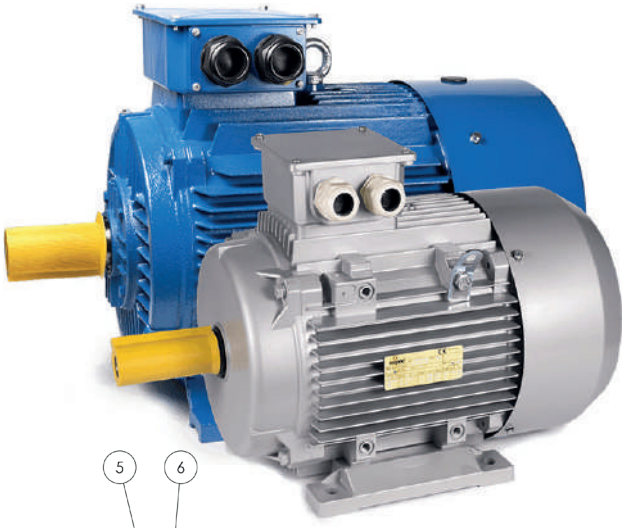
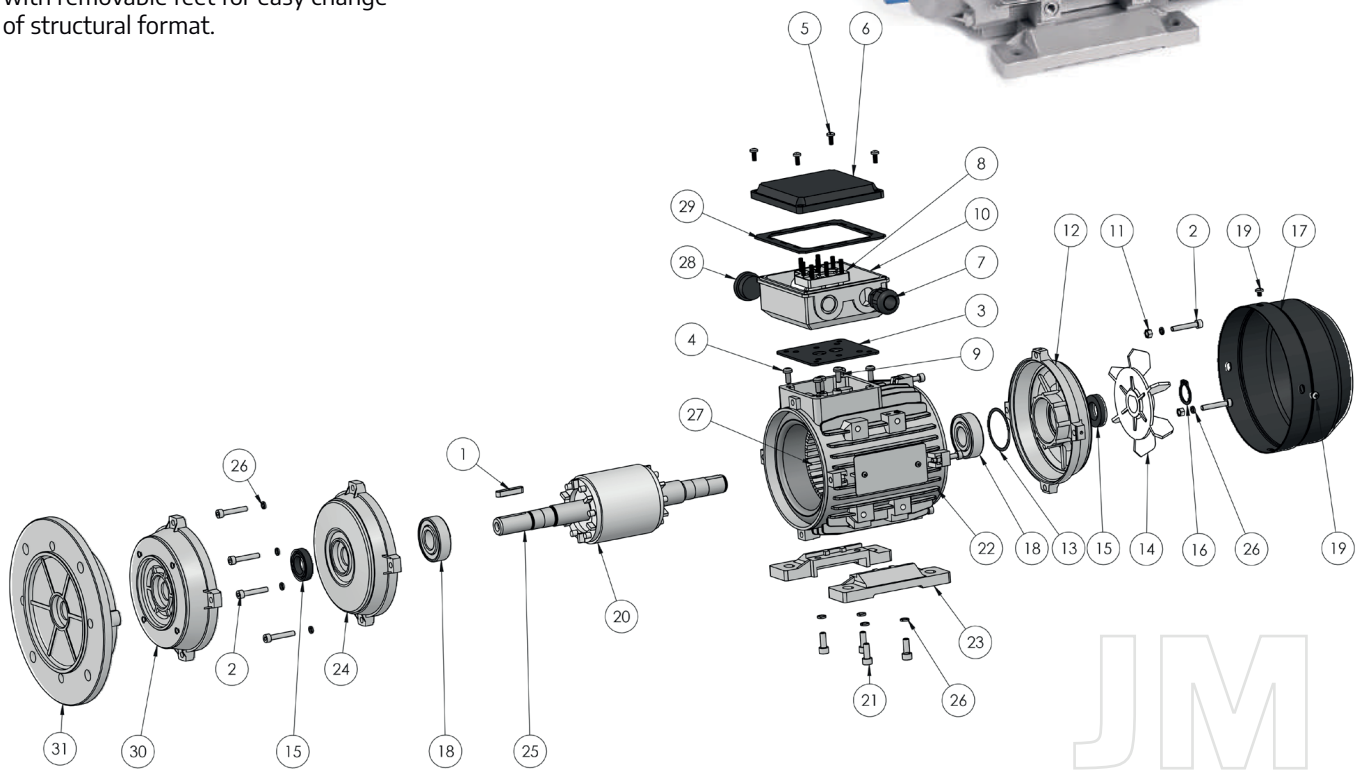
JM-GM
THREE-PHASE MOTORS
IE2-IE3

6 JM-GM THREE-PHASE MOTORS

6.1 COMPONENTS

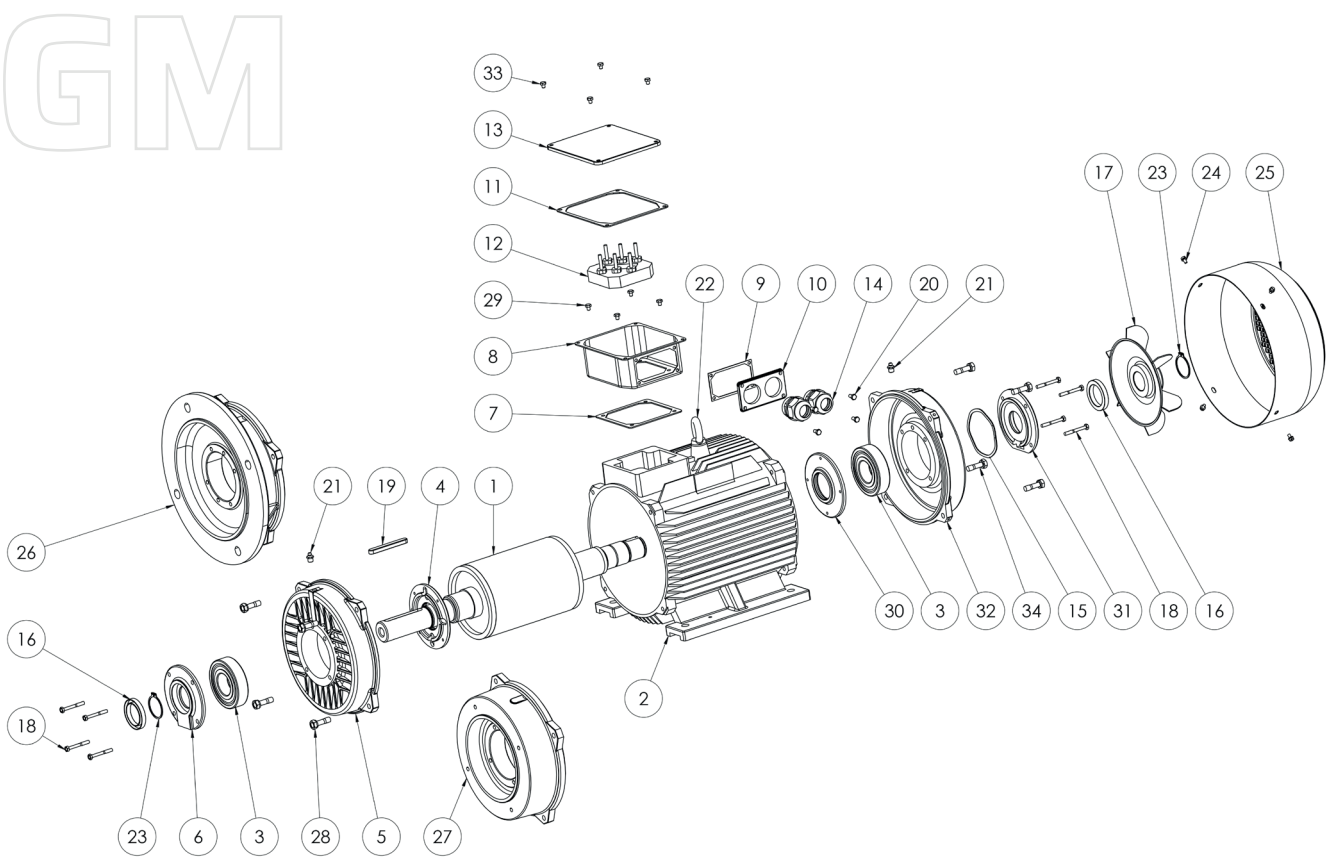


JM SERIES
JM Motors Series size 56 TO 160, in aluminium, with removable feet for easy change of structural format.



1) Key
2) Tie-rod
3) Terminal box gasket
4) Terminal box locking screw
5) Terminal board cover locking screw
6) Terminal board cover
7) Cable gland
8) Terminal board
9) Terminal board locking screw
10) Terminal box
11) Nut
12) Shield B3 side opposite control
13) Preload spring
14) Fan
15) Sealing ring
16) Safety flexible ring
17) Fan cover
18) Bearings
19) Fan cover locking screw
20) Rotor
21) Feet fastening screw for IMB3
22) Housing
23) Foot for IMB3
24) Shield on control side for IMB3
25) Shaft
26) Washer
27) Stator
28) Plug
29) Terminal box cover gasket
30) Flange IMB14
31) Flange IMB5

GM SERIES
GM series motors size 160 to 450, in cast iron,
with fused feet.



1) Shaft with rotor
2) Housing
3) Bearing
4) Control side bearing locking internal flange
5) Shield on control side
6) Control side bearing locking external flange
7) Terminal box gasket
8) Terminal box
9) Terminal box tab gasket
10) Terminal box tab
11) Terminal box cover gasket
12) Terminal board
13) Terminal box cover
14) Cable gland
15) Preload spring
16) Sealing ring
17) Fan
18) Bearing locking external flange fastening screw
19) Key
20) Terminal box tab screw
21) Greaser
22) Lifting eyebolts
23) Safety flexible ring
24) Locking screw
25) Fan cover
26) Flange IMB5
27) Flange IMB14 (size Gm 160 only)
28) Shield locking screw IMB3 on control side
29) Terminal box locking screw
30) Side opposite control bearing locking internal flange
31) Side opposite control bearing locking external flange
32) Shield on side opposite control IMB3
33) Terminal box cover locking screw
34) Shield locking screw IMB3 on side opposite control

• 6.2 ELECTRICAL CONNECTIONS

Single-speed three-phase motor windings can be connected star or delta.

The delta connection is obtained by connecting the end of a phase with the beginning of the next phase.
The phase current I_{ph} and the phase voltage U_{ph} are respectively:
$I_{ph} = I_n / \sqrt{3}$; $U_{ph} = U_n$

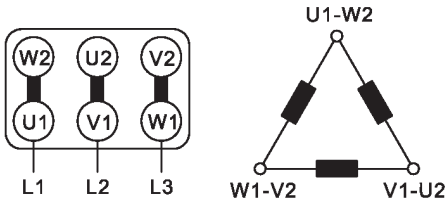
Where I_n is the line current and U_n the voltage relating to the delta connection.

The star connection is obtained by connecting W2, U2 and V2 and powering U1, V1, W1.
The phase current I_{ph} and the phase voltage U_{ph} are respectively:
$I_{ph} = I_n$; $U_{ph} = Un / \sqrt{3}$

Where I_n e U_n refers to the star connection.

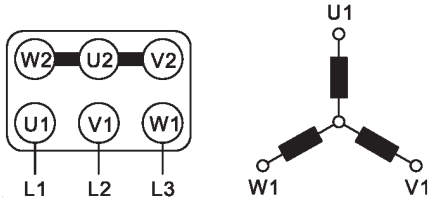
■ **MINIMUM VOLTAGE**
DELTA CONNECTION

Δ



■ **MAXIMUM VOLTAGE**
STAR CONNECTION

Y



Starting of the star-triangle motor allows reduced inrush current by reducing the starting torque, and can therefore only be implemented if the obtained starting torque is higher than the resistant torque.

The inrush current of an asynchronous motor is directly proportional to the square of the voltage, therefore the motors whose nominal delta voltage corresponds to the mains voltage can be started with the star-triangle method

THREE-PHASE ASYNCHRONOUS
IE3 JM-GM MOTORS

Size	JM
80 ~ 160	

Size	GM
160 ~ 450	

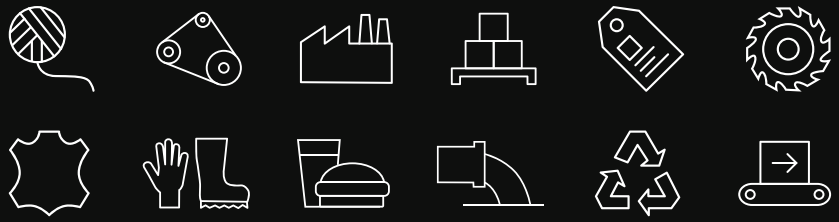
Power	JM
0.75 ~ 18.5 kW	

Power	GM
11 ~ 1000 kW	

Polarity	JM
2, 4, 6, 8 poles	

Polarity	GM
2, 4, 6, 8 poles	

Sectors of use



• 6.7 JM IE3 ELECTRICAL DATA

JM 2 POLES IE3 SERIES

Tab. 6.7.1

IE3	JM Motor	P_N	n_N	T_N	$I_{N\,(400\,V)}$	COSφ	η			$\frac{I_s}{I_N}$	$\frac{T_s}{T_N}$	$\frac{T_{max}}{T_N}$	J	Weight
		kW	min⁻¹	Nm	A	100%	100%	75%	50%				Kg m²	Kg
Δ/Y 230/400V 50Hz	80 a	0,75	2880	2,49	1,62	0,83	80,7	80,7	79,1	6,8	2,3	2,3	0,0013	10
	80 b	1,1	2880	3,65	2,31	0,83	82,7	82,7	81,0	7,3	2,3	2,3	0,0016	11
	80 c*	1,5	2895	4,95	3,10	0,83	84,2	84,2	82,5	7,5	2,3	2,3	0,0017	13
	90 S	1,5	2895	4,95	3,10	0,83	84,2	84,2	82,5	7,6	2,3	2,3	0,0018	14
	90 La	2,2	2895	7,26	4,35	0,85	85,9	85,9	84,2	7,8	2,3	2,3	0,0024	18
	90 Lb*	3	2895	9,90	5,64	0,88	87,1	87,1	85,4	8,1	2,3	2,3	0,0026	19
	100 L	2,2	2895	7,26	4,35	0,85	85,9	86,2	85,4	7,8	2,4	2,7	0,0032	22,5
	100 La	3	2895	9,90	5,65	0,88	87,1	87,1	85,4	8,1	2,3	2,3	0,0035	24
	100 Lb	4	2900	13,2	7,45	0,88	88,1	89,7	89,8	8,0	2,6	3,1	0,0040	26
	112 Ma	4	2900	13,2	7,45	0,88	88,1	88,1	86,3	8,3	2,3	2,3	0,0080	26
	112 Mb*	5,5	2930	17,9	10,1	0,88	89,2	89,2	87,4	8	2,2	2,3	0,0092	36
	112 Mc*	7,5	2930	24,4	13,7	0,88	90,1	90,1	88,3	7,8	2,2	2,3	0,0112	42
Δ 400V 50Hz	132 Sa	5,5	2930	17,9	10,1	0,88	89,2	89,2	87,4	8,0	2,2	2,3	0,0180	43
	132 Sb	7,5	2930	24,4	13,7	0,88	90,1	90,1	88,3	7,8	2,2	2,3	0,0240	49
	132 Ma	9,25	2940	30,0	16,8	0,88	90,1	90,1	88,3	7,8	2,2	2,3	0,0250	57
	132 Mb*	11	2945	35,7	19,3	0,90	91,2	91,2	89,4	7,9	2,2	2,3	0,0270	59
	132 Mc*	15	2945	48,6	25,9	0,91	91,9	91,9	90,1	8,0	2,2	2,3	0,0380	73
	160 Ma	11	2945	35,7	19,3	0,90	91,2	91,2	89,4	7,9	2,2	2,3	0,0430	85
	160Mb	15	2945	48,6	25,9	0,91	91,9	91,9	90,1	8,0	2,2	2,3	0,0480	98
	160 La	18,5	2940	60,1	32,5	0,89	92,4	92,4	90,6	8,1	2,2	2,3	0,0580	108
	160 Lb*	22	2955	71,1	38,1	0,90	92,70	92,70	90,80	8,2	2,2	2,3	0,0930	118

JM 4 POLES IE3 SERIES

Tab. 6.7.2

IE3	JM Motor	P_N	n_N	T_N	$I_{N\,(400\,V)}$	COSφ	η			$\frac{I_s}{I_N}$	$\frac{T_s}{T_N}$	$\frac{T_{max}}{T_N}$	J	Weight
		kW	min⁻¹	Nm	A	100%	100%	75%	50%				Kg m²	Kg
Δ/Y 230/400V 50Hz	80 b	0,75	1420	5,04	1,77	0,74	82,5	82,5	80,9	6,3	2,3	2,3	0,0022	12
	80 c*	1,1	1445	7,27	2,55	0,74	84,1	84,1	82,4	6,5	2,3	2,3	0,0023	18
	90 S	1,1	1435	7,32	2,52	0,75	84,1	84,1	82,4	6,5	2,3	2,3	0,0025	16
	90 La	1,5	1435	9,98	3,38	0,75	85,3	85,3	83,6	6,6	2,3	2,3	0,0034	20
	90 Lb*	1,85	1435	12,3	3,95	0,78	86,7	86,7	85,0	6,7	2,3	2,3	0,0036	20,5
	90 Lc*	2,2	1435	14,6	4,68	0,78	86,7	86,7	85,0	6,9	2,3	2,3	0,0038	21
	100 La	2,2	1445	14,5	4,52	0,81	86,7	86,7	85,0	6,9	2,3	2,3	0,0067	26
	100 Lb	3	1445	19,8	6,02	0,82	87,7	87,7	85,9	7,5	2,3	2,3	0,0081	31
	112 Ma	4	1450	26,3	7,95	0,82	88,6	88,6	86,8	7,6	2,3	2,3	0,0130	38
	112 Mc*	5,5	1460	36,0	11,1	0,80	89,6	89,6	87,8	7,7	2,0	2,3	0,0150	41
Δ 400V 50Hz	132 Sa	5,5	1465	35,9	10,8	0,82	89,6	89,6	87,8	7,7	2,0	2,3	0,0250	50
	132 Ma	7,5	1465	48,9	14,4	0,83	90,4	90,4	88,6	7,5	2,0	2,3	0,0350	60
	132 Mb	9,25	1460	60,5	18,0	0,82	90,4	90,4	88,6	7,5	2,0	2,3	0,0420	62
	132 Mc*	11	1465	71,7	21,2	0,82	91,4	91,4	89,6	7,4	2,2	2,3	0,0510	73
	160 Ma	11	1475	71,2	20,4	0,85	91,4	91,4	89,6	7,4	2,2	2,3	0,0755	93
	160 La	15	1475	97,1	27,3	0,86	92,1	92,1	90,3	7,5	2,2	2,3	0,0925	108

JM 6 POLES IE3 SERIES

Tab. 6.7.3

IE3	JM Motor	P_N	n_N	T_N	$I_{N\,(400\,V)}$	COSφ	η			$\frac{I_S}{I_N}$	$\frac{T_s}{T_N}$	$\frac{T_{max}}{T_N}$	J	Weight
		kW	min^{-1}	Nm	A	100%	100%	75%	50%				Kg m^2	Kg
Δ/Y 230/400V 50Hz	**90 S**	**0,75**	935	7,66	2,25	0,61	78,9	78,9	77,3	5,8	2,1	2,1	0,0033	15
	90 La	**1,1**	945	11,1	2,84	0,69	81,0	81,0	79,4	5,9	2,1	2,1	0,0040	19
	100 La	**1,5**	945	15,2	3,80	0,69	82,5	82,5	80,9	6,0	2,1	2,1	0,0075	25
	112 Ma	**2,2**	955	22,0	5,31	0,71	84,3	84,3	82,6	6,0	2,1	2,1	0,0170	31
Δ 400V 50Hz	**132 Sa**	**3**	965	29,7	7,12	0,71	85,6	85,6	83,9	6,2	2,0	2,1	0,0310	42
	132 Ma	**4**	965	39,6	9,37	0,71	86,8	86,8	85,1	6,8	2,0	2,1	0,0380	50
	132 Mb	**5,5**	965	54,4	12,0	0,75	88,0	88,0	86,2	7,1	2,0	2,1	0,0480	61
	160 Ma	**7,5**	970	73,8	15,8	0,77	89,1	89,1	87,3	6,7	2,1	2,1	0,0850	84
	160 La	**11**	970	108,3	22,3	0,79	90,3	90,3	88,5	6,9	2,1	2,1	0,1200	116

JM 8 POLES IE3 SERIES

Tab. 6.7.4

IE3	JM Motor	P_N	n_N	T_N	$I_{N\,(400\,V)}$	COSφ	η			$\frac{I_S}{I_N}$	$\frac{T_s}{T_N}$	$\frac{T_{max}}{T_N}$	J	Weight
		kW	min^{-1}	Nm	A	100%	100%	75%	50%				Kg m^2	Kg
Δ / Y 230 / 400V 50 Hz	**100 La**	**0,75**	710	10,1	2,29	0,63	75,0	75,3	72,0	3,5	1,7	2,1	0,00635	17,5
	100 Lb	**1,1**	710	14,8	3,19	0,64	77,7	78,0	74,5	3,5	1,7	2,1	0,00834	19,7
	112 Ma	**1,5**	710	20,2	4,18	0,65	79,7	80,1	76,6	4,2	1,8	2,1	0,01395	25,6
Δ 400V 50Hz	**132 Sa**	**2,2**	720	29,2	5,88	0,66	81,9	82,3	77,8	5,5	2,0	2,0	0,03213	35,5
	132 Ma	**3**	720	39,8	7,74	0,67	83,5	83,8	79,8	5,5	2,0	2,0	0,04060	45
	160 Ma	**4**	720	53,0	10,0	0,68	84,8	85,2	81,2	6,0	1,9	2,1	0,07104	60
	160 Mb	**5,5**	720	72,9	13,5	0,68	86,2	86,6	81,8	6,0	2,0	2,2	0,08623	72
	160 La	**7,5**	720	99,5	18,0	0,69	87,3	87,7	83,2	6,0	1,9	2,2	0,11308	92

* Power or power/size not standardized

• 6.8 GM IE3 ELECTRICAL DATA

GM 2 POLES IE3 SERIES

Tab. 6.8.1

IE3	GM Motor	P_N	n_N	T_N	$I_{N\,(400\,V)}$	COSφ	η			$\frac{I_s}{I_N}$	$\frac{T_s}{T_N}$	$\frac{T_{max}}{T_N}$	J	Weight
		kW	min^{-1}	Nm	A	100%	100%	75%	50%				Kg m^2	Kg
Δ 400V 50Hz	**160 Ma**	**11**	2945	35,67	19,3	0,90	91,2	91,2	89,4	7,9	2,2	2,3	0,0430	116
	160 Mb	**15**	2945	48,64	25,9	0,91	91,9	91,9	90,1	8,0	2,2	2,3	0,0480	124
	160 La	**18,5**	2940	60,09	32,5	0,89	92,4	92,4	90,6	8,1	2,2	2,3	0,0580	138
	180 M	**22**	2955	71,09	38,1	0,90	92,7	92,7	90,8	8,2	2,2	2,3	0,0980	182
	180 L	**30**	2960	96,78	52,1	0,89	93,3	93,3	92,4	7,8	2,6	3,0	0,1200	233
	200 La	**30**	2960	96,78	52,1	0,89	93,3	93,3	91,4	7,5	2,2	2,3	0,1400	250
	200 Lb	**37**	2960	119,37	62,6	0,91	93,7	93,7	91,8	7,5	2,2	2,3	0,1700	259
	225 M	**45**	2965	144,93	78,5	0,88	94,0	94,0	92,1	7,6	2,2	2,3	0,2800	324
	250 M	**55**	2970	176,84	94,6	0,89	94,3	94,3	92,4	7,6	2,2	2,3	0,4000	426
	280 S	**75**	2975	240,74	127	0,90	94,7	94,7	92,8	6,9	2,0	2,3	0,6500	533
	280 M	**90**	2975	288,89	154	0,89	95,0	95,0	93,1	7,0	2,0	2,3	0,7500	612
	280 Mb	**110**	2975	353,08	185	0,90	95,2	95,2	93,3	7,1	2,0	2,2	0,9149	660
	315 S	**110**	2975	353,08	185	0,90	95,2	95,2	93,3	7,1	2,0	2,2	1,4500	905
	315 M	**132**	2975	423,70	222	0,90	95,4	95,4	93,5	7,1	2,0	2,2	2,1000	995
	315 L	**160**	2980	512,71	268	0,90	95,6	95,6	93,7	7,1	2,0	2,2	2,4000	1119
	315 Lb	**200**	2980	640,89	331	0,91	95,8	95,8	93,9	7,1	2,0	2,2	2,6000	1150
	355 M	**250**	2980	801,12	409	0,92	95,8	95,8	93,9	7,1	2,0	2,2	3,1000	1948
	355 Mb	**280**	2980	897,25	459	0,92	95,8	95,8	93,9	7,1	2,0	2,2	3,4000	2150
	355 L	**315**	2980	1009,41	516	0,92	95,8	95,8	93,9	7,1	2,0	2,2	3,6000	2356
	355 Lc	**355**	2980	1137,58	583	0,92	95,8	95,8	93,9	6,9	2,0	2,5	13,2000	2650
	355 Xa	**355**	2980	1137,67	581	0,92	95,8	95,6	93,8	5,7	1,7	2,4	5,4500	2000
	355 Xb	**400**	2980	1281,88	655	0,92	95,8	95,6	93,8	7,3	2,3	3,0	6,4300	2135
	355 Xc	**450**	2980	1442,11	737	0,92	95,8	95,6	93,8	6,0	1,9	2,5	6,9900	2215
	400 Ma	**400**	2985	1279,73	670	0,90	95,8	95,5	93,7	4,9	1,5	2,0	8,0100	2630
	400 Mb	**450**	2985	1439,70	753	0,90	95,8	95,5	93,7	7,0	2,2	2,8	8,4300	2756
	400 La	**500**	2985	1599,66	837	0,90	95,8	95,5	93,7	5,6	1,8	2,3	9,4900	2886
	400 Lb	**560**	2985	1791,62	938	0,90	95,8	95,5	93,7	4,6	1,5	2,0	10,3300	2997

GM 4 POLES IE3 SERIES

Tab. 6.8.2

IE3	GM Motor	P_N	n_N	T_N	$I_{N\,(400\,V)}$	COSφ	η			$\frac{I_S}{I_N}$	$\frac{T_s}{T_N}$	$\frac{T_{max}}{T_N}$	J	Weight
		kW	min^{-1}	Nm	A	100%	100%	75%	50%				Kg m^2	Kg
Δ 400V 50Hz	**160 Ma**	**11**	1475	71,22	20,4	0,85	91,4	91,4	89,6	7,4	2,2	2,3	0,0750	123
	160 La	**15**	1475	97,11	27,3	0,86	92,1	92,1	90,3	7,5	2,2	2,3	0,0920	141
	180 M	**18,5**	1470	120,18	34,3	0,84	92,6	92,6	90,7	7,5	2,2	2,3	0,1420	175
	180 L	**22**	1470	142,91	40,2	0,85	93,0	93,0	91,1	7,7	2,2	2,3	0,1600	209
	180 Lb	**30**	1475	194,22	53,8	0,86	93,6	93,6	91,7	7,8	2,0	2,3	0,1880	215
	200 L	**22**	1470	142,91	39,7	0,86	93,0	93,0	91,1	7,8	2,0	2,3	0,1900	245
	200 La	**30**	1475	194,22	53,8	0,86	93,6	93,6	91,7	7,8	2,2	2,3	0,2650	275
	225 S	**37**	1485	237,93	66,1	0,86	93,9	93,9	92,0	7,2	2,2	2,3	0,4100	324
	225 M	**45**	1485	289,37	79,3	0,87	94,2	94,2	92,3	7,3	2,2	2,3	0,4730	359
	250 Mb	**55**	1485	353,68	96,5	0,87	94,6	94,6	92,7	7,7	2,3	2,6	0,5030	370
	250 M	**55**	1485	353,68	96,5	0,87	94,6	94,6	92,7	7,4	2,2	2,3	0,6700	433
	280 S	**75**	1485	482,29	129	0,88	95,0	95,0	93,1	7,4	2,2	2,3	1,1300	568
	280 M	**90**	1485	578,75	157	0,87	95,2	95,2	93,3	6,7	2,2	2,3	1,4700	649
	315 S	**110**	1485	707,36	189	0,88	95,4	95,4	93,5	6,9	2,2	2,2	3,1500	935
	315 M	**132**	1485	848,83	226	0,88	95,6	95,6	93,7	6,9	2,2	2,2	3,6500	1020
	315 La	**160**	1485	1028,88	274	0,88	95,8	95,8	93,9	6,9	2,2	2,2	4,1500	1090
	315 Lb	**200**	1490	1281,78	342	0,88	96,0	96,0	94,1	6,9	2,2	2,2	4,7500	1233
	355 M	**250**	1490	1602,23	427	0,88	96,0	96,0	94,1	6,9	2,2	2,2	6,5500	1744
	355 Mb	**280**	1490	1794,50	478	0,88	96,0	96,0	94,1	6,9	2,2	2,2	7,4000	1850
	355 L	**315**	1490	2018,81	538	0,88	96,0	96,0	94,1	6,9	2,2	2,2	8,2500	1950
	355 Xa	**355**	1490	2275,17	602	0,89	96,0	96,0	94,1	6,7	2,2	2,5	9,9500	2200
	355 Xb	**400**	1488	2567,20	668	0,90	96,0	96,1	95,2	7,1	2,1	2,9	11,94	2256
	355 Xc	**450**	1489	2886,17	752	0,90	96,0	96,1	95,2	7,5	2,3	3,0	13,62	2400
	400 Ma	**355**	1492	2272,12	594	0,90	96,0	96,0	94,0	6,4	1,9	2,4	14,5000	2650
	400 Mb	**400**	1489	2565,48	668	0,90	96,0	96,1	95,2	7,2	1,8	3,1	14,6500	2771
	400 Mc	**450**	1489	2886,17	752	0,90	96,0	96,1	95,2	7,5	2,0	3,1	16,6400	2891
	400 La	**500**	1489	3206,85	835	0,90	96,0	96,1	95,2	8,0	2,1	3,1	19,0100	3002
	400 Lb	**560**	1490	3589,26	936	0,90	96,0	96,1	95,2	8,3	2,2	3,2	22,1800	3213
	400 Lc	**630**	1490	4037,92	1052	0,90	96,0	96,1	95,2	7,4	2,0	3,0	23,7600	3324
	450 Ma	**560**	1490	3589,26	935	0,90	96,1	96,2	95,3	6,4	1,8	2,5	19,2200	3498
	450 Mb	**630**	1490	4037,92	1051	0,90	96,1	96,2	95,3	6,2	1,7	2,4	20,8700	3697
	450 La	**710**	1490	4550,67	1185	0,90	96,1	96,2	95,3	5,0	1,5	2,1	22,3200	3798
	450 Lb	**800**	1490	5127,52	1335	0,90	96,1	96,2	95,3	7,4	2,2	2,8	29,1200	4267
	450 Lc	**900**	1490	5768,46	1502	0,90	96,1	96,2	95,3	6,0	1,7	2,3	32,0300	4475
	450 Ld	**1000**	1490	6409,40	1669	0,90	96,1	96,2	95,3	5,0	1,5	2,1	34,4500	4642

GM 6 POLES IE3 SERIES

Tab. 6.8.3

IE3	GM Moto	P_N	n_N	T_N	$I_{N\,(400\,V)}$	COSφ	η			$\frac{I_s}{I_N}$	$\frac{T_s}{T_N}$	$\frac{T_{max}}{T_N}$	J	Weight
		kW	min^{-1}	Nm	A	100%	100%	75%	50%				Kg m^2	Kg
Δ 400V 50Hz	**160 Ma**	**7,5**	970	73,83	15,8	0,77	89,1	89,1	87,3	6,7	2,1	2,1	0,0950	118
	160 La	**11**	970	108,29	22,3	0,79	90,3	90,3	88,5	6,9	2,1	2,1	0,1200	138
	180 L	**15**	980	146,16	29,3	0,81	91,2	91,2	89,4	7,2	2,0	2,1	0,2100	193
	180 Lb	**18,5**	980	180,27	35,9	0,81	91,7	91,7	89,9	7,2	2,1	2,1	0,2400	205
	200 La	**18,5**	980	180,27	35,9	0,81	91,7	91,7	89,9	7,2	2,1	2,1	0,3200	230
	200 Lb	**22**	980	214,37	41,5	0,83	92,2	92,2	90,4	7,3	2,1	2,1	0,3650	243
	225 M	**30**	980	292,33	55,5	0,84	92,9	92,9	91,0	7,1	2,0	2,1	0,5500	302
	250 M	**37**	985	358,70	68,1	0,84	93,3	93,3	91,4	7,1	2,1	2,1	0,8500	390
	280 S	**45**	985	436,26	81,6	0,85	93,7	93,7	91,8	7,2	2,1	2,0	1,4000	505
	280 M	**55**	985	533,21	99,3	0,85	94,1	94,1	92,2	7,2	2,1	2,0	1,7000	570
	315 S	**75**	985	727,10	135	0,85	94,6	94,6	92,7	6,7	2,0	2,0	4,1500	815
	315 M	**90**	985	872,52	161	0,85	94,9	94,9	93,0	6,7	2,0	2,0	4,8000	955
	315 La	**110**	985	1066,42	194	0,86	95,1	95,1	93,2	6,7	2,0	2,0	5,4800	1015
	315 Lb	**132**	985	1279,70	232	0,86	95,4	95,4	93,5	6,7	2,0	2,0	6,1500	1120
	315 Lc	**160**	990	1543,32	281	0,86	95,6	95,6	93,7	6,7	2,0	2,0	6,4000	1250
	355 Ma	**160**	990	1543,32	281	0,86	95,6	95,6	93,7	6,7	2,0	2,0	6,5500	1591
	355 Mb	**200**	990	1929,15	342	0,88	95,8	95,8	93,9	6,7	2,0	2,0	6,5500	1720
	355 L	**250**	990	2411,44	428	0,88	95,8	95,8	93,9	6,7	2,0	2,0	8,2500	1870
	355 Xa	**315**	994	3026,19	546	0,87	95,8	95,8	93,9	6,3	2,2	2,3	14,0000	2350
	355 Xb	**355**	994	3410,46	615	0,87	95,8	95,8	93,9	6,3	2,2	2,3	14,9000	2520
	355 Xc	**400**	992	3850,81	701	0,86	95,8	95,6	94,6	6,3	1,9	2,4	20,4800	2720
	400 Ma	**315**	994	3026,19	550	0,86	95,8	95,8	93,8	6,2	2,1	2,2	18,9000	2905
	400 Mb	**355**	994	3410,46	618	0,87	95,8	95,8	93,8	6,2	2,1	2,2	20,0000	2940
	400 La	**400**	994	3843,06	709	0,85	95,8	95,6	94,6	7,3	2,4	3,1	23,3200	2991
	400 Lb	**450**	994	4323,44	798	0,85	95,8	95,6	94,6	6,2	2,0	2,6	24,7200	3071
	400 Lc	**500**	994	4803,82	886	0,85	95,8	95,6	94,6	7,2	2,4	3,0	27,9800	3256
	400 Ld	**560**	994	5380,28	993	0,85	95,8	95,6	94,6	7,2	2,4	3,0	31,2400	3438
	450 Ma	**500**	994	4803,82	865	0,87	95,9	95,7	94,7	6,6	2,2	2,4	35,2200	3890
	450 Mb	**560**	994	5380,28	969	0,87	95,9	95,7	94,7	6,2	2,0	2,2	40,3600	4066
	450 La	**630**	994	6052,82	1090	0,87	95,9	95,7	94,7	6,2	2,0	2,2	44,0300	4234
	450 Lb	**710**	994	6821,43	1228	0,87	95,9	95,7	94,7	6,3	2,1	2,3	48,4300	4434
	450 Lc	**800**	994	7686,12	1384	0,87	95,9	95,7	94,7	6,1	2,0	2,2	56,5000	4797

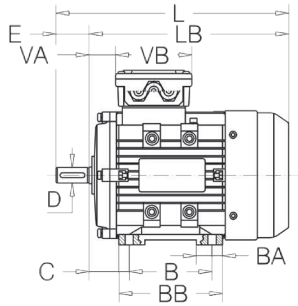
GM 8 POLES IE3 SERIES

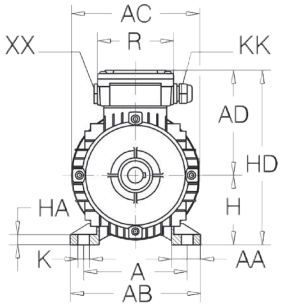
Tab. 6.8.4

IE3	GM Motor	P_N	n_N	T_N	$I_{N\,(400\,V)}$	COSφ	η			$\frac{I_s}{I_N}$	$\frac{T_s}{T_N}$	$\frac{T_{max}}{T_N}$	J	Weight
		kW	min^{-1}	Nm	A	100%	100%	75%	50%				$Kg\,m^2$	Kg
Δ 400V 50Hz	**160 Ma**	**4**	720	53,0	9,3	0,73	84,8	84,8	82,1	5,4	2,3	2,8	0,0766	102
	160 Mb	**5,5**	720	72,9	12,4	0,74	86,2	85,3	83,5	5,6	2,4	2,8	0,1052	113
	160 La	**7,5**	720	99,5	16,5	0,75	87,3	86,4	84,1	5,5	2,3	2,6	0,1435	132
	180 L	**11**	730	144	23,9	0,75	88,6	87,7	85,4	6,2	2,4	2,8	0,2493	171
	200 La	**15**	730	196	31,8	0,76	89,6	88,9	86,6	5,8	2,1	2,5	0,3824	217
	225 S	**18,5**	740	239	39,0	0,76	90,1	89,0	86,9	6,8	2,2	2,7	0,5828	259
	225 M	**22**	740	284	44,9	0,78	90,6	89,5	87,7	6,5	2,0	2,5	0,6661	278
	250 M	**30**	740	387	60,0	0,79	91,3	90,4	88,6	6,0	2,4	2,8	1,0819	373
	280 S	**37**	740	478	73,6	0,79	91,8	90,9	89,4	5,9	2,3	2,6	1,8803	484
	280 M	**45**	740	581	89,2	0,79	92,2	91,4	90,1	5,9	2,3	2,6	2,2360	536
	315 S	**55**	740	710	106	0,81	92,5	91,6	90,4	5,6	2,0	2,3	4,2151	721
	315 M	**75**	740	968	144	0,81	93,1	92,0	90,9	5,5	2,0	2,2	5,3744	865
	315 L	**90**	740	1161	170	0,82	93,4	92,3	91,3	6,0	2,3	2,4	7,1658	972
	315 Lb	**110**	740	1420	207	0,82	93,7	92,8	91,7	5,5	2,0	2,2	8,8519	1077
	355 M	**132**	740	1703	247	0,82	94,0	93,1	92,0	5,9	2,3	2,3	13,575	1518
	355 Mb	**160**	740	2065	299	0,82	94,3	93,6	92,5	5,3	2,0	2,1	16,076	1630
	355 La	**200**	740	2581	368	0,83	94,6	94,0	93,0	5,3	2,0	2,0	20,363	1819
	355 Xa	**132**	740	1703	247	0,82	94,0	93,1	92,0	5,9	2,3	2,3	13,575	1518
	355 Xb	**160**	740	2065	299	0,82	94,3	93,6	92,5	5,3	2,0	2,1	16,076	1630
	355 Xc	**200**	740	2581	368	0,83	94,6	94,0	93,0	5,3	2,0	2,0	20,363	1819
	400 Ma	**250**	744	3209	495	0,77	94,6	94,3	93,4	5,3	1,8	2,1	26,845	2900
	400 Mb	**280**	744	3594	555	0,77	94,6	94,3	93,4	5,5	1,9	2,1	28,300	2995
	400 La	**315**	744	4043	624	0,77	94,6	94,3	93,4	5,8	1,9	2,1	30,550	3102
	400 Lb	**355**	744	4557	703	0,77	94,6	94,3	93,4	6,8	1,8	2,6	33,278	3230
	400 Lc	**400**	744	5134	782	0,78	94,6	94,3	93,4	7,2	2,0	3,7	37,100	3410
	450 La	**400**	744	5134	735	0,83	94,7	94,4	93,5	4,9	1,9	2,4	38,160	3850
	450 Lb	**450**	744	5776	826	0,83	94,7	94,4	93,5	4,6	1,6	1,9	40,360	4046
	450 Lc	**500**	744	6418	918	0,83	94,7	94,4	93,5	4,5	1,6	1,8	44,030	4215
	450 Ld	**560**	744	7188	1028	0,83	94,7	94,4	93,5	4,5	1,6	1,8	48,430	4412
	450 Le	**630**	744	8087	1157	0,83	94,7	94,4	93,5	4,2	1,5	1,7	52,830	4615

• 6.9 JM IE3 DIMENSIONAL DATA

B3





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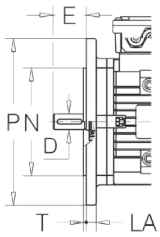

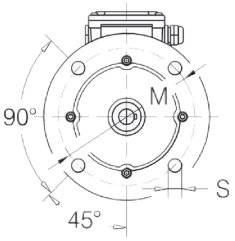

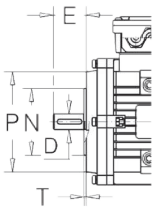

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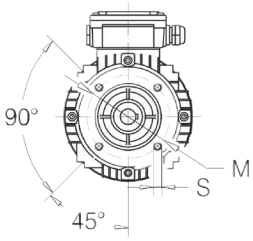
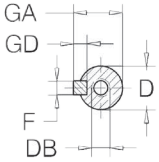
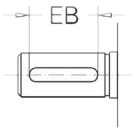






Shaft end

JM IE3 SERIES **Tab. 6.9.1**

JM Motor			Main Overall Dimension						Feet									Flange						
			AC	AD	H	HD	LB	L	A	B	C	AB	BB	AA	BA	HA	K	IM	M	NJ6	P	LA	T	S
80		**2-4**	157	135	80	215	255	295	125	100	50	160	130	35	35	11	10x13	**B5**	165	130	200	10	3,5	N°4 12
																		B14	100	80	120	--	3	N°4 M6
90	**S L**	**2-4-6**	174	143	90	233	285	335	140	100/125	56	175	155	35	33	12	10x13	**B5**	165	130	200	12	3,5	N°4 12
							315	365		125								**B14**	115	95	140	--	3	N°4 M8
100	**L**	**2-4-6-8**	198	153	100	253	340	400	160	140	63	198	176	50	42	15	12x16	**B5**	215	180	250	13	4	N°4 15
																		B14	130	110	160	--	3,5	N°4 M8
112	**M**	**2-4-6-8**	220	174	112	286	375	435	190	140	70	220	180	55	42	15	12x15	**B5**	215	180	250	14	4	N°4 15
																		B14	130	110	160	--	3,5	N°4 M8
132	**S M**	**2-4-6-8**	258	193	132	325	420	500	216	140	89	252	224	58	73	15	12x15	**B5**	265	230	300	14	4	N°4 15
							445	525		178								**B14**	165	130	200	--	3,5	N°4 M10
160	**M L**	**2-4-6-8**	314	235	160	395	530	640	254	210	108	290	293	54	90	17	15x20	**B5**	300	250	350	15	5	N°4 19
										254								**B14**	215	180	250	--	4	N°4 M12

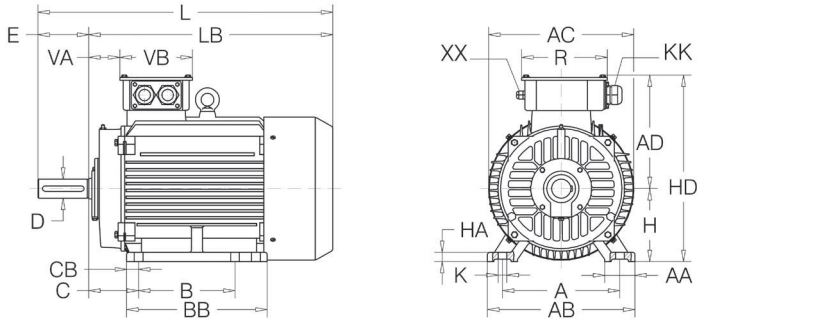
JM IE3 SERIES

Tab. 6.9.2

JM Motor			Shaft - End							Shaft - Seals						Terminal - Box					
							Key			Flange-End			Drive End DE Non drive end NDE.			Terrm.	Cable gland				
			D	DB	E	GA	F	GD	EB	Øi	Øe	H	Øi	Øe	H	N°-Ø	N°-KK	N°-XX	VA	VB	R
80		**2-4**	19 j6	M6	40	21,5	6	6	32	20	35	7	20	35	7	6-M4	1- M20X1,5	1-plug	27,5	105	105
90	**S**	**2-4-6**	24 j6	M8	50	27	8	7	40	25	37	7	25	37	7	6-M4	1- M25X1,5	1-plug	32	105	105
	L																				
100	**L**	**2-4-6-8**	28 j6	M10	60	31	8	7	50	30	42	7	30	42	7	6-M5	1-M25X1.5	1-plug	27	105	105
112	**M**	**2-4-6-8**	28 j6	M10	60	31	8	7	50	30	44	7	30	44	7	6-M5	2-M25X1.5		32	112	119
132	**S**	**2-4-6-8**	38 k6	M12	80	41	10	8	70	40	58	8	40	58	8	6-M5	2-M32X1.5		37	112	119
	M																				
160	**M L**	**2-4-6-8**	42 k6	M16	110	45	12	8	90	45	65	8	45	65	8	6-M6	2-M40X1.5		65	146	146

• 6.10 GM 2-4-6-8 POLES IE3 DIMENSIONAL DATA

B3



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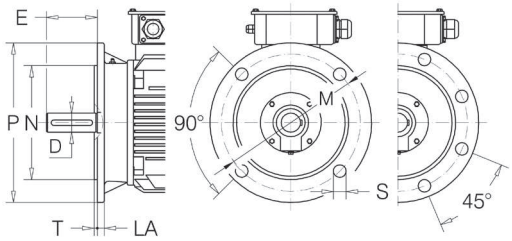

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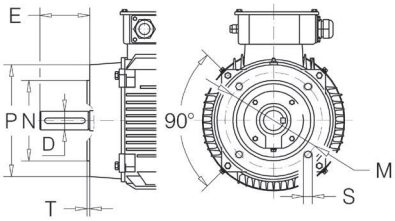

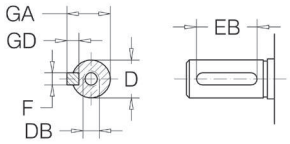

Shaft end

GM IE3 SERIES

Tab. 6.10.1

GM Motor			Main Overall Dimension						Feet									Flange						
			AC	AD	H	HD	LB	L	A	B	C	AB	BB	AA	CB	HA	K	IM	M	NJ6	P	LA	T	S
160	M	2-4-6-8	315	247	160	407	548	658	254	210	108	314	302	65	24	19	14,5	B5	300	250	350	15	5	N°4 18,5
	L									254								B14	215	180	250		4	N°4 M12
180	M L	2-4 4-6-8	357	268	180	448	611	721	279	241 279	121	345	320	68	20,5	22	14,5	B5	300	250	350	15	5	N°4 18,5
200	L	2-4-6-8	398	307	200	507	671	781	318	305	133	388	353	78	24	25	18,5	B5	350	300	400	17	5	N°4 18,5
225	S	4-8	447	328	225	553	691	831	356	286	149	431	348	75	31	28	18,5	B5	400	350	450	19	5	N° 8 18,5
225	M	2 4-6-8	447	328	225	553	716	826 856	356	311	149	431	373	75	31	28	18,5	B5	400	350	450	19	5	N° 8 18,5
250	M	2-4-6-8	486	367	250	617	797	937	406	349	168	484	445	100	49	33	24	B5	500	450	550	22	5	N° 8 18,5
280	S	2 4-6-8	548	396	280	676	828 847	968 987	457	368	190	546	485	105	69	35	24	B5	500	450	550	22	5	N° 8 18,5
280	M	2 4-6-8	548	396	280	676	879 898	1019 1038	457	419	190	546	536	105	69	35	24	B5	500	450	550	22	5	N° 8 18,5
315	S	2 4-6-8	623	481	315	796	1006 1036	1146 1206	508	406	216	624	511	125	59	45	28	B5	600	550	660	24	6	N° 8 24
315	M	2 4-6-8	623	481	315	796	1116 1146	1256 1316	508	457	216	624	621	125	59	45	28	B5	600	550	660	24	6	N° 8 24
315	L	2 4-6-8	623	481	315	796	1116 1146	1256 1316	508	508	216	624	621	125	59	45	28	B5	600	550	660	24	6	N° 8 24
355	M	2 4-6-8	700	644	355	999	1470	1610 1680	610	560	254	730	850	120	68	50	28	B5	740	680	800	25	6	N° 8 24
355	L	2 4-6-8	700	644	355	999	1470	1610 1680	610	630	254	730	850	120	68	50	28	B5	740	680	800	25	6	N° 8 24
355	X	4-6-8	745	584	355	939	1709	1919	630	800	224	760	1110	140	100	49	35	B5	740	680	800	25	6	N°8 24
400	M	2 4-6-8	850	710	400	1110	1785	1955 1995	686	630	280	806	1090	120	58	45	35	B5	940	880	1000	25	6	N°8 28
400	L	2 4-6-8	850	710	400	1110	1785	1955 1995	686	710	280	806	1090	120	58	45	35	B5	940	880	1000	25	6	N°8 28
450		2 4-6-8	1030	1000	450	1450	2210	2380 2420	800	1000	280	980	1495	225	75	55	42	B5	940 1080	880 1000	1000 1150	25 33	6	N°8 28

GM IE3 SERIES

Tab. 6.10.2

GM Motor			Shaft - End							Shaft - Seals						Terminal - Box					
							Key			Flange-End			Drive End DE Non drive end NDE			Term.	Cable gland				
			D	DB	E	GA	F	GD	EB	Øi	Øe	H	Øi	Øe	H	N°-Ø	N°-KK	N°-XX	VA	VB	R
160		**2-4-6-8**	42	M16	110	45	12	8	90	45	70	8	45	70	8	6-M6	2-M40x1,5	1-M16x1,5	71	158	166
180		**2-4-6-8**	48	M16	110	51,5	14	9	100	55	80	8	55	80	8	6-M6	2-M40x1,5	1-M16x1,5	83	158	166
200		**2-4-6-8**	55	M20	110	59	16	10	100	60	85	8	60	85	8	6-M8	2-M50x1,5	1-M16x1,5	88	200	216
225	**S**	**4-8**	60	M20	140	64	18	11	125	65	90	10	65	90	10	6-M8	2-M50x1,5	1-M16x1,5	98	200	216
225	**M**	**2**	55	M20	110	59	16	10	100	65	90	10	65	90	10	6-M8	2-M50x1,5	1-M16x1,5	98	200	216
		4-6-8	60		140	64	18	11	125												
250	**M**	**2**	60	M20	140	64	18	11	125	70	95	10	70	95	10	6-M10	2-M63x1,5	1-M16x1,5	105	224	245
		4-6-8	65			69															
280		**2**	65	M20	140	69	18	11	125	70	95	10	70	95	10	6-M10	2-M63x1,5	1-M16x1,5	104	224	245
		4-6-8	75			79,5	20	12		85	110	12	85	110	12						
315		**2**	65	M20	140	69	18	11	125	80	105	10	80	105	10	6-M12/16	2-M63x1,5	1-M16x1,5	97	311	343
		4-6-8	80		170	85	22	14	140	95	120	12	95	120	12						
355		**2**	75	M20	140	79,5	20	12	125	95	120	12	95	120	12	6-M20	2-M63x1,5	1-M16x1,5	120	374	408
		4-6-8	100	M24	210	106	28	16	180	110	140	12	110	140	12						
355	**X**	**4-6-8**	100	M24	210	106	28	16	180	120	150	12	110	140	12	6-M20	4-M63x1,5	1-M16x1,5	193	366	442
400	**M**	**2**	80	M20	170	85	22	14	140	85	110	12	85	110	12	6-M16	4-M63x1,5	1-M16x1,5	147	430	640
		4-6-8	110	M24	210	116	28	16	180	130	160	12	130	160	12						
400	**L**	**2**	80	M20	170	85	22	14	140	85	110	12	85	110	12	6-M16	4-M63x1,5	1-M16x1,5	147	430	640
		4-6-8	110	M24	210	116	28	16	180	130	160	12	130	160	12						
450		**2**	95	M24	170	100	25	14	140	110	130	10/12	110	130	10/12	12-ø14	4-M63x1,5	1-M16x1,5	125	570	780
		4-6-8	130	M24	210	137	32	18	180	140	165	10/13	140	165	10/13						

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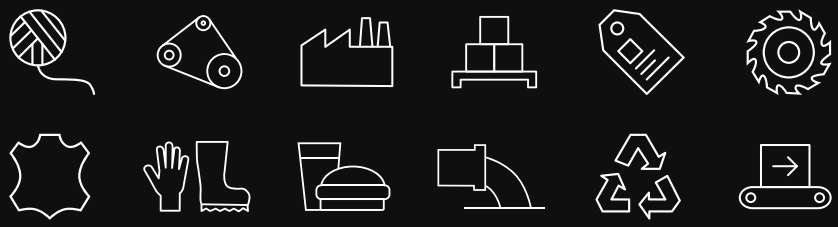
THREE-PHASE ASYNCHRONOUS
IE2 JM MOTORS

Size	JM
56 ~ 80	

Power	JM
0.12 ~ 0.55 kW	

Polarity	JM
2, 4, 6, 8 poles	

Sectors of use



• 6.11 JM IE2 ELECTRICAL DATA

JM 2 POLES IE2 SERIES

Tab. 6.11.1

IE2	JM Motor	Poles	P_N kW	n_N min^{-1}	T_N Nm	$I_{N\,(400\,V)}$ A	COSφ 100%	η 100%	η 75%	η 50%	I_s/I_N	T_s/T_N	T_{max}/T_N	J Kg m^2	Weight Kg
Δ / Y - 230 / 400 V - 50 Hz	56 b	2	0,12	2660	0,43	0,47	0,69	53,6	53,8	50,5	3,5	3,0	3,0	0,00013	3,2
	63 a	2	0,18	2710	0,63	0,57	0,75	60,4	61,2	57,5	4,4	3,1	3,2	0,00015	3,5
	63 b	2	0,25	2710	0,88	0,71	0,78	64,8	65,5	62,3	4,5	2,8	3,0	0,00017	4,0
	63 c*	2	0,37	2730	1,29	0,97	0,79	69,5	70,3	66,8	4,4	3,0	3,1	0,00020	4,4
	71 a	2	0,37	2730	1,29	0,97	0,79	69,5	70,3	66,8	5,6	2,4	3,1	0,00031	5,6
	71 b	2	0,55	2760	1,90	1,36	0,79	74,1	74,8	72,1	5,5	2,8	3,2	0,00038	6,3
	71 c*	2	0,75	2760	2,60	1,71	0,82	77,4	77,9	74,3	5,6	2,8	2,9	0,00047	7,1

JM 4 POLES IE2 SERIES

Tab. 6.11.2

IE2	JM Motor	Poles	P_N kW	n_N min^{-1}	T_N Nm	$I_{N\,(400\,V)}$ A	COSφ 100%	η 100%	η 75%	η 50%	I_s/I_N	T_s/T_N	T_{max}/T_N	J Kg m^2	Weight Kg
Δ / Y - 230 / 400 V - 50 Hz	63 a	4	0,12	1350	0,85	0,46	0,64	59,1	59,8	56,4	3,1	2,4	2,8	0,00027	3,9
	63 b	4	0,18	1350	1,27	0,62	0,65	64,7	65,3	62,5	3,3	2,5	2,6	0,00034	4,3
	63 c	4	0,25	1350	1,77	0,80	0,66	68,5	69,5	66,2	3,4	2,5	2,5	0,00041	5,0
	71 a	4	0,25	1350	1,77	0,73	0,72	68,5	69,3	65,6	4,4	2,6	2,7	0,00056	5,4
	71 b	4	0,37	1370	2,58	0,99	0,74	72,7	73,3	69,3	4,6	3,0	3,0	0,00071	6,5
	71 c*	4	0,55	1380	3,81	1,37	0,75	77,1	77,8	74,3	4,5	2,8	2,9	0,00092	7,2
	80 a	4	0,55	1370	3,83	1,37	0,75	77,1	77,8	74,3	5,4	2,3	2,6	0,00145	8,2

JM 6 POLES IE2 SERIES

Tab. 6.11.3

IE2	JM Motor	Poles	P_N kW	n_N min^{-1}	T_N Nm	$I_{N\,(400\,V)}$ A	COSφ 100%	η 100%	η 75%	η 50%	I_s/I_N	T_s/T_N	T_{max}/T_N	J Kg m^2	Weight Kg
Δ / Y - 230 / 400 V - 50 Hz	63 b	6	0,12	850	1,35	0,55	0,62	50,6	51,6	48,5	2,2	2,0	2,1	0,00052	5,3
	71 a	6	0,18	880	1,95	0,70	0,66	56,6	57,4	53,2	2,8	2,0	2,4	0,00084	6,0
	71 b	6	0,25	900	2,65	0,84	0,70	61,6	62,4	58,3	3,0	2,1	2,3	0,00097	6,5
	71 c*	6	0,37	900	3,93	1,13	0,70	67,6	68,6	64,3	3,1	2,2	2,4	0,00115	7,2
	80 a	6	0,37	900	3,93	1,13	0,70	67,6	68,6	64,3	4,1	2,1	2,5	0,00160	8,2
	80 b	6	0,55	900	5,84	1,51	0,72	73,1	73,9	70,1	4,2	2,1	2,4	0,00204	9,9

JM 8 POLES IE2 SERIES

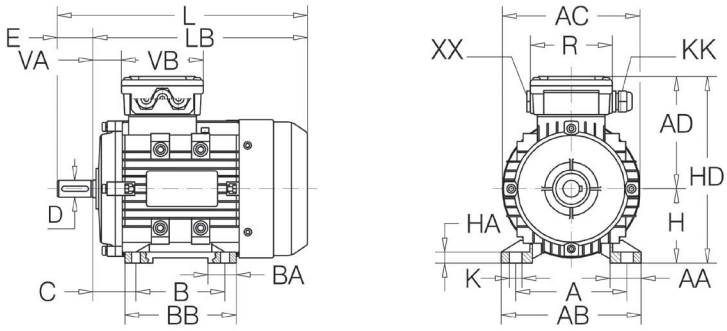
Tab. 6.11.4

IE2	JM Motor	Poles	P_N kW	n_N min^{-1}	T_N Nm	$I_{N\,(400\,V)}$ A	COSφ 100%	η 100%	η 75%	η 50%	I_s/I_N	T_s/T_N	T_{max}/T_N	J Kg m^2	Weight Kg
Δ / Y - 230 / 400 V - 50 Hz	71 B	8	0,12	690	1,66	0,74	0,59	39,8	40,6	36,5	2,0	1,9	1,9	0,00084	6,8
	80 a	8	0,18	680	2,53	0,93	0,61	45,9	46,7	42,1	3,1	2,0	2,5	0,00202	9,9
	80 b	8	0,25	680	3,51	1,17	0,61	50,6	51,6	47,5	3,3	2,2	2,5	0,00232	10,9
	90 S	8	0,37	680	5,20	1,51	0,63	56,1	56,8	53,4	2,9	1,6	1,9	0,00327	14,8
	90 La	8	0,55	680	7,72	1,98	0,65	61,7	62,3	58,4	3,0	1,8	1,9	0,00428	17,2

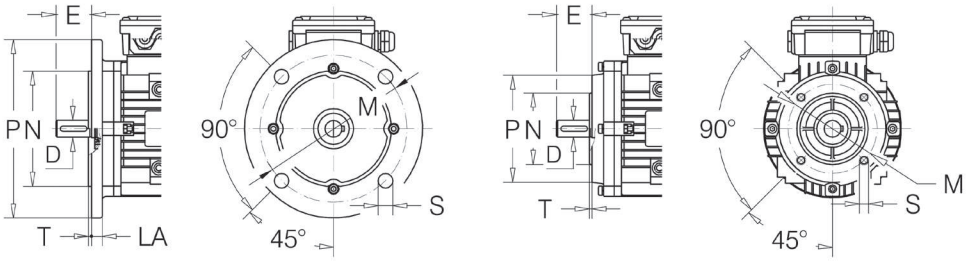
* Power or power/size not standardized

• 6.12 JM 2-4-6-8 POLES IE2 DIMENSIONAL DATA

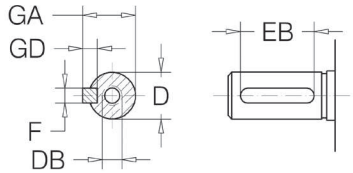
B3



B5



B14



Shaft end

JM IE2 SERIES **Tab. 6.12.1**

JM - JMD Motor		Main Overall Dimension						Feet									Flange						
		AC	AD	H	HD	LB	L	A	B	C	AB	BB	AA	BA	HA	K	IM	M	NJ6	P	LA	T	S
56	**2-4-6**	112	98	56	154	176	196	90	71	36	110	89	20	20	6	6x9	**B5**	100	80	120	8	3	N°4 ø7
																	B14	65	50	80	--	2,5	N°4 M5
63	**2-4-6**	122	110	63	173	200	223	100	80	40	120	103	28	26	8,5	7x10	**B5**	115	95	140	9	3	N°4 ø9
																	B14	75	60	90	--	2,5	N°4 M5
71	**2-4-6-8**	139	116	71	187	231	261	112	90	45	133	106	28	23	10	7x10	**B5**	130	110	160	9	3,5	N°4 ø10
																	B14	85	70	105	--	2,5	N°4 M6
80	**2-4-6-8**	157	135	80	215	254	294	125	100	50	160	130	35	35	11	10x13	**B5**	165	130	200	10	3,5	N°4 ø12
																	B14	100	80	120	--	3	N°4 M6

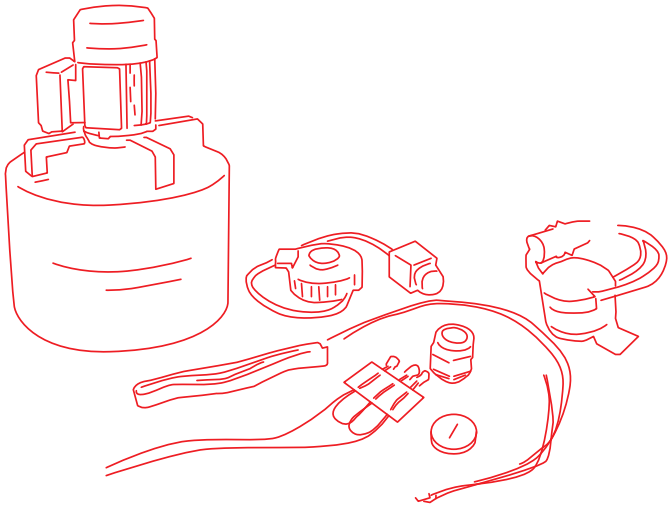
JM IE2 SERIES **Tab. 6.12.2**

JM - JMD Motor		Shaft - End							Shaft - Seals						Terminal - Box					
		Key							Flange-End			Drive End DE Non drive end NDE			Term.	Cable gland				
		D	DB	E	GA	F	GD	EB	Øi	Øe	H	Øi	Øe	H	N°-Ø	N°-KK	N°-XX	VA	VB	R
56	**2-4-6**	9 j6	M4	20	10,2	3	3	12	12	22	5	12	22	5	6-M4	1-M16x1,5	1-M16x1,5	14	88	88
63	**2-4-6**	11 j6	M4	23	12,5	4	4	16	12	24	7	12	24	7	6-M4	1-M20x1,5	1-M20x1,5	17	95	95
71	**2-4-6-8**	14 j6	M5	30	16	5	5	22	15	25	7	15	25	7	6-M4	1-M20x1,5	1-M20x1,5	21	94	94
80	**2-4-6-8**	19 j6	M6	40	21,5	6	6	32	20	35	7	20	35	7	6-M4	1-M20x1,5	1-M20x1,5	27,5	105	105

EXECUTIONS

NON-STANDARD

10 SPECIAL EXECUTIONS



1) WINDING

Non-standard voltages and/or frequencies
Seipee electric motors with three-phase power supply are designed for use on the European mains
230/400V ± 10% 50Hz.
This means that the same motor can also be connected to the following electrical mains:

- 220/380V ±5%
- 230/400V ±10%
- 240/415V ±5%

Special windings can be created on request with different voltages and/or frequencies.

Tropicalization
Tropicalization of winding consists in cold painting a product of remarkable hygroscopic qualities that ensures a certain refractory capacity against penetration of condensation in materials that must maintain optimal insulation.
It is indicated in situations where the motor is installed in environments where moisture content is particularly high.

Additional wrapping impregnation
It consists of a second impregnation cycle, recommended for:

- humid and corrosive environments (mildew);
- environments with strong mechanical and electromagnetic stress induced by inverters;
- in the presence of strong electrical agents (voltage peaks);
- in the presence of strong mechanical agents (induced mechanical or electromagnetic vibrations);

2) TERMINAL BOX

Side terminal box
As standard, the terminal box is in position T, i.e. on the top control side.
For motors with feet IM B3 and deriving structural formats, it is possible to place the terminal box R (right) or L (left), on request.
In self-braking motors, any release lever follows the position of the terminal box.

NDE terminal box
On request, the terminal box can be positioned on the NDE side (fan side) instead of the DE side (control side) as is standard.

Cables input
As standard, the cable glands are positioned on the right side of the terminal box. The position of the cables input can be rotated by 90° or 180° on request.

Cable gland type
The standard cable glands are made of polyamide, and the relative dimensions for each motor size are outlined in the tables of the dimensional data of the various series of motors.
On request, cable glands and metal plugs can be supplied, especially suitable for applications with temperatures outside the range -15/+40 C.

Cylindrical connector for quick motor cabling

Auxiliary capacitor (JMM series)
Auxiliary capacitor with built-in electronic circuit breaker for high starting point (MS/MN=approximately 1..1÷1.4).
It automatically enters at the start of the motor only for a time of 1.5 s (not suitable for applications with starting times > 1.5 s).

Warning: The time between starting and the next start must be > 6 s, to avoid causing damage to the circuit breaker.

3) MOTOR PROTECTION

Bimetal thermal probes (PTO)
Three probes connected in series with normally closed contact inserted in the motor winding. The contact is opened when the winding temperature reaches and exceeds the intervention value (150 C for motor in class F). VN,max. 250 [V], IN,max. 1.6 [A]
The terminals are placed inside the motor terminal box.

Standard on motors with axle height 160 to 450.

Thermistor thermal probes (PTC)
Three thermistors connected in series inserted in the winding conforming to DIN 44081/44082, to be connected to specific release equipment (the purchase of this equipment is charged to the buyer of the motor).

There is a sudden change in resistance (which causes the release) when the temperature of the winding reaches and exceeds the intervention value (150 C for motor in class F).
The terminals are placed inside the motor terminal box.

Standard on all motors with power over 0.75kw.

Temperature sensor PT 100 (resistance thermometer)
It is a temperature sensor that takes advantage of the variation in the resistivity of certain materials as temperature changes, in accordance with DIN-IEC 751.
Three PT 100 are inserted inside the winding, one for each phase. Terminals placed inside the motor terminal box must be connected to appropriate equipment (purchase of this equipment is charged to the buyer of the motor).

Temperature probe KTY84-130
Temperature sensor in silicon depending on the change in resistance with positive temperature coefficient.

Anti-condensation heater
It is recommended for motors operating in environments:
- with high humidity;
- with strong thermal excursions;
- with low temperature (possible ice formation);

It is a resistor fixed on coil heads that allows heating the winding of the stopped electric motor and then eliminates condensate inside the housing.

Structure: Glass fibre tape, in which a multi-wire resistor is inserted in nickel-chrome, covered with polyester adhesive tape reinforced with glass fibre filaments and an additional external glass fibre sleeve

Single-phase power supply 230V ac ±10% 50 / 60 Hz, absorbed power:
- 25 W for size 63 ... 90;
- 26 W for size 100 ... 112;
- 40 W for size 132 ... 160;
- 26 W for size 180 ... 200;
- 42 W for size 225 ... 250;
- 65 W for size 280;
- 99 W for size 315 ... 450;

The heater must not be powered during while the motor is running.
Terminals located inside the motor terminal box.

The anti-condensate heater is compulsory combined with the condensation drainage holes execution.
As standard on the GM 160...450 motors, on the side opposite the terminal box.
On placing the order, always specify the working position of the motor.
If, on installation, the plugs on the holes of the condensate exhaust located on the lower side of the electric motor have not been removed, they must be opened approximately every 5 months to allow leakage of the condensate created.

4) COLOURS AND PAINTING

Seipee motors are powder painted or painted with combined nitro paint to resist normal industrial environments and allow further finishing with monocomponent synthetic paint.

- JMM 56...100: RAL 9006 (White aluminium);
- JM 56...160: RAL 9006 (White aluminium);
- GM 160...450: RAL 5010 (blue);
- JMD 80...160: RAL 9006 (White aluminium);
- GMD 180...250: RAL 5010 (blue);
- JMK 63....160 RAL 9006 (White aluminium); Copriventola RAL 9005 (Black)
- GMK 180...280 RAL 5010 (blue);

The choice of painting treatment is a critical phase as it depends on the durability of the electric motor according to the environment in which it is to be placed.

According to standard UNI EN ISO 12944-1 the durability of the paint can be classified according to 3 classes:
Low (L) from 2 to 5 years.
Medium (M) from 5 to 10 years.
High (H) over 15 years.
Durability is indicated next to the corrosion category of the installation environment to allow the definition of the protec-

tion cycle able to operate in that environment and to ensure the required durability. The painting cycles that are carried out are fully compliant with the regulations.
ISO 12944 Classification:
C1 - C2 = Rural zones, low pollution. Heated buildings/neutral atmosphere.
C3 = Urban and industrial atmosphere. Moderate levels of sulphur dioxide. Production areas with high humidity.
C4 = Industrial and coastal. Chemical processing plants.
C5L = Industrial areas with high humidity and aggressive atmospheres.
C5M = Sea areas, offshore, estuaries, coastal areas with high salinity.

- Without paint: motor supplied with base primer only
- Painting in other hues: RAL to indicate on purchase order
- Special paint C3
- Special paint resistant to heavier environments C4 or C5.

5) EXECUTIONS ON BEARINGS

PT 100 on bearing
PT100 sensor inserted on the bearing support (control side, side opposite control). The terminals are placed inside a shunt box fastened to the motor housing. .

Electrically insulated bearing
The rolling bearings of electric motors are potentially subject to current passages that quickly damage the surfaces of runners and rolling bodies and degrade their grease.
The risk of damage increases in the increasingly popular electric motors equipped with frequency converters, especially in applications with sudden variations in frequency.
In bearings on such motors, there is an additional risk due to the presence of high frequency currents caused by the parasitic capacities existing within the motor. The electrically insulated bearing has the outer surface of the external ring coated with a layer of aluminium oxide 100 m thick, able to withstand voltages of 1,000 V d.c., practically eliminating issues caused by current passage.
It is usually installed on the NDE bearing.

For use in motors equipped with frequency converters: recommended starting from size 250.

• Bearing 2RS

• Locked bearing as standard on GM motors, on request on JM series

• Oblique contact bearing
For applications with important axial loads acting in one direction only (size 315 and higher)

• Cylindrical roller bearing
For applications with strong, constant radial loads (size 160 to 280).

• Automatic single point greaser for bearings
Automatic lubricators can be installed to ensure the correct amount of lubricant is delivered within a certain time using an inert gas cell.
This lubrication procedure allows more accurate control of the amount of lubricant supplied, compared to traditional manual re-lubrication techniques. It has a nominal delivery period that can vary between 1 month and 12 months and can also be temporarily deactivated if necessary.

Suitable for direct mounting in confined spaces and is particularly suitable for points requiring frequent lubrication, machine shutdown and safety implications. (only possible for motors with re-lubricating bearings, GM series size 160 and higher)

6) MECHANICAL EXECUTIONS AND DEGREES OF PROTECTION

- **Double output shaft** (on which radial loads are not permitted)
- **Shaft ends to drawing**
- **Standard shaft in stainless steel**
- **External screws in stainless steel**
- **Entire key balancing**
- **Balancing without key**
- **Flange tolerance in precise class**
- **Fan cover for textile environment**

Fan cover equipped with a special protective roof instead of the normal grate to avoid clogging with waste and dust from filaments in the textile environment.
The longitudinal dimensions of the motor increase by 30÷70mm according to size.

IP56 protection JM and GM series
Recommended for motors operating in very humid environments and/ or in the presence water sprays. The protection rating on the rating plate becomes IP56.
You should contact the technical office for vertical axis positioned motors.

IP65 protection JM and GM series
Recommended for motors working in dusty environments.
The protection rating on the rating plate becomes IP65.
You should contact the technical office for vertical axis positioned motors.

Condensate drain holes
As standard on the GM 160...450 motors, on the side opposite the terminal box.
On placing the order, always specify the working position of the motor.
If, on installation, the plugs on the holes of the condensate exhaust located on the lower side of the electric motor have not been removed, they must be opened approximately every 5 months to allow leakage of the condensate created.

Rain cover
Execution required for outdoor applications or in the presence of water splashes, with vertical shaft pointing downwards, type of construction (IM V5, IM V1, IM V18, IM V15, IM V17).
The LB dimension increases by:
• 35 mm size 56 ... 112;
• 45 mm size 132 ... 160;
• 65 mm size 180 ... 225;
• 85 mm size 250 ... 355;
• 120 mm size 355X ... 450

Execution for low temperatures
Standard motors can operate at room temperature up to -15°C with peaks up to -20°C.
For room temperature up to -30°C and above, special bearings and an anti-condensate heater are required. On request, we recommend the light alloy fan and the metal cable glands/plugs and in case of condensate formation the relative condensate drainage holes (in this case indicate the mounting position).

Execution for high temperatures
Standard three-phase motors can operate at room temperature up to 55°C with peaks up to 60°C, as long as the required power is lower than the plate power (as per General characteristics/Power yield based on ambient temperature Tab.....).
For an ambient temperature 60 ÷ 90°C, special bearings and sealing rings are necessary in fluorine rubber (viton). Wrapping in insulation class H, light alloy fan and metal cable glands/plugs are also recommended.

7) VENTILATION

IC418
Motor without fan and fan cover. Used in applications where cooling is ensured by the external environment.
IC416
Axial servo-fan IP54 indicated for:
- frequent start-ups and/or heavy start-up cycles
- with use of frequency or voltage variator

since, in the event of prolonged operation at low speed, the ventilation loses its effectiveness, it is therefore advisable to install a forced ventilation system with constant flow.
Vice versa, in the event of prolonged operation at high speeds, the noise emitted by the ventilation system can be annoying, and it is therefore recommended to opt for a forced ventilation system.
The characteristics of the servo-fan and the variation ΔL of the measurement LB (see "motor dimensions) are outlined on page 30 tab. 3.14.

The auxiliary ventilation power terminals are located inside an auxiliary terminal box attached to the fan cover. Before making the electrical connection make sure the power supply corresponds to the electrical data shown on the plate.

Important:
check the rotation direction of the three-phase fan. Corresponds to that indicated by the arrow placed on the fan cover, otherwise reverse two of the three phases of power supply

On request, the servo-fan can be created in special versions: voltages, frequencies, working temperature according to client specifications as well as the single-phase, multi-voltage and IP 66 protection versions.

8) SPEED TRANSDUCERS

Standard incremental encoder with hollow shaft and elastic fastening connection cable equipped with military type male connector fastened to the motor.
The female connector is also supplied with relevant diagram for the connection

Characteristics:
- incremental optical type
- two-directional with zero channel (channels A, B, Z and respective denied channels)
- degree of protection IP 54
- max speed 6000 RPM (4000 RPM in continuous service S1)
- operating temperature -10 C +85 C
- resolution from 200 to 2048 pul. /rev; 1024 standard
- max load current 20 mA per channel
- supply voltage 5 ÷ 28 Vdc
- electronic configuration line driver / push-pull (in push-pull configuration do not connect A,B,Z denied channels)
- absorption with no load 100 mA.

Available executions:
- servo-ventilated motor with encoder
- self-ventilated motor with encoder

Measurement LB in two executions is subject to the same variation ΔL outlined in table (Characteristics of the auxiliary fan page 32 no. table 3.14).

On request, the following can be supplied:
- Incremental encoder with high degree of protection
- Absolute encoder
- Resolver

Only for the JMK and GMK Series:

- **Brake protection in rubber**

It is used to prevent dust and/or water or other foreign bodies from entering the braking surfaces. Furthermore, consistently limit the dust from brake wear dispersing in the environment
It is applied around the brake in the appropriate slots provided.
This execution is necessary for IP55

- **IP55 protection (not possible in execution with release lever).**

TA and GA series brake: sealing ring on control side for IM B5 (V-ring for IM B3), dust-proof, water-proof rubber protection and V-ring on opposite side.

- **TC or L7 brake with IP66 protection (not possible in execution with release lever).**

- **Brake pad with anti-sticking friction material (TA, GA, TC, GC series)**

Eliminates danger of brake pad sticking. It is recommended for motors operating in environments:
- that are aggressive
- with high vapour concentrations
- near the sea (near saltwater)

Also recommended when the motor remains unused for long periods of time. (Attention: the nominal braking moment reduces by 10%)

- **Manual release lever**

It frees the motor from the unpowered brake and returns to its initial position after the manoeuvre (automatic return). Useful for manual rotations in case of power failure and/or during installation. The handle of the lever can be removed and is located in correspondence with the terminal box (standard

position). It is always advisable to remove the handle once the operations have been completed.

- **Manual rotation**

It allows you to turn the motor shaft from the opposite the control side. A hex male key is used by inserting it in the central hole of the fan cover.

- measurement 3 for size 63;
- measurement 4 for 71;
- measurement 5 for 80;
- measurement 6 for 90 ... 132;
- measurement 8 for 160;

NOT possible with executions with Rain protection roof, Encoder and axial servo-fan**.**

- **Braking moment calibrated different to standard value.**

- **Mechanical micrometer to signal wear or the brake Locked/Unlocked position**

- **Micro-switch to signal brake opening/closure.**

9) EXECUTIONS ACCORDING TO STANDARDS GUARDS

Execution according to standards

c UL us for the US and Canadian market, available on JM and GM series. Certificate No. E34813
The main variants are the insulation system of the winding class F certified UL, adaptation of air distances towards the ground and live parts.

Execution according to standards

EAC for the per Eurasian customs union (Russia, Belarus, Kazakhstan, Armenia and Kyrgyzstan) certified RU D-IT.AD53. B07480

for the People's Republic of China

UKCA for the UK

for applications in a naval or marine environment

ATEX

The JM and GM (≤600V) series motors are supplied for use in environments with potentially explosive atmospheres according to ATEX 94/9/EC directive group II category 3D for zone 22 / 3G zone 2.
As standard, PTC 130°C and certified cable glands are installed ATEX.
Marking plate:

ATEX II 3D Ex tc IIIC T125°C Dc IP65 zone 22
ATEX II 3G Ex ec IIC T3 Gc zone 2

On request, the execution is possible ATEX II 3G Ex ec IIC T4 Gc.

Legend:
II = Group of origin (use on surface);
3 = Protection category;
includes equipment designed to operate in accordance with the operating parameters established by the manufacturer and to ensure a normal level of protection; it may only be used in classified areas 2 or 22 non-conductive powders.
D = Powders per installation zone Dc (zona 22);
G = Gas per installation zone Gc (zona 2);
tc / ec = protection mode;
IIIC / IIC = equipment group of origin according to the nature of the explosive atmosphere;
T135°C = maximum surface temperature for atmospheres with presence of dust;
T3 / T4 = temperature class for atmospheres with presence of gas.

For inverter applications. it is always necessary to connect the supplied temperature probes to meet the thermal classes indicated in the marking.

The purchaser of the product will be responsible for taking appropriate technical and organisational measures and for assessing any possible risk of explosion to the health and safety of workers in potentially explosive areas (Directive 99/92/EC).
On receipt of the electric motor, make sure there is no damage or faults.
Before starting the motor, check the data on the plate, read the instruction manual carefully (supplied to the motor) and verify its suitability for the application requested

10) TECHNICAL DATA AND ADDITIONAL PLATES

- Double plate
- Sheet metal plate
- Additional instructions on the plate and the packaging label
- Test certificate
- Document with electrical data
- Document with dimensional drawing