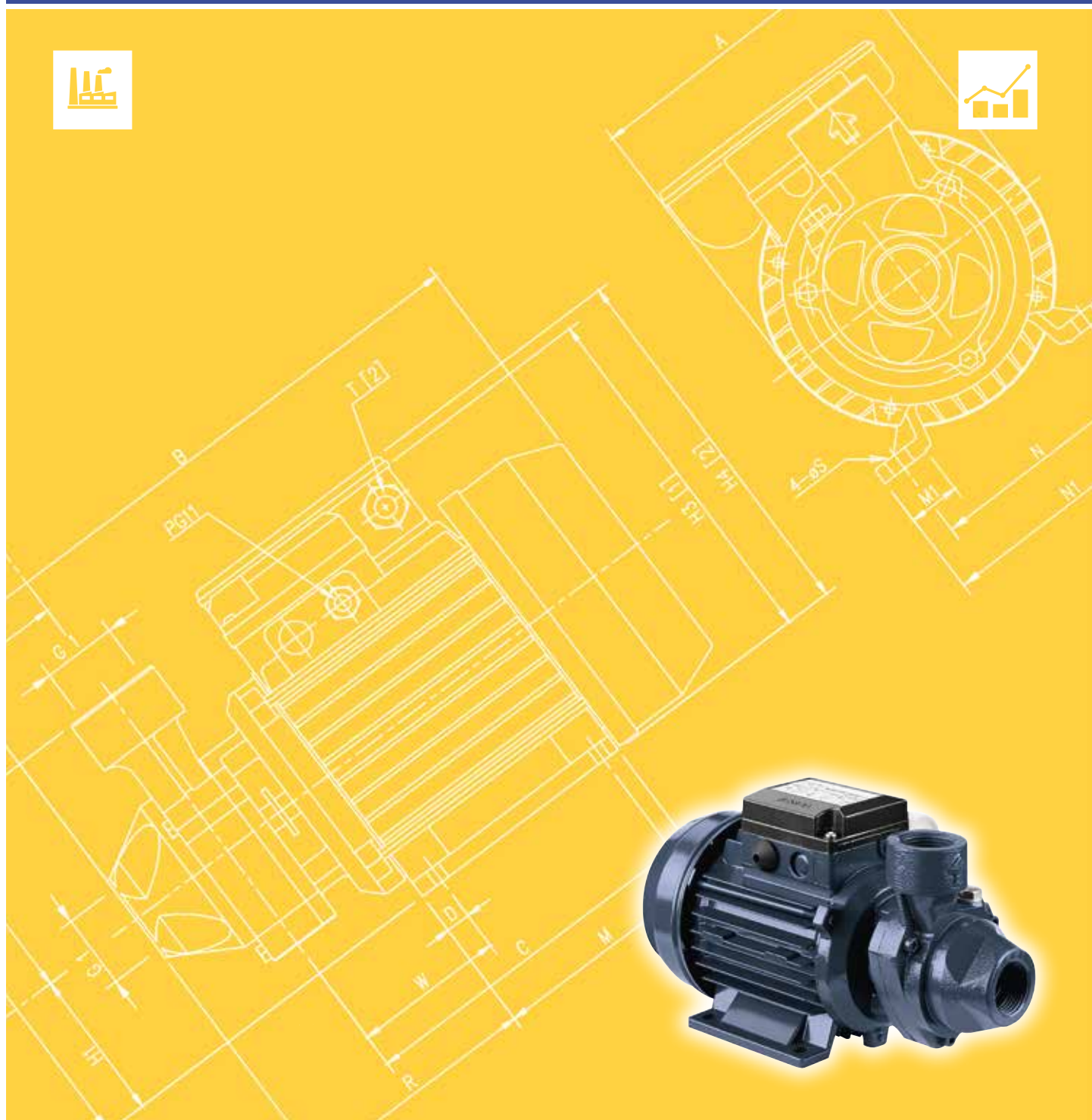




Japanese Technology since 1912

PRA

Data Book 50Hz



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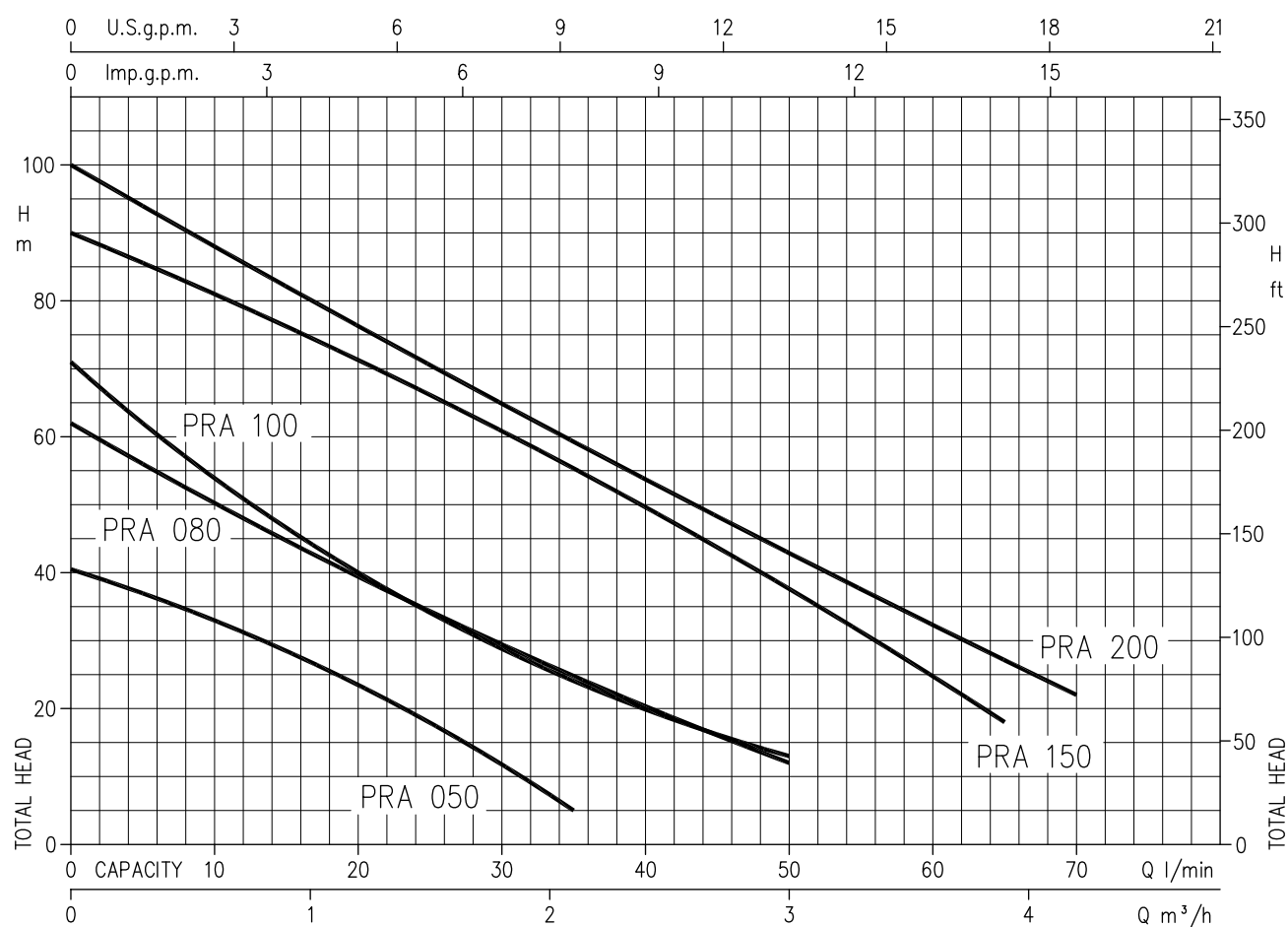
SPECIFICATION

50Hz

Rev. M

PUMP		
Liquid	Type of liquid	Clean water
Handled	Temperature [°C]	min. +5 max. +80
Maximum working pressure	[MPa]	0.6 (PRA 0.50) 0.75 (PRA 0.80) 1.2 (PRA 1.00-1.50-2.00)
Construction	Impeller	Peripheral turbine type
	Shaft seal type	Mechanical seal
	Bearing	Sealed ball bearing
Pipe Connection	Suction [inch]	G 1 UNI ISO 228
	Discharge [inch]	G 1 UNI ISO 228
Material	Casing	Cast iron
	Impeller	Brass
	Shaft seal	Ceramic/Carbon/NBR
	Shaft	Carbon steel - AISI 303 (wet extension)
	Bracket	Cast iron
Applicable standard of test		ISO 9906 – Annex A

MOTOR		
Type	Electric - TEFC	
	Single Phase	Three Phase
Efficiency level (Reg. 1781/2019)	IE2	IE3
No. of Poles	2	
Rotation speed [min ⁻¹]	≈ 2850	
Insulation Class	Class F	
Protection degree (CEI EN 60034-5)	IP 44	
Power rating	[kW]	0.37 ÷ 1.5
	[HP]	0.5 ÷ 2
Frequency [Hz]	50	
Voltage [V]	230 ±10%	230/400 ±10%
Capacitor	Built in	-
Over load protection	Built in	Provided by the user
Casing material	Aluminium	
Base material	Aluminium	
Dimensions of cable entry	PG 11 - PG 13.5 - M16x1.5 - M20x1.5 (see dimensions page 400)	



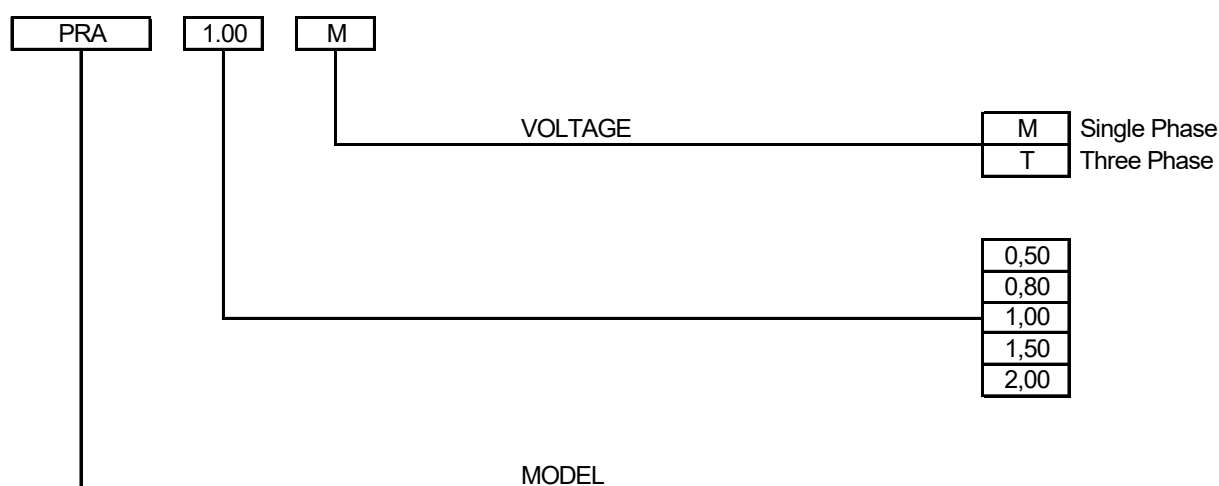
Pump Type		Q=Capacity									
		l/min	0	5	10	15	20	35	50	65	70
Single phase	Three phase	m³/h	0	0,3	0,6	0,9	1,2	2,1	3	3,9	4,2
H=Total manometric head in meters											
PRA 0.50 M	PRA 0.50 T	40,5	37	33,3	28,7	23,7	5	-	-	-	
PRA 0.80 M	PRA 0.80 T	62	56	50,7	45,1	39,8	25	12	-	-	
PRA 1.00 M	PRA 1.00 T	71	62	54,4	47	40,4	24,3	13	-	-	
PRA 1.50 M	PRA 1.50 T	90	-	81	76,9	71,9	55,8	37,9	18	-	
PRA 2.00 M	PRA 2.00 T	100	-	88	82,9	77	59,8	43,3	27,4	22	

TYPE KEY AND CURVE SPECIFICATIONS

50Hz

Rev. M

TYPE KEY



PERFORMANCE 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

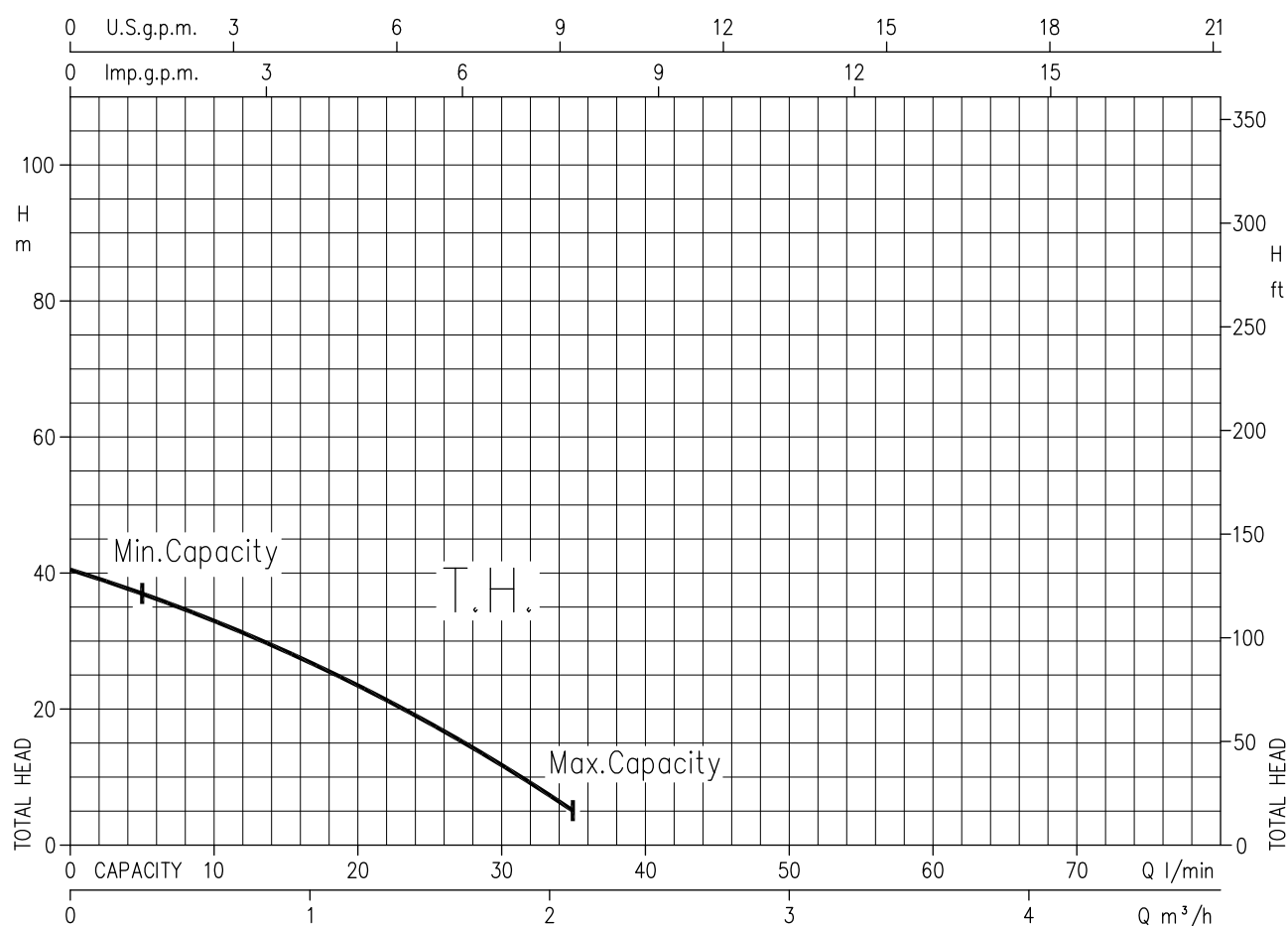
Measurements were carried out with clean water at 20°C of temperature and with a kinematic viscosity of $\nu = 1 \text{ mm}^2/\text{s}$ (1 cSt)

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:

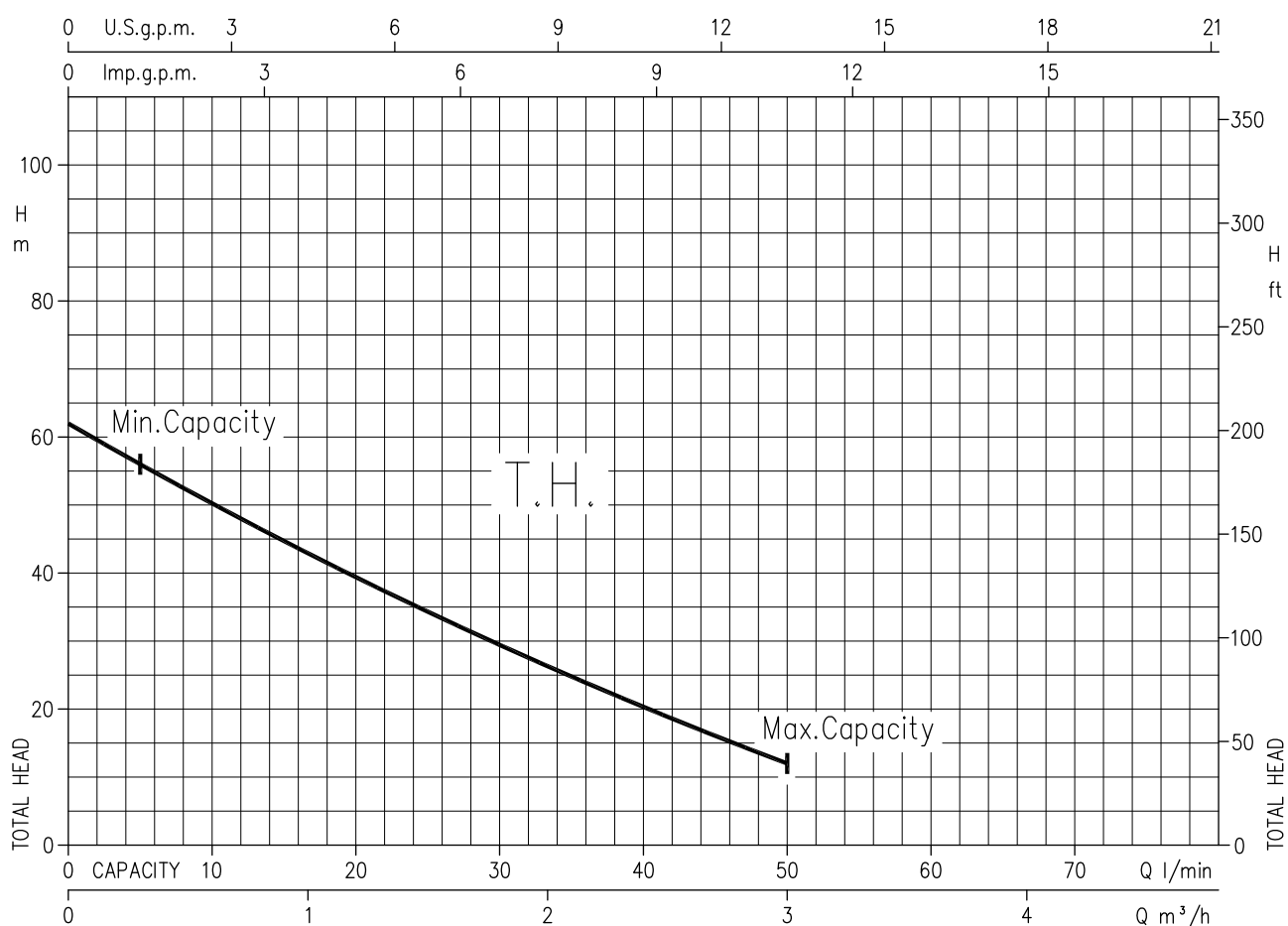
Q = volume flow rate
H = total head

PRA 0.50 - Impeller diameter = 60 mm



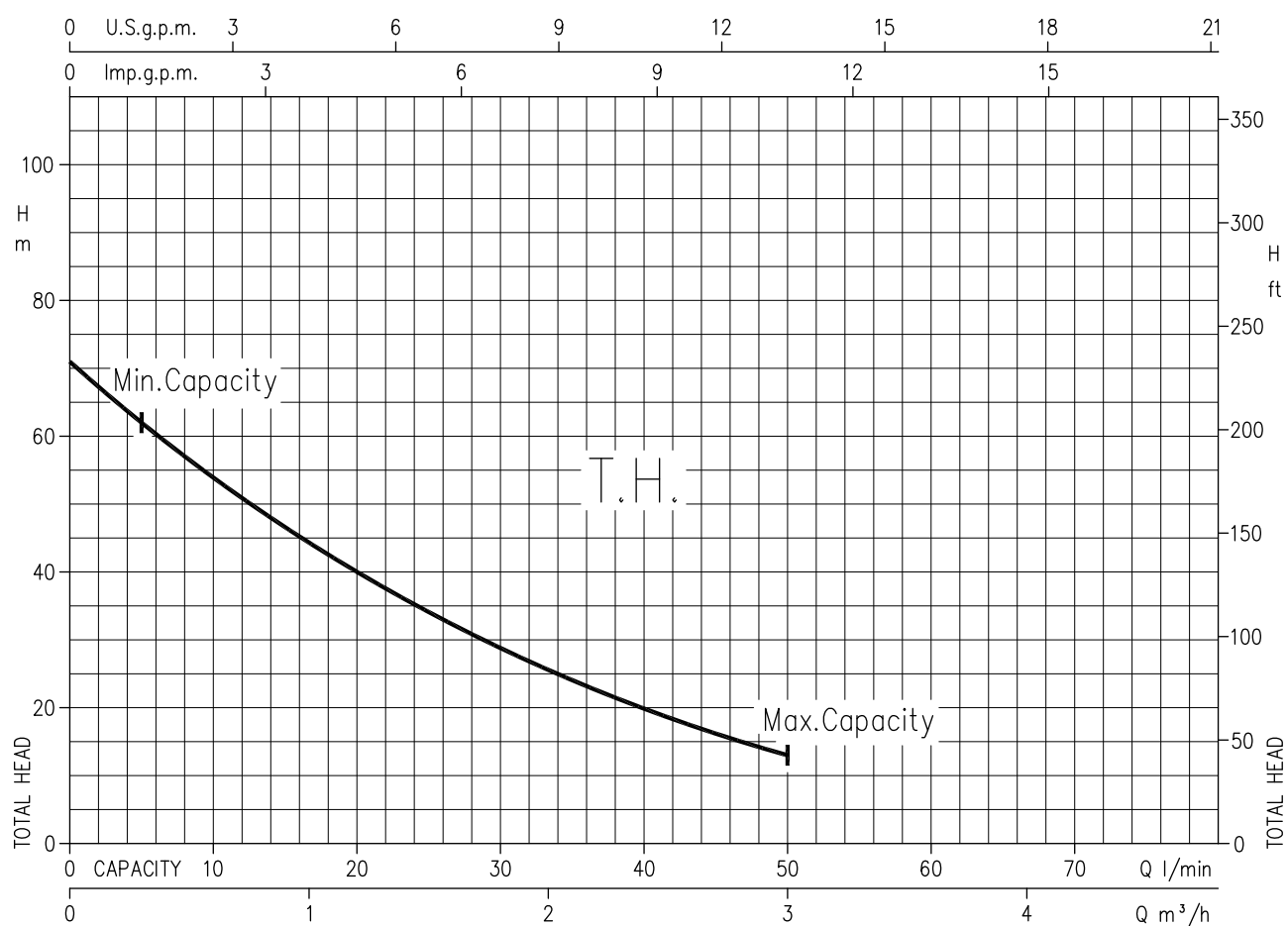
Rotation speed $\approx 2850 \text{ min}^{-1}$
Test standard: ISO 9906 – Annex A

PRA 0.80 - Impeller diameter = 70 mm



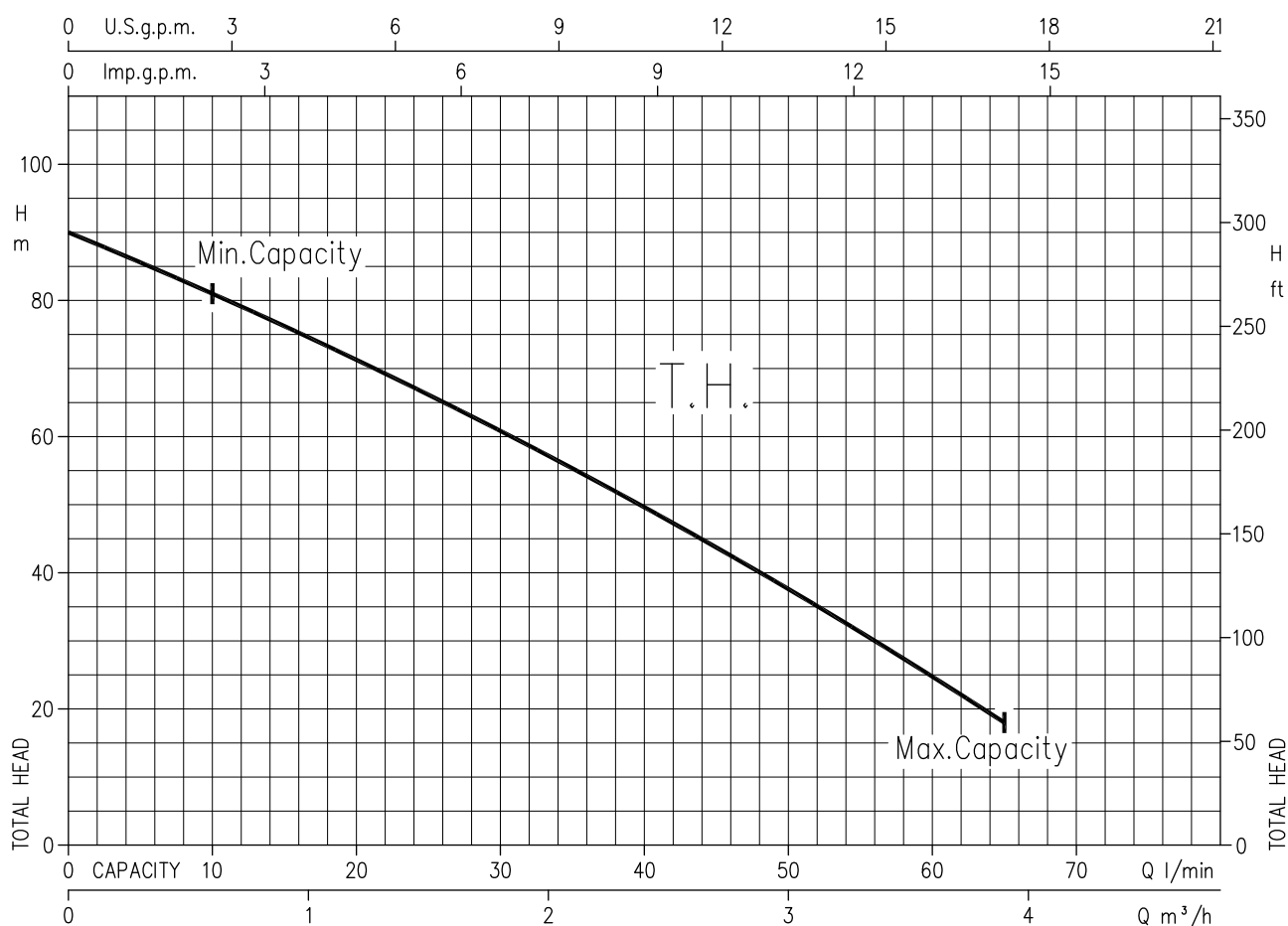
Rotation speed $\approx 2850 \text{ min}^{-1}$
Test standard: ISO 9906 – Annex A

PRA 1.00 - Impeller diameter = 70.8 mm



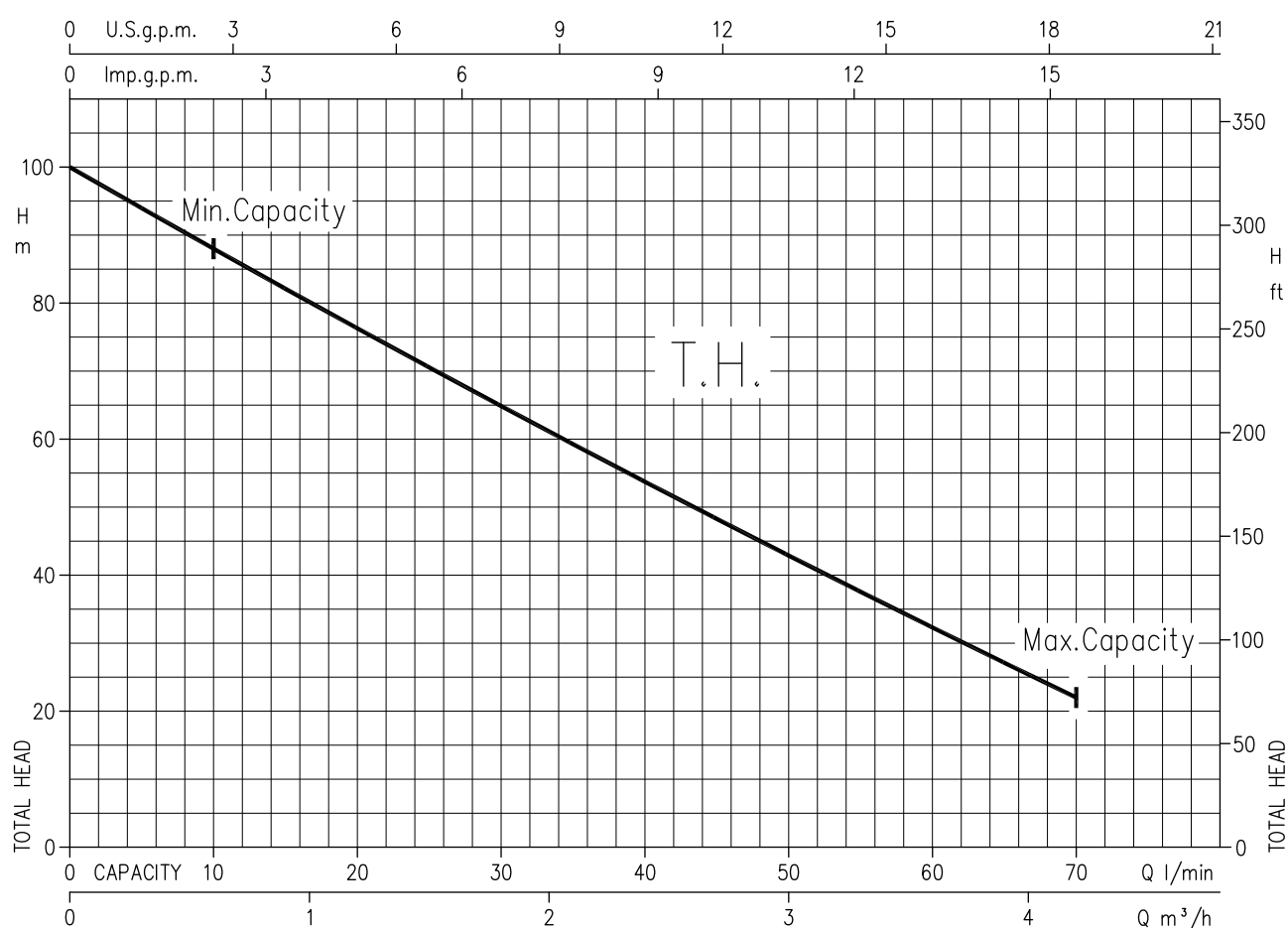
Rotation speed $\approx 2850 \text{ min}^{-1}$
Test standard: ISO 9906 – Annex A

PRA 1.50 - Impeller diameter = 77 mm

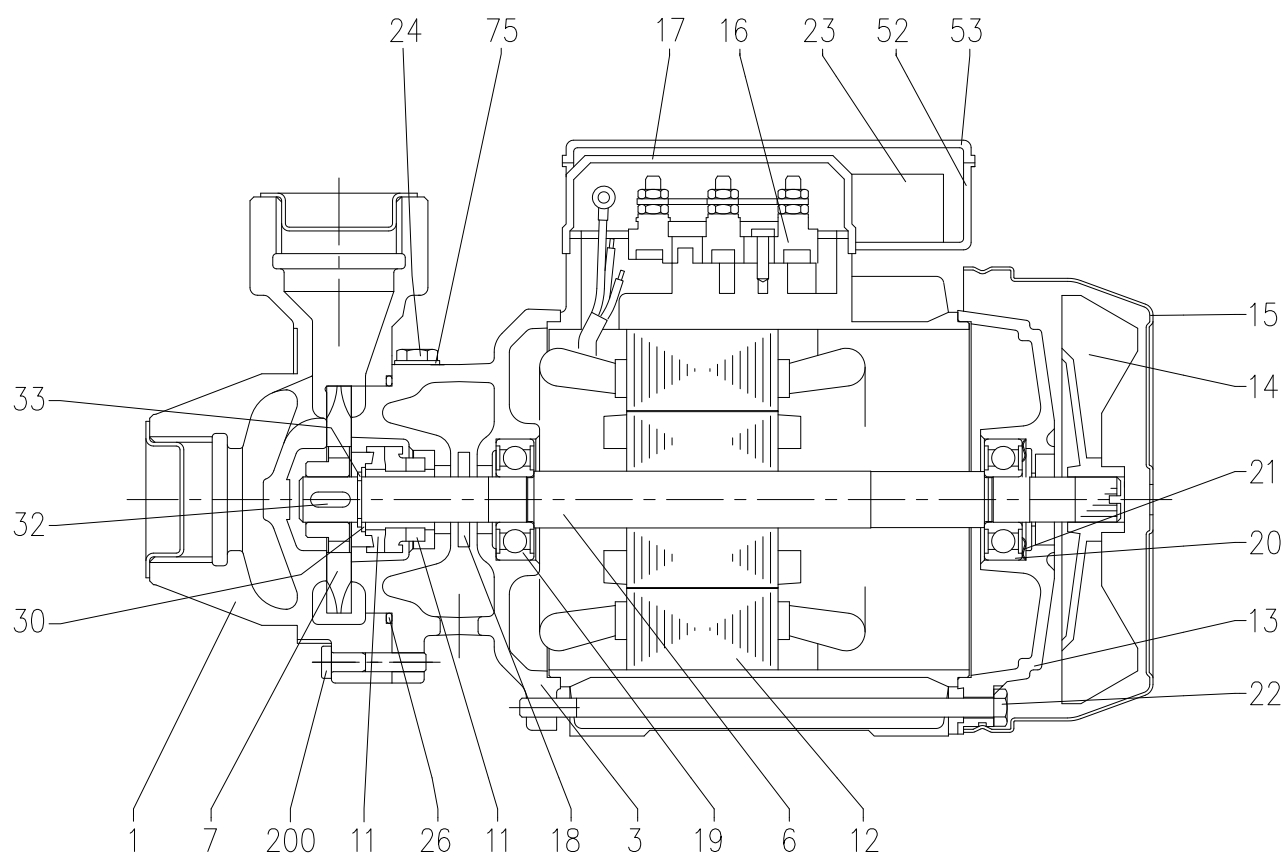


Rotation speed $\approx 2850 \text{ min}^{-1}$
Test standard: ISO 9906 – Annex A

PRA 2.00 - Impeller diameter = 78.2 mm



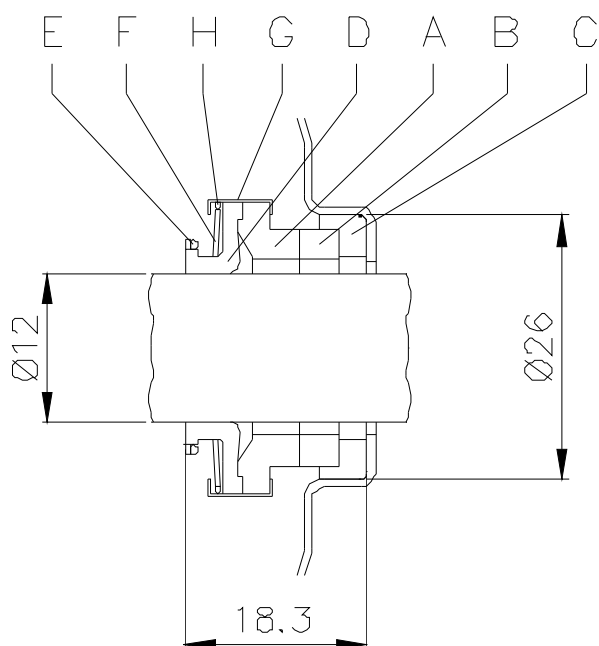
Rotation speed $\approx 2850 \text{ min}^{-1}$
Test standard: ISO 9906 – Annex A



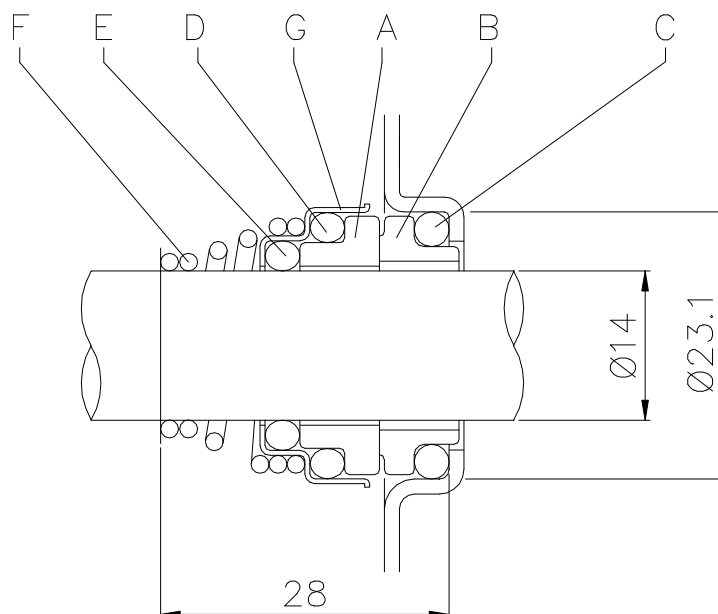
SECTIONAL VIEW TABLE

N°	PART NAME		MATERIAL	DIMENSIONS	STANDARD	Q.TY
1	Casing		Cast iron			1
3	Motor bracket		Cast iron			1
6	Shaft with rotor		[1]		UNI 7846	1
7	Impeller		Brass			1
11	Mechanical seal [2]		Carbon/Ceramic/NBR	See pag.302-303		1
12	Motor frame with stator		-			1
13	Motor cover		Aluminium			1
14	Fan		PP			1
15	Fan cover		Fe P04 Galvanized			1
16	Terminal box		-			1
17	Terminal box cover [3]		Aluminium			1
18	Splash ring		NBR			1
19	Pump side ball bearing		-			1
20	Fan side ball bearing		-			1
21	Adjusting ring		Steel C70			1
22	Tie rod		Fe 42 Galvanized			4
23	Capacitor [4]		-			1
24	Priming plug		Brass	G 1/8"	UNI 338	1
26	O-Ring		NBR			1
30	Washer		AISI 304			1
32	Key		AISI 316			1
33	Seeger ring		AISI 304		UNI 7435	1
52	Capacitor box [4]		ABS class V-0			1
53	Capacitor box cover [4]		ABS class V-0			1
75	Washer		Aluminium			1
200	Screw	0.37 kW	Zn Steel Cl. 8.8	M5X25	UNI 5938	3
		0.6-0.75 kW		M5X40	ISO 898-1	
		1.1-1.5 kW		M6X45		

- [1] Material:AVZ for version PRA 0.50
AISI 303 (wet extension) for the other version
- [2] See constructions mechanical seal page 301-302
- [3] Only for three phase
- [4] Only for single phase

**MECHANICAL SEAL
(UP TO 0.75 kW)**

REF	PART NAME	MATERIAL Standard version (PRA)
A	Rotary seal ring	Carbon graphite
B	Stationary seal ring	Ceramic
C	Gasket	NBR
D	Bellows	NBR
E	Ring	AISI 304
F	Self driving spring	AISI 304
G	Frame	AISI 304
H	Retainer ring	AISI 304

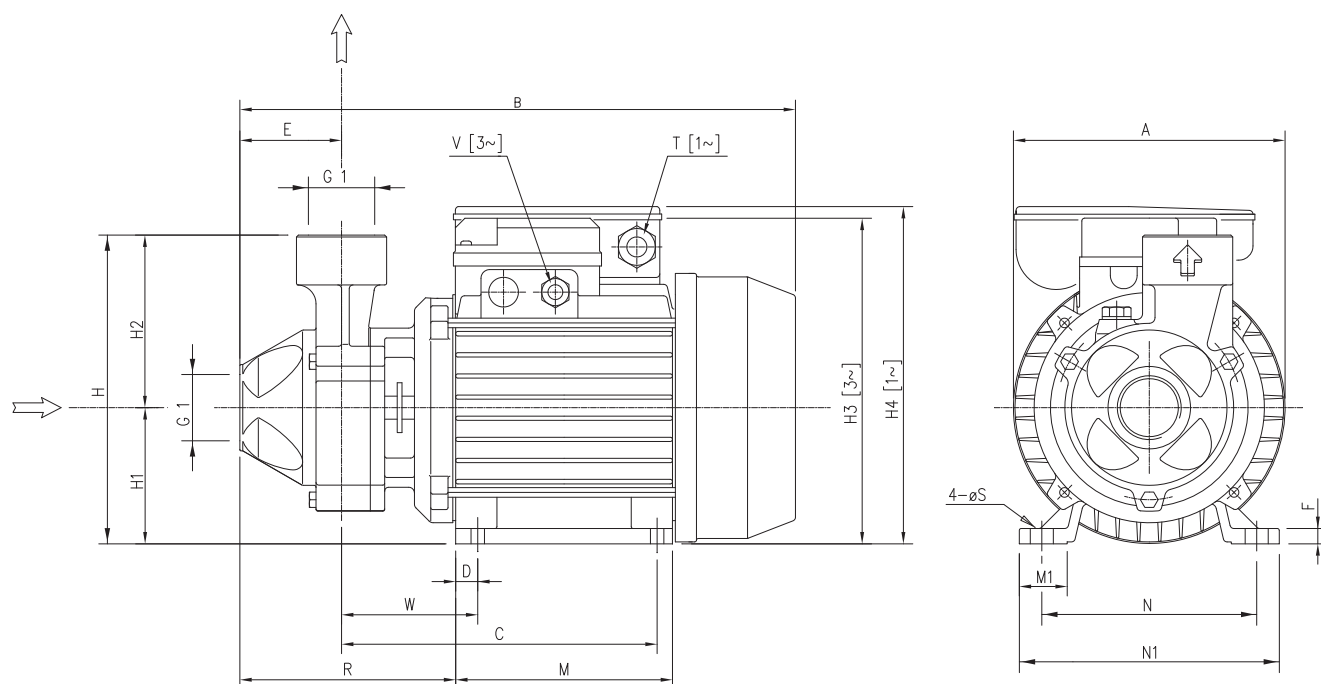
**MECHANICAL SEAL
(1.1 kW AND ABOVE)**

REF	PART NAME	MATERIAL Standard version (PRA)
A	Rotary seal ring	Ceramic
B	Stationary seal ring	Carbon graphite
C	O Ring	NBR
D	O Ring	NBR
E	O Ring	NBR
F	Self driving spring	AISI 316
G	Frame	AISI 304

BEARINGS

Pump Type		Ball Bearing	
Single phase	Three phase	Pump side	Fan side
PRA 0.50 M	PRA 0.50	6201	6201
PRA 0.80 M	PRA 0.80	6202	6202
PRA 1.00 M	PRA 1.00	6202	6202
PRA 1.50 M	PRA 1.50	6204	6203
PRA 2.00 M	PRA 2.00	6204	6203

PUMP

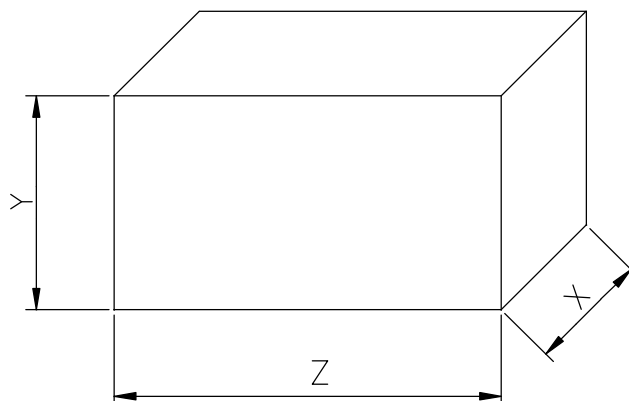


Pump Type	Dimensions [mm]																				Weight [kgf]	
	A	B	(*)	C	D	E	F	H	H1	H2	H3	H4	M	M1	N	N1	R	[1~] T	[3~] V	W		S
PRA 0.50M	130	264	-	149	10	50	7	143	63	80	-	160	100	23	100	120	119	PG11	-	69	7	6
PRA 0.50T	130	264	-	149	10	50	7	143	63	80	150	-	100	23	100	120	119	-	PG11	69	7	5.8
PRA 0.80M	130	291	-	159	11	54	9	161	71	90	-	178	112	25	112	135	122	PG11	-	69	7	10.5
PRA 0.80T	150	291	-	159	11	54	9	161	71	90	168	-	112	25	112	135	122	-	PG11	69	7	9.4
PRA 1.00M	150	291	-	159	11	54	9	161	71	90	-	178	112	25	112	135	122	PG11	-	69	7	9.5
PRA 1.00T	150	291	291	159	11	54	9	161	71	90	168	-	112	25	112	135	122	-	M16x1.5	69	7	10.5
PRA 1.50M	162	343	-	188	12	57	12	175	80	95	-	212	124	28	125	152	144	PG13.5	-	88	9	17.5
PRA 1.50T	162	331	356	188	12	57	12	175	80	95	187	-	124	28	125	152	144	-	M20x1.5	88	9	16.4
PRA 2.00M	162	343	-	188	12	57	12	175	80	95	-	212	124	28	125	152	144	PG13.5	-	88	9	17.5
PRA 2.00T	162	344	357	188	12	57	12	175	80	95	187	-	124	28	125	152	144	-	M20x1.5	88	9	17.3

[1~] Single Phase

[3~] Three Phase

PACKING



Pump Type		Packing [mm]						Weight	
		X		Y		Z		[kgf]	
Single Phase	Three Phase	[1~]	[3~]	[1~]	[3~]	[1~]	[3~]	[1~]	[3~]
PRA 0.50 M	PRA 0.50	155	155	195	195	285	285	7	6,1
PRA 0.80 M	PRA 0.80	180	180	200	200	305	305	11	9,4
PRA 1.00 M	PRA 1.00	180	180	200	200	305	305	10	9,9
PRA 1.50 M	PRA 1.50	195	195	230	230	385	385	18,5	14,6
PRA 2.00 M	PRA 2.00	195	195	230	230	385	385	18,5	17,9

[1~] Single Phase

[3~] Three Phase

MOTOR DATA

Pump type	Power		Efficiency	Capacitor		Efficiency (% load)				Input	Full load current		Locked rotor current
Single Phase	[kW]	[HP]		[μF]	[V]	η %			cos-φ	[kW]	[A]		[A]
						50%	75%	100%			230 V		230 V
PRA 0.50 M	0,37	0,5	IE2	12,5	450	60,0	67,6	69,8	0,92	0,55	2,6		9,6
PRA 0.80 M	0,75	1	IE2	25	450	61,0	70,8	79,2	0,93	0,95	4,4		24
PRA 1.00 M	0,75	1	IE2	25	450	61,0	70,8	79,2	0,93	0,95	4,4		24,0
PRA 1.50 M	1,5	2	IE2	40	450	69,8	76,6	81,3	0,92	1,90	9,0		65,2
PRA 2.00 M	1,5	2	IE2	40	450	69,8	76,6	81,3	0,92	1,90	9,0		65,2

Pump type	Power		Efficiency	Efficiency (% load)			Input	Full load current		Locked rotor current	
Three Phase	[kW]	[HP]		η %			[kW]	[A]		[A]	
				50%	75%	100%		230 V	400 V	230 V	400 V
PRA 0.50	0,37	0,5	IE3	70,2	73,1	74,5	0,51	1,7	1,0	7,1	4,1
PRA 0.80	0,6	0,8	IE3	80,2	82,8	82,9	0,90	3,6	1,7	20,5	11,8
PRA 1.00	0,75	1	IE3	80,9	82,3	82,1	0,91	3,0	1,7	19,7	11,4
PRA 1.50	1,1	1,5	IE3	83,0	85,8	85,6	1,77	5,8	3,3	47,4	27,4
PRA 2.00	1,5	2	IE3	82,7	86,1	87,0	1,72	6,6	3,8	66,6	38,4

NOISE DATA

Pump type		L _{pA} - dB(A) *
Single Phase	Three Phase	
PRA 0.50 M	PRA 0.50	<70
PRA 0.80 M	PRA 0.80	
PRA 1.00 M	PRA 1.00	
PRA 1.50 M	PRA 1.50	73
PRA 2.00 M	PRA 2.00	

* Mean value of several measures at 1m distance around the pump.
Tolerance ± 2.5 dB.