



Stainless steel heavy-duty submersible pumps



Grundfos SEN Range

Stainless steel submersible pumps for aggressive environments

Grundfos offers a full range of extremely dependable wastewater pumps, made entirely or partly of high-grade stainless steel. These powerful pumps are built for handling aggressive wastewater, process water, and unscreened raw sewage in aggressive environments.

The stainless steel pumps are available in three different versions: Version R, made entirely of stainless steel; version S, where the pump housing, flange and impeller are stainless steel; and version Q, where only the impeller is stainless steel.



Powerful advantages

➤ Higher pump efficiency over time

State-of-the-art technology makes the Grundfos pumps extremely efficient and highly dependable. Innovative features such as the unique SmartTrim adjustment of impeller clearance provide low life cycle costs.

➤ Less downtime

The inherent non-clogging design of our Super-Vortex impeller pumps and the excellent solids handling capability of our channel impeller pumps guarantee maximum operating time and substantial reductions in maintenance costs caused by pump blockage or clogging.

➤ Lifelong reliability

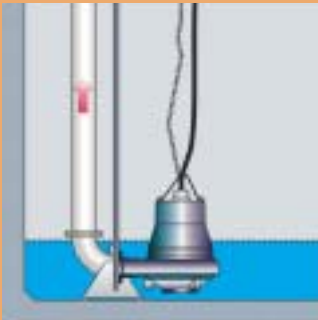
The stainless steel pumps are of a very sturdy construction, designed for continuous pumping under the most difficult operating conditions. The well-proven design is based on our long experience in the wastewater business.

At Grundfos we maintain a close dialogue with our customers in order to constantly improve our pump designs and performance. Only in this way can we build the long-lasting relationships on which our business is founded.



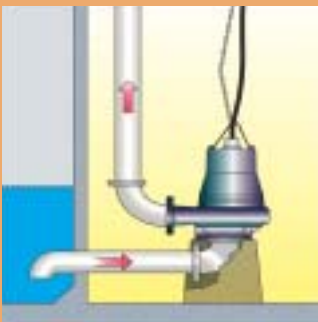
Installation options

Depending on the application, the Grundfos range of stainless steel submersible wastewater pumps is available for submerged or dry installation, or portable use as required.



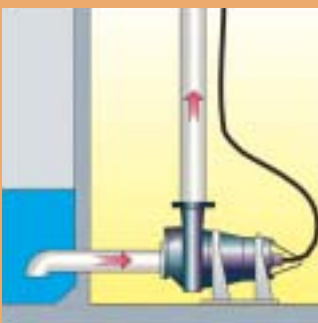
Submerged installation

For submerged installation with auto-coupling system, a base unit with a 90-degree bend, fixed to the bottom of the pit, is required. The pump is lowered into the pit along two guide rails. The pump automatically connects to the base unit, and, on the discharge side of the pump, a flexible neoprene seal – SmartSeal – ensures a leak-proof connection between the pump and the auto-coupling.



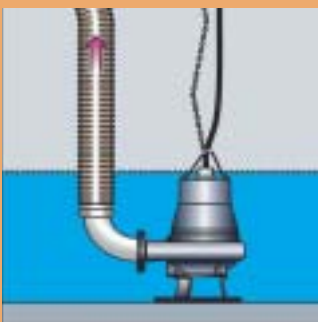
Vertical dry installation

The Grundfos submersible wastewater pumps can be installed either vertically or horizontally to suit specific application arrangements. All pump models are 100% watertight, which allows for dry installation where the workspace surrounding the pump remains clean and dry. However, the pumps are fully flood-proof if the unexpected should occur.



Horizontal dry installation

For reduced operating and installation costs, horizontal dry installation improves the overall efficiency of the system as unnecessary components and bends are avoided. The feasibility of horizontal dry installation, however, depends on the floor space available as the system takes up slightly more room than a vertically installed pump.



Portable submerged application

Certain applications require portable submersible pumps, for instance for emergency use in industry. Where a portable submersible pump is required, hoses of varying lengths and materials can be supplied.

Industrial effluent



The Grundfos stainless steel wastewater pumps are ideal for use in industrial applications where aggressive or corrosive liquids are encountered. The stainless steel parts are made of high-grade steel of DIN/EN 1.4408, 1.4460 or 1.4436 qualities. This makes the pumps suitable for a variety of acidic and corrosive liquids including environments with salt water influx.

Explosion-proof motors

The stainless steel wastewater pumps are available with explosion-proof motors for applications involving a high risk of explosion. For transfer of high-temperature liquids the pumps can be installed with cooling jackets fitted for external cooling water.

The Grundfos stainless steel wastewater pumps are available in three basic versions:

Version Q

– stainless steel impeller. Cast iron pump and motor housing.



Version S

– stainless steel pump housing, flange and impeller. Cast iron motor.



Version R

– made entirely of corrosion-resistant stainless steel.



Typical applications

The pictures show two typical industrial applications



Picture 1 shows one of two Grundfos stainless steel pumps used for pumping pigment-containing channel water with a density of 1.0 - 1.4 kg/dm³ and a maximum viscosity of 250 mPas. Both pumps are fitted with the patented shaft seal flushing system.

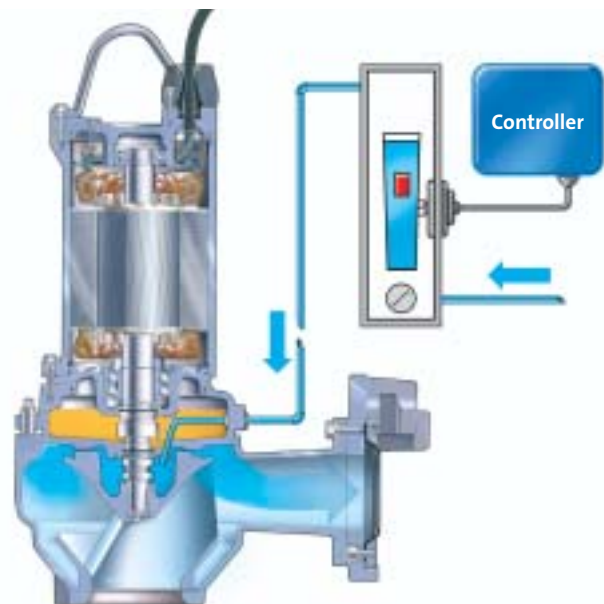


Picture 2 shows one of two Grundfos stainless steel pumps used at a glass wool manufacturing plant for pumping process water with a high content of abrasive particles. Both these pumps are also fitted with the efficient shaft seal flushing system.

Shaft seal flushing system

For applications involving particularly abrasive or sticky liquids, the stainless steel wastewater pumps can be fitted with a unique patented shaft seal flushing system. The system uses water from an external source.

The flushing system operates with a liquid pressure 0.5 bar higher than that of the pumped liquid. This protects the shaft seal from excessive wear, while preventing build-up of abrasives, which may lead to seal failure and pump breakdown.



Tough and reliable pumps...

The Grundfos stainless steel submersible wastewater pumps are built for the toughest environments. Maintaining peak efficiency throughout the entire lifetime of the system is a key issue, and the pumps are designed to reduce energy consumption and to keep downtime costs at a minimum.



Watertight cable entry, DIN/EN 1.4408 stainless steel/PA (depending on pump model) with soft shapes that protect the EPDM power cable.



Watertight encapsulated motor, DIN/EN 1.4408 stainless steel motor housing, insulation class F (155°C), enclosure class IP 68. Three thermal sensors in the stator windings continuously monitor motor temperature and ensure immediate cut-out of motor in the event of overheating.



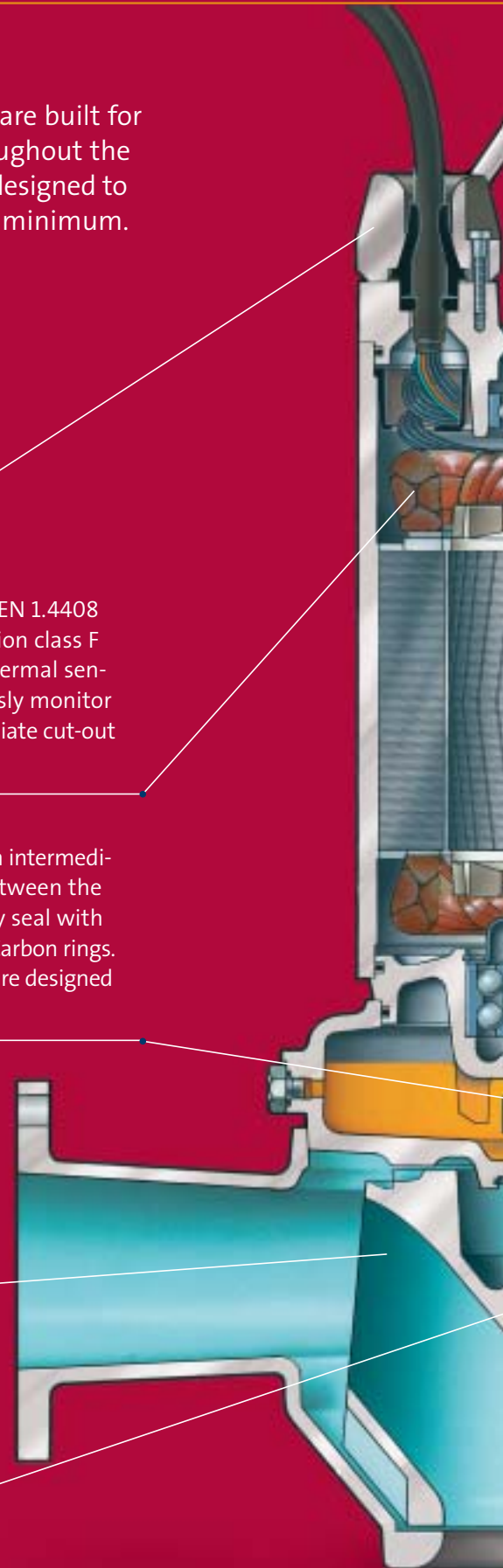
Double mechanical shaft seal system in intermediate oil chamber for reliable sealing between the pumped liquid and the motor. Primary seal with SiC/SiC rings. Secondary seal with SiC/Carbon rings. O-rings of FKM rubber. The shaft seals are designed for rotation in both directions.



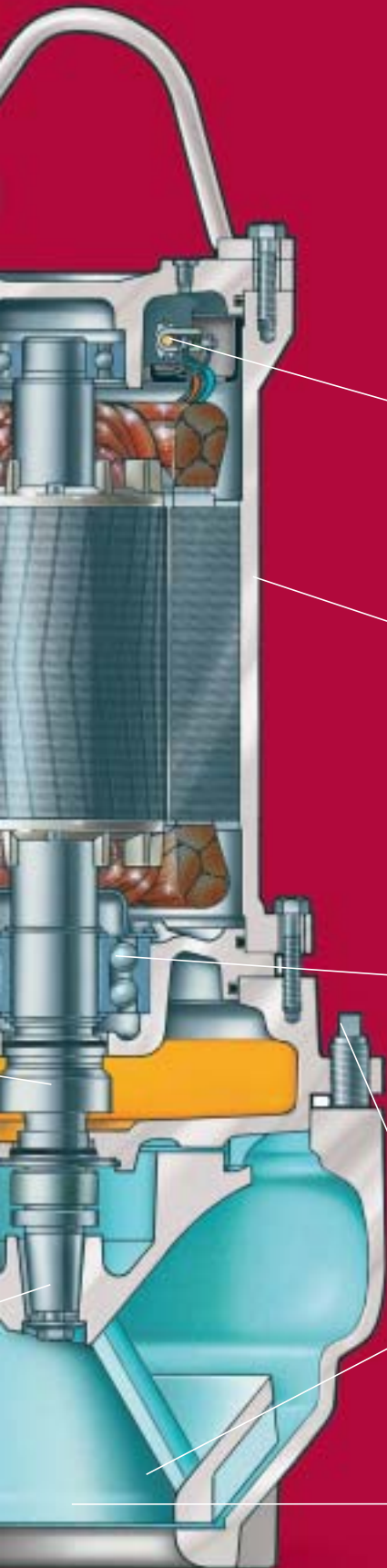
Self-cleaning channel impeller with long vanes that reduce risk of jamming or clogging, or unique SuperVortex impeller, depending on pump model.



DIN/EN 1.4460 stainless steel pump shaft with dynamically balanced rotor and conical shaft end for securing of impeller.



– with many unique features



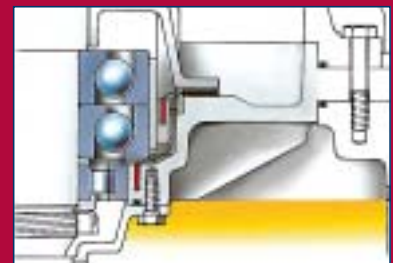
Moisture detector for continuously monitoring of motor enclosure. Automatic power cut-off in the event of leakage.



DIN/EN 1.4408 stainless steel pump housing (depending on pump model, see page 19 for details).



Heavy-duty maintenance-free ball bearings, greased for life. Lower bearing on all pump models consists of double row of ball bearings.



SmartTrim system for easy and quick adjustment of impeller clearance without dismantling the pump. This enables maintaining of factory-set impeller clearance and maximum pump efficiency. Adjustment is done by turning three screws on the pump housing. No special tools are required.



Auxiliary vanes at the bottom of channel impellers prevent back flow and jamming between impeller and pump housing.

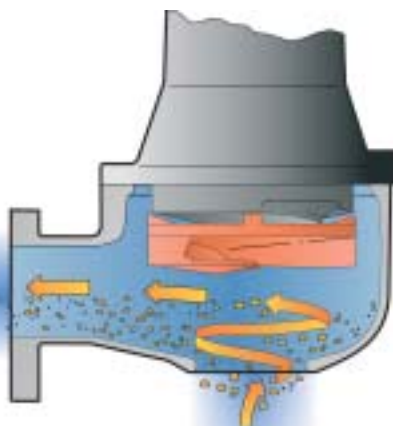


Grundfos SuperVortex



A unique impeller design

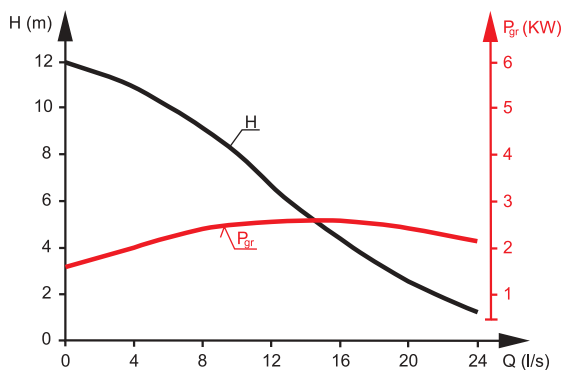
The unique design of the Grundfos SuperVortex impellers provides high pumping efficiency and less down time. With a flow range from 4 l/s, the stainless steel Grundfos SuperVortex pumps are the optimum solution for all smaller pumping stations where aggressive or corrosive liquids are encountered.



No clogging or jamming

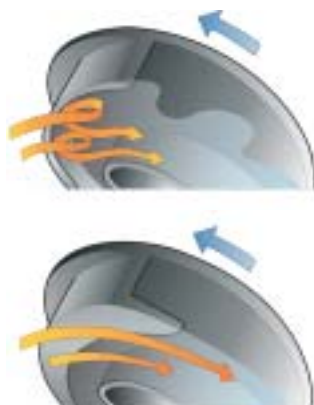
In a SuperVortex pump the flow takes place entirely outside the impeller. The design of the impeller ensures that long fibres, rags, etc. pass freely through the pumps without getting caught and without causing clogging or jamming. This means less downtime and, consequently, reduced service costs and higher pumping efficiency.

The design of the SuperVortex pumps also prevents the common problem of jamming between wear rings. A Grundfos SuperVortex pump needs no wear rings!



Full Q/H curve without operating limitations and vibrations

Due to the special power characteristics of the Grundfos SuperVortex pumps, it is possible to run the pumps from 4 l/s right up to the maximum flow on the curves without any risk of overloading the motor. The steep performance curve means minimal flow fluctuation with varying heads.



Conventional vortex impeller

In pumps fitted with a conventional vortex impeller, turbulent disturbance is liable to form around the impeller. This will disrupt the flow pattern and result in lower pumping efficiency and reduced head.

Grundfos SuperVortex impeller

The liquid passes freely outside the impeller without any turbulent disturbance.

Grundfos channel impellers

Efficient non-clogging

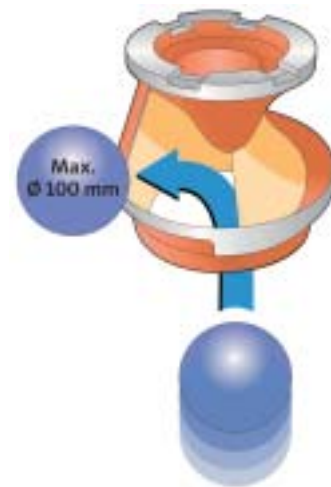
The Grundfos stainless steel channel-impeller pumps provide high efficiency and excellent non-clogging capabilities. The channel impellers are designed with a large free passage – 80 mm or 100 mm, depending on model – and long impeller vanes. Channel-impeller pumps are ideal for heavy-duty operation in larger pumping stations.



Large free passage for superior solids handling

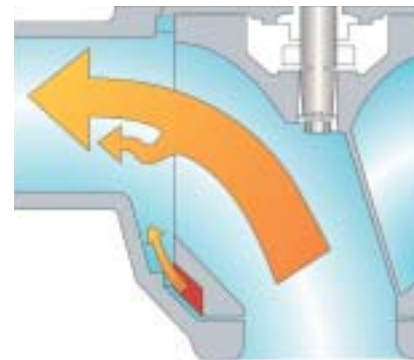
Compromising on the ability to handle solids, in order to obtain higher pumping efficiency, substantially increases the risk of clogging. More clogging means more downtime and increased operating costs.

The Grundfos channel-impeller pumps are capable of handling solids of up to 80 mm or 100 mm size. The full free passage, however, is much larger. The result is less clogging and less downtime.



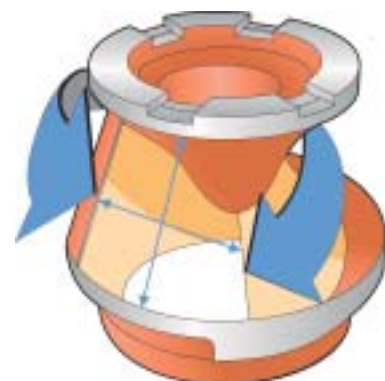
Self-cleaning impeller

On Grundfos wastewater pumps smaller than 12 kW, the bottom part of the channel impellers feature specially designed auxiliary vanes. These vanes are designed to create a powerful flow that keeps the clearance between the impeller and the pump housing free from solids or fibres.



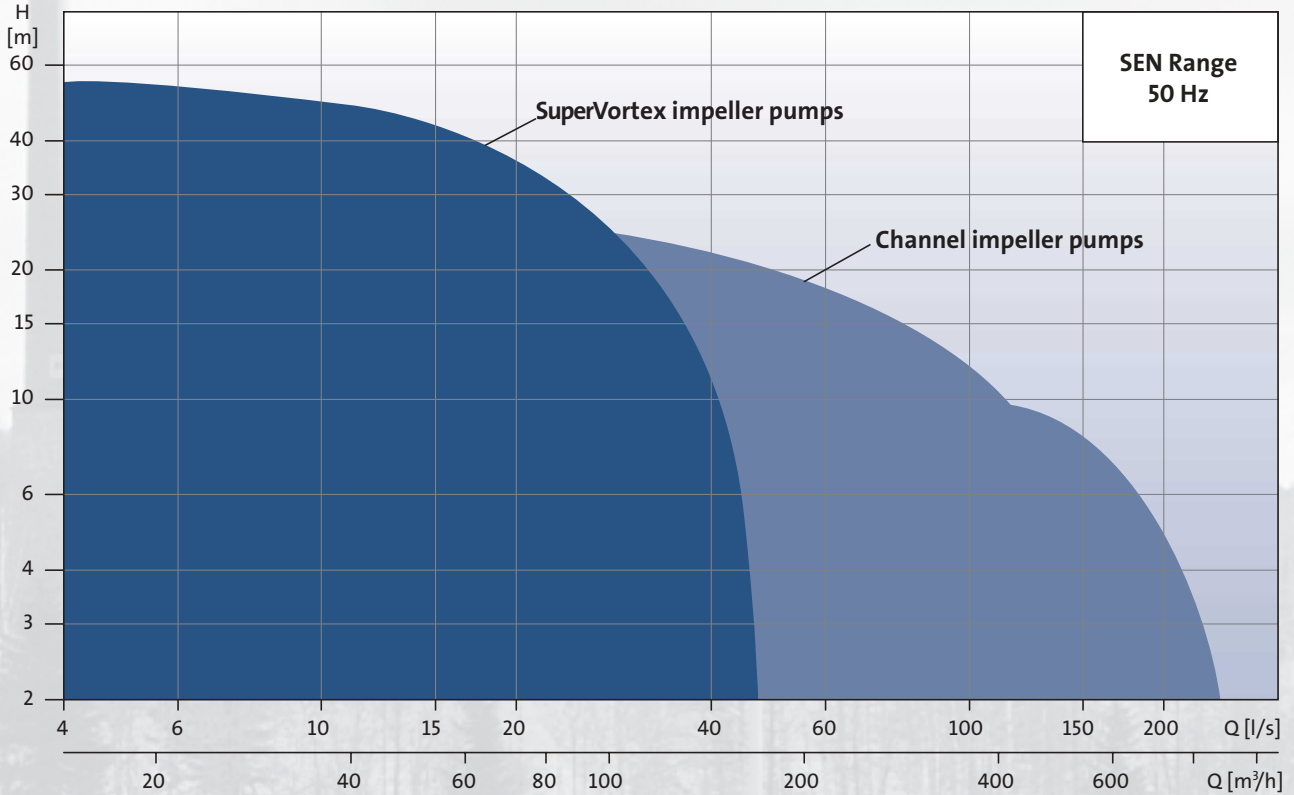
Semi-axial impeller design with long vane

The length of an impeller vane is a key factor in determining the length of fibres that may pass through a pump without getting caught. The Grundfos channel impellers are of a semi-axial design with extra long vanes. This provides maximum performance and eliminates problems with fibres or rags getting caught in the impeller.



Performance overview and type key

Performance overview – stainless steel submersible wastewater pumps

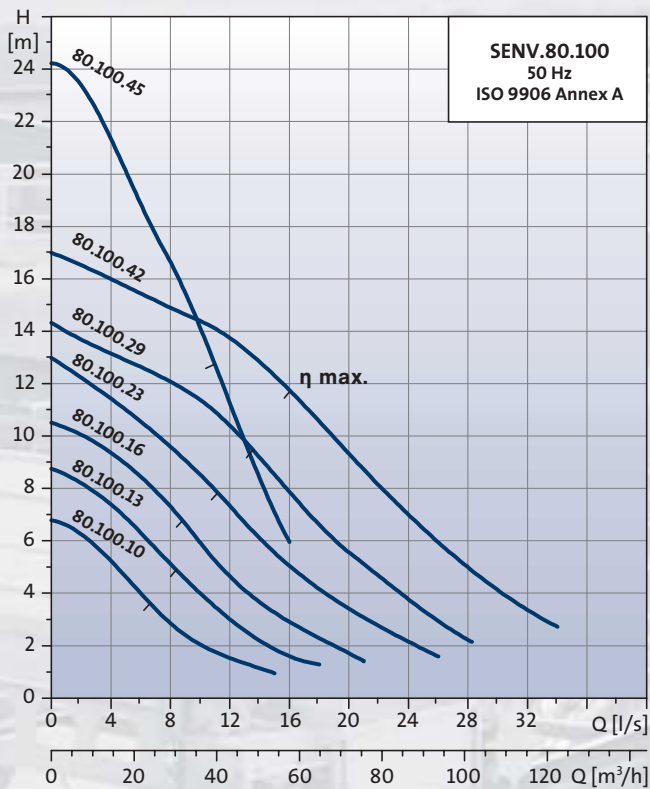
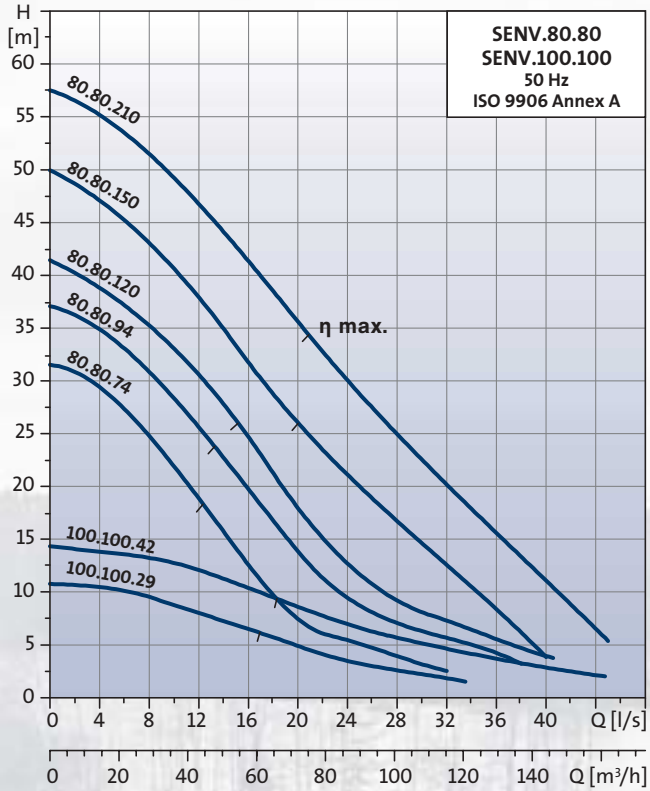


Type key – stainless steel submersible wastewater pumps

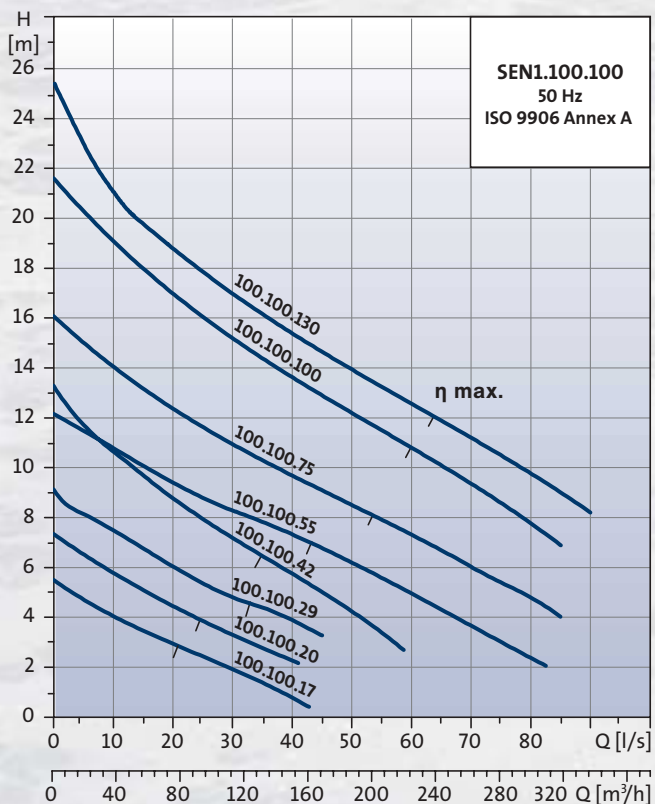
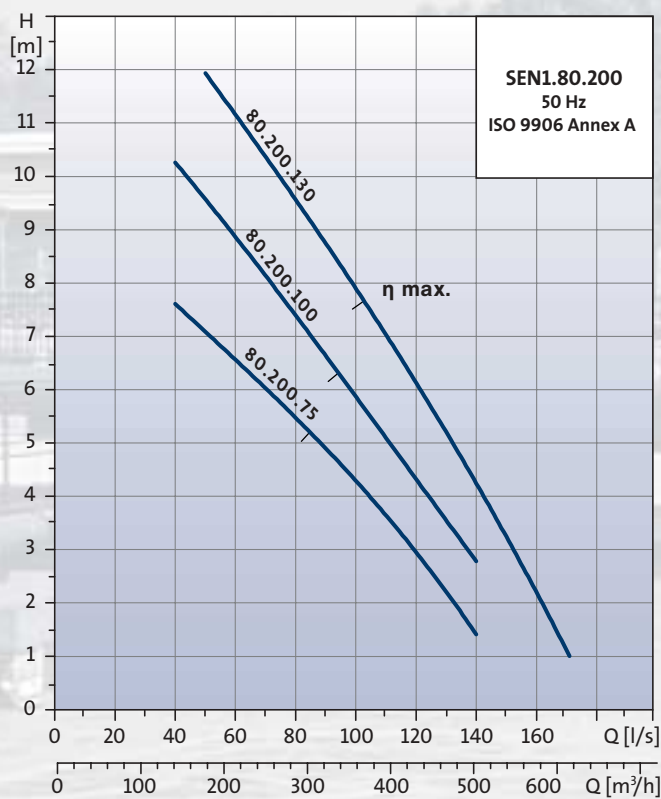
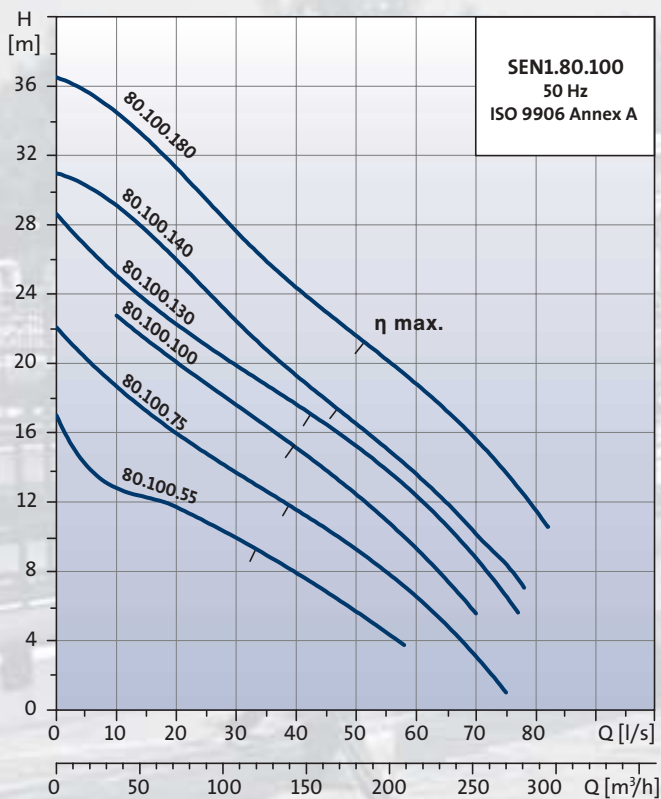
Example SEN1.100.100.130.D.Ex.4.511.Q	SE	N	1	.100	.100	.130	.D	.Ex	4	.511	Q
Pump range											
N	= Stainless steel										
Impeller type											
1	= Figures indicate channel impellers and the number indicates the number of channels										
V	= SuperVortex										
Maximum solids size [mm]											
Nominal diameter of discharge port [mm]											
Motor power output $P_2 / 100$ [W]											
Installation											
Blank	= Without cooling jacket										
D	= With cooling jacket										
Version											
Blank	= Non-explosion-proof										
Ex	= Explosion-proof										
Number of poles											
Frequency, voltage and starting method											
511	= 50 Hz, 400 V, star-delta starting. The first digit indicates the frequency and the next two digits indicate the voltage and starting method.										
5	= 50 Hz										
01	= 400 V, direct-on-line starting										
11	= 400 V, star-delta starting										
Generation											
Blank	= First generation (A)										
B	= Second generation										
C	= Third generation, etc.										
Pump materials											
R	= Pump and motor of stainless steel, DIN W.-Nr. 1.4408										
S	= Hydraulic parts of stainless steel, DIN W.-Nr. 1.4408										
Q	= Cast-iron pump with stainless steel impeller, DIN W.-Nr. 1.4408										

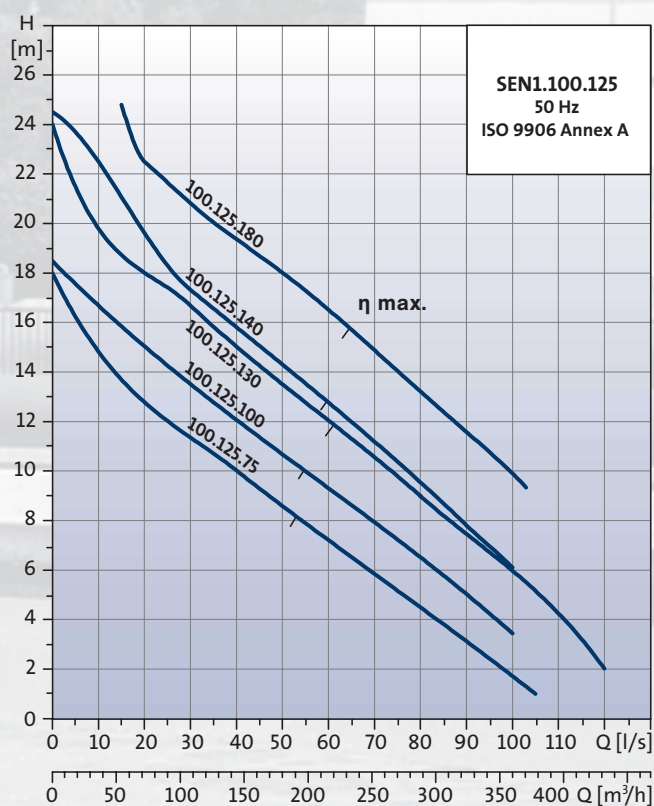
SuperVortex pumps

SuperVortex performance overview



Channel impeller pumps





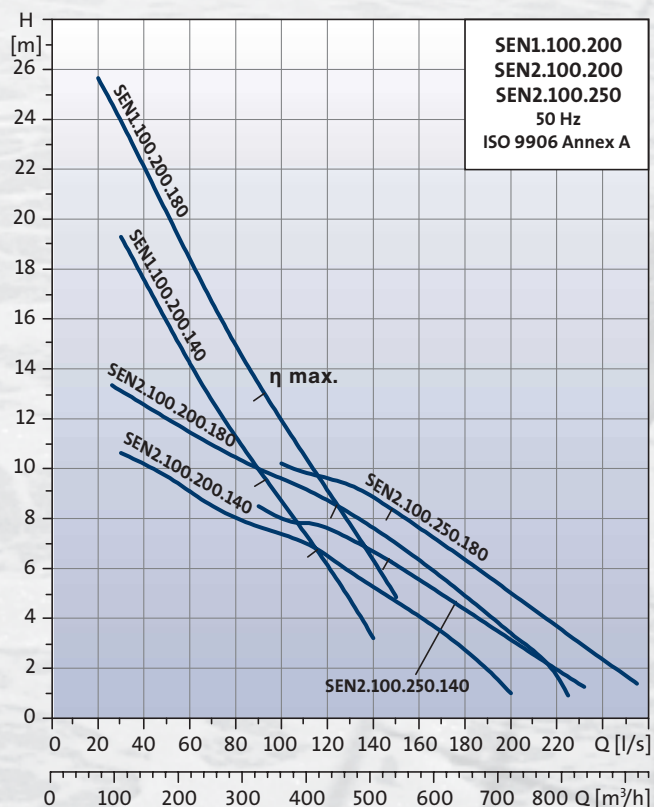
Operating conditions and maximum start-up frequency

Pump usage is restricted by the following limits:

- Maximum ambient temperature and pumped liquid temperature is +40°C
- Storage temperature range -30°C to +60°C
- Maximum submersion is 20 m

Pump start-up frequency should not exceed the recommendations in the table below. For shorter periods of time a start-up frequency of up to double the recommended is permissible.

Motor size	Starts per hour
1 to 4.5 kW	25
5.5 to 21 kW	20



Grundfos SEN stainless steel pumps with cooling jacket.

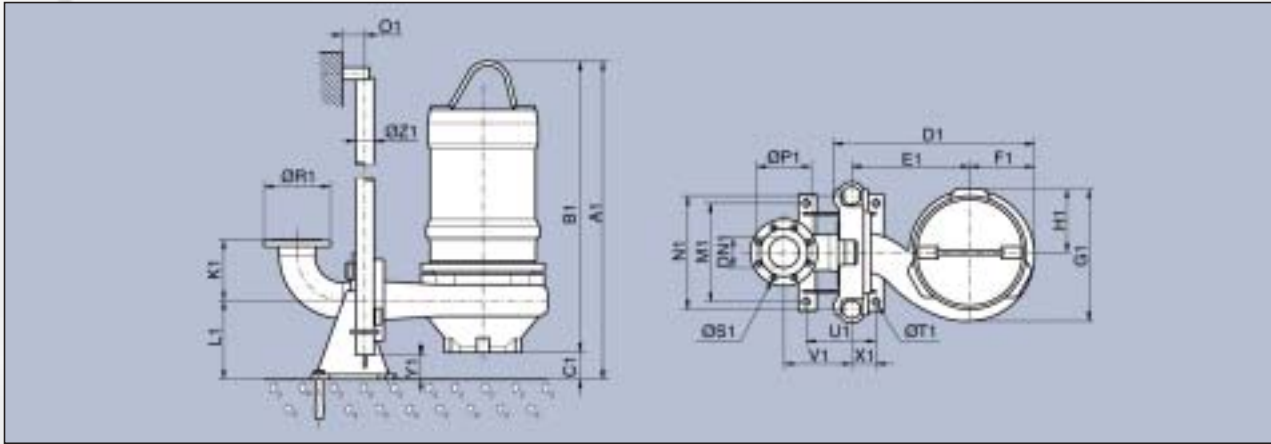
Electrical data and pump designation

Pump type	Max. solids size [mm]	P ₂ [kW]	n [min ⁻¹]	Starting method	I _{1/1} [A]	$\frac{I_s}{I_{1/1}}$	Weight [kg]
SENV.80.80.74 (Ex)	80	7.4	2960	Star/delta	16.6	12.3	180
SENV.80.80.94 (Ex)	80	9.4	2940	Star/delta	19.4	10.4	170
SENV 80.80.120 (Ex)	80	12.0	2910	Star/delta	23.6	7.6	200
SENV 80.80.150 (Ex)	80	15.0	2780	Star/delta	41.2	9.1	250
SENV.80.80.210 (Ex)	80	21.0	2780	Star/delta	41.2	6.6	250
SENV 80.100.10 (Ex)	80	1.0	1440	Direct-on-line	4.3	6.9	60
SENV.80.100.13 (Ex)	80	1.3	1440	Direct-on-line	4.3	6.9	60
SENV 80.100.16 (Ex)	80	1.6	1440	Direct-on-line	4.3	6.9	60
SENV 80.100.23 (Ex)	80	2.3	1400	Direct-on-line	5.4	5.5	60
SENV 80.100.29 (Ex)	80	2.9	1430	Direct-on-line	8.1	6.2	100
SENV 80.100.42 (Ex)	80	4.2	1390	Direct-on-line	10.4	5.0	100
SENV 80.100.45 (Ex)	80	4.5	2840	Direct-on-line	10.2	7.0	100
SENV.100.100.29 (Ex)	100	2.9	1430	Direct-on-line	8.1	6.2	100
SENV.100.100.42 (Ex)	100	4.2	1380	Direct-on-line	10.4	5.0	100
SEN1.80.100.55 (Ex)	80	5.5	1460	Star/delta	13.8	7.4	210
SEN1.80.100.75 (Ex)	80	7.5	1440	Star/delta	16.7	7.4	210
SEN1.80.100.100 (Ex)	80	10.0	1460	Star/delta	22.0	9.6	240
SEN1.80.100.130 (Ex)	80	13.0	1440	Star/delta	26.4	8.3	240
SEN1.80.100.140 (Ex)	80	14.0	1470	Star/delta	33.9	4.9	285
SEN1.80.100.180 (Ex)	80	18.0	1460	Star/delta	37.4	4.4	310
SEN1.80.200.75 (Ex)	80	7.5	1440	Star/delta	16.7	7.4	320
SEN1.80.200.100 (Ex)	80	10.0	1460	Star/delta	22.0	9.6	415
SEN1.80.200.130 (Ex)	80	13.0	1440	Star/delta	26.4	8.3	415
SEN1.100.100.17	100	1.7	910	Direct-on-line	5.5	6.0	110
SEN1.100.100.20 (Ex)	100	2.0	1430	Direct-on-line	8.1	6.2	110
SEN1.100.100.29 (Ex)	100	2.9	1430	Direct-on-line	8.1	6.2	110
SEN1.100.100.42 (Ex)	100	4.2	1390	Direct-on-line	10.5	5.0	110
SEN1.100.100.55 (Ex)	100	5.5	1460	Star/delta	13.8	7.4	205
SEN1.100.100.75 (Ex)	100	7.5	1440	Star/delta	16.7	7.4	200
SEN1.100.100.100 (Ex)	100	10.0	1460	Star/delta	22.0	9.6	215
SEN1.100.100.130 (Ex)	100	13.0	1440	Star/delta	26.4	8.3	215
SEN1.100.125.75 (Ex)	100	7.5	1440	Star/delta	16.7	7.4	235
SEN1.100.125.100 (Ex)	100	10.0	1460	Star/delta	22.0	9.6	235
SEN1.100.125.130 (Ex)	100	13.0	1440	Star/delta	26.4	8.3	235
SEN1.100.125.140 (Ex)	100	14.0	1450	Star/delta	33.9	4.9	320
SEN1.100.125.180 (Ex)	100	18.0	1460	Star/delta	37.4	4.4	310
SEN1.100.200.140 (Ex)	100	14.0	1470	Star/delta	33.9	8.3	390
SEN2.100.200.140 (Ex)	100	14.0	1470	Star/delta	33.9	8.3	400
SEN1.100.200.180 (Ex)	100	18.0	1460	Star/delta	37.4	4.4	390
SEN2.100.200.180 (Ex)	100	18.0	1460	Star/delta	37.4	4.4	405
SEN2.100.250.140 (Ex)	100	14.0	1470	Star/delta	33.9	8.3	470
SEN2.100.250.180 (Ex)	100	18.0	1460	Star/delta	37.4	4.4	545



Dimensions and installation

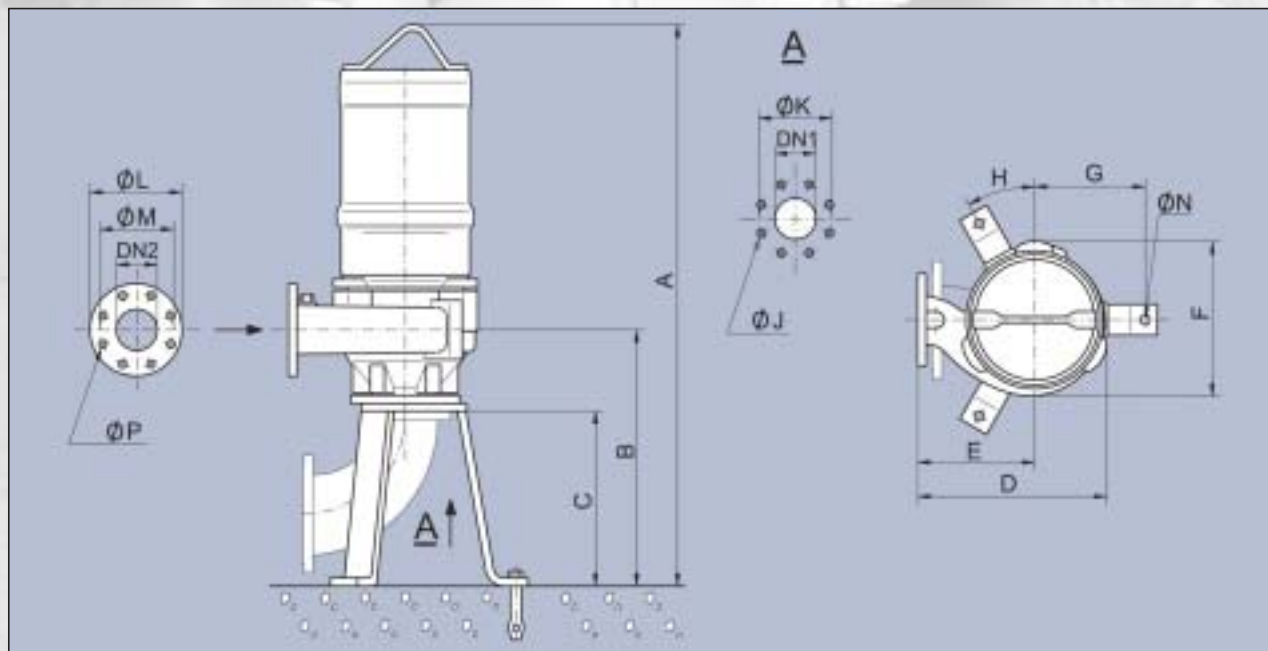
Submerged installation on auto-coupling



Pump type	Dimensions [mm]																							
	DN1	A1	B1	C1	D1	E1	F1	G1	H1	K1	L1	M1	N1	O1	ØP1	ØR1	ØS1	ØT1	U1	V1	X1	Y1	ØZ1	
SENV.80.80.74	100	965	865	100	705	465	180	370	190	120	260	180	220	60	180	220	18	20	205	180	121	180	48	
SENV.80.80.94	100	965	805	100	705	465	180	370	190	120	260	180	220	60	180	220	18	20	205	180	121	180	48	
SENV.80.80.120	100	965	805	100	705	465	180	370	190	120	260	180	220	60	180	220	18	20	205	180	121	180	48	
SENV.80.80.150	80	1055	945	110	610	370	180	395	215	180	260	325	375	75	160	200	18	24	230	203	80	80	60	
SENV.80.80.210	80	1055	945	110	610	370	180	395	215	180	260	325	375	75	160	200	18	24	230	203	80	80	60	
SENV.80.100.10	100	835	650	185	445	270	130	255	130	120	260	180	220	60	180	220	18	20	205	180	121	180	48	
SENV.80.100.13	100	835	650	185	445	270	130	255	130	120	260	180	220	60	180	220	18	20	205	180	121	180	48	
SENV.80.100.16	100	835	650	185	445	270	130	255	130	99	160	184	206	60	180	220	18	20	123	167	65	80	48	
SENV.80.100.23	100	835	650	185	445	270	130	255	130	120	260	180	220	60	180	220	18	20	205	180	121	180	48	
SENV.80.100.29	100	735	655	80	475	270	155	310	155	99	160	184	206	60	180	220	18	20	123	167	65	80	48	
SENV.80.100.42	100	735	655	80	475	270	155	310	155	99	160	184	206	60	180	220	18	20	123	167	65	80	48	
SENV.80.100.45	100	835	655	180	520	310	150	300	150	120	260	180	220	60	180	220	18	20	205	180	121	180	48	
SENV.100.100.29	100	830	690	140	540	330	155	320	155	120	260	180	220	60	180	220	18	20	205	180	121	180	48	
SENV.100.100.42	100	830	690	140	540	330	155	320	155	120	260	180	220	60	180	220	18	20	205	180	121	180	48	
SEN1.80.100.55	100	1000	900	100	585	350	180	375	190	120	260	180	220	60	180	220	18	20	205	180	121	180	48	
SEN1.80.100.75	100	1000	900	100	585	350	180	375	190	120	260	180	220	60	180	220	18	20	205	180	121	180	48	
SEN1.80.100.100	100	1000	900	100	585	350	180	375	190	120	260	180	220	60	180	220	18	20	205	180	121	180	48	
SEN1.80.100.130	100	1000	900	100	585	350	180	375	190	120	260	180	220	60	180	220	18	20	205	180	121	180	48	
SEN1.80.100.140	100	1050	960	90	670	390	215	440	210	200	260	325	375	75	180	220	18	24	230	223	80	80	60	
SEN1.80.100.180	100	1050	960	90	670	390	215	440	210	200	260	325	375	75	180	220	18	24	230	223	80	80	60	
SEN1.80.200.75	200	1130	990	140	950	550	325	625	260	300	400	540	600	150	295	340	22	28	460	320	70	20	88	
SEN1.80.200.100	200	1130	990	140	950	550	325	625	260	300	400	540	600	150	295	340	22	28	460	320	70	20	88	
SEN1.80.200.130	200	1130	990	140	950	550	325	625	260	300	400	540	600	150	295	340	22	28	460	320	70	20	88	
SEN1.100.100.17	100	810	710	100	545	320	165	335	160	120	260	180	220	60	180	220	18	20	205	180	121	180	48	
SEN1.100.100.20	100	810	710	100	545	320	165	335	160	120	260	180	220	60	180	220	18	20	205	180	121	180	48	
SEN1.100.100.29	100	810	710	100	545	320	165	335	160	120	260	180	220	60	180	220	18	20	205	180	121	180	48	
SEN1.100.100.42	100	810	710	100	545	320	165	335	160	120	260	180	220	60	180	220	18	20	205	180	121	180	48	
SEN1.100.100.55	100	1035	935	100	610	375	180	380	190	120	260	180	220	60	180	220	18	20	205	180	121	180	48	
SEN1.100.100.75	100	1035	935	100	610	375	180	380	190	120	260	180	220	60	180	220	18	20	205	180	121	180	48	
SEN1.100.100.100	100	1035	935	100	610	375	180	380	190	120	260	180	220	60	180	220	18	20	205	180	121	180	48	
SEN1.100.100.130	100	1035	935	100	610	375	180	380	190	120	260	180	220	60	180	220	18	20	205	180	121	180	48	
SEN1.100.125.75	150	1130	925	205	735	455	210	435	190	250	380	280	500	100	240	285	22	24	320	265	115	165	77	
SEN1.100.125.100	150	1130	925	205	735	455	210	435	190	250	380	280	500	100	240	285	22	24	320	265	115	165	77	
SEN1.100.125.130	150	1130	925	205	735	455	210	435	190	250	380	280	500	100	240	285	22	24	320	265	115	165	77	
SEN1.100.125.140	150	1185	1000	185	720	432	215	445	210	250	380	280	500	100	240	285	22	24	320	265	115	165	77	
SEN1.100.125.180	150	1185	1000	185	720	432	215	445	210	250	380	280	500	100	240	285	22	24	320	265	115	165	77	
SEN1.100.200.140	200	1215	1020	195	930	590	265	550	235	300	400	540	600	150	295	340	22	28	460	320	70	20	88	
SEN1.100.200.180	200	1215	1020	195	930	590	265	550	235	300	400	540	600	150	295	340	22	28	460	320	70	20	88	
SEN2.100.200.180	200	1215	1020	195	930	590	265	550	235	300	400	540	600	150	295	340	22	28	460	320	70	20	88	
SEN2.100.250.140	250	1205	1060	145	1290	840	370	730	310	350	400	620	700	150	350	395	23	28	500	370	205	270	88	
SEN2.100.250.180	250	1205	1060	145	1290	840	370	730	310	350	400	620	700	150	350	395	23	28	500	370	205	270	88	

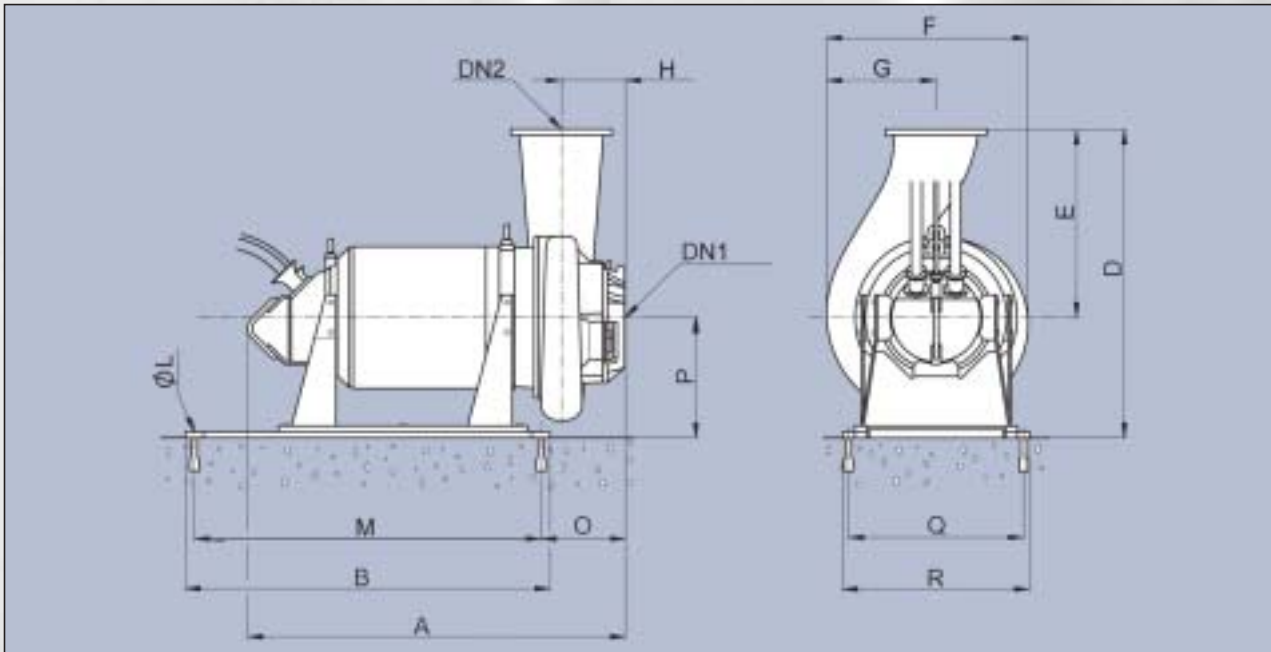
Dimensions and installation

Vertical dry installation



Pump type	Dimensions [mm]															
	DN1	DN2	A	B	C	D	E	F	G	H	ØJ	ØK	ØL	ØM	ØN	ØP
SENV.80.80.94	100	80	1325	620	425	580	400	370	270	30°	M16	180	200	160	24	19
SENV.80.80.120	100	80	1325	620	425	580	400	370	270	30°	M16	180	200	160	24	19
SENV.80.100.10	100	100	1120	545	425	347	217	255	270	30°	M16	180	225	180	24	19
SENV.80.100.13	100	100	1120	545	425	347	217	255	270	30°	M16	180	225	180	24	19
SENV.80.100.16	100	100	1120	545	425	347	217	255	270	30°	M16	180	225	180	24	19
SENV.80.100.29	100	100	1095	525	425	372	217	320	270	30°	M16	180	225	180	24	19
SENV.100.100.29	100	100	1135	565	425	420	265	320	270	30°	M16	180	225	180	24	19
SEN1.80.100.55	100	100	1365	625	425	465	285	375	270	30°	M16	180	200	160	24	19
SEN1.80.100.75	100	100	1365	625	425	465	285	375	270	30°	M16	180	200	160	24	19
SEN1.80.100.100	100	100	1365	625	425	465	285	375	270	30°	M16	180	225	180	24	19
SEN1.80.100.130	100	100	1365	625	425	465	285	375	270	30°	M16	180	225	180	24	19
SEN1.80.100.140	150	100	1605	815	600	570	355	435	300	30°	M20	240	220	180	24	19
SEN1.80.100.180	150	100	1605	815	600	570	355	435	300	30°	M20	240	220	180	24	19
SEN1.80.200.75	200	200	1700	970	700	785	460	625	350	30°	M20	295	340	295	24	24
SEN1.80.200.100	200	200	1700	970	700	785	460	625	350	30°	M20	295	340	295	24	24
SEN1.80.200.130	200	200	1700	970	700	785	460	625	350	30°	M20	295	340	295	24	24
SEN1.100.100.17	100	100	1150	600	425	425	257	335	270	30°	M16	180	220	180	24	19
SEN1.100.100.20	100	100	1150	600	425	425	257	335	270	30°	M16	180	220	180	24	19
SEN1.100.100.29	100	100	1150	600	425	425	257	335	270	30°	M16	180	220	180	24	19
SEN1.100.100.55	150	100	1575	805	600	492	312	380	300	30°	M20	240	225	180	24	19
SEN1.100.100.75	150	100	1575	805	600	492	312	380	300	30°	M20	240	225	180	24	19
SEN1.100.100.100	150	100	1575	805	600	492	312	380	300	30°	M20	240	225	180	24	19
SEN1.100.100.130	150	100	1575	805	600	492	312	380	300	30°	M20	240	225	180	24	19
SEN1.100.130.75	150	130	1565	815	600	590	380	435	300	30°	M20	240	250	210	24	19
SEN1.100.130.100	150	130	1565	815	600	590	380	435	300	30°	M20	240	250	210	24	19
SEN1.100.130.130	150	130	1570	815	600	590	380	435	300	30°	M20	240	250	210	24	19
SEN1.100.125.140	150	125	1640	840	600	575	360	445	300	30°	M20	240	250	210	24	19
SEN1.100.125.180	150	125	1640	840	600	575	360	445	300	30°	M20	240	250	210	24	19
SEN1.100.200.140	200	200	1730	920	700	765	500	550	350	30°	M20	295	340	295	24	24
SEN2.100.200.140	200	200	1730	920	700	765	500	550	350	30°	M20	295	340	295	24	24
SEN1.100.200.180	200	200	1730	920	700	765	500	550	350	30°	M20	295	340	295	24	24
SEN2.100.200.180	200	200	1730	920	700	765	500	550	350	30°	M20	295	340	295	24	24
SEN2.100.250.140	250	250	1910	1105	825	1120	750	730	400	30°	M20	350	406	350	28	24
SEN2.100.250.180	250	250	1910	1105	825	1120	750	730	400	30°	M20	350	406	350	28	24

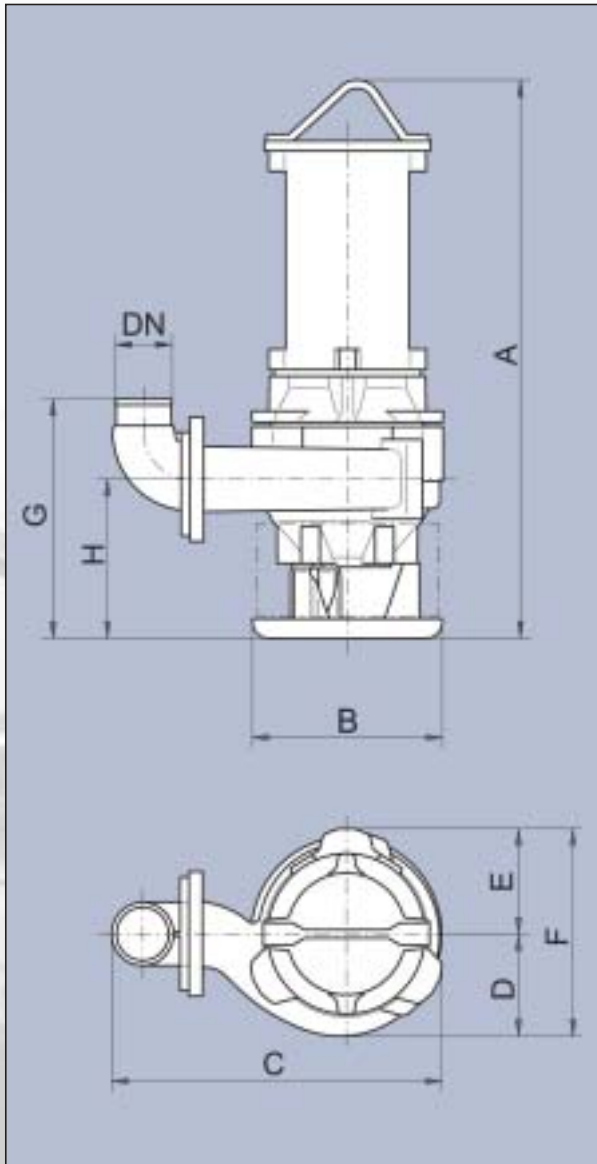
Horizontal dry installation



Pump type	Dimensions [mm]														
	DN1	DN2	A	B	D	E	F	G	H	ØL	M	O	P	Q	R
SENV.80.80.94	100	80	895	820	700	400	370	180	195	18	500	115	300	390	450
SENV.80.80.120	100	80	895	820	700	400	370	180	195	18	500	115	300	390	450
SENV.80.100.10	100	100	705	250	417	217	275	150	118	20	–	130	200	190	250
SENV.80.100.13	100	100	705	250	417	217	275	150	118	20	–	130	200	190	250
SENV.80.100.16	100	100	705	250	417	217	275	150	118	20	–	130	200	190	250
SENV.80.100.29	100	100	675	250	437	217	320	160	102	20	150	57	220	230	300
SENV.100.100.29	100	100	715	250	485	265	320	165	142	20	150	57	220	230	300
SEN1.80.100.55	100	100	935	820	585	285	375	190	195	20	500	115	300	390	450
SEN1.80.100.75	100	100	935	820	585	285	375	190	195	20	500	115	300	390	450
SEN1.80.100.100	100	100	935	820	585	285	375	190	195	20	500	115	300	390	450
SEN1.80.100.130	100	100	935	820	585	285	375	190	195	20	500	115	300	390	450
SEN1.80.100.140	150	100	1020	820	655	355	440	230	185	20	500	115	375	390	450
SEN1.80.100.180	150	100	1020	820	655	355	440	230	185	20	500	115	375	390	450
SEN1.80.200.75	200	200	1000	820	860	460	625	365	275	18	500	115	400	390	450
SEN1.80.200.100	200	200	1000	820	860	460	625	365	275	18	500	115	400	390	450
SEN1.80.200.130	200	200	1000	820	860	460	625	365	275	18	500	115	400	390	450
SEN1.100.100.17	100	100	735	250	477	257	335	175	180	20	150	57	220	230	335
SEN1.100.100.20	100	100	735	250	477	257	335	175	180	20	150	57	220	230	335
SEN1.100.100.29	100	100	735	250	477	257	335	175	180	20	150	57	220	230	335
SEN1.100.100.55	150	100	960	820	610	310	380	190	190	20	500	130	300	390	450
SEN1.100.100.75	150	100	960	820	610	310	380	190	190	20	500	130	300	390	450
SEN1.100.100.100	150	100	960	820	610	310	380	190	190	20	500	130	300	390	450
SEN1.100.100.130	150	100	960	820	612	312	380	190	175	20	500	130	300	390	450
SEN1.100.130.75	150	130	950	820	680	380	430	240	200	20	500	130	300	390	450
SEN1.100.130.100	150	130	950	820	680	380	430	240	200	20	500	130	300	390	450
SEN1.100.130.130	150	130	950	820	680	380	430	240	200	20	500	130	300	390	450
SEN1.100.125.140	150	125	1035	820	735	360	555	345	210	20	500	100	375	390	450
SEN1.100.125.180	150	125	1035	820	735	360	555	345	210	20	500	100	375	390	450
SEN1.100.200.140	200	200	1045	820	875	500	550	315	220	20	500	115	375	390	450
SEN2.100.200.140	200	200	1045	820	875	500	550	315	220	20	500	115	375	390	450
SEN1.100.200.180	200	200	1045	820	875	500	550	315	220	20	500	115	375	390	450
SEN2.100.200.180	200	200	1045	820	875	500	550	315	220	20	500	115	375	390	450
SEN2.100.250.140	250	250	1070		1250	750	730	420	265	18	500	115	500	390	450
SEN2.100.250.180	250	250	1070		1250	750	730	420	265	18	500	115	500	390	450

Dimensions and installation

Submerged free-standing installation



Pump type	Dimensions [mm]								
	DN	A	B	C	D	E	F	G	H
SENV.80.80.74	100	930	350	555	180	180	370	460	290
SENV.80.80.94	100	930	350	555	180	180	370	460	290
SENV.80.80.120	100	930	350	555	180	180	370	460	290
SENV.80.80.150	80	1080	350	635	180	215	395	430	280
SENV.80.80.210	80	1080	350	635	180	215	395	430	280
SENV.80.100.10	80	735	305	490	150	125	275	305	160
SENV.80.100.13	80	735	305	490	150	125	275	305	160
SENV.80.100.16	80	735	305	490	150	125	275	305	160
SENV.80.100.23	80	735	305	490	150	125	275	305	160
SENV.80.100.29	80	765	305	490	155	155	310	355	195
SENV.80.100.42	80	765	305	490	155	155	310	355	195
SENV.80.100.45	100	725	305	545	150	150	300	335	190
SENV.100.100.29	100	805	305	565	165	155	320	380	230
SENV.100.100.42	100	805	305	565	165	155	320	380	230
SEN1.80.100.55	100	1035	350	610	185	190	375	435	290
SEN1.80.100.75	100	1035	350	610	185	190	375	435	290
SEN1.80.100.100	100	1035	350	610	185	190	375	435	290
SEN1.80.100.130	100	1035	350	610	185	190	375	435	290
SEN1.80.100.140	100	1070	550	775	230	210	550	550	280
SEN1.80.100.180	100	1070	550	775	230	210	550	550	280
SEN1.80.200.75	200	1110	550	1210	365	275	640	815	380
SEN1.80.200.100	200	1110	550	1210	365	275	640	815	380
SEN1.80.200.130	200	1110	550	1210	365	275	640	815	380
SEN1.100.100.17	100	820	305	570	175	160	335	415	270
SEN1.100.100.29	100	820	305	570	175	160	335	415	270
SEN1.100.100.42	100	820	305	570	175	160	335	415	270
SEN1.100.100.55	100	1075	350	640	190	190	380	450	300
SEN1.100.100.75	100	1075	350	640	190	190	380	450	300
SEN1.100.100.100	100	1075	350	640	190	190	380	450	300
SEN1.100.100.130	100	1075	350	640	190	190	380	450	300
SEN1.100.130.75	150	1060	350	870	240	190	430	590	310
SEN1.100.130.100	150	1060	350	870	240	190	430	590	310
SEN1.100.130.130	150	1060	350	870	240	190	430	590	310
SEN1.100.125.140	150	1105	550	915	235	210	550	585	305
SEN1.100.125.180	150	1105	550	915	235	210	550	585	305
SEN1.100.200.140	200	1125	550	1200	315	235	590	750	315
SEN2.100.200.140	200	1125	550	1200	315	235	590	750	315
SEN1.100.200.180	200	1125	550	1200	315	235	590	750	315
SEN2.100.200.180	200	1125	550	1200	315	235	590	750	315
SEN2.100.250.140									
SEN2.100.250.180									

Pumped liquids

The Grundfos SEN stainless steel wastewater pumps are suitable for pumping:

- Sewage and wastewater containing long fibres and solids up to 80 mm or 100 mm.
- Industrial effluent containing abrasives or sticky material.
- Aggressive or corrosive drainwater and effluent
- Sludge and drainwater from aggressive or corrosive environments.

Liquid temperature: 0°C to +40°C.

Max. density: 1000 kg/m³.

Motor

2, 4 and 6-pole motors for 50 Hz with voltage tolerance of ± 10%. All motors have a built-in protection device consisting of three thermal switches embedded in the stator windings and a mechanically activated moisture-sensing micro switch below the motor top cover.

Voltage tolerances: 2.9 kW - 4.5 kW + 5% - 15%

Other motors + 10% - 10%

50Hz motors with windings for other voltages available on request, including the entire pump range wound for 60 Hz.

Enclosure class: IP 68.

Insulation Class: F (155°C).

Material specifications

Version R

Part	Material	DIN / EN	AISI
Stator housing	Cast stainless steel	1.4408	CF-8M
Pump housing	Cast stainless steel	1.4408	CF-8M
Guide claw (for pumps installed on auto-coupling only)	Cast stainless steel	1.4408	CF-8M
Impeller	Cast stainless steel	1.4408	CF-8M
Pump shaft	Stainless steel	1.4460	329
Bolts and nuts	Stainless steel	1.4436	316
Cooling jacket (5.5-21.0 kW)	Cast stainless steel	1.4408	CF-8M
O-rings	NBR		
O-rings, mechanical shaft seal	FKM		
Bearings	Heavy-duty prelubricated ball bearings		
Primary shaft seal	SiC/SiC		
Secondary shaft seal	SiC/carbon		
Lifting bracket (1.0-4.5 kW)	Stainless steel	1.4436	316
Lifting bracket (5.5-21.0 kW)	Stainless steel	1.4436	316
Cables	EPDM		
Cable entry	Cast stainless steel	1.4408	CF-8M
Surface protection	150 my two-component epoxy coating		
Oil	SAE 10 W 30		

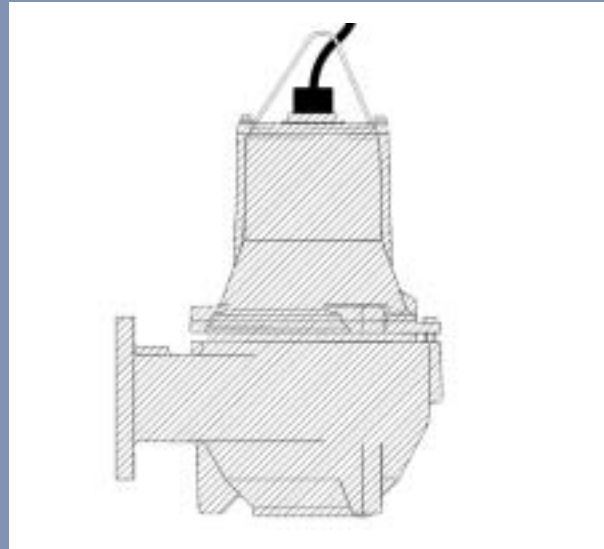
Version S

Part	Material	DIN / EN	AISI
Stator housing	Cast iron	EN-JL1040	
Pump housing	Cast stainless steel	1.4408	CF-8M
Guide claw (for pumps installed on auto-coupling only)	Cast stainless steel	1.4408	CF-8M
Impeller	Cast stainless steel	1.4408	CF-8M
Pump shaft	Stainless steel	1.4460	329
Bolts and nuts	Stainless steel	1.4436	316
Cooling jacket (5.5-21.0 kW)	Ductile iron	EN-JS1050	
O-rings	NBR		
O-rings, mechanical shaft seal	FKM		
Bearings	Heavy-duty prelubricated ball bearings		
Primary shaft seal	SiC/SiC		
Secondary shaft seal	SiC/carbon		
Lifting bracket (1.0-4.5 kW)	Stainless steel	1.4436	316
Lifting bracket (5.5-21.0 kW)	Ductile iron	EN-JS1050	
Cables	EPDM		
Cable	entry PA		
Surface protection	150 my two-component epoxy coating		
Oil	SAE 10 W 30		

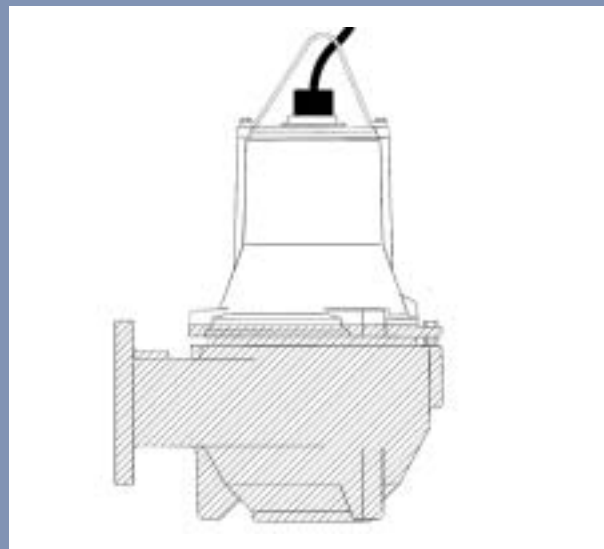
Version Q

Part	Material	DIN / EN	AISI
Stator housing	Cast iron	EN-JL1040	
Pump housing	Cast iron	EN-JL1040	
Guide claw (for pumps installed on auto-coupling only)	Cast iron	EN-JL1040	
Impeller	Cast stainless steel	1.4408	CF-8M
Pump shaft	Stainless steel	1.4460	329
Bolts and nuts	Stainless steel	1.4436	316
Cooling jacket (5.5-21.0 kW)	Ductile iron	EN-JS1050	
O-rings	NBR		
O-rings, mechanical shaft seal	FKM		
Bearings	Heavy-duty prelubricated ball bearings		
Primary shaft seal	SiC/SiC		
Secondary shaft seal	SiC/carbon		
Lifting bracket (1.0-4.5 kW)	Stainless steel	1.4436	316
Lifting bracket (5.5-21.0 kW)	Ductile iron	EN-JS1050	
Cables	EPDM		
Cable	entry PA		
Surface protection	150 my two-component epoxy coating		
Oil	SAE 10 W 30		

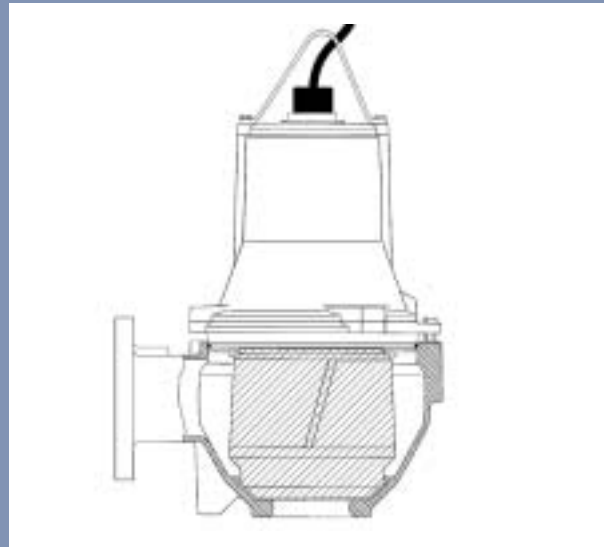
Entirely stainless steel



Hydraulic parts of stainless steel



Stainless steel impeller



Pump types and product numbers

The Grundfos SEN range of stainless steel pumps comprises models with standard motors as well as explosion-proof motors for mains supply of 3 x 400 V, 50 Hz.

All SEN pump models have a built-in thermal switch and a moisture sensor. The pumps are supplied with 8 m cable with protection sleeve on the free cable end. The pumps must be connected to a separate motor starter.

Pump type	Product number					
	Submerged version			Dry version		
	Q	S	R	Q	S	R
SENV.80.80.74	96089703	96089705	96089707			
SENV.80.80.94	96089715	96089717	96089719			
SENV.80.80.120	96089727	96089729	96089731	96089728	96089730	96089732
SENV.80.80.150	96089739	96089740	96089741			
SENV.80.80.210	96089745	96089746	96089747			
SENV.80.100.10	96089661		96089663	96089661		96089663
SENV.80.100.13	96089667		96089669	96089667		96089669
SENV.80.100.16	96089673		96089675	96089673		96089675
SENV.80.100.23	96089679		96089681			
SENV.80.100.29	96089685	96089686	96089687	96089685	96089686	96089687
SENV.80.100.42	96089691	96089692	96089693			
SENV.80.100.45	96089697	96089698	96089699			
SENV.100.100.29	96089751	96089753	96089755	96089751	96089753	96089755
SENV.100.100.42	96089763	96089764	96089765			
SEN1.80.100.55	96089769	96089771	96089773	96089770	96089772	96089774
SEN1.80.100.75	96089781	96089783	96089785	96089782	96089784	96089786
SEN1.80.100.100	96089805	96089807	96089809	96089806	96089808	96089810
SEN1.80.100.130	96089829	96089831	96089833	96089830	96089832	96089834
SEN1.80.100.140	96089853	96089855	96089857	96089854	96089856	96089858
SEN1.80.100.180	96089865	96089867	96089869	96089866	96089868	96089870
SEN1.80.200.75	96089793	96089795	96089797	96089794	96089796	96089798
SEN1.80.200.100	96089817	96089819	96089821	96089818	96089820	96089822
SEN1.80.200.130	96089841	96089843	96089845	96089842	96089844	96089846
SEN1.100.100.17	96089877	96089879	96089881	96089877	96089879	96089881
SEN1.100.100.20	96089889	96089891	96089893	96089889	96089891	96089893
SEN1.100.100.29	96089901	96089903	96089905	96089901	96089903	96089905
SEN1.100.100.42	96089913	96089914	96089915	96089913	96089914	96089915
SEN1.100.100.55	96089919	96089921	96089923	96089920	96089922	96089924
SEN1.100.100.75	96089931	96089933	96089935	96089932	96089934	96089936
SEN1.100.100.100	96089955	96089957	96089959	96089956	96089958	96089960
SEN1.100.100.130	96089979	96089981	96089983	96089980	96089982	96089984
SEN1.100.125.75	96089943	96089945	96089947	96089944	96089946	96089948
SEN1.100.125.100	96089967	96089969	96089971	96089968	96089970	96089972
SEN1.100.125.130	96089991	96089993	96089995	96089992	96089994	96089996
SEN1.100.125.140	96090003	96090005	96090007	96090004	96090006	96090008
SEN1.100.125.180	96090051	96090053	96090055	96090052	96090054	96090056
SEN1.100.200.140	96090015	96090017	96090019	96090016	96090018	96090020
SEN2.100.200.140	96090027	96090029	96090031	96090028	96090030	96090032
SEN1.100.200.180	96090063	96090065	96090067	96090064	96090066	96090068
SEN2.100.200.180	96090075	96090077	96090079	96090076	96090078	96090080
SEN2.100.250.140	96090039	96090041	96090043	96090040	96090042	96090044
SEN2.100.250.180	96090087	96090089	96090091	96090088	96090090	96090092

Some pump models are suitable for submerged as well as dry installation (e.g. SENV.80.100.10).

These pump models will appear with identical product number in the table.


All pump types are available in explosion-proof version.

Accessories


	Description	Pump type						Product number			
		80.80	80.100	80.200	100.100	100.125	100.200	100.250	Material		
									Stainless steel	Cast iron/ steel	
	Auto-coupling. Incl. guide claw, profile seal, guide rail bracket and screws. For submerged installation. See page 15 for auto-coupling outlet dimensions (DN).	Pump outlet									
		DN 80 for 7.4-12.0 kW	•							96090109	96094504
		DN 80 for 15.0-21.0 kW	•							96090122	96094508
		DN 100 for 1.0-4.5 kW		•		•				96090104	96094503
		DN 100 for 5.5-13.0 kW		•		•				96090111	96094505
		DN 100 for 14.0-18.0 kW		•						96090124	96094509
		DN 125 for 7.5-18.0 kW					•			96090114	96094506
		DN 200 for 7.5-18.0 kW			•			•		96090118	96094507
DN 250 for 14.0-18.0 kW							•	96090131	96094510		
	Ring stand. Incl. 90° bend for hose connection, screws and gaskets. For submerged installation, portable.	Hose connection									
		80 mm for 15.0-21.0 kW	•							96090106	96094511
		100 mm for 1.0-4.5 kW		•		•				96090112	96094512
		100 mm for 5.5-13.0 kW		•		•				96090116	96094513
		100 mm for 14.0-18.0 kW		•						96090120	96094514
		150 mm for 7.5 - 13.0 kW					•			96090123	96094515
		150 mm for 14.0 - 18.0 kW						•		96090126	96094516
		200 mm for 7.5 - 13.0 kW			•					96090128	96094517
200 mm for 14.0 - 18.0 kW						•		96090130	96094518		
	Base stand. Incl. screws and gaskets. Not including 90° suction bend. For vertical dry installation.	Pump outlet									
		DN 80/100	•(1)	•(2)						96090101	96094519
		DN 100 for 1.7-2.9 kW		•(3)		•				96090105	96094520
		DN 100 for 5.5-13.0 kW		•		•				96090110	96094521
		DN 125 for 7.5-14.0 kW					•			96090115	96094522
		DN 200 for 7.5-18.0 kW			•			•		96090119	96094523
		DN 100/125 for 14.0 -18.0 kW		•			•(4)			96090125	96094524
DN 250 14.0 -18.0 kW							•	96090132	96094525		
	Base stand. Incl. screws and bracket. For horizontal dry installation.	Pump outlet									
		DN 100 for 1.0-1.6 kW		•						96090135	96094526
		DN 100 for 1.7-2.9 kW		•		•				96090133	96094527
		DN 200 for 7.5-13.0 kW			•					96090134	96094528
		DN 100 for 5.5-13.0 kW	•	•						96090136	96094529
		DN 100/125 for 5.5-13.0 kW				•	•			96090137	96094530
		DN 200 for 14.0-18.0 kW						•		96090138	96094531
		DN 250 for 14.0-18.0 kW							•	96090139	96094532
DN 100/125 for 14.0-18.0 kW		•			•			96090140	96094533		
	90° suction bend with flanges. For vertical dry installation.	Flange connection									
		DN 80/80								96480844	96060928
		DN 100/100								96480845	96060930
		DN 150/150								96480846	96060934
		DN 200/200								96480847	96060938
DN 250/250								96480848	96060942		
	Lifting chain with shackle. Max. load 1100 kg.	Length of chain									
		4 m								96094534	96468283
		6 m								96068195	96468285
8 m								96094535	96468286		
	Signal lamp. Outdoor installation 1 x 230 V									62500020	
	Acoustic signal (horn). 1 x 230 V	Outdoor installation								62500021	
		Indoor installation								62500022	

(1): 9.4 - 12.0 kW, (2): 1.0 - 1.6 kW, (3): 2.9 kW only, (4): 18.0 kW

Level switches and controllers

Level switch	Description	Product number	
	Float switch, non-mercury. 1 switch with 10 m cable	96 00 33 32	
	Float switch with 20 m cable	96 00 36 95	
	Float switch for explosion protection with 10 m cable	96 00 34 21	
	Float switch for explosion protection with 20 m cable	96 00 35 36	
	Bracket for level switch	96 00 33 38	
	Standard float switch, non-mercury type, with 10 m cable and bracket	1 pump without alarm (2 switches)	62 50 00 13
		1 pump with alarm (3 switches)	62 50 00 14
		2 pumps without alarm (3 switches)	62 50 00 14
		2 pumps with alarm (4 switches)	62 50 00 15
	Float switches for areas with a risk of explosion , with 10 m cable and bracket	1 pump without alarm (2 switches)	62 50 00 16
1 pump with alarm (3 switches)		62 50 00 17	
2 pumps without alarm (3 switches)		62 50 00 17	
2 pumps with alarm (4 switches)		62 50 00 18	

In addition to the chemical and thermal properties of the water-proof polypropylene housing as well as the polyurethane cable, the level switches are resistant to alcohol, uric acid, sewage, oils, fats, petrol, fruit acid, as well as a range of chemicals.

Level controller	Description	Operating current per pump [A]	Mains switch required [A]	Product number			
				Standard controller	Including hour counter	Including start counter	Including combined hour and start counter
	LC 107 controller for 1 pump 3 x 400 V, direct-on-line starting	1 - 2.9	25	96 00 24 67			
		1.6 - 5.0	25	96 00 24 68			
		3.7 - 12.0	25	96 00 24 69			
		12.0 - 23.0	40	96 00 24 70			
	LCD 107 controller for 2 pumps 3 x 400 V, direct-on-line starting	1 - 2.9	25	96 00 24 74			
		1.6 - 5.0	25	96 00 24 75			
		3.7 - 12.0	25	96 00 24 76			
		12.0 - 23.0	40	96 00 24 77			
	LC 108 controller for 1 pump 3 x 400 V, direct-on-line starting	1 - 2.9	25	96 43 39 91	96 43 39 92	96 43 39 93	96 43 39 94
		1.6 - 5.0	25	96 43 39 95	96 43 39 96	96 43 39 97	96 43 39 98
		3.7 - 12.0	25	96 43 39 99	96 43 40 00	96 43 40 01	96 43 40 02
		12.0 - 23.0	40	96 43 40 03	96 43 40 04	96 43 40 05	96 43 40 06
	LC 108 controller for 1 pump 3 x 400 V, star-delta starting	6.4 - 20.0	25	96 43 79 28			
		20.8 - 30.0	40	96 43 79 50			
		20.8 - 59.0	80	96 43 79 70			
		24.2 - 72.0		96 43 79 90			
	LCD 108 controller for 2 pumps 3 x 400 V, direct-on-line starting	1.0 - 2.9	25	96 43 40 39	96 43 40 40	96 43 40 41	96 43 40 42
		1.6 - 5.0	25	96 43 40 43	96 43 40 44	96 43 40 45	96 43 40 46
		3.7 - 12.0	40	96 43 40 47	96 43 40 48	96 43 40 49	96 43 40 50
		12.0 - 23.0	60	96 43 40 51	96 43 40 52	96 43 40 53	96 43 40 54
LCD 108 controller for 2 pumps 3 x 400 V, star-delta starting	6.4 - 20.0	25	96 43 80 32				
	20.8 - 30.0	40	96 43 80 52				
	20.8 - 59.0	80	96 43 80 72				
	24.2 - 72.0		96 43 80 92				

Description	Product number
Battery back-up	96 00 25 20
Hour counter [400 V]	96 00 25 15
Start counter [400 V]	96 00 25 17
Combined hour and start counter [400 V]	96 00 25 19
25 [A] external mains switch for supply cable	96 00 25 11
40 [A] external mains switch for supply cable	96 00 25 12
80 [A] external mains switch for supply cable	96 00 25 13
LC-Ex4	96 44 03 00

The Grundfos Wastewater Range

The sewage grinder pumps range

Brochure covers the new Grundfos range of sewage grinder (SEG) pumps for pumping of wastewater with toilet discharge.



Heavy-duty submersible sewage pumps

Brochure covers the Grundfos range of submersible channel impeller pumps from 1,65 kW up to 21 kW and SuperVortex pumps up to 29 kW. All designed for handling unscreened raw sewage.



Heavy-duty submersible sewage pumps

Brochure covers the Grundfos range of sewage pumps from 16 kW up to 155 kW for handling of raw sewage in heavy-duty applications.



Super heavy-duty submersible sewage and raw water pumps

Brochure covers the Grundfos range of super heavy-duty channel pumps, axial flow pumps, and propeller pumps from 2,8 kW up to 520 kW.



The portable dewatering pumps range

Brochure covers the Grundfos range of portable dewatering pumps (DW) from 0.8 kW to 20 kW for pumping raw water with abrasives.



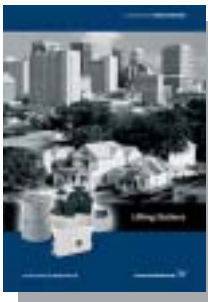
The KP/AP stainless steel range

Brochure covers a wide range of high quality stainless steel pumps for a variety of domestic and commercial applications.



The lifting stations

Brochure covers Grundfos lifting stations for individual as well as multi-user applications.



The range of controls

Brochure covers the Grundfos range of controls for the wastewater pumping systems.



Business with an attitude

Knowledge The sharing of knowledge, experience and expertise across our global network will always lead our business forward.

Innovation Combining the best technology with fresh ways of thinking, we will continue to develop even better pumps, systems, services and standards.

Solution With a complete product range, capable of providing every conceivable water solution, we are the most complete player on the market.