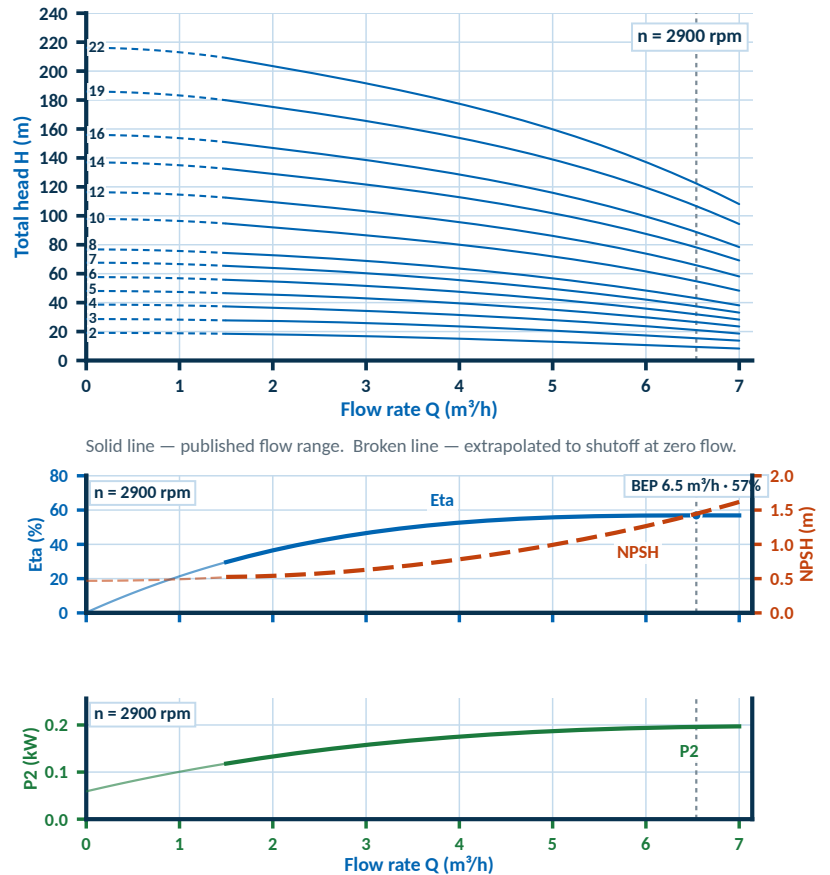


SAR 4 Vertical Multistage Centrifugal Pump



PERFORMANCE CHART AT N=2900 RPM



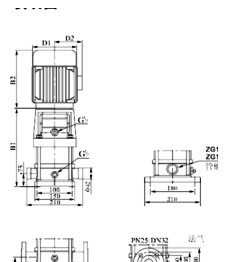
Efficiency and NPSH required (upper), absorbed power P_2 (lower), digitised from the manufacturer curve sheet. P_2 is the input power per stage.

Typical Applications

- Water supply: raw-water transfer, filtration and boosting duties in waterworks, district distribution, high-rise pressure boosting and packaged booster sets.
- Industrial pressure boosting: process water systems, washing and cleaning plant and high-pressure flushing systems.
- Industrial liquid transfer: cooling and air-conditioning circuits, boiler feed and condensate systems, machine-tool coolant supply, and mild acids and alkalis.
- Water treatment: ultra-filtration, reverse osmosis, distillation, separators and swimming-pool circulation.
- Irrigation: field and farm irrigation, sprinkler systems and drip irrigation.

Operating Conditions

- Thin, clean, non-flammable and non-explosive liquids, free of solid particles or fibres.
- Liquid temperature: standard version $-15\text{ }^{\circ}\text{C}$ to $+70\text{ }^{\circ}\text{C}$; hot-water version $+70\text{ }^{\circ}\text{C}$ to $+120\text{ }^{\circ}\text{C}$.
- Maximum ambient temperature $+40\text{ }^{\circ}\text{C}$; maximum installation altitude 1000 m.
- Maximum pressure generated ranges from 1.9 bar on SAR 4-2 to 20.7 bar on SAR 4-22, model by model — see Technical Data. Suction and discharge flanges to PN25 / DN32.
- Suction and discharge ports are in line and of equal bore, allowing the pump to be installed directly in a straight pipe run.
- Pump head and motor are coupled by a rigid spacer coupling, so the mechanical seal can be changed without disturbing the pipework.
- Non-self-priming: the pump must be fully primed and the required NPSH maintained at the inlet to avoid cavitation.
- Above $+40\text{ }^{\circ}\text{C}$ ambient or above 1000 m altitude the motor output is derated and a larger motor frame must be selected.
- Motor totally enclosed, fan-cooled, protection IP55, insulation class F.
- Optional intelligent controller protects against dry running, phase failure and overload.



Technical Data

Technical data for all 13 models in the SAR 4 series is tabulated on page 2.



SAR 4 Technical Data

Model	Motor P2		Supply / voltage range	Current at 50 Hz (A)			Motor eff. (%)	Rated flow Q (m³/h)	Head at rated Q (m)	Max. head (m)	Max. flow (m³/h)	Speed (rpm)	Max. press. (bar)	DN	Dimensions (mm)					Weight (kg)
	kW	HP		Full load In	Start DOL Ist	Soft start Iss									B1	B2	B1+B2	D1	D2	
SAR 4-2	0.37	0.5	1~ 220-240 V	2.7	12	8.2	62.0	4	15	19	7	2900	1.9	DN32	276	225	501	148	117	21
SAR 4-3	0.55	0.75	1~ 220-240 V	3.9	17	12	65.0	4	24	28	7	2900	2.7	DN32	303	225	528	148	117	22
SAR 4-4	0.75	1	1~ 220-240 V	5.0	23	15	68.0	4	32	38	7	2900	3.7	DN32	340	245	585	170	142	25
SAR 4-5	1.1	1.5	1~ 220-240 V	7.2	32	22	70.0	4	40	47	7	2900	4.6	DN32	367	245	612	170	142	27
SAR 4-6	1.1	1.5	1~ 220-240 V	7.2	32	22	70.0	4	48	56	7	2900	5.5	DN32	394	245	639	170	142	27
SAR 4-7	1.5	2	1~ 220-240 V	9.5	43	29	72.0	4	56	66	7	2900	6.5	DN32	431	290	721	190	155	33
SAR 4-8	1.5	2	1~ 220-240 V	9.5	43	29	72.0	4	64	74	7	2900	7.3	DN32	458	290	748	190	155	33
SAR 4-10	2.2	3	1~ 220-240 V	14	61	41	74.0	4	81	96	7	2900	9.4	DN32	512	290	802	190	155	37
SAR 4-12	2.2	3	1~ 220-240 V	14	61	41	74.0	4	95	114	7	2900	11.2	DN32	566	290	856	190	155	38
SAR 4-14	3	4	3~ 380-415 V	5.9	38	18	85.8	4	112	136	7	2900	13.3	DN32	630	345	975	197	165	46
SAR 4-16	3	4	3~ 380-415 V	5.9	38	18	85.8	4	129	152	7	2900	14.9	DN32	684	345	1029	197	165	48
SAR 4-19	4	5.5	3~ 380-415 V	7.7	50	23	86.8	4	153	183	7	2900	17.9	DN32	765	355	1120	230	188	57
SAR 4-22	4	5.5	3~ 380-415 V	7.7	50	23	86.8	4	178	211	7	2900	20.7	DN32	846	355	1201	230	188	59

Maximum pressure is the pressure the pump itself generates at its maximum head; the sum of inlet pressure and pump pressure must not exceed the casing rating. Currents are calculated nominal values for a 2-pole IE3 motor (single phase at 230 V, three phase at 400 V); In is the full-load running current, Ist the direct-on-line starting current and Iss the current with a soft starter set to ramp at 3 x In (adjustable, typically 2 to 4 x In). A soft starter limits inrush and mechanical shock; it does not raise running efficiency, and adds about 0.1 to 0.5 % loss unless it is bypassed once up to speed. Motor efficiency is the nominal IE3 figure at full load, direct-on-line. **Confirm against the motor nameplate before sizing cable, starter or overload.**

Maximum head is the head at the lowest published flow; maximum flow is the highest published flow for the series. Motor totally enclosed, fan-cooled, IP55, insulation class F, 2-pole, 3 x 380-415 V / 50 Hz. HP figures are the nominal standard-frame equivalents of the kW ratings. Motors up to and including 2.2 kW are single-phase as standard, 3 kW and above three-phase; 3 x 200-220 V and other supply voltages are available to special order. Flanges to PN25 / DN32. Weights are for the pump with standard motor.

Model Designation

SAR F 4 – 2 / 1

- SAR** Light vertical multistage centrifugal pump
- F** Wetted parts in stainless steel AISI 304 or 316L. Omitted on the standard cast-iron construction, which is designated SAR.
- 4** Rated flow in m³/h — identifies the series
- 2** Number of chambers (stages)
- 1** Number of impellers fitted. Where this is fewer than the number of chambers, the remaining chamber carries no impeller and the pump delivers proportionally less head. The element is omitted when every chamber carries an impeller, which is the case for all 13 models in this series, e.g. SAR 4-22.



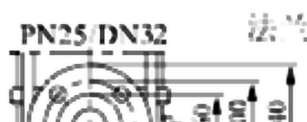
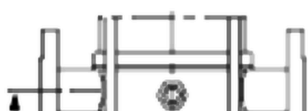
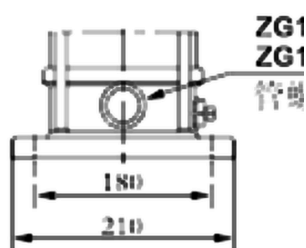
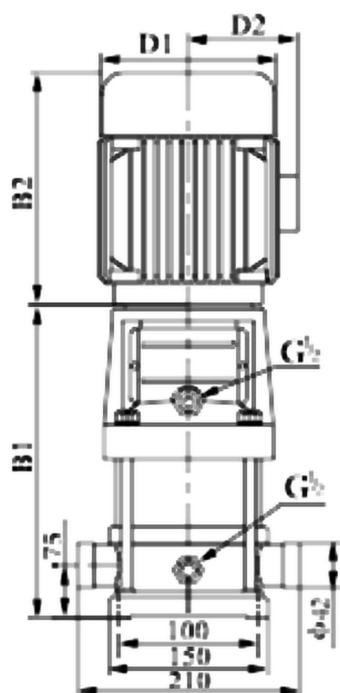
SAR 4 Performance Table

Total head H (m) against flow rate Q (m³/h) at 2900 rpm, tested on clean water at 20 °C (kinematic viscosity 1 mm²/s, air-free). Tolerances to ISO 9906, Annex A. Motor power P2 is the standard motor rating for each model.

Model	Motor			Q (m ³ /h)						
	kW	HP	Supply / voltage range	1.5	2	3	4	5	6	7
SAR 4-2	0.37	0.5	1~ 220-240 V	19	18	17	15	13	10	8
SAR 4-3	0.55	0.75	1~ 220-240 V	28	27	26	24	20	18	13
SAR 4-4	0.75	1	1~ 220-240 V	38	36	34	32	27	24	19
SAR 4-5	1.1	1.5	1~ 220-240 V	47	45	43	40	34	31	23
SAR 4-6	1.1	1.5	1~ 220-240 V	56	54	52	48	41	37	28
SAR 4-7	1.5	2	1~ 220-240 V	66	63	61	56	48	43	33
SAR 4-8	1.5	2	1~ 220-240 V	74	72	70	64	55	50	38
SAR 4-10	2.2	3	1~ 220-240 V	96	90	87	81	71	62	48
SAR 4-12	2.2	3	1~ 220-240 V	114	108	104	95	85	75	58
SAR 4-14	3	4	3~ 380-415 V	136	126	122	112	101	89	68
SAR 4-16	3	4	3~ 380-415 V	152	144	140	129	115	101	78
SAR 4-19	4	5.5	3~ 380-415 V	183	171	168	153	137	122	93
SAR 4-22	4	5.5	3~ 380-415 V	211	200	192	178	160	138	108

Select the duty point within the published flow range. Operating far to the right of the range overloads the motor; operating far to the left causes heat build-up in the pump. The stainless-steel construction is designated SARF and has identical hydraulic performance.

SAR 4 Dimensions and Connections



B1 base to motor flange

B2 motor height

B1+B2 overall height

D1 across motor frame

D2 across base

All dimensions in mm. Suction and discharge are in line and of equal bore, DN32, flanges to PN25 / DN32.

Per-model dimensions and weights are tabulated in the Technical Data pages. Single-phase and flameproof motors alter the external dimensions.