

LENNTECH
WATER TREATMENT SOLUTIONS



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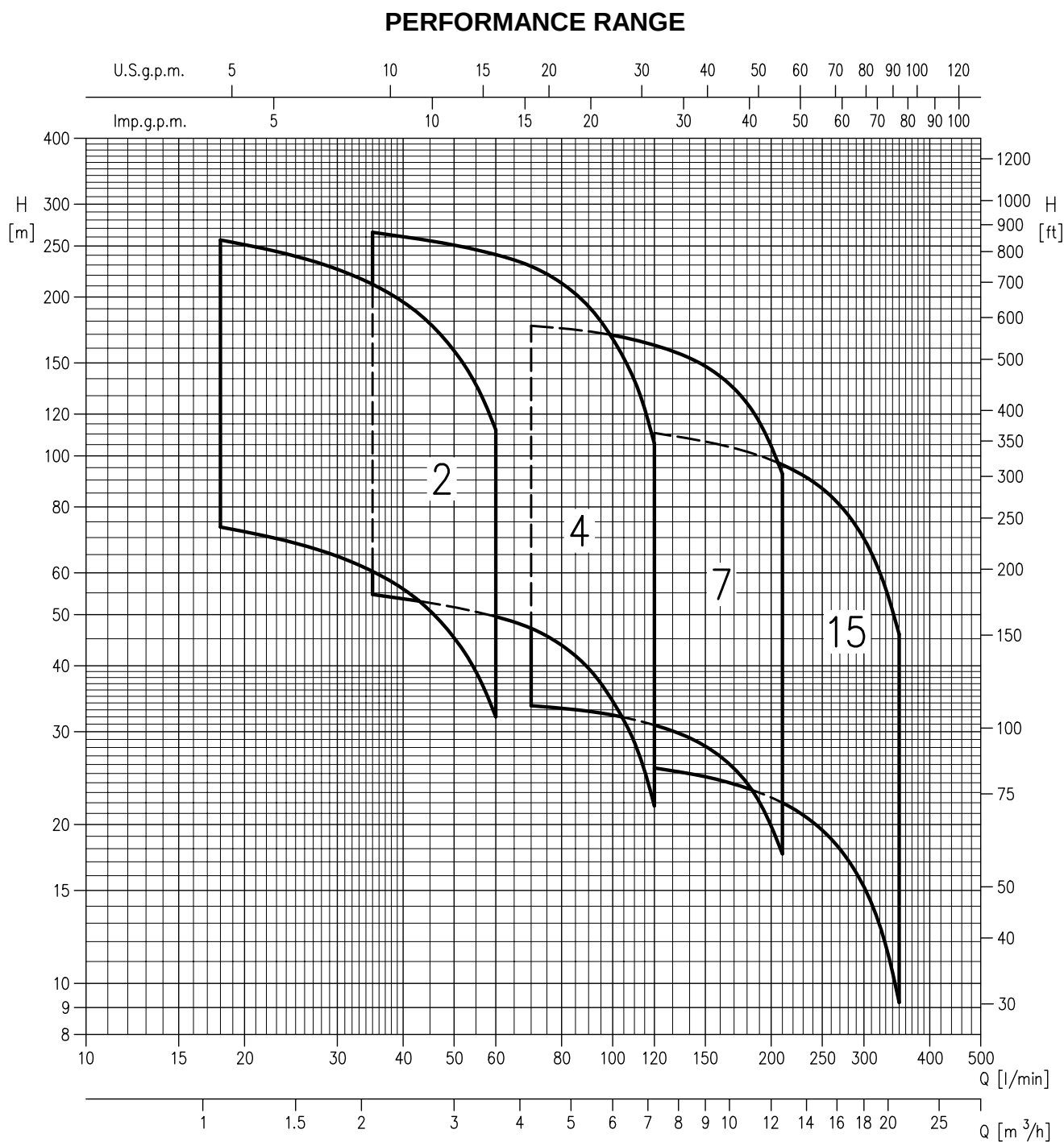
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PUMP SPECIFICATIONS

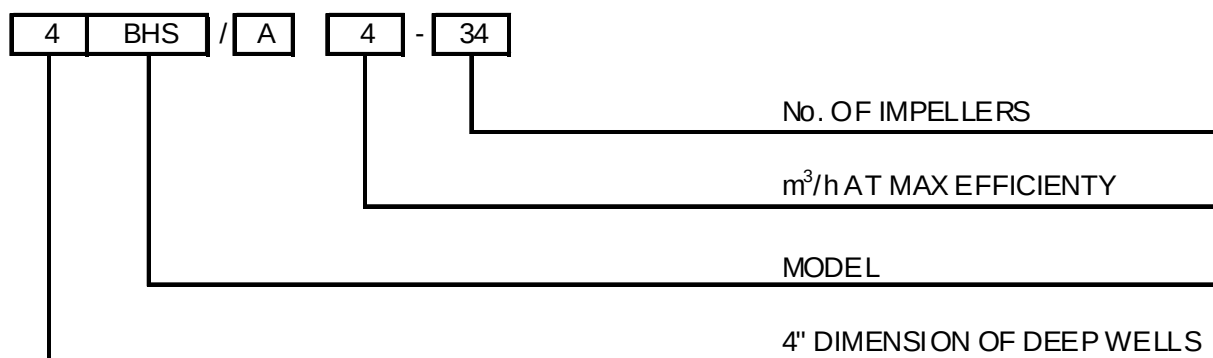
PUMP		
Liquid Handled	Type of liquid	Clean water
	Max temperature [°C]	40 (Oil Filled Motor) 30 (Water Filled Motor)
	Max. Sand content [ppm]	50
	Max. Chlorine ion density [ppm]	500
Construction	Impeller	Closed centrifugal type
	Bearing	Sleeve type - tungsten carbide
Pipe Connection	Suction	N/A
	Discharge	G1 1/4 (4BHS2) - G 1 1/2 (4BHS4) - G 2 (4BHS7-4BHS15) UNI ISO 228
Material	Suction casing	EN 1.4301 (AISI 304)
	Discharge casing	EN 1.4301 (AISI 304)
	Intermediate casing	EN 1.4301 (AISI 304)
	Impeller	EN 1.4301 (AISI 304)
	Shaft	EN 1.4301 (AISI 316)
	Liner ring	EPDM / EN 1.4301 (AISI 304)
	Valve	EN 1.4301 (AISI 304)
"O" ring		NBR
Applicable standard of test		ISO 9906:2012 – Grade 3B



SELECTION CHART

Pump type	Power		Q=Capacity															
	kW	HP	l/min.	0	18	25	35	50	60	70	90	120	150	180	210	250	300	350
			m³/h	0	1.1	1.5	2.1	3.0	3.6	4.2	5.4	7	9.0	11	12.6	15.0	18.0	21
H=Total manometric head in meters																		
4BHS/A 2-10	0.55	0.75	83.5	73.5	68.5	60.5	45	32	-	-	-	-	-	-	-	-	-	-
4BHS/A 2-13	0.75	1	109	95.5	89	78.5	59	41.5	-	-	-	-	-	-	-	-	-	-
4BHS/A 2-18	1.1	1.5	150	132	123	109	81.5	57.5	-	-	-	-	-	-	-	-	-	-
4BHS/A 2-24	1.5	2	200	176	164	145	109	77	-	-	-	-	-	-	-	-	-	-
4BHS/A 2-29	2.2	3	242	213	198	175	131	93	-	-	-	-	-	-	-	-	-	-
4BHS/A 2-35	2.2	3	292	257	239	211	158	112	-	-	-	-	-	-	-	-	-	-
4BHS/A 4-7	0.75	1	62.5	-	-	54.5	51.5	49.5	47	39.6	21.7	-	-	-	-	-	-	-
4BHS/A 4-10	1.1	1.5	89	-	-	78	74	71	67.5	56.5	31	-	-	-	-	-	-	-
4BHS/A 4-13	1.5	2	116	-	-	101	96	92	87.5	73.5	40.5	-	-	-	-	-	-	-
4BHS/A 4-19	2.2	3	169	-	-	148	140	135	128	107	59	-	-	-	-	-	-	-
4BHS/A 4-23	3.0	4	205	-	-	179	170	163	155	130	71.5	-	-	-	-	-	-	-
4BHS/A 4-26	3.0	4	231	-	-	203	192	184	175	147	80.5	-	-	-	-	-	-	-
4BHS/A 4-34	4.0	5.5	303	-	-	265	251	241	229	192	105	-	-	-	-	-	-	-
4BHS/A 7-4	1.1	1.5	35.6	-	-	-	-	-	33.6	32.8	30.9	28.2	24	17.6	-	-	-	-
4BHS/A 7-6	1.5	2	53.5	-	-	-	-	-	50.5	49	46.5	42	35.9	26.4	-	-	-	-
4BHS/A 7-8	2.2	3	71	-	-	-	-	-	67	65.5	62	56.5	48	35.2	-	-	-	-
4BHS/A 7-11	3.0	4	98	-	-	-	-	-	92.5	90	85	77.5	66	48.5	-	-	-	-
4BHS/A 7-14	4.0	5.5	125	-	-	-	-	-	118	115	108	98.5	84	61.5	-	-	-	-
4BHS/A 7-18	5.5	7.5	160	-	-	-	-	-	151	148	139	127	108	79	-	-	-	-
4BHS/A 7-21	5.5	7.5	187	-	-	-	-	-	176	172	162	148	126	92.5	-	-	-	-
4BHS/A 15-4	1.5	2	31.4	-	-	-	-	-	-	-	25.6	24.6	23.4	22	19.5	15.2	9.2	
4BHS/A 15-6	2.2	3	47	-	-	-	-	-	-	-	38.4	37	35.2	33	29.3	22.9	13.8	
4BHS/A 15-9	3.0	4	70.5	-	-	-	-	-	-	-	57.5	55.5	52.5	49.5	44	34.3	20.7	
4BHS/A 15-12	4.0	5.5	95	-	-	-	-	-	-	-	78	75	72	68	61	49	32.4	
4BHS/A 15-17	5.5	7.5	135	-	-	-	-	-	-	-	111	106	102	96	86.5	69.5	46	

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, 2 poles.

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)

During the pump selection, consider to get a safety margin of at least 0.5 m.

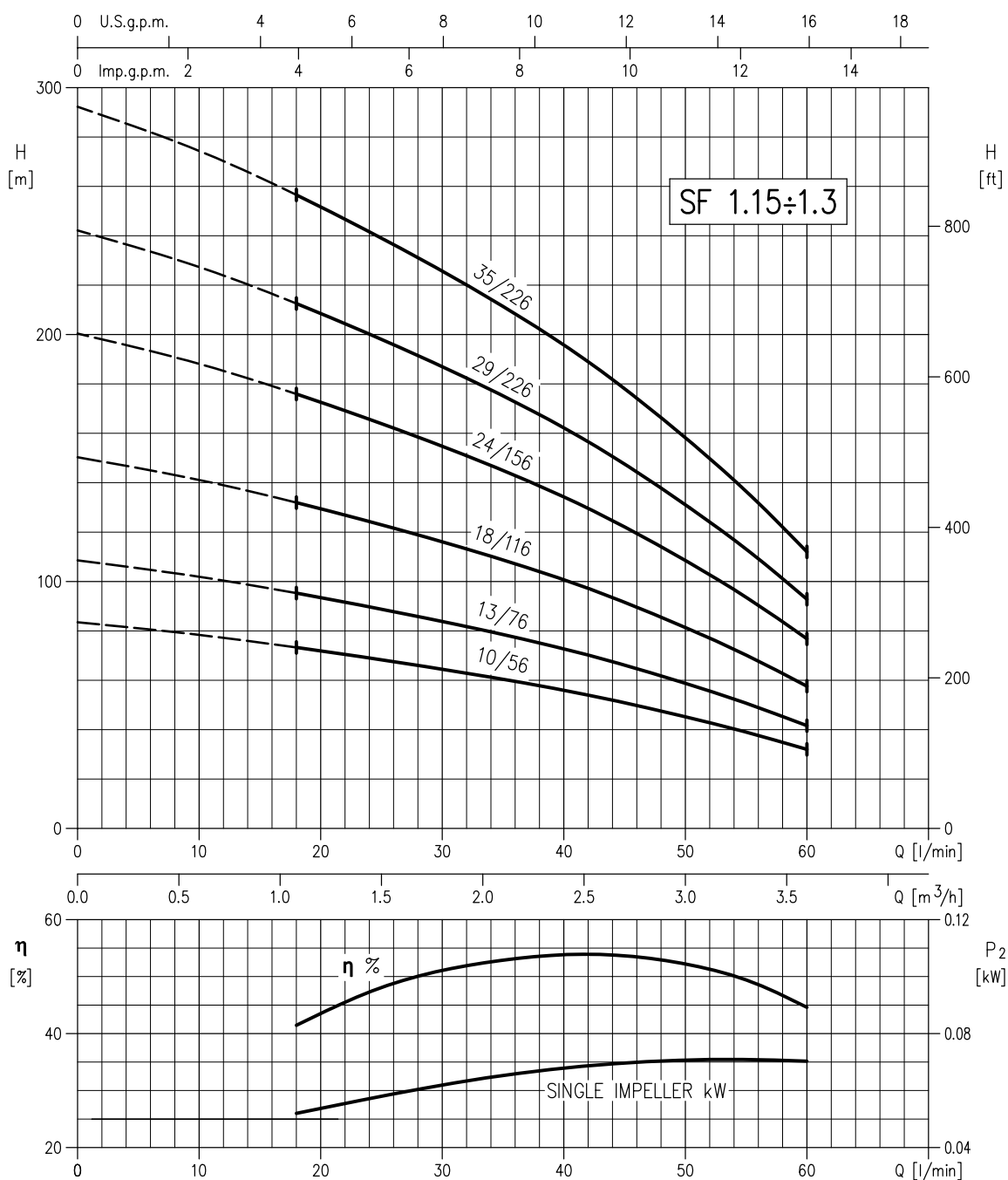
The continuous curves indicate the recommended working range. The dotted curve is only a guide.

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
- P₂ = pump power input (shaft power)
- η = pump efficiency

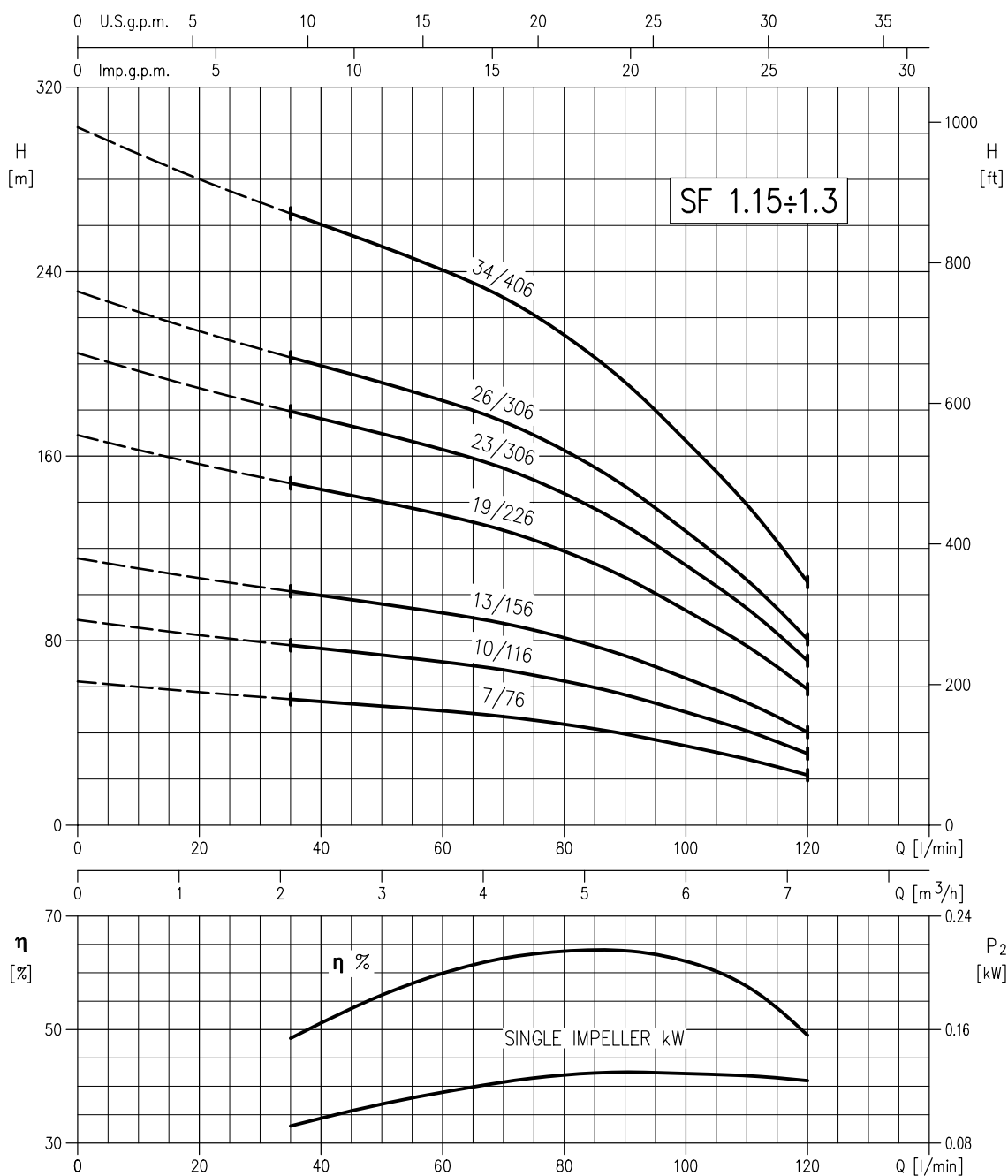
4BHS2 - Impeller diameter = 70.5 mm



Rotation speed: $\approx 3450 \text{ min}^{-1}$

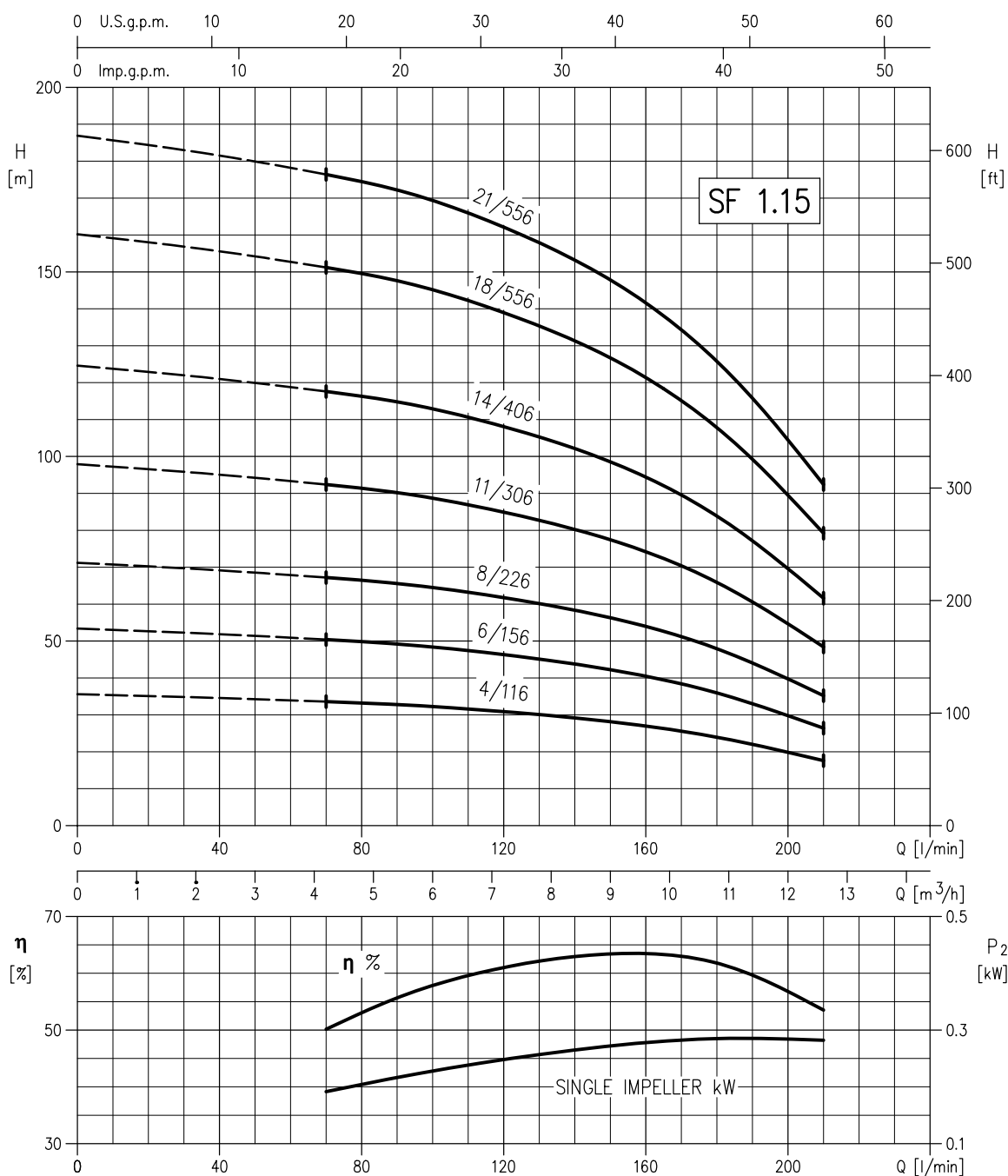
Test standard: ISO 9906:2012 – Grade 3B

4BHS4 - Impeller diameter = 72 mm



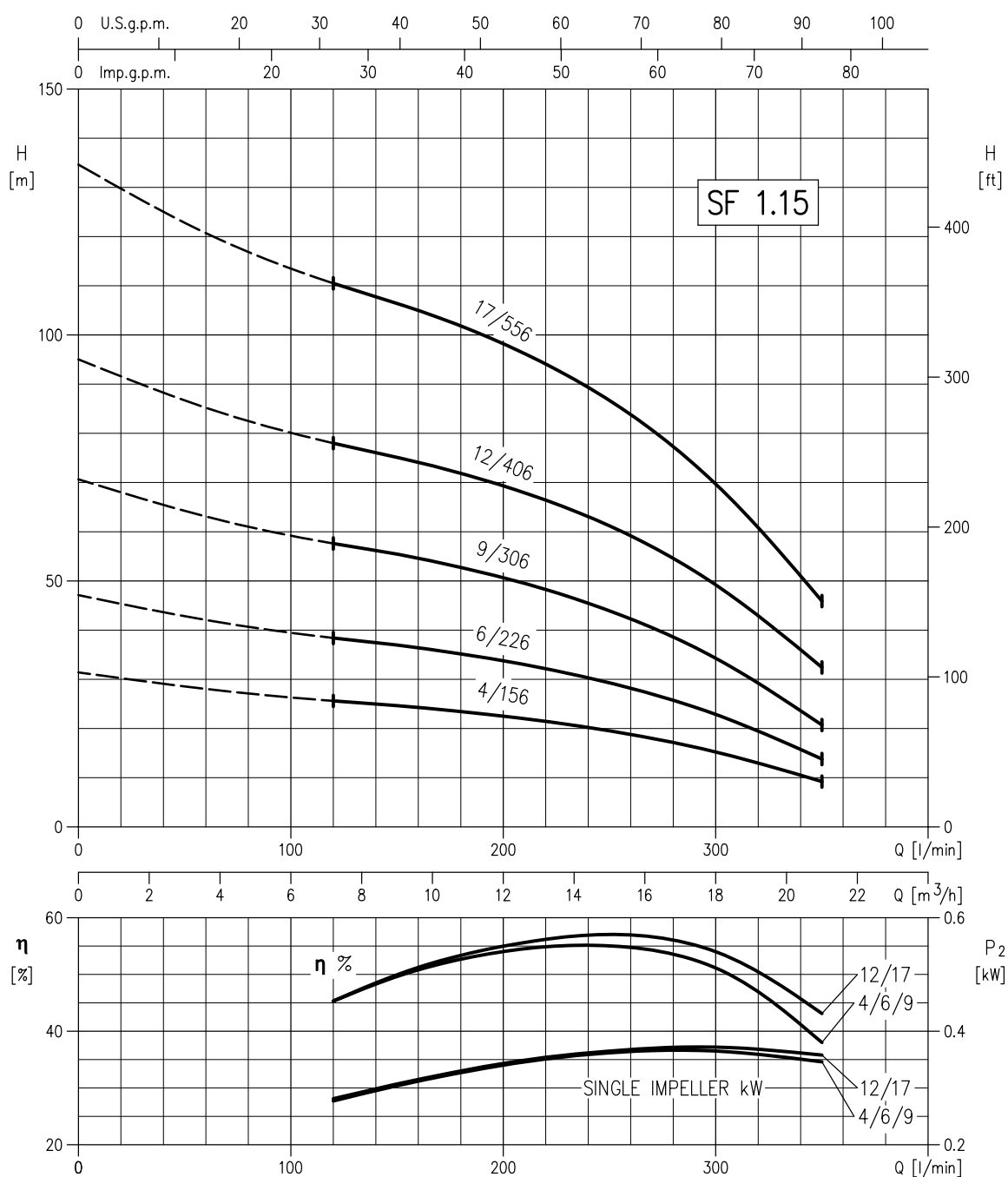
Rotation speed: $\approx 3450 \text{ min}^{-1}$
 Test standard: ISO 9906:2012 – Grade 3B

4BHS7 - Impeller diameter = 74 mm

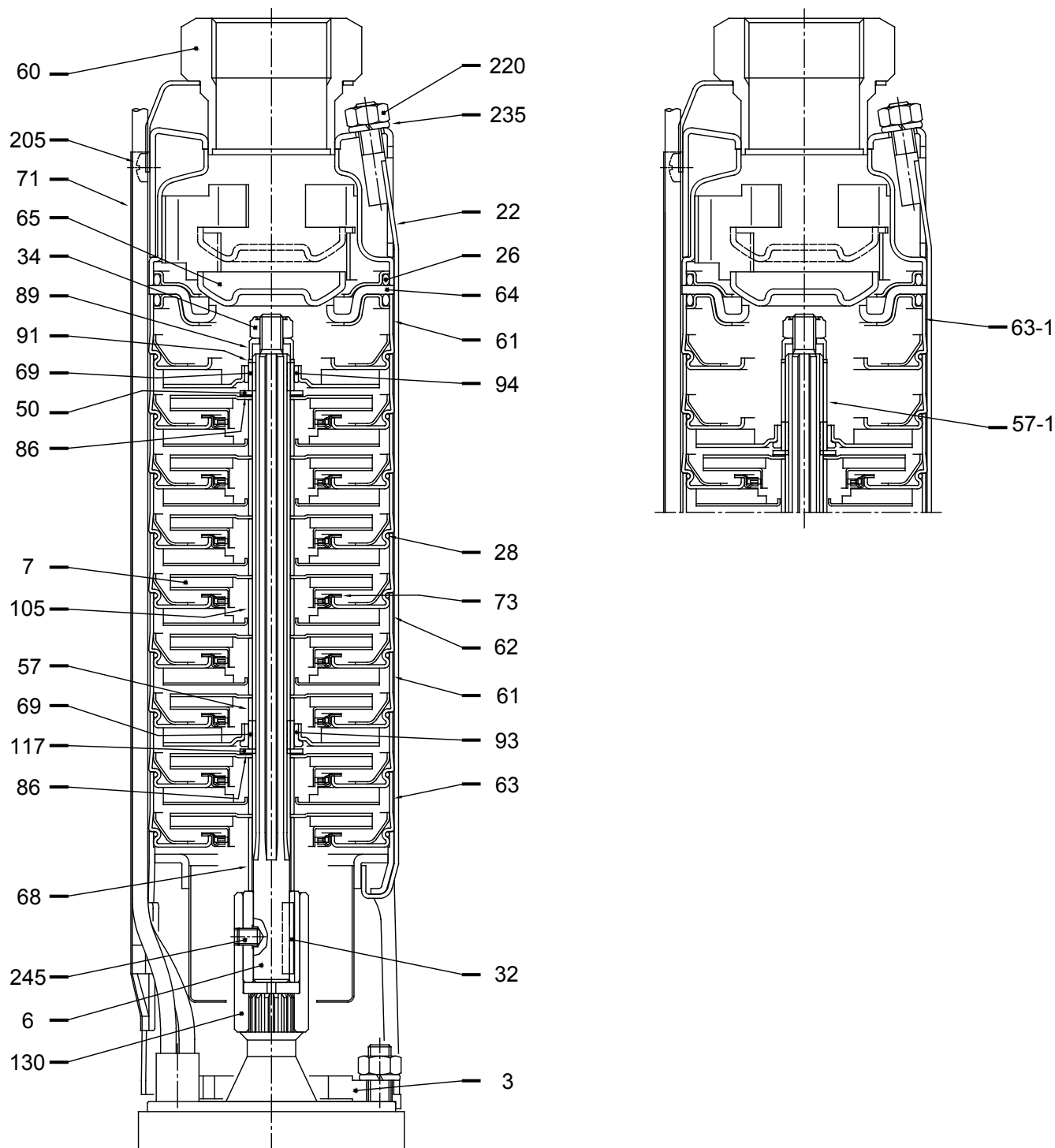


Rotation speed: $\approx 3450 \text{ min}^{-1}$
 Test standard: ISO 9906:2012 – Grade 3B

4BHS15 - Impeller diameter = 72 mm



SECTIONAL VIEW DRAWING



SECTIONAL VIEW TABLE

N°	PART NAME	MATERIAL	DIMENSIONS	Q.TY
3	Bracket	EN 1.4301 (AISI 304)		1
6	Pump shaft	EN 1.4401 (AISI 316)		1
7	Impeller	EN 1.4301 (AISI 304)		[1]
22	Strap	EN 1.4301 (AISI 304)		4
26	O-ring	NBR	3 x 74.5	2
28	O-ring	NBR	1.85 x 78.4	[1]
32	Key	EN 1.4401 (AISI 316)	A 4 x 4 x 25 UNI 6604	1
34	Impeller nut self locking	A2-70 UNI EN ISO 3506-1 with EN 1.4301 (AISI 304) insert	M8 UNI 7474	1
50	Washer	EN 1.4301 (AISI 304)		[1]
57	Bearing spacer	EN 1.4301 (AISI 304)		[1]
57-1	Spacer	EN 1.4301 (AISI 304)		[1]
60	Discharge casing	EN 1.4301 (AISI 304)		1
61	Intermediate casing bearing	EN 1.4301 (AISI 304)		[1]
62	Intermediate casing	EN 1.4301 (AISI 304)		[1]
63	Intermediate casing suction	EN 1.4301 (AISI 304)		1
63-1	Intermediate casing	EN 1.4301 (AISI 304)		[1]
64	Valve seat	EN 1.4301 (AISI 304) + NBR		1
65	Valve	EN 1.4301 (AISI 304)		1
68	Spacer	EN 1.4301 (AISI 304)		1
69	Shaft sleeve	Tungsten carbide		[1]
71	Cable cover	EN 1.4301 (AISI 304)		1
73	Liner ring	EN 1.4301 (AISI 304) + EPDM		[1]
86	Spacer	EN 1.4301 (AISI 304)		[1]
89	Washer	EN 1.4301 (AISI 304)		1
91	Spacer	EN 1.4301 (AISI 304)		[1]
93	Axial bearing	Tungsten carbide		1
94	Radial bearing	Tungsten carbide		[1]
105	Spacer	EN 1.4301 (AISI 304)		[1]
117	Friction ring	Tungsten carbide		1
130	Coupling	EN 1.4301 (AISI 304)		1
205	Screw	EN 1.4301 (AISI 304)	M5 x 6 UNI 7687	2
220	Nut	EN 1.4301 (AISI 304)	M8 UNI 5588	4
235	Washer	EN 1.4301 (AISI 304)	8,4 UNI 1751	4
245	Set screw	EN 1.4301 (AISI 304)	M6 x 8 UNI 5923	1

[1] See QUANTITY FOR MODEL page 302

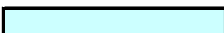
QUANTITY FOR MODEL

Pump type	POS. 7 Impeller	POS. 28 O-ring	POS. 50 Washer	POS. 57 Bearing spacer	POS. 57-1 Spacer	POS. 61 Intermediate casing bearing	POS. 62 Intermediate casing	POS. 63-1 Intermediate casing	POS. 69 Shaft sleeve	POS. 73 Liner ring	POS. 86 Spacer	POS. 91 Spacer	POS. 94 Radial bearing	POS. 105 Spacer
4BHS/A 2-10	10	11	/	/	/	1	9	/	1	10	1	1	/	9
4BHS/A 2-13	13	14	/	/	/	1	12	/	1	13	1	1	/	12
4BHS/A 2-18	18	19	1	1	/	2	16	/	2	18	2	1	/	16
4BHS/A 2-24	24	25	1	1	/	2	22	/	2	24	2	1	/	22
4BHS/A 2-29	29	30	2	2	/	3	26	/	3	29	3	1	/	26
4BHS/A 2-35	35	37	2	2	1	3	32	1	3	35	3	1	/	32
4BHS/A 4-7	7	8	/	/	/	1	6	/	1	7	1	1	/	6
4BHS/A 4-10	10	11	/	/	/	1	9	/	1	10	1	1	/	9
4BHS/A 4-13	13	14	/	/	/	1	12	/	1	13	1	1	/	12
4BHS/A 4-19	19	21	1	1	1	2	17	1	2	19	2	1	1	17
4BHS/A 4-23	23	25	1	1	1	2	21	1	2	23	2	1	1	21
4BHS/A 4-26	26	28	1	1	1	2	24	1	2	26	2	1	1	24
4BHS/A 4-34	34	37	2	2	2	3	31	2	3	34	3	1	2	31
4BHS/A 7-4	4	5	/	/	/	1	3	/	1	4	/	/	/	3
4BHS/A 7-6	6	8	/	/	1	1	6	1	1	6	/	/	/	6
4BHS/A 7-8	8	11	/	/	2	1	9	2	1	8	/	/	/	9
4BHS/A 7-11	11	13	1	1	1	2	10	1	2	11	/	/	1	10
4BHS/A 7-14	14	15	1	1	/	2	12	/	2	14	/	/	1	12
4BHS/A 7-18	18	19	1	1	/	2	16	/	2	18	/	/	1	16
4BHS/A 7-21	21	24	2	2	2	3	20	2	3	21	/	/	2	20
4BHS/A 15-4	4	5	/	/	/	1	3	/	1	4	/	/	/	3
4BHS/A 15-6	6	8	/	/	2	1	5	1	1	6	/	/	/	5
4BHS/A 15-9	9	11	1	1	2	2	7	1	2	9	/	/	1	7
4BHS/A 15-12	12	14	1	1	2	2	10	1	2	12	/	/	1	10
4BHS/A 15-17	17	18	2	2	/	3	14	/	3	17	/	/	2	14

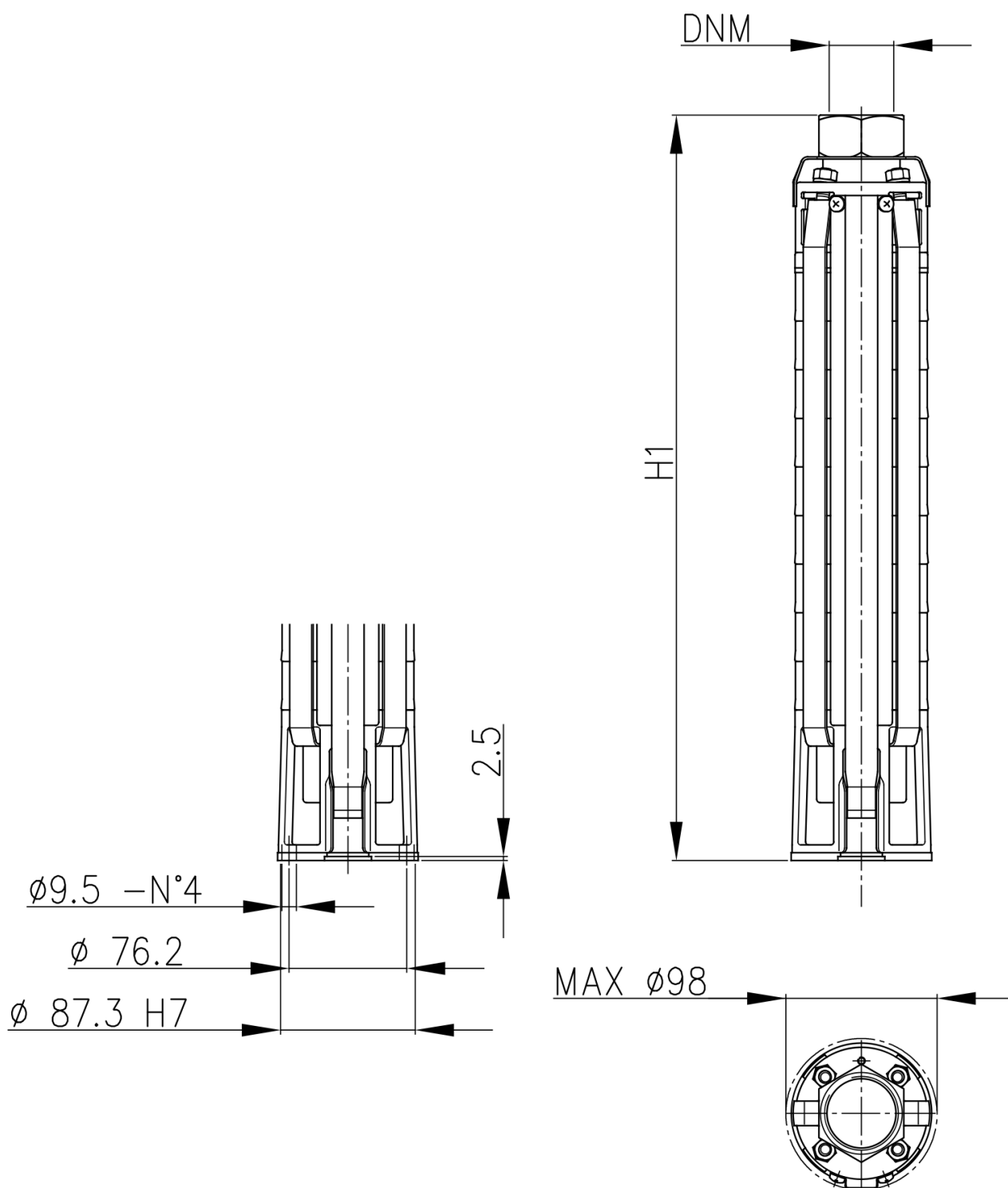
INTERMEDIATE CASING WITH BEARINGS POSITION

Pump type	N° impeller	Quantity for model		Position *		
		axial	radial			
4BHS/A 2-10	10	1	/			11th
4BHS/A 2-13	13	1	/			14th
4BHS/A 2-18	18	1	1	5th		19th
4BHS/A 2-24	24	1	1	5th		25th
4BHS/A 2-29	29	1	2	5th	20th	30th
4BHS/A 2-35	35	1	2	5th	20th	36th
4BHS/A 4-7	7	1	/			8th
4BHS/A 4-10	10	1	/			11th
4BHS/A 4-13	13	1	/			14th
4BHS/A 4-19	19	1	1	5th		20th
4BHS/A 4-23	23	1	1	5th		24th
4BHS/A 4-26	26	1	2	5th	20th	27th
4BHS/A 4-34	34	1	2	5th	20th	35th
4BHS/A 7-4	4	1	/			5th
4BHS/A 7-6	6	1	/			7th
4BHS/A 7-8	8	1	/			9th
4BHS/A 7-11	11	1	1	4th		12th
4BHS/A 7-14	14	1	1	4th		15th
4BHS/A 7-18	18	1	1	4th		19th
4BHS/A 7-21	21	1	2	4th	16th	22th
4BHS/A 15-4	4	1	/			5th
4BHS/A 15-6	6	1	/			7th
4BHS/A 15-9	9	1	1	3th		10th
4BHS/A 15-12	12	1	2	3th	12th	13th
4BHS/A 15-17	17	1	2	3th	12th	18th

* the first intermediate suction casing is used as reference for the position of the bearing

 axial bearing

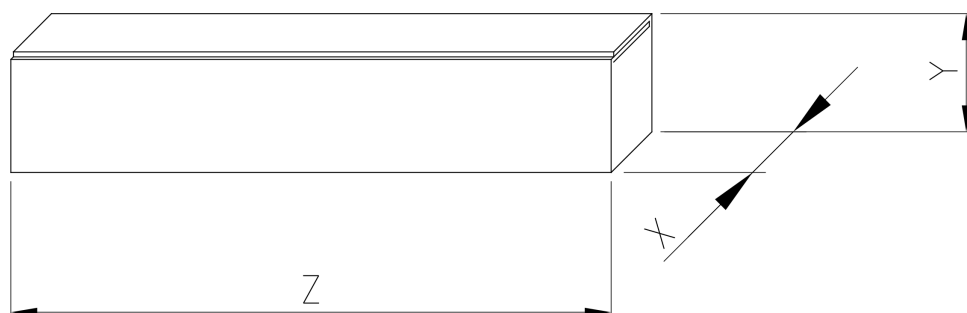
PUMP DRAWING



DIMENSIONS PUMP TABLE

Pump type	Power		DNM	Pump	
	kW	HP		H1 [mm]	Weight [kgf]
4BHS/A 2-10	0,6	0,75	G 1 1/4	426	6,2
4BHS/A 2-13	0,8	1	G 1 1/4	489	6,4
4BHS/A 2-18	1,1	1,5	G 1 1/4	594	7,9
4BHS/A 2-24	1,5	2	G 1 1/4	720	10,4
4BHS/A 2-29	2,2	3	G 1 1/4	825	10,9
4BHS/A 2-35	2,2	3	G 1 1/4	972	13,6
4BHS/A 4-7	0,8	1	G 1 1/2	368	4,3
4BHS/A 4-10	1,1	1,5	G 1 1/2	431	5,2
4BHS/A 4-13	1,5	2	G 1 1/2	494	6,5
4BHS/A 4-19	2,2	3	G 1 1/2	641	8,2
4BHS/A 4-23	3	4	G 1 1/2	725	9,4
4BHS/A 4-26	3	4	G 1 1/2	788	10,5
4BHS/A 4-34	4	5,5	G 1 1/2	977	13,1
4BHS/A 7-4	1,1	1,5	G 2	373	4,8
4BHS/A 7-6	1,5	2	G 2	468	5
4BHS/A 7-8	2,2	3	G 2	562	5,9
4BHS/A 7-11	3	4	G 2	625	7
4BHS/A 7-14	4	5,5	G 2	688	7,9
4BHS/A 7-18	5,5	7,5	G 2	814	9,5
4BHS/A 7-21	5,5	7,5	G 2	972	11
4BHS/A 15-4	1,5	2	G 2	426	5
4BHS/A 15-6	2,2	3	G 2	552	5,4
4BHS/A 15-9	3	4	G 2	678	6,8
4BHS/A 15-12	4	5,5	G 2	804	8,2
4BHS/A 15-17	5,5	7,5	G 2	972	10,3

PACKING

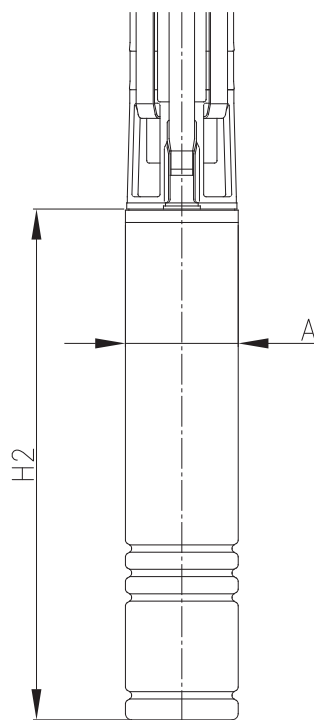


Pump type	X [mm]	Y [mm]	Z [mm]	Weight [kgf]
4BHS/A 2-10	100	100	495	6.6
4BHS/A 2-13	100	100	640	6.7
4BHS/A 2-18	100	100	640	8.3
4BHS/A 2-24	100	100	800	11
4BHS/A 2-29	100	100	1035	11.6
4BHS/A 2-35	100	100	1035	14.3
4BHS/A 4-7	100	100	495	4.8
4BHS/A 4-10	100	100	495	5.7
4BHS/A 4-13	100	100	640	6.9
4BHS/A 4-19	100	100	800	8.8
4BHS/A 4-23	100	100	800	10
4BHS/A 4-26	100	100	1035	11.2
4BHS/A 4-34	100	100	1035	13.8
4BHS/A 7-4	100	100	495	5.3
4BHS/A 7-6	100	100	495	55.5
4BHS/A 7-8	100	100	640	6.3
4BHS/A 7-11	100	100	800	7.6
4BHS/A 7-14	100	100	800	8.5
4BHS/A 7-18	100	100	1035	10.2
4BHS/A 7-21	100	100	1035	11.7
4BHS/A 15-4	100	100	495	5.5
4BHS/A 15-6	100	100	640	5.8
4BHS/A 15-9	100	100	800	7.4
4BHS/A 15-12	100	100	1035	8.9
4BHS/A 15-17	100	100	1035	11

MOTOR SPECIFICATIONS

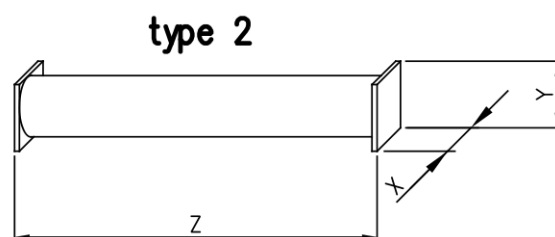
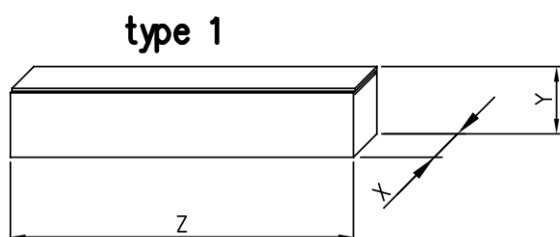
MOTOR							
Type		Submersible oil filled (type OY)		Submersible water filled (type WY)		Submersible water filled (type WY)	
Manufacturer		Ebara Motor (4'')				Franklin Motor (4'')	
		Single phase	Three phase	Single phase	Three phase	Single phase	Three phase
Power rating	[kW]	0.55 ÷ 2.2	0.55 ÷ 5.5	0.55 ÷ 2.2	0.55 ÷ 5.5	0.55 ÷ 2.2	0.55 ÷ 5.5
	[HP]	0.75 ÷ 3.0	0.75 ÷ 7.5	0.75 ÷ 3.0	0.75 ÷ 7.5	0.75 ÷ 3.0	0.75 ÷ 7.5
No. of Poles		2					
Rated speed [min ⁻¹]		Refer to each characteristic performance rotation speed as rated speed					
Insulation Class		F		F		B	
Protection degree		IP 58		IP 68		IP 68	
Maximum immersion [m]		150		150		350	
Starts / hours		30		30		20	
Start type		Direct on line					
Frequency [Hz]		60					
Voltage [V]		220-230 ±10%	380 ±10% 460 ±10%	220-230 +6%-10%	380 -10% 460 +6%	220-230 +6%-10%	380 -10% 460 +6%
Capacitor		Fitted in starter box	-	Fitted in starter box	-	Fitted in starter box	-
Over load protection		Fitted in starter box	Provided by the user	Fitted in starter box	Provided by the user	Fitted in starter box	Provided by the user
Sealing liquid		Oil type: Marcol 82 (Esso)		Propylene Glycol 50% water solution			
Motor bracket		Cast iron nickel plated		Cast Iron G20		EN 1.4301 (AISI 304)	
Casing material		EN 1.4301 (AISI 304)					
Power cable	material	Neoprene (flat cable with watertight connector with integral earthing system)					
	size	4x1.5					
	length [m]	L=1.75 (up to 1.5 kW) / L=2.5 (for 2.2 and 4 kW) / L=4 (for 5.5kW)					
Flange mount		NEMA standard					

MOTOR DIMENSIONS and WEIGHT



Pump type	Power		EBARA MOTORS												FRANKLIN MOTORS					
			OIL FILLED						WATER FILLED						WATER FILLED					
			Single phase			Three phase			Single phase			Three phase			Single phase			Three phase		
	kW	HP	A [mm]	H2 [mm]	Weight [kgf]	A [mm]	H2 [mm]	Weight [kgf]	A [mm]	H2 [mm]	Weight [kgf]	A [mm]	H2 [mm]	Weight [kgf]	A [mm]	H2 [mm]	Weight [kgf]	A [mm]	H2 [mm]	Weight [kgf]
4BHS/A 2-10	0,55	0,75	93	325	7,6	93	325	7	94	265	8,1	94	250	7	95	253	8,4	95	228	6,4
4BHS/A 2-13	0,75	1	93	350	8,7	93	325	7,6	94	295	10,6	94	265	8,3	95	283	9,3	95	248	7,3
4BHS/A 2-18	1,1	1,5	93	385	10,3	93	350	8,7	94	340	11,2	94	295	10,9	95	307	10,5	95	283	8,5
4BHS/A 2-24	1,5	2	93	420	12	93	385	10,4	94	375	14	94	340	1,4	95	339	12	95	307	9,5
4BHS/A 2-29	2,2	3	93	470	14,2	93	420	12	94	430	16,4	94	375	14,2	95	437	17	95	339	11
4BHS/A 2-35	2,2	3	93	470	14,2	93	420	12	94	430	16,4	94	375	14,2	95	437	17	95	339	11
4BHS/A 4-7	0,75	1	93	350	8,7	93	325	7,6	94	295	10,6	94	265	8,3	95	283	9,3	95	248	7,3
4BHS/A 4-10	1,1	1,5	93	385	10,3	93	350	8,7	94	340	11,2	94	295	10,9	95	307	10,5	95	283	8,5
4BHS/A 4-13	1,5	2	93	420	12	93	385	10,4	94	375	14	94	340	1,4	95	339	12	95	307	9,5
4BHS/A 4-19	2,2	3	93	470	14,2	93	420	12	94	430	16,4	94	375	14,2	95	437	17	95	339	11
4BHS/A 4-23	3,0	4	/	/	/	93	544	13,1	/	/	/	94	480	18,3	/	/	/	95	477	17
4BHS/A 4-26	3,0	4	/	/	/	93	544	13,1	/	/	/	94	480	18,3	/	/	/	95	477	17
4BHS/A 4-34	4,0	5,5	/	/	/	93	574	15,6	/	/	/	94	555	23,4	/	/	/	95	543	20
4BHS/A 7-4	1,1	1,5	93	385	10,3	93	350	8,7	94	340	11,2	94	295	10,9	95	307	10,5	95	283	8,5
4BHS/A 7-6	1,5	2	93	420	12	93	385	10,4	94	375	14	94	340	1,4	95	339	12	95	307	9,5
4BHS/A 7-8	2,2	3	93	470	14,2	93	420	12	94	430	16,4	94	375	14,2	95	437	17	95	339	11
4BHS/A 7-11	3,0	4	/	/	/	93	544	13,1	/	/	/	94	480	18,3	/	/	/	95	477	17
4BHS/A 7-14	4,0	5,5	/	/	/	93	574	15,6	/	/	/	94	555	23,4	/	/	/	95	543	20
4BHS/A 7-18	5,5	7,5	/	/	/	93	644	18,9	/	/	/	94	675	29,4	/	/	/	95	653	26,6
4BHS/A 7-21	5,5	7,5	/	/	/	93	644	18,9	/	/	/	94	675	29,4	/	/	/	95	653	26,6
4BHS/A 15-4	1,5	2	93	420	12	93	385	10,4	94	375	14	94	340	1,4	95	339	12	95	307	9,5
4BHS/A 15-6	2,2	3	93	470	14,2	93	420	12	94	430	16,4	94	375	14,2	95	437	17	95	339	11
4BHS/A 15-9	3,0	4	/	/	/	93	544	13,1	/	/	/	94	480	18,3	/	/	/	95	477	17
4BHS/A 15-12	4,0	5,5	/	/	/	93	574	15,6	/	/	/	94	555	23,4	/	/	/	95	543	20
4BHS/A 15-17	5,5	7,5	/	/	/	93	644	18,9	/	/	/	94	675	29,4	/	/	/	95	653	26,6

PACKING



Pump type	Power		EBARA MOTORS																			
			OIL FILLED TYPE										WATER FILLED TYPE									
			Single phase					Three phase					Single phase					Three phase				
			X [mm]	Y [mm]	Z [mm]	Weight [kgf]	type	X [mm]	Y [mm]	Z [mm]	Weight [kgf]	type	X [mm]	Y [mm]	Z [mm]	Weight [kgf]	type	X [mm]	Y [mm]	Z [mm]	Weight [kgf]	type
4BHS/A 2-10	0,55	0,75	100	100	800	16,2	1	100	100	800	15,6	1	100	100	800	16,7	1	100	100	800	15,6	1
4BHS/A 2-13	0,75	1	100	100	1035	18,2	1	100	100	1035	17,1	1	100	100	1035	20,1	1	100	100	1035	17,8	1
4BHS/A 2-18	1,1	1,5	100	100	1035	21,3	1	100	100	1035	19,7	1	100	100	1035	22,2	1	100	100	1035	21,9	1
4BHS/A 2-24	1,5	2	100	100	1300	26,3	1	100	100	1300	24,7	1	100	100	1300	28,3	1	100	100	1300	25,7	1
4BHS/A 2-29	2,2	3	100	100	1530	29,7	1	100	100	1300	27,5	1	100	100	1530	31,9	1	100	100	1300	29	1
4BHS/A 2-35	2,2	3	100	100	1530	32,4	1	100	100	1530	30,2	1	100	100	1530	34,6	1	100	100	1530	32,4	1
4BHS/A 4-7	0,75	1	100	100	800	15,4	1	100	100	800	14,3	1	100	100	800	17,3	1	100	100	800	15	1
4BHS/A 4-10	1,1	1,5	100	100	1035	18,6	1	100	100	1035	17	1	100	100	1035	19,5	1	100	100	1035	19,2	1
4BHS/A 4-13	1,5	2	100	100	1035	21,6	1	100	100	1035	20	1	100	100	1035	23,6	1	100	100	1035	21	1
4BHS/A 4-19	2,2	3	100	100	1300	26,3	1	100	100	1300	24,1	1	100	100	130	28,5	1	100	100	1300	26,3	1
4BHS/A 4-23	3,0	4	/	/	/	/	/	100	100	1530	26,4	1	/	/	/	/	/	100	100	1300	31,6	1
4BHS/A 4-26	3,0	4	/	/	/	/	/	100	100	1530	28,2	1	/	/	/	/	/	100	100	1530	334	1
4BHS/A 4-34	4,0	5,5	/	/	/	/	/	100	100	1810	30,2	2	/	/	/	/	/	100	100	1810	38	2
4BHS/A 7-4	1,1	1,5	100	100	800	17,5	1	100	100	800	15,9	1	100	100	800	18,4	1	100	100	800	18,1	1
4BHS/A 7-6	1,5	2	100	100	1035	20,1	1	100	100	1035	18,5	1	100	100	1035	22,1	1	100	100	1035	19,5	1
4BHS/A 7-8	2,2	3	100	100	1300	24	1	100	100	1035	21,8	1	100	100	1300	26,2	1	100	100	1035	23,2	1
4BHS/A 7-11	3,0	4	/	/	/	/	/	100	100	1530	24	1	/	/	/	/	/	100	100	1530	29,9	1
4BHS/A 7-14	4,0	5,5	/	/	/	/	/	100	100	1530	27,4	1	/	/	/	/	/	100	100	1530	35,9	1
4BHS/A 7-18	5,5	7,5	/	/	/	/	/	100	100	1530	33	1	/	/	/	/	/	100	100	1530	43,5	1
4BHS/A 7-21	5,5	7,5	/	/	/	/	/	100	100	1810	31,4	2	/	/	/	/	/	100	100	1810	41,9	2
4BHS/A 15-4	1,5	2	100	100	1035	20,1	1	100	100	1035	18,5	1	100	100	1035	22,1	1	100	100	1035	19,5	1
4BHS/A 15-6	2,2	3	100	100	1300	23,5	1	100	100	1035	21,3	1	100	100	1300	25,7	1	100	100	1035	22,7	1
4BHS/A 15-9	3,0	4	/	/	/	/	/	100	100	1300	23,8	1	/	/	/	/	/	100	100	1300	29	1
4BHS/A 15-12	4,0	5,5	/	/	/	/	/	100	100	1530	28,4	1	/	/	/	/	/	100	100	1530	36,2	1
4BHS/A 15-17	5,5	7,5	/	/	/	/	/	100	100	1810	30,7	2	/	/	/	/	/	100	100	1810	41,2	2

Pump type	FRANKLIN MOTORS									
	WATER FILLED TYPE									
	Single phase					Three phase				
	X [mm]	Y [mm]	Z [mm]	Weight [kgf]	type	X [mm]	Y [mm]	Z [mm]	Weight [kgf]	type
4BHS/A 2-10	100	100	800	17	1	100	100	800	15	1
4BHS/A 2-13	100	100	1035	18,8	1	100	100	1035	16,8	1
4BHS/A 2-18	100	100	1035	21,5	1	100	100	1035	19,5	1
4BHS/A 2- 24	100	100	1300	26,3	1	100	100	1300	23,8	1
4BHS/A 2- 29	100	100	1530	32,5	1	100	100	1300	25,8	1
4BHS/A 2-35	100	100	1530	35,2	1	100	100	1530	29,2	1
4BHS/A 4-7	100	100	800	16	1	100	100	800	14	1
4BHS/A 4-10	100	100	1035	18,8	1	100	100	1035	16,8	1
4BHS/A 4-13	100	100	1035	21,6	1	100	100	1035	19,1	1
4BHS/A 4-19	100	100	1300	29,1	1	100	100	1300	23,1	1
4BHS/A 4-23	/	/	/	/	/	100	100	1300	30,3	1
4BHS/A 4-26	/	/	/	/	/	100	100	1530	32,1	1
4BHS/A 4-34	/	/	/	/	/	100	100	1810	34,6	2
4BHS/A 7-4	100	100	800	17,7	1	100	100	800	15,7	1
4BHS/A 7-6	100	100	1035	20,1	1	100	100	1035	17,6	1
4BHS/A 7-8	100	100	1300	29,1	1	100	100	1035	20	1
4BHS/A 7-11	/	/	/	/	/	100	100	1300	27,9	1
4BHS/A 7-14	/	/	/	/	/	100	100	1300	31,8	1
4BHS/A 7-18	/	/	/	/	/	100	100	1530	40,7	1
4BHS/A 7-21	/	/	/	/	/	100	100	1810	39,1	2
4BHS/A 15-4	100	100	1035	20,1	1	100	100	1035	17,6	1
4BHS/A 15-6	100	100	1300	26,3	1	100	100	1035	19,5	1
4BHS/A 15-9	/	/	/	/	/	100	100	1300	27,7	1
4BHS/A 15-12	/	/	/	/	/	100	100	1530	32,8	1
4BHS/A 15-17	/	/	/	/	/	100	100	1810	38,4	2

EBARA MOTORS OIL FILLED DATA

Output power		S.F.	Single phase 220 V					Single phase 230 V					Thrust [N]
[kW]	[HP]		Input [kW]	IN [A]	IA [A]	I _{max} [A]	Power factor	Input [kW]	IN [A]	IA [A]	I _{max} [A]	Power factor	
0.55	0.75	1.5	1.03	4.8	18.3	7.4	0.98	1.15	5.1	18.3	7.4	0.98	1500
0.75	1	1.4	1.22	5.8	25.2	7.8	0.96	1.36	6.2	25.2	7.8	0.96	1500
1.1	1.5	1.3	1.55	7.2	33.4	10.4	0.98	1.73	7.7	33.4	10.4	0.98	1500
1.5	2	1.25	2.21	10.5	34	12.4	0.96	2.38	10.8	34	12.4	0.96	1500
2.2	3	1.15	3.26	15.6	48	16.8	0.95	3.54	16.2	48	16.8	0.95	1500

Output power		S.F.	Three phase 380 V					Three phase 460 V					Thrust [N]
[kW]	[HP]		Input [kW]	IN [A]	IA [A]	I _{max} [A]	Power factor	Input [kW]	IN [A]	IA [A]	I _{max} [A]	Power factor	
0.55	0.75	1.5	0.91	1.9	11	2.4	0.73	1.05	1.8	9	2.6	0.73	1500
0.75	1	1.4	1.20	2.6	16	3.2	0.7	1.28	2.3	14	2.9	0.7	1500
1.1	1.5	1.3	1.68	3.6	14	4	0.71	1.87	3.3	15	3.4	0.71	1500
1.5	2	1.25	2.13	4.5	26	5.1	0.72	2.41	4.2	22	4.6	0.72	1500
2.2	3	1.15	3.03	6.4	37	6.8	0.72	3.32	5.8	25	6.5	0.72	1500
3	4	1.15	4.15	8.3	43	11.2	0.76	4.29	7.1	36	7.9	0.76	5000
4	5.5	1.15	4.99	9.6	54	13.6	0.79	6.16	9.8	45	10.8	0.79	5000
5.5	7.5	1.15	7.33	13.6	72	15.3	0.82	8.74	13.4	60	14.2	0.82	5000

EBARA MOTORS WATER FILLED DATA

Output power		S.F.	Single phase 230 V					Thrust [N]
[kW]	[HP]		Input [kW]	IN [A]	IA [A]	I _{max} [A]	Power factor	
0.55	0.75	1.5	1.13	7	32	9.30	0.7	1500
0.75	1	1.4	1.37	8.5	40	12.00	0.7	1500
1.1	1.5	1.3	1.91	10.1	49	13.00	0.82	3000
1.5	2	1.25	2.24	11.6	52	15.00	0.84	3000
2.2	3	1.15	3.27	14.8	68	16.90	0.96	3000

Output power		S.F.	Three phase 380 V					Three phase 460 V					Thrust [N]
[kW]	[HP]		Input [kW]	IN [A]	IA [A]	I _{max} [A]	Power factor	Input [kW]	IN [A]	IA [A]	Power factor	I _{max} [A]	
0.55	0.75	1.5	0.92	2	10	3.00	0.7	0.89	1.6	11	0.7	1.95	1500
0.75	1	1.4	1.20	2.6	13	3.60	0.7	1.11	2	13	0.7	2.50	1500
1.1	1.5	1.3	1.54	3.3	18	4.20	0.71	1.58	2.8	15	0.71	3.30	3000
1.5	2	1.25	2.21	4.2	25	5.20	0.8	2.12	3.5	22	0.76	4.20	3000
2.2	3	1.15	3.15	6.3	35	7.20	0.76	2.93	4.9	31	0.75	5.50	3000
3	4	1.15	4.00	7.8	40	9.00	0.78	3.88	6.5	45	0.75	7.20	6500
4	5.5	1.15	5.10	10.2	55	12.00	0.76	5.44	9.0	62	0.76	9.90	6500
5.5	7.5	1.15	7.44	15.0	82	17.30	0.78	7.45	12.0	77	0.78	13.30	6500

FRANKLIN MOTORS WATER FILLED DATA

Output power		S.F.	Single phase 230 V				Thrust [N]
[kW]	[HP]		Input [kW]	IN [A]	IA [A]	Power factor	
0.55	0.75	1.5	1.36	8	34.2	0.74	4000
0.75	1	1.4	1.67	9.8	41.8	0.74	4000
1.1	1.5	1.3	2.17	11.5	52	0.82	4000
1.5	2	1.25	2.88	13.2	51	0.95	4000
2.2	3	1.15	3.79	17	82	0.97	4000

Output power		S.F.	Three phase 380 V				Three phase 460 V				Thrust [N]
[kW]	[HP]		Input [kW]	IN [A]	IA [A]	Power factor	Input [kW]	IN [A]	IA [A]	Power factor	
0.55	0.75	1.5	1.20	2.3	11.9	0.79	1.20	1.9	9.8	0.79	4000
0.75	1	1.4	1.46	2.7	13.3	0.82	1.50	2.3	11	0.82	4000
1.1	1.5	1.3	1.94	3.6	19.5	0.82	1.96	3	16.1	0.82	4000
1.5	2	1.25	2.47	4.7	24.7	0.8	2.49	3.9	20.4	0.8	4000
2.2	3	1.15	3.34	6.5	34.7	0.78	3.36	5.4	28.7	0.78	4000
3	4	1.15	4.58	8.8	48.1	0.79	4.53	7.2	39.7	0.79	4000
4	5.5	1.15	6.08	11.7	68.8	0.79	6.11	9.7	56.8	0.79	6500
5.5	7.5	1.15	8.19	15.0	85.9	0.83	8.20	12.4	71.0	0.83	6500

EBARA MOTORS OIL & WATER FILLED CABLE SELECTION

EXAMPLE : MOTOR 0.75 kW 220-230 V CABLE LENGTH 75 m - 4x2,5 mm²

Single phase (220-230V)

POWER		CABLE TYPE AND MAXIMUM LENGTH (*)							
kW	HP	4x1	4x1,5	4x2	4x2,5	4x4	4x6	4x10	4x16
0.55	0.75	38	57	76	95	152	-	-	-
0.75	1	30	45	60	75	120	174	-	-
1.1	1.5	22	33	43	53	85	127	210	-
1.5	2	-	23	31	38	63	92	154	246
2.2	3	-	-	22	28	45	67	112	180

Three phase (380-460V)

POWER		CABLE TYPE AND MAXIMUM LENGTH (*)							
kW	HP	4x1	4x1,5	4x2	4x2,5	4x4	4x6	4x10	4x16
0.55	0.75	164	246	328	-	-	-	-	-
0.75	1	133	200	266	333	-	-	-	-
1.1	1.5	97	146	195	244	390	-	-	-
1.5	2	72	109	145	180	290	435	-	-
2.2	3	51	78	103	130	207	310	516	-
3	4	41	62	83	104	167	250	416	-
4	5.5	31	46	62	77	124	186	310	496
5.5	7.5	-	33	45	56	90	135	225	360

(*) Maximum cable length with a voltage drop of 3% at 30°C ambient temperature.

If the operating voltage U_i in the installation is different from the nominal voltage U_n , it is possible to calculate the permissible maximum length L_{max} , with the given table length L_{tab} , with the following formula:

$$L_{max} = L_{tab} (U_i / U_n)^2$$

FRANKLIN MOTORS WATER FILLED CABLE SELECTION

EXAMPLE : MOTOR 0.75 kW 220-230 V CABLE LENGTH 73 m - 4x2,5 mm²

Single phase (220-230V)

POWER		CABLE TYPE AND MAXIMUM LENGTH (*)							
kW	HP	4x1	4x1,5	4x2	4x2,5	4x4	4x6	4x10	4x16
0.55	0.75	39	58	77	97	155	-	-	-
0.75	1	29	44	58	73	117	175	-	-
1.1	1.5	20	30	40	50	79	119	198	-
1.5	2	-	23	31	39	62	93	156	249
2.2	3	-	-	23	28	45	68	113	181

Three phase (380-460V)

POWER		CABLE TYPE AND MAXIMUM LENGTH (*)							
kW	HP	4x1	4x1,5	4x2	4x2,5	4x4	4x6	4x10	4x16
0.55	0.75	223	335	446	-	-	-	-	-
0.75	1	167	251	335	418	-	-	-	-
1.1	1.5	120	179	239	299	478	-	-	-
1.5	2	86	129	172	215	343	515	-	-
2.2	3	61	91	122	152	243	365	609	-
3	4	45	67	89	112	179	268	446	-
4	5.5	34	51	68	85	135	203	338	541
5.5	7.5	-	40	53	66	106	159	266	425

(*) Maximum cable length with a voltage drop of 3% at 30°C ambient temperature.

If the operating voltage U_i in the installation is different from the nominal voltage U_n , it is possible to calculate the permissible maximum length L_{max} , with the given table length L_{tab} , with the following formula:

$$L_{max} = L_{tab} (U_i / U_n)^2$$

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