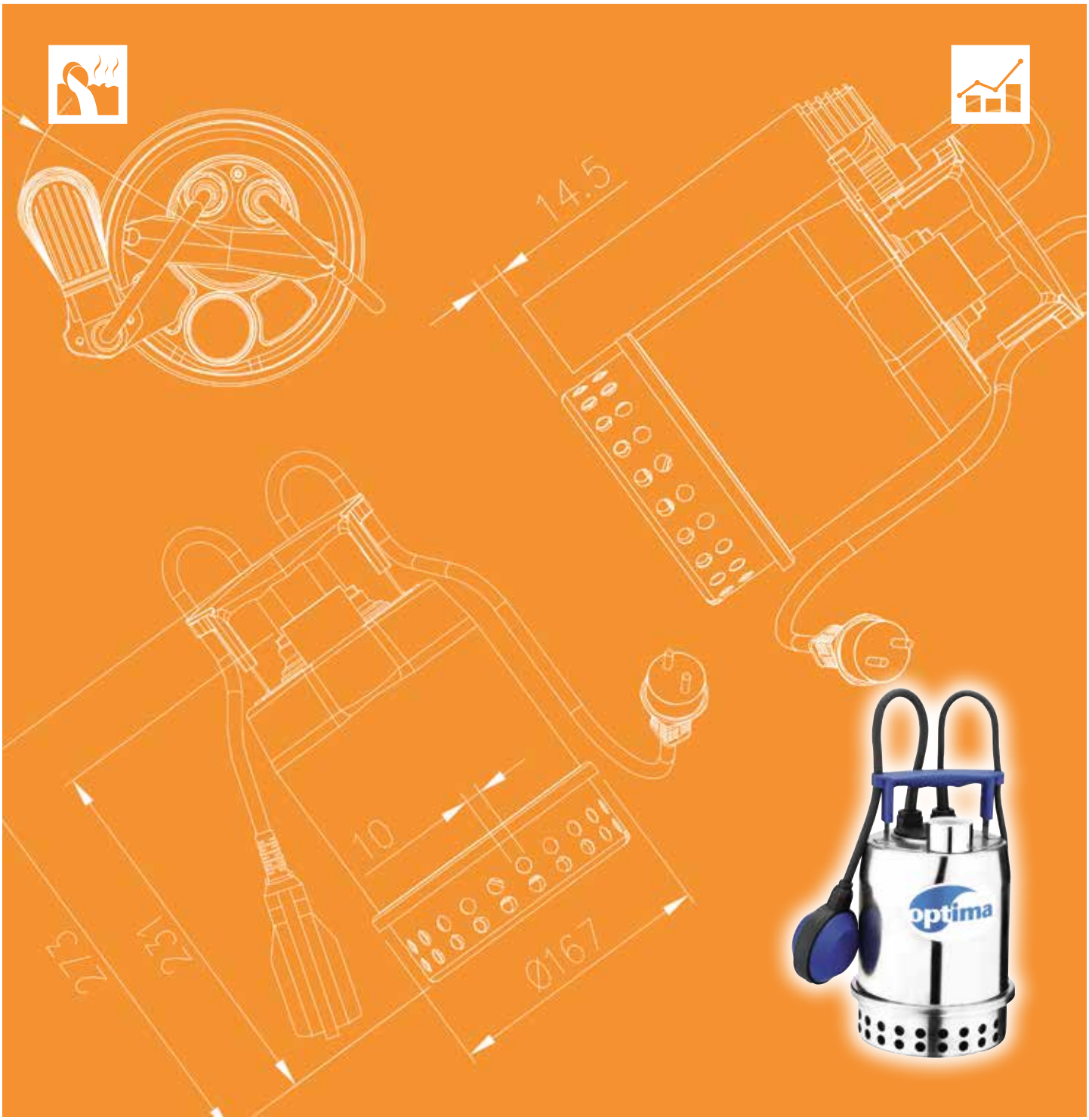
EBARA

Japanese Technology since 1912

OPTIMA

Data Book 60Hz



CONTENTS

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SPECIFICATIONS 60Hz

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PUMP			
Liquid Handled	Type of liquid		Clear water (Clean water for MS version)
	Max temperature	[℃]	50
	Max solids size	[mm]	10
Maximum immersion		[m]	2 (with power cable length 5 m) 5 (with power cable length 10 m)
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 9006:2012 - Grade 3B

MOTOR			
Type			Submersible dry type
			Single Phase
No. of Poles			2
Rotation speed		[min^{-1}]	≈ 3400
Insulation Class			F
Protection degree			IP 68
Power rating		[kW]	0.25
		[HP]	0.33
Frequency		[Hz]	60
Voltage		[V]	110-115 ±6% 220-230 ±6%
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); 10
	material		H05RN-F
	size		3G0.75
Cable entry			Cable Gland

PERFORMANCE RANGE and SELECTION CHART 60Hz

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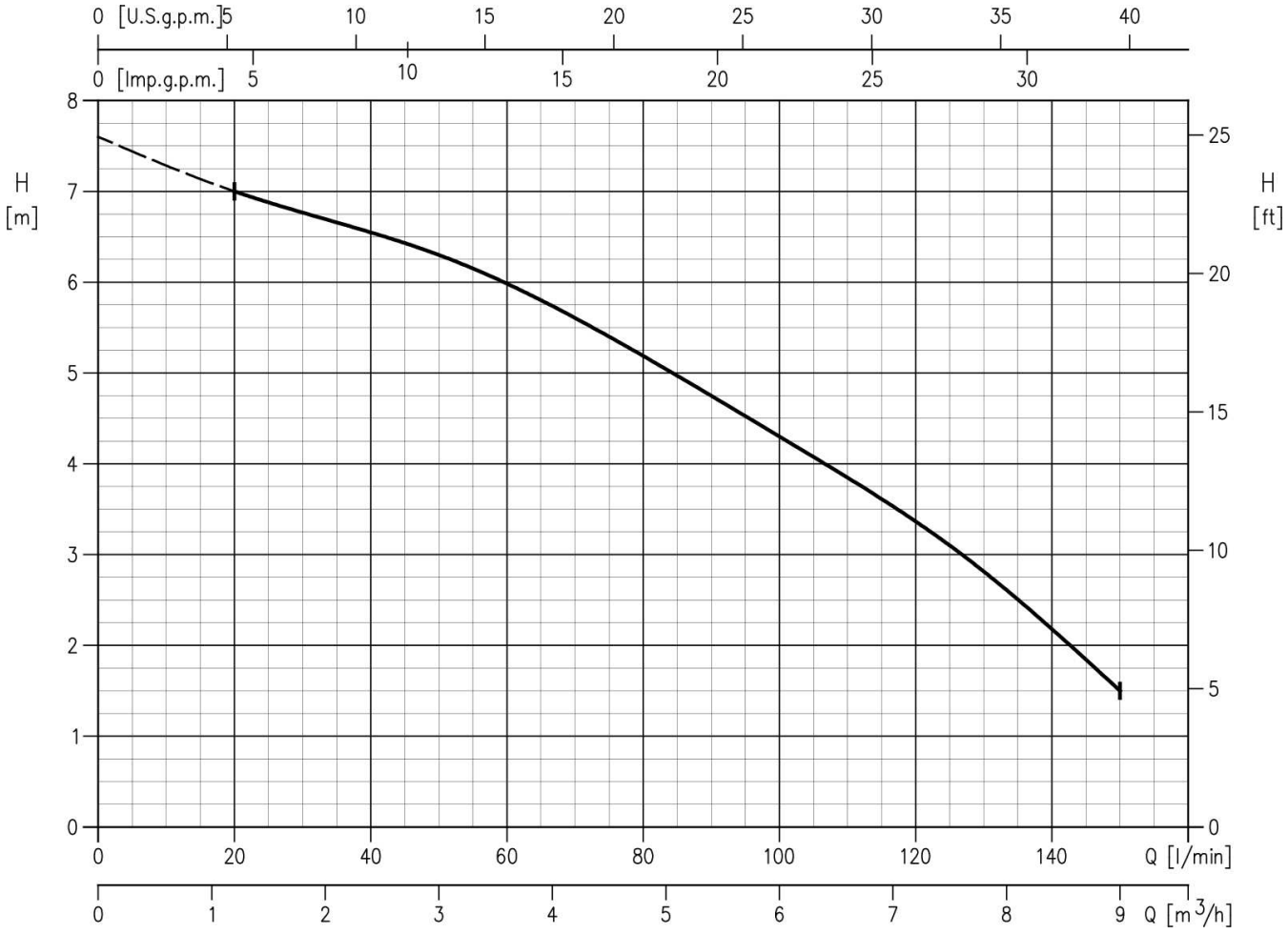
PERFORMANCE RANGE



SELECTION CHART

Type pumps	Power		Q=Capacity						
			l/min	0	20	50	75	100	125	150
Single Phase	[kW]	[HP]	m³/h	0	1,2	3	4,5	6	7,5	9
			H=Total manometric head in meters							
OPTIMA M	0,25	0,33	7,6	7,0	6,3	5,4	4,3	3,1	1,5

TYPE KEY and CURVES SPECIFICATIONS

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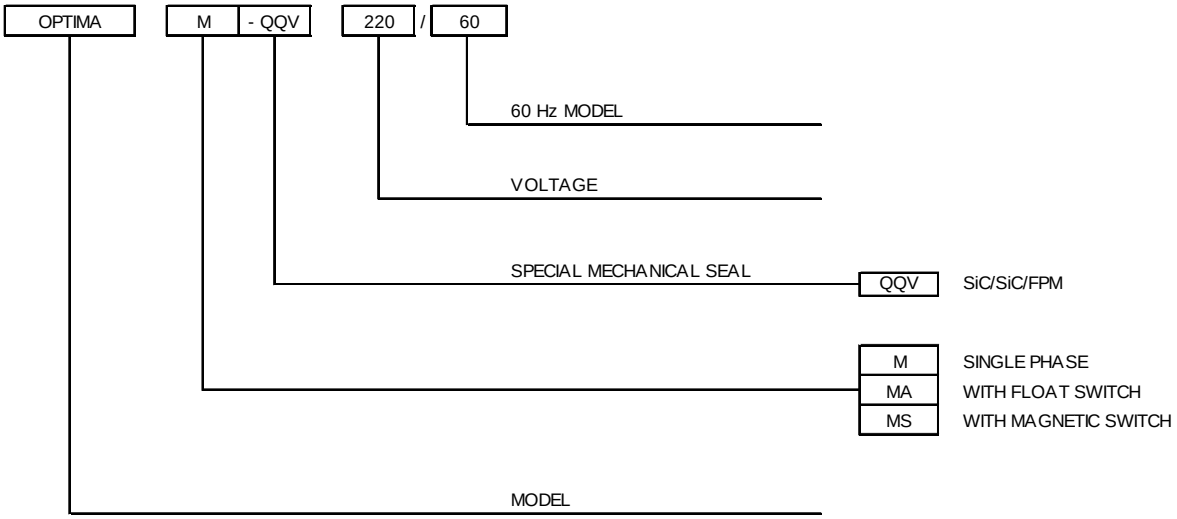
TYPE KEY



CURVES SPECIFICATIONS

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

Tolerances according to ISO 9006:2012 - Grade 3B
The curves refer to effective speed of asynchronous motors at 60 Hz, 2 poles.
Measurements were carried out with clean water at 20℃ of temperature and with a kinematic viscosity of $\nu = 1\ mm^2/s$ (1 cSt)
The continuous curves indicate the recommended working range. The dotted curve is only a guide.
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

PERFORMANCE CURVES

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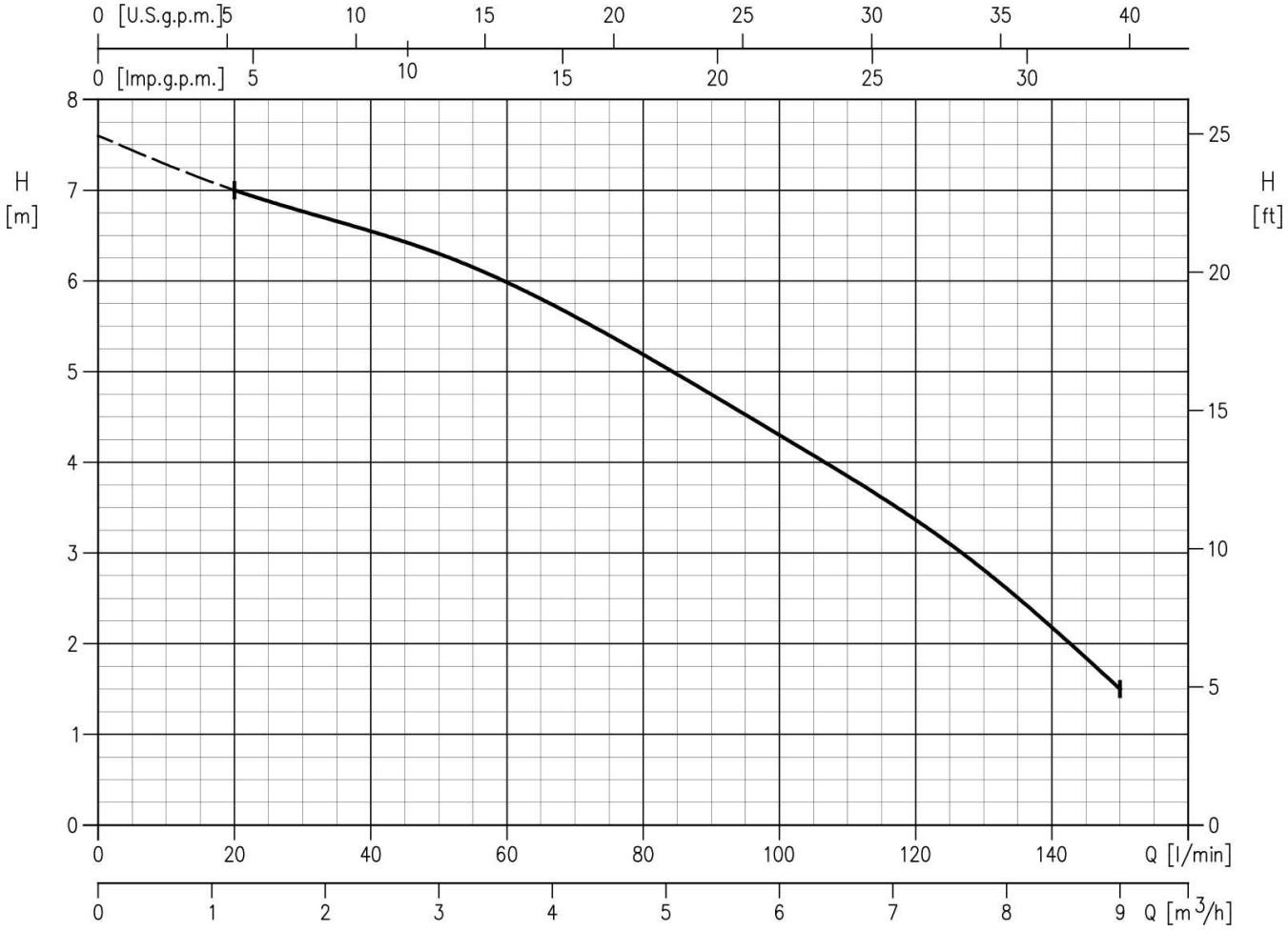
OPTIMA M (0.25 kW) – impeller diameter = 69 mm



Rotation speed: ≈3400min-1
Test standard: ISO 9006:2012 - Grade 3B

CONSTRUCTIONS

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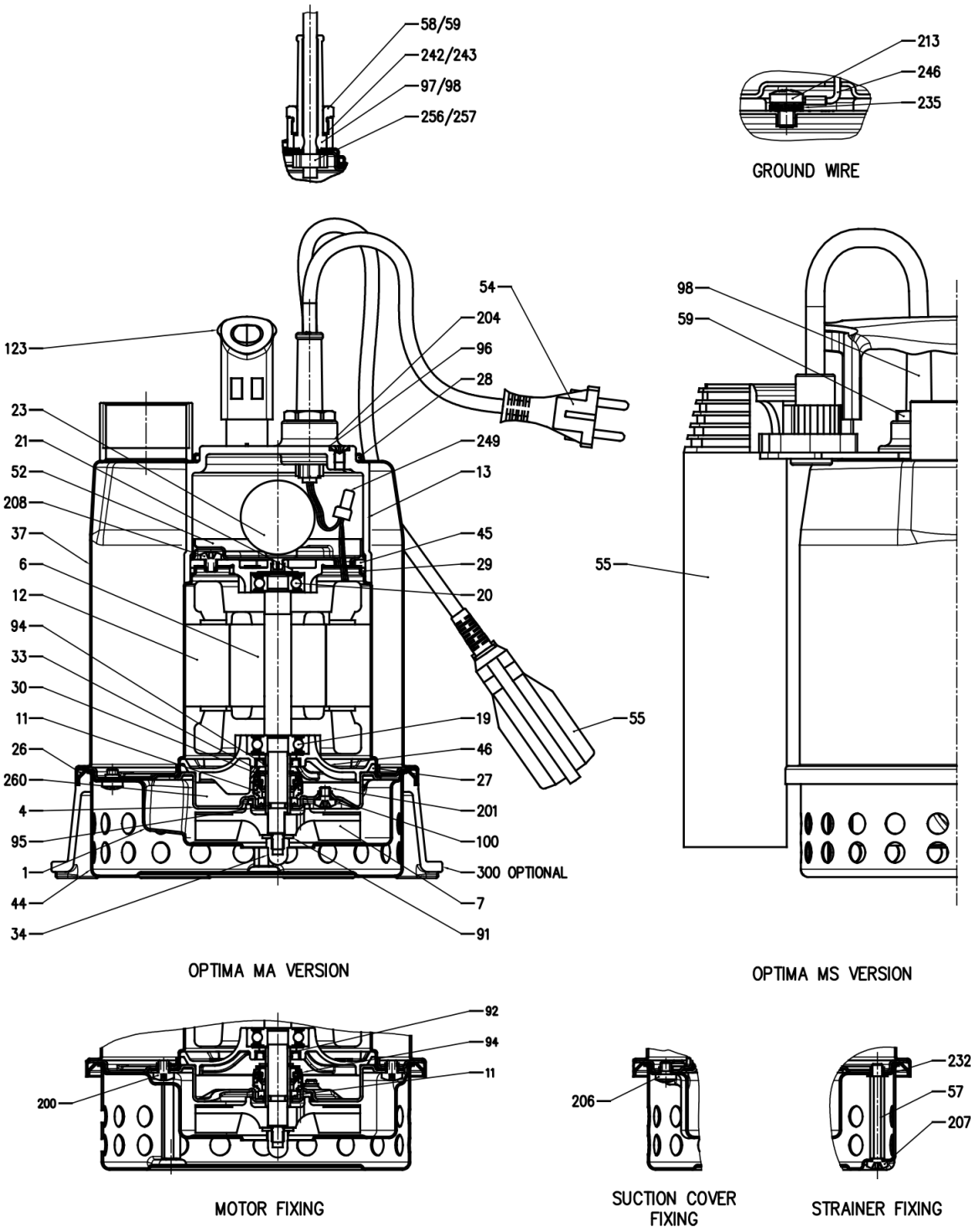
SECTIONAL VIEW DRAWING



CONSTRUCTIONS

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SECTIONAL VIEW TABLE

N°	PART NAME	MATERIAL	DIMENSIONS	STANDARD	Q.TY
1	Suction cover	EN 14301(AISI 304)	-	-	1
4	Casing cover	EN 14301(AISI 304)	-	-	1
6	Shaft with rotor	EN 14305 (AISI 303)	-	-	1
7	Impeller	PPE+PS glass fibre reinforced	-	-	1
11	Mechanical seal [1]	-	-	-	1
12	Motor frame with stator	EN 14301(AISI 304)	-	-	1
13	Motor cover	PP-GF30 class V-0	-	-	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	75,00x3,00	-	1
30	Washer	EN 14301(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 14301(AISI 304)	-	-	1
44	Strainer	EN 14301(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 class V-0	-	-	1
54	Power cable	-	-	-	1
55	Switch [2] [3]	-	-	-	1
57	Spacer	EN 14301(AISI 304)	-	-	2
58	Power cable connector	PA66-GF30	-	-	1
59	Switch cable connector [2]	PA66-GF30		-	1
91	Washer	EN 14301(AISI 304)	-	-	1
92	Lip seal	NBR	22x12x4	-	1
94	Shaft sleeve	EN 14305 (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 14301(AISI 304)	13,4x15,9x1	-	1
243	Washer [2]	EN 14301(AISI 304)	13,4x15,9x1	-	1
246	Ground wire	-	-	-	1
249	Cap terminal	-	-	-	4
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 **MECHANICAL SEAL** page 302
[2] Only for automatic version
[3] Floating or magnetic switch
[4] See **OPTIONAL** page 700

CONSTRUCTIONS

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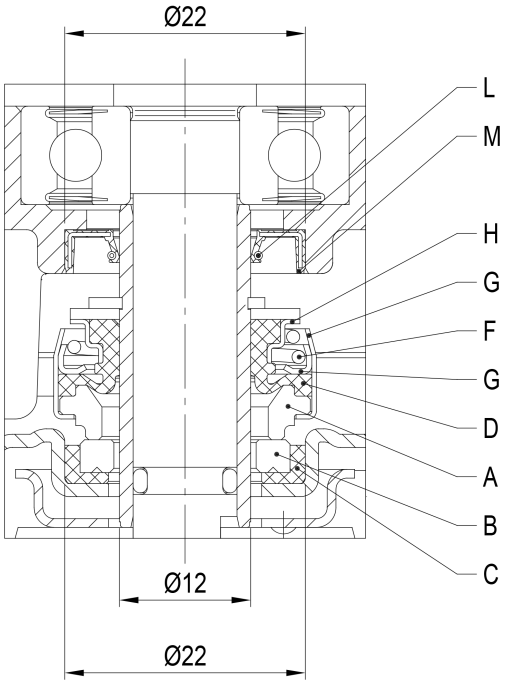
BEARINGS

Pump Type	Ball Bearing	
	Lower side	Upper side
OPTIMA M	6200 ZZ C3	6000 ZZ C3

MECHANICAL SEAL



REF	PART NAME	MATERIAL	
		Standard version	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

DIMENSIONS and WEIGHT

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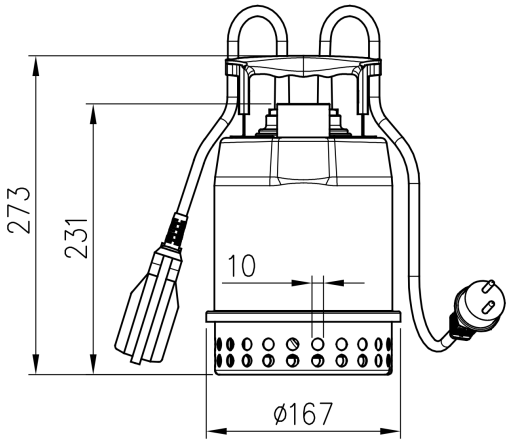
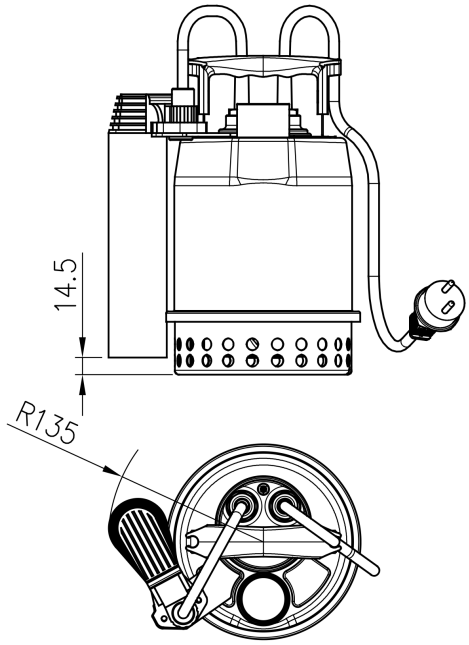
PUMP

OPTIMA MA



OPTIMA MS



Pump Type	Weight [kgf]
OPTIMA M	4,2
OPTIMA MA	4,4
OPTIMA MS	4,6

DIMENSIONS and WEIGHT

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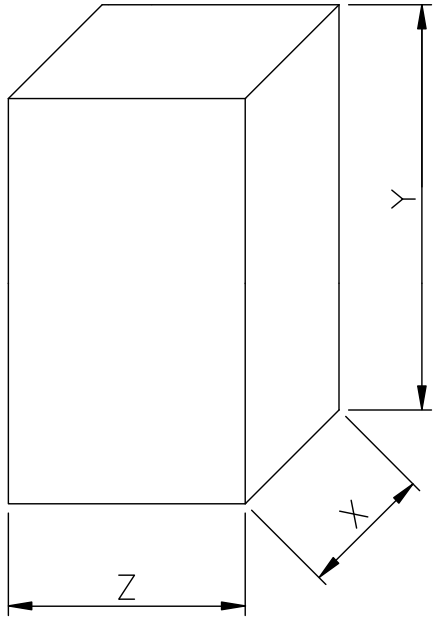
PACKING



Pump Type	Dimensions [mm]			Weight
	X	Y	Z	[kgf]
OPTIMA M	180	330	220	4,7
OPTIMA MA				4,9
OPTIMA MS				5,1

TECHNICAL DATA

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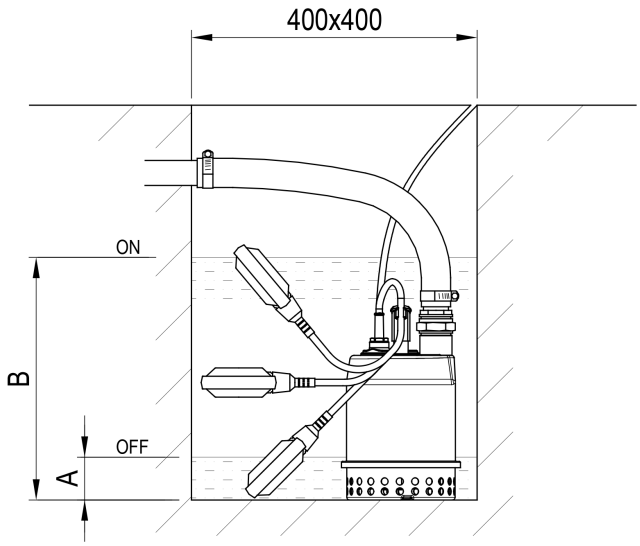
MOTOR DATA

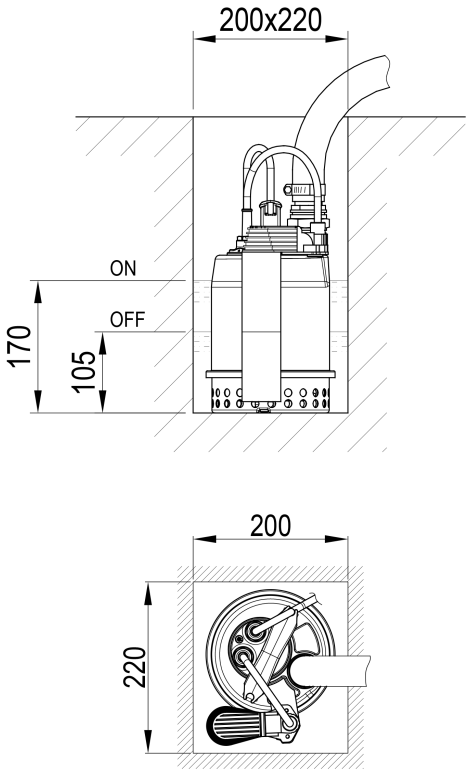
Pump type	Power		Capacitor				Input [kW]		Full load current [A]		Locked rotor current [A]	
	[kW]	[HP]	110-115 V ∀ F]	[V]	220-230 V ∀ F]	[V]	110-115 V	220-230 V	110-115 V	220-230 V	110-115 V	220-230 V
OPTIMA M	0.25	0.33	20	250	6.3	450	0.42	0.43	4.2	2.1	11.9	6.0

INSTALLATION

OPTIMA MA



OPTIMA MS



OPTIONAL

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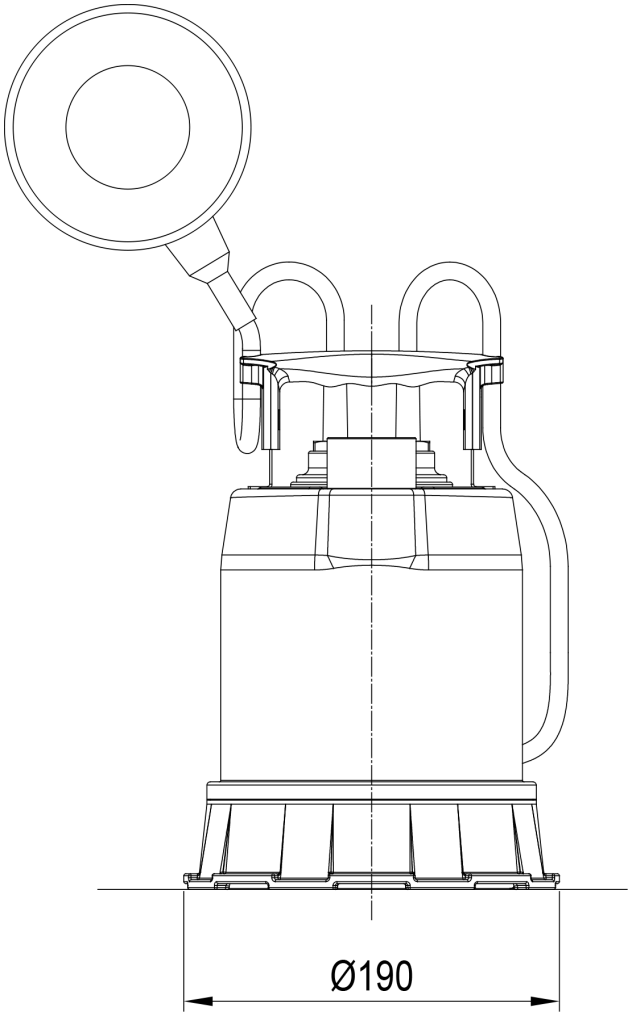
MINIMUN SUCTION SYSTEM



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

COMPATIBILITY			
Type pumps	Version		
	M	MA	MS
Optima	✓	✓	×