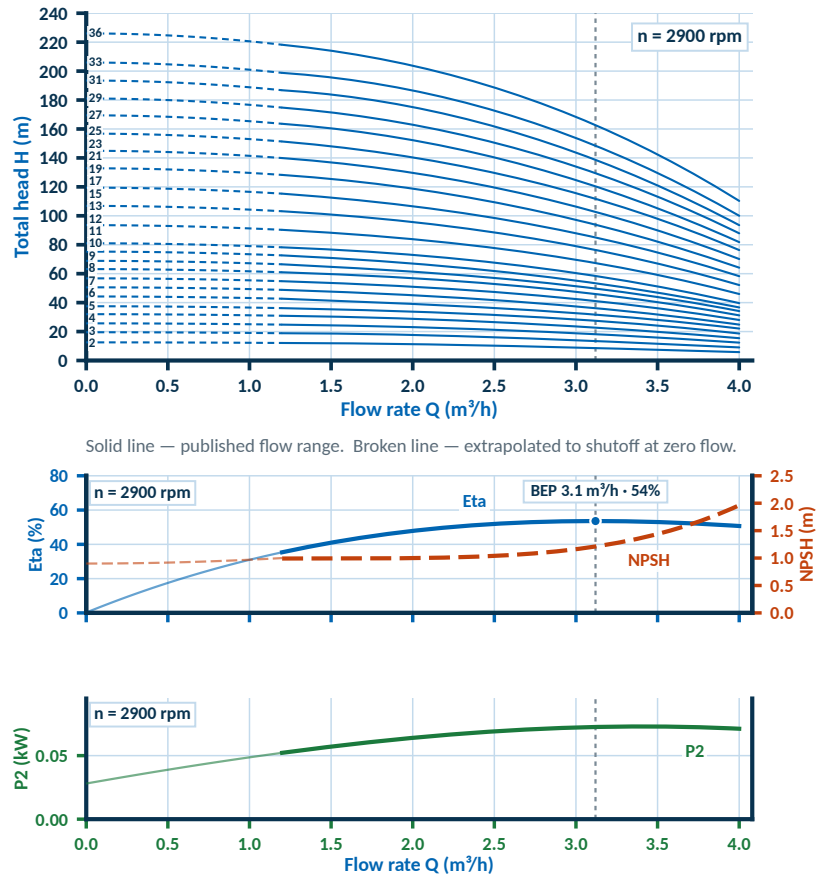


SAR 3

Vertical Multistage Centrifugal Pump



PERFORMANCE CHART AT N=2900 RPM



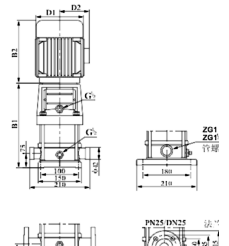
Efficiency and NPSH required (upper), absorbed power P2 (lower), digitised from the manufacturer curve sheet. P2 is the input power per stage.

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 1.2 bar on SAR 3-2 to 21.4 bar on SAR 3-36, model by model — see Technical Data. Suction and discharge flanges to PN25 / DN25.
- 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.



Technical Data

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



SAR 3 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 3-2	0.37	0.5	1~ 220-240 V	2.7	12	8.2	62.0	3	9	12.5	4	2900	1.2	DN25	258	225	483	148	117	20
SAR 3-3	0.37	0.5	1~ 220-240 V	2.7	12	8.2	62.0	3	14	19	4	2900	1.9	DN25	276	225	501	148	117	20
SAR 3-4	0.37	0.5	1~ 220-240 V	2.7	12	8.2	62.0	3	19	25	4	2900	2.5	DN25	294	225	519	148	117	21
SAR 3-5	0.37	0.5	1~ 220-240 V	2.7	12	8.2	62.0	3	23	31	4	2900	3.0	DN25	312	225	537	148	117	21
SAR 3-6	0.55	0.75	1~ 220-240 V	3.9	17	12	65.0	3	28	36	4	2900	3.5	DN25	330	225	555	148	117	23
SAR 3-7	0.55	0.75	1~ 220-240 V	3.9	17	12	65.0	3	32	43	4	2900	4.2	DN25	348	225	573	148	117	24
SAR 3-8	0.75	1	1~ 220-240 V	5.0	23	15	68.0	3	37	49	4	2900	4.8	DN25	376	245	621	170	142	27
SAR 3-9	0.75	1	1~ 220-240 V	5.0	23	15	68.0	3	42	55	4	2900	5.4	DN25	394	245	639	170	142	28
SAR 3-10	0.75	1	1~ 220-240 V	5.0	23	15	68.0	3	47	61	4	2900	6.0	DN25	412	245	657	170	142	28
SAR 3-11	1.1	1.5	1~ 220-240 V	7.2	32	22	70.0	3	51	67	4	2900	6.6	DN25	430	245	675	170	142	29
SAR 3-12	1.1	1.5	1~ 220-240 V	7.2	32	22	70.0	3	55	73	4	2900	7.2	DN25	448	245	693	170	142	30
SAR 3-13	1.1	1.5	1~ 220-240 V	7.2	32	22	70.0	3	60	78	4	2900	7.6	DN25	466	245	711	170	142	31
SAR 3-15	1.1	1.5	1~ 220-240 V	7.2	32	22	70.0	3	69	90	4	2900	8.8	DN25	502	245	747	170	142	32
SAR 3-17	1.5	2	1~ 220-240 V	9.5	43	29	72.0	3	79	103	4	2900	10.1	DN25	548	290	838	190	155	38
SAR 3-19	1.5	2	1~ 220-240 V	9.5	43	29	72.0	3	88	115	4	2900	11.3	DN25	584	290	874	190	155	39
SAR 3-21	2.2	3	1~ 220-240 V	14	61	41	74.0	3	98	128	4	2900	12.5	DN25	620	290	910	190	155	42

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 / DN25. Weights are for the pump with standard motor.



SAR 3

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 3-23	2.2	3	1~ 220-240 V	14	61	41	74.0	3	107	140	4	2900	13.7	DN25	656	290	946	190	155	43
SAR 3-25	2.2	3	1~ 220-240 V	14	61	41	74.0	3	116	151	4	2900	14.8	DN25	692	290	982	190	155	44
SAR 3-27	2.2	3	1~ 220-240 V	14	61	41	74.0	3	124	164	4	2900	16.1	DN25	728	290	1018	190	155	45
SAR 3-29	2.2	3	1~ 220-240 V	14	61	41	74.0	3	133	175	4	2900	17.2	DN25	764	290	1054	190	155	46
SAR 3-31	3	4	3~ 380-415 V	5.9	38	18	85.8	3	142	187	4	2900	18.3	DN25	810	345	1155	197	165	54
SAR 3-33	3	4	3~ 380-415 V	5.9	38	18	85.8	3	151	199	4	2900	19.5	DN25	846	345	1191	197	165	55
SAR 3-36	3	4	3~ 380-415 V	5.9	38	18	85.8	3	168	218	4	2900	21.4	DN25	900	345	1245	197	165	57

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 / DN25. Weights are for the pump with standard motor.

Model Designation

SAR F 3 – 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.
3	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 3-36.



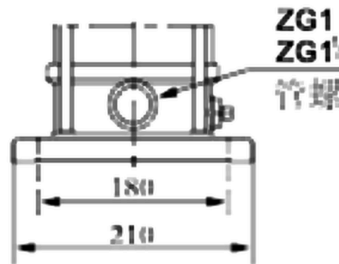
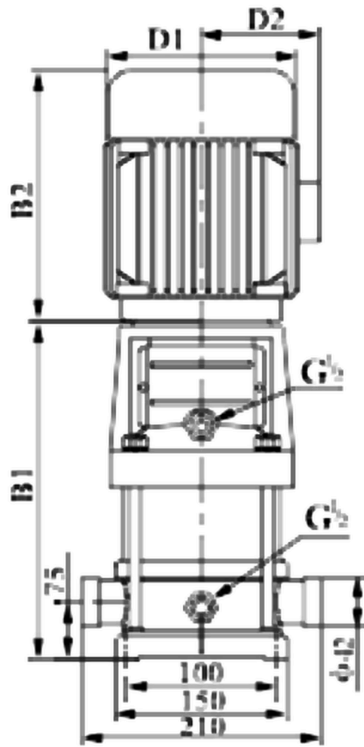
SAR 3 Performance Table

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	1.6	2	2.4	2.8	3	3.2	3.6	4
SAR 3-2	0.37	0.5	1~ 220-240 V	12.5	11.5	11	10.5	10	9	8	7	6
SAR 3-3	0.37	0.5	1~ 220-240 V	19	18.5	17.5	16.5	15	14	13	11	9
SAR 3-4	0.37	0.5	1~ 220-240 V	25	24	23	21.5	20	19	18	15	12
SAR 3-5	0.37	0.5	1~ 220-240 V	31	30	29	27	25	23	22	19	16
SAR 3-6	0.55	0.75	1~ 220-240 V	36	35	34	32	30	28	27	23	19
SAR 3-7	0.55	0.75	1~ 220-240 V	43	41	39	37	34	32	31	27	23
SAR 3-8	0.75	1	1~ 220-240 V	49	47	45	43	39	37	35	31	25
SAR 3-9	0.75	1	1~ 220-240 V	55	53	51	48	45	42	40	35	28
SAR 3-10	0.75	1	1~ 220-240 V	61	59	57	54	50	47	45	39	31
SAR 3-11	1.1	1.5	1~ 220-240 V	67	64	61	58	54	51	49	42	34
SAR 3-12	1.1	1.5	1~ 220-240 V	73	70	67	63	58	55	52	45	37
SAR 3-13	1.1	1.5	1~ 220-240 V	78	76	73	69	64	60	57	49	40
SAR 3-15	1.1	1.5	1~ 220-240 V	90	88	84	79	73	69	66	57	46
SAR 3-17	1.5	2	1~ 220-240 V	103	100	96	90	83	79	75	64	52
SAR 3-19	1.5	2	1~ 220-240 V	115	112	107	100	92	88	83	72	58
SAR 3-21	2.2	3	1~ 220-240 V	128	124	119	112	102	98	91	79	64
SAR 3-23	2.2	3	1~ 220-240 V	140	135	130	122	112	107	100	86	70
SAR 3-25	2.2	3	1~ 220-240 V	151	147	141	131	122	116	109	94	76
SAR 3-27	2.2	3	1~ 220-240 V	164	159	152	143	132	124	117	101	82
SAR 3-29	2.2	3	1~ 220-240 V	175	170	163	153	142	133	126	109	88
SAR 3-31	3	4	3~ 380-415 V	187	182	175	165	153	142	135	116	94
SAR 3-33	3	4	3~ 380-415 V	199	194	187	176	163	151	145	125	100
SAR 3-36	3	4	3~ 380-415 V	218	212	204	192	178	168	159	137	109

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 3 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, DN25, flanges to PN25 / DN25.

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

