BUREAU VERITAS Certifcation
ISO 9001:2008

UKAS QUALITY MANAGEMENT

Archimedes Pump

Horizontal Split-Case Pumps

PT. Archimedes Global Pump

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Archimedes Pump

Manufactured for Archimedes Pump by ANAVALOS PUMPS

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Fields of Application

- Water supply and booster stations
- İrrigation , overhead irrigation
- Drainage stations
- Power stations
- Industrial water supply systems
- Fire fighting systems
- Marine applications
- General aplications in refineries.

Pumped Liquids

Thin ,clean , non –aggresive and non explosive liquids free from large solid particles or fibres.

Design

Single or double stage , axially split casing pumps with double entry , radial impeller . Bigger sizes are double volute construction . Double entry, closed impeller is hydraulically thrust compansated. Lower casing is in-line design , suction and discharge nozzles are on the same line . Upper casing self-aligning and , therefore easy to mount. Thanks to double suction impeller, the NPSH values are reduced and the high suction lifts are possible.

Two different design can be applicated:

1- Long shaft design: For soft packing stuffing box the lengh of the pump shaft is longer. It is also possible to use mechanical seal on this design.
2- Short shaft design: For mechanical seal applications, shaft lenght can be reduced. So a very compact and rigid pumps are available.

You can see concerned technical drawings at the next page.

Pump and motor are separate components connected to each other via flexible coupling and mounting on a base plate .As well as the electric motor it is also available coupled to diesel engine.

Bearings

At the drive end a cylindrical roller bearing, and on the dead end a deep grove ball bearing are installed. Both of them are grease lubricated.

Shaft Seal

Uncooled soft packed stuffig box with lantern ring is essential for the long shaft design. There is a leakage setting device on the washing water line of packing. Different types of mechanical seals are available on long or short shaft design pumps.

Technical Data

- Suction nozzle..... : DN 80-DN 250
- Discharge Nozzle..... : DN 65- DN 200
- Operating Pressure..... : 16 - 20 Bar.
- Speed Range..... : 960 – 3600 RPM.
- Capacity Range..... : 30.....900 m3 /h
- Total Head Range..... : 15.....160 m.

Pump Flanges

- Discharge flanges : DIN 2533 – PN 16
- Suction Flanges : DIN 2533 – PN 16

ANSI , BS or other flanges are also Available on demand.

Idendification Code

HSC 100 – 250 A

HSC: cast iron impeller
HSB: bronze impeller
HST: stainless steel impeller
DN Discharge nozzle
Rated Impeller Diameter

Materials

Volute Casing :

Cast Iron(GG-25),
Ductile Iron (GGG-40),
Cast Steel (G5-45)
Stainless Stell (SS 304-SS 316)
Cast Bronze (G-CuSn 10)

Impeller :

Cast Iron(GG25),
Bronze, or Stainless Steel (SS304-316)

Shaft :

Carbon Steel (C60),
Chromium Steel (SS 420)
or Stainless Steel (SS304- 316)

Casing Wear Ring:

Bronze, Chromium
Steel or Stainless Steel

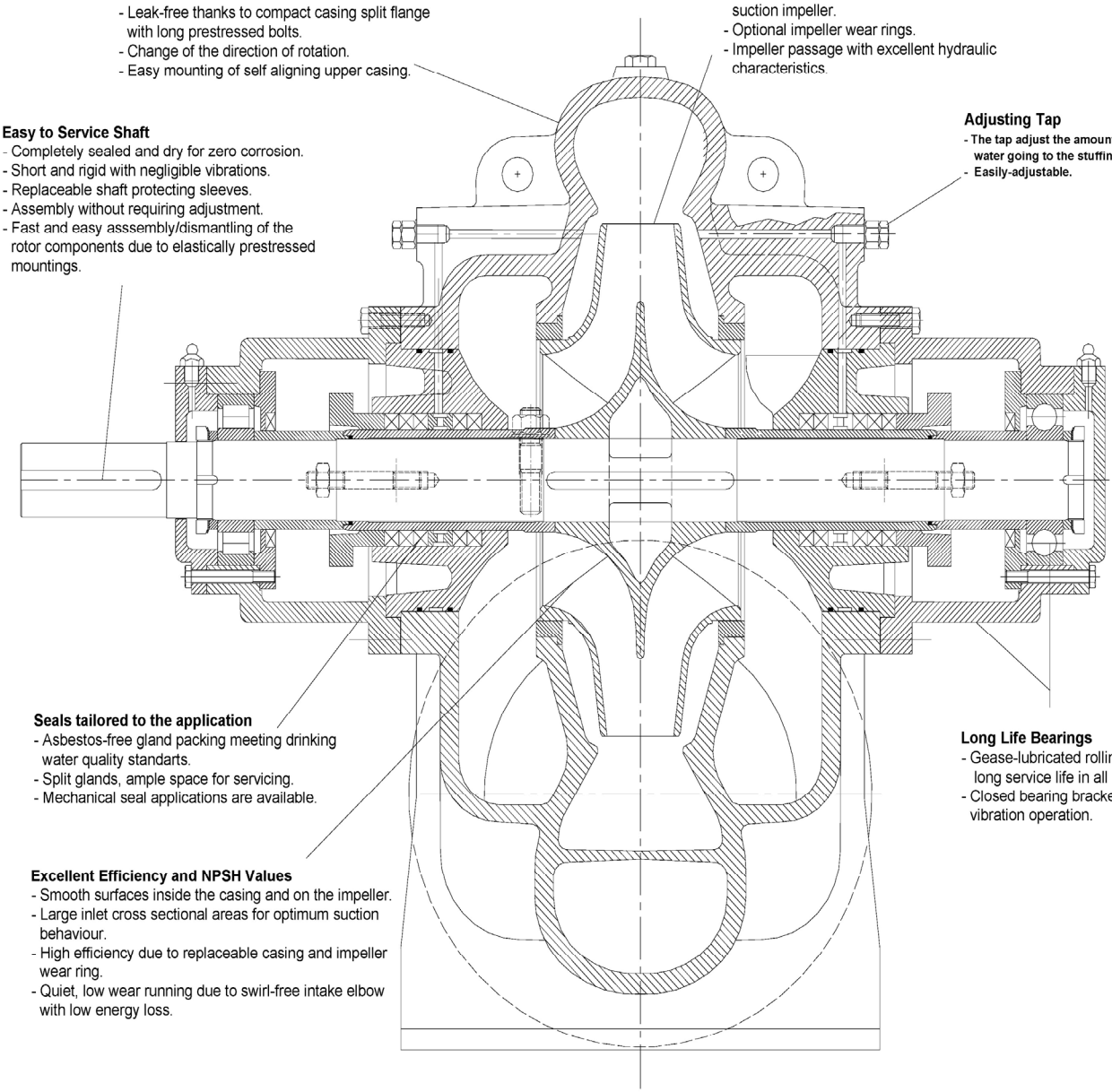
Design Advantages

Innovative Casing
- In-line design.
- Short distance between bearings and also short shaft.
- Leak-free thanks to compact casing split flange with long prestressed bolts.
- Change of the direction of rotation.
- Easy mounting of self aligning upper casing.

High Performance Impeller
- Minimum axial thrust because of double suction impeller.
- Optional impeller wear rings.
- Impeller passage with excellent hydraulic characteristics.

Easy to Service Shaft
- Completely sealed and dry for zero corrosion.
- Short and rigid with negligible vibrations.
- Replaceable shaft protecting sleeves.
- Assembly without requiring adjustment.
- Fast and easy asssembly/dismantling of the rotor components due to elastically prestressed mountings.

Adjusting Tap
- The tap adjust the amount of water going to the stuffing box.
- Easily-adjustable.



Seals tailored to the application
- Asbestos-free gland packing meeting drinking water quality standarts.
- Split glands, ample space for servicing.
- Mechanical seal applications are available.

Long Life Bearings
- Gease-lubricated rolling element bearings for long service life in all operating range.
- Closed bearing brackets for low-noise and low vibration operation.

Excellent Efficiency and NPSH Values
- Smooth surfaces inside the casing and on the impeller.
- Large inlet cross sectional areas for optimum suction behaviour.
- High efficiency due to replaceable casing and impeller wear ring.
- Quiet, low wear running due to swirl-free intake elbow with low energy loss.

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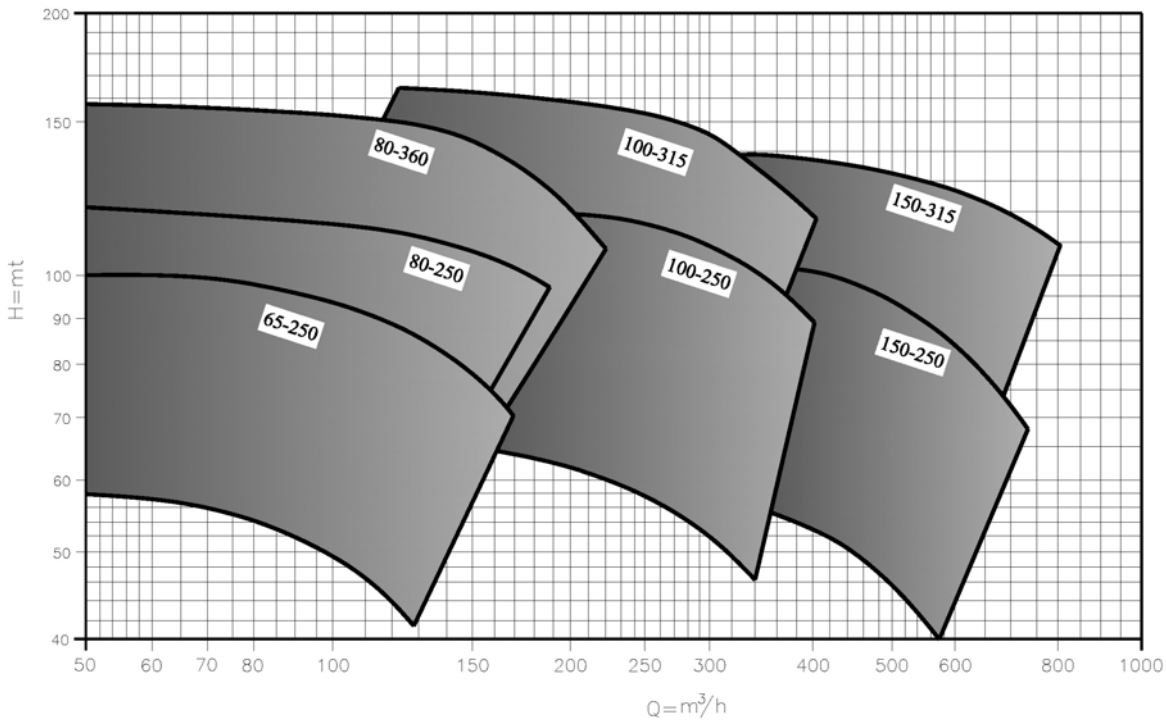
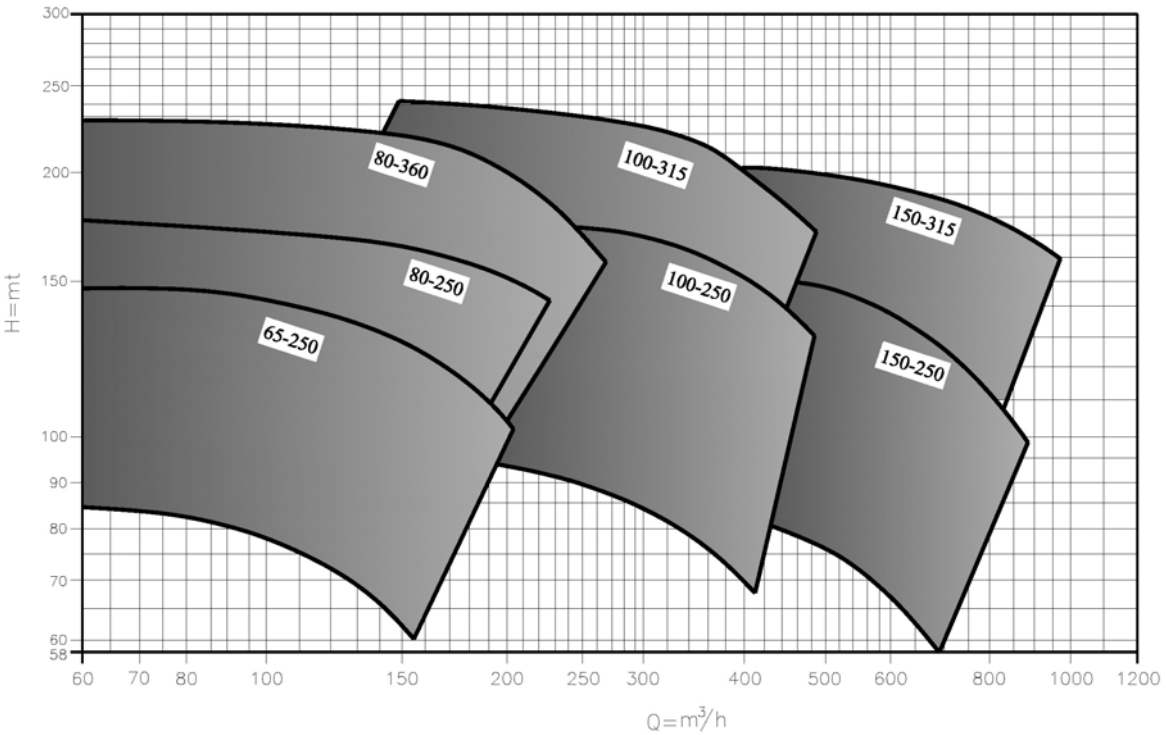
AHSC Performance Range

2900 r.p.m.

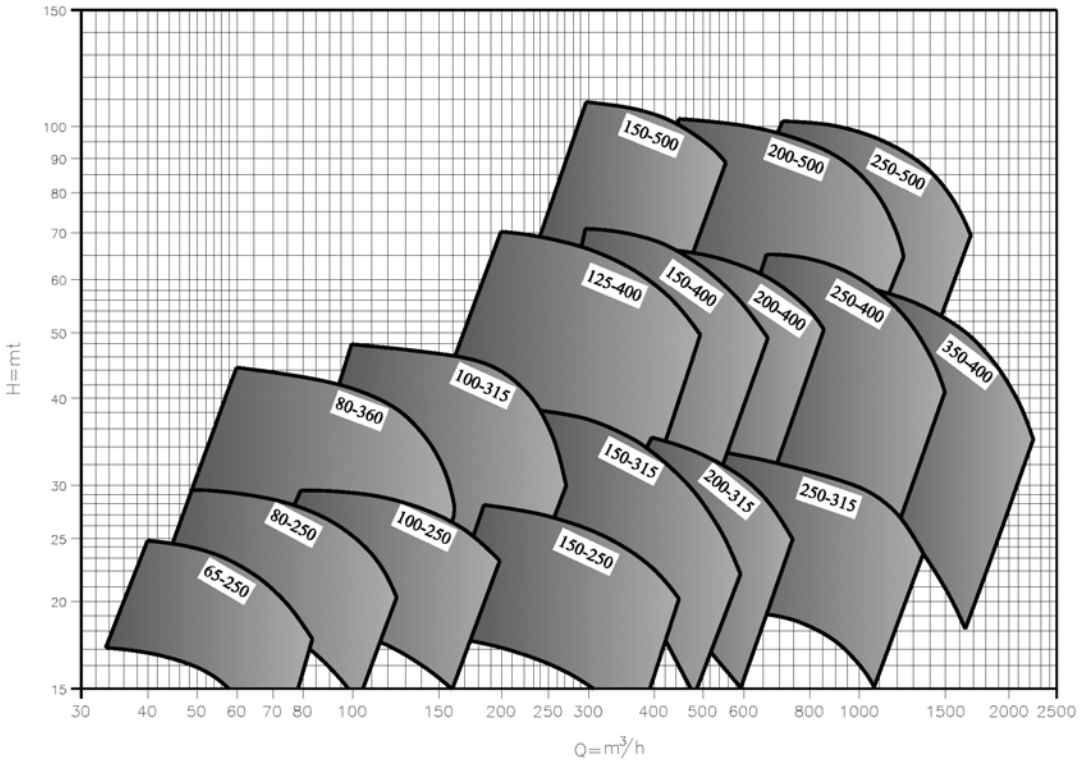


3500 r.p.m.

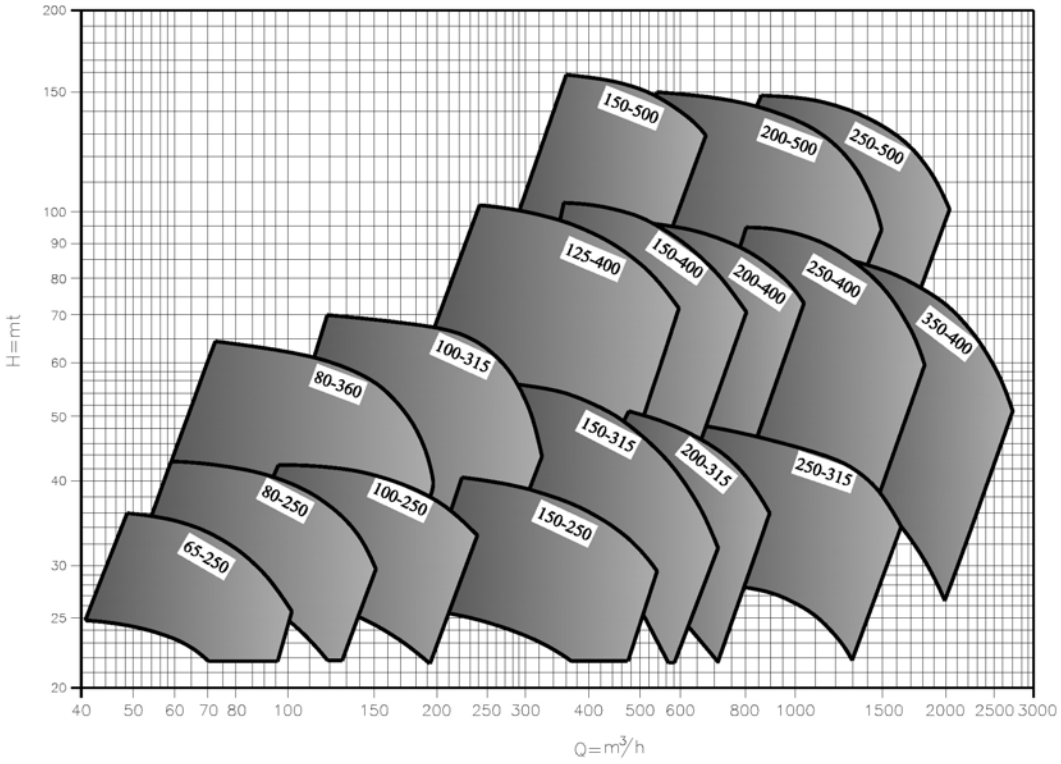


AHSC Performance Range

1450 r.p.m.



1750 r.p.m.



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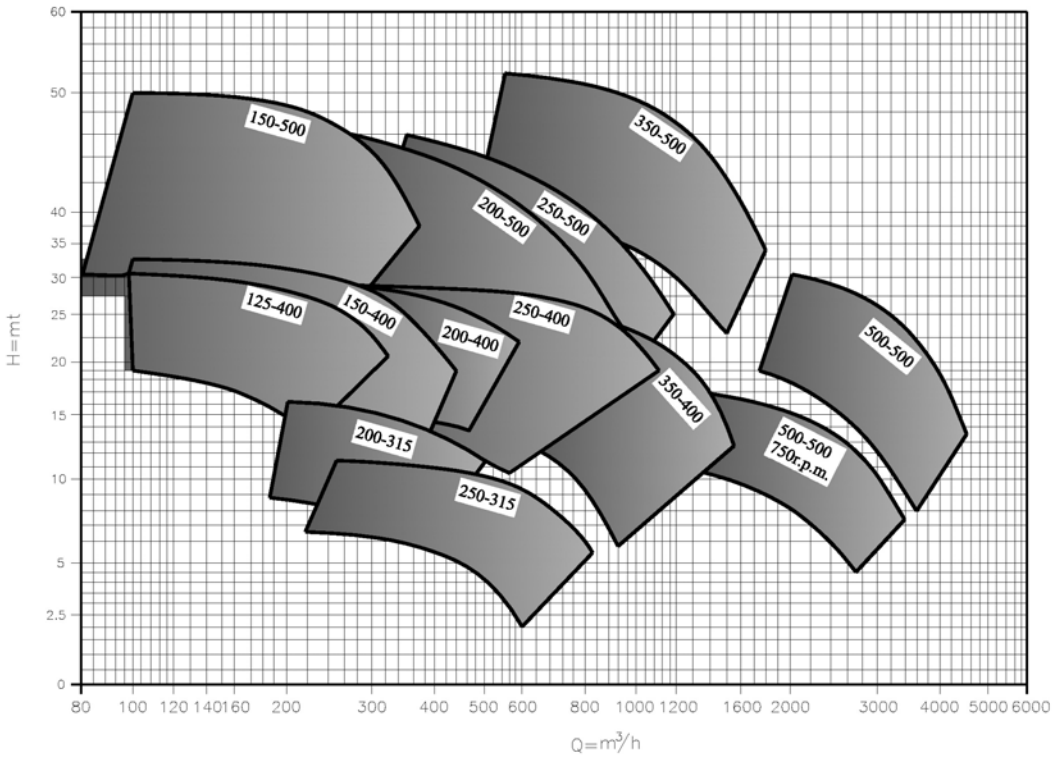
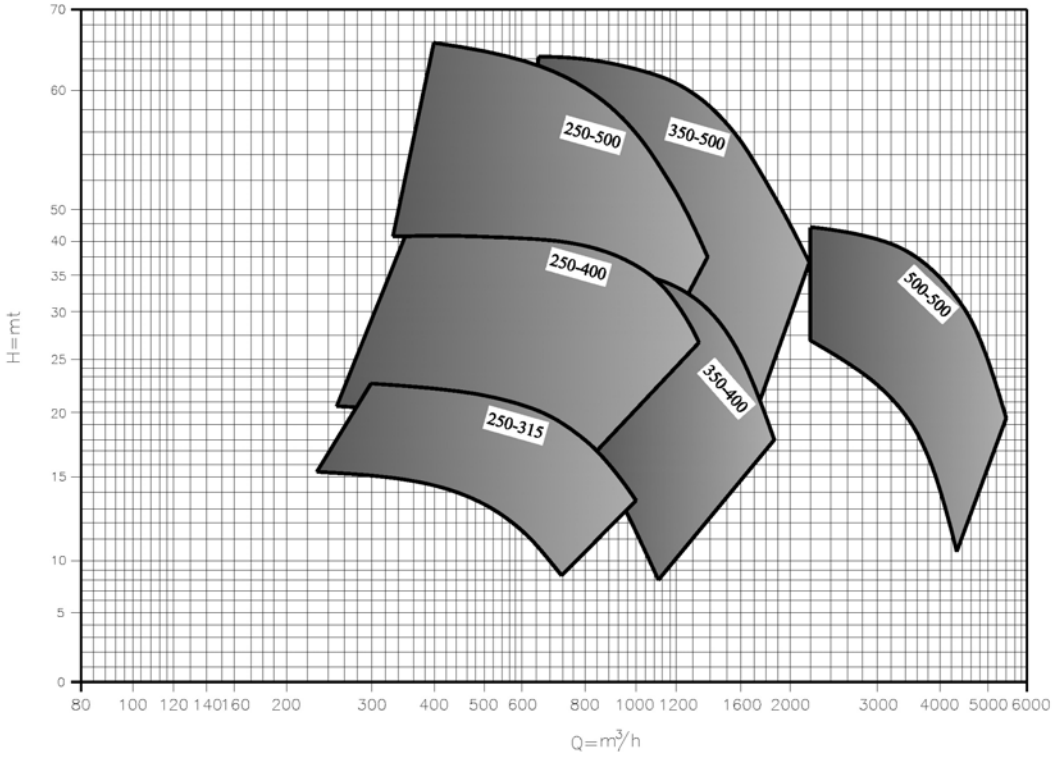
AHSC Performance Range

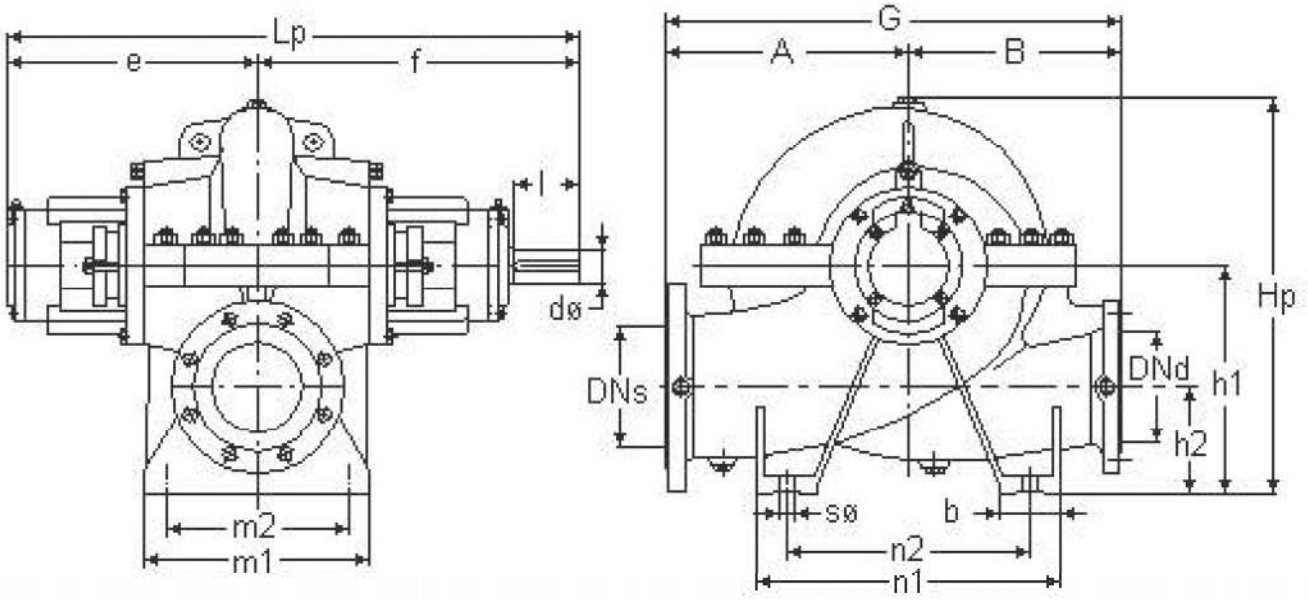
1000 r.p.m.



1200 r.p.m.



HSC Bare-shaft Pump Dimensions



No	PUMP SIZE	FLANGES DNs	FLANGES DNd	Lp	e	f	h1	h2	Hp	A	B	G	b	m1	m2	n1	n2	sø	l	dø	Group	Ball Bea. Drive	Ball Bea. Dead	Mec. Seal
1	65-250	100	65	585	260	325	250	115	425	285	225	510	70	240	190	350	275	18	60	28	A	6307	6307	
2	80-250	125	80	680	300	380	280	140	485	300	275	575	80	234	190	400	330	18	80	35	B	NU 308	6308	ø 55
3	80-360	125	80				315	135	550	325	275	600												
4	100-250	150	100	715	315	400		155						270	220									
5	100-315	150	100	820	350	470	355	145	585	360	320	680	90	290	230	435	350	23	110	45	C	NU 310	6310	ø 65
6	150-250	200	150	870	375	495	375	175	635	400	325	725	100	340	270	500	400							
7	125-400	150	125	945	415	530	375	175	700	450	400	850	100	370	300	500	400	23	110	55	D	NU 312	6312	ø 75
8	150-315	200	150				375	175	645	400	350	750												
9	150-400	200	150				400	200	730	475	400	875												
10	150-500	200	150				450	250	870	550	500	1050				650	550							
11	200-315	250	200	975	430	545	430	205	730	450	375	825		430	360	500	400							
12	200-400	250	200						790	525	425	950				600	500							
13	200-500	250	200	1042	447	595	475	220	870	550	500	1050	100	460	390	650	550	28	140	65	E	NU 314	6314	ø 85
14	250-315	300	250	1062	457	605	500	225	860	525	450	975		480	410									
15	250-400	300	250	1042	447	595	500	225	865	550	450	1000		460	390									
16	250-500	300	250	1062	457	605	525	240	945	600	500	1100		480	410									
17	350-400	400	350	1290	570	720	610	295	1010	600	500	1100	150	600	500	750	600	28	140	75	F	NU 316	6316	ø 100

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.


Archimedes
Pump
Pump Solution Provider