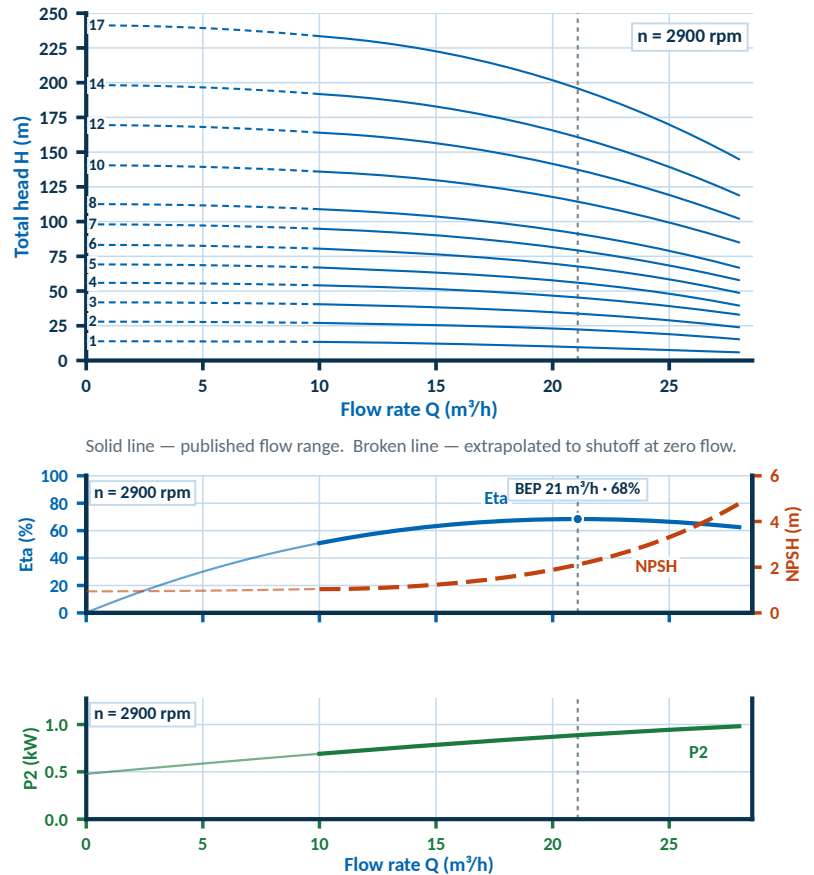


SAR 20 Vertical Multistage Centrifugal Pump



PERFORMANCE CHART AT N=2900 RPM



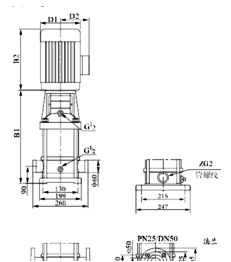
Efficiency and NPSH required (upper), absorbed power P2 (lower), digitised from the manufacturer curve sheet. P2 is the input power per stage.

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 20-1 to 22.9 bar on SAR 20-17, model by model — see Technical Data. Suction and discharge flanges to PN25 / DN50.
- 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 12 models in the SAR 20 series is tabulated on page 2.



SAR 20

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 20-1	1.1	1.5	1~ 220-240 V	7.2	32	22	70.0	20	10	13.5	28	2900	1.3	DN50	387	245	632	170	142	33
SAR 20-2	2.2	3	1~ 220-240 V	14	61	41	74.0	20	23	27	28	2900	2.6	DN50	397	290	687	190	155	42
SAR 20-3	4	5.5	3~ 380-415 V	7.7	50	23	86.8	20	35	40	28	2900	3.9	DN50	452	355	807	230	188	58
SAR 20-4	5.5	7.5	3~ 380-415 V	11	68	32	87.8	20	47	54	28	2900	5.3	DN50	517	390	907	260	208	74
SAR 20-5	5.5	7.5	3~ 380-415 V	11	68	32	87.8	20	58	67	28	2900	6.6	DN50	562	390	952	260	208	76
SAR 20-6	7.5	10	3~ 380-415 V	14	91	42	88.5	20	70	81	28	2900	7.9	DN50	607	390	997	260	208	82
SAR 20-7	7.5	10	3~ 380-415 V	14	91	42	88.5	20	82	95	28	2900	9.3	DN50	652	390	1042	260	208	84
SAR 20-8	11	15	3~ 380-415 V	20	142	61	89.7	20	94	109	28	2900	10.7	DN50	785	500	1285	330	255	153
SAR 20-10	11	15	3~ 380-415 V	20	142	61	89.7	20	118	136	28	2900	13.3	DN50	875	500	1375	330	255	157
SAR 20-12	15	20	3~ 380-415 V	27	190	82	90.5	20	142	164	28	2900	16.1	DN50	965	500	1465	330	255	170
SAR 20-14	15	20	3~ 380-415 V	27	190	82	90.5	20	166	192	28	2900	18.8	DN50	1055	500	1555	330	255	172
SAR 20-17	18.5	25	3~ 380-415 V	33	233	100	91.0	20	202	234	28	2900	22.9	DN50	1190	550	1740	330	255	195

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 / DN50. Weights are for the pump with standard motor.

Model Designation

SAR F 20 – 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.
20	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 12 models in this series, e.g. SAR 20-17.



SAR 20

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.

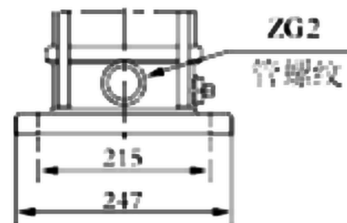
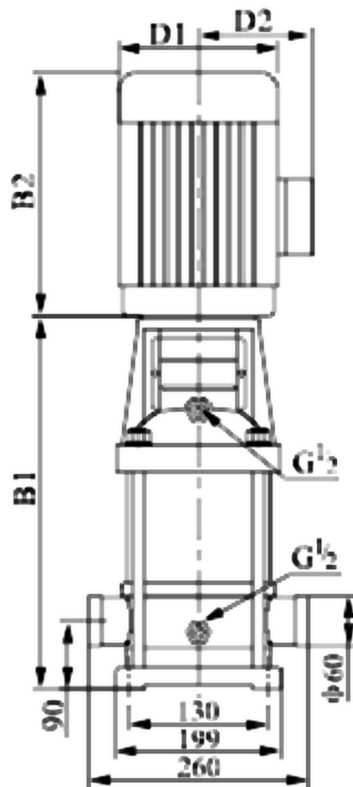
Model	Motor			Q (m ³ /h)									
	kW	HP	Supply / voltage range	10	12	14	16	18	20	22	24	26	28
SAR 20-1	1.1	1.5	1~ 220-240 V	13.5	13	12.5	12	11	10	9	8	7	6
SAR 20-2	2.2	3	1~ 220-240 V	27	26.5	26	25	24	23	22	20	18	15
SAR 20-3	4	5.5	3~ 380-415 V	40	39.5	39	38	37	35	33	30	27	24
SAR 20-4	5.5	7.5	3~ 380-415 V	54	53	52	51	49	47	44	41	37	33
SAR 20-5	5.5	7.5	3~ 380-415 V	67	66	64	62	60	58	55	50	45	40
SAR 20-6	7.5	10	3~ 380-415 V	81	79	77	75	73	70	66	61	55	49
SAR 20-7	7.5	10	3~ 380-415 V	95	93	91	89	86	82	77	71	65	58
SAR 20-8	11	15	3~ 380-415 V	109	107	105	102	99	94	89	82	75	67
SAR 20-10	11	15	3~ 380-415 V	136	134	131	128	124	118	111	103	95	85
SAR 20-12	15	20	3~ 380-415 V	164	162	158	154	149	142	133	124	114	102
SAR 20-14	15	20	3~ 380-415 V	192	189	185	180	174	166	156	145	133	119
SAR 20-17	18.5	25	3~ 380-415 V	234	230	225	219	212	202	190	177	162	145

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 20

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, DN50, flanges to PN25 / DN50.

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