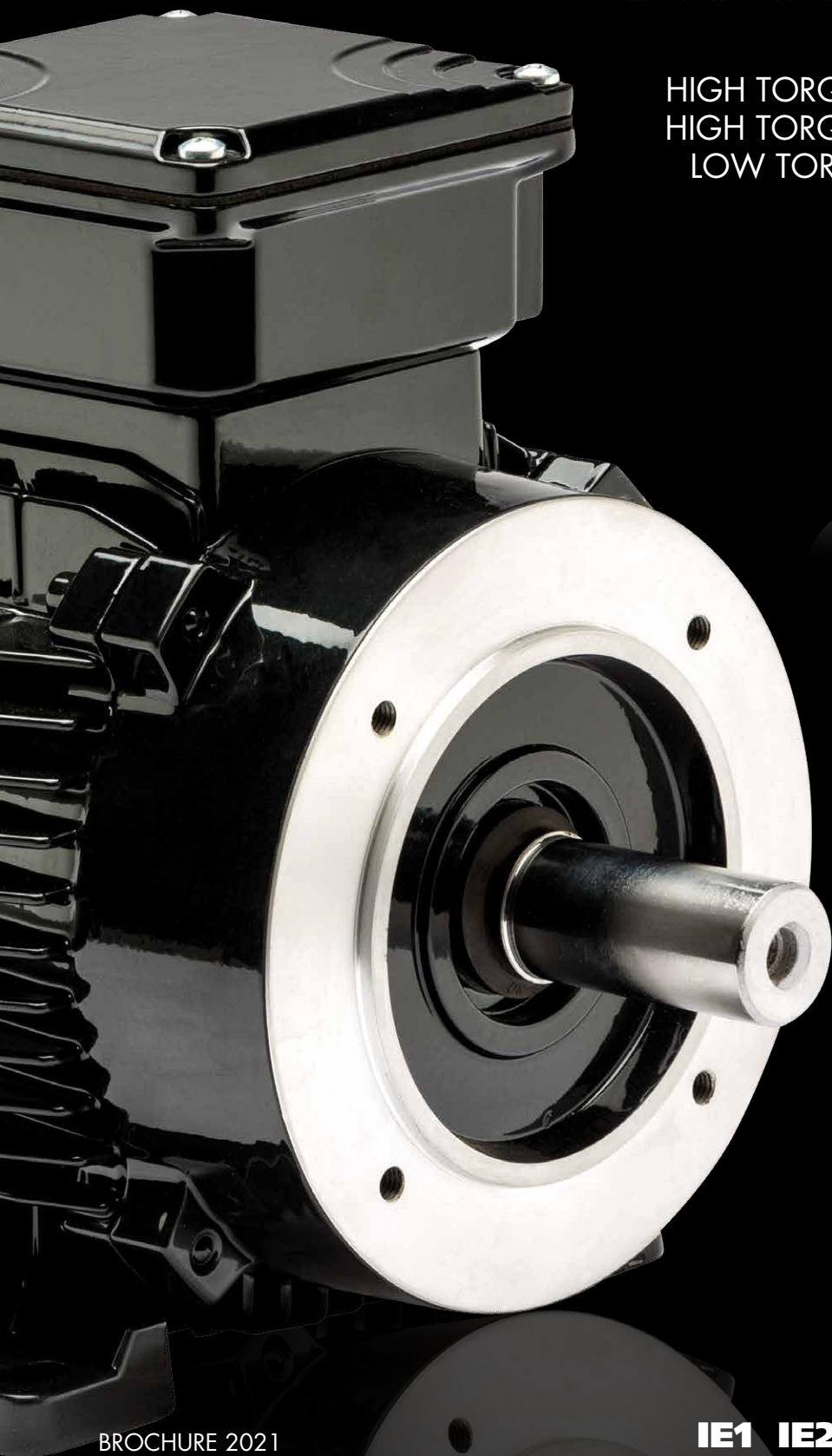


# BRAKE MOTORS

HIGH TORQUE - DC BRAKE (AMBY SERIES)  
HIGH TORQUE - AC BRAKE (AMBZ SERIES)  
LOW TORQUE - DC BRAKE (AMS SERIES)





## SPECIAL APPLICATIONS

The quality of Lafert motors is generated by the constant search for innovative solutions and from our natural propensity for customization and co-engineering. Lafert specializes in designing and manufacturing customized electric motors, created to meet the needs of each customer.

**More than 90% of Lafert products are non-standard motors.**

Thanks to our strong approach to the market, experience in special applications and the wide range of solutions, we can offer an electric and mechanical design perfect for every application need. **The co-designing approach from our engineers** and the skillful expertise of our technical office to adapt the motor to specific market segments allows us to offer an exceptionally high level of customization, efficiency and reliability.

To ensure the maximum performance of our motors **we produce every component internally**. This allows us to tailor every element of our proposals by developing infinite solutions for all applications. From flange design to special windings, from the degree of protection to the fan cooling, we customize everything to create the perfect motor that maximizes the performance and energy savings of the final application.

## STANDARD FEATURES

	AMBY SERIES	AMBZ SERIES	AMS SERIES
Frame size	- 63 to 160	- 63 to 160	- 63 to 160
Power	- 0.12 to 22kW	- 0.12 to 22kW	- 0.12 to 22kW
Poles	- 2, 4, 6, 8 (two speed on request)	- 2, 4, 6, 8 (two speed on request)	- 2, 4, 6, 8 (two speed on request)
Insulation class	- F	- F	- F
Degree of protection	- IP54 - IP55 (on request)	- IP54 - IP55 (on request)	- IP54 - IP55 (on request)
Efficiency level	- IE1, IE2 or IE3	- IE1, IE2 or IE3	- IE1, IE2 or IE3
Braking torque	- 1.8 to 250Nm; $M_b \geq 1,5M_n$	- 1.8 to 250Nm; $M_b \geq 1,5M_n$	- 3 to 30Nm; $M_b \leq M_n$
Brake	- DC Spring-applied electromagnetic fail safe brake with step-adjustable braking torque	- AC Spring-applied electromagnetic fail safe brake with step-adjustable braking torque	- DC Spring-applied electromagnetic fail safe brake with fixed braking torque
Braking surface	- Double braking surface, fitted with asbestos free friction materials	- Double braking surface, fitted with asbestos free friction materials	- Single braking surface, manufactured with asbestos free friction materials
Power supply	- With rectifier (via the terminal board): 230V 50/60Hz, others on request	- Brake power supply: 230/400V 50Hz on dedicated terminal board	- With rectifier (via the terminal board): 230V 50/60Hz, others on request
Special executions Options	<ul style="list-style-type: none"> <li>- cURus and cURus Energy certification available on request</li> <li>- Other power supply with rectifier (via the terminal board)</li> <li>- Rectifiers for fast braking and release</li> <li>- Micro-switch for brake status/air gap monitoring</li> <li>- Anti-sticking executions</li> <li>- Executions for yaw applications on wind turbines (even Off shore)</li> <li>- Executions with brake parts in stainless steel</li> <li>- Silenced execution for theatres</li> <li>- Shaft ends (both LC and LOC) in stainless steel</li> <li>- Wide range of special execution (encoder, axial forced-ventilation, brake hand release lever, flywheel,...)</li> <li>- Wide range of surface painting/finish to meet every environmental conditions</li> </ul>	<ul style="list-style-type: none"> <li>- cURus and cURus Energy certification available on request</li> <li>- Other brake supply values</li> <li>- Micro-switch for brake status/air gap monitoring</li> <li>- Anti-sticking executions</li> <li>- Executions for yaw applications on wind turbines (even Off shore)</li> <li>- Executions with brake parts in stainless steel</li> <li>- Shaft ends (both LC and LOC) in stainless steel</li> <li>- Wide range of special execution (encoder, axial forced-ventilation, brake hand release lever, flywheel,...)</li> <li>- Wide range of surface painting, finish to meet every environmental conditions</li> </ul>	<ul style="list-style-type: none"> <li>- cURus and cURus Energy certification available on request</li> <li>- CCC certification available on request</li> <li>- Other power supply with rectifier (via the terminal board)</li> <li>- Rectifiers for fast braking and release</li> <li>- Execution with increased torque (+50% of catalogue value)</li> <li>- Shaft ends (both LC and LOC) in stainless steel</li> <li>- Wide range of special execution (encoder, axial forced-ventilation, brake hand release lever, ...)</li> <li>- Wide range of surface painting/finish to meet every environmental conditions</li> </ul>
Target applications	Automation Lifting Gear motors Wind turbines (yaw application) Transfer machines Packing machineries Food & Beverage	Lifting Gear motors Wind turbines (yaw application) Ceramic industry Food & Beverage	Automation Woodworking machineries Cutting machineries Machineries for the construction sector (bending machines) Food & Beverage

## STANDARD EFFICIENCY BRAKE MOTORS - IE1

EFFICIENCY LEVEL ACCORDING TO IEC 60034-30-1:2014  
EFFICIENCY TESTING METHOD IEC 60034-2-1:2014

IE code not applicable to motors 2, 4, 6 poles with PN < 0.75 kW. Efficiency testing method: IEC 60034-2:1996

FOR MAINS VOLTAGE  
400 V - 50 HZ

**IE1**

Type		kW	HP	min <sup>-1</sup>	M <sub>N</sub> Nm	IE1 $\eta$			cos $\varphi$	I <sub>N</sub>		I <sub>A</sub> /I <sub>N</sub>	M <sub>A</sub> /M <sub>N</sub>	M <sub>K</sub> /M <sub>N</sub>
						50%	75%	100%		400V	380-420V			
1500 min <sup>-1</sup> (4 poles)														
AM... 63Z AA	4	0.12	0.16	1350	0.8	46.0	50.0	57.0	0.65	0.50	0.55	2.4	2.0	2.0
AM... 63Z BA	4	0.18	0.25	1330	1.3	47.0	50.0	58.0	0.70	0.65	0.70	2.3	1.9	1.9
AM... 63Z CA	4*	0.25	0.33	1360	1.8	49.0	52.5	58.0	0.74	0.85	0.90	2.7	2.2	2.1
AM... 71Z AA	4	0.25	0.33	1340	1.8	55.0	59.0	64.0	0.66	0.90	1.00	3.2	1.9	2.0
AM... 71Z BA	4	0.37	0.5	1370	2.6	60.0	63.0	67.0	0.67	1.20	1.25	3.3	2.2	2.2
AM... 71Z CA	4*	0.55	0.75	1380	3.8	61.0	64.0	69.0	0.68	1.70	1.80	3.6	2.4	2.4
AM... 80Z AA	4	0.55	0.75	1400	3.8	67.0	69.0	70.0	0.72	1.6	1.7	3.6	2.6	2.6
AM... 80Z BA	4	0.75	1.0	1410	5.1	68.7	70.8	72.4	0.72	2.1	2.2	4.4	2.8	2.8
AM... 80Z CA	4*	1.1	1.5	1385	7.6	73.4	75.7	75.2	0.77	2.8	2.9	4.4	2.5	2.6
AM... 90S AA	4	1.1	1.5	1400	7.5	75.8	76.0	75.4	0.78	2.7	2.9	5.2	2.5	2.8
AM... 90L BA	4	1.5	2.0	1400	10.2	77.6	77.8	77.5	0.78	3.6	3.7	5.7	2.8	3.0
AM... 90L CA	4*	1.8	2.5	1380	12.5	76.3	76.5	75.9	0.81	4.2	4.3	5.5	2.7	2.9
AM... 90L DA	4*	2.2	3.0	1400	15.0	78.3	78.5	77.9	0.77	5.3	5.5	4.8	2.9	3.2
AM... 100L AA	4	2.2	3.0	1435	14.6	76.5	79.1	79.9	0.74	5.4	5.6	5.3	2.5	2.7
AM... 100L BA	4	3.0	4.0	1425	20.1	82.0	83.0	81.6	0.78	6.8	6.9	4.6	2.4	2.5
AM... 100L CA	4*	4.0	5.5	1400	27.3	80.8	81.8	80.4	0.78	9.2	9.3	6.0	2.6	2.9
AM... 112M AA	4	4.0	5.5	1430	26.7	83.2	83.9	83.1	0.82	8.5	8.8	6.3	2.2	2.8
AM... 112M BA	4*	5.5	7.5	1430	36.7	84.1	84.8	84.0	0.83	11.4	11.7	6.5	2.2	2.9
AM ... 132S AA	4	5.5	7.5	1460	36.1	85.1	86.8	84.7	0.84	11.0	11.5	7.0	2.6	3.0
AM ... 132M BA	4	7.5	10	1460	49.7	85.8	87.6	86.0	0.84	14.9	15.5	8.2	2.6	3.7
AM ... 132M CA	4*	9.2	12.5	1455	60.3	86.5	87.5	86.9	0.83	18.3	18.9	8.2	2.6	3.7
AM ... 132M DA	4*	11	15	1450	72.4	84.7	86.5	87.6	0.79	23.0	23.5	8.2	2.6	3.7
AM ... 160M AA	4	11	15	1470	71.9	87.0	88.9	87.6	0.82	22.0	22.7	8.2	2.1	2.8
AM ... 160L BA	4	15	20	1465	98.1	88.1	89.6	88.7	0.84	29.0	29.6	8.1	2.1	2.8
AM ... 160L CA	4*	18.5	25	1460	121.8	88.9	90.1	89.3	0.84	35.5	36.0	8.2	2.1	2.8
AM ... 160L DA	4*	22	30	1460	143.9	89.0	90.1	89.9	0.86	41.0	42.0	8.2	2.1	2.8

## HIGH EFFICIENCY BRAKE MOTORS – IE2

EFFICIENCY LEVEL ACCORDING TO IEC 60034-30-1:2014  
EFFICIENCY TESTING METHOD IEC 60034-2-1:2014

FOR MAINS VOLTAGE  
400 V - 50 HZ

**IE2**

Type	kW	HP	min <sup>-1</sup>	M <sub>N</sub> Nm	IE2 $\eta$			cos $\psi$	I <sub>N</sub> 400V	I <sub>A</sub> /I <sub>N</sub>	M <sub>A</sub> /M <sub>N</sub>	M <sub>K</sub> /M <sub>N</sub>	
					50%	75%	100%						
1500 min <sup>-1</sup> (4 poles)													
AMHE ... 63Z AA	4	0.12	0.16	1330	0.8	61.3	62.6	59.1	0.67	0.45	2.4	2.0	2
AMHE ... 63Z BA	4	0.18	0.25	1345	1.3	61.9	66.7	64.7	0.66	0.6	2.3	1.9	1.9
AMHE ... 63Z CA	4*	0.25	0.33	1356	1.8	67.3	71.3	68.5	0.65	0.9	2.7	2.2	2.1
AMHE ... 71Z AA	4	0.25	0.33	1390	1.8	67.0	71.2	68.5	0.77	0.7	3.2	1.9	2
AMHE ... 71Z BA	4	0.37	0.5	1410	2.6	68.4	73.3	72.7	0.70	1.0	3.3	2.2	2.2
AMHE ... 71Z CA	4*	0.55	0.75 <sup>1</sup>	1410	3.8	71.5	75.5	77.1	0.71	1.5	3.6	2.4	2.4
AMHE ... 80Z XA	4	0.55	0.75	1422	3.8	75.1	77.8	77.1	0.72	1.5	3.6	2.6	2.6
AMHE ... 80Z AA	4	0.75	1	1430	5.0	79.2	80.3	80.2	0.76	1.8	5.5	2.8	3.0
AMHE ... 90S AA	4	1.1	1.5	1430	7.3	81.4	82.7	82.5	0.77	2.5	6.1	4.0	4.1
AMHE ... 90L BA	4	1.5	2	1430	10.0	82.0	83.5	83.0	0.77	3.4	6.4	3.9	4.0
AMHE ... 100L AA	4	2.2	3	1450	14.5	84.0	85.3	85.1	0.74	5.1	6.0	3.2	3.4
AMHE ... 100L BA	4	3	4	1440	19.9	85.3	86.6	86.4	0.77	6.5	6.3	3.4	3.6
AMHE ... 112M AA	4	4	5.5	1450	26.3	86.0	87.3	87.1	0.78	8.5	6.1	3.1	3.3
AMHE ... 132S AA	4	5.5	7.5	1455	36.1	89.0	89.6	87.7	0.83	10.9	8.5	2.6	3.7
AMHE ... 132M BA	4	7.5	10	1460	49.1	90.0	90.5	88.7	0.83	14.6	8.2	2.6	3.7
AMHE ... 132M CA	4	9.2	12.5	1460	60.3	90.2	90.6	89.3	0.83	18.0	8.2	2.6	3.7
AMHE ... 160M AA	4	11	15	1470	71	91.4	92.0	91.3	0.81	22.0	8.2	2.1	2.8
AMHE ... 160L BA	4	15	20	1460	98	92.0	92.3	91.7	0.82	29.0	8.2	2.1	2.8
AMHE ... 160L CA	4	18.5	25	1460	122	92.4	92.5	91.8	0.83	35.2	8.2	2.1	2.8
AMHE ... 160L DA	4	22	30	1460	144	92.4	92.5	91.9	0.80	43.5	8.3	2.2	3.0

\* Higher output (progressive motor)

1) Max. Number of no-load starts/hour with cyclic duration factor 50%

2) On request

3) Motor not available

STANDARD EFFICIENCY BRAKE MOTORS – IE1

AMBY SERIES – HIGH TORQUE - DC BRAKE  
AMBZ SERIES – HIGH TORQUE - AC BRAKE  
AMS SERIES – LOW TORQUE - DC BRAKE

IE1

		AMBY				AMBZ				AMS			
		J	M <sub>b max</sub>	z <sub>L</sub> <sup>1)</sup>		J	M <sub>b max</sub>	z <sub>L</sub> <sup>1)</sup>		J	M <sub>b</sub>	z <sub>L</sub> <sup>1)</sup>	
Type		10 <sup>-3</sup> kgm <sup>2</sup>	Nm	c/h	kg	10 <sup>-3</sup> kgm <sup>2</sup>	Nm	c/h	kg	10 <sup>-3</sup> kgm <sup>2</sup>	Nm	c/h	kg
1500 min <sup>-1</sup> (4 poles)													
AM... 63Z AA	4	0.31	3.5	13200	5.4	0.31	3.5	15000	5.2	0.54	3	7500	4.8
AM... 63Z BA	4	0.35	3.5	12500	6.2	0.35	3.5	14000	6.0	0.59	3	7500	5.6
AM... 63Z CA	4*	0.38	3.5	11800	6.3	0.38	3.5	13200	6.1	0.61	3	6700	5.7
AM... 71Z AA	4	0.70	3.5(7.5) <sup>2)</sup>	7500	8.1	0.70	3.5(7.5) <sup>2)</sup>	8500	7.9	1.13	4	5000	7.5
AM... 71Z BA	4	0.87	7.5	7250	9.1	0.87	7.5	8150	8.8	1.26	4	4850	7.8
AM... 71Z CA	4*	1.11	7.5	6900	10.4	1.11	7.5	7800	10.1	1.50	4	4500	9.1
AM... 80Z AA	4	1.49	7.5(15) <sup>2)</sup>	6700	12.4	1.49	7.5(15) <sup>2)</sup>	6700	12.1	2.37	7	4250	11.0
AM... 80Z BA	4	1.93	15	6300	14.4	1.93	15	6300	14.3	2.77	7	4000	12.1
AM... 80Z CA	4*	2.33	15	6000	15.7	2.33	15	6000	15.6	3.16	7	3750	13.4
AM... 90S AA	4	2.36	15(40) <sup>2)</sup>	5000	18.0	2.36	15(40) <sup>2)</sup>	5650	17.9	3.28	7	3550	15.5
AM... 90L BA	4	3.12	40	4750	21.1	3.12	40	5350	21.8	3.85	7	3350	16.3
AM... 90L CA	4*	3.69	40	4550	22.3	3.69	40	5150	23.0	4.43	7	3250	17.5
AM... 90L DA	4*	3.98	40	4300	24.8	3.98	40	4850	25.5	4.71	7	3150	20.0
AM... 100L AA	4	4.83	40(75) <sup>2)</sup>	4500	28.1	4.83	40(75) <sup>2)</sup>	5050	28.8	7.4	13	2500	23.8
AM... 100L BA	4	6.08	40(75) <sup>2)</sup>	4250	31.1	6.08	40(75) <sup>2)</sup>	4800	31.8	8.7	13	2350	26.8
AM... 100L CA	4*	7.24	75	4000	37.0	7.24	75	4500	38.4	9.3	13	2200	29.3
AM... 112M AA	4	11.60	75	2500	42.4	11.60	75	2800	43.8	13.7	13	1500	34.2
AM... 112M BA	4*	14.42	75	2240	46.9	14.42	75	2500	48.3	16.5	13	1320	38.7
AM ... 132S AA	4	22.0	75(150) <sup>2)</sup>	2000	60	22.0	75(150) <sup>2)</sup>	2250	61	25.9	30	1180	51
AM ... 132M BA	4	28.7	75(150) <sup>2)</sup>	1800	69	28.7	75(150) <sup>2)</sup>	2000	70	32.6	30	1000	60
AM ... 132M CA	4*	33.4	150	1500	87	33.4	150	1690	89	35.9	30	800	74
AM ... 132M DA	4*	33.4	150	1500	87	33.4	150	1690	89	35.9	30	800	74
AM ... 160M AA	4	69	150(250) <sup>2)</sup>	670	115	69	150(250) <sup>2)</sup>	750	118	71	30	560	98
AM ... 160L BA	4	90	150(250) <sup>2)</sup>	600	133	90	150(250) <sup>2)</sup>	675	136	92	30	500	117
AM ... 160L CA	4*	108	250	580	157	108	250	650	156	105	30	480	126
AM ... 160L DA	4*	120	250	550	168	120	250	600	168	- <sup>3)</sup>	- <sup>3)</sup>	- <sup>3)</sup>	- <sup>3)</sup>

HIGH EFFICIENCY BRAKE MOTORS – IE2

AMHEBY SERIES – HIGH TORQUE - DC BRAKE  
AMHEBZ SERIES – HIGH TORQUE - AC BRAKE  
AMHES SERIES – LOW TORQUE - DC BRAKE

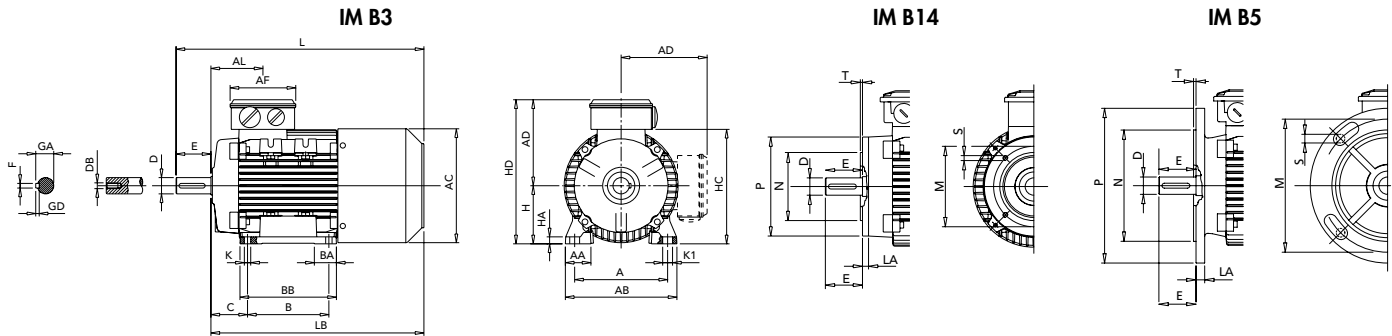
IE2

		AMHEBY				AMHEBZ				AMHES			
	J	M <sub>b max</sub>	z <sub>L</sub> <sup>1)</sup>			J	M <sub>b max</sub>	z <sub>L</sub> <sup>1)</sup>		J	M <sub>b</sub>	z <sub>L</sub> <sup>1)</sup>	
Type	10 <sup>-3</sup> kgm <sup>2</sup>	Nm	c/h	kg		10 <sup>-3</sup> kgm <sup>2</sup>	Nm	c/h	kg	10 <sup>-3</sup> kgm <sup>2</sup>	Nm	c/h	kg
1500 min <sup>-1</sup> (4 poles)													
AMHE... 63Z AA	4	0.31	3.5	13200	5.4	0.31	3.5	15000	5.2	0.54	3	7500	4.8
AMHE... 63Z BA	4	0.35	3.5	12500	6.2	0.35	3.5	14000	6	0.59	3	7500	5.6
AMHE... 63Z CA	4*	0.38	3.5	11800	6.3	0.38	3.5	13200	6.1	0.61	3	6700	5.7
AMHE... 71Z AA	4	0.70	3.5(7.5) <sup>2)</sup>	7500	8.1	0.7	3.5(7.5) <sup>2)</sup>	8500	7.9	1.13	4	5000	7.5
AMHE... 71Z BA	4	0.87	7.5	7250	9.1	0.87	7.5	8150	8.8	1.26	4	4850	7.8
AMHE... 71Z CA	4*	1.11	7.5	6900	10.4	1.11	7.5	7800	10.1	1.50	4	4500	9.1
AMHE... 80Z XA	4	1.49	7.5(15) <sup>2)</sup>	6700	12.4	1.49	7.5(15) <sup>2)</sup>	6700	12.1	2.37	7	4250	11.0
AMHE... 80Z AA	4	2.63	7.5(15) <sup>2)</sup>	5800	15.7	3.5	7	3500	14.3	2.63	7.5(15) <sup>2)</sup>	5800	15.7
AMHE... 90S AA	4	3.5	15(40) <sup>2)</sup>	5250	20.4	4.43	7	3250	17.5	3.5	15(40) <sup>2)</sup>	4650	20.5
AMHE... 90L BA	4	3.98	40	4700	25.5	4.71	7	3000	20	3.98	40	4150	24.8
AMHE... 100L AA	4	6.08	40(75) <sup>2)</sup>	4800	31.8	8.7	13	2350	26.8	6.08	40(75) <sup>2)</sup>	4250	31.1
AMHE... 100L BA	4	7.24	40(75) <sup>2)</sup>	4550	34.3	9.3	13	2000	29.3	7.24	40(75) <sup>2)</sup>	4050	33.6
AMHE... 112M AA	4	13.01	75	2650	46.1	15.1	13	1410	36.5	13.01	75	2370	44.7
AMHE... 132S AA	4	22.0	75(150) <sup>2)</sup>	2250	61	25.9	30	1180	51	22.0	75(150) <sup>2)</sup>	2000	60
AMHE... 132M BA	4	28.7	75(150) <sup>2)</sup>	2000	70	32.6	30	1000	60	28.7	75(150) <sup>2)</sup>	1800	69
AMHE... 132M CA	4	33.4	75(150) <sup>2)</sup>	1690	89	35.9	30	800	74	33.4	75(150) <sup>2)</sup>	1500	87
AMHE... 160M AA	4	69	150(250) <sup>2)</sup>	750	118	71	30	560	98	69	150(250) <sup>2)</sup>	670	115
AMHE... 160L BA	4	90	150(250) <sup>2)</sup>	675	136	92	30	500	117	90	150(250) <sup>2)</sup>	600	133
AMHE...160L CA	4	108	250	650	156	105	30	480	126	108	250	580	157
AMHE...160L DA	4	120	250	600	168	- <sup>3)</sup>	- <sup>3)</sup>	- <sup>3)</sup>	- <sup>3)</sup>	120	250	550	168

\* Higher output (progressive motor)      1) Max. Number of no-load starts/hour with cyclic duration factor 50%      2) On request      3) Motor not available



## BRAKE MOTORS FRAME SIZE 63-160 IM B3, IM B5, IM B14 AMBY - AMBZ - AMS SERIES



	IEC	H	A	B	C	K <sup>1)</sup>	AB	BB	AD <sup>2)</sup>	HD <sup>2)</sup>	AC	HC	HA	K1	L	L*	LB	LB*	AL	AF	BA	AA	D	E	F	GD	GA	DB <sup>3)</sup>
63		63	100	80	40	7	120	100	96	159	124	120	8	11	267	226	244	203	63	92	29	30	11	23	4	4	12.5	M4
71		71	112	90	45	8	135	108	110	181	138	142	8	11	300	255	270	225	69	92	28	31	14	30	5	5	16	M5
80		80	125	100	50	10	153	125	129	208	156	161	9.5	14	350	294	310	254	79	116	29	35	19	40	6	6	21.5	M6
90S 90L	90	140	100	56	10	170	150	137	227	178	180	11	15	403	340	353	290	85	116	28/53	37	24	50	8	7	27	M8	
	90	140	125	56	10	170	150	137	227	178	180	11	15	403	340	353	290	85	116	28/53	37	24	50	8	7	27	M8	
100		100	160	140	63	11	192	166	144	244	192	197	12	17	465	379	405	319	91	116	38	44	28	60	8	7	31	M10
112		112	190	140	70	12.5	220	175	160	272	222	225	15	19	487	396	427	336	92	116	46	48	28	60	8	7	31	M10
132S 132M	132	216	140	89	12	256	180	194	326	259	261	17	20	592	480	512	400	100	133	45	59	38	80	10	8	41	M12	
	132	216	178	89	12	256	218	194	326	259	261	17	20	612	500	532	420	120	133	45	59	38	80	10	8	41	M12	
160M	160	254	210	108	14	320	270	237	397	316	317	23	18	721	614	611	504	146	150	65	76	42	110	12	8	45	M16	
160L	160	254	254	108	14	320	310	237	397	316	317	23	18	763	658	653	548	168	150	65	76	42	110	12	8	45	M16	
160L <sup>4)</sup>	160	254	254	108	14	320	310	237	397	316	317	23	18	790	-	680	-	168	150	65	76	42	110	12	8	45	M16	

1) Clearance hole for screw

2) Maximum dimension

3) Centering holes in shaft extensions to DIN 332 part 2

4) Only for LR A4 AMBY - AMBZ series

L\*LB\* Only for AMS series

IEC	SMALL FLANGE B14							LARGE FLANGE B14							FLANGE B5				
	P	N	LA	M	T	S		P	N	LA	M	T	S	M	N	P	T	LA	S <sup>1)</sup>
63	90	60	8	75	2.5	M5		120	80	8	100	2.5	M6	115	95	140	3	8	M8
71	105	70	8	85	2.5	M6		140	95	8	115	3	M8	130	110	160	3.5	10	M8
80	120	80	9	100	3	M6		160	110	8.5	130	3.5	M8	165	130	200	3.5	10	M10
90	140	95	9	115	3	M8		160	110	9	130	3.5	M8	165	130	200	3.5	12	M10
100	160	110	10	130	3.5	M8		200	130	12	165	3.5	M10	215	180	250	4	14	M12
112	160	110	10	130	3.5	M8		200	130	12	165	3.5	M10	215	180	250	4	14	M12
132	200	130	30	165	3.5	M10		250	180	12	215	4	M12	265	230	300	4	14	M12
160	250	180	12	215	4	M12		300	230	12	265	5	M16	300	250	350	5	15	M16

1) Clearance hole for screw. Hole as standard for 132 to 160 frame size