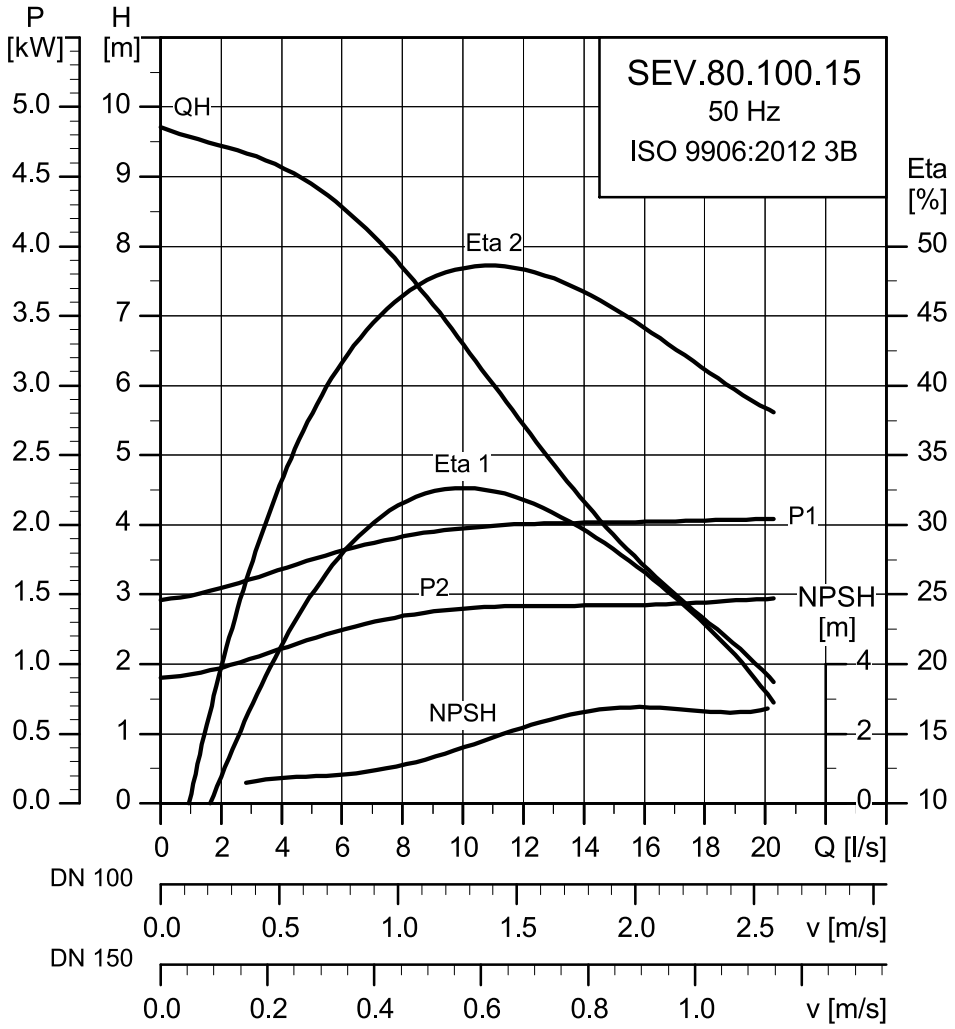
Voltage	P1	P2	Number of poles	Rpm	Starting method	I_N [1]	I_{start}	η_{motor} [%]			Cos φ			Moment of inertia	Breakdown torque $M_{max.}$
[V]	[kW]	[kW]				[A]	[A]	1/2	3/4	1/1	1/2	3/4	1/1	[kgm^2]	[Nm]
3 × 380-415	1.8	1.3	4	1440	DOL	3.8/3.9	21	63.9	69.6	71.7	0.51	0.63	0.72	0.0165	28

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
SuperVortex	80	20	20	IP68	F	40	See *8.2.1 Pumped liquids*

9.47 SEV.80.100.15.(Ex).4



Electrical data

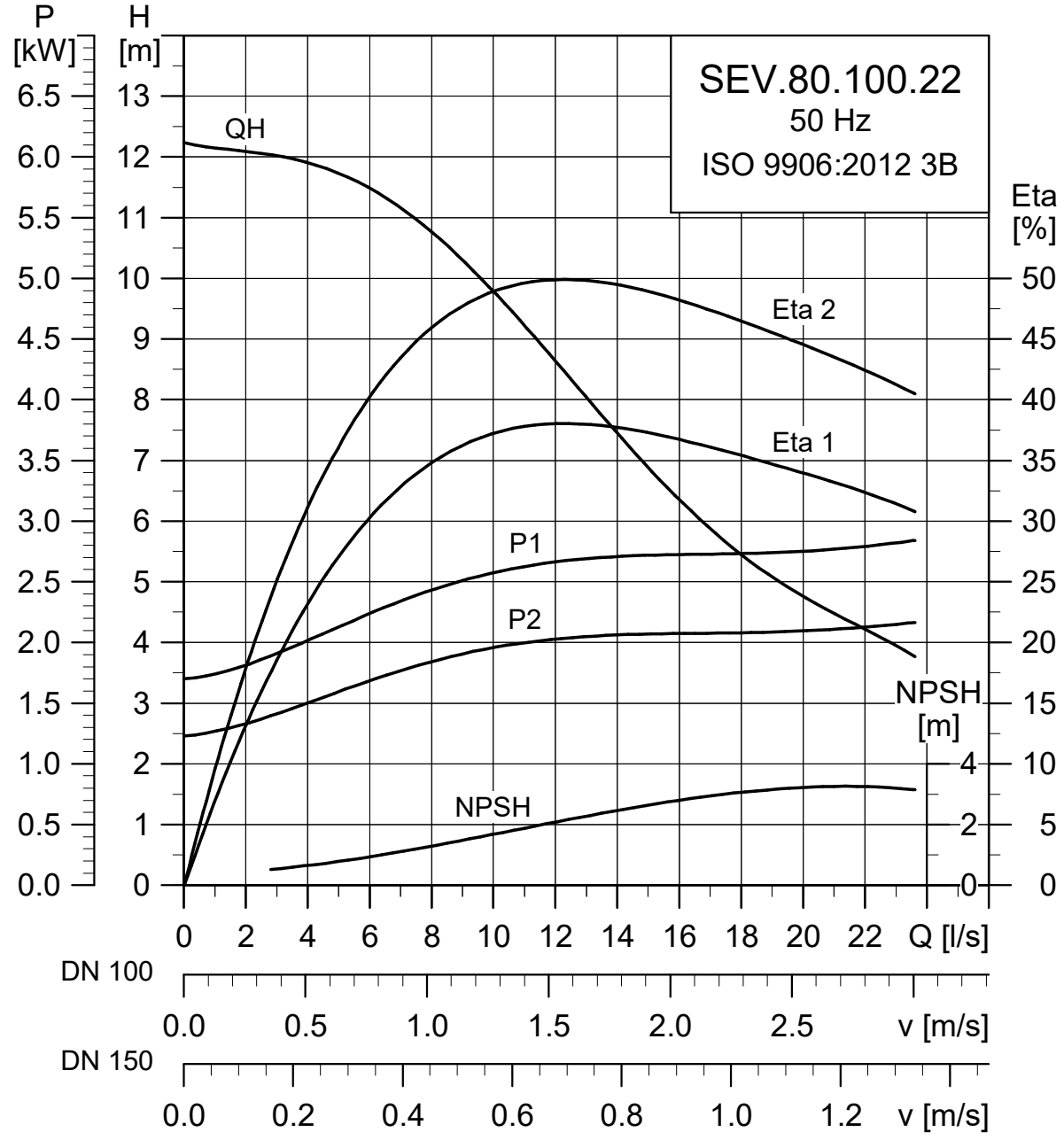
Voltage	P1	P2	Number of poles	Rpm	Starting method	I_N [1]	I_{start}	η_{motor} [%]			Cos φ			Moment of inertia	Breakdown torque $M_{max.}$
[V]	[kW]	[kW]				[A]	[A]	1/2	3/4	1/1	1/2	3/4	1/1	[kgm^2]	[Nm]
3 × 380-415	2.1	1.5	4	1435	DOL	4.2/4.3	21	67	71	72	0.56	0.68	0.76	0.0185	28

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
SuperVortex	80	20	20	IP68	F	40	See *8.2.1 Pumped liquids*

9.48 SEV.80.100.22.(Ex).4



Electrical data

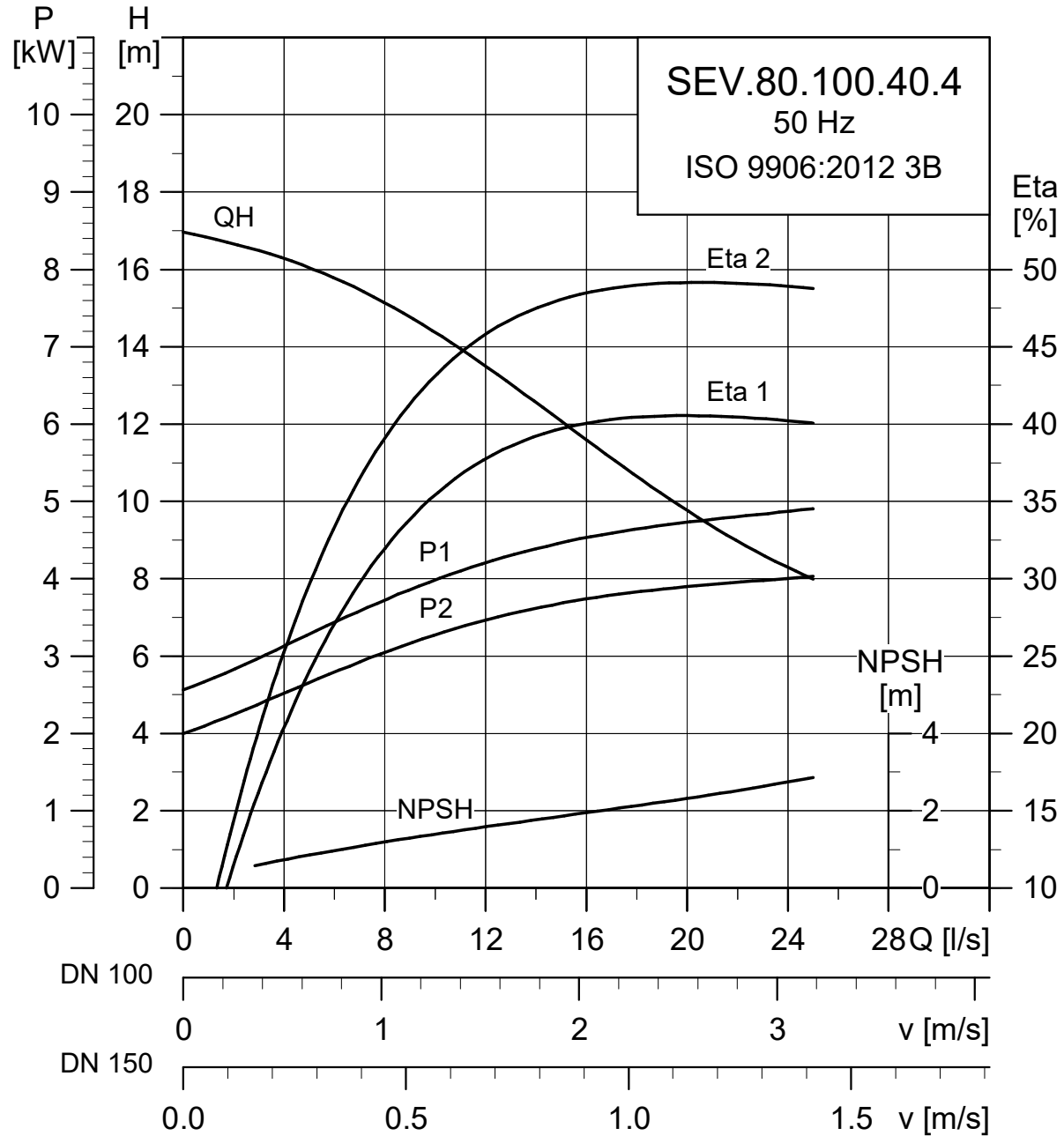
Voltage	P1	P2	Number of poles	Rpm	Starting method	I_N [1]	I_{start}	η_{motor} [%]			Cos φ			Moment of inertia	Breakdown torque $M_{max.}$
[V]	[kW]	[kW]				[A]	[A]	1/2	3/4	1/1	1/2	3/4	1/1	[kgm^2]	[Nm]
3 × 380-415	2.9	2.2	4	1445	DOL	6.0/6.0	32	70.9	75.2	76.3	0.53	0.66	0.74	0.024	45

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
SuperVortex	80	20	20	IP68	F	40	See *8.2.1 Pumped liquids*

9.49 SEV.80.100.40.(Ex).4



Electrical data

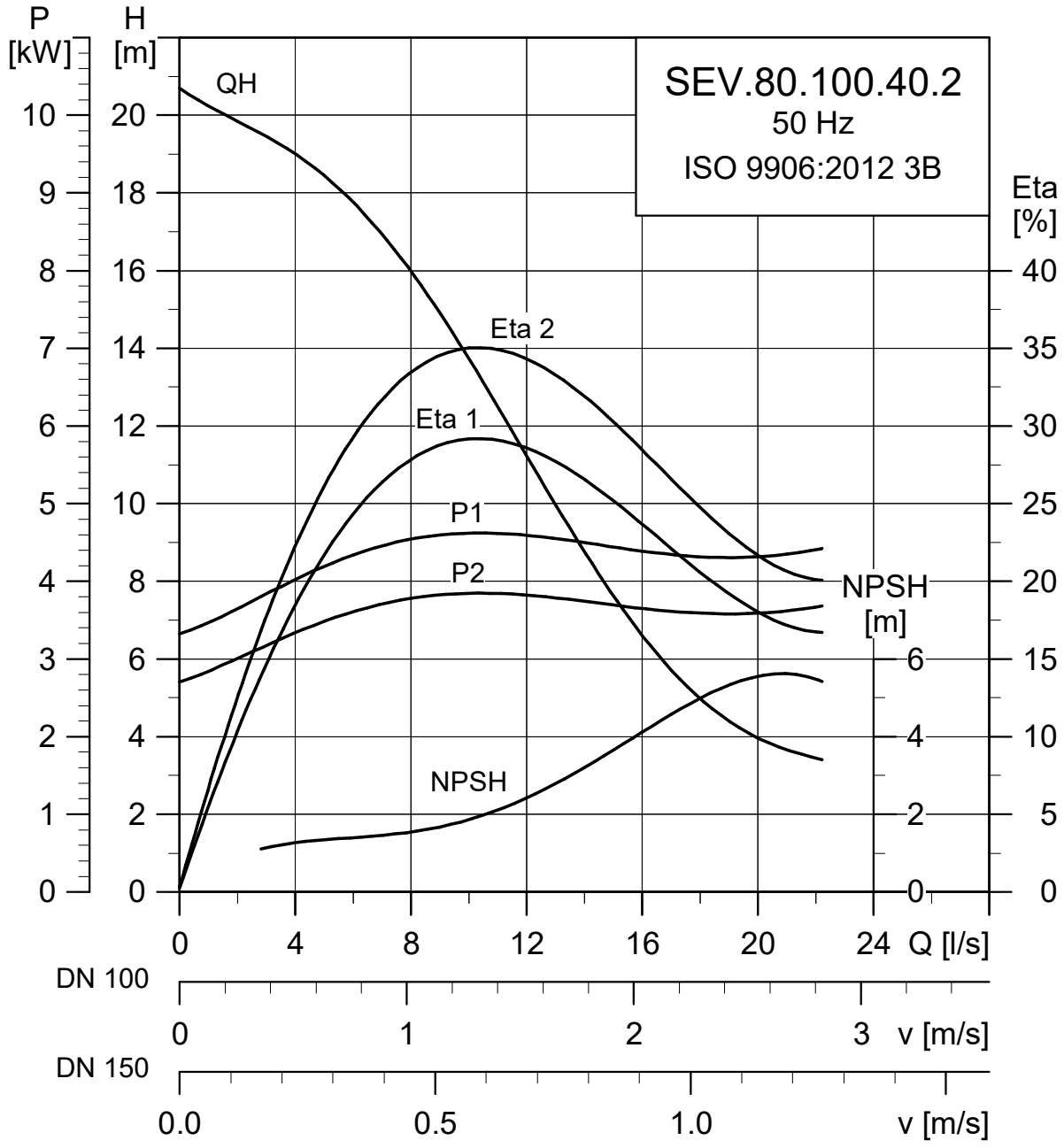
Voltage	P1	P2	Number of poles	Rpm	Starting method	I_N [1]	I_{start}	η_{motor} [%]			Cos φ			Moment of inertia	Breakdown torque $M_{max.}$
[V]	[kW]	[kW]				[A]	[A]	1/2	3/4	1/1	1/2	3/4	1/1	[kgm^2]	[Nm]
3 × 380-415	4.9	4	4	1460	DOL	10.0/10.2	64	78.2	81.7	82.2	0.52	0.65	0.73	0.0479	100

[1] Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
SuperVortex	80	20	20	IP68	F	40	See *8.2.1 Pumped liquids*

9.50 SEV.80.100.40.(Ex).2



Electrical data

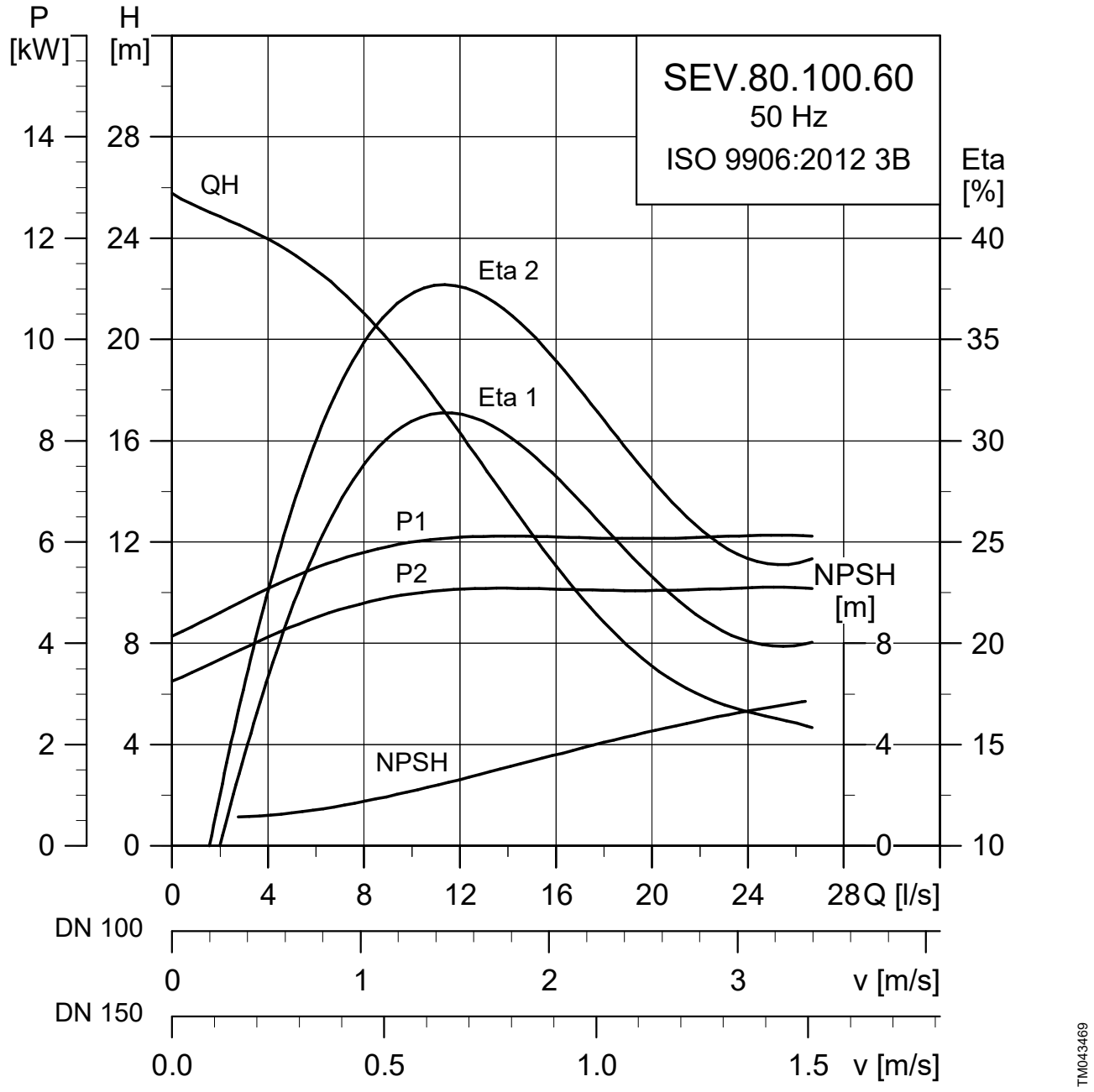
Voltage	P1	P2	Number of poles	Rpm	Starting method	I_N [1]	I_{start}	η_{motor} [%]			Cos φ			Moment of inertia	Breakdown torque $M_{max.}$
[V]	[kW]	[kW]				[A]	[A]	1/2	3/4	1/1	1/2	3/4	1/1	[kgm^2]	[Nm]
3 × 380-415	4.9	4	2	2925	DOL	8.7/8.5	68	79.2	82.4	83.3	0.68	0.78	0.84	0.0127	54

[1] Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
SuperVortex	80	20	20	IP68	F	40	See *8.2.1 Pumped liquids*

9.51 SEV.80.100.60.(Ex).2



Electrical data

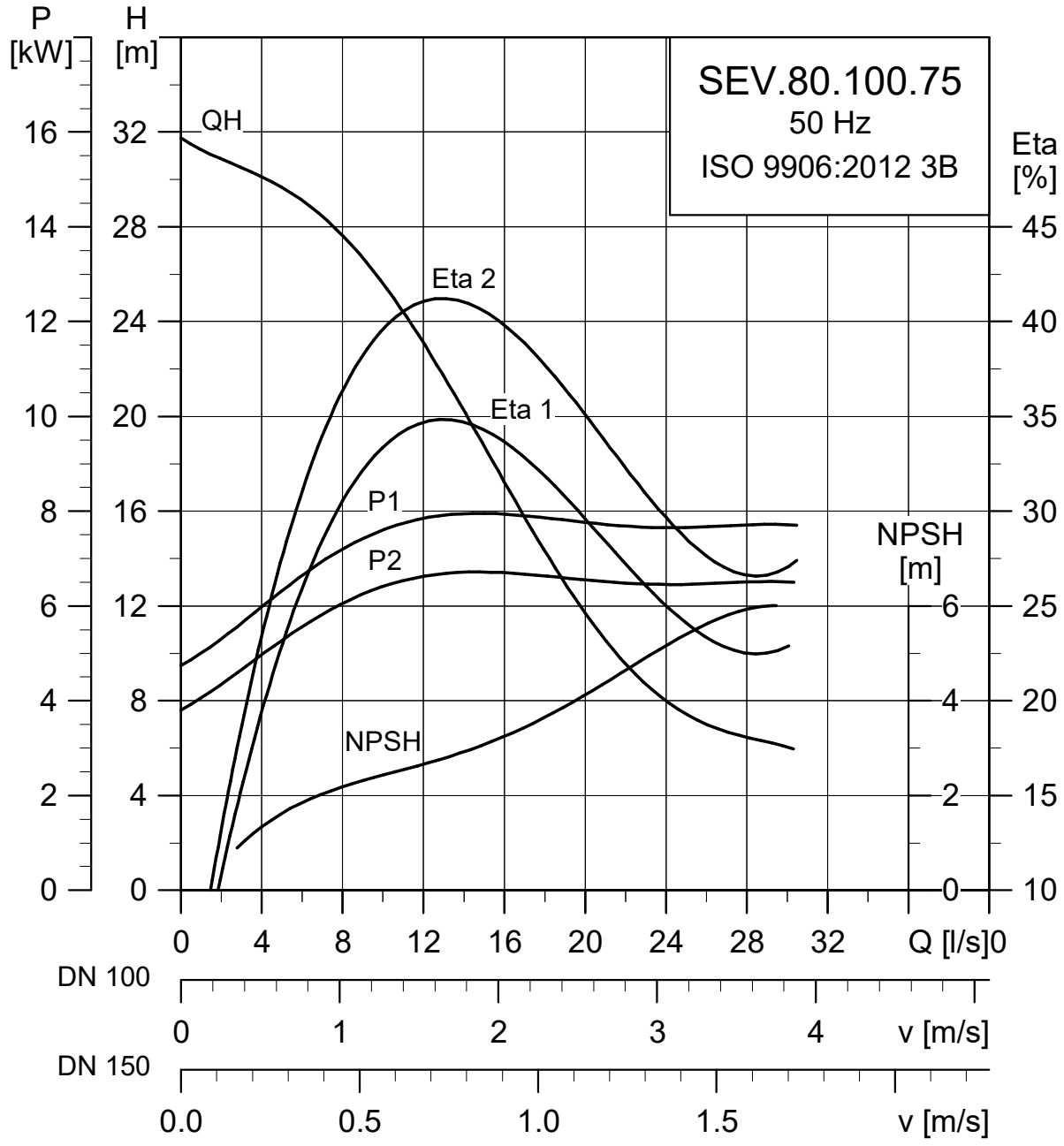
Voltage	P1	P2	Number of poles	Rpm	Starting method	I_N [1]	I_{start}	η_{motor} [%]			Cos φ			Moment of inertia	Breakdown torque $M_{max.}$
[V]	[kW]	[kW]				[A]	[A]	1/2	3/4	1/1	1/2	3/4	1/1	[kgm^2]	[Nm]
3 × 380-415	7.1	6	2	2945	DOL	13.7/14.2	143	77.5	82.2	84.1	0.58	0.7	0.78	0.019	112

[1] Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
SuperVortex	80	20	20	IP68	F	40	See *8.2.1 Pumped liquids*

9.52 SEV.80.100.75.(Ex).2



Electrical data

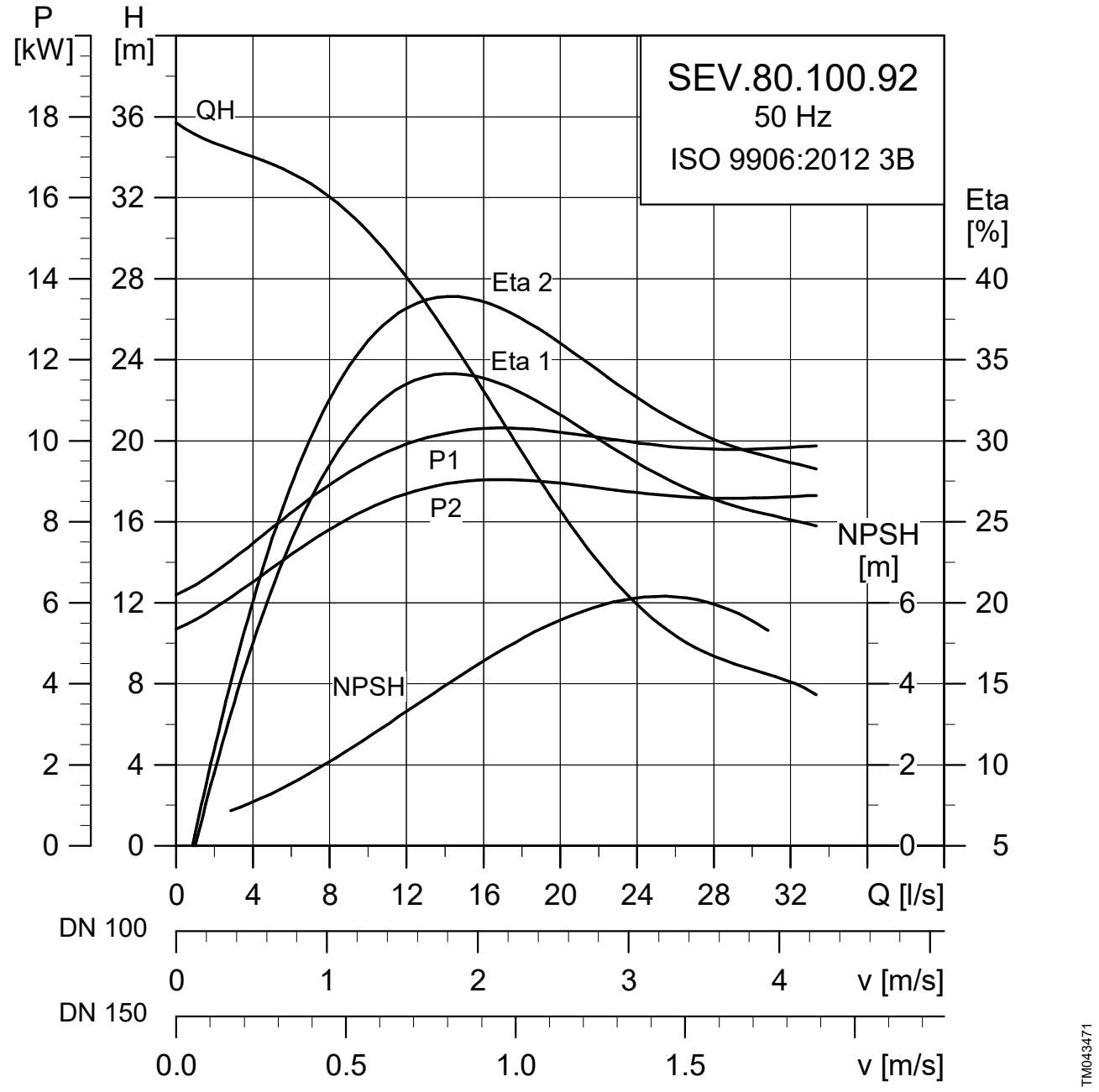
Voltage	P1	P2	Number of poles	Rpm	Starting method	I_N [1]	I_{start}	η_{motor} [%]			Cos φ			Moment of inertia	Breakdown torque $M_{max.}$
[V]	[kW]	[kW]				[A]	[A]	1/2	3/4	1/1	1/2	3/4	1/1	[kgm^2]	[Nm]
3 × 380-415	8.9	7.5	2	2940	DOL	16.5/16.2	146	80.1	83.8	84.8	0.65	0.76	0.83	0.0215	112

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
SuperVortex	80	20	20	IP68	F	40	See *8.2.1 Pumped liquids*

9.53 SEV.80.100.92.(Ex).2



Electrical data

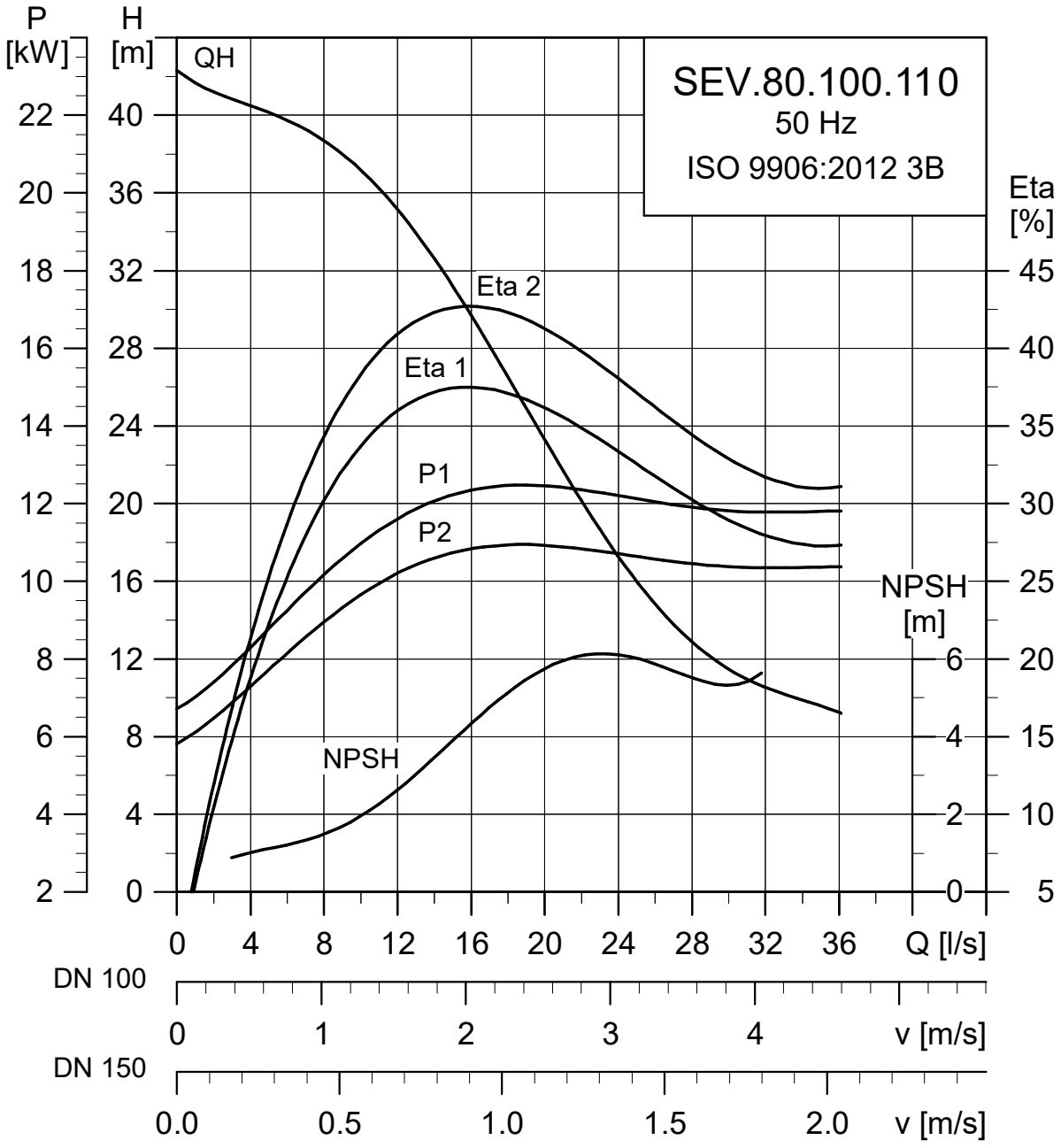
Voltage	P1	P2	Number of poles	Rpm	Starting method	I_N [1]	I_{start}	η_{motor} [%]			Cos φ			Moment of inertia	Breakdown torque $M_{max.}$
[V]	[kW]	[kW]				[A]	[A]	1/2	3/4	1/1	1/2	3/4	1/1	[kgm^2]	[Nm]
3 × 380-415	10.5	9.2	2	2935	DOL	18.8/17.5	156	85.4	87.4	87.6	0.78	0.85	0.89	0.0334	99

[1] Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
SuperVortex	80	20	20	IP68	F	40	See *8.2.1 Pumped liquids*

9.54 SEV.80.100.110.(Ex).2



Electrical data

Voltage	P1	P2	Number of poles	Rpm	Starting method	I_N [1]	I_{start}	η_{motor} [%]			Cos φ			Moment of inertia	Breakdown torque $M_{max.}$
[V]	[kW]	[kW]				[A]	[A]	1/2	3/4	1/1	1/2	3/4	1/1	[kgm^2]	[Nm]
3 × 380-415	12.6	11	2	2935	DOL	22.7/21.4	155	86.4	88.1	87.7	0.75	0.84	0.88	0.0368	118

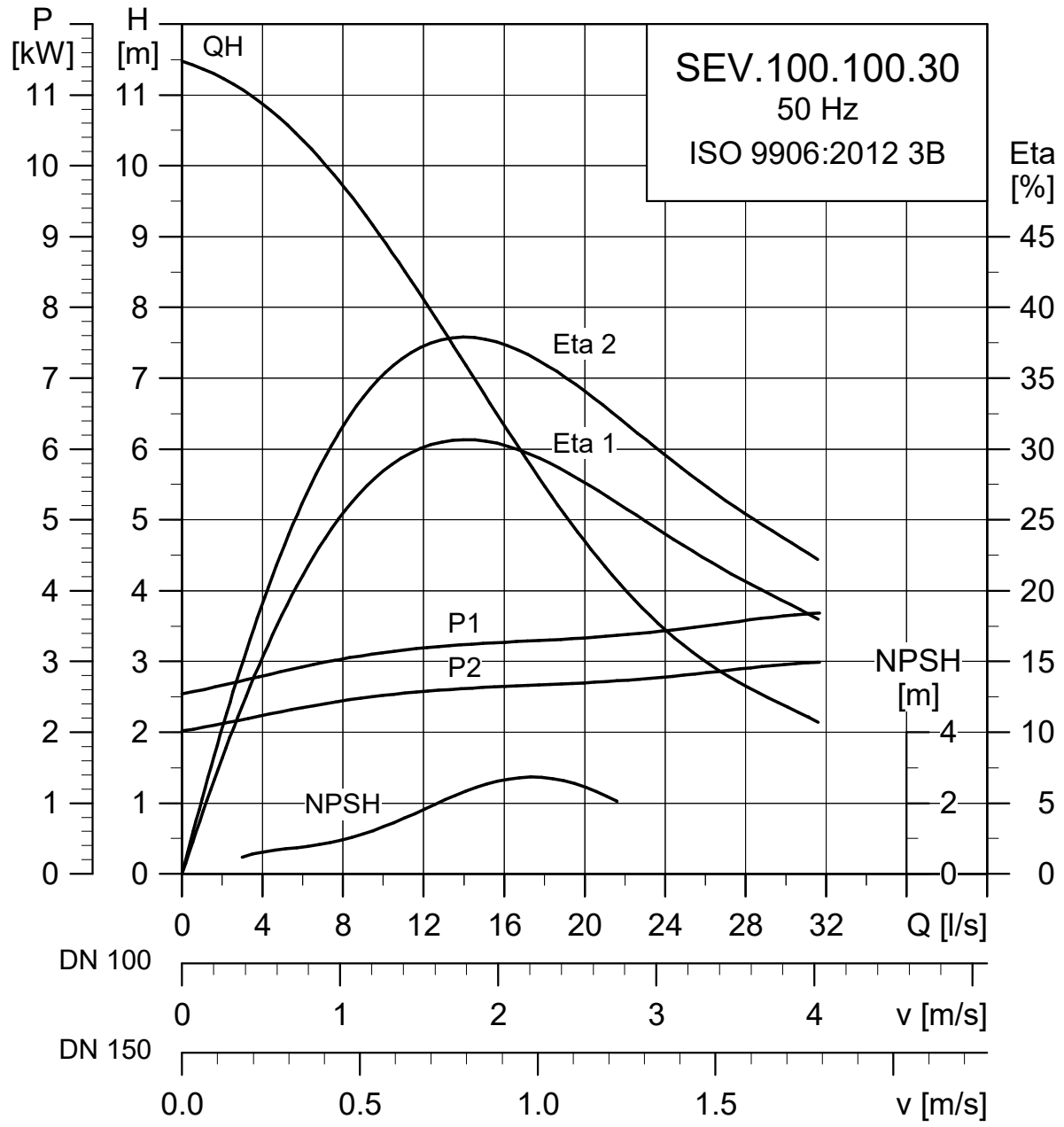
1 Low voltage - high voltage

* Low voltage - high voltage.

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
SuperVortex	80	20	20	IP68	F	40	See *8.2.1 Pumped liquids*

9.55 SEV.100.100.30.(Ex).4



Electrical data

Voltage	P1	P2	Number of poles	Rpm	Starting method	I_N [1]	I_{start}	η_{motor} [%]			Cos φ			Moment of inertia	Breakdown torque $M_{max.}$
[V]	[kW]	[kW]				[A]	[A]	1/2	3/4	1/1	1/2	3/4	1/1	[kgm^2]	[Nm]
3 × 380-415	3.7	3.0	4	1455	DOL	7.8/8.0	74	76.4	79.9	81.2	0.5	0.64	0.73	0.0450	71

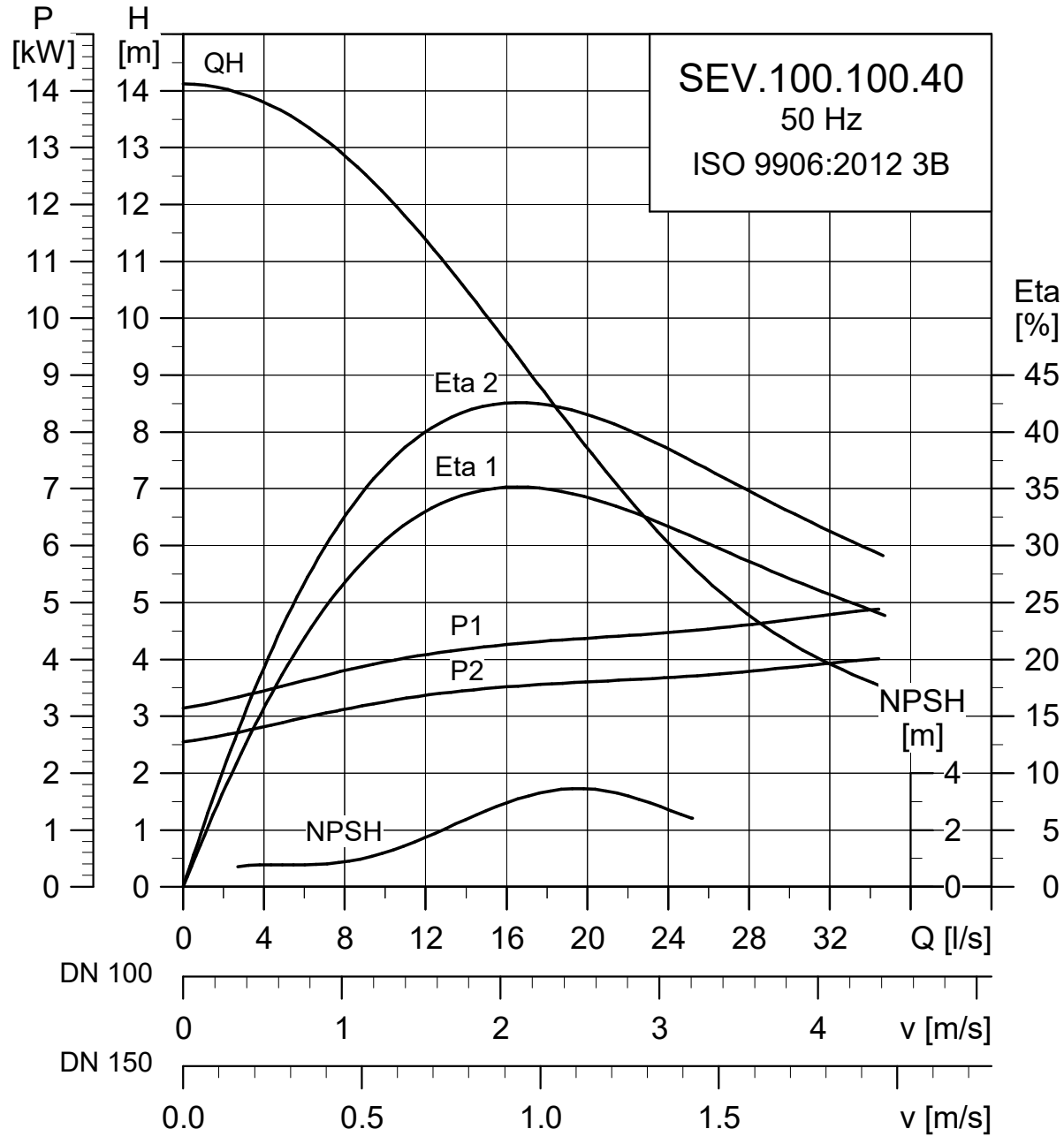
1 Low voltage - high voltage

* Low voltage - high voltage.

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
SuperVortex	100	20	20	IP68	F	40	See *8.2.1 Pumped liquids*

9.56 SEV.100.100.40.(Ex).4



Electrical data

Voltage	P1	P2	Number of poles	Rpm	Starting method	I_N [1]	I_{start}	η_{motor} [%]			Cos φ			Moment of inertia	Breakdown torque $M_{max.}$
[V]	[kW]	[kW]				[A]	[A]	1/2	3/4	1/1	1/2	3/4	1/1	[kgm^2]	[Nm]
3 × 380-415	4.9	4.0	4	1460	Y/D	10.0/10.2	67	78.2	81.7	82.2	0.52	0.65	0.73	0.0501	100

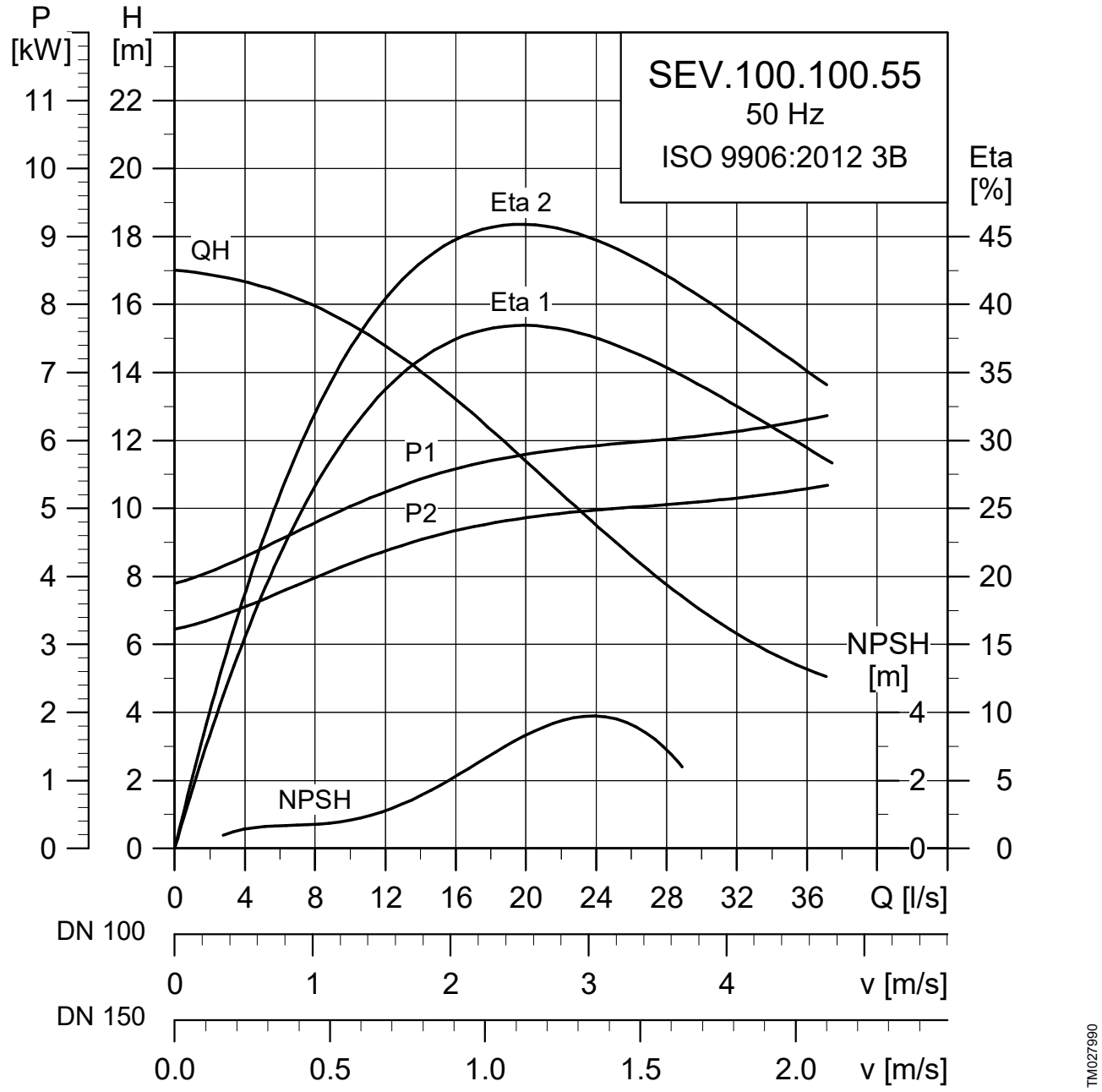
1 Low voltage - high voltage

* Low voltage - high voltage.

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
SuperVortex	100	20	20	IP68	F	40	See *8.2.1 Pumped liquids*

9.57 SEV.100.100.55.(Ex).4



Electrical data

Voltage	P1	P2	Number of poles	Rpm	Starting method	I_N [1]	I_{start}	η_{motor} [%]			Cos φ			Moment of inertia	Breakdown torque $M_{max.}$
[V]	[kW]	[kW]				[A]	[A]	1/2	3/4	1/1	1/2	3/4	1/1	[kgm^2]	[Nm]
3 × 380-415	6.5	5.5	4	1455	Y/D	13.3/13.8	87	81	83.3	83.9	0.52	0.65	0.74	0.0552	122

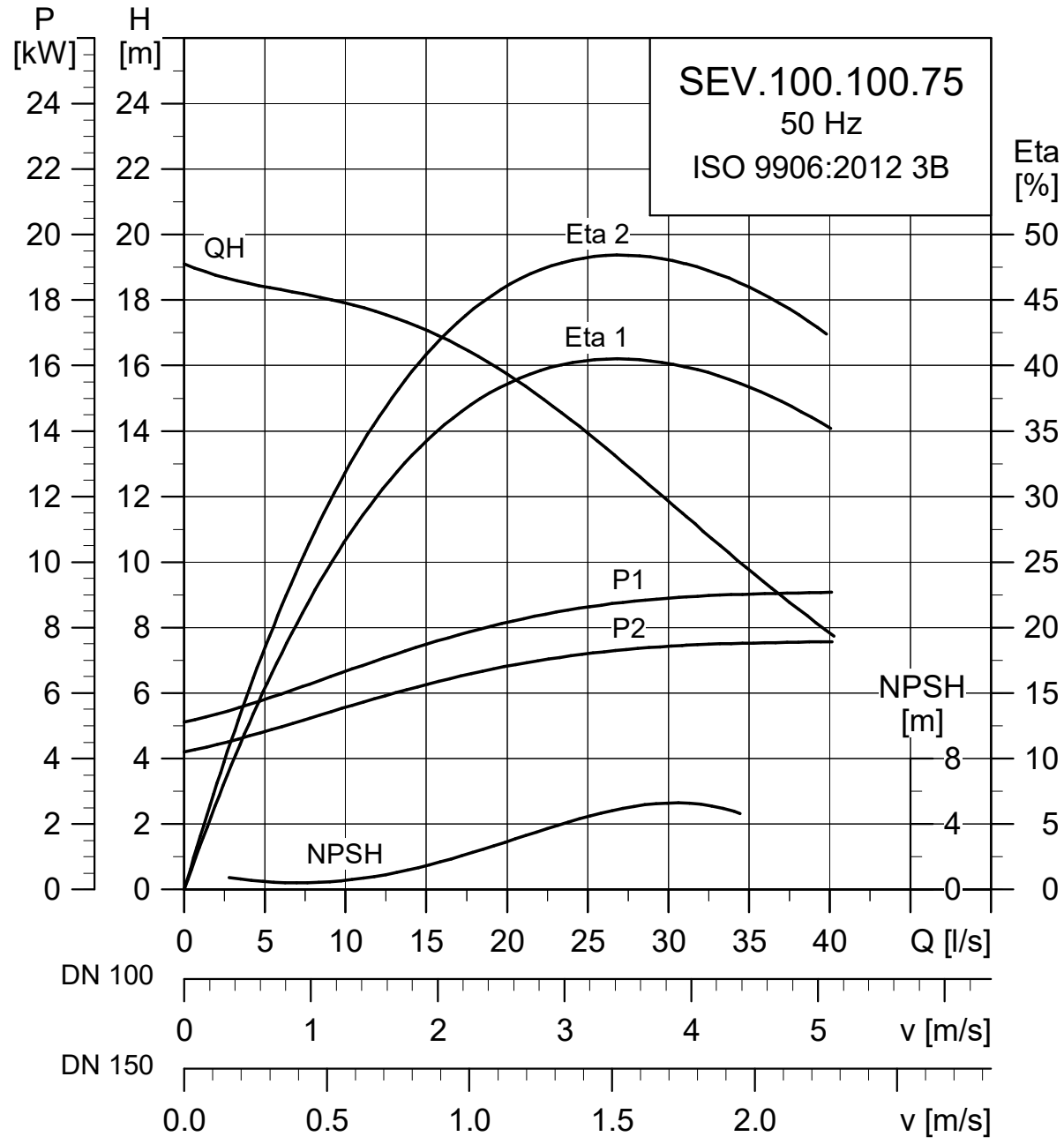
1 Low voltage - high voltage

* Low voltage - high voltage.

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
SuperVortex	100	20	20	IP68	F	40	See *8.2.1 Pumped liquids*

9.58 SEV.100.100.75.(Ex).4



Electrical data

Voltage	P1	P2	Number of poles	Rpm	Starting method	I_N [1]	I_{start}	η_{motor} [%]			Cos φ			Moment of inertia	Breakdown torque $M_{max.}$
[V]	[kW]	[kW]				[A]	[A]	1/2	3/4	1/1	1/2	3/4	1/1	[kgm²]	[Nm]
3 × 380-415	9.0	7.5	4	1455	Y/D	17.7/17.5	107	81.3	83.5	83.4	0.61	0.72	0.79	0.0692	141

1 Low voltage - high voltage

Pump data

Impeller type	Max. solids size	Max. number of starts per hour	Max. installation depth	Enclosure class	Insulation class	Max. liquid temperature	pH
	[mm]		[m]			[°C]	
SuperVortex	100	20	20	IP68	F	40	See *8.2.1 Pumped liquids*

10. Accessories

10.1 Installation systems

Picture	Description	Dimensions	Material	SE1.50.65	SE1.50.80	SE1.80.80	SE1.80.100	SE1.100.100	SE1.100.150	SEV.65.65	SEV.65.80	SEV.80.80	SEV.80.100	SEV.100.100	Product number
 TM044490	Complete auto-coupling system, including guide claw, base plate and upper guide rail bracket. Cast iron, epoxy-coated. With bolts, nuts, gaskets and anchor bolts. **Note:** If your guide rails exceed 4 metres, consider using intermediate guide rail brackets to support your system.	DN 65	Cast iron	•						•					96090992
		DN 80			•	•					•	•			96090993
		DN 80/DN 65		•						•					96102238
		DN 100					•	•					•	•	96090994
		DN 100/DN 80			•	•					•	•			96102240
		DN 150							•						96090995
		DN 150/DN 100					•	•					•	•	96102241
		DN 65	Stainless steel, EN 1.4408	•						•					96825104
		DN 80			•	•					•	•			96825106
		DN 100					•	•					•	•	96825108
		DN 150							•						96945381
 TM054253	Intermediate guide rail brackets in stainless steel.	DN 65	Stainless steel	•						•					96825119
		DN 80				•					•	•			96825142
		DN 100					•	•					•	•	96825161
		DN 150							•						96887674
 TM046086	Ring stand with flanged 90° elbow and hose connection. With bolts, nuts, gaskets and anchor bolts.	DN 65/DN 65	Cast iron, epoxy-coated	•											96102253
		DN 65/DN 80			•										96102378
		DN 80/DN 65								•					96102439
		DN 80/DN 80									•	•			96102254
		DN 100/DN 80				•									96102313
		DN 80/DN 100											•		96943236
		DN 100/DN 100					•							•	96102255
		DN 150/DN 100	Galvanised steel					•							96102314
		DN 150/DN 150							•						96102256
	Ring stand with flanged 90° elbow and outside thread connection. With bolts, nuts, gaskets and anchor bolts.	DN 65/DN 65	Cast iron, epoxy-coated	•											96102379
		DN 65/DN 80			•										96102380
		DN 80/DN 65								•					96102440
		DN 80/DN 80									•	•			96102381
		DN 100/DN 80				•									96102382
		DN 80/DN 100											•		96943236
		DN 100/DN 100					•							•	96102383
		DN 150/DN 100	Galvanised steel					•							96102384
		DN 150/DN 150							•						96102385
 TM044493	Base stand for vertical dry installation, including 90° elbow. Galvanised steel. With bolts, gaskets and anchor bolts.	DN 65	Galvanised steel	•	•										96102257
		DN 80								•	•	•	•		96102258
		DN 100/DN 80								•	•	•	•		96567174
		DN 100				•	•							•	96102259
		DN 150/DN 100				•	•				•			•	96567175
		DN 150						•	•						96102260
		DN 200/DN 150						•	•						96567176

Picture	Description	Dimensions	Material	SE1.50.65	SE1.50.80	SE1.80.80	SE1.80.100	SE1.100.100	SE1.100.150	SEV.65.65	SEV.65.80	SEV.80.80	SEV.80.100	SEV.100.100	Product number
 TM044494	Brackets for horizontal dry installation. With bolts, gaskets and anchor bolts.	DN 65 (2.2 to 3 kW, 2-pole)	Galvanised steel	•	•										99451462
		DN 65 (4 kW, 2-pole)		•	•										99451490
		DN 80 (2.2 to 3 kW, 2-pole)								•	•				99451456
		DN 80 (1.1 to 2.2 kW, 4-pole)										•	•		99451456
		DN 80 (4 to 7.5 kW, 2-pole)								•	•	•	•		99451488
		DN 80 (4 kW, 4-pole)										•	•		99451488
 TM044506		DN 80 (9.2 to 11 kW, 2-pole)										•	•		99451492
		DN 100 (1.5 to 2.2 kW, 4-pole)				•	•								99451460
		DN 100 (3 to 5.5 kW, 4-pole)				•	•							•	99451485
		DN 100 (7.5 kW, 4-pole)				•	•							•	99451504
		DN 150 (4 to 5.5 kW, 4-pole)						•	•						99451491
		DN 150 (7.5 kW, 4-pole)						•	•						99451507

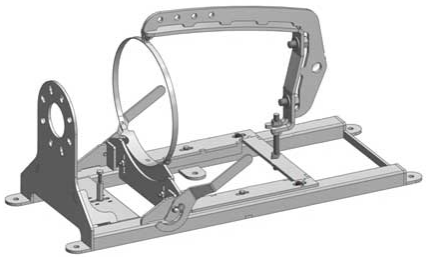
10.1.1 Lifting chain

- complete, certified lifting chain for all pump types
- maximum load: 800 kg
- material variants:
  - galvanised steel
  - stainless steel.

TM026126

Material	Length [m]	Product number
Galvanised steel	2	98425759
	4	98425760
	6	98425781
	8	98425782
	10	98425783
Stainless steel	2	98425796
	4	98425797
	6	98425798
	8	98425799
	10	98425800

10.1.2 Service sledge

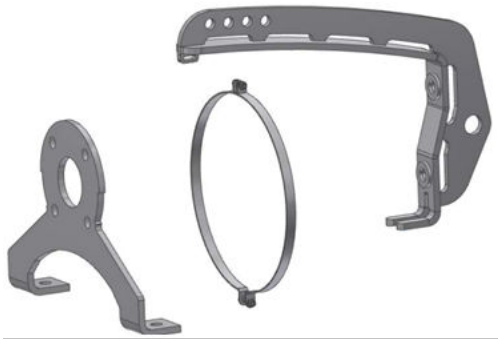


TM080185

Pump to be installed					Service sledge	
Pump/Impeller type	**Pump passage [mm]**	**Pump outlet**	**Power [kW]**	**Poles**	**Service slegde type key**	**Product number**
SE sledge B.SE1.50.2.2-3.2.50 DIN						
SE1	50	65	22	2	SE sledge SE1.50.65.2.2.2.50 DIN	
SE1	50	65	30	2	SE sledge SE1.50.65.3.2.50 DIN	98827089
SE1	50	80	22	2	SE sledge SE1.50.80.2.2.2.50 DIN	
SE1	50	80	30	2	SE sledge SE1.50.80.3.2.50 DIN	
SE sledge B.SEV.65.2/SE1.80.4.50 DIN						
SEV	65	65	22	2	SE sledge SEV.65.65.2.2.2.50 DIN	
SEV	65	65	30	2	SE sledge SEV.65.65.3.2.50 DIN	
SEV	65	80	22	2	SE sledge SEV.65.80.2.2.2.50 DIN	
SEV	65	80	30	2	SE sledge SEV.65.80.3.2.50 DIN	98902585
SE1	80	80	15	4	SE sledge SE1.80.80.1.5.4.50 DIN	
SE1	80	80	22	4	SE sledge SE1.80.80.2.2.4.50 DIN	
SE1	80	100	15	4	SE sledge SE1.80.100.1.5.4.50 DIN	
SE1	80	100	22	4	SE sledge SE1.80.100.2.2.4.50 DIN	
SE sledge B.SEV.80.80.4.50 DIN						
SEV	80	80	11	4	SE sledge SEV.80.80.1.1.4.50 DIN	
SEV	80	80	13	4	SE sledge SEV.80.80.1.3.4.50 DIN	
SEV	80	80	15	4	SE sledge SEV.80.80.1.5.4.50 DIN	
SEV	80	80	22	4	SE sledge SEV.80.80.2.2.4.50 DIN	98902589
SEV	80	100	11	4	SE sledge SEV.80.100.1.1.4.50 DIN	
SEV	80	100	13	4	SE sledge SEV.80.100.1.3.4.50 DIN	
SEV	80	100	15	4	SE sledge SEV.80.100.1.5.4.50 DIN	
SEV	80	100	22	4	SE sledge SEV.80.100.2.2.4.50 DIN	
SE sledge C.SE1.50.4.2.50 DIN						
SE1	50	65	40	2	SE sledge SE1.50.65.4.2.50 DIN	98827090
SE1	50	65	40	2	SE sledge SE1.50.65.4.2.50 DIN	
SE sledge C.SEV.65.4.2.50 DIN						
SEV	65	65	40	2	SE sledge SEV.65.65.4.2.50 DIN	98902602
SEV	65	80	40	2	SE sledge SEV.65.80.4.2.50 DIN	

Pump to be installed					Service sledge	
Pump/Impeller type	**Pump passage [mm]**	**Pump outlet**	**Power [kW]**	**Poles**	**Service slegde type key**	**Product number**
SE sledge C.SEV.80.SE1.80.50 DIN						
SEV	80	80	40	4	SE sledge SEV.80.80.4.4.50 DIN	
SEV	80	80	40	2	SE sledge SEV.80.80.4.2.50 DIN	
SEV	80	80	60	2	SE sledge SEV.80.80.6.2.50 DIN	
SEV	80	80	75	2	SE sledge SEV.80.80.7.5.2.50 DIN	
SEV	80	100	40	4	SE sledge SEV.80.100.4.4.50 DIN	
SEV	80	100	40	2	SE sledge SEV.80.100.4.2.50 DIN	
SEV	80	100	60	2	SE sledge SEV.80.100.6.2.50 DIN	98902603
SEV	80	100	75	2	SE sledge SEV.80.100.7.5.2.50 DIN	
SE1	80	80	30	4	SE sledge SE1.80.80.3.4.50 DIN	
SE1	80	80	40	4	SE sledge SE1.80.80.4.4.50 DIN	
SE1	80	80	55	4	SE sledge SE1.80.80.5.5.4.50 DIN	
SE1	80	100	30	4	SE sledge SE1.80.100.3.4.50 DIN	
SE1	80	100	40	4	SE sledge SE1.80.100.4.4.50 DIN	
SE1	80	100	55	4	SE sledge SE1.80.100.5.5.4.50 DIN	
SE sledge C.SEV.100.100.50 DIN						
SEV	100	100	40	4	SE sledge SEV.100.100.4.4.50 DIN	98902606
SEV	100	100	40	4	SE sledge SEV.100.100.4.4.50 DIN	
SEV	100	100	60	4	SE sledge SEV.100.100.6.4.50 DIN	
SE sledge C.SE1.100.100.4.50 DIN						
SE1	100	100	40	4	SE sledge SE1.100.100.4.4.50 DIN	
SE1	100	100	55	4	SE sledge SE1.100.100.5.5.4.50 DIN	98902607
SE1	100	150	40	4	SE sledge SE1.100.150.4.4.50 DIN	
SE1	100	150	55	4	SE sledge SE1.100.150.5.5.4.50 DIN	
SE sledge D.SEV.80.SE1.80.50 DIN						
SEV	80	80	92	2	SE sledge SEV.80.80.9.2.2.50 DIN	
SEV	80	80	110	2	SE sledge SEV.80.80.11.2.50 DIN	
SEV	80	100	110	2	SE sledge SEV.80.100.11.2.50 DIN	98827091
SEV	80	100	110	2	SE sledge SEV.80.100.11.2.50 DIN	
SE1	80	80	75	4	SE sledge SE1.80.80.7.5.4.50 DIN	
SE1	80	100	75	4	SE sledge SE1.80.100.7.5.4.50 DIN	
SE sledge D.SEV.100.75.4.50 DIN						98902608
SEV	100	100	75	4	SE sledge SEV.100.100.7.5.4.50 DIN	
SE sledge D.SE1.100.75.4.50 DIN						
SE1	100	100	75	4	SE sledge SE1.100.100.7.5.4.50 DIN	98902609
SE1	100	150	75	4	SE sledge SE1.100.150.7.5.4.50 DIN	

10.1.3 Horizontal bracket installation



TM080184

Pump to be installed						Horizontal bracket installation
Pump/Impeller type	**Pump passage [mm]**	**Pump outlet**	**Power [KW]**	**Poles**	**Frequency [Hz]**	**Product number**
Horizontal bracket installation B.65.50 DIN						
SE1	50	65	22	2	50	
SE1	50	65	30	2	50	98902621
SE1	50	80	22	2	50	
SE1	50	80	30	2	50	
Horizontal bracket installation B.80/100.50 DIN						
SEV	65	65	22	2	50	
SEV	65	65	30	2	50	
SEV	65	80	22	2	50	
SEV	65	80	30	2	50	
SE1	80	80	15	4	50	
SE1	80	80	22	4	50	
SE1	80	100	15	4	50	
SE1	80	100	22	4	50	98902622
SEV	80	80	11	4	50	
SEV	80	80	13	4	50	
SEV	80	80	15	4	50	
SEV	80	80	22	4	50	
SEV	80	100	11	4	50	
SEV	80	100	13	4	50	
SEV	80	100	15	4	50	
SEV	80	100	22	4	50	
Horizontal bracket installation C.65.50 DIN						
SE1	50	65	40	2	50	98902623
SE1	50	65	40	2	50	

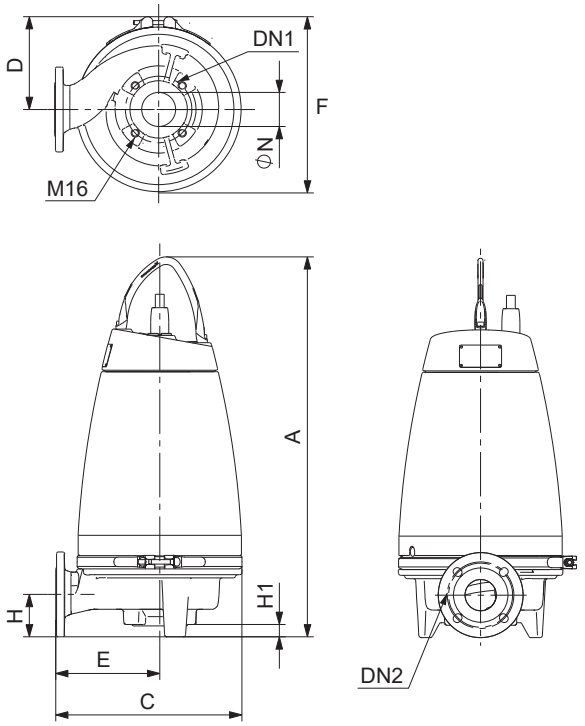
Pump to be installed						Horizontal bracket installation
Pump/Impeller type	**Pump passage [mm]**	**Pump outlet**	**Power [KW]**	**Poles**	**Frequency [Hz]**	**Product number**
Horizontal bracket installation C.80/100.50 DIN						
SEV	65	65	40	2	50	98902625
SEV	65	80	40	2	50	
SEV	80	80	40	4	50	
SEV	80	80	40	2	50	
SEV	80	80	60	2	50	
SEV	80	80	75	2	50	
SEV	80	100	40	4	50	
SEV	80	100	40	2	50	
SEV	80	100	60	2	50	
SEV	80	100	75	2	50	
SE1	80	80	30	4	50	
SE1	80	80	40	4	50	
SE1	80	80	55	4	50	
SE1	80	100	30	4	50	
SE1	80	100	40	4	50	
SE1	80	100	55	4	50	
SEV	100	100	40	4	50	
SEV	100	100	40	4	50	
SEV	100	100	60	4	50	
Horizontal bracket installation C.150.50 DIN						
SE1	100	100	40	4	50	98902626
SE1	100	100	55	4	50	
SE1	100	150	40	4	50	
SE1	100	150	55	4	50	
Horizontal bracket installation C.80/100.50 DIN						
SEV	80	80	92	2	50	98902628
SEV	80	80	110	2	50	
SEV	80	100	110	2	50	
SEV	80	100	110	2	50	
SE1	80	80	75	4	50	
SE1	80	100	75	4	50	
SEV	100	100	75	4	50	
Horizontal bracket installation D.150.50 DIN						
SE1	100	100	75	4	50	98902630
SE1	100	150	75	4	50	

11. Dimensions and weights

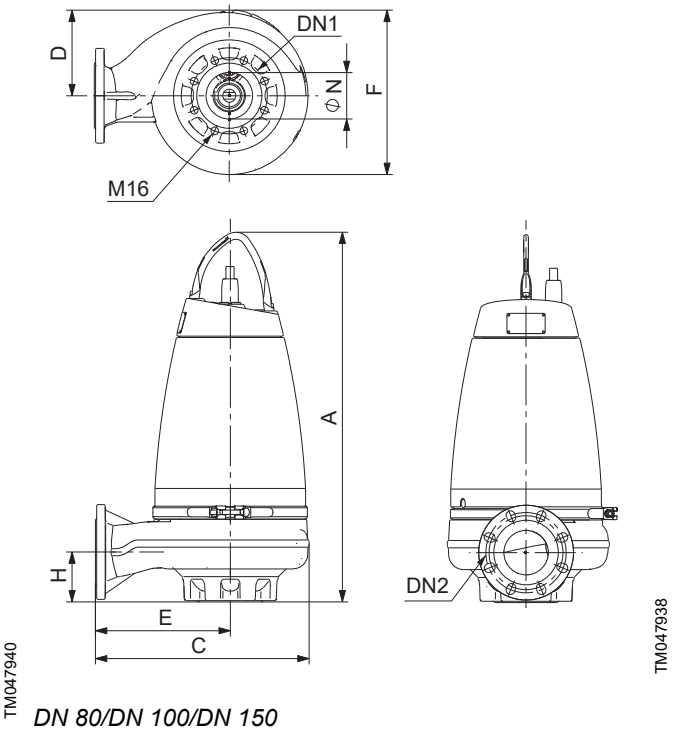
11.1 Dimensions

11.1.1 Pumps without accessories

SE1



DN 65



DN 80/DN 100/DN 150

SE1.50, DN 65 or DN 80 outlet

Pump type	A	C	D	E	F	H	H1	ØN	DN1	DN2
SE1.50.65.22	748	368	170	216	322	93	29	50	65	65
SE1.50.65.30	748	368	170	216	322	93	29	50	65	65
SE1.50.65.40	828	408	199	227	380	93	27	50	65	65
SE1.50.80.22	756	368	170	216	322	100	36	50	65	80
SE1.50.80.30	756	368	170	216	322	100	36	50	65	80
SE1.50.80.40	836	408	199	227	380	100	27	50	65	80

SE1.80, DN 80 outlet

Pump type	A	C	D	E	F	H	H1	ØN	DN1	DN2
SE1.80.80.15	772	434	176	272	330	100	11	80	100	80
SE1.80.80.22	772	434	176	272	330	100	11	80	100	80
SE1.80.80.30	876	508	202	319	385	118	0	80	100	80
SE1.80.80.40	876	508	202	319	385	118	0	80	100	80
SE1.80.80.55	876	508	202	319	385	118	0	80	100	80
SE1.80.80.75	939	529	216	328	416	118	0	80	100	80

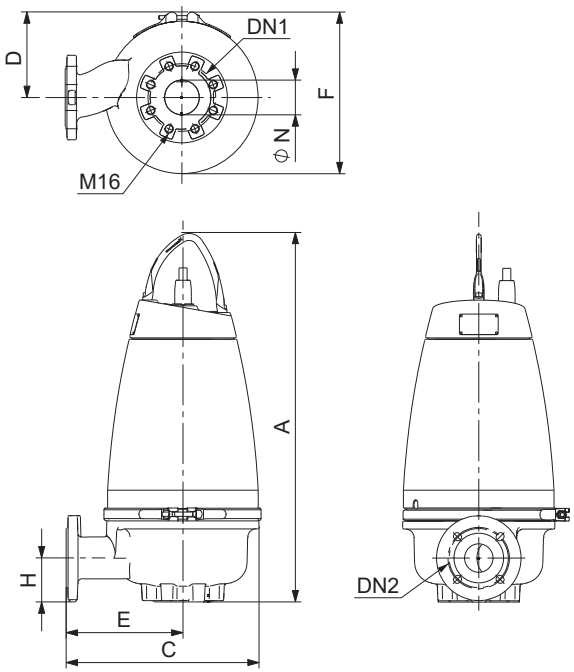
SE1.80, DN 100 outlet

Pump type	A	C	D	E	F	H	H1	ØN	DN1	DN2
SE1.80.100.15	782	434	176	272	330	110	21	80	100	100
SE1.80.100.22	782	434	176	272	330	110	21	80	100	100
SE1.80.100.30	876	508	202	319	385	118	0	80	100	100
SE1.80.100.40	876	508	202	319	385	118	0	80	100	100
SE1.80.100.55	876	508	202	319	385	118	0	80	100	100
SE1.80.100.75	939	529	216	328	416	118	0	80	100	100

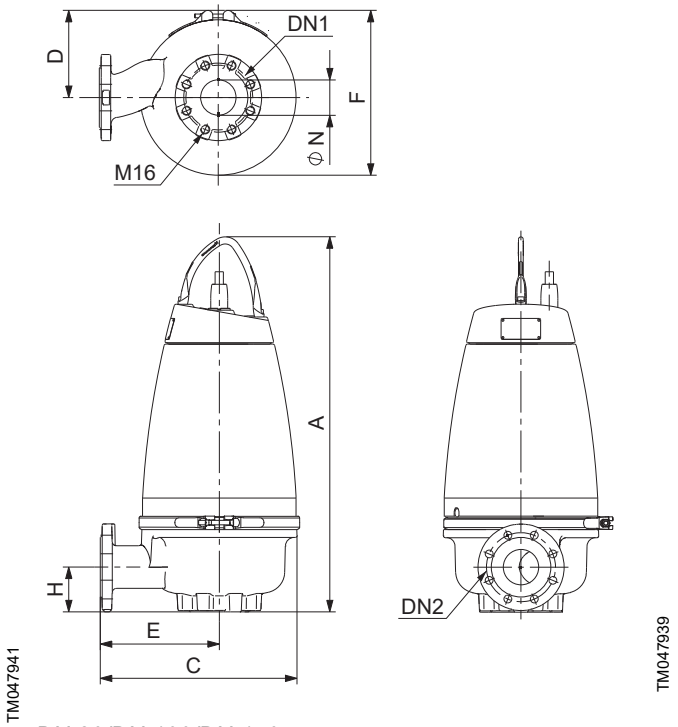
SE1.100, DN 100 or DN 150 outlet

Pump type	A	C	D	E	F	H	H1	ØN	DN1	DN2
SE1.100.100.40.4	882	525	226	320	414	115	0	100	150	100
SE1.100.100.55.4	882	525	226	320	414	115	0	100	150	100
SE1.100.100.75.4	947	519	224	312	427	115	0	100	150	100
SE1.100.150.40.4	914	525	227	320	412	143	35	100	150	100
SE1.100.150.55.4	914	525	227	320	412	143	32	100	150	100
SE1.100.150.75.4	979	522	241	306	445	142	35	100	150	100

SEV



DN 65



DN 80/DN 100/DN 150

SEV.65, DN 65 or DN 80 outlet

Pump type	A	C	D	E	F	H	H1	ØN	DN1	DN2
SEV.65.65.22	766	397	170	247	320	102	0	65	80	65
SEV.65.65.30	766	397	170	247	320	102	0	65	80	65
SEV.65.65.40	846	456	199	276	379	106	0	65	80	65
SEV.65.80.22	767	397	170	247	320	103	0	65	80	80
SEV.65.80.30	767	397	170	247	320	103	0	65	80	80
SEV.65.80.40	846	457	199	277	379	106	0	65	80	80

SEV.80, DN 80 outlet

Pump type	A	C	D	E	F	H	H1	ØN	DN1	DN2
SEV.80.80.11	793	409	170	241	338	109	0	80	80	80
SEV.80.80.13	793	409	170	241	338	109	0	80	80	80
SEV.80.80.15	793	409	170	241	338	109	0	80	80	80
SEV.80.80.22	793	409	170	241	338	109	0	80	80	80
SEV.80.80.40	872	456	199	276	380	104	0	80	80	80
SEV.80.80.60	872	456	199	276	380	104	0	80	80	80
SEV.80.80.75	872	456	199	276	380	104	0	80	80	80
SEV.80.80.92	937	489	216	293	412	123	0	80	80	80
SEV.80.80.110	937	489	216	293	412	123	0	80	80	80

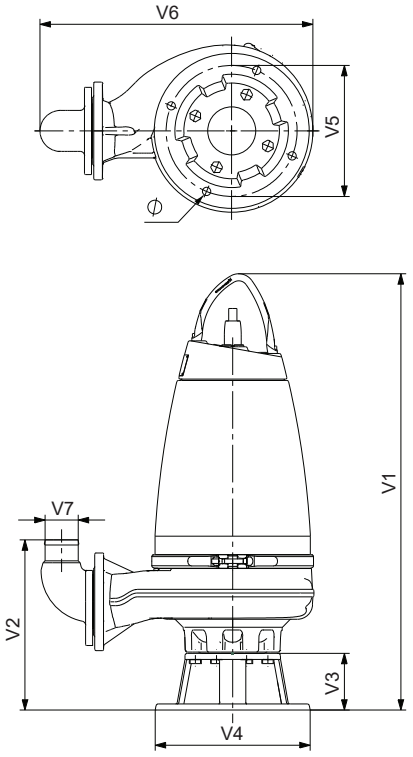
SEV.80, DN 100 outlet

Pump type	A	C	D	E	F	H	H1	ØN	DN1	DN2
SEV.80.100.11	793	407	170	241	336	109	0	80	80	80
SEV.80.100.13	793	407	170	241	336	109	0	80	80	80
SEV.80.100.15	793	407	170	241	336	109	0	80	80	80
SEV.80.100.22	793	407	170	241	336	109	0	80	80	80
SEV.80.100.40	872	466	199	286	380	104	0	80	80	80
SEV.80.100.60	872	466	199	286	380	104	0	80	80	80
SEV.80.100.75	872	466	199	286	380	104	0	80	80	80
SEV.80.100.92	937	499	216	303	412	123	0	80	80	80
SEV.80.100.110	937	499	216	303	412	123	0	80	80	80

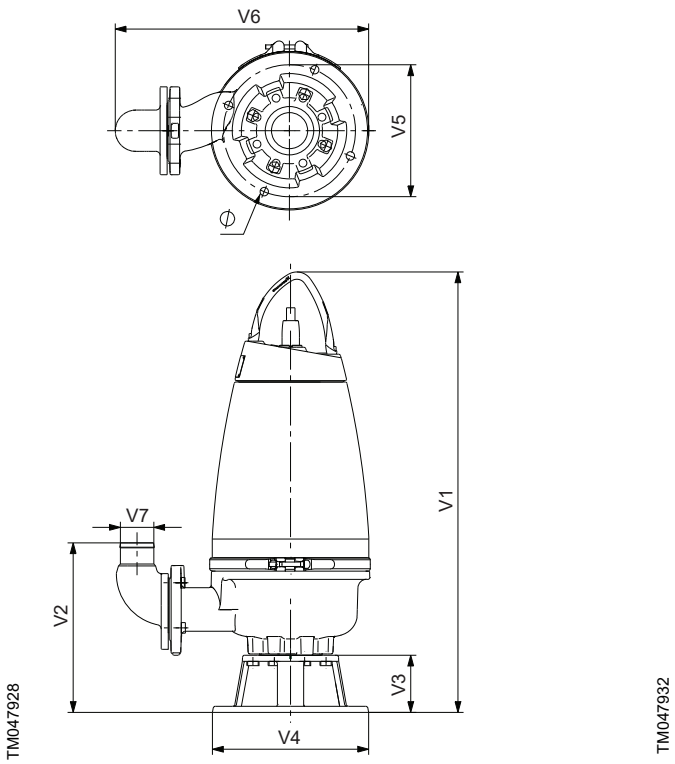
SEV.100, DN 100 outlet

Pump type	A	C	D	E	F	H	H1	ØN	DN1	DN2
SEV.100.100.30	887	457	199	277	379	134	0	100	100	100
SEV.100.100.40	887	457	199	277	379	134	0	100	100	100
SEV.100.100.55	887	457	199	277	379	134	0	100	100	100
SEV.100.100.75	963	490	216	294	416	145	0	100	100	100

11.1.2 Free-standing submerged pump on ring stand



SE1



SEV

SE1.50, DN 65 and DN 80 outlet

Pump type	V1	V2	V3	V4	V5	V6	V7	Ø
SE1.50.65.22.2	853	356	130	325	270	493	61	19
SE1.50.65.30.2	853	356	130	325	270	493	61	19
SE1.50.65.40.2	934	358	130	325	270	522	61	19
SE1.50.80.22.2	853	371	130	325	270	496	76	19
SE1.50.80.30.2	853	371	130	325	270	496	76	19
SE1.50.80.40.2	934	373	130	325	270	526	76	19

SE1.80, DN 80 outlet

Pump type	V1	V2	V3	V4	V5	V6	V7	Ø
SE1.80.80.15.4	894	396	130	355	300	567	76	19
SE1.80.80.22.4	894	396	130	355	300	567	76	19
SE1.80.80.30.4	1006	422	130	355	300	626	76	19
SE1.80.80.40.4	1006	422	130	355	300	626	76	19
SE1.80.80.55.4	1006	422	130	355	300	626	76	19
SE1.80.80.75.4	1069	422	130	355	300	646	76	19

SE1.80, DN 100 outlet

Pump type	V1	V2	V3	V4	V5	V6	V7	Ø
SE1.80.100.15.4	894	399	130	355	300	591	102	19
SE1.80.100.22.4	894	399	130	355	300	591	102	19
SE1.80.100.30.4	1006	425	130	355	300	650	102	19
SE1.80.100.40.4	1006	425	130	355	300	650	102	19
SE1.80.100.55.4	1006	425	130	355	300	650	102	19
SE1.80.100.75.4	1069	425	130	355	300	671	102	19

SE1.100, DN 100 or DN 150 outlet

Pump type	V1	V2	V3	V4	V5	V6	V7	Ø
SE1.100.100.40.4	1068	445	186	450	400	712	102	22
SE1.100.100.55.4	1068	445	186	450	400	712	102	22
SE1.100.100.75.4	1133	445	186	450	400	704	102	22
SE1.100.150.40.4	1068	570	186	450	400	809	148	22
SE1.100.150.55.4	1068	570	186	450	400	809	148	22
SE1.100.150.75.4	1133	570	186	450	400	795	148	22

SEV.65, DN 65 or DN 80 outlet

Pump type	V1	V2	V3	V4	V5	V6	V7	Ø
SEV.65.65.22.2	894	389	128	330	280	527	61	18
SEV.65.65.30.2	894	389	128	330	280	527	61	18
SEV.65.65.40.2	974	393	128	330	280	570	61	18
SEV.65.80.22.2	895	405	128	330	280	530	76	18
SEV.65.80.30.2	895	405	128	330	280	530	76	18
SEV.65.80.40.2	974	408	128	330	280	575	76	18

SEV.80, DN 80 outlet

Pump type	V1	V2	V3	V4	V5	V6	V7	Ø
SEV.80.80.11.4	921	411	128	330	280	527	76	18
SEV.80.80.13.4	921	411	128	330	280	527	76	18
SEV.80.80.15.4	921	411	128	330	280	527	76	18
SEV.80.80.22.4	921	411	128	330	280	527	76	18
SEV.80.80.40.2	1000	406	128	330	280	574	76	18
SEV.80.80.60.2	1000	406	128	330	280	574	76	18
SEV.80.80.75.2	1000	406	128	330	280	574	76	18
SEV.80.80.92.2	1065	425	128	330	280	607	76	18
SEV.80.80.110.2	1065	425	128	330	280	607	76	18

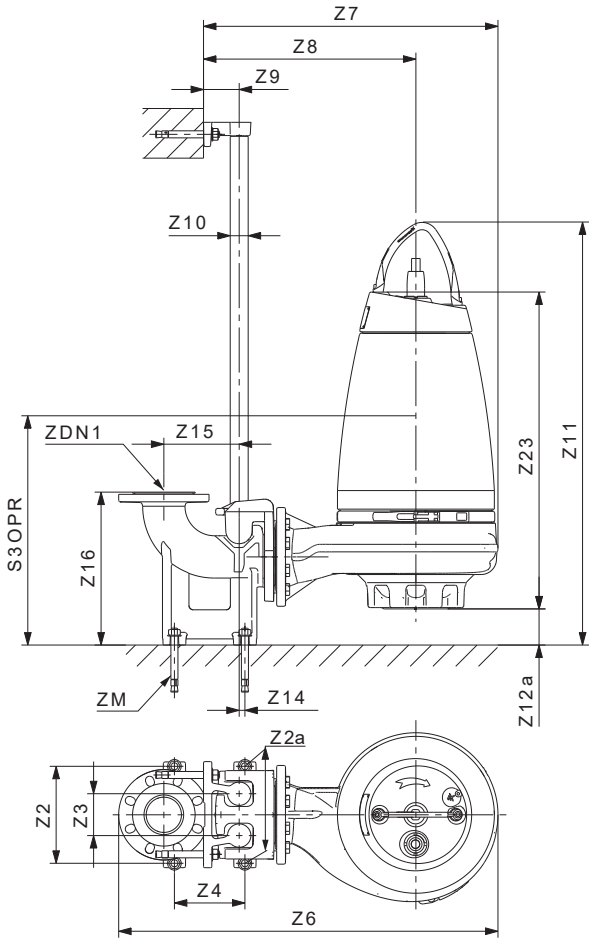
SEV.80, DN 100 outlet

Pump type	V1	V2	V3	V4	V5	V6	V7	Ø
SEV.80.100.11.4	921	414	128	330	280	549	102	18
SEV.80.100.13.4	921	414	128	330	280	549	102	18
SEV.80.100.15.4	921	414	128	330	280	549	102	18
SEV.80.100.22.4	921	414	128	330	280	549	102	18
SEV.80.100.40.2	1000	409	128	330	280	608	102	18
SEV.80.100.60.2	1000	409	128	330	280	608	102	18
SEV.80.100.75.2	1000	409	128	330	280	608	102	18
SEV.80.100.92.2	1065	428	128	330	280	641	102	18
SEV.80.100.110.2	1065	428	128	330	280	641	102	18

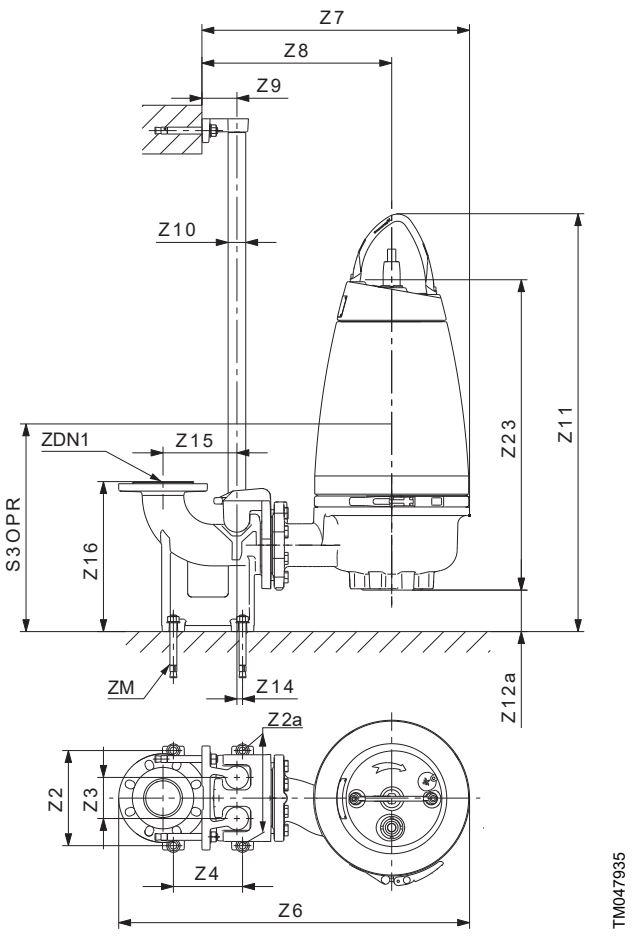
SEV.100, DN 100 outlet

Pump type	V1	V2	V3	V4	V5	V6	V7	Ø
SEV.100.100.30.4	1017	441	130	355	300	599	102	19
SEV.100.100.40.4	1017	441	130	355	300	599	102	19
SEV.100.100.55.4	1017	441	130	355	300	599	102	19
SEV.100.100.75.4	1093	452	130	355	300	632	102	19

11.1.3 Submerged pump on auto coupling



SE1



SEV

SE1.50, DN 65 or DN 80 outlet

Pump type	Z2	Z2a	Z3	Z4	Z6	Z7	Z8	Z9	Z10	Z11	Z12a	Z14	Z15	Z16	Z23	ZM	ZDN1	S3OPR
SE1.50.65.22.2	210	210	95	140	702	516	364	81	1 1/2"	822	99	1	175	268	597	M16	65	236
SE1.50.65.30.2	210	210	95	140	702	516	364	81	1 1/2"	822	99	1	175	268	596	M16	65	236
SE1.50.65.40.2	210	210	95	140	741	554	373	81	1 1/2"	902	97	1	175	268	653	M16	65	235
SE1.50.80.22.2	220	220	95	160	721	528	376	81	1 1/2"	856	133	13	171	347	597	M16	80	270
SE1.50.80.30.2	220	220	95	160	721	528	376	81	1 1/2"	856	133	13	171	347	597	M16	80	270
SE1.50.80.40.2	220	220	95	160	760	568	387	81	1 1/2"	936	131	13	171	347	635	M16	80	269

SE1.80, DN 80 outlet

Pump type	Z2	Z2a	Z3	Z4	Z6	Z7	Z8	Z9	Z10	Z11	Z12a	Z14	Z15	Z16	Z23	ZM	ZDN1	S3OPR
SE1.80.80.15.4	220	220	95	160	787	595	432	81	1 1/2"	872	108	13	171	347	638	M16	80	291
SE1.80.80.22.4	220	220	95	160	787	595	432	81	1 1/2"	872	108	13	171	347	638	M16	80	291
SE1.80.80.30.4	220	220	95	160	861	668	479	81	1 1/2"	958	82	13	171	347	725	M16	80	292
SE1.80.80.40.4	220	220	95	160	861	668	479	81	1 1/2"	958	82	13	171	347	725	M16	80	292
SE1.80.80.55.4	220	220	95	160	861	668	479	81	1 1/2"	958	82	13	171	347	725	M16	80	292
SE1.80.80.75.4	220	220	95	160	882	689	489	81	1 1/2"	1021	82	13	171	347	768	M16	80	293

SE1.80, DN 100 outlet

Pump type	Z2	Z2a	Z3	Z4	Z6	Z7	Z8	Z9	Z10	Z11	Z12a	Z14	Z15	Z16	Z23	ZM	ZDN1	S3OPR
SE1.80.100.15.4	230	260	110	220	876	650	488	110	2"	912	148	0	220	415	638	M16	100	330
SE1.80.100.22.4	230	260	110	220	876	650	488	110	2"	912	148	0	220	415	638	M16	100	330
SE1.80.100.30.4	230	260	110	220	950	724	535	110	2"	998	122	0	220	415	725	M16	100	335
SE1.80.100.40.4	230	260	110	220	950	724	535	110	2"	998	122	0	220	415	725	M16	100	335
SE1.80.100.55.4	230	260	110	220	950	724	535	110	2"	998	122	0	220	415	725	M16	100	335
SE1.80.100.75.4	230	260	110	220	971	745	544	110	2"	1061	122	0	220	415	768	M16	100	332

SE1.100, DN 100 or DN 150 outlet

Pump type	Z2	Z2a	Z3	Z4	Z6	Z7	Z8	Z9	Z10	Z11	Z12a	Z14	Z15	Z16	Z23	ZM	ZDN1	S3OPR
SE1.100.100.40.4	230	260	110	220	976	741	536	110	2"	1007	125	0	220	415	731	M16	100	347
SE1.100.100.55.4	230	260	110	220	976	741	536	110	2"	1007	125	0	220	415	731	M16	100	347
SE1.100.100.75.4	230	260	110	220	961	735	528	110	2"	1072	125	0	220	415	776	M16	100	341
SE1.100.150.40.4	300	300	110	280	1077	763	558	110	2"	1047	164	0	280	452	731	M16	150	386
SE1.100.150.55.4	300	300	110	280	1077	763	558	110	2"	1047	164	0	280	452	731	M16	150	386
SE1.100.150.75.4	300	300	110	280	1073	760	544	110	2"	1112	164	0	280	452	777	M16	150	380

SEV.65, DN 65 or DN 80 outlet

Pump type	Z2	Z2a	Z3	Z4	Z6	Z7	Z8	Z9	Z10	Z11	Z12a	Z14	Z15	Z16	Z23	ZM	ZDN1	S3OPR
SEV.65.65.22.2	210	210	95	140	731	545	395	81	1 1/2"	829	64	1	175	268	639	M16	65	255
SEV.65.65.30.2	210	210	95	140	731	545	395	81	1 1/2"	829	64	1	175	268	639	M16	65	255
SEV.65.65.40.2	210	210	95	140	790	604	424	81	1 1/2"	906	60	1	175	268	694	M16	65	251
SEV.65.80.22.2	220	220	95	160	750	557	407	81	1 1/2"	863	97	13	171	347	640	M16	80	288
SEV.65.80.30.2	220	220	95	160	750	557	407	81	1 1/2"	863	97	13	171	347	640	M16	80	288
SEV.65.80.40.2	220	220	95	160	810	617	437	81	1 1/2"	940	94	13	171	347	695	M16	80	285

SEV.80, DN 80 outlet

Pump type	Z2	Z2a	Z3	Z4	Z6	Z7	Z8	Z9	Z10	Z11	Z12a	Z14	Z15	Z16	Z23	ZM	ZDN1	S3OPR
SEV.80.80.11.4	220	220	95	160	762	569	401	81	1 1/2"	884	91	13	171	347	667	M16	80	301
SEV.80.80.13.4	220	220	95	160	762	569	401	81	1 1/2"	884	91	13	171	347	667	M16	80	301
SEV.80.80.15.4	220	220	95	160	762	569	401	81	1 1/2"	884	91	13	171	347	667	M16	80	301
SEV.80.80.22.4	220	220	95	160	762	569	401	81	1 1/2"	884	91	13	171	347	667	M16	80	301
SEV.80.80.40.2	220	220	95	160	809	617	436	81	1 1/2"	968	96	13	171	347	720	M16	80	312
SEV.80.80.60.2	220	220	95	160	809	617	436	81	1 1/2"	968	96	13	171	347	720	M16	80	312
SEV.80.80.75.2	220	220	95	160	809	617	436	81	1 1/2"	968	96	13	171	347	720	M16	80	312
SEV.80.80.92.2	220	220	95	160	842	650	453	81	1 1/2"	1014	77	13	171	347	766	M16	80	290
SEV.80.80.110.2	220	220	95	160	842	650	453	81	1 1/2"	1014	77	13	171	347	766	M16	80	290

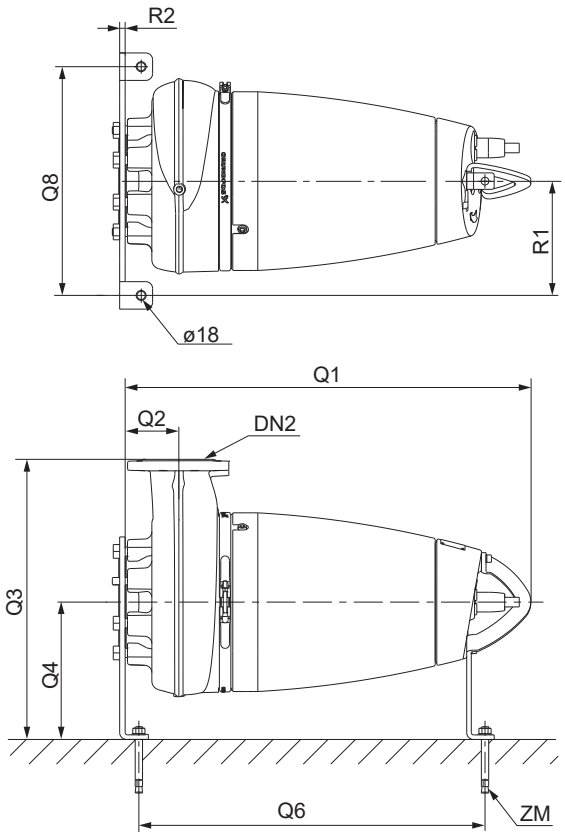
SEV.80, DN 100 outlet

Pump type	Z2	Z2a	Z3	Z4	Z6	Z7	Z8	Z9	Z10	Z11	Z12a	Z14	Z15	Z16	Z23	ZM	ZDN1	S3OPR
SEV.80.100.11.4	260	230	110	220	849	623	457	110	2"	924	131	0	220	415	667	M16	100	344
SEV.80.100.13.4	260	230	110	220	849	623	457	110	2"	924	131	0	220	415	667	M16	100	344
SEV.80.100.15.4	260	230	110	220	849	623	457	110	2"	924	131	0	220	415	667	M16	100	344
SEV.80.100.22.4	260	230	110	220	849	623	457	110	2"	924	131	0	220	415	667	M16	100	344
SEV.80.100.40.2	260	230	110	220	908	682	502	110	2"	1008	136	0	220	415	720	M16	100	345
SEV.80.100.60.2	260	230	110	220	908	682	502	110	2"	1008	136	0	220	415	720	M16	100	345
SEV.80.100.75.2	260	230	110	220	908	682	502	110	2"	1008	136	0	220	415	720	M16	100	345
SEV.80.100.92.2	260	230	110	220	941	715	519	110	2"	1054	117	0	220	415	766	M16	100	326
SEV.80.100.110.2	260	230	110	220	941	715	519	110	2"	1054	117	0	220	415	766	M16	100	326

SEV.100, DN 100 outlet

Pump type	Z2	Z2a	Z3	Z4	Z6	Z7	Z8	Z9	Z10	Z11	Z12a	Z14	Z15	Z16	Z23	ZM	ZDN1	S3OPR
SEV.100.100.30.4	260	230	110	220	899	673	493	110	2"	993	106	0	220	415	736	M16	100	332
SEV.100.100.40.4	260	230	110	220	899	673	493	110	2"	993	106	0	220	415	736	M16	100	332
SEV.100.100.55.4	260	230	110	220	899	673	493	110	2"	993	106	0	220	415	736	M16	100	332
SEV.100.100.75.4	260	230	110	220	932	706	510	110	2"	1058	95	0	220	415	792	M16	100	320

11.1.4 Horizontal dry installation with brackets



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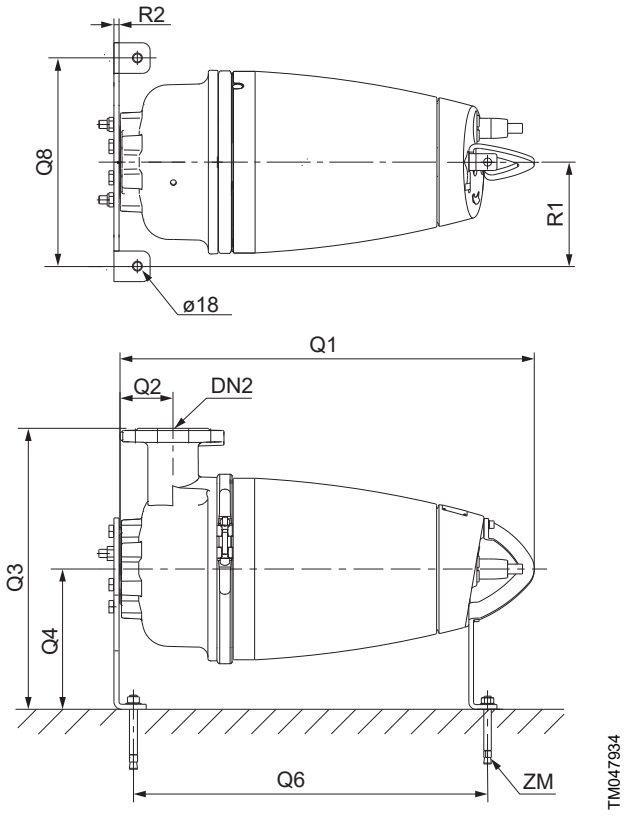


SEV

SE1.50, DN 65 or DN 80 outlet

Pump type	R1	R2	Q1	Q2	Q3	Q4	Q6	Q8	ZM	DN2
SE1.50.65.22.2	175	10	684	69	416	200	581	350	M16	65
SE1.50.65.30.2	175	10	684	69	416	200	581	350	M16	65
SE1.50.65.40.2	175	10	761	71	427	200	632	350	M16	65
SE1.50.80.22.2	175	10	684	69	416	200	581	350	M16	80
SE1.50.80.30.2	175	10	684	69	416	200	581	350	M16	80
SE1.50.80.40.2	175	10	761	71	427	200	631	350	M16	80

SE1.80, DN 80 outlet

Pump type	R1	R2	Q1	Q2	Q3	Q4	Q6	Q8	ZM	DN2
SE1.80.80.15.4	175	10	725	94	472	200	622	350	M16	80
SE1.80.80.22.4	175	10	725	94	472	200	622	350	M16	80
SE1.80.80.30.4	175	10	832	120	519	200	703	350	M16	80
SE1.80.80.40.4	175	10	824	120	519	200	703	350	M16	80
SE1.80.80.55.4	175	10	832	120	519	200	703	350	M16	80
SE1.80.80.75.4	175	10	878	120	538	210	743	350	M16	80

SE1.80, DN 100 outlet

Pump type	R1	R2	Q1	Q2	Q3	Q4	Q6	Q8	ZM	DN2
SE1.80.100.15.4	175	10	725	94	472	200	622	350	M16	100
SE1.80.100.22.4	175	10	725	94	472	200	622	350	M16	100
SE1.80.100.30.4	175	10	832	120	519	200	703	350	M16	100
SE1.80.100.40.4	175	10	832	120	519	200	703	350	M16	100
SE1.80.100.55.4	175	10	832	120	519	200	703	350	M16	100
SE1.80.100.75.4	175	10	878	120	538	210	743	350	M16	100

SE1.100, DN 100 or DN 150 outlet

Pump type	R1	R2	Q1	Q2	Q3	Q4	Q6	Q8	ZM	DN2
SE1.100.100.40.4	250	12	831	117	620	300	710	500	M16	100
SE1.100.100.55.4	250	12	831	117	620	300	710	500	M16	100
SE1.100.100.75.4	250	12	886	117	612	300	751	500	M16	100
SE1.100.150.40.4	250	12	831	113	620	300	710	500	M16	150
SE1.100.150.55.4	250	12	831	113	620	300	710	500	M16	150
SE1.100.150.75.4	250	12	886	113	606	300	751	500	M16	150

SEV.65, DN 65 or DN 80 outlet

Pump type	R1	R2	Q1	Q2	Q3	Q4	Q6	Q8	ZM	DN2
SEV.65.65.22.2	175	10	727	104	447	200	624	350	M16	65
SEV.65.65.30.2	175	10	727	104	447	200	624	350	M16	65
SEV.65.65.40.2	175	10	802	108	476	200	673	350	M16	65
SEV.65.80.22.2	175	10	727	104	447	200	624	350	M16	80
SEV.65.80.30.2	175	10	727	104	447	200	624	350	M16	80
SEV.65.80.40.2	175	10	802	108	476	200	673	350	M16	80

SEV.80, DN 80 outlet

Pump type	R1	R2	Q1	Q2	Q3	Q4	Q6	Q8	ZM	DN2
SEV.80.80.11.4	175	10	755	111	441	200	651	350	M16	80
SEV.80.80.13.4	175	10	755	111	441	200	651	350	M16	80
SEV.80.80.15.4	175	10	755	111	441	200	651	350	M16	80
SEV.80.80.22.4	175	10	755	111	441	200	651	350	M16	80
SEV.80.80.40.2	175	10	828	106	476	200	699	350	M16	80
SEV.80.80.60.2	175	10	828	106	476	200	699	350	M16	80
SEV.80.80.75.2	175	10	828	106	476	200	699	350	M16	80
SEV.80.80.92.2	175	10	876	125	503	210	741	350	M16	80
SEV.80.80.110.2	175	10	876	125	503	210	741	350	M16	80

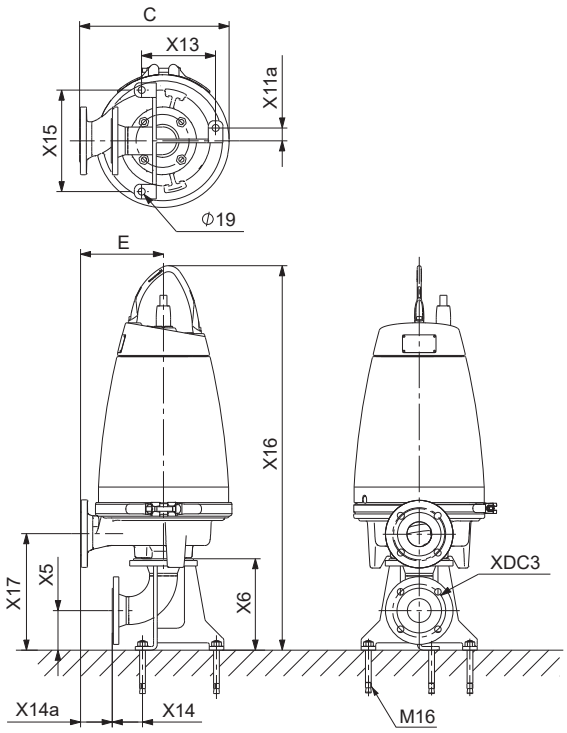
SEV.80, DN 100 outlet

Pump type	R1	R2	Q1	Q2	Q3	Q4	Q6	Q8	ZM	DN2
SEV.80.100.11.4	175	10	755	111	441	200	651	350	M16	100
SEV.80.100.13.4	175	10	755	111	441	200	651	350	M16	100
SEV.80.100.15.4	175	10	755	111	441	200	651	350	M16	100
SEV.80.100.22.4	175	10	755	111	441	200	651	350	M16	100
SEV.80.100.40.2	175	10	828	106	486	200	699	350	M16	100
SEV.80.100.60.2	175	10	828	106	486	200	699	350	M16	100
SEV.80.100.75.2	175	10	828	106	486	200	699	350	M16	100
SEV.80.100.92.2	175	10	876	125	513	210	741	350	M16	100
SEV.80.100.110.2	175	10	876	125	513	210	741	350	M16	100

SEV.100, DN 100 outlet

Pump type	R1	R2	Q1	Q2	Q3	Q4	Q6	Q8	ZM	DN2
SEV.100.100.30.4	175	10	843	136	477	200	715	350	M16	100
SEV.100.100.40.4	175	10	843	136	477	200	715	350	M16	100
SEV.100.100.55.4	175	10	843	136	477	200	715	350	M16	100
SEV.100.100.75.4	175	10	902	147	504	210	767	350	M16	100

11.1.5 Vertical dry installation



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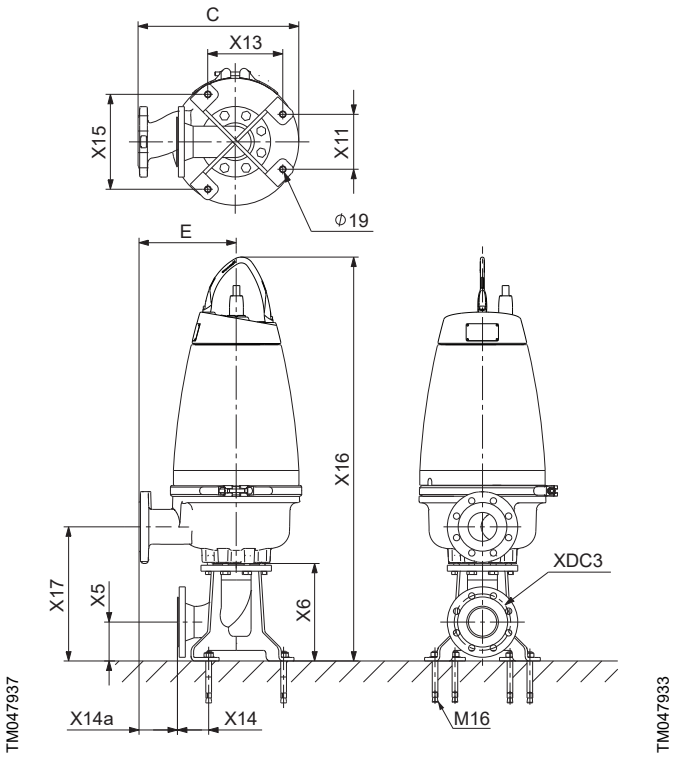


SEV

SE1.50, DN 65 or DN 80 outlet

Pump type	C	E	X5	X6	X11a	X13	X14	X14a	X15	X16	X17	XDC3
SE1.50.65.22.2	381	216	108	248	35	202	83	76	278	973	317	65
SE1.50.65.30.2	381	216	108	248	35	202	83	76	278	973	317	65
SE1.50.65.40.2	408	227	108	248	35	202	83	87	278	1054	319	65
SE1.50.80.22.2	381	216	108	248	35	202	83	76	278	973	317	65
SE1.50.80.30.2	381	216	108	248	35	202	83	76	278	973	317	65
SE1.50.80.40.2	408	227	108	248	35	202	83	87	278	1054	319	65

SE1.80, DN 80 outlet

Pump type	C	E	X5	X6	X11a [1]	X13	X14	X14a	X15	X16	X17	XDC3
SE1.80.80.15.4	457	272	136	340	99	255	106	67	311	1106	434	100
SE1.80.80.22.4	457	272	136	340	99	255	106	67	311	1106	434	100
SE1.80.80.30.4	508	319	136	340	99	255	106	115	311	1218	460	100
SE1.80.80.40.4	508	319	136	340	99	255	106	115	311	1218	460	100
SE1.80.80.55.4	508	319	136	340	99	255	106	115	311	1218	460	100
SE1.80.80.75.4	529	328	136	340	99	255	106	124	311	1281	460	100

1 Base plate DN 150 or DN 100, X11a = 177.5 mm.

SE1.80, DN 100 outlet

Pump type	C	E	X5	X6	X11a [1]	X13	X14	X14a	X15	X16	X17	XDC3
SE1.80.100.15.4	457	272	136	340	99	255	106	67	311	1106	433	100
SE1.80.100.22.4	457	272	136	340	99	255	106	67	311	1106	433	100
SE1.80.100.30.4	508	319	136	340	99	255	106	115	311	1218	460	100
SE1.80.100.40.4	508	319	136	340	99	255	106	115	311	1218	460	100
SE1.80.100.55.4	508	319	136	340	99	255	106	115	311	1218	460	100
SE1.80.100.75.4	529	328	136	340	99	255	106	124	311	1281	460	100

1 Base plate DN 150 or DN 100, X11a = 177.5 mm.

SE1.100, DN 100 or DN 150 outlet

Pump type	C	E	X5	X6	X11a [1]	X13	X14	X14a	X15	X16	X17	XDC3
SE1.100.100.40.4	547	320	159	442	141	339	142	37	396	1326	559	150
SE1.100.100.55.4	547	320	159	442	141	339	142	37	396	1326	559	150
SE1.100.100.75.4	539	312	159	442	141	339	142	29	396	1391	559	150
SE1.100.150.40.4	547	320	159	442	141	339	142	37	396	1326	555	150
SE1.100.150.55.4	547	320	159	442	141	339	142	37	396	1326	555	150
SE1.100.150.75.4	533	306	159	442	141	339	142	23	396	1391	555	150

1 Base plate DN 200 or DN 150, X11a = 230.5 mm.

SEV.65, DN 65 or DN 80 outlet

Pump type	C	E	X5	X6	X11	X13	X14	X14a	X15	X16	X17	XDC3
SEV.65.65.22.2	411	247	111	275	156	213	86	83	269	1043	379	80
SEV.65.65.30.2	411	247	111	275	156	213	86	83	269	1043	379	80
SEV.65.65.40.2	456	276	111	275	156	213	86	112	269	1123	383	80
SEV.65.80.22.2	411	247	111	275	156	213	86	83	269	1044	380	80
SEV.65.80.30.2	397	247	111	275	156	213	86	83	269	1044	380	80
SEV.65.80.40.2	457	277	111	275	156	213	86	113	269	1123	383	80

SEV.80, DN 80 outlet

Pump type	C	E	X5	X6	X11	X13	X14	X14a	X15	X16	X17	XDC3
SEV.80.80.11.4	409	241	111	275	156	213	86	77	269	1070	386	80
SEV.80.80.13.4	409	241	111	275	156	213	86	77	269	1070	386	80
SEV.80.80.15.4	409	241	111	275	156	213	86	77	269	1070	386	80
SEV.80.80.22.4	409	241	111	275	156	213	86	77	269	1070	386	80
SEV.80.80.40.2	456	276	111	275	156	213	86	112	269	1149	381	80
SEV.80.80.60.2	456	276	111	275	156	213	86	112	269	1149	381	80
SEV.80.80.75.2	456	276	111	275	156	213	86	112	269	1149	381	80
SEV.80.80.92.2	489	293	111	275	156	213	86	129	269	1214	400	80
SEV.80.80.110.2	489	293	111	275	156	213	86	129	269	1214	400	80

SEV.80, DN 100 outlet

Pump type	C	E	X5	X6	X11	X13	X14	X14a	X15	X16	X17	XDC3
SEV.80.100.11.4	407	241	111	275	156	213	86	77	269	1070	386	100
SEV.80.100.13.4	407	241	111	275	156	213	86	77	269	1070	386	100
SEV.80.100.15.4	407	241	111	275	156	213	86	77	269	1070	386	100
SEV.80.100.22.4	407	241	111	275	156	213	86	77	269	1070	386	100
SEV.80.100.40.2	466	286	111	275	156	213	86	122	269	1149	381	100
SEV.80.100.60.2	466	286	111	275	156	213	86	122	269	1149	381	100
SEV.80.100.75.2	466	286	111	275	156	213	86	122	269	1149	381	100
SEV.80.100.92.2	499	303	111	275	156	213	86	139	269	1214	400	100
SEV.80.100.110.2	499	303	111	275	156	213	86	139	269	1214	400	100

SEV.100, DN 100 outlet

Pump type	C	E	X5	X6	X11	X13	X14	X14a	X15	X16	X17	XDC3
SEV.100.100.30.4	462	277	136	340	198	255	106	73	311	1229	476	100
SEV.100.100.40.4	462	277	136	340	198	255	106	73	311	1229	476	100
SEV.100.100.55.4	462	277	136	340	198	255	106	73	311	1229	476	100
SEV.100.100.75.4	490	294	136	340	198	255	106	89	311	1305	476	100

11.2 Weights

Pump type	Outlet	Weight [kg]
SE1.50.65.22.2	DN 65	86
SE1.50.65.30.2		90
SE1.50.65.40.2		122
SE1.50.80.22.2	DN 80	87
SE1.50.80.30.2		91
SE1.50.80.40.2		123
SE1.80.80.15.4		100
SE1.80.80.22.4		102
SE1.80.80.30.4		143
SE1.80.80.40.4		152
SE1.80.80.55.4		157
SE1.80.80.75.4		205
SE1.80.100.15.4	DN 100	101
SE1.80.100.22.4		103
SE1.80.100.30.4		145
SE1.80.100.40.4		153
SE1.80.100.55.4		158
SE1.80.100.75.4		207
SE1.100.100.40.4		157
SE1.100.100.55.4		161
SE1.100.100.75.4		207
SE1.100.150.40.4	DN 150	164
SE1.100.150.55.4		169
SE1.100.150.75.4		213
SEV.65.65.22.2	DN 65	89
SEV.65.65.30.2		92
SEV.65.65.40.2		128
SEV.65.80.22.2	DN 80	90
SEV.65.80.30.2		94
SEV.65.80.40.2		126
SEV.80.80.11.4		95
SEV.80.80.13.4		103
SEV.80.80.15.4		103
SEV.80.80.22.4		106
SEV.80.80.40.2		131
SEV.80.80.60.2		141
SEV.80.80.75.2		142
SEV.80.80.92.2		190
SEV.80.80.110.2		195
SEV.80.100.11.4	DN 100	94
SEV.80.100.13.4		102
SEV.80.100.15.4		102
SEV.80.100.22.4		105
SEV.80.100.40.2		133
SEV.80.100.60.2		143
SEV.80.100.75.2		144
SEV.80.100.92.2		191
SEV.80.100.110.2		196
SEV.100.100.30.4		134
SEV.100.100.40.4		141
SEV.100.100.55.4		146
SEV.100.100.75.4		190

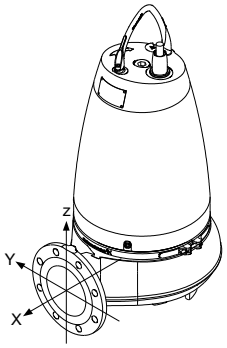
11.3 Flange forces

The flange forces and moments are according to EN ISO 5199.

Forces can be found for both horizontal and vertical installations in Table B.3 in EN ISO 5199 by selecting the correct flange dimension. Forces cannot be used directly for end-suction wastewater pumps without using a coefficient which can be found in Table B.5 in EN ISO 5199 by selecting the correct pump family.

For Grundfos wastewater pumps, the pump families and coefficients are stated below.

- Horizontally installed pumps
  Pump family A4 = Coefficient 0.35
- Vertically installed pumps
  Pump family 10A = Coefficient 0.30



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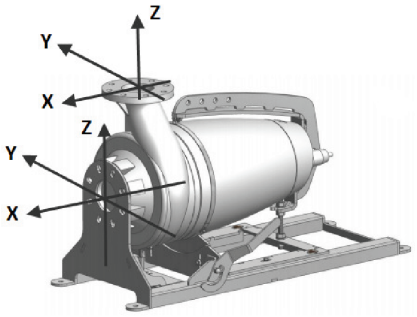

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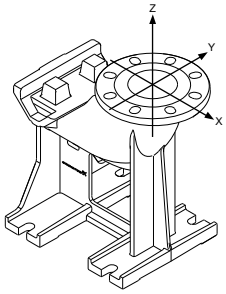

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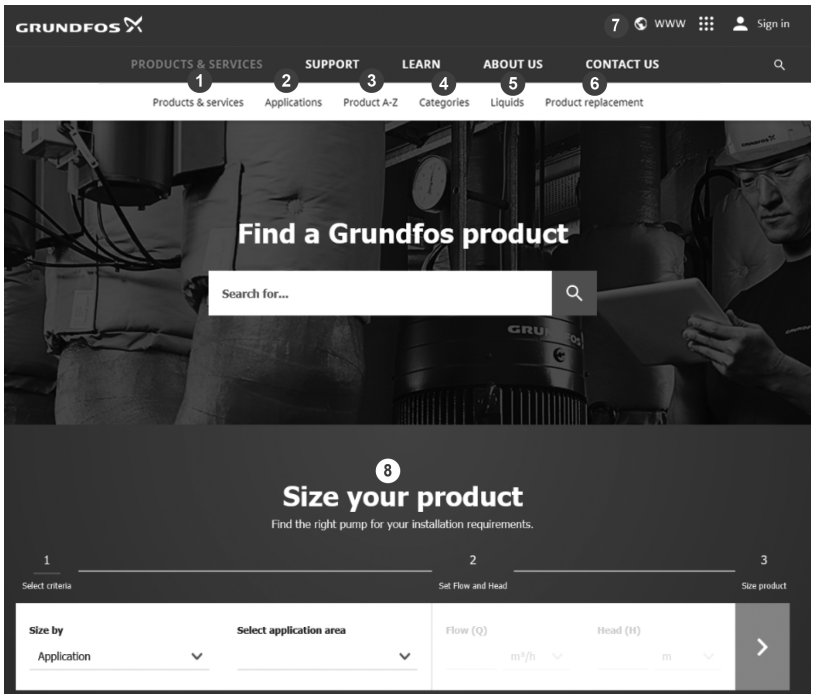

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