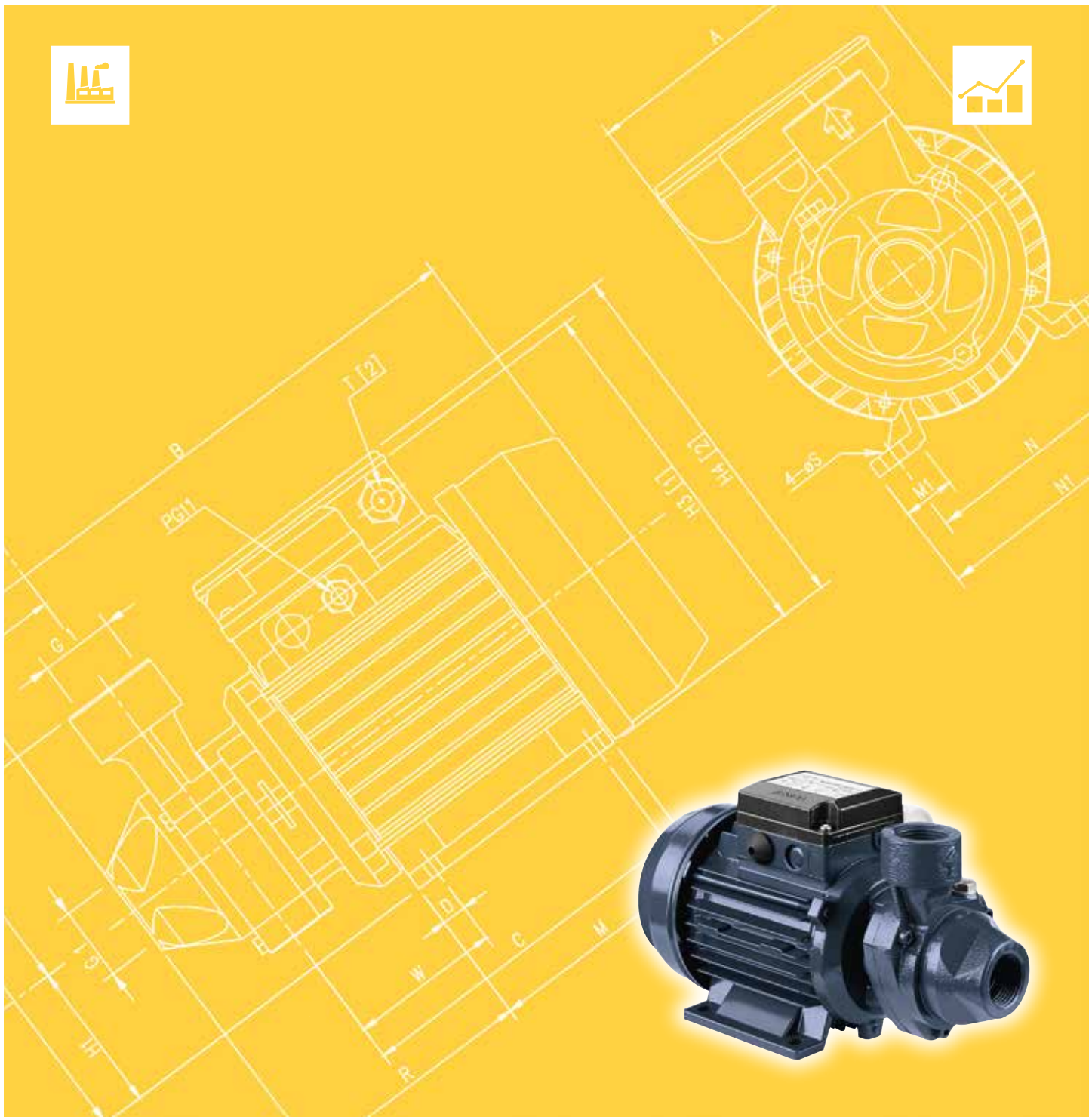




Japanese Technology since 1912

PRA

Data Book 60Hz



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**SPECIFICATIONS**

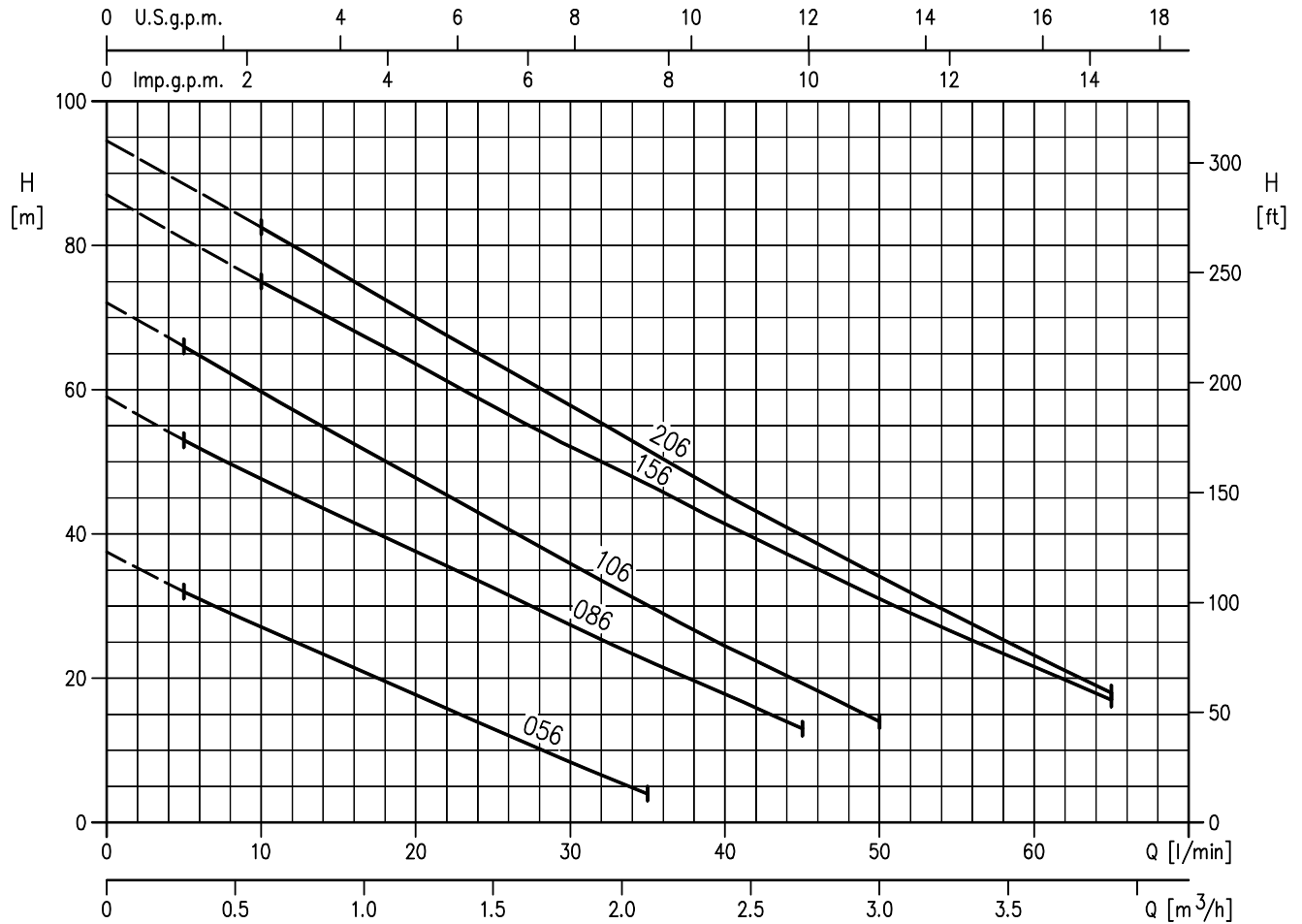
60Hz

Rev. E

<b>PUMP</b>		
Liquid Handled	Type of liquid	Clean water
	Temperature [°C]	min. +5 max. +80
Maximum working pressure	[MPa]	0.6 (PRA 056) 0.75 (PRA 086) 1.2 (PRA 106-156-206)
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 9906:2012 - Grade 3B

<b>MOTOR</b>		
Type	Electric - TEFC	
	Single Phase	Three Phase
Efficiency level (Rif.1781/2019)	-	IE3
No. of Poles	2	
Rotation speed [min <sup>-1</sup> ]	≈ 3350	
Insulation Class	F	
Protection degree	IP 44	
Power rating	[kW]	0.37 ÷ 1.5
	[HP]	0.5 ÷ 2
Frequency [Hz]	60	
Voltage [V]	110-115 ±6%	220/380 -6% +10% (from 0.37 kW up to 0.6 kW)
	220-230 ±6%	220/380 ±10% (from 0.75 kW up to 1.5 kW)
		220/380-460 ±10% (IE3* from 0.75 kW up to 1.5 kW)
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 TABLE page 400)	

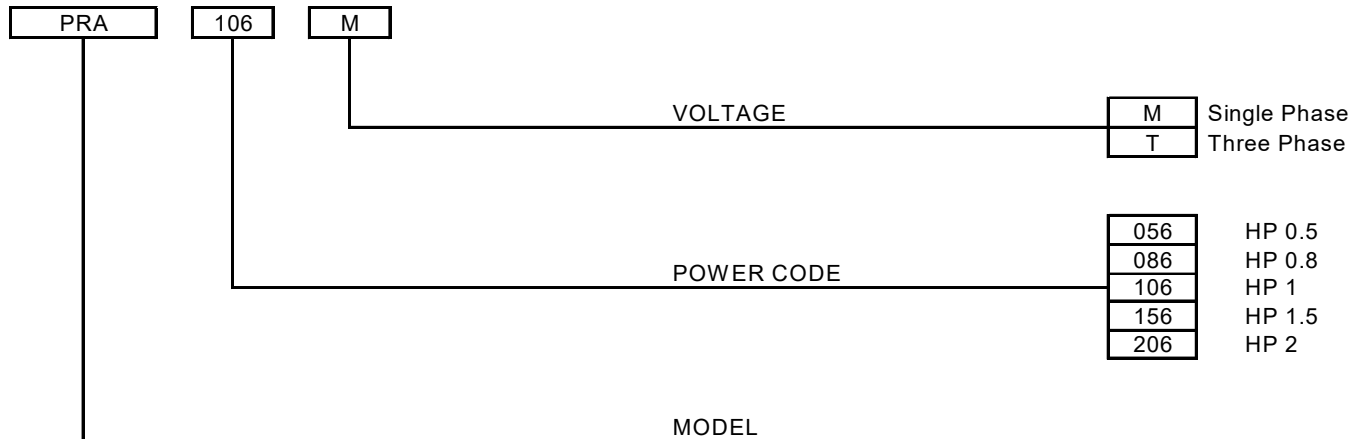
PERFORMANCE RANGE



SELECTION CHART

Pump type		Power		Q=Capacity											
				l/min.	0	5	10	20	30	35	40	45	50	60	65
Single Phase	Three Phase	[kW]	[HP]	m³/h	0	0,3	0,6	1,2	1,8	2,1	2,4	2,7	3,0	3,6	3,9
H=Total manometric head in meters															
PRA 056 M	PRA 056 T	0,37	0,5	37,5	32	27	17,7	8,4	4	-	-	-	-	-	-
PRA 086 M	PRA 086 T	0,6	0,8	59	53	48	37,6	27,5	22,2	17,9	13	-	-	-	-
PRA 106 M	PRA 106 T	0,75	1	72	66	60	48	35,9	30,1	24,5	19,4	14	-	-	-
PRA 156 M	PRA 156 T	1,1	1,5	87	-	75	63,5	52	47	41,5	36,2	31	21,8	17	-
-	PRA 206 T	1,5	2,0	94,5	-	82,5	70	57,8	51,6	45,5	39,8	34,1	23,2	18	-

### TYPE KEY



### CURVES SPECIFICATIONS

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

Tolerances according to ISO 9906:2012 - 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°C of temperature and with a kinematic viscosity of  $\nu = 1 \text{ mm}^2/\text{s}$  (1 cSt)

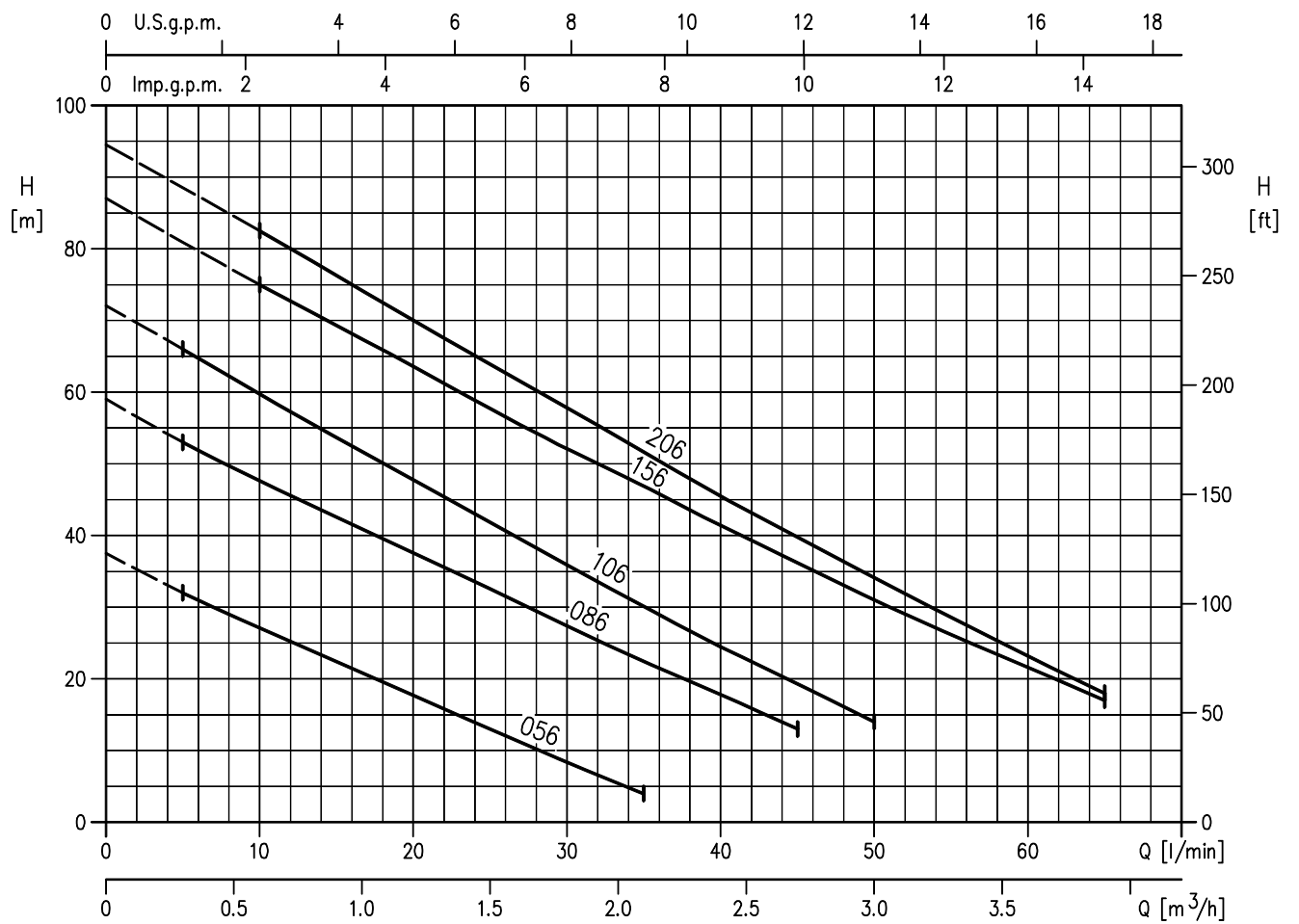
The continuous curves indicate the recommended working range. The dotted curve is only a guide.

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:

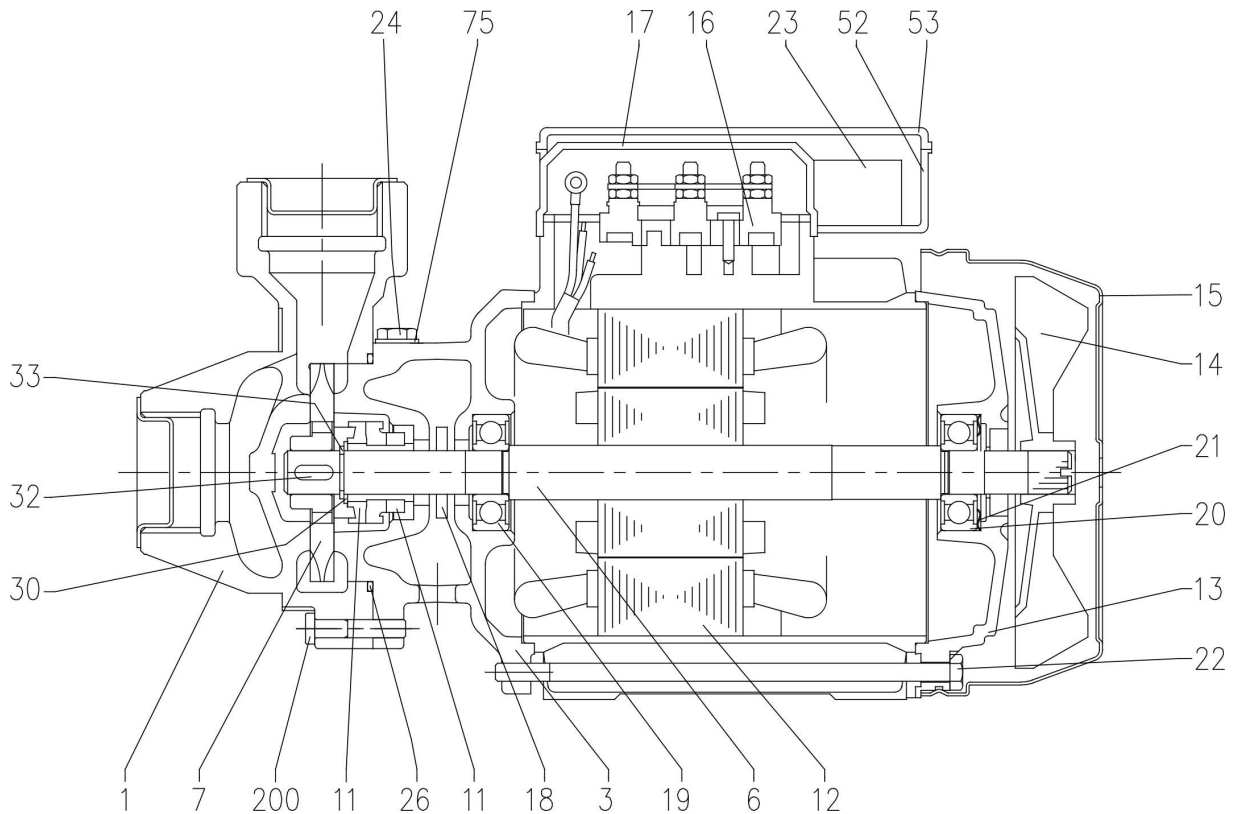
- Q = volume flow rate
- H = total head

PRA 056 (0.37 kW) - Impeller dimension = 57 mm  
 PRA 086 (0.6 kW) - Impeller dimension = 67 mm  
 PRA 106 (0.75 kW) - Impeller dimension = 68 mm  
 PRA 156 (1.1 kW) - Impeller dimension = 74 mm  
 PRA 206 (1.5 kW) - Impeller dimension = 74.5 mm



Rotation speed  $\approx 3350 \text{ min}^{-1}$   
 Test standard: ISO 9906:2012 - Grade 3B

### SECTIONAL VIEW



N°	PART NAME	MATERIAL	Q.TY
1	Casing	Cast Iron	1
3	Motor bracket	Cast Iron	1
6	Shaft with rotor	[1]	1
7	Impeller	Brass	1
11	Mechanical seal [2]	Carbon/Ceramic/NBR	1
12	Motor frame with stator	-	1
13	Motor cover	Aluminium	1
14	Fan	PP	1
15	Fan cover	Fe P04 Zincate	1
16	Terminal box	-	1
17	Terminal box cover [3]	Aluminium	1
18	Splash ring	NBR	1
19	Pump side ball bearing	-	1

N°	PART NAME	MATERIAL	Q.TY
20	Fan side ball bearing	-	1
21	Adjusting ring	Steel C70	1
22	Tie rod	Fe 42 Zincate	4
23	Capacitor [4]	-	1
24	Priming plug	Brass	1
26	O-Ring	NBR	1
30	Washer	AISI 304	1
32	Key	AISI 316	1
33	Seeger ring	AISI 304	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	Zincate Steel Cl. 8.8 ISO 898-1	3

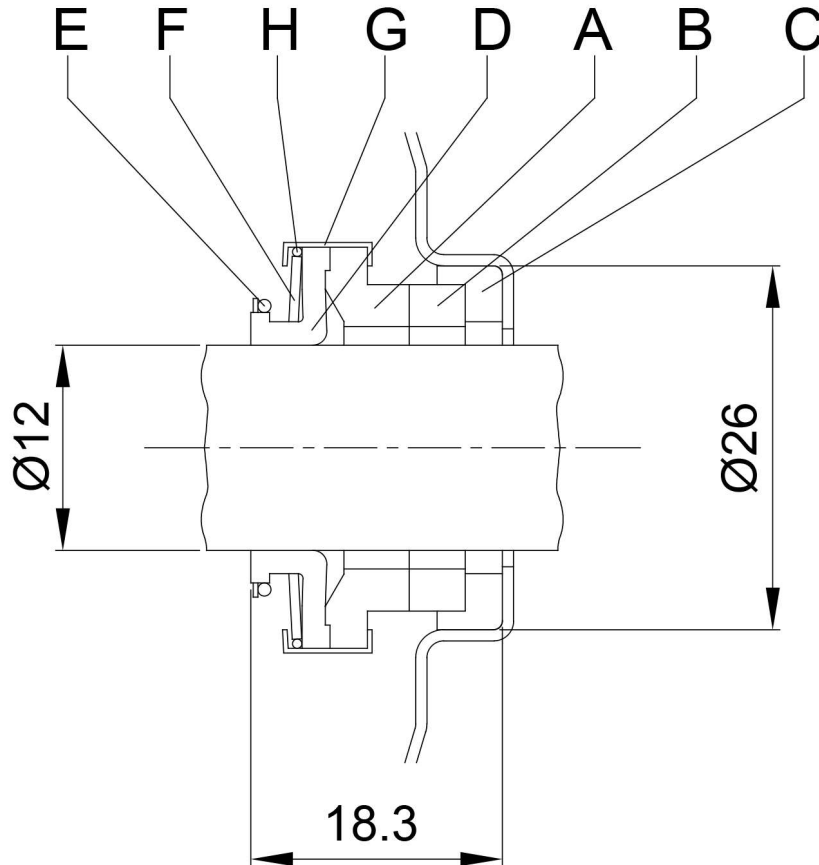
[1] Material: Carbon steel (1.0736) for version PRA 056  
AISI 303 (wet extension) for the other version

[2] See **MECHANICAL SEAL** page 301-302

[3] Only for Three phase

[4] Only for Single phase

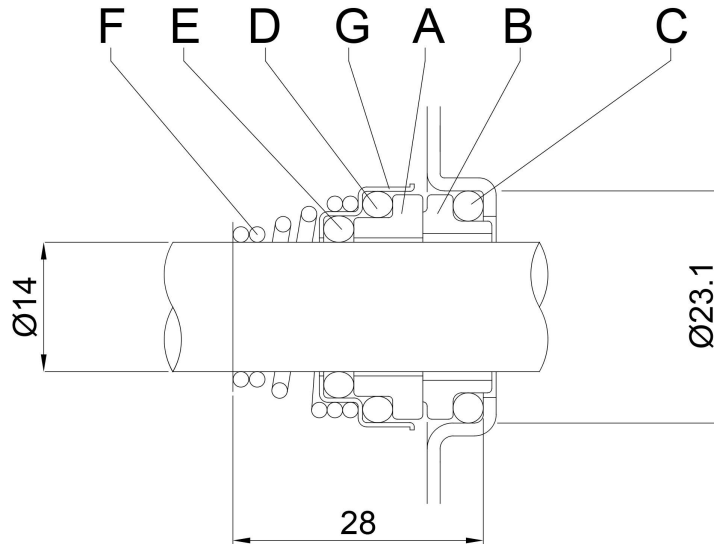
MECHANICAL SEAL  
(UP TO 0.75 kW)



REF	PART NAME	MATERIAL Standard version
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)**

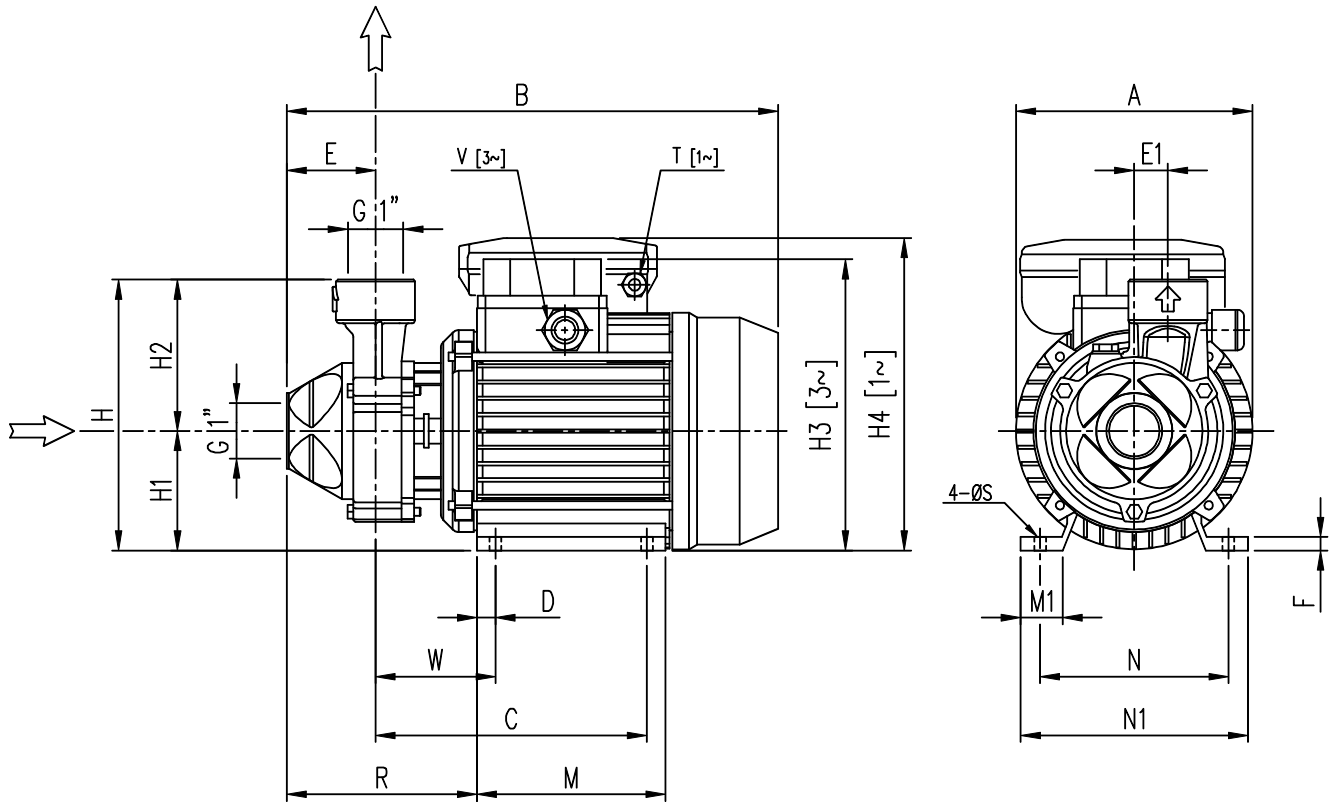


REF	PART NAME	MATERIAL Standard version
A	Rotary seal ring	ceramic
B	Stationary seal ring	carbon graphite
C	O Ring	NBR
D	O Ring	NBR
E	O Ring	NBR
F	Self driving spring	AISI 316
G	Frame	AISI 304

**BEARINGS**

Pump Type		Ball Bearing	
Single phase	Three phase	Pump side	Fan side
PRA 056 M	PRA 056 T	6201 2DW C3	6201 2DW C3
PRA 086 M	PRA 086 T	6201 2DW C3	6201 2DW C3
PRA 106 M	PRA 106 T	6202-ZZ C3	6202-ZZ C3
PRA 156 M	PRA 156 T	6204-ZZ C3	6203-ZZ C3
-	PRA 206 T	6204-ZZ C3	6203-ZZ C3

PUMP

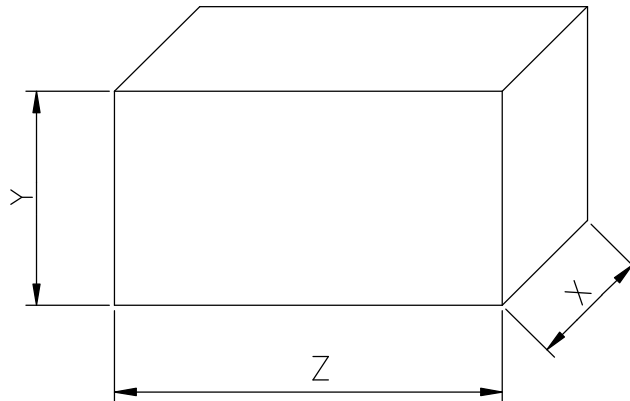


Pump type	Dimensions [mm]																			Weight [kgf]		
	A	B	C	D	E	E1	F	H	H1	H2	H4	H3	M	M1	N	N1	R	T	V		W	S
PRA 056 M	125	263,5	151	10	50	20	7	143	63	80	160	-	100	22	100	120	111	PG11	-	71	7	5,6
PRA 056 T	125	265,5	151	10	50	20	7	143	63	80	-	156	100	22	100	120	111	-	PG11	71	7	5,7
PRA 086 M	141	290,5	161,3	11	52,7	20	9	161	71	90	178	-	112	25	112	135	113	PG11	-	71,3	7	9,2
PRA 086 T	141	292	161,3	11	52,7	20	8	161	71	90	-	172	112	25	112	135	113	-	PG11	71,3	7	10,6
PRA 106 M	141	290,5	161,3	11	52,7	20	9	161	71	90	178	-	112	25	112	135	113	PG11	-	71,3	7	9,7
PRA 106 T	141	292	161,3	11	52,7	20	8	161	71	90	-	172	112	25	112	135	113	-	M16x1,5	71,3	7	9,7
PRA 156 M	160	330,5	191	12	56	20	10	175	80	95	212	-	124	26	125	152	135	PG13,5	-	91	9	14,5
PRA 156 T	160	360	191	12	56	20	10	175	80	95	-	199	124	26	125	152	135	-	M20x1,5	91	9	14,5
PRA 206 T	160	361	191	12	56	20	10	175	80	95	-	199	124	26	125	152	135	-	M20x1,5	91	9	15,8

[1~] Single Phase

[3~] Three Phase

PACKING



Pump Type		Packing [mm]						Weight [kgf]	
Single Phase	Three Phase	X		Y		Z		[1~]	[3~]
		[1~]	[3~]	[1~]	[3~]	[1~]	[3~]		
PRA 056 M	PRA 056 T	155	155	195	195	285	285	6,1	6,2
PRA 086 M	PRA 086 T	180	180	200	200	305	305	9,4	10,8
PRA 106 M	PRA 106 T	180	180	200	200	305	305	10,5	9,9
PRA 156 M	PRA 156 T	195	160	230	205	372	355	15,4	14,6
-	PRA 206 T	-	160	-	205	-	355	-	17,9

[1~] Single Phase  
 [3~] Three Phase

### MOTOR DATA

Pump type		Power		Efficiency		Capacitor				Efficiency (% load)			Efficiency (% load)			Input		Full load current					Locked rotor current				
Single Phase	Three Phase	[kW]	[HP]	Single Phase	Three Phase	110-115 V		220-230 V		Three phase (380 V)			Three phase (460 V)			Single Phase	Three Phase	Single Phase		Three Phase			Single Phase		Three Phase		
						[µF]	[V]	[µF]	[V]	50%	75%	100%	50%	75%	100%			110-115 V	220-230 V	220 V	380 V	460 V	110-115 V	220-230 V	220 V	380 V	460 V
PRA 056 M	PRA 056 T	0,37	0,5	-	IE3	31,5	250	8	450	77,3	78,8	76,4	69,8	76,6	77,8	0,58	0,49	5,5	2,8	1,5	0,9	0,9	15,5	7,55	6,8	3,9	4,8
PRA 086 M	PRA 086 T	0,6	0,8	-	IE3	60	250	14	450	82,3	83,5	83,2	80,5	83,1	84,6	1,37	0,90	12,5	6,3	2,8	1,6	1,5	48,8	23,2	17,9	10,3	12,5
PRA 106 M	PRA 106 T	0,75	1,0	-	IE3	60	250	20	450	80,7	81,9	81,3	78,4	81,6	83,1	1,54	0,90	15,3	7,1	2,8	1,6	1,5	52,0	26,0	16,9	9,7	11,8
PRA 156 M	PRA 156 T	1,1	1,5	-	IE3	-	-	40	450	84,2	84,7	84,5	83,2	84,7	85,7	2,20	1,75	-	10,4	5,3	3,1	2,9	-	69,0	40,2	23,2	28,1
-	PRA 206 T	1,5	2,0	-	IE3	-	-	-	-	86,5	86,8	86,2	86,9	87,8	87,4	-	2,48	-	-	7,5	4,3	4,1	-	-	55,7	32,2	38,9