



**S / SA ranges
Up to 520 kW**



Large-scale performers for the truly demanding jobs



A good reputation is the foundation of the Grundfos range of super-heavy-duty wastewater pumps for submerged or dry installations. The range comprises a variety of axial-flow channel-impeller pumps and propeller pumps with motors up to 520 kW. Each model has a proven record of performance and dependability from some of the most demanding jobs in the world.

Each pump is individually engineered to suit customer requirements for cost-efficient performance, regardless of the application. We maintain a close dialogue with our customers already at the planning stage to find the optimum solution, taking pumping station design, pump selection, future requirements and Cost of Ownership into account. Only this way can we build the longlasting partnerships on which our business is founded.

We have been building heavy-duty wastewater pumps for more than half a century, and we know better than anyone what our customers expect from a super-heavy-duty sewage and raw water pump.



Powerful advantages

➤ Permanent peak efficiency

State-of-the-art technology makes our pumps extremely efficient and highly dependable. Innovative features such as the unique SmartTrim impeller clearance adjustment system in our channel-impeller pumps provide permanent peak performance and low Costs of Ownership.

➤ Less downtime

The excellent solids handling capability of our channel-impeller pumps guarantees maximum operating time and a substantial reduction in maintenance costs.

➤ Optimum efficiency

Our propeller pumps feature adjustable-pitch propeller blades. This ensures optimum efficiency at the specified duty point.

➤ Lifelong reliability

The Grundfos pumps are strongly built and designed for continuous pumping under the most difficult operating conditions.



Tough and reliable pumps...

The Grundfos super-heavy-duty pumps are built for hard work in the toughest environments where maximum operating time is of paramount importance. The pumps offer unique features that serve to reduce faults caused by leakage or wear.

SmartSeal prevents leakage

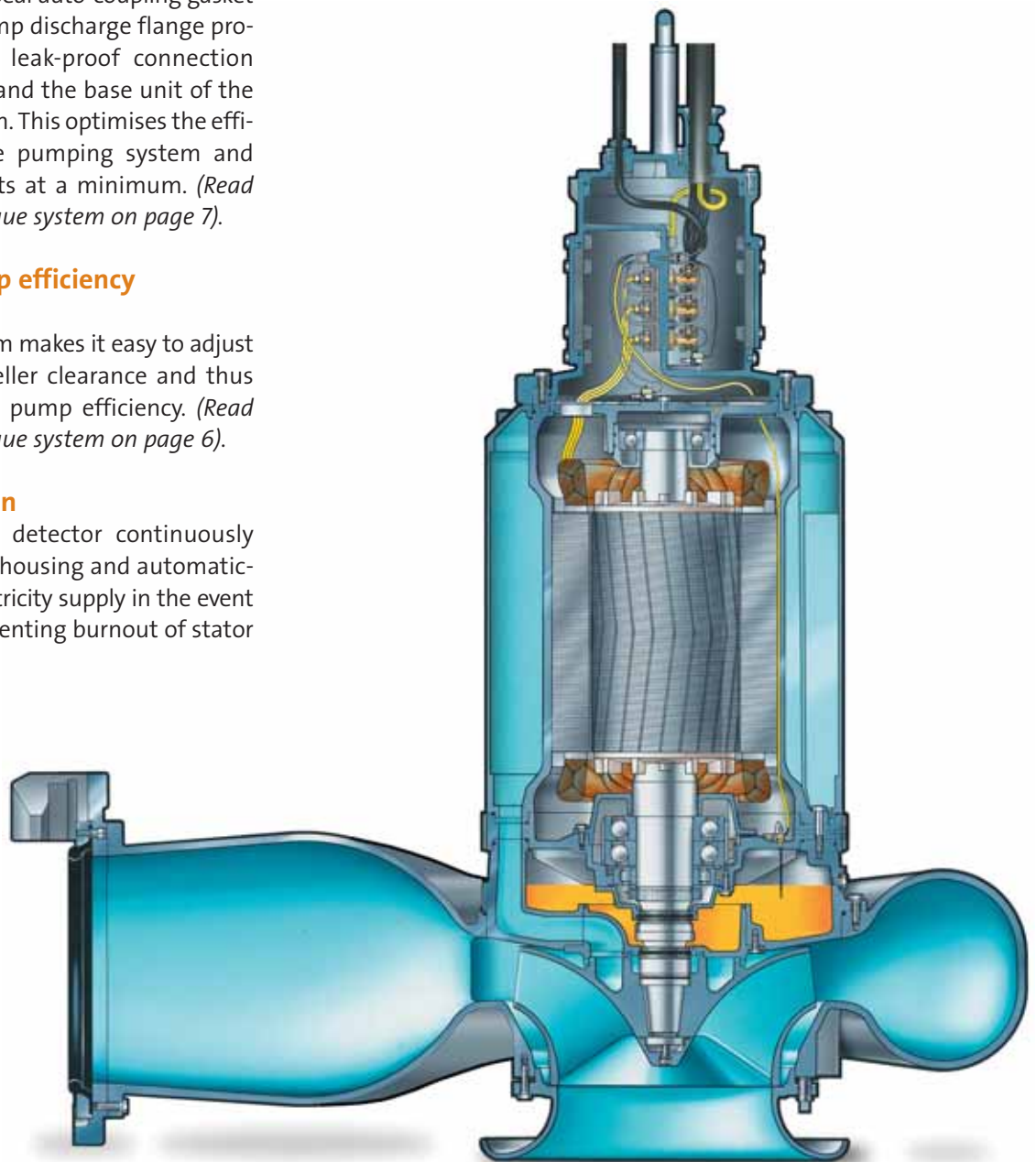
The Grundfos SmartSeal auto-coupling gasket mounted on the pump discharge flange provides a completely leak-proof connection between the pump and the base unit of the auto-coupling system. This optimises the efficiency of the entire pumping system and keeps operating costs at a minimum. *(Read more about this unique system on page 7).*

Maintaining pump efficiency with SmartTrim

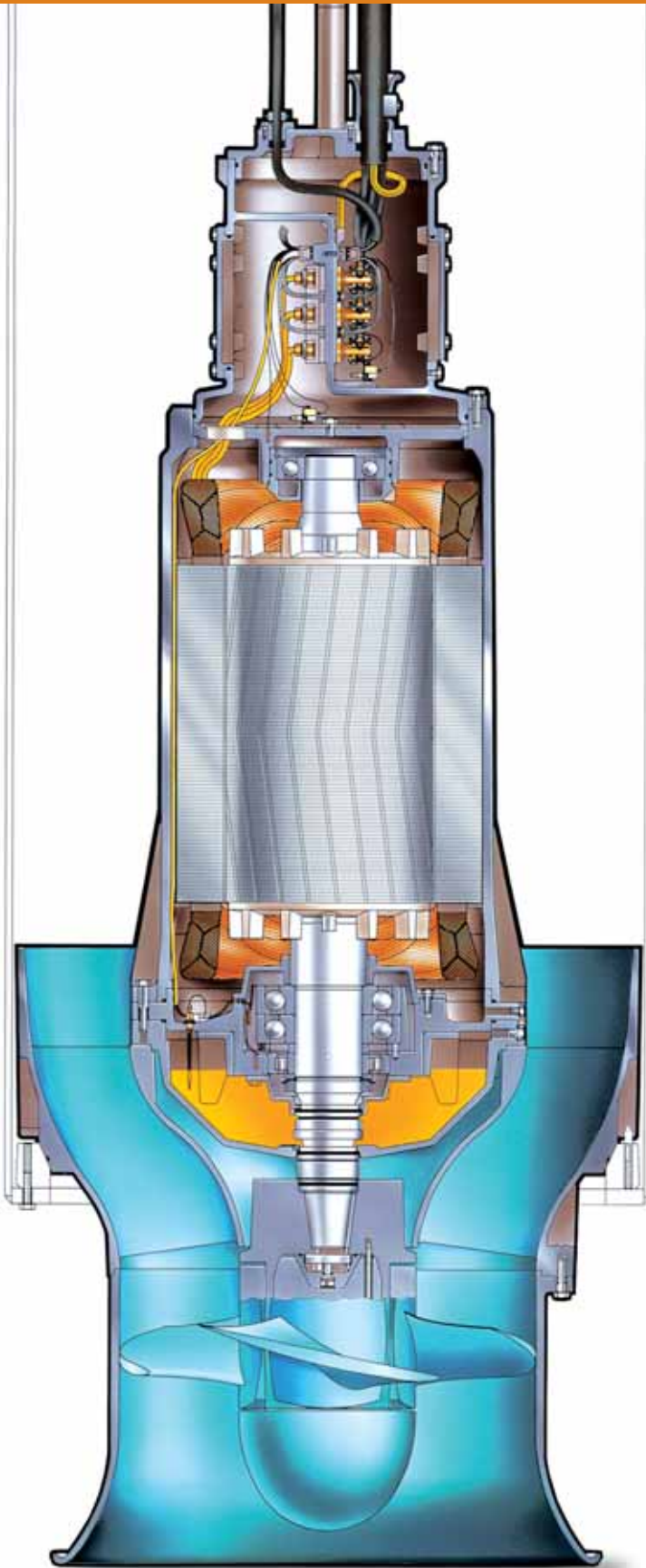
The SmartTrim system makes it easy to adjust the factory-set impeller clearance and thus maintain maximum pump efficiency. *(Read more about this unique system on page 6).*

Moisture detection

A built-in moisture detector continuously monitors the motor housing and automatically cuts out the electricity supply in the event of leakage, thus preventing burnout of stator windings.



- with many unique features



Overheating protection

Three separate thermal switches in the stator windings provide early warning in case the temperature in the windings rises and cuts out the electricity supply in the event of overheating.

Seal condition monitoring (optional)

A monitoring probe in the intermediate oil chamber between the shaft seals provides early warning of any seal leakage, reducing the number of maintenance checks without compromising on reliability.

Bearing condition monitoring (optional)

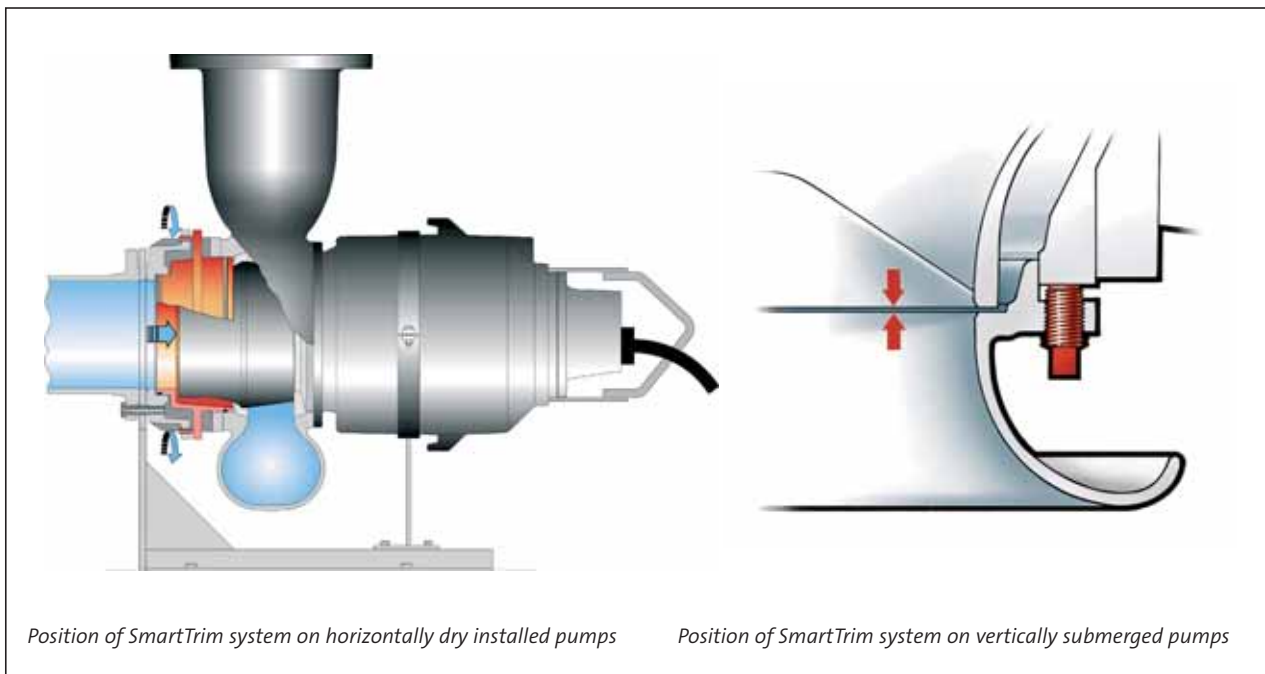
Built-in temperature sensors monitor each ball and roller bearing making it possible to localise faults before they occur. This allows preventive maintenance to be carried out reducing costly downtime.

Stainless steel propeller provides trouble-free operation

The vane bowl of the axial-flow propeller pumps is fitted with special guide vanes, transforming the rotational energy of the liquid to pressure energy, for improved pump efficiency. The guide-vane design ensures trouble-free operation also when pumping dirty water.

Depending on the pump size, the propeller has 3 or 4 stainless steel adjustable-pitch blades, factory-set to the customer-specified duty point, for optimum pump efficiency.

Grundfos SmartTrim impellers



Permanent peak performance

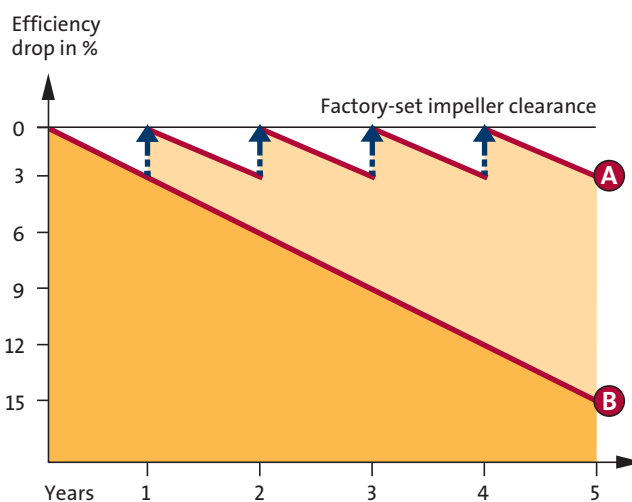
The Grundfos super-heavy-duty sewage pumps are designed to reduce energy consumption and to keep down operating costs. Therefore, maintaining peak pumping efficiency throughout the entire lifetime of the system is a key issue.

Sand, grit and other abrasives cause impeller wear in any pump. As a result, impeller clearance increases, reducing pump efficiency. Increased impeller clearance means more back-flow leakage and a higher risk of jamming.

SmartTrim system – fast, easy and efficient

On conventional pumps, maintaining factory set impeller clearance is a time-consuming and costly task. The pumps need to be disconnected from the pipework and to be totally dismantled in order to get access to the impeller. Not so with Grundfos SmartTrim!

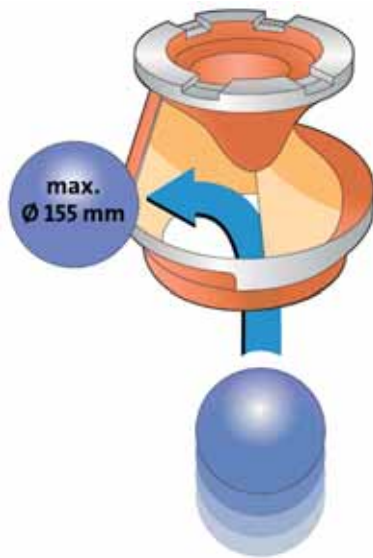
All Grundfos heavy-duty channel-impeller pumps, whether for submerged or dry installation, are equipped with the unique SmartTrim impeller clearance adjustment system. This enables you to easily restore factory-set impeller clearance and maintain peak pump efficiency. All you need to do is to tighten the adjustment screws on the exterior of the impeller housing. This can be done on site, quickly and easily, without dismantling the pump and without using special tools.



A With Grundfos SmartTrim impeller clearance adjustment system

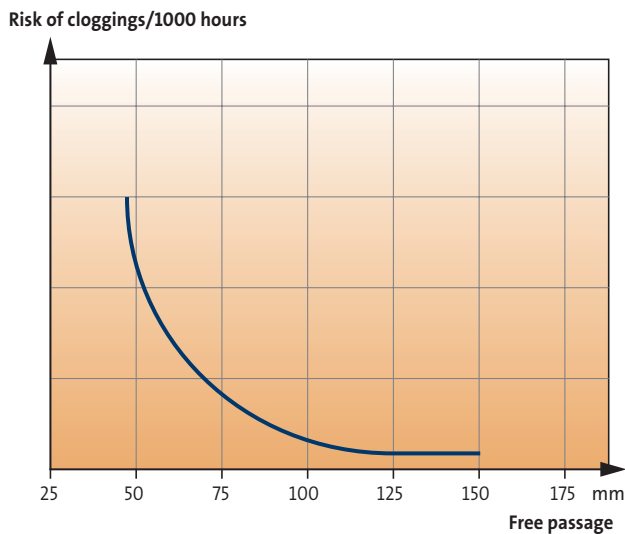
B Without impeller clearance adjustment system

Grundfos channel-impeller pumps



Large free passage for superior solids handling

Compromising on the solids handling capability of the pumps to obtain higher pump efficiency substantially increases the risk of clogging. Clogging means more downtime and increased operating costs.



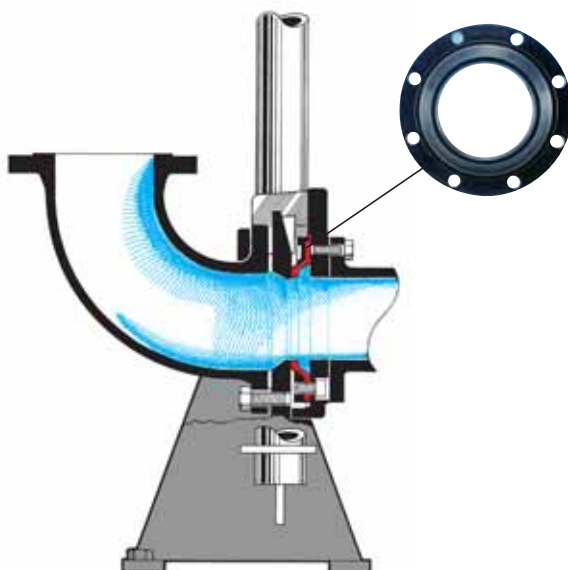
Relation between frequency of clogging and free passage of the impeller

Less costly downtime and unscheduled service visits

The majority of unscheduled service visits to sewage pumping stations are caused by clogged or jammed pumps.

The relation between free passage and frequency of clogging is well-known within the wastewater industry. By choosing a pump with a free passage of $\text{\O} 80$ mm or more, clogging and jamming are almost eliminated.

All Grundfos heavy-duty sewage pumps offer a free passage of minimum $\text{\O} 80$ mm.



Leak-proof flange connection

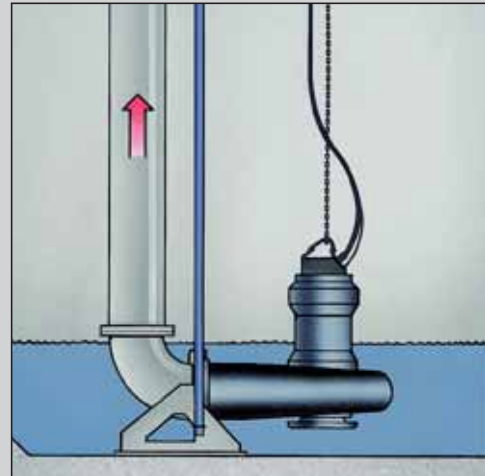
When a pump fitted with an auto-coupling is being submerged, it automatically connects to the base unit of the auto-coupling system. The SmartSeal neoprene gasket provides a completely leak-proof connection between the pump and the discharge pipe. The efficiency of the SmartSeal is further improved by the pressure exerted by the pumped liquid on the inside of the joint.

Typical channel-impeller pump installations

The Grundfos range of super-heavy-duty pumps are designed for submersible or dry installation

Submerged installation on auto-coupling

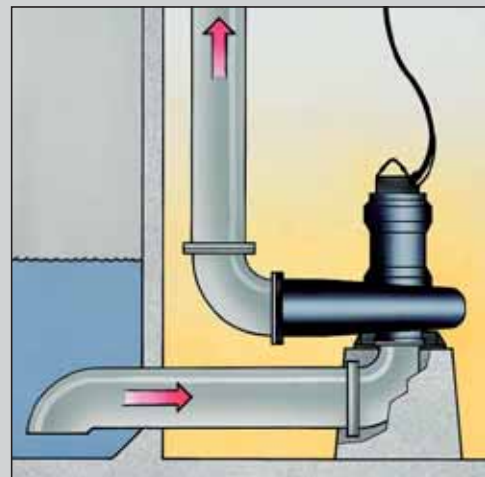
Submerged installation on auto-coupling system requires a base with a 90° bend, fixed to the bottom of the pit. When lowered into the pit along the guide rails, the pump automatically connects to the base plate. The flexible neoprene SmartSeal ensures a leak-proof connection between the pump and the auto-coupling.



Vertical dry installation

The Grundfos sewage pumps can be installed either vertically or horizontally to suit specific application arrangements. All pumps are 100% watertight, allowing for dry installation with the workspace around the pump remaining clean and dry. The pumps are fully flood-proof if an expected flooding should occur.

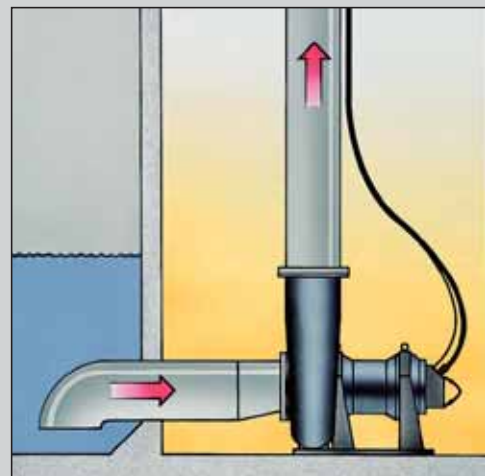
Motor cooling takes place by means of a cooling jacket.



Horizontal dry installation

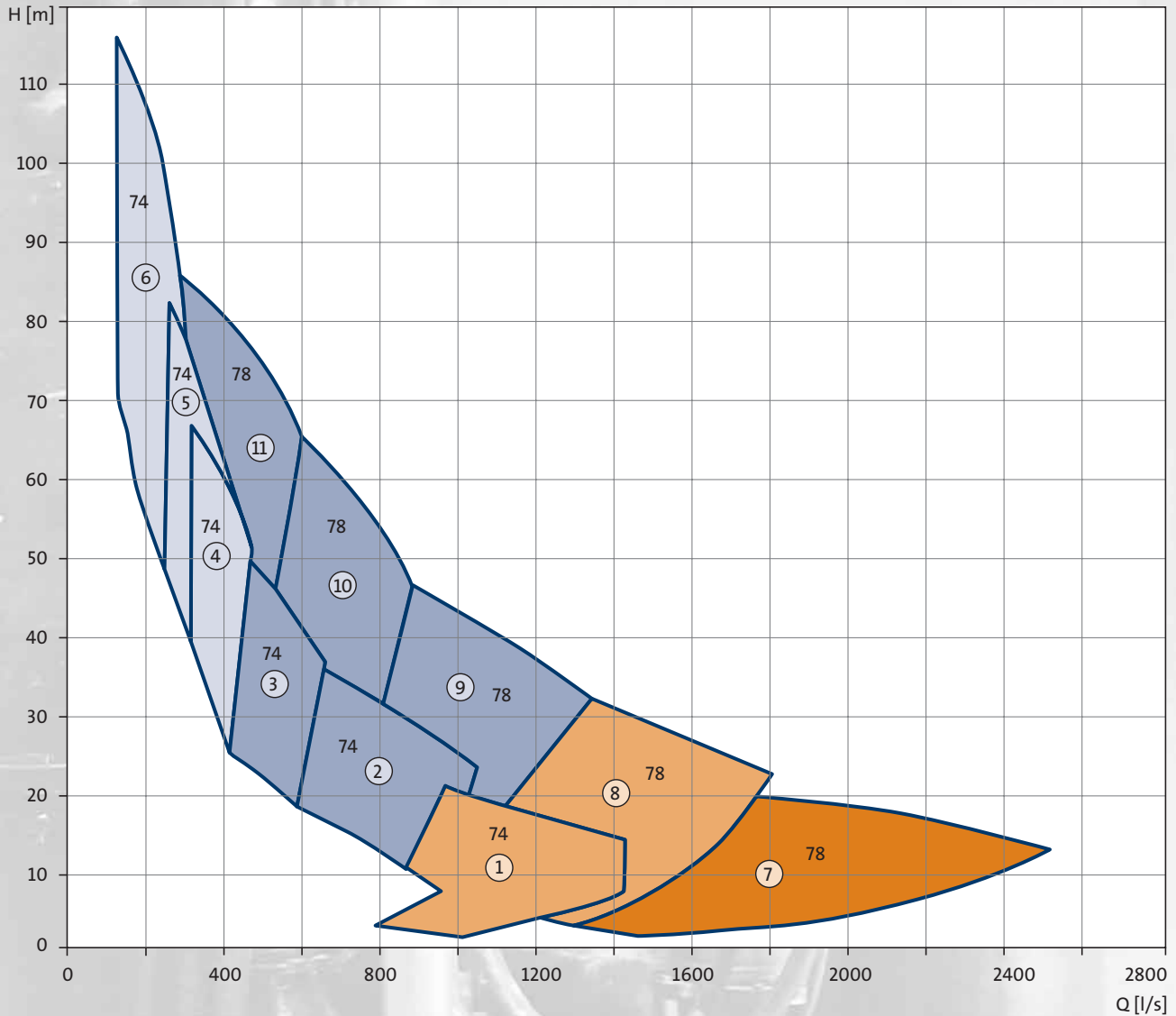
Horizontal dry installation improves the overall efficiency of the system as unnecessary components and bends are avoided. The feasibility of horizontal dry installation depends on the floor space available as the system takes up slightly more space than a vertically installed pump.

Motor cooling takes place by means of a cooling jacket.



Performance overview

Channel-impeller pumps



Technical data and weights

No.	Pump curve			Submerged installation				Dry installation			Motor	
	Pump range	Impeller head classification	Free passage [mm]	Auto-coupling		Weight [kg]		Inlet DN	Outlet DN	Weight [kg]	P _N [kW]	No. of poles
				Type	DN	Pump	Base					
1	74	E	135 x 160	UK 35710	600	3200–3900	1200	600	Ø 600	3200–3900	35–250	8, 10, 12
2	74	L	Ø 135	UK 35759	500	3300–3400	900	500	Ø 500	3300–3800	160–315	6
3	74	M	Ø 120	UK 35759	500	3100–3200	900	500	Ø 500	3100–3600	160–315	6
4	74	H	Ø 110	UK 35481A	300	3100–3200	330	400	Ø 300	3100–3600	160–315	6
5	74	M	102 x 120	UK 35481A	300	2500–2700	330	400	Ø 300	3100–3600	200–315	4
6	74	H	Ø 102	UK 35481A	300	2500–2700	330	400	Ø 300	2600–2800	200–315	4
7	78	F	155 x 215	UK 35739	800	5700–6700	2300	800	Ø 800	5700–6700	75–450	10, 12, 14
8	78	E	Ø 135	UK 35710	600	5500–6200	1200	800	Ø 600	5500–6200	110–520	8, 10, 12
9	78	L	Ø 145	UK 35759	500	5500–6100	900	500	Ø 500	5500–6100	250–520	8, 10
10	78	M	Ø 130	UK 35759	500	5400–6100	900	500	Ø 500	5400–6100	250–520	8, 10
11	78	H	Ø 115	UK 35759	500	5400–6100	900	500	Ø 500	5400–6100	250–520	8

Axial-flow propeller pumps

Large flows and reliable operation

The Grundfos super-heavy-duty axial-flow submersible propeller pumps are designed for extremely large flows at relatively low head. The range covers flows up to 3600 l/s and heads up to 10 m.

Wide range of applications

The axial-flow submersible propeller pumps are built for pumping large quantities of raw water and the pumps are ideal for a wide range of applications:

Municipal applications

- ▶ Pumping of flood or storm water
- ▶ Water-level control in coastal and low-lying areas

Marine applications

- ▶ Pumping of bilge water
- ▶ Filling and emptying of dry docks and harbour installations
- ▶ Controlling of waterways

Water treatment applications

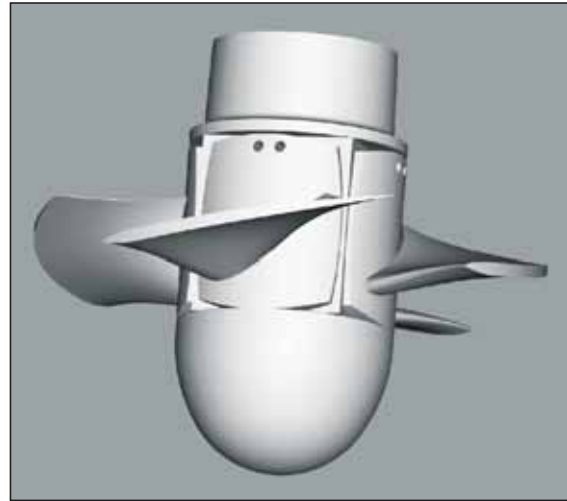
- ▶ Raw water intake
- ▶ Filling or emptying of reservoirs
- ▶ Pumping of treated sewage

Industrial applications

- ▶ Cooling water intake in power stations
- ▶ Pumping of process water and discharge water

Agricultural applications

- ▶ Irrigation
- ▶ Land drainage

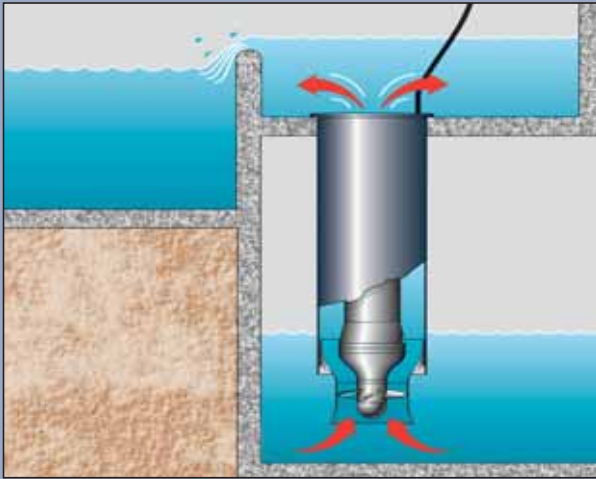


Stainless steel propeller

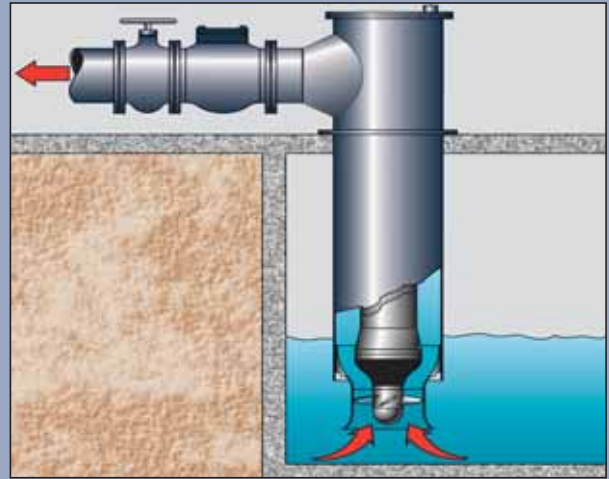
The axial-flow propellers are of a 3- or 4-bladed design, depending on the size of the pump. The pitch of the propeller blades is adjustable but preset from factory to provide maximum efficiency at the duty point specified by the customer. All propeller blades are made of stainless steel in order to guarantee long operating life.



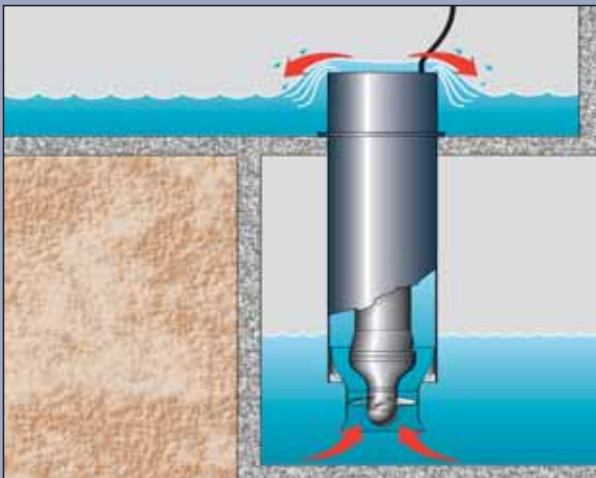
Typical propeller pump installations



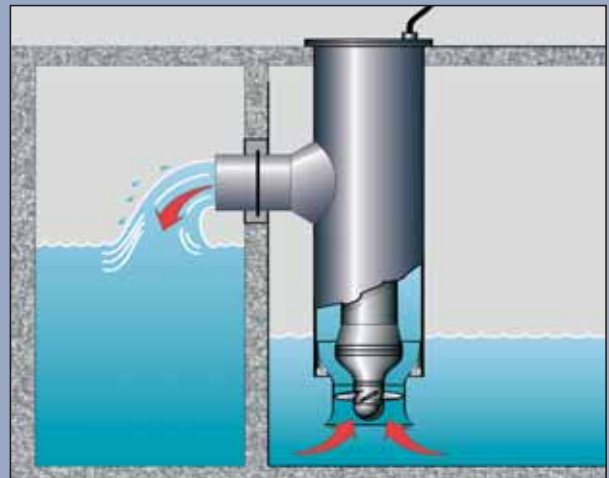
Free outflow over a weir



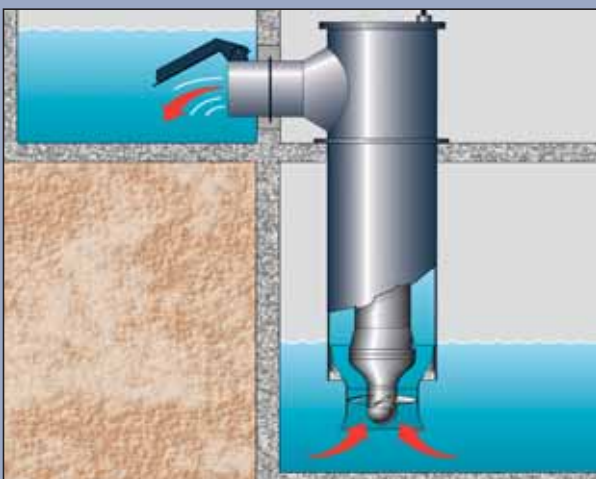
Pressurised outflow with gate valve and non-return valve



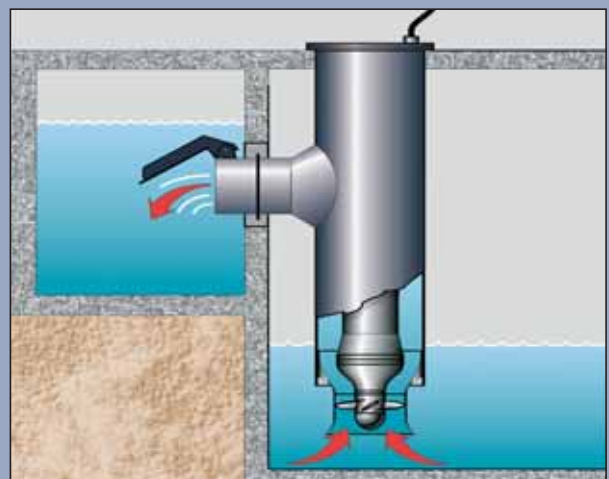
Free outflow



Free outflow



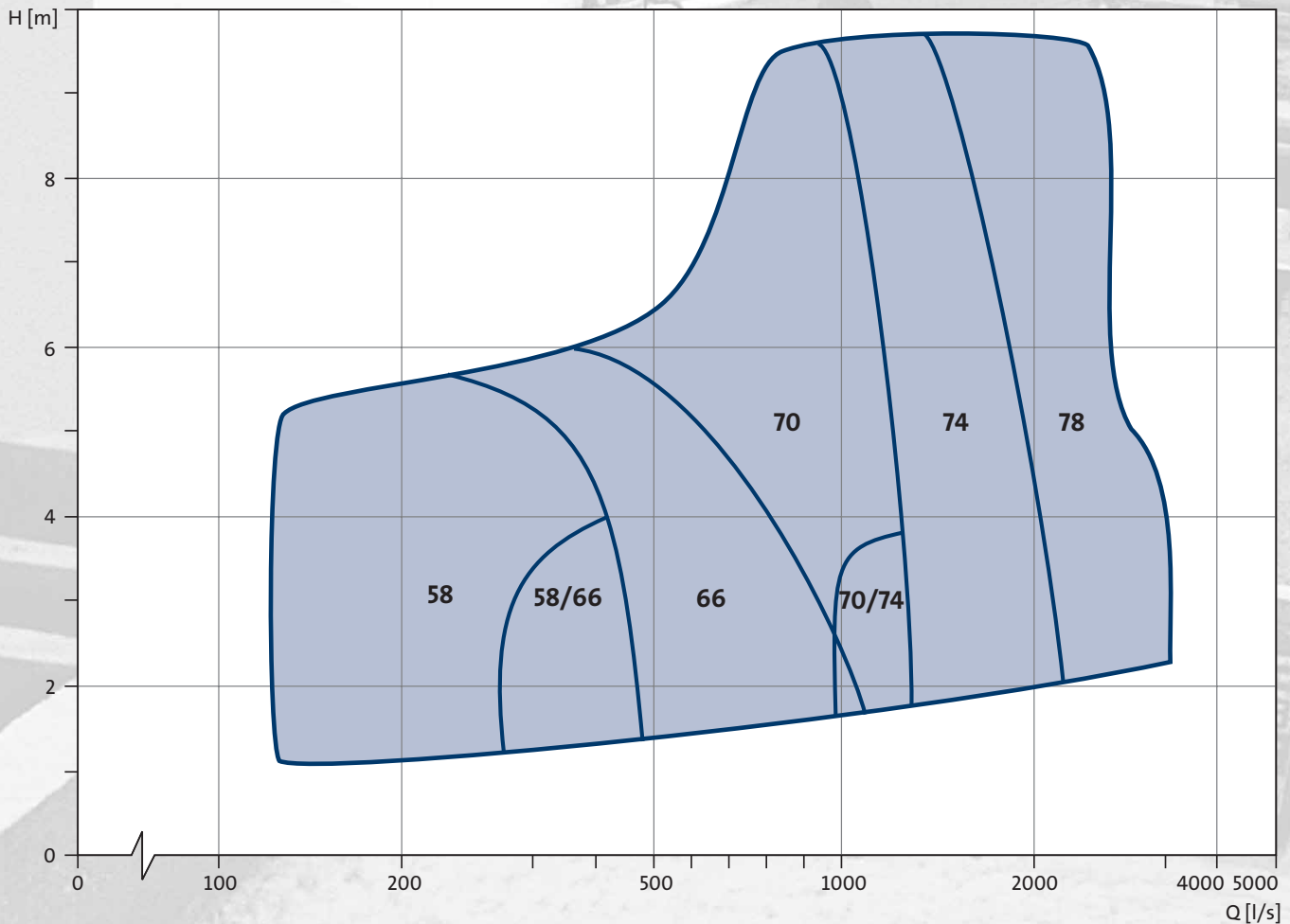
Outflow with non-return flap valve



Pressurised outflow and non-return flap valve

Performance overview

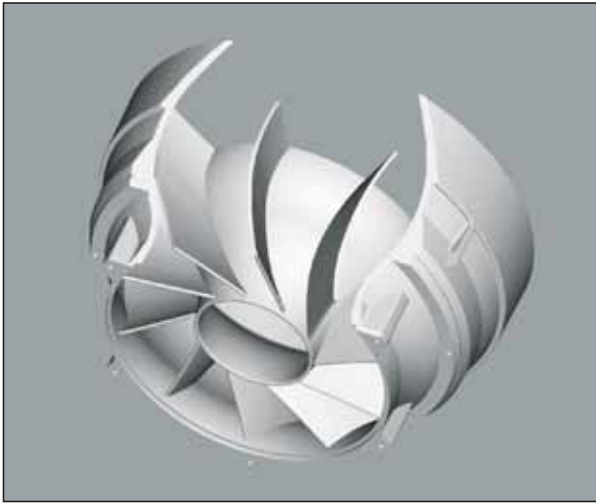
Axial-flow propeller pumps



Technical data and weights

Pump range	Pump range		Tube installation	Motor	
	Max. solids size [mm]	Pump weight [kg]	Inside diameter [mm]	P _N [kW]	No. of poles
58	77	470	700	7.5-28	4, 6
66	120	940	1000	15-50	8, 10, 12
70	150	1290	1000	45-130	6, 8, 10
74	150	2800	1200	55-200	8, 10, 12
78	170	4900-7000	1400	75-450	10, 12, 14

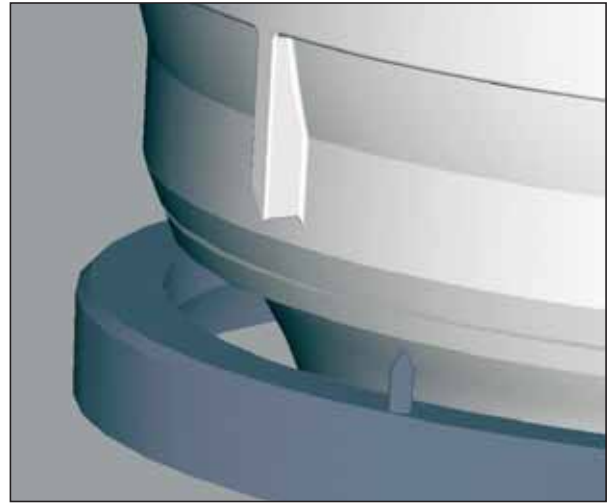
Axial-flow channel-impeller pumps



Guide vanes

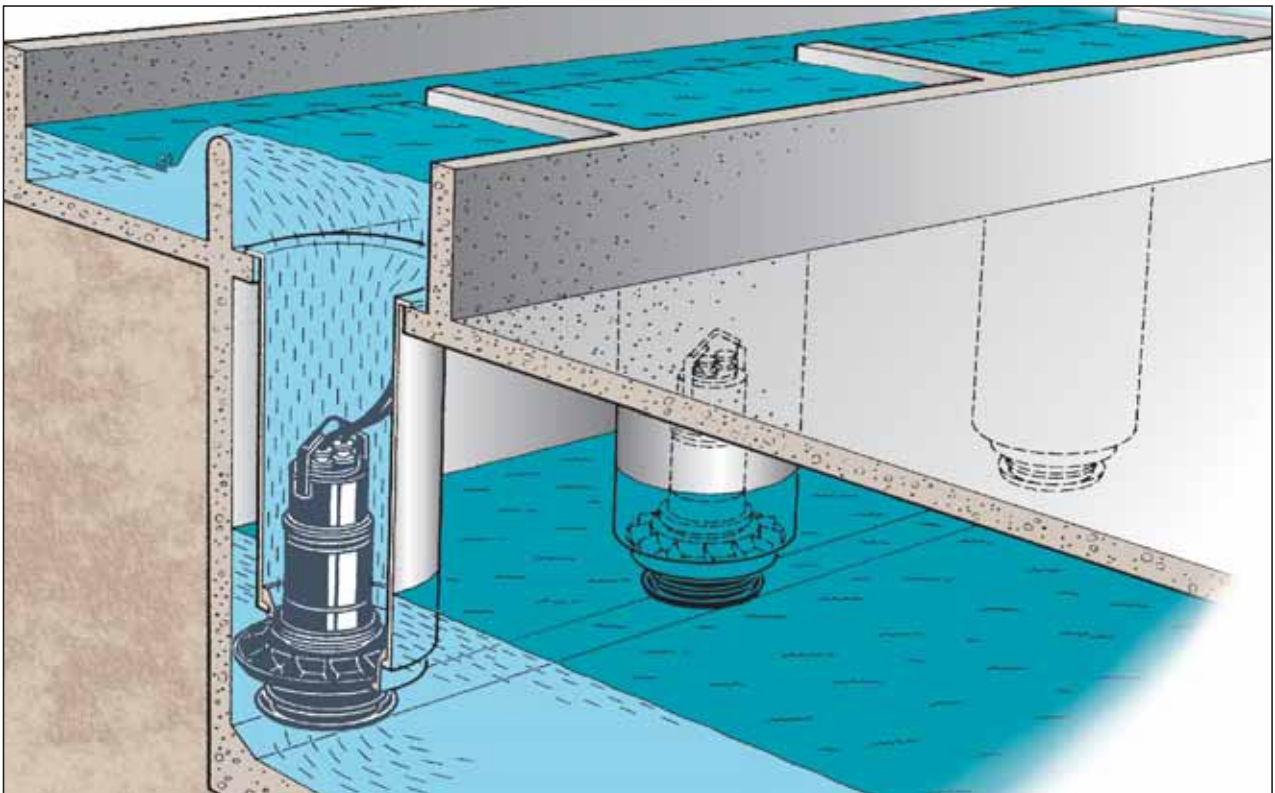
The vane bowl of the axial-flow pumps is fitted with special guide vanes transforming the rotational energy of the liquid to pressure energy for improved pump efficiency.

The geometry of the guide vanes ensures trouble-free operation even when pumping dirty water.



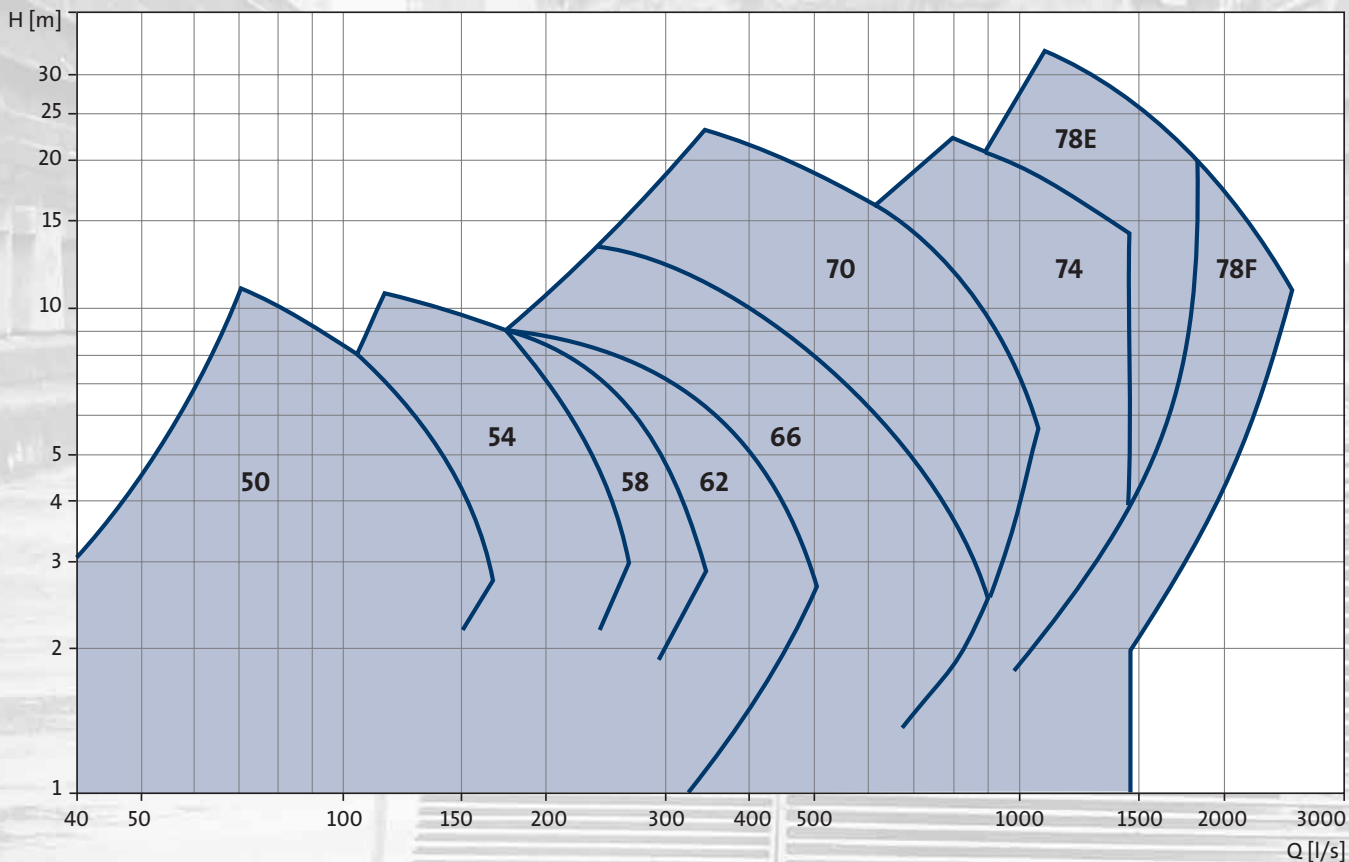
Unique-locking system

A purpose designed seat ring is supplied with all Grundfos axial-flow pumps. The seat ring is fixed at the bottom of the column tube. The pump is lowered into the tube and guided automatically into position on the seat ring. Matching surfaces of the pump volute and the seat ring ensure a perfect fit. This unique locking system prevents any movement of the pump at start-up and during operation.



Performance overview

Axial-flow channel-impeller pumps



Technical data and weights

Pump range				Tube installation	Motor	
Pump range	Impeller head classification	Max. solids size [mm]	Pump weight [kg]	Inside diameter [mm]	P _N [kW]	No. of poles
50	E	80 x 130	350-390	500	7.5-12.5	4
54	E	Ø100	480	700	13.5-17.0	4
58	E	Ø100	590-600	700	16.0-22.5	6
62	E, L, M, H	Ø120 - Ø145	780-900	1000	15.0-28.0	8, 12
66	E, L, M	Ø115 - Ø145	740-1830	1000	22.0-50.0	8, 10
70	E, L, M	Ø90 - Ø120	1250-2030	1000	65.0-130	6, 8
74	E	135 x 160	2500-3200	1200	55.0-250	8, 10, 12
78	E, F	Ø135 - Ø155	4900-5900	1400-1600	75-520	8, 10, 12, 14



Operating conditions

Maximum ambient temperature and pumped liquid temperature: +40°C
 Maximum liquid density: 1000 kg/m³
 Storage temperature range: -30°C to +60°C
 Maximum submergence: 20 m
 Maximum allowable voltage fluctuation is: ±5% of rated voltage (UN)

Maximum starting frequency

Pump start-up frequency should not exceed the recommendations in the table below.

Pump range	Starts per hour
50, 54, 58	20
62, 66, 70	15
74, 78	10

Options available

- Explosion-proof motors
- Special painting/coating
- Zinc anodes for seawater applications
- Cooling jacket for external cooling
- Stainless steel impeller
- ASM 3 alarm status monitoring
- SARI 2/OCT motor insulation resistance and seal condition monitoring devices
- Bearing condition monitoring

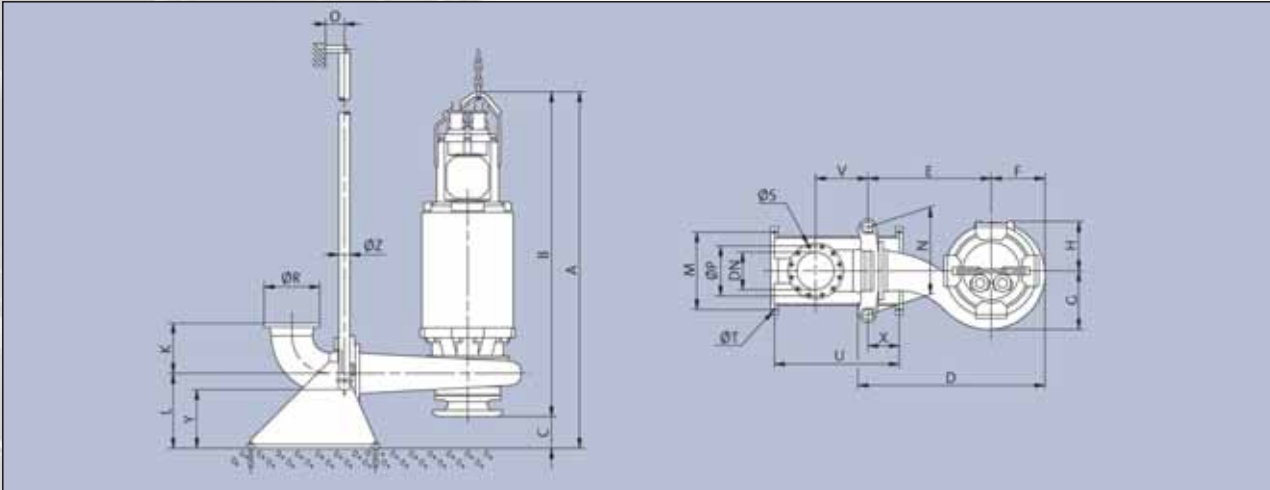
Material specification

Part	Material	DIN/EN	AISI/ASTM
Stator housing	Cast iron	EN-JL1040	A 278 30
Pump housing	Cast iron	EN-JL1040	A 278 30
	Ductile cast iron	EN-JS1050	80-55-06
Impeller, pump ranges 50 to 70	Cast iron	EN-JL1040	A 278 30
Impeller, pump ranges 74 and 78	Ductile cast iron	EN-JS1050	80-55-06
Propeller blades	Stainless steel	1.4408	316
Pump shaft, pump ranges 50 to 62	Stainless steel	1.4460	329
Pump shaft, pump ranges 66 to 78*	Steel	1.7225	
Bolts and nuts	Stainless steel	1.4408	316
Cooling jacket, pump ranges 50 to 62	Ductile cast iron	EN-JS1050	80-55-06
Cooling jacket, pump ranges 66 to 74	Hot-dip galvanized steel	Rst 37-2	
Cooling jacket, pump range 78	Stainless steel	1.4408	316
O-rings	NBR		
O-rings, mechanical shaft seal	FKM		
Primary shaft seal faces	SiC/SiC		
Secondary shaft seal faces	SiC/carbon		
Lifting bracket, pump ranges 50 and 54	Ductile cast iron	EN-JS1050	80-55-06
Lifting bracket, pump ranges 74 and 78	Hot-dip galvanized steel	Rst 37-2	
Cables	EPDM		
Cable entry	PA or cast iron		
Surface protection	150 my two-component epoxy coating		
Oil	SAE 10 W 30		

* Shaft not in contact with pumped liquid.

Dimensions and installation

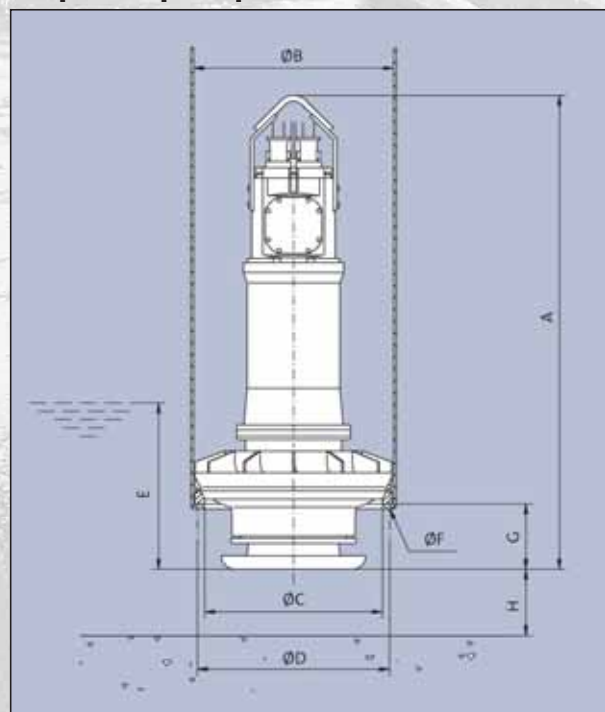
Submerged installation on auto-coupling, channel-impeller pumps



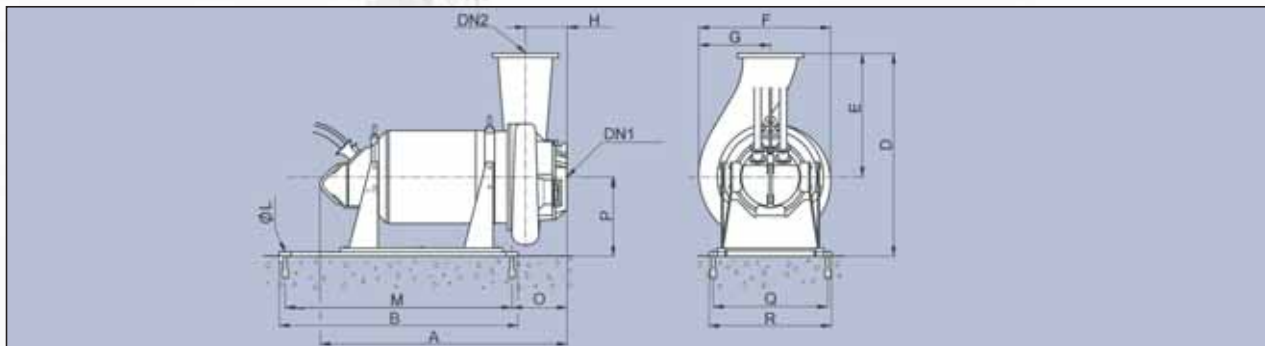
Pump type	Dimensions [mm]																						
	DN	A	B	C	D	E	F	G	H	K	L	M	N	O	ØP	ØR	ØS	ØT	U	V	X	Y	ØZ
74 Impeller/No. of poles																							
E / 8, 10, 12	600	2650	2320	330	2245	1405	780	885	660	700	800	1000	1100	250	725	780	30	34	1400	755	350	550	114
L / 6	500	3070	2700	370	1940	1210	670	760	565	600	800	900	1000	250	620	670	26	34	1400	650	350	550	88
M / 4	300	2850	2600	250	1500	990	435	475	395	400	600	620	700	150	400	445	23	28	1000	420	250	400	88
M / 6	500	3060	2685	375	1840	1210	555	610	490	600	800	900	1000	250	620	670	26	34	1400	650	350	550	88
H / 4	300	2850	2600	200	1690	1190	415	435	395	400	600	620	700	150	400	445	23	28	1000	420	250	400	88
H / 6	300	2850	2600	250	1445	890	470	510	435	400	600	620	700	150	400	445	23	28	1000	420	250	400	88
78 Impeller/No. of poles																							
F / 10, 12, 14	800	3800	3400	400	3170	1900	1110	1285	900	900	1000	1200	1300	250	950	1015	33	34	1900	955	650	300	114
E / 8, 10, 12	600	3550	3250	300	2630	1580	970	1100	835	700	800	1000	1100	250	725	780	30	34	1400	755	350	550	114
L / 8, 10	500	3525	3200	325	2165	1305	780	860	700	600	800	900	1000	250	620	670	26	34	1400	655	350	550	88
M / 8, 10	500	3520	3210	310	2120	1355	685	735	630	600	800	900	1000	250	620	670	26	34	1400	655	350	550	88
H / 8	500	3150	2850	300	2320	1610	630	660	600	600	800	900	1000	250	620	670	26	34	1400	655	350	550	88

Tube installation – propeller and channel-impeller pumps

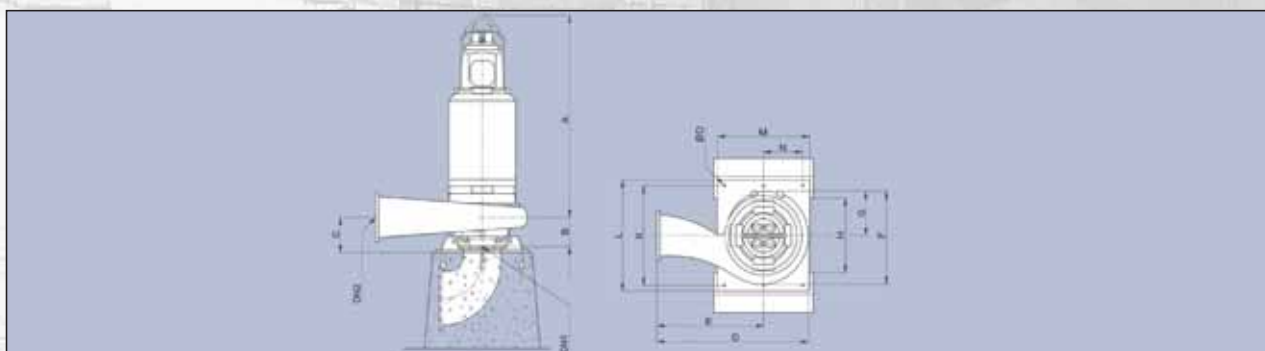
Pump range/ impeller type	Dimensions [mm]							
	Channel pumps							
	A	ØB	ØC	ØD	E	ØF	G	H
50/E	970	500	420	450	500	M12	185	150
54/E	1150	700	600	665	400	M12	175	200
58/E	1240	700	600	665	500	M12	185	200
62	1540	1000	880	940	600	M16	180	200
66/M	1760	1000	880	940	700	M16	405	250
70/E	2000	1000	880	940	700-1300	M16	380	300
70/L	1970	1000	880	940	700-1200	M16	310	250
70/M	2050	1000	880	940	800	M16	405	250
74/E	2850	1200	1065	1150	1000	M16	400	400
78/E	3400	1400	1230	1310	1200	M20	410	300
78/F	3500	1600	1400	1500	1000-1500	M20	470	500
Propeller pumps								
58/A	1300	700-720	635	665	500	M12	470	250
66, 70	2130	1000	880	940	800-1500	M16	725	400
74	3000	1200	1065	1150	1000	M16	400	500
78	3600	1400	1230	1310	1000-2000	M20	835	500
78/L	3670	1600	1400	1500	1500-2500	M20	900	700



Horizontal dry installation, channel-impeller pumps



Pump type	Dimensions [mm]														
	DN1	DN2	A	B	D	E	F	G	H	ØL	M	O	P	Q	R
74 Impeller/No. of poles															
E / 8, 10, 12	600	600	2800	1350	—	2200	1300	1545	885	450	1400	28	1000	—	750
L / 6	500	500	2810	1350	652	1900	1100	1330	765	430	1315	28	1000	—	652
M / 6	400	500	2750	1350	590	1700	1100	1110	610	375	1100	28	1000	—	650
M / 4	400	300	2635	1350	—	1500	900	875	475	340	1100	28	1000	—	600
H / 6	400	300	2690	1350	540	1400	800	945	510	380	1100	28	1000	—	600
H / 4	400	300	2635	1350	—	1700	1100	835	435	337	1100	28	1000	—	600
78 Impeller/No. of poles															
F / 10, 12, 14	800	800	3150	3000	—	3000	1800	2155	1280	600	1780	28	950	950	75
E / 8, 10, 12	800	600	3150	3000	—	2575	1475	1930	1100	600	1680	28	950	950	75
L / 8, 10	500	500	3150	2420	486	2100	1200	1560	860	417	1515	28	1150	1150	546
M / 8, 10	500	500	3150	2420	486	2050	1250	1365	735	424	1415	28	1150	1150	546
H / 8	500	500	3150	2420	468	2300	1500	1260	660	397	1415	28	1150	1150	528



Dry, vertical installation, channel-impeller pumps

Pump type	Dimensions [mm]														
	DN1	DN2	A	B	C	D	E	F	G	H	K	L	M	N	ØO
74 Impeller/No. of poles															
E / 8, 10, 12	600	600	1820	480	480	2080	1300	1545	660	1100	1300	1400	1100	500	27
L / 6	500	500	2150	460	460	1770	1100	1327	565	1000	1200	1300	1000	450	27
M / 6	500	500	2200	538	538	1655	1100	1100	500	1000	1100	1180	700	300	28
M / 4	400	300	2200	340	376	1335	900	870	395	900	1100	1200	900	400	27
H / 6	400	300	2310	415	415	1270	800	945	435	900	1100	1200	900	400	27
H / 4	400	300	2307	373	373	1515	1100	830	395	900	1100	1200	900	400	27
78 Impeller/No. of poles															
F / 10, 12, 14	800	800	2200	600	700	2870	1800	2155	875	1300	1650	1800	1300	550	27
E / 8, 10, 12	800	600	2200	600	600	2445	1475	1930	830	1300	1650	1800	1300	550	27
L / 8, 10	500	500	2730	417	497	1980	1200	1560	700	1000	1350	1500	1300	550	28
M / 8, 10	500	500	2720	424	504	1935	1250	1365	630	1000	1350	1500	1300	550	28
H / 8	500	500	2750	397	477	2130	1500	1260	600	1050	1350	1500	1300	550	27

Testing



Thorough testing of each pump

At Grundfos, pump performance and long-term reliability is of primary concern. Therefore, each heavy-duty pump that leaves our factory has been through a very rigorous and thorough testing program performed under conditions matching, as near as possible, the operating conditions for which the pump was built.

Operation test

Each pump is taken through a test, performed at the pump maximum efficiency capability and at the performance curve limits.

Customised pumps for guaranteed head and flow conditions are tested at the customer specified duty point.

Test data for both pump and motor are automatically entered into our data bank together with individual references to assembly drawings and part lists. All this information is available to customers on request.

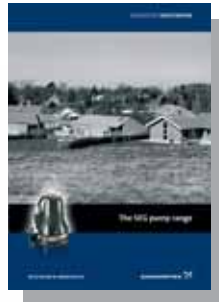
Tightness control and motor testing

All castings are pressure-tested prior to assembly to ensure that motor housings are completely water-tight. Subsequently, the complete motor unit with cables is pressure-tested.

The Grundfos wastewater range

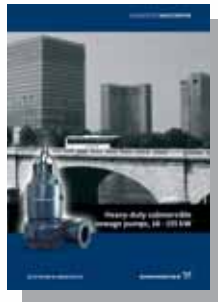
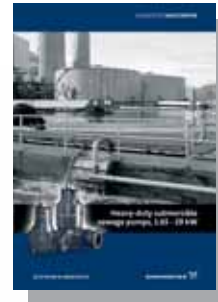
Submersible sewage grinder pumps

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



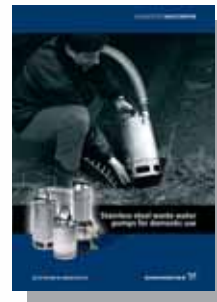
Heavy-duty submersible sewage pumps 1.65 - 29 kW

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.



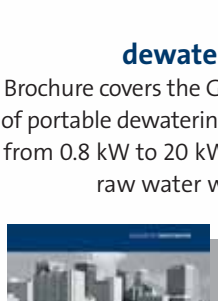
Heavy-duty submersible sewage pumps 15 - 155 kW

Brochure covers the Grundfos range of sewage pumps from 15 kW up to 155 kW for handling of raw sewage in heavy-duty applications.



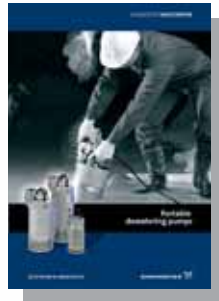
The KP/AP stainless steel range

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



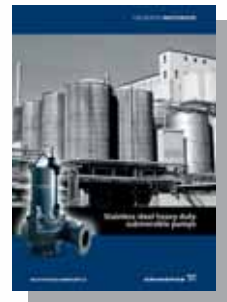
Portable dewatering pumps

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



Stainless steel heavy-duty submersible pumps

Brochure covers the Grundfos range of heavy-duty stainless steel pumps (SEN) for aggressive and corrosive environments.



LC/LCD level controllers

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



Lifting stations

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



Mixers and flowmakers

Brochure covers the new range of mixers and flowmakers for optimal control of liquids and solids throughout the wastewater treatment process.

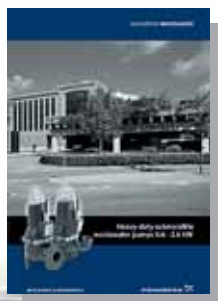


Heavy-duty submersible wastewater pumps 0.6 - 2.6 kW

Brochure covers the Grundfos range of submersible channel-impeller and SuperVortex-impeller pumps from 0.6 to 2.6 kW. Designed for handling drainage, effluent and sewage from private dwellings.

Heavy-duty submersible sewage pumps 0.9 - 11 kW

This brochure describes the innovative SEV/SE1 pump lines. Fitted with SuperVortex or single-channel impellers, these pumps can meet approximately 80% of all wastewater pumping needs.



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.