



EBARA

	Page
- SPECIFICATIONS	200
SELECTION CHART	201
TYPE KEY AND CURVE SPECIFICATIONS	202
PERFORMANCE CURVE DWO 150	203
PERFORMANCE CURVE DWO 200	204
PERFORMANCE CURVE DWO 300	205
PERFORMANCE CURVE DWO 400	206
- CONSTRUCTIONS	300
SECTIONAL VIEW	300
MECHANICAL SEAL	301
- DIMENSIONS AND WEIGHT	400
PUMP	400
GEOMETRIC TOLERANCES	401
PACKING	402
- TECHNICAL DATA	500
MOTOR DATA	500
NOISE DATA	500

SPECIFICATION

50Hz

Rev. G

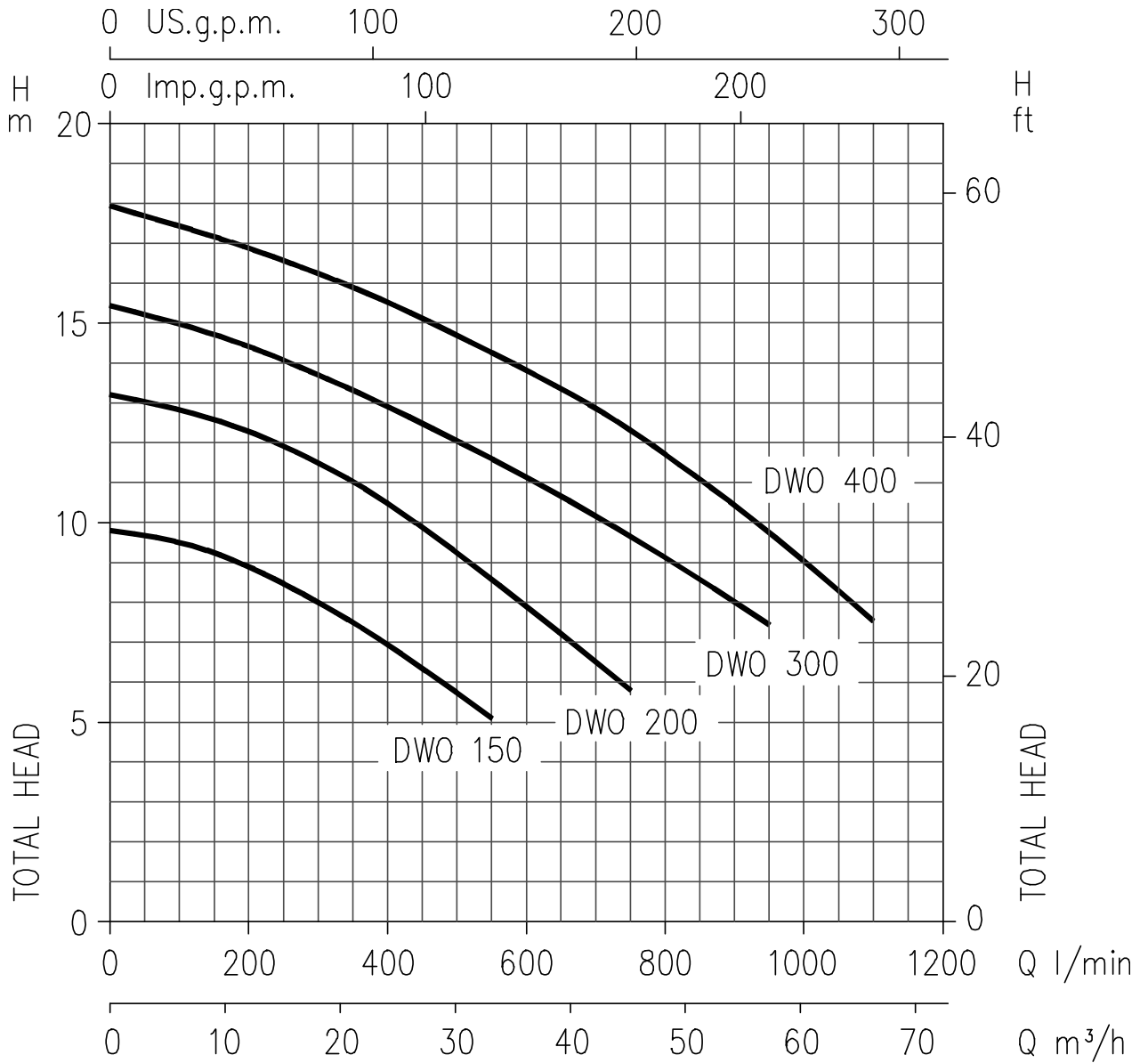
PUMP		
Liquid Handled	Type of liquid	Clean water
	Temperature [°C]	min. -5 max. +90 max. +110 (H-HS-HW)
Maximum working pressure [MPa]		0,8
Construction	Impeller	Open centrifugal type
	Shaft seal type	Mechanical seal
	Bearing	Sealed ball bearing
Pipe Connection	Suction	G 2 G 2½ (DWO 300-400)
	Discharge	G 2
Material	Casing	AISI 304
	Impeller	AISI 304
	Casing cover	AISI 304
	Shaft seal	Ceramic/Carbon/NBR (for DWO) Ceramic/Carbon/FPM (for DWOH) SiC/SiC/FPM (for DWOHS) Tungsten Carbide/Tungsten Carbide/FPM (for DWOHW)
	Casing cover	AISI 304
	Shaft	AISI 304 (Wet extension)
	Bracket	Aluminium
Applicable standard of test		ISO 9906 – Annex A

MOTOR		
Type	Electric - TEFC	
	Single Phase	Three Phase
Efficiency level (Reg. 640/2009)	-	IE2 from 1.1 kW up to 3.0 kW
No. of Poles	2	
Rotation speed [min ⁻¹]	≈ 2800	
Insulation Class	F	
Protection degree(CEI EN 60034-5)	IP 55	
Power rating	[kW]	1.1 ÷ 1.5
	[HP]	1.5 ÷ 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/motor support	Aluminium	
Dimensions of cable entry	PG11 - PG13.5 (See page 400)	

SELECTION CHART

50Hz

Rev. G



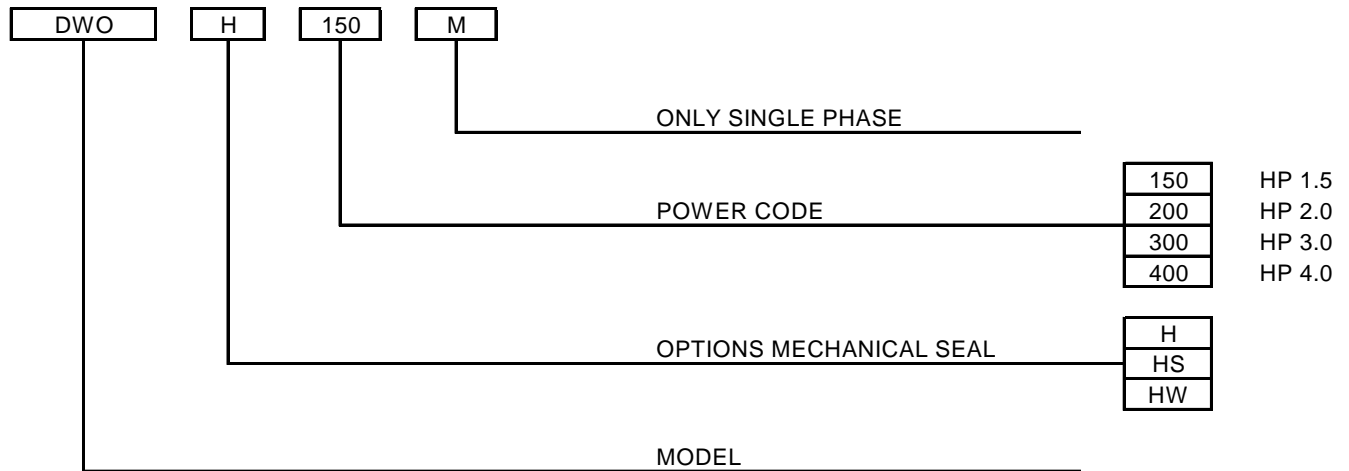
Pump type		Power		Q=Capacity									
				l/min	0	100	200	300	400	550	750	950	1100
Single Phase	Three Phase	[kW]	[HP]	m³/h	0	6	12	18	24	33	42	57	66
H=Total manometric head in meters													
DWO 150 M	DWO 150	1.1	1.5	9.8	9.5	8.9	7.9	6.9	5.1	-	-	-	-
DWO 200 M	DWO 200	1.5	2	13.2	12.7	12.3	11.5	10.5	8.6	5.8	-	-	-
-	DWO 300	2.2	3	15.5	15	14.5	13.8	12.9	11.7	9.7	7.5	-	-
-	DWO 400	3	4	18	17.5	16.9	16.3	15.6	14.3	12.4	9.8	7.6	-

TYPE KEY AND CURVE SPECIFICATIONS

50Hz

Rev. G

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)

The NPSH curve is an average curve obtained in the same conditions of performance curves.

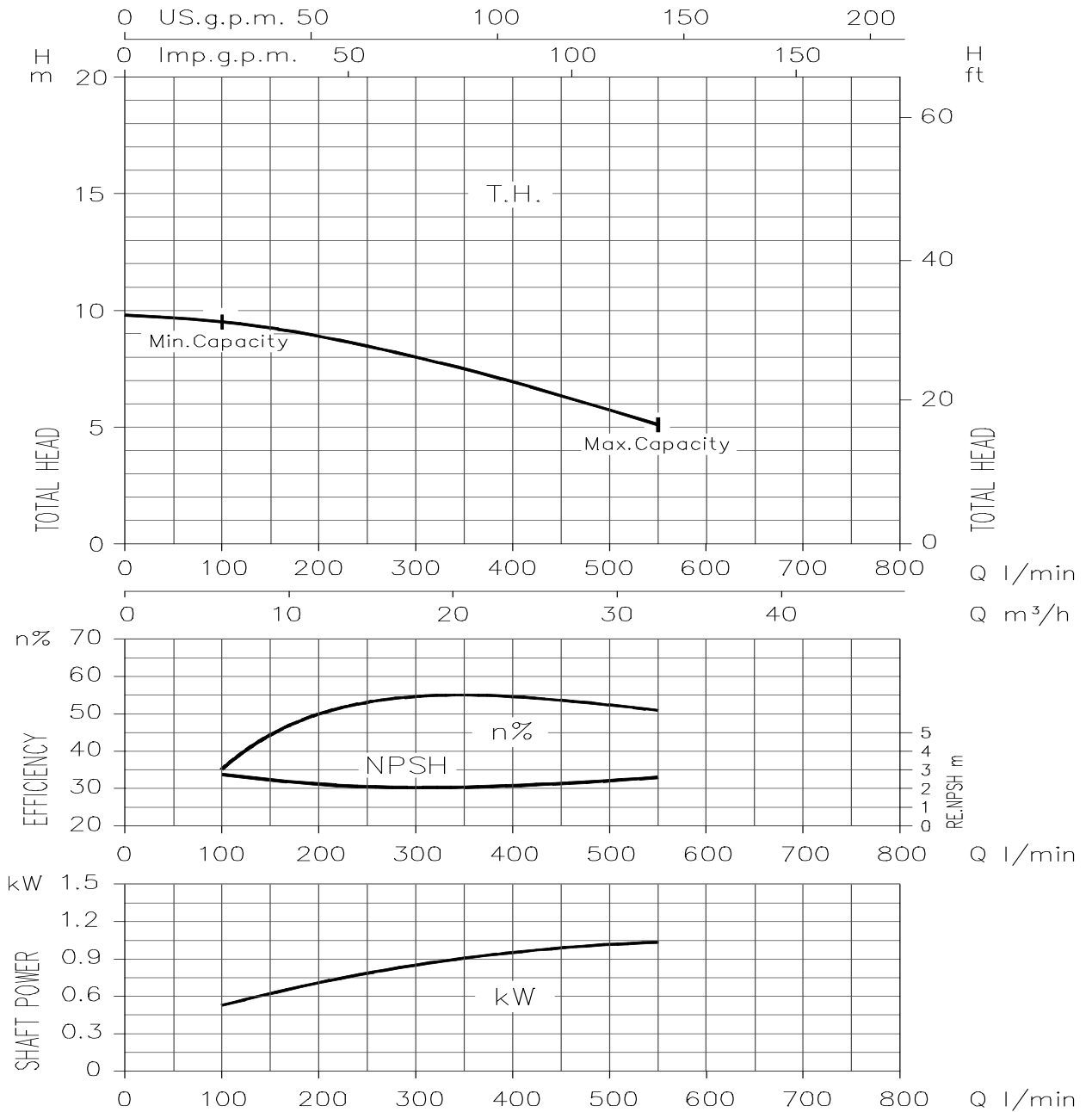
The continuous curves indicate the recommended working range. The dotted curve is only a guide.

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:

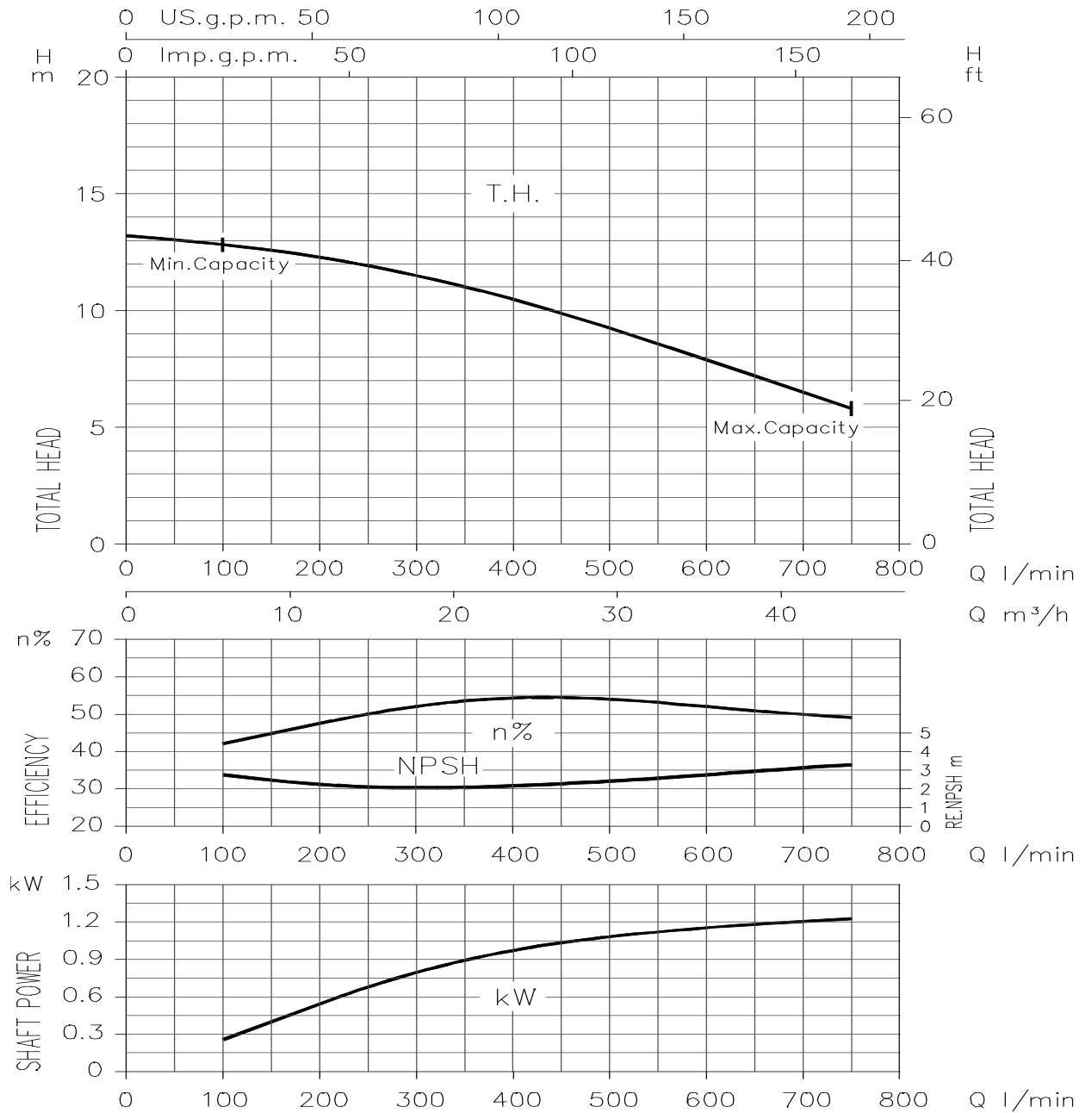
- Q = volume flow rate
- H = total head
- P_2 = pump power input (shaft power)
- η = pump efficiency
- NPSH = net positive suction head required by the pump

DWO 150 (1.1 kW) - Impeller diameter = 88 mm



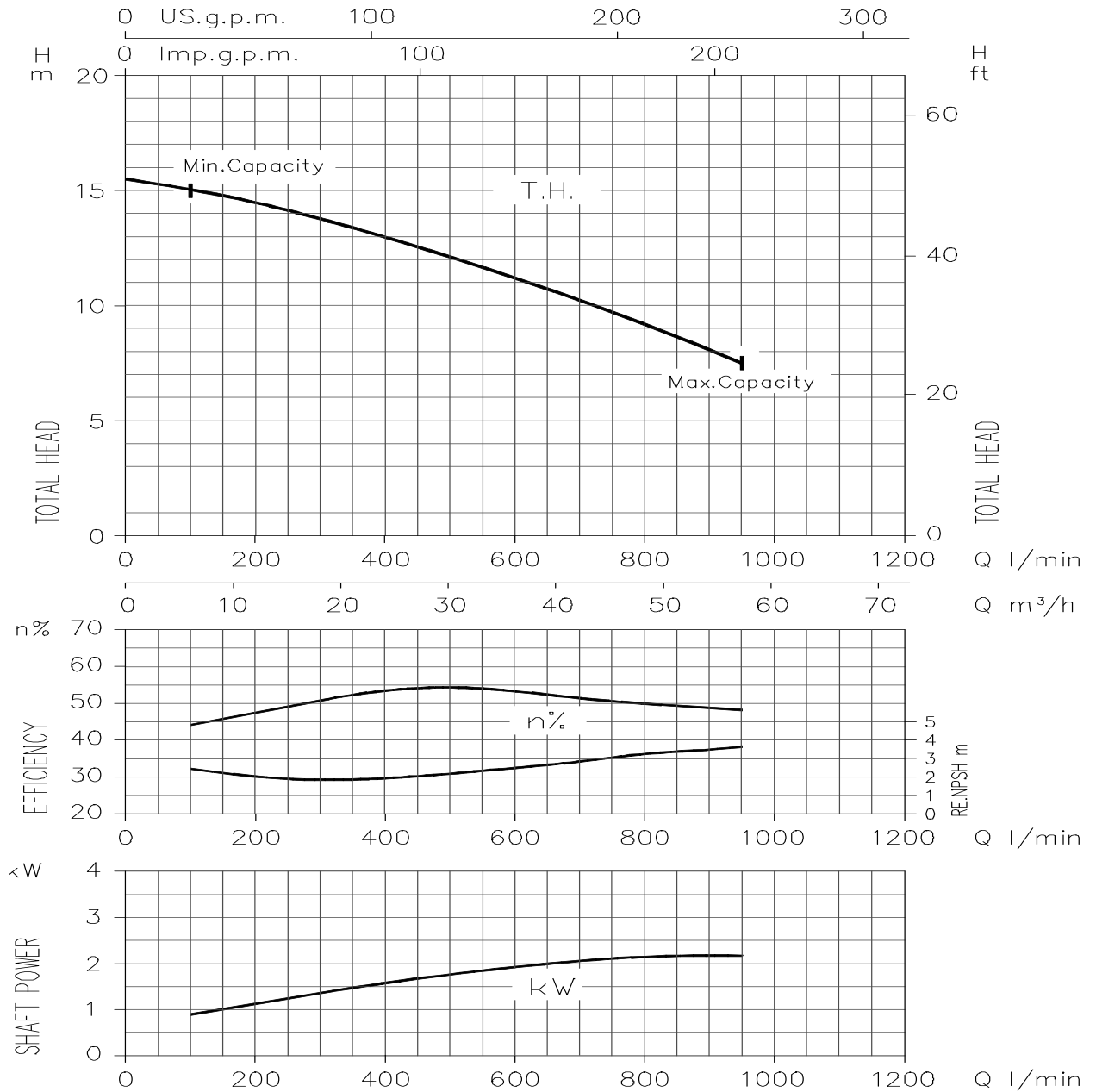
Rotation speed $\approx 2800 \text{ min}^{-1}$
 Test standard: ISO 9906 – Annex A

DWO 200 (1.5 kW) - Impeller diameter = 103 mm



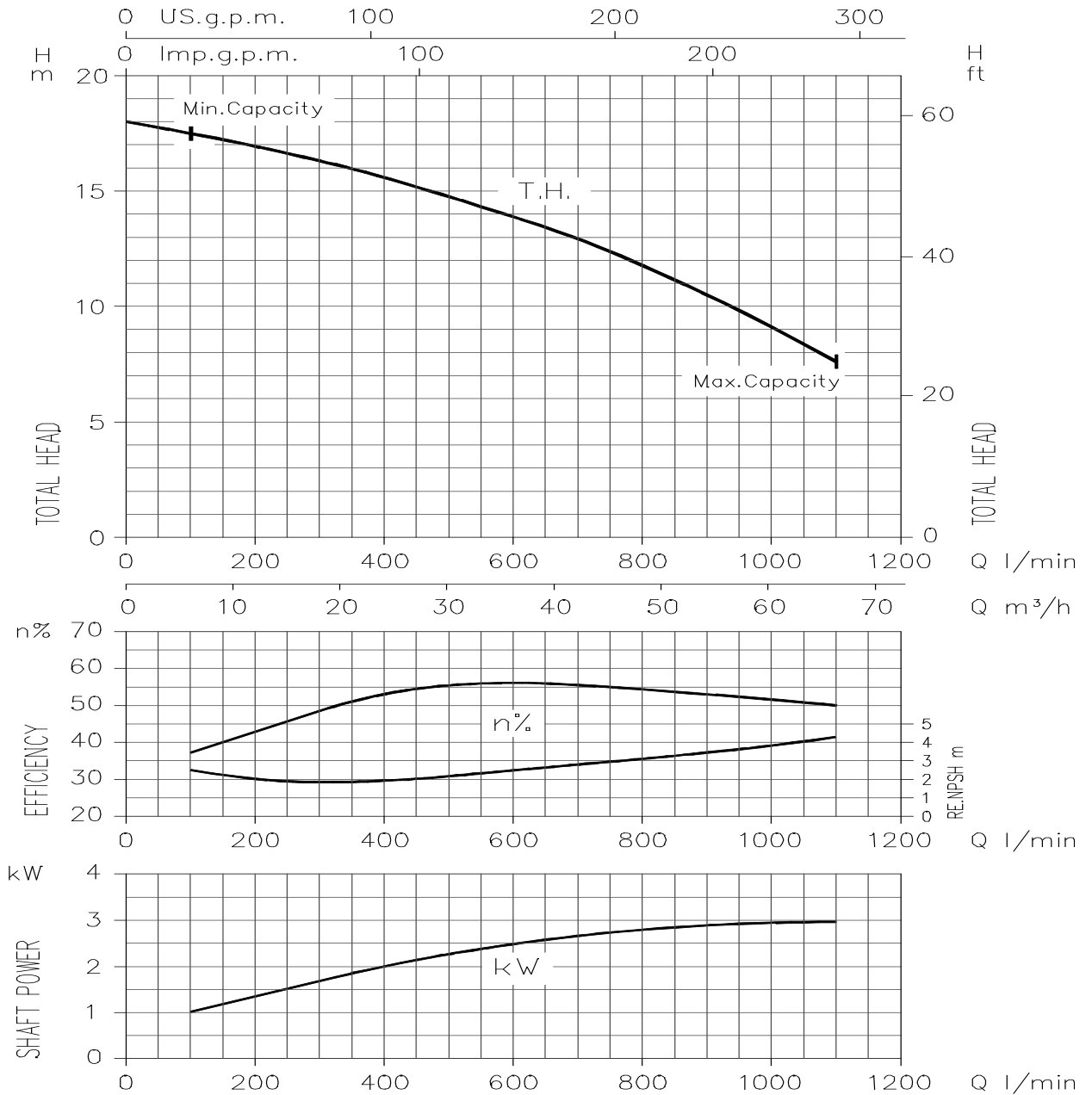
Rotation speed $\approx 2800 \text{ min}^{-1}$
 Test standard: ISO 9906 – Annex A

DWO 300 (2.2 kW) - Impeller diameter = 107 mm



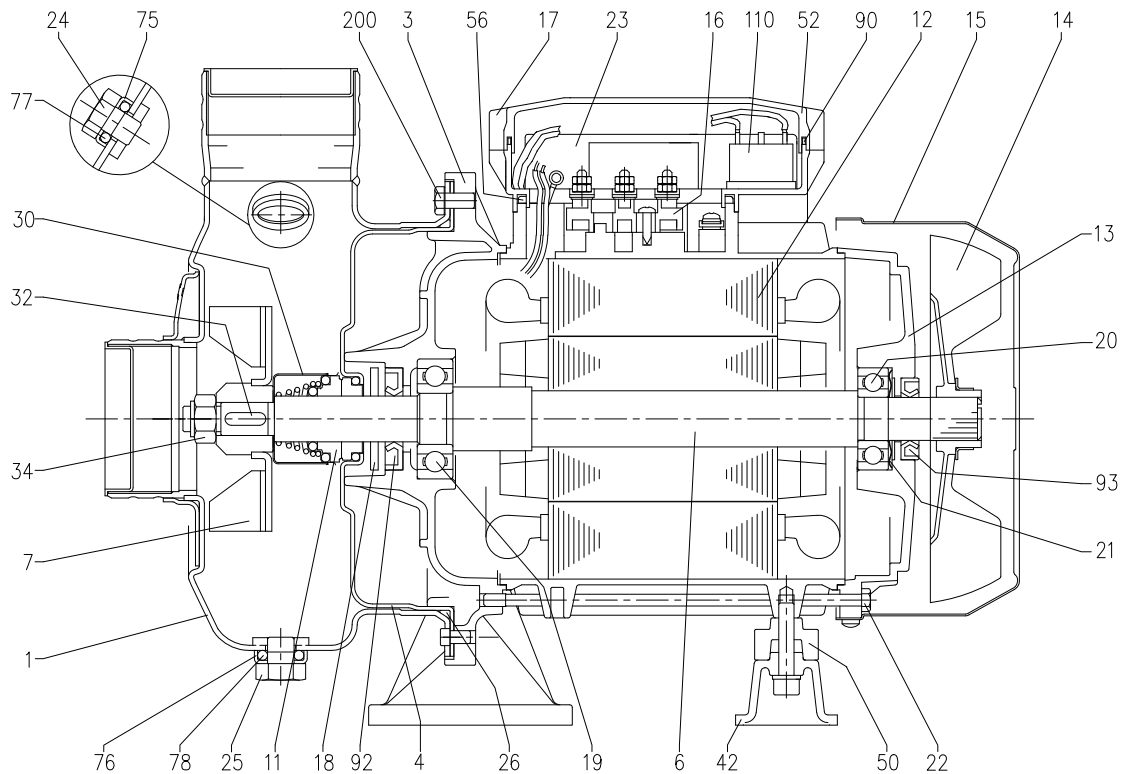
Rotation speed $\approx 2800 \text{ min}^{-1}$
 Test standard: ISO 9906 – Annex A

DWO 400 (3 kW) - Impeller diameter: 118 mm



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

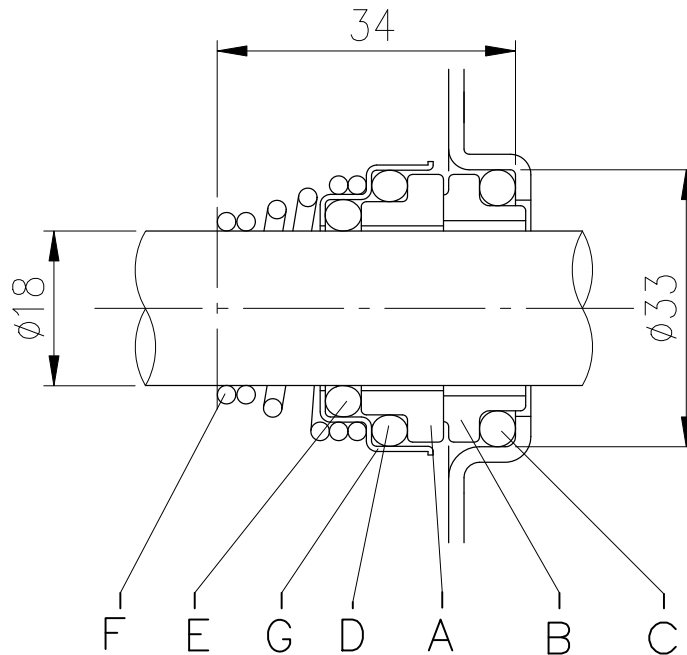
SECTIONAL VIEW



N°	PART NAME	MATERIAL	Q.TY	N°	PART NAME	MATERIAL	Q.TY
1	Casing	AISI 304	1	25	Drain plug	AISI 303	1
3	Motor bracket	Aluminium	1	26	O-ring [4]	NBR	1
4	Casing cover	AISI 304	1	30	Mechanical seal protection	AISI 304	1
6	Shaft with rotor	AISI 304 (Wet extention)	1	32	Key	AISI 316	1
7	Impeller	AISI 304	1	34	Impeller nut	AISI 304	1
11	Mechanical seal [3]	Carbon/Ceramic/NBR	1	42	Motor support	Aluminium	1
12	Motor frame with stator	-	1	50	Spacer	-	1
13	Motor cover	Aluminium	1	52	Terminal box [1]	PP	1
14	Fan	PP	1	56	Box gasket	NBR	1
15	Fan cover	Fe P04 Zincate	1	75	Washer	AISI 304	1
16	Terminal box	-	1	76	Washer	AISI 304	1
17	Terminal box cover [2]	Aluminium	1	77	O-ring	NBR	1
18	Splash ring	NBR	1	78	O-ring	NBR	1
19	Pump side ball bearing	-	1	90	Terminal box cover gasket [1]	NBR	1
20	Fan side ball bearing	-	1	92	Lip seal	-	1
21	Adjusting ring	Steel C70	1	93	Lip seal	-	1
22	Tie rod	Fe 420 Zincate	4	110	Protector [1]	-	1
23	Capacitor [1]	-	1	200	Screw	Stainless steel A2 UNI7323	6
24	Priming plug	AISI 303	1				

- [1] Only for single phase
- [2] Only for three phase
- [3] See constructions mechanical seal page 301
- [4] FPM for DWOH, DWOHS and DWOHW

MECHANICAL SEAL

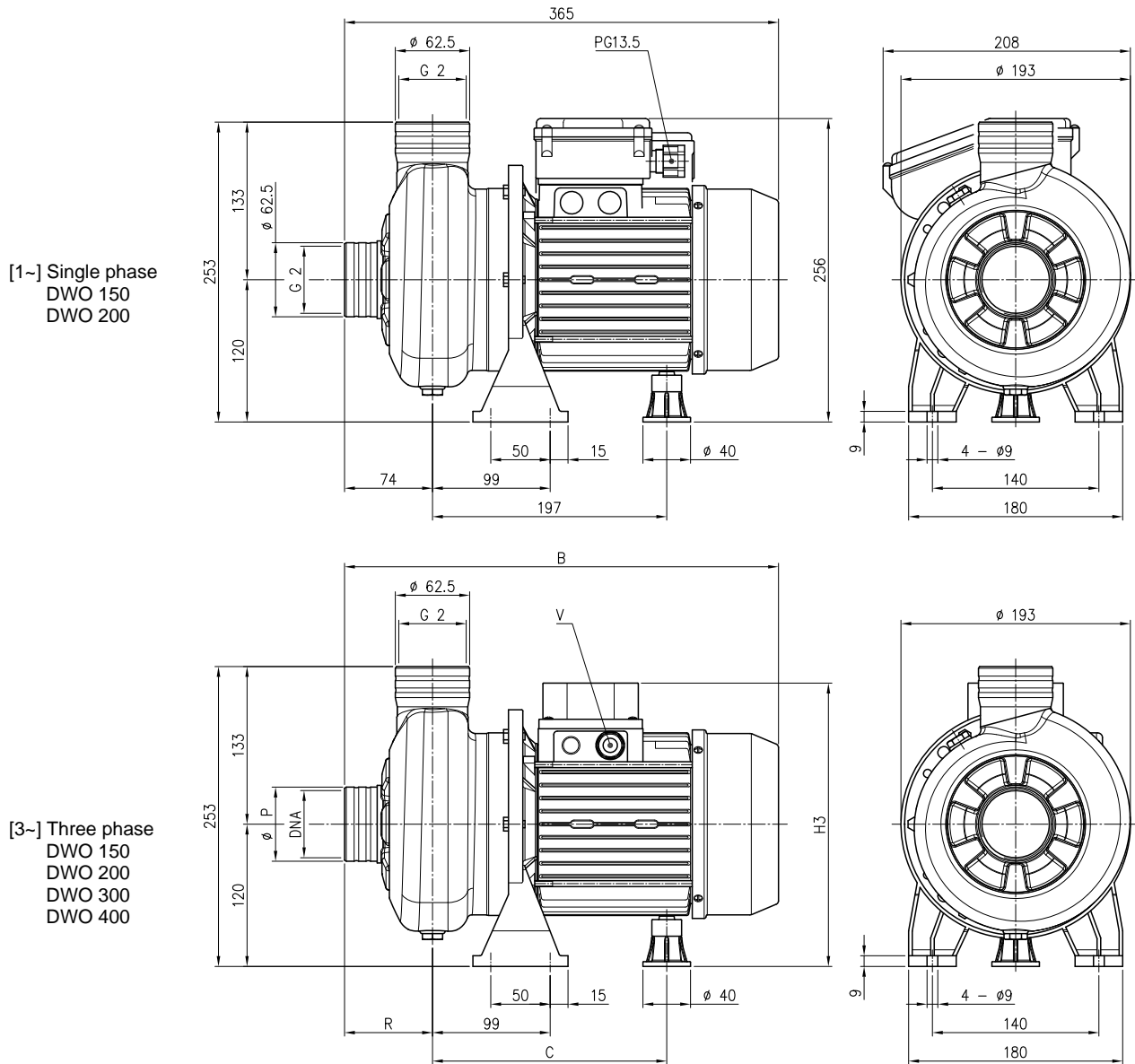


REF	PART NAME	MATERIAL			
		Product standard (DWO)	(DWOH)	Optional (DWOHS)	(DWOHW)
A	Rotary seal ring	ceramic	Ceramic	Silicon carbide	Tungsten carbide
B	Stationary seal ring	carbon graphite	Carbon graphite	Silicon carbide	Tungsten carbide
C	O Ring	NBR	FPM	FPM	FPM
D	O Ring	NBR	FPM	FPM	FPM
E	O Ring	NBR	FPM	FPM	FPM
F	Self driving spring	AISI 316	AISI 316	AISI 316	AISI 316
G	Frame	AISI 304	AISI 304	AISI 316	AISI 316

BEARINGS

Pump type		Ball Bearing	
Single Phase	Three Phase	Pump side	Fan side
DWO 150 M	DWO 150	6204 2RSH	6203 2RSH
DWO 200 M	DWO 200	6204 2RSH	6203 2RSH
-	DWO 300	6305 2RSH	6205 2RSH
-	DWO 400	6305 2RSH	6205 2RSH

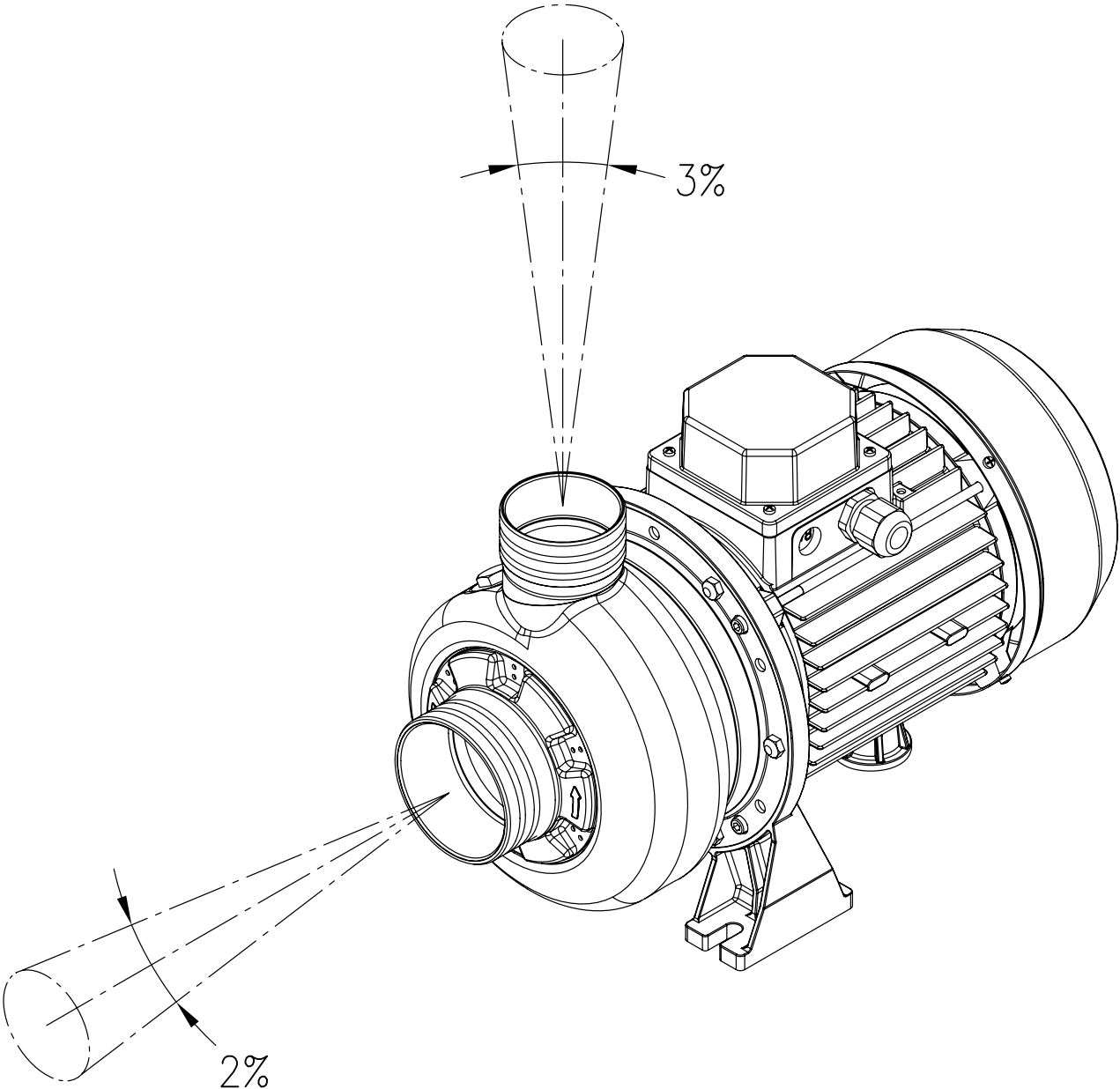
PUMP



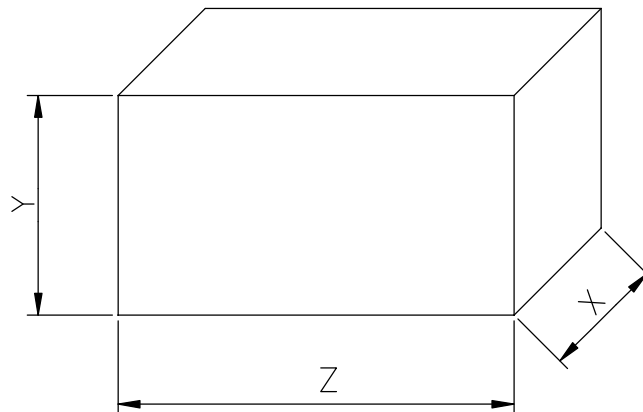
Pump type	B [3~]	C [3~]	H3 [3~]	R [3~]	P [3~]	V [3~]	DNA [3~]	Weight [kgf]	
								[1~]	[3~]
DWO 150	365	197	239	74	62,5	PG11	G 2	13,6	14,5
DWO 200	378	197	239	74	62,5	PG11	G 2	15,7	16,4
DWO 300	416	230/241	244	78	80	PG13.5	G 2½	-	19,5
DWO 400	455	230/241	244	78	80	PG13.5	G 2½	-	22,3

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

GEOMETRIC TOLERANCES



PACKING



Pump type		Packing [mm]						Weight [kgf]	
Single Phase [1~]	Three Phase [3~]	X		Y		Z		[1~]	[3~]
		[1~]	[3~]	[1~]	[3~]	[1~]	[3~]		
DWO 150 M	DWO 150	205	205	280	280	435	435	14,5	15,3
DWO 200 M	DWO 200	205	205	280	280	435	435	16,5	17,3
-	DWO 300	-	205	-	280	-	435	-	20,5
-	DWO 400	-	205	-	280	-	480	-	23,1

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

MOTOR DATA

Pump type		Power		Efficiency		Capacitor		Efficiency (% load)			Input [kW]		Full load current [A]			Locked rotor current [A]		
Single Phase	Three Phase	[kW]	[HP]	Single Phase	Three Phase	Single Phase		Three phase η %			Single Phase	Three Phase	Three Phase			Three Phase		
						[μ F]	[V]	50%	75%	100%			230 V	230 V	400 V	230 V	230 V	400 V
DWO 150 M	DWO 150	1.1	1.5	-	IE2	31.5	450	79.7	82.5	83.0	1.36	1.80	6.8	5.5	3.2	36	45.0	25.7
DWO 200 M	DWO 200	1.5	2.0	-	IE2	40	450	78.6	83.0	84.2	2.05	1.78	9.0	6.3	3.7	43	34.3	20.0
-	DWO 300	2.2	3.0	-	IE2	-	-	83.1	85.7	86.2	-	2.55	-	7.8	4.5	-	75.0	43.5
-	DWO 400	3.0	4.0	-	IE2	-	-	85.0	86.7	86.3	-	3.48	-	10.6	6.1	-	100.0	57.7

NOISE DATA

Pump type		Power		L_{pA} - dB(A) *
Single Phase	Three Phase	[kW]	[HP]	
DWO 150 M	DWO 150	1.1	1.5	<70
DWO 200 M	DWO 200	1.5	2.0	
-	DWO 300	2.2	3.0	
-	DWO 400	3.0	4.0	

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

Tolerance ± 2.5 dB.