

Applications

- Domestic and general water supply
- Irrigation and spray irrigation
- Lowering groundwater levels
- Fountains
- Pressure boosting
- Air-conditioning systems
- Fire protection
- Cooling water cycles

Operating Data

Capacity	Q	up to 16 m ³ /h
Head	H	up to 300 m
Temperature of fluid handled	t	up to +30 °C in continuous operation
Power	Pn	up to 5,5 kW

Pump Type / Design**Pump:**

Stainless steel and plastic multistage centrifugal pump.

- Additional bearing depending on the number of stages
- Pump sizes D1 and D2 with anti-blockage feature. This consists of a hexagonal polyurethane disc mounted to the back of the diffuser. A PE-HD ring fitted to the impeller front side sits close to the disc. The impeller hub is protected by a polyurethane ring. This design improves the starting torque of low-capacity pumps and has the effect that solid particles such as sand are propelled outside instead of clogging the pump.

Motor:

Submersible canned motor (Franklin), NEMA standard, 50 Hz

- For single-phase alternating current (type PSC) or three-phase current
- With short cable
- Connection to power supply mains by means of cable connector (accessories)
- D.o.l. starting, start-up frequency up to 20/h
- Type of enclosure IP 68
- Thermal class B

Designation

Type series	S	100	D	-	4	/	6
Well diameter in mm							
Status							
Capacity in m ³ /h							
Number of stages							

Recommended Accessories

UPA Control: Control box for motor and dry running protection by immersion electrodes.

Automatic control unit: in conjunction with the Controlmatic E or Cervomatic EDP control and monitoring units, which protect the pump against dry running, if the water level falls, S 100D can be used for automatic water supply

Certification

Quality management certified to ISO 9001

Submersible Borehole Pumps

**for Well Diameters
of 100 mm (4 inch)**

Standard Programme

50 Hz

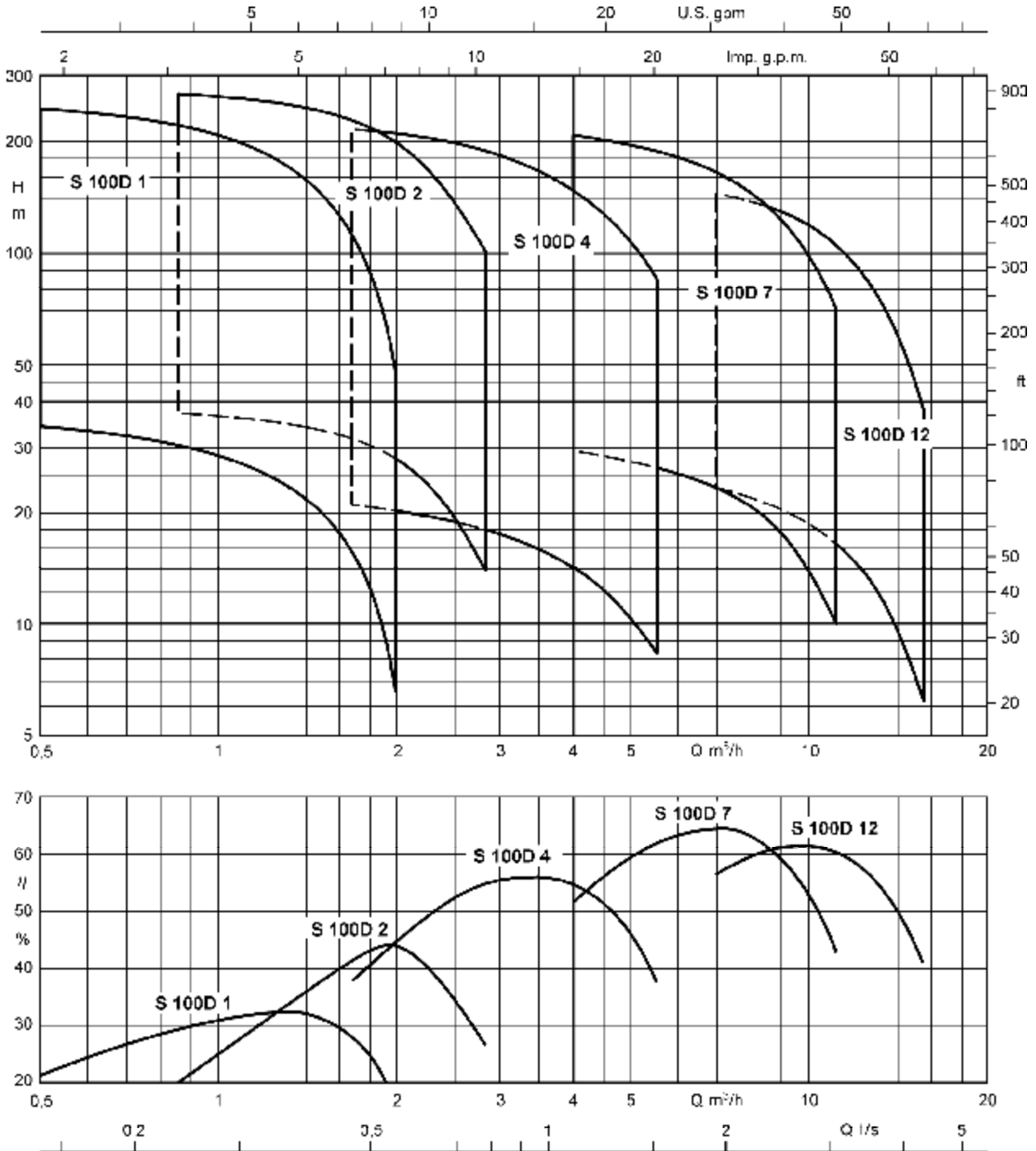
**Available automation products:**

- Automatic control unit

Product Features

- Pumps sizes D1 and D2 with anti-blockage feature
- Rust-proof
- Suitable for installation in narrow deep wells
- High efficiency
- Hermetically sealed motor
- Motor designed for maximum pump output
- Low noise level
- For vertical, angled or horizontal installation
- Check valve with anti-blockage valve disc

Selection Chart (Ranges on Offer)

 $n \approx 2900 \text{ rpm}$

Note:

 Up to a motor rating of $P_N = 2.2 \text{ kW}$, all pump sizes can be supplied with either single-phase a.c. or three-phase current motors.

Materials

Component	Standard design C1
Pump ...	
Outer pump casing/ Suction casing / Valve housing	CrNi steel (1.4301)
Stage casing	CrNi steel (1.4301)
Stage casing (diffuser) / Impeller	glass fibre reinforced Noryl (PPO GF20)
Shaft	Cr-steel (1.4021)
Bearing bush	Nitril NBR 80
Screws, bolts and nuts	CrNiMo-steel (A4-70)
Motor ...	
Shaft	CrNi steel (1.4305)
Bearing carrier	CrNi steel (1.4301)
Stator case	CrNi steel (1.4301)

Bearings / Lubrication

Plain bearings, lubricated by the fluid pumped or by the motor fill liquid. Depending on the number of stages, an additional intermediate bearing is provided in the pump.

The axial thrust is balanced by a thrust bearing in the motor. The hydraulic thrust is balanced by the pump's counter thrust bearing.

Direction of Rotation of the Pump

Clockwise rotation (viewed at the drive shaft end).

Pump End (Discharge Nozzle)

S 100D - 1, 2, 4 + 7: Internal thread G 1 1/4" (DN 32).

S 100D - 12: Internal thread G 2" (DN 50).

Installation

Vertical and, depending on the number of stages, also angled and horizontal installation.

Drive

Type canned motor in squirrel-cage design, 2 poles

Connection NEMA standard

Type of enclosure IP 68

Frequency 50 Hz

Type of current single-phase a.c. (1 ~)
or three-phase (3 ~)

Rated voltage U 220 ... 230 V (1~) and
380 ... 400 V (3~)

Rated power P_N up to 2.2 kW for 1~ and
up to 5.5 kW for 3~

Voltage fluctuation up to ± 5 % acc. to VDE

Frequency of starts up to 20/h

Min. delay before restarting . 3 min

A starter for **single-phase a.c. motors** in PSC design (with integrated run capacitor and motor protection) is included in the scope of supply.

Connection to Power Supply

All DN 100 motors are factory-equipped as follows:

1 x 1.5 m flat cable, quality 4 x 1.5 mm² (3 phases + 1 earth conductor).

Exception: DN 100 motors with a rating of 5.5 kW, 3~, are equipped as follows: 2.5 m cable, quality 4 x 1.5 mm².

Connection of extension cable (any length) by means of a cable connector

Connected at the factory by means of a **standard cable connector (non-separable, shrink tube)**

Ident. No. 40 980 708

For cable quality 4 x 1.5 mm² or 4 x 2.5 mm²

Ident. No. 39 020 536

For cable quality 4 x 4 mm²

Connected at the factory with **Franklin cable connector (separable, sealing compound)**

Ident. No. 90 049 385

For cable quality 4 x 1.5 mm² up to 4 x 2.5 mm²

Starting Mode

Only **direct on line**.

Temperatures

The **S 100D** submersible borehole pump is designed for use in water with temperatures of up to t = + 30 °C.

Variants Available on Request

- Higher fluid temperatures
- Higher voltages up to 500 V
- Other frequencies

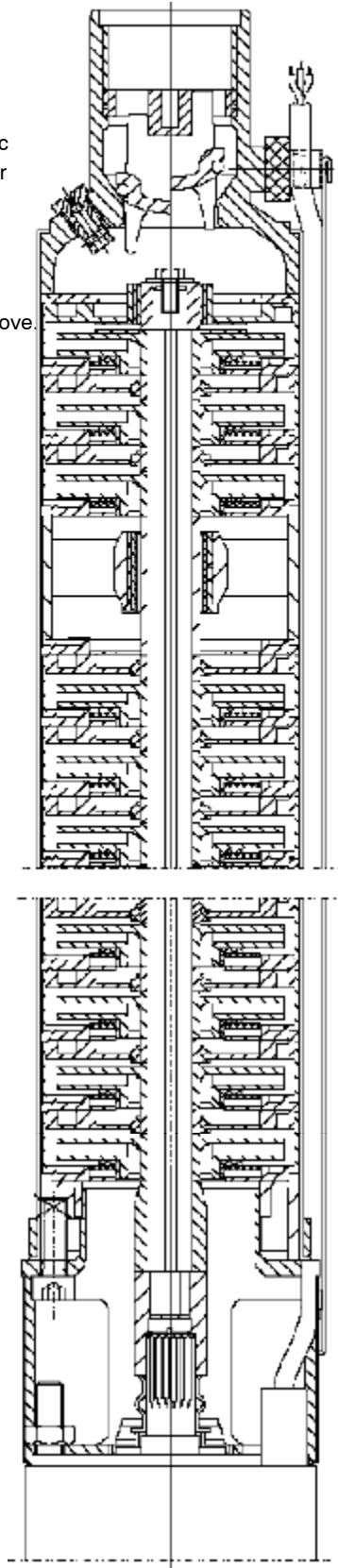
Design Features (Pump sizes D1 - D2)

Easy to commission and service

- Vent valve for operation with automatic control units such as Controlmatic E or Cervomatic EDP
- Easy to install thanks to plug-type connection of power cable of Franklin submersible motor
- The cable guard is easy to fit and remove

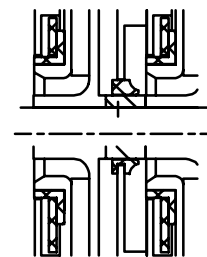
High operating reliability and long service life

- Maintenance-free and wear-protected pump bearings
- Special guide feature prevents jamming or tilting of the check valve
- Cable guard protects cables from damage.



Highly corrosion-resistant

- Suction casing, check valve housing and outer casing made of stainless steel
- Hydraulic system made of glass fibre reinforced Noryl



S 100D - 1 ...

for well diameters of 100 mm (4 inch)

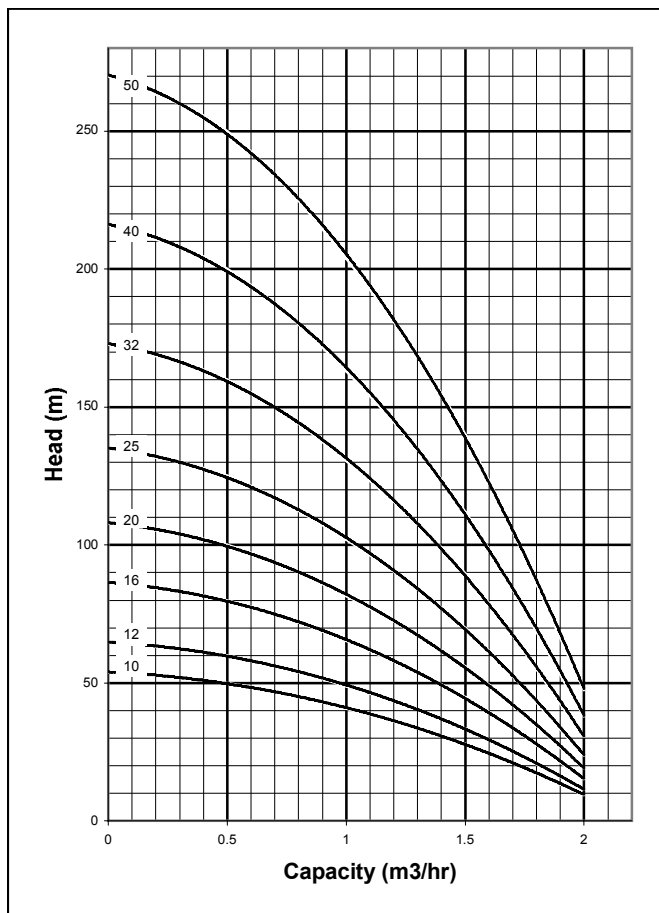
Pumps with submersible motors for ...

- Temperature of fluid handled up to + 30°C
- Current / Operating voltage 1~/230 V
- or 3~/400 V
- Starting direct

Pump unit S 100D	Rated power (motor) P _N kW	Current intensity for ...		Installation ²⁾	
		1 ~ 230 V			3 ~ 400 V
		I _N ¹⁾ A	I _N A		I _N A
1 / 10	0.37	4.2	1.2	v + h	
1 / 12	0.55	6.3	1.6	v + h	
1 / 16	0.55	6.3	1.6	v + h	
1 / 20	0.75	7.6	2.1	v + h	
1 / 25	1.1	9.6	3.0	v	
1 / 32	1.5	11.8	3.9	v	
1 / 40	1.5	11.8	3.9	v	
1 / 50	2.2	16.7	5.8	v	

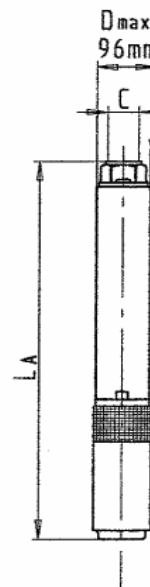
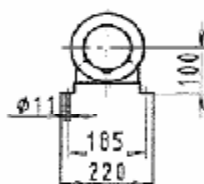
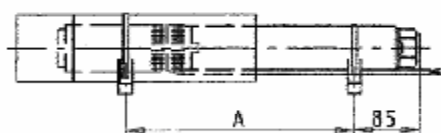
1) Capacitor run motors (PSC motors) with starter.

2) v = vertical and h = inclined / horizontal.


Note : Use a cooling shroud for horizontal installation.
Dimensions / Weights / Horizontal Installation

Pump unit S 100D	1 ~ /230V			3~/400V			C
	L _A +/- mm	M _A +/- kg	A +/- mm	L _A +/- mm	M _A +/- kg	A +/- mm	
1 / 10	657	12.3	453	637	11.3	441	G 1 1/4"
1 / 12	720	13.4	508	700	12.2	492	
1 / 16	810	13.8	597	780	12.6	582	
1 / 20	925	14.3	687	870	13.1	672	
1 / 25	1100	16.3	----	1045	14.9	----	
1 / 32	1284	18.1	----	1214	16.2	----	
1 / 40	1505	20.6	----	1450	18.0	----	
1 / 50	1805	22.7	----	1705	20.3	----	

For information on cooling shroud refer to page 10.



Accessories: UPA Control for dry running protection using 1 or 3 immersion electrodes, see page 11.

S 100D - 2 ...

for well diameters of 100 mm (4 inch)

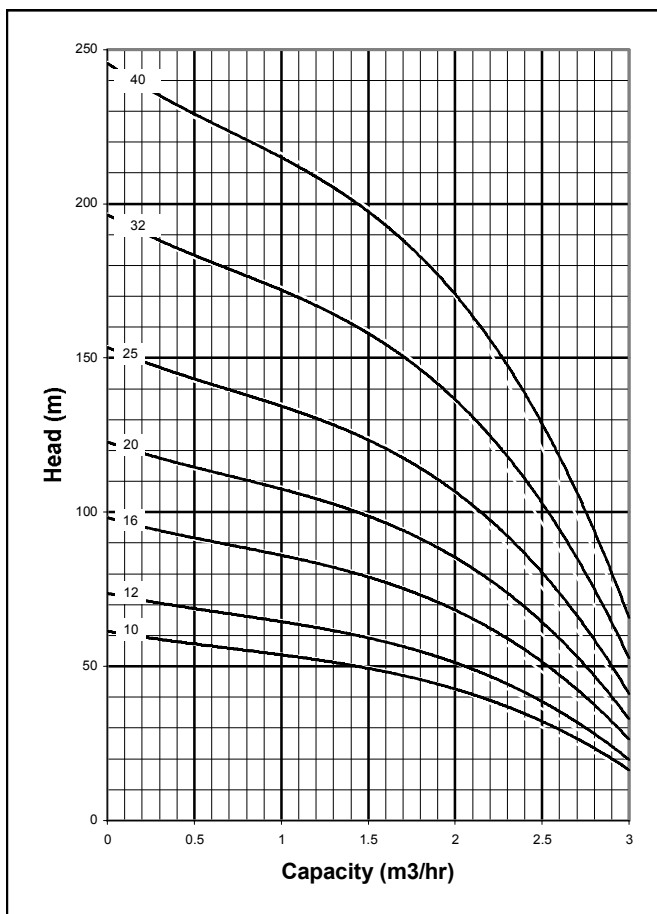
Pumps with submersible motors for ...

- Temperature of fluid handled up to + 30°C
- Current / Operating voltage 1~/230 V
- or 3~/400 V
- Starting direct

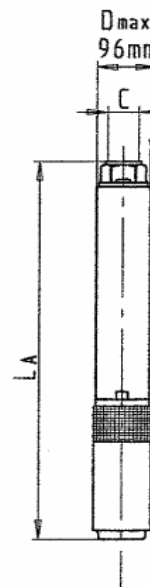
Pump unit S 100D	Rated power (motor) P _N kW	Current intensity for ...		Installation ²⁾
		1 ~ 230 V I _N ¹⁾ A	3 ~ 400 V I _N A	
2 / 10	0.55	6.3	1.6	v + h
2 / 12	0.55	6.3	1.6	v + h
2 / 16	0.75	7.6	2.1	v + h
2 / 20	1.1	9.6	3.0	v + h
2 / 25	1.5	11.8	3.9	v + h
2 / 32	1.5	11.8	3.9	v
2 / 40	2.2	16.7	5.8	v

1) Capacitor run motors (PSC motors) with starter.

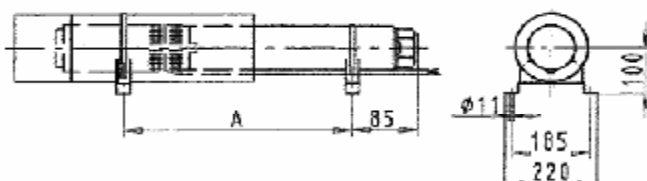
2) v = vertical and h = inclined / horizontal.


Note : Use a cooling shroud for horizontal installation.
Dimensions / Weights / Horizontal Installation

Pump unit S 100D	1 ~/ 230V			3~/400V			C
	L _A +/- mm	M _A +/- kg	A +/- mm	L _A +/- mm	M _A +/- kg	A +/- mm	
2 / 10	664	12.6	456	636	11.5	443	G 1 1/4"
2 / 12	725	13.5	510	696	12.2	496	
2 / 16	857	15.8	621	820	14.0	601	
2 / 20	985	17.8	729	925	15.2	701	
2 / 25	1117	18.9	851	1060	16.4	822	
2 / 32	1362	22.4	----	1277	18.5	----	
2 / 40	1580	24.3	----	1480	20.0	----	



For information on cooling shroud refer to page 10.



Accessories: UPA Control for dry running protection using 1 or 3 immersion electrodes, see page 11.

S 100D - 4 ...

for well diameters of 100 mm (4 inch)

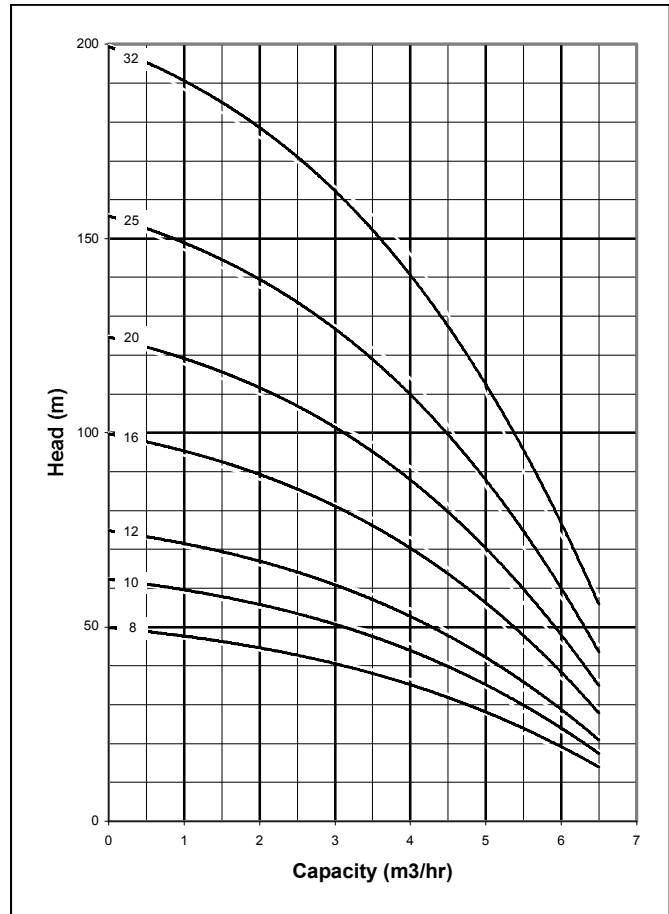
Pumps with submersible motors for ...

- Temperature of fluid handled up to + 30°C
- Current / Operating voltage 1~/230 V
- or 3~/400 V
- Starting direct

Pump unit S 100D	Rated power (motor) P _N kW	Current intensity for ...		Installation ²⁾
		1 ~ 230 V	3 ~ 400 V	
		I _N ¹⁾ A	I _N A	
4 / 8	0.75	7.6	2.1	v + h
4 / 10	1.1	9.6	3.0	v + h
4 / 12	1.1	9.6	3.0	v + h
4 / 16	1.5	11.8	3.9	v + h
4 / 20	2.2	16.7	5.8	v + h
4 / 25	3.0	----	7.8	v
4 / 32	3.0	----	7.8	v

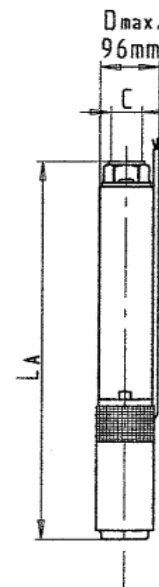
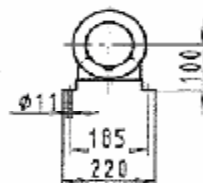
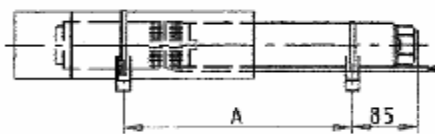
1) Capacitor run motors (PSC motors) with starter.

2) v = vertical and h = inclined / horizontal.


Note : Use a cooling shroud for horizontal installation.
Dimensions / Weights / Horizontal Installation

Pump unit S 100D	1 ~/ 230V			3~/400V			C
	L _A +/- mm	M _A +/- kg	A +/- mm	L _A +/- mm	M _A +/- kg	A +/- mm	
4 / 8	690	15.1	489	665	13.7	475	G 1 1/4"
4 / 10	777	17.2	559	728	14.9	536	
4 / 12	851	19.7	622	792	16.0	594	
4 / 16	975	20.1	734	1080	17.7	706	
4 / 20	1139	24.0	866.8	1048	19.7	819	
4 / 25	----	----	----	1204	21.2	----	
4 / 32	----	----	----	1546	23.9	----	

For information on cooling shroud refer to page 10.



Accessories: UPA Control for dry running protection using 1 or 3 immersion electrodes, see page 11.

S 100D - 7 ...

for well diameters of 100 mm (4 inch)

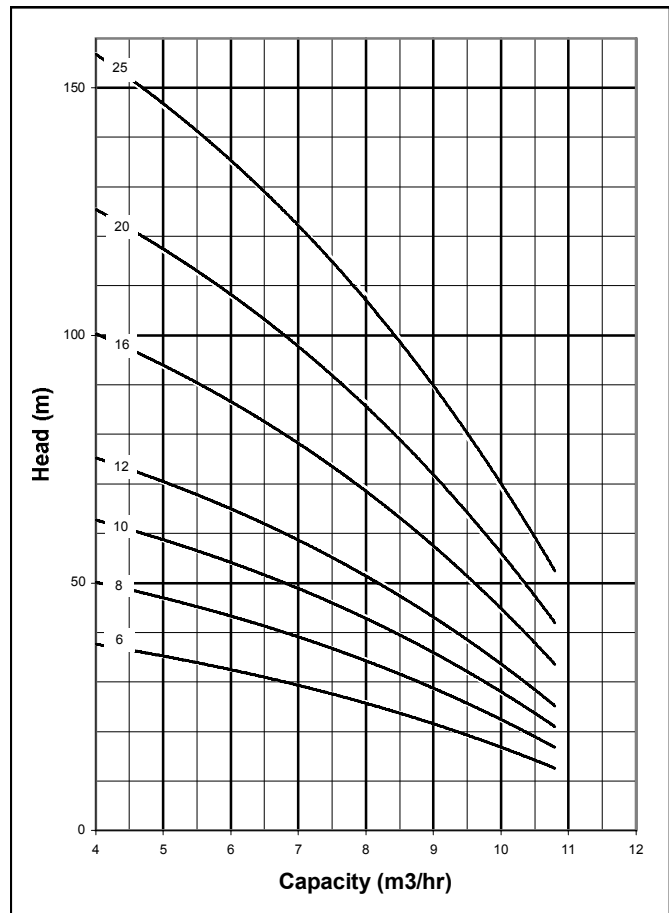
Pumps with submersible motors for ...

- Temperature of fluid handled up to + 30°C
- Current / Operating voltage 1~/230 V
- or 3~/400 V
- Starting direct

Pump unit S 100D	Rated power (motor) P _N kW	Current intensity for ...		Installation ²⁾
		1 ~ 230 V	3 ~ 400 V	
		I _N ¹⁾ A	I _N A	
7 / 6	1.1	9.6	3.0	v + h
7 / 8	1.5	11.8	3.9	v + h
7 / 10	1.5	11.8	3.9	v + h
7 / 12	2.2	16.7	5.8	v + h
7 / 16	3.0	----	7.8	v + h
7 / 20	3.7	----	9.0	v
7 / 25	5.5	----	13.5	v

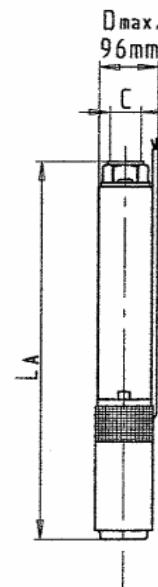
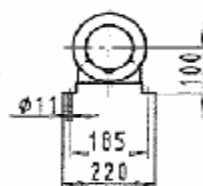
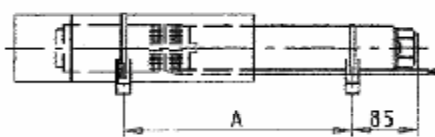
1) Capacitor run motors (PSC motors) with starter.

2) v = vertical and h = inclined / horizontal.


Note : Use a cooling shroud for horizontal installation.
Dimensions / Weights / Horizontal Installation

Pump unit S 100D	1 ~/ 230V			3~/400V			C
	L _A +/- mm	M _A +/- kg	A +/- mm	L _A +/- mm	M _A +/- kg	A +/- mm	
7 / 6	736	17.7	517	676	15.1	489	G 1 1/4"
7 / 8	831	19.1	599	776	16.7	571	
7 / 10	951	21.7	693	866	17.9	648	
7 / 12	1044	23.4	774	944	18.8	721	
7 / 16	----	----	----	1070	20.6	836	
7 / 20	----	----	----	1333	26.2	----	
7 / 25	----	----	----	1662	33.8	----	

For information on cooling shroud refer to page 10.



Accessories: UPA Control for dry running protection using 1 or 3 immersion electrodes, see page 11.

S 100D - 12 ...

for well diameters of 100 mm (4 inch)

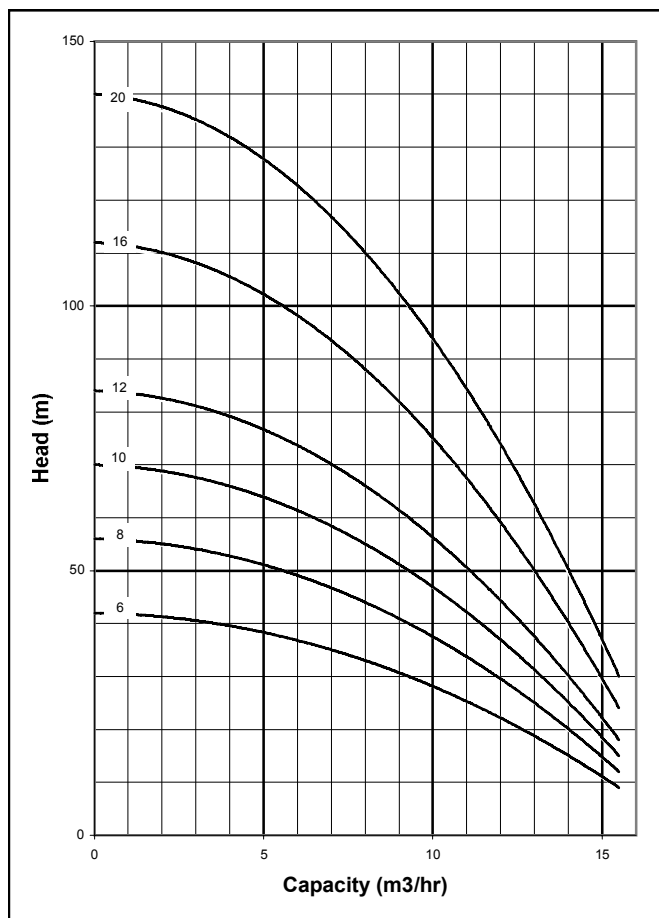
Pumps with submersible motors for ...

- Temperature of fluid handled up to + 30°C
- Current / Operating voltage 1~/230 V
- or 3~/400 V
- Starting direct

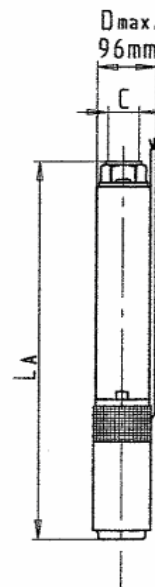
Pump unit S 100D	Rated power (motor) P _N kW	Current intensity for ...		Installation ²⁾
		1 ~ 230 V	3 ~ 400 V	
		I _N ¹⁾ A	I _N A	
12 / 6	1.5	11.8	3.9	v + h
12 / 8	2.2	16.7	5.8	v + h
12 / 10	2.2	16.7	5.8	v + h
12 / 12	3.0	----	7.8	v
12 / 16	3.7	----	9.0	v
12 / 20	5.5	----	13.5	v

1) Capacitor run motors (PSC motors) with starter.

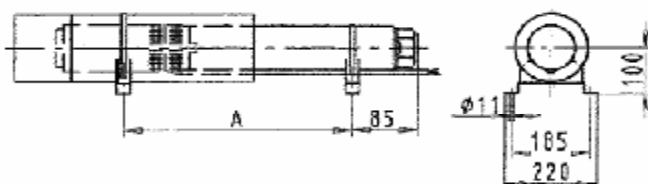
2) v = vertical and h = inclined / horizontal.


Note : Use a cooling shroud for horizontal installation.
Dimensions / Weights / Horizontal Installation

Pump unit S 100D	1 ~/ 230V			3~/400V			C
	L _A +/- mm	M _A +/- kg	A +/- mm	L _A +/- mm	M _A +/- kg	A +/- mm	
12 / 6	1000	19.3	739	945	16.9	707	G 2"
12 / 8	1148	21.9	865	1070	18.5	823	
12 / 10	1295	24.6	991	1195	20.0	938	
12 / 12	----	----	----	1348	22.8	----	
12 / 16	----	----	----	1718	30.2	----	
12 / 20	----	----	----	2093	38.2	----	



For information on cooling shroud refer to page 10.



Accessories: UPA Control for dry running protection using 1 or 3 immersion electrodes, see page 11.

Scope of Supply for Single-phase A.C. Motors DN 100 (1~)

A starter for **single-phase a.c. motors** in PSC design (with integrated run capacitor and motor protection) is included in the scope of supply.

Permissible Cable Lengths

ΔU up to 3 %, direct starting and t up to + 30 °C

Current / Voltage	Motor rating kW	Cable lengths for cable cross-section in ... mm ²			
		1.5	2.5	4.0	6.0
1~/ 230 V (PSC)	0.37	72 m	120 m	190 m	284 m
	0.55	60 m	100 m	159 m	236 m
	0.75	47 m	79 m	125 m	186 m
	1.10	30 m	50 m	80 m	118 m
	1.50	26 m	43 m	68 m	101 m
	2.20	20 m	32 m	52 m	77 m
3~/ 400 V	0.37	752 m	-	-	-
	0.55	483 m	-	-	-
	0.75	368 m	614 m	-	-
	1.10	242 m	403 m	645 m	-
	1.50	194 m	322 m	516 m	-
	2.20	131 m	218 m	350 m	525 m
	3.00	100 m	165 m	265 m	397 m
	3.70	80 m	135 m	215 m	323 m
	5.50	55 m	90 m	143 m	215 m

Technical Data - Cooling Shroud

Pump unit S 100D	Installation ¹⁾	Dimension (dia. x length) and motor type (kW)	Cooling Shroud Ident No.	Strainer Ident No.	Support feet Ident No.
1/7 to 1/20 1/25 to 1/30	v+h v	Ø115 (130) x 400 for motor up to 0.75 kW (1~) or up to 0.75 kW (3~) Weight 1.5 kg	90 065 490	90 065 494	90 065 495
2/7 to 2/15 4/3 to 4/8 7/4	v+h v+h v+h				
1/35 to 1/50	v				
2/18 to 2/27 2/30	v+h v	Ø115 (130) x 500 for motor up to 1.5 kW (1~) or up to 1.5 kW (3~) Weight 1.7 kg	90 065 491	90 065 494	90 065 495
4/11 to 4/16 7/6 to 7/8 12/4 to 12/6	v+h v+h v+h				
2/33 to 2/50 4/21 4/24 to 4/33 7/11 to 7/18 12/10 12/13	v v+h v v+h v+h v				
4/40	v	Ø115 (130) x 800 for motor up to 5.5 kW (3~) Weight 2.5 kg	90 065 492	Ø115x117 0.3 kg	Set = 2 pc. 0.6 kg
7/23 to 7/33 12/17 to 12/25	v v				

¹⁾ v = vertical, h = inclined / horizontal

Accessories: UPA Control for Dry Running Protection (using 3 immersion electrodes)

S 100D-1/.. 1~								S 100D-1/... 3~						
Relais Télémécanique (A)	Electrode (Qty.)	7 9 12	14 16 20	25 30	35 40	50	Ident No.	Relais Télémécanique (A)	Electrode (Qty.)	7 9 12	14 to 30	35 40 50	Ident No.	
2.5 to 4.0	(3)	X					40 980 891	1.0 to 1.6	(3)	X			40 980 887	
4.0 to 6.0	(3)		X				40 980 893	1.6 to 2.5	(3)		X		40 980 889	
5.5 to 8.0	(3)			X			40 990 895	2.5 to 4.0	(3)			X	40 980 891	
7.0 to 10	(3)				X		40 980 897							
9.0 to 13	(3)					X	40 980 899							

S 100D-2/.. 1~									S 100D-2/... 3~						
Relais Télémécanique (A)	Electrode (Qty.)	7	11	15	18 20 22	27 30	33 38 44	Ident No.	Relais Télémécanique (A)	Electrode (Qty.)	7	11 15	18 to 30	33 44 50	Ident No.
2.5 to 4.0	(3)	X						40 980 891	1.0 to 1.6	(3)	X				40 980 887
4.0 to 6.0	(3)		X					40 980 893	1.6 to 2.5	(3)		X			40 980 889
5.5 to 8.0	(3)			X				40 990 895	2.5 to 4.0	(3)			X		40 980 891
7.0 to 10	(3)				X			40 980 897	5.5 to 8.0	(3)				X	40 980 895
9.0 to 13	(3)					X		40 980 899							
12 to 18	(3)						X	40 984 811							

S 100D-4/.. 1~									S 100D-4/... 3~							
Relais Télémécanique (A)	Electrode (Qty.)	3	6	8	11	16	21 24	Ident No.	Relais Télémécanique (A)	Electrode (Qty.)	3	6 8	11 16	21 24	33 40	Ident No.
2.5 to 4.0	(3)	X						40 980 891	1.0 to 1.6	(3)	X					40 980 887
4.0 to 6.0	(3)		X					40 980 893	1.6 to 2.5	(3)		X				40 980 889
5.5 to 8.0	(3)			X				40 990 895	2.5 to 4.0	(3)			X			40 980 891
7.0 to 10	(3)				X			40 980 897	5.5 to 8.0	(3)				X		40 980 895
9.0 to 13	(3)					X		40 980 899	7.0 to 10	(3)					X	40 980 897
12 to 18	(3)						X	40 984 811								

S 100D-7/.. 1~							S 100D-7/... 3~							
Relais Télémécanique (A)	Electrode (Qty.)	4	6	8	11 13	Ident No.	Relais Télémécanique (A)	Electrode (Qty.)	4	6 8	11 13 18	23	28 33	Ident No.
5.5 to 8.0	(3)	X				40 990 895	1.6 to 2.5	(3)	X					40 980 889
7.0 to 10	(3)		X			40 980 897	2.5 to 4.0	(3)		X				40 980 891
9.0 to 13	(3)			X		40 980 899	5.5 to 8.0	(3)			X			40 980 895
12 to 18	(3)				X	40 984 811	7.0 to 10	(3)				X		40 980 897
							12 to 18	(3)					X	40 984 811

S 100D-12/.. 1~						S 100D-12/... 3~						
Relais Télémécanique (A)	Electrode (Qty.)	4	6	10	Ident No.	Relais Télémécanique (A)	Electrode (Qty.)	4 6	10	13 17	21 25	Ident No.
7.0 to 10	(3)	X			40 980 897	2.5 to 4.0	(3)	X				40 980 891
9.0 to 13	(3)		X		40 980 899	5.5 to 8.0	(3)		X			40 980 895
12 to 18	(3)			X	40 984 811	7.0 to 10	(3)			X		40 980 897
						12 to 18	(3)				X	40 984 811



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