

EBARA

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SUBMERSIBLE SEWAGE PUMPS

DW-DW VOX

SPECIFICATIONS

50 Hz

PUMP		
Liquid Handled	Type of liquid	Dirty water, sewage water
	Max temperature [°C]	40
	Max solids size [mm]	50 spherical
Maximum immersion	[m]	10
Construction	Impeller	Single channel (DW) Vortex (DW VOX)
	Shaft seal type	Double mechanical seal
	Bearing	Sealed ball bearing
Pipe Connection	Suction-Flange [mm]	50 Open
	Discharge-Flange	DW - G 2 UNI ISO 228 DWF - Flange DN 50
Material	Casing	AISI 304
	Impeller	AISI 304
	Casing cover	AISI 304
	Shaft seal	Pump side : SiC/SiC/NBR Motor side : Carbon/Ceramic/NBR
	Seal cover	AISI 304
	Shaft	AISI 303 (wet extension)
	Lubricating liquid	White mineral oil: Esso Marcol 172 (385 cc)
Applicable standard of test		ISO 9906 – Annex A

MOTOR			
Type	Submersible dry type		
	Single Phase	Three Phase	
No. of Poles	2		
Rotation speed [min ⁻¹]	≈2800		
Insulation Class	F		
Protection degree	IP X8		
Power rating	[kW]	0.55 ÷ 1.1	
	[HP]	0.75 ÷ 1.5	
Frequency [Hz]	50		
Voltage [V]	230 ±10%	400 ±10%	
Capacitor	Built in	-	
Over load protection	Built in	Provided by the user	
Float switch	Optional	-	
Float switch cable	material	H07RN-F	
	size	3G1	
Casing material	AISI 304		
Base material/motor support	AISI 304		
Power cable	length [m]	10	
	material	H07RN-F	
	size	3G1 (up to 0.55 kW) 3G1.5 (from 0.75 to 1.1 kW)	4G1.5 + 2x0.5
Dimensions of cable entry		Cable Gland	

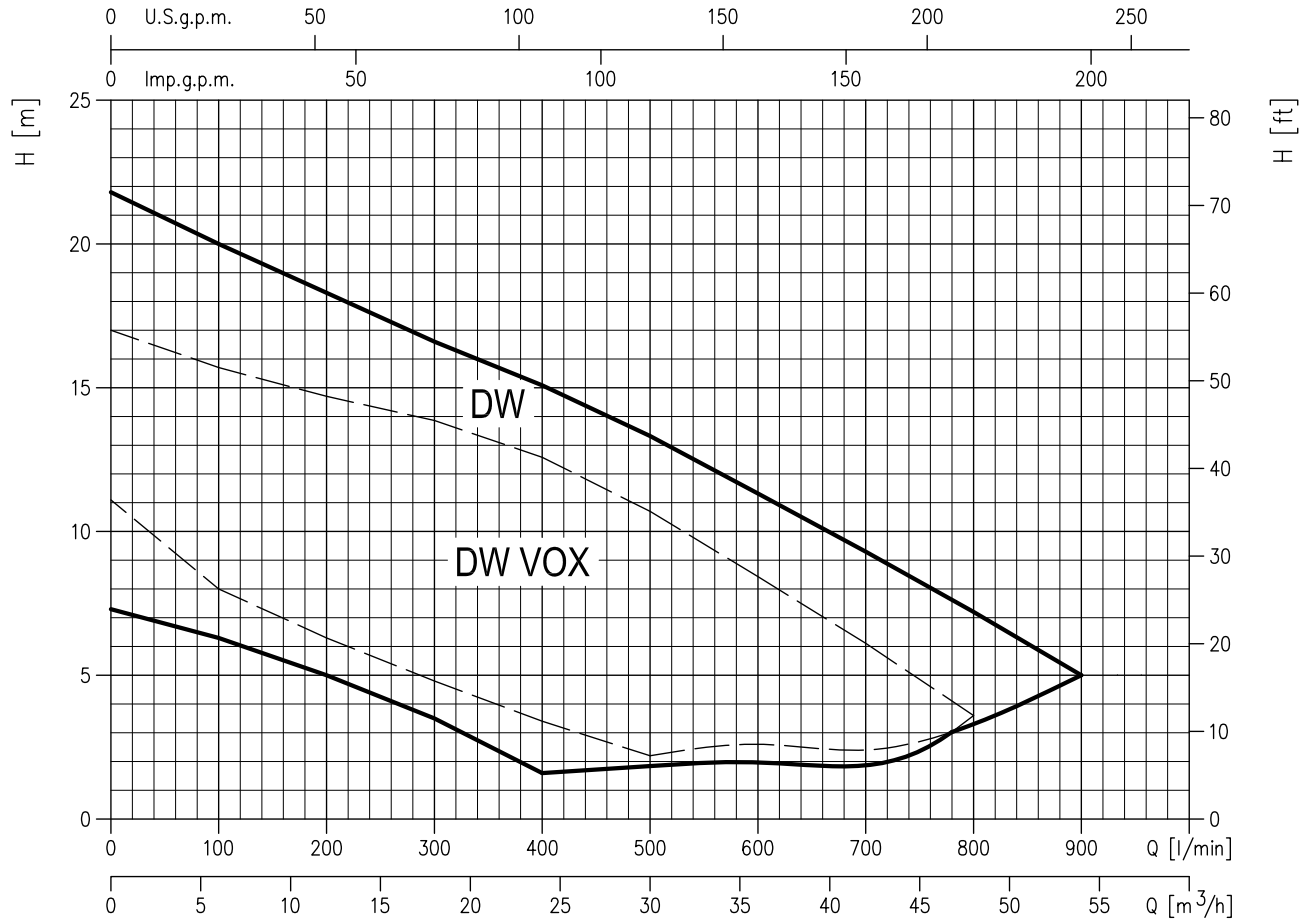
200

SUBMERSIBLE SEWAGE PUMPS

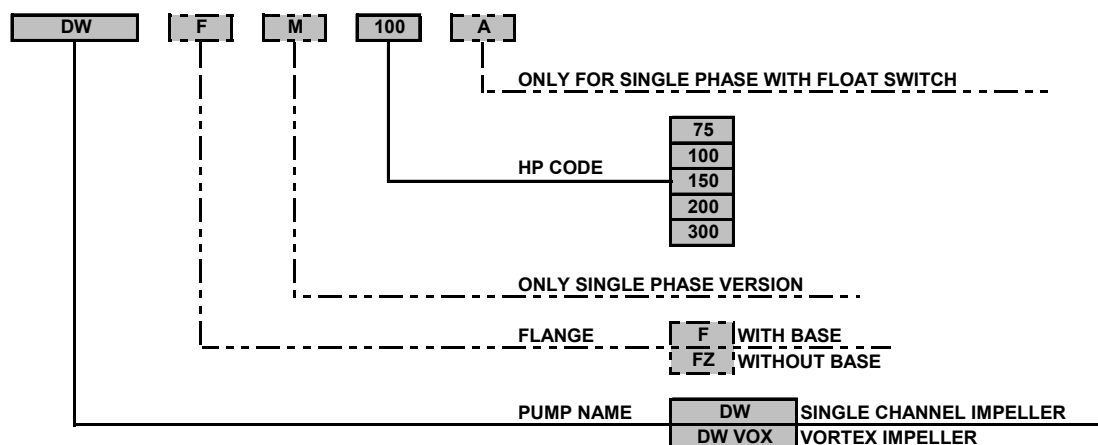
DW-DW VOX

SELECTION CHART

50 Hz



Pump type	kW	HP	Q=Capacity										
			[l/min]	0	100	200	300	400	500	600	700	800	900
			[m³/h]	0	6	12	18	24	30	36	42	48	54
H=Total manometric head in meters													
DW 75	0.55	0.75	11.1	8.0	6.3	4.8	3.4	2.2	-	-	-	-	
DW 100	0.75	1	13.3	10.6	8.7	7.1	5.5	4.0	2.6	-	-	-	
DW 150	1.1	1.5	15.0	13.1	11.3	9.5	7.7	5.9	4.2	2.4	-	-	
DW 200	1.5	2	18.2	16.6	15.0	13.3	11.4	9.5	7.5	5.4	3.3	-	
DW 300	2.2	3	21.8	20.0	18.3	16.6	15.1	13.3	11.3	9.3	7.2	5.0	
DW VOX 75	0.55	0.75	7.3	6.3	5.0	3.5	1.6	-	-	-	-	-	
DW VOX 100	0.75	1	9.0	7.9	6.7	5.3	3.7	1.9	-	-	-	-	
DW VOX 150	1.1	1.5	11.4	10.2	9.0	7.6	6.1	4.1	2.1	-	-	-	
DW VOX 200	1.5	2	13.8	12.5	11.2	9.8	8.3	6.4	4.2	1.6	-	-	
DW VOX 300	2.2	3	17.0	15.7	14.7	13.9	12.6	10.7	8.4	6.1	3.6	-	



Curve specifications

The specifications below qualify the curves shown on the following pages.

Tolerances according to ISO 9906 Annex A

The curves refer to effective speed of asynchronous motors at 50 Hz

Measurements were carried out with clean water at 20°C of temperature and with a kinematic viscosity of $\nu = 1 \text{ mm}^2/\text{s}$ (1 cSt)

In order to avoid the risk of over-heating, the pumps should not be used at a flow rate below 10% of best efficiency point.

Symbols explanation:

Q = volume flow rate

H = total head

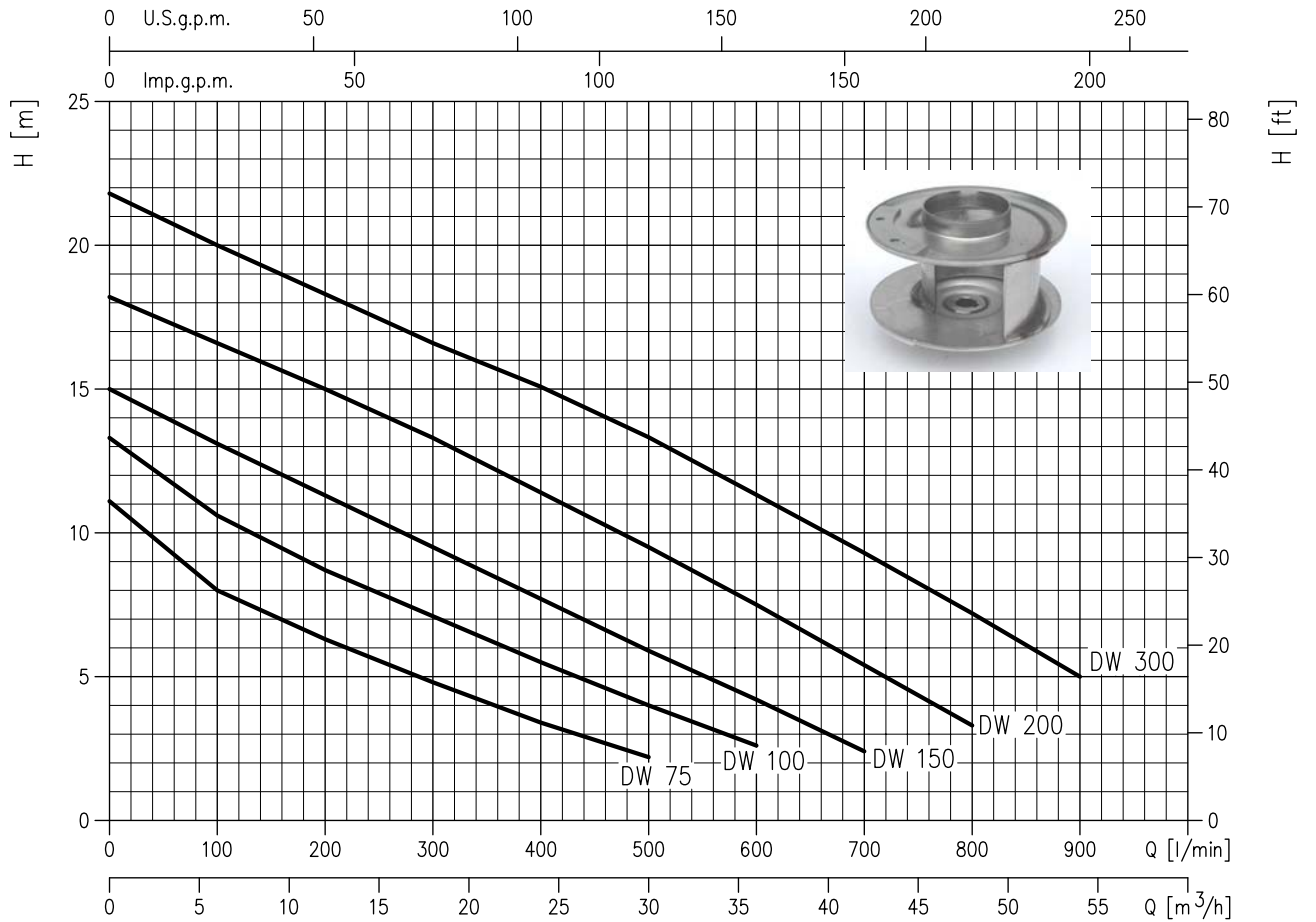
SUBMERSIBLE SEWAGE PUMPS

DW-DW VOX

DW PERFORMANCHE CHART

50 Hz

- DW 75 (0.55 kW) - Impeller diameter = 92**
- DW 100 (0.75 kW) - Impeller diameter = 99**
- DW 150 (1.1 kW) - Impeller diameter = 106**
- DW 200 (1.5 kW) - Impeller diameter = 114**
- DW 300 (2.2 kW) - Impeller diameter = 125**



Rotation speed: $\approx 2800 \text{ min}^{-1}$
 Test standard: ISO 9906 – Annex A

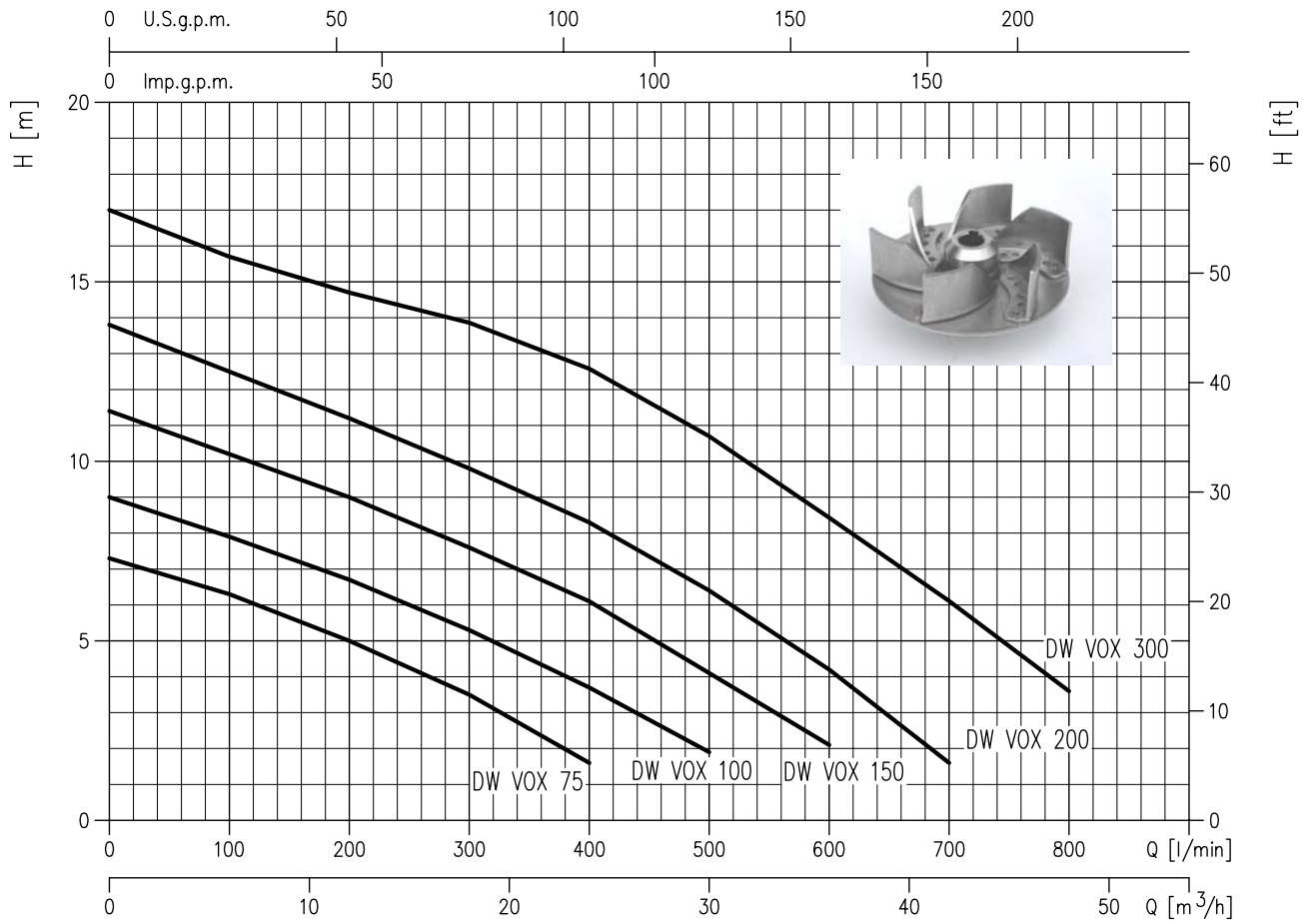
SUBMERSIBLE SEWAGE PUMPS

DW-DW VOX

DW VOX PERFORMANCE CHART

50 Hz

- DW VOX 75 (0.55 kW) - Impeller diameter = 88
- DW VOX 100 (0.75 kW) - Impeller diameter = 88
- DW VOX 150 (1.1 kW) - Impeller diameter = 95
- DW VOX 200 (1.5 kW) - Impeller diameter = 103
- DW VOX 300 (2.2 kW) - Impeller diameter = 116.5



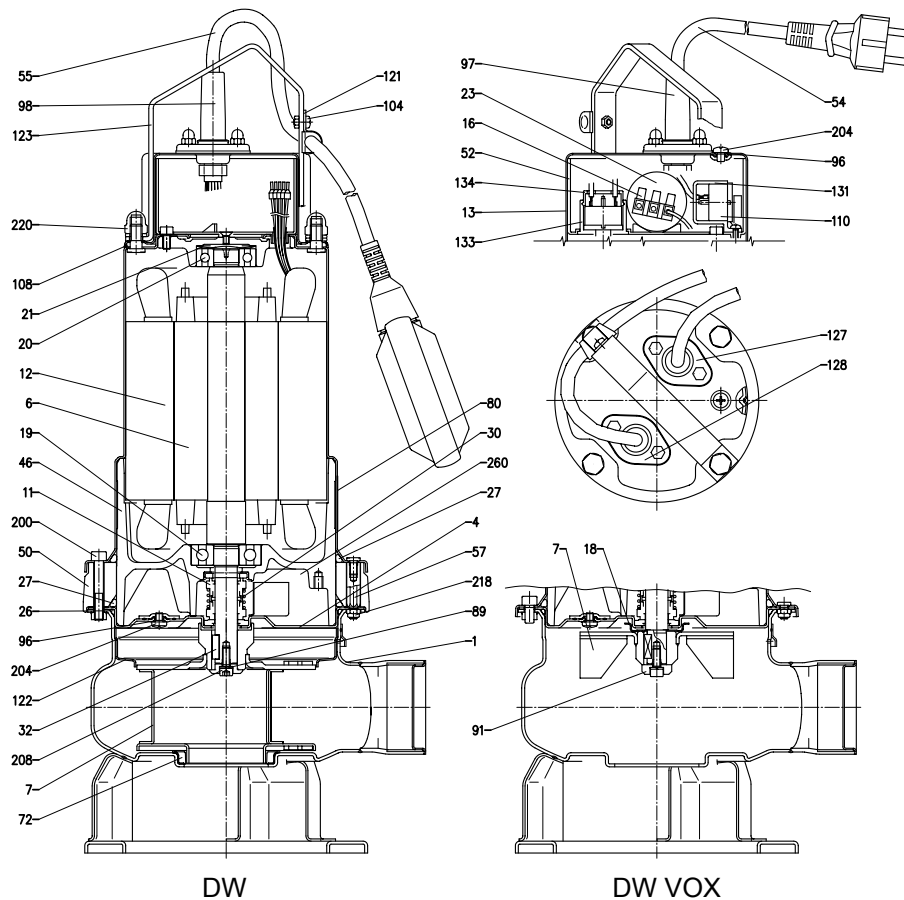
Rotation speed: $\approx 2800 \text{ min}^{-1}$
 Test standard: ISO 9906 – Annex A

SUBMERSIBLE SEWAGE PUMPS

DW-DW VOX

SECTIONAL VIEW

50 Hz



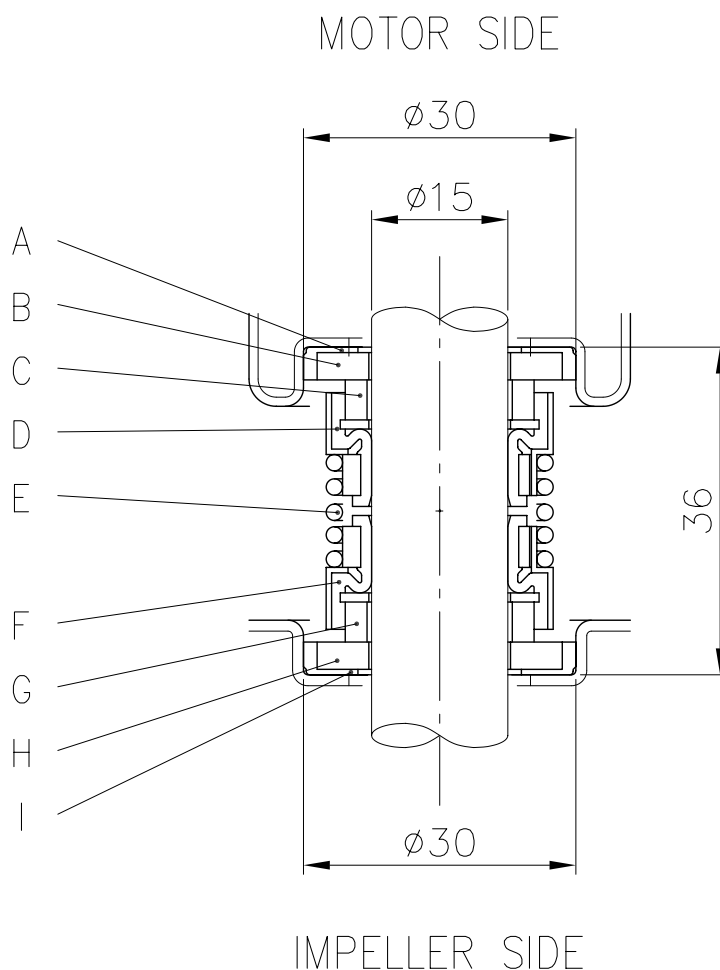
N°	PART NAME	MATERIAL	Q.TY	N°	PART NAME	MATERIAL	Q.TY
1	Casing	AISI 304	1	57	Spacer [3]	AISI 304	4
4	Casing cover	AISI 304	1	72	Casing ring [5]	NBR	1
6	Shaft with rotor	AISI 303	1	89	Washer	AISI 304	1
7	Impeller	AISI 304	1	91	Washer [1]	AISI 304	1
11	Mechanical seal	SiC/SiC/NBR	1	96	O ring	NBR	3
11	Mechanical seal	Carbon/Ceramic/NBR	1	97	Power cable entry	NBR	1
12	Motor frame with stator	-	1	98	Floating sw cable entry [4]	NBR	1
13	Motor cover	AISI 304	1	104	Cable guard [4]	NBR	1
16	Terminal	-	1	108	Cover gasket	NBR	1
18	Mechanical seal protection [1]	AISI 304	1	110	Protector [2]	-	2
19	Lower side ball bearing	-	1	121	Support for float switch [4]	AISI 304	1
20	Upper side ball bearing	-	1	122	Impeller protection ring [6]	AISI 304	1
21	Adjusting ring	Steel C70	1	123	Handle	AISI 304	1
23	Capacitor [2]	-	1	127	Power cable connector	AISI 304	1
26	O ring	NBR	1	128	Floating sw. cable connector [4]	AISI 304	1
27	O ring	NBR	1	131	Support for protector [7]	PA66 glass fibre reinforced	1
27	O ring [3]	NBR	1	133	Support for probe [7]	Aluminium	1
30	Mechanical seal spacer	Brass	1	134	Cover for support probe [7]	PA6	1
32	Key	AISI 304	1	200	Screw	Stainless steel A2 UNI 7323	6
46	Bearing housing	G20	1	204	Screw	Stainless steel A2 UNI 7323	3
50	Spacer [3]	G20	1	208	Screw	Stainless steel A2 UNI 7323	1
52	Terminal insulating box	PA66 glass fibre reinforced	1	218	Nut	Stainless steel A2 UNI 7323	4
54	Power cable	-	1	220	Nut	Stainless steel A2 UNI 7323	4
55	Float switch [4]	-	1	260	Lubricating liquid	White mineral oil	385 cc

- [1] Except for DW-DW VOX 300
 [2] Only for single phase
 [3] Only for DW-DW VOX 300
 [4] Only for single phase with float switch

- [5] Only for DW
 [6] Except for DW VOX 150, 200 and 300
 [7] Only for single phase DW 150

300

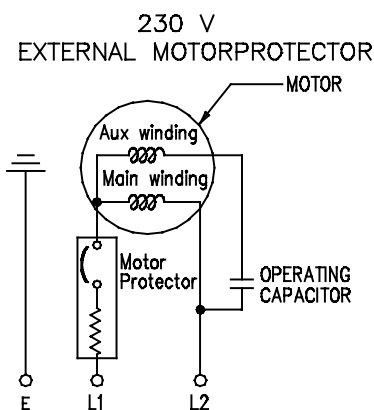
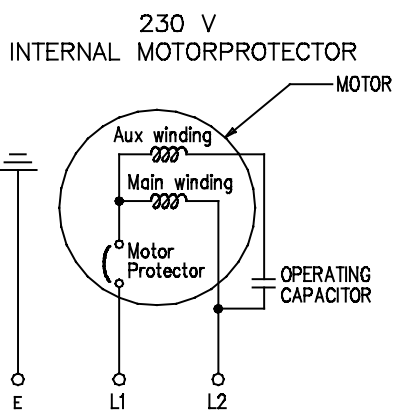
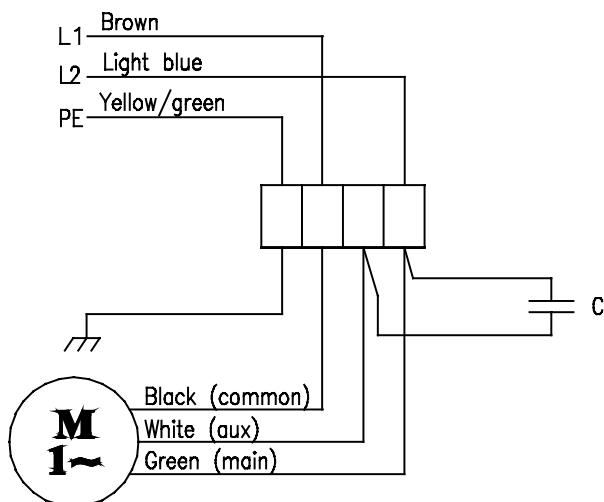
MECHANICAL SEAL



REF	PART NAME	MATERIAL
A	Rubber cup	NBR
B	Seat	Ceramic
C	Seal face	Carbon
D	Bellow	NBR
E	Spring	AISI 304
F	Bellow	NBR
G	Seal face	Silicon carbide
H	Seat	Silicon carbide
I	Rubber cup	NBR

DIAGRAM AND ELECTRIC CONNECTIONS

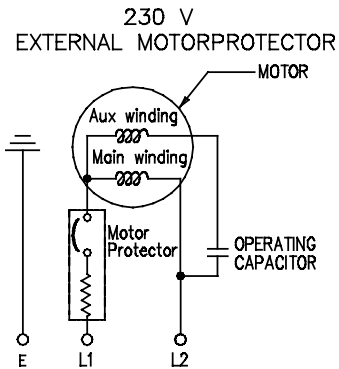
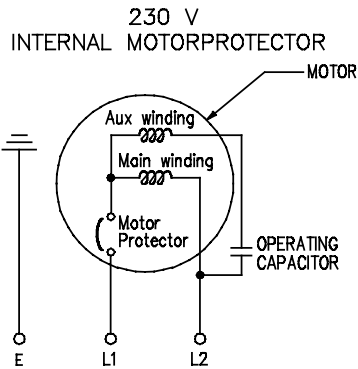
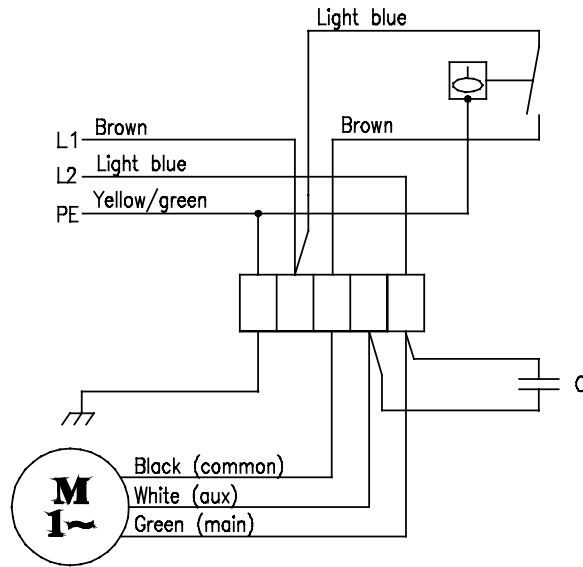
SINGLE PHASE MOTOR
WITHOUT FLOAT SWICH



Pump type	MOTOPROTECTOR	
	INTERNAL	EXTERNAL
75 M	X	
100 M	X	
150 M		X

DIAGRAM AND ELECTRIC CONNECTIONS

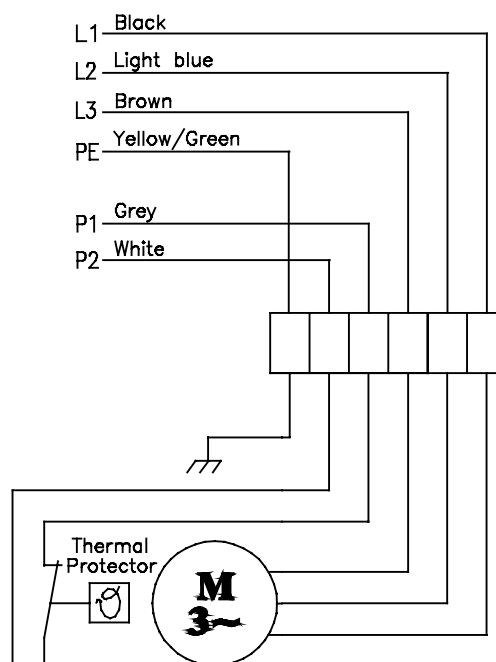
SINGLE PHASE MOTOR
WITH FLOAT SWITCH



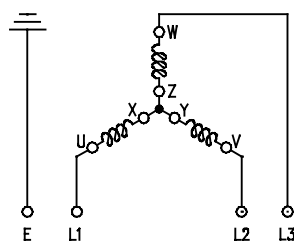
Pump type	MOTOPROTECTOR	
	INTERNAL	EXTERNAL
75 MA	X	
100 MA	X	
150 MA		X

DIAGRAM AND ELECTRIC CONNECTIONS

THREE PHASE MOTOR



400 V
STAR CONNECTION

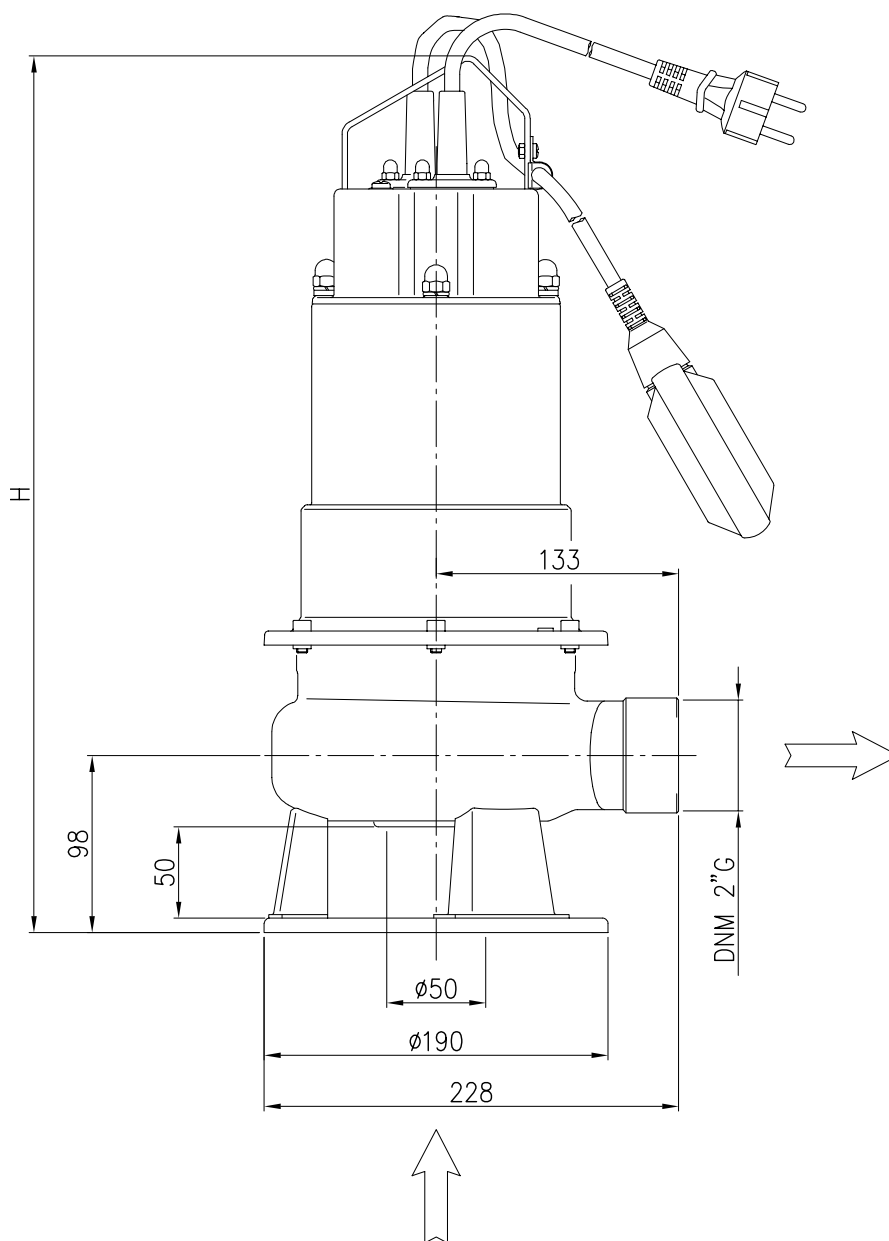


SUBMERSIBLE SEWAGE PUMPS

DW-DW VOX

DW DIMENSION

50 Hz



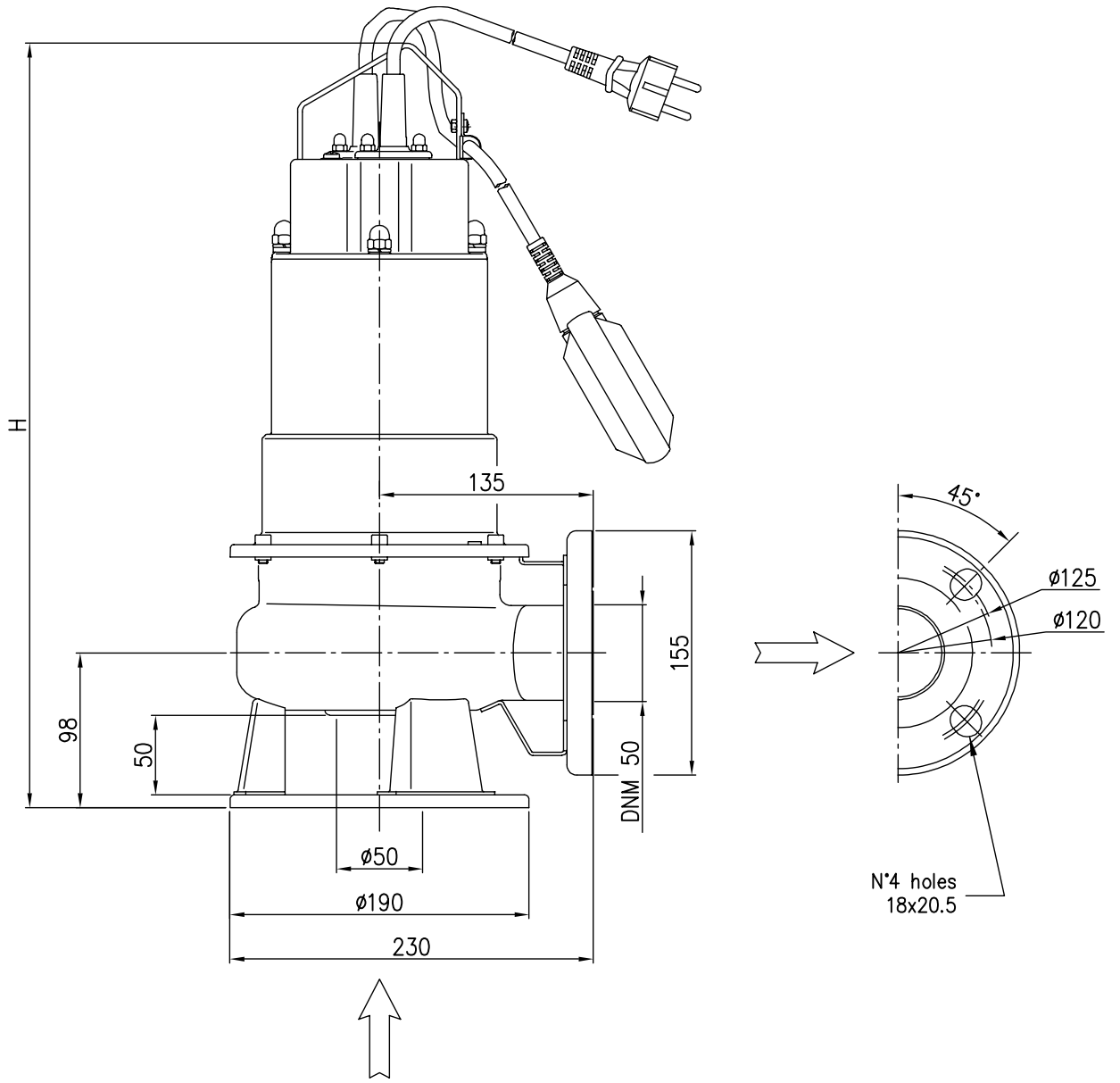
Pump type	H [mm]	
	1~	3~
DW 75	485	485
DW 100	515	485
DW 150	515	515
DW 200	-	515
DW 300	-	545

SUBMERSIBLE SEWAGE PUMPS

DW-DW VOX

DWF DIMENSIONS

50 Hz



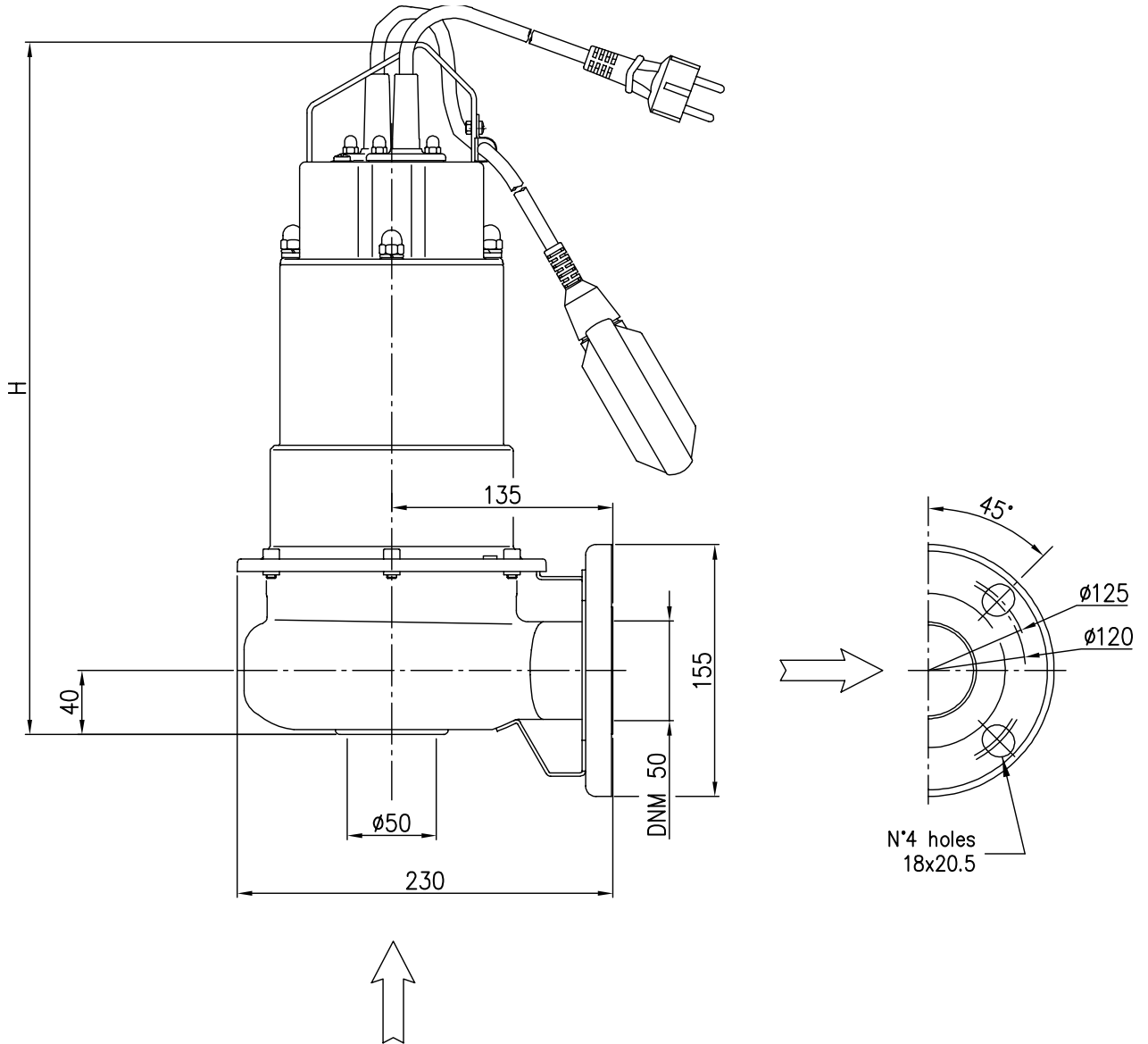
Pump type	H [mm]	
	1~	3~
DWF 75	485	485
DWF 100	515	485
DWF 150	515	515
DWF 200	-	515
DWF 300	-	545

SUBMERSIBLE SEWAGE PUMPS

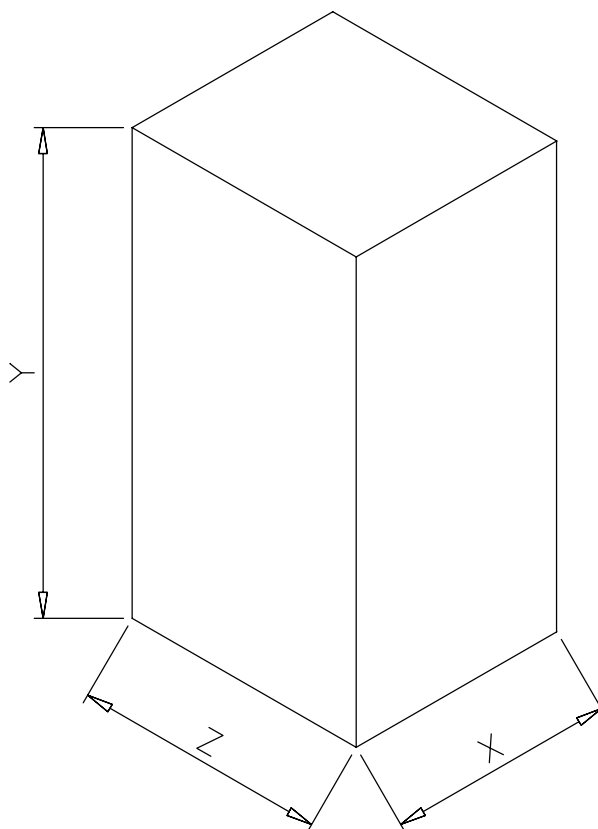
DW-DW VOX

DWFZ DIMENSIONS

50 Hz



Pump type	H [mm]	
	1~	3~
DWFZ 75	427	427
DWFZ 100	457	427
DWFZ 150	457	457
DWFZ 200	-	457
DWFZ 300	-	487



Type pumps	PACKING [mm]			WEIGHT [kg]	
	Z	X	Y	1~	3~
DW	290	260	550	75	14.5
DW VOX				100	16
DWF				150	18
DWF VOX				200	20
				300	-
DWFZ	290	260	550	75	14
DWFZ VOX				100	15.5
				150	17.5
				200	19.5
				300	-

SUBMERSIBLE SEWAGE PUMPS

DW-DW VOX

TECHNICAL DATA

50 Hz

DW											
Type pumps		Power		Capacitor		Input Power		Full load current		Locked rotor current	
Single Phase	Three Phase	[kW]	[HP]	Single Phase		[kW]		[A]		[A]	
230 V 50 Hz	400 V 50 Hz			[μF]	Vc [V]	Single Phase	Three Phase	Single Phase	Three Phase	Single Phase	Three Phase
75 M	75	0.55	0.75	20	450	0.9	0.85	3.9	1.5	17	8.5
100 M	100	0.75	1	25	450	1.28	1.19	5.9	2.1	26	14.2
150 M	150	1.1	1.5	31.5	450	1.57	1.55	7.3	2.8	35	24.2
-	200	1.5	2	-	-	-	2.08	-	3.6	-	30
-	300	2.2	3	-	-	-	2.9	-	5.0	-	45

DW VOX											
Type pumps		Power		Capacitor		Input Power		Full load current		Locked rotor current	
Single Phase	Three Phase	[kW]	[HP]	Single Phase		[kW]		[A]		[A]	
230 V 50 Hz	400 V 50 Hz			[μF]	Vc [V]	Single Phase	Three Phase	Single Phase	Three Phase	Single Phase	Three Phase
75 M	75	0.55	0.75	20	450	0.88	0.80	3.9	1.4	17	8.5
100 M	100	0.75	1	25	450	1.25	1.18	5.8	2.1	26	14.2
150 M	150	1.1	1.5	31.5	450	1.58	1.57	7.3	2.8	35	24.2
-	200	1.5	2	-	-	-	1.92	-	3.3	-	30
-	300	2.2	3	-	-	-	2.4	-	4.4	-	45

DW - DW VOX			
Type pumps		Ball Bearing	
Single Phase	Three Phase	Pump side	Cover side
230 V 50 Hz	400 V 50 Hz		
75 M	75	6303 ZZ	6203 ZZ
100 M	100	6303 ZZ	6203 ZZ
150 M	150	6303 ZZ	6203 ZZ
-	200	6303 ZZ	6203 ZZ
-	300	6303 ZZ	6203 ZZ

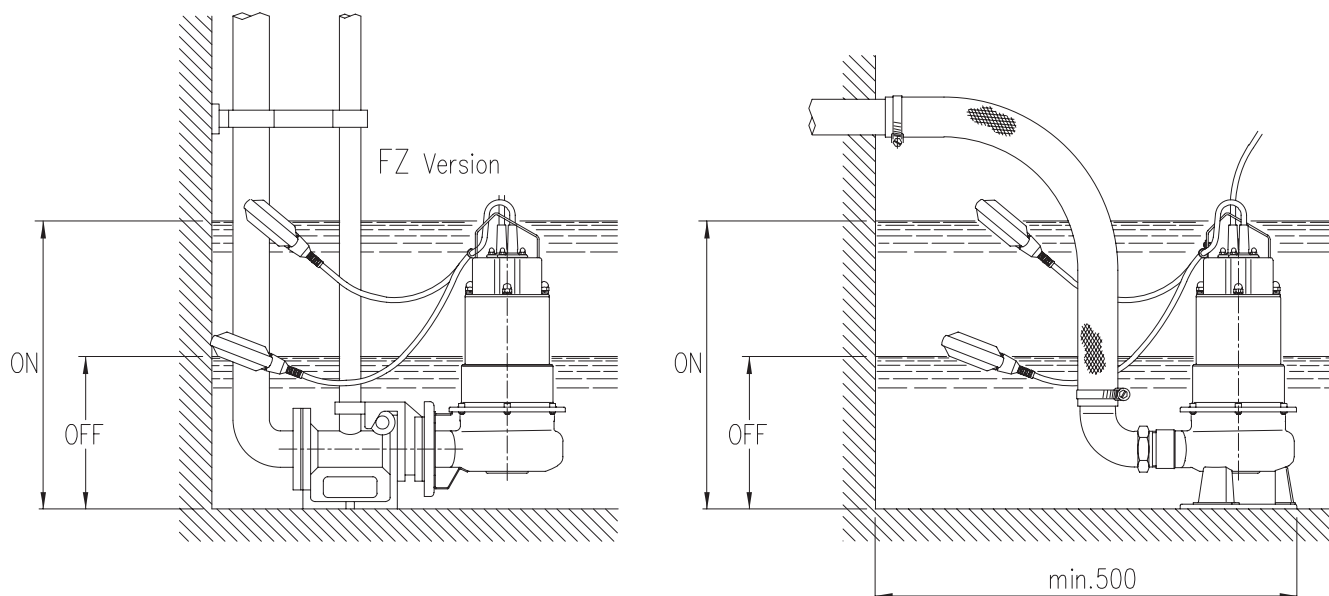
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SUBMERSIBLE SEWAGE PUMPS

DW-DW VOX

ATTENTION ON INSTALLATION OF THE PUMP

50 Hz



Pump type	ON	OFF
	[mm]	
75MA	460	250
100MA	470	260
150MA		