STAIRS

SP 4",6",8",10" series

Stainless Steel Submersible Pumps

60Hz

STAIRS INDUSTRIAL CO., LTD.

Stairs SP Series

STAIRS PUMPS

Index

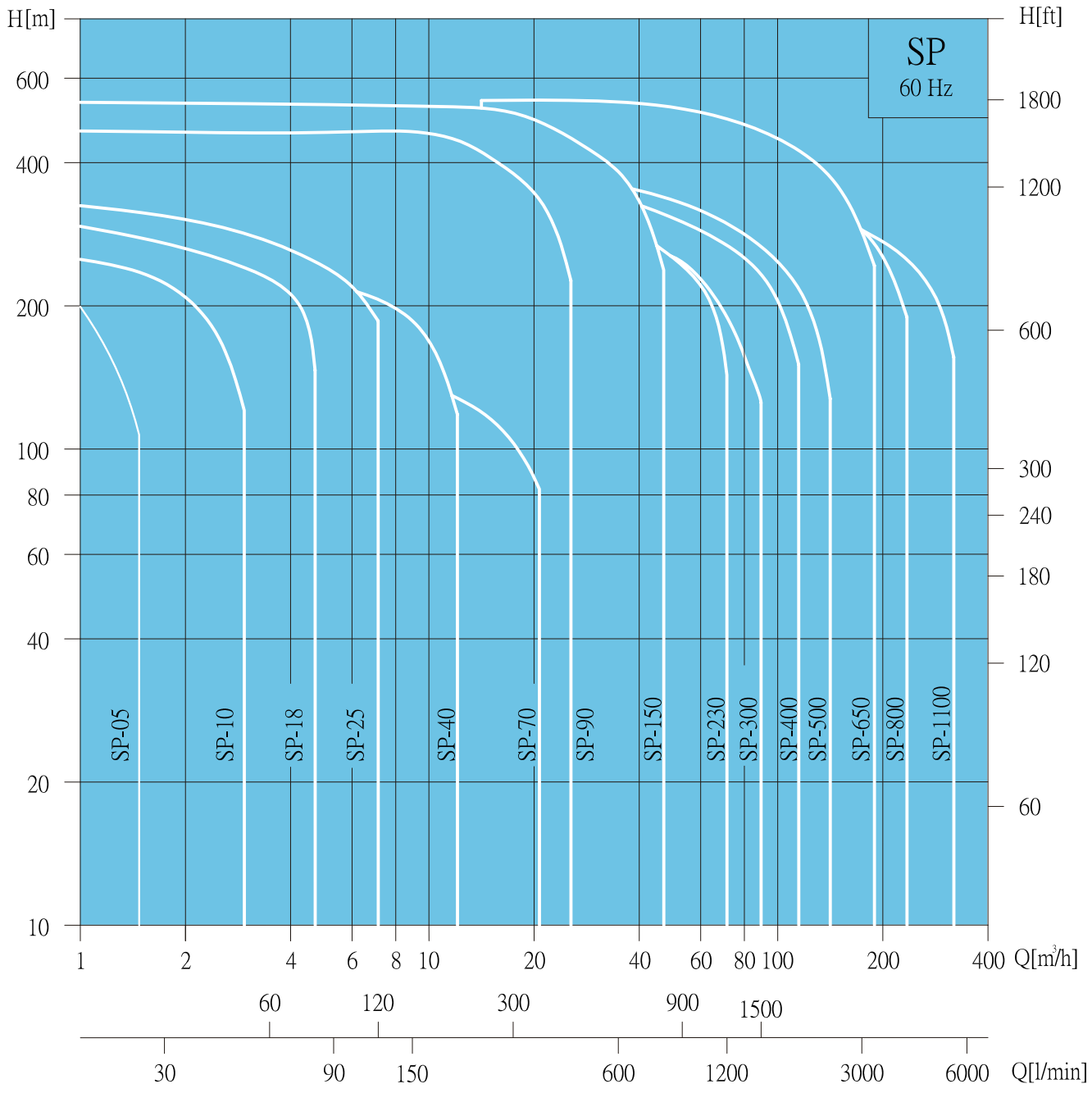
SP Series 4", 6", 8", 10" Stainless Steel Submersible Pumps

SP4", 6", 8" and 10" submersible pumps are made of corrosion and abrasion resistant stainless steel and have been developed in accordance with state-of-the-art technology. The SP series of pumps are manufactured to the highest standards for energy efficiency, dependable performance, rugged construction and long service life for the most demanding applications.

General Data

STAIRS PUMPS

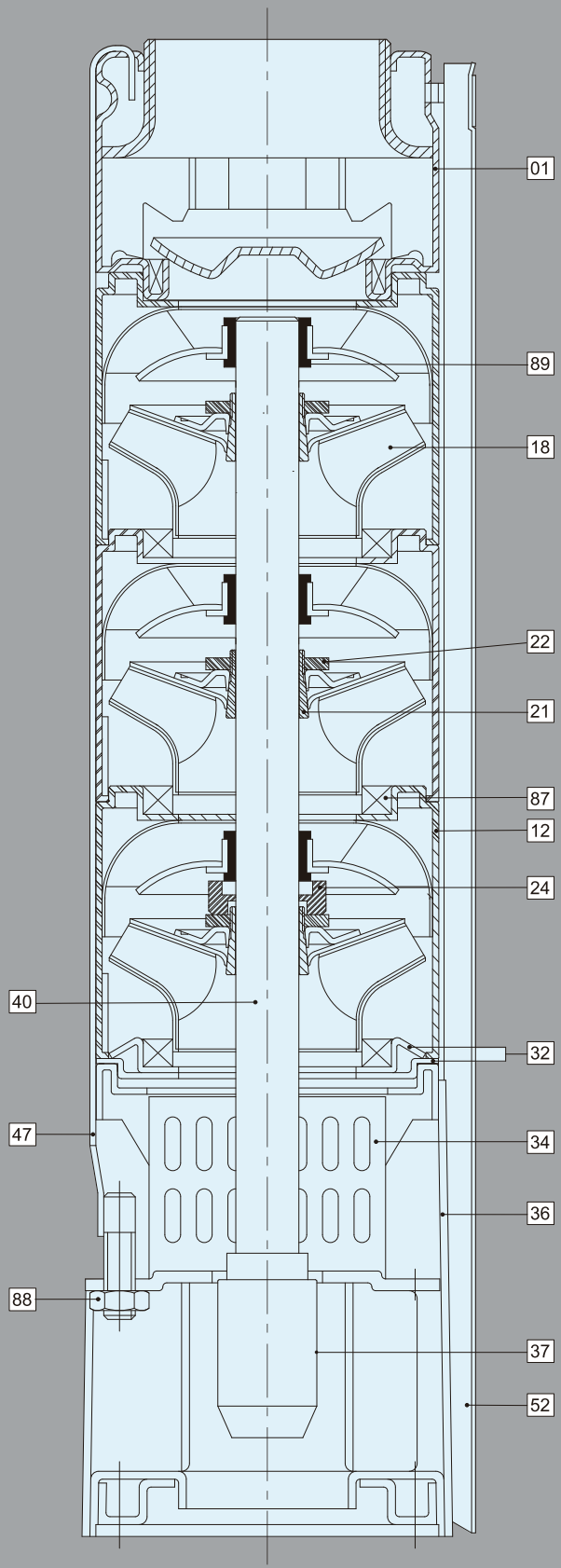
Performance range



General Data

STAIRS PUMPS

Example: SP-70



Material Specification-4" Pumps

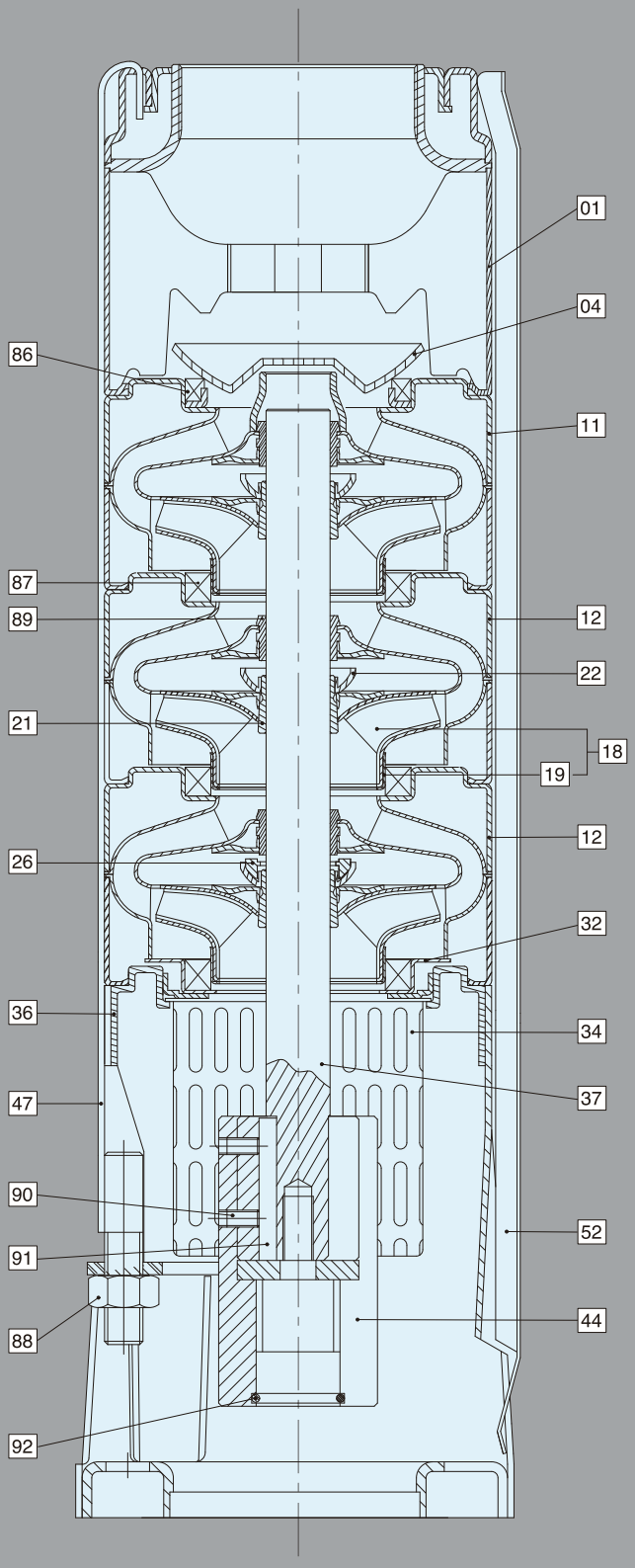
Pos.	Components	Material	Standard
01	Discharge	Stainless Steel	304
12	Diffuser	Stainless Steel	304
18	Impeller	Stainless Steel	304
21	Split Cone	Stainless Steel	304
22	Split Cone Nut	Stainless Steel	304
24	Stop Ring	Carbon/ Graphite/PTFE	
32	Neck Ring Retainer	Stainless Steel	304
34	Strainer	Stainless Steel	304
36	Suction Interconnector	Stainless Steel	304
40	Pump Shaft	Stainless Steel	431
37	Coupling	Stainless Steel	304
47	Strap	Stainless Steel	304
52	Cable Guard	Stainless Steel	304
87	Neck Ring	SUS304+NBR	
88	Nut	Stainless Steel	304
89	Bearing	NBR	

*AISI 316 stainless steel pumps are available on request.

General Data

STAIRS PUMPS

Example: SP-90



Material Specification-6" Pumps

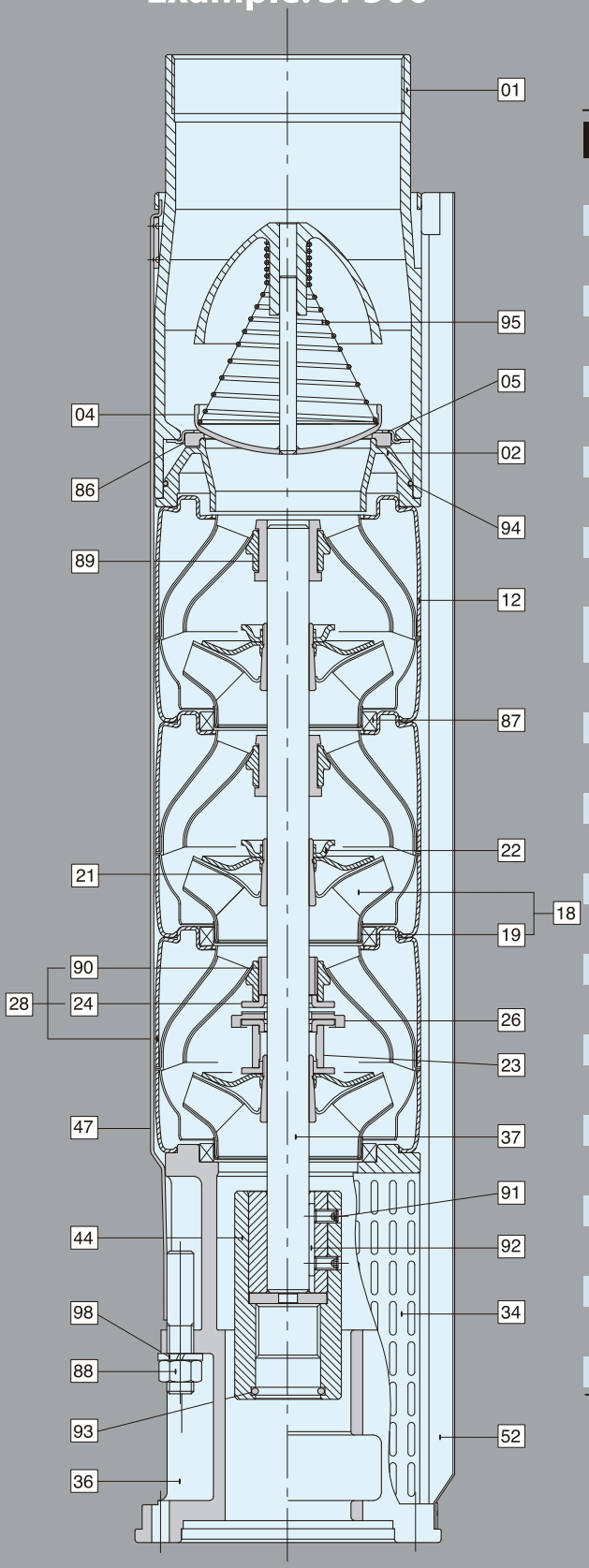
Pos.	Components	Material	Standard
01	Discharge	Stainless Steel	304
04	Valve Cone	Stainless Steel	304
11	Top Diffuser	Stainless Steel	304
12	Diffuser	Stainless Steel	304
18	Impeller	Stainless Steel	304
19	Ring Of Impeller	Stainless Steel	304
21	Split Cone	Stainless Steel	304
22	Split Cone Nut	Stainless Steel	304
26	Spacing Washer For Stop Ring	Carbon/ Graphite/PTFE	
32	Neck Ring Retainer	Stainless Steel	304
34	Strainer	Stainless Steel	304
36	Suction Interconnector	Stainless Steel	304
37	Pump Shaft	Stainless Steel	431
44	Coupling	Stainless Steel	304
47	Strap	Stainless Steel	304
52	Cable Guard	Stainless Steel	304
86	Valve Seat	SUS304+NBR	
87	Neck Ring	SUS304+NBR	
88	Nut	Stainless Steel	304
89	Bearing	NBR	
90	Screw	Stainless Steel	304
91	Key	Stainless Steel	304
92	O-ring	NBR	

*AISI 316 stainless steel pumps are available on request.

General Data

STAIRS PUMPS

Example: SP500



Material Specification-8" Pumps

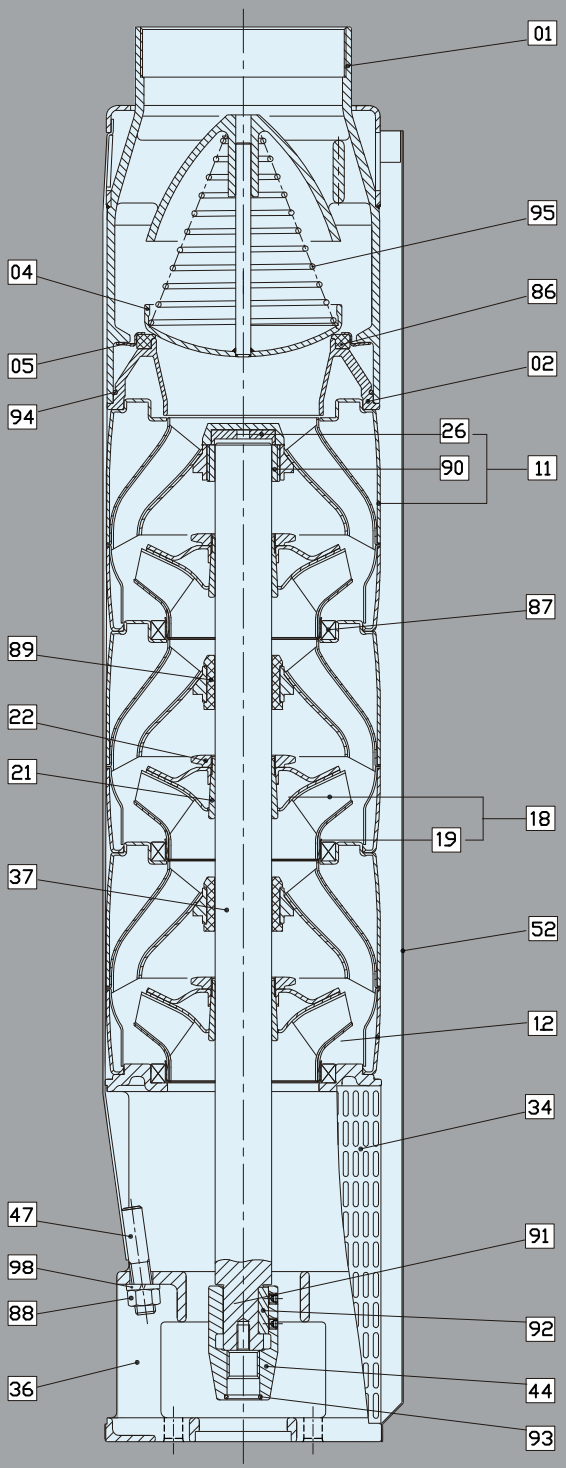
Pos.	Components	Material	Standard
01	Discharge	Stainless Steel	304
02	Lower Valve Seat Retainer	Stainless Steel	304
04	Valve Cup	Stainless Steel	304
05	Upper Valve Seat Retainer	Stainless Steel	304
12	Diffuser	Stainless Steel	304
18	Impeller	Stainless Steel	304
19	Ring Of Impeller	Stainless Steel	304
21	Split Cone	Stainless Steel	304
22	Split Cone Nut	Stainless Steel	304
23	Nut For Stop Ring	Stainless Steel	304
24	Stop Ring	Stainless Steel	304
26	Spacing Washer For Stop Ring	Carbon/ Graphite/PTFE	
28	Bottom Diffuser	Stainless Steel	304
34	Strainer	Stainless Steel	304
36	Suction Interconnector	Stainless Steel	304
37	Pump Shaft	Stainless Steel	431
44	Coupling	Stainless Steel	304
47	Strap	Stainless Steel	304
52	Cable Guard	Stainless Steel	304
86	Valve Seat	NBR	
87	Neck Ring	SUS304+NBR	
88	Nut	Stainless Steel	304
89	Bearing	NBR	
90	Bearing	NBR+SUS304	
91	Screw	Stainless Steel	304
92	Key	Stainless Steel	304
93	O-ring	NBR	
94	O-ring	NBR	
95	Spring	Stainless Steel	304
98	Spring Washer	Stainless Steel	304

*AISI 316 stainless steel pumps are available on request.

General Data

STAIRS PUMPS

Example: SP-1100



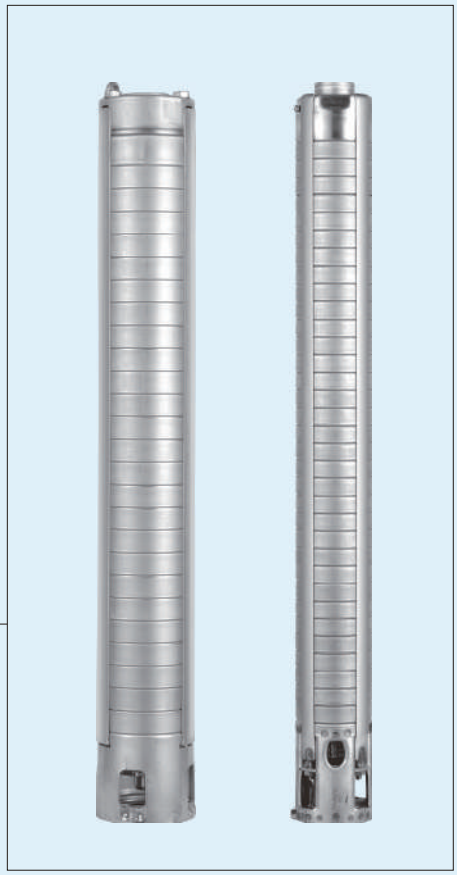
Material Specification-10" Pumps

Pos.	Components	Material	Standard
01	Discharge	Stainless Steel	304
02	Lower Valve Seat Retainer	Stainless Steel	304
04	Valve Cup	Stainless Steel	304
05	Upper Valve Seat Retainer	Stainless Steel	304
11	Upper Diffuser	Stainless Steel	304
+26	Spacing Washer For Stop Ring	Carbon Fiber +MoS2+PTFE	
+90	Upper Bearing	SUS304+NBR	
12	Diffuser	Stainless Steel	304
18	Impeller	Stainless Steel	304
18	Impeller - A	Stainless Steel	304
+19	Ring Of Impeller	Stainless Steel	304
21	Split Cone	Stainless Steel	304
22	Split Cone Nut	Stainless Steel	304
34	Strainer - one lead	Stainless Steel	304
34	Strainer - two leads	Stainless Steel	304
36	Suction Interconnector - 6"	Stainless Steel	304
36	Suction Interconnector - 8"	Stainless Steel	304
37	Shaft	Stainless Steel	431
44	Coupling - 6"	Stainless Steel	304
44	Coupling - 8"	Stainless Steel	304
47	Strap	Stainless Steel	304
52	Cable Guard	Stainless Steel	304
86	Valve Seat	NBR	70
87	Neck Ring	PPS+NBR	
88	Nut	Stainless Steel	304
89	Bearing	NBR	70
91	Screw - 6"	Stainless Steel	304
91	Screw - 8"	Stainless Steel	304
92	Key - 6"	Stainless Steel	304
92	Key - 8"	Stainless Steel	304
93	O-ring - 6"	NBR	70
93	O-ring - 8"	NBR	70
94	O-ring	NBR	70
95	Spring	Stainless Steel	304
98	Spring Washer	Stainless Steel	304

*AISI 316 stainless steel pumps are available on request.

General Data

STAIRS PUMPS



4" Stainless Steel Submersible Pumps

Stairs' SP 4" range of submersible pumps are made of corrosion and abrasion resistant stainless steel and have been developed in accordance with state-of-the-art technology. The SP 4"pumps are manufactured to the highest standards for energy efficiency, dependable performance, rugged construction, and long service life.

Capacity (m^3/h) min 0.3 max 21
Total Head: Max. 290 m

Applications

- Potable water supply from deep wells
- Agricultural-Irrigation, livestock watering, etc.
- Municipal and industrial
- Pressure boosting
- Fountains, etc.

Pumped Liquids

- Clean, non-corrosive and non-abrasive liquids.

Operating Conditions

- Max. ambient temperature (Liquid): 30°C
- Sand content: Max. 50 g/m^3

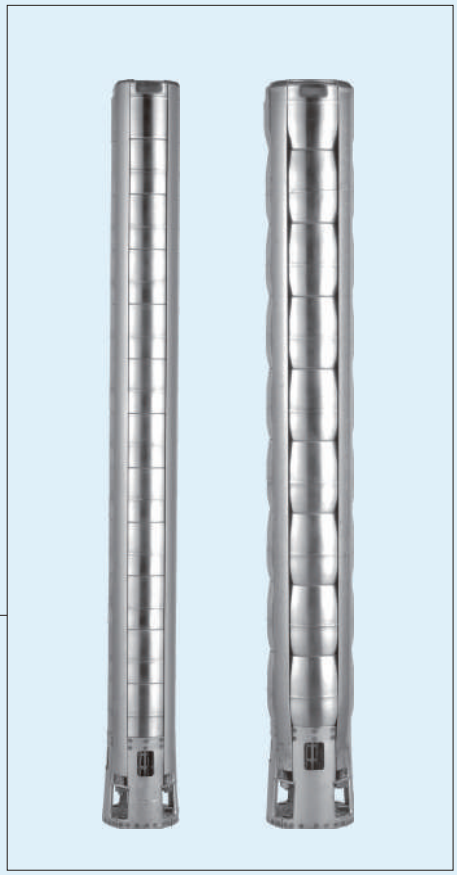
Features

- Stainless steel construction designed and built for years of trouble free operation
- All metal parts are made of 304 stainless steel, except for the shaft, which is made of 431 stainless steel
- Heavy duty stainless steel discharge head with built-in check valve for long life and ease of installation
- Smooth safety hook
- Mounting specifications are according to NEMA standards
- High quality shaft bearings providing low friction and high wear resistance
- Heavy duty stainless steel impellers & diffusers ensuring optimal performance
- Stainless steel strainer to restrict the entry of sand and other extraneous material

STAIRS PUMPS

6" Stainless Steel Submersible Pumps

Stairs' SP 6" stainless steel submersible pumps are made of high quality 304 or 316 corrosion resistant stainless steel. Shafts are made of high strength 431 stainless steel. The pumps are designed for efficient and dependable performance, and a long and trouble-free life. The pumps are light in weight and ruggedly constructed for heavy duty applications.



Capacity (m^3/h) min 6 max 90
Total Head: Max. 535 m

Applications

- Potable water supply from deep wells
- Agricultural-Irrigation and livestock watering
- Municipal and industrial water supply
- Pressure boosting
- Mine de-watering
- Fountains, etc.

Pumped Liquids

- Clean, non corrosive and non-abrasive liquids.

Operating Conditions

- Max. ambient temperature (Liquid): 30°C
- Sand content: Max. 50 g/m^3

Features

- Stainless steel construction designed and built for years of trouble free operation
- Heavy duty stainless steel discharge head with built-in check valve for long life and ease of installation
- Mounting specifications are according to NEMA standards
- High quality shaft bearings providing low friction and high wear resistance
- Heavy duty stainless steel impellers & diffusers ensuring optimal performance
- Stainless steel strainer to restrict the entry of sand and other extraneous material

General Data

STAIRS PUMPS

8" Stainless Steel Submersible Pumps

Stairs' SP 8" submersible pumps are designed for heavy duty and high volume pumping applications. Highly efficient hydraulic impeller and diffuser designs reduce energy requirements and provide long and dependable service life, even in difficult environments.

Capacity (m^3/h) min 18 max 150
Total Head: Max. 390 m

Applications

- Municipal water supply and distribution
- Municipal water treatment
- Industrial-for cooling, cleaning and production
- Agriculture-for irrigation, etc.
- Pressure boosting in high rise buildings, etc.
- Dewatering in mines
- Fountains, etc.

Pumped Liquids

- Clean, non corrosive and non-abrasive liquids.

Operating Conditions

- Max. ambient temperature (Liquid): 30°C
- Sand content: Max. 50 g/m^3

Features

- High pump efficiency means lower energy consumption and thus lower operating costs
- Designed and built to operate under difficult conditions
- High quality materials and high quality workmanship assures high quality pumps
- All metal parts are made of 304 stainless steel, except for the shafts, which are made of 431 stainless steel
- 431 stainless steel pump shafts assure strength with resistance to mechanical wear and corrosion
- Heavy duty stainless steel discharge head with built-in check valve for long life and ease of installation
- A high strength stainless steel coupling facilitates a proper pump/motor alignment
- Mounting specifications are according to NEMA standards

STAIRS PUMPS

10" Stainless Steel Submersible Pumps

Stairs' SP10"submersible pumps are designed for heavy duty and high volume pumping applications. Highly efficient hydraulic impeller and diffuser designs reduce energy requirements and provide long and dependable service life, even in difficult environments.

Capacity (m^3/h) min 20 max 335
Total Head: Max. 547 m

Applications

- Municipal water supply and distribution
- Municipal water treatment
- Industrial-for cooling, cleaning and production
- Agriculture-for irrigation, etc.
- Pressure boosting in high rise buildings, etc.
- Dewatering in mines
- Fountains, etc.

Pumped Liquids

- Clean, non corrosive and non-abrasive liquids.

Operating Conditions

- Max. ambient temperature (Liquid): 30°C
- Sand content: Max. 50 g/m^3

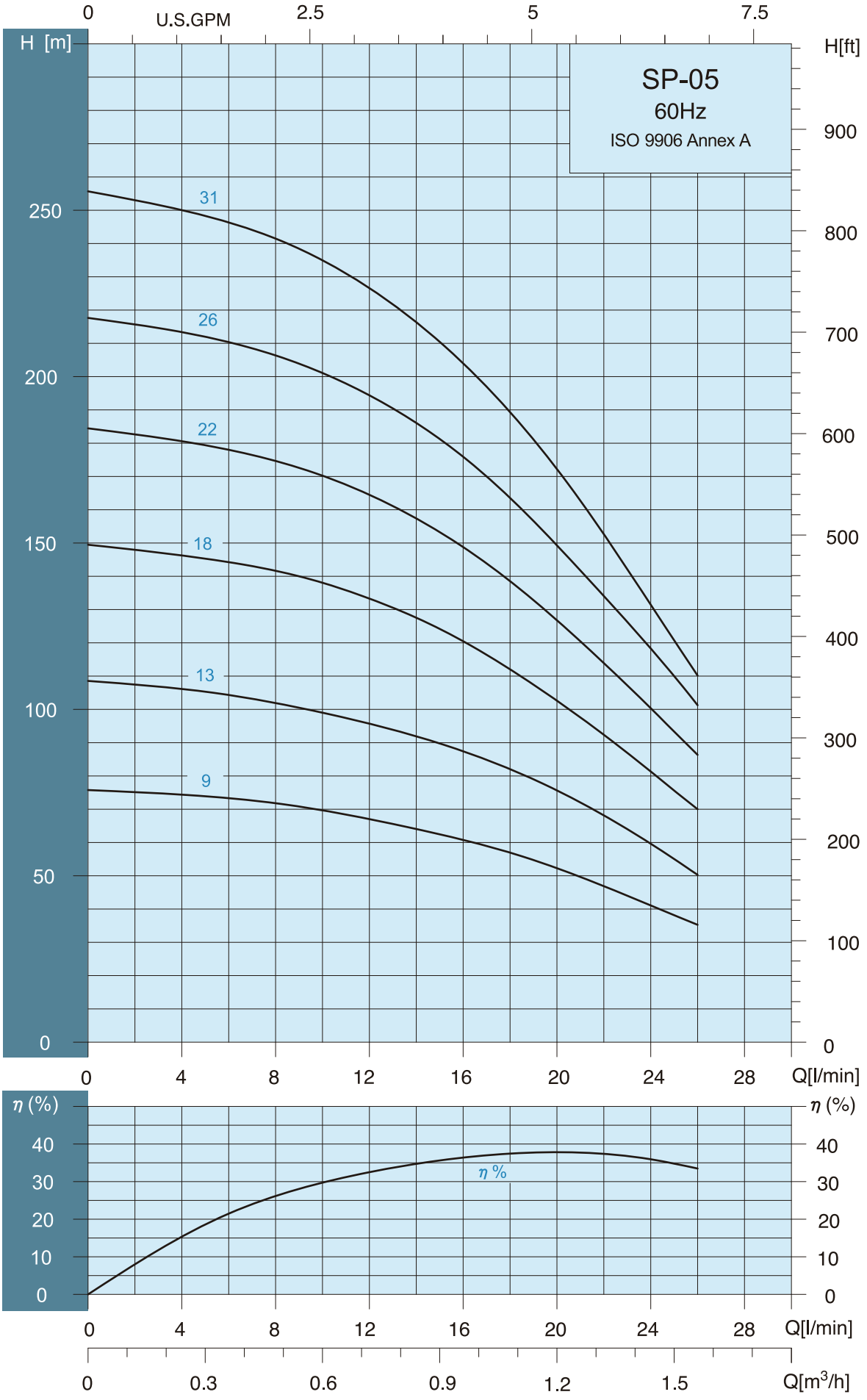
Features

- High pump efficiency means lower energy consumption and thus lower operating costs
- Designed and built to operate under difficult conditions
- High quality materials and high quality workmanship assures high quality pumps
- All metal parts are made of 304 stainless steel, except for the shafts, which are made of 431 stainless steel
- 431 stainless steel pump shafts assure strength with resistance to mechanical wear and corrosion
- Heavy duty stainless steel discharge head with built-in check valve for long life and ease of installation
- A high strength stainless steel coupling facilitates a proper pump/motor alignment
- Mounting specifications are according to NEMA standards

STAIRS PUMPS

SP 4"

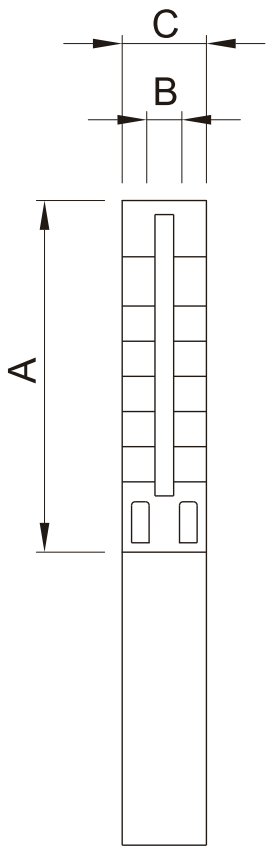
SP05 Performance Curves



Selection Chart

Pump Type	STAGES	KW	HP	Q capacity 3450 rpm															
				l/min 0	5	10	15	20	25	30	35	40	50	60	70	80	90	100	120
				m^3/h 0	0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.4	3.0	3.6	4.2	4.8	5.4	6.0	7.2
				H =TOTAL HEAD IN METERS															
SP-0509	9	0.25	0.33	76	74	70	62	52	38										
SP-0513	13	0.37	0.5	108	105	99	90	76	55										
SP-0518	18	0.55	0.75	150	145	138	124	102	75										
SP-0522	22	0.75	1.0	183	179	170	153	127	93										
SP-0526	26	1.10	1.5	218	212	201	181	149	110										
SP-0531	31	1.10	1.5	256	248	235	210	172	121										

*Higher pressure, longer stages pumps up to 39 stages are available on request.



Dimensions And Weights

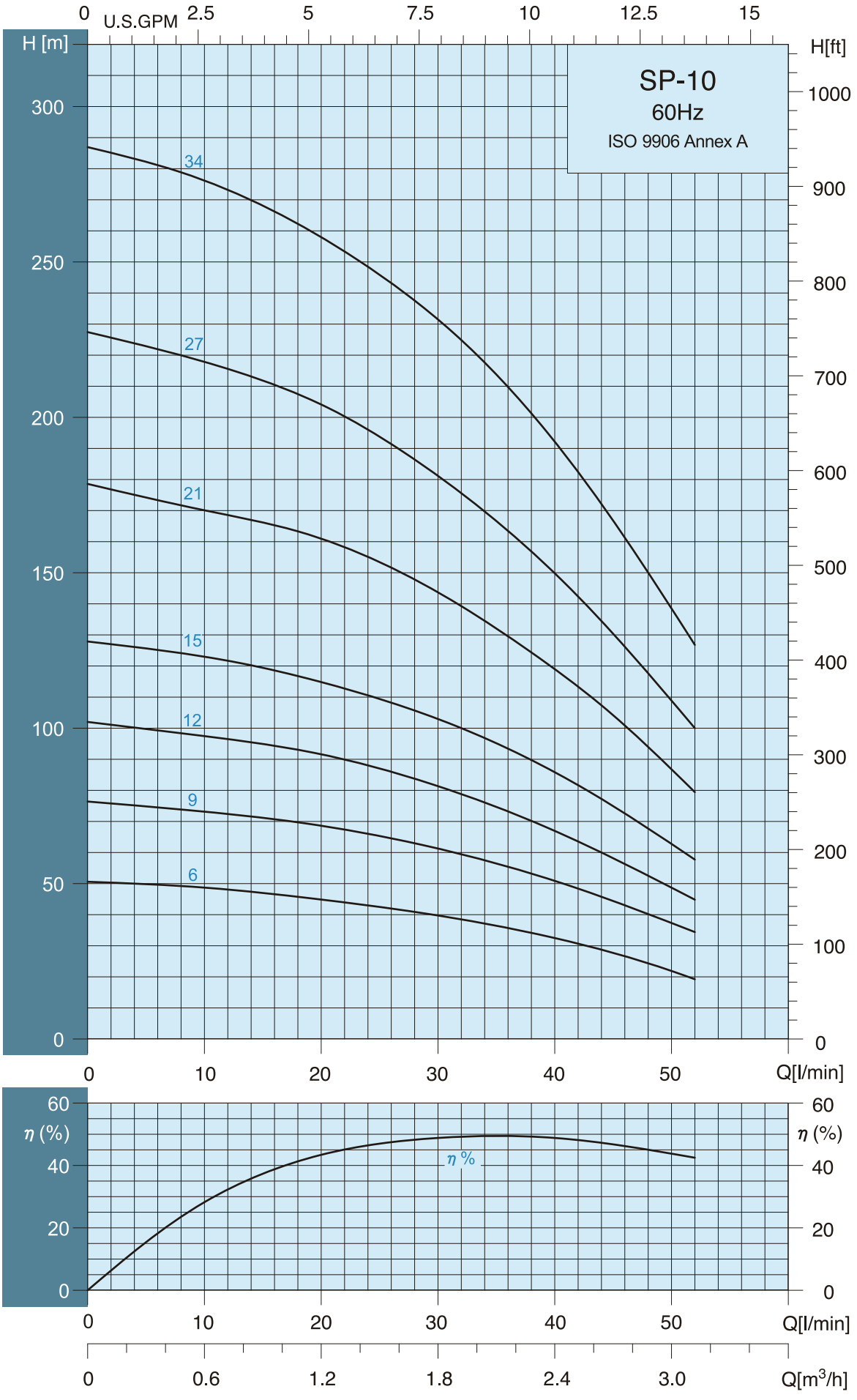
Pump Type	Dimensions(mm)			Net Weight(Kg)
	A	B	C	Pump
SP-0509	356	RP/NPT 1 1/4"	98	2.9
SP-0513	440		98	3.6
SP-0518	545		98	4.4
SP-0522	629		98	5.1
SP-0526	713		98	5.8
SP-0531	841		98	8.8

C = Maximum diameter of pump inclusive of cable guard and motor

STAIRS PUMPS

SP 4"

SP10 Performance Curves

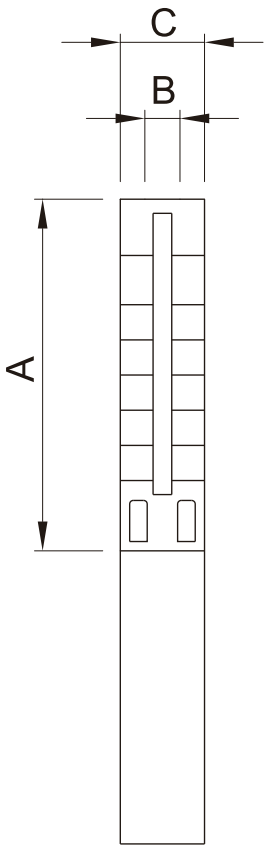


STAIRS PUMPS

Selection Chart

Pump Type	STAGES	KW	HP	Q capacity 3450 rpm															
				l/min 0	5	10	15	20	25	30	35	40	50	60	70	80	90	100	120
				m^3/h 0	0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.4	3.0	3.6	4.2	4.8	5.4	6.0	7.2
				H =TOTAL HEAD IN METERS															
SP-1006	6	0.25	0.33	51				45	42	40	36	32	21						
SP-1009	9	0.37	0.5	77				69	65	61	56	51	37						
SP-1012	12	0.55	0.75	102				92	87	81	75	67	49						
SP-1015	15	0.75	1.0	128				115	109	103	95	86	63						
SP-1021	21	1.10	1.5	179				160	153	144	132	119	87						
SP-1027	27	1.5	2.0	227				204	194	181	167	150	109						
SP-1034	34	2.2	3.0	287				258	246	231	214	192	138						

*Higher pressure, longer stages pumps up to 58 stages are available on request.



Dimensions And Weights

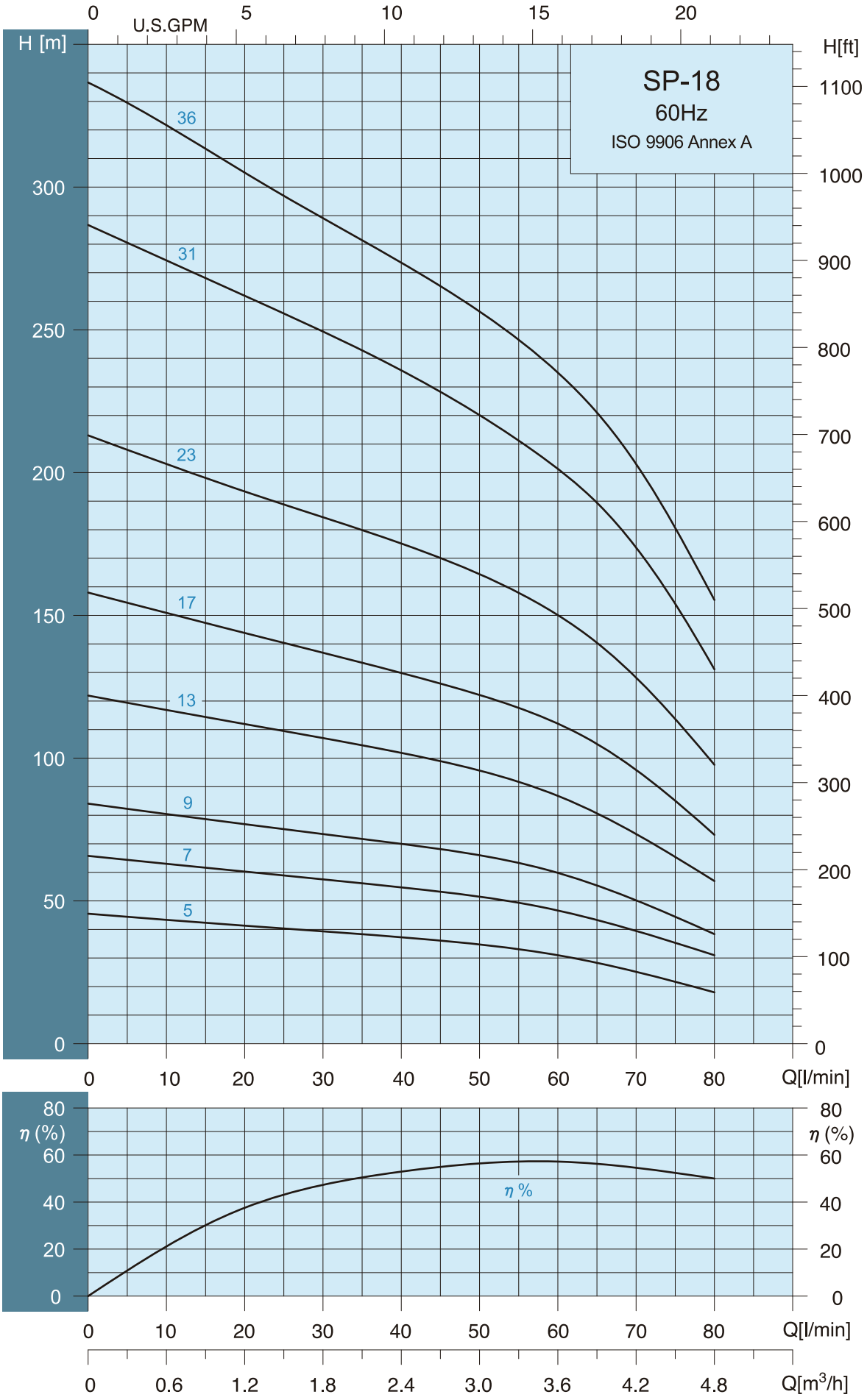
Pump Type	Dimensions(mm)			Net Weight(Kg)
	A	B	C	Pump
SP-1006	293	RP/NPT 1 1/4"	98	2.4
SP-1009	356		98	3.0
SP-1012	419		98	3.6
SP-1015	482		98	4.2
SP-1021	608		98	5.3
SP-1027	734		98	6.4
SP-1034	904		98	10.0

Maximum diameter of pump inclusive of cable guard and motor

STAIRS PUMPS

SP 4"

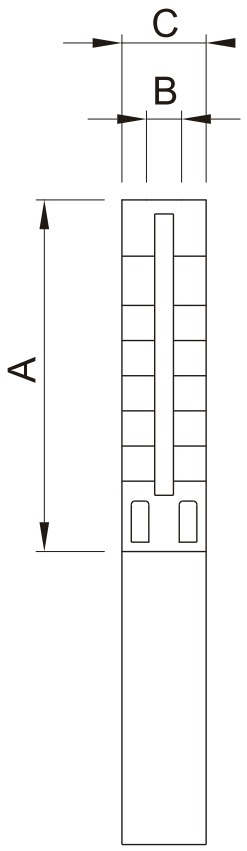
SP18 Performance Curves



Selection Chart

Pump Type	STAGES	KW	HP	Q capacity 3450 rpm															
				l/min 0	15	20	25	30	35	40	50	60	70	80	90	100	120	140	160
				m³/h 0	0.9	1.2	1.5	1.8	2.1	2.4	3.0	3.6	4.2	4.8	5.4	6.0	7.2	8.4	9.6
				H =TOTAL HEAD IN METERS															
SP-1805	5	0.37	0.5	46					38	37	35	31	25	18					
SP-1807	7	0.55	0.75	66					56	55	51	47	39	31					
SP-1809	9	0.75	1.0	84					72	70	66	60	50	38					
SP-1813	13	1.10	1.5	122					105	102	96	87	73	57					
SP-1817	17	1.5	2.0	158					133	130	122	112	96	73					
SP-1823	23	2.2	3.0	213					180	175	164	150	128	98					
SP-1831	31	3 0	4 0	286					243	236	220	201	174	131					
SP-1836	36	3.7	5.0	337					281	274	256	235	203	155					

*Higher pressure, longer stages pumps up to 75 stages are available on request.



Dimensions And Weights

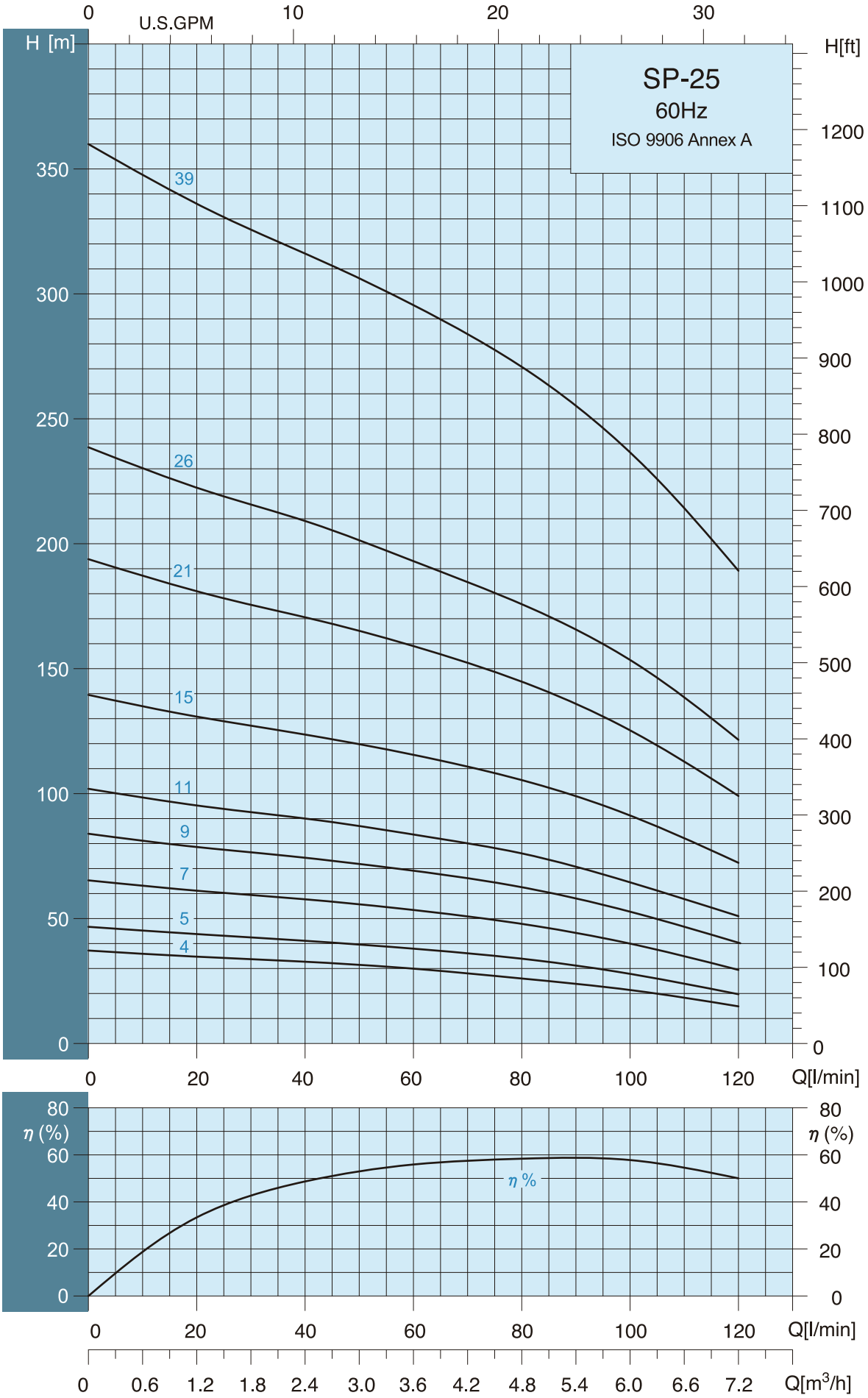
Pump Type	Dimensions(mm)			Net Weight(Kg)
	A	B	C	Pump
SP-1805	272	RP/NPT 1 1/4"	98	2.3
SP-1807	314		98	2.6
SP-1809	356		98	3.0
SP-1813	440		98	3.8
SP-1817	524		98	4.5
SP-1823	650		98	5.7
SP-1831	841		98	9.2
SP-1836	946		98	10.5

= Maximum diameter of pump inclusive of cable guard and motor

STAIRS PUMPS

SP 4"

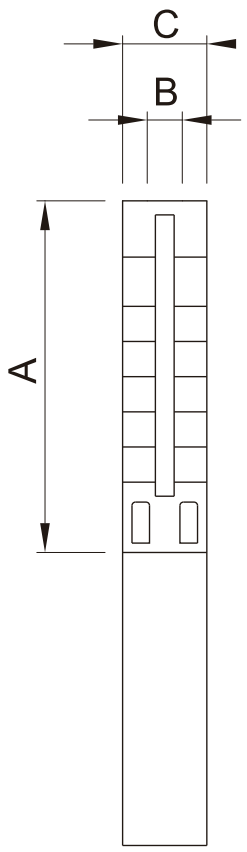
SP25 Performance Curves



Selection Chart

Pump Type	STAGES	KW	HP	Q capacity 3450 rpm																
				l/min 0	25	30	35	40	50	60	70	80	90	100	120	140	160	180	200	250
				m^3/h 0	1.5	1.8	2.1	2.4	3.0	3.6	4.2	4.8	5.4	6.0	7.2	8.4	9.6	10.8	12	15
				H =TOTAL HEAD IN METERS																
SP-2504	4	0.37	0.5	37						30	28	26	24	23	15					
SP-2505	5	0.55	0.75	47						38	36	34	31	28	20					
SP-2507	7	0.75	1.0	65						53	51	48	44	40	29					
SP-2509	9	1.10	1.5	84						69	66	63	58	53	40					
SP-2511	11	1.5	2.0	102						84	80	76	71	65	51					
SP-2515	15	2.2	3.0	140						116	111	105	99	91	72					
SP-2521	21	3.0	4.0	194						159	152	145	136	125	99					
SP-2526	26	3.7	5.0	237						193	185	176	166	153	122					
SP-2539	39	5.5	7.5	360						295	284	271	255	237	189					

*Higher pressure, longer stages pumps up to 52 stages are available on request.



Dimensions And Weights

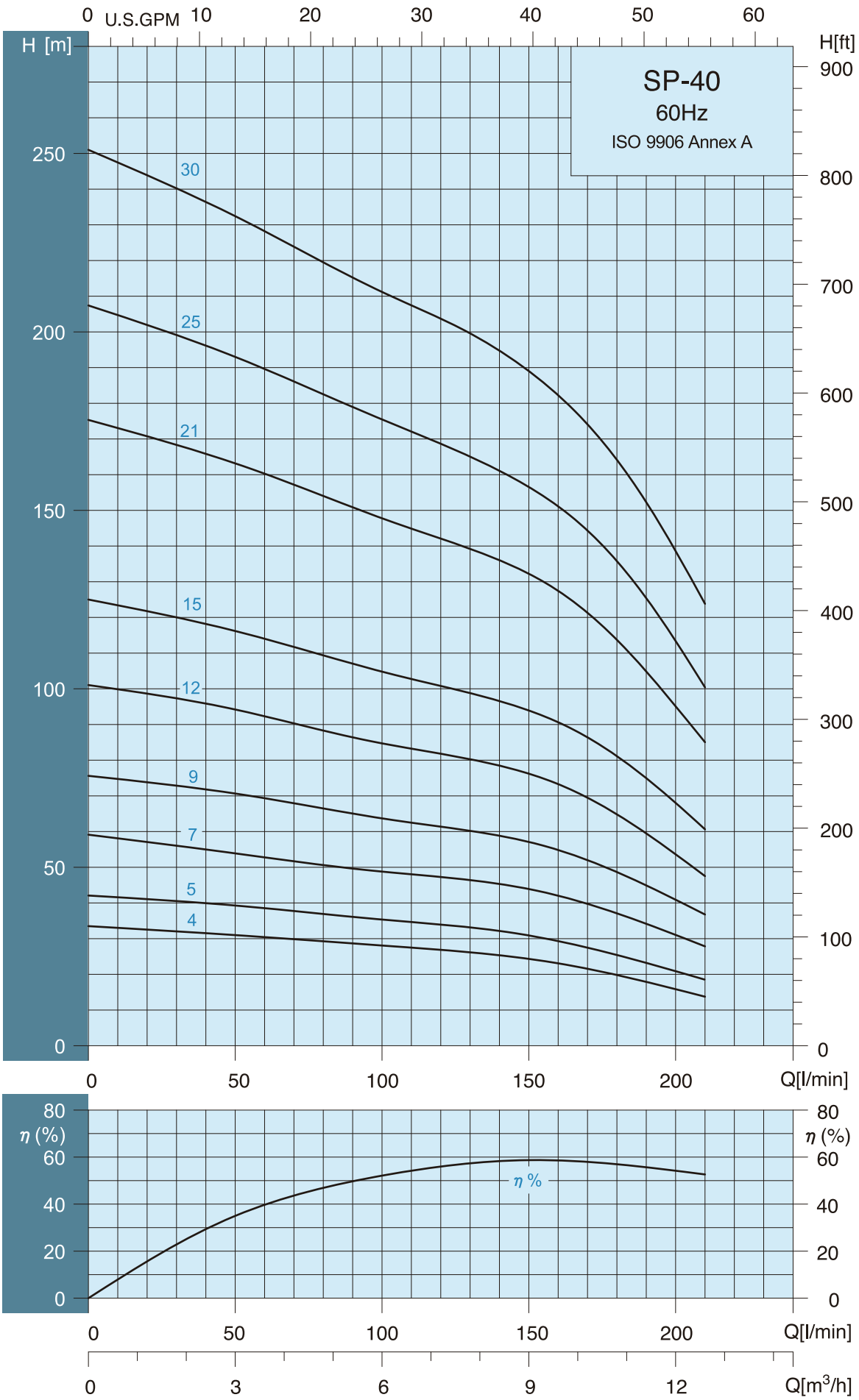
Pump Type	Dimensions(mm)			Net Weight(Kg)
	A	B	C	Pump
SP-2504	251	RP/NPT 1 1/2"	98	2.0
SP-2505	272		98	2.2
SP-2507	314		98	2.6
SP-2509	356		98	3.0
SP-2511	398		98	3.4
SP-2515	482		98	4.1
SP-2521	608		98	5.3
SP-2526	713		98	6.2
SP-2539	994		98	11.1

ximum diameter of pump inclusive of cable guard and motor

STAIRS PUMPS

SP 4"

SP40 Performance Curves

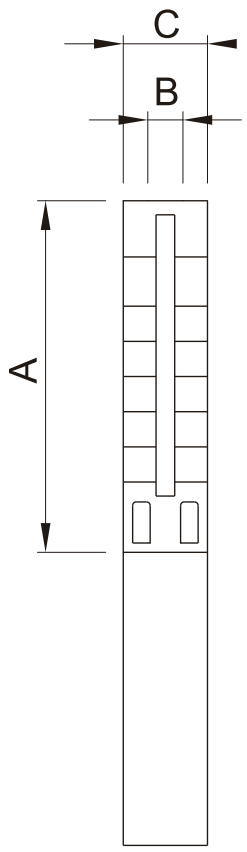


STAIRS PUMPS

Selection Chart

Pump Type	STAGES	KW	HP	Q capacity 3450 rpm																
				l/min 0	35	40	50	60	70	80	90	100	120	140	160	180	200	250	300	350
				m³/h 0	2.1	2.4	3.0	3.6	4.2	4.8	5.4	6.0	7.2	8.4	9.6	10.8	12	15	18	21
				H =TOTAL HEAD IN METERS																
SP-4004	4	0.75	1.0	33						29	28	27	26	25	23	20	16			
SP-4005	5	1.10	1.5	42						37	36	35	34	32	29	25	21			
SP-4007	7	1.5	2.0	59						51	50	49	47	45	42	37	31			
SP-4009	9	2.2	3.0	76						66	65	64	61	59	55	49	41			
SP-4012	12	3.0	4.0	101						88	86	85	82	78	73	65	54			
SP-4015	15	3.7	5.0	125						109	107	105	101	97	91	81	68			
SP-4021	21	5.5	7.5	175						154	151	148	142	136	127	114	95			
SP-4025	25	5.5	7.5	207						183	179	175	169	161	151	136	113			
SP-4030	30	7.5	10	251						220	215	211	204	195	182	164	139			

*Higher pressure, longer stages pumps up to 66 stages are available on request.



Dimensions And Weights

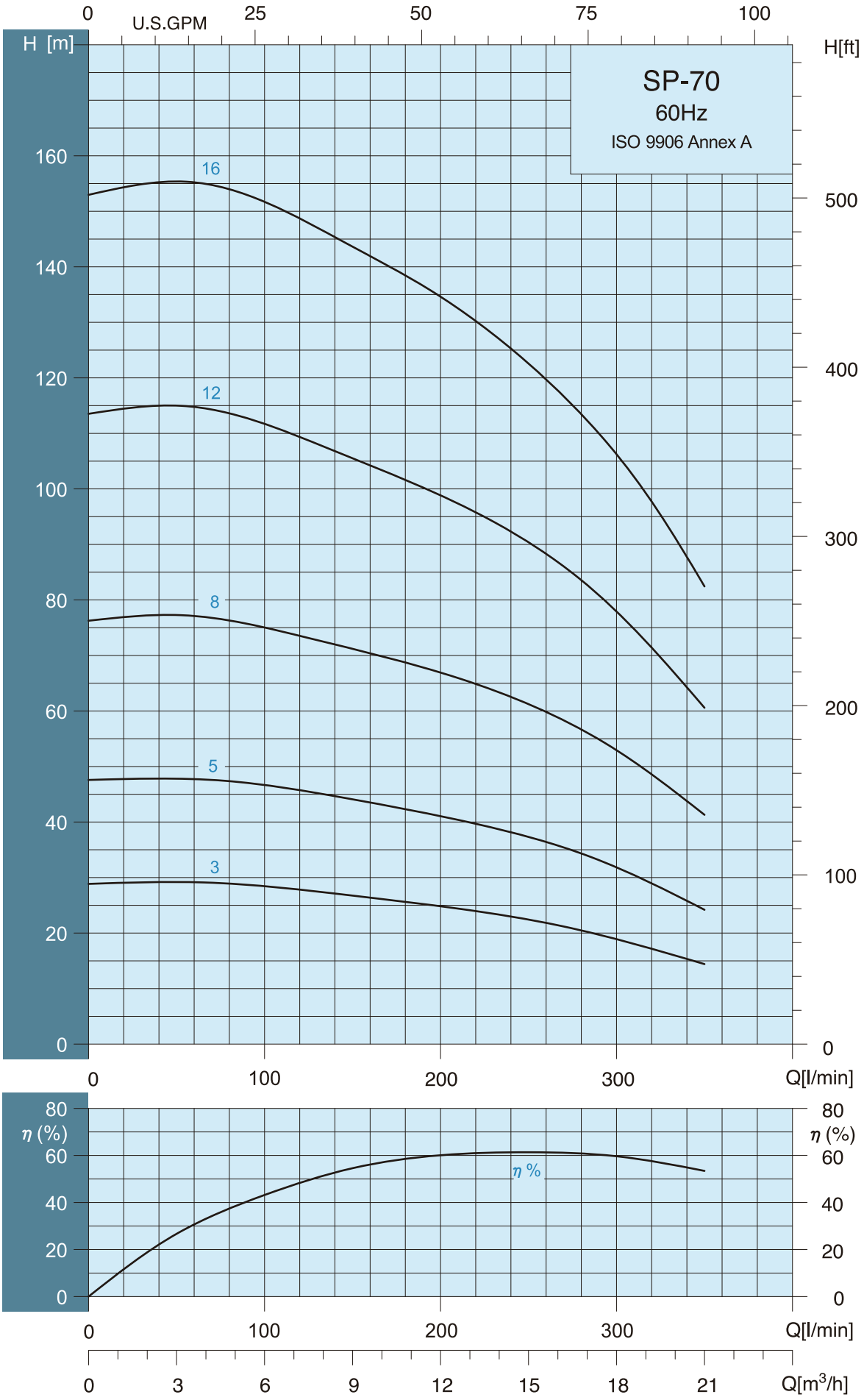
Pump Type	Dimensions(mm)			Net Weight(Kg)
	A	B	C	Pump
SP-4004	370	RP/NPT 2"	98	3.8
SP-4005	412		98	4.3
SP-4007	496		98	5.3
SP-4009	580		98	6.3
SP-4012	706		98	7.8
SP-4015	832		98	9.3
SP-4021	1084		98	12.3
SP-4025	1252		98	14.3
SP-4030	1459		98	16.8

m diameter of pump inclusive of cable guard and motor

STAIRS PUMPS

SP 4"

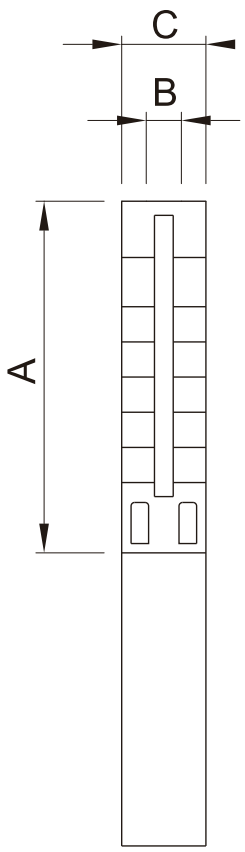
SP70 Performance Curves



STAIRS PUMPS

Selection Chart

Pump Type	STAGES	KW	HP	Q capacity 3450 rpm																
				l/min 0	70	80	90	100	120	140	160	180	200	250	300	350	380	420	460	500
				m^3/h 0	4.2	4.8	5.4	6.0	7.2	8.4	9.6	10.8	12	15	18	21	23	25	28	30
				H =TOTAL HEAD IN METERS																
SP-7003	3	1.5	2.0	29						28	27	26	25	22	19	14				
SP-7005	5	2.2	3.0	48						45	44	42	41	37	32	24				
SP-7008	8	3.7	5.0	76						72	70	69	67	61	53	41				
SP-7012	12	5.5	7.5	114						107	104	102	99	90	78	61				
SP-7016	16	7.5	10	153						145	142	138	135	123	106	82				



Dimensions And Weights

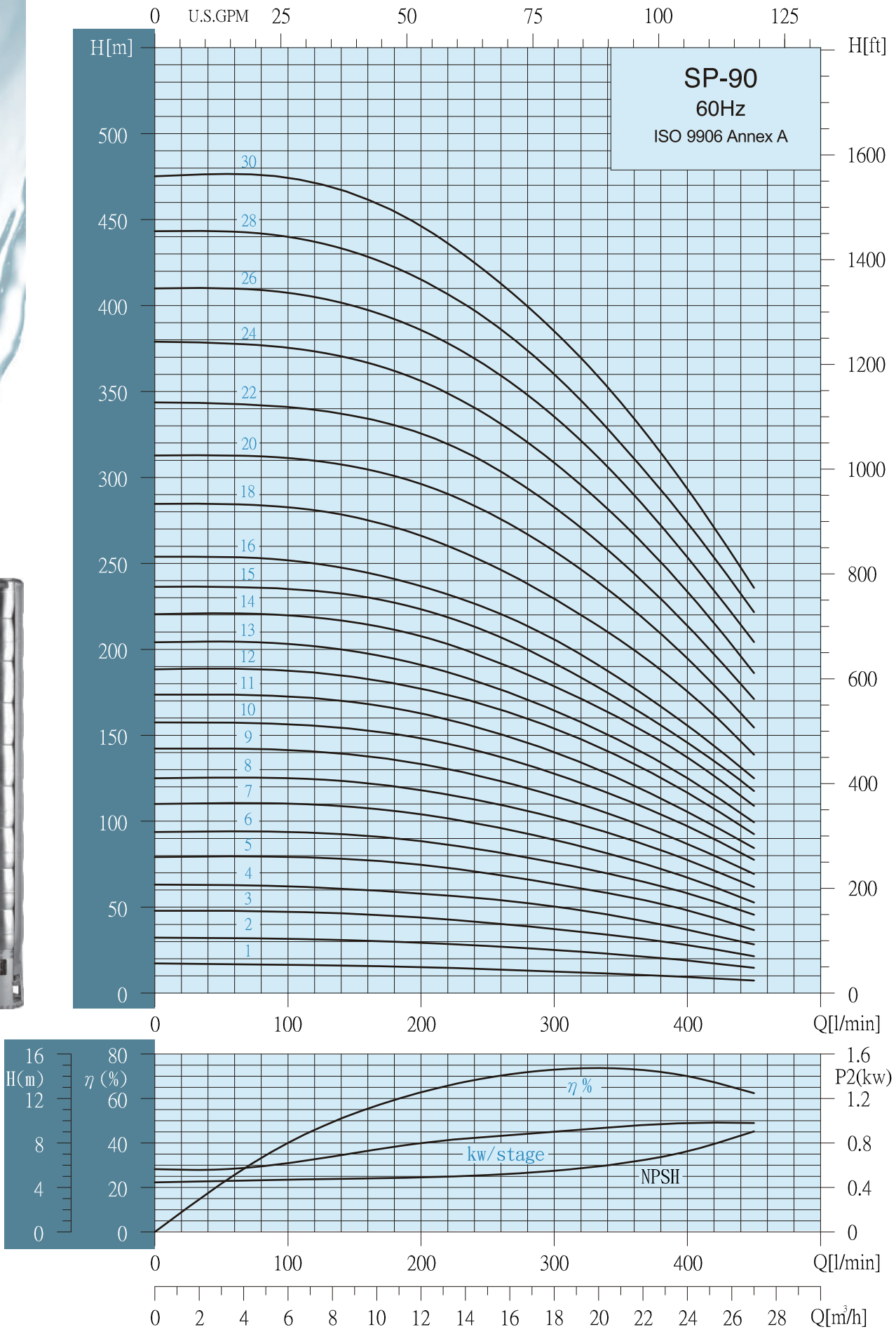
Pump Type	Dimensions(mm)			Net Weight(Kg)
	A	B	C	Pump
SP-7003	375	RP/NPT 2"	98	3.7
SP-7005	505		98	5.0
SP-7008	700		98	7.0
SP-7012	960		98	9.5
SP-7016	1220		98	12.1

C = Maximum diameter of pump inclusive of cable guard and motor

STAIRS PUMPS

SP 6"

SP90 Performance Curves

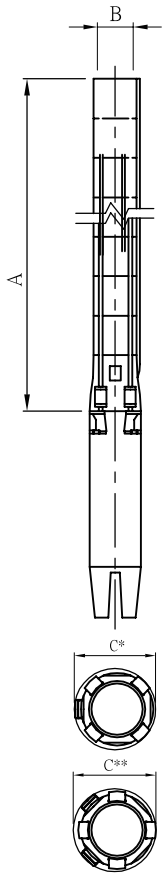


STAIRS PUMPS

Selection Chart

Pump Type	Motor P2		Max.current Amp		Q capacity 3450 rpm								
					m^3/h	6	9	12	15	18	21	24	27
	KW	HP	230V	380V	l/min	100	150	200	250	300	350	400	450
SP 90-1	1.1	1.5	5.9	3.6	HEAD IN METERS	17	15	14	13	12	11	9	8
SP 90-2	2.2	3	10.9	6.6		32	31	29	28	25	23	19	16
SP 90-3	3	4	14.1	8.5		48	47	44	41	38	33	28	22
SP 90-4	3.7	5	17.8	10.7		62	60	58	55	50	45	37	28
SP 90-5	5.5	7.5	24.6	14.9		79	78	75	70	63	57	48	37
SP 90-6	5.5	7.5	24.6	14.9		93	92	88	83	76	68	58	46
SP 90-7	7.5	10	32.2	19.5		110	108	103	98	89	79	68	53
SP 90-8	7.5	10	32.2	19.5		125	122	118	112	102	91	78	62
SP 90-9	7.5	10	32.3	19.5		141	138	133	125	115	102	88	70
SP 90-10	9.3	12.5	42.3	25.6		157	154	148	140	128	115	98	78
SP 90-11	9.3	12.5	42.3	25.6		172	169	162	153	140	125	106	84
SP 90-12	11	15	47.4	28.6		188	184	177	167	154	138	117	93
SP 90-13	11	15	47.4	28.6		203	199	190	179	165	147	125	100
SP 90-14	13	17.5	55	33.3		220	216	208	195	179	160	138	110
SP 90-15	13	17.5	55	33.3		235	231	223	210	192	170	146	119
SP 90-16	15	20	60.6	36.6		252	247	237	224	206	184	156	126
SP 90-18	15	20	60.6	36.6		283	277	266	250	230	205	176	140
SP 90-20	18.5	25	75	45		311	307	297	280	258	229	195	155
SP 90-22	18.5	25	75	45		341	336	325	308	282	251	214	170
SP 90-24	22	30	90.4	54.7		376	369	357	336	309	275	233	186
SP 90-26	22	30	90.4	54.7		408	400	386	365	336	298	253	205
SP 90-28	26	35	106.6	64.5		440	431	415	392	360	320	273	220
SP 90-30	26	35	106.6	64.5		473	465	446	420	385	343	293	236

*Higher pressure, longer stages pumps up to 50 stages are available on request.



Dimensions And Weights

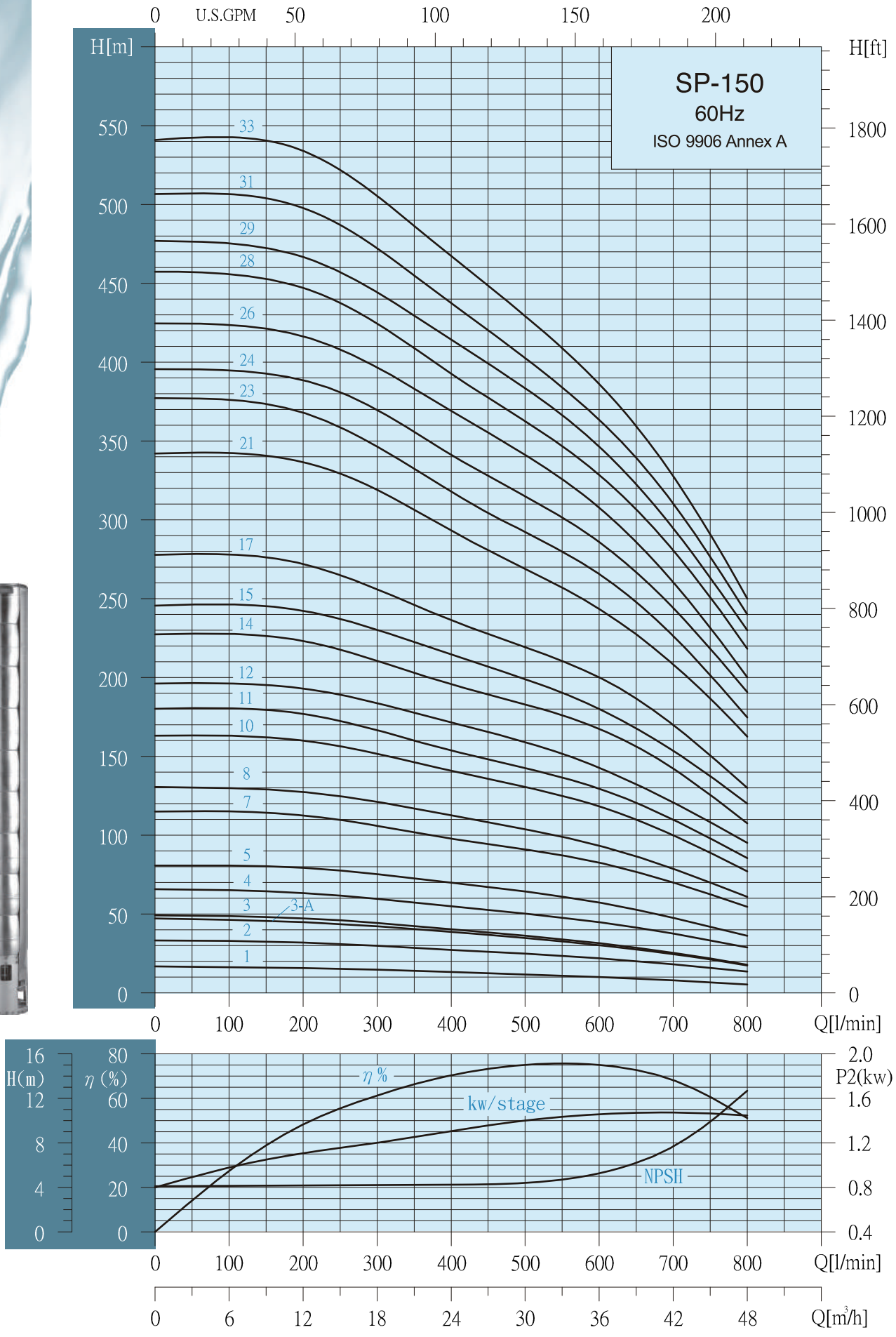
Pump Type	Dimensions(mm)			Net Weight(Kg)
	A	B	C*	Pump
SP 90-1	343	RP 2 1/2" NPT 3"	131	5.0
SP 90-2	403		131	6.4
SP 90-3	464		131	7.9
SP 90-4	524		131	9.3
SP 90-5	585		131	10.8
SP 90-6	645		131	12.2
SP 90-7	706		142	13.7
SP 90-8	766		142	15.1
SP 90-9	827		142	16.6
SP 90-10	887		142	18.0
SP 90-11	948		142	19.5
SP 90-12	1008		142	20.9
SP 90-13	1069		142	22.4
SP 90-14	1129		142	23.8
SP 90-15	1190		142	25.3
SP 90-16	1250		142	26.7
SP 90-18	1371		142	29.6
SP 90-20	1492		142	32.5
SP 90-22	1613		142	35.4
SP 90-24	1734		142	38.3
SP 90-26	1855		142	41.2
SP 90-28	1976		142	44.1
SP 90-30	2097		142	47.0

C*: Maximum diameter of pump with one motor cable

STAIRS PUMPS

SP 6"

SP150 Performance Curves

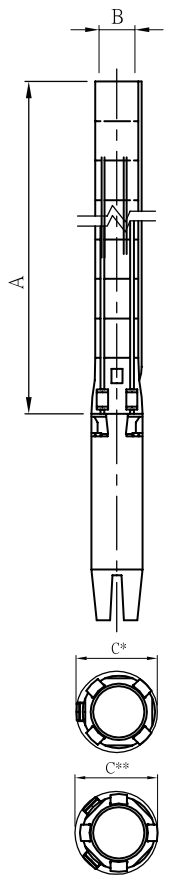


STAIRS PUMPS

Selection Chart

Pump Type	Motor P2		Max.current Amp		Q capacity 3450 rpm												
					m^3/h	12	15	18	21	24	27	30	33	36	39	42	45	48
	KW	HP	230V	380V	l/min	200	250	300	350	400	450	500	550	600	650	700	750	800
SP150-1	1.5	2	8.1	4.9	HEAD IN METERS	16	15.5	15	14	13.5	13	12	11	10	9	8	6	5
SP150-2	3	4	14.1	8.5		32	31	29	28	27	26	24	23	22	20	18	16	13
SP150-3-A	3.7	5	15.4	8.9		44	43	42	40	38	36	34	32	30	27	24	21	17
SP150-3	4	5.5	19.7	11.9		47	46	45	42	40	38	36	34	32	29	26	22	18
SP150-4	5.5	7.5	24.6	14.9		63	62	59	57	55	53	50	47	45	41	37	34	28
SP150-5	7.5	10	32.2	19.5		79	77	75	72	70	67	64	61	58	53	47	42	36
SP150-7	9.3	12.5	42.3	25.6		113	110	106	102	98	94	91	87	82	77	70	63	55
SP150-8	11	15	47.4	28.6		128	125	121	117	113	108	104	99	93	87	78	70	61
SP150-10	13	17.5	55	33.3		160	156	152	146	141	136	130	125	118	110	100	88	77
SP150-11	15	20	60.6	36.6		177	172	167	160	154	148	143	137	129	120	110	97	86
SP150-12	18.5	25	75	45		193	189	184	178	172	166	158	152	143	133	120	108	95
SP150-14	18.5	25	75	45		223	217	210	204	196	189	183	176	167	156	142	126	107
SP150-15	22	30	90.4	54.7		242	237	230	223	215	207	198	190	180	167	154	137	120
SP150-17	22	30	90.4	54.7		272	265	256	246	236	227	219	210	200	187	170	150	130
SP150-21	30	40	124	75		337	329	318	306	293	280	269	257	244	227	208	186	162
SP150-23	30	40	124	75		367	358	346	333	318	305	292	280	266	248	226	201	175
SP150-24	37	50	154	93		388	381	370	356	342	328	315	302	286	267	244	218	190
SP150-26	37	50	154	93		416	408	396	383	369	356	341	326	308	286	260	231	200
SP150-28	37	50	154	93		447	438	424	409	393	377	363	347	328	306	280	250	218
SP150-29	45	60	182	110		466	457	445	429	414	399	383	367	346	322	295	263	230
SP150-31	45	60	182	110		497	487	472	455	437	420	403	384	363	340	310	276	240
SP150-33	45	60	182	110		535	522	505	486	467	449	429	409	386	360	327	290	250

*Higher pressure, longer stages pumps up to 39 stages are available on request.



Dimensions And Weights

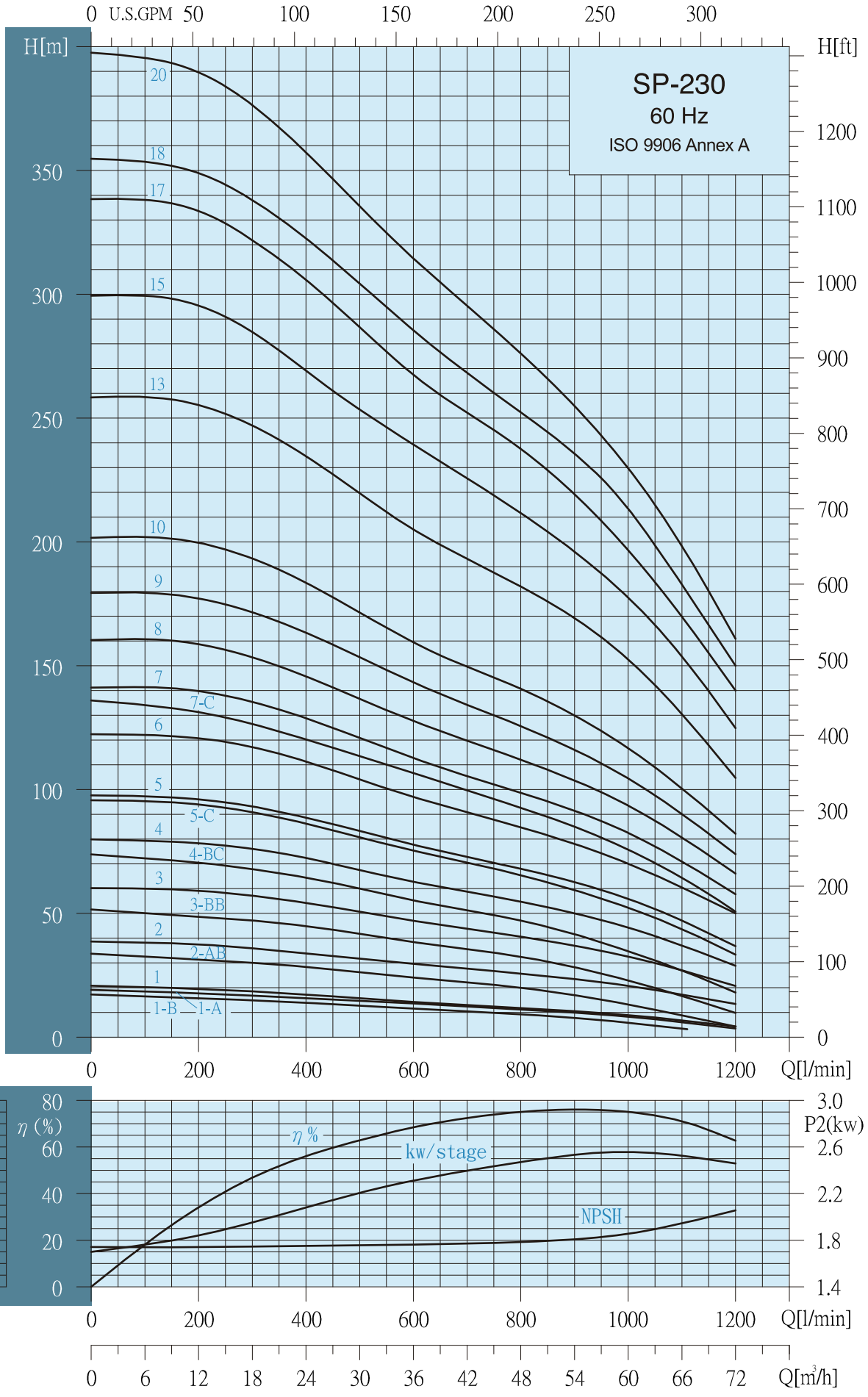
Pump Type	Dimensions(mm)				Net Weight(Kg)
	A	B	C*	C**	Pump
SP150-1	366	NPT/ RP3"	131		6.7
SP150-2	462		131		8.4
SP150-3-A	558		131		10.1
SP150-3	558		131		10.1
SP150-4	654		131		11.8
SP150-5	750		142	142	13.5
SP150-7	942		142	142	16.9
SP150-8	1038		142	142	18.6
SP150-10	1230		142	142	22.0
SP150-11	1326		142	142	23.6
SP150-12	1422		142	142	25.3
SP150-14	1614		142	142	28.7
SP150-15	1710		142	142	30.4
SP150-17	1902		142	142	33.8
SP150-21	2286		142	142	40.6
SP150-23	2478		142	142	44.0
SP150-24	2574		142	142	45.6
SP150-26	2766		142	142	49.0
SP150-28	2958		142	142	52.4
SP150-29	3054		142	142	54.1
SP150-31	3246		142	142	57.5
SP150-33	3438		142	142	60.9

C*: Maximum diameter of pump with one motor cable
C**: Maximum diameter of pump with two motor cable

STAIRS PUMPS

SP 6"

SP230 Performance Curves

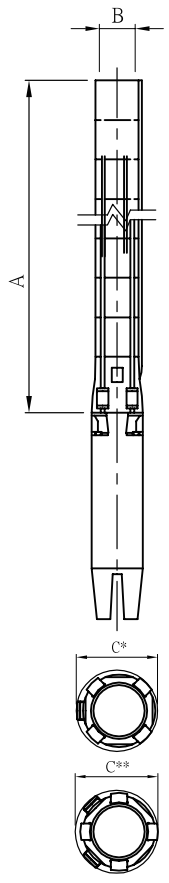


STAIRS PUMPS

Selection Chart

Pump Type	Motor P2		Max.current Amp		Q capacity 3450 rpm												
					m^3/h	18	21	24	27	30	33	36	42	48	54	60	66	72
	KW	HP	230V	380V	l/min	300	350	400	450	500	550	600	700	800	900	1000	1100	1200
SP230-1-B	1.5	2	8.1	4.9	HEAD IN METERS	15	14.5	14	13	12.5	12	11	10	9	8	6	3	
SP230-1-A	2.2	3	10.9	6.6		17	16.5	16	15.5	15	14.5	14	13	11	10	8	6	3
SP230-1	3	4	14.1	8.5		18	17.5	17	16.5	16	15	14	13	12	11	8	6	4
SP230-2-AB	3.7	5	17.8	10.7		30	29	28	27	26	25	24	22	20	17	13	8	4
SP230-2	5.5	7.5	24.6	14.9		36	35	34	33	32	31	29	27	26	24	21	17	13
SP230-3-BB	5.5	7.5	24.6	14.9		47	46	45	43	42	40	38	35	32	28	23	16	10
SP230-3	7.5	10	32.2	19.5		57	56	54	53	51	48	47	44	40	37	33	27	21
SP230-4-BC	7.5	10	32.2	19.5		68	67	64	62	60	58	55	51	47	41	35	27	18
SP230-4	9.3	12.5	42.3	25.6		76	74	72	70	67	65	63	58	55	50	44	37	28
SP230-5-C	11	15	47.4	28.6		91	88	85	83	81	78	75	70	65	59	52	43	34
SP230-5	13	17.5	55	33.3		93	91	88	86	83	81	77	73	68	63	56	47	37
SP230-6	15	20	60.6	36.6		117	114	112	108	104	100	97	91	85	77	70	60	50
SP230-7C	15	20	60.6	36.6		126	123	120	117	114	110	107	99	93	85	76	65	51
SP230-7	18.5	25	75	45		136	133	128	125	121	117	113	106	98	92	83	71	57
SP230-8	18.5	25	75	45		153	150	146	141	137	132	127	120	113	104	94	80	66
SP230-9	22	30	90.4	54.7		172	167	163	158	154	148	143	135	126	116	105	90	74
SP230-10	22	30	90.4	54.7		194	188	184	177	172	165	159	150	141	130	117	100	83
SP230-13	30	40	124	75		247	242	235	227	220	213	205	193	182	168	153	130	105
SP230-15	37	50	154	93		285	277	269	261	254	246	239	226	212	196	177	154	125
SP230-17	37	50	154	93		322	315	306	296	287	277	267	252	237	219	197	170	140
SP230-18	45	60	182	110		337	331	323	314	305	295	286	268	252	236	214	183	150
SP230-20	45	60	182	110		376	367	357	346	335	325	315	295	276	255	230	198	161

*Higher pressure, longer stages pumps up to 24 stages are available on request.



Dimensions And Weights

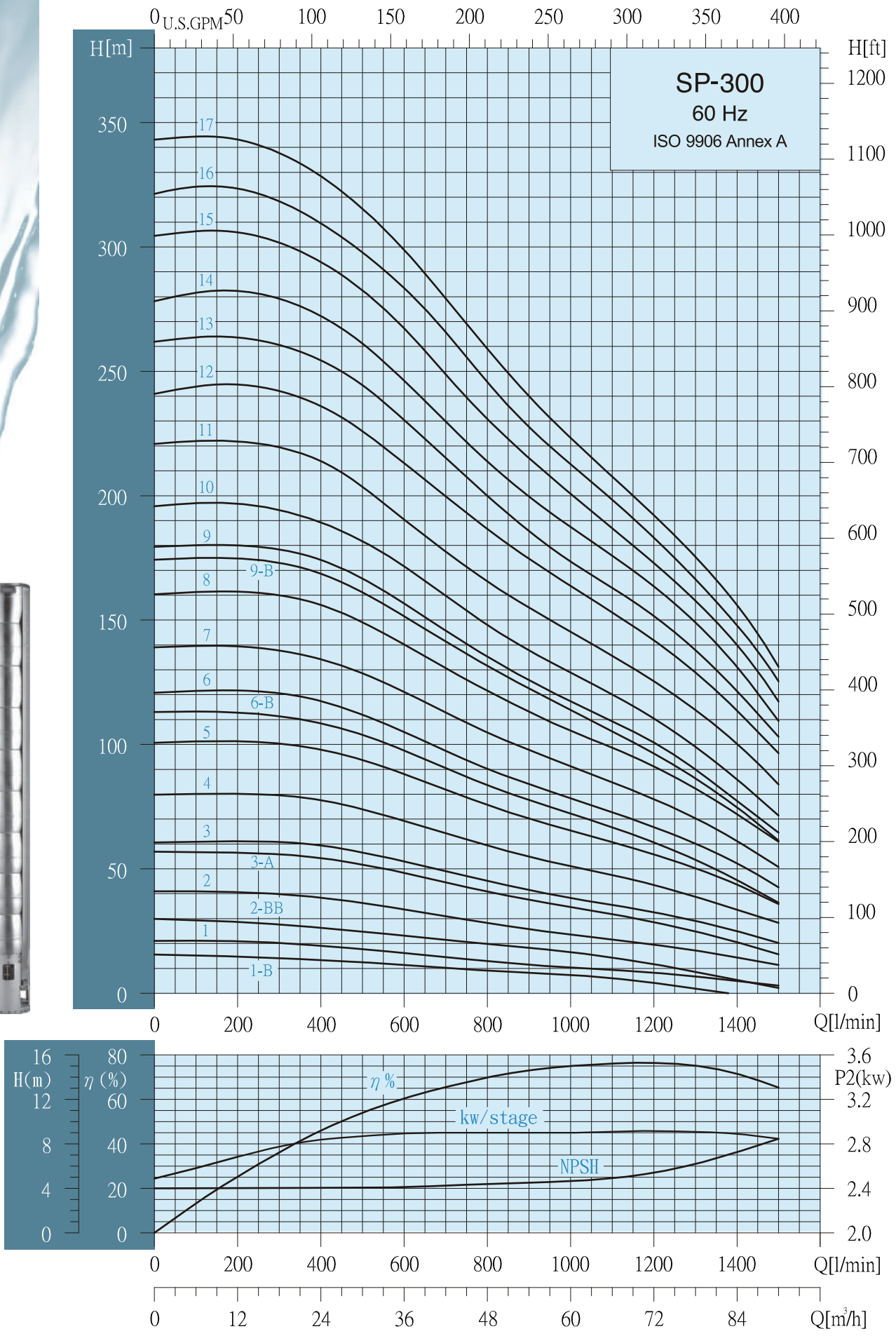
Pump Type	Dimensions(mm)				Net Weight(Kg)
	A	B	C*	C**	Pump
SP230-1-B	383	NPT/ RP 3"OR4"	146	148	6.9
SP230-1-A	383		146	148	6.9
SP230-1	383		146	148	6.9
SP230-2-AB	496		146	148	9.2
SP230-2	496		146	148	9.2
SP230-3-BB	609		146	148	11.5
SP230-3	609		149	152	11.5
SP230-4-BC	722		149	152	13.7
SP230-4	722		149	152	13.7
SP230-5-C	835		149	152	16.0
SP230-5	835		149	152	16.0
SP230-6	948		149	152	18.3
SP230-7-C	1061		149	152	20.6
SP230-7	1061		149	152	20.6
SP230-8	1174		149	152	22.9
SP230-9	1287		149	152	25.1
SP230-10	1400		149	152	27.4
SP230-13	1739		149	152	34.3
SP230-15	1965		149	152	38.8
SP230-17	2191		149	152	43.4
SP230-18	2304		149	152	45.7
SP230-20	2530		149	152	50.2

C*: Maximum diameter of pump with one motor cable
C**: Maximum diameter of pump with two motor cable

STAIRS PUMPS

SP 6"

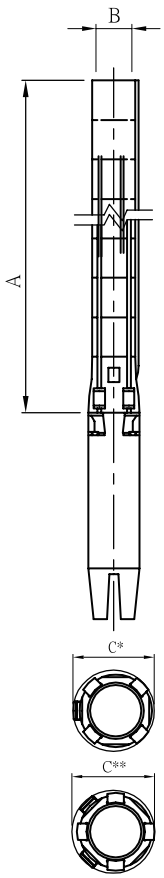
SP300 Performance Curves



Selection Chart

Pump Type	Motor P2		Max.current Amp		Q capacity 3450 rpm													
					m^3/h	24	27	30	36	42	48	54	60	66	72	78	84	90
	KW	HP	230V	380V	l/min	400	450	500	600	700	800	900	1000	1100	1200	1300	1400	1500
SP300-1-B	2.2	3	10.9	6.3	HEAD IN METERS	14	13	12	11	10	9	8	7	6	4	2	0	0
SP300-1	3.7	5	17.8	10.7		19	18	17	16	14	13	11	10	9	8	7	4	3
SP300-2-BB	3.7	5	17.8	10.7		26	25	24	23	22	20	18	17	14	12	8	5	2
SP300-2	5.5	7.5	24.6	14.9		38	37	36	34	31	28	26	24	22	19	17	15	11
SP300-3-A	7.5	10	32.2	19.5		54	53	52	48	44	41	38	35	32	28	25	21	16
SP300-3	9.3	12.5	42.3	25.6		59	58	57	53	49	46	42	38	36	33	29	25	20
SP300-4	11	15	47.4	28.6		77	76	74	69	65	59	55	51	47	44	39	34	28
SP300-5	13	17.5	55	33.3		98	96	94	88	82	76	70	66	61	56	50	44	36
SP300-6-B	15	20	60.6	36.6		108	106	104	97	90	84	77	72	66	60	54	46	37
SP300-6	18.5	25	75	45		117	115	112	105	97	90	84	78	73	67	60	52	43
SP300-7	18.5	25	75	45		134	132	129	121	113	106	98	91	85	78	70	61	51
SP300-8	22	30	90.4	54.7		156	153	149	140	131	122	113	106	98	91	83	72	61
SP300-9-B	22	30	90.4	54.7		168	165	161	152	142	132	123	114	105	96	86	75	62
SP300-9	26	35	106.6	64.5		174	171	167	157	146	136	126	117	109	101	90	77	65
SP300-10	26	35	106.6	64.5		189	186	182	172	160	148	138	129	120	110	99	86	72
SP300-11	30	40	124	75		214	209	204	190	177	166	155	146	136	126	114	100	84
SP300-12	37	50	154	93		236	232	226	213	200	187	175	164	153	142	129	114	97
SP300-13	37	50	154	93		255	250	245	230	215	200	186	174	163	152	138	121	104
SP300-14	37	50	154	93		272	267	261	246	230	214	200	187	176	163	149	131	109
SP300-15	45	60	182	110		294	289	283	267	249	230	215	200	187	173	158	140	118
SP300-16	45	60	182	110		309	304	297	283	266	246	228	212	198	183	166	148	126
SP300-17	45	60	182	110		328	322	316	299	279	259	240	223	208	192	175	157	131

*Higher pressure, longer stages pumps up to 21 stages are available on request.



Dimensions And Weights

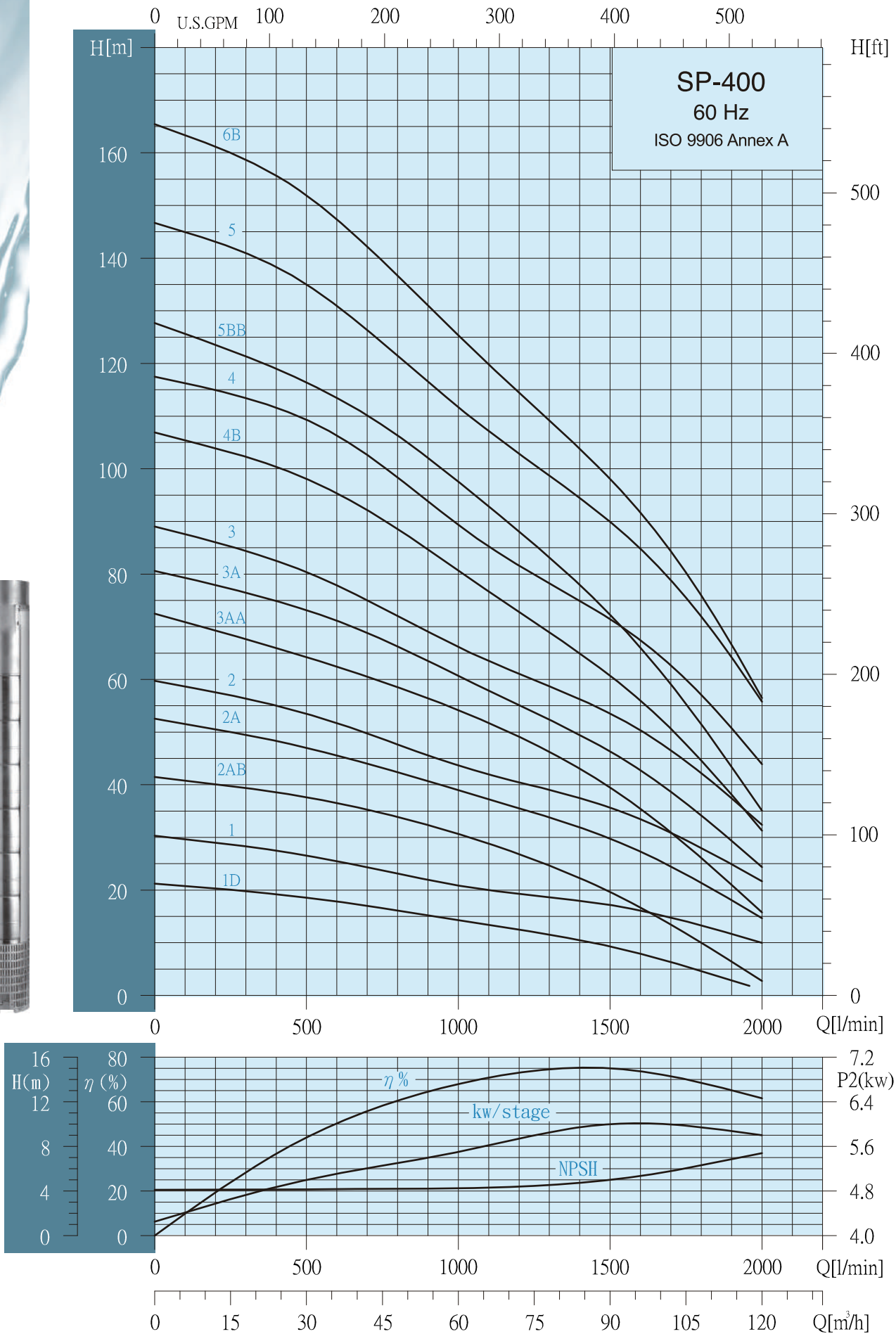
Pump Type	Dimensions(mm)				Net Weight(Kg)
	A	B	C*	C**	Pump
SP300-1-B	383	NPT/ RP 3"OR4"	146	148	6.9
SP300-1	383		146	148	6.9
SP300-2-BB	496		146	148	9.2
SP300-2	496		146	148	9.2
SP300-3-A	609		149	152	11.5
SP300-3	609		149	152	11.5
SP300-4	722		149	152	13.7
SP300-5	835		149	152	16.0
SP300-6-B	948		149	152	18.3
SP300-6	948		149	152	18.3
SP300-7	1061		149	152	20.6
SP300-8	1174		149	152	22.9
SP300-9-B	1287		149	152	25.1
SP300-9	1287		149	152	25.1
SP300-10	1400		149	152	27.4
SP300-11	1513		149	152	29.7
SP300-12	1626		149	152	32.0
SP300-13	1739		149	152	34.3
SP300-14	1852		149	152	36.5
SP300-15	1965		149	152	38.8
SP300-16	2078		149	152	41.1
SP300-17	2191		149	152	43.4

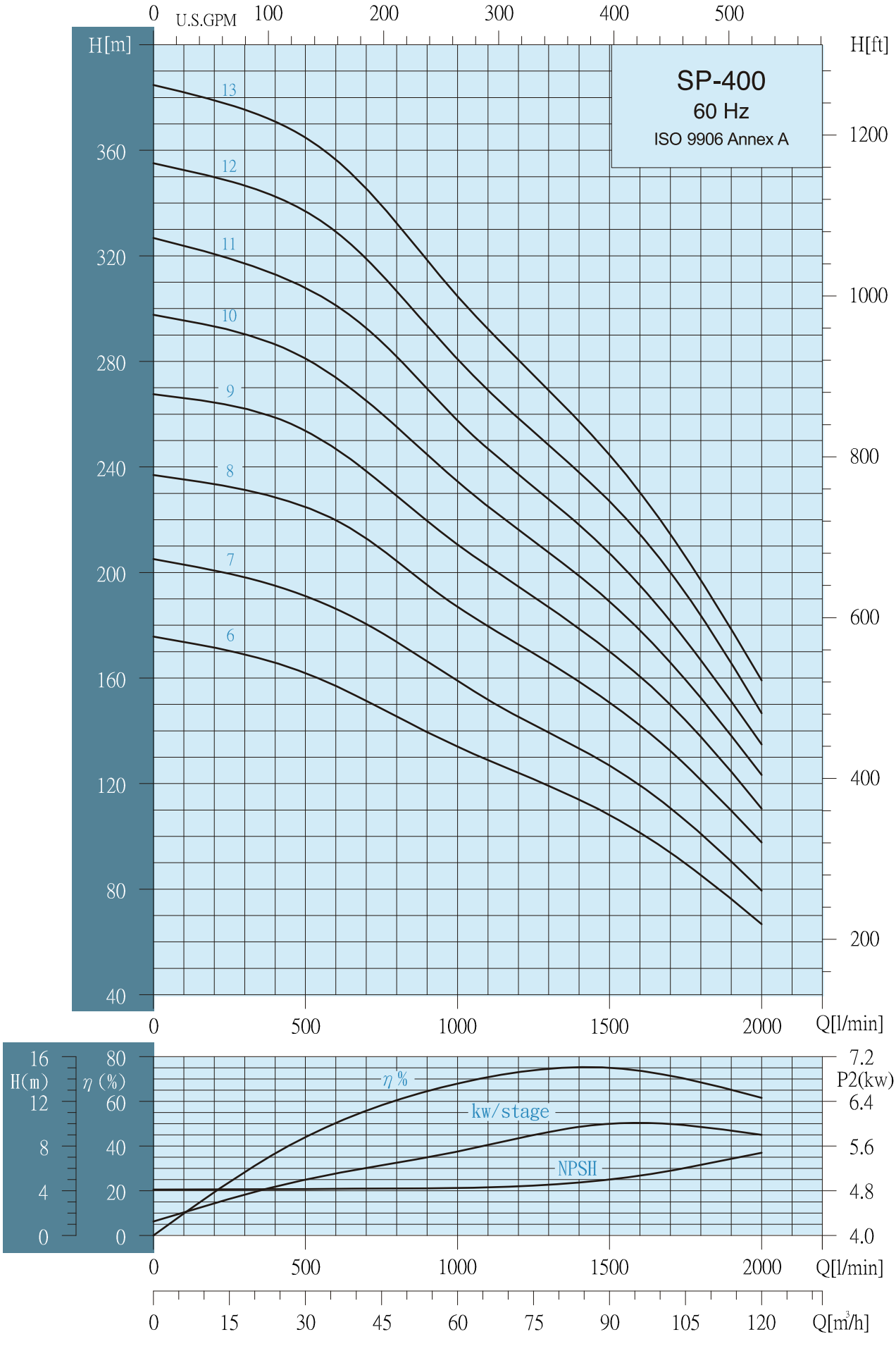
C*: Maximum diameter of pump with one motor cable
C**: Maximum diameter of pump with two motor cable

STAIRS PUMPS

SP 8"

SP400 Performance Curves




SP-400
60 Hz
ISO 9906 Annex A
U.S.GPM
H[m]
H[ft]
Q[l/min]
Q[m³/h]
13
12
11
10
9
8
7
6
η %
kw/stage
NPSH
H(m)
η (%)
P2(kw)

SP 8" **SP400**

STAIRS PUMPS

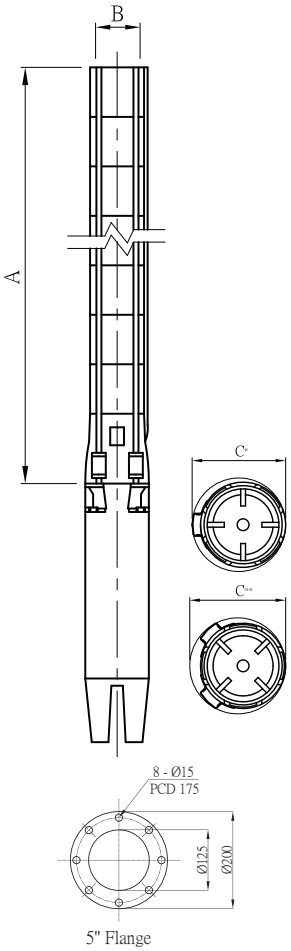
Selection Chart

Pump Type	Motor P2		Max.current Amp		Q capacity 3450 rpm											
					m³/h	18	24	30	36	42	48	60	72	84	96	108	120
	KW	HP	230V	380V	l/min	300	400	500	600	700	800	1000	1200	1400	1600	1800	2000
SP 400-1	5.5	7.5	24.6	15	HEAD IN METERS	28	27	26	25	24	23	21	19	18	16	13	10
SP 400-2-AB	7.5	10	32.2	19.5		39	38	37	36	35	34	31	27	22	17	10	3
SP 400-2A	9.3	12.5	42.3	25.6		49	48	47	46	44	42	39	36	32	27	21	15
SP 400-2	11	15	47.4	28.6		56	55	54	52	50	47	44	40	37	33	28	22
SP 400-3-AA	13	17.5	55	33.3		68	66	64	62	60	58	54	49	43	35	26	16
SP 400-3-A	15	20	60.6	36.6		76	75	73	71	69	66	61	55	50	43	34	25
SP 400-3	18.5	25	75	45		84	83	80	78	75	72	66	61	56	50	42	33
SP 400-4-B	18.5	25	75	45		102	100	98	95	92	88	80	73	65	56	45	32
SP 400-4	22	30	90.4	54.7		113	112	109	106	103	98	89	82	75	68	57	44
SP 400-5-BB	22	30	90.4	54.7		122	119	116	114	110	106	97	88	78	66	51	35
SP 400-5	26	35	106.6	64.5		141	138	135	131	126	121	112	103	95	85	72	56
SP 400-6-B	30	40	124	75		158	156	152	147	142	136	125	115	104	92	76	57
SP 400-6	37	50	154	93		169	166	162	157	151	146	134	124	114	101	86	67
SP 400-7	37	50	154	93		198	195	191	186	180	174	159	146	133	120	101	80
SP 400-8	45	60	172	104		231	228	225	220	213	204	187	172	159	141	121	98
SP 400-9	55	75	214	130		262	259	254	247	238	229	210	195	179	160	138	110
SP 400-10	55	75	214	130		290	287	281	274	265	255	235	217	199	178	152	123
SP 400-11	63	85	266	161		317	313	308	301	293	282	258	237	218	196	168	135
SP 400-12	63	85	266	161		347	342	337	330	319	307	280	259	238	215	183	147
SP 400-13	75	100	284	172		375	370	365	357	346	332	305	280	258	230	198	160

*Higher pressure, longer stages pumps up to 15 stages are available on request.

Dimensions And Weights

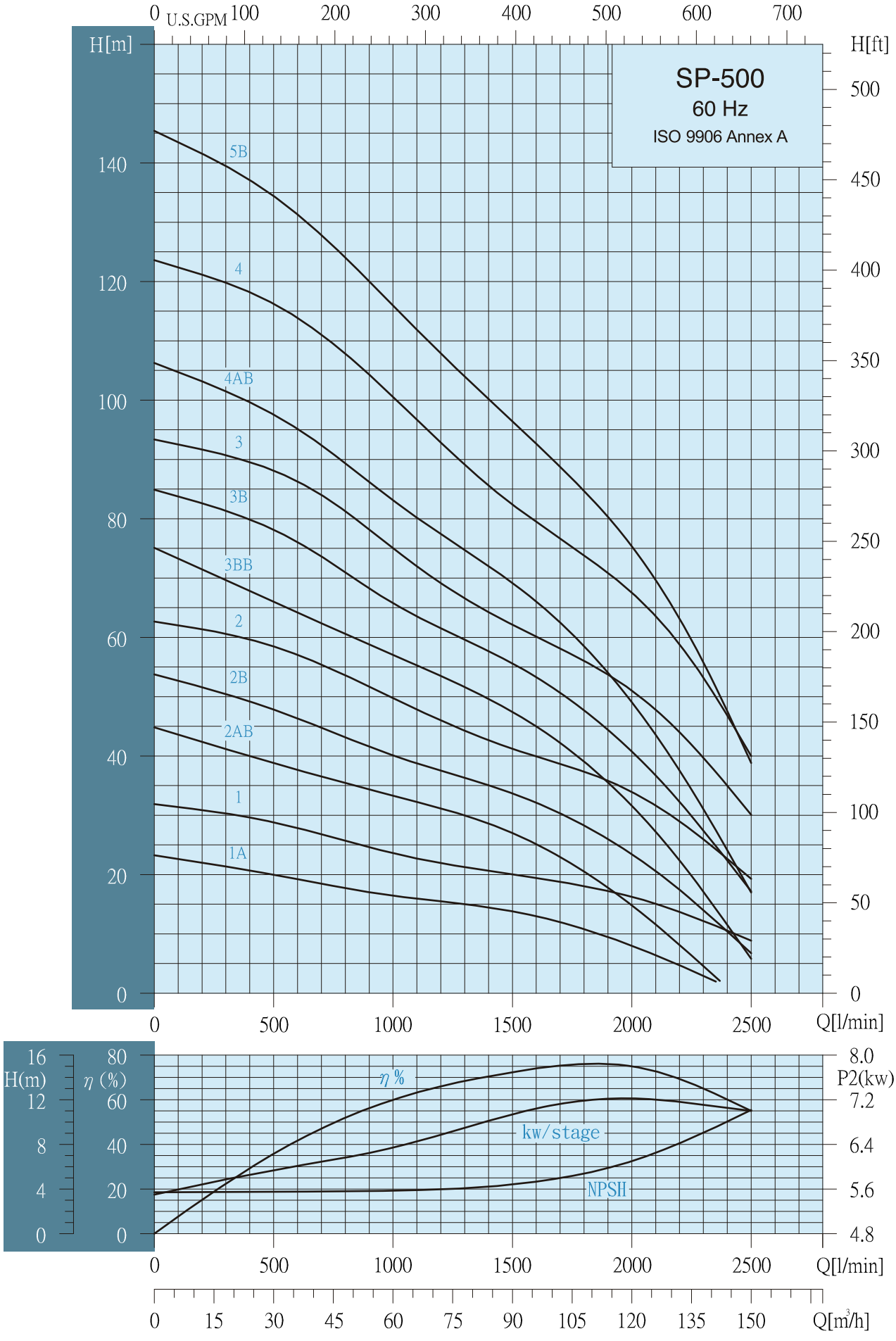
Pump Type	Dimensions(mm)						Net Weight(Kg)
	B 5" Connection (RP,NPT)			B 5" Flange			
	A	C*	C**	A	C*	C**	Pump
SP 400-1	618	178	186	618	200	200	25.1
SP 400-2-AB	746	178	186	746	200	200	28.7
SP 400-2-A	746	178	186	746	200	200	28.7
SP 400-2	746	178	186	746	200	200	28.7
SP 400-3-AA	874	178	186	874	200	200	32.3
SP 400-3-A	874	178	186	874	200	200	32.3
SP 400-3	874	178	186	874	200	200	32.3
SP 400-4-B	1003	178	186	1003	200	200	35.9
SP 400-4	1003	178	186	1003	200	200	35.9
SP 400-5-BB	1131	178	186	1131	200	200	39.5
SP 400-5	1131	178	186	1131	200	200	39.5
SP 400-6-B	1259	178	186	1259	200	200	43.0
SP 400-6	1259	178	186	1259	200	200	43.0
SP 400-7	1387	178	186	1387	200	200	46.6
SP 400-8	1527	200	204	1527	205	205	51.6
SP 400-9	1655	200	204	1655	205	205	55.2
SP 400-10	1783	200	204	1783	205	205	58.8
SP 400-11	1911	200	204	1911	205	205	62.4
SP 400-12	2039	200	204	2039	205	205	66.0
SP 400-13	2168	200	204	2168	205	205	69.6



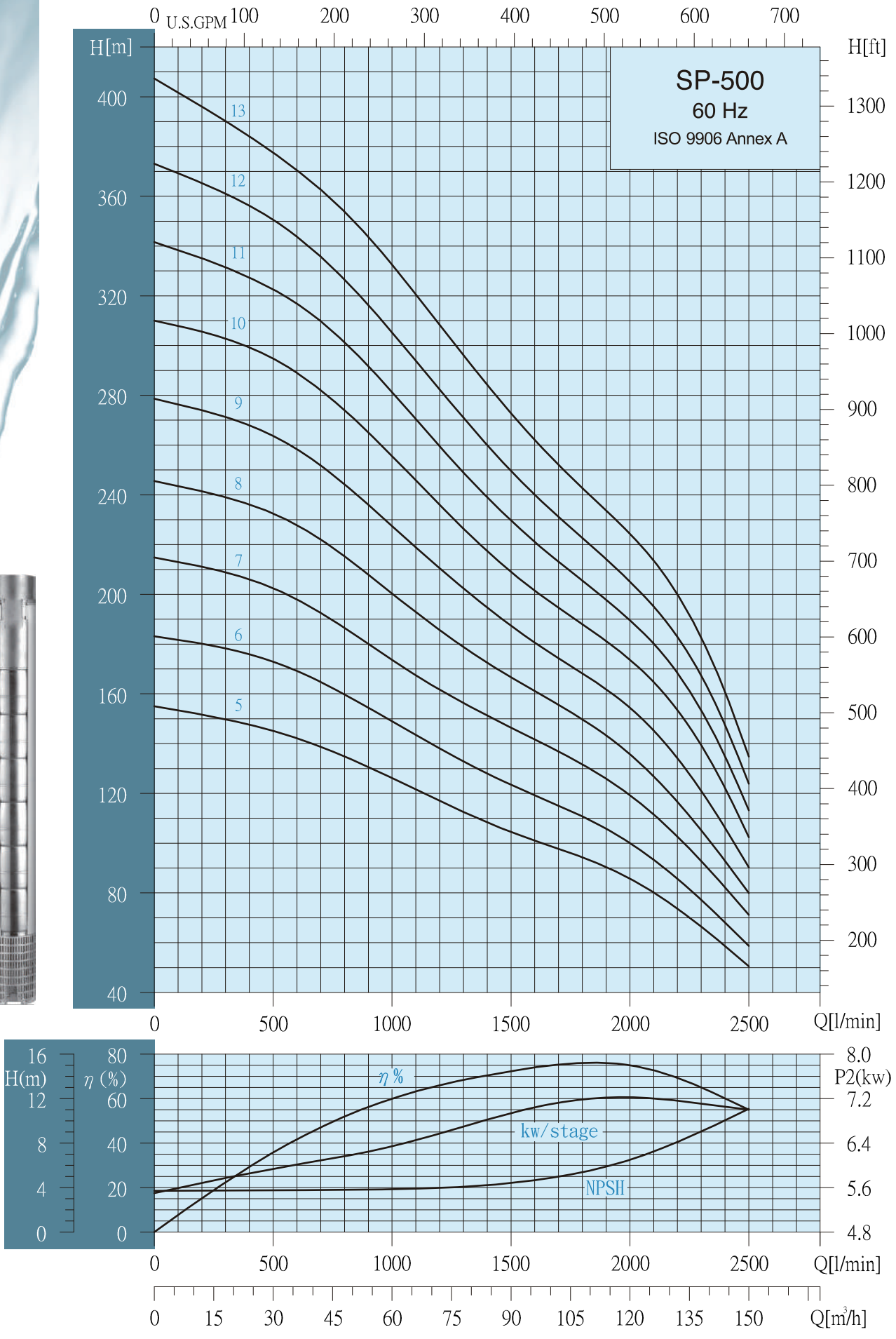
C*: Maximum diameter of pump with one motor cable
C**: Maximum diameter of pump with two motor cable

STAIRS PUMPS

SP 8" SP500 Performance Curves



STAIRS PUMPS



Stairs SP Series

SP 8" **SP500**

STAIRS PUMPS

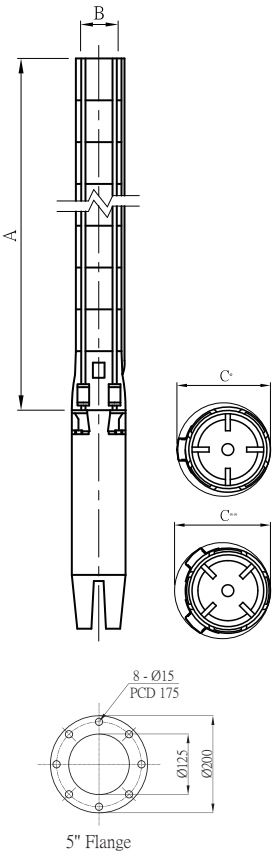
Selection Chart

Pump Type	Motor P2		Max.current Amp		Q capacity 3450 rpm											
					m³/h	18	30	42	54	66	78	90	102	114	126	138	150
	KW	HP	230V	380V	l/min	300	500	700	900	1100	1300	1500	1700	1900	2100	2300	2500
SP 500-1-A	5.5	7.5	24.6	15	HEAD IN METERS	21	20	18	17	16	15	14	12	9	6	3	
SP 500-1	7.5	10	32.2	19.5		30	29	26	25	23	21	20	19	17	15	12	9
SP 500-2-AB	9.3	12.5	42.3	25.6		41	39	36	34	32	30	27	23	18	12	5	
SP 500-2-B	11	15	47.4	28.6		50	48	45	42	39	36	34	30	26	20	14	7
SP 500-2	13	17.5	55	33.3		60	58	55	51	48	44	41	38	36	32	26	19
SP 500-3-BB	15	20	60.6	36.6		70	66	62	59	55	51	47	42	35	27	17	6
SP 500-3-B	18.5	25	75	45		81	78	74	68	64	60	55	51	45	37	27	17
SP 500-3	22	30	90.4	54.7		91	88	84	78	72	66	62	58	54	48	40	30
SP 500-4-AB	22	30	90.4	54.7		102	97	92	86	80	75	69	63	54	44	31	17
SP 500-4	26	35	106.6	64.5		120	116	111	105	97	89	82	77	71	64	53	40
SP 500-5-B	30	40	124	75		140	135	128	120	112	104	96	89	80	70	55	39
SP 500-5	37	50	154	93		150	145	139	130	121	112	105	98	90	80	67	50
SP 500-6	37	50	154	93		178	172	165	154	143	132	123	115	106	93	77	59
SP 500-7	45	60	172	104		209	202	192	180	167	156	147	137	126	111	92	71
SP 500-8	55	75	214	130		239	232	221	208	192	179	167	156	143	127	105	80
SP 500-9	63	85	266	161		271	263	251	236	220	201	188	174	161	145	120	90
SP 500-10	63	85	266	161		302	295	281	265	246	227	210	194	180	165	140	103
SP 500-11	75	100	284	172		331	322	310	291	270	250	230	213	198	180	153	114
SP 500-12	93	125	376	228		360	350	336	316	294	270	250	231	214	195	168	124
SP 500-13	93	125	376	228		390	378	362	344	320	296	272	252	233	213	182	136

Dimensions And Weights

Pump Type	Dimensions(mm)						Net Weight(Kg)
	B 5" Connection (RP,NPT)			B 5" Flange			
	A	C*	C**	A	C*	C**	Pump
SP 500-1-A	618	179	183	618	200	200	25.1
SP 500-1	618	179	183	618	200	200	25.1
SP 500-2-AB	746	179	183	746	200	200	28.7
SP 500-2-B	746	179	183	746	200	200	28.7
SP 500-2	746	179	183	746	200	200	28.7
SP 500-3-BB	874	179	183	874	200	200	32.3
SP 500-3-B	874	179	183	874	200	200	32.3
SP 500-3	874	179	183	874	200	200	32.3
SP 500-4-AB	1003	179	183	1003	200	200	35.9
SP 500-4	1003	179	183	1003	200	200	35.9
SP 500-5-B	1131	179	183	1131	200	200	39.5
SP 500-5	1131	179	183	1131	200	200	39.5
SP 500-6	1259	179	183	1259	200	200	43.0
SP 500-7	1398	205	205	1398	200	202	48.0
SP 500-8	1527	205	205	1527	200	202	51.6
SP 500-9	1655	205	205	1655	200	202	55.2
SP 500-10	1783	205	205	1783	200	202	58.8
SP 500-11	1911	205	205	1911			62.4
SP 500-12	2039	205	205	2039			66.0
SP 500-13	2168	205	205	2168			69.6

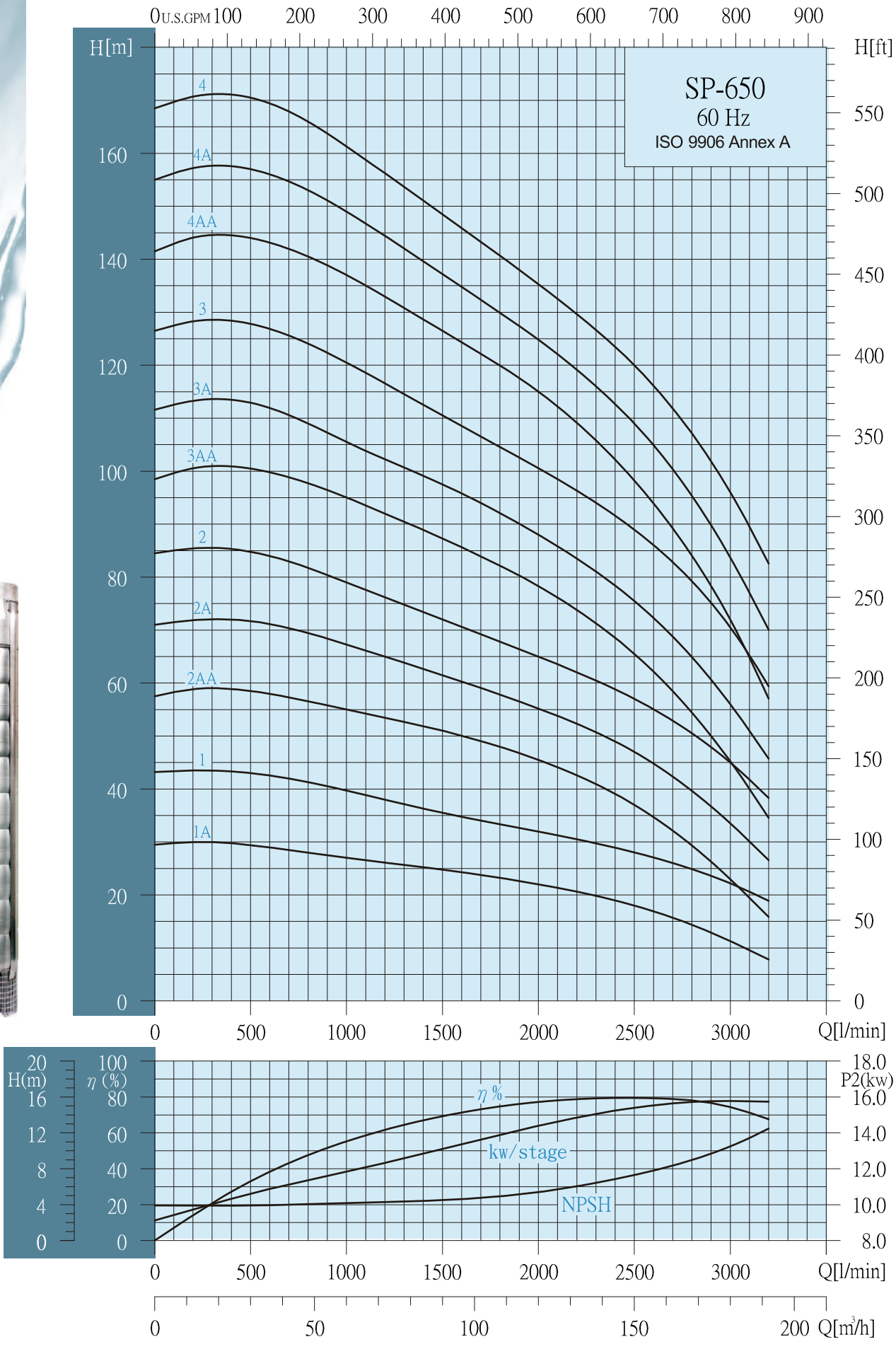
C*: Maximum diameter of pump with one motor cable
C**: Maximum diameter of pump with two motor cable

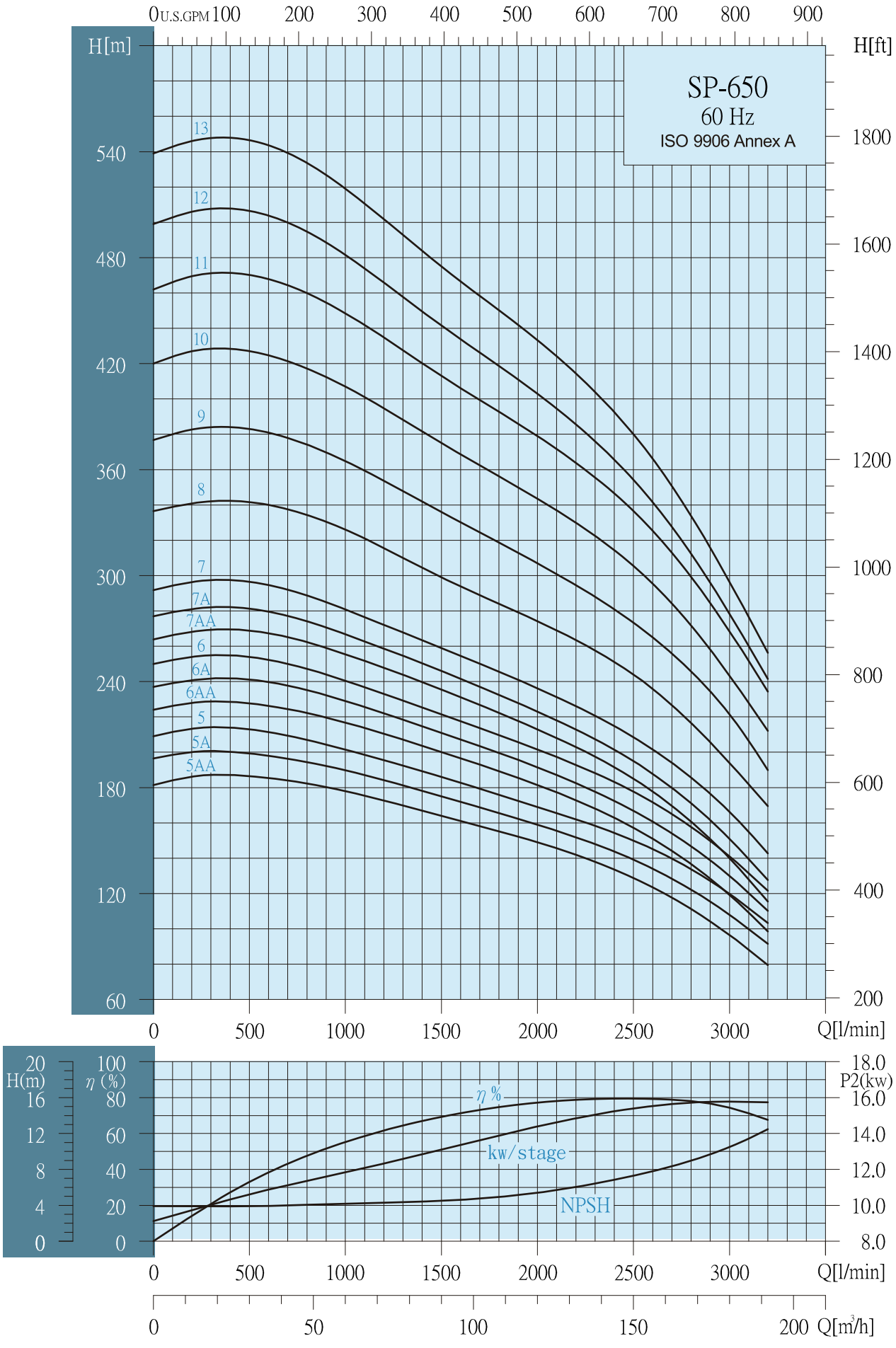


STAIRS PUMPS

SP10"

SP650 Performance Curves

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H[m]
H[ft]
SP-650
60 Hz
ISO 9906 Annex A
13
12
11
10
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7
7A
7AA
6
6A
6AA
5
5A
5AA
540
480
420
360
300
240
180
120
60
1800
1600
1400
1200
1000
800
600
400
200
0 500 1000 1500 2000 2500 3000 Q[l/min]
H(m)
η (%)
η %
kw/stage
NPSH
P2(kw)
18.0
16.0
14.0
12.0
10.0
8.0
0 50 100 150 200 Q[m³/h]

SP10" **SP650**

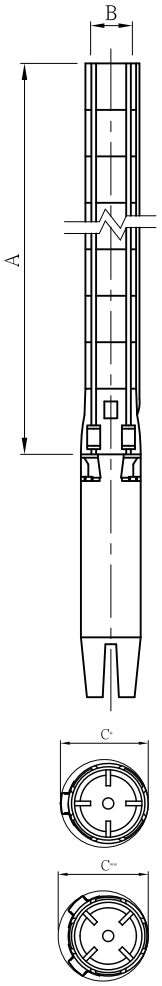
STAIRS PUMPS

Selection Chart

Pump Type	Motor P2		Max.current Amp		Q capacity 3450 rpm											
					m^3/h	48	60	72	84	96	108	120	132	144	156	168	180
	KW	HP	230V	380V	l/min	800	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000
SP 650-1-A	11	15	47.4	28.6	HEAD IN METERS	28	27	26	25	24	23	22	21	19	17	14	11
SP 650-1	18.5	25	75	45		41	40	38	46	35	34	32	31	29	27	25	22
SP 650-2-AA	22	30	90.4	54.7		57	55	58	52	50	48	46	43	39	35	29	23
SP 650-2-A	26	35	106.6	64.5		69	67	65	63	60	58	55	53	49	45	40	34
SP 650-2	30	40	124	75		82	79	76	73	71	68	65	63	59	55	51	45
SP 650-3-AA	37	50	154	93		98	95	92	89	86	82	78	74	69	62	55	45
SP 650-3-A	37	50	154	93		109	107	103	99	96	92	88	83	78	72	65	56
SP 650-3	45	60	172	104		124	121	117	113	108	105	101	96	92	86	79	71
SP 650-4-AA	55	75	214	130		141	137	133	139	124	120	115	109	102	94	84	72
SP 650-4-A	55	75	214	130		153	149	144	140	135	130	125	119	113	105	95	84
SP 650-4	63	85	266	161		166	161	151	151	146	141	135	130	123	116	107	96
SP 650-5-AA	75	100	284	172		182	178	173	167	161	155	149	142	133	123	111	97
SP 650-5-A	75	100	284	172		195	190	185	178	171	165	159	152	143	135	122	108
SP 650-5	75	100	284	172		207	202	196	190	183	176	169	162	155	145	134	120
SP 650-6-AA	75	100	284	172		223	217	210	204	196	190	182	173	163	151	137	119
SP 650-6-A	93	125	376	228		235	229	222	215	208	200	192	183	173	160	147	130
SP 650-6	93	125	376	228		247	241	233	225	218	210	202	193	183		157	141
SP 650-7-AA	93	125	376	228		262	256	248	240	231	222	213	203	192	177	161	140
SP 650-7-A	93	125	376	228		274	267	258	250	241	233	223	213	201	188	171	151
SP 650-7	110	150	440	266		288	281	273	263	255	246	236	226	215	201	185	166
SP 650-8	132	175				334	326	315	305	294	284	274	263	251	236	217	194
SP 650-9	132	175				374	365	354	342	330	318	307	295	281	265	245	222
SP 650-10	147	200				417	407	395	381	369	356	344	330	315	295	272	244
SP 650-11	170	230				460	449	435	420	406	393	379	364	346	325	299	269
SP 650-12	185	250				495	482	466	441	434	419	403	386	366	342	312	279
SP 650-13	185	250				533	519	502	484	467	450	433	414	392	366	333	397

Dimensions And Weights

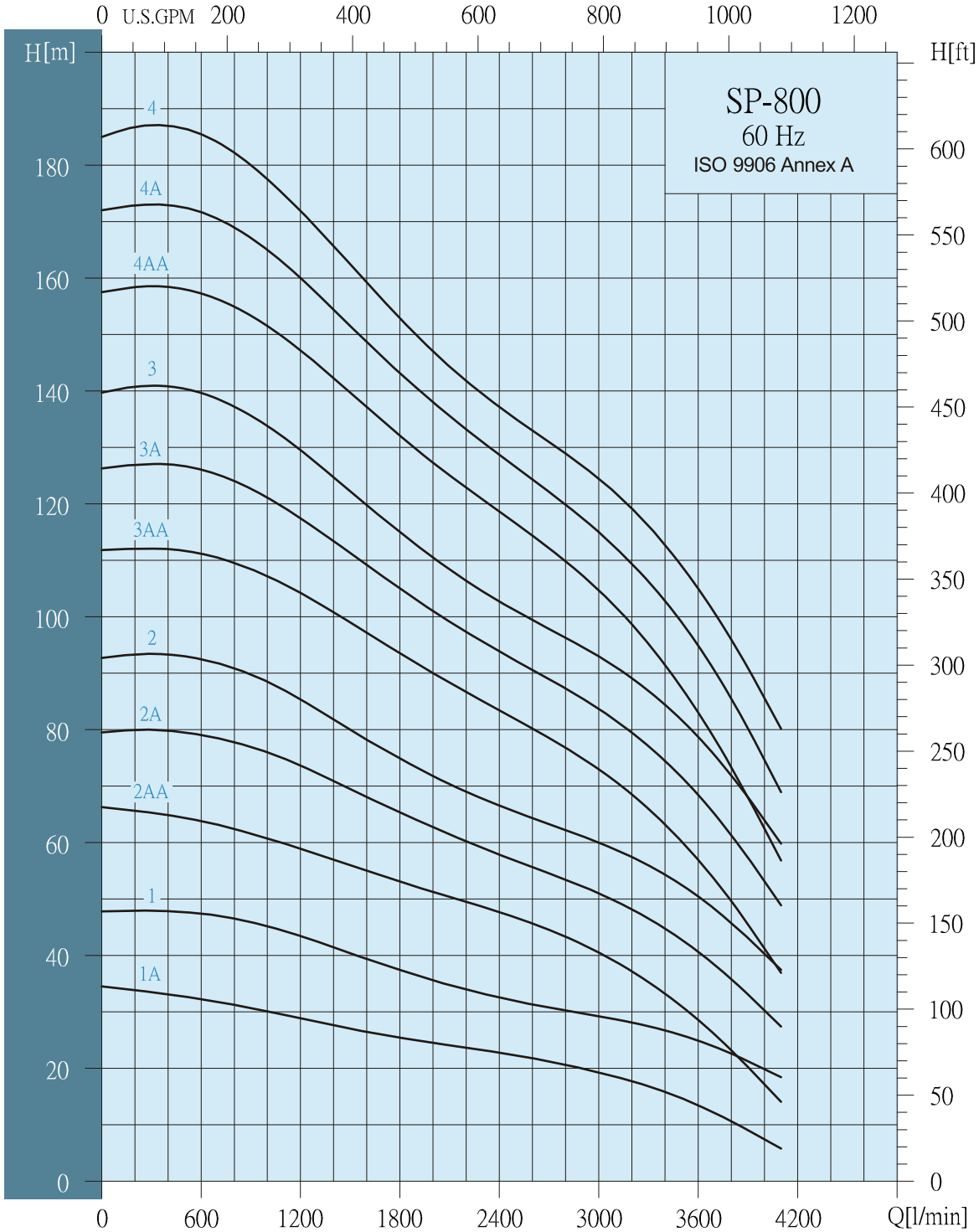
Pump Type	motor Dia.	Dimensions(mm) B 6" Connection (RP,NPT)			Net Weight(Kg)
		A	C*	C**	Pump
SP 650-1-A	6"	652	211	215	29.2
SP 650-1	6"	652	211	215	29.3
SP 650-2-AA	6"	807	211	215	35.6
SP 650-2-A	6"	807	211	215	35.7
SP 650-2	6"	807	211	215	35.8
SP 650-2	8"	807	213	219	42.1
SP 650-3-AA	6"	963	211	215	42.1
SP 650-3-AA	8"	963	213	219	46.9
SP 650-3-A	6"	963	211	215	42.2
SP 650-3-A	8"	963	213	219	47.0
SP 650-3	6"	963	211	215	42.3
SP 650-3	8"	963	213	219	47.1
SP 650-4-AA	8"	1118	213	219	51.9
SP 650-4-A	8"	1118	213	219	52.0
SP 650-4	8"	1118	213	219	52.1
SP 650-5-AA	8"	1274	213	219	56.9
SP 650-5-A	8"	1274	213	219	57.0
SP 650-5	8"	1274	213	219	57.1
SP 650-6-AA	8"	1429	213	219	61.9
SP 650-6-A	8"	1429	213	219	62.0
SP 650-6	8"	1429	213	219	62.1
SP 650-7-AA	8"	1585	213	219	66.9
SP 650-7-A	8"	1585	213	219	67.0
SP 650-7	8"	1585	213	219	67.1
SP 650-8	10"	1870	227	247	83.5
SP 650-9	10"	2026	227	247	90.0
SP 650-10	10"	2181	227	247	96.5
SP 650-11	10"	2337	227	247	103.0
SP 650-12	12"				
SP 650-13	12"				

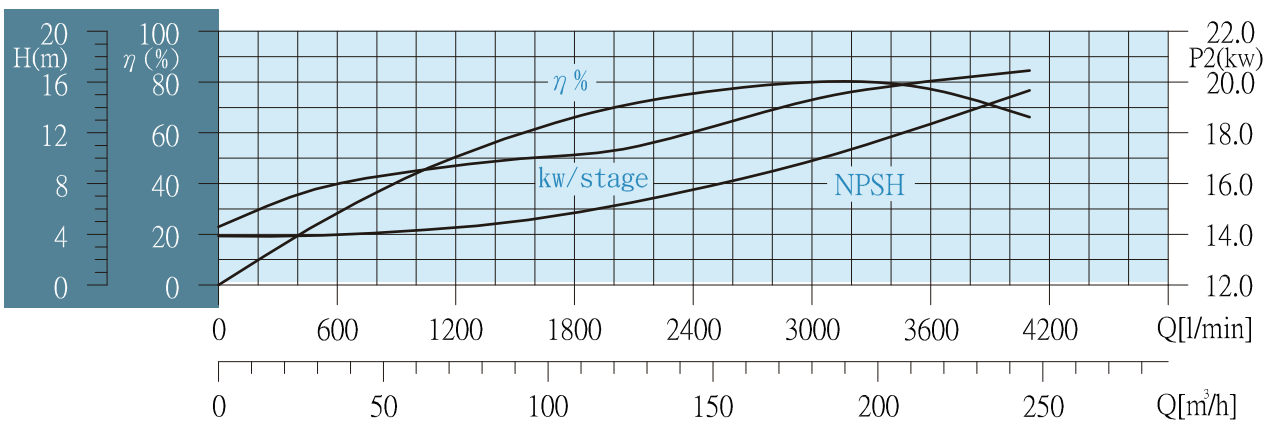


C : Maximum diameter of pump with one motor cable
C**: Maximum diameter of pump with two motor cable

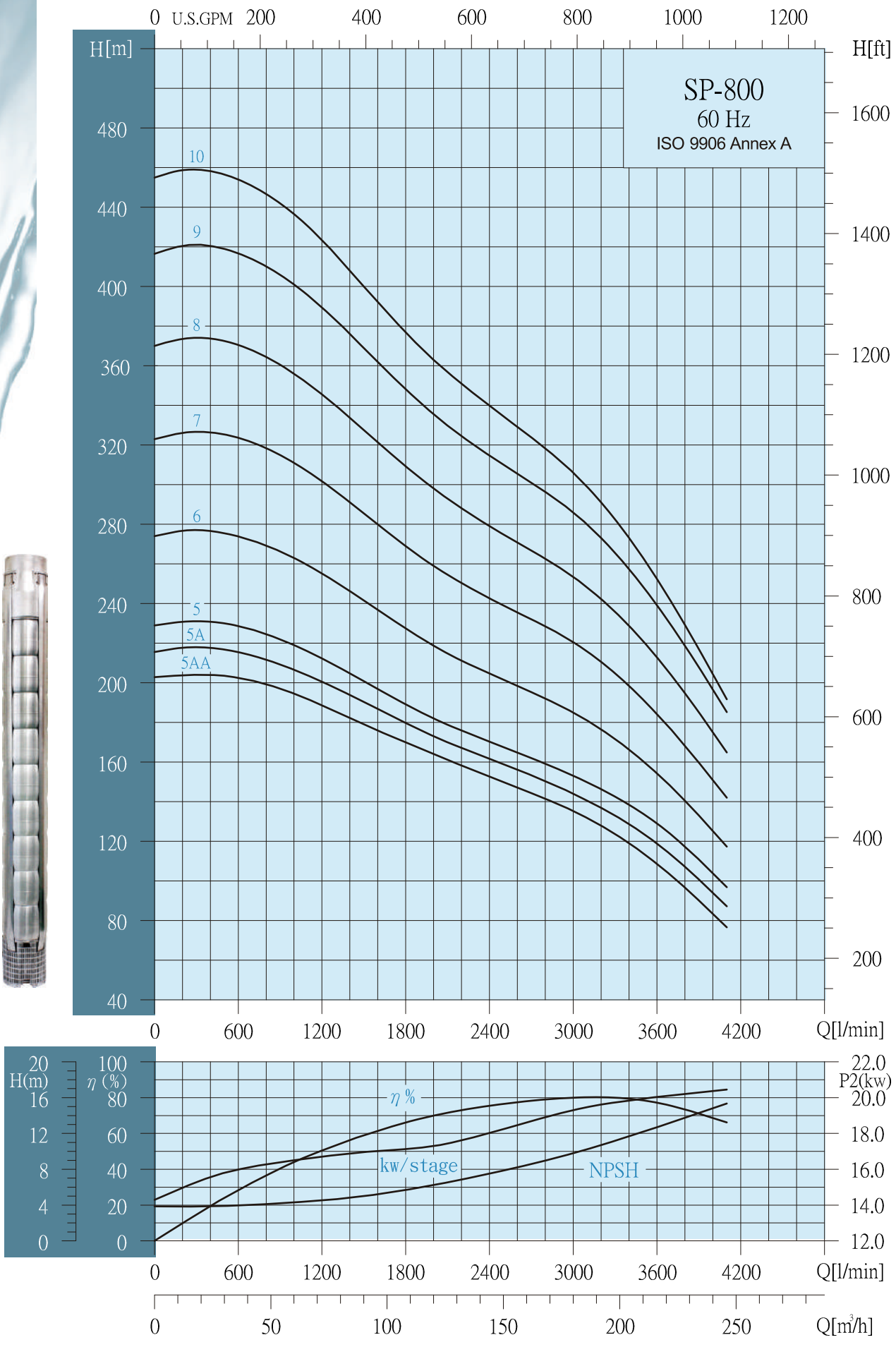
TAIRS PUMPS

SP10" **SP800** Performance Curves





STAIRS PUMPS



Stairs SP Series

SP10" SP800

STAIRS PUMPS

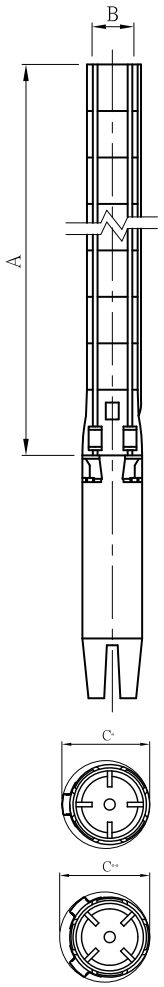
Selection Chart

Pump Type	Motor P2		Max.current Amp		Q capacity 3450 rpm											
					m^3/h	36	54	72	90	108	126	144	162	180	198	216	234
	KW	HP	230V	380V	l/min	600	900	1200	1500	1800	2100	2400	2700	3000	3300	3600	3900
SP 800-1-A	15	20	60.6	36.6	HEAD IN METERS	32	31	29	27	26	24	23	21	19	17	13	9
SP 800-1	22	30	90.4	54.7		47	46	44	40	37	35	33	31	29	28	25	21
SP 800-2-AA	26	35	106.6	64.5		64	62	59	56	53	50	48	45	41	35	28	20
SP 800-2-A	37	50	154	93		79	77	74	70	65	62	58	55	51	47	41	33
SP 800-2	37	50	154	93		93	90	85	80	75	70	67	63	60	56	50	43
SP 800-3-AA	45	60	172	104		111	108	104	99	93	88	83	78	73	66	57	46
SP 800-3-A	55	75	214	130		126	122	118	111	105	99	94	89	84	77	68	57
SP 800-3	55	75	214	130		140	136	130	123	115	108	103	98	93	87	79	68
SP 800-4-AA	63	85	266	161		157	153	147	140	132	125	119	112	105	96	83	68
SP 800-4-A	75	100	284	172		172	167	160	152	143	136	129	122	115	107	95	80
SP 800-4	75	100	284	172		186	180	172	163	153	145	138	131	125	117	105	91
SP 800-5-AA	93	125	376	228		202	197	188	179	170	161	153	144	135	124	108	90
SP 800-5-A	93	125	376	228		216	209	201	191	180	170	162	153	144	133	119	101
SP 800-5	93	125	376	228		228	222	212	201	189	178	170	162	153	143	129	111
SP 800-6	110	150	440	266		274	267	255	242	227	215	205	195	185	172	154	133
SP 800-7	132	175				323	315	302	286	269	255	242	232	221	205	184	160
SP 800-8	147	200				370	361	346	328	309	293	279	267	254	235	213	185
SP 800-9	170	230				417	406	389	369	348	330	314	331	286	266	239	208
SP 800-10	185	250				454	442	423	400	377	357	340	324	306	282	252	217

Dimensions And Weights

Pump Type	motor Dia.	Dimensions(mm) B 6" Connection (RP,NPT)			Net Weight(Kg)
		A	C*	C**	Prop
SP 800-1-A	6"	652	211	215	30.4
SP 800-1	6"	652	211	215	30.4
SP 800-2-AA	6"	807	211	215	36.7
SP 800-2-A	6"	807	211	215	36.8
SP 800-2	6"	807	211	215	36.8
SP 800-3-AA	8"	963	213	219	44.5
SP 800-3-A	8"	963	213	219	44.6
SP 800-3	8"	963	213	219	44.6
SP 800-4-AA	8"	1118	213	219	50.9
SP 800-4-A	8"	1118	213	219	51.0
SP 800-4	8"	1118	213	219	51.0
SP 800-5-AA	8"	1274	213	219	57.3
SP 800-5-A	8"	1274	213	219	57.4
SP 800-5	8"	1274	213	219	57.4
SP 800-6	8"	1429	213	219	63.8
SP 800-7	10"	1715	227	247	83.4
SP 800-8	10"	1870	227	247	89.8
SP 800-9	10"	2026	227	247	96.2
SP 800-10	12"				

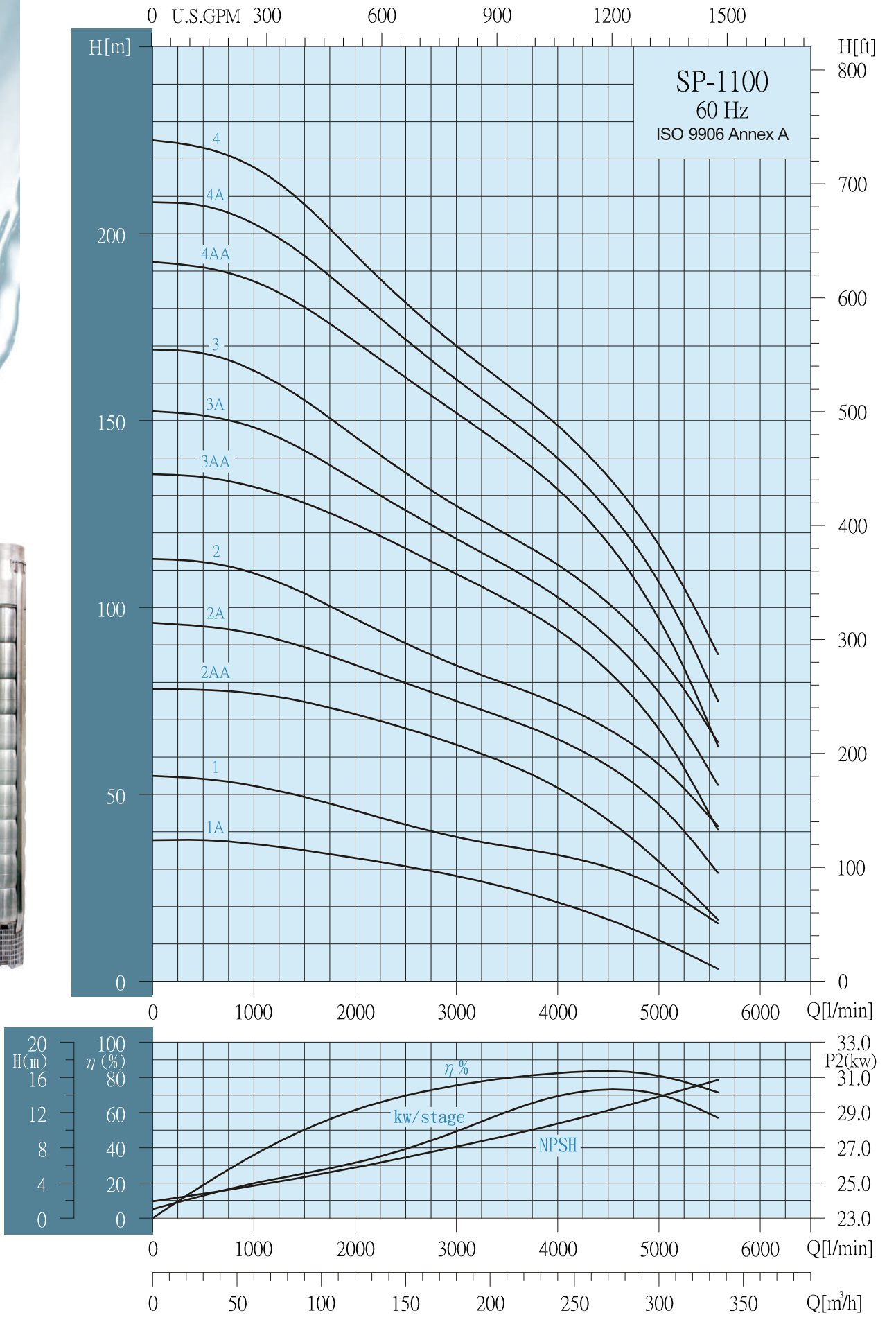
C*: Maximum diameter of pump with one motor cable
C**: Maximum diameter of pump with two motor cable

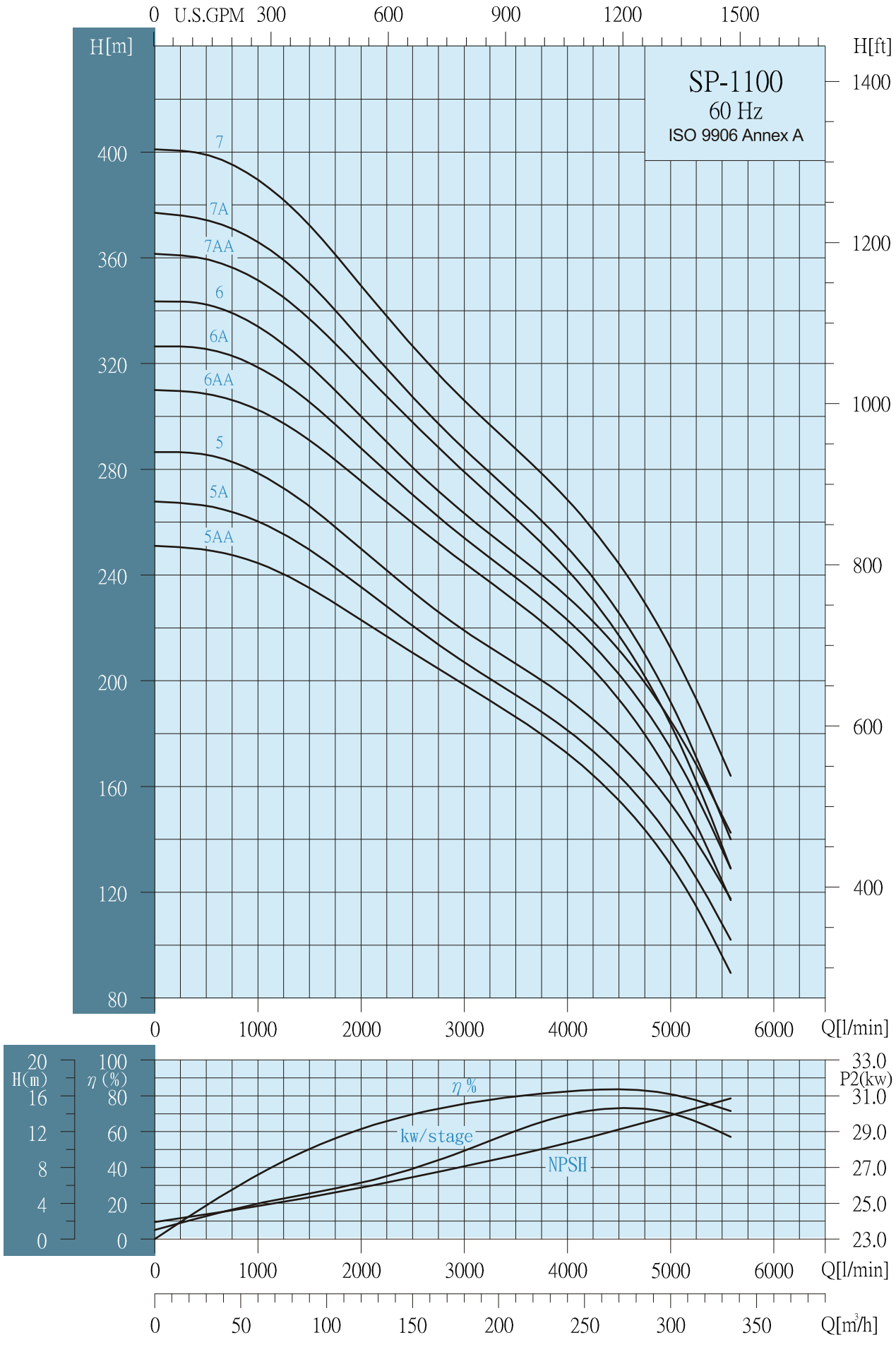


STAIRS PUMPS

SP10"

SP1100 Performance Curves




0 U.S.GPM 300 600 900 1200 1500
H[m]
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7
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0 1000 2000 3000 4000 5000 6000 Q[l/min]
20 H(m) 16 12 8 4 0
100 η (%) 80 60 40 20 0
η %
kw/stage
NPSH
33.0 P2(kw) 31.0 29.0 27.0 25.0 23.0
0 1000 2000 3000 4000 5000 6000 Q[l/min]
0 50 100 150 200 250 300 350 Q[m³/h]

SP10" **SP1100**

STAIRS PUMPS

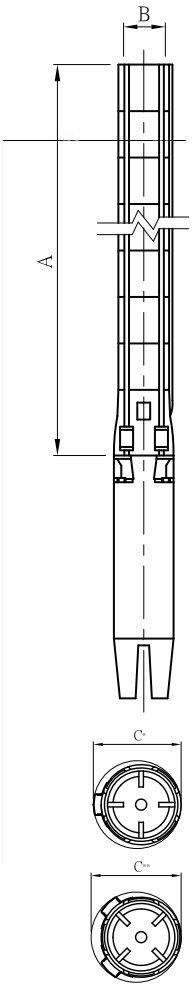
Selection Chart

Pump Type	Motor P2		Max.current Amp		Q capacity 3450 rpm											
					m^3/h	30	60	90	120	150	180	210	240	270	300	330
	KW	HP	230V	380V	l/min	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500
SP 1100-1-A	22	30	90.4	54.7	HEAD IN METERS	38	37	35	33	31	28	25	21	16	11	4
SP 1100-1	30	40	124	75		54	52	49	46	42	38	36	34	30	25	17
SP 1100-2-AA	45	60	172	104		78	77	74	71	67	63	58	52	43	32	19
SP 1100-2-A	55	75	214	130		95	93	89	85	80	75	70	65	57	47	32
SP 1100-2	63	85	266	161		112	109	103	97	90	84	79	74	67	58	44
SP 1100-3-AA	75	100	284	172		135	132	128	122	116	109	102	94	83	67	45
SP 1100-3-A	93	125	376	228		151	148	142	134	126	118	111	103	92	77	56
SP 1100-3	93	125	376	228		168	163	155	146	321	127	119	111	101	87	67
SP 1100-4-AA	110	150	440	266		191	187	180	171	161	152	142	131	117	97	68
SP 1100-4-A	110	150	440	266		207	202	194	183	171	161	151	140	126	107	80
SP 1100-4	110	150	440	266		223	218	208	194	181	170	159	148	135	117	92
SP 1100-5-AA	132	175				249	244	235	223	210	198	186	172	154	130	96
SP 1100-5-A	132	175				266	260	249	235	221	207	194	181	164	140	108
SP 1100-5	147	200				285	278	266	250	233	219	206	193	176	153	123
SP 1100-6-AA	170	230				308	302	291	275	260	244	230	214	192	164	124
SP 1100-6-A	170	230				325	318	305	288	270	254	239	223	202	174	136
SP 1100-6	170	230				342	334	319	300	281	263	248	232	211	185	149
SP 1100-7-AA	185	250				359	351	337	317	297	279	261	242	217	183	137
SP 1100-7-A	185	250				374	366	350	329	307	287	270	250	225	192	148
SP 1100-7	220					399	389	372	349	326	306	287	268	244	212	171

Dimensions And Weights

Pump Type	motor Dia.	Dimensions(mm) B 6" Connection (RP,NPT)			Net Weight(Kg)
		A	C*	C**	Pump
SP 1100-1-A	6"	771.7	237	241	46.1
SP 1100-1	6"	771.7	237	241	46.1
SP 1100-2-AA	8"	947.7	237	241	55.8
SP 1100-2-A	8"	947.7	237	241	55.8
SP 1100-2	8"	947.7	237	241	55.8
SP 1100-3-AA	8"	1123.7	237	241	65.6
SP 1100-3-A	8"	1123.7	237	241	65.6
SP 1100-3	8"	1123.7	237	241	65.6
SP 1100-4-AA	8"	1299.7	237	241	75.4
SP 1100-4-A	8"	1299.7	237	241	75.4
SP 1100-4	8"	1299.7	237	241	75.4
SP 1100-5-AA	10"	1475.7	262	274	90.8
SP 1100-5-A	10"	1475.7	262	274	90.8
SP 1100-5	10"	1475.7	262	274	90.8
SP 1100-6-AA	10"	1651.7	262	274	101.0
SP 1100-6-A	10"	1651.7	262	274	101.0
SP 1100-6	10"	1651.7	262	274	101.0
SP 1100-7-AA	12"				
SP 1100-7-A	12"				
SP 1100-7	12"				

C*: Maximum diameter of pump with one motor cable
C**: Maximum diameter of pump with two motor cable



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www.stairs.com.tw

201802

STAIRS

Submersible Deep Well Pump

4”/6” ST SERIES

INSTALLATION AND OPERATING INSTRUCTIONS

These Instructions must be delivered with the pump to the operator.

WARNING: Failure to follow these instructions and comply with all applicable codes may cause serious bodily injury and/or property damage.

STAIRS INDUSTRIAL CO. LTD.
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EC DECLARATION OF CONFORMITY

according to the following EC Directives
-Machinery Directive: 2006/42/EC
-Low voltage Directive: 2006/95/EC
-Electromagnetic Compatibility Directive: 2004/108/EC
Complies with (EU) No 547/2012 and meets European Directive: 2009/125/EC

CE

We, STAIRS INDUSTRIAL CO.,LTD. as manufacturer declares that the machine described hereafter:

Submersible Pump

Series ST 4, 6 & SP 4, 6, 8,10

Provided that it is used and maintained in accordance with the general accepted codes of good practice and the recommendations of the instructions manual, meet the essential safety and health requirements of the Machinery Directive, Low Voltage Directive and Electromagnetic Compatibility Directive.
For the most specific risks of this machine, safety and compliance with the essential requirements of the Directive has been on elements of:

- EN ISO 12100: 2010 / Safety of Machinery - General principles for design / Risk Assessment and Risk reduction.
- EN 60204-1:2006/A1:2009 / Safety of machinery - Electrical equipment of machines - Part 1: General requirements
- EN 809:1998+A1:2009/ Pumps and pump units for liquids. Common safety requirements
- EN ISO 13857:2008/ Safety of machinery. Safety distances to prevent hazard zones being reached by upper and lower limbs
- EN 414:2000/ Safety of machinery. Rules for the drafting and presentation of safety standards
- EN 953:1997+A1:2009/ Safety of machinery. Guards. General requirements for the design and construction of fixed and movable guards
- EN 61000-6-2: 2005 / Electromagnetic compatibility (EMC)- Part 6-2: Generic standards – Immunity for industrial environments
- EN 61000-6-4: 2007+A1:2011 / Electromagnetic compatibility (EMC)- Part 6-4: Generic standards – Emission standard for industrial environments

Signature : Mr. S.C. HUANG
Responsibility : President
Date : July 29, 2014

Installation & Operating Instructions

It is important that all submersible deep well pumps be installed by experienced persons and that all electrical connections comply with the relevant electrical supply authority requirements.

The electrical connections and checks must be made by a qualified electrician and comply with applicable local standards.

These instructions are provided for guidance only, and assume a familiarity with submersible pump installation and commissioning procedures.

Bore Conditions

1. To guard against installing a pump in aggressive or abrasive water, it is suggested that an analysis of the bore water be submitted to an authorised testing authority prior to installation of the pump. Damage to the pump or motor caused by abrasive or aggressive water is not covered by the guarantee. The water analysis parameters listed below are intended as a guide only as various combinations of the below items and others may act as a corrosive fluid:

   PH - 6 to 8
   Total dissolved solids (PPM) - 1,000 maximum
   Chlorides (PPM) - 500 maximum
   Fe (PPM) - 2 maximum
   $C0_2$ (PPM) - 50 maximum
   O_2 (PPM) - 2 minimum
   Sand content - 25 gr/m_3 maximum

WATER QUALITY: The above guide is NOT an indication of safe drinking water. A water analysis for this purpose should be undertaken.

2. Know the approximate replenishment rate of the bore before selecting a pump. Select a pump with a maximum of 10% less discharge than the replenishment rate of the bore.
3. Where bores are sunk into aquifers comprising of sand or fine gravel, it is important that they be adequately screened to prevent the ingress of these materials into the water being pumped. It is also important that the bore be cleaned prior to the installation of the pump, and that the pumps must not be used for “bailing” or developing the bore.
4. In the event that the water is entering the bore from a level above the pump (“a cascading bore”), or where the pump is installed in a large diameter bore, or in a river or other open water sources, a shroud may be required over the pump to ensure that all water being pumped is drawn over the full length of the motor’s surface. Minimum water velocity past a motor for adequate cooling should be 0.08m/sec @ 20_0C water temperature.
5. To assist in protecting the integrity and quality of your bore water supply we suggest a bore cap be fitted to the top of

your bore casing at all times. This may also assist pump installation.

Coupling the pump with the motor

NOTE: Before coupling pump to motor ensure pump and motor models are as specified.

For ease of transportation and to minimise potential transport damage, Stairs 4" submersible deep well pumps are supplied in component form, ie. motor and liquid end boxed separately. For correct coupling, proceed as follows:

- Remove cable guard after removing the lock screws.
- Insert a screwdriver into the shaft end to ensure the pump is free to rotate. Some small resistance is normal.
- Position the pump and motor so that they are aligned along the same axis.
- Insert the motor shaft into the pump coupling, using the screwdriver to rotate the shaft to align the coupling to the motor shaft.
- On each motor stud fit the four nuts which secure the pump to the motor, tightening them a little at a time in a diagonal sequence.
- Align the motor cable along the pump, then secure the cable guard with the setscrews into the side of the pump.

CAUTION: BE SURE THE MOTOR KW SIZE IS EQUAL TO (OR EXCEEDS) THE MOTOR KW REQUIRED FOR THE PUMP.

Ensure the motor voltage & phase matches the supply voltages & phase.

Installation

NOTE: FOR SEALING OF PIPE THREADS ONTO YOUR STAIRS SUBMERSIBLE DEEP WELL PUMP USE THREAD TAPE ONLY. DO NOT USE PIPE SEALING COMPOUND AT ALL.

1. Drop Pipe

All pipe and fittings must be suited to the maximum pressures available from the pump.

The starting torque of the pump motor tends to give a twist which could cause the pump shell to rub against the inside walls of the bore casing - especially if rigid PVC or polythene pipe is used. Torque stops can be obtained and installed to dampen this twisting.

2. Safety Cable

As a precautionary measure, a safety line should be connected to all pumps regardless of the type of drop pipe used. This line should be fastened to the pump and at the top of the bore casing.

3. Depth of Installation

For the maximum allowable submergence consult the motor specifications from the motor supplier. Ensure that

the pump is installed at least one (1) metre, preferably 3 metres above the bottom of the bore, and one (1) metre below the maximum draw down level.

WARNING: If during the initial operation the pump lowers the bore water level down to below the suction inlet it will be necessary to lower the pump, where feasible or install a level probe protection device to prevent the pump from running under aerated water conditions.

NOTE: OVER PUMPING OF THE BORE (AERATED WATER) WILL CAUSE DAMAGE TO PUMP AND OR MOTOR NOT COVERED BY GUARANTEE

Before lowering the pump unit, smooth out any rough spots or sharp edges on the top lip of the bore casing to prevent damage to the pump or power cables when lowering the unit into the bore.

4. Check Valve

All Stairs submersible deep well pumps are supplied with a check valve, and no additional check valves are required for open discharge conditions up to a maximum of 80 meters head. For installations greater than 80 meters head, or when used as a pressure system, it is recommended that an additional check valve be fitted approximately no more than 60 meters vertically above the pump and every 60 meters vertically thereafter. The fitting of this check valve will limit potential water hammer and consequent pump damage.

5. Pressure System Installation and Pump Controls

Stairs submersible deep well pumps may be used as a pressure system in conjunction with pressure tanks providing a suitable draw off capacity. When selecting a pressure tank, make sure that the rated tank pressure is at least 10% greater than the pump pressure at the bore head and the tank draw off capacity is large enough to limit pump starts to an absolute maximum of those listed on the table below.

While small capacity tanks may be used, extreme care must be taken to ensure the pump unit does not 'cycle'. It may be necessary to fit more than one pressure tank to provide the required draw off or to help prevent pump cycling.

Motor Rating		Average Number of starts per 24hr Day	
HP	KW	Single Phase	Three Phase
Up to 3/4	Up to .55	300	300
1 to 5 1/2	.75 to 4.0	100	300
7 1/2 to 30	5.5 to 22	50	100

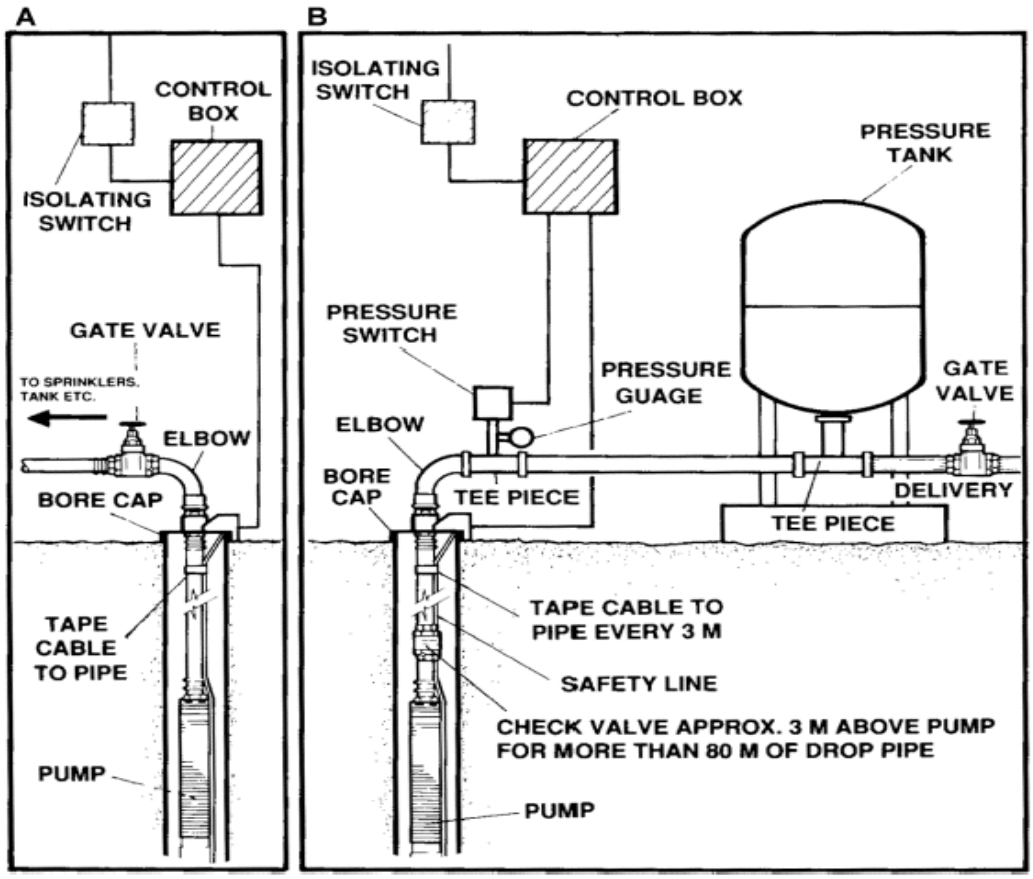
The installation of a 'drilled check valve' to the pressure tank may assist in the prevention of pump 'cycling' problems. For further information on these contact your Stairs Dealer.

NOTE: Any automatic switching of the pump giving excessive starts per hour will shorten the life of the pump and damage caused may effect warranty cover.

Typical Submersible Installation

A. PUMP CONNECTED FOR MANUAL OPERATION.

B. PUMP INSTALLED AS AN AUTOMATIC PRESSURE SYSTEM INCORPORATING PRESSURE TANK AND PRESSURE SWITCH.



WARNING: Failure to use correct starting equipment and overloads may damage your submersible motor. This damage may not be covered by warranty.

Various switching devices and the use of these products is recommended. Alternative systems may be connected directly into the supply line to 240 volt motor control boxes, provided the switching device used has an adequate current rating. If the current rating of the switch is not adequate, a contactor must be wired into the supply and the switching device used to control the contactor's coil. In any case, where a single phase motor has a control (starter) box, no additional switching devices should be wired between the motor and box.

In the case of three phase motors, all switching devices should be wired to the starter's control coil, and on no account should they be used to directly break the supply circuit to the pump.

ALL THREE PHASE MOTORS MUST BE CONNECTED WITH APPROVED OVERLOADS.

6. Electrical Connection

All wiring should conform to the requirements of local and national electrical codes. If in doubt, contact your electricity supply authority. Cables should be insulated and sheath type, conforming to AS3100 and rated for continuous immersion in water.

POWER CONNECTIONS AND WIRING MUST BE CARRIED OUT BY AN AUTHORISED ELECTRICIAN.

For full motor connection details consult the relevant motor installation & operating instructions.

WARNINGS:

A. BEFORE installing or servicing your pump check to ensure that electrical power is turned off and disconnected.

B. Single phase motors with in-built thermal overloads may restart automatically and unexpectedly. Ensure that warning A. above is observed at all times.

All electrical connections should be checked before the pump is installed in the bore. If possible, it is a good practice to run the pump briefly in a container of water (water level must be well over the suction inlet screen) to check on operation before installation in the bore. The drop cable should be secured to the drop pipe at three (3) meter intervals using waterproof plastic tape.

7. Direction of rotation - Three phase motors only

Before finalising wiring connections, check that motor rotates in direction of arrow (clockwise when shaft is viewed from wiring connection end). To alter rotation, change any two power leads at motor terminals.

Any three phase motor connected to a supply line for the first time may rotate in either direction. It is, therefore necessary to find out it the motor is rotating in the correct direction. If the rotation is to be checked on the surface, proceed as follows:

- Pour clean water into the discharge by holding the non-return valve open so that the shaft bearings and impellers become wet.
- Turn the power on and off for a very short time and check the shaft rotation.
- The correct rotation is anti-clockwise by looking down from the discharge.

WARNING: The dry rotation should not exceed a period of one to two seconds, otherwise seizing may occur due to inadequate lubrication.

- To correct a reversed rotation, change any two leads (except earth) from the three phase supply at the motor starter.

8. Three Phase Connection

Three phase models must be wired with a contactor with approved overloads set correctly.

Stairs recommend the use of overloads which also have the ability to detect “single phasing” or “dropped phase” conditions in the power supply.

When the unit is connected and operating the phase balance should be checked. This should be within the 5% variation. “Rolling” the leads may help to improve a small unbalance, but major phase unbalance will usually be attributable to an input power unbalance. This must be addressed before the pump is used.

9. Earthing single and three phase pumps

All pump motors are equipped with an earth lead which must be connected to the earth of the incoming power supply.

Furthermore, control boxes and starters must also be earthed. If testing is used outside a well, the motor must be connected to the power supply earth lead to prevent a lethal shock hazard.

Do not use metal drop pipe as the earth return under any circumstances.

10. Initial start-up

Before connecting the pump outlet pipe from the bore, a bend and gate valve should be screwed into the top of The bore cap.

Never run this pump without discharge flow for more than a few seconds, as the water will heat and cause damage to the pump or pipe lines not covered by guarantee.

Never start the pump at full flow for the first time.

We recommend that the gate valve be only slightly open to start the pump.

Never open the gate valve abruptly, as this may raise sand or silt deposits.

For the first ten to twenty minutes of operation, it is suggested to keep the gate valve only slightly open, to maintain a low flow. This low flow will prevent, in the case of excessive sand in the water, the pump seizing.

Immediately the pump has been started, catch some of the discharge water in a large container and allow solids to settle out. If little or no sand appears, open the valve one third and pump until the discharge water is clear.

In the event of excessive amounts of sand being pumped the pump should be shut down and the bore should be attended to before restarting the pump.

Stairs submersibles are not guaranteed against failure due to pumping sand. Pumping of sand, even small quantities of very fine sand will shorten the effective life of **any pump**.

The pump should be run for a period of at least 30 minutes and then the water level in the bore checked to ensure that the water level in the bore has not dropped to a dangerously low level. Continuous monitoring of bore water level is recommended.

Continuing operation at low water level will cause damage to the pump and motor mechanical parts due to alternating shock pressures on the pump.

Operation and maintenance

The pump must not be operated with the delivery valve shut off (closed head) for more than a few seconds otherwise the motor will overheat, possibly causing permanent damage, not covered by guarantee

While Stairs submersible pumps do not require regular maintenance, it is a good practice to monitor the conditions and performance of the pump and motor. This diagnosis may be carried out by checking the maximum pressure (shut valve for a very short period) generated by the pump, and by checking the amperage draw of the motor at standard duty flow rate.

Both these figures should be compared to pressures and current draws recorded when the unit was initially installed. Any reduction in pressure may indicate wear in the pump, while any increase in motor current indicates a possible overload condition. Consult the pump service chart for further diagnosis of possible causes.

Pump service chart

The following chart offers a means of diagnosing general pump problems.

Problem	Possible Causes
1. Overload protector trips	- Control box or thermals in the sun or near heat source. - Incorrect thermals or control box fitted. - Low line voltage. - Phase failure (3 phase only). - Faulty motor
2. No water delivered	- Water level in bore too low. - Check valve installed backwards or stuck closed. - Inlet screen on pump clogged. - Hole in delivery piping below bore top. - Motor failure. - Broken pump shaft or coupling.
3. Low water delivered	- Pump rotating backwards (3 phase only). - Water level too low in bore. - Discharge piping clogged, corroded or ruptured. - Pump installed too low in bore and covered in sand or other solids. - Inlet screen partially clogged. - Worn pump. - Check valve stuck partially closed. - Motor related problem.
4. Pump starts and stops too often	- Water logged pressure tank. - Pressure switch differential adjustment incorrect. - Pressure tank too small. - Other control problems (eg. probes too close).
5. Fuses blow but overload does not trip	- Fuses too small. - Fuse receptacles dirty or corroded. - Loose connection in fuse box. - Defective incoming power leads. - Ground wire connected to wrong terminal. - Motor failure.
6. Electric shock from water pipe or electrical components	- Incorrectly wired incoming power leads. - Ground wire connected to motor control equipment. - Defective motor starter or control box. - Incorrectly grounded motor.
7. Pressure gauge fluctuates with flow surges	- Water level too low in bore.
8. Pump and/or motor corrosion due to electrolysis	- Pump earthing to ground through poor splice connection or cable chaffing. - Unsatisfactory pH levels. - Active single wire earth return electrical distribution system.

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