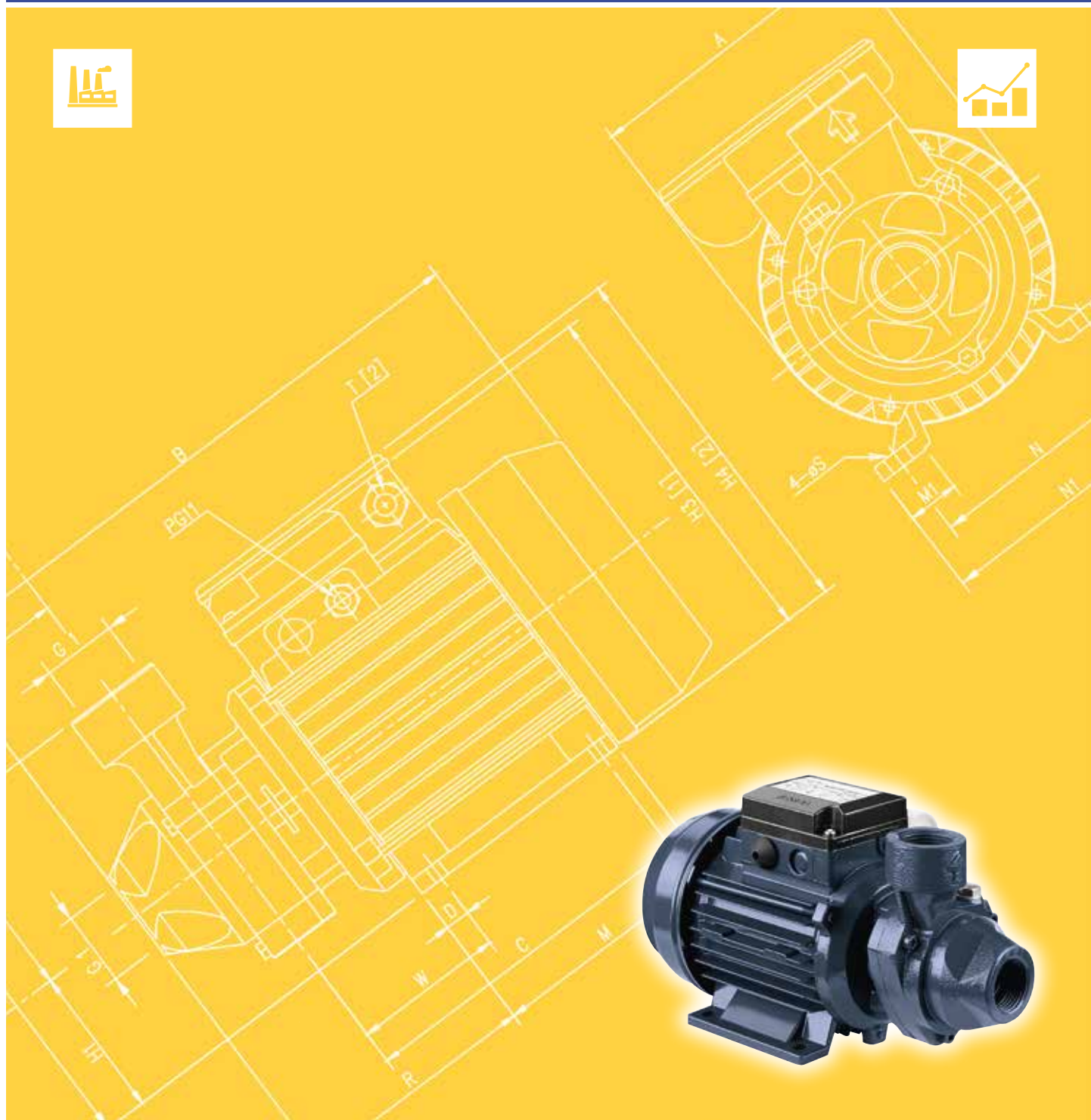




Japanese Technology since 1912

PRA

Data Book 60Hz



	Page
- SPECIFICATIONS^①	200
PERFORMANCE RANGE and SELECTION CHART	201
TYPE KEY and CURVES SPECIFICATIONS	202
PERFORMANCE CURVES	203
- CONSTRUCTIONS	300
SECTIONAL VIEW	300
MECHANICAL SEAL (UP TO 0.75 kW)	301
MECHANICAL SEAL(1.1 kW AND ABOVE)	302
BEARINGS	302
- DIMENSIONS and WEIGHT	400
PUMP	400
PACKING	401
- TECHNICAL DATA	500
MOTOR DATA	500

① click INDEX to jump CORRESPONDING SECTION

② click  to go back to INDEX

SPECIFICATIONS

60Hz

Rev. G

PUMP		
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

MOTOR		
Type	Electric - TEFC	
	Single Phase	Three Phase
Efficiency level (Rif.1781/2019)	IE2**	IE3
No. of Poles	2	
Rotation speed [min ⁻¹]	~ 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% 220-230 ±6%	220/380 -6% +10% (from 0.37 kW up to 0.6 kW) 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)
	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)	

*only for 460 V

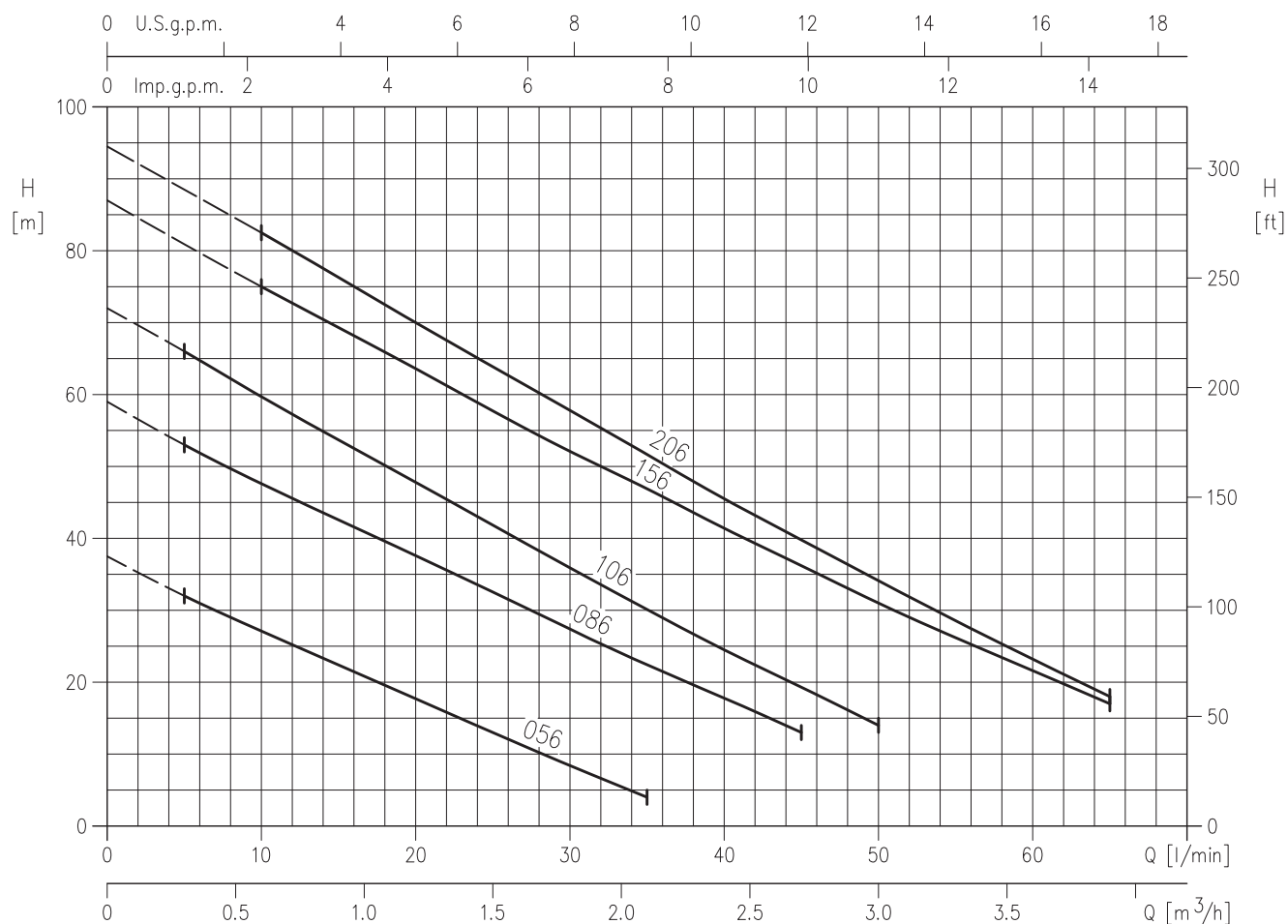
**IE2 only for PRA 056/086/106 models

PERFORMANCE RANGE and SELECTION CHART

60Hz

Rev. G

PERFORMANCE RANGE



SELECTION CHART

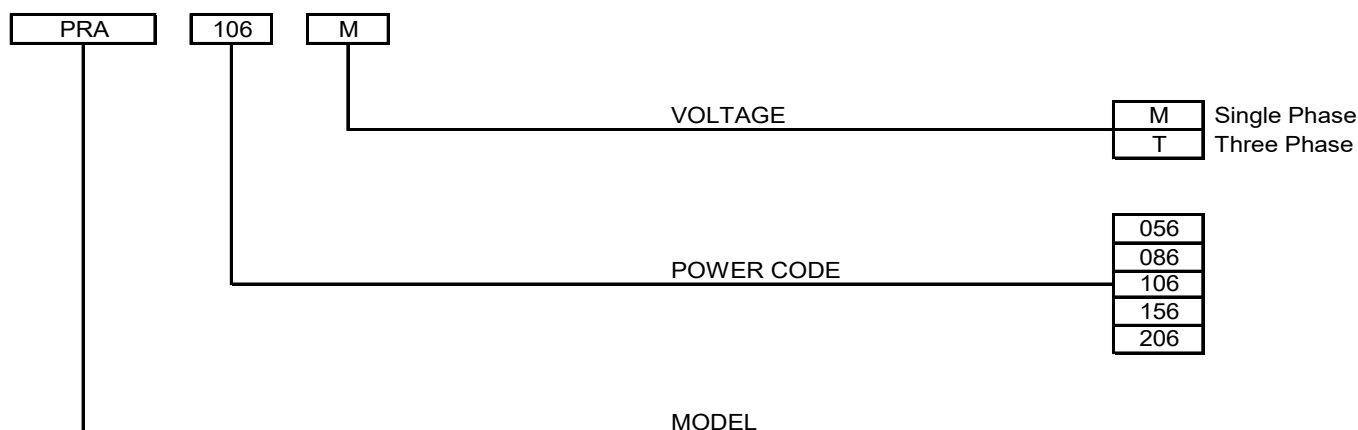
Pump type		Q=Capacity										
		l/min.	5	10	20	30	35	40	45	50	60	65
Single Phase	Three Phase	m³/h	0,3	0,6	1,2	1,8	2,1	2,4	2,7	3,0	3,6	3,9
H=Total manometric head in meters												
PRA 056 M	PRA 056 T	37,5	32	27	17,7	8,4	4	-	-	-	-	-
PRA 086 M	PRA 086 T	59	53	48	37,6	27,5	22,2	17,9	13	-	-	-
PRA 106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

TYPE KEY and CURVES SPECIFICATIONS

60Hz

Rev. G

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)

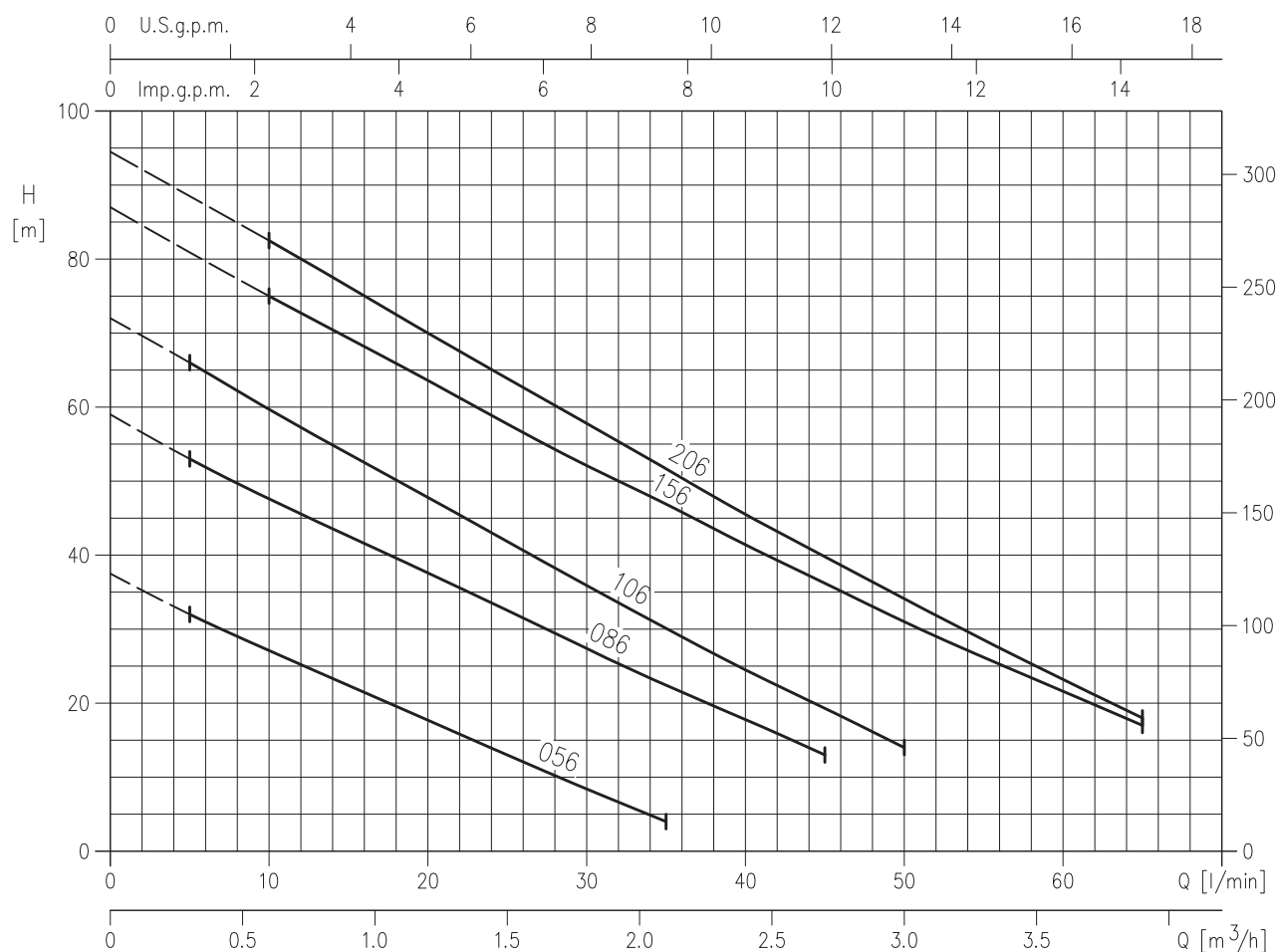
The continuous curves indicate the recommended working range. The dotted curve is only a guide.

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:

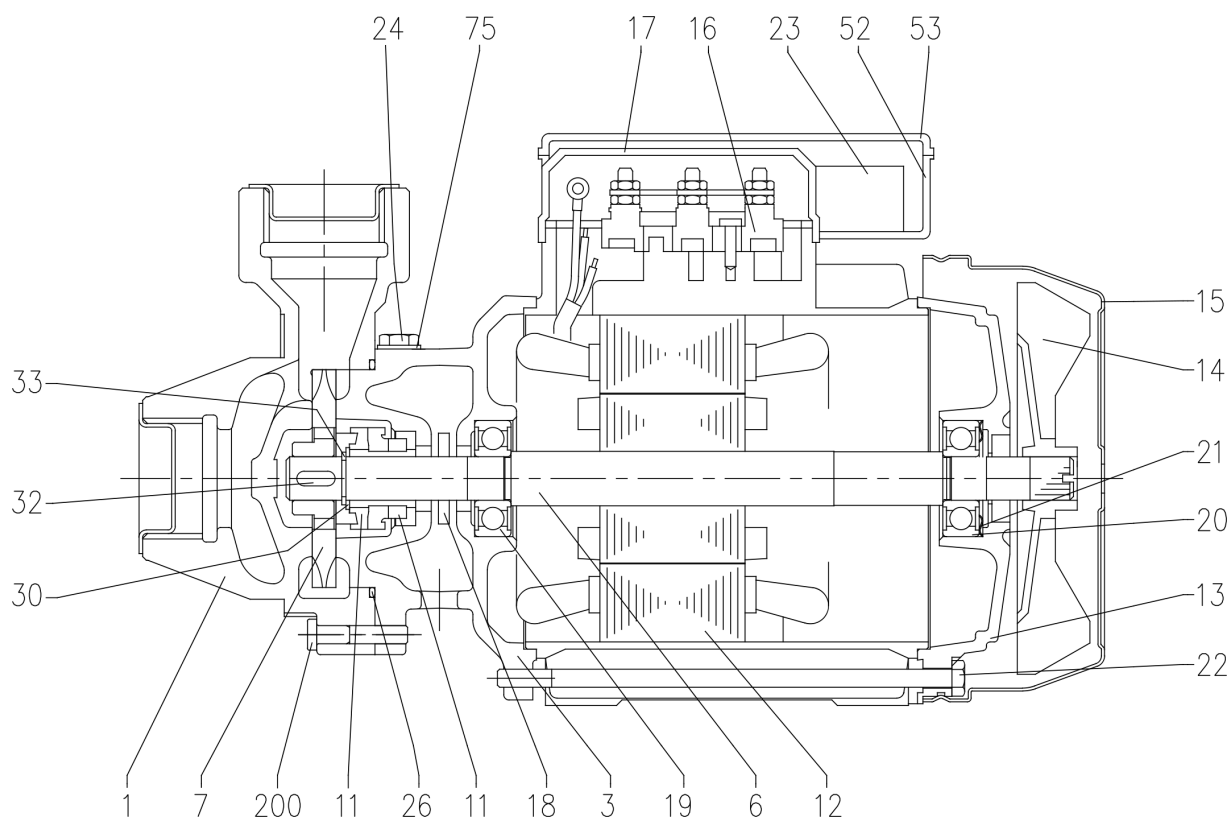
Q = volume flow rate
H = total head

PRA 056 - Impeller dimension = 57 mm
PRA 086 - Impeller dimension = 67 mm
PRA 106 - Impeller dimension = 68 mm
PRA 156 - Impeller dimension = 74 mm
PRA 206 - 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

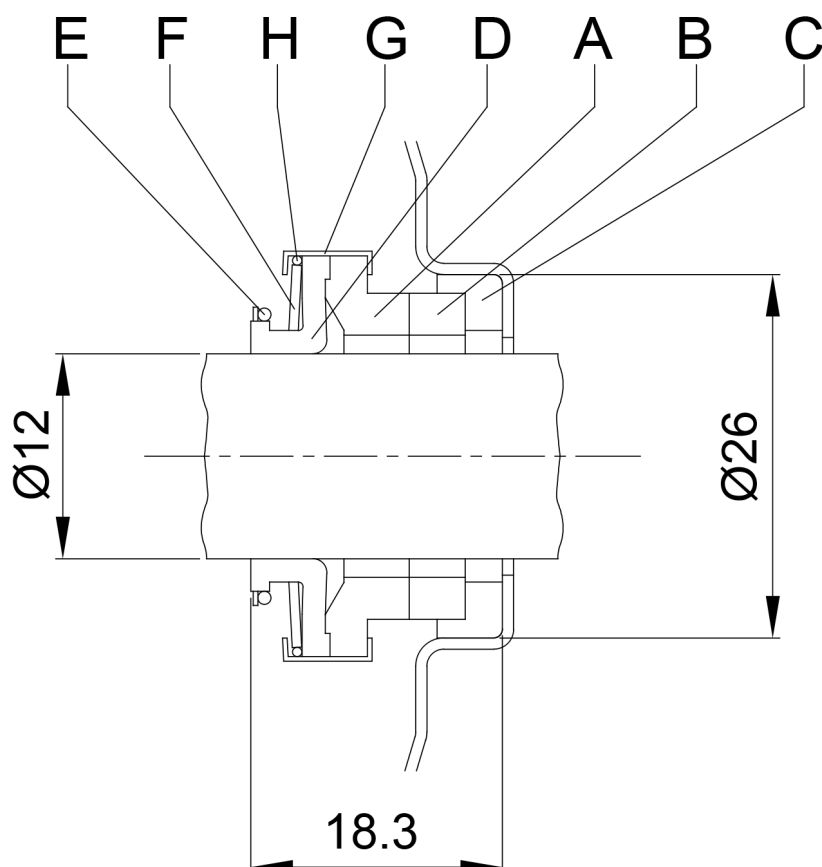
N°	PART NAME	MATERIAL	Q.TY
20	Fan side ball bearing	-	1
21	Adjusting ring	Steel C70	1
22	Tie rod	Fe 42 Zincate	4
23	Capacitor [4]	-	1
24	Priming plug	Brass	1
26	O-Ring	NBR	1
30	Washer	AISI 304	1
32	Key	AISI 316	1
33	Seeger ring	AISI 304	1
52	Capacitor box [4]	ABS class V-0	1
53	Capacitor box cover [4]	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

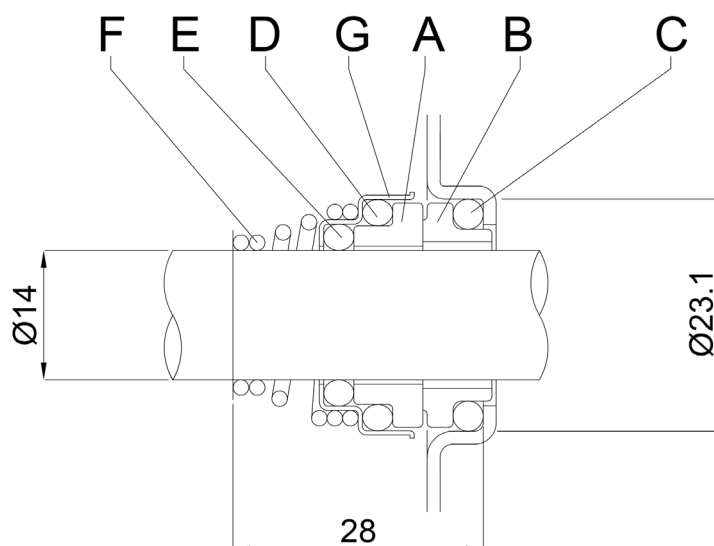
[3] Only for Three phase

[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)

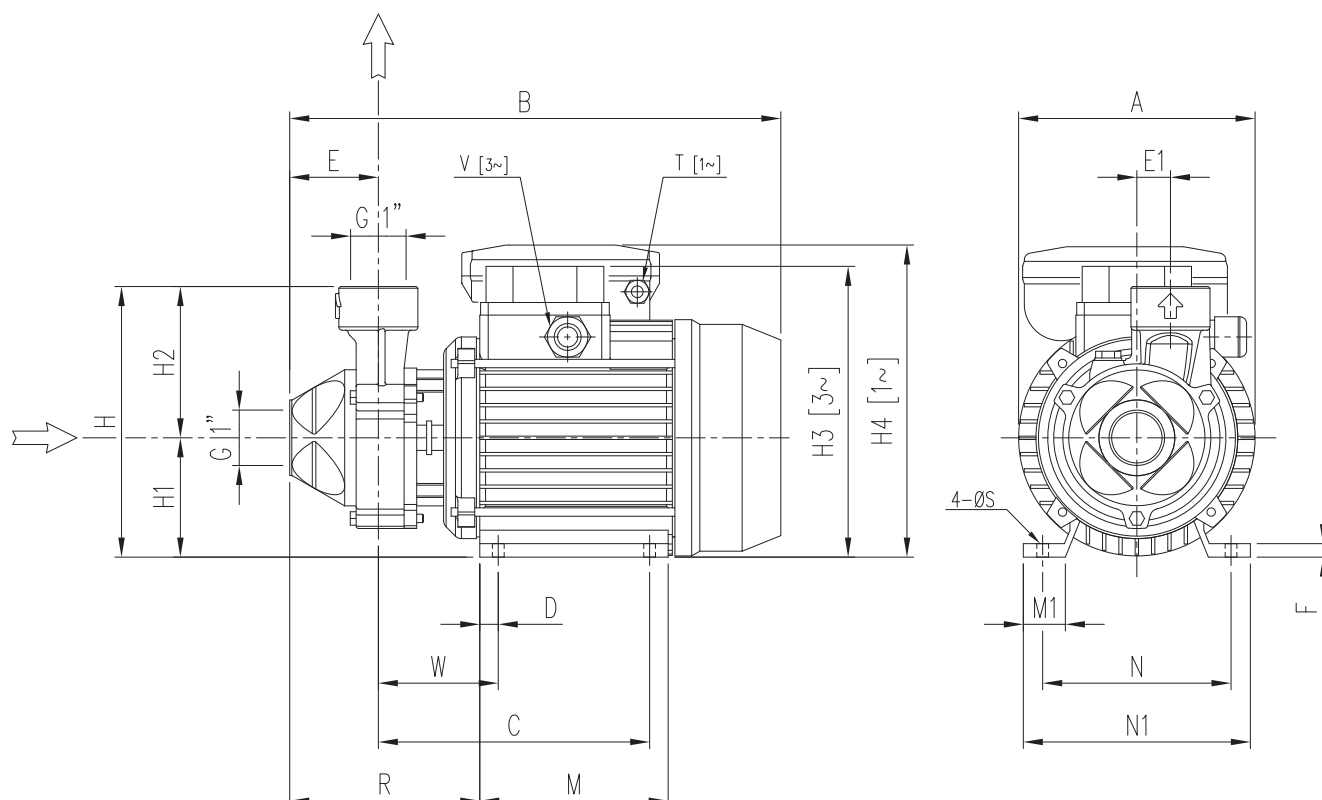


REF	PART NAME	MATERIAL Standard version
A	Rotary seal ring	ceramic
B	Stationary seal ring	carbon graphite
C	O Ring	NBR
D	O Ring	NBR
E	O Ring	NBR
F	Self driving spring	AISI 316
G	Frame	AISI 304

BEARINGS

Pump Type		Ball bearing	
Single phase	Three phase	Pump side	Fan side
PRA 056 M	PRA 056 T	6201	6201
PRA 086 M	PRA 086 T	6201	6201
PRA 106 M	PRA 106 T	6202	6202
PRA 156 M	PRA 156 T	6204	6203

PUMP

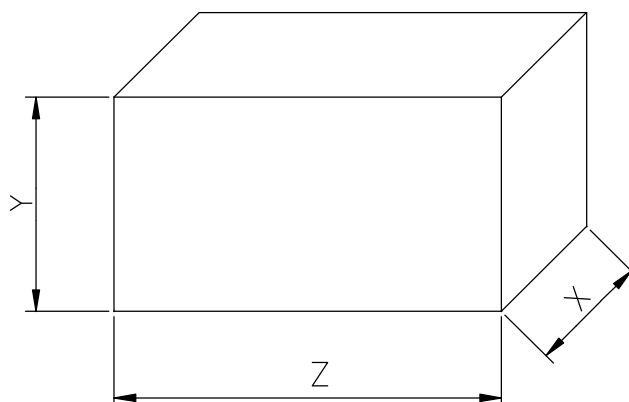


Pump type	Dimensions [mm]																					Weight [kgf]
	A	B	C	D	E	E1	F	H	H1	H2	H4	H3	M	M1	N	N1	R	T	V	W	S	
											[1~]	[3~]						[1~]	[3~]			
PRA 056 M	125	264	151	10	50	20	7	143	63	80	160	-	100	22	100	120	111	PG11	-	71	7	6
PRA 056 T	125	265,5	151	10	50	20	7	143	63	80	-	156	100	22	100	120	111	-	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	11
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	10
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	265	285	6,5	6,1
PRA 086 M	PRA 086 T	180	180	200	200	305	305	11,5	9,4
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 [IE2 / IE3]	Capacitor		Efficiency (% load) and power factor				Input [kW]	Full load current		Locked rotor current	
	[kW]	[HP]		[μF]	[V]	η %			cos-φ		[A]		[A]	
						50%	75%	100%			110 V	220 V	110 V	220 V
Single Phase														
PRA 056 M	0,3	0,4	IE2	8	450	63,1	69,6	68,6	0,93	0,46	-	2,3	-	8,1
PRA 086 M	0,75	1,0	IE2	25	450	63,1	69,8	78,3	0,94	0,96	-	4,7	-	32,3
PRA 106 M	0,75	1,0	IE2	60	250	72,3	77,3	80,7	0,92	0,93	9,3	-	60,5	-
				25	450	63,1	69,8	78,3	0,94	0,96	-	4,7	-	32,3
PRA 156 M	1,8	2,4	-	40	450	-	-	-	0,95	2,29	-	10,5	-	69,0

Pump type	Power		Efficiency	Efficiency (% load)			Efficiency (% load)			Input [kW]	Full load current			Locked rotor current		
	Three Phase [kW]	[HP]		Three phase (380 V) η %			Three phase (460 V) η %				Three Phase [A]			Three Phase [A]		
				50%	75%	100%	50%	75%	100%		220 V	380 V	460 V	220 V	380 V	460 V
PRA 056 T	0,37	0,5	IE2	-	-	-	-	-	-	0,56	1,9	1,1	-	5,5	3,2	-
PRA 086 T	0,6	0,8	IE3	-	-	-	-	-	-	1,33	4,0	2,3	-	16,4	9,5	-
PRA 106 T	0,75	1,0	IE3	77,2	79,5	79,3	76,6	80,9	82,3	1,00	2,9	1,7	-	20,6	11,9	-
PRA 106 T	0,75	1,0	IE3	80,7	81,9	81,3	78,4	81,6	83,1	0,90	2,8	1,6	1,5	16,9	9,7	11,8
PRA 156 T	1,1	1,5	IE3	78,3	80,4	81,0	76,5	81,3	83,4	2,00	5,7	3,3	-	38,8	22,4	-
PRA 156 T	1,1	1,5	IE3	84,2	84,7	84,5	83,2	84,7	85,7	1,75	5,3	3,1	2,9	40,2	23,2	28,1
PRA 206 T	1,5	2,0	IE3	82,4	83,0	82,2	79,5	82,9	83,8	2,90	8,1	4,7	-	54,4	31,4	-
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



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