



**EBARA**



**SUBMERSIBLE SUMP PUMPS****OPTIMA****CONTENTS**

50Hz

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# SUBMERSIBLE SUMP PUMPS

# OPTIMA

## SPECIFICATION

50Hz

PUMP		
Liquid Handled	Type of liquid	Clear water (Clean water for MS version)
	Max temperature [°C]	50
	Max solids size [mm]	10
Maximum immersion [m]		5
Construction	Impeller	Semi-open centrifugal type
	Shaft seal type	Oil lubricated mechanical seal (pump side) + lip seal (motor side)
	Bearing	Sealed ball bearing
Pipe Connection	Suction	Strainer
	Discharge nozzle [inch]	G1¼": UNI ISO 228
Material	Pump casing	AISI 304
	Impeller	PPE + PS Glass fiber reinforced
	Shaft seal	Mechanical seal: Ceramic/Carbon/NBR Lip seal: NBR
	Casing cover	AISI 304
	Shaft	AISI 303 + AISI 303 ceramic coated shaft sleeve
	Lubricating liquid	White mineral oil: Esso Marcol 152
Applicable standard of test		ISO 9906 – Annex A

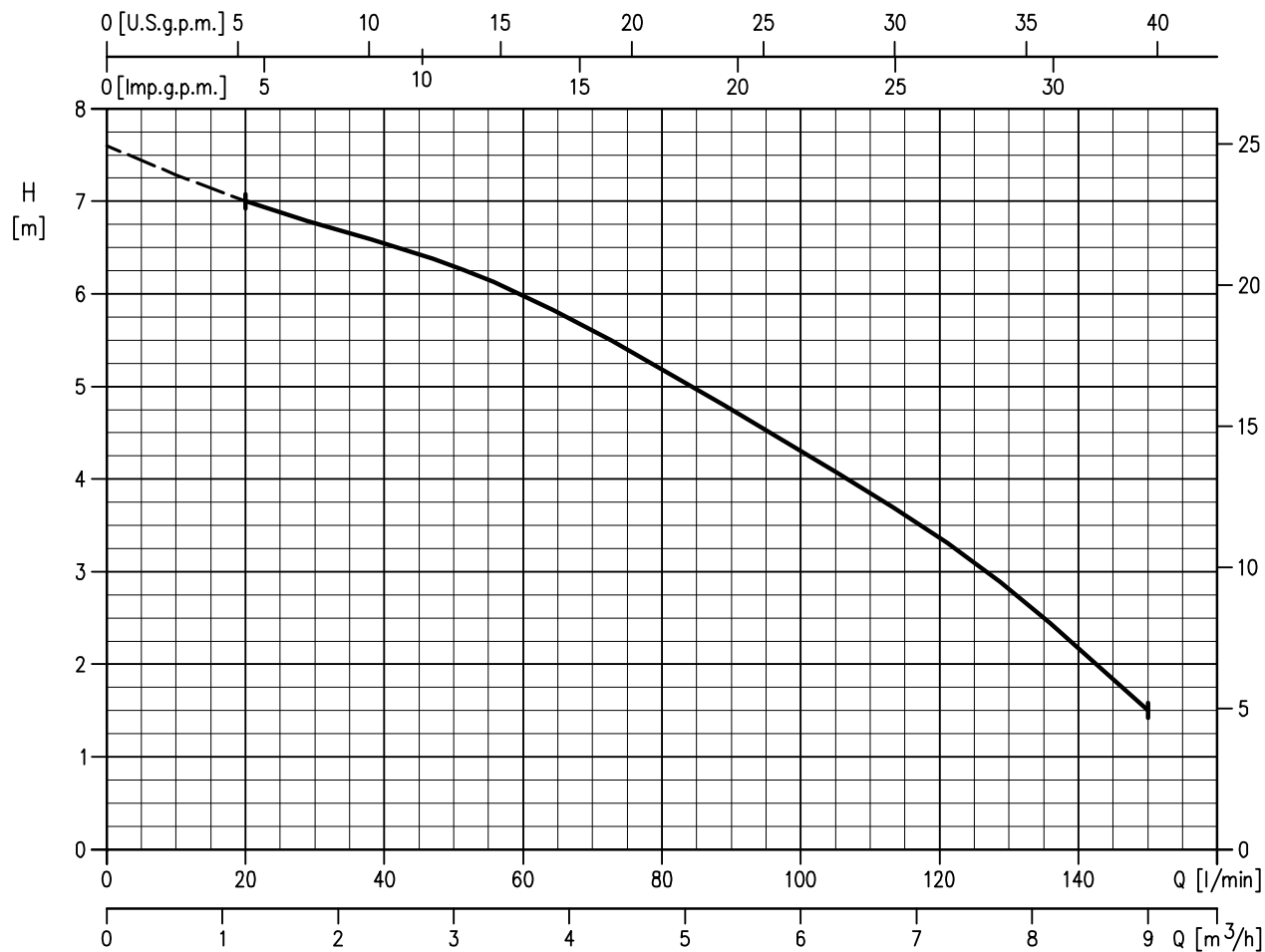
MOTOR		
Type	Submersible dry type	
	Single Phase	
No. of Poles	2	
Rotation speed [min <sup>-1</sup> ]	≈2800	
Insulation Class	F	
Protection degree	IP 68	
Power rating	[kW]	0.25
	[HP]	0.33
Frequency [Hz]	50	
Voltage [V]	230 ±10%	
Capacitor	Built in	
Over load protection	Built in	
Casing material	AISI 304	
Switch	float	MA version (no maintenance required)
	magnetic	MS version (maintenance required)
Float/magnetic switch cable	material	H07RN-F
	size	3G1
Power cable	length [m]	5 (only for internal usage)
	material	H05RN-F
	size	3G0.75
Cable entry	Cable Gland	

**SUBMERSIBLE SUMP PUMPS**

**OPTIMA**

**SELECTION CHART**

50Hz



Type pumps	Power		Q=Capacity							
			l/min	20	50	75	100	125	150	
Single Phase	kW	HP	m³/h	1.2	3	4.5	6	7.5	9	
OPTIMA M	0.25	0.33		7.6	7.0	6.3	5.4	4.3	3.1	1.5

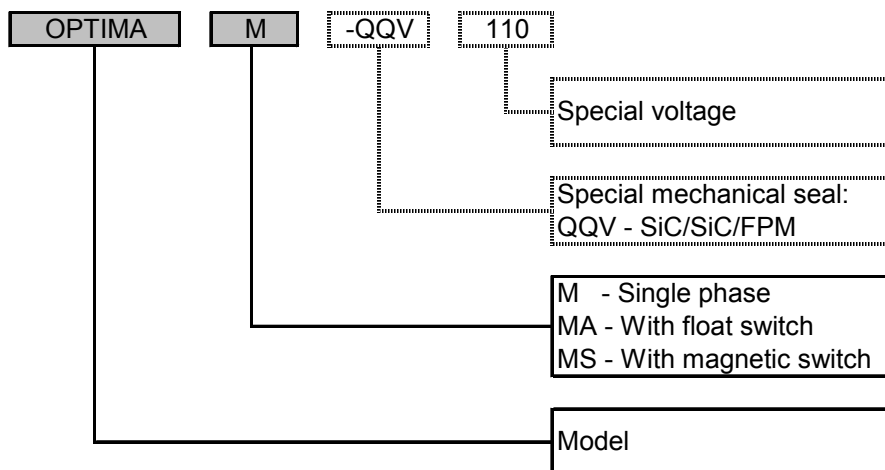
H=Total manometric head in meters

# SUBMERSIBLE SUMP PUMPS

# OPTIMA

## TYPE KEY

50Hz



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**SUBMERSIBLE SUMP PUMPS**

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**OPTIMA**

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**PERFORMANCE CURVE**

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**50Hz****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

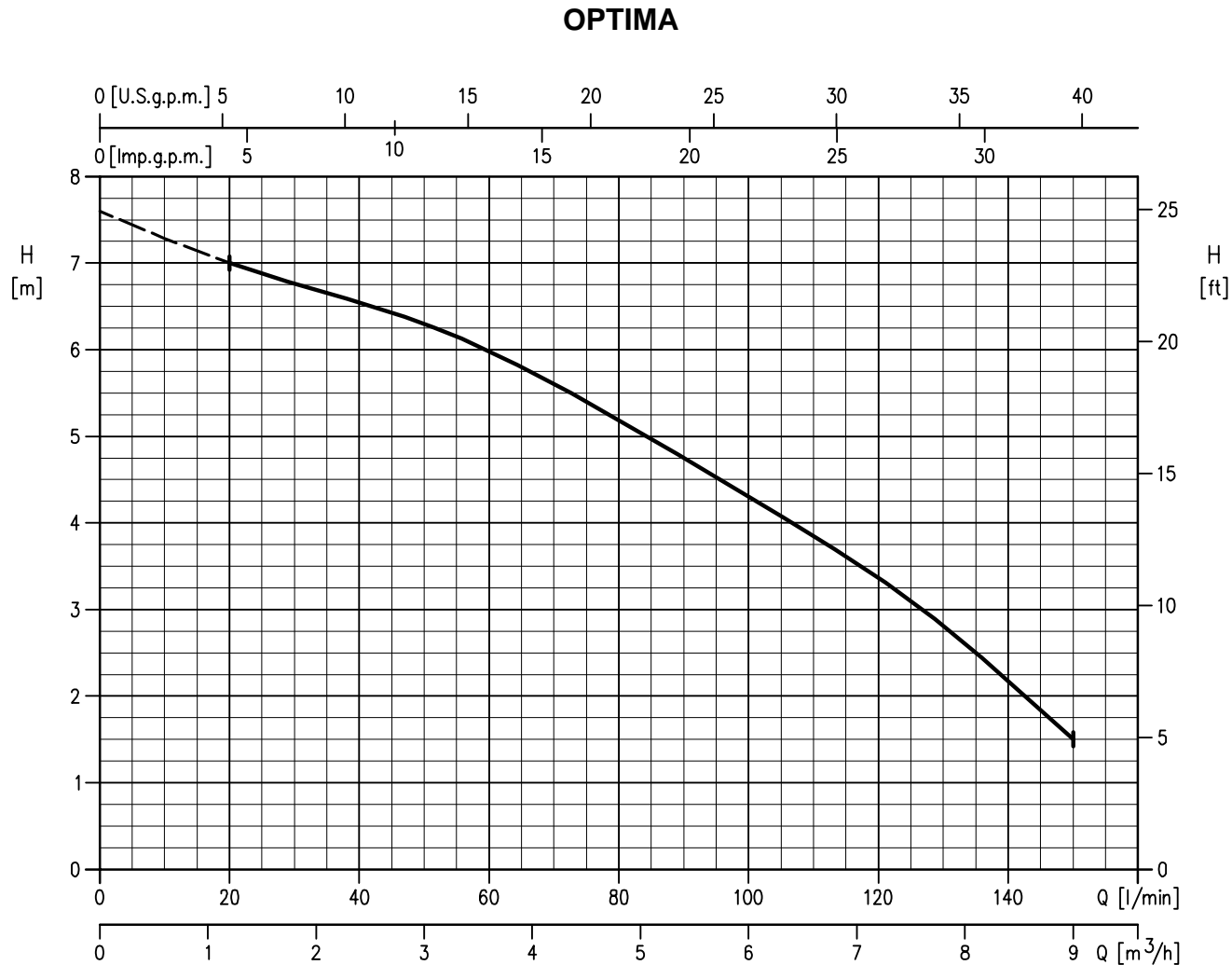
H = total head

# SUBMERSIBLE SUMP PUMPS

# OPTIMA

## PERFORMANCE CURVE

50Hz



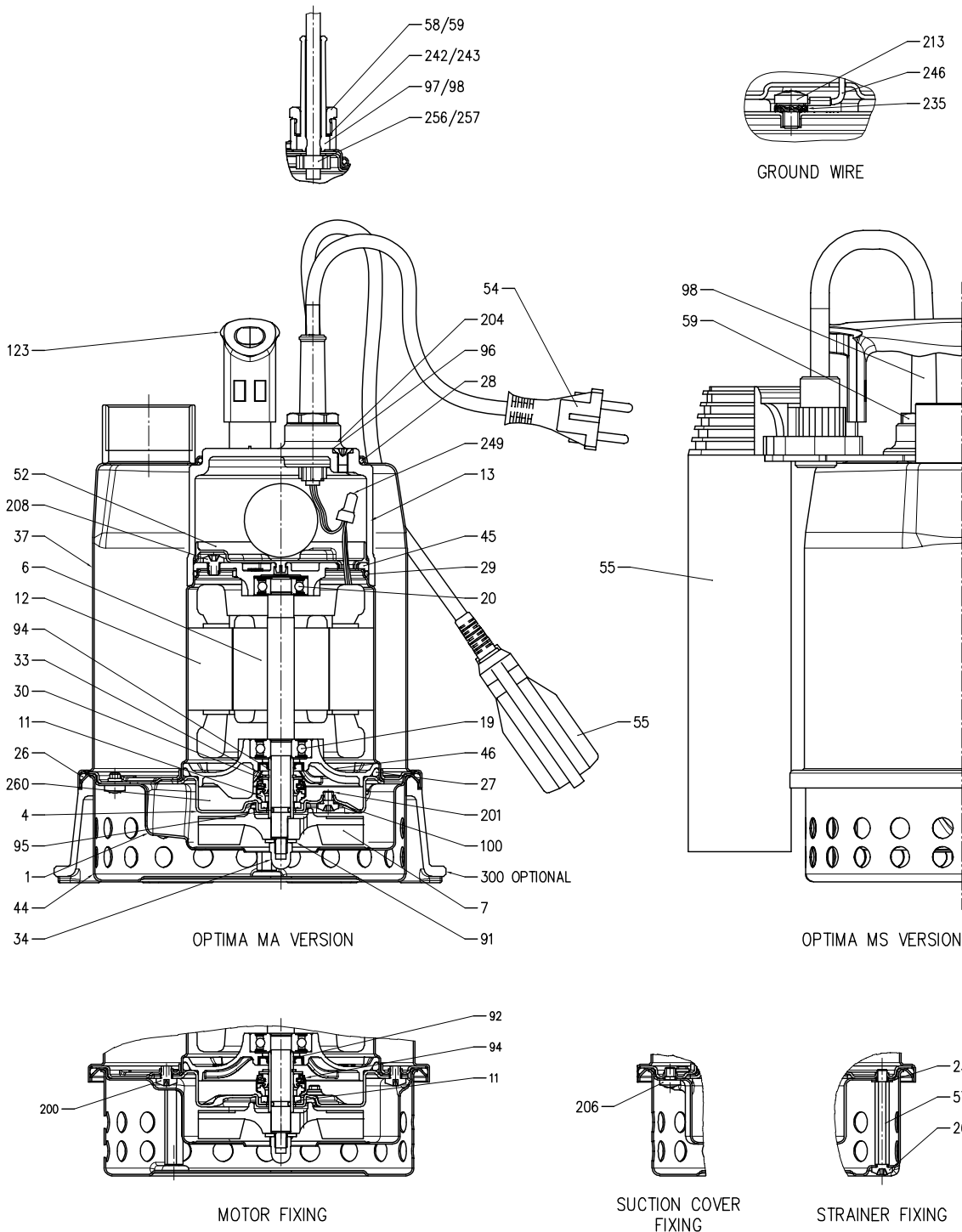
# SUBMERSIBLE SUMP PUMPS

# OPTIMA

## CONSTRUCTION

50Hz

### SECTIONAL VIEW





## SUBMERSIBLE SUMP PUMPS

## OPTIMA

## CONSTRUCTION

50Hz

## SECTIONAL VIEW TABLE

N°	PART NAME	MATERIAL	DIMENSIONS	STANDARD	Q.ty
1	Suction cover	EN 1.4301 (AISI 304)	-	-	1
4	Casing cover	EN 1.4301 (AISI 304)	-	-	1
6	Shaft with rotor	EN 1.4305 (AISI 303)	-	-	1
7	Impeller	PPE+PS-HI-GF20	-	-	1
11	Mechanical seal [1]	[1]	[1]	-	1
12	Motor frame with stator	EN 1.4301 (AISI 304)	-	-	1
13	Motor cover	PP-GF30	-	-	1
19	Lower ball bearing	-	-	-	1
20	Upper ball bearing	-	-	-	1
21	Adjusting ring	-	-	-	1
23	Capacitor	-	-	-	1
26	O-ring	NBR	159,5x3	-	1
27	O-ring	NBR	88,5x3,53	-	1
28	O-ring	NBR	75,87x2,62	-	1
29	O-ring	NBR	75,87x2,62	-	1
30	Washer	EN 1.4301 (AISI 304)	12x21x1	-	1
33	Seeger ring	Carbon steel TC80	12	UNI 7435	1
34	Impeller nut	A2 - 70 UNI 7323	M6	UNI 5721	1
37	Outer casing	EN 1.4301 (AISI 304)	-	-	1
44	Strainer	EN 1.4301 (AISI 304)	-	-	1
45	Upper bearing housing	EN 1706 AC-46000 D	-	-	1
46	Lower bearing housing	EN 1706 AC-46000 D	-	-	1
52	Terminal insulating base	PA6	-	-	1
54	Power cable	-	-	-	1
55	Switch [2] [3]	-	-	-	1
57	Spacer	EN 1.4301 (AISI 304)	-	-	2
58	Power cable connector	PA66-GF30	-	-	1
59	Switch cable connector [2]	PA66-GF30	-	-	1
91	Washer	EN 1.4301 (AISI 304)	-	-	1
92	Lip seal	NBR	22x12x4	-	1
94	Shaft sleeve	EN 1.4305 (AISI 303) ceramic coated	-	-	1
95	O-ring	NBR	6,07x1,78	-	1
96	O-ring	NBR	4,48x1,78	-	1
97	Power cable boot	NBR	-	-	1
98	Switch cable boot [2]	NBR	-	-	1
100	O-ring	NBR	4,48x1,78	-	1
123	Handle	PP	-	-	1
200	Screw	A2 - 70 UNI 7323	M5x6	UNI 7687	4
201	Screw	A2 - 70 UNI 7323	M5x6	UNI 7687	1
204	Screw	A2 - 70 UNI 7323	M5x6	UNI 7687	1
206	Screw	A2 - 70 UNI 7323	M5x6	UNI 7687	3
207	Screw	A2 - 70 UNI 7323	M5x6	UNI 7687	2
208	Screw	A2 - 70 UNI 7323	M5x6	UNI 7687	3
213	Screw	A2 - 70 UNI 7323	M4x6	UNI 7687	1
232	Washer	PA6	5,5x10x1	-	2
235	Washer	Zinked Steel	4	UNI 8842	1
242	Washer	EN 1.4301 (AISI 304)	13,4x15,9x1	-	1
243	Washer [2]	EN 1.4301 (AISI 304)	13,4x15,9x1	-	1
246	Ground wire	-	-	-	1
256	Cable holder	-	-	-	1
257	Cable holder [2]	-	-	-	1
260	Oil	Esso Marcol 152	-	-	40 cc
300	Minimum suction system [4]	Thermoplastic elastomer vulcanizate	-	-	-

[1] See pag. 303

[2] Only for automatic version

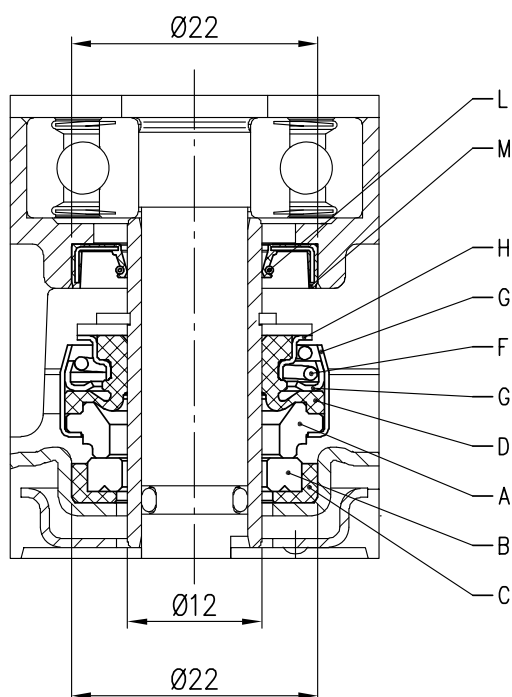
[3] It could be floating or magnetic type

[4] OPTIONAL See pag.700

**BEARINGS**

Type pumps	Ball Bearing	
	Lower side	Upper side
Optima M	6200 ZZ C3	6000 ZZ C3

## MECHANICAL SEAL



REF	PART NAME	MATERIAL product standard	MATERIAL optional
A	Rotary seal ring	Carbon graphite	SiC
B	Stationary seal ring	Ceramic	SiC - Q6 (*)
C	Gasket	NBR	FPM
D	Bellows	NBR	FPM
F	Self driving spring	EN 1.4301 (AISI 304)	
G	Frame	EN 1.4301 (AISI 304)	
H	Retainer ring	EN 1.4301 (AISI 304)	
L	Spring	EN 1.4318 (AISI 302)	
M	Lip	NBR	

(\*) Special grade of SiC with microporosities filled with graphite

# SUBMERSIBLE SUMP PUMPS

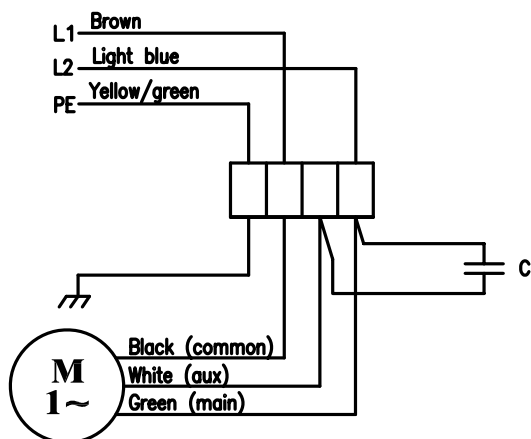
# OPTIMA

## CONSTRUCTION

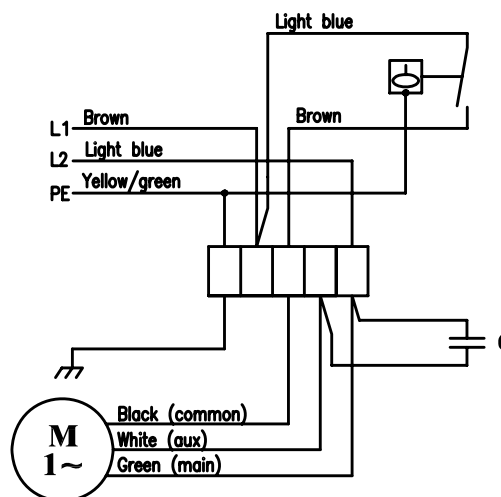
50Hz

### SINGLE PHASE MOTOR DIAGRAM AND ELECTRIC CONNECTIONS

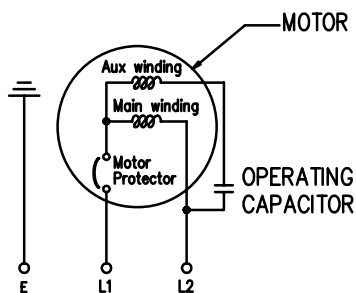
WITHOUT FLOAT SWITCH



WITH FLOAT SWITCH



230 V  
INTERNAL MOTORPROTECTOR

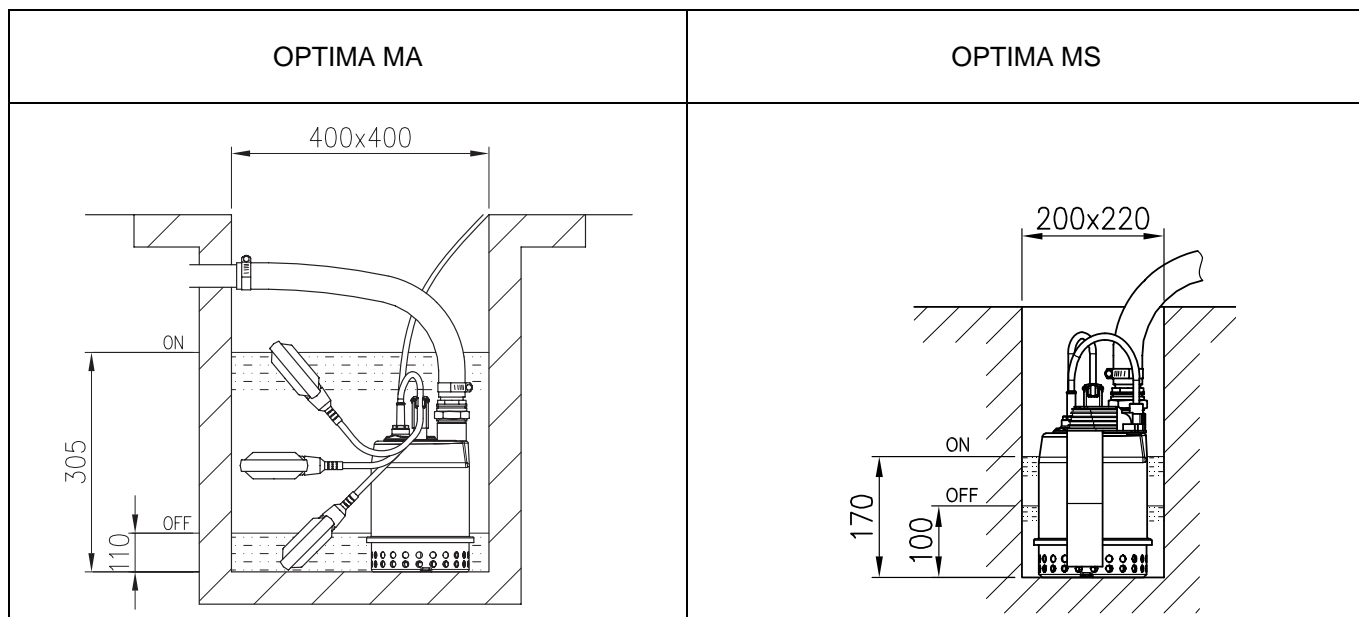


## SUBMERSIBLE SUMP PUMPS

## OPTIMA

## INSTALLATION

50Hz



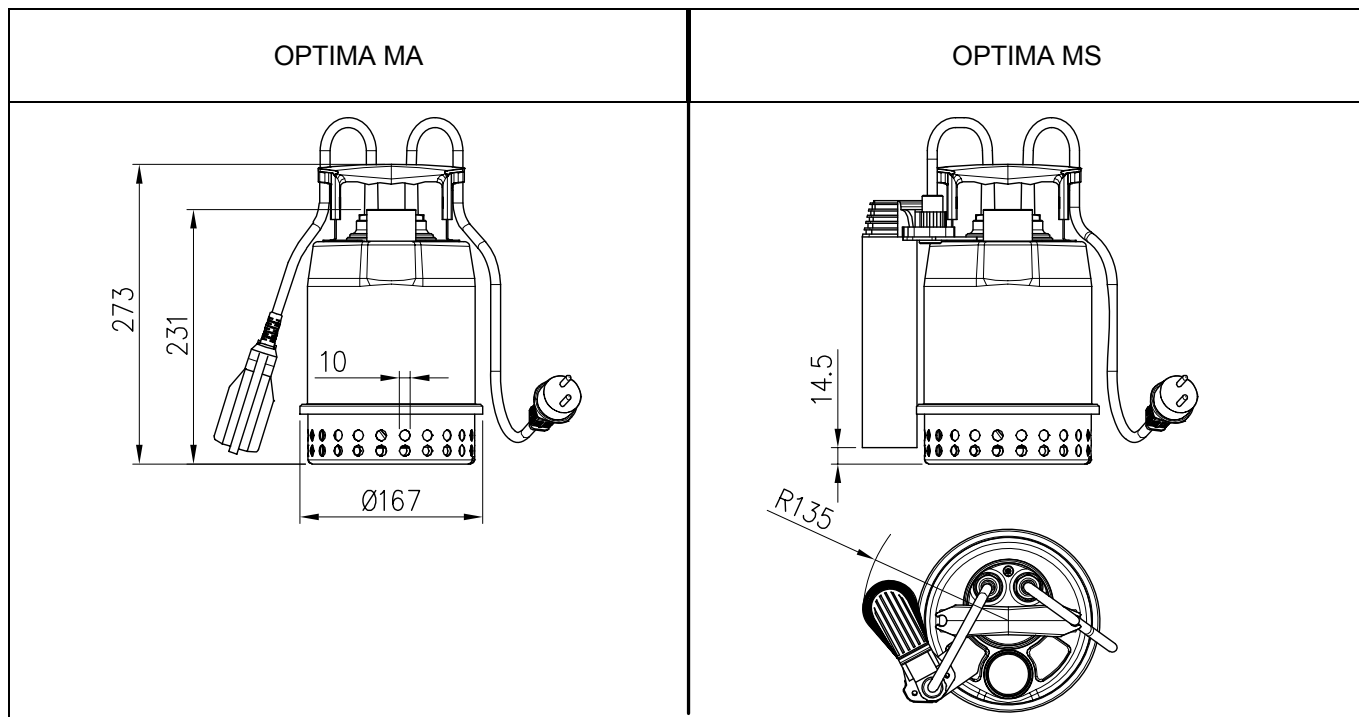
## SUBMERSIBLE SUMP PUMPS

## OPTIMA

## DIMENSIONS AND WEIGHT

50Hz

PUMP



Type Pumps	Weight [kgf]
OPTIMA M	4.2
OPTIMA MA	4.4
OPTIMA MS	4.6

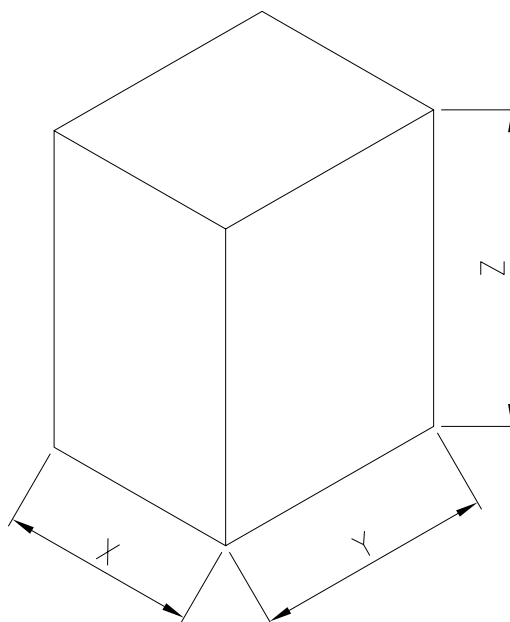
## SUBMERSIBLE SUMP PUMPS

## OPTIMA

## DIMENSIONS AND WEIGHT

50Hz

PACKING



Type Pumps	Dimensions [mm]			Weight [kgf]
	X	Y	Z	
OPTIMA M	180	220	330	4.7
OPTIMA MA				4.9
OPTIMA MS				5.1

**SUBMERSIBLE SUMP PUMPS****OPTIMA****TECHNICAL DATA****50Hz**

ELECTRIC DATA							
Type pumps	kW	HP	Capacitor Single Phase		Input POWER [kW]	Full load current [A]	Locked rotor current [A]
			$\mu$ F	Vc [V]			
OPTIMA M	0.25	0.33	8	450	0.43	1.90	4.8



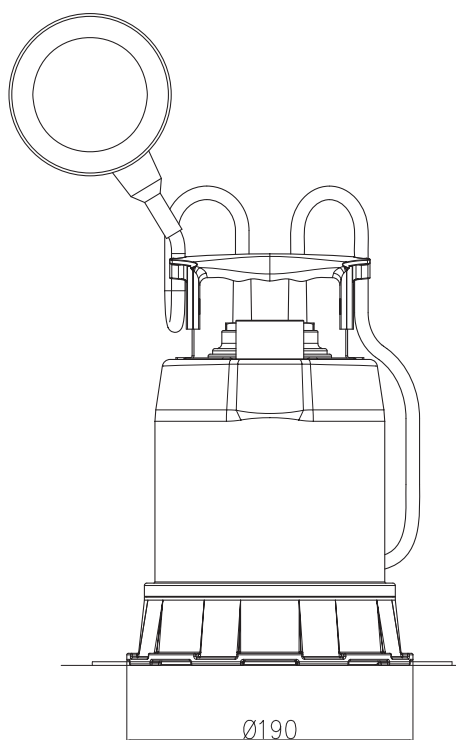
## SUBMERSIBLE SUMP PUMPS

## OPTIMA

OPTIONAL

50Hz

## MINIMUM SUCTION SYSTEM



LEVEL	
Minimum starting suction level	10 mm
Minimum suction level capability	3 mm

COMPATIBILITY			
Type pumps	Version		
	M	MA	MS
Optima	✓	✓	✗