A3SP and A2SP

Multistage Submersible Electric Pump

PT. Archimedes Global Pump

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Archimedes
Pump

A3SP and A2SP

Multistage Submersible Electric Pump

APPLICATIONS

Submersible electric pumps for 3” and 2’’ wells or larger. These units have a very extensive range of applications for lifting and distribution in civil and industrial water systems, filling of pressure vessels and tanks, pressurization and irrigation systems.

PERFORMANCE

Multistage centrifugal type. Pump and motor directly coupled with rigid coupling. Impellers and thrust rings in Noryl and diffusers in self-lubricating polyacetyl. Pump liner, shaft and coupling, strainer and cable sheath in stainless steel. Base support in brass and head in stainless steel, with check valve incorporated in the head.

Pump discharge head is in stainless steel and discharge connection is 1” and 1/2’’. The above will give better hygienic, long lasting and better pump performance because of less friction loss compare to other with 1” and 1/2’’ discharge head.

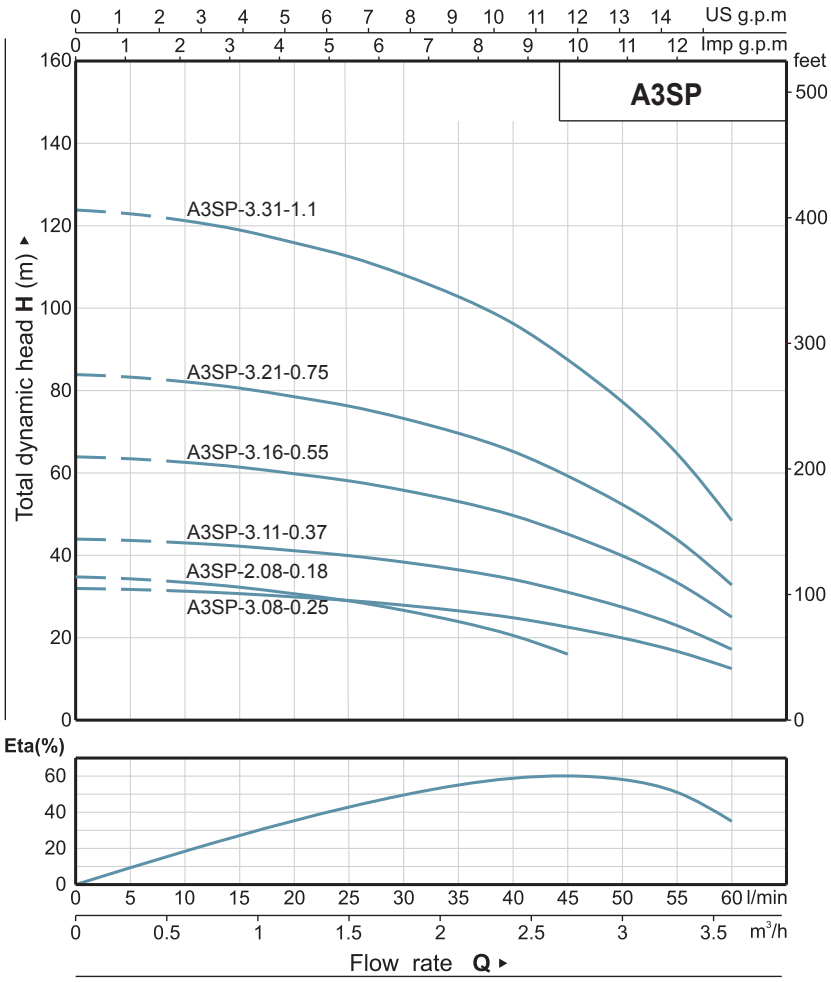
FEATURE

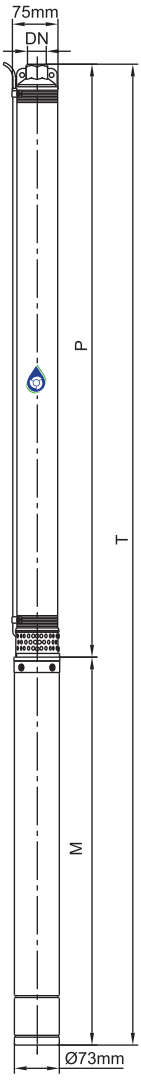
Submersible asynchronous two-pole motor made entirely of AISI 304 stainless steel with brass bearings. Copper squirrel cage rotor mounted on Kingsbury thrust block.The thermal protector with automatic reset is included with the motor.

Protection class : IP68
Insulation class : F
Supply voltage : single-phase
230 V / 50 Hz

Components	Material
Pump external casing	AISI 304 SS
Delivery casing	① Cast-Cu ASTM C85500 ② AISI 304 SS
Suction lantern	① Cast-Cu ASTM C85500 ② AISI 304 SS
Diffuser	Plastic.PC
Impeller	Plastic.POM
Shaft	AISI 304 SS
Shaft coupling	AISI 304 SS
Wear ring	AISI 304 SS
Motor external casing	AISI 304 SS
Top chock	①Cast-Cu ASTM C85500
	②Cast-iron ASTM NO.30
Bottom support	AISI 304 SS
Mechanical seal	Special seal for deep well(Graphite-Ceramic/TC)
Shaft	AISI 304 SS-ASTM 5140
Seal lubricant oil	Oil for food machinery and pharmaceutic use.

Performance Curve





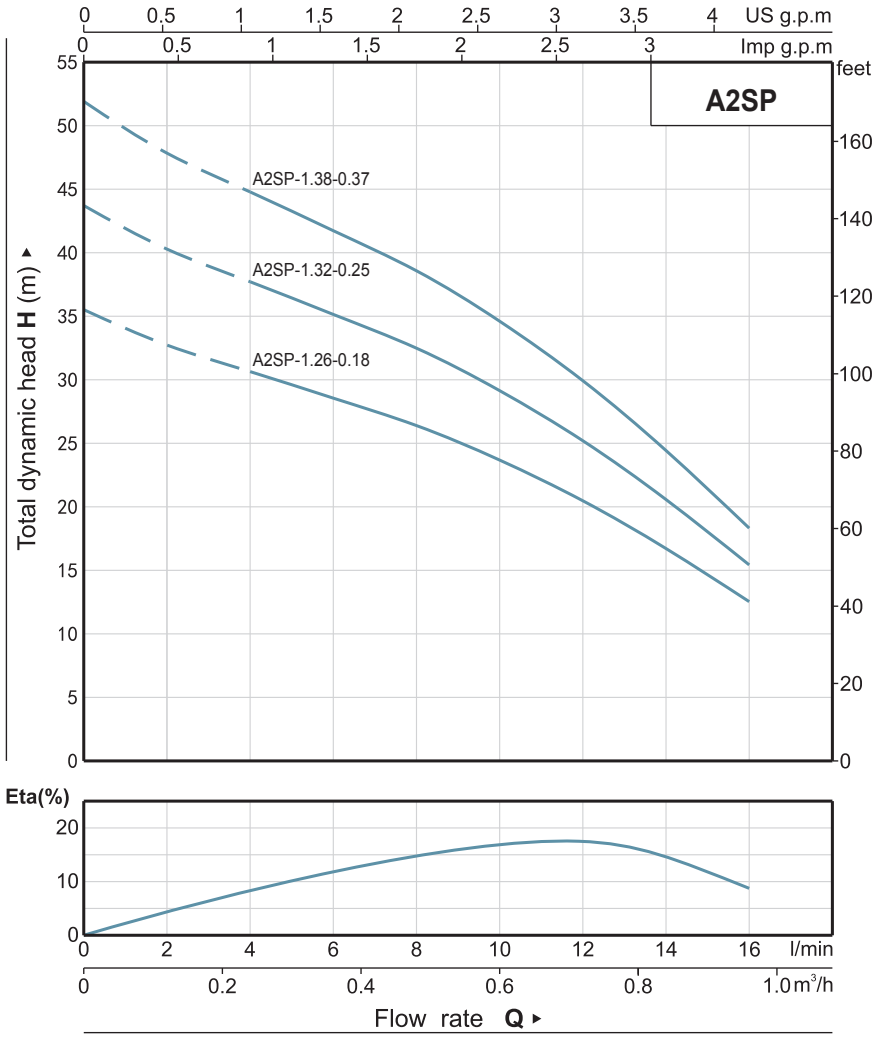
Performance Data

MODEL	P_2		DELIVERY												n≈2850 1/min
1~ 220 - 240V	kW	HP	Q m^3/h	0	0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.7	3.0	3.3	3.6
			l/min	0	5	10	15	20	25	30	35	40	45	50	55	60
A3SP-2.08-0.18	0.18	0.25	H(m)	34	34	33	33	31	29	26	23	19	14			
A3SP-3.08-0.25	0.25	0.33		32	32	32	31	30	29	28	27	26	23	20	16	12
A3SP-3.11-0.37	0.37	0.5		44	44	43	43	41	40	39	37	35	31	27	22	16
A3SP-3.16-0.55	0.55	0.75		64	64	63	62	60	59	56	54	51	45	39	32	23
A3SP-3.21-0.75	0.75	1		85	84	83	81	79	77	74	70	67	60	52	43	31
A3SP-3.31-1.1	1.1	1.5		125	124	122	120	116	114	109	104	99	88	76	63	45

Dimension and Weight

MODEL	DN	DIMENSION(mm)			WEIGHT(kg)		
1 ~ 220 - 240V		P	M	T	P	M	T
A3SP-2.08-0.18	1"	377	288	665	1.8	4.0	5.8
A3SP-3.08-0.25	1"	405	308	713	1.8	4.8	6.6
A3SP-3.11-0.37	1"	483	338	821	2.1	5.6	7.7
A3SP-3.16-0.55	1"	613	368	981	2.5	6.4	8.9
A3SP-3.21-0.75	1"	768	408	1176	3.2	7.5	10.7
A3SP-3.31-1.1	1"	1029	493	1522	4.1	10.0	14.1

Performance Curve

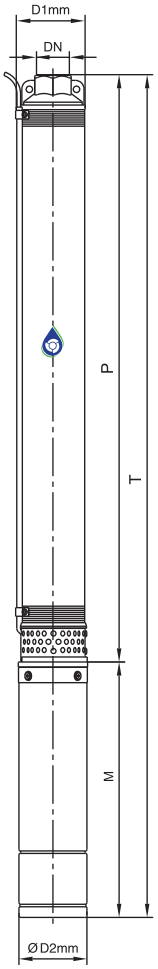


Performance Data

MODEL	P_2		DELIVERY n≈2850 1/min									
1~ 220 - 240V	kW	HP	Q m³/h	0	0.12	0.24	0.36	0.48	0.60	0.72	0.84	0.96
			Q l/min	0	2	4	6	8	10	12	14	16
A2SP-1.26-0.18	0.18	0.25	H(m)	35	32	30	28	26	23	20	16	12
A2SP-1.32-0.25	0.25	0.33		43	40	37	35	32	29	24	20	15
A2SP-1.38-0.37	0.37	0.5		51	47	44	41	38	34	29	24	18

Dimension and Weight

MODEL	DN	DIMENSION(mm)			WEIGHT(kg)			PUMP	
1~ 220 - 240V		P	M	T	P	M	T	D1	øD2
A2SP-1.26-0.18	½"	778	499	1277	2.0	4.3	6.3	51	ø50
A2SP-1.32-0.25	½"	942	499	1441	2.3	4.3	6.6		
A2SP-1.38-0.37	½"	1084	499	1583	2.6	4.3	6.9		



Product Available

EBARA

SUBMERSIBLE MOTORS

Specification

Size	: 4', 6', 8'
Power	: up to 45 kw (60 hp)

*Also available :
Heavy duty motors for under voltage

Archimedes Pump

SUBMERSIBLE PUMPS

Specification

Size	: up to 12"
Power	: up to 300 kw (400 hp)
Head	: up to 700 mtr
Capacity	: up to 600 m^3/h (10.000 l/min)
Material	: cast iron, SS 304, SS 316, Super Duplex
Type of Impeller	: radial and mixed flow

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Friction Loss Table

Head Loss in mWC / 100 m Pipe Due to Friction (C = 150)

C = 150 for High Density Polyethylene Pipe (HDPE)

Flow			Fr Loss & Velocity	Pipe Diameter (Inch)													
GPM	M3/H	L/sec		½"	¾"	1"	1-¼"	1-½"	2"	2-½"	3"	4"	5"	6"	8"	10"	12"
0.5	0.1	0.0	Friction loss (m WC)	0.8	0.1												
		0.0	*Velocity (m/s)*	0.25	0.11	0.06											
1	0.2	0.1	Friction loss (m WC)	**2.9**	**0.4**	**0.1**											
			Velocity (m/s)	*0.50*	*0.22*	*0.12*	*0.08*										
2	0.5	0.1	Friction loss (m WC)	**10.5**	**1.5**	**0.4**	**0.1**										
			Velocity (m/s)	*1.00*	*0.44*	*0.25*	*0.16*										
3	0.7	0.2	Friction loss (m WC)	**22.2**	**3.1**	**0.8**	**0.3**	**0.1**									
			Velocity (m/s)	*1.49*	*0.66*	*0.37*	*0.24*	*0.17*									
4	0.9	0.3	Friction loss (m WC)	**37.9**	**5.3**	**1.3**	**0.4**	**0.2**									
			Velocity (m/s)	*1.99*	*0.89*	*0.50*	*0.32*	*0.22*									
5	1.1	0.3	Friction loss (m WC)	**57.2**	**7.9**	**2.0**	**0.7**	**0.3**	**0.1**								
		0.3	*Velocity (m/s)*	*2.49*	*1.11*	*0.62*	*0.40*	*0.28*	*0.16*								
10	2.3	0.6	Friction loss (m WC)		**28.6**	**7.1**	**2.4**	**1.0**	**0.2**	**0.1**							
			Velocity (m/s)		*2.21*	*1.24*	*0.80*	*0.55*	*0.31*	*0.20*							
15	3.4	0.9	Friction loss (m WC)		**60.6**	**14.9**	**5.0**	**2.1**	**0.5**	**0.2**	**0.1**						
			Velocity (m/s)		*3.32*	*1.87*	*1.19*	*0.83*	*0.47*	*0.30*	*0.21*						
20	4.5	1.3	Friction loss (m WC)			**25.4**	**8.6**	**3.5**	**0.9**	**0.3**	**0.1**						
			Velocity (m/s)			*2.49*	*1.59*	*1.11*	*0.62*	*0.40*	*0.28*						
30	6.8	1.9	Friction loss (m WC)				**18.2**	**7.5**	**1.8**	**0.6**	**0.3**	**0.1**					
			Velocity (m/s)				*2.39*	*1.66*	*0.93*	*0.60*	*0.41*	*0.23*					
40	9.1	2.5	Friction loss (m WC)				**30.9**	**12.7**	**3.1**	**1.1**	**0.4**	**0.1**					
			Velocity (m/s)				*3.19*	*2.21*	*1.24*	*0.80*	*0.55*	*0.31*					
50	11.4	3.2	Friction loss (m WC)				**46.7**	**19.2**	**4.7**	**1.6**	**0.7**	**0.2**	**0.1**				
			Velocity (m/s)				*3.98*	*2.77*	*1.56*	*1.00*	*0.69*	*0.39*	*0.25*				
60	13.6	3.8	Friction loss (m WC)				**65.5**	**26.9**	**6.6**	**2.2**	**0.9**	**0.2**	**0.1**				
			Velocity (m/s)				*4.78*	*3.32*	*1.87*	*1.19*	*0.83*	*0.47*	*0.30*				
70	15.9	4.4	Friction loss (m WC)					**35.8**	**8.8**	**3.0**	**1.2**	**0.3**	**0.1**				
			Velocity (m/s)					*3.87*	*2.18*	*1.39*	*0.97*	*0.54*	*0.35*				
80	18.2	5.0	Friction loss (m WC)					**45.9**	**11.3**	**3.8**	**1.6**	**0.4**	**0.1**	**0.1**			
			Velocity (m/s)					*4.43*	*2.49*	*1.59*	*1.11*	*0.62*	*0.40*	*0.28*			
90	20.4	5.7	Friction loss (m WC)						**14.1**	**4.7**	**2.0**	**0.5**	**0.2**	**0.1**			
			Velocity (m/s)						*2.80*	*1.79*	*1.24*	*0.70*	*0.45*	*0.31*			
100	22.7	6.3	Friction loss (m WC)						**17.1**	**5.8**	**2.4**	**0.6**	**0.2**	**0.1**			
			Velocity (m/s)						*3.11*	*1.99*	*1.38*	*0.78*	*0.50*	*0.35*			
150	34.1	9.5	Friction loss (m WC)						**36.1**	**12.2**	**5.0**	**1.2**	**0.4**	**0.2**			
			Velocity (m/s)						*4.67*	*2.99*	*2.07*	*1.17*	*0.75*	*0.52*			
200	45.4	12.6	Friction loss (m WC)							**20.8**	**8.5**	**2.1**	**0.7**	**0.3**	**0.1**		
			Velocity (m/s)							*3.98*	*2.77*	*1.56*	*1.00*	*0.69*	*0.39*		
250	56.8	15.8	Friction loss (m WC)								**12.9**	**3.2**	**1.1**	**0.4**	**0.1**		
			Velocity (m/s)								*3.46*	*1.94*	*1.24*	*0.86*	*0.49*		
300	68.1	18.9	Friction loss (m WC)								**18.1**	**4.5**	**1.5**	**0.6**	**0.2**	**0.1**	
			Velocity (m/s)								*4.15*	*2.33*	*1.49*	*1.04*	*0.58*	*0.37*	
400	90.8	25.2	Friction loss (m WC)									**7.6**	**2.6**	**1.1**	**0.3**	**0.1**	
			Velocity (m/s)									*3.11*	*1.99*	*1.38*	*0.78*	*0.50*	
500	113.6	31.5	Friction loss (m WC)									**11.5**	**3.9**	**1.6**	**0.4**	**0.1**	**0.1**
			Velocity (m/s)									*3.89*	*2.49*	*1.73*	*0.97*	*0.62*	*0.43*
600	136.3	37.9	Friction loss (m WC)										**5.4**	**2.2**	**0.5**	**0.2**	**0.1**
			Velocity (m/s)										*2.99*	*2.07*	*1.17*	*0.75*	*0.52*
700	159.0	44.2	Friction loss (m WC)										**7.2**	**3.0**	**0.7**	**0.2**	**0.1**
			Velocity (m/s)										*3.48*	*2.42*	*1.36*	*0.87*	*0.61*
800	181.7	50.5	Friction loss (m WC)										**9.2**	**3.8**	**0.9**	**0.3**	**0.1**
			Velocity (m/s)										*3.98*	*2.77*	*1.56*	*1.00*	*0.69*
900	204.4	56.8	Friction loss (m WC)											**4.7**	**1.2**	**0.4**	**0.2**
			Velocity (m/s)											*3.11*	*1.75*	*1.12*	*0.78*
1000	227.1	63.1	Friction loss (m WC)											**5.7**	**1.4**	**0.5**	**0.2**
			Velocity (m/s)											*3.46*	*1.94*	*1.24*	*0.86*
1200	272.5	75.7	Friction loss (m WC)											**8.0**	**2.0**	**0.7**	**0.3**
			Velocity (m/s)											*4.15*	*2.33*	*1.49*	*1.04*
1500	340.7	94.6	Friction loss (m WC)											**12.1**	**3.0**	**1.0**	**0.4**
			Velocity (m/s)											*5.19*	*2.92*	*1.87*	*1.30*
2000	454.2	126.2	Friction loss (m WC)												**5.1**	**1.7**	**0.7**
			Velocity (m/s)												*3.89*	*2.49*	*1.73*
3000	681.4	189.3	Friction loss (m WC)													**3.6**	**1.5**
			Velocity (m/s)													*3.73*	*2.59*

Notes:

1. Values shown above are used in the Hazen-Williams Equation for flow in pipes. Feet of head loss values shown in the tables were developed using the Hazen-Williams equation.
2. Feet of head loss values are subject to the following conditions:

a) Pipes carrying clear water at approximately 60° F (15.6° C).

b) Pipes are flowing full.

c) Velocities of water are generally less than 3 m/sec.

Note: HDPE is commonly sized by outside diameter. If in doubt, use the next smaller pipe size.