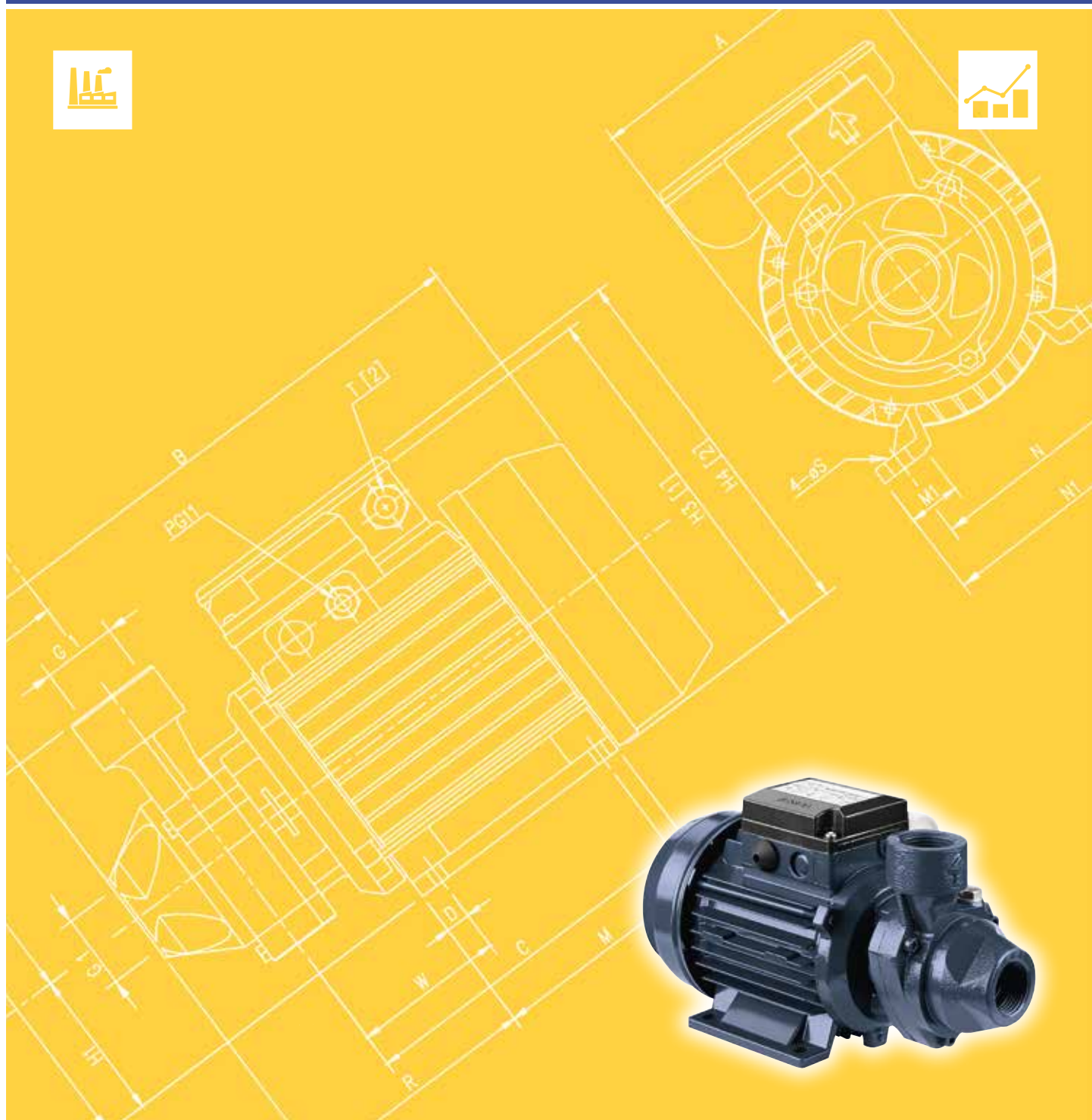




Japanese Technology since 1912

PRA

Data Book 50Hz



	Page
- SPECIFICATIONS	200
SELECTION CHART	201
TYPE KEY AND CURVE SPECIFICATIONS	202
PERFORMANCE CURVE PRA 0.50	203
PERFORMANCE CURVE PRA 0.80	204
PERFORMANCE CURVE PRA 1.00	205
PERFORMANCE CURVE PRA 1.50	206
PERFORMANCE CURVE PRA 2.00	207
- CONSTRUCTIONS	300
SECTIONAL VIEW DRAWING	300
SECTIONAL VIEW TABLE	301
MECHANICAL SEAL (UP TO 0.75 kW)	302
MECHANICAL SEAL (1.1 kW AND ABOVE)	303
BEARINGS	303
- DIMENSIONS AND WEIGHT	400
PUMP	400
PACKING	401
- TECHNICAL DATA	500
MOTOR DATA	500
NOISE DATA	500

SPECIFICATION

50Hz

Rev. N

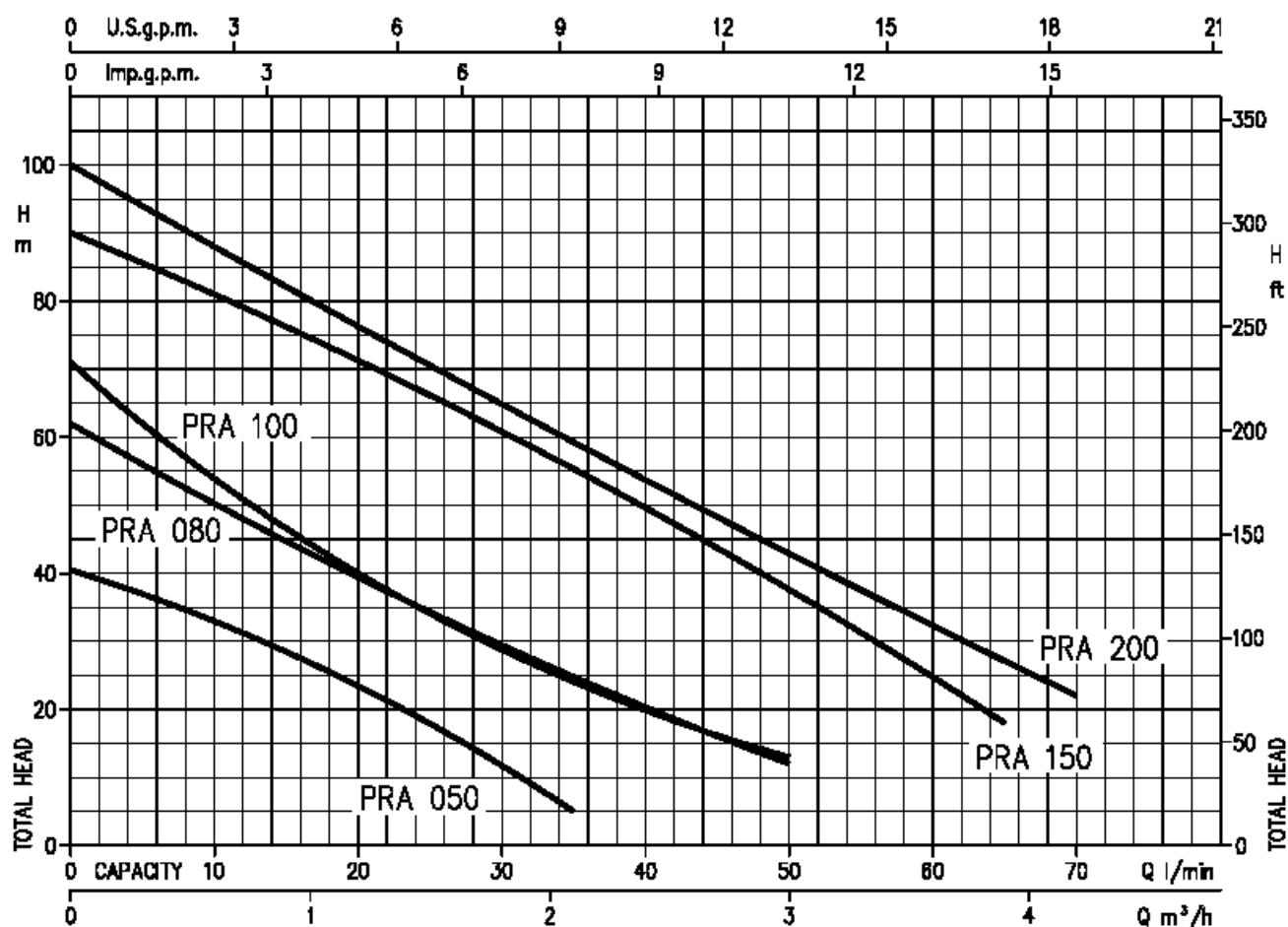
PUMP		
Liquid	Type of liquid	Clean water
Handled	Temperature [°C]	min. +5 max. +80
Maximum working pressure	[MPa]	0.6 (PRA 0.50) 0.75 (PRA 0.80) 1.2 (PRA 1.00-1.50-2.00)
Construction	Impeller	Peripheral turbine type
	Shaft seal type	Mechanical seal
	Bearing	Sealed ball bearing
Pipe Connection	Suction [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)	

SELECTION CHART

50Hz

Rev. N



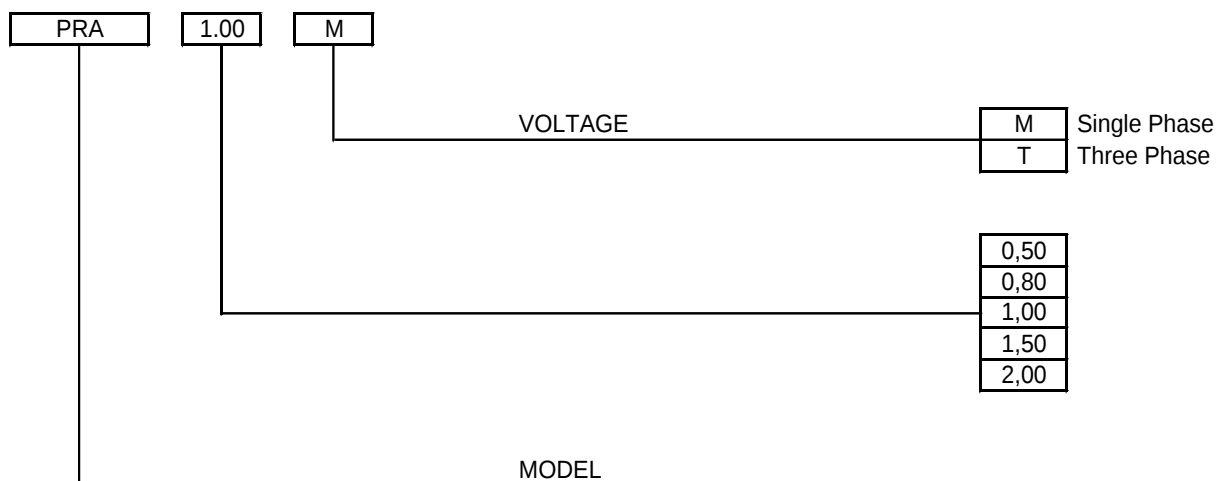
Pump Type		Q=Capacity									
		l/min	0	5	10	15	20	35	50	65	70
Single phase	Three phase	m³/h	0	0,3	0,6	0,9	1,2	2,1	3	3,9	4,2
H=Total manometric head in meters											
PRA 0.50 M	PRA 0.50 T	40,5	37	33,3	28,7	23,7	5	-	-	-	-
PRA 0.80 M	PRA 0.80 T	62	56	50,7	45,1	39,8	25	12	-	-	-
PRA 1.00 M	PRA 1.00 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. N

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

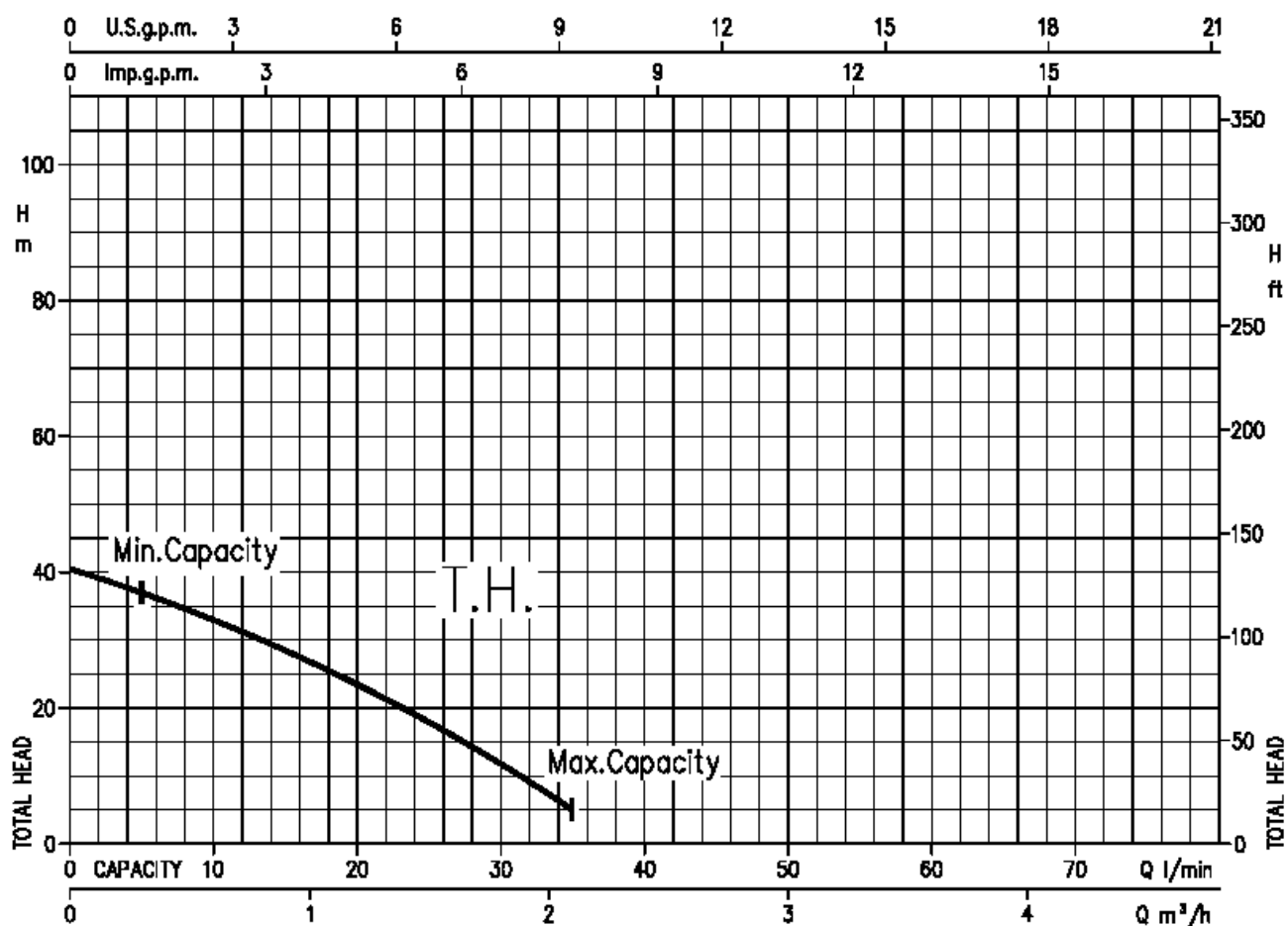
Measurements were carried out with clean water at 20°C of temperature and with a kinematic viscosity of $\nu = 1 \text{ mm}^2/\text{s}$ (1 cSt)

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:

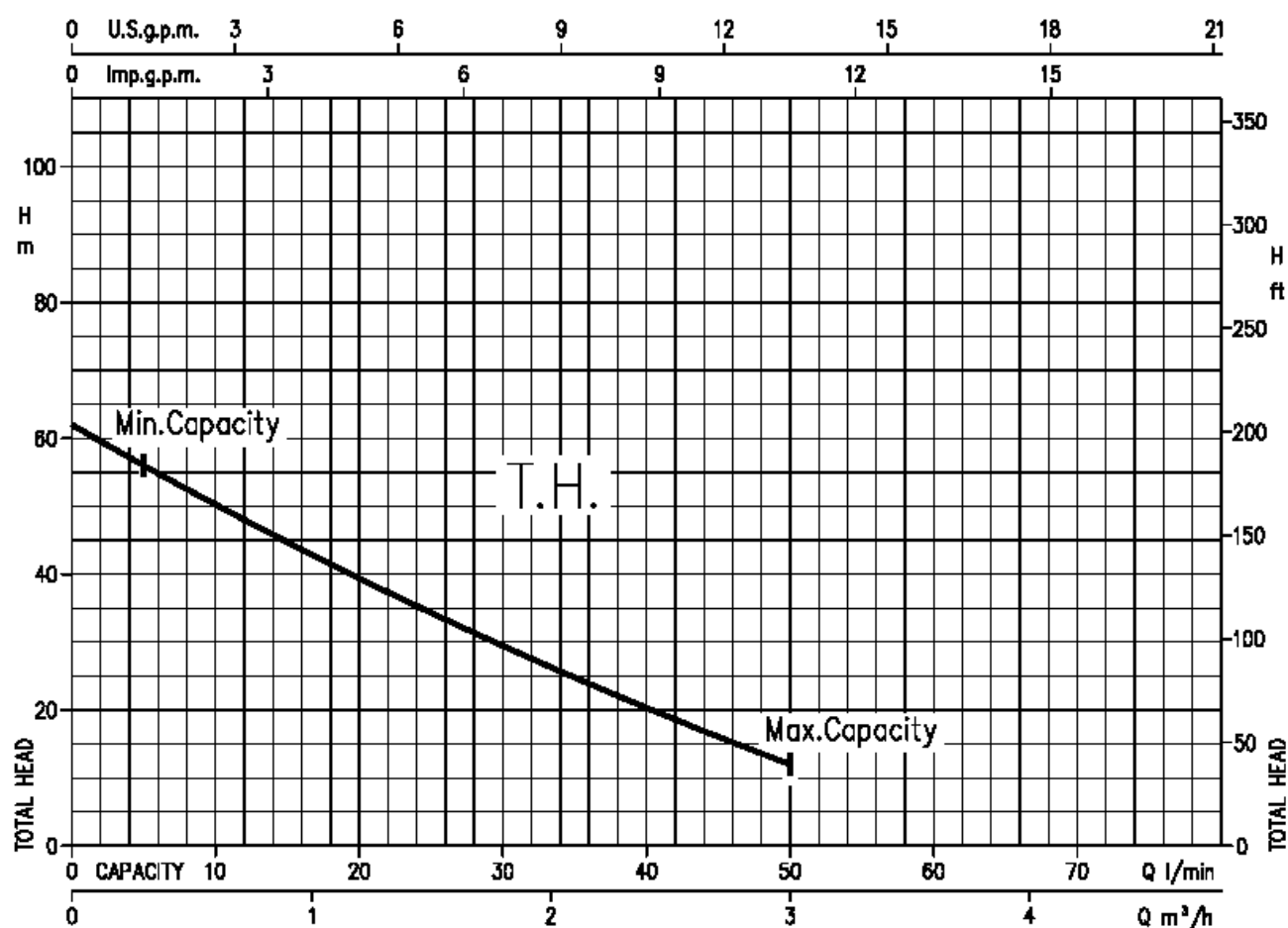
Q = volume flow rate
H = total head

PRA 0.50 - Impeller diameter = 60 mm



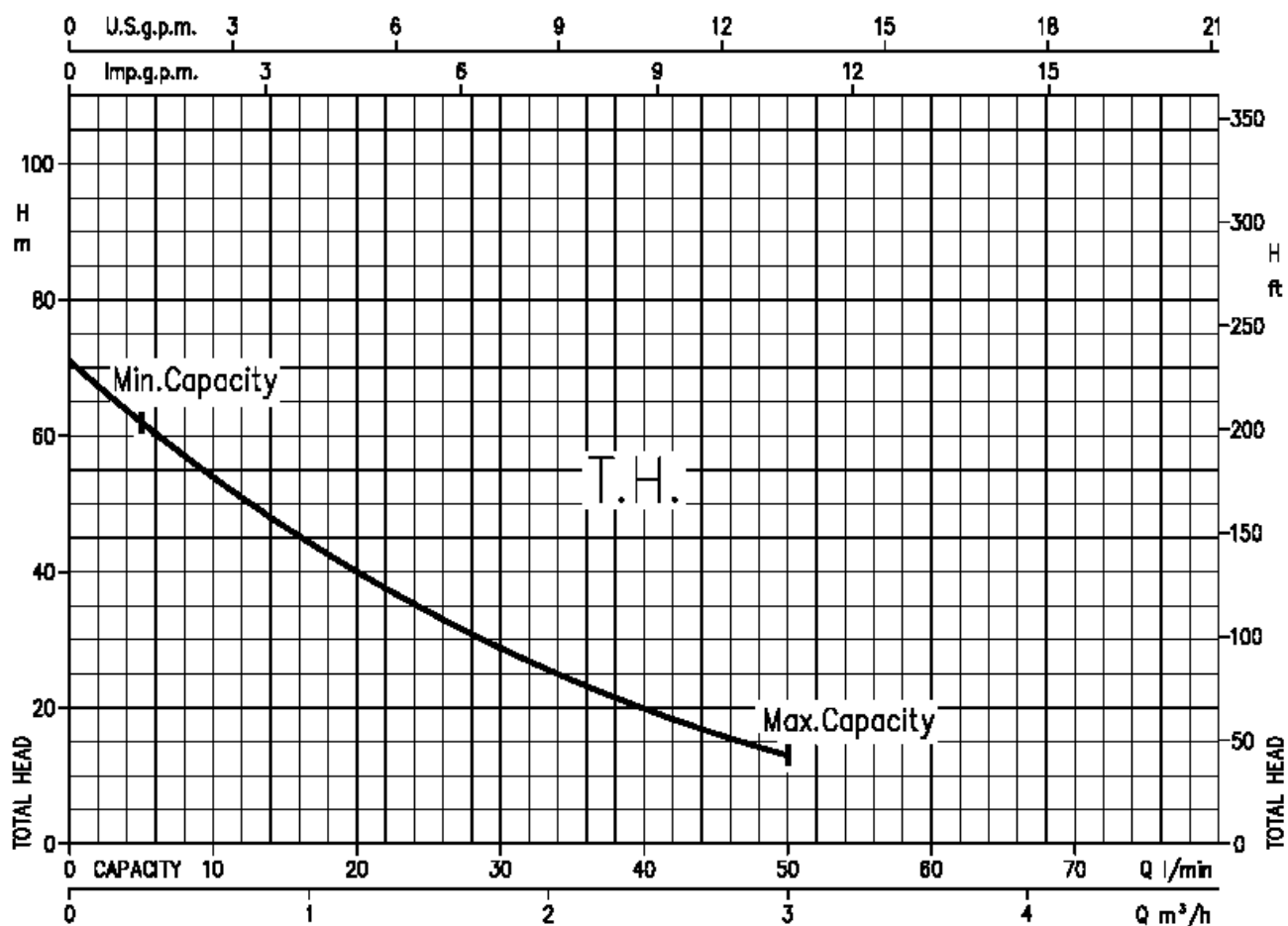
Rotation speed $\approx 2850 \text{ min}^{-1}$
Test standard: ISO 9906 – Annex A

PRA 0.80 - Impeller diameter = 70 mm



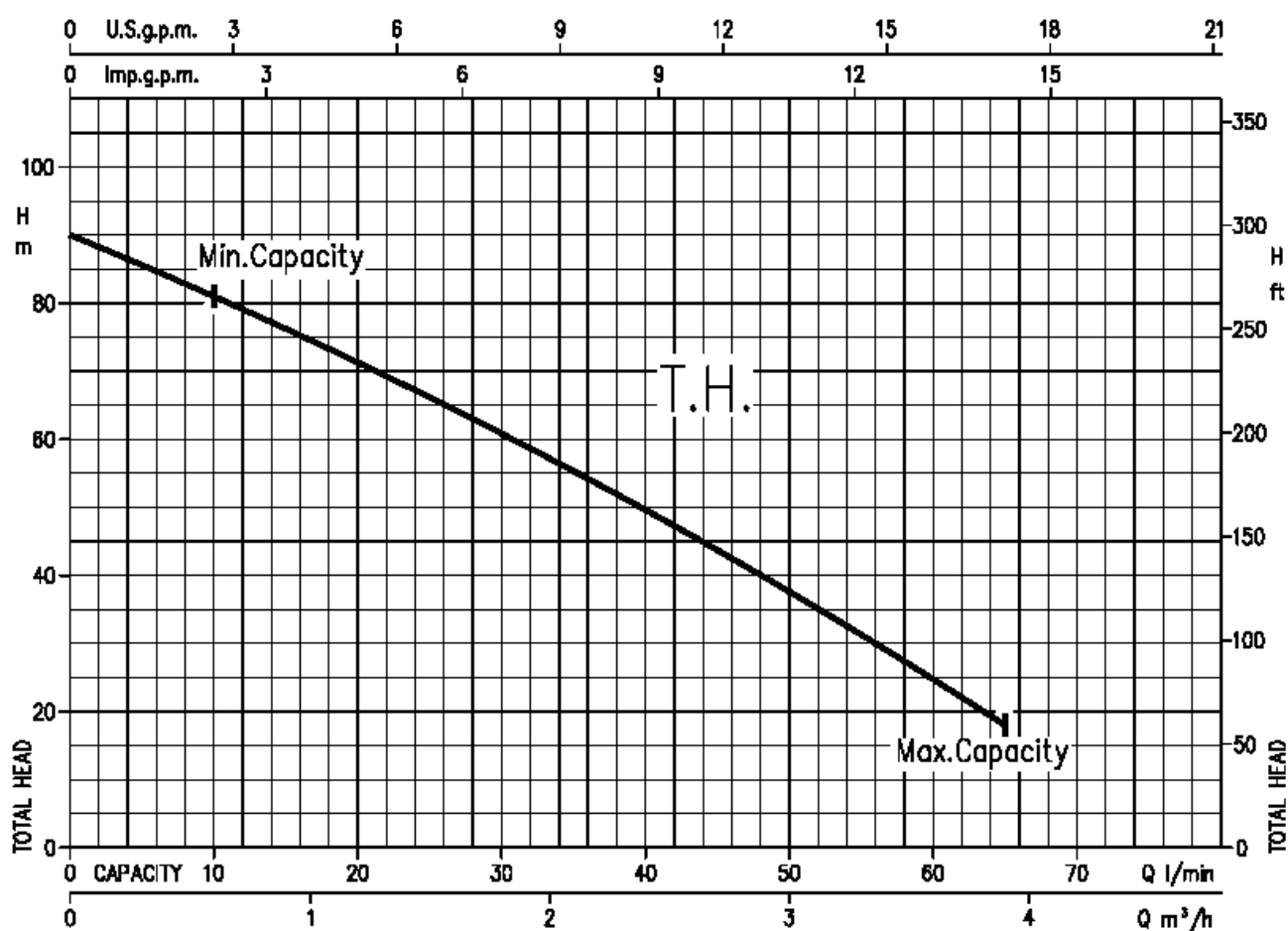
Rotation speed $\approx 2850 \text{ min}^{-1}$
Test standard: ISO 9906 – Annex A

PRA 1.00 - Impeller diameter = 70.8 mm



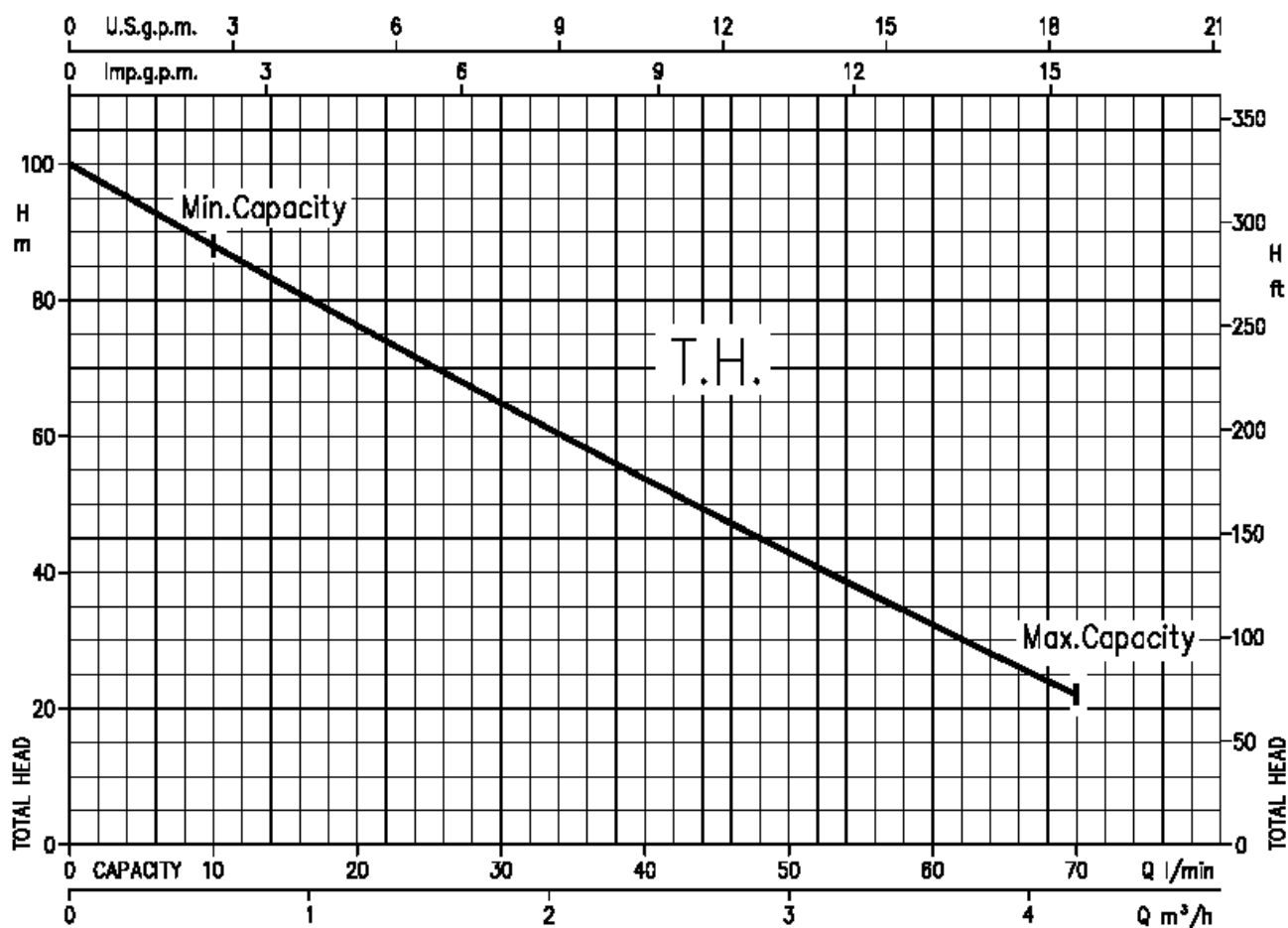
Rotation speed $\approx 2850 \text{ min}^{-1}$
Test standard: ISO 9906 – Annex A

PRA 1.50 - Impeller diameter = 77 mm



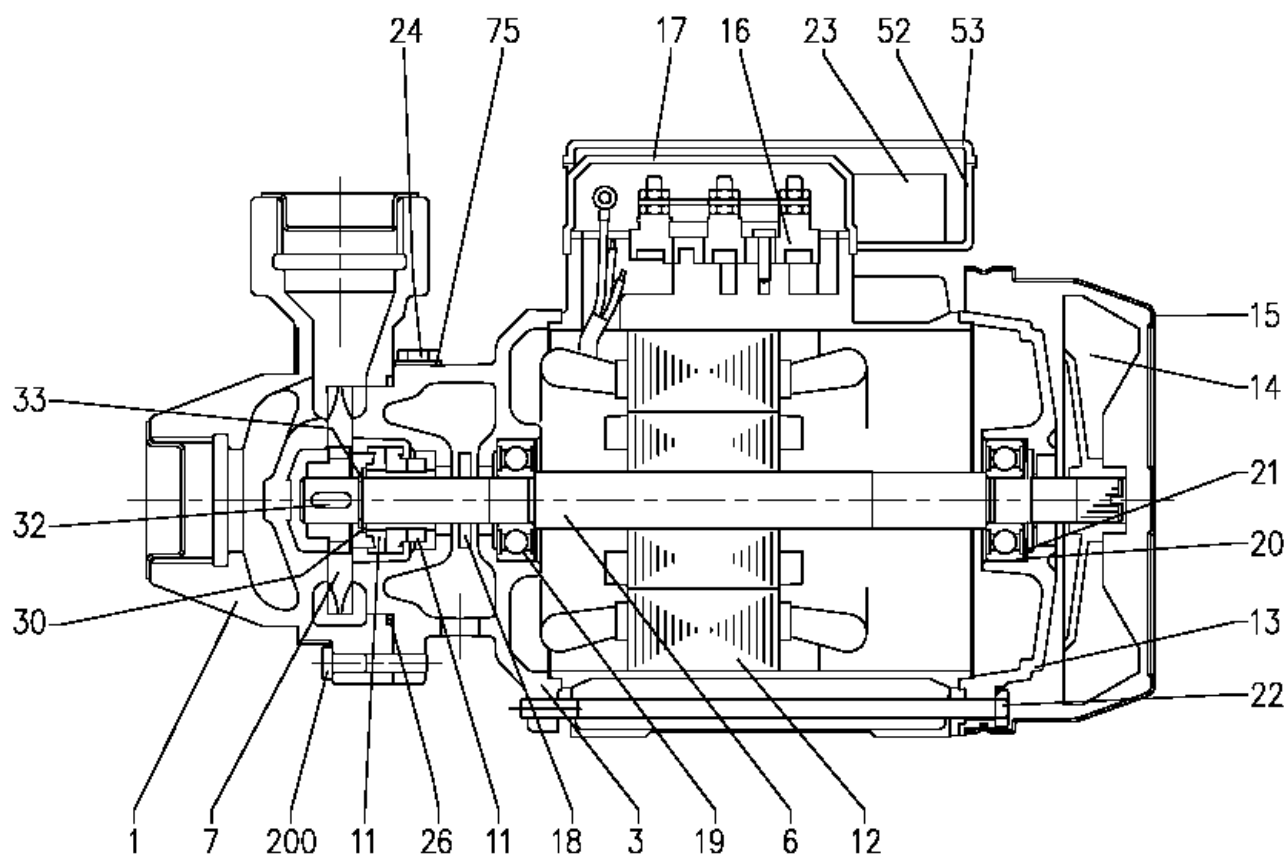
Rotation speed $\approx 2850 \text{ min}^{-1}$
Test standard: ISO 9906 – Annex A

PRA 2.00 - Impeller diameter = 78.2 mm



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

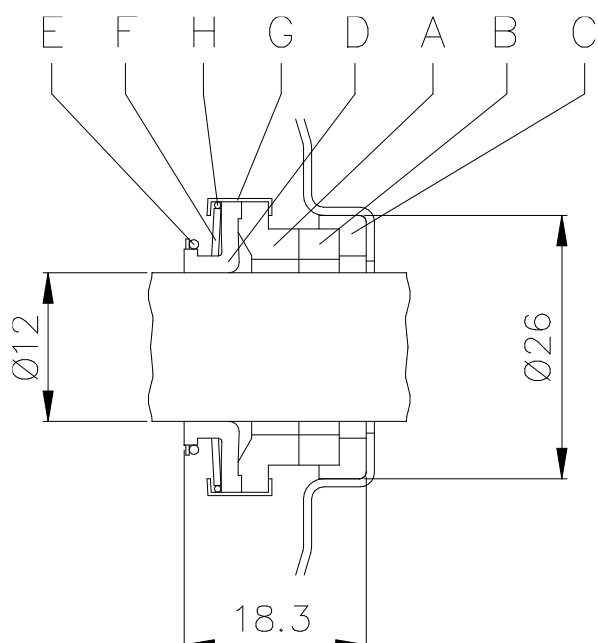
SECTIONAL VIEW DRAWING



SECTIONAL VIEW TABLE

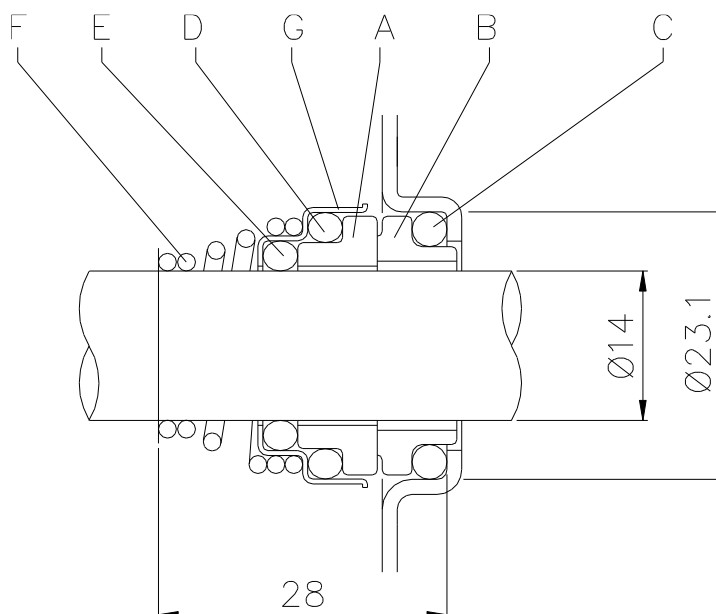
N°	PART NAME		MATERIAL	DIMENSIONS	STANDARD	Q.TY
1	Casing		Cast iron			1
3	Motor bracket		Cast iron			1
6	Shaft with rotor		[1]		UNI 7846	1
7	Impeller		Brass			1
11	Mechanical seal [2]		Carbon/Ceramic/NBR	See pag.302-303		1
12	Motor frame with stator		-			1
13	Motor cover		Aluminium			1
14	Fan		PP			1
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)

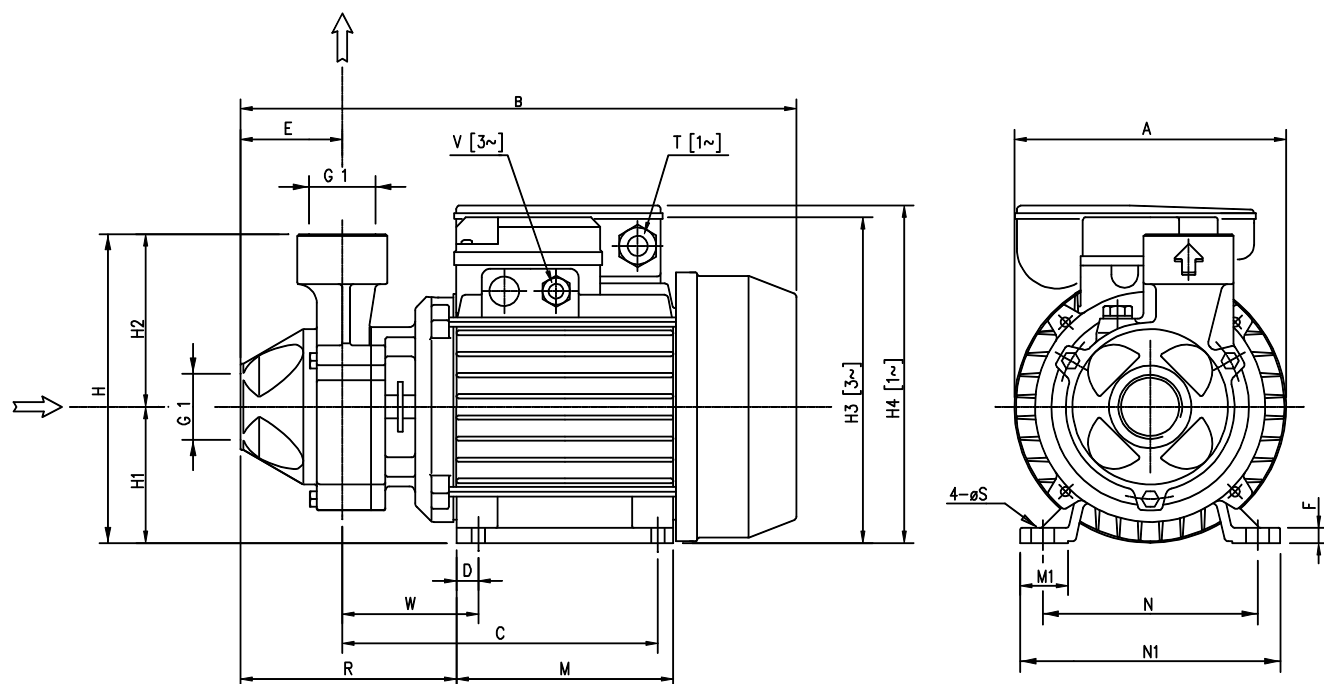


REF	PART NAME	MATERIAL Standard version (PRA)
A	Rotary seal ring	Ceramic
B	Stationary seal ring	Carbon graphite
C	O Ring	NBR
D	O Ring	NBR
E	O Ring	NBR
F	Self driving spring	AISI 316
G	Frame	AISI 304

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

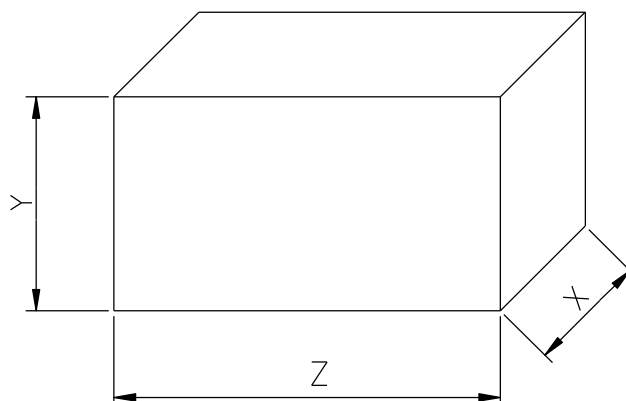


Pump Type	Dimensions [mm]																				Weight [kgf]	
	A	B	(*)	C	D	E	F	H	H1	H2	H3	H4	M	M1	N	N1	R	[1~] T	[3~] V	W		S
PRA 0.50M	130	264	-	149	10	50	7	143	63	80	-	160	100	23	100	120	119	PG11	-	69	7	6
PRA 0.50T	130	264	-	149	10	50	7	143	63	80	150	-	100	23	100	120	119	-	PG11	69	7	5.8
PRA 0.80M	130	291	-	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	361	-	188	12	57	12	175	80	95	-	216	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	361	-	188	12	57	12	175	80	95	-	216	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] 230 V	[A] 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.



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