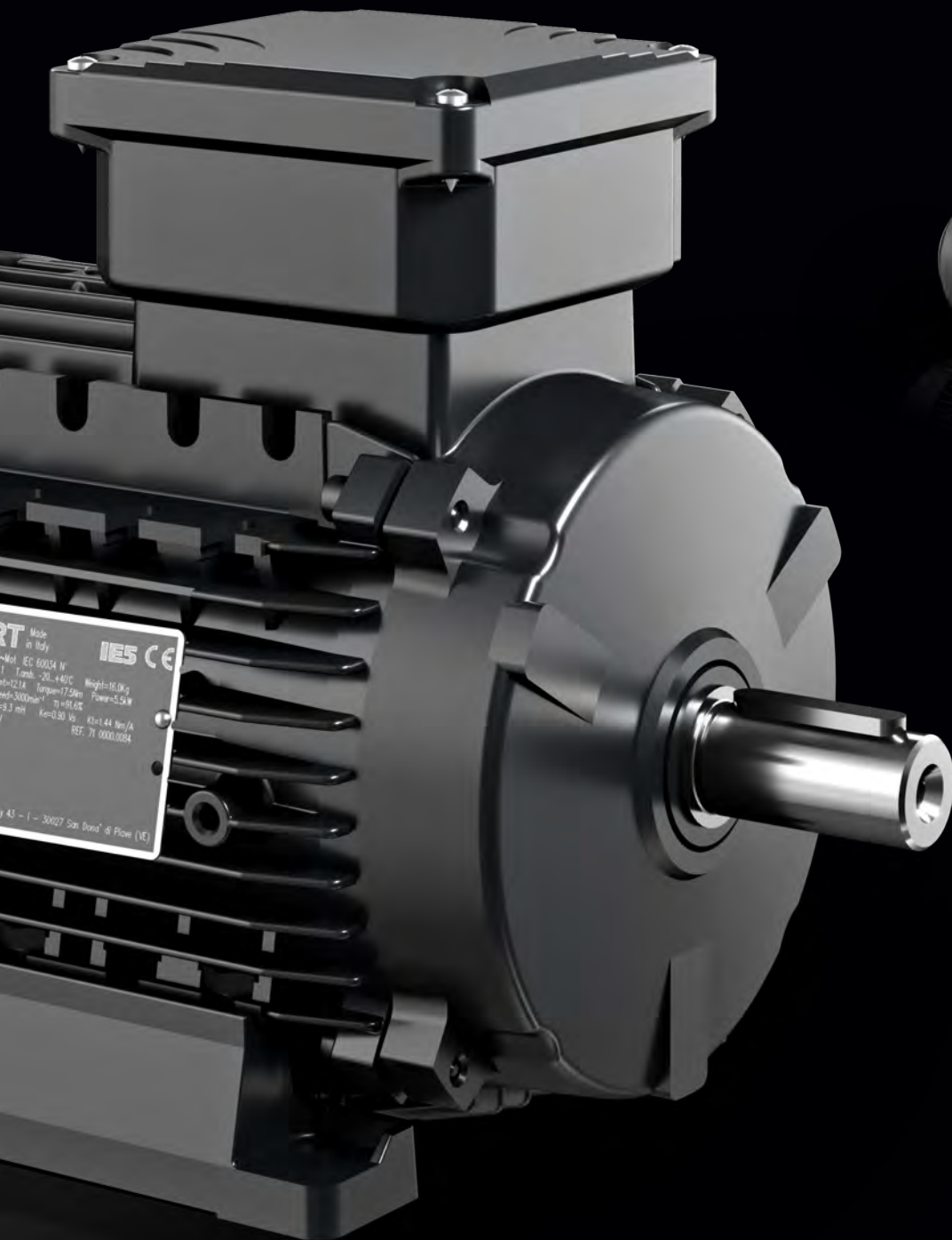


HPS RANGE

HIGH PERFORMANCE
STAND-ALONE MOTORS



HPS RANGE STAND-ALONE MOTOR

A RANGE OF SOLUTIONS
TO MEET SPECIFIC DEMANDS

Power rating: 0.18kW to 37kW
0.24HP to 50HP

Torque: 2 Nm to 190 Nm

Speed: up to 4500 rpm

Frame size: 56 - 71 - 90 - 112 - 132 - 160

Design flexibility by customizing both active
and mechanical parts

IEC mechanical configurations (B14, B5 etc)
NEMA Mounting

Pad Mounting

IPM (Interior Permanent Magnets) or **SMPM**
(Surface Mounted Permanent Magnets) design

Ultra Premium Efficiency **IE5**

Target Applications: pumps, fans, air compressors,
vacuum pumps, conveyors, material handling



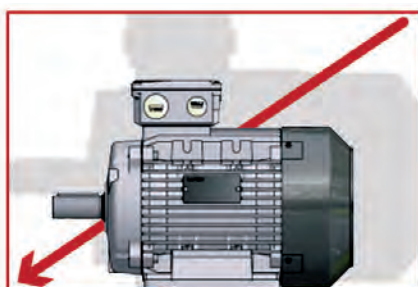
EFFICIENCY @ 3000RPM

Rated Output [kW]	IEC Motor frame	HP Motor frame
0.75	80	71
1.1		
1.5		
2.2		
3	100	90
4	112	
5.5	132	
7.5	160	112
11		
15		
18.5	180	132
22		
30	200	

IE3 Efficiency [%]	HPS IE4 Efficiency [%]	HPS IE5 Efficiency [%]
80.7	81.5	84.6
82.7	83.3	86.2
84.2	84.8	87.4
85.9	86.4	88.9
87.1	87.7	89.9
88.1	88.7	90.7
89.2	89.7	91.6
90.1	90.6	92.4
91.2	91.6	93.2
91.9	92.4	93.7
92.4	92.8	94.2
92.7	93.2	94.4
93.3	93.7	94.9

REDUCTION OF DIMENSIONS & WEIGHT

AC motor
size 112



HPS motor
size 90

Weight AC Motor

Size 112 - 5.5 kW - 34 Kg

Size 132 - 7.5 kW - 53 Kg

Weight HPS Motor

Size 90 - 5.5 kW - 16 Kg

Size 112 - 7.5 kW - 26 Kg



High Performance (HP) is a generation of **permanent magnet (PM) synchronous motors** that achieve **Super Premium IE4 and Ultra Premium IE5 Efficiency level**, combining the electrical design of brushless servo motors with the mechanical design of AC induction motors.

With higher efficiencies than standard AC induction motors, the HP range also enhances the power/weight ratio, thereby allowing for **significant size and weight reductions down to 50%**.

Thanks to the torque and the high efficiency, available through the complete speed range, the HPS range is targeted to both **quadratic torque applications**, typically in HVAC, as well as to **constant torque applications** like material handling, air compressors and vacuum pumps.

These applications require high performances in continuous operation under variable speed, reducing the operating cost and weight/size of the system.

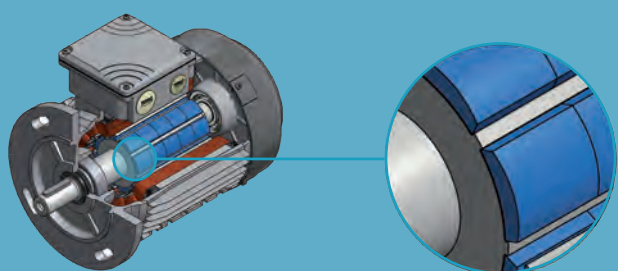
The HP motor range is based upon **Surface Mounted Permanent Magnet (SMPM)** design. PM motors typically use rare earth magnetic material such as Samarium and Neodymium in the construction of the magnet elements.

Furthermore, in order to address market challenges and multiple application needs, Lafert has introduced for specific projects a cost effective **Interior Permanent Magnet (IPM)** and **Surface Mounted Permanent Magnet (SMPM)** design using different magnet elements more readily available, without applying rare earth magnets.

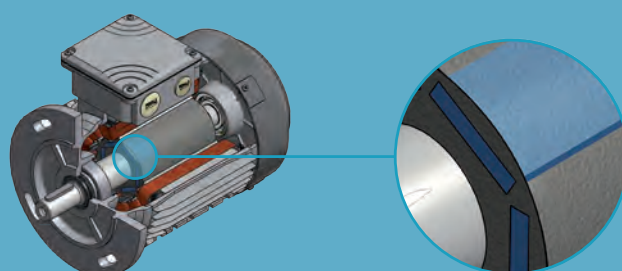
The complete range 0.18 kW to 37 kW are supplied as **stand-alone motors** (HPS range), as **motor-drive combined package** (HPC range), or as **motor-drive integrated unit** (HPI range), specifically designed for their energy saving potential.

Lafert also offer flexibility in terms of design, customising the active and mechanical parts of the motor to suit specific customer requirements.

DIFFERENT MOTOR DESIGN DEPENDING ON THE PERFORMANCE DEMAND



SMPM DESIGN
SURFACE MOUNTED PERMANENT MAGNETS



IPM DESIGN
INTERIOR PERMANENT MAGNETS

VALUES @ 400V

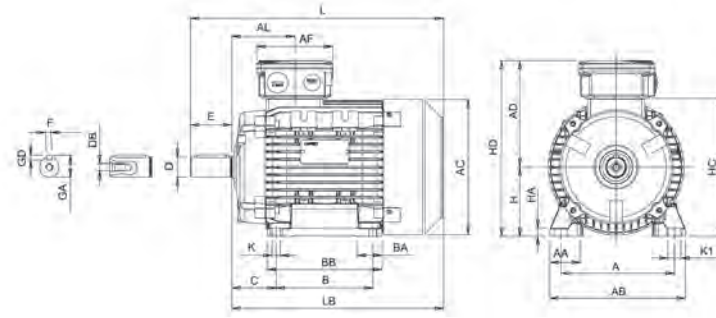
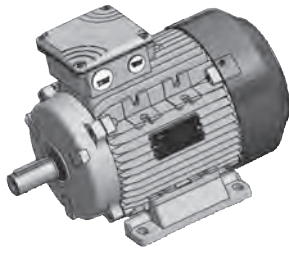
TEMPERATURE RISE TO CLASS B

Type	Size	Rated speed	Rated power	Rated torque	Peak torque	Voltage constant	Torque constant	BEMF at rated speed	Rated current	Efficiency* IE5	Weight
		n rpm	P _n kW	M _n Nm	M _{pk} Nm	K _e Vs	K _t Nm/A	E _n Vrs	I _n Arms	η %	Kg
1800 rpm											
HPS 56 1800 4	56	1800	0.18	1.0	2.9	1.45	2.5	272	0.4	76.3	3.0
HPS 56 1800 5	56	1800	0.25	1.3	4.0	1.45	2.5	272	0.5	79.3	3.2
HPS71 1800 12	71	1800	0.55	2.9	8.8	1.45	2.5	272	1.2	85.0	5.0
HPS71 1800 16	71	1800	0.75	4.0	11.9	1.45	2.5	272	1.6	86.7	5.4
HPS71 1800 23	71	1800	1.1	5.8	17.5	1.45	2.5	272	2.3	88.1	7.0
HPS71 1800 32	71	1800	1.5	8.0	23.9	1.45	2.5	272	3.2	89.1	7.0
HPS90 1800 32	S-L	1800	1.5	8.0	23.9	1.45	2.5	272	3.2	89.1	12
HPS90 1800 46	S-L	1800	2.2	11.7	35.0	1.45	2.5	272	4.6	90.2	14
HPS90 1800 64	S-L	1800	3	15.9	47.7	1.45	2.5	272	6.3	91.0	17
HPS90 1800 84	XL	1800	4	21.2	63.7	1.45	2.5	272	8.4	91.8	18
HPS112 1800 84	M	1800	4	21.2	63.7	1.45	2.5	272	8.4	91.8	23
HPS112 1800 116	M	1800	5.5	29.2	87.5	1.45	2.5	272	11.6	92.5	23
HPS112 1800 158	M	1800	7.5	39.8	119.4	1.45	2.5	272	15.8	93.2	30
HPS112 1800 232	XL	1800	11	58.4	175.1	1.45	2.5	272	23.2	93.5	33
HPS132 1800 232	M	1800	11	58.4	175.1	1.45	2.5	272	23.2	93.8	54
HPS132 1800 317	XXL	1800	15	79.6	238.7	1.45	2.5	272	31.7	94.4	58
HPS132 1800 391	XXL	1800	18.5	98.1	294.4	1.45	2.5	272	39.1	94.6	65
HPS160 1800 232	M	1800	11	58	146	1.45	2.5	272	23.2	93.8	70
HPS160 1800 317	M	1800	15	80	199	1.45	2.5	272	31.7	94.4	75
HPS160 1800 391	M	1800	18.5	98	245	1.45	2.5	272	39.1	94.6	75
HPS160 1800 465	L	1800	22	117	292	1.45	2.5	272	46.5	94.9	85
HPS160 1800 634	L	1800	30	159	398	1.45	2.5	272	63.4	95.3	100

Type	Size	Rated speed	Rated power	Rated torque	Peak torque	Voltage constant	Torque constant	BEMF at rated speed	Rated current	Efficiency* IE5	Weight
		n rpm	P _n kW	M _n Nm	M _{pk} Nm	K _e Vs	K _t Nm/A	E _n Vrs	I _n Arms	η %	Kg
3000 rpm											
HPS 56 3000 5	56	3000	0.25	0.8	2.4	0.87	1.5	272	0.5	75.8	2.8
HPS 56 3000 8	56	3000	0.37	1.2	3.5	0.87	1.5	272	0.8	79.5	3.0
HPS 56 3000 12	56	3000	0.55	1.8	5.3	0.87	1.5	272	1.2	82.7	3.2
HPS71 3000 16	71	3000	0.75	2.4	7.2	0.87	1.5	272	1.6	84.6	4.8
HPS71 3000 23	71	3000	1.1	3.5	10.5	0.87	1.5	272	2.3	86.2	6.0
HPS71 3000 32	71	3000	1.5	4.8	14.3	0.87	1.5	272	3.2	87.4	6.0
HPS71 3000 47	71	3000	2.2	7.0	21.0	0.87	1.5	272	4.7	88.9	6.6
HPS90 3000 47	S-L	3000	2.2	7.0	21.0	0.87	1.5	272	4.7	88.9	10
HPS90 3000 64	S-L	3000	3	9.6	28.7	0.87	1.5	272	6.4	89.9	12
HPS90 3000 85	S-L	3000	4	12.7	38.2	0.87	1.5	272	8.5	90.7	14
HPS90 3000 117	S-L	3000	5.5	17.5	52.5	0.87	1.5	272	11.7	91.6	16
HPS112 3000 117	M	3000	5.5	17.5	52.5	0.87	1.5	272	11.7	91.6	23
HPS112 3000 159	M	3000	7.5	23.9	71.6	0.87	1.5	272	15.9	92.4	26
HPS112 3000 233	M	3000	11	35.0	105.1	0.87	1.5	272	23.3	93.2	30
HPS112 3000 318	M	3000	15	47.8	143.3	0.87	1.5	272	31.8	93.7	33
HPS132 3000 318	M	3000	15	47.8	143.3	0.87	1.5	272	31.8	93.7	55
HPS132 3000 393	XL	3000	18.5	58.9	176.7	0.87	1.5	272	39.3	94.2	59
HPS132 3000 467	XXL	3000	22	70.0	210.1	0.87	1.5	272	46.7	94.4	67
HPS132 3000 636	XXL	3000	30	95.4	286.0	0.87	1.5	272	63.6	94.9	72
HPS160 3000 634	L	3000	30	95.4	239	0.87	1.51	272	63.4	94.9	90
HPS160 3000 782	L	3000	37	118.0	294	0.87	1.51	272	78.2	95.2	95

* In new IEC TS 60034-30-2, the IE class limit values are reduced by adding the additional harmonic losses caused by the drive: 15% additional losses for motors up to 90 kW.
For rated speeds 1500 - 3600 - 4500 rpm, please refer to the catalogue

HPS FRAME SIZE 56 - 71 - 90 - 112 - 132 - 160 IM B3*



IEC	H	A	B	C	K ¹⁾	AB	BB	AD ²⁾	HD ²⁾	AC	HC	HA
56	56	90	71	36	6	107	86	92	148	110	109	8
71	71	112	90	45	8	135	108	114	185	142	142	9
90S	90	140	100	56	10	170	150	148	238	177	181	11
90L	90	140	125	56	10	170	150	148	238	177	181	11
112M	112	190	140	70	12.5	220	176	171	283	225	226	15
112XL	112	190	140	70	12.5	220	176	171	283	225	226	15
132M	132	216	178	89	12	256	218	195	327	248	261	17
132XL	132	216	178	89	12	256	218	195	327	248	261	17
132XXL	132	216	178	89	12	256	218	195	327	248	261	17
160M	160	254	210	108	14	320	270	238	398	317	316	23
160L	160	254	254	108	14	320	310	238	398	317	316	23

IEC	K1	L	LB	AL	AF	BA	AA	D	E	F	GD	GA	DB ³⁾
56	9	188	168	61	93	27	27	14	30	5	5	16	M5
71	17	245	215	75	93	22	30	19	40	6	6	22	M6
90S	15	317	267	85	110	28/53	37	24	50	8	7	27	M8
90L	15	317	267	85	110	28/53	37	24	50	8	7	27	M8
112M	19	388	328	92	110	46	48	28	60	8	7	31	M10
112XL	19	410	350	92	110	46	48	28	60	8	7	31	M10
132M	20	485	405	122	137	45	59	38	80	10	8	41	M12
132XL	20	505	425	122	137	45	59	38	80	10	8	41	M12
132XXL	20	556	476	122	137	45	59	38	80	10	8	41	M12
160M	18	608	498	146	155	65	76	42 ⁴⁾	110	12 ⁴⁾	8 ⁴⁾	45 ⁴⁾	M16
160L	18	652	542	168	155	65	76	48	110	14	9	51.5	M16

1) Clearance hole for screw 2) Maximum dimension 3) Centering holes in shaft extensions to DIN 332 part 2
 4) For type HPS160M 18.5 kW, please refer to HPS160L

* For mounting arrangements IM B5 - IM B14, please refer to the catalogue

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