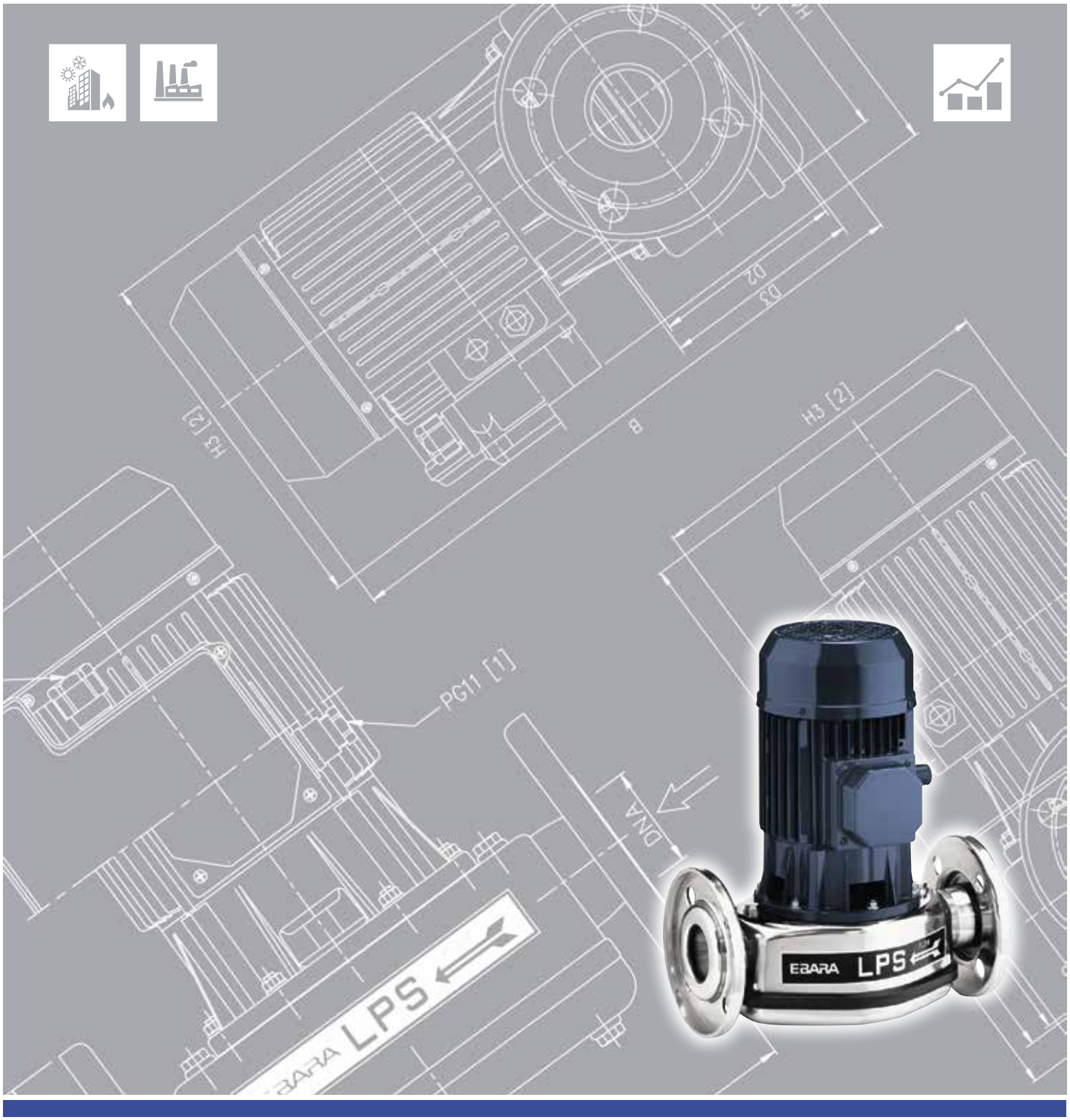
EBARA

Japanese Technology since 1912

LPS

Data Book 50Hz



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50Hz

Rev.R

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SPECIFICATION 50Hz

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PUMP			
Liquid Handled	Type of liquid		Clean water
	Temperature	[°C]	min. -10 max. +100
Max environment temperature		[°C]	40
Min suction pressure		[MPa]	-0.06 at 35°C
Max positive suction pressure		[MPa]	0.2 (All models single phase) 0.2 (LPS 25 three phase) 0.4 (LPS 32, 40, 50 three phase)
Construction	Impeller		Closed centrifugal
	Shaft seal type		Mechanical seal
	Bearing		Sealed ball bearing
Pipe Connection	Suction/Flange		From DN 25 up to DN 50
	Discharge/Flange		From DN 25 up to DN 50
Material	Casing		AISI 304
	Impeller		AISI 304
	Casing cover		AISI 304
	Shaft seal		Ceramic/Carbon/NBRH
	Shaft		AISI 303 (wet extension)
Applicable standard of test			ISO 9906:2012 – Grade 3B

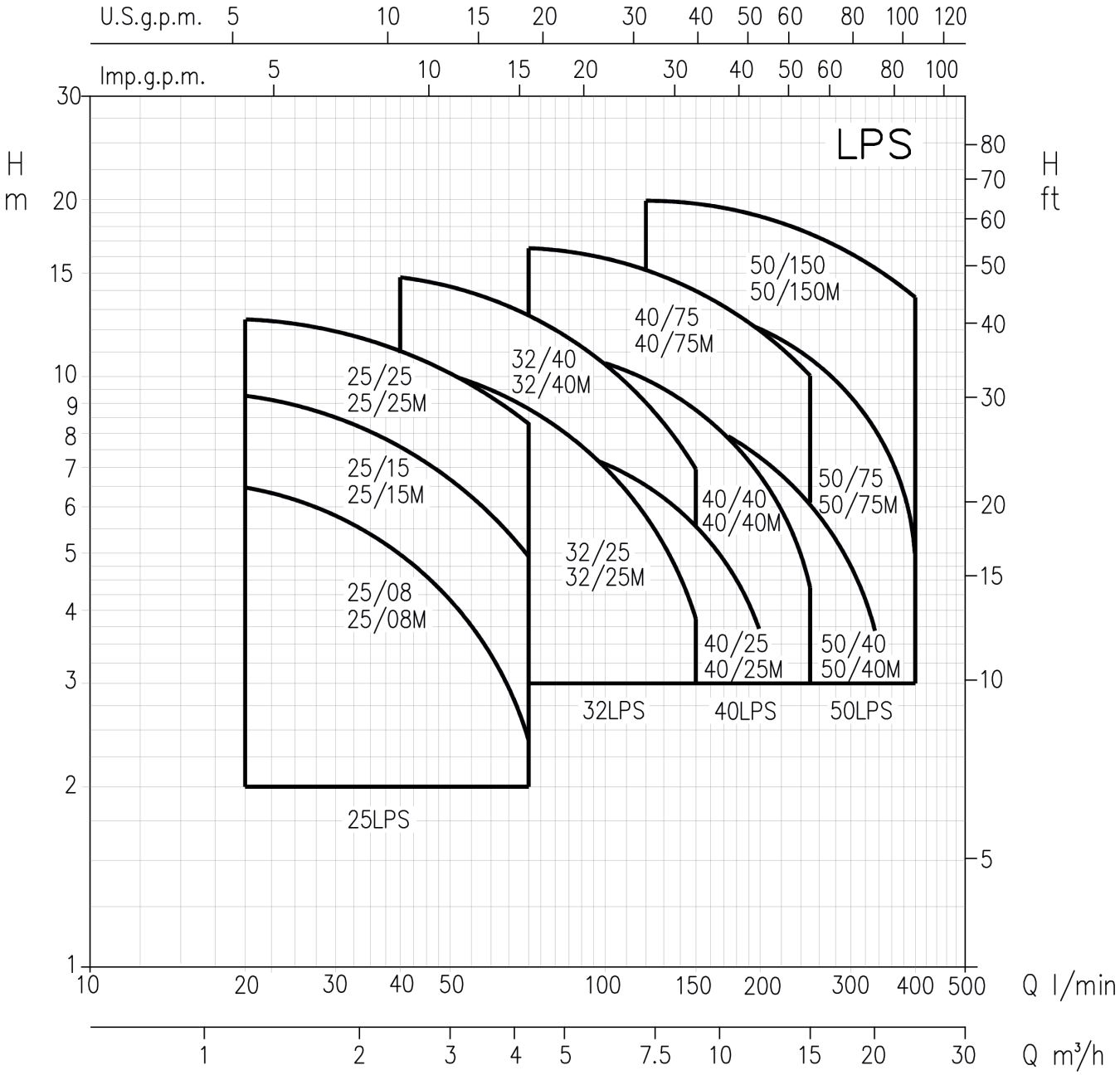
MOTOR			
Type		Electric - TEFC	
		Single Phase	Three Phase
Efficiency level (Reg. 1781/2019)		IE2	IE3
No. of Poles		2	
Rotation speed	[min^{-1}]	≈ 2800	
Insulation Class		Class F	
Protection degree (CEI EN 60034-5)		IP 55	
Power rating	[kW]	0.08 ÷ 1.5	
	[HP]	0.1 ÷ 2	
Frequency	[Hz]	50	
Voltage	[V]	230 ±10%	230/400 ±10%
Capacitor		Built in	-
Over load protection		Built in	User to provide
Motor bracket		Aluminium	
Dimensions of cable entry		PG11 - PG13.5 – M16x1.5 – M20x1.5	

SELECTION CHART

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PERFORMANCE RANGE



SELECTION CHART

50Hz

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SELECTION CHART

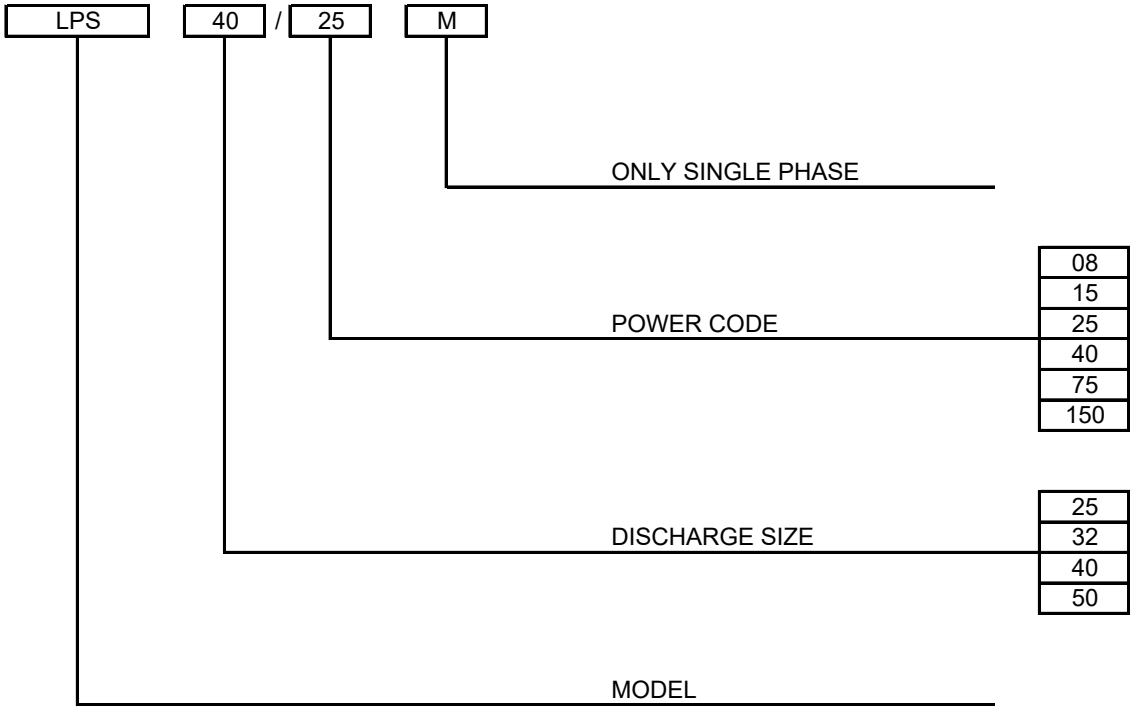
Pump type		Power		Q=Capacity											
				l/min	0	20	40	70	100	120	150	200	250	320	400
Single phase	Three phase	[kW]	[HP]	m^3/h	0	1,2	2,4	4,2	6	7,2	9	12	15	19,2	24
				H=Total manometric head in meters											
LPS 25/08M	LPS 25/08	0,08	0,1		7,2	6,5	5	2,4	-	-	-	-	-	-	-
LPS 25/15M	LPS 25/15	0,15	0,2		10,3	9,3	7,8	4,9	-	-	-	-	-	-	-
LPS 25/25M	LPS 25/25	0,25	0,33		13,7	12,5	11,1	8,4	-	-	-	-	-	-	-
LPS 32/25M	LPS 32/25	0,25	0,33		12,0	-	10,7	9,1	7,2	5,9	3,9	-	-	-	-
LPS 32/40M	LPS 32/40	0,4	0,5		16,4	-	14,5	12,7	10,6	9,2	7	-	-	-	-
LPS 40/25M	LPS 40/25	0,25	0,33		7,9	-	-	7,8	7,1	6,6	5,6	3,7	-	-	-
LPS 40/40M	LPS 40/40	0,4	0,5		11,8	-	-	11,3	10,4	9,9	8,7	6,9	4,4	-	-
LPS 40/75M	LPS 40/75	0,75	1		17,3	-	-	16,6	16	15,2	14,1	12,3	10,1	-	-
LPS 50/40M	LPS 50/40	0,40	0,5		9,8	-	-	-	-	9,1	8,8	7,4	5,9	3,5	-
LPS 50/75M	LPS 50/75	0,75	1		14,8	-	-	-	-	13,8	13,3	12,3	10,7	8,2	5
LPS 50/150M	LPS 50/150	1,5	2		20,7	-	-	-	-	19,8	19,3	18,7	17,8	16	13,7

TYPE KEY AND CURVE SPECIFICATIONS

50Hz

Rev.R

TYPE KEY



PERFORMANCE CURVE SPECIFICATIONS

The specifications below qualify the curves shown on the following pages.

Tolerances according to ISO 9906:2012 – Grade 3B
The curves refer to effective speed of asynchronous motors at 50 Hz, 2 poles.
Measurements were carried out with clean water at 20°C of temperature and with a kinematic viscosity of ν = 1 mm^2/s (1 cSt)
The continuous curves indicate the recommended working range. The dotted curve is only a guide.
In order to avoid the risk of over-heating, the pumps should not be used at a flow rate below 10% of best efficiency point.

Symbols explanation:

Q	=	volume flow rate
H	=	total head
P_2	=	pump power input (shaft power)
η	=	pump efficiency
MEI	=	minimum efficiency index

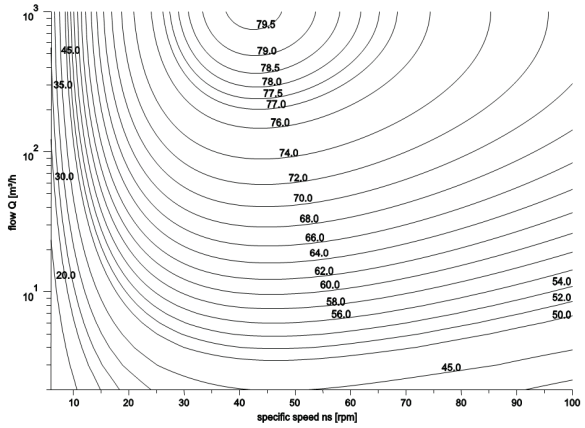
The minimum efficiency index (MEI) is a measure of the quality of a pump size in respect to its mean efficiency. The minimum efficiency index is based on the hydraulic efficiency and on the head at the best efficiency point.

The benchmark for most efficient water pumps is MEI ≥ 0,70.
Information on benchmark efficiency is available at: www.ebaraeurope.com

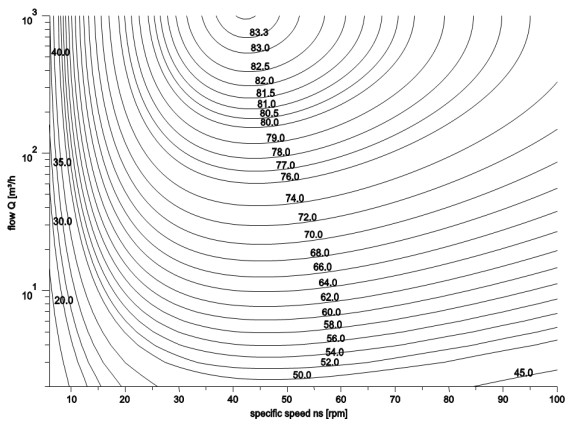
The efficiency of a pump with trimmed impeller is usually lower than that of a pump with the full impeller diameter. The trimming of the impeller will adapt the pump to a fixed duty point, leading to a reduced energy consumption. The minimum efficiency index (MEI) is based on the full impeller diameter.

The operation of these water pumps with variable duty points may be more efficient end economical when controlled, for example, by the use of a variable speed drive that matches the pump duty to the system.

MEI = 0.4 for ESCCi 2900rpm



MEI=0.7 for ESCCi 2900 rpm

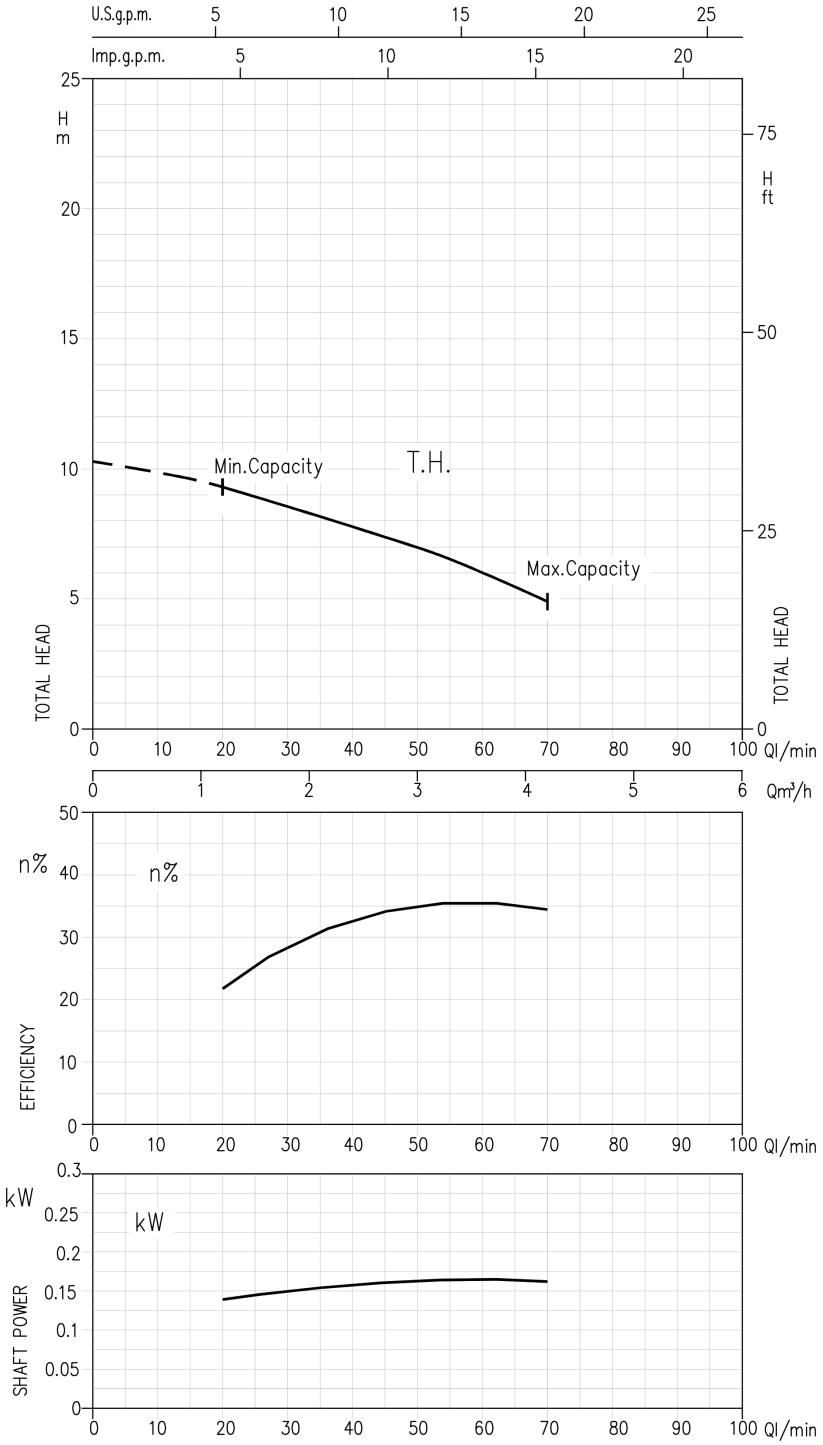


PERFORMANCE CURVE

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LPS 25/15 - LPS 25/15M - Impeller diameter = 98 mm



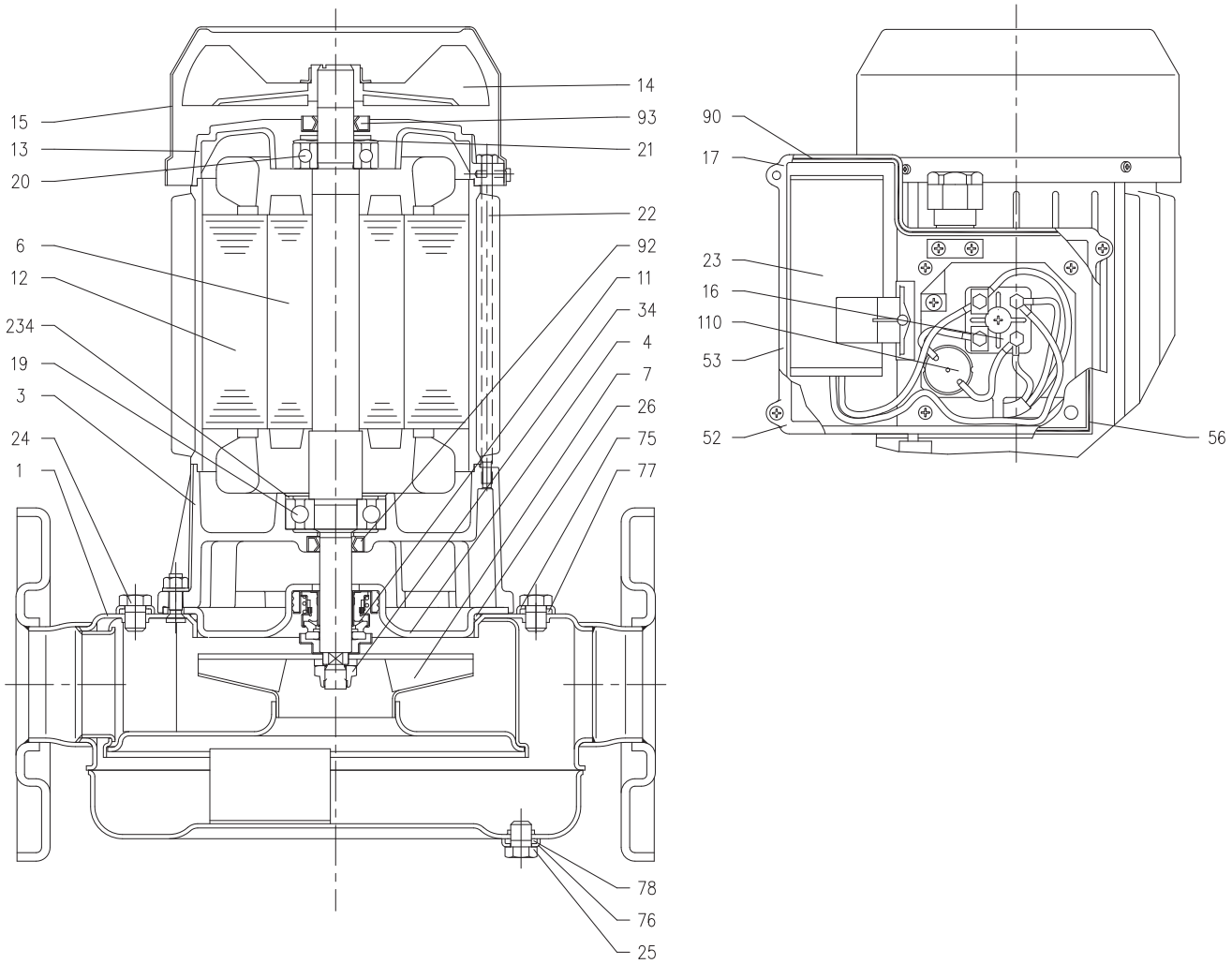
Rotation speed ≈ 2800 min-1
Test standard: ISO 9906:2012 – Grade 3B

CONSTRUCTION

50Hz

Rev.R

SECTIONAL VIEW



CONSTRUCTION

50Hz

Rev.R

SECTIONAL VIEW TABLE

N°	PART NAME	MATERIAL	DIMENSION	STANDARD	Q.TY
1	Casing	AISI 304			1
3	Motor bracket	Aluminium			1
4	Casing cover	AISI 304			1
6	Shaft with rotor	AISI 303 (Wet extension)			1
7	Impeller	AISI 304			1
11	Mechanical seal	Carbon/Ceramic/NBRH	See page 302		1
12	Motor frame with stator	-			1
13	Motor cover	Aluminium			1
14	Fan	PA			1
15	Fan cover	Fe P04 Galvanized			1
16	Terminal board	-			1
17	Terminal box cover [2]	Aluminium			1
19	Pump side ball bearing	-			1
20	Fan side ball bearing	-			1
21	Adjusting ring	Steel C70			1
22	Tie rod	Fe 420 Galvanized			4
23	Capacitor [1]	-			1
24	Priming plug	AISI 304	1/8" G	ISO 228/2	2
25	Drain plug	AISI 304	1/8" G	ISO 228/2	1
26	O-ring	NBR			1
34	Impeller nut	AISI 304	M10x1.25	UNI 7474	1
52	Capacitor box [1]	ABS class V-0			1
53	Capacitor box cover [1]	ABS class V-0			1
56	Box gasket	NBR			1
75	Washer	AISI 304			2
76	Washer	AISI 304			1
77	O-ring	NBR			2
78	O-ring	NBR			1
90	Terminal box cover gasket	NBR			1
92	Lip seal	NBR			1
93	Lip seal	NBR			1
110	Protector [3]	-			1
234	Seeger ring	Carbon steel			1

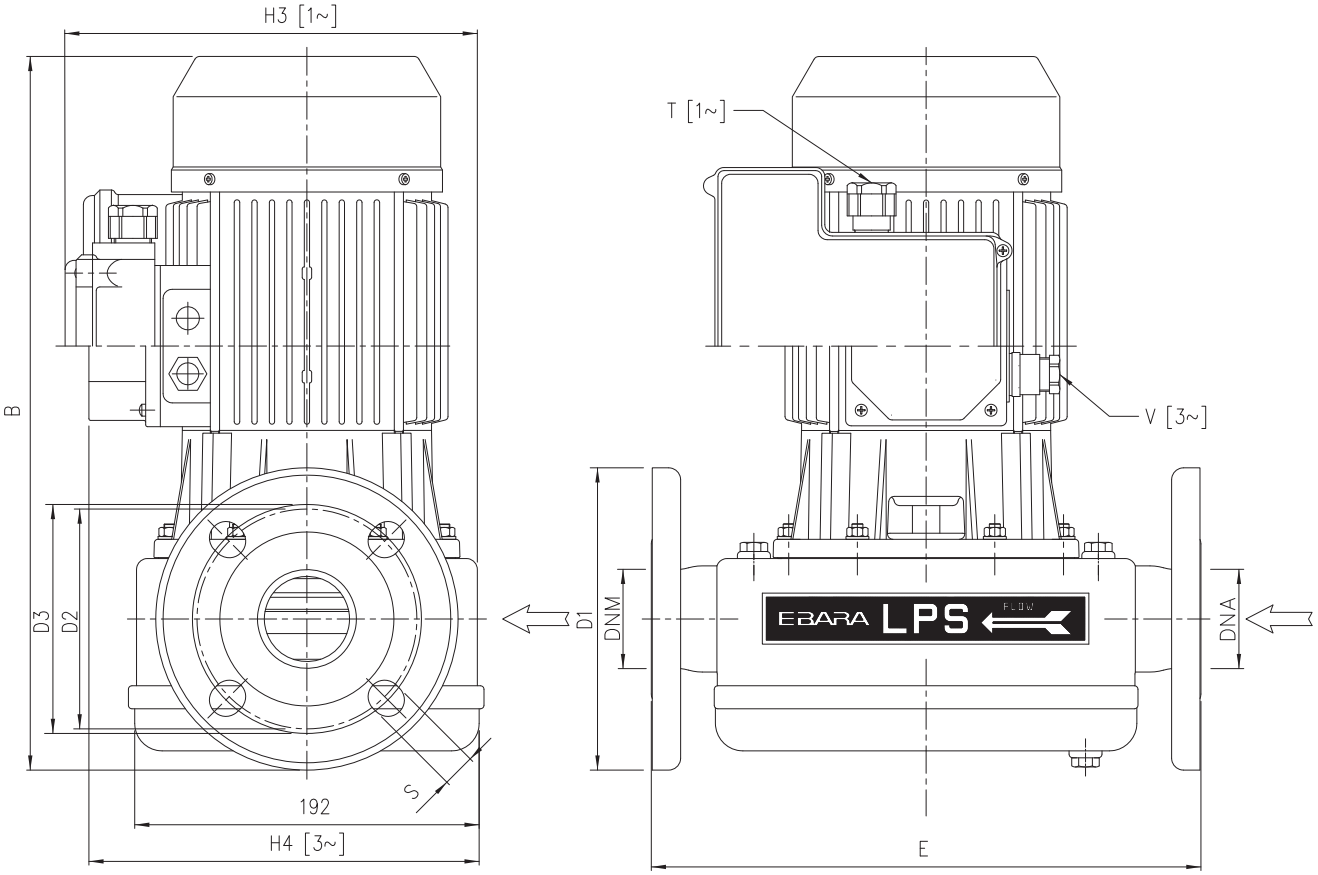
[1] Only for single phase
[2] Only for three phase
[3] Only for version single phase: LPS 50/150M

DIMENSIONS AND WEIGHT

50Hz

Rev.R

PUMP



Pump type		Dimensions in mm													Weight [kgf]	
Single Phase	Three Phase	E	B		H3	H4	T	V	DNA	DNM	D1	D2	D3	S		
[1~]	[3~]		[1~]	[3~]	[1~]	[3~]	[1~]	[3~]							[1~]	[3~]
LPS 25/08M	LPS 25/08	300	322	322	206	197.5	PG11	PG11	25	25	115	85	85	14	10.5	10.8
LPS 25/15M	LPS 25/15	300	322	322	206	197.5	PG11	PG11	25	25	115	85	85	14	10.5	10.8
LPS 25/25M	LPS 25/25	300	322	322	206	197.5	PG11	PG11	25	25	115	85	85	14	10.5	10.9
LPS 32/25M	LPS 32/25	305	341.5	341.5	206	197.5	PG11	PG11	32	32	140	100	100	18	11.5	11.6
LPS 32/40M	LPS 32/40	305	341.5	341.5	206	197.5	PG11	PG11	32	32	140	100	100	18	11.5	11.6
LPS 40/25M	LPS 40/25	305	346.5	346.5	206	197.5	PG11	PG11	40	40	150	105	110	18	11	11.8
LPS 40/40M	LPS 40/40	305	346.5	346.5	206	197.5	PG11	PG11	40	40	150	105	110	18	11.5	11.8
LPS 40/75M	LPS 40/75	305	346.5	346.5	206	197.5	PG11	M16x1.5	40	40	150	105	110	18	13.5	13.7
LPS 50/40M	LPS 50/40	310	356.5	356.5	206	197.5	PG11	PG11	50	50	165	120	125	18	12	12.4
LPS 50/75M	LPS 50/75	310	356.5	356.5	206	197.5	PG11	M16x1.5	50	50	165	120	125	18	14.5	14.4
LPS 50/150M	LPS 50/150	310	412	412.5	232	214.5	PG13.5	M20x1.5	50	50	165	120	125	18	18.5	20.5

[1~] Single Phase
[3~] Three Phase

TECHNICAL DATA

50Hz

Rev.R

MOTOR DATA

Pump type	Power		Efficiency	Capacitor		Efficiency (% load) and power factor				Input	Full load current		Locked rotor current	
						η %			cos-φ	[kW]	[A]		[A]	
	[kW]	[HP]	[IE2 / IE3]	[μF]	[V]	50%	75%	100%			110 V	230 V	110 V	230 V
LPS 25/08M	0,45	0,6	IE2	14	450	55,7	65,6	72,5	0,94	0,65	-	3,0	-	13,4
LPS 25/15M	0,45	0,6	IE2	14	450	55,7	65,6	72,5	0,94	0,65	-	3,0	-	13,4
LPS 25/25M	0,45	0,6	IE2	14	450	55,7	65,6	72,5	0,94	0,65	-	3,0	-	13,4
LPS 32/25M	0,45	0,6	IE2	14	450	55,7	65,6	72,5	0,94	0,65	-	3,0	-	13,4
LPS 32/40M	0,45	0,6	IE2	14	450	55,7	65,6	72,5	0,94	0,65	-	3,0	-	13,4
LPS 40/25M	0,45	0,6	IE2	14	450	55,7	65,6	72,5	0,94	0,65	-	3,0	-	13,4
LPS 40/40M	0,45	0,6	IE2	14	450	55,7	65,6	72,5	0,94	0,65	-	3,0	-	13,4
LPS 40/75M	0,75	1,0	IE2	25	450	61,0	70,8	79,2	0,93	0,95	-	4,4	-	24,0
LPS 50/40M	0,45	0,6	IE2	14	450	55,7	65,6	72,5	0,94	0,65	-	3,0	-	13,4
LPS 50/75M	0,75	1,0	IE2	25	450	61,0	70,8	79,2	0,93	0,95	-	4,4	-	24,0
LPS 50/150M	1,5	2,0	IE2	40	450	69,8	76,6	81,3	0,92	1,90	-	9,0	-	65,2

Pump type	Power		Efficiency	Efficiency (% load)			Input [kW]	Full load current [A]		Locked rotor current [A]	
				η %							
	[kW]	[HP]		50%	75%	100%		230 V	400 V	230 V	400 V
LPS 25/08	0.08	0.1	IE3	75.1	78.5	78.0	0.16	2.4	1.4	12.7	7.33
LPS 25/15	0.15	0.2	IE3	75.1	78.5	78.0	0.22	2.4	1.4	12.7	7.33
LPS 25/25	0.25	0.33	IE3	75.1	78.5	78.0	0.35	2.4	1.4	12.7	7.33
LPS 32/25	0.25	0.33	IE3	75.1	78.5	78.0	0.35	2.4	1.4	12.7	7.33
LPS 32/40	0.4	0.5	IE3	75.1	78.5	78.0	0.50	2.4	1.4	12.7	7.33
LPS 40/25	0.25	0.33	IE3	75.1	78.5	78.0	0.42	2.4	1.4	12.7	7.33
LPS 40/40	0.4	0.5	IE3	75.1	78.5	78.0	0.50	2.4	1.4	12.7	7.33
LPS 40/75	0.75	1	IE3	80.9	82.3	82.1	0.91	3.0	1.7	19.7	11.4
LPS 50/40	0.4	0.5	IE3	75.1	78.5	78.0	0.50	2.4	1.4	12.7	7.33
LPS 50/75	0.75	1	IE3	80.9	82.3	82.1	0.91	3.0	1.7	19.7	11.4
LPS 50/150	1.5	2	IE3	82.7	86.1	87.0	1.72	6.6	3.8	66.6	38.4

NOISE DATA

Pump type		L_{pA} - dB(A) *
Single Phase	Three Phase	
LPS 25/08M	LPS 25/08	60
LPS 25/15M	LPS 25/15	
LPS 25/25M	LPS 25/25	
LPS 32/25M	LPS 32/25	61
LPS 32/40M	LPS 32/40	
LPS 40/25M	LPS 40/25	
LPS 40/40M	LPS 40/40	
LPS 40/75M	LPS 40/75	62
LPS 50/40M	LPS 50/40	
LPS 50/75M	LPS 50/75	63
LPS 50/150M	LPS 50/150	65

* Mean value of several measures at 1m distance around

INSTALLATION

