



Japanese Technology since 1912

3D SERIES

Data Book 50Hz



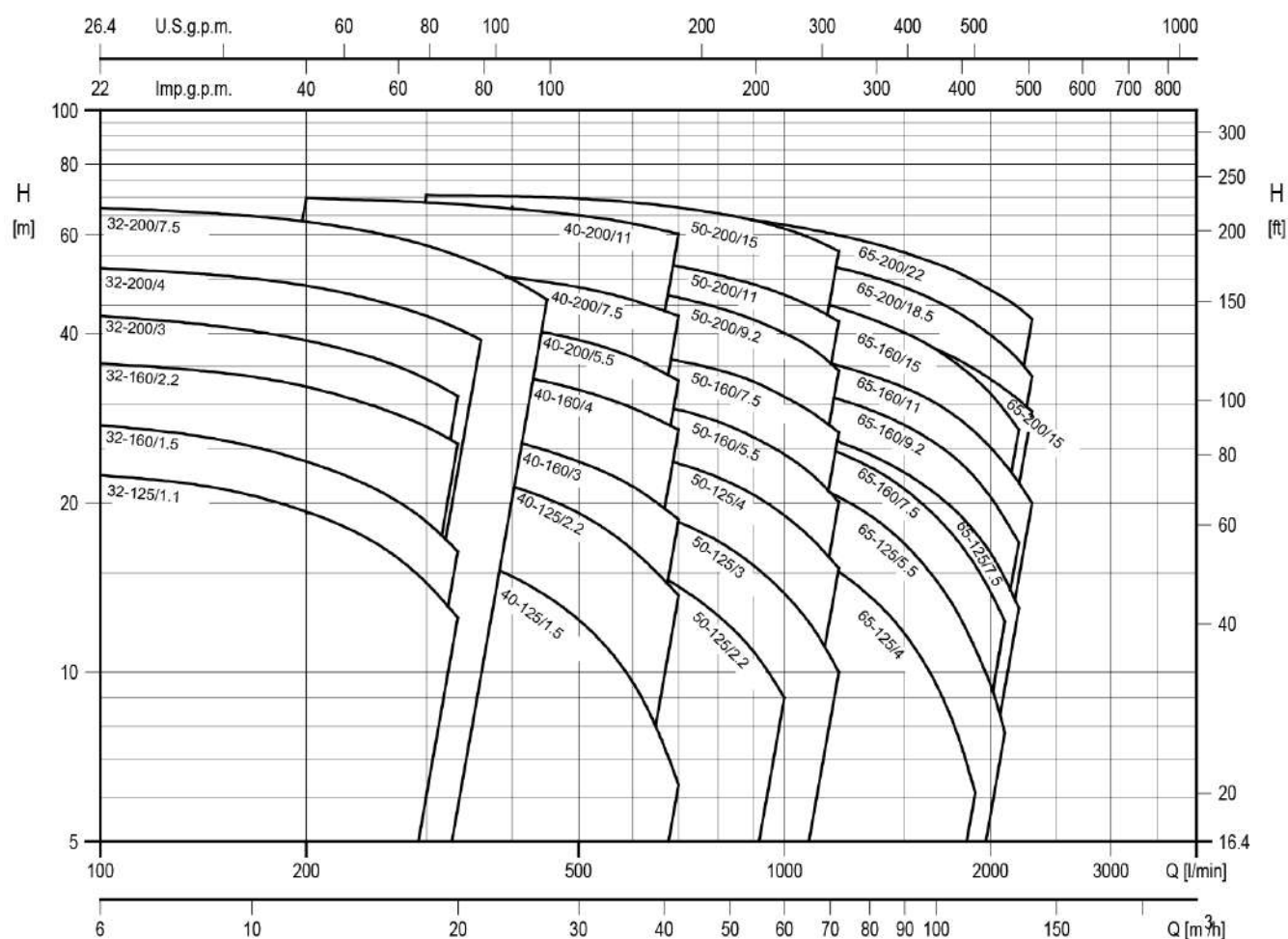
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SPECIFICATIONS

50Hz

Rev. O

Liquid Handled	Type of liquid	Clean water
	Working temperature [°C]	min. -5 max. +90 max. +110 (H, HS, HW, HSW version) max. +120 (E, U3U3EGG, U3CEGG, Q1Q1EGG, Q1U3EGG, Q1AEGG version)
Maximum working pressure [MPa]		1
Construction	Impeller	Closed centrifugal type for 32, 40, 50 series Reinforced laser welding for 40-200/11, 50-200/15 Closed centrifugal three dimensional blades for 65 series
	Shaft seal type	Mechanical seal
	Bearing	Sealed ball bearing
Pipe Connection	Suction	Flange DN 50, 65, 80 according to EN 1092-2
	Discharge	Flange DN 32, 40, 50, 65 according to EN 1092-2
Material	Casing	Cast iron EN-GJL-250-EN 1561
	Impeller	AISI 304 (32, 40, 50 series) AISI 316 made by precision casting (65 series)
	Shaft seal	Ceramic/Carbon/NBR (see MECHANICAL SEAL pages 307-310)
	Shaft	AISI 304 (wet extension)
	Bracket	Aluminium/Cast iron
Accessory	Counterflange	DN 32, 40, 50, 65, 80 (see FITTINGS TABLE page 315)
Applicable standard of test		IS O 9906:2012 – Grade 3B

PERFORMANCE RANGE

SELECTION CHART**3D SERIES 32 SIZE**

Pump type	kW	HP	l/min m³/h	0	100	150	200	250	300	333	360	400	450
				0	6	9	12	15	18	20	21,6	24	27
32-125/1.1(M) *	1,1	1,5		23	22,4	21,2	19,3	17,1	14,4	12,5	-	-	-
32-160/1.5(M) *	1,5	2		28,5	27,5	25,9	23,7	21,3	18,5	16,4	-	-	-
32-160/2.2(M) *	2,2	3		36,7	35,4	34,1	32,2	29,8	27,3	25,5	-	-	-
32-200/3.0	3	4		44	43	41	39	36,5	33	31	-	-	-
32-200/4.0	4	5,5		53	52,5	51	49	46	43	41	39	-	-
32-200/7.5	7,5	10		68	67	65	63	61	57	55	53	50	46

3D SERIES 40 SIZE

Pump type	kW	HP	l/min m³/h	0	200	250	300	350	400	450	500	600	700
				0	12	15	18	21	24	27	30	36	42
40-125/1.5(M) *	1,5	2		19	18,2	17,6	16,8	15,9	14,8	13,7	12,4	9,6	6,3
40-125/2.2(M) *	2,2	3		25	24,4	23,9	23,2	22,4	21,4	20,4	19,2	16,5	13,7
40-160/3.0	3	4		31	29,4	28,7	27,8	26,8	25,8	24,8	23,7	21,4	18,7
40-160/4.0	4	5,5		38,8	37,2	36,5	35,7	34,8	33,8	32,8	31,8	29,5	27
40-200/5.5	5,5	7,5		45,5	44,5	44	43	42	41	40	39	36,3	33
40-200/7.5	7,5	10		55	53,5	53	52	51,5	50,5	49,5	48,5	46	43
40-200/11	11	15		71	70	69	68,5	67,5	67	66	65	63	60

3D SERIES 50 SIZE

Pump type	kW	HP	l/min m³/h	0	400	500	600	700	800	900	1000	1100	1200
				0	24	30	36	42	48	54	60	66	72
50-125/2.2(M) *	2,2	3		19,5	18	17	15,7	14,2	12,6	10,9	9	-	-
50-125/3.0	3	4		22,5	21,5	20,8	19,8	18,5	17,1	15,5	13,8	12	10
50-125/4.0	4	5,5		26,5	25,8	25,3	24,5	23,5	22,2	20,7	19	17,2	15,3
50-160/5.5	5,5	7,5		33	32	31,5	30,5	29,3	27,9	26,2	24,4	22,4	20
50-160/7.5	7,5	10		39,5	38,2	37,6	36,9	35,8	34,5	32,9	30,9	28,9	26,7
50-200/9.2	9,2	12,5		51,5	-	49,5	48	46,5	44,5	42,5	40	37,6	34,4
50-200/11	11	15		57,5	-	55,5	54,5	52,5	51	49	47	44,5	42
50-200/15	15	20		71	-	69,5	68,5	67	65,5	63,5	61,5	59	56

3D SERIES 65 SIZE

Pump type	kW	HP	l/min m³/h	0	600	700	1000	1300	1600	1900	2100	2200	2300
				0	36	42	60	78	96	114	126	132	138
65-125/4.0	4	5,5		22	20,4	19,8	17,2	14	10,4	6	-	-	-
65-125/5.5	5,5	7,5		26	-	25	22,5	19,4	15,5	11	8	-	-
65-125/7.5	7,5	10		31	-	29,6	27,5	24,7	21,5	17,8	14,7	13	-
65-160/7.5	7,5	10		31,6	-	29	26,6	23,5	19,8	15,5	12,3	-	-
65-160/9.2	9,2	12,5		36,5	-	34,7	32,4	29,6	26,3	22,2	18,8	17	-
65-160/11	11	15		40,5	-	39	37	34	31	27	23	22	20
65-160/15	15	20		48	-	46	44	41,5	38,4	34,6	31,9	30,5	29
65-200/15	15	20		54	-	51	47	43	38,6	33,3	29,2	27	-
65-200/18.5	18,5	25		60	-	58	55	51	47	41,5	37,9	35,9	33,6
65-200/22	22	30		68	-	65,5	62,5	58,5	54,5	49,5	46	44,5	42,5

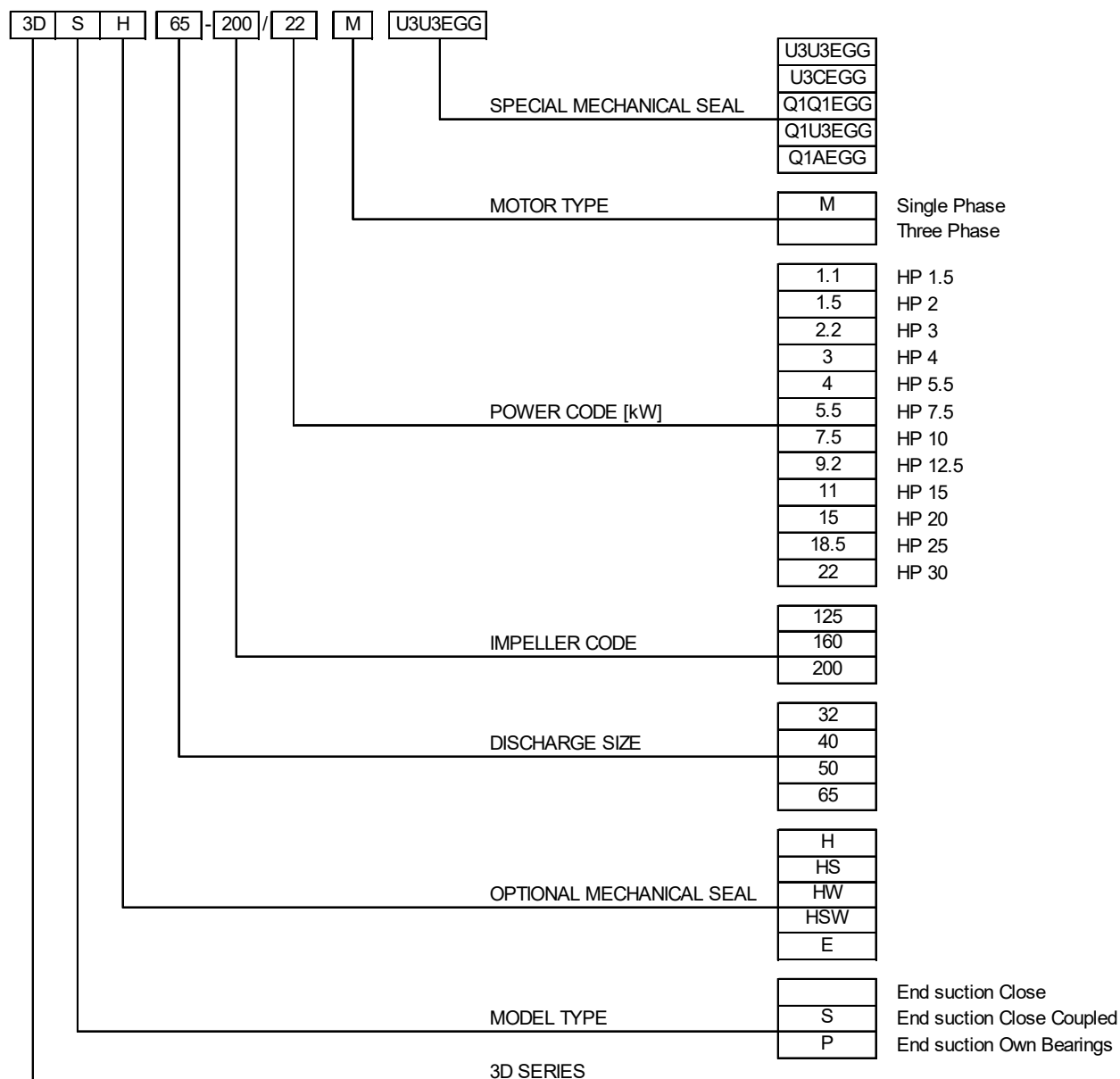
* Single phase version only for 3D type

TYPE KEY

50Hz

Rev.0

TYPE KEY



CURVES SPECIFICATIONS

The specifications below qualify the curves shown on the following pages.

Tolerances according to Test standard: ISO 9906:2012 – Grade 3B

The curves refer to effective speed of asynchronous motors at 50 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)

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

CURVES SPECIFICATIONS

50Hz

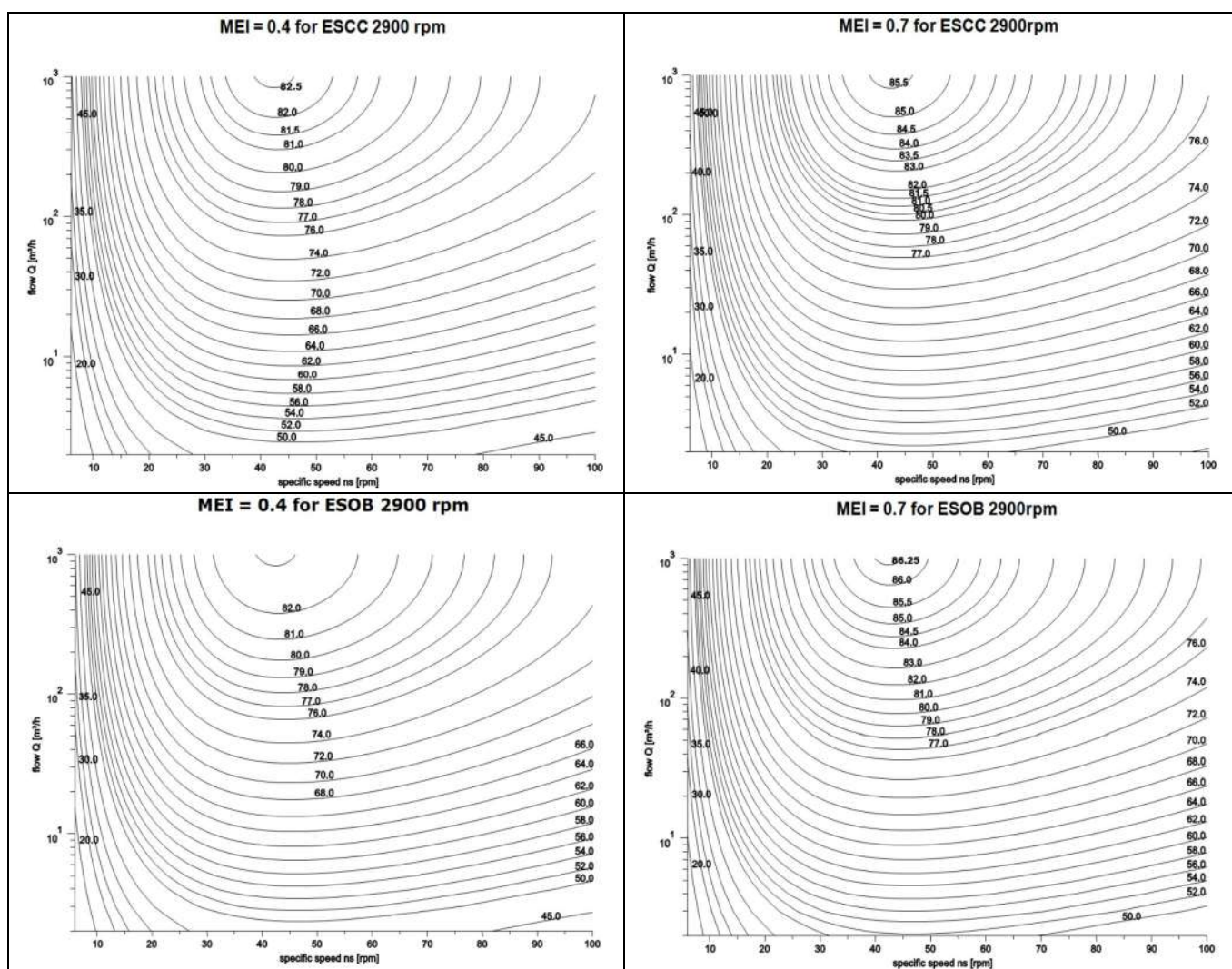
Rev. 0

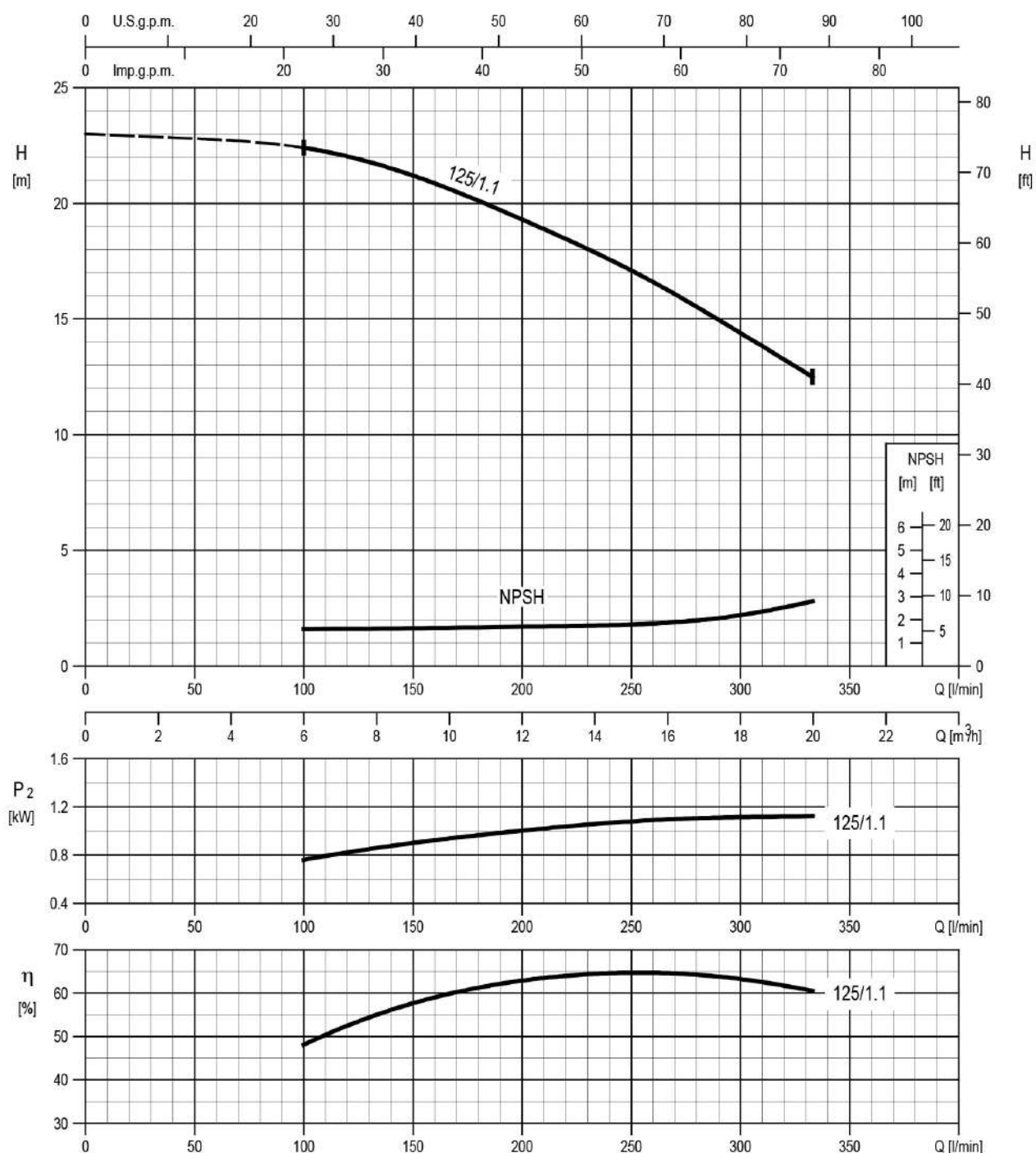
MEI INDEX SPECIFICATIONS

The minimum 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.

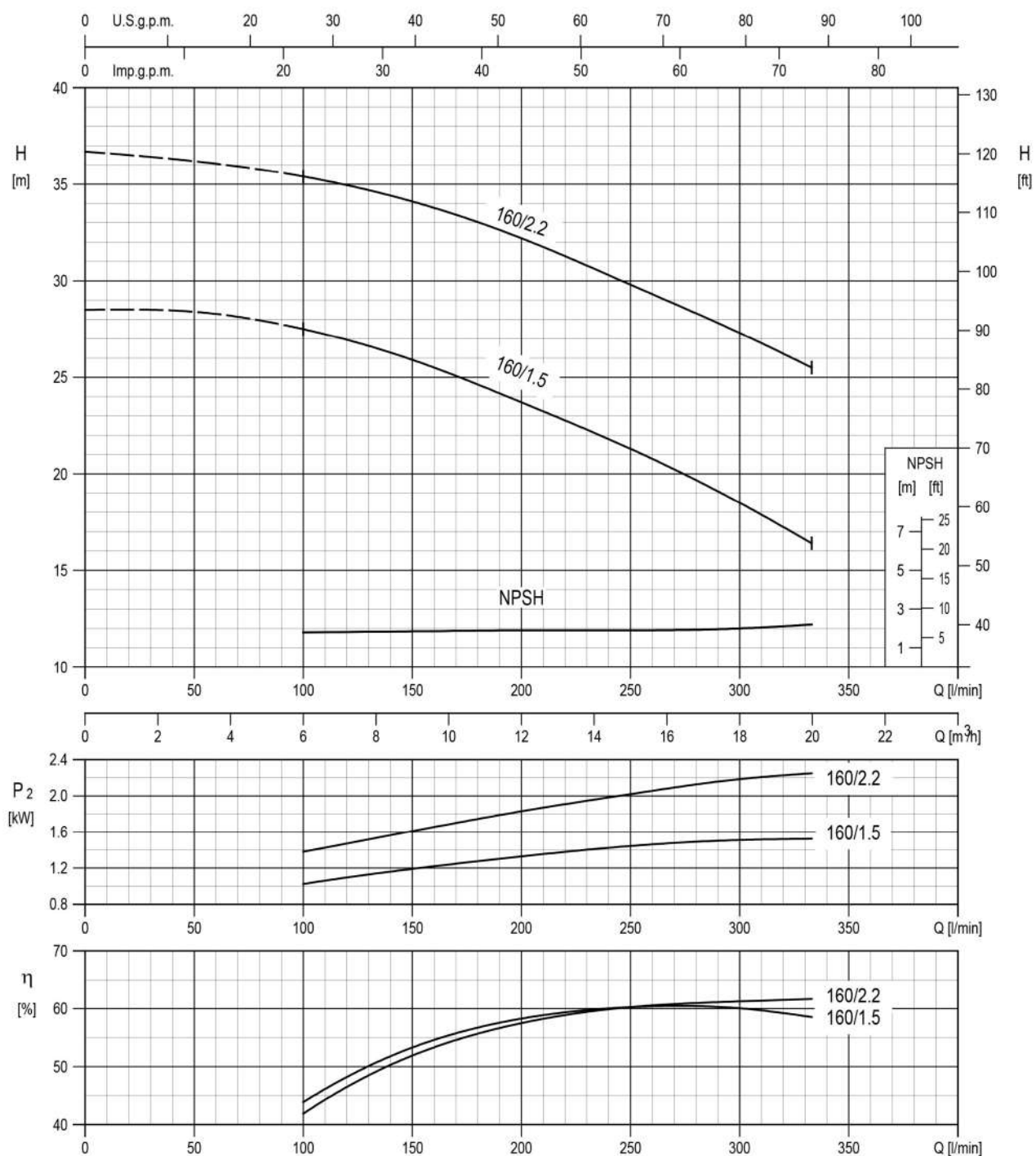
The efficiency of a pump with trimmed impeller is usually lower than that of a pump with the full impeller diameter. The trimming of the impeller will adapt the pump to a fixed duty point, leading to a reduced energy consumption. The minimum efficiency index (MEI) is based on the full impeller diameter.

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

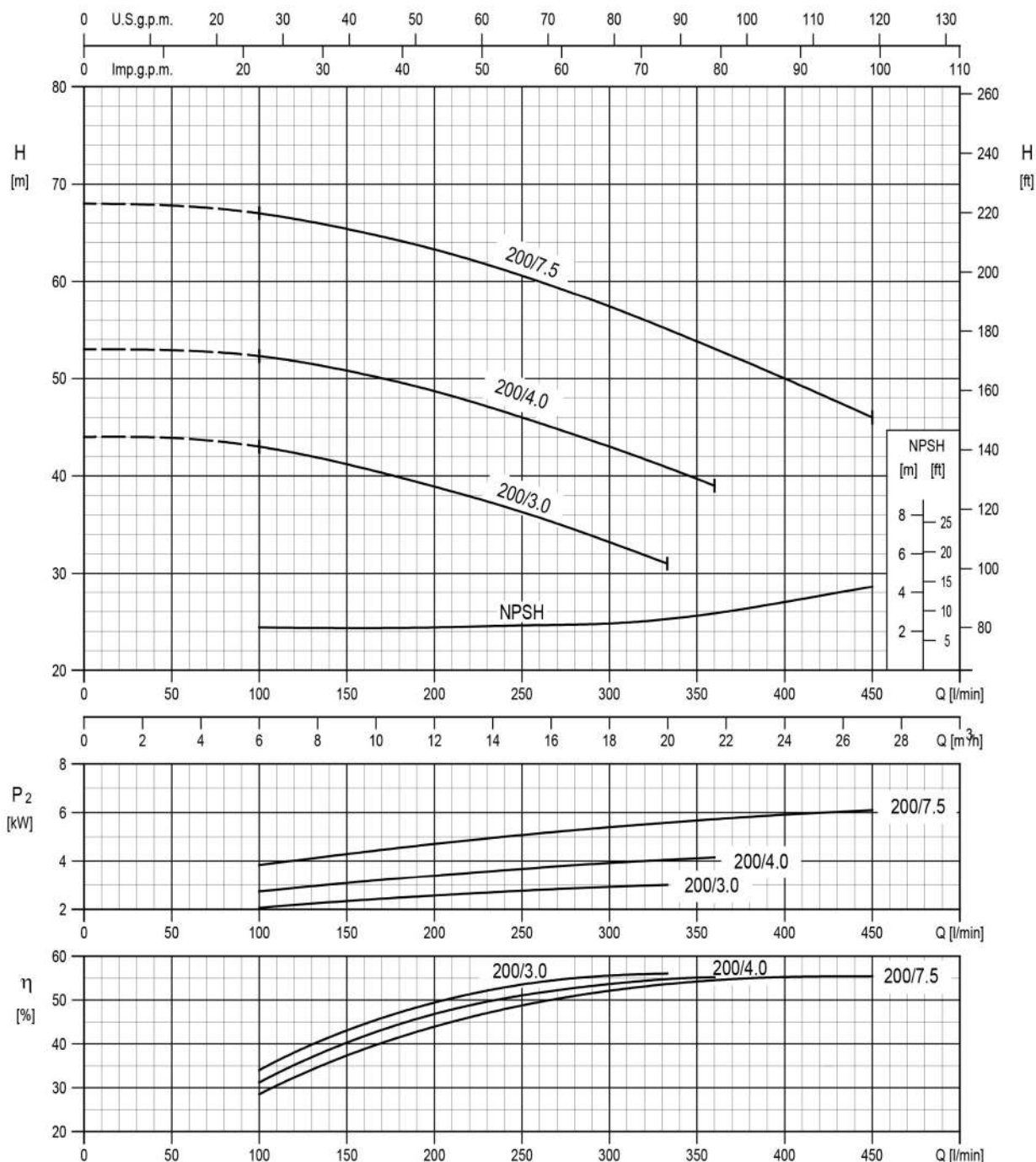


32-125/1.1 (1.1kW) MEI > 0.70 – Impeller diameter = 133 mmRotation speed $\approx 2900 \text{ min}^{-1}$

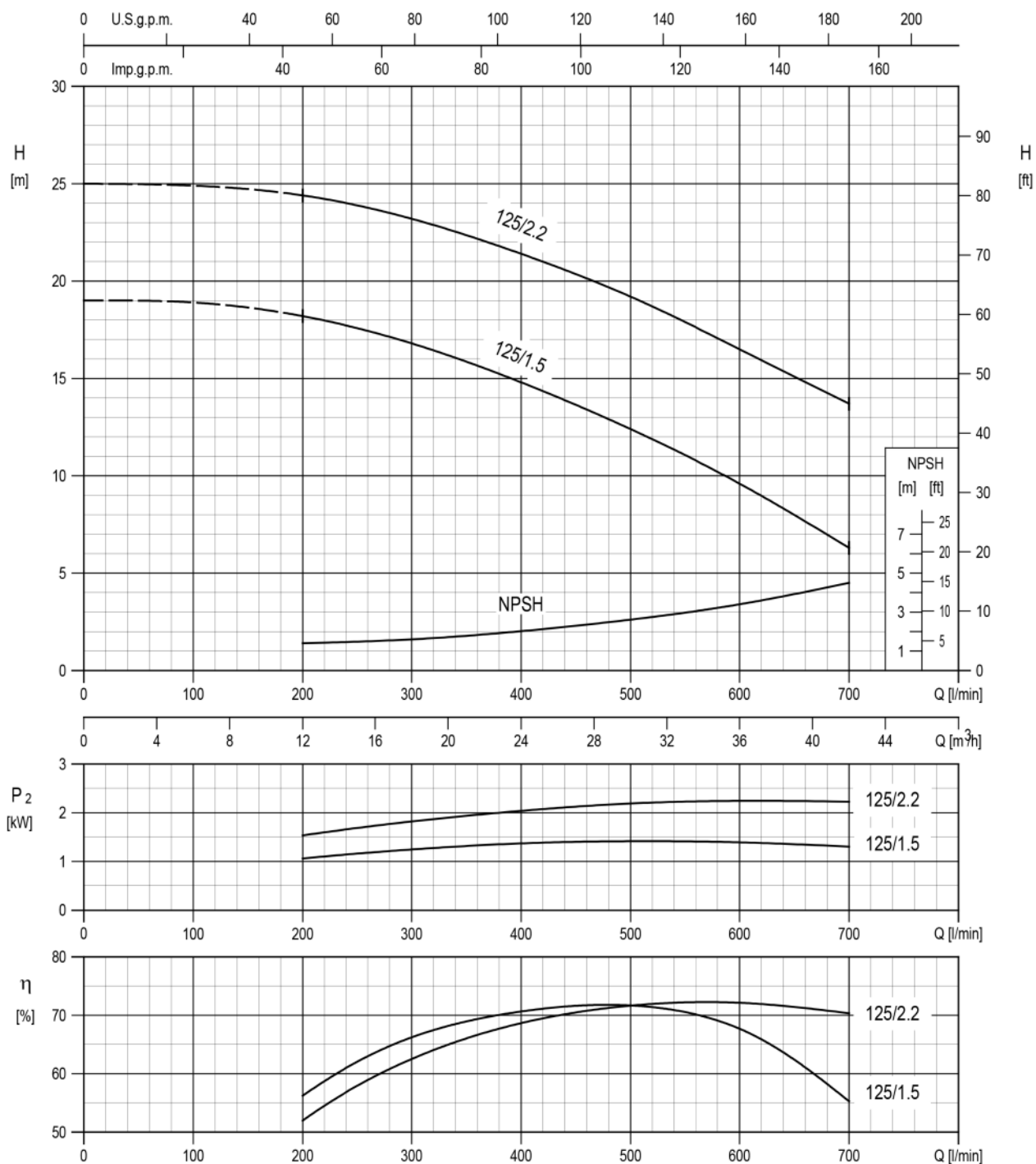
Test standard: ISO 9906:2012 – Grade 3B

32-160/1.5 (1.5kW) MEI > 0.70 – Impeller diameter = 151 mm**32-160/2.2 (2.2kW) MEI > 0.70 – Impeller diameter = 166 mm**Rotation speed $\approx 2900 \text{ min}^{-1}$

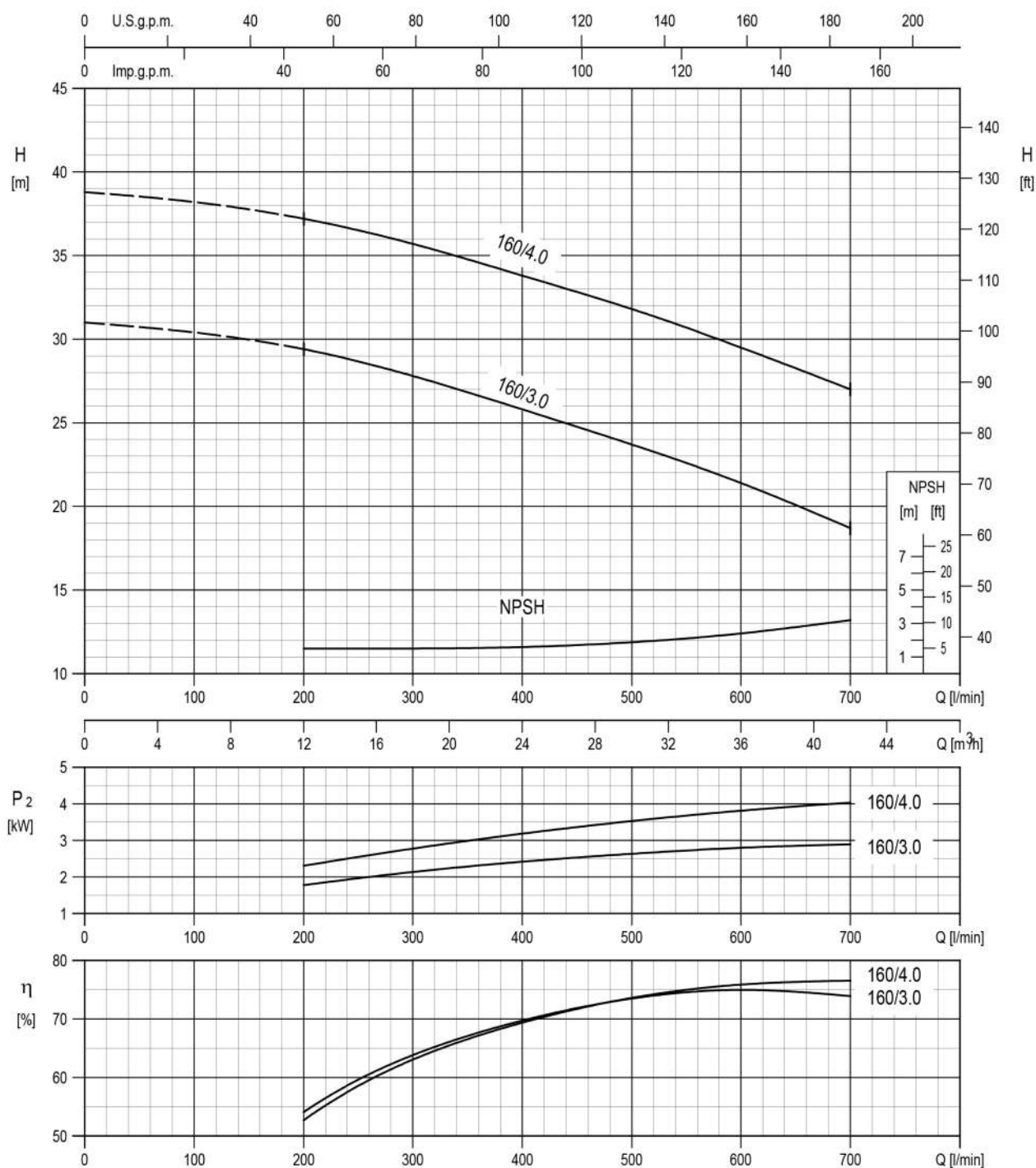
Test standard: ISO 9906:2012 – Grade 3B

32-200/3.0 (3.0kW) MEI > 0.40 – Impeller diameter = 186 mm**32-200/4.0 (4.0kW) MEI > 0.40 – Impeller diameter = 200 mm****32-200/7.5 (7.5kW) MEI > 0.50 – Impeller diameter = 224 mm**

Rotation speed $\approx 2900 \text{ min}^{-1}$
 Test standard: ISO 9906:2012 – Grade 3B

40-125/1.5 (1.5kW) MEI > 0.50 – Impeller diameter = 125 mm**40-125/2.2 (2.2kW) MEI > 0.50 – Impeller diameter = 140 mm**Rotation speed $\approx 2900 \text{ min}^{-1}$

Test standard: ISO 9906:2012 – Grade 3B

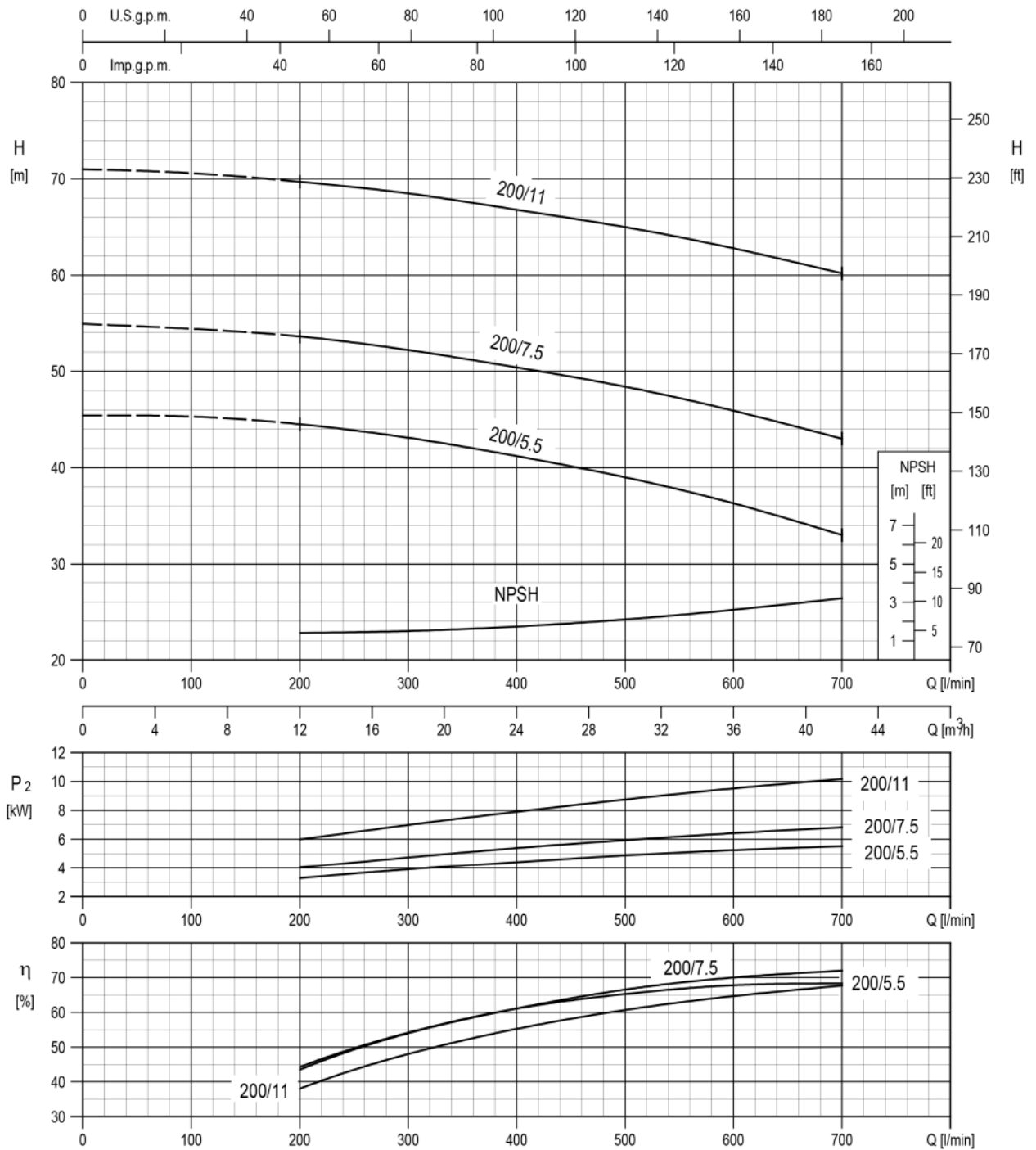
40-160/3.0 (3.0kW) MEI > 0.70 – Impeller diameter = 151 mm**40-160/4.0 (4.0kW) MEI > 0.70 – Impeller diameter = 166 mm**Rotation speed $\approx 2900 \text{ min}^{-1}$

Test standard: ISO 9906:2012 – Grade 3B

40-200/5.5 (5.5kW) MEI > 0.70 – Impeller diameter = 183 mm

40-200/7.5 (7.5kW) MEI > 0.70 – Impeller diameter = 200 mm

40-200/11 (11kW) MEI > 0.70 – Impeller diameter = 224 mm



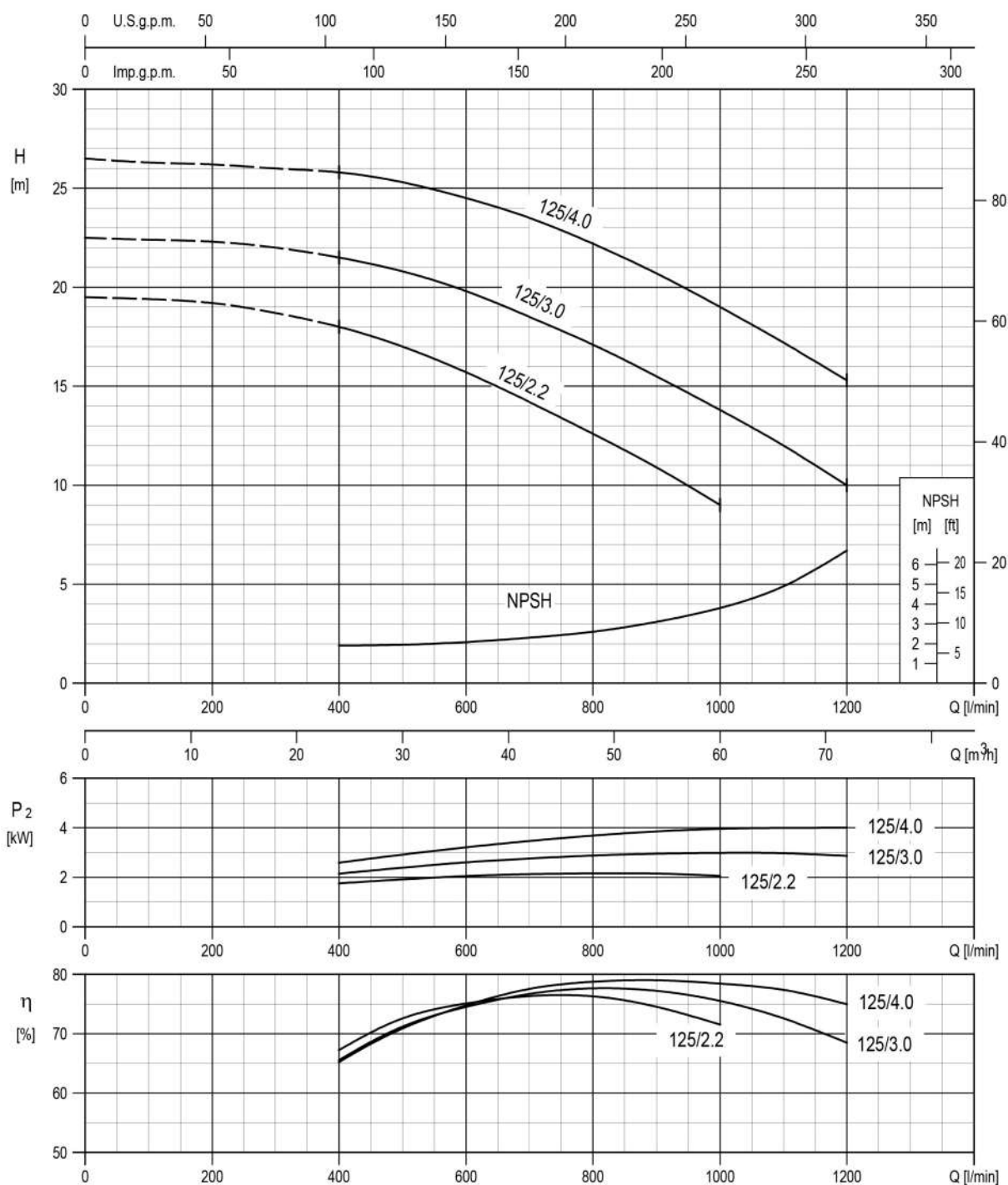
Rotation speed $\approx 2900 \text{ min}^{-1}$

Test standard: ISO 9906:2012 – Grade 3B

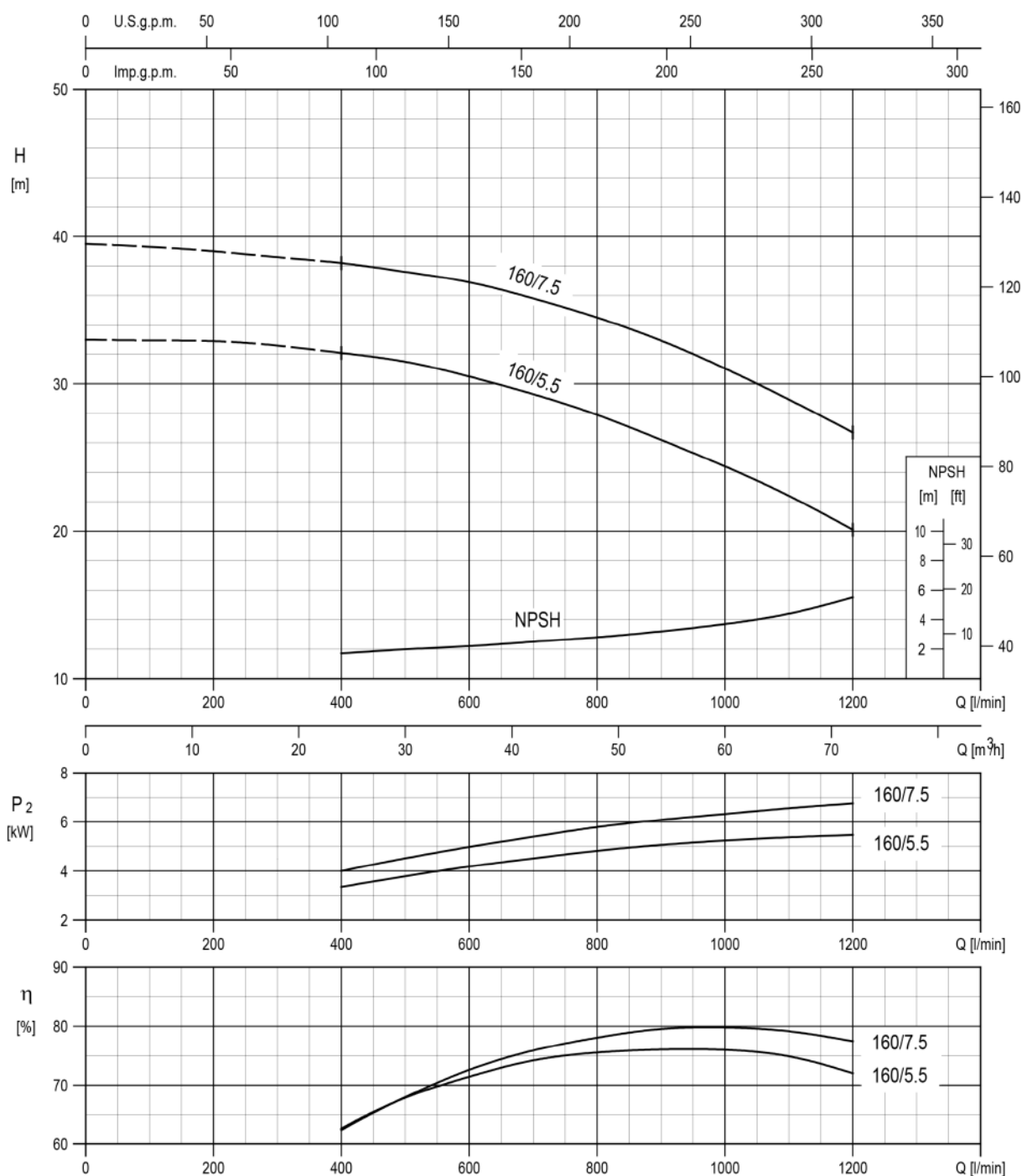
50-125/2.2 (2.2kW) MEI > 0.60 – Impeller diameter = 126 mm

50-125/3.0 (3.0kW) MEI > 0.60 – Impeller diameter = 131 mm

50-125/4.0 (4.0kW) MEI > 0.60 – Impeller diameter = 140 mm

Rotation speed ≈ 2900 min⁻¹

Test standard: ISO 9906:2012 – Grade 3B

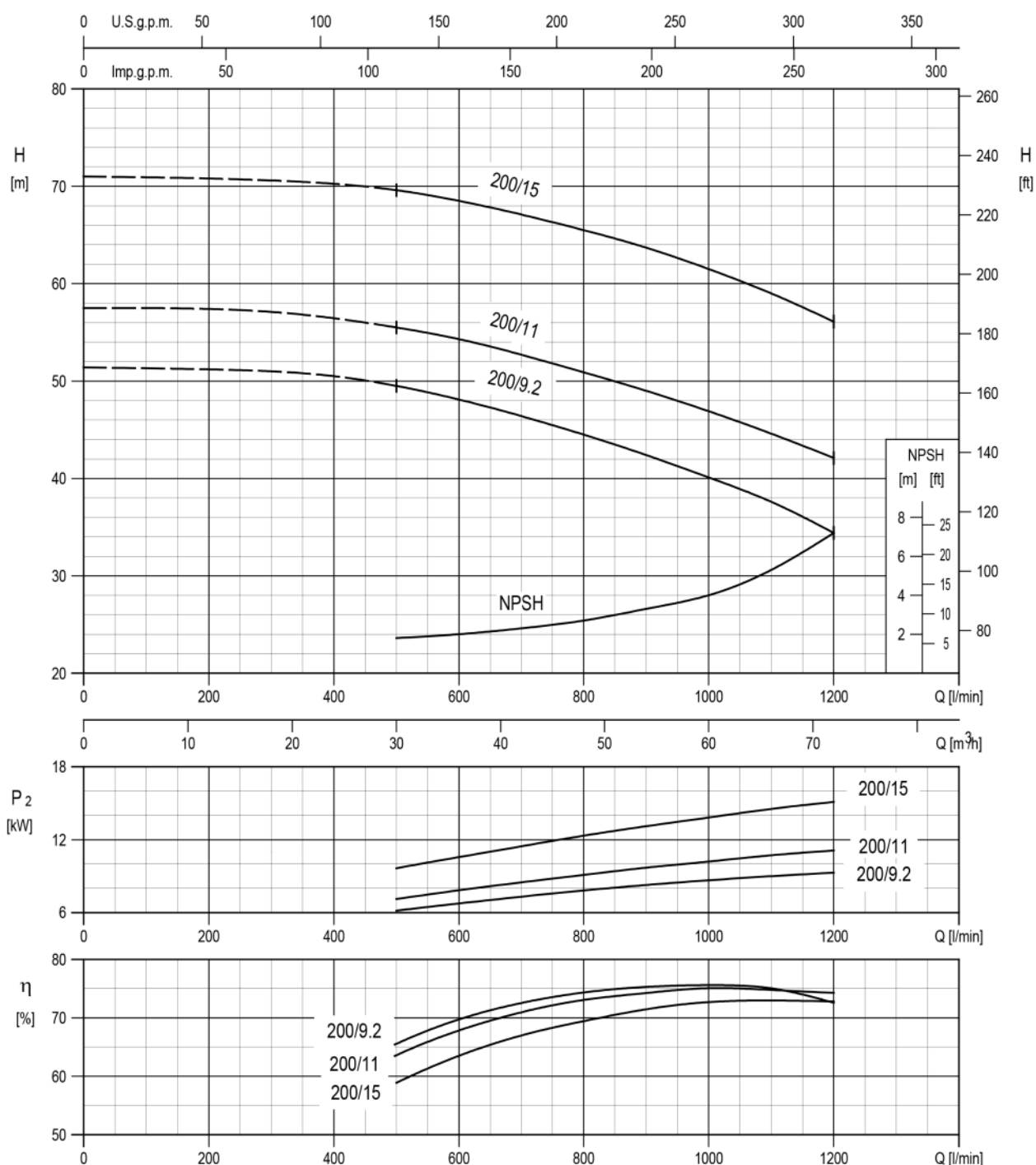
50-160/5.5 (5.5kW) MEI > 0.70 – Impeller diameter = 154 mm**50-160/7.5 (7.5kW) MEI > 0.70 – Impeller diameter = 166 mm**Rotation speed $\approx 2900 \text{ min}^{-1}$

Test standard: ISO 9906:2012 – Grade 3B

50-200/9.2 (9.2kW) MEI > 0.70 – Impeller diameter = 191 mm

50-200/11 (11kW) MEI > 0.70 – Impeller diameter = 200 mm

50-200/15 (15kW) MEI > 0.70 – Impeller diameter = 224 mm



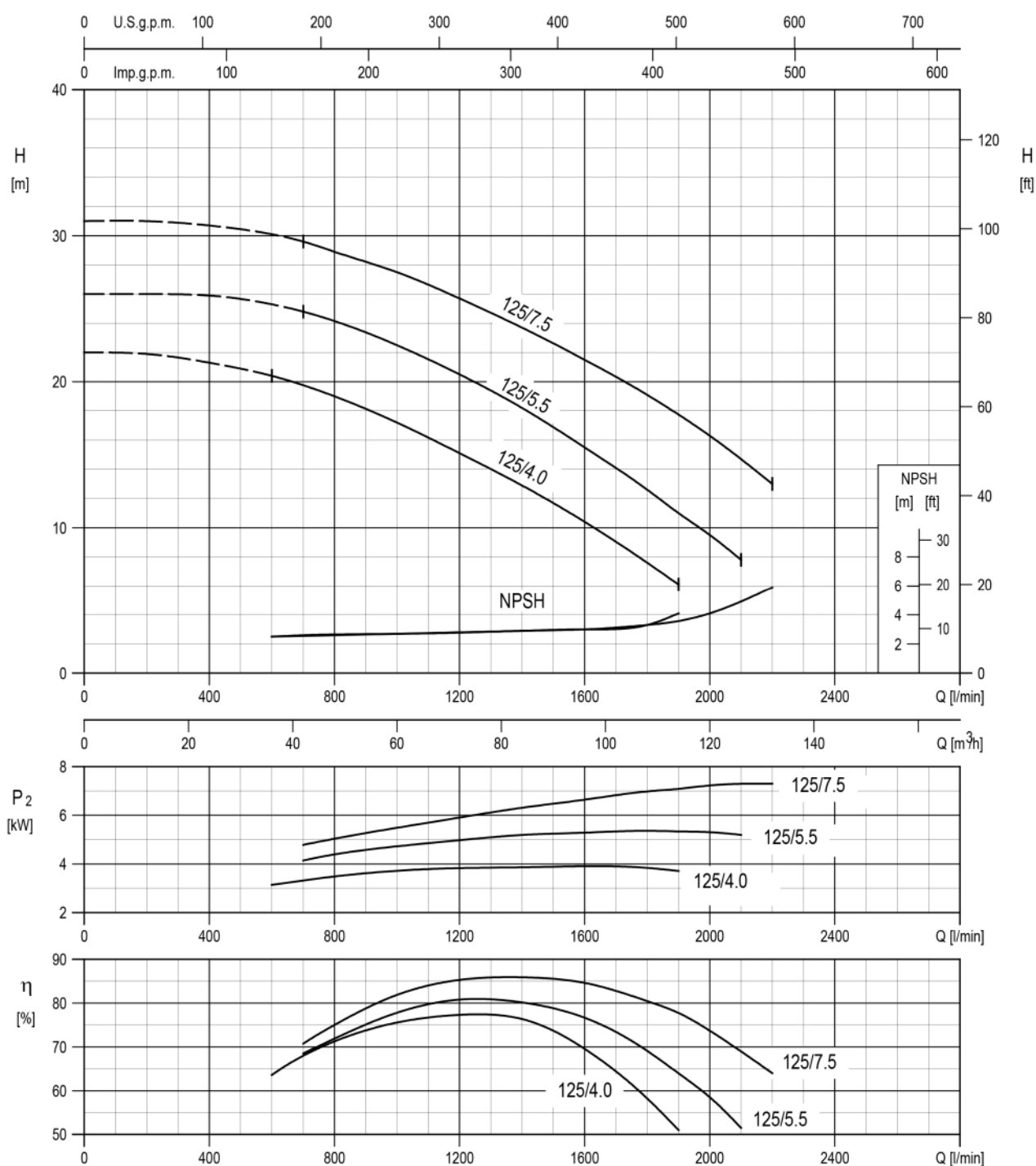
Rotation speed $\approx 2900 \text{ min}^{-1}$

Test standard: ISO 9906:2012 – Grade 3B

65-125/4.0 (4.0kW) MEI > 0.70 – Impeller diameter = 128 mm

65-125/5.5 (5.5kW) MEI > 0.70 – Impeller diameter = 138 mm

65-125/7.5 (7.5kW) MEI > 0.70 – Impeller diameter = 149 mm



Rotation speed ≈ 2900 min⁻¹

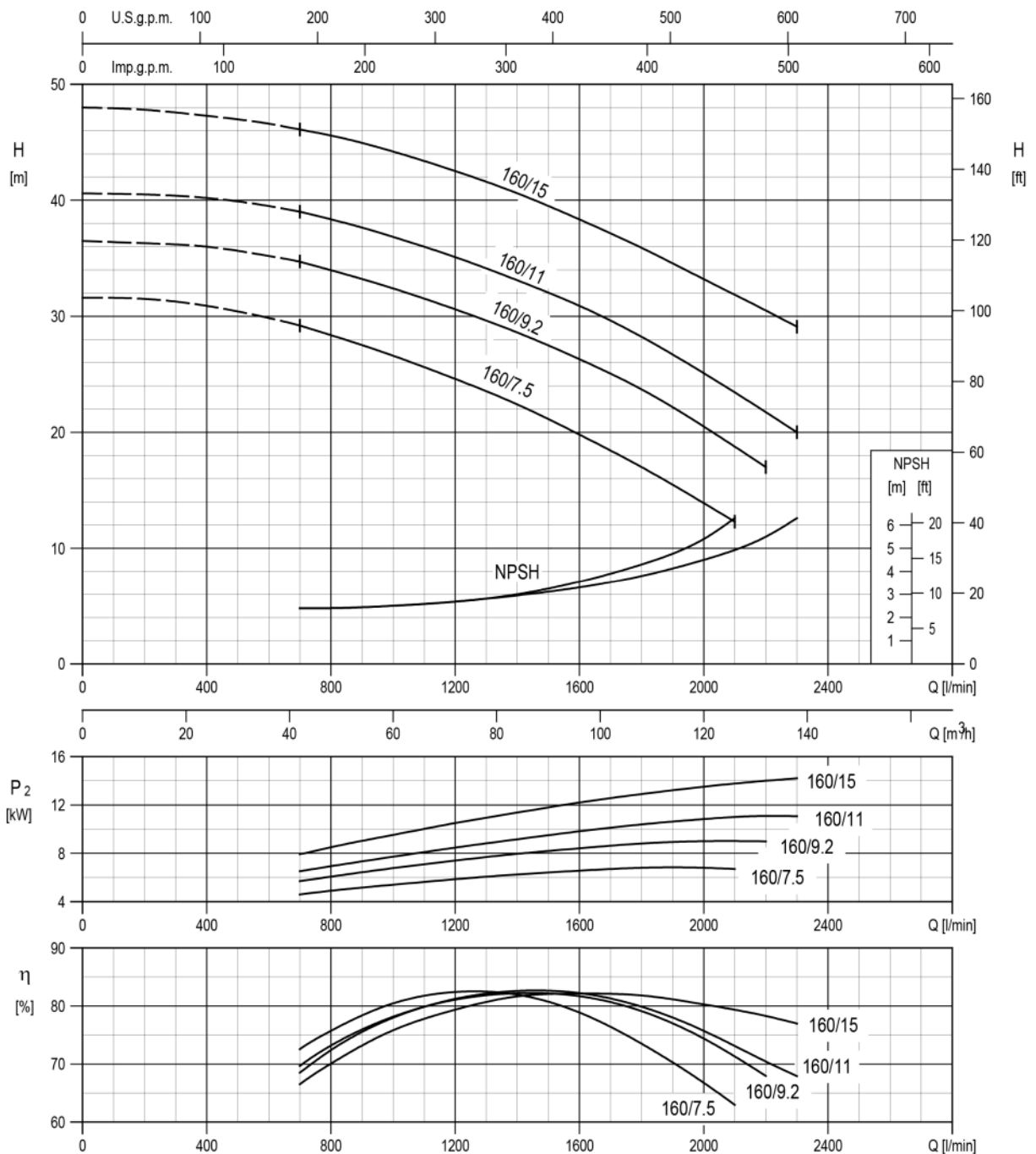
Test standard: ISO 9906:2012 – Grade 3B

65-160/7.5 (7.5kW) MEI > 0.70 – Impeller diameter = 153 mm

65-160/9.2 (9.2kW) MEI > 0.70 – Impeller diameter = 160 mm

65-160/11 (11kW) MEI > 0.70 – Impeller diameter = 168 mm

65-160/15 (15kW) MEI > 0.70 – Impeller diameter = 178 mm



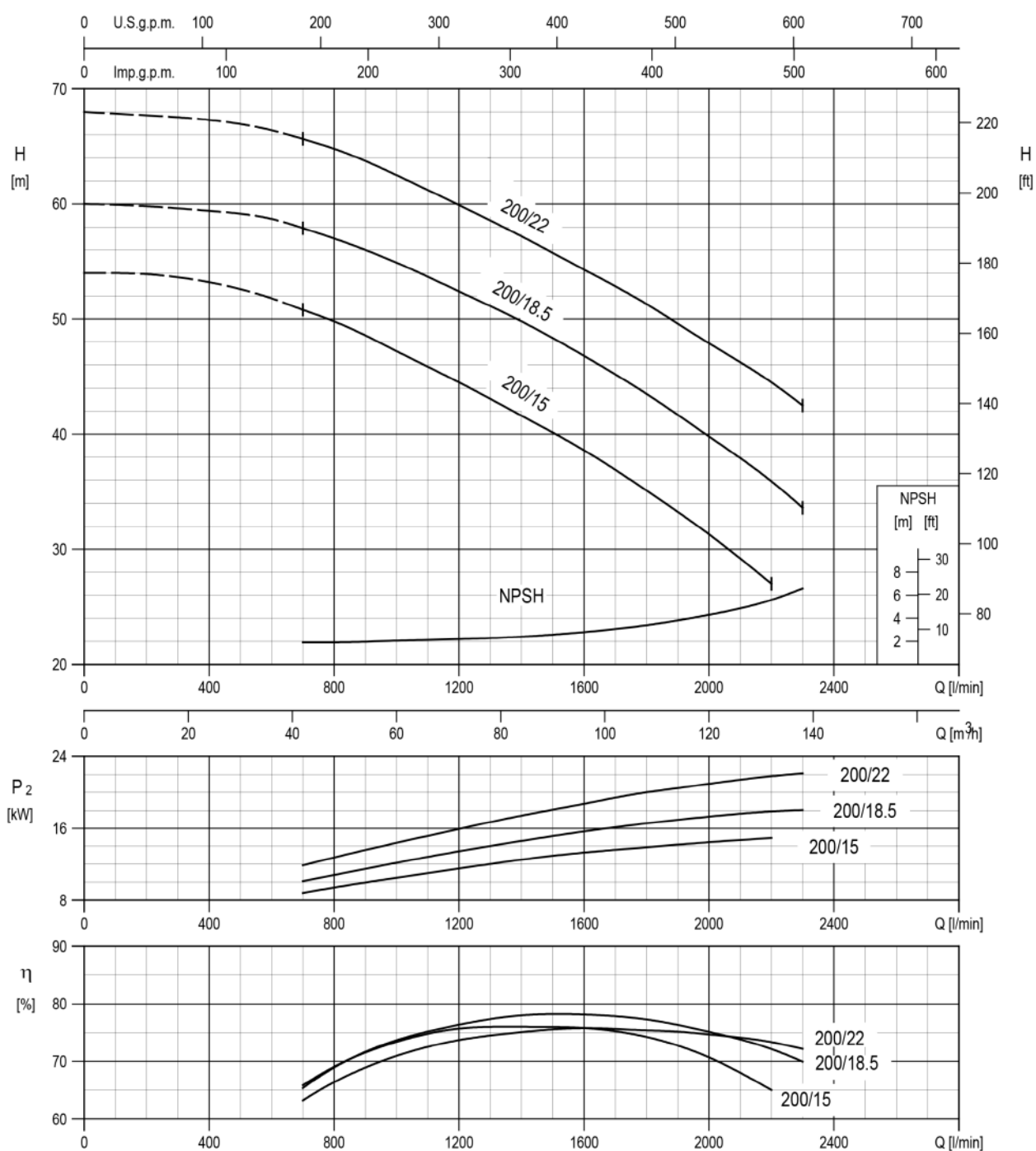
Rotation speed $\approx 2900 \text{ min}^{-1}$

Test standard: ISO 9906:2012 – Grade 3B

65-200/15 (15kW) MEI > 0.60 – Impeller diameter = 190 mm

65-200/18.5 (18.5kW) MEI > 0.60 – Impeller diameter = 201 mm

65-200/22 (22kW) MEI > 0.60 – Impeller diameter = 212 mm

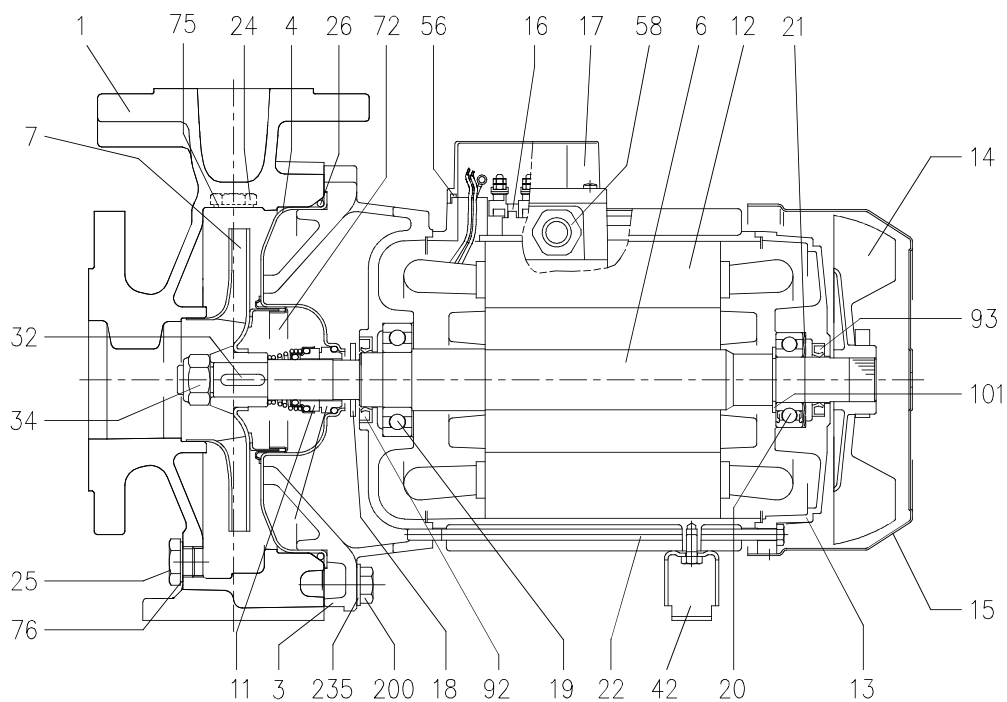


Rotation speed $\approx 2900 \text{ min}^{-1}$

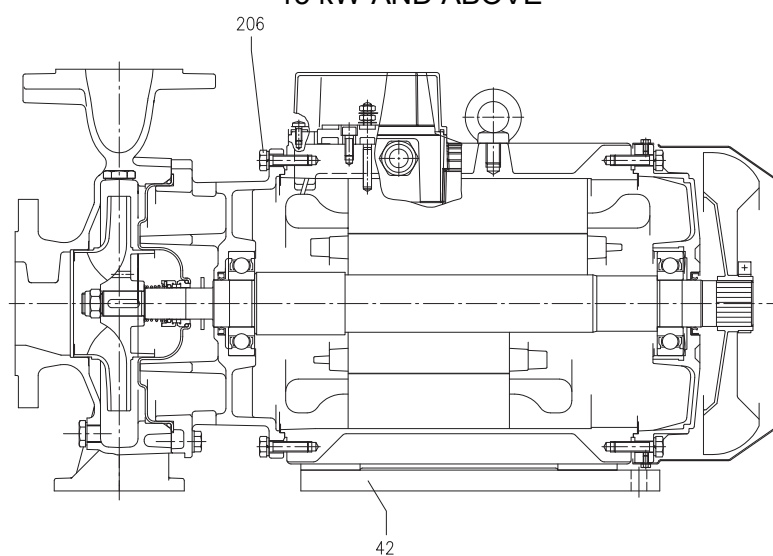
Test standard: ISO 9906:2012 – Grade 3B

3D SECTIONAL VIEW DRAWING

UP TO 11 kW



15 kW AND ABOVE



3D SECTIONAL VIEW TABLE

N°	PART NAME	MATERIAL	DIMENSIONS	STANDARD	Q.TY
1	Casing	Cast iron EN-GJL-250-EN 1561			1
3	Motor bracket [1]	-			1
4	Casing cover	EN 1.4301 (AISI 304)			1
6	Shaft with rotor - Wet extension	EN 1.4301 (AISI 304)			1
7	Impeller [2]	-			1
11	Mechanical seal [3]	-			1
12	Motor frame with stator	-			1
13	Motor cover	Aluminium			1
14	Fan	PA			1
15	Fan cover	Fe P04 Galvanized			1
16	Terminal	-			1
17	Terminal box cover	Aluminium (three phase version)			1
18	Splash ring Up to 11 kW 15 kW and above	NBR	40x21.5x2 50x29.5x3	EBARA DRAWING	1
19	Bearing [10]	-			1
20	Bearing [10]	-			1
21	Adjusting ring	Steel C70			1
22	Tie rod Up to 3 kW For 4 - 5.5 - 7.5 kW 9.2 e 11kW Screw 15 kW and above	Fe 42 Galvanized Gv. Steel 8.8 strenght class ISO 898-1	M5 M6 M8 M10x40	EBARA DRAWING UNI 5739	4
24	Priming plug	Brass	G 3/8" L=8		1
25	Draing plug	Brass	G 3/8" L=8		1
26	O-ring 32-125, 40-125 32-160, 40-160, 50-125, 65-125 32-200, 40-200, 50-160, 50-200, 65-160, 65-200 [4]	NBR/FPM/EPDM	158.11x5.34 183.52x5.34 227.96x5.34	OR 6625 OR 6720 OR 6895	1
32	Key Up to 11 kW 50-200/15 15 kW and above	EN 1.4401 (AISI 316)	A 6x6x25 A 8x7x30	UNI 6604	1
34	Impeller nut Up to 11kW 50-200/15 15 kW and above	EN 1.4301 (AISI 304)	M16x1.5 M18x1.5 M20x1.5	UNI 7474	1
42	Foot	Aluminium / Galvanized steel		EBARA DRAWING	[5]
56	Box gasket	NBR			1
58	Cable gland	-			[6]
72	Casing ring [7]	EN 1.4301 (AISI 304)			1
75	Washer	Aluminium	22x17x1.5	EBARA DRAWING	1
76	Washer	Aluminium			1
92	Lip seal Up to 3kW From 4 to 7.5 kW From 9.2 kW to 11 kW From 15 kW to 22 kW	-	25x40x7 30x47x7 40x55x7 45x60x7	DIN 3760 without spring	1
93	Lip seal Up to 4 kW From 5.5 kW to 7.5 kW From 9.2 kW to 11 kW From 15 kW to 22 kW	-	25x40x7 30x47x7 40x55x7 45x60x7	DIN 3760 without spring	1
101	Snap ring [8]	Carbon tool steels TC 80	Ø 40 M 8x30	UNI 7435	1 8
200	Screw 32-125, 40-125 32-160, 40-160, 50-125, 65-125 32-200, 40-200, 50-160 50-200, 65-160, 65-200	Gv. Steel 8.8 strenght class ISO 898-1	M 10x35	UNI 5739	10 12
235	Washer 32-125, 40-125 32-160, 40-160, 50-125, 65-125 32-200, 40-200, 50-160 50-200, 65-160, 65-200	Galvanized Steel	8.4x17 10.5x21	UNI 6592	8 10 12
206	Screw for bracket [9]	Gv. Steel 8.8 strenght class ISO 898-1	M 10x40	UNI 5739	4

[1] Cast iron EN-GJL-200-EN 1561 for 3D 32-200/3 and models with 15, 18.5, 22 kW motor
Aluminum AL-EN-1706-AC-46000-D for all the others;

[2] EN 1.4301 (AISI 304) for 32, 40, 50 series

EN 1.4401 (AISI 316) for 65 series;

[3] See **MECHANICAL SEAL** pages from 307 to 310

[4] See **MECHANICAL SEAL**, "O-ring" column, pages from 307 to 310

[5] 0 for 65-160/15 kW;

1 for pumps up to 11 kW
2 for 65-200/15, 18.5, 22 kW

[6] 1 for pumps with motor up to 11 kW
2 for pumps with 15 kW motor and above

[7] Only for: 32-200, 40-200, 50-160, 50-200/9.2, 50-200/11

[8] Only for pumps with 9.2 and 11 kW motor

[9] Only for pumps with 15 kW motor and above

[10] See **3D BEARINGS** page 311