PRODUCT CATALOG

Franklin Electric

EM SERIES 50 Hz

VERTICAL CLOSE-COUPLED MULTISTAGE PUMPS



franklinwater.eu

E-Tech®

MENU

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Franklin Electric reserves the right to amend specification without prior notice.

For the most up-to-date product information, visit **franklinwater.eu**.

PRODUCT OVERVIEW

APPLICATIONS

- Small domestic and industrial plants / Domestic water supply
- Water Distribution / Pressure Boosting
- Irrigation / Gardening / Sprinklers / Rainwater collection
- Industrial plants / Wash down unit
- Cooling and refrigeration / Heating and conditioning / Air conditioning systems
- Pumping of clear non-loaded fluids
- 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 and sealed motor ball bearing fitted in the motor
- Mechanical seal Type E0 = Carbon graphite / Ceramic Alumina / EPDM

PUMP SPECIFICATION

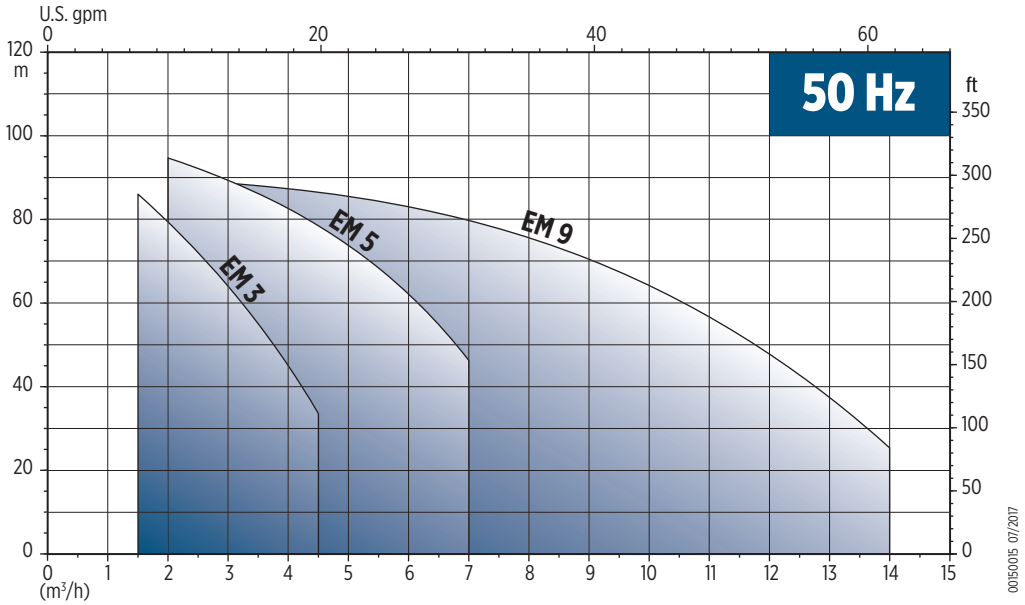
- Flow: up to 14 m^3/h
- Head: up to 104 m
- Discharge and Suction ports: Threaded or Oval connections
- Maximum working pressure: 12 Bar
- Direction of rotation: clockwise looking at the pump from the top down
- Maximum ambient temperature: 40 °C
- Liquid temperature range:
  - Minimum: - 15 °C
  - Maximum: Single-phase motors: +55°C for domestic use (uses covered by EN standard 60335-2-41)
    Three-phase motors: +90°C for industrial use (uses other than those covered by EN standard 60335-2-41)
- The hydraulic characteristics are guaranteed, according to ISO standard 9906:2012, grade 3B

MOTOR SPECIFICATION

- Three-phase motors efficiency class IE3
- Asynchronous, TEFC (Totally Enclosed / Fan-Cooled)
- 2 poles
- Protection degree: IP55
- Insulation class: F

PRODUCT OVERVIEW

FAMILY CURVES



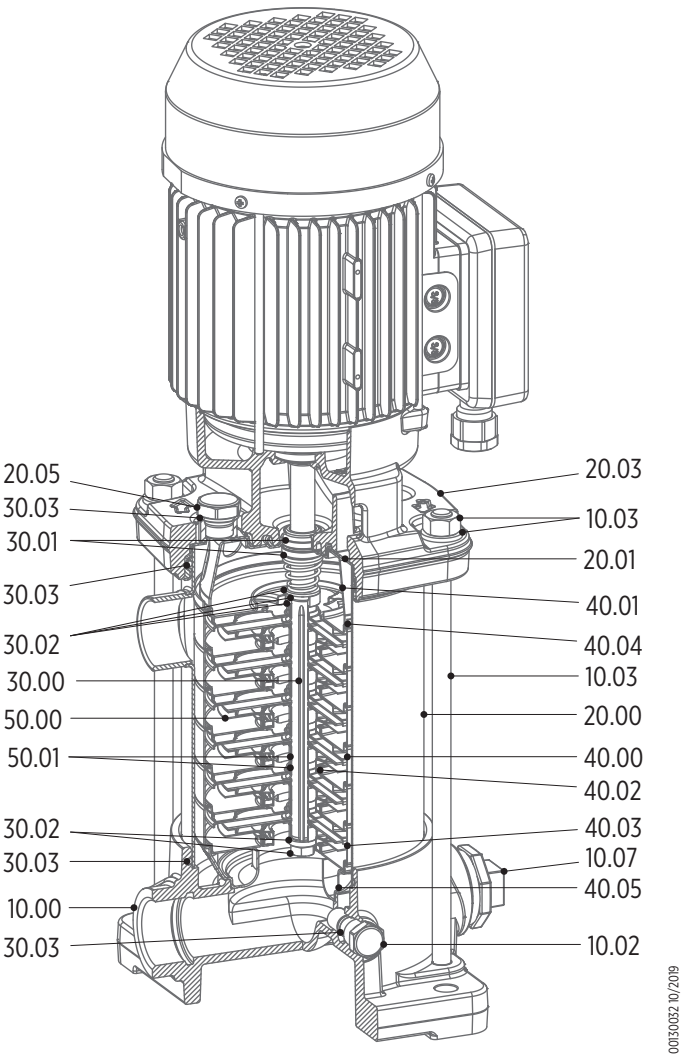
PUMP IDENTIFICATION CODE

EM	5	/	05	D	G	011	T	6	E0		IE3

- Three-phase motors efficiency class IE3
- Pump speciality: Empty (Standard)
- Mechanical seal type
- Frequency: 5 (60 Hz); 6 (60 Hz)
- “T” (Three-Phase)
- Motor power (kWx10)
- Pump material: “G” (Cast iron / AISI 304)
- Connection configurations:
  - “D” (In-line threaded)
  - “T” (In-line oval flange)
  - “R” (Second threaded delivery port putted on top)
- Number of stages
- Nominal flow rate in m3/h
- Pump model

00140012 09/2023

SPARE PARTS AND MATERIALS



SPARE PARTS LIST

Ref. No.	Parts description
10.00	Pump casing
10.02	Draining plug
10.03	Tie bolts, washers and nuts
10.07	Pump casing plug*
20.00	Outer case
20.01	Mechanical seal housing
20.03	Motor bracket
20.05	Filling plug
30.00	Pump shaft
30.01	Kit mechanical seal
30.02	Mechanical seal fastening kit
30.03	Kit O-rings
40.00	Stage housing and diffuser
40.01	Stage Centering outlet
40.02	Floating neck ring
40.03	Initial stage housing
40.04	Last Stage with diffuser
40.05	Stage Centering inlet
50.00	Impeller
50.01	Impeller spacer

* Only for R version

PARTS IN CONTACT WITH LIQUID

Ref. No.	Parts description	Material	Standard	
			ASTM/AISI	DIN/EN
10.00	Pump casing	Cast Iron	A48 Class 35	GJL-250
10.02	Draining plug	Stainless Steel	AISI 304	14301
10.07	Pump casing plug*	Zinc coated steel	-	-
20.00	Outer case	Stainless Steel	AISI 304	14301
20.01	Mechanical seal housing	Stainless Steel	AISI 304	14301
20.05	Filling plug	Stainless Steel	AISI 304	14301
30.00	Pump shaft	Stainless Steel	AISI 304	14301
30.01	Kit mechanical seal	Ceramic / Carbon graphite / EPDM	-	-
30.02	Mechanical seal fastening kit	Stainless Steel	AISI 304	14301
30.03	Kit O-rings	EPDM	-	-
40.00	Stage housing and diffuser	Stainless Steel	AISI 304	14301
40.01	Stage Centering outlet	Stainless Steel	AISI 304	14301
40.02	Floating neck ring	Stainless steel, PPS	AISI 304	14301
40.03	Initial stage housing	Stainless Steel	AISI 304	14301
40.04	Last Stage with diffuser	Stainless Steel	AISI 304	14301
40.05	Stage Centering inlet	Stainless Steel	AISI 304	14301
50.00	Impeller	Stainless Steel	AISI 304	14301
50.01	Impeller spacer	Stainless Steel	AISI 304	14301

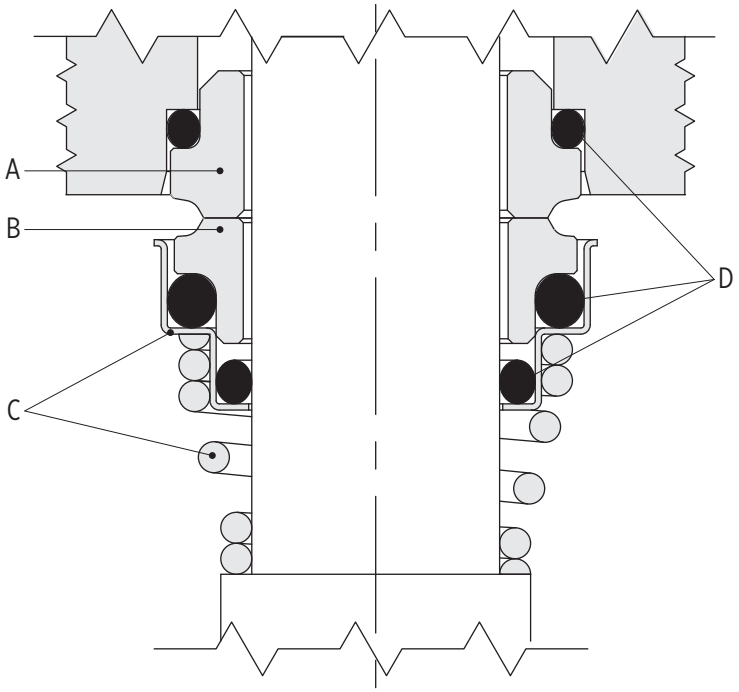
* Only for R version

HYDRAULIC PERFORMANCE AT 50 Hz

THREE-PHASE VERSION

Pump model	Q = DELIVERY															
	l/min 0	33.3	41.7	50.0	58.3	66.7	75.0	83.3	91.7	100.0	116.7	133.3	150.0	166.7	183.3	233.3
	m^3/h 0	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	7.0	8.0	9.0	10.0	11.0	14.0
	US gpm 0	8.8	11.0	13.2	15.4	17.6	19.8	22.0	24.2	26.4	30.8	35.2	39.6	44.0	48.4	61.6
	H = TOTAL METERS HEAD OF WATER COLUMN [m]															
EM 3/2	22.7	19.2	17.7	16.1	14.2	12.2	10.0									
EM 3/3	33.7	28.1	25.9	23.4	20.6	17.6	14.2									
EM 3/4	44.4	36.6	33.6	30.2	26.5	22.4	18.0									
EM 3/5	54.9	44.7	40.8	36.6	31.9	26.9	21.3									
EM 3/6	66.1	54.2	49.6	44.5	38.9	32.8	26.2									
EM 3/7	76.6	62.1	56.6	50.6	44.1	37.0	29.3									
EM 3/8	88.9	73.7	67.7	61.0	53.6	45.5	36.7									
EM 3/9	99.5	82.1	75.3	67.7	59.4	50.2	40.3									
EM 5/2	23.0		21.0	20.4	19.7	18.9	18.1	17.2	16.1	14.9	11.8					
EM 5/3	34.1		30.7	29.7	28.6	27.4	26.1	24.7	23.0	21.2	16.4					
EM 5/4	45.4		40.8	39.6	38.1	36.5	34.8	32.8	30.6	28.1	21.8					
EM 5/5	56.3		50.1	48.4	46.5	44.4	42.2	39.7	36.9	33.7	25.7					
EM 5/6	68.2		61.6	59.8	57.7	55.3	52.7	49.9	46.6	42.9	33.4					
EM 5/7	79.2		71.1	68.9	66.4	63.6	60.5	57.1	53.3	48.9	37.7					
EM 5/8	92.0		84.2	81.9	79.3	76.2	72.9	69.2	65.0	60.1	47.7					
EM 5/9	103.3		94.2	91.6	88.6	85.1	81.3	77.1	72.3	66.8	52.8					
EM 9/2	23.5			22.0	21.8	21.5	21.1	20.8	20.4	20.1	19.3	18.5	17.4	16.0	14.1	6.9
EM 9/3	35.0			32.7	32.3	31.9	31.3	30.7	30.2	29.7	28.5	27.2	25.5	23.3	20.5	9.7
EM 9/4	47.0			44.2	43.8	43.2	42.5	41.8	41.2	40.5	39.0	37.4	35.3	32.5	28.8	14.4
EM 9/5	59.6			56.7	56.2	55.6	54.8	54.0	53.3	52.5	50.8	49.0	46.5	43.2	38.7	21.0
EM 9/6	71.2			67.5	66.9	66.2	65.2	64.2	63.2	62.3	60.2	57.9	54.8	50.8	45.4	24.0
EM 9/7	83.5			79.5	78.8	78.1	76.9	75.8	74.8	73.7	71.4	68.8	65.4	60.7	54.6	29.7
EM 9/8	95.2			90.4	89.6	88.7	87.4	86.1	84.9	83.6	80.9	77.9	73.9	68.5	61.3	32.9

MECHANICAL SEAL SPECIFICATIONS



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 Alumina	Carbon graphite	AISI 316	EPDM	-15 / +110

Type	Material
B	Carbon graphite
E	EPDM
G	AISI 316
V	Ceramic alumina

MOTOR SPECIFICATION

- Asynchronous, TEFC (Totally Enclosed / Fan-Cooled)
- 2 poles
- Protection degree: IP55
- Insulation class: F
- Motor frequency of starts:
  - Max. 60 starts/hour for motor power up to 3 kW (with min. 1 minute resting time)
  - Max. 30 starts/hour for motor power from 4 kW (with min. 2 minute resting time)

THREE-PHASE VERSION AT 50 Hz

- Efficiency Motor Class: IE3 (Premium)
- IE efficiency according to IEC 60034-30-1:2014
- Electrical performance according to IEC 60034-2-1:2007
- Standard voltage:
  - 220-240 / 380-415 V ± 5 % up to 3 kW
  - 380-415 / 660-690 V ± 5 % from 4 kW
- Thermal protection to be provide into the starter panel by the installer

P_N [kW]	Efficiency ηN %						IE
	Δ 230 V Y 400 V			Δ 400 V Y 690 V			
	4/4	3/4	2/4	4/4	3/4	2/4	
0.75	80.9	81.5	79.6	-	-	-	3
1.1	82.7	84.6	84.2	-	-	-	
1.5	84.3	85.7	85.3	-	-	-	
2.2	86.1	86.7	85.4	-	-	-	
3	87.1	87.5	86.1	-	-	-	
4	-	-	-	88.1	88.7	87.7	
5.5	-	-	-	89.2	89.4	88.1	

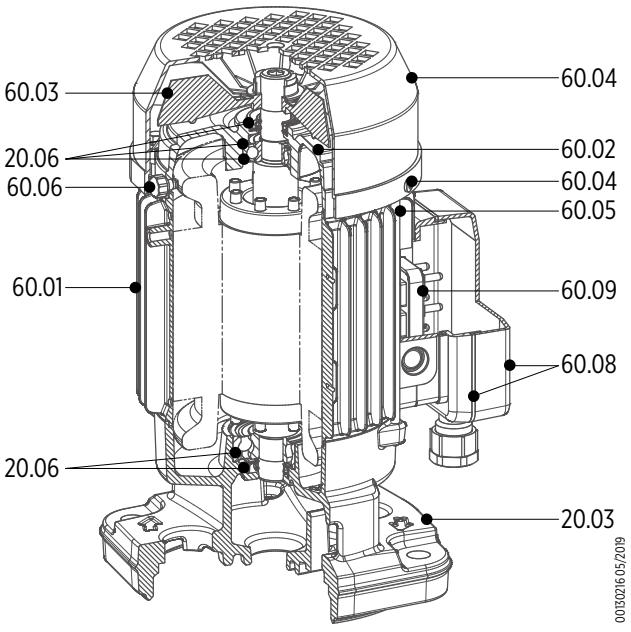
MOTOR SPECIFICATION

P_N [kW]	Motor size	N. of poles	f_N [Hz]	400 V - 50 Hz				
				cos ϕ	I_S / I_N	T_N [Nm]	T_S / T_N	T_M / T_N
0.75	71	2	50	0.83	6.8	2.6	3.6	3.7
1.1	71			0.82	5.9	3.7	3.2	3.1
1.5	80			0.79	6.8	5.1	3.2	3.2
2.2	90			0.8	9.6	7.3	4.3	4.4
3	90			0.83	9.6	9.9	4.7	4.9
4	100			0.85	8.1	13.2	2.8	3
5.5	112			0.81	8.4	18.1	4.3	4.5

P_N [kW]	VOLTAGE U_N				n_N [min^{-1}]	Motor operating conditions		
	Δ 230 V	Y 400 V	Δ 400 V	Y 690 V		Altitude above sea level [m]	T. amb min/max	ATEX
	I_N [A]							
0.75	2.8	1.6	-	-	2800	≤ 1000	-15 / +40	No
1.1	4.1	2.3	-	-	2840			
1.5	5.7	3.3	-	-	2830			
2.2	8.0	4.6	-	-	2880			
3	10.4	6.0	-	-	2900			
4	-	-	7.7	4.4	2900			
5.5	-	-	11.0	6.4	2900			

MOTOR SPARE PARTS

Ref. No.	Parts description
20.03	Motor bracket
20.06	Kit bearings
60.01	Motor housing and stator
60.02	Endshield non-drive end
60.03	Fan
60.04	Fan cover and screws
60.05	Motor tie rods
60.06	Kit motor spare components
60.08	Terminal box cover and base
60.09	Terminal board



Technical data and performance curves

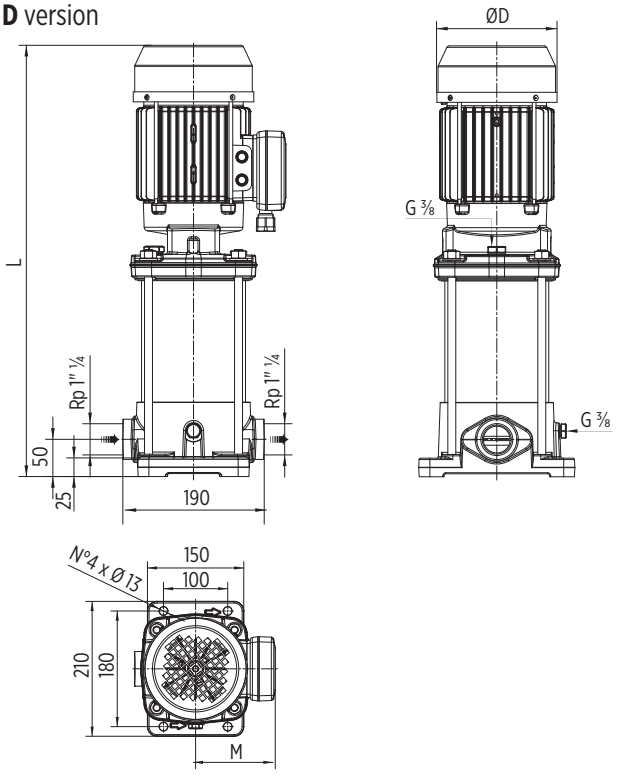
EM 3 - TECHNICAL DATA

THREE-PHASE VERSION

Pump model	Motor size	Motor nominal power		Input power	Input current [A]		Dimensions [mm]				Weight [kg]
		[kW]	[HP]	[kW]	220-240 V	380-415 V	L	L2	ØD	M	
EM 3/2T	71	0.75	1	0.4	1.9	1.1	441.5	87	144	117	19.3
EM 3/3T	71	0.75	1	0.6	2.1	1.2	465.5	111	144	117	19.9
EM 3/4T	71	0.75	1	0.7	2.4	1.4	489.5	135	144	117	20.6
EM 3/5T	71	0.75	1	0.9	2.7	1.6	513.5	159	144	117	21.2
EM 3/6T	71	1.1	1.5	1.0	3.3	1.9	537.5	183	144	117	22.4
EM 3/7T	71	1.1	1.5	1.2	3.6	2.1	561.5	207	144	117	23
EM 3/8T	80	1.5	2	1.4	4.8	2.8	627.5	231	162	124	27
EM 3/9T	80	1.5	2	1.6	5.1	3.0	651.5	255	162	124	27.7

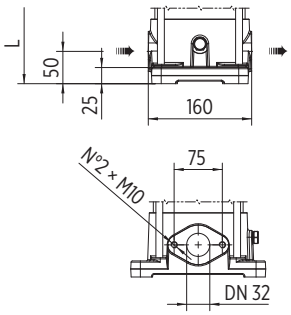
DIMENSIONAL DRAWINGS

D version

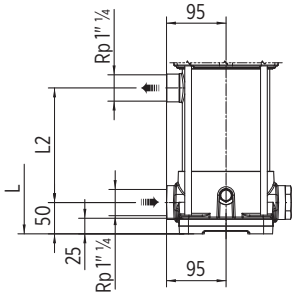


3 ~ VERSION

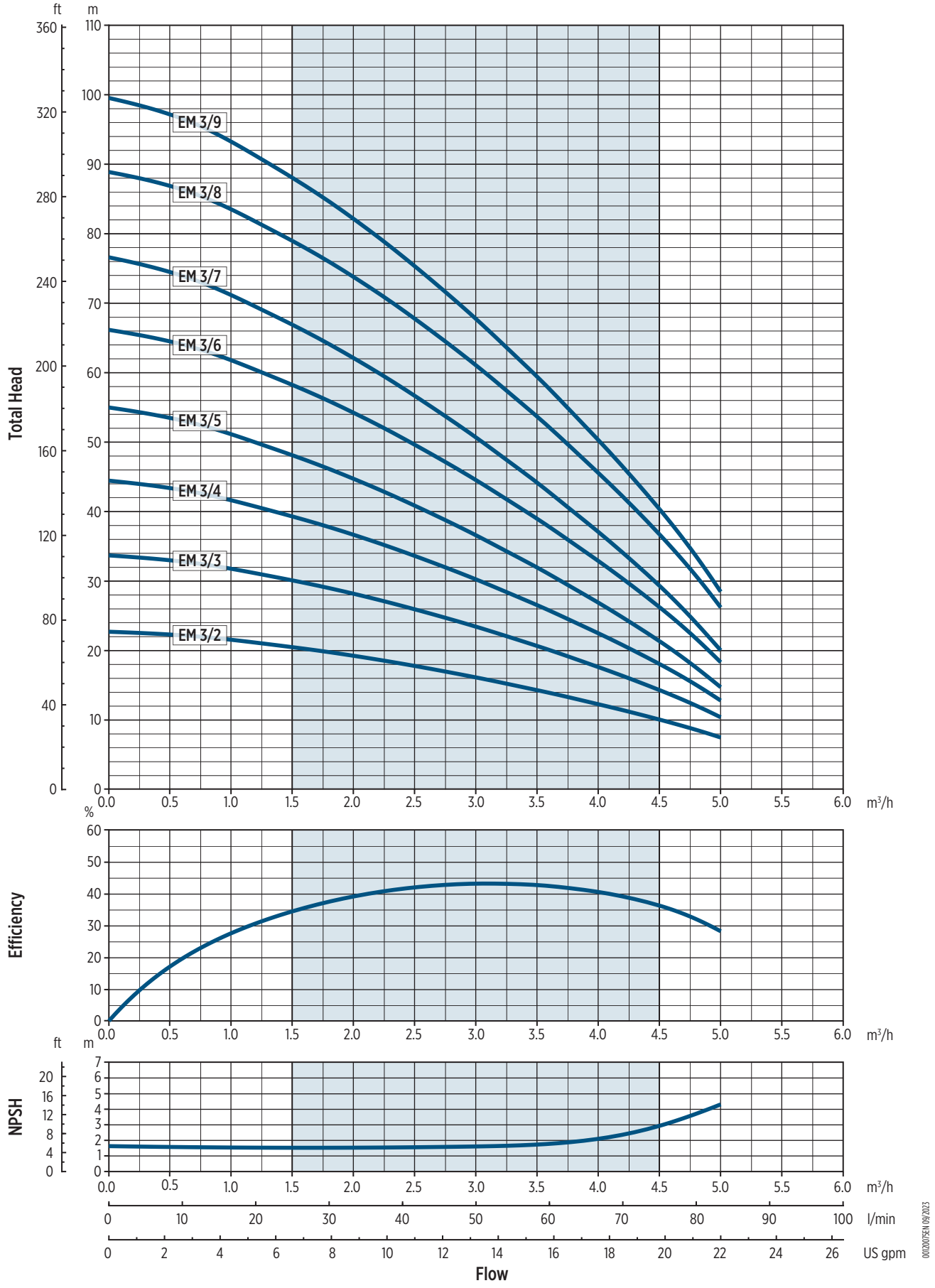
T version



R version



EM 3 - PERFORMANCE CURVES 50 Hz



The hydraulic characteristics are guaranteed, according to ISO standard 9906:2012, grade 3B

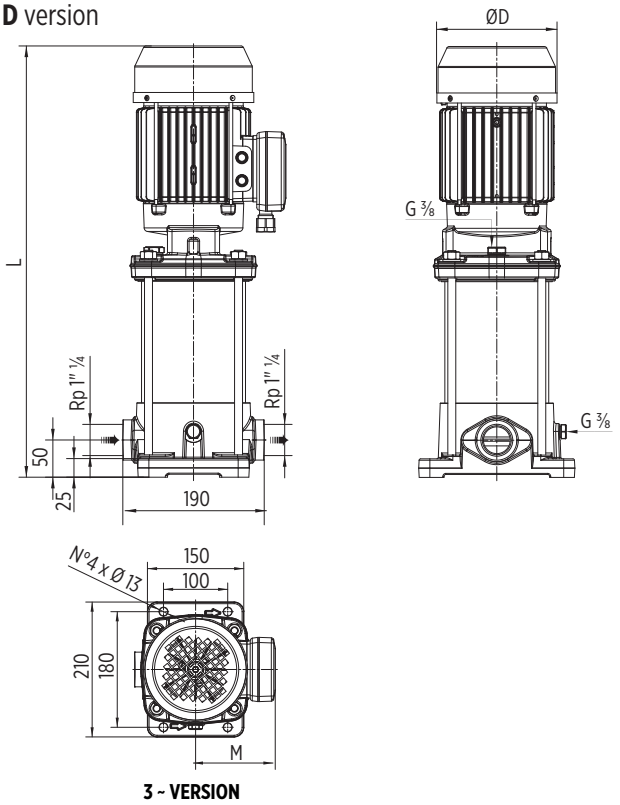
EM 5 - TECHNICAL DATA

THREE-PHASE VERSION

Pump model	Motor size	Motor nominal power		Input power	Input current [A]		Dimensions [mm]				Weight [kg]
		[kW]	[HP]	[kW]	220-240 V	380-415 V	L	L2	ØD	M	
EM 5/2T	71	0.75	1	0.6	2.1	1.2	441.5	87	144	117	19.3
EM 5/3T	71	0.75	1	0.8	2.5	1.4	465.5	111	144	117	19.9
EM 5/4T	71	1.1	1.5	1.0	3.2	1.9	489.5	135	144	117	21.1
EM 5/5T	71	1.1	1.5	1.2	3.7	2.2	513.5	159	144	117	21.7
EM 5/6T	80	1.5	2	1.5	5.0	2.9	579.5	183	162	124	25.8
EM 5/7T	80	1.5	2	1.7	5.5	3.2	603.5	207	162	124	26.4
EM 5/8T	90	2.2	3	2.1	6.8	3.9	666.5	231	179	131	32.5
EM 5/9T	90	2.2	3	2.3	7.4	4.3	690.5	255	179	131	33.1

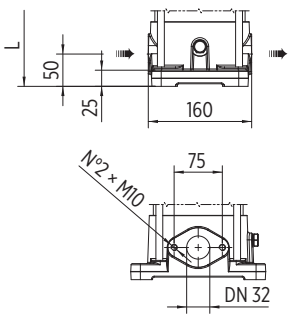
DIMENSIONAL DRAWINGS

D version

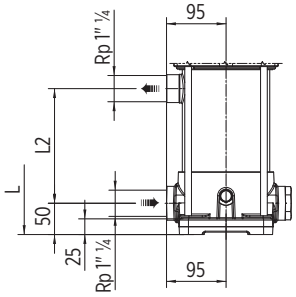


3 ~ VERSION

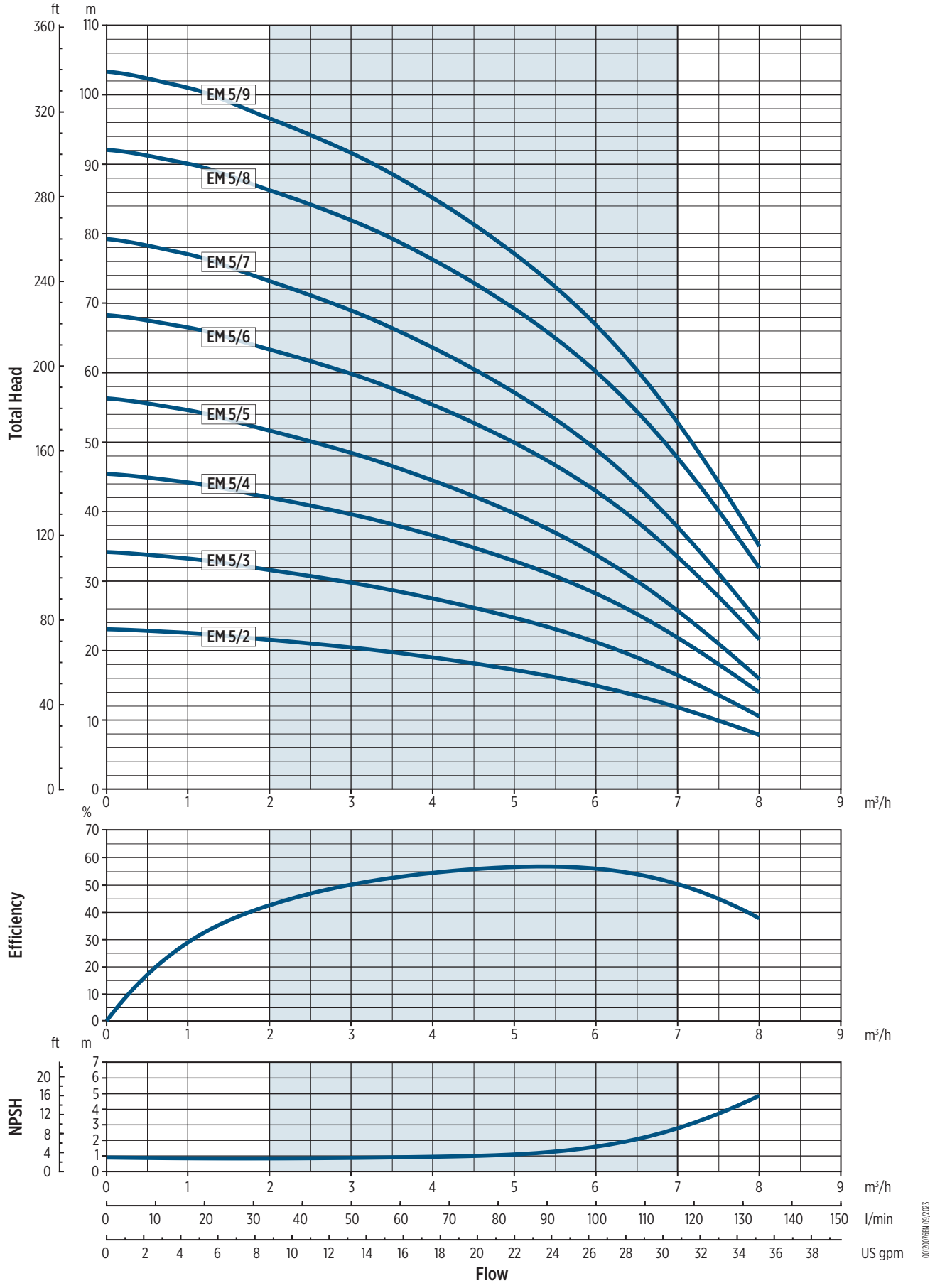
T version



R version



EM 5 - PERFORMANCE CURVES 50 Hz



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The hydraulic characteristics are guaranteed, according to ISO standard 9906:2012, grade 3B

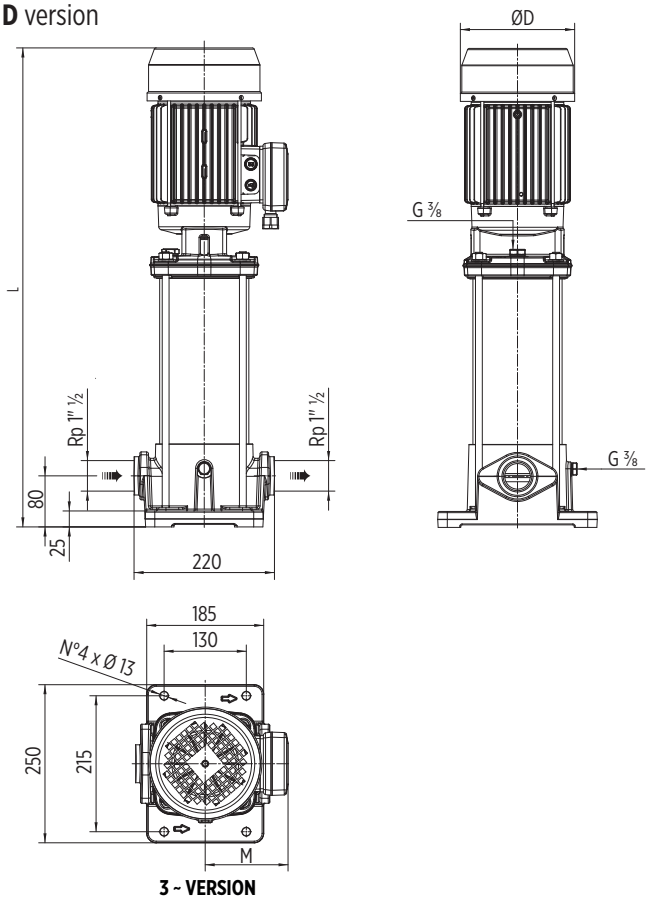
EM 9 - TECHNICAL DATA

THREE-PHASE VERSION

Pump model	Motor size	Motor nominal power		Input power	Input current [A]		Dimensions [mm]				Weight [kg]
		[kW]	[HP]	[kW]	220-240 V	380-415 V	L	L2	ØD	M	
EM 9/2T	71	0.75	1	0.9	2.7	1.6	483.5	99	144	117	22.8
EM 9/3T	71	1.1	1.5	1.2	3.8	2.2	513.5	129	144	117	24.1
EM 9/4T	80	1.5	2	1.7	5.5	3.2	585.5	159	162	124	28.3
EM 9/5T	90	2.2	3	2.2	7.1	4.1	654.5	189	179	131	34.5
EM 9/6T	90	2.2	3	2.6	8.2	4.7	684.5	219	179	131	35.3
EM 9/7T	90	3	4	3.1	9.5	5.5	752.5	249	179	131	39.2
EM 9/8T	90	3	4	3.5	10.4	6.0	782.5	279	179	131	40

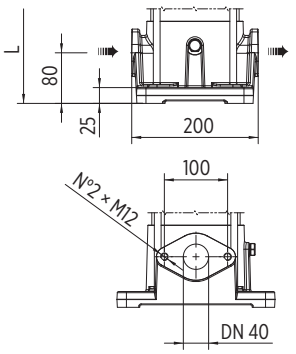
DIMENSIONAL DRAWINGS

D version

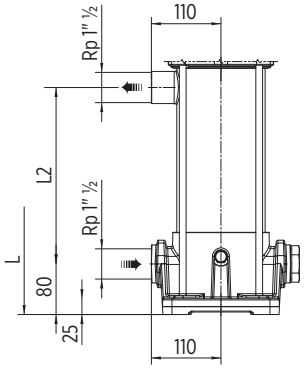


3 ~ VERSION

T version



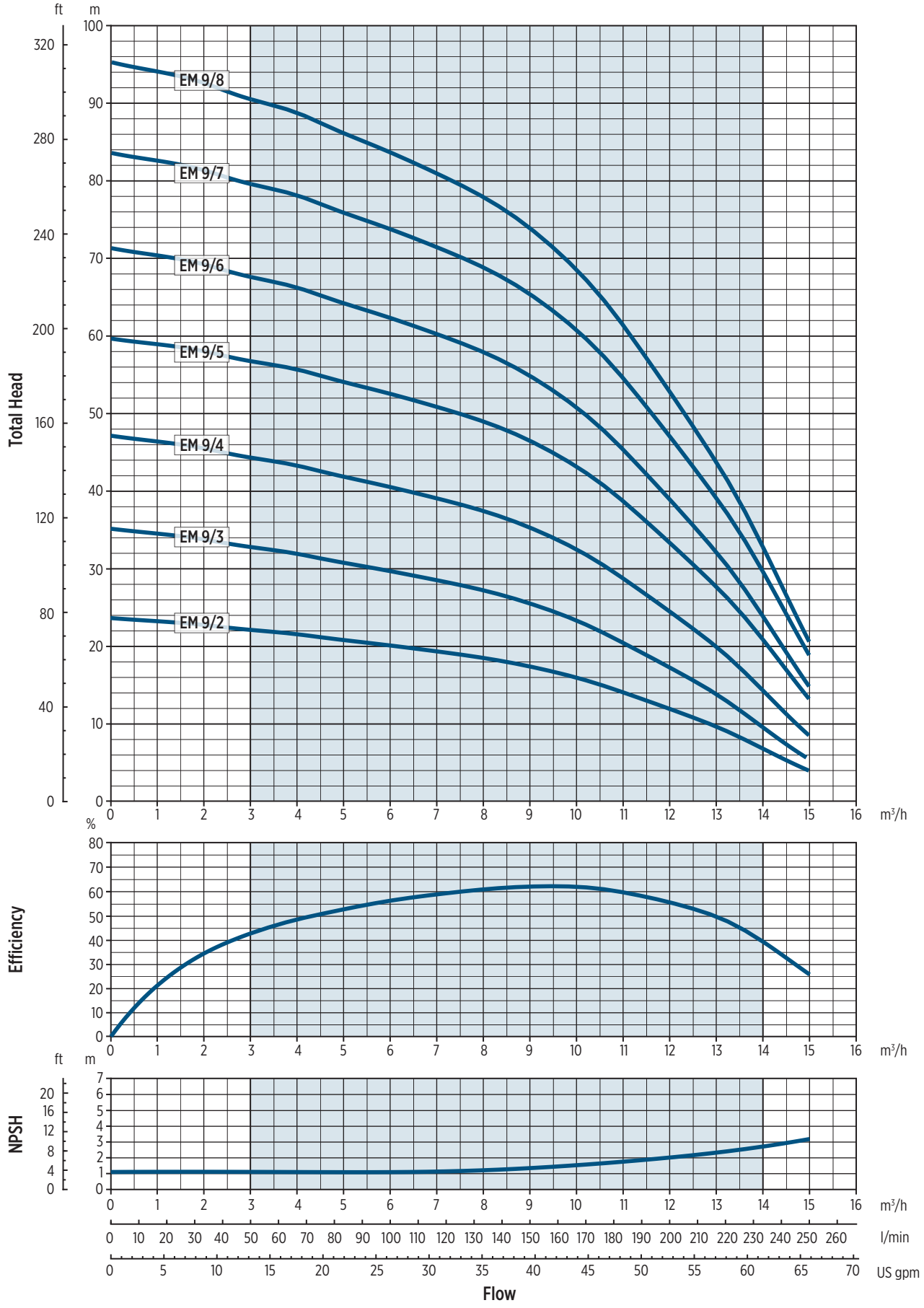
R version



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EM 9 - PERFORMANCE CURVES 50 Hz



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The hydraulic characteristics are guaranteed, according to ISO standard 9906:2012, grade 3B

CATALOG REVISION CHANGE NOTICE

Rev. No.	Changes	Page
01	Updating “Family curves” graph	3
	Updating “Table of Hydraulic Performance at 50 Hz”	5
	Changed the technical data of “EM 5/8 1~” on table “1 ~ Electric Pump Technical Data”	12
02	Modification of “List of main components” and “Parts in contact with fluids”	4, 18 (REV.01)
	Added section “Spare parts and material”	4
	Added section “Motor spare parts”	9
03	Modification of “Spare parts and material”	4
	Updating “Hydraulic performance at 50 Hz”	5, 6
	Updating of “Motor spare parts” list	9
04	Removed “EM 9/7” Single-Phase model	5, 16, 17
05	Single-Phase Version removed	All
	Dimensional Drawings updated	10, 12, 14
	Performance Curves updated	11, 13, 15
06	“Pump Specification” section changed	2

NOTES

NOTES



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00104210 EN REV.06_10-2023

Single member - Company subject to the control and coordination of Franklin Electric Co., Inc.
Franklin Electric reserves the right to amend specification without prior notice.