DWO

Open Impeller Stainless Steel Centrifugal Pumps

CONTENTS

50 Hz
V14

SPECIFICATIONS - FEATURES & APPLICATIONS

50 Hz
V14

Open impeller centrifugal pumps with the hydraulic element manufactured from stainless steel AISI 304.

Features

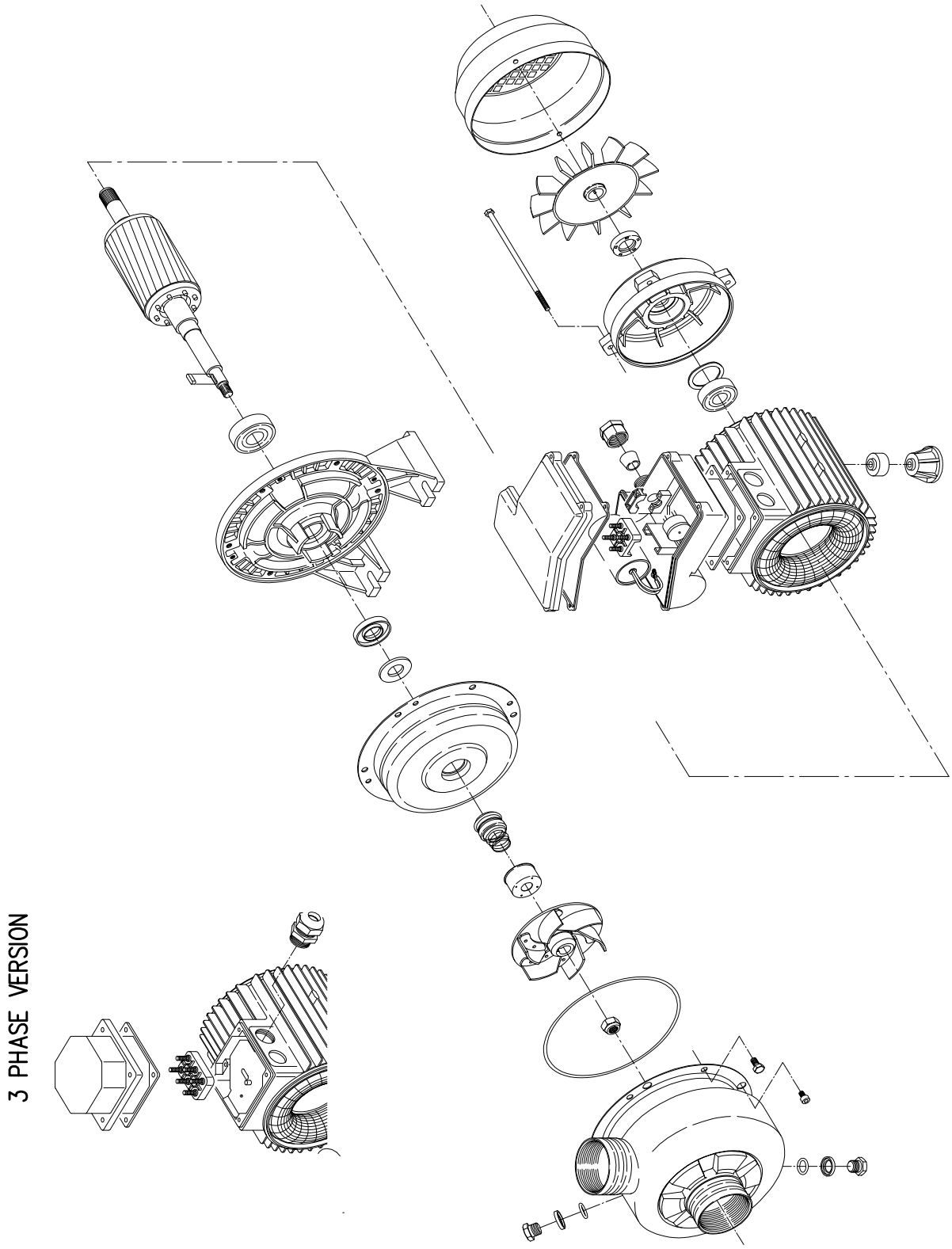
- **Open impeller**
- suitable for suspended solids in liquid and dirty water; solids handling to19mm (spherical)
- **Close coupled design**
- saves space; simplifies maintenance and installation
- **Stainless steel liquid end components**
- high quality; corrosion resistance, threaded connections, hose barb connections
- **Back pullout construction**
- assembly and overhaul of the impeller and seal without distorting suction and discharge connections
- **Top centerline discharge and foot support under motor**
- ensures self-venting and reduces misalignment from pipe loads
- **High operating efficiency**
- lowers operating costs
- **High quality mechanical shaft seals and o-rings**
- available for standard pumping requirements or optional high temperature and chemical duty operation

Applications

- Food process
- Bottle washing
- Cooling systems
- Scrubbers
- OEM equipment application
- Spray systems
- Beverage processing
- Pharmaceutical services
- Water reclamation and treatment
- Parts washers
- Paint plants
- Dirty liquid handling

SPECIFICATIONS - EXPLODED VIEW

50 Hz
V14



SPECIFICATIONS

50 Hz
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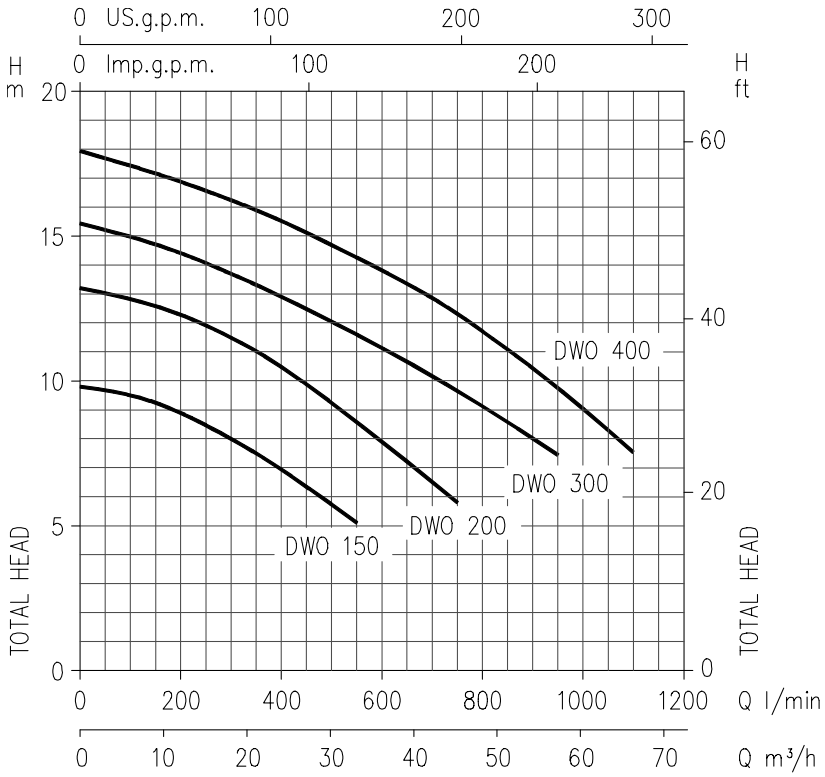
PUMP			
Liquid Handled	Type of liquid		Clean water
	Temperature	[°C]	min. -5 max. +90 max. +110 (H-HS-HW-HSW)
Maximum working pressure		[MPa]	0,8
Construction	Impeller		Open centrifugal type
	Shaft seal type		Mechanical seal
	Bearing		Sealed ball bearing
Pipe Connection	Suction		G 2 G 2½ (DWO 300-400)
	Discharge		G 2
Material	Casing		AISI 304
	Impeller		AISI 304
	Casing cover		AISI 304
	Shaft seal		Ceramic/Carbon/NBR Ceramic/Carbon/FPM (for DWOH) SiC/SiC/FPM (for DWOHS)
	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	1.1 ÷ 3
	[HP]	1.5 ÷ 2	1.5 ÷ 4
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

50 Hz

V14



Type pumps		kW	HP	Q=Capacity							
Single Phase 230 V 50 Hz	Three Phase 230/400 V 50 Hz			l/min100	200	300	400	550	750	950	1100
				m³/h 6	12	18	24	33	42	57	66
				H=Total manometric head in meters							
DWO 150 M	DWO 150	1.1	1.5	9.5	8.9	7.9	6.9	5.1	-	-	-
DWO 200 M	DWO 200	1.5	2	12.7	12.3	11.5	10.5	8.6	5.8	-	-
-	DWO 300	2.2	3	15	14.5	13.8	12.9	11.7	9.7	7.5	-
-	DWO 400	3	4	17.5	16.9	16.3	15.6	14.3	12.4	9.8	7.6

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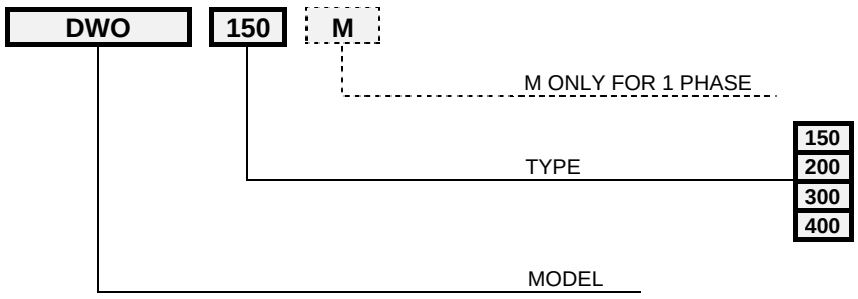
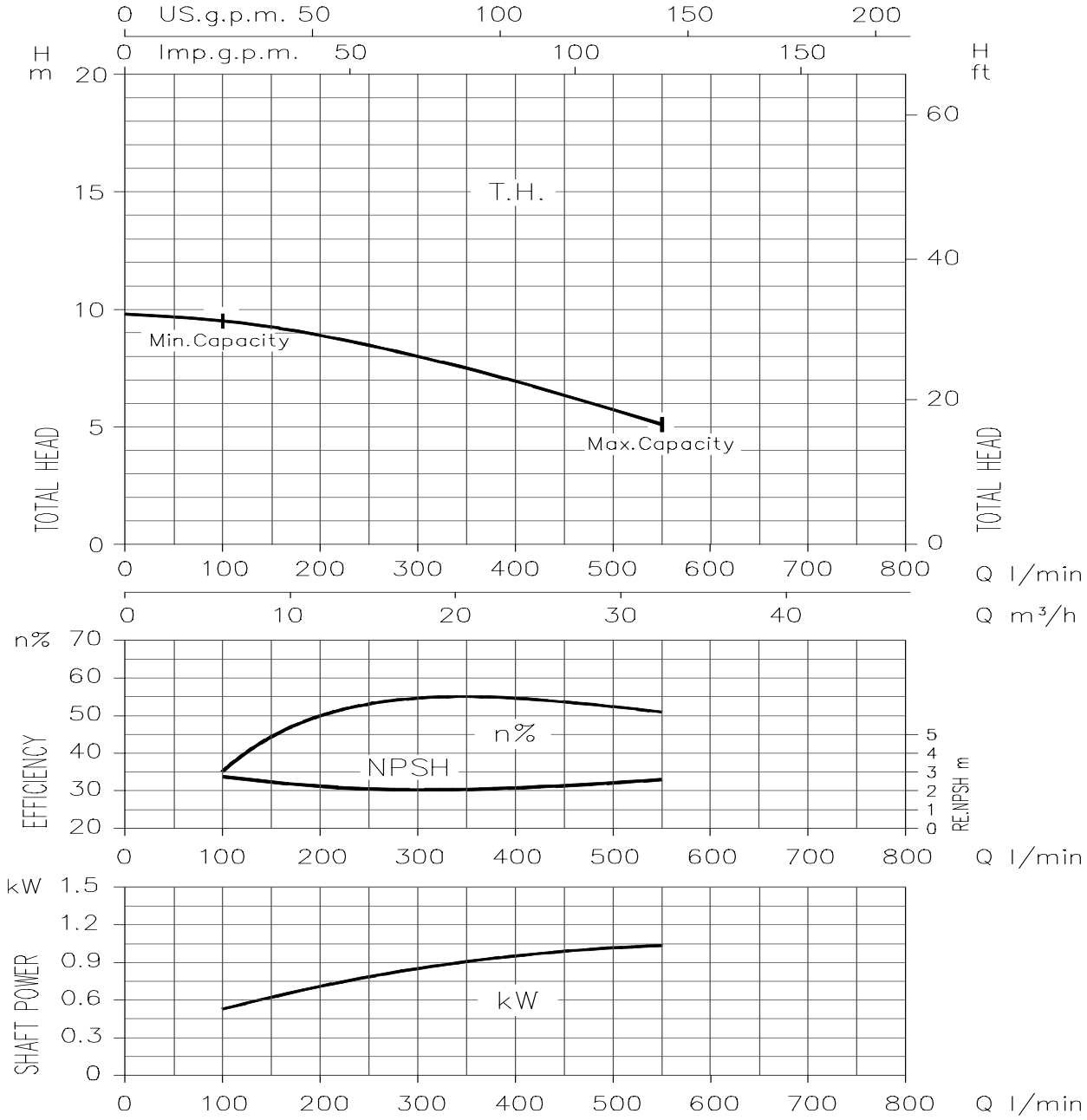


PERFORMANCE CURVES

50 Hz
V14

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

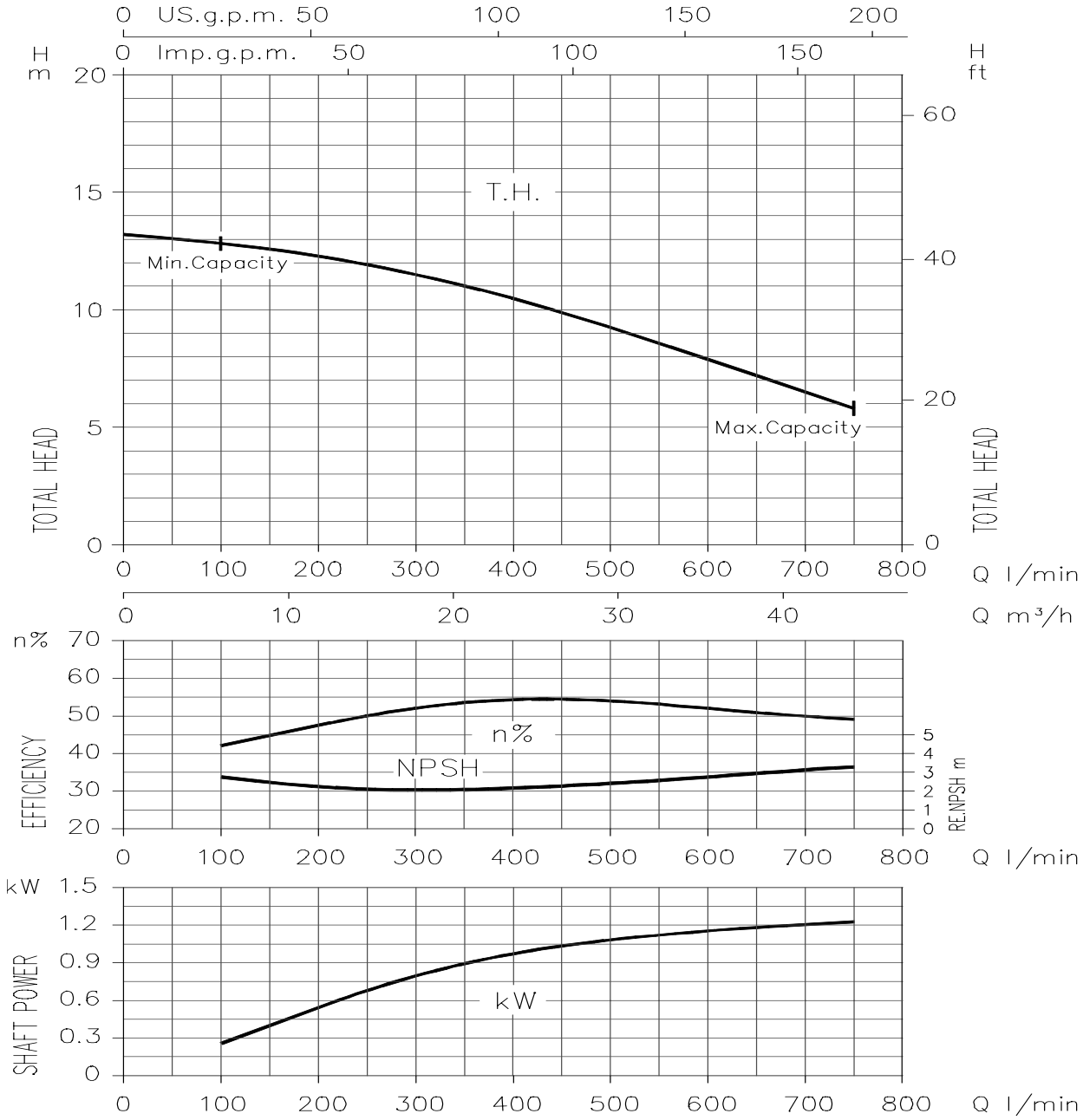


Rotation speed: ≈2800 min^{-1}
Test fluid: clean water at 20°C
Applicable standard of test: ISO 9906 – Annex A

PERFORMANCE CURVES

50 Hz
V14

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

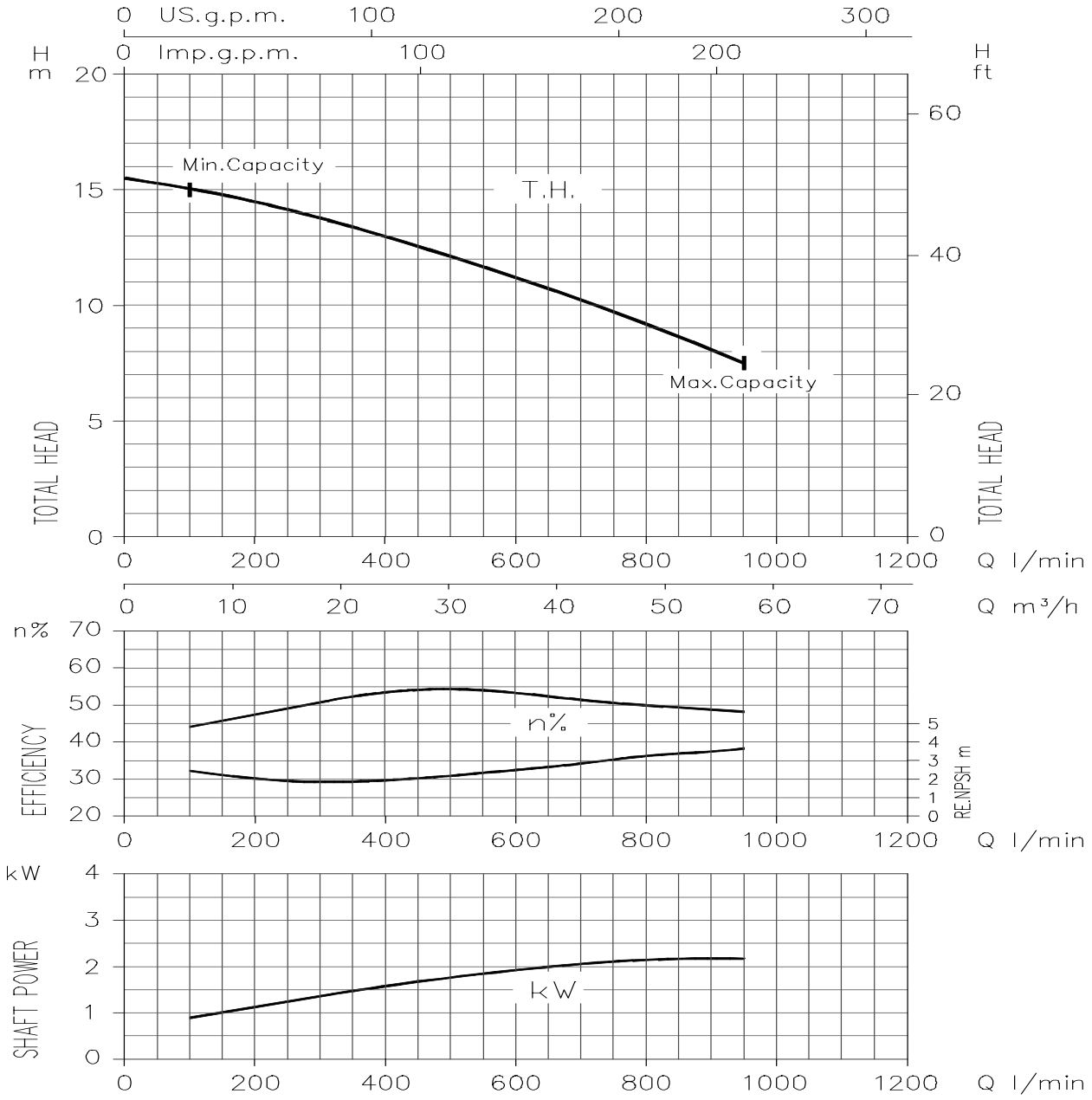


Rotation speed: ≈2800 min^{-1}
Test fluid: clean water at 20°C
Applicable standard of test: ISO 9906 – Annex A

PERFORMANCE CURVES

50 Hz
V14

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

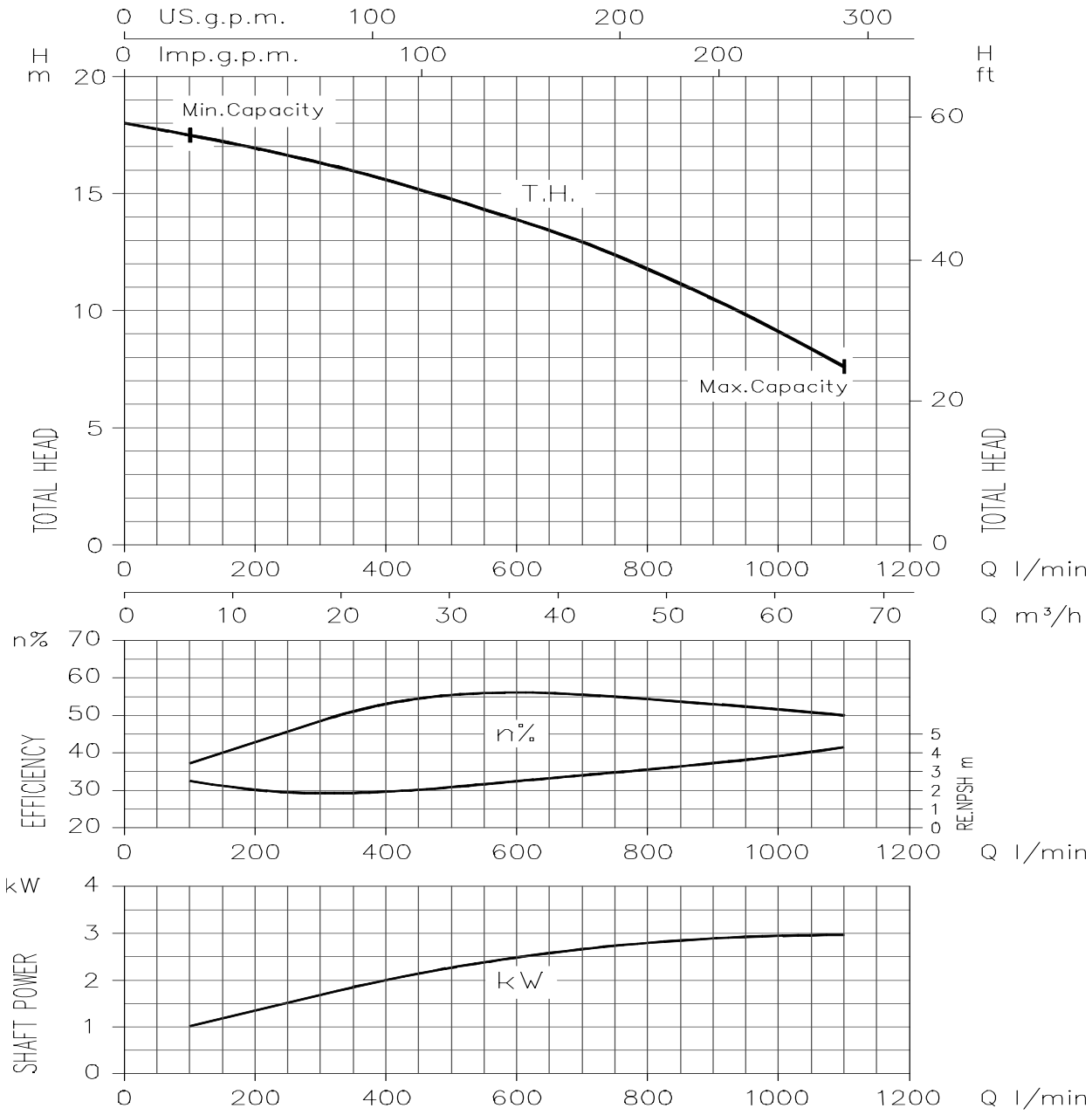


Rotation speed: ≈2800 min^{-1}
Test fluid: clean water at 20°C
Applicable standard of test: ISO 9906 – Annex A

PERFORMANCE CURVES

50 Hz
V14

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

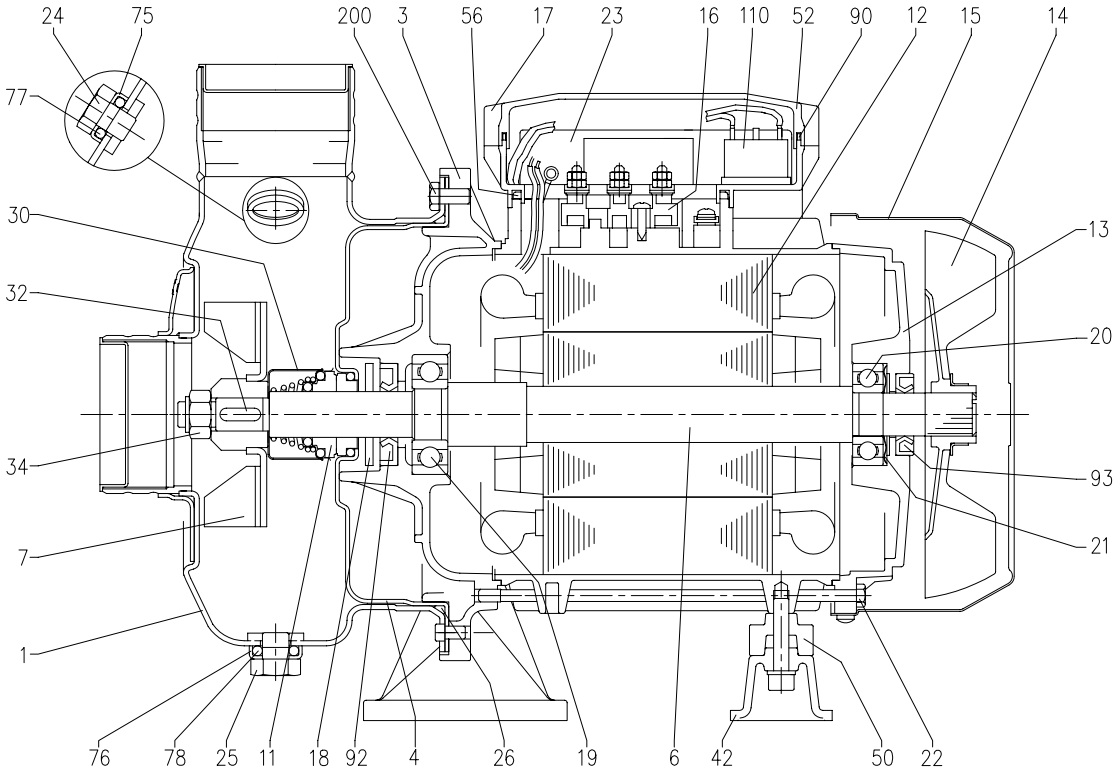


Rotation speed: ≈2800 min^{-1}
Test fluid: clean water at 20°C
Applicable standard of test: ISO 9906 – Annex A

CONSTRUCTION

50 Hz
V14

SECTIONAL VIEW



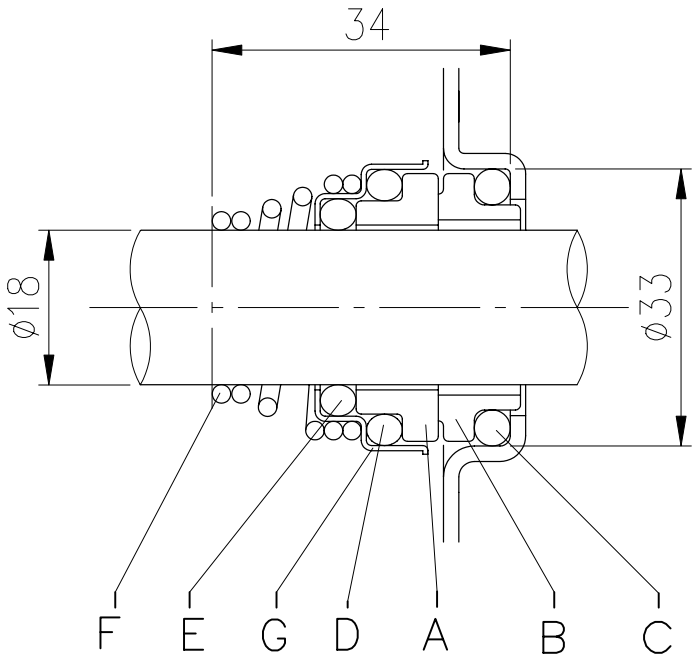
N°	PART NAME	MATERIAL	Q.TY	N°	PART NAME	MATERIAL	Q.TY
1	Casing	AISI 304	1	25	Drain plug	AISI 303	1
3	Motor bracket	Aluminium	1	26	O-ring	NBR	1
4	Casing cover	AISI 304	1	30	Mechanical seal protection	AISI 304	1
6	Shaft with rotor	AISI 304 (Part in contact with liquid)	1	32	Key	AISI 304	1
7	Impeller	AISI 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]	Polypropylene	1
14	Fan	Polypropylene	1	56	Box gasket	NBR	1
15	Fan cover	Fe P04 Zinced	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	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 42 Zinced	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

CONSTRUCTION - MECHANICAL SEAL & BEARINGS

50 Hz
V14

MECHANICAL SEAL



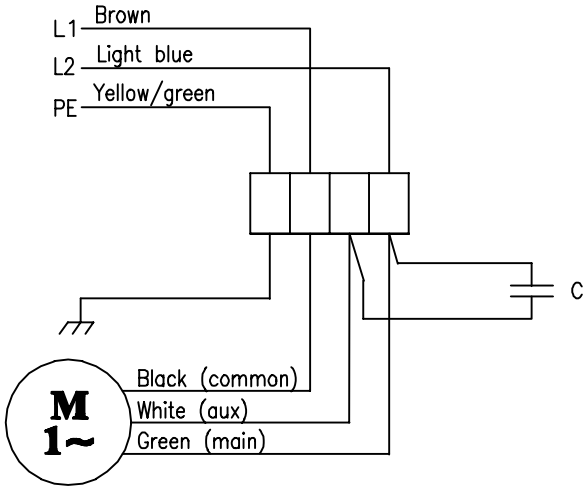
REF	PART NAME	MATERIAL		
		Product standard (DWO)	Optional (DWOH)	(DWOHS)
A	Rotary seal ring	ceramic	Ceramic	Silicon carbide
B	Stationary seal ring	carbon graphite	Carbon graphite	Silicon carbide
C	O Ring	NBR	FPM	FPM
D	O Ring	NBR	FPM	FPM
E	O Ring	NBR	FPM	FPM
F	Self driving spring	AISI 316L	AISI 316L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

DIAGRAM AND ELECTRIC CONNECTIONS

SINGLE PHASE MOTOR



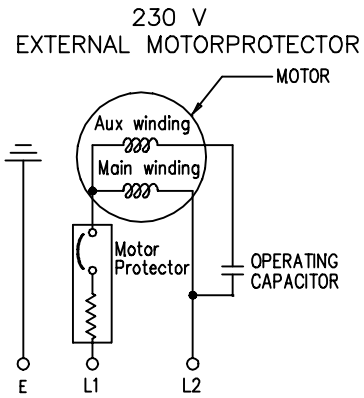
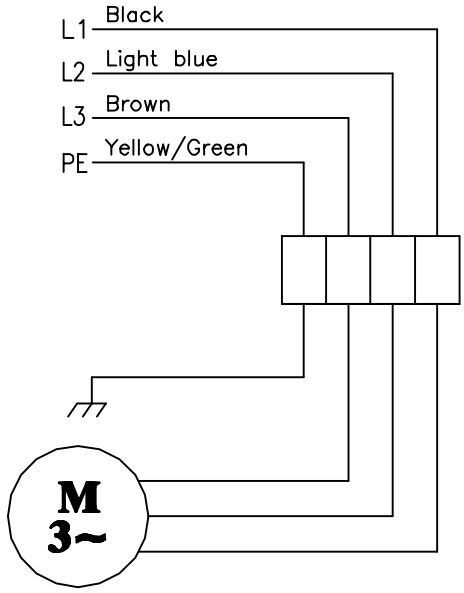
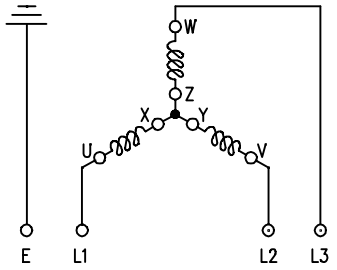


DIAGRAM AND ELECTRIC CONNECTIONS

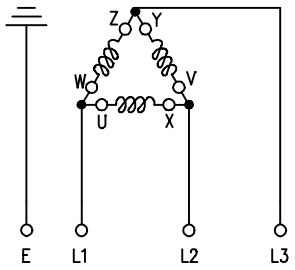
THREE PHASE MOTOR



400 V
STAR CONNECTION



230 V
DELTA CONNECTION

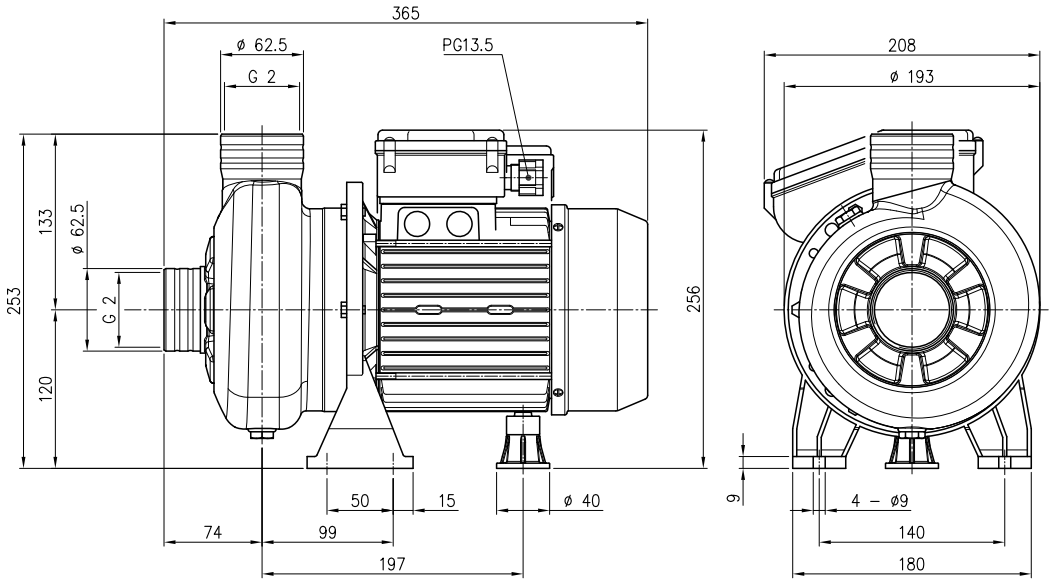


DIMENSIONS

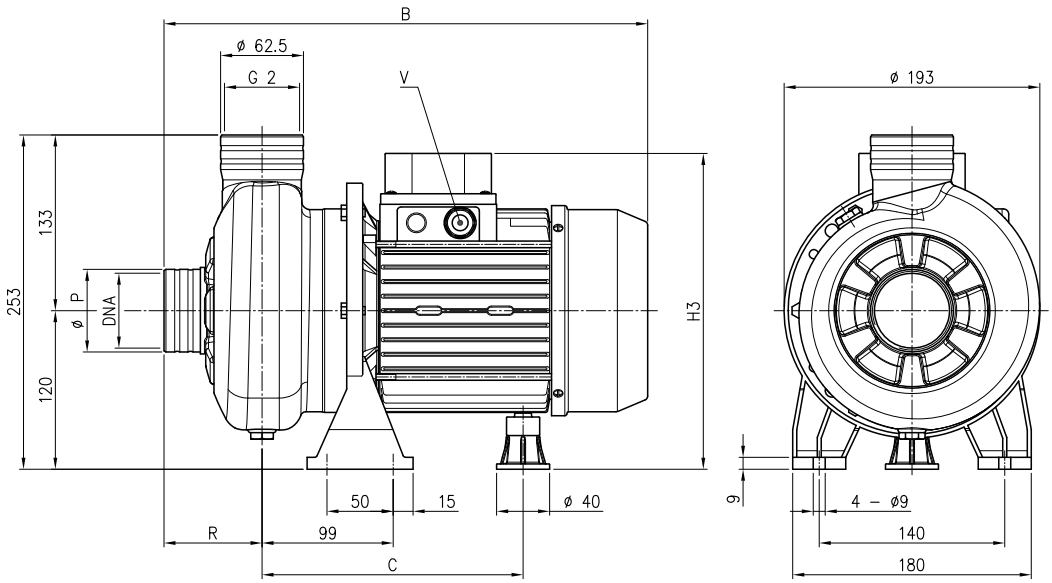
50 Hz
V14

PUMP

[1~] Single phase
DWO 150
DWO 200



[3~] Three phase
DWO 150
DWO 200
DWO 300
DWO 400

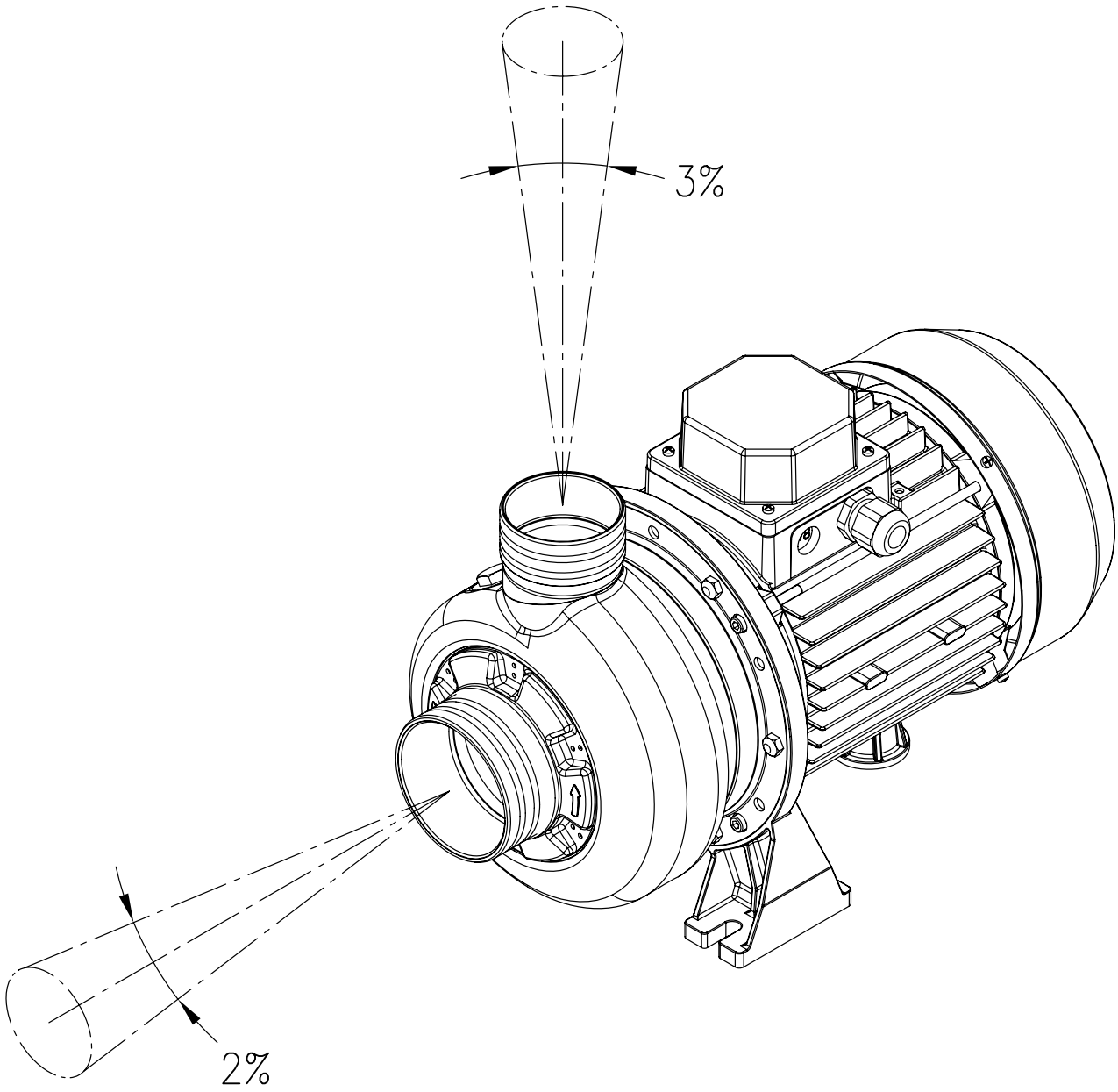


Pump type	B [3~]	C [3~]	H3 [3~]	R [3~]	P [3~]	V [3~]	DNA [3~]	Weight [kgf] [1~]	[3~]
DWO 150	365	197	239	74	62.5	PG11	G 2	14.4	14.5
DWO 200	378	197	239	74	62.5	PG11	G 2	15.7	16.2
DWO 300	416	230/241	244	78	80	PG13.5	G 2½	-	19.4
DWO 400	455	230/241	244	78	80	PG13.5	G 2½	-	22.4

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

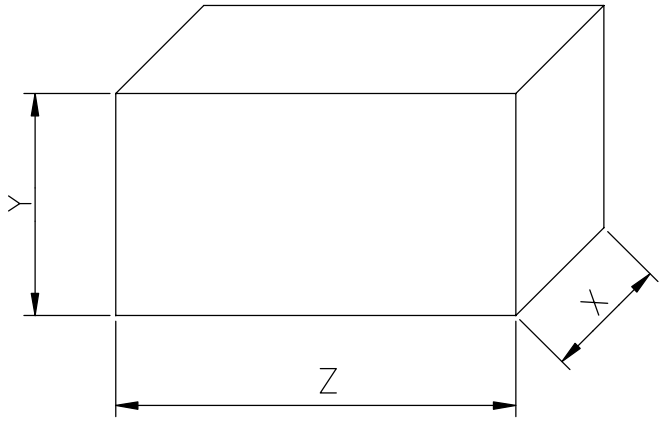
GEOMETRIC TOLERANCES

50 Hz
V14



PACKING AND WEIGHT

50 Hz
V14



Type pumps		PACKING [mm]			WEIGHT [kg]	
Single Phase	Three Phase	X	Y	Z	Single Phase	Three Phase
DWO 150 M	DWO 150	432	205	280	13.6	12.6
DWO 200 M	DWO 200	432	205	280	15.7	14.4
-	DWO 300	432	205	280	-	16.9
-	DWO 400	432	205	280	-	20

MOTOR DATA & BEARING DATA

50 Hz

V14

MOTOR DATA

Pump type		Power		Efficiency		Capacitor		Efficiency (% load)			Input		Full load current			Locked rotor current		
								Three phase			[kW]		[A]			[A]		
Single Phase	Three Phase	[kW]	[HP]	Single Phase	Three Phase	Single Phase		η %			Single Phase	Three Phase	Single Phase	Three Phase		Single Phase	Three Phase	
						[μF]	[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	35	450	79.7	82.5	83.0	1.36	1.80	6.8	5.6	3.2	41	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.
Tollerance ± 2.5 dB.