MTR, MTRE, SPK, MTH, MTA

Immersible pumps

50/60 Hz

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1. Introduction

MTR, SPK and MTH

TM02 8540 0404

Fig. 1 MTR, SPK and MTH pumps

MTR, SPK and MTH pumps are vertical multistage centrifugal pumps designed for pumping of cooling lubricants for machine tools, condensate transfer and similar applications.

The pumps are designed to be mounted on top of tanks with the chamber stack immersed in the pumped liquid.

The pumps come in various pump sizes and have various numbers of stages to provide the flow, the pressure and the installation length required. To meet specific depths of tanks or containers, the immersible length of the pump can be varied using empty chambers.

The pumps consist of two main components:
The motor and the pump unit. The motor is a Grundfos standard MG motor designed to EN standards.

The pump unit consists of optimised hydraulics, various types of connections, a motor stool, a given number of chambers and various other parts.

The pumps are available in two material versions

- standard range (A-version) with wetted parts of cast iron and stainless steel
- stainless steel version (I-version) with all wetted parts of stainless steel EN/DIN 1.4301 or better.

The mounting flange dimensions are according to DIN 5440. The mechanical shaft seal is according to EN 12 756.

MTA

TM05 1132 2211

Fig. 2 MTA and MTA-H

The MTA range of single-stage immersible pumps has been designed especially for filtering systems in the machine tool industry.

The MTA pumps efficiently transport liquid containing chips, fibres and abrasive particles to the filtering unit. The semi-open impellers allow the passing of chips up to 10 mm.

These low-pressure pumps are available in 9 different hydraulic variants and come with a choice between top suction or bottom suction.

The pumps are designed to be mounted on top of tanks with the pump part immersed into the pumped liquid.

The pump is designed to be maintenance free, and therefore does not contain shaft seals or other wear parts.

2. Applications

Application	MTR(E)	SPK	MTH	MTA
Boring	●	●	●	●
Sawing	-	-	-	●
Milling	●	●	●	●
Grinding	●	●	●	●
Spark erosion	●	●	●	-
Wire cutting	●	●	●	-
Turning	●	●	●	●
Chilling	●	●	●	●
Part washing	●	●	●	-
Filtration	-	●	●	●
Condensate systems	●	●	●	-
Wash and clean	●	●	●	-

● The pump is suitable for this application.

Machine tool applications

Grundfos' range of high-pressure pumps offers unsurpassed accuracy and stability to make sure that nothing interferes with the delicate machining process. Equally important, high efficiency ensures a remarkably low heat input into the cooling lubricant. Integrated frequency converters can be optionally supplied for increased system efficiency and flexibility. Pumps suitable for machine tool applications are the immersible MTR, SPK, MTH, MTA and MTS, offering a tank mounted design. For MTS data, see separate MTS data booklet.

Machine tool sub applications

Boring

Grundfos is capable of providing the exact pressure and flow required for different materials, bore diameters and tool speeds in both through boring and blind boring. Our flexible range includes pumps supplying a pressure of up to 130 bar (MTS pumps), required for the deep blind-hole boring.

Milling and turning

The Grundfos range easily meets the individual cooling requirements of different materials in milling and turning - from low flow and low pressure to high flow and high pressure. The pumps are available in different lengths and customised to fit specific tank sizes. In fact, the modular construction of our pumps allows for more than 1,000,000 individual configurable variants.

Wire cutting

In wire cutting it is essential that the liquids are clean. This results in a more accurate process and extends the life of the filter. As a steady temperature is required for wire cutting operation, the process will benefit from a Grundfos E-solution.

Filtration

Reliable filtration is crucial in top quality machine tool applications, as it prolongs the life of the tool as well as prevents chips from damaging surfaces or tolerances.

With semi-open impellers, MTA and MTB are ideal for transporting liquids containing chips, fibres and abrasive particles to the filtration system.

For MTB data, see separate MTB data booklet.

Part washing

The Grundfos range includes pumps suitable for corrosive liquids and liquids with a high content of particles. Our frequency-converter operated pumps with high-efficiency motors ensure that systems operate under the best possible conditions with low-energy consumption. Pumps suitable for this application are MTB and all immersible pumps.

Chilling

The reliable and thoroughly-tested range of pumps for chillers offers a particularly diverse application spectrum. It covers cooling water circuits, washing plants, industrial circulation systems as well as general pressure boosting applications. All pumps are available with an E-motor to increase efficiency and perfectly control any process. Pumps suitable for this application are all immersible pumps.

Condensate systems

As condensate is normally pumped from a tank, an immersible pump will be a perfect choice.
Compact solution as half the pump will be in the tank.
Optimum suction as no pipes or valves are needed in front of inlet. For temperatures above 90 °C, a 120 °C version is available.

Wash and clean

As for condensate systems, wash and clean applications are typically based around a tank. So also here the immersible pumps can save space and secure optimum suction. A version in all stainless steel is available for aggressive liquids.

MTRE - pumps with built-in frequency-converter

TM05 8202 2113 - TM05 8203 2113

Fig. 3 MTRE pumps

MTRE pumps are MTR pumps with an E-motor, i.e. a motor with built-in frequency control.
Frequency control enables continuously variable control of motor speed, which makes it possible to set the pump to operate in any duty point. The motors of the MTRE pumps are Grundfos MGE motors designed to EN standards.

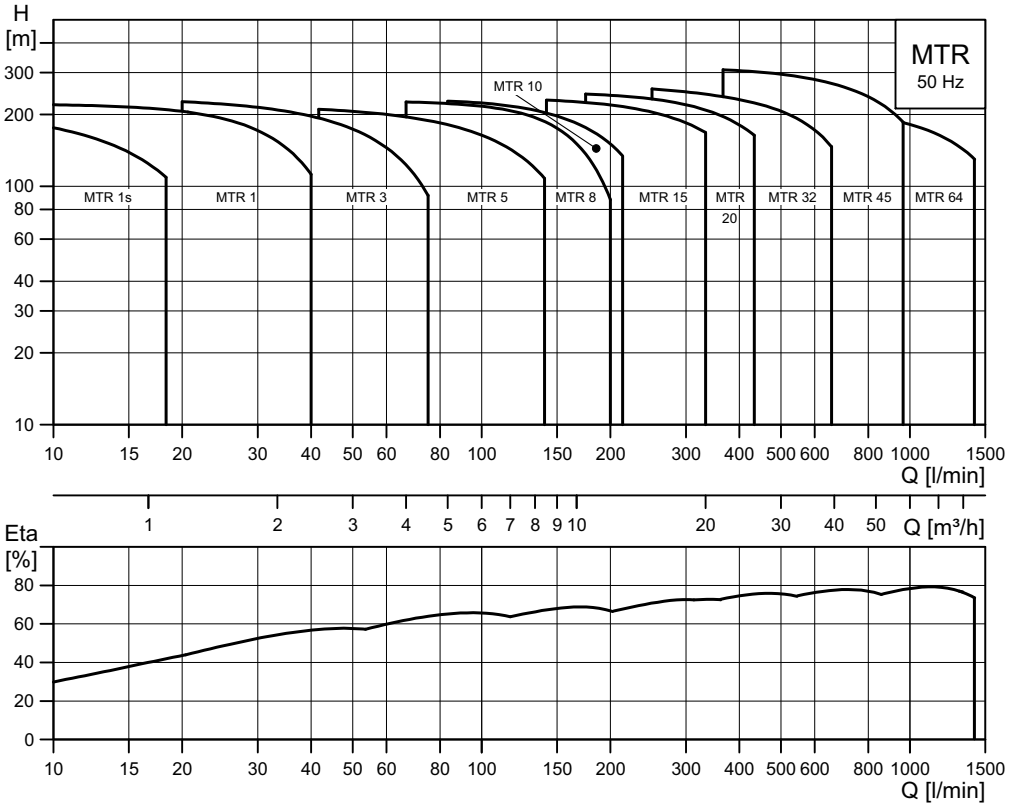
MTRE pumps are ideal for machining centres which operate with different machining processes and tools, as this will often result in different needs for flow and pressure.

The following features and benefits are typical for choosing an MTRE pump:

- energy savings
- low heat input into the cooling lubricant
- increased cooling efficiency
- better performance of the machining centre
- simple integration with the machining centre.

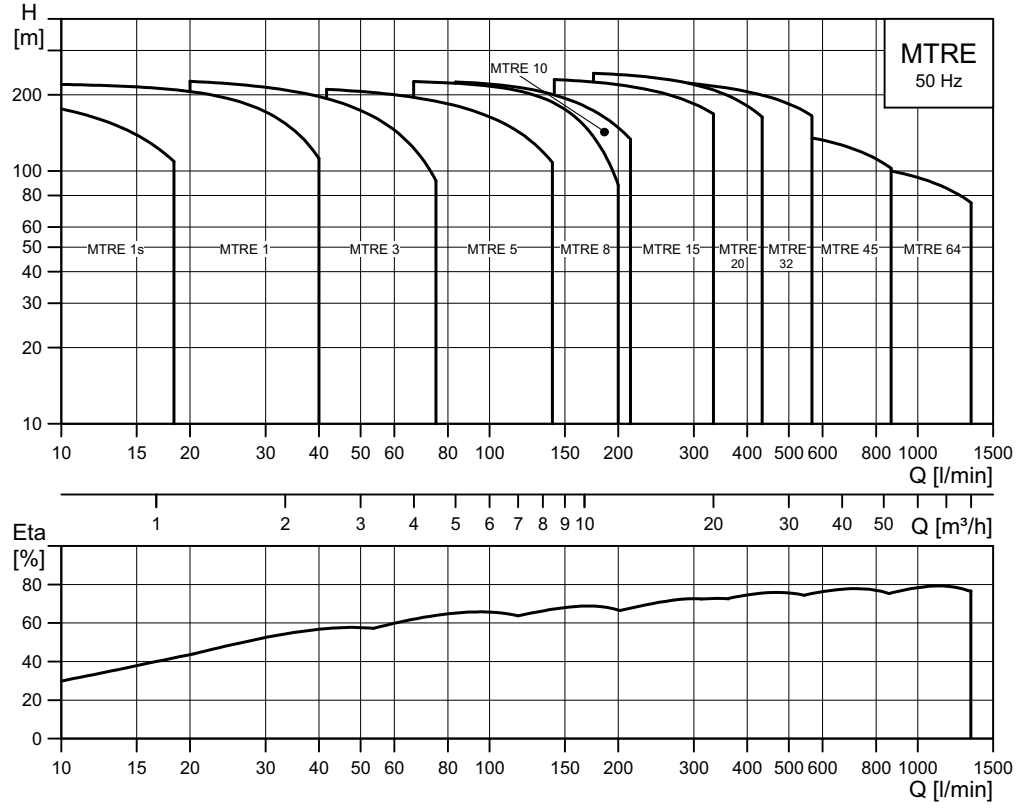
3. Performance range

MTR, 50 Hz



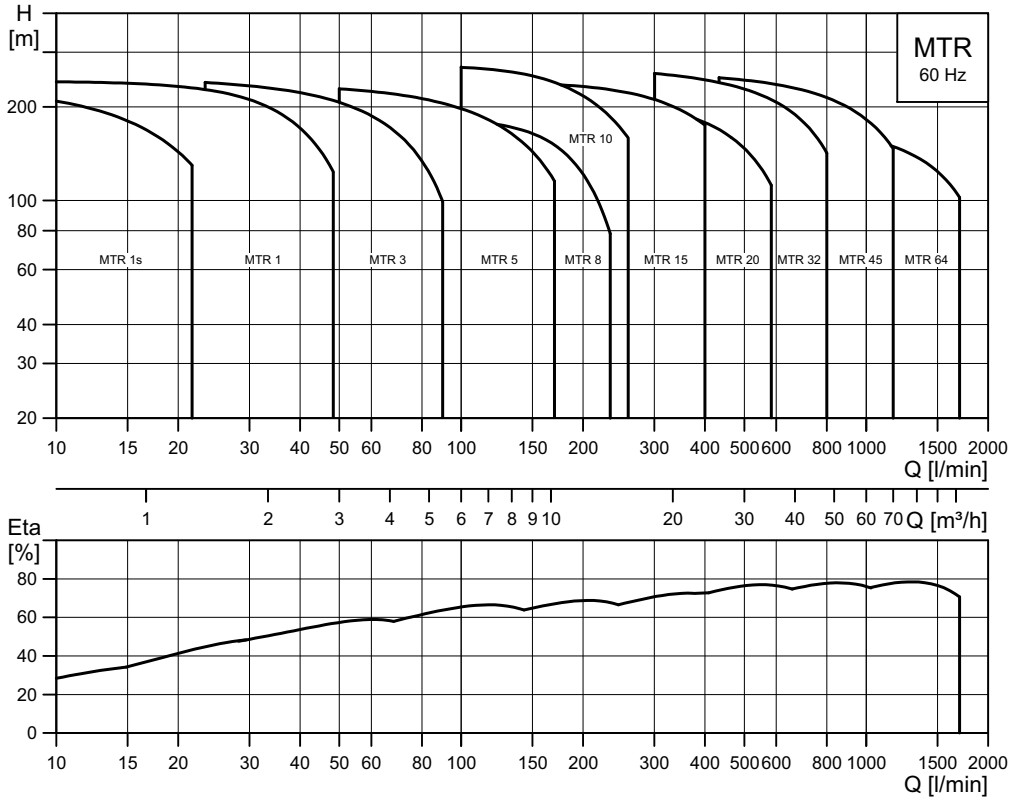
TM02 7818 0215

MTRE, 50 Hz



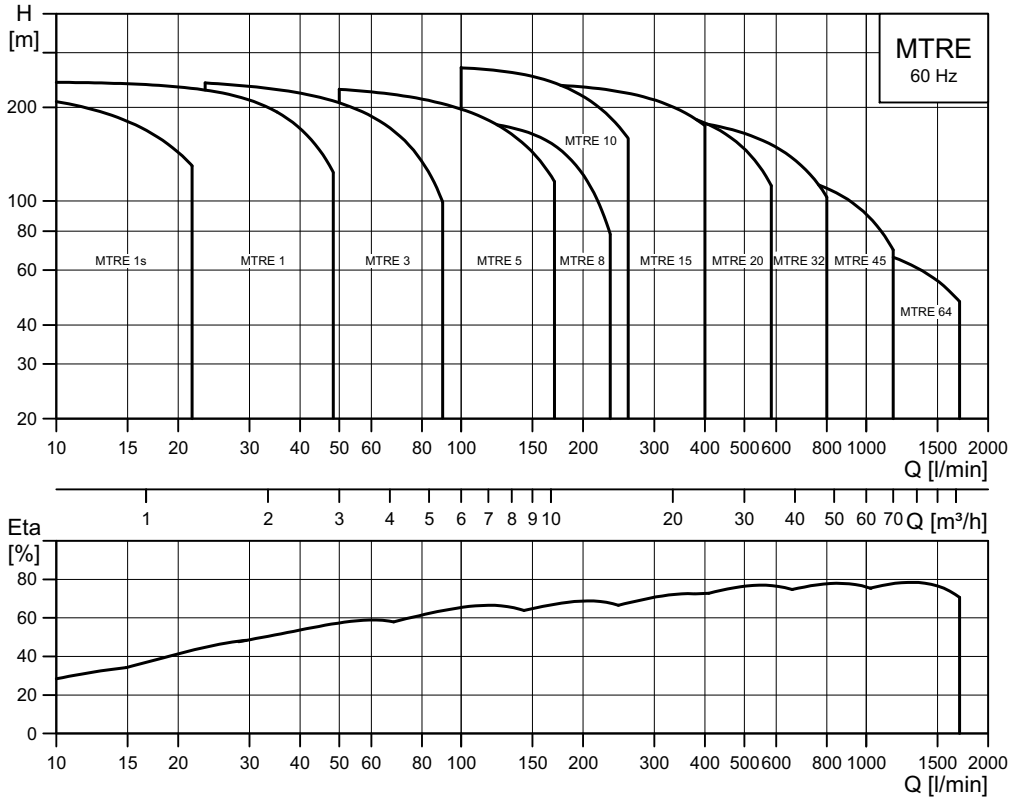
TM02 8553 0215

MTR, 60 Hz



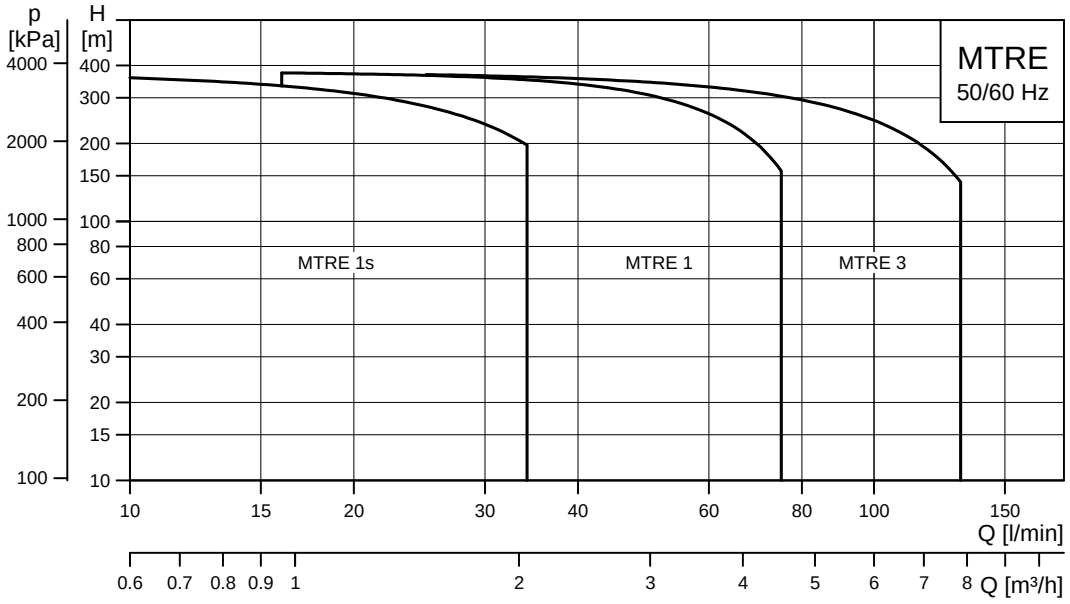
TM02 8105 0215

MTRE, 60 Hz



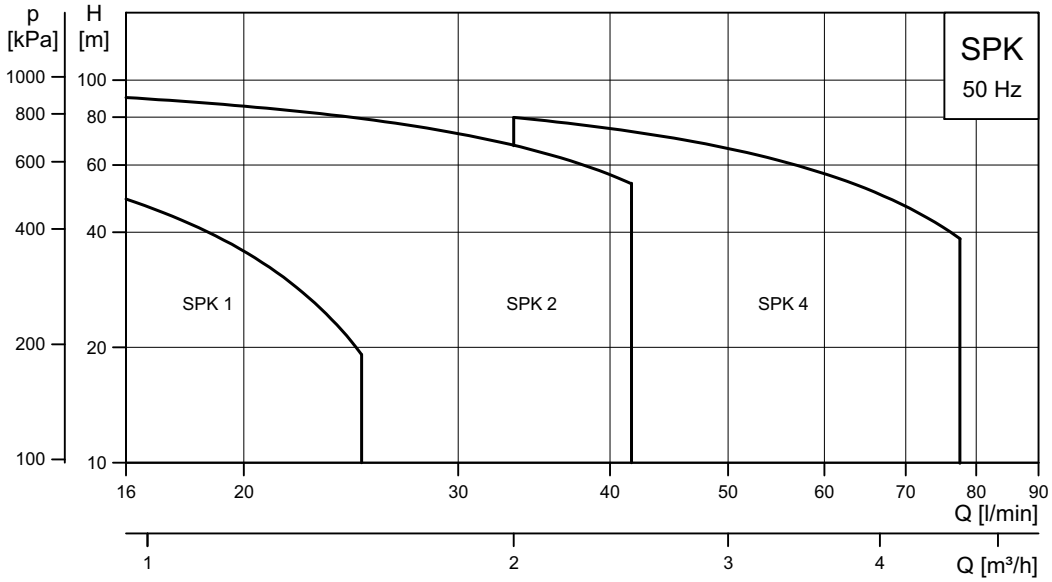
TM02 8554 0215

MTRE high pressure, 50/60 Hz



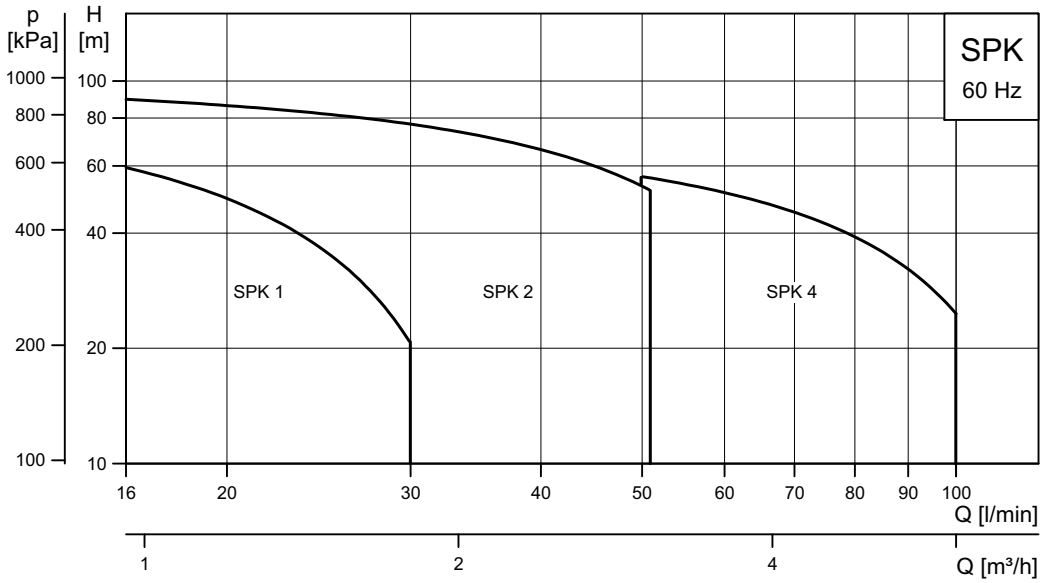
TM05 1565 3111

SPK, 50 Hz



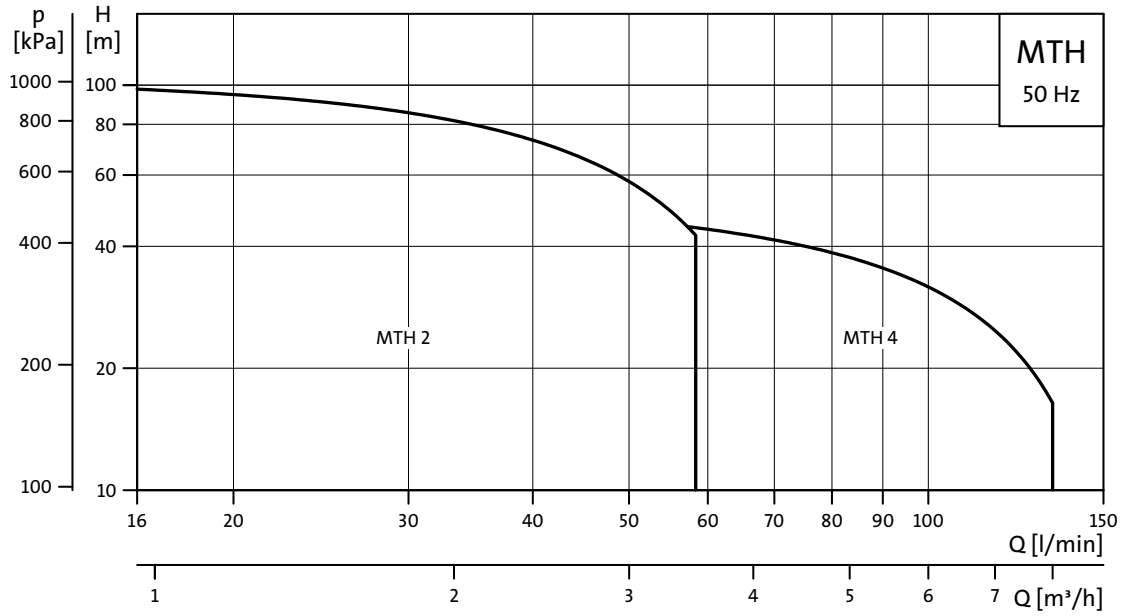
TM00 8398 0215

SPK, 60 Hz



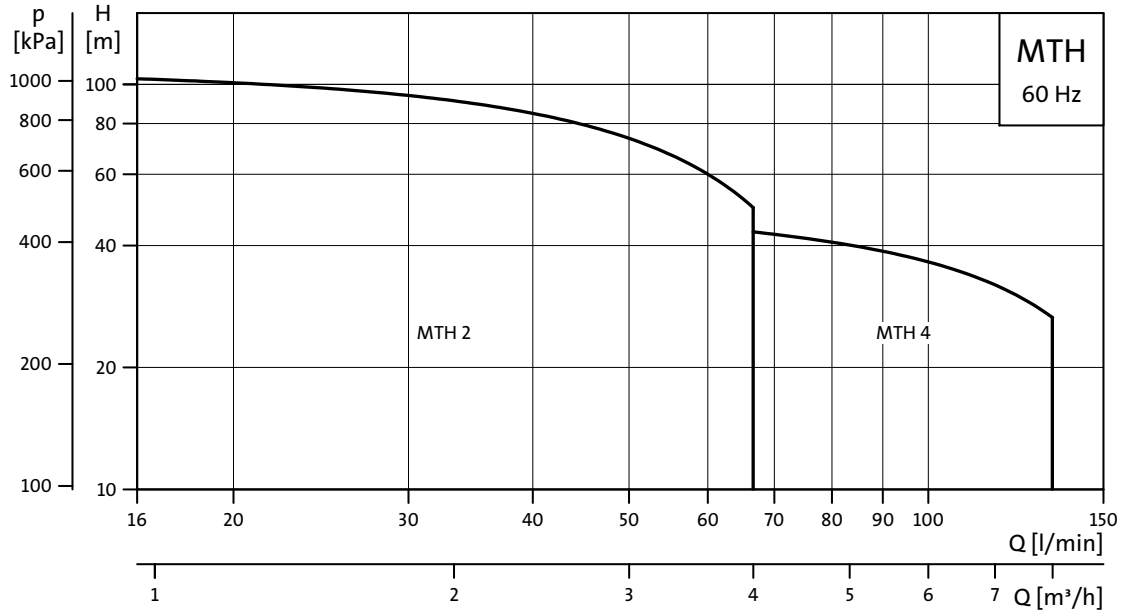
TM00 8397 0215

MTH, 50 Hz



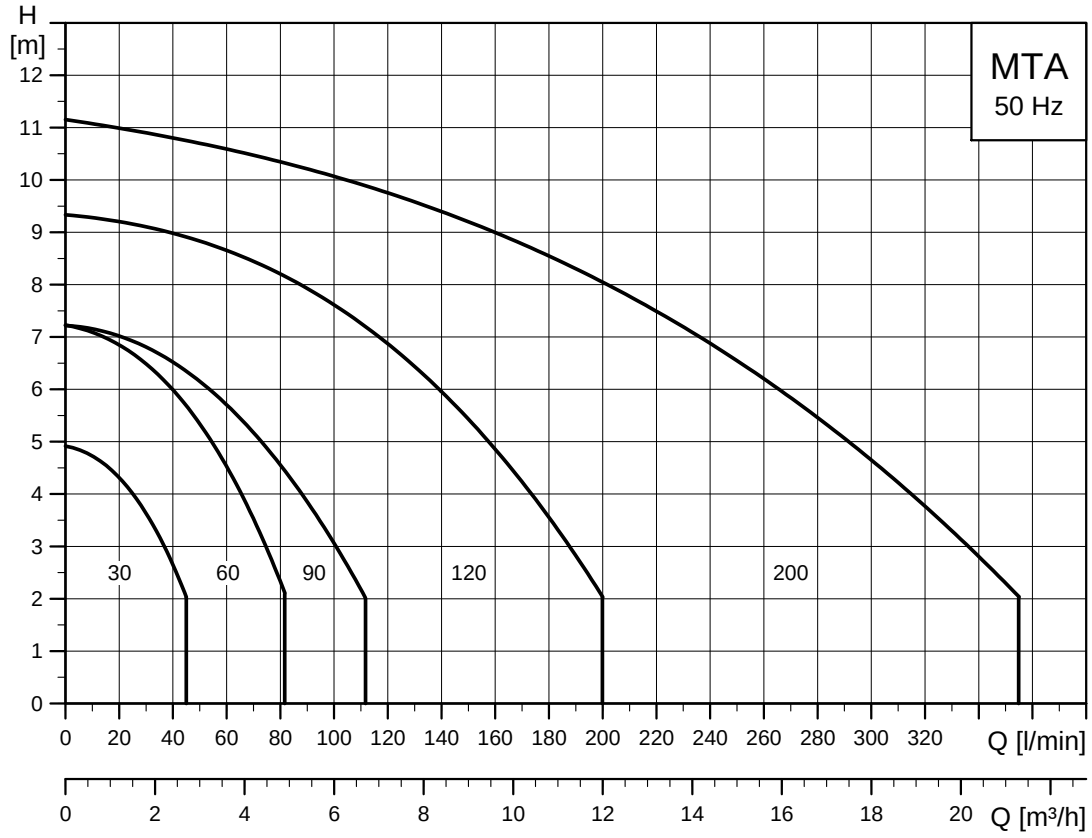
TM02 7828 4103

MTH, 60 Hz



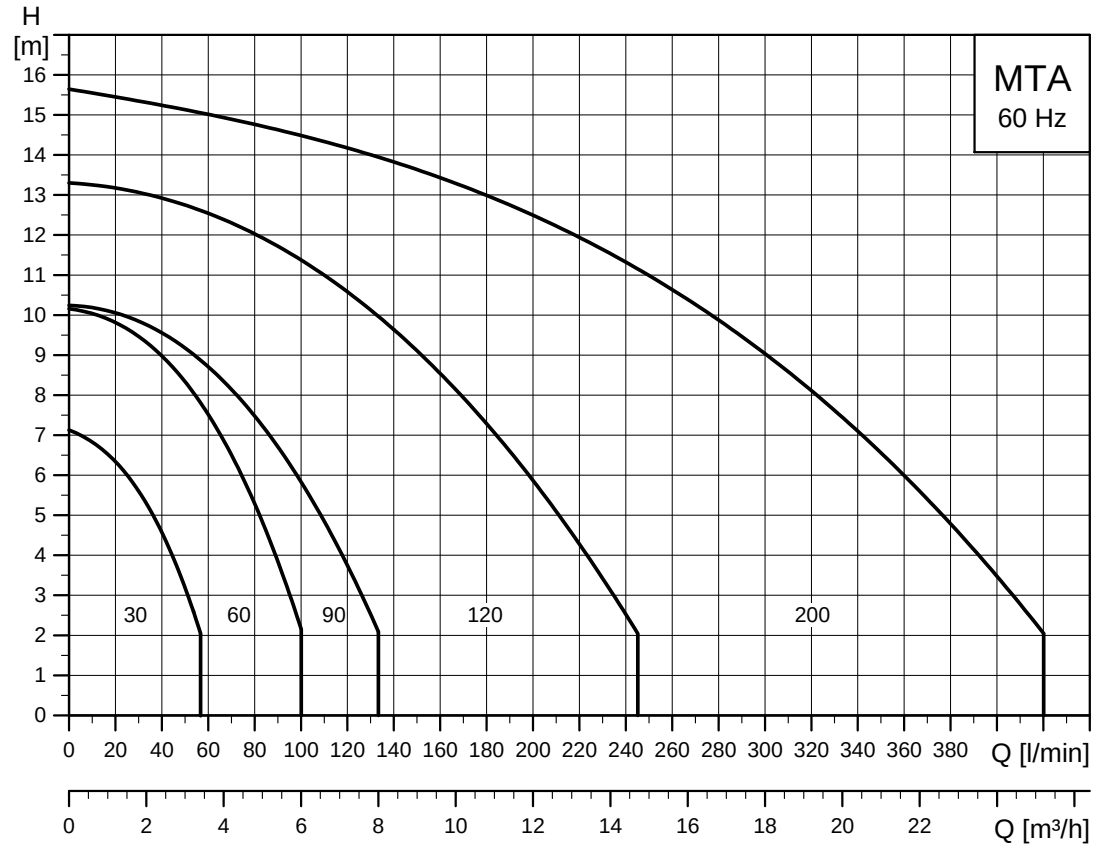
TM02 7829 4103

MTA, 50 Hz



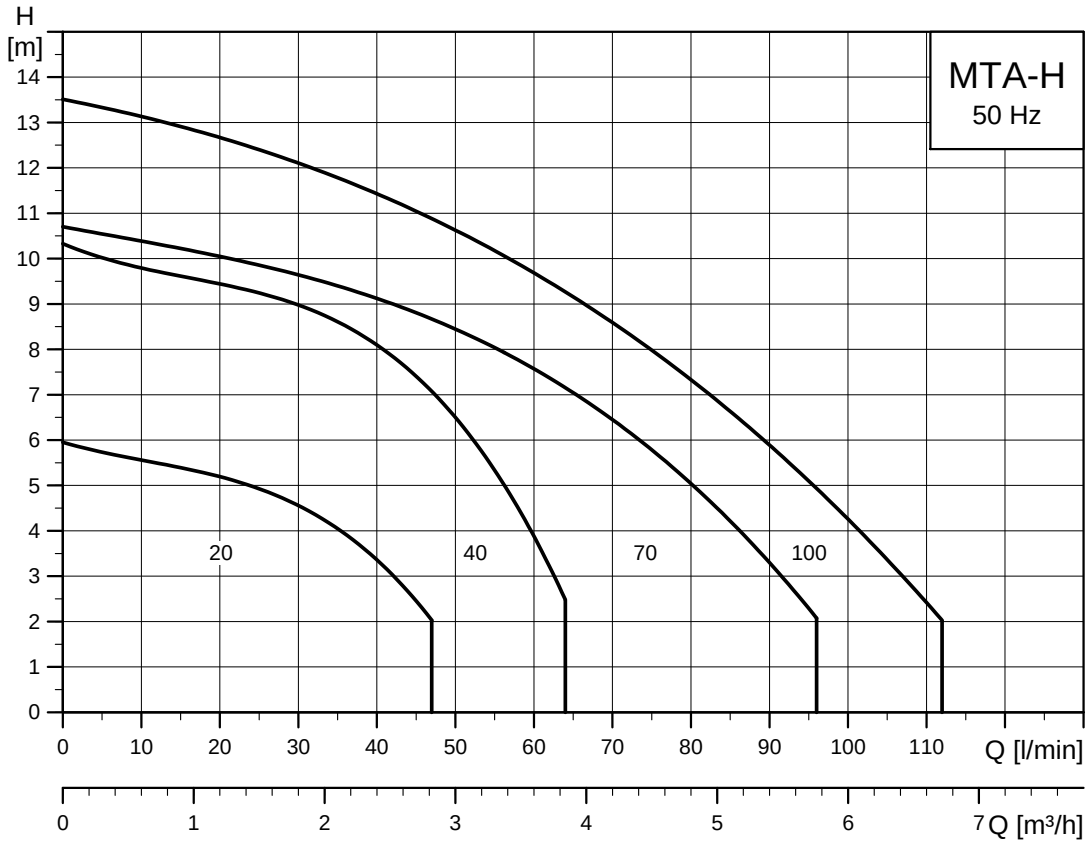
TM04 9437 1711

MTA, 60 Hz



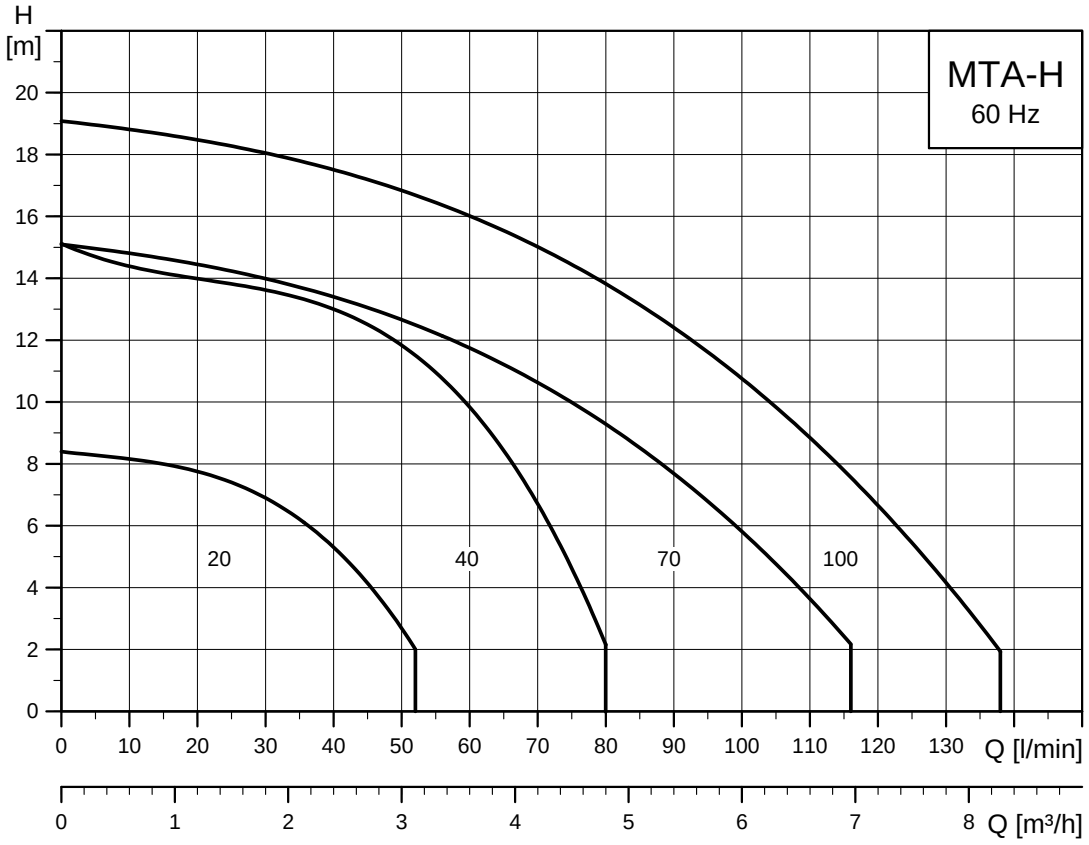
TM04 9439 1711

MTA-H, 50 Hz



TM04 9438 1711

MTA-H, 60 Hz



TM04 9440 1711

EuP ready

The MTR, MTRE, SPK and MTH pumps are energy-optimised and comply with the EuP Directive (Commission Regulation (EC) No 547/2012) which has been effective since 1 January 2013. As from this date, all pumps has been classified/graduated in the new minimum efficiency index (MEI).

Minimum efficiency index

Minimum efficiency index (MEI) means the dimensionless scale unit for hydraulic pump efficiency at best efficiency point (BEP), part load (PL) and overload (OL). The Commission regulation (EU) sets efficiency requirements to MEI ≥ 0.10 as from 1 January 2013 and MEI ≥ 0.40 as from 1 January 2015. An indicative benchmark for best-performing water pump available on the market as from 1 January 2013 is determined in the regulation.

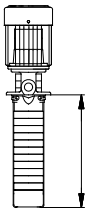
- The benchmark for most efficient water pumps is MEI ≥ 0.70.
- The efficiency of a pump with a trimmed impeller is usually lower than that of a pump with the full impeller diameter. The trimming of the impeller will adapt the pump to a fixed duty point, thus leading to reduced energy consumption. MEI is based on the full impeller diameter.
- The operation of this water pump with variable duty points may be more efficient and economic when controlled, for example, by using a variable-speed drive that matches the pump duty to the system requirement.
- Information on benchmark efficiency is available at http://europump.eu/efficiencycharts.

Minimum efficiency index (MEI)

Pump type	MEI
MTR 1s-3/3	0.67
MTR 1-3/3	> 0.70
MTR 3-3/3	> 0.70
MTR 5-3/3	0.57
MTR 8-3/3	> 0.70
MTR 10-3/3	> 0.70
MTR 15-3/3	> 0.70
MTR 20-3/3	> 0.70
MTR 323/3	> 0.70
MTR 45-3/3	> 0.70
MTR 64-3/3	> 0.70
MTH 2-30/3	> 0.70
MTH 4-30/3	> 0.70

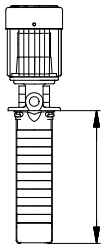
4. Product range

MTR, MTRE

Pump	MTR, MTRE 1s	MTR, MTRE 1	MTR, MTRE 3	MTR, MTRE 5	MTR, MTRE 8	MTR, MTRE 10	MTR, MTRE 15	MTR, MTRE 20	MTR, MTRE 32	MTR, MTRE 45	MTR, MTRE 64
50 Hz											
Rated flow rate [m^3/h]	0.8	1	3	5	8	10	15	20	32	45	64
Rated flow rate [l/min]	13	17	50	83	133	167	250	333	533	750	1067
Temperature range [°C]						-10 - 90					
Maximum efficiency [%]	35	48	58	66	62	70	72	72	76	78	80
MTR pumps											
Flow range [m^3/h]	0.3 - 1.3	0.7 - 2.4	1.2 - 4.5	2.5 - 8.5	4-12	5-13	8.5 - 23.5	10.5 - 29	15-40	22-58	30-85
Flow range [l/min]	5-22	12-40	20-75	42-142	67-200	83-217	142-392	175-483	250-667	367-967	500-1417
Maximum head [bar]	20	22	23	21	25	22	23	24	27	32	22
Motor power [kW]	0.37 - 1.1	0.37 - 2.2	0.37 - 3.0	0.37 - 5.5	0.37 - 7.5	0.37 - 7.5	1.1 - 15.0	1.1 - 18.5	1.5 - 30	3.0 - 45	4.0 - 45
MTRE pumps											
Flow range [m^3/h]	0.3 - 1.3	0.7 - 2.4	1.2 - 4.5	2.5 - 8.5	4-12	5-13	8.5 - 23.5	10.5 - 29	15-40	22-58	30-85
Flow range [l/min]	5-22	12-40	20-75	42-142	67-200	83-217	142-392	175-483	250-667	367-967	500-1417
Maximum head [bar]	20	22	23	21	25	22	23	24	22	15	11
Motor power [kW]	0.37 - 1.1	0.37 - 2.2	0.37 - 3.0	0.37 - 5.5	0.37 - 7.5	0.37 - 7.5	1.1 - 15.0	1.1 - 18.5	1.5 - 22	3.0 - 22	4.0 - 22
60 Hz											
Rated flow rate [m^3/h]	1	1.2	3.6	6	10	12	18	24	38	54	77
Rated flow rate [l/min]	17	20	60	100	167	200	300	400	633	900	1283
Temperature range [°C]						-10 - 90					
Maximum efficiency [%]	35	49	59	67	61	70	72	72	76	78	79
MTR pumps											
Flow range [m^3/h]	0.4 - 1.6	0.8 - 2.9	1.4 - 5.4	3-10	4.5 - 14	6 - 15.5	10 - 28.5	13-35	18-48	26-70	36-102
Flow range [l/min]	7-27	13-23	48-90	50-167	75-233	100-258	167-475	217-583	300-800	433-1167	600-1700
Maximum head [bar]	22	24	23	23	19	26	23	21	27	26	18
Motor power [kW]	0.37 - 1.5	0.37 - 2.2	0.37 - 4.0	0.55 - 7.5	0.55 - 7.5	0.75 - 11	1.5 - 11	2.2 - 18.5	2.2 - 30	5.5 - 45	7.5 - 45
MTRE pumps											
Flow range [m^3/h]	0.4 - 1.6	0.8 - 2.9	1.4 - 5.4	3-10	4.5 - 14	6 - 15.5	10 - 28.5	13-35	18-48	26-70	36-102
Flow range [l/min]	7-27	13-23	48-90	50-167	75-233	100-258	167-475	217-583	300-800	433-1167	600-1700
Maximum head [bar]	22	24	23	23	19	26	23	21	18	13	9
Motor power [kW]	0.37 - 1.5	0.37 - 2.2	0.37 - 4.0	0.55 - 7.5	0.55 - 7.5	0.75 - 11.0	1.5 - 11.0	2.2 - 11.0	2.2 - 22	5.5 - 22	7.5 - 22
Material variants											
Pump head (A-version): cast iron, EN-GJL-200	•	•	•	•	•	•	•	•	•	•	•
Pump head (I-version): stainless steel, EN 1.4408	•	•	•	•	•	•	•	•	•	•	•
Pipe connection											
A-version											
Internal thread	G 1 1/4	G 1 1/4	G 1 1/4	G 1 1/4	G 1 1/4	G 2	G 2	G 2	-	-	-
	-	-	-	-	-	Rp 2	Rp 2	Rp 2	-	-	-
Square flange with internal thread	Rp 1 1/4	Rp 1 1/4	Rp 1 1/4	Rp 1 1/4	Rp 1 1/4	-	-	-	-	-	-
Flange	-	-	-	-	-	-	-	-	DN 65	DN 80	DN 80
I-version											
Internal thread	G 1 1/4	G 1 1/4	G 1 1/4	G 1 1/4	G 1 1/4	G 2	G 2	G 2	-	-	-
	Rp 1 1/4	Rp 1 1/4	Rp 1 1/4	Rp 1 1/4	Rp 1 1/4	Rp 2	Rp 2	Rp 2	-	-	-
Flange	-	-	-	-	-	-	-	-	DN 65	DN 80	DN 80
Installation length [mm]											
	160-1006	160-1006	160-1006	169-1006	196-1006	148-1018	178-1033	178-1033	223-1343	244-1444	249-1487
Shaft seal*											
HUUV	•	•	•	•	•	•	•	•	•	•	•

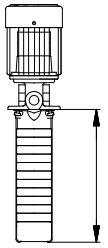
* Other shaft seals on request

SPK

Pump	SPK 1	SPK 2	SPK 4
50 Hz			
Rated flow rate [m^3/h]	1	2	4
Rated flow rate [l/min]	16.7	33.3	67
Flow range [m^3/h]	0.2 - 1.5	0.5 - 2.5	2.0 - 5.0
Flow range [l/min]	3.3 - 25	8.3 - 41.7	33.3 - 83
Maximum head [bar]	8.6	10.5	9.8
Motor power [kW]	0.06 - 0.55	0.06 - 0.75	0.06 - 1.1
Liquid temperature range [°C]	-10 - 90	-10 - 90	-10 - 90
Maximum efficiency [%]	40	55	50
Range 60 Hz			
Rated flow rate [m^3/h]	1	2	4
Rated flow rate [l/min]	16.7	33.3	67
Flow range [m^3/h]	0.2 - 1.8	0.6 - 3.0	2.0 - 6.0
Flow range [l/min]	3.3 - 30	10.0 - 50	33.3 - 100
Maximum head [bar]	8.5	10.0	7.5
Motor power [kW]	0.06 - 0.55	0.06 - 1.1	0.12 - 1.1
Liquid temperature range [°C]	-10 - 90	-10 - 90	-10 - 90
Maximum efficiency [%]	40	55	50
Material variants			
Pump head (A-version): cast iron, EN-GJL-200	•	•	•
Pump head (I-version): stainless steel, EN 1.4408	•	•	•
Pipe connection			
A-version			
Internal thread	G 3/4	G 3/4	G 3/4
Square flange with internal thread	Rp 3/4	Rp 3/4	Rp 3/4
I-version			
Internal thread	Rp 3/4	Rp 3/4	Rp 3/4
	G 3/4	G 3/4	G 3/4
Installation length [mm]			
	140-1005	140-1005	140-1005
Shaft seal*			
AUUV	•	•	•

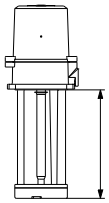
* Other shaft seals on request

MTH

Pump	MTH 2	MTH 4
50 Hz		
Rated flow rate [m^3/h]	2.5	4
Rated flow rate [l/min]	42	67
Temperature range [°C]	-10 - 90	
Maximum efficiency [%]	68	66
Flow range [m^3/h]	0.7 - 3.5	1.2 - 8
Flow range [l/min]	12-58	20-133
Maximum head [bar]	10	10
Motor power P1 [W]	255-1371	340-1340
60 Hz		
Rated flow rate [m^3/h]	3	4.8
Rated flow rate [l/min]	50	80
Temperature range [°C]	-10 - 90	
Maximum efficiency [%]	45	45
Flow range [m^3/h]	0.7 - 4	1.2 - 8
Flow range [l/min]	12-67	20-133
Maximum head [bar]	10	10
Motor power P1 [W]	315-1666	475-1600
Material variants		
Pump head (A-version): cast iron, EN-GJL-200	•	•
Pump head (I-version): stainless steel, EN 1.4408	•	•
Pipe connection		
A-version		
Internal thread	Rp 3/4	Rp 3/4
I-version		
Internal thread	Rp 3/4	Rp 3/4
Installation length [mm]		
	145-289	145-307
Shaft seal*		
AQQV	•	•

* Other shaft seals on request

MTA

Pump	MTA 30	MTA 60	MTA 90	MTA 120	MTA 200	MTA 20H	MTA 40H	MTA 70H	MTA 100H
Range									
50 Hz									
Rated flow rate [l/min]	30	50	80	100	200	20	35	60	90
Temperature range [°C]					0-60				
Flow range [l/min]	0-45	0-82	0-111	0-200	0-355	0-47	0-67	0-95	0-112
Maximum head [m]	4.9	7.2	7.2	9.3	11.1	5.9	10.2	10.2	13.5
60 Hz									
Rated flow rate [l/min]	35	60	96	120	250	24	42	72	108
Temperature range [°C]					0-60				
Flow range [l/min]	0-56	0-100	0-134	0-245	0-420	0-52	0-81	0-114	0-138
Maximum head [m]	7.1	10.1	10.2	13.3	15.6	8.4	14.2	14.6	19.1
Pipe connection									
Internal thread	Rp 3/8	Rp 1/2	Rp 3/4	Rp 1	Rp 2	Rp 3/8	Rp 1/2	Rp 3/4	Rp 1
	G 1/2	G 3/4	G 3/4	G 1 1/4	G 1 1/2	G 1/2	G 3/4	G 3/4	G 1
	1/2" NPT	3/4" NPT	3/4" NPT	1 1/4" NPT	1 1/2" NPT	1/2" NPT	3/4" NPT	3/4" NPT	1" NPT
Material									
Pump housing	Cast iron	Cast iron	Cast iron	Cast iron	Cast iron	Cast iron	Cast iron	Cast iron	Cast iron
Impeller	PAA GF50	PAA GF50	PAA GF50	Bronze	Bronze	Bronze	Bronze	Bronze	Bronze
Installation length [mm]									
	150	130-350	130-350	180-350	250-350	150	180	250	280
Suction									
Top suction	●	●	●	●	-	●	●	●	●
Bottom suction	●	●	●	●	●	-	-	●*	-

* Impeller material: PAA GF50

5. Motors

Motors for MTR and SPK pumps

MTR and SPK pumps are fitted with a totally enclosed, fan-cooled, 2-pole Grundfos standard MG motor with principal dimensions according to IEC, DIN and British standards.

Electrical tolerances according to EN 60034.

Mounting designation	Up to 4 kW	V 18/B 14
	From 5.5 kW	V 1/B 5
Efficiency class	0.06 - 0.55 kW	-
	0.75 - 45 kW	IE3
Enclosure class		IP55
Insulation class		F
Supply voltage, 50 Hz (- 10 %/+ 10 %)	0.06 - 45 kW	3 x 220-240 / 380-415 V
	0.37 - 5.5 kW	3 x 380-415 V Δ
	7.5 - 45 kW	3 x 380-415 / 660-690 V
Supply voltage, 60 Hz (- 10 %/+ 10 %)	0.06 - 0.18 kW	3 x 220-277 / 380-480 V
	0.25 - 1.1 kW	3 x 220-255 / 380-440 V
	1.5 - 45 kW	3 x 220-277 / 380-480 V
	0.37 - 5.5 kW	3 x 380-440 V Δ
	7.5 - 45 kW	3 x 380-480 / 660-690 V
MTR pumps are also available for these supply voltages		
Supply voltage, 50 Hz	0.06 - 22 kW 30-45 kW	3 x 200-220 / 346-380 V
Supply voltage, 60 Hz	0.06 - 45 kW 30-45 kW	3 x 200-230 / 346-400 V
	0.25 - 45 kW	3 x 208-230 / 460-480 V

For detailed electrical data see section "Motor data" on page 142.

On request, Grundfos MG motors are available with cURus approvals carried out by the Underwriters Laboratories Inc. according to UL 1004 Electric motor standard.

Motors for MTH pumps

MTH motors are totally enclosed, fan-cooled, 2-pole Grundfos standard motors with principal dimensions according to IEC, DIN and British standards.

Enclosure class	IP54
Insulation class	F
Supply voltage, 50 Hz (- 10 %/+ 10 %)	3 x 220-240 / 380-415 V
	3 x 200-220 / 346-380 V
Supply voltage, 60 Hz (- 10 %/+ 10 %)	3 x 220-255 / 380-440 V
	3 x 200-230 / 346-400 V
	3 x 208-230 / 460 V

Motors for MTA pumps

Efficiency class (only MTA 200, 750 W)	IE3
Enclosure class	IP54
Insulation class	F
Supply voltage, 50 Hz (- 10 %/+ 10 %)	3 x 220-240 / 380-415 V
	3 x 200 V
Supply voltage, 60 Hz (- 10 %/+ 10 %)	3 x 220-240 / 380-440 V
	3 x 200-220 V
	3 x 208-230 / 460 V

We do not recommend operation via frequency converter.

Grundfos standard motors

Motor protection

Single-phase Grundfos motors have a built-in thermal overload switch (IEC 34-11:TP 211).

Three-phase motors must be connected to a motor-protective circuit breaker in accordance with local regulations.

Three-phase Grundfos motors from 3 kW and upwards have a built-in thermistor (PTC) according to DIN 44082 (IEC 34-11:TP 211).

Terminal box positions

MTR, MTRE, SPK and MTH

Pump	Terminal box positions			
	3 o'clock	6 o'clock (standard)	9 o'clock	12 o'clock
MTR	•	•	•	•
MTRE	•	•	•	•
SPK	•	•	•	•
MTH	•	•	•	-

MTA

Pump	Terminal box positions			
	3 o'clock	6 o'clock	9 o'clock (standard)	12 o'clock
MTA 30	•	-	•	-
MTA 60	•	(•)	•	(•)
MTA 90	•	(•)	•	(•)
MTA 120	(•)	(•)	•	(•)
MTA 200	(•)	(•)	•	(•)
MTA 20H	•	-	•	-
MTA 40H	•	(•)	•	(•)
MTA 70H	•	(•)	•	(•)
MTA 100H	(•)	(•)	•	(•)

- • This position is possible. The pump can be ordered with the terminal box in this position or the terminal box can be turned to this position after delivery.
- (•) This position is possible, but the terminal box cannot be turned to this position after delivery. Therefore, the pump must be ordered with the terminal box in this position.
- \- This position is not possible.

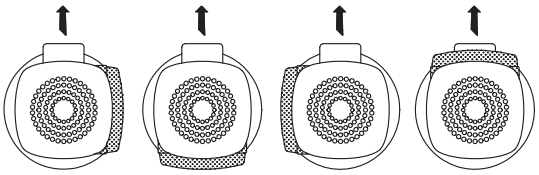


Fig. 4 Terminal box positions, top view

Maximum number of starts

Pump	Motor [kW]	Recommended maximum number of starts per hour
MTR SPK MTH	0.06 - 0.18	100
	0.25 - 2.2	250
	3-4	100
	5.5 - 11	50
	15-22	40
	30-45	8
MTA	All	250

Sound pressure level

Pump	Motor [kW]	$\bar{L}_{pA}$ [dB(A)]	
		50 Hz	60 Hz
MTR SPK	0.06	41	41
	0.12	41	41
	0.18	41	41
	0.25	56	62
	0.37	53	58
	0.55	53	56
	0.75	53	57
	1.1	60	65
	1.5	59	65
	2.2	61	66
	3.0	59	64
	4.0	65	69
	5.5	63	68
	7.5	60	65
	11	60	65
	15	60	65
	18.5	60	65
	22	64	69
	30	71	75
	37	71	75
	45	71	75
MTH		< 70	< 70
MTA 30		< 45	< 45
MTA 60		< 45	< 45
MTA 90		< 45	< 45
MTA 120		< 62	< 62
MTA 200		< 62	< 62
MTA 20H		< 45	< 45
MTA 40H		< 45	< 45
MTA 70H		< 45	< 45
MTA 100H		< 62	< 62

The values have been measured according to EN ISO 4871.

Viscosity and density

The pumping of liquids with densities or kinematic viscosities higher than those of water will cause a considerable pressure drop, a drop in the hydraulic performance and a rise in the power consumption.

In such situations, the pump should be fitted with a larger motor. If in doubt, contact Grundfos.

Ambient temperature

MTR, SPK

Motor power [kW]	Motor make	Motor efficiency class	Maximum ambient temperature at full load [°C]	Maximum altitude above sea level [m]
0.06 - 0.18	Siemens	-	40	1000
0.25 - 0.55	Grundfos MG	-	40	1000
0.75 - 22	Grundfos MG	IE3	60	3500
30-45	Siemens	IE3	55	2750

If the ambient temperature exceeds the above temperature values, or the pump is installed at an altitude exceeding the above altitude values, the motor must not be fully loaded due to the risk of overheating. Overheating may result from excessive ambient temperatures or the low density and consequently low cooling effect of the air.

In such cases, it may be necessary to use a motor with a higher rated output.

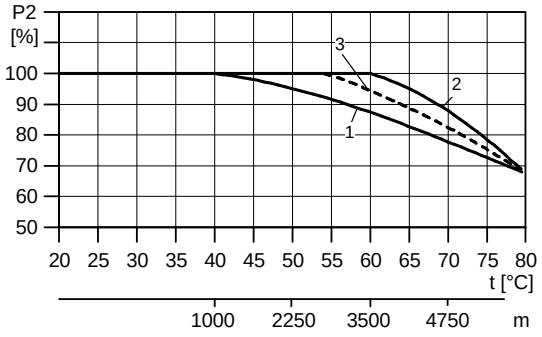


Fig. 5 The maximum motor output depends on the ambient temperature/altitude

Legend

Pos.	Description
1	Siemens motors (0.06 - 0.18 kW)
	MG motors (0.37 - 0.55 kW)
2	MG motors (0.75 - 22 kW)
3	Siemens motors (30-45 kW)

Example: A pump with a 1.1 kW IE3 MG motor: If this pump is installed 4750 m above sea level, the motor must not be loaded more than 88 % of rated output.

At an ambient temperature of 75 °C, the motor must not be loaded more that 78 % of rated output. If the pump is installed 4750 m above sea level at an ambient temperature of 75 °C, the motor must not be loaded more than 88 % x 78 % = 68.6 % of rated output.

MTH

The motor used on an MTH pump is not shown in the list above, but the maximum ambient temperature at full load is the same as for MG motors.

MTA

Max. permissible ambient temperature [°C]	40

Optional motors

The Grundfos standard range of motors meets a wide variety of system requirements.

For special applications or operating conditions, we offer custom-built motors, such as:

- ATEX-approved motors
- MG motors with anti-condensation heating unit
- motors with thermal protection.

Grundfos blueflux®

Grundfos blueflux® technology represents the best from Grundfos within energy-efficient motors and frequency converters. Grundfos blueflux® solutions either meet or exceed legislative requirements, such as the EuP IE3 and IE4 grades.

TM05 9323 3713

Fig. 6 Grundfos blueflux® label

To read more about the energy challenge and Grundfos blueflux®, please visit grundfos.com/energy.

Motors for MTRE pumps

MTRE is an MTR pump with frequency-controlled motors, type MGE.

MGE motors

The MGE motor is a totally enclosed, fan-cooled, 2-pole Grundfos frequency-controlled motor with principal dimensions in accordance with the EN standards.

Electrical tolerances comply with EN 60034.

MTRE pumps from 0.37 to 22 kW are fitted with three-phase MGE motors as standard.

0.37 to 1.5 kW single-phase MGE motors are available on request.

See the Grundfos Product Center (http://product-selection.grundfos.com/).

Motor data for MGE

	MGE motor size (MTRE)	
Mounting designation	Up to 4 kW	V18
	5.5 kW and up	V1
Efficiency class	0.75 - 2.2 kW	Above IE4 level*
	3-22 kW:	IE3
	0.37 and 0.55 kW	The IE classification does not apply for these sizes
Enclosure class	0.37 - 2.2 kW	IP55 (IP66 optional)
	3-22 kW	IP55
Insulation class		F
Supply voltage (- 10 %/+ 10 %)	0.37 - 1.5 kW	1 x 200-240 V
	0.37 - 2.2 kW	3 x 380-500 V
	3-22 kW	3 x 380-480 V
	1.1, 1.5, 2.2, 4.0, 5.5 kW	3 x 200-230 V, 60 Hz
Supply frequency	50/60 Hz	50/60 Hz

* Even though the MGE motor (0.37 to 2.2 kW) has no defined efficiency class, the efficiency is still above the IE4 level including both motor and electronics.

MGE motors, motor protection

MGE motors incorporate thermal protection against slow overload and blocking (IEC 34-11:TP 211).

MTRE pumps require no external motor protection.

MGE motors, ambient temperature

Motor power [kW]	Motor make	Phases	Maximum ambient temperature [°C]	Maximum altitude above sea level [m]
0.37 - 1.5	MGE	1	50	1000
0.37 - 2.2	MGE	3	50	
3-22	MGE	3	40	

If the ambient temperature exceeds the above maximum ambient temperatures or the pump is installed at an altitude exceeding 1000 metres, the motor must not be fully loaded due to the risk of overheating. Overheating may result from excessive ambient temperatures or the low density and consequently low cooling effect of the air.

In such cases, it may be necessary to use a motor with a higher rated output.

Installation altitude

Installation altitude is the height above sea level of the installation site. Motors installed up to 1000 metres above sea level can be loaded 100 %.

Motors installed more than 1000 metres above sea level must not be fully loaded due to the low density and consequently low cooling effect of the air.

MGE 0.37 to 2.2 kW

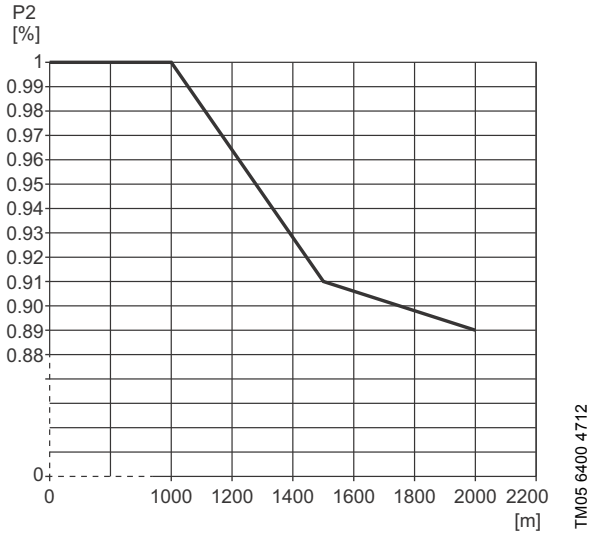


Fig. 7 Derating of motor output (P2) in relation to altitude above sea level

MGE 3 to 22 kW

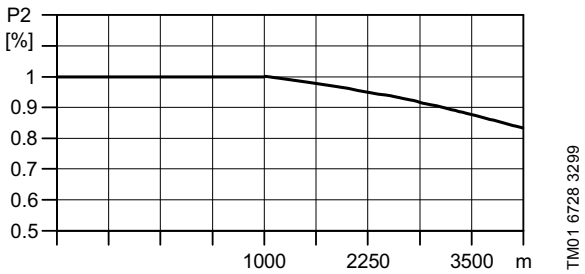


Fig. 8 Derating of motor output (P2) in relation to altitude above sea level

6. Control of MTRE pumps

Control options

You can communicate with MTRE pumps via the following control devices/systems:

- operating panel on the pump
- Grundfos GO
- central management system.

Operating panel on pump

The operating panel on the E-pump terminal box makes it possible to change the setpoint settings manually.

MGE 0.37 to 2.2 kW

The operating condition of the pump is indicated by the Grundfos Eye on the operating panel. See fig. 9, pos. A.

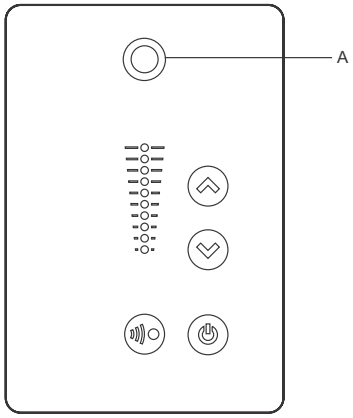


Fig. 9 Operating panel on MTRE pump, 0.37 to 2.2 kW

MGE 3 to 22 kW

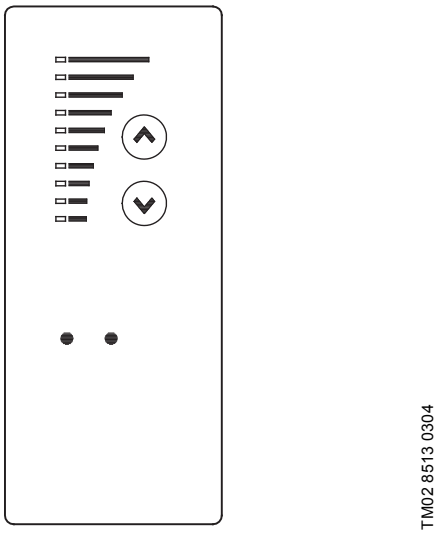


Fig. 10 Operating panel on MTRE pump, 3 to 22 kW

Grundfos GO

The pump is designed for wireless radio or infrared communication with Grundfos GO.

Grundfos GO enables setting of functions and gives access to status overviews, technical product information and actual operating parameters.

Grundfos GO offers the following mobile interfaces (MI). See fig. 11.

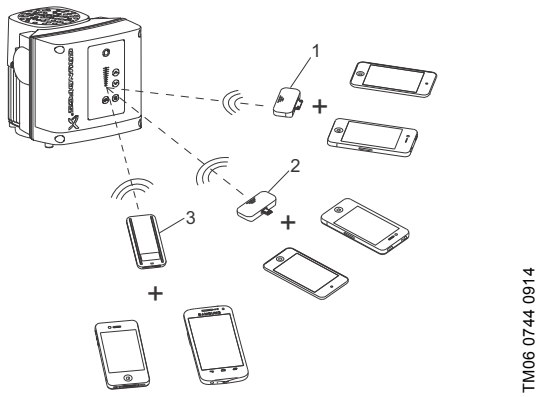


Fig. 11 Grundfos GO communicating with the pump via radio or infrared connection (IR)

Pos.	Description
1	Grundfos MI 202: Add-on module which can be used in conjunction with an Apple iPhone or iPod with 30-pin connector and iOS 5.0 or later, e.g. fourth generation iPhone or iPod.
2	Grundfos MI 204: Add-on module which can be used in conjunction with an Apple iPhone or iPod with lightning connector, e.g. fifth generation iPhone or iPod. (The MI 204 is also available together with an Apple iPod touch and a cover).
3	Grundfos MI 301: Separate module enabling radio or infrared communication. The module can be used in conjunction with an Android or iOS-based smart device with Bluetooth connection.

Communication

Communication must be established using one of these communication types:

- radio communication
- infrared communication.

Radio communication

Radio communication can take place at distances up to 30 metres. You must enable communication by pressing or OK on the pump control panel.

Infrared communication

When communicating via infrared light, point the Grundfos GO at the pump control panel.

Central management system

Communication with the E-pump is possible even if the operator is not present near the E-pump. Communication is enabled by connecting the E-pump to a central management system. This allows the operator to monitor the pump and to change control modes and setpoint settings.

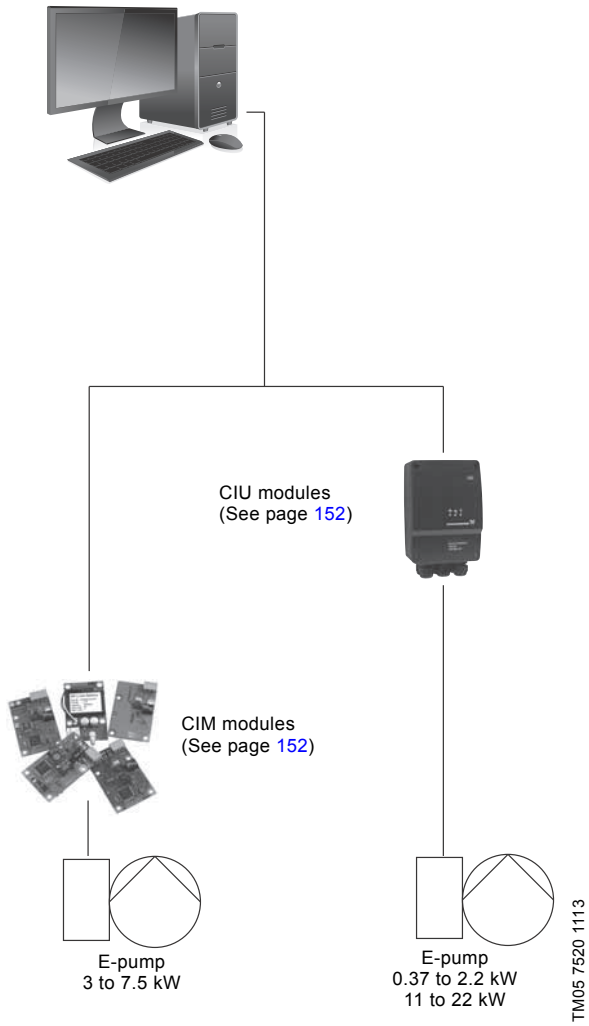


Fig. 12 Structure of a central management system

Control modes for E-pumps

Grundfos MTRE pumps are only available without pressure sensor.

MTRE without sensor

MTRE pumps without sensor are suitable in these situations:

- Where uncontrolled operation is required.
- You want to retrofit another sensor in order to control the flow, temperature, differential temperature, liquid level, pH value, etc. at some arbitrary points in the system.

MGE 0.37 to 2.2 kW

These MTRE pumps without sensor can be set to either of these control modes:

- constant pressure
- constant differential pressure
- constant temperature
- constant differential temperature
- constant flow rate
- constant level
- constant curve
- constant other value.

MGE 3 to 22 kW

These MTRE pumps without sensor can be set to either of these control modes:

- controlled operation
- uncontrolled operation (factory setting).

In controlled-operation mode, the pump adjusts its performance to the desired setpoint. See fig. 13.

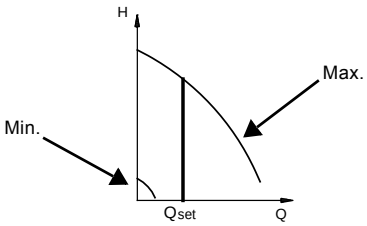


Fig. 13 Constant-flow mode

In uncontrolled-operation mode, the pump operates according to the constant curve set. See fig. 14.

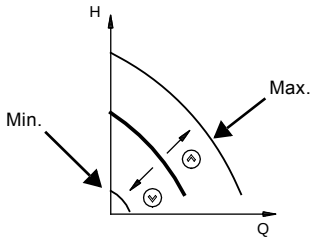


Fig. 14 Constant-curve mode

Functional module for MGE 0.37 to 2.2 kW

Advanced functional module (FM 300)

The FM 300 is the standard functional module in all MGE motors from 0.37 to 2.2 kW.

The module has a number of inputs and outputs enabling the motor to be used in advanced applications where many inputs and outputs are required.

The FM 300 has these connections:

- three analog inputs
- one analog output
- two dedicated digital inputs
- two configurable digital inputs or open-collector outputs
- Grundfos Digital Sensor input and output
- two Pt100/1000 inputs
- two LiqTec sensor inputs
- two signal relay outputs
- GENIbus connection.

Connection terminals

MTRE pumps have a number of inputs and outputs enabling the pumps to be used in advanced applications where many inputs and outputs are required.

The number of available inputs and outputs depends on the selected functional module.

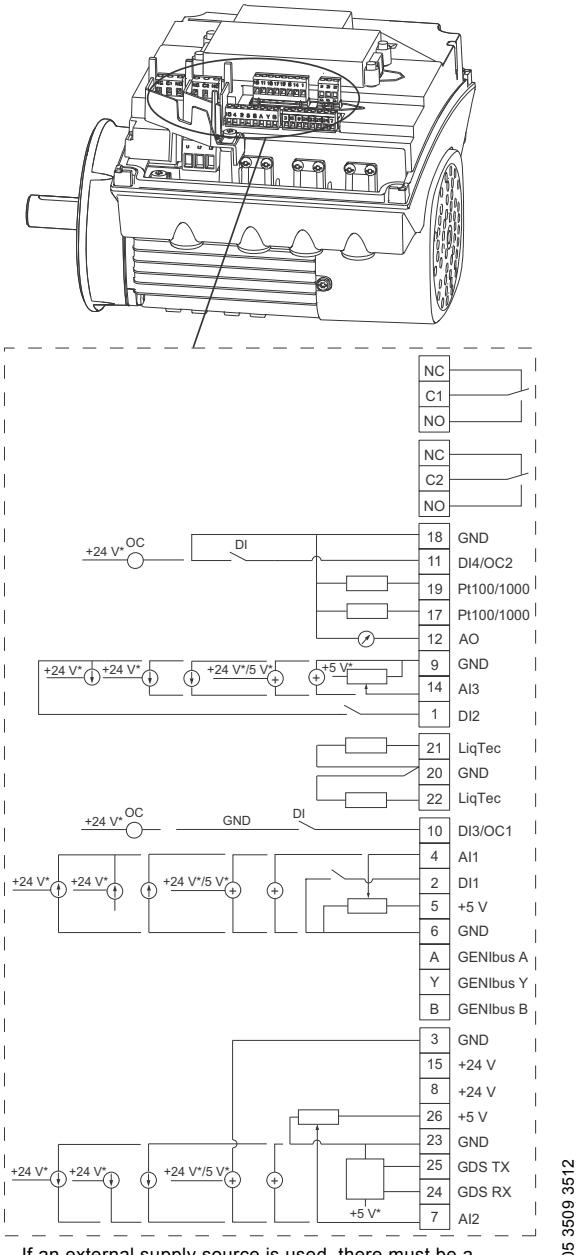
Functional module 300 has been selected as standard for MTRE pumps.

See fig. 15.

As a precaution, the wires to be connected to the following connection groups must be separated from each other by reinforced insulation in their entire lengths.

- **Inputs and outputs**
  All inputs and outputs are internally separated from the mains-conducting parts by reinforced insulation and galvanically separated from other circuits.
  All control terminals are supplied by safety extra-low voltage (SELV), thus ensuring protection against electric shock.
- **Signal relay outputs**
  – Signal relay 1:
  LIVE:
  Mains supply voltages up to 250 VAC can be connected to this output.
  SELV:
  The output is galvanically separated from other circuits. Therefore, the supply voltage or safety extra-low voltage can be connected to the output as desired.
  – Signal relay 2:
  SELV:
  The output is galvanically separated from other circuits. Therefore, the supply voltage or safety extra-low voltage can be connected to the output as desired.
- **Mains supply** (terminals N, PE, L or L1, L2, L3, PE)

A galvanically safe separation must fulfil the requirements for reinforced insulation including creepage distances and clearances specified in EN 61800-5-1.



* If an external supply source is used, there must be a connection to GND.

Fig. 15 Connection terminals, FM 300 functional module

Functional module for MGE 3 to 7.5 kW

Advanced I/O module

The Advanced I/O module is the standard functional module in all MGE motors from 3 to 7.5 kW.

The module has a number of inputs and outputs enabling the motor to be used in advanced applications where many inputs and outputs are required.

The Advanced I/O module has these connections:

- start/stop terminals
- three digital inputs
- one setpoint input
- one sensor input
- one analog output
- GENIbus connection.

Connection terminals

As a precaution, the wires to be connected to the following connection groups must be separated from each other by reinforced insulation in their entire lengths.

Inputs

- Start/stop (terminals 2 and 3)
- digital inputs (terminals 1 and 9, 10 and 9, 11 and 9)
- setpoint input (terminals 4, 5 and 6)
- sensor input (terminals 7 and 8)
- GENIbus (terminals B, Y and A).

All inputs are internally separated from the mains-conducting parts by reinforced insulation and galvanically separated from other circuits.

All control terminals are supplied with protective extra-low voltage (PELV), thus ensuring protection against electric shock.

Output (relay signal, terminals NC, C, NO)

The output is galvanically separated from other circuits.

Therefore, the supply voltage or protective extra-low voltage can be connected to the output as desired.

- Analog output (terminal 12 and 13).

Mains supply (terminals L1, L2, L3)

A galvanic separation must fulfil the requirements for reinforced insulation including creepage distances and clearances specified in EN 60335.

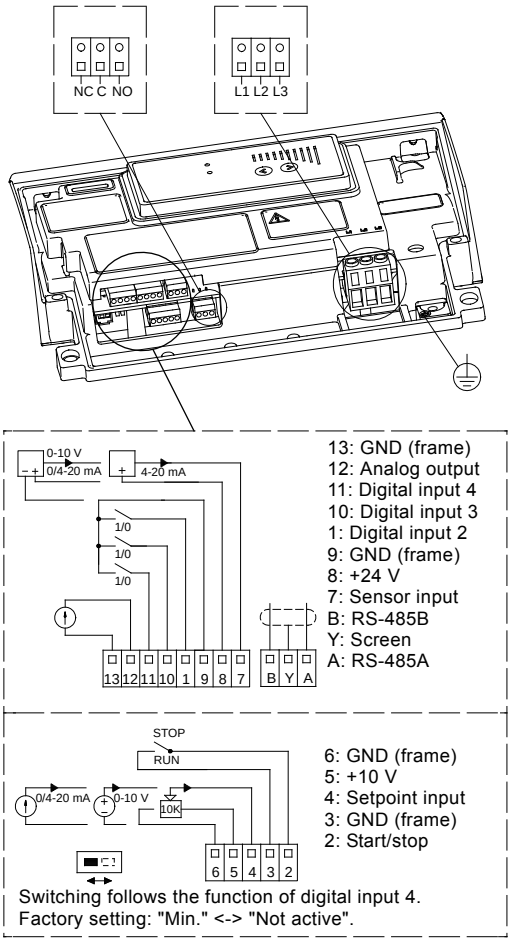


Fig. 16 Connection terminals, Advanced I/O module

Functional module for MGE 11 to 22 kW

Advanced I/O module

The advanced I/O module is the standard functional module in all MGE motors from 11 to 22 kW.

The module has a number of inputs and outputs enabling the motor to be used in advanced applications where many inputs and outputs are required.

The Advanced I/O module has these connections:

- start/stop terminals
- three digital inputs
- one setpoint input
- one sensor input (feedback sensor)
- one sensor two input
- one analog output
- two Pt100 inputs
- two signal relay outputs
- GENIbus connection.

Connection terminals

As a precaution, the wires to be connected to the following connection groups must be separated from each other by reinforced insulation in their entire lengths.

Inputs

- Start/stop (terminals 2 and 3)
- digital inputs (terminals 1 and 9, 10 and 9, 11 and 9)
- sensor input 2 (terminals 14 and 15)
- Pt100 sensor inputs (terminals 17, 18, 19 and 20)
- setpoint input (terminals 4, 5 and 6)
- sensor input (terminals 7 and 8)
- GENIbus (terminals B, Y and A).

All inputs are internally separated from the mains-conducting parts by reinforced insulation and galvanically separated from other circuits.

All control terminals are supplied with protective extra-low voltage (PELV), thus ensuring protection against electric shock.

Output (relay signal, terminals NC, C, NO)

The output is galvanically separated from other circuits.

Therefore, the supply voltage or protective extra-low voltage can be connected to the output as desired.

- Analog output (terminal 12 and 13).

Mains supply (terminals L1, L2, L3)

A galvanic separation must fulfil the requirements for reinforced insulation including creepage distances and clearances specified in EN 61800-5-1.

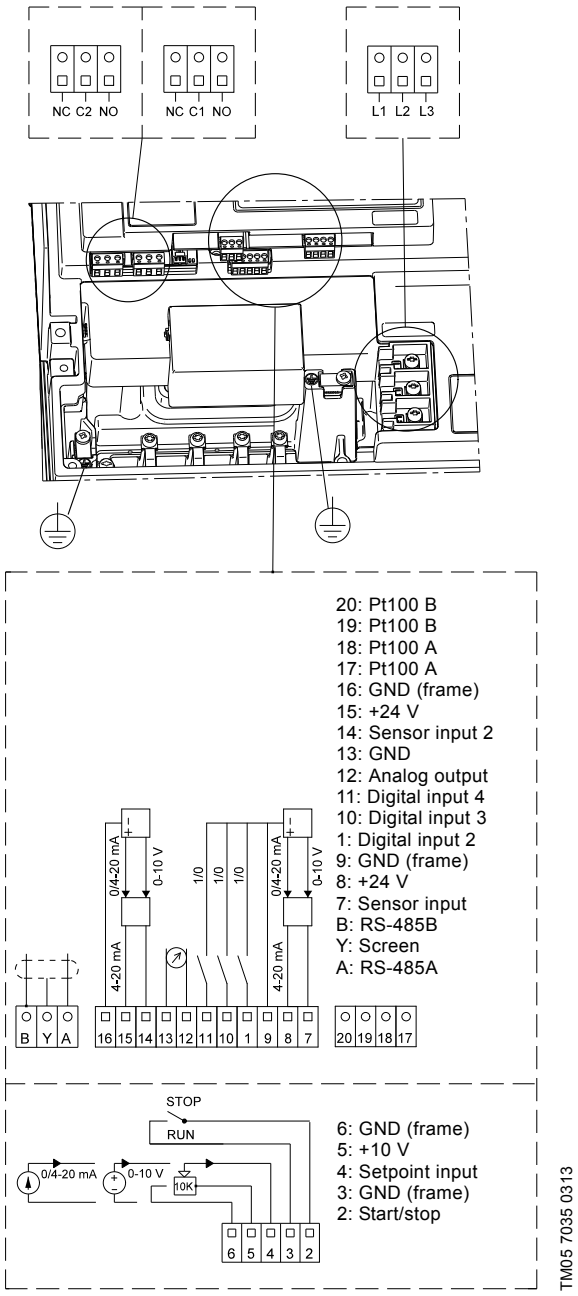


Fig. 17 Connection terminals, Advanced I/O module

7. Construction

MTR, MTRE 1s, 1, 3, 5 and 8

Sectional drawing

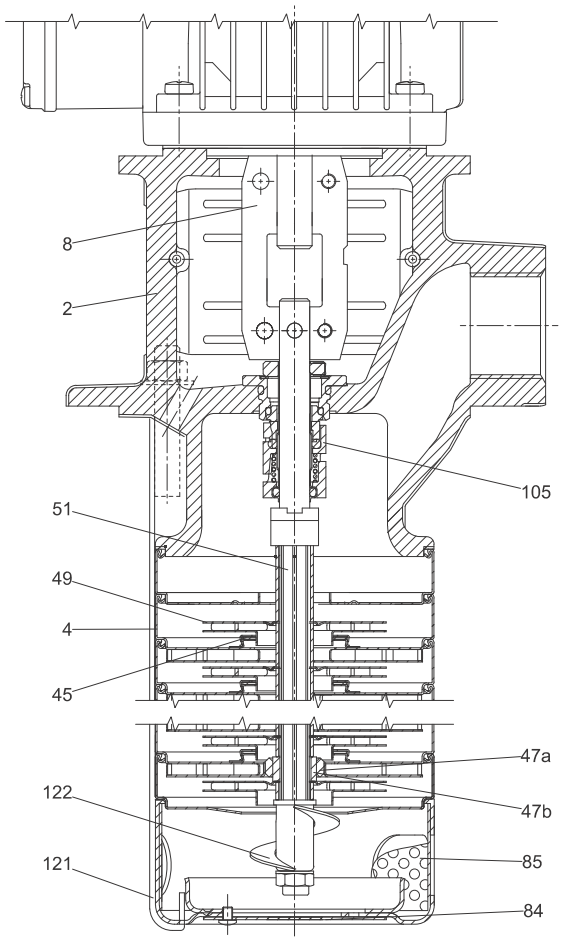


Fig. 18 MTR, MTRE 1s, 1, 3 and 5

Materials

Pos.	Description	Materials	EN/DIN	AISI/ASTM
2	Pump head	A-version: cast iron	EN-GJL-200	ASTM 25B
		I-version: stainless steel	1.4408	AISI 316LN
4	Chamber	Stainless steel	1.4301	AISI 304
8	Coupling	Sintered metal		
45	Neck ring	PTFE		
47a	Bearing ring, stationary	Silicon carbide		
47b	Bearing ring, rotating	Silicon carbide		
49	Impeller	Stainless steel	1.4301	AISI 304
51	Pump shaft	Stainless steel	1.4401	AISI 316
84	Suction strainer	Stainless steel	1.4301	AISI 304
85	Strainer internal	Stainless steel	1.4301	AISI 304
105	Shaft seal	HUUV/HUUE		
121	Strap	Stainless steel	1.4301	AISI 304
122	Priming screw	Stainless steel	1.4301	AISI 304

MTR, MTRE 1s, 1, 3, 5 and 8 with drainage back to tank

Sectional drawing

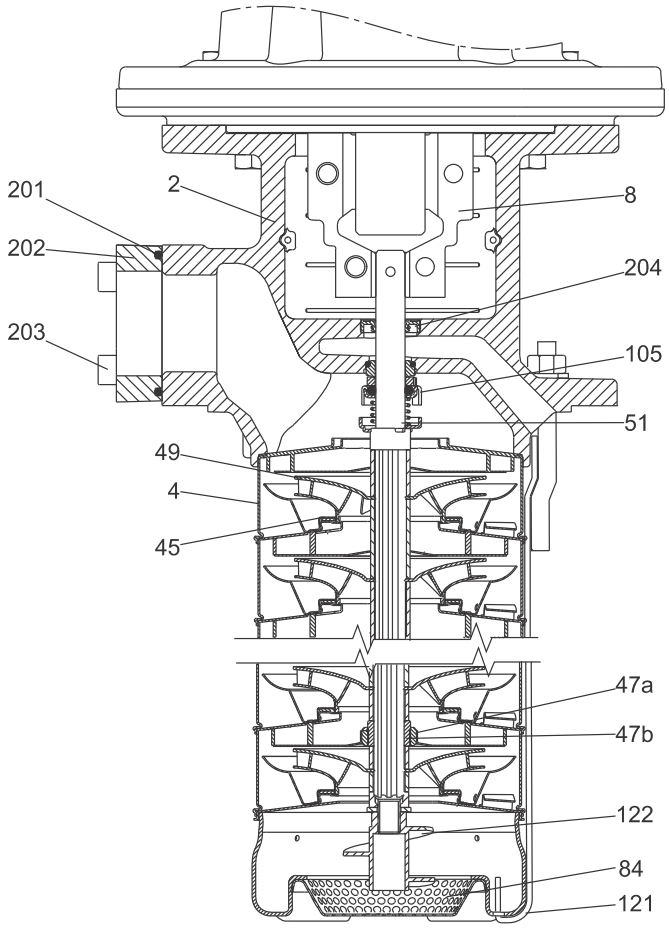


Fig. 19 MTR, MTRE 1s, 1, 3 and 5 with drainage back to tank

Materials

Pos.	Description	Materials	EN/DIN	AISI/ASTM
2	Pump head	A-version: cast iron	EN-GJL-200	ASTM 25B
4	Chamber	Stainless steel	1.4301	AISI 304
8	Coupling	Sintered metal		
45	Neck ring	PTFE		
47a	Bearing ring, stationary	Silicon carbide		
47b	Bearing ring, rotating	Silicon carbide		
49	Impeller	Stainless steel	1.4301	AISI 304
51	Pump shaft	Stainless steel	1.4401	AISI 316
84	Suction strainer	Stainless steel	1.4301	AISI 304
85	Strainer internal	Stainless steel	1.4301	AISI 304
105	Shaft seal	AQQV/AQQE		
121	Strap	Stainless steel	1.4301	AISI 304
122	Priming screw	Stainless steel	1.4301	AISI 304
201	O-ring	NBR		
202	Counter flange	Cast iron	EN-GJL-200	ASTM 25B
203	Bolt	Stainless steel		
204	Lip seal	FKM		

MTR, MTRE 10, 15 and 20

Sectional drawing

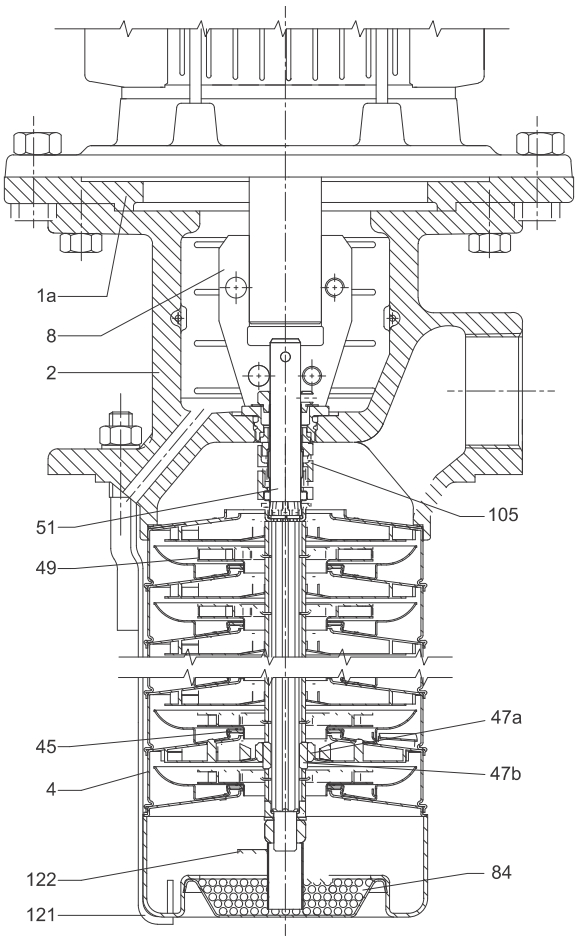


Fig. 20 MTR, MTRE 10, 15 and 20

Materials

Pos.	Description	Materials	EN/DIN	AISI/ASTM
1a	Motor stool	Cast iron	EN-GJL-200	ASTM 25B
2	Pump head	A-version: cast iron	EN-GJL-200	ASTM 25B
		I-version: stainless steel	1.4408	AISI 316LN
4	Chamber	Stainless steel	1.4301	AISI 304
8	Coupling	Sintered metal		
45	Neck ring	PTFE		
47a	Bearing ring, stationary	Silicon carbide		
47b	Bearing ring, rotating	Silicon carbide		
49	Impeller	Stainless steel	1.4301	AISI 304
51	Pump shaft	A-version: stainless steel	1.4057	AISI 431
		I-version: stainless steel	1.4460	
84	Suction strainer	Stainless steel	1.4301	AISI 304
105	Shaft seal	HUUV/HUUE		
121	Strap	Stainless steel	1.4301	AISI 304
122	Priming screw	Stainless steel	1.4301	AISI 304

MTR, MTRE 10, 15 and 20 with drainage back to tank

Sectional drawing

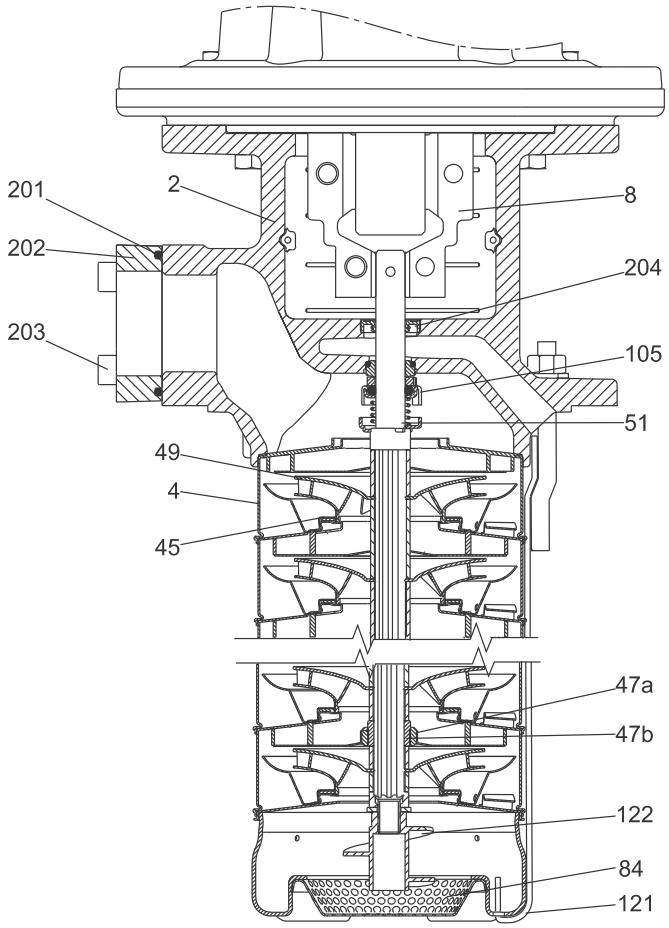


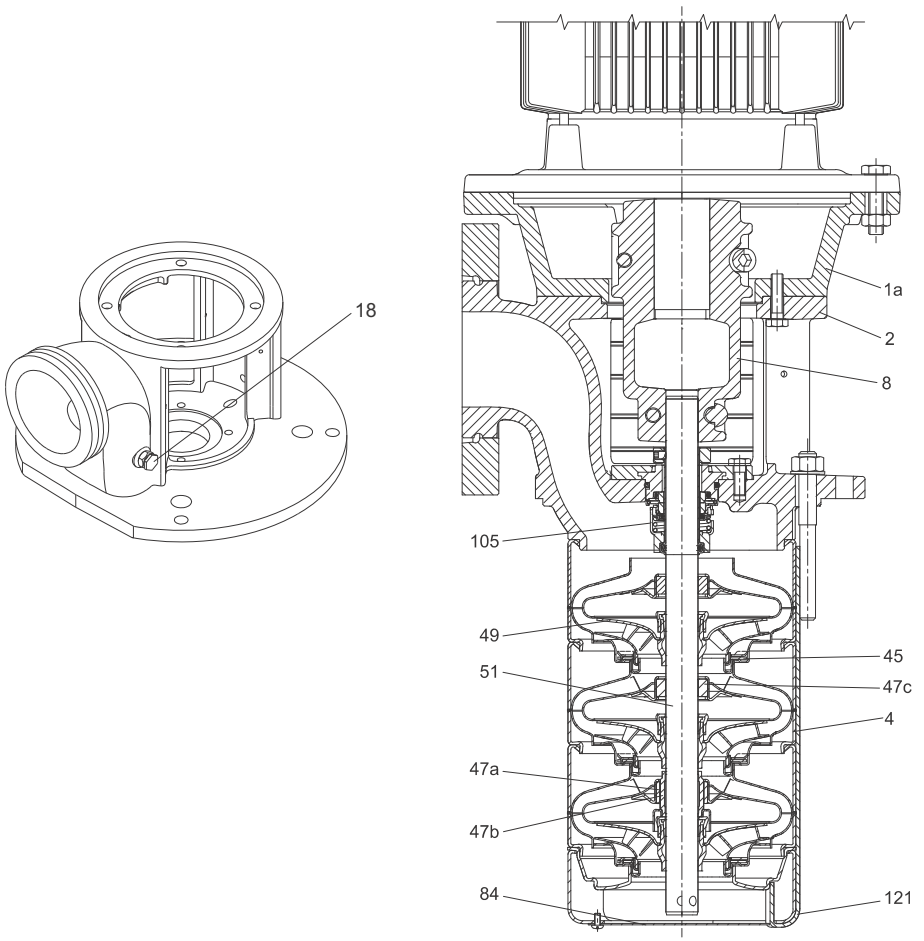
Fig. 21 MTR, MTRE 10, 15 and 20 with drainage back to tank

Materials

Pos.	Description	Materials	EN/DIN	AISI/ASTM
1a	Motor stool	Cast iron	EN-GJL-200	ASTM 25B
2	Pump head	A-version: cast iron	EN-GJL-200	ASTM 25B
4	Chamber	Stainless steel	1.4301	AISI 304
8	Coupling	Sintered metal		
45	Neck ring	PTFE		
47a	Bearing ring, stationary	Silicon carbide		
47b	Bearing ring, rotating	Silicon carbide		
49	Impeller	Stainless steel	1.4301	AISI 304
51	Pump shaft	A-version: stainless steel	1.4057	AISI 431
		I-version: stainless steel	1.4460	
84	Suction strainer	Stainless steel	1.4301	AISI 304
105	Shaft seal	AQQV/AQQE		
121	Strap	Stainless steel	1.4301	AISI 304
122	Priming screw	Stainless steel	1.4301	AISI 304
201	O-ring	NBR		
202	Counter flange	Cast iron	EN-GJL-200	ASTM 25B
203	Bolt	Stainless steel		
204	Lip seal	FKM		

MTR, MTRE 32, 45 and 64

Sectional drawing



TM02 8689 2813 - TM05 8831 2713

Fig. 22 MTR, MTRE 32, 45 and 64

Materials

Pos.	Description	Materials	EN/DIN	AISI/ASTM
1a	Motor stool	Cast iron	EN-GJL-200	ASTM 25B
2	Pump head	A-version: cast iron	EN-GJL-200	ASTM 25B
		I-version: stainless steel	1.4408	AISI 316LN
4	Chamber	Stainless steel	1.4301	AISI 304
8	Coupling	Nodular iron	EN-GJS-500-7	ASTM 80-55-06
18	Air vent screw	Stainless steel	1.4301	AISI 304
45	Neck ring	PTFE		
47a	Bearing ring, stationary	Silicon carbide		
47b	Bearing ring, rotating	Stainless steel	1.4539	AISI 904L
47c	Bush	Graflon®, HY49		
49	Impeller	Stainless steel	1.4301	AISI 304
51	Pump shaft	A-version: stainless steel	1.4057	AISI 431
		I-version: stainless steel	1.4462	
	O-ring*	A-version: NBR		
		I-version: depending on rubber material in shaft seal		
84	Suction strainer	Stainless steel	1.4301	AISI 304
105	Shaft seal	HUUV/HUUE		
121	Strap	Stainless steel	1.4301	AISI 304

* Only used in pumps with empty chambers

SPK 1, SPK 2

Sectional drawing

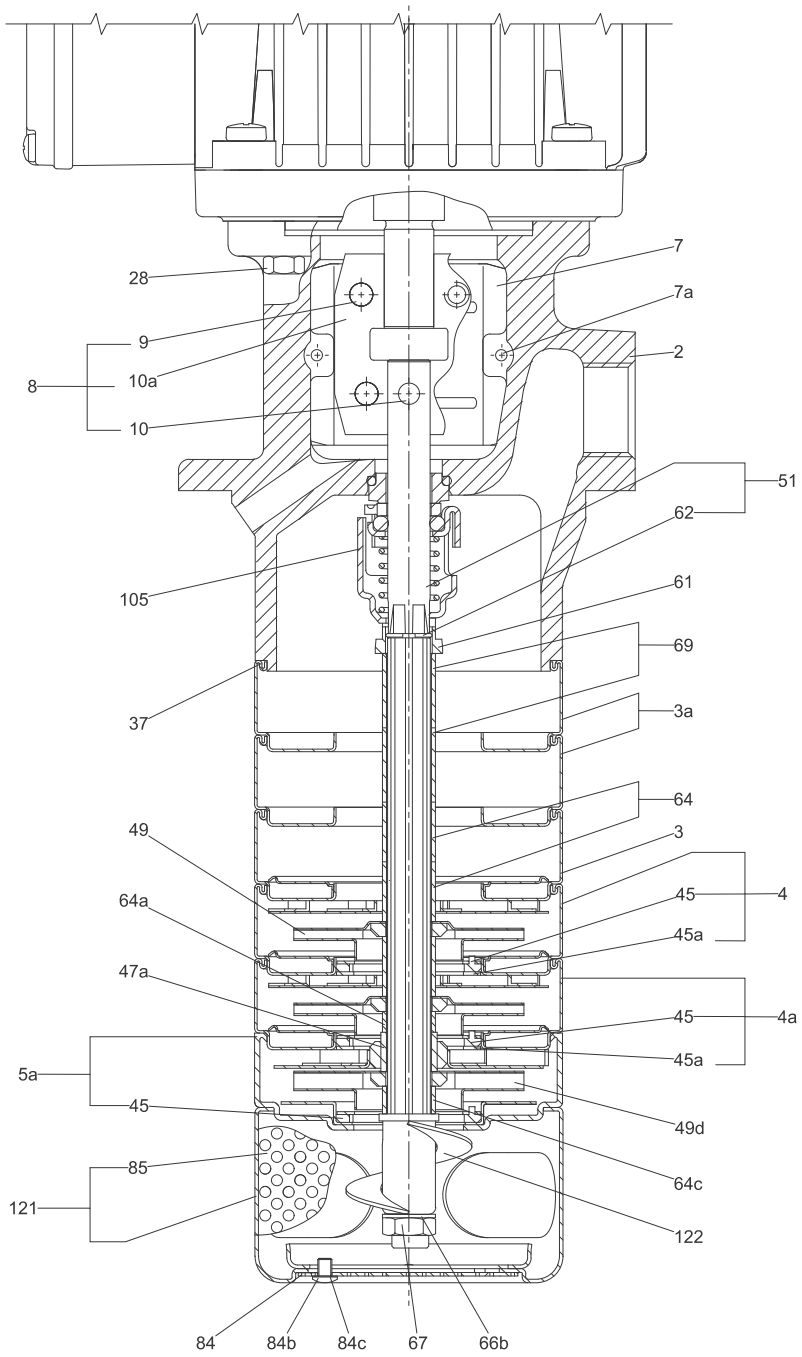


Fig. 23 SPK 1, SPK 2

For information on the materials please see page 34.

SPK 4

Sectional drawing

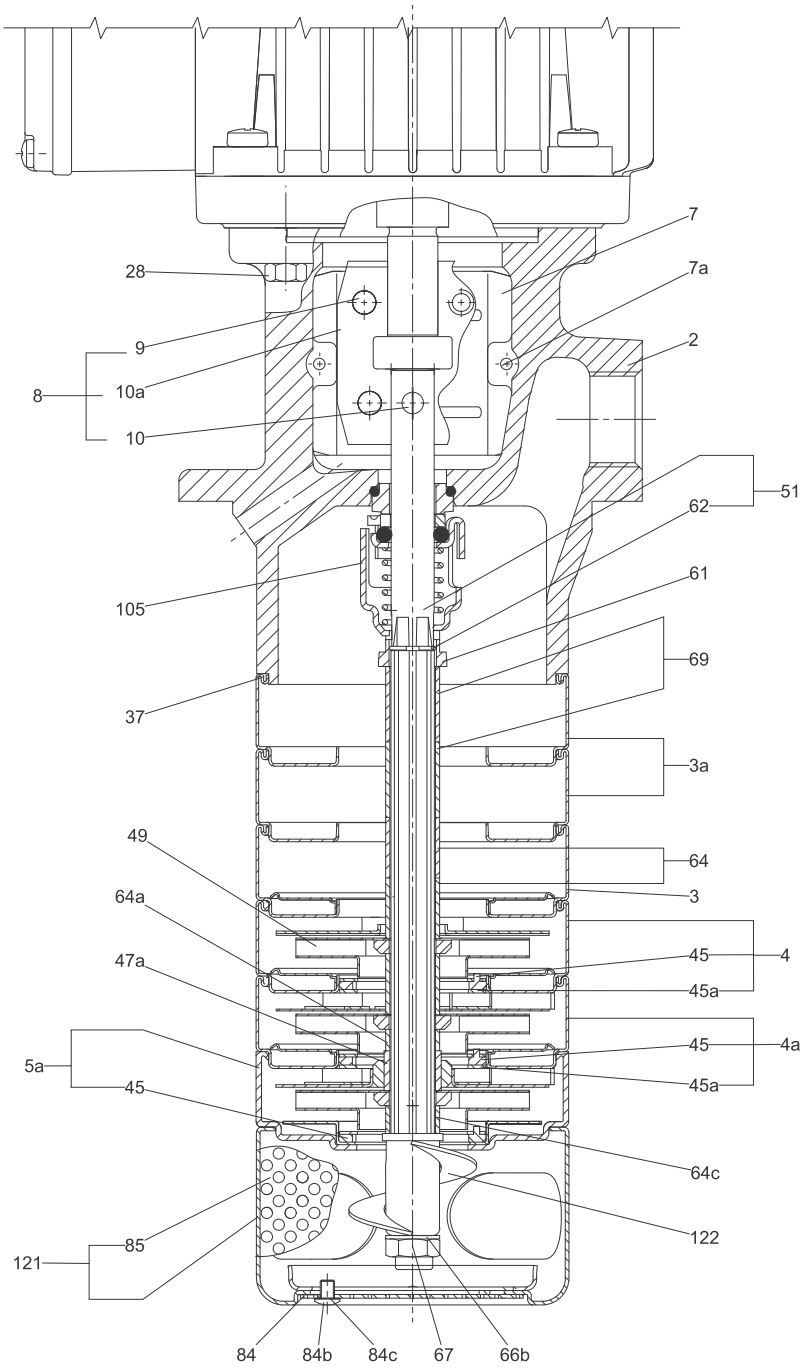


Fig. 24 SPK 4

For information on the materials please see page 34.

SPK materials

Pos.	Description	Materials	EN/DIN	AISI/ASTM
Pump head				
2	Pump head	A-version: cast iron	EN-GJL-200	ASTM 25B
		I-version: stainless steel	1.4408	AISI 316LN
7	Coupling guard	Stainless steel	1.4301	AISI 304
7a	Screw	Stainless steel		
28	Set screw	Stainless steel		
	Extension pipe	Stainless steel	1.4301	AISI 304
Chamber without bearing				
3	Chamber, empty	Stainless steel	1.4301	AISI 304
3a	Chamber, empty	Stainless steel	1.4301	AISI 304
4	Chamber	Stainless steel	1.4301	AISI 304
45	Neck ring	SPK 1, 2 and 4: PPS with 40 % glass fibre		
		SPK 8: Tin/bronze	2.1020.10	
45a	Disc for neck ring	PTFE		
64	Spacing pipe	Stainless steel	1.4401	AISI 316
69	Spacing pipe	Stainless steel	1.4401	AISI 316
Chamber with bearing				
4a	Chamber	Stainless steel	1.4301	AISI 304
	Bearing in chamber	Ceramic Al_2O_3 95-100 % Hilox^{TM}		
45	Neck ring	SPK 1, 2 and 4: PPS with 40 % glass fibre		
		SPK 8: Tin/bronze	2.1020.10	
45a	Disc for neck ring	PTFE		
47a	Bearing ring	Tungsten carbide		
64a	Spacing pipe	Stainless steel	1.4401	AISI 316
64b	Spacing pipe	Stainless steel	1.4401	AISI 316
Bottom chamber				
5a	Chamber	Stainless steel	1.4301	AISI 304
45	Neck ring	SPK 1, 2 and 4: PPS with 40 % glass fibre		
45a	Disc for neck ring	PTFE		
64c	Spacing pipe	Stainless steel	1.4401	AISI 316
Inlet part				
84	Suction strainer	Stainless steel	1.4301	AISI 304
121	Inlet part	Stainless steel	1.4301	AISI 304
84b	Set screw	Stainless steel		
Shaft				
51	Spline shaft	Stainless steel	1.4057	AISI 431
61	Neck ring	Stainless steel	1.4301	AISI 304
62	Stop ring	Stainless steel	1.4436	AISI 316
64c	Neck ring	Stainless steel	1.4401	AISI 316
66	Washer	Stainless steel	1.4301	AISI 304
67	Locking nut	Stainless steel	1.4401	AISI 316
69a	Spacing pipe	Stainless steel	1.4301	AISI 304
112	Spacing pipe	Stainless steel	1.4301	AISI 304
122	Priming screw	Stainless steel	1.4401	AISI 316
Impeller				
49	Impeller	Stainless steel	1.4301	AISI 304
49d	Impeller, lower	Stainless steel	1.4301	AISI 304
Strap				
26	Strap	Stainless steel	1.4301	AISI 304
36	Nut	Stainless steel		
66a	Washer	Stainless steel		
Coupling				
8	Coupling	Sintered metal		
9	Hexagon socket head screw	Steel		
10	Shaft pin	Stainless steel	1.4301	AISI 304

MTH 2

Sectional drawing

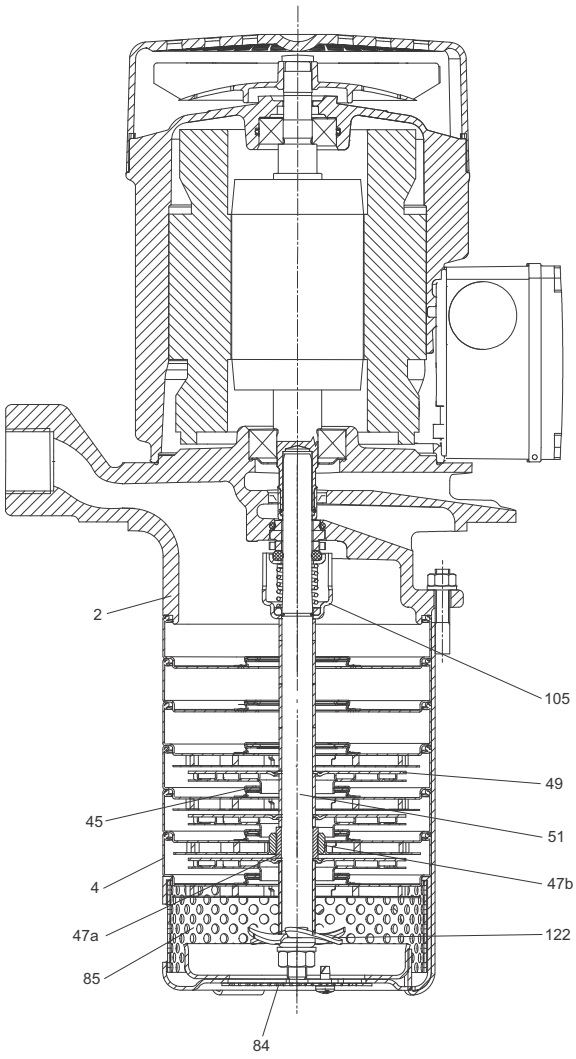


Fig. 25 MTH 2

Material specification

Pos.	Description	Materials	EN/DIN	AISI/ASTM
2	Pump head	A-version: cast iron	EN-GJL-200	ASTM 25B
		I-version: stainless steel	1.4408	AISI 316LN
4	Chamber	I-version: stainless steel	1.4301	AISI 304
45	Neck ring	PTFE		
47a	Bearing ring	SiC EkasiC		
47b	Bearing	SiC EkasiC		
49	Impeller	Stainless steel	1.4301	AISI 304
51	Pump shaft	Stainless steel	1.4057	AISI 431
84	Suction strainer, ∅2 mm holes	Stainless steel	1.4301	AISI 304
85	Strainer, internal	Stainless steel	1.4301	AISI 304
105	Shaft seal	AQQV		
122	Priming screw	Stainless steel	1.4301	AISI 304

MTH 4

Sectional drawing

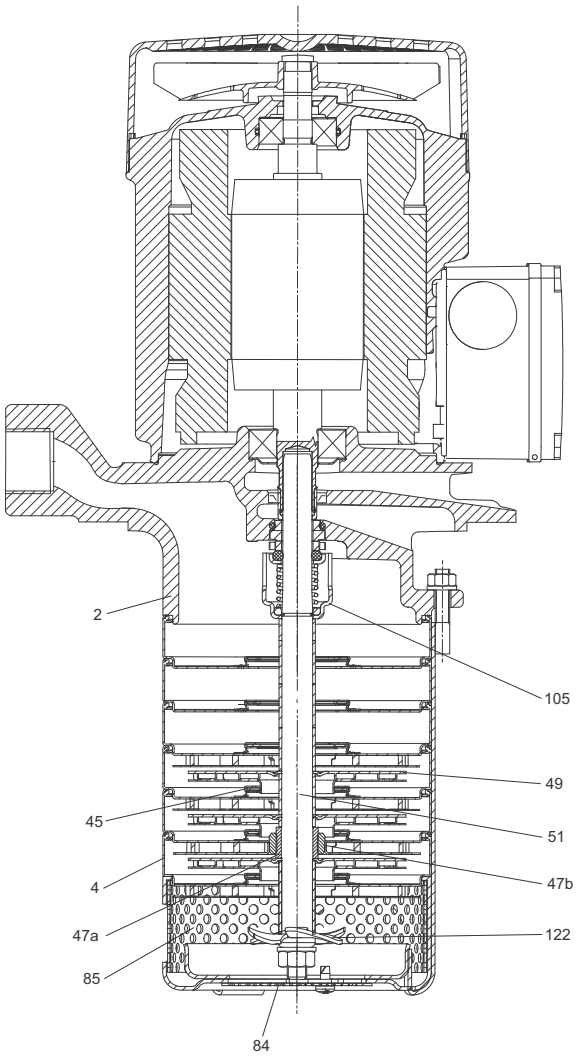
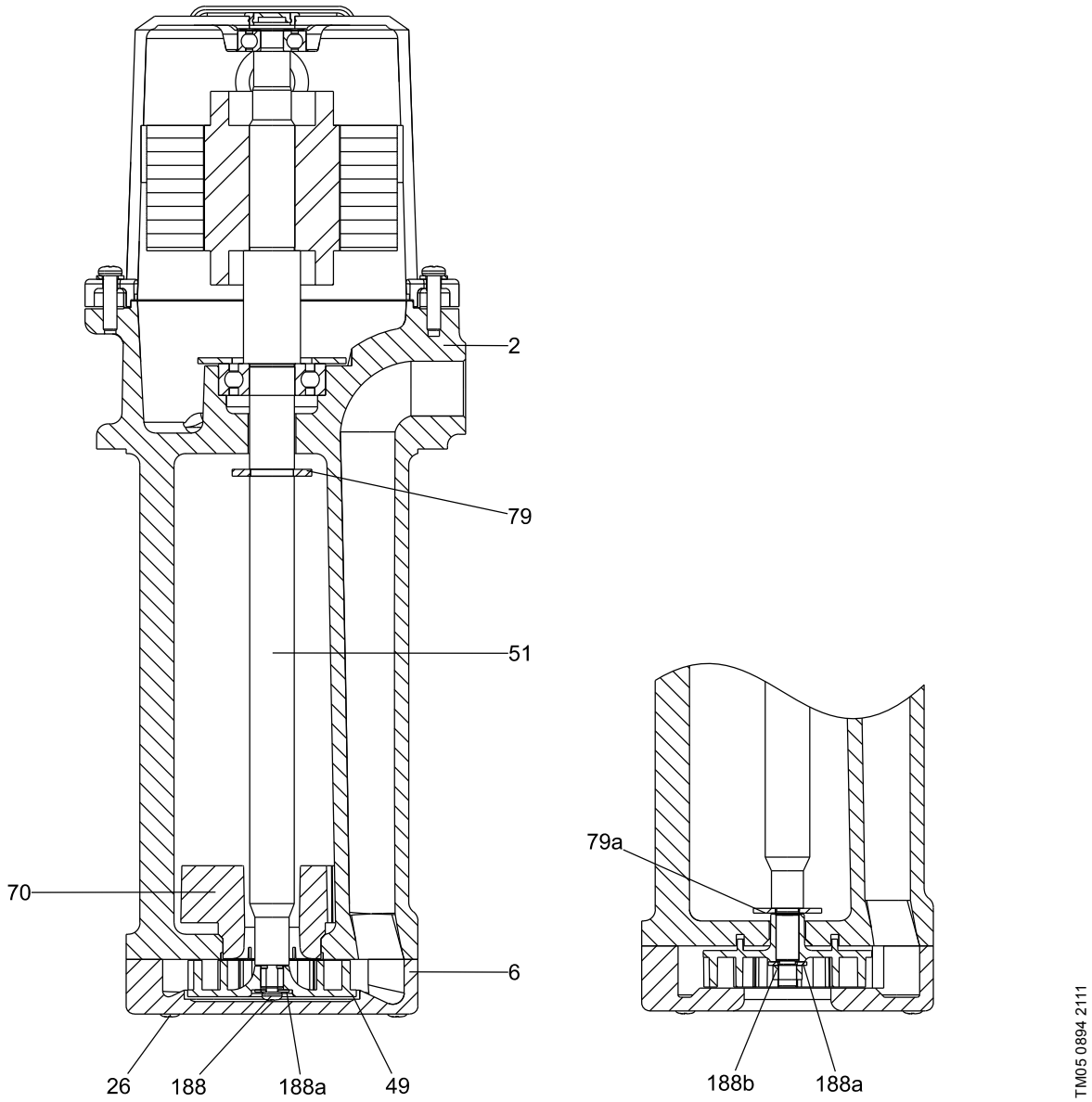


Fig. 26 MTH 4

Material specification

Pos.	Description	Materials	EN/DIN	AISI/ASTM
2	Pump head	A-version: cast iron	EN-GJL-200	ASTM 25B
		I-version: stainless steel	1.4408	AISI 316LN
4	Chamber	Stainless steel	1.4301	AISI 304
45	Neck ring	PTFE		
47a	Bearing ring	AL 203-95-100 % (HILOX 961/3)		
47b	Bearing	Tungsten carbide		
49	Impeller	Stainless steel	1.4301	AISI 304
51	Pump shaft	Stainless steel	1.4057	AISI 431
84	Suction strainer, ∅2 mm holes	Stainless steel	1.4301	AISI 304
85	Strainer, internal	Stainless steel	1.4301	AISI 304
105	Shaft seal	AQQV		
122	Priming screw	Stainless steel	1.4301	AISI 304

MTA 30, 60, 90, 20H, 40H, 70H

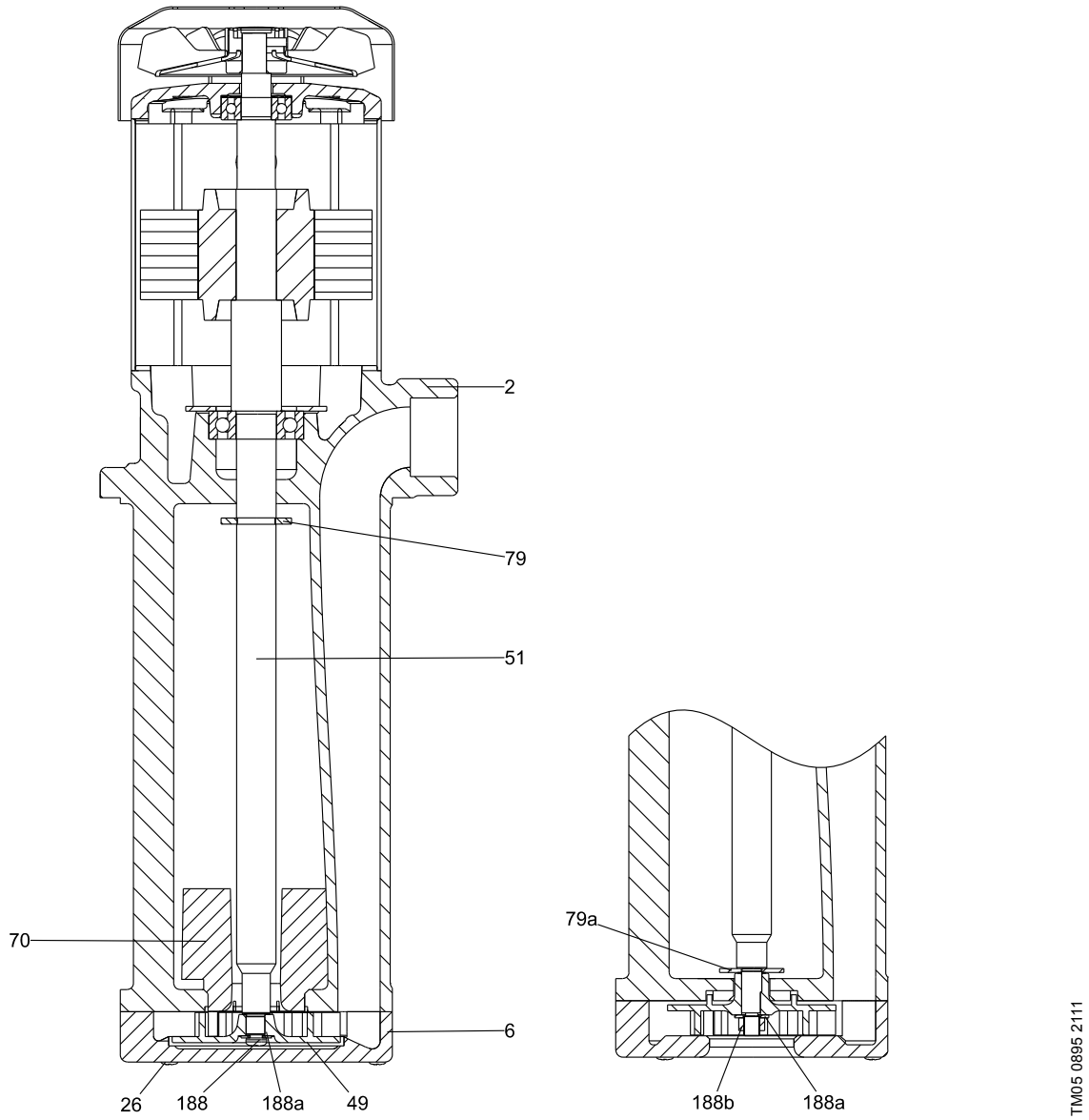


Pos.	Description		Materials	EN/DIN	AISI/ASTM	JIS
2	Pump head		Cast iron	GG20	A48-CL30	FC200
6	Pump housing		Cast iron	GG20	A48-CL30	FC200
26	Screw		Stainless steel	1.4301	A276-304	SUS304
49	Impeller	MTA 30, 60, 90, 70H*	PAA GF50			
		MTA 20H, 40H, 70H**	Bronze casting	G-CuZn-5ZnPb	C92200	BC7
51	Shaft with rotor		Steel	C45	A108-1045	S45C
70	Vortex preventer	MTA 90	PP			
79	Thrower		NBR			
79a	Splash ring		Steel	1623 ST 12	A366	SPCC
188	Cross-head screw		Stainless steel	1.4301	A276-304	SUS304
188a	Washer		Stainless steel	1.4301	A276-304	SUS304
188b	Hexagon nut		Stainless steel	1.4301	A276-304	SUS304
	Terminal box		Aluminium			

* MTA 70H, bottom suction

** MTA 70H, top suction

MTA 120, 200, 100H

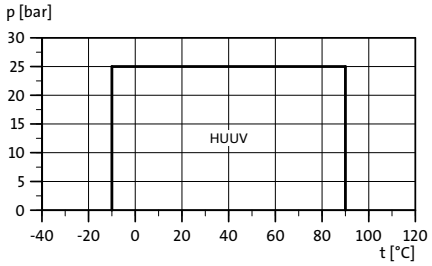


Pos.	Description		Materials	EN/DIN	AISI/ASTM	JIS
2	Pump head		Cast iron	GG20	A48-CL30	FC200
6	Pump housing		Cast iron	GG20	A48-CL30	FC200
26	Screw		Stainless steel	1.4301	A276-304	SUS304
49	Impeller		Bronze casting	G-CuZn-5ZnPb	C92200	BC7
		MTA 120	PAA GF 50			
51	Shaft with rotor		Steel	C45	A108-1045	S45C
70	Vortex preventer	MTA 120	PP			
79	Thrower		NBR			
79a	Splash ring		Steel	1623 ST 12	A366	SPCC
188	Cross-head screw		Stainless steel	1.4301	A276-304	SUS304
188a	Washer		Stainless steel	1.4301	A276-304	SUS304
188b	Hexagon nut		Stainless steel	1.4301	A276-304	SUS304
	Terminal box		Aluminium			

Shaft seals

The operating range of the shaft seal depends on operating pressure, pump type, type of shaft seal and liquid temperature.

Shaft seal, MTR, MTRE

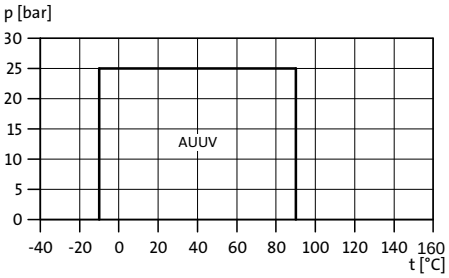


TM02 8798 0904

Shaft seal*	Description	Temperature range [°C]
HUUV	O-ring seal (cartridge type), balanced, tungsten carbide/tungsten carbide, FKM	-10 - 90

* Other shaft seals on request

Shaft seal, SPK

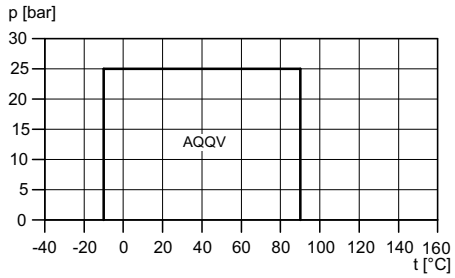


TM03 0023 4604

Shaft seal*	Description	Temperature range [°C]
AUUV	O-ring seal with fixed seal driver, tungsten carbide/tungsten carbide, FKM	-10 - 90

* Other shaft seals on request

Shaft seal, MTH



TM05 8897 3213

Shaft seal*	Description	Temperature range [°C]
AQQV	O-ring seal with fixed seal driver, silicon carbide, silicon carbide, FKM	-10 - 90

* Other shaft seals on request

8. Identification

MTR, MTRE type key

Example	MTR	E	32	(s)	-2	/1	-1	-A	-F	-A	-H	UU	V

Pump type

Pump with integrated frequency control

Rated flow rate [m^3/h]

All impellers with reduced diameter (only MTR 1s)

Number of chambers, see fig. 27

Number of impellers, see fig. 27

Number of impellers with reduced diameter

Pump version

- A Basic version
- B Oversize motor
- C Suction pipe
- D Drainage back to tank
- E Pump with certificate/approval
- F 120 °C version
- H Horizontal version
- HS High pressure
- J Pump with different max. speed
- P Undersize motor
- T Double oversize
- X Special version

Pipe connection

- F DIN flange
- G ANSI flange
- J JIS flange
- M Square flange with internal thread
- W Internal thread
- WB NPT internal thread
- X Special version

Materials

- A Basic version
- I Wetted parts EN/DIN 1.4301/AISI 304
- X Special version

Shaft seal

- A O-ring seal with fixed seal driver
- H Balanced cartridge seal
- Q Silicon carbide
- U Tungsten carbide
- B Carbon
- E EPDM
- F FXM
- K FFKM
- V FKM

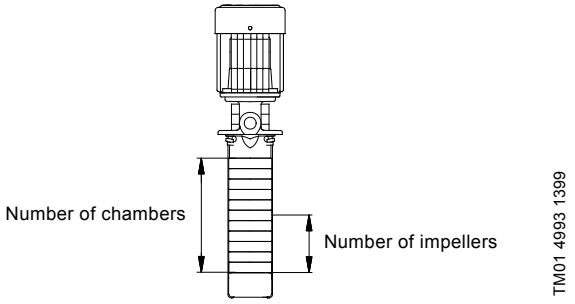


Fig. 27 MTR pump

SPK type key

Example	SPK	E	2	-15	/8	A	-W	-A	A	UU	V
Pump type											
Pump with integrated frequency control											
Rated flow rate [m^3/h]											
Number of chambers, see fig. 28											
Number of impellers, see fig. 28											
Pump version											
A Basic version											
B Oversize motor											
C Suction pipe											
E Pump with certificate/approval											
F 120 °C version											
H Horizontal version											
L With extension pipe											
P Undersize motor											
T Double oversize											
X Special version											
Pipe connection											
M Square flange with internal thread											
W Internal thread											
WB NPT internal thread											
Materials											
A Basic version											
I Pump head of stainless steel											
Shaft seal											
A O-ring seal with fixed seal driver											
B Bellows seal, rubber											
C O-ring seal with spring as seal driver											
R O-ring seal, type A, with reduced seal faces											
A Carbon metal-impregnated											
B Carbon resin-impregnated											
Q Silicon carbide											
U Tungsten carbide											
V Metal oxides, ceramic											
E EPDM											
K FFKM											
P NBR											
V FKM											

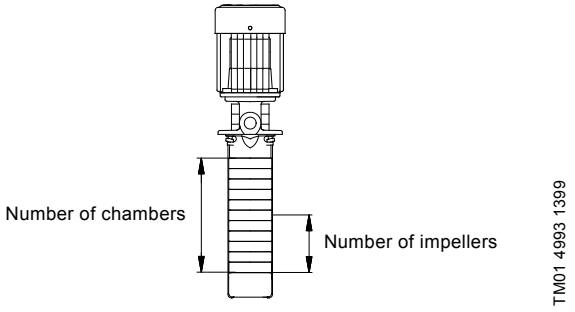
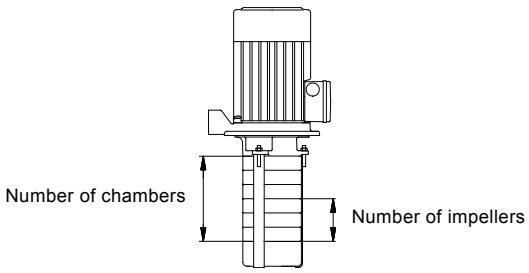


Fig. 28 SPK pump

MTH type key

Example	MTH	2	-6	/3	-A	-W	-A	-A	UU	V
Pump type										
Rated flow rate [m^3/h]										
Number of chambers, see fig. 29										
Number of impellers, see fig. 29										
Pump version										
A Basic version										
C Suction pipe										
X Special version										
Pipe connection										
W Internal thread										
WB NPT internal thread										
Materials										
A Basic version										
I Pump head of stainless steel										
Shaft seal										
A O-ring seal with fixed seal driver										
B Bellows seal, rubber										
C O-ring seal with spring as seal driver										
R O-ring seal, type A, with reduced seal faces										
A Carbon, metal-impregnated										
B Carbon, resin-impregnated										
Q Silicon carbide										
U Tungsten carbide										
V Metal oxides, ceramic										
E EPDM										
V FKM										

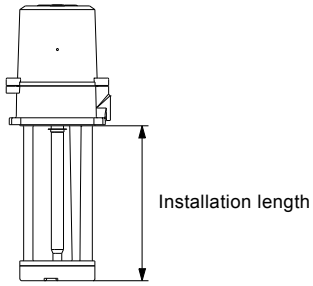


TM01 4992 1299

Fig. 29 MTH pump

MTA type key

Example	MTA	30	H	-150	-A	-W	-A	-T
Pump type								
Pump size								
Pressure type								
Installation length [mm]								
Pump version A = standard version								
Thread type W = internal thread WB = internal NPT thread								
Impeller material A = PAA GF50 B = bronze								
Suction T = top B = bottom								



TM05 1021 2011

Fig. 30 MTA pump

9. Installation

Installation of MTR, MTRE pumps

MTR, MTRE 1s, 1, 3, 5, 10, 15 and 20 pumps can be installed both vertically and horizontally.

MTR, MTRE 32, 45, 64 pumps must be installed in a vertical position.

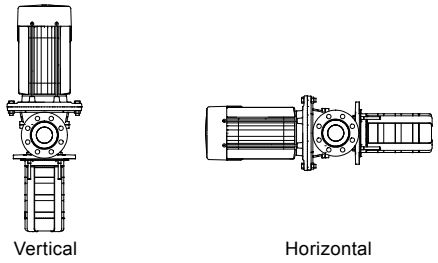


Fig. 31 Installation of a MTR, MTRE pump

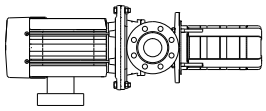


Fig. 32 On horizontally installed MTR, MTRE pumps with motors from 5.5 kW and up, the motors have feet and must be supported

The pumps are designed to provide full performance down to a level of A mm above the bottom of the suction strainer.

At a liquid level between A and B mm above the bottom of the suction strainer, the built-in priming screw will protect the pump against dry running.

Note: MTR, MTRE 32, 45 and 64 pumps have no priming screw.

Pump type	A [mm]	B [mm]
MTR, MTRE 1s, 1, 3, 5	41	28
MTR, MTRE 10, 15, 20	50	25
MTR, MTRE 32, 45, 64	70	-

The distance between the pump and the tank bottom must be minimum 25 mm.

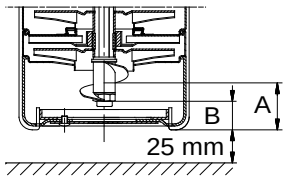


Fig. 33 MTR, MTRE 1s, 1, 3 and 5

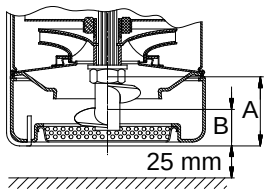


Fig. 34 MTR, MTRE 10, 15 and 20

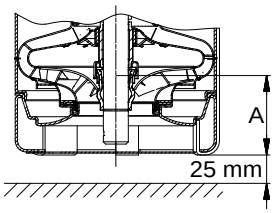


Fig. 35 MTR, MTRE 32, 45 and 64

Installation of SPK pumps

SPK pumps can be installed both vertically and horizontally. If the SPK pump is installed horizontally, the drain hole in the pump head must be closed.

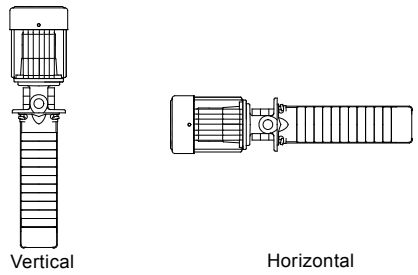


Fig. 36 Installation of a SPK pump

To enable a very low liquid level of 40 mm above the bottom of the suction strainer, a priming screw is fitted below the bottom chamber.

This protects the pump against dry running down to 25 mm above the bottom of the suction strainer.

The distance between pump and tank bottom must be minimum 25 mm.

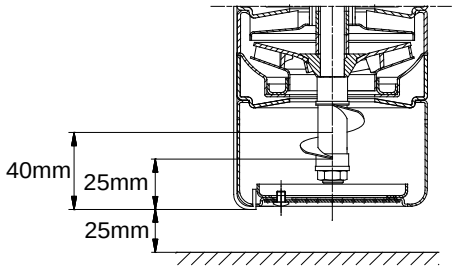


Fig. 37 SPK

Installation of MTH pumps

MTH pumps must be installed vertically.

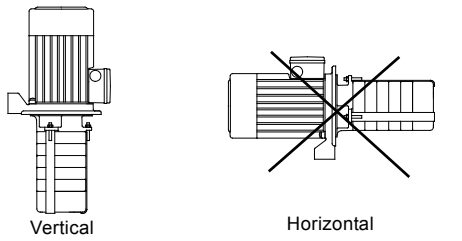


Fig. 38 Installation of an MTH pump

To enable a low liquid level of 40 mm above the bottom of the suction strainer, a priming screw is fitted below the bottom chamber. This protects the pump against dry running down to 25 mm above the bottom of the suction strainer.

The distance between pump and tank bottom must be minimum 25 mm.

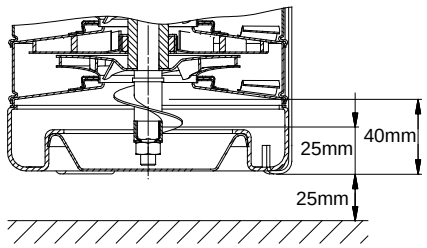


Fig. 39 Minimum distance between pump and tank

Installation of MTA pumps

MTA pumps are designed for vertical mounting in a tank.

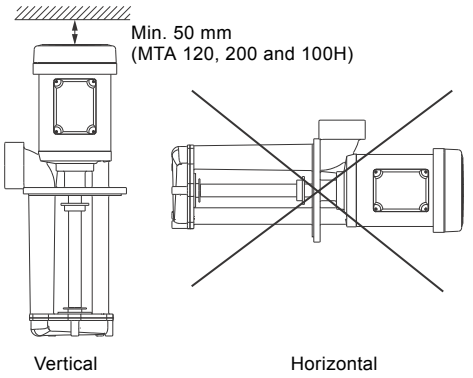


Fig. 40 Mounting position

Provide a clearance of minimum 50 mm above the motor to ensure cooling of fan-cooled motors (MTA 120, 200 and 100H).

The pump is designed for indoor operation only.

Note: The motor must not be exposed to direct water/liquid sprays.

Liquid level

MTA with top suction

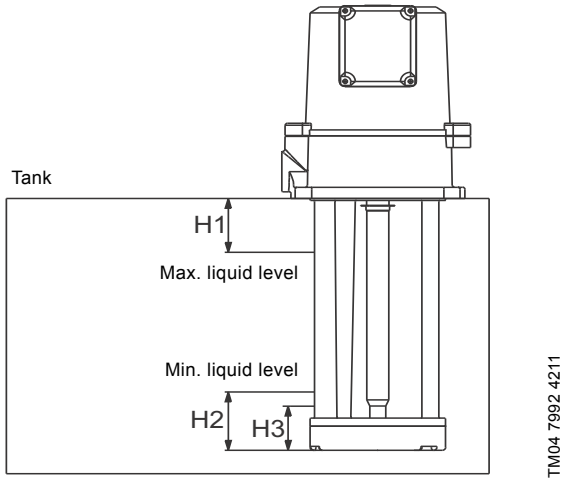


Fig. 41 MTA with top suction

Pump	H1 [mm]	H2* [mm]	H3** [mm]
MTA 30	15	60	50
MTA 60	20	70	45
MTA 90	20	85	58
MTA 120	20	110	70
MTA 20H	15	50	40
MTA 40H	20	70	40
MTA 70H	20	80	50
MTA 100H	20	110	60

* Min. liquid level (full performance).
** Min. permissible liquid level (reduced performance).

MTA with bottom suction

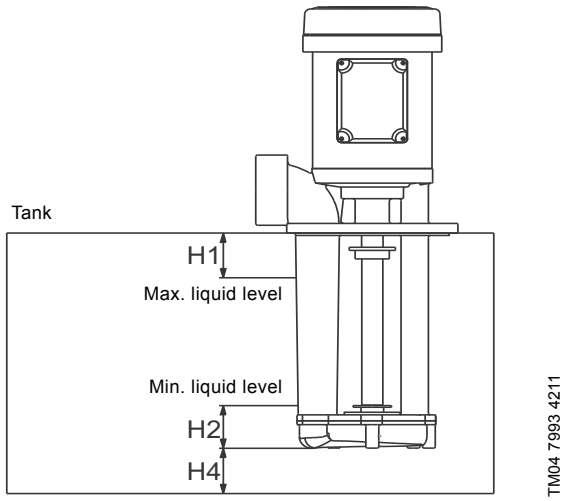


Fig. 42 MTA with bottom suction

Pump	H1 [mm]	H2* [mm]	H4 [mm]
MTA 30	15	20	10
MTA 60	20	20	10
MTA 90	20	25	15
MTA 120	20	25	20
MTA 200	25	50	30

* Minimum liquid level (full performance).

Electrical installation

MTR, SPK and MTH pumps can be fitted with a 10-pin multiplug connection, type Han® 10 ES.

The purpose of a multiplug connection is to make the electrical installation and the service of the pump easier. The multiplug functions as a plug-and-pump device.

The following drawings show where the multiplug is positioned on the motor.

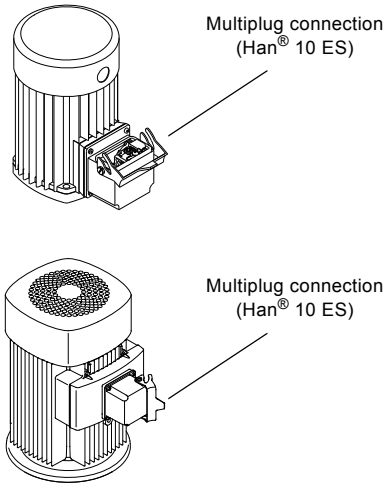


Fig. 43 Multiplug on a Grundfos MG motor

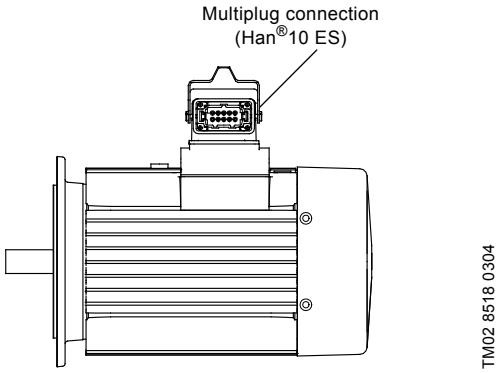


Fig. 44 Multiplug type Han® 10 ES

On request, the following motors can be supplied with a multiplug connection (type Han® 10 ES):

- motors for MTR/SPK up to 7.5 kW
- all MTH motors.

Technical data for multiplug

Material description

Material	Description
Material	GD-Al Si 8 Cu 3
Surface	Powder paint
Clip for locking	Stainless steel
Housing gasket	NBR rubber
Temperature range [°C]	-40 - 125
Enclosure class	IP65 at DIN 40050 in closed position
Type	Han® 10E

Dimensions

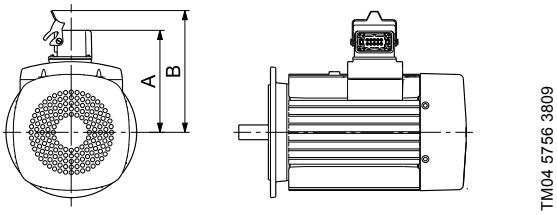


Fig. 45 Motor with multiplug

Motor	Frame size	A [mm]	B [mm]
MG	71	131	162
MG	80	131	162
MG	90	173	204
MG	100	183	214
MG	112	197	228
MG (5.5 kW)	132	197	228
MG (7.5 kW)	132	222	253

Plug connections

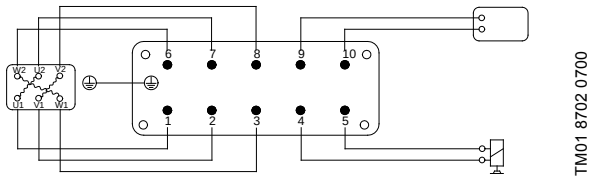


Fig. 46 From motor

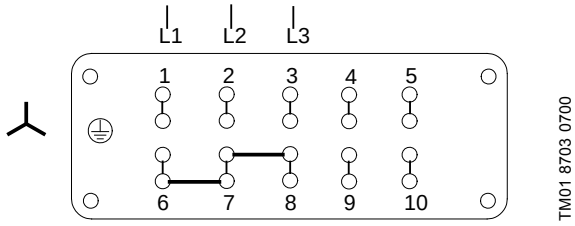


Fig. 47 Plug connections for star connection

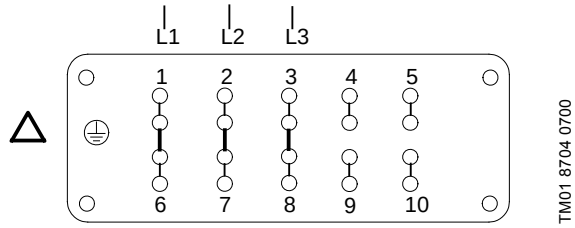


Fig. 48 Plug connections for delta connection.
Fishplates for connections are located in the plug

10. Selection and sizing

Selection of pumps

Selection of pumps must be based on the following parameters:

- the duty point of the pump
- dimensional data such as pressure loss as a result of height differences, friction loss in the pipework, pump efficiency etc.
- minimum inlet pressure - NPSH.

Duty point of the pump

From a duty point you can select a pump on the basis of the curve charts shown in the chapter of *Performance curves and technical data* starting on page 51.

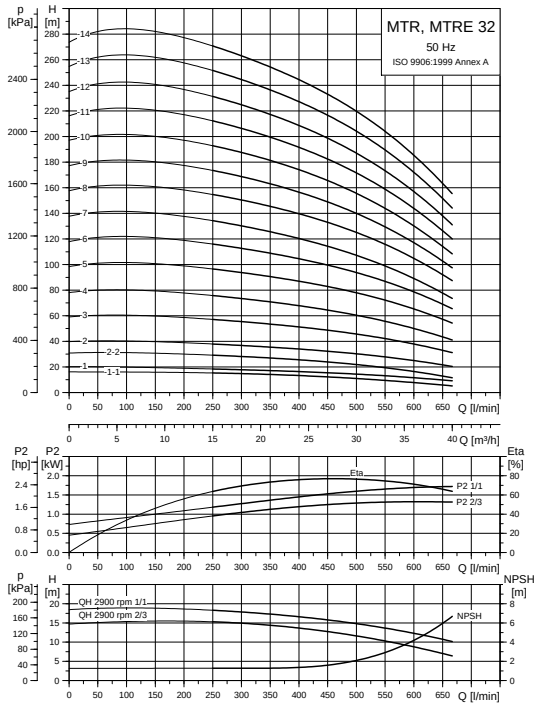


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Fig. 49 Example of a curve chart

Dimensional data

When sizing a pump the following aspects must be taken into account:

- required flow rate and pressure at the draw-off point
- pressure loss as a result of height differences (H_{geo})
- friction loss in the pipework (H_f).
  It may be necessary to account for pressure loss in connection with long pipes, bends or valves, etc.
- best efficiency at the estimated duty point
- NPSH value
  For calculation of the NPSH value, see "Minimum inlet pressure - NPSH" on page 50.

Efficiency

Before determining the point of best efficiency, you need to identify the operating pattern of the pump.

Is the pump expected always to operate in the same duty point, select an MTR, MTH, MTA pump which is operating at a duty point corresponding to the best efficiency of the pump.

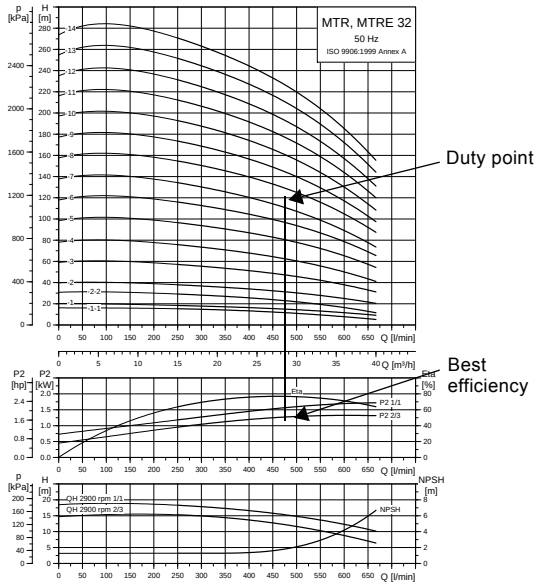

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Fig. 50 Example of an MTR pump's duty point

As the pump is sized on the basis of the highest possible flow, it is important always to have the duty point to the right on the efficiency curve (eta) in order to keep efficiency high when the flow drops.

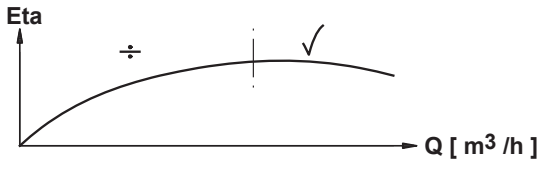


Fig. 51 Best efficiency5

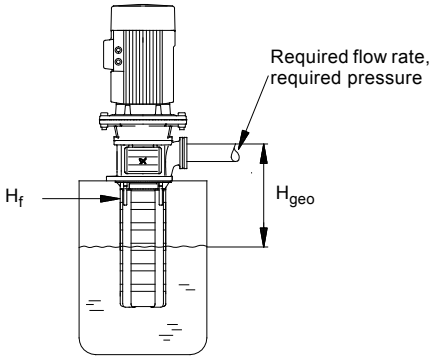


Fig. 52 Dimensional data

Normally, MTRE pumps are used in applications characterized by a variable flow rate. Consequently, you cannot select a pump that is operating constantly at optimum efficiency. In order to achieve optimum operating economy, you must select the pump on the basis of the following criteria:

- The maximum duty point should be as close as possible to the QH curve of the pump.
- The required duty point should be positioned so that P2 is close to the maximum point of the QH curve.

Between the minimum and maximum performance curves, MTRE pumps have an infinite number of performance curves each representing a specific speed. Therefore, you may not be able to select a duty point close to the maximum curve.

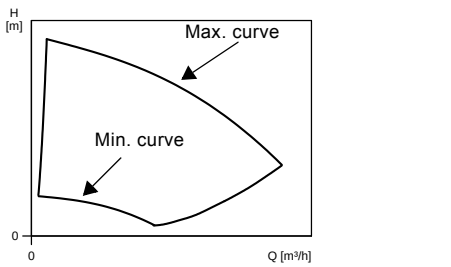


Fig. 53 Minimum and maximum performance curves

In situations where you cannot select a duty point close to the maximum curve, you can use the affinity equations below. The head (H), the flow rate (Q) and the input power (P) are all the appropriate variables you need to be able to calculate the motor speed (n).

Note:

The approximated formulas apply on condition that the system characteristic remains unchanged for n_n and n_x and that it is based on the formula $H = k \times Q^2$ where k is a constant.

The power equation implies that the pump efficiency is unchanged at the two speeds. In practice this is not quite correct.

Finally, it is worth noting that the efficiencies of the frequency converter and the motor must be taken into account if you want a precise calculation of the power saving resulting from a reduction of the pump speed.

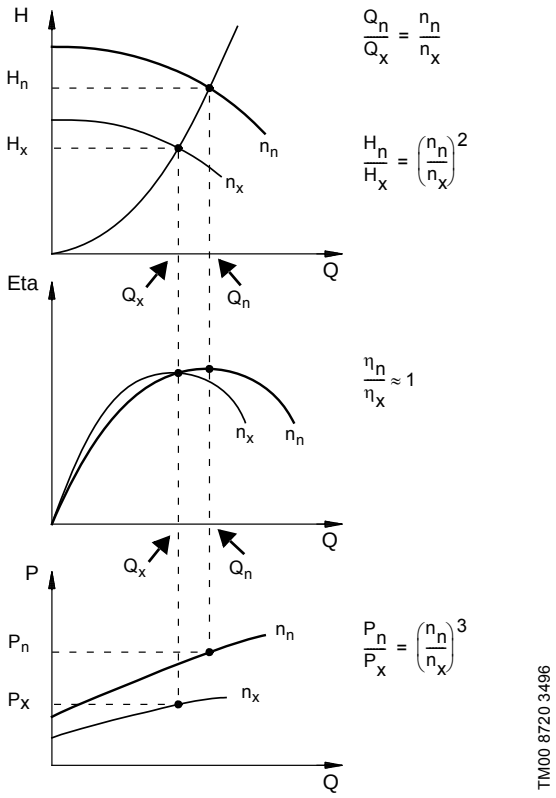


Fig. 54 Affinity equations

Legend

H_n	Rated head [m]
H_x	Current head [m]
Q_n	Flow rate [m^3/h]
Q_x	Current flow rate [m^3/h]
n_n	Rated motor speed [min^{-1}]
n_x	Current motor speed [min^{-1}]
η_n	Rated efficiency [%]
η_x	Current efficiency [%]

Grundfos Product Center

The Grundfos Product Center is an online product selection and sizing tool which you can use to calculate the specific duty point and energy consumption of the pump.

For further information see page 157.

Pressure loss

During operation pressure losses occur in all centrifugal pumps.

The below curves illustrate the pressure losses for pumped liquid passing through one empty chamber. An empty chamber is a chamber without an impeller.

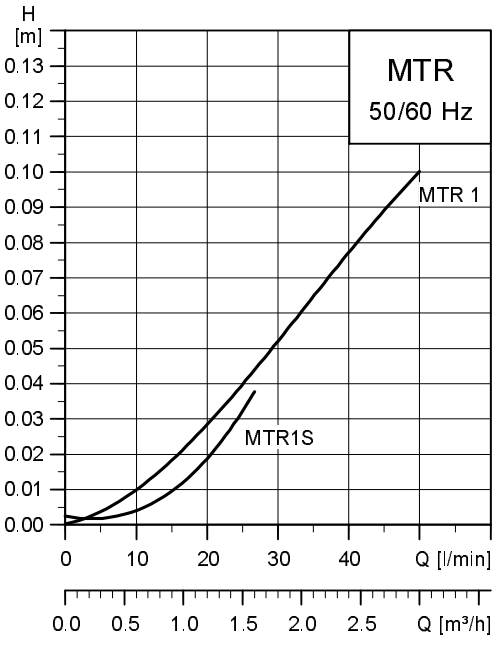


Fig. 55 Pressure losses of pumped liquid passing through an empty chamber for MTR 1s and MTR 1 pumps

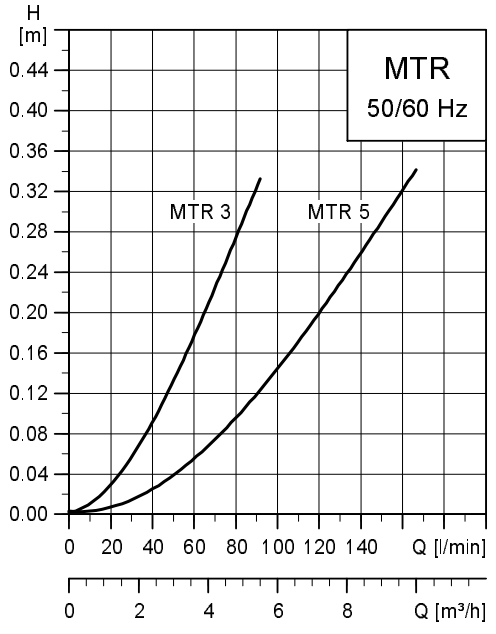


Fig. 56 Pressure losses of pumped liquid passing through an empty chamber for MTR 3 and MTR 5 pumps

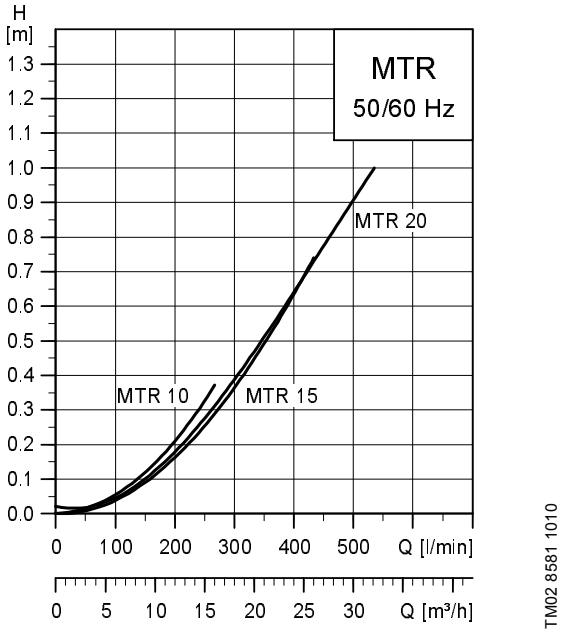


Fig. 57 Pressure losses of pumped liquid passing through an empty chamber for MTR 10, MTR 15 and MTR 20 pumps

As MTR, MTRE 32, 45 and 64 pumps have holes in the guide vanes, no pressure losses occur in the empty chambers of these pumps.

Calculation of the reduced head of a pump with empty chambers

Calculation of pressure loss in empty chambers

From the above curves and the curve charts of each pump type starting on page 46, you can calculate the reduced head of a pump with empty chambers.

You can do the calculation as shown below.

Example:

Pump type	MTR 5-18/7
Flow Q (duty point)	6 [m^3/h]
Head (duty point)	90 [m]

The selected pump is an MTR 5-18/18 with 11 empty chambers, see type keys on page 40.

From the above pressure loss curve of MTR 5, it appears that the pressure loss of each empty chamber at 6 m^3/h is 0.14 [m]. This results in a total pressure loss of:

(Total pressure loss) = 0.14 × 11 = 1.54 [m]

The reduced head of the MTR 5-18/7 pump including pressure losses caused by empty chambers is:

Head = 33 - 1.54 = 31.46 [m]

The head 33 metres is read from the performance curve for an MTR 5-18/7, see page 58.

Viscosity

Pump	Maximum kinematic viscosity of pumped liquid [cSt] = [mm²/s]
MTR 1s, 1, 3, 5, 8	50
MTR 10, 15, 20, 32, 45, 64	100
SPK	50
MTH	50
MTA	75

The pumping of liquids with densities or kinematic viscosities higher than those of water will cause a considerable pressure drop, a drop in the hydraulic performance and a rise in the power consumption.

In such situations you must equip the pump with a larger motor. If in doubt, contact Grundfos.

The following examples show the drop in the hydraulic performance of MTR, MTRE pumps pumping oil with a density of 872 kg/m^3 but with three different kinematic viscosities.

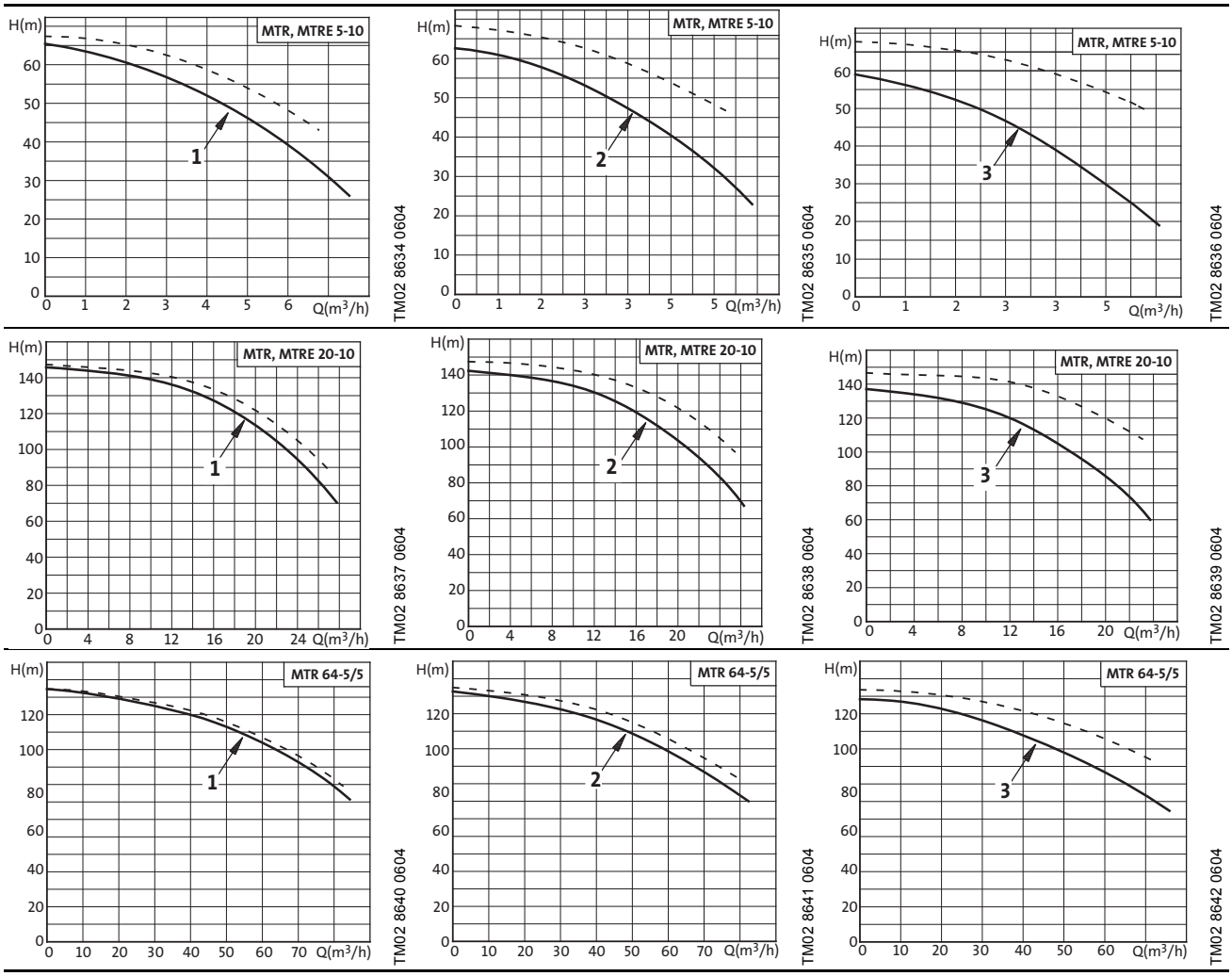


Fig. 58 Drop in the hydraulic performance of MTR, MTRE pumps pumping oil with three different kinematic viscosities

Key

Position	Density [kg/m³]	Kinematic viscosity [cSt] = [mm²/s]
1	872	16
2	872	32
3	872	75

For further information about pump performance when pumping liquids with densities or kinematic viscosities higher than those of water, see the Grundfos Product Center (http://product-selection.grundfos.com/).
The Grundfos Product Center is an online product selection and sizing tool.

For further information see page 157.

Kinematic viscosity of different oils

The curves below show the kinematic viscosity of different oils in relation to oil temperature.

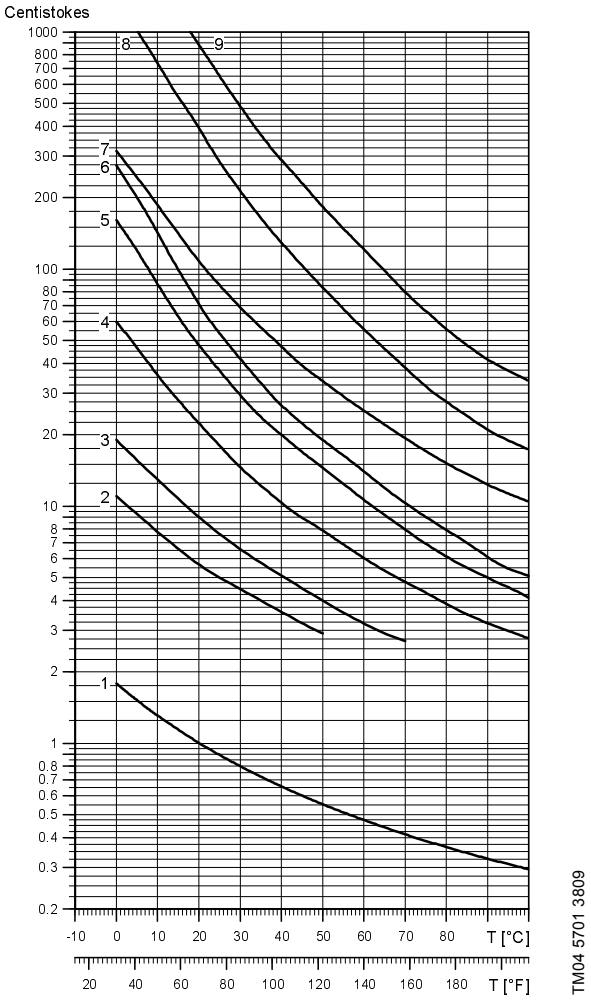


Fig. 59 Kinematic viscosity of different oils in relation to oil temperature

Key to kinematic viscosities of different oils

Curve number	Liquid
1	Water
2	Honing oil
3	Grinding oil
4	Hydraulic oil (ISO VG10)
5	Thermal oil
6	Cutting oil
7	Hydraulic oil (ISO VG46)
8	Motor oil (20W-50)
9	Gear oil

Minimum inlet pressure - NPSH

We recommend that you calculate the inlet pressure "H" when the following aspects apply:

- The liquid temperature is high.
- The flow is significantly higher than the flow rate.
- Water is drawn from depths.
- Water is drawn through long pipes.
- Inlet conditions are poor.

To avoid cavitation, make sure that there is a minimum pressure on the suction side of the pump. You can calculate the maximum suction lift "H" in metres head as follows:

$H = NPSH + H_v + H_s - p_b \times 10.2$

p_b = Barometric pressure in bar. You can set the barometric pressure can be set to 1 bar. In closed systems, p_b indicates the system pressure in bar.

NPSH = Net Positive Suction Head in metres head. (To be read from the NPSH curve at the highest flow rate the pump will be delivering).

H_v = Vapour pressure in metres head.

H_s = Safety margin = minimum 0.5 metre head.

If the calculated "H" is positive, the value shows how high the liquid level must be as minimum above the suction strainer.

If the "H" calculated is negative, the value shows how deep the pump is able to suck in theory.

Note: However, you have to fulfil the requirements of the minimum liquid level above the suction strainer. See page 43.

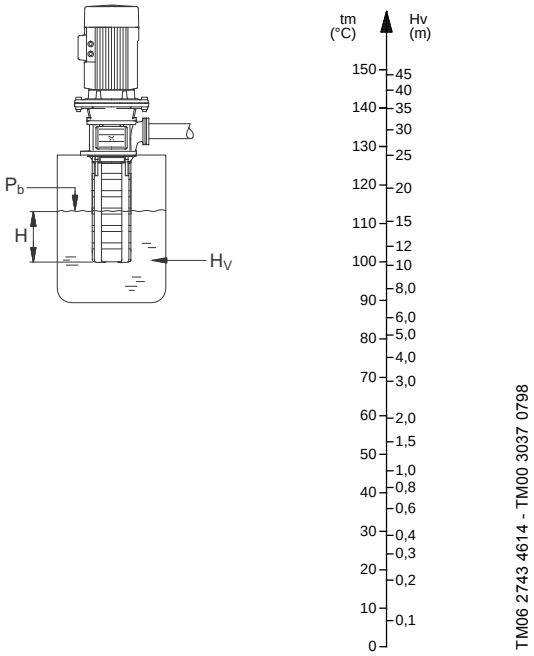


Fig. 60 Minimum inlet pressure - NPSH

Note: In order to avoid cavitation, never select a pump whose duty point is too far to the right on the NPSH curve.

Always check the NPSH value of the pump at the highest possible flow rate.

11. Performance curves and technical data

Introduction to performance curves

How to read the curve charts

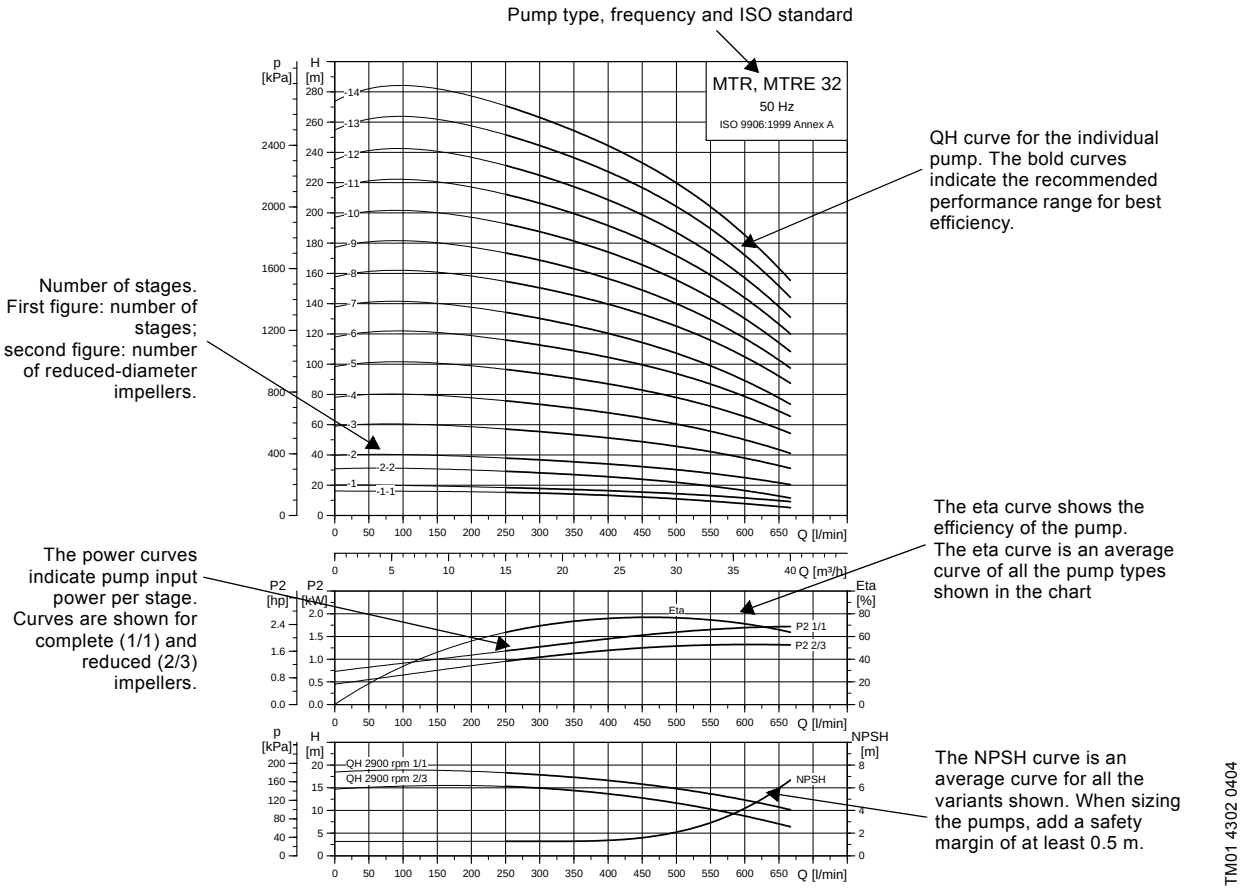


Fig. 61 Example of an MTR, MTRE curve chart

Guidelines to performance curves

The guidelines below apply to the curves shown on the following pages:

1. Tolerances to ISO 9906, Annex A, if indicated.
2. The motors used for the measurements are standard Grundfos motors (MG or MGE).
3. Measurements have been made with airless water at a temperature of 20 °C.
4. The curves apply to a kinematic viscosity of υ = 1 mm^2/s (1 cSt).
5. Due to the risk of overheating, the pumps should not be used at a flow below the minimum flow rate.
6. QH curves of the individual pumps are based on current motor speeds.

The curve below shows the minimum flow rate as a percentage of the nominal flow rate in relation to the liquid temperature.

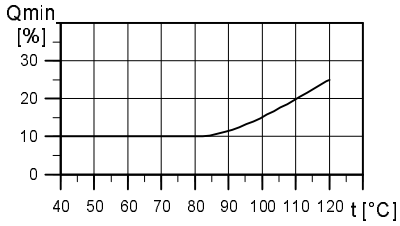
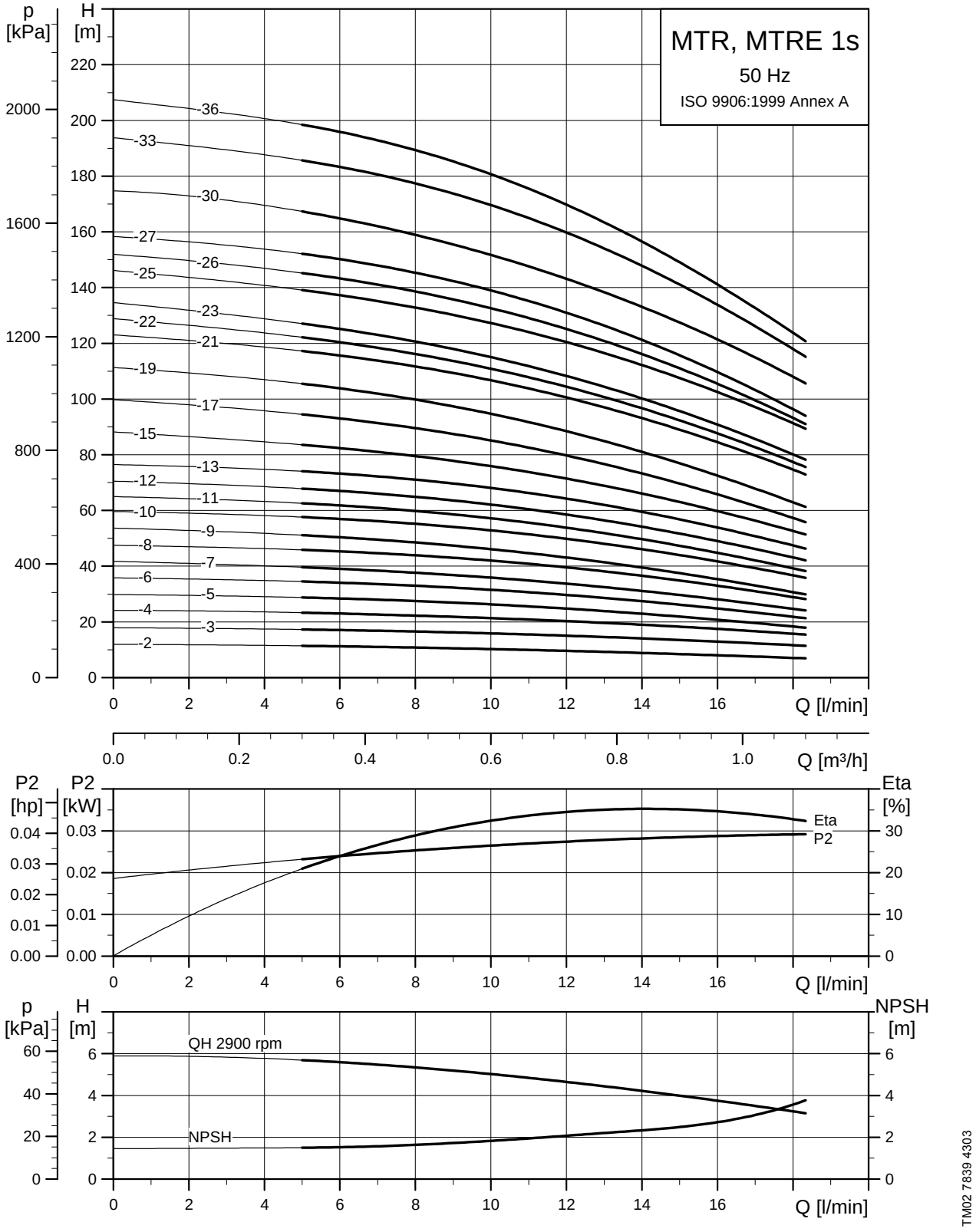


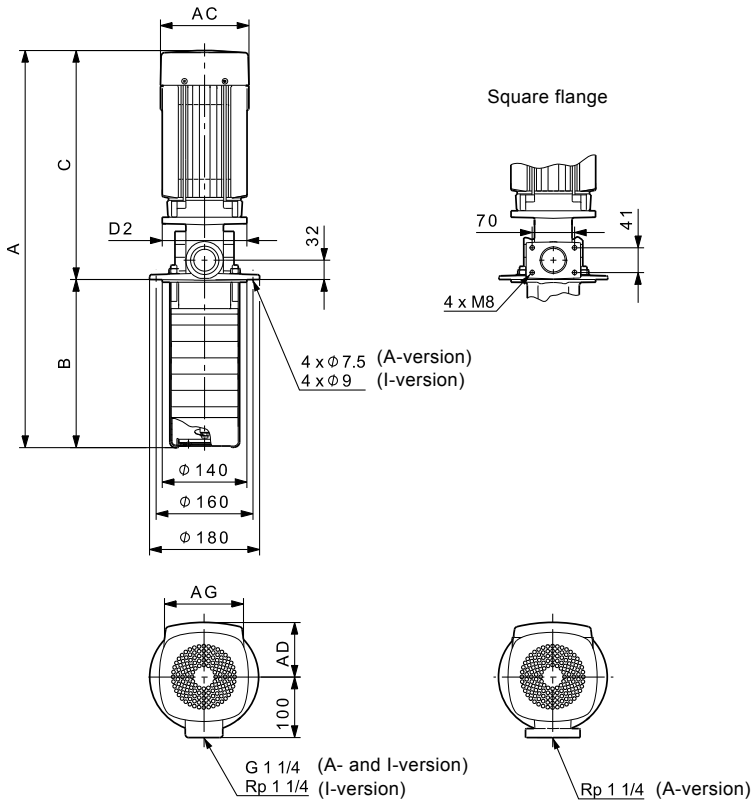
Fig. 62 Minimum flow rate

MTR, MTRE, 50 Hz

MTR, MTRE 1s, 50 Hz



Dimensional sketches



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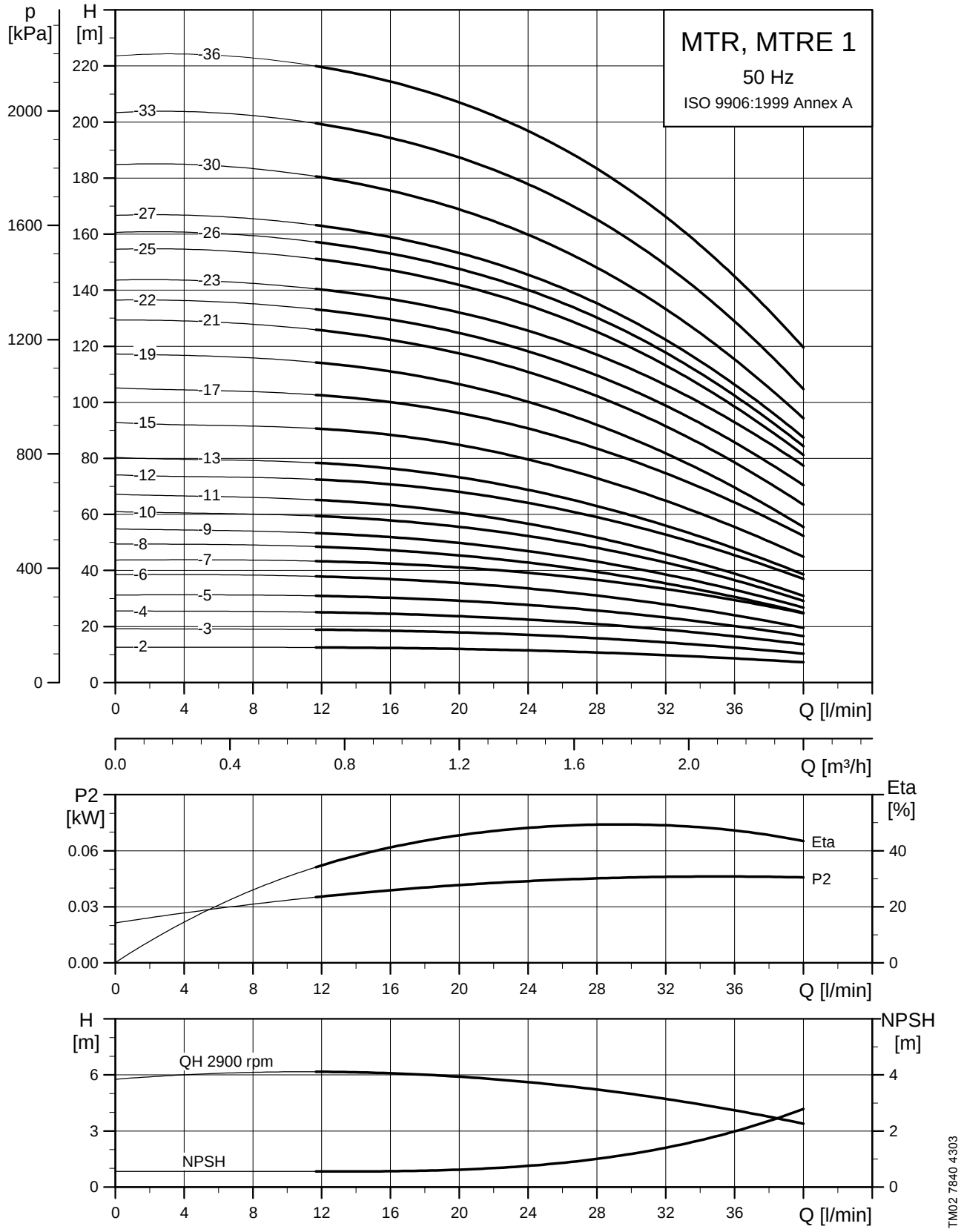
Dimensions and weights

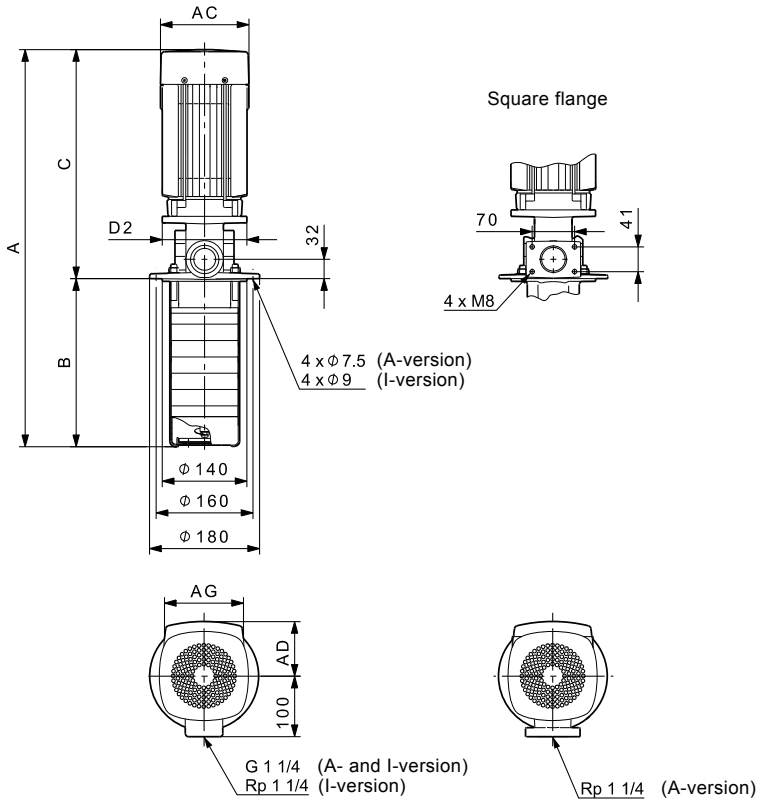
Pump type	P2 [kW]	MTR								MTRE							
		Dimensions [mm]							Net weight [kg]	Dimensions [mm]							Net weight [kg]
		A	B	C	AC	D2	AD	AG		A	B	C	AC	D2	AD	AG	
MTR 1s-2/2	0.37	462	160	302	141	140	109	82	12.9	-	-	-	-	-	-	-	-
MTR 1s-3/3	0.37	480	178	302	141	140	109	82	13	-	-	-	-	-	-	-	-
MTR 1s-4/4	0.37	498	196	302	141	140	109	82	13	-	-	-	-	-	-	-	-
MTR, MTRE 1s-5/5	0.37	516	214	302	141	140	109	82	13	579	214	365	122	140	158	268	17.4
MTR 1s-6/6	0.37	534	232	302	141	140	109	82	13	-	-	-	-	-	-	-	-
MTR 1s-7/7	0.37	552	250	302	141	140	109	82	13.1	-	-	-	-	-	-	-	-
MTR, MTRE 1s-8/8	0.37	570	268	302	141	140	109	82	13.1	633	268	365	122	140	158	268	17.5
MTR 1s-9/9	0.37	588	286	302	141	140	109	82	13.1	-	-	-	-	-	-	-	-
MTR 1s-10/10	0.37	606	304	302	141	140	109	82	13.1	-	-	-	-	-	-	-	-
MTR 1s-11/11	0.37	624	322	302	141	140	109	82	13.1	-	-	-	-	-	-	-	-
MTR, MTRE 1s-12/12	0.37	642	340	302	141	140	109	82	13.2	705	340	365	122	140	158	268	17.6
MTR 1s-13/13	0.37	660	358	302	141	140	109	82	13.2	-	-	-	-	-	-	-	-
MTR 1s-15/15	0.55	696	394	302	141	140	109	82	12.7	-	-	-	-	-	-	-	-
MTR 1s-17/17	0.55	732	430	302	141	140	109	82	12.7	-	-	-	-	-	-	-	-
MTR, MTRE 1s-19/19	0.55	768	466	302	141	140	109	82	12.8	831	466	365	122	140	158	268	17.7
MTR 1s-21/21	0.75	844	502	342	141	140	109	82	15.1	-	-	-	-	-	-	-	-
MTR 1s-22/22	0.75	862	520	342	141	140	109	82	15.1	-	-	-	-	-	-	-	-
MTR 1s-23/23	0.75	880	538	342	141	140	109	82	15.2	-	-	-	-	-	-	-	-
MTR, MTRE 1s-25/25	0.75	916	574	342	141	140	109	82	15.2	939	574	365	122	140	158	268	18
MTR 1s-26/26	0.75	934	592	342	141	140	109	82	15.2	-	-	-	-	-	-	-	-
MTR 1s-27/27	1.1	972	610	362	141	140	109	82	17.3	-	-	-	-	-	-	-	-
MTR, MTRE 1s-30/30	1.1	1026	664	362	141	140	109	82	17.3	1029	664	365	122	140	158	268	18.9
MTR 1s-33/33	1.1	1080	718	362	141	140	109	82	17.4	-	-	-	-	-	-	-	-
MTR, MTRE 1s-36/36	1.1	1134	772	362	141	140	109	82	17.5	1137	772	365	122	140	158	268	19

The maximum immersion depth is 1006 mm. See page 154.
For information about electrical data, see section *Motor data* on page 142.

MTR, MTRE 1, 50 Hz



Dimensional sketches

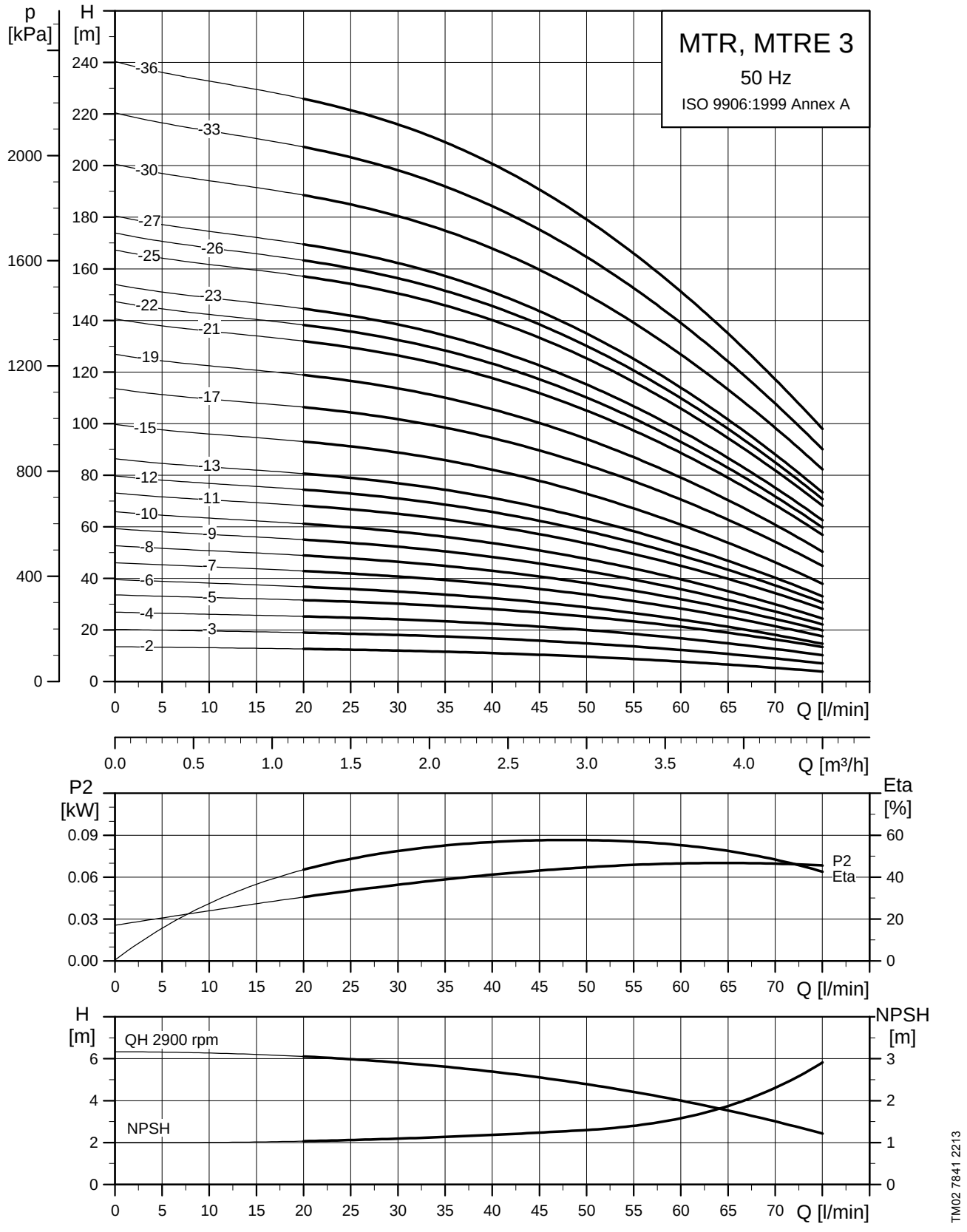


Dimensions and weights

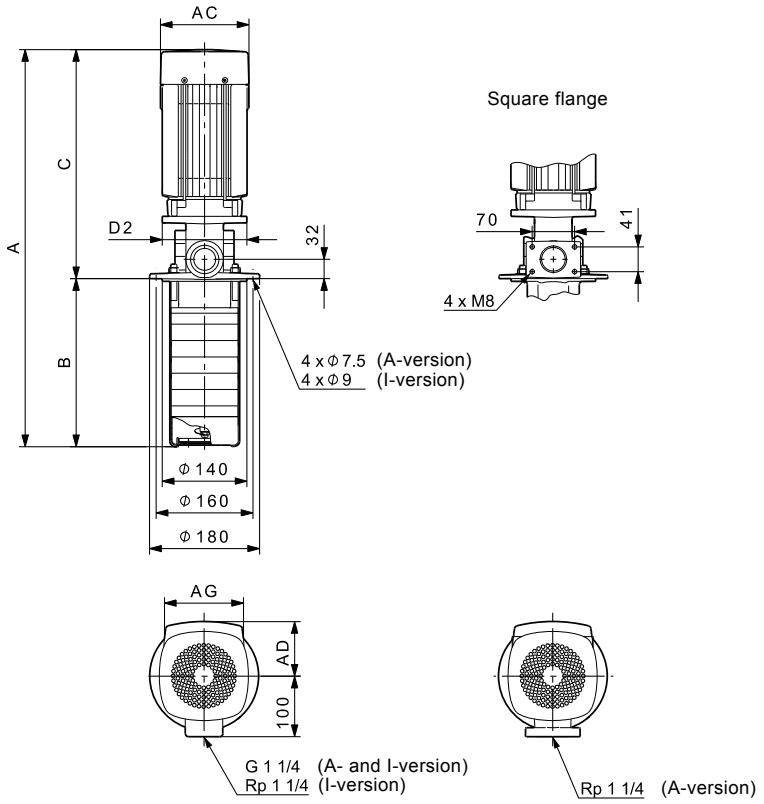
Pump type	P2 [kW]	MTR								MTRE							
		Dimensions [mm]							Net weight [kg]	Dimensions [mm]							Net weight [kg]
		A	B	C	AC	D2	AD	AG		A	B	C	AC	D2	AD	AG	
MTR 1-2/2	0.37	462	160	302	141	140	109	82	12.9	-	-	-	-	-	-	-	-
MTR 1-3/3	0.37	480	178	302	141	140	109	82	13	-	-	-	-	-	-	-	-
MTR 1-4/4	0.37	498	196	302	141	140	109	82	13	-	-	-	-	-	-	-	-
MTR, MTRE 1-5/5	0.37	516	214	302	141	140	109	82	13	516	214	302	122	140	158	268	13
MTR 1-6/6	0.37	534	232	302	141	140	109	82	13	-	-	-	-	-	-	-	-
MTR 1-7/7	0.37	552	250	302	141	140	109	82	13.1	-	-	-	-	-	-	-	-
MTR, MTRE 1-8/8	0.55	570	268	302	141	140	109	82	12.5	570	268	302	122	140	158	268	12.5
MTR 1-9/9	0.55	588	286	302	141	140	109	82	12.6	-	-	-	-	-	-	-	-
MTR 1-10/10	0.55	606	304	302	141	140	109	82	12.6	-	-	-	-	-	-	-	-
MTR 1-11/11	0.55	624	322	302	141	140	109	82	12.6	-	-	-	-	-	-	-	-
MTR, MTRE 1-12/12	0.75	682	340	342	141	140	109	82	14.9	682	340	342	122	140	158	268	14.9
MTR 1-13/13	0.75	700	358	342	141	140	109	82	14.9	-	-	-	-	-	-	-	-
MTR, MTRE 1-15/15	0.75	736	394	342	141	140	109	82	15	736	394	342	122	140	158	268	15
MTR 1-17/17	1.1	792	430	362	141	140	109	82	17	-	-	-	-	-	-	-	-
MTR 1-19/19	1.1	828	466	362	141	140	109	82	17.1	-	-	-	-	-	-	-	-
MTR 1-21/21	1.1	864	502	362	141	140	109	82	17.1	-	-	-	-	-	-	-	-
MTR 1-22/22	1.1	882	520	362	141	140	109	82	17.1	-	-	-	-	-	-	-	-
MTR, MTRE 1-23/23	1.1	900	538	362	141	140	109	82	17.2	900	538	362	122	140	158	268	17.2
MTR 1-25/25	1.5	966	574	392	178	140	110	162	25.3	-	-	-	-	-	-	-	-
MTR 1-26/26	1.5	984	592	392	178	140	110	162	25.3	-	-	-	-	-	-	-	-
MTR 1-27/27	1.5	1002	610	392	178	140	110	162	25.4	-	-	-	-	-	-	-	-
MTR, MTRE 1-30/30	1.5	1056	664	392	178	140	110	162	25.4	1056	664	392	122	140	158	268	25.4
MTR 1-33/33	2.2	1150	718	432	178	140	110	162	28.6	-	-	-	-	-	-	-	-
MTR, MTRE 1-36/36	2.2	1204	772	432	178	140	110	162	28.7	1204	772	432	122	140	158	268	28.7

The maximum immersion depth is 1006 mm. See page 154.
For information about electrical data, see section *Motor data* on page 142.

MTR, MTRE 3, 50 Hz



Dimensional sketches



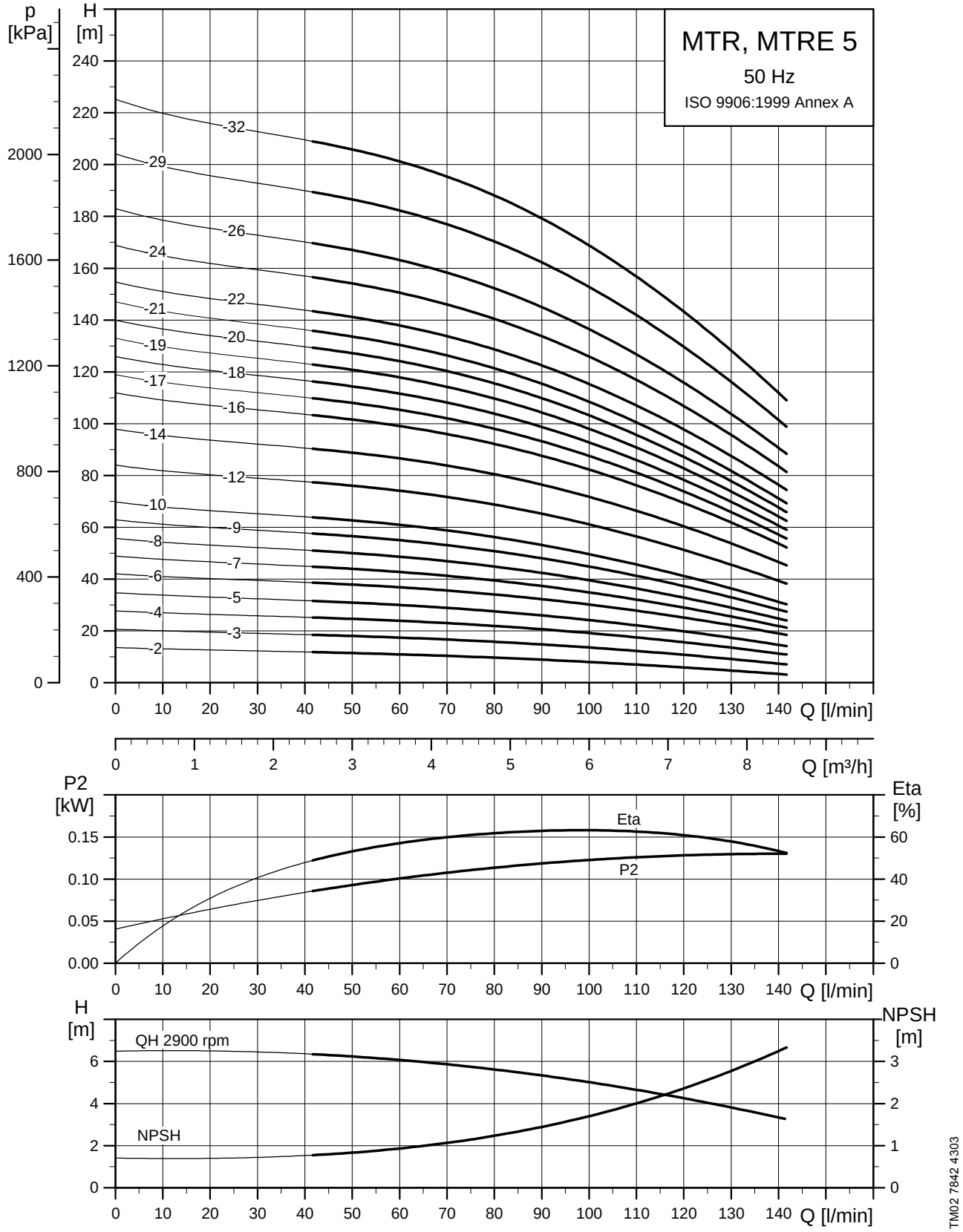
TM03 2677 2413

Dimensions and weights

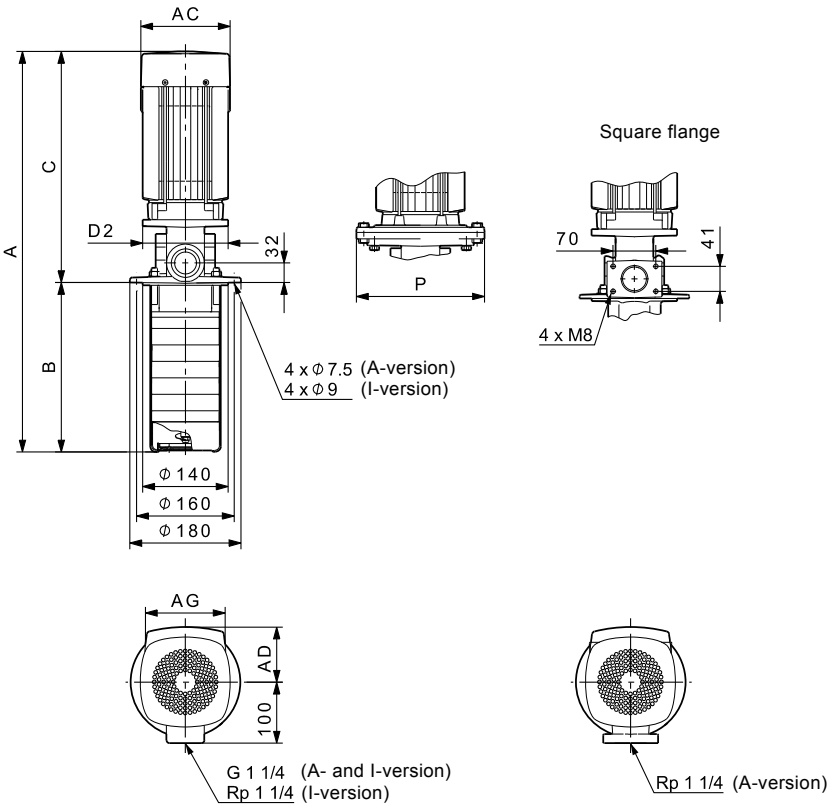
Pump type	P2 [kW]	MTR								MTRE							
		Dimensions [mm]							Net weight [kg]	Dimensions [mm]							Net weight [kg]
		A	B	C	AC	D2	AD	AG		A	B	C	AC	D2	AD	AG	
MTR 3-2/2	0.37	462	160	302	141	140	109	82	12.9	-	-	-	-	-	-	-	-
MTR 3-3/3	0.37	480	178	302	141	140	109	82	13	-	-	-	-	-	-	-	-
MTR 3-4/4	0.37	498	196	302	141	140	109	82	13	-	-	-	-	-	-	-	-
MTR, MTRE 3-5/5	0.37	516	214	302	141	140	109	82	13	579	214	365	122	140	158	268	17.4
MTR 3-6/6	0.55	534	232	302	141	140	109	82	12.5	-	-	-	-	-	-	-	-
MTR 3-7/7	0.55	552	250	302	141	140	109	82	12.5	-	-	-	-	-	-	-	-
MTR, MTRE 3-8/8	0.75	610	268	342	141	140	109	82	14.8	633	268	365	122	140	158	268	17.6
MTR 3-9/9	0.75	628	286	342	141	140	109	82	14.8	-	-	-	-	-	-	-	-
MTR 3-10/10	0.75	646	304	342	141	140	109	82	14.9	-	-	-	-	-	-	-	-
MTR, MTRE 3-11/11	0.75	664	322	342	141	140	109	82	14.9	687	322	365	122	140	158	268	17.6
MTR 3-12/12	1.1	702	340	362	141	140	109	82	16.9	-	-	-	-	-	-	-	-
MTR 3-13/13	1.1	720	358	362	141	140	109	82	16.9	-	-	-	-	-	-	-	-
MTR, MTRE 3-15/15	1.1	756	394	362	141	140	109	82	17	759	394	365	122	140	158	268	18.5
MTR 3-17/17	1.5	822	430	392	178	140	110	162	25.1								
MTR, MTRE 3-19/19	1.5	858	466	392	178	140	110	162	25.2	851	466	385	122	140	158	268	21.5
MTR 3-21/21	2.2	934	502	432	178	140	110	162	28.3	-	-	-	-	-	-	-	-
MTR 3-22/22	2.2	952	520	432	178	140	110	162	28.3	-	-	-	-	-	-	-	-
MTR 3-23/23	2.2	970	538	432	178	140	110	162	28.4	-	-	-	-	-	-	-	-
MTR, MTRE 3-25/25	2.2	1006	574	432	178	140	110	162	28.4	959	574	385	122	140	158	268	23
MTR 3-26/26	2.2	1024	592	432	178	140	110	162	28.4	-	-	-	-	-	-	-	-
MTR 3-27/27	2.2	1042	610	432	178	140	110	162	28.5	-	-	-	-	-	-	-	-
MTR, MTRE 3-30/30	3	1110	664	446	198	160	120	162	32.5	1110	664	446	198	160	177	264	38.7
MTR 3-33/33	3	1164	718	446	198	160	120	162	32.6	-	-	-	-	-	-	-	-
MTR, MTRE 3-36/36	3	1218	772	446	198	160	120	162	32.7	1218	772	446	198	160	177	264	38.9

The maximum immersion depth is 1006 mm. See page 154.
For information about electrical data, see section *Motor data* on page 142.

MTR, MTRE 5, 50 Hz



Dimensional sketches



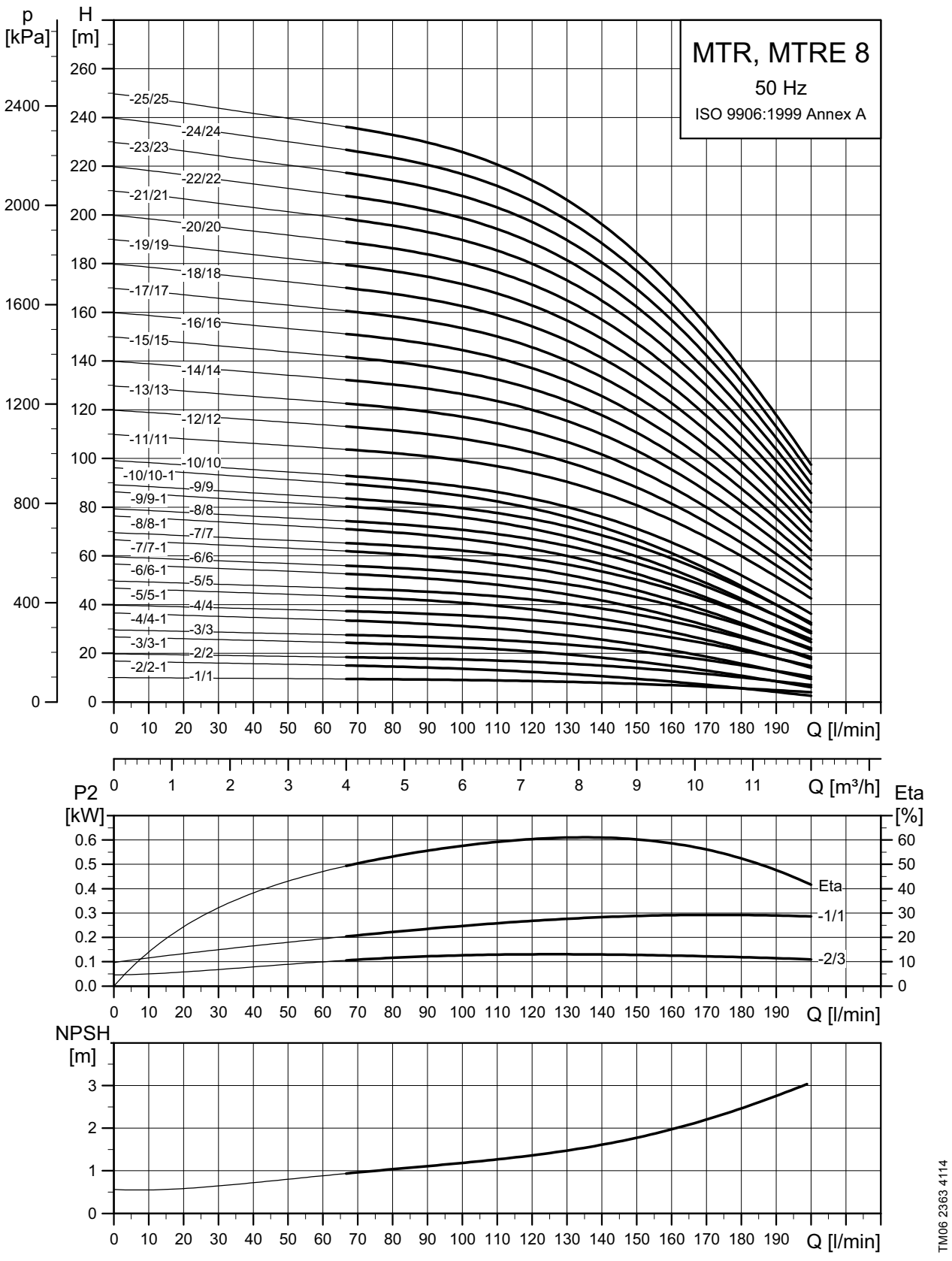
TM04 2789 2413

Dimensions and weights

Pump type	P2 [kW]	MTR									MTRE								
		Dimensions [mm]								Net weight [kg]	Dimensions [mm]								Net weight [kg]
		A	B	C	AC	D2	P	AD	AG		A	B	C	AC	D2	P	AD	AG	
MTR, MTRE 5-2/2	0.37	471	169	302	141	140	-	109	82	13.2	534	169	365	122	140	-	158	268	17.6
MTR 5-3/3	0.55	498	196	302	141	140	-	109	82	12.7	-	-	-	-	-	-	-	-	-
MTR, MTRE 5-4/4	0.55	525	223	302	141	140	-	109	82	12.7	588	223	365	122	140	-	158	268	17.7
MTR, MTRE 5-5/5	0.75	592	250	342	141	140	-	109	82	15.1	615	250	365	122	140	-	158	268	17.8
MTR 5-6/6	1.1	639	277	362	141	140	-	109	82	17.1	-	-	-	-	-	-	-	-	-
MTR 5-7/7	1.1	666	304	362	141	140	-	109	82	17.1	-	-	-	-	-	-	-	-	-
MTR, MTRE 5-8/8	1.1	693	331	362	141	140	-	109	82	17.2	696	331	365	122	140	-	158	268	18.7
MTR 5-9/9	1.5	750	358	392	178	140	-	110	162	25.3	-	-	-	-	-	-	-	-	-
MTR, MTRE 5-10/10	1.5	777	385	392	178	140	-	110	162	25.3	770	385	385	122	140	-	158	268	21.7
MTR 5-12/12	2.2	871	439	432	178	140	-	110	162	28.5	-	-	-	-	-	-	-	-	-
MTR 5-14/14	2.2	925	493	432	178	140	-	110	162	28.6	-	-	-	-	-	-	-	-	-
MTR, MTRE 5-16/16	2.2	979	547	432	178	140	-	110	162	28.6	932	547	385	122	140	-	158	268	23.3
MTR 5-17/17	3	1029	574	446	198	160	-	120	162	32.7	-	-	-	-	-	-	-	-	-
MTR 5-18/18	3	1047	601	446	198	160	-	120	162	32.7	-	-	-	-	-	-	-	-	-
MTR 5-19/19	3	1074	628	446	198	160	-	120	162	32.7	-	-	-	-	-	-	-	-	-
MTR, MTRE 5-20/20	3	1101	655	446	198	160	-	120	162	32.8	1101	655	446	198	160	-	177	264	39
MTR 5-21/21	3	1128	682	446	198	160	-	120	162	32.8	-	-	-	-	-	-	-	-	-
MTR, MTRE 5-22/22	4	1192	709	483	220	160	-	134	202	44.5	1192	709	483	220	160	-	188	290	50.2
MTR 5-24/24	4	1246	763	483	220	160	-	134	202	44.6	-	-	-	-	-	-	-	-	-
MTR 5-26/26	4	1300	817	483	220	160	-	134	202	44.7	-	-	-	-	-	-	-	-	-
MTR, MTRE 5-29/29	4	1381	898	483	220	160	-	134	202	44.8	1381	898	483	220	160	-	188	290	50.4
MTR, MTRE 5-32/32	5.5	1506	979	527	220	-	300	134	202	62.1	1506	979	527	220	-	300	188	290	69.5

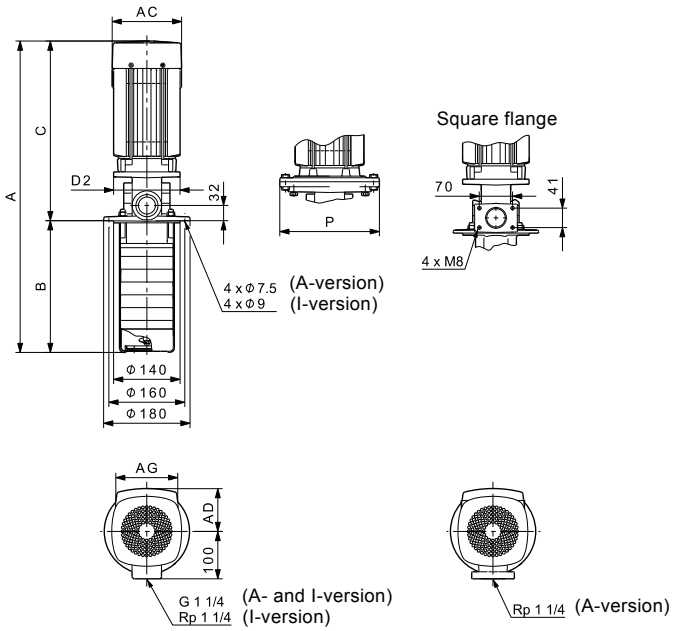
The maximum immersion depth is 1006 mm. See page 154.
For information about electrical data, see section *Motor data* on page 142.

MTR, MTRE 8, 50 Hz



TM06 2363 4114

Dimensional sketches



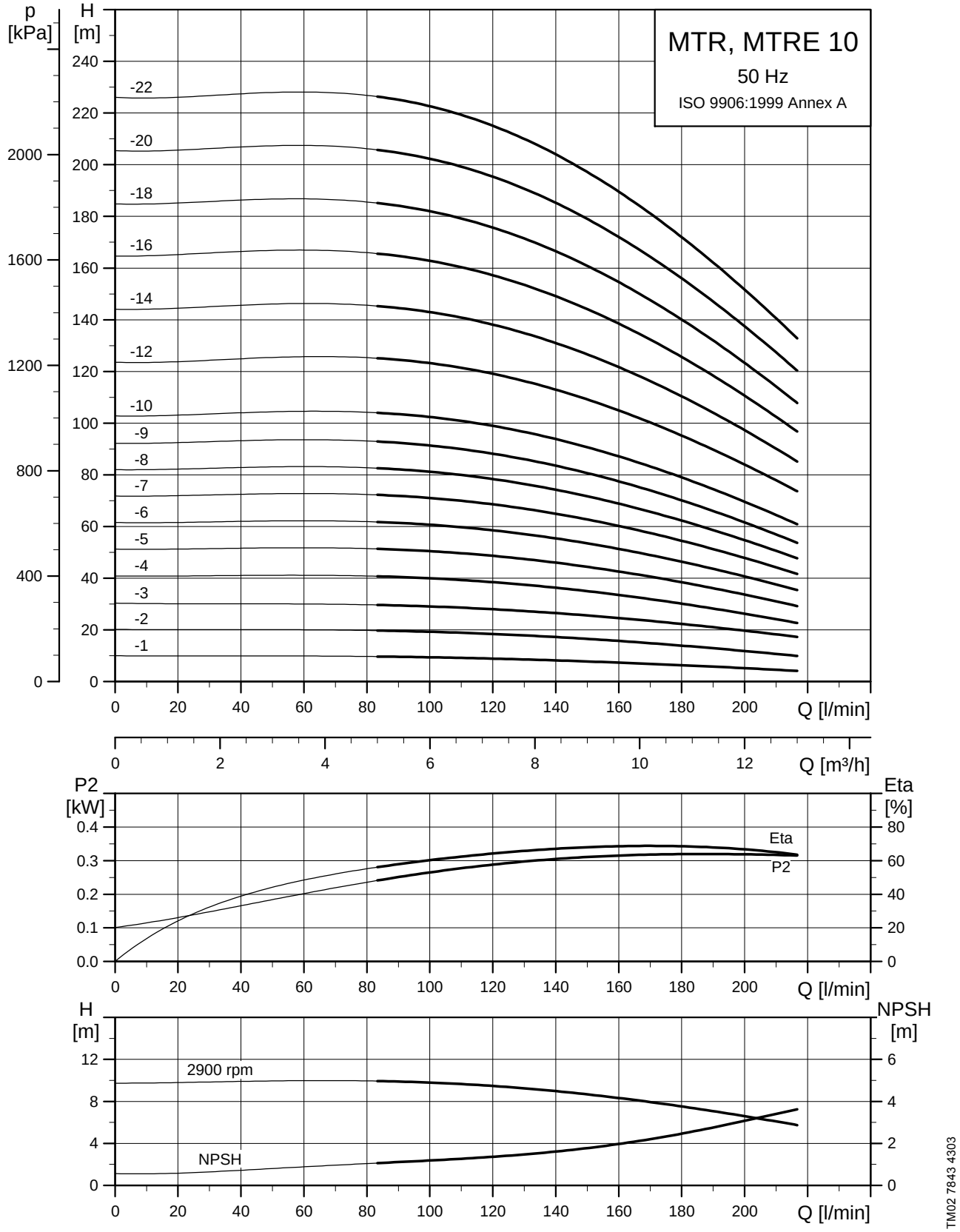
TM04 2789 2413

Dimensions and weights

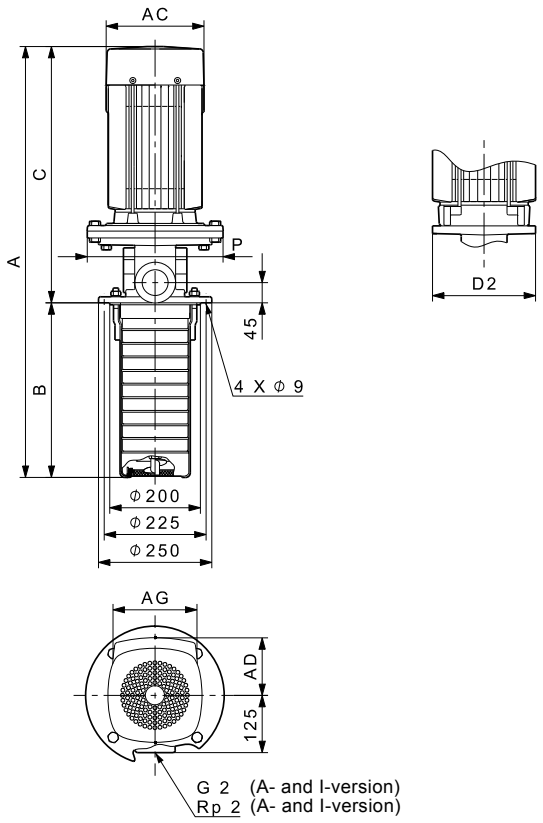
Pump type	P2 [kW]	MTR									MTRE								
		Dimensions [mm]								Net weight [kg]	Dimensions [mm]								Net weight [kg]
		A	B	C	AC	D2	P	AD	AG		A	B	C	AC	D2	P	AD	AG	
MTR, MTRE 8-1/1	0.37	498	196	302	141	140	-	109	82	17.3	521	196	325	122	140	-	158	212	16
MTR, MTRE 8-2/2-1	0.55	525	223	302	141	140	-	109	82	16.8	548	223	325	122	140	-	158	212	17
MTR 8-2/2	0.75	565	223	342	141	140	-	109	82	19	-	-	-	-	-	-	-	-	-
MTR, MTRE 8-3/3-1	0.75	592	250	342	141	140	-	109	82	19.1	575	250	325	122	140	-	158	212	18.5
MTR 8-3/3	1.1	612	250	362	141	140	-	109	82	21.1	-	-	-	-	-	-	-	-	-
MTR, MTRE 8-4/4-1	1.1	639	277	362	141	140	-	109	82	21.1	602	277	325	122	140	-	158	212	20
MTR 8-4/4	1.5	669	277	392	178	140	-	110	162	29.2	-	-	-	-	-	-	-	-	-
MTR 8-5/5-1	1.5	696	304	392	178	140	-	110	162	29.2	-	-	-	-	-	-	-	-	-
MTR, MTRE 8-5/5	1.5	696	304	392	178	140	-	110	162	29.2	649	304	345	122	140	-	158	212	34
MTR 8-6/6-1	2.2	763	331	432	178	140	-	110	162	32.4	-	-	-	-	-	-	-	-	-
MTR 8-6/6	2.2	763	331	432	178	140	-	110	162	32.4	-	-	-	-	-	-	-	-	-
MTR 8-7/7-1	2.2	790	358	432	178	140	-	110	162	32.4	-	-	-	-	-	-	-	-	-
MTR, MTRE 8-7/7	2.2	790	358	432	178	140	-	110	162	32.4	743	358	385	122	140	-	158	268	36.5
MTR 8-8/8-1	3	831	385	446	198	160	-	120	162	36.4	-	-	-	-	-	-	-	-	-
MTR 8-8/8	3	831	385	446	198	160	-	120	162	36.4	-	-	-	-	-	-	-	-	-
MTR 8-9/9-1	3	858	412	446	198	160	-	120	162	36.5	-	-	-	-	-	-	-	-	-
MTR 8-9/9	3	858	412	446	198	160	-	120	162	36.5	-	-	-	-	-	-	-	-	-
MTR 8-10/10-1	3	885	439	446	198	160	-	120	162	36.5	-	-	-	-	-	-	-	-	-
MTR, MTRE 8-10/10	3	885	439	446	198	160	-	120	162	36.5	885	439	446	198	160	-	177	264	41
MTR 8-11/11	4	949	466	483	220	160	-	134	202	48.2	-	-	-	-	-	-	-	-	-
MTR 8-12/12	4	976	493	483	220	160	-	134	202	48.3	-	-	-	-	-	-	-	-	-
MTR, MTRE 8-13/13	4	1003	520	483	220	160	-	134	202	48.3	1003	520	483	220	160	-	188	290	47.5
MTR 8-14/14	5.5	1074	547	527	220	-	300	134	202	65.5	-	-	-	-	-	-	-	-	-
MTR 8-15/15	5.5	1101	574	527	220	-	300	134	202	65.6	-	-	-	-	-	-	-	-	-
MTR 8-16/16	5.5	1128	601	527	220	-	300	134	202	65.6	-	-	-	-	-	-	-	-	-
MTR 8-17/17	5.5	1155	628	527	220	-	300	134	202	65.6	-	-	-	-	-	-	-	-	-
MTR, MTRE 8-18/18	5.5	1182	655	527	220	-	300	134	202	65.7	1182	655	527	220	-	298	188	290	73.1
MTR 8-19/19	7.5	1197	682	515	260	-	300	159	203	75.5	-	-	-	-	-	-	-	-	-
MTR 8-20/20	7.5	1224	709	515	260	-	300	159	203	75.5	-	-	-	-	-	-	-	-	-
MTR 8-21/21	7.5	1251	736	515	260	-	300	159	203	75.6	-	-	-	-	-	-	-	-	-
MTR 8-22/22	7.5	1278	763	515	260	-	300	159	203	75.6	-	-	-	-	-	-	-	-	-
MTR 8-23/23	7.5	1305	790	515	260	-	300	159	203	75.7	-	-	-	-	-	-	-	-	-
MTR 8-24/24	7.5	1332	817	515	260	-	300	159	203	75.7	-	-	-	-	-	-	-	-	-
MTR, MTRE 8-25/25	7.5	1359	844	515	260	-	300	159	203	75.7	1359	844	515	260	-	300	213	290	86.2

The maximum immersion depth is 1006 mm. See page 154.
For information about electrical data, see section *Motor data* on page 142.

MTR, MTRE 10, 50 Hz



Dimensional sketches



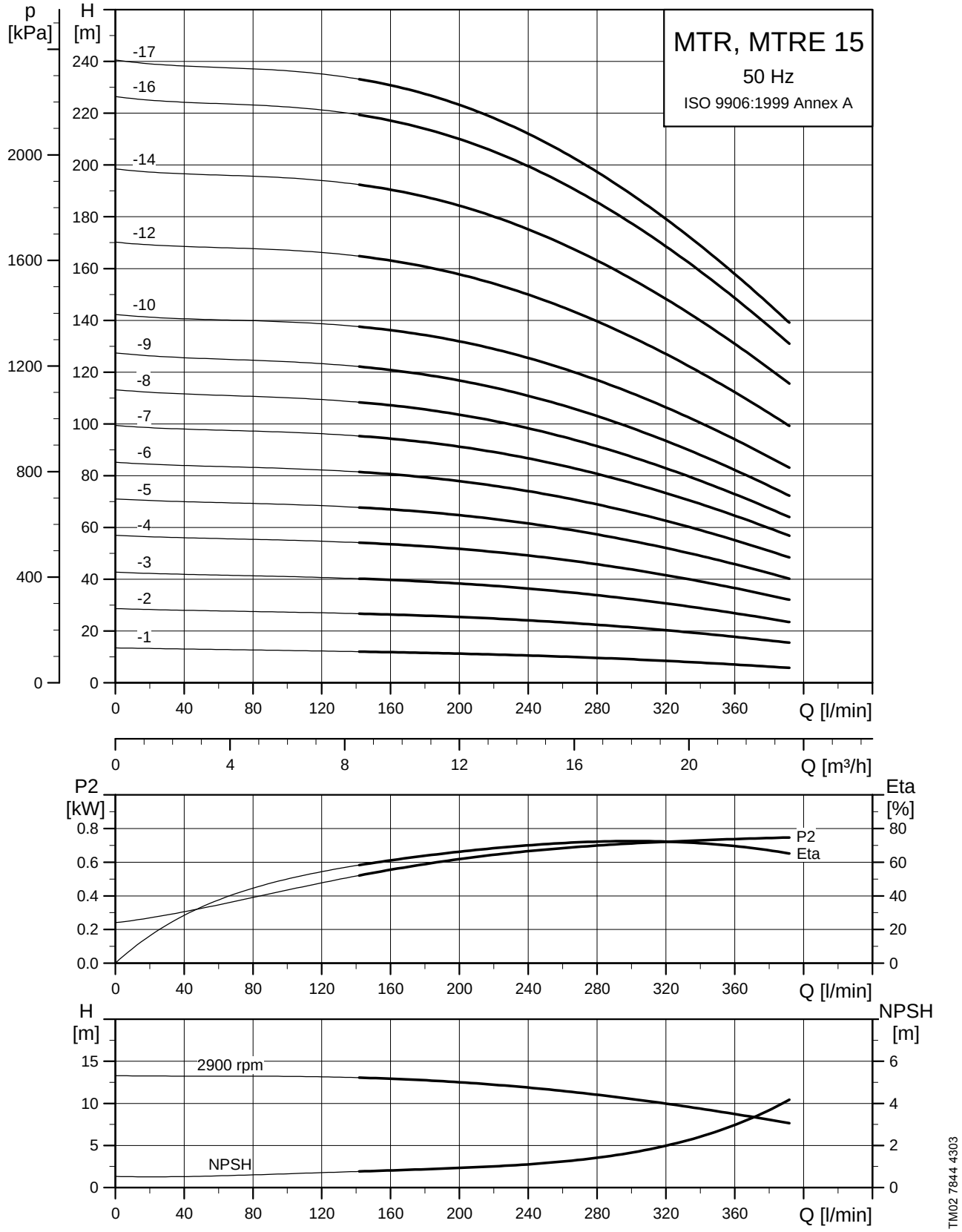
TM04 2790 2413

Dimensions and weights

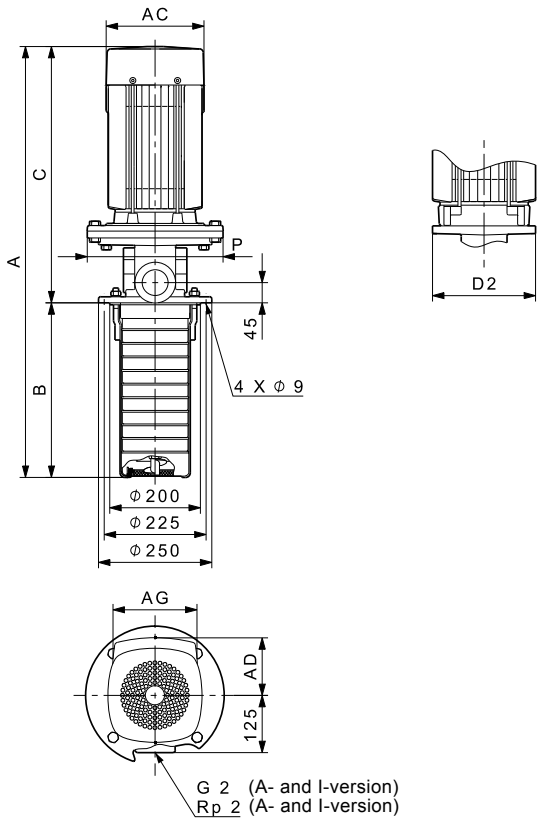
Pump type	P2 [kW]	MTR									MTRE								
		Dimensions [mm]								Net weight [kg]	Dimensions [mm]								Net weight [kg]
		A	B	C	AC	D2	P	AD	AG		A	B	C	AC	D2	P	AD	AG	
MTR, MTRE 10-2/1	0.75	519	148	371	141	140	-	109	82	22.7	542	148	394	122	140	-	158	268	25.5
MTR, MTRE 10-2/2	0.75	519	148	371	141	140	-	109	82	22.7	542	148	394	122	140	-	158	268	25.5
MTR, MTRE 10-3/3	1.1	569	178	391	141	140	-	109	82	24.8	572	178	394	122	140	-	158	268	26.3
MTR, MTRE 10-4/4	1.5	629	208	421	178	140	-	110	162	33	622	208	414	122	140	-	158	268	29.3
MTR 10-5/5	2.2	699	238	461	178	140	-	110	162	36.1	-	-	-	-	-	-	-	-	-
MTR, MTRE 10-6/6	2.2	729	268	461	178	140	-	110	162	36.2	682	268	414	122	140	-	158	268	30.8
MTR 10-7/7	3	773	298	475	198	160	-	120	162	40.3	-	-	-	-	-	-	-	-	-
MTR 10-8/8	3	803	328	475	198	160	-	120	162	40.4	-	-	-	-	-	-	-	-	-
MTR, MTRE 10-9/9	3	833	358	475	198	160	-	120	162	40.4	833	358	475	198	160	-	177	264	46.6
MTR 10-10/10	4	900	388	512	220	160	-	134	202	52.2	-	-	-	-	-	-	-	-	-
MTR, MTRE 10-12/12	4	960	448	512	220	160	-	134	202	52.3	960	448	512	220	160	-	188	290	58
MTR 10-14/14	5.5	1063	508	555	220	-	300	134	202	64.7	-	-	-	-	-	-	-	-	-
MTR, MTRE 10-16/16	5.5	1123	568	555	220	-	300	134	202	64.8	1123	568	555	220	-	300	188	290	72.2
MTR 10-18/18	7.5	1165	622	543	260	-	300	159	203	74.8	-	-	-	-	-	-	-	-	-
MTR 10-20/20	7.5	1231	688	543	260	-	300	159	203	74.9	-	-	-	-	-	-	-	-	-
MTR, MTRE 10-22/22	7.5	1291	748	543	260	-	300	159	203	75	1291	748	543	260	-	300	213	290	85.5

The maximum immersion depth is 1018 mm. See page 154.
For information about electrical data, see section *Motor data* on page 142.

MTR, MTRE 15, 50 Hz



Dimensional sketches



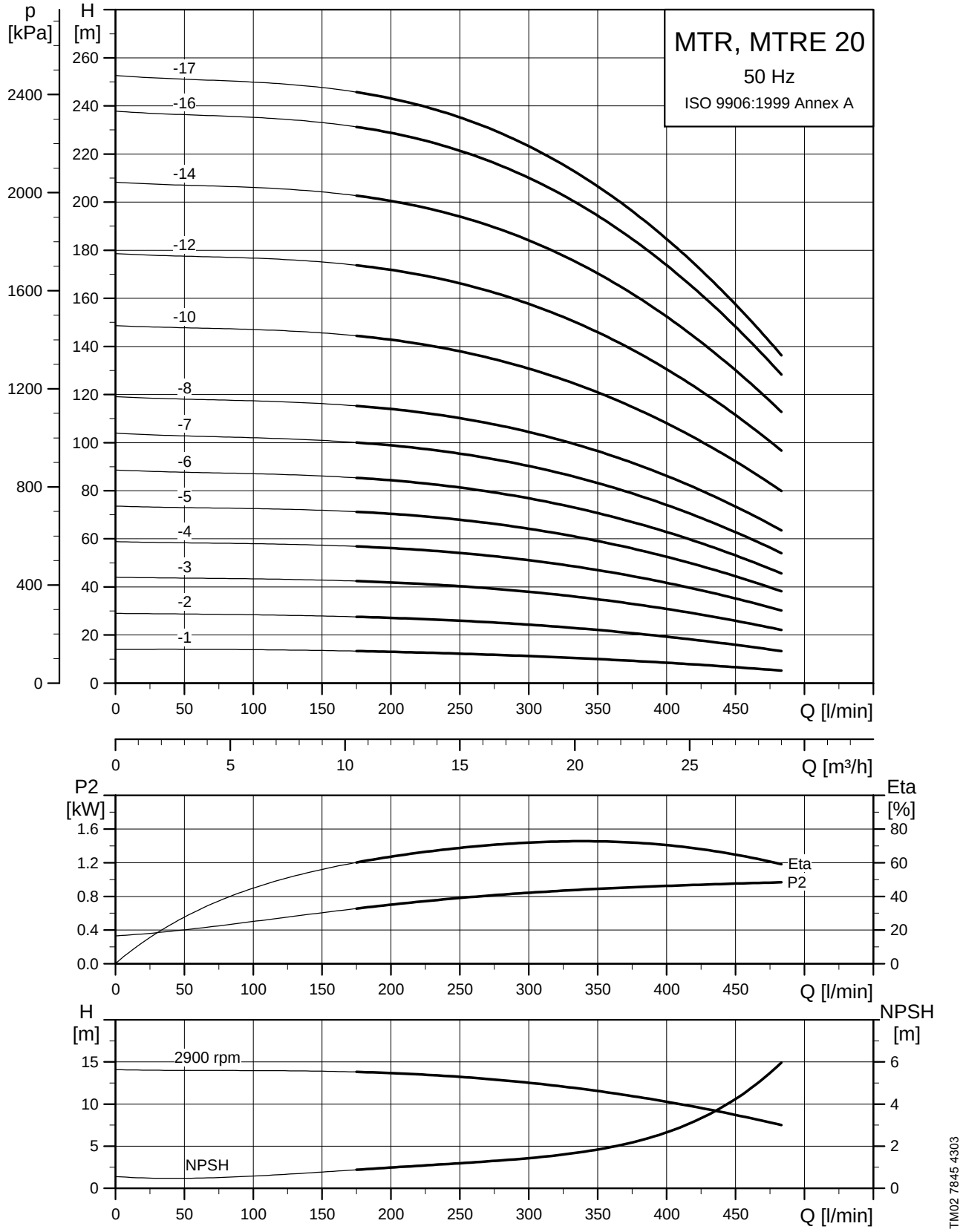
TM04 2790 2413

Dimensions and weights

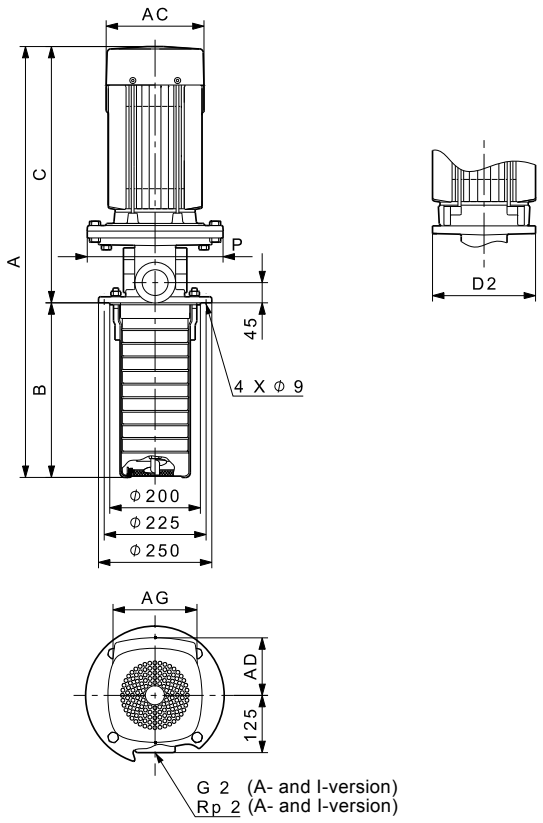
Pump type	P2 [kW]	MTR									MTRE								
		Dimensions [mm]								Net weight [kg]	Dimensions [mm]								Net weight [kg]
		A	B	C	AC	D2	P	AD	AG		A	B	C	AC	D2	P	AD	AG	
MTR, MTRE 15-2/1	1.1	569	178	391	141	140	-	109	82	25.8	572	178	394	122	140	-	158	268	27.3
MTR, MTRE 15-2/2	2.2	639	178	461	178	140	-	110	162	37	592	178	414	122	140	-	158	268	31.6
MTR, MTRE 15-3/3	3	698	223	475	198	160	-	120	162	41.1	698	223	475	198	160	-	177	264	47.3
MTR 15-4/4	4	780	268	512	220	160	-	134	202	52.9	-	-	-	-	-	-	-	-	-
MTR, MTRE 15-5/5	4	825	313	512	220	160	-	134	202	53	825	313	512	220	160	-	188	290	58.6
MTR 15-6/6	5.5	913	358	555	220	-	300	134	202	65.3	-	-	-	-	-	-	-	-	-
MTR, MTRE 15-7/7	5.5	958	403	555	220	-	300	134	202	65.4	958	403	555	220	-	300	188	290	72.8
MTR 15-8/8	7.5	991	448	543	260	-	300	159	203	75.3	-	-	-	-	-	-	-	-	-
MTR, MTRE 15-9/9	7.5	1036	493	543	260	-	300	159	203	75.4	1036	493	543	260	-	300	213	290	85.9
MTR 15-10/10	11	1203	538	665	314	-	350	204	243	113	-	-	-	-	-	-	-	-	-
MTR 15-12/12	11	1293	628	665	314	-	350	204	243	113.2	-	-	-	-	-	-	-	-	-
MTR, MTRE 15-14/14	11	1383	718	665	314	-	350	204	243	113.4	1383	718	665	314	-	350	308	420	143.4
MTR 15-16/16	15	1473	808	665	314	-	350	204	243	125.4	-	-	-	-	-	-	-	-	-
MTR, MTRE 15-17/17	15	1518	853	665	314	-	350	204	243	125.5	1518	853	665	314	-	350	308	420	158.7

The maximum immersion depth is 1033 mm. See page 154.
For information about electrical data, see section *Motor data* on page 142.

MTR, MTRE 20, 50 Hz



Dimensional sketches



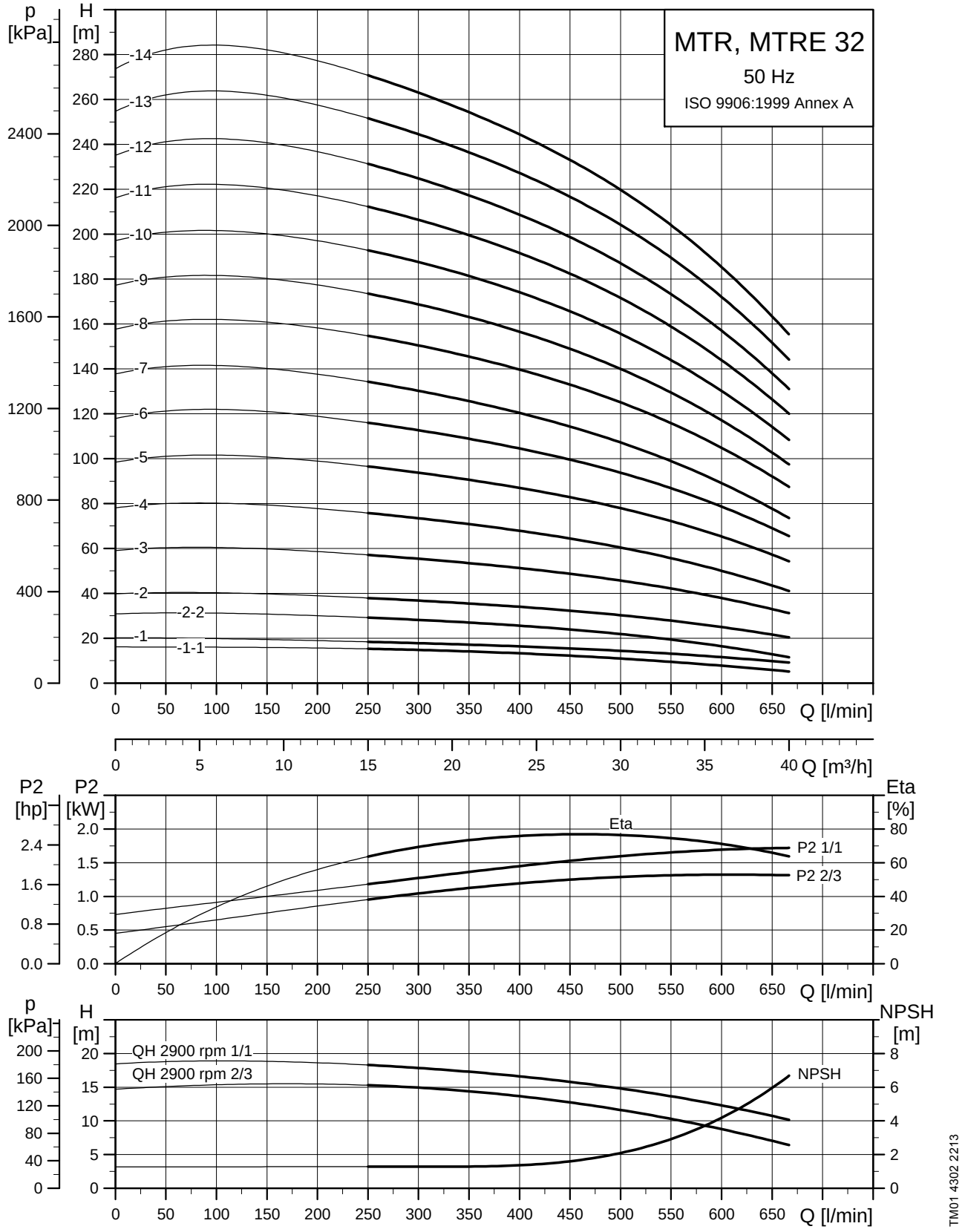
TM04 2790 2413

Dimensions and weights

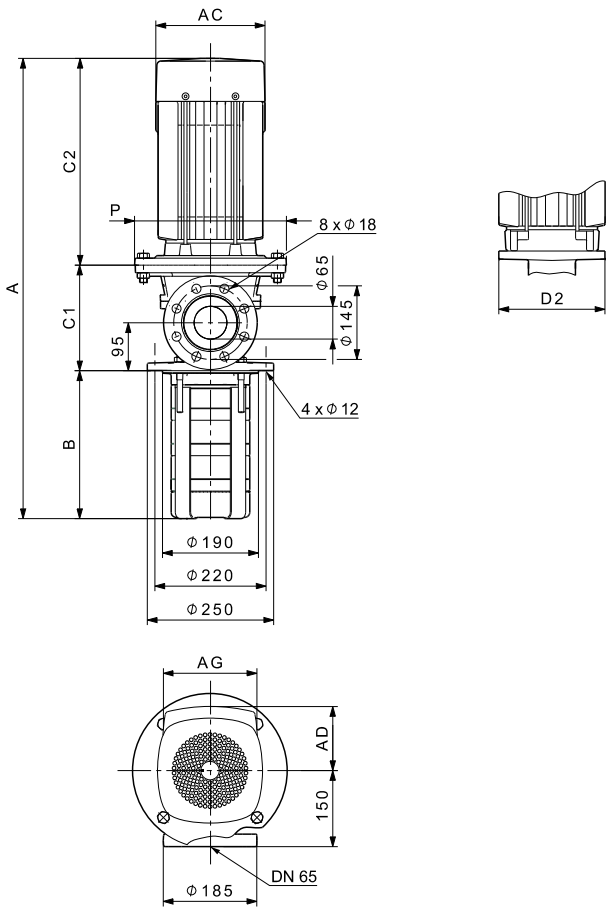
Pump type	P2 [kW]	MTR									MTRE								
		Dimensions [mm]								Net weight [kg]	Dimensions [mm]								Net weight [kg]
		A	B	C	AC	D2	P	AD	AG		A	B	C	AC	D2	P	AD	AG	
MTR, MTRE 20-2/1	1.1	569	178	391	141	140	-	109	82	25.8	572	178	394	122	140	-	158	268	27.3
MTR, MTRE 20-2/2	2.2	639	178	461	178	140	-	110	162	37	592	178	414	122	140	-	158	268	31.6
MTR, MTRE 20-3/3	4	735	223	512	220	-	-	134	202	52.8	735	223	512	220	160	-	188	290	58.4
MTR 20-4/4	5.5	823	268	555	220	-	300	134	202	65.1	-	-	-	-	-	-	-	-	-
MTR, MTRE 20-5/5	5.5	868	313	555	220	-	300	134	202	65.2	868	313	555	220	-	300	188	290	72.6
MTR 20-6/6	7.5	901	358	543	260	-	300	159	203	75.1	-	-	-	-	-	-	-	-	-
MTR, MTRE 20-7/7	7.5	946	403	543	260	-	300	159	203	75.2	946	403	543	260	-	300	213	290	85.7
MTR 20-8/8	11	1113	448	665	314	-	350	204	243	112.8	-	-	-	-	-	-	-	-	-
MTR, MTRE 20-10/10	11	1203	538	665	314	-	350	204	243	113	1203	538	665	314	-	350	308	420	143
MTR 20-12/12	15	1293	628	665	314	-	350	204	243	125	-	-	-	-	-	-	-	-	-
MTR, MTRE 20-14/14	15	1383	718	665	314	-	350	204	243	125.2	1383	718	665	314	-	350	308	420	158.4
MTR 20-16/16	18.5	1517	808	709	314	-	350	204	243	138.1	-	-	-	-	-	-	-	-	-
MTR, MTRE 20-17/17	18.5	1562	853	709	314	-	350	204	243	138.2	1562	853	709	314	-	350	308	420	170.7

The maximum immersion depth is 1033 mm. See page 154.
For information about electrical data, see section *Motor data* on page 142.

MTR, MTRE 32, 50 Hz



Dimensional sketches



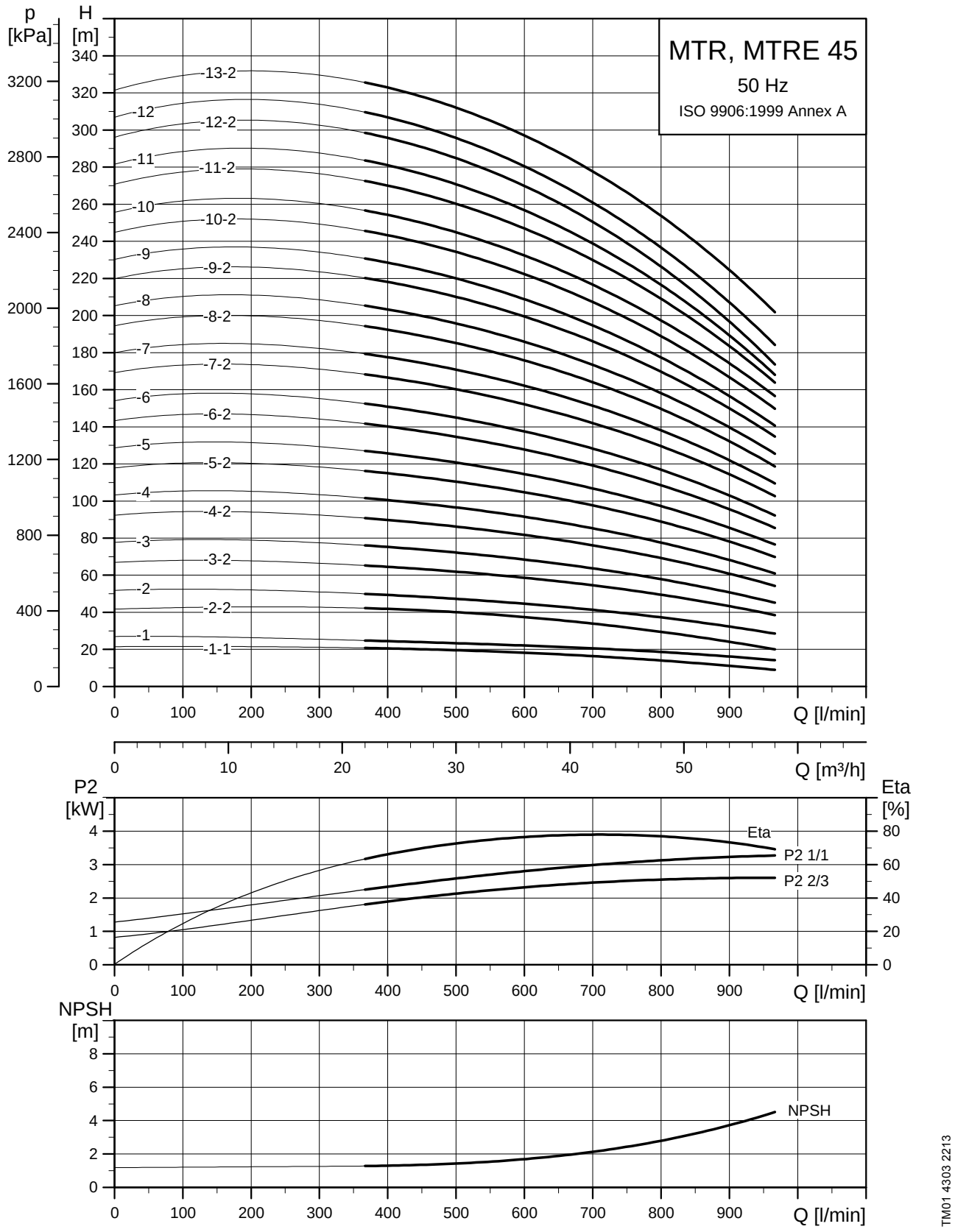
TM04 2791 4614

Dimensions and weights

Pump type	P2 [kW]	MTR										MTRE									
		Dimensions [mm]									Net weight [kg]	Dimensions [mm]									Net weight [kg]
		A	B	C1	C2	AC	D2	P	AD	AG		A	B	C1	C2	AC	D2	P	AD	AG	
MTR, MTRE 32-2/1-1	1.5	642	223	138	281	178	-	200	110	162	51.8	635	223	138	274	122	200	-	158	268	48.1
MTR, MTRE 32-2/1	2.2	682	223	138	321	178	-	200	110	162	54.9	635	223	138	274	122	200	-	158	268	49.5
MTR, MTRE 32-2/2-2	3	696	223	138	335	198	198	-	120	162	58	696	223	138	335	198	198		177	264	64.2
MTR, MTRE 32-2/2	4	733	223	138	372	220	198	-	134	202	69.7	733	223	138	372	220	198		188	290	75.3
MTR, MTRE 32-3/3	5.5	893	293	209	391	220	-	300	134	202	84.6	893	293	209	391	220	-	298	188	290	92.1
MTR, MTRE 32-4/4	7.5	951	363	209	379	260	-	300	159	203	94.7	951	363	209	379	260	-	300	213	290	105.2
MTR 32-5/5	11	1113	433	209	471	314	-	350	204	243	132	-	-	-	-	-	-	-	-	-	-
MTR, MTRE 32-6/6	11	1183	503	209	471	314	-	350	204	243	132.2	1183	503	209	471	314	-	350	308	420	162.2
MTR 32-7/7	15	1253	573	209	471	314	-	350	204	243	144.3	-	-	-	-	-	-	-	-	-	-
MTR, MTRE 32-8/8	15	1323	643	209	471	314	-	350	204	243	144.5	1323	643	209	471	314	-	350	308	420	177.7
MTR 32-9/9	18.5	1437	713	209	515	314	-	350	204	243	157.5	-	-	-	-	-	-	-	-	-	-
MTR, MTRE 32-10/10	18.5	1507	783	209	515	314	-	350	204	243	157.8	1507	783	209	515	314	-	350	308	420	190.3
MTR 32-11/11	22	1603	853	209	541	314	-	350	204	243	173.2	-	-	-	-	-	-	-	-	-	-
MTR, MTRE 32-12/12	22	1673	923	209	541	314	-	350	204	243	173.5	1673	923	209	541	314	-	350	308	420	203.8
MTR 32-13/13	30	1813	993	209	611	396	-	400	315	265	288.5	-	-	-	-	-	-	-	-	-	-
MTR 32-14/14	30	1883	1063	209	611	396	-	400	315	265	288.8	-	-	-	-	-	-	-	-	-	-

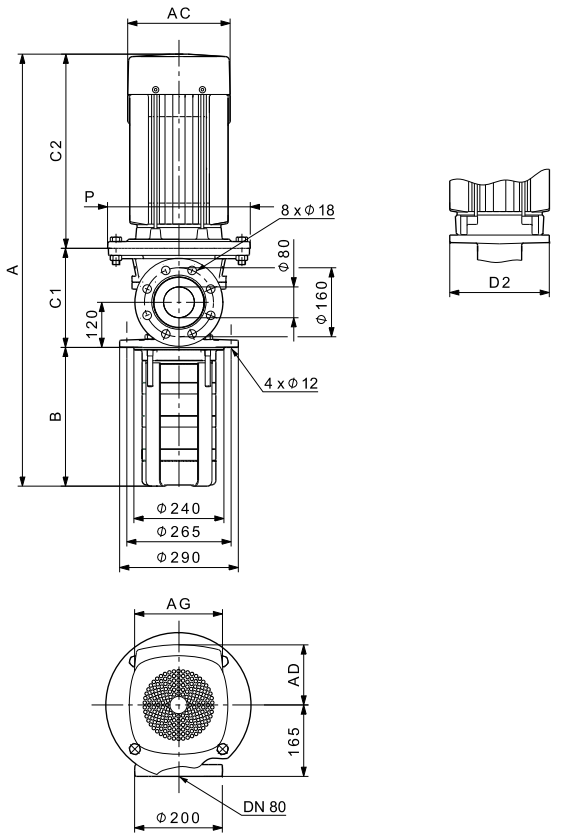
The maximum immersion depth is 1343 mm. See page 154.
For information about electrical data, see section *Motor data* on page 142.

MTR, MTRE 45, 50 Hz



TM01 4303 2213

Dimensional sketches



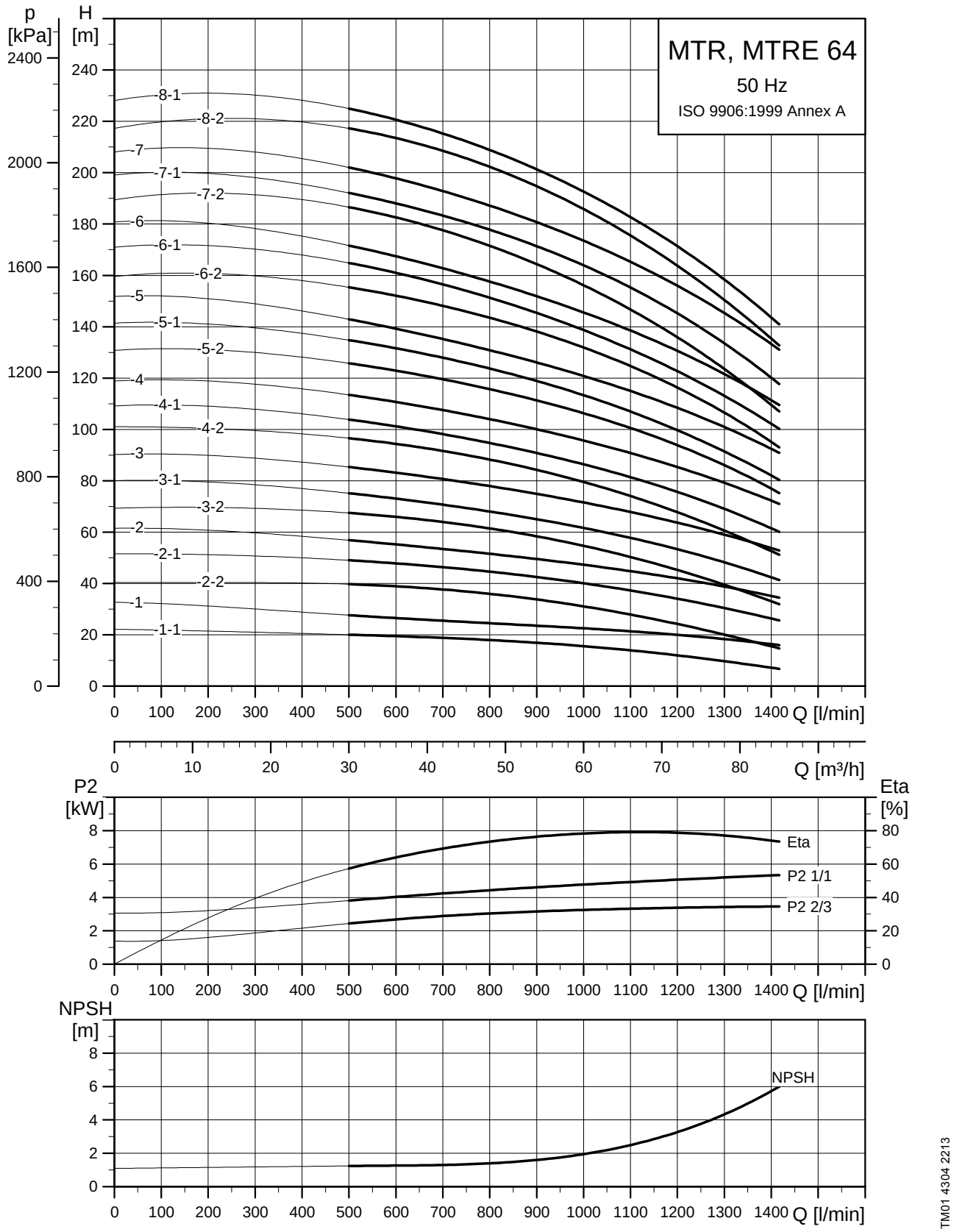
TM04 2792 4614

Dimensions and weights

Pump type	P2 [kW]	MTR										MTRE									
		Dimensions [mm]									Net weight [kg]	Dimensions [mm]									Net weight [kg]
		A	B	C1	C2	AC	D2	P	AD	AG		A	B	C1	C2	AC	D2	P	AD	AG	
MTR, MTRE 45-2/1-1	3	748	244	169	335	198	198	-	120	162	66.8	748	244	169	335	198	198	-	177	264	73
MTR, MTRE 45-2/1	4	785	244	169	372	220	198	-	134	202	78.5	785	244	169	372	220	198	-	188	290	84.2
MTR, MTRE 45-2/2-2	5.5	875	244	240	391	220	-	300	134	202	92.2	875	244	240	391	220	298	-	188	290	99.7
MTR, MTRE 45-2/2	7.5	863	244	240	379	314	-	350	204	243	102	863	244	240	379	260	-	300	213	290	112.5
MTR 45-3/3-2	11	1035	324	240	471	314	-	350	204	243	140.3	-	-	-	-	-	-	-	-	-	-
MTR, MTRE 45-3/3	11	1035	324	240	471	314	-	350	204	243	140.3	1035	324	240	471	314	-	350	308	420	170.3
MTR 45-4/4-2	15	1115	404	240	471	314	-	350	204	243	152.4	-	-	-	-	-	-	-	-	-	-
MTR, MTRE 45-4/4	15	1115	404	240	471	314	-	350	204	243	152.4	1115	404	240	471	314	-	350	308	420	185.6
MTR 45-5/5-2	18.5	1239	484	240	515	314	-	350	204	243	165.4	-	-	-	-	-	-	-	-	-	-
MTR, MTRE 45-5/5	18.5	1239	484	240	515	314	-	350	204	243	165.4	1239	484	240	515	314	-	350	308	420	197.9
MTR 45-6/6-2	22	1345	564	240	541	314	-	350	204	243	180.9	-	-	-	-	-	-	-	-	-	-
MTR, MTRE 45-6/6	22	1345	564	240	541	314	-	350	204	243	180.9	1345	564	240	541	314	-	350	308	420	211.2
MTR 45-7/7-2	30	1495	644	240	611	396	-	400	315	265	296	-	-	-	-	-	-	-	-	-	-
MTR 45-7/7	30	1495	644	240	611	396	-	400	315	265	296	-	-	-	-	-	-	-	-	-	-
MTR 45-8/8-2	30	1575	724	240	611	396	-	400	315	265	296.3	-	-	-	-	-	-	-	-	-	-
MTR 45-8/8	30	1575	724	240	611	396	-	400	315	265	296.3	-	-	-	-	-	-	-	-	-	-
MTR 45-9/9-2	30	1655	804	240	611	396	-	400	315	265	296.6	-	-	-	-	-	-	-	-	-	-
MTR 45-9/9	37	1680	804	240	636	396	-	400	315	265	321.6	-	-	-	-	-	-	-	-	-	-
MTR 45-10/10-2	37	1760	884	240	636	396	-	400	315	265	321.9	-	-	-	-	-	-	-	-	-	-
MTR 45-10/10	37	1760	884	240	636	396	-	400	315	265	321.9	-	-	-	-	-	-	-	-	-	-
MTR 45-11/11-2	45	1931	964	259	708	449	-	450	338	266	389.6	-	-	-	-	-	-	-	-	-	-
MTR 45-11/11	45	1931	964	259	708	449	-	450	338	266	389.6	-	-	-	-	-	-	-	-	-	-
MTR 45-12/12-2	45	2011	1044	259	708	449	-	450	338	266	389.9	-	-	-	-	-	-	-	-	-	-
MTR 45-12/12	45	2011	1044	259	708	449	-	450	338	266	389.9	-	-	-	-	-	-	-	-	-	-
MTR 45-13/13-2	45	2091	1124	259	708	449	-	450	338	266	390.2	-	-	-	-	-	-	-	-	-	-

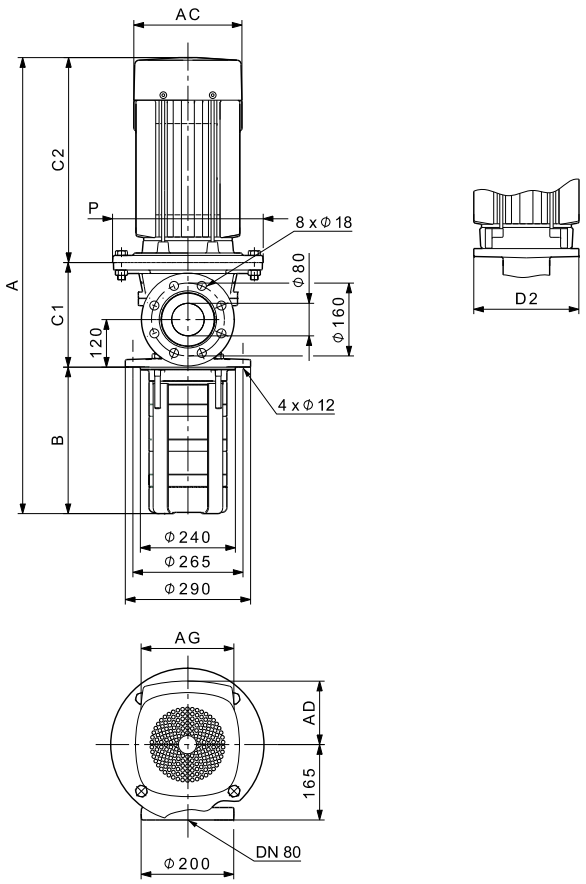
The maximum immersion depth is 1444 mm. See page 154.
For information about electrical data, see section *Motor data* on page 142.

MTR, MTRE 64, 50 Hz



TM01 4304 2213

Dimensional sketches



TM04 2792 4614

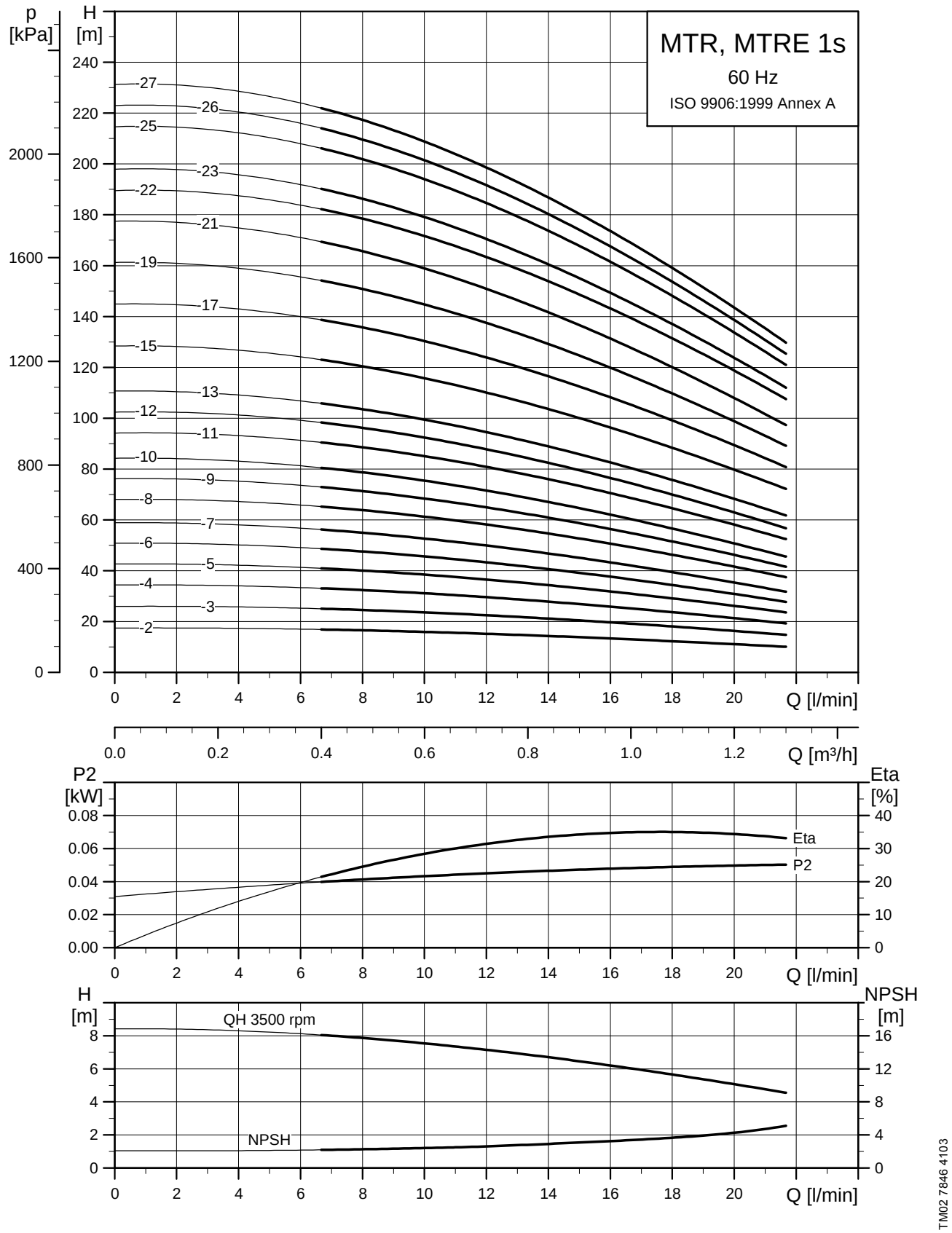
Dimensions and weights

Pump type	P2 [kW]	MTR										MTRE									
		Dimensions [mm]									Net weight [kg]	Dimensions [mm]									Net weight [kg]
		A	B	C1	C2	AC	D2	P	AD	AG		A	B	C1	C2	AC	D2	P	AD	AG	
MTR, MTRE 64-2/1-1	4	790	249	169	372	220	198	-	134	202	81	790	249	169	372	220	198	-	188	290	86.7
MTR, MTRE 64-2/1	5.5	880	249	240	391	220	-	300	134	202	94.7	880	249	240	391	220	-	298	188	290	102.2
MTR, MTRE 64-2/2-2	7.5	868	249	240	379	260	-	300	159	203	104.5	868	249	240	379	260	-	300	213	290	115
MTR 64-2/2-1	11	960	249	240	471	314	-	350	204	243	142.5	-	-	-	-	-	-	-	-	-	-
MTR, MTRE 64-2/2	11	960	249	240	471	314	-	350	204	243	142.5	960	249	240	471	314	-	350	308	420	172.5
MTR 64-3/3-2	15	1043	332	240	471	314	-	350	204	243	154.6	-	-	-	-	-	-	-	-	-	-
MTR, MTRE 64-3/3-1	15	1043	332	240	471	314	-	350	204	243	154.6	1043	332	240	471	314	-	350	308	420	187.8
MTR, MTRE 64-3/3	18.5	1087	332	240	515	314	-	350	204	243	167.3	1087	332	240	515	314	-	350	308	420	199.8
MTR 64-4/4-2	18.5	1169	414	240	515	314	-	350	204	243	167.7	-	-	-	-	-	-	-	-	-	-
MTR 64-4/4-1	22	1195	414	240	541	314	-	350	204	243	182.9	-	-	-	-	-	-	-	-	-	-
MTR, MTRE 64-4/4	22	1195	414	240	541	314	-	350	204	243	182.9	1195	414	240	541	314	-	350	308	420	213.2
MTR 64-5/5-2	30	1348	497	240	611	396	-	400	315	265	298	-	-	-	-	-	-	-	-	-	-
MTR 64-5/5-1	30	1348	497	240	611	396	-	400	315	265	298	-	-	-	-	-	-	-	-	-	-
MTR 64-5/5	30	1348	497	240	611	396	-	400	315	265	298	-	-	-	-	-	-	-	-	-	-
MTR 64-6/6-2	30	1430	579	240	611	396	-	400	315	265	298.3	-	-	-	-	-	-	-	-	-	-
MTR 64-6/6-1	37	1455	579	240	636	396	-	400	315	265	323.3	-	-	-	-	-	-	-	-	-	-
MTR 64-6/6	37	1455	579	240	636	396	-	400	315	265	323.3	-	-	-	-	-	-	-	-	-	-
MTR 64-7/7-2	37	1538	662	240	636	396	-	400	315	265	323.6	-	-	-	-	-	-	-	-	-	-
MTR 64-7/7-1	37	1538	662	240	636	396	-	400	315	265	323.6	-	-	-	-	-	-	-	-	-	-
MTR 64-7/7	45	1629	662	259	708	449	-	450	338	266	391	-	-	-	-	-	-	-	-	-	-
MTR 64-8/8-2	45	1711	744	259	708	449	-	450	338	266	391.3	-	-	-	-	-	-	-	-	-	-
MTR 64-8/8-1	45	1711	744	259	708	449	-	450	338	266	391.3	-	-	-	-	-	-	-	-	-	-

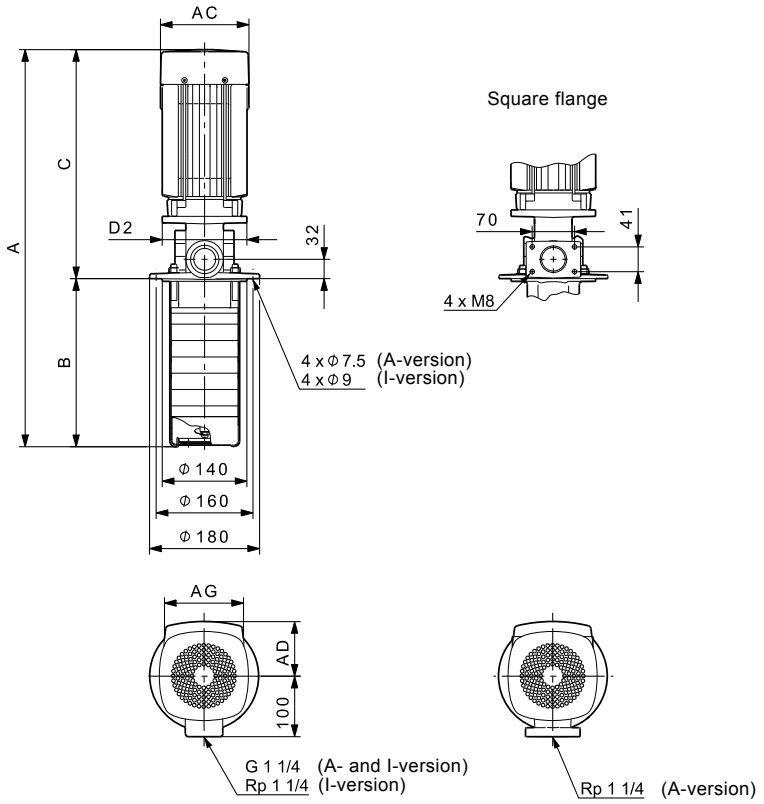
The maximum immersion depth is 1487 mm. See page 154.
For information about electrical data, see section *Motor data* on page 142.

MTR, MTRE, 60 Hz

MTR, MTRE 1s, 60 Hz



Dimensional sketches



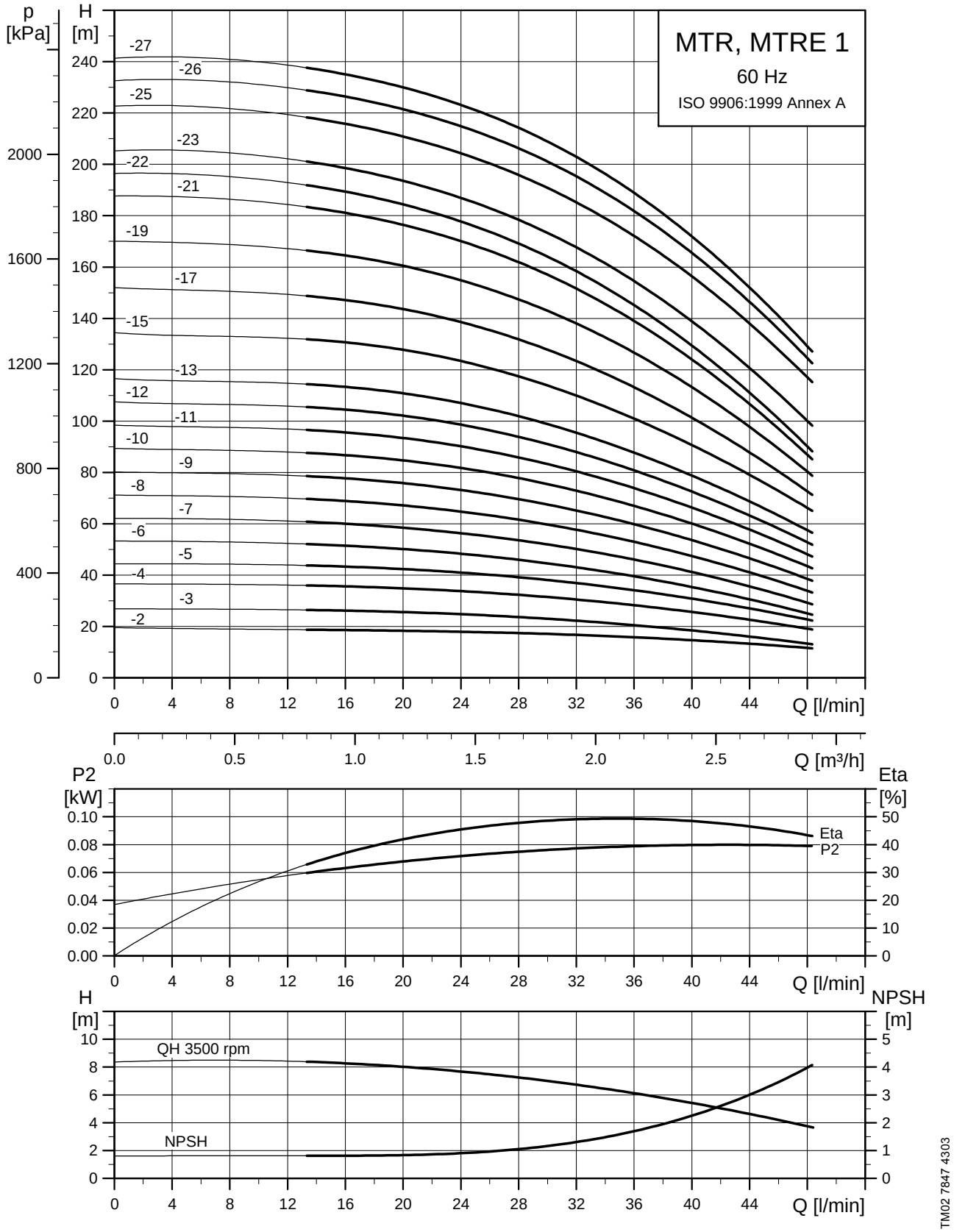
TM03 2677 2413

Dimensions and weights

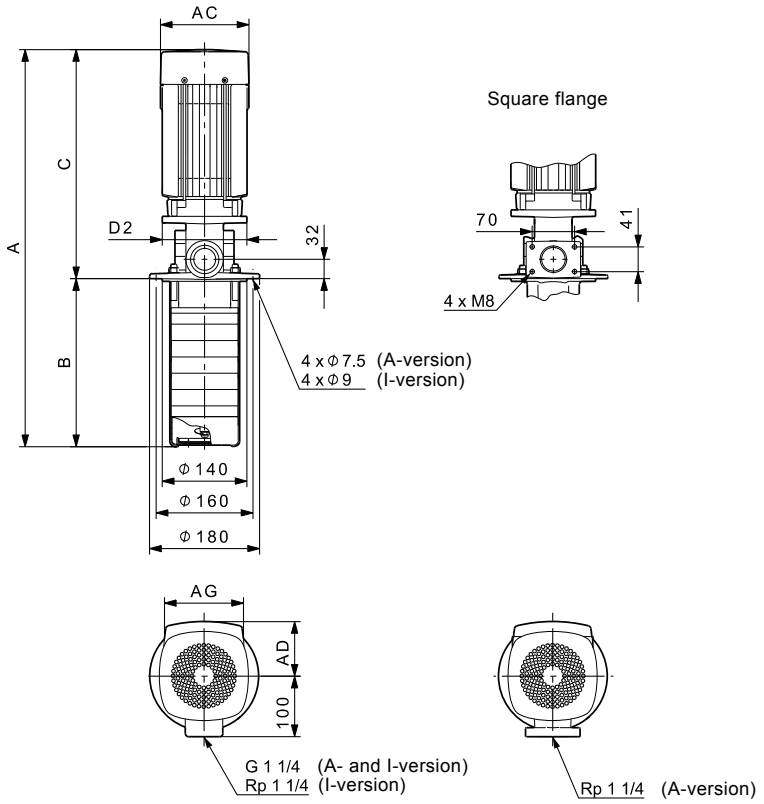
Pump type	P2 [kW]	MTR								MTRE							
		Dimensions [mm]							Net weight [kg]	Dimensions [mm]							Net weight [kg]
		A	B	C	AC	D2	AD	AG		A	B	C	AC	D2	AD	AG	
MTR 1s-2/2	0.37	462	160	302	141	140	109	82	12.9	-	-	-	-	-	-	-	-
MTR 1s-3/3	0.37	480	178	302	141	140	109	82	13	-	-	-	-	-	-	-	-
MTR, MTRE 1s-4/4	0.37	498	196	302	141	140	109	82	13	561	196	365	122	140	158	268	17.4
MTR 1s-5/5	0.37	516	214	302	141	140	109	82	13	-	-	-	-	-	-	-	-
MTR 1s-6/6	0.37	534	232	302	141	140	109	82	13	-	-	-	-	-	-	-	-
MTR, MTRE 1s-7/7	0.37	552	250	302	141	140	109	82	13.1	615	250	365	122	140	158	268	17.5
MTR 1s-8/8	0.55	570	268	302	141	140	109	82	12.5	-	-	-	-	-	-	-	-
MTR 1s-9/9	0.55	588	286	302	141	140	109	82	12.6	-	-	-	-	-	-	-	-
MTR, MTRE 1s-10/10	0.55	606	304	302	141	140	109	82	12.6	669	304	365	122	140	158	268	17.5
MTR 1s-11/11	0.75	664	322	342	141	140	109	82	14.9	-	-	-	-	-	-	-	-
MTR 1s-12/12	0.75	682	340	342	141	140	109	82	14.9	-	-	-	-	-	-	-	-
MTR, MTRE 1s-13/13	0.75	700	358	342	141	140	109	82	14.9	723	358	365	122	140	158	268	17.7
MTR 1s-15/15	1.1	756	394	362	141	140	109	82	17	-	-	-	-	-	-	-	-
MTR 1s-17/17	1.1	792	430	362	141	140	109	82	17	-	-	-	-	-	-	-	-
MTR 1s-19/19	1.1	828	466	362	141	140	109	82	17.1	-	-	-	-	-	-	-	-
MTR, MTRE 1s-21/21	1.1	864	502	362	141	140	109	82	17.1	867	502	365	122	140	158	268	18.7
MTR 1s-22/22	1.5	912	520	392	178	140	110	162	25.2	-	-	-	-	-	-	-	-
MTR, MTRE 1s-23/23	1.5	930	538	392	178	140	110	162	25.3	923	538	385	122	140	158	268	21.6
MTR 1s-25/25	1.5	966	574	392	178	140	110	162	25.3	-	-	-	-	-	-	-	-
MTR 1s-26/26	1.5	984	592	392	178	140	110	162	25.3	-	-	-	-	-	-	-	-
MTR, MTRE 1s-27/27	1.5	1002	610	392	178	140	110	162	25.4	995	610	385	122	140	158	268	21.7

The maximum immersion depth is 1006 mm. See page 154.
For information about electrical data, see section *Motor data* on page 142.

MTR, MTRE 1, 60 Hz



Dimensional sketches



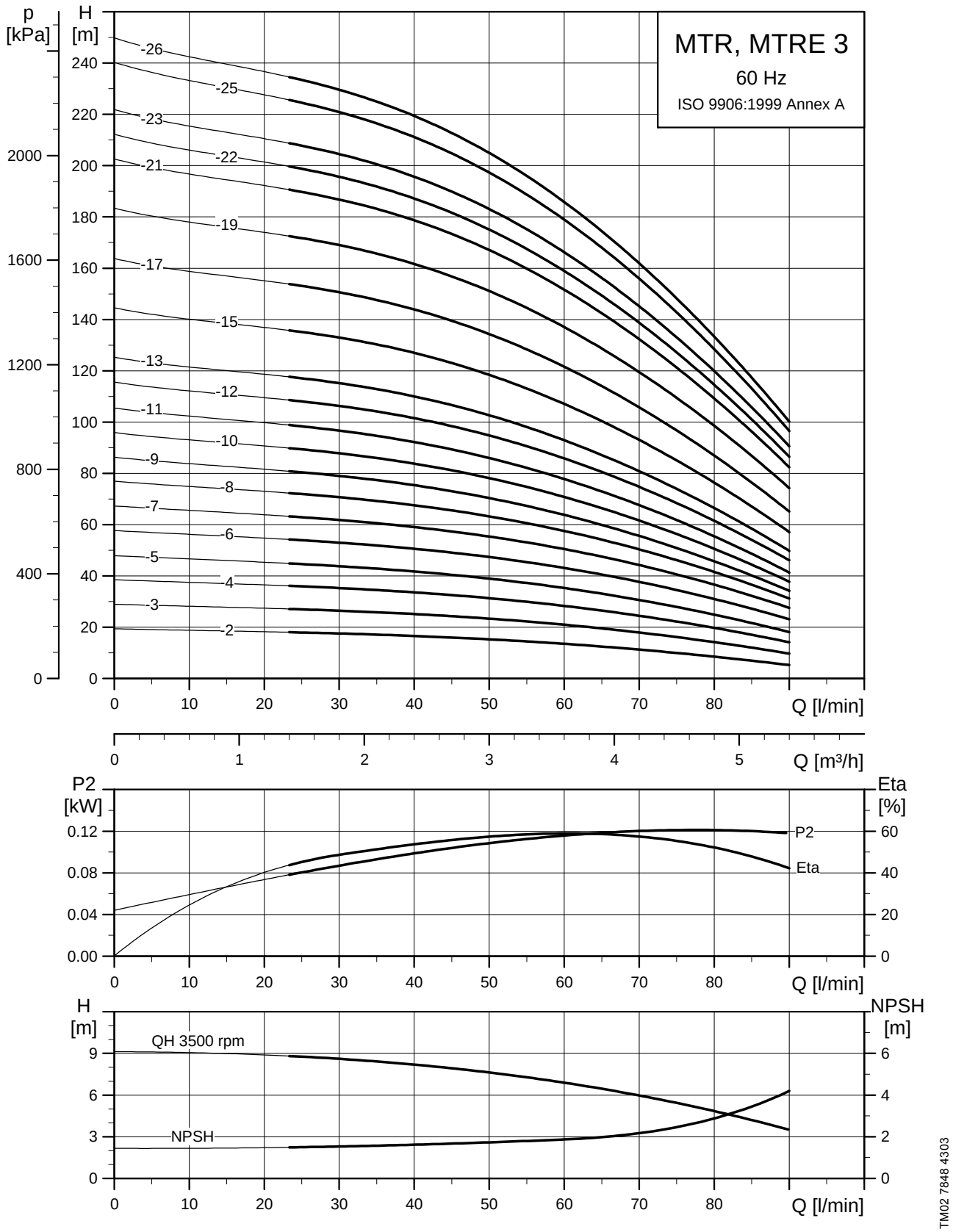
TM03 2677 2413

Dimensions and weights

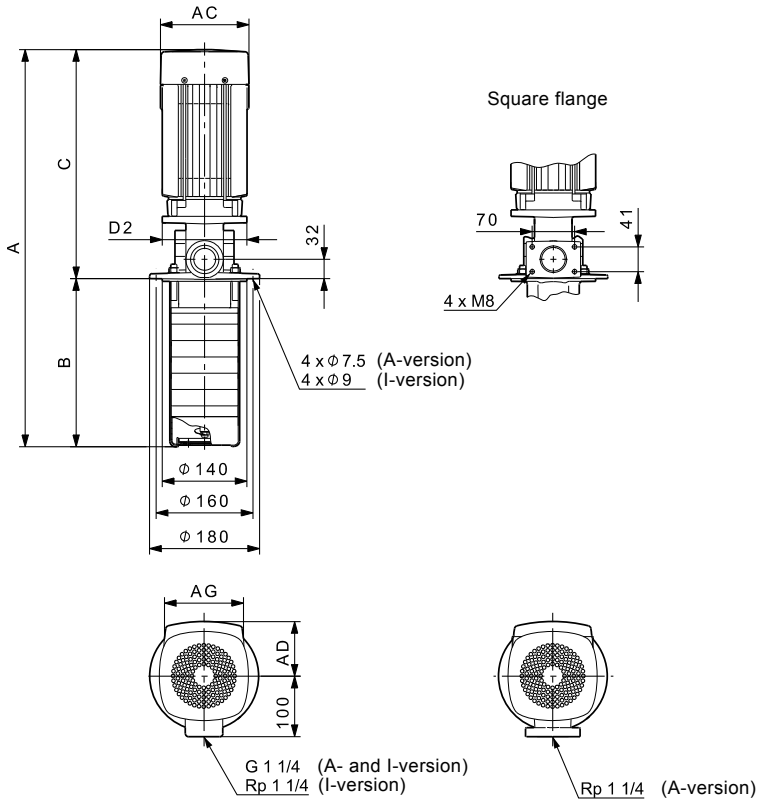
Pump type	P2 [kW]	MTR								MTRE							
		Dimensions [mm]							Net weight [kg]	Dimensions [mm]							Net weight [kg]
		A	B	C	AC	D2	AD	AG		A	B	C	AC	D2	AD	AG	
MTR 1-2/2	0.37	462	160	302	141	140	109	82	12.9	-	-	-	-	-	-	-	-
MTR 1-3/3	0.37	480	178	302	141	140	109	82	13	-	-	-	-	-	-	-	-
MTR, MTRE 1-4/4	0.37	498	196	302	141	140	109	82	13	561	196	365	122	140	158	268	17.4
MTR 1-5/5	0.55	516	214	302	141	140	109	82	12.5	-	-	-	-	-	-	-	-
MTR 1-6/6	0.55	534	232	302	141	140	109	82	12.5	-	-	-	-	-	-	-	-
MTR, MTRE 1-7/7	0.75	592	250	342	141	140	109	82	14.8	615	250	365	122	140	158	268	17.5
MTR 1-8/8	0.75	610	268	342	141	140	109	82	14.8	-	-	-	-	-	-	-	-
MTR, MTRE 1-9/9	0.75	628	286	342	141	140	109	82	14.8	651	286	365	122	140	158	268	17.6
MTR 1-10/10	1.1	666	304	362	141	140	109	82	16.9	-	-	-	-	-	-	-	-
MTR 1-11/11	1.1	684	322	362	141	140	109	82	16.9	-	-	-	-	-	-	-	-
MTR 1-12/12	1.1	702	340	362	141	140	109	82	16.9	-	-	-	-	-	-	-	-
MTR, MTRE 1-13/13	1.1	720	358	362	141	140	109	82	16.9	723	358	365	122	140	158	268	18.5
MTR 1-15/15	1.5	786	394	392	178	140	110	162	25.1	-	-	-	-	-	-	-	-
MTR, MTRE 1-17/17	1.5	822	430	392	178	140	110	162	25.1	815	430	385	122	140	158	268	21.5
MTR 1-19/19	2.2	898	466	432	178	140	110	162	28.3	-	-	-	-	-	-	-	-
MTR 1-21/21	2.2	934	502	432	178	140	110	162	28.3	-	-	-	-	-	-	-	-
MTR, MTRE 1-22/22	2.2	952	520	432	178	140	110	162	28.3	905	520	385	122	140	158	268	23
MTR 1-23/23	2.2	970	538	432	178	140	110	162	28.4	-	-	-	-	-	-	-	-
MTR 1-25/25	2.2	1006	574	432	178	140	110	162	28.4	-	-	-	-	-	-	-	-
MTR 1-26/26	3	1038	592	446	198	160	120	162	32.4	-	-	-	-	-	-	-	-
MTR, MTRE 1-27/27	3	1056	610	446	198	160	120	162	32.5	1056	610	446	198	160	177	264	38.7

The maximum immersion depth is 1006 mm. See page 154.
For information about electrical data, see section *Motor data* on page 142.

MTR, MTRE 3, 60 Hz



Dimensional sketches



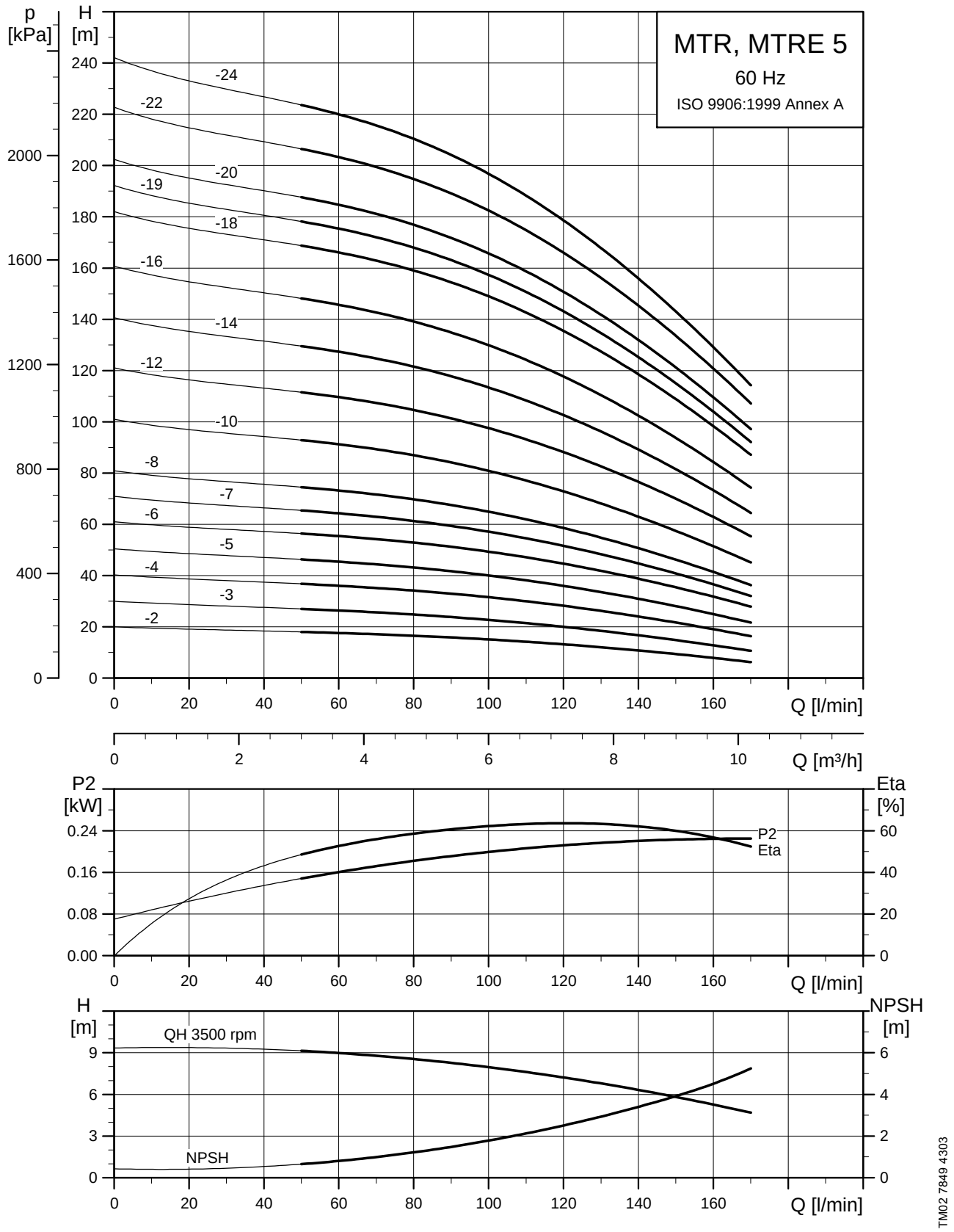
TM03 2677 2413

Dimensions and weights

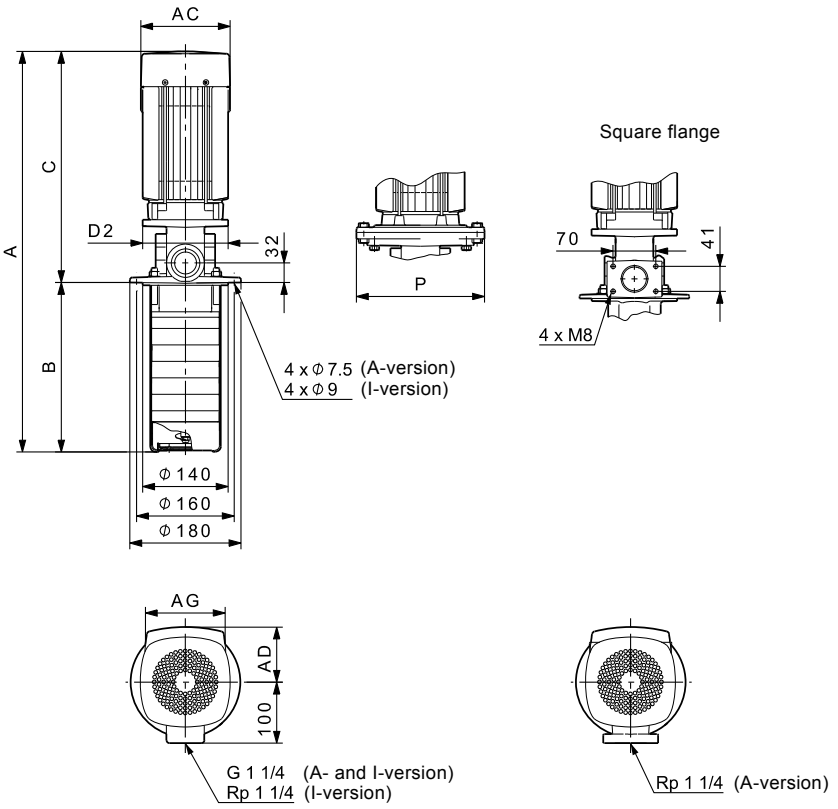
Pump type	P2 [kW]	MTR								MTRE							
		Dimensions [mm]							Net weight [kg]	Dimensions [mm]							Net weight [kg]
		A	B	C	AC	D2	AD	AG		A	B	C	AC	D2	AD	AG	
MTR 3-2/2	0.37	462	160	302	141	140	109	82	12.9								
MTR, MTRE 3-3/3	0.55	480	178	302	141	140	109	82	12.4	543	178	365	122	140	158	268	17.4
MTR, MTRE 3-4/4	0.55	498	196	302	141	140	109	82	12.5	561	196	365	122	140	158	268	17.4
MTR 3-5/5	0.75	556	214	342	141	140	109	82	14.8	-	-	-	-	-	-	-	-
MTR, MTRE 3-6/6	1.1	594	232	362	141	140	109	82	16.8	597	232	365	122	140	158	268	18.3
MTR 3-7/7	1.1	612	250	362	141	140	109	82	16.8	-	-	-	-	-	-	-	-
MTR 3-8/8	1.1	630	268	362	141	140	109	82	16.8	-	-	-	-	-	-	-	-
MTR 3-9/9	1.5	678	286	392	178	140	110	162	24.9	-	-	-	-	-	-	-	-
MTR 3-10/10	1.5	696	304	392	178	140	110	162	25	-	-	-	-	-	-	-	-
MTR, MTRE 3-11/11	1.5	714	322	392	178	140	110	162	25	707	322	385	122	140	158	268	21.3
MTR 3-12/12	2.2	772	340	432	178	140	110	162	28.1	-	-	-	-	-	-	-	-
MTR 3-13/13	2.2	790	358	432	178	140	110	162	28.1	-	-	-	-	-	-	-	-
MTR 3-15/15	2.2	826	394	432	178	140	110	162	28.2	-	-	-	-	-	-	-	-
MTR, MTRE 3-17/17	2.2	862	430	432	178	140	110	162	28.2	815	430	385	122	140	158	268	22.8
MTR 3-19/19	3	912	466	446	198	160	120	162	32.3	-	-	-	-	-	-	-	-
MTR 3-21/21	3	948	502	446	198	160	120	162	32.3	-	-	-	-	-	-	-	-
MTR 3-22/22	3	966	520	446	198	160	120	162	32.3	-	-	-	-	-	-	-	-
MTR, MTRE 3-23/23	3	984	538	446	198	160	120	162	32.4	984	538	446	198	160	177	264	38.6
MTR 3-25/25	4	1057	574	483	220	160	134	202	44.1	-	-	-	-	-	-	-	-
MTR, MTRE 3-26/26	4	1075	592	483	220	160	134	202	44.1	1075	592	483	220	160	188	290	49.8

The maximum immersion depth is 1006 mm. See page 154.
For information about electrical data, see section *Motor data* on page 142.

MTR, MTRE 5, 60 Hz



Dimensional sketches



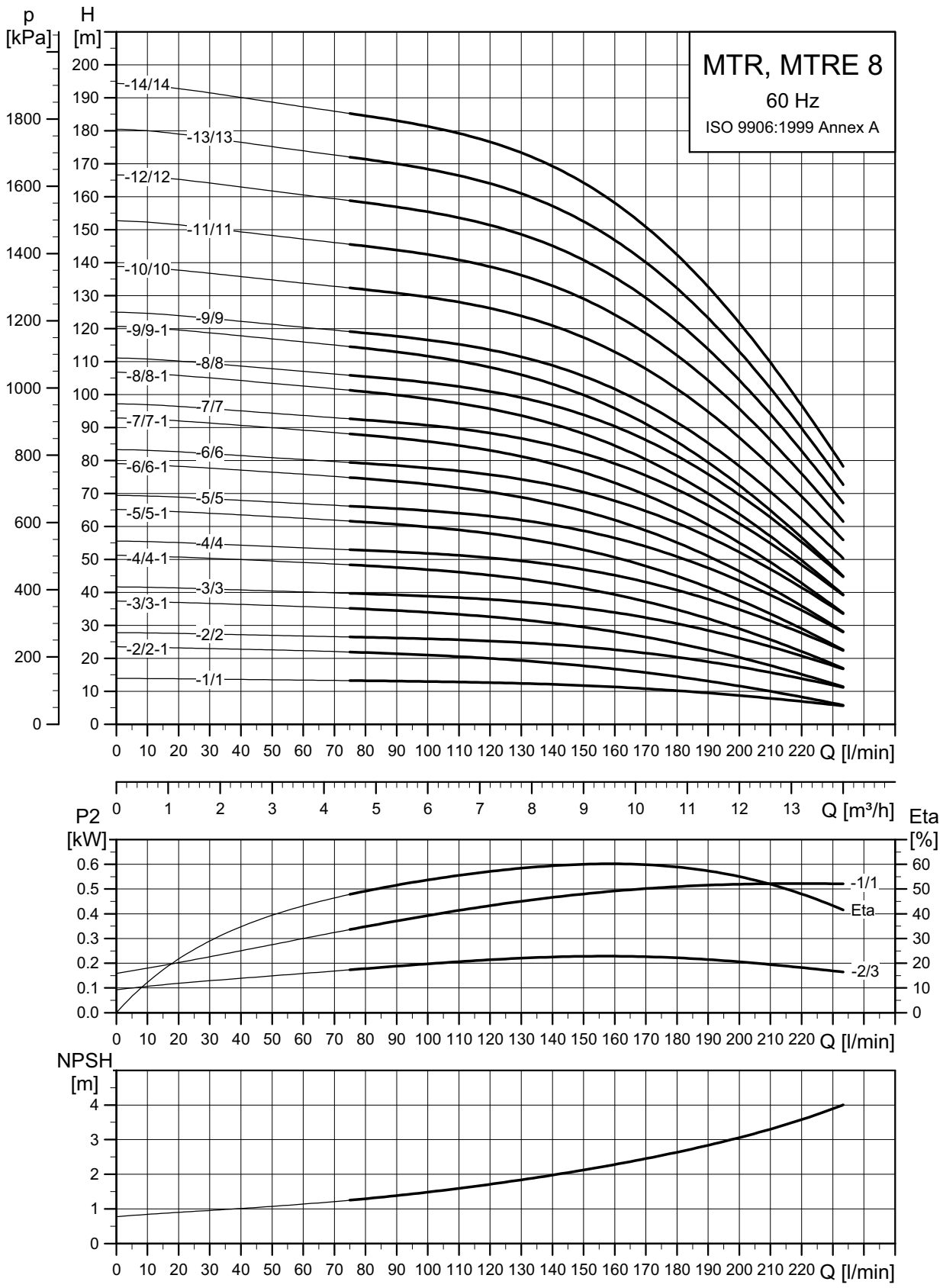
TM04 2789 2413

Dimensions and weights

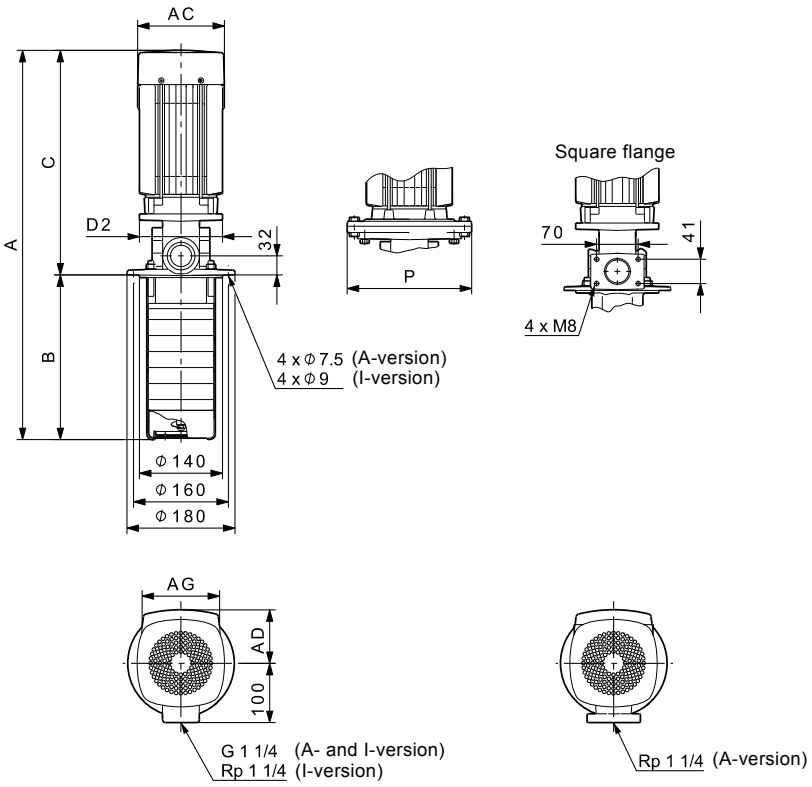
Pump type	P2 [kW]	MTR									MTRE								
		Dimensions [mm]								Net weight [kg]	Dimensions [mm]								Net weight [kg]
		A	B	C	AC	D2	P	AD	AG		A	B	C	AC	D2	P	AD	AG	
MTR, MTRE 5-2/2	0.55	471	169	302	141	140	-	109	82	12.7	534	169	365	122	140	-	158	268	17.6
MTR 5-3/3	1.1	558	196	362	141	140	-	109	82	17	-	-	-	-	-	-	-	-	-
MTR, MTRE 5-4/4	1.1	585	223	362	141	140	-	109	82	17	588	223	365	122	140	-	158	268	18.6
MTR, MTRE 5-5/5	1.5	642	250	392	178	140	-	110	162	25.2	635	250	385	122	140	-	158	268	21.5
MTR 5-6/6	2.2	709	277	432	178	140	-	110	162	28.3	-	-	-	-	-	-	-	-	-
MTR 5-7/7	2.2	736	304	432	178	140	-	110	162	28.3	-	-	-	-	-	-	-	-	-
MTR, MTRE 5-8/8	2.2	763	331	432	178	140	-	110	162	28.4	716	331	385	122	140	-	158	268	23
MTR 5-10/10	3	831	385	446	198	160	-	120	162	32.4	-	-	-	-	-	-	-	-	-
MTR, MTRE 5-12/12	3	885	439	446	198	160	-	120	162	32.5	885	439	446	198	160	-	177	264	38.7
MTR 5-14/14	4	976	493	483	220	160	-	134	202	44.3	-	-	-	-	-	-	-	-	-
MTR, MTRE 5-16/16	4	1030	547	483	220	160	-	134	202	44.3	1030	547	483	220	160	-	188	290	50
MTR 5-18/18	5.5	1128	601	527	220	-	300	134	202	61.6	-	-	-	-	-	-	-	-	-
MTR 5-19/19	5.5	1155	628	527	220	-	300	134	202	61.6	-	-	-	-	-	-	-	-	-
MTR 5-20/20	5.5	1182	655	527	220	-	300	134	202	61.7	-	-	-	-	-	-	-	-	-
MTR, MTRE 5-22/22	5.5	1236	709	527	220	-	300	134	202	61.7	1236	709	527	220	-	300	188	290	69.2
MTR, MTRE 5-24/24	7.5	1278	763	515	260	-	300	159	203	71.6	1278	763	515	260	-	300	213	290	82.1

The maximum immersion depth is 1006 mm. See page 154.
For information about electrical data, see section *Motor data* on page 142.

MTR, MTRE 8, 60 Hz



Dimensional sketches



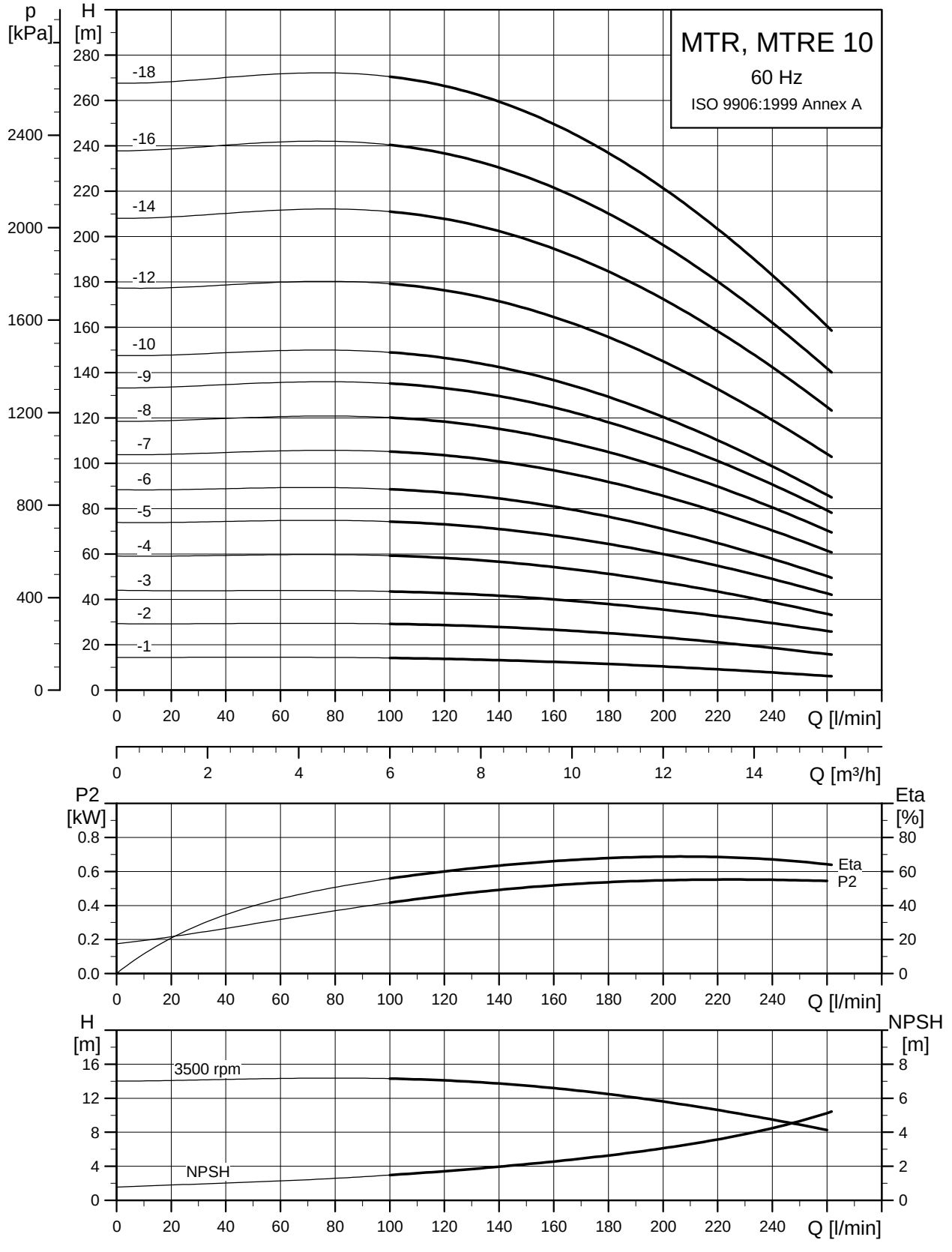
TM04 2790 2413

Dimensions and weights

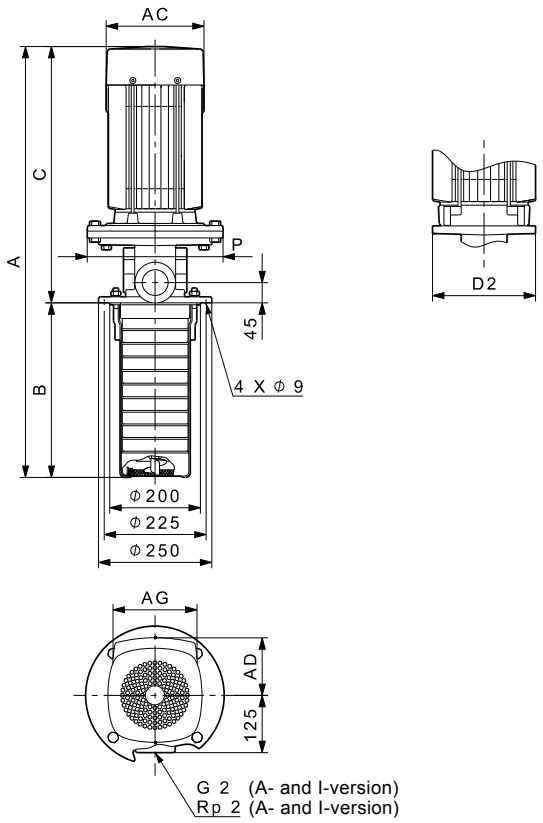
Pump type	P2 [kW]	MTR									MTRE								
		Dimensions [mm]								Net weight [kg]	Dimensions [mm]								Net weight [kg]
		A	B	C	AC	D2	P	AD	AG		A	B	C	AC	D2	P	AD	AG	
MTR, MTRE 8-1/1	0.55	498	196	302	141	140	-	109	82	16.7	521	196	325	122	140	-	158	212	16.5
MTR, MTRE 8-2/2-1	0.75	565	223	342	141	140	-	109	82	19	548	223	325	122	140	-	158	212	17.5
MTR, MTRE 8-2/2	1.1	585	223	362	141	140	-	109	82	21	548	223	325	122	140	-	158	212	19
MTR, MTRE 8-3/3-1	1.5	642	250	392	141	140	-	109	82	29.2	595	250	345	122	140	-	158	212	33
MTR 8-3/3	2.2	682	250	432	141	140	-	109	82	32.3	-	-	-	-	-	-	-	-	-
MTR 8-4/4-1	2.2	709	277	432	141	140	-	109	82	32.3	-	-	-	-	-	-	-	-	-
MTR, MTRE 8-4/4	2.2	709	277	432	141	140	-	109	82	32.3	662	277	385	122	140	-	158	268	35.5
MTR 8-5/5-1	3	750	304	446	141	160	-	109	82	36.3	-	-	-	-	-	-	-	-	-
MTR 8-5/5	3	750	304	446	141	160	-	109	82	36.3	-	-	-	-	-	-	-	-	-
MTR, MTRE 8-6/6-1	3	777	331	446	141	160	-	109	82	36.4	777	331	446	198	160	-	177	264	40.5
MTR 8-6/6	4	814	331	483	141	160	-	109	82	48.1	-	-	-	-	-	-	-	-	-
MTR 8-7/7-1	4	841	358	483	141	160	-	109	82	48.1	-	-	-	-	-	-	-	-	-
MTR 8-7/7	4	841	358	483	141	160	-	109	82	48.1	-	-	-	-	-	-	-	-	-
MTR, MTRE 8-8/8-1	4	868	385	483	141	160	-	109	82	48.1	868	385	483	220	160	-	188	290	47
MTR 8-8/8	5.5	912	385	527	141	-	300	109	82	65.3	-	-	-	-	-	-	-	-	-
MTR 8-9/9-1	5.5	939	412	527	141	-	300	109	82	65.4	-	-	-	-	-	-	-	-	-
MTR 8-9/9	5.5	939	412	527	141	-	300	109	82	65.4	-	-	-	-	-	-	-	-	-
MTR, MTRE 8-10/10	5.5	966	439	527	141	-	300	109	82	65.4	966	439	527	220	-	300	188	290	47
MTR 8-11/11	7.5	981	466	515	141	-	300	109	82	75.2	-	-	-	-	-	-	-	-	-
MTR 8-12/12	7.5	1008	493	515	141	-	300	109	82	75.3	-	-	-	-	-	-	-	-	-
MTR 8-13/13	7.5	1035	520	515	141	-	300	109	82	75.3	-	-	-	-	-	-	-	-	-
MTR, MTRE 8-14/14	7.5	1062	547	515	141	-	300	109	82	75.3	1062	547	515	260	-	300	213	290	47

The maximum immersion depth is 1006 mm. See page 154.
For information about electrical data, see section *Motor data* on page 142.

MTR, MTRE 10, 60 Hz



Dimensional sketches



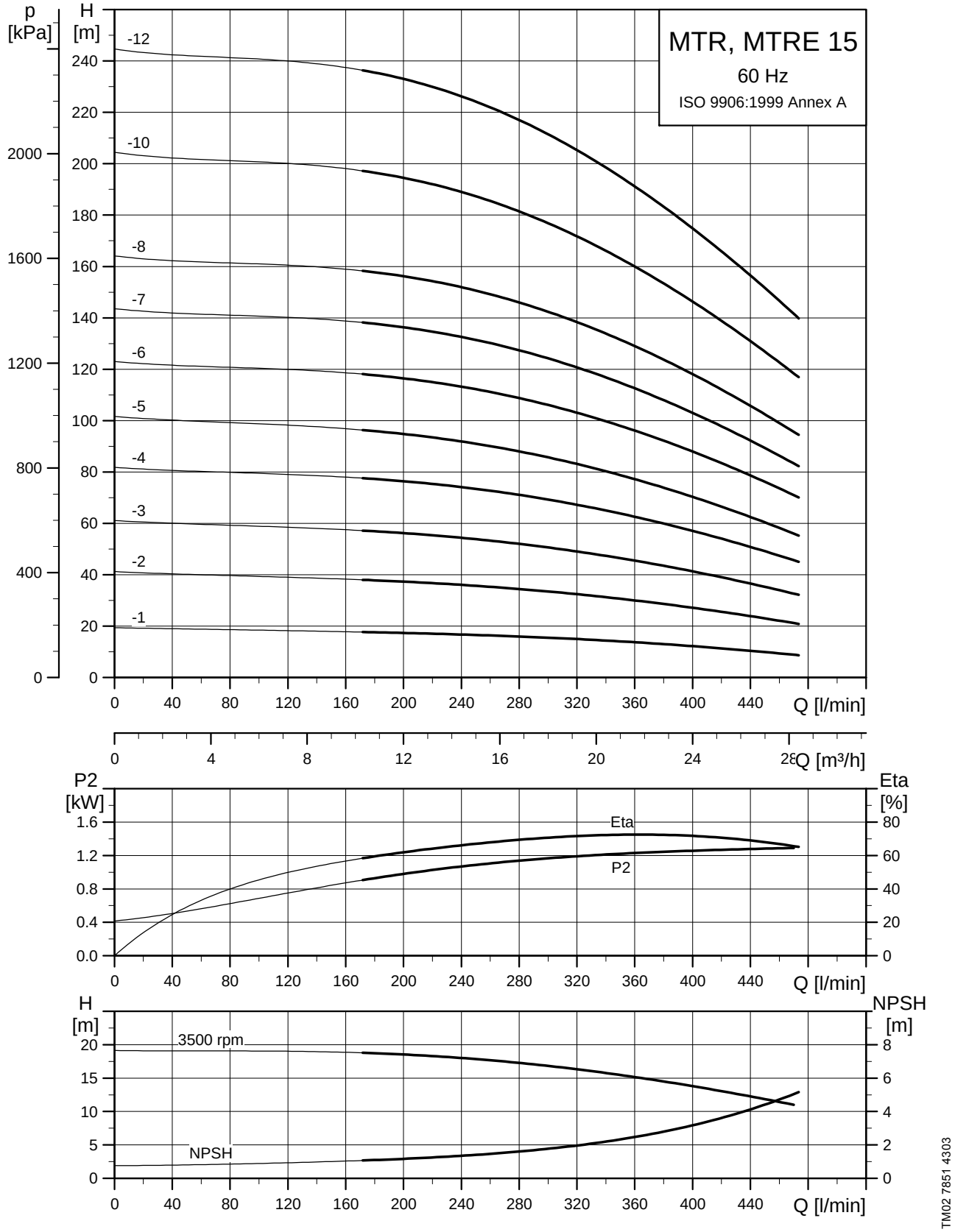
TM04 2790 2413

Dimensions and weights

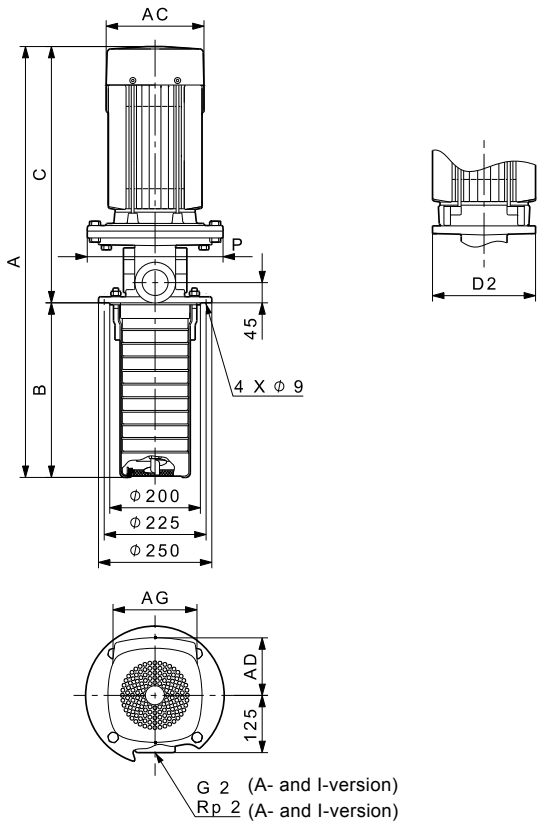
Pump type	P2 [kW]	MTR									MTRE								
		Dimensions [mm]								Net weight [kg]	Dimensions [mm]								Net weight [kg]
		A	B	C	AC	D2	P	AD	AG		A	B	C	AC	D2	P	AD	AG	
MTR 10-2/1	0.75	519	148	371	141	140	-	109	82	22.7	-	-	-	-	-	-	-	-	-
MTR, MTRE 10-2/2	1.5	569	148	421	178	140	-	110	162	32.8	562	148	414	122	140	-	158	268	29.2
MTR, MTRE 10-3/3	2.2	639	178	461	178	140	-	110	162	36	592	178	414	122	140	-	158	268	30.6
MTR 10-4/4	3	683	208	475	198	160	-	120	162	40.1	-	-	-	-	-	-	-	-	-
MTR, MTRE 10-5/5	3	713	238	475	198	160	-	120	162	40.1	713	238	475	198	160	-	177	264	46.3
MTR, MTRE 10-6/6	4	780	268	512	220	160	-	134	202	51.9	780	268	512	220	160	-	188	290	57.5
MTR 10-7/7	5.5	853	298	555	220	-	300	134	202	64.2	-	-	-	-	-	-	-	-	-
MTR, MTRE 10-8/8	5.5	883	328	555	220	-	300	134	202	64.3	883	328	555	220	-	300	188	290	71.7
MTR 10-9/9	5.5	913	358	555	220	-	300	134	202	64.3	-	-	-	-	-	-	-	-	-
MTR, MTRE 10-10/10	7.5	931	388	543	260	-	300	159	203	74.2	931	388	543	260	-	300	213	290	84.7
MTR, MTRE 10-12/12	7.5	991	448	543	260	-	300	159	203	74.3	-	-	-	-	-	-	-	-	-
MTR 10-14/14	11	1173	508	665	314	-	350	204	243	112	991	448	543	260	-	300	213	290	84.8
MTR 10-16/16	11	1233	568	665	314	-	350	204	243	112.1	-	-	-	-	-	-	-	-	-
MTR, MTRE 10-18/18	11	1287	622	665	314	-	350	204	243	112.3	1287	622	665	314	-	350	308	420	142.3
MTR 10-20/18	11	1353	688	665	314	-	350	204	243	112.4	-	-	-	-	-	-	-	-	-
MTR 10-22/18	11	1413	748	665	314	-	350	204	243	112.5	-	-	-	-	-	-	-	-	-

The maximum immersion depth is 1018 mm. See page 154.
For information about electrical data, see section *Motor data* on page 142.

MTR, MTRE 15, 60 Hz



Dimensional sketches



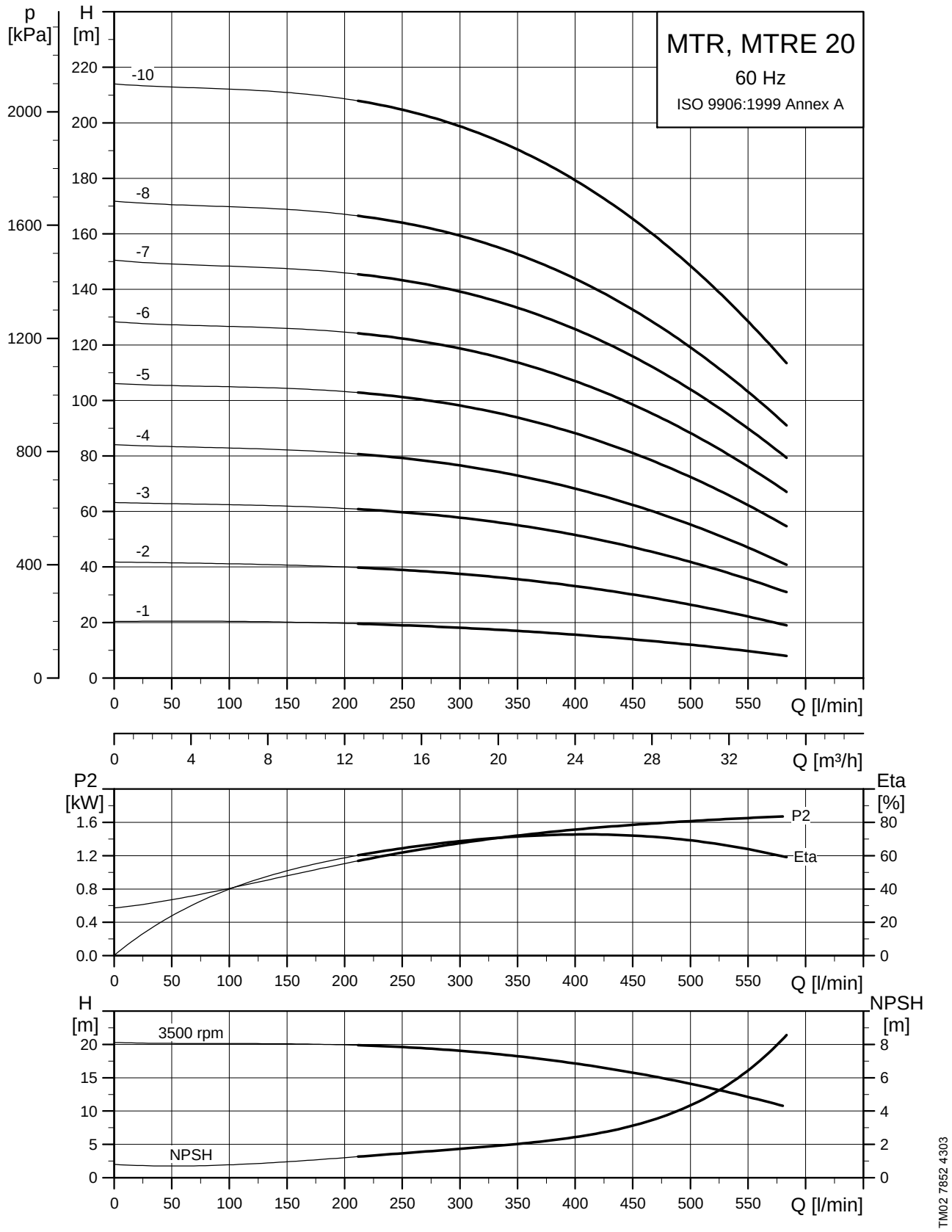
TM04 2790 2413

Dimensions and weights

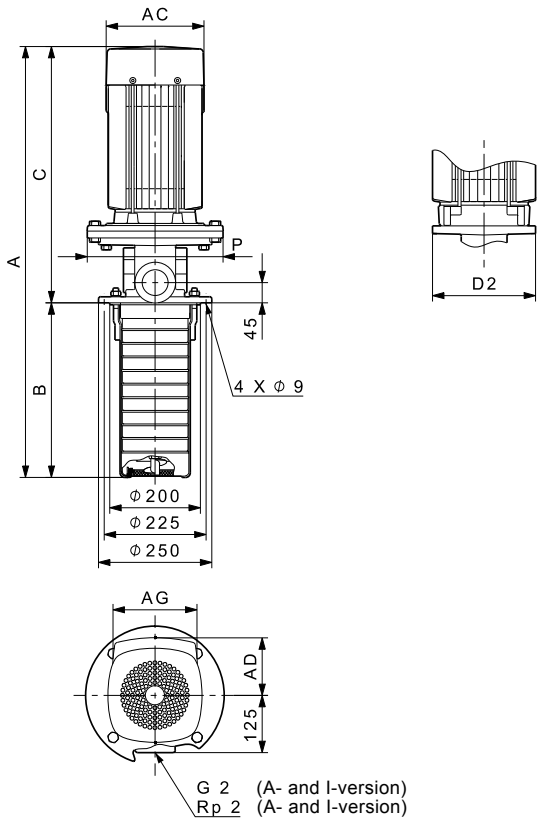
Pump type	P2 [kW]	MTR									MTRE								
		Dimensions [mm]								Net weight [kg]	Dimensions [mm]								Net weight [kg]
		A	B	C	AC	D2	P	AD	AG		A	B	C	AC	D2	P	AD	AG	
MTR, MTRE 15-2/1	1.5	599	178	421	178	140	-	110	162	33.9	592	178	414	122	140	-	158	268	30.2
MTR, MTRE 15-2/2	3	653	178	475	198	160	-	120	162	41	653	178	475	198	160	-	177	264	47.2
MTR, MTRE 15-3/3	4	735	223	512	220	160	-	134	202	52.8	735	223	512	220	160	-	188	290	58.4
MTR, MTRE 15-4/4	5.5	823	268	555	220	-	300	134	202	65.1	823	268	555	220	-	300	188	290	72.5
MTR, MTRE 15-5/5	7.5	856	313	543	260	-	300	159	203	75	856	313	543	260	-	300	213	290	85.5
MTR 15-6/6	11	1023	358	665	314	-	350	204	243	112.6	-	-	-	-	-	-	-	-	-
MTR 15-7/7	11	1068	403	665	314	-	350	204	243	112.7	-	-	-	-	-	-	-	-	-
MTR, MTRE 15-8/8	11	1113	448	665	314	-	350	204	243	112.8	1113	448	665	314	-	350	308	420	142.8
MTR, MTRE 15-10/10	15	1203	538	665	314	-	350	204	243	124.8	1203	538	665	314	-	350	308	420	158
MTR, MTRE 15-12/12	18.5	1337	628	709	314	-	350	204	243	137.7	1337	628	709	314	-	350	308	420	170.2
MTR 15-14/12	18.5	1427	718	709	314	-	350	204	243	137.9	-	-	-	-	-	-	-	-	-
MTR 15-16/12	18.5	1517	808	709	314	-	350	204	243	138.1	-	-	-	-	-	-	-	-	-
MTR 15-17/12	18.5	1562	853	709	314	-	350	204	243	138.2	-	-	-	-	-	-	-	-	-

The maximum immersion depth is 1033 mm. See page 154.
For information about electrical data, see section *Motor data* on page 142.

MTR, MTRE 20, 60 Hz



Dimensional sketches



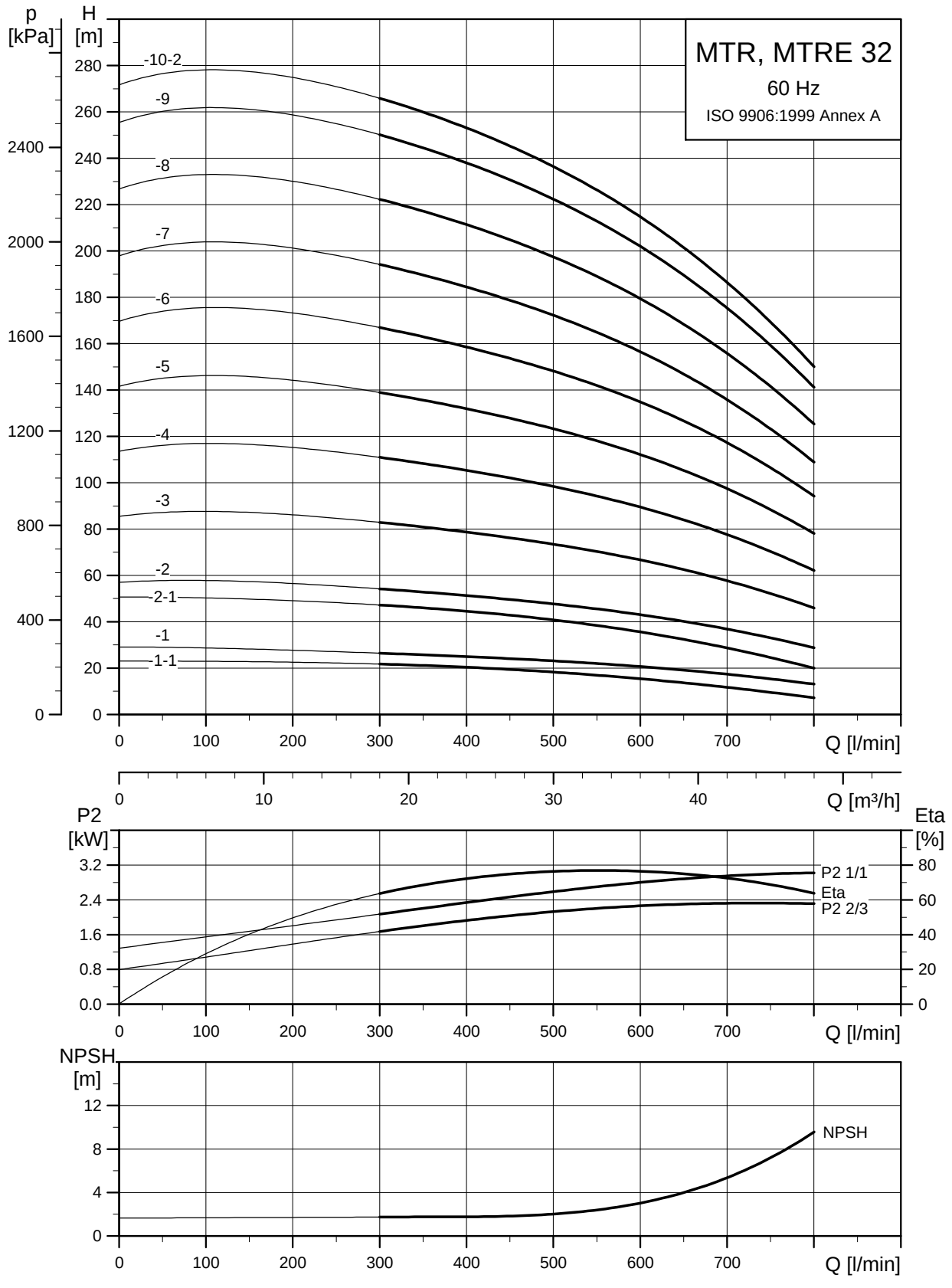
TM04 2790 2413

Dimensions and weights

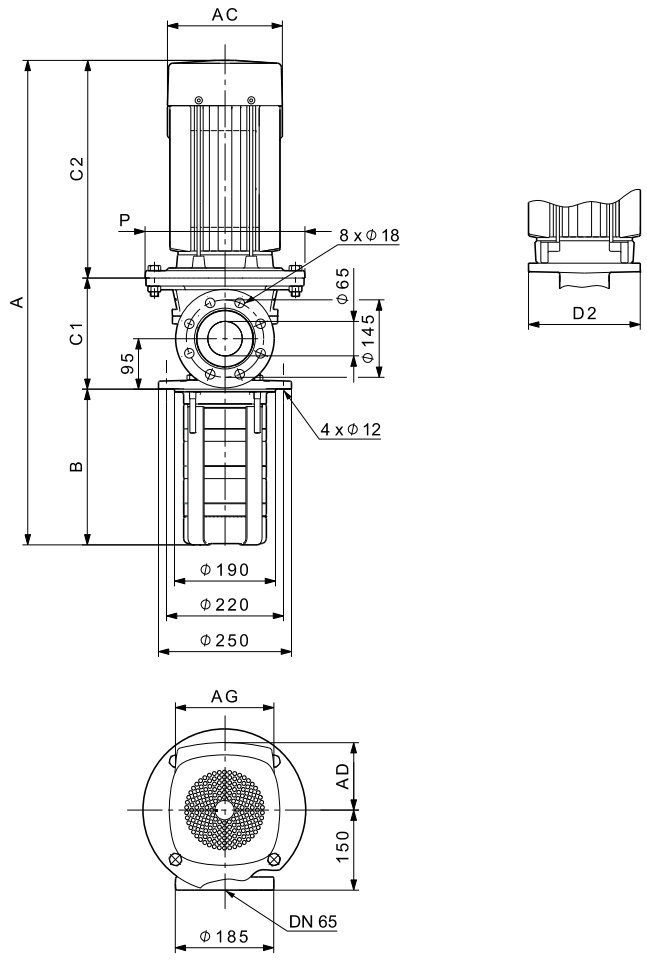
Pump type	P2 [kW]	MTR									MTRE								
		Dimensions [mm]								Net weight [kg]	Dimensions [mm]								Net weight [kg]
		A	B	C	AC	D2	P	AD	AG		A	B	C	AC	D2	P	AD	AG	
MTR, MTRE 20-2/1	2.2	639	178	461	178	140	-	110	162	37	592	178	414	122	140	-	158	268	31.6
MTR, MTRE 20-2/2	4	690	178	512	220	160	-	134	202	52.7	690	178	512	220	160	-	188	290	58.3
MTR, MTRE 20-3/3	5.5	778	223	555	220	-	300	134	202	65	778	223	555	220	-	300	188	290	72.4
MTR, MTRE 20-4/4	7.5	811	268	543	260	-	300	159	203	74.9	811	268	543	260	-	300	213	290	85.4
MTR 20-5/5	11	978	313	665	314	-	350	204	243	112.5	-	-	-	-	-	-	-	-	-
MTR, MTRE 20-6/6	11	1023	358	665	314	-	350	204	243	112.6	1023	358	665	314	-	350	308	420	142.6
MTR 20-7/7	15	1068	403	665	314	-	350	204	243	124.5	-	-	-	-	-	-	-	-	-
MTR, MTRE 20-8/8	15	1113	448	665	314	-	350	204	243	124.6	1113	448	665	314	-	350	308	420	157.8
MTR, MTRE 20-10/10	18.5	1247	538	709	314	-	350	204	243	137.5	1247	538	709	314	-	350	308	420	170
MTR 20-12/10	18.5	1337	628	709	314	-	350	204	243	137.7	-	-	-	-	-	-	-	-	-
MTR 20-14/10	18.5	1427	718	709	314	-	350	204	243	137.9	-	-	-	-	-	-	-	-	-
MTR 20-16/10	18.5	1517	808	709	314	-	350	204	243	138.1	-	-	-	-	-	-	-	-	-
MTR 20-17/10	18.5	1562	853	709	314	-	350	204	243	138.2	-	-	-	-	-	-	-	-	-

The maximum immersion depth is 1033 mm. See page 154.
For information about electrical data, see section *Motor data* on page 142.

MTR, MTRE 32, 60 Hz



Dimensional sketches



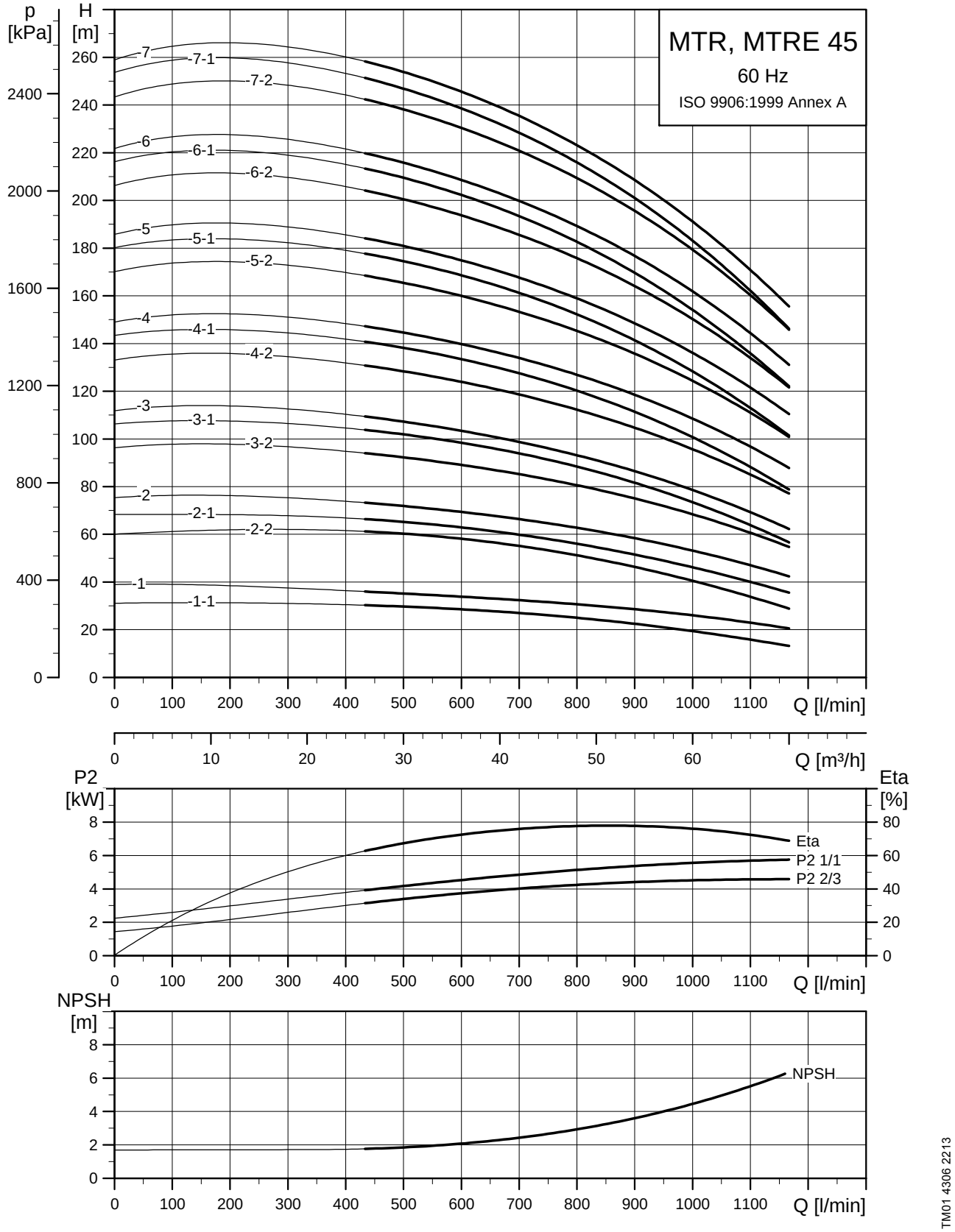
TM04 2791 4614

Dimensions and weights

Pump type	P2 [kW]	MTR										MTRE									
		Dimensions [mm]									Net weight [kg]	Dimensions [mm]									Net weight [kg]
		A	B	C1	C2	AC	D2	P	AD	AG		A	B	C1	C2	AC	D2	P	AD	AG	
MTR, MTRE 32-2/1-1	2.2	682	223	138	321	178	-	200	110	162	54.9	635	223	138	274	122	-	200	158	268	49.5
MTR, MTRE 32-2/1	3	696	223	138	335	198	198	-	120	162	58	696	223	138	335	198	198	-	177	264	64.2
MTR, MTRE 32-2/2-1	5.5	823	223	209	391	220	-	300	134	202	84.4	823	223	209	391	220	-	298	188	290	91.8
MTR, MTRE 32-2/2	7.5	811	223	209	379	260	-	300	159	203	94.2	811	223	209	379	260	-	300	213	290	104.7
MTR, MTRE 32-3/3	11	973	293	209	471	314	-	350	204	243	131.4	973	293	209	471	314	-	350	308	420	161.4
MTR, MTRE 32-4/4	15	1043	363	209	471	314	-	350	204	243	143.5	1043	363	209	471	314	-	350	308	420	176.7
MTR 32-5/5	18.5	1157	433	209	515	314	-	350	204	243	156.5	-	-	-	-	-	-	-	-	-	-
MTR, MTRE 32-6/6	18.5	1227	503	209	515	314	-	350	204	243	156.7	1227	503	209	515	314	-	350	308	420	189.2
MTR, MTRE 32-7/7	22	1323	573	209	541	314	-	350	204	243	172.2	1323	573	209	541	314	-	350	308	420	202.5
MTR 32-8/8	30	1463	643	209	611	396	-	400	315	265	287.2	-	-	-	-	-	-	-	-	-	-
MTR 32-9/9	30	1533	713	209	611	396	-	400	315	265	287.5	-	-	-	-	-	-	-	-	-	-
MTR 32-10/10-2	30	1603	783	209	611	396	-	400	315	265	287.8	-	-	-	-	-	-	-	-	-	-

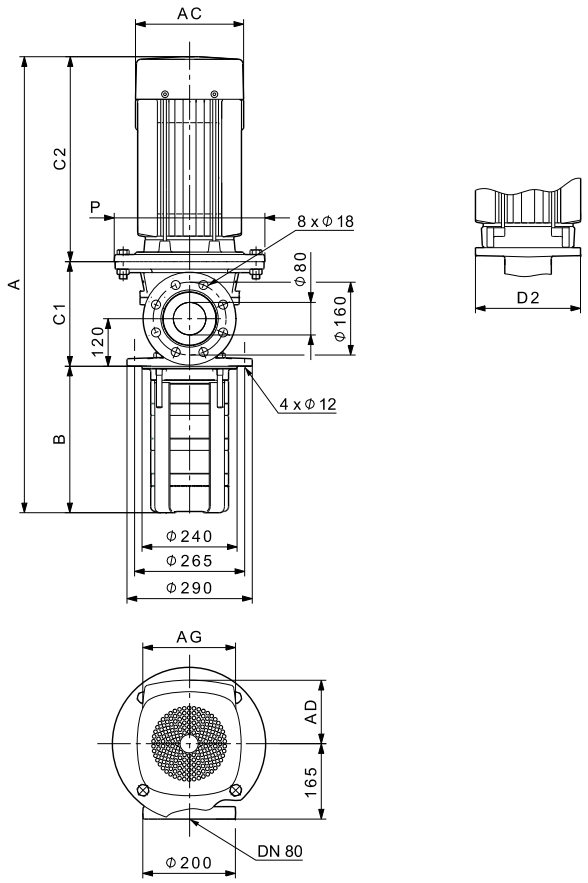
The maximum immersion depth is 1343 mm. See page 154.
For information about electrical data, see section *Motor data* on page 142.

MTR, MTRE 45, 60 Hz



TM01 4306 2213

Dimensional sketches



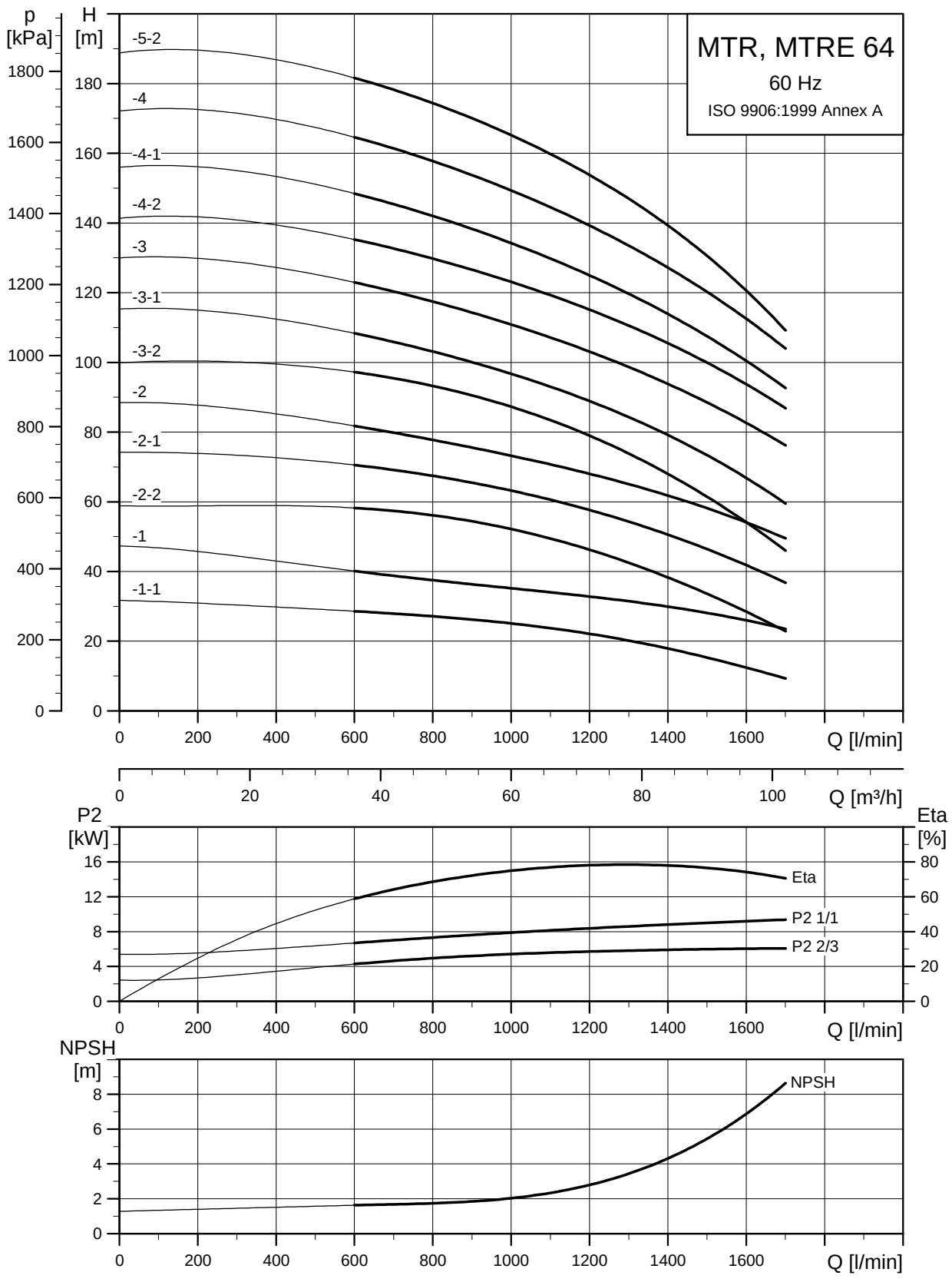
TM04 2792 4614

Dimensions and weights

Pump type	P2 [kW]	MTR										MTRE									
		Dimensions [mm]									Net weight [kg]	Dimensions [mm]									Net weight [kg]
		A	B	C1	C2	AC	D2	P	AD	AG		A	B	C1	C2	AC	D2	P	AD	AG	
MTR, MTRE 45-2/1-1	5.5	875	244	240	391	220	-	300	134	202	92.2	875	244	240	391	220	-	298	188	290	99.7
MTR, MTRE 45-2/1	7.5	863	244	240	379	260	-	300	159	203	102	863	244	240	379	260	-	300	213	290	112.5
MTR 45-2/2-2	11	955	244	240	471	314	-	350	204	243	140	-	-	-	-	-	-	-	-	-	-
MTR, MTRE 45-2/2-1	11	955	244	240	471	314	-	350	204	243	140	955	244	240	471	314	-	350	308	420	170
MTR, MTRE 45-2/2	15	955	244	240	471	314	-	350	204	243	151.8	955	244	240	471	314	-	350	308	420	185
MTR 45-3/3-2	18.5	1079	324	240	515	314	-	350	204	243	164.8	-	-	-	-	-	-	-	-	-	-
MTR 45-3/3-1	18.5	1079	324	240	515	314	-	350	204	243	164.8	-	-	-	-	-	-	-	-	-	-
MTR, MTRE 45-3/3	18.5	1079	324	240	515	314	-	350	204	243	164.8	1079	324	240	515	314	-	350	308	420	197.3
MTR, MTRE 45-4/4-2	22	1185	404	240	541	314	-	350	204	243	180.3	1185	404	240	541	314	-	350	308	420	210.6
MTR 45-4/4-1	30	1255	404	240	611	396	-	400	315	265	295.1	-	-	-	-	-	-	-	-	-	-
MTR 45-4/4	30	1255	404	240	611	396	-	400	315	265	295.1	-	-	-	-	-	-	-	-	-	-
MTR 45-5/5-2	30	1335	484	240	611	396	-	400	315	265	295.4	-	-	-	-	-	-	-	-	-	-
MTR 45-5/5-1	30	1335	484	240	611	396	-	400	315	265	295.4	-	-	-	-	-	-	-	-	-	-
MTR 45-5/5	30	1335	484	240	611	396	-	400	315	265	295.4	-	-	-	-	-	-	-	-	-	-
MTR 45-6/6-2	37	1440	564	240	636	396	-	400	315	265	320.7	-	-	-	-	-	-	-	-	-	-
MTR 45-6/6-1	37	1440	564	240	636	396	-	400	315	265	320.7	-	-	-	-	-	-	-	-	-	-
MTR 45-6/6	37	1440	564	240	636	396	-	400	315	265	320.7	-	-	-	-	-	-	-	-	-	-
MTR 45-7/7-2	45	1611	644	259	708	449	-	450	338	266	388.4	-	-	-	-	-	-	-	-	-	-
MTR 45-7/7-1	45	1611	644	259	708	449	-	450	338	266	388.4	-	-	-	-	-	-	-	-	-	-
MTR 45-7/7	45	1611	644	259	708	449	-	450	338	266	388.4	-	-	-	-	-	-	-	-	-	-

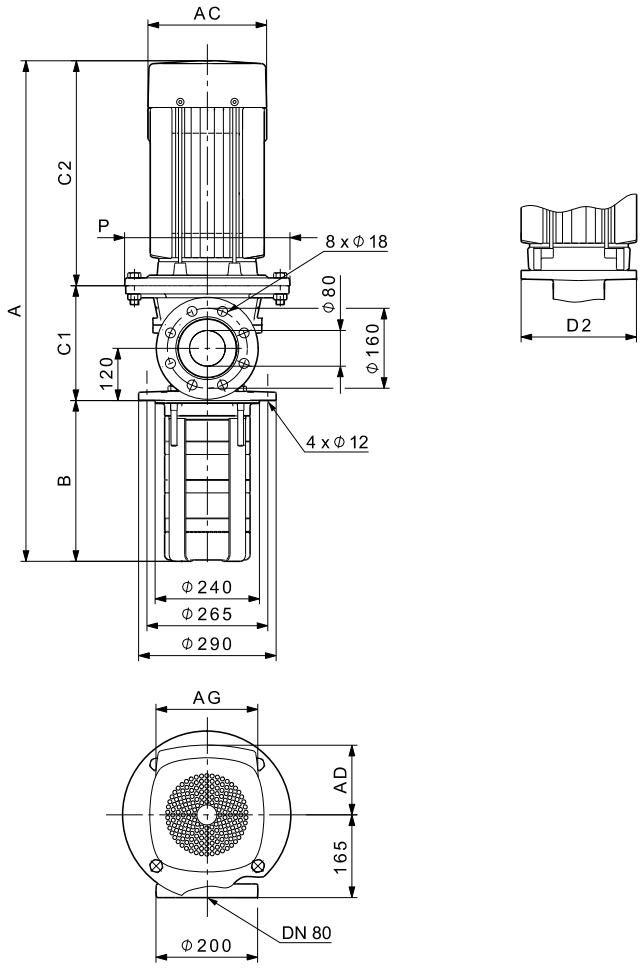
The maximum immersion depth is 1444 mm. See page 154.
For information about electrical data, see section *Motor data* on page 142.

MTR, MTRE 64, 60 Hz



TM01 4307 2213

Dimensional sketches



TM04 2792 4614

Dimensions and weights

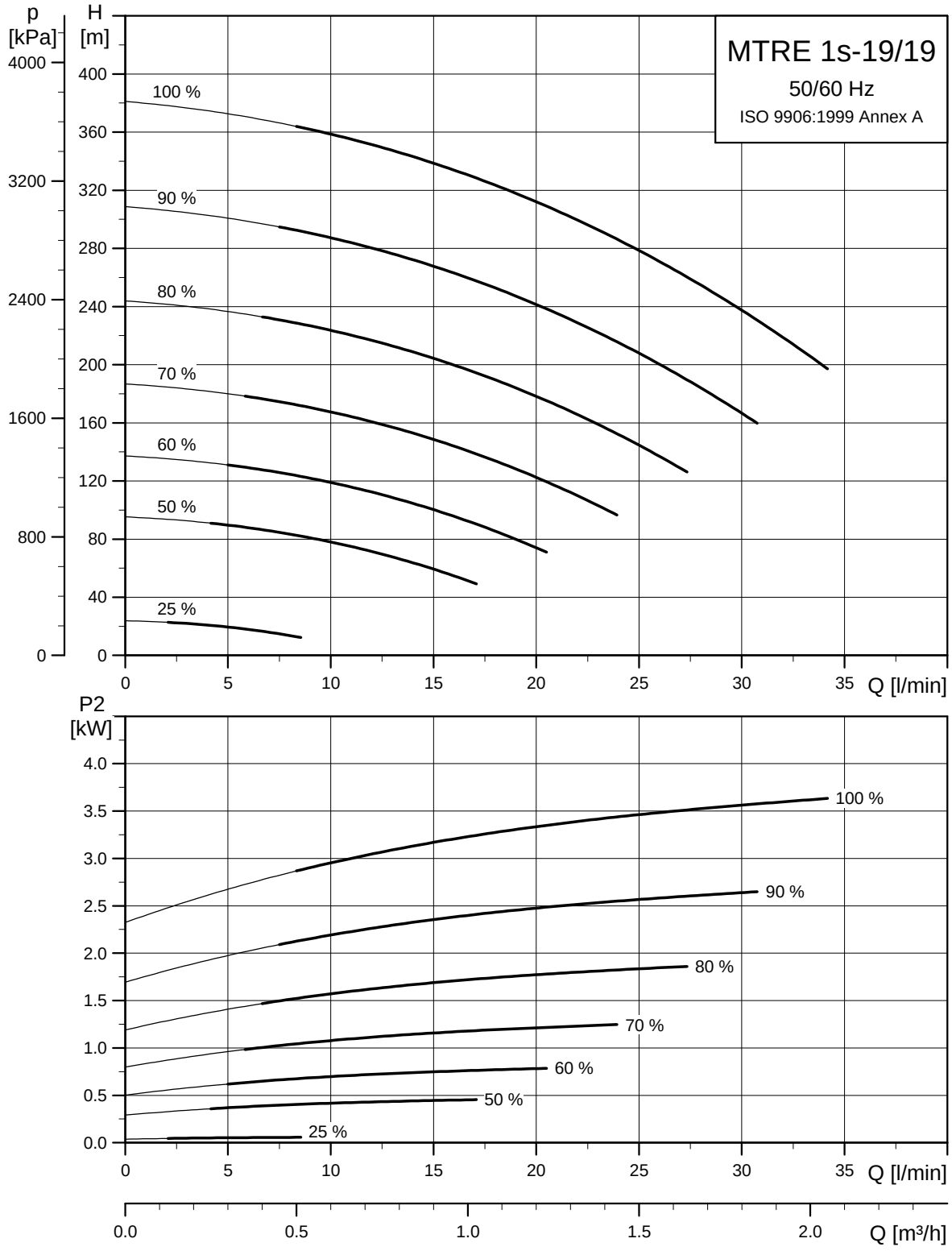
Pump type	P2 [kW]	MTR										MTRE									
		Dimensions [mm]									Net weight [kg]	Dimensions [mm]									Net weight [kg]
		A	B	C1	C2	AC	D2	P	AD	AG		A	B	C1	C2	AC	D2	P	AD	AG	
MTR, MTRE 64-2/1-1	7.5	868	249	240	379	260	-	300	159	203	104.5	868	249	240	379	260	-	300	213	290	115
MTR, MTRE 64-2/1	11	960	249	240	471	314	-	350	204	243	142.5	960	249	240	471	314	-	350	308	420	172.5
MTR, MTRE 64-2/2-2	15	960	249	240	471	314	-	350	204	243	154.3	960	249	240	471	314	-	350	308	420	187.5
MTR, MTRE 64-2/2-1	18.5	1004	249	240	515	314	-	350	204	243	167	1004	249	240	515	314	-	350	308	420	199.5
MTR, MTRE 64-2/2	22	1030	249	240	541	314	-	350	204	243	182.2	1030	249	240	541	314	-	350	308	420	212.5
MTR 64-3/3-2	22	1113	332	240	541	314	-	350	204	243	182.5	-	-	-	-	-	-	-	-	-	-
MTR 64-3/3-1	30	1183	332	240	611	396	-	400	315	265	297.3	-	-	-	-	-	-	-	-	-	-
MTR 64-3/3	30	1183	332	240	611	396	-	400	315	265	297.3	-	-	-	-	-	-	-	-	-	-
MTR 64-4/4-2	37	1290	414	240	636	396	-	400	315	265	322.7	-	-	-	-	-	-	-	-	-	-
MTR 64-4/4-1	37	1290	414	240	636	396	-	400	315	265	322.7	-	-	-	-	-	-	-	-	-	-
MTR 64-4/4	45	1381	414	259	708	449	-	450	338	266	390.1	-	-	-	-	-	-	-	-	-	-
MTR 64-5/5-2	45	1464	497	259	708	449	-	450	338	266	390.4	-	-	-	-	-	-	-	-	-	-

The maximum immersion depth is 1487 mm. See page 154.
For information about electrical data, see section *Motor data* on page 142.

MTRE for high pressure applications

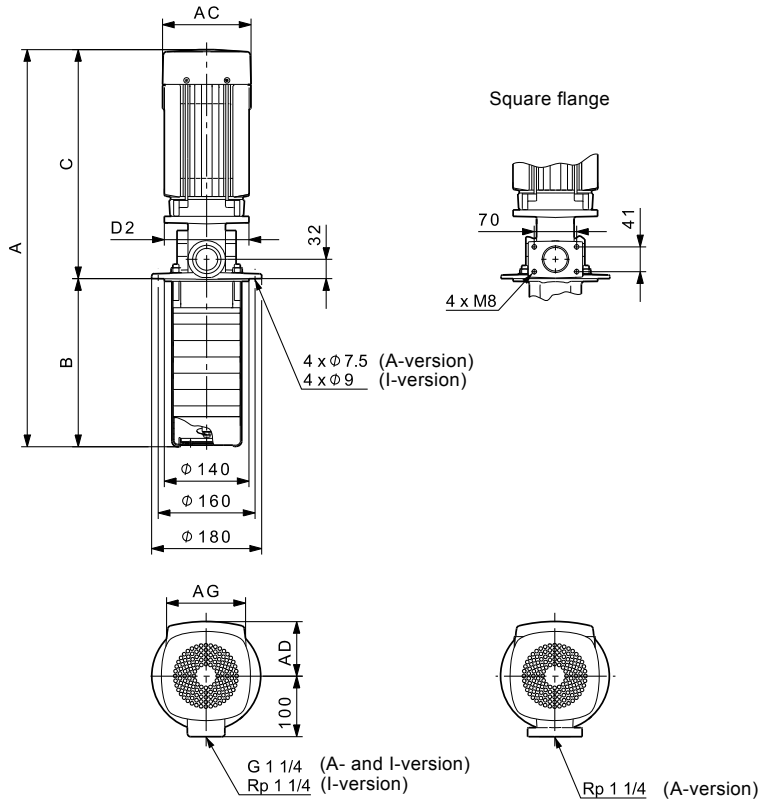
For high-pressure applications, Grundfos offers a unique MTR pump capable of generating up to 38 bar. These pumps are equipped with a high-speed motor, type MGE

MTRE 1s high-pressure pump



TM05 1563 3111

Dimensional sketches



TM03 2677 2413

Dimensions and weight

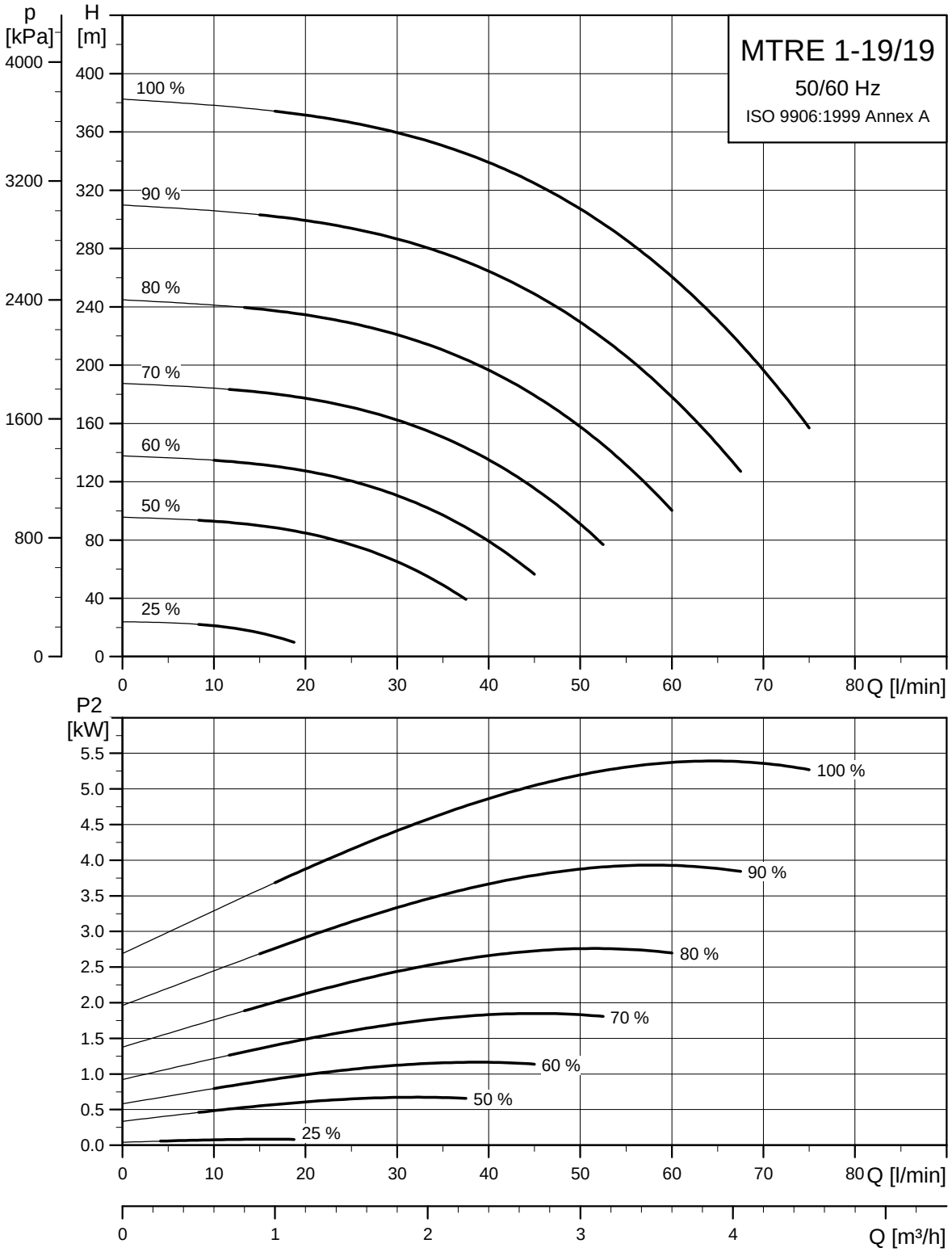
Pump type	Dimensions [mm]							Weight [kg]
	A	B	C	AC	D2	AD	AG	
MTRE1s-19/19 HS	951	466	485	220	160	188	290	49.8

The maximum immersion depth is 1006 mm. For further details about the available immersion depths for MTR, MTRE pumps, see page 154.

Electrical data

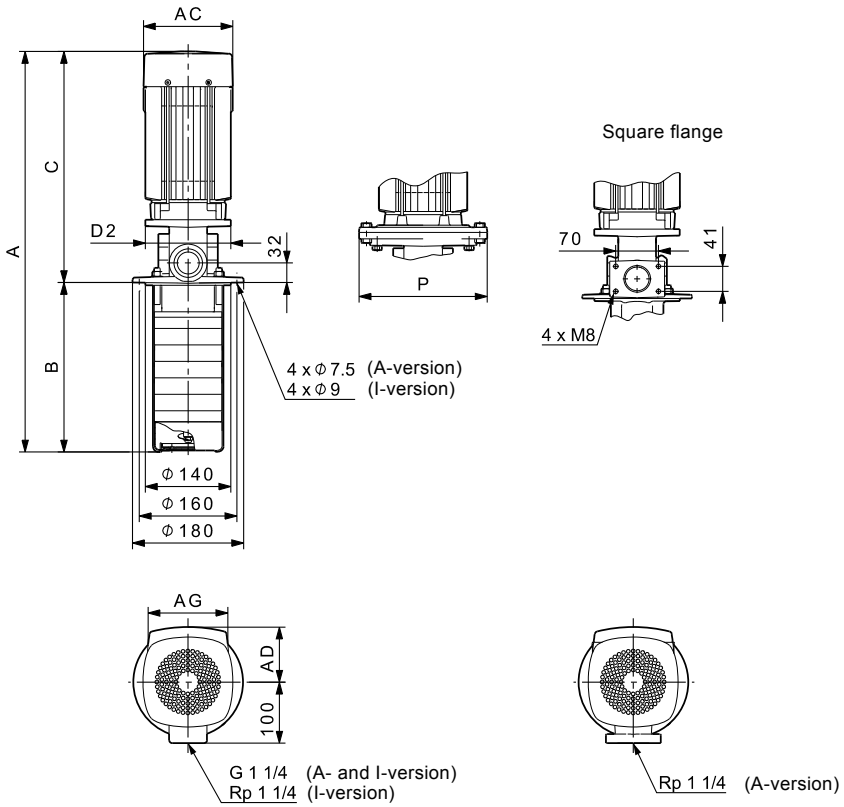
Voltage	P2 [kW]	Type	$I_{1/1}$ [A]	I_{start} [A]	Power factor cos $\varphi_{1/1}$	Motor efficiency		Maximum motor speed [min^{-1}]
						η [%]	Class	
3 x 380-480 V 50/60 Hz	4	MGE112MC	8.1 - 6.6	8.1 - 6.6	0.94 - 0.92	88.1	IE3	5425
3 x 200-230 V 50/60 Hz	4	MGE112MC	13.4 - 12.8	13.4 - 12.8	0.94	88.1	IE3	5425

MTRE 1 high-pressure pump



TM04 5677 0610

Dimensional sketches



TM04 2789 2413

Dimensions and weight

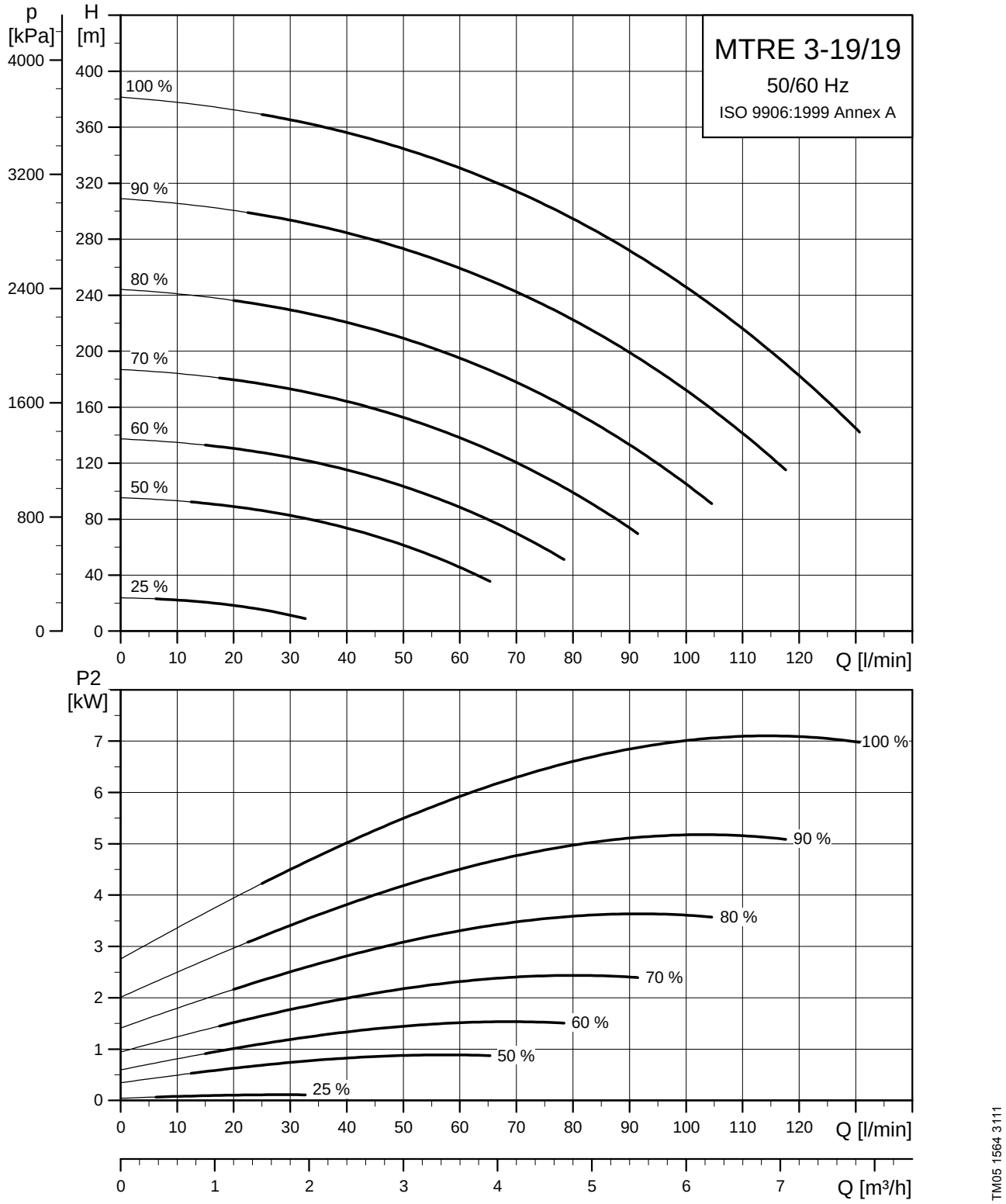
Pump type	Dimensions [mm]							Weight [kg]
	A	B	C	AC	P	AD	AG	
MTRE1-19/19 HS	994	466	528	220	300	188	290	61

The maximum immersion depth is 1006 mm. For further details about the available immersion depths for MTR, MTRE pumps, see page 154.

Electrical data

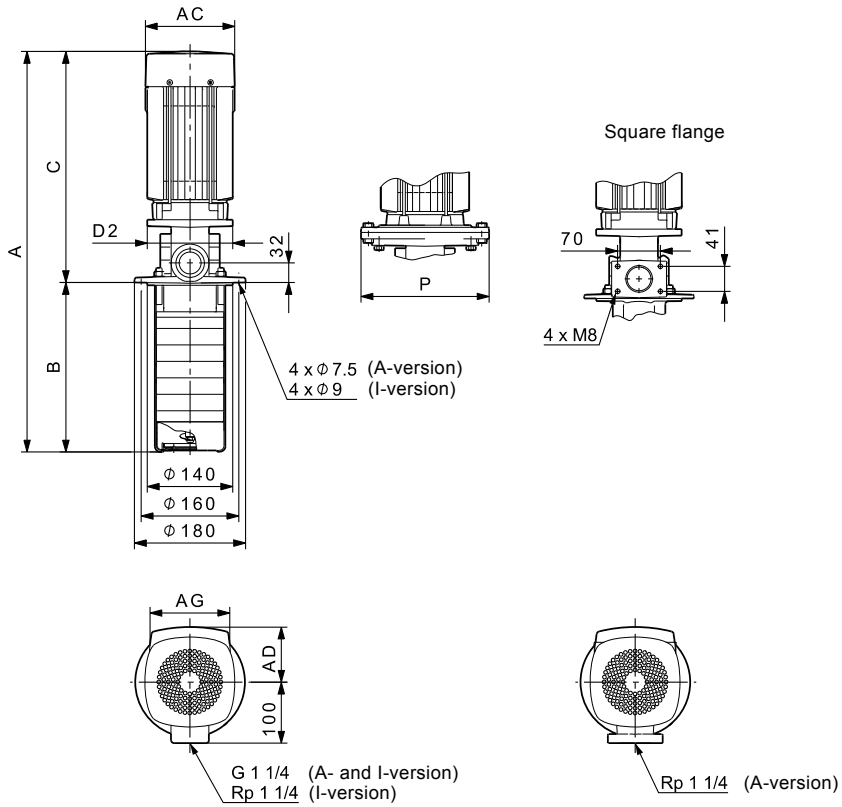
Voltage	P2 [kW]	Type	$I_{1/1}$ [A]	I_{start} [A]	Power factor cos $\varphi_{1/1}$	Motor efficiency		Maximum motor speed [min^{-1}]
						η [%]	Class	
3 x 380-480 V 50/60 Hz	5.5	MGE132SC	11 - 8.8	11 - 8.8	0.94 - 0.93	85.5	IE2	5400
3 x 200-230 V 50/60 Hz	5.5	MGE132SC	19.7 - 18.1	19.7 - 18.1	0.94	88.5	IE2	5400

MTRE 3 high-pressure pump



TM05 1564 3111

Dimensional sketches



TM04 2789 2413

Dimensions and weight

Pump type	Dimensions [mm]							Weight [kg]
	A	B	C	AC	P	AD	AG	
MTRE3-19/19 HS	982	466	516	260	300	213	290	64.2

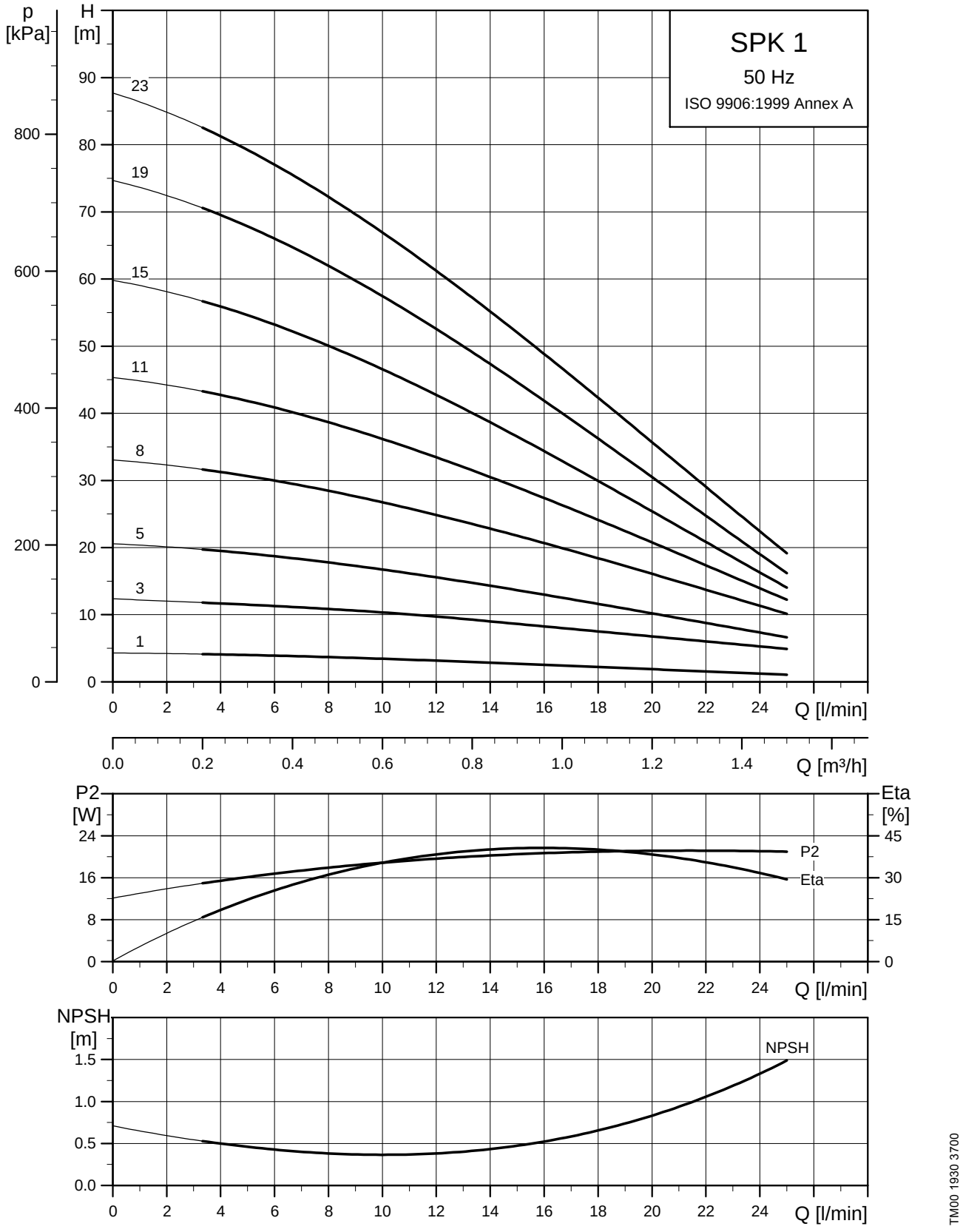
The maximum immersion depth is 1006 mm. For further details about the available immersion depths for MTR, MTRE pumps, see page 154.

Electrical data

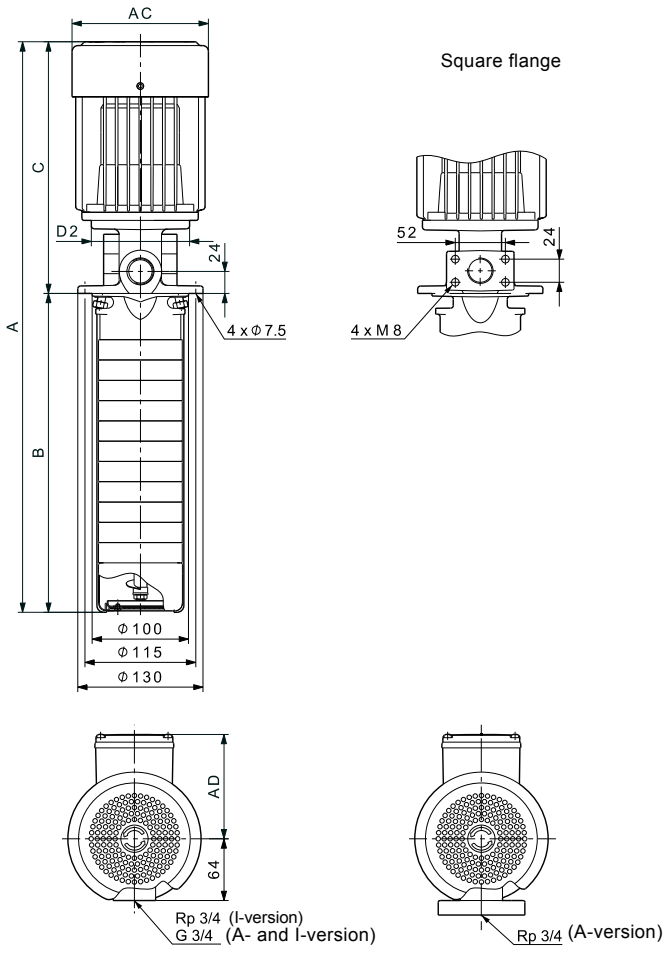
Voltage	P2 [kW]	Type	$I_{1/1}$ [A]	I_{start} [A]	Power factor cos $\varphi_{1/1}$	Motor efficiency		Maximum motor speed [min^{-1}]
						η [%]	Class	
3 x 380-480 V 50/60 Hz	7.5	MGE132SC	14.6 - 11.6	14.6 - 11.6	0.94	88.1	IE2	5050

SPK, 50 Hz

SPK 1, 50 Hz



Dimensional sketches



TM04 5801 3313

Dimensions and weights

Pump type	P2 [kW]	Dimensions [mm]						Weight* [kg]
		A	B	C	AC	D2	AD	
SPK 1-1/1	0.06	395	140	255	124	90	101	9.3
SPK 1-3/3	0.12	437	182	255	124	90	101	9.0
SPK 1-5/5	0.12	479	224	255	124	90	101	9.5
SPK 1-8/8	0.18	542	287	255	124	90	101	10.5
SPK 1-11/11	0.25	596	350	246	141	102	109	12.6
SPK 1-15/15	0.37	701	434	267	141	102	109	14.0
SPK 1-19/19	0.37	785	518	267	141	102	109	15.1
SPK 1-23/23	0.55	869	602	267	141	102	109	15.7

* The weights apply to the standard range (A-version). For the stainless steel versions (I-version), add 1 kg.

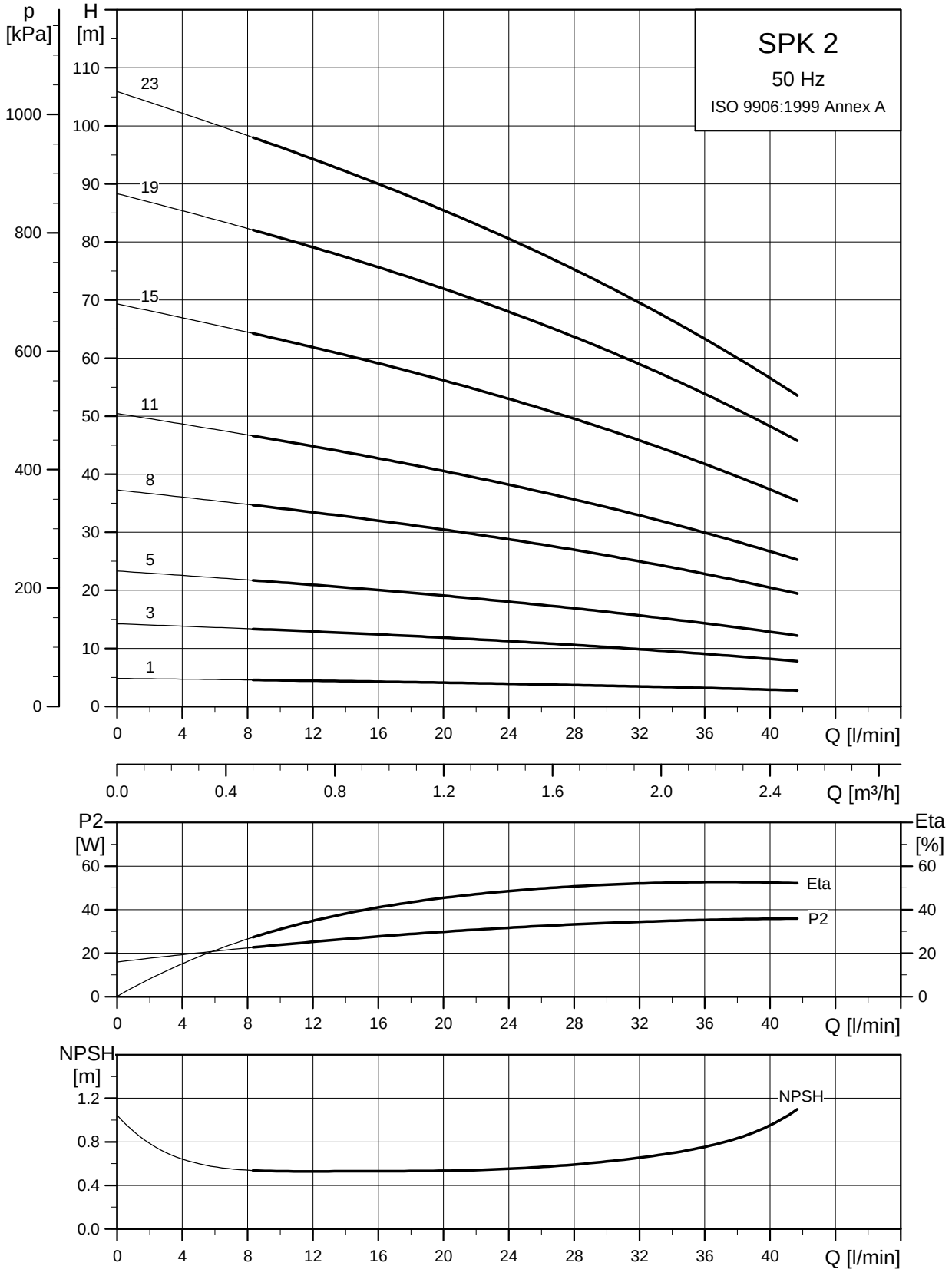
SPK with extension pipe

Pump type	P2 [kW]	Dimensions [mm]						Weight* [kg]
		A	B	C	AC	D2	AD	
SPK 1-23/23	0.55	1272	1005	267	141	102	109	20.3

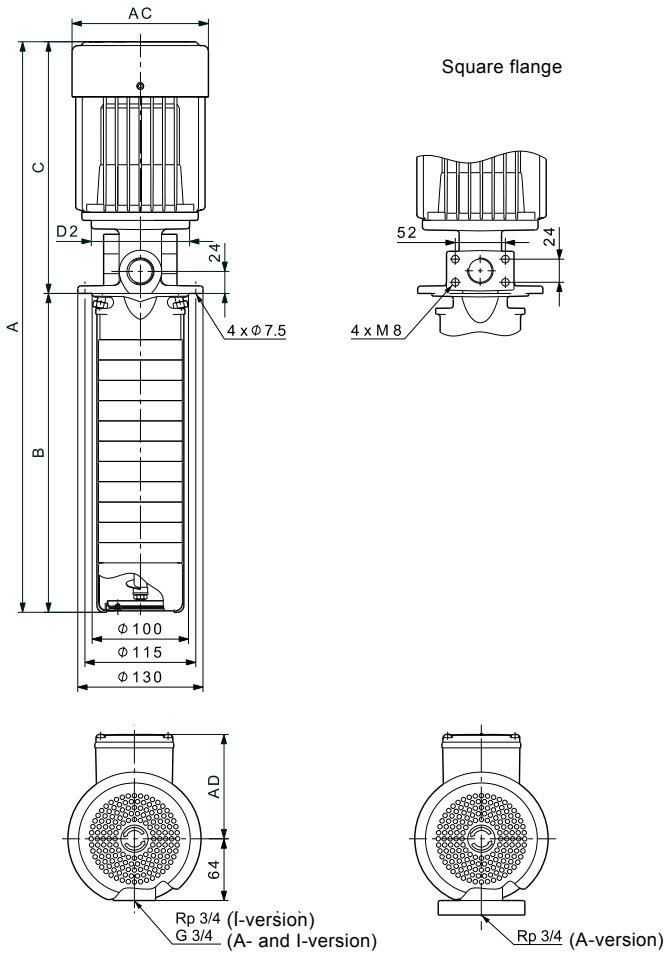
* The weights apply to the standard range (A-version). For the stainless steel versions (I-version), add 1 kg.

For information about electrical data, see section *Motor data* on page 142.

SPK 2, 50 Hz


SPK 2
50 Hz
ISO 9906:1999 Annex A
p [kPa]
H [m]
23
19
15
11
8
5
3
1
Q [l/min]
Q [m³/h]
P2 [W]
Eta [%]
Eta
P2
NPSH [m]
NPSH
TM00 1932 3700

Dimensional sketches



TM04 5801 3313

Dimensions and weights

Pump type	P2 [kW]	Dimensions [mm]						Weight* [kg]
		A	B	C	AC	D2	AD	
SPK 2-1/1	0.06	395	140	255	124	90	101	9.3
SPK 2-3/3	0.12	437	182	255	124	90	101	9.0
SPK 2-5/5	0.18	479	224	255	124	90	101	9.7
SPK 2-8/8	0.37	554	287	267	141	102	109	12.1
SPK 2-11/11	0.37	617	350	267	141	102	109	12.9
SPK 2-15/15	0.55	701	434	267	141	102	109	13.6
SPK 2-19/19	0.75	825	518	307	141	120	300	17.2
SPK 2-23/23	0.75	909	602	307	141	120	300	18.4

* The weights apply to the standard range (A-version). For the stainless steel versions (I-version), add 1 kg.

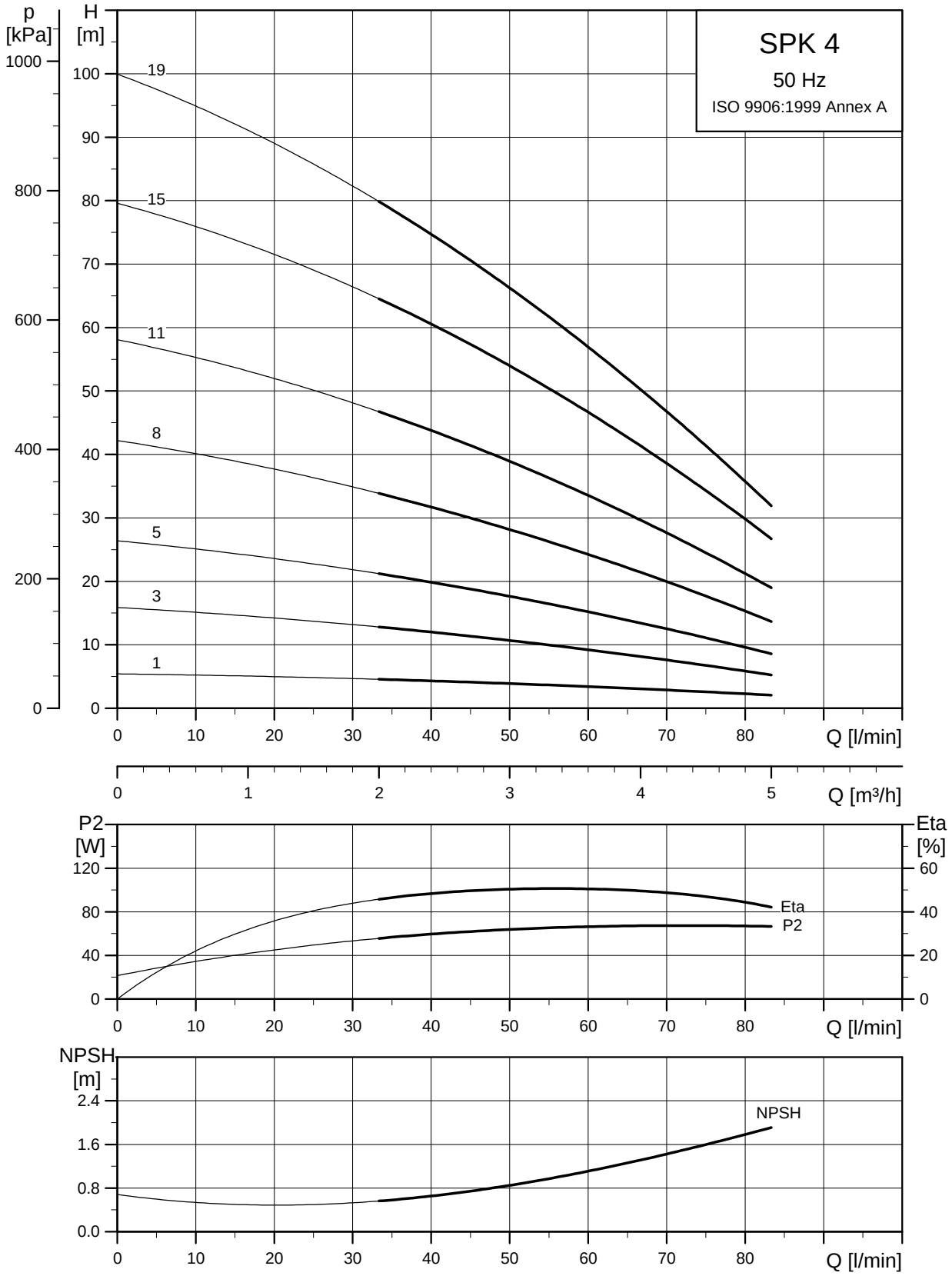
SPK with extension pipe

Pump type	P2 [kW]	Dimensions [mm]						Weight* [kg]
		A	B	C	AC	D2	AD	
SPK 2-23/23	0.75	1312	1005	307	141	120	300	23.0

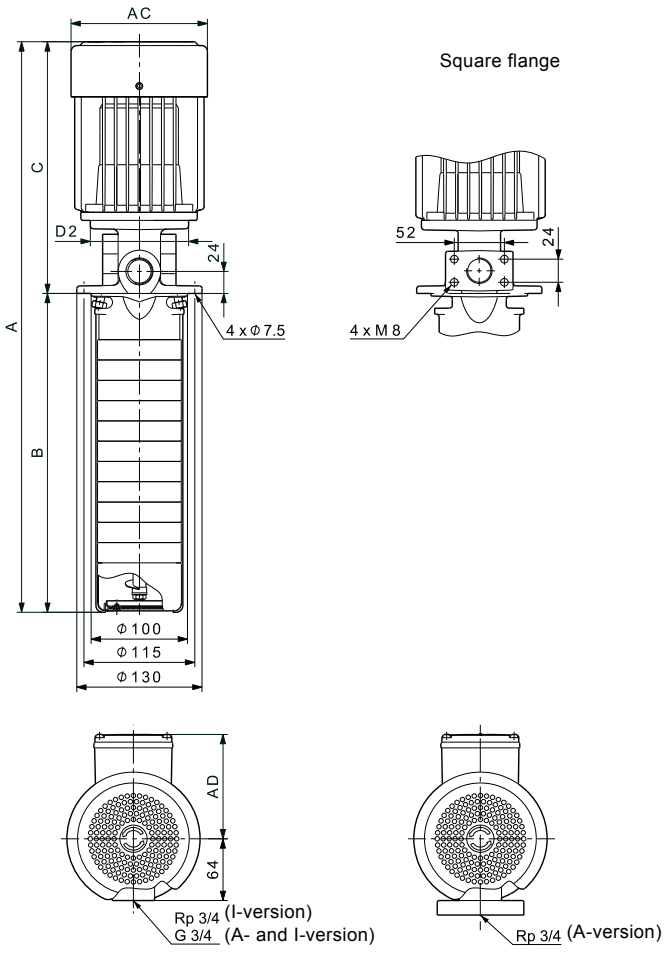
* The weights apply to the standard range (A-version). For the stainless steel versions (I-version), add 1 kg.

For information about electrical data, see section *Motor data* on page 142.

SPK 4, 50 Hz


SPK 4
50 Hz
ISO 9906:1999 Annex A
p [kPa]
H [m]
19
15
11
8
5
3
1
Q [l/min]
Q [m³/h]
P2 [W]
Eta [%]
Eta
P2
NPSH [m]
NPSH
TM00 1934 3700

Dimensional sketches



TM04 5801 3313

Dimensions and weights

Pump type	P2 [kW]	Dimensions [mm]						Weight* [kg]
		A	B	C	AC	D2	AD	
SPK 4-1/1	0.12	395	140	255	124	90	101	8.5
SPK 4-3/3	0.25	428	182	246	141	102	109	10.3
SPK 4-5/5	0.37	491	224	267	141	102	109	10.8
SPK 4-8/8	0.55	554	287	267	141	102	109	10.7
SPK 4-11/11	0.75	657	350	307	141	120	300	13.6
SPK 4-15/15	1.1	761	434	327	141	120	300	16.3
SPK 4-19/19	1.1	845	518	327	141	120	300	16.9

* The weights apply to the standard range (A-version). For the stainless steel versions (I-version), add 1.3 kg.

SPK with extension pipe

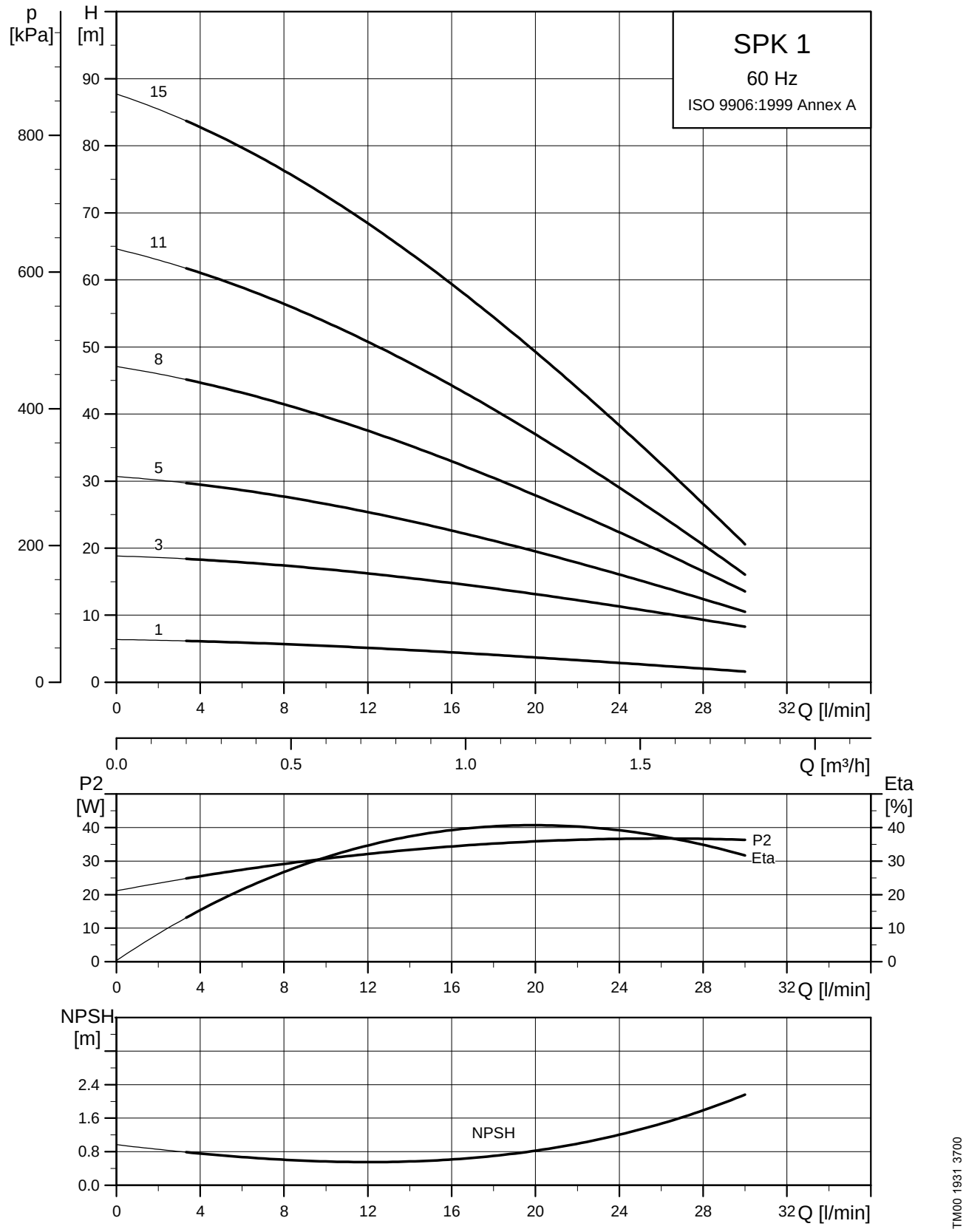
Pump type	P2 [kW]	Dimensions [mm]						Weight* [kg]
		A	B	C	AC	D2	AD	
SPK 4-19/19	1.1	1332	1005	327	141	120	300	22.1

* The weights apply to the standard range (A-version). For the stainless steel versions (I-version), add 1.3 kg.

For information about electrical data, see section *Motor data* on page 142.

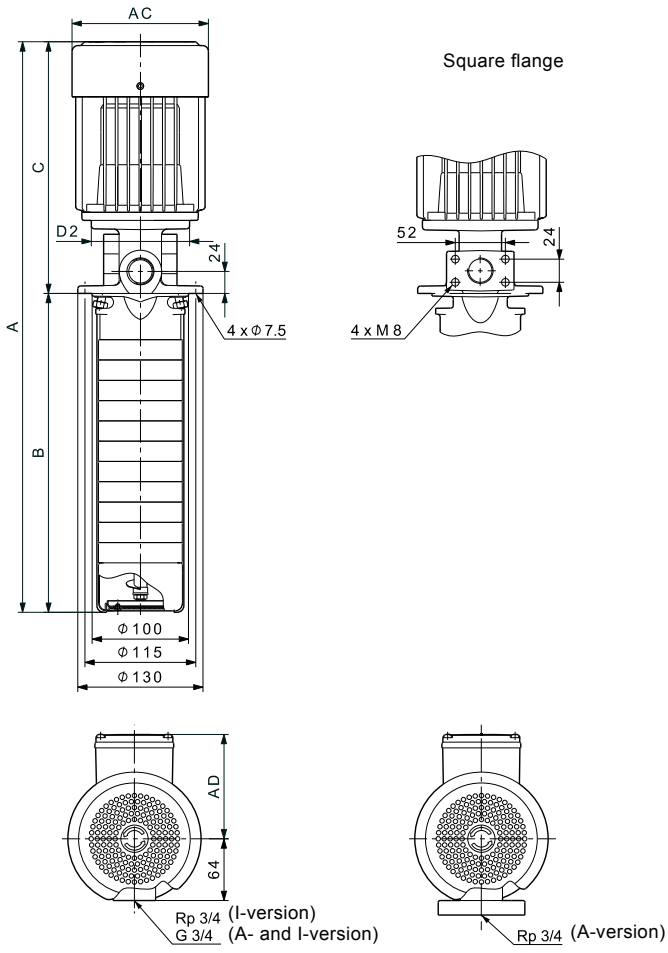
SPK, 60 Hz

SPK 1, 60 Hz



TM00 1931 3700

Dimensional sketches



TM04 5801 3313

Dimensions and weights

Pump type	P2 [kW]	Dimensions [mm]						Weight* [kg]
		A	B	C	AC	D2	AD	
SPK 1-1/1	0.06	395	140	255	124	90	101	9.3
SPK 1-3/3	0.12	437	182	255	124	90	101	9.0
SPK 1-5/5	0.25	470	224	246	141	102	109	9.0
SPK 1-8/8	0.25	533	287	246	141	102	109	11.8
SPK 1-11/11	0.37	617	350	267	141	102	109	12.8
SPK 1-15/15	0.55	701	434	267	141	102	109	13.4
SPK 1-19/15	0.55	785	518	267	141	102	109	13.8
SPK 1-23/15	0.55	869	602	267	141	102	109	14.3

* The weights apply to the standard range (A-version). For the stainless steel versions (I-version), add 1 kg.

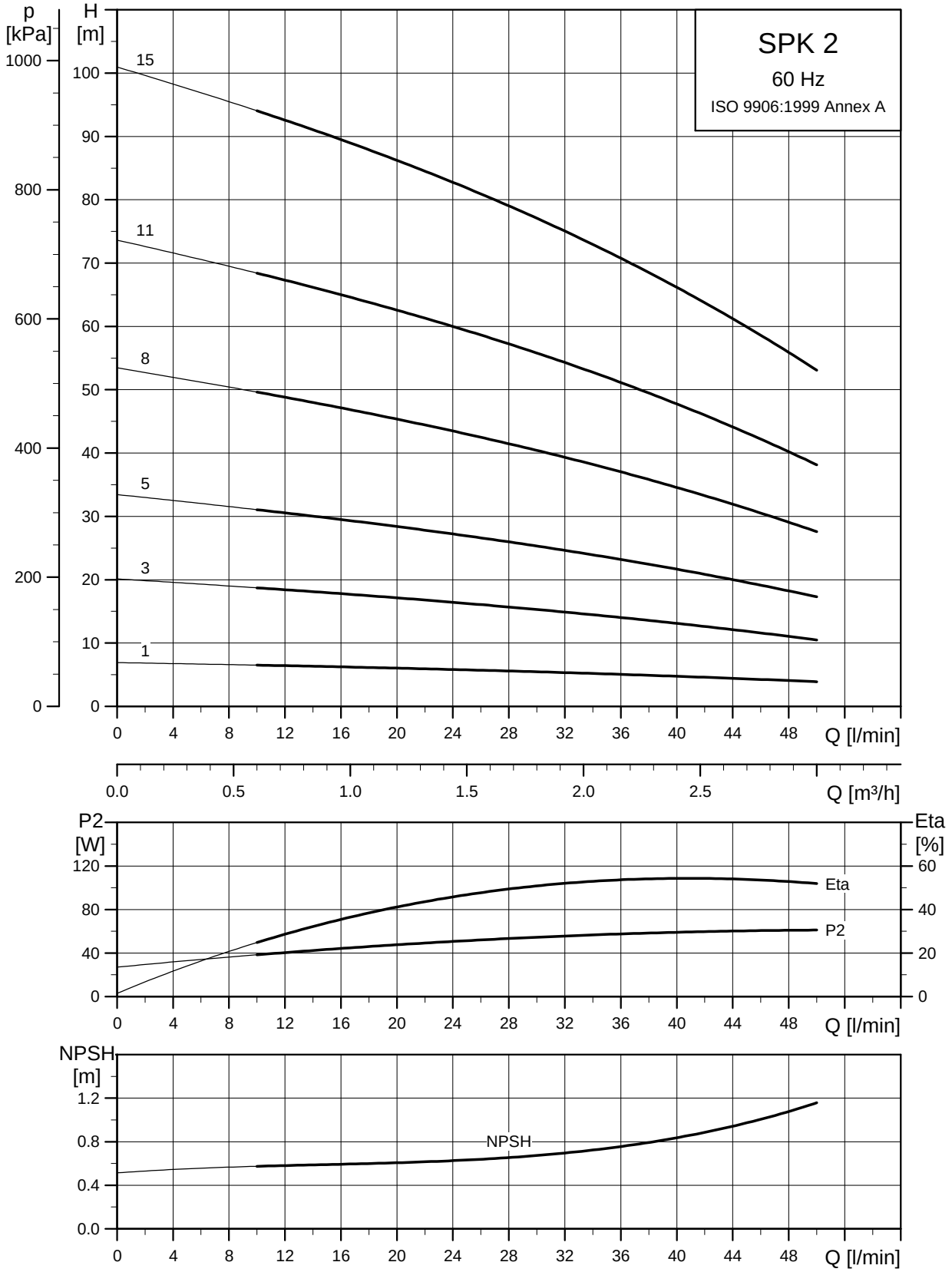
SPK with extension pipe

Pump type	P2 [kW]	Dimensions [mm]						Weight* [kg]
		A	B	C	AC	D2	AD	
SPK 1-23/15	0.55	1272	1005	267	141	102	109	19.0

* The weights apply to the standard range (A-version). For the stainless steel versions (I-version), add 1 kg.

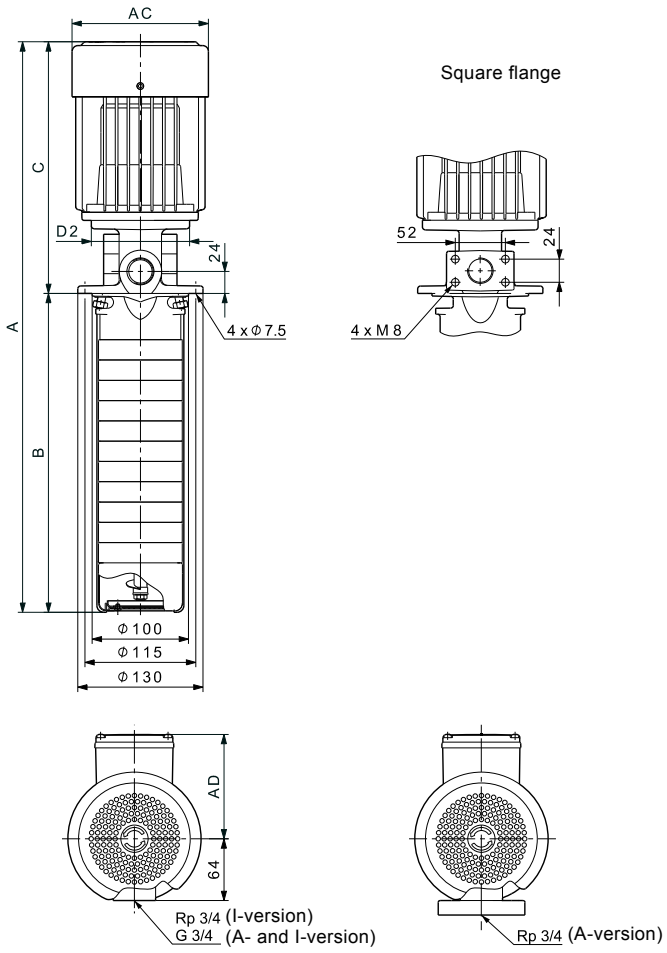
For information about electrical data, see section *Motor data* on page 142.

SPK 2, 60 Hz



TM00 1933 3700

Dimensional sketches



TM04 5801 3313

Dimensions and weights

Pump type	P2 [kW]	Dimensions [mm]						Weight* [kg]
		A	B	C	AC	D2	AD	
SPK 2-1/1	0.06	395	140	255	124	90	101	9.3
SPK 2-3/3	0.25	437	182	255	141	90	109	8
SPK 2-5/5	0.37	491	224	267	141	102	109	11.2
SPK 2-8/8	0.55	554	287	267	141	102	109	11.5
SPK 2-11/11	0.75	657	350	307	141	120	109	14.9
SPK 2-15/15	1.1	761	434	327	141	120	109	18
SPK 2-19/15	1.1	845	518	327	141	120	109	18.5
SPK 2-23/15	1.1	929	602	327	141	120	109	18.9

* The weights apply to the standard range (A-version). For the stainless steel versions (I-version), add 1 kg.

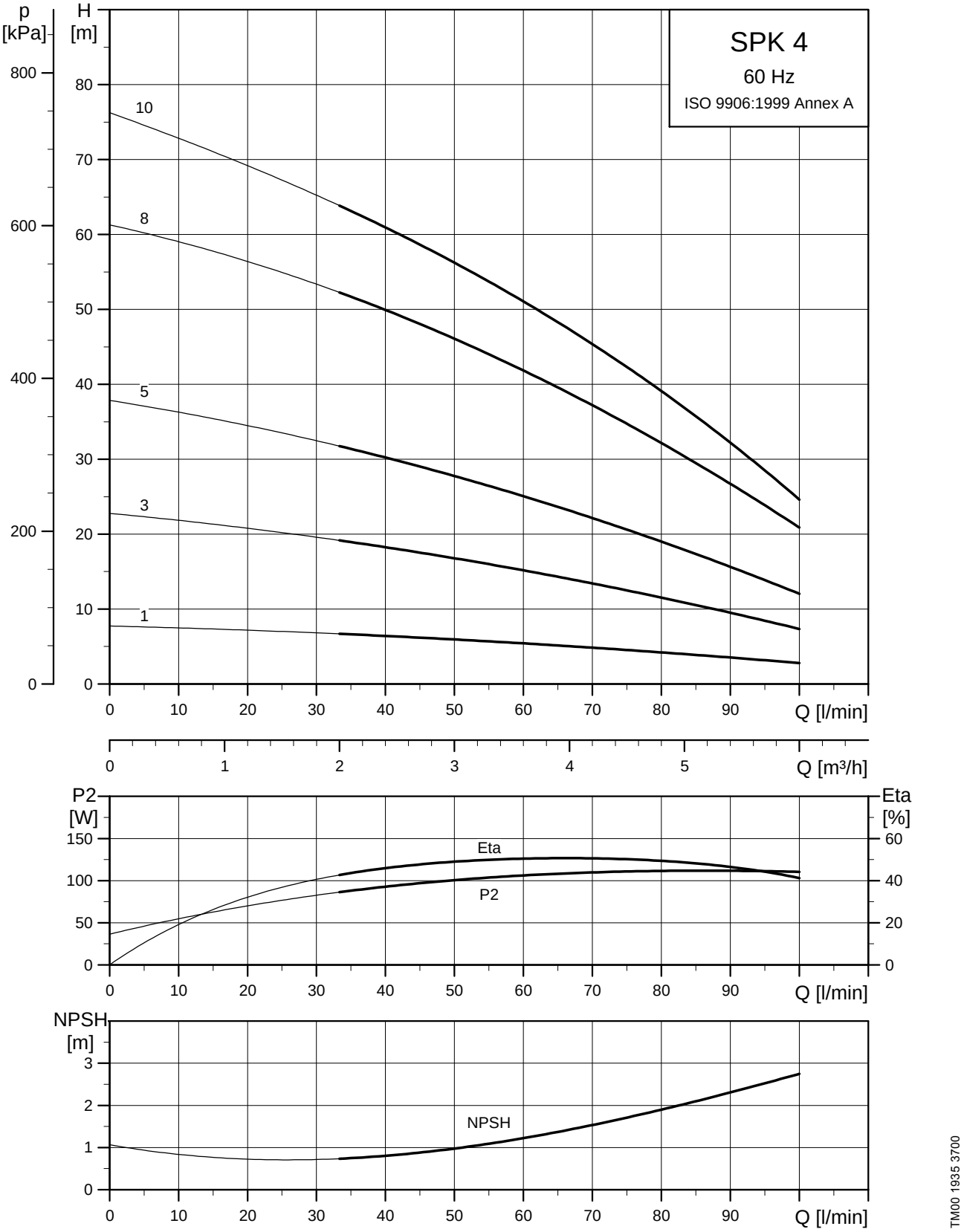
SPK with extension pipe

Pump type	P2 [kW]	Dimensions [mm]						Weight* [kg]
		A	B	C	AC	D2	AD	
SPK 2-23/15	1.1	1332	1005	327	141	120	109	23.6

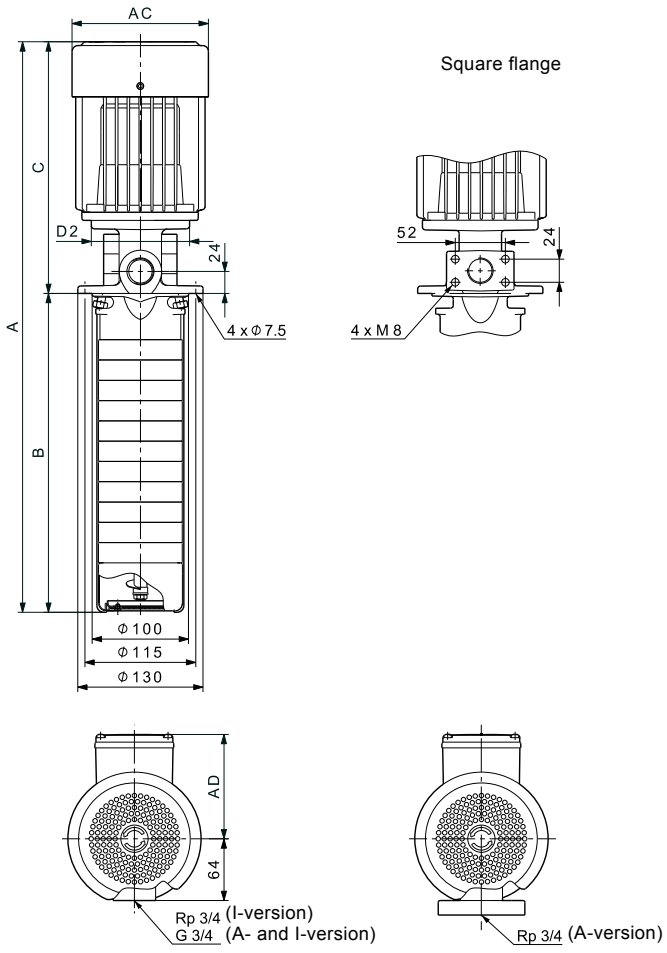
* The weights apply to the standard range (A-version). For the stainless steel versions (I-version), add 1 kg.

For information about electrical data, see section *Motor data* on page 142.

SPK 4, 60 Hz


SPK 4
60 Hz
ISO 9906:1999 Annex A
p [kPa]
H [m]
10
8
5
3
1
Q [l/min]
Q [m³/h]
P2 [W]
Eta [%]
Eta
P2
NPSH [m]
NPSH
TM00 1935 3700

Dimensional sketches



TM04 5801 3313

Dimensions and weights

Pump type	P2 [kW]	Dimensions [mm]						Weight* [kg]
		A	B	C	AC	D2	AD	
SPK 4-1/1	0.12	395	140	255	124	90	101	8.5
SPK 4-3/3	0.37	449	182	267	141	102	109	10.5
SPK 4-5/5	0.55	491	224	267	141	102	109	10.2
SPK 4-8/8	1.1	614	287	327	141	120	109	15.2
SPK 4-11/10	1.1	677	350	327	141	120	109	15.5
SPK 4-15/10	1.1	761	434	327	141	120	109	16.1
SPK 4-19/10	1.1	845	518	327	141	120	109	16.6

* The weights apply to the standard range (A-version). For the stainless steel versions (I-version), add 1.3 kg.

SPK with extension pipe

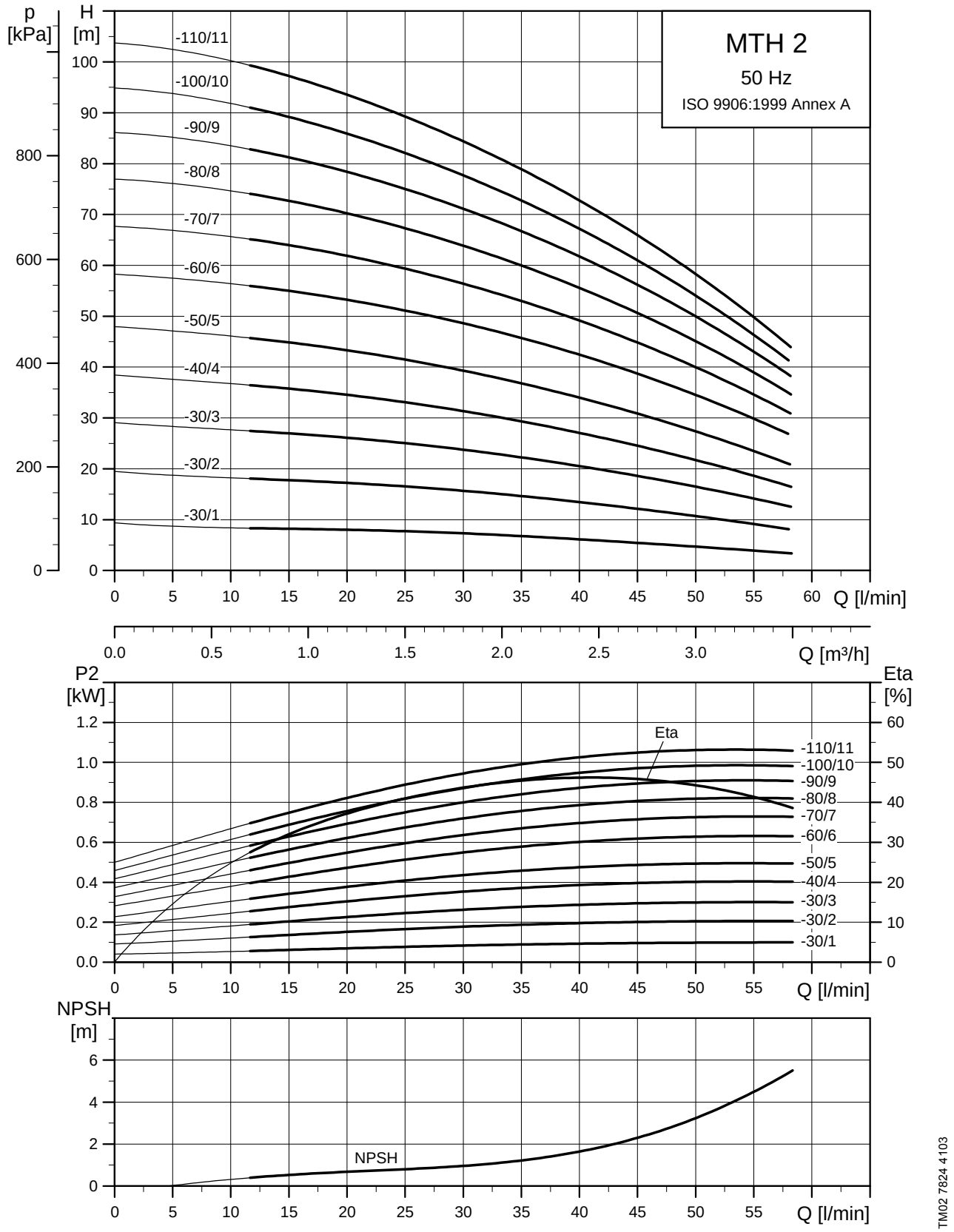
Pump type	P2 [kW]	Dimensions [mm]						Weight* [kg]
		A	B	C	AC	D2	AD	
SPK 4-19/10	1.1	1332	1005	327	141	120	109	21.8

* The weights apply to the standard range (A-version). For the stainless steel versions (I-version), add 1.3 kg.

For information about electrical data, see section *Motor data* on page 142.

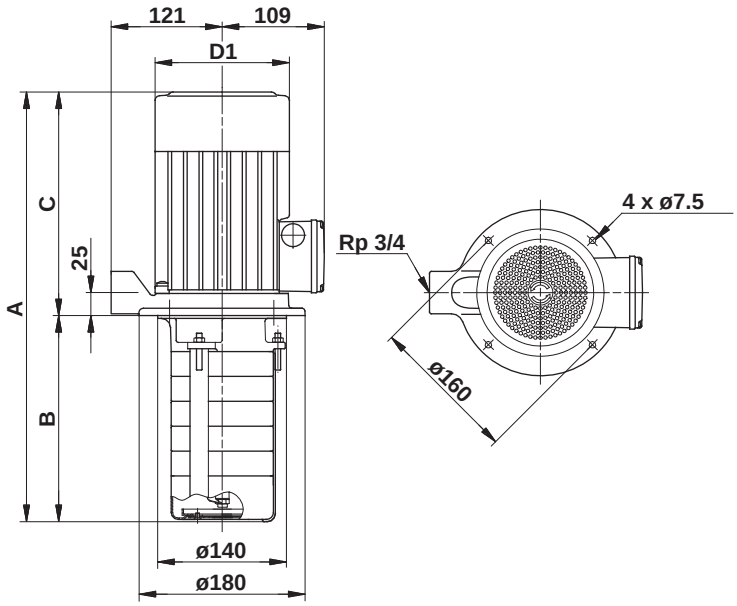
MTH, 50 Hz

MTH 2, 50 Hz



TM02 7824 4103

Dimensional sketches



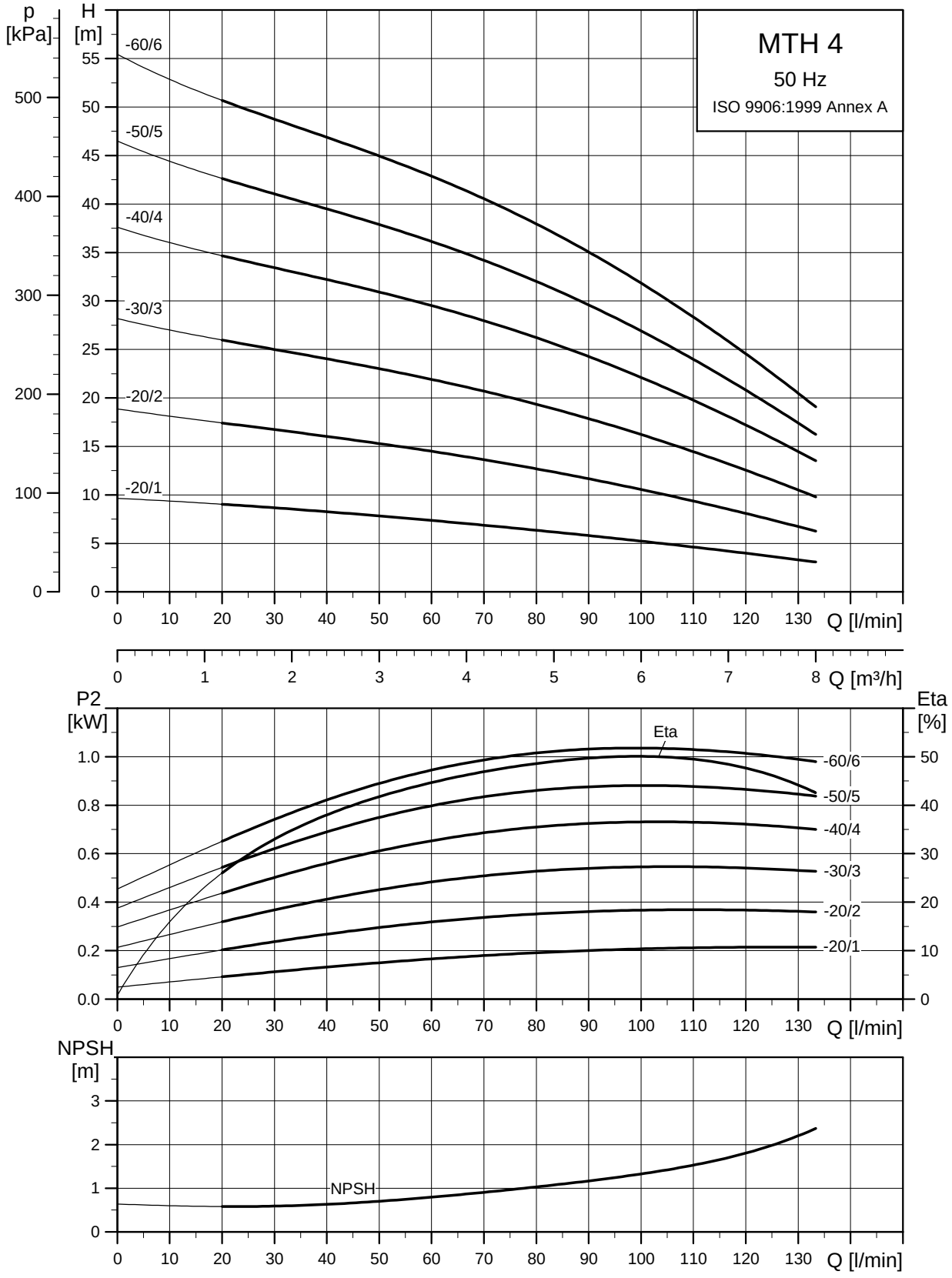
TM00 1919 4899

Dimensions and weights

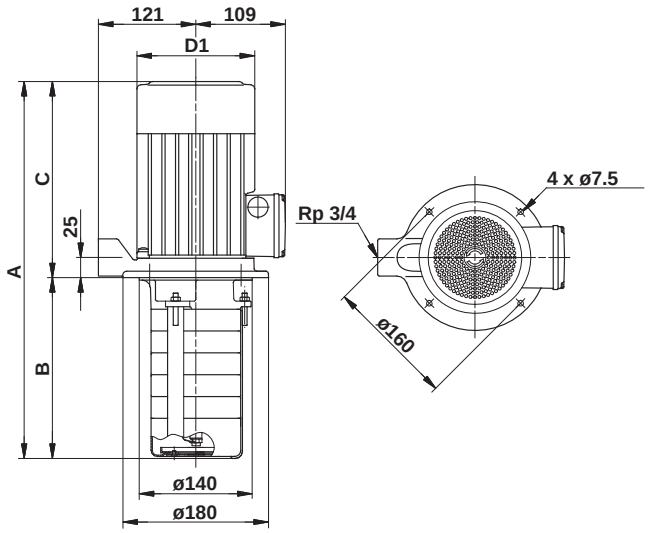
Pump type	Motor P2 [kW]	Electrical data				Dimensions [mm]				Weight [kg]
		220-240 Δ V / 380-415 Y V		200-240 Δ V / 346-380 Y V						
		$I_{1/1}$ [A]	I_{max} [A]	$I_{1/1}$ [A]	I_{max} [A]	A	B	C	D1	
MTH 2-30/1	0.55	2.4/1.4	3.2	2.6/1.5	3.6/2.1	347	145	202	135	10.2
MTH 2-30/2	0.55	2.4/1.4	3.2	2.6/1.5	3.6/2.1	347	145	202	135	10.3
MTH 2-30/3	0.55	2.4/1.4	3.2	2.7/1.6	3.6/2.1	347	145	202	135	10.4
MTH 2-40/1	0.55	2.4/1.4	3.2	2.6/1.5	3.6/2.1	365	163	202	135	10.4
MTH 2-40/2	0.55	2.4/1.4	3.2	2.6/1.5	3.6/2.1	365	163	202	135	10.5
MTH 2-40/3	0.55	2.4/1.4	3.2	2.7/1.6	3.6/2.1	365	163	202	135	10.6
MTH 2-40/4	0.75	3.2/1.8	4.1	3.5/2.0	4.5/2.6	405	163	242	142	10.8
MTH 2-50/1	0.55	2.4/1.4	3.2	2.6/1.5	3.6/2.1	383	181	202	135	10.6
MTH 2-50/2	0.55	2.4/1.4	3.2	2.6/1.5	3.6/2.1	383	181	202	135	10.7
MTH 2-50/3	0.55	2.4/1.4	3.2	2.7/1.6	3.6/2.1	383	181	202	135	10.8
MTH 2-50/4	0.75	3.2/1.8	4.1	3.5/2.0	4.5/2.6	423	181	242	142	11.2
MTH 2-50/5	0.75	3.3/1.9	4.1	3.6/2.1	4.5/2.6	423	181	242	142	11.3
MTH 2-60/1	0.55	2.4/1.4	3.2	2.6/1.5	3.6/2.1	401	199	202	135	10.8
MTH 2-60/2	0.55	2.4/1.4	3.2	2.6/1.5	3.6/2.1	401	199	202	135	10.9
MTH 2-60/3	0.55	2.4/1.4	3.2	2.7/1.6	3.6/2.1	401	199	202	135	11.0
MTH 2-60/4	0.75	3.2/1.8	4.1	3.5/2.0	4.5/2.6	441	199	242	142	13.6
MTH 2-60/5	0.75	3.3/1.9	4.1	3.6/2.1	4.5/2.6	441	199	242	142	13.7
MTH 2-60/6	1.1	3.8/2.2	5.3	4.2/2.4	5.8/3.3	441	199	242	142	13.8
MTH 2-70/1	0.55	2.4/1.4	3.2	2.6/1.5	3.6/2.1	419	217	202	135	11.0
MTH 2-70/2	0.55	2.4/1.4	3.2	2.6/1.5	3.6/2.1	419	217	202	135	11.1
MTH 2-70/3	0.55	2.4/1.4	3.2	2.7/1.6	3.6/2.1	419	217	202	135	11.2
MTH 2-70/4	0.75	3.2/1.8	4.1	3.5/2.0	4.5/2.6	459	217	242	142	13.8
MTH 2-70/5	0.75	3.3/1.9	4.1	3.6/2.1	4.5/2.6	459	217	242	142	13.9
MTH 2-70/6	1.1	3.8/2.2	5.3	4.2/2.4	5.8/3.3	459	217	242	142	14.0
MTH 2-70/7	1.1	4.0/2.3	5.3	4.3/2.5	5.8/3.3	459	217	242	142	14.1
MTH 2-80/1	0.55	2.4/1.4	3.2	2.6/1.5	3.6/2.1	437	235	202	135	11.2
MTH 2-80/2	0.55	2.4/1.4	3.2	2.6/1.5	3.6/2.1	437	235	202	135	11.3
MTH 2-80/3	0.55	2.4/1.4	3.2	2.7/1.6	3.6/2.1	437	235	202	135	11.4
MTH 2-80/4	0.75	3.2/1.8	4.1	3.5/2.0	4.5/2.6	477	235	242	142	14.0
MTH 2-80/5	0.75	3.3/1.9	4.1	3.6/2.1	4.5/2.6	477	235	242	142	14.1
MTH 2-80/6	1.1	3.8/2.2	5.3	4.2/2.4	5.8/3.3	477	235	242	142	14.2
MTH 2-80/7	1.1	4.0/2.3	5.3	4.3/2.5	5.8/3.3	477	235	242	142	14.3
MTH 2-80/8	1.1	4.2/2.4	5.3	4.5/2.6	5.8/3.3	477	235	242	142	14.4
MTH 2-90/1	0.55	2.4/1.4	3.2	2.6/1.5	3.6/2.1	455	253	202	135	11.4
MTH 2-90/2	0.55	2.4/1.4	3.2	2.6/1.5	3.6/2.1	455	253	202	135	11.5
MTH 2-90/3	0.55	2.4/1.4	3.2	2.7/1.6	3.6/2.1	455	253	202	135	11.6

Pump type	Motor P2 [kW]	Electrical data				Dimensions [mm]				Weight [kg]
		220-240 Δ V / 380-415 Y V		200-240 Δ V / 346-380 Y V						
		$I_{1/1}$ [A]	I_{max} [A]	$I_{1/1}$ [A]	I_{max} [A]	A	B	C	D1	
MTH 2-90/4	0.75	3.2/1.8	4.1	3.5/2.0	4.5/2.6	495	253	242	142	14.4
MTH 2-90/5	0.75	3.3/1.9	4.1	3.6/2.1	4.5/2.6	495	253	242	142	14.5
MTH 2-90/6	1.1	3.8/2.2	5.3	4.2/2.4	5.8/3.3	495	253	242	142	14.6
MTH 2-90/7	1.1	4.0/2.3	5.3	4.3/2.5	5.8/3.3	495	253	242	142	14.7
MTH 2-90/8	1.1	4.2/2.4	5.3	4.5/2.6	5.8/3.3	495	253	242	142	14.8
MTH 2-90/9	1.1	4.3/2.5	5.3	4.7/2.7	5.8/3.3	495	253	242	142	14.9
MTH 2-100/1	0.55	2.4/1.4	3.2	2.6/1.5	3.6/2.1	473	271	202	135	11.6
MTH 2-100/2	0.55	2.4/1.4	3.2	2.6/1.5	3.6/2.1	473	271	202	135	11.7
MTH 2-100/3	0.55	2.4/1.4	3.2	2.7/1.6	3.6/2.1	473	271	202	135	11.8
MTH 2-100/4	0.75	3.2/1.8	4.1	3.5/2.0	4.5/2.6	513	271	242	142	14.7
MTH 2-100/5	0.75	3.3/1.9	4.1	3.6/2.1	4.5/2.6	513	271	242	142	14.8
MTH 2-100/6	1.1	3.8/2.2	5.3	4.2/2.4	5.8/3.3	513	271	242	142	14.9
MTH 2-100/7	1.1	4.0/2.3	5.3	4.3/2.5	5.8/3.3	513	271	242	142	15.0
MTH 2-100/8	1.1	4.2/2.4	5.3	4.5/2.6	5.8/3.3	513	271	242	142	15.1
MTH 2-100/9	1.1	4.3/2.5	5.3	4.7/2.7	5.8/3.3	513	271	242	142	15.2
MTH 2-100/10	1.1	4.4/2.6	5.3	4.9/2.8	5.8/3.3	513	271	242	142	15.3
MTH 2-110/1	0.55	2.4/1.4	3.2	2.6/1.5	3.6/2.1	491	289	202	135	11.8
MTH 2-110/2	0.55	2.4/1.4	3.2	2.6/1.5	3.6/2.1	491	289	202	135	11.9
MTH 2-110/3	0.55	2.4/1.4	3.2	2.7/1.6	3.6/2.1	491	289	202	135	12.0
MTH 2-110/4	0.75	3.2/1.8	4.1	3.5/2.0	4.5/2.6	531	289	242	142	14.9
MTH 2-110/5	0.75	3.3/1.9	4.1	3.6/2.1	4.5/2.6	531	289	242	142	15.0
MTH 2-110/6	1.1	3.8/2.2	5.3	4.2/2.4	5.8/3.3	531	289	242	142	15.1
MTH 2-110/7	1.1	4.0/2.3	5.3	4.3/2.5	5.8/3.3	531	289	242	142	15.2
MTH 2-110/8	1.1	4.2/2.4	5.3	4.5/2.6	5.8/3.3	531	289	242	142	15.3
MTH 2-110/9	1.1	4.3/2.5	5.3	4.7/2.7	5.8/3.3	531	289	242	142	15.4
MTH 2-110/10	1.1	4.4/2.6	5.3	4.9/2.8	5.8/3.3	531	289	242	142	15.5
MTH 2-110/11	1.1	4.6/2.7	5.3	5.0/2.9	5.8/3.3	531	289	242	142	15.6

MTH 4, 50 Hz


MTH 4
50 Hz
ISO 9906:1999 Annex A
p [kPa]
H [m]
-60/6
-50/5
-40/4
-30/3
-20/2
-20/1
Q [l/min]
Q [m³/h]
P2 [kW]
Eta [%]
Eta
NPSH [m]
NPSH
TM02 7825 4103

Dimensional sketches



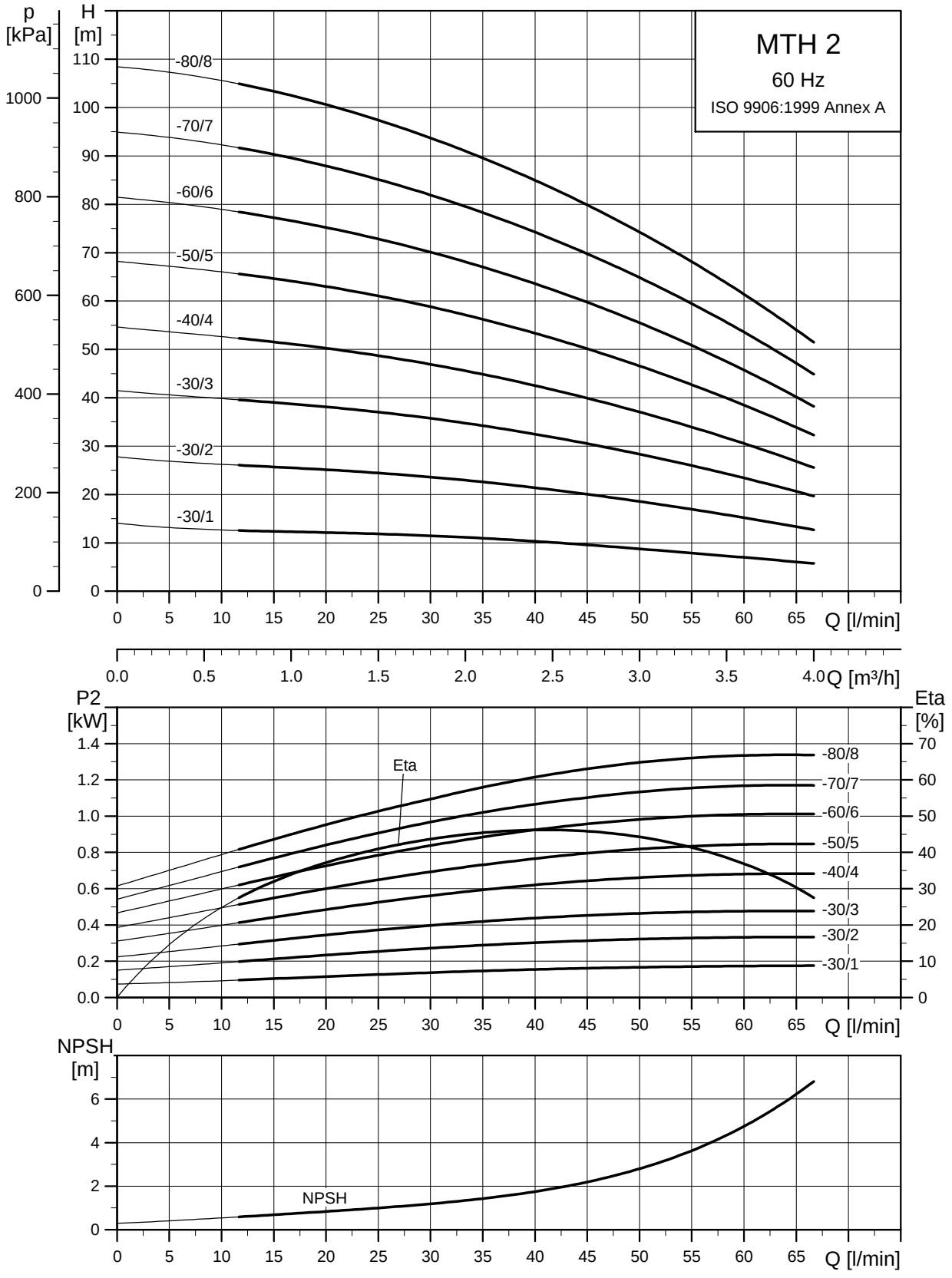
TM00 1919 4899

Dimensions and weights

Pump type	Motor P2 [kW]	Electrical data				Dimensions [mm]				Weight [kg]
		220-240 Δ V / 380-415 Y V		200-240 Δ V / 346-380 Y V						
		$I_{1/1}$ [A]	I_{max} [A]	$I_{1/1}$ [A]	I_{max} [A]	A	B	C	D1	
MTH 4-20/1	0.55	2.4/1.7	3.2	2.6/1.5	3.6/2.1	347	145	202	135	10.1
MTH 4-20/2	0.55	2.5/1.4	3.2	2.8/1.6	3.6/2.1	347	145	202	135	10.2
MTH 4-30/1	0.55	2.4/1.7	3.2	2.6/1.5	3.6/2.1	374	172	202	135	10.3
MTH 4-30/2	0.55	2.5/1.4	3.2	2.8/1.6	3.6/2.1	374	172	202	135	10.4
MTH 4-30/3	0.75	3.3/1.9	4.1	3.7/2.1	4.5/2.6	374	172	242	142	10.9
MTH 4-40/1	0.55	2.4/1.7	3.2	2.6/1.5	3.6/2.1	401	199	202	135	10.5
MTH 4-40/2	0.55	2.5/1.4	3.2	2.8/1.6	3.6/2.1	401	199	202	135	10.6
MTH 4-40/3	0.75	3.3/1.9	4.1	3.7/2.1	4.5/2.6	401	199	242	142	12.4
MTH 4-40/4	1.1	4.0/2.3	5.3	4.4/2.5	5.8/3.3	441	199	242	142	12.5
MTH 4-50/1	0.55	2.4/1.7	3.2	2.6/1.5	3.6/2.1	428	226	202	135	10.7
MTH 4-50/2	0.55	2.5/1.4	3.2	2.8/1.6	3.6/2.1	428	226	202	135	10.8
MTH 4-50/3	0.75	3.3/1.9	4.1	3.7/2.1	4.5/2.6	428	226	242	142	14.0
MTH 4-50/4	1.1	4.0/2.3	5.3	4.4/2.5	5.8/3.3	468	226	242	142	14.1
MTH 4-50/5	1.1	4.2/2.4	5.3	4.7/2.7	5.8/3.3	468	226	242	142	14.2
MTH 4-60/1	0.55	2.4/1.7	3.2	2.6/1.5	3.6/2.1	455	253	202	135	10.9
MTH 4-60/2	0.55	2.5/1.4	3.2	2.8/1.6	3.6/2.1	455	253	202	135	11.0
MTH 4-60/3	0.75	3.3/1.9	4.1	3.7/2.1	4.5/2.6	455	253	242	142	14.5
MTH 4-60/4	1.1	4.0/2.3	5.3	4.4/2.5	5.8/3.3	495	253	242	142	14.6
MTH 4-60/5	1.1	4.2/2.4	5.3	4.7/2.7	5.8/3.3	495	253	242	142	14.7
MTH 4-60/6	1.1	4.8/2.8	5.3	5.0/2.9	5.8/3.3	495	253	242	142	14.8
MTH 4-70/1	0.55	2.4/1.7	3.2	2.6/1.5	3.6/2.1	482	280	202	135	11.1
MTH 4-70/2	0.55	2.5/1.4	3.2	2.8/1.6	3.6/2.1	482	280	202	135	11.2
MTH 4-70/3	0.75	3.3/1.9	4.1	3.7/2.1	4.5/2.6	482	280	242	142	15.6
MTH 4-70/4	1.1	4.0/2.3	5.3	4.4/2.5	5.8/3.3	522	280	242	142	15.7
MTH 4-70/5	1.1	4.2/2.4	5.3	4.7/2.7	5.8/3.3	522	280	242	142	15.8
MTH 4-70/6	1.1	4.8/2.8	5.3	5.0/2.9	5.8/3.3	522	280	242	142	15.9
MTH 4-80/1	0.55	2.4/1.7	3.2	2.6/1.5	3.6/2.1	509	307	202	135	11.3
MTH 4-80/2	0.55	2.5/1.4	3.2	2.8/1.6	3.6/2.1	509	307	202	135	11.4
MTH 4-80/3	0.75	3.3/1.9	4.1	3.7/2.1	4.5/2.6	509	307	242	142	15.9
MTH 4-80/4	1.1	4.0/2.3	5.3	4.4/2.5	5.8/3.3	549	307	242	142	16.0
MTH 4-80/5	1.1	4.2/2.4	5.3	4.7/2.7	5.8/3.3	549	307	242	142	16.1
MTH 4-80/6	1.1	4.8/2.8	5.3	5.0/2.9	5.8/3.3	549	307	242	142	16.2

MTH, 60 Hz

MTH 2, 60 Hz



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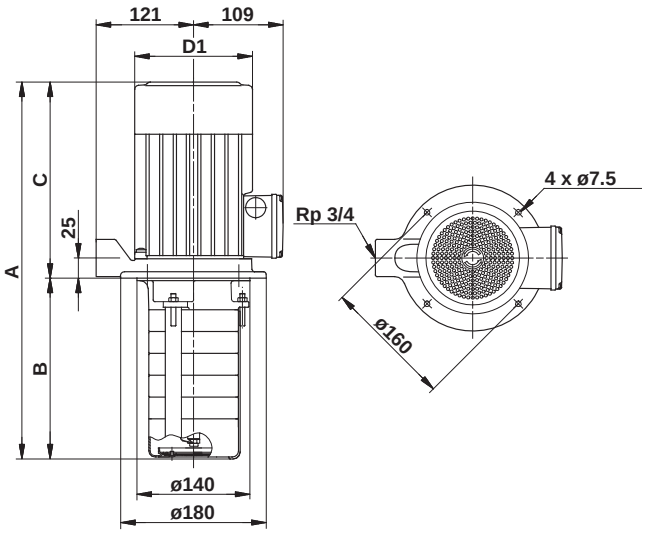
Dimensional sketches



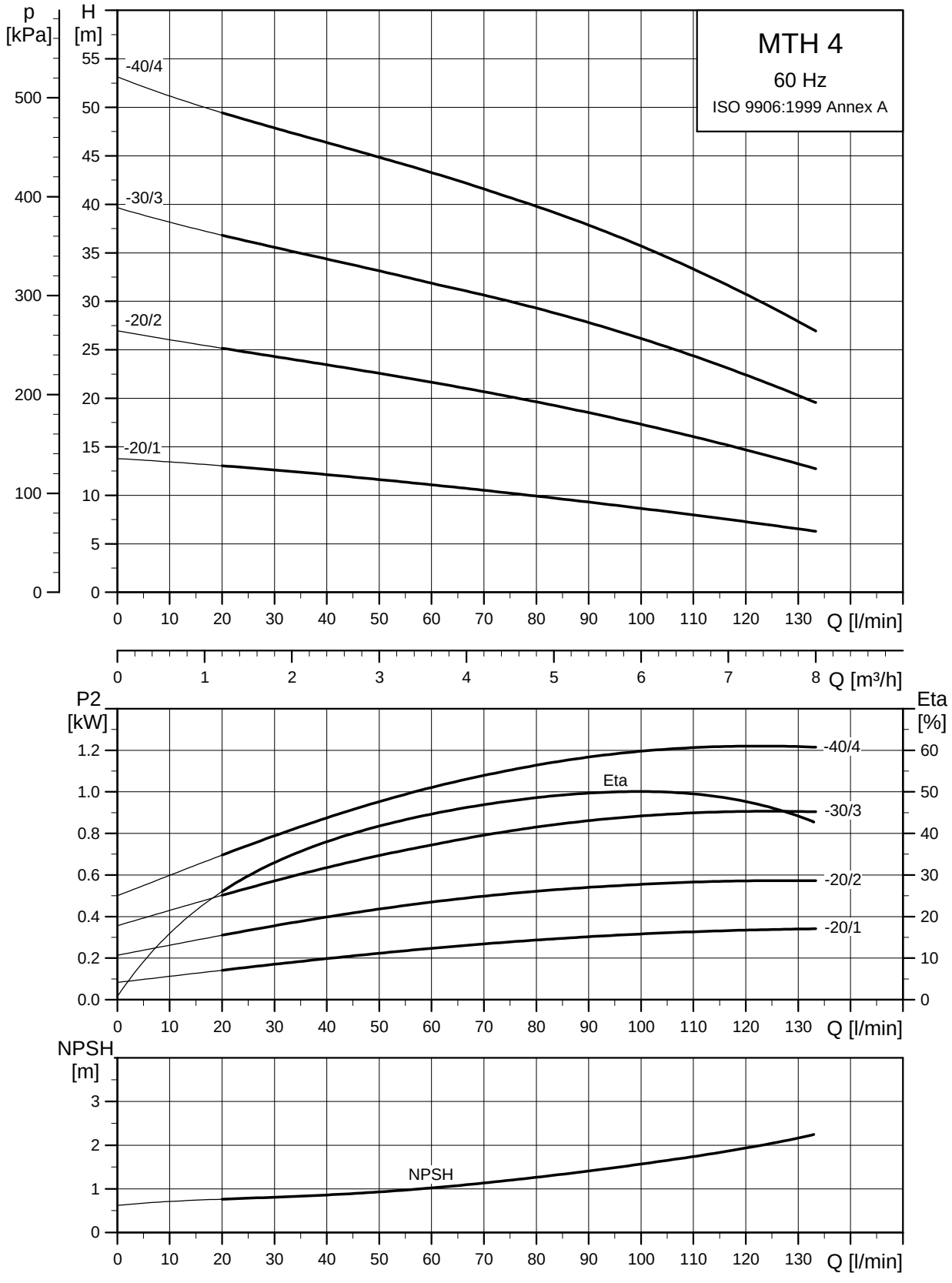
TM00 1919 4899

Dimensions and weights

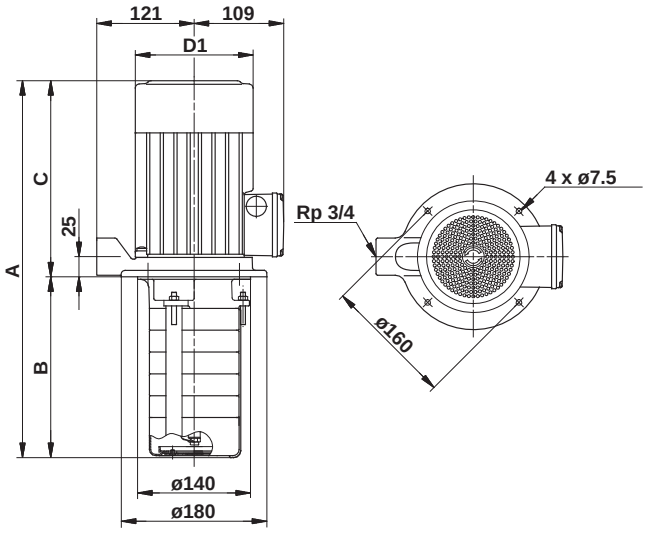
Pump type	Motor P2 [kW]	Electrical data				Dimensions [mm]				Weight [kg]
		220-255 Δ V / 380-440 Y V		200-230 Δ V / 346-400 Y V						
		$I_{1/1}$ [A]	I_{max} [A]	$I_{1/1}$ [A]	I_{max} [A]	A	B	C	D1	
MTH 2-30/1	0.55	1.6/0.9	3.2	1.8/1.0	3.5/2.0	347	145	202	135	10.4
MTH 2-30/2	0.55	1.9/1.1	3.2	2.1/1.2	3.5/2.0	347	145	202	135	10.5
MTH 2-30/3	0.55	2.2/1.3	3.2	2.4/1.4	3.5/2.0	347	145	202	135	10.6
MTH 2-40/1	0.55	1.6/0.9	3.2	1.8/1.0	3.5/2.0	365	163	202	135	10.6
MTH 2-40/2	0.55	1.9/1.1	3.2	2.1/1.2	3.5/2.0	365	163	202	135	10.7
MTH 2-40/3	0.55	2.2/1.3	3.2	2.4/1.4	3.5/2.0	365	163	202	135	10.8
MTH 2-40/4	0.75	2.7/1.6	4.1	3.1/1.8	4.4/2.5	405	163	242	142	12.0
MTH 2-50/1	0.55	1.6/0.9	3.2	1.8/1.0	3.5/2.0	383	181	202	135	10.8
MTH 2-50/2	0.55	1.9/1.1	3.2	2.1/1.2	3.5/2.0	383	181	202	135	10.9
MTH 2-50/3	0.55	2.2/1.3	3.2	2.4/1.4	3.5/2.0	383	181	202	135	11.0
MTH 2-50/4	0.75	2.7/1.6	4.1	3.1/1.8	4.4/2.5	423	181	242	142	12.2
MTH 2-50/5	0.75	3.2/1.8	4.1	3.6/2.1	4.4/2.5	423	181	242	142	12.3
MTH 2-60/1	0.55	1.6/0.9	3.2	1.8/1.0	3.5/2.0	401	199	202	135	11.0
MTH 2-60/2	0.55	1.9/1.1	3.2	2.1/1.2	3.5/2.0	401	199	202	135	11.1
MTH 2-60/3	0.55	2.2/1.3	3.2	2.4/1.4	3.5/2.0	401	199	202	135	11.2
MTH 2-60/4	0.75	2.7/1.6	4.1	3.1/1.8	4.4/2.5	441	199	242	142	13.9
MTH 2-60/5	0.75	3.2/1.8	4.1	3.6/2.1	4.4/2.5	441	199	242	142	14.0
MTH 2-60/6	1.1	3.9/2.2	5.5	4.4/2.5	6.0/3.4	441	199	242	142	14.1
MTH 2-70/1	0.55	1.6/0.9	3.2	1.8/1.0	3.5/2.0	419	217	202	135	11.2
MTH 2-70/2	0.55	1.9/1.1	3.2	2.1/1.2	3.5/2.0	419	217	202	135	11.3
MTH 2-70/3	0.55	2.2/1.3	3.2	2.4/1.4	3.5/2.0	419	217	202	135	11.4
MTH 2-70/4	0.75	2.7/1.6	4.1	3.1/1.8	4.4/2.5	459	217	242	142	14.1
MTH 2-70/5	0.75	3.2/1.8	4.1	3.6/2.1	4.4/2.5	459	217	242	142	14.2
MTH 2-70/6	1.1	3.9/2.2	5.5	4.4/2.5	6.0/3.4	459	217	242	142	14.3
MTH 2-70/7	1.1	4.2/2.4	5.5	5.2/3.1	6.0/3.4	459	217	242	142	14.4
MTH 2-80/1	0.55	1.6/0.9	3.2	1.8/1.0	3.5/2.0	437	235	202	135	11.4
MTH 2-80/2	0.55	1.9/1.1	3.2	2.1/1.2	3.5/2.0	437	235	202	135	11.5
MTH 2-80/3	0.55	2.2/1.3	3.2	2.4/1.4	3.5/2.0	437	235	202	135	11.6
MTH 2-80/4	0.75	2.7/1.6	4.1	3.1/1.8	4.4/2.5	477	235	242	142	14.3
MTH 2-80/5	0.75	3.2/1.8	4.1	3.6/2.1	4.4/2.5	477	235	242	142	14.4
MTH 2-80/6	1.1	3.9/2.2	5.5	4.4/2.5	6.0/3.4	477	235	242	142	14.5
MTH 2-80/7	1.1	4.2/2.4	5.5	5.2/3.1	6.0/3.4	477	235	242	142	14.6
MTH 2-80/8	1.1	4.3/2.7	5.5	5.1/2.9	6.0/3.4	477	235	242	142	14.7
MTH 2-90/1	0.55	1.6/0.9	3.2	1.8/1.0	3.5/2.0	455	253	202	135	11.6
MTH 2-90/2	0.55	1.9/1.1	3.2	2.1/1.2	3.5/2.0	455	253	202	135	11.7
MTH 2-90/3	0.55	2.2/1.3	3.2	2.4/1.4	3.5/2.0	455	253	202	135	11.8
MTH 2-90/4	0.75	2.7/1.6	4.1	3.1/1.8	4.4/2.5	495	253	242	142	14.4
MTH 2-90/5	0.75	3.2/1.8	4.1	3.6/2.1	4.4/2.5	495	253	242	142	14.5

Pump type	Motor P2 [kW]	Electrical data				Dimensions [mm]				Weight [kg]
		220-255 Δ V / 380-440 Y V		200-230 Δ V / 346-400 Y V						
		$I_{1/1}$ [A]	I_{max} [A]	$I_{1/1}$ [A]	I_{max} [A]	A	B	C	D1	
MTH 2-90/6	1.1	3.9/2.2	5.5	4.4/2.5	6.0/3.4	495	253	242	142	14.6
MTH 2-90/7	1.1	4.2/2.4	5.5	5.2/3.1	6.0/3.4	495	253	242	142	14.7
MTH 2-90/8	1.1	4.3/2.7	5.5	5.1/2.9	6.0/3.4	495	253	242	142	14.8
MTH 2-100/1	0.55	1.6/0.9	3.2	1.8/1.0	3.5/2.0	473	271	202	135	11.8
MTH 2-100/2	0.55	1.9/1.1	3.2	2.1/1.2	3.5/2.0	473	271	202	135	11.9
MTH 2-100/3	0.55	2.2/1.3	3.2	2.4/1.4	3.5/2.0	473	271	202	135	12.0
MTH 2-100/4	0.75	2.7/1.6	4.1	3.1/1.8	4.4/2.5	513	271	242	142	14.7
MTH 2-100/5	0.75	3.2/1.8	4.1	3.6/2.1	4.4/2.5	513	271	242	142	14.8
MTH 2-100/6	1.1	3.9/2.2	5.5	4.4/2.5	6.0/3.4	513	271	242	142	14.9
MTH 2-100/7	1.1	4.2/2.4	5.5	5.2/3.1	6.0/3.4	513	271	242	142	15.0
MTH 2-100/8	1.1	4.3/2.7	5.5	5.1/2.9	6.0/3.4	513	271	242	142	15.1
MTH 2-110/1	0.55	1.6/0.9	3.2	1.8/1.0	3.5/2.0	491	289	202	135	12.0
MTH 2-110/2	0.55	1.9/1.1	3.2	2.1/1.2	3.5/2.0	491	289	202	135	12.1
MTH 2-110/3	0.55	2.2/1.3	3.2	2.4/1.4	3.5/2.0	491	289	202	135	12.2
MTH 2-110/4	0.75	2.7/1.6	4.1	3.1/1.8	4.4/2.5	531	289	242	142	14.9
MTH 2-110/5	0.75	3.2/1.8	4.1	3.6/2.1	4.4/2.5	531	289	242	142	15.0
MTH 2-110/6	1.1	3.9/2.2	5.5	4.4/2.5	6.0/3.4	531	289	242	142	15.1
MTH 2-110/7	1.1	4.2/2.4	5.5	5.2/3.1	6.0/3.4	531	289	242	142	15.2
MTH 2-110/8	1.1	4.3/2.7	5.5	5.1/2.9	6.0/3.4	531	289	242	142	15.3

MTH 4, 60 Hz


MTH 4
60 Hz
ISO 9906:1999 Annex A
p [kPa]
H [m]
-40/4
-30/3
-20/2
-20/1
Q [l/min]
Q [m³/h]
P2 [kW]
Eta [%]
Eta
NPSH [m]
NPSH
TM02 7827 4103

Dimensional sketches



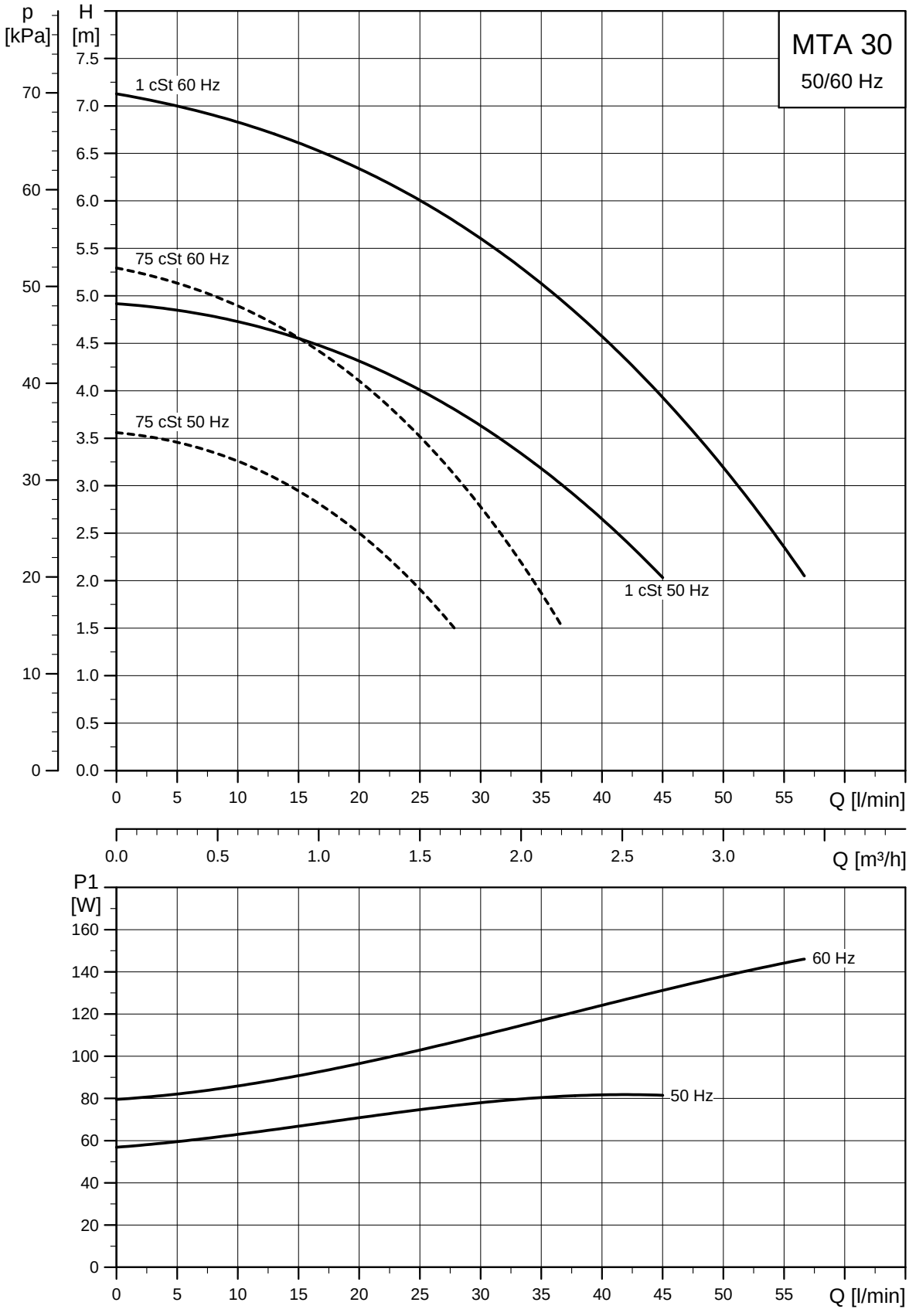
TM00 1919 4899

Dimensions and weights

Pump type	Motor P2 [kW]	Electrical data				Dimensions [mm]				Weight [kg]
		220-255 Δ V / 380-440 Y V		200-230 Δ V / 346-400 Y V						
		$I_{1/1}$ [A]	I_{max} [A]	$I_{1/1}$ [A]	I_{max} [A]	A	B	C	D1	
MTH 4-20/1	0.55	1.8/1.0	3.2	2.0/1.2	3.5/2.0	347	145	202	135	10.3
MTH 4-20/2	0.55	2.4/1.4	3.2	2.8/1.6	3.5/2.0	347	145	202	135	10.4
MTH 4-30/1	0.55	1.8/1.0	3.2	2.0/1.2	3.5/2.0	374	172	202	135	10.5
MTH 4-30/2	0.55	2.4/1.4	3.2	2.8/1.6	3.5/2.0	374	172	202	135	10.6
MTH 4-30/3	0.75	3.3/1.9	4.1	3.9/2.3	4.4/2.5	374	172	202	135	11.9
MTH 4-40/1	0.55	1.8/1.0	3.2	2.0/1.2	3.5/2.0	401	199	202	135	10.7
MTH 4-40/2	0.55	2.4/1.4	3.2	2.8/1.6	3.5/2.0	401	199	202	135	10.8
MTH 4-40/3	0.75	3.3/1.9	4.1	3.9/2.3	4.4/2.5	401	199	202	135	13.7
MTH 4-40/4	1.1	4.2/2.4	5.5	5.1/2.9	6.0/3.4	441	199	242	142	13.8
MTH 4-50/1	0.55	1.8/1.0	3.2	2.0/1.2	3.5/2.0	428	226	202	135	10.9
MTH 4-50/2	0.55	2.4/1.4	3.2	2.8/1.6	3.5/2.0	428	226	202	135	11.0
MTH 4-50/3	0.75	3.3/1.9	4.1	3.9/2.3	4.4/2.5	428	226	202	135	14.0
MTH 4-50/4	1.1	4.2/2.4	5.5	5.1/2.9	6.0/3.4	468	226	242	142	14.1
MTH 4-60/1	0.55	1.8/1.0	3.2	2.0/1.2	3.5/2.0	455	253	202	135	11.1
MTH 4-60/2	0.55	2.4/1.4	3.2	2.8/1.6	3.5/2.0	455	253	202	135	11.2
MTH 4-60/3	0.75	3.3/1.9	4.1	3.9/2.3	4.4/2.5	455	253	202	135	14.5
MTH 4-60/4	1.1	4.2/2.4	5.5	5.1/2.9	6.0/3.4	495	253	242	142	14.6
MTH 4-70/1	0.55	1.8/1.0	3.2	2.0/1.2	3.5/2.0	482	280	202	135	11.3
MTH 4-70/2	0.55	2.4/1.4	3.2	2.8/1.6	3.5/2.0	482	280	202	135	11.4
MTH 4-70/3	0.75	3.3/1.9	4.1	3.9/2.3	4.4/2.5	482	280	202	135	15.8
MTH 4-70/4	1.1	4.2/2.4	5.5	5.1/2.9	6.0/3.4	522	280	242	142	15.9
MTH 4-80/1	0.55	1.8/1.0	3.2	2.0/1.2	3.5/2.0	509	307	202	135	11.5
MTH 4-80/2	0.55	2.4/1.4	3.2	2.8/1.6	3.5/2.0	509	307	202	135	11.6
MTH 4-80/3	0.75	3.3/1.9	4.1	3.9/2.3	4.4/2.5	509	307	202	135	16.1
MTH 4-80/4	1.1	4.2/2.4	5.5	5.1/2.9	6.0/3.4	549	307	242	142	16.2

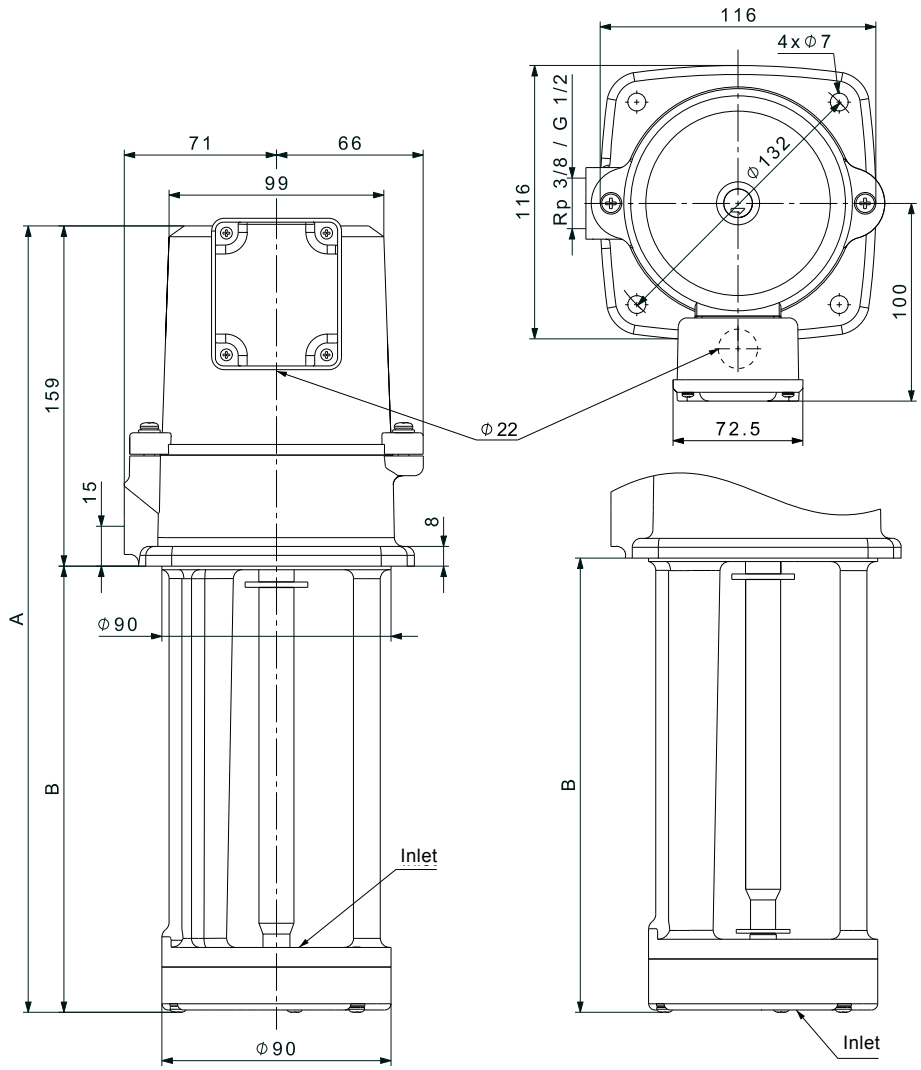
MTA, 50/60 Hz

MTA 30



TM05 0857 1711

Dimensional sketches



Top suction Bottom suction

TM05 0879 3313

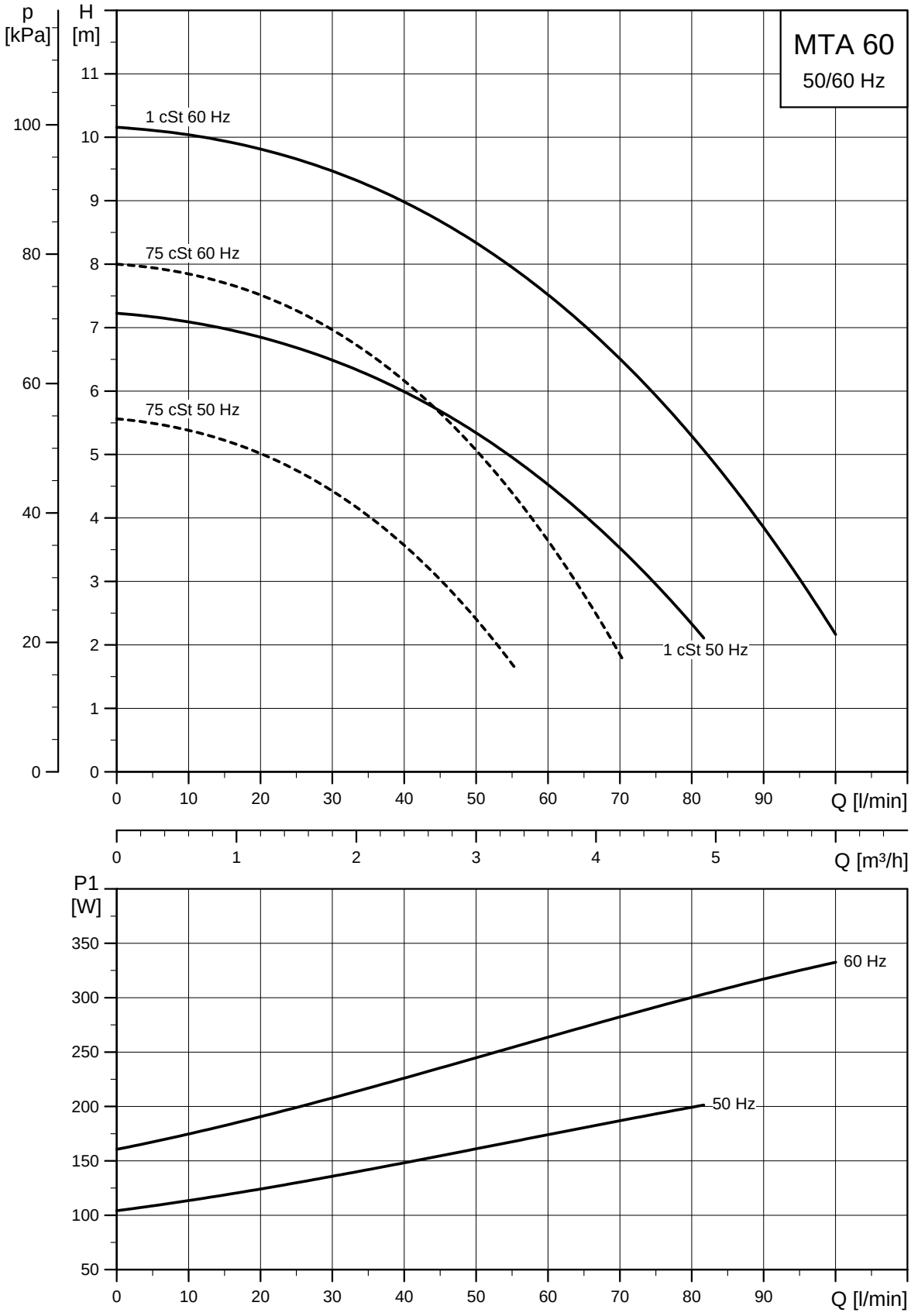
Dimensions and weights

Pump type	Suction	A [mm]	B [mm]	Net weight [kg]	Gross weight [kg]	Shipping volume [m^3]
MTA 30-150	Top	309	150	6.7	7.6	0.012
MTA 30-150	Bottom	312	153	6.7	7.7	0.012

Electrical data

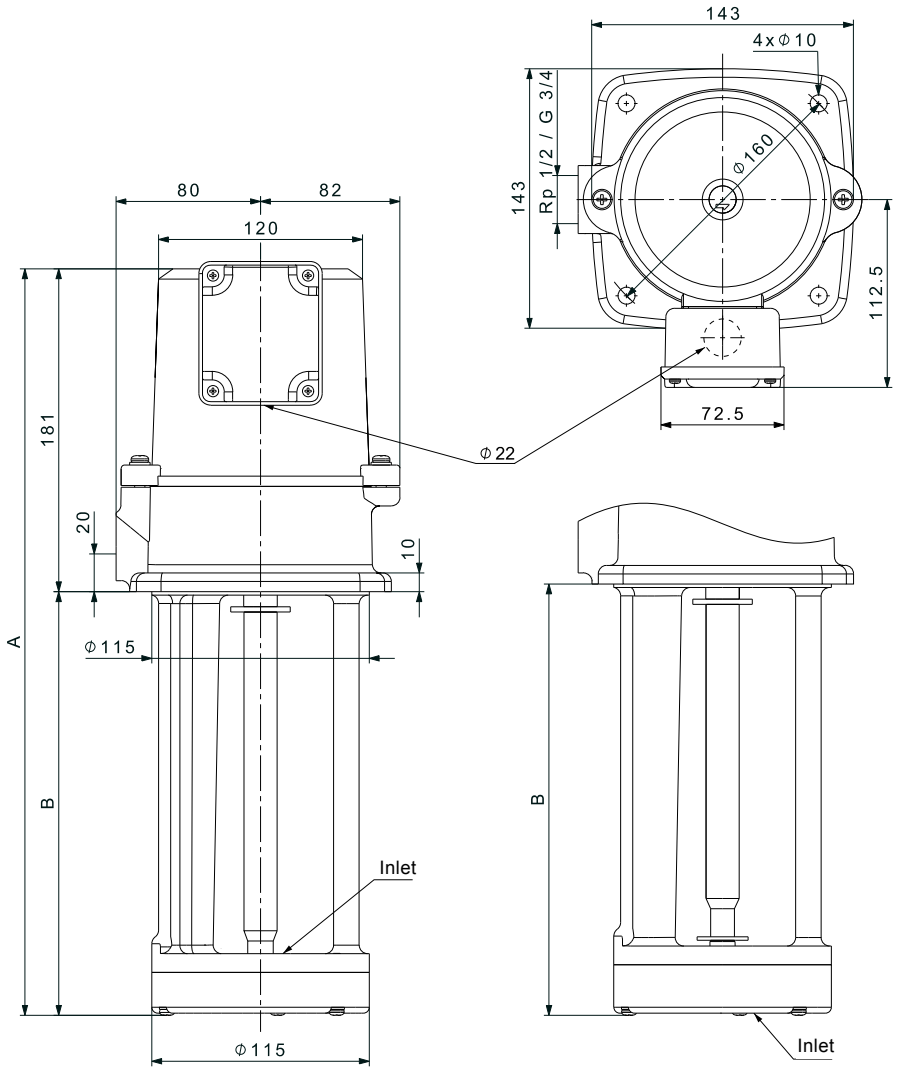
Voltage	Frequency [Hz]	P1 [W]	$I_{1/1}$ [A]	I_{max} [A]	I_{start} [A]	Cos φ
3 x 200 Δ V	50	82	0.41	0.47	3.28	0.58
3 x 200-220 Δ V	60	145	0.5	0.58 - 0.58	3.65 - 3.80	0.84 - 0.76
3 x 220-240 Δ / 380-415Y V	50	86	0.33/0.19	0.38/0.22	3.14/1.81	0.68 - 0.63
3 x 220-240 Δ / 380-440Y V	60	142	0.41/0.24 - 0.22	0.47/0.28 - 0.25	3.36/1.97 - 1.80	0.91 - 0.83

MTA 60



TM05 0858 1711

Dimensional sketches



Top suction

Bottom suction

TM05 0880 3313

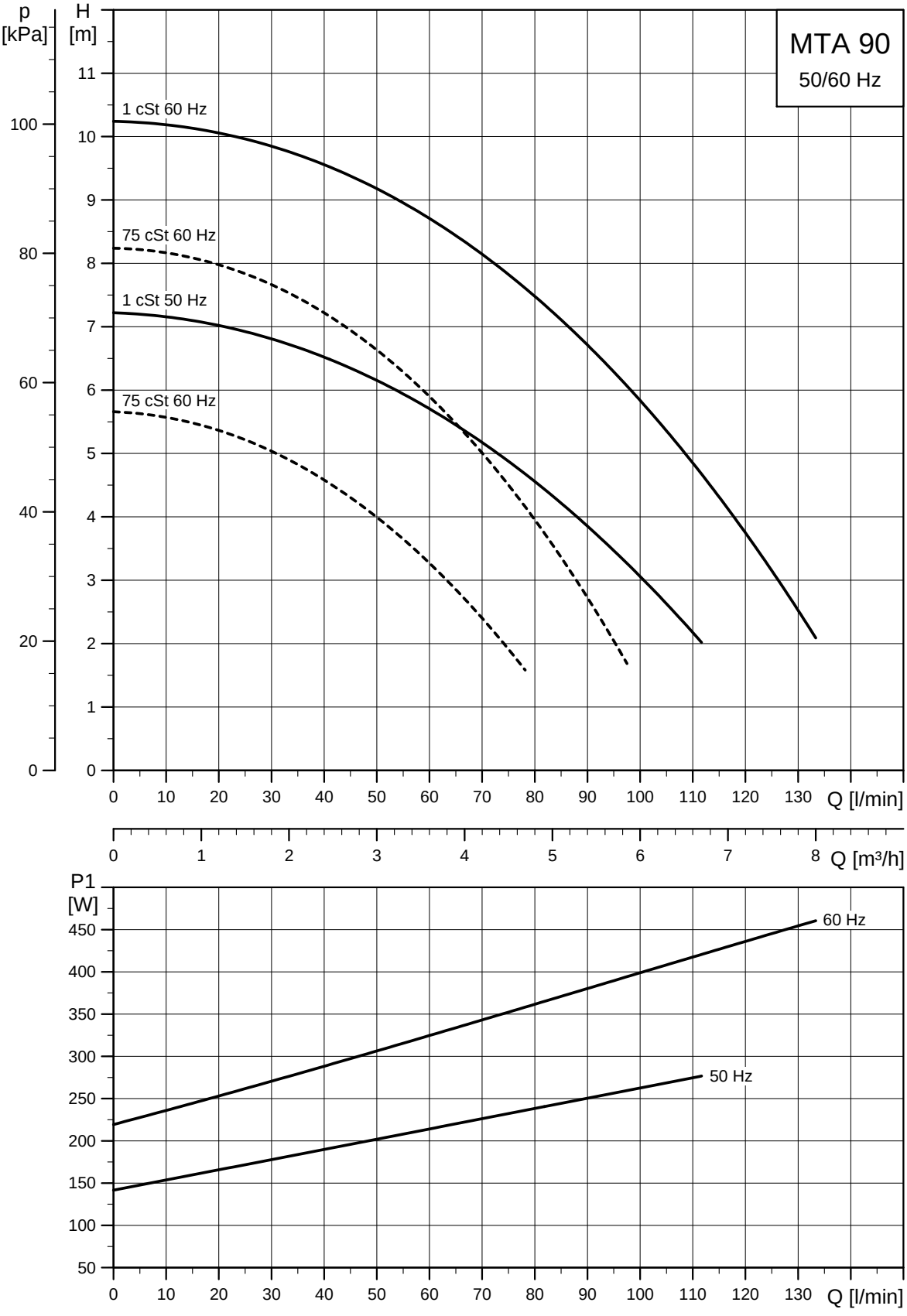
Dimensions and weights

Pump type	Suction	A [mm]	B [mm]	Net weight [kg]	Gross weight [kg]	Shipping volume [m^3]
MTA 60-130	Top	306	125	10.6	11.6	0.170
MTA 60-180		356	175	11.1	12.2	0.020
MTA 60-250		426	245	11.8	12.2	0.023
MTA 60-350		526	345	12.9	14.7	0.027
MTA 60-130	Bottom	311.5	130.5	10.9	11.8	0.017
MTA 60-180		361.5	180.5	11.4	12.4	0.020
MTA 60-250		431.5	250.5	12.2	13.5	0.023
MTA 60-350		531.5	350.5	13.2	14.9	0.027

Electrical data

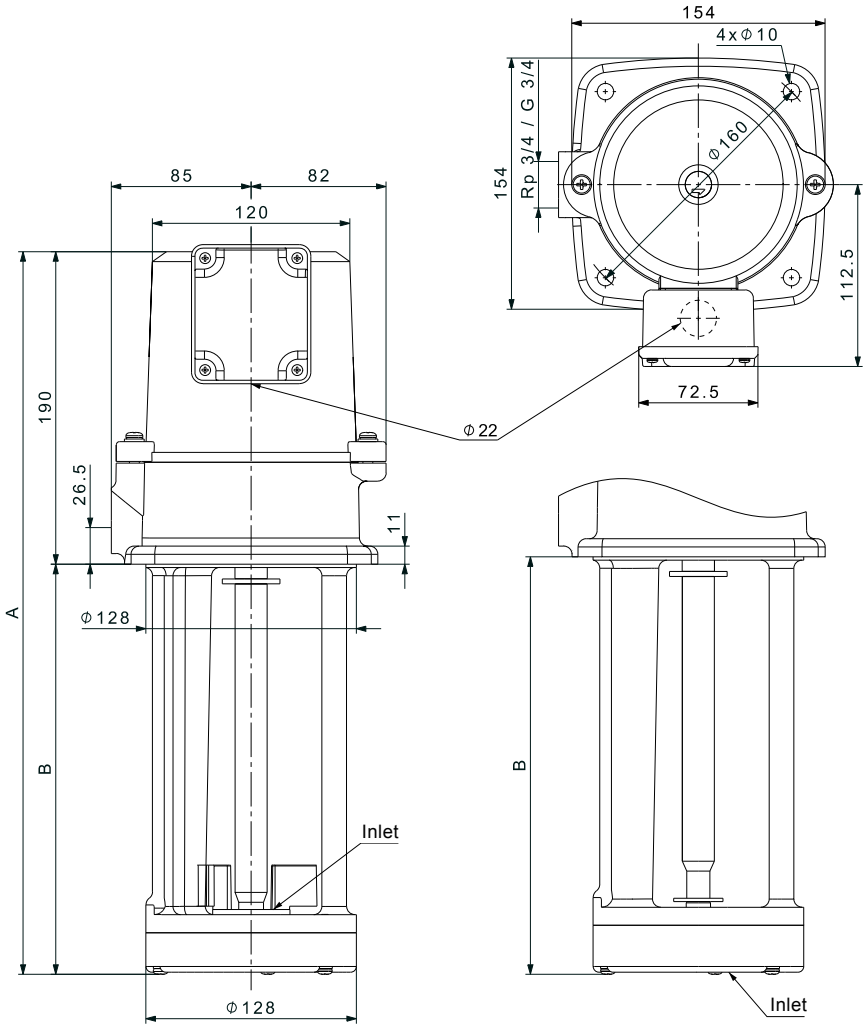
Voltage	Frequency [Hz]	P1 [W]	$I_{1/1}$ [A]	I_{max} [A]	I_{start} [A]	Cos φ
3 x 200 Δ V	50	202	0.78	0.90	5.38	0.75
3 x 200-220 Δ V	60	333	1.18 - 1.09	1.36 - 1.27	6.25 - 6.43	0.81 - 0.80
3 x 220-240 Δ / 380-415Y V	50	200	0.69/0.42	0.79/0.48	5.87/3.57	0.76 - 0.70
3 x 220-240 Δ / 380-440Y V	60	330	0.99/0.63 - 0.57	1.14/0.72 - 0.66	6.44/4.10 - 3.71	0.87 - 0.80

MTA 90



TM05 0859 1711

Dimensional sketches



TM05 0881 3313

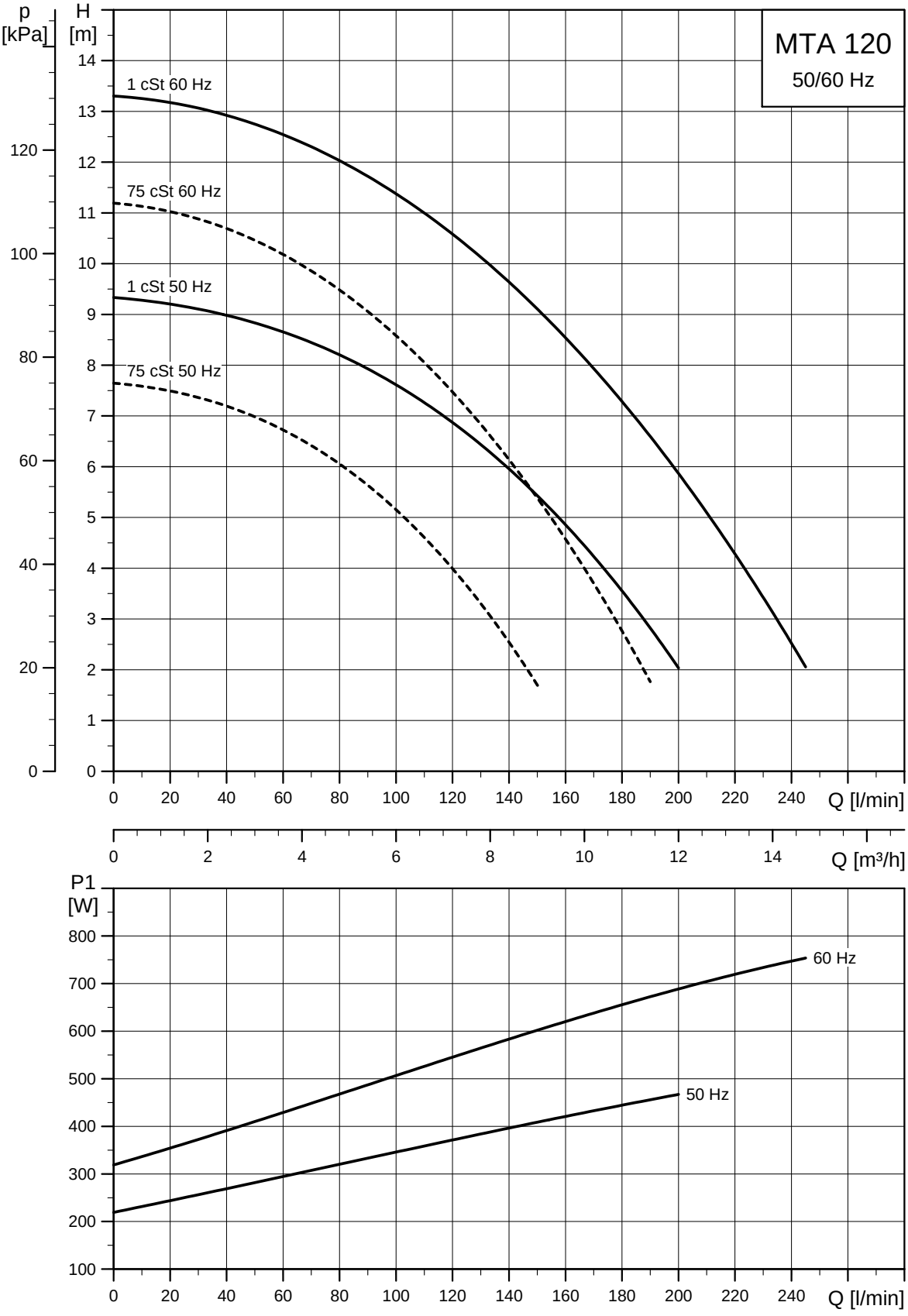
Dimensions and weights

Pump type	Suction	A [mm]	B [mm]	Net weight [kg]	Gross weight [kg]	Shipping volume [m^3]
MTA 90-130	Top	318	128	12.5	14.2	0.017
MTA 90-180		368	178	13.3	15.1	0.020
MTA 90-250		438	248	14.2	16.2	0.023
MTA 90-350		538	348	15.6	17.9	0.027
MTA 90-130	Bottom	322.5	132.5	12.9	14.3	0.017
MTA 90-180		372.5	182.5	13.6	15.2	0.020
MTA 90-250		442.5	252.5	14.5	16.3	0.023
MTA 90-350		542.5	352.5	15.9	18.0	0.027

Electrical data

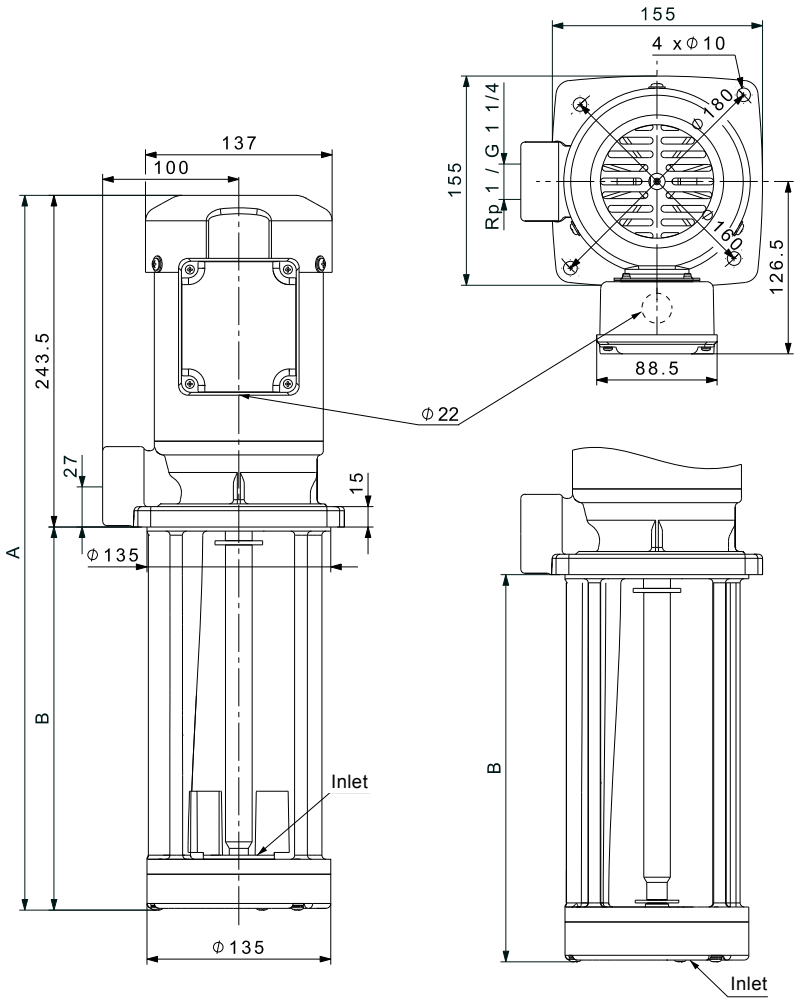
Voltage	Frequency [Hz]	P1 [W]	$I_{1/1}$ [A]	I_{max} [A]	I_{start} [A]	Cos φ
3 x 200 Δ V	50	276	1.12	1.29	8.29	0.71
3 x 200-220 Δ V	60	460	1.63 - 1.51	1.87 - 1.74	9.29 - 9.51	0.81 - 0.80
3 x 220-240 Δ / 380-415Y V	50	270	0.97/0.55	1.12/0.63	7.86/4.46	0.73 - 0.67
3 x 220-240 Δ / 380-440Y V	60	440	1.3/0.8 - 0.72	1.5/0.92 - 0.83	8.45/5.20 - 4.68	0.89 - 0.81

MTA 120



TM05 0859 1711

Dimensional sketches



Top suction

Bottom suction

TM05 0882 3313

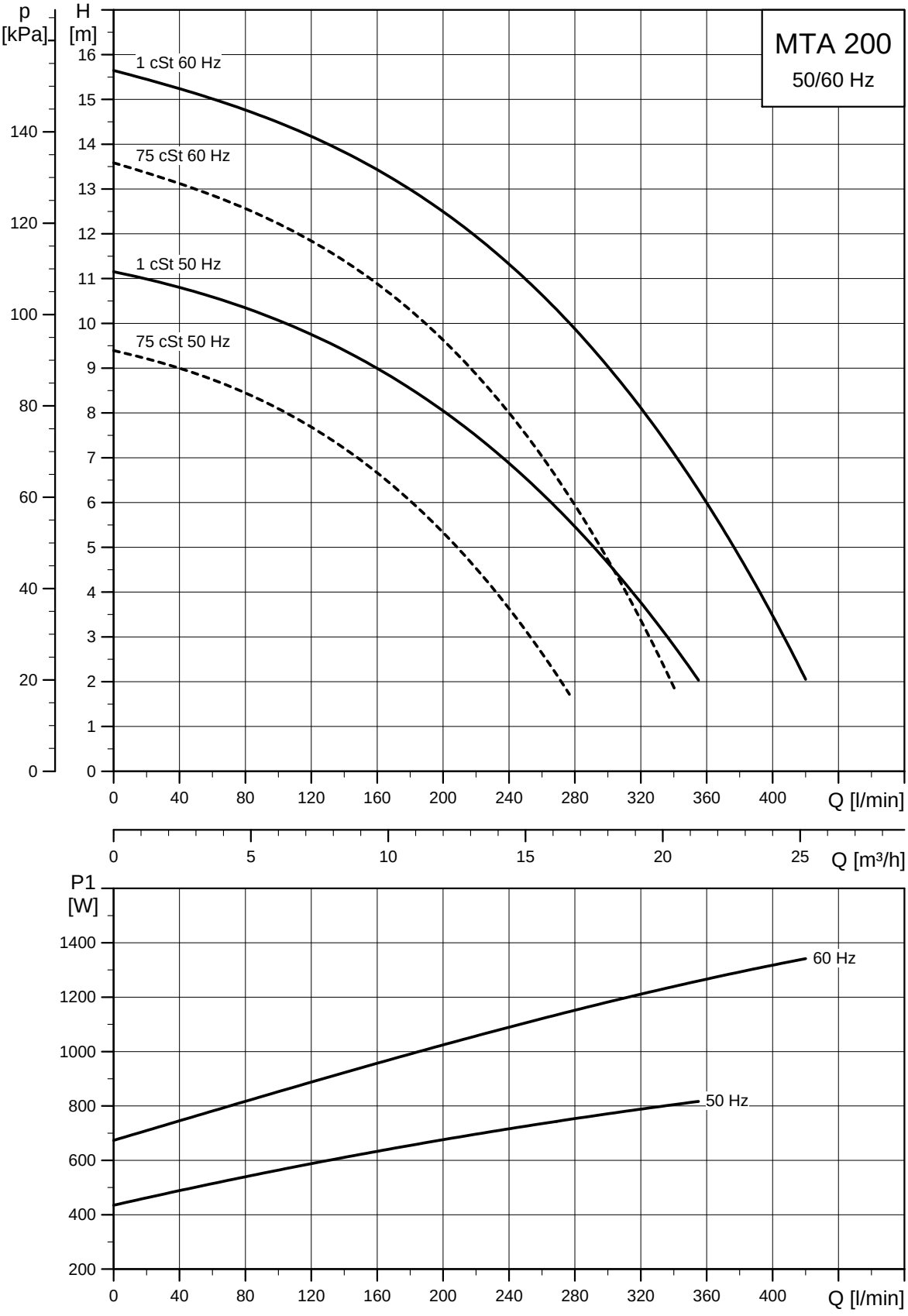
Dimensions and weights

Pump type	Suction	A [mm]	B [mm]	Net weight [kg]	Gross weight [kg]	Shipping volume [m^3]
MTA 120-180	Top	423.5	180	15.8	17.5	0.026
MTA 120-250		493.5	250	16.9	19.0	0.032
MTA 120-280		523.5	280	17.4	19.4	0.032
MTA 120-350		593.5	350	18.4	21.5	0.036
MTA 120-180	Bottom	426.5	183	16.0	18.1	0.026
MTA 120-250		496.5	253	17.1	19.2	0.032
MTA 120-280		526.5	283	17.6	19.6	0.032
MTA 120-350		596.5	353	18.6	21.7	0.036

Electrical data

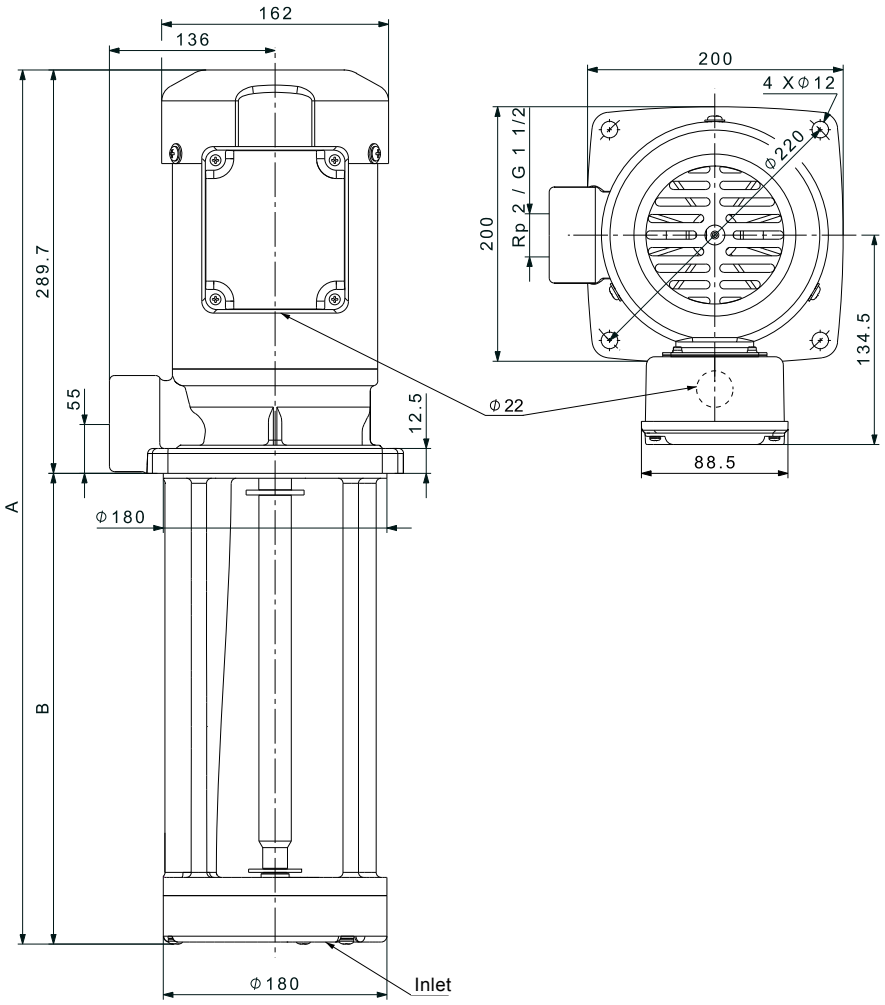
Voltage	Frequency [Hz]	P1 [W]	$I_{1/1}$ [A]	I_{max} [A]	I_{start} [A]	Cos φ
3 x 200 Δ V	50	468	1.79	2.06	12.2	0.75
3 x 200-220 Δ V	60	755	2.47 - 2.37	2.84 - 2.73	13.8 - 14.2	0.88 - 0.84
3 x 220-240 Δ / 380-415Y V	50	440	1.47/0.87	1.69/1.00	10.0/5.92	0.79 - 0.72
3 x 220-240 Δ / 380-440Y V	60	730	2.1/1.26 - 1.13	2.42/1.45 - 1.30	11.34/6.80 - 6.10	0.91 - 0.84

MTA 200



TM05 0861 1711

Dimensional sketches



Bottom suction

TM05 0883 3313

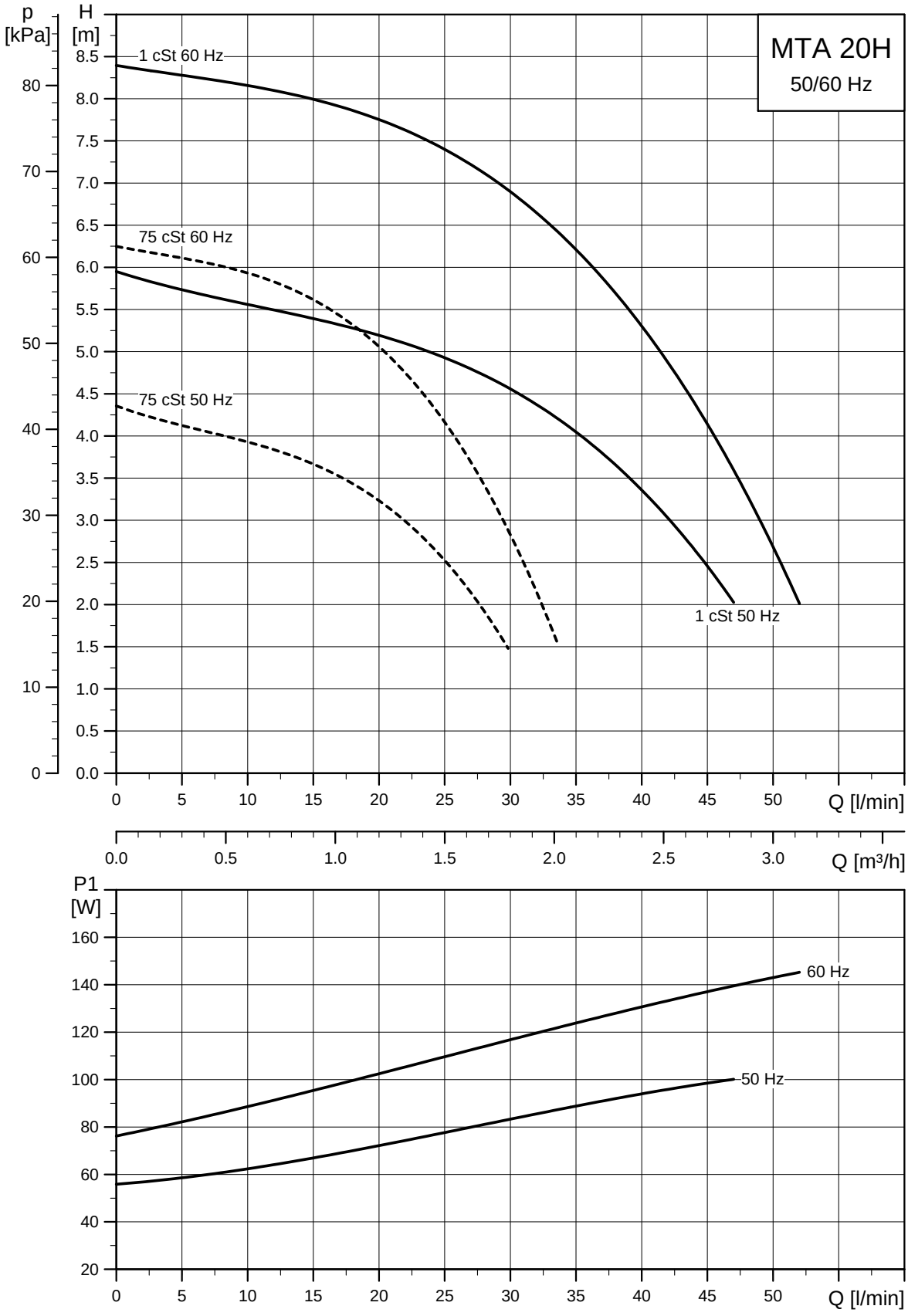
Dimensions and weights

Pump type	Suction	A [mm]	B [mm]	Net weight [kg]	Gross weight [kg]	Shipping volume [m^3]
MTA 200-250	Bottom	534.7	250	24.3	26.9	0.06
MTA 200-280		564.7	280	24.8	27.4	0.06
MTA 200-350		634.7	350	25.8	28.6	0.067

Electrical data

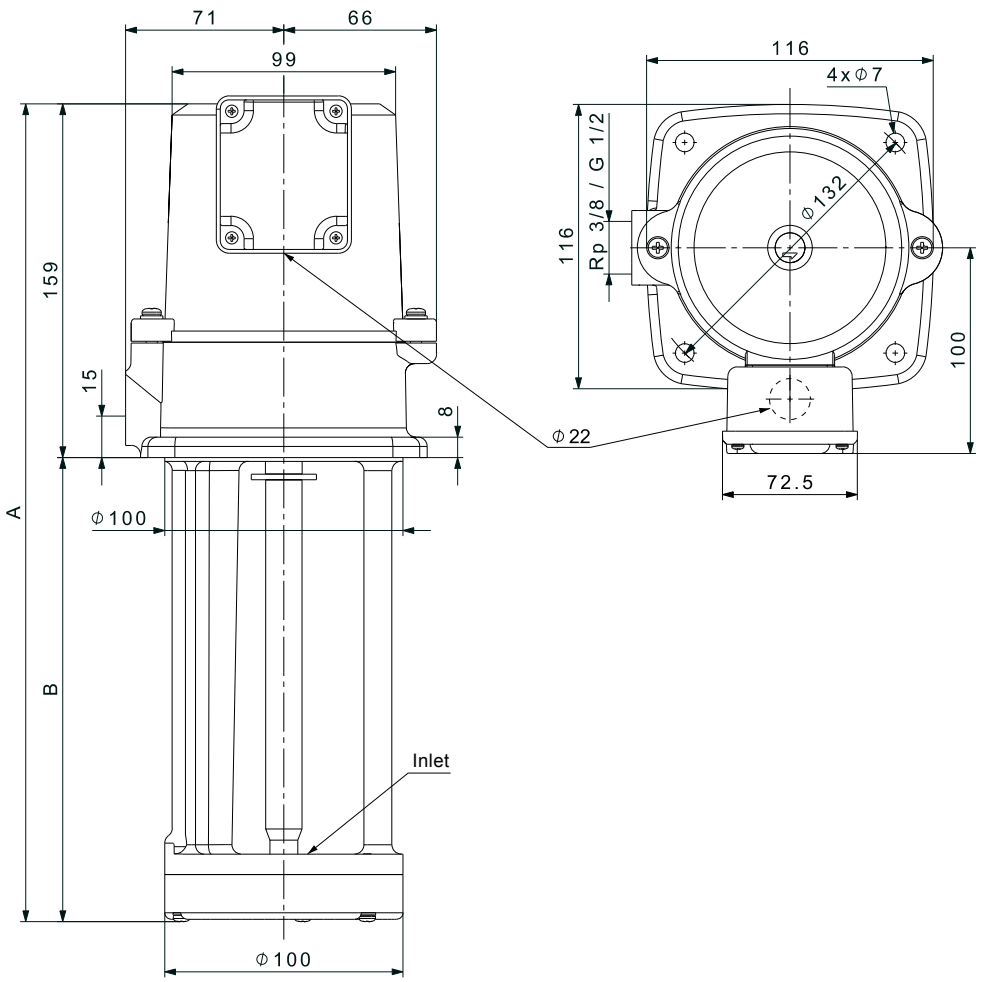
Voltage	Frequency [Hz]	P1 [W]	$I_{1/1}$ [A]	I_{max} [A]	I_{start} [A]	Cos φ
3 x 200 Δ V	50	815	2.85	3.28	23.9	0.83
3 x 200-220 Δ V	60	1340	4.28 - 4.28	4.92 - 4.92	27.8 - 27.8	0.90 - 0.82
3 x 220-240 Δ / 380-415Y V	50	790	2.78/1.64	3.2/1.89	23.9/14.1	0.75 - 0.68
3 x 220-240 Δ / 380-440Y V	60	1270	3.48/2.11 - 1.96	4.0/2.43 - 2.25	27.5/16.7 - 15.5	0.96 - 0.88

MTA 20H



TM05 0862 1711

Dimensional sketches



Top suction

TM05 0884 3313

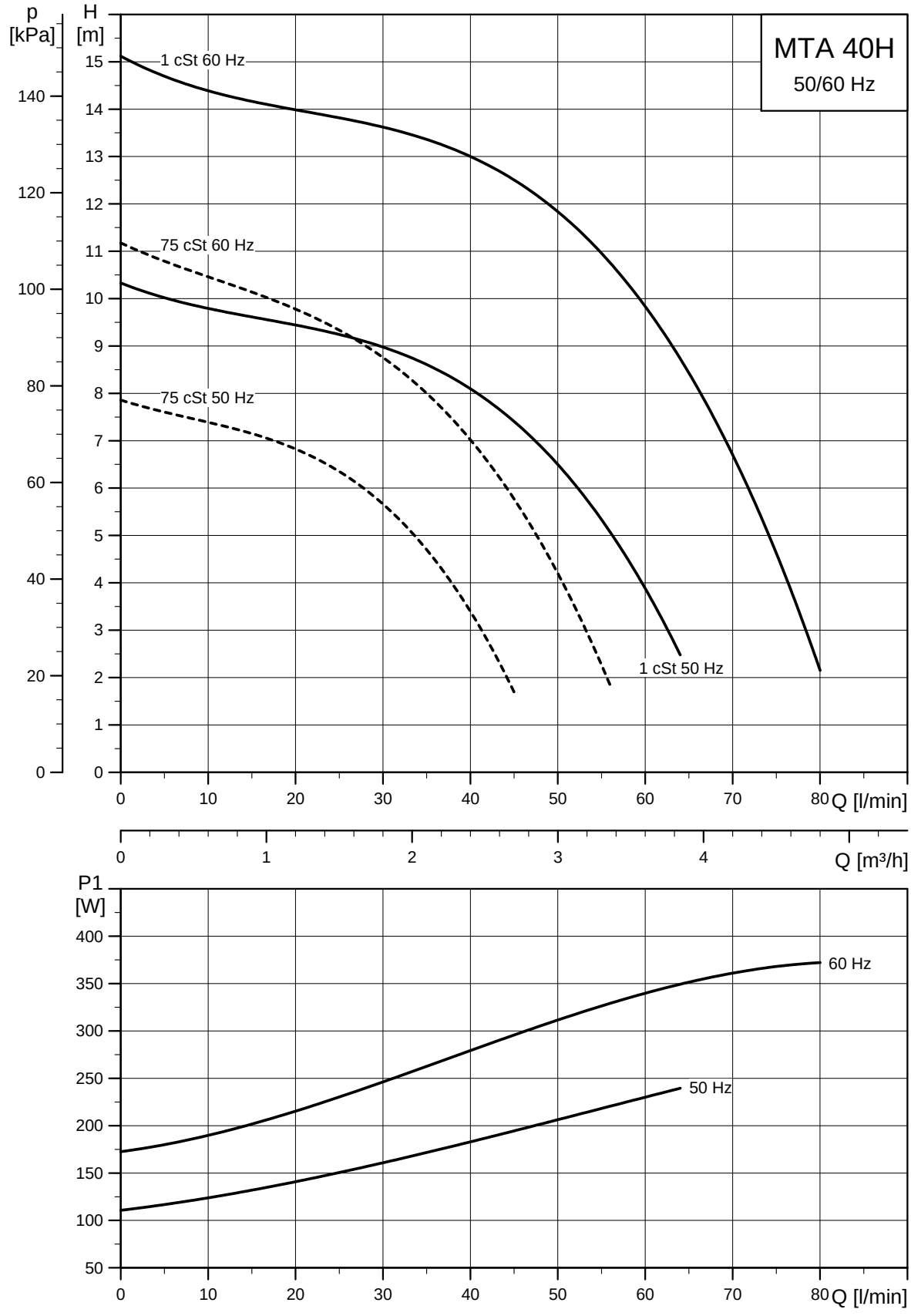
Dimensions and weights

Pump type	Suction	A [mm]	B [mm]	Net weight [kg]	Gross weight [kg]	Shipping volume [m^3]
MTA 20H-150	Top	309	150	6.8	7.7	0.012

Electrical data

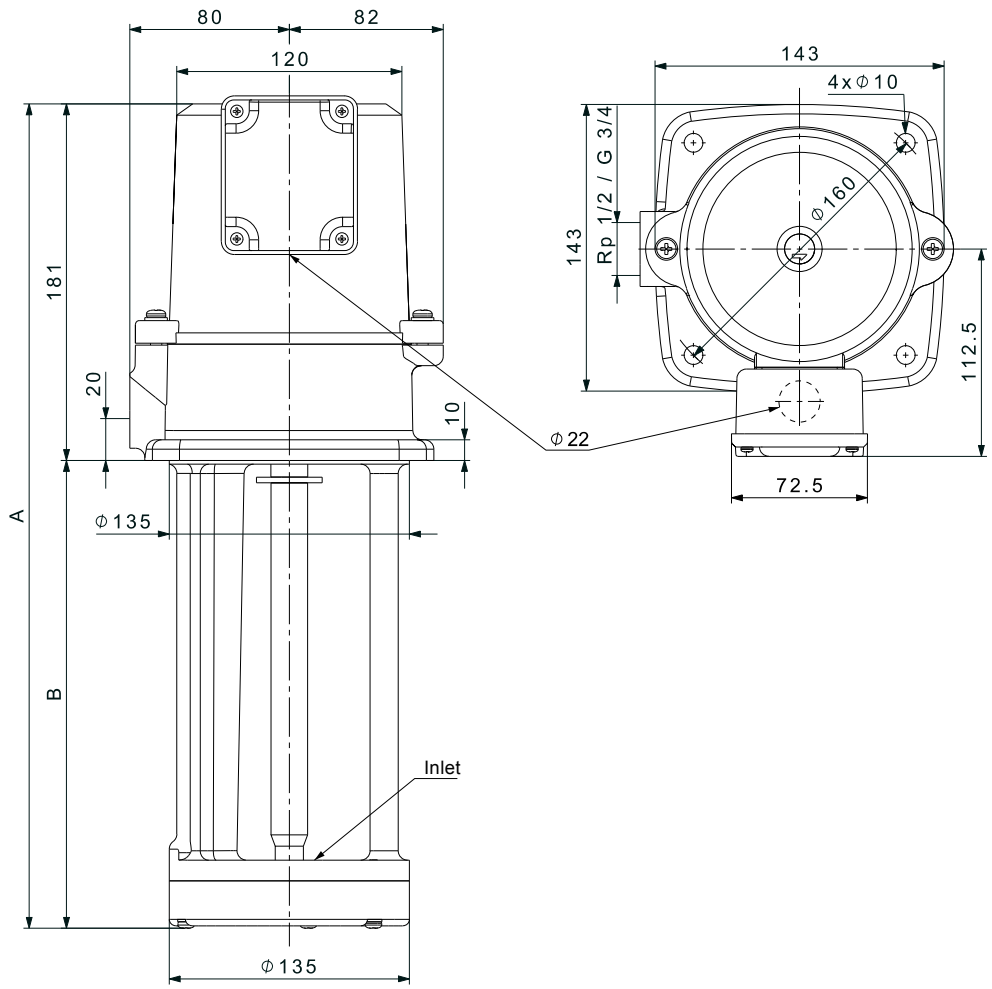
Voltage	Frequency [Hz]	P1 [W]	$I_{1/1}$ [A]	I_{max} [A]	I_{start} [A]	Cos φ
3 x 200 Δ V	50	100	0.39	0.45	3.32	0.74
3 x 200-220 Δ V	60	145	0.46 - 0.46	0.53 - 0.53	3.68 - 3.82	0.91 - 0.83
3 x 220-240 Δ / 380-415Y V	50	95	0.37/0.19	0.43/0.22	3.52/1.81	0.67 - 0.62
3 x 220-240 Δ / 380-440Y V	60	140	0.41/0.25 - 0.22	0.47/0.29 -0.25	3.24/1.98 - 1.74	0.9 - 0.82

MTA 40H



TM05 0863 1711

Dimensional sketches



Top suction

TM05 0885 3313

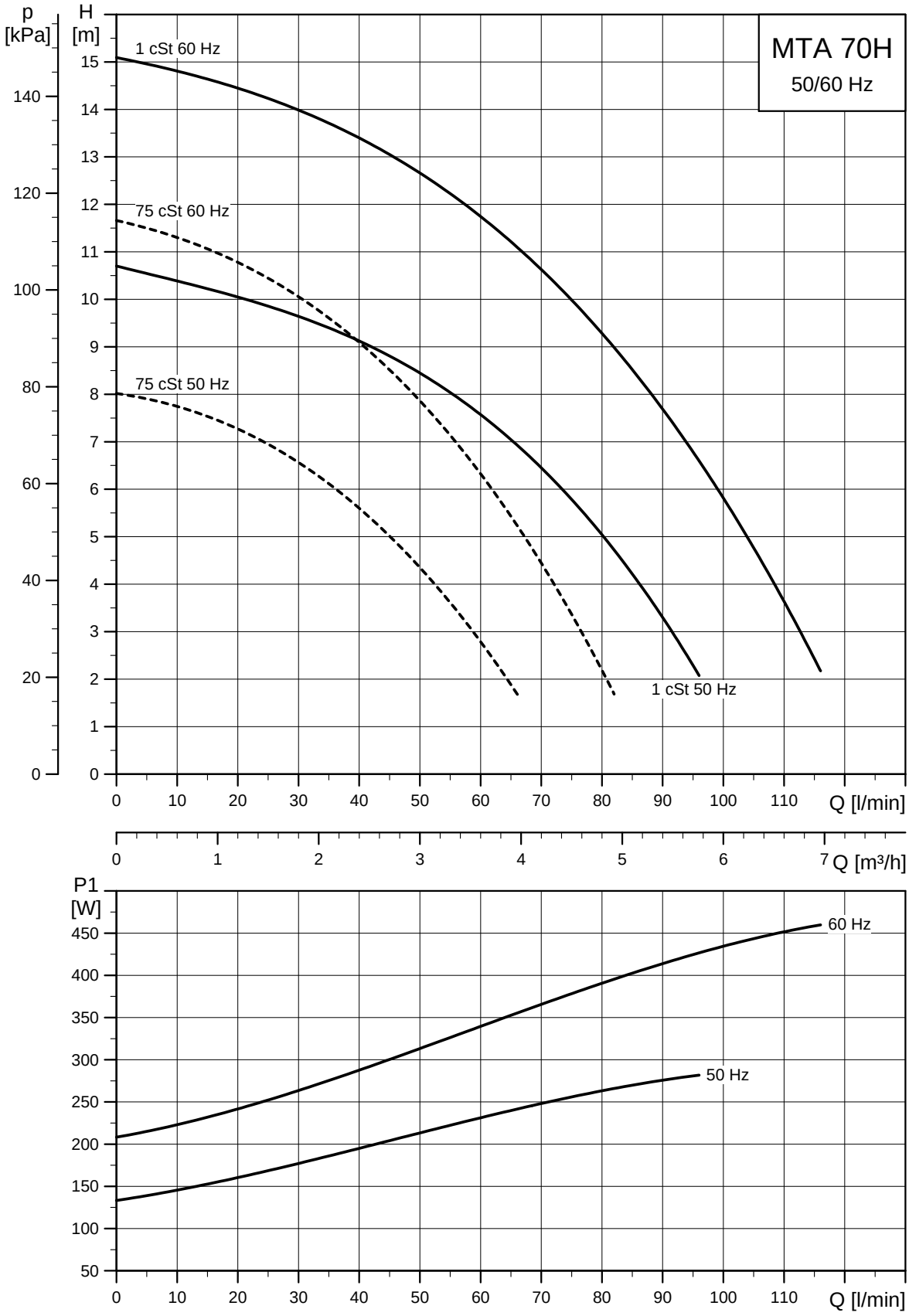
Dimensions and weights

Pump type	Suction	A [mm]	B [mm]	Net weight [kg]	Gross weight [kg]	Shipping volume [m^3]
MTA 40H-180	Top	361	180	11.3	12.6	0.02

Electrical data

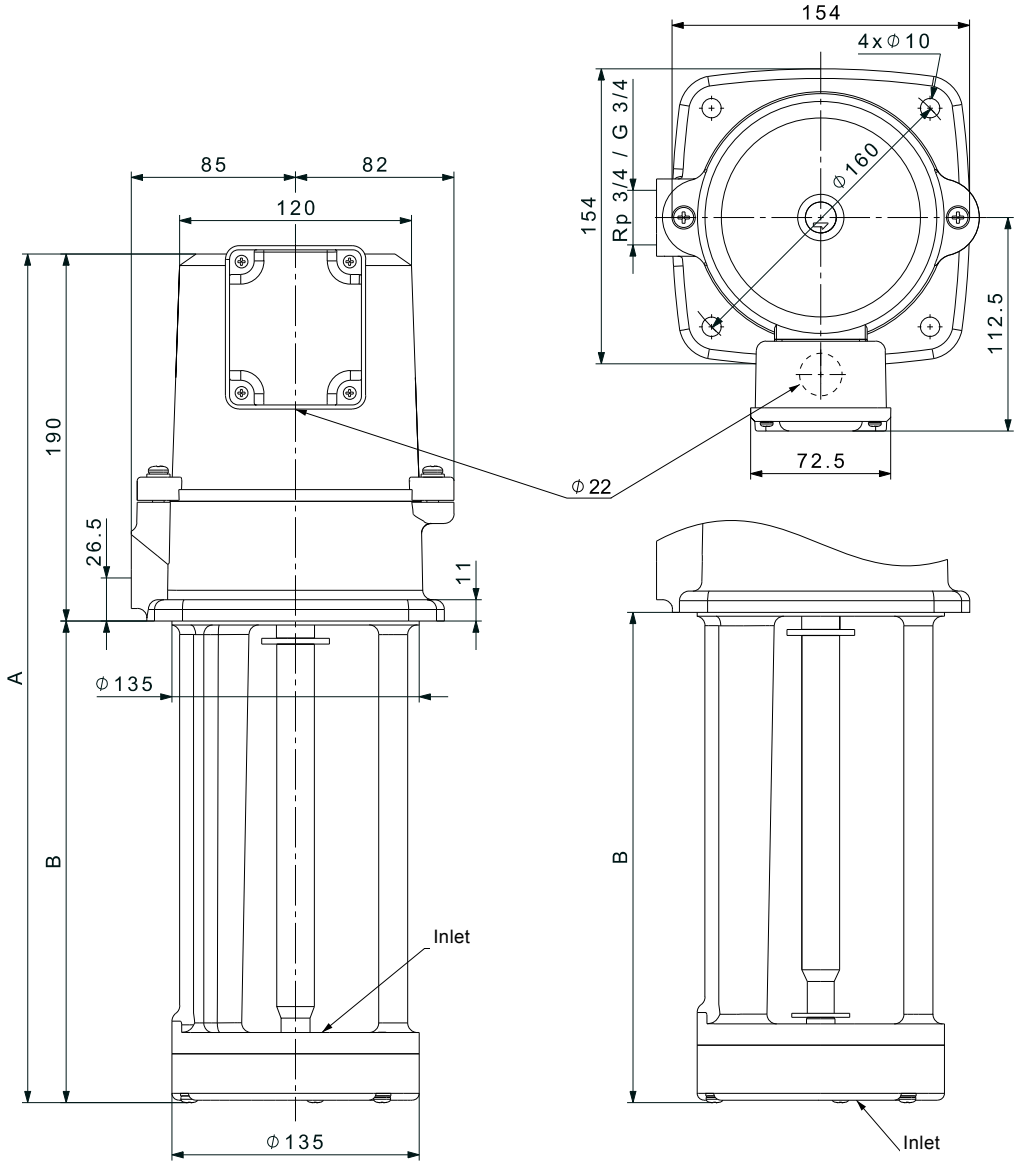
Voltage	Frequency [Hz]	P1 [W]	$I_{1/1}$ [A]	I_{max} [A]	I_{start} [A]	Cos φ
3 x 200 Δ V	50	240	0.86	0.99	5.42	0.81
3 x 200-220 Δ V	60	375	1.28 - 1.2	1.47 - 1.38	6.27 - 6.36	0.85 - 0.82
3 x 220-240 Δ / 380-415Y V	50	230	0.79/0.48	0.91/0.55	5.85/3.55	0.76 - 0.70
3 x 220-240 Δ / 380-440Y V	60	365	1.14/0.69 - 0.63	1.31/0.79 - 0.72	6.50/3.93 - 3.59	0.84 - 0.77

MTA 70H



TM05 0864 1711

Dimensional sketches



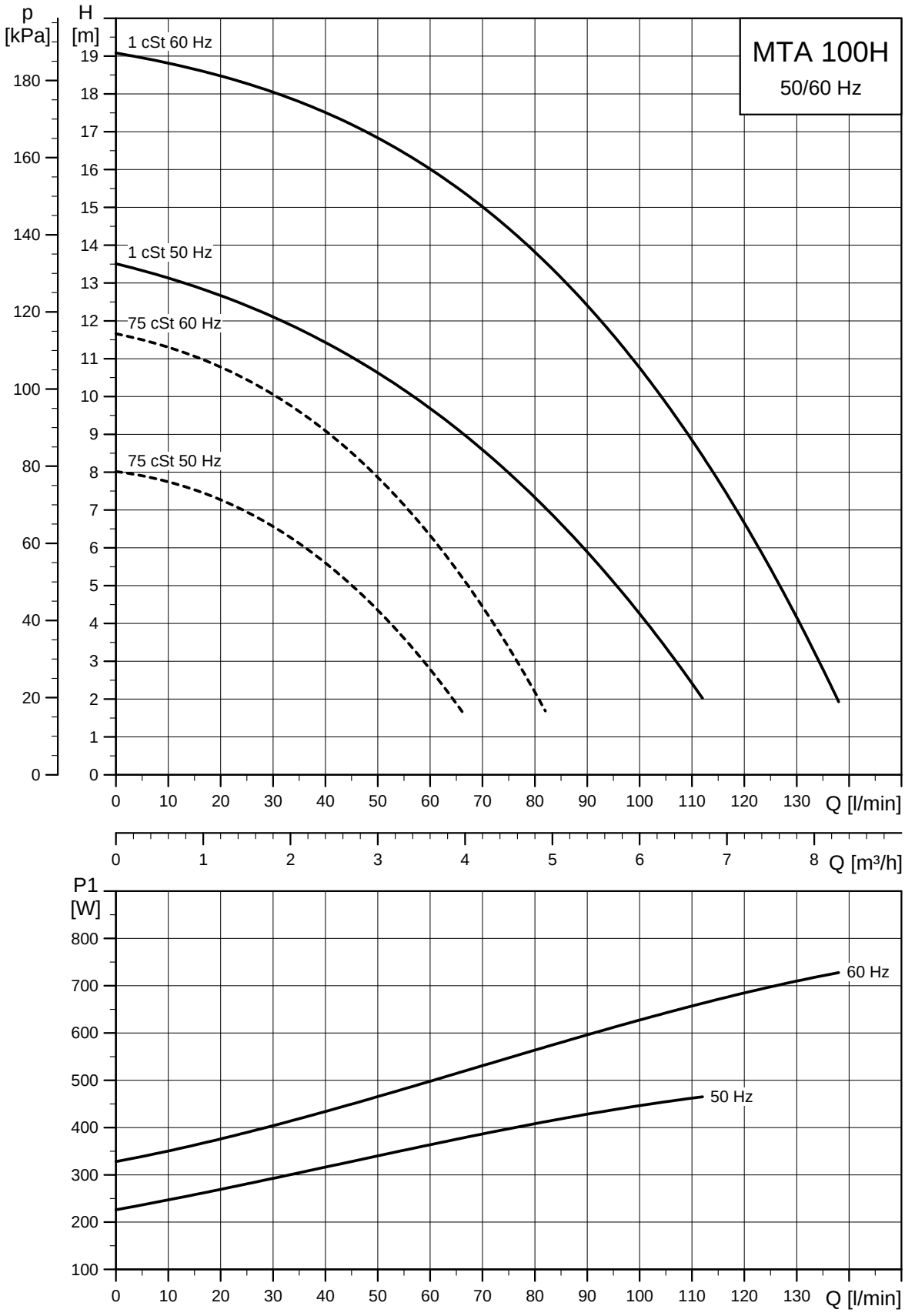
Dimensions and weights

Pump type	Suction	A [mm]	B [mm]	Net weight [kg]	Gross weight [kg]	Shipping volume [m^3]
MTA 70H-250	Top	440	250	14.3	16.0	0.023
MTA 70H-250	Bottom	440	250	14.8	16.5	0.023

Electrical data

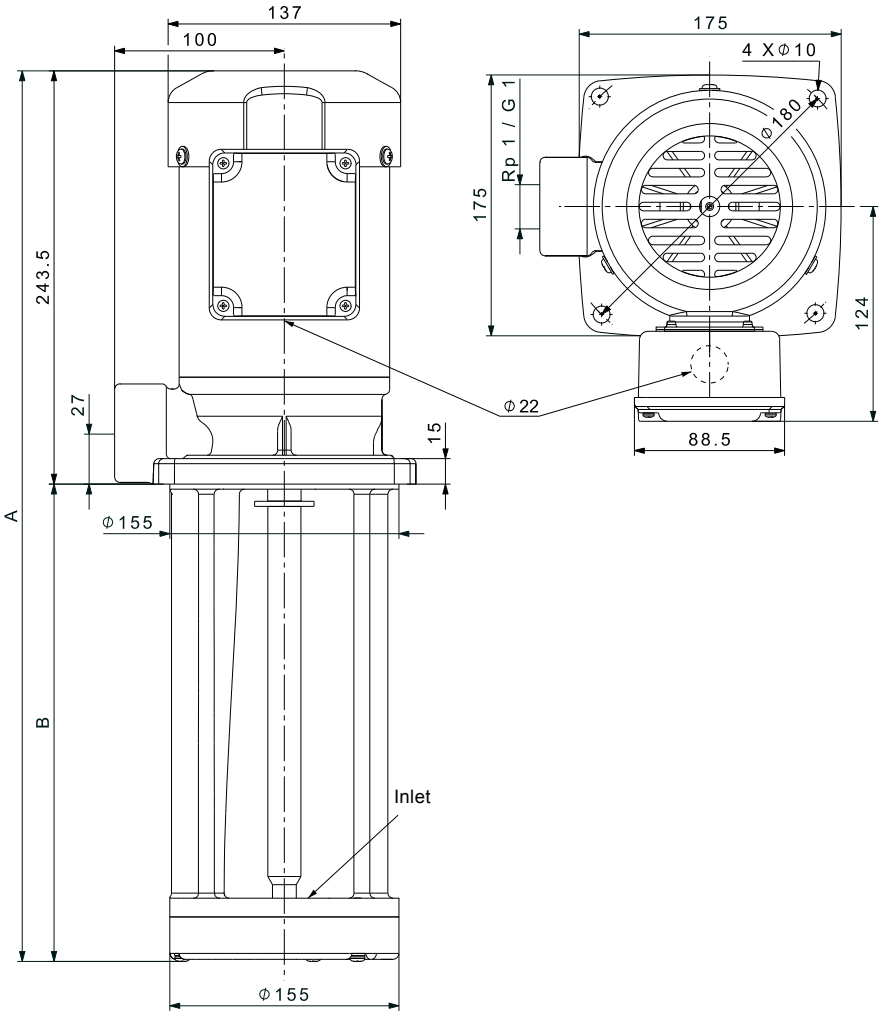
Voltage	Frequency [Hz]	P1 [W]	$I_{1/1}$ [A]	I_{max} [A]	I_{start} [A]	Cos φ
3 x 200 Δ V	50	283	1.18	1.36	8.26	0.69
3 x 200-220 Δ V	60	460	1.63 - 1.54	1.87 - 1.77	9.29 - 9.55	0.81 - 0.78
3 x 220-240 Δ / 380-415Y V	50	281	1.02/0.59	1.17/0.68	7.65/4.43	0.72 - 0.66
3 x 220-240 Δ / 380-440Y V	60	458	1.45/0.86 - 0.74	1.67/0.99 - 0.85	8.56/5.07 - 4.37	0.83 - 0.76

MTA 100H



TM05 0865 1711

Dimensional sketches



Top suction

TM06 2756 4614

Dimensions and weights

Pump type	Suction	A [mm]	B [mm]	Net weight [kg]	Gross weight [kg]	Shipping volume [m^3]
MTA 100H-280	Top	523.5	280	18.5	16.1	0.032

Electrical data

Voltage	Frequency [Hz]	P1 [W]	$I_{1/1}$ [A]	I_{max} [A]	I_{start} [A]	Cos φ
3 x 200 Δ V	50	465	1.81	2.08	12.1	0.74
3 x 200-220 Δ V	60	725	2.4 - 2.28	2.76 - 2.62	13.9 - 14.1	0.87 - 0.83
3 x 220-240 Δ / 380-415Y V	50	445	1.47/0.87	1.69/1.00	10.0/5.92	0.79 - 0.73
3 x 220-240 Δ / 380-440Y V	60	715	1.98/1.21 - 1.05	2.28/1.39 - 1.21	11.5/7.02 - 6.09	0.95 - 0.87

12. Motor data

Standard motors, MTR and SPK

TM03 1711 2805

Fig. 63 Grundfos MG motor

TM03 1710 2805

Fig. 64 Siemens motor

Standard motors, MTR and SPK, 50 Hz

Motor make	P2 [kW]	Frame size	Standard voltage [V]	$I_{1/1}$ [A]	Cos $\varphi_{1/1}$	η [%]	Motor efficiency class	I_{start} [A]	Speed [min^{-1}]
Siemens	0.06	63	220-240Δ/380-415Y	0.31/0.18	0.79 -0.72	68.5	-	1.55/0.90	2800-2850
	0.12	63	220-240Δ/380-415Y	0.59/0.34	0.80-0.72	71.0	-	2.71/1.56	2800-2850
	0.18	63	220-240Δ/380-415Y	0.90/0.52	0.79-0.71	71.5	-	3.94/2.28	2800-2850
Grundfos MG	0.25	71	220-255Δ/380-440Y	1.12/0.65	0.83-0.71	73.0	-	6.38/3.71	2840-2880
	0.37	71	220-240Δ/380-415Y	1.7/1.0	0.80-0.70	73.8	-	8.5-9.2/4.9-5.3	2850-2880
	0.55	71	220-240Δ/380-415Y	2.5/1.4	0.80-0.70	77.8	-	12-13/6.9-7.5	2830-2850
	0.75	80	380-415Δ	1.9	0.81-0.71	80.7	IE3	11.0-11.8	2840-2870
	1.1	80	380-415Δ	2.5	0.83-0.76	82.7	IE3	11.3-12.5	2840-2870
	1.5	90	380-415Δ	3.15	0.87-0.82	84.2	IE3	26.8-29.3	2890-2910
	2.2	90	380-415Δ	4.45	0.89-0.87	85.9	IE3	37.8-42.3	2890-2910
	3.0	100	380-415Δ	6.30	0.87-0.82	87.1	IE3	52.9-58.0	2900-2920
	4.0	112	380-415Δ	7.90	0.87	88.1	IE3	79-87.7	2920-2940
	5.5	132	380-415Δ	11.0	0.87-0.82	89.2	IE3	118.8-129.8	2920-2940
	7.5	132	380-415Δ/660-690Y	14.4-14.0/8.30-8.10	0.88-0.82	90.4	IE3	112.3-127.4/64.7-73.7	2910-2920
	11	160	380-415Δ/660-690Y	20.8-19.8/12.0-11.8	0.88-0.84	91.2	IE3	137.3-154.4/79.2-92.04	2940-2950
	15	160	380-415Δ/660-690Y	28.0-26.0/16.2-15.6	0.89-0.87	91.9	IE3	184.8-202.8/106.9-121.7	2930-2950
	18.5	160	380-415Δ/660-690Y	34.5-32.5/20.0-18.8	0.89-0.85	92.4	IE3	286.4-318.5/166-184.2	2940-2950
	22	180	380-415Δ/660-690Y	39.5/22.8	0.90	92.7	IE3	327.9-189.24	2950
Siemens	30	200L	380-415Δ/660-690Y	56.0-51.0/32.0-29.5	0.86	93.3	IE3	369.6-336.6/211.2-194.7	2955
	37	200L	380-415Δ/660-690Y	68.0-63.0/39.0-36.0	0.87	93.7	IE3	455.6-422.1/261.3-241.2	2955
	45	225M	380-415Δ/660-690Y	81.0-74.0/47.0-43.0	0.89	94.0	IE3	558.9-510.6/324.3-296.7	2960

Standard motors, MTR and SPK, 50 Hz, 3 x 200 V

Motor make	P2 [kW]	Frame size	Standard voltage [V]	$I_{1/1}$ [A]	Cos $\varphi_{1/1}$	η [%]	Motor efficiency class	I_{start} [A]	Speed [min^{-1}]
Siemens	0.06	63	200Δ/346Y	0.35/0.2	0.79	69.3	-	1.70/0.97	2830
	0.12	63	200Δ/346Y	0.66/0.38	0.77	70.5	-	3.38/1.95	2830
	0.18	63	200Δ/346Y	1.0/0.58	0.75	70.3	-	4.61/2.67	2830
Grundfos MG	0.25	71A	200-220Δ/346-380Y	1.32/0.76	0.82-0.77	70.0	-	7.00/4.03	2810-2850
	0.37	71A	200-220Δ/346-380Y	1.90/1.1	0.80-0.70	78.5	-	9.31/5.39	2850-2880
	0.55	71B	200-220Δ/346-380Y	2.75/1.58	0.80-0.70	80.0	-	13.2/7.58	2830-2850
	0.75	80A	200-220Δ/346-380Y	3.35-3.65/1.94-2.1	0.79-0.67	80.7	IE3	22.1-24.5/12.8-14.1	2820-2860
	1.1	80C	200-220Δ/346-380Y	4.65-4.65/2.7-2.7	0.83-0.75	82.7	IE3	33.5-37.2/19.4-21.6	2830-2860
	1.5	90LC	200-220Δ/346-380Y	6-6.05/3.45-3.5	0.85-0.78	84.2	IE3	68.4-77.4/39.3-44.8	2930-2950
	2.2	90LC	200-220Δ/346-380Y	8.9-9.35/5.15-5.35	0.85-0.74	85.9	IE3	89-100/51.5-57.2	2910-2930
	3	100LC	200-220Δ/346-380Y	11.4-12.8/6.55-7.35	0.86-0.7	87.1	IE3	161.9-180.5/93-103.6	2940-2950
	4	112MC	200-220Δ/346-380Y	14.6-14/8.5-8.1	0.88-0.84	88.1	IE3	151.8-170.8/88.4-98.8	2930-2940
	5.5	132SC	200-220Δ/346-380Y	20.4-19.8/11.8-11.4	0.88-0.82	89.2	IE3	208.1-231.7/120.4-133.4	2910-2930
	7.5	132SB	200-220Δ/346-380Y	29-32/16.8-18.2	0.82-0.69	90.7	IE3	263.9-297.6/152.9-169.3	2930-2940
Siemens	11	160M	200Δ	40.0	0.87	91.2	IE3	-	2955
	15	160M	200Δ	54.0	0.86	91.9	IE3	-	2955
	18.5	160L	200Δ	64.0	0.90	92.4	IE3	-	2960
	22	180M	200Δ	77.0	0.89	92.7	IE3	-	2950
	30	200L	200Δ	106	0.87	93.3	IE3	-	2955
	37	200L	200Δ	130	0.88	93.7	IE3	-	2955
	45	225M	200Δ	155	0.89	94	IE3	-	2960

TM03 1711 2805

Fig. 65 Grundfos MG motor

TM03 1710 2805

Fig. 66 Siemens motor

Standard motors, MTR and SPK, 60 Hz

Motor make	P2 [kW]	Frame size	Standard voltage [V]	$I_{1/1}$ [A]	Cos $\varphi_{1/1}$	η [%]	Motor efficiency class	I_{start} [A]	Speed [min^{-1}]
Siemens	0.06	63	220-277Δ/380-480Y	0.31/0.18	0.83-0.67	69.0	-	1.62/0.95	3360-3460
	0.12	63	220-277Δ/380-480Y	0.59/0.34	0.85-0.67	71.0	-	2.92/1.70	3360-3460
	0.18	63	220-277Δ/380-480Y	0.90/0.52	0.84-0.66	70.5	-	4.08/2.35	3360-3460
Grundfos MG	0.25	71A	220-255Δ/380-440Y	1.10-1.02/0.63-0.59	0.86-0.77	73	-	6.1-7.1/3.5-4.1	3400-3450
	0.37	71	220-255Δ/380-440Y	1.50-1.44/0.87-0.83	0.85-0.76	73.8	-	8.3-9.4/4.8-5.4	3410-3470
	0.55	71	220-255Δ/380-440Y	2.15-2.05/1.25-1.20	0.85-0.76	76.8	-	10.8-12.3/6.3-7.2	3390-3460
	0.75	80	380-440Δ	1.70-1.60	0.86-0.77	77	IE3	10.2-11.8	3410-3470
	1.1	80	380-440Δ	2.40-2.30	0.88-0.80	82.5	IE2 - IE3	10.3-11.5	3420-3470
	1.5	90	380-480Δ	3.10-2.70	0.90-0.81	84-58.5	IE2 - IE3	24.2-28.4	3470-3530
	2.2	90	380-480Δ	4.45-3.70	0.91-0.85	85.5-86.5	IE2 - IE3	34.7-40.7	3470-3530
	3.0	100	380-480Δ	6.20-5.40	0.91-0.84	87.5-88.5	IE2 - IE3	53.3-59.4	3480-3530
	4.0	112	380-480Δ	7.80-6.80	0.91-0.82	88.1	IE3	78-100	3510-3540
	5.5	132	380-480Δ	10.6-9.30	0.90-0.80	89.5	IE3	108.1-137.6	3510-3550
	7.5	132	380-480Δ/660-690Y	14.2-12.0/8.20-8.10	0.90-0.82	89.5	IE2	96.6-126/55.8-85.1	3490-3530
	11	160	380-480Δ/660-690Y	20.8-17.2/12.0-11.6	0.89-0.83	90.2-91	IE2 - IE3	120.6-153.1/69.6-103.2	3520-3550
	15	160	380-480Δ/660-690Y	28.0-22.4/16.2-15.6	0.90-0.86	90.2-91	IE2 - IE3	162.4-199.4/94-138.8	3520-3550
	18.5	160	380-480Δ/660-690Y	34.5-28.0/20.0-16.6	0.89-0.84	91-91.7	IE2 - IE3	231.2-308/134-182.6	3520-3560
	22	180	380-480Δ/660-690Y	40.0-32.5/23.0-22.2	0.91	91.7	IE3	260-338/149.5-230.9	3520-3560
Siemens	30	200L	380-420Δ/660-725Y	56.0-50.0/32.0-29.0	0.89	92.4	IE3	341.6-305/195.2-176.9	3545
	37	200L	380-420Δ/660-725Y	69.0-62.0/38.5-35.0	0.90	93	IE3	400.2-359.6/223.3-203	3540
	45	225M	380-420Δ/660-725Y	81.0-73.0/47.0-43.0	0.90	93.6	IE3	453.6-408.8/263.2-240.8	3550

Standard motors, MTR and SPK, 60 Hz, 3 x 200 V

Motor make	P2 [kW]	Frame size	Standard voltage [V]	$I_{1/1}$ [A]	Cos $\varphi_{1/1}$	η [%]	Motor efficiency class	I_{start} [A]	Speed [min^{-1}]
Siemens	0.06	63	200-230Δ/346-400Y	0.33/0.19	0.81-0.72	69.3	IE2	1.60/0.92	3380-3440
	0.12	63	200-230Δ/346-400Y	0.64/0.37	0.84-0.74	70.5	IE2	3.28/1.89	3380-3440
	0.18	63	200-230Δ/346-400Y	0.94/0.54	0.81-0.68	70.3	IE2	4.33/2.49	3380-3440
Grundfos MG	0.25	71A	200-230Δ/346-400Y	1.30/0.75	0.86-0.80	68.0	IE2	6.50/3.75	3380-3450
	0.37	71A	200-230Δ/346-400Y	1.65-1.50/0.96-0.87	0.85-0.76	79.0-80.0	IE2	9.08-9.75/5.28-5.66	3410-3470
	0.55	71B	200-230Δ/346-400Y	2.36-2.14/1.36-1.24	0.85-0.76	81.5-83.0	IE2	11.8-12.8/6.80-7.44	3390-3460
	0.75	80A	200-230Δ/346-400Y	3.2-2.95/1.82-1.7	0.84-0.77	75.5-77	IE2 - IE3	8.3-10.9/4.7-6.3	3380-3450
	1.1	80C	200-230Δ/346-400Y	4.5-4.15/2.6-2.32	0.86-0.81	82.5-84	IE2 - IE3	13.1-17/7.5-9.5	3380-3450
	1.5	90LC	200-230Δ/346-400Y	5.9-5.5/3.4-3.1	0.89-0.86	84-85.5	IE2 - IE3	58.4-71.5/33.7-40.3	3520-3530
	2.2	90LC	200-230Δ/346-400Y	8.6-8/5-4.55	0.89-0.87	85.5-86.5	IE2 - IE3	74-91.2/43-51.9	3490-3510
	3	100LC	200-230Δ/346-400Y	11.2-10.4/6.5-5.8	0.88-0.86	87.5-88.5	IE2 - IE3	141.1-173.7/81.9-96.9	3520-3540
	4	112MC	200-230Δ/346-400Y	14.6-13/8.45-7.45	0.9-0.87	87.5-88.5	IE2 - IE3	129.9-154.7/75.2-88.7	3510-3540
	5.5	132SC	200-230Δ/346-400Y	20.2-18/11.6-10.4	0.9-0.87	88.5-89.5	IE2 - IE3	177.8-210.6/102.1-121.7	3490-3520
	7.5	132SB	200-230Δ/346-400Y	26.5-25/15.4-14.4	0.89-0.82	91-91.6	IE2 - IE3	220-262.5/127.8-151.2	3520-3540
Siemens	11	160M	200-220Δ	40.0-36.4	0.87-0.89	91.2-91.6	IE3	-	3550-3560
	15	160M	200-220Δ	55.0-51.4	0.89-0.88	91.0-92.1	IE3	-	3545-3560
	18.5	160L	200-220Δ	64.0-59.6	0.91-0.89	91.0-92.4	IE3	-	3545-3558
	22	180M	200-220Δ	77.0-71.0	0.90-0.89	91.7-91.7	IE3	-	3540-3550
	30	200L	200-220Δ	106-98.0	0.89-0.87	92.4-92.4	IE3	-	3545-3555
	37	200L	200-220Δ	130-118	0.90-0.89	93.0-93.0	IE3	-	3540-3560
	45	225M	200-220Δ	157-142	0.89-0.89	93.0-93.6	IE3	-	3550-3565

E-motors, MTRE

TM03 1712 2805

Fig. 67 Grundfos MGE motor

E-motors, MTRE, 50/60 Hz

Motor make	P2 [kW]	Frame size	Phase	Standard voltage [V]	$I_{1/1}$ [A]	Cos $\varphi_{1/1}$	η [%]	Motor efficiency class
Grundfos MGE	0.37*	71	1	200-240	1.9 - 2.3	0.98	86.3	-
	0.55*	71	1	200-240	2.8 - 3.3	0.99	86.7	-
	0.75*	80	1	200-240	3.8 - 4.5	0.99	85.8	-
	1.1*	80	1	200-240	5.4 - 6.5	0.99	87.2	-
	1.5*	90	1	200-240	7.3 - 8.7	1.00	87.6	-
	0.37	71	3	380-500	0.7 - 0.8	0.73 - 0.85	88.2	-
	0.55	71	3	380-500	1.0 - 1.1	0.76 - 0.87	88.5	-
	0.75	90	3	380-500	1.3 - 1.5	0.79 - 0.89	87.7	IE4**
	1.1	90	3	380-500	1.8 - 2.1	0.82 - 0.91	89.5	IE4**
	1.5	90	3	380-500	2.3 - 2.8	0.85 - 0.92	90.0	IE4**
	2.2	90	3	380-480	3.3 - 4.0	0.88 - 0.93	90.7	IE4**
	3	100	3	380-480	6.2 - 5.0	0.94 - 0.92	87.1	IE3
	4	112	3	380-480	8.1 - 6.6	0.94 - 0.92	88.1	IE3
	5.5	132	3	380-480	11.0 - 8.8	0.94 - 0.93	89.2	IE3
	7.5	132	3	380-480	14.8 - 11.6	0.94 - 0.95	90.1	IE3
	11	132	3	380-480	22.5 - 18.8	0.90 - 0.90	91.2	IE3
	15	160	3	380-480	30.0 - 26.0	0.91 - 0.86	91.9	IE3
	18.5	160	3	380-480	37.0 - 31.0	0.91 - 0.88	92.4	IE3
	22	180	3	380-480	43.5 - 35.0	0.91 - 0.90	92.7	IE3

* Pumps are normally fitted with three-phase MGE motors. Dimension tables in section *Performance curves and technical data* on page 51 show pumps with three-phase MGE motors.

** The IE efficiency levels are defined in IEC 60034-30-1 Ed. 1 (CD) draft. Due to the technology used in this motor, it falls outside the scope of IEC 60034-30-1 Ed. 1 (CD). Being the only defined standard at present, this standard is chosen as reference. The efficiency (including both motor and electronics) is above the IE4 level.

E-motors, MTRE, 60 Hz, 3 x 200 V

Motor make	P2 [kW]	Frame size	Phase	Standard voltage [V]	$I_{1/1}$ [A]	Cos $\varphi_{1/1}$	η [%]	Motor efficiency class
Grundfos MGE	1.5	90	3	200-230	5.6 - 5.1	0.95	84.0	IE2
	2.2	90	3	200-230	8.3 - 7.6	0.95	85.5	IE2
	4	112	3	200-230	13.4 - 12.8	0.94	87.5	IE2
	5.5	132	3	200-230	19.7 - 18.1	0.94 - 0.92	88.5	IE2

13. Pumped liquids

Pumped liquids

MTR, MTRE, MTH and MTA pumps are designed to pump non-explosive liquids that do not chemically attack the pump materials.

When pumping liquids with a density and/or viscosity higher than that of water, oversized motors may be required.

Whether a pump is suitable for a particular liquid depends on a number of factors of which the most important are the chloride content, pH-value, temperature and content of chemicals, oils, etc.

Please note that aggressive liquids may attack or dissolve the protective oxide film of the stainless steel and thus cause corrosion.

Pumping of solid particles

MTR, SPK and MTH pumps

These pumps are fitted with a suction strainer. The strainer prevents large solid particles from entering and damaging the pump. The table below describes the size of the passage in the strainer and the impeller.

Pump	Strainer passage [mm]	Free strainer passage [cm^2]	Impeller passage [mm]
MTR(E) 1s	∅2	23	2.5
MTR(E) 1	∅2	23	2.5
MTR(E) 3	∅2	23	3.1
MTR(E) 5	∅4	28	5.5
MTR(E) 10	∅4	43	5.5
MTR(E) 15	∅4	43	6.0
MTR(E) 20	∅4	43	8.0
MTR(E) 32	∅4	56	8.0
MTR(E) 45	∅4	56	9.5
MTR(E) 64	∅4	56	13.0
SPK 1	∅2	-	2.5
SPK 2	∅2	-	2.5
SPK 4	∅2	-	2.5
SPK 8	∅4	-	4.0
MTH 2	∅2	23	2.0
MTH 4	∅4	28	4.0

If the pumped liquid contains solid particles larger than the size of the holes in the strainer, the passage of the strainer may be blocked. In such situations the performance will drop as a result of a reduced flow through the pump.

Note: If you remove the strainer from the suction port, solid particles may enter the pump and cause a seizure or even damage the pump.

In grinding applications Grundfos recommends that the pumped liquid is screened for abrasive particles before entering the pump. When pumped, abrasive particles reduce the life of the pump components.

Wear of the pump components caused by abrasive particles starts when the concentration exceeds 20 ppm.

MTA pumps

MTA pumps are not fitted with a suction strainer.

Pump	Max. particle size [mm]
MTA 30	4-5
MTA 60	
MTA 90	8-10
MTA 120	
MTA 200	
MTA 20H	4-5
MTA 40H	
MTA 70H	
MTA 100H	

List of pumped liquids

A number of typical liquids are listed below.

Other pump versions/shaft seals may be applicable, but those stated in the list are considered to be the best choices.

The table is intended as a general guide only, and it cannot replace actual testing of the pumped liquids and pump materials under specific working conditions.

The list should, however, be applied with some caution as factors such as concentration of the pumped liquid, liquid temperature or pressure may affect the chemical resistance of a specific pump version.

Safety precautions must be taken when pumping hazardous/flammable liquids.

Pumped liquid	Note	Liquid concentration, liquid temperature	Recommended pump version/shaft seal	
			MTR, MTRE	
			A-version (standard range, all wetted parts of cast iron and stainless steel)	I-version (stainless-steel version, all wetted parts of stainless steel EN/DIN 1.4301)
Acetic acid, CH_3COOH	-	5 %, 20 °C	-	HUUE
Alkaline degreasing agent	D, F	-	HUUE	-
Ammonium bicarbonate, NH_4HCO_3	E	20 %, 30 °C	-	HUUE
Ammonium hydroxide, NH_4OH	-	20 %, 40 °C	HUUE	-
Benzoic acid, C_6H_5COOH	H	0.5 %, 20 °C	-	HUUV
Boiler water	-	< 90 °C	HUUE	-
Calcareous water	-	< 90 °C	HUUE	-
Calcium acetate (as coolant with inhibitor) $Ca(CH_3COO)_2$	D, E	30 %, 50 °C	HUUE	-
Calcium hydroxide, $Ca(OH)_2$	E	Saturated solution, 50 °C	HUUE	-
Chloride-containing water	F	< 30 °C, max. 500 ppm	-	HUUE
Citric acid, $HOC(CH_2CO_2H)_2COOH$	H	5 %, 40 °C	-	HUUE
Completely desalinated water (demineralised water)	-	< 90 °C	-	HUUE
Condensate	-	< 90 °C	HUUE	-
Copper sulphate, $CuSO_4$	E	10 %, 30 °C	-	HUUE
Corn oil	D, E, 3	100 %, 80 °C	HUUV	-
Domestic hot water (potable water)	-	< 120 °C	HUUE	-
Ethylene glycol, $HOCH_2CH_2OH$	D, E	50 %, 50 °C	HUUE	-
Formic acid, HCOOH	-	2 %, 20 °C	-	HUUE
Glycerine (glycerol), $OHCH_2CH(OH)CH_2OH$	D, E	50 %, 50 °C	HUUE	-
Hydraulic oil (mineral)	E, 2, 3	100 %, 100 °C	HUUV	-
Hydraulic oil (synthetic)	E, 2, 3	100 %, 100 °C	HUUV	-
Lactic acid, $CH_3CH(OH)COOH$	E, H	10 %, 20 °C	-	HUUV
Linoleic acid, $C_{17}H_{31}COOH$	E, 3	100 %, 20 °C	HUUV	-
Motor oil	E, 2, 3	100 %, 80 °C	HUUV	-
Cutting oil	E	90 °C	HUUV	-
Water-based cooling lubricant	E	90 °C	HUUV	-
Naphthalene, $C_{10}H_8$	E, H	100 %, 80 °C	HUUV	-
Nitric acid, HNO_3	F	1 %, 20 °C	-	HUUE
Oil-containing water	-	< 90 °C	HUUV	-
Olive oil	D, E, 3	100 %, 80 °C	HUUV	-
Oxalic acid, $(COOH)_2$	H	1 %, 20 °C	-	HUUE
Peanut oil	D, E, 3	100 %, 80 °C	HUUV	-
Phosphoric acid, H_3PO_4	E	20 %, 20 °C	-	HUUE
Propylene glycol, $CH_3CH(OH)CH_2OH$	D, E	50 %, 90 °C	HUUE	-
Potassium carbonate, K_2CO_3	E	20 %, 50 °C	HUUE	-
Potassium formate (as coolant with inhibitor), KOOCH	D, E	30 %, 50 °C	HUUE	-
Potassium hydroxide, KOH	E	20 %, 50 °C	-	HUUE
Potassium permanganate, $KMnO_4$	-	1 %, 20 °C	-	HUUE
Rape seed oil	D, E, 3	100 %, 80 °C	HUUV	-
Salicylic acid, $C_6H_4(OH)COOH$	H	0.1 %, 20 °C	-	HUUE
Silicone oil	E, 3	100 %	HUUV	-
Sodium bicarbonate, $NaHCO_3$	E	10 %, 60 °C	-	HUUE
Sodium chloride (as coolant), NaCl	D, E	30 %, < 5 °C, pH > 8	HUUE	-
Sodium hydroxide, NaOH	E	20 %, 50 °C	-	HUUE
Sodium nitrate, $NaNO_3$	E	10 %, 60 °C	-	HUUE
Sodium phosphate, Na_3PO_4	E, H	10 %, 60 °C	-	HUUE
Sodium sulphate, Na_2SO_4	E, H	10 %, 60 °C	-	HUUE
Softened water	-	< 120 °C	-	HUUE
Soya oil	D, E, 3	100 %, 80 °C	HUUV	-
Unsalted swimming pool water	-	Approx. 2 ppm free chlorine (Cl_2)	HUUE	-

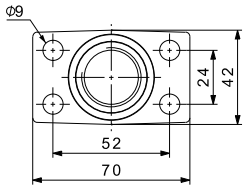
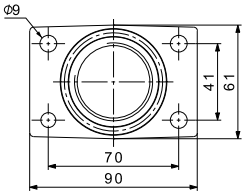
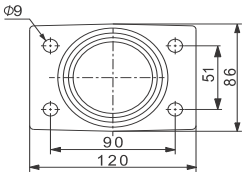
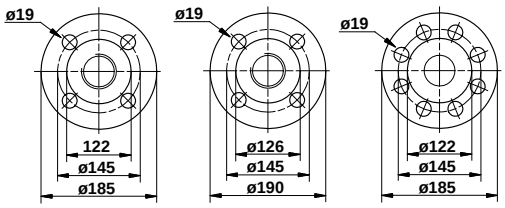
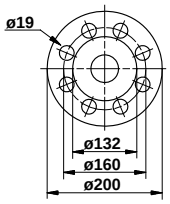
List of notes

D	Often with additives.
E	Density and/or viscosity differ from that of water. Allow for this when calculating motor output and pump performance.
F	Pump selection depends on many factors. Contact Grundfos.
H	Risk of crystallisation/precipitation in shaft seal.
1	The pumped liquid is easily ignited.
2	The pumped liquid highly inflammable.
3	Insoluble in water.
4	Low self-ignition point.

14. Accessories

Counter-flanges for MTR, MTRE, SPK

A counter-flange set consists of one counter-flange, one gasket, bolts and nuts. Counter-flange sets are available in cast iron (EN-GJL-200) and some are also available in stainless steel (EN/DIN 1.4301/AISI 304).

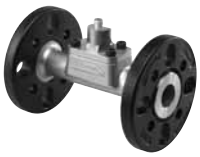
Counter-flange		Pump type	Description	Rated pressure	Pipe connection	Material	Product number
	TM04 6337 0210	**SPK 1 SPK 2 SPK 4**	Threaded	25 bar	Rp 3/4	Cast iron	395104
	TM04 6336 0210	**MTR, MTRE 1s MTR, MTRE 1 MTR, MTRE 3 MTR, MTRE 5 MTR, MTRE 8**	Threaded	16 bar	Rp 1 1/4	Cast iron	405178
					G 1 1/4		98508757
					NPT 1 1/4		-
	TM06 2823 4614	**MTR, MTRE 10 MTR, MTRE 15 MTR, MTRE 20**	Threaded	16 bar, EN 1092-2	Rp 2	Cast iron	98767494
					G 2		98796348
					NPT 2		98796349
 Rp 2 1/2 / 16 bar Rp 3 / 16 bar 25/40 bar	TM03 2116 3705	**MTR, MTRE 32**	Threaded	16 bar, EN 1092-2	Rp 2 1/2	Cast iron	349902
						Stainless steel	349910
			Threaded	16 bar, special flange	Rp 3	Cast iron	349901
						Stainless steel	349911
			For welding	16 bar, EN 1092-2	65 mm, nominal	Cast iron	349904
						Stainless steel	349906
			For welding	40 bar, DIN 2635	65 mm, nominal	Cast iron	349905
						Stainless steel	349908
			For welding	16 bar, special flange	80 mm, nominal	Cast iron	349903
						Stainless steel	349907
			For welding	25 bar, special flange	80 mm, nominal	Stainless steel	349909
	TM03 2117 3705	**MTR, MTRE 45 MTR, MTRE 64**	Threaded	16 bar	Rp 3	Cast iron	350540
						Stainless steel	350543
			For welding	16 bar	80 mm, nominal	Cast iron	350541
						Stainless steel	350544
			For welding	40 bar	80 mm, nominal	Cast iron	350542
						Stainless steel	350545

Pipe connection

Various sets of counter-flanges and couplings are available for pipe connection.

Sensors for MTR, MTRE and SPK

Accessory	Type	Flow range [m^3/h]	Pipe connection	O-ring		Connection type		Product number
				EPDM	FKM	Cast-iron flange	Stainless-steel flange	
Grundfos Vortex Flow sensor, VFI[1)] • Sensor tube with sensor, sensor tube of EN 1.4408 and sensor of EN 1.4404 • 4-20 mA output signal • 2 flanges • 5 m cable with M12 connection in one end • quick guide.	VFI 1.3-25 DN32 020 E	1.3-25	DN 32	•		•		97686141
	VFI 1.3-25 DN32 020 F				•	•		97686142
	VFI 1.3-25 DN32 020 E			•			•	97688297
	VFI 1.3-25 DN32 020 F				•		•	97688298
	VFI 2-40 DN40 020 E	2-40	DN 40	•		•		97686143
	VFI 2-40 DN40 020 F				•	•		97686144
	VFI 2-40 DN40 020 E			•			•	97688299
	VFI 2-40 DN40 020 F				•		•	97688300
	VFI 3.2-64 DN50 020 E	2-64	DN 50	•		•		97686145
	VFI 3.2-64 DN50 020 F				•	•		97686146
	VFI 3.2-64 DN50 020 E			•			•	97688301
	VFI 3.2-64 DN50 020 F				•		•	97688302
	VFI 5.2-104 DN65 020 E	5.2-104	DN 65	•		•		97686147
	VFI 5.2-104 DN65 020 F				•	•		97686148
	VFI 5.2-104 DN65 020 E			•			•	97688303
	VFI 5.2-104 DN65 020 F				•		•	97688304
	VFI 8-160 DN80 020 E	8-160	DN 80	•		•		97686149
	VFI 8-160 DN80 020 F				•	•		97686150
	VFI 8-160 DN80 020 E			•			•	97688305
	VFI 8-160 DN80 020 F				•		•	97688306
	VFI 12-240 DN100 020 E	12-240	DN 100	•		•		97686151
	VFI 12-240 DN100 020 F				•	•		97686152
	VFI 12-240 DN100 020 E			•			•	97688308
	VFI 12-240 DN100 020 F				•		•	97688309



1) For more information about the VFI sensor, see the Grundfos Direct Sensors™ data booklet, publication number 97790189, in Grundfos Product Center (http://product-selection.grundfos.com/).

Accessory	Type	Supplier	Measuring range	Product number
Flowmeter	SITRANS F M MAGFLO MAG 5100 W	Siemens	1-5 m^3 (DN 25)	ID8285
	SITRANS F M MAGFLO MAG 5100 W		3-10 m^3 (DN 40)	ID8286
	SITRANS F M MAGFLO MAG 5100 W		6-30 m^3 (DN 65)	ID8287
	SITRANS F M MAGFLO MAG 5100 W		20-75 m^3 (DN 100)	ID8288
Temperature sensor	TTA (0) 25	Carlo Gavazzi	0-25 °C	96432591
	TTA (-25) 25		-25 - 25 °C	96430194
	TTA (50) 100		50-100 °C	96432592
	TT.A (0) 150		0-150 °C	96430195
Accessory for temperature sensor. All with 1/2 RG connection	Protecting tube ∅9 x 50 mm			96430201
	Protecting tube ∅9 x 100 mm			96430202
	Cutting ring bush			96430203
Temperature sensor, ambient temperature	WR 52	tmg (DK: Plesner)	-50 - 50 °C	ID8295
Differential-temperature sensor	ETSD	Honsberg	0-20 °C	96409362
			0-50 °C	96409363

Note: All sensors have 4-20 mA signal output.

Danfoss pressure sensor kits

Content	Liquid temperature	Pressure [bar]	Product number
• Danfoss pressure sensor, type MBS 3000, with 2 m screened cable Connection: G 1/2 A (DIN 16288-B6kt) • 5 cable clips (black) • Instructions PT (400212)	-40 - 85 °C	0-4	96428014
		0-6	96428015
		0-10	96428016
		0-16	96428017
		0-25	96428018

DPI differential-pressure sensor kit

Content	Pressure [bar]	Product number
• 1 sensor incl. 0.9 m screened cable (7/16" connections) • 1 original DPI bracket for wall mounting • 1 Grundfos bracket for mounting on motor • 2 M4 screws for mounting of sensor on bracket • 1 M6 screw (self-cutting) for mounting on MGE 90/100 • 1 M8 screw (self-cutting) for mounting on MGE 112/132 • 3 capillary tubes (short/long) • 2 fittings (1/4" - 7/16") • 5 cable clips (black) • Installation and operating instructions (00480675) • Service kit instructions.	0 - 0.6	96611522
	0 - 1.0	96611523
	0 - 1.6	96611524
	0 - 2.5	96611525
	0 - 4.0	96611526
	0 - 6.0	96611527
	0-10	96611550

EMC filter for MTRE

EMC filter required for installation of 7.5 - 22 kW MTRE pumps in residential areas.

Product	Product number
EMC filter (7.5 kW)	96041047
EMC filter (11 kW)	96478309
EMC filter (15 kW)	96478309
EMC filter (18.5 kW)	96478309
EMC filter (22 kW)	96478309

Grundfos GO

The Grundfos GO is used for wireless infrared or radio communication with the pumps.

Various Grundfos GO variants are available.

The variants are described in the following.

MI 202 and MI 204

The MI 202 and MI 204 are add-on modules with built-in infrared and radio communication. The MI 202 can be used in conjunction with an Apple iPhone or iPod with 30-pin connector and iOS 5.0 or later, e.g. fourth generation iPhone or iPod.

The MI 204 can be used in conjunction with an Apple iPhone or iPod with Lightning connector, e.g. fifth generation iPhone or iPod.

(The MI 204 is also available together with an Apple iPod touch and a cover.)

TM05 3887 1612 - TM05 7704 1513

Fig. 68 MI 202 and MI 204

Supplied with the product:

- Grundfos MI 202 or 204
- sleeve
- quick guide
- charger cable.

MI 301

The MI 301 is a module with built-in infrared and radio communication. The MI 301 must be used in conjunction with an Android or iOS-based smart devices with a Bluetooth connection. The MI 301 has rechargeable Li-ion battery and must be charged separately.

TM05 3890 1712

Fig. 69 MI 301

Supplied with the product:

- Grundfos MI 301
- battery charger
- quick guide.

Product numbers

Grundfos GO variant	Product number
Grundfos MI 202	98046376
Grundfos MI 204	98424092
Grundfos MI 204 including iPod touch	98612711
Grundfos MI 301	98046408

CIU communication interface units

GrA 6118

Fig. 70 Grundfos CIU communication interface unit

The CIU units enable communication of operating data, such as measured values and setpoints, between MTRE pumps and a building management system.

The CIU unit incorporates a 24-240 VAC/VDC power supply module and a CIM module. You can mount it on a DIN rail or on a wall.

You can use the CIU modules for MTRE pumps with MGE motors from 3.0 to 7.5 kW.

We offer the following CIU units:

Description	Fieldbus protocol	Product number
CIU 100	LonWorks	96753735
CIU 150	PROFIBUS DP	96753081
CIU 200	Modbus RTU	96753082
CIU 250*	GSM/GPRS	96787106
CIU 271*	Grundfos Remote Management (GRM)	96898819
CIU 300	BACnet MS/TP	96893769
CIU 500	BACnet IP	96753894
CIU 500	Modbus TCP	
CIU 500	PROFINET IO	

* Antenna not included. See below.

Antenna for CIU 250 and 270

Description	Product number
Antenna for roof	97631956
Antenna for desk	97631957

For further information about data communication via CIU units and fieldbus protocols, see the CIU documentation available in Grundfos Product Center. See page 157.

CIM communication interface modules

GrA 6121

Fig. 71 Grundfos CIM communication interface module

The CIM modules enable communication of operating data, such as measured values and setpoints, between MTRE pumps and a building management system.

The CIM modules are add-on communication modules which are fitted in the terminal box of CRE, CRIE, CRNE pumps of 11-22 kW.

The CIM modules can be used for MTRE pumps with MGE motors from 0.25 - 2.2 kW and 11-22 kW.

Note: CIM modules must be fitted by authorised staff.

We offer the following CIM modules:

Description	Fieldbus protocol	Product number
CIM 050	GENI	96824631
CIM 100	LonWorks	96824797
CIM 150	PROFIBUS DP	96824793
CIM 200	Modbus RTU	96824796
CIM 250*	GSM/GPRS	96824795
CIM 271*	Grundfos Remote Management (GRM)	96898815
CIM 300	BACnet MS/TP	96893770
CIM 500	BACnet IP	98301408
CIM 500	Modbus TCP	
CIM 500	PROFINET	

* Antenna not included. See below.

Antenna for CIM 250 and 270

Description	Product number
Antenna for roof	97631956
Antenna for desk	97631957

For further information about data communication via CIM modules and fieldbus protocols, see the CIM documentation available in Grundfos Product Center. See page 157.

15. Variants

List of variants - on request

Below please find the range of options available for customizing the MTR, MTRE, SPK, MTH and MTA pumps to meet special requirements.

Contact Grundfos for further information or for requests other than the ones mentioned below.

Pumps

Variant	Applies to	Description
Immersion depth	MTR, MTRE	See page 154
	SPK	See page 155
Horizontally mounted pump	MTR, MTRE SPK	See page 156
120 °C solution	MTR, MTRE SPK	See page 156
Suction pipe	MTR, MTRE SPK MTH	See page 156

Shaft seals

Variant	Applies to	Description
Shaft seal with FFKM, FXM or EDPM O-ring material	MTR, MTRE SPK MTH	We recommend shaft seals with FFKM, FXM or EPDM O-ring material for applications where the pumped liquid may damage the standard O-ring material.

Motors

Variant	Applies to	Description
ATEX motor	MTR	For operation in hazardous atmospheres, explosion-proof or dust-ignition-proof motors may be required.
Motor with anti-condensation heating unit	MTR SPK	For operation in humid environments motors with built-in anti-condensation heating unit may be required.
Motor with thermal protection	MTR SPK	Grundfos offers motors with built-in bimetallic thermal switches or temperature-controlled PTC sensors (thermistors) incorporated in the motor windings.
Oversize motor	MTR, MTRE SPK	Ambient temperatures above 40 °C or installation at altitudes of more than 1000 metres above sea level require the use of an oversize motor (i.e. derating).
Multiplug	MTR SPK MTH	Pumps with motors from 0.25 kW to 7.5 kW can be fitted with a 10-pin multiplug connection, type Han® 10 ES. The purpose of a multiplug connection is to make the electrical installation and the service of the pump easier. The multiplug functions as a plug-and-pump device.
4-pole motor	MTR	Grundfos offers 4-pole standard motors

Certificates

Certificate	Description
Certificate of compliance with the order	According to EN 10204, 2.1. Grundfos document certifying that the pump supplied is in compliance with the order specifications.
Test certificate. Non-specific inspection and testing	According to EN 10204, 2.2. Certificate with inspection and test results of a non-specific pump.
Inspection certificate 3.1	Grundfos document certifying that the pump supplied is in compliance with the order specifications. Inspection and test results are mentioned in the certificate.
Inspection certificate	Grundfos document certifying that the pump supplied is in compliance with the order specifications. Inspection and test results are mentioned in the certificate. Certificate from the surveyor is included. **Note:** Contact Grundfos if you require a certificate. We offer the following inspection certificates: • Lloyds Register of Shipping (LRS) • Det Norske Veritas (DNV) • Germanischer Lloyd (GL) • Bureau Veritas (BV) • American Bureau of Shipping (ABS) • Registro Italiano Navale Agenture (RINA) • China Classification Society (CCS) • Russian maritime register of Shipping (RS) • Biro Klassifikasio Indonesia (BKI) • United States Coast Guard (USCG) • Nippon Kaiji Koykai (NKK).
Standard test report	Certifies that the main components of the specific pump are manufactured by Grundfos, and that the pump has been QH-tested, inspected and conforms to the full requirements of the appropriate catalogues, drawings and specifications.
Material specification report	Certifies the material used for the main components of the specific pump.
Duty-point verification report	Certifies a test point specified by the customer. Issued according to ISO 9906 concerning "Duty point verification".
ATEX-approved pump (MTR)	Confirms that the specific pump is ATEX-approved according to the EU directive 94/9/EC, the "ATEX directive".

Note: Other certificates are available on request.

Immersion depths, MTR, MTRE

To meet specific depths of tanks and containers, the immersion depth of the pump can be varied using empty chambers.

For the MTR, MTRE range the following immersion depths are available.

The number of impellers depends on the requested head, and can be found on the technical data pages for each product type.

Number of chambers	Immersion depth [mm]										
	MTR1s	MTR1	MTR3	MTR5	MTR 8	MTR10	MTR15	MTR20	MTR32	MTR45	MTR64
1	-	-	-	-	196	-	-	-	-	-	-
2	160	160	160	169	223	148	178	178	223	244	249
3	178	178	178	196	250	178	223	223	293	324	332
4	196	196	196	223	277	208	268	268	363	404	414
5	214	214	214	250	304	238	313	313	433	484	497
6	232	232	232	277	331	268	358	358	503	564	579
7	250	250	250	304	358	298	403	403	573	644	662
8	268	268	268	331	385	328	448	448	643	724	744
9	286	286	286	358	412	358	493	493	713	804	827
10	304	304	304	385	439	388	538	538	783	884	909
11	322	322	322	412	466	-	583	583	853	964	992
12	340	340	340	439	493	448	628	628	923	1044	1074
13	358	358	358	466	520	-	673	673	993	1124	1157
14	376	376	376	493	547	508	718	718	1063	1204	1239
15	394	394	394	520	574	-	763	763	1133	1284	1322
16	412	412	412	547	601	568	808	808	1203	1364	1404
17	430	430	430	574	628	-	853	853	1273	1444	1487
18	448	448	448	601	655	628	898	898	1343	-	-
19	466	466	466	628	682	-	943	943	-	-	-
20	484	484	484	655	709	688	988	988	-	-	-
21	502	502	502	682	736	-	1033	1033	-	-	-
22	520	520	520	709	763	748	-	-	-	-	-
23	538	538	538	736	790	778	-	-	-	-	-
24	556	556	556	763	817	808	-	-	-	-	-
25	574	574	574	790	844	838	-	-	-	-	-
26	592	592	592	817	871	868	-	-	-	-	-
27	610	610	610	844	898	898	-	-	-	-	-
28	628	628	628	871	925	928	-	-	-	-	-
29	646	646	646	898	952	958	-	-	-	-	-
30	664	664	664	925	979	988	-	-	-	-	-
31	682	682	682	952	1006	1018	-	-	-	-	-
32	700	700	700	979	-	-	-	-	-	-	-
33	718	718	718	1006	-	-	-	-	-	-	-
34	736	736	736	-	-	-	-	-	-	-	-
35	754	754	754	-	-	-	-	-	-	-	-
36	772	772	772	-	-	-	-	-	-	-	-
37	790	790	790	-	-	-	-	-	-	-	-
38	808	808	808	-	-	-	-	-	-	-	-
39	826	826	826	-	-	-	-	-	-	-	-
40	844	844	844	-	-	-	-	-	-	-	-
41	862	862	862	-	-	-	-	-	-	-	-
42	880	880	880	-	-	-	-	-	-	-	-
43	898	898	898	-	-	-	-	-	-	-	-
44	916	916	916	-	-	-	-	-	-	-	-
45	934	934	934	-	-	-	-	-	-	-	-
46	952	952	952	-	-	-	-	-	-	-	-
47	970	970	970	-	-	-	-	-	-	-	-
48	988	988	988	-	-	-	-	-	-	-	-
49	1006	1006	1006	-	-	-	-	-	-	-	-

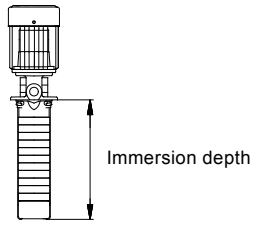
Immersion depths, SPK

To meet specific depths of tanks and containers, the immersion depth of the pump can be varied using empty chambers.

For the SPK range the following immersion depths are available.

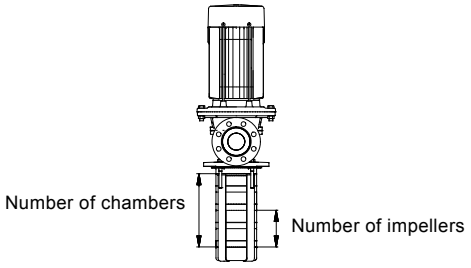
The number of impellers depends on the requested head and can be found on the technical data pages for each product type.

Number of chambers	Immersion depth [mm]		
	SPK 1	SPK 2	SPK 4
1	140	140	140
2	-	-	-
3	182	182	182
4	-	-	-
5	224	224	224
6	-	-	-
7	266	266	266
8	287	287	287
9	-	-	-
10	-	-	-
11	350	350	350
12	-	-	-
13	392	392	392
14	-	-	-
15	434	434	434
16	455	455	455
17	476	476	476
18	-	-	-
19	518	518	518
20	-	-	-
21	560	560	560
22	-	-	-
23	602	602	602
24	-	-	-
25	644	644	644
26	-	-	-
27	-	-	-
28	-	-	-
29	-	-	-
30	-	-	-
31	770	770	770
32	-	-	-
33	-	-	-
34	-	-	-
35	-	-	-
36	-	-	-
37	896	896	896
15 + extension pipe	-	-	-
19 + extension pipe	-	-	1005
23 + extension pipe	1005	1005	-



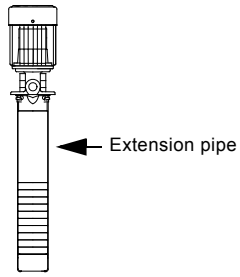
TM01 4460 1299

Fig. 72 Immersion depth



TM01 4991 1299

Fig. 73 Number of chambers/impellers

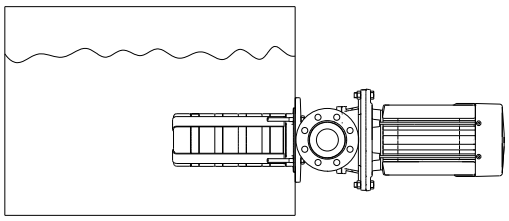


TM01 4214 1299

Fig. 74 Extension pipe

Horizontal mounting

For safety or height reasons, certain applications, for instance on ships, require the pump to be mounted in horizontal position.



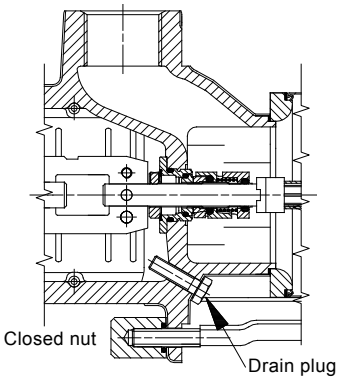
TM04 6542 0610

Fig. 75 Horizontal mounting of an MTR pump

Note: If the MTR, MTRE or SPK pump is to be installed horizontally, the drain hole in the pump head must be fitted with a plug, and four closed nuts with O-rings must be fitted to the straps.

For MTR, MTRE pumps horizontal mounting is only available with stainless steel pump heads.

For motors from 5.5 kW and up, motor support is required.



TM02 8043 4503

Fig. 76 Horizontal installation

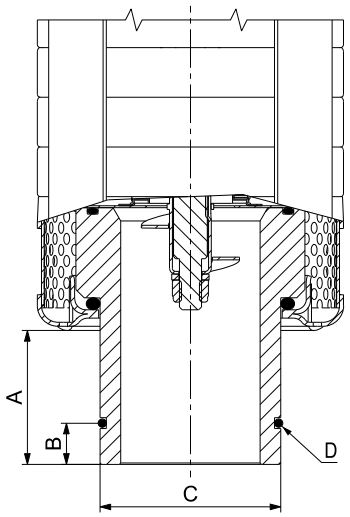
120 °C solution

For applications with liquid temperature above 90 °C and up to 120 °C, Grundfos offers a solution for MTR, MTRE and SPK.

Suction pipe

For compact coolant applications the filter is mounted inside the tank, and the pump sucks directly through this filter.

Pump	A [mm]	B [mm]	C [mm]	D [mm]
MTR, MTRE 1s, 1, 3, 5	48.5	15	∅64.8	∅60 x 3
MTR, MTRE 10, 15, 20	48	15	∅88.8	∅84 x 3
MTR, MTRE 32	48	15	∅104.8	∅100 x 3
MTR, MTRE 45	48	15	∅124.8	∅119.5 x 3
MTR, MTRE 64	48	15	∅133.7	∅128 x 3
SPK 1, 2, 4	48	15	∅56	∅51.2 x 3
SPK 8	48	15	∅56	∅51.2 x 3
MTH 2, 4	48	15	∅64.8	∅60 x 3



TM04 6335 0210

Fig. 77 Suction pipe

16. Grundfos Product Center

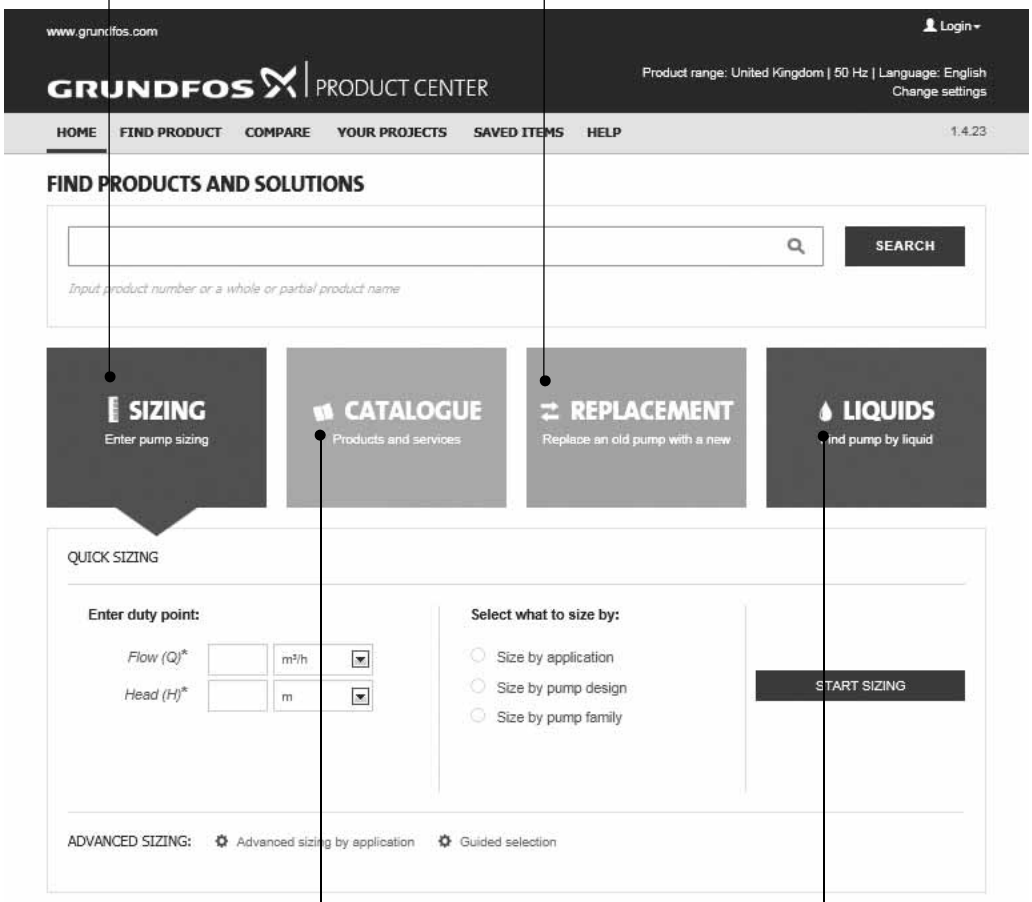
Online search and sizing tool to help you make the right choice.

http://product-selection.grundfos.com

SIZING enables you to size a pump based on entered data and selection choices.

REPLACEMENT enables you to find a replacement product.
Search results will include information on

- the lowest purchase price
- the lowest energy consumption
- the lowest total life cycle cost.



CATALOGUE gives you access to the Grundfos product catalogue.

LIQUIDS enables you to find pumps designed for aggressive, flammable or other special liquids.

All the information you need in one place

Performance curves, technical specifications, pictures, dimensional drawings, motor curves, wiring diagrams, spare parts, service kits, 3D drawings, documents, system parts. The Product Center displays any recent and saved items - including complete projects - right on the main page.

Downloads

On the product pages, you can download installation and operating instructions, data booklets, service instructions, etc. in PDF format.

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