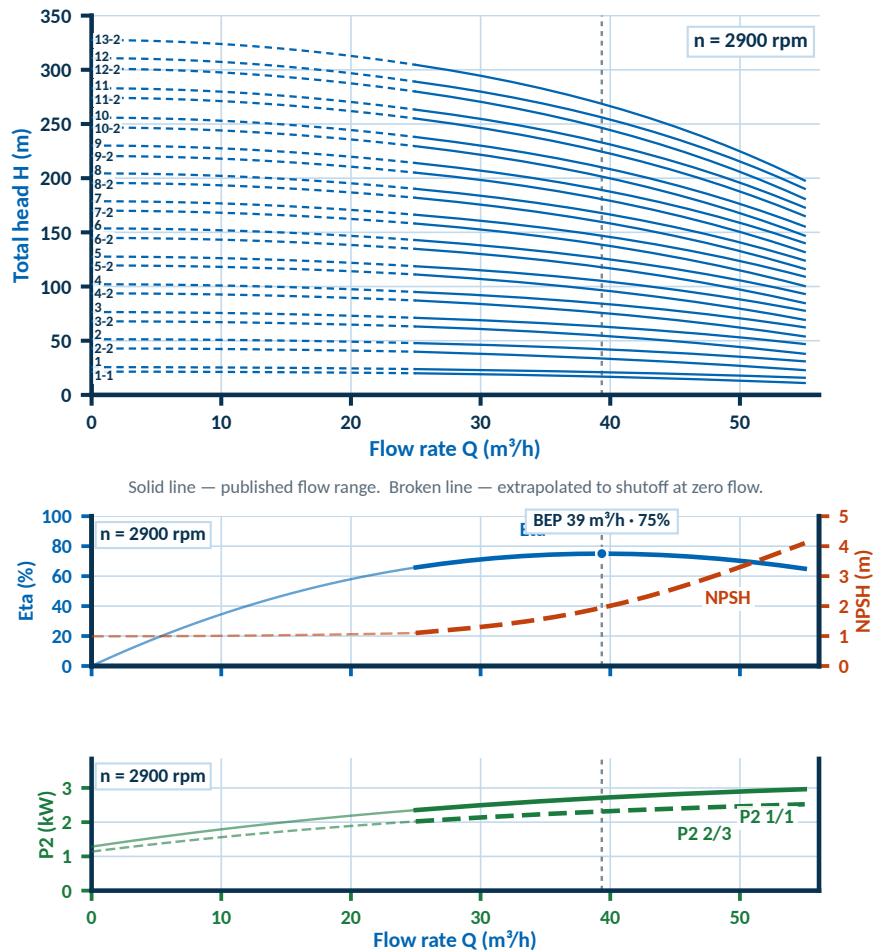


SAR 45 Vertical Multistage Centrifugal Pump



PERFORMANCE CHART AT N=2900 RPM

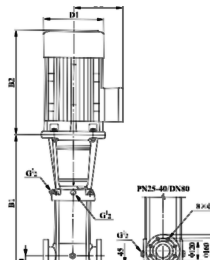


Typical Applications

- 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 2.0 bar on SAR 45-1-1 to 29.9 bar on SAR 45-13-2, model by model — see Technical Data. Suction and discharge flanges to PN25-40/DN80.
- 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 25 models in the SAR 45 series is tabulated on pages 2 to 3.



SAR 45

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 45-1-1	3	4	3~ 380-415 V	5.9	38	18	85.8	45	15	20	55	2900	2.0	DN80	561	345	906	197	165	83
SAR 45-1	4	5.5	3~ 380-415 V	7.7	50	23	86.8	45	19	24	55	2900	2.4	DN80	561	355	916	230	188	90
SAR 45-2-2	5.5	7.5	3~ 380-415 V	11	68	32	87.8	45	30	40	55	2900	3.9	DN80	641	390	1031	260	208	105
SAR 45-2	7.5	10	3~ 380-415 V	14	91	42	88.5	45	39	48	55	2900	4.7	DN80	641	390	1031	260	208	110
SAR 45-3-2	11	15	3~ 380-415 V	20	142	61	89.7	45	50	63	55	2900	6.2	DN80	826	500	1326	330	255	183
SAR 45-3	11	15	3~ 380-415 V	20	142	61	89.7	45	58	71	55	2900	7.0	DN80	826	500	1326	330	255	183
SAR 45-4-2	15	20	3~ 380-415 V	27	190	82	90.5	45	69	87	55	2900	8.5	DN80	906	500	1406	330	255	197
SAR 45-4	15	20	3~ 380-415 V	27	190	82	90.5	45	78	95	55	2900	9.3	DN80	906	500	1406	330	255	197
SAR 45-5-2	18.5	25	3~ 380-415 V	33	233	100	91.0	45	88	111	55	2900	10.9	DN80	986	550	1536	330	255	221
SAR 45-5	18.5	25	3~ 380-415 V	33	233	100	91.0	45	97	119	55	2900	11.7	DN80	986	550	1536	330	255	221
SAR 45-6-2	22	30	3~ 380-415 V	40	277	119	91.3	45	108	135	55	2900	13.2	DN80	1066	575	1641	360	285	261
SAR 45-6	22	30	3~ 380-415 V	40	277	119	91.3	45	116	143	55	2900	14.0	DN80	1066	575	1641	360	285	261
SAR 45-7-2	30	40	3~ 380-415 V	53	374	160	92.0	45	127	158	55	2900	15.5	DN80	1146	650	1796	400	310	320
SAR 45-7	30	40	3~ 380-415 V	53	374	160	92.0	45	135	166	55	2900	16.3	DN80	1146	650	1796	400	310	320
SAR 45-8-2	30	40	3~ 380-415 V	53	374	160	92.0	45	146	182	55	2900	17.8	DN80	1226	650	1876	400	310	324
SAR 45-8	30	40	3~ 380-415 V	53	374	160	92.0	45	154	190	55	2900	18.6	DN80	1226	650	1876	400	310	324

The stage figure in the model name is the actual number of stages.

Maximum pressure is that generated by the pump 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 230 V, three phase 400 V); In is full-load running current, Ist direct-on-line starting current and Iss the current with a soft starter ramping at 3 × In. **Confirm against the motor nameplate before sizing cable, starter or overload.** A soft starter limits inrush; it does not raise running efficiency.

Motors up to and including 2.2 kW are single-phase as standard, 3 kW and above three-phase; 3 × 200-220 V and other supply voltages to special order.



SAR 45

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 45-9-2	30	40	3~ 380-415 V	53	374	160	92.0	45	166	205	55	2900	20.1	DN80	1306	650	1956	400	310	328
SAR 45-9	37	50	3~ 380-415 V	66	460	197	92.4	45	174	214	55	2900	21.0	DN80	1306	650	1956	400	310	352
SAR 45-10-2	37	50	3~ 380-415 V	66	460	197	92.4	45	185	230	55	2900	22.5	DN80	1386	650	2036	400	310	355
SAR 45-10	37	50	3~ 380-415 V	66	460	197	92.4	45	193	238	55	2900	23.3	DN80	1386	650	2036	400	310	355
SAR 45-11-2	45	60	3~ 380-415 V	80	557	239	92.8	45	206	255	55	2900	25.0	DN80	1466	685	2151	450	345	426
SAR 45-11	45	60	3~ 380-415 V	80	557	239	92.8	45	214	263	55	2900	25.8	DN80	1466	685	2151	450	345	426
SAR 45-12-2	45	60	3~ 380-415 V	80	557	239	92.8	45	226	280	55	2900	27.5	DN80	1546	685	2231	450	345	432
SAR 45-12	45	60	3~ 380-415 V	80	557	239	92.8	45	236	289	55	2900	28.3	DN80	1546	685	2231	450	345	432
SAR 45-13-2	45	60	3~ 380-415 V	80	557	239	92.8	45	247	305	55	2900	29.9	DN80	1626	685	2311	450	345	438

The stage figure in the model name is the actual number of stages.

Maximum pressure is that generated by the pump 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 230 V, three phase 400 V); In is full-load running current, Ist direct-on-line starting current and Iss the current with a soft starter ramping at 3 × In. **Confirm against the motor nameplate before sizing cable, starter or overload.** A soft starter limits inrush; it does not raise running efficiency.

Motors up to and including 2.2 kW are single-phase as standard, 3 kW and above three-phase; 3 × 200-220 V and other supply voltages to special order.

Model Designation

SAR F 45 – 3 – 2

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.
45	Rated flow in m³/h — identifies the series
3	Number of stages — the actual count
2	Number of reduced-diameter impellers. Omitted when every impeller is full diameter.

Reduced-Diameter Impellers

Reduced-Diameter Impellers

Stages come in whole numbers, so a plain stage count steps the head up in coarse jumps. A duty falling between two steps would otherwise be met by taking the next size up and throttling the surplus away in a valve, wasting energy for the life of the pump.

Fitting one or two impellers of reduced outside diameter trims the head between those steps. Head varies roughly with the square of impeller diameter and absorbed power with the cube, so a trimmed impeller lowers the curve while *reducing* shaft power — the duty is met on a smaller motor rather than by wasting head across a valve. The suffix gives how many impellers are trimmed.



SAR 45

Performance Table

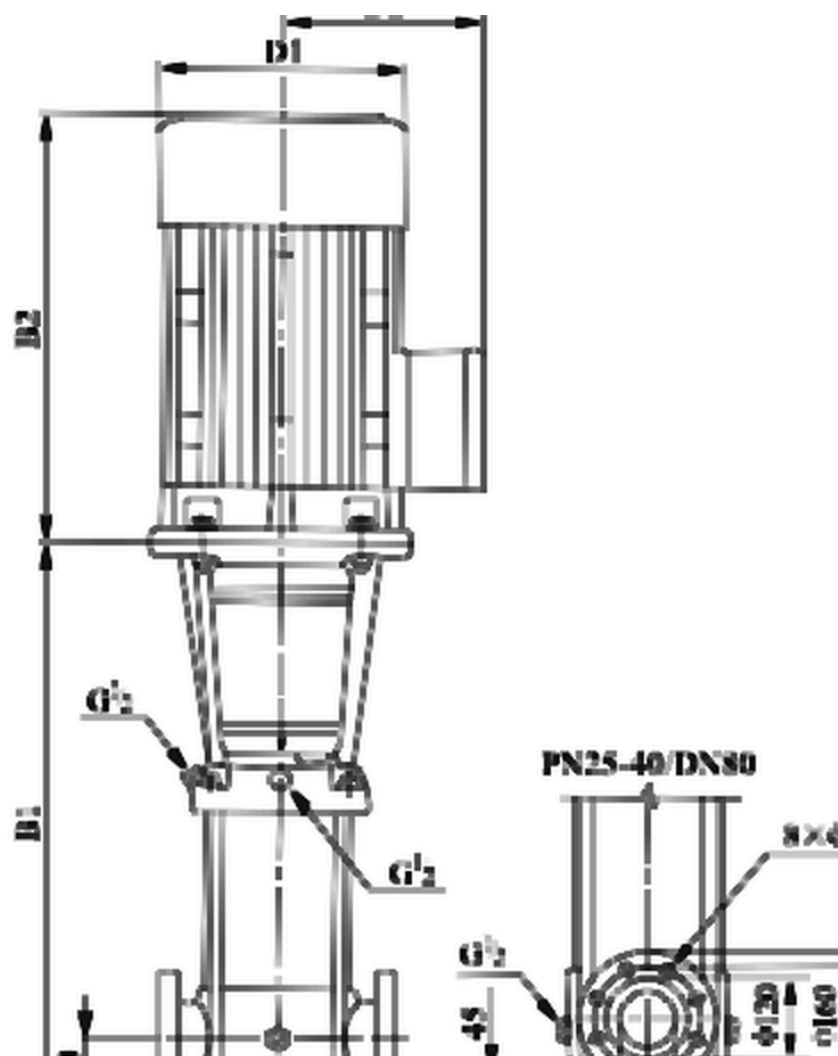
Total head H (m) against flow rate Q (m³/h) at 2900 rpm, tested on clean water at 20 °C (kinematic viscosity 1 mm²/s, air-free). Tolerances to ISO 9906, Annex A.

Model	Motor			Q (m ³ /h)							
	kW	HP	Supply / voltage range	25	30	35	40	42	45	50	55
SAR 45-1-1	3	4	3~ 380-415 V	20	19	18	17	16	15	13	11
SAR 45-1	4	5.5	3~ 380-415 V	24	23	22	21	20	19	18	16
SAR 45-2-2	5.5	7.5	3~ 380-415 V	40	38	36	33	32	30	27	23
SAR 45-2	7.5	10	3~ 380-415 V	48	46	44	42	41	39	35	31
SAR 45-3-2	11	15	3~ 380-415 V	63	61	58	54	52	50	44	38
SAR 45-3	11	15	3~ 380-415 V	71	69	66	63	61	58	53	47
SAR 45-4-2	15	20	3~ 380-415 V	87	84	80	75	73	69	62	54
SAR 45-4	15	20	3~ 380-415 V	95	92	88	84	81	78	71	62
SAR 45-5-2	18.5	25	3~ 380-415 V	111	107	102	96	93	88	80	69
SAR 45-5	18.5	25	3~ 380-415 V	119	115	110	105	101	97	88	78
SAR 45-6-2	22	30	3~ 380-415 V	135	130	124	117	113	108	97	85
SAR 45-6	22	30	3~ 380-415 V	143	138	132	125	122	116	106	93
SAR 45-7-2	30	40	3~ 380-415 V	158	152	146	138	134	127	115	100
SAR 45-7	30	40	3~ 380-415 V	166	161	154	146	142	135	124	109
SAR 45-8-2	30	40	3~ 380-415 V	182	175	168	159	154	146	133	116
SAR 45-8	30	40	3~ 380-415 V	190	184	176	167	162	154	141	124
SAR 45-9-2	30	40	3~ 380-415 V	205	198	190	180	174	166	150	132
SAR 45-9	37	50	3~ 380-415 V	214	207	198	188	183	174	159	140
SAR 45-10-2	37	50	3~ 380-415 V	230	221	212	200	194	185	168	147
SAR 45-10	37	50	3~ 380-415 V	238	230	220	209	203	193	177	155
SAR 45-11-2	45	60	3~ 380-415 V	255	246	236	223	217	206	188	165
SAR 45-11	45	60	3~ 380-415 V	263	255	244	232	225	214	196	173
SAR 45-12-2	45	60	3~ 380-415 V	280	270	259	245	238	226	206	181
SAR 45-12	45	60	3~ 380-415 V	289	280	268	255	247	236	216	190
SAR 45-13-2	45	60	3~ 380-415 V	305	294	282	267	259	247	225	198

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 45

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, DN80, flanges to PN25-40/DN80.

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