



WATER SOLUTIONS



50 HZ EM SERIES

VERTICAL CLOSE-COUPLE MULTISTAGE PUMPS



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NOTE: Geoquip Water Solutions. reserves the right to amend specification without prior notice

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 rust resistant / Superior efficiency and performances
 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 leak-proof motor ball bearing fitted in the motor
 Pumping of clear non-loaded fluids
 Mechanical seal carbon/ceramic/EPDM Type E0

PUMP SPECIFICATIONS

Capacities: up to 14 m³/h
 Heads: up to 104 m
 Discharge and Suction port: 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: +90°C for domestic use (uses covered by CEI EN standard 60335-2-41);
 + 110 only for industrial use (uses other than those covered by CEI EN standard 60335-2-41)

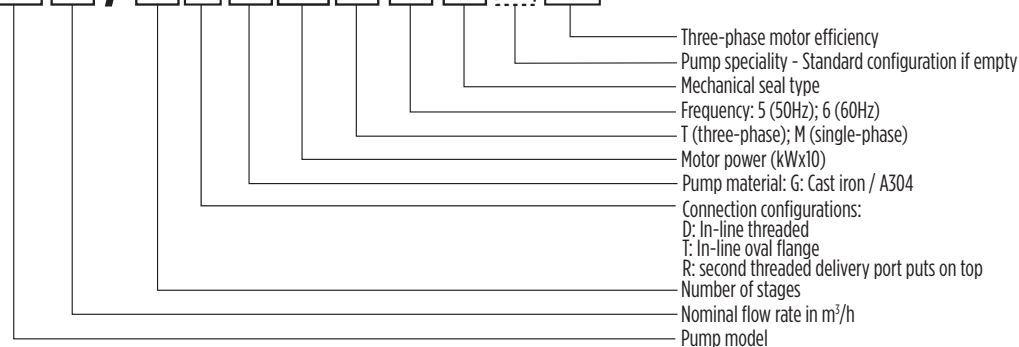
The hydraulic characteristics are guaranteed, according to ISO standard 9906:2012, grade 3B

MOTOR SPECIFICATIONS

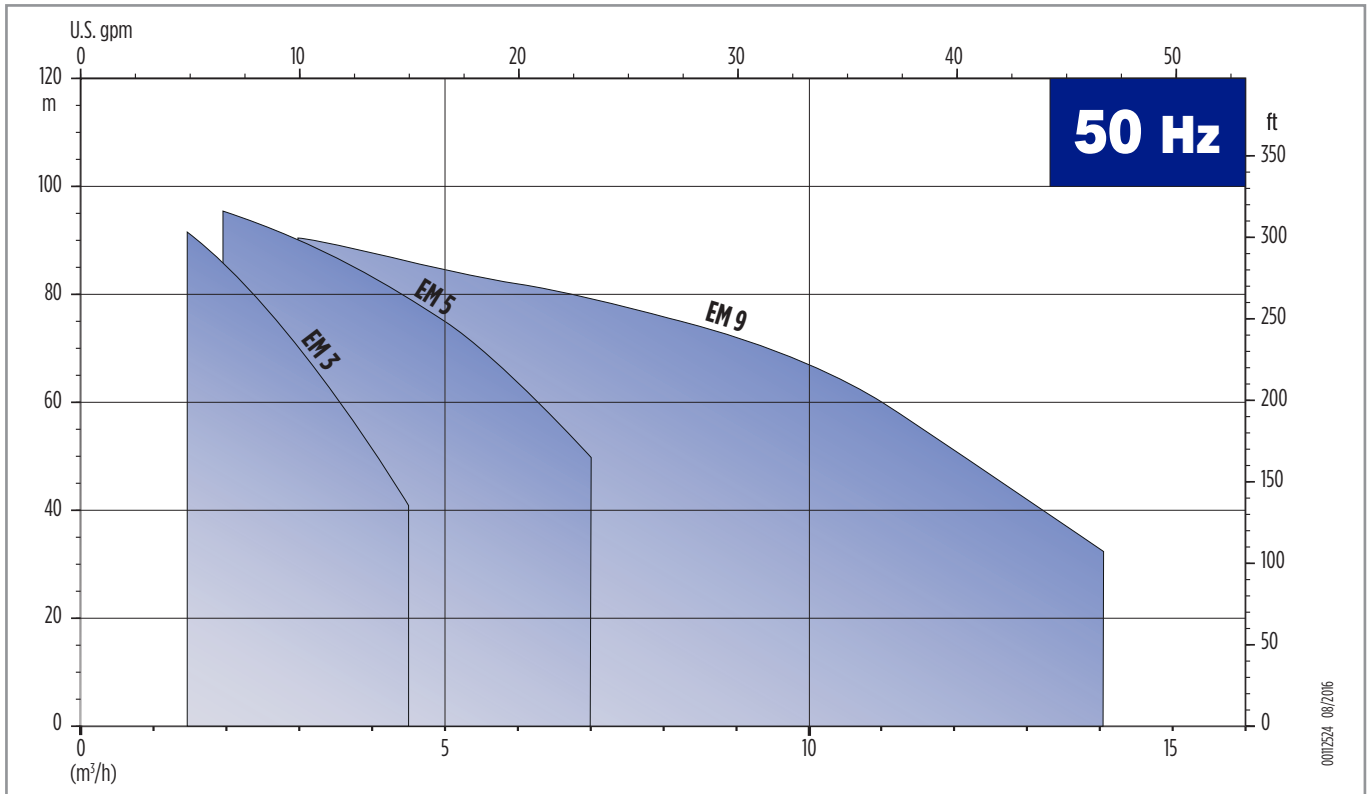
Single-phase or three-phase IE3 motors
 Asynchronous, TEFC (Totally Enclosed, Fan-Cooled)
 2 pole
 IP55 protection motor
 Insulation class F

PUMP IDENTIFICATION CODE

EM 5 / 05 D G 011 T 5 E0 IE3



001253 08/2016



001254 08/2016

MATERIALS/FLUIDS COMPATIBILITY

Ref. N.	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

* only for R version

EM 3-5-9 SINGLE-PHASE

Table of hydraulic performance at 50Hz

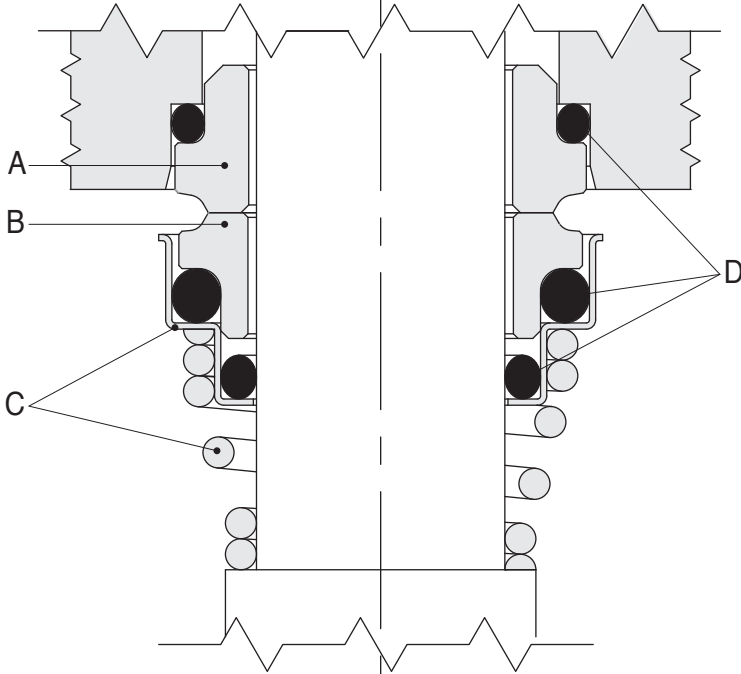
PUMP TYPE	Q = DELIVERY																
	l/min 0	25	33	42	50	58	67	75	83	92	100	117	133	150	167	183	233
	m ³ /h 0	1,5	2	2,5	3	3,5	4	4,5	5	5,5	6	7	8	9	10	11	14
	US GMP 0	6,6	8,8	11,0	13,2	15,4	17,6	19,8	22,01	24,2	26,4	30,8	35,2	39,6	44,02	48,4	61,6
H=TOTAL M.HEAD OF WATER COLUMN [m]																	
EM 3/2	22,5	20,3	19,0	17,6	15,9	14,1	12,1	9,9									
EM 3/3	33,4	29,9	27,9	25,7	23,2	20,4	17,4	14,0									
EM 3/4	44,1	39,0	36,3	33,3	29,9	26,2	22,1	17,7									
EM 3/5	54,6	47,7	44,2	40,3	36,0	31,3	26,2	20,7									
EM 3/6	66,5	59,0	55,1	50,5	45,5	39,9	33,8	27,2									
EM 3/7	77,2	67,9	63,3	57,9	51,9	45,4	38,2	30,5									
EM 3/8	88,9	78,6	73,2	67	60,1	52,6	44,5	33,6									
EM 3/9	99,5	87,3	81,1	74,0	66,2	57,7	48,5	38,5									
EM 5/2	22,8		21,3	20,8	20,2	19,6	18,8	17,9	17	16	14,7	11,6					
EM 5/3	33,9		31,3	30,5	29,5	28,4	27,2	25,9	24,4	22,7	20,9	16,1					
EM 5/4	45,6		42,4	41,3	40,1	38,7	37,1	36,4	33,5	31,3	28,9	22,5					
EM 5/5	55,6		52,3	50,8	49,2	47,4	45,3	43,1	40,6	37,9	34,7	26,7					
EM 5/6	68,2		63,1	61,4	59,4	57,2	54,7	52,0	49,0	45,7	41,9	32,3					
EM 5/7	79,2		72,8	70,6	68,2	65,4	62,3	59,0	55,4	51,4	46,8	35,5					
EM 5/8	91,7		85,9	83,8	81,5	78,9	75,8	72,5	68,7	6,45	59,6	47,2					
EM 5/9	103,0		96,2	93,8	91,2	88,1	84,6	80,8	76,5	71,7	66,1	52,1					
EM 9/2	23,4				21,9	21,6	21,3	21,0	20,6	20,2	19,9	19,1	18,3	17,1	15,7	13,8	6,6
EM 9/3	35,2				33,1	32,7	32,3	31,8	31,2	30,7	30,2	29,1	27,8	26,2	24,0	21,2	10,4
EM 9/4	47,1				44,3	43,9	43,3	42,6	41,9	41,2	40,5	39,1	37,4	35,2	32,4	28,7	14,4
EM 9/5	59,4				56,5	56,0	55,4	54,6	53,8	53,0	52,3	50,6	48,7	46,1	40,8	38,3	20,5
EM 9/6	71,0				67,3	66,6	65,9	64,9	63,8	62,9	62,0	59,8	57,4	54,2	50,1	44,6	23,2
EM 9/7	82,5				77,9	77,1	76,1	74,8	73,6	72,4	71,2	68,5	65,6	61,7	56,7	50,1	25,1

EM 3-5-9 THREE-PHASE

Table of hydraulic performance at 50Hz

PUMP TYPE	Q = DELIVERY																
	l/min 0	25	33	42	50	58	67	75	83	92	100	117	133	150	167	183	233
	m ³ /h 0	1,5	2	2,5	3	3,5	4	4,5	5	5,5	6	7	8	9	10	11	14
	US GMP 0	6,6	8,8	11,0	13,2	15,4	17,6	19,8	22,01	24,2	26,4	30,8	35,2	39,6	44,02	48,4	61,6
H=TOTAL M.HEAD OF WATER COLUMN [m]																	
EM 3/2	22,6	20,4	19,2	17,7	16,1	14,2	12,2	10									
EM 3/3	33,6	30,0	28,1	25,9	23,4	20,6	17,6	14,2									
EM 3/4	44,4	39,2	36,6	33,6	30,2	26,5	22,4	18,0									
EM 3/5	55,0	48,0	44,7	40,8	36,5	31,9	26,8	21,3									
EM 3/6	66,1	58,2	54,2	49,6	44,5	38,9	32,8	26,2									
EM 3/7	76,6	66,9	62,1	56,6	50,6	44,1	37,0	29,3									
EM 3/8	88,9	78,9	73,7	67,7	61,0	53,6	45,5	36,7									
EM 3/9	99,5	88,0	82,1	75,3	67,7	59,4	50,3	40,3									
EM 5/2	23,0		21,5	21,0	20,4	19,7	18,9	18,1	17,2	16,1	14,9	11,8					
EM 5/3	34,1		31,5	30,7	29,7	28,6	27,4	26,1	24,7	23,0	21,1	16,4					
EM 5/4	45,4		42,0	40,9	39,6	38,1	36,5	34,8	32,8	30,6	28,1	21,8					
EM 5/5	56,3		51,6	50,1	48,4	46,5	44,4	42,2	36,7	36,9	33,7	25,7					
EM 5/6	68,2		63,3	61,6	59,8	57,7	55,3	52,7	49,9	46,6	42,9	33,4					
EM 5/7	79,2		73,1	71,1	68,9	66,4	63,6	60,5	57,1	53,3	48,9	37,7					
EM 5/8	92,0		86,2	84,2	81,9	79,3	76,2	72,9	69,2	64,9	60,0	47,7					
EM 5/9	103,3		96,5	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	7,0
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	67,0	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	84,5				79,5	78,8	78,0	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	73,8	68,5	61,3	32,9

MECHANICAL SEAL SPECIFICATIONS



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STANDARD VERSION					Position				Temperature (°C)
Model	Type				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



EM Series

Technical data and Performance curves

MOTORS SPECIFICATIONS

Asynchronous, TEFC (Totally Enclosed, Fan-Cooled)

2 pole

IP55

Insulation class F

Starts per hour:

- for motor power up to 3kW the allowed starts are 60. Waiting time between two consecutive starts 1 minute
- for motor power from 4kW the allowed starts are 30. Waiting time between two consecutive starts 2 minutes

SINGLE-PHASE VERSION

Standard voltage 220-240V ± 5%

Thermal protection built into the motor

THREE-PHASE VERSION

IE3 Premium Efficiency Motors

IE efficiency according to IEC 60034-30-1:2014

Electrical performances according to IEC 60034-2-1:2007

Standard voltage: 220-240 / 380-415V ± 5 % up to 3kW.

380-415 / 660-690V ± 5 % from 4kW.

Thermal protection to be provided into the starter panel by the installer

Single-phase motors at 50Hz

P _N [kW]	IEC SIZE	INPUT CURRENT IN [A]	CAPACITOR		DATA FOR 230 V 50 Hz VOLTAGE						
			230V	μF	V	n _n [min ⁻¹]	I _s /I _N	η %	cosΦ	T _N [Nm]	T _s /T _N
0,33	71	2,50	16	450	2920	6,5	64,8	0,88	1,08	1,00	1,60
0,45	71	3,00	16	450	2890	5,4	69,7	0,92	1,5	0,72	1,60
0,55	71	3,50	16	450	2860	4,6	72,6	0,94	1,83	0,59	1,85
0,75	71	4,67	16	450	2790	3,5	72,2	0,97	2,56	0,42	1,87
0,9	71	5,45	30	450	2875	4,8	75,3	0,93	3	0,47	1,67
1,1	71	6,60	30	450	2820	3,9	77,0	0,96	3,7	0,38	1,86
1,3	80	7,46	30	450	2860	4,2	80,8	0,94	4,35	0,57	1,86
1,5	80	8,56	30	450	2830	3,6	79,9	0,95	5,05	0,50	1,92
1,85	80	10,90	30	450	2760	2,8	76,6	0,96	6,4	0,39	2,40
2,2	90	12,60	60	450	2870	2,2	76,7	0,99	7,3	0,51	1,99

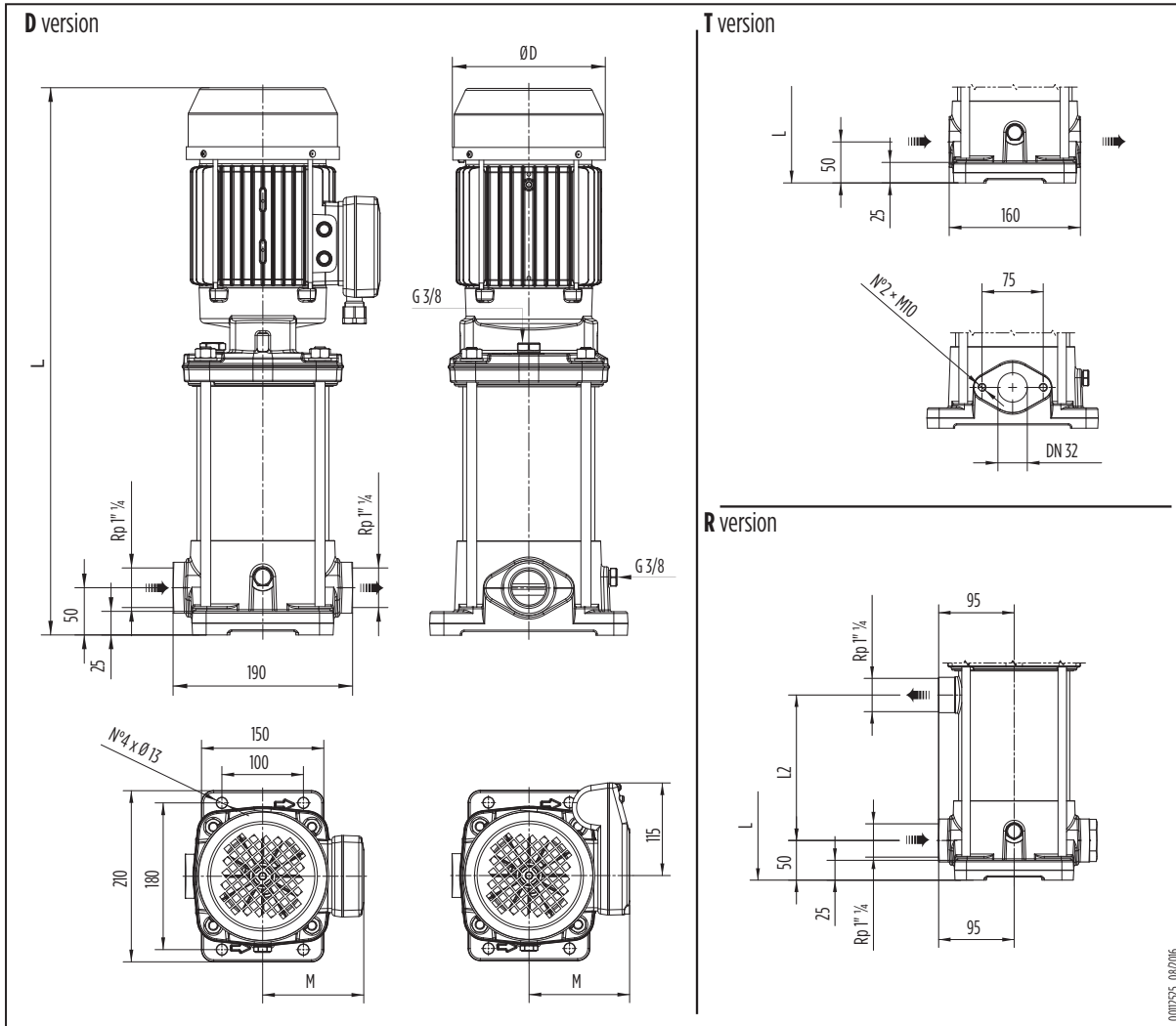
Three-phase motors at 50Hz

P _N [kW]	Rendimento / Efficiency η _N %						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	

P _N [kW]	IEC SIZE	N. of Poles	fN [Hz]	DATA FOR 400 V 50 Hz VOLTAGE				
				cosΦ	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				nN [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 °C	ATEX
	IN [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			

EM 3



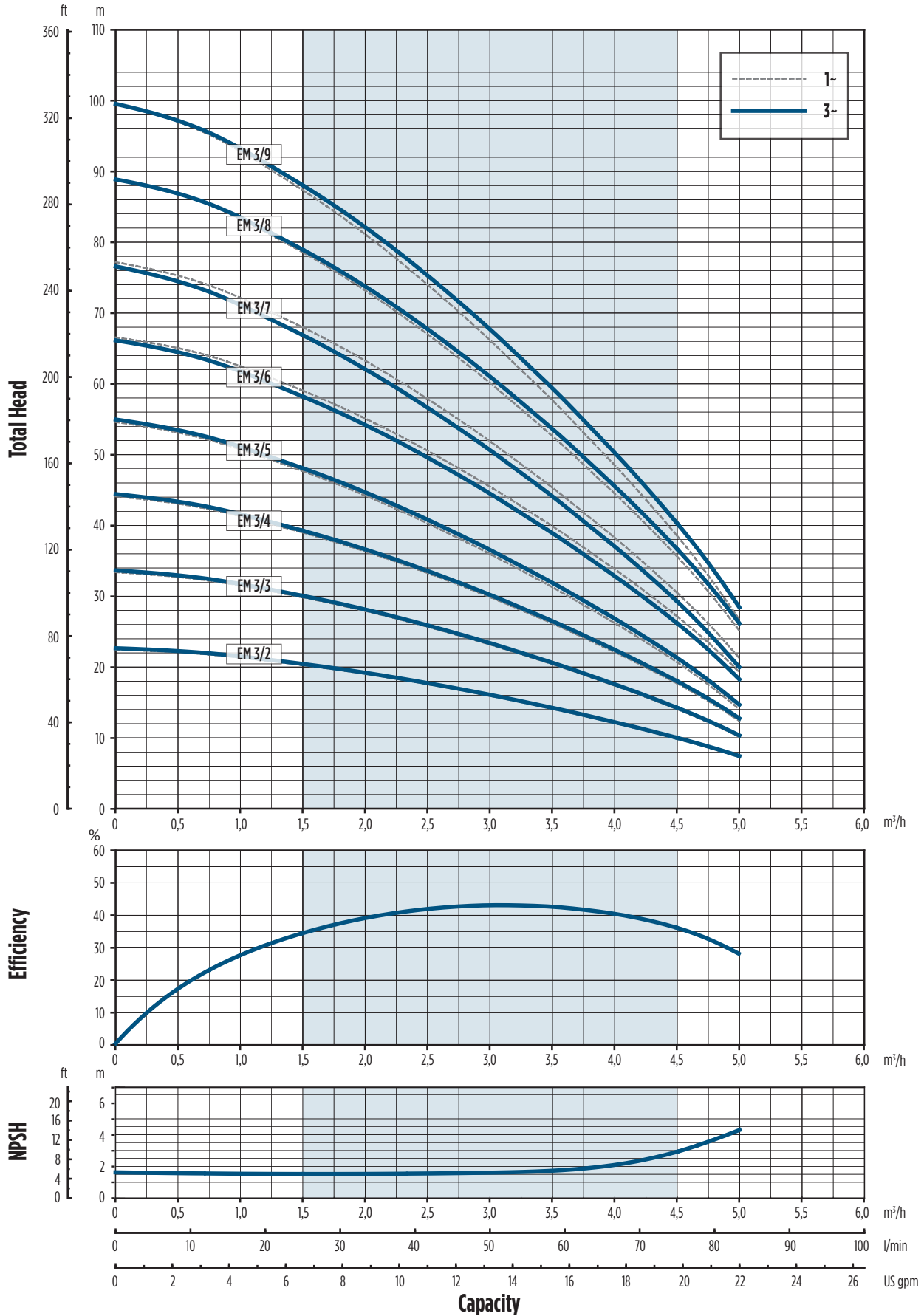
SINGLE-PHASE ELECTRIC PUMP CHARACTERISTICS

PUMPS MODEL	MOTOR SIZE	MOTOR NOMINAL POWER		INPUT POWER [kW]	CAPACITOR 450V [μF]	INPUT CURRENT [A] 220-240 V	DIMENSIONS [mm]				WEIGHT [kg]
		kW	HP				L	L2	D	M	
EM 3/2	71	0,33	0,45	0,46	16	2,5	441,5	87,0	144,0	117,0	19,4
EM 3/3	71	0,45	0,6	0,60	16	3,0	465,5	111,0	144,0	117,0	20,1
EM 3/4	71	0,55	0,75	0,76	16	3,7	489,5	135,0	144,0	117,0	20,7
EM 3/5	71	0,75	1	0,91	16	4,3	513,5	159,0	144,0	117,0	21,4
EM 3/6	71	0,9	1,2	1,13	30	5,4	537,5	183,0	144,0	117,0	22,5
EM 3/7	71	1,1	1,5	1,28	30	6,0	561,5	207,0	144,0	117,0	23,1
EM 3/8	80	1,3	1,8	1,43	30	6,9	627,5	231,0	162,0	124,0	27,2
EM 3/9	80	1,5	2	1,58	30	7,5	651,5	255,0	162,0	124,0	27,8

THREE-PHASE IE3 ELECTRIC PUMP CHARACTERISTICS

PUMPS MODEL	MOTOR SIZE	MOTOR NOMINAL POWER		INPUT POWER [kW]	INPUT CURRENT [A]		DIMENSIONS [mm]				WEIGHT [kg]
		kW	HP		220-240 V	380-415 V	L	L2	D	M	
EM 3/2T	71	0,75	1	0,41	1,9	1,1	441,5	87,0	144,0	117,0	19,3
EM 3/3T	71	0,75	1	0,57	2,1	1,2	465,5	111,0	144,0	117,0	19,9
EM 3/4T	71	0,75	1	0,72	2,4	1,4	489,5	135,0	144,0	117,0	20,6
EM 3/5T	71	0,75	1	0,87	2,7	1,6	513,5	159,0	144,0	117,0	21,2
EM 3/6T	71	1,1	1,5	1,02	3,3	1,9	537,5	183,0	144,0	117,0	22,4
EM 3/7T	71	1,1	1,5	1,17	3,6	2,1	561,5	207,0	144,0	117,0	23
EM 3/8T	80	1,5	2	1,39	4,8	2,8	627,5	231,0	162,0	124,0	27
EM 3/9T	80	1,5	2	1,55	5,1	3,0	651,5	255,0	162,0	124,0	27,7

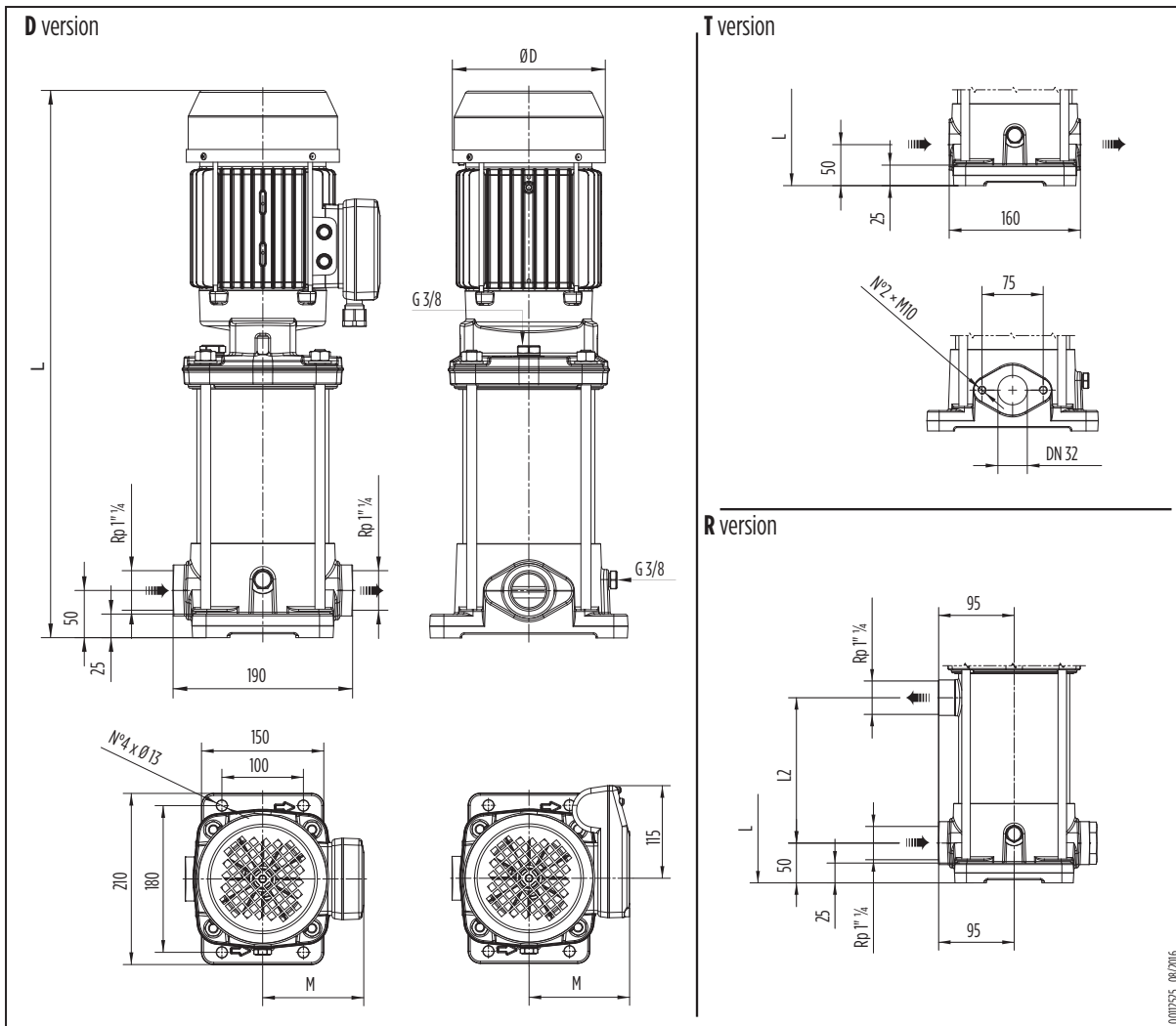
PERFORMANCE CURVES 50Hz



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

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EM 5



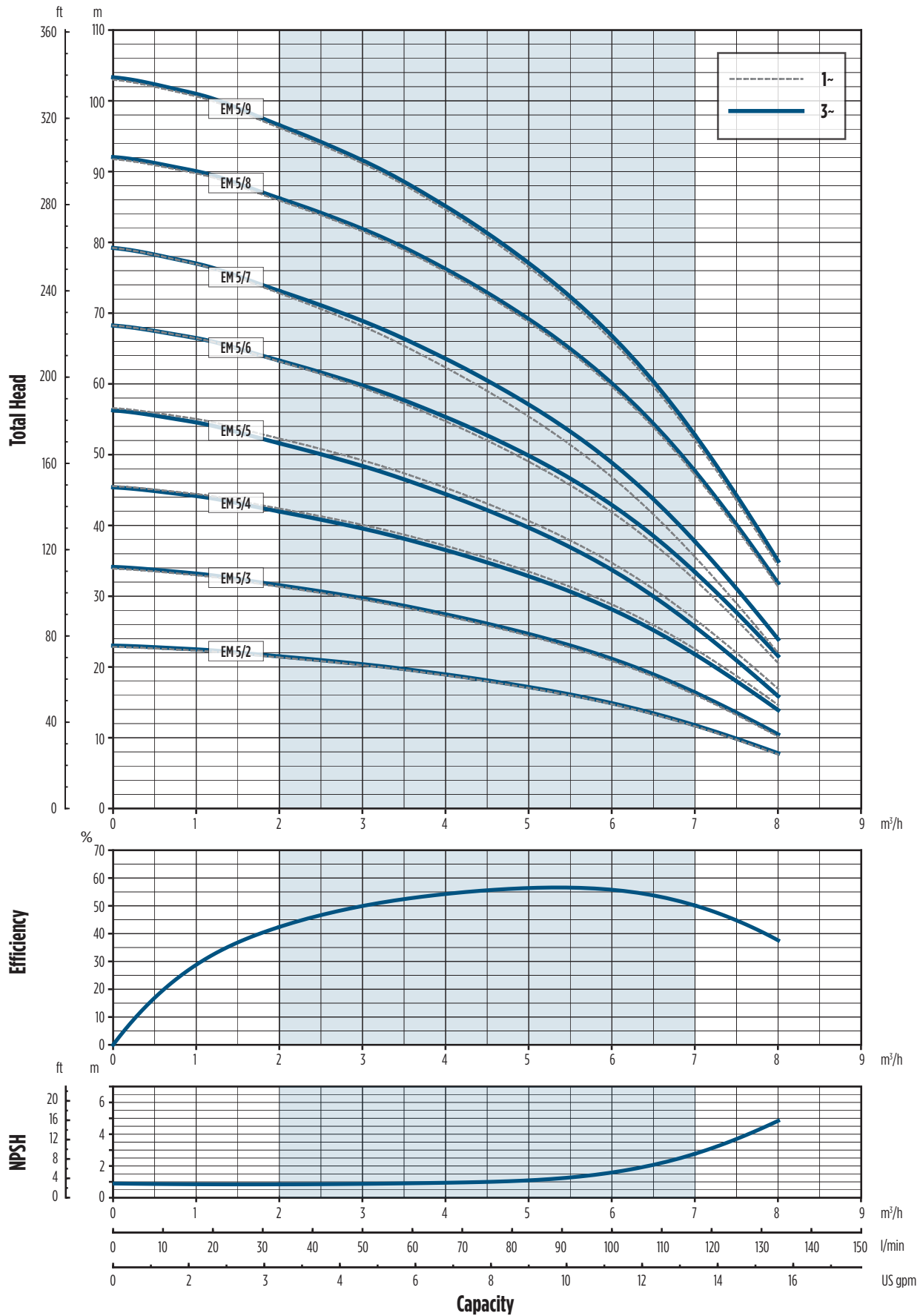
SINGLE-PHASE ELECTRIC PUMP CHARACTERISTICS

PUMPS MODEL	MOTOR SIZE	MOTOR NOMINAL POWER		INPUT POWER	CAPACITOR 450V	INPUT CURRENT [A]	DIMENSIONS [mm]				WEIGHT [kg]
		kW	HP				L	L2	D	M	
EM 5/2	71	0,45	0,6	0,59	16	3,0	441,5	87,0	144,0	117,0	19,4
EM 5/3	71	0,55	0,75	0,81	16	3,9	465,5	111,0	144,0	117,0	20,1
EM 5/4	71	0,9	1,2	1,10	30	5,3	489,5	135,0	144,0	117,0	21,2
EM 5/5	71	1,1	1,5	1,32	30	6,2	513,5	159,0	144,0	117,0	21,9
EM 5/6	80	1,3	1,8	1,53	30	7,3	579,5	183,0	162,0	124,0	25,9
EM 5/7	80	1,5	2	1,74	30	8,2	603,5	207,0	162,0	124,0	26,6
EM 5/8	90	1,85	2,5	1,94	60	8,9	666,5	231,0	179,0	131,0	30,4
EM 5/9	90	2,2	3	2,59	60	11,4	690,5	255,0	179,0	131,0	33,2

THREE-PHASE IE3 ELECTRIC PUMP CHARACTERISTICS

PUMPS MODEL	MOTOR SIZE	MOTOR NOMINAL POWER		INPUT POWER	INPUT CURRENT [A]		DIMENSIONS [mm]				WEIGHT [kg]
		kW	HP		220-240 V	380-415 V	L	L2	D	M	
EM 5/2T	71	0,75	1	0,55	2,1	1,2	441,5	87,0	144,0	117,0	19,3
EM 5/3T	71	0,75	1	0,77	2,5	1,4	465,5	111,0	144,0	117,0	19,9
EM 5/4T	71	1,1	1,5	0,99	3,2	1,9	489,5	135,0	144,0	117,0	21,1
EM 5/5T	71	1,1	1,5	1,21	3,7	2,2	513,5	159,0	144,0	117,0	21,7
EM 5/6T	80	1,5	2	1,50	5,0	2,9	579,5	183,0	162,0	124,0	25,8
EM 5/7T	80	1,5	2	1,72	5,5	3,2	603,5	207,0	162,0	124,0	26,4
EM 5/8T	90	2,2	3	2,16	7,5	4,4	666,5	231,0	179,0	131,0	32,5
EM 5/9T	90	2,2	3	2,40	8,0	4,6	690,5	255,0	179,0	131,0	33,1

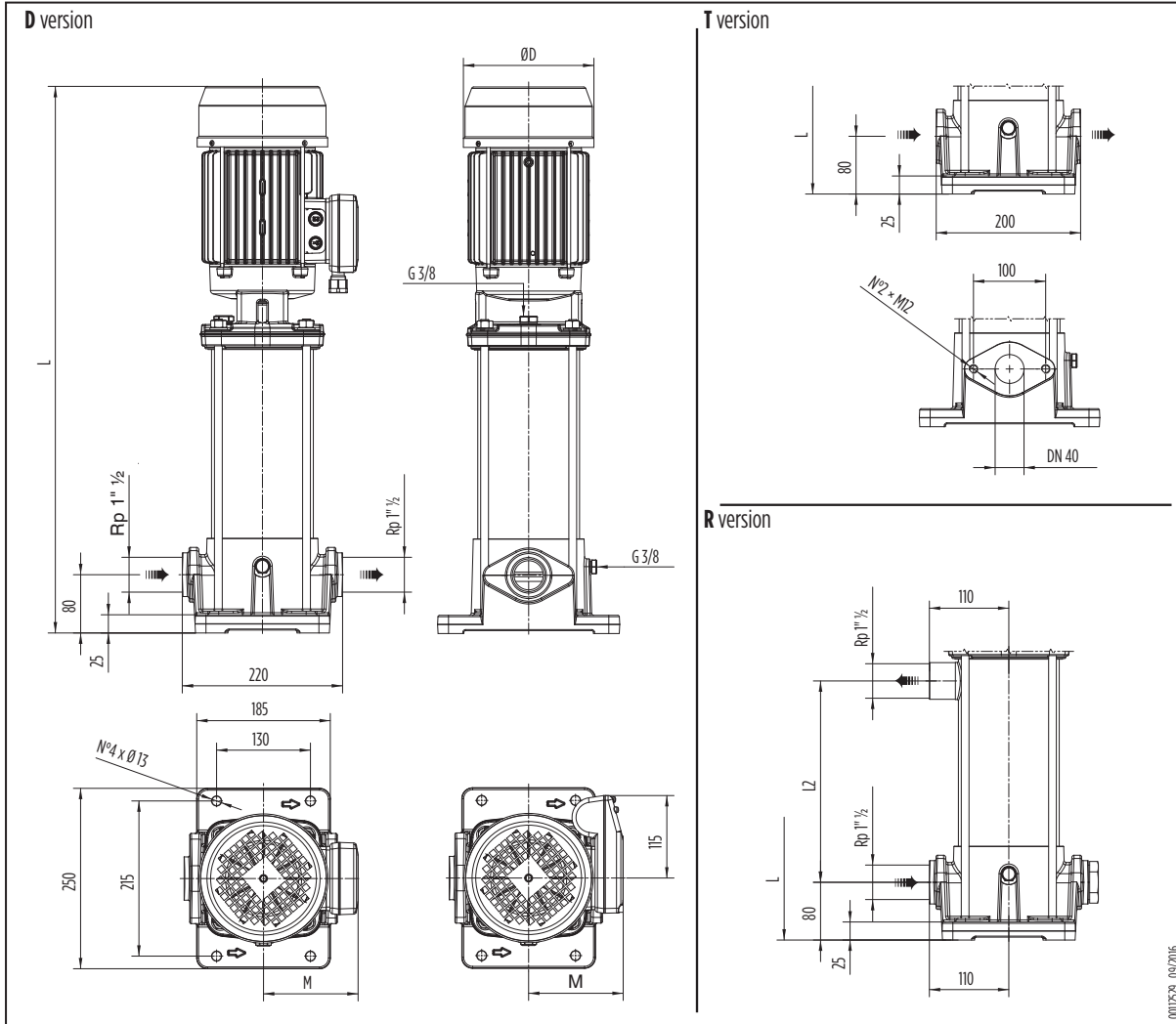
PERFORMANCE CURVES 50Hz



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

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EM 9



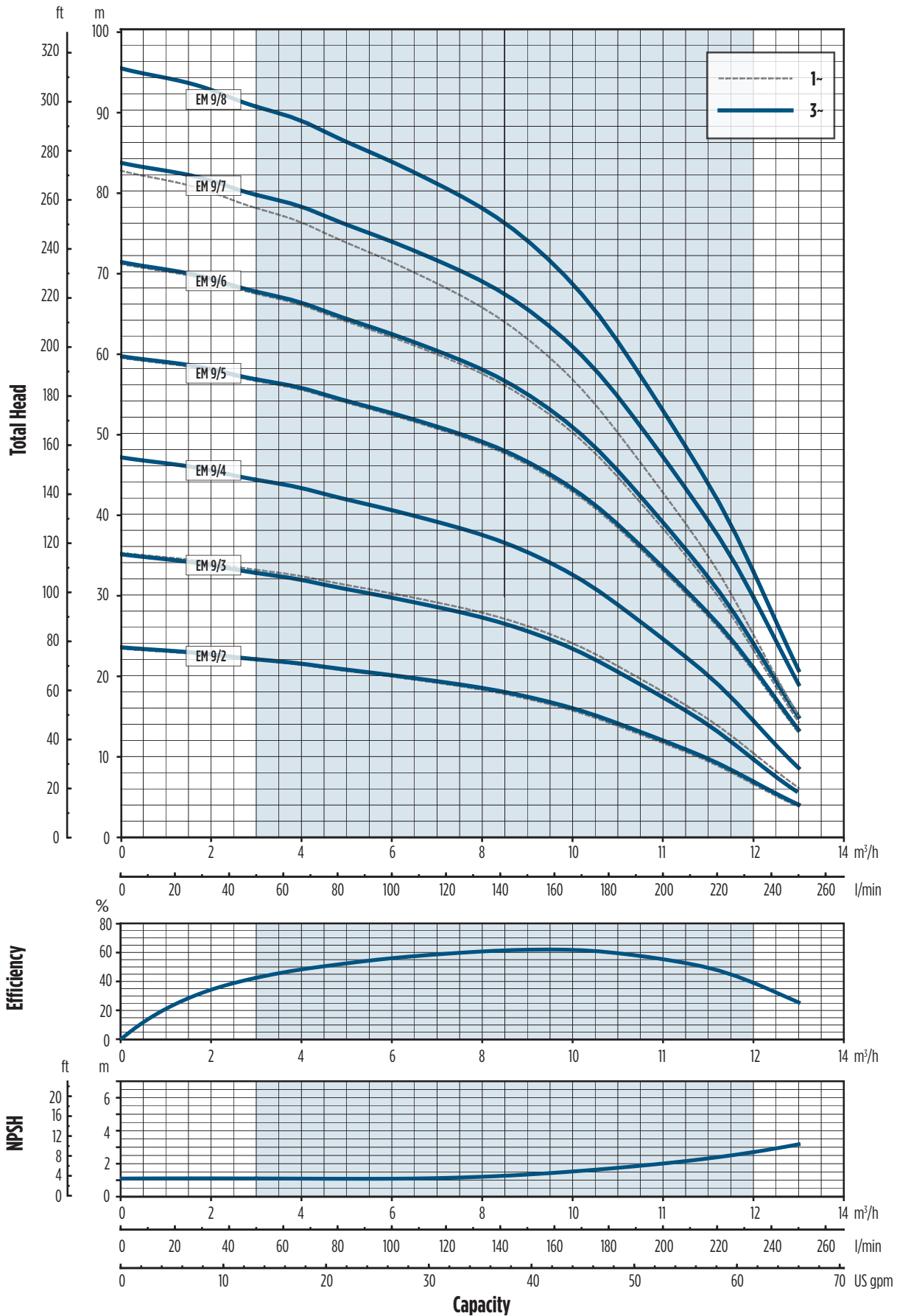
SINGLE-PHASE ELECTRIC PUMP CHARACTERISTICS

PUMPS MODEL	MOTOR SIZE	MOTOR NOMINAL POWER		INPUT POWER kW	CAPACITOR 450V μ F	INPUT CURRENT [A] 220-240 V	DIMENSIONS [mm]				WEIGHT (kg)
		kW	HP				L	L2	D	M	
EM 9/2	71	0,75	1	0,91	16	4,3	483,5	99,0	144,0	117,0	23
EM 9/3	71	1,1	1,5	1,35	30	6,3	513,5	129,0	144,0	117,0	24,3
EM 9/4	80	1,5	2	1,74	30	8,2	585,5	159,0	162,0	124,0	28,5
EM 9/5	90	2,2	3	2,51	60	11,1	654,5	189,0	179,0	131,0	34,6
EM 9/6	90	2,2	3	2,89	60	12,7	684,5	219,0	179,0	131,0	35,4
EM 9/7	90	2,2	3	3,30	60	14,5	752,5	249,0	179,0	131,0	39,4

THREE-PHASE IE3 ELECTRIC PUMP CHARACTERISTICS

PUMPS MODEL	MOTOR SIZE	MOTOR NOMINAL POWER		INPUT POWER kW	INPUT CURRENT [A]		DIMENSIONS [mm]				WEIGHT (kg)
		kW	HP		220-240 V	380-415 V	L	L2	D	M	
EM 9/2T	71	0,75	1	0,87	2,7	1,6	483,5	99,0	144,0	117,0	22,8
EM 9/3T	71	1,1	1,5	1,24	3,8	2,2	513,5	129,0	144,0	117,0	24,1
EM 9/4T	80	1,5	2	1,70	5,5	3,2	585,5	159,0	162,0	124,0	28,3
EM 9/5T	90	2,2	3	2,20	7,8	4,5	654,5	189,0	179,0	131,0	34,5
EM 9/6T	90	2,2	3	2,61	8,7	5,0	684,5	219,0	179,0	131,0	35,3
EM 9/7T	90	3	4	3,24	11,1	6,4	752,5	249,0	179,0	131,0	39,2
EM 9/8T	90	3	4	3,59	11,9	6,9	782,5	279,0	179,0	131,0	40

PERFORMANCE CURVES 50Hz



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

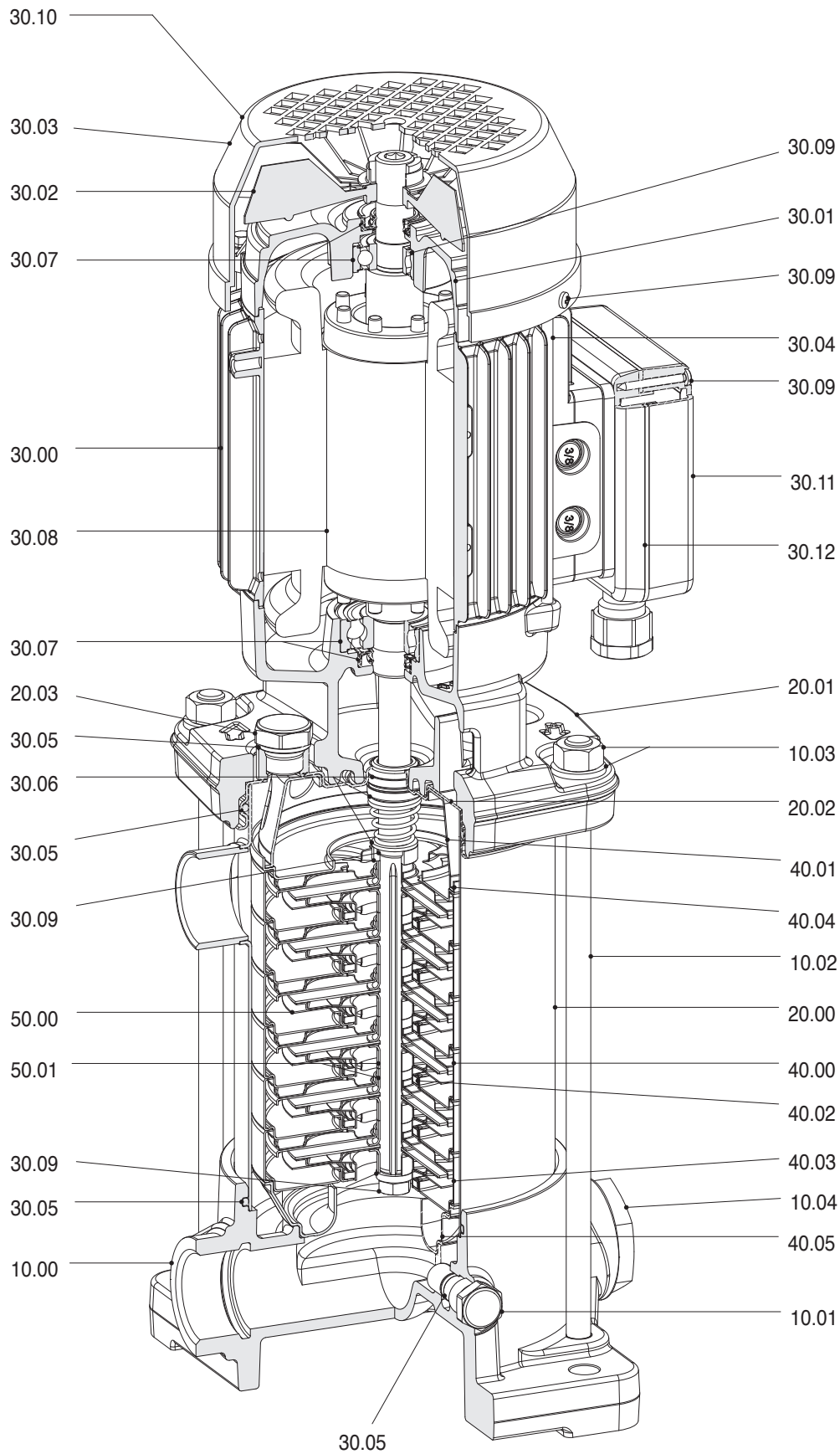
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EM Series Pump Section and List of Main Components

EM 3-5-9

Pump section



EM 3-5-9

List of Main components

Ref. N.	Description
10.00	Pump casing
10.01	Draining plug
10.02	Tie bolt
10.03	Kit nuts and washers
10.04	Outlet plug
20.00	Outer case
20.01	Motor flange
20.02	Mechanical seal housing
20.03	Filling plug
30.00	Motor housing and stator
30.01	Bearing housing
30.02	Fan
30.03	Fan cover
30.04	Motor tie bolt
30.05	O-Rings

Ref. N.	Description
30.06	Mechanical seal
30.07	Ball bearings and lip seals
30.08	Rotor and pump shaft
30.09	Screws, nuts and washers
30.10	Valve plug
30.11	Terminal box cover
30.12	Terminal box base gaskets
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

geoquip

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NOTE: Geoquip Water Solutions reserves the right to amend specification without prior notice
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