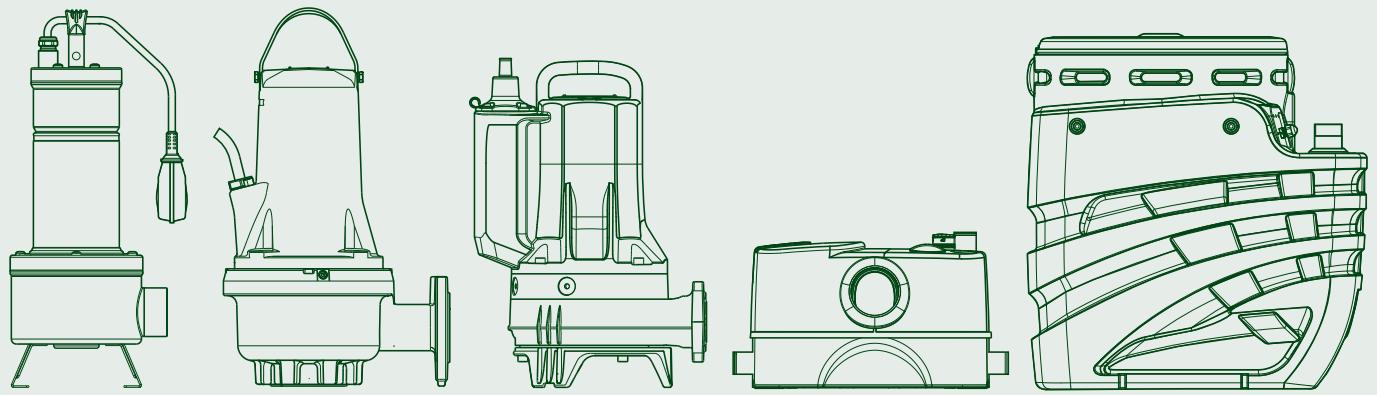


# SUBMERSIBLE PUMPS



TECHNICAL  
CATALOGUE

# CERTIFICATIONS



SCAN HERE  
For more information.

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## SUBMERSIBLE PUMPS

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## ACCESSORIES - PANELS

## TECHNICAL APPENDIX



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NOVA 180 A



NOVA 600 M

## TECHNICAL DATA

**Flow rate minimum and maximum:** from 1 m<sup>3</sup>/h to 16 m<sup>3</sup>/h

**Head up to:** 10,2 m

**Maximum immersion depth:** 7 m

**Type of pumped liquid:** clear water or rainwater

**Free passage:** 5 mm or 10 mm (depending on the model)

**Minimum intake level:**

NOVA 180/200 8 mm

NOVA 300 13 mm

NOVA 600 30 mm

**Supported liquid temperature min. and max.:**

from +0°C to +35°C for domestic use

from +0°C to +50°C for other use

**Class of protection:** IP 68

**Motor insulation class:** F

**Impeller construction material(s):** technopolymer

**Single phase power input:** 230V 50Hz

**Three phase power input:** 3 x 400V 50Hz

**Possible type of installation:** fixed or portable in a vertical position

Nova is a submersible pump for draining clear water in domestic and residential environments. Completely redesigned in 2019 for the forty years of sales, it is now even more durable, reliable and ergonomic in use. Nova can also be used for emptying tanks or cisterns.

## CONSTRUCTION FEATURES OF THE PUMP

The pump body, the impeller and the suction grille are in technopolymer. Robust and reliable with triple sealing in oil bath. The pump allows the suction of the liquid up to the minimum level of 10 mm and the possibility of dry operation up to 1 minute.

## CONSTRUCTION FEATURES OF THE MOTOR

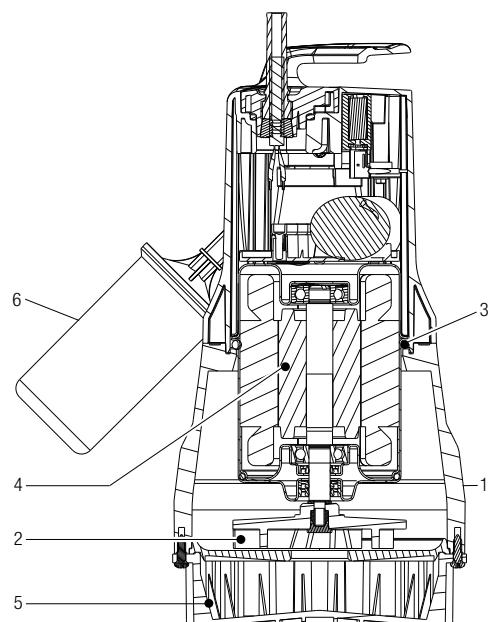
Continuous duty asynchronous submersible motor. Stator inserted in a hermetic stainless steel casing and rotor mounted on oversized ball bearings. Thermal protection incorporated in all single-phase versions.

The motor is in AISI 304 stainless steel and the shaft is in AISI 431 steel for greater resistance to corrosive attacks.

## MATERIALS

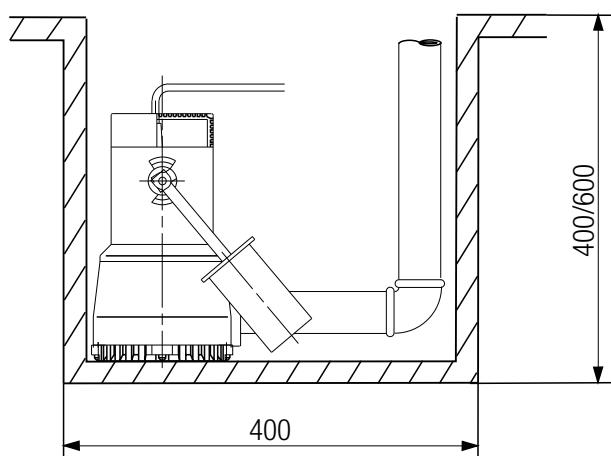
No.	PARTS *		MATERIALS
1	PUMP BODY		TECHNOPOLIMER
2	IMPELLER		TECHNOPOLIMER
3	OR RING		NBR
4	MOTOR	CASE	AISI 304 STAINLESS STEEL X5 CrNi1810 - UNI 6900/71
		ROTOR SHAFT	AISI 431 STAINLESS STEEL
5	SUCTION GRID		TECHNOPOLIMER
6	FLOAT		TECHNOPOLIMER

\* In contact with the liquid



## MINIMUM WELL SIZE FOR AUTOMATIC OPERATION FIXED INSTALLATION:

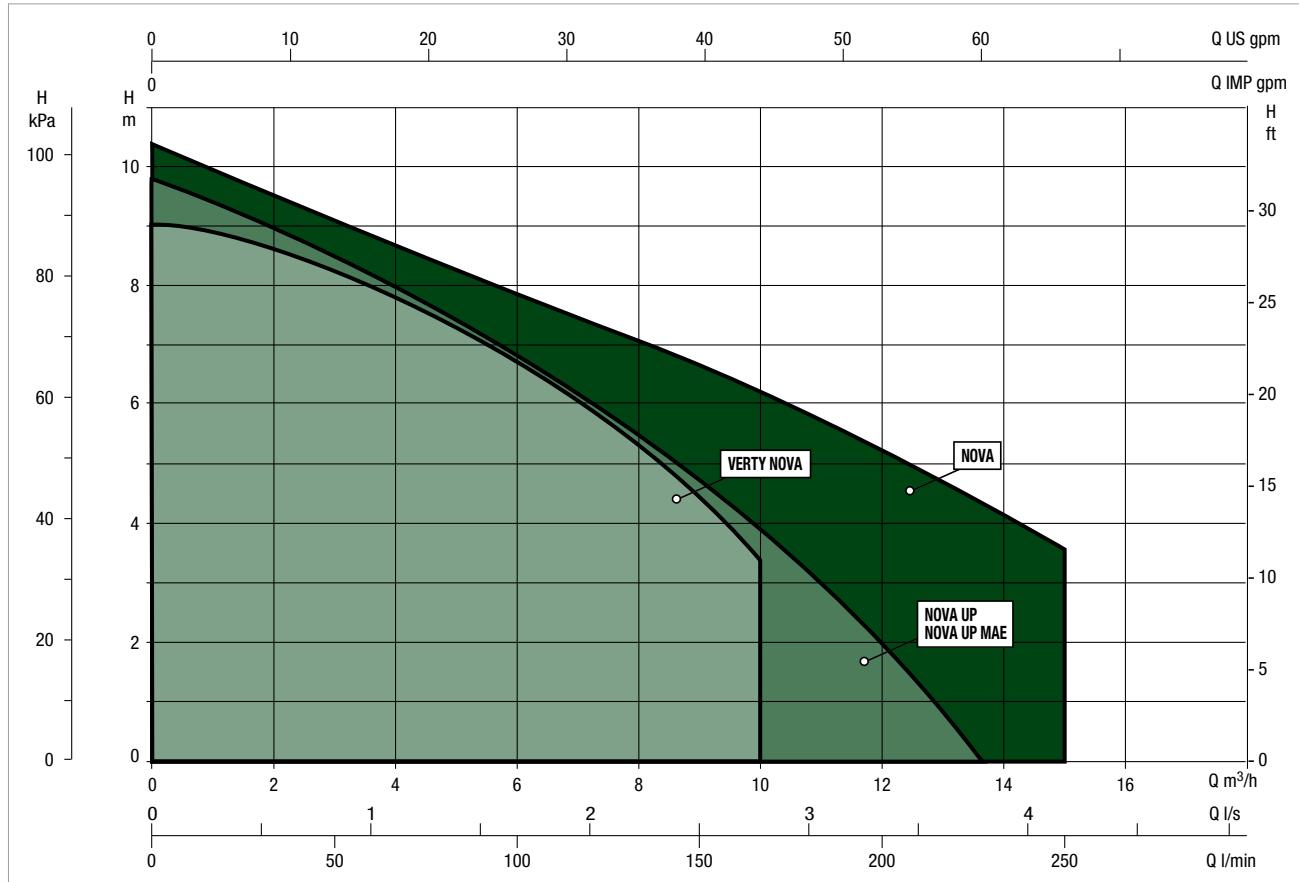
NOVA 180 - NOVA 300 - NOVA 600



### PERFORMANCE RANGE

The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equal to 1000 kg/m<sup>3</sup>. Curve tolerance according to ISO 9906.

### GRAPHIC SELECTION TABLE

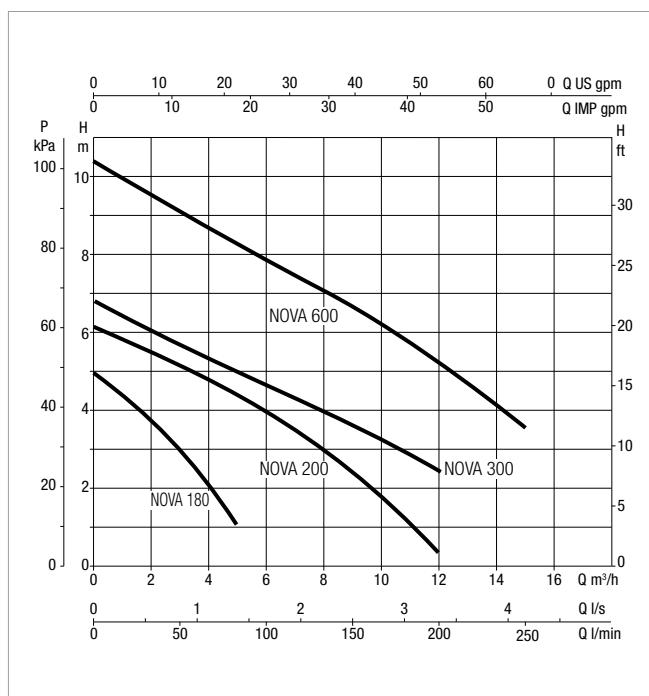
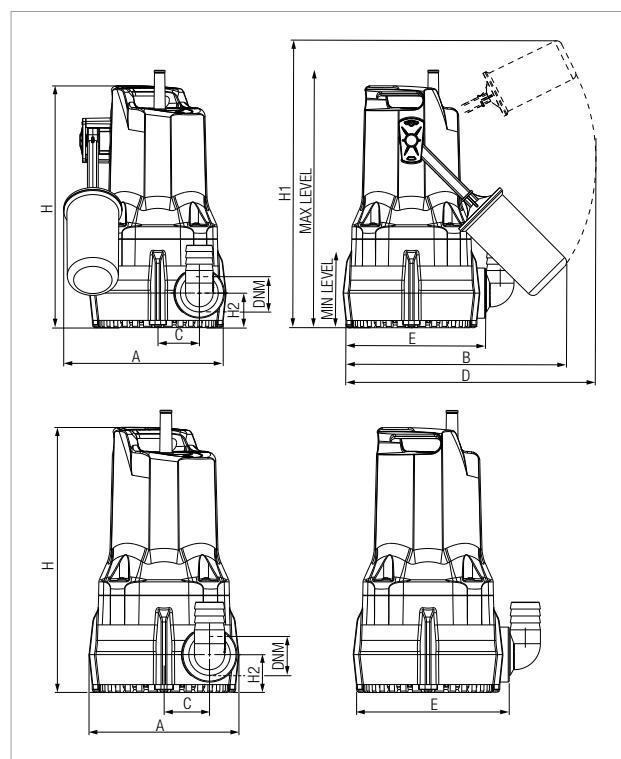


### SELECTION TABLE - NOVA

MODEL	Q= m <sup>3</sup> /h	0	3	6	9	12
	Q=l/min	0	50	100	150	200
NOVA 180 MA - MNA	H (m)	5	3,2	-	-	-
NOVA 200 MNA		7,1	5,6	4,2	2,8	1,5
NOVA 300 MA		7,2	5,8	4,6	3,4	2,2
NOVA 600 MA-MNA-TNA		10,4	9	7,8	6,7	5,3

## NOVA 180-200 - SUBMERSIBLE PUMP

Liquid temperature range: from 0°C to +35°C for domestic use



The performance curves are based on kinematic viscosity values = 1 mm²/s and density equal to 1000 kg/m³. Curve tolerance according to ISO 9906.

MODEL	Q= m³/h	0	3	6	9	12
	Q= l/min	0	50	100	150	200
NOVA 180 MA - MNA	H (m)	5	3,2	-	-	-
NOVA 200 MNA	H (m)	7,1	5,6	4,2	2,8	1,5

MODEL	ELECTRICAL DATA						
	POWER INPUT 50 Hz	P1 MAX kW	P2 NOMINAL		In A	CAPACITOR	
			kW	HP		μF	Vc
NOVA 180 MA - MNA	1x230V~	0,19	0,2	0,3	0,9	5	450
NOVA 200 MNA	1x230V~	0,35	0,22	0,3	1,5	8	450

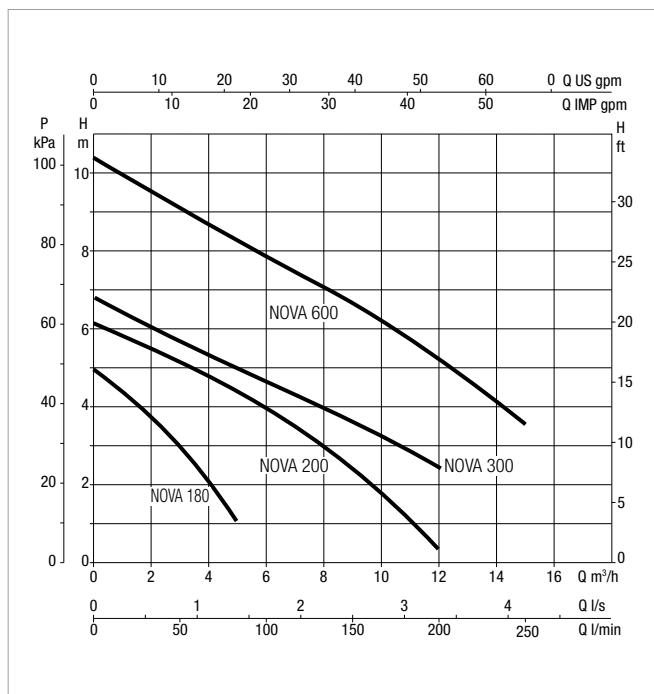
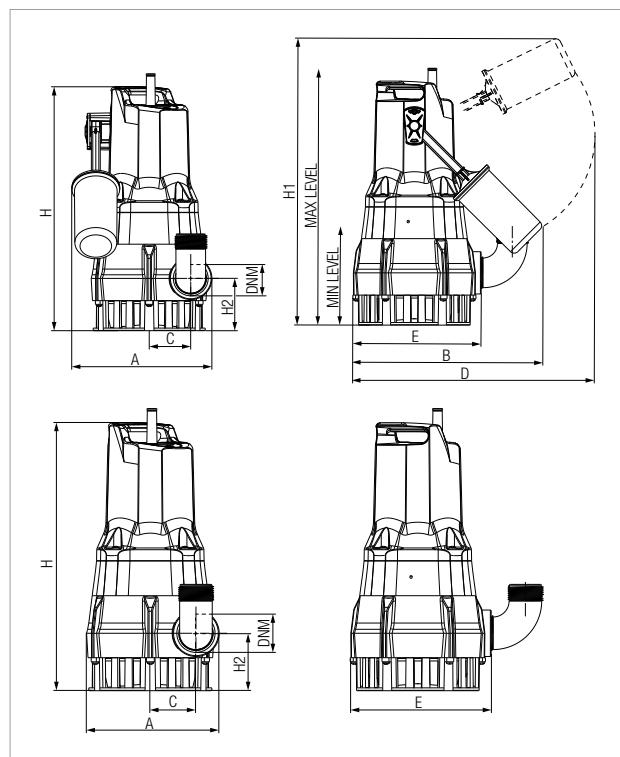
A: Automatic with float - NA: Non-automatic, without float

MODEL	A	B	C	D	E	H	H1	H2	LEV. MIN.	LEV. MAX.	DNM GAS	PACKING DIMENSIONS			CABLE*	VOLUME (mc)	WEIGHT kg
												L/A	L/B	H			
NOVA 180 MA	180	247	46	296	158	268	345	38	77	285	1" ¼	287	202	320	5m H05 10m H05	0,019	4,6
NOVA 180 MNA	151	-	46	-	158	268	-	38	-	-	1" ¼	287	202	320	10m H05	0,019	4,6
NOVA 200 MNA	151	-	46	-	158	268	-	38	-	-	1" ¼	287	202	320	10m H05	0,019	4,6

As per European standard EN 60335-2-41, for outdoor use power cable must be 10m long.

**NOVA 300-600 - SUBMERSIBLE PUMP**

Liquid temperature range: from 0°C to +35°C for domestic use



The performance curves are based on kinematic viscosity values = 1 mm²/s and density equal to 1000 kg/m³. Curve tolerance according to ISO 9906.

MODEL	Q= m³/h	0	3	6	9	12	15
	Q=l/min	0	50	100	150	200	250
NOVA 300 MA	H (m)	7,2	5,8	4,6	3,4	2,2	-
NOVA 600 MA-MNA-TNA	H (m)	10,4	9	7,8	6,7	5,3	3,5

MODEL	ELECTRICAL DATA						
	POWER INPUT 50 Hz	P1 MAX kW	P2 NOMINAL		In A	CAPACITOR	
			kW	HP		μF	Vc
NOVA 300 MA	1X230V~	0,35	0,22	0,3	1,5	8	450
NOVA 600 MA-MNA	1X230V~	0,66	0,5	0,7	3,0	10	450
NOVA 600 TNA	3X400V~	0,66	0,5	0,67	1,7	-	-

A: Automatic with float - NA: Non-automatic, without float

MODEL	A	B	C	D	E	H	H1	H2	LEV. MIN.	LEV. MAX.	DNM GAS	PACKING DIMENSIONS			CABLE*	VOLUME (mc)	WEIGHT kg
												L/A	L/B	H			
NOVA 300 MA	180	247	46	296	158	277	354	47	85	285	1" 1/4	287	202	320	5m H05 10m H05	0,019	4,6
NOVA 600 MA	189	255	56	296	174	329	443	71	190	390	1" 1/4	287	202	431	5m H05 10m H05	0,025	7
NOVA 600 MNA	163	-	56	-	174	329	-	71	-	-	1" 1/4	287	202	431	10m H05	0,025	7
NOVA 600 TNA	163	-	56	-	174	329	-	71	-	-	1" 1/4	287	202	431	10m H07	0,025	7

As per European standard EN 60335-2-41, for outdoor use power cable must be 10m long.



### TECHNICAL DATA

#### Operating range:

from 1 to 15 m<sup>3</sup>/h with head up to 10 metres.

#### Liquid temperature range:

from 0°C to +35°C for domestic use.

#### Pumped liquid:

dirty water without fibres.

#### Minimum draught depth:

NOVA UP 300 M-A 120 mm

NOVA UP 300 M-NA 60 mm

NOVA UP 600 M-A 165 mm

NOVA UP 600 M-NA 70 mm

#### Max. immersion depth:

7 metres.

#### Installation:

vertical, fixed or portable.

#### Protection class:

IP 68.

#### Insulation class:

F.

### APPLICATIONS

The vertical delivery draining submersible pump is suitable for domestic automatically operated fixed applications, for draining basements and garages that are subject to flooding. Thanks to its compact, easy to handle shape, it may also be used as a portable pump for emergencies such as lifting water from tanks or rivers, emptying swimming pools, fountains, excavations, and pedestrian subways. It is also ideal for gardening, and hobby applications in general. This pump can be used with liquids containing solid particles of up to 10 mm in size. The level switch allows fixed installation, ensuring automatic operation. With removable filter, it is capable of suction of up to a minimum of 2/3 mm (filter removed).

### CONSTRUCTION FEATURES OF THE PUMP

Hydro resistant technopolymer pump body, cover, and suction grid.

Stainless steel motor, roto shaft, and bolts and screws.

Threefold seal with interposed rings with oil pre-chamber.

### CONSTRUCTION FEATURES OF THE MOTOR

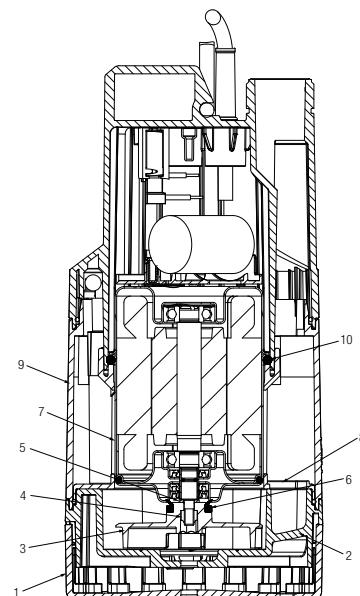
Submersible type continuous duty asynchronous motor.

Stator enclosed in airtight stainless steel casing, with an outer cover that protects the wiring and the capacitor. Rotor running on permanently lubricated ball bearings, oversized to ensure low noise and durability. Built-in thermal-amperometric protection and permanently connected capacitor.

### MATERIALS

No.	PARTS*		MATERIALS
1	SUCTION STRAINER		TECHNOPOLYMER
2	BASE		TECHNOPOLYMER
3	IMPELLER		TECHNOPOLYMER
4	NUT		A2 DIN982-UNIT7473 STAINLESS STEEL
5	WASHER		A2 STAINLESS STEEL
6	V. RING		NBR
7	MOTOR	CASE ROTOR SHAFT	AISI 304 STAINLESS STEEL X5 CrNi 1810 - UNI 6900/71 AISI 416 STAINLESS STEEL UNI EN 10088-1 X12CRS13
8	DIAPHRAGM		TECHNOPOLYMER
9	BODY		TECHNOPOLYMER
10	OR RING		NBR

\* In contact with the liquid



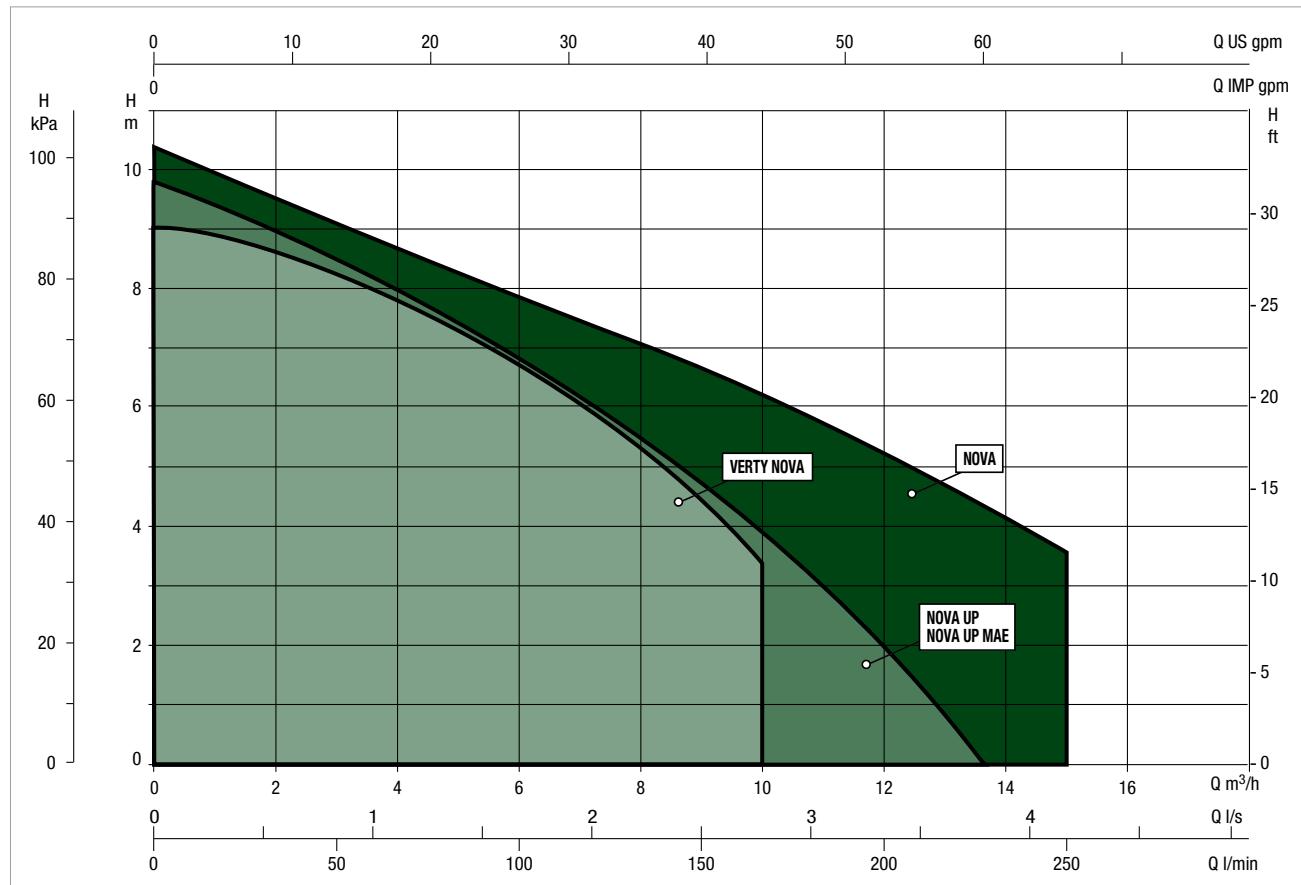
# NOVA RANGE

## SUBMERSIBLE PUMPS

### PERFORMANCE RANGE

The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equal to 1000 kg/m<sup>3</sup>. Curve tolerance according to ISO 9906.

### GRAPHIC SELECTION TABLE

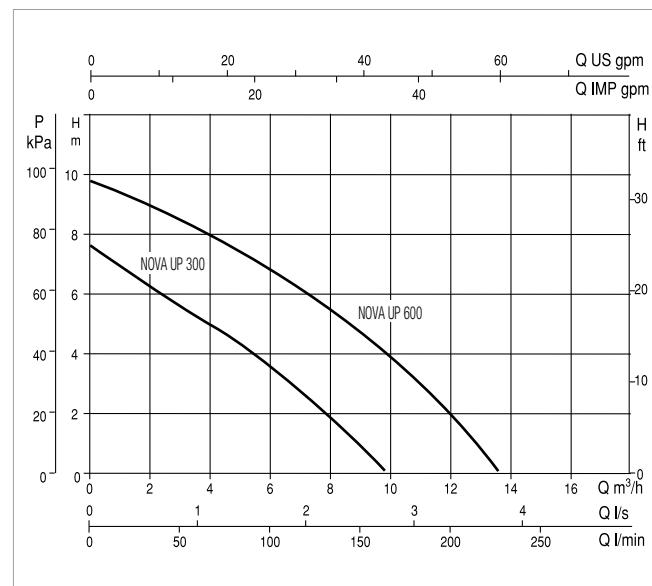
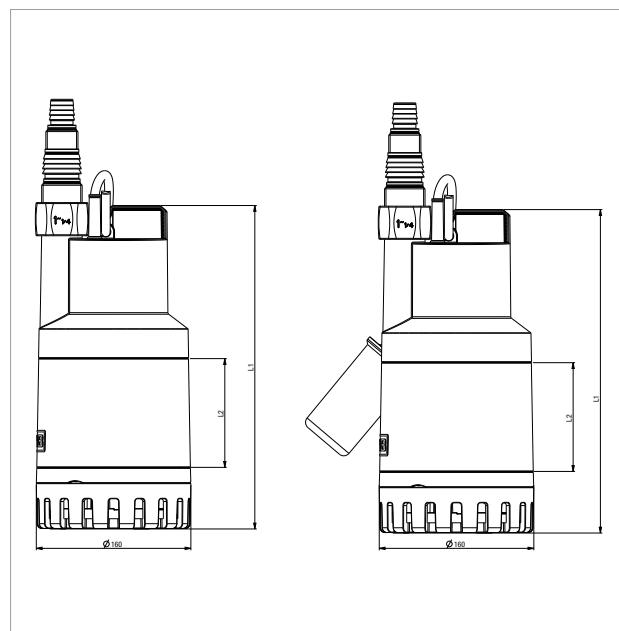


### SELECTION TABLE - NOVA UP

MODEL	Q= m <sup>3</sup> /h	0	1	2	3	4.5	5	6	7	7.5	9	10	12	13.5	15
	Q=l/min	0	16.6	33.3	50	75	83.3	100	116.6	125	150	166.6	200	225	250
NOVA UP 300 M	H (m)	7.6	6.9	6.25	5.6	4.7	4.4	3.6	2.8	2.3	1				
NOVA UP 600 M		9.8	9.4	9	8.5	7.7	7.4	6.8	6.2	5.9	4.7	3.9	2	0.3	

## NOVA UP - CLEAN WATER DRAINING SUBMERSIBLE PUMPS FOR DOMESTIC USE

Liquid temperature range: from 0°C to +35°C for domestic use



The performance curves are based on kinematic viscosity values = 1 mm²/s and density equal to 1000 kg/m³. Curve tolerance according to ISO 9906.

MODEL	ELECTRICAL DATA					
	POWER INPUT 50 Hz	P1 MAX kW	P2 NOMINAL		In A	
			KW	HP		
NOVA UP 300 M-A	1x220-240V~	0.38	0.21	0.28	1.5	
NOVA UP 300 M-NA	1x220-240V~	0.38	0.21	0.28	1.5	
NOVA UP 600 M-A	1x220-240V~	0.77	0.52	0.69	3.5	
NOVA UP 600 M-NA	1x220-240V~	0.77	0.52	0.69	3.5	

MODEL	L1	L2	DNM GAS	PACKING DIMENSIONS			CABLE	VOLUME (m³)	WEIGHT kg
				L/A	L/B	H			
NOVA UP 300 M-A	296	75,9	1" ½	265	225	317	10 mt.	0.018	5.8
NOVA UP 300 M-NA	296	75,9	1" ½	265	225	317	10 mt.	0.018	5.6
NOVA UP 600 M-A	332	111,6	1" ½	265	225	352	10 mt.	0.021	7.3
NOVA UP 600 M-NA	332	111,6	1" ½	265	225	352	10 mt.	0.021	7.1

# NOVA UP MAE

## SUBMERSIBLE PUMPS



### TECHNICAL DATA

#### Operating range:

from 1 to 15 m<sup>3</sup>/h with head up to 10 metres.

#### Liquid temperature range:

from 0°C to +35°C for domestic use.

#### Pumped liquid:

dirty water without fibres.

#### Minimum draught depth:

NOVA UP 300 M-AE 60 mm

NOVA UP 600 M-AE 70 mm

#### Max. immersion depth:

7 metres.

#### Installation:

vertical, fixed or portable.

#### Protection class:

IP 68.

#### Insulation class:

F.

### APPLICATIONS

The vertical delivery draining submersible pump is suitable for domestic automatically operated fixed applications, for draining basements and garages that are subject to flooding. This version is particularly suited for narrow well installation requiring automatic suction up to 2/3 mm. Thanks to its compact, easy to handle shape, it may also be used as a portable pump for emergencies such as lifting water from tanks or rivers, emptying swimming pools, fountains, excavations, and pedestrian subways. It is also ideal for gardening, and hobby applications in general. This pump can be used with liquids containing solid particles of up to 10 mm in size. The electronic level selector allows fixed installation, ensuring automatic operation, and enabling the selection of the level of the liquid for automatic start. With removable filter, it is capable of suction of up to a minimum of 2/3 mm (filter removed).

### CONSTRUCTION FEATURES OF THE PUMP

Hydro resistant technopolymer pump body, cover, and suction grid.

Stainless steel motor, roto shaft, and bolts and screws.

Threefold seal with interposed rings with oil pre-chamber.

### CONSTRUCTION FEATURES OF THE MOTOR

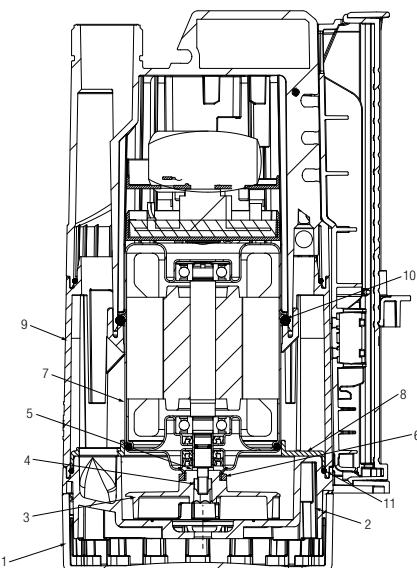
Submersible type continuous duty asynchronous motor.

Stator enclosed in airtight stainless steel casing, with an outer cover that protects the wiring and the capacitor. Rotor running on permanently lubricated ball bearings, oversized to ensure low noise and durability. Built-in thermal-amperometric protection and permanently connected capacitor.

### MATERIALS

No.	PARTS*		MATERIALS
1	SUCTION STRAINER		TECHNOPOLYMER
2	BASE		TECHNOPOLYMER
3	IMPELLER		TECHNOPOLYMER
4	NUT		A2 DIN982-UNI7473 STAINLESS STEEL
5	WASHER		A2 STAINLESS STEEL
6	V. RING		NBR
7	MOTOR	CASE	AISI 304 STAINLESS STEEL X5 CrNi 1810 - UNI 6900/71
		ROTOR SHAFT	AISI 416 STAINLESS STEEL UNI EN 10088-1 X12CR13
8	DIAPHRAGM		TECHNOPOLYMER
9	BODY		TECHNOPOLYMER
10 - 11	OR RING		NBR

\* In contact with the liquid



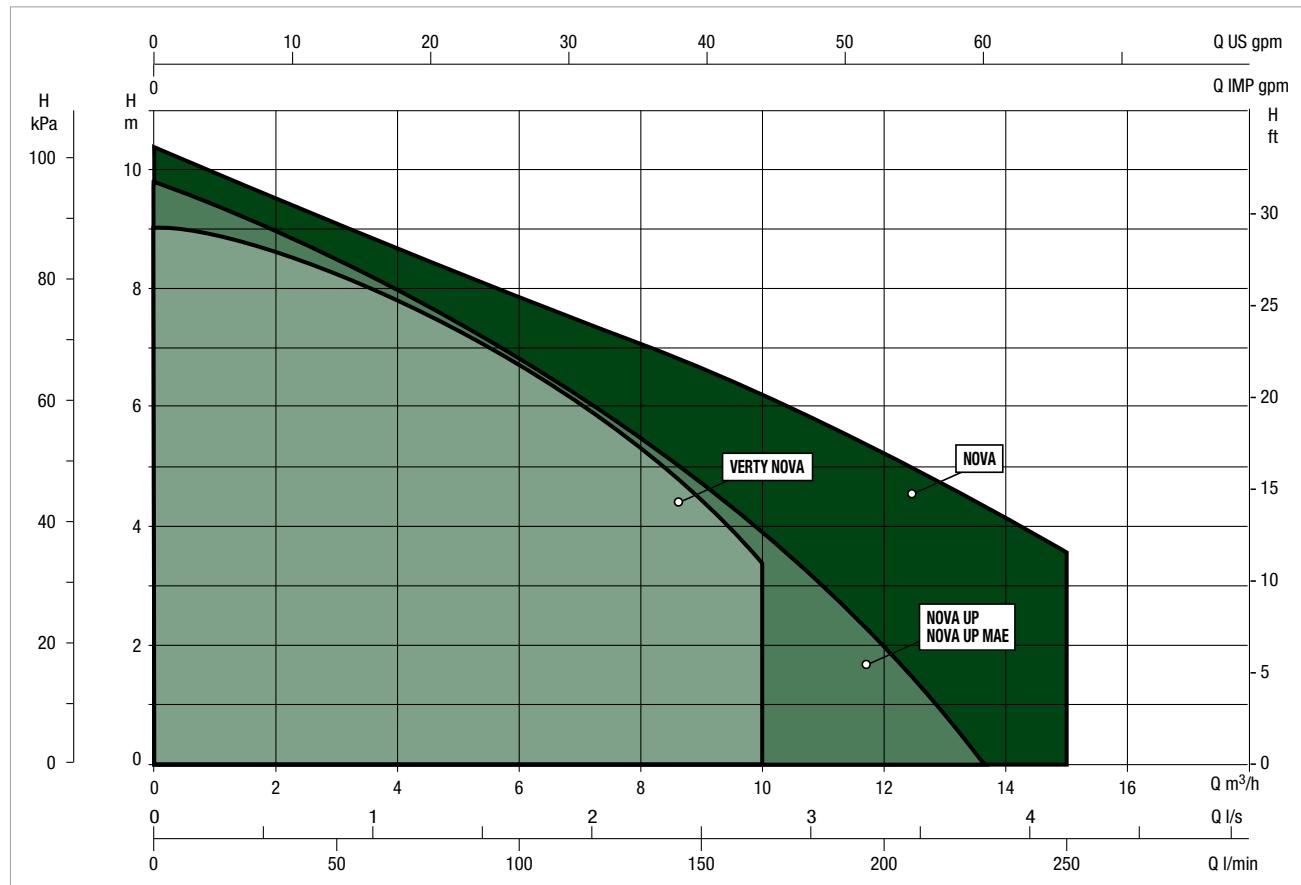
# NOVA RANGE

## SUBMERSIBLE PUMPS

### PERFORMANCE RANGE

The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equal to 1000 kg/m<sup>3</sup>. Curve tolerance according to ISO 9906.

### GRAPHIC SELECTION TABLE

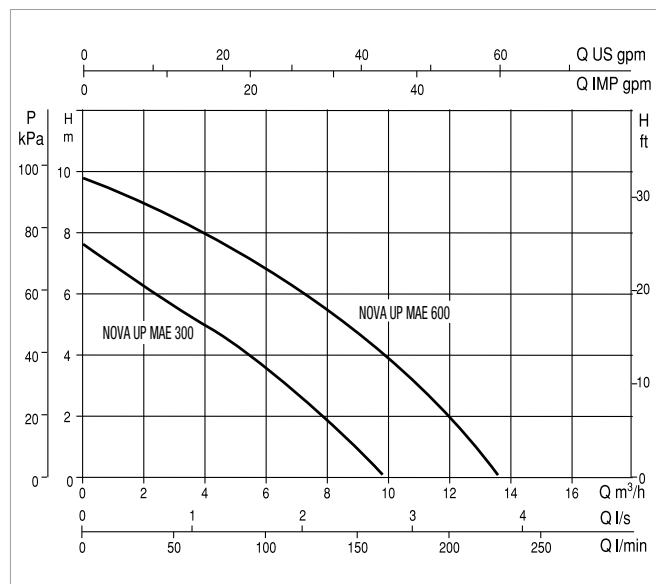
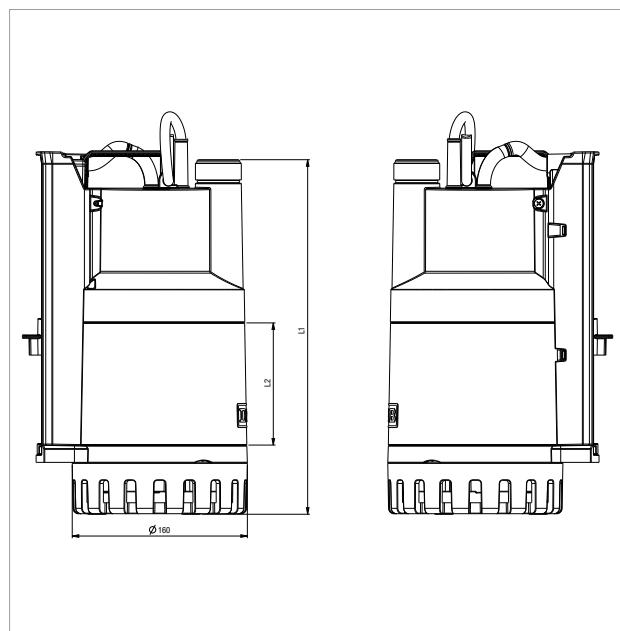


### SELECTION TABLE - NOVA UP MAE

MODEL	Q= m <sup>3</sup> /h	0	1	2	3	4.5	5	6	7	7.5	9	10	12	13.5	15
	Q=l/min	0	16.6	33.3	50	75	83.3	100	116.6	125	150	166.6	200	225	250
NOVA UP 300 M-AE	H (m)	7.6	6.9	6.25	5.6	4.7	4.4	3.6	2.8	2.3	1				
NOVA UP 600 M-AE		9.8	9.4	9	8.5	7.7	7.4	6.8	6.2	5.9	4.7	3.9	2	0.3	

## NOVA UP MAE - CLEAN WATER DRAINING SUBMERSIBLE PUMPS FOR DOMESTIC USE

Liquid temperature range: from 0°C to +35°C for domestic use



The performance curves are based on kinematic viscosity values = 1 mm²/s and density equal to 1000 kg/m³. Curve tolerance according to ISO 9906.

MODEL	ELECTRICAL DATA					
	POWER INPUT 50 Hz	P1 MAX kW	P2 NOMINAL		In A	
			KW	HP		
NOVA UP 300 M-AE	1 x 220 - 240V ~	0.38	0.21	0.28	1.5	
NOVA UP 600 M-AE	1 x 220 - 240V ~	0.77	0.52	0.69	3.5	

MODEL	L1	L2	DNM GAS	PACKING DIMENSIONS			CABLE	VOLUME (m³)	WEIGHT kg
				L/A	L/B	H			
NOVA UP 300 M-AE	296.2	75.9	1" ¼	265	225	317	10 mt.	0.018	5,6
NOVA UP 600 M-AE	324	111.6	1" ½	265	225	352	10 mt.	0.021	7,3

# VERTY NOVA

SUBMERSIBLE PUMPS WITH INTERNAL FLOAT



## TECHNICAL DATA

### Operating range:

from 1 to 10m<sup>3</sup>/h with head up to 9 metres.

### Liquid temperature range:

from 0°C to +35°C for domestic use.

### Pumped liquid:

dirty water without fibres.

### Pump priming limit:

10-15 mm in manual operation.

### Max. immersion depth:

7 metres.

### Installation:

vertical, fixed or portable.

### Protection class:

IP 68.

### Insulation class:

F.

## APPLICATIONS

The vertical delivery draining submersible pump is suitable for domestic automatically operated fixed applications, for draining basements and garages that are subject to flooding. Thanks to its compact and easy to handle shape, and the built-in float, it is suitable for particularly small draining wells (minimum 20x20 cm). It may also be used as a portable pump for emergencies such as lifting water from tanks or rivers, emptying swimming pools, fountains, excavations and underpasses. It is also ideal for gardening, and hobby applications in general. This pump can be used with liquids containing solid particles of up to 5 mm in size. The level switch with built-in float allows fixed installation, ensuring automatic operation. With easy access to the float for maintenance purposes, and automatic or manual mode selector. Minimum suction level up to 2/3 mm.

## CONSTRUCTION FEATURES OF THE PUMP

Hydro resistant technopolymer pump body, cover, and suction grid.

Stainless steel motor, roto shaft, and bolts and screws.

Threefold seal with interposed rings with oil pre-chamber.

## CONSTRUCTION FEATURES OF THE MOTOR

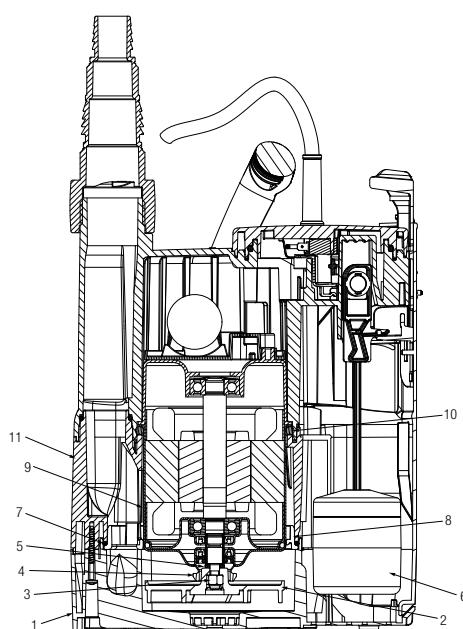
Submersible type continuous duty asynchronous motor.

Stator enclosed in airtight stainless steel casing, with an outer cover that protects the wiring and the capacitor. Rotor running on permanently lubricated ball bearings, oversized to ensure low noise and durability. Built-in thermal-amperometric protection and permanently connected capacitor.

## MATERIALS

No.	PARTS*		MATERIALS
1	FILTER BASE		TECHNOPOLYMER
2	IMPELLER		TECHNOPOLYMER
3	NUT		A2 DIN982-UNI7473 STAINLESS STEEL
4	V. RING		NBR
5	WASHER		A2 STAINLESS STEEL
6	FLOAT		TECHNOPOLYMER
7	OR RING		NBR
8	DIAPHRAGM		TECHNOPOLYMER
9	MOTOR	CASE	AISI 304 STAINLESS STEEL X5 CrNi 1810 - UNI 6900/71
		ROTOR SHAFT	AISI 416 STAINLESS STEEL UNI EN 10088-1 X12CRS13
10	OR RING		NBR
11	BODY		TECHNOPOLYMER

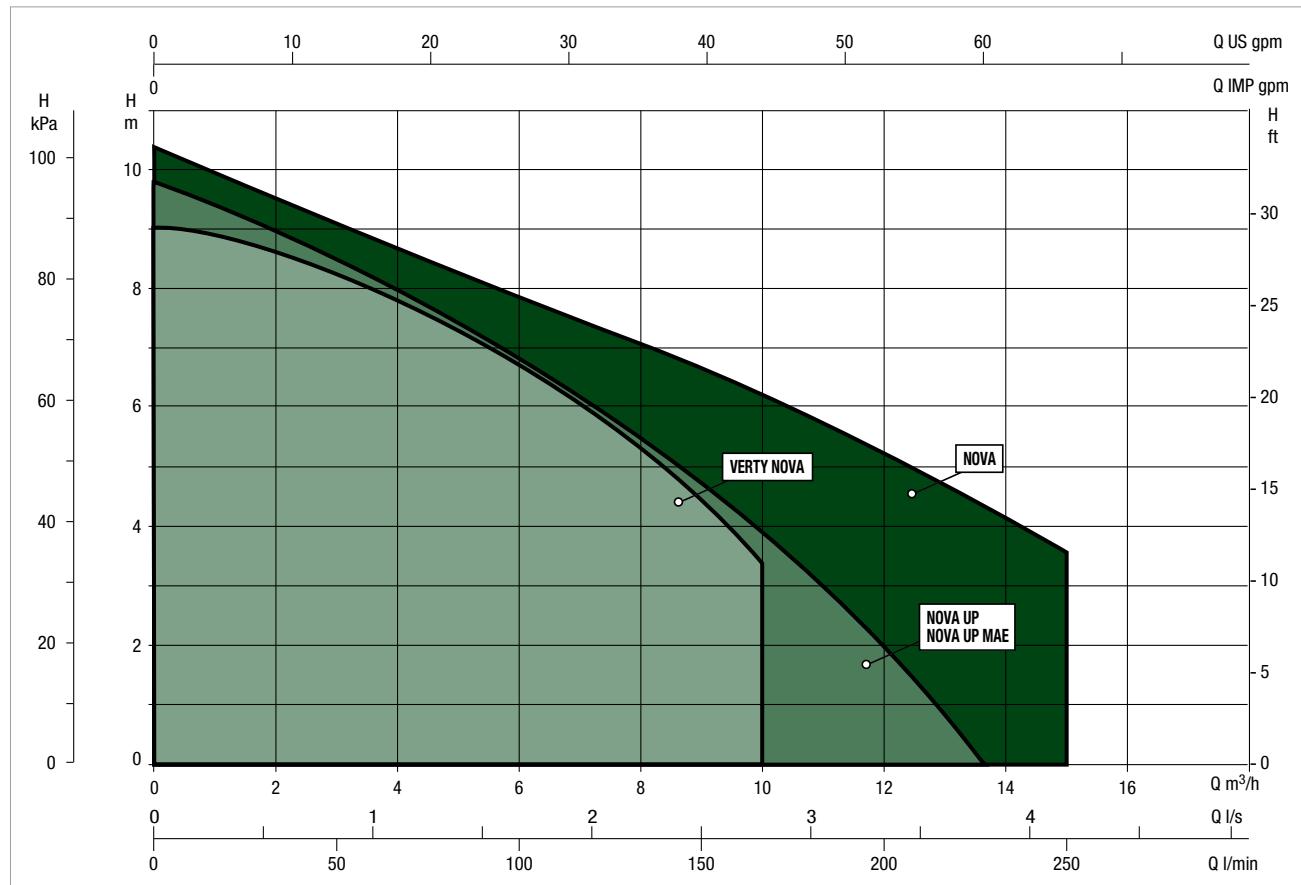
\* In contact with the liquid



### PERFORMANCE RANGE

The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equal to 1000 kg/m<sup>3</sup>. Curve tolerance according to ISO 9906.

### GRAPHIC SELECTION TABLE

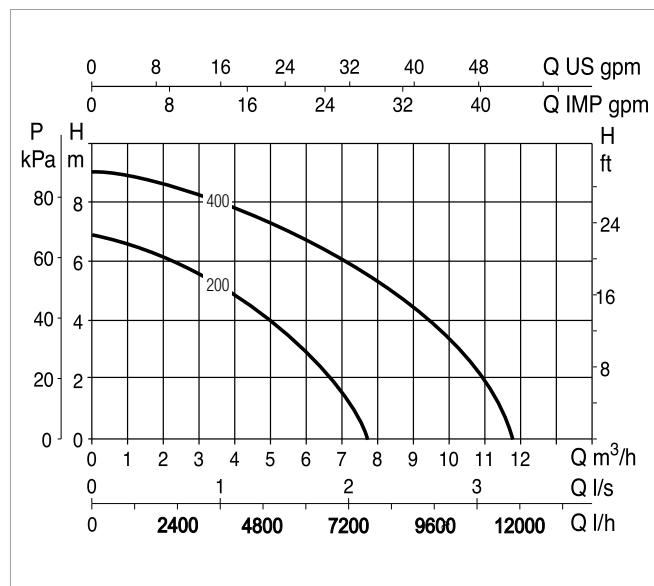
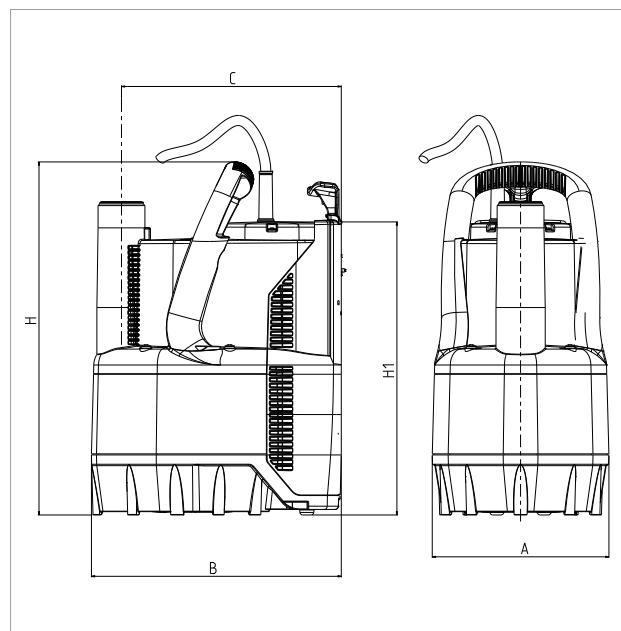


### SELECTION TABLE - VERTY NOVA

MODEL	Q= m <sup>3</sup> /h	0	1	2	3	4.5	5	6	7	7.5	9	10	12	13.5	15
	Q=l/min	0	16.6	33.3	50	75	83.3	100	116.6	125	150	166.6	200	225	250
VERTY NOVA 200 M	H (m)	6.9	6.5	6	5.8	4.5	4	3	1.8						
VERTY NOVA 400 M		9	8.8	8.5	8.1	7.8	7	6.7	6	5.7	4.2	3.5			

**VERTY NOVA - CLEAN WATER DRAINING SUBMERSIBLE PUMPS FOR DOMESTIC USE WITH BUILT-IN FLOAT**

Liquid temperature range: from 0°C to +35°C for domestic use



The performance curves are based on kinematic viscosity values = 1 mm²/s and density equal to 1000 kg/m³. Curve tolerance according to ISO 9906.

MODEL	ELECTRICAL DATA						
	POWER INPUT 50 Hz	P1 MAX kW	P2 NOMINAL			In A	
			kW	HP			
VERTY NOVA 200 M	1 x 230 V ~	0.3	0.2	0.28		1.3	
VERTY NOVA 400 M	1 x 230 V ~	0.6	0.4	0.55		2.6	

MODEL	A	B	C	ØD	H	H1	DNM GAS	PACKING DIMENSIONS			CABLE	VOLUME (m³)	WEIGHT kg
								L/A	L/B	H			
VERTY NOVA 200 M	158	225	200	33	318	265	1" ½	222	193	340	10 mt.	0.014	4.2
VERTY NOVA 400 M	158	225	200	33	354	301	1" ½	222	193	340	10 mt.	0.014	5.1



FEKA 600 M



FEKA 300 A

## TECHNICAL DATA

**Flow rate minimum and maximum:** from 1 m<sup>3</sup>/h to 16 m<sup>3</sup>/h

**Head up to:** 7,5 m

**Maximum immersion depth:** 7 m

**Type of pumped liquid:** wastewater and rainwater

**Free passage:** 25 mm

**Minimum intake level:** 38 mm

**Supported liquid temperature min. and max.:**

from +0°C to +35°C for domestic use

from +0°C to +50°C for other uses

**Class of protection:** IP 68

**Motor insulation class:** F

**Impeller construction material(s):** technopolymer

**Single phase power input:** 230 V 50 Hz

**Three phase power input:** 3x230 V 50 Hz / 3x400 V 50 Hz

**Possible type of installation:** fixed or portable in a vertical position

Feka 300 and Feka 600 are submersible pumps suitable for draining and lifting light or gray wastewater and rainwater in domestic and residential environments, suitable for fixed or mobile installations. The pumps have been redesigned on the occasion of the forty years of production, making them even more reliable, resistant and ergonomic to use. Available in the automatic versions with integrated float switch or in the manual versions without float switch. Possibility of dry running up to 1 minute.

## CONSTRUCTION FEATURES OF THE PUMP

Technopolymer pump body and suction grille. Triple ring seal in oil bath.

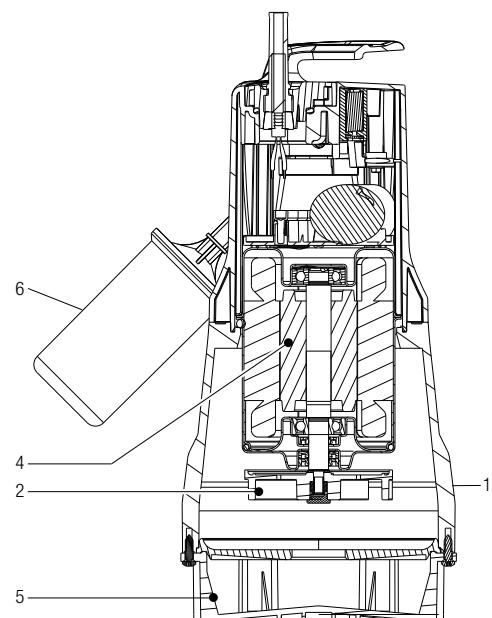
## CONSTRUCTION FEATURES OF THE MOTOR

Continuous duty asynchronous submersible motor. Stator inserted in a hermetic stainless steel casing and rotor mounted on oversized ball bearings. Thermal protection incorporated in all single-phase versions. Motor in AISI 304 stainless steel and shaft in AISI 431 steel for greater resistance to corrosive attacks.

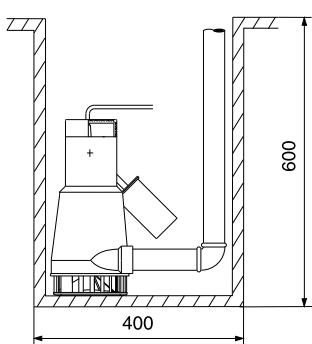
## MATERIALS

No.	PARTS *		MATERIALS
1	PUMP BODY		TECHNOPOLIMER
2	IMPELLER		TECHNOPOLIMER
3	OR RING		NBR
4	MOTOR	CASE	AISI 304 STAINLESS STEEL X5 CrNi1810 - UNI 6900/71
		ROTOR SHAFT	AISI 431 STAINLESS STEEL
5	SUCTION GRID		TECHNOPOLIMER
6	FLOAT		TECHNOPOLIMER

\* In contact with the liquid



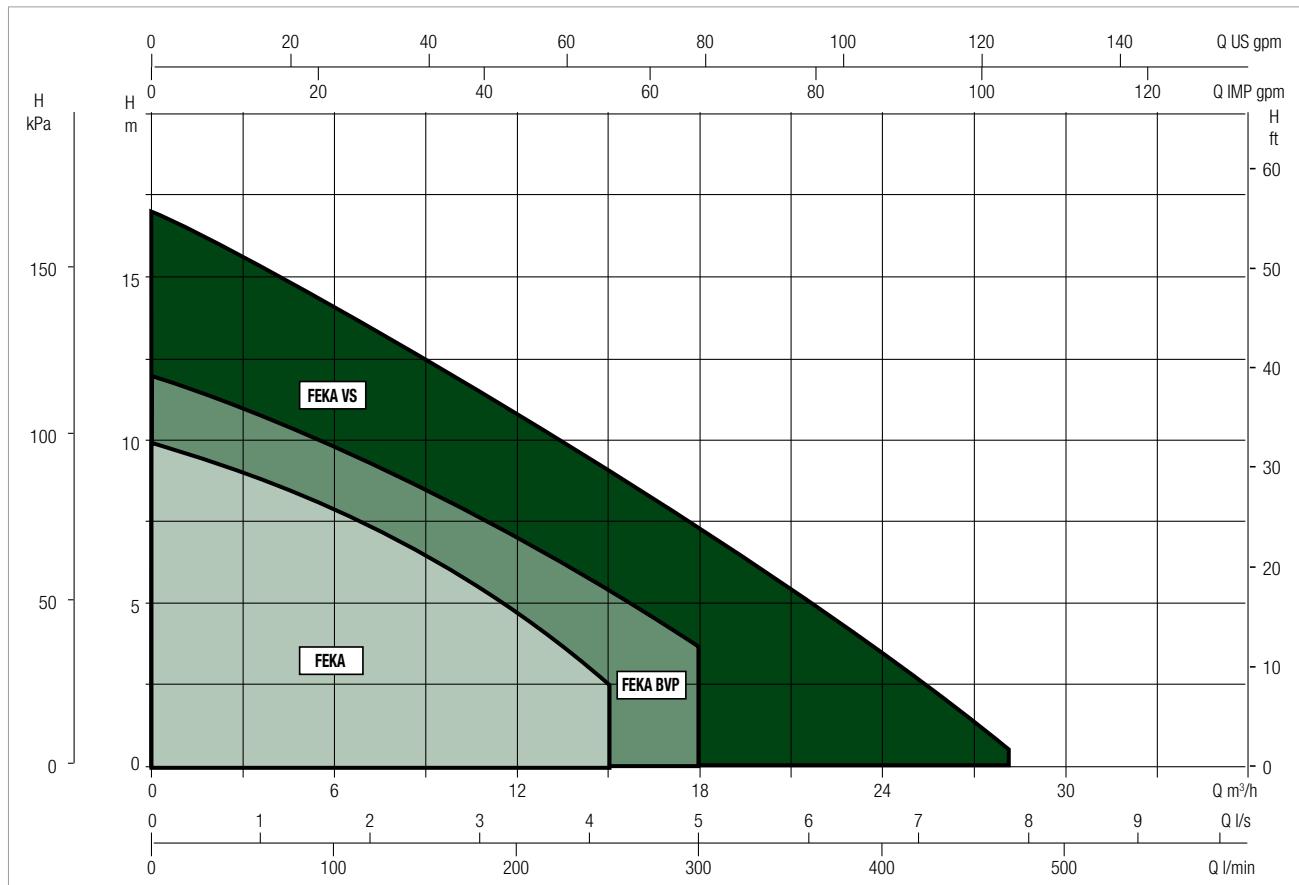
## MINIMUM WELL SIZE FOR AUTOMATIC OPERATION FIXED INSTALLATION:



### PERFORMANCE RANGE

The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equal to 1000 kg/m<sup>3</sup>. Curve tolerance according to ISO 9906.

### GRAPHIC SELECTION TABLE

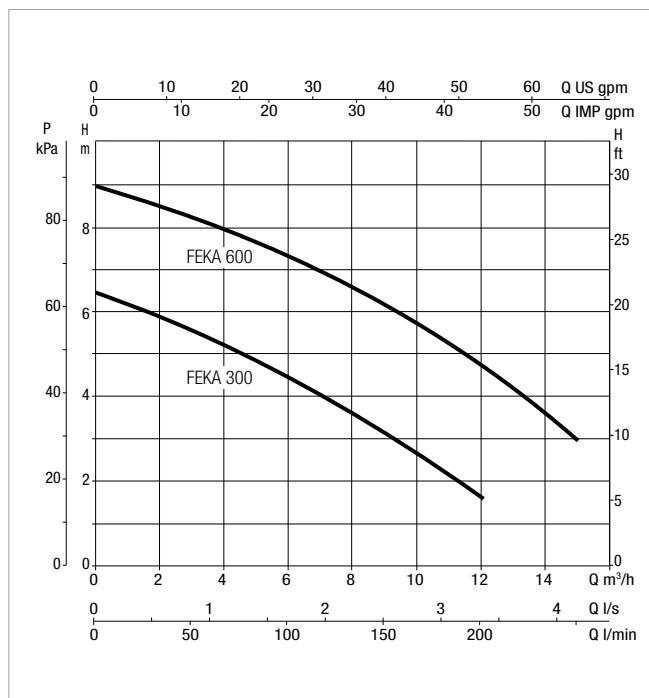
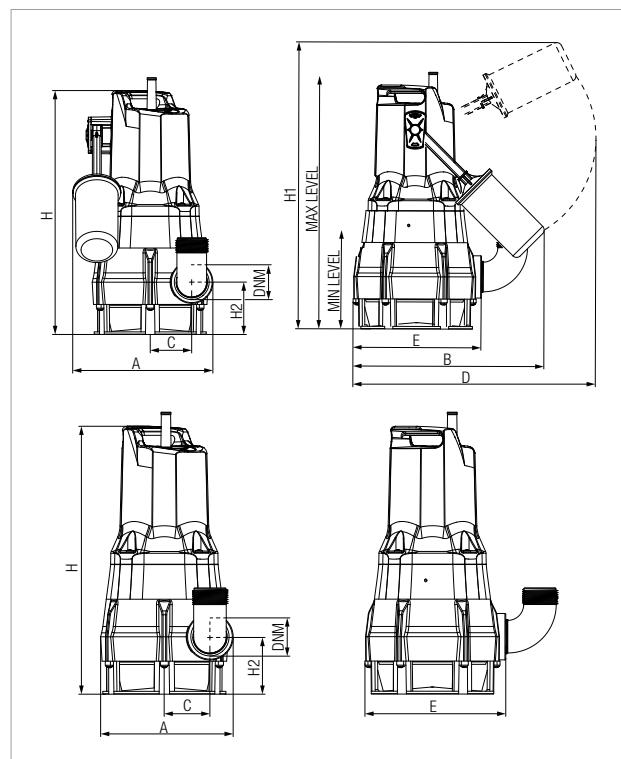


### SELECTION TABLE - FEKA 600

MODEL	Q=m <sup>3</sup> /h	0	3	6	9	12	15	18	24	30	36
	Q=l/min	0	50	100	150	200	250	300	400	500	600
<b>FEKA 600 M-T</b>	H (m)	7,45	6,45	5,7	4,95	4,1	2,8				

**FEKA 300-600 - SUBMERSIBLE PUMPS**

Liquid temperature range: from 0°C to +35°C for domestic use



The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equal to 1000 kg/m<sup>3</sup>. Curve tolerance according to ISO 9906.

MODEL	Q= m <sup>3</sup> /h	0	3	6	9	12	15
	Q=l/min	0	50	100	150	200	250
FEKA 300 MA - MNA	H (m)	6,4	5,5	4,4	3,1	1,6	
FEKA 600 MA-MNA-TNA	H (m)	8,9	8,2	7,2	6,1	4,7	2,9

MODEL	ELECTRICAL DATA						
	POWER INPUT 50 Hz	P1 MAX kW	P2 NOMINAL		In A	CAPACITOR	
			kW	HP		μF	Vc
FEKA 300 MA - MNA	1X230V~	0,35	0,22	0,30	1,9	8	450
FEKA 600 MA-MNA	1X230V~	0,68	0,5	0,7	3,1	10	450
FEKA 600 TNA	3X400V~	0,68	0,5	0,7	1,8	-	-

A: Automatic with float - NA: Non-automatic, without float

MODEL	A	B	C	D	E	H	H1	H2	LEV. MIN.	LEV. MAX.	DNM GAS	PACKING DIMENSIONS			CABLE*	VOLUME (mc)	WEIGHT kg
												L/A	L/B	H			
FEKA 300 MA	189	255	56	296	174	329	355	71	95	305	1" 1/4	287	202	431	5m H05 10m H05	0,025	4,6
FEKA 300 MNA	163	-	56	-	174	329	-	71	-	-	1" 1/4	287	202	431	10m H05	0,025	4,6
FEKA 600 MA	189	255	56	296	174	349	443	71	190	390	1" 1/4	287	202	431	5m H05 10m H05	0,025	7
FEKA 600 MNA	163	-	56	-	174	349	-	71	-	-	1" 1/4	287	202	431	10m H05	0,025	7
FEKA 600 TNA	163	-	56	-	174	349	-	71	-	-	1" 1/4	287	202	431	10m H07	0,025	7

As per European standard EN 60335-2-41, for outdoor use power cable must be 10m long.



## TECHNICAL DATA

### Operating range:

from 1 to 18 m<sup>3</sup>/h with head up to 12 metres.

### Liquid temperature range:

from 0°C to +35°C.

### Pumped liquid:

dirty water with maximum solid particle size 38 mm.

**Max. immersion depth:** 7 metres.

**Maximum dry run time:** 1 minute

**Protection class:** IP 68.

**Insulation class:** F.

## APPLICATIONS

Powerful submersible pumps for draining and emptying applications. Suitable for pumping dirty water with solid particle size up to 38 mm. Automatic version with float switch for automatic pump start and stop also available

## CONSTRUCTION FEATURES OF THE PUMP

Hydro resistant technopolymer pump body, wear-free impellers, cover, and suction grid.

Corrosion and oxidation resistant materials.

## CONSTRUCTION FEATURES OF THE MOTOR

Submersible type continuous duty asynchronous motor.

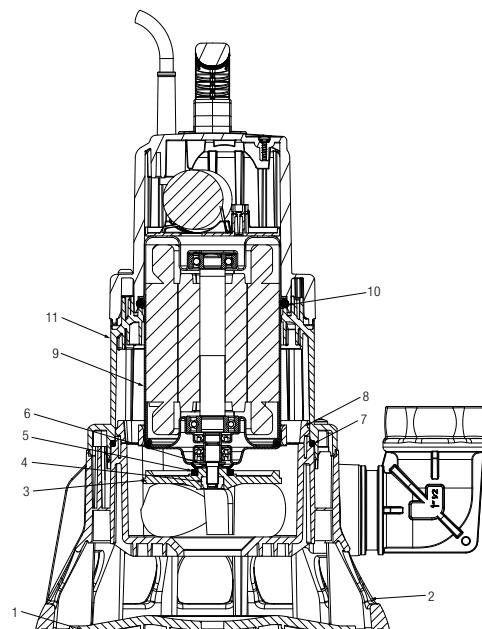
Thermal overheating protection.

Wear-resistant motor shaft.

## MATERIALS

No.	PARTS*	MATERIALS
1	CAP	TECHNOPOLYMER
2	FLOAT	TECHNOPOLYMER
3	IMPELLER	TECHNOPOLYMER
4	NUT	A2 DIN982-UNI7473 STAINLESS STEEL
5	V. RING	NBR
6	WASHER	A2 STAINLESS STEEL
7	OR RING	NBR
8	MOTOR RING	TECHNOPOLYMER
9	MOTOR	CASE
		AISI 416 STAINLESS STEEL UNI EN 10088-1 X12CRS13
10	OR RING	NBR
11	BODY	TECHNOPOLYMER

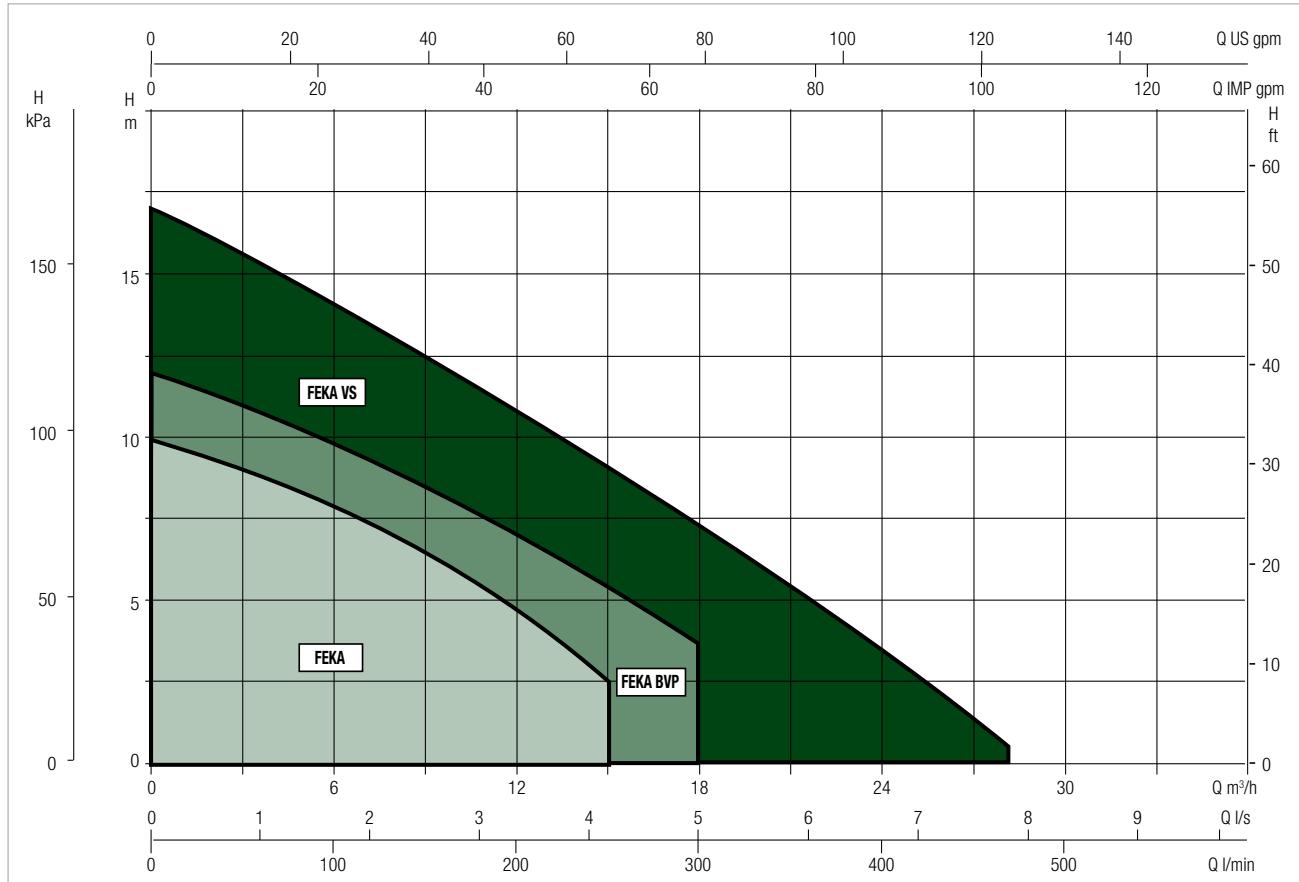
\* In contact with the liquid



### PERFORMANCE RANGE

The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equal to 1000 kg/m<sup>3</sup>. Curve tolerance according to ISO 9906.

### GRAPHIC SELECTION TABLE

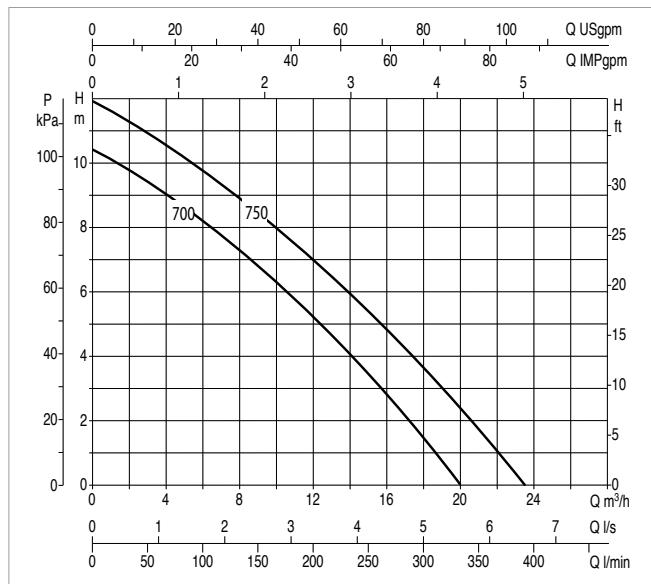
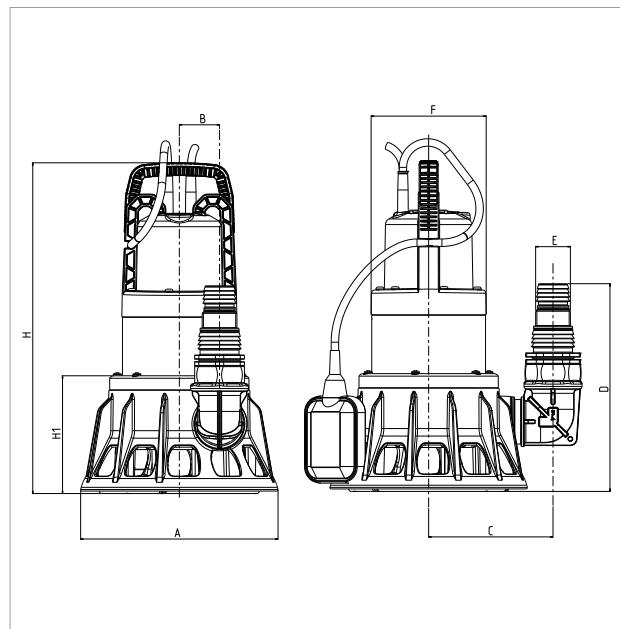


### SELECTION TABLE - FEKA BVP

MODEL	Q= m <sup>3</sup> /h	0	3	6	9	12	15	18	24	30	36
	Q=l/min	0	50	100	150	200	250	300	400	500	600
FEKA BVP 700 M	H (M)	10.5	9.5	8.1	7	5.1	4	1.5			
FEKA BVP 750 M	(M)	12	11	9.8	8.8	7	6	3.6			

## FEKA BVP - SEWAGE WATER DRAINING SUBMERSIBLE PUMPS FOR DOMESTIC USE

Liquid temperature range: from 0°C to +35°C



The performance curves are based on kinematic viscosity values = 1 mm²/s and density equal to 1000 kg/m³. Curve tolerance according to ISO 9906.

MODEL	ELECTRICAL DATA						
	POWER INPUT 50 Hz		P1 MAX kW	P2 NOMINAL		In A	
	KW	HP		KW	HP		
FEKA BVP 700 M-A	1 x 230 V ~		1.0	0.70	0.95	4.6	
FEKA BVP 750 M-A	1 x 230 V ~		1.1	0.75	1	5.6	

MODEL	A	B	C	D	E	F	H	H1	DNM GAS	PACKING DIMENSIONS			CABLE	VOLUME (m³)	WEIGHT kg
										L/A	L/B	H			
FEKA BVP 700 M-A	240	49	150	250	M40	140	400	142	1" ½	244	244	442	10 mt.	0.026	8
FEKA BVP 750 M-A	240	49	150	250	M40	140	400	142	1" ½	244	244	442	10 mt.	0.026	8

# DRENAG 1000-1200

SUBMERSIBLE PUMPS



## TECHNICAL DATA

**Operating range:** from 3 to 28 m<sup>3</sup>/h with head up to 17 metres.

**Pumped liquid:** rain water, ground water, sandy water from construction sites and clean, non aggressive, waste water.

**Free passage of solids:** 10 mm.

**Liquid temperature range:**

- from 0°C to +35°C for domestic use (EN 60335-2-41).

- from 0°C to +50°C for other uses.

**Maximum ambient temperature for operation with motor above water:** +40°C

**Maximum immersion depth:** 7 metres.

**Motor protection class:** IP 68

**Insulation class:** F

**Standard voltage:** 220-240 V - 50Hz single-phase.

380-415 V - 50Hz three-phase.

**Installation:** fixed or portable, vertical or horizontal.

## APPLICATIONS

Stainless steel centrifugal submersible pump with microcast ring impeller, suitable for draining clean waste water, sandy water, muddy water with solid particles of sizes up to 10 mm without fibres. Suitable for residential applications and for construction sites, also in case of unexpected flooding.

## CONSTRUCTION FEATURES OF THE PUMP

Pump body, microcast ring impeller, motor flange, filter and disc, motor casing, cable compartment casing with handle and cover in AISI 304 stainless steel. Insulating rubber covered handle. AISI 316 stainless steel motor shaft. Double mechanical seal with interposed oil chamber (non-toxic oil) in carbon-alumina on the motor side, and silicon carbide-silicon carbide on the pump side.

## CONSTRUCTION FEATURES OF THE MOTOR

Dry, asynchronous and waterproof motor, cooled by the pumped liquid. Rotor running on permanently lubricated sealed ball bearings, selected to ensure low noise and durability. Thermo-amperometric protection provided as standard. Permanently connected capacitor in the single-phase version.

The single-phase version can be supplied with float for automatic operation. Power cable: 10 metre H07RN-F, with UNEL 47166-68 plug for the single-phase version.

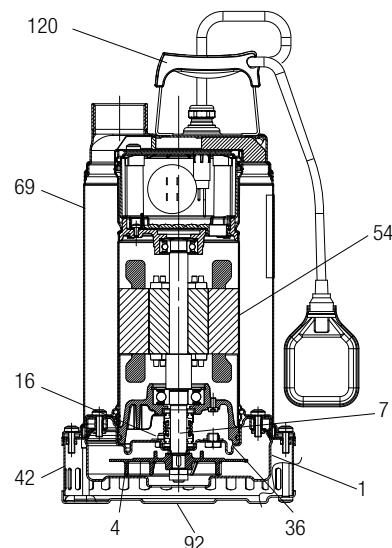
Number of poles: 2

Max starts/hour: 20

## MATERIALS

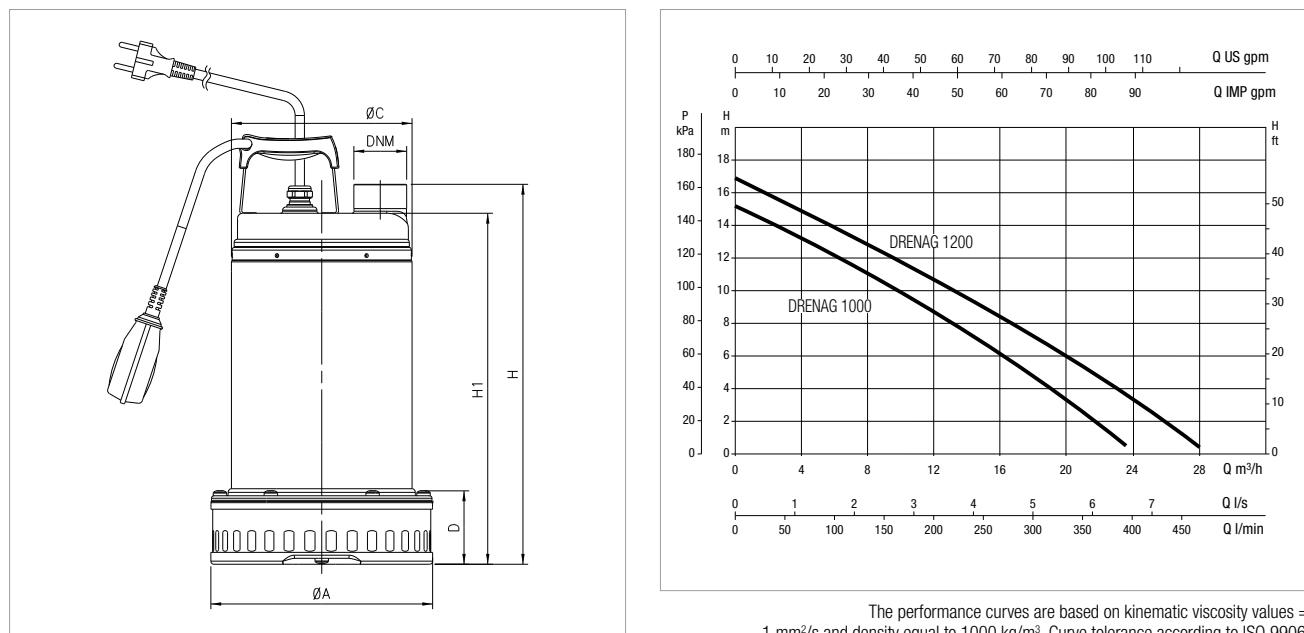
No.	PARTS*		MATERIALS
1	PUMP BODY		AISI 304 STAINLESS STEEL X5CrNi 1810 - UNI 6900/71
4	IMPELLER		MICROCAST STAINLESS STEEL AISI 316 X5CrNiMo 1712 - UNI 6900/71
7	MOTOR SHAFT		SILICON CARBIDE/SILICON CARBIDE
16	MECHANICAL SEAL	PUMP SIDE	CARBON/ALUMINA
36	SEAL COVER		
42	STRAINER		
54	MOTOR CASING		AISI 304 STAINLESS STEEL X5CrNi 1810 - UNI 6900/71
69	PUMP LINER		
92	STRAINER COVER		
120	HANDLE		AISI 304 STAINLESS STEEL X5CrNi 1810 - UNI 6900/7 INSULATING RUBBER COATED

\* In contact with the liquid



**DRENAG 1000 - 1200 - SUBMERSIBLE PUMPS FOR DRAINING CONSTRUCTION SITE CLEAN AND SANDY WATER**

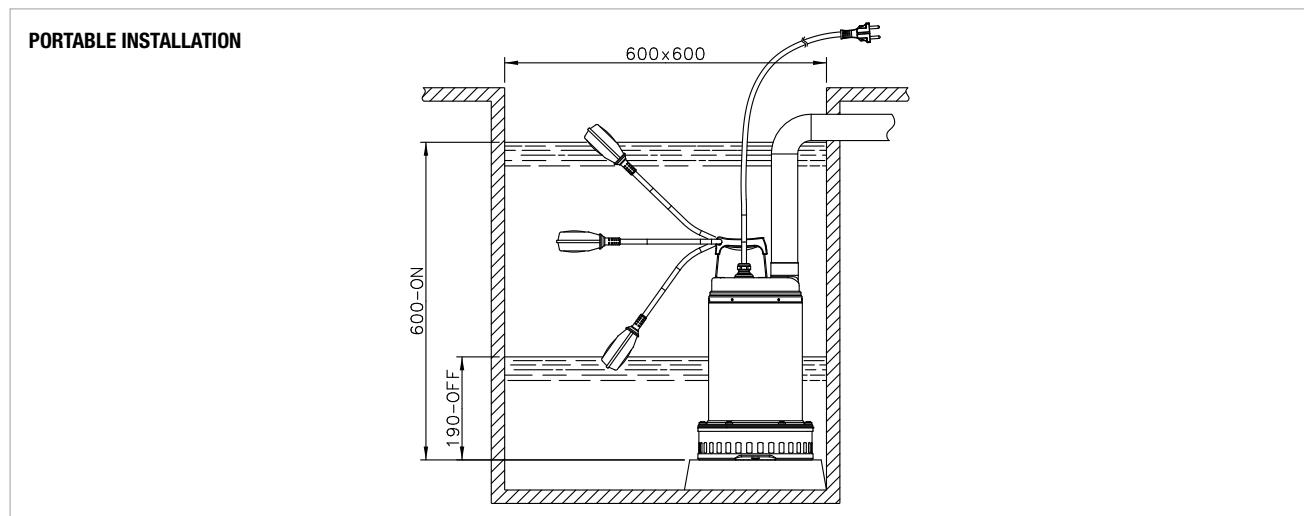
Liquid temperature range: from 0°C to +35°C for domestic use - from 0°C to +50°C for the other uses.



MODEL	Q= m³/h	0	3	6	9	12	15	18	24	30	36	42	48	54	60	66
	Q=l/min	0	50	100	150	200	250	300	400	500	600	700	800	900	1000	1100
<b>DRENAG 1000 M-T</b>	H (m)	15.3	13.7	12.1	10.5	8.7	6.8	4.7								
<b>DRENAG 1200 M-T</b>		17	15.4	13.8	12.4	10.7	9	7.3	3.3							

MODEL	ELECTRICAL DATA						
	POWER INPUT 50 Hz	P1 MAX W	P2 NOMINAL		In A	CAPACITOR	
			kW	HP		µF	Vc
<b>DRENAG 1000 M</b>	1x220V-240V~	1.29	1	1.36	6	25	450
<b>DRENAG 1000 T</b>	3x400V~	1.18	1	1.36	2.43	-	-
<b>DRENAG 1200 M</b>	1x220V-240V~	1.85	1.2	1.6	7.5	30	450
<b>DRENAG 1200 T</b>	3x400V~	1.65	1.2	1.6	3.24	-	-

MODEL	Ø A	Ø C	D	H	H1	Ø DNM	PACKING DIMENSIONS			VOLUME (m³)	WEIGHT kg
							L/A	L/B	H		
<b>DRENAG 1000</b>	215	175	71	413	385	1 ½" F	240	600	250	0.034	17
<b>DRENAG 1200</b>	215	175	71	413	385	1 ½" F	240	600	250	0.034	18.5





### TECHNICAL DATA

#### Operating range:

from 0 to 32 m<sup>3</sup>/h with head up to 14 metres.

**Pumped liquid:** sewage water and used water in general, non aggressive.

**Free passage:** 50 mm.

**Liquid temperature range:**

- from 0°C to +35°C for domestic use (EN 60335-2-41).

- from 0°C to +50°C for other uses.

**Maximum ambient temperature for operation with motor above water:** +40°C

**Maximum immersion depth:** 7 metres.

**Motor protection class:** IP 68

**Insulation class:** F

**Standard voltage:** 220-240 V - 50Hz single-phase.

380-415 V - 50Hz three-phase.

**Power cable:**

10 metre H07RN-F, with plug for the single-phase version.

**Installation:** fixed or portable, vertical position.

### APPLICATIONS

Stainless steel submersible centrifugal pump with microcast steel liquid vortex impeller, suitable for lifting sewage and drain water in general containing solid matter with size up to 50 mm.

### CONSTRUCTION FEATURES OF THE PUMP

AISI 304 stainless steel pump body, seal cover, motor cover, and cap with handle. Microcast steel impeller. Insulating rubber covered handle. AISI 316 stainless steel motor shaft. Double mechanical seal with interposed oil chamber (non-toxic oil) in carbon-alumina on the motor side, and silicon carbide/silicon carbide on the pump side.

### CONSTRUCTION FEATURES OF THE MOTOR

Dry, asynchronous and waterproof motor, cooled by the pumped liquid. Rotor running on permanently lubricated ball bearings, selected to ensure low noise and durability. Overcurrent protection as standard for the single-phase version, optional for the three-phase version. Permanently connected capacitor in the single-phase version. Continuous duty with liquid temperature 35°C and completely submerged pump. The single-phase version can be supplied with float for automatic operation. Power cable: 10 metre H07RN-F, with plug for the single-phase version.

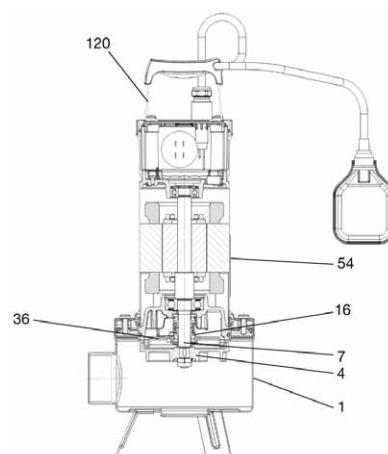
Number of poles: 2

Max starts/hour: 20

### MATERIALS

No.	PARTS*	MATERIALS
1	PUMP BODY	AISI 304 STAINLESS STEEL
4	IMPELLER FEKA VS	AISI 304 MICROCAST STEEL
7	MOTOR SHAFT	AISI 316 STAINLESS STEEL
16	MECHANICAL SEAL	SILICON CARBIDE/SILICON CARBIDE
	PUMP SIDE	CARBON/ALUMINA
36	SEAL COVER	AISI 304 STAINLESS STEEL
54	MOTOR CASING	AISI 304 STAINLESS STEEL
120	HANDLE	AISI 304 STAINLESS STEEL INSULATING RUBBER COATED

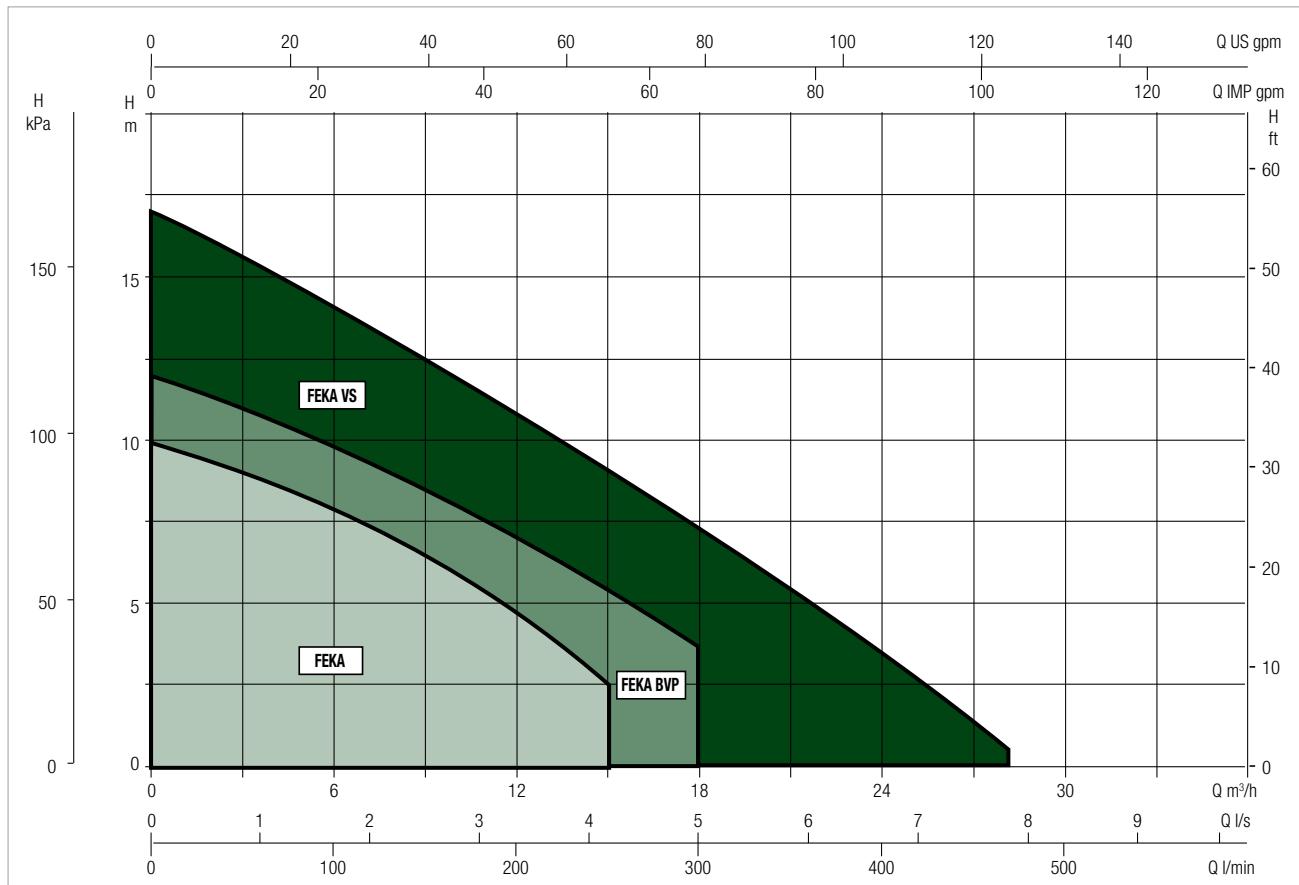
\* In contact with the liquid



### PERFORMANCE RANGE

The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equal to 1000 kg/m<sup>3</sup>. Curve tolerance according to ISO 9906.

### GRAPHIC SELECTION TABLE

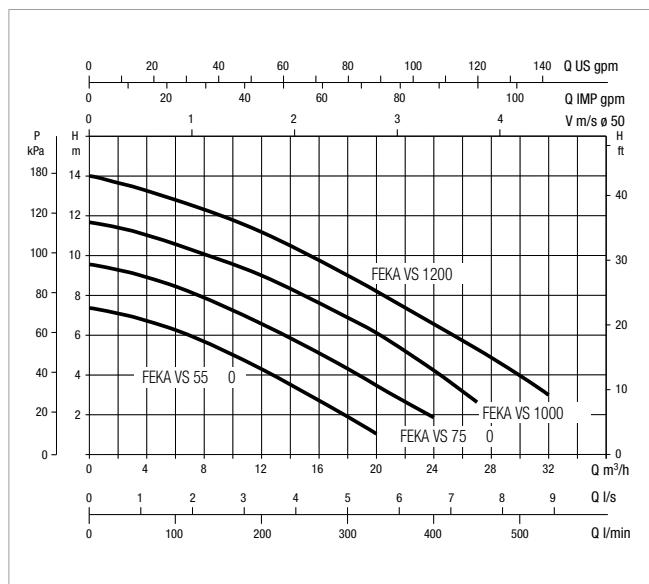
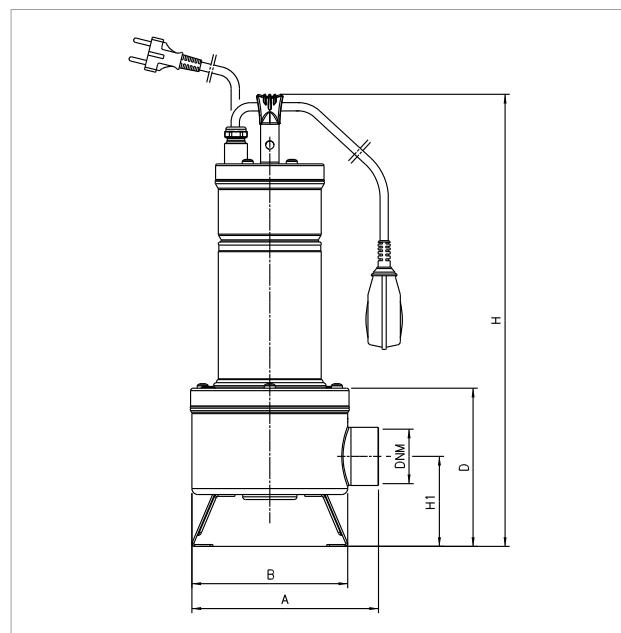


### SELECTION TABLE - FEKA VS

MODEL	Q=m <sup>3</sup> /h	0	3	6	9	12	15	18	24	30	36
	Q=l/min	0	50	100	150	200	250	300	400	500	600
FEKA VS 550 M-T	H (m)	7,4	6,9	6,2	5,6	4,1	3,2	1,8			
FEKA VS 750 M-T		9,6	9,2	8,5	7,6	6,7	5,6	4,3	1,9		
FEKA VS 1000 M-T		11,8	11,3	10,5	9,8	9	8	6,8	4,1		
FEKA VS 1200 M-T		14	13,4	12,8	12	11,2	10,1	9	6,7	4	

## FEKA VS - SUBMERSIBLE PUMPS FOR LIFTING WASTE WATER

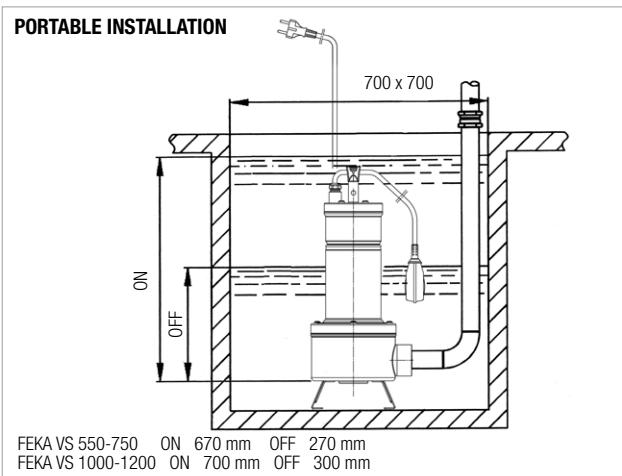
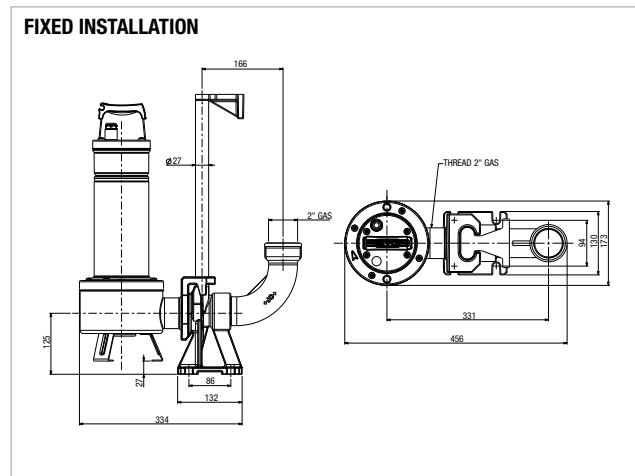
Liquid temperature range: from 0°C to +35°C for domestic use (EN 60335-2-41) - from 0°C to +50°C for the other uses.



The performance curves are based on kinematic viscosity values = 1 mm²/s and density equal to 1000 kg/m³. Curve tolerance according to ISO 9906.

MODEL	ELECTRICAL DATA							
	POWER INPUT 50 Hz	P1 MAX W	P2 NOMINAL		In A	I st. A	CAPACITOR	
			KW	HP			µF	Vc
FEKA VS 550 M-NA	1x 220V-240V ~	0,92	0,55	0,75	4,2	20	20	450
FEKA VS 550 M-A	1x 220V-240V ~	0,92	0,55	0,75	4,2	20	20	450
FEKA VS 550 T-NA	3x 400V ~	0,90	0,55	0,75	1,64	11	-	-
FEKA VS 750 M-NA	1x 220V-240V ~	1,11	0,75	1	5,13	20	20	450
FEKA VS 750 M-A	1x 220V-240V ~	1,11	0,75	1	5,13	20	20	450
FEKA VS 750 T-NA	3x 400V ~	1,02	0,75	1	1,94	11	-	-
FEKA VS 1000 M-NA	1x 220V-240V ~	1,46	1	1,36	6,63	31	25	450
FEKA VS 1000 M-A	1x 220V-240V ~	1,46	1	1,36	6,63	31	25	450
FEKA VS 1000 T-NA	3x 400V ~	1,37	1	1,36	2,51	16	-	-
FEKA VS 1200 M-NA	1x 220V-240V ~	1,93	1,2	1,6	8,63	38	30	450
FEKA VS 1200 M-A	1x 220V-240V ~	1,93	1,2	1,6	8,63	38	30	450
FEKA VS 1200 T-NA	3x 400V ~	1,86	1,2	1,6	3,44	22	-	-

MODEL	A	B	D	H	H1	$\emptyset$ DNM	PACKING DIMENSIONS			VOLUME (m³)	WEIGHT kg
							L/A	L/B	H		
FEKA VS 550	203	170	172	492	98	2" F	240	600	240	0,034	13,7
FEKA VS 750	203	170	172	492	98	2" F	240	600	240	0,034	13,8
FEKA VS 1000	203	170	172	492	98	2" F	240	600	240	0,034	15,5
FEKA VS 1200	203	170	172	492	98	2" F	240	600	240	0,034	17,1



# FEKA VS GRINDER

SUBMERSIBLE PUMP



FEKA VS GRINDER MA

FEKA VS GRINDER M-NA

## TECHNICAL DATA

**Flow rate:** from 0 m<sup>3</sup>/h to 14,4 m<sup>3</sup>/h

**Head:** 25 m

**Pumped liquid:** sewage water, gray water

**Free passage:** n/a

**Liquid temperature:** from 0°C to +40°C for domestic use

**Outlet:** 1" 1/2 GAS - DN 32 and DN 40

**Outlet direction:** horizontal and vertical with curve kit accessory

**Impeller:** vortex in cast iron, there is a shredder

**Motor protection degree:** IP 68

**Thermal classification of the motor insulation:** F

**Power cable type:** H07RN8-F

**Possible type of installation:** fixed or mobile in vertical position

**Maximum immersion depth:** 7 meters

Submersible pump for draining wastewater in commercial building service. The pump is certified to the European Union standard EN 12050-1 which applies to lifting systems for waste water containing fecal material in buildings and construction sites. Thanks to the shredder, the pump is suitable for systems with small diameter pipes or those requiring high pressures. Pump suitable for fixed installations with coupling device or mobile installation if placed directly on the bottom of the tank. Construction according to CEI 2-3 CEI 61-69 (EN 60335-2-41) standards. Single-phase versions is available in automatic version with integrated float switch or in the manual version without float switch.

## CONSTRUCTION FEATURES OF THE PUMP

The motor shaft is in AISI 316 stainless steel. Double mechanical seal with interposed oil chamber (non-toxic oil) in carbon/alumina on the motor side and silicon carbide/silicon carbide on the pump side. Seal holder cover, motor case, cap and handle are made in stainless steel. The pump body and the base are in cast iron. The shredding system is in AISI 630 stainless steel. The handle is covered in insulating rubber.

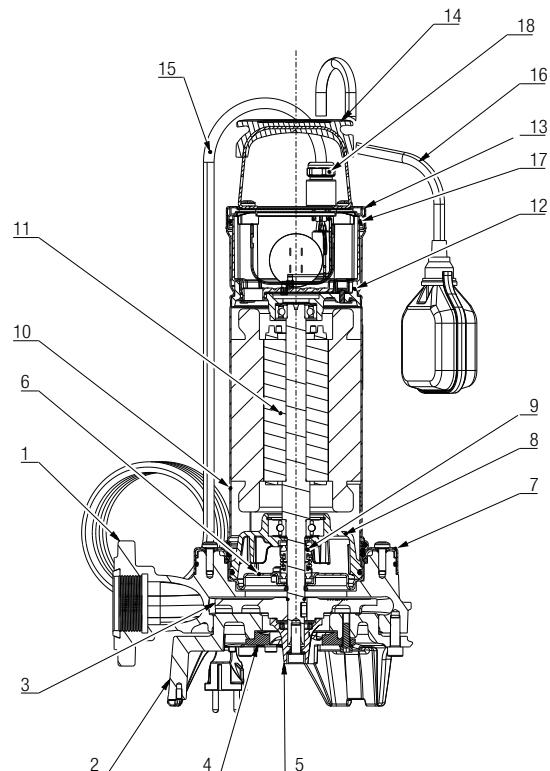
## CONSTRUCTION FEATURES OF THE MOTOR

The motor is asynchronous, it is watertight, cooled by the pumped liquid. The rotor is mounted on greased-for-life ball bearings, oversized and selected to ensure low noise and durability. Standard thermo-amperometric protection for the single-phase version with capacitor inserted as standard, the three-phase version has a thermal protection which can be connected to a control panel.

## MATERIALS

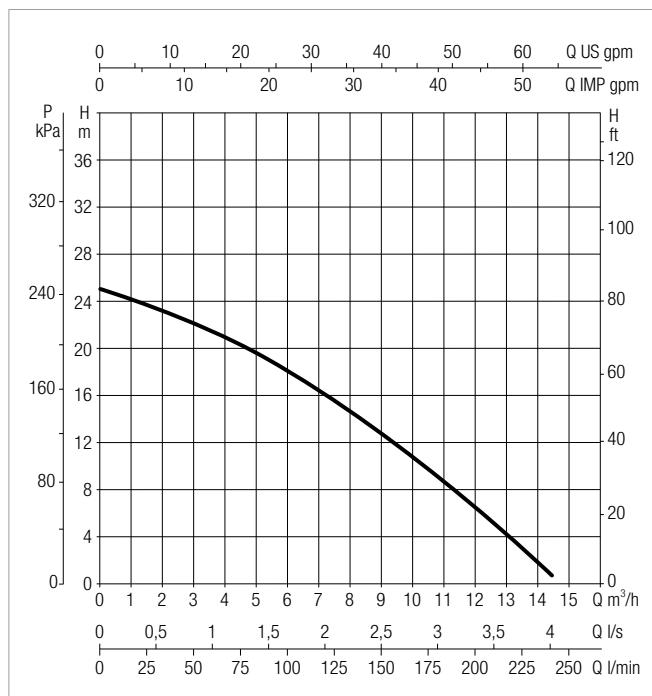
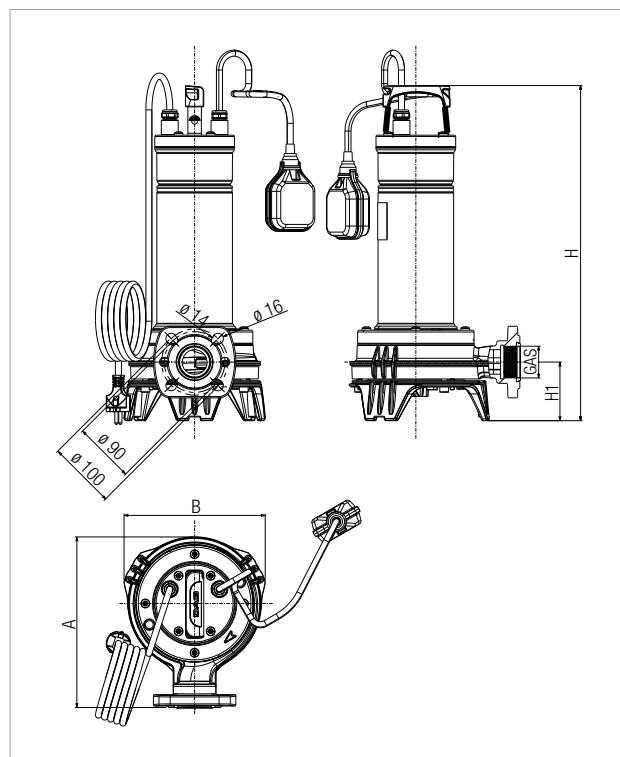
No.	PARTS*		MATERIALS
1	PUMP HOUSING		CAST IRON
2	PUMP BASE		CAST IRON
3	IMPELLER		CAST IRON
4	CUTTER BASE		STAINLESS STEEL
5	CUTTER		STAINLESS STEEL
6	SHAFT SEAL DISC		STAINLESS STEEL
7	MOTOR CONNECTION FLANGE		STAINLESS STEEL
8	LOWER BEARING SUPPORT		ALUMINIUM
9	DOUBLE MECHANICAL SEAL	PUMP SIDE	SIC/SIC
		MOTOR SIDE	CARBON / ALUMINA
10	MOTOR CASE		STAINLESS STEEL
11	MOTOR SHAFT		STAINLESS STEEL
12	UPPER BEARING SUPPORT		ALUMINIUM
13	COVER CONNECTION		STAINLESS STEEL
14	HANDLE		STAINLESS STEEL AND INSULATING RUBBER
15	SUPPLY CABLE		H07RN8-F
16	FLOAT SWITCH CABE		H07RN-F
17	O-RINGS		NBR
18	CABLE GLAND		NICHEL-PLATED BRASS

\* In contact with the liquid



## FEKA VS GRINDER - SUBMERSIBLE PUMPS WITH SHREDDER FOR SEWAGE

Liquid temperature range: from 0°C to +40°C for domestic use.



The performance curves are based on kinematic viscosity values = 1 mm²/s and density equal to 1000 kg/m³. Curve tolerance according to ISO 9906.

## PERFORMANCE AT 50 Hz

MODEL	HYDRAULIC DATA										
	Q=m³/h	0	2	4	6	8	9	10	11	14	
	Q=l/min	0	34	66	100	135	150	168	180	240	
FEKA VS GRINDER 1000 MA	H (mt)	25	23	21	18	14,5	12,8	10,5	9	6,5	0,67
FEKA VS GRINDER 1000 M-NA		25	23	21	18	14,5	12,8	10,5	9	6,5	0,67
FEKA VS GRINDER 1000 TNA		25	23	21	18	14,5	12,8	10,5	9	6,5	0,67

## ELECTRICAL DATA

MODEL	ELECTRICAL DATA							
	POWER INPUT 50 Hz	P1 MAX W	P2 NOMINAL		In A	Ist A	CAPACITOR	
			kW	HP			μF	Vc
FEKA VS GRINDER 1000 MA	220 x 240V	1,3	1	1,3	6,4A	29,9	35	450
FEKA VS GRINDER 1000 M-NA	220 x 240V	1,3	1	1,3	6,2A	29,9	35	450
FEKA VS GRINDER 1000 TNA	380 x 415V	1,3	1	1,3	3A	19,8	-	-

## DIMENSIONAL DATA

MODEL	A	B	H	H1	GAS	DN1	HOLES	PACKING DIMENSIONS			VOLUME (mc)	WEIGHT Kg
								L/A	L/B	H		
FEKA VS GRINDER 1000	253	209	496	87	Rp 1 1/2	DN32 PN10 / 6 DN40 PN6	4 2	290	230	560	0,037	23



### TECHNICAL DATA

- Flow rate minimum and maximum:** 62,8 m<sup>3</sup>/h  
**Head up to:** 19,6 m  
**Immersion depth (maximum):** 20 m  
**Type of pumped liquid:** waters with filamentary bodies, paper or textile material in the presence of domestic or civil waste  
**Supported liquid temperature (maximum and minimum):** +50°C (+60°C for a short period of time)  
**Flanged and threaded:** from 2", DN50, DN65  
**Impeller type:** Vortex  
**Start time (maximum) per hour:** 20/h  
**Class of protection:** IP 68  
**Motor insulation class:** F  
**Single phase power input:** 1x 220-240V 50Hz  
**Three phase power input:** 3x 400V 50Hz / 3x 230V 50Hz only on request  
**Maximum dry run time:** 10 min  
**Power cable (m) and plug:** 10 m  
H07RN8-F, single phase;  
07RN8-F, three phase.  
**Possible type of installation:** mobile when on the ground, fixed with coupling  
**Certification:** EN 12050-1 \ ATEX  
**Special versions on request:** different cable lengths, different voltages and frequencies

Feka FXV is a submersible pump for draining sewage water in commercial building service. It is certified for the European Union standard EN 12050-1 which applies to sewage lifting containing faecal material in buildings and construction sites. Pump suitable for fixed installations with a coupling device or mobile if placed directly on the bottom of the tank. High-performance super vortex impeller with solid handling up to 50 mm or 60 mm. The pump is suitable for liquid with solids and long fibers in suspension. The reduced overall dimensions and the outlet ports both flanged and threaded make it ideal for replacements. Designed for quick maintenance thanks to a constructive solution that provides easy access to the main components of the pump. Automatic versions with power up to 1,5 kW. ATEX version available for use in potentially explosive environments. (ATEX certifications: II2G Ex db k IIB T4 or IEC EX: Ex db IIB T4 Gb).

### CONSTRUCTION FEATURES OF THE PUMP

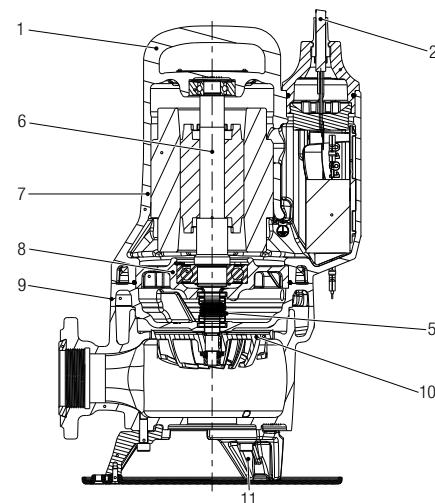
Pump body and impeller in cast iron. Motor shaft in AISI 304 stainless steel. Double mechanical seal in SiC-SiC/SiC-C in oil chamber not in contact with the pumped liquid, independent of the direction of rotation. Delivery port both flanged and threaded.

### CONSTRUCTION FEATURES OF THE MOTOR

Available in single-phase asynchronous motor (MA / MNA versions) and three-phase motor (TNA versions). Rotor mounted on lubricated bearings. Continuous operation in S1 with the motor completely immersed. Dry running for a maximum time of 10 minutes. Over-temperature sensors in the motor windings with intervention threshold at +130°C. Quick-bonded resin-bonded cable gland, 07RN8-F power cable. Single-phase versions with integrated capacitor, available with float for automatic operation (MA) with powers up to 1,5 kW. In the three-phase motors the over-temperature sensor connection is responsibility of the user.

## MATERIALS

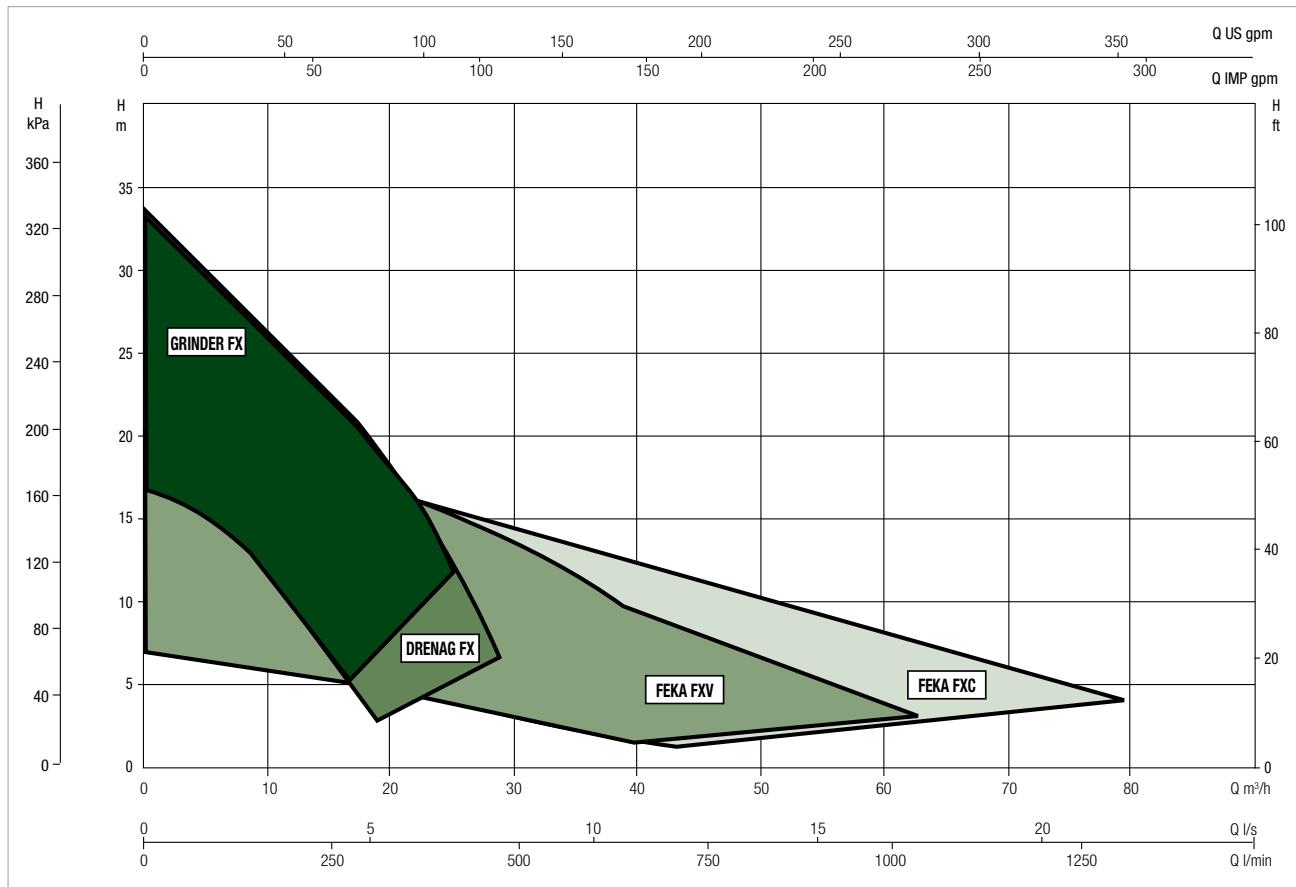
No.	PARTS	MATERIALS
1	HANDLE	CAST IRON EN GJL 200
2	ELECTRIC CABLE	07RN8-F
3	SCREWS	STAINLESS STEEL AISI 304
4	OR	NBR
5	MECHANICAL SEAL PUMP SIDE	SiC-SiC/SiC-C
	MECHANICAL SEAL MOTOR SIDE	SIC/CARBON
6	MOTOR SHAFT	STAINLESS STEEL AISI 304 (P2>1.5kW and 4 poles) AISI 431 (P2<1.2kW)
7	PUMP BODY / MOTOR	CAST IRON EN GJL 200
8	BEARING INNER FLANGE	ALUMINIUM ALLOY EN AC 46100
9	FLANGE	CAST IRON EN GJL 200
10	IMPELLER	CAST IRON EN GJL 250
11	BASE	CAST IRON EN GJL 200
13	COATING	CATAPHORESIS and ACRYLIC TWO-COMPONENT 50µm



### PERFORMANCE RANGE

The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equal to 1000 kg/m<sup>3</sup>. Curve tolerance according to ISO9906.

#### GRAPHIC SELECTION TABLE

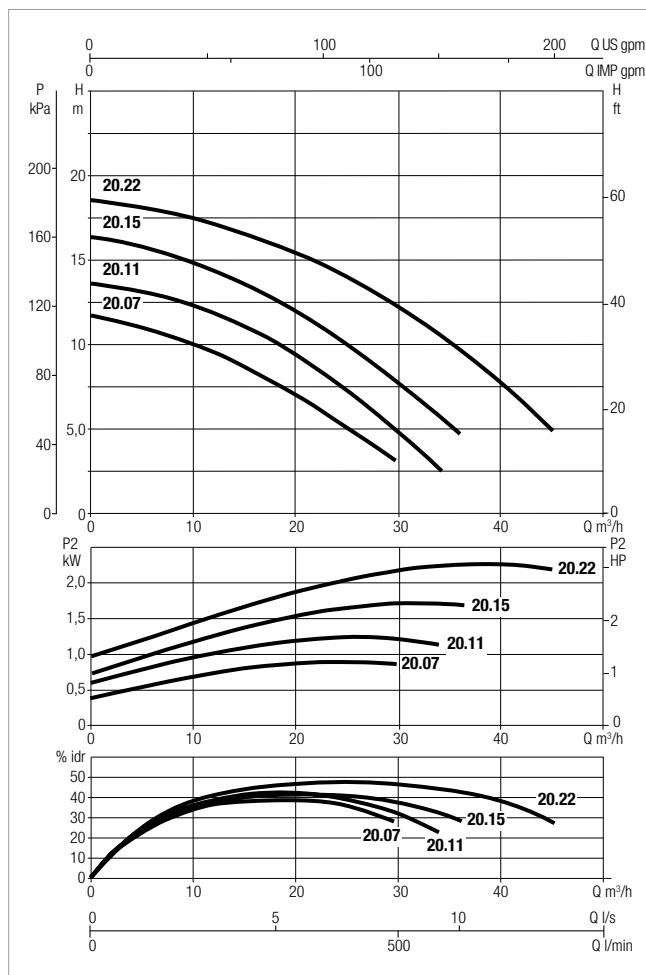
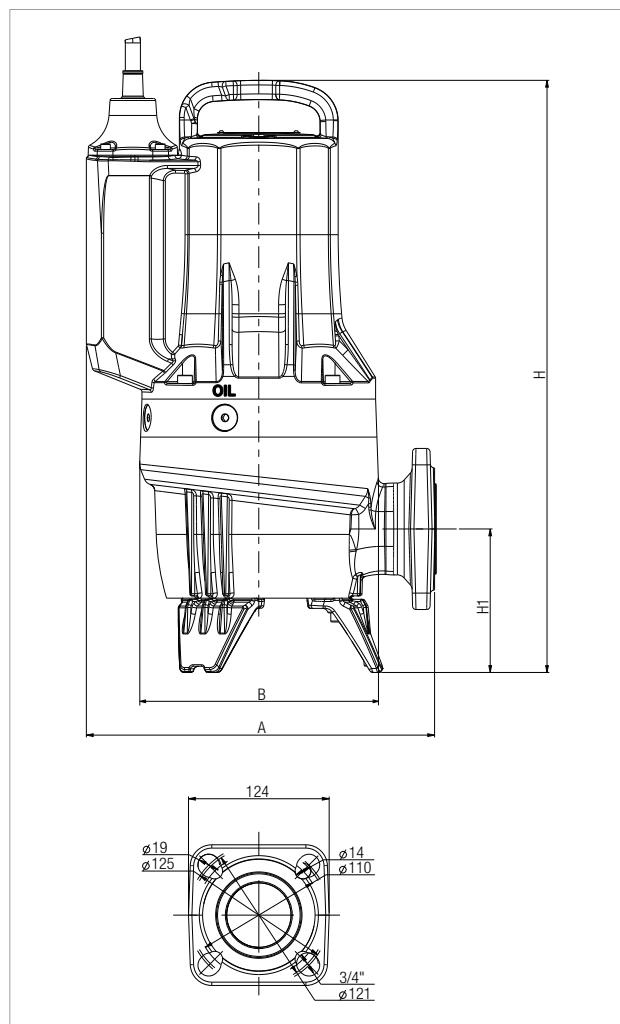


### SELECTION TABLE FEKA FXV 20 - 25

MODEL	Q=m <sup>3</sup> /h	0	6	12	18	24	30	36	42	48	54
	Q=l/min	0	100	200	300	400	500	600	700	800	900
<b>FEKA FXV 20.07</b>	H (m)	11,7	10,9	9,6	7,7	5,4	2,9				
<b>FEKA FXV 20.11</b>		13,1	12,9	11,9	10,1	7,7	4,8				
<b>FEKA FXV 20.15</b>		16,2	15,6	14,4	12,6	10,4	7,7	4,7			
<b>FEKA FXV 20.22</b>		18,5	18,0	17,1	15,9	14,3	12,2	9,7	6,6		
<b>FEKA FXV 25.07</b>		8,8	8,1	7,0	5,7	4,3	3,0	1,8			
<b>FEKA FXV 25.11</b>		11,3	10,7	9,6	8,2	6,6	4,9	3,4	2,2		
<b>FEKA FXV 25.15</b>		13,7	13,4	12,4	11,0	9,2	7,4	5,5	3,9	2,5	
<b>FEKA FXV 25.22</b>		16,5	16,3	15,6	14,5	13,0	11,3	9,4	7,5	5,6	3,8
<b>FEKA FXV 25.07.4</b>		6,3	6,0	5,5	4,8	3,9	2,9	1,8			
<b>FEKA FXV 25.12.4</b>		9,0	8,7	8,3	7,8	7,1	6,3	5,4	4,3	3,2	1,9

## FEKA FXV 20 - SUBMERSIBLE PUMPS

Pumped liquid temperature range: from 0° to +50°C. For higher temperatures contact our sales network.



The performance curves are based on kinematic viscosity values = 1 mm²/s and density equal to 1000 kg/m³. Curve tolerance according to ISO9906.

MODEL	ELECTRICAL DATA							
	POWER INPUT 50 Hz	P1 MAX kW	P2 NOMINAL		In A	Is A	CAPACITOR µF	RATED SPEED rpm/min
			Kw	HP				
FEKA FXV 20.07 MA	1x230V	1,4	0,9	1,2	6,4	29	25	2870
FEKA FXV 20.07 MNA*	1x230V	1,4	0,9	1,2	6,4	29	25	2870
FEKA FXV 20.07 TNA*	3x400V	1,4	0,9	1,2	2,4	22	-	2870
FEKA FXV 20.11 MA	1x230V	1,7	1,2	1,6	8	29	25	2870
FEKA FXV 20.11 MNA*	1x230V	1,7	1,2	1,6	8	29	25	2870
FEKA FXV 20.11 TNA*	3x400V	1,6	1,2	1,6	2,9	19	-	2870
FEKA FXV 20.15 MA	1x230V	2,3	1,7	2,3	10,5	36	40	2870
FEKA FXV 20.15 MNA*	1x230V	2,3	1,7	2,3	10,5	36	40	2870
FEKA FXV 20.15 TNA*	3x400V	2,2	1,7	2,3	4	25	-	2870
FEKA FXV 20.22 TNA*	3x400V	2,9	2,2	2,9	5	35	-	2870

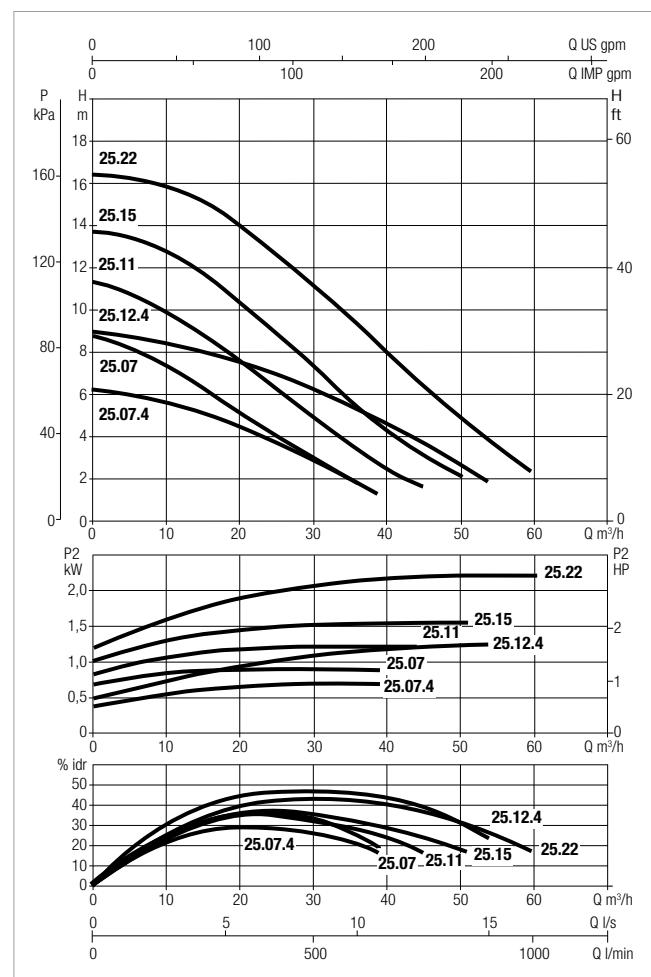
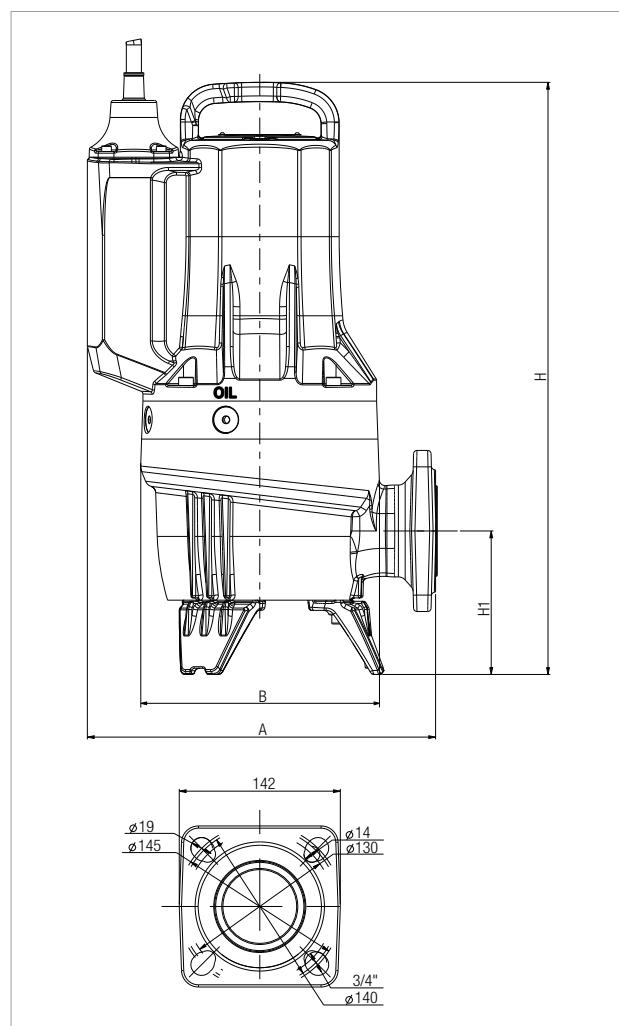
\*Available in Atex version

MODEL	FREE PASSAGE	A	B	H		H1	DELIVERY				PACKING DIMENSIONS			WEIGHT kg
				Ex			GAS	DN1	Holes	D	L/A	L/B	H	
FEKA FXV 20.07*	50	307	211	464	464	104	Rp 2"	50 PN10/6	4	125-110	660	370	400	35
FEKA FXV 20.11*	50	307	211	464	482	104	Rp 2"	50 PN10/6	4	125-110	660	370	400	35
FEKA FXV 20.15 MA	50	307	211	464	-	104	Rp 2"	50 PN10/6	4	125-110	660	370	400	39
FEKA FXV 20.15 MNA-TNA*	50	307	211	474	492	104	Rp 2"	50 PN10/6	4	125-110	660	370	400	39
FEKA FXV 20.22*	50	307	211	492	508	104	Rp 2"	50 PN10/6	4	125-110	660	370	400	40

\*Available in Atex version

## FEKA FXV 25 - SUBMERSIBLE PUMPS

Pumped liquid temperature range: from 0° to +50°C. For higher temperatures contact our sales network.



The performance curves are based on kinematic viscosity values = 1 mm²/s and density equal to 1000 kg/m³. Curve tolerance according to ISO9906.

MODEL	ELECTRICAL DATA							
	POWER INPUT 50 Hz	P1 MAX kW	P2 NOMINAL		In A	Is A	CAPACITOR µF	RATED SPEED rpm/min
			Kw	HP				
FEKA FXV 25.07.4 TNA*	3x400V	1	0,7	0,9	2,2	10	-	2870
FEKA FXV 25.12.4 TNA*	3x400V	1,7	1,2	1,6	3	15	-	2870
FEKA FXV 25.07 MA	1x230V	1,5	1	1,3	6,6	29	25	2870
FEKA FXV 25.07 MNA*	1x230V	1,5	1	1,3	6,6	29	25	2870
FEKA FXV 25.07 TNA*	3x400V	1,3	1	1,3	2,3	22	-	2870
FEKA FXV 25.11 MA	1x230V	1,7	1,2	1,6	7,6	29	25	2870
FEKA FXV 25.11 MNA*	1x230V	1,7	1,2	1,6	7,6	29	25	2870
FEKA FXV 25.11 TNA*	3x400V	1,7	1,2	1,6	3	19	-	2870
FEKA FXV 25.15 MA	1x230V	2,3	1,7	2,3	10,6	36	40	2870
FEKA FXV 25.15 MNA*	1x230V	2,3	1,7	2,3	10,6	36	40	2870
FEKA FXV 25.15 TNA*	3x400V	2,2	1,7	2,3	4	25	-	2870
FEKA FXV 25.22 TNA*	3x400V	2,8	2,2	2,9	4,9	35	-	2870

\*Available in Atex version

MODEL	FREE PASSAGE	A	B	H		H1	DELIVERY				PACKING DIMENSIONS			WEIGHT kg
				Ex			GAS	DN1	Holes	D	L/A	L/B	H	
FEKA FXV 20.07*	50	307	211	464	464	104	Rp 2"	50 PN10/6	4	125-110	660	370	400	35
FEKA FXV 20.11*	50	307	211	464	482	104	Rp 2"	50 PN10/6	4	125-110	660	370	400	35
FEKA FXV 20.15 MA	50	307	211	464	-	104	Rp 2"	50 PN10/6	4	125-110	660	370	400	39
FEKA FXV 20.15 MNA-TNA*	50	307	211	474	492	104	Rp 2"	50 PN10/6	4	125-110	660	370	400	39
FEKA FXV 20.22*	50	307	211	492	508	104	Rp 2"	50 PN10/6	4	125-110	660	370	400	40

\*Available in Atex version



### TECHNICAL DATA

**Flow rate minimum and maximum:** 78,9 m<sup>3</sup>/h  
**Head up to:** 20,9 m  
**Immersion depth (maximum):** 20 m  
**Type of pumped liquid:** Waste water, sewage water  
**Free passage:** 50 mm  
**Supported liquid temperature (maximum and minimum):** +50°C (+60°C for a short time)  
**Flanged and threaded:** from 2", DN50, DN65  
**Impeller type:** Channel  
**Start time (maximum) per hour:** 20/h  
**Class of protection:** IP 68  
**Motor insulation class:** F  
**Single phase power input:** 1x 220-240V 50Hz  
**Three phase power input:** 3x 400V 50Hz / 3x 230V 50Hz on request  
**Maximum dry run time:** 10 min  
**Power cable (m) and plug:** 10 m  
**Possible type of installation:** mobile when on the ground, fixed with coupling  
**Certification:** EN 12050 \ ATEX  
**Special versions on request:** different cable lengths, different voltages and frequencies

Feka FXC is a submersible pump for the drainage of sewage in commercial building service. The pump is certified according to the wastewater standard EN 12050-2. Pump suitable for fixed installations with a coupling device or mobile if placed directly on the bottom of the tank. Suitable for waste water without long fibers, rainwater and ground water. The pump is suitable for draining rooms subject to flooding, when high flow rates are required. The pump is designed for quick maintenance thanks to a constructive solution that provides easy access to the main components. Automatic versions with power up to 1,5 kW. ATEX version available for use in potentially explosive environments. (ATEX certifications: II2G Ex db k IIB T4 or IEC EX: Ex db IIB T4 Gb).

### CONSTRUCTION FEATURES OF THE PUMP

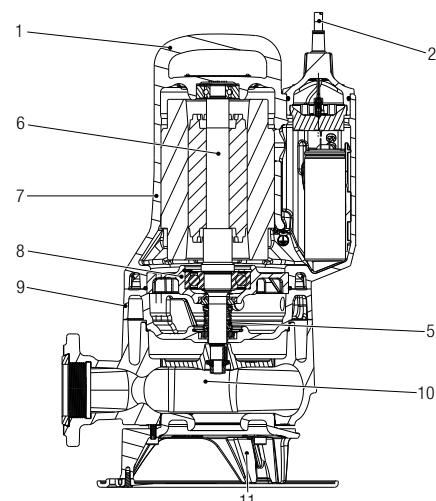
Channel impeller with anti-lock system, 50 mm free passage. Pump body and impeller in cast iron. Motor shaft in AISI 304 stainless steel. Double mechanical seal in SiC-SiC/SiC-C in oil chamber not in contact with the pumped liquid. Delivery port both flanged and threaded.

### CONSTRUCTION FEATURES OF THE MOTOR

Available with single-phase asynchronous motor (MA / MNA versions) and three-phase motor (TNA versions). Rotor mounted on lubricated bearings. Continuous operation in S1 with the motor completely immersed. Dry running for a maximum time of 10 minutes. Over-temperature sensors in the motor windings with intervention threshold at +130°C. Quick-bonded resin-bonded cable gland, 07RN8-F power cable. Single-phase versions with integrated capacitor, available with float for automatic operation (MA version) with power up to 1,5 kW. In the three-phase motors the over-temperature sensor connection is responsibility of the user.

## MATERIALS

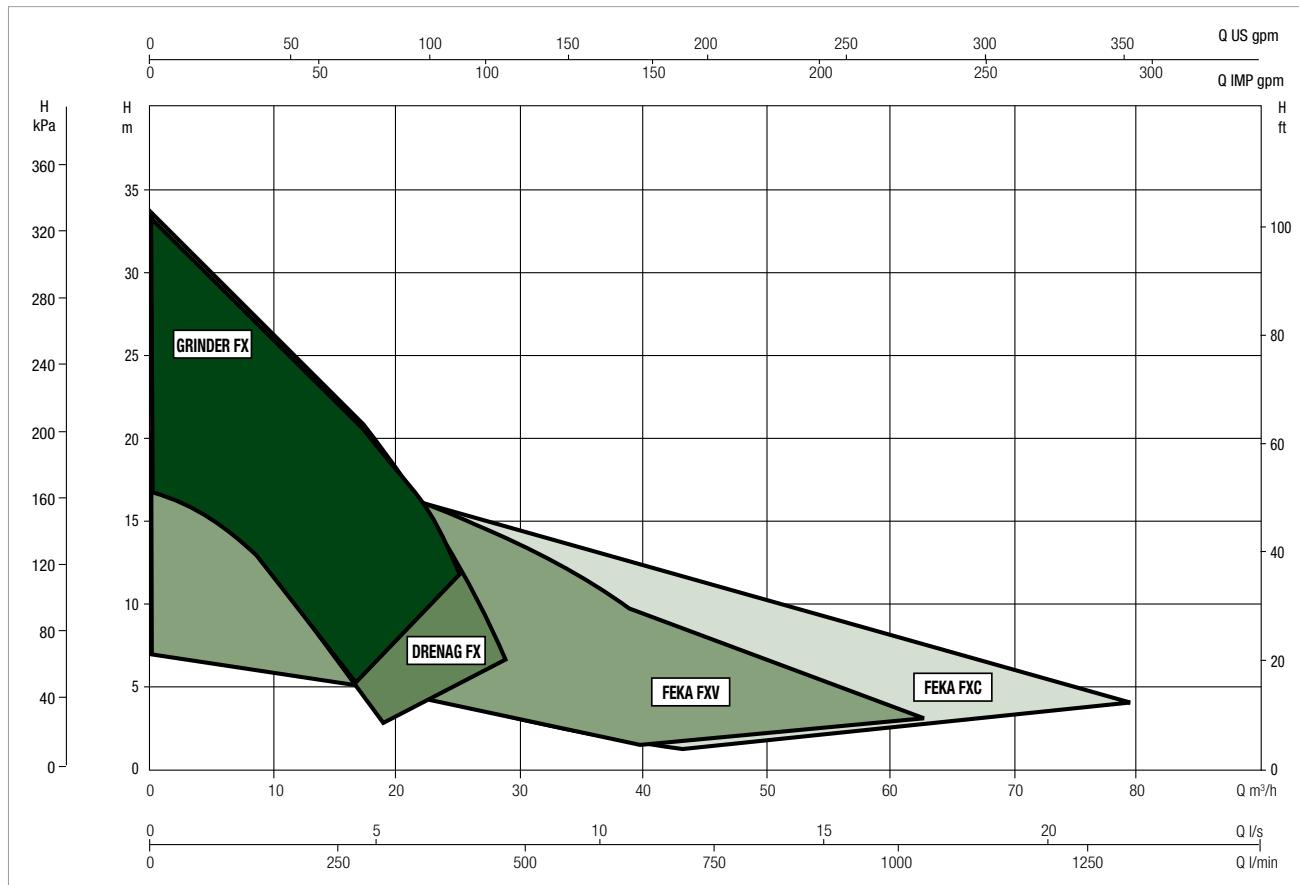
No.	PARTS	MATERIALS
1	HANDLE	CAST IRON EN GJL 200
2	ELECTRIC CABLE	07RN8-F
3	SCREWS	STAINLESS STEEL AISI 304
4	OR	NBR
5	MECHANICAL SEAL PUMP SIDE	SiC-SiC/SiC-C
	MECHANICAL SEAL MOTOR SIDE	SiC/CARBON
6	MOTOR SHAFT	STAINLESS STEEL AISI 304 (P2>1.5kW) AISI 431 (P2<1.2kW)
7	PUMP BODY / MOTOR	CAST IRON GJL 200
8	BEARING INNER FLANGE	ALUMINIUM ALLOY EN AC 46100
9	FLANGE	CAST IRON GJL 200
10	IMPELLER	CAST IRON GJL 250
11	BASE	CAST IRON EN GJL 200
13	COATING	CATAPHORESIS and ACRYLIC TWO-COMPONENT 50µm



## PERFORMANCE RANGE

The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equal to 1000 kg/m<sup>3</sup>. Curve tolerance according to ISO9906.

### GRAPHIC SELECTION TABLE

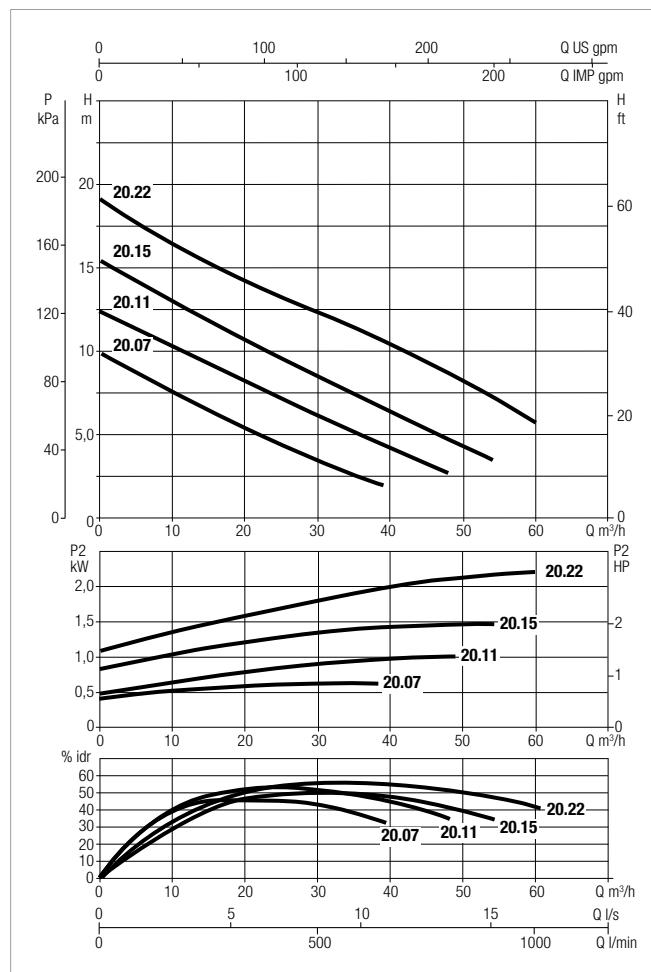
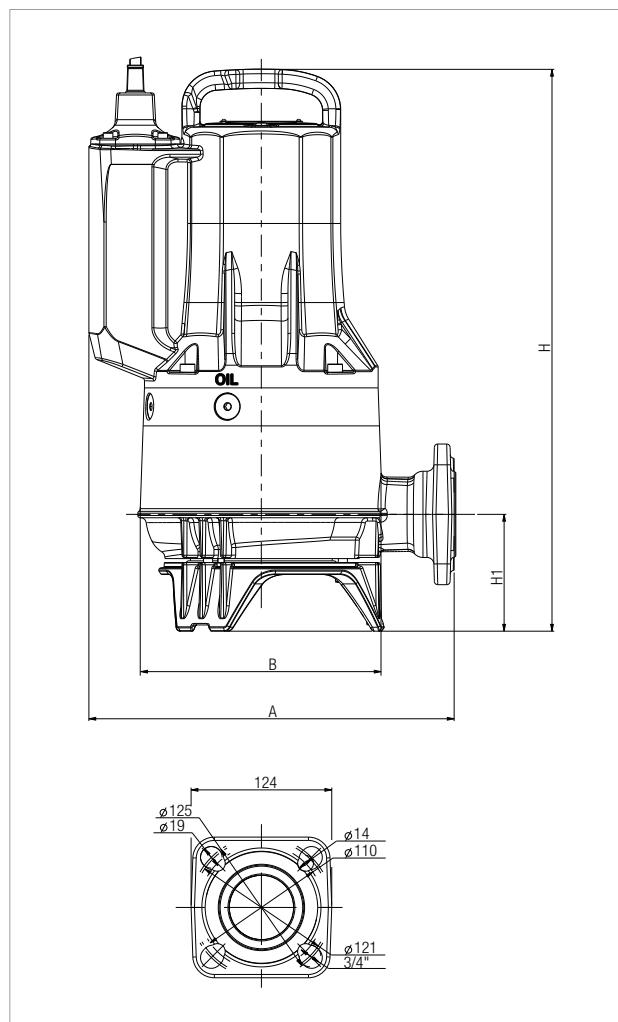


### SELECTION TABLE FEKA FXC 20 - 25

MODEL	Q=m <sup>3</sup> /h	0	7	14	22	29	36	43	50	58	65
	Q=l/min	0	120	240	360	480	600	720	840	960	1080
FEKA FXC 20.07		9,8	8,3	6,7	5,1	3,6	2,4				
FEKA FXC 20.11		12,4	10,8	9,3	7,8	6,4	5,0	3,6			
FEKA FXC 20.15		15,3	13,5	11,8	10,2	8,7	7,1	5,7	4,2		
FEKA FXC 20.22		19,1	17,2	15,5	14,0	12,6	11,2	9,8	8,1	6,2	
FEKA FXC 25.07		9,4	7,8	6,2	4,6	3,3	2,2	1,4			
FEKA FXC 25.11		11,9	10,3	8,8	7,4	6,0	4,8	3,5	2,4		
FEKA FXC 25.15		15,1	13,5	11,8	10,3	8,8	7,3	5,8	4,5	3,1	
FEKA FXC 25.22		18,9	16,9	15,2	13,8	12,4	11,1	9,8	8,4	6,9	5,1

## FEKA FXC 20 - SUBMERSIBLE PUMPS

Pumped liquid temperature range: from 0° to +50°C. For higher temperatures contact our sales network.



The performance curves are based on kinematic viscosity values = 1 mm²/s and density equal to 1000 kg/m³. Curve tolerance according to ISO9906.

MODEL	ELECTRICAL DATA							
	POWER INPUT 50 Hz	P1 MAX kW	P2 NOMINAL		In A	Is A	CAPACITOR µF	RATED SPEED rpm/min
			Kw	HP				
FEKA FXC 20.07 MA	1x230V	0,9	0,7	0,9	4,1	15	20	2870
FEKA FXC 20.07 MNA*	1x230V	0,9	0,7	0,9	4,1	15	20	2870
FEKA FXC 20.07 TNA*	3x400V	0,9	0,7	0,9	1,8	22	-	2870
FEKA FXC 20.11 MA	1x230V	1,4	1	1,3	6,3	29	25	2870
FEKA FXC 20.11 MNA*	1x230V	1,4	1	1,3	6,3	29	25	2870
FEKA FXC 20.11 TNA*	3x400V	1,3	1	1,3	2,6	19	-	2870
FEKA FXC 20.15 MA	1x230V	2	1,5	2,0	9,1	36	40	2870
FEKA FXC 20.15 MNA*	1x230V	2	1,5	2,0	9,1	36	40	2870
FEKA FXC 20.15 TNA*	3x400V	1,8	1,5	2,0	3,5	25	-	2870
FEKA FXC 20.22 TNA*	3x400V	2,8	2,2	2,9	4,9	35	-	2870

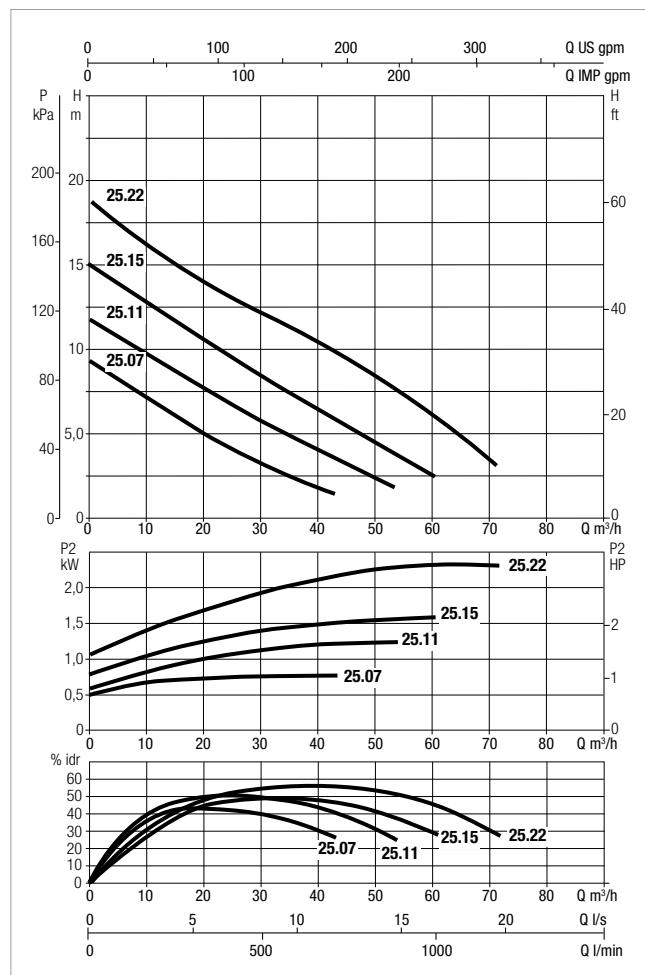
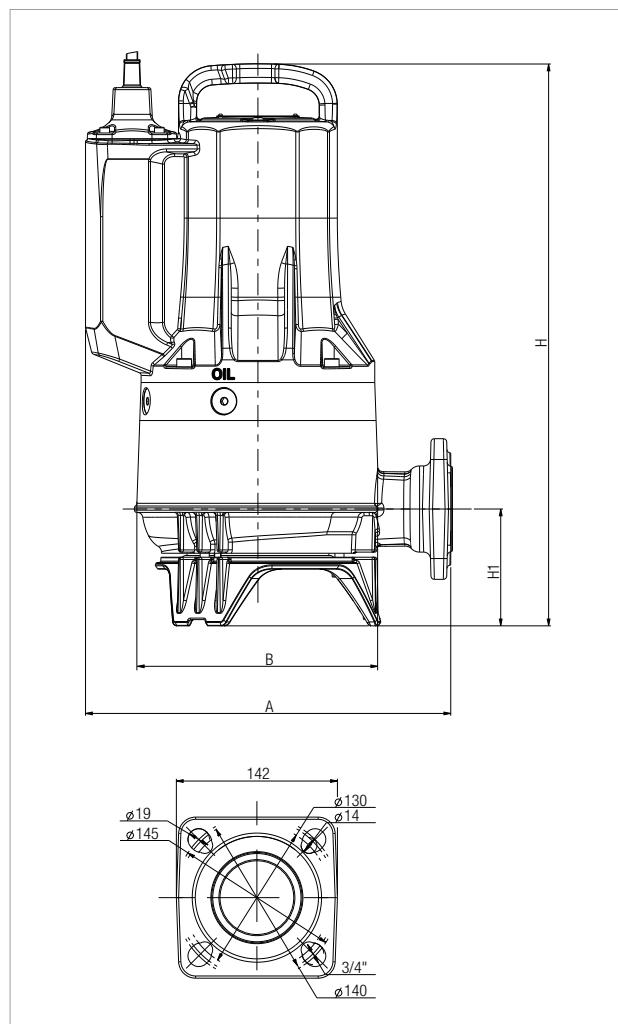
\*Available in Atex version

MODEL	FREE PASSAGE	A	B	H		H1	DELIVERY				PACKING DIMENSIONS			WEIGHT kg
				Ex	GAS		DN1	Holes	D	L/A	L/B	H		
FEKA FXC 20.07*	50	322	210	468	468	103	Rp 2"	50 PN10/6	4	125-110	660	370	400	37
FEKA FXC 20.11*	50	322	210	468	487	103	Rp 2"	50 PN10/6	4	125-110	660	370	400	37
FEKA FXC 20.15*	50	322	218	468	496	103	Rp 2"	50 PN10/6	4	125-110	660	370	400	42
FEKA FXC 20.22 *	50	322	218	496	512	103	Rp 2"	50 PN10/6	4	125-110	660	370	400	43

\*Available in Atex version

## FEKA FXC 25 - SUBMERSIBLE PUMPS

Pumped liquid temperature range: from 0° to +50°C. For higher temperatures contact our sales network.



The performance curves are based on kinematic viscosity values = 1 mm²/s and density equal to 1000 kg/m³. Curve tolerance according to ISO9906.

MODEL	ELECTRICAL DATA							
	POWER INPUT 50 Hz	P1 MAX kW	P2 NOMINAL		In A	Is A	CAPACITOR µF	RATED SPEED rpm/min
			Kw	HP				
FEKA FXC 25.07 MA	1x230V	0,9	0,6	0,8	4,1	15	20	2870
FEKA FXC 25.07 MNA*	1x230V	0,9	0,6	0,8	4,1	15	20	2870
FEKA FXC 25.07 TNA*	3x400V	0,9	0,6	0,8	1,8	22	-	2870
FEKA FXC 25.11 MA	1x230V	1,4	1,1	1,5	6,4	29	25	2870
FEKA FXC 25.11 MNA*	1x230V	1,4	1,1	1,5	6,4	29	25	2870
FEKA FXC 25.11 TNA*	3x400V	1,4	1,1	1,5	2,6	19	-	2870
FEKA FXC 25.15 MA	1x230V	2	1,6	2,1	9,3	36	40	2870
FEKA FXC 25.15 MNA*	1x230V	2	1,6	2,1	9,3	36	40	2870
FEKA FXC 25.15 TNA*	3x400V	1,9	1,6	2,1	3,6	25	-	2870
FEKA FXC 25.22 TNA*	3x400V	2,9	2,3	3,1	5	35	-	2870

\*Available in Atex version

MODEL	FREE PASSAGE	A	B	H		H1	DELIVERY				PACKING DIMENSIONS			WEIGHT kg
				Ex	H1		GAS	DN1	HOLES	D	L/A	L/B	H	
FEKA FXC 25.07 MA	50	322	210	478	-	103	-	65 PN10/6	4	145-130	660	370	400	37
FEKA FXC 25.07 MNA - TNA*	50	322	210	468	468	103	-	65 PN10/6	4	145-130	660	370	400	37
FEKA FXC 25.11*	50	322	210	468	486	103	-	65 PN10/6	4	145-130	660	370	400	38
FEKA FXC 25.15*	50	322	218	478	496	103	-	65 PN10/6	4	145-130	660	370	400	43
FEKA FXC 25.22 *	50	322	218	496	512	103	-	65 PN10/6	4	145-130	660	370	400	44

\*Available in Atex version



## TECHNICAL DATA

**Flow rate minimum and maximum:** 23,8 m<sup>3</sup>/h

**Head up to:** 33 m

**Immersion depth (maximum):** 20 m

**Type of pumped liquid:** loaded waters with filamentary bodies, paper or textile material in the presence of domestic or civil waste

**Supported liquid temperature (maximum and minimum):** +50°C (+60°C for short period of time)

**Flanged and threaded:** from 1"1/2, DN32, DN40

**Impeller type:** Grinder

**Start time (maximum) per hour:** 20/h

**Class of protection:** IP 68

**Motor insulation class:** F

**Single phase power input:** 1x 220-240V 50Hz

**Three phase power input:** 3x 400V 50Hz / 3x 230V 50Hz on request

**Maximum dry run time:** 10 min

**Power cable (m) and plug:** 10 m

H07RN8-F, single phase;

07RN8-F, three phase.

**Possible type of installation:** mobile on the ground or fixed on a coupling device

**Certification:** EN 12050 \ ATEX

**Special versions on request:** different cable lengths, different voltages and frequencies

Grinder FX is a submersible pump with shredder designed for the drainage of waste water coming from drains in civil and commercial environments. The pump is certified according to the wastewater standard EN 12050-1. Pump suitable for fixed installations with a coupling device or mobile if placed on a base directly on the bottom of the tank. Thanks to the high-strength grinder, the pump is suitable for installations with small-diameter pipes or those requiring high pressures. The pump is designed for quick maintenance thanks to a constructive solution that provides easy access to the main components of the pump. Automatic versions with power up to 1,5 kW. ATEX version available for use in potentially explosive environments. (ATEX certifications: II2G Ex db k IIB T4 or IEC EX: Ex db IIB T4 Gb).

## CONSTRUCTION FEATURES OF THE PUMP

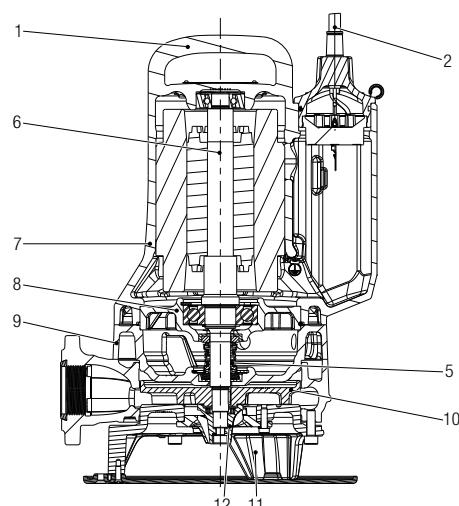
Pump body and impeller in cast iron, shredder in AISI 630. Motor shaft in AISI 304 stainless steel. Double mechanical seal in SiC-SiC/SiC-C in oil chamber not in contact with the pumped liquid, independent of the direction of rotation. Delivery port both flanged and threaded.

## CONSTRUCTION FEATURES OF THE MOTOR

Single-phase asynchronous motor (MA / MNA versions) and three-phase version motor (TNA versions). The rotor is mounted on lubricated bearings. Continuous operation in S1 with the motor completely immersed. Dry running for a maximum time of 10 minutes. Over-temperature sensors in the motor windings with intervention threshold at +130°C. Quick-bonded resin-bonded cable gland, 07RN8-F power cable. Single-phase versions with starter and capacitor in a separate panel, MA versions with float for automatic operation. In the three-phase motors the over-temperature sensor connection is responsibility of the user.

## MATERIALS

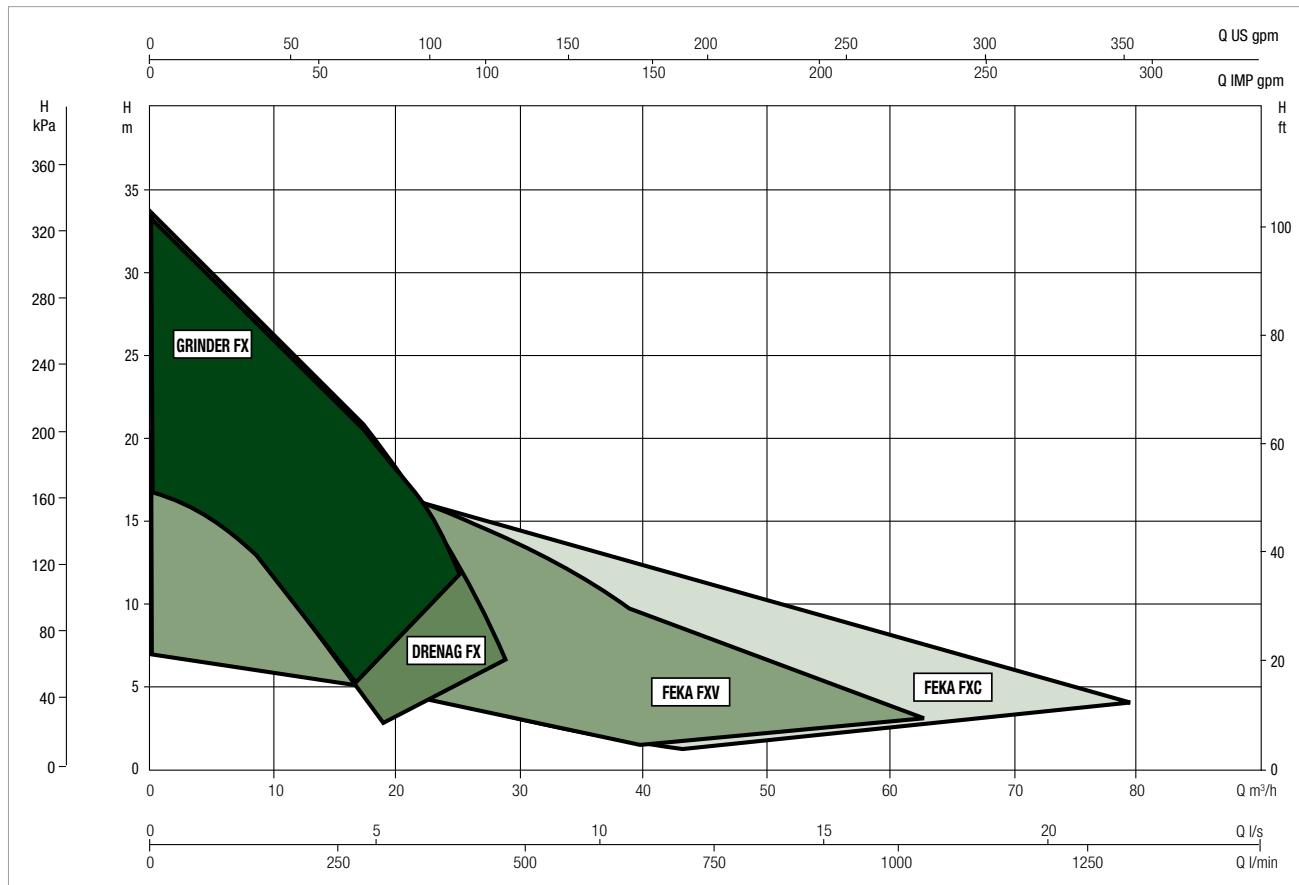
No.	PARTS	MATERIALS
1	HANDLE	CAST IRON EN GJL 200
2	ELECTRIC CABLE	07RN8-F
3	SCREWS	STAINLESS STEEL AISI 304
4	OR	NBR
5	MECHANICAL SEAL PUMP SIDE	SiC-SiC/SiC-C
	MECHANICAL SEAL MOTOR SIDE	SiC/CARBON
6	MOTOR SHAFT	STAINLESS STEEL AISI 304 (P2>1.5kW) AISI 431 (P2<1.2kW)
7	PUMP BODY / MOTOR	CAST IRON EN GJL 200
8	BEARING INNER FLANGE	ALUMINIUM ALLOY EN AC 46100
9	FLANGE	CAST IRON EN GJL 200
10	IMPELLER	CAST IRON EN GJL 250
11	BASE	CAST IRON EN GJL 200
12	CUTTER / CUTTER BASE	STAINLESS STEE EN1.4542 / AISI 630
13	COATING	CATAPHORESIS and ACRYLIC TWO-COMPONENT 50µm



### PERFORMANCE RANGE

The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equal to 1000 kg/m<sup>3</sup>. Curve tolerance according to ISO9906.

### GRAPHIC SELECTION TABLE

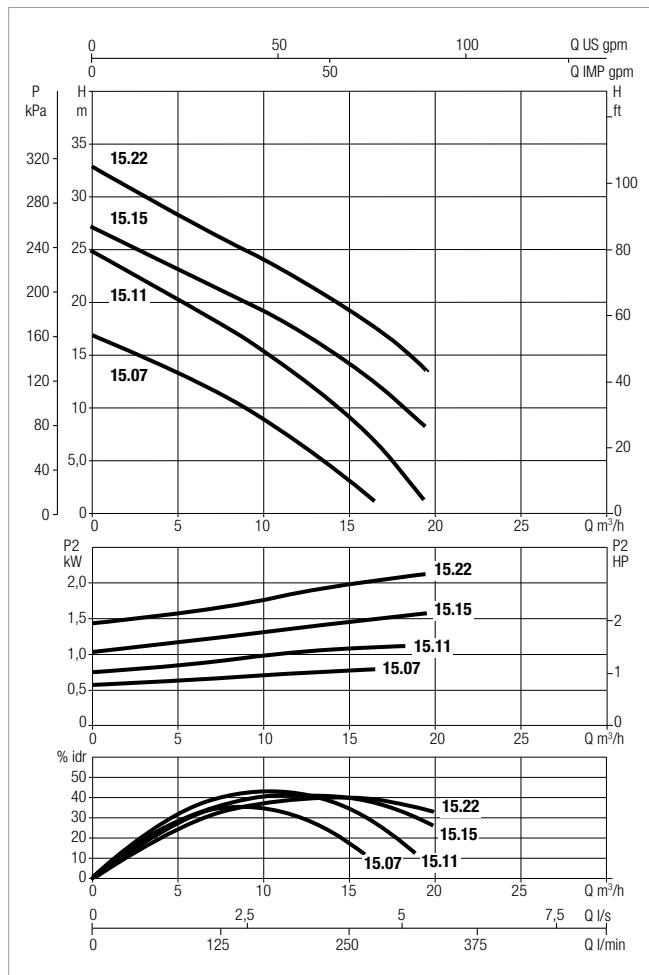
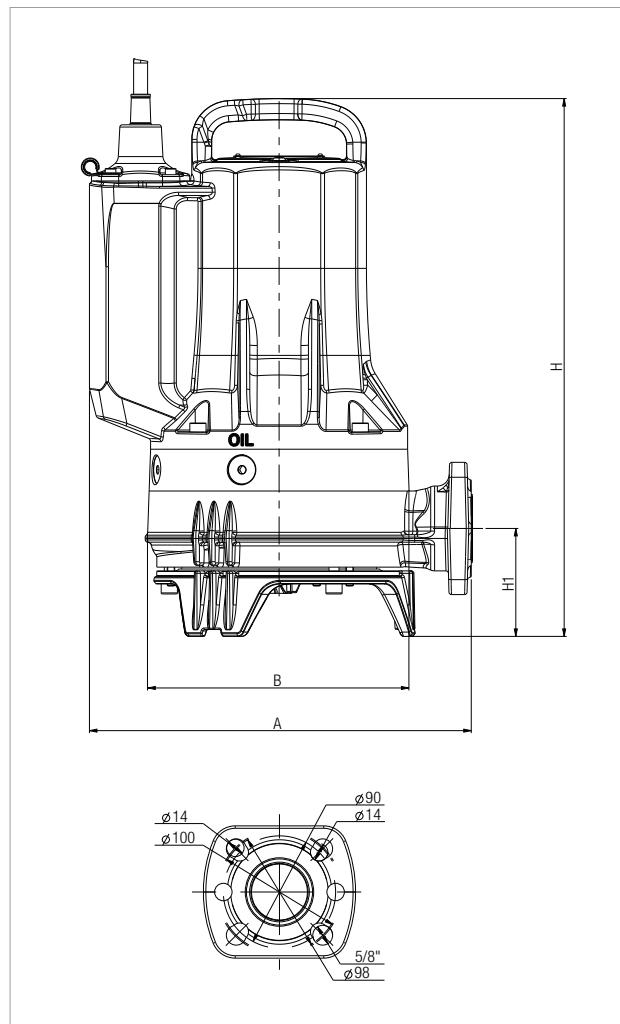


### SELECTION TABLE GRINDER FX 15

MODEL	Q=m <sup>3</sup> /h	0	2,4	4,8	7,2	9,6	12	14,4	16,8	19,2
	Q=l/min	0	40	80	120	160	200	240	280	320
GRINDER FX 15.07	H (m)	16,9	15,2	13,4	11,4	9,2	6,7	3,9		
GRINDER FX 15.11		24,9	22,6	20,5	18,3	15,9	13,2	10,1	6,3	1,8
GRINDER FX 15.15		27,3	25,2	23,3	21,4	19,5	17,3	14,8	11,9	8,5
GRINDER FX 15.22		32,8	30,5	28,5	26,5	24,4	22,3	19,9	17,2	14,0

## GRINDER FX 15 - SUBMERSIBLE PUMPS

Pumped liquid temperature range: from 0° to +50°C. For higher temperatures contact our sales network.



The performance curves are based on kinematic viscosity values = 1 mm²/s and density equal to 1000 kg/m³. Curve tolerance according to ISO9906.

MODEL	ELECTRICAL DATA							
	POWER INPUT 50 Hz	P1 MAX kW	P2 NOMINAL		In A	Is A	CAPACITOR µF	RATED SPEED rpm/min
			Kw	HP				
GRINDER FX 15.07 MA	1x230V	1,1	0,8	1,1	5,3	29	25+200	2870
GRINDER FX 15.07 MNA*	1x230V	1,1	0,8	1,1	5,3	29	25+200	2870
GRINDER FX 15.07 TNA*	3x400V	1	0,8	1,1	2	22	-	2870
GRINDER FX 15.11 MA	1x230V	1,5	1,1	1,5	6,8	29	25+200	2870
GRINDER FX 15.11 MNA*	1x230V	1,5	1,1	1,5	6,8	29	25+200	2870
GRINDER FX 15.11 TNA*	3x400V	1,5	1,1	1,5	2,8	19	-	2870
GRINDER FX 15.15 MA	1x230V	2,2	1,6	2,1	9,8	36	40+100-130 µF	2870
GRINDER FX 15.15 MNA*	1x230V	2,2	1,6	2,1	9,8	36	40+100-130 µF	2870
GRINDER FX 15.15 TNA*	3x400V	2,1	1,6	2,1	3,8	25	-	2870
GRINDER FX 15.22 TNA*	3x400V	2,6	2,1	2,8	4,7	35	-	2870

\*Available in Atex version

MODEL	FREE PASSAGE	A	B	H		H1	DELIVERY				PACKING DIMENSIONS			WEIGHT kg
				Ex			GAS	DN1	Holes	D	L/A	L/B	H	
GRINDER FX 15.07*	-	306	215	404	404	87	Rp 1"1/2	DN32 PN10 / 6 DN40 PN6	4 2	100-90 90	660	370	400	35
GRINDER FX 15.11*	-	306	215	404	421	87	Rp 1"1/2	DN32 PN10 / 6 DN40 PN6	4 2	100-90 90	660	370	400	35
GRINDER FX 15.15*	-	306	215	413	430	87	Rp 1"1/2	DN32 PN10 / 6 DN40 PN6	4 2	100-90 90	660	370	400	38
GRINDER FX 15.22*	-	306	215	430	448	87	Rp 1"1/2	DN32 PN10 / 6 DN40 PN6	4 2	100-90 90	660	370	400	39

\*Available in Atex version



### TECHNICAL DATA

**Flow rate minimum and maximum:** 28,5 m<sup>3</sup>/h  
**Head up to:** 33 m  
**Immersion depth (maximum):** 20 m  
**Type of pumped liquid:** drainage water  
**Free passage:** 10 mm  
**Supported liquid temperature (maximum and minimum):** +50°C (+60°C for short period)  
**Flanged and threaded:** from 1"1/2, DN32, DN40  
**Impeller type:** Open  
**Start time (maximum) per hour:** 20/h  
**Class of protection:** IP 68  
**Motor insulation class:** F  
**Single phase power input:** 1x 220-240V 50Hz  
**Three phase power input:** 3x 400V 50Hz / 3x 230V 50Hz on request  
**Maximum dry run time:** 10 min  
**Power cable (m) and plug:** 10 m (other lengths on request)  
H07RN8-F, single phase; 07RN8-F, three phase.  
**Possible type of installation:** mobile when on the ground, fixed with coupling  
**Certification:** EN 12050-2 \ ATEX  
**Special versions on request:** different cable lengths, different voltages and frequencies

Drenag FX is a submersible pump for the drainage water, groundwater or rainwater in commercial building service; The pump is suitable for applications with high prevalence. The pump is certified according to the wastewater standard EN 12050-2. Suitable for fixed installations with a coupling device or mobile if placed directly on the bottom of the tank. It is designed for quick maintenance thanks to a constructive solution that provides easy access to the main components of the pump. Automatic versions with power up to 1,5 kW. ATEX version available for use in potentially explosive environments. (ATEX certifications: II2G Ex db k IIB T4 or IEC EX: Ex db IIB T4 Gb).

### CONSTRUCTION FEATURES OF THE PUMP

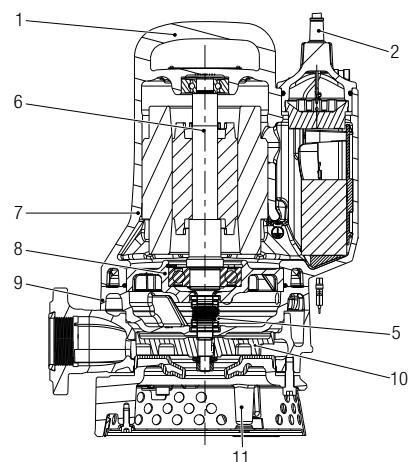
Open impeller and wear-resistant rubber disc for the use even in the presence of abrasive particles. Pump body and impeller in spheroidal cast iron. Motor shaft in AISI 304 stainless steel. Double mechanical seal in SiC-SiC/SiC-C in oil chamber not in contact with the pumped liquid. Delivery port both flanged and threaded.

### CONSTRUCTION FEATURES OF THE MOTOR

Single-phase asynchronous motor (MA / MNA versions) and three-phase (TNA versions). Rotor mounted on lubricated bearings. Continuous operation in S1 with the motor completely immersed. Dry running for a maximum time of 10 minutes. Over-temperature sensors in the motor windings with intervention threshold at +130°C. Cable glande with resin, 07RN8-F power cable with quick connection. Single-phase versions with integrated capacitor, available with float for automatic operation (MA version) with power up to 1,5 kW. In the three-phase motors the over-temperature sensor connection is responsibility of the user.

## MATERIALS

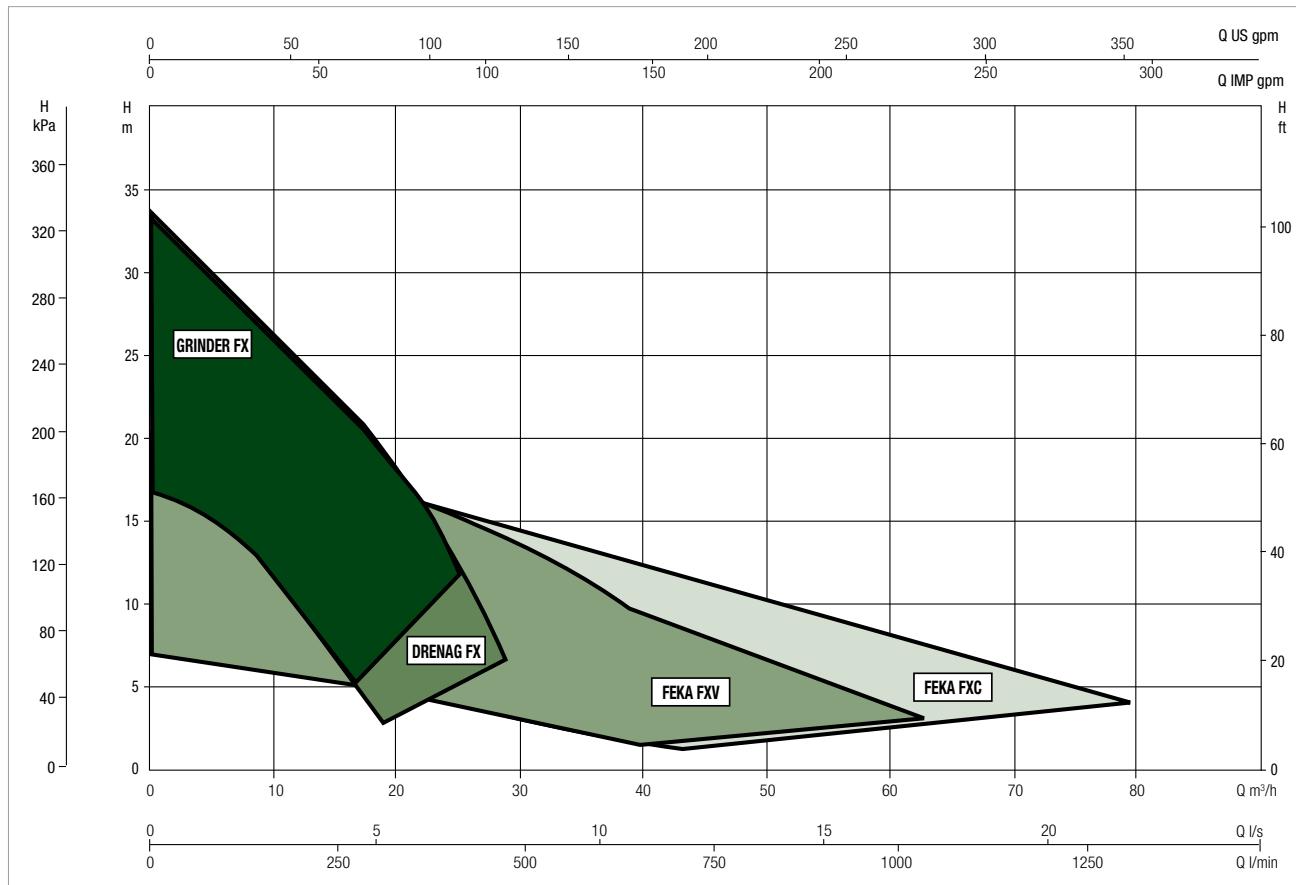
No.	PARTS	MATERIALS
1	HANDLE	CAST IRON EN GJL 200
2	ELECTRIC CABLE	07RN8-F
3	SCREWS	STAINLESS STEEL AISI 304
4	OR	NBR
5	MECHANICAL SEAL PUMP SIDE	SiC-SiC/SiC-C
	MECHANICAL SEAL MOTOR SIDE	SiC/CARBON
6	MOTOR SHAFT	STAINLESS STEEL AISI 304 (P2>1.5kW) AISI 431 (P2<1.2kW)
7	PUMP BODY / MOTOR	CAST IRON EN GJL 200
8	BEARING INNER FLANGE	ALUMINIUM ALLOY EN AC 46100
9	FLANGE	CAST IRON EN GJL 200
10	IMPELLER	CAST IRON EN GJL 250
11	BASE	CAST IRON EN GJL 200 + NATURAL RUBBER
13	COATING	CATAPHORESIS and ACRYLIC TWO-COMPONENT 50µm



## PERFORMANCE RANGE

The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equal to 1000 kg/m<sup>3</sup>. Curve tolerance according to ISO9906.

### GRAPHIC SELECTION TABLE

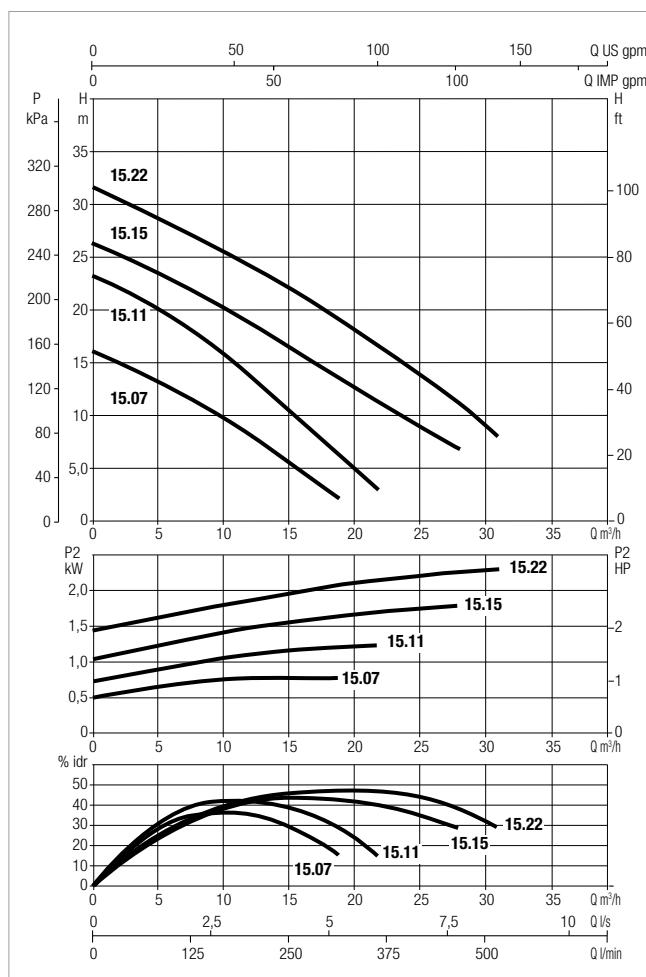
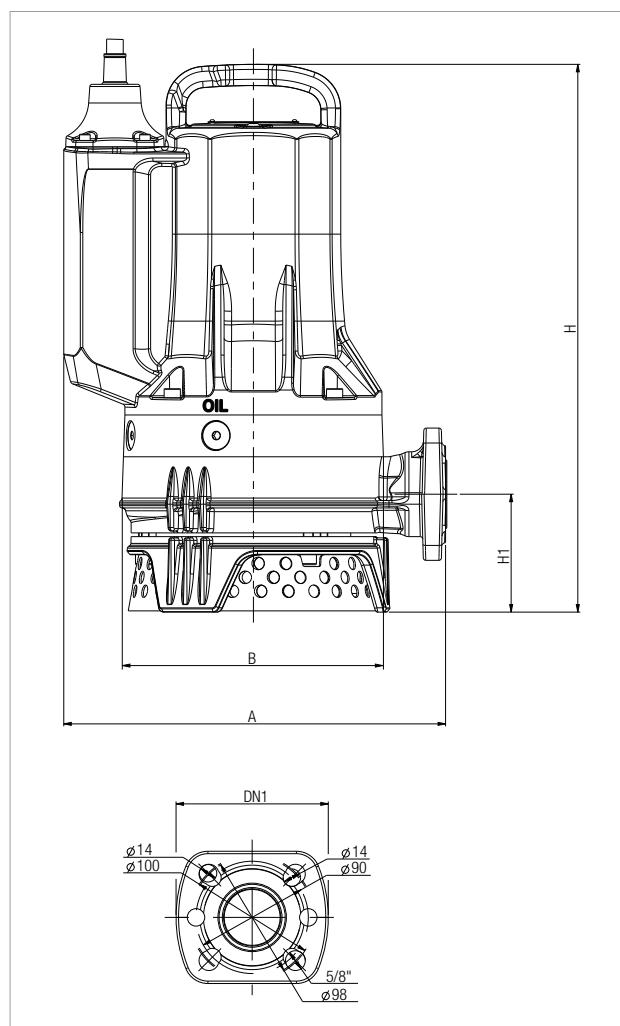


### SELECTION TABLE DRENAG FX 15

MODEL	Q=m <sup>3</sup> /h	0	3	6	9	12	15	18	21	24	27	30
	Q=l/min	0	50	100	150	200	250	300	350	400	450	500
DRENAG FX 15.07	H (m)	16,2	14,5	12,6	10,5	8,1	5,5	2,8				
DRENAG FX 15.11		23,3	21,5	19,3	16,7	13,8	10,6	7,3	3,8			
DRENAG FX 15.15		26,4	24,9	23,1	21,1	18,9	16,6	14,2	11,8	9,5	7,4	
DRENAG FX 15.22		31,8	30,0	28,2	26,3	24,3	22,1	19,8	17,4	14,8	12,0	9,0

## DRENAG FX 15 - SUBMERSIBLE PUMPS

Pumped liquid temperature range: from 0° to +50°C. For higher temperatures contact our sales network.



The performance curves are based on kinematic viscosity values = 1 mm²/s and density equal to 1000 kg/m³. Curve tolerance according to ISO9906.

MODEL	ELECTRICAL DATA							
	POWER INPUT 50 Hz	P1 MAX kW	P2 NOMINAL		In A	Is A	CAPACITOR µF	RATED SPEED rpm/min
			Kw	HP				
<b>DRENAG FX 15.07 MA</b>	1x230V	1,1	0,8	1,1	5,1	29	25	2870
<b>DRENAG FX 15.07 MNA*</b>	1x230V	1,1	0,8	1,1	5,1	29	25	2870
<b>DRENAG FX 15.07 TNA*</b>	3x400V	1	0,8	1,1	2,1	22	-	2870
<b>DRENAG FX 15.11 MA</b>	1x230V	1,5	1,2	1,6	6,8	29	25	2870
<b>DRENAG FX 15.11 MNA*</b>	1x230V	1,5	1,2	1,6	6,8	29	25	2870
<b>DRENAG FX 15.11 TNA*</b>	3x400V	1,5	1,2	1,6	2,8	19	-	2870
<b>DRENAG FX 15.15 MA</b>	1x230V	2,3	1,8	2,4	10,6	36	40	2870
<b>DRENAG FX 15.15 MNA*</b>	1x230V	2,3	1,8	2,4	10,6	36	40	2870
<b>DRENAG FX 15.15 TNA*</b>	3x400V	2,5	1,8	2,4	4,3	25	-	2870
<b>DRENAG FX 15.22 TNA*</b>	3x400V	3,1	2,3	3,1	5,2	35	-	2870

\*Available in Atex version

MODEL	FREE PASSAGE	A	B	H		H1	DELIVERY				PACKING DIMENSIONS			WEIGHT kg
					Ex		GAS	DN1	Holes	D	L/A	L/B	H	
<b>DRENAG FX 15.07*</b>	10	306	215	412	412	95	Rp 1"1/2	DN32 PN10 / 6 DN40 PN6	4 2	100-90 90	660	370	400	35
<b>DRENAG FX 15.11*</b>	10	306	215	412	430	95	Rp 1"1/2	DN32 PN10 / 6 DN40 PN6	4 2	100-90 90	660	370	400	35
<b>DRENAG FX 15.15*</b>	10	306	215	421	439	95	Rp 1"1/2	DN32 PN10 / 6 DN40 PN6	4 2	100-90 90	660	370	400	38
<b>DRENAG FX 15.22*</b>	10	306	215	439	456	95	Rp 1"1/2	DN32 PN10 / 6 DN40 PN6	4 2	100-90 90	660	370	400	39

\*Available in Atex version



## TECHNICAL DATA

**Impeller Type:** Vortex; Single channel.

**Solid Handling:** 65 ÷ 100 mm.

**Nominal Power:** 1,1 ÷ 11 kW.

**Outlet :** DN 65 / 80 / 100 / 150.

**Performance Range:** from 4.3 to 280 m<sup>3</sup>/h with 41 meters head.

**Fluid:** wastewater and sewage from buildings and sites in private, commercial, industrial areas.

**Fluid PH:** 6.5 ÷ 12.

**Fluid Temperature Range:** from 0° to +40°C. for higher temperature please contact our sale offices.

**Max installation Depth:** 20 m (with a proper cable length).

**Type of installation:** fixed by Coupling Unit, portable in vertical position with pedestal.

Continuous working with total submerged applications, or discontinuous S3 with respect of minimum levels.

**Approvals:** EN 12050-1 e Ex (ATEX , IECEEx).

## APPLICATIONS

Design for the pumping of wastewater and sewage from buildings and sites in private, commercial, industrial areas in accordance with European Standard EN 12050-1.

Available in Ex version for use in potentially explosive atmosphere (ATEX certifications: II2G Ex db k IIB T4 or IECEEx: Ex db IIB T4 Gb)

## PUMP CONSTRUCTION

Vortex impeller with maximum solids handling with new no-clogging shape, Single channel impeller with high efficiency and compliance with European Standard EN 12050-1. Single-unit cartridge seal with double mechanical seals, SiC-SiC at the pump side, SiC-C at the motor side. All seals are independent of rotation direction.

DN 65, DN 80, DN 100, DN150 radial slot EN 1092-1 flange discharge.

Liquid Viscosity : 1mm<sup>2</sup>/s

## MOTOR CONSTRUCTION

Premium Efficiency IE3, three-phase, squirrel-cage motor. Continuously S1 rated motor in submerged applications, or discontinuous S3 according to minimum levels. Seal monitoring by a moisture sensor in the seal chamber, which signals an inspection alert if there is leakage at the mechanical seals (Optional). Bi-metallic switch in stator windings, with max temperature (130°C). Start-up: 1.1 - 4.0 kW = direct on line (DOL); 5.5 - 11.0 kW = star-delta (Y/Δ). Lubricated-for-life bearings with a calculated lifetime of minimum 50,000 hrs. Stainless steel shaft. Designed with high resistance fatigue fracture. Degree of protection: IP 68.

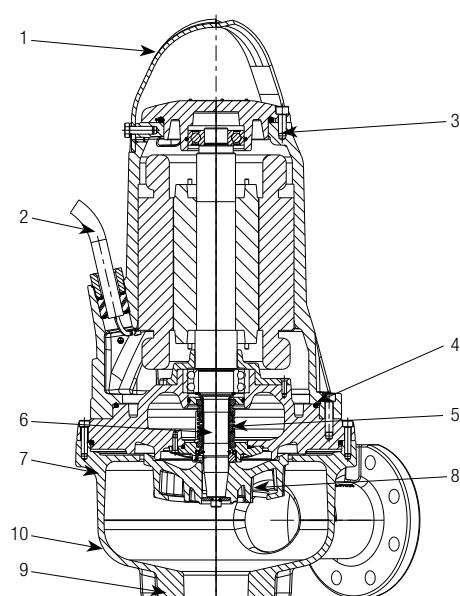
Insulation class: F.

Max starting /hours: 20.

## MATERIALS

No.	PARTS	MATERIALS
1	Handle	Stainless Steel ( AISI 304 )
2	Electric cable	07RN8-F
3	Screws	STAINLESS STEEL ( AISI 304 )
4	OR	NBR
5	Mechanical seal pump side	SiC/SiC
	Mechanical seal motor side	SiC/Carbon
	Ring Seal*	HNBR
6	Motor Shaft	Stainless Steel ( AISI 420 )
7	Pump body / motor	Cast Iron ( EN GJL 200 )
8	Impeller	Cast Iron ( EN GJL 250 )
9	Wear ring	Cast Iron ( EN GJL 150 )
10	Coating	Acrylic Two-component 50µm

\* only from 3kW 4 poles and from 4kW 2 poles



**- DENOMINATION INDEX**  
(example)

	FK	C	65	22	2	T	5	230D	Ex	S	
DIGITS											
FK	Technical pump range name										
C	Single channel impeller										
V	Vortex impeller										
65	Outlet diameter										
80											
100											
150											
22	Approximate nominal power kW x10 (a, b, c, d in case of different curve at same power)										
2	Number of poles										
4											
T	Three-phase										
5	Tension frequency										
6	5 = 50hz - 6 = 60hz										
230	D.O.L.      Tension rate & Start method										
220-277	D.O.L.										
400	D.O.L.										
380-480	D.O.L.										
230	Y/D										
400	Y/D										
220-277	Y/D										
380-480	Y/D										
EX	No explosion proof Explosion proof (ATEX)										
S	No sensor version (moisture sensor) Sensor version (moisture sensor) NOT for Ex version										
20,30,50	Cable lenght 10m Specific cable lenght										

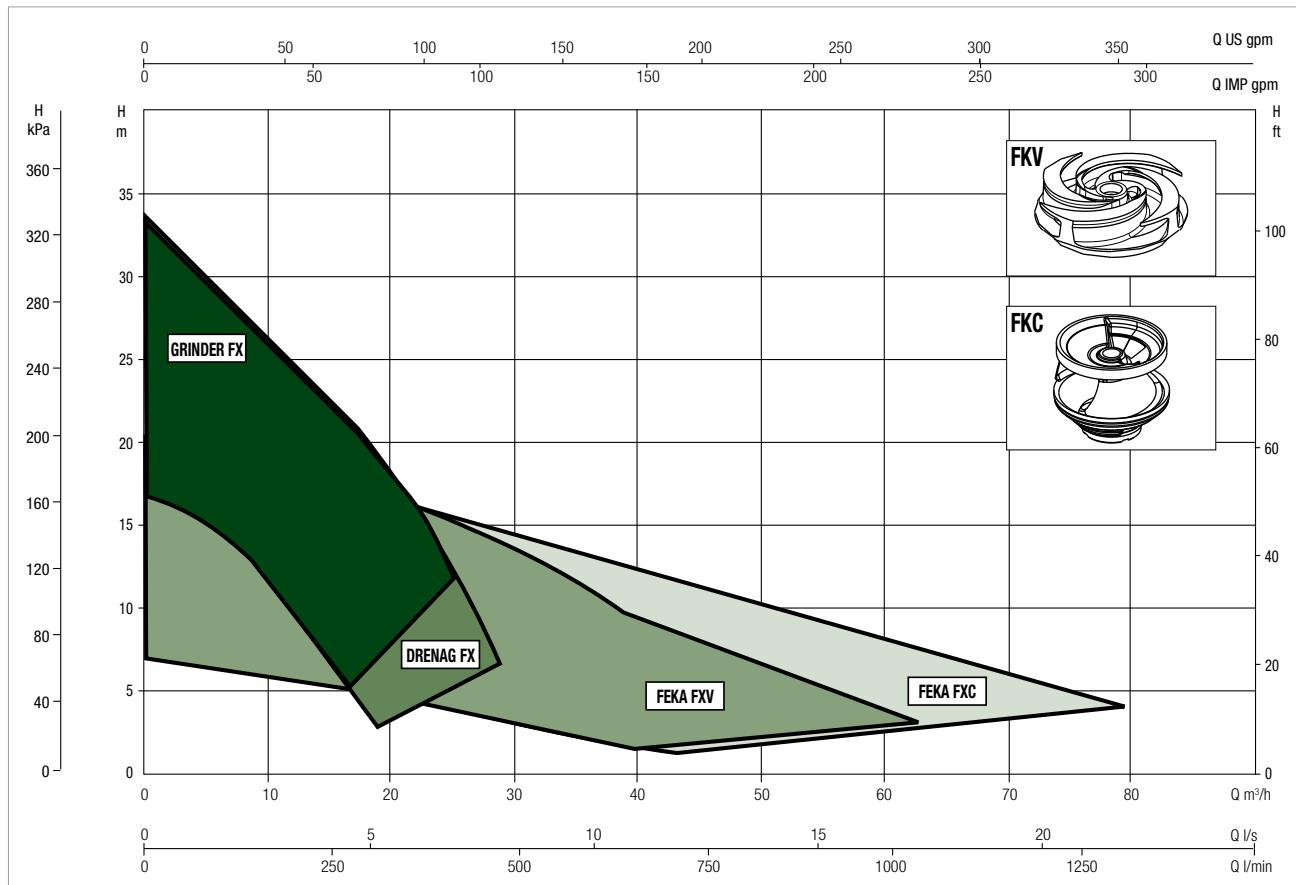
**STANDARD AND OPTIONS**

	STANDARD	OPTIONS
MAINS VOLTAGE	3 x 400 V~	3 x 230 V~
VOLTAGE TOLERANCE	+ 6 % / -10 %, 50 Hz	-
TEMPERATURE MONITORING BY BI-METALLIC SWITCH IN THE STATOR WINDINGS	150°C	-
MECHANICAL SEAL (AT PUMP SIDE)	SiC/SiC	-
MECHANICAL SEAL (AT MOTOR SIDE)	SiC/Carbon	-
MOISTURE SENSOR	-	YES
CABLE LENGTH (M)	10	20-30-50
APPROVALS	EN 12050 -1	Ex (ATEX, IECEx)
O-RING	NBR	FKM (Viton®)
INSTALLATION	Wet well	-

## PERFORMANCE RANGE

The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equal to 1000 kg/m<sup>3</sup>. Curve tolerance according to ISO 9906.

### GRAPHIC SELECTION TABLE



### SELECTION TABLE FKV 65

MODEL	Q=m <sup>3</sup> /h	0	7,2	14,4	21,6	28,8	36	43,2	50,4	57,6	64,8	72	79,2	86,4	93,6	100,8	108
	Q=l/min	0	120	240	360	480	600	720	840	960	1080	1200	1320	1440	1560	1680	1800
<b>FKV 65 11.4 T5 400D</b>		9,1	8,7	7,9	6,7	5,3	4,0	2,7	1,8								
<b>FKV 65 22.2 T5 400D</b>		16,5	14,3	11,8	9,1	6,6	4,3	2,7									
<b>FKV 65 30.2 T5 400D</b>		21,1	19,5	17,1	14,2	11,1	8,1	5,4	3,4	2,3							
<b>FKV 65 40.2 T5 400D</b>		27,2	26,0	24,0	21,3	18,3	15,1	11,8	8,8	6,2	4,2	3,0					

### SELECTION TABLE FKV 80

MODEL	Q=m <sup>3</sup> /h	0	7,2	14,4	21,6	28,8	36	43,2	50,4	57,6	64,8	72	79,2	86,4	93,6	100,8	108
	Q=l/min	0	120	240	360	480	600	720	840	960	1080	1200	1320	1440	1560	1680	1800
<b>FKV 80 11.4 T5 400D</b>		7,0	6,7	6,1	5,3	4,5	3,6	2,7	1,9	1,3							
<b>FKV 80 15.4 T5 400D</b>		9,5	9,3	8,9	8,1	7,2	6,1	5,0	3,9	3,0	2,3	1,9					
<b>FKV 80 22.4 T5 400D</b>		11,8	11,6	11,3	10,8	10,0	9,1	8,0	6,9	5,8	4,7	3,7	2,8				
<b>FKV 80 40.4 T5 400D</b>		17,5	17,1	16,5	15,7	14,9	14,0	13,1	12,1	11,1	10,0	9,0	8,1	7,1			
<b>FKV 80 40.2 T5 400D</b>		22,1	21,1	19,5	17,3	14,9	12,2	9,7	7,3	5,2	3,7	2,9					
<b>FKV 80 60.2 T5 400Y/D</b>		29,1	28,4	27,0	25,1	22,8	20,3	17,6	14,8	12,2	9,8	7,5	5,5				
<b>FKV 80 75.2 T5 400Y/D</b>		32,1	31,8	30,8	29,1	27,0	24,5	21,8	18,9	16,0	13,2	10,6	8,4	6,6	5,4		
<b>FKV 80 92.2 T5 400Y/D</b>		36,2	35,9	35,1	33,7	31,7	29,2	26,4	23,4	20,3	17,3	14,3	11,7	9,5	7,7	6,6	
<b>FKV 80 110.2 T5 400Y/D</b>		41,2	41,0	40,5	39,2	37,4	35,2	32,6	29,7	26,6	23,5	20,3	17,3	14,6	12,1	10,0	8,5

# FK RANGE

SUBMERSIBLE PUMPS FOR SEWAGE

## SELECTION TABLE FKV 100

MODEL	Q=m³/h	0,0	14,4	28,8	43,2	57,6	72,0	86,4	100,8	115,2	129,6	144,0
	Q=l/min	0,0	240	480	720	960	1200	1440	1680	1920	2160	2400
FKV 100 30.4 T5 400D	H (m)	11,8	10,9	9,7	8,2	6,5	4,9	3,4	2,3			
FKV 100 40.4 T5 400D		14,0	13,2	12,0	10,6	9,0	7,4	5,8	4,3	3,1		
FKV 100 55.4 T5 400Y/D		15,9	15,6	14,9	13,8	12,6	11,1	9,6	8,0	6,5	5,0	
FKV 100 75.4 T5 400Y/D		19,0	18,8	18,3	17,5	16,5	15,2	13,9	12,4	10,8	9,2	7,7

## SELECTION TABLE FKC 65

MODEL	Q=m³/h	0	7,2	14,4	21,6	28,8	36	43,2	50,4	57,6	64,8	72	79,2	86,4	93,6	100,8
	Q=l/min	0	120	240	360	480	600	720	840	960	1080	1200	1320	1440	1560	1680
FKC 65 22.2 T5 400D	H (m)	20,0	17,8	15,9	14,3	12,8	11,6	10,4	9,3	8,3	7,2	6,1	4,9	3,6		
FKC 65 30.2 T5 400D		26,5	23,5	20,9	18,6	16,7	15,1	13,7	12,4	11,2	10,1	9	7,8	6,5	5,1	3,4

## SELECTION TABLE FKC 80

MODEL	Q=m³/h	0	14	29	43	58	72	86	101	115	130	144	158	173	187
	Q=l/min	0	240	480	720	960	1200	1440	1680	1920	2160	2400	2640	2880	3120
FKC 80 15.4 T5 400D	H (m)	8,9	7,9	6,9	6,1	5,3	4,5	3,6	2,8	1,9					
FKC 80 22.4 T5 400D		13,9	12,0	10,5	9,2	8,0	7,0	6,0	5,0	3,9	2,6				
FKC 80 30.4 T5 400D		13,9	12,4	11,1	10,0	9,0	8,1	7,2	6,4	5,4	4,4	3,3			
FKC 80 40.4 T5 400D		17,4	15,7	14,3	13,0	11,9	10,9	10,0	9,2	8,3	7,4	6,4	5,3		
FKC 80 55.4 T5 400Y/D		21	19,4	18	16,7	15,5	14,4	13,3	12,3	11,3	10,4	9,5	8,5	7,6	5,4
FKC 80 75.4 T5 400Y/D		24,6	22,7	21,1	19,6	18,2	17	15,9	14,8	13,7	12,7	11,7	10,6	9,4	8,2

## SELECTION TABLE FKC 100

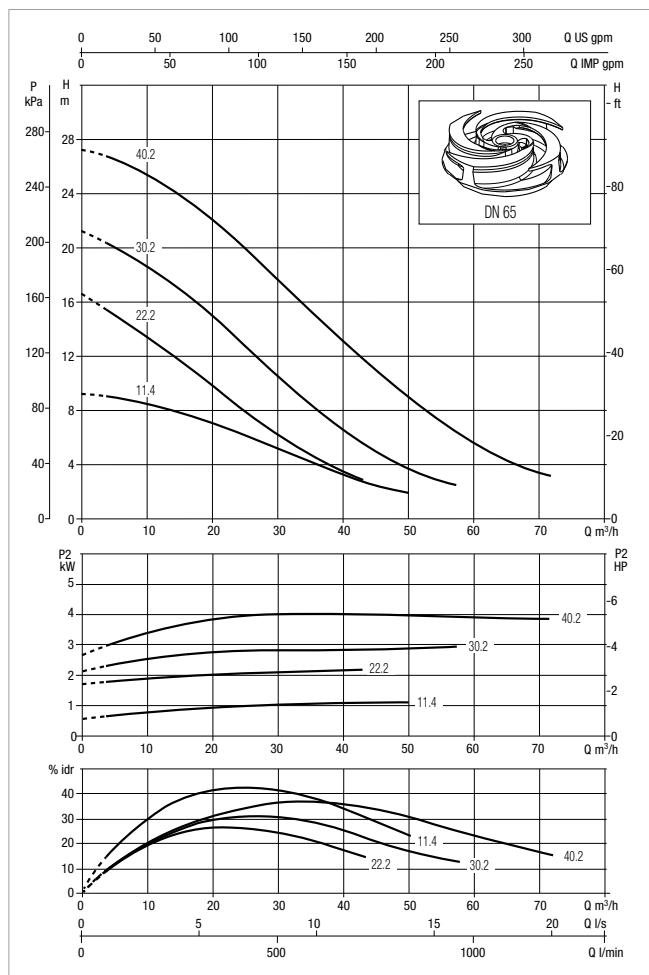
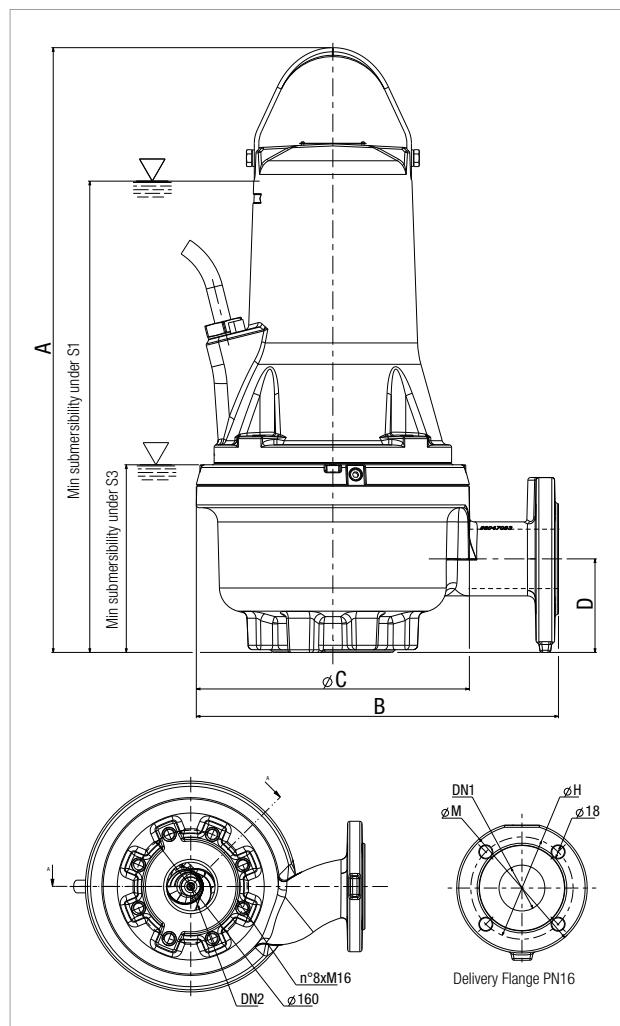
MODEL	Q=m³/h	0	22	43	65	86	108	130	151	173	194	216	238	259	281
	Q=l/min	0	360	720	1080	1440	1800	2160	2520	2880	3240	3600	3960	4320	4680
FKC 100 15.4 T5 400D	H (m)	8,9	7,3	6,0	4,7	3,5	2,2								
FKC 100 22.4 T5 400D		14,1	11,5	9,5	7,8	6,3	4,8	3,1							
FKC 100 30.4 T5 400D		9,8	9,2	8,5	7,8	6,9	6,0	5,1	4,2	3,3	2,4				
FKC 100 40.4 T5 400D		13,1	11,8	10,7	9,5	8,5	7,4	6,4	5,4	4,4	3,3				
FKC 100 55.4 T5 400Y/D		17,4	15,9	14,6	13,3	12	10,9	9,7	8,6	7,5	6,4	5,2	4	2,7	
FKC 100 75.4 T5 400Y/D		22,5	20,8	19,2	17,7	16,3	14,9	13,7	12,4	11,2	10,1	8,9	7,6	6,4	5,1

## SELECTION TABLE FKC 150

MODEL	Q=m³/h	0	22	43	65	86	108	130	151	173	194	216	238	259	281
	Q=l/min	0	360	720	1080	1440	1800	2160	2520	2880	3240	3600	3960	4320	4680
FKC 150 30.4 T5 400D	H (m)	9,7	9,1	8,5	7,8	7,1	6,3	5,5	4,7	3,8	3,0	2,1			
FKC 150 40.4 T5 400D		13,3	12,1	11,1	10,1	9,1	8,1	7,2	6,2	5,3	4,3	3,2	2,2		
FKC 150 55.4 T5 400Y/D		17,3	15,8	14,4	13,1	12	10,9	9,9	8,9	8	7,1	5,1	5,3	4,3	3,3
FKC 150 75.4 T5 400Y/D		22,5	20,7	19,1	17,6	16,3	15	13,9	12,8	11,7	10,7	8,6	8,7	7,7	6,7

## FKV 65 - 2/4 POLES - SUBMERSIBLE PUMPS FOR SEWAGE

Fluid temperature range: from 0° to +40°C. For higher temperature please contact our sale offices.



The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equal to 1000 kg/m<sup>3</sup>. Curve tolerance according to ISO 9906.

MODEL	ELECTRICAL DATA										
	RATED VOLTAGE 50 Hz	P1 kW	P2 NOMINAL		I <sub>n</sub> A	I <sub>s</sub> A	η% MOTOR	% S3 *EMERGED MOTOR	RATED SPEED rpm/min	STARTING	CABLE
<b>FKV 65 11.4 T5 400D</b>	3 x 400V~	1,3	1,1	1,5	3,3	9,9	85,0%	100% S1	1450	DOL	10mt 4G1.5+3x1
<b>FKV 65 22.2 T5 400D</b>	3 x 400V~	2,5	2,2	3,0	4,8	19,1	87,5%	100% S1	2900	DOL	10mt 4G1.5+3x1
<b>FKV 65 30.2 T5 400D</b>	3 x 400V~	3,3	3,0	4,0	5,7	19,1	87,7%	100% S1	2900	DOL	10mt 4G1.5+3x1
<b>FKV 65 40.2 T5 400D</b>	3 x 400V~	4,6	4,0	5,5	7,5	27,0	89,1%	100% S1	2900	DOL	10mt 4G1.5+3x1

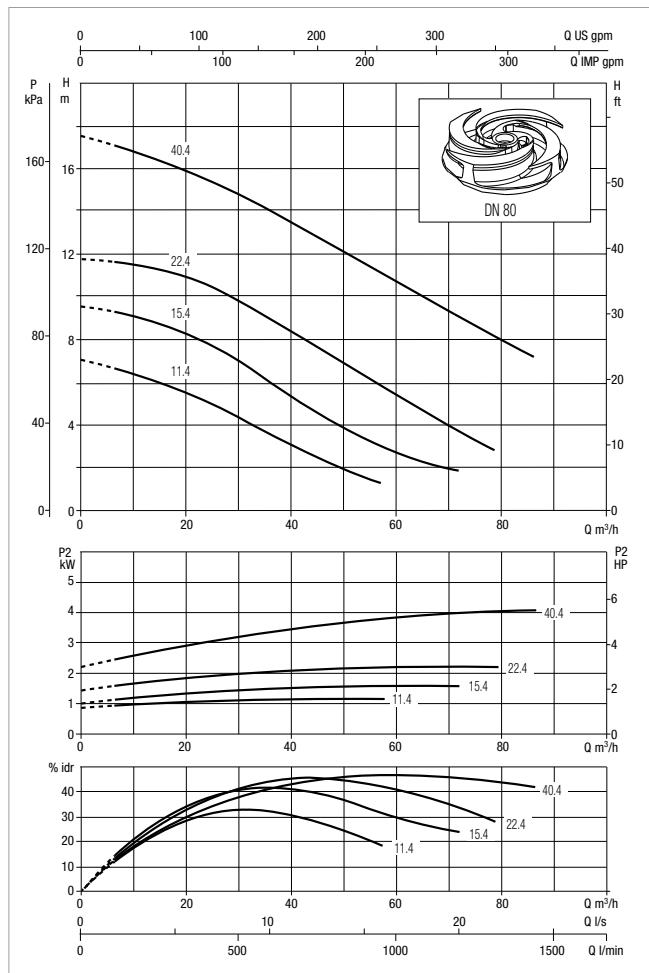
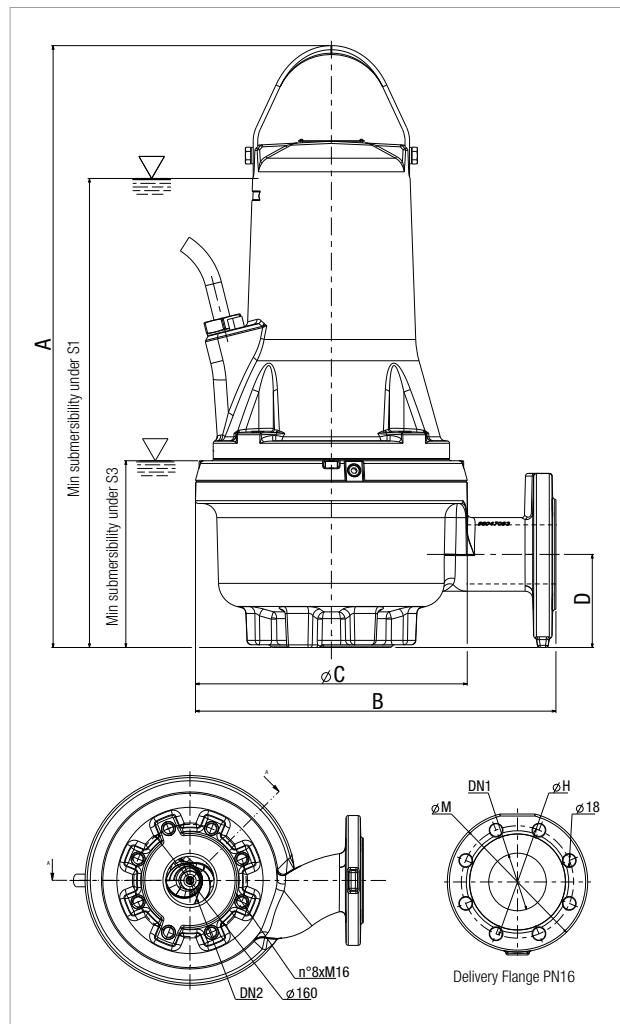
Models available in explosion proof version ATEX or IECEx. Only with pump completely submerged.

\* %S3 indicates the percentage of duty in a cycle from 10 up to 60 minutes; 100% S1 means continuous duty.

MODEL	SOLIDS HANDLING	A	B	C	D	S1	S3	DN2	FLANGE DIMENSION EN 1092-1 PN16				PACKAGING DIMENSION			WEIGHT kg
									DN1	M	H	N°HOLES	L/A	L/B	H	
<b>FKV 65 11.4 T5 400D</b>	55	662	396	300	102	515	206	65	65	185	145	4	830	430	603	105
<b>FKV 65 22.2 T5 400D</b>	65	662	396	300	102	515	206	65	65	185	145	4	830	430	603	105
<b>FKV 65 30.2 T5 400D</b>	65	662	396	300	102	515	206	65	65	185	145	4	830	430	603	105
<b>FKV 65 40.2 T5 400D</b>	65	720	456	360	106	585	245	65	65	185	145	4	1030	530	668	147

## FKV 80 - 4 POLES - SUBMERSIBLE PUMPS FOR SEWAGE

Fluid temperature range: from 0° to +40°C. For higher temperature please contact our sale offices.



The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equal to 1000 kg/m<sup>3</sup>. Curve tolerance according to ISO 9906.

MODEL	ELECTRICAL DATA										
	RATED VOLTAGE 50 Hz	P1 kW	P2 NOMINAL		I <sub>n</sub> A	I <sub>s</sub> A	η% MOTOR	% S3 *EMERGED MOTOR	RATED SPEED rpm/min	STARTING	CABLE
<b>FKV 80 11.4 T5 400D</b>	3x400V~	1,3	1,1	1,5	3,5	11,4	85,2%	100% S1	1450	DOL	10mt 4G1.5+3x1
<b>FKV 80 15.4 T5 400D</b>	3x400V~	1,8	1,5	2,0	3,8	11,4	87,2%	100% S1	1450	DOL	10mt 4G1.5+3x1
<b>FKV 80 22.4 T5 400D</b>	3x400V~	2,5	2,2	3,0	4,7	11,4	87,8%	100% S1	1450	DOL	10mt 4G1.5+3x1
<b>FKV 80 40.4 T5 400D</b>	3x400V~	4,5	4,0	5,5	8,6	20,0	88,8%	100% S1	1450	DOL	10mt 4G1.5+3x1

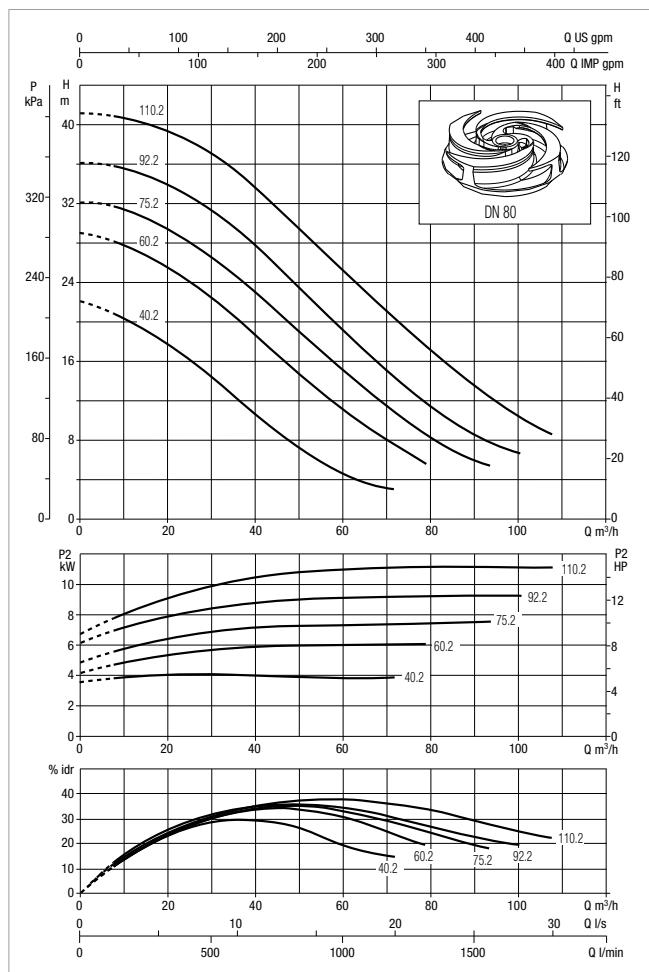
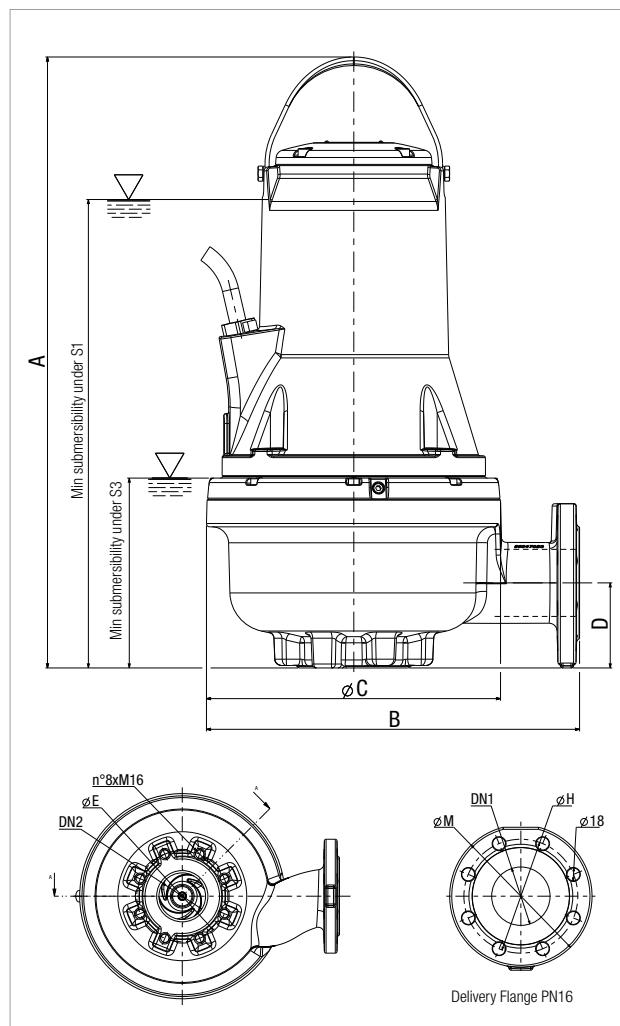
Models available in explosion proof version ATEX or IECEx. Only with pump completely submerged.

\* %S3 indicates the percentage of duty in a cycle from 10 up to 60 minutes; 100% S1 means continuous duty.

MODEL	SOLIDS HANDLING	A	B	C	D	S1	S3	DN2	FLANGE DIMENSION EN 1092-1 PN16				PACKAGING DIMENSION			WEIGHT kg
									DN1	M	H	NºHOLES	L/A	L/B	H	
<b>FKV 80 11.4 T5 400D</b>	80	686	409	336	109	540	230	80	80	200	160	8	830	430	603	114
<b>FKV 80 15.4 T5 400D</b>	80	686	409	336	109	540	230	80	80	200	160	8	830	430	603	114
<b>FKV 80 22.4 T5 400D</b>	80	686	409	336	109	540	230	80	80	200	160	8	830	430	603	115
<b>FKV 80 40.4 T5 400D</b>	80	749	460	386	109	575	235	80	80	200	160	8	1030	530	668	170

## FKV 80 - 2 POLES - SUBMERSIBLE PUMPS FOR SEWAGE

Fluid temperature range: from 0° to +40°C. For higher temperature please contact our sale offices.



The performance curves are based on kinematic viscosity values = 1 mm²/s and density equal to 1000 kg/m³. Curve tolerance according to ISO 9906.

MODEL	ELECTRICAL DATA										
	RATED VOLTAGE 50 Hz	P1 kW	P2 NOMINAL		In A	I <sub>s</sub> A	η% MOTOR	% S3 * EMERGED MOTOR	RATED SPEED rpm/min	STARTING	CABLE
<b>FKV 80 40.2 T5 400D</b>	3x400V~	4,6	4,0	5,5	7,7	27,0	88,2%	100% S1	2900	DOL	10mt 4G1,5+3x1
<b>FKV 80 60.2 T5 400Y/D</b>	3x400V~	6,9	6,0	8,2	11,7	43,5	88,0%	45%	2900	Y/Δ	10mt 7G2,5+3x1
<b>FKV 80 75.2 T5 400Y/D</b>	3x400V~	8,3	7,5	10,2	13,7	41,2	90,7%	40%	2900	Y/Δ	10mt 7G2,5+3x1
<b>FKV 80 92.2 T5 400Y/D</b>	3x400V~	10,2	9,2	12,5	18,0	119,0	90,8%	45%	2900	Y/Δ	10mt 7G2,5+3x1
<b>FKV 80 110.2 T5 400Y/D</b>	3x400V~	12,1	11,0	15,0	21,0	121,0	91,2%	40%	2900	Y/Δ	10mt 7G2,5+3x1

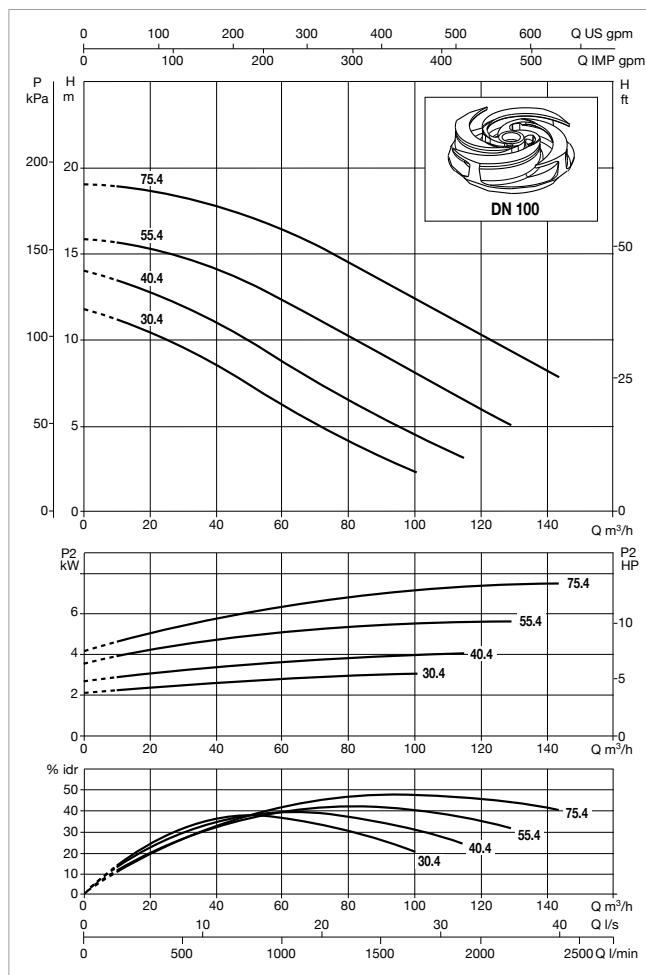
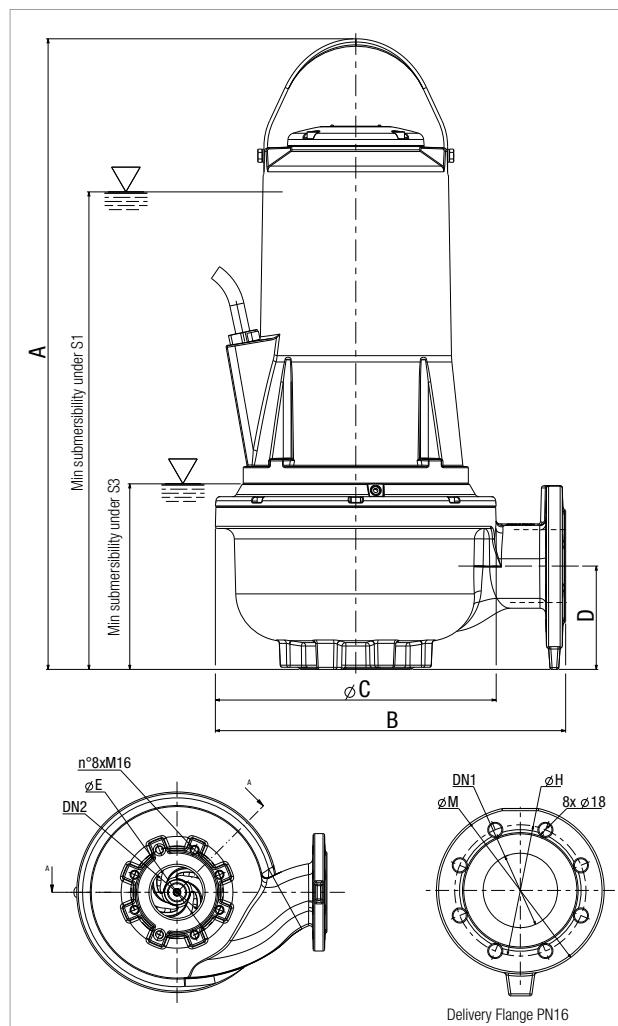
Models available in explosion proof version ATEX or IECEx. Only with pump completely submerged.

\* %S3 indicates the percentage of duty in a cycle from 10 up to 60 minutes; 100% S1 means continuous duty.

MODEL	SOLIDS HANDLING	A	B	C	D	S1	S3	DN2	FLANGE DIMENSION EN 1092-1 PN16				PACKAGING DIMENSION			WEIGHT kg
									DN1	M	H	N°HOLES	L/A	L/B	H	
<b>FKV 80 40.2 T5 400D</b>	80	747	456	360	104	575	235	80	80	200	160	8	1030	530	668	153
<b>FKV 80 60.2 T5 400Y/D</b>	80	747	456	360	104	575	235	80	80	200	160	8	1030	530	668	168
<b>FKV 80 75.2 T5 400Y/D</b>	80	747	456	360	104	575	235	80	80	200	160	8	1030	530	668	168
<b>FKV 80 92.2 T5 400Y/D</b>	80	863	488	390	123	650	240	80	80	200	160	8	1030	530	668	218
<b>FKV 80 110.2 T5 400Y/D</b>	80	863	488	390	123	650	240	80	80	200	160	8	1030	530	668	218

## FKV 100 - 4 POLES - SUBMERSIBLE PUMPS FOR SEWAGE

Fluid temperature range: from 0° to +40°C. For higher temperature please contact our sale offices.



The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equal to 1000 kg/m<sup>3</sup>. Curve tolerance according to ISO 9906.

MODEL	ELECTRICAL DATA										
	RATED VOLTAGE 50 Hz	P1 kW	P2 NOMINAL kW HP		In A	I <sub>s</sub> A	η% MOTOR	% S3 * EMERGED MOTOR	RATED SPEED rpm/min	STARTING	CABLE
<b>FKV 100 30.4 T5 400D</b>	3x400V~	3,5	3,0	4,0	8,0	24,7	87,8%	100% S1	1450	DOL	10mt 4G1,5+3x1
<b>FKV 100 40.4 T5 400D</b>	3x400V~	4,5	4,0	5,5	8,9	20,0	88,8%	100% S1	1450	DOL	10mt 4G1,5+3x1
<b>FKV 100 55.4 T5 400Y/D</b>	3x400V~	6,2	5,5	7,5	11,3	50,3	90,8%	80%	1450	Y/Δ	10mt 7G2,5+3x1
<b>FKV 100 75.4 T5 400Y/D</b>	3x400V~	8,3	7,5	10,0	14,3	44,5	90,6%	60%	1450	Y/Δ	10mt 7G2,5+3x1

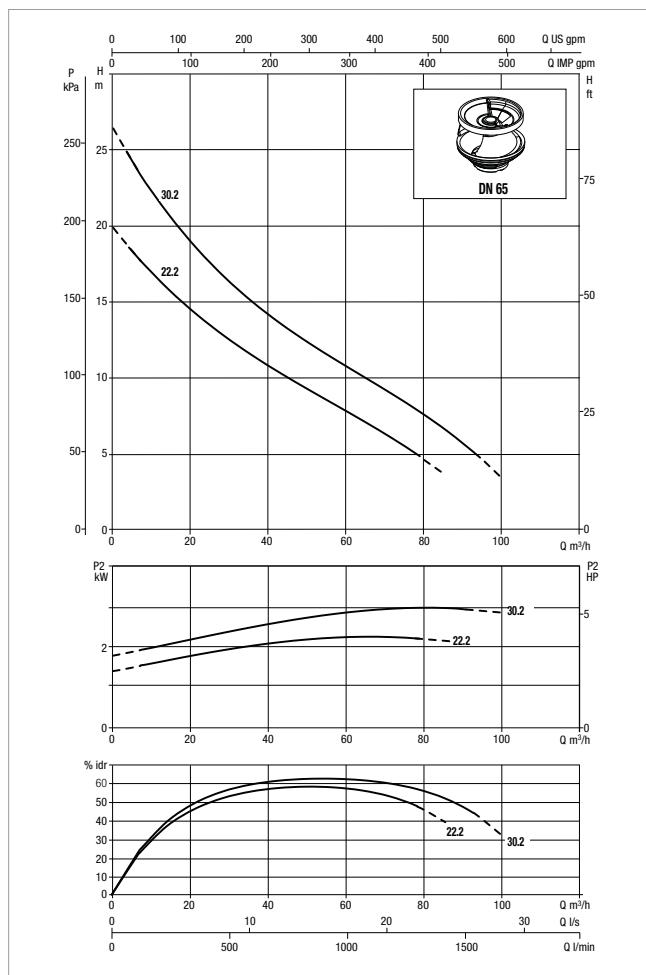
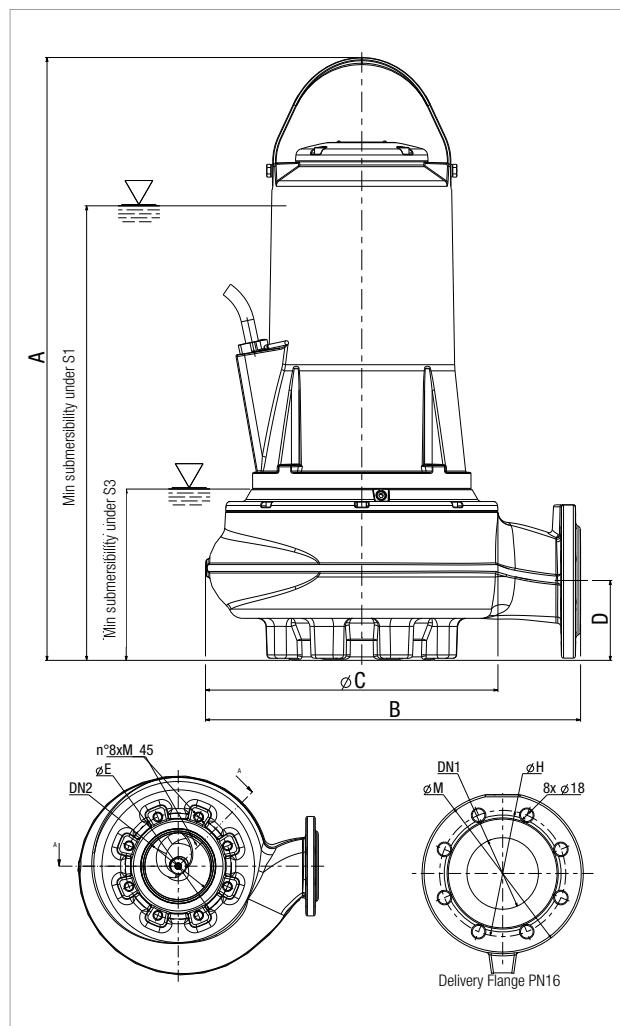
Models available in explosion proof version ATEX or IECEx. Only with pump completely submerged.

\* %S3 indicates the percentage of duty in a cycle from 10 up to 60 minutes; 100% S1 means continuous duty.

MODEL	SOLIDS HANDLING	A	B	C	D	S1	S3	DN2	FLANGE DIMENSION EN 1092-1 PN16				PACKAGING DIMENSION			WEIGHT kg
									DN1	M	H	N°HOLES	L/A	L/B	H	
<b>FKV 100 30.4 T5 400D</b>	100	760	457	360	134	585	245	100	100	230	180	8	1030	530	668	167
<b>FKV 100 40.4 T5 400D</b>	100	760	457	360	134	585	245	100	100	230	180	8	1030	530	668	167
<b>FKV 100 55.4 T5 400Y/D</b>	100	883	490	390	123	670	230	100	100	230	180	8	1030	530	668	221
<b>FKV 100 75.4 T5 400Y/D</b>	100	883	490	390	123	670	230	100	100	230	180	8	1030	530	668	221

## FKC 65 - 2 POLES - SUBMERSIBLE PUMPS FOR SEWAGE

Fluid temperature range: from 0° to +40°C. For higher temperature please contact our sale offices.



The performance curves are based on kinematic viscosity values = 1 mm²/s and density equal to 1000 kg/m³. Curve tolerance according to ISO 9906.

MODEL	ELECTRICAL DATA										
	RATED VOLTAGE 50 Hz	P1 kW	P2 NOMINAL		In A	Is A	η% MOTOR	% S3 * EMERGED MOTOR	RATED SPEED rpm/min	STARTING	CABLE
			KW	HP							
FKC 65 22.2 T5 400D	3x400V~	2,6	2,2	3,0	4,8	19,1	87,3%	100% S1	2900	DOL	10mt 4G1.5+3x1
FKC 65 30.2 T5 400D	3x400V~	3,4	3,0	4,0	5,8	19,1	87,8%	100% S1	2900	DOL	10mt 4G1.5+3x1

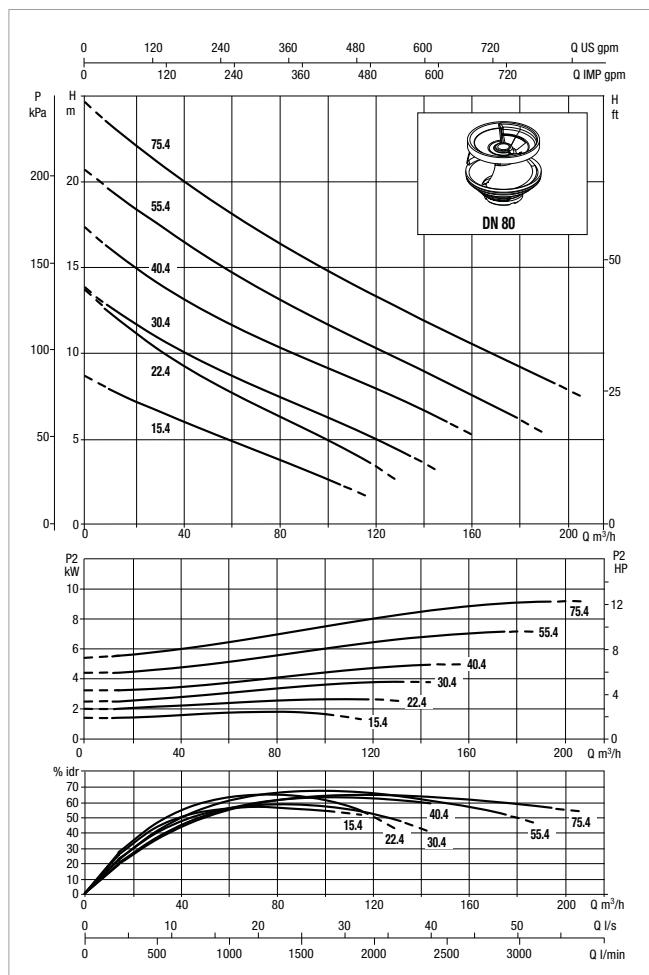
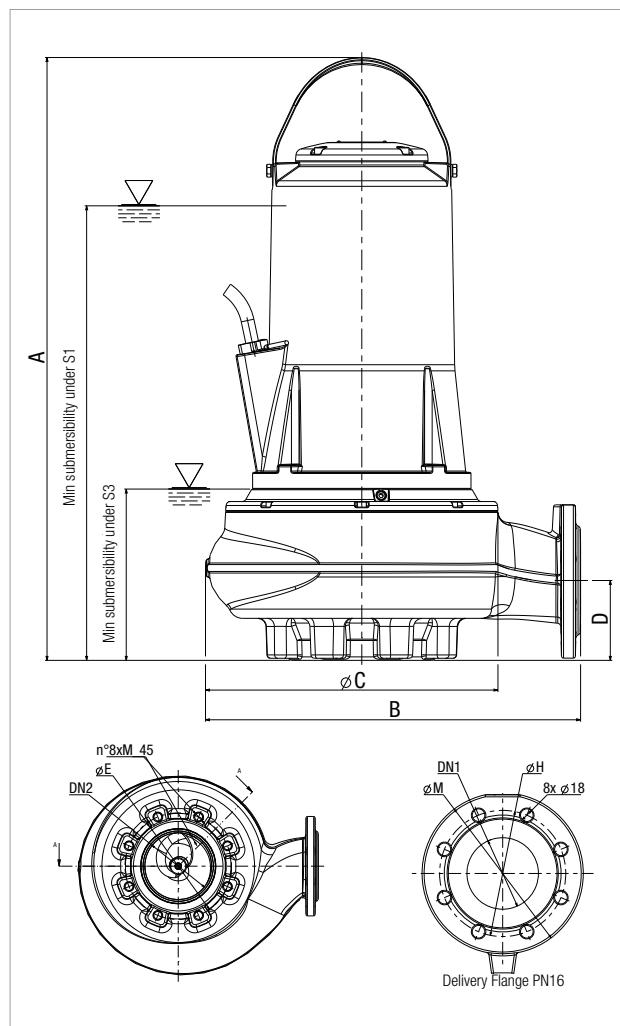
Models available in explosion proof version ATEX or IECEx. Only with pump completely submerged.

\* %S3 indicates the percentage of duty in a cycle from 10 up to 60 minutes; 100% S1 means continuous duty.

MODEL	SOLIDS HANDLING	A	B	C	D	S1	S3	DN2	FLANGE DIMENSION EN 1092-1 PN16				PACKAGING DIMENSION			WEIGHT kg
									DN1	M	H	N°HOLES	L/A	L/B	H	
FKC 65 22.2 T5 400D	50	645	365	300	91	494	188	65	65	185	145	4	830	430	603	104
FKC 65 30.2 T5 400D	50	645	365	300	91	494	188	65	65	185	145	4	830	430	603	104

## FKC 80 - 4 POLES - SUBMERSIBLE PUMPS FOR SEWAGE

Fluid temperature range: from 0° to +40°C. For higher temperature please contact our sale offices.



The performance curves are based on kinematic viscosity values = 1 mm²/s and density equal to 1000 kg/m³. Curve tolerance according to ISO 9906.

MODEL	ELECTRICAL DATA										
	RATED VOLTAGE 50 Hz	P1 kW	P2 NOMINAL		In A	Is A	η1% MOTOR	% S3 * EMERGED MOTOR	RATED SPEED rpm/min	STARTING	CABLE
			kW	HP							
<b>FKC 80 15.4 T5 400D</b>	3x 400 V~	1,8	1,5	2,0	3,5	11,4	87,2%	100% S1	1450	DOL	10mt 4G1.5+3x1
<b>FKC 80 22.4 T5 400D</b>	3x 400 V~	2,6	2,2	3,0	4,7	11,4	87,3%	100% S1	1450	DOL	10mt 4G1.5+3x1
<b>FKC 80 30.4 T5 400D</b>	3x 400 V~	3,6	3,0	4,0	7,6	24,7	87,9%	100% S1	1450	DOL	10mt 4G1.5+3x1
<b>FKC 80 40.4 T5 400D</b>	3x 400 V~	4,7	4,0	5,5	8,9	20,0	88,6%	100% S1	1450	DOL	10mt 4G1.5+3x1
<b>FKC 80 55.4 T5 400Y/D</b>	3x 400 V~	6,3	5,5	7,5	12	50,3	89,8%	80%	1450	Y/Δ	10mt 7G2,5+3x1
<b>FKC 80 75.4 T5 400Y/D</b>	3x 400 V~	8,5	7,5	10,0	14,1	44,5	90,7%	60%	1450	Y/Δ	10mt 7G2,5+3x1

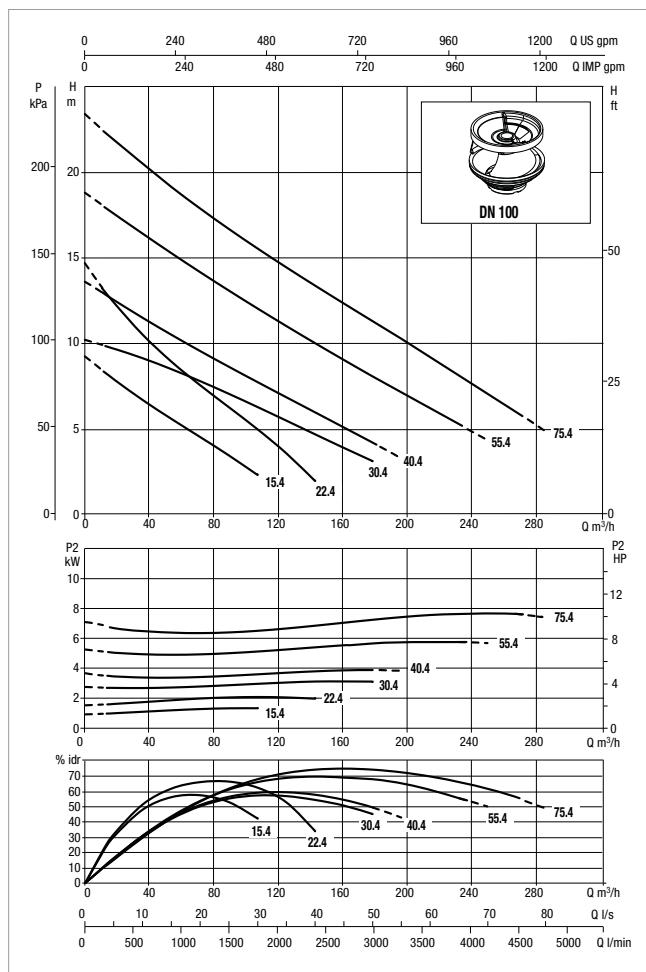
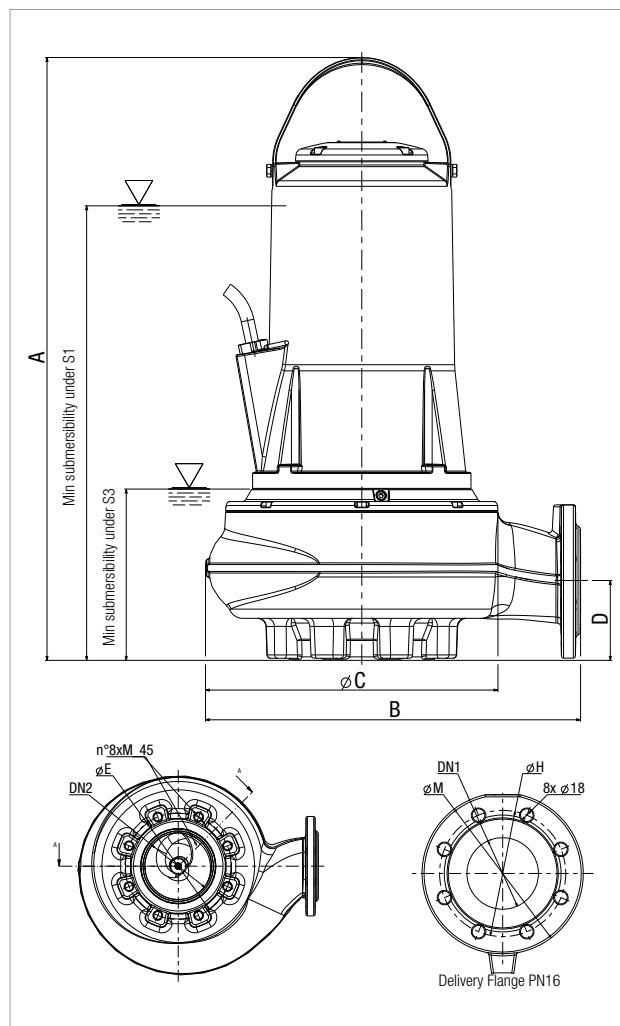
Models available in explosion proof version ATEX or IECEx. Only with pump completely submerged.

\* %S3 indicates the percentage of duty in a cycle from 10 up to 60 minutes; 100% S1 means continuous duty.

MODEL	SOLIDS HANDLING	A	B	C	D	S1	S3	DN2	FLANGE DIMENSION EN 1092-1 PN16				PACKAGING DIMENSION			WEIGHT kg
									DN1	M	H	N°HOLES	L/A	L/B	H	
<b>FKC 80 15.4 T5 400D</b>	80	665	435	355	100	514	208	100	80	200	160	8	830	430	603	167
<b>FKC 80 22.4 T5 400D</b>	80	665	435	355	100	514	208	100	80	200	160	8	830	430	603	167
<b>FKC 80 30.4 T5 400D</b>	80	750	506	380	118	548	210	100	80	200	160	8	1030	530	728	221
<b>FKC 80 40.4 T5 400D</b>	80	750	506	380	118	548	210	100	80	200	160	8	1030	530	728	221
<b>FKC 80 55.4 T5 400Y/D</b>	80	860	530	407	118	660	250	100	80	200	160	8	1030	530	728	231
<b>FKC 80 75.4 T5 400Y/D</b>	80	860	530	407	118	660	250	100	80	200	160	8	1030	530	728	237

## FKC 100 - 4 POLES - SUBMERSIBLE PUMPS FOR SEWAGE

Fluid temperature range: from 0° to +40°C. For higher temperature please contact our sale offices.



The performance curves are based on kinematic viscosity values = 1 mm²/s and density equal to 1000 kg/m³. Curve tolerance according to ISO 9906.

MODEL	ELECTRICAL DATA										
	RATED VOLTAGE 50 Hz	P1 kW	P2 NOMINAL		In A	Is A	11% MOTOR	% S3 * EMERGED MOTOR	RATED SPEED rpm/min	STARTING	CABLE
			kW	HP							
<b>FKC 100 15.4 T5 400D</b>	3x 400V~	1,8	1,5	2,0	3,9	11,4	87,2%	100% S1	1450	DOL	10mt 4G1.5+3x1
<b>FKC 100 22.4 T5 400D</b>	3x 400V~	2,6	2,2	3,0	4,7	11,4	87,3%	100% S1	1450	DOL	10mt 4G1.5+3x1
<b>FKC 100 30.4 T5 400D</b>	3x 400V~	3,3	3,0	4,0	7,7	24,7	88,0%	100% S1	1450	DOL	10mt 4G1.5+3x1
<b>FKC 100 40.4 T5 400D</b>	3x 400V~	4,2	4,0	5,5	8,6	20,0	89,6%	100% S1	1450	DOL	10mt 4G1.5+3x1
<b>FKC 100 55.4 T5 400Y/D</b>	3x 400V~	5,7	5,5	7,5	11,4	50,3	90,9%	80%	1450	Y/Δ	10mt 7G2,5+3x1
<b>FKC 100 75.4 T5 400Y/D</b>	3x 400V~	8,1	7,5	10,0	14,6	44,5	90,4%	60%	1450	Y/Δ	10mt 7G2,5+3x1

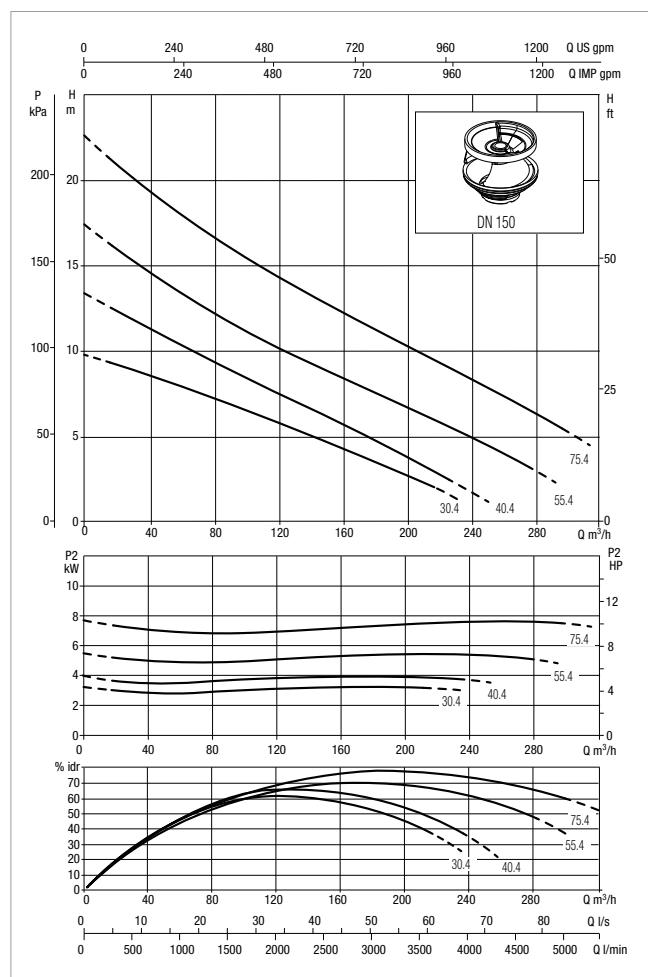
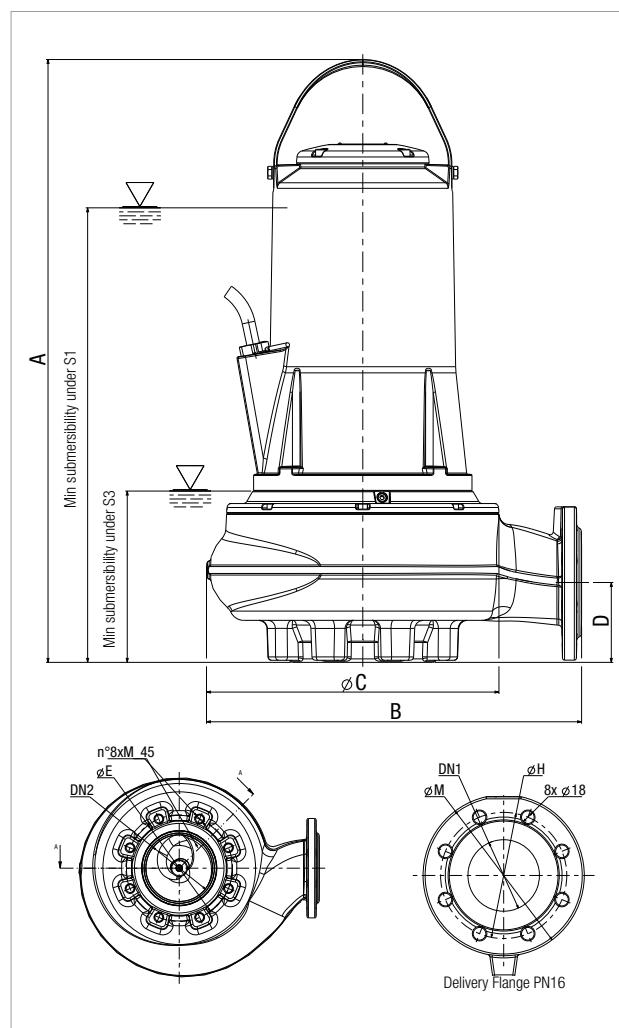
Models available in explosion proof version ATEX or IECEx. Only with pump completely submerged.

\* %S3 indicates the percentage of duty in a cycle from 10 up to 60 minutes; 100% S1 means continuous duty.

MODEL	SOLIDS HANDLING	A	B	C	D	S1	S3	DN2	FLANGE DIMENSION EN 1092-1 PN16				PACKAGING DIMENSION			WEIGHT kg
									DN1	M	H	N°HOLES	L/A	L/B	H	
<b>FKC 100 15.4 T5 400D</b>	80	677	435	355	112	526	220	100	100	224	180	8	803	430	603	117
<b>FKC 100 22.4 T5 400D</b>	80	677	435	355	112	526	220	100	100	224	180	8	803	430	603	117
<b>FKC 100 30.4 T5 400D</b>	100	758	544	430	116	558	220	150	100	224	180	8	1030	530	728	190
<b>FKC 100 40.4 T5 400D</b>	100	758	544	430	116	558	220	150	100	230	180	8	1030	530	728	190
<b>FKC 100 55.4 T5 400Y/D</b>	100	870	540	445	115	660	250	150	100	225	180	8	1030	530	728	238
<b>FKC 100 75.4 T5 400Y/D</b>	100	870	540	445	115	660	250	150	100	230	180	8	1030	530	728	238

## FKC 150 - 4 POLES - SUBMERSIBLE PUMPS FOR SEWAGE

Fluid temperature range: from 0° to +40°C. For higher temperature please contact our sale offices.



The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equal to 1000 kg/m<sup>3</sup>. Curve tolerance according to ISO 9906.

MODEL	ELECTRICAL DATA										
	RATED VOLTAGE 50 Hz	P1 kW	P2 NOMINAL		In A	I <sub>s</sub> A	η% MOTOR	% S3 *EMERGED MOTOR	RATED SPEED rpm/min	STARTING	CABLE
			kW	HP							
<b>FKC 150 30.4 T5 400D</b>	3x400V~	3,7	3,0	4,1	7,8	20,0	88,8%	100% S1	1450	DOL	10mt 4G1,5+3x1
<b>FKC 150 40.4 T5 400D</b>	3x400V~	4,5	4,0	5,5	8,7	20,0	88,8%	100% S1	1450	DOL	10mt 4G1,5+3x1
<b>FKC 150 55.4 T5 400Y/D</b>	3x400V~	6,0	5,5	7,5	11,3	50,3	90,8%	80%	1450	Y/Δ	10mt 7G2,5+3x1
<b>FKC 150 75.4 T5 400Y/D</b>	3x400V~	8,4	7,5	10,1	14,7	44,5	90,6%	60%	1450	Y/Δ	10mt 7G2,5+3x1

Models available in explosion proof version ATEX or IECEx. Only with pump completely submerged.

\* %S3 indicates the percentage of duty in a cycle from 10 up to 60 minutes; 100% S1 means continuous duty.

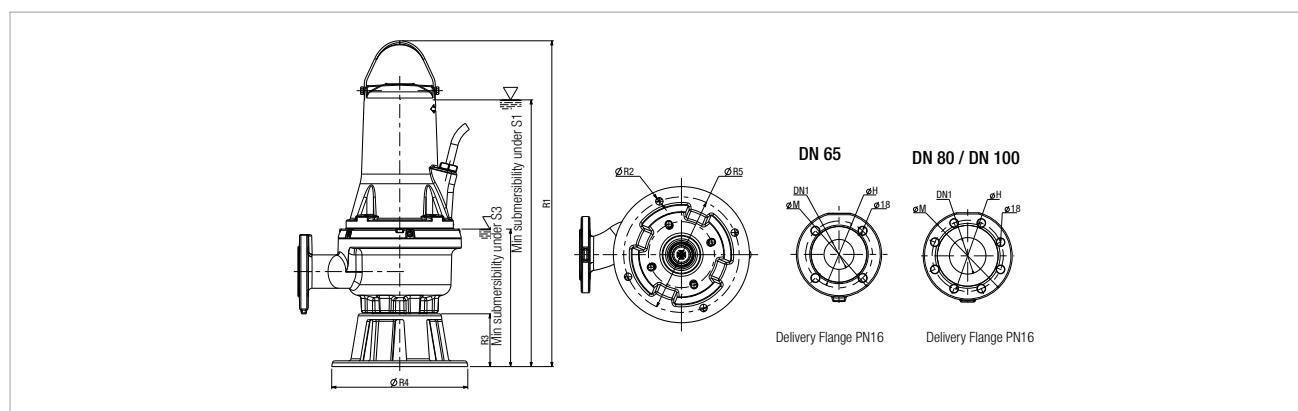
MODEL	SOLIDS HANDLING	A	B	C	D	S1	S3	DN2	FLANGE DIMENSION EN 1092-1 PN16				PACKAGING DIMENSION			WEIGHT kg
									DN1	M	H	NºHOLES	L/A	L/B	H	
<b>FKC 150 30.4 T5 400D</b>	100	775	544	435	128	568	220	150	150	285	240	8	1030	530	728	193
<b>FKC 150 40.4 T5 400D</b>	100	775	544	435	128	568	220	150	150	285	240	8	1030	530	728	193
<b>FKC 150 55.4 T5 400Y/D</b>	100	870	540	460	110	660	250	150	150	285	240	8	1030	530	728	240
<b>FKC 150 75.4 T5 400Y/D</b>	100	870	540	460	110	660	250	150	150	285	240	8	1030	530	728	242

## FK - RINGSTAND

The Ringstand is useful for portable installation when a rapid pump positioning in the tank is needed, ensuring high stability thanks to a large contact surface.

DESCRIPTION		GENERAL FEATURES	FKC 65	FKV 65/80	FKC 80/100	FKC 65 100/150	PACKAGING DIMENSION			WEIGHT Kg
							L/A	L/B	H	
	RINGSTAND 0325 FK	<ul style="list-style-type: none"> <li>- EN GJL200</li> <li>- Screws Stainless Steel A2</li> <li>- Two Component Coating</li> </ul>	X				360	360	160	10,5
	RINGSTAND 0330 FK			X						10,5
	RINGSTAND 0355 FK				X above 2.2 kW					11,4
	RINGSTAND 0400 FK	<ul style="list-style-type: none"> <li>- Hot galvanized steel</li> <li>- A2 STAINLESS STEEL bolts and screws</li> </ul>			X above 2.2 kW	500	500	180		10,3

MODEL	R1	R2	R3	R4	R5	S1	S3	FLANGE DIMENSION EN 1092-1 PN16			
								DN1	M	H	N° HOLES
<b>FKV 65 11.4 T5 400D</b>	790	18	128	330	280	643	334	65	185	145	4
<b>FKV 65 22.2 T5 400D</b>	790	18	128	330	280	643	334	65	185	145	4
<b>FKV 65 30.2 T5 400D</b>	790	18	128	330	280	643	334	65	185	145	4
<b>FKV 65 40.2 T5 400D</b>	848	18	128	330	280	713	373	65	185	145	4
<b>FKV 80 11.4 T5 400D</b>	814	18	128	330	280	668	358	80	200	160	8
<b>FKV 80 15.4 T5 400D</b>	814	18	128	330	280	668	358	80	200	160	8
<b>FKV 80 22.4 T5 400D</b>	814	18	128	330	280	668	358	80	200	160	8
<b>FKV 80 40.4 T5 400D</b>	877	18	128	330	280	703	363	80	200	160	8
<b>FKV 80 40.2 T5 400D</b>	875	18	128	330	280	703	363	80	200	160	8
<b>FKV 80 60.2 T5 400Y/D</b>	875	18	128	330	280	703	363	80	200	160	8
<b>FKV 80 75.2 T5 400Y/D</b>	875	18	128	330	280	703	363	80	200	160	8
<b>FKV 80 92.2 T5 400Y/D</b>	991	18	128	330	280	778	368	80	200	160	8
<b>FKV 80 110.2 T5 400Y/D</b>	991	18	128	330	280	778	368	80	200	160	8
<b>FKV 100 30.4 T5 400D</b>	890	19	130	355	300	715	375	100	230	180	8
<b>FKV 100 40.4 T5 400D</b>	890	19	130	355	300	715	375	100	230	180	8
<b>FKV 100 55.4 T5 400Y/D</b>	1013	19	130	355	300	800	390	100	230	180	8
<b>FKV 100 75.4 T5 400Y/D</b>	1013	19	130	355	300	800	390	100	230	180	8
<b>FKC 65 22.2 T5 400D</b>	750	19	130	325	270	600	290	65	185	145	4
<b>FKC 65 30.2 T5 400D</b>	750	19	130	325	270	600	290	65	185	145	4
<b>FKC 80 15.4 T5 400D</b>	787	19	130	355	300	640	330	80	200	160	8
<b>FKC 80 22.4 T5 400D</b>	787	19	130	355	300	640	330	80	200	160	8
<b>FKC 80 30.4 T5 400D</b>	879	19	130	355	300	692	365	80	200	160	8
<b>FKC 80 40.4 T5 400D</b>	879	19	130	355	300	692	365	80	200	160	8
<b>FKC 80 55.4 T5 400Y/D</b>	879	19	130	355	300	692	365	80	200	160	8
<b>FKC 80 75.4 T5 400Y/D</b>	879	19	130	355	300	692	365	80	200	160	8
<b>FKC 100 15.4 T5 400D</b>	787	19	130	355	300	640	330	100	224	180	8
<b>FKC 100 22.4 T5 400D</b>	787	19	130	355	300	640	330	100	224	180	8
<b>FKC 100 30.4 T5 400D</b>	-	-	-	-	-	-	-	100	224	180	8
<b>FKC 100 40.4 T5 400D</b>	-	-	-	-	-	-	-	100	224	180	8
<b>FKC 100 55.4 T5 400Y/D</b>	-	-	-	-	-	-	-	100	224	180	8
<b>FKC 100 75.4 T5 400Y/D</b>	-	-	-	-	-	-	-	100	224	180	8
<b>FKC 150 40.4 T5 400D</b>	-	-	-	-	-	-	-	150	285	240	8
<b>FKC 150 40.4 T5 400D</b>	-	-	-	-	-	-	-	150	285	240	8
<b>FKC 150 55.4 T5 400Y/D</b>	-	-	-	-	-	-	-	150	285	240	8
<b>FKC 150 75.4 T5 400Y/D</b>	-	-	-	-	-	-	-	150	285	240	8



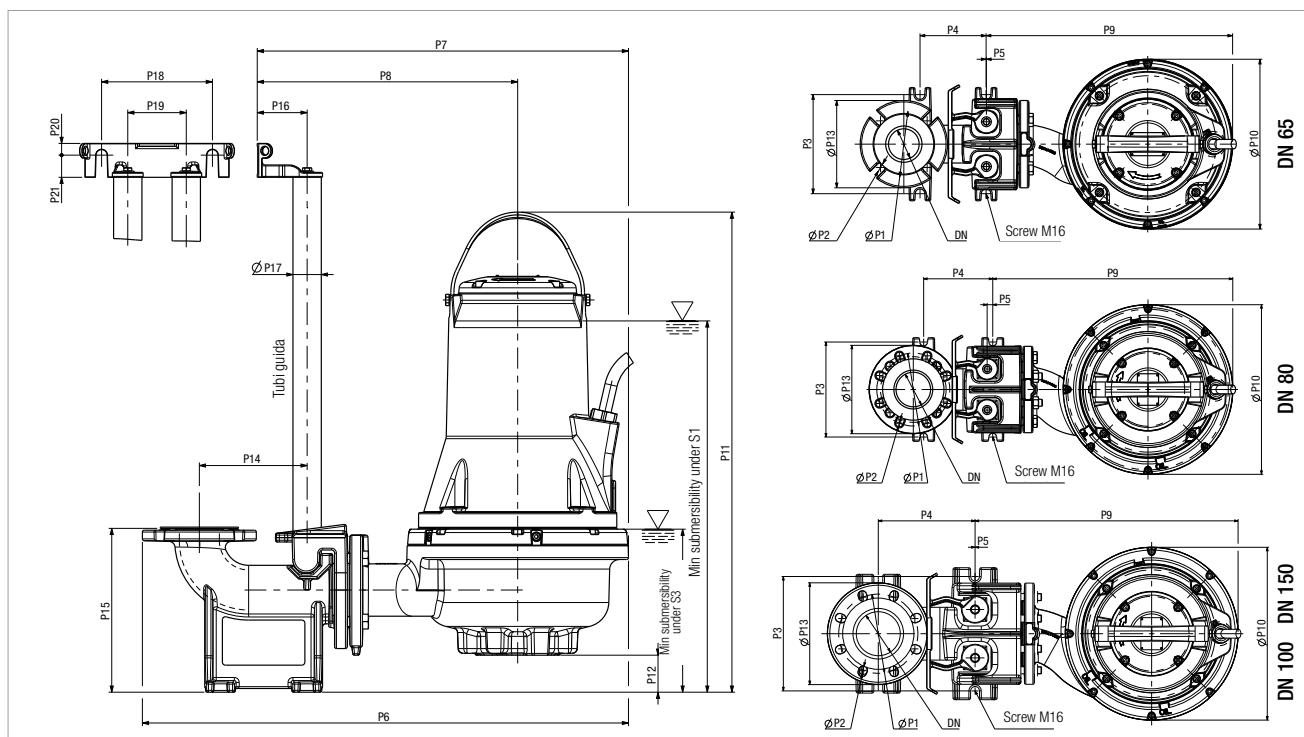
## FK - COUPLING UNIT WITH VERTICAL OUTLET DA-V (DN65 ÷ DN100)

The coupling unit devices for fixed installation facilitate the ascent and descent of the pump in the tank. They come complete with all necessary components for installation with the exception of guide rails.

DESCRIPTION	GENERAL FEATURES	FKV - FKC 65	FKV - FKC 80	FKV - FKC 100	FKC 150	PACKAGING DIMENSION			WEIGHT Kg
		L/A	L/B	H					
	DA-V65 COUPLING UNIT DN65	<ul style="list-style-type: none"> <li>- EN GJL200</li> <li>- Screws Stainless Steel A2</li> <li>- Two Component Coating</li> <li>- NBR Rubber Seal</li> </ul>	X						25
	DA-V80 COUPLING UNIT DN80			X					31,5
	DA-V100 COUPLING UNIT DN100				X				60
	DA-V150 COUPLING UNIT DN150					X			96

MODEL	DN	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	P21	S1	S3
<b>FKV 65 11.4 T5 400D</b>	65	145	4xø18	210	140	1	730	543	394	463	300	725	63	185	175	266	81	1" 1/2	180	95	19	36	578	269
<b>FKV 65 22.2 T5 400D</b>	65	145	4xø18	210	140	1	730	543	394	463	300	725	63	185	175	266	81	1" 1/2	180	95	19	36	578	269
<b>FKV 65 30.2 T5 400D</b>	65	145	4xø18	210	140	1	730	543	394	463	300	725	63	185	175	266	81	1" 1/2	180	95	19	36	578	269
<b>FKV 65 40.2 T5 400D</b>	65	145	4xø18	210	140	1	790	603	423	523	360	780	60	185	175	266	81	1" 1/2	180	95	19	36	645	305
<b>FKV 80 11.4 T5 400D</b>	80	150+160	4xø19+8xø18	220	160	13	762	570	402	489	336	777	91	205	171	345	81	1" 1/2	180	95	19	36	631	321
<b>FKV 80 15.4 T5 400D</b>	80	150+160	4xø19+8xø18	220	160	13	762	570	402	489	336	777	91	205	171	345	81	1" 1/2	180	95	19	36	631	321
<b>FKV 80 22.4 T5 400D</b>	80	150+160	4xø19+8xø18	220	160	13	762	570	402	489	336	777	91	205	171	345	81	1" 1/2	180	95	19	36	631	321
<b>FKV 80 40.4 T5 400D</b>	80	150+160	4xø19+8xø18	220	160	13	813	620	427	527	386	842	91	205	171	345	81	1" 1/2	180	95	19	36	666	326
<b>FKV 80 40.2 T5 400D</b>	80	150+160	4xø19+8xø18	220	160	13	809	617	437	523	360	843	96	205	171	345	81	1" 1/2	180	95	19	36	671	331
<b>FKV 80 60.2 T5 400Y/D</b>	80	150+160	4xø19+8xø18	220	160	13	809	617	437	523	360	843	96	205	171	345	81	1" 1/2	180	95	19	36	671	331
<b>FKV 80 75.2 T5 400Y/D</b>	80	150+160	4xø19+8xø18	220	160	13	809	617	437	523	360	843	96	205	171	345	81	1" 1/2	180	95	19	36	671	331
<b>FKV 80 92.2 T5 400Y/D</b>	80	150+160	4xø19+8xø18	220	160	13	842	650	454	556	390	940	77	205	171	345	81	1" 1/2	180	95	19	36	727	317
<b>FKV 80 110.2 T5 400Y/D</b>	80	150+160	4xø19+8xø18	220	160	13	842	650	454	556	390	940	77	205	171	345	81	1" 1/2	180	95	19	36	727	317
<b>FKV 100 30.4 T5 400D</b>	100	180	8xø18	260	220	0	900	675	495	565	360	866	106	230	220	413	110	2"	200	110	20	35	691	351
<b>FKV 100 40.4 T5 400D</b>	100	180	8xø18	260	220	0	900	675	495	565	360	866	106	230	220	413	110	2"	200	110	20	35	691	351
<b>FKV 100 55.4 T5 400Y/D</b>	100	180	8xø18	260	220	0	934	708	512	597	390	979	96	230	220	413	110	2"	200	110	20	35	766	356
<b>FKV 100 75.4 T5 400Y/D</b>	100	180	8xø18	260	220	0	934	708	512	597	390	979	96	230	220	413	110	2"	200	110	20	35	766	356

MODEL	DN	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	P21	S1	S3
<b>FKC 65 22.2 T5 400D</b>	65	145	4xØ18	210	140	1	700	512	363	431	300	720	100	185	175	266	81	1" 1/2	180	95	19	36	578	270
<b>FKC 65 30.2 T5 400D</b>	65	145	4xØ18	210	140	1	700	512	363	431	300	720	100	185	175	266	81	1" 1/2	180	95	19	36	578	270
<b>FKC 80 15.4 T5 400D</b>	80	150+160	4xØ19+8xØ18	220	160	13	769	594	432	513	355	765	108	205	171	345	81	1" 1/2	180	95	19	36	630	325
<b>FKC 80 22.4 T5 400D</b>	80	150+160	4xØ19+8xØ18	220	160	13	769	594	432	513	355	765	108	205	171	345	81	1" 1/2	180	95	19	36	630	325
<b>FKC 80 30.4 T5 400D</b>	80	150+160	4xØ19+8xØ18	220	160	13	860	666	480	572	384	832	82	205	171	345	81	1" 1/2	180	95	19	36	666	326
<b>FKC 80 40.4 T5 400D</b>	80	150+160	4xØ19+8xØ18	220	160	13	860	666	480	572	384	832	82	205	171	345	81	1" 1/2	180	95	19	36	671	331
<b>FKC 80 55.4 T5 400Y/D</b>	80	150+160	4xØ19+8xØ18	220	160	13	883	690	490	596	407	940	82	205	171	345	81	1" 1/2	180	95	19	36	730	320
<b>FKC 80 75.4 T5 400Y/D</b>	80	150+160	4xØ19+8xØ18	220	160	13	883	690	490	596	407	940	82	205	171	345	81	1" 1/2	180	95	19	36	730	320
<b>FKC 100 15.4 T5 400D</b>	100	180+190	8xØ18	230	220	0	876	652	490	542	355	805	148	230	220	413	110	2	200	110	20	35	800	350
<b>FKC 100 22.4 T5 400D</b>	100	180+190	8xØ18	230	220	0	876	652	490	542	355	805	148	230	220	413	110	2	200	110	20	35	800	350
<b>FKC 100 30.4 T5 400D</b>	100	180	8xØ18	260	220	0	990	762	546	652	430	885	125	230	220	413	110	2"	200	110	20	35	691	351
<b>FKC 100 40.4 T5 400D</b>	100	180	8xØ18	260	220	0	990	762	546	652	430	885	125	230	220	413	110	2"	200	110	20	35	691	351
<b>FKC 100 55.4 T5 400Y/D</b>	100	180	8xØ18	260	220	0	984	759	533	649	445	995	125	230	220	413	110	2"	200	110	20	35	785	375
<b>FKC 100 75.4 T5 400Y/D</b>	100	180	8xØ18	260	220	0	984	759	533	649	445	995	125	230	220	413	110	2"	200	110	20	35	785	375
<b>FKC 150 30.4 T5 400D</b>	150	240	8xØ23	300	280	0	1095	780	563	670	435	922	165	290	280	450	110	2"	200	110	20	35	735	407
<b>FKC 150 40.4 T5 400D</b>	150	240	8xØ23	300	280	0	1095	780	563	670	435	922	165	290	280	450	110	2"	200	110	20	35	735	407
<b>FKC 150 55.4 T5 400Y/D</b>	150	240	8xØ23	300	280	0	1095	781	548	671	458	1035	165	290	280	450	110	2"	200	110	20	35	820	410
<b>FKC 150 75.4 T5 400Y/D</b>	150	240	8xØ23	300	280	0	1095	781	548	671	458	1035	165	290	280	450	110	2"	200	110	20	35	820	410

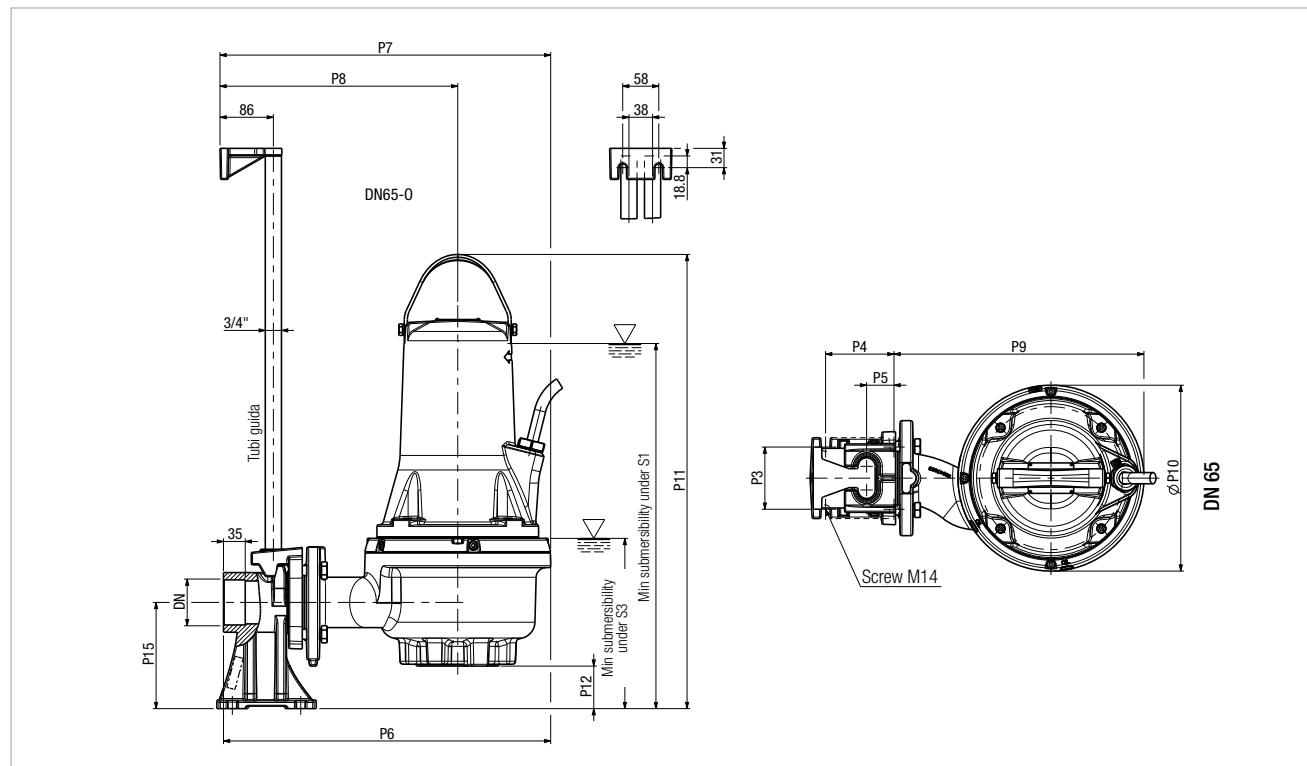


## FK - COUPLING UNIT WITH HORIZONTAL OUTLET DA-0 (DN65)

The coupling unit devices for fixed installation facilitate the ascent and descent of the pump in the tank. They come complete with all necessary components for installation with the exception of guide rails.

DESCRIPTION	GENERAL FEATURES	FKV - FKC 65	FKV - FKC 80	FKV - FKC 100	FKC 150	PACKAGING DIMENSION			WEIGHT Kg
						L/A	L/B	H	
	DA-065 COUPLING UNIT DN65	- EN GJL200 - Screws Stainless Steel A2 - Two Component Coating	x			160	180	240	12,5

MODEL	DN	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P15	S1	S3
<b>FKV 65 11.4 T5 400D</b>	Rp 2" 1/2	100	110	44	526	532	382	402	300	730	68	171	583	274
<b>FKV 65 22.2 T5 400D</b>	Rp 2" 1/2	100	110	44	526	532	382	402	300	730	68	171	583	274
<b>FKV 65 30.2 T5 400D</b>	Rp 2" 1/2	100	110	44	526	532	382	402	300	730	68	171	583	274
<b>FKV 65 40.2 T5 400D</b>	Rp 2" 1/2	100	110	44	526	532	382	402	300	730	68	171	650	310
<b>FKC 65 22.2 T5 400D</b>	Rp 2" 1/2	100	110	44	495	490	340	371	300	725	105	171	580	275
<b>FKC 65 30.2 T5 400D</b>	Rp 2" 1/2	100	110	44	495	490	340	371	300	725	105	171	580	275



## FK - CONTROL PANEL / PUMP SELECTION

PUMP MODEL	P1 MAX	KW	HP	In A	CONTROL PANEL ED 1 PUMP		CONTROL PANEL ED 2 PUMPS		CONTROL PANEL ED 3 PUMPS		ELECTRONIC	
					CONTROL PANEL CODE	CONTROL PANEL MODEL	CONTROL PANEL CODE	CONTROL PANEL MODEL	CONTROL PANEL CODE	CONTROL PANEL MODEL	e.box PLUS	e.box PLUS D
<b>FKV 65 11.4 T5 400D</b>	1,3	1,1	1,5	3,3	108320340	ED1,5T	108320450	E2D3T	108330450	E3D4,5T	•	•
<b>FKV 65 22.2 T5 400D</b>	2,5	2,2	3,0	4,8	108320350	ED2,5T	108320460	E2D5T	60115082	E3D7,5T	•	•
<b>FKV 65 30.2 T5 400D</b>	3,3	3,0	4,0	5,7	108320350	ED2,5T	108320460	E2D5T	60115082	E3D7,5T	•	•
<b>FKV 65 40.2 T5 400D</b>	4,6	4,0	5,5	7,5	60170054	ED4T	60170062	E2D8T	60170069	E3D12T	•	•
<b>FKV 80 11.4 T5 400D</b>	1,3	1,1	1,5	3,5	108320340	ED1,5T	108320450	E2D3T	108330450	E3D4,5T	•	•
<b>FKV 80 15.4 T5 400D</b>	1,8	1,5	2,0	3,8	108320340	ED1,5T	108320450	E2D3T	108330450	E3D4,5T	•	•
<b>FKV 80 22.4 T5 400D</b>	2,5	2,2	3,0	4,7	108320350	ED2,5T	108320460	E2D5T	60115082	E3D7,5T	•	•
<b>FKV 80 40.4 T5 400D</b>	4,5	4,0	5,5	8,6	60170054	ED4T	60170062	E2D8T	60170069	E3D12T	•	•
<b>FKV 80 40.2 T5 400D</b>	4,6	4,0	5,5	7,7	60170054	ED4T	60170062	E2D8T	60170069	E3D12T	•	•
<b>FKV 80 60.2 T5 400Y/D</b>	6,9	6,0	8,2	11,7	108320840	ED7,5T SD	60170047	E2D15T SD	60170051	E3D22,5T SD		
<b>FKV 80 75.2 T5 400Y/D</b>	8,3	7,5	10,2	13,7	108320840	ED7,5T SD	60170047	E2D15T SD	60170051	E3D22,5T SD		
<b>FKV 80 92.2 T5 400Y/D</b>	10,2	9,2	12,5	18,0	60170075	ED15T SD	60170065	E2D30T SD	60170072	E3D45T SD		
<b>FKV 80 110.2 T5 400Y/D</b>	12,1	11,0	15,0	21,0	60170075	ED15T SD	60170065	E2D30T SD	60170072	E3D45T SD		
<b>FKV 100 30.4 T5 400D</b>	3,5	3,0	4,0	8,0	60170054	ED4T	60170062	E2D8T	60170069	E3D12T	•	•
<b>FKV 100 40.4 T5 400D</b>	4,5	4,0	5,5	8,9	60170054	ED4T	60170062	E2D8T	60170069	E3D12T	•	•
<b>FKV 100 55.4 T5 400Y/D</b>	6,2	5,5	7,5	11,3	108320840	ED7,5T SD	60170047	E2D15T SD	60170051	E3D22,5T SD		
<b>FKV 100 75.4 T5 400Y/D</b>	8,3	7,5	10,0	14,3	108320840	ED7,5T SD	60170047	E2D15T SD	60170051	E3D22,5T SD		
<b>FKC 65 22.2 T5 400D</b>	2,5	2,2	3,0	4,8	108320350	ED2,5T	108320460	E2D5T	60115082	E3D7,5T	x	x
<b>FKC 65 30.2 T5 400D</b>	3,3	3,0	4,0	5,7	108320350	ED2,5T	108320460	E2D5T	60115082	E3D7,5T	x	x
<b>FKC 80 15.4 T5 400D</b>	1,8	1,5	2,0	3,8	108320340	ED1,5T	108320450	E2D3T	108330450	E3D4,5T	x	x
<b>FKC 80 22.4 T5 400D</b>	2,5	2,2	3,0	4,7	108320350	ED2,5T	108320460	E2D5T	60115082	E3D7,5T	x	x
<b>FKC 80 30.4 T5 400D</b>	3,5	3,0	4,0	8,0	60170054	ED4T	60170062	E2D8T	60170069	E3D12T	x	x
<b>FKC 80 40.4 T5 400D</b>	4,5	4,0	5,5	8,9	60170054	ED4T	60170062	E2D8T	60170069	E3D12T	x	x
<b>FKC 80 55.4 T5 400Y/D</b>	6,2	5,5	7,5	12	108320840	ED7,5T SD	60170047	E2D15T SD	60170051	E3D22,5T SD		
<b>FKC 80 75.4 T5 400Y/D</b>	8,3	7,5	10,0	14,3	108320840	ED7,5T SD	60170047	E2D15T SD	60170051	E3D22,5T SD		
<b>FKC 100 15.4 T5 400D</b>	1,8	1,5	2,0	3,8	108320340	ED1,5T	108320450	E2D3T	108330450	E3D4,5T	x	x
<b>FKC 100 22.4 T5 400D</b>	2,5	2,2	3,0	4,7	108320350	ED2,5T	108320460	E2D5T	60115082	E3D7,5T	x	x
<b>FKC 100 30.4 T5 400D</b>	3,5	3,0	4,0	8,0	60170054	ED4T	60170062	E2D8T	60170069	E3D12T	x	x
<b>FKC 100 40.4 T5 400D</b>	4,5	4,0	5,5	8,9	60170054	ED4T	60170062	E2D8T	60170069	E3D12T	x	x
<b>FKC 100 55.4 T5 400Y/D</b>	6,2	5,5	7,5	11,3	108320840	ED7,5T SD	60170047	E2D15T SD	60170051	E3D22,5T SD		
<b>FKC 100 75.4 T5 400Y/D</b>	8,3	7,5	10,0	14,3	108320840	ED7,5T SD	60170047	E2D15T SD	60170051	E3D22,5T SD		
<b>FKC 150 40.4 T5 400D</b>	4,5	4,0	5,5	8,9	60170054	ED4T	60170062	E2D8T	60170069	E3D12T	x	x
<b>FKC 150 55.4 T5 400Y/D</b>	6,2	5,5	7,5	11,3	108320840	ED7,5T SD	60170047	E2D15T SD	60170051	E3D22,5T SD		
<b>FKC 150 75.4 T5 400Y/D</b>	8,3	7,5	10,0	14,3	108320840	ED7,5T SD	60170047	E2D15T SD	60170051	E3D22,5T SD		

# FEKA 6000

## SUBMERSIBLE PUMPS



### TECHNICAL DATA

**Type of compeller:** single-channel, closed

**Free passage:** 95 to 108 mm.

**Nominal power:** 15 to 24 kW

**Delivery:** DN 150

**Operating range:**

from 36 to 420 m<sup>3</sup>/h with head up to 24,5 metres.

**Pumped liquid:** loaded water, generally for use in civil or industrial sewage systems with grids, compatibly with the construction materials.

**PH of the liquid:** 6 to 11

**Liquid temperature range:** from 0° to +40°C.

**Maximum installation depth:** 20 metres.

(with cable of appropriate length).

**Installation:** fixed using a coupling device, or free in the vertical position.

Continuous duty with completely submerged pump.

**Supplied with:** UNI 1092 PN16 flange and base for free installation.

### APPLICATIONS

Submersible electric pump for civil and industrial drain water compatible with the pump materials. Suitable for lifting or decanting loaded cesspool water, sewage water in systems with grids from cesspools, meteoric water, or dirty water in general, containing solid non-filamentous matter with diameter up to 80 mm.

### CONSTRUCTION FEATURES OF THE PUMP

Single-channel impeller with rotating and fixed wear ring on the diffuser.

Flanged delivery port, EN 1092-1. DN 150 PN 16.

Carbon/Steel mechanical seal in oil chamber on the motor side, double SiC/SiC mechanical seal on the pump side.

### CONSTRUCTION FEATURES OF THE MOTOR

Dry, asynchronous and waterproof motor, cooled by the surrounding liquid. Continuous S1 duty with completely submerged pump. Rotor mounted on permanently lubricated ball bearings, oversized to ensure long-term reliability and extended lifetime. Water infiltration sensor in oil chamber, capable of indicating water infiltrations through the mechanical seal (standard). Overtemperature sensors in the motor windings, with 150°C tripping threshold.

Standard voltage: 3x400V~. For other models contact our commercial department.

Start-up type: star-triangle (Y/Δ)

Number of poles: 4

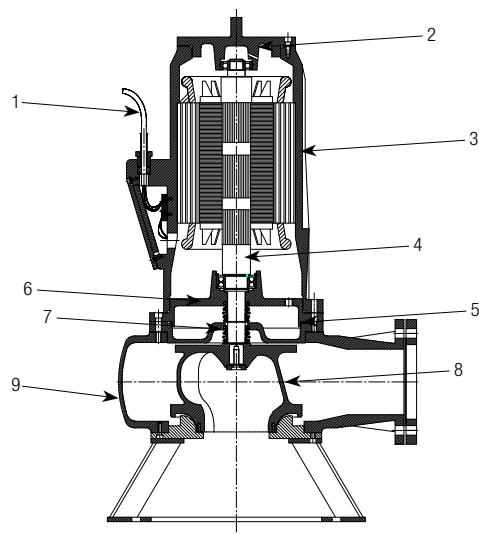
Motor protection class: IP 68

Insulation class: F

Max starts/hour: 20

### MATERIALS

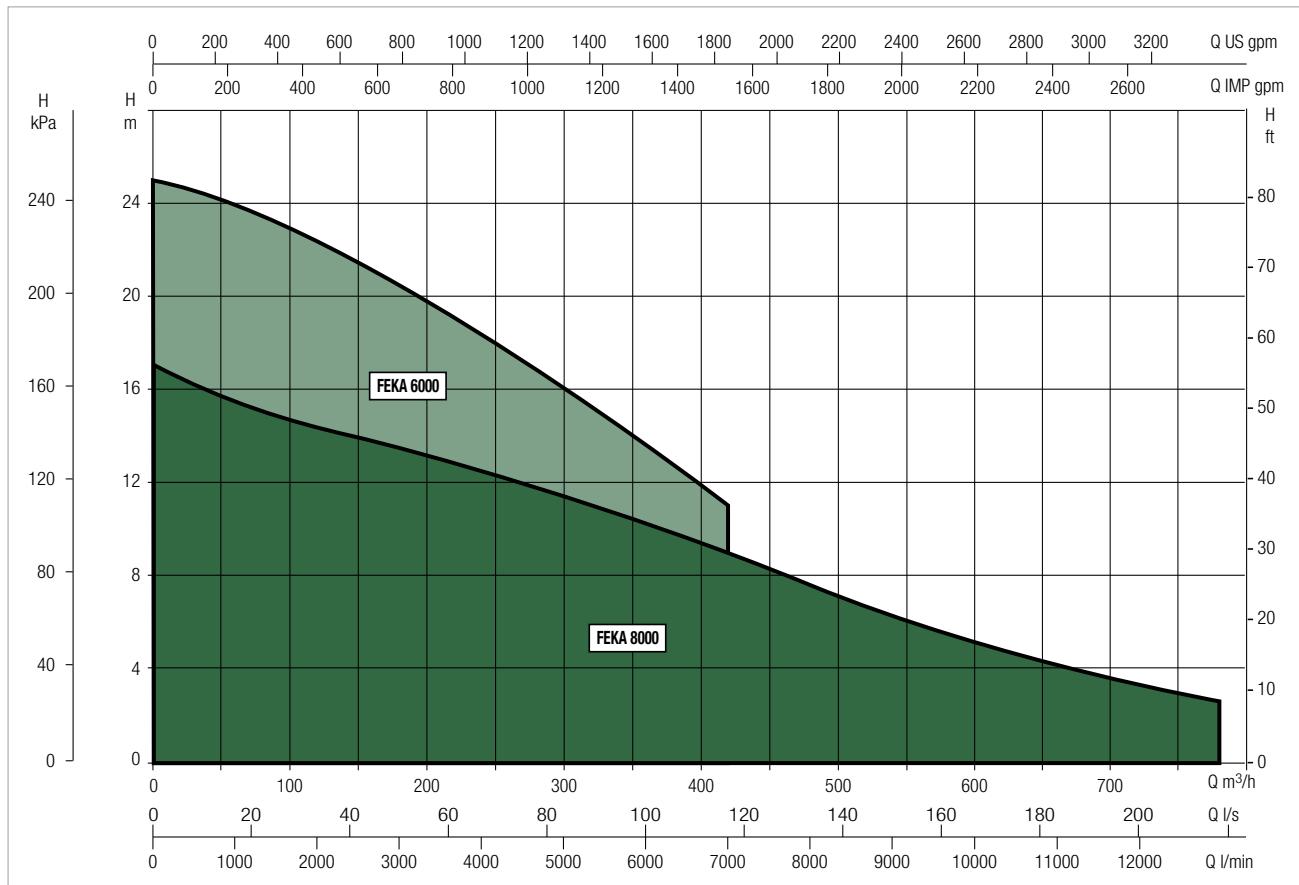
No.	PARTS	MATERIALS
1	POWER INPUT CABLE	H07RN-F
2	UPPER COVER	EN GJL 200 CAST IRON
3	MOTOR BODY	EN GJL 200 CAST IRON
4	MOTOR SHAFT	AISI 420
5	OR	NBR
6	BEARING FLANGE	EN GJL 200 CAST IRON
7	MECHANICAL SEAL	MOTOR: SiC - SiC PUMP: CARBON - STEEL
8	IMPELLER	EN GJL 200 CAST IRON
9	HYDRAULIC BODY	EN GJL 200 CAST IRON



### PERFORMANCE RANGE

The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equal to 1000 kg/m<sup>3</sup>. Curve tolerance according to ISO 9906.

### GRAPHIC SELECTION TABLE

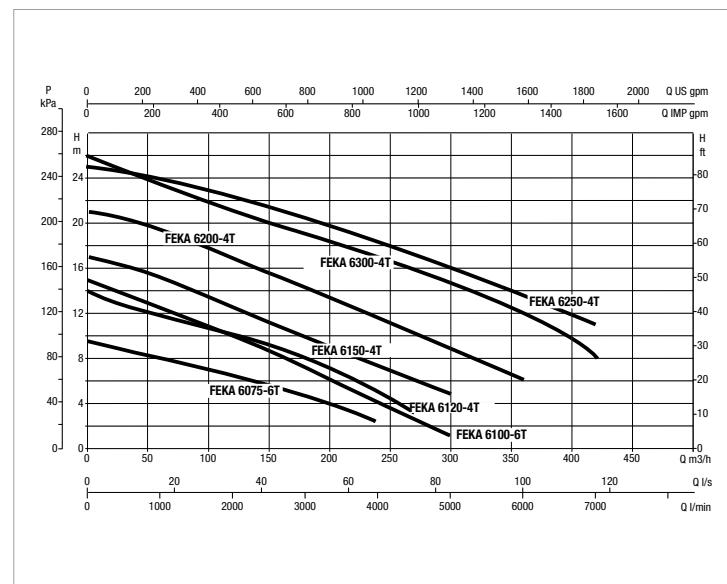
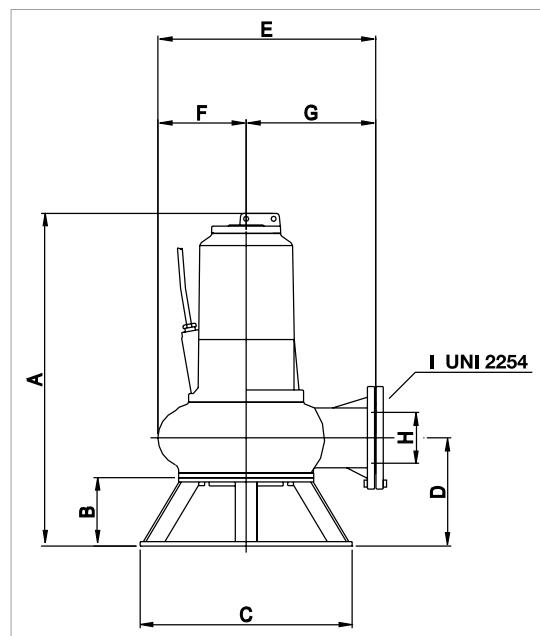


### SELECTION TABLE - FEKA 6000

MODEL	Q=m <sup>3</sup> /h	0	24	36	48	60	72	90	108	126	150	180	210	240	270	300	360	420
	Q=l/min	0	400	600	800	1000	1200	1500	1800	2100	2500	3000	3500	4000	4500	5000	6000	7000
FEKA 6075.6T	H (m)	9,6	9,2	8,5	8,4	8	7,8	7,2	6,8	6,4	5,8	4,8	3,7	2,4				
FEKA 6100.6T		15	14,2	13,7	13	12,6	12	11,5	10,9	9,3	8,8	8,5	6,2	3,5	2,8	1,2		
FEKA 6120.4T		14	12,8	12,5	12,2	11,7	11,4	11	10,5	10	9,2	8,1	6,7	5,2	3,2			
FEKA 6150.4T		17	16,3	16,1	15,8	15,4	14,9	14	13,3	12,1	11,6	10,1	8,4	7,7	5,9	4,8		
FEKA 6200.4T		21	20,5	20,3	20	19,5	18,8	18,2	17,4	16,2	15,5	14,1	12,8	11,8	10,2	8,4	4,2	
FEKA 6250.4T		25	24,7	24,5	24,2	24	23,5	23	22,5	22	21,5	20,5	19,5	18,5	17	16	14	11
FEKA 6300.4T		26	24,9	24	23,8	23,4	23	22	21	20,5	19,8	19	18	16,8	16	14,4	12,3	8

## FEKA 6000 - SUBMERSIBLE PUMPS FOR LIFTING WASTE WATER

Liquid temperature range: from 0°C to +40°C



The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equal to 1000 kg/m<sup>3</sup>. Curve tolerance according to ISO 9906.

MODEL	ELECTRICAL DATA					
	POWER INPUT 50 Hz	P1 MAX kW	P2 NOMINAL			In A
			KW	HP		
FEKA 6075.6T	3X400 V~	6,3	5,2	6,9		13
FEKA 6100.6T	3X400 V~	6,4	5,75	7,7		19
FEKA 6120.4T	3X400 V~	12,7	8,5	11,3		23
FEKA 6150.4T	3X400 V~	14	10,9	14,5		26
FEKA 6200.4T	3X400 V~	15,8	14,9	19,9		30
FEKA 6250.4T	3X400 V~	24	18,5	24,7		40
FEKA 6300.4T	3X400 V~	23	21	28		45

MODEL	A	B	C	D	E	F	G	H	I	PACKAGING DIMENSION			WEIGHT kg
										L/A	L/B	H	
FEKA 6075.6T	950	190	590	301	602	240	362	150	DN150	900	780	1180	200
FEKA 6100.6T	1150	190	590	317	657	271	386	150	DN150	1200	740	1500	330
FEKA 6120.4T	950	190	590	301	602	240	362	150	DN150	900	780	1180	200
FEKA 6150.4T	950	190	590	301	602	240	362	150	DN150	900	780	1180	212
FEKA 6200.4T	950	190	590	301	602	240	362	150	DN150	900	780	1180	226
FEKA 6250.4T	1150	190	590	317	657	271	386	150	DN150	1200	740	1500	330
FEKA 6300.4T	1150	190	590	317	657	271	386	150	DN150	1200	740	1500	340



### TECHNICAL DATA

**Type of compeller:** Three-channel, closed.

**Free passage:** 80 mm.

**Nominal power:** 8 to 19 kW.

**Delivery:** DN 200.

**Operating range:**

from 24 to 780 m<sup>3</sup>/h with head up to 17 metres.

**Pumped liquid:** loaded water, generally for use in civil or industrial sewage systems with grids, compatibly with the construction materials.

**PH of the liquid:** 6 to 11.

**Liquid temperature range:** from 0° to +40°C.

**Maximum installation depth:** 20 metres.

(with cable of appropriate length).

**Installation:** fixed using a coupling device, or free in the vertical position.

Continuous duty with completely submerged pump.

**Supplied with:** UNI 1092 PN 16 flange and base for free installation.

### APPLICATIONS

Submersible electric pump for civil and industrial drain water compatible with the pump materials. Suitable for lifting or decanting loaded cesspool water, sewage water in systems with grids from cesspools, meteoric water, or dirty water in general, containing solid non-filamentous matter with diameter up to 80 mm.

### CONSTRUCTION FEATURES OF THE PUMP

Three-channel impeller with rotating and fixed wear ring on the diffuser.

Flanged delivery port, EN 1092-1, DN 200 PN 16.

Double SIC/SiC mechanical seal in oil chamber on the motor side, Carbon/Steel mechanical seal on the pump side.

### CONSTRUCTION FEATURES OF THE MOTOR

Dry, asynchronous and waterproof motor, cooled by the surrounding liquid. Continuous S1 duty with completely submerged pump. Rotor mounted on permanently lubricated ball bearings, oversized to ensure long-term reliability and extended lifetime. Water infiltration sensor in oil chamber, capable of indicating water infiltrations through the mechanical seal (standard). Overtemperature sensors in the motor windings, with 150°C tripping threshold.

Standard voltage: 3x400V~. For other models contact our commercial department.

Start-up type: star-triangle (Y/Δ)

Number of poles: 6

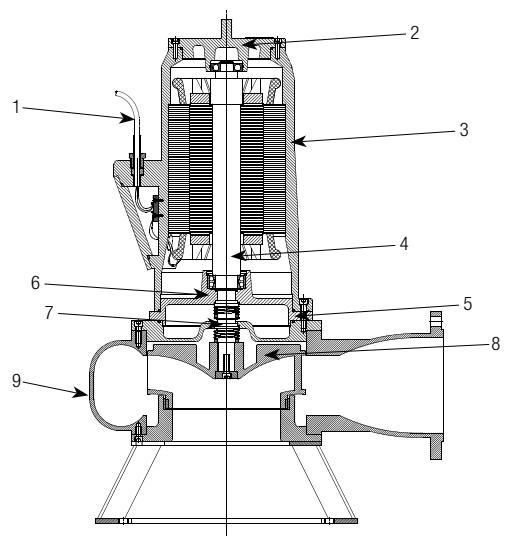
Motor protection class: IP 68

Insulation class: F

Max starts/hour: 20

### MATERIALS

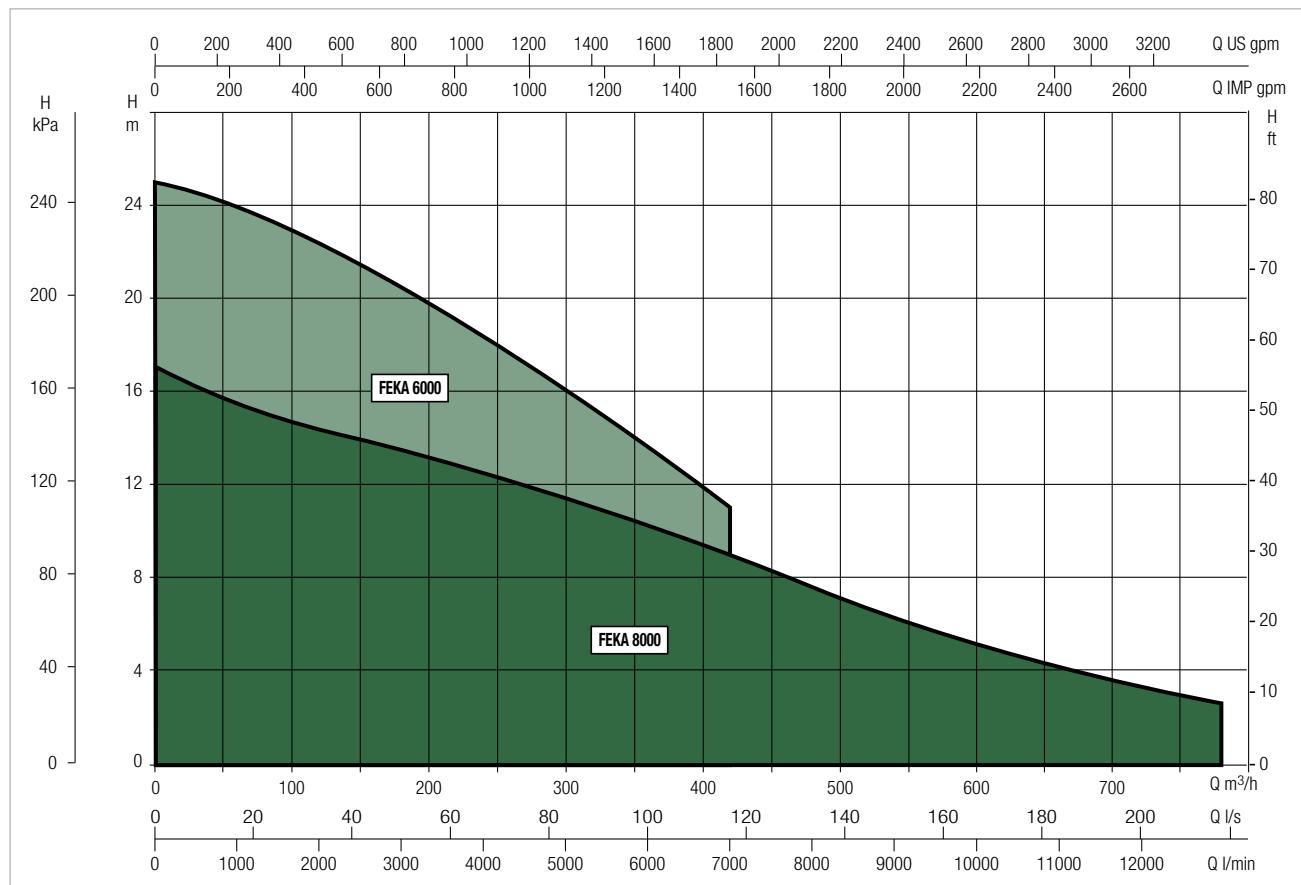
No.	PARTS	MATERIALS
1	POWER INPUT CABLE	H07RN-F
2	UPPER COVER	EN GJL 200 CAST IRON
3	MOTOR BODY	EN GJL 200 CAST IRON
4	MOTOR SHAFT	AISI 420
5	OR	NBR
6	BEARING FLANGE	EN GJL 200 CAST IRON
7	MECHANICAL SEAL	MOTOR: SIC -SIC PUMP: CARBON - STEEL
8	IMPELLER	EN GJL 200 CAST IRON
9	HYDRAULIC BODY	EN GJL 200 CAST IRON



## PERFORMANCE RANGE

The performance curves are based on kinematic viscosity values = 1 mm<sup>2</sup>/s and density equal to 1000 kg/m<sup>3</sup>. Curve tolerance according to ISO 9906.

### GRAPHIC SELECTION TABLE

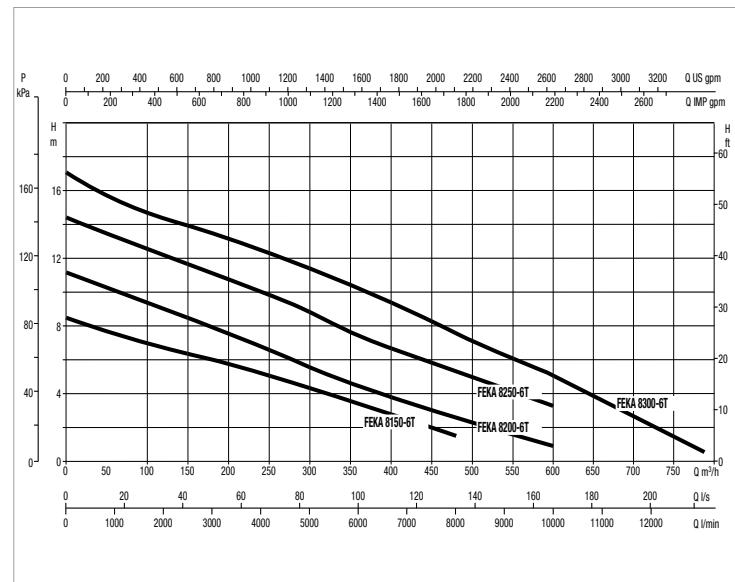
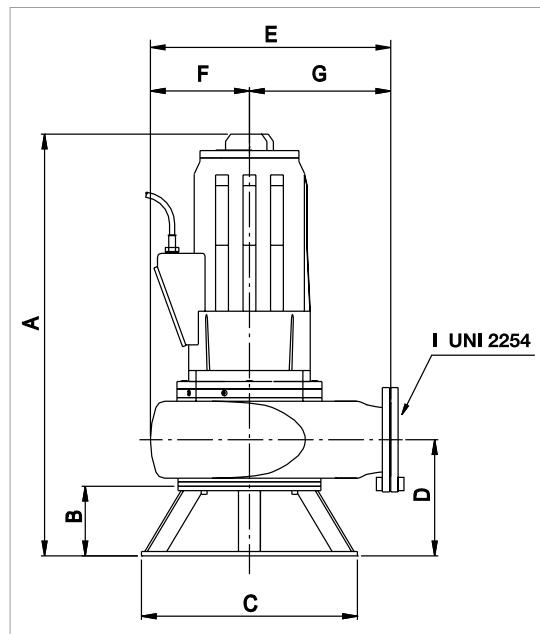


### SELECTION TABLE - FEKA 8000

MODEL	Q= m <sup>3</sup> /h	0	24	36	48	60	72	90	108	126	150	180	210	240	270	300	360	420	480	600	780
	Q=l/min	0	400	600	800	1000	1200	1500	1800	2100	2500	3000	3500	4000	4500	5000	6000	7000	8000	10000	13000
FEKA 8150.6T	H (m)	8.53	8.05	7.83	7.6	7.45	7.3	7.15	6.9	6.7	6.45	6	5.6	5.24	4.6	4.2	3.34	2.34	1.56		
FEKA 8200.6T		11.2	18	10.5	10.3	9.97	9.7	9.5	9.2	8.8	8.46	8	7.4	6.95	6.3	5.6	4.4	3.6	2.67	1.07	
FEKA 8250.6T		14.4	14	13.7	13.5	13.2	13	12.6	12.34	12	11.52	11.1	10.6	10	9.4	8.7	7.3	6.5	5.5	3.3	
FEKA 8300.6T		17	16.6	16.2	16	15.6	15	14.7	14.5	14.2	13.8	13.5	13	12.4	12	11.4	10	9	7.6	5	2.6

**FEKA 8000 - SUBMERSIBLE PUMPS FOR LIFTING WASTE WATER**

Liquid temperature range: from 0°C to +40°C



The performance curves are based on kinematic viscosity values = 1 mm²/s and density equal to 1000 kg/m³. Curve tolerance according to ISO 9906.

MODEL	ELECTRICAL DATA						In A
	POWER INPUT 50 Hz	P1 MAX kW	P2 NOMINAL				
			KW	HP			
FEKA 8150. 6T	3X400 V~	10,7	8.5	11.3			22
FEKA 8200. 6T	3X400 V~	13.4	11.4	15.2			27
FEKA 8250. 6T	3X400 V~	17	13.5	18			36
FEKA 8300. 6T	3X400 V~	22	19.3	25.7			46

MODEL	A	B	C	D	E	F	G	H	I	PACKING DIMENSIONS			WEIGHT kg
										L/A	L/B	H	
FEKA 8150. 6T	1200	190	640	317	771	271	500	200	DN200	1200	740	1500	450
FEKA 8200. 6T	1200	190	640	317	771	271	500	200	DN200	1200	740	1500	460
FEKA 8250. 6T	1200	190	640	317	771	271	500	200	DN200	1200	740	1500	465
FEKA 8300. 6T	1200	190	640	317	771	271	500	200	DN200	1200	740	1500	480



## TECHNICAL DATA

**Liquid temperature range:**

from 0°C to +50°C.

**Pumped liquid:**

waste water according to EN 12050-3.

**Third party approval:** VDE-GS, LGA, VDE-EMC.

**Capacity:** approved for 6 and 9 litre flushing units according to EN 12050-3.

**Protection class:** IP44.

## APPLICATIONS

Its use is needful whenever the wastewater coming from the WC, the shower, the washbasin or the bidet cannot be expelled by gravity. GENIX models normally have a front WC connection. The difference in the GENIX WL is the side WC connection, specifically designed for WC wall-mounted installations or where there is no room enough behind the WC. In the model 130, beside the WC, three more lines can be connected, such as shower, washbasin, bidet or bathtub. The models offered stand out for silent running, even more improved in the Comfort version. The pump, powerful and reliable, and the grinding system, with blades in nickel plated stainless steel, make together a long lasting and basically daily maintenance-free product. Extremely easy the maintenance in case of clog or motor blocking, with the possibility to dismount the motor subassembly only operating on two screws, and with the unique discharge tap that will allow a clean, and free of problems, maintenance. In case of blockage, the motor unit can be accessed from the outside, with no need to remove the product. Extraordinary maintenance will be extremely easy, clean and without issues. The installation kit comes with easy-connect fittings adaptable to various pipe sections and including built-in non-return valves

Available, as accessories, an acoustic alarm anti-flooding and an adaptor pipe, to adapt the GENIX to a vast majority of existing installations.

## CONSTRUCTIONAL CHARACTERISTICS

Tank in Barium 15% polypropylene. In the Comfort version, soundproof shield in Barium 70% polypropylene. Impeller in PPO 30% GF. Motor shaft in stainless steel. Grinding blades in nickel plated stainless steel.

## MOTOR CONSTRUCTIONAL CHARACTERISTICS

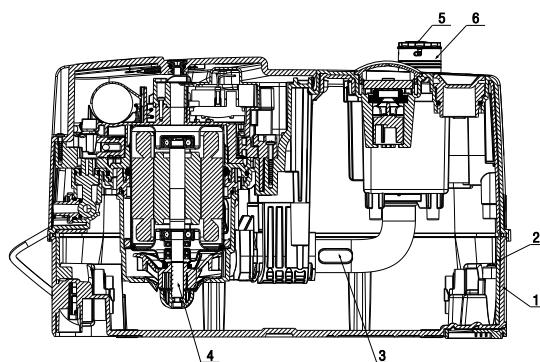
Asynchronous motor in stainless steel.

Shaft and motor sleeve in stainless steel.

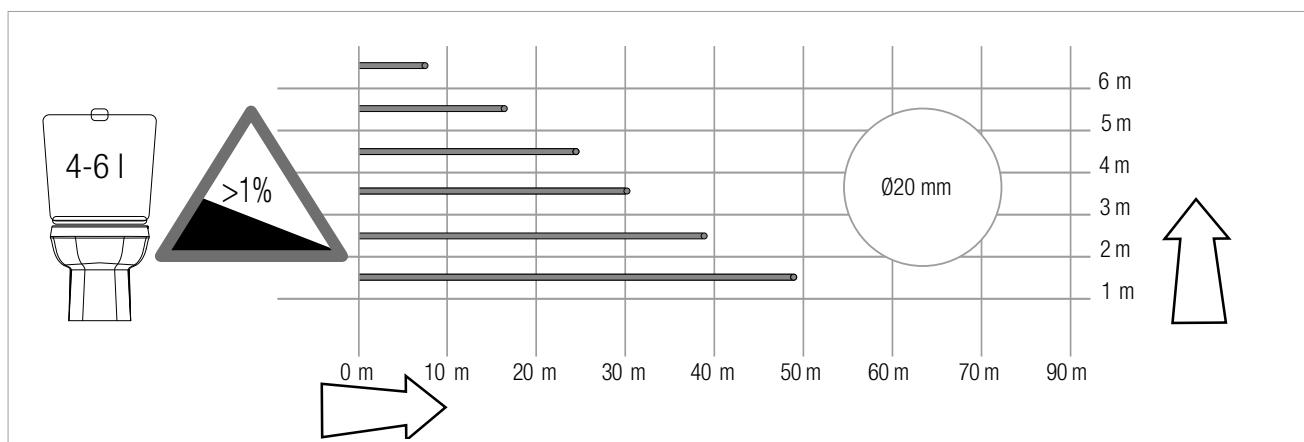
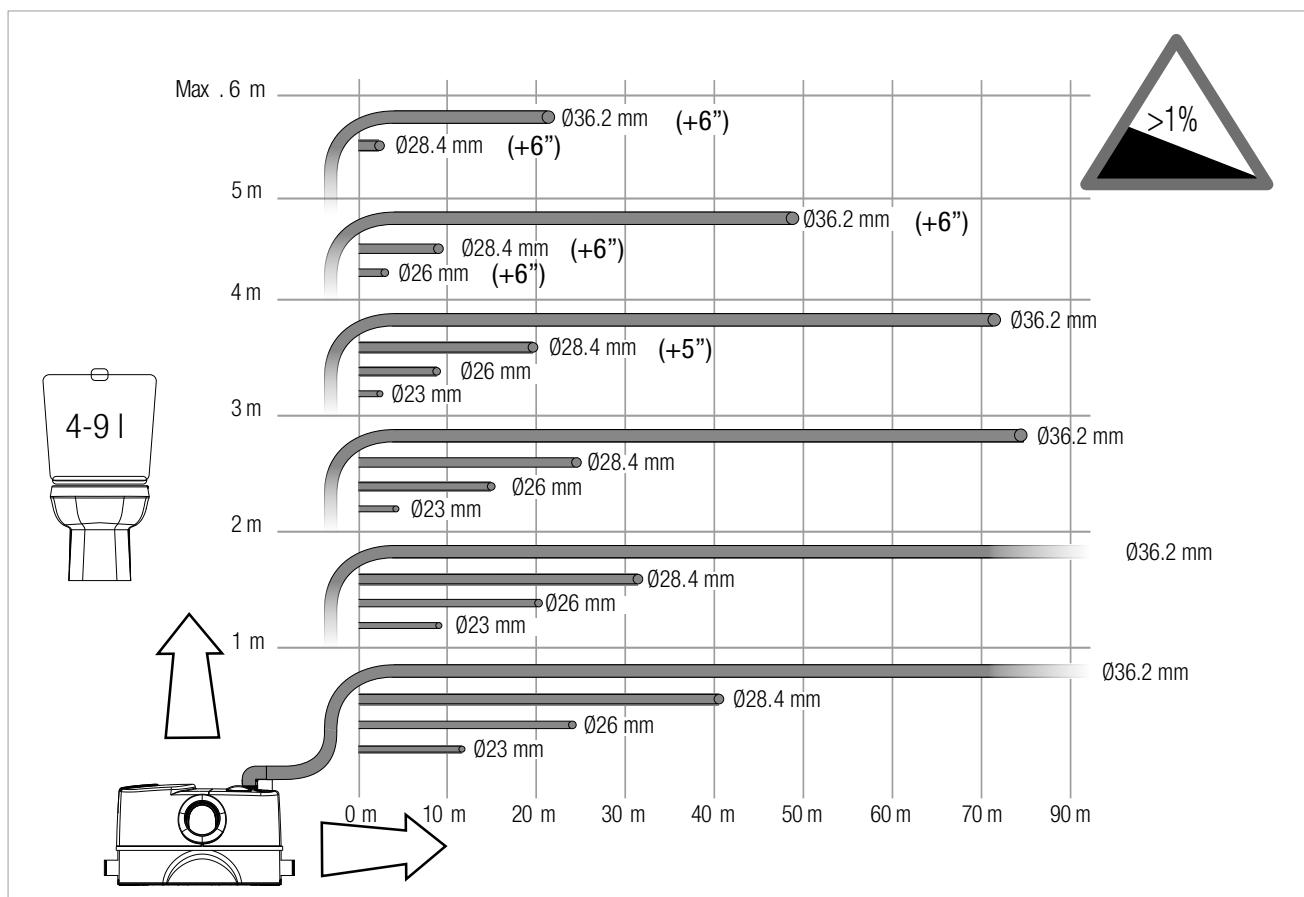
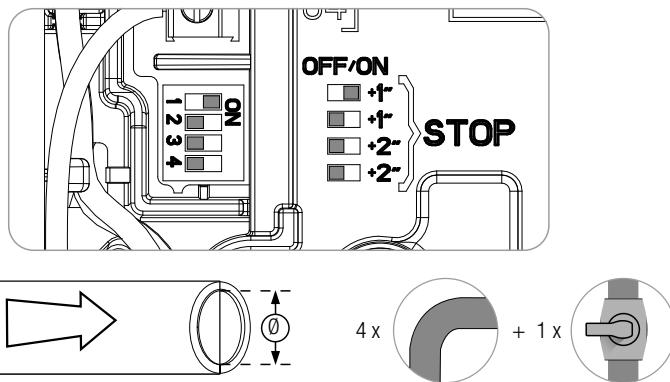
Thermal protection for overheating. Motor shaft wear resistant.

## MATERIALS

No.	PARTS	MATERIALS
1	TANK	PP 15% BARIUM
2	SOUND PROOFER	PP 70% BARIUM
3	PIPE	EPDM
4	GENIX COMFORT FLANGE GROUP V230-50Hz	MOTOR-COVER AISI 304 MOTOR-SHAFT AISI 416 IMPELLER 30 % FIBRE GLASS PPO FIXED GRINDER AISI 304 IMPELLER NUT 30 % FIBRE GLASS PPO MOVING GRINDER AISI 420 MOTOR FLANGE 30 % FIBRE GLASS PP PUMP BODY 30 % FIBRE GLASS PP CENTERING RING 30 % FIBRE GLASS PP VOLUTE 30 % FIBRE GLASS PP
5	VALVE ASSEMBLY	CHECK VALVE BODY 30 % FIBRE GLASS PP OVAL CLAPET VALVE EPDM OR -3118 29.82 X 2.62 NBR
6	DELIVERY PIPE	30 % FIBRE GLASS PP



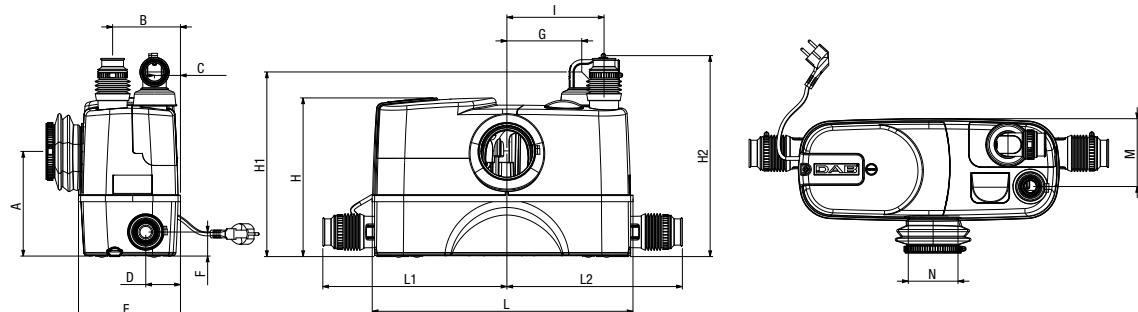
## INSTALLATION INSTRUCTIONS



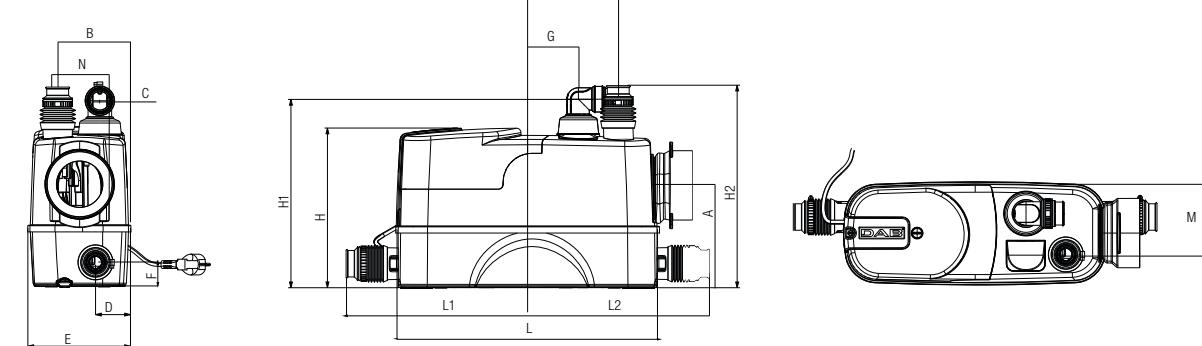
## GENIX - AUTOMATIC LIFTING STATIONS

Liquid temperature range: from 0°C to +50°C

**GENIX**



**GENIX WL**



MODEL	ELECTRICAL DATA															In A	
	VOLTAGE 50 Hz			P1 MAX kW			P2 NOMINAL										
							kW			HP							
<b>GENIX 110</b>	1 x 230 V ~			0,49			0,32			0,44						2,3	
<b>GENIX 130</b>	1 x 230 V ~			0,49			0,32			0,44						2,3	
<b>GENIX COMFORT 110</b>	1 x 230 V ~			0,49			0,32			0,44						2,3	
<b>GENIX COMFORT 130</b>	1 x 230 V ~			0,49			0,32			0,44						2,3	
<b>GENIX WL 110</b>	1 x 230 V ~			0,49			0,32			0,44						2,3	
<b>GENIX WL 130</b>	1 x 230 V ~			0,49			0,32			0,44						2,3	

MODEL	A	B	C	D	E	F	G	H	H1	H2	I	L	L1	L2	M	N	PACKING DIMENSION			VOLUME (mc)	WEIGHT kg
																	L/A	L/B	H		
<b>GENIX 110</b>	183	118	45	/	178	/	178	277	323	351	170	456	/	/	118	87	538	227	426	0,0520	10
<b>GENIX 130</b>	183	118	45	60	178	42	178	277	323	351	170	456	322	307	118	87	538	227	426	0,0520	10,3
<b>GENIX COMFORT 110</b>	183	118	45	/	178	/	178	277	323	351	170	456	/	/	118	87	538	227	426	0,0520	11,2
<b>GENIX COMFORT 130</b>	183	118	45	60	178	42	178	277	323	351	170	456	322	307	118	87	538	227	426	0,0520	11,7
<b>GENIX WL 110</b>	183	125	56	/	178	/	80	277	322	346	150	456	/	/	125	87	538	227	426	0,052	10
<b>GENIX WL 130</b>	183	125	56	60	178	42	80	277	322	346	150	456	322	307	125	87	538	227	426	0,052	10,3



## TECHNICAL DATA

### Liquid temperature range:

From 0°C to +75°C up to +90°C for 30 min.

### Liquid pumped:

Sewage water containing fecal matter as regulated by EN 12050-3.

### Third parts certifications: LGA

**Tank capacity and delivery:** 1-90 m<sup>3</sup>/h with dynamic head up to 8 metres

**International Protection grade:** IP44.

## APPLICATIONS

Its use is needful whenever the wastewater coming from the WC, the shower, the washbasin or the bidet cannot be expelled by gravity. These lifting stations can be installed wherever there is the wish to add a toilet during new installations or constructions, renovations, or structural modifications. GENIX 110 has the facility to connect one high drain utility, like a washbasin; GENIX 130 has the facility to connect up to three utilities, even with low drain as a shower, bidet or bathtub.. Our models offer silent operation and reliable performance, thanks to a powerful motor which allows to work with temperatures up to 90 deg C. Extremely easy the maintenance in case of clog or motor blocking, with the possibility to dismount the motor subassembly only operating on two screws, and with the unique discharge tap that will allow a clean, and free of problems, maintenance. The non-return valves are integrated in the delivery pipe, and for the 130 models in the lateral bottom inlets. Available, as accessories, an acoustic alarm anti-flooding and an adaptor pipe, to adapt the GENIX to a vast majority of existing installations.

## CONSTRUCTIONAL CHARACTERISTICS

30% barium-loaded polypropylene tank. 30% fibre-glass PPO impeller. Stainless steel drive shaft.

## MOTOR CONSTRUCTIONAL CHARACTERISTICS

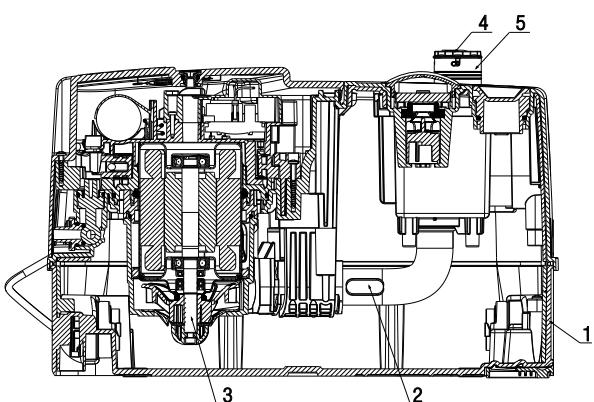
Induction type, stainless steel. Stainless steel shaft and cover.

Thermal cut-out protection.

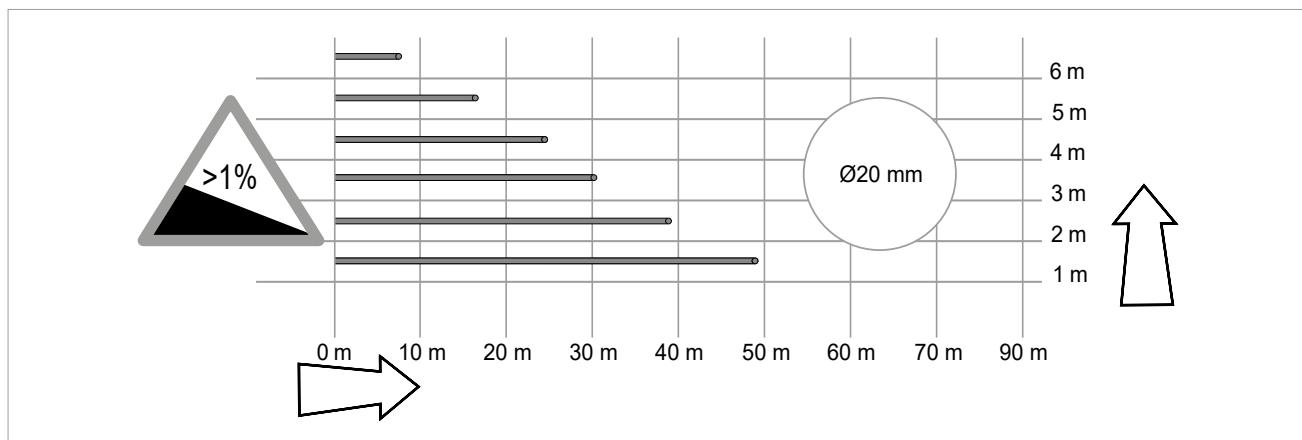
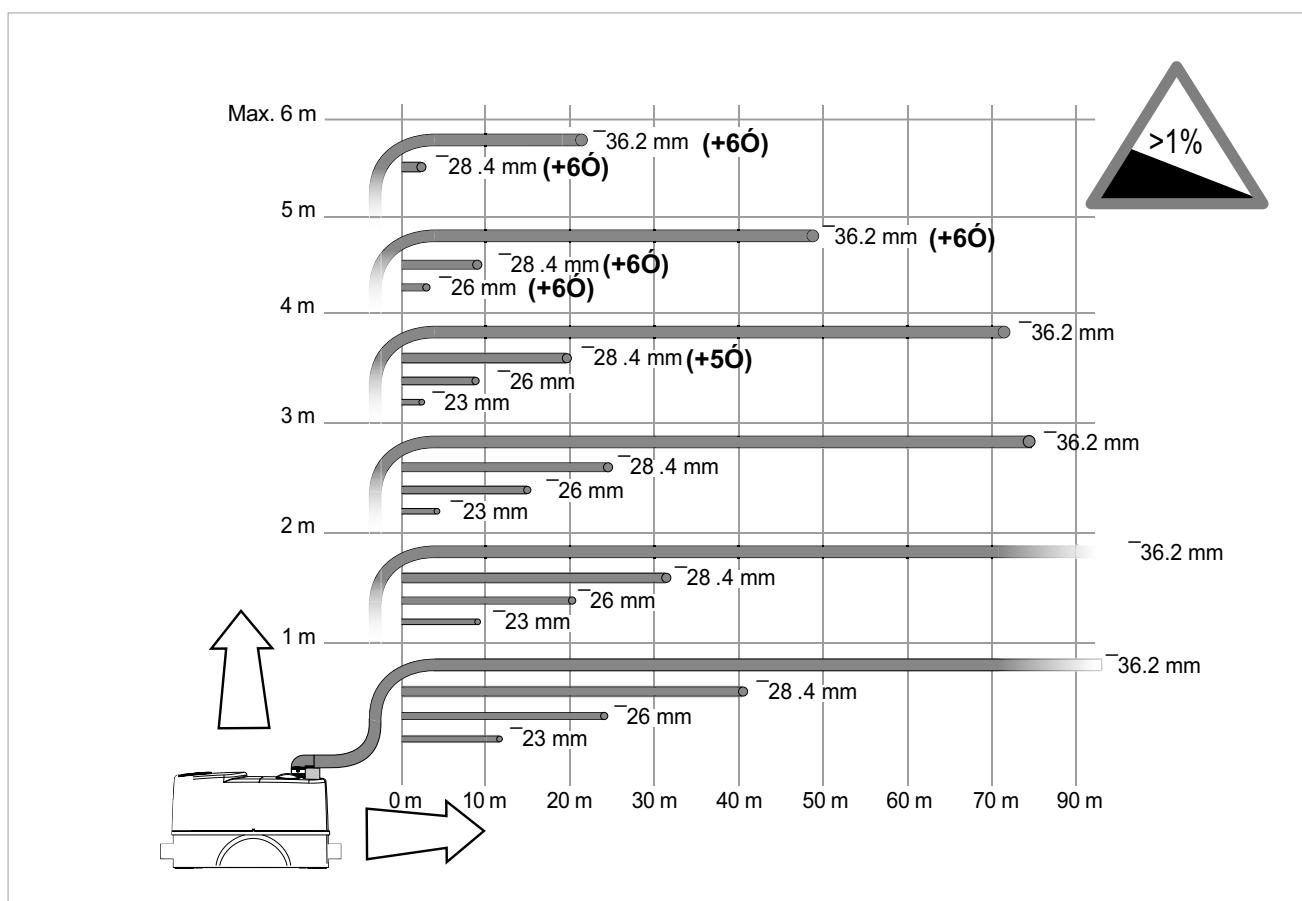
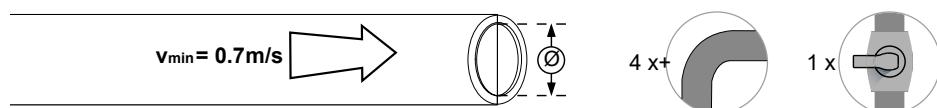
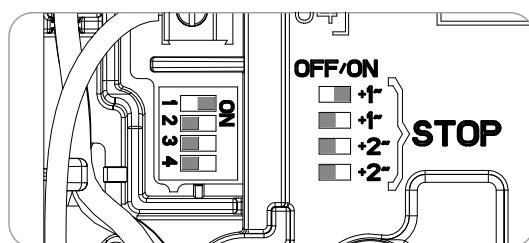
Wear-resistant motor shaft.

## MATERIALS

No.	DESCRIPTION	MATERIALS	
1	TANK	PP 15% BARIO	
2	PIPE	EPDM	
3	GENIX VT FLANGE GROUP V230-50Hz	MOTOR-SLEEVE	AISI 304
		MOTOR-SHAFT	AISI 416
		IMPELLER	PPO 30% FIBERGLASS
		MPELLER NUT	PPO 30% FIBERGLASS
		FLANGE	PP 30% FIBERGLASS
		PUMP BODY	PP 30% FIBERGLASS
		ALIGNING RING	PP 30% FIBERGLASS
		DIFFUSER	PP 30% FIBERGLASS
4	VALVE GROUP	NON RETURN VALVE BODY	PP 30 FIBERGLASS
		OVAL CLAPET VALVE	EPDM
		OR -3118 29.82 X 2.62	NBR
5	DELIVERY PIPE	PP 30 FIBERGLASS	

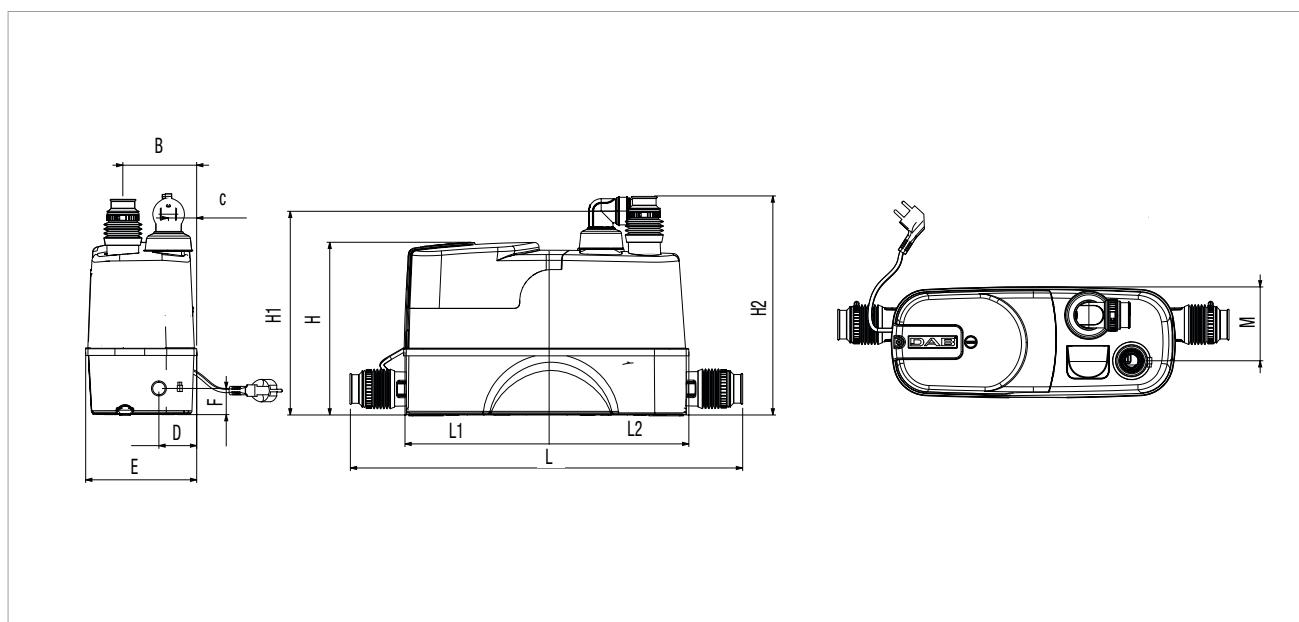


### INSTALLATION INSTRUCTIONS



## GENIX VT - AUTOMATIC LIFTING STATIONS

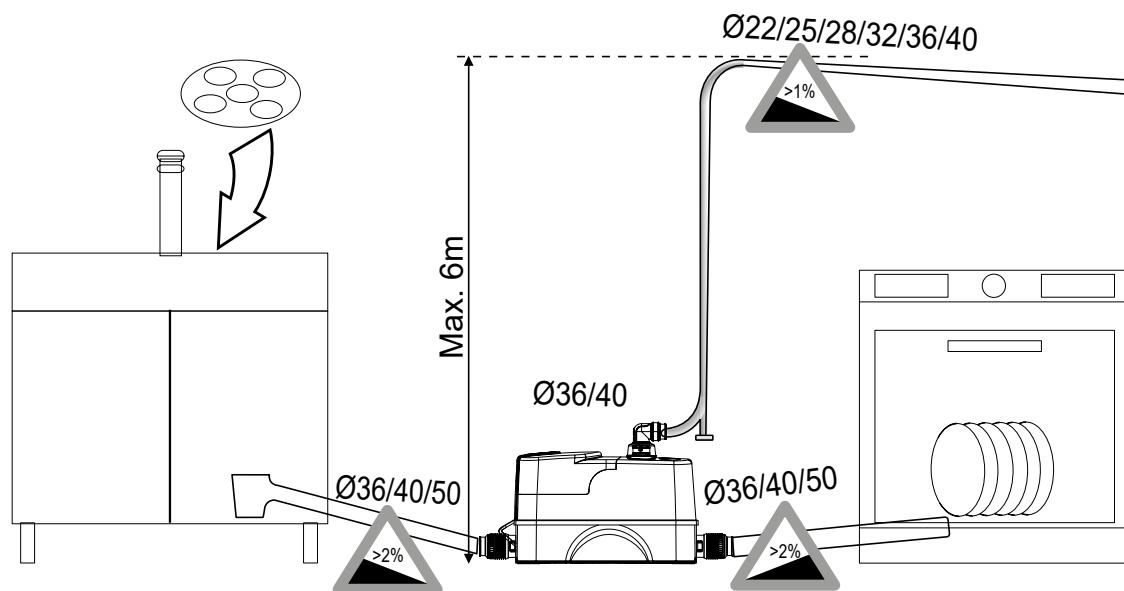
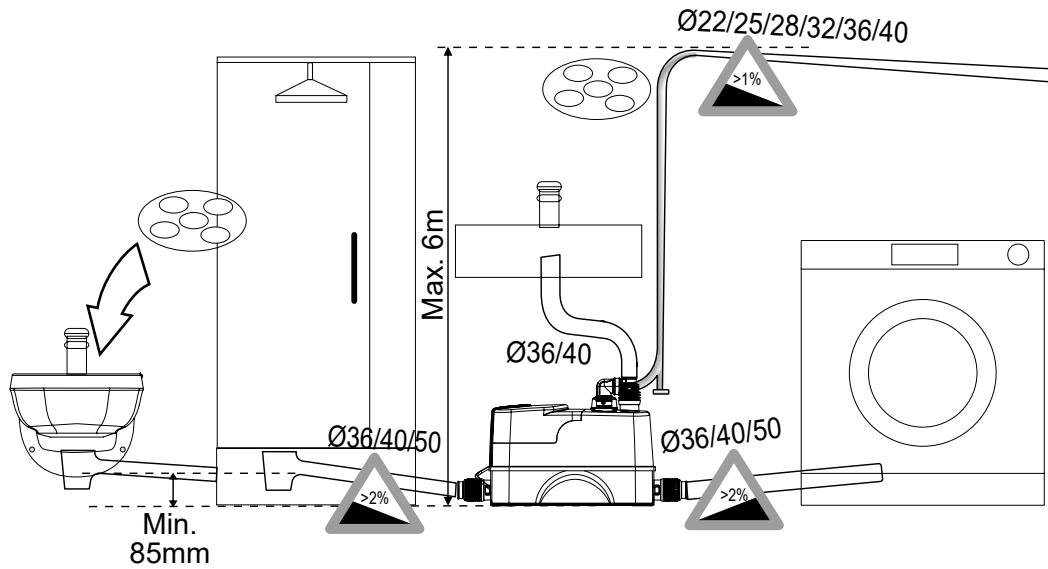
Liquid temperature range from 0°to +75°C



MODEL	ELECTRICAL DATA														In A							
	VOLTAGE 50 Hz				P1 MAX kW				P2 NOMINAL				kW		HP							
GENIX VT 010	1 x 230 V ~				0,53				0,32				0,44		2,5							
GENIX VT 030	1 x 230 V ~				0,53				0,32				0,44		2,5							

MODEL	A	B	C	D	E	F	G	H	H1	H2	I	L	L1	L2	M	N	PACKING DIMENSION			VOLUME (mc)	WEIGHT kg
																	L/A	L/B	H		
GENIX VT 010	183	125	56	/	178	/	80	277	322	346	150	456	/	/	125	/	538	227	426	0,052	10
GENIX VT 030	183	125	56	60	178	42	80	277	322	346	150	456	322	307	125	/	538	227	426	0,052	10,3

**INSTALLATION**





## TECHNICAL DATA

### Operating range:

from 1 to 7,2 m<sup>3</sup>/h with head up to 6,9 metres.

### Liquid temperature range:

+ 50°C.

+ 90°C for a maximum time of 3 minutes.

### Pumped liquid:

waste water without solid and/or fibrous matter.

**Protection class of the motor and the pump: IP 68.**

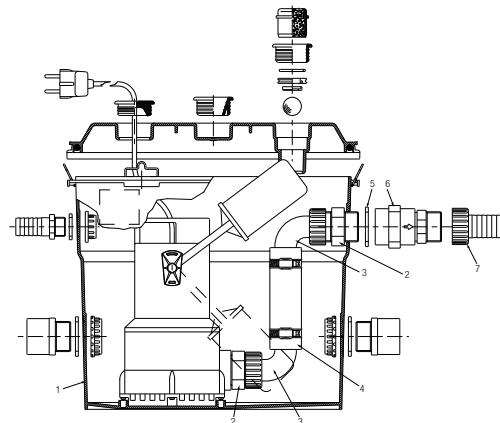
**Motor isolation rating: F.**

## APPLICATIONS

Stations for the collection and lifting of domestic waste water from the bath, sink, shower, and washing machine in basements, or below the sewer network in general. They consist of a NOVA 300 pump with 5 metre power input cable and plug fitted on a technopolymer plate, 30 litre technopolymer tank, check valve on the delivery. The lifting station is supplied with pump with connection kit and shower float kit.

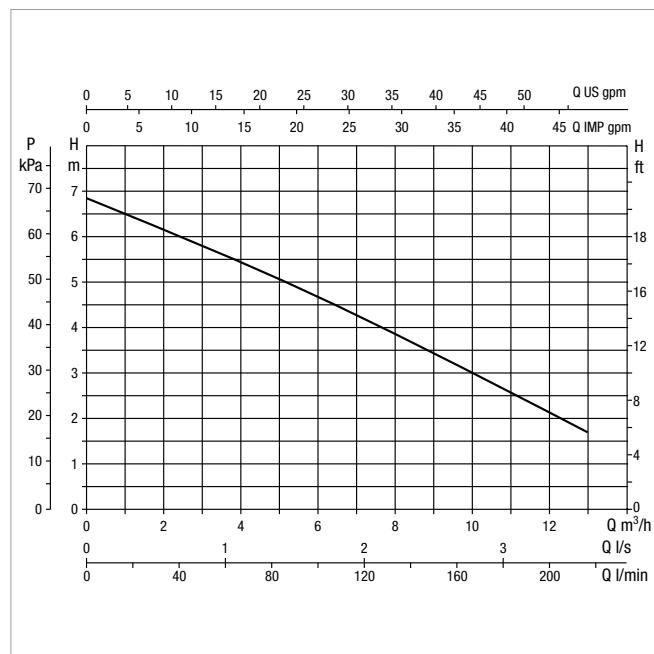
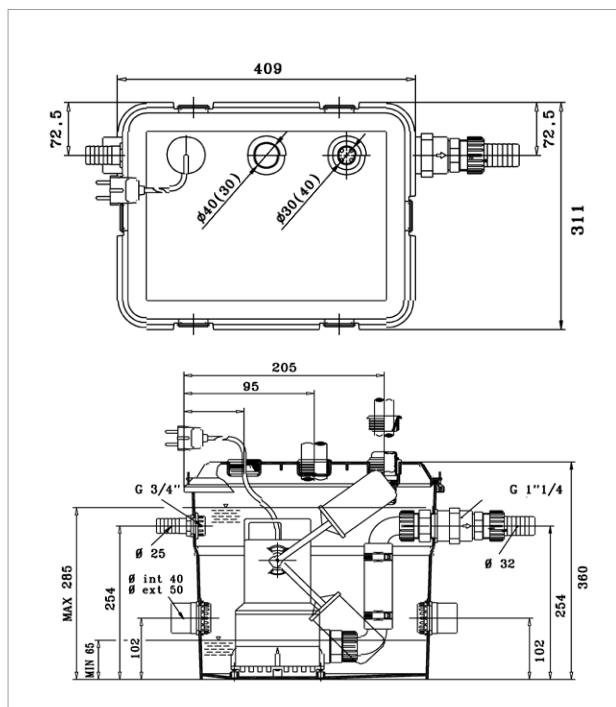
## MATERIALS

No.	PARTS	MATERIALS
1	TANK	TECHNOPOLYMER
2	NIPPLE	TECHNOPOLYMER
3	RUBBER HOLDER	TECHNOPOLYMER
4	PIPE	RUBBER
5	OR RING	EPDM
6	NON-RETURN VALVE	TECHNOPOLYMER
7	RUBBER HOLDER	TECHNOPOLYMER



## NOVABOX - AUTOMATIC WASTE WATER DRAINING COLLECTION AND LIFTING STATIONS

Liquid temperature range: from +50°C to +90°C for a maximum time of 3 minutes



The performance curves are based on kinematic viscosity values = 1 mm²/s and density equal to 1000 kg/m³. Curve tolerance according to ISO 9906.

MODEL	ELECTRICAL DATA						
	POWER INPUT 50 Hz	P1 MAX kW	P2 NOMINAL		In A	CAPACITOR	
			kW	HP		μF	Vc
NOVABOX 30/300.1M	1 x 220-240 V ~	0.29	0.22	0.3	1.3	8	450
NOVABOX 30/300.1M-SV	1 x 220-240 V ~	0.29	0.22	0.3	1.3	8	450

MODEL	A	B	C	D	E	F	H	H1	H2	PACKING DIMENSIONS			VOLUME (m³)	WEIGHT kg
										L/A	L/B	H		
NOVABOX 30/300.1M	407	309	94	204	314	72	360	100	254	450	330	380	0.056	9.2



### TECHNICAL DATA

**Operating range:**

from 1 to 24 m<sup>3</sup>/h with head up to 9 metres.

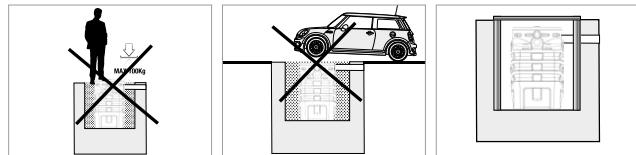
**Liquid temperature range:** + 45°C**Pumped liquid:**

waste water and domestic drains.

Liquids compatible with EN12050 2.

**Installation:** inside the building, secured to the floor.

It cannot be driven or walked on.



### APPLICATIONS

Pumping stations suitable for the collection and redirection to the sewer network, of domestic drain water (waste, dirty, rain), of basements and garages, for one dwelling, when the sewer network cannot be reached due to gravity issues. Not compatible with the alarm system.

### CONSTRUCTION FEATURES

**CAPACITY:** 110 l

**MATERIALS:** LLDPE

**REGULATIONS:** 12050-2

#### CONNECTIONS

- Inputs DN 50/110
- Ventilation DN 50
- Horizontal or vertical G2" output

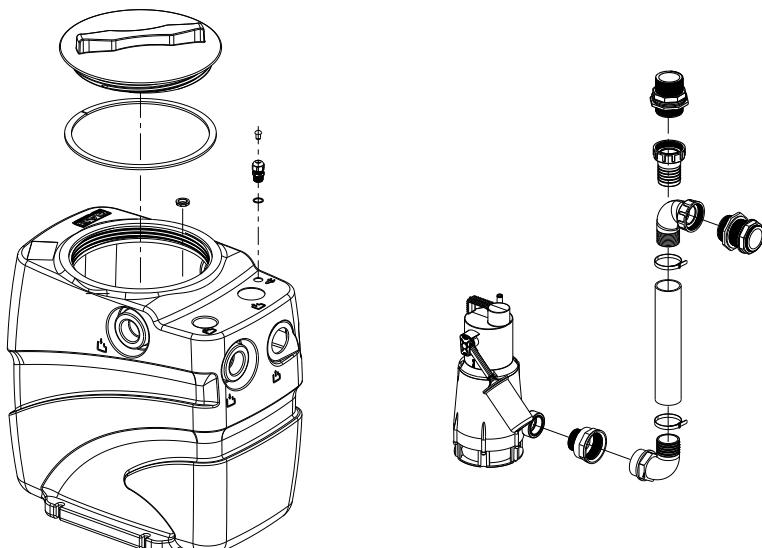
#### COMPONENTS INCLUDED:

- Complete pump installation kit (see pump installation image).
- Cable gland for individual pump
- 2" F x 1 x ¼ M connector for FEKA 600

#### COMPONENTS NOT INCLUDED

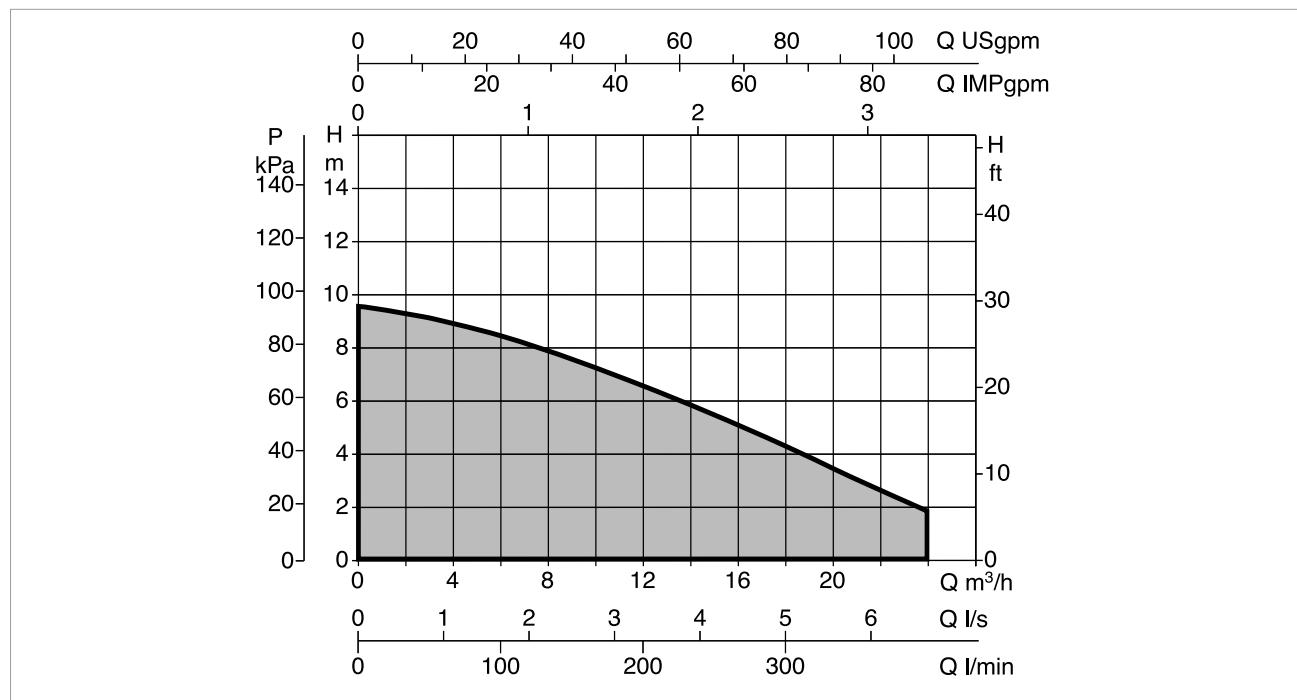
- Pump: to be selected according to the possible configurations.

### PUMP INSTALLATION

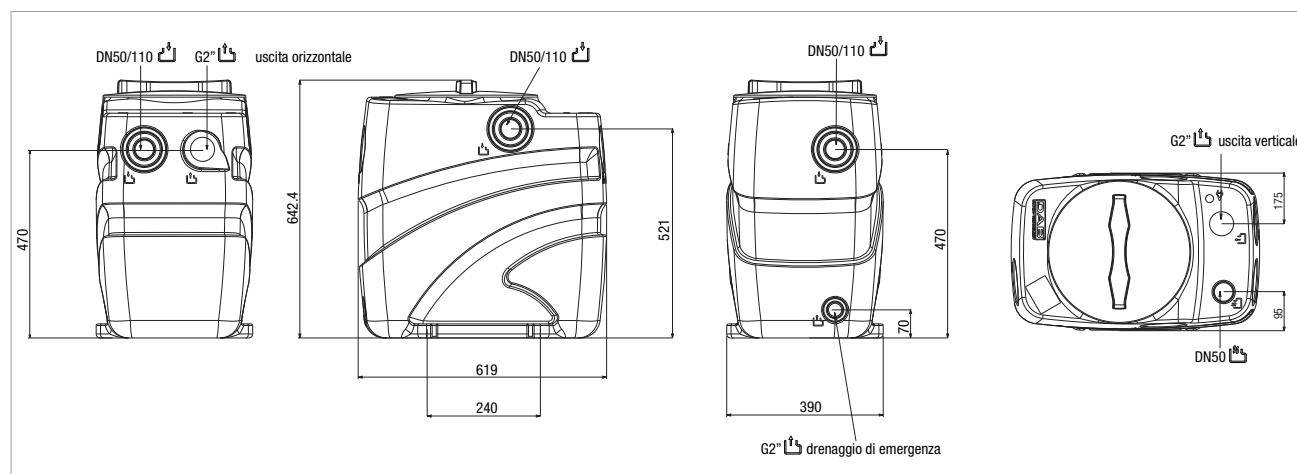


**FEKABOX 110 - AUTOMATIC WASTE WATER LIFTING AND COLLECTION STATIONS**

Liquid temperature range: +50°C

**CONFIGURATIONS**

PUMP MODEL	ELECTRICAL DATA				In A
	POWER INPUT 50 HZ	P1 MAX kW	P2 NOMINAL		
			kW	HP	
FEKA 600 M A 40th	1x230V~	0,68	0,5	0,67	3,1
FEKA VS 550 M-A	1x220V-240V~	0,92	0,55	0,75	4,2
FEKA VS 750 M-A	1x220V-240V~	1,11	0,75	1	5,13

**SIZES AND WEIGHTS**

PACKING DIMENSIONS			WEIGHT Kg
L/A	L/B	H	
650	400	665	10.3

**LEGEND:**

- Emergency output or delivery piping connection
- Collection piping input
- Power and float cable output
- Ventilation pipe connection
- Recyclable material



### TECHNICAL DATA

**Operating range:** from 1 to 24 m<sup>3</sup>/h with head up to 15 metres.

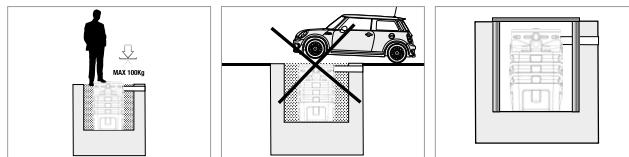
**Pumped liquid:** ground water, rain water, clear waste water, grey waste water, and river or lake water.

Liquids compatible with EN12050 1/2.

**Maximum temperature of liquid:** 45°C

**Installation:** Secured to the floor if inside a building. Underground if outside the building.

It cannot be driven on, but it can be walked on, maximum weight 100 kg.



### APPLICATIONS

Pumping stations suitable for the collection and redirection to the sewer network, of domestic drain water (waste, dirty, rain), of basements and garages, for one or more dwellings, when the sewer network cannot be reached due to gravity issues.

### CONSTRUCTION FEATURES

**CAPACITY:** 200 lt

**MATERIALS:** LLDPE

**STANDARDS:** 12050-1

#### CONNECTIONS

- DN 50/110 inputs
- DN 50 ventilation
- G2" output

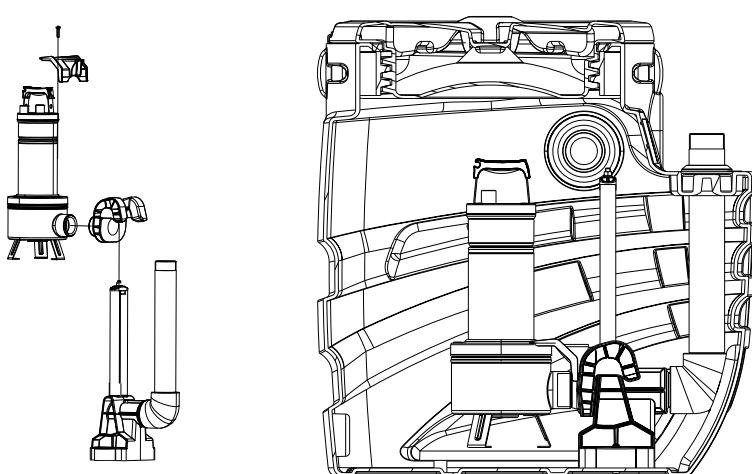
#### COMPONENTS INCLUDED:

- 2" PP lifting device and rotation prevention bracket for FEKA VS and VX
- Cable gland for individual pump
- 2" F x 1 x 1/4 M connector for FEKA 600
- FEKA VS and VX float cable stop kit

#### COMPONENTS NOT INCLUDED

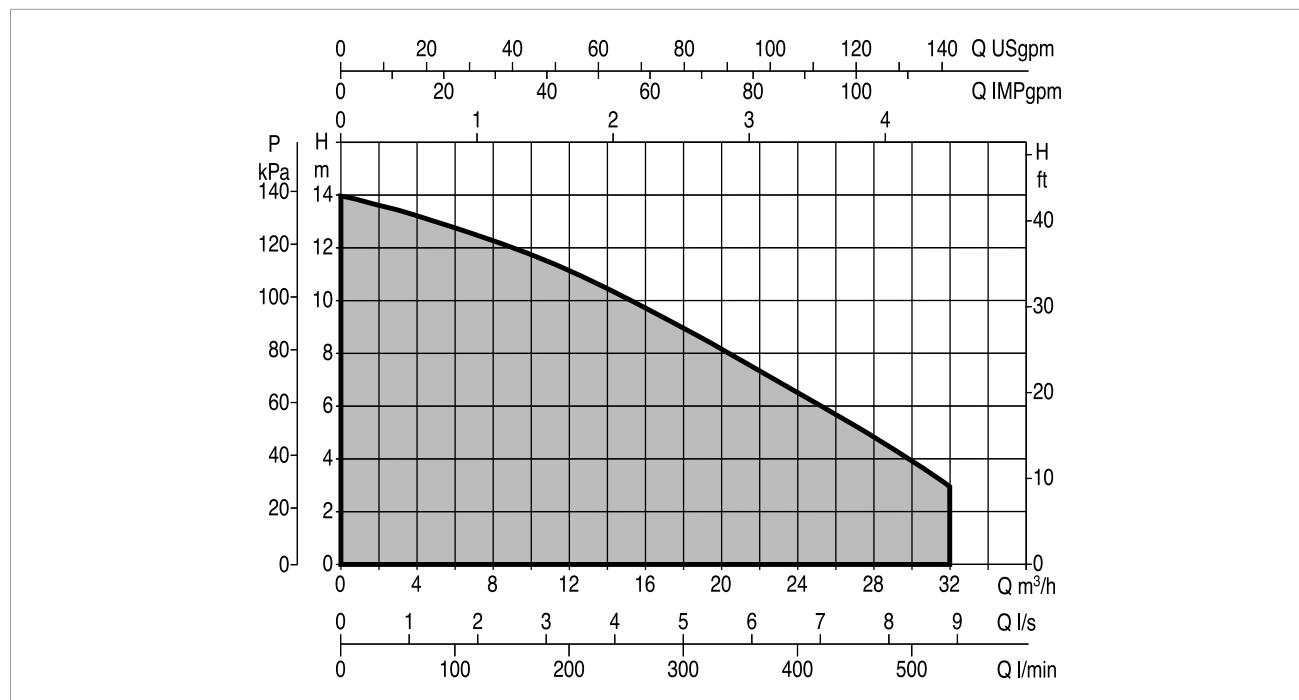
- Pump: to be selected according to the possible configurations
- Alarm float support

### PUMP INSTALLATION



**FEKABOX 200** - WASTE WATER AUTOMATIC COLLECTION AND LIFTING STATIONS

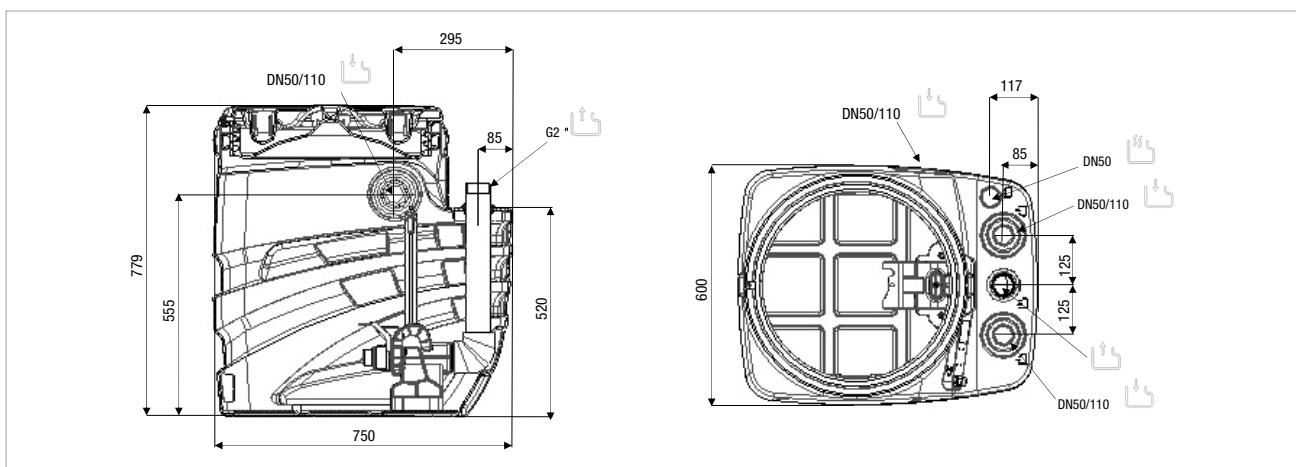
Maximum temperature of liquid: 45°C

**CONFIGURATIONS**

PUMP MODEL	ELECTRICAL DATA					In A
	POWER INPUT 50 Hz	P1 MAX kW	P2 NOMINAL		HP	
			kW	HP		
FEKA 600 MA	1x230V~	0,68	0,5	0,67	3,1	
FEKA VS 550 MA	1x220V-240V~	0,92	0,55	0,75	4,2	
FEKA VS 750 MA	1x220V-240V~	1,11	0,75	1	5,13	
FEKA VS 1000 MA	1x220V-240V~	1,46	1	1,36	6,63	
FEKA VS 1200 MA	1x220V-240V~	1,93	1,2	1,6	8,63	
FEKA VS GRINDER 1000 MA	220x240V	1,3	1	1,3	6,4 A	
FEKA VS GRINDER 1000 M-NA	220x240V	1,3	1	1,3	6,2 A	
FEKA VS GRINDER 1000 TNA	380x415V	1,3	1	1,3	3 A	
FEKA FXV 20.07 MA	1x230V	1,4	0,9	1,2	6,4	
FEKA FXV 20.11 MA	1x230V	1,7	1,2	1,6	8	
FEKA FXV 20.15 MA	1x230V	2,3	1,7	2,3	10,5	
FEKA FXC 20.07 MA	1x230V	0,9	0,7	0,9	4,1	
FEKA FXC 20.11 MA	1x230V	1,4	1	1,3	6,3	
FEKA FXC 20.15 MA	1x230V	2	1,5	2,0	9,1	
DRENAG FX 15.07 MA	1x230V	1,1	0,8	1,1	5,1	
DRENAG FX 15.11MA	1x230V	1,5	1,2	1,6	6,8	
DRENAG FX 15.15 MA	1x230V	2,3	1,8	2,4	10,6	
GRINDER FX 15.07 MA	1x230V	1,1	0,8	1,1	5,3	
GRINDER FX 15.11 MA	1x230V	1,5	1,1	1,5	6,8	
GRINDER FX 15.15 MA	1x230V	2,2	1,6	2,1	9,8	

## FEKABOX 200 - WASTE WATER AUTOMATIC COLLECTION AND LIFTING STATIONS

Maximum temperature of liquid: 45°C



### SIZES AND WEIGHTS

PACKING DIMENSIONS			WEIGHT Kg
L/A	L/B	H	
750	600	779	23.2

### LEGEND:

- Emergency output or delivery piping connection
- Collection piping input
- Power and float cable output
- Ventilation pipe connection
- Recyclable material

# FEKA FOS 280

## 1 PUMP AUTOMATIC LIFTING STATIONS



### TECHNICAL DATA

#### Operating range:

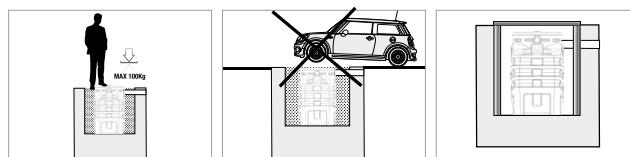
from 1 to 32 m<sup>3</sup>/h with head up to 23 metres.

**Pumped liquid:** ground water, rain water, clear waste water, grey waste water, and river or lake water. Liquids compatible with EN12050 1/2.

**Maximum temperature of liquid:** 45°C

**Installation:** Secured to the floor if inside a building. Underground if outside the building.

It cannot be driven on, but it can be walked on, maximum weight 100 kg.



### APPLICATIONS

Pumping stations suitable for the collection and redirection to the sewer network, of domestic drain water (waste, dirty, rain), of basements and garages, for one or more dwellings, when the sewer network cannot be reached due to gravity issues.

### CONSTRUCTION FEATURES

**CAPACITY:** 280 lt

**MATERIALS:** LLDPE

**STANDARDS:** 12050-1

#### CONNECTIONS

- Inputs DN 50/110
- Ventilation DN 50
- G2" output

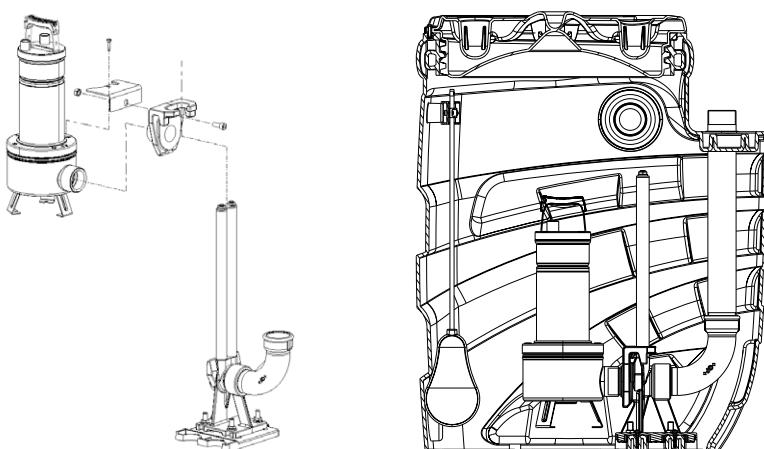
#### COMPONENTS INCLUDED:

- DSD2" lifting device and rotation prevention bracket for FEKA VS and VX
- 4 cable glands for single pump and floats
- 2" F x 1 x 1/4 M connector for FEKA 600
- FEKA VS and VX float cable stop kit
- 2 floats and alarm float support

#### COMPONENTS NOT INCLUDED

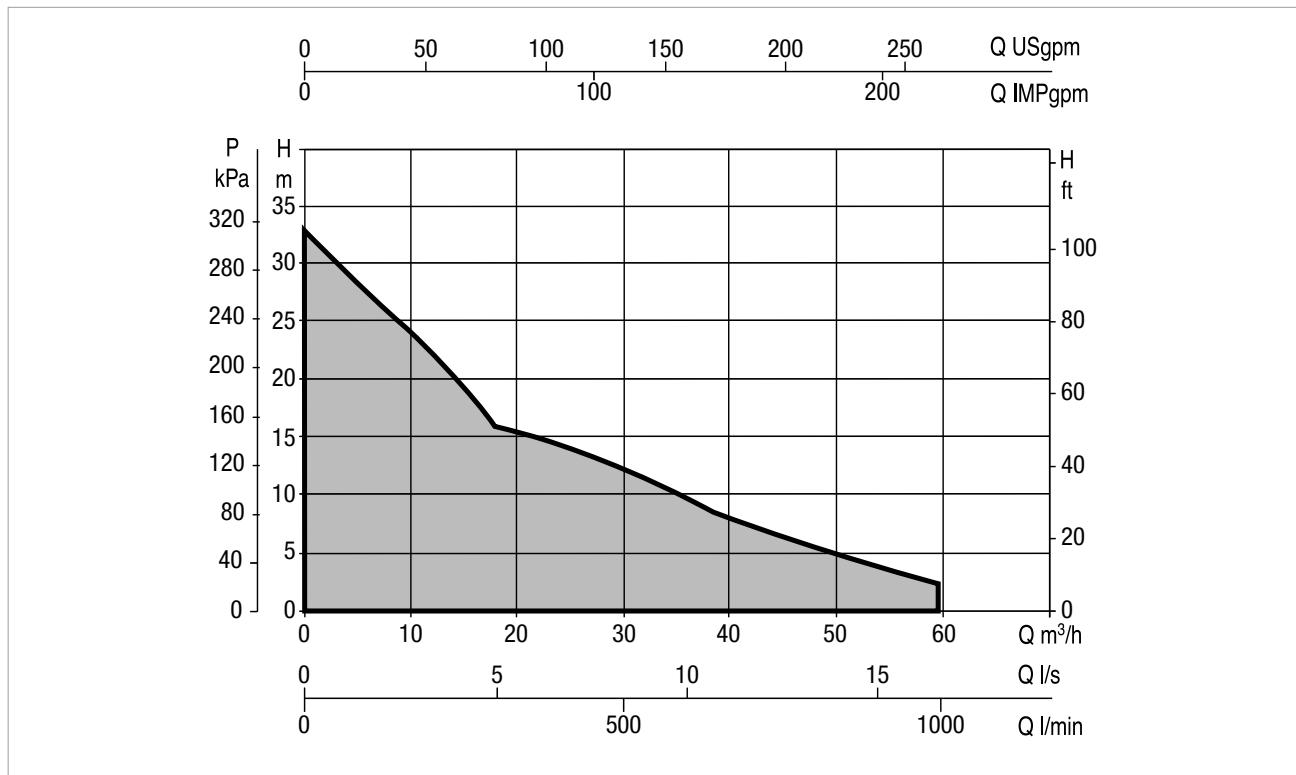
- Pump: to be selected according to the possible configurations
- Panel: to be selected according to the possible configurations
- Overflow alarm float

### PUMP INSTALLATION



# FEKAfos 280 - WASTE WATER AUTOMATIC COLLECTION AND LIFTING STATIONS

Maximum temperature of liquid: 45°C



## CONFIGURATIONS

MODEL PUMP	ELECTRICAL DATA				In A	ELECTRICAL PANEL MATCHING	ELECTRONIC PANEL MATCHING			
	POWER INPUT 50 HZ	P1 MAX kW	P2 NOMINAL							
		kW	HP	HP						
FEKA VS 550 M-NA	1x220V-240V~	0,92	0,55	0,75	4,2	ED1M	EBOX PLUS D			
FEKA VS 550 T-NA	3x400V~	0,90	0,55	0,75	1,64	ED1T				
FEKA VS 750 M-NA	1x220V-240V~	1,11	0,75	1	5,13	ED1M				
FEKA VS 750 T-NA	3x400V~	1,02	0,75	1	1,94	ED1T				
FEKA VS 1000 M-NA	1x220V-240V~	1,46	1	1,36	6,63	ED1,5M				
FEKA VS 1000 T-NA	3x400V~	1,37	1	1,36	2,51	ED1,5T				
FEKA VS 1200 M-NA	1x220V-240V~	1,93	1,2	1,6	8,63	ED1,5M				
FEKA VS 1200 T-NA	3x400V~	1,86	1,2	1,6	3,44	ED1,5T				
FEKA VS GRINDER 1000 MA	220x240V	1,3	1	1,3	6,4 A	ED1,5 M				
FEKA VS GRINDER 1000 M-NA	220x240V	1,3	1	1,3	6,2 A	ED1,5 M				
FEKA VS GRINDER 1000 TNA	380x415V	1,3	1	1,3	3 A	ED1,5 T				
FEKA FXV 20.07 MNA*	1x230V	1,4	0,9	1,2	6,4	ED1,5M				
FEKA FXV 20.07 TNA*	3x400V	1,4	0,9	1,2	2,4	ED1,5T				
FEKA FXV 20.11 MNA*	1x230V	1,7	1,2	1,6	8	ED1,5M				
FEKA FXV 20.11 TNA*	3x400V	1,6	1,2	1,6	2,9	ED1,5T				
FEKA FXV 20.15 MNA*	1x230V	2,3	1,7	2,3	10,5	ED2M				
FEKA FXV 20.15 TNA*	3x400V	2,2	1,7	2,3	4	ED2,5T				
FEKA FXV 20.22 TNA*	3x400V	2,9	2,2	2,9	5	ED2,5T				
FEKA FXC 20.07 MNA*	1x230V	0,9	0,7	0,9	4,1	ED1M				
FEKA FXC 20.07 TNA*	3x400V	0,9	0,7	0,9	1,8	ED0,75M				
FEKA FXC 20.11 MNA*	1x230V	1,4	1	1,3	6,3	ED1,5M				
FEKA FXC 20.11 TNA*	3x400V	1,3	1	1,3	2,6	ED1,5T				
FEKA FXC 20.15 MNA*	1x230V	2	1,5	2,0	9,1	ED1,5M				
FEKA FXC 20.15 TNA*	3x400V	1,8	1,5	2,0	3,5	ED1,5T				
FEKA FXC 20.22 TNA*	3x400V	2,8	2,2	2,9	4,9	ED2,5T				

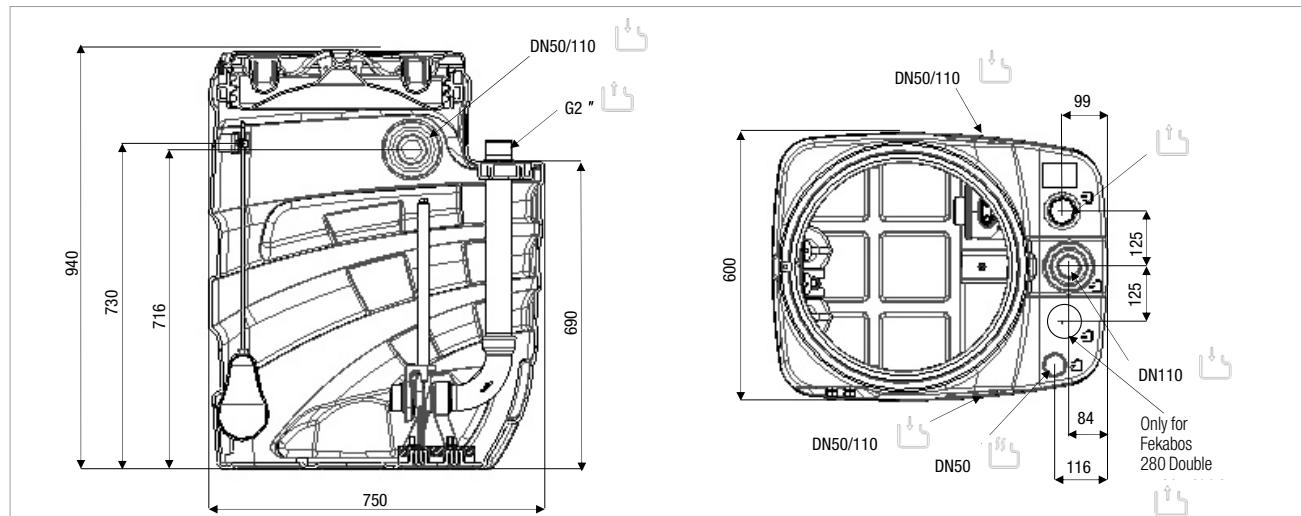
\*Available in Atex version

## FEKAPOS 280 - WASTE WATER AUTOMATIC COLLECTION AND LIFTING STATIONS

Maximum temperature of liquid: 45°C

MODEL PUMP	ELECTRICAL DATA					In A	ELECTRICAL PANEL MATCHING	ELECTRONIC PANEL MATCHING			
	POWER INPUT 50 HZ	P1 MAX kW	P2 NOMINAL								
			kW	HP							
DRENAG FX 15.07 MNA*	1x230V	1,1	0,8	1,1	5,1	ED1,5M					
DRENAG FX 15.07 TNA*	3x400V	1	0,8	1,1	2,1	ED1T					
DRENAG FX 15.11 MNA*	1x230V	1,5	1,2	1,6	6,8	ED1,5M					
DRENAG FX 15.11 TNA*	3x400V	1,5	1,2	1,6	2,8	ED1,5T					
DRENAG FX 15.15 MNA*	1x230V	2,3	1,8	2,4	10,6	ED2M					
DRENAG FX 15.15 TNA*	3x400V	2,5	1,8	2,4	4,3	ED2,5T					
DRENAG FX 15.22 TNA*	3x400V	3,1	2,3	3,1	5,2	ED2,5T					
GRINDER FX 15.07 MNA*	1x230V	1,1	0,8	1,1	5,3	ED1M					
GRINDER FX 15.07 TNA*	3x400V	1	0,8	1,1	2	ED1T					
GRINDER FX 15.11 MNA*	1x230V	1,5	1,1	1,5	6,8	ED1,5M					
GRINDER FX 15.11 TNA*	3x400V	1,5	1,1	1,5	2,8	ED1,5T					
GRINDER FX 15.15 MNA*	1x230V	2,2	1,6	2,1	9,8	ED2M					
GRINDER FX 15.15 TNA*	3x400V	2,1	1,6	2,1	3,8	ED1,5T					
GRINDER FX 15.22 TNA*	3x400V	2,6	2,1	2,8	4,7	ED2,5T					

\*Disponibile in versione Atex



### SIZES AND WEIGHTS

PACKING DIMENSIONS			WEIGHT Kg
L/A	L/B	H	
750	600	940	40,5

### LEGEND:

- Emergency output or delivery piping connection
- Collection piping input
- Power and float cable output
- Ventilation pipe connection
- Recyclable material

# FEKAFOS 280 DOUBLE

2 PUMP AUTOMATIC LIFTING STATIONS



## TECHNICAL DATA

### Operating range:

from 1 to 32 m<sup>3</sup>/h with head up to 23 metres.

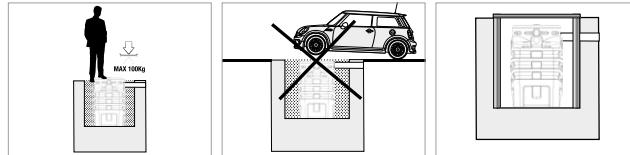
**Pumped liquid:** ground water, rain water, clear waste water, grey waste water, and river or lake water.

Liquids compatible with EN12050 1/2.

**Maximum temperature of liquid:** 45°C

**Installation:** Secured to the floor if inside a building. Underground if outside the building.

It cannot be driven on, but it can be walked on, maximum weight 100 kg.



## APPLICATIONS

Pumping stations suitable for the collection and redirection to the sewer network, of domestic drain water (waste, dirty, rain), of basements and garages, for one or more dwellings, when the sewer network cannot be reached due to gravity issues.

## CONSTRUCTION FEATURES

**CAPACITY:** 280 lt

**MATERIALS:** LLDPE

**STANDARDS:** 12050-1

### CONNECTIONS

- DN 50/110 inputs
- DN 50 ventilation
- G2" output

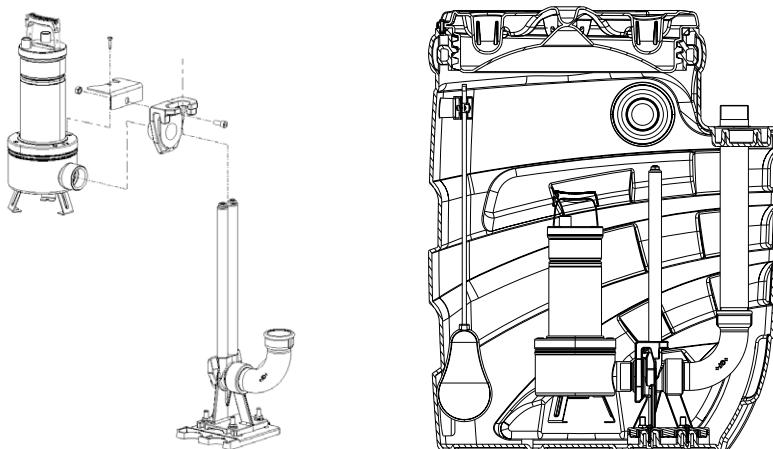
### COMPONENTS INCLUDED:

- 2 DSD2" lifting devices and rotation prevention bracket for FEKA VS and VX
- 6 cable glands for double pump and floats
- 2 FEKA VS and VX float cable stop kits
- 3 floats and alarm float support

### COMPONENTS NOT INCLUDED

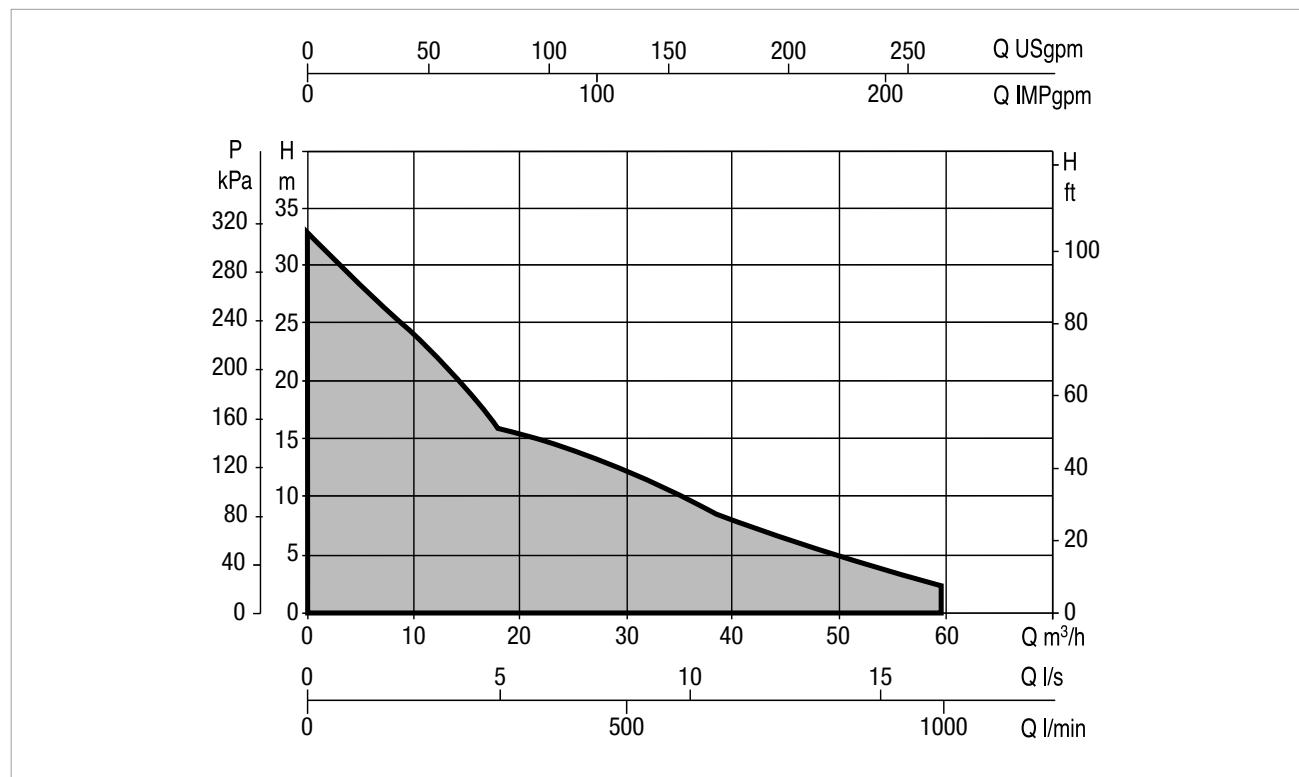
- Pump: to be selected according to the possible configurations
- Panel: to be selected according to the possible configurations
- Overflow alarm float

## PUMP INSTALLATION



**FEKA FOS 280 DOUBLE - WASTE WATER AUTOMATIC COLLECTION AND LIFTING STATIONS**

Maximum temperature of liquid: 45°C

**CONFIGURATIONS**

MODEL PUMP	ELECTRICAL DATA					ELECTRICAL PANEL MATCHING	ELECTRONIC PANEL MATCHING
	POWER INPUT 50 HZ	P1 MAX kW	P2 NOMINAL		In A		
			kW	HP			
FEKA VS 550 M-NA	1x220V-240V~	0,92	0,55	0,75	4,2	E2D2M	EBOX PLUS D
FEKA VS 550 T-NA	3x400V~	0,90	0,55	0,75	1,64	E2D2T	
FEKA VS 750 M-NA	1x220V-240V~	1,11	0,75	1	5,13	E2D2M	
FEKA VS 750 T-NA	3x400V~	1,02	0,75	1	1,94	E2D2T	
FEKA VS 1000 M-NA	1x220V-240V~	1,46	1	1,36	6,63	E2D3M	
FEKA VS 1000 T-NA	3x400V~	1,37	1	1,36	2,51	E2D3T	
FEKA VS 1200 M-NA	1x220V-240V~	1,93	1,2	1,6	8,63	E2D3M	
FEKA VS 1200 T-NA	3x400V~	1,86	1,2	1,6	3,44	E2D3T	
FEKA VS GRINDER 1000 MA	220x240V	1,3	1	1,3	6,4A	E2D3M	
FEKA VS GRINDER 1000 M-NA	220x240V	1,3	1	1,3	6,2A	E2D 3M	
FEKA VS GRINDER 1000 TNA	380x415V	1,3	1	1,3	3A	E2D3T	
FEKA FXV 20.07 MNA*	1x230V	1,4	0,9	1,2	6,4	E2D3M	
FEKA FXV 20.07 TNA*	3x400V	1,4	0,9	1,2	2,4	E2D3T	
FEKA FXV 20.11 MNA*	1x230V	1,7	1,2	1,6	8	E2D3M	
FEKA FXV 20.11 TNA*	3x400V	1,6	1,2	1,6	2,9	E2D3T	
FEKA FXV 20.15 MNA*	1x230V	2,3	1,7	2,3	10,5	E2D4M	
FEKA FXV 20.15 TNA*	3x400V	2,2	1,7	2,3	4	E2D3T	
FEKA FXV 20.22 TNA*	3x400V	2,9	2,2	2,9	5	E2D5T	
FEKA FXC 20.07 MNA	1x230V	0,9	0,7	0,9	4,1	E2D2M	
FEKA FXC 20.07 TNA	3x400V	0,9	0,7	0,9	1,8	E2D1,5M	
FEKA FXC 20.11 MNA	1x230V	1,4	1	1,3	6,3	E2D3M	
FEKA FXC 20.11 TNA	3x400V	1,3	1	1,3	2,6	E2D3T	
FEKA FXC 20.15 MNA	1x230V	2	1,5	2,0	9,1	E2D3M	
FEKA FXC 20.15 TNA	3x400V	1,8	1,5	2,0	3,5	E2D3T	
FEKA FXC 20.22 TNA	3x400V	2,8	2,2	2,9	4,9	E2D5T	

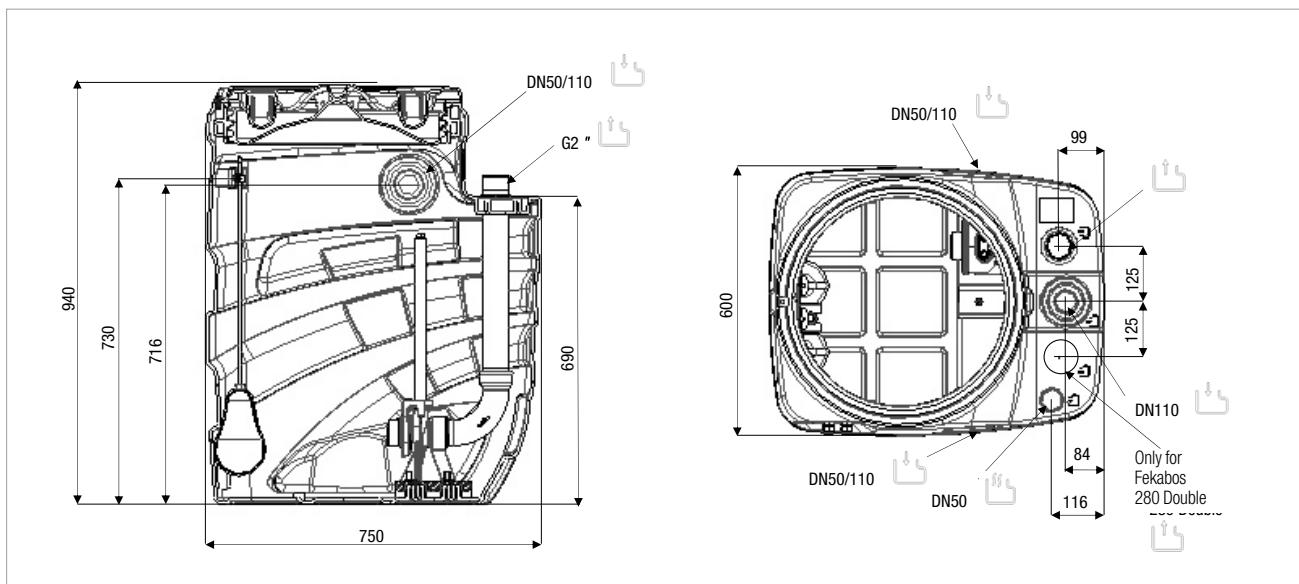
\*Available in Atex version

## FEKAPOS 280 DOUBLE - WASTE WATER AUTOMATIC COLLECTION AND LIFTING STATIONS

Maximum temperature of liquid: 45°C

MODEL PUMP	ELECTRICAL DATA					In A	ELECTRICAL PANEL MATCHING	ELECTRONIC PANEL MATCHING			
	POWER INPUT 50 HZ	P1 MAX kW	P2 NOMINAL								
			kW	HP							
DRENAG FX 15.07 MNA*	1x230V	1,1	0,8	1,1	5,1	E2D2M	EBOX PLUS D				
DRENAG FX 15.07 TNA*	3x400V	1	0,8	1,1	2,1	E2D2T					
DRENAG FX 15.11 MNA*	1x230V	1,5	1,2	1,6	6,8	E2D3M					
DRENAG FX 15.11 TNA*	3x400V	1,5	1,2	1,6	2,8	E2D3T					
DRENAG FX 15.15 MNA*	1x230V	2,3	1,8	2,4	10,6	E2D4M					
DRENAG FX 15.15 TNA*	3x400V	2,5	1,8	2,4	4,3	E2D5T					
DRENAG FX 15.22 TNA*	3x400V	3,1	2,3	3,1	5,2	E2D5T					
GRINDER FX 15.07 MNA*	1x230V	1,1	0,8	1,1	5,3	E2D3M					
GRINDER FX 15.07 TNA*	3x400V	1	0,8	1,1	2	E2D3T					
GRINDER FX 15.11 MNA*	1x230V	1,5	1,1	1,5	6,8	E2D3M					
GRINDER FX 15.11 TNA*	3x400V	1,5	1,1	1,5	2,8	E2D3T					
GRINDER FX 15.15 MNA*	1x230V	2,2	1,6	2,1	9,8	E2D4M					
GRINDER FX 15.15 TNA*	3x400V	2,1	1,6	2,1	3,8	E2D5T					
GRINDER FX 15.22 TNA*	3x400V	2,6	2,1	2,8	4,7	E2D5T					

\*Disponibile in versione Atex



### SIZES AND WEIGHTS

PACKING DIMENSIONS			WEIGHT Kg
L/A	L/B	H	
750	600	940	53.7

### LEGEND:

- Emergency output or delivery piping connection
- Collection piping input
- Power and float cable output
- Ventilation pipe connection
- Recyclable material



# FEKA FOS 550 DOUBLE

2 PUMP AUTOMATIC LIFTING STATIONS

## TECHNICAL DATA

### Operating range:

from 1 to 32 m<sup>3</sup>/h with head up to 23 metres.

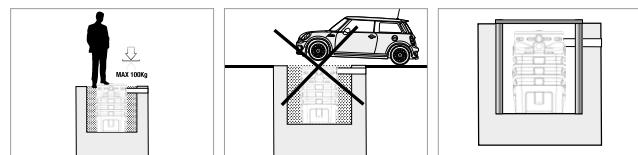
### Liquid temperature range: + 45°C

**Pumped liquid:** ground water, rain water, clear waste water, grey waste water, and river or lake water.

Liquids compatible with EN12050 1/2.

**Installation:** Secured to the floor if inside a building. Underground if outside the building.

It cannot be driven on, but it can be walked on, maximum weight 100 kg.



## APPLICATIONS

Pumping stations suitable for the collection and redirection to the sewer network, of domestic drain water (waste, dirty, rain), of basements and garages, for one or more dwellings, when the sewer network cannot be reached due to gravity issues.

## CONSTRUCTION FEATURES

**CAPACITY:** 550 lt

**MATERIALS:** LLDPE

**REGULATIONS:** 12050-1

### CONNECTIONS

- Inputs DN 50/110
- Ventilation DN 50
- G2" output

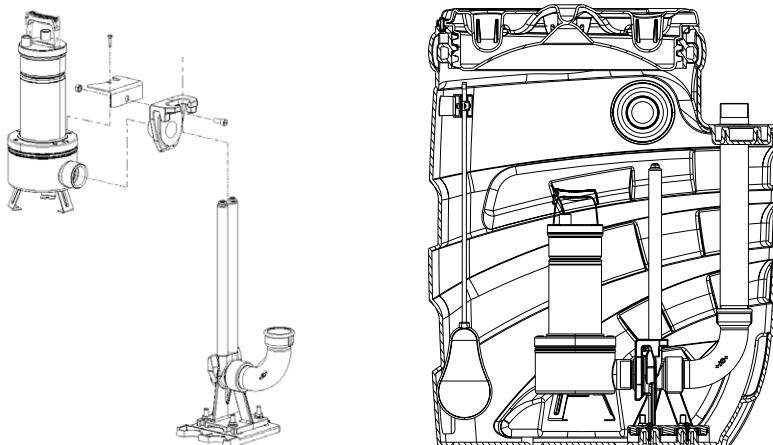
### COMPONENTS INCLUDED:

- 2 DSD2" lifting devices and rotation prevention bracket for FEKA VS and VX
- 6 cable glands for double pump and floats
- 2 FEKA VS and VX float cable stop kits
- 3 floats and alarm float support

### COMPONENTS NOT INCLUDED

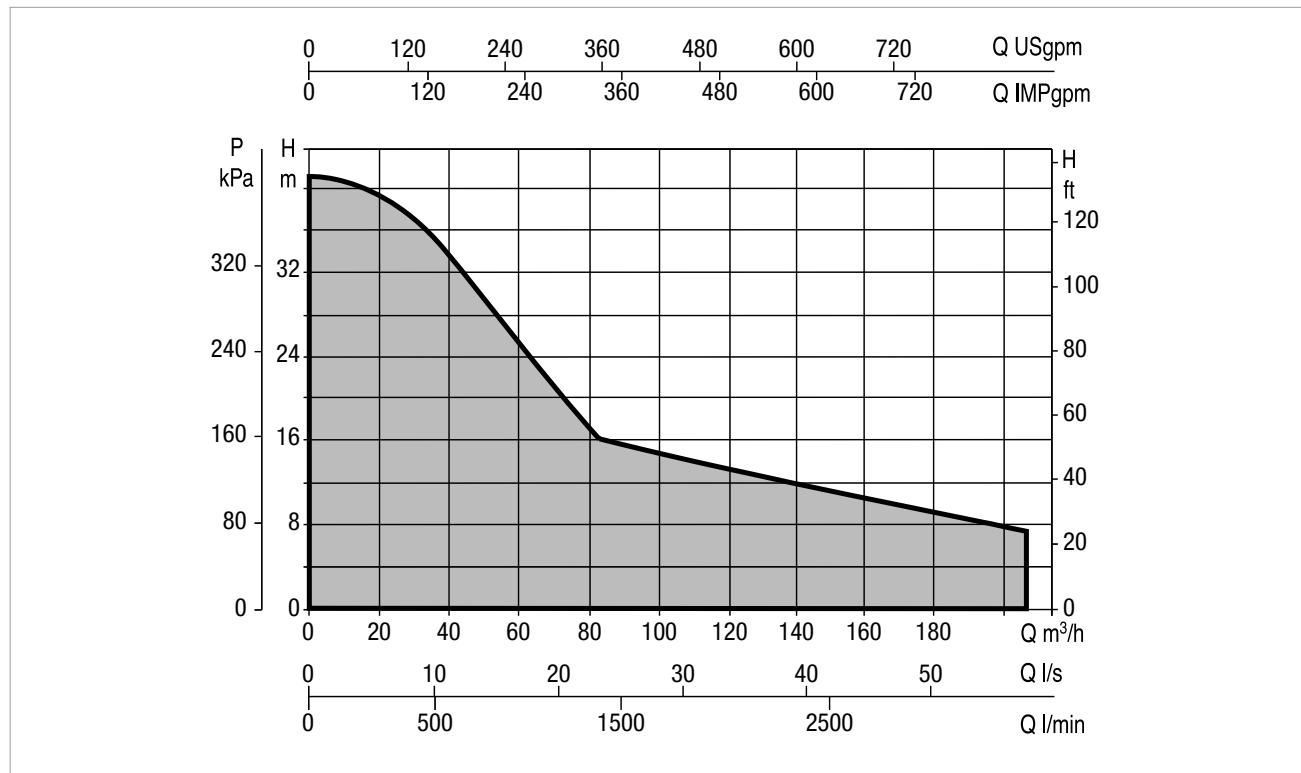
- Pump: to be selected according to the possible configurations.
- Panel: to be selected according to the possible configurations
- Overflow alarm float

## PUMP INSTALLATION



## FEKAfos 550 DOUBLE - AUTOMATIC WASTE WATER LIFTING AND COLLECTION STATIONS

Liquid temperature range: +45°C



### CONFIGURATIONS

MODEL PUMP	ELECTRICAL DATA					ELECTRICAL PANEL MATCHING	ELECTRONIC PANEL MATCHING		
	POWER INPUT 50 Hz	P1 MAX kW	P2 NOMINAL		In A				
			kW	HP					
FEKA VS 550 M-NA	1x220V-240V~	0,92	0,55	0,75	4,2	E2D2M	EBOX PLUS D		
FEKA VS 550 T-NA	3x400V~	0,90	0,55	0,75	1,64	E2D2T			
FEKA VS 750 M-NA	1x220V-240V~	1,11	0,75	1	5,13	E2D2M			
FEKA VS 750 T-NA	3x400V~	1,02	0,75	1	1,94	E2D2T			
FEKA VS 1000 M-NA	1x220V-240V~	1,46	1	1,36	6,63	E2D3M			
FEKA VS 1000 T-NA	3x400V~	1,37	1	1,36	2,51	E2D3T			
FEKA VS 1200 M-NA	1x220V-240V~	1,93	1,2	1,6	8,63	E2D3M			
FEKA VS 1200 T-NA	3x400V~	1,86	1,2	1,6	3,44	E2D3T			
FEKA VS GRINDER 1000 MA	220x240V	1,3	1	1,3	6,4 A	E2D3M			
FEKA VS GRINDER 1000 M-NA	220x240V	1,3	1	1,3	6,2 A	E2D 3M			
FEKA VS GRINDER 1000 TNA	380x415V	1,3	1	1,3	3 A	E2D3T			
FEKA FXV 20.07 MNA*	1x230V	1,4	0,9	1,2	6,4	E2D3M			
FEKA FXV 20.07 TNA*	3x400V	1,4	0,9	1,2	2,4	E2D3T			
FEKA FXV 20.11 MNA*	1x230V	1,7	1,2	1,6	8	E2D3M			
FEKA FXV 20.11 TNA*	3x400V	1,6	1,2	1,6	2,9	E2D3T			
FEKA FXV 20.15 MNA*	1x230V	2,3	1,7	2,3	10,5	E2D4M			
FEKA FXV 20.15 TNA*	3x400V	2,2	1,7	2,3	4	E2D3T			
FEKA FXV 20.22 TNA*	3x400V	2,9	2,2	2,9	5	E2D5T			
FEKA FXC 20.07 MNA*	1x230V	0,9	0,7	0,9	4,1	E2D2M			
FEKA FXC 20.07 TNA*	3x400V	0,9	0,7	0,9	1,8	E2D1,5M			
FEKA FXC 20.11 MNA*	1x230V	1,4	1	1,3	6,3	E2D3M			
FEKA FXC 20.11 TNA*	3x400V	1,3	1	1,3	2,6	E2D3T			
FEKA FXC 20.15 MNA*	1x230V	2	1,5	2,0	9,1	E2D3M			
FEKA FXC 20.15 TNA*	3x400V	1,8	1,5	2,0	3,5	E2D3T			
FEKA FXC 20.22 TNA*	3x400V	2,8	2,2	2,9	4,9	E2D5T			

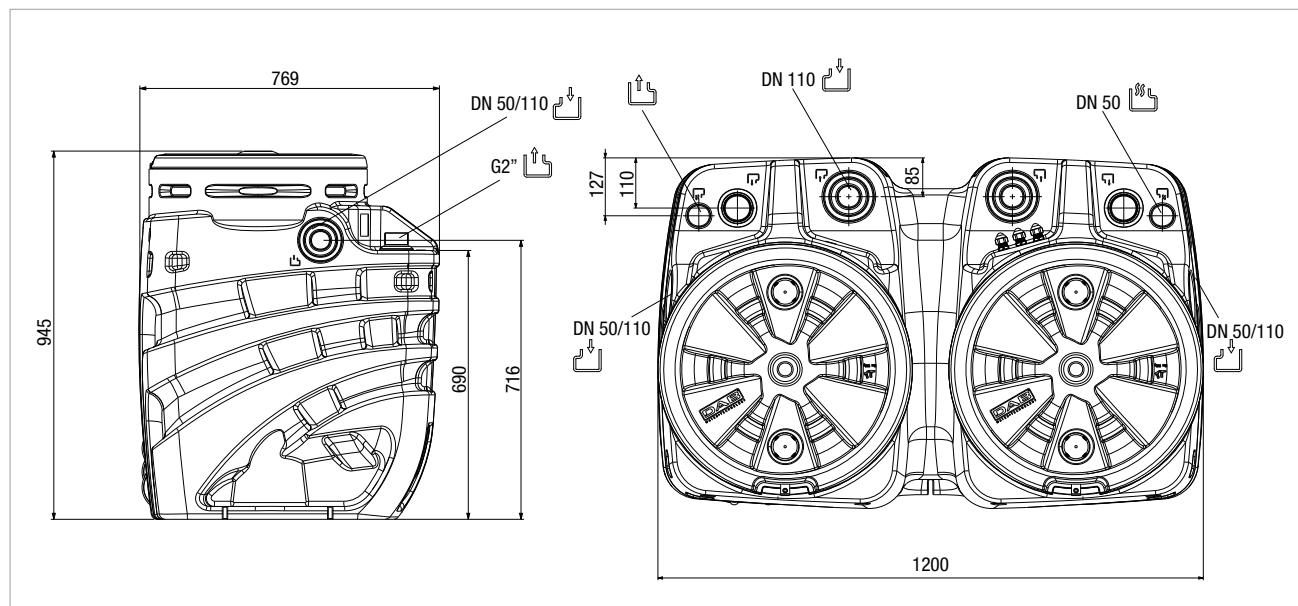
\*Available in Atex version

## FEKAPOS 550 DOUBLE - AUTOMATIC WASTE WATER LIFTING AND COLLECTION STATIONS

Liquid temperature range: +45°C

MODEL PUMP	ELECTRICAL DATA					In A	ELECTRICAL PANEL MATCHING	ELECTRONIC PANEL MATCHING			
	POWER INPUT 50 HZ	P1 MAX kW	P2 NOMINAL								
			kW	HP							
DRENAG FX 15.07 MNA*	1x230V	1,1	0,8	1,1	5,1	E2D2M	EBOX PLUS D				
DRENAG FX 15.07 TNA*	3x400V	1	0,8	1,1	2,1	E2D2T					
DRENAG FX 15.11 MNA*	1x230V	1,5	1,2	1,6	6,8	E2D3M					
DRENAG FX 15.11 TNA*	3x400V	1,5	1,2	1,6	2,8	E2D3T					
DRENAG FX 15.15 MNA*	1x230V	2,3	1,8	2,4	10,6	E2D4M					
DRENAG FX 15.15 TNA*	3x400V	2,5	1,8	2,4	4,3	E2D5T					
DRENAG FX 15.22 TNA*	3x400V	3,1	2,3	3,1	5,2	E2D5T					
GRINDER FX 15.07 MNA*	1x230V	1,1	0,8	1,1	5,3	E2D3M					
GRINDER FX 15.07 TNA*	3x400V	1	0,8	1,1	2	E2D3T					
GRINDER FX 15.11 MNA*	1x230V	1,5	1,1	1,5	6,8	E2D3M					
GRINDER FX 15.11 TNA*	3x400V	1,5	1,1	1,5	2,8	E2D3T					
GRINDER FX 15.15 MNA*	1x230V	2,2	1,6	2,1	9,8	E2D4M					
GRINDER FX 15.15 TNA*	3x400V	2,1	1,6	2,1	3,8	E2D5T					
GRINDER FX 15.22 TNA*	3x400V	2,6	2,1	2,8	4,7	E2D5T					

\*Available in Atex version



### SIZES AND WEIGHTS

PACKING DIMENSIONS			WEIGHT Kg
L/A	L/B	H	
790	1220	965	74

### LEGEND:

- Emergency output or delivery piping connection
- Collection piping input
- Power and float cable output
- Ventilation pipe connection
- Recyclable material

# FEKAFOS MAXI 1200 - 1700 - 2200 - 3600

AUTOMATIC LIFTING STATIONS FOR 2 PUMPS

## TECHNICAL SPECIFICATIONS

**Operating range:** From 1 to 160 m<sup>3</sup>/h with head up to 40 m.

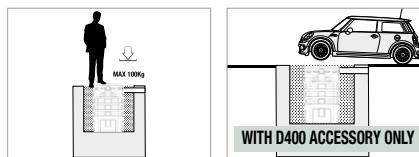
**Liquid temperature range:** + 55°C

**Pumped liquid:** groundwater, rainwater, clear waste water, waste sewage water and river or lake water.

**Installation:** Underground on the outside of a building.

Walk-over load up to 100 kg - Standard installation.

Drive-over load class D400 with appropriate coverage available as an accessory.



## APPLICATIONS

Automatic collection and lifting station suitable for clear and rainwater or civil and industrial waste. Composed of a cylindrical polyethylene monoblock with a suitably shaped bottom to house the pumps and to avoid stagnation. The upper inlet is equipped with lids with locking clasps and anti-odour seals. The station is set up for the use of two single-phase non-automatic or three-phase pumps with a discharge diameter from DN50 to DN80.

## CONSTRUCTION CHARACTERISTICS

**CAPACITY:** 1200 / 1700 / 2200 / 3600 L

**MATERIALS:** LLDPE

### CONNECTIONS:

- DN DN125 / DN160 inlets
- DN 50 ventilation
- 2xDN50 / 2xDN65 / 2xDN80 outlets

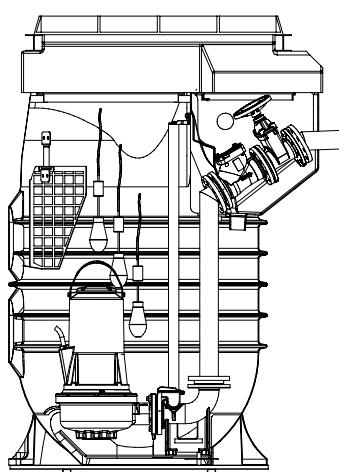
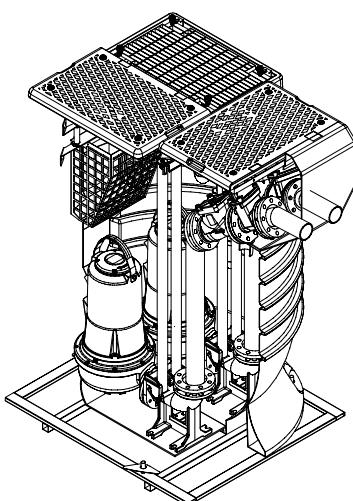
### COMPONENTS INCLUDED:

- 2 coupling units in grey cast iron for insertion and extraction of pumps
- Stainless steel guide tubes
- PVC "T" inlet fitting
- 2 polyethylene outlet pipes
- 3 Bulb floats
- Lids with locking clasps and polyethylene anti-odour seals

### ACCESSORIES ON REQUEST:

- Valve inspection section complete with two gate valves and grey cast iron check valves
- Anti-intrusion grating.
- Filter basket
- Drive-over frame D400 1200x1200 (To be fixed on site in the concrete structure surrounding the tank)

## PUMP INSTALLATION



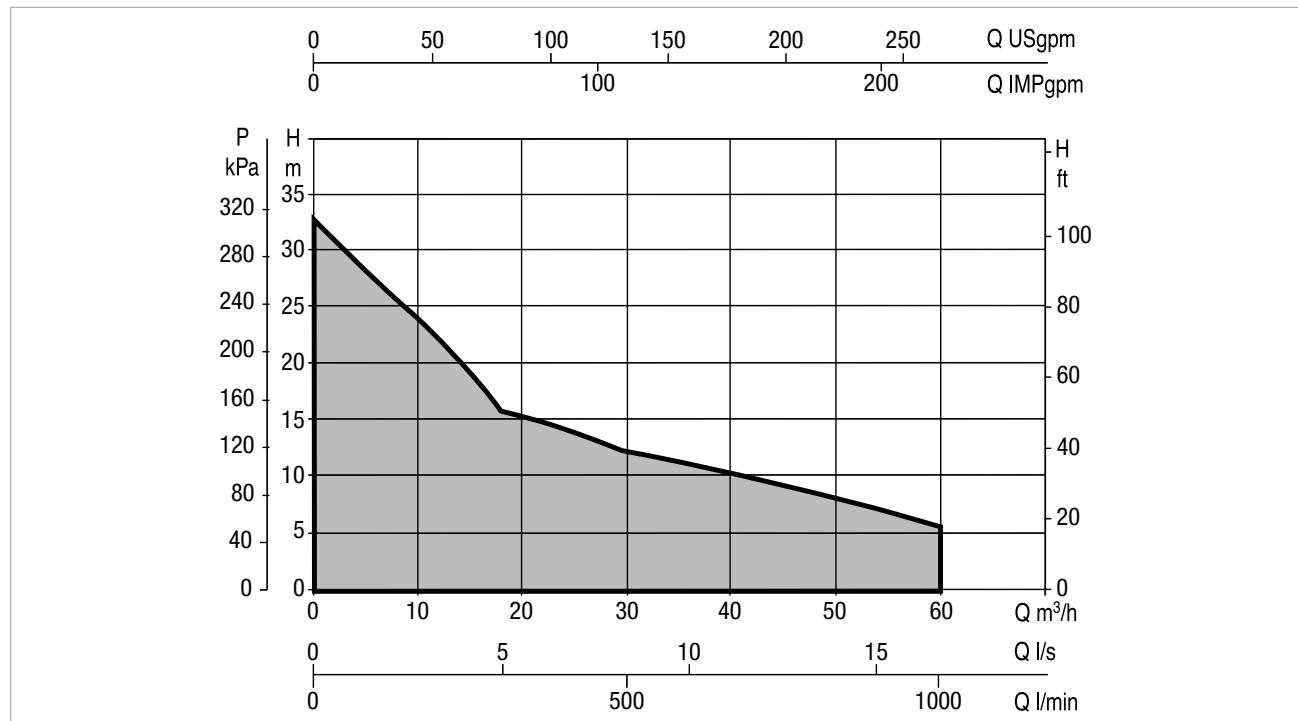
# ACCESSORIES

## AUTOMATIC LIFTING STATIONS

D400 DRIVE-OVER FRAME	DESCRIPTION
	<p><b>D400 DRIVE-OVER FRAME</b> To be fixed on site in the reinforced concrete structure surrounding the tank</p> <ul style="list-style-type: none"><li>- Steel frame for anchoring on the reinforced concrete slab.</li><li>- Drive-over spheroidal cast iron manhole D400 1200x1200</li><li>- Elevation and protection skirt</li></ul>
VALVE SECTION	DESCRIPTION
	<p><b>VALVE SECTION</b> Preassembled, to be ordered with the tank</p> <ul style="list-style-type: none"><li>- 2 spheroidal cast iron ball check valves</li><li>- 2 spheroidal cast iron gate valves</li><li>- 2 PE outlet pipes</li></ul>
FILTER BASKET	DESCRIPTION
	<p><b>FILTER BASKET:</b> Preassembled, to be ordered with the tank</p> <p>Removable stainless steel basket with inlet filter grilles 40x40 mm.</p>
ANTI-INTRUSION GRATING	DESCRIPTION
	<p><b>ANTI-INTRUSION GRATING:</b> Preassembled, to be ordered with the tank</p> <p>Steel frame and grilles for the protection of the upper access to the tank.</p>

**FEKAFOSS MAXI 1200 - 1700 - 2200 - 3600**

AUTOMATIC LIFTING STATIONS FOR THE COLLECTION AND LIFTING OF WASTE WATER

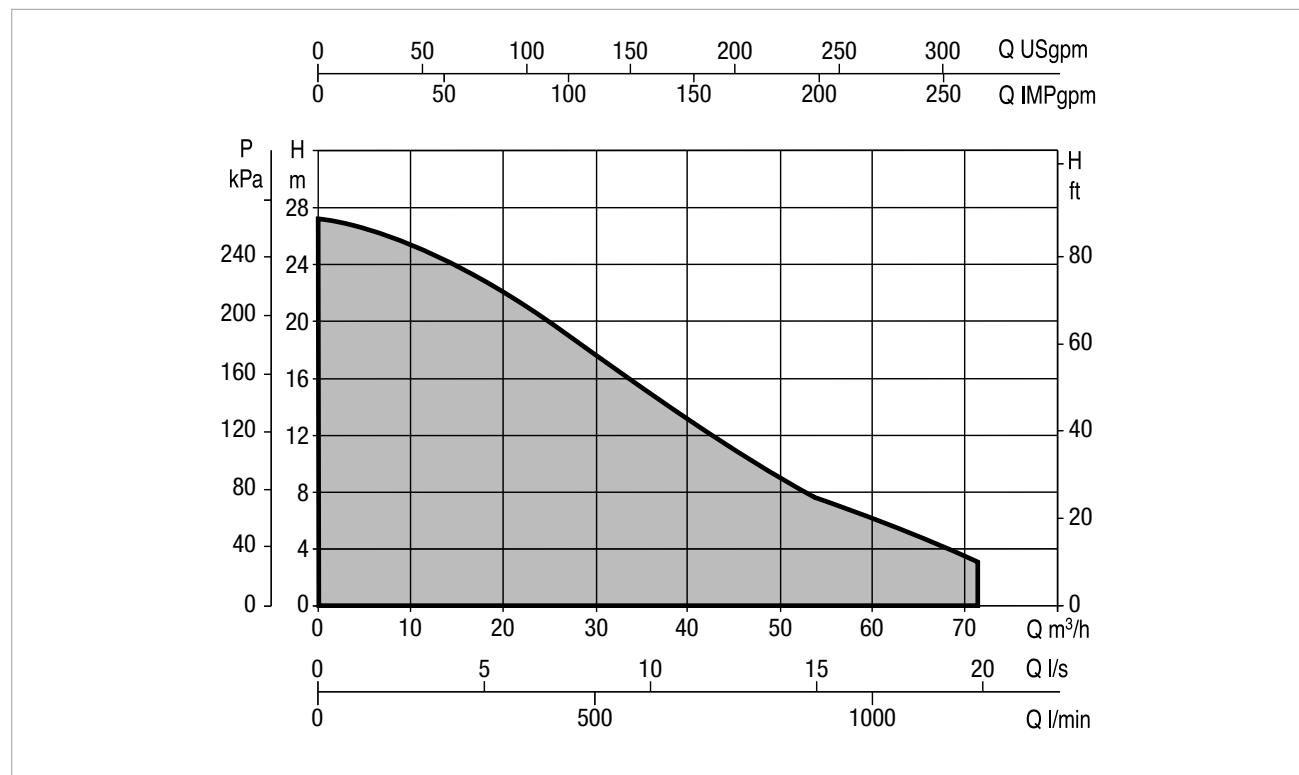
**CONFIGURATIONS DN50**

MODEL PUMP	ELECTRICAL DATA					ELECTRICAL PANEL MATCHING	ELECTRONIC PANEL MATCHING		
	POWER INPUT 50 HZ	P1 MAX kW	P2 NOMINAL		In A				
			kW	HP					
FEKA VS 550 M-NA	1x220V-240V~	0,92	0,55	0,75	4,2	E2D2M	EBOX PLUS D		
FEKA VS 550 T-NA	3x400V~	0,90	0,55	0,75	1,64	E2D2T			
FEKA VS 750 M-NA	1x220V-240V~	1,11	0,75	1	5,13	E2D2M			
FEKA VS 750 T-NA	3x400V~	1,02	0,75	1	1,94	E2D2T			
FEKA VS 1000 M-NA	1x220V-240V~	1,46	1	1,36	6,63	E2D3M			
FEKA VS 1000 T-NA	3x400V~	1,37	1	1,36	2,51	E2D3T			
FEKA VS 1200 M-NA	1x220V-240V~	1,93	1,2	1,6	8,63	E2D3M			
FEKA VS 1200 T-NA	3x400V~	1,86	1,2	1,6	3,44	E2D3T			
FEKA VS GRINDER 1000 MA	220x240V	1,3	1	1,3	6,4 A	E2D3M			
FEKA VS GRINDER 1000 M-NA	220x240V	1,3	1	1,3	6,2 A	E2D 3M			
FEKA VS GRINDER 1000 TNA	380x415V	1,3	1	1,3	3 A	E2D3T			
FEKA FXV 20.07 MNA*	1x230V	1,4	0,9	1,2	6,4	E2D3M			
FEKA FXV 20.07 TNA*	3x400V	1,4	0,9	1,2	2,4	E2D3T			
FEKA FXV 20.11 MNA*	1x230V	1,7	1,2	1,6	8	E2D3M			
FEKA FXV 20.11 TNA*	3x400V	1,6	1,2	1,6	2,9	E2D3T			
FEKA FXV 20.15 MNA*	1x230V	2,3	1,7	2,3	10,5	E2D4M			
FEKA FXV 20.15 TNA*	3x400V	2,2	1,7	2,3	4	E2D3T			
FEKA FXV 20.22 TNA*	3x400V	2,9	2,2	2,9	5	E2D5T			
FEKA FXC 20.07 MNA*	1x230V	0,9	0,7	0,9	4,1	E2D2M			
FEKA FXC 20.07 TNA*	3x400V	0,9	0,7	0,9	1,8	E2D1,5M			
FEKA FXC 20.11 MNA*	1x230V	1,4	1	1,3	6,3	E2D3M			
FEKA FXC 20.11 TNA*	3x400V	1,3	1	1,3	2,6	E2D3T			
FEKA FXC 20.15 MNA*	1x230V	2	1,5	2,0	9,1	E2D4M			
FEKA FXC 20.15 TNA*	3x400V	1,8	1,5	2,0	3,5	E2D3T			
FEKA FXC 20.22 TNA*	3x400V	2,8	2,2	2,9	4,9	E2D5T			
DRENAG FX 15.07 MNA*	1x230V	1,1	0,8	1,1	5,1	E2D2M			
DRENAG FX 15.07 TNA*	3x400V	1	0,8	1,1	2,1	E2D2T			
DRENAG FX 15.11 MNA*	1x230V	1,5	1,2	1,6	6,8	E2D3M			
DRENAG FX 15.11 TNA*	3x400V	1,5	1,2	1,6	2,8	E2D3T			
DRENAG FX 15.15 MNA*	1x230V	2,3	1,8	2,4	10,6	E2D4M			
DRENAG FX 15.15 TNA*	3x400V	2,5	1,8	2,4	4,3	E2D5T			
DRENAG FX 15.22 TNA*	3x400V	3,1	2,3	3,1	5,2	E2D5T			
GRINDER FX 15.07 MNA*	1x230V	1,1	0,8	1,1	5,3	E2D3M			
GRINDER FX 15.07 TNA*	3x400V	1	0,8	1,1	2	E2D3T			
GRINDER FX 15.11 MNA*	1x230V	1,5	1,1	1,5	6,8	E2D3M			
GRINDER FX 15.11 TNA*	3x400V	1,5	1,1	1,5	2,8	E2D3T			
GRINDER FX 15.15 MNA*	1x230V	2,2	1,6	2,1	9,8	E2D4M			
GRINDER FX 15.15 TNA*	3x400V	2,1	1,6	2,1	3,8	E2D5T			
GRINDER FX 15.22 TNA*	3x400V	2,6	2,1	2,8	4,7	E2D5T			

\*Available in Atex version

**FEKAFO MAXI 1200 - 1700 - 2200 - 3600**

AUTOMATIC LIFTING STATIONS FOR THE COLLECTION AND LIFTING OF WASTE WATER

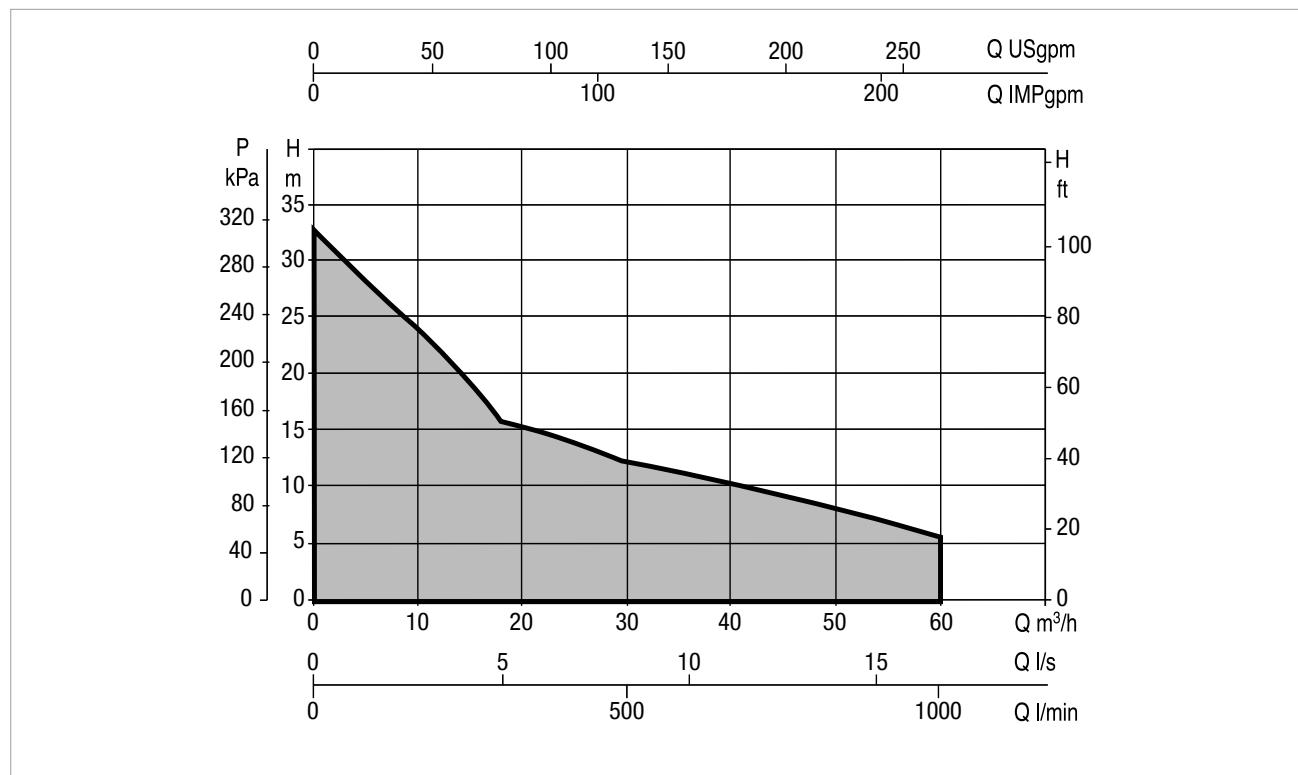
**CONFIGURATIONS DN65**

MODEL PUMP	ELECTRICAL DATA					ELECTRICAL PANEL MATCHING	ELECTRONIC PANEL MATCHING		
	POWER INPUT 50 HZ	P1 MAX kW	P2 NOMINAL		In A				
			kW	HP					
FEKA FXV 25.07.4 TNA*	3x400V	1	0,7	0,9	2,2	E2D3M	EBOX PLUS D		
FEKA FXV 25.12.4 TNA*	3x400V	1,7	1,2	1,6	3	E2D3T			
FEKA FXV 25.07 MNA*	1x230V	1,5	1	1,3	6,6	E2D3M			
FEKA FXV 25.07 TNA*	3x400V	1,3	1	1,3	2,3	E2D3T			
FEKA FXV 25.11 MNA*	1x230V	1,7	1,2	1,6	7,6	E2D4M			
FEKA FXV 25.11 TNA*	3x400V	1,7	1,2	1,6	3	E2D5T			
FEKA FXV 25.15 MNA*	1x230V	2,3	1,7	2,3	10,6	E2D5T			
FEKA FXV 25.15 TNA*	3x400V	2,2	1,7	2,3	4	E2D3T			
FEKA FXV 25.22 TNA*	3x400V	2,8	2,2	2,9	4,9	E2D3T			
FEKA FXC 25.07 MNA*	1x230V	0,9	0,6	0,8	4,1	E2D3M			
FEKA FXC 25.07 TNA*	3x400V	0,9	0,6	0,8	1,8	E2D1,5M			
FEKA FXC 25.11 MNA*	1x230V	1,4	1,1	1,5	6,4	E2D4M			
FEKA FXC 25.11 TNA*	3x400V	1,4	1,1	1,5	2,6	E2D5T			
FEKA FXC 25.15 MNA*	1x230V	2	1,6	2,1	9,3	E2D5T			
FEKA FXC 25.15 TNA*	3x400V	1,9	1,6	2,1	3,6	E2D3T			
FEKA FXC 25.22 TNA*	3x400V	2,9	2,3	3,1	5	E2D3T			
FKV 65.11.4 T5 400D*	3x 400V~	1,3	1,1	1,5	3,3	E2D3T			
FKV 65.22.2 T5 400D*	3x 400V~	2,5	2,2	3,0	4,8	E2D5T			
FKV 65.30.2 T5 400D*	3x 400V~	3,3	3,0	4,0	5,7	E2D5T			
FKV 65.40.2 T5 400D*	3x 400V~	4,6	4,0	5,5	7,5	E2D8T			
FKC 65.22.2 T5 400D*	3x 400V~	2,6	2,2	3,0	4,8	E2D5T			
FKC 65.30.2 T5 400D*	3x 400V~	3,4	3,0	4,0	5,8	E2D5T			

\*Available in Atex version

**FEKAFO MAXI 1200 - 1700 - 2200 - 3600**

AUTOMATIC LIFTING STATIONS FOR THE COLLECTION AND LIFTING OF WASTE WATER

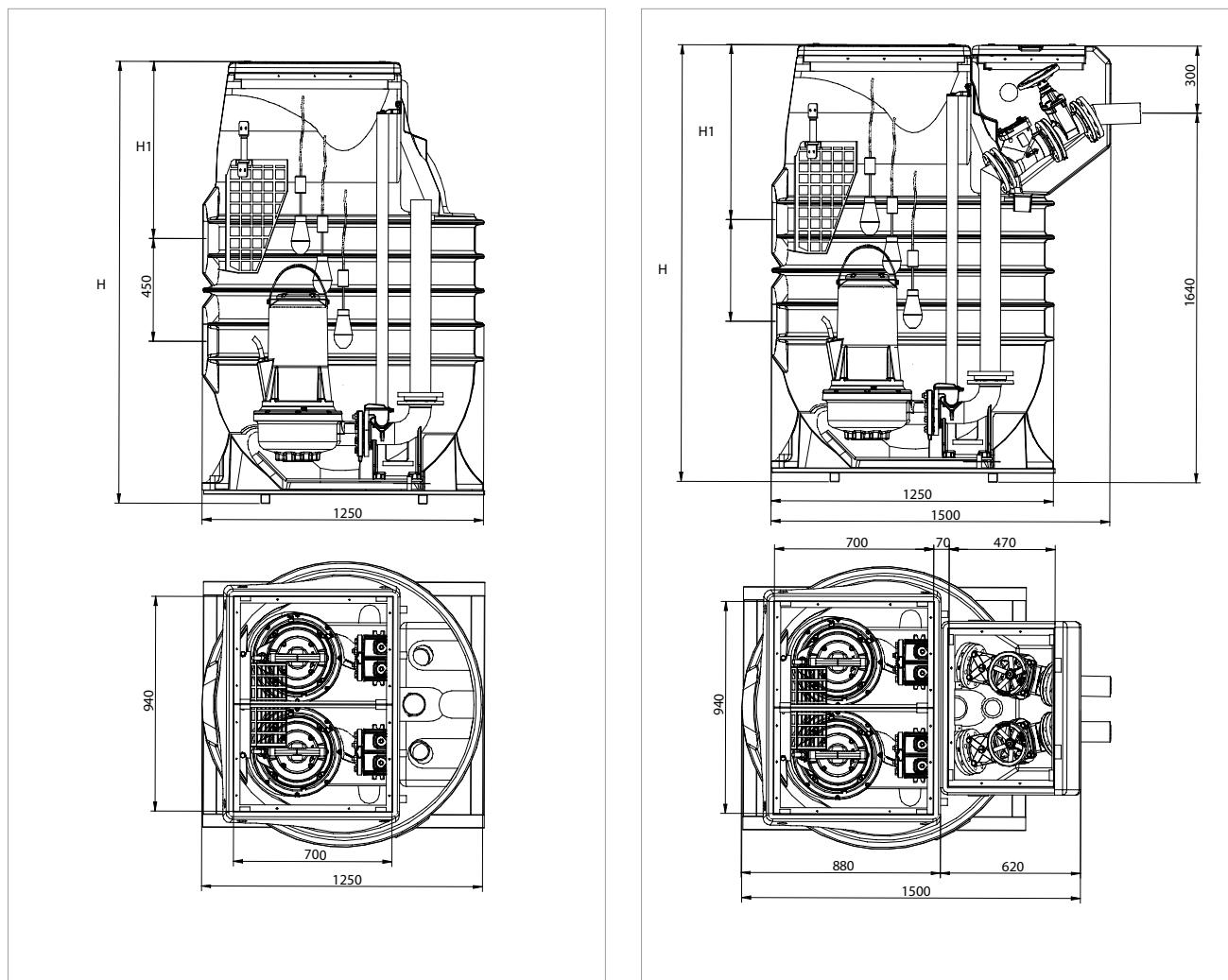
**CONFIGURATIONS DN80**

MODEL PUMP	ELECTRICAL DATA					ELECTRICAL PANEL MATCHING	ELECTRONIC PANEL MATCHING		
	POWER INPUT 50 HZ	P1 MAX kW	P2 NOMINAL		In A				
			kW	HP					
FKV 80 11.4 T5 400D*	3 x 400 V~	1,3	1,1	1,5	3,5	E2D3T	EBOX PLUS D		
FKV 80 15.4 T5 400D*	3 x 400 V~	1,8	1,5	2,0	3,8	E2D5T			
FKV 80 22.4 T5 400D*	3 x 400 V~	2,5	2,2	3,0	4,7	E2D5T			
FKV 80 40.4 T5 400D*	3 x 400 V~	4,5	4,0	5,5	8,6	E2D8T			
FKV 80 40.2 T5 400D*	3 x 400 V~	4,6	4,0	5,5	7,7	E2D8T			
FKV 80 60.2 T5 400Y/D*	3 x 400 V~	6,9	6,0	8,2	11,7	E2D15T SD			
FKV 80 75.2 T5 400Y/D*	3 x 400 V~	8,3	7,5	10,2	13,7	E2D22T SD	-		
FKV 80 92.2 T5 400Y/D*	3 x 400 V~	10,2	9,2	12,5	18,0	E2D30T SD	-		
FKV 80 110.2 T5 400Y/D*	3 x 400 V~	12,1	11,0	15,0	21,0	E2D30T SD	-		
FKC 80 15.4 T5 400D*	3 x 400 V~	1,8	1,5	2,0	3,5	E2D3T	EBOX PLUS D		
FKC 80 22.4 T5 400D*	3 x 400 V~	2,6	2,2	3,0	4,7	E2D5T			
FKC 80 30.4 T5 400D*	3 x 400 V~	3,6	3,0	4,0	7,6	E2D8T			
FKC 80 40.4 T5 400D*	3 x 400 V~	4,7	4,0	5,5	8,9	E2D8T			
FKC 80 55.4 T5 400Y/D*	3 x 400 V~	6,3	5,5	7,5	12	E2D15T SD			
FKC 80 75.4 T5 400Y/D*	3 x 400 V~	8,5	7,5	10,0	14,1	E2D30T SD	-		

\*Available in Atex version

**FEKAPOS MAXI 1200 - 1700 - 2200 - 3600**

AUTOMATIC LIFTING STATIONS FOR THE COLLECTION AND LIFTING OF WASTE WATER

**DIMENSIONS AND WEIGHTS**

MODEL	VOLUME (L)	INLET / OUTLET	H1 (mm)	LIVE STORAGE CAPACITY (L)	H (mm)	WEIGHT kg	DIMENSIONS (mm)	DIMENSIONS WITH VALVE SECTION (mm)
FEKAPOS 1200 MAXI	1200	125 / 2x DN50	775	800	1420	140	1250 x 1250 x 1420	1250 x 1500 x 1420
FEKAPOS 1700 MAXI	1700		775	1050	1870	165	1250 x 1250 x 1870	1250 x 1500 x 1870
FEKAPOS 2200 MAXI	2200		775	1900	2320	190	1250 x 1250 x 2320	1250 x 1500 x 2320
FEKAPOS 3600 MAXI	3600		775	3100	3670	285	1250 x 1250 x 3670	1250 x 1500 x 3670
FEKAPOS 1200 MAXI	1200	160 / 2x DN65	775	800	1420	170	1250 x 1250 x 1420	1250 x 1500 x 1420
FEKAPOS 1700 MAXI	1700		775	1050	1870	195	1250 x 1250 x 1870	1250 x 1500 x 1870
FEKAPOS 2200 MAXI	2200		775	1900	2320	220	1250 x 1250 x 2320	1250 x 1500 x 2320
FEKAPOS 3600 MAXI	3600		775	3100	3670	315	1250 x 1250 x 3670	1250 x 1500 x 3670
FEKAPOS 1200 MAXI	1200	160 / 2x DN80	775	800	1420	183	1250 x 1250 x 1420	1250 x 1500 x 1420
FEKAPOS 1700 MAXI	1700		775	1050	1870	208	1250 x 1250 x 1870	1250 x 1500 x 1870
FEKAPOS 2200 MAXI	2200		775	1900	2320	220	1250 x 1250 x 2320	1250 x 1500 x 2320
FEKAPOS 3600 MAXI	3600		775	3100	3670	328	1250 x 1250 x 3670	1250 x 1500 x 3670

H1\* The entry measurement from the ground level can be modulated, on request it is possible to have a greater amount defined in the following intervals.

FEKAPOS 1700 H1 optional: 1230 mm FEKAPOS 2200 H1 optional: 1230 mm / 1680 mm

FEKAPOS 3600 H1 optional: 1230 mm / 1680 mm / 2130mm / 2580mm



### TECHNICAL DATA

**Power input voltage:** Single-phase 230 V ± 10 % 50 Hz

**Output voltage:** Single-phase 230 V ± 10 % 50 Hz

**Output frequency:** 50 Hz ± 0,005 %

**Operating temperature:** -20°C + 60°C

**Humidity:** ≤ 90 % without condensation

**Protection class:** IP 21

### APPLICATIONS

SOCCORER systems are indicated in civil and industrial installations where the powering of a single-phase 230 V electric pump is required, and the temporary power interruption could cause flooding of areas underneath the water-sewage system, which could result in damage to people and property. The new SOCCORER systems consist of two main sections: a metal support with wall fixing system, and the body made of self-extinguishing ABS. Their innovative design makes them suitable for installation in any environment.

### FUNCTIONALITY

SOCCORER systems are completely automatic as they are managed by high performance processor, capable of controlling:

The lack of electricity network input and the need to use the battery power.

The type of battery and the charge level.

Recharging of batteries in the shortest possible time.

Starting and stopping of the electric pumps (also with safety float)

The overcurrent protection system.

Any electric pump overloads.

The automatic reset of the electric pumps.

That the pump is not operating without water.

Manual and automatic self-tests.

A free contact for remote alarm notification.

SOCCORER systems are available with "single output" (one electric pump) and "dual output" (two electric pumps) output. In the "dual output" version, pumps can operate simultaneously, or in alternation.

### SUPPLY

SOCCORER systems are supplied with: flood prevention controller, battery connection cables, sealed battery, battery shelf. The float is supplied separate. However, it is necessary for operation with non-automatic DAB pumps.

# SOCCORRER

## EMERGENCY SYSTEMS

SINGLE OUTPUT SOCCORRER			1 SINGLE-PHASE PUMP OPERATION (single well), M-A and M-NA drives	2 SINGLE-PHASE PUMP OPERATION (single well), M-A drive only
				2 SINGLE-PHASE PUMP OPERATION (2 separate wells), M-A drive only
MODEL	no. of BATTERIES	Max Electric pump current Amperes	PUMP MODEL (Autonomy in minutes)	PUMP MODEL (Autonomy in minutes)
<b>SOCCORRER 500</b>	4 x 12 Ah	1,9	1 x Nova 180 (106 min.) 1 x Nova 200 (63 min.) 1 x Nova 300 M-A (60 min.)	-
<b>SOCCORRER 600</b>	2 x 45 Ah	2,3	1 x Nova 180 (166 min.) 1 x Nova 200 (100 min.) 1 x Nova 300 (93 min.)	2 x Nova 180 (83 min.)
<b>SOCCORRER 600</b>	2 x 60 Ah	2,3	1 x Nova 180 (230 min.) 1 x Nova 200 (138 min.) 1 x Nova 300 (129 min.)	2 x Nova 180 (115 min.)
<b>SOCCORRER 1000 PLUS</b>	2 x 45 Ah	4,2	1 x Nova 600 (47 min.)	2 x Nova 200 (54 min.) 2 x Nova 300 (50 min.)
<b>SOCCORRER 1000 PLUS</b>	2 x 60 Ah	4,2	1 x Nova 600 (65 min.)	2 x Nova 200 (73 min.) 2 x Nova 300 (66 min.)
<b>SOCCORRER 1000 PLUS</b>	2 x 100 Ah	4,2	1 x Nova 600 (123 min.)	2 x Nova 200 (140 min.) 2 x Nova 300 (130 min.)
<b>SOCCORRER 1500</b>	4 x 60 Ah	5,7	1 x Nova 600 (121 min.) 1 x Feka 600 M (95 min.) 1 x Feka VS 550 (98 min.) 1 x Feka VS 750 (80 min.)	-
<b>SOCCORRER 1500</b>	4 x 100 Ah	5,7	1 x Nova 600 (218 min.) 1 x Feka 600 M (172 min.) 1 x Feka VS 550 (176 min.) 1 x Feka VS 750 (144 min.)	-
<b>SOCCORRER 2000</b>	4 x 60 Ah	7,6	1 x Feka VS 1000 (62 min.) 1 x Drenag 1000 (68 min.) 1 x Drenag 1200 (55 min.)	2 x Nova 600 (60 min.)
<b>SOCCORRER 2000</b>	4 x 100 Ah	7,6	1 x Feka VS 1000 (109 min.) 1 x Drenag 1000 (120 min.) 1 x Drenag 1200 (96 min.)	2 x Nova 600 (106 min.)
<b>SOCCORRER 2500</b>	4 x 60 Ah	9,6	1 x Feka VS 1000 (62 min.) 1 x Feka VS 1200 (47 min.) 1 x Drenag 1400 (44 min.) 1 x Feka 1400 (47 min.)	2 x Feka 600 (47 min.) 2 x Feka VS 550 (48 min.)
<b>SOCCORRER 2500</b>	4 x 100 Ah	9,6	1 x Feka VS 1000 (109 min.) 1 x Feka VS 1200 (83 min.) 1 x Drenag 1400 (78 min.) 1 x Feka 1400 (85 min.)	2 x Feka 600 (84 min.) 2 x Feka VS 550 (86 min.)
<b>SOCCORRER 3000</b>	4 x 60 Ah	11,5		2 x Feka VS 750 (40 min.)
<b>SOCCORRER 3000</b>	4 x 100 Ah	11,5		2 x Feka VS 750 (66 min.)
<b>SOCCORRER 4000</b>	4 x 100 Ah	15,2	-	2 x Feka VS 1000 (60 min.)
<b>SOCCORRER 4000</b>	4 x 180 Ah	15,2	1 x Feka VS 1000 (220 min.) 1 x Feka VS 1200 (169 min.) 1 x Drenag 1000 (243 min.) 1 x Drenag 1200 (195 min.) 1 x Drenag 1400 (159 min.) 1 x Feka 1400 (172 min.)	2 x Feka VS 1000 (108 min.)
<b>SOCCORRER 5000</b>	4 x 100 Ah	20	-	2 x Feka VS 1200 (41 min.) 2 x Drenag 1400 (37 min.) 2 x Feka 1400 (42 min.) 2 x Drenag 1200 (47 min.)
<b>SOCCORRER 5000</b>	4 x 180 Ah	20	-	2 x Feka VS 1200 (41 min.) 2 x Drenag 1400 (37 min.) 2 x Feka 1400 (42 min.) 2 x Drenag 1200 (47 min.)

SOCCORRER WITH DUAL ALTERNATE OUTPUT			2 SINGLE-PHASE PUMP ALTERNATE OPERATION (single well), M-A and M-NA drives	2 SINGLE-PHASE PUMP ALTERNATE + SIMULTANEOUS OPERATION
MODEL	no. of BATTERIES	Max Electric pump current Amperes	PUMP MODEL (Autonomy in minutes)	PUMP MODEL (Autonomy in minutes)
SOCCORRER 600	2 x 45 Ah	2,3	1 x Nova 180 (166 min.) 1 x Nova 200 (100 min.) 1 x Nova 300 (93 min.)	2 x Nova 180 (166/83 min.)
SOCCORRER 600	2 x 60 Ah	2,3	1 x Nova 180 (230 min.) 1 x Nova 200 (138 min.) 1 x Nova 300 (129 min.)	2 x Nova 180 (230/115 min.)
SOCCORRER 1000 PLUS	2 x 45 Ah	4,2	1 x Nova 600 (47 min.)	2 x Nova 200 (108/54 min.) 2 x Nova 300 (100/50 min.)
SOCCORRER 1000 PLUS	2 x 60 Ah	4,2	1 x Nova 600 (65 min.)	2 x Nova 200 (146/73 min.) - 2 x Nova 300 (132/66 min.)
SOCCORRER 1000 PLUS	2 x 100 Ah	4,2	1 x Nova 600 (123 min.)	2 x Nova 200 (280/140 min.) 2 x Nova 300 (260/130 min.)
SOCCORRER 1500	4 x 60 Ah	5,7	1 x Nova 600 (121 min.) 1 x Feka 600 M (95 min.) 1 x Feka VS 550 (98 min.) 1 x Feka VS 750 (80 min.)	-
SOCCORRER 1500	4 x 100 Ah	5,7	1 x Nova 600 M (218 min.) 1 x Feka 600 M (172 min.) 1 x Feka VS 550 (176 min.) 1 x Feka VS 750 (144 min.)	-
SOCCORRER 2000	4 x 60 Ah	7,6	1 x Drenag 1000 (68 min.) 1 x Drenag 1200 (55 min.)	2 x Nova 600 (120/60 min.)
SOCCORRER 2000	4 x 100 Ah	7,6	1 x Drenag 1000 (120 min.) 1 x Drenag 1200 (96 min.)	2 x Nova 600 (212/106 min.)
SOCCORRER 2500	4 x 60 Ah	9,6	1 x Feka VS 1200 (47 min.) 1 x Drenag 1400 (44 min.) 1 x Feka 1400 (47 min.)	2 x Feka 600 (94/47 min.) 2 x Feka VS 550 (96/48 min.)
SOCCORRER 2500	4 x 100 Ah	9,6	1 x Feka VS 1200 (83 min.) 1 x Drenag 1400 (78 min.) 1 x Feka 1400 (85 min.)	2 x Feka 600 (168/84 min.) 2 x Feka VS 550 (172/86 min.)
SOCCORRER 3000	4 x 60 Ah	11,5		
SOCCORRER 3000	4 x 100 Ah	11,5		

## MAIN DISPLAY ITEMS

Soccorrer systems are equipped with a display and an easy to use software that shows:

- the power input voltage, in V (Volts);
- the power absorbed by the electric pump when connected to the electricity power network, in VA (Volt Amperes);
- the battery recharge current when connected to the electricity power network, in A (Amperes);
- the battery voltage, in V (Volts);
- the maximum overload current, in A (Amperes);
- the number of electric pump starts when connected to the electricity power network;
- the number of electric pump starts using the energy from the batteries;
- the time of operation of the electric pump in hours and minutes, while absorbing power from the batteries;
- the total time of operation of the electric pump in hours and minutes (batteries + electricity power network);
- the number of hours of operation, which can be set by the user, in order to perform the self-test (only for electric pumps with float directly connected to the system);
- the serial number;
- the microprocessor version.

MACHINE DETAILS	TEST	LOG
U1 228V P: 486VA Ub50.9V Ib: 4.7A	TEST 1↑/24 ENTER 230 26.2 P 427VA	INTERVENTI EPS IN RETE : 41900
MATRICOLA 1000-07-0830	TEMPO FRA I TEST ↓↑ 44 ORE ENTER	INTERVENTI EPS SU BATT.: 06801
	DURATA DEI TEST ↓↑ 12 sec. ENTER	USCITA RETE ON 00024 h 15 min.
		USCITA INU. ON 00012 h 05 min.

MODEL	ELECTRICAL DATA			HYDRAULIC DATA																
	In A	P2 NOMINAL		Q m³/h l/min	0	1	2	3	4.5	5	6	7	7.5	9	10	12	15	18	24	30
		kW	HP		0	16.6	33.3	50	75	83.3	100	116.6	125	150	166.6	200	250	300	400	500
NOVA 180 M-A	0.9	0.22	0.3		4.95	4.45	3.9	3.15	1.7	1.15										
NOVA 180 M-NA	0.9	0.22	0.3		4.95	4.45	3.9	3.15	1.7	1.15										
NOVA 200 M-NA	1.5	0.22	0.3		7.1	6.6	6.1	5.6	4.9	4.7	4.2	3.7	3.5	2.8	2.35	1.5				
NOVA 300 M-A	1.6	0.22	0.3		7.18	6.7	6.23	5.8	5.2	5	4.6	4.2	4	3.42	3	2.2				
NOVA 600 M-A	3.4	0.55	0.75		10.2	9.7	9.3	8.9	8.3	8.1	7.8	7.4	7.2	6.6	6.1	5	3.1			
NOVA 600 M-NA	3.4	0.55	0.75		10.2	9.7	9.3	8.9	8.3	8.1	7.8	7.4	7.2	6.6	6.1	5	3.1			
FEKA 600 M-A	4.3	0.55	0.75		7.45	7.1	6.75	6.45	6.1	5.95	5.7	5.45	5.35	4.95	4.7	4.1	2.8			
FEKA 600 M-NA	4.3	0.55	0.75		7.45	7.1	6.75	6.45	6.1	5.95	5.7	5.45	5.35	4.95	4.7	4.1	2.8			
FEKA VS-VX 550 M-A	4.2	0.55	0.75		7.4	7.3	7.2	6.9	6.7	6.6	6.2	6.0	5.9	5.6	5.2	4.1	3.2	1.8		
FEKA VS-VX 550 M-NA	4.2	0.55	0.75		7.4	7.3	7.2	6.9	6.7	6.6	6.2	6.0	5.9	5.6	5.2	4.1	3.2	1.8		
FEKA VS-VX 750 M-A	5.13	0.75	1		9.6	9.5	9.4	9.2	9.0	8.9	8.5	8.3	8.2	7.6	7.2	6.7	5.6	4.3	1.9	
FEKA VS-VX 750 M-NA	5.13	0.75	1		9.6	9.5	9.4	9.2	9.0	8.9	8.5	8.3	8.2	7.6	7.2	6.7	5.6	4.3	1.9	
FEKA VS-VX 1000 M-A	6.63	1.00	1.36		11.8	11.7	11.6	11.3	11.1	11.0	10.5	10.3	10.2	9.8	9.4	9.0	8.0	6.8	4.1	
FEKA VS-VX 1000 M-NA	6.63	1.00	1.36		11.8	11.7	11.6	11.3	11.1	11.0	10.5	10.3	10.2	9.8	9.4	9.0	8.0	6.8	4.1	
FEKA VS-VX 1200 M-A	8.63	1.20	1.60		14	13.9	13.8	13.4	13.2	13.0	12.8	12.6	12.5	12.0	11.6	11.2	10.1	9.0	6.7	
FEKA VS-VX 1200 M-NA	8.63	1.20	1.60		14	13.9	13.8	13.4	13.2	13.0	12.8	12.6	12.5	12.0	11.6	11.2	10.1	9.0	6.7	
DRENAG 1000 M-A / M-NA	6	1	1.36		15.3		13.7	13.2	13	12.1	11.5	11.2	10.5	10	8.7	6.8	4.7			
DRENAG 1200 M-A / M-NA	7.5	1.2	1.6		17		15.4	14.7	14.5	13.8	13.4	13	12.4	11.8	10.7	9	7.3	3.3		
DRENAG 1400 M	9.2	1.1	1.5		19.2					17	16.5	16.3	15.9	15.6	14.6	13.5	12.1	9	5.5	
FEKA 1400 M	8.5	1.1	1.5		13.9					12	11.6	11.4	11	10.8	9.9	8.9	7.8	5.7	3.4	

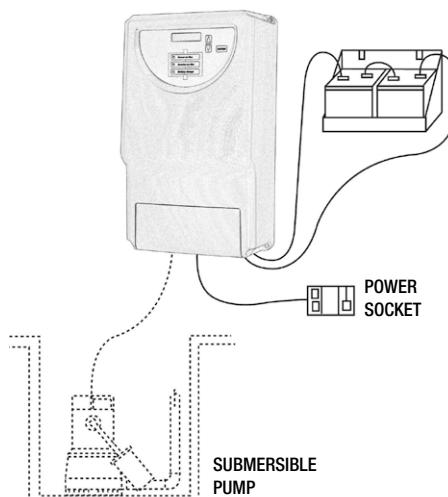
### SINGLE OUTPUT (1 PUMP)

The SOCCORRER KIT includes:

- Flood prevention controller preset for the connection of 1 electric pump.
- Sealed batteries\*.
- Battery shelves (excluding 180 Ah batteries).
- Kit of battery connection cables.
- Instruction manual.

**The pumps, the floats, and the other accessories must be ordered separately.**

\* Built-in for the Soccorrer 500 model

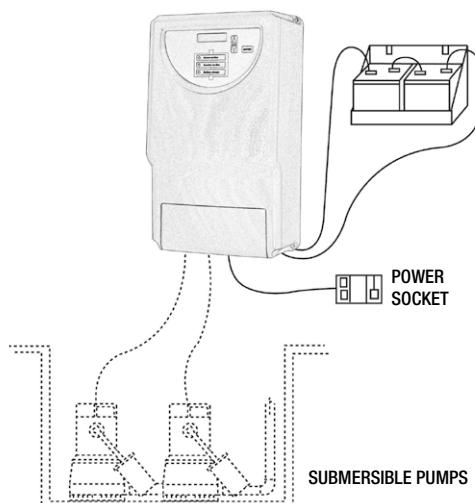


### DUAL OUTPUT (2 PUMPS)

The SOCCORRER KIT includes:

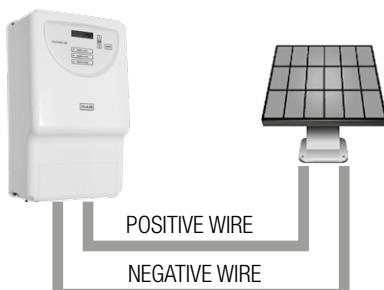
- Flood prevention controller preset for the connection of 2 electric pumps.
- Sealed batteries.
- Battery shelves (excluding 180 Ah batteries).
- Kit of battery connection cables.
- Instruction manual.

**The pumps, the floats, and the other accessories must be ordered separately.**



### CONNECTION TO PHOTOVOLTAIC PANELS (OPTIONAL)

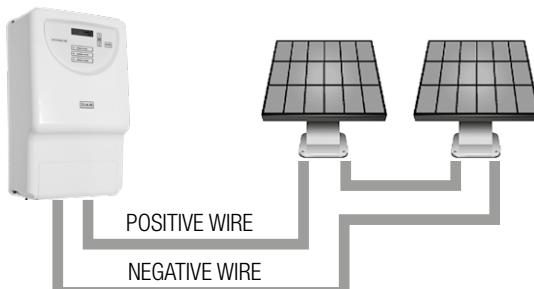
The photovoltaic panels for charging the batteries, for isolated use, must be connected to the input connector underneath the equipment.



#### CONNECTION

E.P.S. 600  
E.P.S. 1000Gold

Maximum no-load input voltage 100 V  
Maximum power of panels 800 W



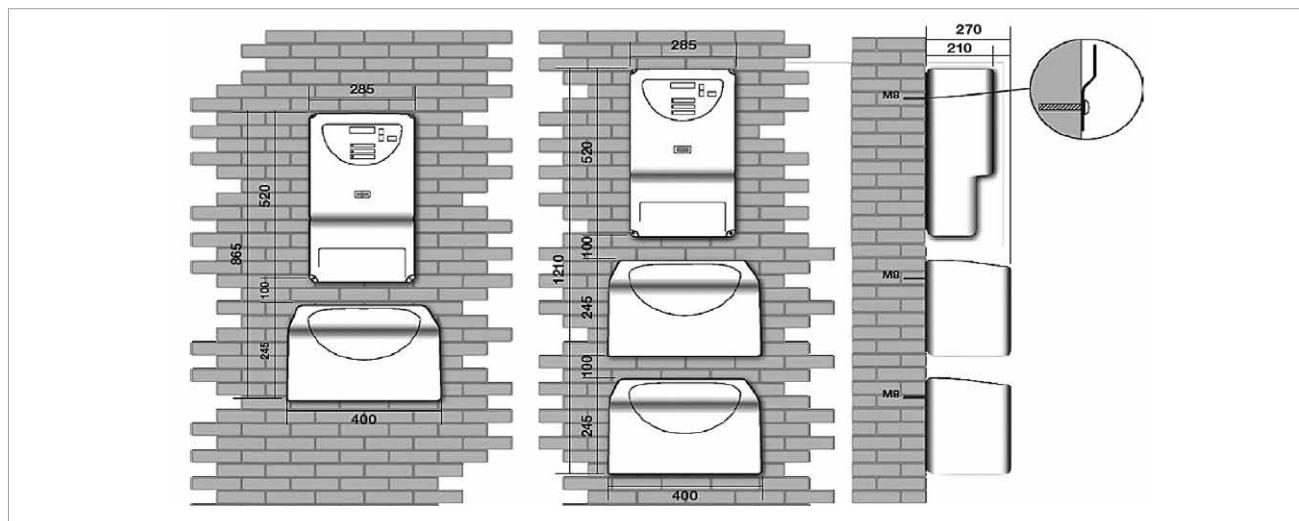
#### CONNECTION

E.P.S. 1500 E.P.S. 2000 E.P.S. 2500 E.P.S. 3000  
E.P.S. 4000 E.P.S. 5000

Maximum no-load input voltage 100 V  
Maximum power of panels 800 W

### TECHNICAL DATA AND CONFIGURATION

TECHNICAL DATA	SOCCORRER 500	SOCCORRER 600	SOCCORRER 1000	SOCCORRER 1500	SOCCORRER 2000	SOCCORRER 2500	SOCCORRER 3000	SOCCORRER 4000	SOCCORRER 5000	
<b>Power input voltage</b>	SINGLE-PHASE 230 V ± 10 % 50 Hz									
<b>Output voltage</b>	SINGLE-PHASE 230 V ± 10 % 50 Hz									
<b>Output frequency</b>	50 Hz ± 0,005 %									
<b>Battery voltage</b>	48 Vdc	24 Vdc							48 Vdc	
<b>Limits of operation of the battery</b>	40 Vdc	20 Vdc							40 Vdc	
<b>Yield</b>	97%	93%							97%	
<b>Connection time</b>	1 second									
<b>Battery network switch</b>	Automatic									
<b>Maximum battery charger power from network</b>	400 W									
<b>Maximum battery charger power from photovoltaic</b>	800 W									
<b>Photovoltaic panel input voltage</b>	100 Volts									
<b>Operation</b>	With MPPT adjustment									
<b>Recharging time</b>	8/10 hours	Form power network 8/10 hours - Power network + photovoltaic (500 W) 4/5 hours - Photovoltaic only (500 W) 7/9 hours								
<b>Consumption from network with battery charged</b>	18 W									
<b>Maximum power delivered</b>	500 VA	600 VA	1200 VA	1500 VA	2000 VA	2500 VA	3000 VA	4000 VA	5000 VA	
<b>Maximum current delivered</b>	2.2 A	2.6 A	5.3 A	6.5 A	8.7 A	11 A	13 A	17.4 A	22 A	
<b>Max motor electric pump current</b>	1.9 A	2.3 A	4.2 A	5.7 A	7.6 A	9.6 A	11.5 A	15.2 A	20 A	
<b>Maximum starting current</b>	10 A	10 A	20 A	20 A	25 A	30 A	30 A	50 A	50 A	
<b>Operating temperature</b>	-20°C - 60°C									
<b>Humidity</b>	≤ 90 % without condensation									
<b>Protection class</b>	IP 21									
<b>Electronic protections</b>	Overload / Short circuit / Minimum battery voltage									
<b>Electric protections</b>	Input fuse / battery output									
<b>Standards</b>	CEI EN 62040 - 1 - CEI EN 62040 - 2 - CEI EN 60204 - 1 - CEI EN 50171									



MODEL	PACKING DIMENSIONS			WEIGHT kg
	L/A	L/B	H	
<b>SOCCORRER 500</b>	285	210	520	32
<b>SOCCORRER 600</b>	285	210	520	18
<b>SOCCORRER 1000</b>	285	210	520	26
<b>SOCCORRER 1500</b>	285	210	520	30
<b>SOCCORRER 2000</b>	285	210	520	36
<b>SOCCORRER 2500</b>	285	210	520	40
<b>SOCCORRER 3000</b>	285	210	520	44
<b>SOCCORRER 4000</b>	285	210	520	46
<b>SOCCORRER 5000</b>	285	210	520	55

### ACCESSORIES ON REQUEST TO BE ORDERED SEPARATELY

ACCESSORY TABLE		1 <sup>ST</sup> FLOAT		2 <sup>ND</sup> FLOAT		MDM CONTROL PANEL	SEALED BATTERY	ACOUSTIC VISUAL ALARM
		1 <sup>ST</sup> FLOAT	2 <sup>ND</sup> FLOAT	MDM CONTROL PANEL	SEALED BATTERY	ACOUSTIC VISUAL ALARM		
PUMP TYPE		M-NA	M-A	M-NA	M-A	FEKA 1400M DRENAG 1400 M		
<b>SOCCORRER</b>	Single output	●	⊗	○	⊗	●	○	○
	Dual output (alternated)	●	⊗	○	⊗	●	○	○
	Dual output (simultaneous)	●	●	●	⊗	●	○	○

● Required

○ Safety / Optional

⊗ Not required

## ACCESSORIES

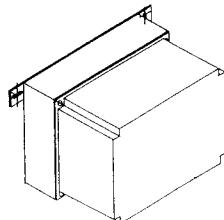
### FLOAT

5 metres.  
10 metres.  
15 metres.  
20 metres.



## CONTROL MDN

Controller for the protection and the automatic and manual operation of DRENAG 1400 M and FEKA 1400 M single-phase electric pumps. Supplied in plastic self-extinguishing box with pre-assembled bracket for wall installation. With manual reset micro circuit breaker for overload protection, automatic reset thermal protection, start-up capacitor.



## SEALED BATTERIES

Sealed batteries  
Zero maintenance  
Longer duration  
Power check for visual control of the charge status  
Lead/Calcium/Tin technology  
Double thermally welded cover with "flame Arrest" pellet  
Anti-corrosion poles  
Case bottom with "Frex Ribs" for vibration absorption  
Nominal voltage 12 VDC  
Average battery life 4/5 years.



MODEL	DIMENSIONS (mm)			WEIGHT kg
	L	H	P	
CONTROL MDN	198	168	148	2.1
SEALED 60AH BATTERY	242	190	175	14.4
SEALED 90AH BATTERY	352	190	175	23.3

## ACOUSTIC AND VISUAL ALARM

Flashing siren, powered by the batteries of the flooding prevention system, complete with activation float.





## TECHNICAL DATA

**Operating range:** air capacity 2 to 17 m<sup>3</sup>/h for depths from 20 to 90 cm from the axis of the suction port.

**Protection class:** IP68.

**Insulation class:** F.

**Pumped liquid operating range:** from 0°C to 35°C according to EN 60335-2-41 for domestic use.

**Minimum immersion depth:** 20 cm.

**Maximum immersion depth:** 80 cm (Novair 200) 90 cm (Novair 600).

**Immersion liquid:** Cesspool sewage water without solid matter and fibre, clean water.

**Standard voltage:** single-phase: 220 – 240 V / 50 Hz.

**Power cable:** H07RN-F, 2 m, 5 m and 10 m, with the possibility of SCHUKO plug.

**Installation:** Vertical.

## APPLICATIONS

The submerged aerator has been designed for the aeration of sewage in small purification systems. Further uses can be the oxygenation of garden ponds, and fresh water fish farms.

## CONSTRUCTION FEATURES

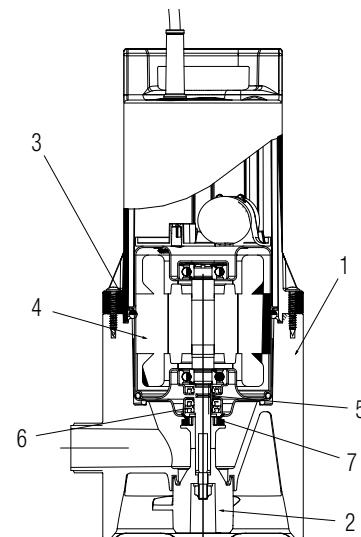
Technopolymer pump body, wiring cover, and impellers. Two-pole asynchronous submersible 0,18 and 0,4 kW motor with built-in thermal protection and permanent capacitor in the wiring compartment.

Steel motor shaft with ceramic treated bushing, on oversized and permanently lubricated ball bearings. Threefold seal with interposed rings with oil pre-chamber.

## MATERIALS

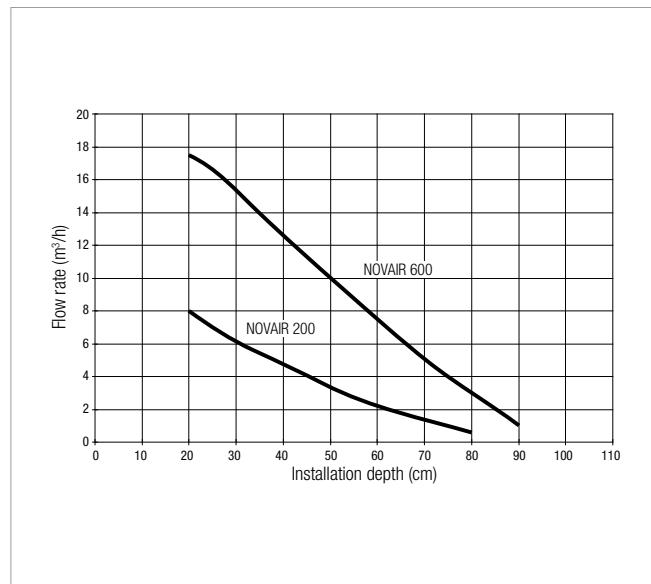
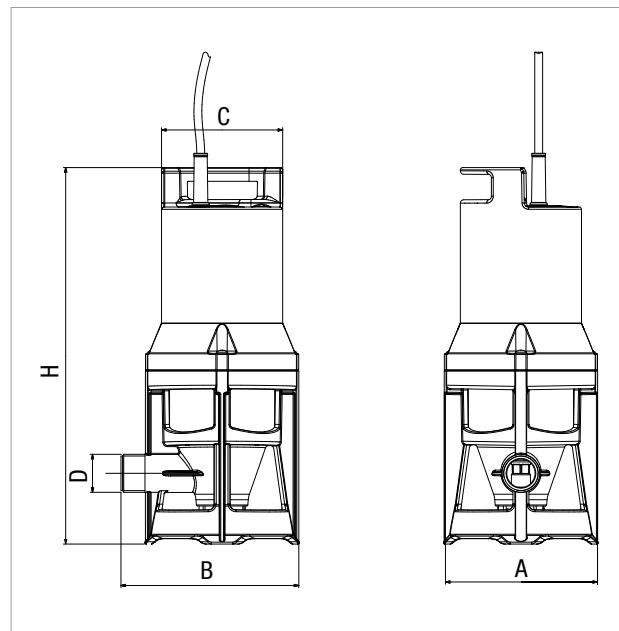
No.	PARTS*	MATERIALS
1	PUMP BODY	TECHNOPOLYMER
2	IMPELLER	TECHNOPOLYMER
3	OR RING	NBR 70
4	MOTOR CASING	AISI 304
	SHAFT	AISI 416
5	CERAMIC TREATED BUSHING	AISI 303 + CERAMIC
6	RADIAL SEAL	NBR 70
7	V-RING	NBR 70 + GREASE

\* In contact with the liquid



## NOVAIR - SUBMERGED AERATOR FOR SMALL PURIFICATION SYSTEMS

Liquid temperature range: from 0°C to 35°C according to EN 60335-2-41 for domestic use.



The performance curves are based on kinematic viscosity values = 1  $\text{mm}^2/\text{s}$  and density equal to 1000  $\text{kg}/\text{m}^3$ . Curve tolerance according to ISO 9906.

MODEL	ELECTRICAL DATA					In A	MAXIMUM AIR RATE $\text{m}^3/\text{h}$		
	POWER INPUT 50 Hz	P1 MAX kW	P2 NOMINAL						
			kW	HP					
NOVAIR 200 M-NA	1X220- 240 V~	0.28	0.18	0.24	1.4		8		
NOVAIR 600 M-NA	1X220- 240 V~	0.63	0.40	0.54	3		17.5		

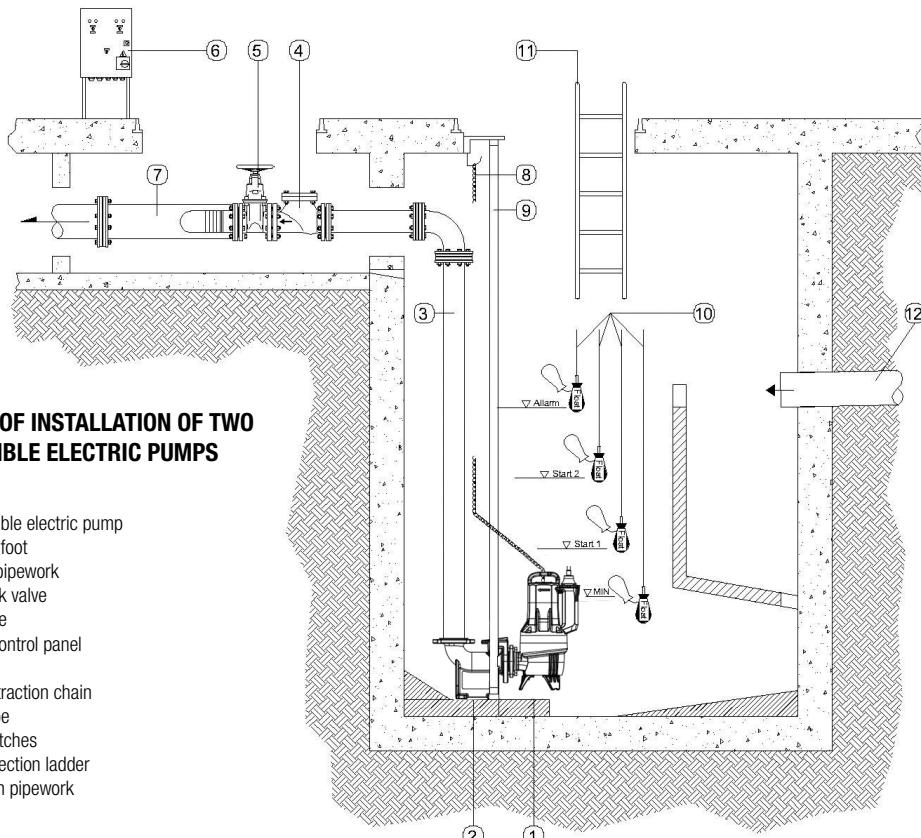
MODEL	H	A	B	$\emptyset$ C	D G NPT	PACKING DIMENSIONS			CABLE	VOLUME ( $\text{m}^3$ )	WEIGHT kg
						L/A	L/B	H			
NOVAIR 200	329.5	130.5	158	106	1"	190	255	308	2 m / H07RN8-F	0.015	3.5
									5 mt / H07RN8-F		
									10 mt / H07RN8-F		
NOVAIR 600	380.2	130.5	158	106	1" 1/4	190	255	419	2 m / H07RN8-F	0.015	5.4
									5 mt / H07RN8-F		
									10 mt / H07RN8-F		

# **ACCESSORIES**

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# **PANELS**

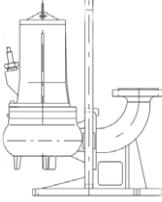
### PUMPING STATION ACCESSORIES



FLOATS	DESCRIPTION	NOVA/FEKA DRENAG	FEKA VS	FX	FK	SOCCORRER	FEKABOX / FEKAFOS
	<b>FLOAT</b>	5 metres					
		10 metres	●	●	●	●	
		15 metres					
		20 metres					
	<b>ATEX FLOAT</b>	10 metres		●	●		
	<b>BULB FLOAT</b>	10 metres		●	●		●
		20 metres					
	<b>300 g COUNTERWEIGHT FOR FLOAT</b>	●	●	●	●	●	
	<b>FEKA VS/VX FLOAT CABLE STOP KIT</b>		●				●

# ACCESSORIES

## SUBMERSIBLE PUMPS

LIFTING DEVICES	DESCRIPTION	NOVA/FEKA DRENAG	FEKA VS	FX	FEKA 6000/8000	FEKABOX / FEKAFO'S
	DSD2 - LIFTING DEVICE FOR FEKA VS 550-1200		•			
	ROTATION PREVENTION BRACKET FOR FEKA VS		•			
	LIFTING DEVICE FEKA 6000 DN 150				•	
	LIFTING DEVICE FEKA 8000 DN 200				•	

Guide pipes not supplied

COUPLING UNIT	DESCRIPTION	NOVA/FEKA DRENAG	FEKA VS	FX	FK	FEKABOX / FEKAFO'S
	DA-050 HORIZONTAL COUPLING UNIT			•		
	DA-065 HORIZONTAL COUPLING UNIT DN65			•	•	
	DA-V65 COUPLING UNIT DN65			•	•	
	DA-V80 COUPLING UNIT DN80				•	
	DA-V100 COUPLING UNIT DN100				•	
	DA-V150 COUPLING UNIT DN150				•	

RINGSTAND	DESCRIPTION	NOVA/FEKA DRENAG	FEKA VS	FX	FK	FEKABOX / FEKAFO'S
	RINGSTAND Ø325 FK				•	
	RINGSTAND Ø330 FK				•	
	RINGSTAND Ø355 FK				•	
	RINGSTAND Ø400 FK				•	

# ACCESSORIES

## SUBMERSIBLE PUMPS

CLEVIS KIT	DESCRIPTION	NOVA/FEKA DRENAG	FEKA VS/FEKA VS GRINDER	FX	FK	FEKABOX / FEKAFO'S
	CLEVIS KIT WITH 5 metre CHAIN MAX 150 KG	●	●	●	●	●
	CLEVIS KIT WITH 10 metre CHAIN MAX 350 KG					
	CLEVIS KIT WITH 10 metre CHAIN MAX 700 KG					

ADAPTERS	DESCRIPTION	DRENAG FX/GRINDER FX	FEKA VS GRINDER	FEKA FXV	FEKA FXC	FK
	FLYGT COUPLING ADAPTER DN65				●	
	FLYGT COUPLING ADAPTER DN80				●	
	FLYGT COUPLING ADAPTER DN100				●	
	FLYGT COUPLING ADAPTER DN150				●	
	ADAPTER FK 65 - COUPLING FOOT FEKA2500				●	
	ADAPTER FK 80 - COUPLING FOOT FEKA3000				●	
	ADAPTER FK 100 - COUPLING FOOT FEKA 4000				●	
	ADAPTER FK 150 - COUPLING FOOT FEKA 6000				●	
	ADAPTER FK 65 - COUPLING FOOT FEKA 3000				●	
	ADAPTER FK 80 - COUPLING FOOT FEKA 4000				●	
	COUPLING SYSTEM ADAPTOR FX GRINDER - FEKA DN32 DN40 DN50	●	●	●	●	
	COUPLING SYSTEM ADAPTOR FX - FLYGT DN50			●	●	
	KIT ELBOW 90° 1"1/2 GAS FX	●	●			
	KIT ELBOW 90° 2" GAS FX *			●	●	
	KIT ELBOW 90° 2" 1/2 GAS FX **			●	●	●

\* Suitable for pumps with DN50 - \*\* Suitable for pumps with DN65

KIT FLANGE	DESCRIPTION	FX	FK
	KIT FLANGE DN 65 PN 16 UNI 2254	●	●
	KIT FLANGE DN 80 PN 16 UNI 2254		●
	KIT FLANGE DN 100 PN 16 UNI 2254		●

# ACCESSORIES

## SUBMERSIBLE PUMPS

NON-RETURN BALL VALVE	DESCRIPTION	NOVA/FEKA DRENAG	FEKAVS	FX	FK	FEKABOX / FEKAFO'S
	PVC NOT RETURN BALL VALVE 1" 1/4 THREADED	•				
	PVC NOT RETURN BALL VALVE 1" 1/2 THREADED	•	•	•		
	PVC NOT RETURN BALL VALVE 2" THREADED	•	•	•		•
	PVC NOT RETURN BALL VALVE 2" 1/2 THREADED	•	•	•	•	•
	PVC NOT RETURN BALL VALVE 3" THREADED	•	•	•	•	•
	NOT RETURN BALL VALVE 1" 1/4 THREADED	•				
	NOT RETURN BALL VALVE 1" 1/2 THREADED	•	•	•		
	NOT RETURN BALL VALVE 2" THREADED	•	•	•		•
	NOT RETURN BALL VALVE 2" 1/2 THREADED	•	•	•	•	
	NOT RETURN BALL VALVE DN 50		•	•		•
	NOT RETURN BALL VALVE DN 65		•	•	•	•
	NOT RETURN BALL VALVE DN 80				•	•
	NOT RETURN BALL VALVE DN 100				•	
	NOT RETURN BALL VALVE DN 150				•	
	NOT RETURN BALL VALVE DN 200					

BACKFLOW KIT	DESCRIPTION	NOVA/FEKA DRENAG	FEKAVS	FX	FK	FEKABOX / FEKAFO'S
	BACKFLOW KIT	•	•	•		•

GATE VALVES	DESCRIPTION	NOVA/FEKA DRENAG	FEKAVS	FX	FK	FEKABOX / FEKAFO'S
	DN 50 FLAT BODY GATE VALVES		•	•		•
	DN 65 FLAT BODY GATE VALVES		•	•	•	•
	DN 80 FLAT BODY GATE VALVES				•	•
	DN 100 FLAT BODY GATE VALVES				•	•
	DN 150 FLAT BODY GATE VALVES				•	•
	DN 200 FLAT BODY GATE VALVES					•

# ACCESSORIES

## SUBMERSIBLE PUMPS

PANEL CONTROL AND ALARMS	DESCRIPTION	NOVA/FEKA DRENAG	FEKAVS	FX	FK	SOCCORER	FEKABOX / FEKAPOS
	CONTROL AS 1 WITH ALARM DEVICE	•	•	•			
	ACOUSTIC ALARM 230 V - 50 Hz	•	•	•	•		
	ACOUSTIC ALARM 24 V - 50 Hz						•
	SOCCORER ACOUSTIC VISUAL ALARM					•	
	FLASHING ORANGE 230 V	•	•	•	•		

TRANSDUCERS	DESCRIPTION	NOVA/FEKA DRENAG	FEKAVS	FX	FK	SOCCORER	FEKABOX / FEKAPOS
	0-5 m - 20 m LEVEL TRANSDUCERS EBOX PANEL CABLE	•	•	•	•		

BATTERIES	DESCRIPTION	NOVA/FEKA DRENAG	FEKAVS	FX	FK	SOCCORER	FEKABOX / FEKAPOS
	45 AH CAR BATTERY					•	
	60 AH CAR BATTERY					•	
	100 AH CAR BATTERY					•	
	180 AH CAR BATTERY					•	
	60 AH SEALED BATTERY					•	
	90 AH SEALED BATTERY					•	
	BATTERY SUPPORT (SUPPLIED ONLY FOR 100 AH, 45 AH, 60AH VERSIONS)					•	

\* ogni supporto contiene una sola batteria.

# ELECTRIC PROTECTION AND CONTROL PANELS

EBOX



## TECHNICAL DATA

### Nominal power input voltage:

Ebox Plus 1x 230 V / 3 x 230 V - 3 x 400 V (automatic selection).

Ebox Basic 1x 230 V.

### Frequency:

50 - 60 Hz.

### Maximum power of use:

Ebox Plus 5,5 kWatt + 5,5 kW.

Ebox Basic 2,2 kWatt + 2,2 kW.

### Maximum current of use:

12 A + 12 A.

### Starting capacitor:

Supplied as accessory KIT.

### Ambient temperature operation limits:

0° C + 50° C

### Air relative humidity:

90 % at 20°C.

### Max. altitude:

1000 a.s.l.

### Protection class:

IP 54.

### Display:

1,6" for Ebox PLUS D and Ebox BASIC D models

Standard of reference for the construction of the control panels EN 60335-1.

## APPLICATIONS

Ebox is an electronic control panel that provides all the functions and protections required for the installation of a pumping set for draining, filling, and pressurisation purposes.

**EBOX PLUS** is an electric control panel for automatic protection and operation of one or more submersible electric pumps or pressure booster pumps, both single and three phase, for domestic, civil, and industrial applications. Thanks to the current regulation possibility, the Ebox control panel is compatible with all pump models with current between 1 and 12 A, with power up to 5,5 kW.

**EBOX BASIC** is an electric control panel for automatic protection and operation of one or more single phase submersible electric pumps or pressure booster pumps for domestic applications. The Ebox control panel is compatible with all single phase pump models with current between 1 and 12 A, with power up to 2,2 kW, as indicated in the product compatibility table.

## CONTROL PANEL CONSTRUCTION

Supplied in an IP 55 protection class self-extinguishing thermoplastic material box, the control panel protects the electric pumps from abnormal conditions such as: overload and overtemperature (with automatic reset), short circuit (with fuses - Plus model only), pump current surges (amperometric protection), abnormal voltage, dry run, quick starts, pressure sensor fault, or inconsistency of the external protection commands.

## FRONT PANEL COMPONENTS

- General disconnector with padlockable door lock.
- AUT-O-MAN operation selection pushbuttons.
- Alarm RESET pushbutton.
- Operation, stop, alarm notification lamps.
- Display, for PLUS D or BASIC D models.

## PANEL INTERNAL COMPONENTS

- Electronic control card with protection fuses and contactors.
- Power input connection terminals, single phase (L-N in the Basic version), or three phase (L1-L2-L3 in the Plus version).
- Electric pump connection terminals, single phase (L-N in the BASIC version), or three phase (L1-L2-L3 in the PLUS version).
- Terminals for the connection of pressure switches, sensors, KK thermal protection, alarm notification N.O. contacts. Operation selection dip switch: level floats or sensor, tank filling and emptying, operation with one or two pumps also for the version with display.

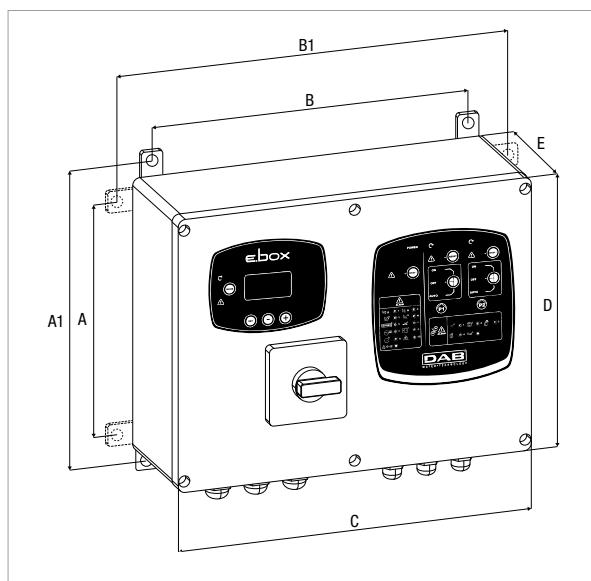
## SOFTWARE

For the models with display, the software

- During the first installation, provides step by step guidance in the selection of the correct settings based on the actual application.
- Makes the status of the control panel and the pumps clearly and immediately visible.
- When compared to the previous model, makes it easier to change the level settings, as operation of the control panel dip switch is no longer required.

# ELECTRIC PROTECTION AND CONTROL PANELS

EBOX



MODEL	A	A1	B	B1	C	D	E	PACKING DIMENSIONS			WEIGHT kg
								L/A	L/B	H	
EBOX BASIC 230/50-60	212	265	282	337	320	260	120	250	430	310	4
EBOX PLUS 230-400V/50-60	212	265	282	337	320	260	120	250	430	310	5
EBOX BASIC D 230/50-60	212	265	282	337	320	260	120	250	430	310	4
EBOX PLUS D 230-400V/50-60	212	265	282	337	320	260	120	250	430	310	5

MODEL	ELECTRICAL DATA					
	POWER INPUT 50 Hz	STARTING	P2 NOMINAL		MAX CURRENT A	DISPLAY
			kW x2	HP x2		
EBOX BASIC 230/50-60	1x230V~	direct	2.2	3	12+12	
EBOX PLUS 230-400V/50-60	1x230V~	direct	2.2	3	12+12	
	3x230V~		3	4		
	3x400V~		5.5	7.5		
EBOX BASIC D 230/50-60	1x230V~	direct	2.2	3	12+12	•
EBOX PLUS D 230-400V/50-60	1x230V~	direct	2.2	3	12+12	•
	3x230V~		3	4		
	3x400V~		5.5	7.5		

## ACCESSORIES

	<b>FLOAT</b>	5 meters cable
		10 meters cable
		15 meters cable
		20 meters cable
	<b>BULB FLOAT</b>	10 meters cable
		20 meters cable
	<b>0-5 m - 20 m LEVEL TRANSDUCERS EBOX PANEL CABLE</b>	

	<b>FLASHING ORANGE 230 V</b>
	<b>KIT CAPACITOR 40UF</b>
	<b>KIT CAPACITOR 30UF</b>
	<b>KIT CAPACITOR 20UF</b>

# ELECTRO-MECHANICAL PROTECTION AND CONTROL PANELS

CONTROL MDN



## TECHNICAL DATA

**Power input voltage:** 220 - 240 V.

**Phases:** 1.

**Frequency:** 50 Hz.

**Rated power of use:** 1,1 kW - 1,5 HP.

**Maximum rated current of use:** 12 A.

**Starting capacitor:** 40 µF - 450 V.

**Ambient temperature operation limits:** -10°C +40°C.

**Protection class:** IP 55.

**Storage temperature:** -10°C +60°C.

**Air relative humidity:** MAX 95%.

**Electric construction:** EN 60204-1 e EN 60439-1.

**E.M.C. (Emissions):** EN 55014 - EN 61000-3-2-1.

## APPLICATIONS

Controller for the protection and the automatic and manual operation of DRENAG 1400 M and FEKA 1400 M single-phase electric pumps.

To be connected to a 2P+ 16 Amperes 220-240 V a.c. wall socket with disconnection switch and AM 10-12 Ampere fuse holder.

## FEATURES

Supplied in plastic self-extinguishing box with pre-assembled bracket for wall installation.

Supplied with:

Manual reset overload protection micro circuit breaker.

Automatic reset thermal protection.

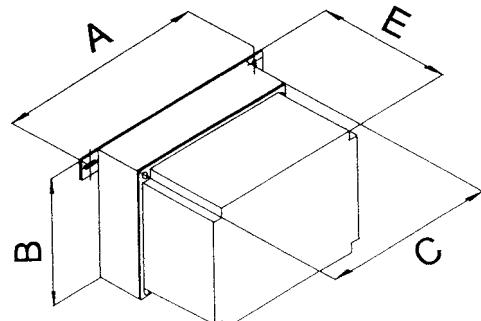
Remote switch for the operation of an optional float (available on request).

Terminal board for the connection of the electric pump and the float (if required, powered at 220-240 V).

1,5 m H07RN-F 3G1,5 power cable with EEC plug, 17-2P+Earth (16 A-220 V)

Electric connection diagram plate on the inside of the cover.

MODEL	A	B	C	E	WEIGHT kg
MDN	225	168	198	148	2.1



# ELECTRO-MECHANICAL PROTECTION AND CONTROL PANELS

ED FOR 1 POMP



## TECHNICAL DATA

**Nominal power input voltage:** 230V 1~ ± 10%  
400V 3~ ± 10%

**Frequency:** 50-60 Hz.

**Ambient temperature operation limits:** -10°C +40°C.

**Storage ambient temperature limit:** -25°C + 55°C.

**Relative humidity (without condensation):**

50% at 40°C MAX (90% a 20°C).

**Protection class:** IP55.

**Panel construction:** to EN 60204-1 and EN 60439-1.

## APPLICATIONS

Control panels for automatic protection and control, through digital controls (floats, pressure switches, timers, etc.), of 1 single-phase or three-phase electric pumps, with direct star/triangle start Y/D.

## CONTROL PANEL CONSTRUCTION

Panel construction: to EN 60204-1 and EN 60439-1

Supplied on self-extinguishing thermoplastic material box with wall fastening bracket.

The control panel is self-protected and protects the electric pump from overload, short circuit and power loss, with manual reset, and from overtemperature, with automatic reset.

## COMPLETE WITH:

Power line disconnect device with padlockable door lock handle.

Auxiliary circuit fuses.

Adjustable scale thermal magnetic protection on each motor.

Self-protected transformer to provide 24V supply for external controls.

Terminals for the connection of the electric pump, and the protection and minimum/maximum level control floats (or max/min pressure by means of pressure switches, etc.).

Powerless terminals for dry run, overflow, overpressure, sound or luminous alarm notification.

Terminals for the connection of the motor temperature sensors. Bridge fitted as standard, to be removed in case of use. (SEE THE TABLE)

Panel front Manual - Off - Automatic selector switch.

0" to 30 " adjustable switch timer, only for control panels with Y/D start.

## FRONT PANEL NOTIFICATION:

Red lamp, overload protection activation.

Green lamp, pump in operation.

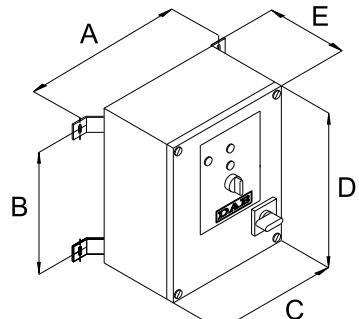
White lamp, auxiliary circuits working correctly.

Red lamp, dry run or maximum pressure.

## ED FOR 1 POMP - ELECTRO-MECHANICAL PROTECTION AND CONTROL PANELS

MODEL	ELECTRICAL DATA								
	POWER INPUT 50 HZ	STARTING	CAPACITOR	KW	HP	MAX CURRENT	THERMAL PROTECTION	MOTOR PROTECTOR KK	OIL PROBE MODULE
<b>ED0,1M</b>	1X220 - 240 V~	direct	-	0,1	0,1	1	0,63-1A		
<b>ED0,3M</b>	1X220 - 240 V~	direct	-	0,2	0,3	2	1-1,6A		
<b>ED0,75M</b>	1X220 - 240 V~	direct	-	0,6	0,75	4	2,5-4A		
<b>ED1M</b>	1X220 - 240 V~	direct	-	0,7	1	6	4-6,3A		
<b>ED1,5M</b>	1X220 - 240 V~	direct	-	1,1	1,5	10	6,3-10A		
<b>ED2M</b>	1X220 - 240 V~	direct	-	1,5	2	16	10-16A		
<b>ED2,4M</b>	1X220 - 240 V~	direct	-	1,8	2,4	20	16-20A		
<b>ED3M 40uF</b>	1X220 - 240 V~	direct	40	2,2	3	10	6,3-10A	•	
<b>ED3MHS</b>	1X220 - 240 V~	direct	40uF+250pF	2,2	3	10	6,3-10A	•	
<b>ED0,08T</b>	3X400 V~	direct	-	0,1	0,08	1	0,4-0,63A		suitable
<b>ED0,5T</b>	3X400 V~	direct	-	0,4	0,5	2	1-1,6A		suitable
<b>ED1T</b>	3X400 V~	direct	-	0,7	1	3	1,6-2,5A		suitable
<b>ED1,5T</b>	3X400 V~	direct	-	1,1	1,5	4	2,5-4A		suitable
<b>ED2,5T</b>	3X400 V~	direct	-	1,8	2,5	6	4-6,3A	•	suitable
<b>ED4T</b>	3X400 V~	direct	-	2,9	4	10	6,3-10A	•	suitable
<b>ED8T</b>	3X400 V~	direct	-	5,9	8	16	10-16A	•	suitable
<b>ED11T</b>	3X400 V~	direct	-	8,1	11	20	16-20A	•	suitable
<b>ED14T</b>	3X400 V~	direct	-	10,3	14	25	20-25A	•	suitable
<b>ED15T</b>	3X400 V~	direct	-	11,0	15	32	25-32A	•	suitable
<b>ED7,5T SD</b>	3X400 V~	Y/Δ	-	5,5	7,5	16	10-16A	•	standard
<b>ED15T SD</b>	3X400 V~	Y/Δ	-	11,0	15	25	18-25A	•	standard
<b>ED20T SD</b>	3X400 V~	Y/Δ	-	14,7	20	32	23-32A	•	standard
<b>ED25T SD</b>	3X400 V~	Y/Δ	-	18,4	25	45	32-45A	•	standard
<b>ED30T SD</b>	3X400 V~	Y/Δ	-	22,1	30	63	40-63A	•	standard

MODEL	A	B	C	D	E	PACKING DIMENSIONS			WEIGHT kg
						L/A	L/B	H	
<b>ED0,1M</b>	345	248	270	270	200	320	420	250	7
<b>ED0,3M</b>	345	248	270	270	200	320	420	250	7
<b>ED0,75M</b>	345	248	270	270	200	320	420	250	7
<b>ED1M</b>	345	248	270	270	200	320	420	250	7
<b>ED1,5M</b>	345	248	270	270	200	320	420	250	7
<b>ED2M</b>	345	248	270	270	200	320	420	250	7
<b>ED2,4M</b>	345	248	270	270	200	320	420	250	7
<b>ED3M 40uF</b>	345	248	270	270	200	320	420	250	7
<b>ED3MHS</b>	345	248	270	270	200	320	420	250	7
<b>ED0,08T</b>	345	248	270	270	200	320	420	250	7
<b>ED0,5T</b>	345	248	270	270	200	320	420	250	7
<b>ED1T</b>	345	248	270	270	200	320	420	250	7
<b>ED1,5T</b>	345	248	270	270	200	320	420	250	7
<b>ED2,5T</b>	345	248	270	270	200	320	420	250	7
<b>ED4T</b>	345	248	270	270	200	320	420	250	7
<b>ED8T</b>	345	248	270	270	200	320	420	250	7
<b>ED11T</b>	345	248	270	270	200	320	420	250	8
<b>ED14T</b>	345	248	270	270	200	320	420	250	8
<b>ED15T</b>	345	248	270	270	200	320	420	250	8
<b>ED7,5T SD</b>	345	335	270	360	200	320	420	250	9
<b>ED15T SD</b>	345	335	270	360	200	320	420	250	9
<b>ED20T SD</b>	345	335	270	360	255	360	450	450	9
<b>ED25T SD</b>	612	335	540	360	255	620	600	330	15
<b>ED30T SD</b>	612	335	540	360	255	620	600	330	15



# ELECTRO-MECHANICAL PROTECTION AND CONTROL PANELS

E2D FOR 2 PUMPS



indicative photo

## TECHNICAL DATA

### Nominal power input voltage:

230V 1~ ± 10%

400V 3~ ± 10%

**Frequency:** 50-60 Hz.

**Ambient temperature operation limits:** -10°C to +40°C.

**Storage ambient temperature limit:** -25°C to + 55°C.

**Relative humidity (without condensation):**

50% at 40°C MAX (90% a 20°C).

**Protection class:** IP55.

**Control panel construction:** According to EN 60204-1, and UNI EN 60439/1.

## APPLICATIONS

Control panels for automatic protection and control, through digital controls (floats, pressure switches, timers, etc.), of 2 single-phase or three-phase electric pumps, with direct star/triangle start Y/D.

## CONTROL PANEL CONSTRUCTION

Panel construction to EN 60204-1 and EN 60439-1

Supplied on self-extinguishing thermoplastic material box with wall fastening bracket.

The control panel is self-protected and protects the electric pump from overload, short circuit and power loss, with manual reset, and from overtemperature, with automatic reset.

## COMPLETE WITH:

Power line disconnect device with padlockable door lock handle.

Auxiliary circuit fuses.

Adjustable scale thermal magnetic protection on each motor.

Self-protected transformer to provide 24V supply for external controls.

Terminals for the connection of the electric pump, and the protection and minimum/maximum level control floats (or max/min pressure by means of pressure switches, etc.).

Powerless terminals for dry run, overflow, overpressure, sound or luminous alarm notification.

Terminals for the connection of the motor temperature sensors. Bridge fitted as standard, to be removed in case of use. (SEE THE TABLE)

Panel front Manual - Off - Automatic selector switch.

0" to 30 " adjustable switch timer, only for control panels with Y/D start.

## FRONT PANEL NOTIFICATION:

Red lamp, overload protection activation.

Green lamp, pump in operation.

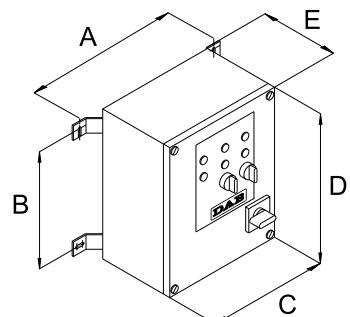
White lamp, auxiliary circuits working correctly.

Red lamp, dry run or maximum pressure.

## ED FOR 2 PUMPS - ELECTRO-MECHANICAL PROTECTION AND CONTROL PANELS

MODEL	ELECTRICAL DATA								
	POWER INPUT 50 HZ	STARTING	CAPACITOR	kW	HP	MAX CURRENT	THERMAL PROTECTION	MOTOR PROTECTOR KK	OIL PROBE MODULE
<b>E2D0,6M</b>	1X220 - 240 V~	direct	-	0,2	0,3	2	1-1,6A		
<b>E2D1,5M</b>	1X220 - 240 V~	direct	-	0,6	0,75	4	2,5-4A		
<b>E2D2M</b>	1X220 - 240 V~	direct	-	0,7	1	6	4-6,3A		
<b>E2D3M</b>	1X220 - 240 V~	direct	-	1,1	1,5	10	6,3-10A		
<b>E2D4M</b>	1X220 - 240 V~	direct	-	1,5	2	16	10-16A		
<b>E2D4,8M</b>	1X220 - 240 V~	direct	-	1,8	2,4	20	16-20A		
<b>E2D6M 40uF</b>	1X220 - 240 V~	direct	40	2,2	3	10	6,3-10A	•	
<b>E2D6M HS</b>	1X220 - 240 V~	direct	40μF+250μF	2,2	3	10	6,3-10A	•	
<b>E2D2T</b>	3X400 V~	direct	-	0,7	1	3	1,6-2,5A		suitable
<b>E2D3T</b>	3X400 V~	direct	-	1,1	1,5	4	2,5-4A		suitable
<b>E2D5T</b>	3X400 V~	direct	-	1,8	2,5	6	4-6,3A	•	suitable
<b>E2D8T</b>	3X400 V~	direct	-	2,9	4	10	6,3-10A	•	suitable
<b>E2D15T</b>	3X400 V~	direct	-	5,5	7,5	16	10-16A	•	suitable
<b>E2D22T</b>	3X400 V~	direct	-	8,1	11	20	16-20A	•	suitable
<b>E2D28T</b>	3X400 V~	direct	-	10,3	14	25	20-25A	•	suitable
<b>E2D30T</b>	3X400 V~	direct	-	11,0	15	32	25-32A	•	suitable
<b>E2D15T SD</b>	3X400 V~	Y/Δ	-	5,5	7,5	16	10-16A	•	standard
<b>E2D30T SD</b>	3X400 V~	Y/Δ	-	11,0	15	25	18-25A	•	standard
<b>E2D40T SD</b>	3X400 V~	Y/Δ	-	14,7	20	32	23-32A	•	standard
<b>E2D50T SD</b>	3X400 V~	Y/Δ	-	18,4	25	45	32-45A	•	standard
<b>E2D60T SD</b>	3X400 V~	Y/Δ	-	22,1	30	63	40-63A	•	standard

MODEL	A	B	C	D	E	PACKING DIMENSIONS			WEIGHT kg
						L/A	L/B	H	
<b>E2D0,6M</b>	345	335	270	360	200	320	420	250	8
<b>E2D1,5M</b>	345	335	270	360	200	320	420	250	8
<b>E2D2M</b>	345	335	270	360	200	320	420	250	8
<b>E2D3M</b>	345	335	270	360	200	320	420	250	8
<b>E2D4M</b>	345	335	270	360	200	320	420	250	8
<b>E2D4,8M</b>	345	335	270	360	200	320	420	250	8
<b>E2D6M 40uF</b>	345	335	270	360	200	320	420	250	8
<b>E2D6M HS</b>	345	335	270	360	200	320	420	250	8
<b>E2D2T</b>	345	335	270	360	200	320	420	250	8
<b>E2D3T</b>	345	335	270	360	200	320	420	250	8
<b>E2D5T</b>	345	335	270	360	200	320	420	250	8
<b>E2D8T</b>	345	335	270	360	200	320	420	250	8
<b>E2D15T</b>	345	335	270	360	200	320	420	250	8
<b>E2D22T</b>	345	335	270	360	200	320	420	250	9
<b>E2D28T</b>	345	335	270	360	200	320	420	250	9
<b>E2D30T</b>	345	335	270	360	200	320	420	250	9
<b>E2D15T SD</b>	612	335	540	360	200	620	600	330	10
<b>E2D30T SD</b>	612	335	540	360	200	620	600	330	10
<b>E2D40T SD</b>	575	600	500	700	275	520	750	300	30
<b>E2D50T SD</b>	670	693	600	800	280	620	850	350	30
<b>E2D60T SD</b>	670	693	600	800	280	620	850	350	30



# ELECTRO-MECHANICAL PROTECTION AND CONTROL PANELS

E3D FOR 3 PUMPS



indicative photo

## TECHNICAL DATA

### Nominal power input voltage:

230V 1~ ± 10%

400V 3~ ± 10%

**Frequency:** 50-60 Hz.

**Ambient temperature operation limits:** -10°C to +40°C.

**Storage ambient temperature limit:** -25°C to + 55°C.

**Relative humidity (without condensation):**

50% at 40°C MAX (90% a 20°C).

**Protection class:** IP55.

**Control panel construction:** According to EN 60204-1, and UNI EN 60439/1.

## APPLICATIONS

Control panels for automatic protection and control, through digital controls (floats, pressure switches, timers, etc.), of 2 single-phase or three-phase electric pumps, with direct star/triangle start Y/D.

## CONTROL PANEL CONSTRUCTION

Panel construction to EN 60204-1 and EN 60439-1

Supplied on self-extinguishing thermoplastic material box with wall fastening bracket.

The control panel is self-protected and protects the electric pump from overload, short circuit and power loss, with manual reset, and from overtemperature, with automatic reset.

## COMPLETE WITH:

Power line disconnect device with padlockable door lock handle.

Auxiliary circuit fuses.

Adjustable scale thermal magnetic protection on each motor.

Self-protected transformer to provide 24V supply for external controls.

Terminals for the connection of the electric pump, and the protection and minimum/maximum level control floats (or max/min pressure by means of pressure switches, etc.).

Powerless terminals for dry run, overflow, overpressure, sound or luminous alarm notification.

Terminals for the connection of the motor temperature sensors. Bridge fitted as standard, to be removed in case of use. (SEE THE TABLE)

Panel front Manual - Off - Automatic selector switch.

0" to 30 " adjustable switch timer, only for control panels with Y/D start.

## FRONT PANEL NOTIFICATION:

Red lamp, overload protection activation.

Green lamp, pump in operation.

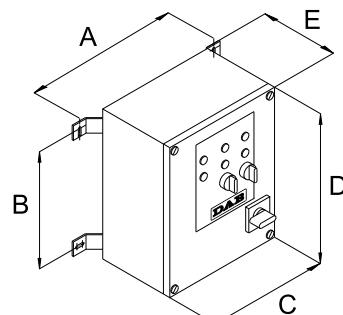
White lamp, auxiliary circuits working correctly.

Red lamp, dry run or maximum pressure.

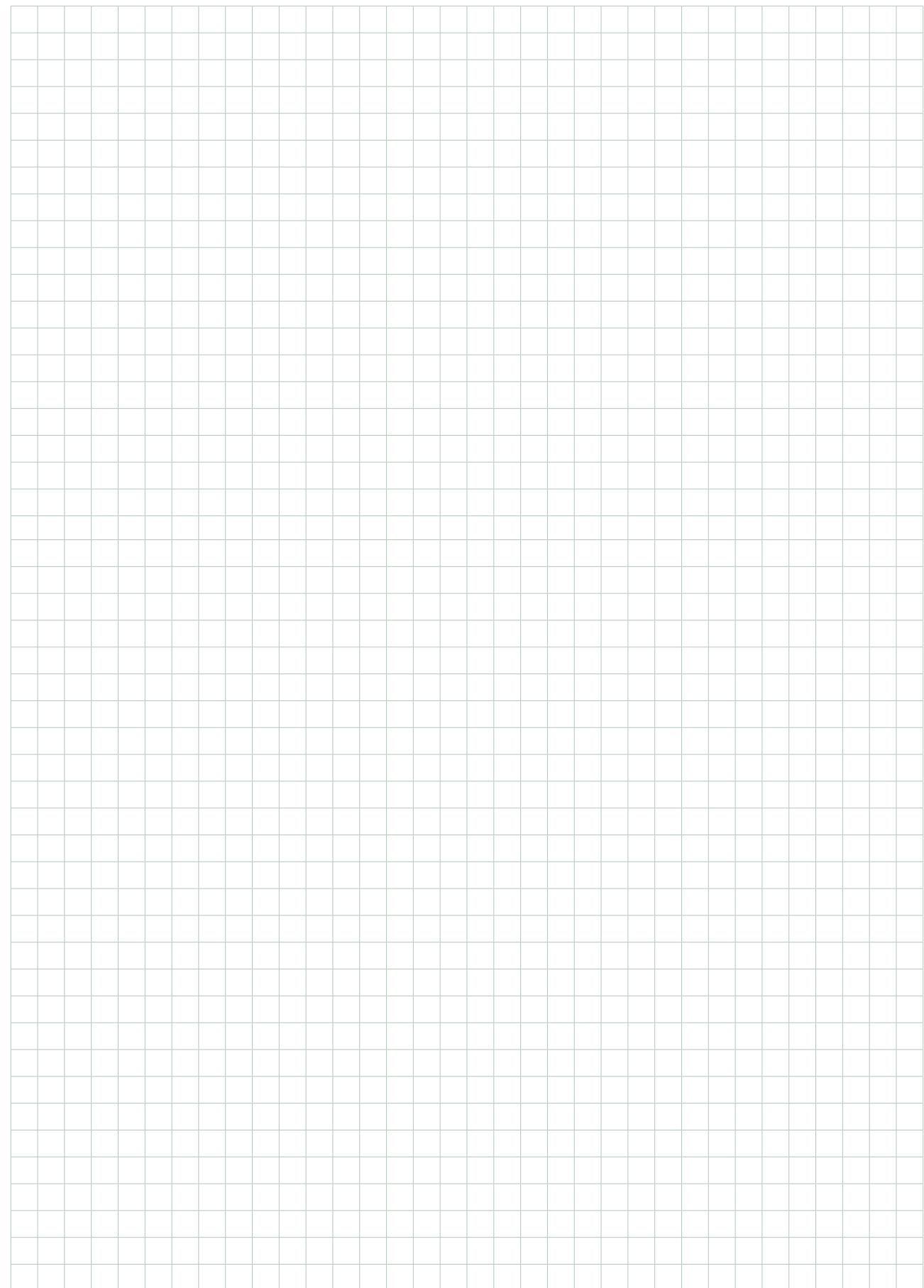
## E3D FOR 3 PUMPS - ELECTRO-MECHANICAL PROTECTION AND CONTROL PANELS

MODEL	ELECTRICAL DATA								
	POWER INPUT 50 Hz	STARTING	CAPACITOR	KW	HP	MAX CURRENT	THERMAL PROTECTION	MOTOR PROTECTOR KK	OIL PROBE MODULE
<b>E3D0,9M</b>	1X220 - 240 V~	direct	-	0,2	0,3	2	1-1,6A		
<b>E3D2,25M</b>	1X220 - 240 V~	direct	-	0,6	0,75	4	2,5-4A		
<b>E3D3M</b>	1X220 - 240 V~	direct	-	0,7	1	6	4-6,3A		
<b>E3D4,5M</b>	1X220 - 240 V~	direct	-	1,1	1,5	10	6,3-10A		
<b>E3D6M</b>	1X220 - 240 V~	direct	-	1,5	2	16	10-16A		
<b>E3D7,2M</b>	1X220 - 240 V~	direct	-	1,8	2,4	20	16-20A		
<b>E3D9M 40uF</b>	1X220 - 240 V~	direct	40	2,2	3	10	6,3-10A	•	
<b>E3D9M HS</b>	1X220 - 240 V~	direct	40μF+250μF	2,2	3	10	6,3-10A	•	
<b>E3D3T</b>	3X400 V~	direct	-	0,7	1	3	1,6-2,5A		suitable
<b>E3D4,5T</b>	3X400 V~	direct	-	1,1	1,5	4	2,5-4A		suitable
<b>E3D7,5T</b>	3X400 V~	direct	-	1,8	2,5	6	4-6,3A	•	suitable
<b>E3D12T</b>	3X400 V~	direct	-	2,9	4	10	6,3-10A	•	suitable
<b>E3D22,5T</b>	3X400 V~	direct	-	5,5	7,5	16	10-16A	•	suitable
<b>E3D33T</b>	3X400 V~	direct	-	8,1	11	20	16-20A	•	suitable
<b>E3D42T</b>	3X400 V~	direct	-	10,3	14	25	20-25A	•	suitable
<b>E3D45T</b>	3X400 V~	direct	-	11,0	15	32	25-32A	•	suitable
<b>E3D22,5T SD</b>	3X400 V~	Y/Δ	-	5,5	7,5	16	10-16A	•	standard
<b>E3D45T SD</b>	3X400 V~	Y/Δ	-	11,0	15	25	18-25A	•	standard
<b>E3D60T SD</b>	3X400 V~	Y/Δ	-	14,7	20	32	23-32A	•	standard
<b>E3D75T SD</b>	3X400 V~	Y/Δ	-	18,4	25	45	32-45A	•	standard
<b>E3D90T SD</b>	3X400 V~	Y/Δ	-	22,1	30	63	40-63A	•	standard

MODEL	A	B	C	D	E	PACKING DIMENSIONS			WEIGHT kg
						L/A	L/B	H	
<b>E3D0,9M</b>	612	335	540	360	200	620	600	330	11
<b>E3D2,25M</b>	612	335	540	360	200	620	600	330	11
<b>E3D3M</b>	612	335	540	360	200	620	600	330	11
<b>E3D4,5M</b>	612	335	540	360	200	620	600	330	11
<b>E3D6M</b>	612	335	540	360	200	620	600	330	11
<b>E3D7,2M</b>	612	335	540	360	200	620	600	330	11
<b>E3D9M 40uF</b>	612	335	540	360	200	620	600	330	11
<b>E3D9M HS</b>	612	335	540	360	200	620	600	330	11
<b>E3D3T</b>	612	335	540	360	200	620	600	330	11
<b>E3D4,5T</b>	612	335	540	360	200	620	600	330	11
<b>E3D7,5T</b>	612	335	540	360	200	620	600	330	11
<b>E3D12T</b>	612	335	540	360	200	620	600	330	11
<b>E3D22,5T</b>	612	335	540	360	200	620	600	330	11
<b>E3D33T</b>	612	335	540	360	200	620	600	330	11
<b>E3D42T</b>	612	335	540	360	200	620	600	330	11
<b>E3D45T</b>	575	600	500	700	275	520	750	300	30
<b>E3D22,5T SD</b>	575	600	500	700	275	520	750	300	30
<b>E3D45T SD</b>	575	600	500	700	275	520	750	300	30
<b>E3D60T SD</b>	670	693	600	800	280	620	850	350	30
<b>E3D75T SD</b>	670	693	600	800	280	620	850	350	30
<b>E3D90T SD</b>	670	693	600	800	280	620	850	350	30



## NOTES



# **TECHNICAL APPENDIX**

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### GENERAL INFORMATION

#### FUNDAMENTAL TERMS USED IN PUMPS

The following is a list of fundamental terms used in pumps and an explanation of their meanings. Their knowledge is necessary in order to discuss hydraulic pumps. All measurements are given in Technical units. Reference should be made to the chart for their international and Anglo-Saxon equivalents.

#### HEAD

Head means height, difference in level, gradient. For example if a pump has a flow of Q litres per second and a head of 30 metres, it means that it is capable of raising Q litres of liquid by 30 metres every second (therefore achieving a 30 metre gradient). For each given pump, the head is determined by its construction, such as the external diameter of the impeller and the speed of rotation, but it is not affected by the pumped liquid. This means that the pump as such can raise by 30 metres Q litres per second of water, petrol, mercury, etc.; the only difference in the three cases will be the power of the motor required.

#### SPECIFIC WEIGHT OF A LIQUID OR FLUID

The specific weight of a liquid or fluid is the weight per unit volume of the liquid/fluid. Specific weight is usually measured in kg/dm<sup>3</sup> or kg/l, remembering that 1 dm<sup>3</sup> equals 1 litre.

#### PRESSURE

Pressure means weight per unit of area (e.g. kg/cm<sup>2</sup>), and it should not be confused with head. In the case of liquids, the pressure that the liquid exerts on a surface is given by the product of the head (or height) of the liquid, multiplied by its specific weight. For this reason, the column of several km of air on the earth's surface produces at sea level a pressure of about 1kg/cm<sup>2</sup> (equal to approx. 1 atmosphere). If the same column were of water rather than air, the pressure would be some 700 to 800 times greater, due to the fact that water has a specific weight approximately 700-800 times greater than that of air.

Bearing in mind that a column of water 10 m high is equivalent to approx. 1 kg/cm<sup>2</sup>, if we placed a manometer on the delivery of the pump, the following pressure increases would be measured:

- |  |   |
|--|---|
| a) with petrol (specific weight 0,7 kg/dm <sup>3</sup> )   | = 0,7 x 0,001 x 30 x 100 = 2,1 kg/cm <sup>2</sup>   |
| b) with water (specific weight 1,0 kg/dm <sup>3</sup> )    | = 0,1 x 0,001 x 30 x 100 = 3,0 kg/cm <sup>2</sup>   |
| c) with mercury (specific weight 13,6 kg/dm <sup>3</sup> ) | = 13,6 x 0,001 x 30 x 100 = 40,8 kg/cm <sup>2</sup> |

#### FLOW

Flow means the quantity of liquid or fluid that passes through a point, such as the delivery outlet of a pump, or a cross section of a pipe, in the set unit of time.

This can be measured in litres per minute (l/min), litres per second (l/s), cubic metres per hour (m<sup>3</sup>/h) etc.

It should be noted that there is a perfect analogy between the flow of water through a pipe and the flow of electricity through a wire. It is sufficient to remember that hydraulic head is equivalent to electrical potential or voltage, and hydraulic flow is equivalent to electric current or amperes in electrotechnics. Even their behaviour is the same. Just as a thin wire restricts the flow of electricity more than one with a larger section, in the same way, a pipe of a smaller diameter offers a greater resistance to the flow of a liquid than one of a larger one. Just as the passage of electric current through the wire to a cable needs a voltage difference, in the same way, the flow of a liquid or fluid through a pipe needs a certain head.

There will never be a movement of liquid between two points of a perfectly horizontal pipe, and with the liquid at the same head in both points. This is due to the fact that, in the same way as the cable exerts a certain resistance to the passage of the electric current (electric resistance), the pipe also exerts a certain resistance to the passage of the fluid, the extent of which depends on the quality of the pipe (material, shape, presence of scale) and its section, and therefore the speed at which the fluid runs through the pipe. This resistance is called head loss.

#### HEAD LOSS

Head loss is that part of the head, possessed by the liquid, which is lost when passing through a pipe, a valve, a filter, etc. This loss cannot be recovered, as it is lost due to friction. Going back to the analogy between electrical and hydraulic phenomena, just as the losses in a cable increase in proportion with the current, so head losses are proportionally greater as the speed of the liquid increases. This means that the more the flow is restricted by scaled pipes, clogged filters, partially closed valves etc. the greater the head loss will be.

#### PUMP

A pump is a machine used to give a certain head to a liquid that passes through it. The head can be used to raise the liquid to a higher level, or to make it flow inside a pipe, or even in the open air, so that it covers a certain distance. The characteristics of a pump are:

- a) **Flow** (the quantity of liquid that is moved through the pump in a unit of time)
- b) **Head** (that is the height at which the pump is capable lifting the flow)

Based on the existing relationship between the flow and the head, it is possible to have:

- a) Pumps with small flow and large head (piston pumps, rotary pumps, small centrifugal pumps).
- b) Pumps with medium flow and medium head (centrifugal pumps in general).
- c) Pumps with large flow and small head (helico-centrifugal pumps, propeller pumps).

# TECHNICAL APPENDIX

## SUBMERSIBLE PUMPS

Centrifugal pumps, helico-centrifugal pumps and propeller pumps have a rotary motion and their speed is universally measured in revolutions per minute (rpm). With these machines operating at a given speed, for each given value of flow, there is only one value of head. This means that in order to increase or decrease the performance of these types of pumps, the operating speed must be varied accordingly. Basically, the liquid passing through the pump is supplied with energy that is related to the head and the speed of the liquid itself. This energy supplied within the unit of time is known as delivered power.

### DELIVERED POWER

The delivered power is the power delivered by the pump to the liquid. The value of this delivered power depends on three factors: flow, head, and specific weight of the pumped liquid. The higher these three factors, the higher is the power delivered by the pump. For example, a pump delivering petrol does less work than when delivering sulphuric acid, because the specific weights of the two liquids are different.

In order to pump a liquid, a pump must be driven by a motor. In the vast majority of cases, this is either an electric, or an internal combustion motor. Electric motors use electric power, while internal combustion motors (engines) use oil or oil derivative fuels. The power that the pump needs in order to operate is called absorbed power.

### DELIVERED POWER CALCULATION

Delivered power is normally expressed in kW or HP, indicating with:

$Q$  = the flow

$H$  = the head in metres of the column of liquid (m.c.l.)

$\gamma$  = the specific weight of the liquid

The delivered power ( $P_3$ ) is calculated using one of the following equations:

$$P_3 = \frac{\gamma (\text{kg/dm}^3) \times Q (\text{l/s}) \times H (\text{m.c.l.})}{75} \quad \text{in HP}$$

$$P_3 = \frac{\gamma (\text{kg/dm}^3) \times Q (\text{m}^3/\text{h}) \times H (\text{m.c.l.})}{270} \quad \text{in HP}$$

$$P_3 = \frac{\gamma (\text{kg/dm}^3) \times Q (\text{l/s}) \times H (\text{m.c.l.})}{102} \quad \text{in kW}$$

$$P_3 = \frac{\gamma (\text{kg/dm}^3) \times Q (\text{l/min}) \times H (\text{m.c.l.})}{4500} \quad \text{in HP}$$

$$P_3 = \frac{\gamma (\text{kg/dm}^3) \times Q (\text{m}^3/\text{h}) \times H (\text{m.c.l.})}{367} \quad \text{in kW}$$

$$P_3 = \frac{\gamma (\text{kg/dm}^3) \times Q (\text{l/min}) \times H (\text{m.c.l.})}{6120} \quad \text{in kW}$$

### ABSORBED POWER

Absorbed power is the power that the pump absorbs from the motor, to give to the liquid the delivered power discussed above.

Not all the absorbed power becomes delivered power, as some power is lost through friction, and even more within the pump itself, due to hydraulic losses. It is therefore clear that the delivered power is always less than the absorbed power, and the relation between the two is a number always lower than 1. This number is known as the efficiency.

### YIELD

The efficiency is obtained by dividing the delivered power by the absorbed power, and is normally expressed as a percentage. For example, an efficiency of 75 % of a pump indicates that only 75 % of the absorbed power is converted into delivered power, with the remaining 25 % being lost due to friction. Therefore, the higher the efficiency of a pump, the smaller the portion of absorbed power being lost. If one then considers that the cost of energy relates to the absorbed power, it immediately becomes apparent just how important efficiency is. If we compare two pumps with the same 1 HP delivered power, but with an efficiency of 50 % for the first, and 60 % for the second, we can assume that the first one will need 2 HP to supply 1, while the second will only need 1,67 HP to achieve the same result. This means that the efficiency of a pump expresses, better than any other parameter, the quality of the pump and the related savings in terms of operating costs.

### CALCULATION OF POWER OUTPUTS

$P_1$ : is the power absorbed by the motor in kW (generally indicated by the wattmeter).

$P_2$ : the power delivered by the motor in kW. This is measured at the brake (it basically is the power absorbed by the pump).

$P_3$ : the power delivered by the pump in kW.

$$\text{Power output of the motor } \eta = \frac{P_2}{P_1}$$

$$\text{Power output of the motor } \eta = \frac{P_3}{P_2}$$

$$\text{Power output of the motor } \eta = \frac{P_3}{P_1}$$

# TECHNICAL APPENDIX

## SUBMERSIBLE PUMPS

### THE HEAD OF A PUMP AND ITS MEASUREMENT

The head of a pump is always the differential head, or that given by the pump itself. This is generally expressed in metres. In order to ascertain the head of a surface pump, during its operation it is necessary to measure the value of the head both at the suction and at the delivery of the pump itself, making sure that the readings are taken at the same level, which is called the reference plane. Two cases are possible, depending on installation:

1) the value of the head at the suction is negative (i.e. below zero shown on the manometer): in this case, the level of the liquid collected is lower than the level of the suction inlet.

2) the value of the head at the suction is positive (i.e. above zero shown on the manometer) in this case, the level of the liquid collected is higher than the level of the suction inlet (flooded suction).

In the first case the head of the pump is given by the sum of the two readings, while in the second it is given by subtracting the value of the head at the suction inlet from the value at the delivery outlet.

Finally, it is necessary to make sure that the readings at the suction and the delivery have been taken from apertures of the same diameter, so that they are not distorted by a difference in the speed of the liquid at the point of measurement. Any correction is made by calculating the dynamic head, or that part of the head linked with the speed of the liquid, which means that part of the head that the liquid possesses at the measuring section, due to the fact that it is moving. The dynamic head  $H_d$ , expressed in metres, is calculated using the following formula:

$$H_d = \frac{v^2}{2g}$$

where:  $v$  = speed of the fluid at the measuring point, given in m/s

$g$  = acceleration of gravity (9,81), expressed in m/s<sup>2</sup>

$2g = 2 \times 9,81 = 19,62 \text{ m/s}^2$

The correction of the head is given by the difference between the dynamic head at the delivery, and the dynamic head- at the suction. It is therefore clear that if the readings upstream and downstream the pump have been taken on pipes of the same diameter, and therefore with the liquid flowing at the same speed, the correction is zero.

In order to ascertain the head of a submerged impeller pump, it is sufficient, during operation, to measure the head at the delivery port. In this case, the head of the pump is given by adding the value read to the dynamic head (always at the delivery port), and to the difference of level between the free surface of the liquid collected and the manometer.

### VARIATION IN PUMP HEAD IN RELATION TO SPEED VARIATION

The performance of a pump is directly connected to its speed in rpm ( $n$ ). Providing that there is no cavitation, the law of similarity may be used, which is expressed as follows:

$$Q_x = Q \times \frac{n_x}{n}$$

$$H_x = H \times \left( \frac{n_x}{n} \right)^2$$

$$P_{2-x} = P_2 \times \left( \frac{n_x}{n} \right)^3$$

For example, when doubling the number of revolutions ( $x$ ) one obtains:

$Q_x$  = the value of the flow doubles

$H_x$  = the value of the head is 4 times higher

$P_{2-x}$  = the value of the absorbed power is 8 times higher

$Q - H - P_2$  are the values at speed

$Q_x - H_x - P_{2-x}$  are the values at speed .

# TECHNICAL APPENDIX

## SUBMERSIBLE PUMPS

### NOTES ON THE MOTORS OF ELECTRIC PUMPS

INDEX OF SYMBOLS USED	
P <sub>1</sub>	= POWER ABSORBED BY THE MOTOR IN kW.
P <sub>2</sub>	= POWER DELIVERED BY THE MOTOR IN kW OR HP.
V ~	= AC POWER INPUT VOLTAGE AT THE MAINS.
Hz	= FREQUENCY IN CYCLES PER SECOND OF THE POWER INPUT VOLTAGE.
I	= CURRENT ABSORBED BY THE MOTOR IN AMPERES.
COSΦ	= POWER FACTOR.
n <sup>1/min</sup>	= SPEED OF ROTATION IN RPM.
η	= OUTPUT POWER (RELATION BETWEEN DEVELOPED POWER AND ABSORBED POWER P <sub>2</sub> /P <sub>1</sub> ).
p	= NUMBER OF POLES OF THE MOTOR.
C <sub>n</sub>	= NOMINAL TORQUE OF THE MOTOR.

#### NO-LOAD SPEED OF ROTATION

The no-load speed of single-phase and three-phase electric induction motors is given by the formula:

$$n^{1/min} = \frac{120 \times Hz}{p}$$

No-load speed of rotation n<sup>1/min</sup>

FREQUENCY Hz	2 POLES	4 POLES
50	3000	1500
60	3600	1800

The full-load speed is 2 to 7 % lower than the no-load speed (2 to 7 % sliding).

#### CURRENT ABSORBED

$$\text{Single-phase: } I = \frac{1000 \times P_2 (\text{kW})}{V \times \cos\phi \times \eta} \quad \text{or: } I = \frac{736 \times P_2 (\text{HP})}{V \times \cos\phi \times \eta}$$

$$\text{Three-phase: } I = \frac{1000 \times P_2 (\text{kW})}{1.73 \times V \times \cos\phi \times \eta} \quad \text{or: } I = \frac{736 \times P_2 (\text{HP})}{1.73 \times V \times \cos\phi \times \eta}$$

#### ABSORBED POWER

$$\text{Single-phase: } P_1 (\text{kW}) = \frac{V \times I \times \cos\phi}{1000}$$

$$\text{Three-phase: } P_1 (\text{kW}) = \frac{1.73 \times V \times I \times \cos\phi}{1000}$$

#### POWER DELIVERED AT THE MOTOR AXIS

$$\text{Single-phase: } P_2 (\text{kW}) = \frac{V \times I \times \cos\phi \times \eta}{1000} \quad \text{or: } P_2 (\text{HP}) = \frac{V \times I \times \cos\phi \times \eta}{736}$$

$$\text{Three-phase: } P_2 (\text{kW}) = \frac{1.73 \times V \times I \times \cos\phi \times \eta}{1000} \quad \text{or: } P_2 (\text{HP}) = \frac{1.73 \times V \times I \times \cos\phi \times \eta}{736}$$

#### YIELD

$$\eta = \frac{P_2 (\text{kW})}{P_1 (\text{kW})}$$

# TECHNICAL APPENDIX

## SUBMERSIBLE PUMPS

### POWER FACTOR

$$\text{Single-phase: } \cos\phi = \frac{P_2(\text{kW}) \times 1000}{V \times I \times \eta}$$

$$\text{or: } \cos\phi = \frac{P_1(\text{kW}) \times 1000}{V \times I}$$

$$\text{Three-phase: } \cos\phi = \frac{P_2(\text{kW}) \times 1000}{1,73 \times V \times I \times \eta}$$

$$\text{or: } \cos\phi = \frac{P_1(\text{kW}) \times 1000}{1,73 \times V \times I}$$

### TORQUE FACTOR

$$C_n = \frac{P_2(\text{kW}) \times 1000}{1.027 \times n^{1/\text{min}}} \text{ in kgm}$$

$$C_n = \frac{P_2(\text{HP}) \times 736}{1.027 \times n^{1/\text{min}}} \text{ in kgm}$$

$$C_n = \frac{702 \times HP}{n^{1/\text{min}}} \text{ in decaNewtonmetres}$$

### RELATIONSHIP BETWEEN KW AND HP

$$1 \text{ HP} = 0,736 \text{ kW}$$

$$1 \text{ kW} = 1,36 \text{ HP}$$

$$\frac{\text{HP}}{1.36} = \text{kW}$$

$$\text{kW} \times 1,36 = \text{HP}$$

### STARTING CURRENT (ISP)

The starting current (at switch on) of a motor is 4 to 8 times greater than the nominal current, depending on the power of the motor.  
 $I_{sp} = I_n \times 4 \div 8$

### DETAILS ON CAPACITORS

The approximate current absorbed by a capacitor is:

$$I = \frac{6,28 \times F \times C \times V}{1.000.000}$$

Where:

I = current in Amps absorbed by the capacitor.

F = frequency in Hz of the applied voltage.

C = capacity of capacitor  $\mu\text{F}$ .

V = applied voltage.

Example:

The current absorbed by a 14  $\mu\text{F}$  capacitor connected to a 220 Volt - 50 Hz power input is:

$$I = \frac{6,28 \times 50 \times 14 \times 220}{1.000.000} = 0,96 \text{ Amperes}$$

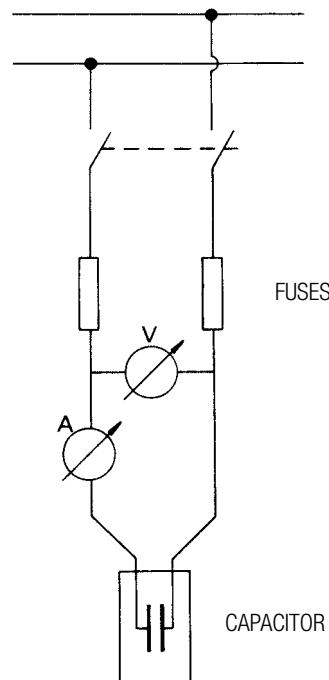
The approximate capacity of a capacitor is determined by:

$$C = \frac{I}{6,28 \times F \times V} \times 1.000.000$$

Example:

The capacity of a capacitor absorbing 1,4 Amps connected to a 220 Volt - 50 Hz power input is:

$$C = \frac{1,4}{6,28 \times 50 \times 220} \times 1.000.000 = 20,2 \mu\text{F}$$



### STAR-DELTA START-UP

The normally delta  $\Delta$  connected motor is connected to the network using a star type connection. The current and the starting torque are both reduced to 1/3 of the value they would be if delta  $\Delta$  connected.

### PROTECTION

It is recommended that motors are connected to the power input network using appropriate three-fuse thermal magnetic circuit breakers, or in any case circuit breakers complying with current local regulations.

# TECHNICAL APPENDIX

## SUBMERSIBLE PUMPS

### LOAD LOSS AND SPEED TABLE

In order to accurately calculate , the following table is used:

FLOW			NEW GALVANISED PIPING										
			NOMINAL DIAMETERS: INCHES AND MM										
I/s	I/min	m <sup>3</sup> /h	1/2"	3/4"	1"	1"1/4	1"1/2	2"	2"1/2	3"	3"1/2	4"	
			15,75	21,25	27	35,75	41,25	52,5	68	80,25	92,5	105	
0,17	10	0,6	0,856	0,47	0,291								
				9,01	20,9	0,65							
0,25	15	0,9	1,284	0,705	0,4387	0,249							
				19,07	4,43	1,38	0,35						
0,33	20	1,2	1,712	0,94	0,582	0,332	0,25						
				32,47	7,55	2,35	0,6	0,3					
0,42	25	1,5	2,14	1,175	0,728	0,415	0,31						
				49,06	11,41	3,55	0,91	0,45					
0,5	30	1,8	2,568	1,411	0,874	0,498	0,37	0,23					
				68,74	15,98	4,98	1,27	0,63	0,2				
0,58	35	2,1	2,996	1,646	1,019	0,581	0,44	0,27					
				91,42	21,26	6,62	1,69	0,84	0,26				
0,67	40	2,4		1,881	1,165	0,664	0,5	0,31					
					27,22	8,48	2,16	1,08	0,33				
0,83	50	3		2,351	1,456	0,831	0,62	0,39	0,23				
					41,13	12,81	3,27	1,63	0,5	0,14			
1	60	3,6		2,821	1,747	0,997	0,75	0,46	0,28				
					57,63	17,95	4,58	2,28	0,7	0,2			
1,17	70	4,2		3,291	2,039	1,163	0,87	0,54	0,32	0,23			
					76,64	23,88	6,08	3,03	0,94	0,27	0,12		
1,33	80	4,8			2,33	1,329	1	0,62	0,37	0,26			
						30,57	7,79	3,88	1,2	34	0,15		
1,5	90	5,4			2,621	1,495	1,12	0,69	0,41	0,3			
						38,01	9,69	4,83	1,49	0,42	0,19		
1,67	100	6			2,912	1,661	1,25	0,77	0,46	0,33	0,25		
						46,19	11,77	5,86	1,81	0,51	0,23	0,11	
2,08	125	7,5			3,641	2,077	1,56	0,96	0,57	0,41	0,31	0,24	
						69,79	17,79	8,86	2,74	0,78	0,35	0,17	0,09
2,5	150	9				2,492	1,87	1,16	0,69	0,49	0,37	0,29	
							24,92	12,41	3,84	1,09	0,49	0,24	0,13
2,92	175	10,5				2,907	2,18	1,35	0,8	0,58	0,43	0,34	
							33,15	16,51	5,1	1,45	0,65	0,32	0,17

White numbers: Load losses in m. for every 100 m of pipework

Green numbers: Water speed in m/sec

The table refers to galvanised pipework.

For other materials multiply as follows:

- 0,6 PVC pipes.
- 0,7 aluminium pipes.
- 0,8 laminated steel and stainless steel.

# TECHNICAL APPENDIX

## SUBMERSIBLE PUMPS

### LOAD LOSS AND SPEED TABLE

In order to accurately calculate , the following table is used:

FLOW			NEW GALVANISED PIPING									
l/s	l/min	m <sup>3</sup> /h	NOMINAL DIAMETERS: INCHES AND MM									
			1"1/4	1"1/2	2"	2"1/2	3"	3"1/2	4"	5"	6"	8"
			35,75	41,25	52,5	68	80,25	92,5	105	130	155	206
3,33	200	12	3,322	2,5	1,54	0,92	0,66	0,5	0,39	0,25		
				42,43	21,14	6,53	1,85	0,83	0,41	0,22	0,08	
4,17	250	15	4,156	3,12	1,93	1,15	0,82	0,62	0,48	0,31		
				64,12	31,94	9,87	2,8	1,25	1,63	0,34	0,12	
5	300	18		3,74	2,31	1,38	0,99	0,74	0,58	0,38	0,27	
				44,75	13,83	3,92	1,75	0,88	0,47	0,17	0,07	
6,67	400	24		4,99	3,08	1,84	1,32	0,99	0,77	0,5	0,35	
					76,2	23,55	6,68	2,98	1,49	0,8	0,28	0,12
8,33	500	30			3,85	2,3	1,65	1,24	0,96	0,63	0,44	
					35,58	10,09	4,51	2,26	1,22	0,43	0,18	
10	600	36			4,62	2,75	1,98	1,49	1,16	0,75	0,53	0,3
					49,85	14,14	6,31	3,16	1,7	0,6	0,26	0,06
11,67	700	42				3,21	2,31	1,74	1,35	0,88	0,62	0,35
						18,81	8,4	4,2	2,27	0,8	0,34	0,09
13,33	800	48				3,67	2,64	1,99	1,54	1,01	0,71	0,4
						24,08	10,75	5,38	2,9	1,03	0,44	0,11
15	900	54				4,13	2,97	2,23	1,73	1,13	0,8	0,45
						29,94	13,37	6,69	3,61	1,28	0,54	0,14
16,67	1000	60				4,59	3,3	2,48	1,93	1,26	0,88	0,5
						36,39	16,24	8,13	4,39	1,55	0,66	0,16
20,83	1250	75					4,12	3,1	2,41	1,57	1,1	0,63
							24,54	12,29	6,63	2,34	0,99	0,25
25	1500	90					4,95	3,72	2,89	1,88	1,33	0,75
							34,39	17,22	9,29	3,28	1,39	0,35
29,17	1750	105						4,34	3,37	2,2	1,55	0,88
									22,9	12,35	4,37	1,85
33,33	2000	120						4,96	3,85	2,5	1,77	1
									29,31	15,81	5,59	2,37
41,67	2500	150								4,81	3,14	2,21
											23,89	3,59
50	3000	180									3,77	1,5
												11,83
66,67	4000	240									5,03	2
												20,15
83,33	5000	300										4,42
												12,93
												3,23

White numbers: Load losses in m. for every 100 m of pipework

Green numbers: Water speed in m/sec

The table refers to galvanised pipework.

For other materials multiply as follows:

- 0,6 PVC pipes.
- 0,7 aluminium pipes.
- 0,8 laminated steel and stainless steel.

HAZEN WILLIAMS CALCULATION  
FORMULA (UNI EN 12845 13.2.1)

# TECHNICAL APPENDIX

## SUBMERSIBLE PUMPS

### HEAD LOSS

in cm of column of water in bends, gate valves, and foot valves

VELOCITY OF WATER IN m/s	SHARP EDGED BENDS					NORMAL BENDS					GATE VALVE	FOOT VALVE	NON-RETURN VALVE	HEAD LOSS ON EXIT FROM PIPES V <sup>2</sup> /2G				
	$\alpha = 30^\circ$	$\alpha = 40^\circ$	$\alpha = 60^\circ$	$\alpha = 80^\circ$	$\alpha = 90^\circ$	$\frac{d}{R} = 0,4$	$\frac{d}{R} = 0,6$	$\frac{d}{R} = 0,8$	$\frac{d}{R} = 1$	$\frac{d}{R} = 1,5$								
0,03	0,04	0,05	0,07	008	0,07	0,08	0,01	0,0155	0,027	0,03	30	30	0,05					
0,06	0,73	0,1	0,14	0,17	0,016	0,019	0,024	0,033	0,06	0,033	31	31	0,12					
0,11	0,13	0,18	0,26	0,31	0,028	0,033	0,04	0,059	0,11	0,058	31	31	0,21					
0,17	0,21	0,28	0,4	0,48	0,044	0,052	0,063	0,091	0,17	0,09	31	31	0,32					
0,25	0,3	0,41	0,6	0,7	0,063	0,074	0,09	0,13	0,25	0,13	31	31	0,46					
0,33	0,4	0,54	0,8	0,93	0,085	0,10	0,12	0,18	0,33	0,18	31	31	0,62					
0,43	0,52	0,71	1,0	1,2	0,11	0,13	0,16	0,23	0,43	0,23	32	31	0,82					
0,67	0,81	1,1	1,6	1,9	0,18	0,21	0,26	0,37	0,67	0,37	33	32	1,27					
0,97	1,2	1,6	2,3	2,8	0,25	0,29	0,36	0,52	0,97	0,52	34	32	1,84					
1,35	1,65	2,2	3,2	3,9	0,34	0,40	0,48	0,70	1,35	0,7	35	32	2,5					
1,7	2,1	2,8	4,0	4,8	0,45	0,53	0,64	0,93	1,7	0,95	36	33	3,3					
2,2	2,7	6	5,2	6,2	0,57	0,67	0,82	1,18	2,2	1,2	37	34	4,2					
2,7	3,3	4,5	6,4	7,6	0,7	0,82	1,0	1,45	2,7	1,45	38	35	5,1					
6,0	7,3	10,0	14,0	17,0	1,6	1,9	2,3	3,3	6,0	3,3	47	40	11,5					
11,0	14,0	18,0	26,0	31,0	2,8	3,3	4,0	5,8	11,0	5,8	61	48	20,4					
17,0	21,0	28,0	40,0	48,0	4,4	5,2	6,3	9,1	17,0	9,1	78	58	32,0					
25,0	30,0	41,0	60,0	70,0	6,3	7,4	9,0	13,0	25,0	13,0	100	71	46,0					
33,0	40,0	55,0	78,0	93,0	8,5	10,0	12,0	18,0	33,0	18,0	123	85	62,0					
43,0	52,0	70,0	100,0	120,0	11,0	13,0	16,0	23,0	42,0	23,0	150	100	82,0					
55,0	67,0	90,0	130,0	160,0	14,0	21,0	26,0	37,0	55,0	37,0	190	120	103,0					
67,0	82,0	110,0	160,0	190,0	18,0	29,0	36,0	52,0	67,0	52,0	220	140	127,0					

v = velocity of water in metres per second

d = diameter of pipes in m metres

h = head loss in cm of water column for each metre of pipework, calculated according to the Lang formula:

$$h = \lambda \times \frac{100}{d} \times \frac{v^2}{2g} \quad \lambda = 0,02 + \frac{0,0018}{\sqrt{v \times d}}$$

The only loss in bends is that due to the contraction of the liquid stream when changing direction (the development of the curves must therefore be included in the length of the pipework); the head loss for gate valves has been determined through technical tests.

The head loss for gate valves and normal bends is equal to that of 5 m of straight pipework, while that of non-return valves is equal to 15 m.

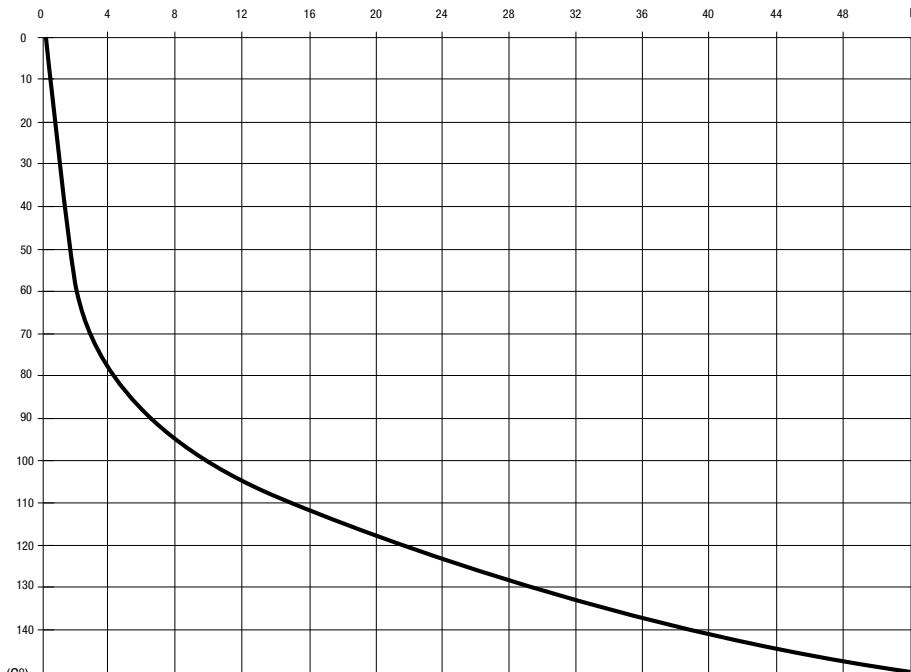
The values given are for pipes with a completely smooth internal surface. In case of rough or scaled pipes, allowances must be made accordingly.

# TECHNICAL APPENDIX

## SUBMERSIBLE PUMPS

### VAPOUR TENSION AND SPECIFIC WEIGHT OF WATER AS A FUNCTION OF TEMPERATURE

VAPOUR TENSION (pV)



C°	m
10	0,121
20	0,22
30	0,387
40	0,675
50	1,147
60	1,888
70	3,014
80	4,67
90	7,035
100	10,33
110	14,83
120	20,85
130	28,744
140	38,97
150	52

$$\frac{P_b}{Y \ 4^\circ} - \frac{(P_b - P_v)}{Y \ t}$$

Pb and Pv in mCA

ATMOSPHERIC PRESSURE (pb)



# TECHNICAL APPENDIX

## SUBMERSIBLE PUMPS

### CONVERSION TABLE FOR UNITS OF MEASURE

CHARACTERISTIC	SYSTEM UNIT OF MEASURE	UNIT OF MEASURE	SYMBOL	CONVERSIONS		
				SYSTEM	INTERNATIONAL SYSTEM (SI)	IMPERIAL SYSTEM
LENGTH	Technical and International	metre decimetre centimetre millimetre	m dm cm mm	1 dm = 0,1 m 1 cm = 0,01 m 1 mm = 0,001 m		1 m = 3,28 ft 1 dm = 3,937 in 1 cm = 0,3937 in
	Imperial	inch foot yard	1", in 1", ft 1yd	1" = 25,4 mm 1" ft = 0,3048 m 1 yd = 0,9144 m		1 ft = 12" 1 yd = 3 ft = 26"
AREA	Technical and International	metres squared centimetres squared millimetres squared	m <sup>2</sup> cm <sup>2</sup> mm <sup>2</sup>	1cm <sup>2</sup> = 0,0001 m <sup>2</sup> 1 mm <sup>2</sup> = 0,01 cm <sup>2</sup>		1m <sup>2</sup> = 1,196 sq.yd 1m <sup>2</sup> = 10,764 sq.ft 1 cm <sup>2</sup> = 0,155 sq.in
	Imperial	square inch square foot square yard	sq.in sq.ft sq.yd	1 sq.in = 6,45 cm <sup>2</sup> 1 sq.ft = 0,0929 m <sup>2</sup> 1 sq.yd = 0,836 m <sup>2</sup>		1 sq.ft = 144 sq.in 1 sq.yd = 1,296 sq.in 1 sq.yd = 9 sq.ft
VOLUME	Technical and International	metre cubed decimetre cubed centimetre cubed litre cubed	m <sup>3</sup> cm <sup>3</sup> mm <sup>3</sup> l	1 m <sup>3</sup> = 1.000 dm <sup>3</sup> 1 cm <sup>3</sup> = 0,001 m = 1.000 cm <sup>3</sup> 1 mm <sup>3</sup> = 0,001 dm <sup>3</sup> 1 l = dm <sup>3</sup>		1 dm <sup>3</sup> = 0,22 Imp.gal 1 dm <sup>3</sup> = 0,264 US.gal 1 dm <sup>3</sup> = 61,0 cu.in
	Imperial	cubic inch cubic feet Imperial gallons U.S. gallons	cu.in cu.ft Imp.gal USA.gal	1 cu.in = 16,39 cm <sup>3</sup> 1 cu.ft = 28,34 m <sup>3</sup> 1 Imp.gal = 4,546 m <sup>3</sup> 1 US.gal = 3,785 dm <sup>3</sup>		1 Imp.gal = 1,201 US.gal 1 US.gal = 0,833 Imp.gal
TEMPERATURE	Technical and International	degrees Centigrade degrees Kelvin	°C °K	°C = °K - 273 °K = °C + 273		°C = 5/9 x (°F - 32) °K = 5/9 x (°F - 32) + 273
	Imperial	degrees Fahrenheit	°F	°F = 9/5 x°C + 32		-
freezing point of water at atmospheric pressure: boiling point of water at atmospheric pressure:				000°C = 273°K = 032°F 100°C = 373°K = 212°F		
WEIGHT and FORCE	Technical	kilogram	kg	-	1 kg = 9,81 N	1 kg = 2,203 lb
	International	Newton	N	1 N = 0,102 kg	-	1 N = 0,22546 lb
	Imperial	pound	lb	1 IB = 0,454 kg	1 lb = 4,452 N	-
SPECIFIC WEIGHT	Technical	kilogram per decimetre cubed	kg/dm <sup>3</sup>	-	1 kg/dm <sup>3</sup> = 9,807 N/dm <sup>3</sup>	1 kg/dm <sup>3</sup> = 62,46 lb/cu.ft
	International	Newton per decimetre cubed	N/dm <sup>3</sup>	1 N/dm <sup>3</sup> = 0,102 kg/dm <sup>3</sup>	-	1 N/dm <sup>3</sup> = 6,36 lb/cu.ft
	Imperial	pound per cubic foot	lb/dm <sup>3</sup>	1 lb/cu.ft = 0,01600 kg/dm <sup>3</sup>	1 lb/cu.ft = 0,160 N/dm <sup>3</sup>	-
PRESSURE	Technical	atmospheres	kg/cm <sup>2</sup>	-	1 kg/cm <sup>2</sup> = 98,067 kPa 1 kg/cm <sup>2</sup> = 0,9807 bar	1 kg/cm <sup>2</sup> = 14,22 psi
	International	Pascal kiloPascal bar	Pa kPa bar	1 kPa = 0,0102 kg/cm <sup>2</sup> 1 bar = 1,02 kg/cm <sup>2</sup>	1 kPa = 1.000 Pa 1 bar = 100.000 Pa	1 kPa = 0,145 psi 1 bar = 14,50 psi
	Imperial	pounds per square inch	psi	1 psi = 0,0703 kg/cm <sup>2</sup>	1 psi = 0,06895 bar 1 psi = 6,894 kPa	-
FLOW	Technical	litres per minute litres per second metres cubed per hour	l/min l/s m <sup>3</sup> /h	1 l/min = 0,0167 l/s 1 l/s = 3,6 m <sup>3</sup> /h 1 m <sup>3</sup> /h = 16,667 l/min	1 l/s = 0,001 m <sup>3</sup> /s	1 l/min = 0,22 imp.g.p.m. 1 l/min = 0,264 US.g.p.m. 1 m <sup>3</sup> /h = 3,666 imp.g.p.m. 1 m <sup>3</sup> /h = 4,403 US.g.p.m.
	International	metres cubed per second	m <sup>3</sup> /s	1 m <sup>3</sup> /s = 1,000 l/s 1 m <sup>3</sup> /s = 3.600 m <sup>3</sup> /h	-	1 m <sup>3</sup> /s = 13,198 imp.g.p.m. 1 m <sup>3</sup> /s = 15,852 US.g.p.m.
	Imperial	imperial gallons per minute U.S. gallons per minute	Imp.g.p.m. US.g.p.m.	1 Imp.g.p.m. = 4,546 l/min 1 Imp.g.p.m. = 0,273 m <sup>3</sup> /h 1 US.g.p.m. = 3,785 l/min 1 US.g.p.m. = 0,227 m <sup>3</sup> /h	-	1 Imp.g.p.m. = 1,201 US.g.p.m. 1 US.g.p.m. = 0,833 Imp.g.p.m.
TORQUE	Technical	kilogram metre	kgm	-	1 kgm = 9,807 Nm	1 kgm = 7,233 ft.lb
	International	Newton metre	Nm	1 Nm = 0,102 kgm	-	1 Nm = 0,7376 ft.lb
	Imperial	foot pound	ft.lb	1 ft.lb = 0,138 kgm	1 ft.lb = 1,358 Nm	-
WORK and ENERGY	Technical	kilogram metre vapour-horsepower hour	kgm CVh		1 kgm = 9,807 J 1 CVh = 0,736 kWh	1 kgm = 7,233 ft.lb 1 Nm = 0,986 HP.hr.
	International	Joule kiloWatt hour	J kWh	1 J = 0,102 kgm 1 kWh = 1,36 CVh	-	1 Nm = 0,7376 ft.lb 1 Nm = 0,7376 ft.lb
	Imperial	foot pound Horsepower hour	ft.lb HP.hr.	1 ft.lb = 0,138 kgm 1 HP.hr. = 1,014 CVh	1 ft.lb = 0,358 Nm 1 HP.hr. = 0,746 kWh	-
POWER	Technical	Horse power	HP	1 HP = 0,736 kW	1 HP = 736 W	-
	International	Watt kiloWatt	W kW	1 W = 0,00136 Hp 1 kW = 1,36 Hp	1 kW = 1.000 W	-
KINETIC VISCOSITY	Technical	stokes centistokes	1 St 1 cSt	1 St = 1 cm <sup>2</sup> /s 1 cSt = 0,01 St	1 St = 0.0001 m <sup>2</sup> /s	1 St = 0.00107 ft <sup>2</sup> /s
	International	m <sup>2</sup> /s	m <sup>2</sup> /s	1 m <sup>2</sup> /s = 10.000 St	1 m <sup>2</sup> /s = 10.000 cm <sup>2</sup> /s	1 m <sup>2</sup> /s = 10,764 ft <sup>2</sup> /s
	Imperial	square foot per second	ft <sup>2</sup> /s	1 ft <sup>2</sup> /s = 929 St	1 ft <sup>2</sup> /s = 0.0929 m <sup>2</sup> /s	-

# TECHNICAL APPENDIX

## WASTE WATER REGULATIONS

### UNI EN 12050-1

#### PRINCIPLES FOR THE CONSTRUCTION AND TESTING OF LIFTING SYSTEMS FOR WASTE WATER CONTAINING FAECAL MATTER

##### CONTENTS

The standard applies to lifting systems for waste water containing faecal matter, which may also be used for the treatment of waste water not containing faecal matter, for the draining of parts of buildings and sites below the high water mark, to avoid backflow of waste water in the building. This European standard contains some general requirements, basic principles for constructions and testing, as well as information on materials and the assessment of conformity.

##### GENERAL PRINCIPLES

Faecal matter lifting systems must be capable of pumping waste water in accordance with the requirements of EN 12056-1, including all the solid matter normally contained in domestic waste water. They must be designed in a way that avoids the accumulation of solid matter.

The regulations require that the free passage in the lifting system for faecal matter, at any point between the point of entry of the faecal matter in the system, and the pumping device, must be 40 mm minimum.

In addition, the tank&piping system and the pump must guarantee a flow speed inside the discharge conduit of at least 0,7 m/s at the point of service.

With the exception of the inlet, outlet, and ventilation ports, the collection tanks must be sealed, to prevent water and smell from escaping. The inside of the collection tank of a lifting system for faecal matter can be considered as an zone containing potentially explosive gases. In this sense, the tank and other mechanical connectors are not subjected to any special requirements, provided that the necessary measures are implemented, to avoid explosions inside the tank.

##### TESTS

The regulations require a specific configuration for testing the actual pumping of solid matter. The test simulate the passage of solid matter, ascertaining the transfer of 40 cm x 25 cm floor cloths. A total of 6 of them is inserted at regular interval in the pumping system. The test is passed if the lifting capabilities are not compromised, and all the floor cloths are pumped by the end of the test.

Seal and smell tests are also required for the tanks: the system and the discharge conduit are subjected to 0.5 bar pressure and their seal is checked for 10 minutes. The test is passed when no leaks are detected.

##### CONSTRUCTION PRINCIPLES

Faecal matter lifting systems must be capable of pumping waste water in accordance with the requirements of EN 12056-1, including all the solid matter normally contained in domestic waste water. They must be designed in a way that avoids the accumulation of solid matter.

The size of the input, discharge, and ventilation connections must make it possible to use standard size piping. Connectors must be flexible and capable of withstanding the maximum delivery pressure of the pump without leaks.

The connector of the ventilation piping must have a minimum nominal diameter of at least DN 50.

The free passage in the lifting system for faecal matter, at any point between the point of entry of the faecal matter in the system, and the pumping device, must be 40 mm minimum.

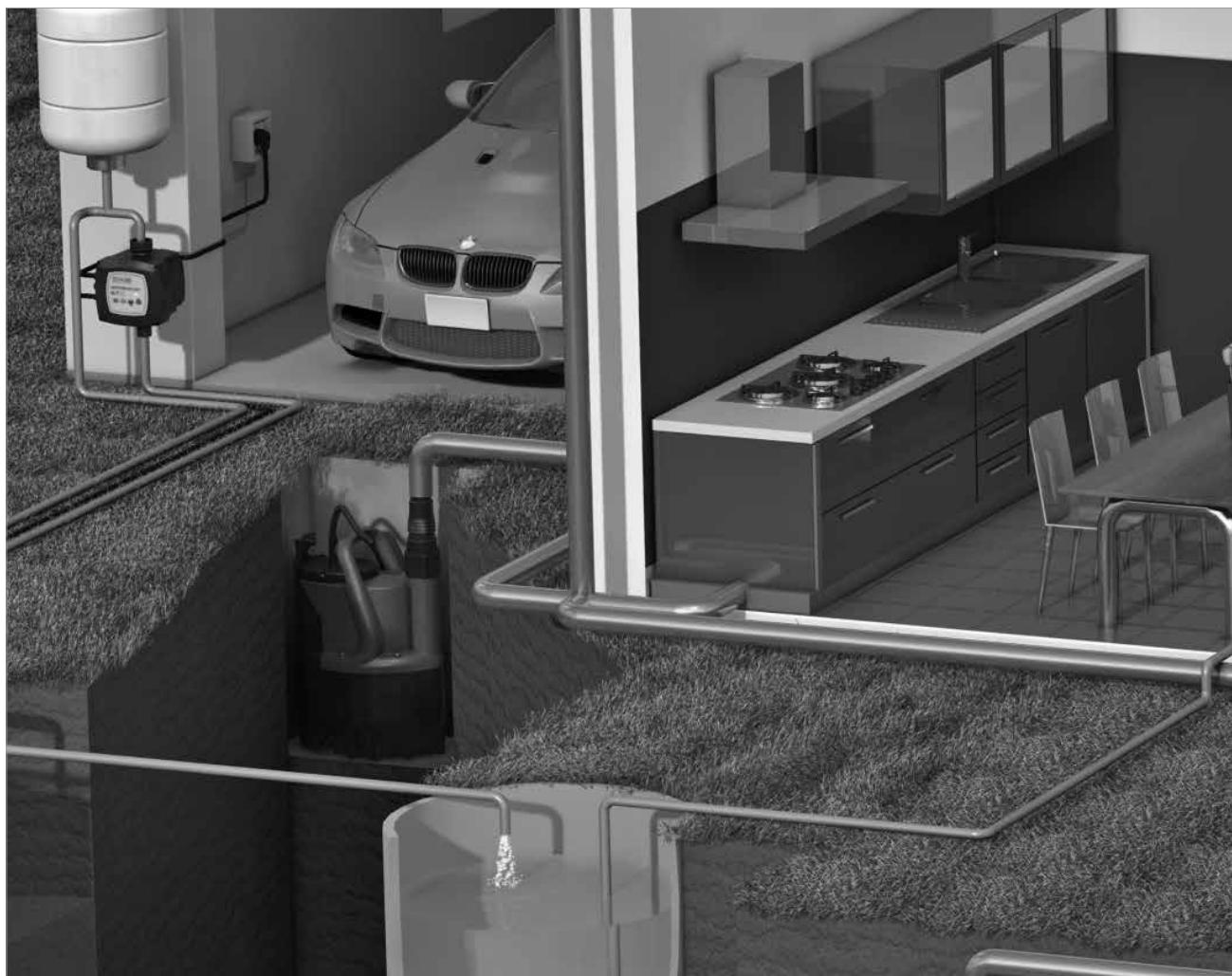
Discharge connectors of faecal matters lifting points without maceration must have a minimum diameter of at least DN 80. The free passage of the check valve must be 60 mm minimum. When required, the discharge connection must be at least DN 50, and the free passage of the check valve must be at least 50 mm.

The discharge connections, the discharge piping, and the check valves for faecal matter lifting systems with maceration must have a minimum diameter of at least DN 32.

Faecal matter lifting systems must include fastening devices to avoid rotation or floating.

# TECHNICAL APPENDIX

## INSTALLATION DIAGRAMS - SUBMERSIBLE PUMPS



### APPLICATIONS

Draining of water from basements and garages  
Rain water collection wells  
Draining wells  
Lifting of water from tanks or rivers  
Other applications  
NOVA: ideal for pumping dirty water without fibres  
FEKA: ideal from pumping sewage water from cesspools

### FEATURES

Operating range: from 1 a 16 m<sup>3</sup> with head of up to 10.2 metres.  
Water temperature between 0°C and 35°C  
Free passage for particles from 5 mm to 25 mm  
Maximum immersion depth: 7 m  
Light and easy to transport

### IMPORTANT INFORMATION:

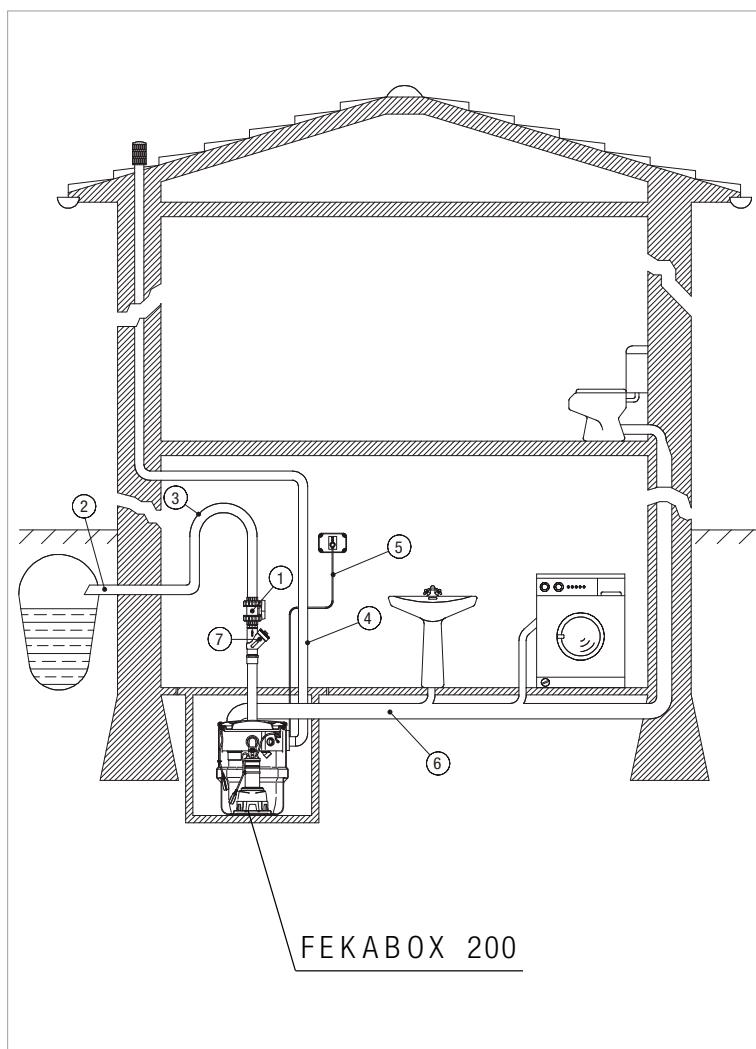
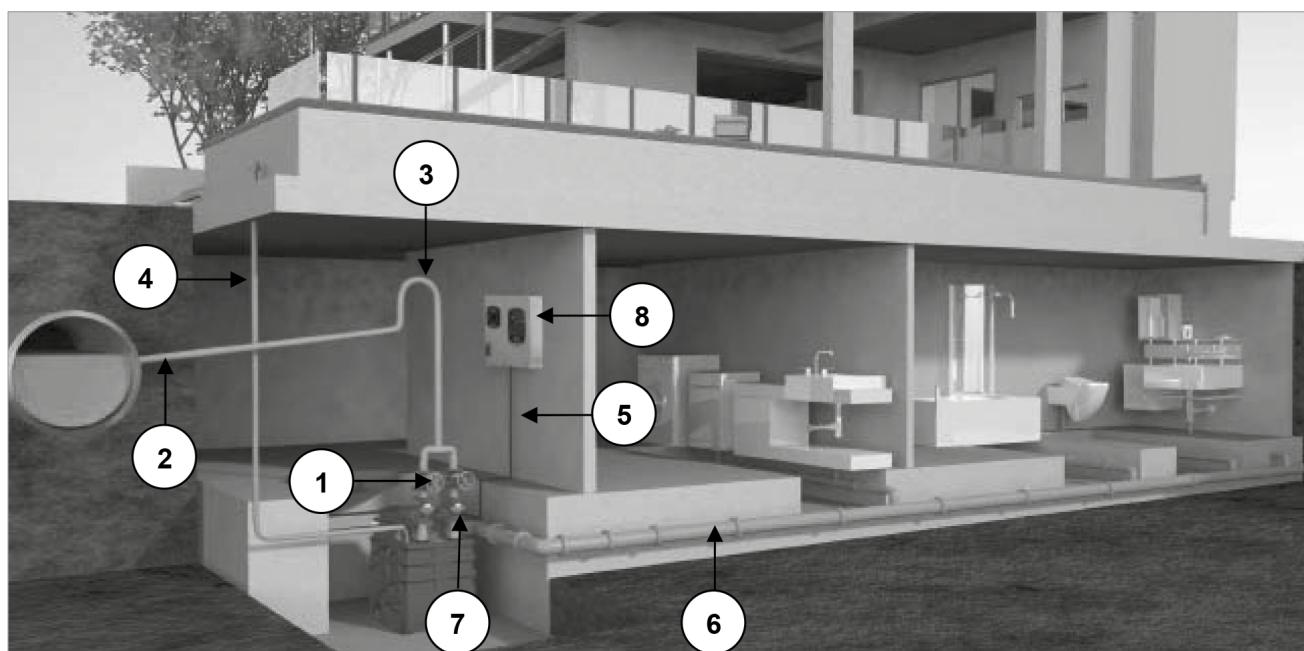
Install a support to ensure that the pump is not resting at the bottom  
Do not install pipes of a smaller diameter than the delivery of the pump  
Always install in the vertical position  
For models with float, to ensure automatic operation, make sure that the arm or the float can move freely, without being impaired by the installation.  
Do not connect the electric power input if there are people in contact with the water in the tank where the pump is installed.  
Submerge the pump completely to avoid motor overheating  
Make sure that there are no air pockets in the pump.

# TECHNICAL APPENDIX

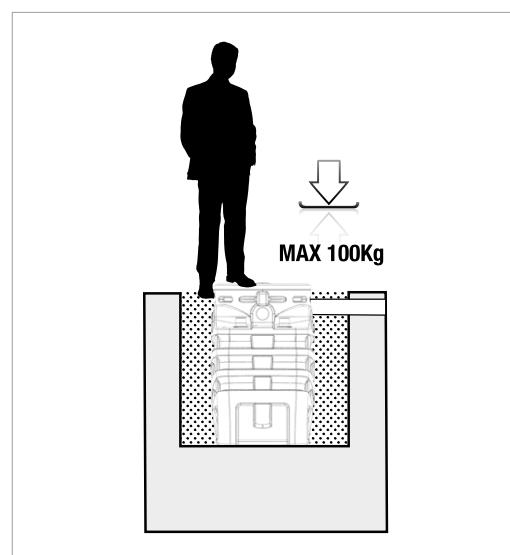
## AUTOMATIC LIFTING STATIONS

### EXAMPLES OF INSTALLATION

Installation can be both above and under ground, when the overcoming of soil barriers is required for connection to the sewage network, including any that might be far. FEKAFOS may be installed in cellars, garages, underground wells.



REFERENCE	DESCRIPTION
1	Ball check valve
2	Delivery
3	Siphon
4	Ventilation
5	Power input cable
6	Collection
7	Non-return valve
8	E-BOX control panel (FEKAFOS models only)



Outdoor installation without supporting structure, buried, with sand.  
It can be walked on.

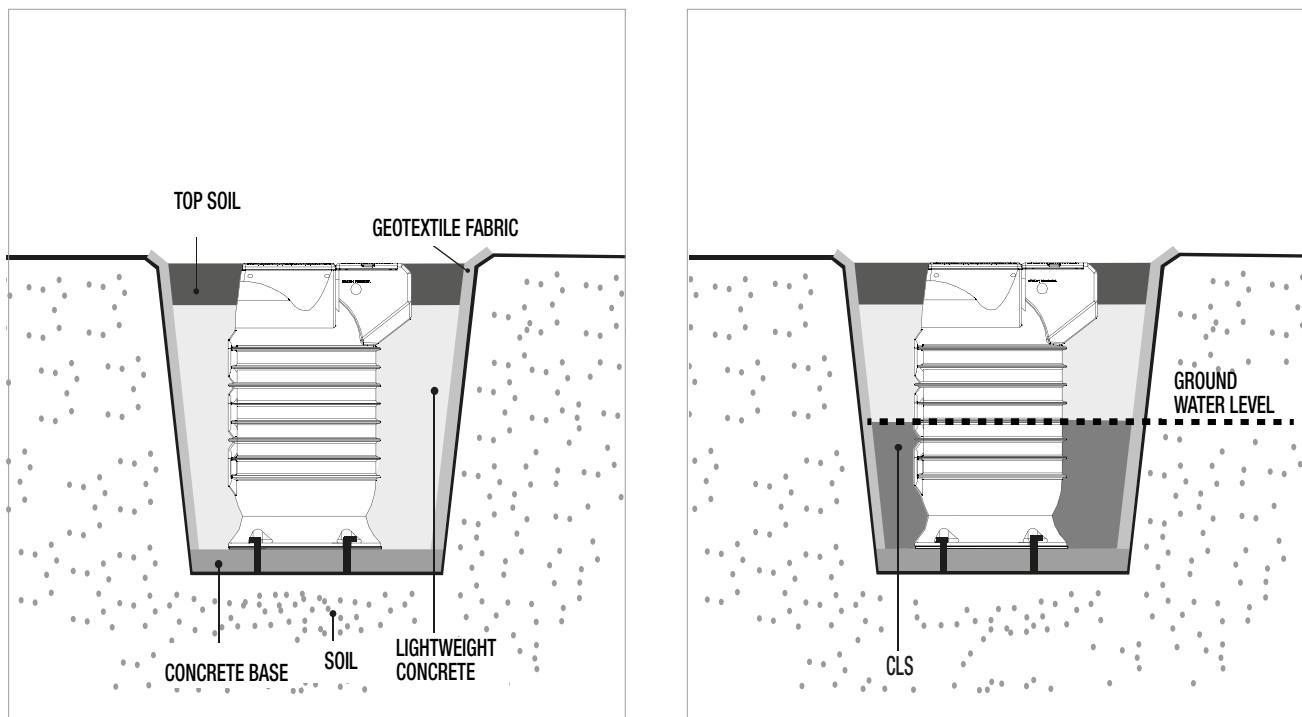
### FEKAPOS MAXI 1200-3600 PUMPING STATION POSITIONING

Underground on the outside of a building, make a reinforced concrete support platform of adequate strength, calculated by a qualified technician. Position the tank on top of the reinforced concrete support platform and make holes in it in correspondence with the appropriate hooking seats made on the base of the product. Then insert pressure screws into the holes made and hook the tank.

In order to avoid abnormal deformations on the tanks and on the inspection towers during the backfill, always keep the water level inside the tank higher than the level of backfill. Proceed forming layers of 15/20 cm, filling the water tank first and then backfilling with light concrete, as indicated in the drawing.

Finally, cover the product with a layer of washed round gravel and sand until it is completely covered.

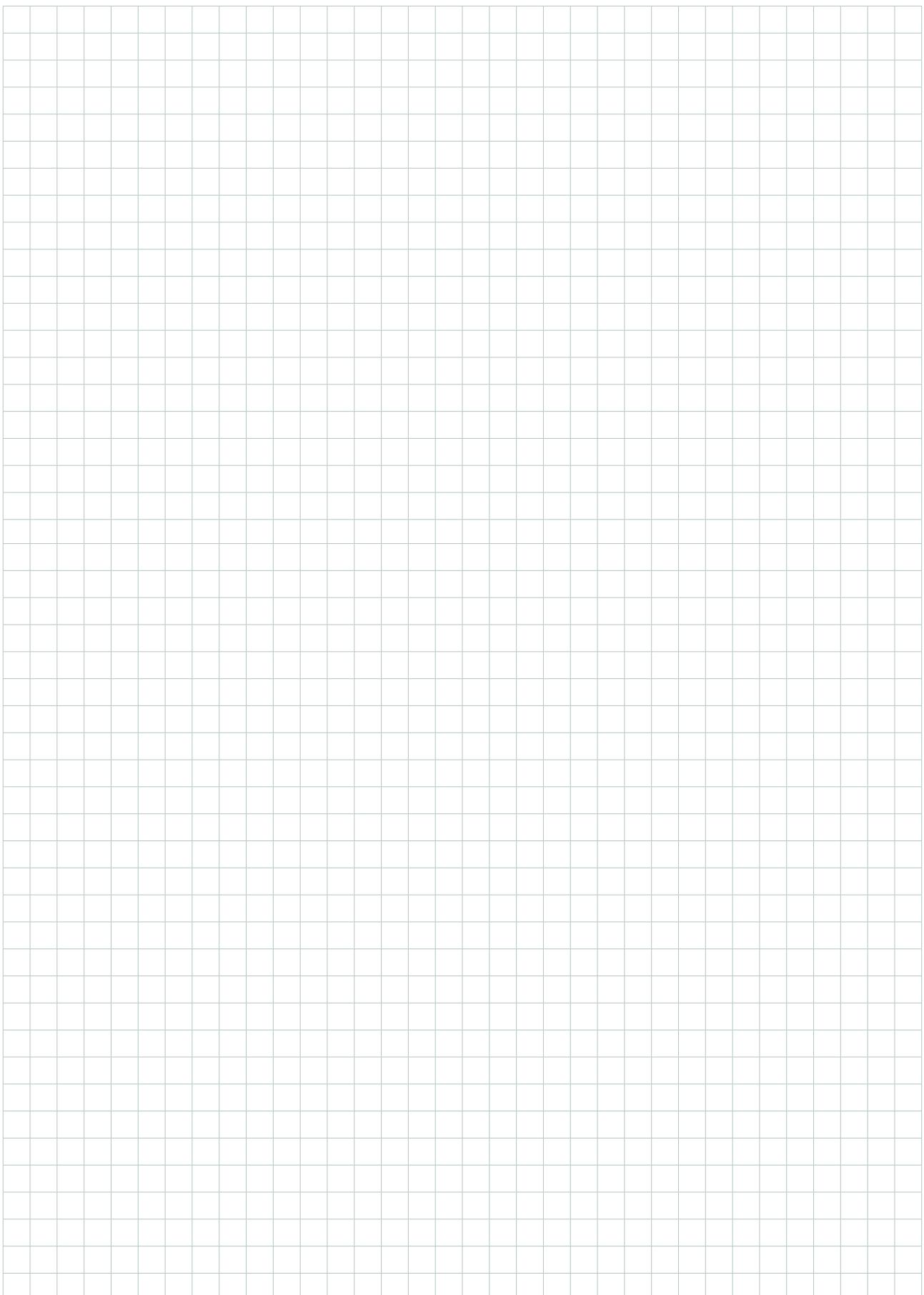
In the event of groundwater, having made the reinforced concrete slab, fill the tank with water until reaching the groundwater level, externally backfilling it for the same thickness with concrete.



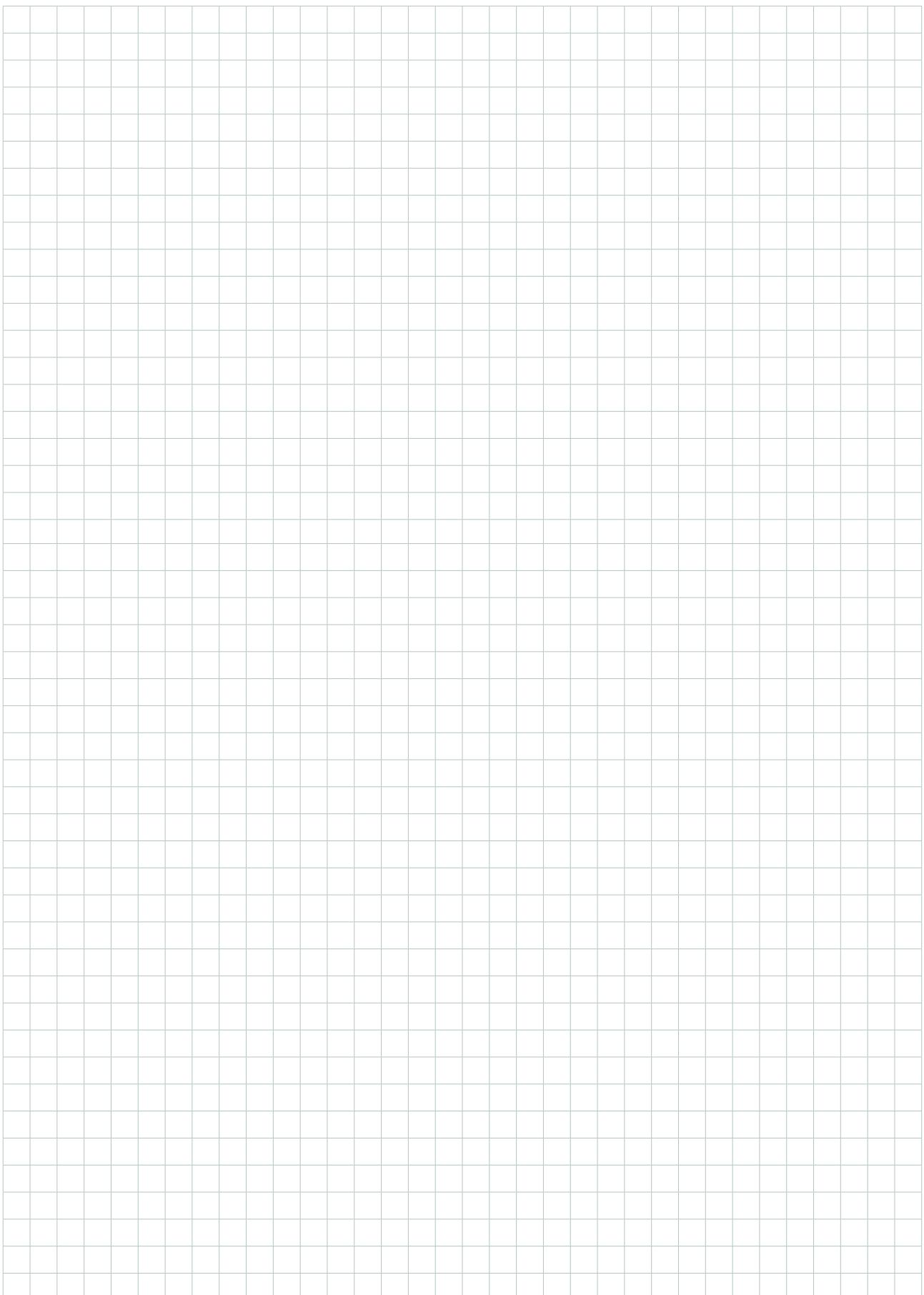
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## NOTE

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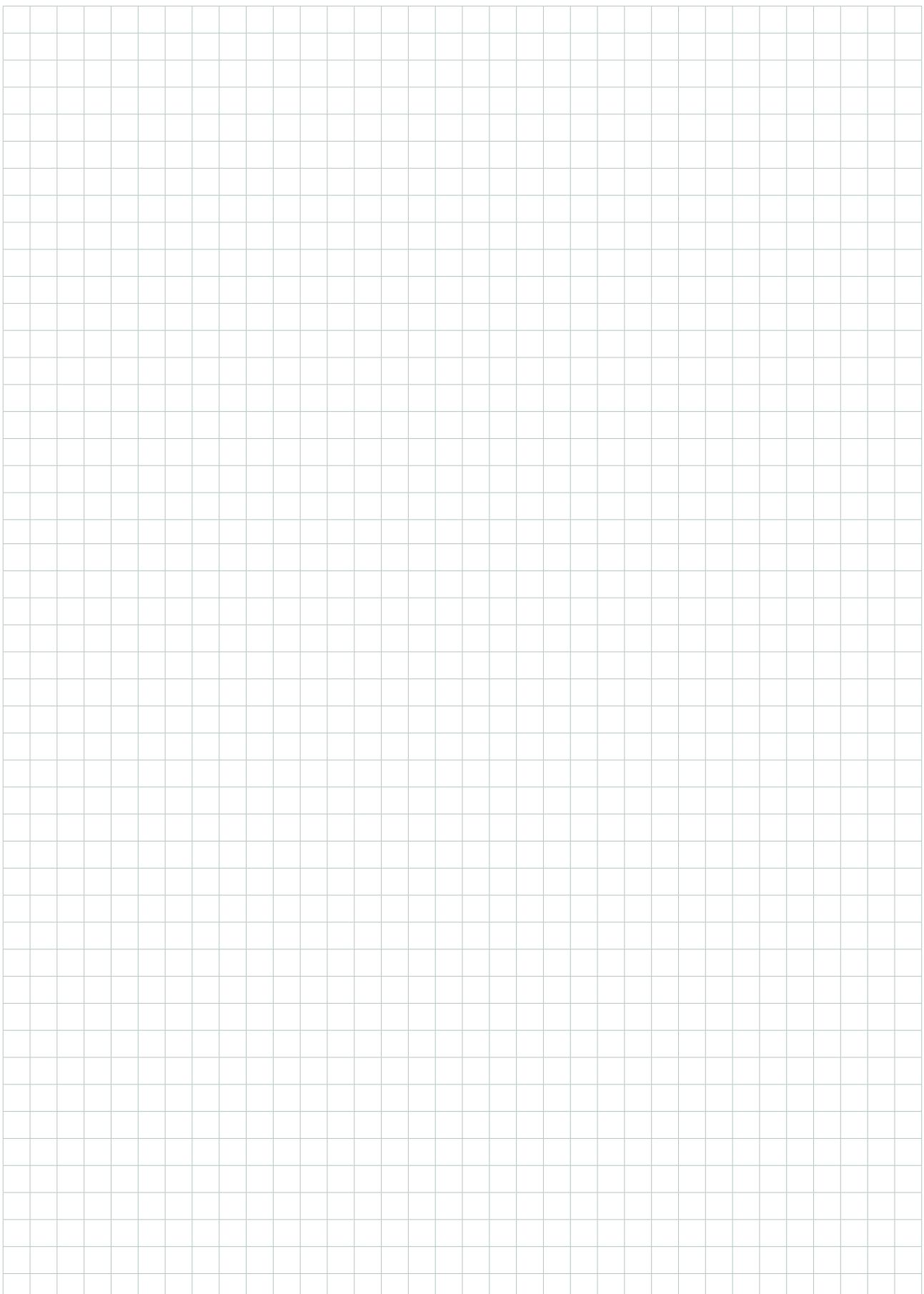
## NOTE



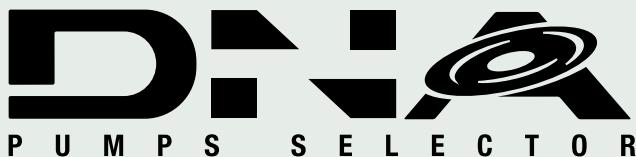
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## NOTE

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# On-line product selection



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