EBARA

Japanese Technology since 1912

AGA

Data Book 60Hz

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60Hz

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SPECIFICATIONS 60Hz

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PUMP			
Liquid Handled	Type of liquid		Clean water
	Temperature	[°C]	min. +5 max. +45
Maximum working pressure		[MPa]	0.6 (AGA 076-106) 1.0 (AGA 156-206-306)
Maximum suction depth		[m]	8
Construction	Impeller		Closed centrifugal type
	Shaft seal type		Mechanical seal
	Bearing		Sealed ball bearing
Pipe Connection	Suction		G 1 (AGA 076-106) UNI ISO 228
			G 1½ (AGA 156-206-306) UNI ISO 228
	Discharge		G 1 UNI ISO 228
Material	Casing		Cast iron
	Impeller		PPE+PS glass fibre reinforced (AGA 076-106)
			Brass (AGA 156-206-306)
	Shaft seal		Ceramic/Carbon/NBR
	Casing cover		AISI 304 (AGA 076-106)
			Cast iron built-in the motor bracket (AGA 156-206-306)
	Shaft		AISI 303 (wet extension)
	Bracket		Aluminium (AGA 076-106)
			Cast iron (AGA 156-206-306)
	Ejector		PPE+PS glass fibre reinforced
	Diffuser		PPE+PS glass fibre reinforced
Applicable standard of test			ISO 9906:2012 - Grade 3B

MOTOR			
Type		Electric - TEFC	
		Single Phase	Three Phase
Efficiency level (Reg. 1781/2019)		IE2**	- 0.55 kW - from 0.75 kW up to 2.2 kW IE3* from 0.75 kW up to 2.2 kW
No. of Poles		2	
Rotation speed	[min^{-1}]	≈3450	
Insulation Class		F	
Protection degree (CEI EN 60034-5)		IP 44	
Power rating	[kW]	0.44÷1.5	0.44÷2.2
	[HP]	0.6÷2	0.6÷3
Frequency	[Hz]	60	
Voltage	[V]	110-115 ±6% 220-230 ±6%	220/380 –6% +10% (0.55 kW) 220/380 ±10% (from 0.75 kW up to 2.2 kW) 220/380-460 ±10% (IE3* 0.75 kW up to 2.2 kW)
Capacitor		Built in	-
Over load protection		Built in	Provided by the user
Casing material		Aluminium	
Base material / Motor support		Plastic foot / Cast iron	
Dimensions of cable entry		PG11 - PG13.5 - M16x1.5 - M20x1.5 (see page 400)	

* only for 460

** only for 076M

PERFORMANCE RANGE and SELECTION CHART 60Hz

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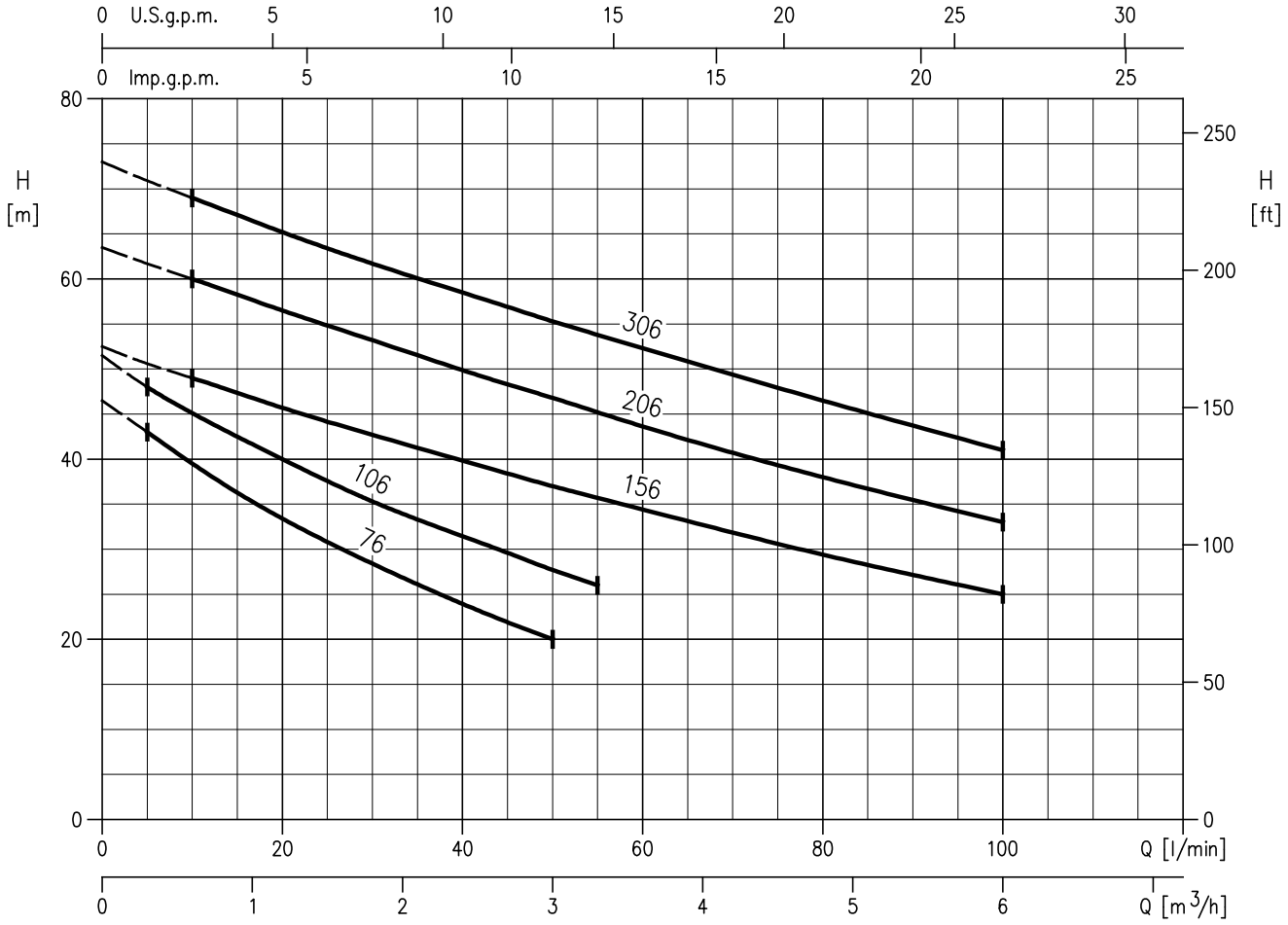
PERFORMANCE RANGE



SELECTION CHART

Pump type		Q =Capacity									
		l/min	0	5	10	20	30	45	50	55	80	100
Single phase	Three phase	m³/h	0	0.3	0.6	1.2	1.8	2.7	3.0	3.3	4.8	6.0
		H=Total head [m]										
AGA 076 M	AGA 076 T		46.5	43	39.5	33.4	28.4	21.9	20	-	-	-
-	AGA 106 T		51.5	48	45.1	40	35.3	29.6	27.7	26	-	-
-	AGA 156 T		52.5	-	49	45.7	42.7	38.4	37	35.7	29.4	25
AGA 206 M	AGA 206 T		63.5	-	60	56.5	53.2	48.3	46.8	45.2	38	33

TYPE KEY and CURVES SPECIFICATIONS 60Hz

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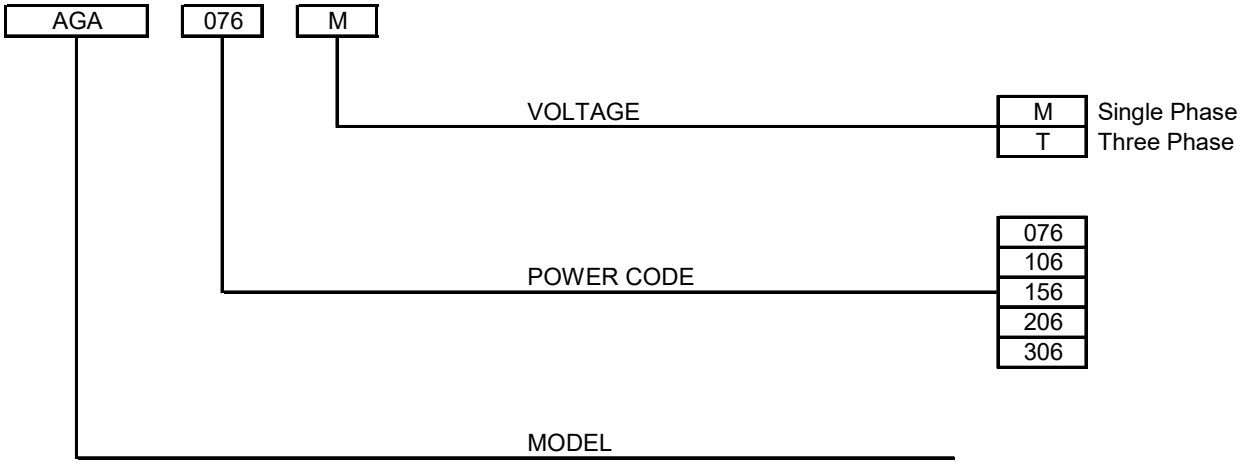
TYPE KEY



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
Measurements were carried out with clean water at 20°C of temperature and with a kinematic viscosity of ν = 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

60Hz

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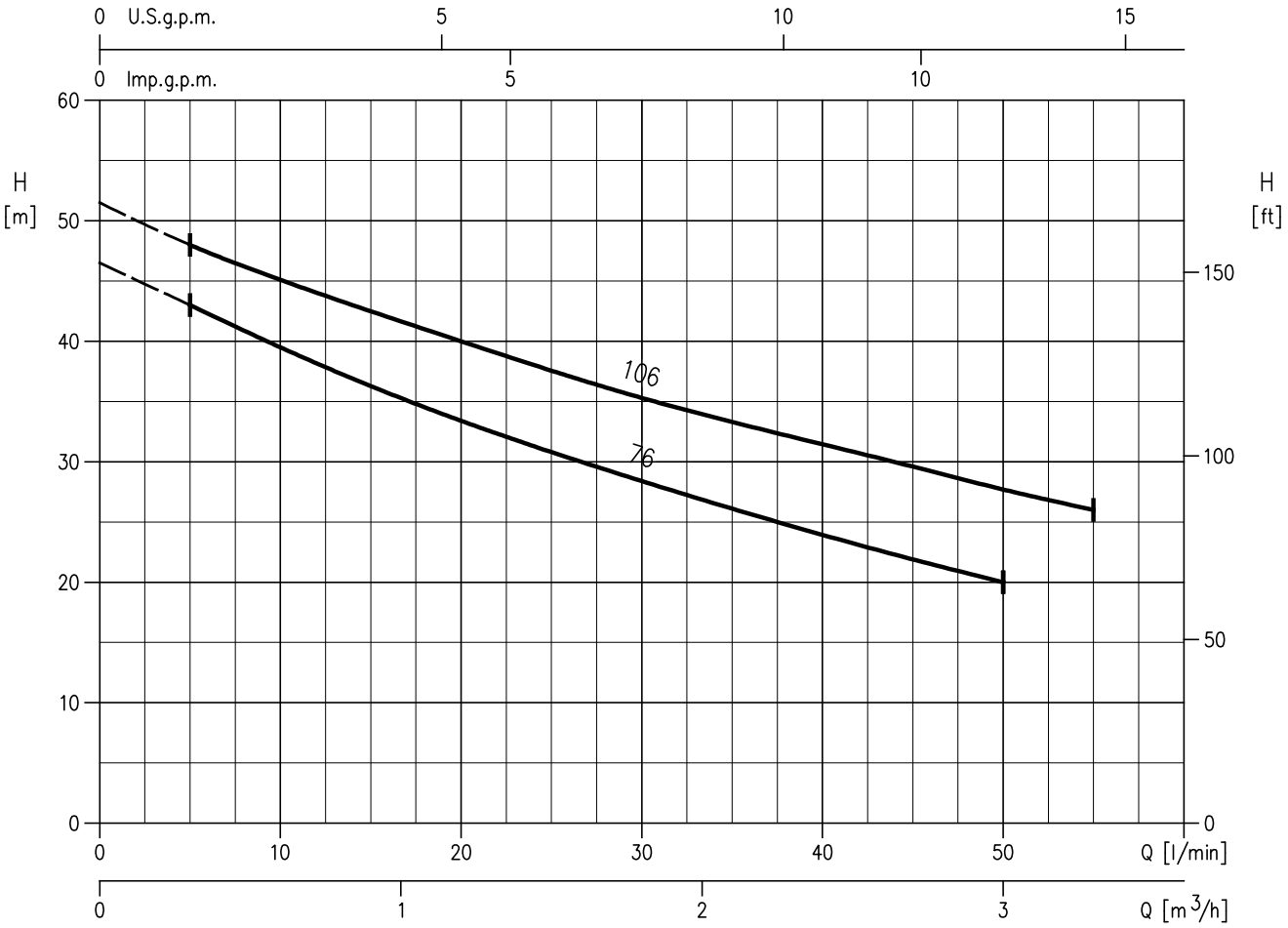
AGA 076- Impeller diameter = 110 mm
AGA 106- Impeller diameter = 116 mm



Rotation speed ≈ 3450 min^{-1}
Test standard: ISO 9906:2012 - Grade 3B

PERFORMANCE CURVES 60Hz

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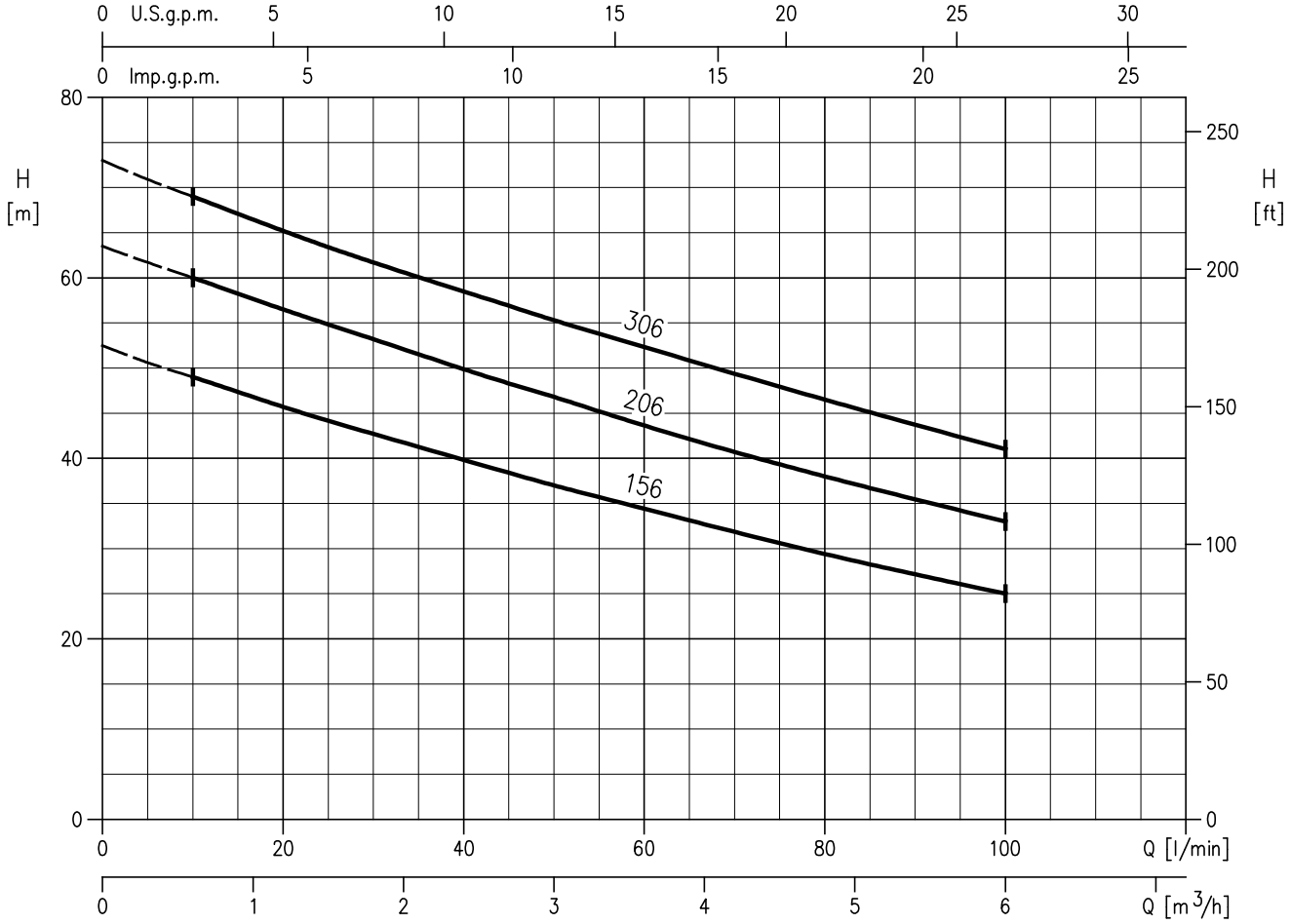
AGA 156- Impeller diameter = 122 mm
AGA 206- Impeller diameter = 135 mm
AGA 306- Impeller diameter = 144 mm



Rotation speed ≈ 3450 min^{-1}
Test standard: ISO 9906:2012 - Grade 3B

CONSTRUCTIONS

60Hz

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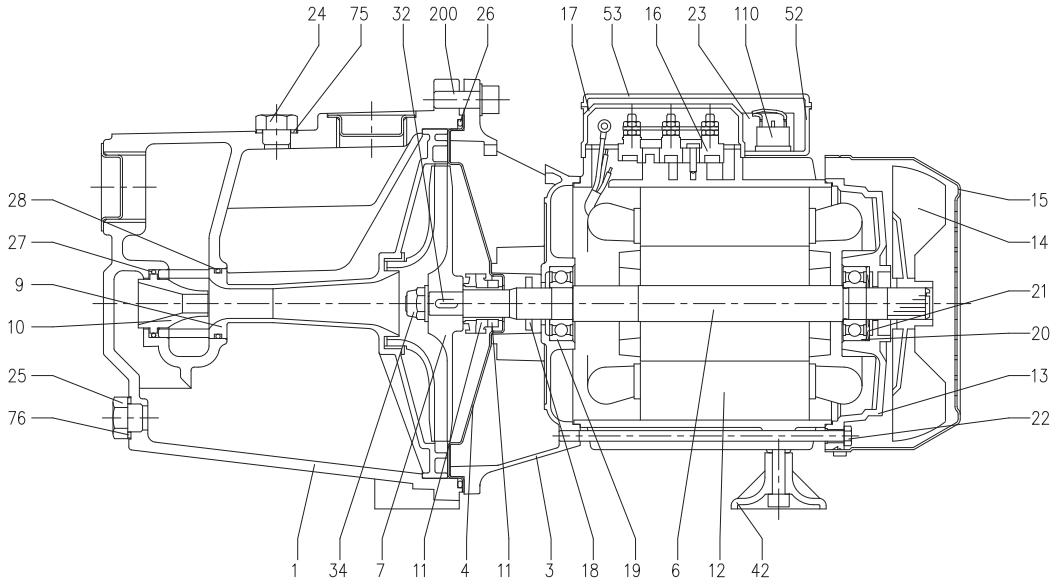
SECTIONAL VIEW

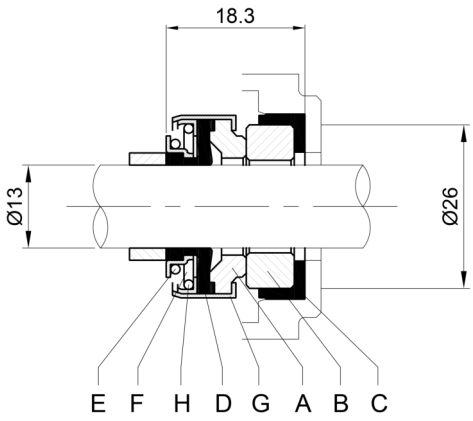


N°	PART NAME	MATERIAL	Q.TY	N°	PART NAME	MATERIAL	Q.TY
1	Casing	Cast iron	1	21	Adjusting ring	Steel C70	1
3	Motor bracket	[7]	1	22	Tie rod	Fe 42 Zincate	4
4	Casing cover [6]	AISI 304	1	23	Capacitor [2]	-	1
6	Shaft with rotor	AISI 303 (wet extension)	1	24	Priming plug	Brass	1
7	Impeller	[4]	1	25	Drain plug	Brass	1
9	Diffuser + Venturi tube	PPE+PS glass fibre reinforced	1	26	O-ring	NBR	1
10	Venturi nozzle	PPE+PS glass fibre reinforced	1	27	O-ring	NBR	1
11	Mechanical seal	Carbon/Ceramic/NBR	1	28	O-ring	NBR	1
12	Motor frame with stator	-	1	32	Key	AISI 316	1
13	Motor cover	Aluminium	1	34	Impeller nut [3]	AISI 304	1
14	Fan	PA6	1	42	Foot	PP	1
15	Fan cover	Fe P04 Zincate	1	52	Capacitor box [2]	ABS class V-0	1
16	Terminal board	-	1	53	Capacitor box cover [2] [8]	ABS class V-0	1
17	Terminal box cover [1]	Aluminium	1	75	Washer	Aluminium	1
18	Splash ring	NBR	1	76	Washer	Aluminium	1
19	Pump side ball bearing	-	1	110	Motor protector [5]	-	1
20	Fan side ball bearing	-	1	200	Screw	Zn Steel Cl. 8.8 ISO 898-1	4

[1] Only for three phase
[2] Only for single phase
[3] Only for Brass impeller version1
[4] Material : PPE+PS glass fibre reinforced for type : AGA 076 - AGA 106
Brass for type : AGA 156 - AGA 206 - AGA 306
[5] Only for version single phase AGA 206
[6] Only for version AGA 076 - AGA 106
[7] Material : Cast iron for version AGA 156 - AGA 206 - AGA 306
Aluminium for version AGA 076 - AGA 106
[8] With gasket in NBR only for version single phase AGA 106

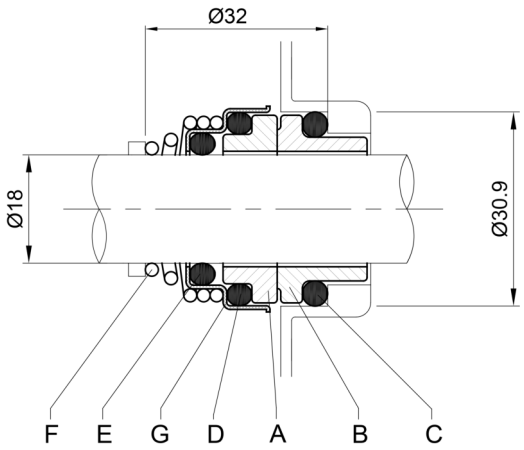
MECHANICAL SEAL

UP TO 0.75 kW



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

1.1 kW AND ABOVE



REF	PART NAME	MATERIAL
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

Type pumps		Ball bearing	
Single Phase	Three Phase	Pump side	Fan side
AGA 076 M	AGA 076 T	6202	6202
-	AGA 106 T	6202	6202
-	AGA 156 T	6204	6203
AGA 206 M	AGA 206 T	6204	6203

DIMENSIONS and WEIGHT

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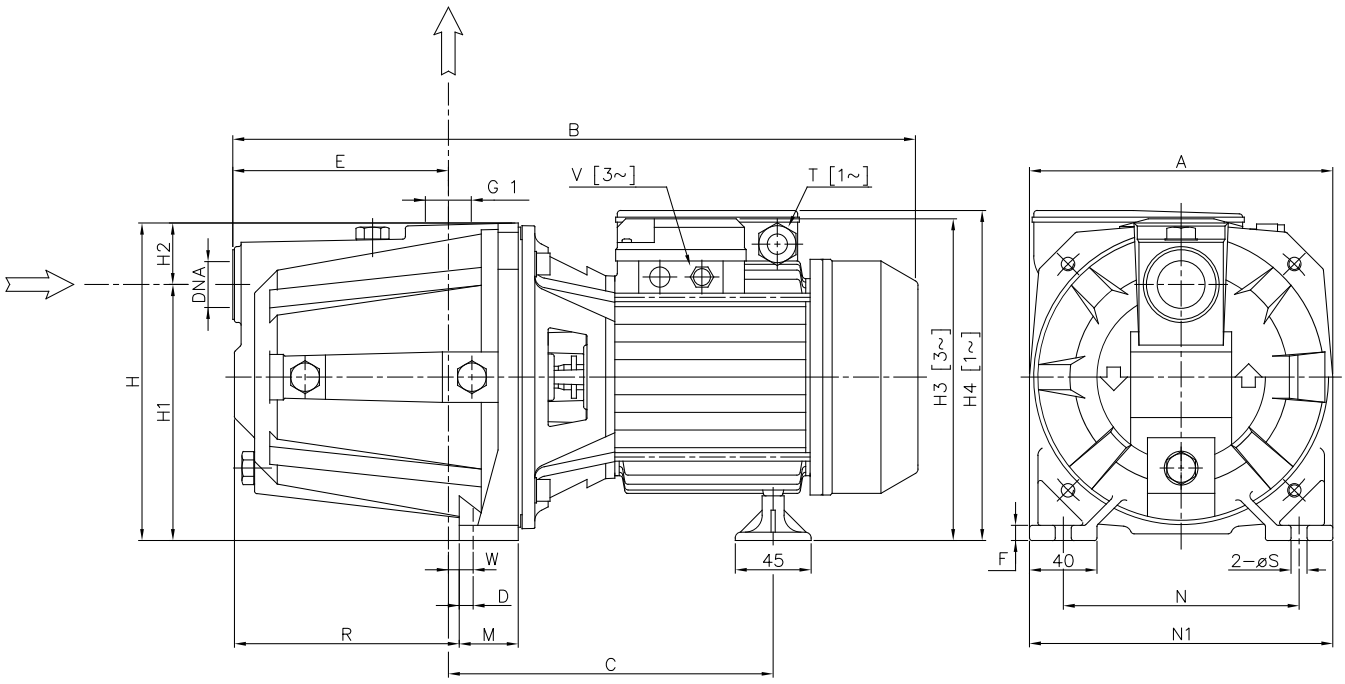
PUMP



Pump type	Dimensions [mm]																			Weight [kgf]
	A	B	C	D	E	F	H	H1	H2	[3~] H3	[1~] H4	M	N	N1	R	T [1~]	V [3~]	W	S	DNA	
AGA 076 M	180	405	195	10.3	127	9	185	152	33	-	199	40	140	180	128.5	PG11	-	11.8	9.5	G 1	13
AGA 076 T	180	405	195	10.3	127	9	185	152	33	197.5	-	40	140	180	128.5	-	PG11	11.8	9.5	G 1	13
AGA 106 T	180	405	195	10.3	127	9	185	152	33	197.5	-	40	140	180	128.5	-	M16x1.5	11.8	9.5	G 1	14
AGA 156 T	220	520	244	10	157	10	223	170	53	229	-	48	175	220	167.5	-	M20x1.5	15.5	9	G 1 1/2	26
AGA 206 M	220	521	244	10	157	10	223	170	53	-	247	48	175	220	167.5	PG13.5	-	15.5	9	G 1 1/2	27
AGA 206 T	220	520	244	10	157	10	223	170	53	229	-	48	175	220	167.5	-	M20x1.5	15.5	9	G 1 1/2	29
AGA 306 T	220	521	244	10	157	10	223	170	53	229	-	48	175	220	167.5	-	M20x1.5	15.5	9	G 1 1/2	29

[1~] Single phase
[3~] Three phase

DIMENSIONS and WEIGHT

60Hz

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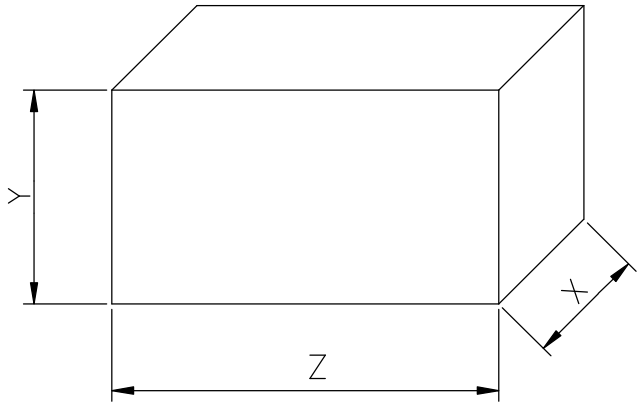
PACKING



Type pumps		Packing [mm]			Weight [kgf]	
Single Phase	Three Phase	X	Y	Z	[1~]	[3~]
AGA 076 M	AGA 076 T	205	250	430	13	13
-	AGA 106 T	205	250	445	15	15
-	AGA 156 T	232	275	547	26	26
AGA 206 M	AGA 206 T	232	275	547	28	29
-	AGA 306 T	232	275	547	-	29

[1~] Single phase
[3~] Three phase

TECHNICAL DATA 60Hz

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MOTOR DATA

Pump type	Power		Efficiency	Capacitor		Efficiency (% load) and power factor				Input	Full load current		Locked rotor current	
						η %					[A]		[A]	
Single Phase	[kW]	[HP]	[IE2 / IE3]	[μF]	[V]	50%	75%	100%	cos-φ	[kW]	110 V	220 V	110 V	220 V
AGA 076 M	0,55	0,75	IE2	12,5	450	63,8	71,2	75,7	0,96	0,75	-	3,6	-	17,4
AGA 206 M	1,8	2,4	-	40	450	-	-	-	0,95	2,29	-	10,5	-	69,0

Pump type	Power		Efficiency (% load) Three phase (380 V)			Efficiency (% load) Three phase (460* V)			Input [kW]	Full load current [A]			Locked rotor current [A]		
			η %			η %			Three	Three Phase			Three Phase		
Three Phase	[kW]	[HP]	50%	75%	100%	50%	75%	100%	Phase	220 V	380 V	460* V	220 V	380 V	460* V
AGA 076 T	0.55	0.75	-	-	-	-	-	-	0.9	2.8	1.6	-	-	-	-
AGA 106 T	0.75	1,0	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
AGA 156 T	1.1	1.5	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
AGA 206 T	1.5	2,0	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
AGA 306 T	2.2	3,0	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

09-23

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