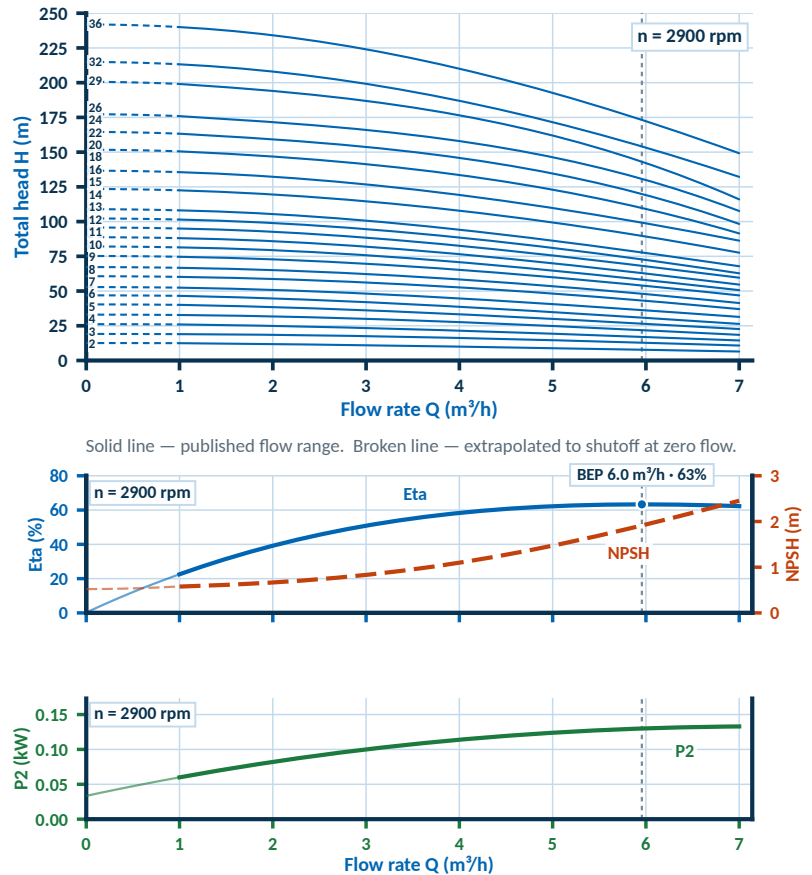


SAR 5 Vertical Multistage Centrifugal Pump



PERFORMANCE CHART AT N=2900 RPM



Efficiency and NPSH required (upper), absorbed power P2 (lower), digitised from the manufacturer curve sheet. P2 is the input power per stage.

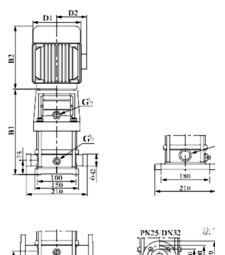
Typical Applications

- 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 °C to +70 °C; hot-water version +70 °C to +120 °C.
- Maximum ambient temperature +40 °C; maximum installation altitude 1000 m.
- Maximum pressure generated ranges from 1.3 bar on SAR 5-2 to 23.6 bar on SAR 5-36, 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 °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.

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Technical Data

Technical data for all 23 models in the SAR 5 series is tabulated on pages 2 to 3.



SAR 5

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 5-2	0.37	0.5	1~ 220-240 V	2.7	12	8.2	62.0	5	9	13	7	2900	1.3	DN32	279	225	504	140	110	23
SAR 5-3	0.55	0.75	1~ 220-240 V	3.9	17	12	65.0	5	15	19	7	2900	1.9	DN32	306	225	531	140	110	23
SAR 5-4	0.55	0.75	1~ 220-240 V	3.9	17	12	65.0	5	19	26	7	2900	2.5	DN32	333	225	558	140	110	24
SAR 5-5	0.75	1	1~ 220-240 V	5.0	23	15	68.0	5	24	33	7	2900	3.2	DN32	366	245	611	160	125	27
SAR 5-6	1.1	1.5	1~ 220-240 V	7.2	32	22	70.0	5	28	40	7	2900	3.9	DN32	393	245	638	160	125	29
SAR 5-7	1.1	1.5	1~ 220-240 V	7.2	32	22	70.0	5	32	46	7	2900	4.5	DN32	420	245	665	160	125	29
SAR 5-8	1.1	1.5	1~ 220-240 V	7.2	32	22	70.0	5	40	53	7	2900	5.2	DN32	447	245	692	160	125	30
SAR 5-9	1.5	2	1~ 220-240 V	9.5	43	29	72.0	5	47	60	7	2900	5.9	DN32	490	290	780	180	125	37
SAR 5-10	1.5	2	1~ 220-240 V	9.5	43	29	72.0	5	53	67	7	2900	6.6	DN32	517	290	807	180	125	37
SAR 5-11	2.2	3	1~ 220-240 V	14	61	41	74.0	5	59	74	7	2900	7.3	DN32	544	290	834	180	125	39
SAR 5-12	2.2	3	1~ 220-240 V	14	61	41	74.0	5	63	81	7	2900	7.9	DN32	571	290	861	180	125	40
SAR 5-13	2.2	3	1~ 220-240 V	14	61	41	74.0	5	68	88	7	2900	8.6	DN32	598	290	888	180	125	40
SAR 5-14	2.2	3	1~ 220-240 V	14	61	41	74.0	5	74	95	7	2900	9.3	DN32	625	290	915	180	125	41
SAR 5-15	2.2	3	1~ 220-240 V	14	61	41	74.0	5	79	101	7	2900	9.9	DN32	652	290	942	180	125	42
SAR 5-16	2.2	3	1~ 220-240 V	14	61	41	74.0	5	85	108	7	2900	10.6	DN32	679	290	969	180	125	42
SAR 5-18	3	4	3~ 380-415 V	5.9	38	18	85.8	5	98	122	7	2900	12.0	DN32	737	345	1082	190	140	49

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.



SAR 5

Technical Data (continued)

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 5-20	3	4	3~ 380-415 V	5.9	38	18	85.8	5	108	135	7	2900	13.2	DN32	791	345	1136	190	140	50
SAR 5-22	4	5.5	3~ 380-415 V	7.7	50	23	86.8	5	120	150	7	2900	14.7	DN32	845	355	1200	220	150	60
SAR 5-24	4	5.5	3~ 380-415 V	7.7	50	23	86.8	5	132	163	7	2900	16.0	DN32	899	355	1254	220	150	62
SAR 5-26	4	5.5	3~ 380-415 V	7.7	50	23	86.8	5	145	176	7	2900	17.3	DN32	953	355	1308	220	150	63
SAR 5-29	4	5.5	3~ 380-415 V	7.7	50	23	86.8	5	155	198	7	2900	19.4	DN32	1034	355	1389	220	150	65
SAR 5-32	5.5	7.5	3~ 380-415 V	11	68	32	87.8	5	170	214	7	2900	21.0	DN32	1145	390	1535	260	210	80
SAR 5-36	5.5	7.5	3~ 380-415 V	11	68	32	87.8	5	191	241	7	2900	23.6	DN32	1253	390	1643	260	210	83

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 5 – 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.
5	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 23 models in this series, e.g. SAR 5-36.



SAR 5

Performance Table

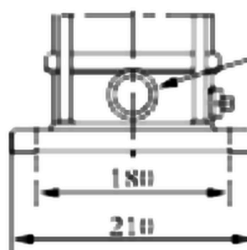
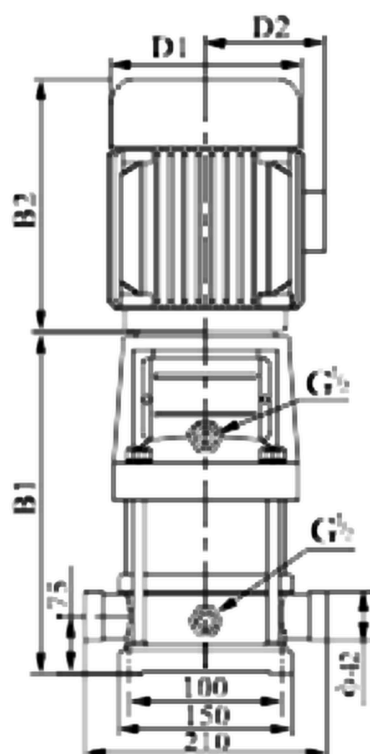
Total head H (m) against flow rate Q (m³/h) at 2900 rpm, tested on clean water at 20 °C (kinematic viscosity 1 mm²/s, air-free). Tolerances to ISO 9906, Annex A. Motor power P2 is the standard motor rating for each model.

Model	Motor			Q (m ³ /h)						
	kW	HP	Supply / voltage range	1	2	3	4	5	6	7
SAR 5-2	0.37	0.5	1~ 220-240 V	13	12	11	10	9	7	6
SAR 5-3	0.55	0.75	1~ 220-240 V	19	19	18	16	15	12	10
SAR 5-4	0.55	0.75	1~ 220-240 V	26	25	24	22	19	16	14
SAR 5-5	0.75	1	1~ 220-240 V	33	32	30	28	24	22	18
SAR 5-6	1.1	1.5	1~ 220-240 V	40	38	37	34	28	27	23
SAR 5-7	1.1	1.5	1~ 220-240 V	46	45	42	40	32	32	27
SAR 5-8	1.1	1.5	1~ 220-240 V	53	51	48	45	40	36	31
SAR 5-9	1.5	2	1~ 220-240 V	60	59	56	53	47	44	37
SAR 5-10	1.5	2	1~ 220-240 V	67	65	62	59	53	48	41
SAR 5-11	2.2	3	1~ 220-240 V	74	73	70	66	59	54	47
SAR 5-12	2.2	3	1~ 220-240 V	81	79	76	72	63	59	51
SAR 5-13	2.2	3	1~ 220-240 V	88	85	82	78	68	64	55
SAR 5-14	2.2	3	1~ 220-240 V	95	92	89	83	74	69	60
SAR 5-15	2.2	3	1~ 220-240 V	101	99	95	89	79	74	63
SAR 5-16	2.2	3	1~ 220-240 V	108	105	101	95	85	78	68
SAR 5-18	3	4	3~ 380-415 V	122	119	115	109	98	90	78
SAR 5-20	3	4	3~ 380-415 V	135	132	127	120	108	100	87
SAR 5-22	4	5.5	3~ 380-415 V	150	147	142	134	120	112	91
SAR 5-24	4	5.5	3~ 380-415 V	163	160	154	146	132	122	97
SAR 5-26	4	5.5	3~ 380-415 V	176	173	166	157	145	132	106
SAR 5-29	4	5.5	3~ 380-415 V	198	194	188	178	155	149	115
SAR 5-32	5.5	7.5	3~ 380-415 V	214	208	198	189	170	154	131
SAR 5-36	5.5	7.5	3~ 380-415 V	241	234	223	212	191	173	148

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 5 Dimensions and Connections

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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.

