



# MATRIX

## Multistage Stainless Steel Pumps



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Bare Pump

Automatic Pressure System  
(Presscontrol)Pressure System  
(Pressure Switch, Tee piece and gauge)

Horizontal multistage centrifugal electric pumps in AISI 304 stainless steel suitable for household and commercial water boosting, distribution and treatment of water, irrigation and recovery of rain water etc. Strong and compact construction. Available as pressure systems.

### **Specifications**

- Maximum working pressure : 10 bar
- Liquid temperature: -15°C to 85°C

### **Materials**

- Pump casing: 304 Stainless Steel
- Intermediate casings: 304 Stainless Steel
- Impellers: 304 Stainless Steel
- Casing cover: 304 Stainless Steel
- Shaft : 304 Stainless Steel
- Bracket & Motor frame: Aluminium
- Mechanical seal: Carbon/Ceramic/EPDM

### **Motor Data**

- TEFC, 2 pole motor
- Insulation class F
- IP55 protection
- 50 Hz, 1 phase - 230 Volt
- In built overload protection for 1 phase

### **Range**

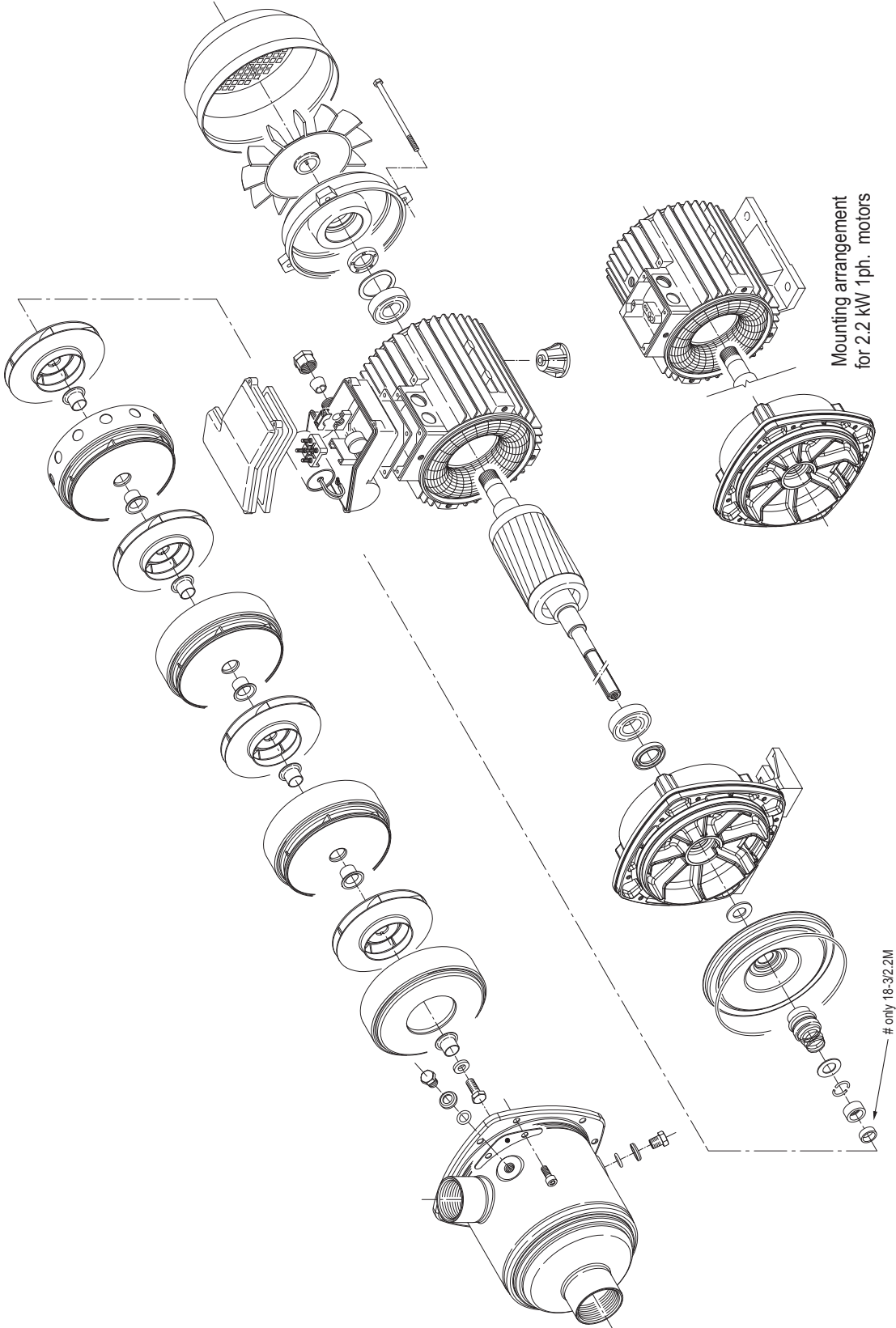
- 0.65 to 2.2 kW - 1 phase

### **Supply**

- 1.8 m cable & plug with 1 phase models

### **Options**

- Available as pressure systems



## PUMP AND MOTOR SPECIFICATIONS

50Hz

V14

PUMP			
Liquid Handled	Type of liquid	Water, mildly aggressive solutions	
	Max temperature	[°C] 85	
	Min temperature	[°C] -15	
	Max. chlorine content	500 ppm	
Maximum 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/Discharge ( threads according ISO 228)	MATRIX 3	G 1" - G 1"
		MATRIX 5	G 1¼ - G 1"
		MATRIX 10	G 1½ - G 1¼
		MATRIX 18	G 2 - G 1½
Material	Casing	EN 1.4301 (AISI 304)	
	Impeller	EN 1.4301 (AISI 304)	
	Intermediate casing	EN 1.4301 (AISI 304)	
	O-Rings	EPDM	
	Casing cover	EN 1.4301 (AISI 304)	
	Shaft seal	Ceramic/Carbon/EPDM	
	Liner ring	EN 1.4301 (AISI 304) + PTFE	
	Shaft (wet extension)	EN 1.4301 (AISI 304)	
Bracket	EN AB-AISI11Cu2(Fe) (Die cast Aluminium)		
Applicable standard of test		ISO 9906 - Annex A	

Approval for drinking water application

WRAS Approved product

DM174/2004



MOTOR		
Type	Electric asynchronous TEFC	
	Single Phase	
No. of Poles	2	
Insulation Class	F	
Max ambient temperature	[°C]	40
Protection degree	IP 55	
Power rating	[kW]	0.65 ÷ 2.2
	[HP]	0.9 ÷ 3.0
Frequency	[Hz]	50
Voltage	[V]	230 ±10%
Capacitor	Built in	
Overload protection	Built in	
Casing material	Aluminium	
Base material/motor support	Aluminium	
Dimensions of cable entry	PG11 - M20x1.5	

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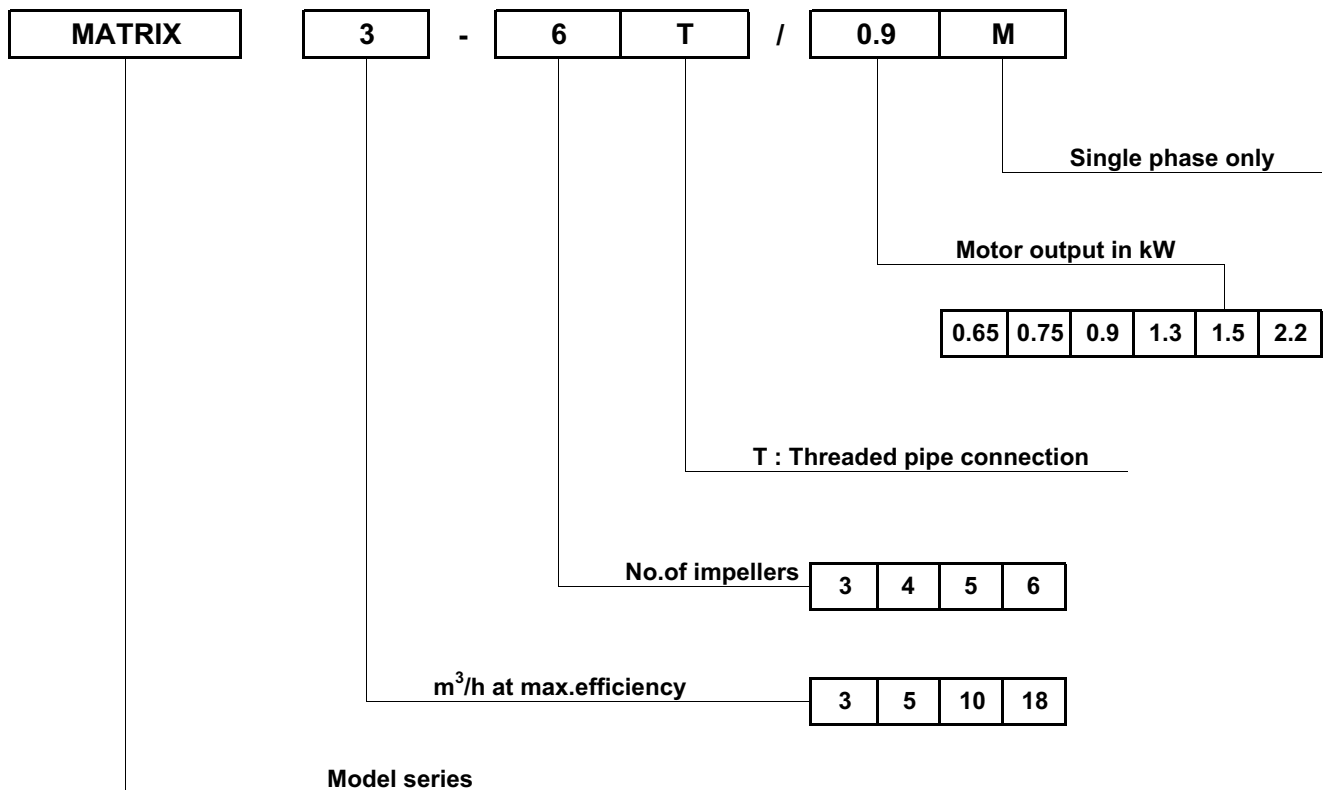
## SELECTION CHART

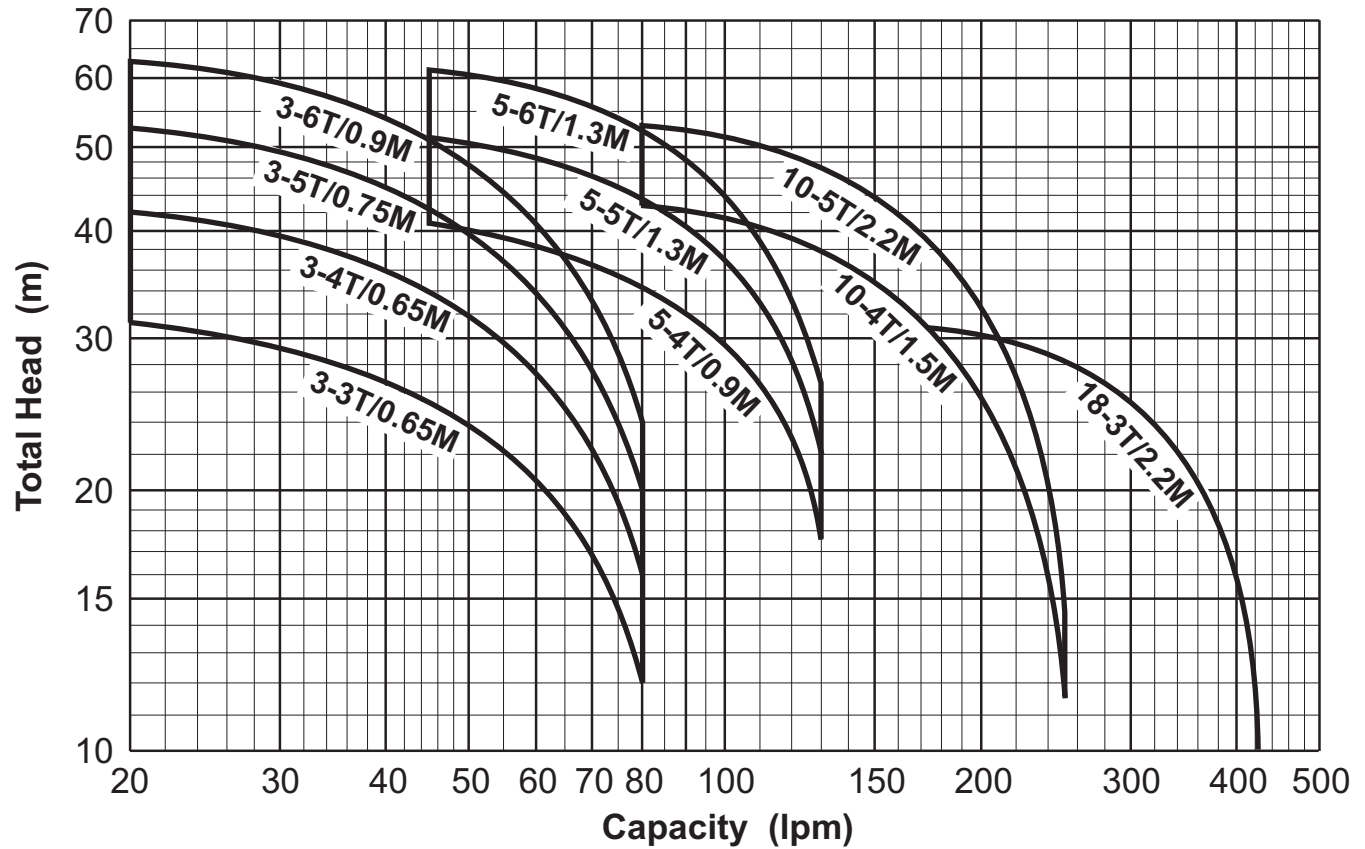
50Hz

V14

Pump type <b>MATRIX</b> Single phase	Motor		Q=Capacity															
	Power		l/min	0	20	30	45	60	80	100	130	160	200	250	300	350	400	450
	kW	HP	m <sup>3</sup> /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															
3-3T /0.65M	0.65	0.9	33.9	31.4	29.3	25.5	20.4	12.0										
3-4T /0.65M	0.65	0.9	45.0	42.0	39.1	34.0	27.2	16.0										
3-5T /0.75M	0.75	1.0	56.5	52.5	49.0	42.5	34.0	20.0										
3-6T /0.9M	0.9	1.2	68.0	62.5	58.5	51.0	41.0	24.0										
5-4T /0.9M	0.9	1.2	46.0	-	43.0	41.0	38.6	34.7	29.4	17.6								
5-5T /1.3M	1.3	1.8	57.5	-	54.0	51.0	48.5	43.5	36.7	22.0								
5-6T /1.3M	1.3	1.8	69.0	-	64.5	61.5	58.0	52.0	44.0	26.4								
10-4T /1.5M	1.5	2.0	48.0	-	-	-	44.5	43.0	41.0	38.1	34.0	25.7	11.6					
10-5T /2.2M	2.2	3.0	60.0	-	-	-	55.5	53.5	51.5	47.5	42.5	32.1	14.5					
18-3T /2.2M	2.2	3.0	36.3	-	-	-	-	-	-	33.0	31.9	30.4	28.1	25.2	21.3	15.5	7.8	

### Type Key :





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  $\nu = 1 \text{ mm}^2/\text{s}$  (1 cSt)

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:

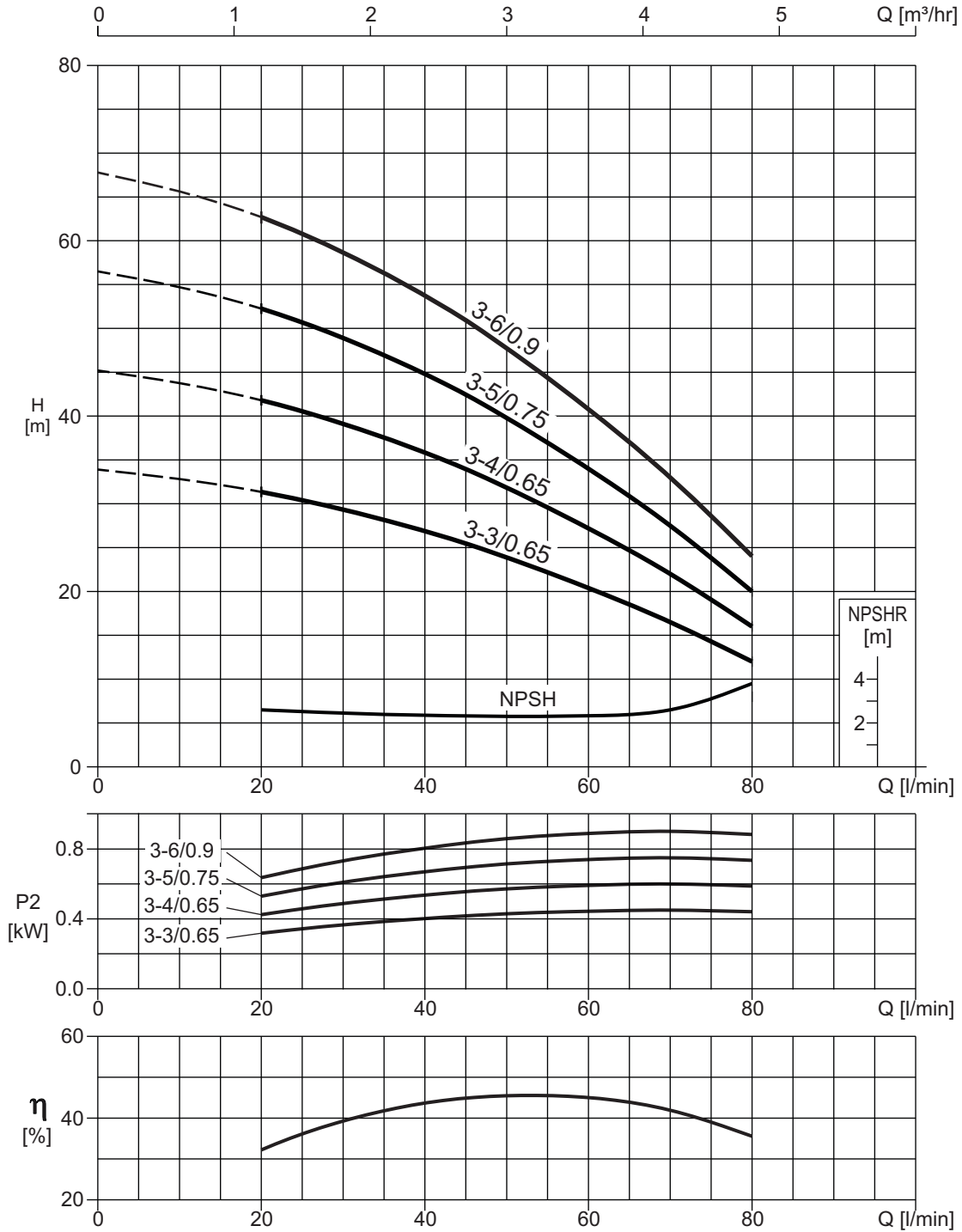
- Q = volume flow rate
- H = total head
- $P_2$  = pump power input (shaft power)
- $\eta$  = pump efficiency
- NPSH = net positive suction head required by the pump

PERFORMANCE CURVE - MATRIX 3

50Hz

V14

MATRIX 3-6/0.9 ( 0.90 kW ) - Impeller diameter = 98.5 mm  
 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



Impeller diameter : 98.5 mm  
 Rotation speed ~ 2850 min<sup>-1</sup>  
 Test standard : ISO 9906 Annex A

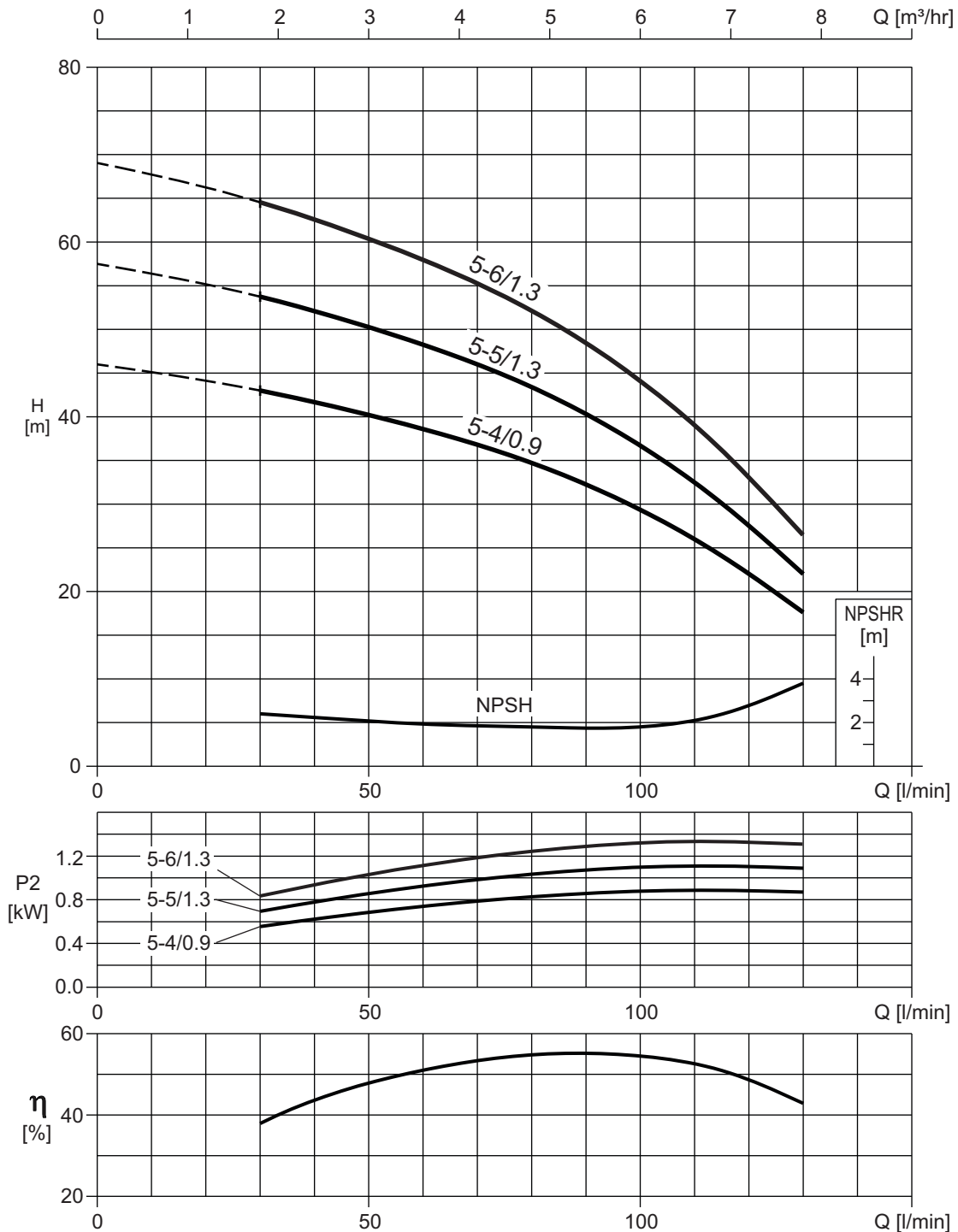


PERFORMANCE CURVE - MATRIX 5

50Hz

V14

MATRIX 5-6/1.3 ( 1.3 kW ) - Impeller diameter = 97 mm  
 MATRIX 5-5/1.3 ( 1.3 kW ) - Impeller diameter = 97 mm  
 MATRIX 5-4/0.9 ( 0.90 kW ) - Impeller diameter = 97 mm



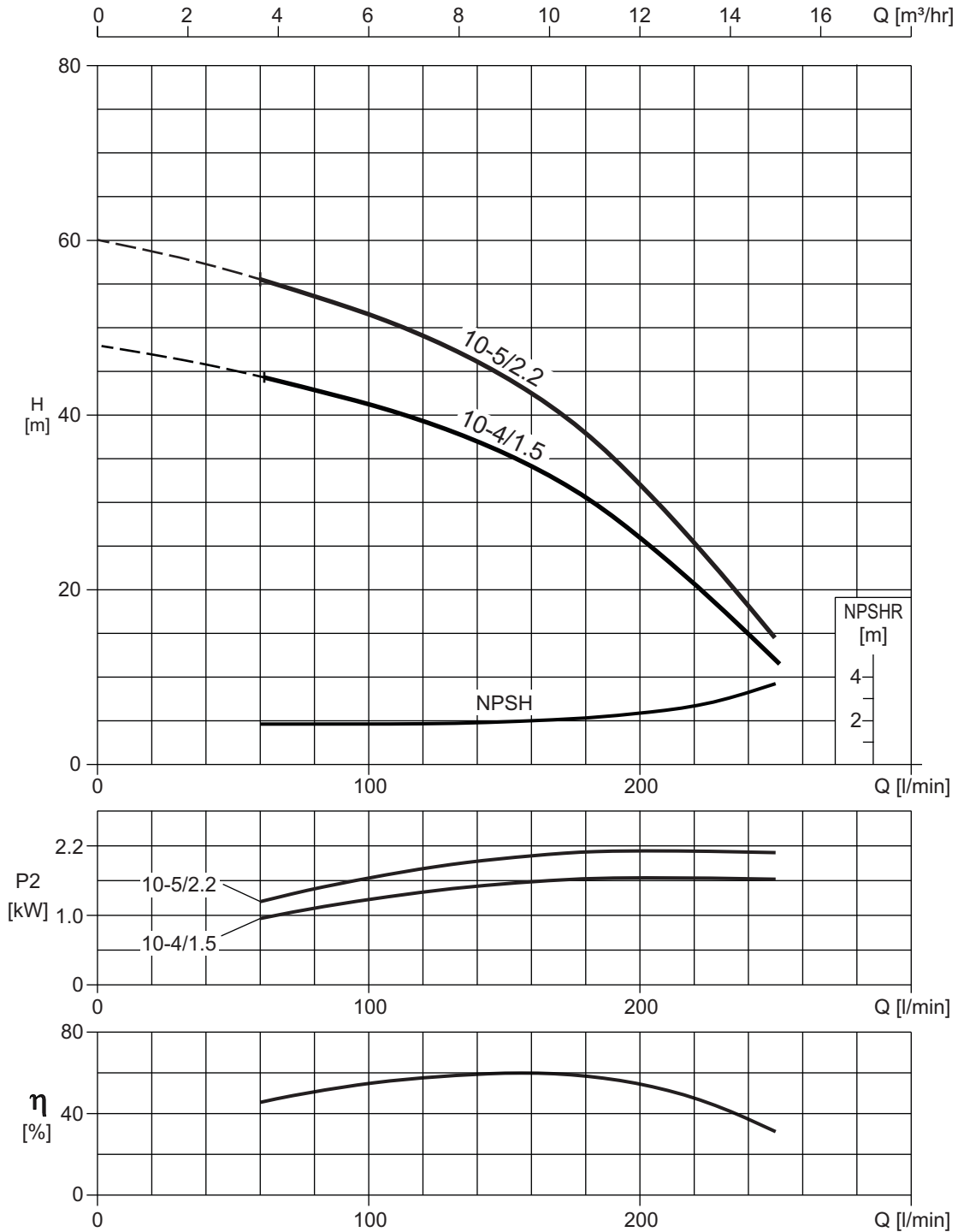
Impeller diameter : 97 mm  
 Rotation speed ~ 2850 min<sup>-1</sup>  
 Test standard : ISO 9906 Annex A

PERFORMANCE CURVE - MATRIX 10

50Hz

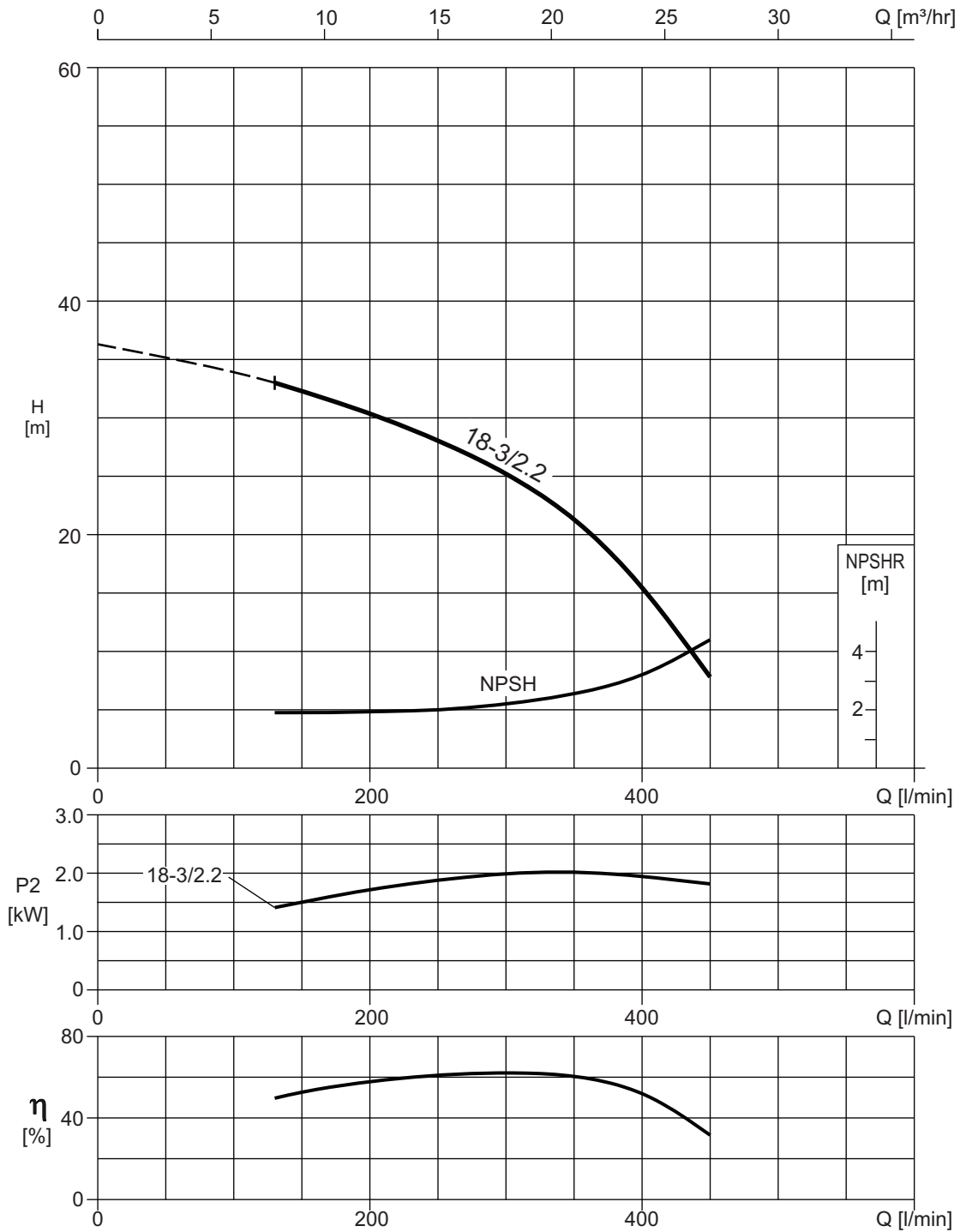
V14

MATRIX 10-5/2.2 ( 2.2 kW ) - Impeller diameter = 100.5 mm  
 MATRIX 10-4/1.5 ( 1.5 kW ) - Impeller diameter = 100.5 mm

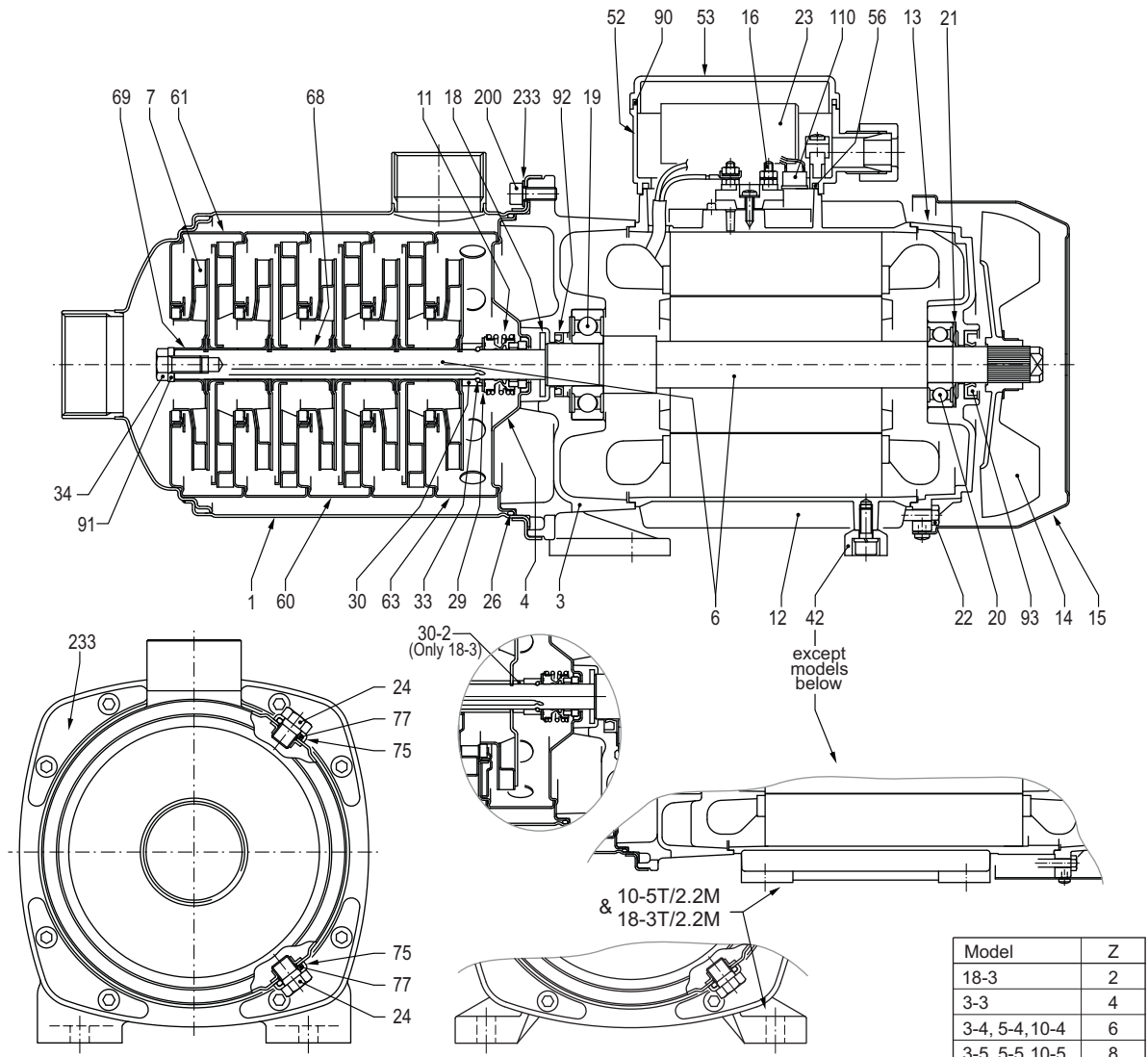


Impeller diameter : 100.5 mm  
 Rotation speed ~ 2850 min<sup>-1</sup>  
 Test standard : ISO 9906 Annex A

MATRIX 18-3/2.2 ( 2.2 kW ) - Impeller diameter = 106.7 mm



Impeller diameter : 106.7 mm  
 Rotation speed ~ 2875 min<sup>-1</sup>  
 Test standard : ISO 9906 Annex A



\* refer to table above

No.	PART NAME	MATERIAL	QTY	No.	PART NAME	MATERIAL	QTY	No.	PART NAME	MATERIAL	QTY
1	Casing	AISI 304	1	21	Adjusting ring	Steel C70	1	60	Intermediate Casing	AISI 304	[N-2]
3	Bracket	Aluminium	1	22	Tie rod	Fe 42 zinc plated	4	61	Inter. Casing (suction)	AISI 304	1
4	Casing cover	AISI 304	1	23	Capacitor	-	1	63	Inter. Casing (discharge)	AISI 304	1
6	Shaft with rotor	AISI 304 <sup>Wetted end.</sup>	1	24	Plug (Drain & Fill)	AISI 304	2	68	Shaft Sleeve (intermediate)	AISI 304	Z*
7	Impeller	AISI 304	[N]	26	O'Ring	EPDM	1	69	Impeller spacer	AISI 304	1
11	Mechanical seal	Car/Cer/EPDM	1	29	Washer	AISI 304	1	75	Washer (plug)	AISI 304	2
12	Motor frame & stator	-	1	30	Ring holder	AISI 304	1	77	O'Ring (plug)	EPDM	2
13	Motor Cover	Aluminium	1	30-2	Shaft sleeve	AISI 304	1 <sup>#</sup>	90	Cover box gasket	AISI 304	1
14	Fan	Polyamide	1	33	Ring	AISI 304	2	91	Shaft washer	AISI 304	1
15	Fan cover	Zinc plated steel	1	34	Screw	AISI 304	1	92	Lip seal	-	1
16	Terminal board	-	1	42	Foot	Aluminium	1 <sup>#</sup>	93	Lip seal	-	1
18	Splash ring	NBR	1	52	Capacitor box	Polypropylene	1	110	Protector	-	1 <sup>+</sup>
19	Bearing (Pump side)	-	1	53	Cover box	Polypropylene	1	200	Screw	AISI 304	8
20	Bearing (Fan side)	-	1	56	Box gasket	NBR	1	233	Plate	AISI 304	4

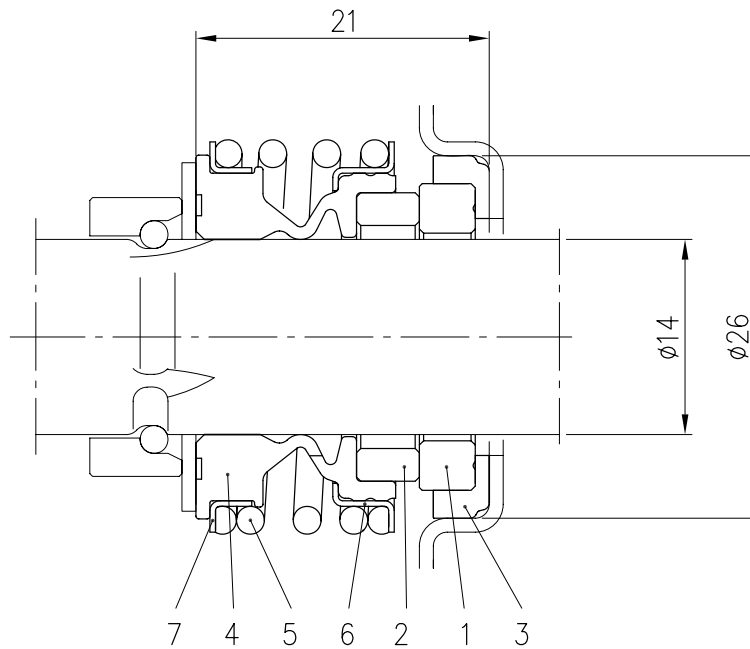
[N = no. of stages]

# refer to drg's above

+ only 1.3, 1.5 & 2.2M

Specifications subject to change without notice

**MECHANICAL SEAL**



Manufacturer reference	Version	Material						
		1 Stationary seal ring	2 Rotary seal ring	3 Gasket	4 Bellows	5 Spring	6 Frame	7 Retainer ring
BT Burgmann	Standard	Ceramic	Carbon	EPDM	EPDM	EN 1.4402 (AISI 316)	EN 1.4402 (AISI 316)	EN 1.4402 (AISI 316)

Approval for drinking water application

WRAS Approved product

DM174/2004

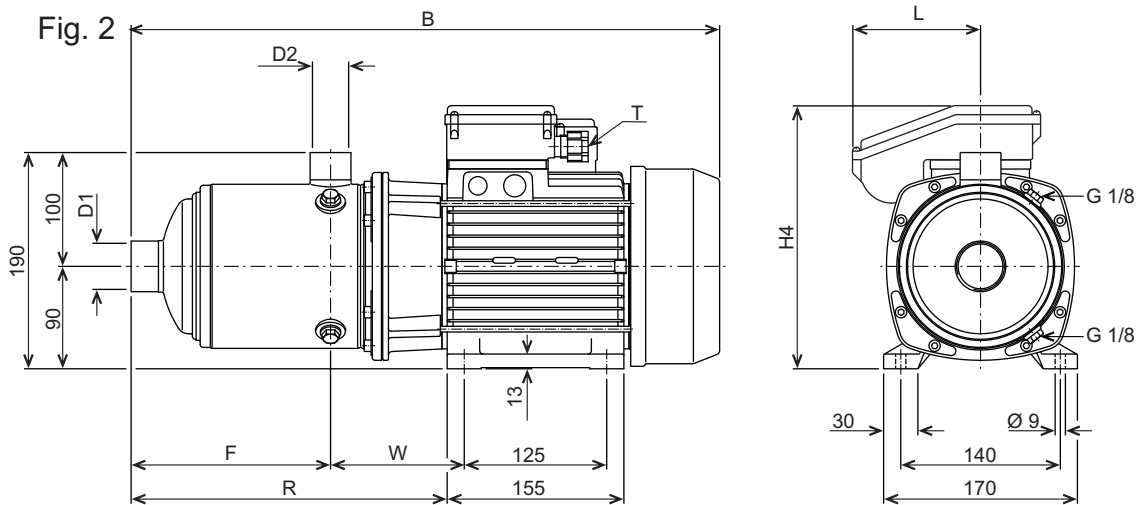
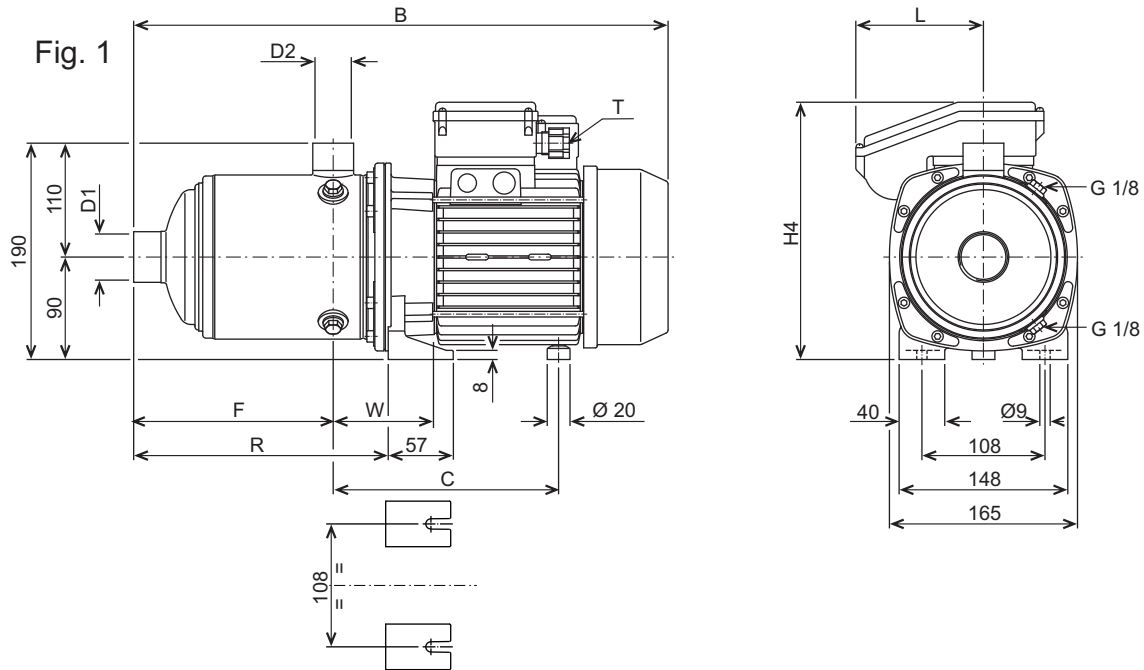


## DIMENSIONS AND WEIGHT

50Hz

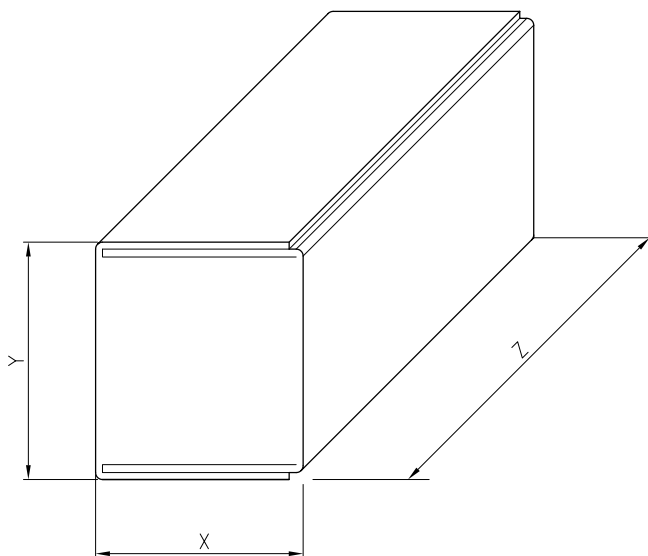
V14

Units: mm unless otherwise specified



Pump Model	Drg.	Dimensions (mm)										Weight
		D1	D2	B	C	F	H4	L	R	T	W	
MATRIX 3-3T/0.65M	Fig. 1	1"	1"	360	171	103	200	84	151.5	Pg11	88~97	9.9 kg
MATRIX 3-4T/0.65M				384	171	127	200	84	175.5	Pg11	88~97	10.6 kg
MATRIX 3-5T/0.75M				408	171	151	200	84	199.5	Pg11	88~97	12.5 kg
MATRIX 3-6T/0.9M				432	171	175	219	106	223.5	M20x1.5	88~97	13.7 kg
MATRIX 5-4T/0.9M	Fig. 1	1 1/4"	1"	384	171	127	219	106	175.5	M20x1.5	88~97	12.2 kg
MATRIX 5-5T/1.3M				445	198	151	226	112	199.5	M20x1.5	88~97	15.0 kg
MATRIX 5-6T/1.3M				469	198	175	226	112	223.5	M20x1.5	88~97	15.2 kg
MATRIX 10-4T/1.5M	Fig. 1	1 1/2"	1 1/4"	446	202	148	226	112	200.5	M20x1.5	92~101	15.6 kg
MATRIX 10-5T/2.2M	Fig. 2			524	-	178	231	112	284.5	M20x1.5	121.5	21.3 kg
MATRIX 18-3T/2.2M	Fig. 2			490	-	141	231	112	205.5	M20x1.5	124.5	20.6 kg

**PACKING AND WEIGHT**



Pump Type	Packing [mm]			Weight [kgf]
	X	Y	Z	
MATRIX 3-3T/0.65M	192	228	432	10.5
MATRIX 3-4T/0.65M				11.2
MATRIX 3-5T/0.75M				13.1
MATRIX 3-6T/0.9M	222	258	562	14.5
MATRIX 5-4T/0.9M	192	228	432	13
MATRIX 5-5T/1.3M	222	258	562	15.8
MATRIX 5-6T/1.3M				16
MATRIX 10-4T/1.5M	222	258	562	16.4
MATRIX 10-5T/2.2M				22.1
MATRIX 18-3T/2.2M				21.4

Pump Type	Power		Motor			Capacitor		Input power [kW]	Full load current [A] 230 V	Locked rotor current [A] 230 V
	kW	HP	size	Bearing		mF	Vc			
				pump side	fan side					
MATRIX 3-3T/0.65M	0.65	0.9	71	6203-2RSH-C3	6202-2RSH	16	450	0.97	4.5	16.2
MATRIX 3-4T/0.65M	0.65	0.9	71			16	450	0.97	4.5	16.2
MATRIX 3-5T/0.75M	0.75	1.0	71			25	450	1.14	5.4	26.5
MATRIX 3-6T/0.9M	0.9	1.2	71			31.5	450	1.28	5.7	21.7
MATRIX 5-4T/0.9M	0.9	1.2	71	6203-2RSH-C3	6202-2RSH	31.5	450	1.28	5.7	21.7
MATRIX 5-5T/1.3M	1.3	1.8	80	6304-2RSH-C3	6203-2RSH	35	450	1.75	7.8	41
MATRIX 5-6T/1.3M	1.3	1.8	80			35	450	1.75	7.8	41
MATRIX 10-4T/1.5M	1.5	2.0	80	6304-2RSH-C3	6203-2RSH	40	450	1.95	8.7	43
MATRIX 10-5T/2.2M	2.2	3.0	90	6305-2RSH1-C3	6205-2RSH-C3	50	450	2.92	13	62.4
MATRIX 18-3T/2.2M	2.2	3.0	90	6305-2RSH1-C3	6205-2RSH-C3	50	450	2.92	13	62.4

NOISE DATA					
Pump Type		Motor			LpA-dB(A)*
Single phase	Three phase	kW	HP	size	
MATRIX 3-3T/0.65M		0.65	0.9	71	62
MATRIX 3-4T/0.65M					
MATRIX 3-5T/0.75M					
MATRIX 3-6T/0.9M		0.9	1.2	71	62
MATRIX 5-4T/0.9M					
MATRIX 5-5T/1.3M		1.3	1.8	80	64
MATRIX 5-6T/1.3M					
MATRIX 10-4T/1.5M		1.5	2.0	80	64
MATRIX 10-5T/2.2M		2.2	3.0	90	68
MATRIX 18-3T/2.2M		2.2	3.0	90	68

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