



NASTEC

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4HS

4" variable speed submersible pumps



The electronic revolution

4HS is a range of 4" electric submersible pumps for well applications, featuring:

- Three-phase water-filled asynchronous motor with encapsulated resin stator, fully constructed of AISI 304 stainless steel.
- Built-in integrated inverter controlled by CM control module.
- Multistage pump made of AISI 304 stainless steel.

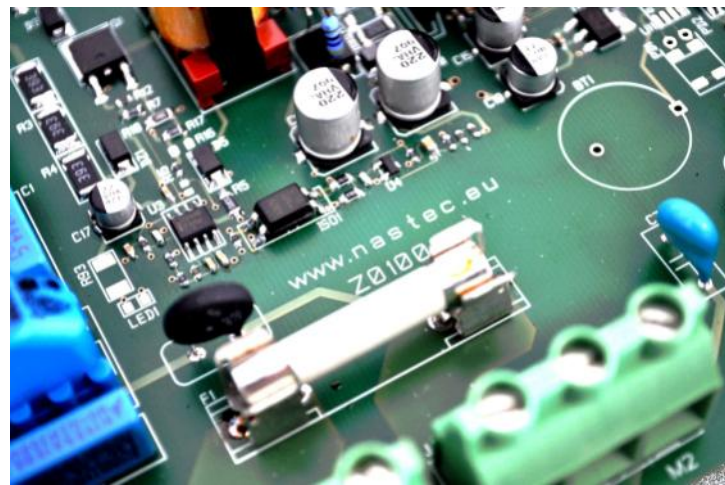
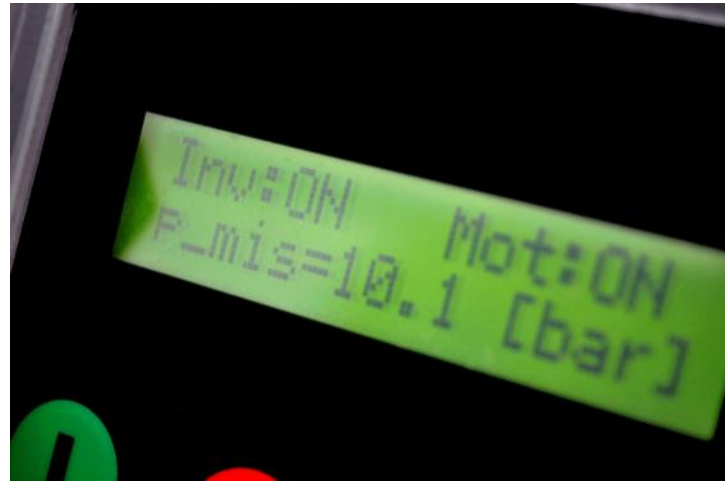
Inverter allows 4HS to:

- Change pump speed to maintain set-pressure regardless of water demand. Thus, the pump is operated only when and as needed without wasting energy, and extending pump life.
- Starts and stops pump gently, thus reducing peak absorption, mechanical stress.
- Protects pump and drive from overload, surges, under/over-voltage, dry running, and any abnormal conditions.

4HS product range matches applications in commercial and residential markets for water supply, water pressurization and irrigation.

Compared to conventional solutions 4HS offers:

- Energy-saving operation.
- Quick and simplified application.
- System reliability.



Construction characteristics and use of specific materials allow 4HS to be suitable for drinking water applications.

A ready to use product

The 4HS range submersible pumps are designed to provide customers a ready to-use product and so come packaged in a kit including:

- 4HS pump including 2,5 meter/8 foot flat cable lead (ACS-WRAS - KTM compliant)
- Surface control module (CM)

- Cable junction kit
- Pressure transducer 0-16 bar / 0—250 psi
- Operating Manual



Inverter, motor, pump, all integrated



Pump

Pump stages, in AISI 304 stainless steel, are specifically designed to manage high water energy produced by higher pump speeds. The number of stages used is four times less than traditional 50 Hz pumps. Mono-block single shaft reduces imbalance and, as a consequence, vibration in the pump, to provide silent and smooth operation and extended motor life. Variable speed allows the pump to cover a wide range of hydraulic performance with a single pump, allowing a corresponding reduction in variants of pumps to stock.



Motor

The encapsulated stator, constructed entirely of AISI 304 stainless steel, is impregnated with a special resin with high thermal conductivity. Due to this design, 4HS submersibles are suitable for use in pumping high-temperature water.

The water-filled rotor maintains the radial alignment of the shaft and sustains the axial thrust via bushings and an up-thrust bearing with pads.



MINT: Built-in inverter module

Entirely made of AISI 304 stainless steel, it features an inverter power board immersed in a special resin with high thermal conductivity; this construction extends the life of electronic components and provides greater mechanical resistance to vibration and external pressure.

The power plug allows simple and quick cable replacement.



CM: surface control module



CM control module, mounted above-ground, manages the pump operation by changing pump speed to maintain the desired pressure in the system regardless of water demand.

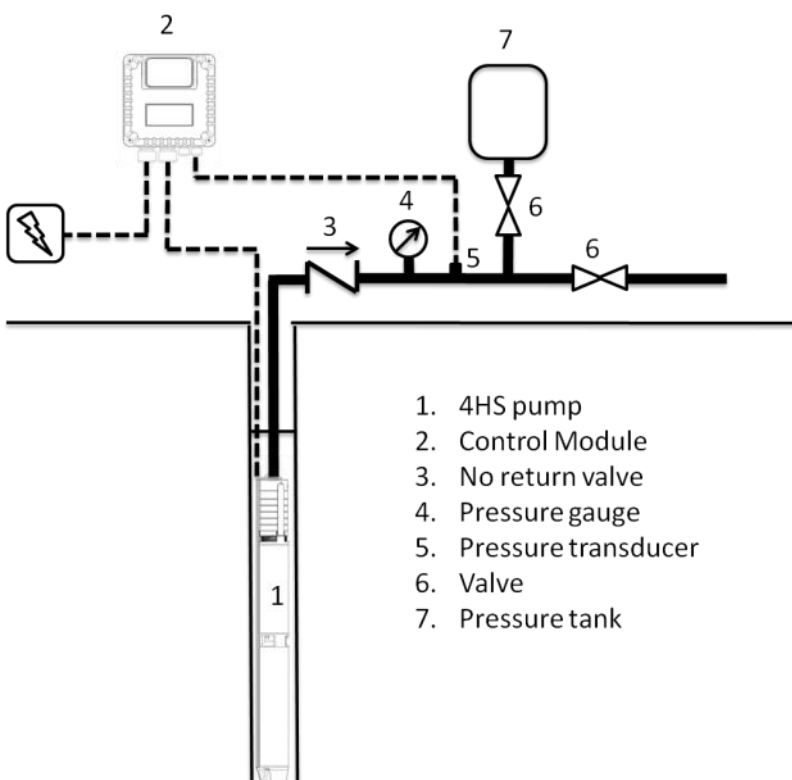
Simply connect the pressure transducer, supplied as standard, and perform a quick set-up of the sensor to configure the pressure range in relation to the system.

During operation, the CM control unit continuously monitors the electrical, hydraulic and thermal parameters providing complete protection against under/over-voltage, overload and dry-running.

Cable junction kit

The waterproof junction between the pump lead and drop cables is made using a provided kit consisting of:

- Polymer sheath containing the cable junctions
- Polyurethane resin
- Hardener
- Stick for mixing resin-hardener
- Insulated cable connectors
- Multilingual instruction manual

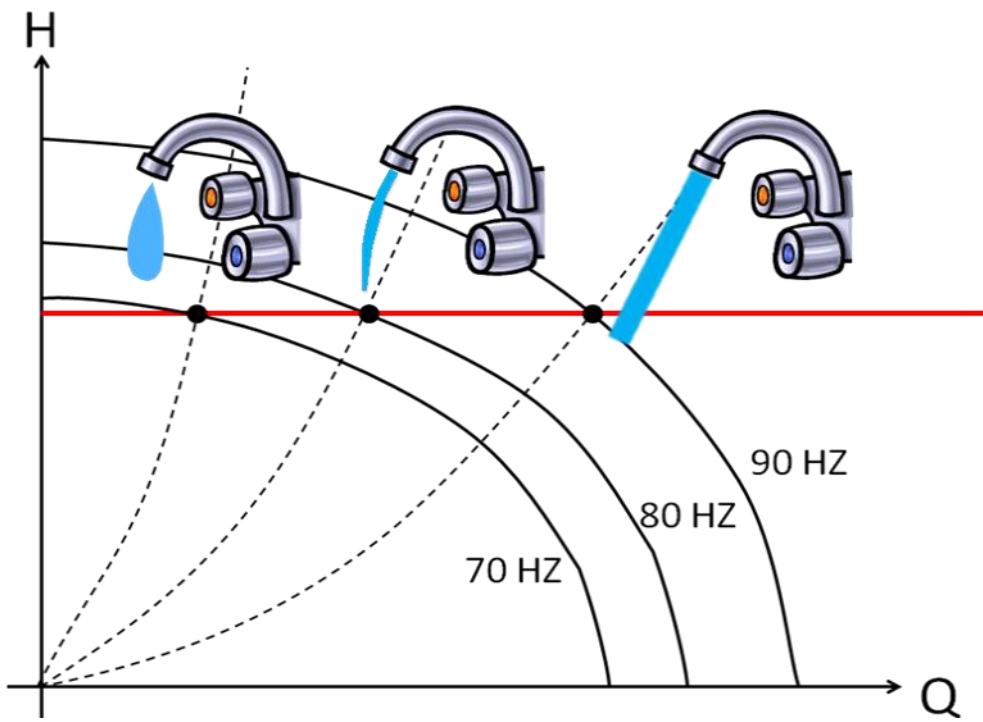


Installation layout

To set-up the system in a constant pressure application simply install the 4HS pump, connect the CM control module and wire the pressure sensor.

A small pressure tank is normally used to compensate for water losses while the pump is not running.

Constant pressure control

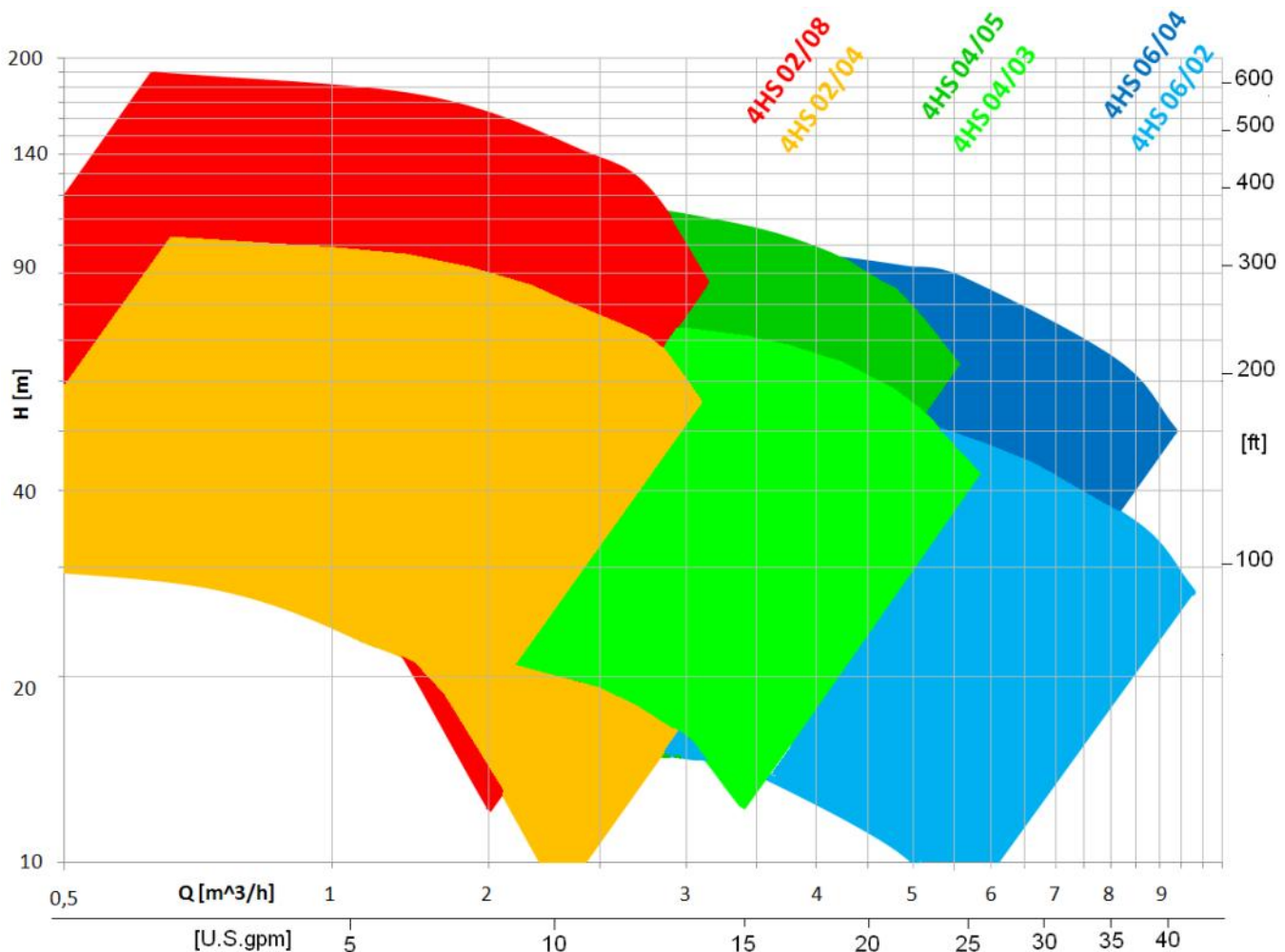


The control module receives the pressure signal from the pressure transducers and varies pump speed to maintain a constant set pressure regardless of water demand. In addition to the constant pressure control, CM can also the following control modes:

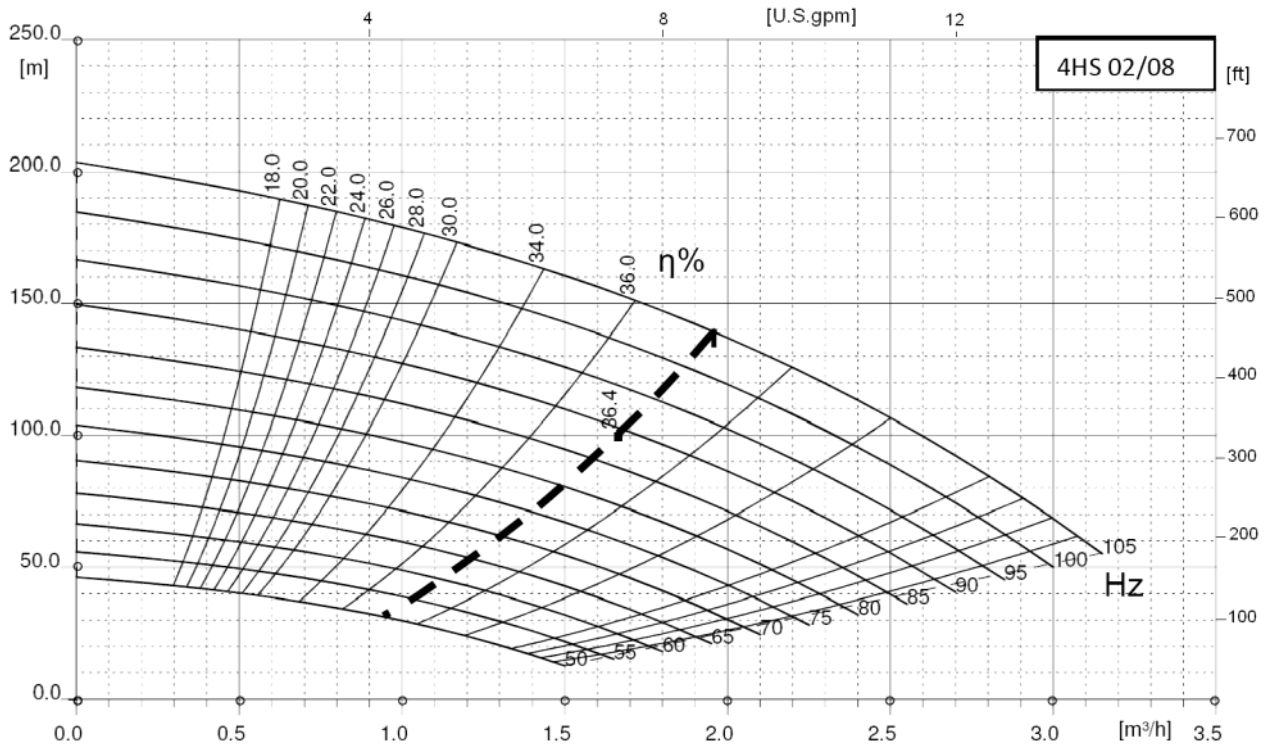
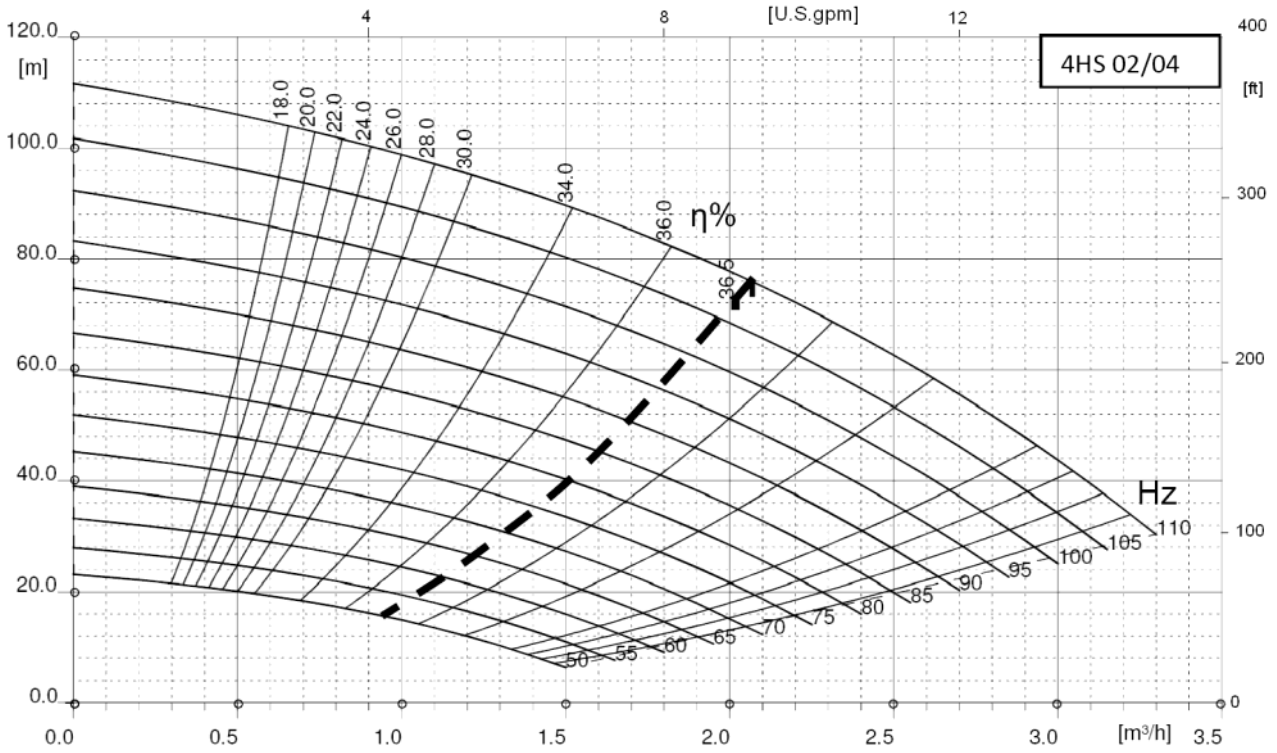
- fixed frequency
- constant flow
- constant temperature

Pump selection chart

Variable speed allows 4HS to cover a wide range of water flow and heads with only few models; selecting the proper pump model for an application will help maximize the performance and overall efficiency of the application. Use the diagram below to select the most suitable 4HS pump model for your application.



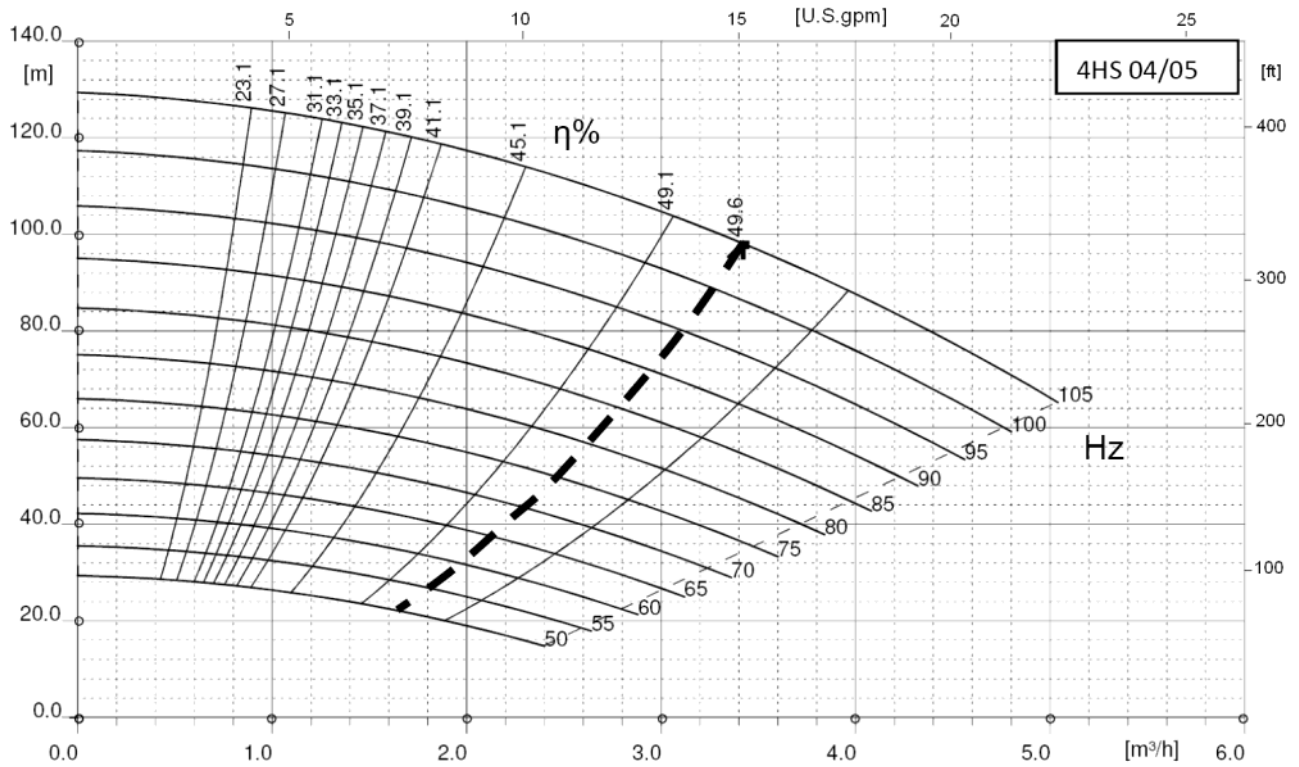
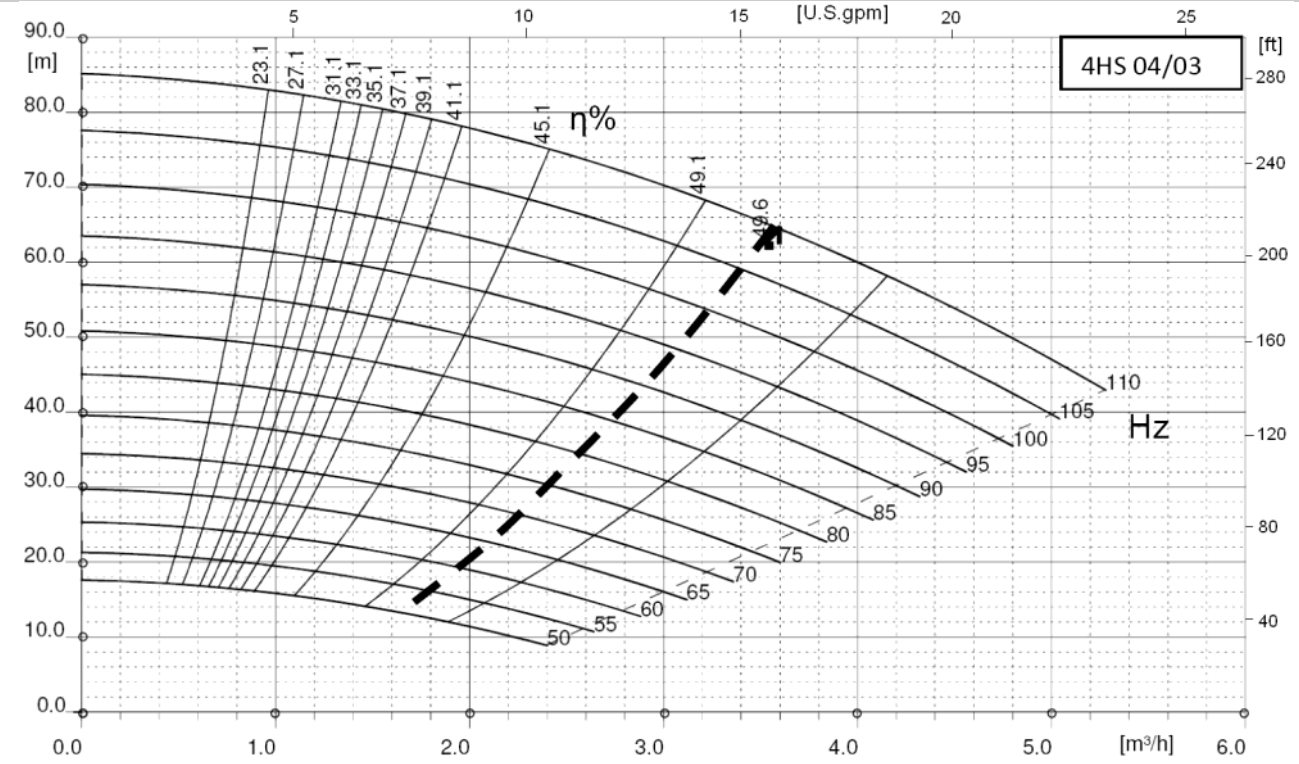
Performance



Model	m ³ /h	0,0	0,5	1,0	1,5	2,0	2,5	3,0	Packing Weight [kg]
	l/min	0,0	8,3	16,7	25,0	33,3	41,7	50,0	
	Hz	H [m]							
4HS - 02/04	50	23	20	15	7				22
	60	34	30	24	16				
	70	46	42	36	28	16			
	80	60	56	48	40	28			
	90	75	70	64	56	44	28		
	100	96	88	80	72	60	44	25	
110	112	105	98	90	78	64	45		
4HS - 02/08	50	45	40	30	12				25
	60	66	60	50	32				
	70	90	82	70	55	30			
	80	120	110	97	80	55			
	90	150	140	128	110	86	55		
	100	185	172	160	142	120	90	50	
105	205	190	180	160	135	105	70		

Packing dimensions = 139 x 22 x 16 cm (54,7 " x 8,7 " x 6,3 ")

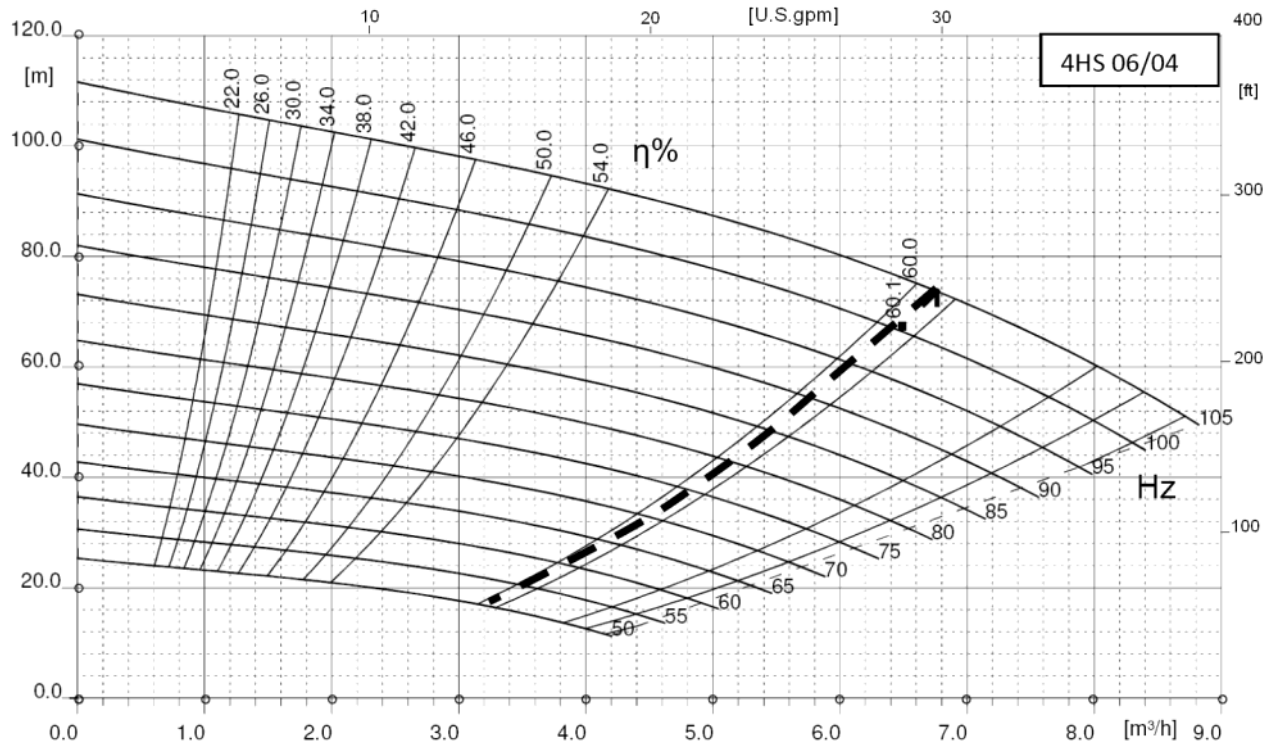
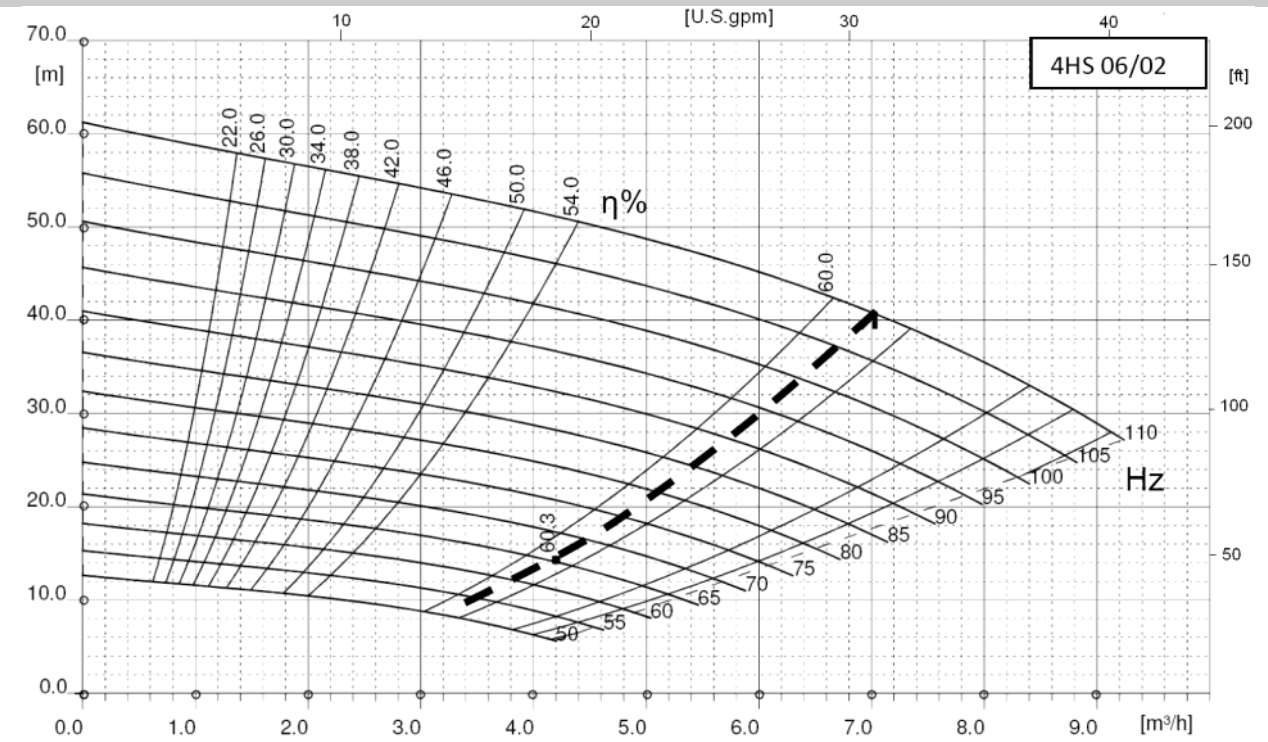
Performance



Model	m ³ /h	0,0	1,0	2,0	3,0	4,0	5,0	6,0	Packing Weight [kg]	
	l/min	0,0	16,7	33,3	50,0	66,6	83,3	100,0		
	Hz	H [m]								
4HS - 04/03	50	18	16	12					22	
	60	26	24	19						
	70	34	33	28	21					
	80	45	43	38	31	20				
	90	58	55	50	42	32				
	100	70	68	64	56	46				
	110	85	83	78	70	60	47			
4HS - 04/05	50	30	26	19					24	
	60	42	40	32	20					
	70	58	54	47	34					
	80	76	72	64	52	36				
	90	95	92	84	72	54				
	100	118	114	106	92	76				
	105	130	126	118	104	88	66			

Packing dimensions = 139 x 22 x 16 cm (54,7 " x 8,7 " x 6,3 ")

Performance



Model	<i>m³/h</i>	0,0	2,0	4,0	6,0	8,0	9,0	Packing Weight [kg]
	<i>l/min</i>	0,0	33,3	66,6	100,0	133,3	150,0	
	Hz	<i>H [m]</i>						
4HS - 06/02 V in = 1x230V +/- 15% 50/60 Hz P2 max = 1.3 kW	50	12	10	6				22
	60	18	16	12				
	70	25	22	18	10			
	80	32	29	25	18			
	90	41	37	33	26			
	100	50	46	42	35	25		
110	61	56	52	45	36	29		
4HS - 06/04 V in = 1x230V +/- 15% 50/60 Hz P2 max = 2.2 kW	50	23	21	12				24
	60	36	32	24				
	70	50	44	36	20			
	80	66	58	50	36			
	90	82	74	66	52			
	100	102	92	84	72	50		
105	112	104	92	80	60	48		

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