

LENNTECH
WATER TREATMENT SOLUTIONS



LENNTECH
WATER TREATMENT SOLUTIONS

info@lennotech.com Tel. +31-152-610-900
www.lennotech.com Fax. +31-152-616-289

	Page
- SPECIFICATIONS	200
SELECTION CHART	201
TYPE KEY AND CURVE SPECIFICATIONS	202
PERFORMANCE CURVE AGA 0.60	203
PERFORMANCE CURVE AGA 0.75	204
PERFORMANCE CURVE AGA 1.00	205
PERFORMANCE CURVE AGA 1.50	206
PERFORMANCE CURVE AGA 2.00	207
PERFORMANCE CURVE AGA 3.00	208
PERFORMANCE CURVE AGC 1.50	209
PERFORMANCE CURVE AGC 2.00	210
PERFORMANCE CURVE AGC 3.00	211
- CONSTRUCTIONS	300
SECTIONAL VIEW	300
MECHANICAL SEAL	301
BEARINGS	301
- DIMENSIONS AND WEIGHT	400
PUMP	400
PACKING	401
- TECHNICAL DATA	500
MOTOR DATA	500
NOISE DATA	500

SPECIFICATION

50Hz

Rev. J

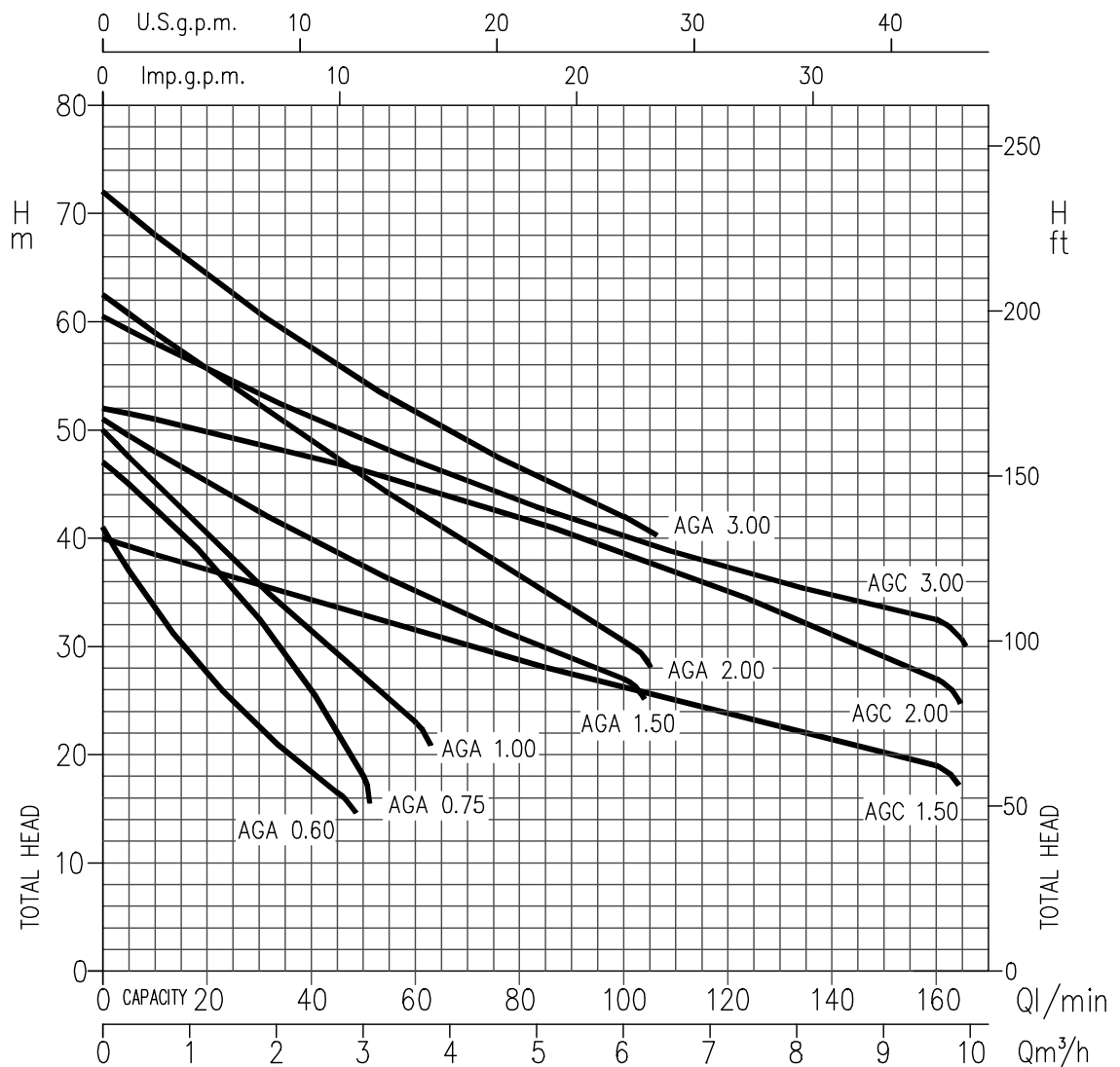
PUMP		
Liquid Handled	Type of liquid	Clean water
	Temperature [°C]	min. +5 max. +45
Maximum working pressure [MPa]		0.6 (AGA 0.60-0.75-1.00) 1.0 (AGA 1.50-2.00-3.00; all AGC)
Maximum suction depth [m]		8
Construction	Impeller	Closed centrifugal type
	Shaft seal type	Mechanical seal
	Bearing	Sealed ball bearing
Pipe Connection	Suction	G 1 (AGA 0.60-0.75-1.00) UNI ISO 228 G 1½ (AGA 1.50-2.00-3.00; all AGC) UNI ISO 228
	Discharge	G 1 UNI ISO 228
Material	Casing	Cast iron
	Impeller	PPE+PS glass fibre reinforced (AGA 0.60-0.75-1.00) Brass (AGA 1.50-2.00-3.00; all AGC)
	Shaft seal	Ceramic/Carbon/NBR
	Casing cover	AISI 304 (AGA 0.60-0.75-1.00) Cast iron built-in on the motor bracket (AGA 1.50-2.00-3.00; all AGC)
	Shaft	AISI 303 (wet extension)
	Bracket	Aluminium (AGA 0.60-0.75-1.00) Cast iron (AGA 1.50-2.00-3.00; all AGC)
	Ejector	PPE+PS glass fibre reinforced
	Diffuser	PPE+PS glass fibre reinforced
Applicable standard of test		ISO 9906 – Annex A

MOTOR		
Type	Electric - TEFC	
	Single Phase	Three Phase
Efficiency level (Reg. 640/2009)	-	- from 0.44 kW up to 0.55 kW IE2 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]	≈ 2800	
Insulation Class	F	
Protection degree (CEI EN 60034-5)	IP 44	
Power rating	[kW]	0.44÷1.5
	[HP]	0.6÷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 / Motor support	Plastic foot /Cast iron	
Dimensions of cable entry	PG11 - PG13.5 – M16x1.5 – M20x1.5 (see dimensions page 400)	

SELECTION CHART

50Hz

Rev. J



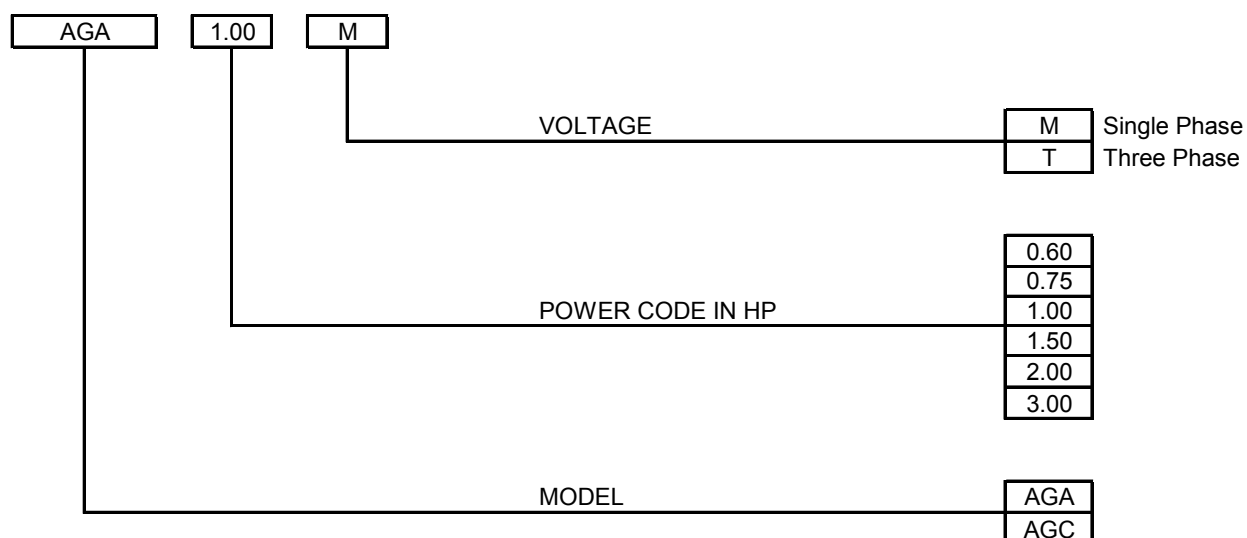
Type pumps		Power		Q=Capacity												
				l/min	0	5	10	20	30	45	50	60	80	100	130	160
Single Phase	Three Phase	[kW]	[HP]	m³/h	0	0.3	0.6	1.2	1.8	2.7	3.0	3.6	4.8	6	7.8	9.6
				H=Total manometric head in meters												
AGA 0.60 M	AGA 0.60 T	0.44	0.6	41.5	37	33.4	27.1	22	16.5	-	-	-	-	-	-	-
AGA 0.75 M	AGA 0.75 T	0.55	0.75	47	45	42.8	37.9	32	21.9	18	-	-	-	-	-	-
AGA 1.00 M	AGA 1.00 T	0.75	1	50	47.5	45	40.3	35.7	29.1	27	23	-	-	-	-	-
AGA 1.50 M	AGA 1.50 T	1.1	1.5	51	-	48	45.1	42.4	38.6	37.4	35.1	30.8	27	-	-	-
AGA 2.00 M	AGA 2.00 T	1.5	2	62.5	-	59	55.6	52.2	47.3	45.7	42.5	36.4	30.5	-	-	-
-	AGA 3.00 T	2.2	3	72	-	68	64.3	60.8	55.9	54.4	51.6	46.4	42	-	-	-
AGC 1.50 M	AGC 1.50 T	1.1	1.5	40	-	38.5	37	35.6	33.5	32.7	31.4	28.7	26.1	22.4	19	-
AGC 2.00 M	AGC 2.00 T	1.5	2	52	-	51	49.9	48.8	46.9	46.3	44.9	42	38.7	33.2	27	-
-	AGC 3.00 T	2.2	3	60.5	-	58	55.6	53.3	50.1	49.1	47.1	43.4	40.2	35.9	32.5	-

TYPE KEY AND CURVE SPECIFICATIONS

50Hz

Rev. J

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

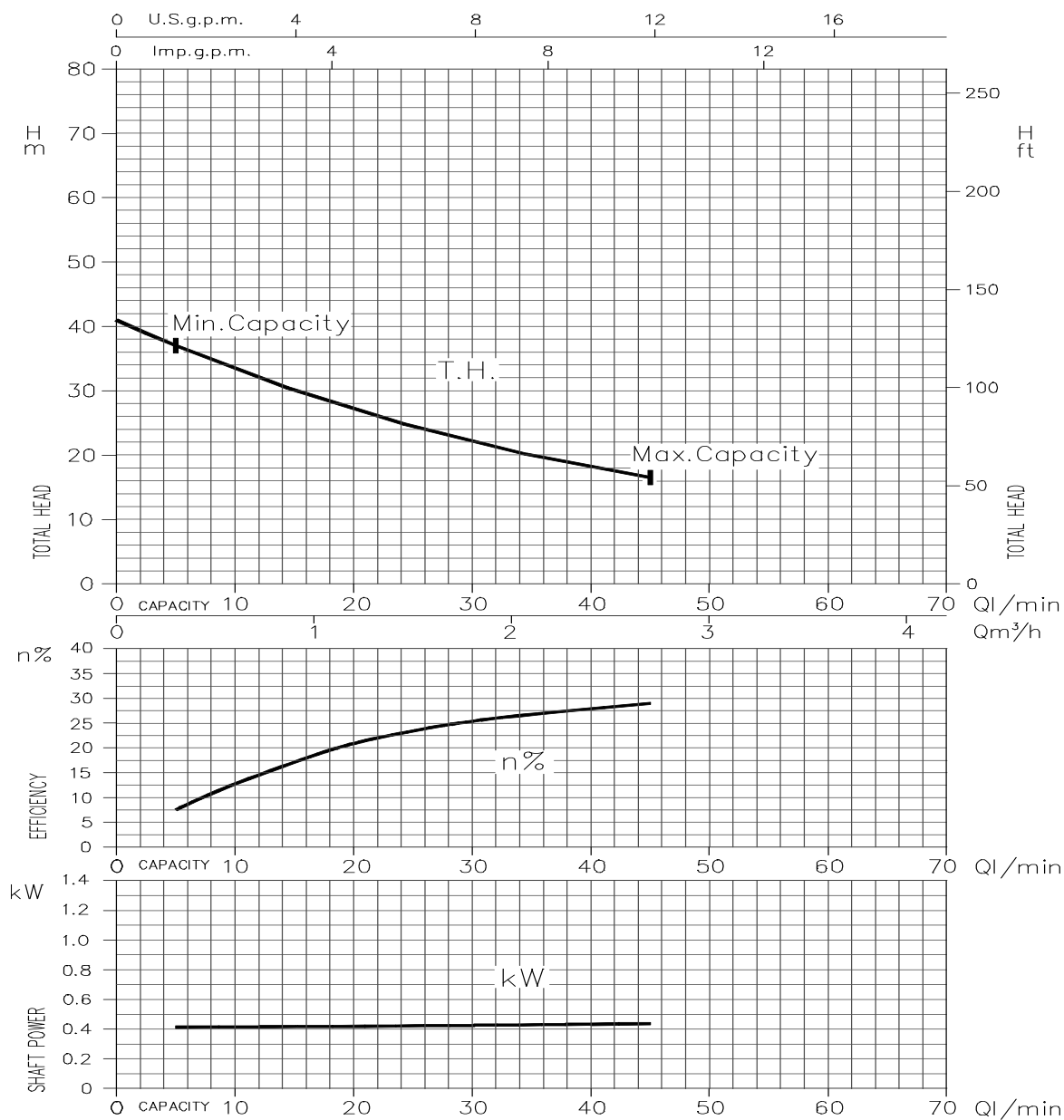
Measurements were carried out with clean water at 20°C of temperature and with a kinematic viscosity of $\nu = 1 \text{ mm}^2/\text{s}$ (1 cSt)

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:

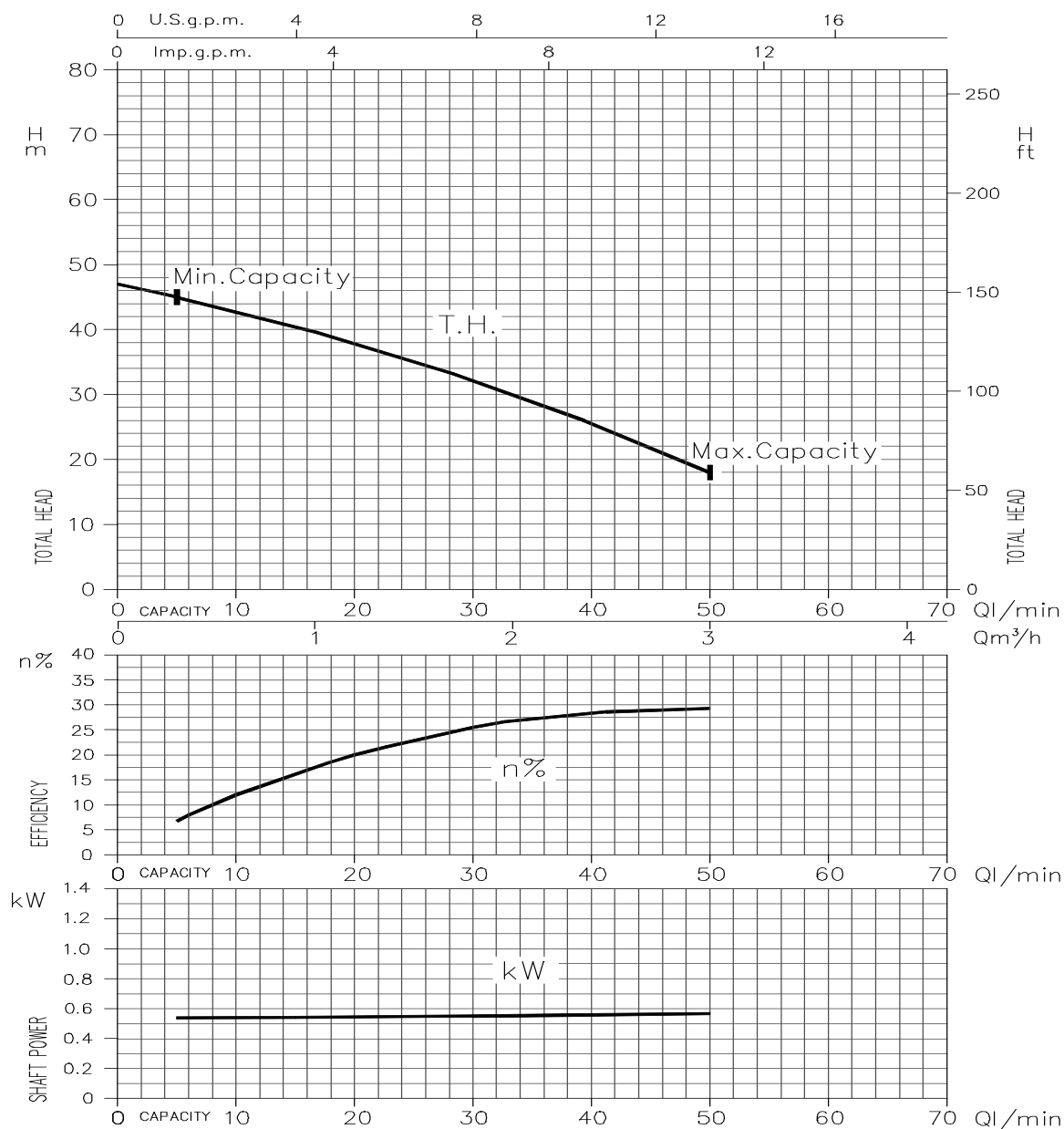
- Q = volume flow rate
- H = total head
- P_2 = pump power input (shaft power)
- η = pump efficiency

AGA 0.60 (0.45 kW) - Impeller diameter = 130 mm



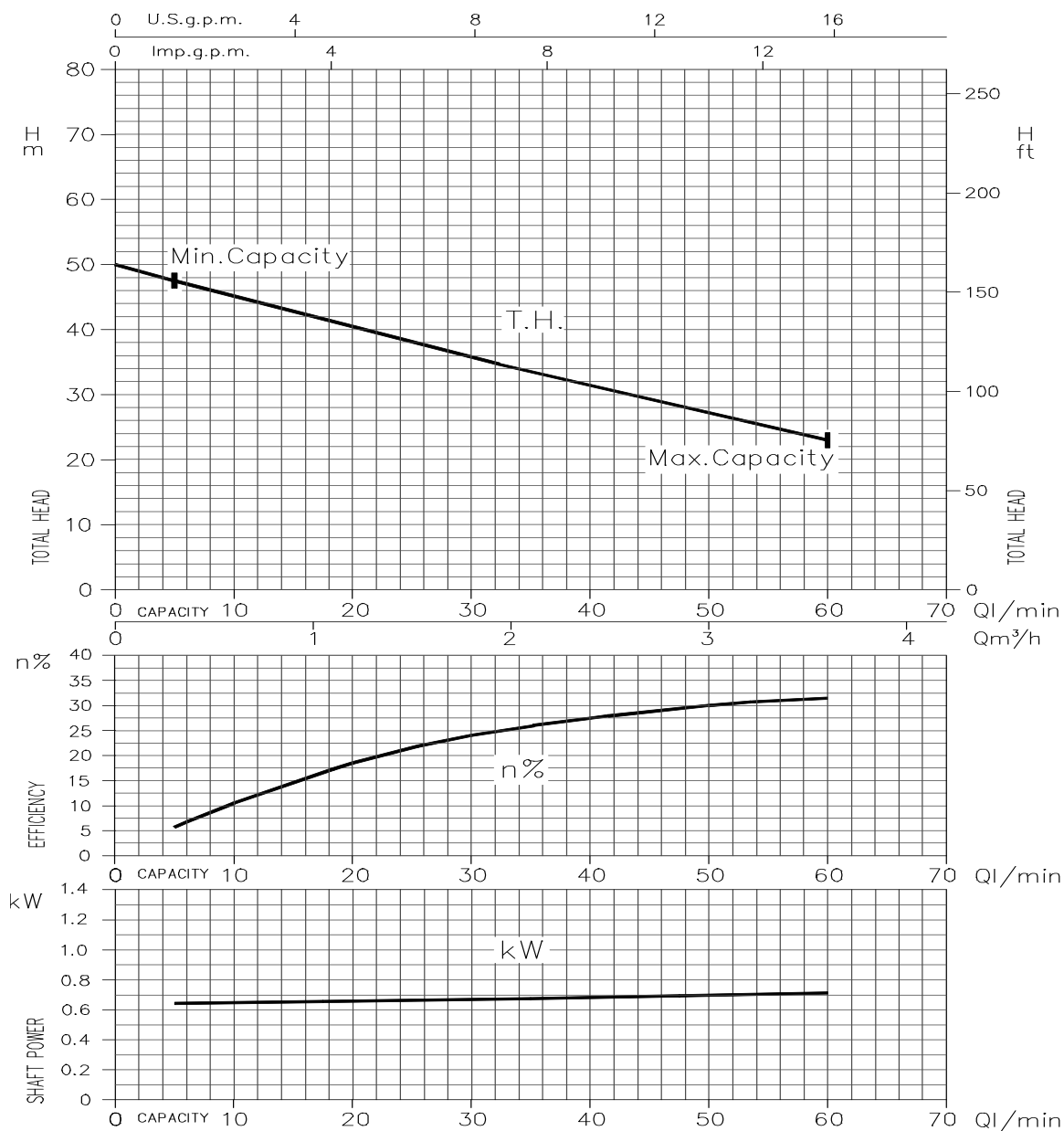
Rotation speed $\approx 2800 \text{ min}^{-1}$
Test standard: ISO 9906 – Annex A

AGA 0.75 (0.55 kW) - Impeller diameter = 130 mm



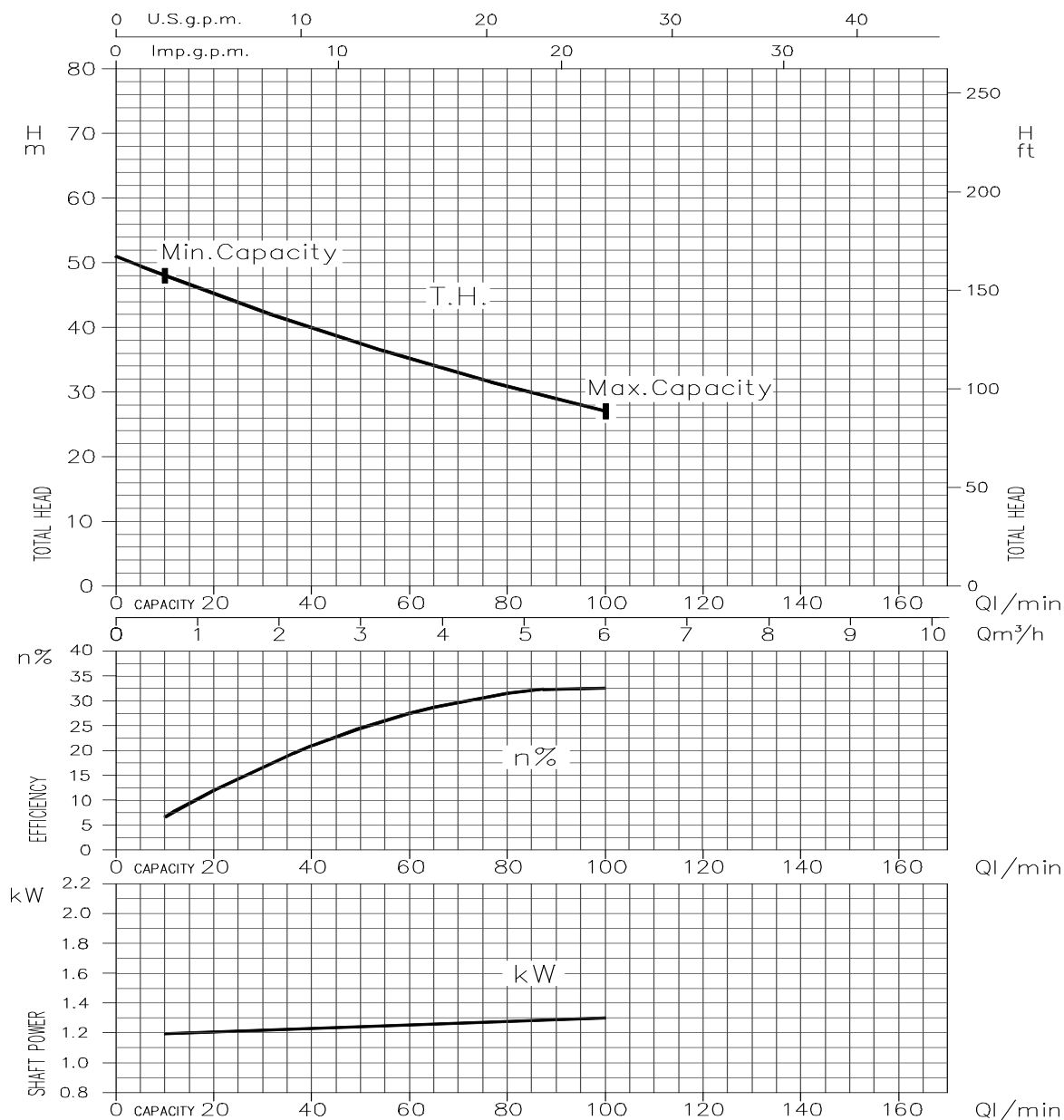
Rotation speed $\approx 2800 \text{ min}^{-1}$
 Test standard: ISO 9906 – Annex A

AGA 1.00 (0.75 kW) - Impeller diameter = 130 mm



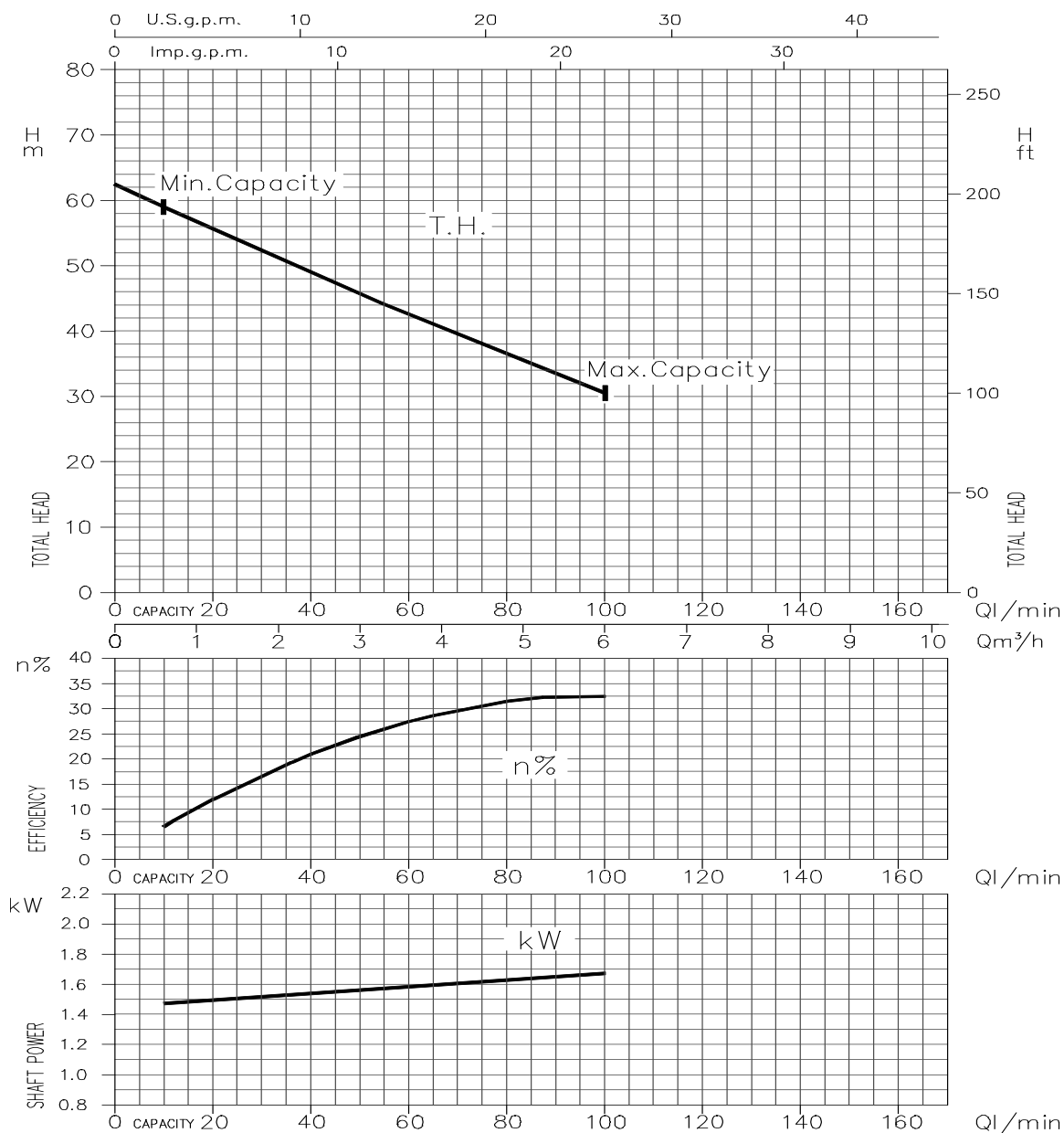
Rotation speed $\approx 2800 \text{ min}^{-1}$
 Test standard: ISO 9906 – Annex A

AGA 1.50 (1.1 kW) - Impeller diameter = 143 mm



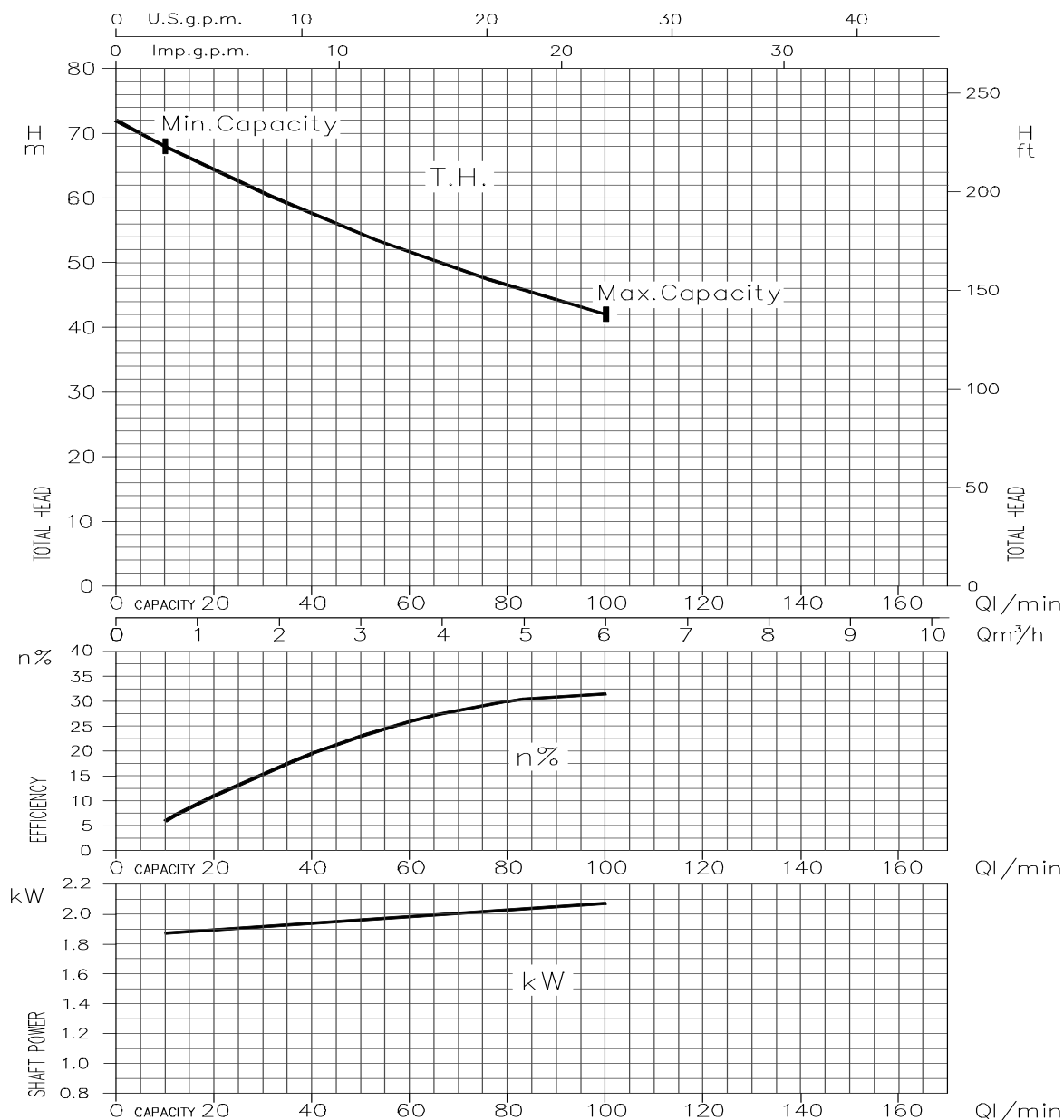
Rotation speed $\approx 2850 \text{ min}^{-1}$
 Test standard: ISO 9906 – Annex A

AGA 2.00 (1.5 kW) - Impeller diameter = 157 mm



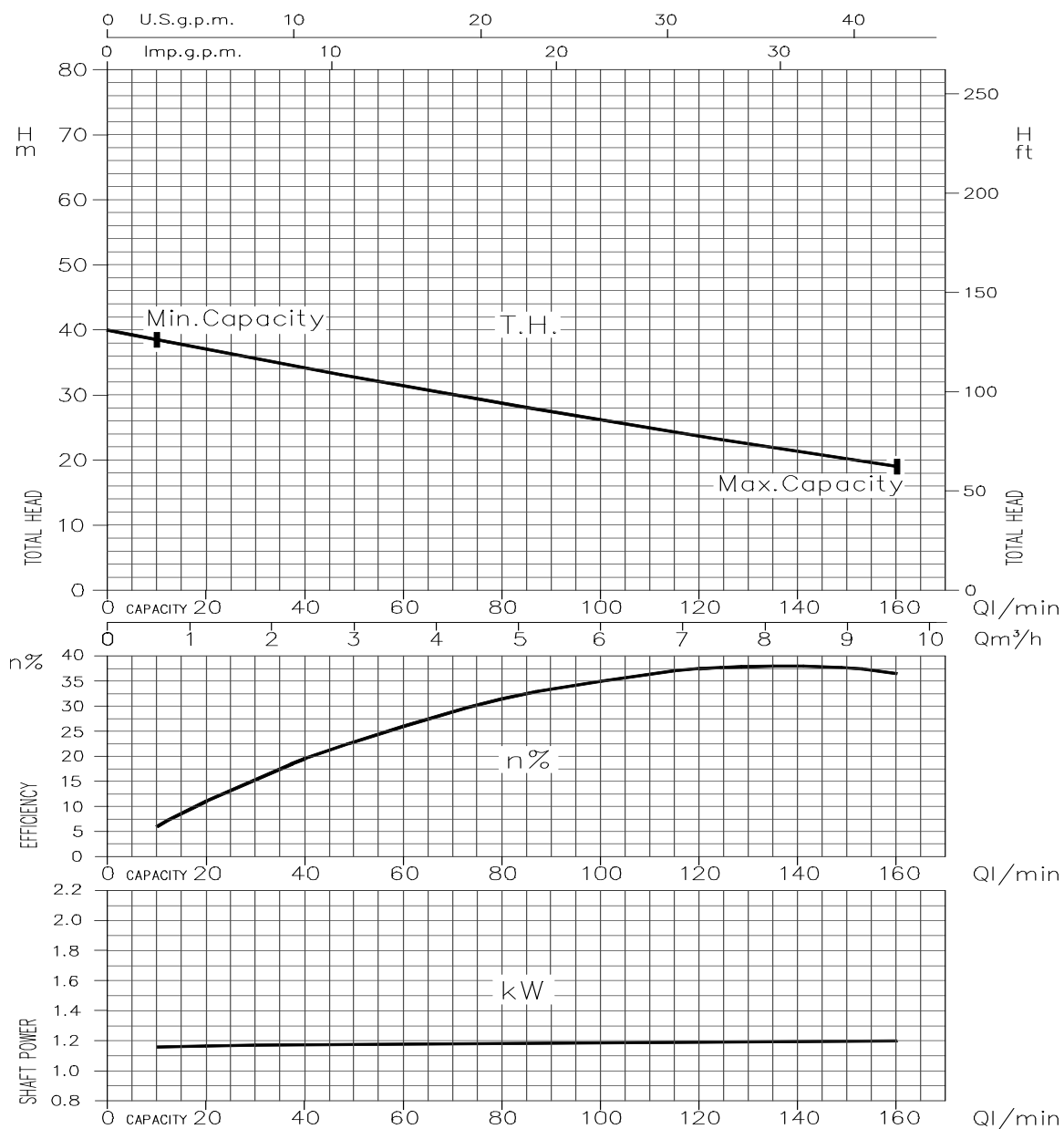
Rotation speed $\approx 2850 \text{ min}^{-1}$
 Test standard: ISO 9906 – Annex A

AGA 3.00 (2.2 kW) - Impeller diameter = 164 mm



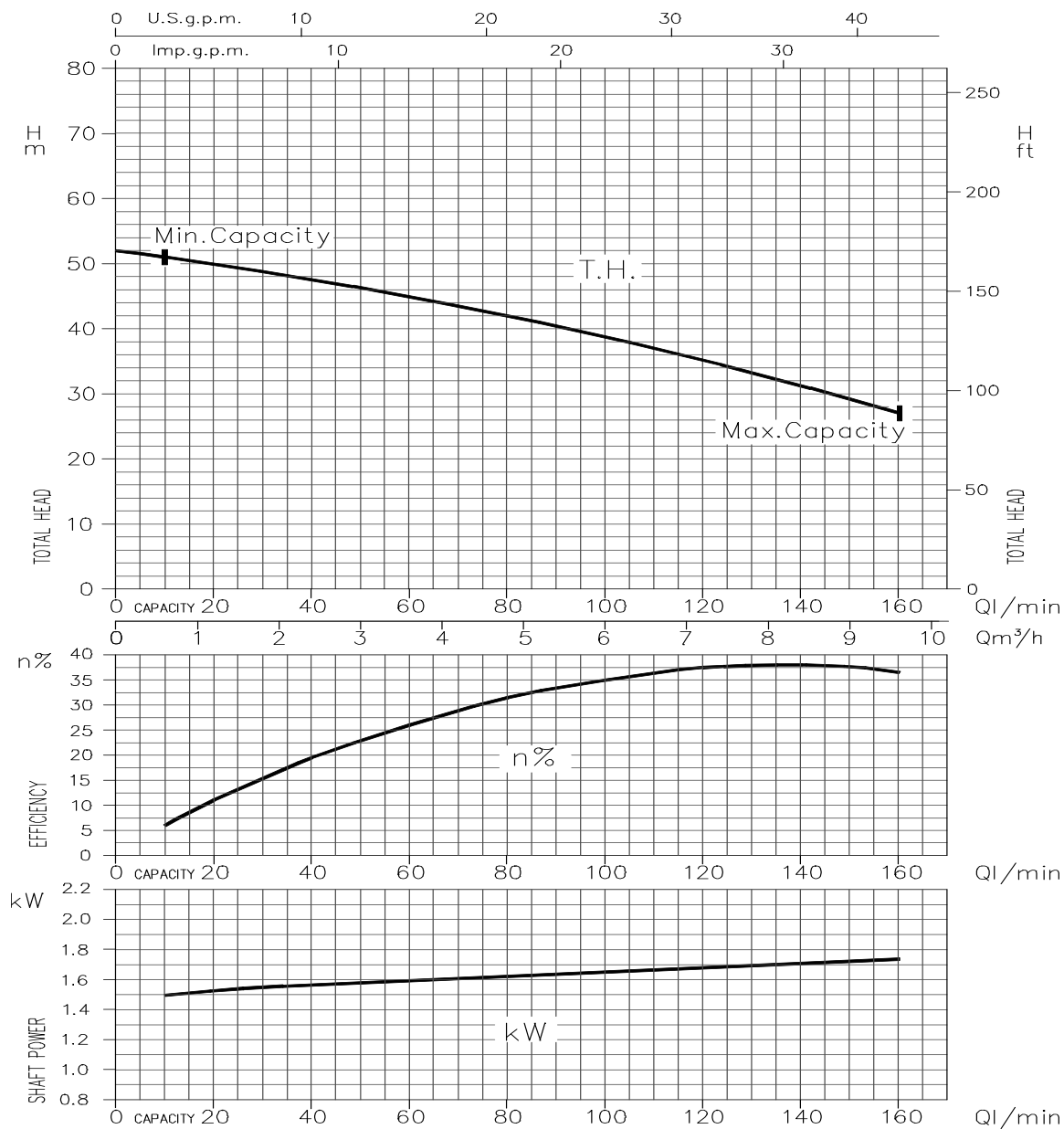
Rotation speed $\approx 2850 \text{ min}^{-1}$
 Test standard: ISO 9906 – Annex A

AGC 1.50 (1.1 kW) - Impeller diameter = 143 mm



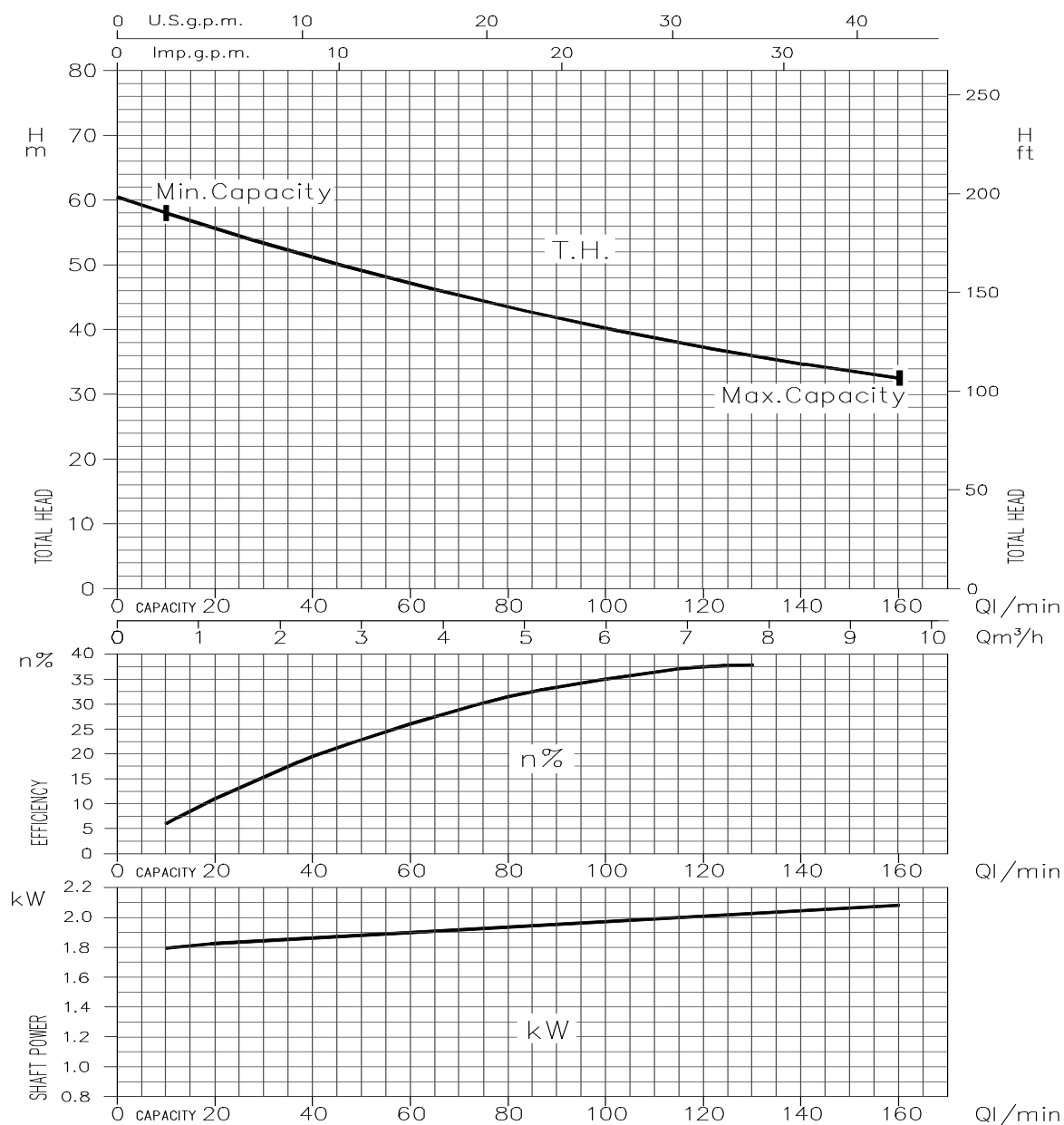
Rotation speed $\approx 2850 \text{ min}^{-1}$
Test standard: ISO 9906 – Annex A

AGC 2.00 (1.5 kW) - Impeller diameter = 157 mm



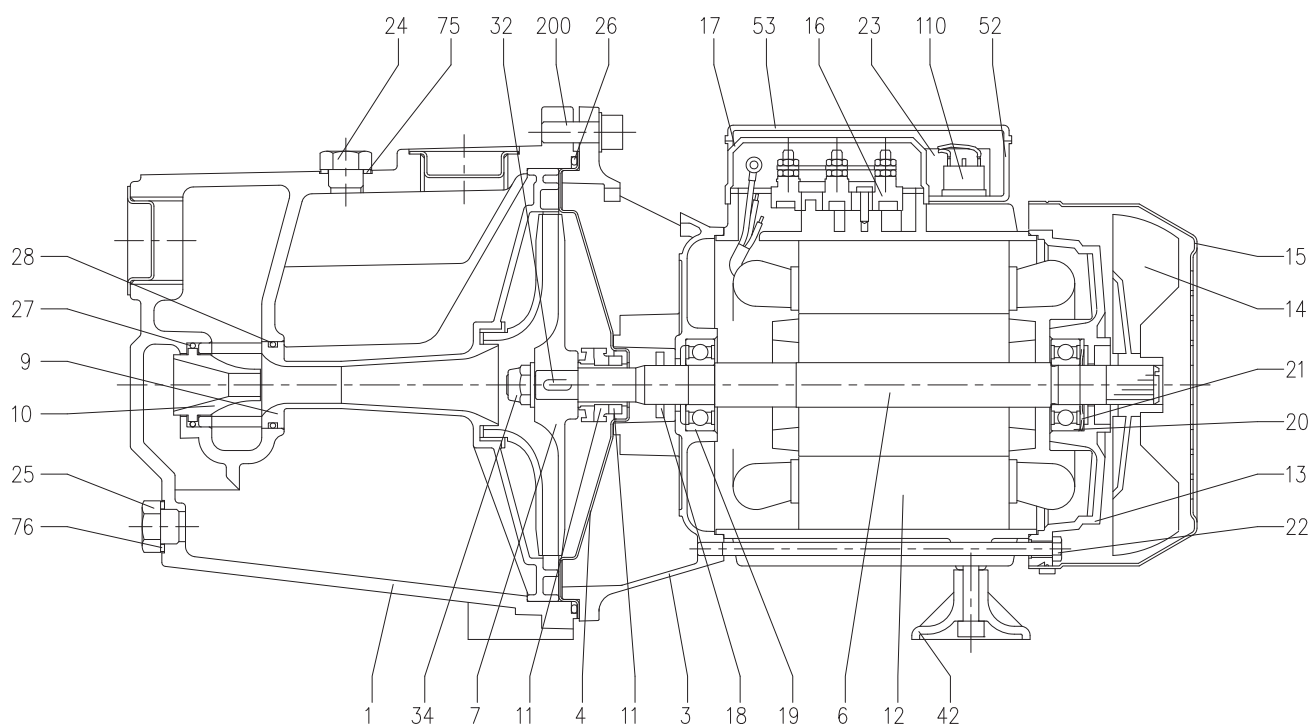
Rotation speed $\approx 2850 \text{ min}^{-1}$
Test standard: ISO 9906 – Annex A

AGC 3.00 (2.2 kW) - Impeller diameter = 164 mm



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

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	[1]	1	22	Tie rod	Fe 42 Zincate	4
4	Casing cover	AISI 304 [2]	1	23	Capacitor [6]	-	1
6	Shaft with rotor	AISI 303 (wet extension)	1	24	Priming plug	Brass	1
7	Impeller	[3]	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 [4]	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 [7]	AISI 304	1
14	Fan	PA	1	42	Foot	PP	1
15	Fan cover	Fe P04 Zincate	1	52	Capacitor box [6]	ABS class V-0	1
16	Terminal board	-	1	53	Capacitor box cover [9]	ABS class V-0 [9]	1
17	Terminal box cover [5]	Aluminium	1	75	Washer	Aluminium	1
18	Splash ring	NBR	1	76	Washer	Aluminium	1
19	Pump side ball bearing	-	1	110	Protector [8]	-	1
20	Fan side ball bearing	-	1	200	Screw	Zn Steel Cl. 8.8 ISO 898-1	4

[1] Material : Cast iron for version AGA 1.50 - AGA 2.00 - AGA 3.00 - AGC 1.50 - AGC 2.00 - AGC 3.00
Aluminium for version AGA 0.60 - AGA 0.75 - AGA 1.00

[2] Only for version AGA 0.60 - AGA 0.75 - AGA 1.00

[3] Material : PPE+PS glass fibre reinforced for version AGA 0.60 - AGA 0.75 - AGA 1.00

Brass for version AGA 1.50 - AGA 2.00 - AGA 3.00 - AGC 1.50 - AGC 2.00 - AGC 3.00

[4] See constructions mechanical seal page 301

[5] Only for three phase

[6] Only for single phase

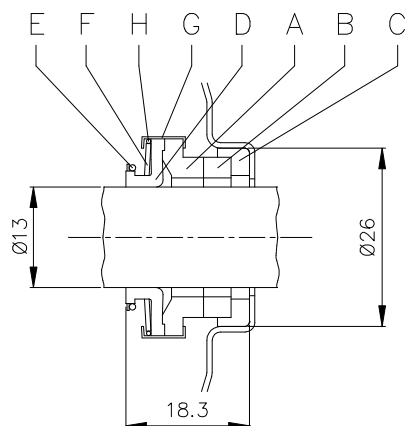
[7] Only for version with impeller in Brass

[8] Only for version single phase AGA 1.50 - AGA 2.00 - AGC 1.50 - AGC 2.00

[9] With gasket in NBR only for version single phase AGA 0.60 - AGA 0.75 - AGA 1.00

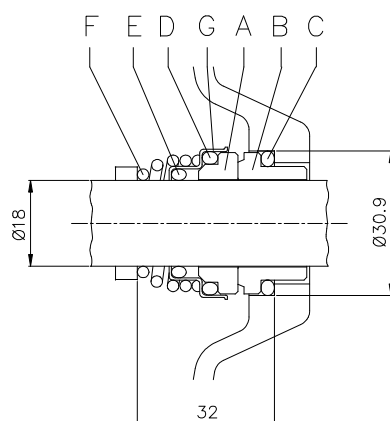
MECHANICAL SEAL

UP TO 0.75 kW



REF	PART NAME	MATERIAL product standard AGA-AGC
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

1.1 kW AND ABOVE



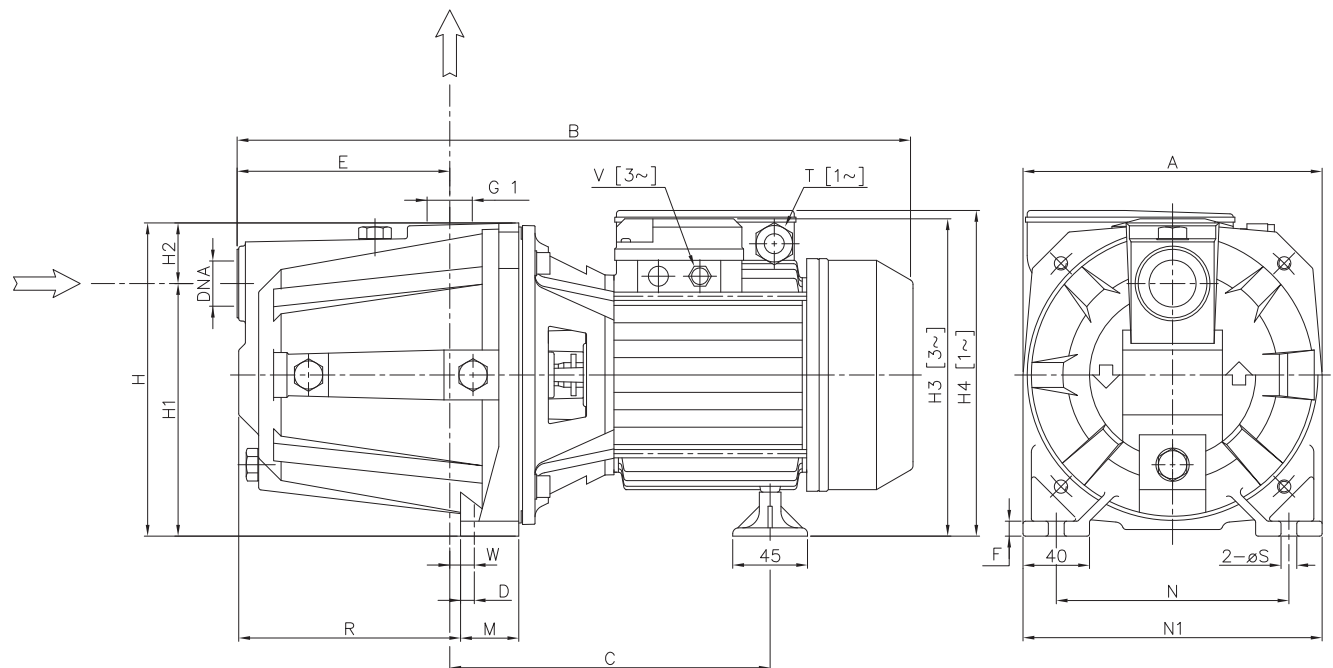
REF	PART NAME	MATERIAL product standard AGA-AGC
A	Rotary seal ring	ceramic
B	Stationary seal ring	carbon graphite
C	O Ring	NBR
D	O Ring	NBR
E	O Ring	NBR
F	Self driving spring	AISI 316
G	Frame	AISI 304

BEARINGS

Type pumps		Ball Bearing			
Single Phase	Three Phase	Pump side	(*) Pump side	Fan side	(*) Fan side
AGA 0.60 M	AGA 0.60 T	6202 2RSH	-	6202 2RSH	-
AGA 0.75 M	AGA 0.75 T	6202 2RSH	-	6202 2RSH	-
AGA 1.00 M	AGA 1.00 T	6202 2RSH	6202-ZZ C3	6202 2RSH	6202-ZZ C3
AGA 1.50 M	AGA 1.50 T	6204 2RSH	6204-ZZ C3	6203 2RSH	6203-ZZ C3
AGA 2.00 M	AGA 2.00 T	6204 2RSH	6204-ZZ C3	6203 2RSH	6203-ZZ C3
-	AGA 3.00 T	6204 2RSH	6204-ZZ C3	6203 2RSH	6203-ZZ C3
AGC 1.50 M	AGC 1.50 T	6204 2RSH	6204-ZZ C3	6203 2RSH	6203-ZZ C3
AGC 2.00 M	AGC 2.00 T	6204 2RSH	6204-ZZ C3	6203 2RSH	6203-ZZ C3
-	AGC 3.00 T	6204 2RSH	6204-ZZ C3	6203 2RSH	6203-ZZ C3

(*) Only for IE3 Motors

PUMP



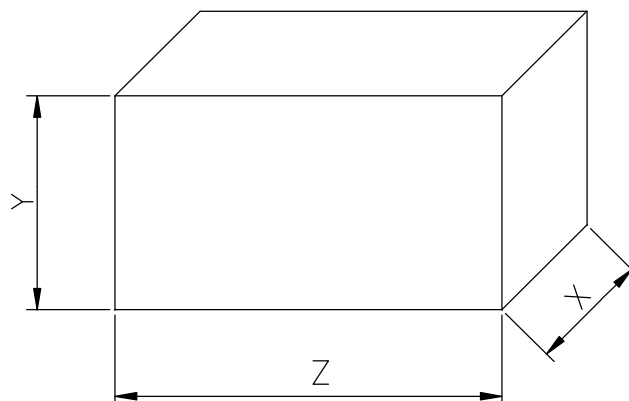
Pump type	Dimensions [mm]																				Weight [kgf]			
	A	B	(*)	C	D	E	F	H	H1	H2	[3~]	[1~]	M	N	N1	R	[1~]	[3~]	[3~]	W	S	DNA		(*)
AGA 0.60 M	180	405	-	195	10.3	127	9	185	152	33	-	199	40	140	180	128.5	PG11	-	-	11.8	9.5	G 1	12	-
AGA 0.60 T	180	405	-	195	10.3	127	9	185	152	33	197.5	-	40	140	180	128.5	-	-	PG11	11.8	9.5	G 1	12	-
AGA 0.75 M	180	405	-	195	10.3	127	9	185	152	33	-	199	40	140	180	128.5	PG11	-	-	11.8	9.5	G 1	12.5	-
AGA 0.75 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	12.3	-
AGA 1.00 M	180	405	-	195	10.3	127	9	185	152	33	-	199	40	140	180	128.5	PG11	-	-	11.8	9.5	G 1	13.8	-
AGA 1.00 T	180	405	405	195	10.3	127	9	185	152	33	197.5	-	40	140	180	128.5	-	M16x1.5	PG11	11.8	9.5	G 1	14.8	14.8
AGA 1.50 M	220	508	-	244	10	157	10	223	170	53	-	247	48	180	220	167.5	PG13.5	-	-	15.5	9	G 1 1/2	25.5	-
AGA 1.50 T	220	495	520	244	10	157	10	223	170	53	229	-	48	180	220	167.5	-	M20x1.5	PG11	15.5	9	G 1 1/2	25.6	26.5
AGA 2.00 M	220	508	-	244	10	157	10	223	170	53	-	247	48	180	220	167.5	PG13.5	-	-	15.5	9	G 1 1/2	26.6	-
AGA 2.00 T	220	495	520	244	10	157	10	223	170	53	229	-	48	180	220	167.5	-	M20x1.5	PG11	15.5	9	G 1 1/2	27.7	28.6
AGA 3.00 T	220	508	521	244	10	157	10	223	170	53	229	-	48	180	220	167.5	-	M20x1.5	PG11	15.5	9	G 1 1/2	29	29.9
AGC 1.50 M	220	508	-	244	10	157	10	223	170	53	-	247	48	180	220	167.5	PG13.5	-	-	15.5	9	G 1 1/2	25.5	-
AGC 1.50 T	220	495	520	244	10	157	10	223	170	53	229	-	48	180	220	167.5	-	M20x1.5	PG11	15.5	9	G 1 1/2	27.4	28.3
AGC 2.00 M	220	508	-	244	10	157	10	223	170	53	-	247	48	180	220	167.5	PG13.5	-	-	15.5	9	G 1 1/2	26.6	-
AGC 2.00 T	220	508	521	244	10	157	10	223	170	53	229	-	48	180	220	167.5	-	M20x1.5	PG11	15.5	9	G 1 1/2	28.6	29.5
AGC 3.00 T	220	508	521	244	10	157	10	223	170	53	229	-	48	180	220	167.5	-	M20x1.5	PG11	15.5	9	G 1 1/2	29	29.9

[1 ~] Single phase

[3 ~] Three phase

(*) Only for IE3 Motors

PACKING



Type pumps		Packing [mm]			Weight [kgf]		
Single Phase	Three Phase	X	Y	Z	[1~]	[3~]	(*) [3~]
AGA 0.60 M	AGA 0.60 T	205	250	445	12.7	12.7	-
AGA 0.75 M	AGA 0.75 T	205	250	445	13.3	13	-
AGA 1.00 M	AGA 1.00 T	205	250	445	14.6	15.6	15.6
AGA 1.50 M	AGA 1.50 T	232	275	547	26.4	26.4	27.3
AGA 2.00 M	AGA 2.00 T	232	275	547	27.7	28.8	29.7
-	AGA 3.00 T	232	275	547	-	29.9	30.8
AGC 1.50 M	AGC 1.50 T	232	275	547	26.4	28.3	29.2
AGC 2.00 M	AGC 2.00 T	232	275	547	27.7	29.7	30.6
-	AGC 3.00 T	232	275	547	-	29.9	30.8

[1 ~] Single phase

[3 ~] Three phase

(*) Only for IE3 Motors

MOTOR DATA

Pump type		Power		Efficiency		Capacitor		Efficiency (% load)			Input		Full load current			Locked rotor current		
Single Phase	Three Phase	[kW]	[HP]	Single Phase	Three Phase	Single Phase	Three Phase	Three phase η %			Single Phase	Three Phase	Single Phase	Three Phase	Three Phase	Single Phase	Three Phase	Three Phase
						[μ F]	[V]	50%	75%	100%	Phase	Phase	230 V	230 V	400 V	230 V	230 V	400 V
AGA 0.60 M	AGA 0.60 T	0.45	0.6	-	-	12.5	450	-	-	-	0.70	0.65	3.1	2.1	1.2	10.2	11.0	6.4
AGA 0.75 M	AGA 0.75 T	0.55	0.75	-	-	14	450	-	-	-	0.92	0.84	4.0	2.8	1.6	13.5	12.0	7.1
AGA 1.00 M	AGA 1.00 T	0.75	1	-	IE2	20	450	77.2	80.9	81.3	1.15	0.92	5.5	2.9	1.7	17.5	22.0	12.9
-	AGA 1.00 T	0.75	1	-	IE3	-	-	80.9	82.3	82.1	-	0.91	-	3.0	1.7	-	19.7	11.4
AGA 1.50 M	AGA 1.50 T	1.1	1.5	-	IE2	40	450	79.7	82.5	83.0	1.65	1.80	8.1	5.5	3.2	38	45.0	25.7
-	AGA 1.50 T	1.1	1.5	-	IE3	-	-	83.0	85.8	85.6	-	1.77	-	5.8	3.3	-	47.4	27.4
AGA 2.00 M	AGA 2.00 T	1.5	2	-	IE2	40	450	79.7	82.5	83.0	2.10	2.05	9.8	6.0	3.5	44	45.0	25.7
-	AGA 2.00 T	1.5	2	-	IE3	-	-	83.0	85.8	85.6	-	1.77	-	5.8	3.3	-	47.4	27.4
-	AGA 3.00 T	2.2	3	-	IE2	-	-	83.0	84.4	83.8	-	2.63	-	8.1	4.7	-	59.0	34.3
-	AGA 3.00 T	2.2	3	-	IE3	-	-	86.2	87.0	86.0	-	2.55	-	8.2	4.7	-	66.6	38.4
AGC 1.50 M	AGC 1.50 T	1.1	1.5	-	IE2	40	450	79.7	82.5	83.0	1.80	1.80	8.6	5.5	3.2	38	45.0	25.7
-	AGC 1.50 T	1.1	1.5	-	IE3	-	-	83.0	85.8	85.6	-	1.77	-	5.8	3.3	-	47.4	27.4
AGC 2.00 M	AGC 2.00 T	1.5	2	-	IE2	40	450	80.3	83.4	83.8	2.30	2.23	10.5	7.4	4.3	44	34.3	20.0
-	AGC 2.00 T	1.5	2	-	IE3	-	-	84.2	86.8	86.9	-	2.01	-	7.1	4.1	-	66.6	38.4
-	AGC 3.00 T	2.2	3	-	IE2	-	-	83.0	84.4	83.8	-	2.63	-	8.1	4.7	-	59.0	34.3
-	AGC 3.00 T	2.2	3	-	IE3	-	-	86.2	87.0	86.0	-	2.55	-	8.2	4.7	-	66.6	38.4

NOISE DATA

Pump type		Power		L _{pA} - dB(A) *
Single Phase	Three Phase	[kW]	[HP]	
AGA 0.60 M	AGA 0.60 T	0.45	0.6	71
AGA 0.75 M	AGA 0.75 T	0.55	0.75	
AGA 1.00 M	AGA 1.00 T	0.75	1	
AGA 1.50 M	AGA 1.50 T	1.1	1.5	76
AGA 2.00 M	AGA 2.00 T	1.5	2	
-	AGA 3.00 T	2.2	3	
AGC 1.50 M	AGC 1.50 T	1.1	1.5	
AGC 2.00 M	AGC 2.00 T	1.5	2	
-	AGC 3.00 T	2.2	3	

* Mean value of several measures at 1m distance around the pump.

Tolerance ± 2.5 dB.