
EBARA

CONTENTS

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SPECIFICATION 50Hz

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PUMP			
Liquid Handled	Type of liquid		Clean water, moderate aggressive fluids, glycol solutions, other industrial fluids after a check by our sales network
	Temperature	[°C]	min. -15 max. +90 max. +110 (H–HS-HW-HSW)
Maximum working pressure		[MPa]	0,8
Construction	Impeller		Closed centrifugal type
	Shaft seal type		Mechanical seal
	Bearing		Sealed ball bearing
Pipe Connection	Suction		DWC-V Victaulic connection Ø 2” (60.3 mm) DWC-N G 2
	Discharge		DWC-V Victaulic connection Ø 2” (60.3 mm) DWC-N G 2
Material	Casing		EN 1.4301 (AISI 304)
	Impeller		EN 1.4301 (AISI 304)
	Casing cover		EN 1.4301 (AISI 304)
	Shaft seal		Ceramic/Carbon/EPDM (for DWC) Ceramic/Carbon/FPM (for DWCH) SiC/SiC/FPM (for DWCHS) Tungsten Carbide/Tungsten Carbide/FPM (for DWCHW) SiC/Tungsten Carbide/FPM (for DWCHSW)
	Shaft		EN 1.4301 (AISI 304) (Wet extension)
	Bracket		Aluminium
Applicable standard of test			ISO 9906 – Annex A

MOTOR		
Type		Electric - TEFC
		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 ÷ 3
	[HP]	1.5 ÷ 4
Frequency	[Hz]	50
Voltage	[V]	230/400 ±10%
Over load protection		User provide
Casing material		Aluminium
Motor support		Aluminium
Dimensions of cable entry		PG11 - PG13.5 (See page 400)

SELECTION CHART

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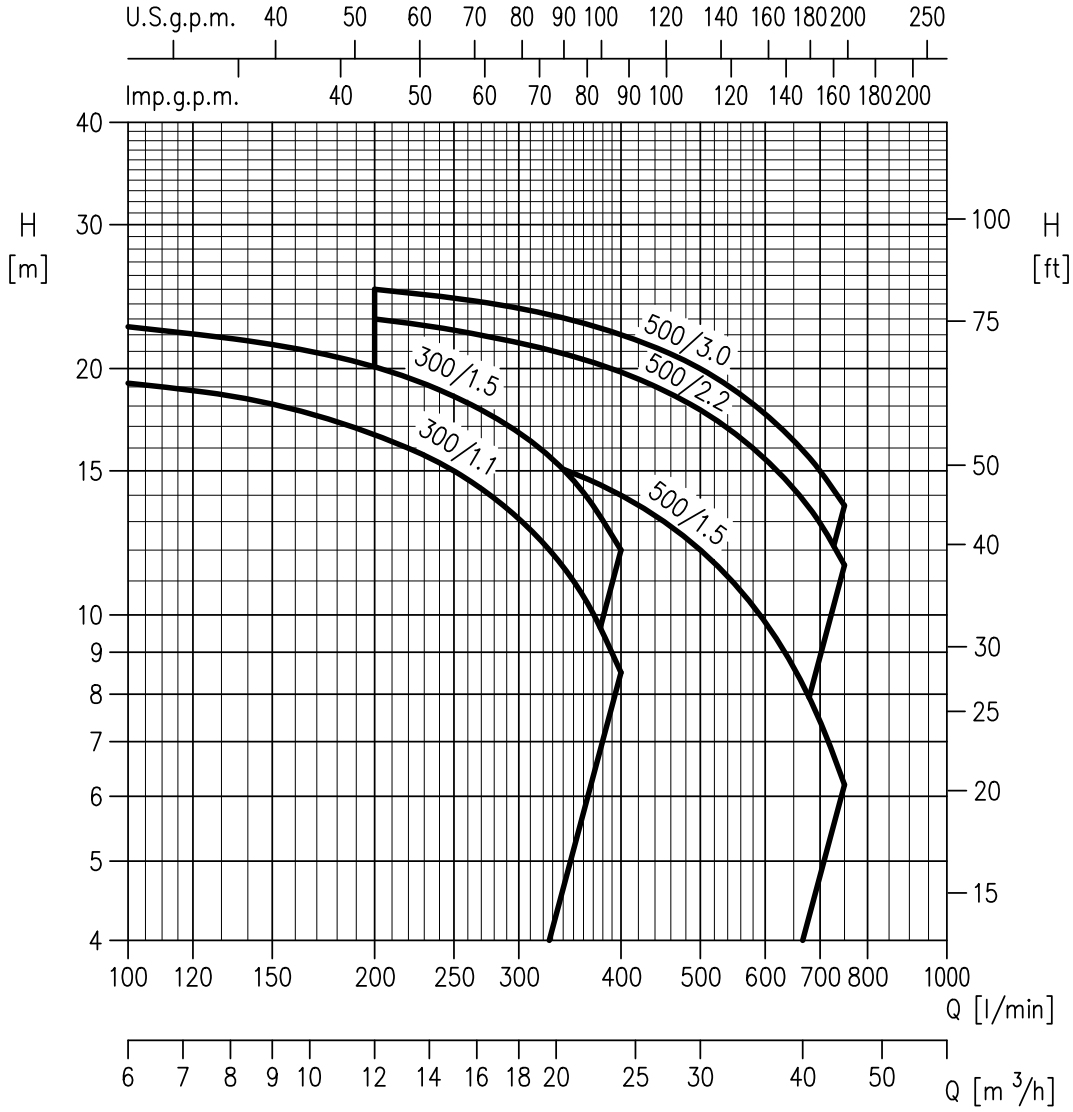

Pump type	Power		Q=Capacity											
			l/min	0	100	150	200	250	300	350	400	500	600	700	750
	[kW]	[HP]	m³/h	0	6	9	12	15	18	21	24	30	36	42	45
			H=Total head in meters												
DWC 300/1,1	1.1	1.5		21	19.2	18.1	16.6	15	13.1	11	8.5	-	-	-	-
DWC 300/1,5	1.5	2		24.5	22.5	21.4	20.1	18.5	16.7	14.6	12	-	-	-	-
DWC 500/1,5	1.5	2		18.5	-	-	17	16.4	15.7	14.9	14	12	9.8	7.4	6.2
DWC 500/2,2	2.2	3		24.5	-	-	23	22.3	21.5	20.7	19.8	17.8	15.5	13	11.5
DWC 500/3,0	3	4		26.3	-	-	25	24.4	23.7	22.9	22	20	17.6	15	13.6

TYPE KEY AND CURVE SPECIFICATIONS 50Hz

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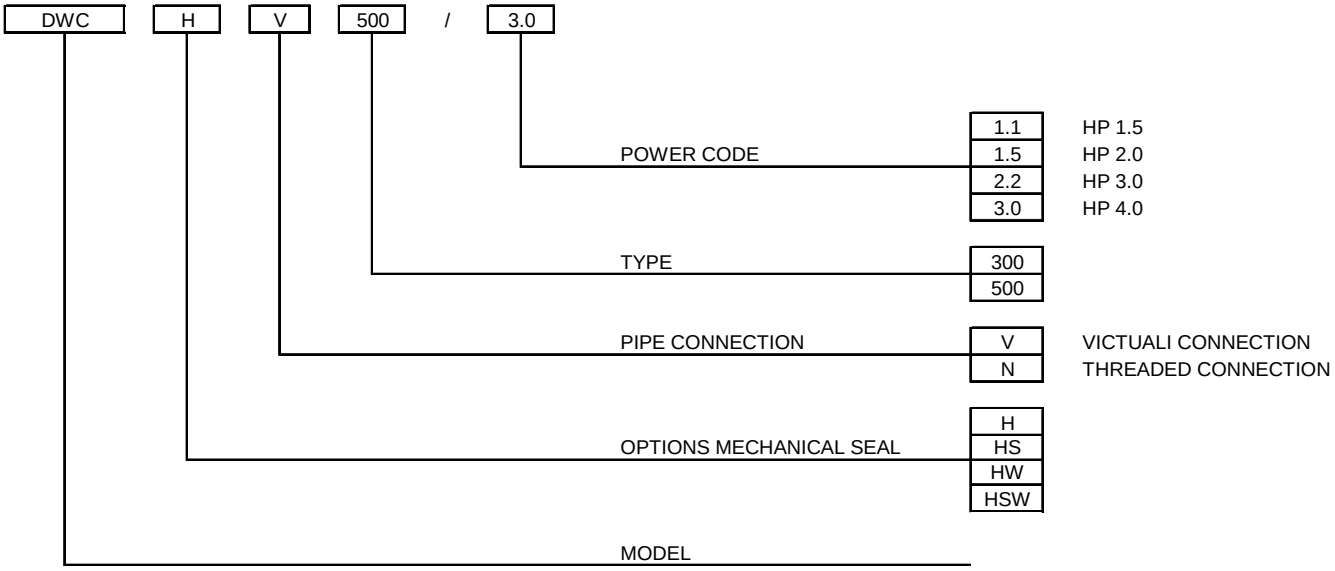
TYPE KEY



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 $\nu = 1\ mm^2/s$ (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:

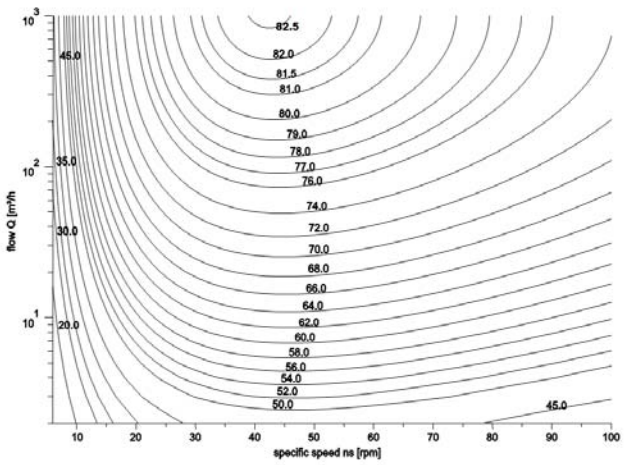
Q	=	volume flow rate
H	=	total head
P_2	=	pump power input (shaft power)
η	=	pump efficiency
NPSH	=	net positive suction head required by the pump
MEI	=	minimum efficiency index

The minimun efficiency index (MEI) is a measure of the quality of a pump size in respect to its mean efficiency. The minimum efficiency index is based on the hydraulic efficiency and on the head at the best efficiency point.

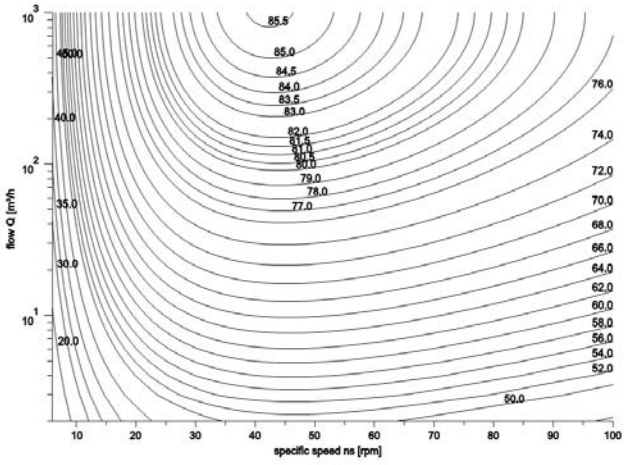
The efficiency of a pump with trimmed impeller is usually lower than that of a pump with the full impeller diameter. The trimming of the impeller will adapt the pump to a fixed duty point, leading to reduced energy consumption. The minimum efficiency index (MEI) is based on the full impeller diameter.

The operation of these water pumps with variabile duty points may be more efficient end economic when controlled, for example, by the use of a variable speed drive that matches the pump duty to the system.

MEI = 0.4 for ESCC 2900 rpm



MEI = 0.7 for ESCC 2900rpm



PERFORMANCE CURVE

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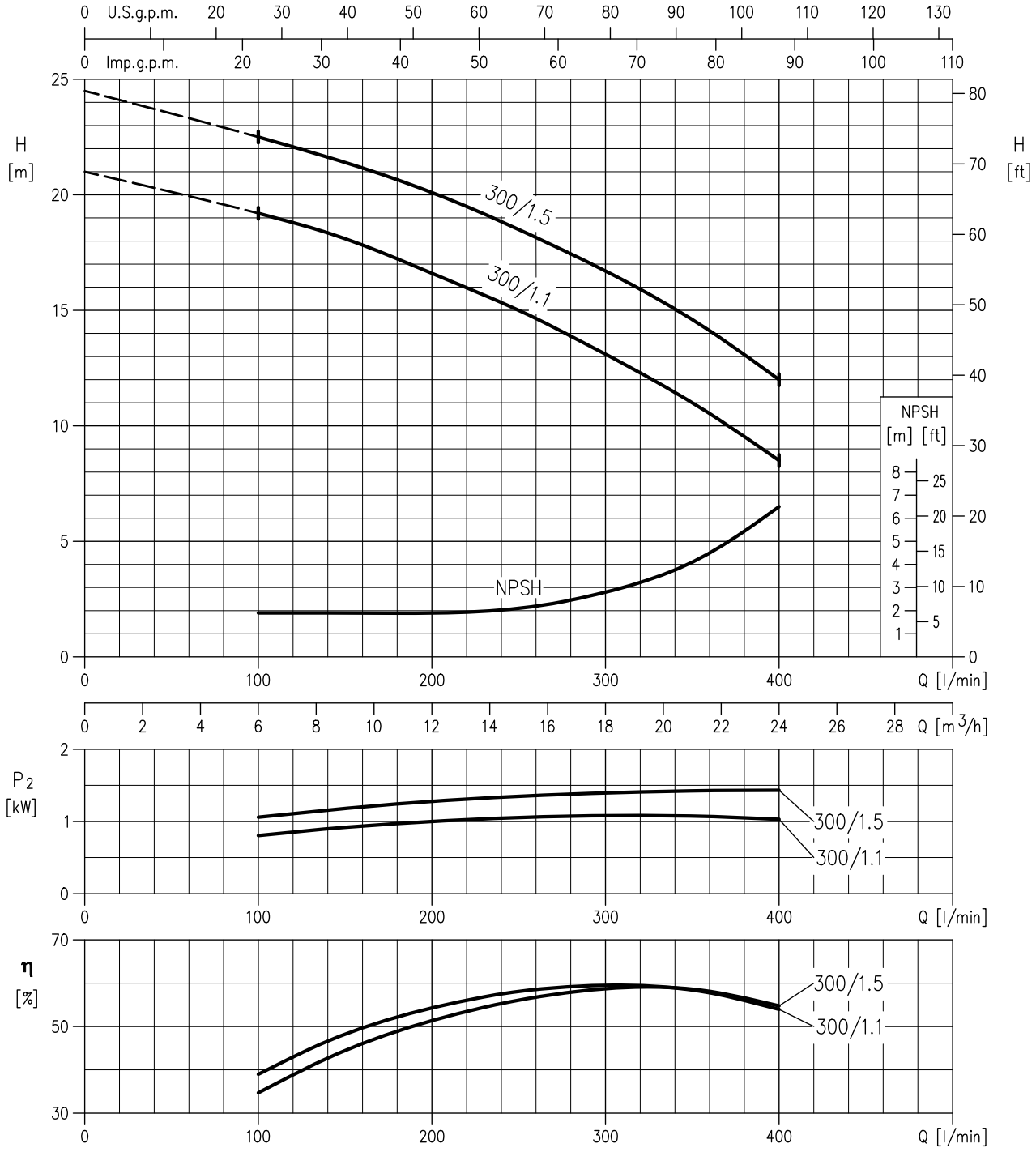
300/1.1 (1.1 kW) MEI > 0.10 – Impeller diameter = 133 mm
300/1.5 (1.5 kW) MEI > 0.10 – Impeller diameter = 148 mm



Rotation speed ≈ 2900 min^{-1}
Test standard: ISO 9906 – Annex A

PERFORMANCE CURVE

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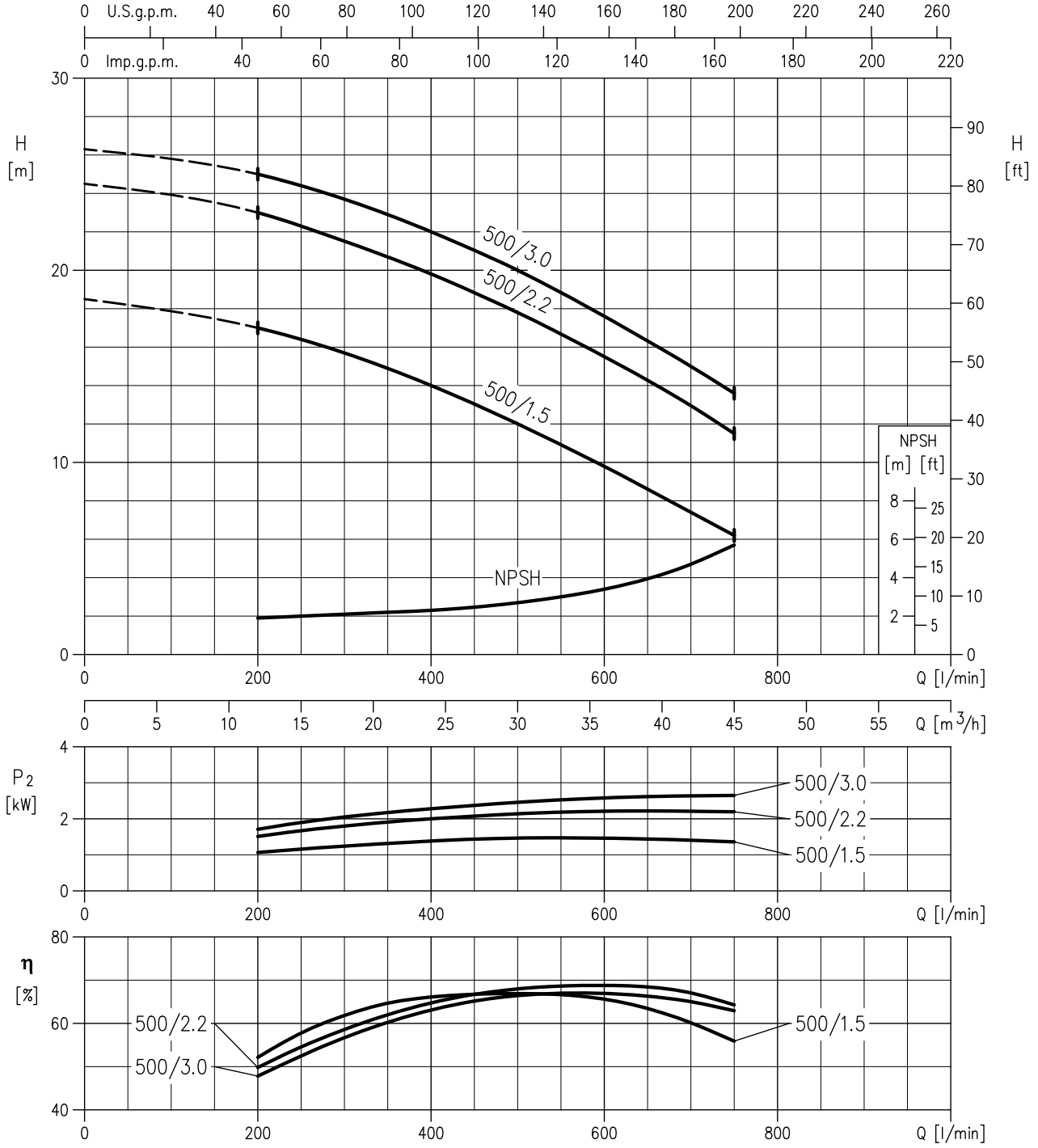
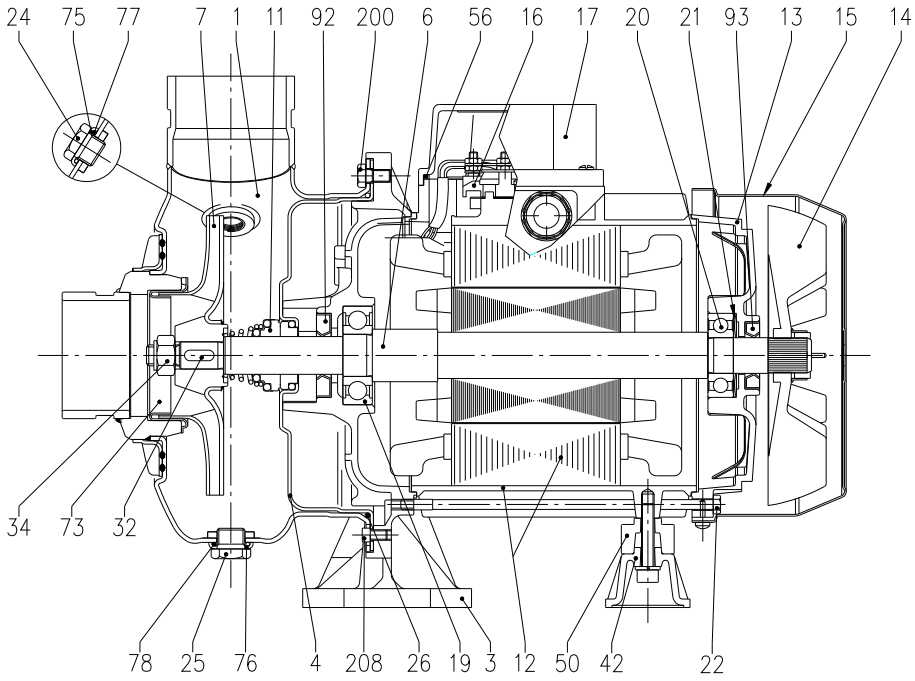
500/1.5 (1.5 kW) MEI > 0.30 – Impeller diameter = 125 mm
500/2.2 (2.2 kW) MEI > 0.30 – Impeller diameter = 140 mm
500/3.0 (3.0 kW) MEI > 0.20 – Impeller diameter = 148 mm



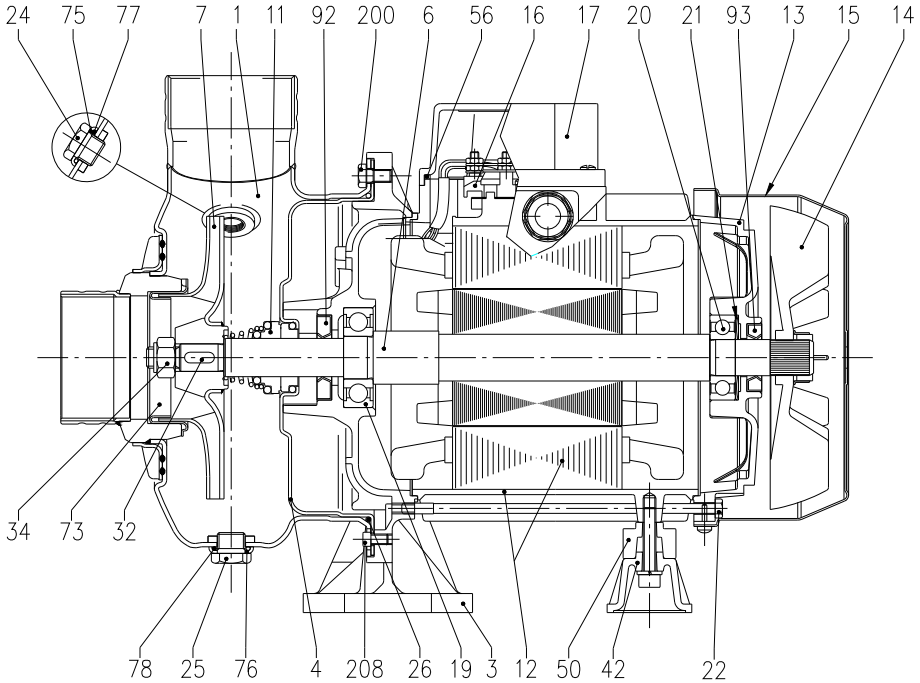
Rotation speed ≈ 2900 min^{-1}
Test standard: ISO 9906 – Annex A

SECTIONAL VIEW DRAWING

DWC-V (Victaulic connection)



DWC-N (Threaded connection)



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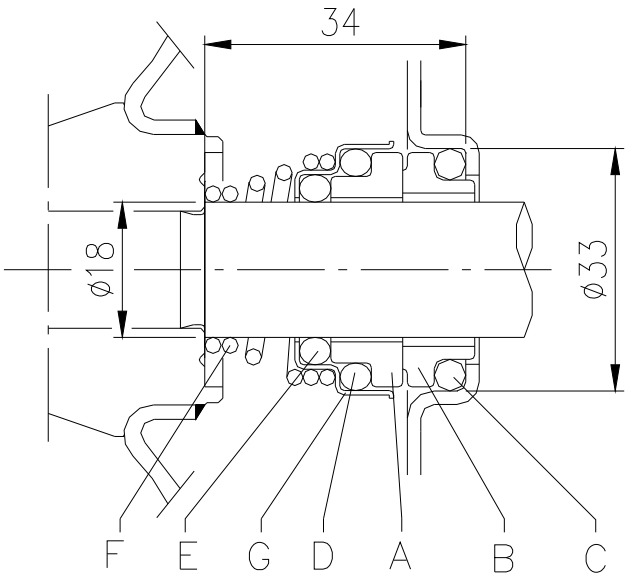
SECTIONAL VIEW TABLE

N°	PART NAME	MATERIAL	DIMENSIONS	STANDARD	Q.TY
1	Casing	EN 1.4301 (AISI 304)	-	-	1
3	Motor bracket	Aluminium	-	-	1
4	Casing cover	EN 1.4301 (AISI 304)	-	-	1
6	Shaft with rotor	EN 1.4301(AISI 304)-Wet extension	-	-	1
7	Impeller	EN 1.4301 (AISI 304)	-	-	1
11	Mechanical seal	Ceramic / Carbon / EPDM	See pag.302	-	1
12	Motor frame with stator	-	-	-	1
13	Motor cover	Aluminium	-	UNI 5079	1
14	Fan	PA	-	-	1
15	Fan cover	Fe P04 Zincate	-	-	1
16	Terminal board	-	-	-	1
17	Terminal board cover	Aluminium	-	-	1
19	Bearing	-	See pag.302	-	1
20	Bearing	-	See pag.302	-	1
21	Adjusting ring	Steel C70	-	-	1
22	Tie rod	Fe 42 Zincate	-	EBARA drawing	4
24	Priming plug	EN 1.4301 (AISI 304)	G 1/4"	EBARA drawing	1
25	Draing plug	EN 1.4301 (AISI 304)	G 1/4"	EBARA drawing	1
26	"O" ring [2]	EPDM	148,8x3,53	OR 4587	1
32	Key	EN 1.4401 (AISI 316)	5x5x15	UNI 6604	1
34	Impeller nut	Stainless steel A2-70	M10x1.25	UNI 7474	1
42	Foot	Aluminium / Zincate steel	-	EBARA drawing	1
50	Spacer	Aluminium	-	-	[1]
56	Box gasket	NBR	-	-	1
73	Casing ring	EN 1.4301 (AISI 304)	-	-	1
75	Washer	EN 1.4301 (AISI 304)	-	EBARA drawing	1
76	Washer	EN 1.4301 (AISI 304)	-	EBARA drawing	1
77	O-ring [2]	EPDM	13,1x2,62	OR 117	1
78	O-ring [2]	EPDM	13,1x2,62	OR 117	1
92	Lip seal	NBR	18x40x7	DIN 3760 without spring	1
93	Lip seal – Up to 1,5 kW	NBR	17x32x7	DIN 3760 without spring	1
	Lip seal – For 2,2 and 3.0 kW		25x40x7		
200	Screw	Stainless steel A2-70 class ISO 3506-1	M 6x12	UNI 5739	6
208	Screw	Stainless steel A2-70 class ISO 3506-1	M 5x8	UNI 5931	4

[1] N°1 only for 1,1 kW and 1,5 kW
[2] FPM for H, HS, HW, HSW

MECHANICAL SEAL



REF	PART NAME	MATERIAL				
		Standard version	Optional			
		(DWC)	(DWCH)	(DWCHS)	(DWCHW)	(DWCHSW)
A	Rotary seal ring	Ceramic	Ceramic	Silicon carbide	Tungsten carbide	Silicon carbide
B	Stationary seal ring	Carbon graphite	Carbon graphite	Silicon carbide	Tungsten carbide	Tungsten carbide
C	O Ring	EPDM	FPM	FPM	FPM	FPM
D	O Ring	EPDM	FPM	FPM	FPM	FPM
E	O Ring	EPDM	FPM	FPM	FPM	FPM
F	Self driving spring	AISI 316	AISI 316	AISI 316	AISI 316	AISI 316
G	Frame	AISI 304	AISI 304	AISI 316	AISI 316	AISI 316

BEARINGS

Pump type	Ball Bearing	
	Pump side	Fan side
DWC 300/1,1	6204 2RSH	6203 2RSH
DWC 300/1,5	6204 2RSH	6203 2RSH
DWC 500/1,5	6204 2RSH	6203 2RSH
DWC 500/2,2	6305 2RS1	6205 2RSH
DWC 500/3,0	6305 2RS1	6205 2RSH

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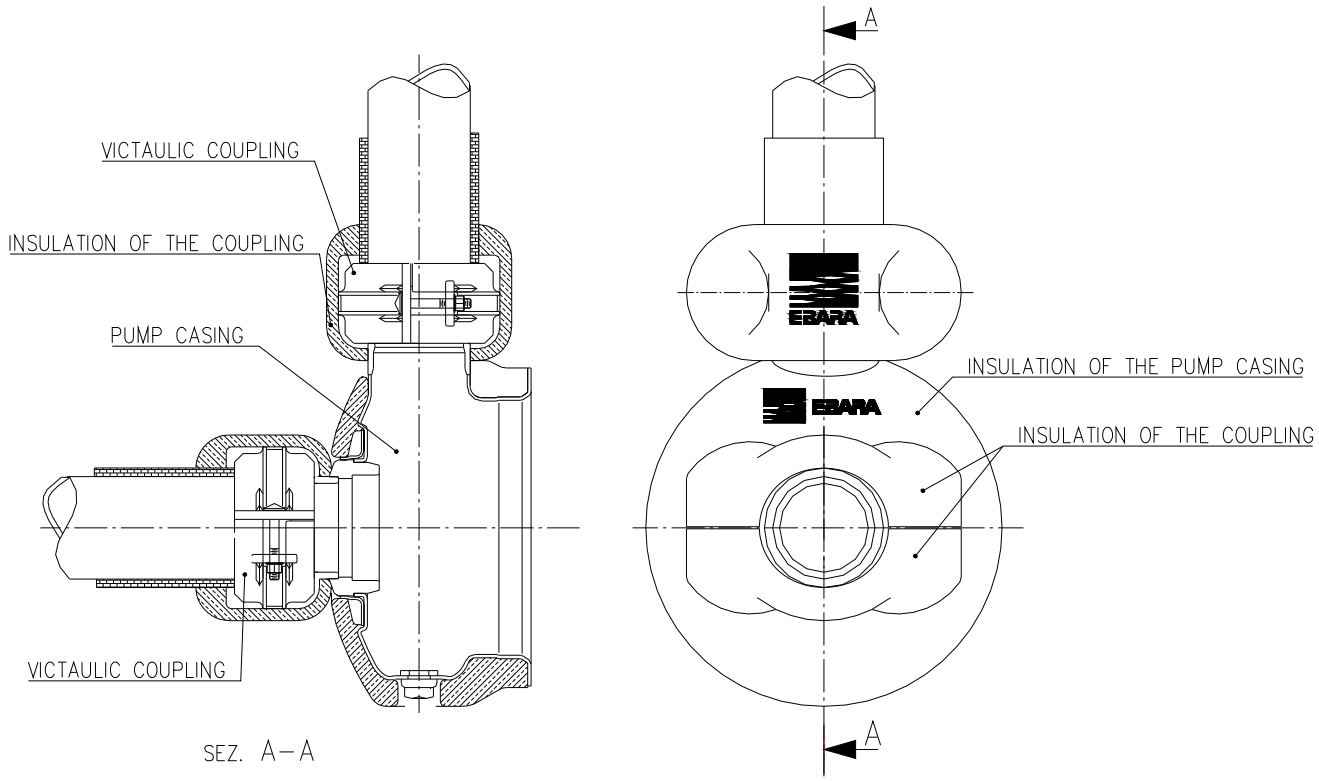
THERMAL INSULATION



Pump type		INSULATION OF THE PUMP CASING	INSULATION OF THE COUPLING	VICTAULIC COUPLING
VICTAULIC CONNECTION	DWC-V 300/1.1	STANDARD	ON REQUEST	ON REQUEST
	DWC-V 300/1.5			
	DWC-V 500/1.5			
	DWC-V 500/2.2			
	DWC-V 500/3.0			
THREADED CONNECTION	DWC-N 300/1.1	ON REQUEST	NO NECESSARY	NO NECESSARY
	DWC-N 300/1.5			
	DWC-N 500/1.5			
	DWC-N 500/2.2			
	DWC-N 500/3.0			

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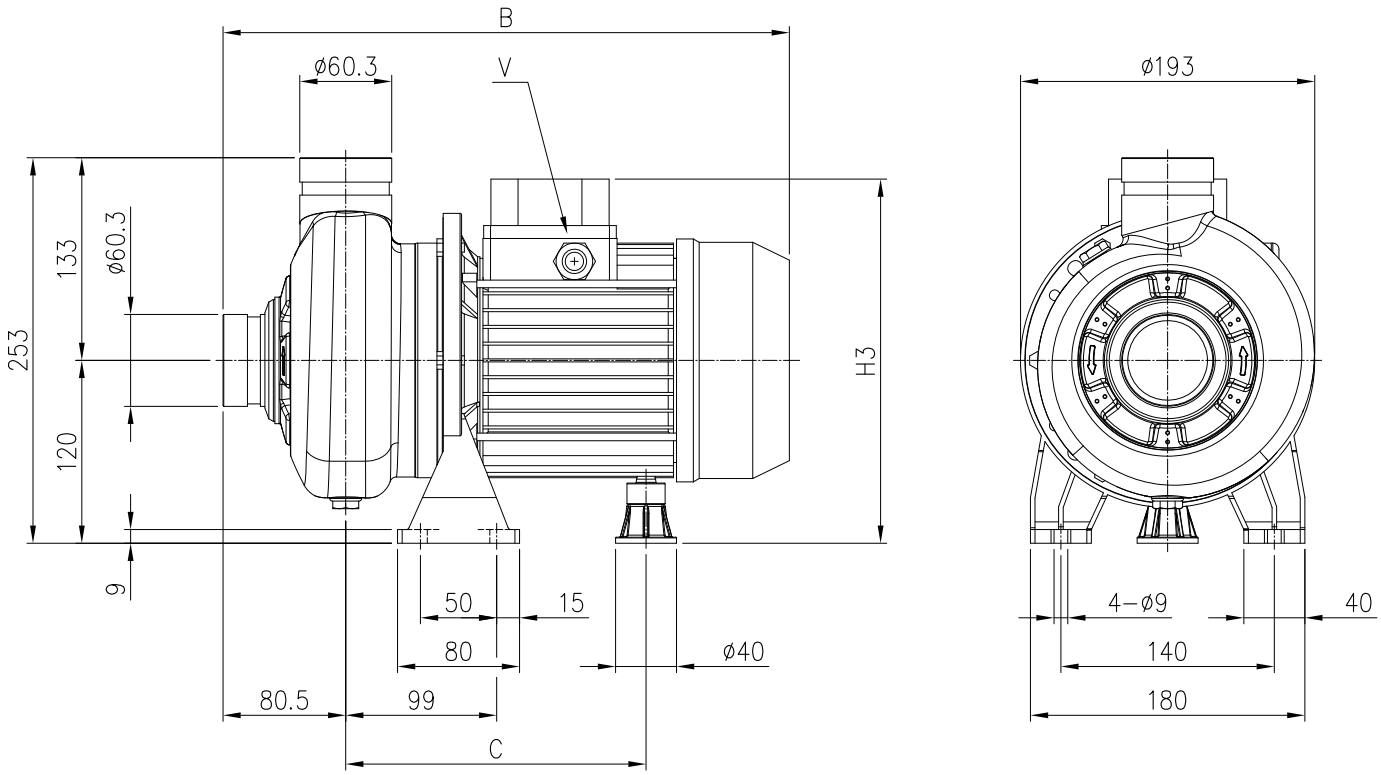
DWC-V (VICTAULIC CONNECTION)



Pump type	Dimensions [mm]				Weight [kgf]
	B	C	H3	V	
DWC-V 300/1.1	372	197	239	PG11	14.5
DWC-V 300/1.5	385	197	239	PG11	16
DWC-V 500/1.5	385	197	239	PG11	16.5
DWC-V 500/2.2	418	230 ÷ 241	244	PG13.5	20.3
DWC-V 500/3.0	457	230 ÷ 241	244	PG13.5	22.3

DIMENSIONS AND WEIGHT

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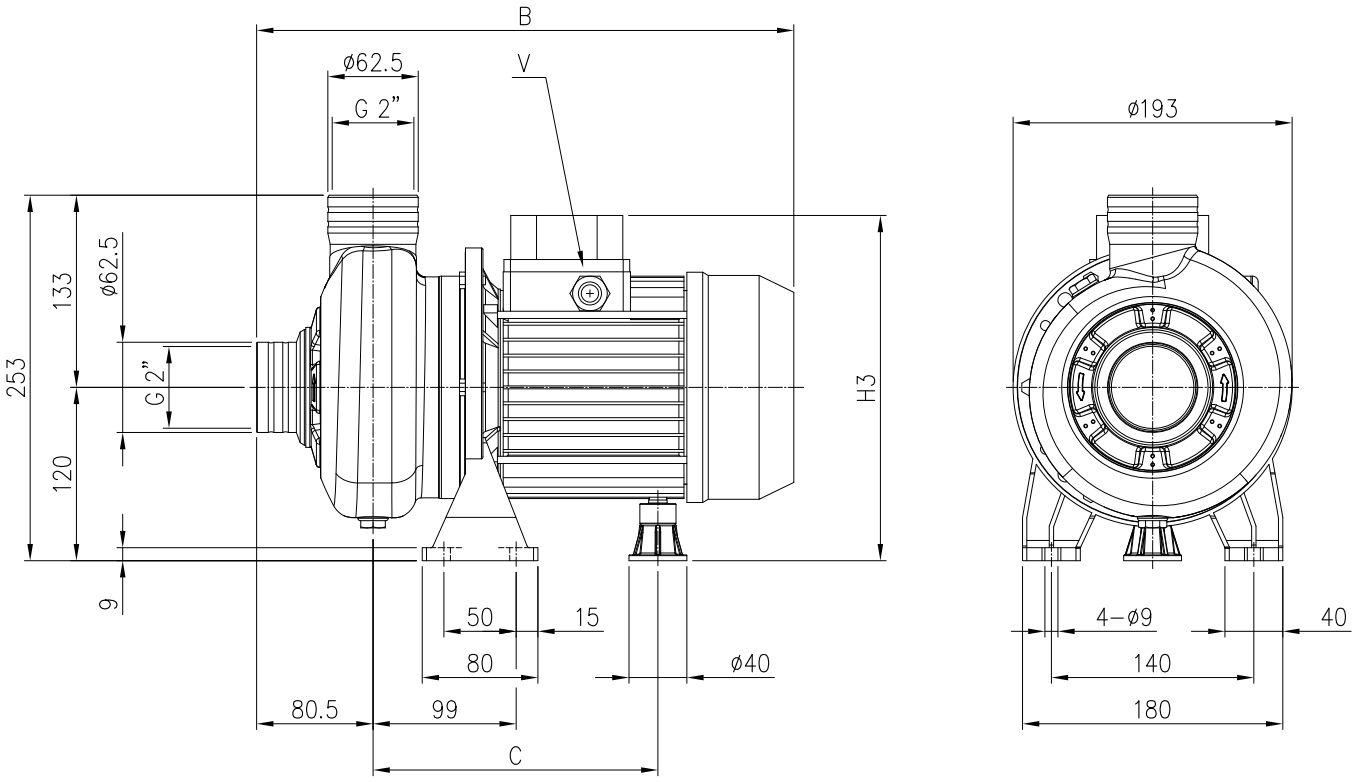
DWC-N (THREADED CONNECTION)



Pump type	Dimensions [mm]				Weight
	B	C	H3	V	[kgf]
DWC-N 300/1.1	372	197	239	PG11	14.5
DWC-N 300/1.5	385	197	239	PG11	16
DWC-N 500/1.5	385	197	239	PG11	16.5
DWC-N 500/2.2	418	230 ÷ 241	244	PG13.5	20.3
DWC-N 500/3.0	457	230 ÷ 241	244	PG13.5	22.3

DIMENSIONS AND WEIGHT

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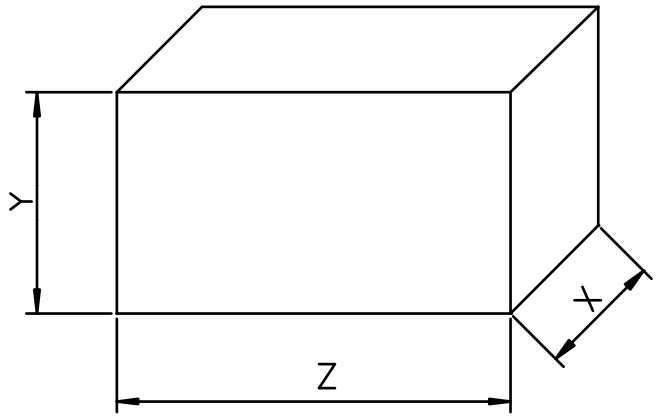
PACKING



Pump type	Packing [mm]			Weight
	X	Y	Z	[kgf]
DWC 300/1.1	205	288	477	15.5
DWC 300/1.5	205	288	477	17
DWC 500/1.5	205	288	477	18
DWC 500/2.2	205	288	477	21.5
DWC 500/3.0	205	288	477	23.5

MOTOR DATA

Pump type	Power		Efficiency	Efficiency (% load) η %			Input [kW]	Full load current [A]		Locked rotor current [A]	
	[kW]	[HP]		50%	75%	100%		230 V	400 V	230 V	400 V
DWC 300/1.1	1.1	1.5	IE2	79.7	82.5	83.0	1.80	5.6	3.2	45.0	25.7
DWC 300/1.5	1.5	2.0	IE2	78.6	83.0	84.2	1.78	6.3	3.7	59.0	34.3
DWC 500/1.5	1.5	2.0	IE2	78.6	83.0	84.2	1.78	6.3	3.7	59.0	34.3
DWC 500/2.2	2.2	3.0	IE2	83.1	85.7	86.2	2.55	7.8	4.5	75.0	43.5
DWC 500/3.0	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) *
	[kW]	[HP]	
DWC 300/1.1	1.1	1.5	64
DWC 300/1.5	1.5	2.0	
DWC 500/1.5	1.5	2.0	
DWC 500/2.2	2.2	3.0	68
DWC 500/3.0	3.0	4.0	

* Mean value of several measures at 1m distance around the
Tollerance ± 2.5 dB.