



EM DTm SERIES

VERTICAL CLOSE-COUPLED MULTISTAGE PUMPS WITH DRIVE-TECH MINI



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NOTE: Franklin Electric S.r.l. reserves the right to amend specification without prior notice
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EM SERIES - VERTICAL CLOSE-COUPLE MULTISTAGE PUMPS

APPLICATIONS

- Small domestic and industrial systems / Domestic water supply
- Water distribution / pressure boosting
- Irrigation / Gardening / Sprinklers / Rainwater collection
- Industrial plants / Wash down unit
- Cooling and chilling / Heating and conditioning / Air conditioning systems
- Other various installations

FEATURES

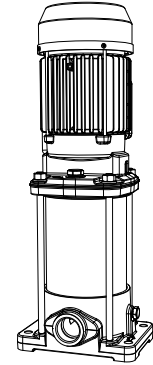
- Compact close-coupled design, robust and corrosion resistant / Superior efficiency and performance
- Floating neck ring in PPS
- Heavy duty oversize motor shaft
- Impellers and diffusers are made of stainless steel in order to achieve durability
- Easy maintenance
- Strong motor ball bearing fitted in the motor
- Pumping of clear non-loaded fluids
- Mechanical seal carbon/ceramic/EPDM Type E0

PUMP SPECIFICATIONS

- Flow: up to 17 m³/h
- Head: up to 101 m
- Discharge and Suction port: Threaded or Oval connections
- Maximum working pressure 10 Bar
- Direction of rotation: clockwise looking at the pump from the top down.
- Maximum altitude at rated current: 1000 m
- Maximum ambient temperature 40 °C
- Liquid temperature range: Minimum: 0 °C
 - Maximum: +80 °C for domestic use (uses covered by CEI EN standard 60335-2-41);
- The hydraulic characteristics are guaranteed, according to ISO standard 9906:2012, grade 3B

MOTOR SPECIFICATIONS

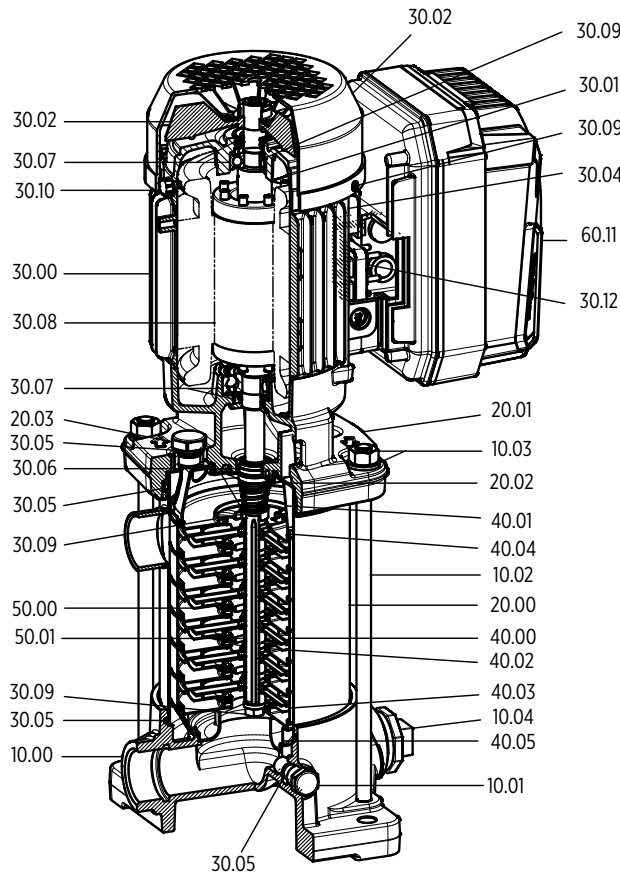
- Three-phase with IE3 motors
- Asynchronous, TEFC (Totally Enclosed, Fan-Cooled)
- 2 pole, 60 Hz
- IP55 protection motor
- Insulation class F



MATERIALS/FLUIDS COMPATIBILITY

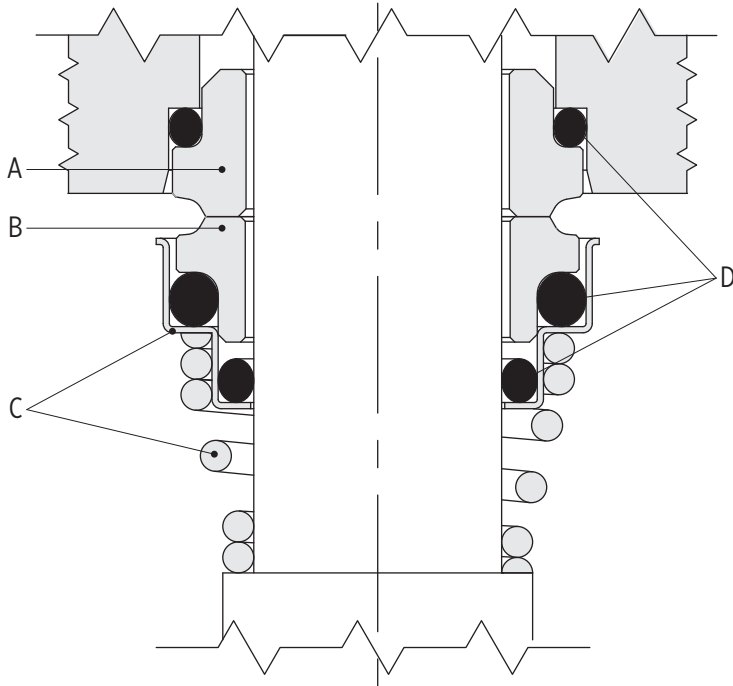
Pos.	Parts description	Type	Material	
			ASTM/AISI	DIN/EN
10.00	Pump casing	Cast iron	A48 Class 35	GJL-250
10.01	Draining plug	Stainless Steel	AISI 304	1.4301
10.04	Outlet plug*	Zinc coated steel	-	-
20.00	Outer case	Stainless Steel	AISI 304	1.4301
20.02	Mechanical seal housing	Stainless Steel	AISI 304	1.4301
20.03	Filling plug	Stainless Steel	AISI 304	1.4301
30.05	O-Rings	EPDM	-	-
30.06	Mechanical seal	Ceramic, Carbon graphite, EPDM, Stainless steel	-	-
30.08	Rotor and pump shaft	Stainless Steel	AISI 304	1.4301
30.09	Screws, nuts and washers	Stainless Steel	AISI 304	1.4301
40.00	Stage housing and diffuser	Stainless Steel	AISI 304	1.4301
40.01	Stage centering outlet	Stainless Steel	AISI 304	1.4301
40.02	Floating neck ring	PPS	-	-
40.03	Initial stage housing	Stainless Steel	AISI 304	1.4301
40.04	Last stage with diffuser	Stainless Steel	AISI 304	1.4301
40.05	Stage centering inlet	Stainless Steel	AISI 304	1.4301
50.00	Impeller	Stainless Steel	AISI 304	1.4301
50.01	Impeller spacer	Stainless Steel	AISI 304	1.4301
	Pressure trasducer	Stainless steel	AISI 304	1.4301

* only for R version



00130098 02/2018

MECHANICAL SEAL SPECIFICATIONS



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STANDARD VERSION

Model	Type				Position				Temperature [°C]
					A Stationary part	B Rotating part	C Other components	D Elastomers	
EM 3 - 5 - 9									
E0	V	B	G	E	Ceramic	Graphite	AISI 316	EPDM	-15 °C +110 °C

THREE-PHASE MOTORS SPECIFICATIONS

- Asynchronous, TEFC (Totally Enclosed, Fan-Cooled)
- 2 pole, 60 Hz
- IP55
- Insulation class F
- IE3 Motors Efficiency according to IEC 60034-30-1:2014
- Electrical performance according to IEC 60034-2-1:2007
- Standard voltage: 220-230 V \pm 5 % up to 3 kW

P_N [kW]	Rendimento / Efficiency η_N %			IE
	Δ 230 V Y 400 V			
	4/4	3/4	2/4	
0.75	82.5	82.6	80.4	3
1.1	84	84.5	82.8	
1.5	85.5	85.7	83.7	
2.2	86.9	87.6	86.8	

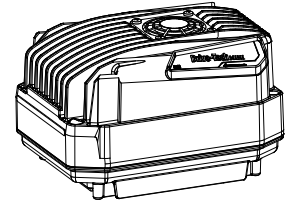
P_N [kW]	MOTOR SIZE	N. of poles	f_N [Hz]	230 V 60 Hz				
				$\cos \phi$	I_s / I_N	T_N [Nm]	T_s / T_N	T_M / T_N
0.75	71	2	60	0.85	7.9	2.1	3.9	4
1.1	71			0.85	6.6	3.1	3	3.1
1.5	80			0.85	8.2	4.1	3.1	3.2
2.2	90			0.89	9.8	6.0	4	4.1

P_N [kW]	VOLTAGE U_N		n_N [min ⁻¹]	Motor operating conditions		
	Δ 230 V	Y 400 V		Altitude Above Sea Level [m]	T. amb min/max [°C]	ATEX
	I_N [A]					
0.75	2.8	1.6	3440	≤ 1000	-15 / 40	NO
1.1	4.0	2.3	3440			
1.5	5.4	3.1	3480			
2.2	7.5	4.3	3490			

DRIVE-TECH MINI

APPLICATIONS

- Water booster sets
- HVAC systems with circulating pumps
- Control of submersible pumps (when installed on wall)



FEATURES

- Energy saving due to variable speed control
- Soft start and soft stop
- Extended system life and reliability
- Simplified installation on motor or wall
- Easy and fast commissioning thanks to initial configuration wizard
- Installation on humid and dusty environment made possible by IP55 (NEMA 4) protection degree
- High thermal and mechanical performance thanks to aluminum case and independent ventilation

SPECIFICATIONS

Advanced functionalities:

- Monitoring and programming with smartphone and FE Connect App, available for Android and iOS mobile devices
- Remote control using a smartphone nearby as a modem
- Copy and paste of programming recipes
- Ability to send reports via email
- Multilingual support

Control modes:

- Constant pressure control
- Constant or proportional differential pressure control
- Constant temperature control
- Constant differential temperature control
- Constant flow control
- External frequency control (trimmer) or 1 or 2 preset frequencies control

Built-in protection against:

- Overvoltage and undervoltage
- Overcurrent and no load
- Dry running
- Overtemperature

EMC compatibility for residential environment:

- Integrated PFC (P.F. 1) to meet EN61000-3-2
- Integrated input filter for Category C1 (EN61800-3), Class B (EN55011)

Multi-pump operation (COMBO):

- Up to 8 units
- Working alternation for uniform pumps wearing
- Master or slave replacement in case of failure to ensure continuity of operation

Advanced motor controls:

- Next generation control of asynchronous motors
- Sensorless control of permanent magnet synchronous motors

Inputs and outputs:

- 2 programmable digital inputs for motor start & stop
- Modbus RTU
- 2 output relays for alarm and run indication
- 2 analog inputs 4-20 mA
- 2 analog inputs 0-10 V

SYSTEM PERFORMANCE

- P.F. line side: 1
- Power frequency: 50-60 Hz ($\pm 2\%$)
- Stacking temperature: from $-30\text{ }^{\circ}\text{C}$ to $+70\text{ }^{\circ}\text{C}$
- Minimum ambient temperature at rated current: $-10\text{ }^{\circ}\text{C}$
- Maximum ambient temperature at rated current: $+40\text{ }^{\circ}\text{C}$
- Maximum altitude at rated current: 1000 m
- Maximum relative humidity: 95% without condensation
- Grade of protection: IP55 (NEMA 4) or motor IP when connected to motor terminal box (protect the device from exposure to sunlight and atmospheric agents)
- Connetivity: serial RS 485 for COMBO operation (up to 8 units) + Bluetooth SMART for motoring programming + MODBUS RTU

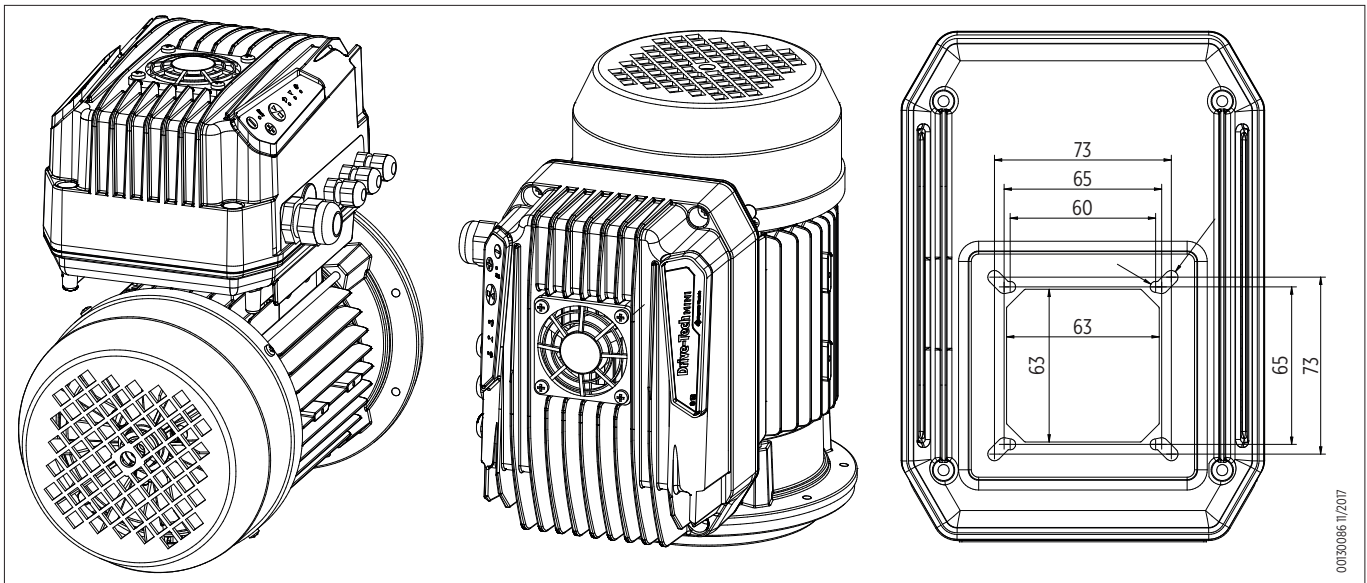
TRASDUCER SPECIFICATION

- Nominal output signal (protected against shortcut): $4 \div 20\text{ mA}$
- Power voltage [U_B], protection antipolarity: $9 \div 28\text{ V}$
- Sensor temperature range: $0\text{ }^{\circ}\text{C} \div +80\text{ }^{\circ}\text{C}$
- Environment temperature range (based on electric connection): $-20\text{ }^{\circ}\text{C} \div +80\text{ }^{\circ}\text{C}$
- Shielded cable: 2 m
- Protection degree achived with connector coupled: IP67

DIMENSIONAL DATA

Model	Vin [Vac]	Max Vout [V]	Max I input [A]	Max I out [A]	Typical motor power P ₂ [kW]	Drawing
DTm 2.005 M/T 3A	1 x 230 ± 15 %	3 x 230	4.5	3	0.55	
DTm 2.011 M/T 5A	1 x 230 ± 15 %	3 x 230	7.5	5	1.1	
DTm 2.015 M/T 7.5A	1 x 230 ± 15 %	3 x 230	11	7.5	1.5	

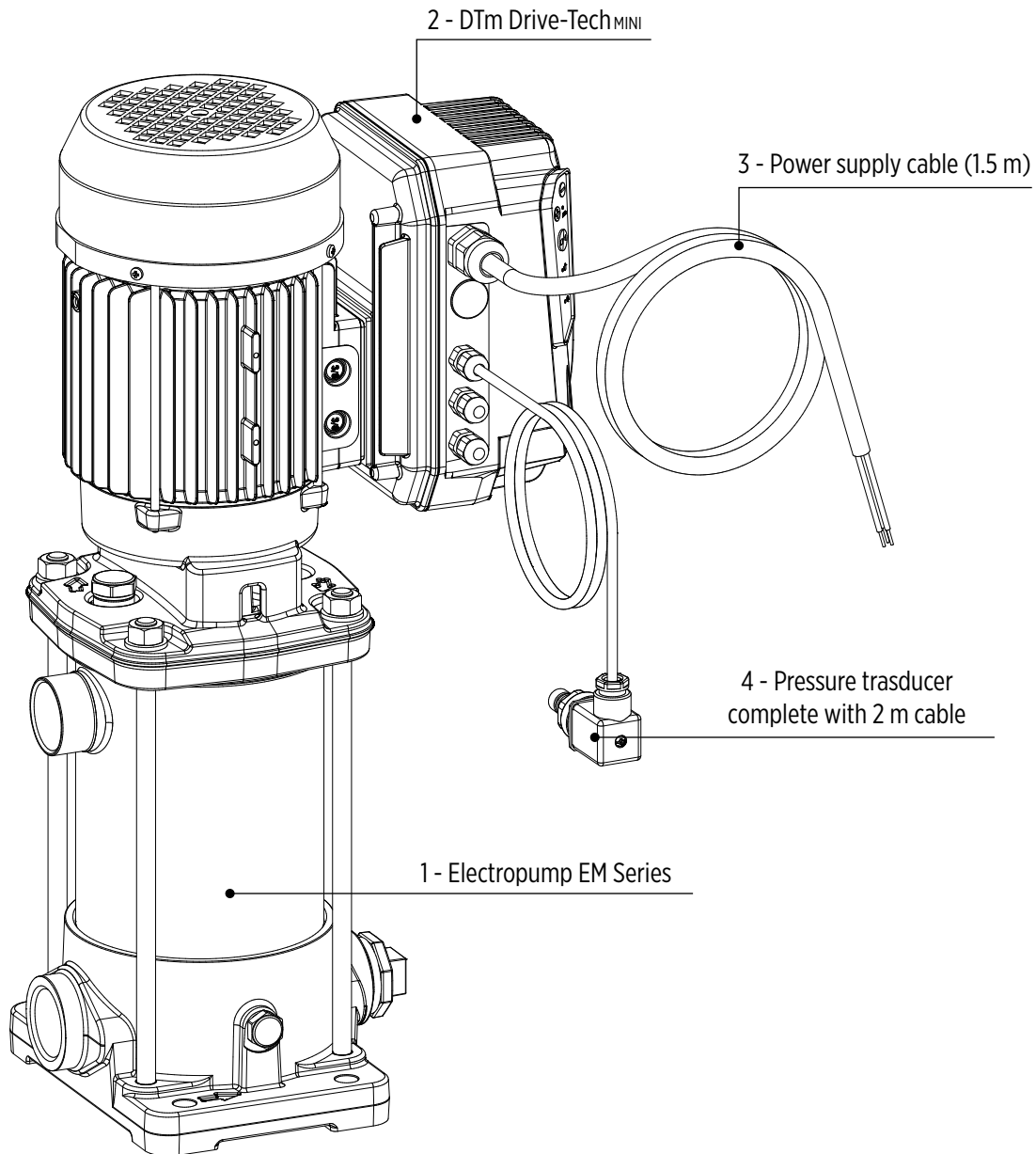
INSTALLATION DRAWINGS



DTm can be installed directly on motor terminal box of horizontal or vertical axis pumps

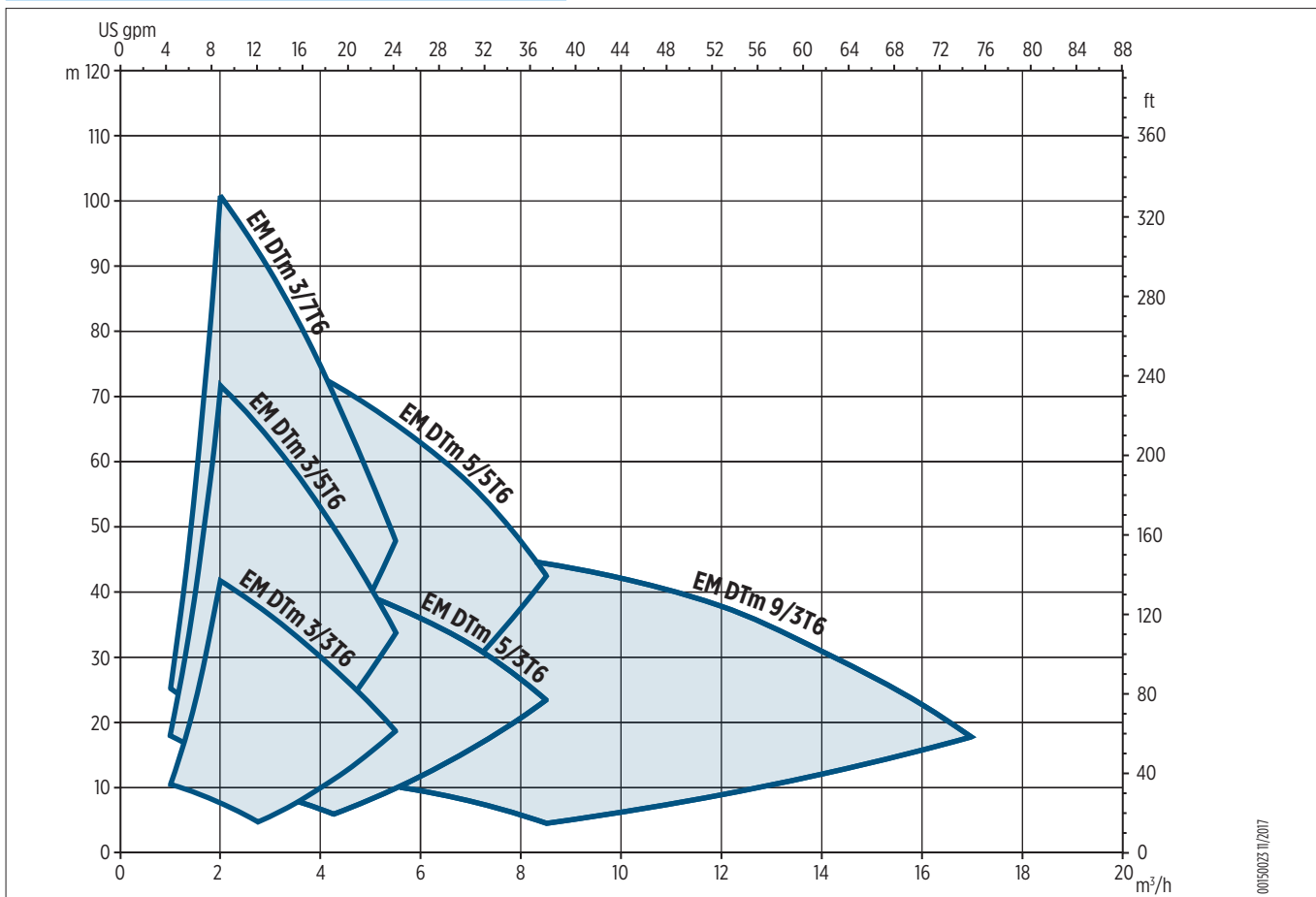
EM DTm 3-5-9

PACKAGE SYSTEM AND MAIN COMPONENTS INCLUDED



00130088EN 11-2017

EM DTm FAMILY CURVES



00540023 11/2017

SYSTEM IDENTIFICATION CODE

EM DTm 3 / 03 007 T6 E0 IE3

- EM DTm
 - 3
 - /
 - 03
 - 007
 - T6
 - E0
 - IE3
- System model
 - Nominal flow rate in m³/h
 - Number of stages
 - R (Second threaded delivery port puts on top)
 - T (In-line oval flange);
 - Pump version: D (In-line threaded);
 - Motor power kW x 10
 - Motor type: T (Three phase); 6 (60Hz)
 - Mechanical seal type
 - Three-phase motor efficiency

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EM DTm 3-5-9

TABLE OF HYDRAULIC PERFORMANCE AT 60Hz

Pump model	Q = DELIVERY																	
	l/min 0	33	42	50	58	67	75	83	92	100	117	133	141.6	167	200	233	266.6	283.3
	m ³ /h 0	2	2.5	3	3.5	4	4.5	5	5.5	6	7	8	8.5	10	12	14	16	17
	US GMP 0	8.8	11.0	13.2	15.4	17.6	19.8	22.01	24.2	26.4	30.8	35.2	37.4	44.02	52.8	61.6	70.4	74.8
H=TOTAL M.HEAD OF WATER COLUMN [m]																		
EM DTm 3/3T6	48.0	41.5	39.0	36.5	33.5	30.0	26.5	23.0	19.0	14.0								
EM DTm 3/5T6	81.5	71.5	68.0	63.0	58.0	53.0	47.0	40.5	34.0	26.0								
EM DTm 3/7T6	114.5	101.0	95.5	89.0	82.0	74.5	66.5	57.5	48.0	37.0								
EM DTm 5/3T6	49.5		46.0	44.5	43.5	42.5	41.0	39.5	38.0	36.0	32.0	26.5	23.5					
EM DTm 5/5T6	83.5		78.0	76.5	75.0	73.0	71.0	68.5	66.0	63.0	56.5	48.0	42.5					
EM DTm 9/3T6	52.0									47.0	46.0	45.0	44.5	42.0	38.0	31.0	23.0	18.0



EM DTm
EM Series with Drive-Tech_{MINI}
Technical data and
Performance curves

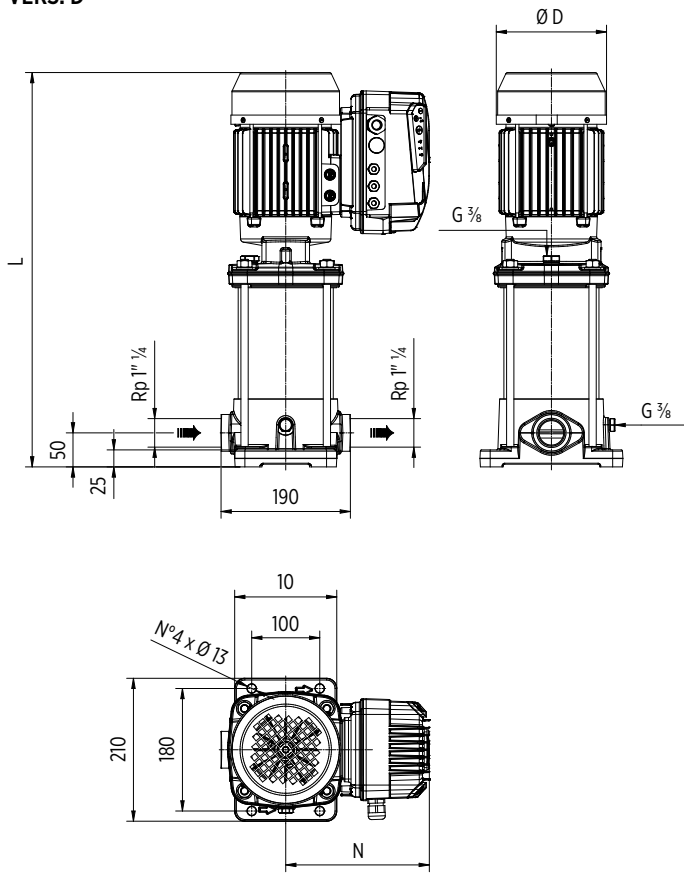
EM DTm 3

TECHNICAL DATA

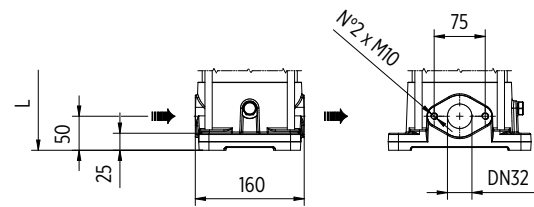
Pump model	Motor Size	MOTOR NOMINAL POWER		INPUT POWER [kW]	INPUT CURRENT [A]	Dimensions [mm]				Weight [Kg]
		[kW]	[HP]			L	L2	D	N	
EM DTm 3/3T6	71	0.75	1	1.04	4.5	465.5	111	144	204	22.3
EM DTm 3/5T6	80	1.5	2	1.76	7.5	555.5	159	162	211	27.5
EM DTm 3/7T6	90	2.2	2.7	2.44	11.0	642.5	207	179	218	34.2

DIMENSIONAL DRAWINGS

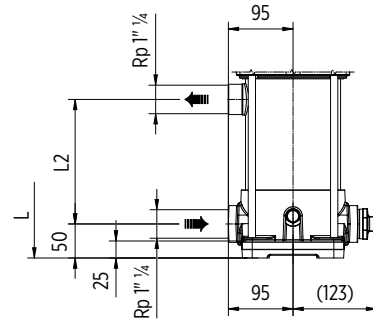
VERS. D



VERS. T



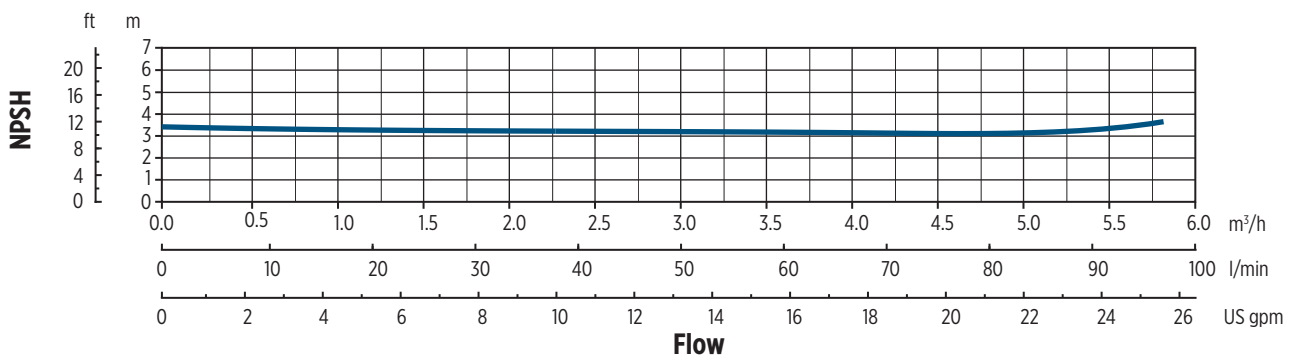
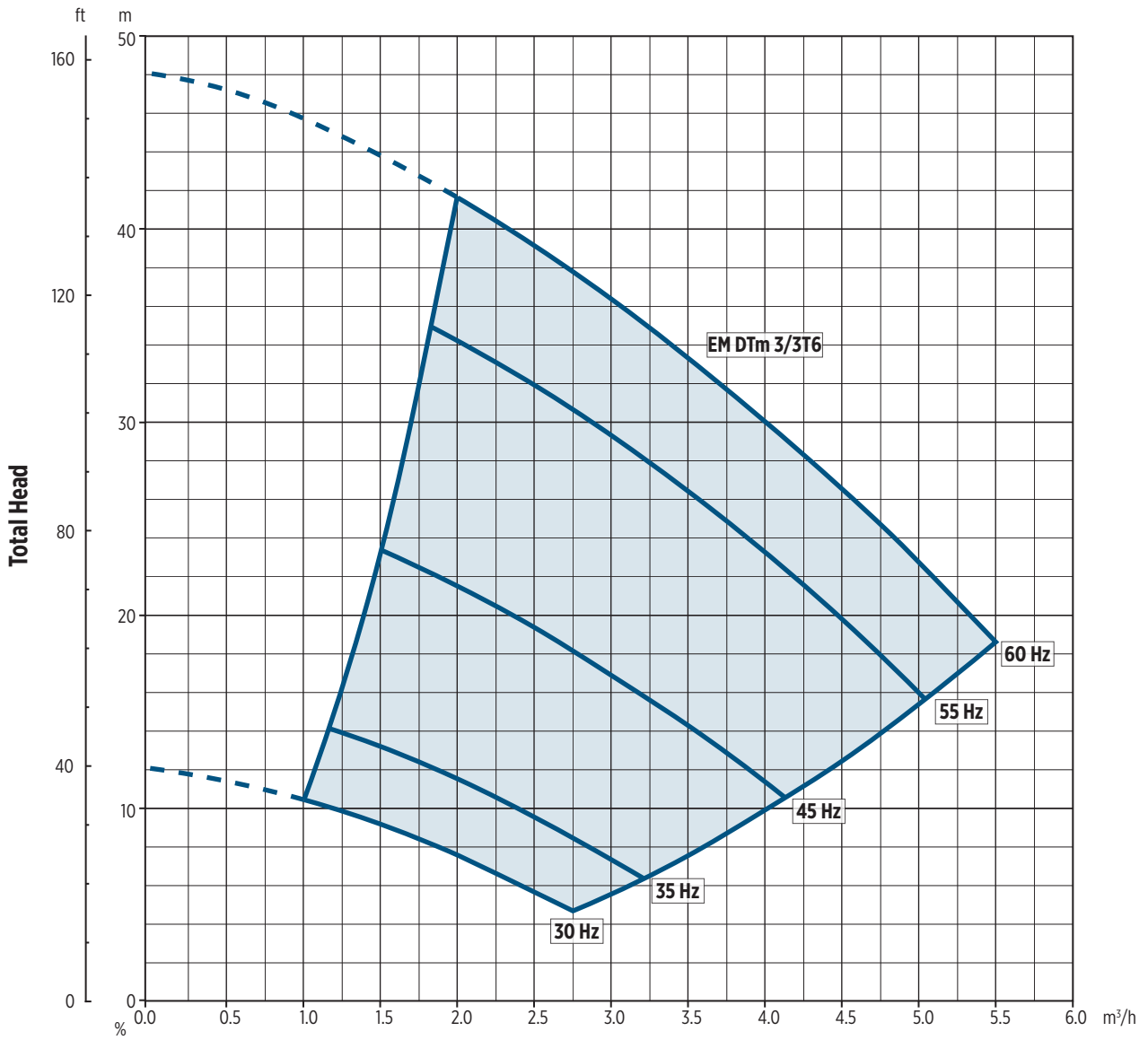
VERS. R



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PERFORMANCE CURVES

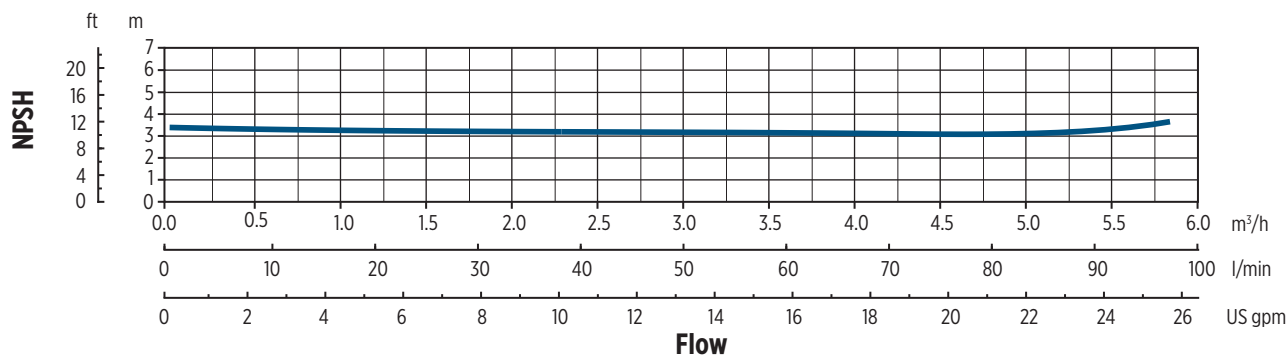
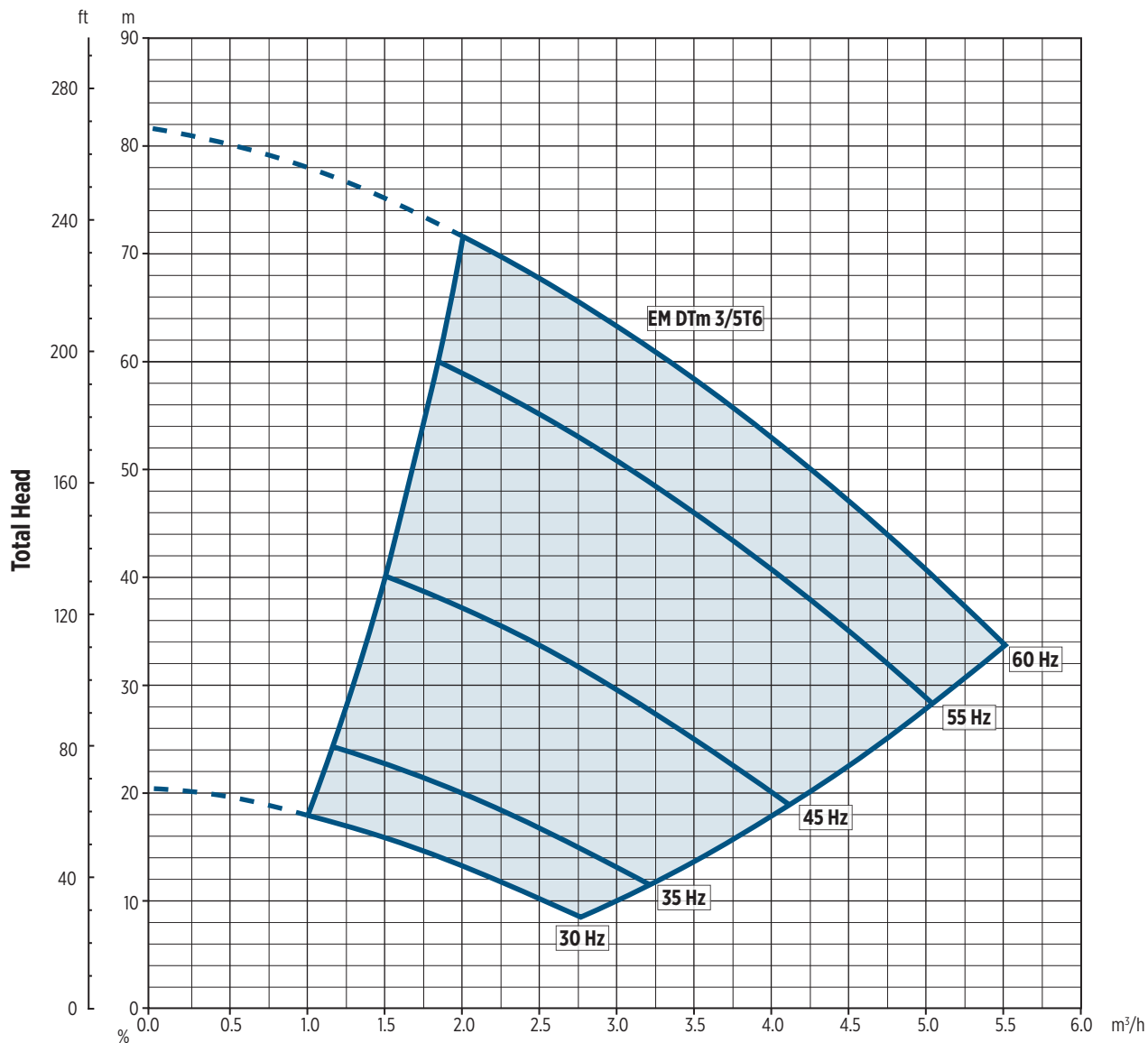
MEI ≥ 0,40



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PERFORMANCE CURVES

MEI ≥ 0,40

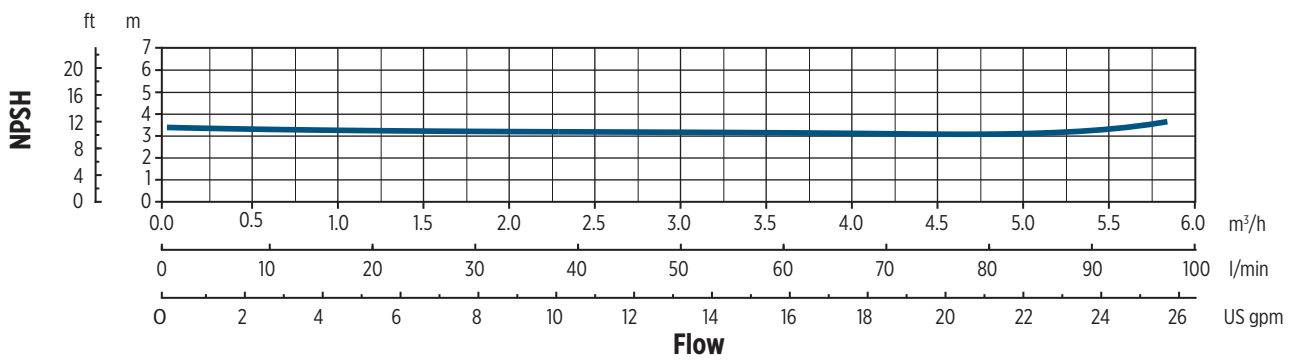
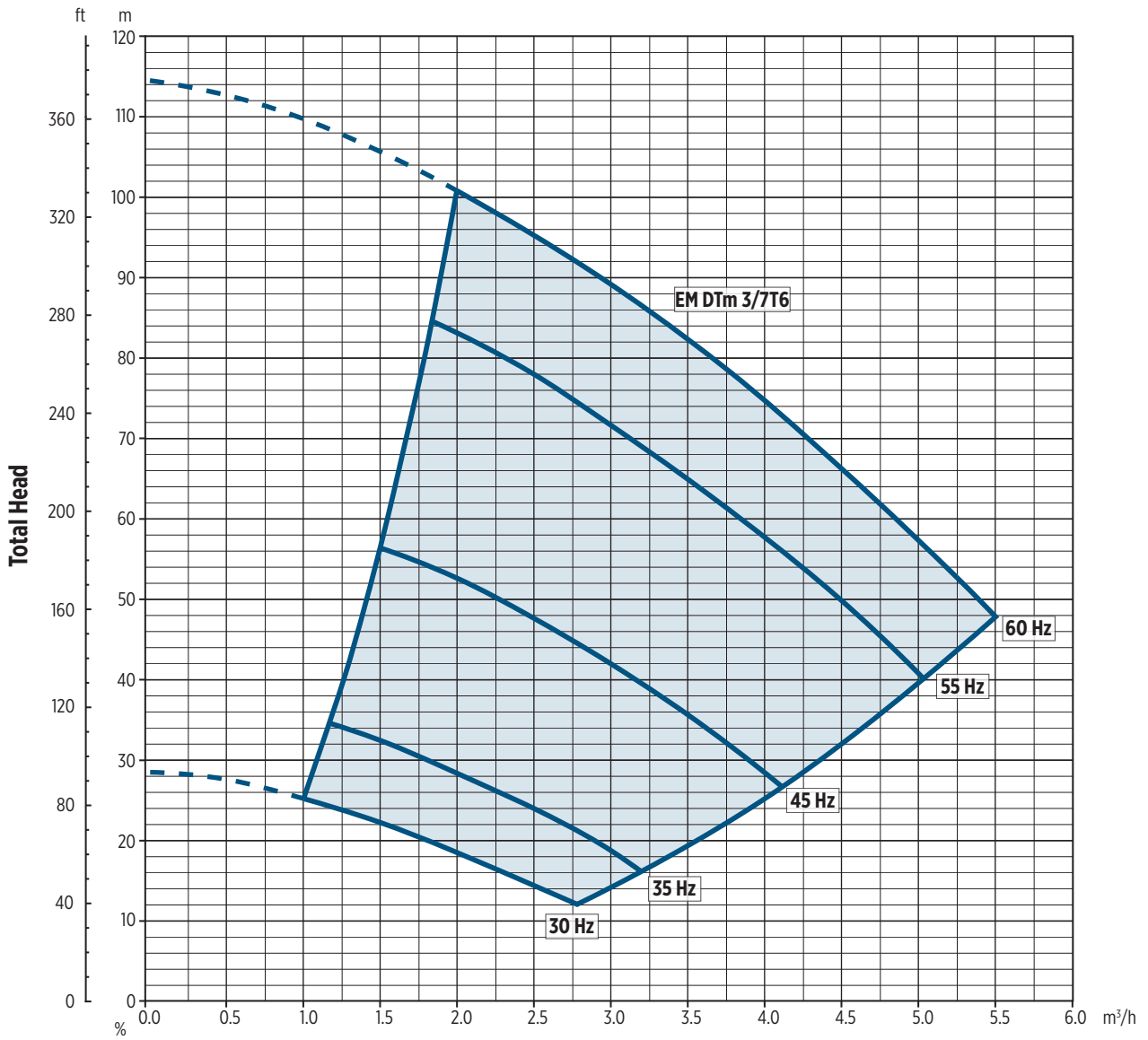


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PERFORMANCE CURVES

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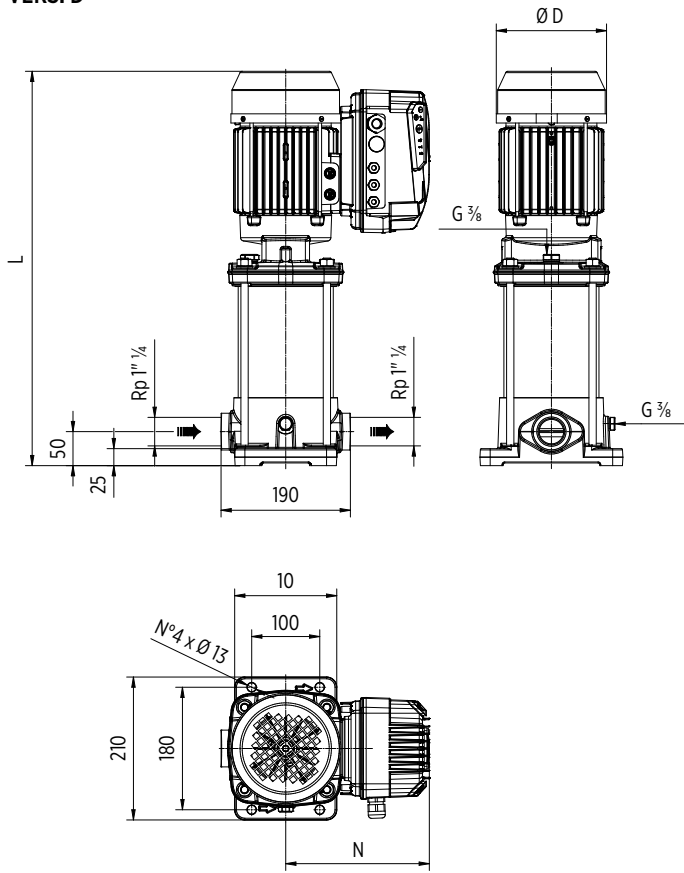
EM DTm 5

TECHNICAL DATA

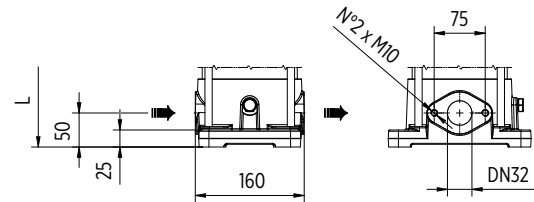
Pump model	Motor Size	MOTOR NOMINAL POWER		INPUT POWER [kW]	INPUT CURRENT [A]	Dimensions [mm]				Weight [Kg]
		[kW]	[HP]			L	L2	D	N	
EM DTm 5/3T6	71	1.1	1.5	1.44	7.5	465.5	111	144	204	22.8
EM DTm 5/5T6	90	2.2	2.7	2.45	11.0	594.5	159	179	218	32.9

DIMENSIONAL DRAWINGS

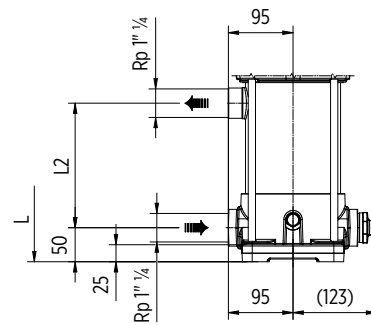
VERS. D



VERS. T



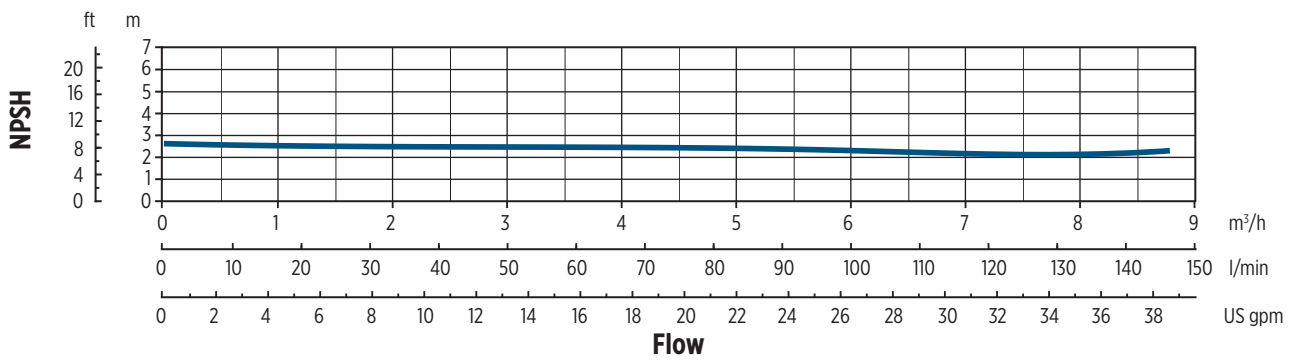
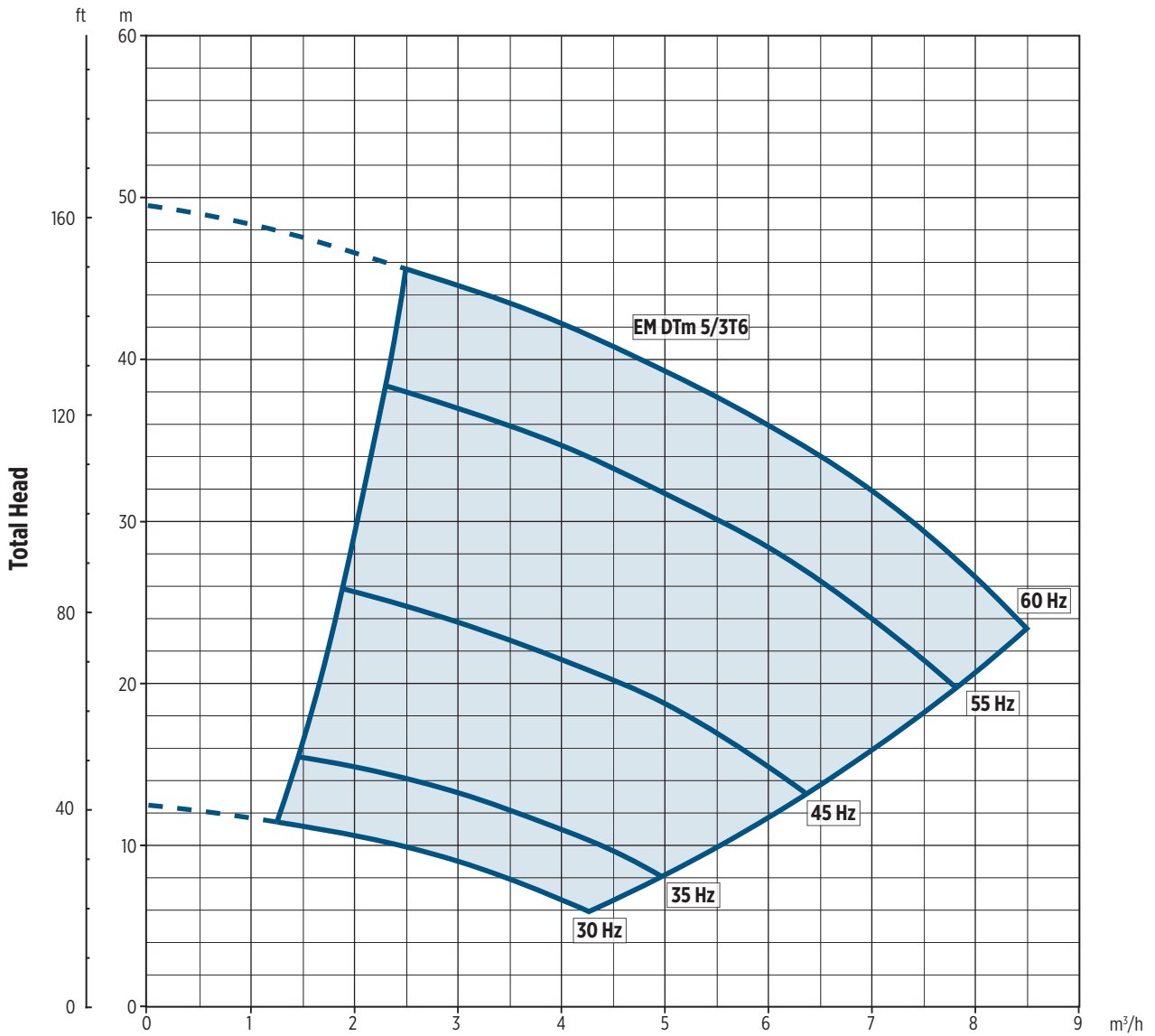
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PERFORMANCE CURVES

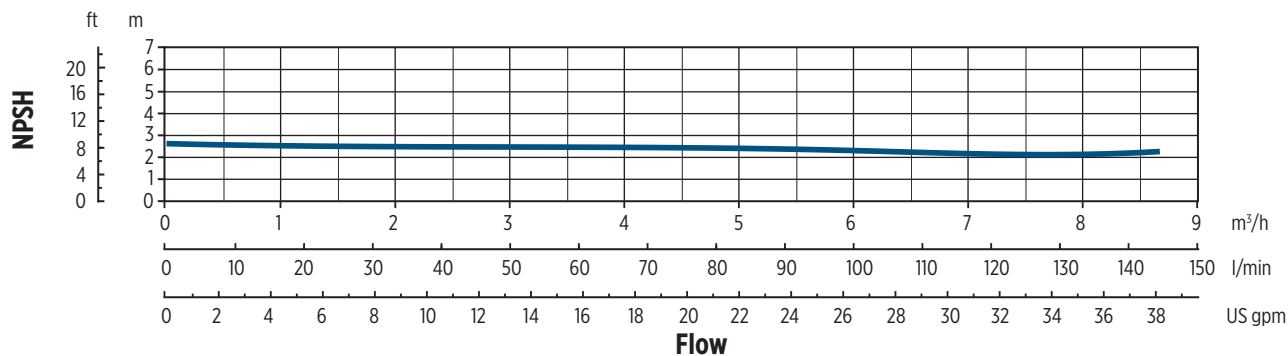
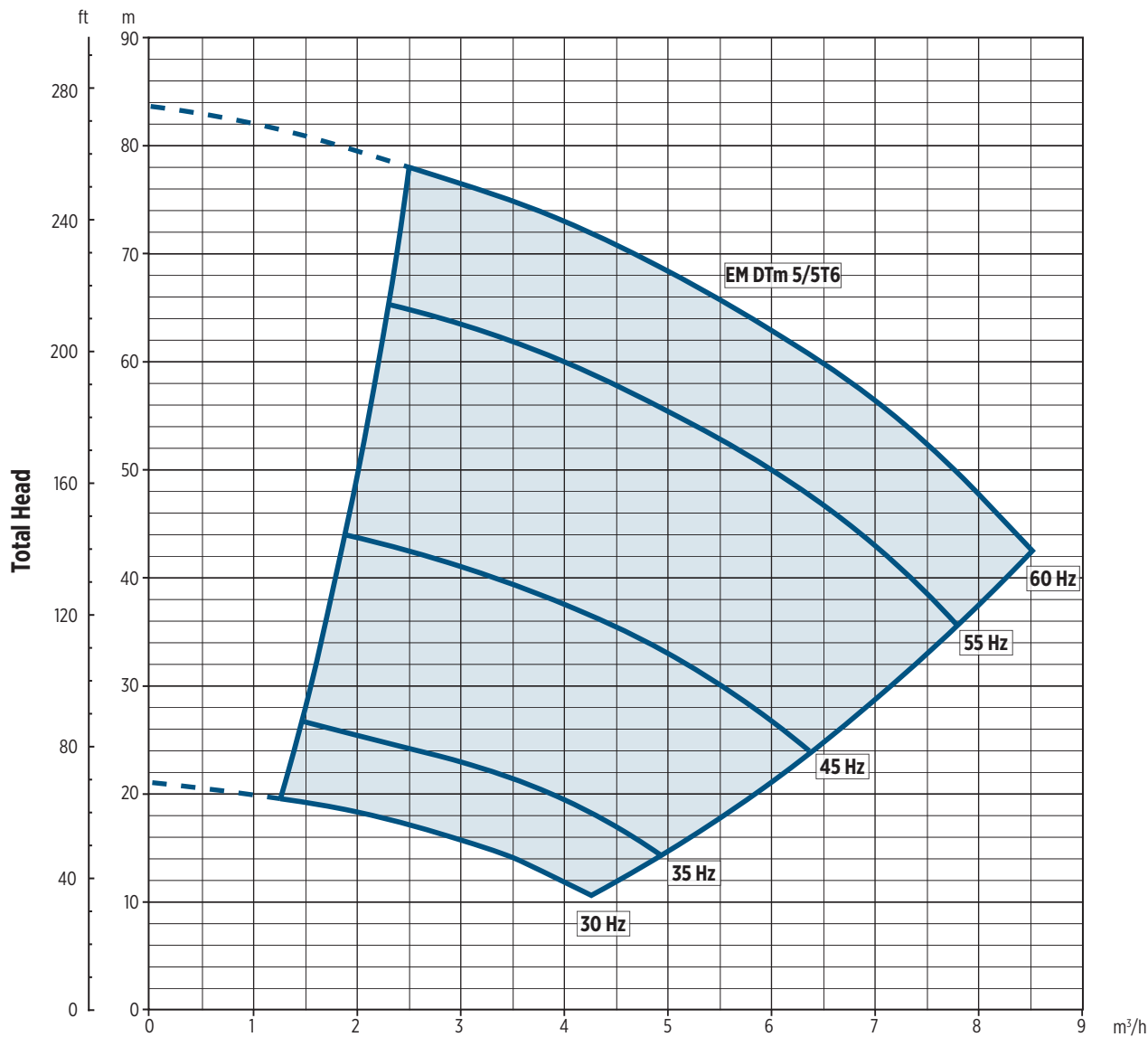
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PERFORMANCE CURVES

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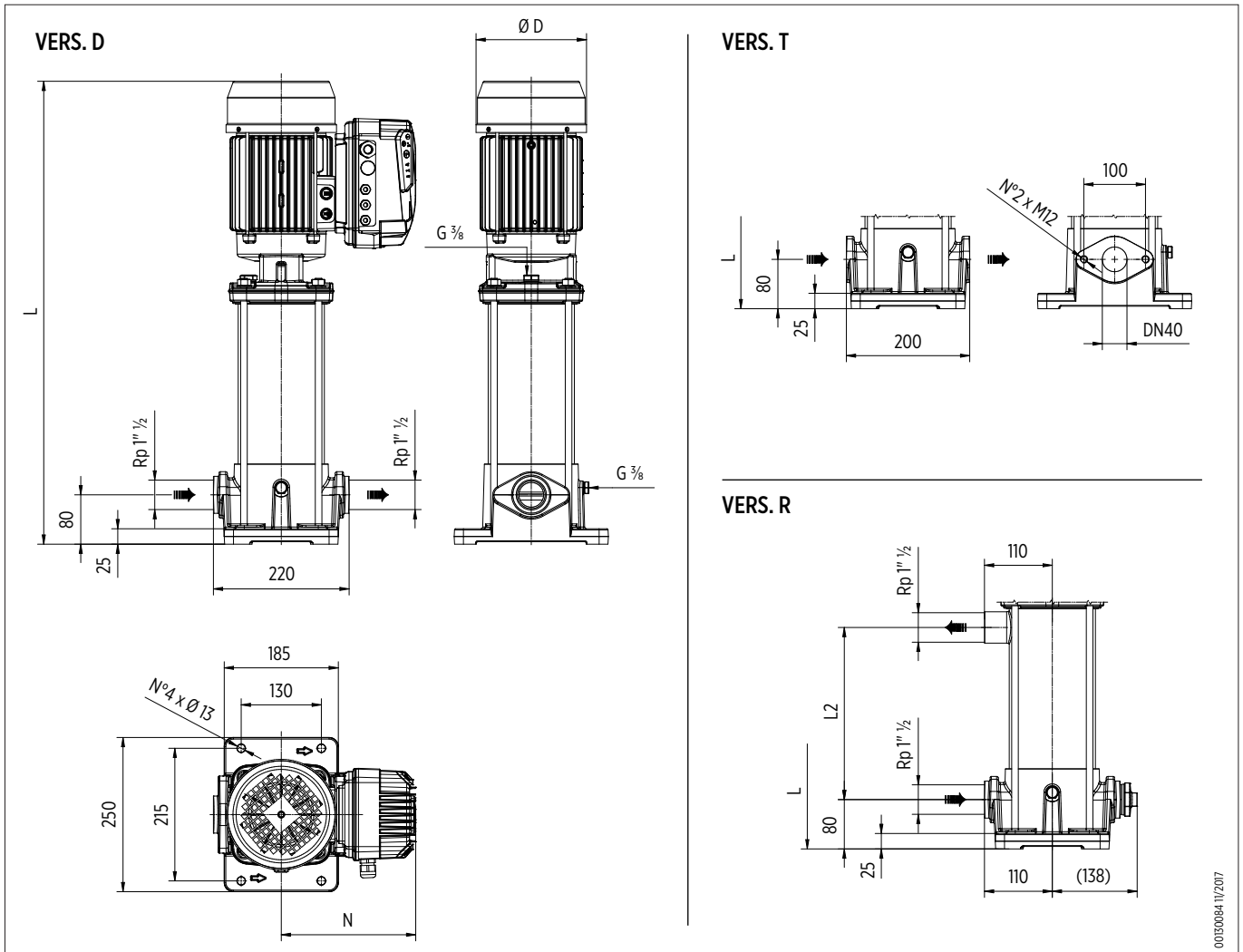


EM DTm 9

TECHNICAL DATA

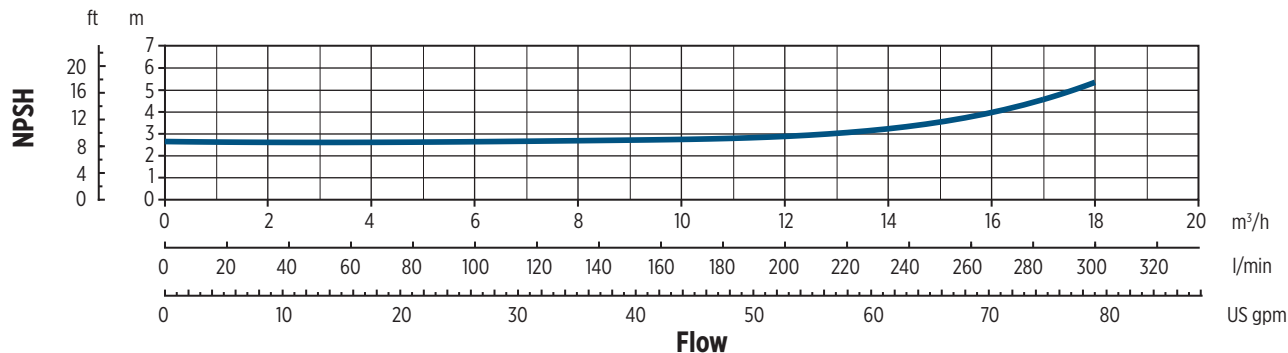
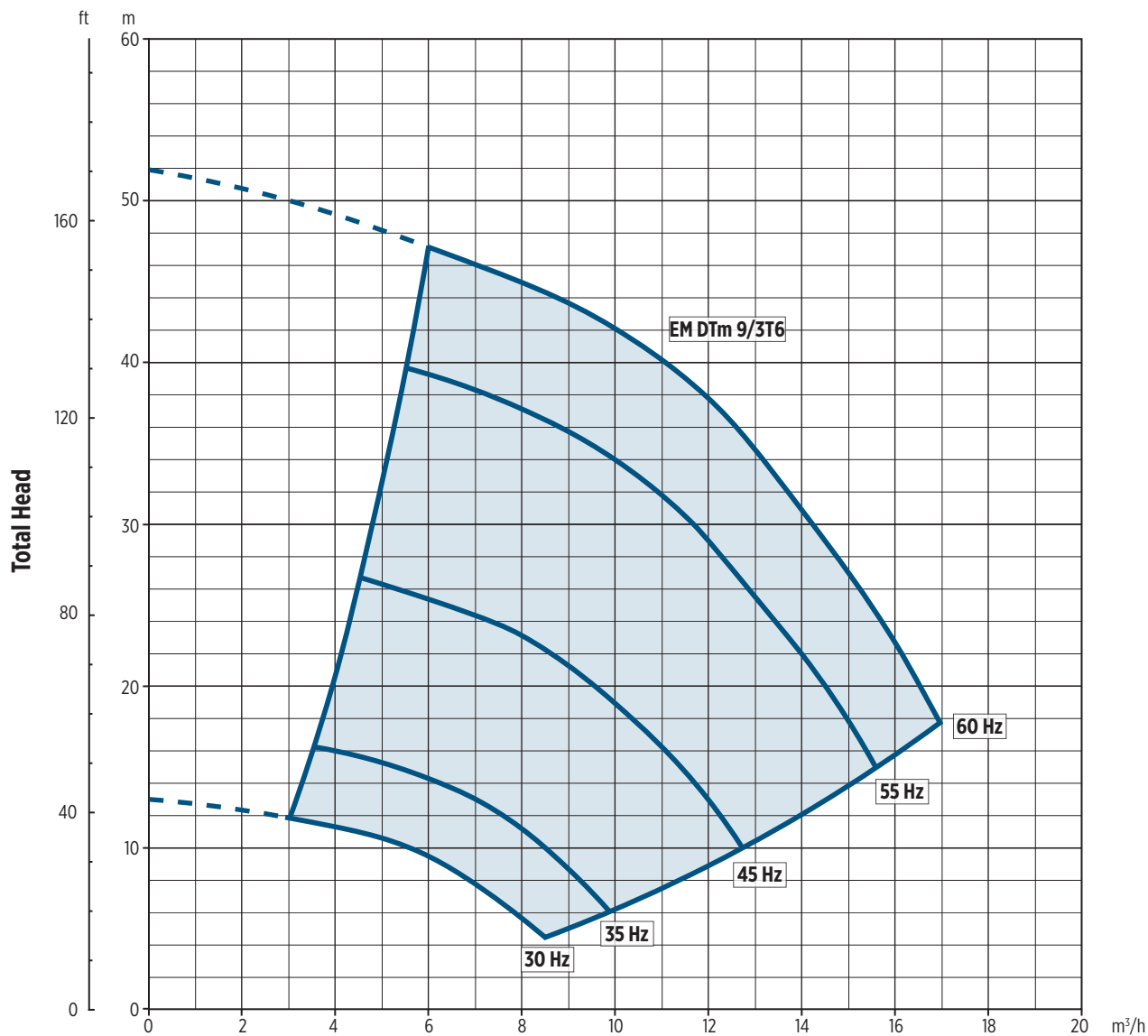
Pump model	Motor Size	MOTOR NOMINAL POWER		INPUT POWER	INPUT CURRENT [A]	Dimensions [mm]				Weight [Kg]
		[kW]	[HP]	[kW]		L	L2	D	N	
EM DTm 9/3T6	90	2.2	2.7	2.57	11.0	594	129	179	218	35.3

DIMENSIONAL DRAWINGS



PERFORMANCE CURVES

MEI ≥ 0,40



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Franklin Electric

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