

# ZDS

pump innovation

Made in Italy



2020



## 4" Submersible Pumps

50 Hz  
n~2850 min<sup>-1</sup>

# THE 4" SUBMERSIBLE PUMPS SPECIALIST

ZDS, headquartered in Padua, is specialized in the design and manufacture of 4" submersible pumps for water treatment and distribution; electric motors; electronic control systems and accessories.

ZDS products are manufactured to ISO 9001 standards: to achieve the quality objectives, to be innovative and to meet customer requirements.

From the very beginning, the company has been focused on the development of automatic and innovative complete solutions thanks to built-in electronic protections that are ready to use, economical and easy to install.

Innovative ideas have been supported by technical know-how and organizational skills gained from long-term experience which is rooted in the know-how of some historic manufacturers in the hydraulic field.

# INDEX

Basic instructions for the selection of a submersible pump	4 - 5
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## 4" HYDRAULIC PARTS - SUBMERSIBLE MOTORS

QS4P and QS4X 4" Hydraulic parts	8 - 15
O2 - 4" oil-cooled single-phase submersible motors	16
O3 - 4" oil-cooled single-phase submersible motors	17
OT - 4" oil-cooled three-phase submersible motors	18
H2 - 4" water-cooled encapsulated single-phase submersible motors	19
Franklin - 4" water-cooled encapsulated submersible motors	20

## 4" SUBMERSIBLE PUMPS

QPGo, QPGo.DRP, QPGo.DRP-Plus	22 - 27
P/X.O3, P/X.O3.DRP	28 - 31
P/X.OT, P/X.OT.DRP	32 - 35
ZDJet, ZDJet.DRP, ZDJet.DRP-Plus	36 - 41
P/X.H3F, P/X.H3F.DRP	42 - 45
P/X.HTF, P/X.HTF.DRP	46 - 49
Plug&Go.Evo	50 - 53
Submersible pumps for earth-heating pumps P/X.H3H, P/X.HTH	54 - 55

## ACCESSORIES

Power supply cables	57 - 59
Accessories	60 - 65

## TERMS AND CONDITIONS

# Basic instructions for the selection of a submersible pump:

## 1. Delivery (Q)

When you select a submersible pump and you do not know the real delivery of the borehole, it is recommended to consider the smallest quantity of water which is necessary for that installation (Q = delivery of water). If the quantity of water you draw is bigger than the one the borehole can deliver, the borehole itself might be damaged, even if the dry running protection of the pump is activated.

Regarding irrigation and other possible uses of water instead, it is necessary to consider the data provided by the manufacturer of the plant or equipment.

## 2. Pressure

In order to ensure the correct operating working pressure to the highest point of the plant, we advise you to make the calculation following described criteria for the determination of the pressure required by the pumps: **H = A + B + C**

**H:** Total Head, total dynamic pressure + safety factor 3%

**A:** maximum difference between the water surface and the ground with pump in action

**B:** distance from the ground to the highest point of use

**C:** pressure required to the highest point of use + head losses

The total dynamic pressure (H) refers to the minimum pressure guaranteed. It may be influenced by the dynamic water level of the well, caused by the variation of the groundwater while the pump is running. In this case it is necessary to calculate correctly the dynamic water level of the well in order to avoid too much pressure for the user. As far as it relates to irrigation and other possible uses of water instead, it is necessary to consider the data provided by the manufacturer of the plant or equipment.

Example of head losses every 100 mt of straight pipeline

Material	Galvanized steel	Polyethylene PE 100		Galvanized steel	Polyethylene PE 100		Galvanized steel	Polyethylene PE 100		Galvanized steel	Polyethylene PE 100		Galvanized steel	Polyethylene PE 100		Galvanized steel	Polyethylene PE 100	
DN (mm) External diameter	25	32		32	40		40	50		50	63		65	75				
Nominal Ø	1"		1" 1/4		1" 1/2		2"		2" 1/2									
Internal Ø (mm)	27	PN16 26	PN25 23.2	35.8	PN16 32.6	PN25 29	41.3	PN16 40.8	PN25 36.2	52.5	PN16 51.4	PN25 45.8	68	PN16 61.4	PN25 54.4			
Delivery (Q)	m <sup>3</sup> /h	METERS																
	l/min																	
	0.6	10	0.7	0.5	0.9	0.2	0.2	0.3	-	-	0.1	-	-	-	-	-	-	-
	0.9	15	1.6	1.1	1.9	0.4	0.4	0.6	0.2	0.1	0.2	-	-	-	-	-	-	-
	1.2	20	2.6	1.8	3.2	0.7	0.6	1.1	0.4	0.2	0.4	-	-	-	-	-	-	-
	1.5	25	3.8	2.9	5.0	1.0	1.0	1.7	0.5	0.3	0.6	0.1	-	0.1	-	-	-	-
	1.8	30	5.3	4.0	6.9	1.4	1.3	2.3	0.7	0.4	0.8	0.2	0.1	0.2	-	-	-	0.1
	2.1	35	6.9	5.2	9.1	1.8	1.7	3.1	0.9	0.6	1.0	0.3	0.2	0.3	-	-	-	0.1
	2.4	40	8.8	6.8	11.9	2.3	2.3	4.0	1.2	0.8	1.4	0.4	0.3	0.4	-	-	0.1	0.2
	3.0	50	13.1	10.1	17.6	3.4	3.4	5.9	1.7	1.1	2.0	0.5	0.4	0.6	0.1	0.15	0.3	
	3.6	60	18.3	14.3	24.9	4.7	4.7	8.4	2.4	1.6	2.8	0.8	0.5	0.9	0.2	0.2	0.4	
	4.2	70	24.2	19.1	33.3	6.2	6.3	11.2	3.1	2.2	3.8	1.0	0.7	1.2	0.3	0.3	0.5	
	4.8	80	30.9	24.2	42.1	7.9	8.0	14.2	4.0	2.7	4.8	1.3	0.9	1.5	0.3	0.4	0.7	
	5.4	90	38.3	30.2	52.7	9.8	10.0	17.8	4.9	3.4	6.0	1.6	1.1	1.9	0.4	0.5	0.8	
6.0	100	46.5	36.9	-	11.9	12.3	21.7	6.0	4.1	7.4	1.9	1.3	2.3	0.5	0.6	1.0		
7.5	125	-	55.3	-	17.9	18.4	32.5	9.0	6.2	11.0	2.8	2.0	3.5	0.8	0.8	1.5		
9.0	150	-	-	-	25.1	25.8	45.7	12.5	8.7	15.5	3.9	2.8	4.9	1.1	1.2	2.1		
10.5	175	-	-	-	33.3	34.4	-	16.7	11.6	20.7	5.2	3.8	6.6	1.5	1.6	2.8		
12.0	200	-	-	-	42.8	43.9	-	21.4	14.7	26.4	6.6	4.8	8.4	1.9	2.0	3.6		
15.0	250	-	-	-	-	-	-	32.3	22.3	40.0	10.0	7.3	12.7	2.8	3.1	5.5		
18.0	300	-	-	-	-	-	-	44.5	30.5	57.5	13.8	10.2	17.8	3.9	4.3	7.7		
21.0	350	-	-	-	-	-	-	59.1	40.5	-	18.4	13.5	23.6	6.7	5.7	10.2		
24.0	400	-	-	-	-	-	-	-	52.0	-	23.6	17.3	30.3	10.0	7.3	13.1		

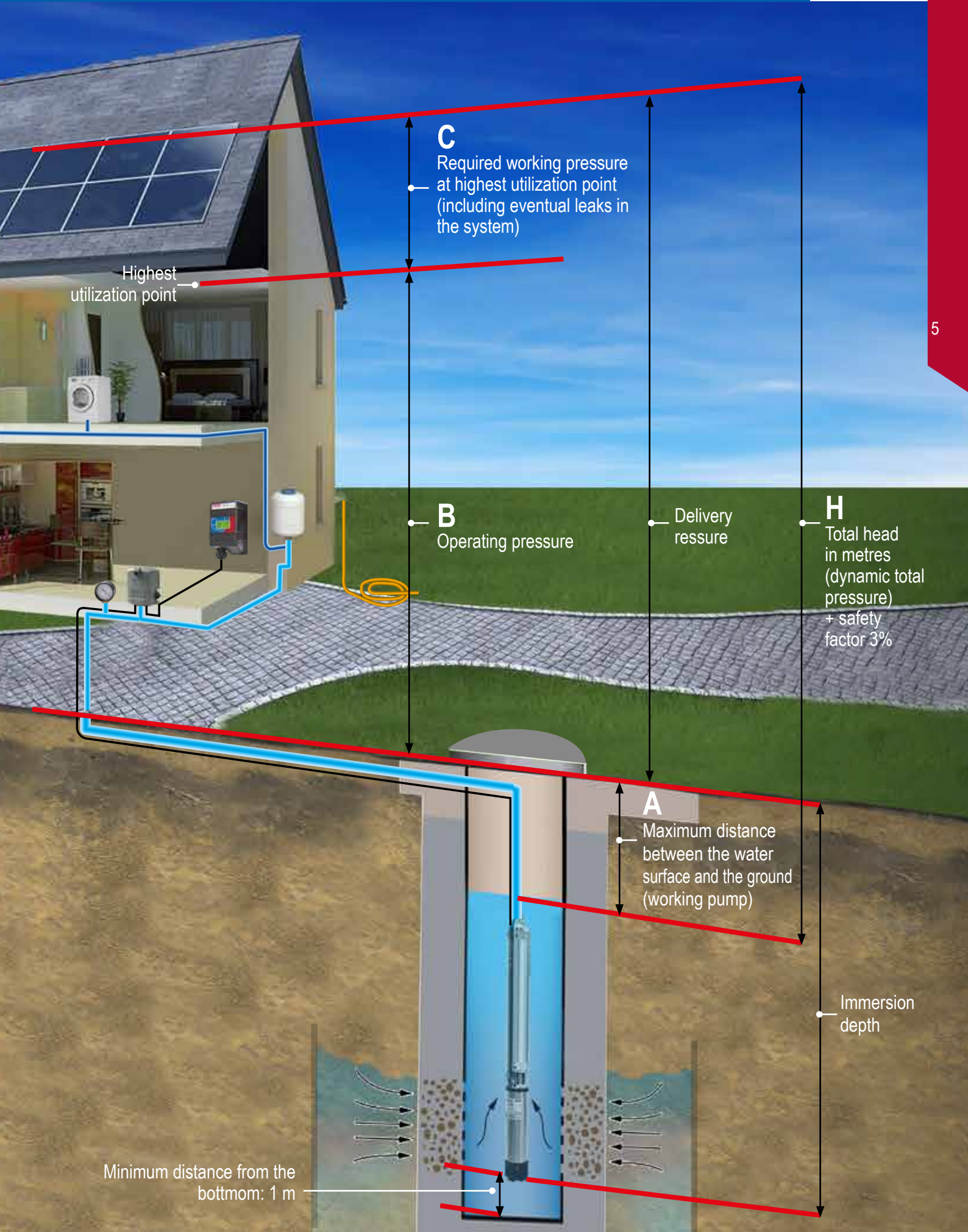
We recommend to install a proper cooling jacket in installations bigger than 10 cm, to guarantee the correct motor cooling flow.

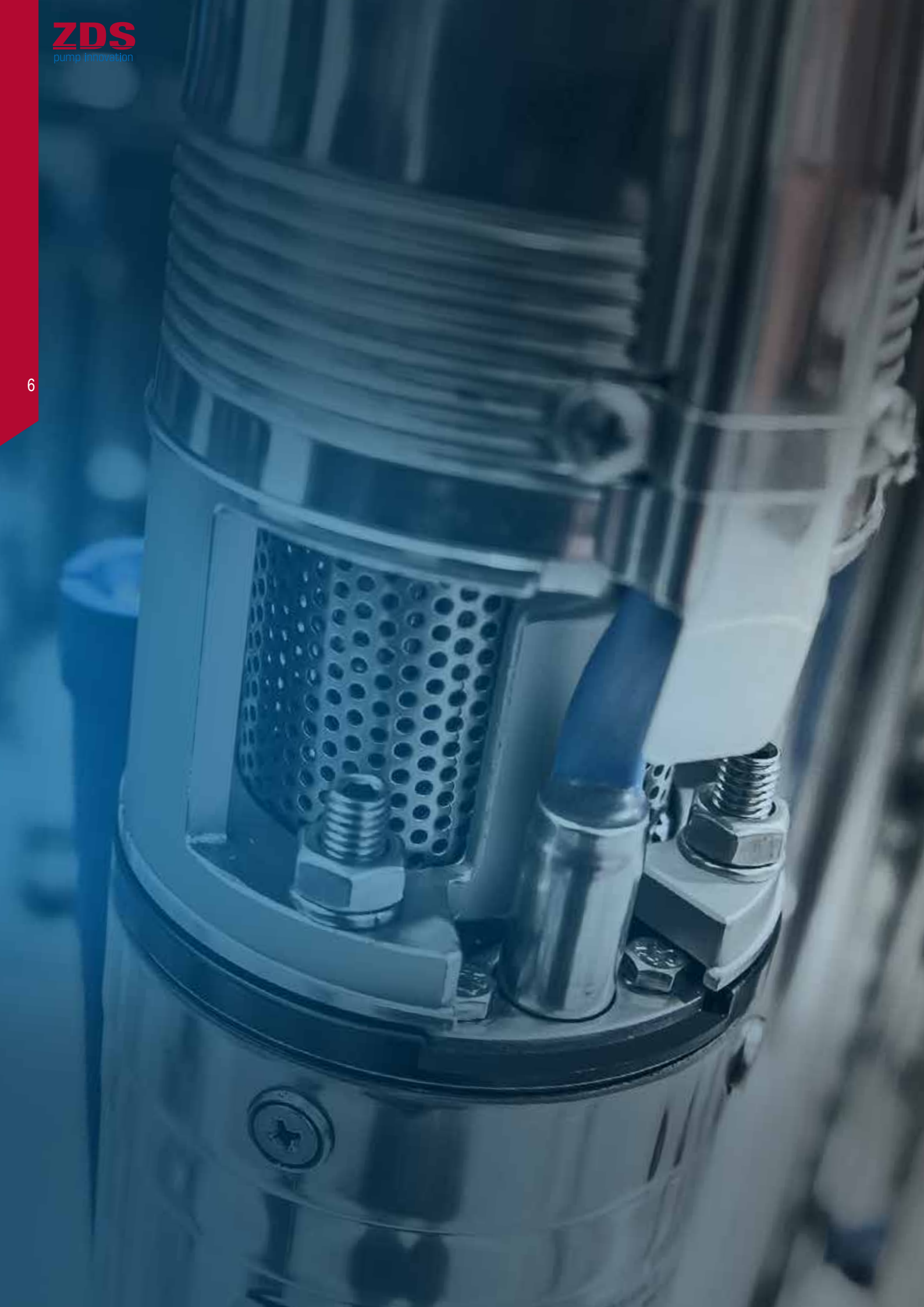
For every 90° pipe curve or valve losses to be added: 0,18 m

For every check valve losses to be added: 0,5 m

If possible we recommend not to exceed 15 m losses in 100 m of pipeline

Internal diameter of polyethylene pipeline: PE100 UNI 10910





4"

# HYDRAULIC PARTS

## SUBMERSIBLE MOTORS



## 4" Hydraulic parts

Multistage centrifugal hydraulic parts designed to be used in 4" wells or larger, available in a wide range of deliveries and heads. Reliable, strong, easy to maintain, they are suitable in applications for lifting, distribution, and pressurization of water in water systems.



### QS4P and QS4X main characteristics

Each single part of QS4P and QS4X has been designed with particular care to ensure the highest quality and reliability.

The pump impellers, diffusers, stage boxes, bushings and floating rings are made of special technopolymers, materials to improve performance, efficiency and to resist corrosion.
The non-return valve is integrated into the upper head to allow the weight of the water column and any water hammer to be discharged without damaging the impellers and diffusers.
The non-return valves have undergone very severe durability tests: more than 600.000 water hammers at 37 bars for QS4P and more than 1.000.000 water hammers at 37 bar for QS4X.
The stainless steel coupling shaft is oversized to better resist mechanical torque.
The special design of the hydraulic part, allows the pump to work even in heavy sand conditions, up to maximum of 120 g/m <sup>3</sup> .
Thanks to its particular design, ZDS hydraulic part automatically eliminates any air contained in the submersible pump.

### TECHNICAL SPECIFICATIONS

<b>Pumped liquid:</b>	clean, free of solids and abrasives, non-viscous, non-aggressive, non-crystallised and chemically neutral.
<b>Flange:</b>	4" NEMA standard dimensions
<b>Rated ambient temperature:</b>	max. 40° C
<b>Maximum quantity of suspended sand:</b>	120 g/m <sup>3</sup>
<b>Mounting:</b>	vertical/horizontal
<b>Maximum immersion depth:</b>	150 m
<b>Allowed range of water PH:</b>	6,4 - 8,0
<b>Outlet diameter:</b>	1" ¼ G-F (1,2,3,5 series), 2" G-F (8,10 series)
<b>Maximum pump overall diameter:</b>	98 mm (cable cover included)
<b>Maximum delivery (Q):</b>	15.000 l/h
<b>Maximum head (H):</b>	300 m



### What is so special about the design of our hydraulic parts?

The internal construction of our hydraulic parts primarily consists of the following components: technopolymer impellers with stainless steel support rings, technopolymer diffusers and stage-boxes, thermoplastic bushing and floating rings. ZDS has selected this unique design in order to make the pump much more resistant to sand and equivalent abrasives. Compared to conventional designs and similar products available on the market, the ZDS hydraulic part needs less starting torque to start pumping. This is why the ZDS pump is a particularly good option when you are challenged with unstable power supply.



### ErP Ready - MEI Index:

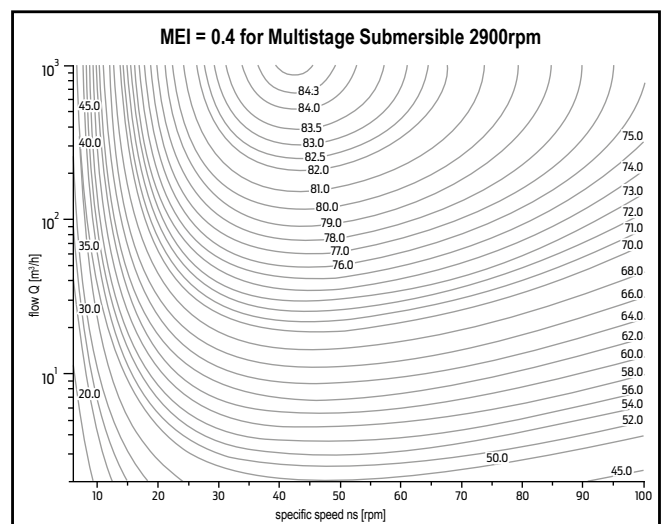
ZDS hydraulic parts from Series 1 to Series 5 are highly efficient and comply with the ErP Directive (Commission Regulation (EC) No 547/2012) which is effective from 1 January 2013. These hydraulic parts are classified/graduated in a new energy efficiency index (MEI).

Minimum Efficiency Index (MEI) is the dimensionless scale unit for hydraulic pump efficiency at best efficiency point (BEP), part load and overload.

The operation of ZDS hydraulic parts for clean water in variable points of the performance curve can be more efficient and cheap if it is controlled, for example, by an adjustable speed motor which adjusts the operation of the pump to the system.

Trimmed impeller diameter offer lower efficiency than full impeller diameter. Impeller trimming will make the submersible pump work in a fixed point with lower energy consumption. Minimum Efficiency Index (MEI) is based on the full diameter impeller.

Information about the referential efficiency are available on [www.zdsgroup.com](http://www.zdsgroup.com)

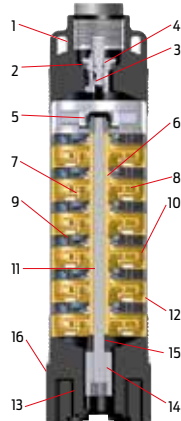




## QS4P

### 4" Hydraulic parts with pump head and lower support in TECHNOPOLYMER

- Pump head and lower support made of special material, strong and resistant to acid water corrosion (low pH value) and ferrous water.
- Extra mechanical resistance of the upper head is guaranteed by the double threaded stainless steel ring placed inside and outside of this component.
- Integrated filter inside the lower support.



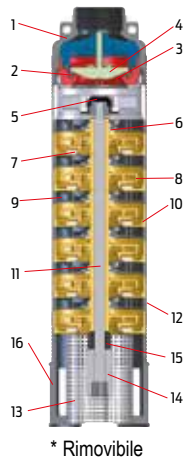
Pos.	COMPONENTS	MATERIALS
1	Upper head	PA 6.6
2	O-Ring	NBR
3	Complete valve	POM
4	Plate valve	POM
5	Shaft guide	NBR
6	Bearing	TPU
7	Floating ring	TPU
8	Impeller	Noryl and stainless steel
9	Diffuser	Noryl
10	Stage box	Noryl
11	Pump shaft	Stainless steel AISI 304 (DIN 1.4301)
12	Outer sleeve	Stainless steel AISI 304 (DIN 1.4301)
13	Filter	PA 6.6
14	Coupling	Stainless steel AISI 304 (DIN 1.4301)
15	Spacer	Noryl
16	Pump support	PA 6.6
-	Cable cover	PVC



## QS4X

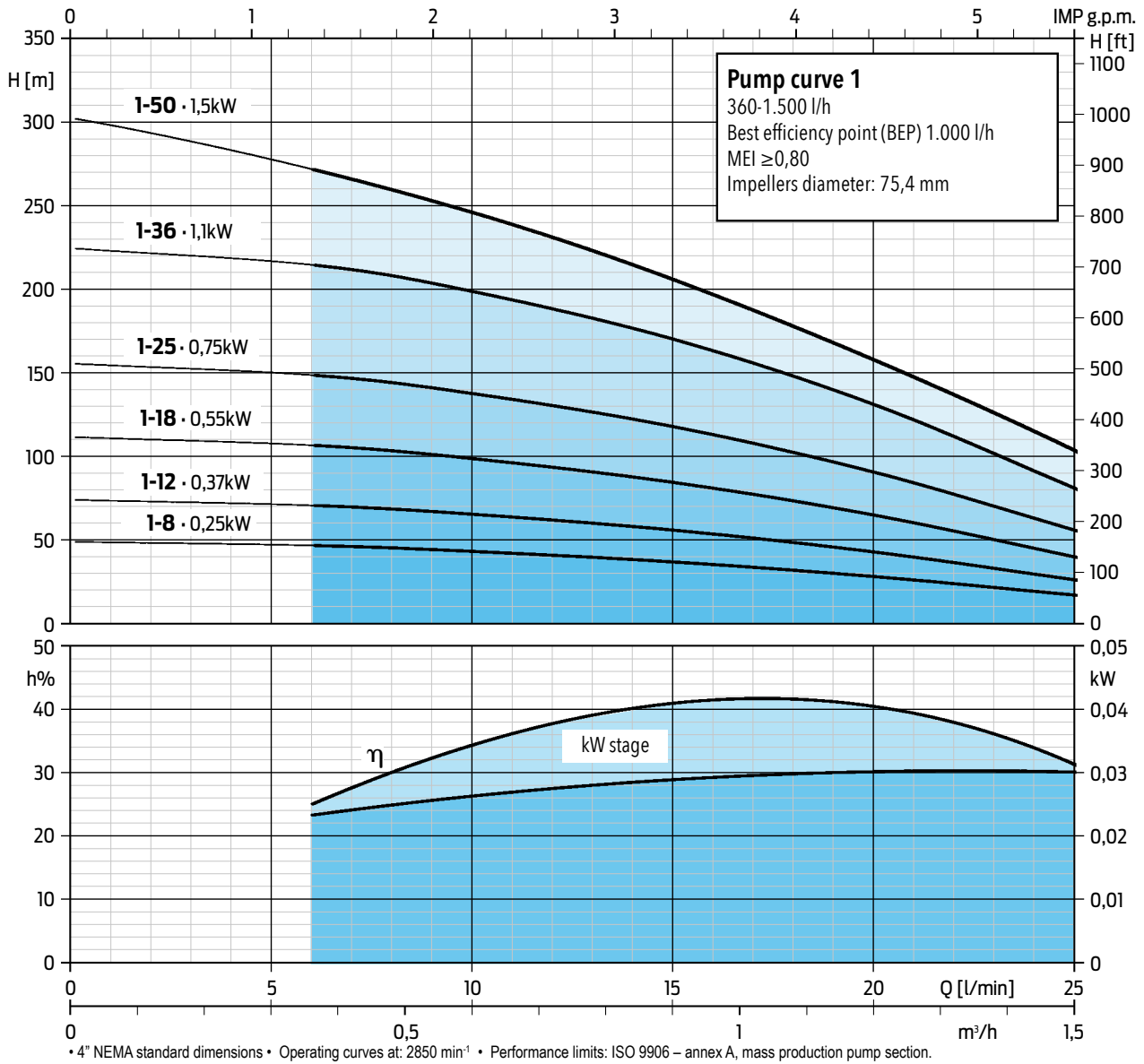
### 4" Hydraulic parts with pump head and lower support in STAINLESS STEEL

- Pump head available in 1-1/4" or 2" outlet diameter.
- Cable cover in stainless steel, to protect the power supply cable during installation.
- Removable stainless steel filter.



Pos.	COMPONENTS	MATERIALS
1	Upper head	Stainless steel AISI 304 (DIN 1.4301)
2	O-Ring	NBR
3	Complete valve	PA 6.6
4	Plate valve	PA 6.6
5	Shaft guide	NBR
6	Bearing	TPU
7	Floating ring	TPU
8	Impeller	Noryl and stainless steel
9	Diffuser	Noryl
10	Stage box	Noryl
11	Pump shaft	Stainless steel AISI 304 (DIN 1.4301)
12	Outer sleeve	Stainless steel AISI 304 (DIN 1.4301)
13	Filter	* Stainless steel AISI 304 (DIN 1.4301)
14	Coupling	Stainless steel AISI 304 (DIN 1.4301)
15	Spacer	Noryl
16	Pump support	Stainless steel AISI 304 (DIN 1.4301)
-	Cable cover	Stainless steel AISI 304 (DIN 1.4301)

# Hydraulic parts series 1



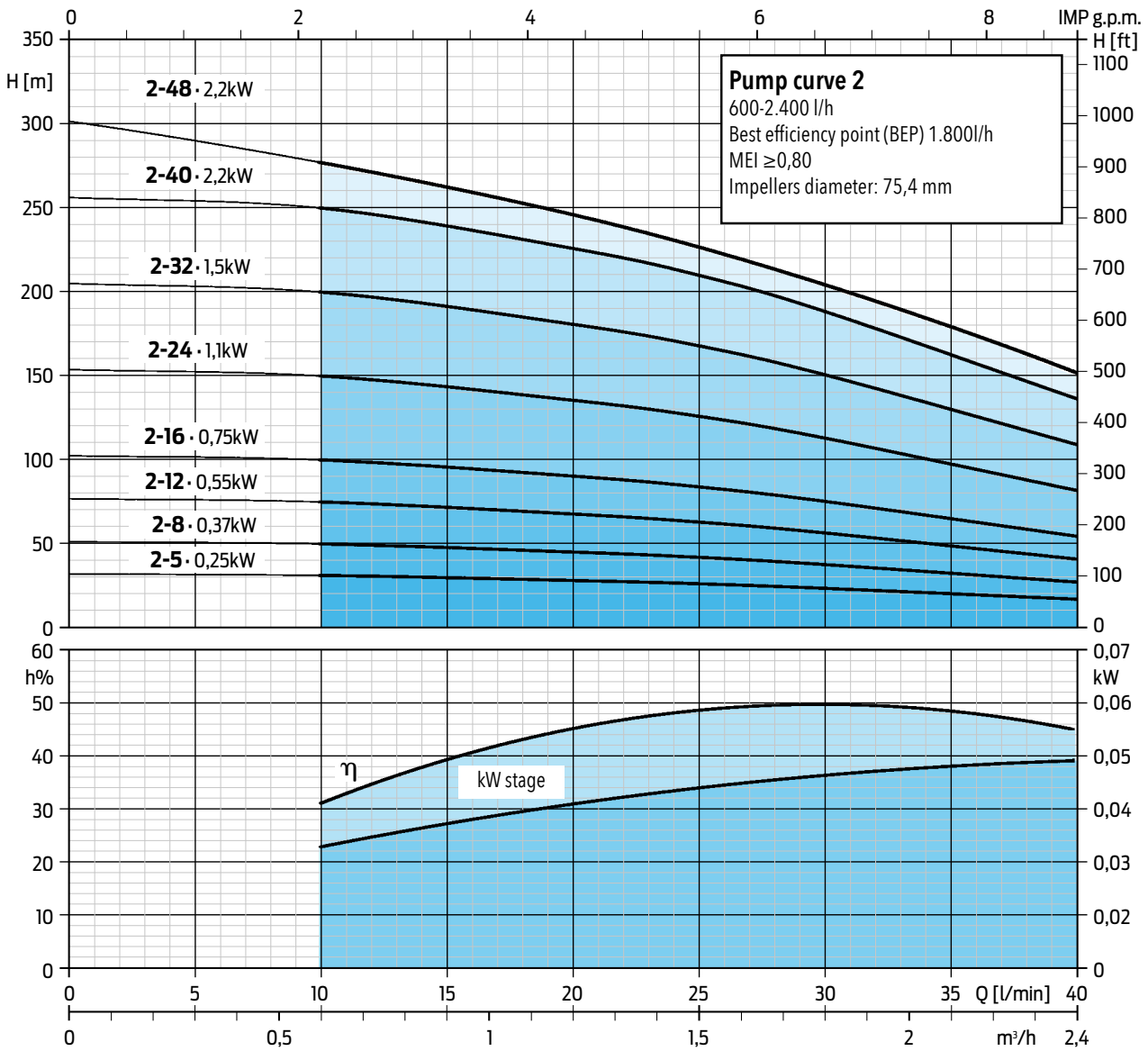
## QS4P.1 Upper head and lower support in **TECHNOPOLIMER**

HYDRAULIC TECHNOPOLYMER Pump curve 1	CODE	COUPABLE MOTORS 50Hz n~2850 min <sup>-1</sup>			HYDRAULIC CHARACTERISTICS (n~2850 min <sup>-1</sup> ) Delivery (Q) – Ø Outlet diameter: 1" ¼ G-F					Lenght	Weight	
		Power		Minimum Thrust	m³/h	0	0,36	0,6	1,2			1,5
		kW	HP									
QS4P.1-8	181005008	0,25	0,33	1500	Total head in meters = H= dynamic total pressure	50,2	48	44,4	29,2	18	357	2,5
QS4P.1-12	181005012	0,37	0,5	1500		75,4	72	66,6	43,8	27	437	3
QS4P.1-18	181005018	0,55	0,75	1500		113	108	99,9	65,7	40,5	557	3,9
QS4P.1-25	181005025	0,75	1	1500		157	150	138,8	91,3	56,3	697	4,8

## QS4X.1 Upper head and lower support in **STAINLESS STEEL**

HYDRAULIC INOX Pump curve 1	CODE	COUPABLE MOTORS 50Hz n~2850 min <sup>-1</sup>			HYDRAULIC CHARACTERISTICS (n~2850 min <sup>-1</sup> ) Delivery (Q) – Ø Outlet diameter: 1" ¼ G-F					Lenght	Weight	
		Power		Minimum Thrust	m³/h	0	0,36	0,6	1,2			1,5
		kW	HP									
QS4X.1-8	1810100081	0,25	0,33	1500	Total head in meters = H= dynamic total pressure	50,2	48	44,4	29,2	18	357	3,5
QS4X.1-12	1810100121	0,37	0,5	1500		75,4	72	66,6	43,8	27	437	4
QS4X.1-18	1810100181	0,55	0,75	1500		113	108	99,9	65,7	40,5	557	4,8
QS4X.1-25	1810100251	0,75	1	1500		157	150	138,8	91,3	56,3	697	5,7
QS4X.1-36	1810100361	1,1	1,5	2500		226,1	216	199,8	131,4	81	950	7,6
QS4X.1-50	1810100501	1,5	2	2500		300	280	260	170	106	1230	9,9

# Hydraulic parts series 2



• 4" NEMA standard dimensions • Operating curves at 2850 min<sup>-1</sup> • Performance limits: ISO 9906 – annex A, mass production pump section.

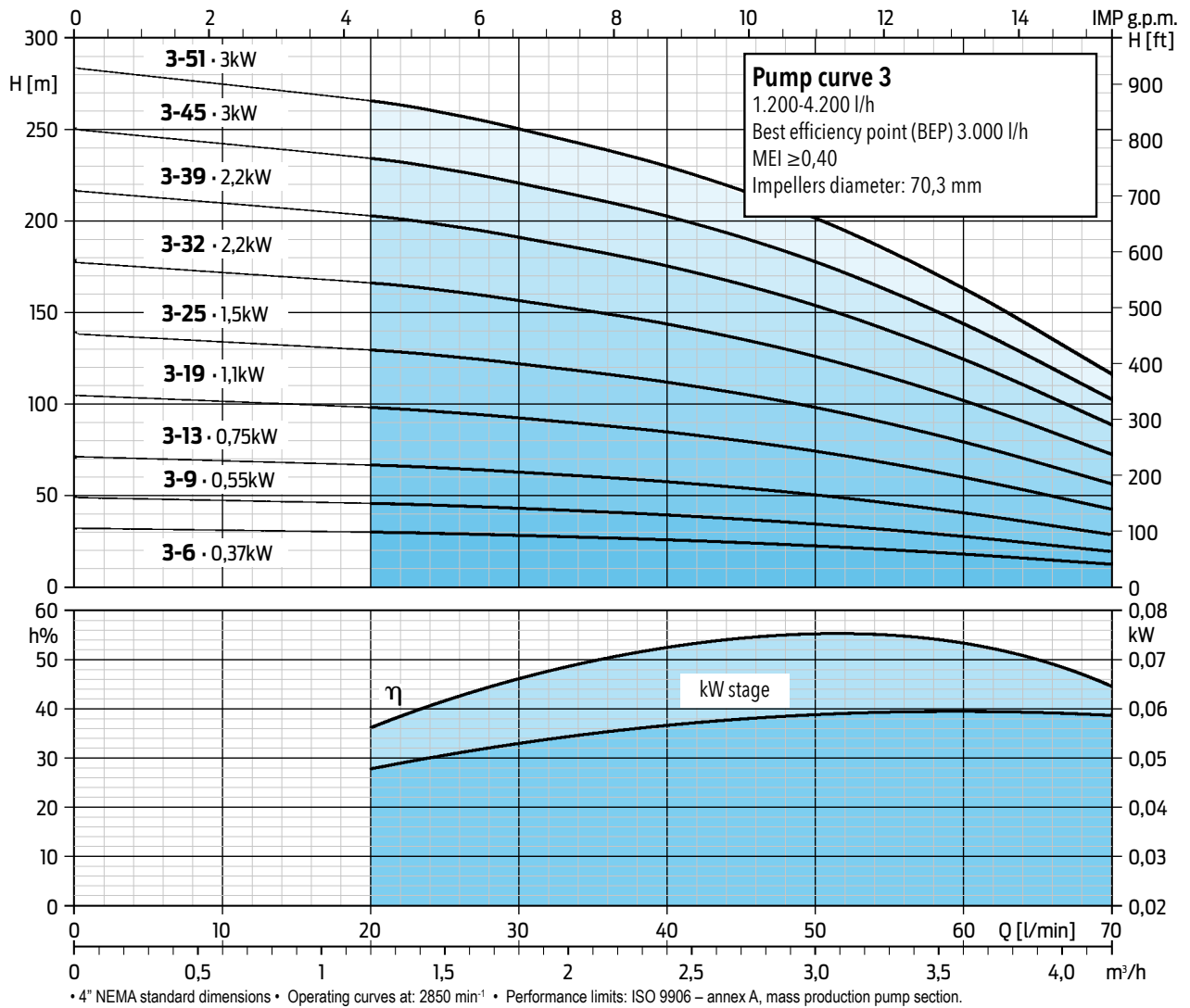
## QS4P.2 Upper head and lower support in TECHNOLIMER

HYDRAULIC TECHNOPOLYMER Pump curve 2	CODE	COUPABLE MOTORS 50Hz n~2850 min <sup>-1</sup>			HYDRAULIC CHARACTERISTICS (n~2850 min <sup>-1</sup> )						Lenght	Weight
		Power		Minimum Thrust F [N]	Delivery (Q) – Ø Outlet diameter: 1" ¼ G-F							
		kW	HP		m³/h	0	0,6	1,2	1,5	1,8		
QS4P.2-5	181005105	0,25	0,33	1500	32	31,2	28,2	26,2	23,5	17,0	310	2,1
QS4P.2-8	181005108	0,37	0,5	1500	51,2	49,9	45,1	41,9	37,6	27,2	377	2,6
QS4P.2-12	181005112	0,55	0,75	1500	76,8	74,9	67,7	62,9	56,4	40,8	467	3,2
QS4P.2-16	181005116	0,75	1	1500	102,4	99,8	90,2	83,8	75,2	54,4	557	3,8
QS4P.2-24	181005124	1,1	1,5	2500	153,6	149,8	135,4	125,8	112,8	81,6	737	5,2

## QS4X.2 Upper head and lower support in STAINLESS STEEL

HYDRAULIC INOX Pump curve 2	CODE	COUPABLE MOTORS 50Hz n~2850 min <sup>-1</sup>			HYDRAULIC CHARACTERISTICS (n~2850 min <sup>-1</sup> )						Lenght	Weight
		Power		Minimum Thrust F [N]	Delivery (Q) – Ø Outlet diameter: 1" ¼ G-F							
		kW	HP		m³/h	0	0,6	1,2	1,5	1,8		
QS4X.2-5	1810101051	0,25	0,33	1500	32	31,2	28,8	26,2	23,5	17	310	3,1
QS4X.2-8	1810101081	0,37	0,5	1500	51,2	49,9	45,1	41,9	37,6	27,2	377	3,6
QS4X.2-12	1810101121	0,55	0,75	1500	76,8	74,9	67,7	62,9	56,4	40,8	467	4,1
QS4X.2-16	1810101161	0,75	1	1500	102,4	99,8	90,2	83,8	75,2	54,4	557	4,8
QS4X.2-24	1810101241	1,1	1,5	2500	153,6	149,8	135,4	125,8	112,8	81,6	737	5,9
QS4X.2-32	1810101321	1,5	2	2500	204,7	199,7	180,5	167,7	150,4	108	917	7,7
QS4X.2-40	1810101401	2,2	3	3000	255,9	249,6	225,6	209,6	188	136	1130	8,5
QS4X.2-48	1810101481	2,2	3	4000	300	290	258	235	208	150	1310	9,9

# Hydraulic parts series 3



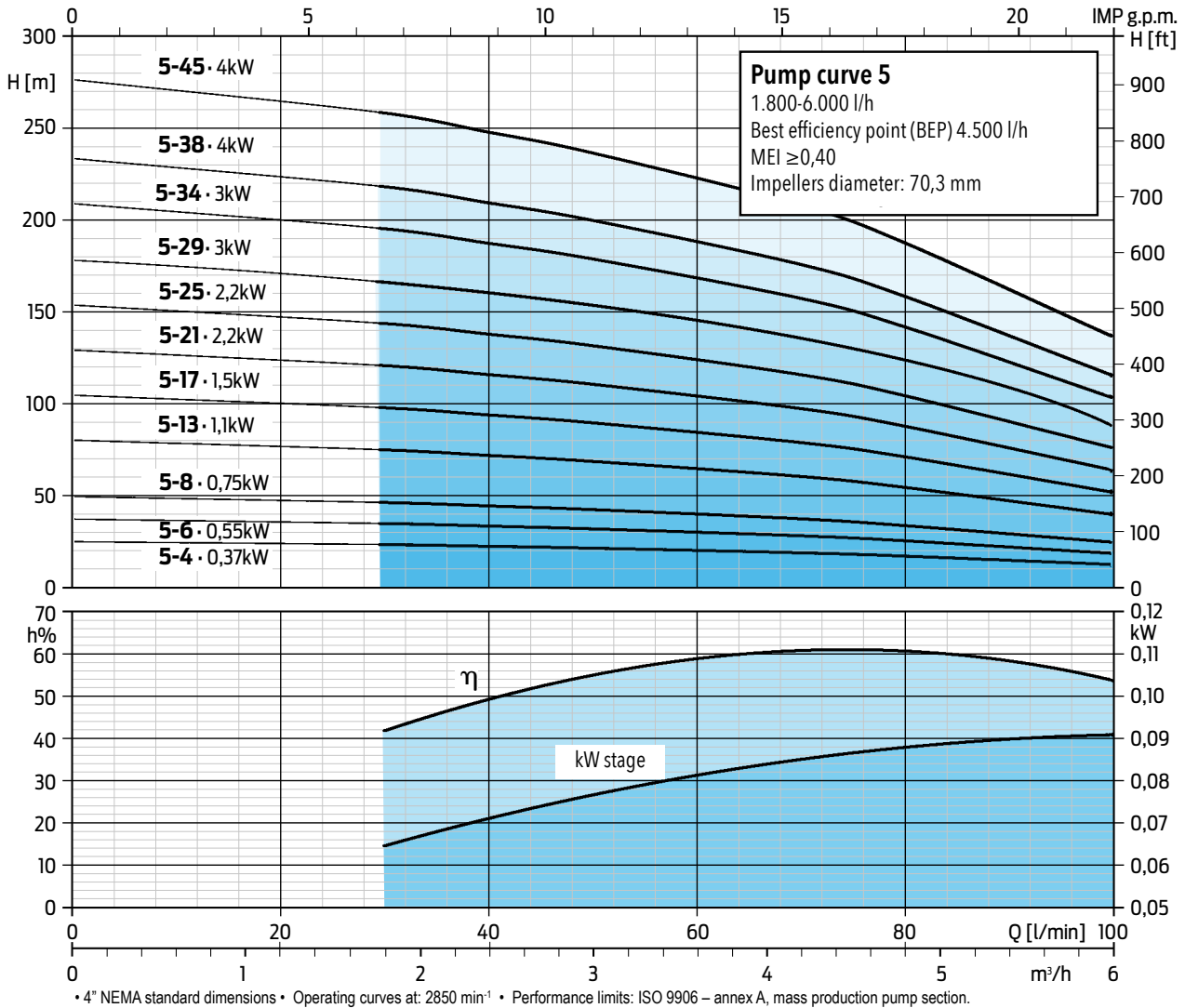
## QS4P.3 Upper head and lower support in **TECHNOPOLIMER**

HYDRAULIC TECHNOPOLYMER Pump curve 3	CODE	COUPABLE MOTORS 50Hz n~2850 min <sup>-1</sup>			HYDRAULIC CHARACTERISTICS (n~2850 min <sup>-1</sup> )								Lenght	Weight
		Power		Minimum Thrust	Delivery (Q) – Ø Outlet diameter: 1" ¼ G-F									
		kW	HP		F [N]	m³/h	0	1,2	1,5	1,8	2,4	3		
QS4P.3-6	181005206	0,37	0,5	1500	Total head in meters = H= dynamic total pressure	33,3	31,2	30,4	29,4	27	23,7	13,7	392	2,6
QS4P.3-9	181005209	0,55	0,75	1500		50	46,8	45,6	44,1	40,5	35,6	20,6	490	3,2
QS4P.3-13	181005213	0,75	1	1500		72,2	67,6	65,9	63,7	58,5	51,4	29,8	620	4
QS4P.3-19	181005219	1,1	1,5	1500		105,5	98,8	96,3	93,1	85,5	75,1	43,5	815	5,6
QS4P.3-25	181005225	1,5	2	2500		138,8	130	126,8	122,5	112,5	98,8	57,3	1010	6,7

## QS4X.3 Upper head and lower support in **STAINLESS STEEL**

HYDRAULIC INOX Pump curve 3	CODE	COUPABLE MOTORS 50Hz n~2850 min <sup>-1</sup>			HYDRAULIC CHARACTERISTICS (n~2850 min <sup>-1</sup> )								Lenght	Weight
		Power		Minimum Thrust	Delivery (Q) – Ø Outlet diameter: 1" ¼ G-F									
		kW	HP		F [N]	m³/h	0	1,2	1,5	1,8	2,4	3		
QS4X.3-6	1810102061	0,37	0,5	1500	Total head in meters = H= dynamic total pressure	33,3	31,2	30,4	29,4	27	23,7	13,7	392	3,6
QS4X.3-9	1810102091	0,55	0,75	1500		50	46,8	45,6	44,1	40,5	35,6	20,6	490	4,1
QS4X.3-13	1810102131	0,75	1	1500		72,2	67,6	65,9	63,7	58,5	51,4	29,8	620	5
QS4X.3-19	1810102191	1,1	1,5	1500		105,5	98,8	96,3	93,1	85,5	75,1	43,5	815	6,6
QS4X.3-25	1810102251	1,5	2	2500		138,8	130	126,8	122,5	112,5	98,8	57,3	1010	7,5
QS4X.3-32	1810102321	2,2	3	2500		177,6	166,4	162,2	156,8	144	126,4	73,3	1270	9,6
QS4X.3-39	1810102391	2,2	3	3000		216,5	202,8	197,7	191,1	175,5	154,1	89,3	1497	11
QS4X.3-45	1810102451	3	4	4000		249,8	234	228,2	220,5	202,5	177,8	103,1	1725	12,4
QS4X.3-51	1810102511	3	4	4000		283,1	265,2	258,6	249,9	229,5	201,5	116,8	1920	14,1

# Hydraulic parts series 5

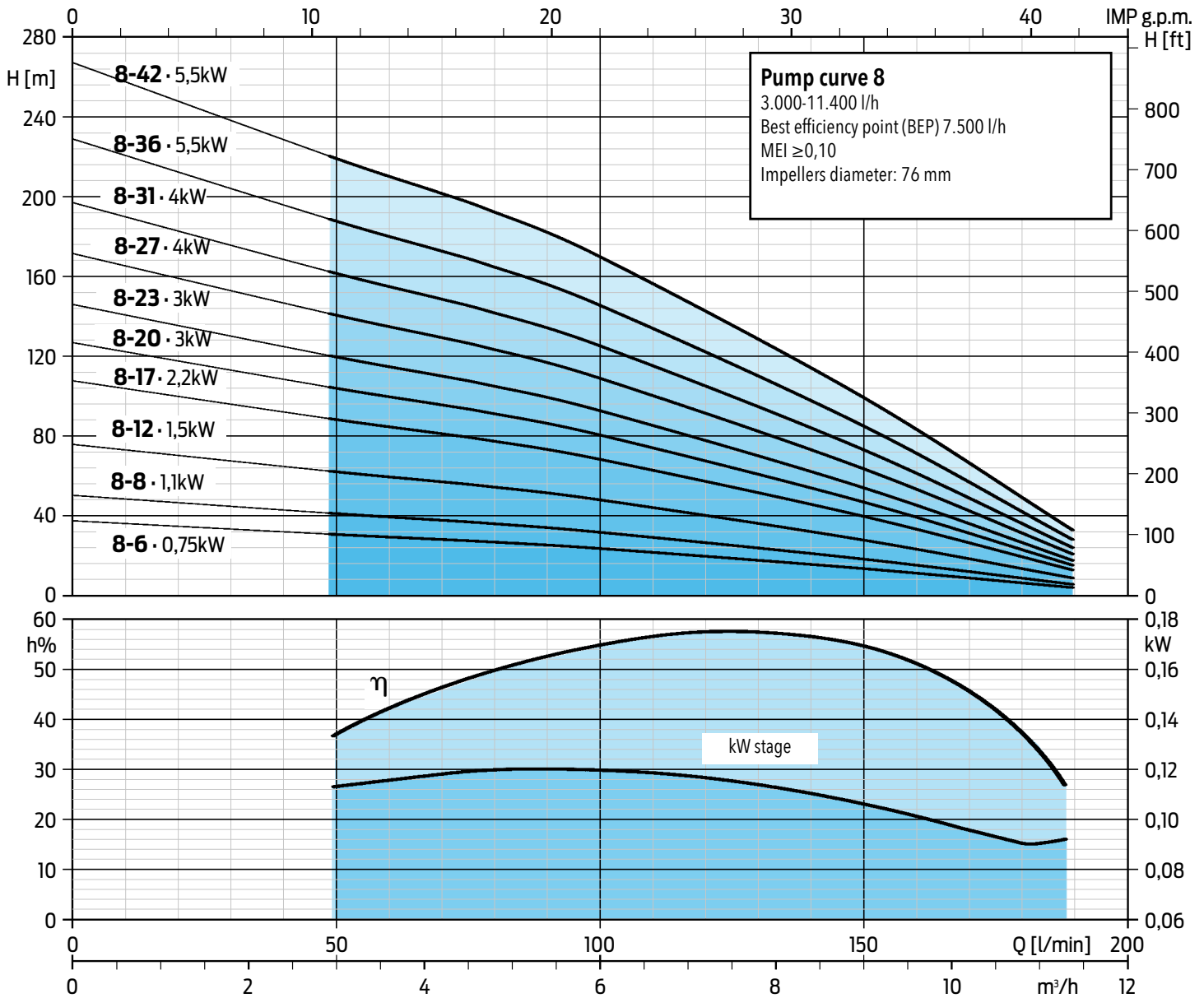


## QS4P.5 Upper head and lower support in TECHNOLIMER

HYDRAULIC TECHNOLIMER Pump curve 5	CODE	COUPABLE MOTORS 50Hz n~2850 min <sup>-1</sup>			HYDRAULIC CHARACTERISTICS (n~2850 min <sup>-1</sup> ) Delivery (Q) – Ø Outlet diameter: 1" ¼ G-F							Lenght mm	Weight kg	
		Power		Minimum Thrust F [N]	m³/h	0	1,8	2,4	3	4,2	4,8			6
		kW	HP											
QS4P.5-4	181005304	0,37	0,5	1500	Total head in meters = H= dynamic total pressure	24,5	22,9	22	21	18,5	16,7	12,1	327	2,2
QS4P.5-6	181005306	0,55	0,75	1500		36,8	34,4	33	31,5	27,7	25	18,2	392	2,6
QS4P.5-8	181005308	0,75	1	1500		49,1	45,8	44	42	37	33,3	24,2	457	3
QS4P.5-13	181005313	1,1	1,5	1500		79,7	74,5	71,5	68,3	60,1	54,2	39,4	620	4,1
QS4P.5-17	181005317	1,5	2,0	2500		104,3	97,4	93,5	89,3	78,5	70,8	51,5	750	5
QS4P.5-21	181005321	2,2	3,0	2500		128,8	120,3	115,5	110,3	97	87,5	63,3	880	5,8
QS4P.5-25	181005325	2,2	3,0	2500		153,3	143,3	137,5	131,3	115,5	104,2	75,8	1010	6,7

## QS4X.5 Upper head and lower support in STAINLESS STEEL

HYDRAULIC INOX Pump curve 5	CODE	COUPABLE MOTORS 50Hz n~2850 min <sup>-1</sup>			HYDRAULIC CHARACTERISTICS (n~2850 min <sup>-1</sup> ) Delivery (Q) – Ø Outlet diameter: 1" ¼ G-F							Lenght mm	Weight kg	
		Power		Minimum Thrust F [N]	m³/h	0	1,8	2,4	3	4,2	4,8			6
		kW	HP											
QS4X.5-4	1810103041	0,37	0,5	1500	Total head in meters = H= dynamic total pressure	24,5	22,9	22	21	18,5	16,7	12,1	327	3,2
QS4X.5-6	1810103061	0,55	0,75	1500		36,8	34,4	33	31,5	27,7	25	18,2	392	3,6
QS4X.5-8	1810103081	0,75	1	1500		49,1	45,8	44	42	37	33,3	24,2	457	4
QS4X.5-13	1810103131	1,1	1,5	1500		79,7	74,5	71,5	68,3	60,1	54,2	39,4	620	5,1
QS4X.5-17	1810103171	1,5	2	2500		104,3	97,4	93,5	89,3	78,5	70,8	51,5	750	6
QS4X.5-21	1810103211	2,2	3	2500		128,8	120,3	115,5	110,3	97	87,5	63,6	880	6,8
QS4X.5-25	1810103251	2,2	3	2500		153,3	143,3	137,5	131,3	115,5	104,2	75,8	1010	7,6
QS4X.5-29	1810103291	3	4	4000		177,9	166,2	159,5	152,3	134	120,8	87,9	1172	8,7
QS4X.5-34	1810103341	3	4	4000		208,5	194,8	187	178,5	157,1	141,7	103	1335	9,8
QS4X.5-38	1810103381	4	5,5	4000		233,1	217,1	209	199,5	175,6	158,3	115,1	1497	11,2
QS4X.5-45	1810103451	4	5,5	4000		276	257,9	247,5	236,3	207,9	187,5	136,4	1725	13

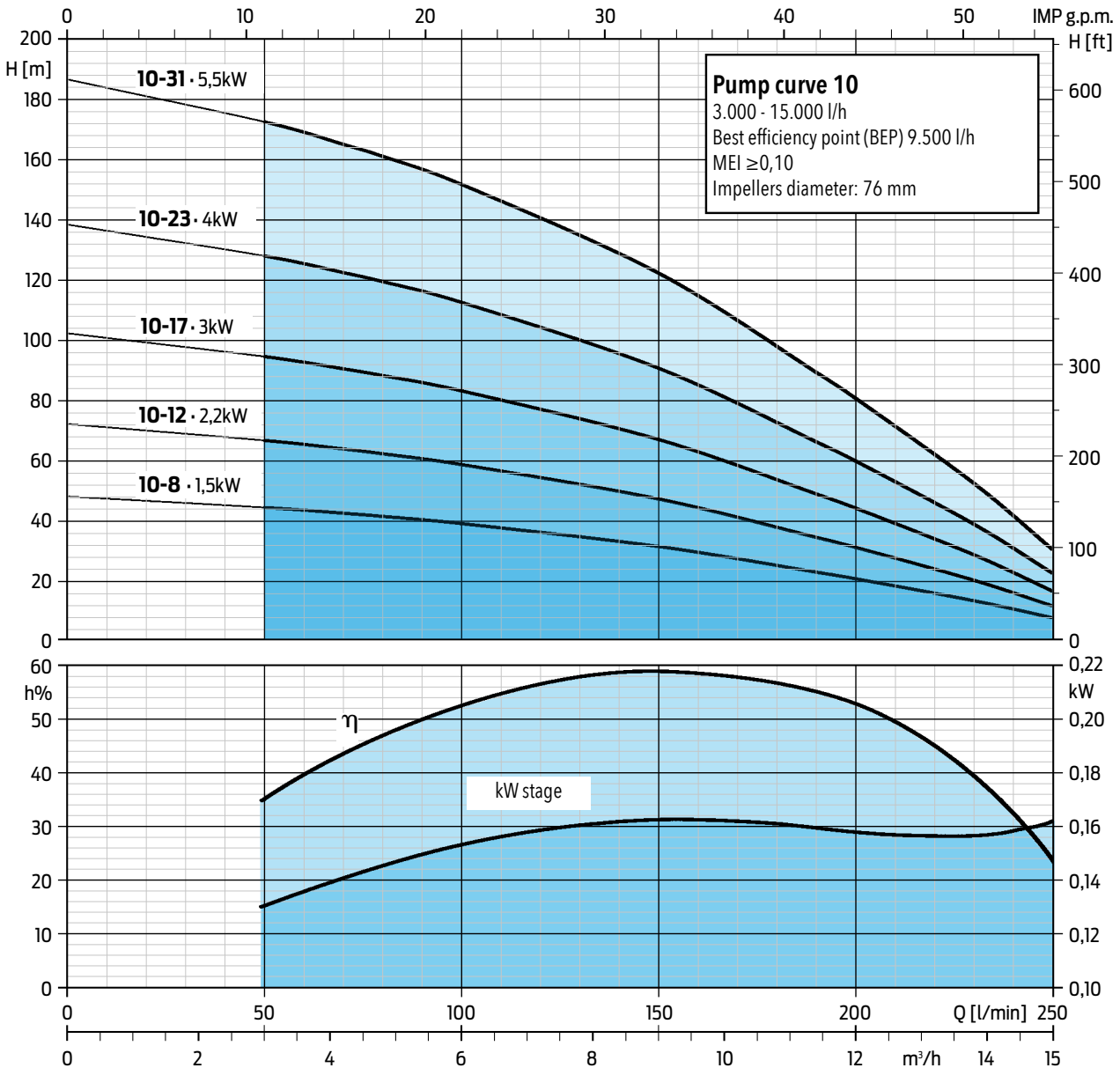


• 4" NEMA standard dimensions • Operating curves at: 2850 min<sup>-1</sup> • Performance limits: ISO 9906 – annex A, mass production pump section.

## QS4X.8 Upper head and lower support in **STAINLESS STEEL**

HYDRAULIC INOX Pump curve 8	CODE	COUPABLE MOTORS 50Hz n~2850 min <sup>-1</sup>			HYDRAULIC CHARACTERISTICS (n~2850 min <sup>-1</sup> )						Lenght mm	Weight kg
		Power		Minimum Thrust F [N]	Delivery (Q) – Ø Outlet diameter: 2" G-F							
		kW	HP		m <sup>3</sup> /h	0	3	4,8	6	9		
QS4X.8-6	1810104061	0,75	1	1500	38,4	31,5	27,7	24,5	14,4	4,8	512	4,2
QS4X.8-8	1810104081	1,1	1,5	1500	51,2	42	36,9	32,7	19,2	6,4	617	4,8
QS4X.8-12	1810104121	1,5	2	1500	76,8	63	55,3	49	28,8	9,6	827	6,2
QS4X.8-17	1810104171	2,2	3	2500	108,8	89,3	78,4	69,4	40,8	13,6	1122	7,8
QS4X.8-20	1810104201	3	4	2500	128	105	92,2	81,7	48	16	1280	8,9
QS4X.8-23	1810104231	3	4	2500	147,2	120,8	106	93,9	55,2	18,4	1437	9,8
QS4X.8-27	1810104271	4	5,5	4000	172,8	141,8	124,5	110,2	64,8	21,6	1680	11,4
QS4X.8-31	1810104311	4	5,5	4000	198,4	162,8	142,9	126,6	74,4	24,8	1890	12,6
QS4X.8-36	1810104361	5,5	7,5	4000	230,4	189	166	147	86,4	28,8	2185	14,4
QS4X.8-42	1810104421	5,5	7,5	4000	268,8	220,5	193,6	171,5	100,8	33,6	2500	16,3

# Hydraulic parts series 10



• 4" NEMA standard dimensions • Operating curves at: 2850 min<sup>-1</sup> • Performance limits: ISO 9906 – annex A, mass production pump section.

## QS4X.10 Upper head and lower support in STAINLESS STEEL

HYDRAULIC INOX Pump curve 10	CODE	COUPABLE MOTORS 50Hz n~2850 min <sup>-1</sup>			HYDRAULIC CHARACTERISTICS (n~2850 min <sup>-1</sup> )										Lenght mm	Weight kg
		Power		Minimum Thrust F [N]	Delivery (Q) – Ø Outlet diameter: 2" G-F											
		kW	HP		m³/h	0	3	4,8	6	9	11,4	13,8	15			
						l/min	0	50	80	100	150	190	230	250		
QS4X.10-8	1810105081	1,5	2	1500	Total head in meters = H= dynamic total pressure	48,2	44,4	41,6	39,2	31,6	23,1	13,6	7,9	617	4,8	
QS4X.10-12	1810105121	2,2	3	1500		72,3	66,6	62,4	58,8	47,4	34,7	20,4	11,9	827	6,2	
QS4X.10-17	1810105171	3	4	2500		102,4	94,4	88,4	83,3	67,2	47,1	28,9	16,8	1122	7,8	
QS4X.10-23	1810105231	4	5,5	4000		138,6	127,7	119,6	112,7	90,9	66,4	39,1	22,8	1437	9,8	
QS4X.10-31	1810105311	5,5	7,5	4000		186,8	172,1	161,2	151,9	122,5	89,5	52,7	30,7	1890	12,7	

PRODUCT NOT AVAILABLE FOR THE EUROPEAN MARKET

# O2 4" oil-cooled single-phase submersible motors



## O2 2-wire single-phase motor

Electric motors from series O2 are 2 pole asynchronous single-phase submersible motors, **designed to operate coupled to ZDS 4" hydraulic parts**. Strong and reliable, they are made of materials suitable for contact with water and oil-cooled by FDA - Food Drug Administration approved dielectric fluid. O2 motors are equipped with a special and unique start and run capacitor, which is designed to guarantee a long-life to the motor and avoid the installation of an external control panel. They also come with a special and manually resettable built-in thermal protection, which stops the motor when overheated.

### APPLICATIONS

O2 oil-cooled motors ensure reliable working in 4" or larger diameter wells and are designed to be used in for lifting, distribution, and pressurisation of water in water systems. O2 motors can be installed with a frequency inverter.

### TECHNICAL SPECIFICATIONS

<b>Power range:</b>	0,37 - 1,5 kW
<b>Voltage range:</b>	1x220 - 230V / 50 Hz
<b>Voltage tolerance 50Hz from nominal:</b>	+6% / -10% U <sub>N</sub>
<b>Flange:</b>	4" NEMA standard dimensions
<b>Rotation:</b>	CCW facing shaft end
<b>Degree of protection:</b>	IP 68
<b>Insulation:</b>	Cl. F
<b>Rated ambient temperature:</b>	max. 40° C
<b>Required cooling flow:</b>	min 8 cm/sec
<b>Maximum quantity of suspended sand:</b>	120 g/m <sup>3</sup>
<b>Maximum starts/h:</b>	150, equally distributed
<b>Mounting:</b>	vertical/horizontal
<b>Maximum immersion depth:</b>	100 m
<b>Thrust:</b>	1.500 N; 2.500 N (according to ranges)
<b>Allowed range of water PH:</b>	6,4-8,0
<b>Cable size:</b>	3x1,5 mm <sup>2</sup> (ACS approved)

### CHARACTERISTICS

2 pole asynchronous 2-wire single-phase oil-cooled motor.
Special and long lasting integrated start and run capacitor.
Rewindable stator and rotor immersed in dielectric fluid (FDA approved).
Oversized axial and radial oil-lubricated bearings to guarantee longer life to the motor.
The pressure compensation inside the motor is ensured by a special internal diaphragm.
Sand protection to guarantee optimal operation even with sand in the borehole.
Motor bottom cover for extra protection and safety.
Removable lead connector to make installation and maintenance easier.
Supply cable according to drinking water regulations (ACS), available in different lengths.

### MOTOR'S PROTECTIONS

Special thermal protector, manually resettable, especially designed to ensure higher reliability and longer life



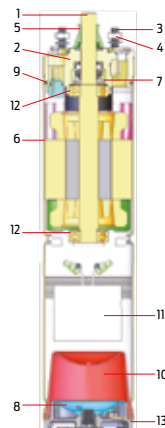
#### Thermal protection

which stops the motor in case of overheating because of an incorrect installation



#### Current overload protection

which protects the motor in the case the submersible pump is partially or totally blocked.



Pos.	COMPONENTS	MATERIALS
1	Shaft End	Stainless steel AISI 304/420
2	Top bracket	G20 Cast Iron - cataphoretic treatment
3	Stud	Stainless steel AISI 304
4	Nut	Stainless steel AISI 304
5	Rotating Sand Guard	NBR
6	Motor casing	Stainless steel AISI 304
7	Mechanical seal	Graphite/Ceramic
8	Bottom cover	Stainless steel AISI 304
9	O-Ring	NBR
10	Diaphragm	NBR
11	Capacitor	-
12	Bearing	Stainless Steel
13	Safety bottom cover	Technopolimer

## O2 - 220-230V - 2-WIRE SINGLE-PHASE OIL-COOLED MOTORS - START AND RUN CONTROL PANEL NOT REQUIRED

Model	CODE (No cable)	CODE (Short cable)	CODE (with DRP)	Power			Cable (m)	n <sub>N</sub> [min <sup>-1</sup> ]	I <sub>N</sub> [A]	I <sub>START</sub> [A]	η eff [%]	CosΦ (P.f.)	T <sub>START</sub>		Lenght [mm]	W [kg]
				[kW]	[HP]	[N]							T <sub>N</sub>			
<b>O2.037.15</b>	197100010	197100010L	197100010S	0,37	0,5	1500	1,5	2855	3,3-3,5	9,8-10,7	52	0,99	0,85	389	8,5	
<b>O2.055.15</b>	197100015	197100015L	197100015S	0,55	0,75	1500	1,5	2840	4,4-4,6	12,8-13,9	60	0,99	0,64	404	9,2	
<b>O2.075.15</b>	197100020	197100020L	197100020S	0,75	1	1500	1,5	2855	5,8-6,1	17,9-19,1	62	0,99	0,7	429	10,3	
<b>O2.110.25</b>	197100025	197100025L	197100025S	1,1	1,5	2500	1,5	2855	7,8-8	23,8-24,7	66	0,99	0,62	464	11,9	
<b>O2.150.25</b>	197100030	197100030L	197100030S	1,5	2	2500	2,5	2855	10,1-11	33-34	65	0,99	0,6	518	13,7	

# O3 4" oil-cooled single-phase submersible motors



## O3 PSC single-phase motor

Electric motors from series O3 are 2 pole asynchronous single-phase submersible motors designed to operate coupled to hydraulic parts with 4" Nema standard. Strong and reliable, they are made of materials suitable for contact with water and oil-cooled by FDA - Food Drug Administration approved dielectric fluid.

O3 motors require a start and run control panel CBO, which includes capacitor and manual reset amperometric protection.

### APPLICATIONS



O3 oil-cooled motors ensure reliable working in 4" or larger diameter wells and are designed to be used in for lifting, distribution, and pressurisation of water in water systems. O3 motors can be installed with a frequency inverter.

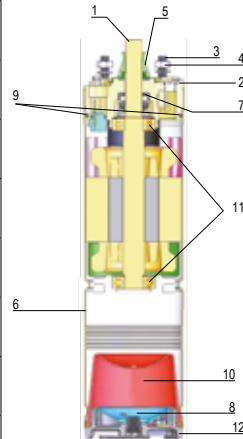
### TECHNICAL SPECIFICATIONS



<b>Protection requirements for O3 motors without control panel:</b>	N 60947-4-1 trip time < 10 sec. at 5 x I <sub>N</sub>
<b>Power range:</b>	0,37 - 2,2 kW
<b>Voltage range:</b>	1x220 - 230V / 50 Hz
<b>Voltage tolerance 50Hz from nominal:</b>	+6% / -10% U <sub>N</sub>
<b>Flange:</b>	4" NEMA standard dimensions
<b>Rotation:</b>	CCW facing shaft end
<b>Degree of protection:</b>	IP 68
<b>Insulation:</b>	Cl. F
<b>Rated ambient temperature:</b>	max. 40° C
<b>Required cooling flow:</b>	min 8 cm/sec
<b>Maximum quantity of suspended sand:</b>	120 g/m <sup>3</sup>
<b>Maximum starts/h:</b>	150, equally distributed
<b>Mounting:</b>	vertical/horizontal
<b>Maximum immersion depth:</b>	150 m
<b>Thrust:</b>	1.500 N; 2.500 N; 4.500 N (according to ranges)
<b>Allowed range of water PH:</b>	6,4-8,0
<b>Cable size:</b>	4x1,5 mm <sup>2</sup> (ACS approved)

### CHARACTERISTICS

- 2 pole asynchronous single-phase PSC oil-cooled motor.
- Rewindable stator and rotor immersed in dielectric fluid (FDA approved).
- Oversized axial and radial oil-lubricated bearings to guarantee longer life to the motor.
- The pressure compensation inside the motor is ensured by a special internal diaphragm.
- Sand protection to guarantee optimal operation even with sand in the borehole.
- Motor bottom cover for extra protection and safety.
- Removable lead connector to make installation and maintenance easier.
- Supply cable according to drinking water regulations (ACS), available in different lengths.



Pos.	COMPONENTS	MATERIALS
1	Shaft End	Stainless steel AISI 304/420
2	Top bracket	G20 Cast Iron - cathophoretic treatment
3	Stud	Stainless steel AISI 304
4	Nut	Stainless steel AISI 304
5	Rotating Sand Guard	NBR
6	Outer sleeve	Stainless steel AISI 304
7	Mechanical seal	Graphite/Ceramic
8	Bottom cover	Stainless steel AISI 304
9	O-Ring	NBR
10	Diaphragm	NBR
11	Bearing	Stainless Steel
12	Safety bottom cover	Technopolimer

## O3 - 220-230 V - SINGLE-PHASE PSC OIL-COOLED MOTORS - CONTROL PANEL NOT INCLUDED

Model	CODE (No cable)	CODE (Short cable)	CODE (with DRP)	Power		Thrust [N]	Cable (m)	n <sub>N</sub> [min <sup>-1</sup> ]	I <sub>N</sub> [A]	I <sub>START</sub> [A]	η eff [%]	CosΦ (P.f.)	C450V (μF)	T <sub>START</sub> T <sub>N</sub>	Lenght [mm]	Weight [kg]
				[kW]	[HP]											
<b>O3.037.15</b>	197101010	197101010L	197101010S	0,37	0,5	1500	1,5	2855	3,3-3,5	9,8-10,7	52	0,99	20	0,85	324	8,0
<b>O3.055.15</b>	197101015	197101015L	197101015S	0,55	0,75	1500	1,5	2840	4,4-4,6	12,8-13,9	60	0,99	25	0,64	339	8,7
<b>O3.075.15</b>	197101020	197101020L	197101020S	0,75	1	1500	1,5	2855	5,8-6,1	17,9-19,1	62	0,99	35	0,7	364	9,7
<b>O3.110.25</b>	197101025	197101025L	197101025S	1,1	1,5	2500	1,5	2855	7,8-8	23,8-24,7	66	0,99	40	0,62	399	11,3
<b>O3.150.25</b>	197101030	197101030L	197101030S	1,5	2	2500	2,5	2855	10,1-11	33-34	65	0,99	60	0,6	434	13,1
<b>O3.150.45</b>	197101035	197101035L	197101035S	1,5	2	4500	2,5	2855	10,1-11	33-34	65	0,99	60	0,6	457	13,7
<b>O3.220.25</b>	197101040	197101040L	197101040S	2,2	3	2500	2,5	2850	14-15,2	43-45	68	0,99	80	0,6	484	15,3
<b>O3.220.45</b>	197101045	197101045L	197101045S	2,2	3	4500	2,5	2850	14-15,2	43-45	68	0,99	80	0,6	507	15,8

# OT 4" oil-cooled three-phase submersible motors



## OT three-phase motor

Electric motors from series OT are 2 pole asynchronous three-phase submersible motors designed to operate coupled to hydraulic parts with 4" Nema standard. Strong and reliable, they are made of materials suitable for contact with water and oil-cooled by FDA - Food Drug Administration approved dielectric fluid. OT motors require a start, operation and protection system.

### APPLICATIONS

OT oil-cooled motors ensure reliable working in 4" or larger diameter wells and are designed to be used in for lifting, distribution, and pressurisation of water in water systems. OT motors are equipped with phase separator which ensures optimal operation when the motor is used with frequency inverter.

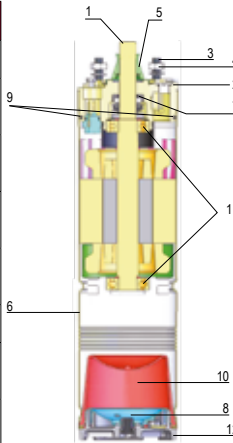
### TECHNICAL SPECIFICATIONS

<b>For OT motors an overload protection must be installed according to:</b>	EN 60947-4-1 trip time < 10 sec. at $5 \times I_N$
<b>Power range:</b>	0,37 - 5,5 kW
<b>Voltage range:</b>	3x380 - 415V / 50 Hz
<b>Voltage tolerance 50Hz from nominal:</b>	+6% / -10% $U_N$
<b>Flange:</b>	4" NEMA standard dimensions
<b>Rotation:</b>	reversible
<b>Degree of protection:</b>	IP 68
<b>Insulation:</b>	Cl. F
<b>Rated ambient temperature:</b>	max. 40° C
<b>Required cooling flow:</b>	min 8 cm/sec
<b>Maximum quantity of suspended sand:</b>	120 g/m <sup>3</sup>
<b>Maximum starts/h:</b>	150, equally distributed
<b>Mounting:</b>	vertical/horizontal
<b>Maximum immersion depth:</b>	150 m
<b>Thrust:</b>	1.500 N; 2.500 N; 4.500 N (according to ranges)
<b>Allowed range of water PH:</b>	6,4-8,0
<b>Cable size:</b>	4x1,5 mm <sup>2</sup> (ACS approved)

18

### CHARACTERISTICS

2 pole asynchronous three-phase oil-cooled motor.
Rewindable stator and rotor immersed in dielectric fluid (FDA approved)
Oversized axial and radial oil-lubricated bearings to guarantee longer life to the motor.
The pressure compensation inside the motor is ensured by a special internal diaphragm.
Sand protection to guarantee optimal operation even with sand in the borehole.
Motor bottom cover for extra protection and safety.
Removable lead connector to make installation and maintenance easier.
Supply cable according to drinking water regulations (ACS), available in different lengths.



Pos.	COMPONENTS	MATERIALS
1	Shaft End	Stainless steel AISI 304/420
2	Top bracket	G20 Cast Iron - cathophoretic treatment
3	Stud	Stainless steel AISI 304
4	Nut	Stainless steel AISI 304
5	Rotating Sand Guard	NBR
6	Motor casing	Stainless steel AISI 304
7	Mechanical seal	Graphite/Ceramic
8	Bottom cover	Stainless steel AISI 304
9	O-Ring	NBR
10	Diaphragm	NBR
11	Bearing	Steel
12	Safety bottom cover	Technopolymer

## OT – 380-415V – THREE-PHASE OIL-COOLED MOTORS

Model	CODE (No cable)	CODE (Short cable)	CODE (with DRP)	Power		Thrust [N]	Cable (m)	$n_N$ [min <sup>-1</sup> ]	$I_N$ [A]	$I_{START}$ [A]	$\eta_{eff}$ [%]	Cos $\Phi$ (P.f.)	$T_{START}$ $T_N$	Lenght [mm]	W [kg]
				[kW]	[HP]										
OT.037.15	184198010	184198010L	184198010S	0,37	0,5	1500	1,5	2865-2885	1,5-1,7	6,5-7,4	58	0,63-0,54	4,1	313	7,5
OT.055.15	184198015	184198015L	184198015S	0,55	0,75	1500	1,5	2820-2855	1,6-1,8	7,6-8,3	64	0,75-0,67	3	324	8
OT.075.15	184198020	184198020L	184198020S	0,75	1	1500	1,5	2820-2850	2,3-2,6	10,3-11,2	66	0,75-0,63	3,2	339	8,8
OT.110.25	184198025	184198025L	184198025S	1,1	1,5	2500	1,5	2815-2840	3,1-3,6	14-15,2	69	0,77-0,66	3,7	364	9,9
OT.150.25	184198030	184198030L	184198030S	1,5	2	2500	2,5	2815-2840	4,1-4,6	19,6-21,4	71	0,77-0,66	3,7	399	11,6
OT.150.45	184198035	184198035L	184198035S	1,5	2	4500	2,5	2815-2840	4,1-4,6	19,6-21,4	71	0,77-0,66	3,7	422	12,2
OT.220.25	184198040	184198040L	184198040S	2,2	3	2500	2,5	2832-2865	5,2-5,4	24,2-27	74	0,86-0,76	2,2	434	13,1
OT.220.45	184198045	184198045L	184198045S	2,2	3	4500	2,5	2832-2865	5,2-5,4	24,2-27	74	0,86-0,76	2,2	457	13,8
OT.300.25	184198050	184198050L	184198050S	3	4	2500	2,5	2820-2855	7,0-7,2	33,7-36,8	75	0,85-0,76	3,2	434	13,1
OT.300.45	184198055	184198055L	184198055S	3	4	4500	2,5	2820-2855	7,0-7,2	33,7-36,8	75	0,85-0,76	3,2	457	13,8
OT.400.25	184198060	184198060L	184198060S	4	5,5	2500	2,5	2825-2860	9,3-9,8	42,9-46,8	76	0,84-0,75	2,8	484	16,3
OT.400.45	184198065	184198065L	184198065S	4	5,5	4500	2,5	2825-2860	9,3-9,8	42,9-46,8	76	0,84-0,75	2,8	484	16,9
OT.550.45	184198070	184198070L	Not available	5,5	7,5	4500	3,5	2820-2850	12,2-12,6	56,8-62	78	0,8-0,7	2,7	572	20,5

# H2 4" encapsulated water-cooled single-phase submersible motors



## H2 2-wire single-phase motor

Electric motors from series H2 are 2 pole asynchronous single-phase submersible motors **designed to operate coupled to 4" ZDS hydraulic parts**. They are made of materials suitable for contact with water, and cooling and lubrication of the thrust block and bushes are guaranteed by a mixture of water and glycol. H2 motors are equipped with a special and unique start and run capacitor, which is designed to guarantee a long-life to the motor and avoid the installation of an external control panel. They also come with a special and manually resettable built-in thermal protection, which stops the motor when overheated.

### APPLICATIONS

H2 water-cooled motors ensure reliable working in 4" or larger diameter wells and are designed to be used in for lifting, distribution, and pressurisation of water in water systems. H2 motors can be installed with a frequency inverter.

### TECHNICAL SPECIFICATIONS

<b>Power range:</b>	0,37 - 1,5 kW
<b>Voltage range:</b>	1x220 - 230V / 50 Hz
<b>Voltage tolerance 50Hz from nominal:</b>	+6% / -10% $U_N$
<b>Flange:</b>	4" NEMA standard dimensions
<b>Rotation:</b>	CCW facing shaft end
<b>Degree of protection:</b>	IP 68
<b>Insulation:</b>	Cl. F
<b>Rated ambient temperature:</b>	max. 35° C
<b>Required cooling flow:</b>	min 8 cm/sec
<b>Maximum quantity of suspended sand:</b>	120 g/m <sup>3</sup>
<b>Maximum starts/h:</b>	150, equally distributed
<b>Mounting:</b>	vertical/horizontal
<b>Maximum immersion depth:</b>	150 m
<b>Thrust:</b>	1.500 N; 2.500 N (according to ranges)
<b>Allowed range of water PH:</b>	6,4-8,0
<b>Cable size:</b>	3x1,5 mm <sup>2</sup> (ACS approved)

### CHARACTERISTICS

- 2 pole asynchronous 2-wire single-phase encapsulated water-cooled motor.
- Special and long lasting integrated start and run capacitor. In case of need it can be easily replaced.
- Axial and radial water-lubricated bearings allow for maintenance-free operation.
- Hermetically sealed stator by 304L stainless steel flanges, internal and external casings, filled by resin to guarantee optimal cooling capacity of temperature during operation.
- Rotor set on Kingsbury thrust block equipped with carbon clearance ring and oscillating pads in high-strength stainless steel to sustain high axial loads.
- Pre-filled with non-contaminating antifreeze lubricant liquid.
- Sand protection to guarantee optimal operation even with sand in the borehole.
- Removable lead connector to make installation and maintenance easier.
- Supply cable according to drinking water regulations (ACS), available in different lengths.

### MOTOR'S PROTECTIONS

Special thermal protector, manually resettable, especially designed to ensure higher reliability and longer life



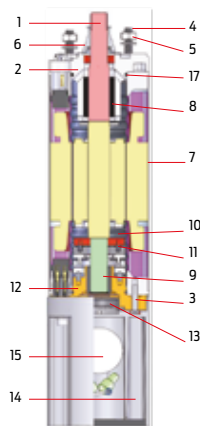
#### Thermal protection

which stops the motor in case of overheating because of an incorrect installation



#### Current overload protection

which protects the motor in the case the submersible pump is partially or totally blocked.



Pos.	COMPONENTS	MATERIALS
1	Shaft End	Stainless steel AISI 304/420
2	Top bracket	G20 Cast Iron - cataphoretic treatment
3	Pump support	G20 Cast Iron - cataphoretic treatment
4	Stud	Stainless steel AISI 304
5	Nut	Stainless steel AISI 304
6	Rotating Sand Guard	NBR
7	Outer sleeve	Stainless steel AISI 304
8	Upper bearing	Graphite HT 204
9	Lower bearing	Graphite HT 204
10	Rocking disk	Stainless steel AISI 304
11	Segments	Stainless steel AISI 304
12	O-ring	NBR
13	Diaphragm	NBR
14	Capacitor Box	Technopolimer
15	Capacitor	-

## H2 - 220-230 V - 2-WIRE SINGLE-PHASE WATER COOLED ENCAPSULATED MOTORS - START AND RUN CONTROL PANEL NOT REQUIRED

Model	CODE (No cable)	CODE (Short cable)	CODE (with DRP)	Power		Thrust [N]	Cable (m)	$n_n$ [min <sup>-1</sup> ]	$I_N$ [A]	$I_{START}$ [A]	$\eta_{eff}$ [%]	Cos $\Phi$ (P.f.)	$T_{START}$ $T_N$	Length [mm]	W [kg]
				[kW]	[HP]										
H2.037.15	196190010	196190010L	196190010S	0,37	0,5	1500	1,5	2850	3,0-3,1	9,5-11	58	0,97	0,8	390	9,7
H2.055.15	196190015	196190015L	196190015S	0,55	0,75	1500	1,5	2830	4,1-4,2	14,2-15,7	63	0,99	0,8	417	11
H2.075.15	196190020	196190020L	196190020S	0,75	1	1500	1,5	2830	5,5-5,6	18-20,3	63	0,99	0,9	434	12,2
H2.110.30	196190025	196190025L	196190025S	1,1	1,5	2500	1,5	2840	8,3-8,5	29-31,5	63	0,97	0,8	465	13,5
H2.150.30	196190030	196190030L	196190030S	1,5	2	2500	1,5	2840	10,6-10,7	35-36,5	66	0,99	0,7	556	15,4



## 1x220-230V SINGLE-PHASE PSC MOTORS - CONTROL PANEL NOT INCLUDED

Model	Code Franklin	CODE (No cable)	CODE (Short cable)	CODE (with DRP)	Power		Thrust [N]	Cable (m)	I <sub>N</sub> [A]	I <sub>START</sub> I <sub>N</sub>	η eff [%]	CosΦ (P.f.)	C450V (μF)	Lenght [mm]	Weight [kg]
					[kW]	[HP]									
H3F.025.30	254 803 6700L	196191105	196191105L	196191105S	0,25	0,37	4000	1,5	2,4	9,0-9,4	51-50	0,92	12,5	214	7,3
H3F.037.30	254 805 6700L	196191110	196191110L	196191110S	0,37	0,5	4000	1,5	3,3	12,1-12,6	54-54	0,9	16	228	7,9
H3F.055.30	254 807 6700L	196191115	196191115L	196191115S	0,55	0,75	4000	1,5	4,3	16,9-17,7	63-63	0,94	20	253	9,1
H3F.075.30	254 808 6700L	196191120	196191120L	196191120S	0,75	1	4000	1,5	5,7	21,7-22,7	61-59	1	35	282	10
H3F.110.30	254 809 6700L	196191125	196191125L	196191125S	1,1	1,5	4000	1,5	8,4	32,5-33,9	65-63	0,92	40	306	11,5
H3F.150.30	254 810 6700L	196191130	196191130L	196191130S	1,5	2	3000	1,5	10,7	39,9-41,7	68-66	0,95	50	338	12,6
H3F.220.40	254 811 6700L	196191135	196191135L	196191135S	2,2	3	4000	2,5	14,7	59,2-61,8	70-68	0,97	70	436	17,4

## 3x380-415V THREE-PHASE MOTORS

Model	Code Franklin	CODE (No cable)	CODE (Short cable)	CODE (with DRP)	Power		Thrust [N]	Cable (m)	I <sub>N</sub> [A]	I <sub>START</sub> I <sub>N</sub>	η eff [%]	CosΦ (P.f.)	Lenght [mm]	Weight [kg]
					[kW]	[HP]								
HTF.037.30	234 761 6700L	184192010	184192010L	184192010S	0,37	0,5	4000	1,5	1,1-1,1	5,1-5,6	66	0,79-0,71	214	6,3
HTF.055.30	234 762 6700L	184192015	184192015L	184192015S	0,55	0,75	4000	1,5	1,6-1,7	7,0-7,7	68	0,79-0,7	228	7,2
HTF.075.30	234 763 6700L	184192020	184192020L	184192020S	0,75	1	4000	1,5	2,0-2,1	10,1-10,9	70	0,81-0,73	248	8
HTF.110.30	234 724 6700L	184192025	184192025L	184192025S	1,1	1,5	4000	1,5	2,8-2,9	15,3-16,7	74	0,82-0,74	282	9,3
HTF.150.30	234 725 6700L	184192030	184192030L	184192030S	1,5	2	4000	1,5	3,9-4	19,7-21,5	73	0,83-0,73	306	10,3
HTF.220.40	234 726 6700L	184192035	184192035L	184192035S	2,2	3	4000	2,5	5,4-5,8	28,3-30,9	75	0,82-0,72	338	11,8
HTF.300.40	234 764 6700L	184192040	184192040L	184192040S	3	4	4000	3	7,4-7,9	39,9-43,6	77	0,82-0,72	393	14,3
HTF.400.65	234 765 3421L	184192045	184192045L	184192045S	4	5,5	6500	3	9,7-10,4	54,1-59,1	78	0,82-0,72	543	21,8
HTF.550.65	234 728 3421L	184192050	184192050L	Not available	5,5	7,5	6500	3	12,6-12,8	73,3-80,1	79	0,85-0,77	652	28,7
HTF.750.65	234 729 3421L	184192055	184192055L	Not available	7,5	10	6500	3	17,2-17,6	94,3-103	79	0,86-0,77	730	32,7

## 3x220-230V THREE-PHASE MOTORS

Model	Code Franklin	CODE - PRICE		Power		Thrust [N]	Cable (m)	I <sub>N</sub> [A]	I <sub>START</sub> I <sub>N</sub>	η eff [%]	CosΦ (P.f.)	Lenght [mm]	Weight [kg]		
		(No cable)	(Short cable)	[kW]	[HP]										
HTF.038.30	234 751 6700L	197192010	€ 355	197192010L	€ 406	0,37	0,5	4000	1,5	1,9-1,9	8,8-9,3	66	0,79-0,74	214	7,2
HTF.056.30	234 752 6700L	197192015	€ 363	197192015L	€ 414	0,55	0,75	4000	1,5	2,7-2,8	12,2-12,9	68	0,79-0,74	228	7,7
HTF.076.30	234 753 6700L	197192020	€ 390	197192020L	€ 441	0,75	1	4000	1,5	3,5-3,5	17,4-18,3	70	0,81-0,77	248	8,7
HTF.111.30	234 754 6700L	197192025	€ 456	197192025L	€ 506	1,1	1,5	4000	1,5	4,9-4,9	26,4-27,8	74	0,82-0,78	282	10,2
HTF.151.30	234 755 6700L	197192030	€ 540	197192030L	€ 591	1,5	2	4000	1,5	6,7-6,7	34,0-35,9	73	0,83-0,78	306	11,2
HTF.221.40	234 756 6700L	197192035	€ 665	197192035L	€ 726	2,2	3	4000	2,5	9,3-9,5	49,0-51,6	75	0,82-0,77	338	12,6
HTF.301.40	234 766 6700L	197192040	€ 805	197192040L	€ 865	3	4	4000	2,5	12,8-13	69,1-72,8	76	0,82-0,77	393	15
HTF.401.65	234 767 3421L	197192045	€ 1115	197192045L	€ 1175	4	5,5	6500	2,5	16,7-17,2	93,7-98,7	78	0,82-0,77	543	20
HTF.551.65	234 758 3421L	197192050	€ 1304	197192050L	€ 1364	5,5	7,5	6500	2,5	21,9-21,8	127-133,7	79	0,85-0,81	652	26,6

# 4" COMPLETE SUBMERSIBLE PUMPS



# QPGo

**4" complete submersible pump, made of ZDS hydraulic part, ZDS 2-wire single-phase oil-cooled O2 motor and supply cable in different lengths.** Reliable, strong, easy to maintain and available in a wide range of models; it's ready to use as it doesn't require a start and run control panel. It can be protected against many possible installation or operation faults thanks to the DRP (integrated in the power supply cable) or the DRP-Plus (display monitoring protections).



## HYDRAULIC PART



QS4P technopolymer or QS4X stainless steel ZDS hydraulic part, with floating ring technology and reinforced impeller.

Great reliability with the integrated non-return valve.

Special design and selected materials to ensure optimal resistance against sand and other abrasives.

Improved impellers design, which requires less starting torque to the motor.

## MOTOR



2 pole asynchronous 2-wire single-phase oil-cooled O2 motor.

Special and long lasting integrated start and run capacitor.

Rewindable stator and rotor immersed in dielectric fluid (FDA approved).

Oversized axial and radial oil-lubricated bearings to guarantee longer life to the motor.

The pressure compensation inside the motor is ensured by a special internal diaphragm.

Sand protection to guarantee optimal operation even with sand in the borehole.

Motor bottom cover for extra protection and safety.

Removable lead connector to make installation and maintenance easier.

Supply cable according to drinking water regulations (ACS), available in different lengths.

## MOTOR'S PROTECTIONS



Special thermal protector, manually resettable, especially designed to ensure higher reliability and longer life



**Thermal protection** which stops the motor in case of overheating because of an incorrect installation.



**Current overload protection** which protects the motor in the case the submersible pump is partially or totally blocked.

## OPTIONAL



**DRP:**  
INTEGRATED DRP -  
DRY RUNNING PROTECTION



**DRP-PLUS DISPLAY**  
MONITORING  
PROTECTION

## APPLICATIONS



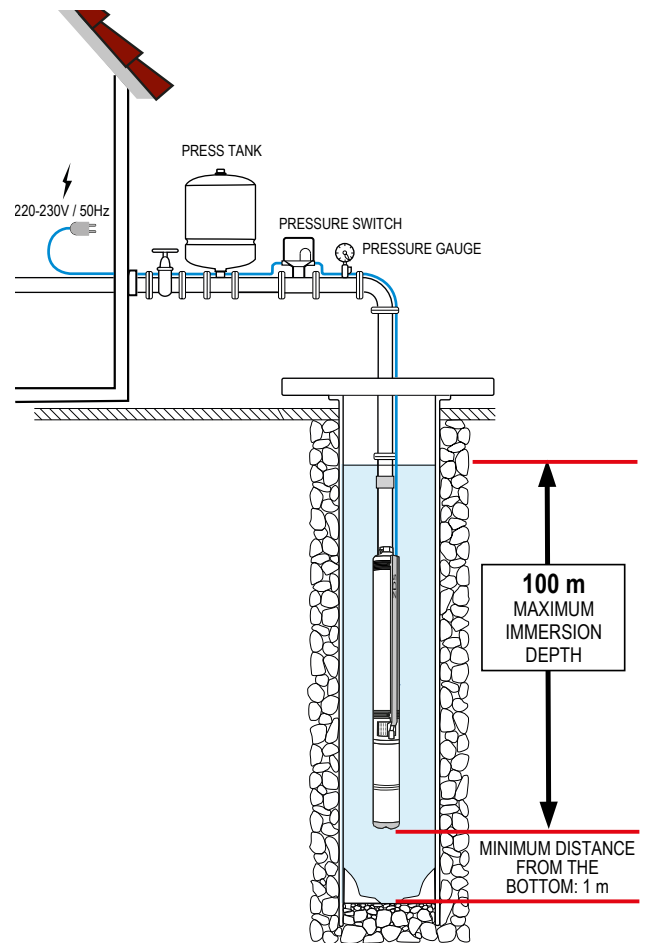
Submersible pump designed to be used in 4" boreholes (or larger) and tanks, for lifting, distribution, pressurization of water in water systems.

# READY AND EASY TO INSTALL

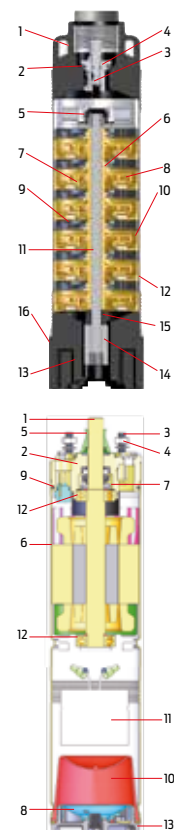
# NO NEED FOR EXTERNAL CONTROL PANEL

# INTEGRATED CAPACITOR AND SPECIAL THERMAL PROTECTION

TECHNICAL SPECIFICATIONS	
Power range:	0,37 - 1,5 kW
Voltage range:	1x220-230V / 50 Hz
Voltage tolerance 50Hz from nominal:	+6% / -10% U <sub>N</sub>
Degree of protection:	IP 68
Insulation:	Cl. F
Rated ambient temperature:	max. 40° C
Required cooling flow:	min. 8 cm/sec
Maximum quantity of suspended sand:	120 g/m <sup>3</sup>
Maximum starts/h:	150, equally distributed
Mounting:	vertical/horizontal
Maximum immersion depth:	100 m
Allowed range of water PH:	6,4-8,0
Outlet diameter:	1" ¼ G-F - 2" G-F
Maximum delivery (Q):	15.000 l/h
Maximum head (H):	220 m

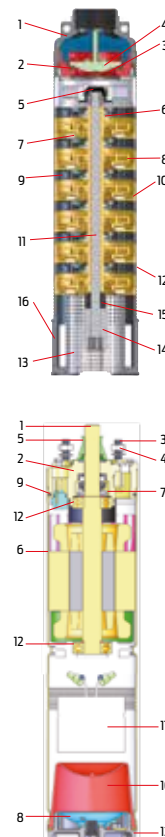


## QPGo.P



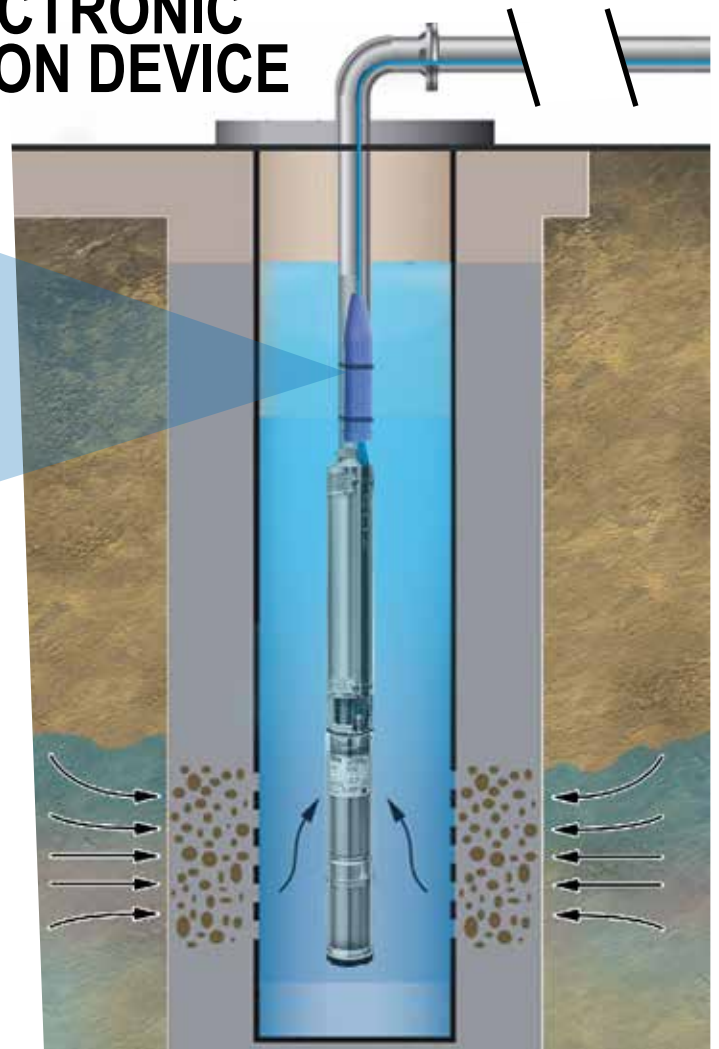
Pos.	COMPONENTS	MATERIALS
1	Upper head	PA 6.6
2	O-Ring	NBR
3	Complete valve	POM
4	Plate valve	POM
5	Shaft guide	NBR
6	Bearing	TPU
7	Floating ring	TPU
8	Impeller	Noryl and stainless steel
9	Diffuser	Noryl
10	Stage box	Noryl
11	Pump shaft	Stainless steel AISI 304 (DIN 1.4301)
12	Outer sleeve	Stainless steel AISI 304 (DIN 1.4301)
13	Filter	PA 6.6
14	Coupling	Stainless steel AISI 304 (DIN 1.4301)
15	Spacer	Noryl
16	Pump support	PA 6.6
-	Cable cover	PVC
1	Shaft End	Stainless steel AISI 304/420
2	Top bracket	G20 Cast Iron - cataphoretic treatment
3	Stud	Stainless steel AISI 304
4	Nut	Stainless steel AISI 304
5	Rotating Sand Guard	NBR
6	Outer sleeve	Stainless steel AISI 304
7	Mechanical seal	Graphite/Ceramic
8	Bottom cover	Stainless steel AISI 304
9	O-Ring	NBR
10	Diaphragm	NBR
11	Capacitor	-
12	Bearing	Stainless Steel
13	Safety bottom cover	Technopolimer

## QPGo.X



Pos.	COMPONENTS	MATERIALS
1	Upper head	Stainless steel AISI 304 (DIN 1.4301)
2	O-Ring	NBR
3	Complete valve	PA 6.6
4	Plate valve	PA 6.6
5	Shaft guide	NBR
6	Bearing	TPU
7	Floating ring	TPU
8	Impeller	Noryl and stainless steel
9	Diffuser	Noryl
10	Stage box	Noryl
11	Pump shaft	Stainless steel AISI 304 (DIN 1.4301)
12	Outer sleeve	Stainless steel AISI 304 (DIN 1.4301)
13	Filter (removable)	Stainless steel AISI 304 (DIN 1.4301)
14	Coupling	Stainless steel AISI 304 (DIN 1.4301)
15	Spacer	Noryl
16	Pump support	Stainless steel AISI 304 (DIN 1.4301)
-	Cable cover	Stainless steel AISI 304 (DIN 1.4301)
1	Shaft End	Stainless steel AISI 304/420
2	Top bracket	G20 Cast Iron - cataphoretic treatment
3	Stud	Stainless steel AISI 304
4	Nut	Stainless steel AISI 304
5	Rotating Sand Guard	NBR
6	Outer sleeve	Stainless steel AISI 304
7	Mechanical seal	Graphite/Ceramic
8	Bottom cover	Stainless steel AISI 304
9	O-Ring	NBR
10	Diaphragm	NBR
11	Capacitor	-
12	Bearing	Stainless Steel
13	Safety bottom cover	Technopolimer

# DRP ELECTRONIC PROTECTION DEVICE



DRP is an electronic device that guarantees optimal protection of the submersible pump from dry running, positioned in the pump supply cable just above the pump. In case of water shortage, the DRP stops the pump immediately, the water drops below the DRP to allow water to flow into the bore hole. Thus the pump operation is directly proportional to the water supply for optimum efficiency. In contrast to traditional solutions, no additional cables, sensors and control boxes are needed. The DRP device has been developed and tested to make the submersible pump function autonomously in conditions of water shortage. The DRP is ready for use, integrated into the connection cable and needs no further installation.

## FEATURES

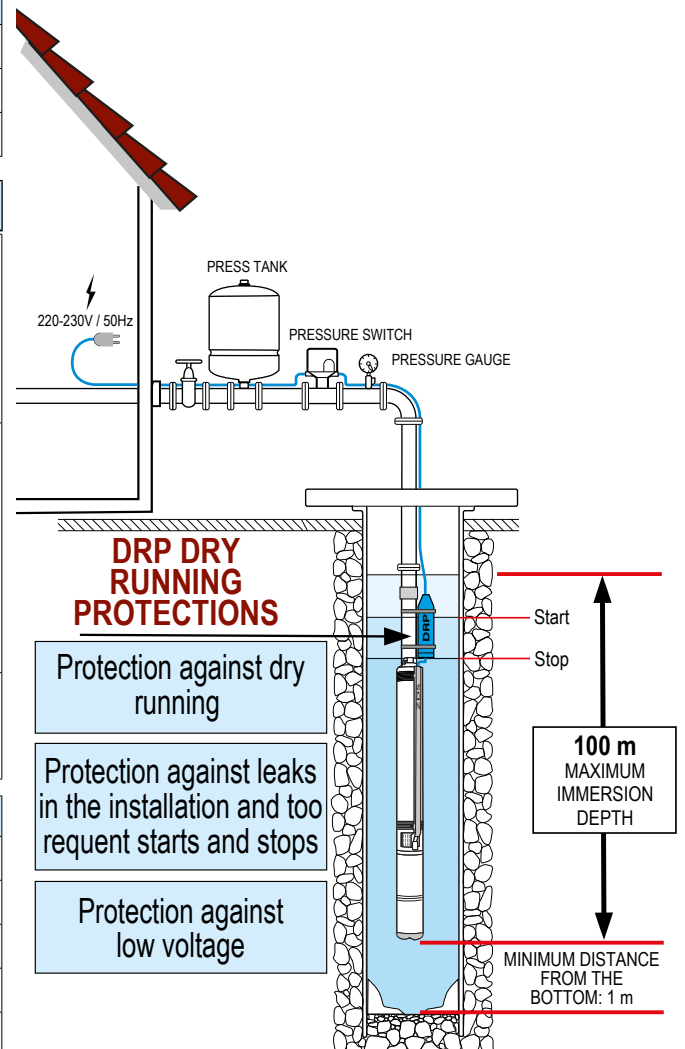
- Automatic programmed restarts in case of protection
- Stand-by mode at maximum number of restart attempts overcoming
- Ready to use, doesn't need any further calibration or setting up

## DRP Protection

	<p><b>Protection against dry running and lack of water in the well</b> The DRP completely protects the submersible pump against lack of water in the well, without the aid of other equipment (probes, cables, sensors, control panels etc.). In case of dry running, the DRP automatically stops the pump. When the water level is restored in the well, the DRP restarts the pump after a programmed cycle time.</p>
	<p><b>Protection against leaks in the installation and too frequent starts and stops</b> The DRP protects the submersible pump against leaks in the piping system (also when the pressure tank is exhausted or its membrane is defective, or when there is a defective pressure switch) and too frequent starts and stops (for example if the tank is too small for the system). In such cases to avoid potential damages, the DRP, after some automatic re-start attempts, makes the pump enter the stand-by mode.</p>
	<p><b>Protection against low voltage</b> The DRP protects the submersible pump against low voltage, that can damage the motor.</p>

## Technical Specifications

<b>Casing:</b>	Thermoplastic material
<b>Voltage range:</b>	1x220-230V +6% / -10% / 50 Hz
<b>Degree of protection:</b>	IP 68
<b>Rated ambient temperature:</b>	-10/+40° C
<b>Size (cm):</b>	33 x 5 x 3



# DRP- PLUS DISPLAY MONITORING PROTECTIONS



## CHARACTERISTICS

- LCD display for easy diagnostic
- Soft start technology
- Extra torque on start up when necessary
- Sounder alarm in the event of a fault
- Ready to use, doesn't need any further calibration or setting up
- Self-learning button for possible field approach

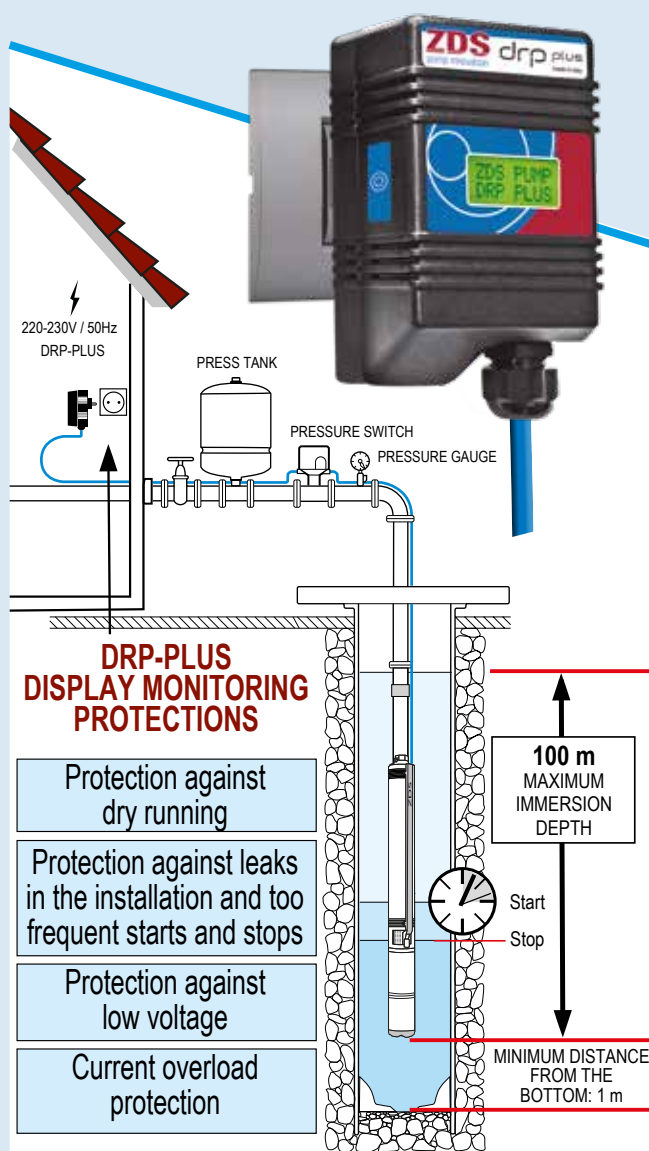
**DRP-Plus** device is designed to guarantee an optimal protection of the QPGo pump against many possible installation and operation faults: an alarm will be shown on the display in case of current overload, low voltage or high voltage, too frequent starts and stops and dry running; ensuring a high degree of automation and restoration. **DRP-Plus** allows to continuously monitor the submersible pump, guaranteeing its operation in the most efficient way through a Soft start procedure (first start attempt with low starting torque) and if needed, a Strong start procedure to benefit of more starting torque. **DRP-Plus** allows to continuously detect and monitor in real time the power: the electrical parameters obtained are processed by a special software, which will efficiently guarantee the correct working conditions. With **DRP-Plus**, the QPGo.DRP-Plus submersible pump can work and be continuously protected also when actual supply voltage values are at tolerance limit, providing the effectiveness of the protection operation. In addition, **DRP-Plus**, thanks to a "smart software" at variable time and automatic restart, can ensure the optimization of water withdrawal from the borehole or tank when the pump is dry running.

### DRP-PLUS Protection

	<b>Protection against dry running and lack of water in the well</b> The device automatically stops the submersible pump showing an alarm on the display, to restart it after a programmed cycle time.
	<b>Protection against leaks in the installation and too frequent starts and stops</b> In case of leaks in the piping system (also when the pressure tank is exhausted or its membrane is damaged, or when there is a defective pressure switch) and too frequent starts and stops (for example if the tank is too small for the system), DRP-Plus automatically makes the pump enter the stand-by mode showing an alarm on the display.
	<b>Protection against low/high voltage</b> Avoid motor damages caused by too low or too high power supply voltages.
	<b>Current overload protection</b> In case the submersible pump is partially or totally blocked, after some restart attempts it enters the stand-by mode.

### Technical Specifications

<b>Schuko plug:</b>	Integrated
<b>Casing:</b>	Thermoplastic material
<b>Voltage range:</b>	1x220-230V +6% / -10% / 50 Hz
<b>Degree of protection:</b>	IP 40
<b>Rated ambient temperature:</b>	-10/+35° C
<b>Size (cm):</b>	7,6 x 13 x 5,5



Model	Power		P.C.*	c.c.**	Hydraulic performance (n~2.850 min <sup>-1</sup> )											Cable 1,5 m		Cable 15 m		Cable 30 m		Cable 45 m	
	kW	HP			ln	m <sup>3</sup> /h	0		0,6	1,5	2,4	4,2	6	Code	Code	Code	Code						
							0	6	10	25	40	70	100										
PUMP CURVE 1	QPGo.P.1-8	0,25	0,33	0,55	2,9	50,2	48	44,4	18			197300108L	197300108L1	197300108L2	Not available								
	QPGo.P.1-8.DRP											197300108S	197300108S1	197300108S2	Not available								
	QPGo.P.1-8.DRP-Plus											197300108P	197300108P1	197300108P2	Not available								
	QPGo.P.1-12	0,37	0,5	0,72	3,3	75,4	72	66,6	27			197300112L	197300112L1	197300112L2	197300112L3								
	QPGo.P.1-12.DRP											197300112S	197300112S1	197300112S2	197300112S3								
	QPGo.P.1-12.DRP-Plus											197300112P	197300112P1	197300112P2	197300112P3								
	QPGo.P.1-18	0,55	0,75	0,95	4,4	113	108	99,9	40,5			197300118L	197300118L1	197300118L2	197300118L3								
	QPGo.P.1-18.DRP											197300118S	197300118S1	197300118S2	197300118S3								
	QPGo.P.1-18.DRP-Plus											197300118P	197300118P1	197300118P2	197300118P3								
	QPGo.P.1-25	0,75	1	1,24	5,8	157	150	138,8	56,3			197300125L	197300125L1	197300125L2	197300125L3								
QPGo.P.1-25.DRP	197300125S											197300125S1	197300125S2	197300125S3									
QPGo.P.1-25.DRP-Plus	197300125P											197300125P1	197300125P2	197300125P3									
PUMP CURVE 2	QPGo.P.2-5	0,25	0,33	0,59	2,9	32		31,2	26,2	17		197300205L	197300205L1	197300205L2	Not available								
	QPGo.P.2-5.DRP											197300205S	197300205S1	197300205S2	Not available								
	QPGo.P.2-5.DRP-Plus											197300205P	197300205P1	197300205P2	Not available								
	QPGo.P.2-8	0,37	0,5	0,73	3,3	51,2		49,9	41,9	27,2		197300208L	197300208L1	197300208L2	197300208L3								
	QPGo.P.2-8.DRP											197300208S	197300208S1	197300208S2	197300208S3								
	QPGo.P.2-8.DRP-Plus											197300208P	197300208P1	197300208P2	197300208P3								
	QPGo.P.2-12	0,55	0,75	0,97	4,4	76,8		74,9	62,9	40,8		197300212L	197300212L1	197300212L2	197300212L3								
	QPGo.P.2-12.DRP											197300212S	197300212S1	197300212S2	197300212S3								
	QPGo.P.2-12.DRP-Plus											197300212P	197300212P1	197300212P2	197300212P3								
	QPGo.P.2-16	0,75	1	1,27	5,8	102,4		99,8	83,8	54,4		197300216L	197300216L1	197300216L2	197300216L3								
QPGo.P.2-16.DRP	197300216S											197300216S1	197300216S2	197300216S3									
QPGo.P.2-16.DRP-Plus	197300216P											197300216P1	197300216P2	197300216P3									
QPGo.P.2-24	1,1	1,5	1,7	7,8	153,6		149,8	125,8	81,6		197300224L	197300224L1	197300224L2	197300224L3									
QPGo.P.2-24.DRP											197300224S	197300224S1	197300224S2	197300224S3									
QPGo.P.2-24.DRP-Plus											197300224P	197300224P1	197300224P2	197300224P3									
PUMP CURVE 3	QPGo.P.3-6	0,37	0,5	0,7	3,3	33,3		30,4	27	13,7		197300306L	197300306L1	197300306L2	Not available								
	QPGo.P.3-6.DRP											197300306S	197300306S1	197300306S2	Not available								
	QPGo.P.3-6.DRP-Plus											197300306P	197300306P1	197300306P2	Not available								
	QPGo.P.3-9	0,55	0,75	0,93	4,4	50		45,6	40,5	20,6		197300309L	197300309L1	197300309L2	197300309L3								
	QPGo.P.3-9.DRP											197300309S	197300309S1	197300309S2	197300309S3								
	QPGo.P.3-9.DRP-Plus											197300309P	197300309P1	197300309P2	197300309P3								
	QPGo.P.3-13	0,75	1	1,24	5,8	72,2		65,9	58,5	29,8		197300313L	197300313L1	197300313L2	197300313L3								
	QPGo.P.3-13.DRP											197300313S	197300313S1	197300313S2	197300313S3								
	QPGo.P.3-13.DRP-Plus											197300313P	197300313P1	197300313P2	197300313P3								
	QPGo.P.3-19	1,1	1,5	1,66	7,8	105,5		96,3	85,5	43,5		197300319L	197300319L1	197300319L2	197300319L3								
QPGo.P.3-19.DRP	197300319S											197300319S1	197300319S2	197300319S3									
QPGo.P.3-19.DRP-Plus	197300319P											197300319P1	197300319P2	197300319P3									
QPGo.P.3-25	1,5	2	2,23	10,1	138,8		126,8	112,5	57,3		197300325L	197300325L1	197300325L2	Not available									
QPGo.P.3-25.DRP											197300325S	197300325S1	197300325S2	Not available									
QPGo.P.3-25.DRP-Plus											197300325P	197300325P1	197300325P2	Not available									
PUMP CURVE 5	QPGo.P.5-4	0,37	0,5	0,72	3,3	24,5			22	18,5	12,1	197300504L	197300504L1	197300504L2	Not available								
	QPGo.P.5-4.DRP											197300504S	197300504S1	197300504S2	Not available								
	QPGo.P.5-4.DRP-Plus											197300504P	197300504P1	197300504P2	Not available								
	QPGo.P.5-6	0,55	0,75	0,95	4,4	36,9			33	27,7	18,2	197300506L	197300506L1	197300506L2	Not available								
	QPGo.P.5-6.DRP											197300506S	197300506S1	197300506S2	Not available								
	QPGo.P.5-6.DRP-Plus											197300506P	197300506P1	197300506P2	Not available								
	QPGo.P.5-8	0,75	1	1,23	5,8	49,1			44	37	24,2	197300508L	197300508L1	197300508L2	197300508L3								
	QPGo.P.5-8.DRP											197300508S	197300508S1	197300508S2	197300508S3								
	QPGo.P.5-8.DRP-Plus											197300508P	197300508P1	197300508P2	197300508P3								
	QPGo.P.5-13	1,1	1,5	1,7	7,8	79,7			71,5	60,1	39,4	197300513L	197300513L1	197300513L2	197300513L3								
QPGo.P.5-13.DRP	197300513S											197300513S1	197300513S2	197300513S3									
QPGo.P.5-13.DRP-Plus	197300513P											197300513P1	197300513P2	197300513P3									
QPGo.P.5-17	1,5	2	2,25	10,4	104,3			93,5	78,5	51,5	197300517L	197300517L1	197300517L2	Not available									
QPGo.P.5-17.DRP											197300517S	197300517S1	197300517S2	Not available									
QPGo.P.5-17.DRP-Plus											197300517P	197300517P1	197300517P2	Not available									

Total head in meters = H = dynamic total pressure

\*Power consumption \*\*Current consumption

# Product codes and hydraulics performance data

## QPGo.X complete submersible pump



Hydraulic part with upper head and lower support in **stainless steel** and 2-wire single-phase oil-cooled motor - 220-230V

Model	Power		P.C.**	C.C.** In (A)	Hydraulic performance (n~2.850 min <sup>-1</sup> )											Cable 1,5 m		Cable 15 m		Cable 30 m		Cable 45 m	
	kW	HP			0	0,6	1,5	2,4	4,2	6	11,4	15	Code	Code	Price	Code	Code	Code					
					l/min	10	25	40	70	100	190	250											
QPGo.X.1-8	0,25	0,33	0,59	2,9	Total head in meters = H = dynamic total pressure	50,2	44,4	18								197200108L	197200108L1	197200108L2	Not available				
QPGo.X.1-8.DRP																197200108S	197200108S1	197200108S2	Not available				
QPGo.X.1-8.DRP-Plus																197200108P	197200108P1	197200108P2	Not available				
QPGo.X.1-12	0,37	0,5	0,72	3,3		75,4	66,6	27								197200112L	197200112L1	197200112L2	197200112L3				
QPGo.X.1-12.DRP																197200112S	197200112S1	197200112S2	197200112S3				
QPGo.X.1-12.DRP-Plus																197200112P	197200112P1	197200112P2	197200112P3				
QPGo.X.1-18	0,55	0,75	0,95	4,4		113	99,9	40,5								197200118L	197200118L1	197200118L2	197200118L3				
QPGo.X.1-18.DRP																197200118S	197200118S1	197200118S2	197200118S3				
QPGo.X.1-18.DRP-Plus																197200118P	197200118P1	197200118P2	197200118P3				
QPGo.X.1-25	0,75	1	1,24	5,8		157	138,8	56,3								197200125L	197200125L1	197200125L2	197200125L3				
QPGo.X.1-25.DRP																197200125S	197200125S1	197200125S2	197200125S3				
QPGo.X.1-25.DRP-Plus																197200125P	197200125P1	197200125P2	197200125P3				
QPGo.X.1-36	1,1	1,5	1,66	7,8		226,1	199,8	81								197200136L	197200136L1	197200136L2	197200136L3				
QPGo.X.1-36.DRP																197200136S	197200136S1	197200136S2	197200136S3				
QPGo.X.1-36.DRP-Plus																197200136P	197200136P1	197200136P2	197200136P3				
QPGo.X.2-5	0,25	0,33	0,59	2,9	Total head in meters = H = dynamic total pressure	32	31,2	26,2	17							197200205L	197200205L1	197200205L2	Not available				
QPGo.X.2-5.DRP																197200205S	197200205S1	197200205S2	Not available				
QPGo.X.2-5.DRP-Plus																197200205P	197200205P1	197200205P2	Not available				
QPGo.X.2-8	0,37	0,5	0,73	3,3		51,2	49,9	41,9	27,2							197200208L	197200208L1	197200208L2	197200208L3				
QPGo.X.2-8.DRP																197200208S	197200208S1	197200208S2	197200208S3				
QPGo.X.2-8.DRP-Plus																197200208P	197200208P1	197200208P2	197200208P3				
QPGo.X.2-12	0,55	0,75	0,97	4,4		76,8	74,9	62,9	40,8							197200212L	197200212L1	197200212L2	197200212L3				
QPGo.X.2-12.DRP																197200212S	197200212S1	197200212S2	197200212S3				
QPGo.X.2-12.DRP-Plus																197200212P	197200212P1	197200212P2	197200212P3				
QPGo.X.2-16	0,75	1	1,27	5,8		102,4	99,8	83,8	54,4							197200216L	197200216L1	197200216L2	197200216L3				
QPGo.X.2-16.DRP																197200216S	197200216S1	197200216S2	197200216S3				
QPGo.X.2-16.DRP-Plus																197200216P	197200216P1	197200216P2	197200216P3				
QPGo.X.2-24	1,1	1,5	1,7	7,8		153,6	149,8	125,8	81,6							197200224L	197200224L1	197200224L2	197200224L3				
QPGo.X.2-24.DRP																197200224S	197200224S1	197200224S2	197200224S3				
QPGo.X.2-24.DRP-Plus																197200224P	197200224P1	197200224P2	197200224P3				
QPGo.X.2-32	1,5	2	2,25	10,5	204,7	199,7	167,7	108							197200232L	197200232L1	197200232L2	Not available					
QPGo.X.2-32.DRP															197200232S	197200232S1	197200232S2	Not available					
QPGo.X.2-32.DRP-Plus															197200232P	197200232P1	197200232P2	Not available					
QPGo.X.3-6	0,37	0,5	0,7	3,3	Total head in meters = H = dynamic total pressure	33,3	30,4	27	13,7							197200306L	197200306L1	197200306L2	Not available				
QPGo.X.3-6.DRP																197200306S	197200306S1	197200306S2	Not available				
QPGo.X.3-6.DRP-Plus																197200306P	197200306P1	197200306P2	Not available				
QPGo.X.3-9	0,55	0,75	0,93	4,4		50	45,6	40,5	20,6							197200309L	197200309L1	197200309L2	197200309L3				
QPGo.X.3-9.DRP																197200309S	197200309S1	197200309S2	197200309S3				
QPGo.X.3-9.DRP-Plus																197200309P	197200309P1	197200309P2	197200309P3				
QPGo.X.3-13	0,75	1	1,24	5,8		72,2	65,9	58,5	29,8							197200313L	197200313L1	197200313L2	197200313L3				
QPGo.X.3-13.DRP																197200313S	197200313S1	197200313S2	197200313S3				
QPGo.X.3-13.DRP-Plus																197200313P	197200313P1	197200313P2	197200313P3				
QPGo.X.3-19	1,1	1,5	1,66	7,8		105,5	96,3	85,5	43,5							197200319L	197200319L1	197200319L2	197200319L3				
QPGo.X.3-19.DRP																197200319S	197200319S1	197200319S2	197200319S3				
QPGo.X.3-19.DRP-Plus																197200319P	197200319P1	197200319P2	197200319P3				
QPGo.X.3-25	1,5	2	2,23	10,1		138,8	126,8	112,5	57,3							197200325L	197200325L1	197200325L2	Not available				
QPGo.X.3-25.DRP																197200325S	197200325S1	197200325S2	Not available				
QPGo.X.3-25.DRP-Plus																197200325P	197200325P1	197200325P2	Not available				
QPGo.X.5-4	0,37	0,5	0,72	3,3	24,5		22	18,5	12,1						197200504L	197200504L1	197200504L2	Not available					
QPGo.X.5-4.DRP															197200504S	197200504S1	197200504S2	Not available					
QPGo.X.5-4.DRP-Plus															197200504P	197200504P1	197200504P2	Not available					
QPGo.X.5-6	0,55	0,75	0,95	4,4	36,8		33	27,7	18,2						197200506L	197200506L1	197200506L2	Not available					
QPGo.X.5-6.DRP															197200506S	197200506S1	197200506S2	Not available					
QPGo.X.5-6.DRP-Plus															197200506P	197200506P1	197200506P2	Not available					
QPGo.X.5-8	0,75	1	1,23	5,9	49,1		44	37	24,2						197200508L	197200508L1	197200508L2	197200508L3					
QPGo.X.5-8.DRP															197200508S	197200508S1	197200508S2	197200508S3					
QPGo.X.5-8.DRP-Plus															197200508P	197200508P1	197200508P2	197200508P3					
QPGo.X.5-13	1,1	1,5	1,7	7,8	79,7		71,5	60,1	39,4						197200513L	197200513L1	197200513L2	197200513L3					
QPGo.X.5-13.DRP															197200513S	197200513S1	197200513S2	197200513S3					
QPGo.X.5-13.DRP-Plus															197200513P	197200513P1	197200513P2	197200513P3					
QPGo.X.5-17	1,5	2	2,35	10,4	104,3		93,5	78,5	51,5						197200517L	197200517L1	197200517L2	Not available					
QPGo.X.5-17.DRP															197200517S	197200517S1	197200517S2	Not available					
QPGo.X.5-17.DRP-Plus															197200517P	197200517P1	197200517P2	Not available					
QPGo.X.8-6	0,75	1	1,23	5,8	38,4		29	25	5						197200806L	197200806L1	197200806L2	Not available					
QPGo.X.8-6.DRP															197200806S	197200806S1	197200806S2	Not available					
QPGo.X.8-6.DRP-Plus															197200806P	197200806P1	197200806P2	Not available					
QPGo.X.8-8	1,1	1,5	1,71	7,8	51,2		39	33	7						197200808L	197200808L1	197200808L2	197200808L3					
QPGo.X.8-8.DRP															197200808S	197200808S1	197200808S2	197200808S3					
QPGo.X.8-8.DRP-Plus															197200808P	197200808P1	197200808P2	197200808P3					
QPGo.X.8-12	1,5	2	2,25	10,1	76,8		58	49	9,6						197200812L	197200812L1	197200812L2	Not available					
QPGo.X.8-12.DRP															197200812S	197200812S1	197200812S2	Not available					
QPGo.X.8-12.DRP-Plus															197200812P	197200812P1	197200812P2	Not available					
QPGo.X.10-8	1,5	2	2,35	10,8	48,2				39,2	7,9					197200906L	197200906L1	197200906L2	Not available					
QPGo.X.10-8.DRP															197200906S	197200906S1	197200906S2	Not available					
QPGo.X.10-8.DRP-Plus															197200906P	197200906P1	197200906P2	Not available					

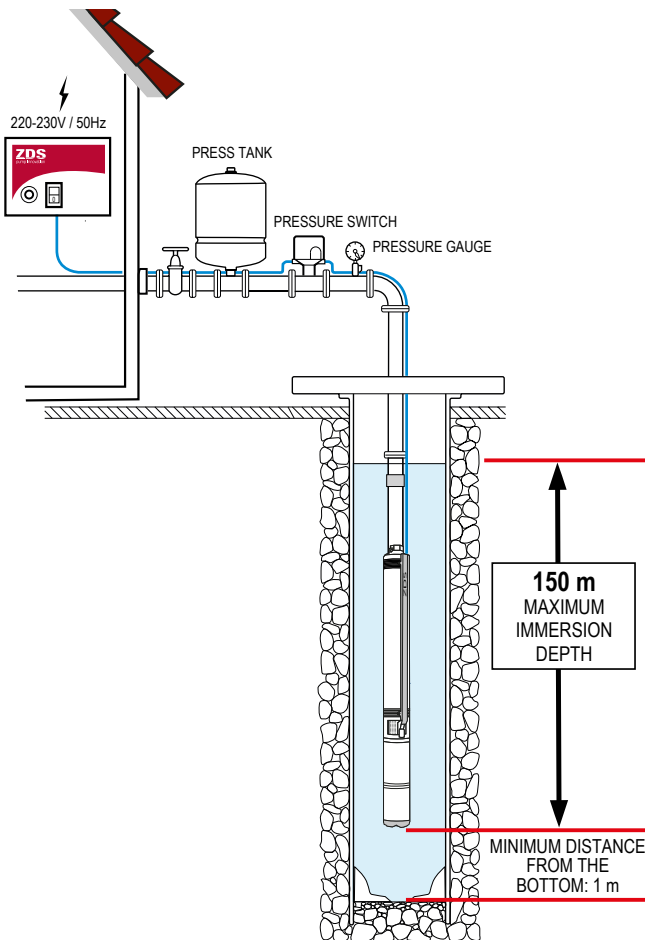
\*Power consumption \*\*Current consumption



# P/X.03

4" complete submersible pump, made of ZDS hydraulic part, ZDS single-phase PSC oil-cooled O3 motor, supply cable in different lengths and ZDS CBO electrical start panel (which includes on/off switch, start and run capacitor and overload protector).

Reliable, strong, easy to maintain and available in a wide range of models. It can be protected against many possible installation or operation faults thanks to the DRP protection device.



## HYDRAULIC PART

QS4P technopolymer or QS4X stainless steel ZDS hydraulic part, with floating ring technology and reinforced impeller.

Great reliability with the integrated non-return valve.

Special design and selected materials to ensure optimal resistance against sand and other abrasives.

Improved impellers design, which requires less starting torque to the motor.

## MOTOR

2 pole asynchronous single-phase PSC oil-cooled motor O3.

Rewindable stator and rotor immersed in dielectric fluid (FDA approved)

Oversized axial and radial oil-lubricated bearings to guarantee longer life to the motor.

The pressure compensation inside the motor is ensured by a special internal diaphragm.

Sand protection to guarantee optimal operation even with sand in the borehole.

Motor bottom cover for extra protection and safety.

Removable lead connector to make installation and maintenance easier.

Supply cable according to drinking water regulations (ACS), available in different lengths.

## TECHNICAL SPECIFICATIONS

<b>Power range:</b>	0,37 - 2,2 kW
<b>Voltage range:</b>	1x220-230V / 50 Hz
<b>Voltage tolerance 50Hz from nominal:</b>	+6% / -10% U <sub>N</sub>
<b>Degree of protection:</b>	IP 68
<b>Insulation:</b>	Cl. F
<b>Rated ambient temperature:</b>	max. 40° C
<b>Required cooling flow:</b>	min. 8 cm/sec
<b>Maximum quantity of suspended sand:</b>	120 g/m <sup>3</sup>
<b>Maximum starts/h:</b>	150, equally distributed
<b>Mounting:</b>	vertical/horizontal
<b>Maximum immersion depth:</b>	150 m
<b>Allowed range of water PH:</b>	6,4-8,0
<b>Outlet diameter:</b>	1" ¼ G-F - 2" G-F
<b>Maximum delivery (Q):</b>	15.000 l/h
<b>Maximum head (H):</b>	220 m

## OPTIONAL



**DRP:**  
INTEGRATED DRP -  
DRY RUNNING  
PROTECTION

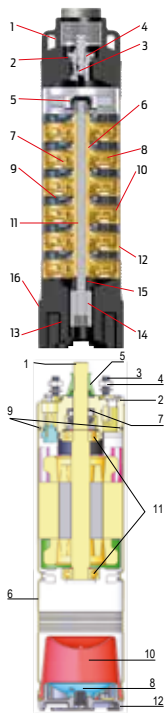


## CBO - Electric start panel

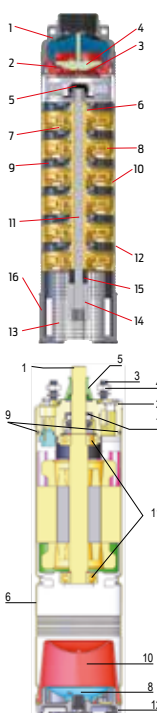
Motor start and operation system with capacitor, equipped with thermal amperometric protection against current overload, ON/OFF illuminated switch, terminal box, cable glands, power supply cable, mounting accessories.

## APPLICATIONS

Submersible pump designed to be used in 4" boreholes (or larger) and tanks, for lifting, distribution, pressurization of water in water systems.



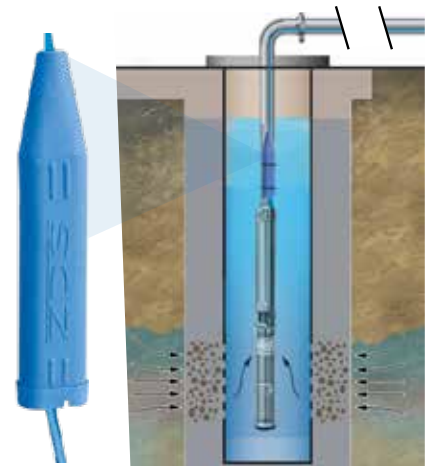
Pos.	COMPONENTS	MATERIALS
1	Upper head	PA 6.6
2	O-Ring	NBR
3	Complete valve	POM
4	Plate valve	POM
5	Shaft guide	NBR
6	Bearing	TPU
7	Floating ring	TPU
8	Impeller	Noryl and stainless steel
9	Diffuser	Noryl
10	Stage box	Noryl
11	Pump shaft	Stainless steel AISI 304 (DIN 1.4301)
12	Outer sleeve	Stainless steel AISI 304 (DIN 1.4301)
13	Filter	PA 6.6
14	Coupling	Stainless steel AISI 304 (DIN 1.4301)
15	Spacer	Noryl
16	Pump support	PA 6.6
-	Cable cover	PVC
1	Shaft End	Stainless steel AISI 304/420
2	Top bracket	G20 Cast Iron - cathaphoretic treatment
3	Stud	Stainless steel AISI 304
4	Nut	Stainless steel AISI 304
5	Rotating Sand Guard	NBR
6	Outer sleeve	Stainless steel AISI 304
7	Mechanical seal	Graphite/Ceramic
8	Bottom cover	Stainless steel AISI 304
9	O-Ring	NBR
10	Diaphragm	NBR
11	Bearing	Stainless Steel
12	Safety bottom cover	Technopolimer



Pos.	COMPONENTS	MATERIALS
1	Upper head	Stainless steel AISI 304 (DIN 1.4301)
2	O-Ring	NBR
3	Complete valve	PA 6.6
4	Plate valve	PA 6.6
5	Shaft guide	NBR
6	Bearing	TPU
7	Floating ring	TPU
8	Impeller	Noryl and stainless steel
9	Diffuser	Noryl
10	Stage box	Noryl
11	Pump shaft	Stainless steel AISI 304 (DIN 1.4301)
12	Outer sleeve	Stainless steel AISI 304 (DIN 1.4301)
13	Filter (removable)	Stainless steel AISI 304 (DIN 1.4301)
14	Coupling	Stainless steel AISI 304 (DIN 1.4301)
15	Spacer	Noryl
16	Pump support	Stainless steel AISI 304 (DIN 1.4301)
-	Cable cover	Stainless steel AISI 304 (DIN 1.4301)
1	Shaft End	Stainless steel AISI 304/420
2	Top bracket	G20 Cast Iron - cathaphoretic treatment
3	Stud	Stainless steel AISI 304
4	Nut	Stainless steel AISI 304
5	Rotating Sand Guard	NBR
6	Outer sleeve	Stainless steel AISI 304
7	Mechanical seal	Graphite/Ceramic
8	Bottom cover	Stainless steel AISI 304
9	O-Ring	NBR
10	Diaphragm	NBR
11	Bearing	Stainless Steel
12	Safety bottom cover	Technopolimer

## DRP ELECTRONIC PROTECTION DEVICE

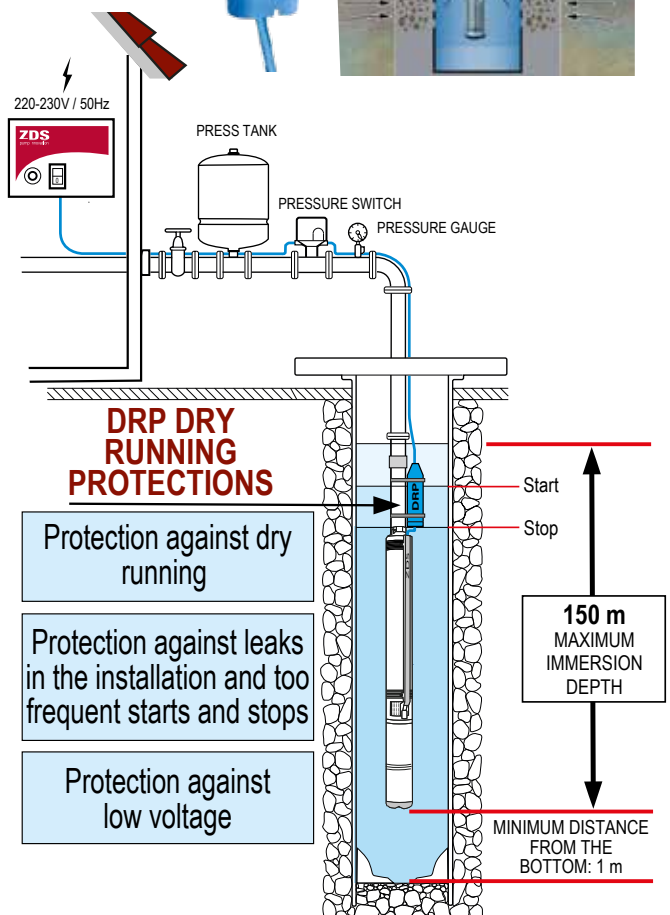
DRP is an electronic device that guarantees optimal protection of the submersible pump from dry running, positioned in the pump supply cable just above the pump. In case of water shortage, the DRP stops the pump immediately, the water drops below the DRP to allow water to flow into the bore hole. Thus the pump operation is directly proportional to the water supply for optimum efficiency. In contrast to traditional solutions, no additional cables, sensors and control boxes are needed. The DRP device has been developed and tested to make the submersible pump function autonomously in conditions of water shortage. The DRP is ready for use, integrated into the connection cable and needs no further installation.



CHARACTERISTICS	
	Automatic programmed restarts in case of protection
	Stand-by mode at maximum number of restart attempts overcoming
	Ready to use, doesn't need any further calibration or setting up

DRP Protection	
	<b>Protection against dry running and lack of water in the well</b> The DRP completely protects the submersible pump against lack of water in the well, without the aid of other equipment (probes, cables, sensors, control panels etc.). In case of dry running, the DRP automatically stops the pump. When the water level is restored in the well, the DRP restarts the pump after a programmed cycle time.
	<b>Protection against leaks in the installation and too frequent starts and stops</b> The DRP protects the submersible pump against leaks in the piping system (also when the pressure tank is exhausted or its membrane is defective, or when there is a defective pressure switch) and too frequent starts and stops (for example if the tank is too small for the system). In such cases to avoid potential damages, the DRP, after some automatic re-start attempts, makes the pump enter the stand-by mode.
	<b>Protection against low voltage</b> The DRP protects the submersible pump against low voltage, that can damage the motor.

Technical Specifications	
Casing:	Thermoplastic material
Voltage range:	1x220-230V +6% / -10% / 50 Hz
Degree of protection:	IP 68
Rated ambient temperature:	-10/+40° C
Size (cm):	33 x 5 x 3



Model	Power		P.C.*	C.C.** In (A)	Hydraulic performance (n~2.850 min <sup>-1</sup> )							Cable 1,5 m		Cable 15 m		Cable 30 m		Cable 45 m	
	kW	HP			m <sup>3</sup> /h							Code	Code	Code	Code				
					0	0.6	1.5	2.4	4.2	6	0					10	25	40	70
PUMP CURVE 1 P.1-8.03 P.1-8.03.DRP P.1-12.03 P.1-12.03.DRP P.1-18.03 P.1-18.03.DRP P.1-25.03 P.1-25.03.DRP	0,25	0,33	0,59	2,9	Total head in meters = H= dynamic total pressure	50,2	44,4	18					197500108L	197500108L1	197500108L2	Not available			
						197500108S	197500108S1	197500108S2	Not available										
	0,37	0,5	0,72	3,3		75,4	66,6	27					197500112L	197500112L1	197500112L2		197500112L3		
						197500112S	197500112S1	197500112S2		197500112S3									
	0,55	0,75	0,95	4,4		113	100	40					197500118L	197500118L1	197500118L2		197500118L3		
						197500118S	197500118S1	197500118S2		197500118S3									
	0,75	1	1,24	5,8		157	139	56					197500125L	197500125L1	197500125L2		197500125L3		
197500125S					197500125S1	197500125S2		197500125S3											
PUMP CURVE 2 P.2-5.03 P.2-5.03.DRP P.2-8.03 P.2-8.03.DRP P.2-12.03 P.2-12.03.DRP P.2-16.03 P.2-16.03.DRP P.2-24.03 P.2-24.03.DRP	0,25	0,33	0,59	2,9	32	31,2	28,2	17					197500205L	197500205L1	197500205L2	Not available			
					197500205S	197500205S1	197500205S2	Not available											
	0,37	0,5	0,73	3,3	51,2	49,9	41,9	27,2					197500208L	197500208L1	197500208L2		197500208L3		
					197500208S	197500208S1	197500208S2		197500208S3										
	0,55	0,97	4,4	113	76,8	74,9	62,9	40,8					197500212L	197500212L1	197500212L2		197500212L3		
					197500212S	197500212S1	197500212S2		197500212S3										
	0,75	1	1,27	5,8	102,4	99,8	83,8	54,4					197500216L	197500216L1	197500216L2		197500216L3		
					197500216S	197500216S1	197500216S2		197500216S3										
	1,1	1,5	1,7	7,8	153,6	149,8	125,8	81,6					197500224L	197500224L1	197500224L2		197500224L3		
197500224S					197500224S1	197500224S2		197500224S3											
PUMP CURVE 3 P.3-6.03 P.3-6.03.DRP P.3-9.03 P.3-9.03.DRP P.3-13.03 P.3-13.03.DRP P.3-19.03 P.3-19.03.DRP P.3-25.03 P.3-25.03.DRP	0,37	0,5	0,7	3,3	33,3		30,4	27	13,7				197500306L	197500306L1	197500306L2	Not available			
					197500306S	197500306S1	197500306S2	Not available											
	0,55	0,75	0,93	4,4	50		45,6	40,5	20,6				197500309L	197500309L1	197500309L2		197500309L3		
					197500309S	197500309S1	197500309S2		197500309S3										
	0,75	1	1,24	5,8	72,2		65,9	58,5	29,8				197500313L	197500313L1	197500313L2		197500313L3		
					197500313S	197500313S1	197500313S2		197500313S3										
	1,1	1,5	1,66	7,8	100,5		96,38	85,5	43,5				197500319L	197500319L1	197500319L2		197500319L3		
					197500319S	197500319S1	197500319S2		197500319S3										
1,5	2	2,23	10,1	138,8		126,8	112,5	57,3				197500325L	197500325L1	197500325L2	Not available				
				197500325S	197500325S1	197500325S2	Not available												
PUMP CURVE 5 P.5-4.03 P.5-4.03.DRP P.5-6.03 P.5-6.03.DRP P.5-8.03 P.5-8.03.DRP P.5-13.03 P.5-13.03.DRP P.5-17.03 P.5-17.03.DRP P.5-21.03 P.5-21.03.DRP	0,37	0,5	0,72	3,3	24,5			22	18,5	12,1			197500504L	197500504L1	197500504L2	Not available			
					197500504S	197500504S1	197500504S2	Not available											
	0,55	0,75	0,95	4,4	36,8			33	27,7	18,2			197500506L	197500506L1	197500506L2	Not available			
					197500506S	197500506S1	197500506S2	Not available											
	0,75	1	1,23	5,8	49,1			44	37	24,2			197500508L	197500508L1	197500508L2		197500508L3		
					197500508S	197500508S1	197500508S2		197500508S3										
	1,1	1,5	1,7	7,8	79,7			71,5	60,1	39,4			197500513L	197500513L1	197500513L2		197500513L3		
					197500513S	197500513S1	197500513S2		197500513S3										
	1,5	2	2,3	10,1	104,3			93,5	78,5	51,5			197500517L	197500517L1	197500517L2	Not available			
					197500517S	197500517S1	197500517S2	Not available											
2,2	3	2,75	13,1	128,8			115,5	97	63,6			197500521L	197500521L1	Not available	Not available	Not available			
				197500521S	197500521S1	Not available	Not available	Not available											

\*Power consumption \*\*Current consumption

CBO included in the price

# Product codes and hydraulics performance data

## X.03 complete submersible pump



Hydraulic part with upper head and lower support in **stainless steel** and single-phase PSC oil-cooled motor - 220-230V

Model	Power		P.C.*	c.c.** In (A)	Hydraulic performance (n~2.850 min <sup>-1</sup> )										Cable 1,5 m		Cable 15 m		Cable 30 m		Cable 45 m	
	kW	HP			0	0,6	1,5	2,4	4,2	6	11,4	15	Code	Code	Code	Code						
					0	10	25	40	70	100	190	250										
PUMP CURVE 1	X.1-8.O3	0,25	0,33	0,59	2,9	50,2	44,4	18						197400108L	197400108L1	197400108L2	Not available					
	X.1-8.O3.DRP												197400108S	197400108S1	197400108S2	Not available						
	X.1-12.O3	0,37	0,5	0,72	3,3	75,4	66,6	27						197400112L	197400112L1	197400112L2	197400112L3					
	X.1-12.O3.DRP												197400112S	197400112S1	197400112S2	197400112S3						
	X.1-18.O3	0,55	0,75	0,95	4,4	113	99,9	40,5						197400118L	197400118L1	197400118L2	197400118L3					
	X.1-18.O3.DRP												197400118S	197400118S1	197400118S2	197400118S3						
	X.1-25.O3	0,75	1	1,24	5,8	157	138,8	56,3						197400125L	197400125L1	197400125L2	197400125L3					
	X.1-25.O3.DRP												197400125S	197400125S1	197400125S2	197400125S3						
X.1-36.O3	1,1	1,5	1,66	7,8	226,1	199,8	91						197400136L	197400136L1	197400136L2	197400136L3						
X.1-36.O3.DRP												197400136S	197400136S1	197400136S2	197400136S3							
PUMP CURVE 2	X.2-5.O3	0,25	0,33	0,59	2,9	32	31,2	28,2	17					197400205L	197400205L1	197400205L2	Not available					
	X.2-5.O3.DRP													197400205S	197400205S1	197400205S2	Not available					
	X.2-8.O3	0,37	0,5	0,73	3,3	51,2	49,9	41,9	27,2					197400208L	197400208L1	197400208L2	197400208L3					
	X.2-8.O3.DRP													197400208S	197400208S1	197400208S2	197400208S3					
	X.2-12.O3	0,55	0,75	0,97	4,4	76,8	74,9	62,9	40,8					197400212L	197400212L1	197400212L2	197400212L3					
	X.2-12.O3.DRP													197400212S	197400212S1	197400212S2	197400212S3					
	X.2-16.O3	0,75	1	1,27	5,8	102,4	99,8	83,8	54,4					197400216L	197400216L1	197400216L2	197400216L3					
	X.2-16.O3.DRP													197400216S	197400216S1	197400216S2	197400216S3					
	X.2-24.O3	1,1	1,5	1,7	7,8	153,6	149,8	125,8	81,6					197400224L	197400224L1	197400224L2	197400224L3					
	X.2-24.O3.DRP													197400224S	197400224S1	197400224S2	197400224S3					
X.2-32.O3	1,5	2	2,3	10,1	204,7	199,7	167,7	108					197400232L	197400232L1	197400232L2	Not available						
X.2-32.O3.DRP													197400232S	197400232S1	197400232S2	Not available						
PUMP CURVE 3	X.3-6.O3	0,37	0,5	0,7	3,3	33,3	30,4	27	13,7					197400306L	197400306L1	197400306L2	Not available					
	X.3-6.O3.DRP													197400306S	197400306S1	197400306S2	Not available					
	X.3-9.O3	0,55	0,75	0,93	4,4	50	45,6	40,5	20,6					197400309L	197400309L1	197400309L2	197400309L3					
	X.3-9.O3.DRP													197400309S	197400309S1	197400309S2	197400309S3					
	X.3-13.O3	0,75	1	1,24	5,8	72,2	65,9	58,5	29,8					197400313L	197400313L1	197400313L2	197400313L3					
	X.3-13.O3.DRP													197400313S	197400313S1	197400313S2	197400313S3					
	X.3-19.O3	1,1	1,5	1,66	7,8	105,5	96,3	85,5	43,5					197400319L	197400319L1	197400319L2	197400319L3					
	X.3-19.O3.DRP													197400319S	197400319S1	197400319S2	197400319S3					
X.3-25.O3	1,5	2	2,23	10,1	138,8	126,8	112,5	57,3					197400325L	197400325L1	197400325L2	Not available						
X.3-25.O3.DRP													197400325S	197400325S1	197400325S2	Not available						
PUMP CURVE 5	X.5-4.O3	0,37	0,5	0,72	3,3	24,5		22	18,5	12,1				197400504L	197400504L1	197400504L2	Not available					
	X.5-4.O3.DRP														197400504S	197400504S1	197400504S2	Not available				
	X.5-6.O3	0,55	0,75	0,95	4,4	36,8		33	27,7	18,2				197400506L	197400506L1	197400506L2	Not available					
	X.5-6.O3.DRP														197400506S	197400506S1	197400506S2	Not available				
	X.5-8.O3	0,75	1	1,23	5,8	49,1		44	37	24,2				197400508L	197400508L1	197400508L2	197400508L3					
	X.5-8.O3.DRP														197400508S	197400508S1	197400508S2	197400508S3				
	X.5-13.O3	1,1	1,5	1,7	7,8	79,7		71,5	60,1	39,4				197400513L	197400513L1	197400513L2	197400513L3					
	X.5-13.O3.DRP														197400513S	197400513S1	197400513S2	197400513S3				
	X.5-17.O3	1,5	2	2,3	10,4	104,3		93,5	78,5	51,5				197400517L	197400517L1	197400517L2	Not available					
	X.5-17.O3.DRP														197400517S	197400517S1	197400517S2	Not available				
X.5-21.O3	2,2	3	2,75	13,5	128,8		115,5	97	63,6				197400521L	197400521L1	Not available	Not available						
X.5-21.O3.DRP														197400521S	197400521S1	Not available	Not available					
PUMP CURVE 8	X.8-6.O3	0,75	1	1,23	5,8	38,4			29	24,5	4,8			197400806L	197400806L1	197400806L2	Not available					
	X.8-6.O3.DRP															197400806S	197400806S1	197400806S2	Not available			
	X.8-8.O3	1,1	1,5	1,71	7,8	51,2			38,6	32,7	6,4			197400808L	197400808L1	197400808L2	197400808L3					
	X.8-8.O3.DRP															197400808S	197400808S1	197400808S2	197400808S3			
	X.8-12.O3	1,5	2	2,25	10,1	76,8			58	49	9,6			197400812L	197400812L1	197400812L2	Not available					
	X.8-12.O3.DRP															197400812S	197400812S1	197400812S2	Not available			
	X.8-17.O3	2,2	3	3,05	14	108,8			82,1	69,4	13,6			197400817L	197400817L1	Not available	Not available					
X.8-17.O3.DRP															197400817S	197400817S1	Not available	Not available				
P.C.10	X.10-8.O3	1,5	2	2,6	10,1	48,2			42,6	39,2	23,1	7,9		197401008L	197401008L1	197401008L2	Not available					
	X.10-8.O3.DRP																197401008S	197401008S1	197401008S2	Not available		
	X.10-12.O3	2,2	3	2,9	14	72,3			64	58,8	34,7	11,9		197401012L	197401012L1	Not available	Not available					
	X.10-12.O3.DRP																197401012S	197401012S1	Not available	Not available		

Total head in meters = H = dynamic total pressure

\*Power consumption \*\*Current consumption

CBO included in the price

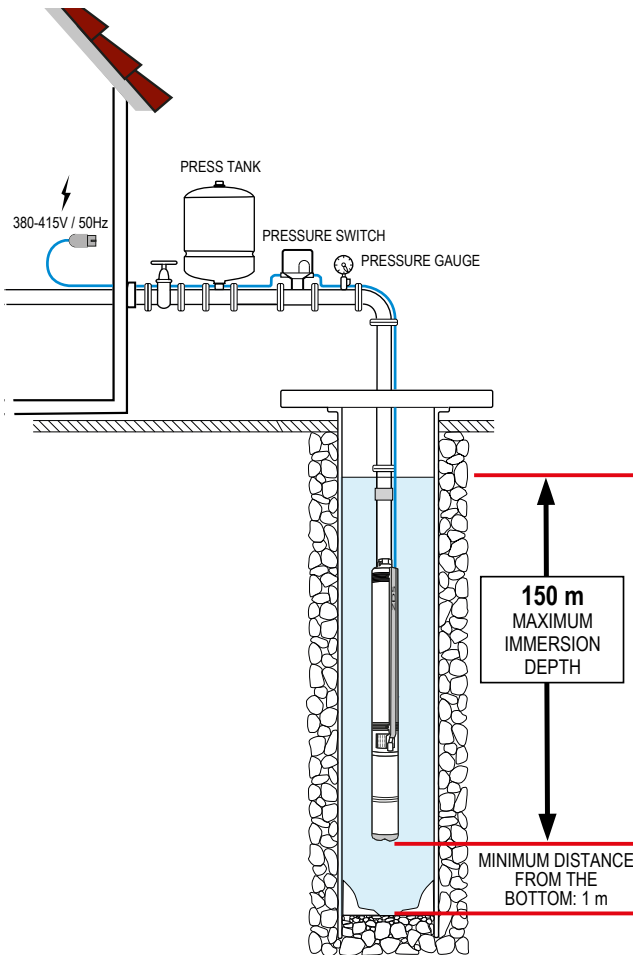


# P/X.OT

**4" complete submersible pump, made of ZDS hydraulic part, ZDS three-phase oil-cooled OT motor and supply cable in different lengths.**

Reliable, strong and easy to maintain, it's available in a wide range of models. It can be protected against many possible installation or operation faults thanks to the DRP protection device.

It requires a start, operation and protection system.



## HYDRAULIC PART



QS4P technopolymer or QS4X stainless steel ZDS hydraulic part, with floating ring technology and reinforced impeller.

Great reliability with the integrated non-return valve.

Special design and selected materials to ensure optimal resistance against sand and other abrasives.

Improved impellers design, which requires less starting torque to the motor.

## MOTOR



2 pole asynchronous three-phase oil-cooled OT motor.

Rewindable stator and rotor immersed in dielectric fluid (FDA approved)

Oversized axial and radial oil-lubricated bearings to guarantee longer life to the motor.

The pressure compensation inside the motor is ensured by a special internal diaphragm.

Sand protection to guarantee optimal operation even with sand in the borehole.

Motor bottom cover for extra protection and safety.

Removable lead connector to make installation and maintenance easier.

Supply cable according to drinking water regulations (ACS), available in different lengths.

## TECHNICAL SPECIFICATIONS



<b>Overload protection requirements according to:</b>	EN 60947-4-1 trip time < 10 sec. at $5xI_N$
<b>Power range:</b>	0,37 - 2,2 kW
<b>Voltage range:</b>	3x380-415V / 50 Hz
<b>Voltage tolerance 50Hz from nominal:</b>	+6% / -10% $U_N$
<b>Degree of protection:</b>	IP 68
<b>Insulation:</b>	Cl. F
<b>Rated ambient temperature:</b>	max. 40° C
<b>Required cooling flow:</b>	min. 8 cm/sec
<b>Maximum quantity of suspended sand:</b>	120 g/m <sup>3</sup>
<b>Maximum starts/h:</b>	150, equally distributed
<b>Mounting:</b>	vertical/horizontal
<b>Maximum immersion depth:</b>	150 m
<b>Allowed range of water PH:</b>	6,4-8,0
<b>Outlet diameter:</b>	1" ¼ G-F - 2" G-F
<b>Maximum delivery (Q):</b>	15.000 l/h
<b>Maximum head (H):</b>	220 m

## OPTIONAL



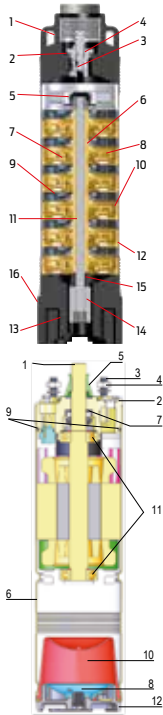
**DRP:**  
INTEGRATED DRP -  
DRY RUNNING PROTECTION

## APPLICATIONS



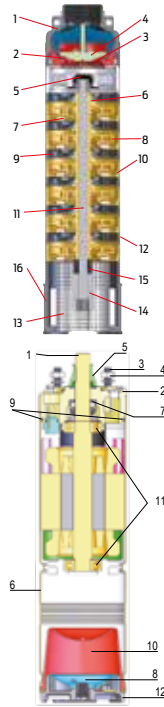
Submersible pump designed to be used in 4" boreholes (or larger) and tanks, for lifting, distribution, pressurization of water in water systems.

# P.O.T



Pos.	COMPONENTS	MATERIALS
1	Upper head	PA 6.6
2	O-Ring	NBR
3	Complete valve	POM
4	Plate valve	POM
5	Shaft guide	NBR
6	Bearing	TPU
7	Floating ring	TPU
8	Impeller	Noryl and stainless steel
9	Diffuser	Noryl
10	Stage box	Noryl
11	Pump shaft	Stainless steel AISI 304 (DIN 1.4301)
12	Outer sleeve	Stainless steel AISI 304 (DIN 1.4301)
13	Filter	PA 6.6
14	Coupling	Stainless steel AISI 304 (DIN 1.4301)
15	Spacer	Noryl
16	Pump support	PA 6.6
-	Cable cover	PVC
1	Shaft End	Stainless steel AISI 304/420
2	Top bracket	G20 Cast Iron - cataphoretic treatment
3	Stud	Stainless steel AISI 304
4	Nut	Stainless steel AISI 304
5	Rotating Sand Guard	NBR
6	Outer sleeve	Stainless steel AISI 304
7	Mechanical seal	Graphite/Ceramic
8	Bottom cover	Stainless steel AISI 304
9	O-Ring	NBR
10	Diaphragm	NBR
11	Bearing	Stainless Steel
12	Safety bottom cover	Technopolimer

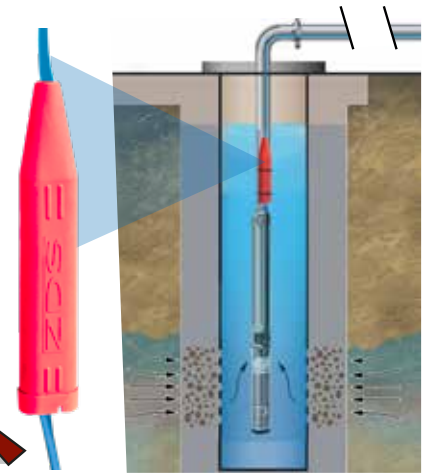
# X.O.T



Pos.	COMPONENTS	MATERIALS
1	Upper head	Stainless steel AISI 304 (DIN 1.4301)
2	O-Ring	NBR
3	Complete valve	PA 6.6
4	Plate valve	PA 6.6
5	Shaft guide	NBR
6	Bearing	TPU
7	Floating ring	TPU
8	Impeller	Noryl and stainless steel
9	Diffuser	Noryl
10	Stage box	Noryl
11	Pump shaft	Stainless steel AISI 304 (DIN 1.4301)
12	Outer sleeve	Stainless steel AISI 304 (DIN 1.4301)
13	Filter (removable)	Stainless steel AISI 304 (DIN 1.4301)
14	Coupling	Stainless steel AISI 304 (DIN 1.4301)
15	Spacer	Noryl
16	Pump support	Stainless steel AISI 304 (DIN 1.4301)
-	Cable cover	Stainless steel AISI 304 (DIN 1.4301)
1	Shaft End	Stainless steel AISI 304/420
2	Top bracket	G20 Cast Iron - cataphoretic treatment
3	Stud	Stainless steel AISI 304
4	Nut	Stainless steel AISI 304
5	Rotating Sand Guard	NBR
6	Outer sleeve	Stainless steel AISI 304
7	Mechanical seal	Graphite/Ceramic
8	Bottom cover	Stainless steel AISI 304
9	O-Ring	NBR
10	Diaphragm	NBR
11	Bearing	Stainless Steel
12	Safety bottom cover	Technopolimer

## DRP ELECTRONIC PROTECTION DEVICE

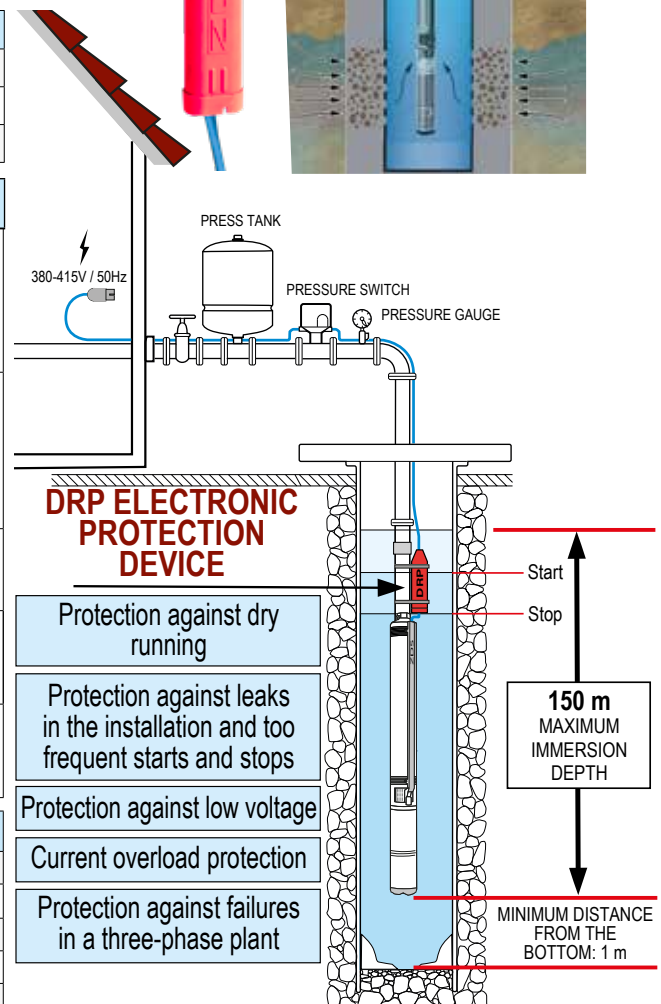
DRP is an electronic device that guarantees optimal protection of the submersible pump from dry running, positioned in the pump supply cable just above the pump. In case of water shortage, the DRP stops the pump immediately, the water drops below the DRP to allow water to flow into the bore hole. Thus the pump operation is directly proportional to the water supply for optimum efficiency. In contrast to traditional solutions, no additional cables, sensors and control boxes are needed. The DRP device has been developed and tested to make the submersible pump function autonomously in conditions of water shortage. The DRP is ready to use, integrated into the connection cable and needs no further installation.



CHARACTERISTICS
Automatic programmed restarts in case of protection
Stand-by mode at maximum number of restart attempts overcoming
Ready to use, doesn't need any further calibration or setting up

DRP Protection	
	<b>Protection against dry running and lack of water in the well</b> The DRP completely protects the submersible pump against lack of water in the well, without the aid of other equipment (probes, cables, sensors, control panels etc.). In case of dry running, the DRP automatically stops the pump. When the water level is restored in the well, the DRP restarts the pump after a programmed cycle time.
	<b>Protection against leaks in the installation and too frequent starts and stops</b> The DRP protects the submersible pump against leaks in the piping system (also when the pressure tank is exhausted or its membrane is defective, or when there is a defective pressure switch) and too frequent starts and stops (for example if the tank is too small for the system). In such cases to avoid potential damages, the DRP, after some automatic re-start attempts, makes the pump enter the stand-by mode.
	<b>Protection against low voltage</b> The DRP protects the submersible pump against low voltage, that can damage the motor.
	<b>Current overload protection</b> In case the submersible pump is partially or totally blocked, after some restart attempts it enters the stand-by mode.
	<b>Protection against failures in a three-phase plant</b> The submersible pump is protected against phase-loss (caused by a brake of a fuse). The DRP protects the motor against damaging.

Technical Specifications	
Casing:	Thermoplastic material
Voltage range:	3x380-415V +6% / -10% / 50 Hz
Degree of protection:	IP 68
Rated ambient temperature:	-10/+40° C
Size (cm):	33 x 5 x 3



Model	Power		P.C.*	C.C.**	Hydraulic performance (n~2.850 min <sup>-1</sup> )							Cable 1,5 m		Cable 15 m		Cable 30 m		Cable 45 m																							
	kW	HP			In	m <sup>3</sup> /h	0	0.6	1.5	2.4	4.2	6	Code	Code	Code	Code																									
							l/min	0	10	25	40	70					100																								
PUMP CURVE 1	P.1-8.OT	0,25	0,33	0,57	1,65	Total head in meters = H= dynamic total pressure	50,2	44,4	18				184086008	184086008L	184086008L1	Not available																									
	P.1-8.OT.DRP												184086008S	184086008S1	184086008S2	Not available																									
	P.1-12.OT	0,37	0,5	0,7	1,7								75,4	66,6	27				184086011	184086011L	184086012	184086012L																			
	P.1-12.OT.DRP																		184086011S	184086011S1	184086012S	184086012S1																			
	P.1-18.OT	0,55	0,75	0,87	1,75														113	99,9	40,5				184086017	184086017L	184086018	184086018L													
	P.1-18.OT.DRP																								184086017S	184086017S1	184086018S	184086018S1													
	P.1-25.OT	0,75	1	1,16	2,35																				157	138,9	56,3				184086024	184086024L	184086024L1	184086024L2							
P.1-25.OT.DRP	184086024S					184086024S1	184086024S2	184086024S3																																	
PUMP CURVE 2	P.2-5.OT	0,25	0,33	0,57	1,65	Total head in meters = H= dynamic total pressure	32	31,2	28,2	17																					184086104	184086105	184086105L	Not available							
	P.2-5.OT.DRP												184086104S	184086105S	184086105S1	Not available																									
	P.2-8.OT	0,37	0,5	0,71	1,7								51,2	49,9	41,9	27,2															184086107	184086108	184086108L	184086108L1							
	P.2-8.OT.DRP																		184086107S	184086108S	184086108S1	184086108S2																			
	P.2-12.OT	0,55	0,75	0,88	1,75														76,8	74,9	62,9	40,8									184086111	184086111L	184086112	184086112L							
	P.2-12.OT.DRP																								184086111S	184086111S1	184086112S	184086112S1													
	P.2-16.OT	0,75	1	1,21	2,4																				102,4	99,8	83,8	54,4			184086115	184086115L	184086116	184086116L							
	P.2-16.OT.DRP																														184086115S	184086115S1	184086116S	184086116S1							
	P.2-24.OT	1,1	1,5	1,71	3,3																										153,6	149,8	125,8	81,6			184086124L	184086124L1	184086124L2	184086124L3	
P.2-24.OT.DRP	184086123S					184086123S1	184086123S2	184086123S3																																	
PUMP CURVE 3	P.3-6.OT	0,37	0,5	0,68	1,7	Total head in meters = H= dynamic total pressure	33,3		30,4	27	13,7																										184086205	184086206	184086206L	Not available	
	P.3-6.OT.DRP												184086205S	184086206S	184086206S1	Not available																									
	P.3-9.OT	0,6	0,8	0,8	1,7								50		45,6	40,5	20,6																				184086208	184086209	184086209L	184086209L1	
	P.3-9.OT.DRP																		184086208S	184086209S	184086209S1	184086209S2																			
	P.3-13.OT	0,75	1	1,16	2,35														72,2		65,9	58,5	29,8														184086212	184086212L	184086213	184086213L	
	P.3-13.OT.DRP																								184086212S	184086212S1	184086213S	184086213S1													
	P.3-19.OT	1,1	1,5	1,6	3,2																				105,5		96,3	85,5	43,5								184086218	184086218L	184086219	184086219L	
	P.3-19.OT.DRP																														184086218S	184086218S1	184086219S	184086219S1							
P.3-25.OT	1,5	2	2,1	4,3	138,8		126,8	112,5	57,3		184086225	184086225L																			184086225L1	184086225L2									
P.3-25.OT.DRP											184086225S	184086225S1																			184086225S2	184086225S3									
PUMP CURVE 5	P.5-4.OT	0,37	0,5	0,7							1,7	Total head in meters = H= dynamic total pressure	24,5		22	18,5	12,1														184086303	184086304	184086304L	Not available							
	P.5-4.OT.DRP																														184086303S	184086304S	184086304S1	Not available							
	P.5-6.OT	0,6	0,8	0,9							1,8								36,8		33	27,7	18,2								184086305	184086306	184086306L	Not available							
	P.5-6.OT.DRP																														184086305S	184086306S	184086306S1	Not available							
	P.5-8.OT	0,8	1	1,2							2,3														49,1		44	37	24,2		184086307	184086308	184086308L	184086308L1							
	P.5-8.OT.DRP																														184086307S	184086308S	184086308S1	184086308S2							
	P.5-13.OT	1,1	1,5	1,7	3,3	79,7		71,5	60,1	39,4																					184086311	184086311L	184086313	184086313L							
	P.5-13.OT.DRP																														184086311S	184086311S1	184086313S	184086313S1							
	P.5-17.OT	1,5	2	2,2	4,4																										104,3		93,5	78,5	51,5		184086317	184086317L	184086317L1	184086317L2	
	P.5-17.OT.DRP																																				184086317S	184086317S1	184086317S2	184086317S3	
P.5-21.OT	2,2	3	2,6	4,9	128,8								115,5	97	63,6		184086321	184086321L																			184086321L1	184086321L2			
P.5-21.OT.DRP																	184086321S	184086321S1																			184086321S2	184086321S3			

\*Power consumption \*\*Current consumption

# Product codes and hydraulics performance data

## X.OT Complete submersible pump



Hydraulic part with upper head and lower support in **stainless steel** and three-phase oil-cooled motor - **380-415V**

Model	Power		P.C.*	c.c.**	Hydraulic performance (n~2.850 min <sup>-1</sup> )											Cable 1,5 m		Cable 15 m		Cable 30 m		Cable 45 m	
	kW	HP			In	m <sup>3</sup> /h	0	0,6	1,5	2,4	4,2	6	11,4	15	Code	Code	Code	Code					
																			(A)	l/min	0	10	25
PUMP CURVE 1	X.1-8.OT	0,25	0,33	0,57	1,65	50,2	44,4	18					184068008	184068008L	184068008L1	Not available							
	X.1-8.OT.DRP												184068008S	184068008S1	184068008S2	Not available							
	X.1-12.OT	0,37	0,5	0,7	1,7	75,4	66,6	27					184068011	184068011L	184068012	184068012L							
	X.1-12.OT.DRP												184068011S	184068011S1	184068012S2	184068012S1							
	X.1-18.OT	0,55	0,75	0,87	1,75	113	99,9	40,5						184068017	184068017L	184068018	184068018L						
	X.1-18.OT.DRP													184068017S	184068017S1	184068018S	184068018S1						
	X.1-25.OT	0,75	1	1,16	2,35	157	138,8	56,3						184068024	184068024L	184068024L1	184068024L2						
	X.1-25.OT.DRP													184068024S	184068024S1	184068024S2	184068024S3						
X.1-36.OT	1,1	1,5	1,64	3,25	226,1	199,8	91						184068016	184068016L	184068016L1	184068016L2							
X.1-36.OT.DRP													184068016S	184068016S1	184068016S2	184068016S3							
PUMP CURVE 2	X.2-5.OT	0,25	0,33	0,57	1,65	32	31,2	28,2	17				184068104	184068105	184068105L	Not available							
	X.2-5.OT.DRP												184068104S	184068105S	184068105S1	Not available							
	X.2-8.OT	0,37	0,5	0,71	1,7	51,2	49,9	41,9	27,2				184068107	184068108	184068108L	184068108L1							
	X.2-8.OT.DRP												184068107S	184068108S	184068108S1	184068108S2							
	X.2-12.OT	0,55	0,75	0,88	1,75	76,8	74,9	62,9	40,8				184068111	184068111L	184068112	184068112L							
	X.2-12.OT.DRP												184068111S	184068111S1	184068112S	184068112S1							
	X.2-16.OT	0,75	1	1,21	2,4	102,4	99,8	83,8	54,4				184068115	184068115L	184068116	184068116L							
	X.2-16.OT.DRP												184068115S	184068115S1	184068116S	184068116S1							
	X.2-24.OT	1,1	1,5	1,71	3,3	153,6	149,8	125,8	81,6				184068124	184068124L1	184068124L2	184068124L3							
	X.2-24.OT.DRP												184068123S	184068123S1	184068123S2	184068123S3							
X.2-32.OT	1,5	2	2,17	4,4	204,7	199,7	167,7	108				197069132	197069132L	197069132L1	197069132L2								
X.2-32.OT.DRP												197069132S	197069132S1	197069132S2	197069132S3								
PUMP CURVE 3	X.3-6.OT	0,37	0,5	0,68	1,7	33,3	30,4	27	13,7				184068205	184068206	184068206L	Not available							
	X.3-6.OT.DRP												184068205S	184068206S	184068206S1	Not available							
	X.3-9.OT	0,55	0,75	0,85	1,7	50	45,6	40,5	20,6				184068208	184068209	184068209L	184068209L1							
	X.3-9.OT.DRP												184068208S	184068209S	184068209S1	184068209S2							
	X.3-13.OT	0,75	1	1,16	2,35	72,2	65,9	58,5	29,8				184068212	184068212L	184068213	184068213L							
	X.3-13.OT.DRP												184068212S	184068212S1	184068213S	184068213S1							
	X.3-19.OT	1,1	1,5	1,64	3,25	105,5	96,3	85,5	43,5				184068218	184068218L	184068219	184068219L							
	X.3-19.OT.DRP												184068218S	184068218S1	184068219S	184068219S1							
X.3-25.OT	1,5	2	2,1	4,3	138,8	126,8	112,5	57,3				197069225L	197069225L1	197069225L2	197069225L3								
X.3-25.OT.DRP												197069225S	197069225S1	197069225S2	197069225S3								
PUMP CURVE 5	X.5-4.OT	0,37	0,5	0,7	1,7	24,5		22	18,5	12,1			184068303	184068304	184068304L	Not available							
	X.5-4.OT.DRP												184068303S	184068304S	184068304S1	Not available							
	X.5-6.OT	0,55	0,75	0,87	1,75	36,8		33	27,7	18,2			184068305	184068306	184068306L	Not available							
	X.5-6.OT.DRP												184068305S	184068306S	184068306S1	Not available							
	X.5-8.OT	0,75	1	1,15	2,3	49,1		44	37	24,2			184068307	184068308	184068308L	184068308L1							
	X.5-8.OT.DRP												184068307S	184068308S	184068308S1	184068308S2							
	X.5-13.OT	1,1	1,5	1,71	3,3	79,7		71,5	60,1	39,4			184068311S	184068311L	184068313	184068313L							
	X.5-13.OT.DRP												184068311	184068311S1	184068313S	184068313S1							
	X.5-17.OT	1,5	2	2,17	4,4	104,3		93,5	78,5	51,5			184068317	184068318	184068318L	184068318L1							
	X.5-17.OT.DRP												184068317S	184068318S	184068318S1	184068318S2							
X.5-21.OT	2,2	3	2,6	4,9	128,8		115,5	97	63,6			184068321	184068322	184068322L	184068322L1								
X.5-21.OT.DRP												184068321S	184068322S	184068322S1	184068322S2								
PUMP CURVE 8	X.8-6.OT	0,75	1	1,16	2,35	38,4		29	24,5	4,8			184068406	184068407	184068407L	Not available							
	X.8-6.OT.DRP												184068406S	184068407S	184068407S1	Not available							
	X.8-8.OT	1,1	1,5	1,52	3	51,2		38,6	32,7	6,4			184068408	184068409	184068409L	184068409L1							
	X.8-8.OT.DRP												184068408S	184068409S	184068409S1	184068409S2							
	X.8-12.OT	1,5	2	2,12	4,3	76,8		58	49	9,6			184068412	184068413	186068413L	186068413L1							
	X.8-12.OT.DRP												184068412S	184068413S	184068413S1	184068413S2							
	X.8-17.OT	2,2	3	2,9	5,2	109		82,1	69,4	13,6			184068417	184068417L	184068417L1	184068417L2							
X.8-17.OT.DRP	184068417S												184068417S1	184068417S2	184068417S3								
P.C.10	X.10-8.OT	1,5	2	1,94	4	48,2		42,6	39,2	23,1	7,9		184068508	184068509	184068509L	184068509L1							
	X.10-8.OT.DRP												184068508S	184068509S	184068509S1	184068509S2							
	X.10-12.OT	2,2	3	2,76	5	72,3		64	58,8	34,7	11,9		184068512	184068513	184068513SL	184068513L11							
	X.10-12.OT.DRP												184068512S	184068513S	184068513S1	184068513S2							

Total head in meters = H = dynamic total pressure

\*Power consumption \*\*Current consumption

# ZDJet

**4" complete submersible pump, made of ZDS hydraulic part, ZDS 2-wire single-phase encapsulated water-cooled H2 motor and supply cable in different lengths.**

Reliable, strong, easy to maintain and available in a wide range of models; it's ready to use as it doesn't require a start and run control panel.

It can be protected against many possible installation or operation faults thanks to the DRP (integrated in the power supply cable) or the DRP-Plus (display monitoring protections).



## HYDRAULIC PART

QS4P technopolymer or QS4X stainless steel ZDS hydraulic part, with floating ring technology and reinforced impeller.

Great reliability with the integrated non-return valve.

Special design and selected materials to ensure optimal resistance against sand and other abrasives.

Improved impellers design, which requires less starting torque to the motor.



## MOTOR

2 pole asynchronous 2-wire single-phase encapsulated water-cooled H2 motor.

Special and long lasting integrated start and run capacitor. In case of need it can be easily replaced.

Axial and radial water-lubricated bearings allow for maintenance-free operation.

Hermetically sealed stator by 304L stainless steel flanges, internal and external casings, filled by resin to guarantee optimal cooling capacity of temperature during operation.

Rotor set on Kingsbury thrust block equipped with carbon clearance ring and oscillating pads in high-strength stainless steel to sustain high axial loads.

Pre-filled with non-contaminating antifreeze lubricant liquid.

Sand protection to guarantee optimal operation even with sand in the borehole.

Removable lead connector to make installation and maintenance easier.

Supply cable according to drinking water regulations (ACS), available in different lengths.



## MOTOR'S PROTECTIONS

Special thermal protector, manually resettable, especially designed to ensure higher reliability and longer life



**Thermal protection** which stops the motor in case of overheating because of an incorrect installation.



**Current overload protection** which protects the motor in the case the submersible pump is partially or totally blocked.



## APPLICATIONS

Submersible pump designed to be used in 4" boreholes (or larger) and tanks, for lifting, distribution, pressurization of water in water systems.



## OPTIONAL



**DRP:**  
INTEGRATED DRP -  
DRY RUNNING PROTECTION



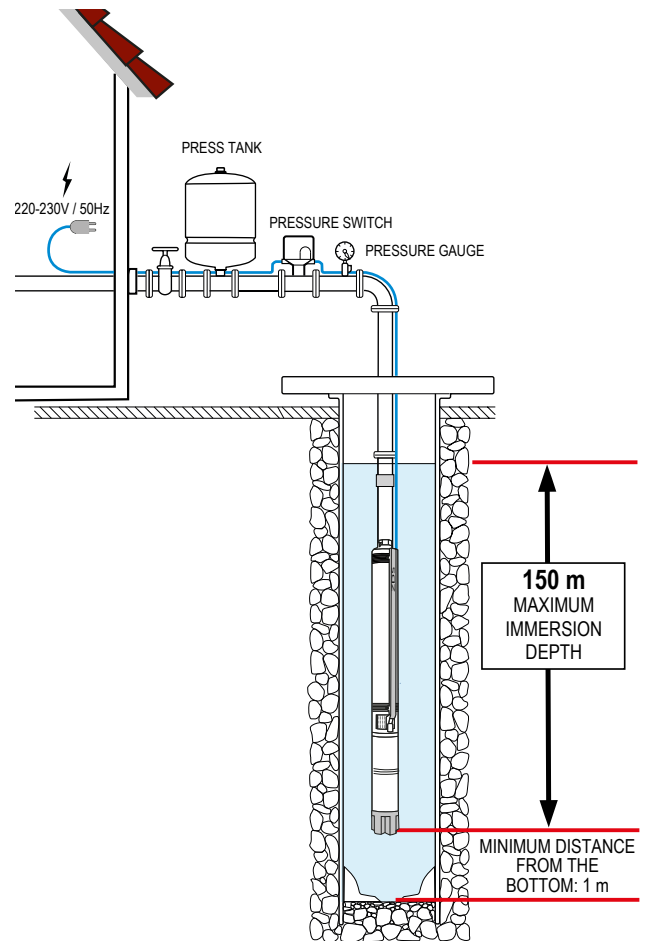
**DRP-PLUS**  
DISPLAY MONITORING  
PROTECTION

# READY AND EASY TO INSTALL

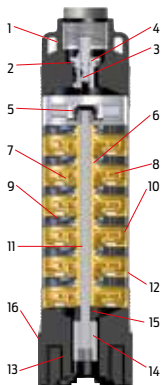
# NO NEED FOR EXTERNAL CONTROL PANEL

# INTEGRATED CAPACITOR AND SPECIAL THERMAL PROTECTION

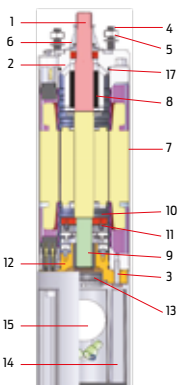
TECHNICAL SPECIFICATIONS	
Power range:	0,37 - 1,5 kW
Voltage range:	1x220-230V / 50 Hz
Voltage tolerance 50Hz from nominal:	+6% / -10% U <sub>N</sub>
Degree of protection:	IP 68
Insulation:	Cl. F
Rated ambient temperature:	max. 35° C
Required cooling flow:	min. 8 cm/sec
Maximum quantity of suspended sand:	120 g/m <sup>3</sup>
Maximum starts/h:	150, equally distributed
Mounting:	vertical/horizontal
Maximum immersion depth:	150 m
Allowed range of water PH:	6,4-8,0
Outlet diameter:	1" ¼ G-F - 2" G-F
Maximum delivery (Q):	15.000 l/h
Maximum head (H):	220 m



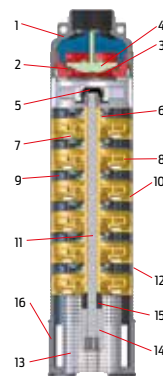
## ZDJet.P



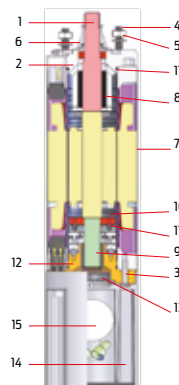
Pos.	COMPONENTS	MATERIALS
1	Upper head	PA 6.6
2	O-Ring	NBR
3	Complete valve	POM
4	Plate valve	POM
5	Shaft guide	NBR
6	Bearing	TPU
7	Floating ring	TPU
8	Impeller	Noryl and stainless steel
9	Diffuser	Noryl
10	Stage box	Noryl
11	Pump shaft	Stainless steel AISI 304 (DIN 1.4301)
12	Outer sleeve	Stainless steel AISI 304 (DIN 1.4301)
13	Filter	PA 6.6
14	Coupling	Stainless steel AISI 304 (DIN 1.4301)
15	Spacer	Noryl
16	Pump support	PA 6.6
-	Cable cover	PVC
1	Shaft End	Stainless steel AISI 304/420
2	Top bracket	G20 Cast Iron - cathaphoretic treatment
3	Pump support	G20 Cast Iron - cathaphoretic treatment
4	Stud	Stainless steel AISI 304
5	Nut	Stainless steel AISI 304
6	Rotating Sand Guard	NBR
7	Outer sleeve	Stainless steel AISI 304
8	Upper bearing	Graphite HT 204
9	Lower bearing	Graphite HT 204
10	Rocking disk	Stainless steel AISI 304
11	Segments	Stainless steel AISI 304
12	O-ring	NBR
13	Diaphragm	NBR
14	Capacitor Box	Technopolimer
15	Capacitor	-



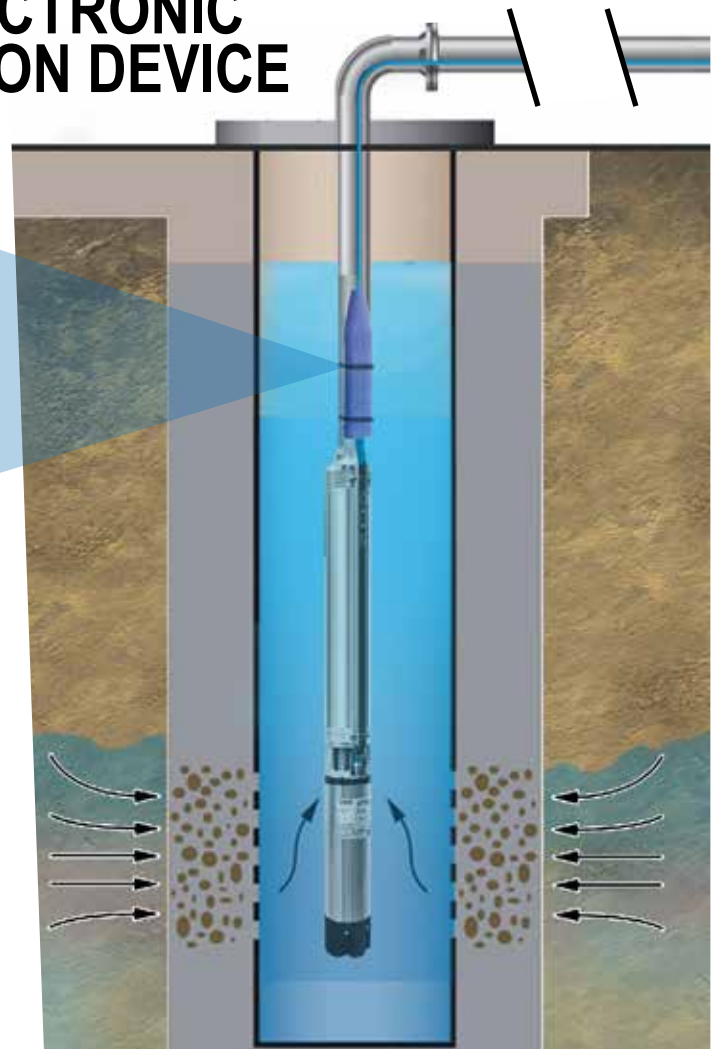
## ZDJet.X



Pos.	COMPONENTS	MATERIALS
1	Upper head	Stainless steel AISI 304 (DIN 1.4301)
2	O-Ring	NBR
3	Complete valve	PA 6.6
4	Plate valve	PA 6.6
5	Shaft guide	NBR
6	Bearing	TPU
7	Floating ring	TPU
8	Impeller	Noryl and stainless steel
9	Diffuser	Noryl
10	Stage box	Noryl
11	Pump shaft	Stainless Steel inox AISI 304 (DIN 1.4301)
12	Outer sleeve	Stainless Steel inox AISI 304 (DIN 1.4301)
13	Filter (removable)	Stainless steel AISI 304 (DIN 1.4301)
14	Coupling	Stainless Steel inox AISI 304 (DIN 1.4301)
15	Spacer	Noryl
16	Pump support	Stainless steel AISI 304 (DIN 1.4301)
-	Cable cover	Stainless steel AISI 304 (DIN 1.4301)
1	Shaft End	Stainless steel AISI 304/420
2	Top bracket	G20 Cast Iron - cathaphoretic treatment
3	Pump support	G20 Cast Iron - cathaphoretic treatment
4	Stud	Stainless steel AISI 304
5	Nut	Stainless steel AISI 304
6	Rotating Sand Guard	NBR
7	Outer sleeve	Stainless steel AISI 304
8	Upper bearing	Graphite HT 204
9	Lower bearing	Graphite HT 204
10	Rocking disk	Stainless steel AISI 304
11	Segments	Stainless steel AISI 304
12	O-ring	NBR
13	Diaphragm	NBR
14	Capacitor Box	Technopolimer
15	Capacitor	-



# DRP ELECTRONIC PROTECTION DEVICE

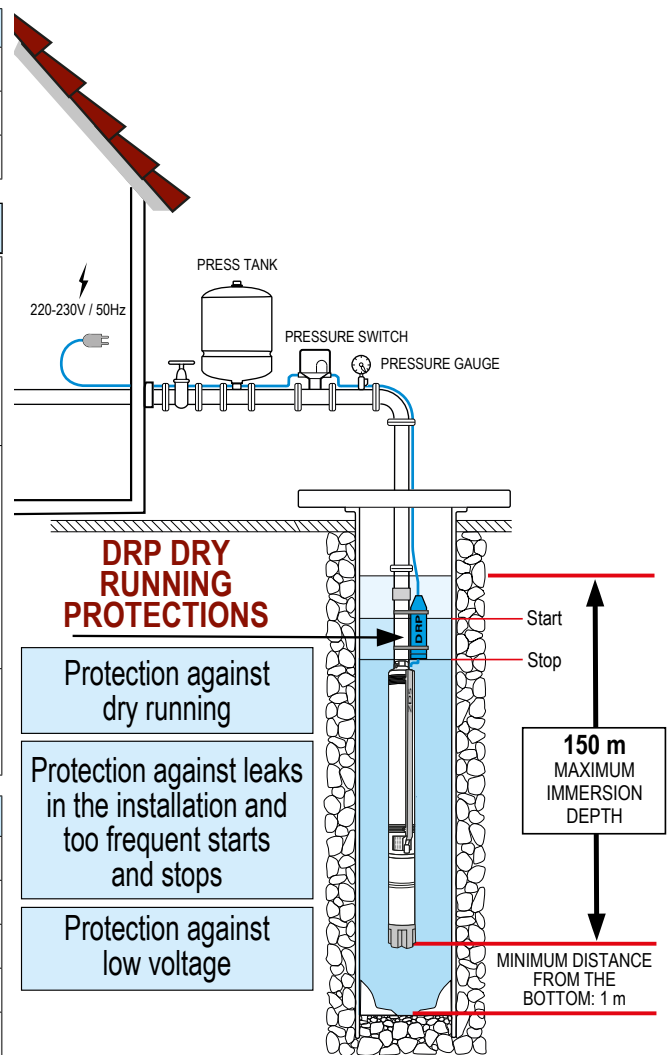


DRP is an electronic device that guarantees optimal protection of the submersible pump from dry running, positioned in the pump supply cable just above the pump. In case of water shortage, the DRP stops the pump immediately, the water drops below the DRP to allow water to flow into the bore hole. Thus the pump operation is directly proportional to the water supply for optimum efficiency. In contrast to traditional solutions, no additional cables, sensors and control boxes are needed. The DRP device has been developed and tested to make the submersible pump function autonomously in conditions of water shortage. The DRP is ready for use, integrated into the connection cable and needs no further installation.

CHARACTERISTICS	
Automatic programmed restarts in case of protection	
Stand-by mode at maximum number of restart attempts overcoming	
Ready to use, doesn't need any further calibration or setting up	

DRP Protection	
	<b>Protection against dry running and lack of water in the well</b> The DRP completely protects the submersible pump against lack of water in the well, without the aid of other equipment (probes, cables, sensors, control panels etc.). In case of dry running, the DRP automatically stops the pump. When the water level is restored in the well, the DRP restarts the pump after a programmed cycle time.
	<b>Protection against leaks in the installation and too frequent starts and stops</b> The DRP protects the submersible pump against leaks in the piping system (also when the pressure tank is exhausted or its membrane is defective, or when there is a defective pressure switch) and too frequent starts and stops (for example if the tank is too small for the system). In such cases to avoid potential damages, the DRP, after some automatic re-start attempts, makes the pump enter the stand-by mode.
	<b>Protection against low voltage</b> The DRP protects the submersible pump against low voltage, that can damage the motor.

Technical Specifications	
<b>Casing:</b>	Thermoplastic material
<b>Voltage range:</b>	1x220-230V +6% / -10% / 50 Hz
<b>Degree of protection:</b>	IP 68
<b>Rated ambient temperature:</b>	-10/+40° C
<b>Size (cm):</b>	33 x 5 x 3



# DRP-PLUS DISPLAY MONITORING PROTECTIONS



## CHARACTERISTICS

- **LCD display for easy diagnostic**
- **Soft start technology**
- **Extra torque on start up when necessary**
- **Sounder alarm in the event of a fault**
- **Ready to use, doesn't need any further calibration or setting up**
- **Self-learning button for possible field approach**

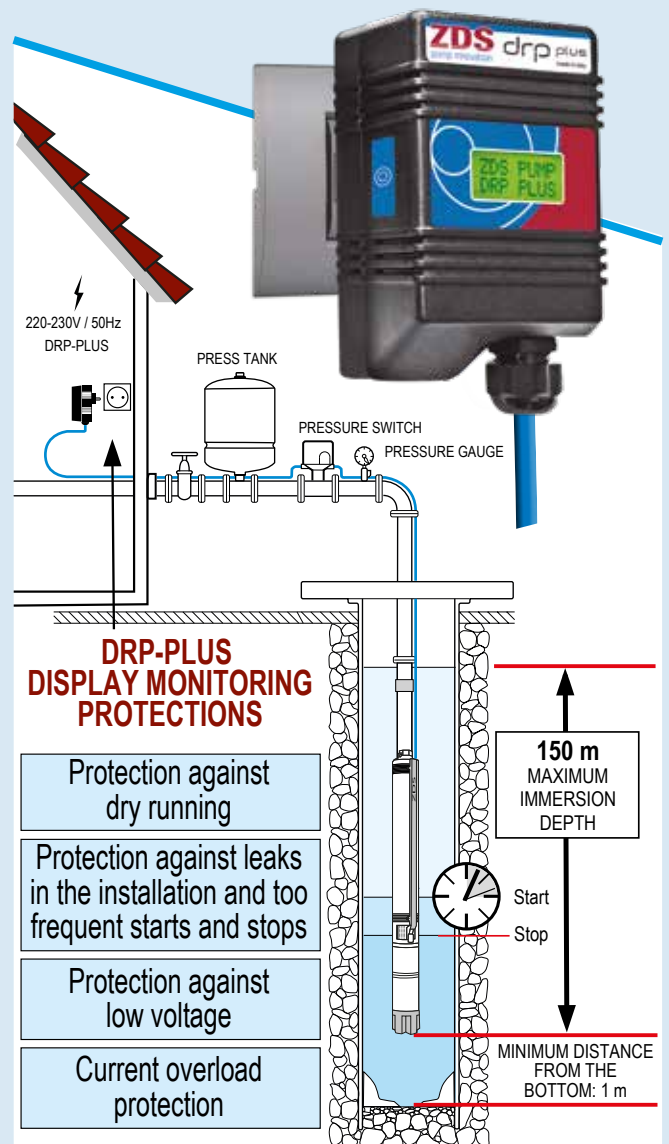
**DRP-Plus** device is designed to guarantee an optimal protection of the ZDJet pump against many possible installation and operation faults: an alarm will be shown on the display in case of current overload, low voltage or high voltage, too frequent starts and stops and dry running; ensuring a high degree of automation and restoration. **DRP-Plus** allows to continuously monitor the submersible pump, guaranteeing its operation in the most efficient way through a Soft start procedure (first start attempt with low starting torque) and if needed, a Strong start procedure to benefit of more starting torque. **DRP-Plus** allows to continuously detect and monitor in real time the power: the electrical parameters obtained are processed by a special software, which will efficiently guarantee the correct working conditions. With **DRP-Plus**, the ZDJet.DRP-Plus submersible pump can work and be continuously protected also when actual supply voltage values are at tolerance limit, providing the effectiveness of the protection operation. In addition, **DRP-Plus**, thanks to a "smart software" at variable time and automatic restart, can ensure the optimization of water withdrawal from the borehole or tank when the pump is dry running.

### DRP-PLUS Protection

	<b>Protection against dry running and lack of water in the well</b> The device automatically stops the submersible pump showing an alarm on the display, to restart it after a programmed cycle time.
	<b>Protection against leaks in the installation and too frequent starts and stops</b> In case of leaks in the piping system (also when the pressure tank is exhausted or its membrane is damaged, or when there is a defective pressure switch) and too frequent starts and stops (for example if the tank is too small for the system), DRP-Plus automatically makes the pump enter the stand-by mode showing an alarm on the display.
	<b>Protection against low/high voltage</b> Avoid motor damages caused by too low or too high power supply voltages.
	<b>Current overload protection</b> In case the submersible pump is partially or totally blocked, after some restart attempts it enters the stand-by mode.

### Technical Specifications

<b>Schuko plug:</b>	Integrated
<b>Casing:</b>	Thermoplastic material
<b>Voltage range:</b>	1x220-230V +6% / -10% / 50 Hz
<b>Degree of protection:</b>	IP 40
<b>Rated ambient temperature:</b>	-10/+35° C
<b>Size (cm):</b>	7,6 x 13 x 5,5





# Product codes and hydraulics performance data

## ZDJet.X complete submersible pump



Hydraulic part with upper head and lower support in stainless steel and 2-wire single-phase encapsulated water-cooled motor - 220-230V

	Model	Power		P.C.*	c.c.** In (A)	Hydraulic performance (n~2.850 min <sup>-1</sup> )										Cable 1,5 m		Cable 15 m		Cable 30 m		Cable 45 m	
		kW	HP			m <sup>3</sup> /h	0	0,6	1,5	2,4	4,2	6	11,4	15	Code	Code	Code	Code					
																			l/min	0	10	25	40
PUMP CURVE 1	ZDJet.X.1-8	0,25	0,33	0,55	2,7	50,2	44,4	18							196020108	196020108L	196020108L1	Not available					
	ZDJet.X.1-8.DRP														196020108S	196020108S1	196020108S2	Not available					
	ZDJet.X.1-8.DRP-Plus														196020108P	196020108P1	196020108P2	Not available					
	ZDJet.X.1-12	0,37	0,5	0,69	3,3	75,4	66,6	27							196020112	196020112L	196020112L1	196020112L2					
	ZDJet.X.1-12.DRP														196020112S	196020112S1	196020112S2	196020112S3					
	ZDJet.X.1-12.DRP-Plus														196020112P	196020112P1	196020112P2	196020112P3					
	ZDJet.X.1-18	0,55	0,75	0,87	4,3	113	99,9	40,5							196020118	196020118L	196020118L1	196020118L2					
	ZDJet.X.1-18.DRP														196020118S	196020118S1	196020118S2	196020118S3					
	ZDJet.X.1-18.DRP-Plus														196020118P	196020118P1	196020118P2	196020118P3					
	ZDJet.X.1-25	0,75	1	1,23	5,7	157	138,8	56,3							196020125	196020125L	196020125L1	196020125L2					
	ZDJet.X.1-25.DRP														196020125S	196020125S1	196020125S2	196020125S3					
	ZDJet.X.1-25.DRP-Plus														196020125P	196020125P1	196020125P2	196020125P3					
ZDJet.X.1-36	1,1	1,5	1,69	8,4	226,1	199,8	81							196020136	196020136L	196020136L1	196020136L2						
ZDJet.X.1-36.DRP														196020136S	196020136S1	196020136S2	196020136S3						
ZDJet.X.1-36.DRP-Plus														196020136P	196020136P1	196020136P2	196020136P3						
PUMP CURVE 2	ZDJet.X.2-5	0,25	0,33	0,55	2,7	32	31,2	26,2	17						196020205	196020205L	196020205L1	Not available					
	ZDJet.X.2-5.DRP														196020205S	196020205S1	196020205S2	Not available					
	ZDJet.X.2-5.DRP-Plus														196020205P	196020205P1	196020205P2	Not available					
	ZDJet.X.2-8	0,37	0,5	0,73	3,4	51,2	49,9	41,9	27,2						196020208	196020208L	196020208L1	196020208L2					
	ZDJet.X.2-8.DRP														196020208S	196020208S1	196020208S2	196020208S3					
	ZDJet.X.2-8.DRP-Plus														196020208P	196020208P1	196020208P2	196020208P3					
	ZDJet.X.2-12	0,75	1	0,97	4,4	102	99,8	83,8	54,4						196020212	196020212L	196020212L1	196020212L2					
	ZDJet.X.2-12.DRP														196020212S	196020212S1	196020212S2	196020212S3					
	ZDJet.X.2-12.DRP-Plus														196020212P	196020212P1	196020212P2	196020212P3					
	ZDJet.X.2-16	0,75	1	1,27	5,8	102	99,8	83,8	54,4						196020216	196020216L	196020216L1	196020216L2					
	ZDJet.X.2-16.DRP														196020216S	196020216S1	196020216S2	196020216S3					
	ZDJet.X.2-16.DRP-Plus														196020216P	196020216P1	196020216P2	196020216P3					
	ZDJet.X.2-24	1,1	1,5	1,7	8,6	153,6	149,8	126	81,6						196020224	196020224L	196020224L1	196020224L2					
	ZDJet.X.2-24.DRP														196020224S	196020224S1	196020224S2	196020224S3					
	ZDJet.X.2-24.DRP-Plus														196020224P	196020224P1	196020224P2	196020224P3					
	ZDJet.X.2-32	1,5	2	2,25	10,5	204,7	199,7	167,7	108						196020232	196020232L	196020232L1	Not available					
	ZDJet.X.2-32.DRP														196020232S	196020232S1	196020232S2	Not available					
	ZDJet.X.2-32.DRP-Plus														196020232P	196020232P1	196020232P2	Not available					
	PUMP CURVE 3	ZDJet.X.3-6	0,37	0,5	0,7	3,2	33,3		30,4	27	13,7					196020306	196020306L	196020306L1	Not available				
		ZDJet.X.3-6.DRP														196020306S	196020306S1	196020306S2	Not available				
		ZDJet.X.3-6.DRP-Plus														196020306P	196020306P1	196020306P2	Not available				
		ZDJet.X.3-9	0,55	0,75	0,93	4	50		45,6	40,5	20,6					196020309	196020309L	196020309L1	196020309L2				
		ZDJet.X.3-9.DRP														196020309S	196020309S1	196020309S2	196020309S3				
		ZDJet.X.3-9.DRP-Plus														196020309P	196020309P1	196020309P2	196020309P3				
ZDJet.X.3-13		0,75	1	1,24	5,8	72,2		65,9	58,5	29,8					196020313	196020313L	196020313L1	196020313L2					
ZDJet.X.3-13.DRP															196020313S	196020313S1	196020313S2	196020313S3					
ZDJet.X.3-13.DRP-Plus															196020313P	196020313P1	196020313P2	196020313P3					
ZDJet.X.3-19		1,1	1,5	1,66	8,1	105,5		96	85,5	43,50					196020319	196020319L	196020319L1	196020319L2					
ZDJet.X.3-19.DRP															196020319S	196020319S1	196020319S2	196020319S3					
ZDJet.X.3-19.DRP-Plus															196020319P	196020319P1	196020319P2	196020319P3					
ZDJet.X.3-25		1,5	2	2,34	10,6	138,8		126,8	112,5	57,3					196020325	196020325L	196020325L1	Not available					
ZDJet.X.3-25.DRP															196020325S	196020325S1	196020325S2	Not available					
ZDJet.X.3-25.DRP-Plus															196020325P	196020325P1	196020325P2	Not available					
PUMP CURVE 5		ZDJet.X.5-4	0,37	0,5	0,72	3,3	24,5			22	18,5	12,1				196020504	196020504L	196020504L1	Not available				
		ZDJet.X.5-4.DRP														196020504S	196020504S1	196020504S2	Not available				
		ZDJet.X.5-4.DRP-Plus														196020504P	196020504P1	196020504P2	Not available				
	ZDJet.X.5-6	0,55	0,75	0,95	4,2	37			33	27,7	18,2				196020506	196020506L	196020506L1	Not available					
	ZDJet.X.5-6.DRP														196020506S	196020506S1	196020506S2	Not available					
	ZDJet.X.5-6.DRP-Plus														196020506P	196020506P1	196020506P2	Not available					
	ZDJet.X.5-8	0,75	1	1,23	5,7	49,1			44	37	24,2				196020508	196020508L	196020508L1	196020508L2					
	ZDJet.X.5-8.DRP														196020508S	196020508S1	196020508S2	196020508S3					
	ZDJet.X.5-8.DRP-Plus														196020508P	196020508P1	196020508P2	196020508P3					
	ZDJet.X.5-13	1,1	1,5	1,7	8,8	79,7			72	60,1	39,4				196020513	196020513L	196020513L1	196020513L2					
	ZDJet.X.5-13.DRP														196020513S	196020513S1	196020513S2	196020513S3					
	ZDJet.X.5-13.DRP-Plus														196020513P	196020513P1	196020513P2	196020513P3					
ZDJet.X.5-17	1,5	2	2,35	10,8	104,3			93,5	78,5	51,5				196020517	196020517L	196020517L1	Not available						
ZDJet.X.5-17.DRP														196020517S	196020517S1	196020517S2	Not available						
ZDJet.X.5-17.DRP-Plus														196020517P	196020517P1	196020517P2	Not available						
PUMP CURVE 8	ZDJet.X.8-6	0,75	1	1,26	5,8	38,4			29	25	5				196020806	196020806L	196020806L1	Not available					
	ZDJet.X.8-6.DRP														196020806S	196020806S1	196020806S2	Not available					
	ZDJet.X.8-6.DRP-Plus														196020806P	196020806P1	196020806P2	Not available					
	ZDJet.X.8-8	1,1	1,5	1,65	8	51,2			39	33	7				196020808	196020808L	196020808L1	196020808L2					
	ZDJet.X.8-8.DRP														196020808S	196020808S1	196020808S2	196020808S3					
	ZDJet.X.8-8.DRP-Plus														196020808P	196020808P1	196020808P2	196020808P3					
	ZDJet.X.8-12	1,5	2	2,25	10,4	76,8			58	49	9,6				196020812	196020812L	196020812L1	Not available					
	ZDJet.X.8-12.DRP														196020812S	196020812S1	196020812S2	Not available					
	ZDJet.X.8-12.DRP-Plus														196020812P	196020812P1	196020812P2	Not available					
C.S.10	ZDJet.X.10-8	1,5	2	2,4	11	48,2				39,2	7,9			196020108	196020108L	196020108L1	Not available						
	ZDJet.X.10-8.DRP													196020108S	196020108S1	196020108S2	Not available						
	ZDJet.X.10-8.DRP-Plus													196020108P	196020108P1	196020108P2	Not available						

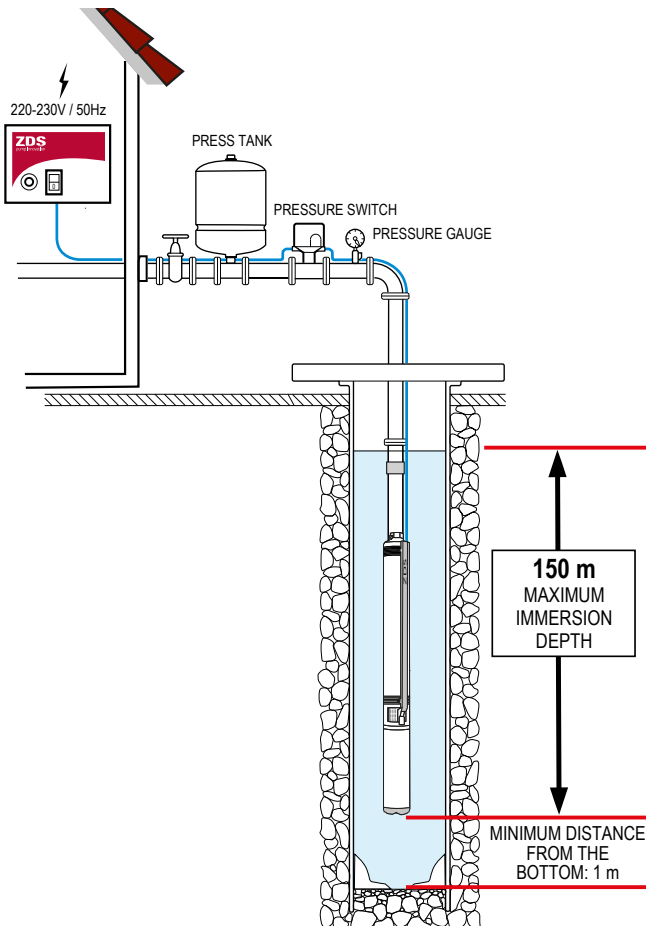
Total head in meters = H = dynamic total pressure

\*Power consumption \*\*Current consumption

# P/X-H3F

4" complete submersible pump, made of ZDS hydraulic part, Franklin single-phase encapsulated PSC water-cooled motor, supply cable in different lengths and ZDS CBH electrical star panel (which includes start and run capacitor).

Reliable, strong, easy to maintain and available in a wide range of models. It can be protected against many possible installation or operation faults thanks to the DRP protection device.



## HYDRAULIC PART

QS4P technopolymer or QS4X stainless steel ZDS hydraulic part, with floating ring technology and reinforced impeller.

Great reliability with the integrated non-return valve.

Special design and selected materials to ensure optimal resistance against sand and other abrasives.

Improved impellers design, which requires less starting torque to the motor.

## MOTOR

2 pole asynchronous single-phase PSC encapsulated water-cooled Franklin motor.

Axial and radial water-lubricated bearings.

Hermetically resin sealed stator.

Pre-filled with non-contaminating antifreeze lubricant liquid.

Removable lead connector.

Supply cable according to drinking water regulations (ACS), available in different lengths.

## TECHNICAL SPECIFICATIONS

<b>Power range:</b>	0,37 - 2,2 kW
<b>Voltage range:</b>	1x220-230V / 50 Hz
<b>Voltage tolerance 50Hz from nominal:</b>	+6% / -10% U <sub>N</sub>
<b>Degree of protection:</b>	IP 68
<b>Insulation:</b>	Cl. B
<b>Rated ambient temperature:</b>	max. 30° C
<b>Required cooling flow:</b>	min. 8 cm/sec
<b>Maximum quantity of suspended sand:</b>	120 g/m <sup>3</sup>
<b>Maximum starts/h:</b>	20, equally distributed
<b>Mounting:</b>	vertical/horizontal
<b>Maximum immersion depth:</b>	150 m
<b>Allowed range of water PH:</b>	6,4-8,0
<b>Outlet diameter:</b>	1" ¼ G-F - 2" G-F
<b>Maximum delivery (Q):</b>	15.000 l/h
<b>Maximum head (H):</b>	220 m

## OPTIONAL



**DRP:**  
INTEGRATED DRP -  
DRY RUNNING  
PROTECTION

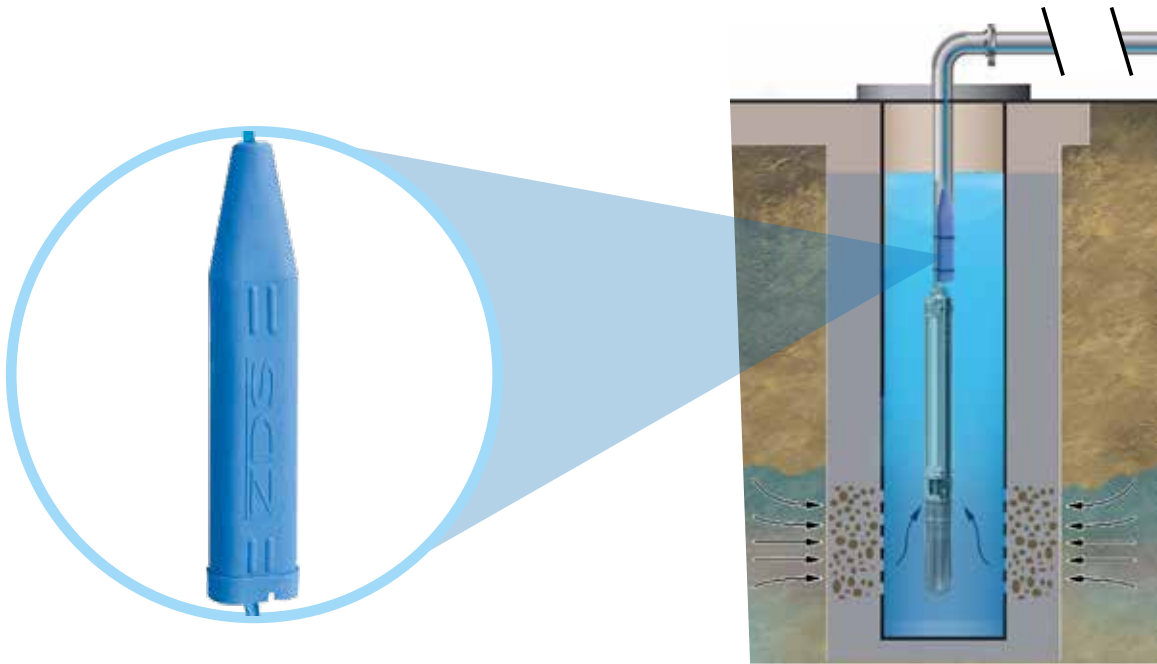


## CBH - Electric start panel

Motor start and operation system with capacitor, equipped with thermal amperometric protection against current overload, ON/OFF illuminated switch, terminal box, cable glands, power supply cable, mounting accessories.

## APPLICATIONS

Submersible pump designed to be used in 4" boreholes (or larger) and tanks, for lifting, distribution, pressurization of water in water systems.



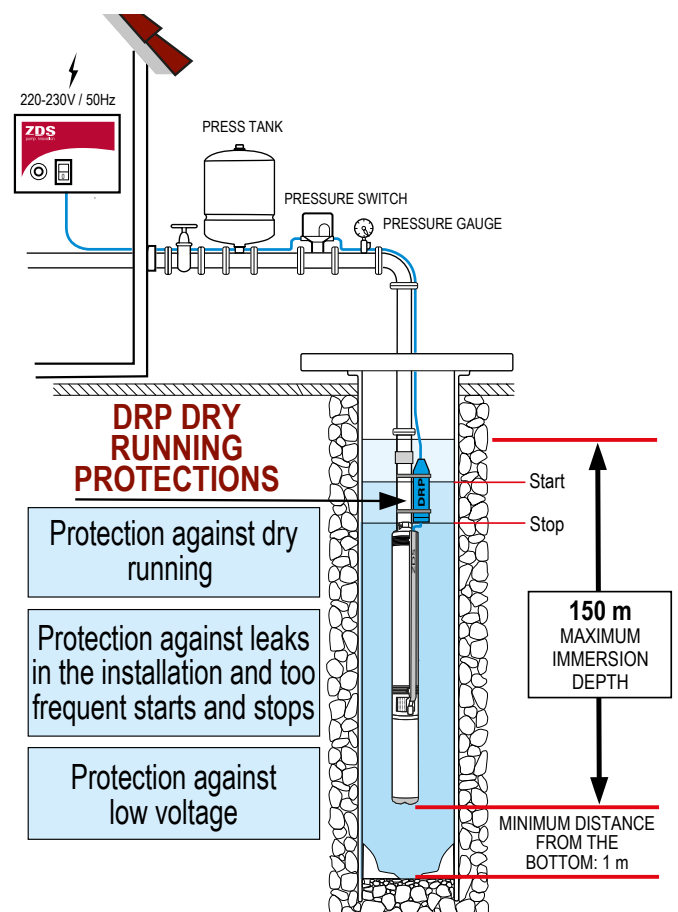
## CHARACTERISTICS

- Automatic programmed restarts in case of protection
- Stand-by mode at maximum number of restart attempts overcoming
- Ready to use, doesn't need any further calibration or setting up

## DRP Protection

	<p><b>Protection against dry running and lack of water in the well</b> The DRP completely protects the submersible pump against lack of water in the well, without the aid of other equipment (probes, cables, sensors, control panels etc.). In case of dry running, the DRP automatically stops the pump. When the water level is restored in the well, the DRP restarts the pump after a programmed cycle time.</p>
	<p><b>Protection against leaks in the installation and too frequent starts and stops</b> The DRP protects the submersible pump against leaks in the piping system (also when the pressure tank is exhausted or its membrane is defective, or when there is a defective pressure switch) and too frequent starts and stops (for example if the tank is too small for the system). In such cases to avoid potential damages, the DRP, after some automatic re-start attempts, makes the pump enter the stand-by mode.</p>
	<p><b>Protection against low voltage</b> The DRP protects the submersible pump against low voltage, that can damage the motor.</p>

DRP is an electronic device that guarantees optimal protection of the submersible pump from dry running, positioned in the pump supply cable just above the pump. In case of water shortage, the DRP stops the pump immediately, the water drops below the DRP to allow water to flow into the bore hole. Thus the pump operation is directly proportional to the water supply for optimum efficiency. In contrast to traditional solutions, no additional cables, sensors and control boxes are needed. The DRP device has been developed and tested to make the submersible pump function autonomously in conditions of water shortage. The DRP is ready to use, integrated into the connection cable and needs no further installation.



Technical Specifications	
<b>Casing:</b>	Thermoplastic material
<b>Voltage range:</b>	1x220-230V +6% / -10% / 50 Hz
<b>Degree of protection:</b>	IP 68
<b>Rated ambient temperature:</b>	-10/+40° C
<b>Size (cm):</b>	33 x 5 x 3

	Model	Power		P.C.*	C.C.** In (A)	Hydraulic performance (n~2.850 min <sup>-1</sup> )						Cable 1.5 m		Cable 15 m		Cable 30 m	
		kW	HP			0	0.6	1.5	2.4	4.2	6	Code	Code	Code			
															m <sup>3</sup> /h	l/min	0
PUMP CURVE 1	P.1-8.H3F	0,25	0,33	0,49	2,3	Total head in meters = H= dynamic total pressure	50,2	44,4	18				182079614F	182079614F1	182079614F2		
	P.1-8.H3F.DRP												182079614FS	182079614FS1	182079614FS2		
	P.1-12.H3F	0,37	0,5	0,69	3,2		75,4	66,6	27				182079616F	182079616F1	182079616F2		
	P.1-12.H3F.DRP												182079616FS	182079616FS1	182079616FS2		
	P.1-18.H3F	0,55	0,75	0,87	4,3		113	99,9	40,5					182079719F	182079719F1	182079719F2	
	P.1-18.H3F.DRP													182079719FS	182079719FS1	182079719FS2	
	P.1-25.H3F	0,75	1	1,23	5,6		157	138,8	56,3					182079620F	182079620F1	182079620F2	
P.1-25.H3F.DRP	182079620FS					182079620FS1								182079620FS2			
PUMP CURVE 2	P.2-5.H3F	0,25	0,33	0,59	2,2	Total head in meters = H= dynamic total pressure	32	31,2	28,2	17			182079622F	182079622F1	182079622F2		
	P.2-5.H3F.DRP												182079622FS	182079622FS1	182079622FS2		
	P.2-8.H3F	0,37	0,5	0,73	3,3		51,2	49,9	41,9	27,2				182079624F	182079624F1	182079624F2	
	P.2-8.H3F.DRP													182079624FS	182079624FS1	182079624FS2	
	P.2-12.H3F	0,55	0,75	0,97	4,4		76,8	74,9	62,9	40,8				182079626F	182079626F1	182079626F2	
	P.2-12.H3F.DRP													182079626FS	182079626FS1	182079626FS2	
	P.2-16.H3F	0,75	1	1,27	6		102,4	99,8	83,8	54,4				182079628F	182079628F1	182079628F2	
	P.2-16.H3F.DRP													182079628FS	182079628FS1	182079628FS2	
	P.2-24.H3F	1,1	1,5	1,7	8,4		153,6	149,8	125,8	81,6				182079630F	182079630F1	182079630F2	
P.2-24.H3F.DRP	182079630FS					182079630FS1								182079630FS2			
PUMP CURVE 3	P.3-6.H3F	0,37	0,5	0,7	3,1	Total head in meters = H= dynamic total pressure	33,3		30,4	27	13,7			182079632F	182079632F1	182079632F2	
	P.3-6.H3F.DRP													182079632FS	182079632FS1	182079632FS2	
	P.3-9.H3F	0,55	0,75	0,93	3,9		50		45,6	40,5	20,6				182079634F	182079634F1	182079634F2
	P.3-9.H3F.DRP														182079634FS	182079634FS1	182079634FS2
	P.3-13.H3F	0,75	1	1,24	5,9		72,2		65,9	58,5	29,8				182079636F	182079636F1	182079636F2
	P.3-13.H3F.DRP														182079636FS	182079636FS1	182079636FS2
	P.3-19.H3F	1,1	1,5	1,66	7,9		105,5		96,3	85,5	43,5				182079638F	182079638F1	182079638F2
	P.3-19.H3F.DRP														182079638FS	182079638FS1	182079638FS2
P.3-25.H3F	1,5	2	2,23	10,1	138,8		126,8	112,5	57,3				182079648F	182079648F1	182079648F2		
P.3-25.H3F.DRP													182079648FS	182079648FS1	182079648FS2		
PUMP CURVE 5	P.5-4.H3F	0,37	0,5	0,72	3,2	Total head in meters = H= dynamic total pressure	24,5			22	18,5	12,1			182079640F	182079640F1	182079640F2
	P.5-4.H3F.DRP														182079640FS	182079640FS1	182079640FS2
	P.5-6.H3F	0,55	0,75	0,95	4,1		36,8			33	27,7	18,2			182079642F	182079642F1	182079642F2
	P.5-6.H3F.DRP														182079642FS	182079642FS1	182079642FS2
	P.5-8.H3F	0,75	1	1,23	5,6		49,1			44	37	24,2			182079644F	182079644F1	182079644F2
	P.5-8.H3F.DRP														182079644FS	182079644FS1	182079644FS2
	P.5-13.H3F	1,1	1,5	1,7	8,5		79,7			71,5	60,1	39,4			182079646F	182079646F1	182079646F2
	P.5-13.H3F.DRP														182079646FS	182079646FS1	182079646FS2
	P.5-17.H3F	1,5	2	2,3	10,7		104,3			93,5	78,5	51,5			182079650F	182079650F1	182079650F2
	P.5-17.H3F.DRP														182079650FS	182079650FS1	182079650FS2
	P.5-21.H3F	2,2	3	2,75	14		128,8			115,5	97	63,6			182079652F	182079652F1	Not available
P.5-21.H3F.DRP	182079652FS					182079652FS1									Not available		

\*Power consumption \*\*Current consumption

CBH included in the price.

# Product codes and hydraulics performance data

## X.H3F complete submersible pump



Hydraulic part with upper head and lower support in **stainless steel** and PSC single-phase encapsulated water-cooled motor - 220-230V

Model	Power		P.C.*	c.c.**	Hydraulic performance (n~2.850 min <sup>-1</sup> )											Cable 1,5 m		Cable 15 m		Cable 30 m	
	kW	HP			In (A)	m <sup>3</sup> /h	0	0,6	1,5	2,4	4,2	6	11,4	15	Code	Code	Code				
							0	10	25	40	70	100	190	250							
Total head in meters = H = dynamic total pressure																					
PUMP CURVE 1	X.1-8.H3F	0,25	0,33	0,49	2,3	50,2	44,4	18					196071614F	196071614F1	196071614F2						
	X.1-8.H3F.DRP												196071614FS	196071614FS1	196071614FS2						
	X.1-12.H3F	0,37	0,5	0,69	3,2	75,4	66,6	27					196071616F	196071616F1	196071616F2						
	X.1-12.H3F.DRP												196071616FS	196071616FS1	196071616FS2						
	X.1-18.H3F	0,55	0,75	0,87	4,3	113	99,9	40,5					196071618F	196071618F1	196071618F2						
	X.1-18.H3F.DRP												196071618FS	196071618FS1	196071618FS2						
	X.1-25.H3F	0,75	1	1,23	5,6	157	138,8	56,3					196071620F	196071620F1	196071620F2						
	X.1-25.H3F.DRP												196071620FS	196071620FS1	196071620FS2						
	X.1-36.H3F	1,1	1,5	1,69	8,4	226,1	199,8	91					196071622F	196071622F1	196071622F2						
X.1-36.H3F.DRP												196071622FS	196071622FS1	196071622FS2							
PUMP CURVE 2	X.2-5.H3F	0,25	0,33	0,59	2,2	32	31,2	28,2	17				196071626F	196071626F1	196071626F2						
	X.2-5.H3F.DRP												196071626FS	196071626FS1	196071626FS2						
	X.2-8.H3F	0,37	0,5	0,73	3,3	51,2	49,9	41,9	27,2				196071628F	196071628F1	196071628F2						
	X.2-8.H3F.DRP												196071628FS	196071628FS1	196071628FS2						
	X.2-12.H3F	0,55	0,75	0,97	4,4	76,8	74,9	62,9	40,8				196071712F	196071712F1	196071712F2						
	X.2-12.H3F.DRP												196071712FS	196071712FS1	196071712FS2						
	X.2-16.H3F	0,75	1	1,27	6	102,4	99,8	83,8	54,4				196071716F	196071716F1	196071716F2						
	X.2-16.H3F.DRP												196071716FS	196071716FS1	196071716FS2						
	X.2-24.H3F	1,1	1,5	1,7	8,4	153,6	149,8	125,8	81,6				196071724F	196071724F1	196071724F2						
	X.2-24.H3F.DRP												196071724FS	196071724FS1	196071724FS2						
X.2-32.H3F	1,5	2	2,3	10,6	204,7	199,7	167,7	108				196071630F	196071630F1	196071630F2							
X.2-32.H3F.DRP												196071630FS	196071630FS1	196071630FS2							
PUMP CURVE 3	X.3-6.H3F	0,37	0,5	0,7	3,1	33,3		30,4	27	13,7			196071636F	196071636F1	196071636F2						
	X.3-6.H3F.DRP											196071636FS	196071636FS1	196071636FS2							
	X.3-9.H3F	0,55	0,75	0,93	3,9	50		45,6	40,5	20,6			196071638F	196071638F1	196071638F2						
	X.3-9.H3F.DRP												196071638FS	196071638FS1	196071638FS2						
	X.3-13.H3F	0,75	1	1,24	5,9	72,2		65,9	58,5	29,8			196071640F	196071640F1	196071640F2						
	X.3-13.H3F.DRP												196071640FS	196071640FS1	196071640FS2						
	X.3-19.H3F	1,1	1,5	1,66	7,9	105,5		96,3	85,5	43,5			196071819F	196071819F1	196071819F2						
X.3-19.H3F.DRP												196071819FS	196071819FS1	196071819FS2							
X.3-25.H3F	1,5	2	2,23	10,1	138,8		126,8	112,5	57,3			196071642F	196071642F1	196071642F2							
X.3-25.H3F.DRP												196071642FS	196071642FS1	196071642FS2							
PUMP CURVE 5	X.5-4.H3F	0,37	0,5	0,72	3,2	24,5			22	18,5	12,1		196071646F	196071646F1	196071646F2						
	X.5-4.H3F.DRP												196071646FS	196071646FS1	196071646FS2						
	X.5-6.H3F	0,55	0,75	0,95	4,1	36,8			33	27,7	18,2		196071648F	196071648F1	196071648F2						
	X.5-6.H3F.DRP												196071648FS	196071648FS1	196071648FS2						
	X.5-8.H3F	0,75	1	1,23	5,6	49,1			44	37	24,2		196071650F	196071650F1	196071650F2						
	X.5-8.H3F.DRP												196071650FS	196071650FS1	196071650FS2						
	X.5-13.H3F	1,1	1,5	1,7	8,5	79,7			71,5	60,1	39,4		196071652F	196071652F1	196071652F2						
	X.5-13.H3F.DRP												196071652FS	196071652FS1	196071652FS2						
	X.5-17.H3F	1,5	2	2,3	10,7	104,3			93,5	78,5	51,5		196071654F	196071654F1	196071654F2						
	X.5-17.H3F.DRP												196071654FS	196071654FS1	196071654FS2						
X.5-21.H3F	2,2	3	2,8	14	128,8			115,5	97	63,6		196071656F	196071656F1	Not available							
X.5-21.H3F.DRP												196071656FS	196071656FS1	Not available							
PUMP CURVE 8	X.8-6.H3F	0,75	1	1,24	5,8	38,4				29	24,5	4,8	196071660F	196071660F1	196071660F2						
	X.8-6.H3F.DRP												196071660FS	196071660FS1	196071660FS2						
	X.8-8.H3F	1,1	1,5	1,54	7,4	51,2				38,6	32,7	6,4	196071662F	196071662F1	196071662F2						
	X.8-8.H3F.DRP												196071662FS	196071662FS1	196071662FS2						
	X.8-12.H3F	1,5	2	2,25	10,3	76,8				58	49	9,6	196071664F	196071664F1	196071664F2						
	X.8-12.H3F.DRP												196071664FS	196071664FS1	196071664FS2						
X.8-17.H3F	2,2	3	3,05	15	109				82,1	69,4	13,6	196071666F	196071666F	Not available							
X.8-17.H3F.DRP												196071666FS	196071666FS1	Not available							
P.C.10	X.10-8.H3F	1,5	2	2,6	10	48,2				42,6	39,2	23,1	7,9	196071668F	196071668F1	196071668F2					
	X.10-8.H3F.DRP												196071668FS	196071668FS1	196071668FS2						
	X.10-12.H3F	2,2	3	2,9	14,8	72,3				64	58,8	34,7	11,9	196071670F	196071670F1	Not available					
	X.10-12.H3F.DRP												196071670FS	196071670FS1	Not available						

\*Power consumption \*\*Current consumption

CBH included in the price.

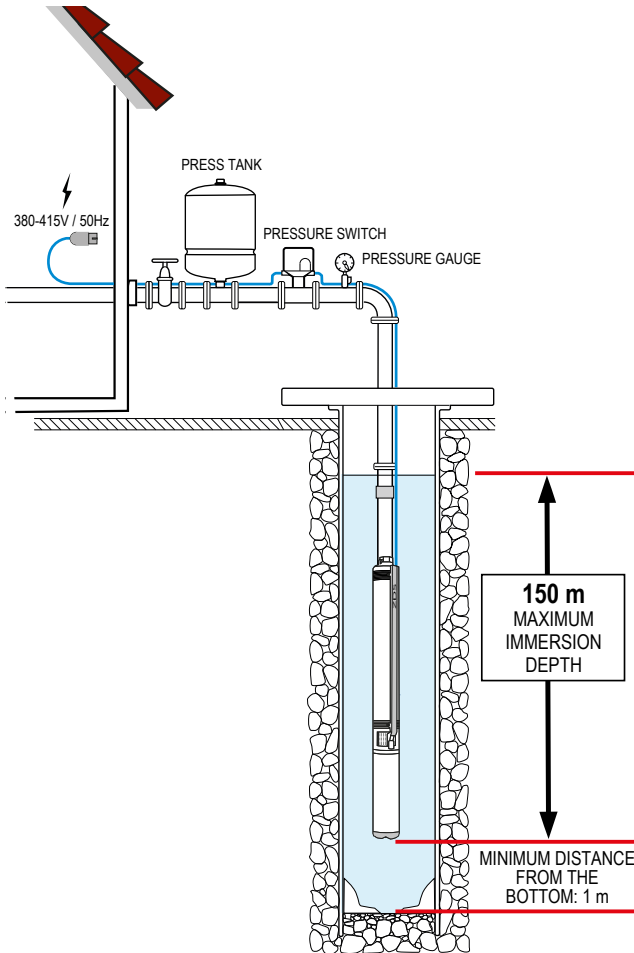


# P/X-HTF

**4" complete submersible pump, made of ZDS hydraulic part, Franklin three-phase encapsulated water-cooled motor and supply cable in different lengths.**

Reliable, strong and easy to maintain, it's available in a wide range of models. It can be protected against many possible installation or operation faults thanks to the DRP protection device.

It requires a start, operation and protection system.



## HYDRAULIC PART

QS4P technopolymer or QS4X stainless steel ZDS hydraulic part, with floating ring technology and reinforced impeller.

Great reliability with the integrated non-return valve.

Special design and selected materials to ensure optimal resistance against sand and other abrasives.

Improved impellers design, which requires less starting torque to the motor.

## MOTOR

2 pole asynchronous three-phase encapsulated water-cooled Franklin motor.

Axial and radial water-lubricated bearings.

Hermetically resin sealed stator.

Pre-filled with non-contaminating antifreeze lubricant liquid.

Removable lead connector.

Supply cable according to drinking water regulations (ACS), available in different lengths.

## TECHNICAL SPECIFICATIONS

<b>Overload protection requirements according to:</b>	EN 60947-4-1 trip time < 10 sec. at $5xI_N$
<b>Power range:</b>	0,37 - 2,2 kW
<b>Voltage range:</b>	3x380-415V / 50 Hz
<b>Voltage tolerance 50Hz from nominal:</b>	+6% / -10% $U_N$
<b>Degree of protection:</b>	IP 68
<b>Insulation:</b>	Cl. B
<b>Rated ambient temperature:</b>	max. 30° C
<b>Required cooling flow:</b>	min. 8 cm/sec
<b>Maximum quantity of suspended sand:</b>	120 g/m <sup>3</sup>
<b>Maximum starts/h:</b>	20, equally distributed
<b>Mounting:</b>	vertical/horizontal
<b>Maximum immersion depth:</b>	150 m
<b>Allowed range of water PH:</b>	6,4-8,0
<b>Outlet diameter:</b>	1" ¼ G-F - 2" G-F
<b>Maximum delivery (Q):</b>	15.000 l/h
<b>Maximum head (H):</b>	220 m

## OPTIONAL

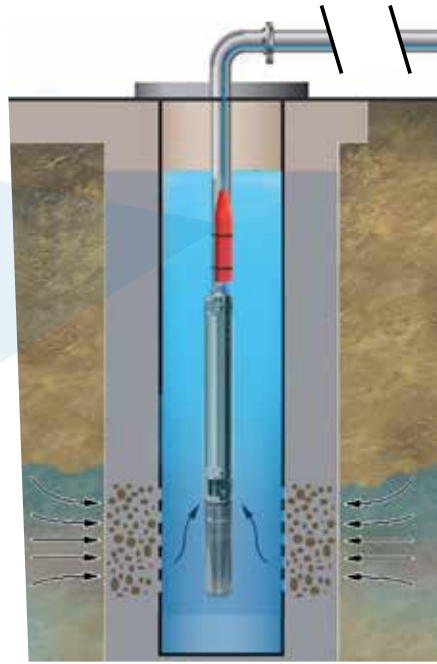
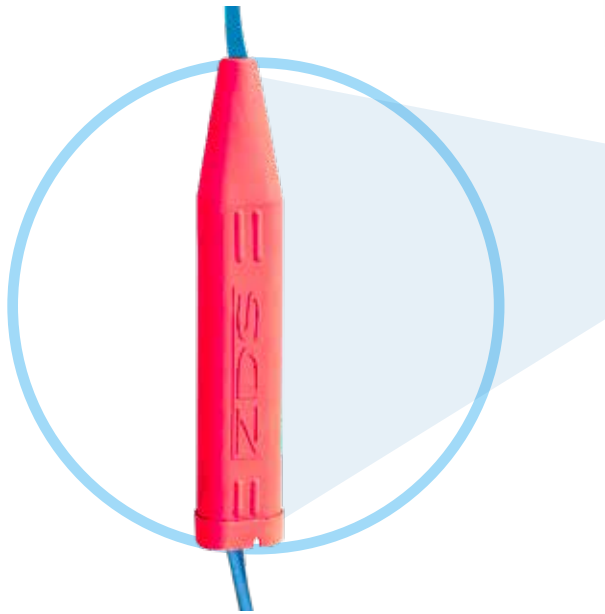


**DRP:**  
INTEGRATED DRP -  
DRY RUNNING PROTECTION

## APPLICATIONS

Submersible pump designed to be used in 4" boreholes (or larger) and tanks, for lifting, distribution, pressurization of water in water systems.

# DRP ELECTRONIC PROTECTION DEVICE



## CHARACTERISTICS

Automatic programmed restarts in case of protection

Stand-by mode at maximum number of restart attempts overcoming

Ready to use, doesn't need any further calibration or setting up

## DRP Protection



### Protection against dry running and lack of water in the well

The DRP completely protects the submersible pump against lack of water in the well, without the aid of other equipment (probes, cables, sensors, control panels etc.). In case of dry running, the DRP automatically stops the pump. When the water level is restored in the well, the DRP restarts the pump after a programmed cycle time.



### Protection against leaks in the installation and too frequent starts and stops

The DRP protects the submersible pump against leaks in the piping system (also when the pressure tank is exhausted or its membrane is defective, or when there is a defective pressure switch) and too frequent starts and stops (for example if the tank is too small for the system). In such cases to avoid potential damages, the DRP, after some automatic re-start attempts, makes the pump enter the stand-by mode.



### Protection against low voltage

The DRP protects the submersible pump against low voltage, that can damage the motor.



### Current overload protection

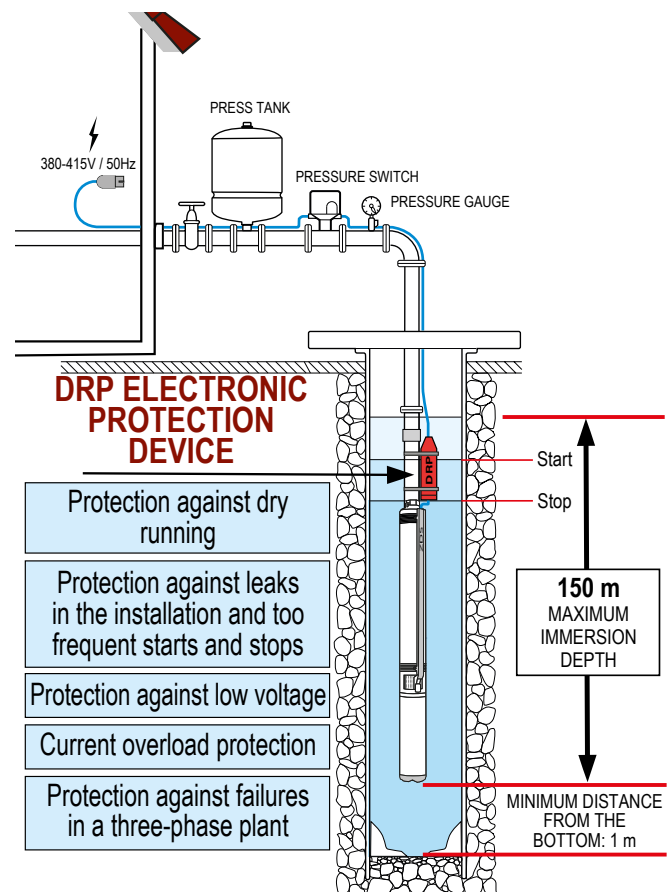
In case the submersible pump is partially or totally blocked, after some restart attempts it enters the stand-by mode.



### Protection against failures in a three-phase plant

The submersible pump is protected against phase-loss (caused by a brake of a fuse). The DRP protects the motor against damaging.

DRP is an electronic device that guarantees optimal protection of the submersible pump from dry running, positioned in the pump supply cable just above the pump. In case of water shortage, the DRP stops the pump immediately, the water drops below the DRP to allow water to flow into the bore hole. Thus the pump operation is directly proportional to the water supply for optimum efficiency. In contrast to traditional solutions, no additional cables, sensors and control boxes are needed. The DRP device has been developed and tested to make the submersible pump function autonomously in conditions of water shortage. The DRP is ready to use, integrated into the connection cable and needs no further installation.



## Technical Specifications

<b>Casing:</b>	Thermoplastic material
<b>Voltage range:</b>	3x380-415V +6% / -10% / 50 Hz
<b>Degree of protection:</b>	IP 68
<b>Rated ambient temperature:</b>	-10/+40° C
<b>Size (cm):</b>	33 x 5 x 3

Model	Potenza		P.C.*	C.C.**	Hydraulic performance (n~2.850 min <sup>-1</sup> )						Cable1.5 m		Cable15 m		Cable30 m																																																																																
	kW	HP			In	m <sup>3</sup> /h	0	0.6	1.5	2.4	4.2	6	Code	Code	Code																																																																																
	(A)	l/min	0	10	25	40	70	100																																																																																							
PUMP CURVE 1	P.1-12.HTF	0,37	0,5	0,56	1,1	Total head in meters = H= dynamic total pressure	75,4	66,6	27									184083012	184083012L1	184083012L1																																																																											
	P.1-12.HTF.DRP																	184083012S	184083012S1	184083012S2																																																																											
	P.1-18.HTF	0,55	0,75	0,81	1,6													113	99,9	40,5																																																																											
	P.1-18.HTF.DRP																															184083018S	184083018S1	184083018S2																																																													
	P.1-25.HTF	0,75	1	1,07	2,1																											157	138,8	56,3																																																													
	P.1-25.HTF.DRP																																														184083025S	184083025S1	184083025S2																																														
PUMP CURVE 2	P.2-8.HTF	0,37	0,5	0,59	1,2	51,2	49,9	41,9	27,2																																																																																						
	P.2-8.HTF.DRP																																																	184073108S	184083108S1	184083108S2																																											
	P.2-12.HTF	0,55	0,75	0,86	1,7													76,8	74,9	62,9	40,8																																																																										
	P.2-12.HTF.DRP																																																		184083112S	184083112S1	184083112S2																																										
	P.2-16.HTF	0,75	1	1,11	2,1																											102,4	99,8	83,8	54,4																																																												
	P.2-16.HTF.DRP																																																		184083116S	184083116S1	184083116S2																																										
P.2-24.HTF	1,1	1,5	1,6	3	153,6	149,8	125,8	81,6																																																																																							
P.2-24.HTF.DRP																																																	184083124S		184083124S1	184083124S2																																											
PUMP CURVE 3	P.3-6.HTF	0,37	0,5	0,54														1,1	33,3		30,4	27	13,7																																																																								
	P.3-6.HTF.DRP																																																		184083206S	184083206S1	184083206S2																																										
	P.3-9.HTF	0,55	0,75	0,77														1,5														50		45,6	40,5	20,6																																																											
	P.3-9.HTF.DRP																																																		184083209S	184083209S1	184083209S2																																										
	P.3-13.HTF	0,75	1	1,07	2	72,2		65,9	58,5	29,8																																																																																					
	P.3-13.HTF.DRP																																																		184083213S	184083213S1	184083213S2																																										
	P.3-19.HTF	1,1	1,5	1,49	2,8																																														105,5		96,3	85,5	43,5																																								
	P.3-19.HTF.DRP																																																																	184083219S	184083219S1	184083219S2																											
	P.3-25.HTF	1,5	2	2	3,8																																																													138,8		126,8	112,5	57,3																									
P.3-25.HTF.DRP	184083225S																		184083225S1	184083225S2																																																																											
PUMP CURVE 5	P.5-4.HTF	0,4	0,5	0,56	1,1														24,5			22	18,5	12,1																																																																							
	P.5-4.HTF.DRP																															184083304S	184083304S1	184083304S2																																																													
	P.5-6.HTF	0,55	0,75	0,81	1,6																											36,8			33	27,7	18,2																																																										
	P.5-6.HTF.DRP					184083306S	184083306S1	184083306S2																																																																																							
	P.5-8.HTF	0,75	1	1,03	1,9	49,1			44	37	24,2																																																																																				
	P.5-8.HTF.DRP																																																		184083308S	184083308S1	184083308S2																																										
	P.5-13.HTF	1,1	1,5	1,63	3,1																																														79,7			71,5	60,1	39,4																																							
	P.5-13.HTF.DRP																																																																	184083313S	184083313S1	184083313S2																											
	P.5-17.HTF	1,5	2	2,2	4																																																													104,3			93,5	78,5	51,5																								
	P.5-17.HTF.DRP																																																																																184083317S	184083317S1	184083317S2												
	P.5-21.HTF	2,2	3	2,55	4,8																																																																												128,8			115,5	97	63,6									
	P.5-21.HTF.DRP																																																																																														

\*Power consumption \*\*Current consumption

# Product codes and hydraulics performance data

## X.HTF complete submersible pump



Hydraulic part with upper head and lower support in **stainless steel** and three-phase encapsulated water-cooled motor- **380-415V**

Model	Potenza		P.C.*	c.c.**	Hydraulic performance (n~2.850 min <sup>-1</sup> )										Cable1,5 m		Cable15 m		Cable30 m																																																																		
	kW	HP			ln	m <sup>3</sup> /h	0	0,6	1,5	2,4	4,2	6	11,4	15	Code		Code		Code																																																																		
	(A)	l/min	0	10	25	40	70	100	190	250																																																																											
PUMP CURVE 1	X.1-12.HTF	0,37	0,5	0,56	1,1	Total head in meters = H = dynamic total pressure	75,4	66,6	27											184075012	184075012L	184075012L1																																																															
	X.1-12.HTF.DRP																			184075012S	184075012S1	184075012S2																																																															
	X.1-18.HTF	0,55	0,75	0,81	1,6															113	99,9	40,5																																																															
	X.1-18.HTF.DRP																																			184075018S	184075018S1	184075018S2																																															
	X.1-25.HTF	0,75	1	1,07	2,1																															157	138,8	56,3																																															
	X.1-25.HTF.DRP																																																			184075025S	184075025S1	184075025S2																															
X.1-36.HTF	1,1	1,5	1,49	2,9	226,1	199,8	91																																																																														
X.1-36.HTF.DRP																																																					184075036S	184075036S1	184075036S2																														
PUMP CURVE 2	X.2-8.HTF	0,37	0,5	0,59																1,2	Total head in meters = H = dynamic total pressure	51,2	49,9	41,9	27,2																																																												
	X.2-8.HTF.DRP																																																						184075108S	184075108S1	184075108S2																												
	X.2-12.HTF	0,55	0,75	0,86																1,7																76,8	74,9	62,9	40,8																																														
	X.2-12.HTF.DRP																																																						184075112S	184075112S1	184075112S2																												
	X.2-16.HTF	0,75	1	1,11	2,1	102,4	99,8	83,8	54,4																																																																												
	X.2-16.HTF.DRP																																																						184075116S	184075116S1	184075116S2																												
	X.2-24.HTF	1,1	1,5	1,6	3																																																		153,6	149,8	125,8	81,6																											
	X.2-24.HTF.DRP																																																																						184075124S	184075124S1	184075124S2												
X.2-32.HTF	1,5	2	2,16	4,1	204,7																199,7	167,7	108																																																														
X.2-32.HTF.DRP																																																					184075132S	184075132S1																	184075132S2														
PUMP CURVE 3	X.3-6.HTF	0,37	0,5	0,54																																1,1	Total head in meters = H = dynamic total pressure	33,3		30,4	27	13,7																																											
	X.3-6.HTF.DRP																																																																						184075206S	184075206S1	184075206S2												
	X.3-9.HTF	0,55	0,75	0,77		1,5	50		45,6	40,5	20,6																																																																										
	X.3-9.HTF.DRP																																																																						184075209S	184075209S1	184075209S2												
	X.3-13.HTF	0,75	1	1,07		2																																																	72,2		65,9	58,5	29,8																										
	X.3-13.HTF.DRP																																																																						184075213S	184075213S1	184075213S2												
	X.3-19.HTF	1,1	1,5	1,49	2,8	105,5																96,3	85,5	43,5																																																													
	X.3-19.HTF.DRP																																																																						184075219S	184075219S1	184075219S2												
X.3-25.HTF	1,5	2	2	3,8	138,8																																	126,8	112,5	57,3																																													
X.3-25.HTF.DRP																																																					184075225S	184075225S1																	184075225S2														
PUMP CURVE 5	X.5-4.HTF	0,37	0,5	0,56			1,1	Total head in meters = H = dynamic total pressure	24,5			22	18,5	12,1																																																																							
	X.5-4.HTF.DRP																																																					184075304S																	184075304S1	184075304S2													
	X.5-6.HTF	0,55	0,75	0,81			1,6																																															36,8			33	27,7	18,2																										
	X.5-6.HTF.DRP																																																																					184075306S	184075306S1	184075306S2													
	X.5-8.HTF	0,75	1	1,03		1,9	49,1																44	37	24,2																																																												
	X.5-8.HTF.DRP																																																																					184075308S	184075308S1	184075308S2													
	X.5-13.HTF	1,1	1,5	1,63	3,1	79,7																																	71,5	60,1	39,4																																												
	X.5-13.HTF.DRP																																																																					184075313S	184075313S1	184075313S2													
	X.5-17.HTF	1,5	2	2,15	4																																																																	104,3			93,5	78,5	51,5										
	X.5-17.HTF.DRP																																																																																				
X.5-21.HTF	2,2	3	2,55	4,8	128,8					115,5	97	63,6																																																																									
X.5-21.HTF.DRP																																																					184075321S																																
PUMP CURVE 8	X.8-6.HTF	0,75	1	1,07																																																	2,1	Total head in meters = H = dynamic total pressure	38,4			29	24,5	4,8																									
	X.8-6.HTF.DRP																																																																																				
	X.8-8.HTF	1,1	1,5	1,37			2,6														51,2			38,6	32,7	6,4																																																											
	X.8-8.HTF.DRP																																																																																				
	X.8-12.HTF	1,5	2	2,06		3,9	76,8																																58	49	9,6																																												
	X.8-12.HTF.DRP																																																																																				
X.8-17.HTF	2,2	3	2,85	5,3		109																																																		82,1	69,4	13,6																											
X.8-17.HTF.DRP																																																																					184075417S	184075417S1	184075417S2														
P.C.10	X.10-8.HTF	1,5	2	1,89	3,5			Total head in meters = H = dynamic total pressure	48,2			42,6	39,2	23,1	7,9																																																																						
	X.10-8.HTF.DRP																							184075508S	184075508S1	184075508S2																																																											
	X.10-12.HTF	2,2	3	2,77	5,2		72,3																			64	58,8	34,7	11,9																																																								
X.10-12.HTF.DRP	184075512S							184075512S1	184075512S2																																																																												

\*Power consumption \*\*Current consumption

# Plug&GO.evo

**4" complete submersible pump, made of ZDS hydraulic part, ZDS 2-wire single-phase encapsulated water-cooled motor, supply cable in different lengths and Evo diagnostic device.**

It is particularly recommended for domestic installations, since it is completely automatic and easy to install (it only needs a pressure tank to compensate for any leaks in the plant). The integrated electronics ensures the operation of the pump (pressure switch is not needed) and protects the pump against many other possible problems.

The **Evo** diagnostic device allows to continuously display the Plug&GO.Evo operation and to monitor the possible system faults, such as current overload, low voltage or high voltage, too frequent starts and stops and dry running; ensuring a high degree of automation and restoration.

**Evo** allows to continuously monitor the submersible pump, guaranteeing its operation in the most efficient way through a Soft start procedure (first start attempt with low starting torque) and if needed, a Strong start procedure to benefit of more starting torque.

**Evo** allows to continuously detect and monitor in real time the power: the electrical parameters obtained are processed by a special software, which will efficiently guarantee the correct working conditions. With **Evo**, the Plug&Go. Evo submersible pump can work and be continuously protected also when actual supply voltage values are at tolerance limit, providing the effectiveness of the protection operation. In addition, **Evo**, thanks to a "smart software" at variable time and automatic restart, can ensure the optimization of water withdrawal from the borehole or tank when the pump is dry running.



**THE INNOVATIVE SOLUTION  
IN ONE BOX**

## AUTOMATIC PROTECTIONS



Protection against dry running and lack of water in the well or tank



Thermal protection



Current overload protection



Protection against leaks in the installation and too frequent starts and stops



Protection against low/high voltage



Protection against voltage peaks



Check-valve working test

# THE EASIEST 4" SUBMERSIBLE PUMP TO INSTALL

## HYDRAULIC PART



- ZDS hydraulic part with integrated electronic.
- Hydraulic part internal technology with floating ring and reinforced impeller.
- Great reliability with the integrated non-return valve.
- Special design and selected materials to ensure optimal resistance against sand and other abrasives.
- Improved impellers design, which requires less starting torque to the motor.

## MOTOR



- 2 pole asynchronous 2-wire single-phase encapsulated water-cooled motor.
- Special and long lasting integrated start and run capacitor. In case of need it can be easily replaced.
- Soft start procedure.
- Axial and radial water-lubricated bearings allow for maintenance-free operation.
- Hermetically sealed stator by 304L stainless steel flanges, internal and external casings, filled by resin to guarantee optimal cooling capacity of temperature during operation.
- Rotor set on Kingsbury thrust block equipped with carbon clearance ring and oscillating pads in high-strength stainless steel to sustain high axial loads.
- Pre-filled with non-contaminating antifreeze lubricant liquid.
- Sand protection to guarantee optimal operation even with sand in the borehole.
- Removable lead connector to make installation and maintenance easier.
- Supply cable according to drinking water regulations (ACS), available in different lengths.

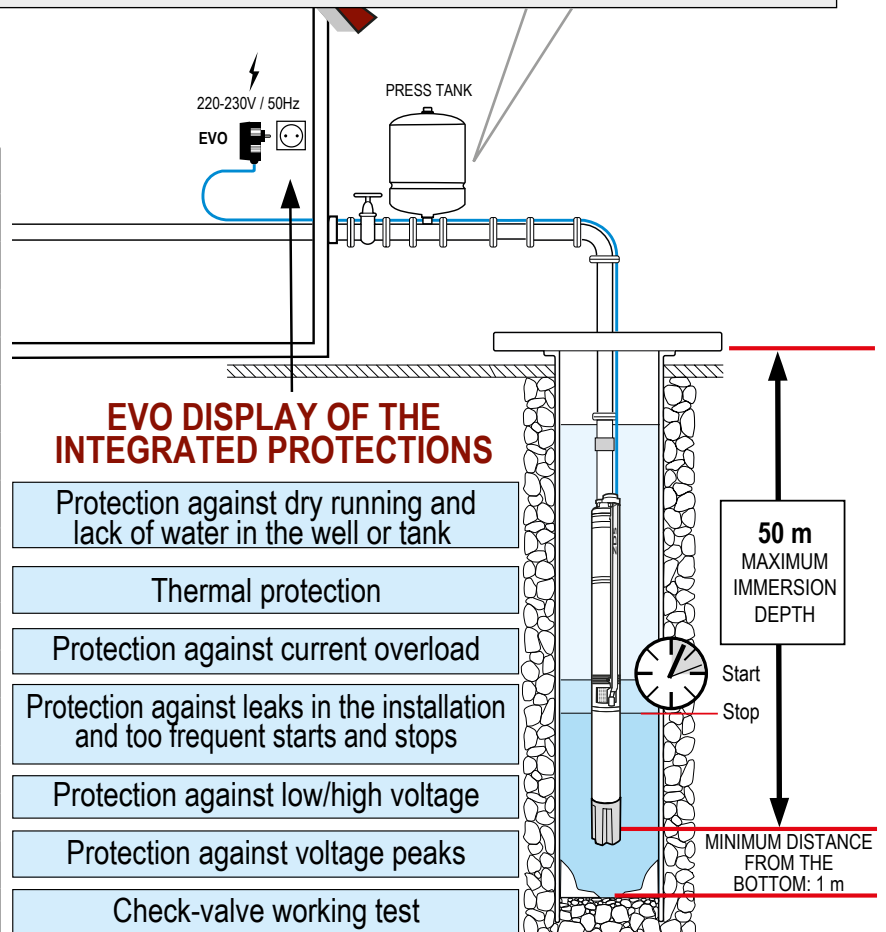


To guarantee the correct operation of Plug&GO.Evo, it is necessary to install a pressure tank if not provided already. The pressure tank should be correctly sized according to the installation requirements.

## TECHNICAL SPECIFICATIONS










Power range:	0,37 - 1,1 kW
Voltage range:	1x220-230V / 50 Hz
Voltage tolerance 50Hz from nominal:	+6% / -10% U <sub>N</sub>
Degree of protection:	IP 68
Insulation:	Cl. F
Rated ambient temperature:	max. 35° C
Required cooling flow:	min 8 cm/sec
Maximum quantity of suspended sand:	120 g/m <sup>3</sup>
Maximum starts/h:	150, equally distributed
Mounting:	vertical/horizontal
Maximum immersion depth:	20-50 m
Allowed range of water PH:	6,4-8,0
Outlet diameter:	1"
Maximum delivery (Q):	6.000 l/h
Maximum head (H):	79 m



## Evo: Display of the integrated protections



	<p><b>Protection against dry running and lack of water in the well</b> The Plug&amp;GO.Evo pump completely protects itself against lack of water in the well or tank, without the aid of other equipment (probes, cables, sensors, control panels etc.). In case of dry running, the Plug&amp;GO.Evo pump automatically stops, to restart after a programmed cycle time.</p>
	<p><b>Thermal protection</b> The Plug&amp;GO.Evo pump is automatically protected against motor overheating due to an incorrect installation. In such cases, the thermal protection system stops the pump, which automatically restarts as soon as the correct working temperature parameters are restored.</p>
	<p><b>Current overload protection</b> The Plug&amp;GO.Evo pump is completely protected against overload. In case the pump is partially or totally blocked, the Plug&amp;GO.Evo software, after some automatic restart attempts, makes the pump enter the stand-by mode.</p>
	<p><b>Protection against leaks in the installation and too frequent starts and stops</b> The Plug&amp;GO.Evo pump is automatically protected against leaks in the piping system (also when the pressure tank is exhausted or its membrane is damaged) and too frequent starts and stops (for example if the tank is of the incorrect size). In these cases, the Plug&amp;GO.Evo automatically enters the stand-by mode.</p>
	<p><b>Protection against low/high voltage</b> The Plug&amp;GO.Evo pump is protected against low or high voltage, that can damage the motor. In these situations, in order to avoid potential damages, the pump stops running. A number of consecutive automatic attempts verifies if the operating parameters are correct; if they are not, the pump enters stand-by mode.</p>
	<p><b>Protection against voltage peaks</b> The Evo diagnostic device is equipped with internal filters, designed to prevent voltage peaks from damaging the electronic components integrated in the Plug&amp;GO.Evo. The filters are replaceable and easy to access. It is designed to filter the voltage peaks, eventually by interrupting the power supply. Evo diagnostic device works automatically and does not need any scheduled maintenance.</p>
	<p><b>Check-valve working test</b> The Plug&amp;GO.Evo pump regularly controls if the check valve works properly and if it is not clogged by any impurities. In case it is clogged, a special software procedure mechanically releases the check valve or makes the pump enter the stand-by mode.</p>

### CHARACTERISTICS

Led interface for operation and protection's display

Alarm buzzer: audio signal during attempts and during stand-by

Ready to use, doesn't need any further calibration or setting up

### Technical Specifications

<b>Schuko plug:</b>	Integrated
<b>Casing:</b>	Thermoplastic material
<b>Voltage range:</b>	1x220-230V +6% / -10% / 50 Hz
<b>Degree of protection:</b>	IP 40
<b>Rated ambient temperature:</b>	-10/+35° C
<b>Size (cm):</b>	7,6 x 13 x 5,5

## ADVANTAGES:

**INTEGRATED ELECTRONIC PROTECTIONS**

**INTEGRATED PRESSURE SWITCH**

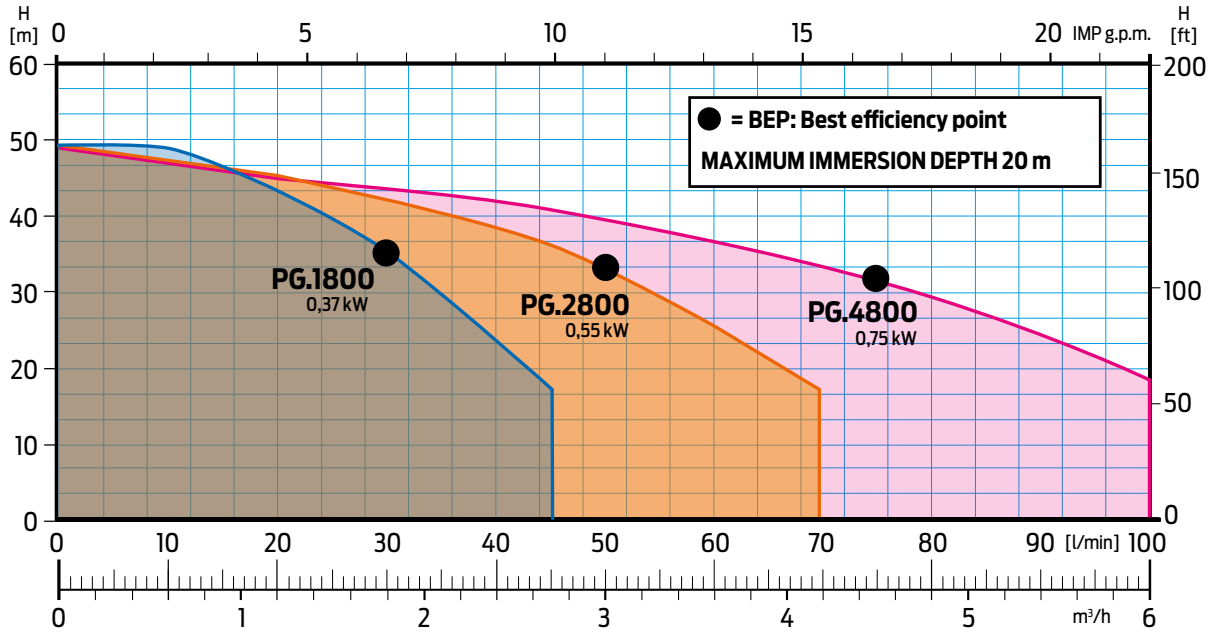
**MONITORING AND DIAGNOSTIC  
OF PUMP STATUS**

**ALARMS DIAGNOSTIC**

**SOFT START**

**NO CONTROL PANEL REQUIRED**



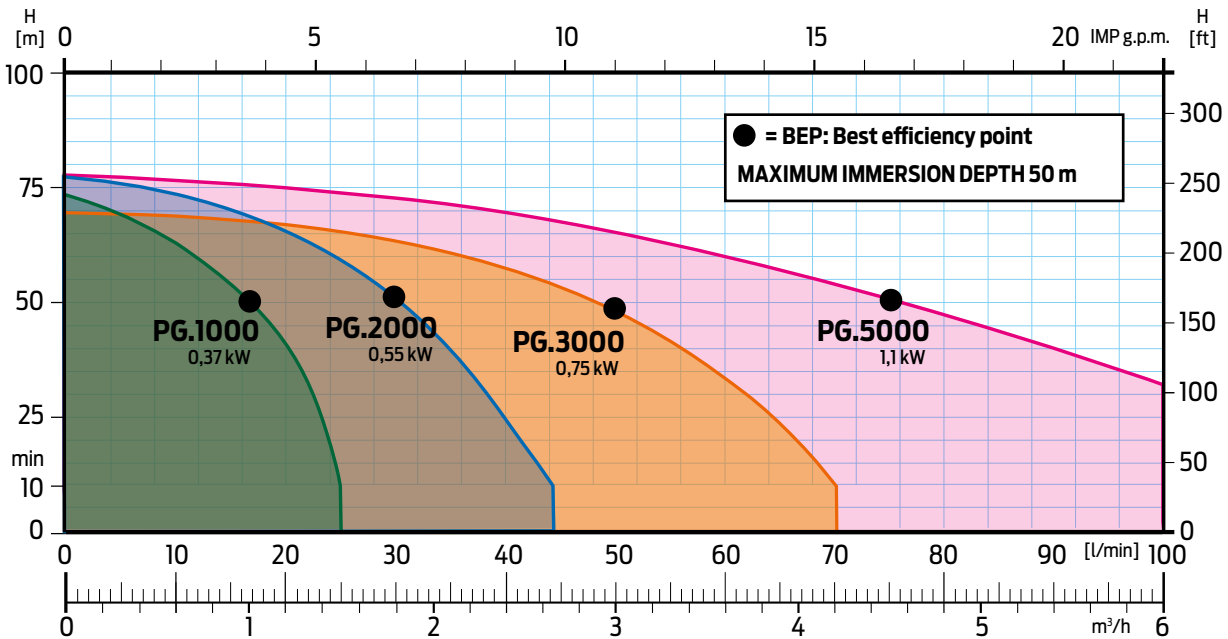


220-230V

Model	Power kW HP	P.C.* kW	C.C.** (A) / I <sub>a</sub>	Soft Start A <sub>start</sub> / I <sub>a</sub>	Start A <sub>start</sub> / I <sub>a</sub>	Hydraulic performance (n~2.850 min <sup>-1</sup> )										Cable 1,5 m		Cable 15 m		Cable 30 m		Cable 45 m		L. mm	W. Kg
						m³/h	0	0,6	1,2	1,5	1,8	2,7	3,6	4,2	4,8	6,0	CODE	CODE	CODE	CODE					
						l/min	0	10	20	25	30	45	60	70	80	100									
PG.1800.Evo	0,37	0,5	0,73	3,4	7,5	9,8	49,6	48,7	43,3	40	35,3	17,3					1960705200E	1960705200L	1960705200L1	1960705200L2	870	15,7			
PG.2800.Evo	0,55	0,75	0,93	4	10	13,5	H 48,5		45,7	44,3	42,2	36	25,6	17,3			1960705210E	1960705210L	1960705210L1	1960705210L2	1010	17,4			
PG.4800.Evo	0,75	1	1,23	5,7	13	17	49,2			44,3	41,2	36,9	33,2	29,5	19,1			1960705220E	1960705220L	1960705220L1	1960705220L2	1040	19,2		

\*Power consumption \*\*Current consumption - L=Lenght - P=Weight - Total head in meters = H= dynamic total pressure

Evo device included in the price



220-230V

Model	Power kW HP	P.C.* kW	C.C.** (A) / I <sub>a</sub>	Soft Start A <sub>start</sub> / I <sub>a</sub>	Start A <sub>start</sub> / I <sub>a</sub>	Hydraulic performance (n~2.850 min <sup>-1</sup> )										Cable 1,5 m		Cable 15 m		Cable 30 m		Cable 45 m		L. mm	W. Kg
						m³/h	0	0,3	0,6	1,2	1,5	1,8	2,7	3,6	4,2	4,8	6,0	CODE	CODE	CODE	CODE				
						l/min	0	6	10	20	25	30	45	60	70	80	100								
PG.1000.Evo	0,37	0,5	0,69	3,3	7,5	9,8	71	68	63	41	24							1960705112E	1960705112L	1960705112L1	1960705112L2	955	16		
PG.2000.Evo	0,55	0,75	0,97	4,4	10	13,5	H 74,4		73	65	60	53	26					1960705212E	1960705212L	1960705212L1	1960705212L2	1010	17,4		
PG.3000.Evo	0,75	1	1,24	5,8	13	17	70			66	64	61	52	37	25			1960705313E	1960705313L	1960705313L1	1960705313L2	1230	19,4		
PG.5000.Evo	1,1	1,5	1,7	8,8	19	25	79,7					72	67	60	54	48	31			1960705513E	1960705513L	1960705513L1	1960705513L2	1260	20,7

Evo device included in the price

### APPLICATIONS

Submersible pump designed to be used in 4" boreholes (or larger) and tanks, for lifting, distribution, pressurization of water in water systems.





4" complete submersible pump, made of ZDS hydraulic part, Franklin three-phase encapsulated water-cooled motor and supply cable in different lengths. It requires a start, operation and protection system.

### HYDRAULIC PART

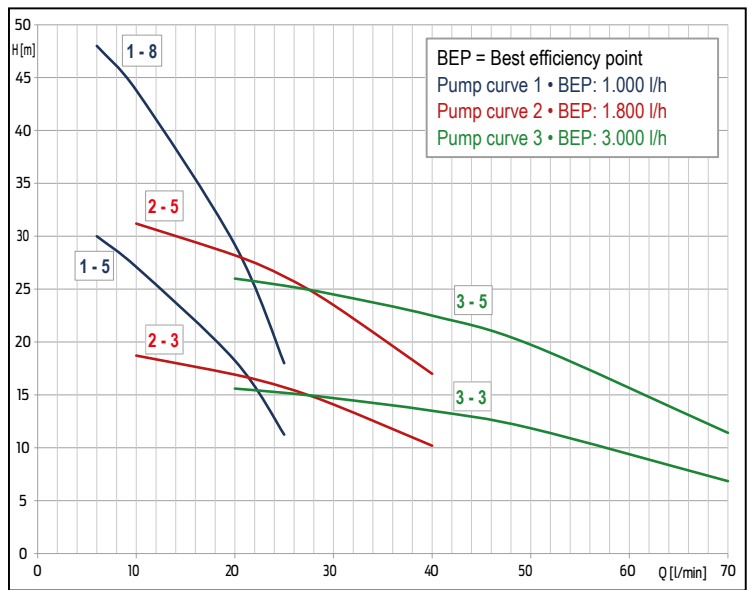
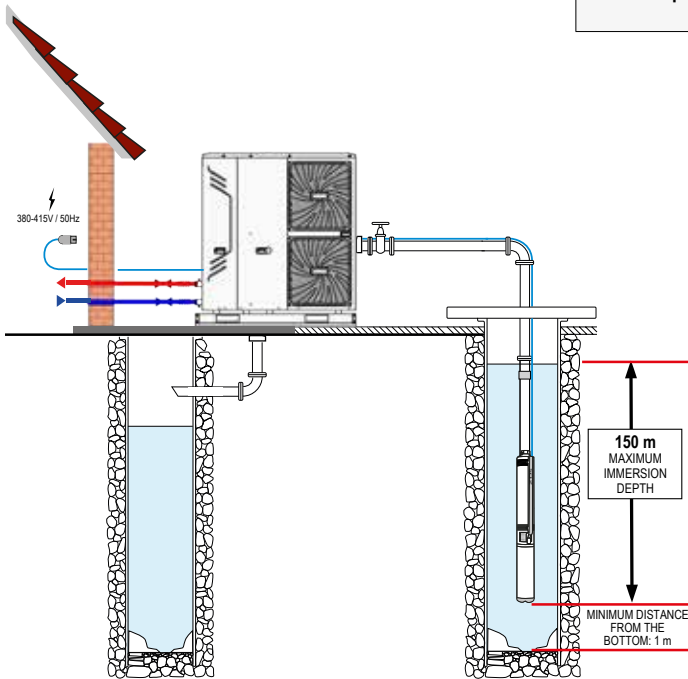
- QS4P technopolymer or QS4X stainless steel ZDS hydraulic part, with floating ring technology and reinforced impeller.
- Great reliability with the integrated non-return valve.
- Special design and selected materials to ensure optimal resistance against sand and other abrasives.
- Improved impellers design, which requires less starting torque to the motor.

### MOTOR

- 2 pole asynchronous three-phase encapsulated water-cooled Franklin motor.
- Axial and radial water-lubricated bearings.
- Hermetically resin sealed stator.
- Pre-filled with non-contaminating antifreeze lubricant liquid.
- Removable lead connector.
- Supply cable according to drinking water regulations (ACS), available in different lengths.

### TECHNICAL SPECIFICATIONS

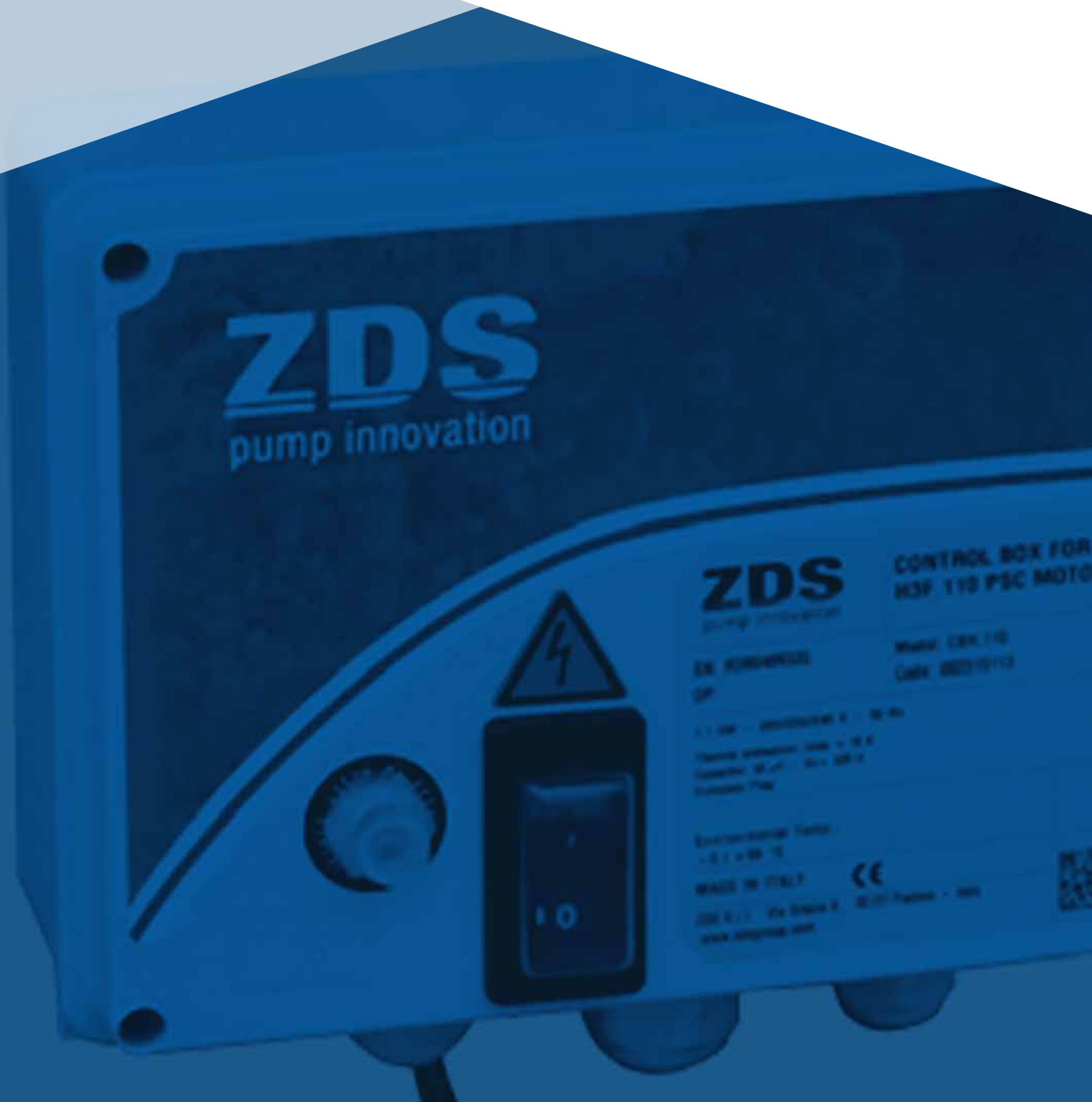
<b>Power range:</b>	0,25 kW
<b>Voltage range:</b>	3x380 - 415V / 50 Hz
<b>Voltage tolerance 50Hz from nominal:</b>	+6% / -10% U <sub>N</sub>
<b>Degree of protection:</b>	IP 68
<b>Insulation:</b>	Cl. B
<b>Rated ambient temperature:</b>	max 30° C
<b>Required cooling flow:</b>	min 8 cm/sec
<b>Maximum quantity of suspended sand:</b>	120 g/m <sup>3</sup>
<b>Maximum starts/h:</b>	20, equally distributed
<b>Mounting:</b>	vertical/horizontal
<b>Maximum immersion depth:</b>	150 m
<b>Allowed range of water PH:</b>	6,4 - 8,0
<b>Outlet diameter:</b>	1" 1/4 G-F
<b>Maximum delivery (Q):</b>	4.200 l/h
<b>Maximum head (H):</b>	50 m
<b>Overload protection requirements according to:</b>	EN 60947-4-1 trip time < 10 sec. at 5xI <sub>N</sub>



380-415 V	Model	Power		P.C.*	C.C.**	Hydraulic performance (n~2.850 min <sup>-1</sup> )											Cable 1,5 m		Cable 15 m		Cable 30 m	
		kW	HP			In (A)	m <sup>3</sup> /h	0	0,36	0,6	1,2	1,5	1,8	2,4	3	4,2	CODE	CODE	CODE	CODE		
Upper head and lower support in STAINLESS STEEL	X.1-5.HTH	0,25	0,33	240	0,55	31,4	30	27,8	18,3	11,3							184100105	184100105L	184100105L1			
	X.1-8.HTH	0,25	0,33	360	0,70	50,2	48	44,4	29,2	18							184100108	184100108L	184100108L1			
	X.2-3.HTH	0,25	0,33	240	0,55	19,2		18,7	16,9	15,7	14,1	10,2					184100203	184100203L	184100203L1			
	X.2-5.HTH	0,25	0,33	360	0,70	32		31,2	28,2	26,2	23,5	17					184100205	184100205L	184100205L1			
	X.3-3.HTH	0,25	0,33	270	0,59	16,7			15,6	15,2	14,7	13,5	11,9	6,9			184100303	184100303L	184100303L1			
	X.3-5.HTH	0,25	0,33	425	0,77	27,8			26	25,3	24,5	22,5	19,8	11,4			184100305	184100305L	184100305L1			
Upper head and lower support in TECHNOPOLYMER	P.1-5.HTH	0,25	0,33	240	0,55	31,4	30	27,8	18,3	11,3							184101105	184101105L	184101105L1			
	P.1-8.HTH	0,25	0,33	360	0,70	50,2	48	44,4	29,2	18							184101108	184101108L	184101108L1			
	P.2-3.HTH	0,25	0,33	240	0,55	19,2		18,7	16,9	15,7	14,1	10,2					184101203	184101203L	184101203L1			
	P.2-5.HTH	0,25	0,33	360	0,70	32		31,2	28,2	26,2	23,5	17					184101205	184101205L	184101205L1			
	P.3-3.HTH	0,25	0,33	270	0,59	16,7			15,6	15,2	14,7	13,5	11,9	6,9			184101303	184101303L	184101303L1			
	P.3-5.HTH	0,25	0,33	425	0,77	27,8			26	25,3	24,5	22,5	19,8	11,4			184101305	184101305L	184101305L1			

\*Power consumption \*\*Current consumption

# ACCESSORIES



## ACCESSORIES

### Power supply cables

#### CONNECTOR CABLES FOR ZDS SINGLE-PHASE O2 AND H2 MOTORS (QPGo and ZDJet series)

Model		Code	Description
CS.2W-1,5		081510100	1,5 m cable connector (3x1,5 section)
CS.2W-15/1		081510133	15 m cable connector (3x1 section, up to 1,1 kW)
CS.2W-30/1		081510136	30 m cable connector (3x1 section, up to 1,1 kW)
CS.2W-15/1,5		081510131	15 m cable connector (3x1,5 section, 1,5 kW)
CS.2W-30/1,5		081510132	30 m cable connector (3x1,5 section, 1,5 kW)

\* upon request for 1-50 model



#### CONNECTOR CABLES WITH PUMP PROTECTOR DRP FOR ZDS SINGLE-PHASE O2 AND H2 MOTORS (QPGo and ZDJet series)

Model		Code	Description
CS.2W-2.DRP		081510100X	1,5 m DRP cable connector (3x1,5 section)
CS.2W-15.DRP/1		081510133X	15 m DRP cable connector (3x1 section, up to 1,1 kW)
CS.2W-30.DRP/1		081510136X	30 m DRP cable connector (3x1 section, up to 1,1 kW)
CS.2W-15.DRP/1,5		081510131X	15 m DRP cable connector (3x1,5 section, 1,5 kW)
CS.2W-30.DRP/1,5		081510132X	30 m DRP cable connector (3x1,5 section, 1,5 kW)

\* upon request for 1-50 model



#### CONNECTOR CABLES FOR ZDS SINGLE-PHASE O3 MOTORS AND THREE-PHASE OT MOTORS

Model		Code	Description
CS.3W-1,5		081510102	1,5 m cable connector (4x1,5 section, up to 1,1 kW)
CS.3W-2,5		081510030	2,5 m cable connector (4x1,5 section, above 1,1 kW)
CS.3W-15/1,5		081510035	15 m cable connector (4x1,5 section)
CS.3W-30/1,5		081510036	30 m cable connector (4x1,5 section)



#### CONNECTOR CABLES WITH PUMP PROTECTOR DRP FOR ZDS SINGLE-PHASE PSC O3 MOTORS

Model		Code	Description
CS.3W-1,5.DRP (1,1kW)		081510102X	1,5 m DRP cable connector (4x1,5 section, up to 1,1 kW)
CS.3W-2,5.DRP (1,5 kW)		081510104X	2,5 m DRP cable connector (4x1,5 section, 1,5 kW)
CS.3W-2,5.DRP (2,2 kW)		081510103X	2,5 m DRP cable connector (4x1,5 section, 2,2 kW)



#### CONNECTOR CABLES WITH PUMP PROTECTOR DRP FOR ZDS THREE-PHASE OT MOTORS

Model		Ccode	Description
CS.3W.T037.DRP		081510165	2 m DRP cable connector (4x1,5 section, 0,37 kW)
CS.3W.T055.DRP		081510167	2 m DRP cable connector (4x1,5 section, 0,55 kW)
CS.3W.T075.DRP		081510169	2 m DRP cable connector (4x1,5 section, 0,75 kW)
CS.3W.T110.DRP		081510171	2 m DRP cable connector (4x1,5 section, 1,1 kW)
CS.3W.T150.DRP		081510173	3 m DRP cable connector (4x1,5 section, 1,5 kW)
CS.3W.T220.DRP		081510175	3 m DRP cable connector (4x1,5 section, 2,2 kW)
CS.3W.T300.DRP		081510177	3 m DRP cable connector (4x1,5 section, 3 kW)
CS.3W.T400.DRP		081510179	3 m DRP cable connector (4x1,5 section, 4 kW)



#### CONNECTOR CABLES FOR PLUG&GO.EVO SUBMERSIBLE PUMP SERIES

Model		Code	Description
L3x1,5-1,5		081510330	1,5 m cable connector (3x1,5 section)
L3x1,5-15		081510332	15 m cable connector
L3x1,5-30		081510334	30 m cable connector
L3x1,5-45		081510310	45 m cable connector



**Power supply cables**

**CONNECTOR CABLES FOR 4" FRANKLIN MOTORS**

Model		Code	Description
CS.3WF-1,5		081510020	1,5 m cable connector (4x1,5 section, up to 1,1 kW)
CS.3WF-2,5		081510021	2,5 m cable connector (4x1,5 section, above 1,1 kW)
CS.3WF-15		081510024	15 m cable connector (4x1,5 section)
CS.3WF-30		081510026	30 m cable connector (4x1,5 section)



**CONNECTOR CABLES WITH PUMP PROTECTOR DRP FOR 4" FRANKLIN SINGLE-PHASE PSC H3F MOTORS**

Model		Code	Description
CS.3WF-1,5.DRP (1,1 kW)		081510102XF	1,5 m DRP cable connector (4x1,5 section, up to 1,1 kW)
CS.3WF-2,5.DRP (1,5 kW)		081510103XF	2,5 m DRP cable connector (4x1,5 section, 1,5 kW)
CS.3WF-2,5.DRP (2,2 kW)		0815101042XF	2,5 m DRP cable connector (4x1,5 section, 2,2 kW)



**CONNECTOR CABLES WITH PUMP PROTECTOR DRP FOR 4" FRANKLIN THREE-PHASE HTF MOTORS**

Model		Code	Description
CS.3WF.T037.DRP		081510181	2 m DRP cable connector (4x1,5 section, 0,37 kW)
CS.3WF.T055.DRP		081510183	2 m DRP cable connector (4x1,5 section, 0,55 kW)
CS.3WF.T075.DRP		081510185	2 m DRP cable connector (4x1,5 section, 0,75 kW)
CS.3WF.T110.DRP		081510187	2 m DRP cable connector (4x1,5 section, 1,1 kW)
CS.3WF.T150.DRP		081510189	3 m DRP cable connector (4x1,5 section, 1,5 kW)
CS.3WF.T220.DRP		081510191	3 m DRP cable connector (4x1,5 section, 2,2 kW)
CS.3WF.T300.DRP		081510193	3 m DRP cable connector (4x1,5 section, 3 kW)
CS.3WF.T400.DRP		081510195	3 m DRP cable connector (4x1,5 section, 4 kW)



**Cables per meter**

**PRICE PER METER OF CUSTOMIZED LENGHT CABLES**



Model		Code	Description	W (kg/m)
H07RNF – 3x1 mm <sup>2</sup>		081510001	Section 3x1 mm <sup>2</sup>	0,11
H07RNF – 3x1,5 mm <sup>2</sup>		081510002	Section 3x1,5 mm <sup>2</sup>	0,13
H07RNF – 3x2,5 mm <sup>2</sup>		081510003	Section 3x2,5 mm <sup>2</sup>	0,20
H07RNF – 3x4 mm <sup>2</sup>		081510004	Section 3x4 mm <sup>2</sup>	0,28

Model		Code	Description	W (kg/m)
H07RNF – 4x1 mm <sup>2</sup>		081510010	Section 4x1 mm <sup>2</sup>	0,13
H07RNF – 4x1,5 mm <sup>2</sup>		081510011	Section 4x1,5 mm <sup>2</sup>	0,17
H07RNF – 4x2,5 mm <sup>2</sup>		081510012	Section 4x2,5 mm <sup>2</sup>	0,24
H07RNF – 4x4 mm <sup>2</sup>		081510013	Section 4x4 mm <sup>2</sup>	0,34



Model		Code	Description	W (kg/m)
H07 – 3x1 mm <sup>2</sup> WRAS		081510001D	Section 3x1 mm <sup>2</sup>	0,11
H07 – 3x1,5 mm <sup>2</sup> WRAS		081510002D	Section 3x1,5 mm <sup>2</sup>	0,13

Model		Code	Description	W (kg/m)
H07 – 4x1 mm <sup>2</sup> WRAS		081510010D	Section 4x1 mm <sup>2</sup>	0,13
H07 – 4x1,5 mm <sup>2</sup> WRAS		081510011D	Section 4x1,5 mm <sup>2</sup>	0,17

\*3x4 and 4x4 size minimum lenght required: 100 m  
 Manpower for customized lenght cable with junction  
 Package and transport costs for customized lenght cable listed separately.  
 Assembly of hydraulic part, motor and cable, test

Heat-Shrink kit

Model		Code	Description
KIT GTR1		081505010	Heat-Shrink connection kit for 1-4 mm <sup>2</sup> motor cable
KIT GTR2		081505015	Heat-Shrink connection kit for 6-10 mm <sup>2</sup> motor cable



Guide for the selection of the correct size and length of the cable:

2-WIRE & PSC SINGLE-PHASE - 1X220-240 V~, 50 HZ

kW	HP	A	3/4 x 1 mm <sup>2</sup>	3/4 x 1,5 mm <sup>2</sup>	3/4 x 2,5 mm <sup>2</sup>	3/4 x 4 mm <sup>2</sup>	3/4 x 6 mm <sup>2</sup>	3/4 x 10 mm <sup>2</sup>
0,25	0,33	2,8	93 m	140 m	232 m	370 m	553 m	-
0,37	0,5	3,3	79 m	119 m	197 m	314 m	470 m	776 m
0,55	0,75	4,4	60 m	89 m	148 m	236 m	352 m	582 m
0,75	1	5,8	45 m	68 m	112 m	179 m	267 m	442 m
1,1	1,5	7,7	32 m	48 m	80 m	128 m	191 m	316 m
1,5	2	10,5	-	37 m	62 m	99 m	148 m	244 m
2,2	3	14,8	-	25 m	42 m	67 m	100 m	166 m

THREE-PHASE - 3X380-415 V~, 50 HZ

kW	HP	A	4 x 1 mm <sup>2</sup>	4 x 1,5 mm <sup>2</sup>	4 x 2,5 mm <sup>2</sup>	4 x 4 mm <sup>2</sup>	4 x 6 mm <sup>2</sup>	4 x 10 mm <sup>2</sup>
0,37	0,5	1,7	381 m	571 m	-	-	-	-
0,55	0,75	1,8	360 m	540 m	897 m	-	-	-
0,75	1	2,6	249 m	374 m	621 m	-	-	-
1,1	1,5	3,6	180 m	270 m	448 m	715 m	-	-
1,5	2	4,6	141 m	211 m	351 m	560 m	835 m	-
2,2	3	5,4	106 m	159 m	265 m	422 m	630 m	-
3	4	7,2	79 m	118 m	197 m	314 m	469 m	774 m
4	5,5	9,8	-	96 m	160 m	255 m	380 m	628 m
5,5	7,5	12,6	-	68 m	114 m	181 m	271 m	447 m
7,5	10	17,6	-	-	88 m	141 m	210 m	348 m

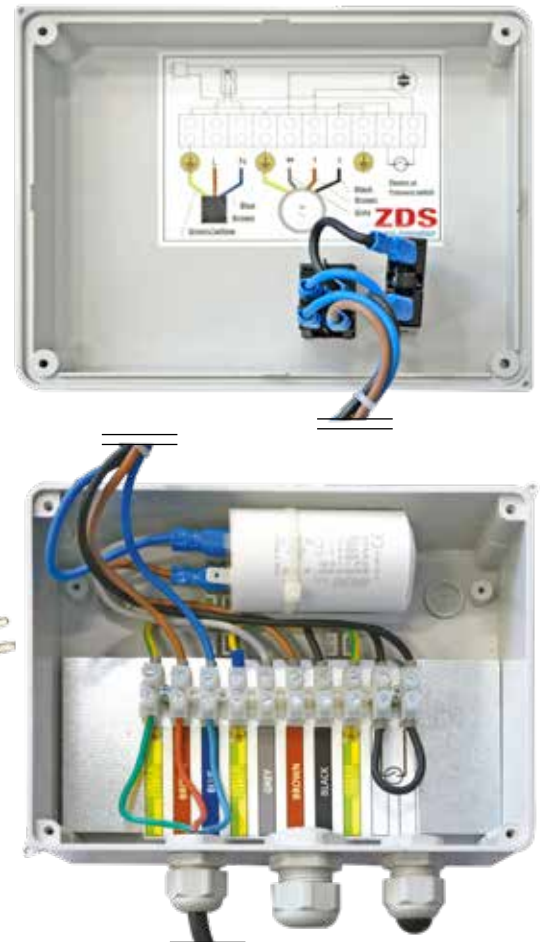
THREE-PHASE - 3X220-230 V~, 50 HZ

kW	HP	A	4 x 1 mm <sup>2</sup>	4 x 1,5 mm <sup>2</sup>	4 x 2,5 mm <sup>2</sup>	4 x 4 mm <sup>2</sup>	4 x 6 mm <sup>2</sup>	4 x 10 mm <sup>2</sup>
0,37	0,5	2,9	129 m	193 m	320 m	510 m	762 m	-
0,55	0,75	3,1	120 m	180 m	300 m	477 m	713 m	-
0,75	1	4,5	83 m	124 m	206 m	329 m	491 m	811 m
1,1	1,5	6,2	60 m	90 m	150 m	239 m	356 m	588 m
1,5	2	8,0	47 m	70 m	116 m	185 m	276 m	456 m
2,2	3	9,3	-	55 m	91 m	145 m	217 m	358 m
3	4	12,5	-	41 m	69 m	110 m	164 m	270 m
4	5,5	17,0	-	-	54 m	86 m	129 m	212 m
5,5	7,5	21,8	-	-	38 m	60 m	90 m	149 m

- Voltage drop:  $\Delta U = 4\% \cdot \cos\Phi = 0,99$  for single-phase motor -  $\cos\Phi = 0,80$  for three phase motor • Cable specific resistance:  $r = 0,0178 \Omega \text{ mm}^2/\text{m}$  • Inductive resistance:  $X_l = 0,078 \cdot 3 \cdot 10^{-3} [\Omega/\text{m}]$
- Environmental temperature:  $30^\circ\text{C}$  - In case of specific installation or for a precise cable selection the following calculation is recommended:
- $U$  = Nominal Voltage [V] •  $\Delta U$  = Voltage drop [%] •  $I$  = Current [A]
- $a$  = Coefficient 2,0 for single phase motor - Coefficient 1,73 for three phase motor
- $\cos\Phi$  = Power parameter •  $r$  = Specific resistance [ $\Omega\text{mm}^2/\text{m}$ ]
- $q$  = Cable conductor section [ $\text{mm}^2$ ] •  $X_l$  = Inductive resistance [ $\Omega/\text{m}$ ]

$$L = \frac{U \times \Delta U}{I \times a \times 100 \times (\cos\Phi \frac{r}{q} + \sqrt{1 - \cos^2\Phi} \times X_l)} \text{ [m]}$$

**CBO/CBH Single-phase submersible motor start and operation electric panel**



**Electric panel made of:**

Casing material in thermoplastic, ON/OFF illuminated switch with anti-humidity protection, thermal switch for motor protection, start and run capacitor, terminal box, cable glands, power supply cable, mounting accessories.

Technical Specifications
Over-sized thermoplastic casing
Power inlet 1x230 V ±10% 50Hz
Start and run capacitor included
Degree of protection: IP 55
1,5 m cable with European plug
Standard: IEC 60439-1:2010
Inlet for connection to pressure switches or floats
Over-sized terminal box
Manually resettable amperometric protection cut-off
Cable glands of 3 different sizes
Rated ambient temp.: from -10°C to +40° C
Size (cm): 23,8 x 19 x 9

**CBO FOR PSC SINGLE-PHASE OIL-COOLED MOTORS**

Model	Code	Power	Amperometric protection	Capacitor	Weight
		kW	I <sub>max</sub> [N]	[µF]	[kg]
<b>CBO.037</b>	082515041	0,37	4	20	0,7
<b>CBO.055</b>	082515059	0,55	5	25	0,8
<b>CBO.075</b>	082515079	0,75	7	35	0,8
<b>CBO.110</b>	082515114	1,1	10	40	0,8
<b>CBO.150</b>	082515154	1,5	12	60	0,9
<b>CBO.220</b>	082515224	2,2	18	80	1

**CBH FOR PSC ENCAPSULATED SINGLE-PHASE WATER-COOLED MOTORS**

Model	Code	Power	Amperometric protection	Capacitor	Weight
		kW	I <sub>max</sub> [N]	[µF]	[kg]
<b>CBH.025</b>	082515028	0,25	4	12,5	0,8
<b>CBH.037</b>	082515040	0,37	4	16	0,8
<b>CBH.055</b>	082515058	0,55	5	20	0,8
<b>CBH.075</b>	082515078	0,75	7	35	0,8
<b>CBH.110</b>	082515113	1,1	10	40	0,8
<b>CBH.150</b>	082515153	1,5	12	50	1
<b>CBH.220</b>	082515223	2,2	18	70	1,1

## DOMINO-UP - Electronic panel for direct start-up of one single-phase or one three-phase motor with $\cos\phi$ control and minimum current



Technical Specifications
Over-sized thermoplastic casing
Power inlet 1x230 V $\pm 10\%$ 50Hz
Power inlet 3x380 V $\pm 10\%$ 50Hz
Degree of protection: IP 55
Standard: IEC 60439-1:2010
Rated ambient temp.: from -10°C to +40° C
2 inputs multi-contact float/pressure switch (NO) (in low voltage)
Over-sized terminal box
Cable glands of 6 different sizes
Main switch with door interlock
AUTO-0-MAN buttons (manual temporary)
LED interface for automatic and manual operation
Motor output: relay (single-phase)/contactor (three-phase)
Contact output for alarm
Start and run capacitor predisposition for single-phase (not included)
Self-learning of motor data
Multifunction display with command keys and display of electrical parameters/ voltage/motor current/ $\cos\phi$ /alarms

PROTECTIONS
Protection fuses
Keyboard adjustable motor overload protection
Dry running protection from minimum current or $\cos\phi$
Min/max voltage protection
Motor protection for incorrect phase sequence
Automatic restore from dry running
Push-buttons to restore protections

Model	Code	V		Power		Current	Size (mm)			Weight	Casing
		50/60 Hz		kW	Hp	Nx [range] A	Height	Lenght	Width	[kg]	Type
DOMINO-UP-M/3	082515401	1~230V		0,37÷2,2	0,5÷3	1x [2÷16]	340	240	170	1,5	ABS
DOMINO-UP-T/10	082515402	3~400V		0,55÷7,5	0,75÷10	1x [2÷15]	340	240	170	2,5	ABS

## Capacitors



Model	Code	Capacity $\mu\text{F}$	Tension (V)
12,5 $\mu\text{F}$ capacitor	000010012	12,5	450
16 $\mu\text{F}$ capacitor	000010016	16	450
20 $\mu\text{F}$ capacitor	000010020	20	450
25 $\mu\text{F}$ capacitor	000010025	25	450
35 $\mu\text{F}$ capacitor	000010035	35	450
40 $\mu\text{F}$ capacitor	000010040	40	450
50 $\mu\text{F}$ capacitor	000010050	50	450
60 $\mu\text{F}$ capacitor	000010060	60	450
70 $\mu\text{F}$ capacitor	000010070	70	450
80 $\mu\text{F}$ capacitor	000010080	80	450

**Re-Start&Go**



**Re-Start&Go**

Electronic device for direct start, stop and protection of the pump against dry running. It keeps a constant working flow, thanks to the inner sensor and start up adjustable pressure switch. The water movement or the pressure decreasing (down the 1,5 bar factory adjustable value) starts the motor. In case of dry running, the Re-Start&Go tries up to 9th automatic restarts attempts in programmed schedules time. The last attempt is set every two hours without a maximum limit.

**TECHNICAL SPECIFICATIONS**

Outlet diameter Ø = 1"
Manual start switch (RESET)
Information led: POWER, ON (running), FAILURE
Degree of protection: IP 65
Maximum working temperature: 60°C
Factory set starting pressure value 1,5 bar (adjustable 1,5-3 bar)
Max working pressure: 8 bar
Manometer included
Voltage: 220/240V (50/60Hz)
Working: single-phase
Max load: 1,1 kW

**Flexible steel pipe**

Flexible steel pipe, suitable for use in drinking water and perfect for submersible pump installation. Recommended to avoid excessive vibrations or frictions on the pipelines. Inlet/outlet: f-f

**Screen Filter**

Plastic screen filter with replaceable cartridge for wide range of filtration applications.

**TECHNICAL SPECIFICATIONS**

Casing material: polypropylene body, EPDM gaskets
Screen Type: Inox 100 mesh
Inlet/outlet: 1" BSP threads, male/male
Max working pressure: 10 bar (145 PSI)
Filtering capacity: 6 m³/h
Cartridge Ø: 50 x 150 mm
Replacement cartridge

Model	Code	Description
Kit Re-Start	082515301	Kit made of Re-Start&Go, Flexible steel pipe and Screen filter.

Model	Code	Voltage	Working	Maximum load	Maximum working pressure (bar)
PRC Re-Start&Go	082515105	220/240V (50/60Hz)	Single-phase	1,1 kW	8 bar

Model	Code	Casing material	Screen Type	Inlet/ outlet	Maximum working pressure	Filtering capacity	Cartridge Ø
1" Screen Filter	082515106	Polypropylene body, EPDM gaskets	Inox 100 mesh	1" m-m	10 bar (145 PSI)	6 m³/h	50 x 150 mm
Replacement Cartridge	082515107	Polypropylene cartridge frame	Inox 100 mesh	-	-	6 m³/h	50 x 150 mm

Model	Code	Description
Flexible steel pipe	081505064	Steel braided flexible pipe, WRAS approved, suitable for the installation of submersible pumps, domestic hot and cold water, etc..



KIOS Kit



The Kios Kit is a cooling sleeve normally used to ensure the proper cooling of the 4" submersible pump. It can be installed in vertical or horizontal position. The KIOS kit can be set on any surfaces and it features comfortable handles for easy carrying. It comes with an oversized filter to avoid blockage by leaves, small stones or other impurities. It is recommended in all those applications where the required cooling flow to the motors is not guaranteed: water flowing through the Kios Kit will guarantee a better operation of the motor, as it allows the dispersion of the heat generated by its normal functioning.

APPLICATIONS

- Boreholes with diameter bigger than 4"
- Tanks, harvesting tanks, collection tanks, reservoir, lakes, irrigation channels.
- If the submersible pump is installed below the incoming borehole's flow of water.
- When a large number of solids and impurities are in the borehole.

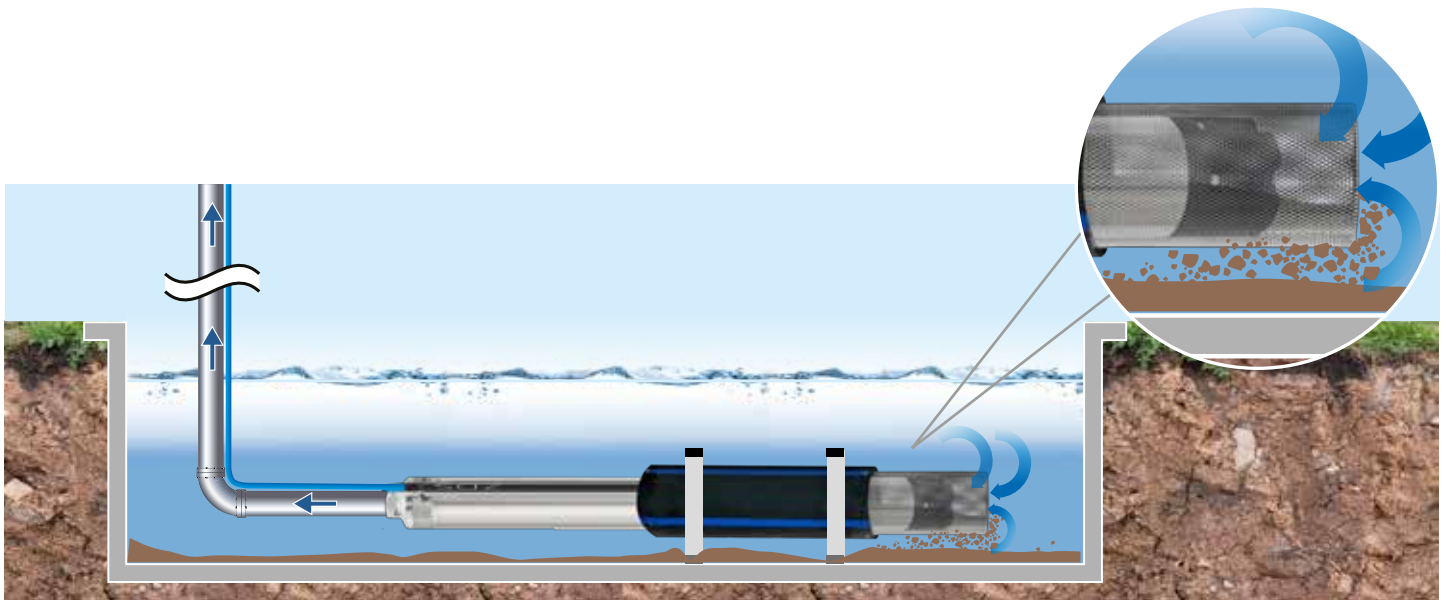
COMPONENTS	MATERIALS
Filter	Stainless Steel Aisi 304
Pipe	Polyethylene
Handles	Stainless Steel Aisi 304
Gasket	SBR

KIOSKIT 1

Model	Code	Lenght	Heigth	Width	Weight
KIOSKIT 1	081190010	600 mm	180 mm	140 mm	1,4 kg
Compatible with:		kW			
QPGO - Plug&GO.Evo		up to 1,1 kW			
ZDJet		up to 0,75 kW			
P/X.O3 - O3		up to 1,5 kW			
P/X.H3F - H3F		up to 2,2 kW			
P/X.OT - OT - P/X.HTF - HTF		up to 3 kW			

KIOSKIT 2

Model	Code	Lenght	Heigth	Width	Weight
KIOSKIT 2	081190015	900 mm	180 mm	140 mm	2,3 kg
Compatible with:		kW			
QPGO		1,5 kW			
ZDJet		1,1 kW and 1,5 kW			
P/X.O3 - O3		2,2 kW			
OT		4 kW and 5,5 Kw			
HTF		4 kW, 5,5 kW and 7,5 kW			



## Mechanical pressure switch Telemecanique

Mechanical pressure switch to automatically adjust start and stop of the submersible pump.

**Technical specifications:**

- Ambient air temperature for operation: from -25° C to +70° C
- IP degree of protection: IP 54
- Maximum power: 1,5 kW
- Outlet Ø: ¼ G-F



Model	Code	Telemecanique code	Working	Settings (bar)	Contacts	Entry
PRV0-6	082515099	XMPA06B2131	Single-phase	0 - 6	2 NC snap action 1,5 kW / 11A	2 entries PG 13,5
PRV6-12	082515100	XMPA12B2131	Single-phase	6 - 12	2 NC snap action 1,5 kW / 11A	2 entries PG 13,5

## Manometer

Manometer to measure hydraulic pressure. Vertical, horizontal or sidelong installation.



Model	Code	Working range (bar)	Diameter (mm)	Connection	Casing material
MAN0-6	082515117	0-6 (precision 2,5)	63	Radial ¼"	ABS
MAN0-12	082515116	0-12 (precision 2,5)	63	Radial ¼"	ABS

## Press tanks GWS

Single diaphragm design - Internal polypropylene capsule - Water inlet connection in stainless steel - Certificate NSF Standard 61, CE/PED, WRAS, ACS, GOST - Does not require any maintenance - Shell: carbon steel internally coated with powder for alimentary purposes - Fixed membrane: butyl, for alimentary purposes



Model	Price	Code	Code	Capacity	Diameter	Height	W.	Connections	Max working pressure
			GWS	(lt)	(mm)	(mm)	(kg)	(mm)	
PRESS TANK 2		481500002	PWB	2	127	183	1	1" G	10 bar
PRESS TANK 8		481500008	PWB	8	203	314	2,6	1" G	10 bar
PRESS TANK 18		481500018	PWB	18	280	368	4,3	1" G	10 bar
PRESS TANK 60		481500060	PWB	60	388	730	12,3	1" G	10 bar
PRESS TANK 100		481500100	PWB	100	431	804	18,9	1" G	10 bar
PRESS TANK 200		481500200	PWB	200	450	1060	35	1" G	10 bar
PRESS TANK 300		481500300	PWB	300	450	1520	48	1" G	10 bar

## ACCESSORIES

### Protection anode for 4" oil-cooled ZDS motors



Corrosion protection anode for 4" oil-cooled ZDS motors, manufactured with an alloy suitable for contact with drinking water. It can be easily fit to the lower extremity of ZDS motors to protect them from corrosion in the presence of irregular currents or particularly aggressive waters, greatly increasing the life of the motor components.

Model		Code
Anode for 4" ZDS oil-cooled motors		081505059

### Wessoclean - Ecological well regeneration



Product suitable for periodic cleaning of the well, which easily removes from the submersible pump the common incrustations, restoring the correct water quality.

**EASY TO USE:**

1. Open the well
2. Pour WESSOCLEAN AQUA Typ 1 into the well
3. Wait for 12 hours
4. Pump WESSOCLEAN AQUA Typ 1 out of the well

No heavy equipment is required and the pump can stay inside the well.

Model		Code	Description	Weight
WESSOCLEAN AQUA TYP 1		081505063	Suitable to clean from: iron-oxides, manganeseoxides, lime, biofilms. All clogging in the well, in the filter gravel and the surrounding soil is dissolved within 12 hours. 4 kg dissolved in a 4" borehole treat a water column of 10 m circa (80 l circa).	4 kg



## 1. Application.

These Terms and Conditions shall apply to the purchase of goods (hereinafter also the "Goods") by the client ("Buyer"), manufactured and marketed by ZDS S.r.l., a company registered in Italy under number IT0414260283, whose registered office is at Via Grecia 8, 35127 Padua (hereinafter the "Seller" or "ZDS"). Any offer, order confirmation and delivery made by the Seller shall be regulated by these Terms and Conditions, unless agreed differently in writing between the Buyer and the Seller.

## 2. Finalization.

The sale shall be considered completed when the Buyer's order for Goods is confirmed in writing by the Seller. The orders shall be considered completed if accepted in writing by the Seller, and only if containing the necessary information to identify the Goods; it is understood that the Seller reserves the right to accept or refuse the Buyer's order at its unquestionable discretion.

If the Buyer orders by phone, the order is considered accepted when (a) the order confirmation is signed by the Buyer, (b) the order confirmation is accepted by the Buyer by e-mail, sms, whatsapp or similar, (c) the order confirmation is accepted by the Buyer by telefax. Possible cancellations or changes of the order made by the Buyer, will not have effect if not previously authorized or subsequently approved in writing by the Seller. The execution of this sales agreement conventionally takes place at the Seller's place.

## 3. Delivery terms.

Unless otherwise agreed in writing, delivery terms will be agreed on the order confirmation on a case-by-case basis referring .

All the dates indicated as delivery terms, are to be considered as purely indicative. Any eventual delay on the delivery, shall not give the Buyer any right to cancel the order or to claim compensation for any kind of damage, and ZDS will not be liable for any costs caused by the delayed delivery. By accepting a delayed delivery, the Buyer waives in any case for any claim in relation to the delay. Any possible interruptions in the manufacturing arising with regards to force majeure, will cancel any responsibility of the Seller for the delay, which has the right to withdraw from the contract without the Buyer to be entitled to any payment in compensation. If the delivery fails for any responsibility of the Buyer, the Seller shall charge him an amount as payment for the transport and stock costs incurred. If the Goods (i) are delivered with broken or lifted seal, (ii) are of a different quantity from the shipping document, (iii) have tampered boxes/pallets, the Buyer:

- 1 - shall accept the Goods with reserve, has to write this on the shipping document, has to inform the carrier,
- 2 - must inform the Seller in writing within 8 (eight) days from the delivery and must check the Goods within 8 (eight) days from delivery.

## 4. Prices.

Unless otherwise agreed in writing, the Seller's current pricelist will be applied to every order confirmation. The specified prices shall be net; any applicable value added tax, shipping, customs clearance, insurance, packaging, etc. shall be added at the rate applicable and borne by the Buyer. In case of delayed delivery of the Goods due to the Buyer's responsibility, any price increase occurred after the order confirmation will be charged to the Buyer. The Buyer, whether reselling the products, undertakes not to apply a lower price than the one paid for purchasing the Goods from the Seller. In case of breach of undertakings, as a penalty under art.1382 of the Italian Civil Code, the Buyer shall pay the Seller an amount equal to the value of goods (as indicated in the invoice) without prejudice to any greater damages.

## 5. Payment terms.

Unless otherwise agreed in writing, the payment of the Goods will be made by advanced bank transfer. The payment shall be notified by forwarding to the Seller the bank receipt via e-mail or telefax. Without the bank receipt the Seller shall suspend any further deliveries to the Buyer and cancel the pending orders from the Buyer after 30 days from order confirmation. Term payments shall be made at the due date indicated on the relevant invoice, without deduction. In any case it is understood that the payment takes place at the Seller's domicile in Padua, Italy.

## 6. Non-payment.

In case of non-payment or partial payment, the Seller has the right to suspend the production and the shipment of the Goods until the payment in full is received. On the contrary the Seller has the right to terminate the agreement, without prejudice to any greater damages.

## 7. Limitation and delayed payment.

For any reason the Buyer shall not be entitled to suspend or to delay the payment of the Goods, or to raise any objection before the payment of the Goods' is supplied in full. In case of delayed payment, the Seller has the right to receive the total amount of the invoice (without any deducted discounts), together with the default interest as a penalty under art.1382 of the Italian Civil Code, without prejudice to any greater damages. In any case the Seller has the right to terminate the agreement for the Goods not yet delivered or to delay the current order process, upon the settlement of any outstanding debit position.

## 8. Seller's withdrawal.

The Seller has the right to withdraw the agreement at any time and at its unquestionable judgement, or to require any guarantees to execute it, if any change in the solvency or liquidity positions of the Buyer happens (inability, dissolution or conversion, amendments of the Buyer, suspension of payments, insolvency proceedings, protests, etc.), without prejudice to any greater damages.

## 9. Claims and warranties.

ZDS products and electronic devices are tested before delivery, in order to guarantee their longer lifetime and a full service for customers. The warranty on ZDS products covers manufacturing and materials defects. The warranty period starts on the date of purchase, proved by purchase documents within 24 months. For goods supplied through intermediary or distributor, the warranty period of 24 months shall commence on the effective date of purchase by the final Buyer (proved by purchase documents), up to maximum 48 months beginning from the date of manufacture. For the ZDS complete submersible pumps from series QPGo, ZDJet, Plug&Go.Evo, P/X.O3, P/X.OT (all versions), the warranty period is extended to 36 months from the date of purchase, proved by purchase documents. Franklin products are covered by Franklin warranty of 24 months from purchase date, proved by purchase documents. In the absence of the purchase document, the warranty is limited to 30 months from the date of product manufacture. In case of warranty request the Buyer shall proceed as described below. It is necessary to fill up the "Warranty application form" which can be found inside the product box, and forward it where the product was purchased, within 8 days since the discovery. As an alternative the "Warranty application form" can be filled online at the address [www.zdsgroup.com/en/report](http://www.zdsgroup.com/en/report). It is mandatory to forward the form together with a copy of the purchase document of the claimed item. The reseller can directly solve the claim or can forward the form, with the referred purchase document, to ZDS (or can fill it online at the address [www.zdsgroup.com/en/report](http://www.zdsgroup.com/en/report)). ZDS will instruct its service point to assist the Buyer or to authorize the return shipment of the claimed product. In case of authorized return shipment, it is normally expected that the claimed product is sent back complete and properly packed by the Buyer to the purchasing point. The replacement with a new product or the eventual reparation, will take place only after ZDS technical inspection. In case the claimed item is reported by ZDS technical inspection as not defective and therefore it is working, the costs for the general control will be charged in the final balance. After the ZDS technical inspection and the communication of its results to the customer, the inspected material will be maintained at the client's disposal up to maximum 6 months. Once 6 months have expired without any feedback from the customer, the inspected material will be disposed.

All transport costs are generally at Buyer's expenses. The warranty is not valid in the following situations:

- not compliance between the received product and the information given on the "Warranty application form";
- in case the product has been tampered, disassembled or is incomplete of some parts;
- when damages are caused by incorrect transport condition, and the transport has been carried out by the Buyer;
- when damages are caused by not closely following the product use and installation instructions;
- in case the installation has not been carried out by qualified and expert technician;
- in case of wrong electrical connections or wrong hydraulic installations;
- when damages are caused by incorrect size of the power supply cable's extension;
- if the application is not included in the technical specifications;
- if the product is used with liquids other than those referred, and so incompatible with its construction materials;
- if the product is used with an excessive quantity of sand or other foreign bodies in the liquid;
- when damages are caused by galvanic currents;
- if the product is damaged by inappropriate or non authorized devices, such as frequency converter or power generators;
- when non authorized technical modifications are made on the product;
- if the system's electrical or hydraulic features are not suitable to the product;
- if electrical protection is insufficient;
- to normal material damages overtime;
- in case of incorrect or excessive use of the product;
- in case of wrong technical choice of the product;
- if the installation doesn't follow existing standards;
- in case of natural events or disasters (fires, lightning, etc...).

In case the warranty is granted, ZDS will repair or replace the defective product as soon as possible. No warranty is valid when products are new, never installed before and still in the original packaging. The warranty never includes the possibility of compensation. The granting of the warranty does not give the right to ask for direct and indirect damages caused by ZDS products. Any problem related to the warranty does not authorize the client to suspend contractual obligations.

## 10. Returns.

Goods may not be returned without the prior written agreement of the Seller, and without its authorisation number marked on the shipping document and on the external packaging. In any case the returned Goods must be intact and must be returned with appropriate packaging. The Seller shall inspect the returned Goods to ascertain the existence of the defect and its responsibility and only then will replace the Goods considered defective. Goods returned without any authorisation shall not allow the Buyer to issue a debit note. In any case, costs and risks of Goods' returning are borne in full by the Buyer.

## 11. Seller's responsibilities' limitation.

The Seller's warranties and responsibilities shall be limited to the ones established by these Terms and Conditions, except as provided by mandatory and not derogated rules beyond the control of the parties. Without prejudice to cases of intent and/or gross negligence, in any case the Seller shall not be liable for any loss or damages of any nature, direct or indirect, including any loss of profits or consequential damages suffered or incurred by the Buyer for whatever reason. In any case, the Seller's overall maximum responsibility of each supply can never exceed the value of the supply (cost of the products).

## 12. Privacy, ban of disclosure, industrial and intellectual property rights

The Buyer undertakes to consider all the data, documents, materials and information, in whatever form and on whatever medium, received or obtained by the Seller, as strictly private and confidential and of exclusive property, physical and intellectual, of the Seller. The Buyer is committed to take all necessary measures not to damage the Seller and not to affect the confidentiality and secrecy of the above mentioned data, documents, materials and information. These information include past, current and future activities regarding the company, the research, the development, the commercial activities, non-commercial activities, the products, the services, the technical knowledge, but also information on clients, projects, plans, organization and business projects. The Buyer shall be prohibited to disclose and communicate in any way all the information received by the Seller. The confidential information and knowledge shall not be in full or in part copied or reproduced, if not for business requirements closely related to the Goods' purchasing.

The technical data, performance details and characteristics stated in all ZDS official documents refer to indicative and non-binding data. ZDS reserves the right to amend the documentation without prior notice.

At any time ZDS reserves the right to make changes to the products, design, construction or composition of the products, or the materials or equipment used in the products, whenever it should be considered necessary, without prior notice to the Buyer.

## 13. Fortuitous event and majeure force.

The Seller shall be liable for any failure or delay in performing their obligations towards the Buyer, where such failure or delay results from any cause that is beyond its reasonable control or in any case due to fortuitous event or majeure force.

Such causes include, but are not limited to: missed or delayed delivery of raw materials from suppliers, strikes and other industrial actions, terrorism acts, power failure, transport difficulties or any other event that is beyond the control of the Seller.

## 14. Law and jurisdiction.

These Terms and Conditions are ruled by 1980's Vienna Convention on the international sale of goods. Italian Civil Code will be applied for matters outside Vienna Convention.

Any dispute, controversy, proceedings or claim between the Seller and the Buyer, relating to these Terms and Conditions shall fall within the jurisdiction of the court of Padua.

As an alternative the Seller has the right to appeal to the Buyer's court.

Only in respect to debt recovery, the Seller has the right to proceed with enforceable European order for payment if the Buyer is registered in any of the European Union State.

# ZDS

pump innovation

ZDS S.r.l. – Via Grecia, 8  
35127 Padova – ITALY  
P.IVA IT04141260283

☎ +39 049 7994854

📠 +39 049 5910056

✉ [support@zdsgroup.com](mailto:support@zdsgroup.com)

🏠 [www.zdsgroup.com](http://www.zdsgroup.com)