

MTD

Multi-stage coolant pump

50/60 Hz



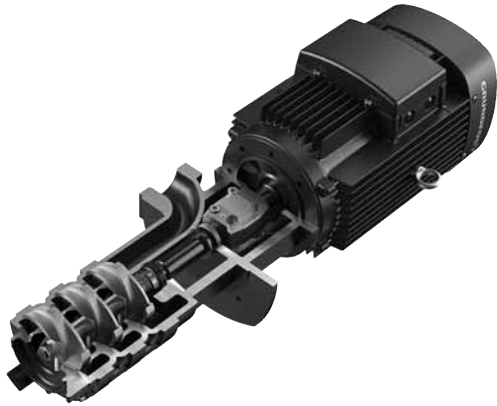
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1. Product introduction

This data booklet describes MTD pumps.



TM06 9795 3317

Fig. 1 Cutaway of MTD pump

Grundfos MTD range of multistage immersible coolant lubricant pumps has been designed especially for filtering systems in the machine tool industry. These middle-pressure pumps are available in two different sizes and have various numbers of stages to provide the flow rate, the pressure and the installation length required. The pumps are designed to be mounted on top of tanks with the pump part immersed into the pumped liquid. The dimensions of the mounting flanges are according to DIN5440.

Applications

The MTD pumps are suitable for providing cooling lubricant in these applications:

- boring
- sawing
- milling
- grinding
- filtration.

Multiple applications

The compact MTD pumps efficiently transport liquid containing chips, fibres and abrasive particles to the filtering unit. Semi-open impellers allow the passing of chips up to 10 mm, making the pumps ideal for removing liquid from any machining process.

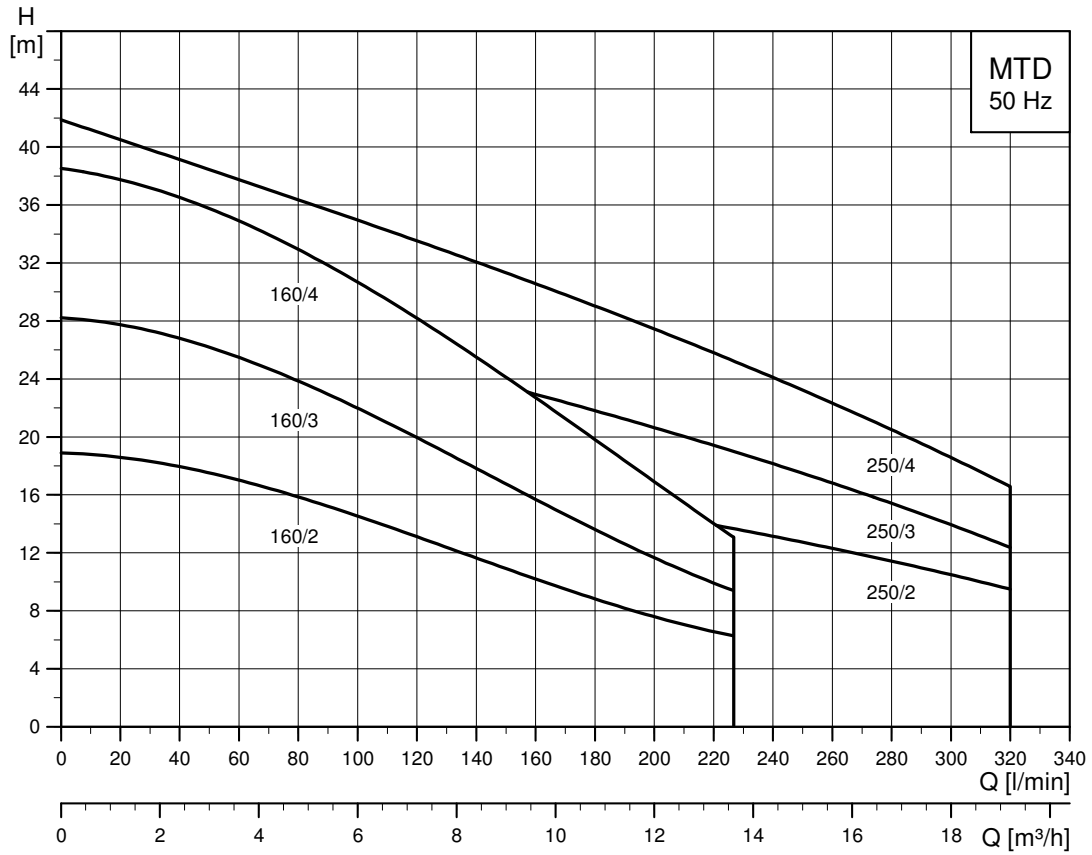
Other Grundfos machine tool pumps

Grundfos also offers a wide range of high-pressure machine tool pumps, offering unsurpassed accuracy and stability ensuring that nothing interferes with the delicate machining process. High efficiency minimizes the heat input into the cooling lubricant. As an option, the pumps can be supplied with integrated frequency converters to increase system efficiency and flexibility.

Pumps suitable for high-pressure machine tool applications are the immersible MTR, SPK, MTH and MTS, all designed for tank mounting. A separate data booklet is available for the MTS pump range.

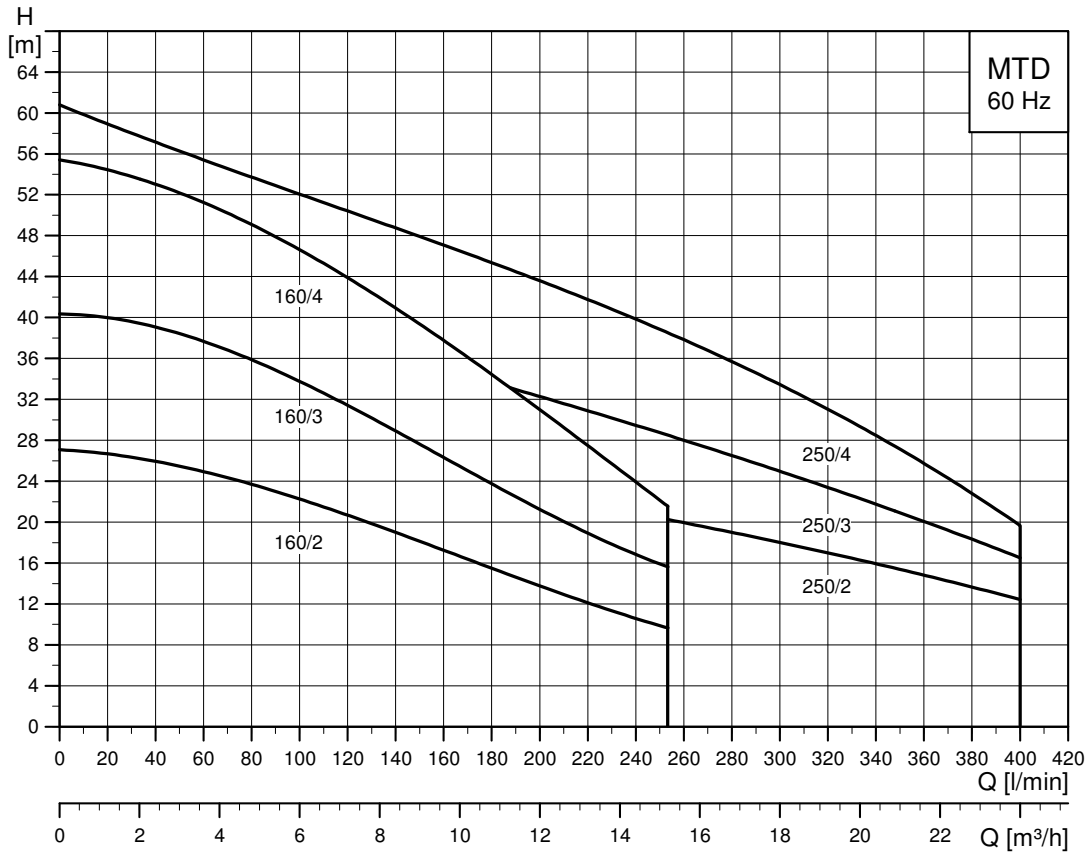
2. Performance range

MTD 160, 250 (50 Hz)



TM06 7196 3118

MTD 160, 250 (60 Hz)



TM06 9197 3118

3. Product range

Pump	MTD 160	MTD 250
50 Hz		
Rated flow rate [l/min]	160	250
Temperature range [°C]	0 to +60	
Flow range [l/min]	0-220	0-350
Maximum head [m]	41	44
60 Hz		
Rated flow rate [l/min]	190	300
Temperature range [°C]	0 to +60	
Flow range [l/min]	0-260	0-410
Maximum head [m]	58	63
Pipe connection		
Internal thread	Rp 1 1/2 G 1 1/2	
Materials		
Pump housing	Cast iron	
Impellers	Nodular cast iron	
Installation length [mm]		
MTD	230-330	230-330

4. Technical data

Max. permissible ambient temperature [°C]	+40
Permissible storage temperature [°C]	-50 to +70

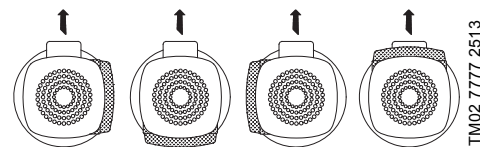
Electrical data

Mounting designation	Up to 4 kW	V 18/B 14
Efficiency class	1.1 - 4 kW	IE3
Enclosure class		IP55
Insulation class		F
Supply voltage, 50 Hz (- 10 %/+ 10 %)	1.1 - 4 kW	3 x 220-240 / 380-415 V
		3 x 380-415 V Δ
		3 x 380-415 / 660-690 V
		3 x 220-277 / 380-480 V
Supply voltage, 60 Hz (- 10 %/+ 10 %)	1.1 - 4 kW	3 x 220-255 / 380-440 V
		3 x 220-277 / 380-480 V
		3 x 380-440 V Δ
		3 x 380-480 / 660-690 V

Terminal box positions

The terminal box can be turned to another position.

Pump	Terminal box positions			
	3 o'clock	6 o'clock (standard)	9 o'clock	12 o'clock
MTD 160	•	•	•	•
MTD 250	•	•	•	•



- The terminal box can be turned to another position after delivery.

Maximum number of starts

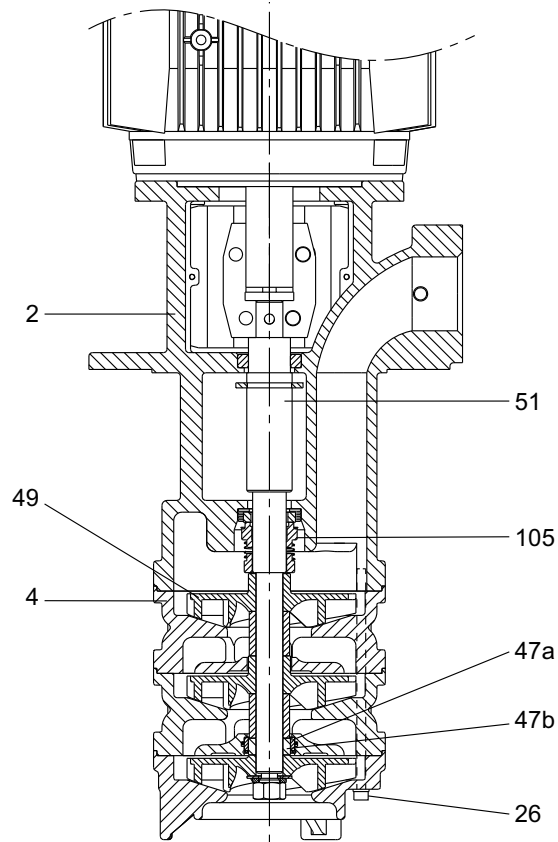
Pump	Motor [kW]	Recommended maximum number of starts per hour
MTD	1.1 - 2.2	250
	3-4	100

Sound pressure level

Pump	Motor [kW]	LpA [dB(A)]	
		50 Hz	60 Hz
MTD	1.1 - 2.2	< 45	< 45
	3-4	< 62	< 62

5. Construction

MTD 160, 250



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Pos.	Description	Materials	EN/DIN	AISI/ASTM
2	Pump head	Cast iron	EN-GJL-250 / GG25	ASTM A48
4	Chamber	Cast iron	EN-GJL-250 / GG25	ASTM A48
26	Stay bolt	Steel	DIN 34CrMo4	A322-4137
47a	Bearing ring, stationary	Brass	DIN 1787-CuZn40Pb2	ASTM B124 C 37700
47b	Bearing ring, rotating	Carbon steel	EN 10083-2	ASTM A29
49	Impeller	Iron	EN-GJS-400-15 / GGG40	AISI 304
51	Pump shaft	Stainless steel	14307	AISI 304
105	Shaft seal	BQQP	-	-

6. Identification

Type key

Example	MTD 250- 280/ 2 -A -W -A -B QQ P
Pump type	
Pump size (flow rate [l/min])	
Installation length [mm]	
Number of impellers (stages)	
Pump version	
A= standard version	
Connection	
W = internal thread	
WB = internal NPT thread	
Impeller material	
D = Nodular cast iron	
Shaft seal Type:	
A = O-ring seal	
B = Bellows seal	
Seal ring material:	
B = Carbon	
Q = Silicon carbide	
U = Tungsten carbide	
V = Ceramic	
Rubber material:	
P = NBR	
V = FKM	

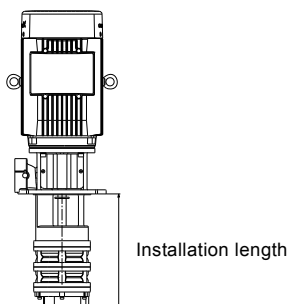


Fig. 2 Installation length

TM07 4388 1419

7. Installation

Note: The MTD pumps may only be mounted in vertical position.

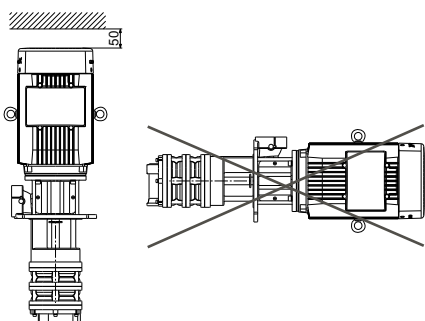


Fig. 3 Mounting position

Provide a clearance of minimum 50 mm above the motor to ensure cooling of fan-cooled motors.

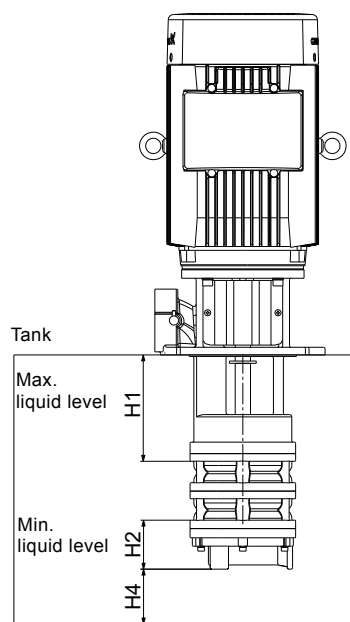
The pump is designed for indoor operation only.

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

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Liquid level

MTD with bottom suction



TM07 4386 1419

Fig. 4 MTD with bottom suction

Pump	H1 [mm]	H2* [mm]	H4 [mm]
MTD 160	25	40	30
MTD 250	25	40	30

* Minimum liquid level (full performance).

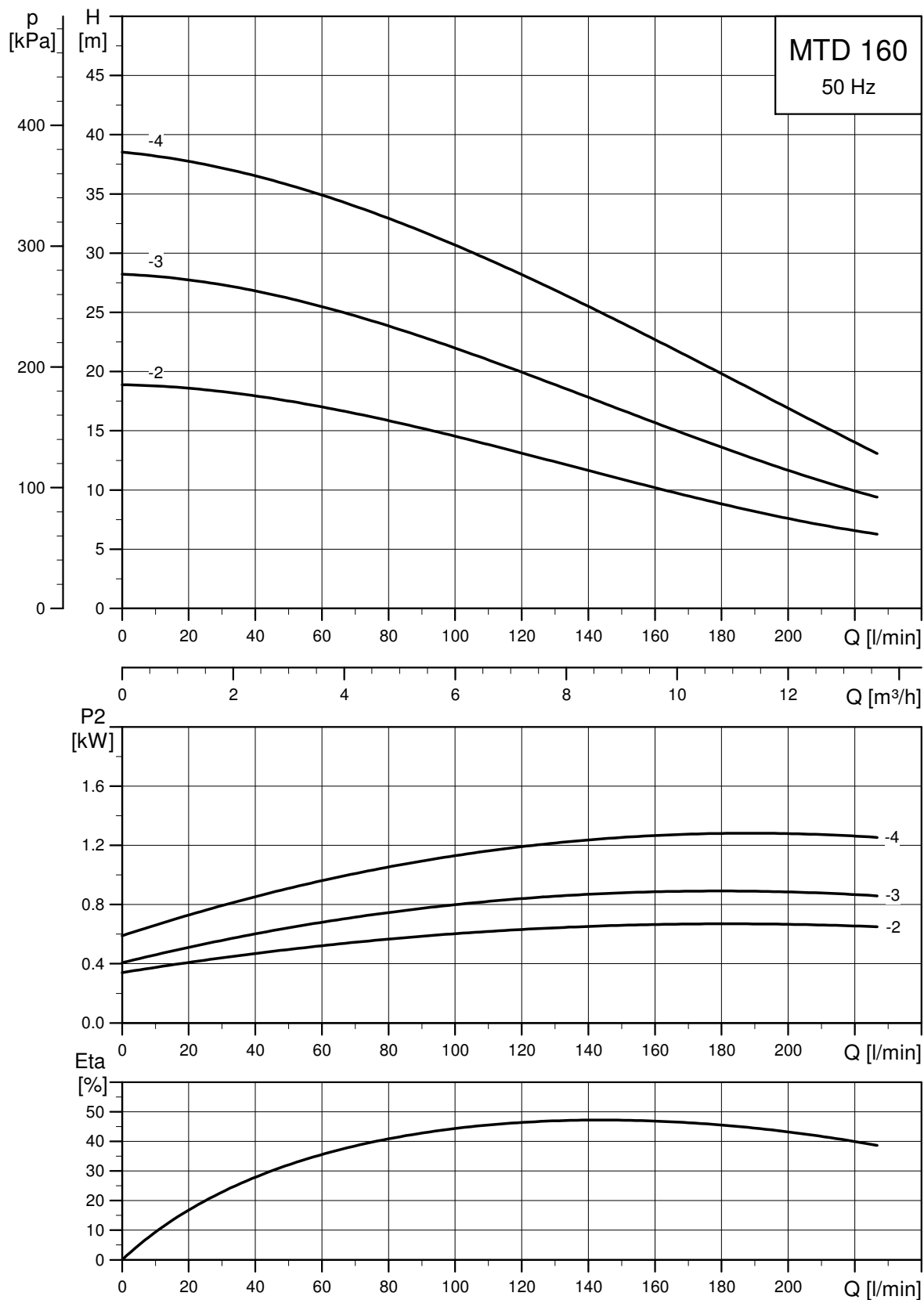
Pumped liquids

Pump	Max. particle size [mm]
MTD 160	4-5
MTD 250	8-10

Max. kinematic viscosity [mm ² /s (=cSt)]	90
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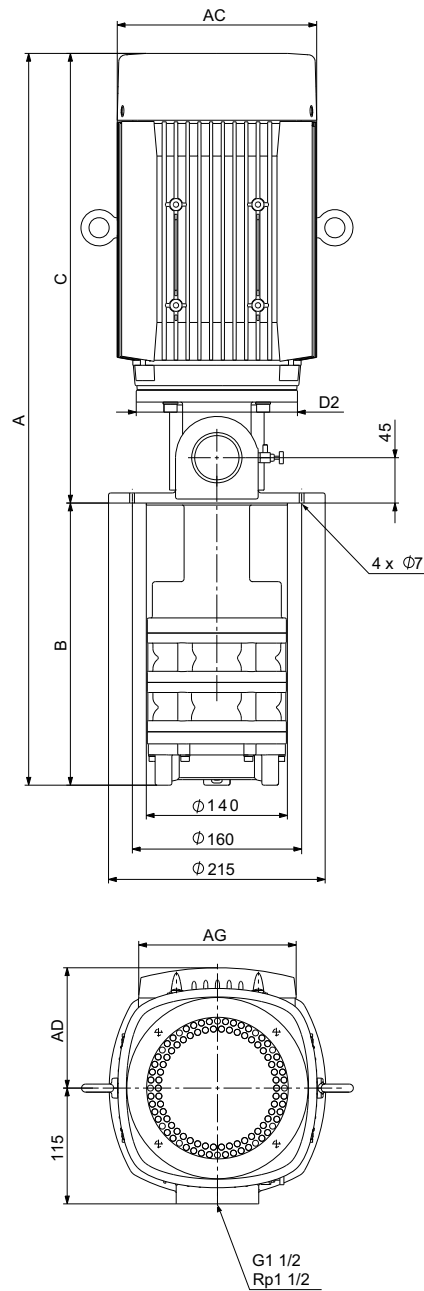
8. Performance curves and technical data

MTD 160, 50 Hz



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Dimensional sketches

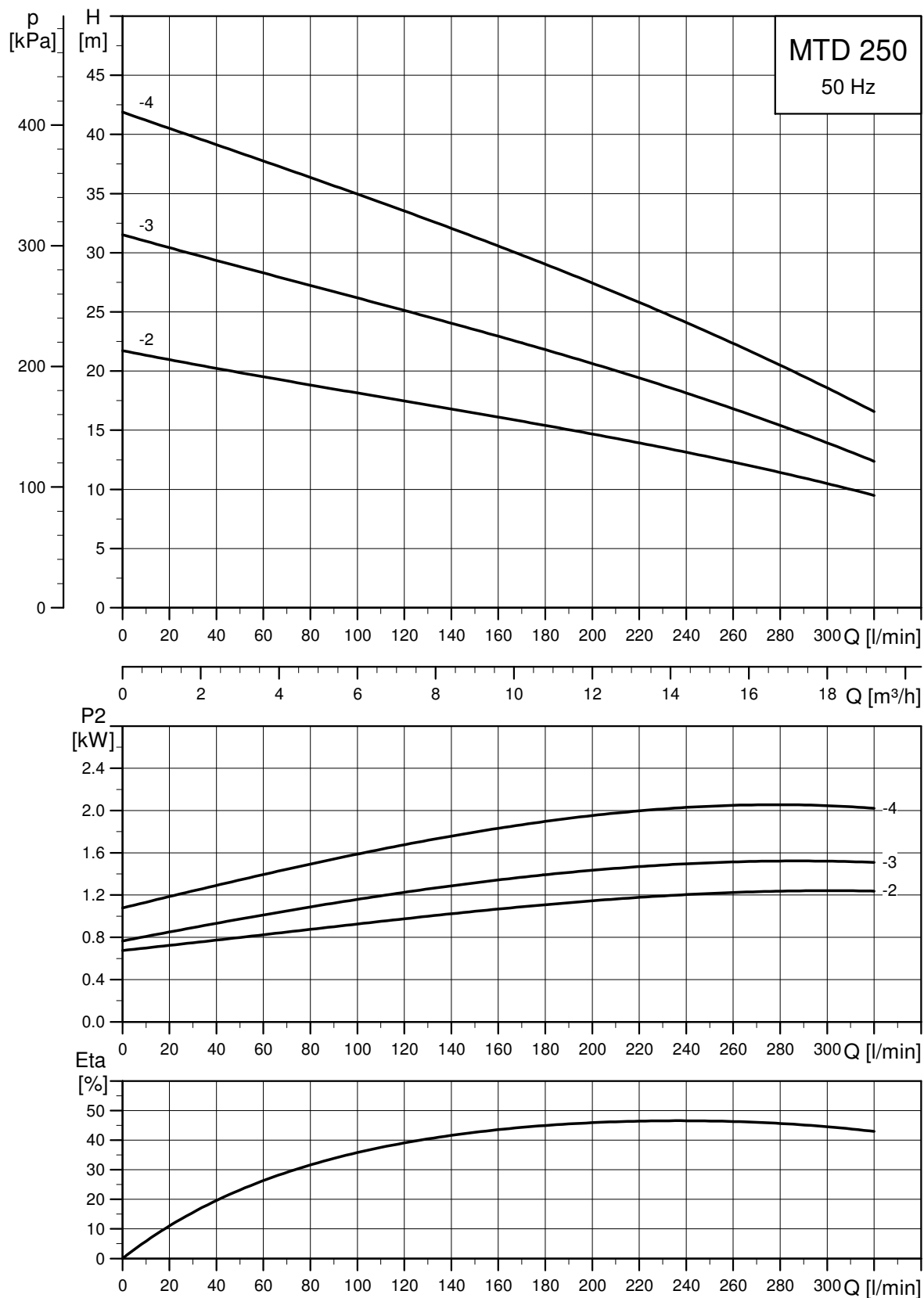


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Dimensions

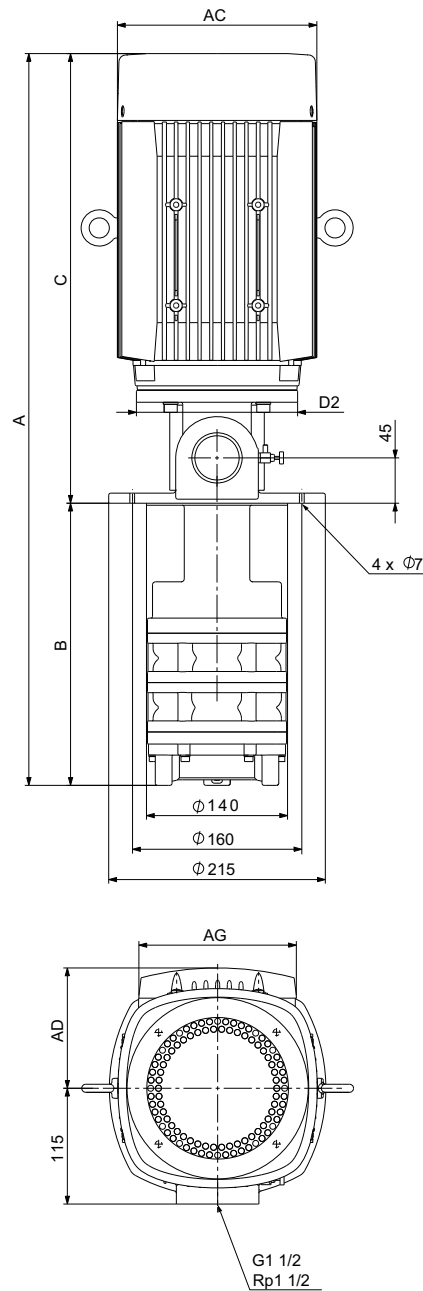
Pump type	P2 [kW]	A	B	C	AC	D2	AD	AG
MTD 160-230/2	1.5	622	230	392	178	150	110	162
MTD 160-280/2	1.5	672	280	392	178	150	110	162
MTD 160-330/2	1.5	722	330	392	178	150	110	162
MTD 160-280/3	1.5	672	280	392	178	150	110	162
MTD 160-330/3	1.5	722	330	392	178	150	110	162
MTD 160-330/4	2.2	762	330	432	178	150	110	162

MTD 250, 50 Hz



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Dimensional sketches

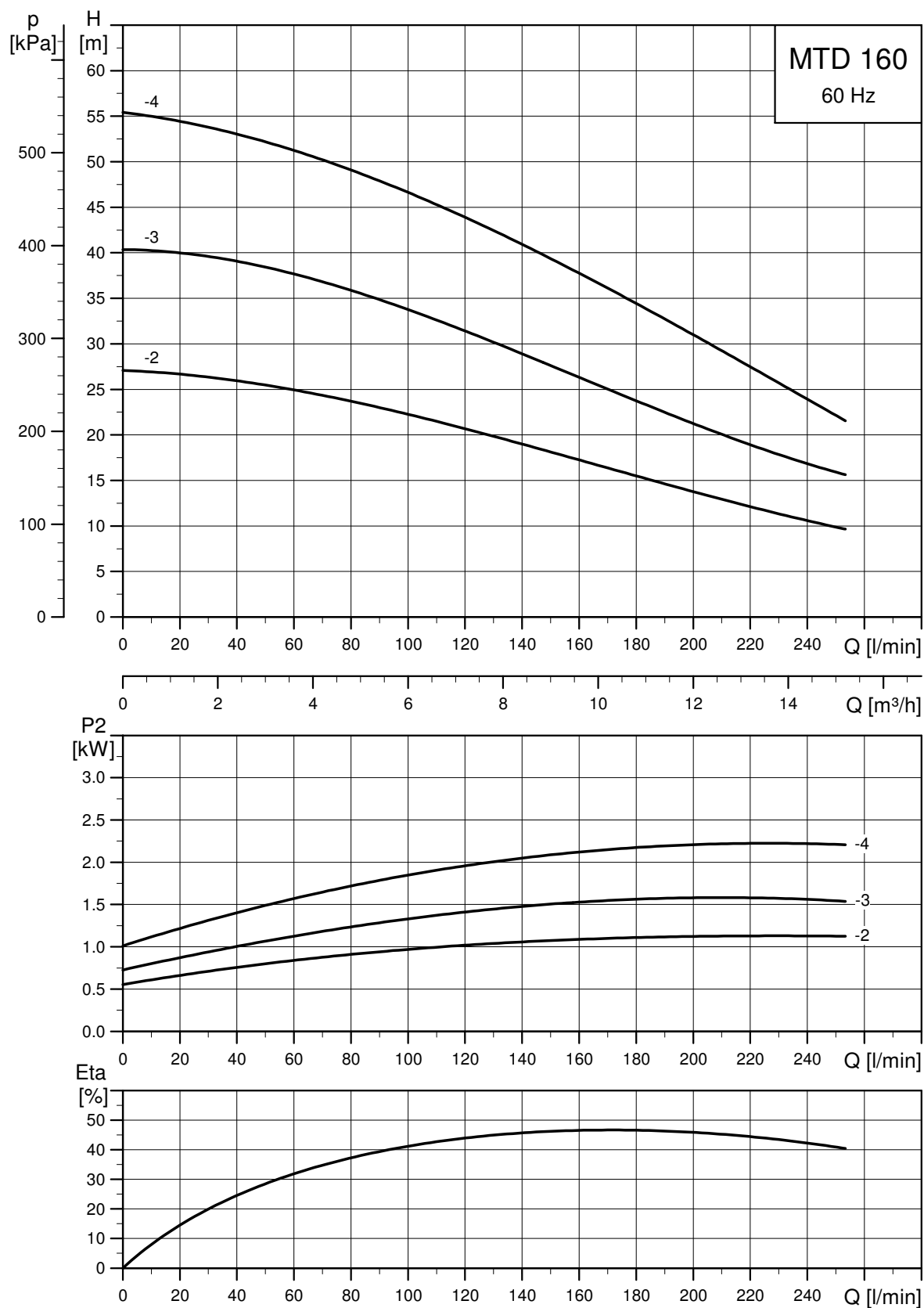


TM06 9834 1919

Dimensions

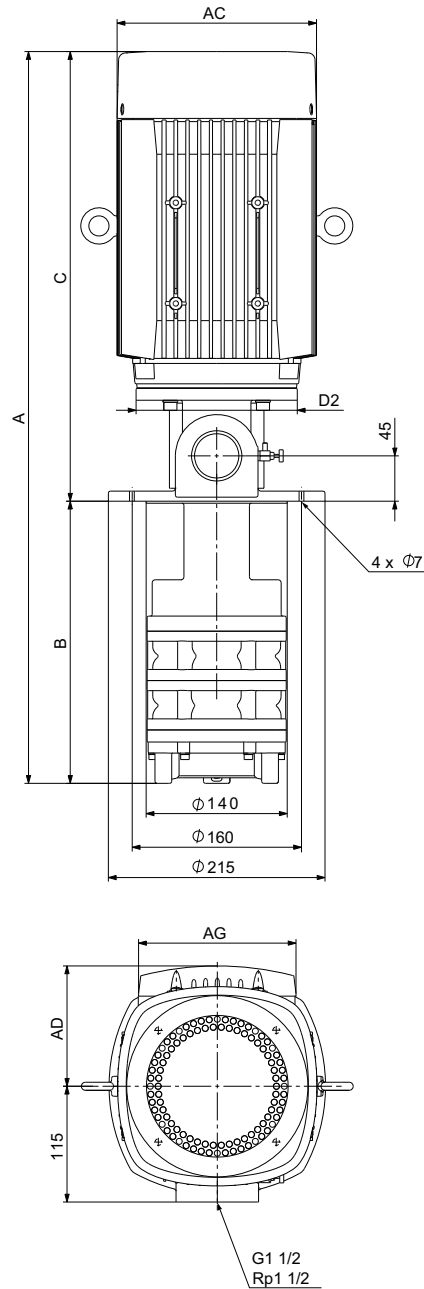
Pump type	P2 [kW]	A	B	C	AC	D2	AD	AG
MTD 250-230/2	1.5	622	230	392	178	150	110	162
MTD 250-280/2	1.5	672	280	392	178	150	110	162
MTD 250-330/2	1.5	722	330	392	178	150	110	162
MTD 250-280/3	2.2	712	280	432	178	150	110	162
MTD 250-330/3	2.2	762	330	432	178	150	110	162
MTD 250-330/4	3	776	330	446	198	160	120	162

MTD 160, 60 Hz



TM06 9828 3118

Dimensional sketches

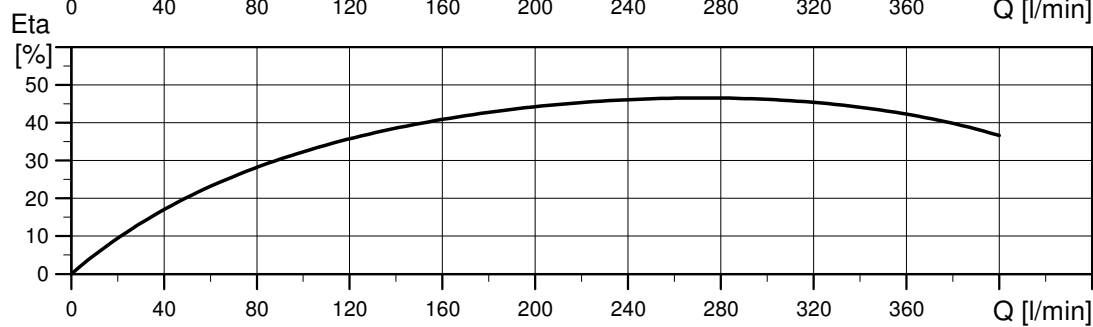
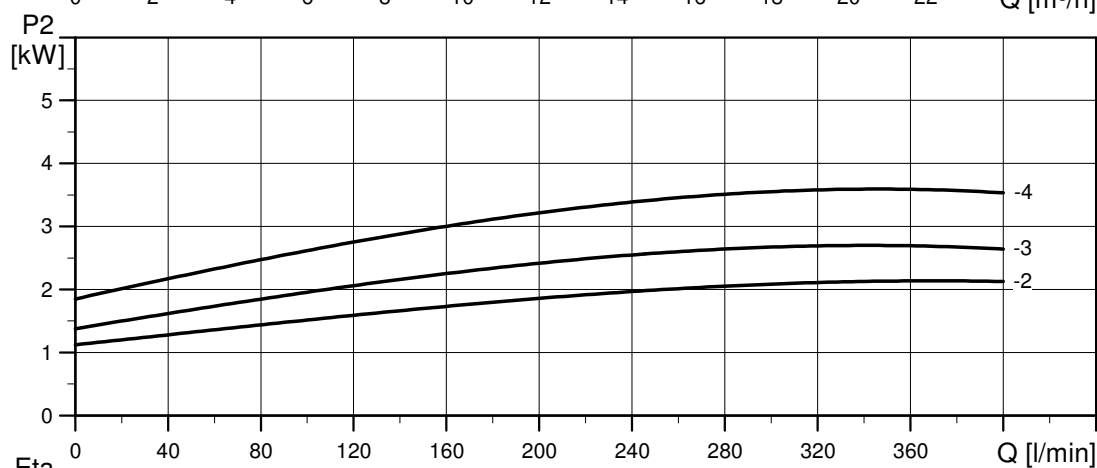
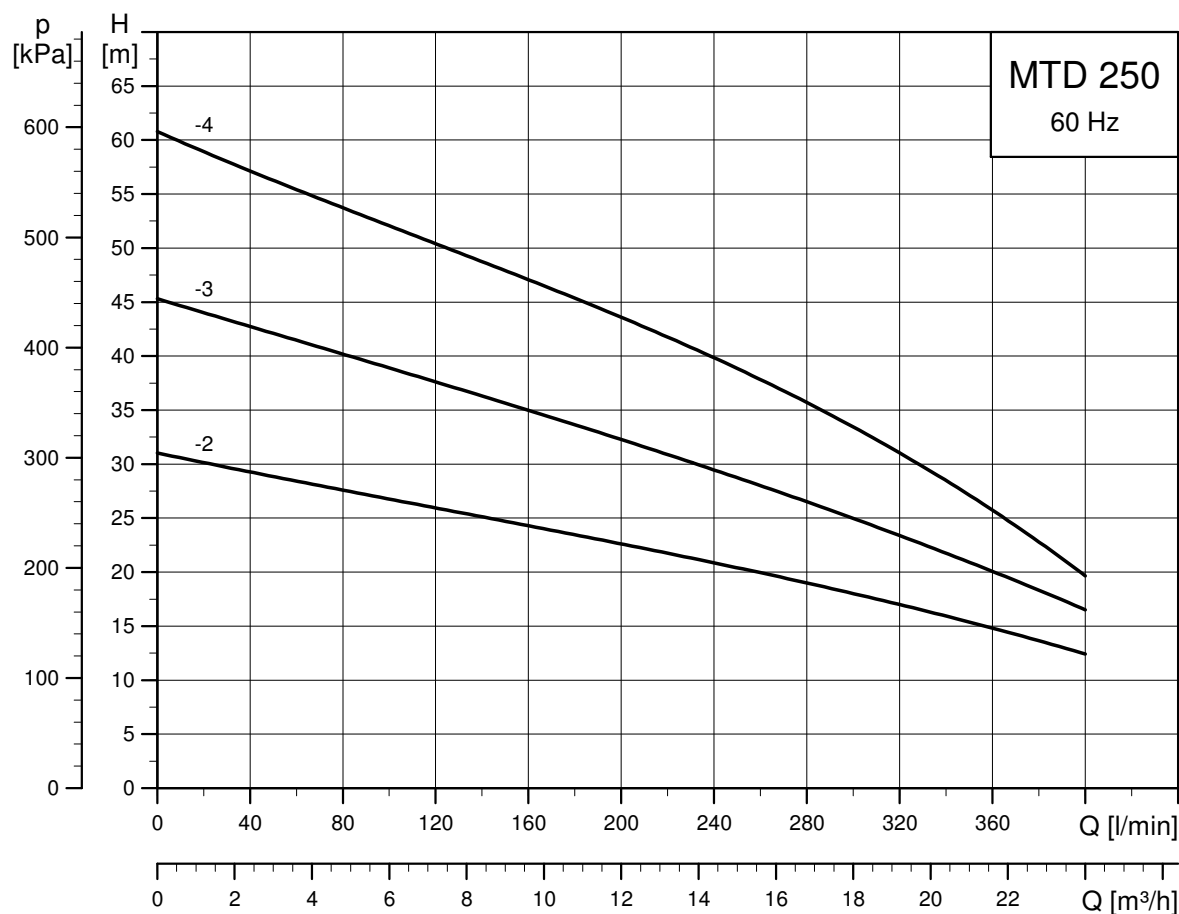


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Dimensions

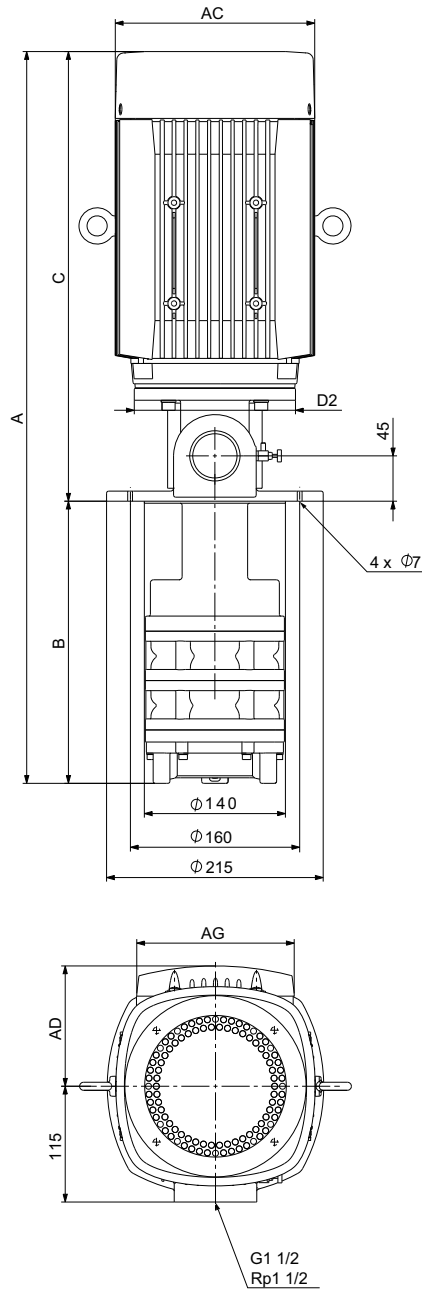
Pump type	P2 [kW]	A	B	C	AC	D2	AD	AG
MTD 160-230/2	1.5	622	230	392	178	150	110	162
MTD 160-280/2	1.5	672	280	392	178	150	110	162
MTD 160-330/2	1.5	722	330	392	178	150	110	162
MTD 160-280/3	2.2	712	280	432	178	150	110	162
MTD 160-330/3	2.2	762	330	432	178	150	110	162
MTD 160-330/4	3	776	330	446	198	160	120	162

MTD 250, 60 Hz



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Dimensional sketches



TM06 9834 1919

Dimensions

Pump type	P2 [kW]	A	B	C	AC	D2	AD	AG
MTD 250-230/2	2.2	662	230	432	178	150	110	162
MTD 250-280/2	2.2	712	280	432	178	150	110	162
MTD 250-330/2	2.2	762	330	432	178	150	110	162
MTD 250-280/3	3	726	280	446	198	160	120	162
MTD 250-330/3	3	776	330	446	198	160	120	162
MTD 250-330/4	4	813	330	483	220	160	134	202

9. Motor data



TM03 1711 2805

Fig. 5 Grundfos MG motor

Standard motors, 50 Hz

3 x 380-415D V, 50 Hz

Motor make	P2 [kW]	Frame size	Standard voltage [V]	$I_{1/1}$ [A]	$\cos \phi_{1/1}$	η [%]	Motor efficiency class	I_{start} [A]	Speed [min^{-1}]
Grundfos MG	1.1	80	380-415 Δ	2.5	0.83 - 0.76	82.7	IE3	11.3 - 12.5	2840-2870
	1.5	90	380-415 Δ	3.15	0.87 - 0.82	84.2	IE3	26.8 - 29.3	2890-2910
	2.2	90	380-415 Δ	4.45	0.89 - 0.87	85.9	IE3	37.8 - 42.3	2890-2910
	3.0	100	380-415 Δ	6.30	0.87 - 0.82	87.1	IE3	52.9 - 58.0	2900-2920
	4.0	112	380-415 Δ	7.90	0.87	88.1	IE3	79 - 87.7	2920-2940

3 x 200-220D/346-380Y, 50 Hz

Motor make	P2 [kW]	Frame size	Standard voltage [V]	$I_{1/1}$ [A]	$\cos \phi_{1/1}$	η [%]	Motor efficiency class	I_{start} [A]	Speed [min^{-1}]
Grundfos MG	1.1	80C	200-220 Δ /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	200-220 Δ /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	200-220 Δ /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	200-220 Δ /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	200-220 Δ /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

Standard motors, 60 Hz

3 x 220-277 Δ /380-480Y, 60 Hz

Motor make	P2 [kW]	Frame size	Standard voltage [V]	$I_{1/1}$ [A]	$\cos \phi_{1/1}$	η [%]	Motor efficiency class	I_{start} [A]	Speed [min^{-1}]
Grundfos MG	1.1	80	380-440 Δ	2.40 - 2.30	0.88 - 0.80	82.5	IE2 - IE3	10.3 - 11.5	3420-3470
	1.5	90	380-480 Δ	3.10 - 2.70	0.90 - 0.81	84 - 58.5	IE2 - IE3	24.2 - 28.4	3470-3530
	2.2	90	380-480 Δ	4.45 - 3.70	0.91 - 0.85	85.5 - 86.5	IE2 - IE3	34.7 - 40.7	3470-3530
	3.0	100	380-480 Δ	6.20 - 5.40	0.91 - 0.84	87.5 - 88.5	IE2 - IE3	53.3 - 59.4	3480-3530
	4.0	112	380-480 Δ	7.80 - 6.80	0.91 - 0.82	88.1	IE3	78-100	3510-3540

3 x 200-230D/346-400Y, 60 Hz

Motor make	P2 [kW]	Frame size	Standard voltage [V]	$I_{1/1}$ [A]	$\cos \phi_{1/1}$	η [%]	Motor efficiency class	I_{start} [A]	Speed [min^{-1}]
Grundfos MG	1.1	80C	200-230 Δ /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	200-230 Δ /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	200-230 Δ /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	200-230 Δ /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	200-230 Δ /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

E-motors, 50/60 Hz



TM06 5685 5215

Fig. 6 Grundfos MGE motor

3 x 380-500 V, 50/60 Hz

Motor make	P2 [kW]	Frame size	Phase	Standard voltage [V]	I _{1/1} [A]	Cos φ _{1/1}	η [%]	Motor efficiency class
Grundfos MGE	1.1	80	3	380-500	2.2 - 1.9	0.89 - 0.79	89.1	IE5*
	1.5	90	3	380-500	2.9 - 2.4	0.92 - 0.85	88.9	IE5*
	2.2	90	3	380-500	4.15 - 3.4	0.93 - 0.87	90.1	IE5*
	3	100	3	380-500	5.8 - 4.8	0.91 - 0.86	90.7	IE5*
	4	112	3	380-500	7.6 - 6.2	0.92 - 0.87	92.2	IE5*

* The motor is energy efficiency class IE5 according to IEC60034-30-2. In combination with the integrated frequency converter, the combined power drive system is efficiency class IES2 according to IEC50598-2.

3 x 200-240 V, 50/60 Hz

Motor make	P2 [kW]	Frame size	Phase	Standard voltage [V]	I _{1/1} [A]	Cos φ _{1/1}	η [%]	Motor efficiency class
Grundfos MGE	1.1	80	3	200-240	4.1 - 3.5	0.92 - 0.91	89.3	IE5
	1.5	90	3	200-240	5.4 - 4.6	0.92 - 0.92	88.9	IE5
	2.2	90	3	200-240	7.8 - 6.5	0.94 - 0.94	88.8	IE5
	4	112	3	200-240	10.5 - 8.8	0.94 - 0.94	90.3	IE5
	5.5	132	3	200-240	14.1 - 11.8	0.94 - 0.94	90.8	IE5

10. Grundfos Product Center

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

<http://product-selection.grundfos.com>



This drop-down menu enables you to set the search function to "Products" or "Literature".

"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 following:

- 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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