



# Pump Selection Guide

RESIDENTIAL & COMMERCIAL WATER

 **LOWARA**  
a xylem brand

Let's solve water.

Xylem is focused on helping our customers solve their most challenging water issues: treating water to make it potable, transporting it to where it is needed, using it in the most efficient manner, testing and analyzing its qualities, and cleaning it after its many uses.



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# For the efficient movement and use of water

Creating essential solutions everyday.

With deep applications expertise in the water industry, Xylem Residential and Commercial Water (RCW) is focused on producing highly efficient water technologies that use less energy, reduce life-cycle costs and provide environmental benefits to users and the

communities in which they operate. Through trusted, industry-leading brands, RCW offers a complete range of products, accessories, and systems for use of water in homes, commercial buildings, general industry, agriculture and irrigation.



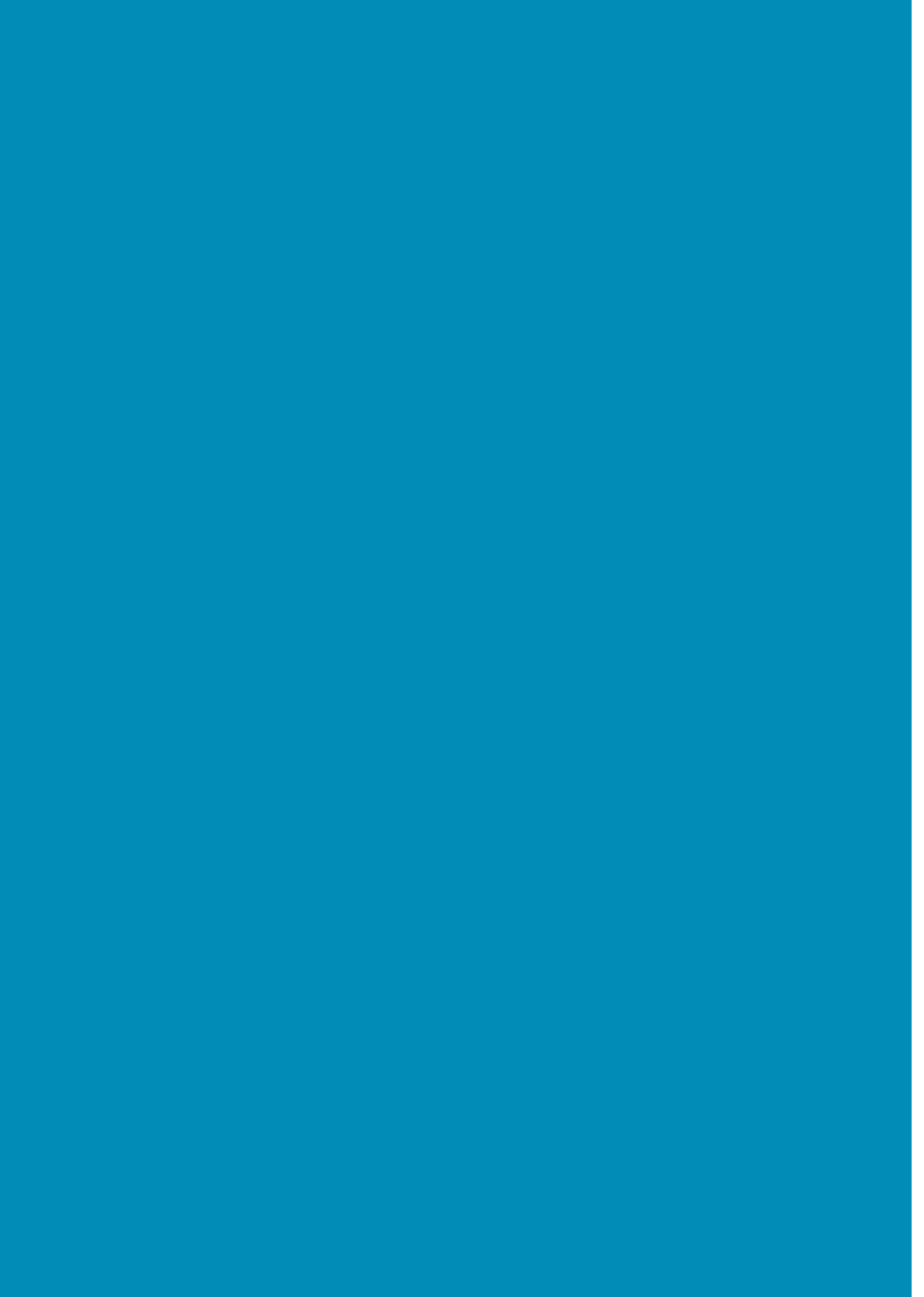
## Renowned innovative hydraulic design.

Lowara is focused on producing high quality, reliable, cost-effective pumping systems, maximizing efficiency in order to satisfy customers' needs at best. Lowara pumps are made in fabricated stainless steel, which keeps the water from contamination. Laser welding technology creates pumps that are resistant to aggressive chemicals and guarantees the production process respect the natural environment. Lowara enables smarter use of water.





# Domestic Pressure Systems





# Water pressure systems with automatic pump controller.

Lowara water pressure systems feature new generation all stainless steel pumps manufactured to the highest standards using only the finest quality components and supplied with the toughest, most dependable tanks available.

## Features

- Advanced design and materials
- Highly corrosion resistant
- Efficient and economical
- Quiet, compact and light
- Easily installed and serviced
- Extended service life

## HM/HMS series.

- Above ground supply
- HMS liquid end is all 316 stainless steel
- Flows up to 7.2 m<sup>3</sup>/hr
- Economical and quiet
- Ideal for larger residences

## BGM series.

- Self priming stainless steel jet pump
- Can be used with above or below ground water supply
- Flows up to 4.2 m<sup>3</sup>/hr
- Ideal for small to medium size residences

## C series.

- For above ground water supply
- Flows up to 31 m<sup>3</sup>/hr
- Suitable for large residences and domestic irrigation

## CentriPro PC automatic pump controller.

The CentriPro PC controller is a device designed to control pumps in domestic applications. Controlling the operating pressure, it will protect the pump from dry running to ensure your pump operate efficiently for many years.

Lowara HM/HMS & BGM are available with PC pressure controller.



HM/HMS & PC



BGM & PC



C SERIES

### HM/HMS Performance At Zero Suction

Model	kPa psi Kw	Discharge Pressure																				
		100	125	150	175	200	225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	
		14	18	22	25	29	33	36	39	43	47	51	54	57	62	65	69	72	76	79	82	
Pump Output Litres per min./Gallons per min.																						
2HM3	0.3	68 15	59 13	50 11	40 9	25 6	7 2	0 0														
2HM4	0.45	72 16		68 15	64 14	56 12	49 11	42 9	34 8	25 6	16 4	0 0										
2HM5	0.55					73 16	68 15	64 14	60 13	55 12	50 11	44 10	38 8	32 7	25 6	18 4	9 2	0 0				
2HM7	0.75						72 16	68 15	61 14	58 13	54 12	50 11	45 10	40 9	35 8	30 7	25 6	18 4	12 3	0 0		
4HM4	0.45	118 26	92 20	78 17	60 13	40 9	15 3	0 0														
4HM5	0.55	124 28	115 26	107 24	98 22	88 20	76 17	65 14	52 12	39 9	22 5	7 2	0 0									
4HM7	0.75	130 29	125 28	120 27	114 25	107 24	100 22	94 21	86 19	78 17	68 15	59 13	50 11	38 8	25 6	14 3	0 0					
4HM9	0.90	133 30	130 29	126 28	121 27	117 26	113 25	107 24	102 22	96 21	90 20	84 19	78 17	70 16	62 14	55 12	47 10	38 8	27 6	20 4	0 0	
2HMS3	0.3	55 12	45 10	32 7	20 4	3 0.7	0 0															
2HMS4	0.45				62 14	57 13	53 12	47 10	40 9	35 8	27 6	22 5	12 3	5 1	0 0							
2HMS7	0.75					65 15	62 14	57 13	54 12	50 11	45 10	41 9	36 8	31 7	25 6	20 4	17 3	6 1	0 0			
4HMS4	0.45	115 26	102 23	90 20	75 17	60 13	45 10	20 4	8 2	0 0												
4HMS5	0.55			115 26	110 24	100 22	90 20	78 17	66 15	55 12	40 9	25 6	10 2	0 0								
4HMS7	0.75				120 27	112 25	105 23	97 22	90 20	80 18	72 16	60 13	50 11	40 9	25 6	12 3	0 0					

### BGM Performance at Zero Suction

Model	kPa psi Kw	Discharge Pressure																	
		100	125	150	175	200	225	250	275	300	325	350	375	400	425	450	475	500	525
		14	18	22	25	29	33	36	39	43	47	51	54	57	62	65	69	72	75
		Pump Output Litres per min./Gallons per min.																	
BGM 3	0.37	55 12	46 10	38 8	32 7	26 6	20 4	14 3	10 2	6 1	0 0								
BGM 5	0.55	65 14			60 13	52 11	46 10	40 9	34 8	26 6	20 4	14 3	8 2	0 0					
BGM 7	0.75	65 14				56 12	50 11	44 10	38 8	30 7	26 6	20 4	14 3	8 2	0 0				
BGM 9	0.90	70 16						65 14	57 13	48 11	42 9	32 7	27 6	20 4	14 3	8 2	0 0		
BGM 11	1.10	75 17								70 16	62 14	54 12	46 10	38 8	30 7	22 4	14 3	8 2	0 0

### CAM Performance at Zero Suction

Model		Discharge Pressure														
		kPa														
		225	250	275	300	325	350	375	400	425	450	475	500	525	550	
		psi	33	36	39	43	47	51	54	57	60	64	68	72	76	80
Kw		Pump Output Litres per min./Gallons per min.														
CAM 70/33	0.75	80 18	75 17	67 15	65 14	55 12	42 9	32 7	12 3	0 0						
CAM 70/45	1.10						80 18	75 17	72 16	65 14	60 13	50 11	40 9	30 7	17 4	0 0
CAM 120/33	1.10	140 31	125 28	115 26	95 21	85 19	65 15	45 10	20 4	0 0						
CAM 120/35	1.50					150 33	135 30	125 28	115 26	95 21	80 18	60 13	40 9	10 2	0 0	

**Shaded Areas:**  
recommended  
pressure switch  
setting

Inlet size: 1¼" Outlet: 1"NOTE:



### Rule of Thumb:

To insure adequate pressure throughout the home, make sure there's enough Discharge Pressure at the highest outlet.

For Example:

Vert elevation  
7m x 10 = 70kPa

Friction Loss  
2m x 10 = 20kPa

Desired Pressure  
at highest outlet +210kPa  
300kPa

Cut in pressure would be set at 300 kPa to deliver 210 kPa at highest outlet



### Rule of Thumb:

When selecting a pump, always use 'cut in' pressure because this represents peak demand conditions.

# BGR series with CentriPro MP automatic pump controller.

## Applications

- Pressure boosting
- Water transfer
- Lawn and garden irrigation
- Cistern filling

## Features

### PUMP

Self-priming centrifugal jet pumps for handling clean water in domestic applications. Robust design with pressed stainless steel casing and an aluminium motor body. These pumps are equipped with built-in ejector systems providing suction lift capability. This design arrangement allows the pumps to remain primed if there are gases in the pumped water. All liquid contact components are FDA approved.

Available in 220-240V, 50Hz, Single Phase  
Approved for use in drinking water to AS/NZS 4020

### CONTROL

Compact and functional device incorporating an electronic circuit, a diaphragm and retaining spring system integrated with delivery and pressure sensors. It is designed to replace traditional pressure switch control systems in domestic use. It offers the advantage of small overall dimensions, no routine maintenance is required and it also provides the pump with adequate protection against dry running.

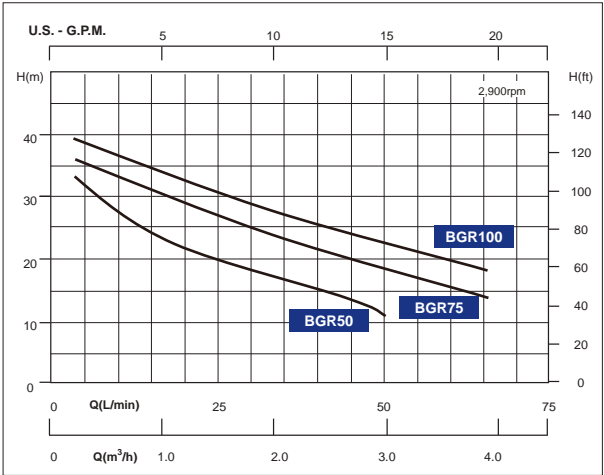
Available in 200-240V, 50Hz, Single Phase




## Options

Also available as bare pumps without MP controller



BGR & MP

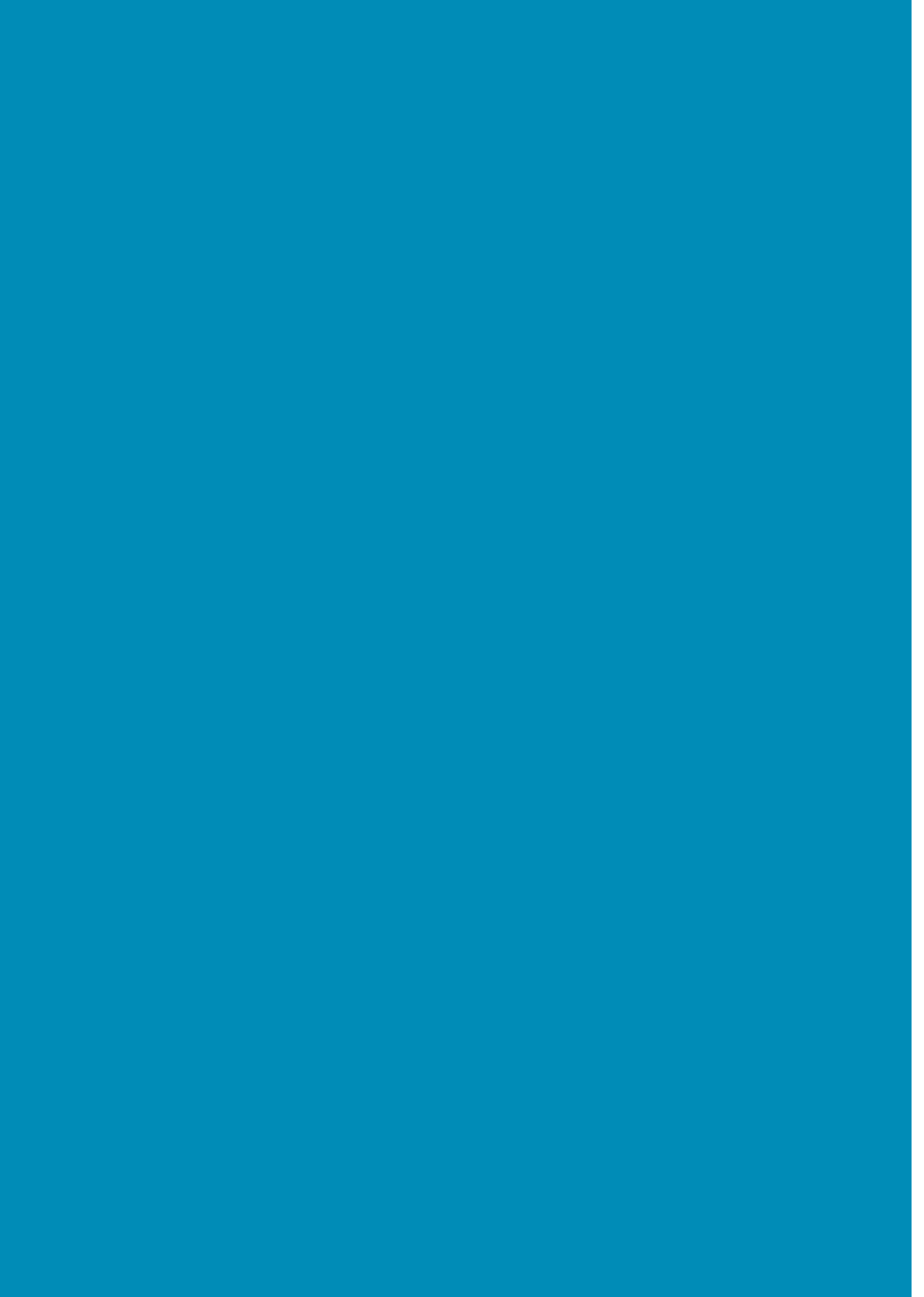


MODEL	POWER		NUMBER OF TAPS
	kW	HP	
BGR 050	0.37	0.5	
BGR 075	0.55	0.75	
BGR 100	0.75	1.0	





# Vertical Inline Pumps



# Inline vertical multistage pump.

## eSV series.

The new eSV is a technologically advanced pump renowned for excellent performance and leading efficiencies with high reliability. With a wide range of sizes available, it is capable of meeting customer needs for various industries.

### Applications

- Ideal for use with the Hydrovar pump mounted system controller. See pages 39-41
- Handling of water, free of suspended solids, in the civil, industrial and agricultural sectors
- Pressure boosting and water supply systems
- Irrigation systems
- Wash systems
- Water treatment plants
- Handling of moderately aggressive liquids, demineralized water, water and glycol, etc
- Circulation of hot and cold water for heating, cooling and conditioning systems
- Boiler feed
- Pharmaceutical industries
- Food & beverage industries

### Specifications

#### PUMP

The SV pump is a non-self priming vertical multistage pump coupled to a standard motor. The liquid end, located between the upper cover and the pump casing, is held in place by tie rods. The pump casing is available with different configurations and connection types.

- Delivery: up to 160 m<sup>3</sup>/hr
- Head: up to 330m
- Temperature of pumped liquid:
  - from -30°C to +120°C for standard version
- Maximum operating pressure:
  - 1, 3, 5, 10, 15, 22SV with oval flanges: 16 bar (PN16)
  - 1, 3, 5, 10, 15, 22SV with round flanges or Victaulic®, Clamp or DIN 11851 connections: 25 bar (PN 25)
  - 33,46SV: 16, 25, 40 bar (PN16, PN25 or PN40)
  - 66, 92, 125SV: 16 or 25 bar (PN16 or PN25)
- Tested in compliance with ISO 9906 - Annex A
- Direction of rotation: clockwise looking at the pump from the top down (marked with an arrow on the adapter and on the coupling)



#### MOTOR

- Squirrel cage in short circuit, enclosed construction with external ventilation
- IP55 protection
- Class F insulation
- Performances according to EN 60034-1
- Standard voltage:
  - Single-phase version: 220-240V, 50 Hz
  - Three-phase version: 220-240/380-415V, 380-415/660-690V, 50 Hz for power above 3 kW
- Standard motors comply with MEPS

#### Options

- Patented i-ALERT monitor continuously measures vibration to support optimum performance
- Optical sensor for detecting the lack of water to prevent damage deriving from dry running. This accessory can be fitted to the filling tapping
- High pressure pump, horizontal version, low NPSH version, high temperature version, passivated and electro-polished version are also available upon request

#### Materials

- Standard construction: 1SV to 22SV all wetted parts in 304SS; 33SV to 125SV wetted parts in 304SS/316SS/CI
- SVS construction: 33SV to 92SV all wetted part in 304SS
- SVN construction: all wetted parts in 316SS
- All constructions are suitable for use with potable water to AS/NZS 4020

### Features of 1, 3, 5, 10, 15 & 22SV series

- Vertical multistage centrifugal pump. All metal parts in contact with the pumped liquid are made of stainless steel
- Reduced axial thrusts enable the use of standard motors that are easily found in the market. The SM  $\geq 0,75$  kW and PLM surface motors have efficiency values that fall within the range normally referred to as efficiency class IE2
- Seal housing chamber designed to prevent the accumulation of air in the critical area next to the mechanical seal
- Mechanical seal according to EN 12756 (ex DIN 24960) and ISO 3069 for 1, 3, 5SV and 10, 15, 22SV ( $\leq 4$  kW) series
- Easy maintenance. No special tools required for assembly or disassembly
- With round flanges that can be coupled to counter-flanges, according to EN 1092

### Options

- The following versions are available:
  - F: round flanges, in-line delivery and suction ports, AISI 304
  - T: oval flanges, in-line delivery and suction ports, AISI 304
  - R: round flanges, delivery port above the suction port, with four adjustable positions, AISI 304
  - N: round flanges, in-line delivery and suction ports, AISI 316
  - V: Victaulic® couplings, in-line delivery and suction ports, AISI 316
  - C: Clamp couplings (DIN 32676), in-line delivery and suction ports, AISI 316
  - K: threaded couplings, (DIN 11851), in-line delivery and suction ports, AISI 316
- Balanced mechanical seal according to EN 12756 (ex DIN 24960) and ISO 3069, which can be replaced without removing the motor from the pump for 10, 15 and 22SV ( $\geq 5,5$  kW) series
- A second plug is available for 10, 15, 22SV series
- Threaded, oval counter-flanges made of stainless steel are standard supply for the T versions
- Round counter-flanges made of stainless steel are available on request for the F, R and N versions

### Features of 33, 46, 66, 92 & 125SV series

- Version G: vertical multistage centrifugal pump with impellers, diffusers and outer sleeve made entirely of stainless steel, and with pump casing and motor adaptor made of cast iron
- Innovative axial load compensation system on pumps with higher head. This ensures reduced axial thrusts and enables the use of standard motors that are easily found in the market
- Seal housing chamber designed to prevent the accumulation of air in the critical area next to the mechanical seal
- The pumps for G, N versions are certified for drinking water use (WRAS and ACS certified)
- Standard version for temperatures ranging from  $-30^{\circ}\text{C}$  to  $+120^{\circ}\text{C}$
- Pump body fitted with couplings for installing pressure gauges on both suction and delivery flanges
- In-line ports with round flanges that can be coupled to counter-flanges, in compliance with EN 1092
- Mechanical sturdiness and easy maintenance. No special tools required for assembly or disassembly

### Options

- Balanced mechanical seal according to EN 12756 (ex DIN 24960) and ISO 3069, which can be replaced without removing the motor from the pump
- N, P: version made entirely of AISI 316 stainless steel

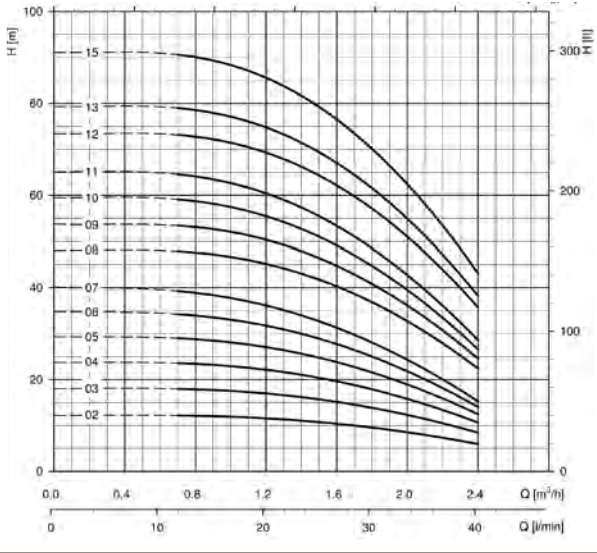


V (left) , R (middle), T (right)

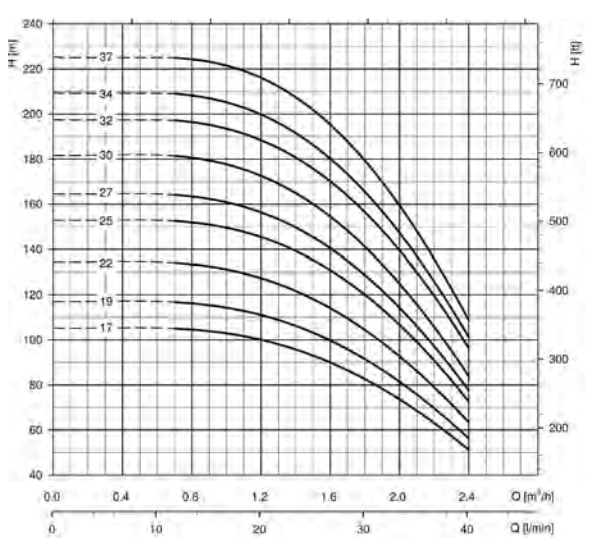


PERFORMANCE CURVES AT 2900 RPM

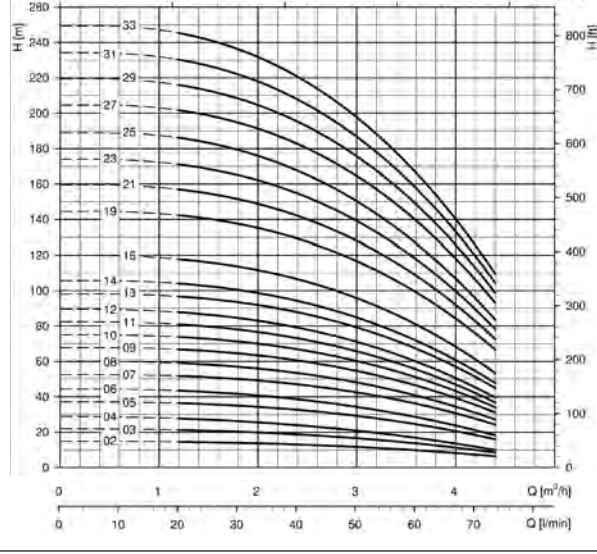
1SV : 2-15 stages



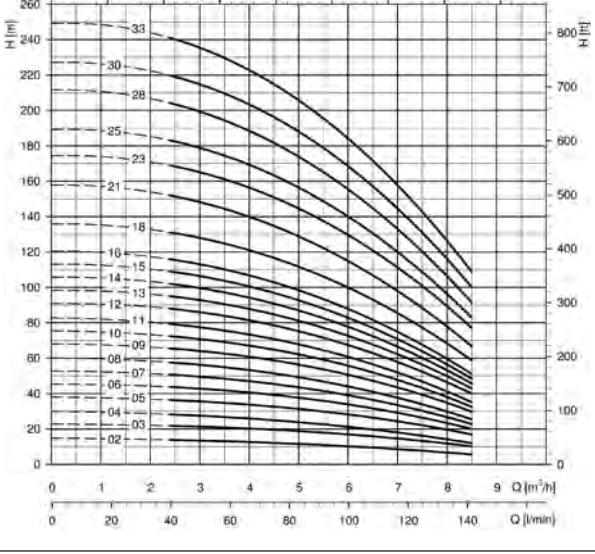
1SV : 17-37 stages



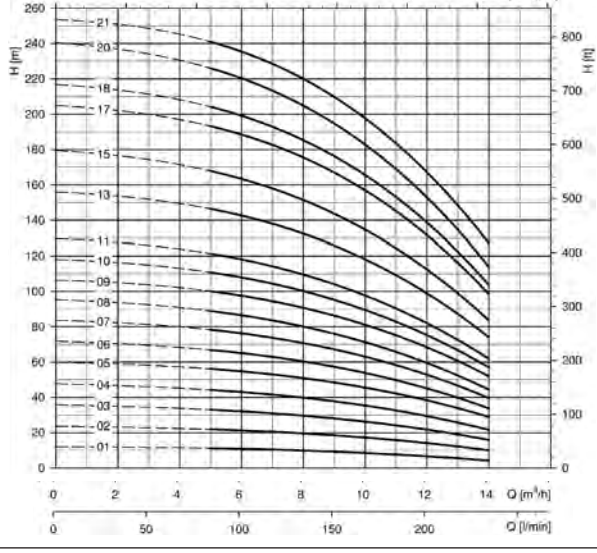
3SV



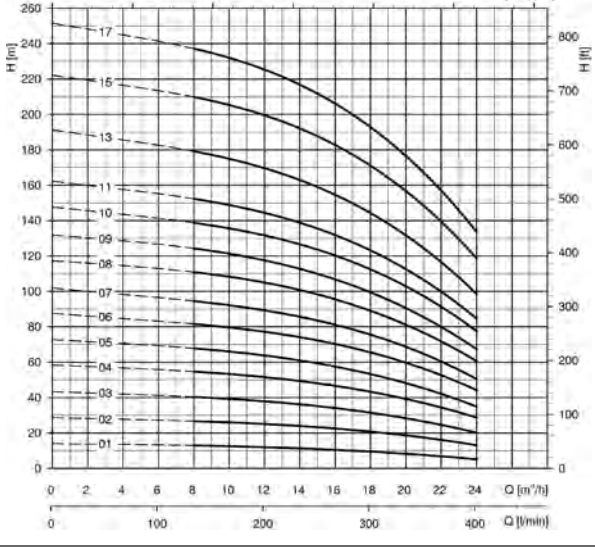
5SV



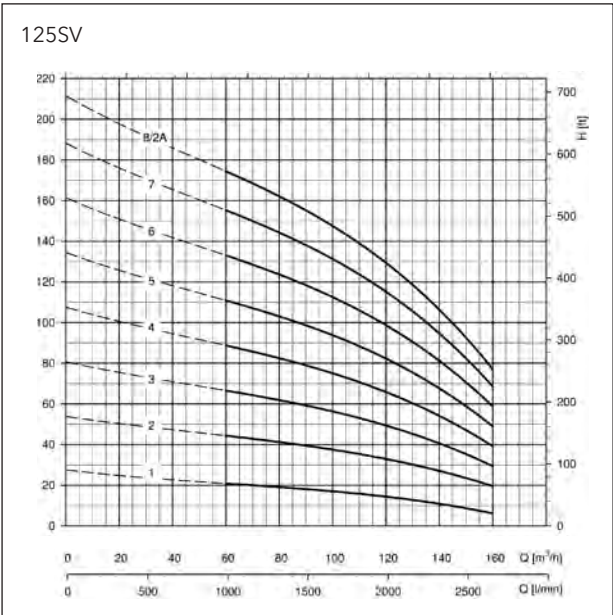
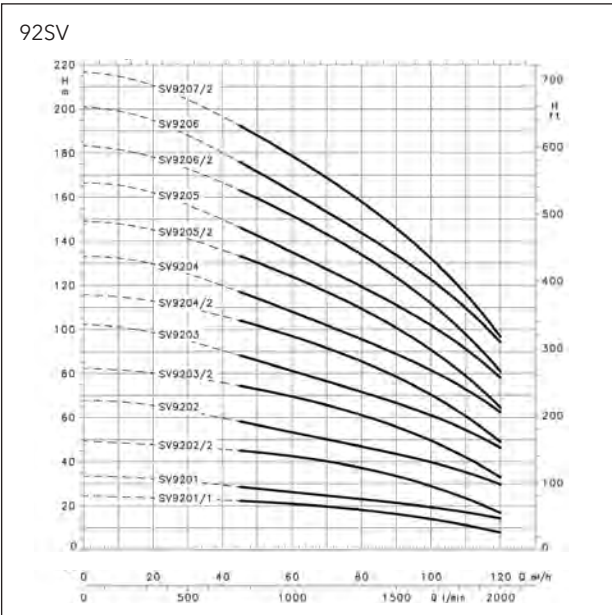
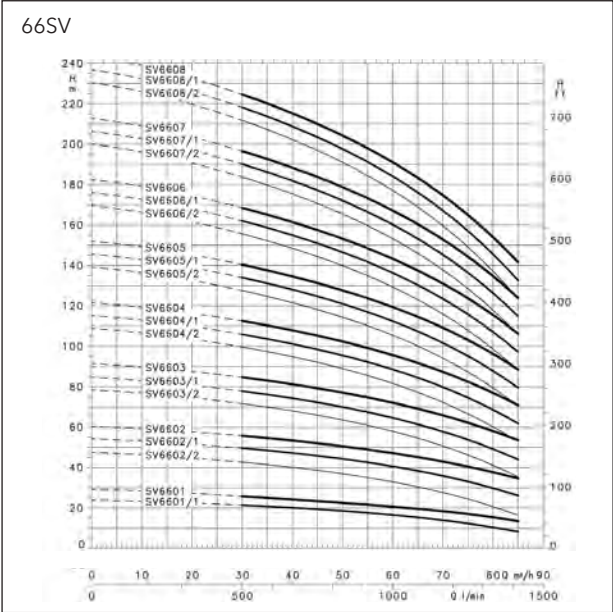
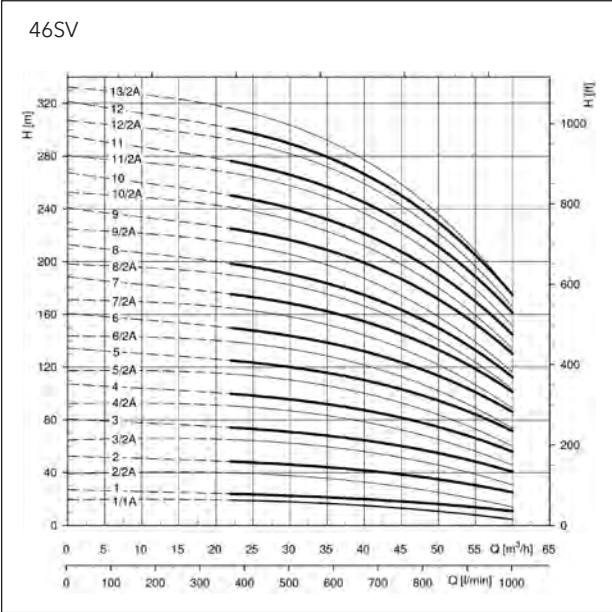
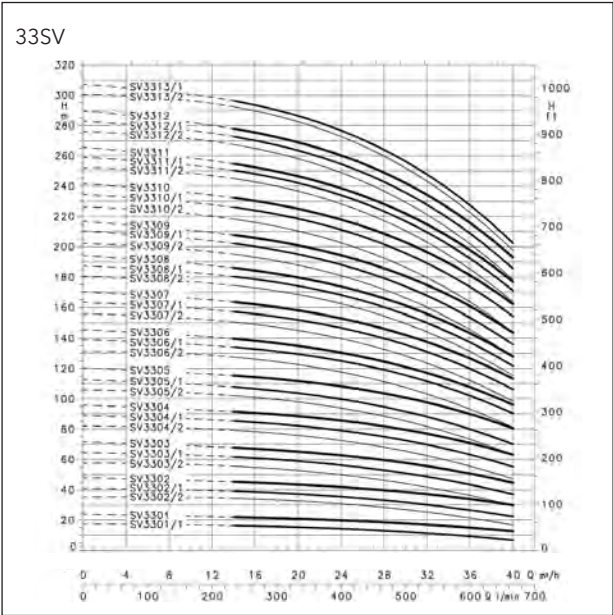
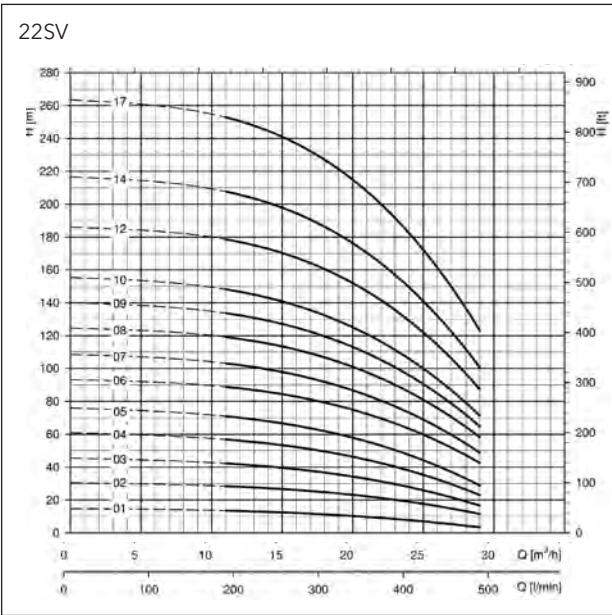
10SV



15SV



PERFORMANCE CURVES AT 2900 RPM





# Inline close coupled pump.

## FC series.

Reliable high performance pump with casing in high resistance cast iron and high strength impeller in laser welded 316L stainless steel.

### Applications

- Ideal for use with the Hydrovar pump mounted system controller. See pages 39-41
- Water supply
- Pressure boosting
- Tank filling
- Water transfer
- Wash down
- Irrigation

### Specifications

- Flows to 190 m³/hr
- Heads to 89 m
- Power up to 22 kW
- Mechanical seal in accordance with DIN 24960
- Liquid temperature limits: -10°C to 130°C (E versions), -20°C to 140°C (S versions)
- Maximum operating pressure: 12 bar, PN12 (E versions), PN16 (S versions)
- IP55 TEFC motor standard
- Standard three phase voltage up to 3kW 380-415V 4kW and over 380-415/600V

### Features

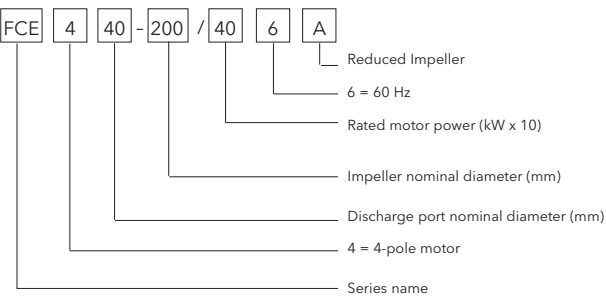
- Top pull out design
- AISI 316L replaceable wear rings fitted to impeller as standard
- Impeller: AISI 316L stainless steel laser welded technology for sizes up to 80-160. All other sizes in cast iron class 25B
- Four pole versions available
- Flanges in compliance with DIN 2532
- Counter flanges available
- Seal chamber air vent standard
- FCE - Extended shaft
- FCS - Stub shaft (subject to availability)



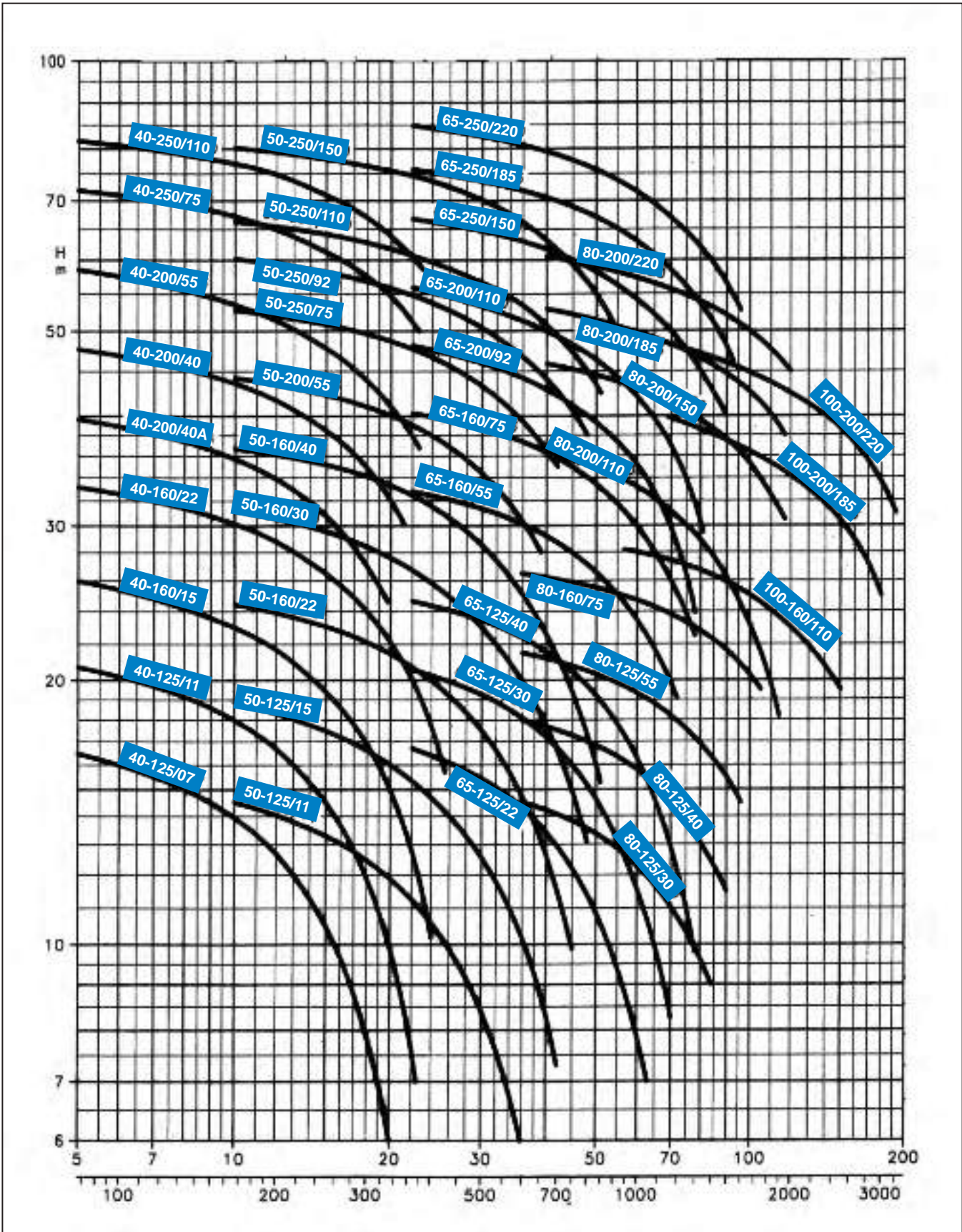
### MATERIAL TABLE

COMPONENT	MATERIAL
Pump body	CAST IRON CLASS 25 B
Impeller	AISI 316 L
Seal housing	CAST IRON CLASS 25 B
Adaptor	ALUMINIUM/CAST IRON CASTRON CLASS 25 B
Mechanical seal	CERAMIC/CARBON/EPDM
O-ring	EPDM
Wear ring	AISI 316 L
Counterwear ring	AISI 316 L
Shaft	AISI 316
Base	ALUMINIUM
Fill / drain plug	NICKEL PLATED BRASS

### IDENTIFICATION CODES



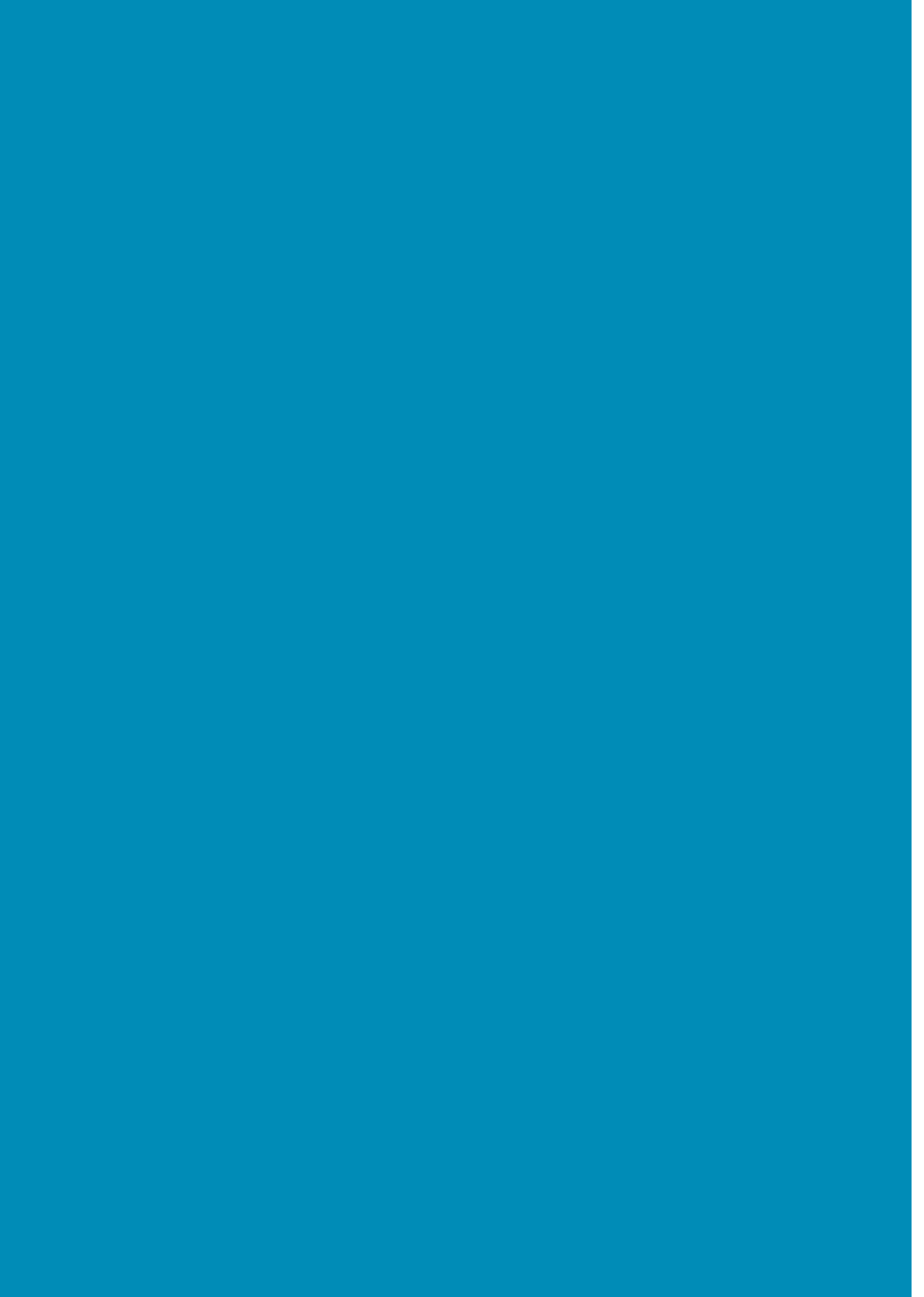
PERFORMANCE CURVES AT 2900 RPM FC SERIES



These family curves are for reference only. Final selection should be made from individual performance charts.



# End Suction Centrifugal Pumps



# Horizontal multistage pump.

## HM/HMS series.

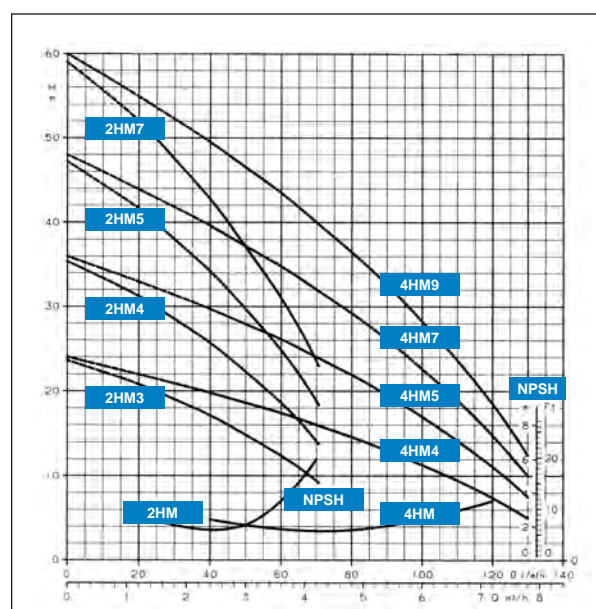
General purpose, multistage pumps particularly suitable for domestic and industrial service with clean liquids.

### Applications

- Water supply
- Water circulation and transfer
- Irrigation
- Pressure boosting

### Specifications

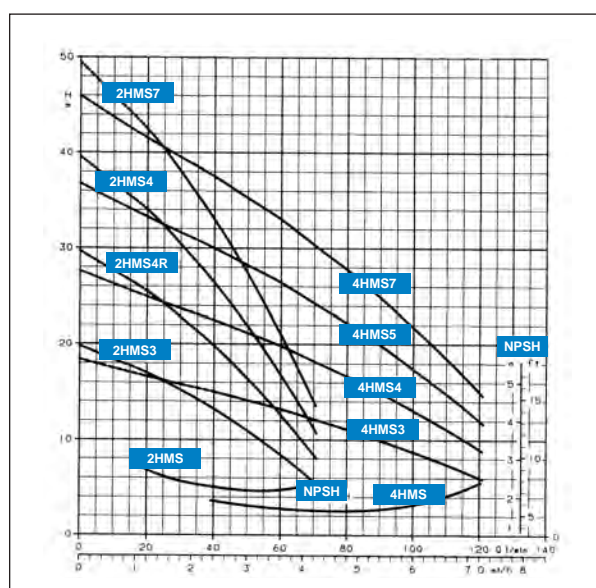
- Flows up to 130 l/min
- Heads up to 60m
- Power up to 0.9kW
- Maximum liquid temperature  
HMS 110°C/ HM 60°C
- Maximum working pressure 8 bar
- IP55 TEFC motor standard
- Class F insulation
- Voltages
  - Single phase: 220 - 240V / 50Hz
  - Three phase: 380 - 415V / 50 Hz
- Continuously rated



HM

### Features

- Back pull out design
- HMS Series liquid-end in all AISI 316L stainless steel construction
- HMS Series can be used with moderately aggressive liquids
- HM Series impellers in high efficiency not food-grade high impact thermoplastic
- Quiet operation
- Approved for use in drinking water to AS/NZS 4020



HMS

# Stainless steel close coupled end suction pump.

## CEA-CA series.

General purpose, single impeller (CEA) and dual impeller (CA) pumps suitable for domestic and industrial service.

### Applications

- Transfer of water and clean moderately aggressive fluids
- Water supply
- Water circulation
- Pressure boosting
- Irrigation
- Dairy services
- Vat wash

### Specifications

- Flows to 31 m<sup>3</sup>/hr
- Heads to 62m
- Power up to 3 kW
- Maximum liquid temperature  
Standard 85°C (CEA-CA)  
Optional 110°C (CEA V, CA-V)
- Maximum working pressure 8 bar, PN8
- IP55 TEFC motor standard
- Class F insulation
- Voltages
  - Single phase: 220 - 240V / 50Hz
  - Three phase: 380 - 415V / 50Hz
- Continuously rated

### Features

- Back pull out design
- Liquid-end in all stainless steel construction
- Single and twin impeller versions available

### Options

- Special 'N' versions available with wet end 316SS construction
- "V" available with all elastomers in FPM

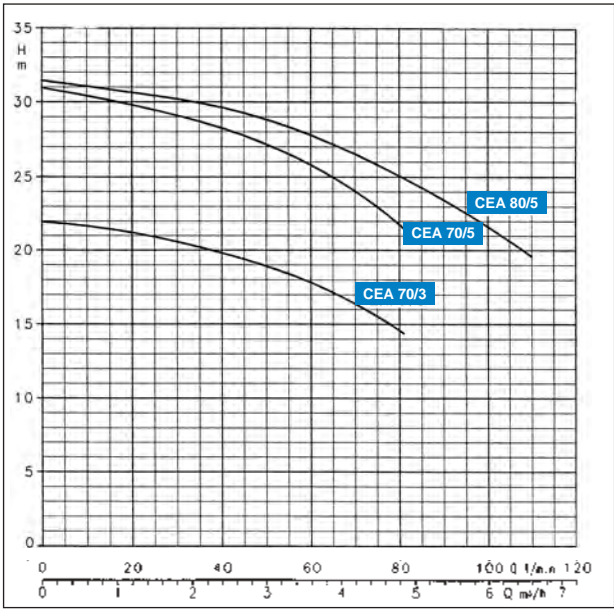


### MATERIAL TABLE

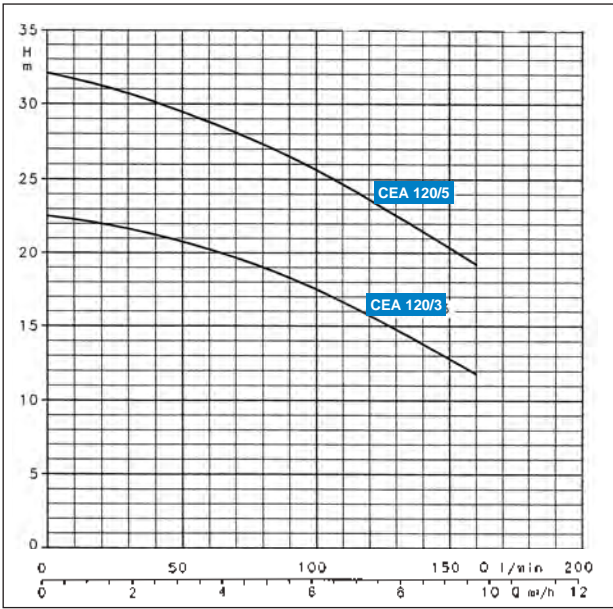
COMPONENT	MATERIAL
Pump body, flange, back plate, diffuser	STAINLESS STEEL (AISI 304 - DIN 1.4301)
Impeller	STAINLESS STEEL (AISI 304 - DIN 1.4301)
Shaft extension	STAINLESS STEEL (AISI 304 - DIN 1.4301)
Filling and drain plugs	STAINLESS STEEL (AISI 304 - DIN 1.4301)
Mechanical seal	CARBON/CERAMIC
O-rings	NBR



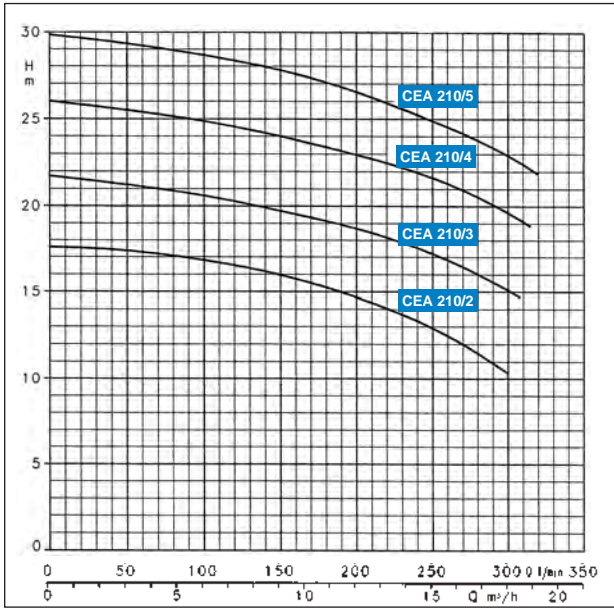
SINGLE IMPELLER VERSION - PERFORMANCE CURVES AT 2850 RPM



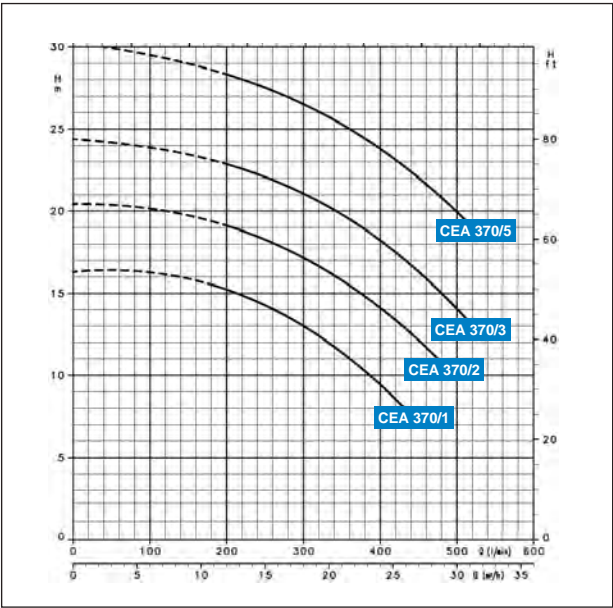
CEA70-CEA80



CEA120



CEA210



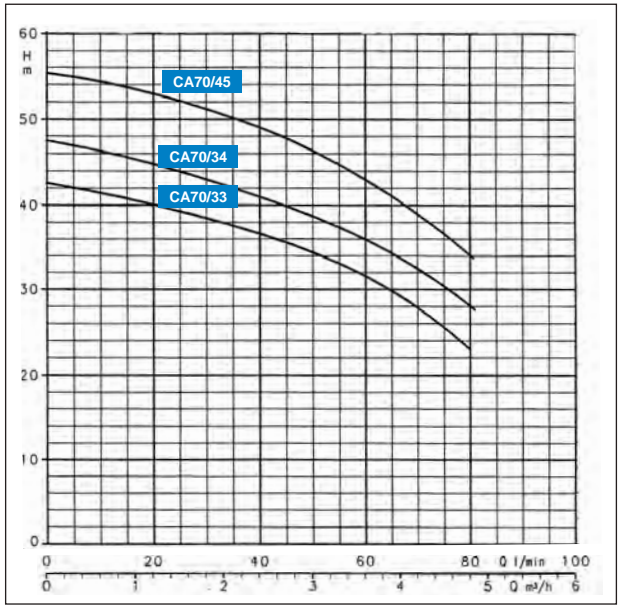
CEA370

MOTOR POWER - SINGLE IMPELLER

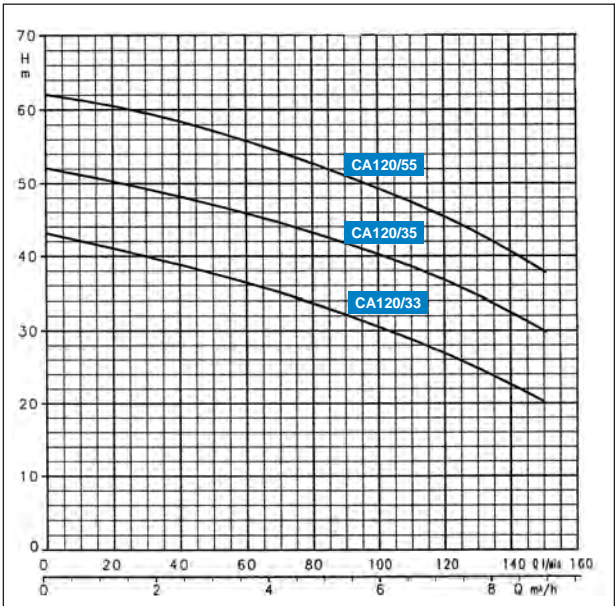
Single Phase	CEAM 70/3	CEAM 70/5	CEAM 80/5	CEAM 120/3	CEAM 120/5	CEAM 210/2	CEAM 210/3	CEAM 210/4	CEAM 210/5	CEAM 370/1	CEAM 370/2	CEAM 370/3
kW	0.37	0.55	0.75	0.55	0.9	0.75	1.1	1.5	2.2	1.0	1.5	1.85

Three Phase	CEA 70/3	CEA 70/5	CEA 80/5	CEA 120/3	CEA 120/5	CEA 210/2	CEA 210/3	CEA 210/4	CEA 210/5	CEA 370/1	CEA 370/2	CEA 370/3	CEA 370/5
kW	0.37	0.55	0.75	0.55	0.9	0.75	1.1	1.5	1.85	1.0	1.5	1.85	3

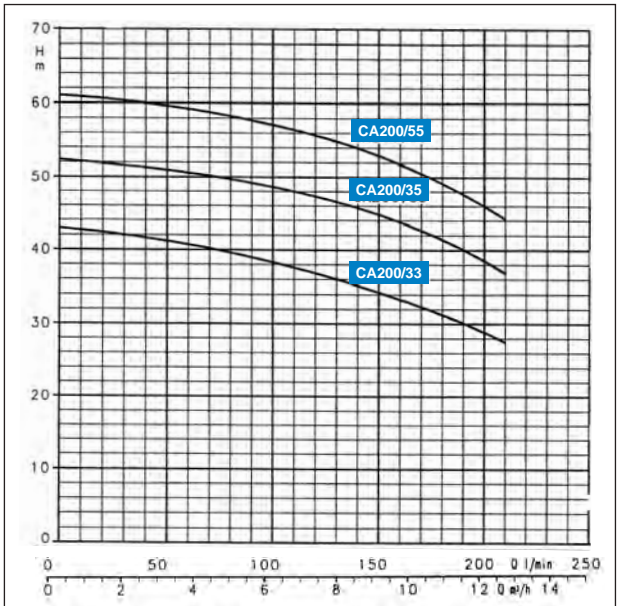
TWIN IMPELLER VERSION - PERFORMANCE CURVES AT 2850 RPM



CA70



CA120



CA200

MOTOR POWER - TWIN IMPELLER

Single Phase	CAM 70/33	CAM 70/34	CAM 70/45	CAM 120/33	CAM 120/35	CAM 120/55	CAM 200/33
kW	0.75	0.9	1.1	1.1	1.5	2.2	1.85

Three Phase	CA 70/33	CA 70/34	CA 70/45	CA 120/33	CA 120/35	CA 120/55	CA 200/33	CA 200/35	CA 200/55
kW	0.75	0.9	1.1	1.1	1.5	2.2	1.85	2.2	3.0

# Open impeller close coupled pump.

## CO series.

General purpose, open impeller pumps particularly suitable for industrial service with moderately aggressive liquids containing suspended solids.

### Applications

- Metal washing and surface treatment
- Produce washing in the packaging industry
- Washing equipment for the food industry
- Textile industry
- Industrial washing machines
- Commercial dishwashers

### Specifications

- Flows to 54 m<sup>3</sup>/hr
- Heads to 24m
- Power up to 3 kW
- Maximum liquid temperature  
-10°C to 120°C
- Maximum solid sizes:  
CO350 11mm, CO500 20mm
- Maximum working pressure 8 bar, PN8
- IP55 TEFC class F motor as standard
- Voltages
  - Single phase: 220 - 240V / 50Hz
  - Three phase: 380 - 415V / 50Hz

### Features

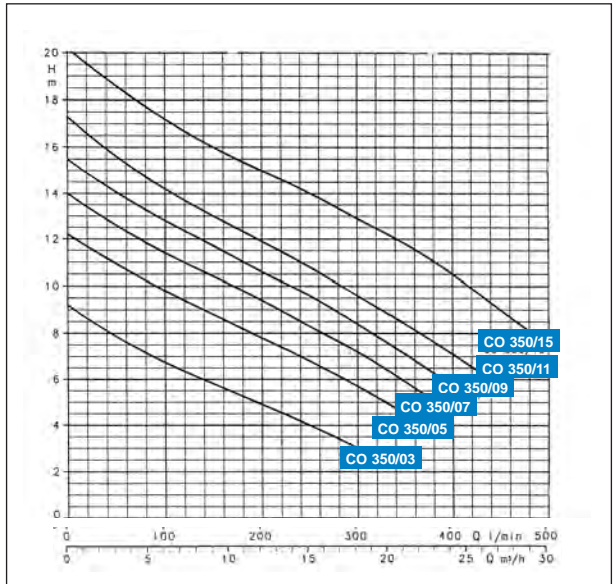
- All pump parts in contact with fluid made of AISI 316L stainless steel
- Threaded connections to pipe work, pump having an open impeller design for increased wear capabilities
- Special seal options available
- Also available as COF version, frame mount for 2 and 4 pole applications
- Additional open impeller design pumps, see SHO series on page 24

### MATERIAL TABLE

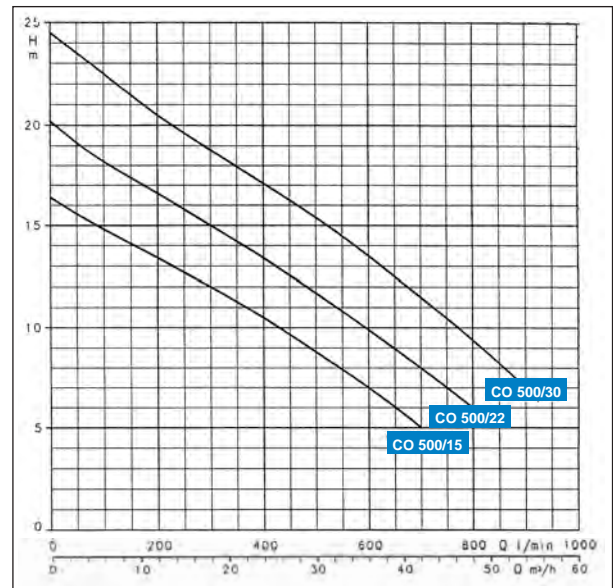
COMPONENT	MATERIAL
Pump casing, mechanical seal housing and impeller	STAINLESS STEEL (AISI 316L - DIN 1.4404)
Shaft	STAINLESS STEEL (AISI 316L - DIN 1.4404)
Filler and discharge plugs	STAINLESS STEEL (AISI 316L - DIN 1.4404)
Mechanical Seal (standard)	CERAMIC/CARBON
Mechanical Seal (option)	SIL.CARB./TUNGS.CARB
Elastomers	FPM



### PERFORMANCE CURVES AT 2850 RPM



CO 350



CO 500



# End suction close coupled pump.

## FH series.

Reliable high performance pump with casing in high resistance cast iron and high strength impeller in laser welded 316L stainless steel.

### Applications

- Ideal for use with the Hydrovar pump mounted system controller. See pages 39-41
- Water supply
- Pressure boosting
- Tank filling
- Water transfer
- Wash down
- Irrigation

### Specifications

- Flows to 700 m³/hr
- Heads up 95m
- Complies with EN733 / DIN 24255
- Mechanical seal in accordance with DIN 24960
- Liquid temperature limits
  - Standard: -10°C to 85°C
  - Optional: -20°C to 120°C
- Maximum operating pressure 12 bar, PN12
- Single phase 220-240 V available up to 2.2kW
- IP55 TEFC Motor Standard

### Features

- Back pull out design
- AISI 316L replaceable wear rings fitted to impeller as standard
- Impeller: AISI 316L stainless steel laser welded technology for sizes 32, 40, 50, 65-125. All other sizes in cast iron class 25B
- Four pole versions available
- Flanges in compliance with DIN 2532
- Counter flanges available

### Design Configuration

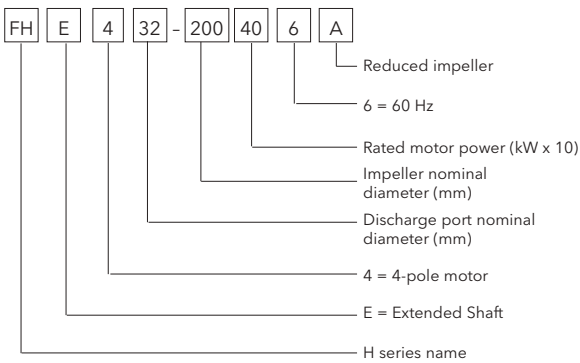
- FHE - Extended shaft
- FHS - Stub shaft (subject to availability)
- FHF - Frame mounted (subject to availability)
- Elastomers in component and NBR in material



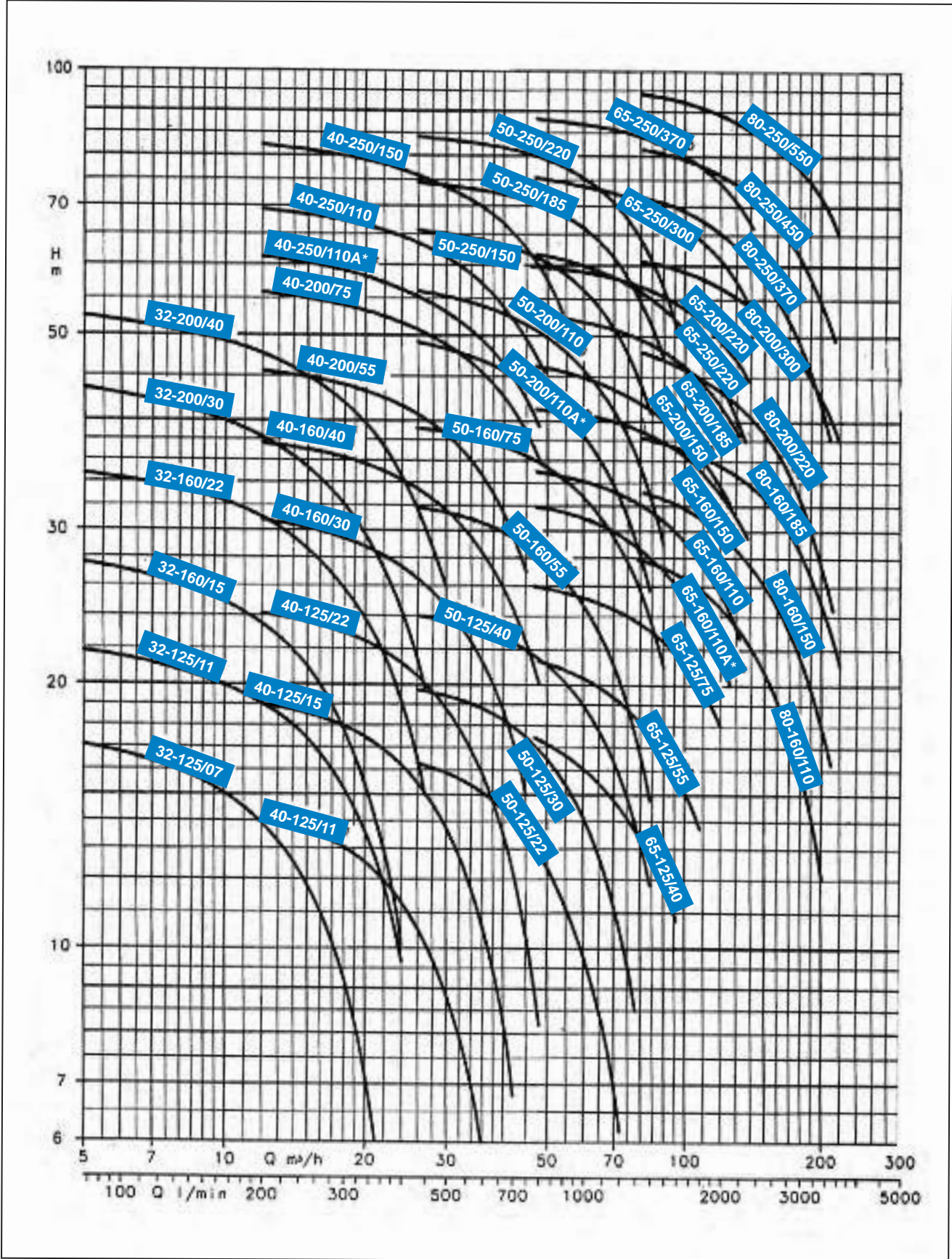
### MATERIAL TABLE

COMPONENT	MATERIAL
Pump body	CAST IRON CLASS 25B
Impeller 32, 40, 50, 65-125	AISI 316 L
Impeller 65-80	CAST IRON CLASS 25B
Seal housing	CAST IRON CLASS 25B
Adaptor	ALUMINIUM OR CAST IRON
Mechanical seal	CERAMIC/CARBON/NITRILE
Wear ring	AISI 316 L
Fill/drain plug	NICKEL PLATED BRASS

### IDENTIFICATION CODES



PERFORMANCES CURVES AT 2900 RPM FH SERIES



These family curves are for reference only. Final selection should be made from individual performance charts.



# Stainless steel end suction close coupled pumps.

## SH series.

A pump designed to handle hot, cold and moderately aggressive fluids with high strength, efficiency and reliability through the extensive use of laser welding technology.

### Applications

- Water supply and pressure boosting
- Transfer of moderately aggressive fluids for industrial processes
- Hot and cold water circulation for heating, ventilation and air conditioning systems
- Ideal for use with the Hydrovar pump mounted system controller. See page 39-41

### Specifications

- Flows to 240 m<sup>3</sup>/hr
- Heads to 110m
- Liquid temperature limitations  
Standard - 10°C to 120°C
- Maximum operation pressure 12 bar, PN12
- IP55 TEFC Class F motor as standard
- Standard voltage 380-415 V / 50 Hz

### Features & Options

- All pump parts in contact with fluid made of AISI 316L stainless steel
- Closed impeller design in either AISI 316L laser welded or cast CF8M construction
- Complies with EN 733, ex DIN 24255 and UNI-EN 1092-1
- Back pull out design for ease of service

### Design Configuration Options

- SHE - Extended motor shaft
- SHS - Stub shaft
- SHF - Frame mounted
- Four pole and special seal options available



SHS



SHE



SHF



SHO

## SHO series.

Open impeller version of the SH pump to handle fluids with small suspended particles or solids. Impeller in cast CF8M stainless steel, capable of passing solids of 20mm to 40mm depending upon model.

- Flows to 56 m<sup>3</sup>/hr
- Heads to 50m

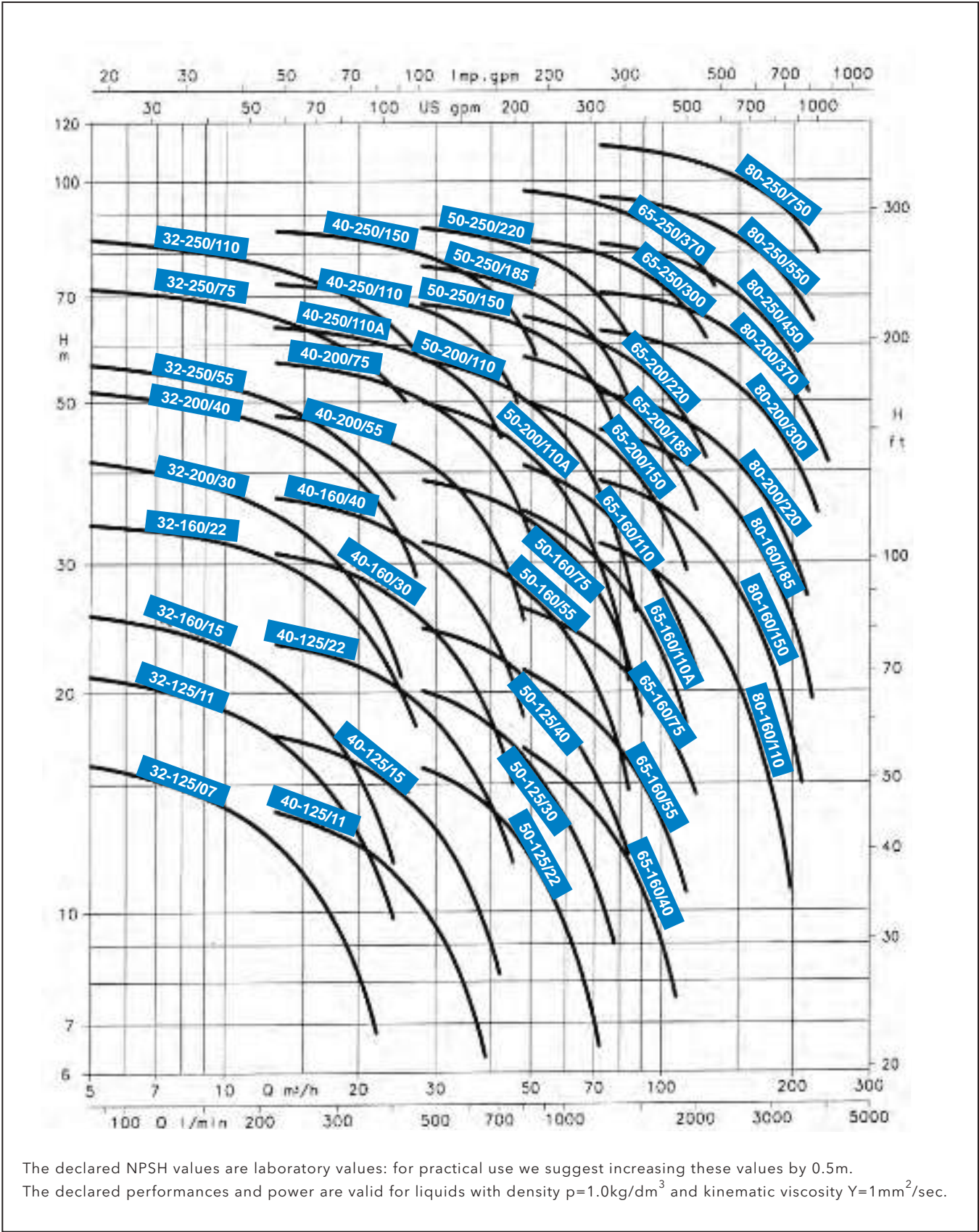
### Design Configuration Options

- SHOE - Extended motor shaft
- SHOS - Stub shaft
- SHOD - Double seal arrangement

### MATERIAL TABLE

COMPONENT	MATERIAL
Pump body	AISI 316 L
Impeller	AISI 316 L
Seal housing	AISI 316 L
Wear rings	AISI 316 L
Adaptor	ALUMINIUM OR CAST IRON CLASS 25 B
Mechanical Seal	CERAMIC/CARBON/FPM
O-ring	FPM
Fill drain plugs	STAINLESS STEEL
Shaft	AISI 316

PERFORMANCES CURVES AT 2900 RPM SH SERIES



These family curves are for reference only. Final selection should be made from individual performance charts.



# Circulators





# Wet rotor circulator.

## TLC-TLCB series.

Threaded wet rotor circulators for residential, light commercial heating and air conditioning systems.

### Features

- Reduced noise level thanks to shaft and bearings made of ceramic
  - Three speed with manual adjustment to optimise system performance
  - 'H' version for high flow applications
  - 'B' version is with bronze pump body
  - The pump is easily bled by simply opening the venting screw located in the center of the top cover
- |              |        |      |                     |       |                      |
|--------------|--------|------|---------------------|-------|----------------------|
| • TLC-TLCH   | Flows- | TLC  | 3m <sup>3</sup> /hr | TLCH  | 12m <sup>3</sup> /hr |
|              | Heads- | TLC  | 7m/hr               | TLCH  | 12m/hr               |
| • TLCB-TLCHB | Flows- | TLCB | 4m <sup>3</sup> /hr | TLCHB | 12m <sup>3</sup> /hr |
|              | Heads- | TLCB | 7m/hr               | TLCHB | 12m/hr               |
- Refer to Lowara technical catalogues for H series performances

### Specifications

- Port to port dimensions of: 130 / 150 / 180mm
- Single connection with threaded discharge ports of 1", 1¼", 1½", 2"
- Temperature of pumped fluid: +2°C to +110°C
- Insulation: Class H
- Protection: IP44
- Max Operating Pressure: 10 bar
- Voltage: 230V / 50Hz

### Options

- Insulation shell
- Pipe / Barrel Unions

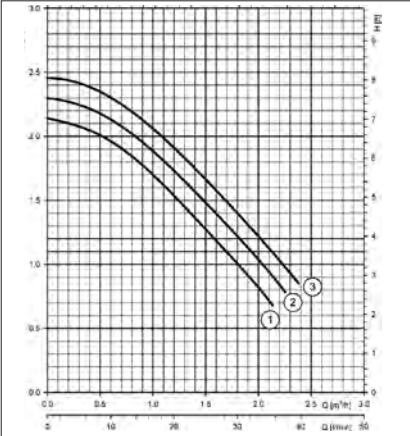


TLC-TLCH

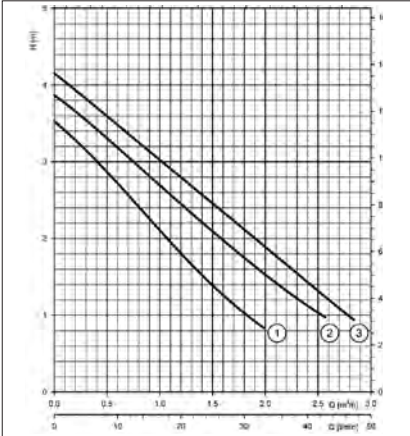


TLCB-TLCHB

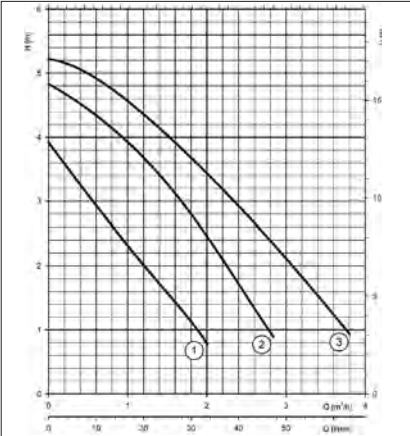
Performance Curves for TLC Series at 2900RPM



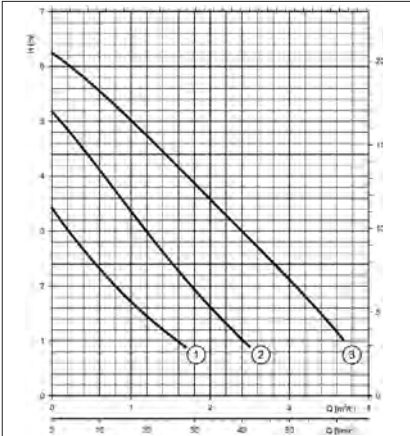
TLC 15 / 25 / 32 - 2.5



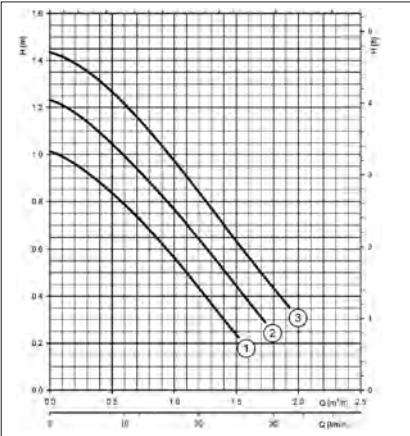
TLC 15 / 25 / 32 - 4



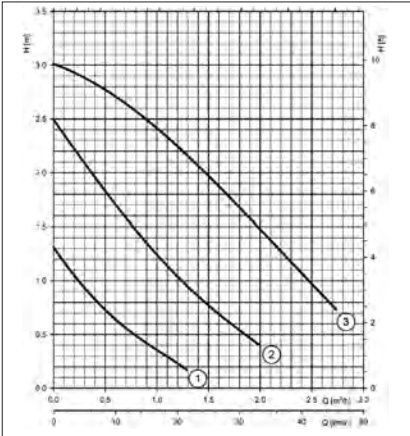
TLC 15 / 25 / 32 - 5



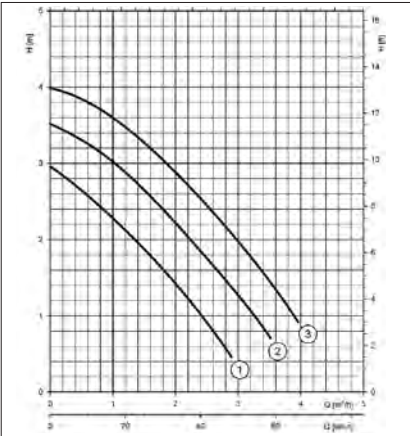
TLC 15 / 25 / 32 - 6



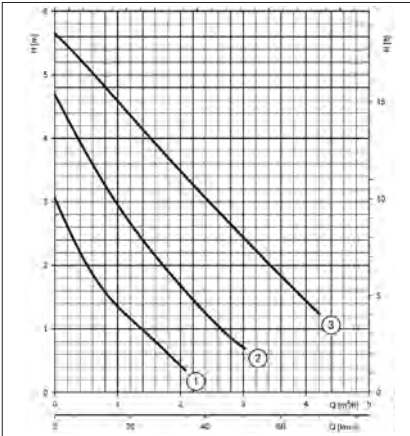
TLCB 15 / 20 / 25 - 1.5



TLCB 15 / 20 / 25 - 3



TLCB 15 / 20 / 25 - 4



TLCB 15 / 20 / 25 - 6

# Variable Speed Control



# Variable speed system controller.

## Hydrovar.

Hydrovar is a pump mounted variable speed, micro-processor based system controller, and was the world's first of its type to manage motor speed and hence match the pumps performance in numerous water applications. It is fully programmable on site and due to its unique modular design it can be mounted directly on centrifugal pumps with standard IEC motors. Available in Master, Single or Basic variants, ensuring the correct solution for your application.

### Applications

- Constant pressure water supply for residential, civil and commercial buildings
- Constant pressure boosting and transfer for irrigation and turf water systems
- Constant temperature for heating & cooling applications
- Control of tank or reservoir levels with input from probes or level transducer
- Flow control for when a constant flow rate is required against varying system pressures
- Wall mounted options to control submersible or remote pump applications

### Specifications & Features

- Master Hydrovar – all inclusive for single or multipump applications
- Single Hydrovar – for single pump applications only
- Basic Hydrovar – for single or multipump slave applications
- Power 1.1kW to 22kW pump mounted, for higher kW use HYDROVAR SMART
- Single phase 1.1kW to 2.2kW / Three phase 2.2kW - 22kW
- Temperature limitations; 1°C to 40°C, de-ratable to 50°C
- IP55 enclosures as standard
- Standard ModBus Protocol for easy integration into BMS systems
- Inbuilt sensing monitors for under and over voltage, overload, drive and motor over temperature, no flow and transducer failure
- Real time clock for error logging
- Full status menu for easy diagnostics
- Simple menu structure for easy commissioning or adjustment



HYDROVAR MASTER

### Energy Savings

Varying the speed of a pump ensures maximum efficiency and when the demand is low, you only consume the power that is required for the duty at hand. In multiple pump applications, only the number of pumps required to deliver the duty will ever run at the most efficient speed. This contributes to significant reductions in energy usage. Additionally when using multiple Hydrovars, due to the "soft start" nature of the technology and optimized speeds, the mechanical stresses are lowered thus giving additional savings in servicing costs. Both of these savings contribute to substantial reduction in Life Cycle Costs.

### Retro Fitting

Hydrovar can be directly mounted onto virtually any model centrifugal pump motor, or wall mounted to control the motor remotely as for use in submersible pump applications. Thus an existing pump or pumping system can easily be converted to benefit from having Hydrovar control.



# Hydrovar system.

## Benefits of using Hydrovar

- Maximize system performance
- Reduce energy consumption
- Reduce starting currents
- Eliminate bypass lines, pressure control and metering valves
- Eliminate pressure pulsation and water hammer
- Increase reliability and service life
- Space saving
- Built-in friction-loss compensation

### 1. Constant Pressure (figure 1)

In this mode, the Hydrovar varies the pump speed as demand increases or decreases to maintain your required setpoint. In order to set the Hydrovar for this application, the pump should be selected so that the maximum pressure and flow required by the system is on or below the full speed performance curve of the pump (usually 2950 RPM).

### 2. Multi-pump Applications (figure 2)

- Full VFD System

Up to 8 Hydrovar Master controlled pumps can be operated together in parallel. No other control panels are necessary. The Hydrovar units are wired together through their RS485 interfaces. The microprocessors monitor the activity in each Hydrovar and pump to adjust the overall system performance. Auto changeover of lead pump is possible to ensure even wear throughout the system. This system offers full multiple redundancy.

- Master / Basic VFD System

A combination of Master and Basic Hydrovars can also be used to create a system. A total of 8 drives can be coupled in any configuration with the lead drive being a Master drive. The microprocessor of the lead Master Hydrovar will control the switching on/off, the speed of the Basic Hydrovars, and the rotation of lead pumps. No other control panels are necessary. The Hydrovar units are wired together through their RS485 interfaces.

- Partial VFD System

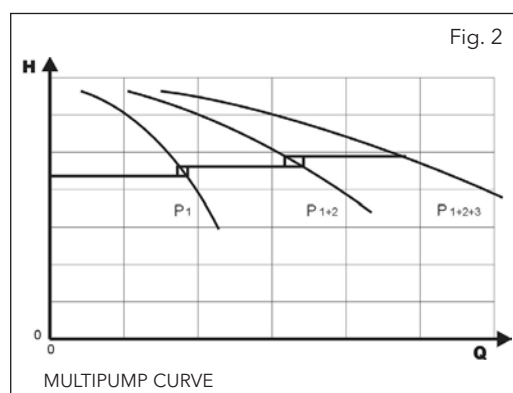
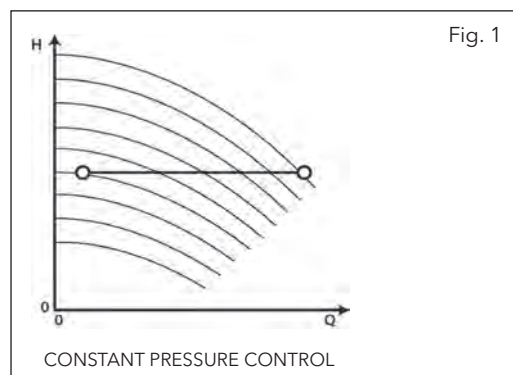
A relay card can be added to a Master Hydrovar which allows the control of an additional 5 fixed speed pumps. The Master drive will control the switching on/off of the fixed speed pumps. An ancillary control panel will be required to house the switch-gear for each pump.



HYDROVAR TRIPLE BOOSTER PACKAGE

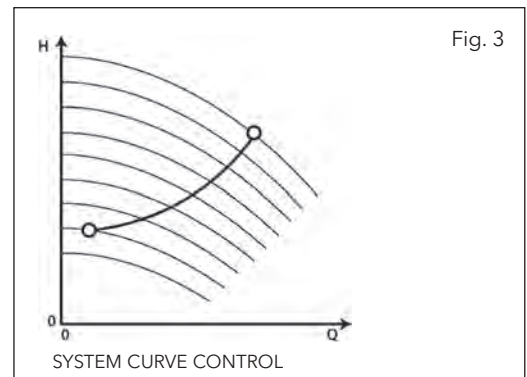


HYDROVAR ON SINGLE PUMP



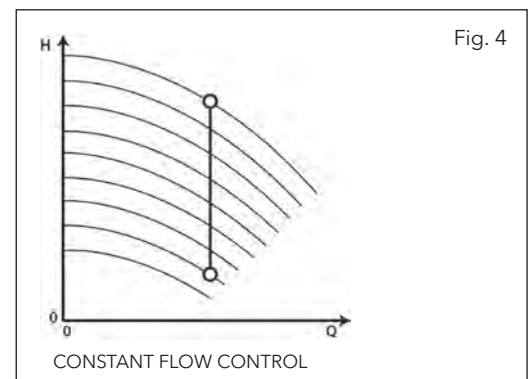
### 3. Compensation for system losses (figure 3)

The Hydrovar can increase the discharge pressure of the pump as the flow increases to compensate for the added friction losses in the system. This allows the pumps to “follow the system curve”. To do this, the operator enters the percentage increase in discharge pressure required at the maximum speed and flow. In addition, the operator selects the speed at which this increased pressure will start. The pump should be selected so that the maximum flow is on or below the pump curve. An alternative method is to use a differential pressure transducer on a circulator suction and discharge. The Hydrovar will automatically compensate for system pressure drops.



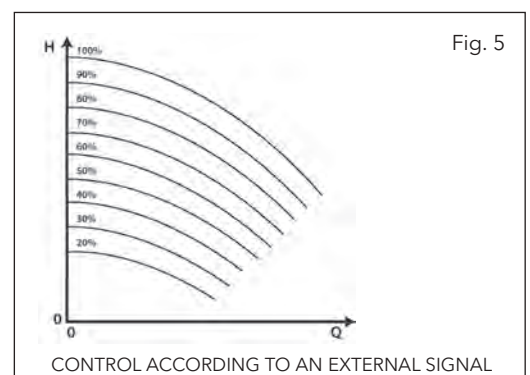
### 4. Constant flow (figure 4)

This method allows the operator to set a required flow in either circulator or process applications. The actual flow value can be measured either by means of a flow sensor or by using an orifice plate in combination with a differential pressure transducer. As demand changes the Hydrovar increases pressure to maintain flow. The pump should be selected so that the flow required is near to the maximum efficiency point of the pump and the maximum pressure required is within the scope of the pump performance at full speed.



### 5. Hydrovar operated in Actuator mode (figure 5)

In actuator mode the Hydrovar will vary pump speed in accordance to a 4 to 20 milliamp external source. In this case the built in controller system is not utilised. Other control methods such as constant level & constant temperature control are also possible.



HYDROVAR 15KW TO 22KW

# Universal pump controller & booster system.

## SD60 series.

Designed to control up to 6 VFD driven pumps on one standard control module, SD60 provides flexibility and eliminates the need for extra control panels or circuitry for variable speed systems. SD60 is a cost-effective addition to system designs and is ideal for high level installations that require safety, reliability, and optimum performance.

### Application

- Water supply applications
- Irrigation systems

### Specifications & Features

- Pumps can be sequenced based on flow, temperature, level or pressure. Pumps are approximately timed to avoid water hammer
- Intuitive OLED interface with graphic display, PID logic controller, and cap-sense key pads back lit for easy reading. Guided start-up menus with touch-sensitive screen for easy programming and avoids wear-and-tear over time. Operators can obtain, at any given time, a summary of the status of the system and decide what maintenance is required
- Multi-language support
- Cyclical exchange of starting of the variable-speed pumps and of the fixed-speed pumps for uniform wear of all the installed pumps
- Equipped as standard with 2 optoinsulated serial interfaces, for connection with the most widespread BMS supervision and control systems or with applications developed by third parties. Standard communication protocols are ModBus RTU and CAN. Interface with BacNet™, Johnson Metasys®, TCP/IP, LonWorks®, and Trend is also possible by means of optional external modules, available on request
- Energy consumption can be controlled through a distribution network analyzer (kWh, offered as an option) linked with the SD60 as an external module
- Cascade and speed control



SD60 PUMP CONTROLLER



VARISPEED BOOSTER SYSTEM  
WITH SD60

# Pumps with integrated variable speed drive.

## Teknospeed series.

The Teknospeed is a range of variable speed electric pumps and booster units for constant pressure applications having inbuilt frequency drives.

### Applications

- Household and commercial water supply
- Heating and washing systems
- Irrigation and turf
- Fountains

### Specifications

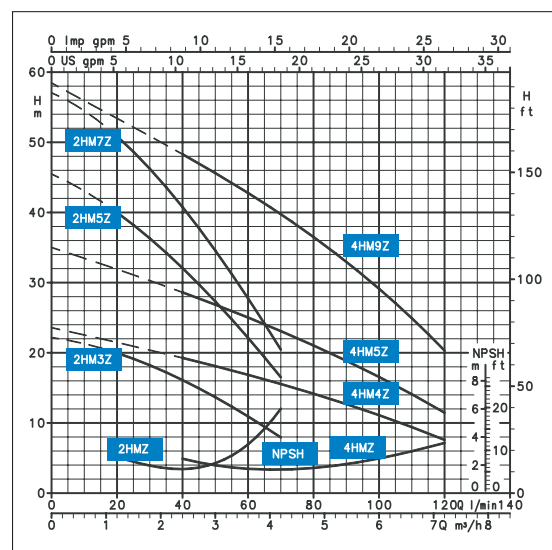
- Delivery up to 10 m<sup>3</sup>/hr
- Heads up to 75m
- Single phase
- Motor ratings of 0.37kW to 1.1kW
- Maximum liquid temperature 40°C

### Features

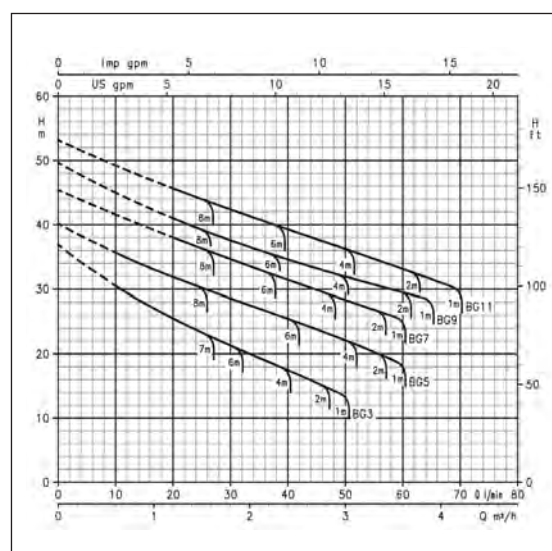
- Variable speed operation assures constant pressure at outlets
- Energy saving with frequency converter controlling power use
- Low maintenance, extended pump life
- Easy to install and silent running
- Protection against dry running available
- Twin pump units for higher flow applications
- Teknospeed also available on C and BG Series pumps



TEKNOSPEED & CA PUMP



TKS / HM SERIES



TKS / BG SERIES





# Borehole Pumps & Motors



# 4" submersible borehole pump.

## MSP series.

The MSP Series is the cost effective option that is designed to meet performance requirements in the most demanding applications. Compact, sturdy and designed to be extremely reliable.

### Applications

- Water supply
- Irrigation systems
- Pressure boosting
- Stock watering
- Mine dewatering

### Specifications

#### PUMP

- Delivery up to 21 m<sup>3</sup>/hr
- Head up to 340m
- Maximum diameter for complete pump/motor (cable cover included): 99mm
- Maximum sand handling 150gm/m<sup>3</sup>
- 1MSP - 2MSP - 4MSP - 6MSP versions 1¼" delivery outlet
- 8MSP - 12MSP - 16MSP versions 2" delivery outlet
- Motor power from 0.25 to 7.5 kW
- Water temperature 0°C to +35°C

#### MOTOR

- Single-phase version: 230-240V, 50 Hz  
2 poles (2850 RPM) from 0.25 to 2.2 kW
- Three-phase version: 380-415V, 50 Hz  
2 poles (2850 RPM) from 0.37 to 7.5 kW

### Features

#### PUMP

- Abrasion resistant construction. The front wear plate, combined with the floating impeller, ensures optimum resistance to abrasion
- A non-return valve is fitted in the discharge to ensure no back flow or water hammer to the pump, thus safeguarding impellers, diffusers and motor
- The upper and lower supports are made of precision cast lead free bronze material for strength and durability



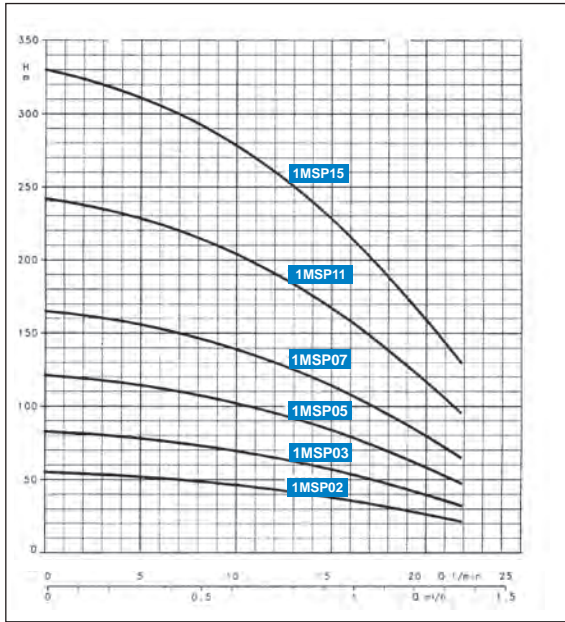
### MATERIAL TABLE

COMPONENT	MATERIAL
Sleeve, cable cover and grid	(AISI 304) STAINLESS STEEL
Shaft, diffuser casing joint	(AISI 304) STAINLESS STEEL
Upper bracket & lower bracket	PRECISION LEAD FREE BRONZE
Impeller and diffuser	TECHNOPOLYMER
Upper bearing	POLYURETHANE
Valve packing	NITRILE RUBBER

### MSP SERIES MOTOR SELECTION CHART

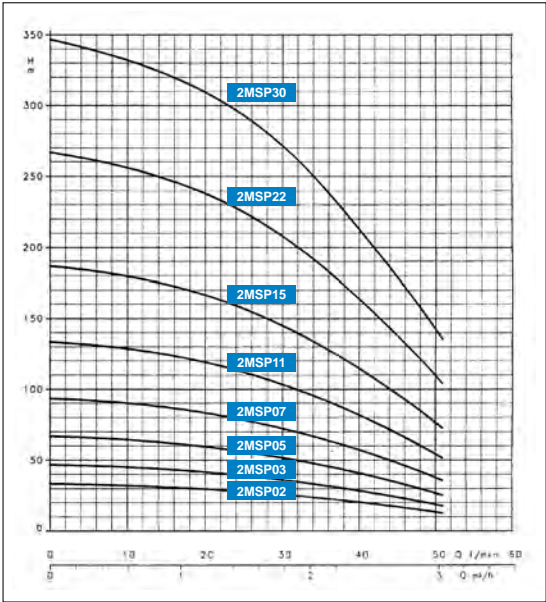
Series Model	Motor Size kW											
	0.25	0.37	0.55	0.75	1.10	1.50	2.20	3.00	4.00	5.50	7.50	
1MSP	02	03	05	07	11	15						
2MSP	02	03	05	07	11	15	22	30				
4MSP		03	05	07	11	15	22	30	40			
6MSP			05	07	11	15	22	30	40	55		
8MSP				07	11	15	22	30	40	55	75	
12MSP						15	22	30	40	55	75	
16MSP							22	30	40	55	75	

### PERFORMANCE CURVES AT 2900 RPM

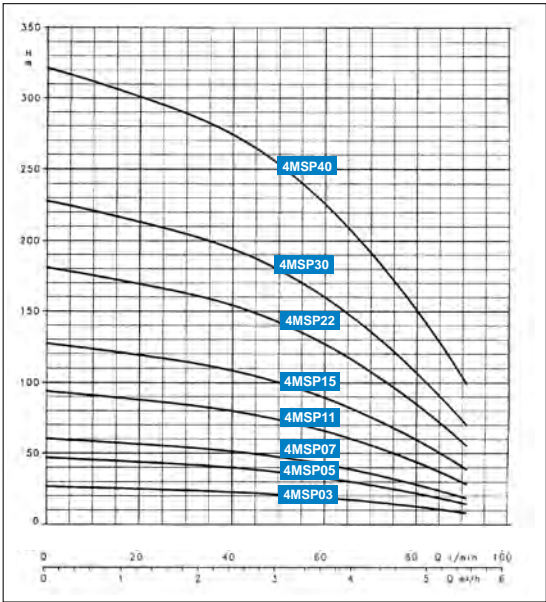


1MSP

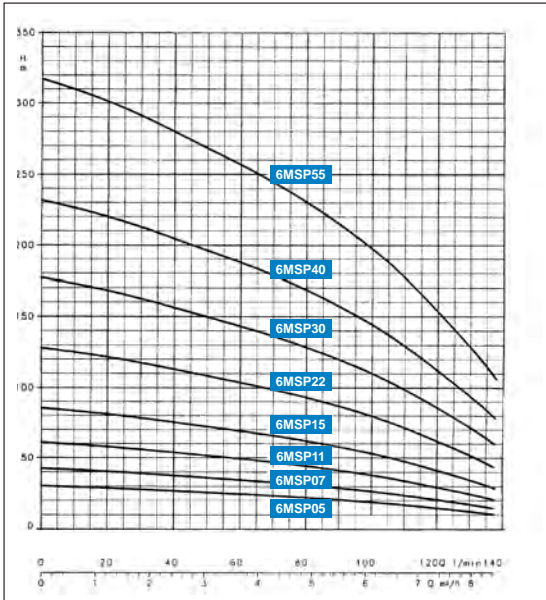
PERFORMANCE CURVES AT 2900 RPM



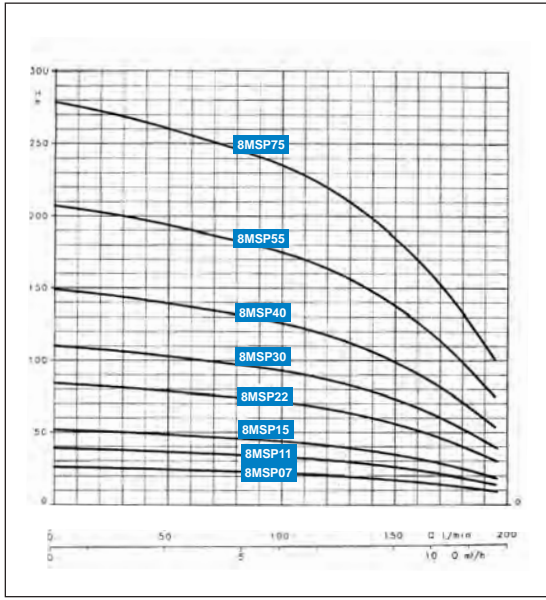
2MSP



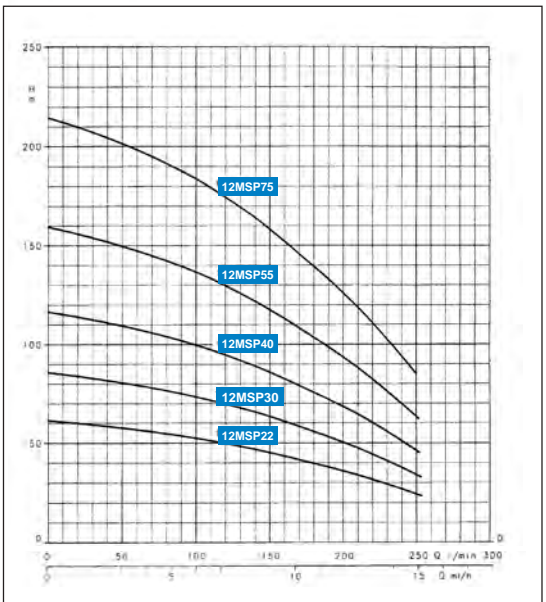
4MSP



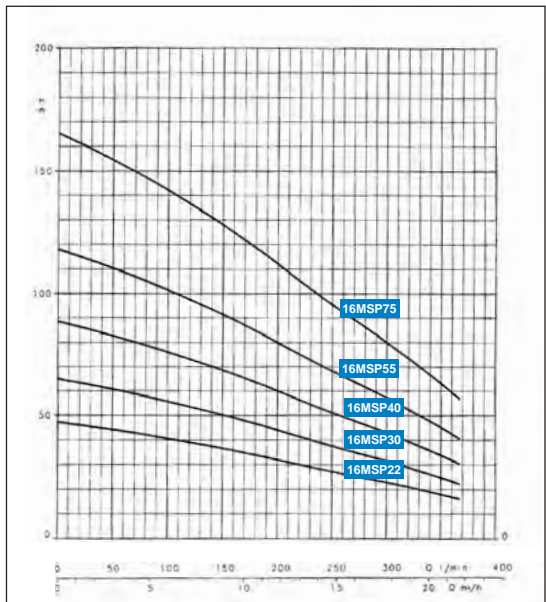
6MSP



8MSP



12MSP



16MSP

GS series.

The GS Series pumps are a new concept in bore hole pumps. Compact and almost maintenance-free, they are designed to be extremely reliable. They are resistant to oxidation since all the metal parts are in stainless steel. Motor supports and pump discharge are made from precision cast stainless steel.

Applications

- Water supply
- Irrigation systems
- Pressure boosting
- Stock watering
- Mine dewatering

Specifications

PUMP

- Delivery up to 21 m³/hr
- Head up to 340m
- Maximum diameter for complete pump/motor (cable cover included): 99mm
- Maximum sand handling 150gm/m³
- 1GS - 2GS - 4GS - 6GS versions 1¼" delivery outlet
- 8GS - 12GS - 16GS versions 2" delivery outlet
- Motor power from 0.25 to 7.5 kW
- Water temperature 0°C to +35°C

MOTOR

- Single-phase version: 230-240V, 50 Hz, 2 poles (2850 RPM) from 0.25 to 2.2 kW
- Three-phase version: 380-415V, 50 Hz, 2 poles (2850 RPM) from 0.37 to 7.5 kW



Features

PUMP

- Abrasion resistant construction. The front wear plate, combined with the floating impeller, ensures optimum resistance to abrasion
- A non-return valve is fitted in the discharge to ensure no back flow or water hammer to the pump, thus safeguarding impellers, diffusers and motor
- The upper and lower supports are made of precision-cast stainless steel, ensuring resistance to corrosion, durability and sturdy coupling to the motor

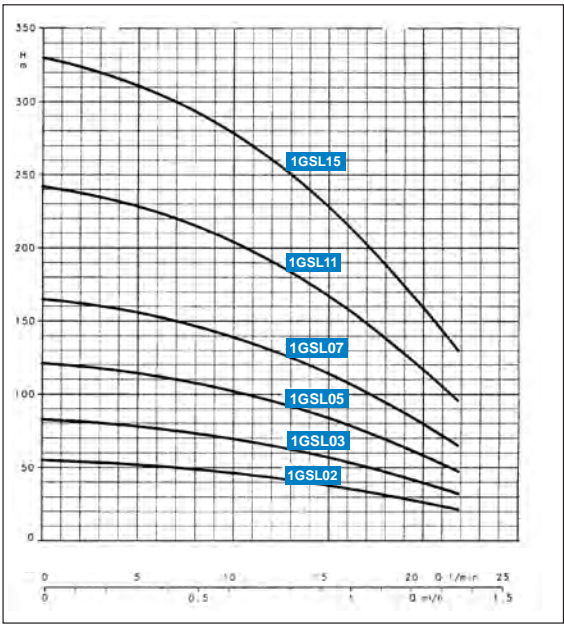
MATERIAL TABLE

COMPONENT	MATERIAL
Sleeve, cable cover and grid	(AISI 304) STAINLESS STEEL
Shaft, diffuser casing joint	(AISI 304) STAINLESS STEEL
Upper bracket and lower bracket	(AISI 303) STAINLESS STEEL PRECISION CASTING
Impeller and diffuser	TECHNOPOLYMER
Upper bearing	POLYURETHANE
Valve packing	NITRILE RUBBER

GS SERIES MOTOR SELECTION CHART

Series Model	Motor Size kW										
	0.25	0.37	0.55	0.75	1.10	1.50	2.20	3.00	4.00	5.50	7.50
1GS	02	03	05	07	11	15					
2GS	02	03	05	07	11	15	22	30			
4GS		03	05	07	11	15	22	30	40		
6GS			05	07	11	15	22	30	40	55	
8GS				07	11	15	22	30	40	55	75
12GS						15	22	30	40	55	75
16GS							22	30	40	55	75

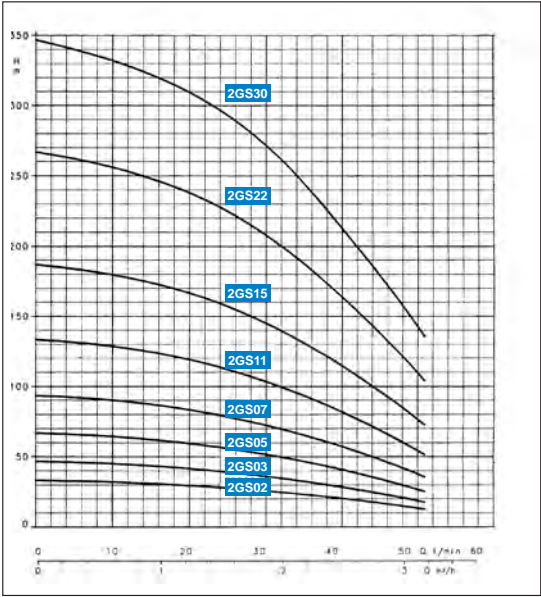
PERFORMANCE CURVES AT 2900 RPM



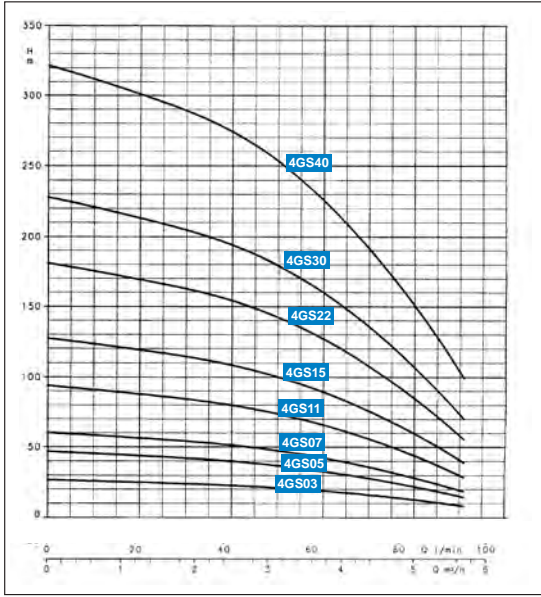
1GS



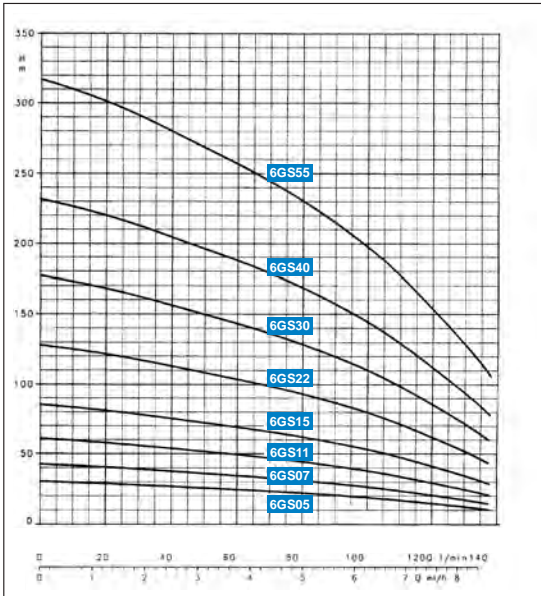
PERFORMANCE CURVES AT 2900 RPM



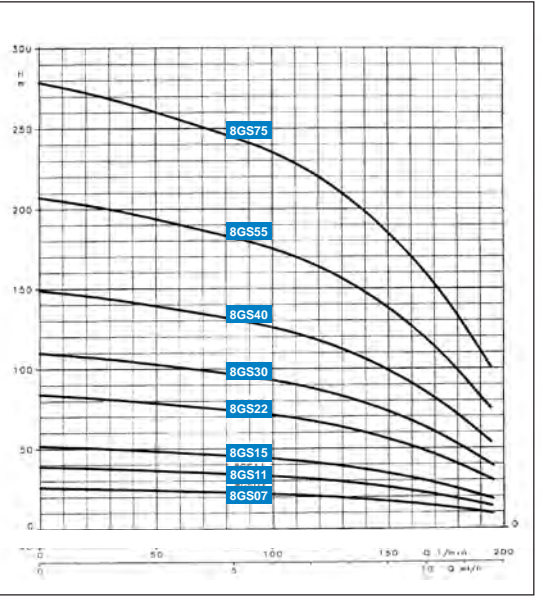
2GS



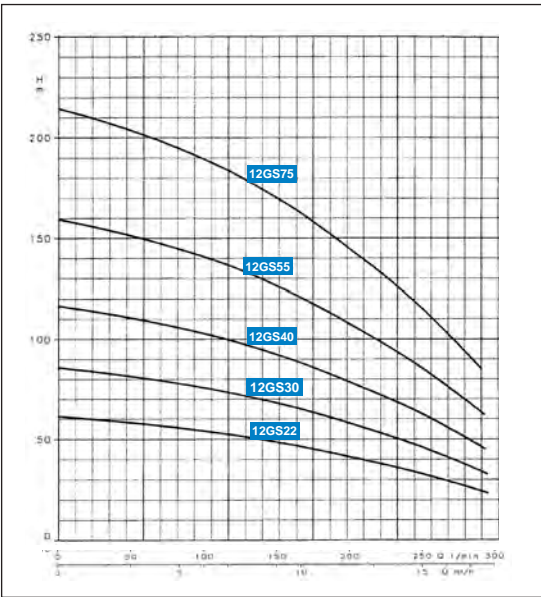
4GS



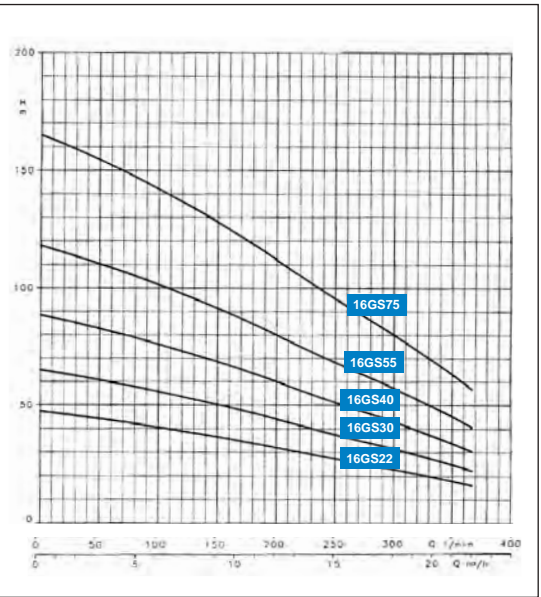
6GS



8GS



12GS



16GS

# 6" submersible borehole pump.

## Z6-ZN6 series.

Durable and lightweight multistage centrifugal submersible pumps for clean water bore hole pumping. Available as standard in 304SS or as ZN in 316SS construction with low maintenance and high efficiency design.

### Applications

- Water supply
- Irrigation systems
- Pressure boosting
- Mine dewatering

### Specifications

#### PUMP

- Delivery up to 78 m<sup>3</sup>/hr
- Head up to 700m
- Maximum overall diameter (cable cover included)
  - 144mm standard version
  - 195mm high pressure version
- Maximum solids 100gm/m<sup>3</sup>
- Delivery outlet:
  - 2½" for Z612 - Z616 - Z622 series
  - 3" for Z631 - Z646 - Z660 series
- Water temperature 0°C to +60°C

#### MOTOR

- 4",6",8" NEMA motor mounting options on certain sizes
- Power requirements from 0.55kW to 55kW
- Water temperature limited to motor
- Available in all either standard, 316SS or duplex construction

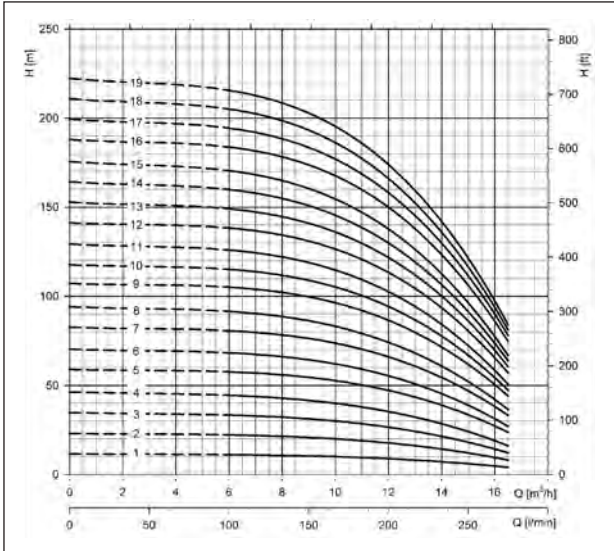
### Features

- Sturdy and lightweight, easy to disassemble and corrosion-resistant
- Impellers and diffusers are made of stainless steel
- Stainless steel supports
- Stainless steel non-return valve
- Upper bearing of tungsten carbide
- Shaft bearings of special polyurethane
- Elastomers EPDM
- Available in all 316SS construction

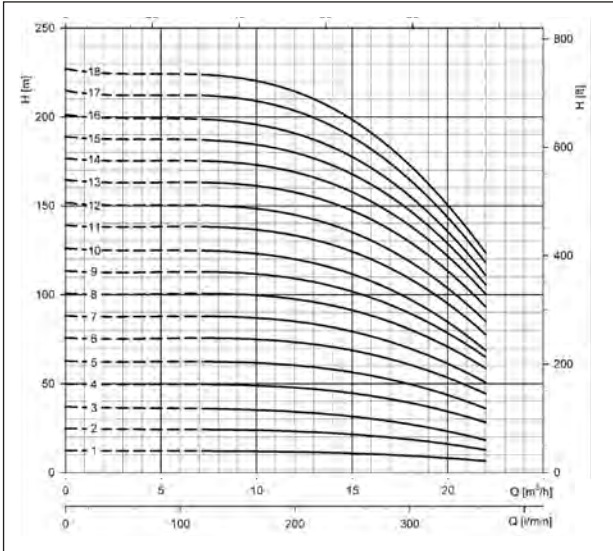




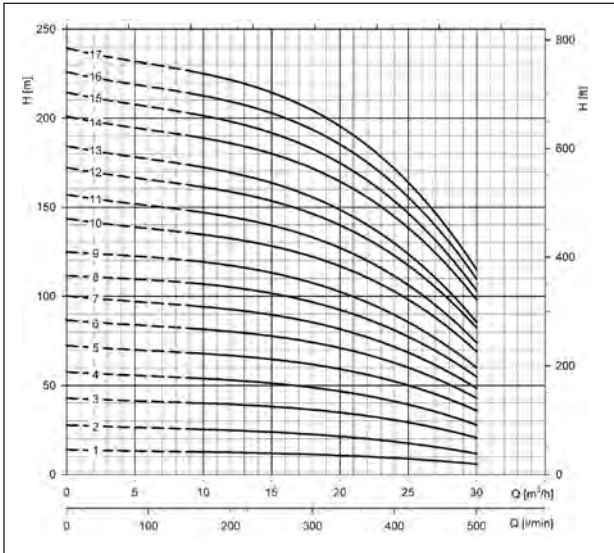
PERFORMANCE CURVES AT 2900 RPM



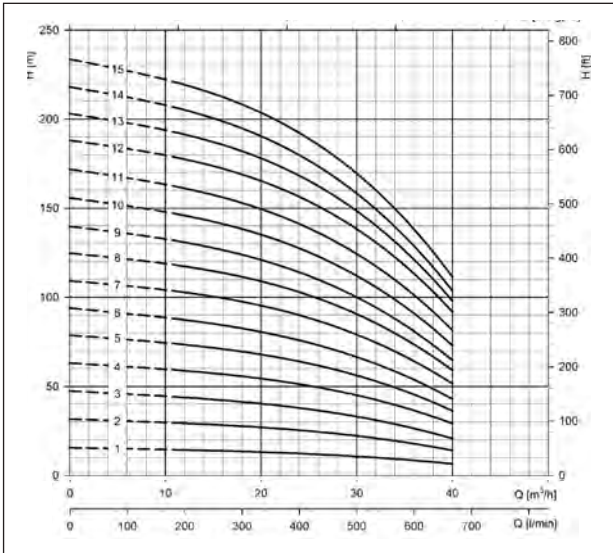
Z612 1 to 19 Stages



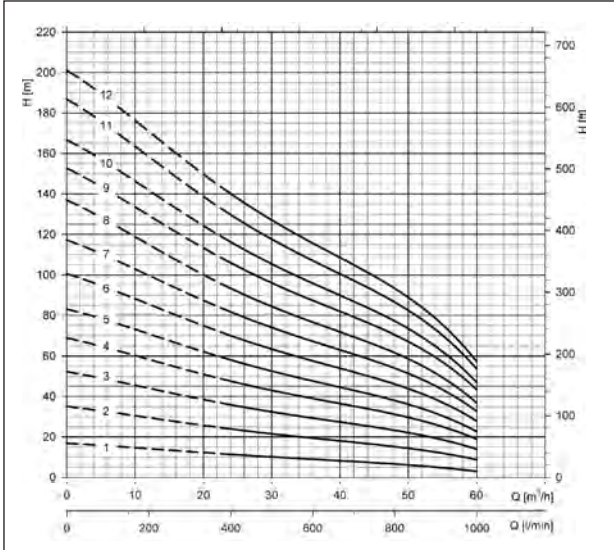
Z616 1 to 18 Stages



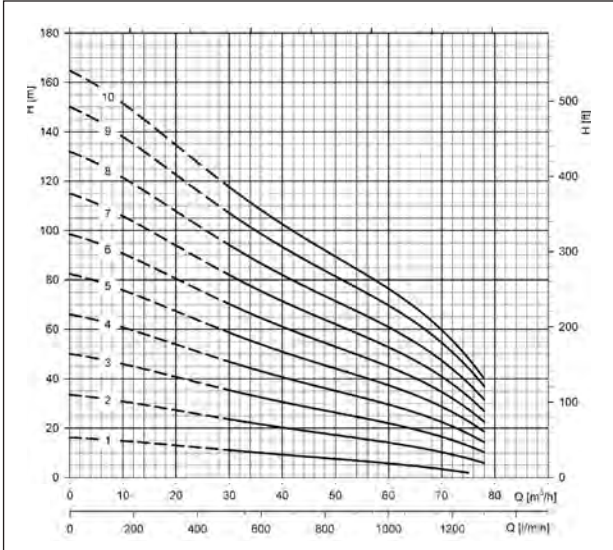
Z622 1 to 17 Stages



Z631 1 to 15 Stages



Z646 1 to 12 Stages



Z660 1 to 10 Stages

For ease of display, only the first grouping of performance stages shown.  
Refer to the comprehensive Z Series catalogue for higher stage performance curves.

	Z612	Z616	Z622	Z631	Z646	Z660
Max Stages / Max Head	60 / 690m	56 / 700m	50 / 674m	43 / 628m	37 / 437m	32 / 380m

# 8", 10" & 12" submersible borehole pump.

## Z8-ZR8, Z10-ZR10, Z12-ZR12 series.

This series of robust and light weight submersible pumps are highly efficient and designed for ease of servicing. Optimized hydraulic design with high quality castings. Standard manufacture in cast 304 Stainless Steel equivalent to assist operation in corrosive environments. Available also in "R" as cast Duplex Stainless Steel for more corrosive applications.

### Applications

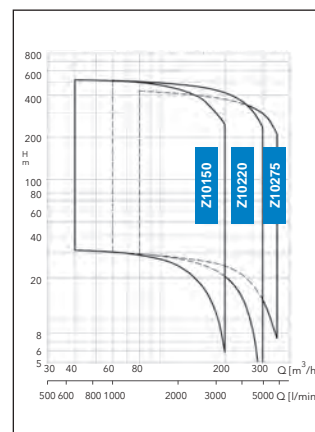
- Water supply from deep bores, rivers and reservoirs
- Pressure boosting and water distribution in civil and commercial systems
- Firefighting and washing systems
- Dewatering and water level control
- Irrigation for crop and turf

### Specifications

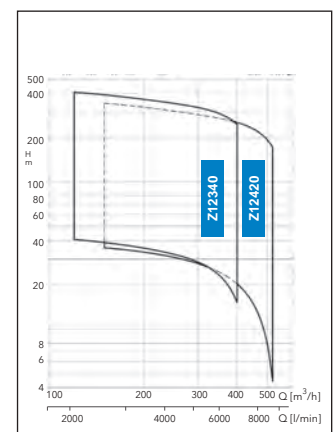
- Flows: Z8 180m<sup>3</sup>/hr, Z10 350m<sup>3</sup>/hr, Z12 520m<sup>3</sup>/hr
- Heads: Z8 to 550m, Z10 to 545m, Z12 to 450m
- Motor fitting to 6" & 8" NEMA, and 10" & 12" with keyed shaft
- Pump Max OD:
  - Z8 one cable guard; 198mm, with two cable guards; 204mm
  - Z10 with one cable guard; 255mm, with two cable guards; 271mm
  - Z12 with one cable guard; 290mm, with two cable guards; 302mm
- Pump Discharges: Z8 of 5", Z10 of 6", Z12 of 8"
- Max permissible suspended solids of 50gm/m<sup>3</sup>, up to 100g/m<sup>3</sup> if wear tolerated

### Features

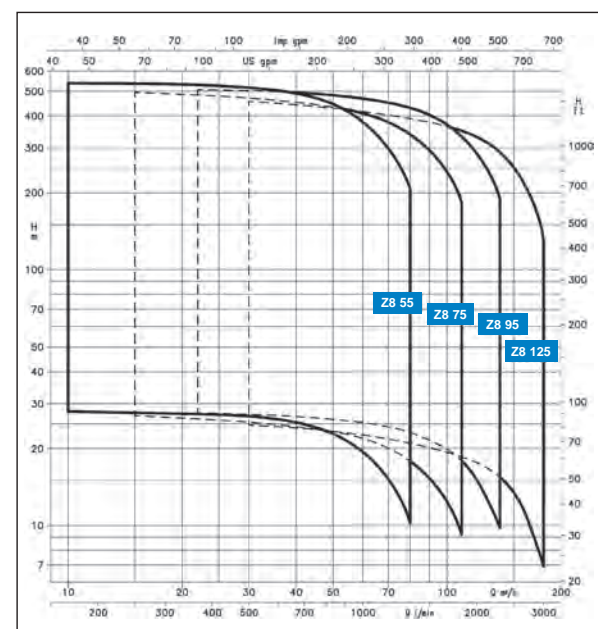
- High efficiency of hydraulics to ensure minimum energy use
- New "dynamic" wear ring reduces hydraulic losses to a minimum, keeps the high efficiency characteristics over time and the pump from blocking during stand-by periods
- Guide bearings on all the stages ensure resistance to wear and guarantee constantly reliable hydraulics
- In built Non-Return Check Valve with integrated spring for positive return
- Impeller and diffusers made of stainless steel
- Delivery casing made of stainless steel
- Suction support and shaft made of stainless steel
- Suitable for horizontal operation



Z10



Z12



Z8

# 4" submersible motors & control boxes.

Submersible motors suitable for use within boreholes, wells and applications when combined with centrifugal pumps that have 4" NEMA shaft and coupling dimensions. Single phase option as available in either 2-Wire or 3-Wire to 1.1kW, 3-Wire to 4kW, 3-Phase to 7.5kW

## CentriPro CP4C series.

### 2-WIRE MODEL

- Single Phase from 0.37kW to 1.1kW
- NEMA standard flange and shaft dimensions
- Protection Class IP68
- Class F insulation
- Voltage 230V/50Hz +5% -10%
- Maximum submergence 300 meters

### Features

- Canned stator design with unique gas filled windings
- Internally rotor and bearings cooled and lubricated in water bath
- PSC design with replaceable lead and starting capacitor housing
- 304SS motor body



CP4C

## CentriPro CT400 series.

### 3-WIRE AND 3-PHASE MODELS

- Single Phase from 0.37kW to 4.0kW
- Three Phase 0.37kW to 7.5kW
- NEMA standard flange and shaft dimensions.
- Protection Class IP68
- Class B insulation
- Voltages 230V/50Hz +5% -10%, 415V/50Hz +5% -10%
- Maximum submergence 300 meters

### Features

- Internally stator, rotor and bearings cooled and lubricated in FDA approved oil bath
- Single phase is PSC design with starting capacitor within the matching control box, see next "CPC/S"
- 304SS motor body and fittings with forged brass upper support and 431SS shaft



CT400



## Motor Control Boxes.

Designed specifically for the CentriPro CT400 single phase motors in two versions.

### **CPC/S SERIES:**

Suitable for the 0.37kW to 2.2kW motors

### **CPC/L SERIES:**

Suitable for the 3kW and 4kW motors

### **Features**

- Manual On/Off switch incorporating thermal overload in CPC/S
- Lightning arrestor included in both versions
- 230-240V/50Hz +/- 10%
- IP56 sturdy thermoplastic enclosures



MOTOR CONTROL BOXES

# 6", 8", 10" and 12" submersible motors.

Robust submersible motors suitable for use within boreholes, wells and applications when combined with centrifugal pumps. Water filled rewindable stator design. Standard construction is for 304SS stator with cast iron ends. The 6" and 8" series have NEMA shaft and coupling dimensions. The 10" and 12" have borehole pump suitable dimensions. Suitable for use with VFD. The cable lead supplied complies with WRAS (Water Regulation Advisory Scheme - BS 6920).

## CentriPro CP6W & 8W series.

- Voltage 380-400V/50Hz +/-10%
- Power range CP6W: 4kW to 37kW  
CP8W: 30kW to 93kW
- Protection class IP68
- Maximum submergence 350m
- Class Y insulation on standard products
- Maximum water temperature 30°C  
CP6W minimum cooling velocity of 0.2m/sec 4kW to 30kW (0.5 for 37kW), CP8W minimum cooling velocity of 0.5m/sec 30kW to 93kW
- Axial load thrust with kingsbury bearing;
  - CP6W 6,000N to 22kW and 30,000N to 37kW
  - CP8W 50,000N
- Maximum starts per hour at regular intervals  
CP6W:15, CP8W: 10
- Mechanical shaft seal incorporating sand guard
- Compensating bellows for internal liquid thermal expansion

## CentriPro CP10W & 12W series.

- Voltage 380-400V/50Hz +/- 10%
- Power range CP10W; 93kW to 150kW  
CP12W; 185kW to 300kW
- Protection class IP68
- Maximum submergence 350m
- Class Y insulation on standard products
- Maximum water temperature 30°C  
CP10W; minimum cooling velocity of 0.5m/sec  
CP12W; minimum cooling velocity of 0.5m/sec
- Axial load thrust with kingsbury bearing;
  - CP10W; 65,000N
  - CP12W; 65,000N
- Maximum Starts per hour at regular intervals  
CP6W; 8, CP8W; 4
- Mechanical shaft seal incorporating sand guard
- Compensating bellows for internal liquid thermal expansion



### Construction Options

- All 316 SS version
- All Duplex version

### Optional Features

- High temperature winding for up to 60°C - check de-rating over 45°C
- Special voltages and 4 pole versions
- Pt 100 temperature protection sensors & controllers
- Silicon carbide mechanical seal

# Submersible Pumps for Dewatering & Sewage



# Submersible dewatering.

## DOC series.

Compact, versatile and light weight. Suitable for clean and domestic water applications.

### Applications

- Emptying of residential areas such as cellars and pits
- Pumping domestic wastewater
- Emptying water tanks and storage vessels

### Specifications

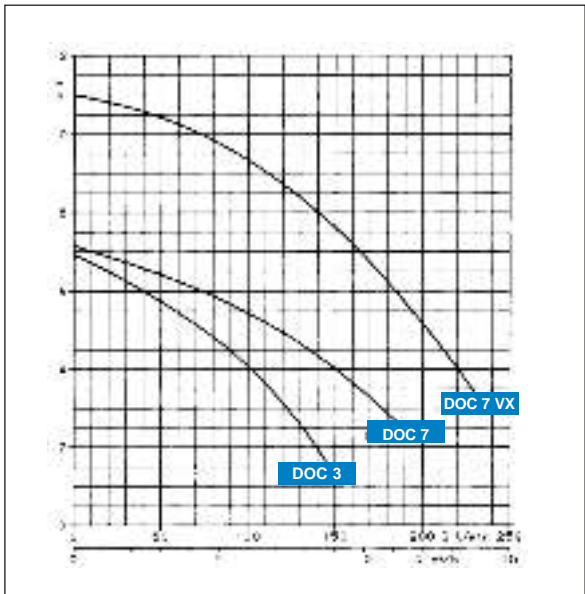
- Flow up to 14 m<sup>3</sup>/hr
- Heads up to 11m
- Solid handling DOC3-DOC7 to 10mm  
DOC7VX to 20mm
- Built in thermal overload protection
- Manual and automatic start  
Maximum pump down level 50 mm
- Maximum depth of submergence 5m
- Cable length 5m, options to 10m
- Maximum liquid temperature 40°C
- DOC 7 has a capacity of up to 13.5 m<sup>3</sup>/hr and delivery head of up to 11m and is suitable for 10 mm solids in suspension
- DOC 7VX has a capacity of up to 10.5 m<sup>3</sup>/hr and 7m maximum head delivery. It can pump liquid with solids in suspension having maximum dimensions of 20 mm
- Versions  
Single-phase 220-240V 50 Hz 2 pole  
Three-phase 380-415V 50 Hz 2 pole

### Features

- Built in capacitor
- Built in thermal motor protection
- Single-phase versions can be equipped with pre-assembled float for automatic pump operation
- Three phase version available



PERFORMANCE CURVE AT 2850 RPM



MATERIAL TABLE

COMPONENT	MATERIAL
Pump body and inlet grill	TECHNOPOLYMER
Handle and upper support	TECHNOPOLYMER
Impeller	TECHNOPOLYMER
Outer casing	STAINLESS STEEL (AISI 304)
Motor casing	STAINLESS STEEL (AISI 304)
Lower casing	STAINLESS STEEL (AISI 304)
Shaft extension	STAINLESS STEEL (AISI 304)
Screws and bolts	STAINLESS STEEL (AISI 304)
Elastomers	NITRILE RUBBER (NBR)



# DIWA series.

For drainage of cellars, sumps, basements and tanks. Dirty water transfer, garden irrigation, fountains and water features.

## Features

- Flows to 25 m<sup>3</sup>/hr
- Heads to 20m
- Open impeller for solids to 8mm
- Coated replaceable wear plate
- Lowara double mechanical seal system
- 4 models up to 1.5 kW
- Maximum submergence 7m
- Manual and automatic models

# DN series.

Submersible pumps for dirty water. Made in cast iron and stainless steel, with mechanical seal and open impeller with abrasion-resistant rubber coating. Supplied with or without float switch.

## Applications

- Emptying of drains, rain water tanks or domestic wastewater
- Emptying of wells and tanks in industrial and ecological applications
- Lawn and garden irrigation
- Emptying of tanks or reservoirs
- Emergency draining in flooded areas

## Specifications

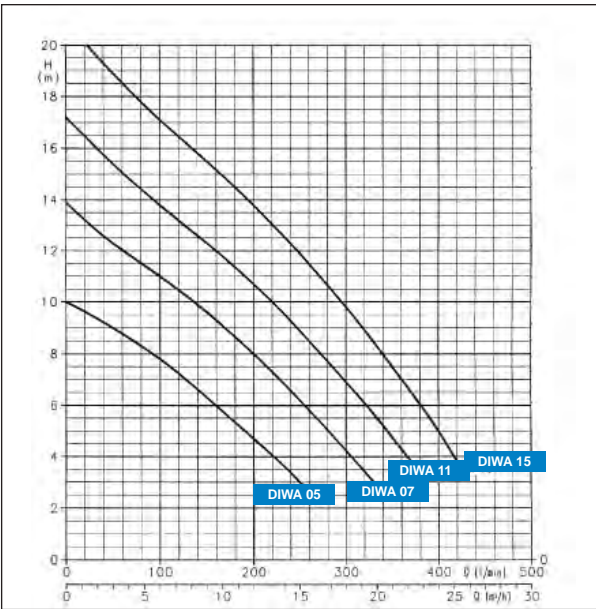
- Flow up to 17 m<sup>3</sup>/hr
- Heads up to 20m
- Maximum depth of submergence 5m



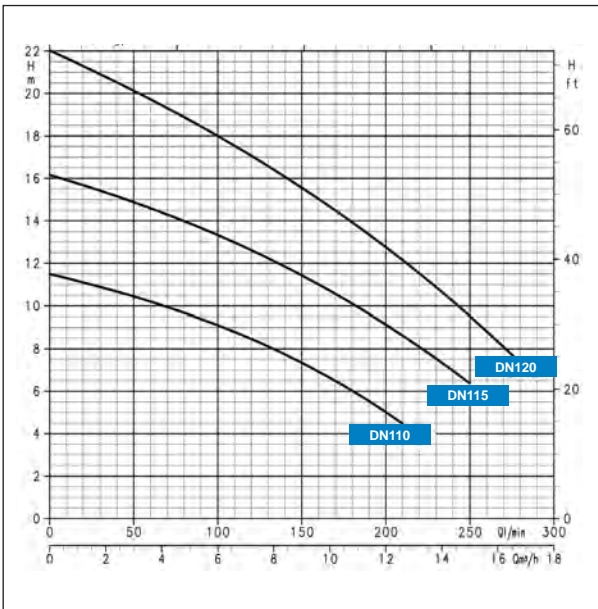
DIWA



DN



DIWA



DN

# Submersible wastewater.

## DOMO series.

For drainage of cellars, sumps, basements, tanks, dams and dirty water transfer.

- Flows to 40 m<sup>3</sup>/hr
- Heads to 14m
- Twin channel and vortex impeller versions
- Single phase versions up to 1.1 kW  
Three phase versions up to 1.5 kW
- Lowara DRIVELUB double seal system
- Maximum solids handling
  - 35mm for DOMO 7 and DOMO 7VX
  - 50mm for DOMO 10-15-20
  - 50mm for DOMO 10-15-20VX
- Maximum submergence 5m
- Manual and automatic models

### Applications

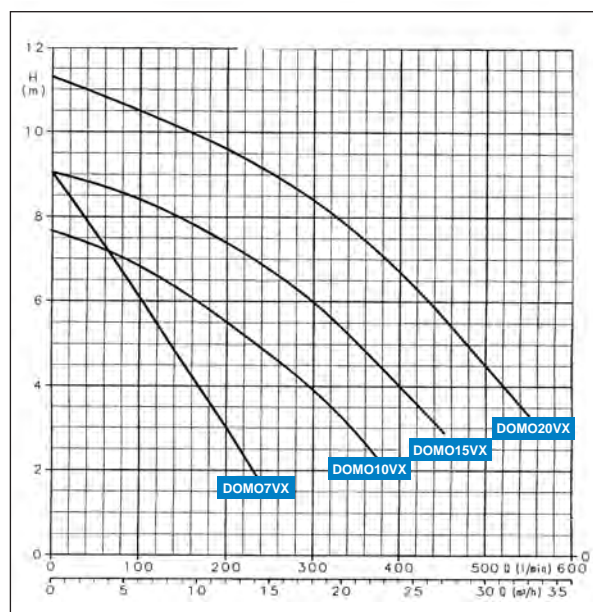
- Emptying of septic tanks and residential sumps
- Pumping of effluent (the VX version also pumps suspended solids)
- Emptying of wells and tanks in industrial and ecological applications
- Emptying of tanks and reservoirs
- Emergency draining in flooded areas

### Materials

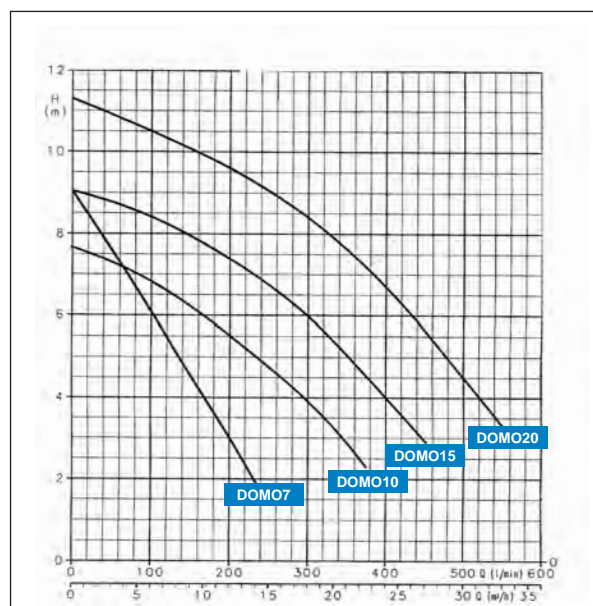
- Pump body & motor casing: stainless steel
- Shaft: stainless steel
- Handle: nylon
- DOMO 7 (VX) Impeller: reinforced nylon
- DOMO 10-15-20 (VX) impeller: stainless steel
- Upper lip seal: NBR



DOMO



DOMO VX



DOMO

## GL & DL series.

Submersible pumps designed for drainage of waste water from cesspools, collecting tanks, excavations, dams and dirty water transfer.

### Features

- Flows to 42 m<sup>3</sup>/hr
- Heads to 21m
- Maximum submergence 5m
- Lifting devices available

### GL-GLV series with cast iron motor

- 304SS construction impellers in single-channel or vortex design
- Mechanical seal protected by sand labyrinth
- Single and three phase versions to 2.2kW
- Maximum liquid temperatures  
30°C partially submerged / 50°C full submerged

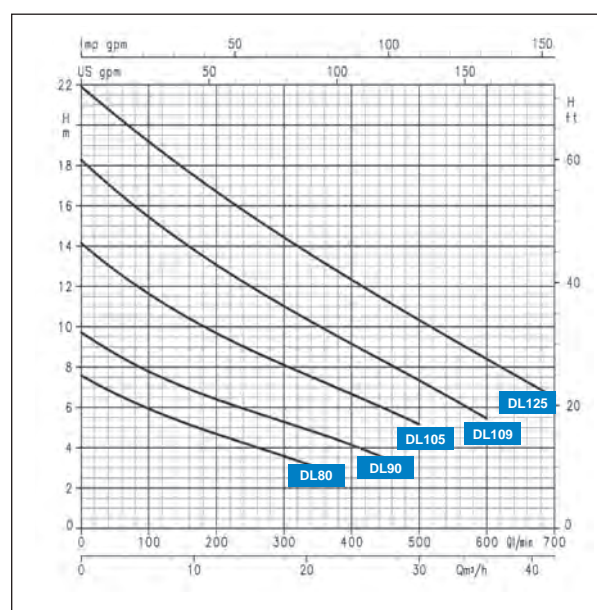
### DL-DLV series with solids handling capabilities and stainless steel motor

- Single-channel or vortex impeller designs
- Mechanical seal of SiC/SiC/NBR construction as standard
- Single and three phase versions to 1.5kW
- Maximum liquid temperatures:  
25°C partially submerged / 50°C full submerged
- Maximum solids handling
  - 45mm: DL80, 90, 105
  - 50mm: DL109, 125, 160, DLV100, 115

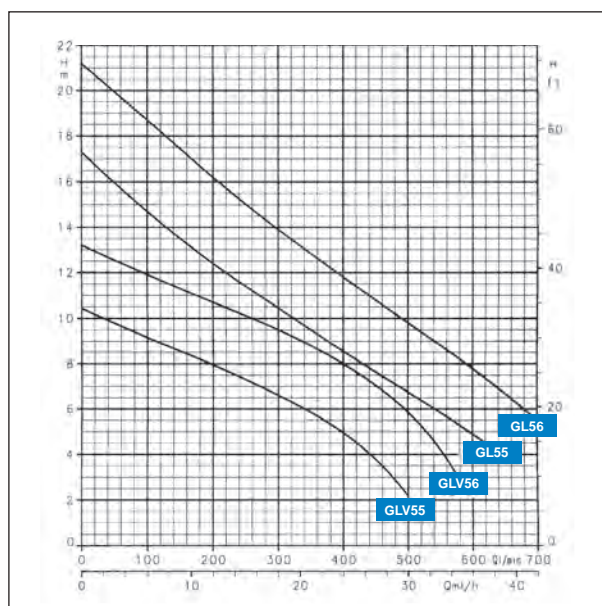


GL-GLV

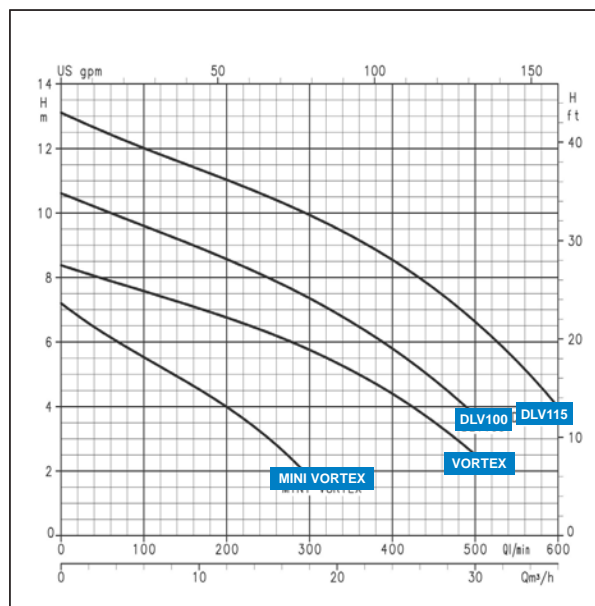
DL-DLV



DL



GL-GLV



DLV



## G2-V series.

For pumping sewage water and suspended solid bodies, in particular for drainage of septic tanks and other civil or industrial applications.

### Applications

- Emptying of septic tanks and residential sumps
- Pumping of effluent
- Emptying of wells and tanks in industrial and ecological applications
- Emergency draining in flooded areas

### Specifications & Features

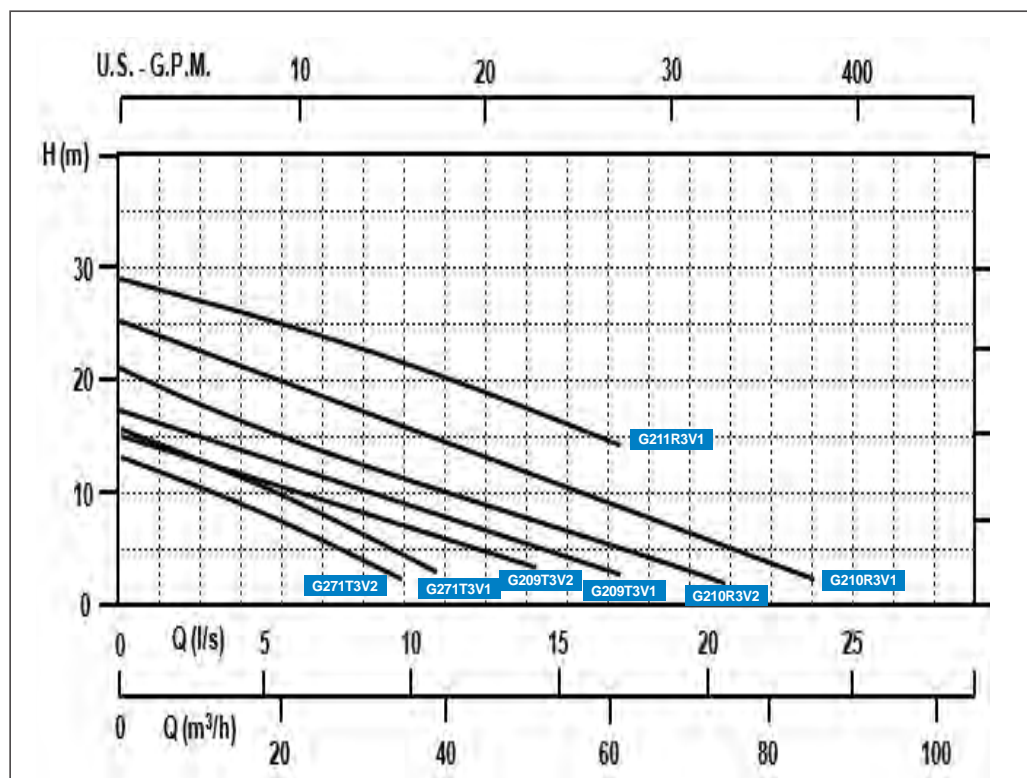
- Delivery up to 24 m<sup>3</sup>/hr
- Heads up to 29m
- Maximum water temperature to 40°C
- Free passage 50mm or 70mm
- Class H motor insulation
- Single phase 400V/50Hz, 1.4kW to 3.2kW (P2)
- Three phase 400-690V/50Hz, 5kW to 7.4kW (P2)
- Mechanical seal SiC/SiC
- O-ring and lip seal in nitrile
- Discharges of either DN50 or DN80

### Options

- Lowering & Connection systems to suit



G2-V



# Grinder.

## DOMO GRI series.

The pump has been designed to deliver domestic sewage, waste water and fluids containing solids from residential to sewer mains. Features new grinder system and efficient pump to make a reliable package.

### Applications

- Residential and domestic sewage

### Specifications & Features

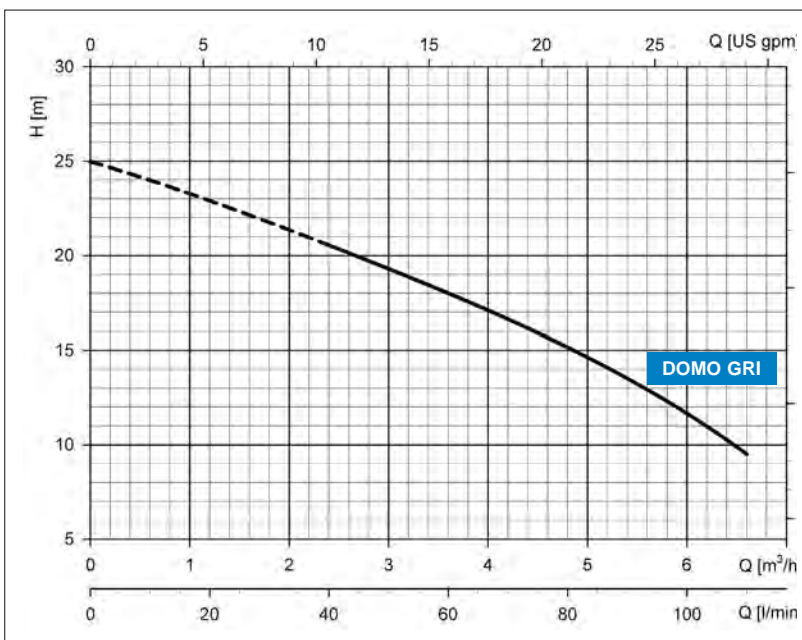
- Delivery up to 6.5 m<sup>3</sup>/hr
- Heads up to 21m
- Single phase 220-240V/50Hz, 1.1kW (P2)
- Three phase 380-415V/50Hz, 1.1kW (P2)
- Mechanical seal of SiC/SiC/NBR
- All delivery ports Rp 1

### Options

- Single phase with float for auto-operation
- Lowering & Connection systems to suit



DOMO GRI





## G2-T series.

Designed for sewage and other wastewater applications where water quality does not allow large solids passing through pipe work. Generating high heads and enabling the use of long discharge pipes.

### Applications

- Residential and commercial sewage
- Draining of flooded excavations
- Farm effluent

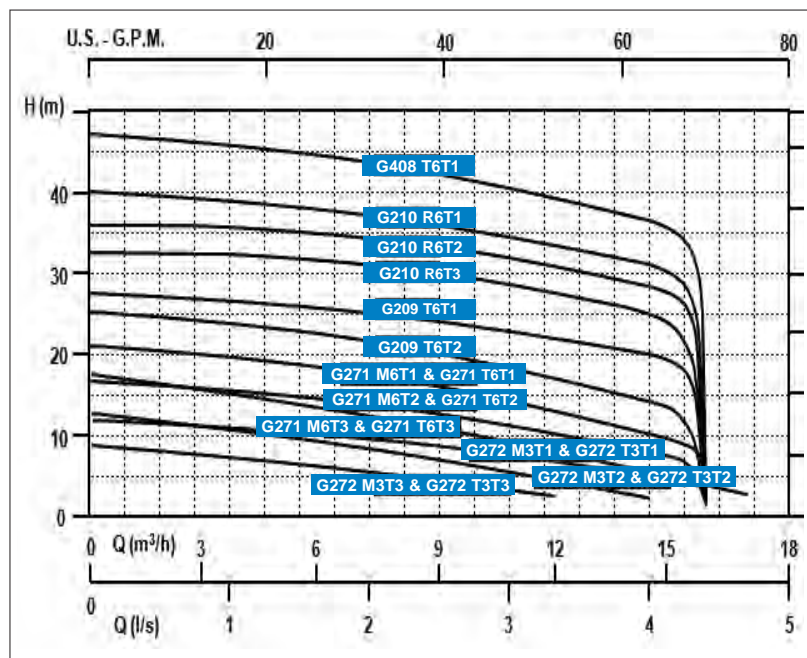
### Specifications & Features

- Delivery up to 16 m<sup>3</sup>/hr
- Heads up to 46m
- Maximum water temperature to 40°C
- Free passage 6mm or 7mm
- Class H motor insulation
- Single phase 230V/50Hz, 1.1kW to 1.8kW (P2)
- Three phase 400V/50Hz, 1.1kW to 5kW (P2)
- Mechanical seal SiC/SiC
- O-ring and lip seal in nitrile
- All discharges of DN40

### Options

- Single phase comes with starting panel and float for auto-operation
- Lowering & Connection systems to suit

G2-T



# Multistage centrifugal submersible pump.

## SCUBA series.

The SC Series of pumps are specifically designed for clean water pumping with major components in 304SS. The liquid end and motor are combined in one package with the pump fluid providing the motor cooling. These pumps can be directly installed into tanks or wells to avoid suction problems and noise.

### Applications

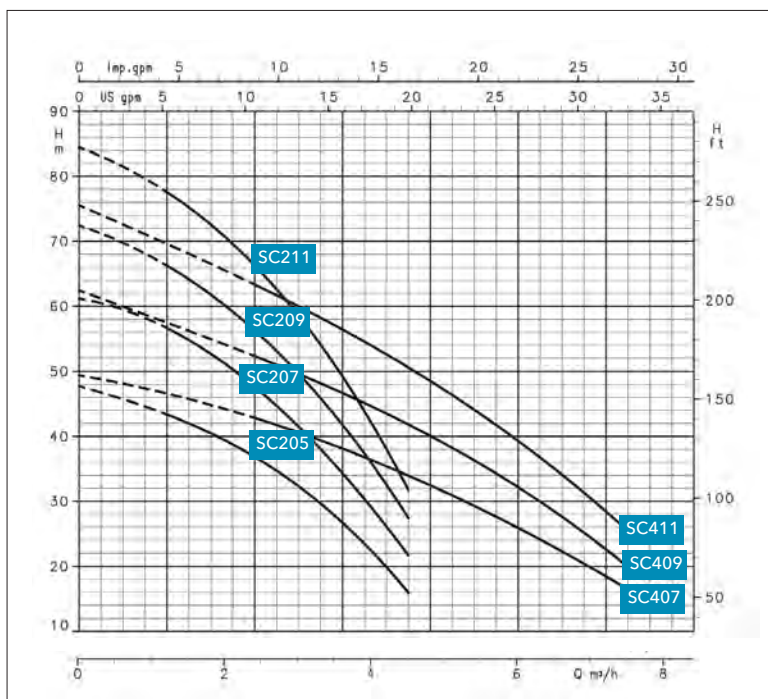
- Water supply from tank, 6" wells and basins
- Rain water tank collection
- Pressure boosting
- Irrigation

### Specifications

- Flow up to 7.5 m<sup>3</sup>/hr
- Heads to 80m
- Maximum submergence 20m
- Single and three phase versions available.  
Single phase includes internal capacitor and thermal protection
- Water temperature 0°C to +40°C
- Suspended solids to 2.5mm
- Single phase available in automatic or manual control



SCUBA



## SGR series.

The SGR high quality multistage submersible pump is designed where you need to deliver higher pressures with clean water applications. The SGR Series pump is compact, light weight and features a glass lled techno polymer pump body, stainless steel motor housing and shaft with built in overload protection.

### Applications

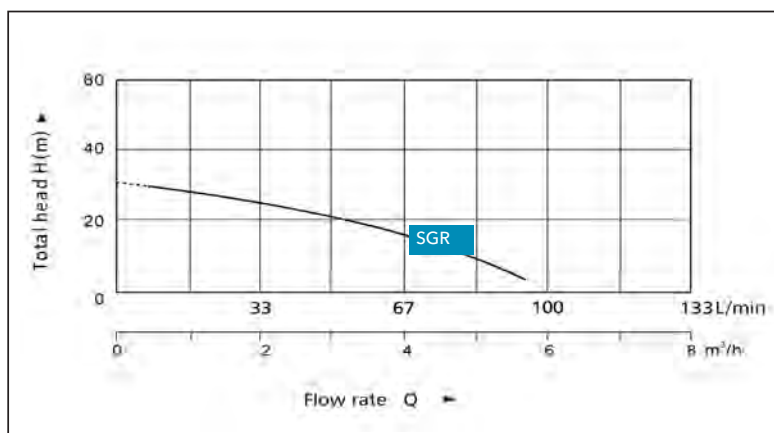
- Water supply from rain water tanks
- Small drainage pits
- Reservoirs
- Emergency drainage of flooded areas
- Irrigation
- Residential cisterns applications

### Specifications

- Head: up to 30 meters
- Delivery: up to 5.5 m<sup>3</sup>/hr
- Maximum immersion depth: 6 meters
- Max. working pressure: 8 bar
- Fluid temperature up to 35°C
- Manual and auto versions



SGR



# SPG series .

The SPG Series submersible sump pump is a simple and easy solution to your water drainage needs. Its lightweight design and corrosion-resistant construction is ideal for indoor and outdoor installations. The pump includes tethered wide angle float switch that is adjustable for various liquid levels and a discharge hose adaptor kit.

## Applications

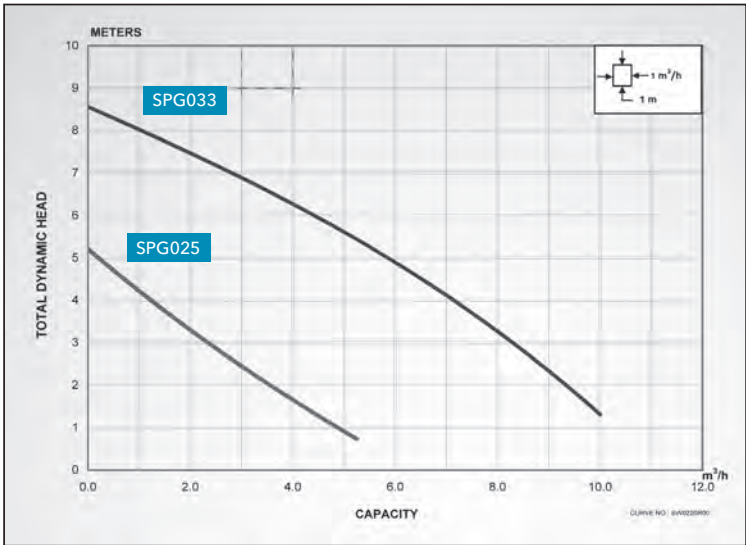
- Water supply applications
- Draining of basements or sumps
- Water transfer for garden or lawn irrigation
- Dewatering of tanks
- Emergency draining of flooded areas

## Specifications

- Discharge size: 1 ¼" BSP
- Capacities: to 10.0 m³/hr
- Maximum head: 8.5 m
- Maximum solids: 3 mm spherical
- Temperature: 40°C (104°F) maximum liquid temperature
- Mechanical seal: ceramic/ silicon carbide with BUNA elastomers
- Single phase, 2900 RPM, 50Hz motor with built-in thermal overload protection with automatic reset
- 10m power cord with A&NZ plug
- CE approved

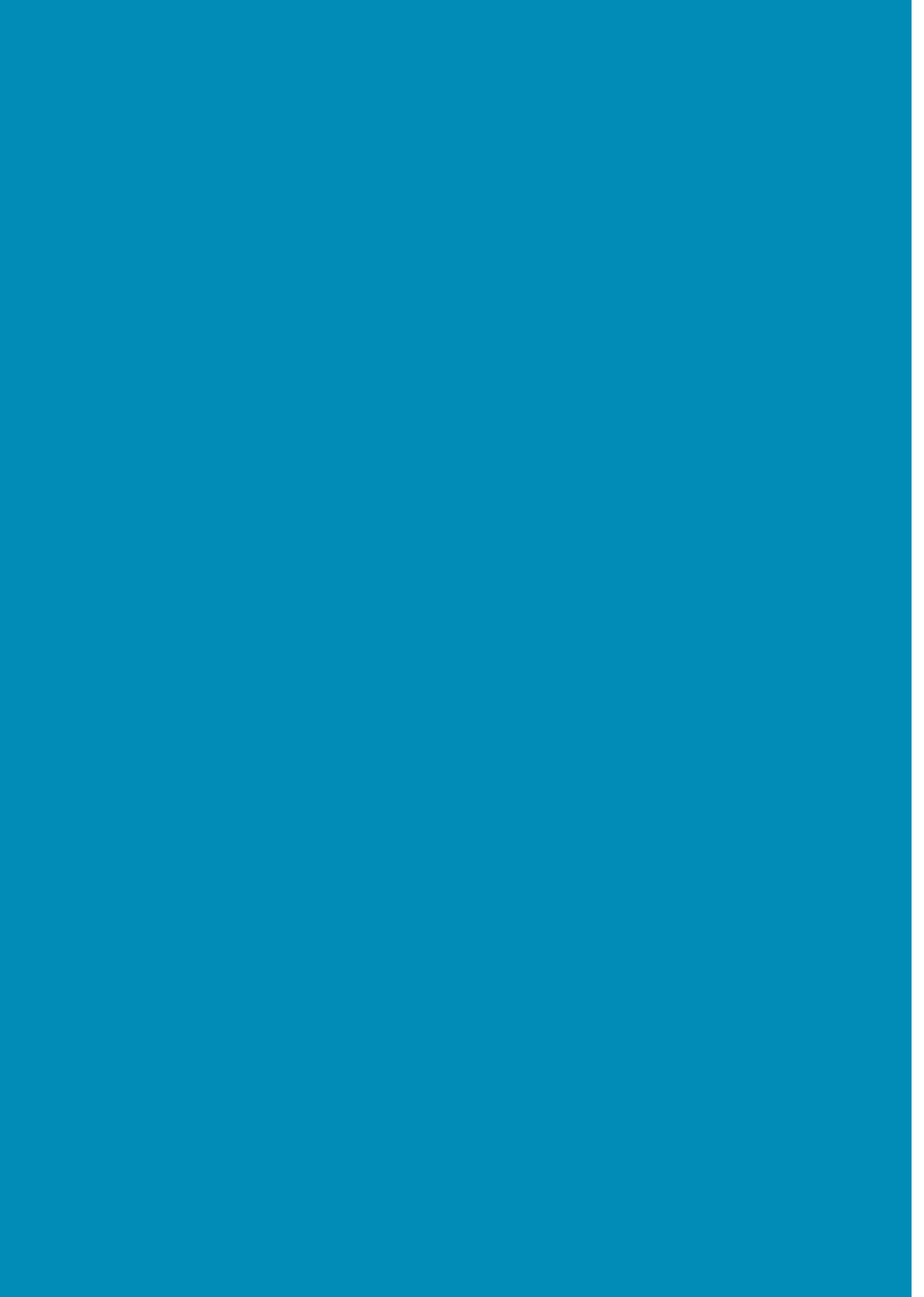


SPG



# Goulds Water Technology Pumps





# Goulds water technology pumps.

The following are selected pump models from our wide range of Goulds Water Technology offering, which includes a variety of robust cast construction pumps suitable for diverse applications.

Comprehensive catalogues are available for each individual series.

## GIS-GISO series: horizontal centrifugal ISO pumps.

- Delivery: Max 900 m<sup>3</sup>/hr
- Fluid temperature: -15°C to +120°C
- Working pressure: Max 16 bar

### Applications

- Water supply
- Heating and air-conditioning system
- Fire protection
- Spray irrigation and transfer
- Boiler water supply
- Industrial transportation
- Vehicle washing



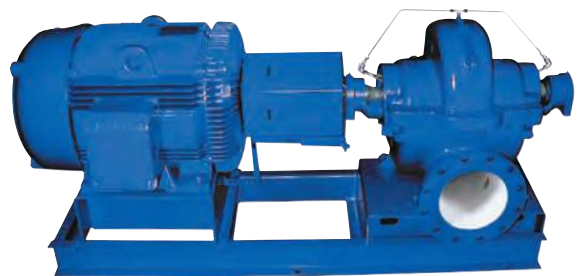
GIS-GISO SERIES

## HSC-S series: double entry split case pumps.

- Delivery: Max 1,500 m<sup>3</sup>/hr
- Head: Max 180m
- Fluid temperature: -20°C to +120°C
- Working pressure: Nom Max 25 bar

### Applications

- Water supply
- Water treatment
- Boiler water supply
- Commercial supply



HSC-S SERIES

## Submersible turbine pumps.

- Cast construction submersible pumps
- Delivery: Flows up to 1800 m<sup>3</sup>/hr
- Head: to 300m
- Various materials of construction are available on request

### Applications

- Irrigation
- Municipal water supply
- Pressure booster systems
- Dewatering



SUBMERSIBLE TURBINE PUMPS

## P & MP series: cast construction multistage pumps.

- Delivery: Max. 340 m<sup>3</sup>/hr
- Head: Max. 150m
- Fluid temperature: -30°C to +120°C

### Applications

- Water supply
- Heating and air-conditioning
- Fire protection
- Spray and irrigation
- Boiler water supply
- Industrial fluid
- Transportation
- Vehicle washing equipment



P & MP SERIES

# Pressure Tanks

# Pressure tanks.

The additions of pressure tanks to pumps reduce pumps' on/off cycles and lengthen motor and switch life. This helps to bring down the total operational costs.

## Pressure wave.

- Single diaphragm design
- NSF Standard 61, CE/PED, WRAS, ACS, ISO:9001, Gost approved
- Patented stainless steel water connection
- Virgin polypropylene liner
- Two part polyurethane, epoxy primed paint finish
- Leak free, o-ring sealed air valve cap
- Comprehensive testing
- No maintenance



PRESSUREWAVE SERIES

## Challenger.

- Patented CAD2 diaphragm technology
- NSF Standard 61, CE/PD, WRAS, ACS, ISO-9001, gost approved
- Stainless steel water connection
- Condensation reducing design
- Two part polyurethane, epoxy primed paint finish
- Leak free air valve cap sealed with closed cell foam
- Comprehensive testing
- No maintenance



CHALLENGER SERIES



## C2 Lite.

- Patented CAD-2 diaphragm technology
- Unique 3 piece construction
- Reinforced plastic connection
- Durable continuous strand fiberglass sealed with epoxy resin
- Rugged copolymer polypropylene base
- Quality brass air stem with o-ring seal
- No sweat design
- NSF, CE/PED, WRAS, ACS, ISO:9001 approved
- Comprehensive testing
- No maintenance



C2 SERIES

## PRESSURE WAVE SERIES

Type	Model Number	Rated Litres	Drawdown in Litres at System Operating Pressure Range of: (kPa)			System Connection	Dimensions (cm)		Shipping Weight (kg)	Factory Precharge Pressure (kPa)
			140/275	210/345	275/415		Height	Dia		
STEEL TANKS - RATED @ 1000 kPa (nominal 10 Bar)										
PWL4	HGBPA-LOW-4LX	4	1.3	1.1	1.0	1" BSPT	25.9	6.4	1.6	190
PWL8	PWB-LOW-8LX	8	2.8	2.3	2.1	1" BSPT	31.3	20.2	2.4	190
PWL12	PWB-LOW-12LX	12	4.2	3.5	3.2	1" BSPT	36.5	23.0	3.1	190
PWL18	PWB-LOW-18LX	18	6.4	5.4	4.8	1" BSPT	36.7	27.9	4.1	190
PWL24	PWB-LOW-24LX	24	8.5	7.2	6.4	1" BSPT	44.7	29.0	5.0	190
PWL35	PWB-LOW-35LX	35	12.5	10.5	9.4	1" BSPT	48.1	31.8	7.0	190
PWL35V	PWB-LOW-35LV	35	12.5	10.5	9.4	1" BSPT	55.5	31.8	7.8	190
PWL60V	PWB-LOW-60LV	60	21.5	18.1	16.2	1" BSPP	62.0	38.9	11.8	190
PWL80V	PWB-LOW-80LV	80	28.7	24.2	21.6	1" BSPP	81.5	38.9	16.2	190
PWL100V	PWB-LOW-100LV	100	35.9	30.2	27.1	1" BSPP	80.4	43.0	19.1	190
PWL150V	PWB-LOW-150LV	150	53.9	45.4	40.7	1" BSPP	107.4	43.0	26.7	190
HORIZONTAL TANKS - RATED @ 1000 kPa (nominal 10 Bar)										
PWL24H	PWB-LOW-24LH	24	8.5	7.2	6.4	1" BSPT	44.7	32.1	5.9	190
PWL60H	PWB-LOW-60LH	60	21.5	18.1	16.2	1" BSPT	53.0	42.4	11.4	190
HIGH PRESSURE STEEL TANKS - RATED @ 1600 kPa (nominal 16 Bar)										
PWL8 16	MXB-LOW-8LX	8	2.8	2.3	2.1	1" BSPT	31.3	20.2	2.4	400
PWL12 16	MXB-LOW-12LX	12	4.2	3.5	3.2	1" BSPT	36.8	23.0	3.2	400
PWL18 16	MXB-LOW-18LX	18	6.4	5.4	4.8	1" BSPT	36.7	27.9	4.8	400
PWL24 16	MXB-LOW-24LX	24	8.5	7.2	6.4	1" BSPT	44.7	29.0	5.95	400
PWL35 16	PWB-LOW-35LX	35	12.5	10.5	9.4	1" BSPT	48.1	31.8	8.6	400
PWL60V 16	MXB-LOW-60LV	60	21.5	18.1	16.2	1" BSPP	62.0	39.0	15.12	400

## CHALLENGER SERIES

<b>STEEL TANKS - RATED @ 1000 kPa (nominal 10 Bar)</b>										
Type	Model Number	Rated Litres	Drawdown in Litres at System Operating			System Connection	Dimensions (cm)		Shipping Weight (kg)	Factory Precharge
			140/275	210/345	275/415		Height	Length		
GCL200-PC144	GCB-LOW-200LV	200	71.9	60.6	54.3	1 1/4" BSPP	103.3	53.3	34.3	140
GCL240-PC211	GCB-LOW-250LV	250	89.9	75.7	67.9	1 1/4" BSPP	121.2	53.3	36.5	140
GCL310-PC244	GCB-LOW-300LV	300	107.9	90.9	81.5	1 1/4" BSPP	150.0	53.3	45.4	140
GCL450-PC366	GCB-LOW-450LV	450	161.9	136.4	122.2	1 1/4" BSPP	152.9	66.0	69.3	140

## C2-LITE CAD SERIES

<b>C2-LITE CAD Series</b>										
<b>COMPOSITE TANKS - RATED @ 860 kPa (nominal 8.6 Bar)</b>										
Type	Model Number	Rated Litres	Drawdown in Litres at System Operating			System Connection	Dimensions (cm)		Shipping Weight (kg)	Factory Precharge
			140/275	210/345	275/415		Height	Length		
C2B60	C2B-60LV	60	21.5	18.1	16.2	1" BSPT	64.9	41.8	8.6	140
C2B80	C2B-80LV	80	28.7	24.2	21.6	1" BSPT	85.2	41.8	10.9	140
C2B100	C2B-100LV	100	35.9	30.2	27.1	1" BSPT	96.7	41.8	12.7	140



# Appendix



# Pump fundamentals.

## System curves.

For a specific impeller diameter and speed, a centrifugal pump has a fixed and predictable performance curve.

The point where a pump will operate on its curve is dependent upon the characteristics of the system it is operating in. This is commonly called the System Head Curve. The head in a typical system is made up of three components:

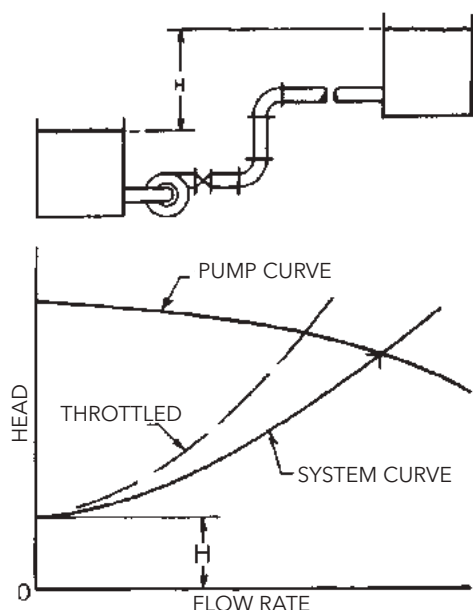
1. Static head.
2. Pressure head.
3. All losses i.e. friction.

This is represented in graphic form and since friction losses vary as the square of the flow rate, the system curve is parabolic in shape.

By plotting the system head curve and the pump curve together, it can be determined:

1. Where the pump will operate on its curve.
2. What changes will occur if the system curve or the pump performance curve changes.

A centrifugal pump will always operate at the intersection of the system curve and the pump curve. This represents the head required to make liquid flow through the system piping, valves etc.



The diagram above represents a pump system. The parabolic shape of the system curve is determined by the friction losses through the pipework including all bends

and valves. The suction and discharge tanks are on different levels resulting in a positive static head 'H'. The static head does not affect the shape of the system curve or its 'steepness', but it does dictate the head of the system curve at zero flow rate.

The operating point is at the intersection of the system curve and the pump curve. The flow rate can be reduced by closing, or 'throttling', the discharge valve. Throttling increases system friction losses and changes the system curve and the operating point of the pump.

## Net Positive Suction Head (NPSH).

Simply stated, NPSH is an analysis of the energy conditions on the suction side of the pump to determine if the liquid will vapourise at the lowest pressure point of the pump.

The pressure that a liquid exerts on its surroundings is dependent on its temperature. This pressure is called its vapour pressure. It is a unique characteristic of every fluid and it increases with temperature. When the vapour pressure of a fluid equals the pressure of its surroundings, the fluid begins to vapourise, or boil.

If we wish to pump a fluid effectively we must keep it in liquid form. NPSH is simply a measure of the amount of suction head present to prevent this vapourisation at the lowest pressure point in the pump.

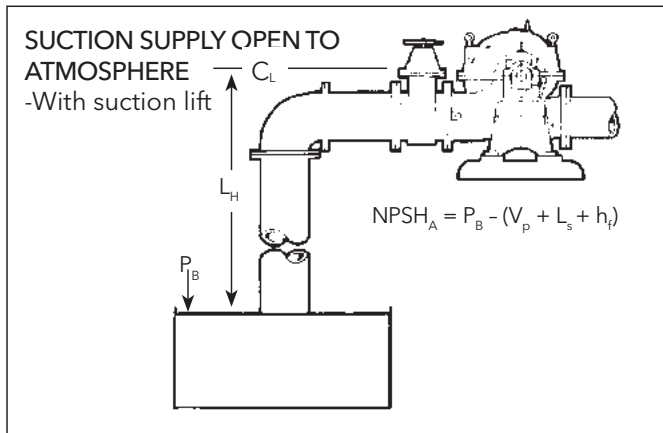
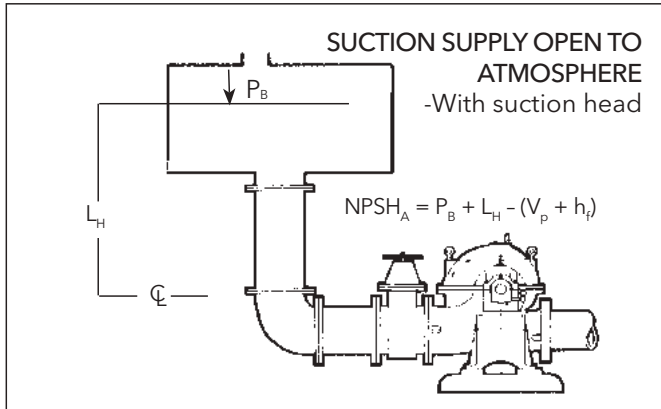
NPSH required is a function of the pump design and varies with speed and capacity.

NPSH available is a function of the system the pump is operating in. It is the excess pressure of the liquid, in metres absolute, over its vapour pressure as it arrives at the pump suction.

NPSH available must always be greater than NPSH required at the maximum required flow rate.



The diagrams below show typical suction systems with NPSH available formulas applicable to each. It is important to correct for the specific gravity of the liquid and to convert all terms to units of metres absolute when using the formulas.



- PB = Barometric pressure, in metres absolute
- VP = Vapour pressure of the liquid at maximum pumping temperature in metres absolute
- LS = Maximum suction lift in metres
- LH = Maximum suction head in metres
- hf = Friction loss in the suction pipe at required capacity in metres

# Piping frictional losses.

Friction Loss for PVC Pipe ( m/100 metres of pipe )																
Flow Rate			25mm		32mm		40mm		50mm		80mm		100mm		150mm	
lps	lpm	m³/hr	PN 9	PN 12	PN 9	PN 12	PN 9	PN 12	PN 9	PN 12	PN 9	PN 12	PN 9	PN 12	PN 9	PN 12
0.2	12	0.72	0.43	0.49	0.14	0.16	0.08	0.42								
0.5	30	1.80	2.15	2.40	0.70	0.80	0.37	0.97	0.13	0.14						
0.8	48	2.88	4.91	5.50	1.61	1.82	0.84	1.43	0.29	0.33						
1.0	60	3.60	7.29	8.16	2.38	2.70	1.24	3.30	0.42	0.48	0.07	0.08				
1.6	96	5.76	16.85	18.87	5.49	6.23	2.86	4.90	0.97	1.11	0.15	0.18				
2.0	120	7.20			8.17	9.27	4.25	10.12	1.42	1.65	0.23	0.26	0.07	0.05		
3.0	180	10.8					8.77	16.98	2.97	3.40	0.46	0.53	0.14	0.08		
4.0	240	14.4							4.98	5.68	0.77	0.89	0.23	0.16		
5.0	300	18.0							7.43	8.49	1.15	1.32	0.34	0.26		
6.0	360	21.6									1.60	1.83	0.48	0.39	0.09	0.11
7.0	420	25.2									2.11	2.42	0.63	0.55	0.12	0.14
8.0	480	28.8									2.68	3.07	0.80	0.72	0.16	0.18
9.0	540	32.4									3.31	3.80	0.98	0.91	0.19	0.22
10.0	600	36.0									4.00	4.59	1.19	1.13	0.23	0.27
15.0	900	54.0											2.47	1.36	0.48	0.55
20.0	1200	72.0													0.81	0.93

Friction Loss for Poly Pipe ( m/100 metres of pipe )																		
Flow Rate			25mm O.D.		32mm O.D.		40mm O.D.		50mm O.D.		63mm O.D.		75mm O.D.		90mm O.D.		110mm O.D.	
lps	lpm	m³/hr	PN 6.3	PN 12.5	PN 6.3	PN 12.5	PN 6.3	PN 12.5	PN 6.3	PN 12.5	PN 6.3	PN 12.5	PN 6.3	PN 12.5	PN 6.3	PN 12.5	PN 6.3	PN 12.5
0.2	12	0.72	2.12	2.97	0.56	0.90	0.02	0.32										
0.5	30	1.80	10.53	14.83	2.78	4.45	0.86	1.58	0.27	0.55								
0.8	48	2.88	24.24	34.17	6.37	10.20	1.97	3.62	0.61	1.25								
1.0	60	3.60			9.46	15.17	2.92	5.38	0.91	1.85	0.33	0.61	0.14	0.26				
1.6	96	5.76			21.88		6.73	12.41	2.08	4.25	0.75	1.13	0.33	0.49				
2.0	120	7.20					10.02	18.50	3.10	6.33	1.11	2.07	0.48	0.89	0.20	0.37		
3.0	180	10.8							6.39	13.07	2.29	4.27	0.99	1.83	0.42	0.76	0.16	0.29
4.0	240	14.4							10.70		3.82	7.15	1.65	3.05	0.69	1.27	0.27	0.49
5.0	300	18.0									5.70		2.46	4.55	1.03	1.89	0.40	0.72
6.0	360	21.6									7.92		3.42	6.32	1.43	2.63	0.55	1.00
7.0	420	25.2											4.51		1.88	3.46	0.72	1.32
9.0	540	32.4											7.09		2.96	5.45	1.14	2.07
10.0	600	36.0													3.58	6.59	1.37	2.50
15.0	900	54.0															2.85	5.20
20.0	1200	72.0															4.80	

Friction Loss for Poly Pipe - 20mm to 63mm ( m/100 metres of pipe )																															
Flow in		Medium Density Polythene Pipe																													
ltrs min.	gals hr.	Rural Class B Pipe						PE80/PN8						PE80/PN10						PE80/PN12.5						PE80/PN16					
		3/4"	1"	1 1/4"	1 1/2"	2"	20	25	32	40	50	63	20	25	32	40	50	63	20	25	32	40	50	63	20	25	32	40	50	63	
10	132	2.7	0.7	0.2	0.1	—	3.9	1.1	0.3	0.1	—	—	4.5	1.4	0.4	0.1	—	—	5.3	1.8	0.5	0.2	0.1	—	6.8	2.2	0.7	0.2	0.1	—	
20	264	9.8	2.4	0.8	0.3	0.1	14.2	4.0	1.2	0.4	0.1	—	16.4	5.1	1.5	0.5	0.2	0.1	19.0	6.4	1.8	0.6	0.2	0.1	24.4	8.0	2.4	0.8	0.3	0.1	
30	396	20.8	5.1	1.7	0.7	0.2		8.5	2.6	0.9	0.3	0.1		10.7	3.2	1.0	0.4	0.1		13.6	3.8	1.3	0.4	0.1		17.0	5.2	1.7	0.6	0.2	
40	528		8.7	2.9	1.2	0.3			4.5	1.5	0.5	0.2			5.4	1.7	0.6	0.2			6.5	2.2	0.8	0.2			8.8	2.9	1.1	0.3	
50	660		13.2	4.5	1.8	0.5			6.8	2.3	0.8	0.3			8.1	2.6	0.9	0.3			9.8	3.4	1.1	0.4			13.3	4.4	1.5	0.5	
60	792		18.5	6.2	2.6	0.6			9.5	3.2	1.1	0.4			11.4	3.7	1.3	0.4			13.7	4.8	1.6	0.5			18.0	6.2	2.0	0.7	
80	1056		30.1	10.6	4.4	1.1				5.5	1.8	0.6				6.3	2.3	0.7				8.1	2.7	0.9				10.5	3.5	1.2	
100	1320			16.1	6.6	1.6				8.3	2.7	0.9				9.5	3.4	1.1				12.2	4.1	1.3				15.9	5.3	1.7	
120	1584				9.3	2.3					3.8	1.3					4.8	1.5					5.8	1.9					7.4	2.4	
140	1848				12.3	3.0					5.1	1.7					6.4	2.0					7.7	2.5					9.8	3.2	
160	2112					3.9					6.5	2.2					8.1	2.6					9.8	3.2					12.6	4.2	
180	2376					4.8						2.7						3.3						3.9						5.2	
200	2639					5.9						3.3						4.0						4.8						6.3	
220	2904					7.0						3.9						4.7						5.7						7.5	
240	3168					8.2						4.6						5.6						6.7						8.8	
250	3300					8.9						5.0						6.0						7.2						9.5	

# Xylem |'zīləm|

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- 2) a leading global water technology company.

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