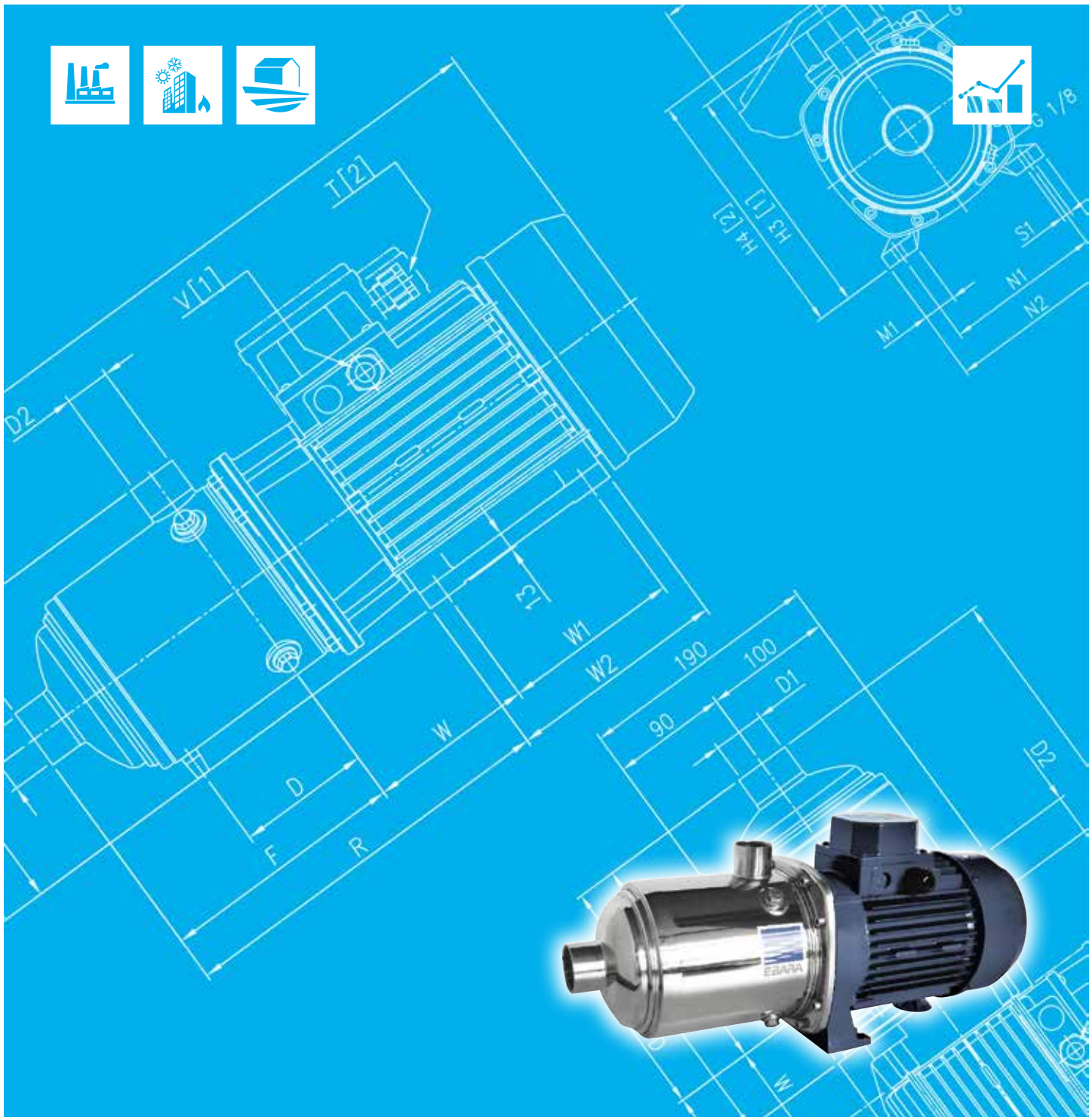




Japanese Technology since 1912


# MATRIX

Data Book 50Hz



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**SPECIFICATIONS**

50Hz

Rev. H

PUMP			
Liquid Handled	Type of liquid	Water, moderate aggressive solutions, glycol solutions, moderate viscous fluids	
	Temperature [°C]	min.-15 max.+85 (STD*, H**, HS** version) max.+110 (-TE**, U3Q1EGG**, Q1AEGG** version)	
Max chlorine content		500 ppm	
Maximum working pressure [MPa]		1	
Construction	Impeller	Closed centrifugal type	
	Motor bearings	Screened ball bearing – greased for life	
	Pump bearings	n° 7-8-9 impellers (Matrix 3-5) n° 6 impellers (Matrix 10) n° 5-6 impellers (Matrix 18)	Type: Sleeve Shaft sleeve: Tungsten Carbide Bearing: Ceramic
Pipe Connection	Suction	G 1" (Matrix 3) UNI ISO 228 G 1"¼ (Matrix 5) UNI ISO 228 G 1"½ (Matrix 10) UNI ISO 228 G 2" (Matrix 18) UNI ISO 228	
	Discharge	G 1" (Matrix 3) UNI ISO 228 G 1" (Matrix 5) UNI ISO 228 G 1"¼ (Matrix 10) UNI ISO 228 G 1"½ (Matrix 18) UNI ISO 228	
Material	Casing	EN 1.4301 (AISI 304)	
	Impeller	EN 1.4301 (AISI 304)	
	Intermediate casing	EN 1.4301 (AISI 304)	
	O-Rings	EPDM	
	Shaft seal	Ceramic / Carbon / EPDM	
	Liner ring	EN 1.4301 (AISI 304) + PPS	
	Casing cover	EN 1.4301 (AISI 304)	
	Shaft	EN 1.4301 (AISI 304) wet extension	
Bracket	EN AB-AISi11Cu2(Fe) (Die cast Aluminium)		
Applicable standard of test		ISO 9906:2012 - Grade 3B	

\* Approval for drinking water application  
WRAS Approved product



\*\* Approval for drinking water application  
DM174/2004

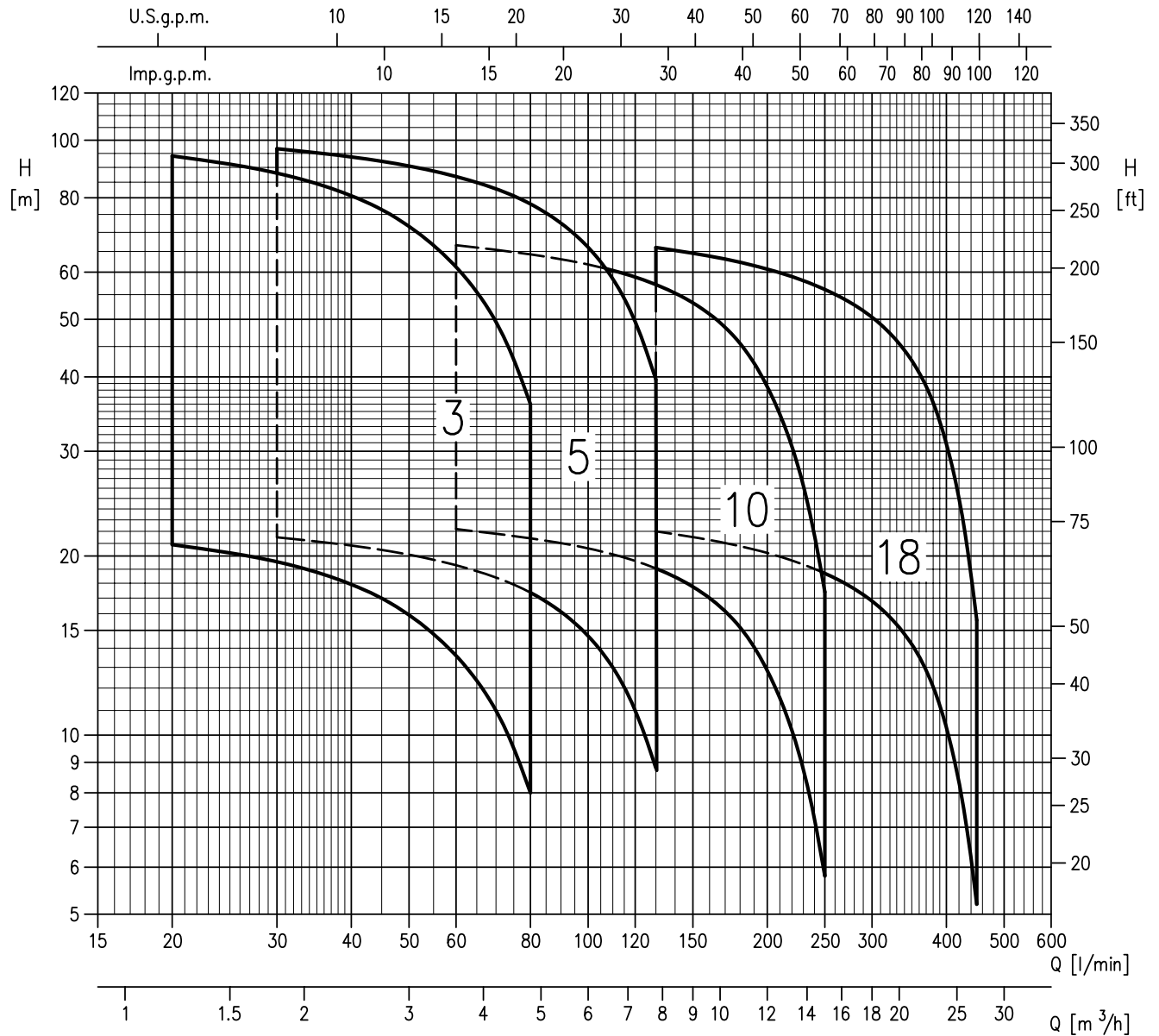
**SPECIFICATIONS**

50Hz

Rev. H

<b>MOTOR</b>		
Type	Electric - TEFC	
	Single Phase	Three Phase
Efficiency level (Reg. 640/2009)	-	- from 0.45 kW up to 0.65 kW IE3 from 0.75 kW up to 4.0 kW
No. of Poles	2	
Rotation speed [min <sup>-1</sup> ]	≈ 2850	
Insulation Class	F	
Max temperature environment [°C]	40	
Protection degree (CEI EN 60034-5)	IP 55	
Power rating	[kW]	0.45 ÷ 2.2
	[HP]	0.6 ÷ 3.0
Frequency	[Hz]	50
	[V]	230 ±10%
Voltage		230/400 ±10%
Capacitor	Built in	-
Overload protection	Built in	Provided by the user
Casing material	Aluminium	
Base material / Motor support	Aluminium	
Dimensions of cable entry	PG11 – M20x1.5	PG11 – PG13.5
		M16x1.5 – M20x1.5

PERFORMANCE RANGE



SELECTION CHART

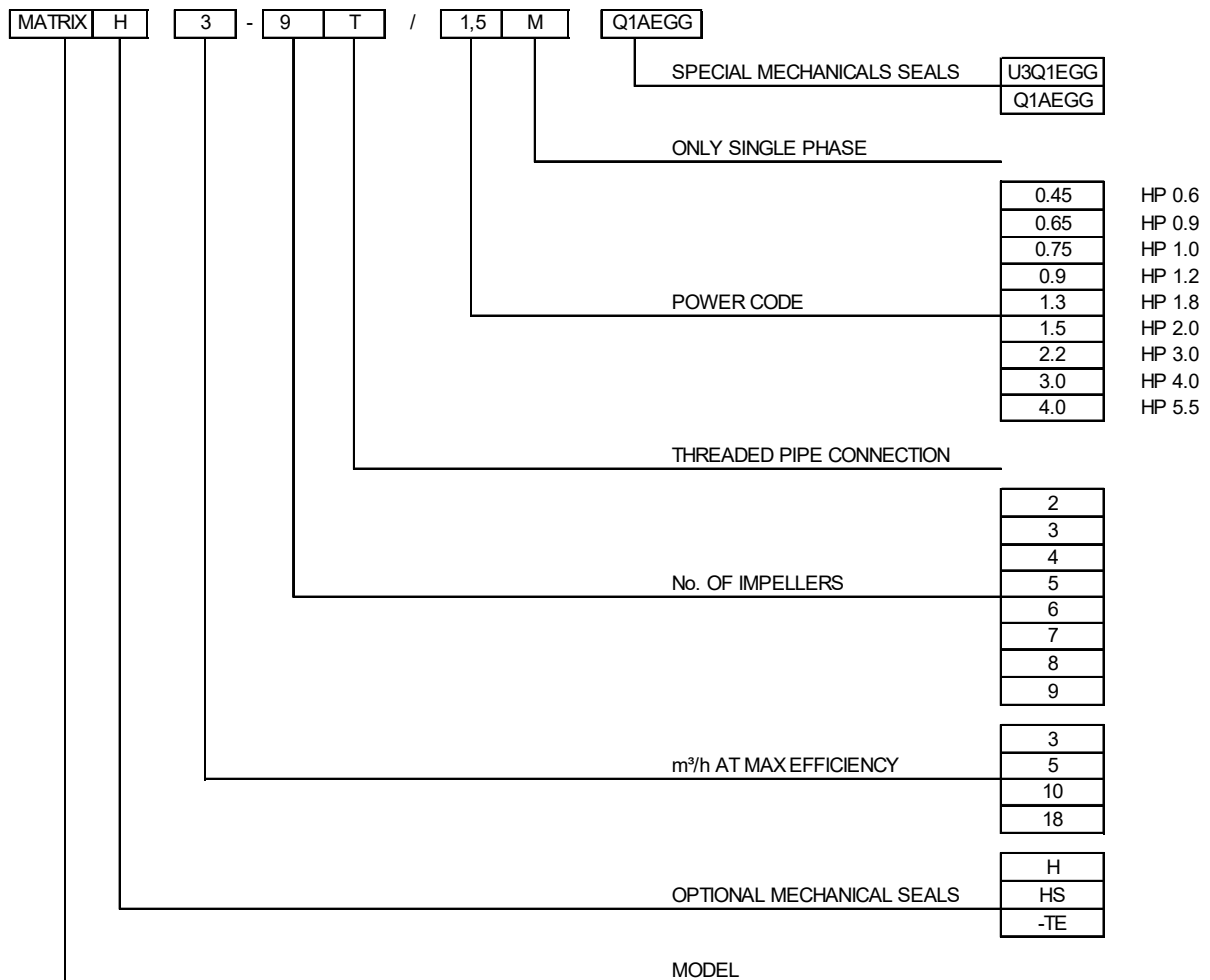
50Hz

Rev. H

SELECTION CHART

Pump type		Power		Q=Capacity																
Single phase	Three phase	[kW]	[HP]	l/min	0	20	30	45	60	80	100	130	160	200	250	300	350	400	450	
				m³/h	0	1.2	1.8	2.7	3.6	4.8	6	7.8	9.6	12	15	18	21	24	27	
				H=Total manometric head in meters																
3-2(.) / 0.45M	3-2(.) / 0.45	0.45	0.6	22.6	20.9	19.6	17.0	13.6	8.0											
3-3(.) / 0.65M	3-3(.) / 0.65	0.65	0.9	33.9	31.4	29.3	25.5	20.4	12.0											
3-4(.) / 0.65M	3-4(.) / 0.65	0.65	0.9	45.0	42.0	39.1	34.0	27.2	16.0											
3-5(.) / 0.75M	3-5(.) / 0.75	0.75	1.0	56.5	52.5	49.0	42.5	34.0	20.0											
3-6(.) / 0.9M	3-6(.) / 0.9	0.9	1.2	68.0	62.5	58.5	51.0	41.0	24.0											
3-7(.) / 1.3M	3-7(.) / 1.3	1.3	1.8	79.0	73.0	68.5	59.5	47.5	28.0											
3-8(.) / 1.3M	3-8(.) / 1.3	1.3	1.8	90.5	83.5	78.0	68.0	54.5	32.0											
3-9(.) / 1.5M	3-9(.) / 1.5	1.5	2.0	102.0	94.0	88.0	76.5	61.0	36.0											
5-2(.) / 0.45M	5-2(.) / 0.45	0.45	0.6	23.0	-	21.5	20.5	19.3	17.4	14.7	8.8									
5-3(.) / 0.65M	5-3(.) / 0.65	0.65	0.9	34.5	-	32.3	30.7	29.0	26.0	22.0	13.2									
5-4(.) / 0.9M	5-4(.) / 0.9	0.9	1.2	46.0	-	43.0	41.0	38.6	34.7	29.4	17.6									
5-5(.) / 1.3M	5-5(.) / 1.3	1.3	1.8	57.5	-	54.0	51.0	48.5	43.5	36.7	22.0									
5-6(.) / 1.3M	5-6(.) / 1.3	1.3	1.8	69.0	-	64.5	61.5	58.0	52.0	44.0	26.4									
5-7(.) / 1.5M	5-7(.) / 1.5	1.5	2.0	80.5	-	75.5	72.0	67.5	61.0	51.5	30.8									
5-8(.) / 2.2M	5-8(.) / 2.2	2.2	3.0	92.0	-	86.0	82.0	77.0	69.5	58.5	35.2									
5-9(.) / 2.2M	5-9(.) / 2.2	2.2	3.0	104.0	-	97.0	92.0	87.0	78.0	66.0	39.6									
10-2(.) / 0.75M	10-2(.) / 0.75	0.75	1.0	24.0	-	-	-	22.2	21.4	20.6	19.1	17.0	12.8	5.8						
10-3(.) / 1.3M	10-3(.) / 1.3	1.3	1.8	36.0	-	-	-	33.3	32.1	30.9	28.6	25.5	19.3	8.7						
10-4(.) / 1.5M	10-4(.) / 1.5	1.5	2.0	48.0	-	-	-	44.5	43.0	41.0	38.1	34.0	25.7	11.6						
10-5(.) / 2.2M	10-5(.) / 2.2	2.2	3.0	60.0	-	-	-	55.5	53.5	51.5	47.5	42.5	32.1	14.5						
10-6(.) / 2.2M	10-6(.) / 2.2	2.2	3.0	72.0	-	-	-	66.5	64.5	62.0	57.0	51.0	38.5	17.4						
18-2(.) / 1.5M	18-2(.) / 1.5	1.5	2.0	24.2	-	-	-	-	-	-	22.0	21.3	20.2	18.7	16.8	14.2	10.3	5.2		
18-3(.) / 2.2M	18-3(.) / 2.2	2.2	3.0	36.3	-	-	-	-	-	-	33.0	31.9	30.4	28.1	25.2	21.3	15.5	7.8		
-	18-4(.) / 3	3.0	4.0	48.5	-	-	-	-	-	-	44.0	42.5	40.5	37.4	33.6	28.4	20.6	10.4		
-	18-5(.) / 4	4.0	5.5	60.5	-	-	-	-	-	-	55.0	53.0	50.5	47.0	42.0	35.5	25.8	13.0		
-	18-6(.) / 4	4.0	5.5	72.5	-	-	-	-	-	-	66.0	64.0	60.5	56.0	50.5	42.5	30.9	15.6		

### TYPE KEY



### PERFORMANCE CURVE 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 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)

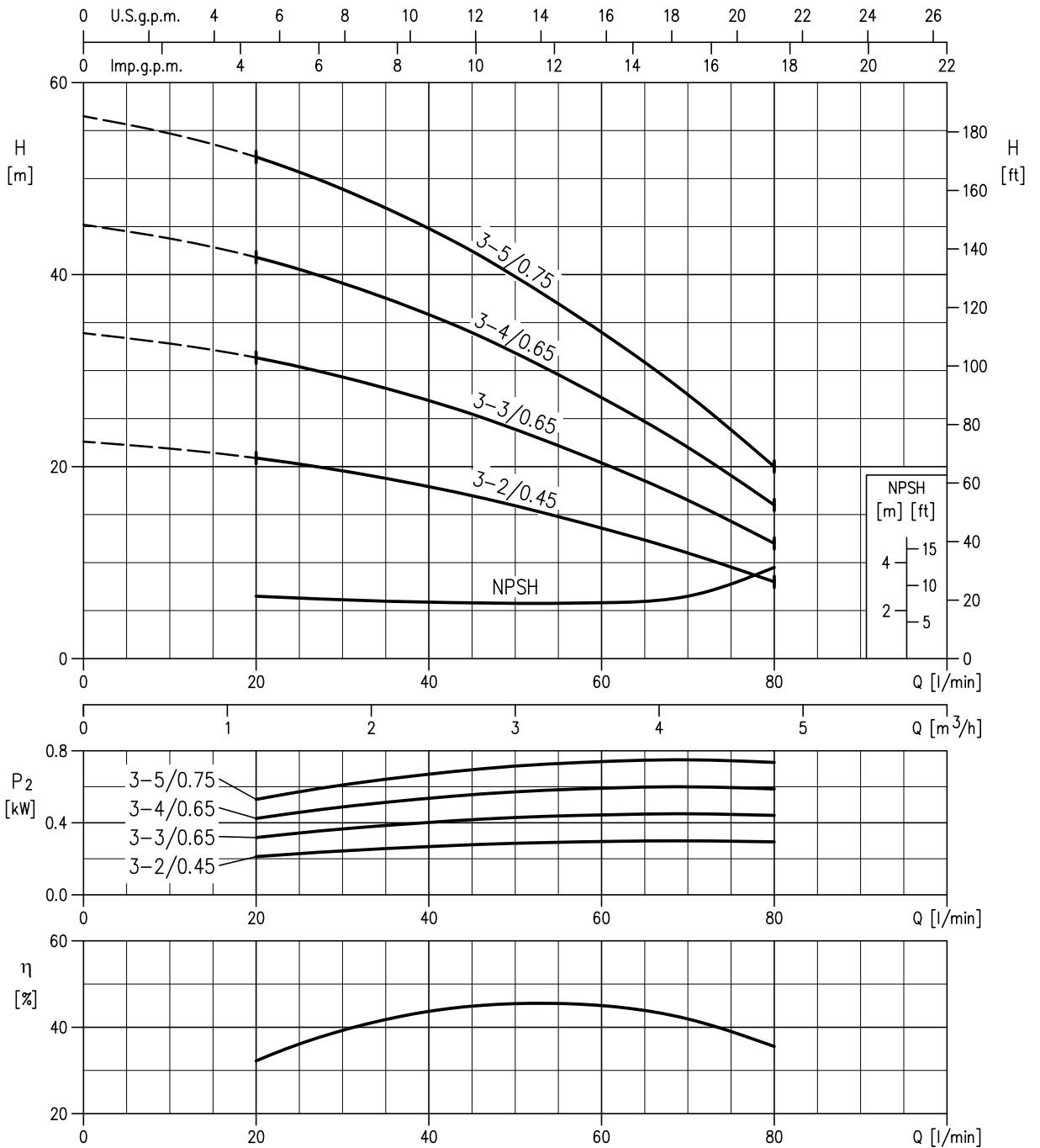
The continuous curves indicate the recommended working range. The dotted curve is only a guide.

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<sub>2</sub> = pump power input (shaft power)
- $\eta$  = pump efficiency
- NPSH = net positive suction head required by the pump

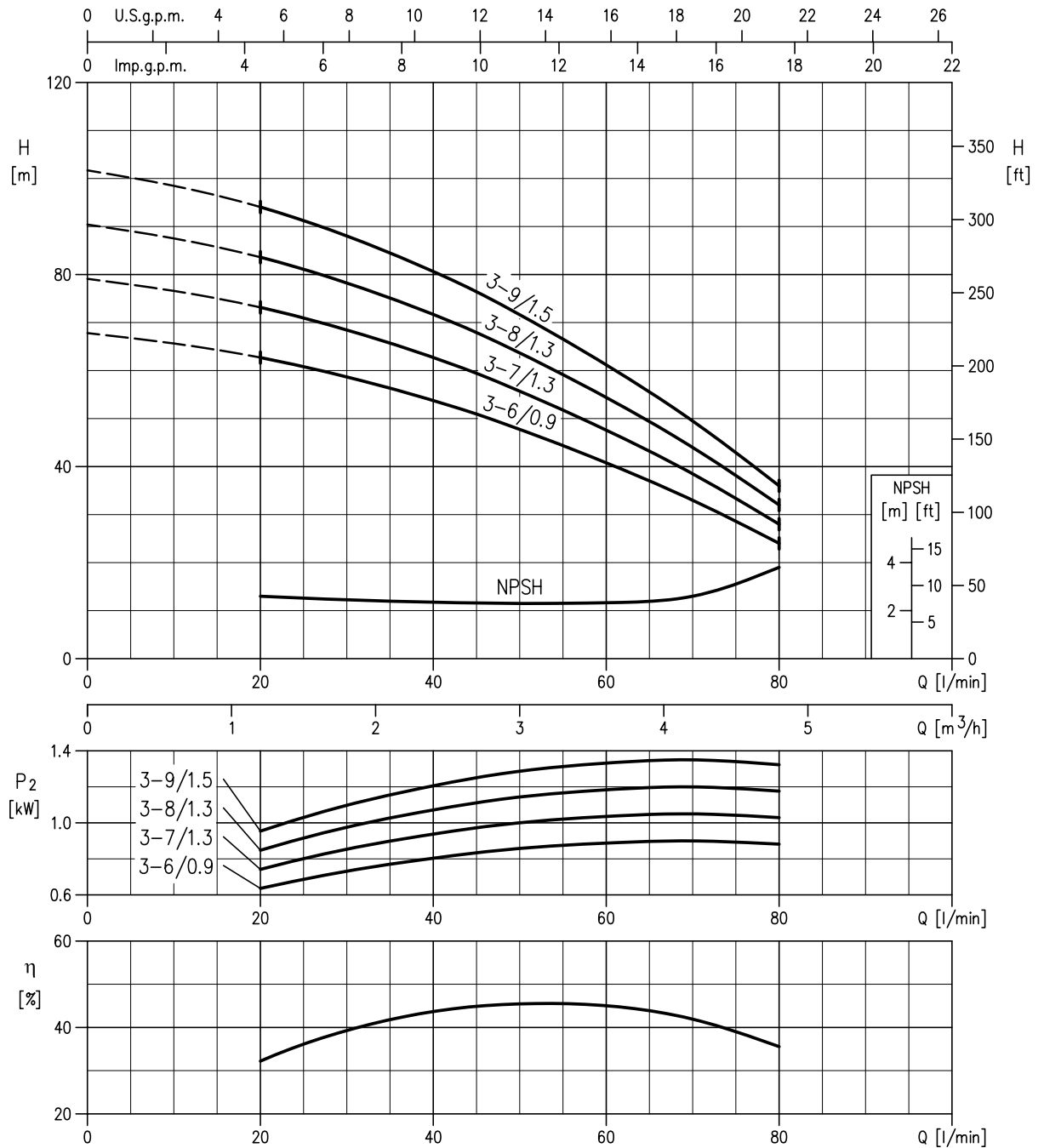
**MATRIX 3-5/0.75 (0.75 kW) - Impeller diameter = 98.5 mm**  
**MATRIX 3-4/0.65 (0.65 kW) - Impeller diameter = 98.5 mm**  
**MATRIX 3-3/0.65 (0.65 kW) - Impeller diameter = 98.5 mm**  
**MATRIX 3-2/0.45 (0.45 kW) - Impeller diameter = 98.5 mm**



Rotation speed ≈ 2850 min<sup>-1</sup>  
 Test standard: ISO 9906:2012 - Grade 3B

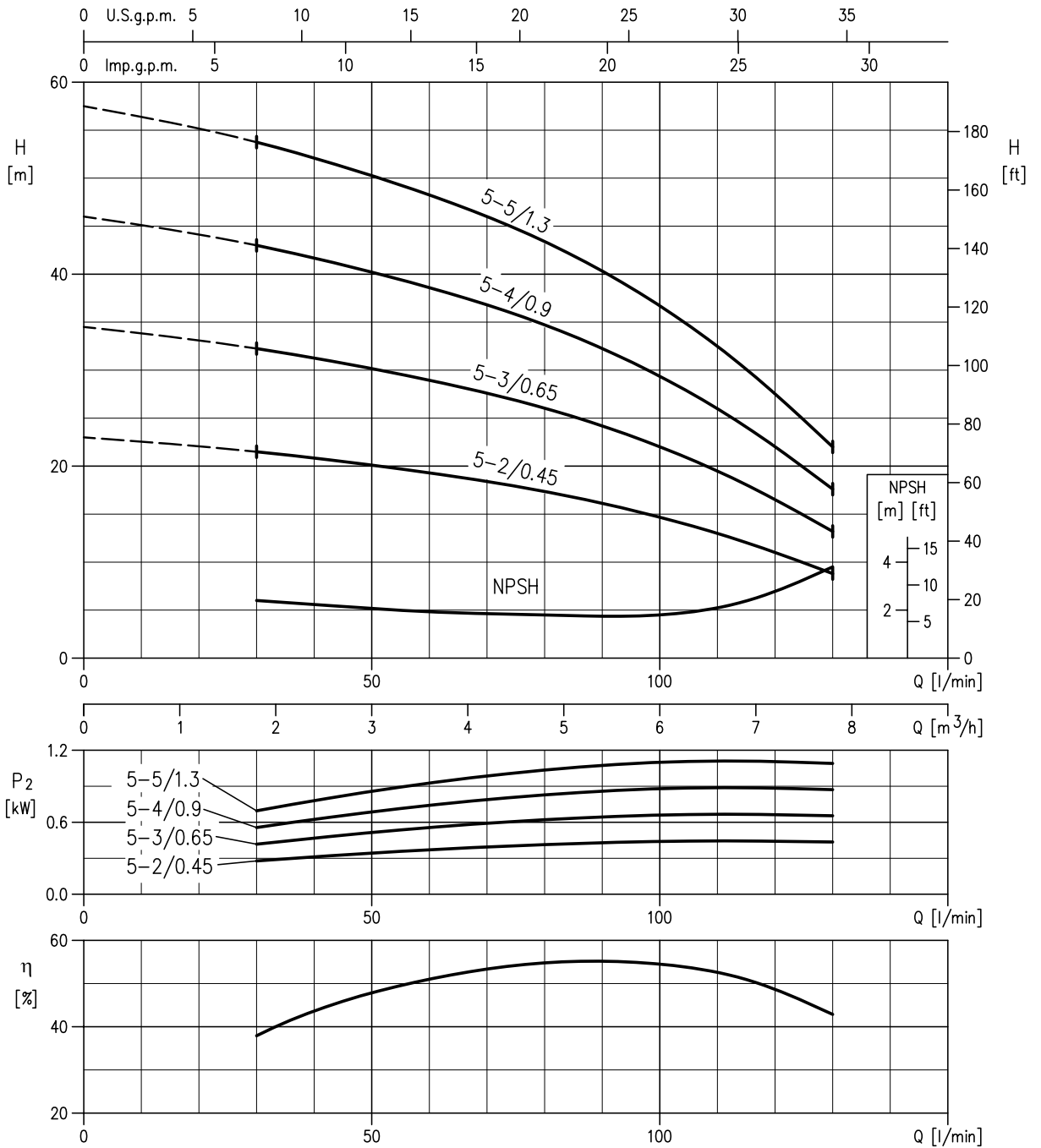


**MATRIX 3-9/1.5 (1.5 kW) - Impeller diameter = 98.5 mm**  
**MATRIX 3-8/1.3 (1.3 kW) - Impeller diameter = 98.5 mm**  
**MATRIX 3-7/1.3 (1.3 kW) - Impeller diameter = 98.5 mm**  
**MATRIX 3-6/0.9 (0.90 kW) - Impeller diameter = 98.5 mm**



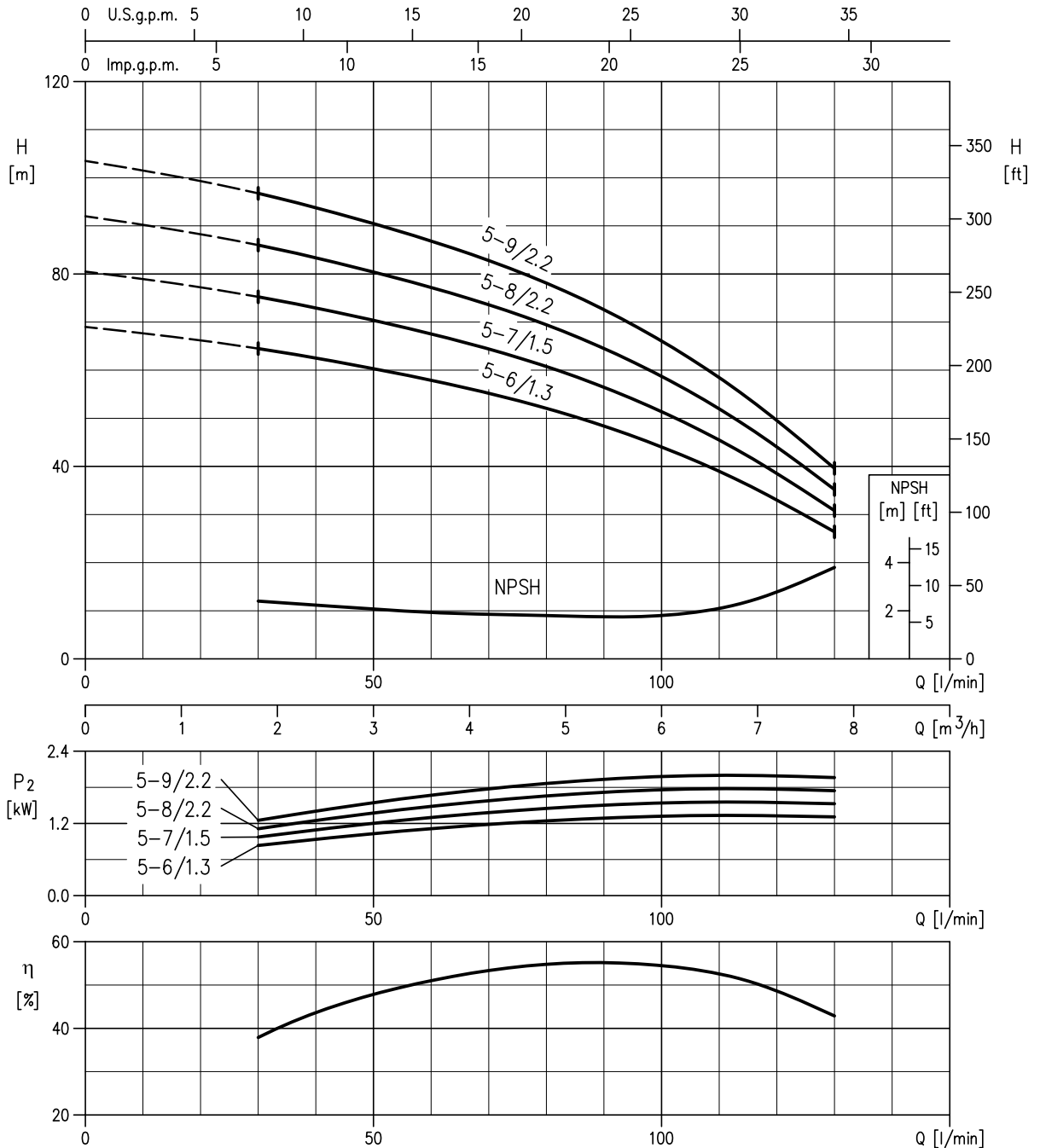
Rotation speed ≈ 2850 min<sup>-1</sup>  
 Test standard: ISO 9906:2012 - Grade 3B

**MATRIX 5-5/1.3 (1.3 kW) - Impeller diameter = 97 mm**  
**MATRIX 5-4/0.9 (0.90 kW) - Impeller diameter = 97 mm**  
**MATRIX 5-3/0.65 (0.65 kW) - Impeller diameter = 97 mm**  
**MATRIX 5-2/0.45 (0.45 kW) - Impeller diameter = 97 mm**



Rotation speed ≈ 2850 min<sup>-1</sup>  
 Test standard: ISO 9906:2012 - Grade 3B

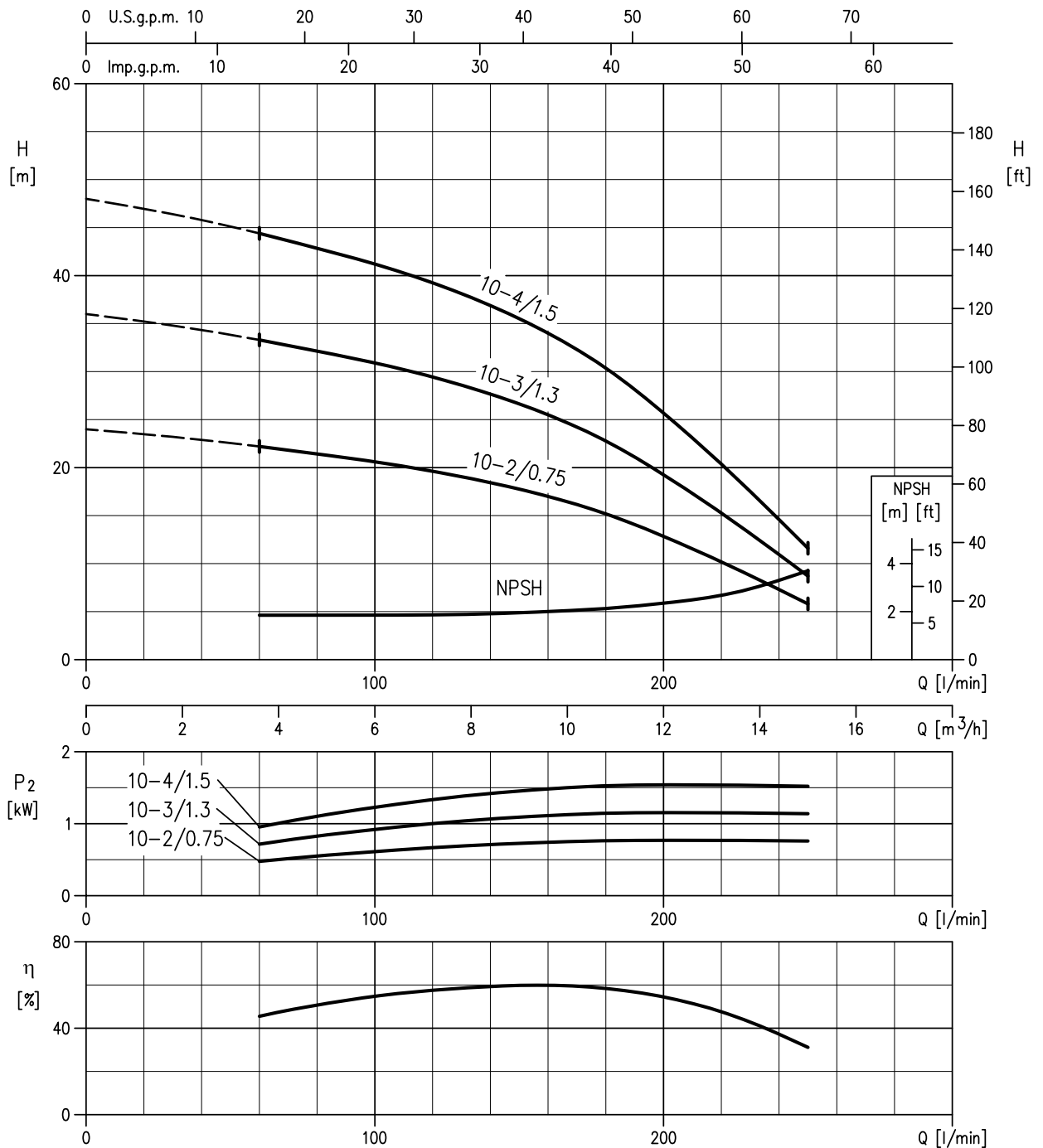
**MATRIX 5-9/2.2 (2.2 kW) - Impeller diameter = 97 mm**  
**MATRIX 5-8/2.2 (2.2 kW) - Impeller diameter = 97 mm**  
**MATRIX 5-7/1.5 (1.5 kW) - Impeller diameter = 97 mm**  
**MATRIX 5-6/1.3 (1.3 kW) - Impeller diameter = 97 mm**



Rotation speed ≈ 2850 min<sup>-1</sup>

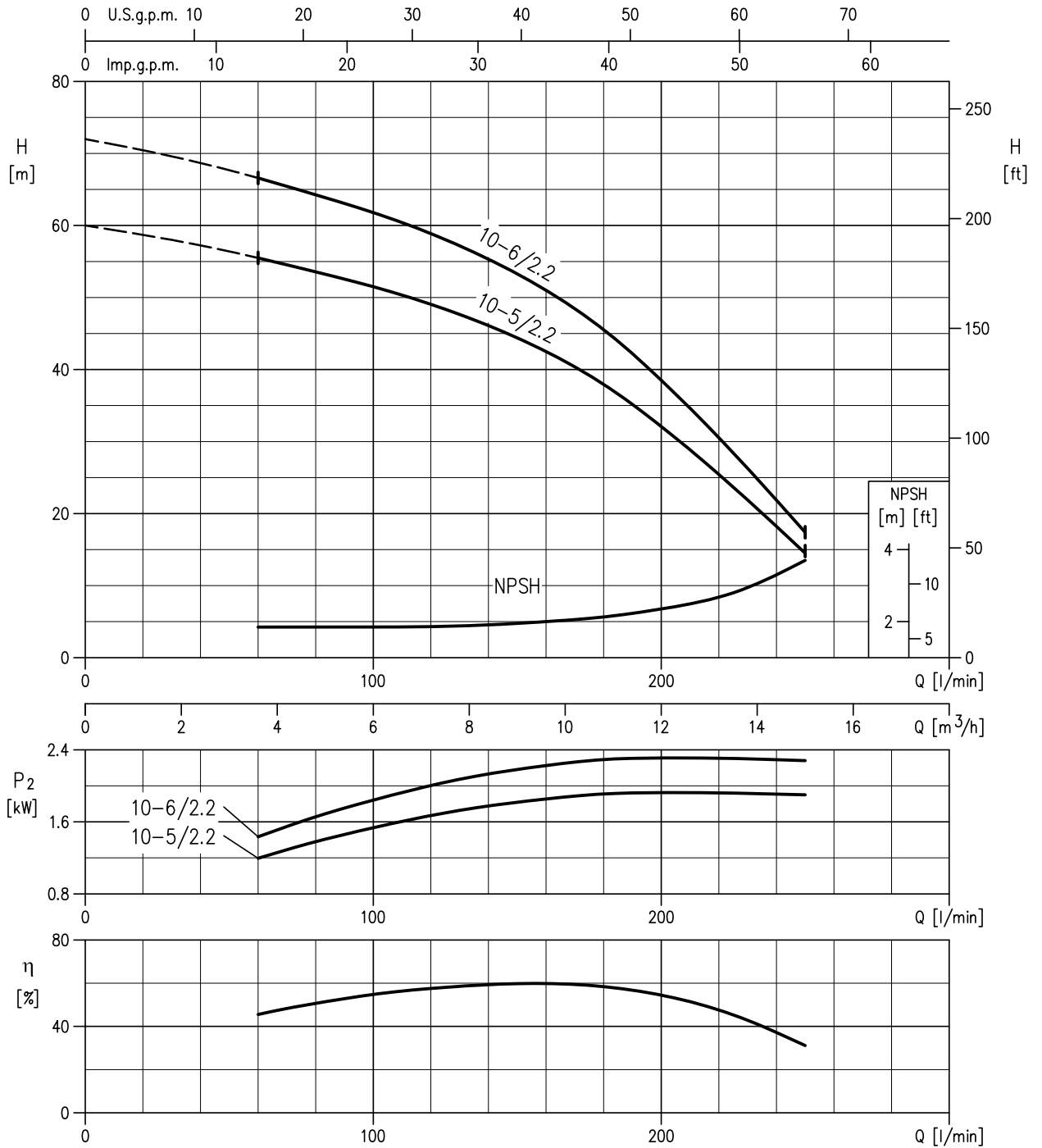
Test standard: ISO 9906:2012 - Grade 3B

**MATRIX 10-4/1.5 (1.5 kW) - Impeller diameter = 100.5 mm**  
**MATRIX 10-3/1.3 (1.3 kW) - Impeller diameter = 100.5 mm**  
**MATRIX 10-2/0.75 (0.75 kW) - Impeller diameter = 100.5 mm**



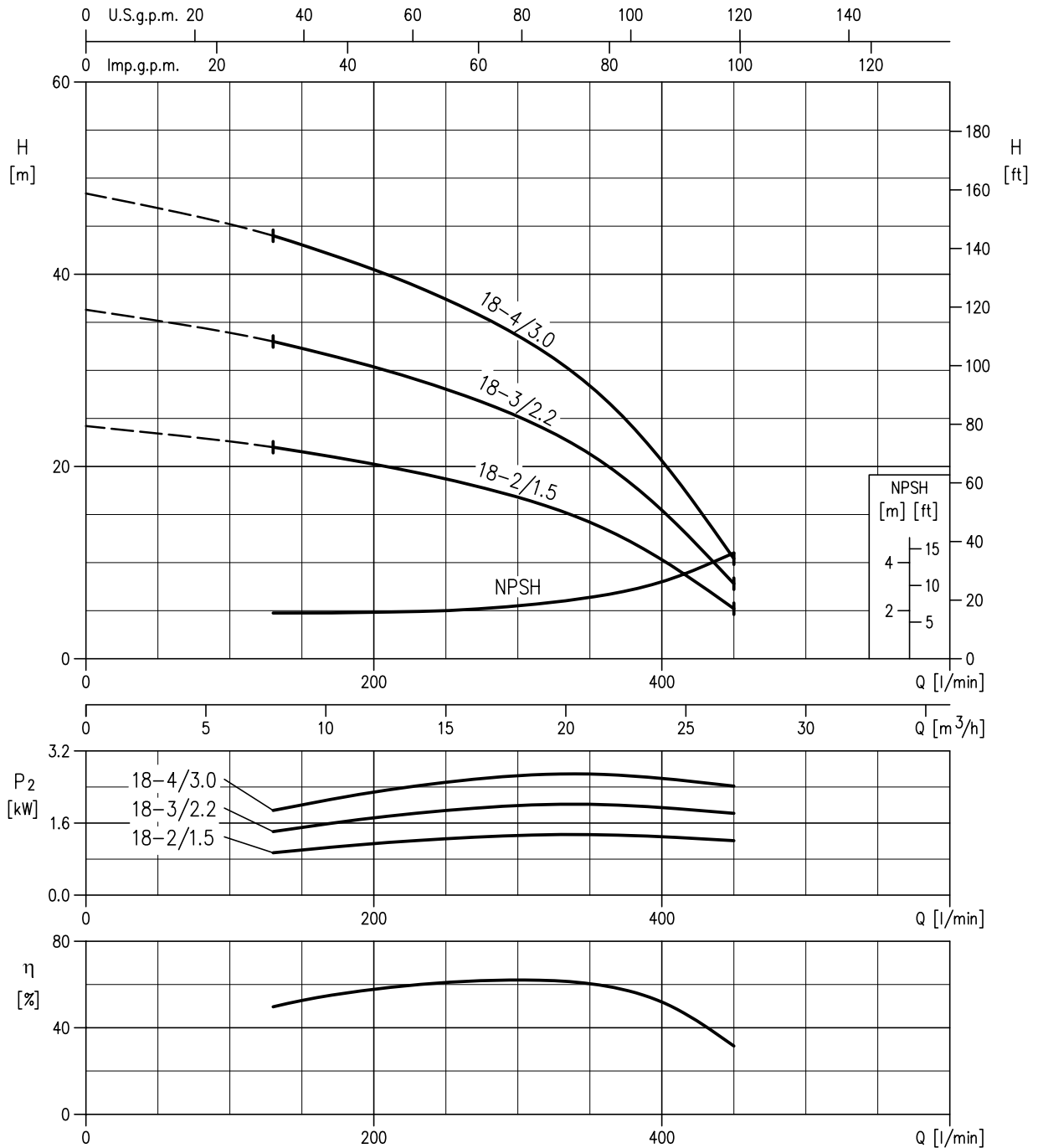
Rotation speed ≈ 2850 min<sup>-1</sup>  
 Test standard: ISO 9906:2012 - Grade 3B

**MATRIX 10-6/2.2 (2.2 kW) - Impeller diameter = 100.5 mm**  
**MATRIX 10-5/2.2 (2.2 kW) - Impeller diameter = 100.5 mm**



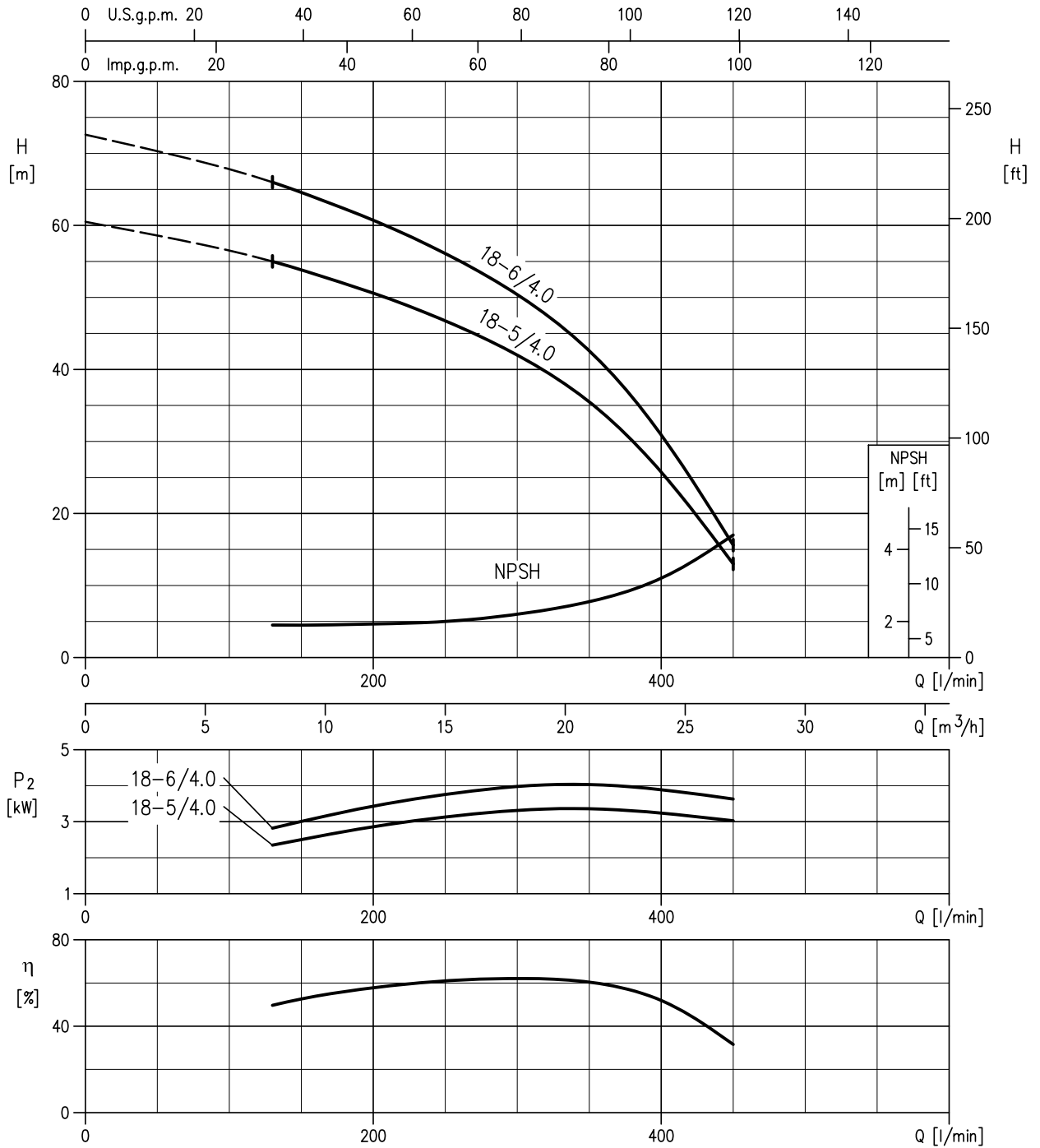
Rotation speed ≈ 2850 min<sup>-1</sup>  
 Test standard: ISO 9906:2012 - Grade 3B

**MATRIX 18-4/3.0 (3.0 kW) - Impeller diameter = 106.7 mm**  
**MATRIX 18-3/2.2 (2.2 kW) - Impeller diameter = 106.7 mm**  
**MATRIX 18-2/1.5 (1.5 kW) - Impeller diameter = 106.7 mm**



Rotation speed ≈ 2875 min<sup>-1</sup>  
 Test standard: ISO 9906:2012 - Grade 3B

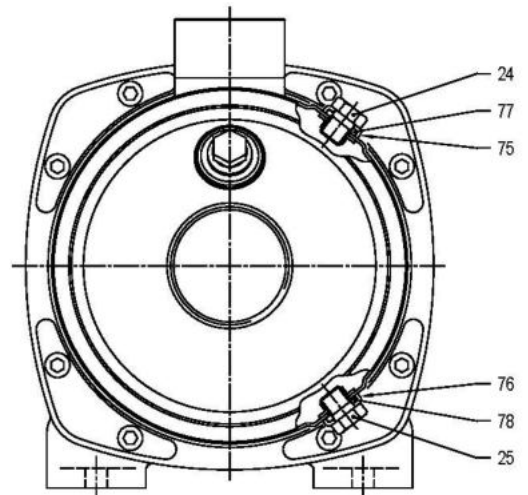
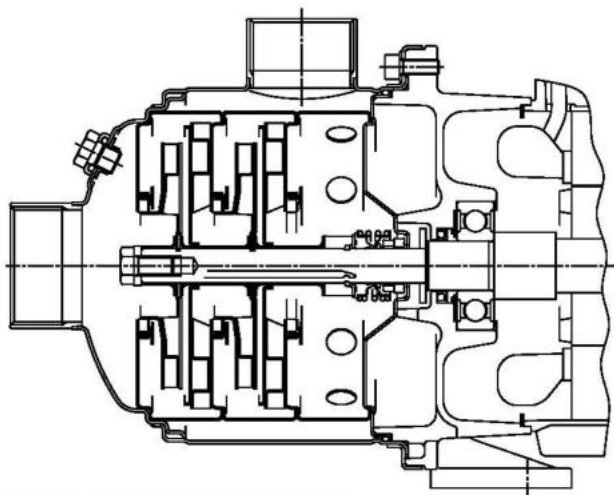
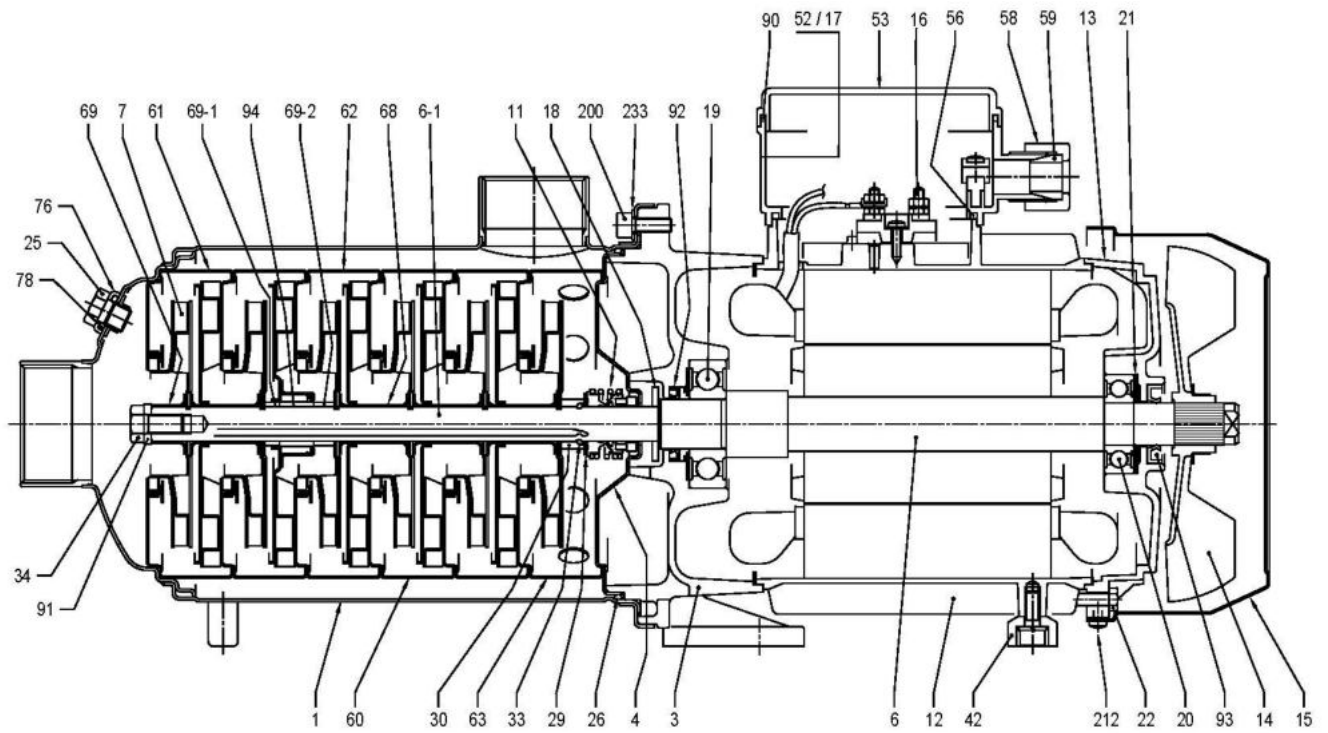
**MATRIX 18-6/4.0 (4.0 kW) - Impeller diameter = 106.7 mm**  
**MATRIX 18-5/4.0 (4.0 kW) - Impeller diameter = 106.7 mm**



Rotation speed ≈ 2850 min<sup>-1</sup>  
 Test standard: ISO 9906:2012 - Grade 3B

SECTIONAL VIEW DRAWING

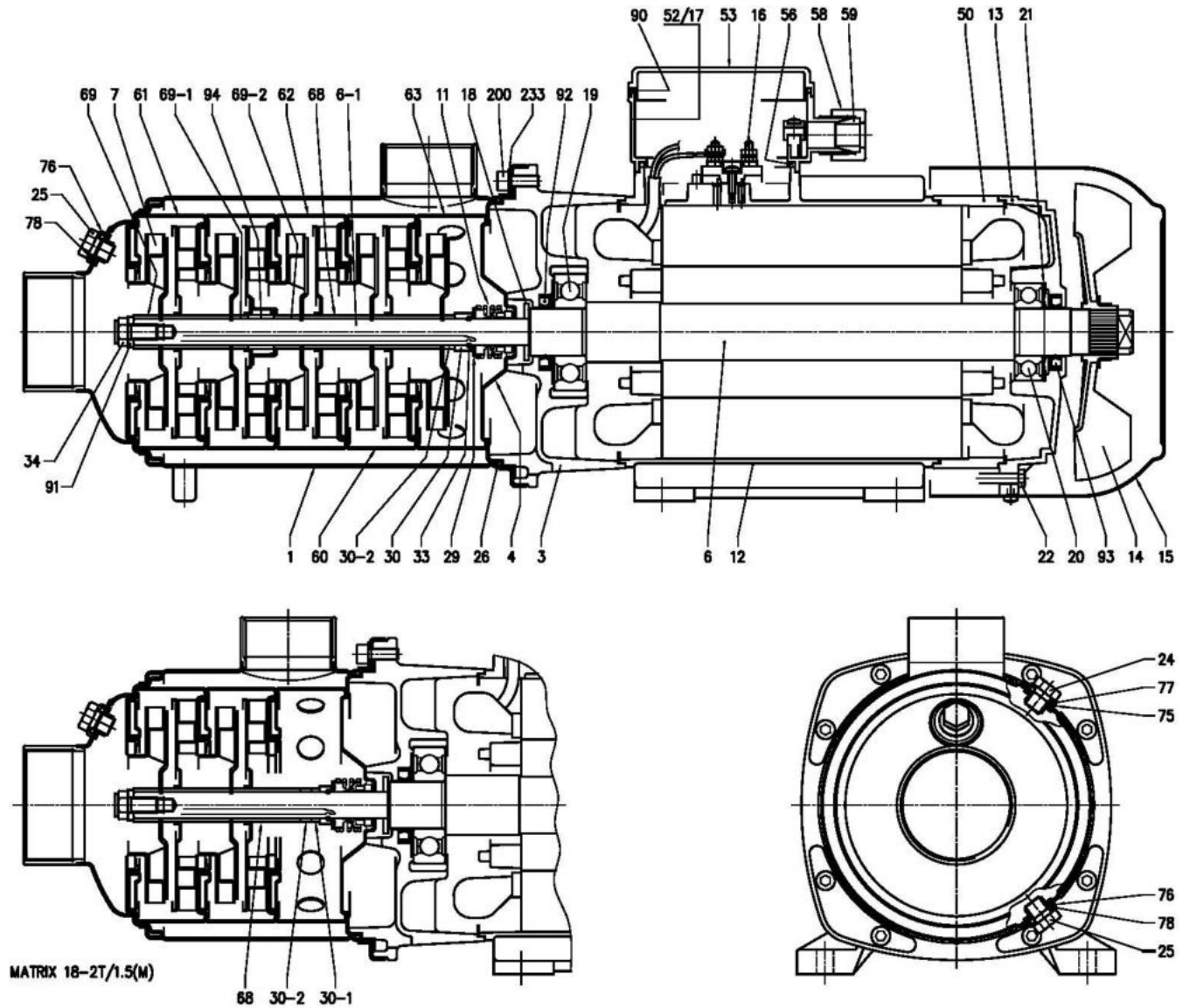
MATRIX 3/5/10



VERSION FOR PUMP TYPE: MATRIX 3-2T/0.45(M)  
MATRIX 5-2T/0.45(M)  
MATRIX 10-2T/0.75(M)



MATRIX 18



### SECTIONAL VIEW TABLE

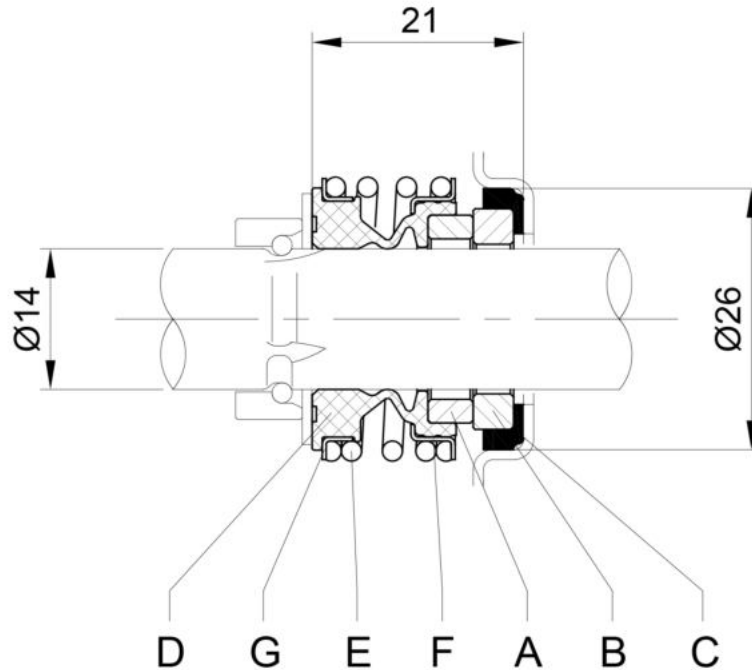
N°	PART NAME	MATERIAL	DIMENSION	STANDARD	Q.TY
1	Casing	EN 1.4301 (AISI 304)			1
3	Bracket	EN AB-AISI11Cu2(Fe)			1
4	Casing cover	EN 1.4301 (AISI 304)			1
6	Shaft with rotor	-			1
6-1	Pump Shaft	EN 1.4301 (AISI 304)			1
7	Impeller	EN 1.4301 (AISI 304)			[1]
11	Mechanical seal	[4] Ceramic/Carbon/EPDM			1
12	Motor frame with stator	-			1
13	Motor cover	Aluminium			1
14	Fan	PA			1
15	Fan cover	Fe P04 Zincate			1
16	Terminal board	-			1
17	Terminal box cover	Aluminium			[1]
18	Splash ring	NBR	30x13.5x2.5		1
19	Bearing	-			1
20	Bearing	-			1
21	Adjusting ring	Steel C70			1
22	Tie rod	Fe 42 Zinc-coated			4
24	Plug	EN 1.4301 (AISI 304)			1
25	Plug	EN 1.4301 (AISI 304)			2
26	O-ring	EPDM			1
29	Washer	EN 1.4301 (AISI 304)	25.1x14x1		1
30	Ring holder	EN 1.4301 (AISI 304)			1
30-1	Shaft sleeve (adjustment)	EN 1.4301 (AISI 304)			[1]
30-2	Shaft sleeve (adjustment)	EN 1.4301 (AISI 304)			[1]
33	Ring	EN 1.4301 (AISI 304)			2
34	Screw	EN 1.4301 (AISI 304)	M 8x16	UNI 5739	1
42	Foot	Aluminium			[1]
50	Motor spacer	[3] Aluminium			1
52	Capacitor box	[2] ABS class V-0			1
53	Capacitor box cover	[2] ABS class V-0			1
56	Box gasket	NBR			1
58	Ring nut	-			[1]
59	Conic gasket	NBR			[1]
60	Intermediate casing	EN 1.4301 (AISI 304)+PPS			[1]
61	Intermediate casing (suction)	EN 1.4301 (AISI 304)+PPS			1
62	Intermediate casing (bearing)	EN 1.4301 (AISI 304)+PPS + Ceramic			[1]
63	Intermediate casing (discharge)	EN 1.4301 (AISI 304)+PPS			1
68	Shaft sleeve (intermediate)	EN 1.4301 (AISI 304)			[1]
69	Impeller spacer	EN 1.4301 (AISI 304)			1
69-1	Shaft sleeve (adjustment)	[1] EN 1.4301 (AISI 304)			[1]
69-2	Shaft sleeve (adjustment)	[1] EN 1.4301 (AISI 304)			[1]
75	Washer (plug)	EN 1.4301 (AISI 304)			1
76	Washer (plug)	EN 1.4301 (AISI 304)			2
77	O-ring	EPDM	9.19x2.62		1
78	O-ring	EPDM	9.19x2.62		2
90	Terminal box cover gasket	[2] NBR			[1]
91	Shaft washer	EN 1.4301 (AISI 304)			1
92	Lip seal	0.45-0.65-0.75-0.9 kW 1.3-1.5-2.2 kW 2.2M-3-4 kW	- 17x32x6 20x30x4 25x40x7		1 1 1
93	Lip seal	0.45-0.65-0.75-0.9 kW 1.3-1.5-2.2 kW 2.2M-3-4 kW	- 15x30x5 17x32x7 25x40x7		1 1 1
94	Shaft sleeve (bearing)	WC - Tungsten carbide			[1]
200	Screw	EN 1.4301 (AISI 304)	M6x16	UNI 5931	8
212	Screw	Zincate Steel			4
233	Plate	EN 1.4301 (AISI 304)			4

- [1] See **QUANTITY FOR MODEL** page 303  
 [2] Only for single phase  
 [3] Only for 18-5T/4 and 18-6T/4  
 [4] See **MECHANICAL SEAL** pages 304-306

### QUANTITY FOR MODEL

Pump type	7	17	30-1	30-2	42	58	59	60	62	68	69-1	69-2	90	94
MATRIX 3-2T/0.45M	2	-	-	-	1	1	1	1	-	4	-	-	1	-
MATRIX 3-2T/0.45		1	-	-	1	-	-	1	-	4	-	-	-	-
MATRIX 3-3T/0.65M	3	-	-	-	1	1	1	1	-	4	-	-	1	-
MATRIX 3-3T/0.65		1	-	-	1	-	-	1	-	4	-	-	-	-
MATRIX 3-4T/0.65M	4	-	-	-	1	1	1	2	-	6	-	-	1	-
MATRIX 3-4T/0.65		1	-	-	1	-	-	2	-	6	-	-	-	-
MATRIX 3-5T/0.75M	5	-	-	-	1	1	1	3	-	8	-	-	1	-
MATRIX 3-5T/0.75		1	-	-	1	-	-	3	-	8	-	-	-	-
MATRIX 3-6T/0.9M	6	-	-	-	1	1	1	4	-	10	-	-	1	-
MATRIX 3-6T/0.9		1	-	-	1	-	-	4	-	10	-	-	-	-
MATRIX 3-7T/1.3M	7	-	-	-	1	1	1	4	1	10	1	1	1	1
MATRIX 3-7T/1.3		1	-	-	1	-	-	4	1	10	1	1	-	1
MATRIX 3-8T/1.3M	8	-	-	-	1	1	1	5	1	12	1	1	1	1
MATRIX 3-8T/1.3		1	-	-	1	-	-	5	1	12	1	1	-	1
MATRIX 3-9T/1.5M	9	-	-	-	1	1	1	6	1	14	1	1	1	1
MATRIX 3-9T/1.5		1	-	-	1	-	-	6	1	14	1	1	-	1
MATRIX 5-2T/0.45M	2	-	-	-	1	1	1	1	-	4	-	-	1	-
MATRIX 5-2T/0.45		1	-	-	1	-	-	1	-	4	-	-	-	-
MATRIX 5-3T/0.65M	3	-	-	-	1	1	1	1	-	4	-	-	1	-
MATRIX 5-3T/0.65		1	-	-	1	-	-	1	-	4	-	-	-	-
MATRIX 5-4T/0.9M	4	-	-	-	1	1	1	2	-	6	-	-	1	-
MATRIX 5-4T/0.9		1	-	-	1	-	-	2	-	6	-	-	-	-
MATRIX 5-5T/1.3M	5	-	-	-	1	1	1	3	-	8	-	-	1	-
MATRIX 5-5T/1.3		1	-	-	1	-	-	3	-	8	-	-	-	-
MATRIX 5-6T/1.3M	6	-	-	-	1	1	1	4	-	10	-	-	1	-
MATRIX 5-6T/1.3		1	-	-	1	-	-	4	-	10	-	-	-	-
MATRIX 5-7T/1.5M	7	-	-	-	1	1	1	4	1	10	1	1	1	1
MATRIX 5-7T/1.5		1	-	-	1	-	-	4	1	10	1	1	-	1
MATRIX 5-8T/2.2M	8	-	-	-	-	1	1	5	1	12	1	1	1	1
MATRIX 5-8T/2.2		1	-	-	1	-	-	5	1	12	1	1	-	1
MATRIX 5-9T/2.2M	9	-	-	-	-	1	1	6	1	14	1	1	1	1
MATRIX 5-9T/2.2		1	-	-	1	-	-	6	1	14	1	1	-	1
MATRIX 10-2T/0.75M	2	-	-	-	1	1	1	1	-	4	-	-	1	-
MATRIX 10-2T/0.75		1	-	-	1	-	-	1	-	4	-	-	-	-
MATRIX 10-3T/1.3M	3	-	-	-	1	1	1	1	-	4	-	-	1	-
MATRIX 10-3T/1.3		1	-	-	1	-	-	1	-	4	-	-	-	-
MATRIX 10-4T/1.5M	4	-	-	-	1	1	1	2	-	6	-	-	1	-
MATRIX 10-4T/1.5		1	-	-	1	-	-	2	-	6	-	-	-	-
MATRIX 10-5T/2.2M	5	-	-	-	-	1	1	3	-	8	-	-	1	-
MATRIX 10-5T/2.2		1	-	-	1	-	-	3	-	8	-	-	-	-
MATRIX 10-6T/2.2M	6	-	-	-	-	1	1	3	1	8	1	1	1	1
MATRIX 10-6T/2.2		1	-	-	1	-	-	3	1	8	1	1	-	1
MATRIX 18-2T/1.5M	2	-	1	1	1	1	1	1	-	2	-	-	1	-
MATRIX 18-2T/1.5		1	1	1	1	1	-	-	1	-	2	-	-	-
MATRIX 18-3T/2.2M	3	-	-	1	-	1	1	1	-	2	-	-	1	-
MATRIX 18-3T/2.2		1	-	1	1	-	-	1	-	2	-	-	-	-
MATRIX 18-4T/3	4	1	-	1	-	-	-	2	-	3	-	-	-	-
MATRIX 18-5T/4	5	1	-	1	-	-	-	2	1	3	1	1	-	1
MATRIX 18-6T/4	6	1	-	1	-	-	-	3	1	4	1	1	-	1

**MECHANICAL SEAL**



	A Rotary seal ring	B Stationary seal ring	C Gasket	Material D Bellows	E Spring	F Frame	G Retainer ring
<b>STANDARD*</b>	Carbon	Ceramic	EPDM	EPDM	EN 1.4402 (AISI 316)	EN 1.4402 (AISI 316)	EN 1.4402 (AISI 316)

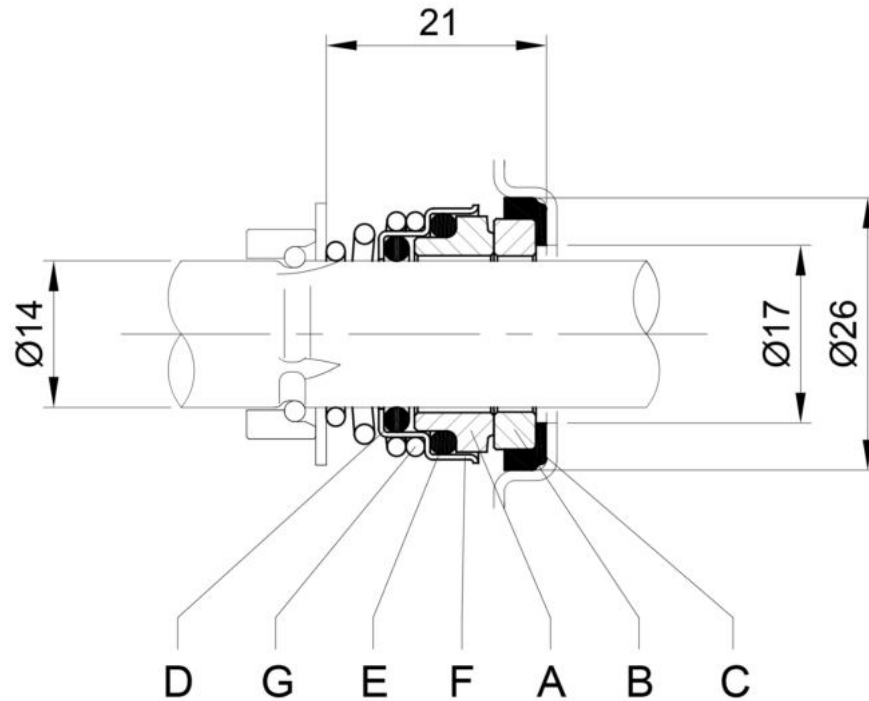
	A Rotary seal ring	B Stationary seal ring	C Gasket	Material D Bellows	E Spring	F Frame	G Retainer ring
<b>OPTIONAL**</b>							
Version							
H	Ceramic	Carbon	FPM	FPM	EN 1.4402 (AISI 316)	EN 1.4402 (AISI 316)	EN 1.4402 (AISI 316)
HS	Silicon Carbide	Silicon Carbide	FPM	FPM	EN 1.4402 (AISI 316)	EN 1.4402 (AISI 316)	EN 1.4402 (AISI 316)

\*Approval for drinking water application  
WRAS Approval product

\*\*Approval for drinking water application  
DM174/2004



**MECHANICAL SEAL**

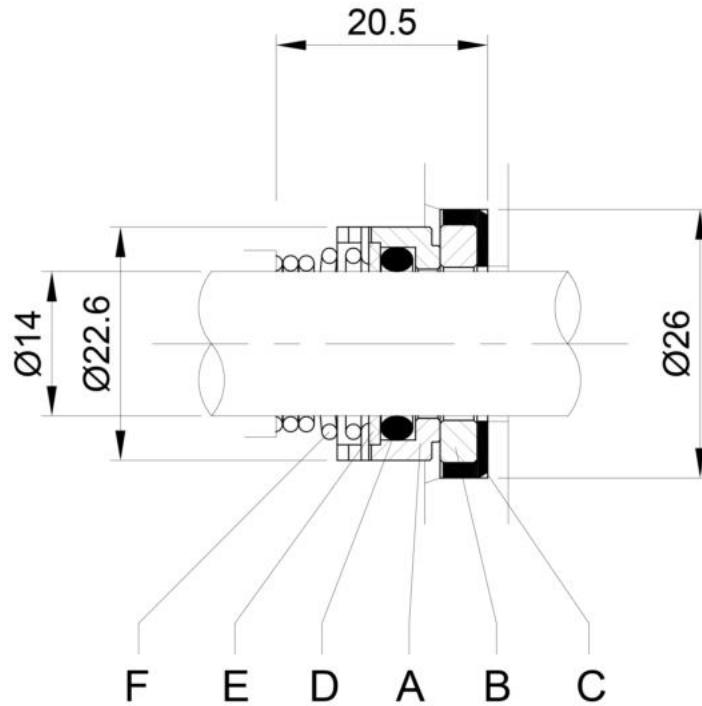


Version	A	B	C	Material			
	Rotary seal ring	Stationary seal ring	Gasket	D O-ring	E O-ring	F Spring	G Retainer ring
<b>OPTIONAL**</b> -TE	Carbon	Ceramic	EPDM	EPDM	EN 1.4402 (AISI 316)	EN 1.4402 (AISI 316)	EN 1.4402 (AISI 316)

Version	A	B	C	Material			
	Rotary seal ring	Stationary seal ring	Gasket	D O-ring	E O-ring	F Spring	G Retainer ring
<b>SPECIAL**</b> Q1AEGG	Metalized Carbon	Silicon Carbide	EPDM	EPDM	EN 1.4402 (AISI 316)	EN 1.4402 (AISI 316)	EN 1.4402 (AISI 316)

\*\* Approval for drinking water application  
DM174/2004

**MECHANICAL SEAL**



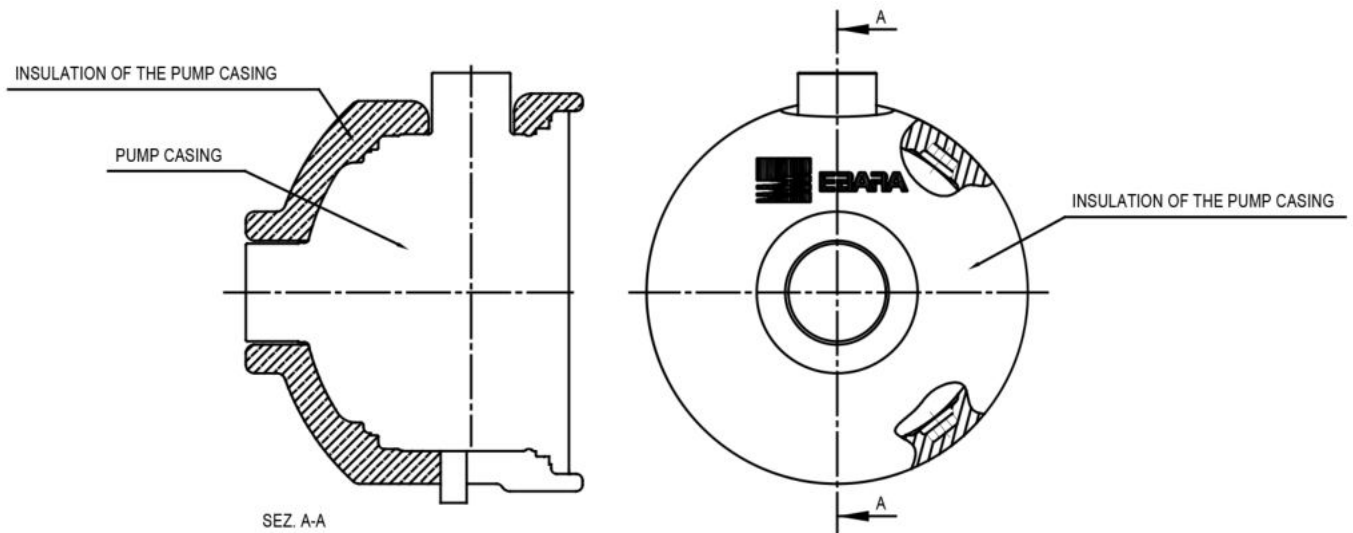
Version	Material					
	A Rotary seal ring	B Stationary seal ring	C Stationary Gasket	D O-Ring	E Washer	F Spring
<b>SPECIAL**</b> U3Q1EGG	Tungsten Carbide	Silicon Carbide	EPDM	EPDM	EN 1.4402 (AISI 316)	EN 1.4402 (AISI 316)

\*\* Approval for drinking water application  
DM174/2004

### BEARINGS

Pump Type	Bearings	
	Pump side	Fan side
MATRIX 3-2T/0.45M	6203-2RSH	6202-2RSH
MATRIX 3-2T/0.45		
MATRIX 3-3T/0.65M		
MATRIX 3-3T/0.65		
MATRIX 3-4T/0.65M		
MATRIX 3-4T/0.65		
MATRIX 3-5T/0.75M		
MATRIX 3-5T/0.75		
MATRIX 3-6T/0.9M	6203-ZZ C3	6202-ZZ C3
MATRIX 3-6T/0.9		
MATRIX 3-7T/1.3M	6304-2RSH	6203-2RSH
MATRIX 3-7T/1.3	6304-ZZ C3	6203-ZZ C3
MATRIX 3-8T/1.3M	6304-2RSH	6203-2RSH
MATRIX 3-8T/1.3	6304-ZZ C3	6203-ZZ C3
MATRIX 3-9T/1.5M	6304-2RSH	6203-2RSH
MATRIX 3-9T/1.5	6304-ZZ C3	6203-ZZ C3
MATRIX 5-2T/0.45M	6203-2RSH	6202-2RSH
MATRIX 5-2T/0.45		
MATRIX 5-3T/0.65M		
MATRIX 5-3T/0.65		
MATRIX 5-4T/0.9M		
MATRIX 5-4T/0.9	6203-ZZ C3	6202-ZZ C3
MATRIX 5-5T/1.3M	6304-2RSH	6203-2RSH
MATRIX 5-5T/1.3	6304-ZZ C3	6203-ZZ C3
MATRIX 5-6T/1.3M	6304-2RSH	6203-2RSH
MATRIX 5-6T/1.3	6304-ZZ C3	6203-ZZ C3
MATRIX 5-7T/1.5M	6304-2RSH	6203-2RSH
MATRIX 5-7T/1.5	6304-ZZ C3	6203-ZZ C3
MATRIX 5-8T/2.2M	6305-ZZ C3	6205-ZZ C3
MATRIX 5-8T/2.2	6304-ZZ C3	6203-ZZ C3
MATRIX 5-9T/2.2M	6305-ZZ C3	6205-ZZ C3
MATRIX 5-9T/2.2	6304-ZZ C3	6203-ZZ C3
MATRIX 10-2T/0.75M	6203-2RSH	6202-2RSH
MATRIX 10-2T/0.75	6203-ZZ C3	6202-ZZ C3
MATRIX 10-3T/1.3M	6304-2RSH	6203-2RSH
MATRIX 10-3T/1.3	6304-ZZ C3	6203-ZZ C3
MATRIX 10-4T/1.5M	6304-2RSH	6203-2RSH
MATRIX 10-4T/1.5	6304-ZZ C3	6203-ZZ C3
MATRIX 10-5T/2.2M	6305-ZZ C3	6205-ZZ C3
MATRIX 10-5T/2.2	6304-ZZ C3	6203-ZZ C3
MATRIX 10-6T/2.2M	6305-ZZ C3	6205-ZZ C3
MATRIX 10-6T/2.2	6304-ZZ C3	6203-ZZ C3
MATRIX 18-2T/1.5M	6304-2RSH	6203-2RSH
MATRIX 18-2T/1.5	6304-ZZ C3	6203-ZZ C3
MATRIX 18-3T/2.2M	6305-2RSH1	6205-ZZ C3
MATRIX 18-3T/2.2	6304-ZZ C3	6203-ZZ C3
MATRIX 18-4T/3	6305-ZZ C3	6205-ZZ C3
MATRIX 18-5T/4		
MATRIX 18-6T/4		

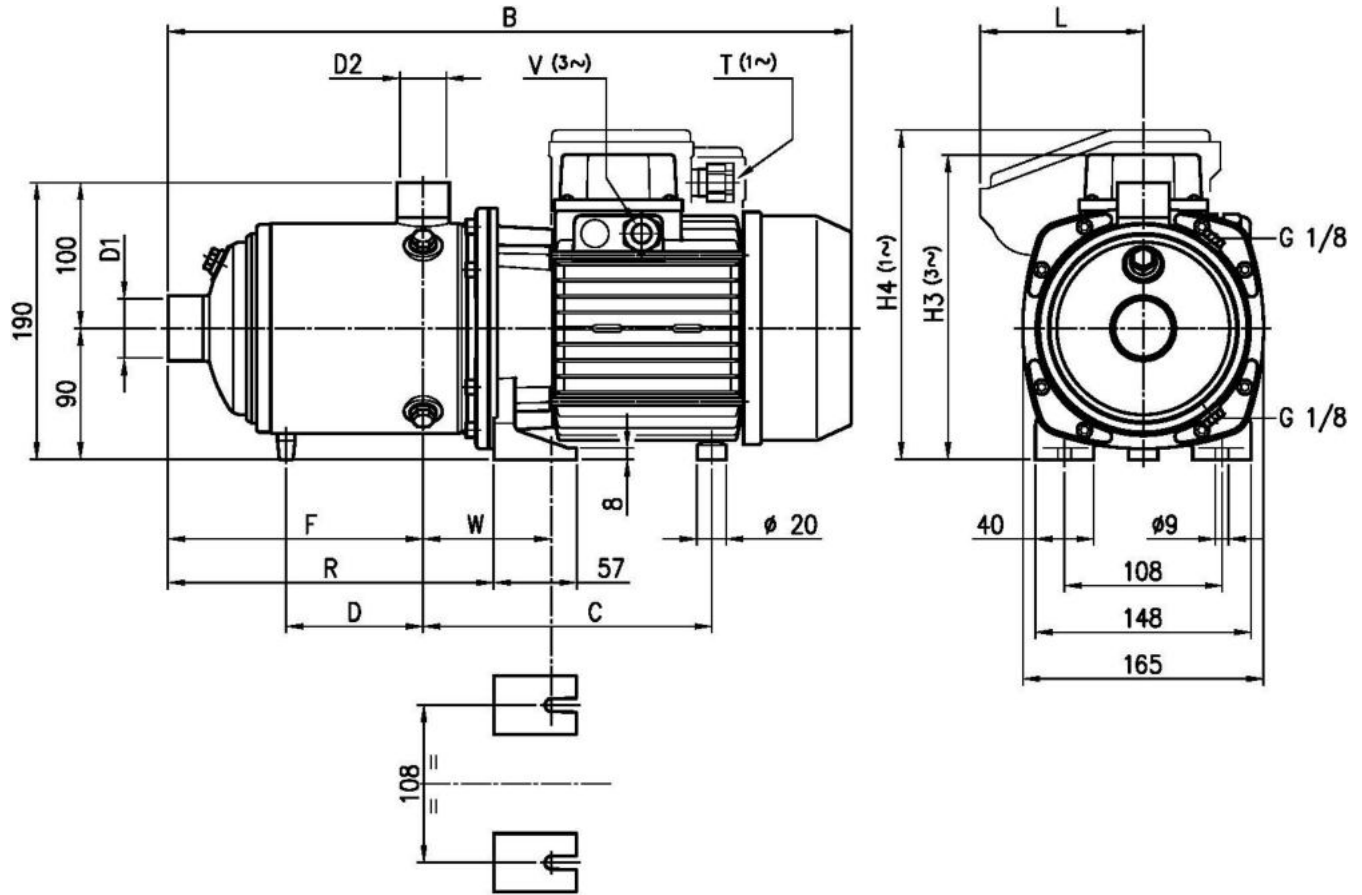
### THERMAL INSULATION



Pump type		INSULATION OF PUMP CASING
Single phase	Three phase	
3-2(.)0.45M	3-2(.)0.45	ON REQUEST
3-3(.)0.65M	3-3(.)0.65	
3-4(.)0.65M	3-4(.)0.65	
3-5(.)0.75M	3-5(.)0.75	
3-6(.)0.9M	3-6(.)0.9	
3-7(.)1.3M	3-7(.)1.3	
3-8(.)1.3M	3-8(.)1.3	
3-9(.)1.5M	3-9(.)1.5	
5-2(.)0.45M	5-2(.)0.45	
5-3(.)0.65M	5-3(.)0.65	
5-4(.)0.9M	5-4(.)0.9	
5-5(.)1.3M	5-5(.)1.3	
5-6(.)1.3M	5-6(.)1.3	
5-7(.)1.5M	5-7(.)1.5	
5-8(.)2.2M	5-8(.)2.2	
5-9(.)2.2M	5-9(.)2.2	
10-2(.)0.75M	10-2(.)0.75	
10-3(.)1.3M	10-3(.)1.3	
10-4(.)1.5M	10-4(.)1.5	
10-5(.)2.2M	10-5(.)2.2	
10-6(.)2.2M	10-6(.)2.2	
18-2(.)1.5M	18-2(.)1.5	
18-3(.)2.2M	18-3(.)2.2	
-	18-4(.)3	
-	18-5(.)4	
-	18-6(.)4	

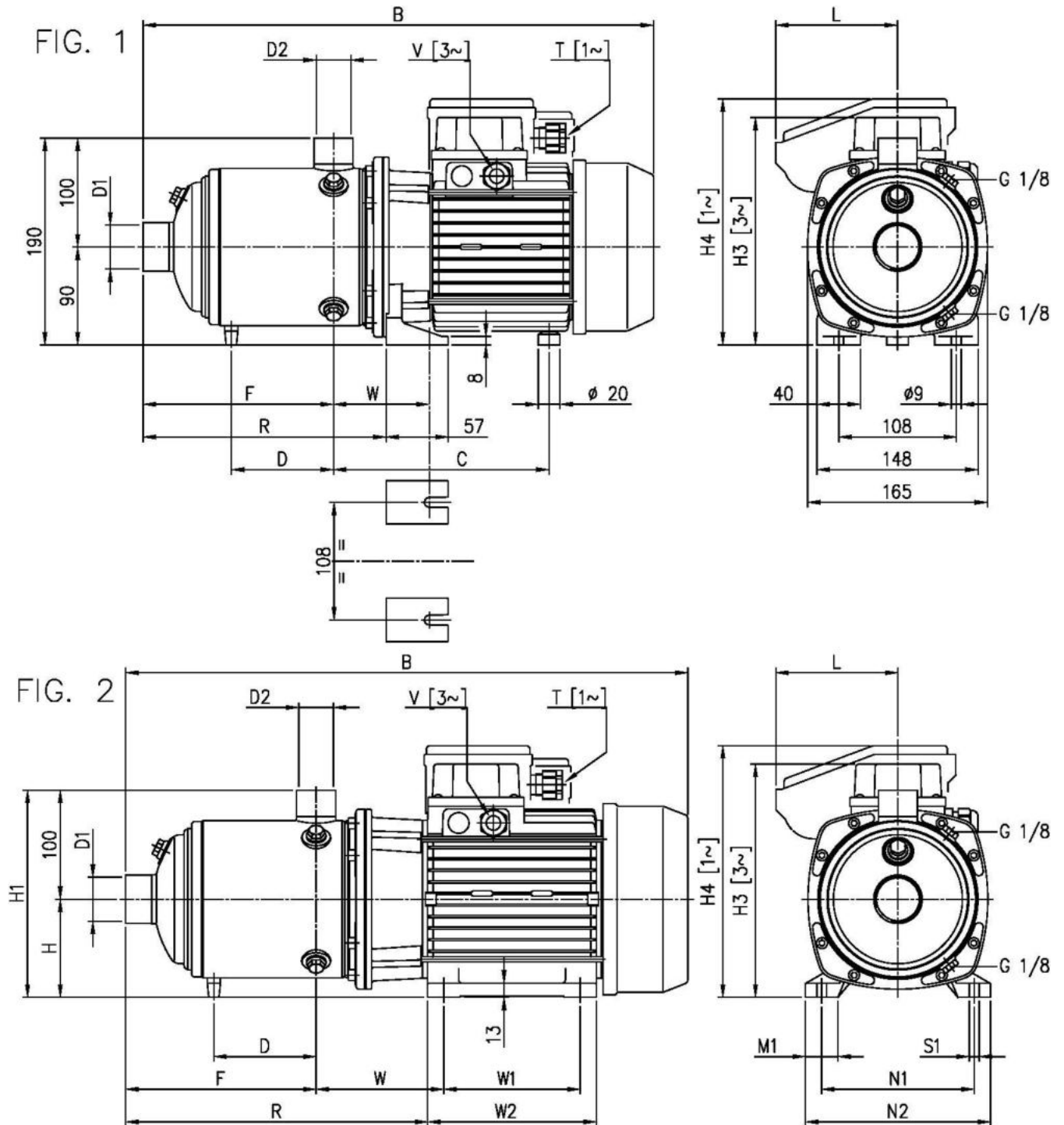


### PUMP MATRIX 3



Pump Type	Dimensions [mm]												Weight [kgf]	
	D1	D2	B	C	D	F	H3 (3~)	H4 (1~)	L	R	T (1~)	V (3~)		W
MATRIX 3-2T/0.45M	1"	1"	360	171	-	103	-	200	86.5	151.5	PG11	-	88 + 97	8.5
MATRIX 3-2T/0.45			360	171	-	103	192	-	-	151.5	-	PG11	88 + 97	8.4
MATRIX 3-3T/0.65M			360	171	-	103	-	200	86.5	151.5	PG11	-	88 + 97	9.9
MATRIX 3-3T/0.65			360	171	-	103	192	-	-	151.5	-	PG11	88 + 97	9.8
MATRIX 3-4T/0.65M			384	171	-	127	-	200	86.5	175.5	PG11	-	88 + 97	10.6
MATRIX 3-4T/0.65			384	171	-	127	192	-	-	175.5	-	PG11	88 + 97	10.4
MATRIX 3-5T/0.75M			408	171	-	151	-	200	86.5	199.5	PG11	-	88 + 97	12.5
MATRIX 3-5T/0.75			408	171	-	151	192	-	-	199.5	-	M16x1.5	88 + 97	12.4
MATRIX 3-6T/0.9M			432	171	-	175	-	219	106	223.5	M20x1.5	-	88 + 97	13.7
MATRIX 3-6T/0.9			444	171	-	175	192	-	-	223.5	-	M16x1.5	88 + 97	13.6
MATRIX 3-7T/1.3M			493	198	110.5	199	-	226	112	247.5	M20x1.5	-	88 + 97	16.3
MATRIX 3-7T/1.3			518	198	110.5	199	209	-	-	247.5	-	M20x1.5	88 + 97	17.9
MATRIX 3-8T/1.3M			517	198	134.5	223	-	226	112	271.5	M20x1.5	-	88 + 97	16.3
MATRIX 3-8T/1.3			542	198	134.5	223	209	-	-	271.5	-	M20x1.5	88 + 97	18.7
MATRIX 3-9T/1.5M			541	198	158.5	247	-	226	112	295.5	M20x1.5	-	88 + 97	18.3
MATRIX 3-9T/1.5			567	198	158.5	247	209	-	-	295.5	-	M20x1.5	88 + 97	20.9

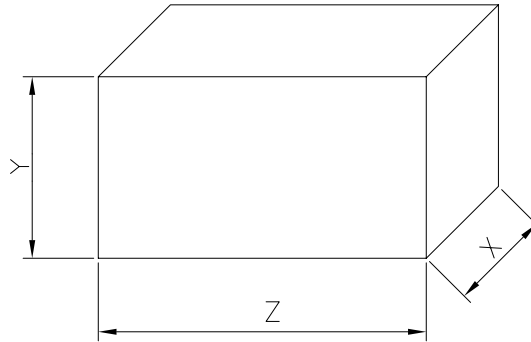
PUMP DRAWING MATRIX 5/10/18



**DIMENSION TABLE MATRIX 5/10/18**

Pump Type	Fig.	D1	D2	Dimensions [mm]																	Weight [kg]					
				H	H1	B	C	D	F	H3 (3~)	H4 (1~)	L	R	T (1~)	V (3~)	W	W1	W2	M1	N1		N2	S1			
MATRIX 5-2T/0.45 M	1	1 1/4	1"	-	-	360	171	-	103	-	200	86.5	151.5	PG11	-	88+97	-	-	-	-	-	-	-	8.5		
MATRIX 5-2T/0.45				-	-	360	171	-	103	192	-	-	151.5	-	PG11	88+97	-	-	-	-	-	-	-	-	8.4	
MATRIX 5-3T/0.65 M				-	-	360	171	-	103	-	200	86.5	151.5	PG11	-	88+97	-	-	-	-	-	-	-	-	9.9	
MATRIX 5-3T/0.65				-	-	360	171	-	103	192	-	-	151.5	-	PG11	88+97	-	-	-	-	-	-	-	-	9.8	
MATRIX 5-4T/0.9 M				-	-	384	171	-	127	-	219	106	175.5	M20x1.5	-	88+97	-	-	-	-	-	-	-	-	12.2	
MATRIX 5-4T/0.9				-	-	396	171	-	127	192	-	-	175.5	-	M16x1.5	88+97	-	-	-	-	-	-	-	-	12.4	
MATRIX 5-5T/1.3 M				-	-	445	198	-	151	-	226	112	199.5	M20x1.5	-	88+97	-	-	-	-	-	-	-	-	15.8	
MATRIX 5-5T/1.3				-	-	470	198	-	151	209	-	-	199.5	-	M20x1.5	88+97	-	-	-	-	-	-	-	-	16.7	
MATRIX 5-6T/1.3 M				-	-	469	198	-	175	-	226	112	223.5	M20x1.5	-	88+97	-	-	-	-	-	-	-	-	15.2	
MATRIX 5-6T/1.3				-	-	494	198	-	175	209	-	-	223.5	-	M20x1.5	88+97	-	-	-	-	-	-	-	-	17.1	
MATRIX 5-7T/1.5 M				-	-	493	198	110.5	199	-	226	112	247.5	M20x1.5	-	88+97	-	-	-	-	-	-	-	-	18.3	
MATRIX 5-7T/1.5				-	-	518.5	198	110.5	199	209	-	-	247.5	-	M20x1.5	88+97	-	-	-	-	-	-	-	-	19.6	
MATRIX 5-8T/2.2 M				2			90	190	565	-	134.5	223	-	231	112	325.5	M20x1.5	-	117.5	125	155	30	140	170	9	22.3
MATRIX 5-8T/2.2				1			-	-	542.5	198	134.5	223	209	-	-	271.5	-	M20x1.5	88+97	-	-	-	-	-	-	19.6
MATRIX 5-9T/2.2 M	2			90	190	589	-	158.5	247	-	231	112	349.5	M20x1.5	-	117.5	125	155	30	140	170	9	23.3			
MATRIX 5-9T/2.2	1			-	-	566.5	198	158.5	247	209	-	-	295.5	-	M20x1.5	88+97	-	-	-	-	-	-	19.7			
MATRIX 10-2T/0.75 M	1	1 1/2	1 1/4	-	-	379	175	-	118	-	200	86.5	170.5	PG11	-	92+101	-	-	-	-	-	-	11.3			
MATRIX 10-2T/0.75				-	-	379	175	-	118	192	-	-	170.5	-	M16x1.5	92+101	-	-	-	-	-	-	-	11.2		
MATRIX 10-3T/1.3 M				-	-	416	202	-	118	-	226	112	170.5	M20x1.5	-	92+101	-	-	-	-	-	-	-	14.3		
MATRIX 10-3T/1.3				-	-	441	202	-	118	209	-	-	170.5	-	M20x1.5	92+101	-	-	-	-	-	-	-	14.5		
MATRIX 10-4T/1.5 M				-	-	446	202	-	148	-	226	112	200.5	M20x1.5	-	92+101	-	-	-	-	-	-	-	15.6		
MATRIX 10-4T/1.5				-	-	471.5	202	-	148	209	-	-	200.5	-	M20x1.5	92+101	-	-	-	-	-	-	-	18.2		
MATRIX 10-5T/2.2 M				2			90	190	524	-	-	178	-	231	112	284.5	M20x1.5	-	121.5	125	155	30	140	170	9	21.8
MATRIX 10-5T/2.2				1			-	-	501.5	202	-	178	209	-	-	230.5	-	M20x1.5	92+101	-	-	-	-	-	18.8	
MATRIX 10-6T/2.2 M				2			90	190	554	-	118.5	208	-	231	112	314.5	M20x1.5	-	121.5	125	155	30	140	170	9	22.1
MATRIX 10-6T/2.2				1			-	-	531.5	202	118.5	208	209	-	-	260.5	-	M20x1.5	92+101	-	-	-	-	-	19.2	
MATRIX 18-2T/1.5M	1	2"	1 1/2	-	-	442	205	-	141	-	226	112	196.5	M20x1.5	-	95 + 104	-	-	-	-	-	-	14.5			
MATRIX 18-2T/1.5				-	-	467.5	205	-	141	209	-	-	196.5	-	M20x1.5	95 + 104	-	-	-	-	-	-	17.1			
MATRIX 18-3T/2.2M				2			90	190	490	-	-	141	-	231	112	250.5	M20x1.5	-	124.5	125	155	30	140	170	9	20.7
MATRIX 18-3T/2.2				1			-	-	467.5	205	-	141	209	-	-	196.5	-	M20x1.5	95 + 104	-	-	-	-	-	18.1	
MATRIX 18-4T/3				2			90	190	565	-	-	178.5	214	-	-	288	-	M20x1.5	124.5	125	155	30	140	170	9	23.8
MATRIX 18-5T/4					100	200	615	-	123	216	241	-	-	315	-	M20x1.5	114	140	170	35	160	192	11	33.2		
MATRIX 18-6T/4				100	200	652	-	160.5	253.5	241	-	-	352.5	-	M20x1.5	114	140	170	35	160	192	11	34.2			

### PACKING



Pump Type	Packing [mm]			Weight [kgf]	
	X	Y	Z		
MATRIX 3-2T/0.45M	180	220	465	9.1	
MATRIX 3-2T/0.45				9	
MATRIX 3-3T/0.65M				10.5	
MATRIX 3-3T/0.65				10.4	
MATRIX 3-4T/0.65M				11.2	
MATRIX 3-4T/0.65				11	
MATRIX 3-5T/0.75M	210	240	550	13.1	
MATRIX 3-5T/0.75				13	
MATRIX 3-6T/0.9M				14.5	
MATRIX 3-6T/0.9			570	14.6	
MATRIX 3-7T/1.3M				17.1	
MATRIX 3-7T/1.3				18	
MATRIX 3-8T/1.3M	660	17.1			
MATRIX 3-8T/1.3		18.8			
MATRIX 3-9T/1.5M		19.1			
MATRIX 3-9T/1.5	21				
MATRIX 5-2T/0.45M	180	220	465	9.1	
MATRIX 5-2T/0.45				9	
MATRIX 5-3T/0.65M				10.5	
MATRIX 5-3T/0.65				10.4	
MATRIX 5-4T/0.9M				13	
MATRIX 5-4T/0.9				210	240
MATRIX 5-5T/1.3M	570	16.8			
MATRIX 5-5T/1.3		17.7			
MATRIX 5-6T/1.3M		660	16		
MATRIX 5-6T/1.3	18.1				
MATRIX 5-7T/1.5M	19.3				
MATRIX 5-7T/1.5	210	240	570	20.5	
MATRIX 5-8T/2.2M				660	23.3
MATRIX 5-8T/2.2					20.4
MATRIX 5-9T/2.2M			24.4		
MATRIX 5-9T/2.2			20.7		
MATRIX 10-2T/0.75M			180	220	465
MATRIX 10-2T/0.75	11.8				
MATRIX 10-3T/1.3M	210	240	570	15.3	
MATRIX 10-3T/1.3				15.1	
MATRIX 10-4T/1.5M			570	16.4	
MATRIX 10-4T/1.5				19.1	
MATRIX 10-5T/2.2M			660	22.3	
MATRIX 10-5T/2.2				19.6	
MATRIX 10-6T/2.2M			660	23.1	
MATRIX 10-6T/2.2				20	
MATRIX 18-2T/1.5M	210	240	570	15.3	
MATRIX 18-2T/1.5				17.9	
MATRIX 18-3T/2.2M				660	21.6
MATRIX 18-3T/2.2			19.1		
MATRIX 18-4T/3			24.8		
MATRIX 18-5T/4			280	750	34.4
MATRIX 18-6T/4	35.2				

### 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 [μF]	[V]	Three phase η %			Single Phase	Three Phase	Single Phase 230 V	230 V	400 V	Single Phase 230 V	230 V	400 V
								50%	75%	100%	Phase	Phase						
MATRIX 3-2T/0.45M	MATRIX 3-2T/0.45	0.45	0.6	-	-	12.5	450	-	-	-	0.73	0.72	3.2	2.3	1.3	8.0	11.0	6.5
MATRIX 3-3T/0.65M	MATRIX 3-3T/0.65	0.65	0.9	-	-	16	450	-	-	-	0.97	0.85	4.5	2.8	1.6	16.2	16.0	9.1
MATRIX 3-4T/0.65M	MATRIX 3-4T/0.65	0.65	0.9	-	-	16	450	-	-	-	0.97	0.89	4.5	3.1	1.8	16.2	16.0	9.1
MATRIX 3-5T/0.75M	MATRIX 3-5T/0.75	0.75	1.0	-	IE3	25	450	80.9	82.3	82.1	1.14	0.91	5.4	3.0	1.7	22.7	19.7	11.4
MATRIX 3-6T/0.9M	MATRIX 3-6T/0.9	0.9	1.2	-	IE3	31.5	450	83.1	82.4		1.28	1.34	5.7	4.3	2.5	21.7	28.8	16.6
MATRIX 3-7T/1.3M	MATRIX 3-7T/1.3	1.3	1.8	-	IE3	35	450	83.5	84.3	84.6	1.75	1.77	7.8	5.8	3.3	41.0	47.4	27.4
MATRIX 3-8T/1.3M	MATRIX 3-8T/1.3	1.3	1.8	-	IE3	35	450	83.5	84.3	84.6	1.75	1.77	7.8	5.8	3.3	41.0	47.4	27.4
MATRIX 3-9T/1.5M	MATRIX 3-9T/1.5	1.5	2.0	-	IE3	40	450	82.7	86.1	87.0	1.95	1.72	8.7	6.6	3.8	43.0	66.6	38.4
MATRIX 5-2T/0.45M	MATRIX 5-2T/0.45	0.45	0.6	-	-	12.5	450	54.5	60.8	62.8	0.73	0.72	3.2	2.3	1.3	8.0	11.0	6.5
MATRIX 5-3T/0.65M	MATRIX 5-3T/0.65	0.65	0.9	-	-	16	450	57.0	64.2	66.7	0.97	0.91	4.5	3.1	1.8	16.2	16.0	9.1
MATRIX 5-4T/0.9M	MATRIX 5-4T/0.9	0.9	1.2	-	IE3	31.5	450	81.7	83.1	82.4	1.28	1.34	5.7	4.3	2.5	21.7	28.8	16.6
MATRIX 5-5T/1.3M	MATRIX 5-5T/1.3	1.3	1.8	-	IE3	35	450	83.5	84.3	84.6	1.75	1.77	7.8	5.8	3.3	41.0	47.4	27.4
MATRIX 5-6T/1.3M	MATRIX 5-6T/1.3	1.3	1.8	-	IE3	35	450	83.5	84.3	84.6	1.75	1.77	7.8	5.8	3.3	41.0	47.4	27.4
MATRIX 5-7T/1.5M	MATRIX 5-7T/1.5	1.5	2.0	-	IE3	40	450	82.7	86.1	87.0	1.95	1.72	8.7	6.6	3.8	43.0	66.6	38.4
MATRIX 5-8T/2.2M	MATRIX 5-8T/2.2	2.2	3.0	-	IE3	50	450	86.2	87.0	86.0	2.92	2.55	13.0	8.2	4.7	62.4	66.6	38.4
MATRIX 5-9T/2.2M	MATRIX 5-9T/2.2	2.2	3.0	-	IE3	50	450	86.2	87.0	86.0	2.92	2.55	13.0	8.2	4.7	62.4	66.6	38.4
MATRIX 10-2T/0.75M	MATRIX 10-2T/0.75	0.75	1.0	-	IE3	25	450	80.9	82.3	82.1	1.14	0.91	5.4	3.0	1.7	26.5	19.7	11.4
MATRIX 10-3T/1.3M	MATRIX 10-3T/1.3	1.3	1.8	-	IE3	35	450	83.5	84.3	84.6	1.75	1.77	7.8	5.8	3.3	41.0	47.4	27.4
MATRIX 10-4T/1.5M	MATRIX 10-4T/1.5	1.5	2.0	-	IE3	40	450	82.7	86.1	87.0	1.95	1.72	8.7	6.6	3.8	43.0	66.6	38.4
MATRIX 10-5T/2.2M	MATRIX 10-5T/2.2	2.2	3.0	-	IE3	50	450	86.2	87.0	86.0	2.92	2.55	13.0	8.2	4.7	62.4	66.6	38.4
MATRIX 10-6T/2.2M	MATRIX 10-6T/2.2	2.2	3.0	-	IE3	50	450	86.2	87.0	86.0	2.92	2.55	13.0	8.2	4.7	62.4	66.6	38.4
MATRIX 18-2T/1.5M	MATRIX 18-2T/1.5	1.5	2.0	-	IE3	40	450	82.7	86.1	87.0	1.95	1.72	8.7	6.6	3.8	43.0	66.6	38.4
MATRIX 18-3T/2.2M	MATRIX 18-3T/2.2	2.2	3.0	-	IE3	50	450	86.2	87.0	86.0	2.92	2.55	13.0	8.2	4.7	62.4	66.6	38.4
-	MATRIX 18-4T/3	3	4.0	-	IE3	-	-	85.9	87.5	87.1	-	3.44	-	11.1	6.4	-	90.0	52.0
-	MATRIX 18-5T/4	4	5.5	-	IE3	-	-	85.8	88.3	88.4	-	4.52	-	15.1	8.7	-	131.8	76.1
-	MATRIX 18-6T/4	4	5.5	-	IE3	-	-	85.8	88.3	88.4	-	4.52	-	15.1	8.7	-	131.8	76.1

### NOISE DATA

Pump Type		Power		LpA-dB(A)*
Single phase	Three phase	[kW]	[HP]	
MATRIX 3-2T/0.45M	MATRIX 3-2T/0.45	0.45	0.6	61
MATRIX 5-2T/0.45M	MATRIX 5-2T/0.45			
MATRIX 3-3T/0.65M	MATRIX 3-3T/0.65	0.65	0.9	62
MATRIX 3-4T/0.65M	MATRIX 3-4T/0.65			
MATRIX 5-3T/0.65M	MATRIX 5-3T/0.65			
MATRIX 3-5T/0.75M	MATRIX 3-5T/0.75	0.75	1.0	62
MATRIX 10-2T/0.75M	MATRIX 10-2T/0.75			
MATRIX 3-6T/0.9M	MATRIX 3-6T/0.9	0.9	1.2	62
MATRIX 5-4T/0.9M	MATRIX 5-4T/0.9			
MATRIX 3-7T/1.3M	MATRIX 3-7T/1.3			
MATRIX 3-8T/1.3M	MATRIX 3-8T/1.3	1.3	1.8	64
MATRIX 5-5T/1.3M	MATRIX 5-5T/1.3			
MATRIX 5-6T/1.3M	MATRIX 5-6T/1.3			
MATRIX 10-3T/1.3M	MATRIX 10-3T/1.3			
MATRIX 3-9T/1.5M	MATRIX 3-9T/1.5			
MATRIX 5-7T/1.5M	MATRIX 5-7T/1.5	1.5	2.0	64
MATRIX 10-4T/1.5M	MATRIX 10-4T/1.5			
MATRIX 18-2T/1.5M	MATRIX 18-2T/1.5			
-	MATRIX 5-8T/2.2			
-	MATRIX 5-9T/2.2	2.2	3.0	65
-	MATRIX 10-5T/2.2			
-	MATRIX 10-6T/2.2			
-	MATRIX 18-3T/2.2			
MATRIX 5-8T/2.2M	-			
MATRIX 5-9T/2.2M	-			
MATRIX 10-5T/2.2M	-			
MATRIX 10-6T/2.2M	-			
MATRIX 18-3T/2.2M	-	3.0	4.0	68
-	MATRIX 18-4T/3			
-	MATRIX 18-5T/4			
-	MATRIX 18-6T/4	4.0	5.5	69

\* Mean value of several measures at 1 m distance around the pump.  
Tolerance  $\pm 2.5$  dB.