Dust ignition protection cast iron motors / Protection by enclosure Ex t IIIB/IIIC T125 °C, Db/Dc

Totally enclosed squirrel cage three phase low voltage motors, Sizes 71 to 400, 0.25 to 1000 kW

Ordering information

When placing an order, specify motor type, size and product code according to the following example.

Example	
Motor type	M3GP 160 MLA
Pole number	2
Mounting arrangement (IM-code)	IM B3 (IM 1001)
Rated output	11 kW
Product code	3GGP161410-ADD
Variant codes if needed	

Explanation of the product code

Motor type	Motor size	Product code	Mounting arrangement code, Voltage and frequency code, Generation code	Variant codes
M3GP	160MLA	3GGP 161 410 - ADD		002, etc.
		1 2 3 4 5 6 7 8 9 10 11 12 13 14		

Positions 1 - 4

3GGP: Totally enclosed fan cooled squirrel cage motor with cast iron frame, dust ignition proof
3GAA: Totally enclosed fan cooled squirrel cage motor with aluminum frame, dust ignition proof

Positions 5 and 6

IEC-frame

06	63
07	71
08:	80
09:	90
10:	100
11:	112
13:	132
16:	160
18:	180
20:	200
22:	225
25:	250
28:	280
31:	315
35:	355
40:	400

Position 7

Speed (Pole pairs)

1:	2 poles
2:	4 poles
3:	6 poles
4:	8 poles
5:	10 poles

Positions 8 to 10

Serial number

Position 11

- (Dash)

Position 12

Mounting arrangement

A:	Foot-mounted, top-mounted terminal box
R:	Foot-mounted, terminal box RHS seen from D-end
L:	Foot-mounted, terminal box LHS seen from D-end
B:	Flange-mounted, large flange
C:	Flange-mounted, small flange (sizes 71 to 112)
H:	Foot- and flange-mounted, terminal box top-mounted
J:	Foot- and flange-mounted, small flange with tapped holes
S:	Foot- and flange-mounted, terminal box RHS seen from D-end
T:	Foot- and flange-mounted, terminal box LHS seen from D-end
V	Flange-mounted, special flange
F:	Foot- and flange-mounted. Special flange

Position 13

Voltage and frequency

Single-speed motors

B:	380 VΔ 50 Hz
D:	400 VΔ, 415 VΔ, 690 VY 50 Hz
E:	500 VΔ 50 Hz
F:	500 VY 50 Hz
S:	230 VΔ, 400 VY, 415 VY 50 Hz
T:	660 VΔ 50 Hz
U:	690 VΔ 50 Hz
X:	Other rated voltage, connection or frequency, 690 V maximum

Position 14

Generation code

G, H...

The product code must be, if needed, followed by variant codes.

Explanation of technical data pages:

The two bullets in the product code indicate choice of mounting arrangements, voltage and frequency code (see ordering information page).

Efficiency values are given according to IEC 60034-2-1; 2007. Please note that the values are not comparable without knowing the testing method. ABB has calculated the efficiency values according to indirect method, stray load losses (additional losses) determined from measuring.

I_s / I_N = Starting current
T_l / T_N = Locked rotor torque
T_b / T_N = Pull-out torque

Rating plates

The rating plates are in table form giving values for speed, current and power factor for three voltages for cast iron motors: 400V-415V-690V as standard. Other voltage and frequency combinations are possible and can be ordered with variant codes 002 or 209. Please see Variant code section.

The following information will be shown on the motor rating plate:

- Lowest nominal efficiency at 100 %, 75 % and 50 % rated load
- Efficiency level
- Year of manufacture
- Type of protection
- Apparatus group
- Temperature class
- Identification number of the certification body
- Certificate number: for cast iron motors both ATEX and IECEx are stamped on the rating plate as standard.

ABB Oy, Motors and Generators
Vaasa, Finland

CE 0081 IE2 IEC60034-1 Ex II 2D

3~ Motor		M3GP 180MLB 6 IMB3/IM1001					2016
Ex tb III B T125C Db							
1130309-2							
No. 3G1F1601303810						Ins. cl. F	IP 65
V		Hz	kW	r/min	A	cos φ	Duty
690	Y	50	15	973	16.9	0.82	S1
400	D	50	15	973	29.7	0.82	S1
415	D	50	15	975	29.3	0.80	S1
IE2-90.5%(100%)-91.0%(75%)-90.5%(50%)							
Product code 3GGP183420-ADD334435							
LCIE 13 ATEX 3067 X / IECEx LCIE 13.0047X							
Manual: 3GZF500730-47							
6310/C3 6209/C3							240 kg

Technical data for Ex t IIIB/IIIC T125 °C, Db/Dc, IP 65/IP 55
Dust ignition protection IE2 cast iron motors

IP 65/55 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30-1; 2014

Output kW	Motor type	Product code	Speed r/min	Efficiency IEC 60034--2-1; 2007 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor cos φ	Current I_N A	$\frac{I_s}{I_N}$	Torque T_N N_m	$\frac{T_l}{T_N}$	$\frac{T_b}{T_N}$	Moment of inertia J = 1/4 GD² kgm²	Weight kg	Sound pressure level L_{PA} dB
3000 r/min = 2-poles		400 V 50 Hz						CENELEC-design							
0.37	M3GP 71MA 2	3GGP071321-••B	2768	74.8	75.4	72.4	0.78	0.89	4.5	1.27	2.2	2.3	0.00039	11	58
0.55	M3GP 71MB 2	3GGP071322-••B	2813	77.8	78.3	76.0	0.79	1.29	4.3	1.86	2.4	2.5	0.00051	11	56
0.75	M3GP 80MB 2	3GGP081322-••B	2895	80.6	79.6	75.6	0.74	1.8	7.7	2.4	4.2	4.2	0.001	16	57
1.1	M3GP 80MC 2	3GGP081323-••B	2870	81.8	81.7	79.0	0.80	2.48	7.5	3.6	3.7	4.6	0.0012	18	60
1.5	M3GP 90SLB 2	3GGP091322-••B	2900	82.2	82.9	81.3	0.89	2.94	7.5	4.9	2.5	2.6	0.00254	24	69
2.2	M3GP 90SLC 2	3GGP091323-••B	2885	84.7	86.8	85.7	0.88	4.2	6.8	7.2	1.9	2.5	0.0028	25	64
3	M3GP 100LB 2	3GGP101322-••B	2925	85.2	84.9	82.7	0.87	5.75	9.1	9.7	3.1	3.5	0.0053	36	68
4	M3GP 112MB 2	3GGP111322-••B	2895	86.1	87.0	86.6	0.89	7.52	8.7	13.08	3.3	3.5	0.00575	37	70
5.5	M3GP 132SMB 2	3GGP131322-••B	2865	87.7	88.4	87.7	0.86	10	7.0	18.3	2.6	2.7	0.0128	68	70
7.5	M3GP 132SMC 2	3GGP131324-••B	2890	88.2	88.5	87.5	0.88	13.7	8.3	24.7	2.6	3.6	0.0136	70	70
11	M3GP 160MLA 2	3GGP161410-••D	2931	90.1	90.4	89.3	0.89	20.2	6.7	35.81	2.5	3.2	0.043	139	71
15	M3GP 160MLB 2	3GGP161420-••D	2929	91.2	91.7	90.8	0.89	27	7.2	48.9	2.9	3.4	0.052	149	71
18.5	M3GP 160MLC 2	3GGP161430-••D	2934	91.6	92.4	92.3	0.90	32.4	7.4	60.3	3.1	3.5	0.062	159	69
22	M3GP 180MLA 2	3GGP181410-••D	2938	91.7	92.3	91.8	0.90	39.1	7.0	71.4	2.5	3.2	0.089	199	69
30	M3GP 200MLA 2	3GGP201410-••D	2956	93.2	93.6	93.0	0.88	52.7	7.4	96.9	3.0	3.2	0.15	275	74
37	M3GP 200MLC 2	3GGP201430-••D	2954	93.6	94.0	93.4	0.89	64.7	7.5	119.9	2.8	3.2	0.19	304	75
45	M3GP 225SMB 2	3GGP221220-••D	2968	93.8	93.9	93.0	0.87	78.8	7.2	144	2.7	3.0	0.26	357	76
55	M3GP 250SMA 2	3GGP251210-••D	2975	94.3	94.2	93.2	0.89	95.1	7.8	176	2.4	3.1	0.49	445	75
75 [3]	M3GP 280SMA 2	3GGP281210-••G	2977	94.3	93.8	92.2	0.88	131	7.6	240	2.1	3.0	0.8	625	77
90 [3]	M3GP 280SMB 2	3GGP281220-••G	2976	94.6	94.7	93.8	0.89	154	7.4	288	2.1	2.9	0.9	665	77
110 [3]	M3GP 315SMA 2	3GGP311210-••G	2982	94.9	94.4	92.9	0.86	197	7.4	352	2.2	3.2	1.2	880	78
132 [3]	M3GP 315SMB 2	3GGP311220-••G	2982	95.1	94.8	93.6	0.88	227	7.4	422	2.2	3.0	1.4	940	78
160 [3]	M3GP 315SMC 2	3GGP311230-••G	2981	95.4	95.2	94.2	0.89	271	7.5	512	2.3	3.0	1.7	1025	78
200 [3]	M3GP 315MLA 2	3GGP311410-••G	2980	95.7	95.7	94.9	0.90	335	7.7	640	2.6	3.0	2.1	1190	78
250 [3]	M3GP 355SMA 2	3GGP351210-••G	2984	95.7	95.5	94.5	0.89	423	7.7	800	2.1	3.3	3.0	1600	83
315 [3]	M3GP 355SMB 2	3GGP351220-••G	2980	95.7	95.6	95.0	0.89	531	7.0	1009	2.1	3.0	3.4	1680	83
355 [3]	M3GP 355SMC 2	3GGP351230-••G	2984	95.7	95.7	94.9	0.88	603	7.2	1136	2.2	3.0	3.6	1750	83
400 [3]	M3GP 355MLA 2	3GGP351410-••G	2982	96.9	96.6	95.9	0.88	677	7.1	1280	2.3	2.9	4.1	2000	83
450 [3]	M3GP 355MLB 2	3GGP351420-••G	2983	97.1	97.0	96.4	0.90	743	7.9	1440	2.2	2.9	4.3	2080	83
500 [3]	M3GP 355LKA 2	3GGP351810-••G	2982	96.9	96.9	96.5	0.90	827	7.5	1601	2.0	3.9	4.8	2320	83
560 [3]	M3GP 355LKB 2	3GGP351820-••G	2983	97.0	97.0	96.5	0.90	925	8.0	1792	2.2	4.1	5.2	2460	83
560 [2]	M3GP 400LA 2	3GGP401510-••G	2988	97.2	97.2	96.6	0.89	934	7.8	1789	2.5	3.7	7.9	2950	82
560 [2]	M3GP 400LKA 2	3GGP401810-••G	2988	97.2	97.2	96.6	0.89	934	7.8	1789	2.5	3.7	7.9	2950	82
630 [2]	M3GP 400LB 2	3GGP401520-••G	2987	97.4	97.2	96.7	0.89	1049	7.6	2014	2.6	3.7	8.2	3050	82
630 [2]	M3GP 400LKB 2	3GGP401820-••G	2987	97.4	97.2	96.7	0.89	1049	7.6	2014	2.6	3.7	8.2	3050	82
710 [2]	M3GP 400LC 2	3GGP401530-••G	2987	97.5	97.4	96.9	0.89	1178	7.2	2270	2.6	3.4	9.3	3300	82
710 [2]	M3GP 400LKC 2	3GGP401830-••G	2987	97.5	97.4	96.9	0.89	1178	7.2	2270	2.6	3.4	9.3	3300	82
3000 r/min = 2-poles		400 V 50 Hz						High-output design							
22 [1]	M3GP 160MLD 2	3GGP161440-••D	2929	91.2	91.9	91.4	0.90	38.3	7.5	71.7	3.1	3.3	0.07	166	77
30	M3GP 180MLB 2	3GGP181420-••D	2943	92.5	93.2	92.6	0.90	52.2	7.1	97.23	2.3	3.2	0.13	236	78
37	M3GP 180MLC 2	3GGP181430-••D	2950	92.8	93.1	92.8	0.90	64.9	8.1	119.9	3.3	3.7	0.13	237	77
45	M3GP 200MLE 2	3GGP201450-••D	2944	93.3	93.6	93.0	0.88	79.1	7.3	145	2.9	3.1	0.22	312	79
55	M3GP 225SMC 2	3GGP221230-••D	2965	93.9	94.2	93.5	0.88	95.8	7.1	177	2.6	3.0	0.29	377	80
67	M3GP 225SMD 2	3GGP221240-••D	2966	93.9	93.9	93.0	0.86	120	7.4	215	2.8	3.2	0.31	388	78
75	M3GP 250SMB 2	3GGP251220-••D	2969	93.8	93.9	93.2	0.89	129	7.9	241	2.6	3.1	0.57	487	80
90	M3GP 250SMC 2	3GGP251230-••D	2965	94.4	94.5	93.9	0.89	153	7.7	289	2.5	3.0	0.59	500	80
110 [3]	M3GP 280SMC 2	3GGP281230-••G	2978	95.1	95.1	94.5	0.90	186	7.9	352	2.4	3.0	1.15	725	77
132 [3]	M3GP 280MLA 2	3GGP281410-••G	2977	95.3	95.3	94.8	0.90	221	7.5	423	2.5	3.0	1.4	840	81
160	M3GP 280MLB 2	3GGP281420-••G	2976	95.5	95.7	95.3	0.91	265	7.6	513	2.8	3.0	1.55	890	81

[1] Efficiency class IE1

[2] Unidirectional fan construction as standard. Direction of rotation must be stated when ordering, see variant codes 044 and 045

[3] -3dB(A) sound pressure level reduction with unidirectional fan construction. Direction of rotation must be stated when ordering, see variant codes 044 and 045

Equipment protection level and equipment group subdivision must be selected when ordering by selecting appropriate variant code;

334 Ex t, dust group IIIB T125 Db (non-conductive dust) acc. to IEC/EN60079-31
335 Ex t, dust group IIIB T125 Dc (non-conductive dust) acc. to IEC/EN60079-31
336 Ex t, dust group IIIC T125 Db (conductive dust) acc. to IEC/EN60079-31
337 Ex t, dust group IIIC T125 Dc (conductive dust) acc. to IEC/EN60079-31

Technical data for Ex t IIIB/IIIC T125 °C, Db/Dc, IP 65/IP 55
Dust ignition protection IE2 cast iron motors

IP 65/55 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30-1; 2014

Output kW	Motor type	Product code	Speed r/min	Efficiency IEC 60034--2-1; 2007 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor cos φ	Current I_N A	I_s/I_N	Torque T_N N_m	T_l/T_N	T_b/T_N	Moment of inertia J = 1/4 GD² kgm²	Weight kg	Sound pressure level L_{PA} dB
1500 r/min = 4-poles		400 V 50 Hz						CENELEC-design							
0.25 [1]	M3GP 71MA 4	3GGP072321-••B	1365	68.3	70.7	69.6	0.81	0.64	3.5	1.74	1.9	2.0	0.00074	10	45
0.37 [1]	M3GP 71MB 4	3GGP072322-••B	1380	72.4	74.5	74.7	0.83	0.87	4.6	2.5	1.6	2.1	0.00088	11	45
0.55 [1]	M3GP 80MA 4	3GGP082321-••B	1415	70.0	69.2	64.7	0.73	1.44	5.6	3.7	2.0	2.8	0.00144	15	45
0.75	M3GP 80MD 4	3GGP082324-••B	1430	81.0	81.0	78.2	0.73	1.82	5.3	5	2.7	3.2	0.00205	17	50
1.1	M3GP 90SLB 4	3GGP092322-••B	1435	83.6	84.1	82.4	0.80	2.36	6.5	7.3	2.4	3.4	0.0044	25	50
1.5	M3GP 90SLD 4	3GGP092325-••B	1430	84.3	85.1	83.9	0.82	3	6.3	10	2.7	3.4	0.0053	27	56
2.2	M3GP 100LC 4	3GGP102323-••B	1450	85.9	85.1	83.4	0.78	4.6	7.7	14.5	2.7	4.1	0.00948	36	56
3	M3GP 100LD 4	3GGP102324-••B	1450	86.8	86.9	85.3	0.79	6.1	7.7	19.8	2.9	3.4	0.011	38	58
4	M3GP 112MB 4	3GGP112322-••B	1440	86.8	87.7	87.4	0.82	7.94	7.0	26.5	2.5	2.9	0.0125	44	59
5.5	M3GP 132SMB 4	3GGP132322-••B	1460	89.0	89.8	88.9	0.80	10.8	6.7	36	2.2	3.2	0.0328	70	67
7.5	M3GP 132SMC 4	3GGP132323-••B	1450	89.3	90.1	90.0	0.81	14.5	7.2	49.4	2.5	3.5	0.0366	73	64
11	M3GP 160MLC 4	3GGP162430-••D	1470	91.2	91.3	90.0	0.82	21.5	8.0	71.5	3.3	3.8	0.096	160	62
15	M3GP 160MLE 4	3GGP162450-••D	1467	92.0	92.3	91.8	0.84	28.5	8.0	97.7	3.3	3.2	0.13	183	61
18.5	M3GP 180MLA 4	3GGP182410-••D	1474	91.6	92.1	91.5	0.83	35.7	7.2	119.9	2.6	3.1	0.19	213	62
22	M3GP 180MLB 4	3GGP182420-••D	1474	92.2	92.5	91.9	0.82	42	7.7	142.3	2.8	3.4	0.23	232	62
30	M3GP 200MLB 4	3GGP202420-••D	1471	92.5	93.2	93.1	0.84	55	7.4	194	3.0	2.8	0.34	306	61
37	M3GP 225SMB 4	3GGP222220-••D	1480	93.6	93.9	93.4	0.85	69	7.6	239	3.2	2.9	0.42	347	67
45	M3GP 225SMC 4	3GGP222230-••D	1477	94.1	94.4	94.3	0.86	78.4	7.6	291	3.2	2.7	0.49	379	67
55	M3GP 250SMA 4	3GGP252210-••D	1479	94.3	94.3	93.6	0.84	100	7.2	355	2.5	3.1	0.72	436	66
75	M3GP 280SMA 4	3GGP282210-••G	1484	94.5	94.7	94.4	0.85	134	6.9	482	2.5	2.8	1.25	625	68
90	M3GP 280SMB 4	3GGP282220-••G	1483	94.7	95.0	94.5	0.85	160	7.2	579	2.5	2.7	1.5	665	68
110	M3GP 315SMA 4	3GGP312210-••G	1487	95.1	95.1	94.3	0.86	194	7.2	706	2.3	2.8	2.3	900	70
132	M3GP 315SMB 4	3GGP312220-••G	1487	95.4	95.4	94.7	0.86	232	7.1	847	2.3	2.7	2.6	960	70
160	M3GP 315SMC 4	3GGP312230-••G	1487	95.3	95.3	94.8	0.85	284	7.2	1027	2.4	2.9	2.9	1000	70
200	M3GP 315MLA 4	3GGP312410-••G	1486	95.6	95.8	95.5	0.86	351	7.2	1285	2.5	2.9	3.5	1160	70
250	M3GP 355SMA 4	3GGP352210-••G	1488	95.9	96.0	95.5	0.85	442	7.1	1604	2.3	2.7	5.9	1610	74
315	M3GP 355SMB 4	3GGP352220-••G	1488	95.9	96.2	95.8	0.86	550	7.3	2021	2.3	2.8	6.9	1780	74
350 [4]	M3GP 355SMC 4	3GGP352230-••G	1487	95.9	95.9	95.7	0.86	612	6.9	2247	2.4	2.7	7.2	1820	78
400 [4]	M3GP 355MLA 4	3GGP352410-••G	1489	96.3	96.3	95.9	0.85	705	6.8	2565	2.3	2.6	8.4	2140	78
450 [4]	M3GP 355MLB 4	3GGP352420-••G	1490	96.8	96.8	96.3	0.86	784	6.9	2884	2.3	2.9	8.4	2140	78
500	M3GP 355LKA 4	3GGP352810-••G	1490	97.0	97.0	96.5	0.86	865	6.8	3204	2.0	3.0	10	2500	78
560 [3]	M3GP 400LA 4	3GGP402510-••G	1491	96.8	96.8	96.3	0.85	982	7.4	3586	2.4	2.8	15	3200	78
560 [3]	M3GP 400LKA 4	3GGP402810-••G	1491	96.8	96.8	96.3	0.85	982	7.4	3586	2.4	2.8	15	3200	78
630 [4]	M3GP 400LB 4	3GGP402520-••G	1491	97.0	97.0	96.5	0.87	1077	7.6	4034	2.2	2.9	16	3300	78
630 [4]	M3GP 400LKB 4	3GGP402820-••G	1491	97.0	97.0	96.5	0.87	1077	7.6	4034	2.2	2.9	16	3300	78
710 [3]	M3GP 400LC 4	3GGP402530-••G	1491	97.1	97.1	96.7	0.86	1227	7.6	4547	2.4	3.0	17	3400	78
710 [3]	M3GP 400LKC 4	3GGP402830-••G	1491	97.1	97.1	96.7	0.86	1227	7.6	4547	2.4	3.0	17	3400	78
800	M3GP 450LA 4	3GGP452510-••G	1491	96.9	96.9	96.4	0.86	1396	7.0	5121	1.3	2.8	23	4050	85
900	M3GP 450LB 4	3GGP452520-••G	1492	97.1	97.0	96.5	0.86	1573	7.0	5761	1.3	2.8	25	4350	85
1000 [2]	M3GP 450LC 4	3GGP452530-••G	1491	97.2	97.2	96.7	0.86	1724	6.8	6404	1.3	2.7	30	4700	85
1500 r/min = 4-poles		400 V 50 Hz						High-output design							
18.5	M3GP 160MLF 4	3GGP162460-••H	2929	91.2	91.9	91.4	0.90	38.3	7.5	71.7	3.1	3.3	0.07	166	77
22 [1]	M3GP 160MLG 4	3GGP162470-••H	2943	92.5	93.2	92.6	0.90	52.2	7.1	97.23	2.3	3.2	0.13	236	78
30 [1]	M3GP 180MLC 4	3GGP182430-••H	2950	92.8	93.1	92.8	0.90	64.9	8.1	119.9	3.3	3.7	0.13	237	77
37	M3GP 200MLC 4	3GGP202430-••G	2944	93.3	93.6	93.0	0.88	79.1	7.3	145	2.9	3.1	0.22	312	79
55	M3GP 225SMD 4	3GGP222240-••D	2965	93.9	94.2	93.5	0.88	95.8	7.1	177	2.6	3.0	0.29	377	80
60 [1]	M3GP 225SME 4	3GGP222250-••D	2966	93.9	93.9	93.0	0.86	120	7.4	215	2.8	3.2	0.31	388	78
75	M3GP 250SMB 4	3GGP252220-••D	2969	93.8	93.9	93.2	0.89	129	7.9	241	2.6	3.1	0.57	487	80
86 [1]	M3GP 250SMC 4	3GGP252230-••D	2965	94.4	94.5	93.9	0.89	153	7.7	289	2.5	3.0	0.59	500	80
110	M3GP 280SMC 4	3GGP282230-••G	2978	95.1	95.1	94.5	0.90	186	7.9	352	2.4	3.0	1.15	725	77
132	M3GP 280MLA 4	3GGP282410-••G	2977	95.3	95.3	94.8	0.90	221	7.5	423	2.5	3.0	1.4	840	81

[1] Efficiency class IE1
[2] Temperature rise class F
[3] Temp. Rise class F, For 400-415 V 50 Hz (380 V 50 Hz voltage code B)
[4] For 400-415 V 50 Hz (380 V 50 Hz voltage code B)

Equipment protection level and equipment group subdivision must be selected when ordering by selecting appropriate variant code;

334 Ex t, dust group IIIB T125 Db (non-conductive dust) acc. to IEC/EN60079-31
335 Ex t, dust group IIIB T125 Dc (non-conductive dust) acc. to IEC/EN60079-31
336 Ex t, dust group IIIC T125 Db (conductive dust) acc. to IEC/EN60079-31
337 Ex t, dust group IIIC T125 Dc (conductive dust) acc. to IEC/EN60079-31

Technical data for Ex t IIIB/IIIC T125 °C, Db/Dc, IP 65/IP 55
Dust ignition protection IE2 cast iron motors

IP 65/55 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30-1; 2014

Output kW	Motor type	Product code	Speed r/min	Efficiency IEC 60034--2-1; 2007 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor cos φ	Current I_N A	$\frac{I_s}{I_N}$	Torque T_N N_m	$\frac{T_l}{T_N}$	$\frac{T_b}{T_N}$	Moment of inertia J = 1/4 GD² kgm²	Weight kg	Sound pressure level L_{PA} dB
1000 r/min = 6-poles		400 V 50 Hz						CENELEC-design							
0.18	M3GP 71MA 6	3GGP073321-••B	900	63.7	63.8	59.0	0.71	0.57	3.1	1.91	2.0	2.1	0.00089	10	42
0.25	M3GP 71MB 6	3GGP073322-••B	915	67.2	65.5	59.5	0.69	0.77	3.7	2.6	2.6	2.7	0.0011	12	42
0.37	M3GP 80MA 6	3GGP083321-••B	925	71.0	70.0	65.0	0.69	1.09	4.1	3.8	2.4	2.5	0.00187	15	47
0.55	M3GP 80MB 6	3GGP083322-••B	920	73.1	74.2	71.9	0.71	1.51	3.8	5.7	1.8	2.2	0.00239	17	47
0.75	M3GP 90SLC 6	3GGP093323-••B	960	78.7	77.2	72.5	0.58	2.3	4.5	7.4	2.4	3.1	0.00491	25	44
1.1	M3GP 90SLE 6	3GGP093324-••B	930	78.2	78.7	76.5	0.66	3	4.0	11.2	1.9	2.3	0.0054	28	44
1.5	M3GP 100L 6	3GGP103322-••B	950	82.2	83.0	81.6	0.69	3.7	4.3	15	1.5	2.7	0.00873	37	49
2.2	M3GP 112MB 6	3GGP113322-••B	950	82.5	83.7	81.6	0.71	5.5	4.4	22.1	1.7	2.3	0.0125	44	66
3	M3GP 132SMB 6	3GGP133321-••B	975	85.3	84.2	81.2	0.63	8	5.5	29.4	1.8	2.9	0.0334	69	57
4	M3GP 132SMC 6	3GGP133322-••B	960	84.9	85.3	83.9	0.68	10	4.6	39.7	1.5	2.2	0.0334	69	57
5.5	M3GP 132SMF 6	3GGP133324-••B	965	86.1	86.5	85.4	0.71	12.9	5.1	54.4	2.0	2.3	0.0487	86	57
7.5	M3GP 160MLA 6	3GGP163410-••D	965	87.6	88.6	88.3	0.78	15.8	6.4	74.2	1.7	2.9	0.126	181	65
11	M3GP 160MLB 6	3GGP163420-••D	972	90.1	91.0	90.4	0.81	22.1	6.9	108	2.4	3.5	0.126	181	65
15	M3GP 180MLB 6	3GGP183420-••D	973	90.5	91.0	90.5	0.82	29.7	6.8	147.3	1.8	3.0	0.25	240	58
18.5	M3GP 200MLA 6	3GGP203410-••D	983	90.5	90.9	90.2	0.82	36.2	7.1	179	3.2	3.1	0.37	266	66
22	M3GP 200MLB 6	3GGP203420-••D	983	91.6	92.0	91.5	0.82	42.8	7.5	213	3.2	3.2	0.43	283	61
30	M3GP 225SMB 6	3GGP223220-••D	985	92.2	92.7	92.4	0.82	57.9	7.4	290	3.4	3.0	0.64	344	61
37	M3GP 250SMA 6	3GGP253210-••D	990	93.2	93.7	93.1	0.81	70.6	6.5	357	2.4	3.1	1.16	440	66
45	M3GP 280SMA 6	3GGP283210-••G	990	93.4	93.8	93.5	0.83	83.8	7.0	434	2.5	2.5	1.85	605	66
55	M3GP 280SMB 6	3GGP283220-••G	990	93.8	94.2	93.9	0.84	100	7.0	530	2.7	2.6	2.2	645	66
75	M3GP 315SMA 6	3GGP313210-••G	992	94.4	94.4	93.5	0.82	139	7.4	721	2.4	2.8	3.2	830	70
90	M3GP 315SMB 6	3GGP313220-••G	992	94.8	94.7	94.1	0.84	166	7.5	866	2.4	2.8	4.1	930	70
110	M3GP 315SMC 6	3GGP313230-••G	991	95.0	95.0	94.6	0.83	201	7.4	1059	2.5	2.9	4.9	1000	70
132	M3GP 315MLA 6	3GGP313410-••G	991	95.3	95.4	94.9	0.83	240	7.5	1271	2.7	3.0	5.8	1150	68
160	M3GP 355SMA 6	3GGP353210-••G	993	95.4	95.6	95.2	0.83	291	7.0	1538	2.0	2.6	7.9	1520	75
200	M3GP 355SMB 6	3GGP353220-••G	993	95.7	95.9	95.7	0.83	364	7.2	1923	2.2	2.7	9.7	1680	75
250	M3GP 355SMC 6	3GGP353230-••G	993	95.7	95.8	95.4	0.82	460	7.4	2404	2.6	2.9	11.3	1820	75
315	M3GP 355MLB 6	3GGP353420-••G	992	95.7	96.0	95.5	0.83	570	7.0	3032	2.5	2.7	13.5	2180	75
355	M3GP 355LKA 6	3GGP353810-••G	992	95.7	95.9	95.4	0.81	658	7.6	3417	2.7	2.9	15.5	2500	75
400 [3]	M3GP 400LA 6	3GGP403510-••G	993	96.2	96.3	95.8	0.82	730	7.1	3846	2.3	2.7	17	2900	76
400 [3]	M3GP 400LKA 6	3GGP403810-••G	993	96.2	96.3	95.8	0.82	730	7.1	3846	2.3	2.7	17	2900	76
450 [3]	M3GP 400LB 6	3GGP403520-••G	994	96.6	96.6	96.1	0.82	819	7.4	4323	2.4	2.8	20.5	3150	76
450 [3]	M3GP 400LKB 6	3GGP403820-••G	994	96.6	96.6	96.1	0.82	819	7.4	4323	2.4	2.8	20.5	3150	76
500 [3]	M3GP 400LC 6	3GGP403530-••G	993	96.6	96.5	96.1	0.83	891	7.2	4809	2.5	2.7	22	3300	76
500 [3]	M3GP 400LKC 6	3GGP403830-••G	993	96.6	96.5	96.1	0.83	891	7.2	4809	2.5	2.7	22	3300	76
560 [3]	M3GP 400LD 6	3GGP403540-••G	993	96.9	96.9	96.4	0.85	984	7.4	5386	2.4	2.8	24	3400	77
560	M3GP 400LKD 6	3GGP403840-••G	993	96.9	96.9	96.4	0.85	984	7.4	5386	2.4	2.8	24	3400	77
630	M3GP 450LA 6	3GGP453510-••G	994	96.7	96.7	96.3	0.84	1127	6.5	6053	1.1	2.5	31	4150	81
710	M3GP 450LB 6	3GGP453520-••G	995	96.9	97.0	96.5	0.85	1244	7.0	6814	1.3	2.5	37	4500	81
800 [2]	M3GP 450LC 6	3GGP453530-••G	995	96.9	96.9	96.4	0.84	1415	7.2	7677	1.3	2.7	41	4800	81
1000 r/min = 6-poles		400 V 50 Hz						High-output design							
14 [1]	M3GP 160MLC 6	3GGP163430-••D	969	89.2	89.5	88.5	0.75	30.1	7.5	138	2.8	4.0	0.126	181	64
18.5 [1] [2]	M3GP 180MLC 6	3GGP183430-••D	971	90.1	90.1	88.5	0.74	41.2	7.3	181.2	2.5	3.7	0.25	240	61
30 [1]	M3GP 200MLC 6	3GGP203430-••D	983	90.6	90.8	89.6	0.81	59.3	7.5	291	3.5	3.4	0.49	302	65
37 [1]	M3GP 225SMC 6	3GGP223230-••D	983	91.8	92.1	92.2	0.83	69.6	7.1	359	3.0	2.8	0.75	371	64
45	M3GP 250SMB 6	3GGP253220-••D	986	93.1	93.4	93.2	0.84	84	7.2	435	3.3	2.8	1.49	487	65
75	M3GP 280SMC 6	3GGP283230-••G	990	94.2	94.7	94.5	0.84	137	7.3	723	2.8	2.7	2.85	725	66
90	M3GP 280MLA 6	3GGP283410-••G	990	94.1	94.3	93.7	0.81	170	7.1	868	2.4	2.5	3.1	840	70

[1] Efficiency class IE1
[2] Temperature rise class F
[3] For 400-415 V 50 Hz (380 V 50 Hz voltage code B)

Equipment protection level and equipment group subdivision must be selected when ordering by selecting appropriate variant code;

334 Ex t, dust group IIIB T125 Db (non-conductive dust) acc. to IEC/EN60079-31
335 Ex t, dust group IIIB T125 Dc (non-conductive dust) acc. to IEC/EN60079-31
336 Ex t, dust group IIIC T125 Db (conductive dust) acc. to IEC/EN60079-31
337 Ex t, dust group IIIC T125 Dc (conductive dust) acc. to IEC/EN60079-31

Technical data for Ex t IIIB/IIIC T125 °C, Db/Dc, IP 65/IP 55
Dust ignition protection IE2 cast iron motors

IP 65/55 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30-1; 2014

Output kW	Motor type	Product code	Speed r/min	Efficiency IEC 60034--2-1; 2007 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor cos φ	Current I_N A	$\frac{I_s}{I_N}$	Torque T_N N_m	$\frac{T_l}{T_N}$	$\frac{T_b}{T_N}$	Moment of inertia J = 1/4 GD² kgm²	Weight kg	Sound pressure level L_{PA} dB
750 r/min = 8-poles		400 V 50 Hz						CENELEC-design							
0.09	M3GP 71MA 8	3GGP074101-••B	660	49.4	46.3	39.6	0.6	0.44	2.7	1.3	2	2.5	0.00089	11	40
0.12	M3GP 71MB 8	3GGP074102-••B	670	51.4	47.5	39.9	0.56	0.6	2.7	1.7	2	2.5	0.0011	12	43
0.18	M3GP 80MA 8	3GGP084101-••B	700	57.4	53.7	46.1	0.62	0.78	3.2	2.5	2.1	2.8	0.00187	15	45
0.25	M3GP 80MB 8	3GGP084102-••B	680	61.5	61.3	53.5	0.65	0.94	3.1	3.5	1.9	2.6	0.00239	17	50
0.37	M3GP 90SLB 8	3GGP094102-••B	705	66.3	64	57	0.54	1.47	2.8	5	1.9	2.5	0.00444	24	50
0.55	M3GP 90SLC 8	3GGP094103-••B	655	61.8	65.6	65.2	0.67	1.92	2.6	8	1.4	1.9	0.00491	25	53
0.75	M3GP 100LA 8	3GGP104101-••B	710	74	72.3	67.1	0.61	2.48	3.7	10.1	1.8	2.6	0.0072	30	46
1.1	M3GP 100LB 8	3GGP104102-••B	695	76	76.4	74.5	0.66	3.12	3.6	15.1	1.6	2.3	0.00871	30	53
1.5	M3GP 112M 8	3GGP114101-••B	690	74.4	75.9	74.1	0.74	4.11	3.5	20.9	1.9	2.6	0.0106	39	55
2.2	M3GP 132SMA 8	3GGP134101-••B	715	79.7	79.5	77.1	0.66	6.51	4.7	29.2	1.6	2.8	0.0334	70	56
3 [1]	M3GP 132SMB 8	3GGP134102-••B	715	79.9	79.7	76.6	0.64	8.5	4.7	39.7	1.7	2.8	0.04	75	58
4	M3GP 160MLA 8	3GGP164410-••D	722	83.3	84.7	84.2	0.7	10.3	4.7	52.9	1.6	2.6	0.133	181	59
5.5	M3GP 160MLB 8	3GGP164420-••D	723	86.8	87.2	86	0.71	13.5	5.8	72.7	1.9	3.1	0.133	182	53
7.5 [3]	M3GP 160MLC 8	3GGP164430-••H	718	82	84	84	0.7	19.3	5.7	99.8	2.1	2.9	0.133	245	55
11	M3GP 180MLB 8	3GGP184420-••H	723	88.3	89.2	88.7	0.72	25.5	5.6	145	2	3	0.245	292	63
15	M3GP 200MLA 8	3GGP204410-••G	734	89.9	90.4	89.5	0.79	30.6	6.9	195	2.4	3.2	0.45	280	56
18.5	M3GP 225SMA 8	3GGP224210-••D	734	90	90.7	90.2	0.74	39.2	6.1	240	2.2	3	0.61	326	55
22	M3GP 225SMB 8	3GGP224220-••D	732	90.6	91.4	91.2	0.81	45.3	6.5	287	1.9	2.9	0.68	343	56
30	M3GP 250SMA 8	3GGP254210-••D	735	91.6	91	90.5	0.78	60.7	6.7	389	2	2.9	1.25	440	56
37	M3GP 280SMA 8	3GGP284210-••G	741	91.7	92	91.2	0.79	72.6	7.3	476	1.7	3	1.85	605	65
45	M3GP 280SMB 8	3GGP284220-••G	741	92.1	92.3	91.7	0.78	89.2	7.6	579	1.8	3.1	2.2	645	65
55	M3GP 315SMA 8	3GGP314210-••G	742	92.4	93	92.4	0.79	106	7.1	707	1.6	2.7	3.2	830	62
75	M3GP 315SMB 8	3GGP314220-••G	741	93	93.2	93	0.82	146	7.1	966	1.7	2.7	4.1	930	62
90	M3GP 315SMC 8	3GGP314230-••G	741	93.3	93.7	93.3	0.82	170	7.4	1159	1.8	2.7	4.9	1000	64
110	M3GP 315MLA 8	3GGP314410-••G	740	93.6	93.9	94	0.83	211	7.3	1419	1.8	2.7	5.8	1150	72
132	M3GP 355SMA 8	3GGP354210-••G	744	93.9	93.8	93.3	0.8	256	7.5	1694	1.5	2.6	7.9	1520	69
160	M3GP 355SMB 8	3GGP354220-••G	744	94.3	94.3	93.8	0.77	293	7.6	1926	1.6	2.6	9.7	1680	69
200	M3GP 355SMC 8	3GGP354230-••G	742	94.5	95	94.8	0.79	385	7.4	2576	1.6	2.6	11.3	1820	69
250 [4]	M3GP 355MLB 8	3GGP354420-••G	743	95.4	95.5	95	0.8	476	7.5	3213	1.6	2.7	13.5	2180	72
315 [4]	M3GP 400LA 8	3GGP404510-••G	744	96.1	96	95.6	0.81	592	7	4043	1.2	2.6	17	2900	71
315 [4]	M3GP 400LKA 8	3GGP404810-••G	744	96.1	96	95.6	0.81	592	7	4043	1.2	2.6	17	2900	71
355 [4]	M3GP 400LB 8	3GGP404520-••G	743	96.2	96.3	96.1	0.83	641	6.8	4562	1.2	2.5	21	3200	71
355 [4]	M3GP 400LKB 8	3GGP404820-••G	743	96.2	96.3	96.1	0.83	641	6.8	4562	1.2	2.5	21	3200	71
400 [4]	M3GP 400LC 8	3GGP404530-••G	744	96.3	96.4	96.1	0.82	735	7.4	5134	1.3	2.7	24	3400	71
400 [4]	M3GP 400LKC 8	3GGP404830-••G	744	96.3	96.4	96.1	0.82	735	7.4	5134	1.3	2.7	24	3400	71
450	M3GP 450LA 8	3GGP454510-••G	744	96.2	96.5	96.2	0.83	813	6	5775	1	2.5	26	3750	80
500	M3GP 450LB 8	3GGP454520-••G	744	96.3	96.4	96.2	0.83	902	6.4	6417	1	2.6	29	4000	80
560	M3GP 450LC 8	3GGP454530-••G	744	96.4	96.5	96.1	0.82	1038	7	7188	1.2	2.9	35	4350	80
630 [2]	M3GP 450LD 8	3GGP454540-••G	745	96.6	96.7	96.2	0.81	1162	7.6	8075	1.3	3.2	41	4800	80
750 r/min = 8-poles		400 V 50 Hz						High-output design							
18.5	M3GP 200MLB 8	3GGP204420-••G	734	89.2	89.8	88.8	0.8	37.1	6.9	240	2.2	3.2	0.54	300	57
30	M3GP 225SMC 8	3GGP224230-••D	731	90.7	91.6	91.6	0.78	61.2	6.3	391	2.3	3	0.75	369	59
37	M3GP 250SMB 8	3GGP254220-••D	737	92.2	92.9	92.5	0.79	73	7.5	479	2.3	3.4	1.52	487	59
55	M3GP 280SMC 8	3GGP284230-••G	741	93.4	93.7	93.6	0.8	107	7.9	708	1.9	3.1	2.85	725	65

[1] Efficiency class IE1
[2] Temperature rise class F
[3] IE0, Temperature rise class F
[4] For 400-415 V 50 Hz (380 V 50 Hz voltage code B)

Equipment protection level and equipment group subdivision must be selected when ordering by selecting appropriate variant code;

334 Ex t, dust group IIIB T125 Db (non-conductive dust) acc. to IEC/EN60079-31
335 Ex t, dust group IIIB T125 Dc (non-conductive dust) acc. to IEC/EN60079-31
336 Ex t, dust group IIIC T125 Db (conductive dust) acc. to IEC/EN60079-31
337 Ex t, dust group IIIC T125 Dc (conductive dust) acc. to IEC/EN60079-31

Technical data for Ex t IIIB/IIIC T125 °C, Db/Dc, IP 65/IP 55
Dust ignition protection IE3 cast iron motors

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE3 efficiency class according to IEC 60034-30-1; 2014

Output kW	Motor type	Product code	Speed r/min	Efficiency IEC 60034--2-1; 2007 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor cos φ	Current I_N A	$\frac{I_s}{I_N}$	Torque T_N N_m	$\frac{T_l}{T_N}$	$\frac{T_b}{T_N}$	Moment of inertia J = 1/4 GD² kgm²	Weight kg	Sound pressure level L_{PA} dB
3000 r/min = 2-poles		400 V 50 Hz						CENELEC-design							
0.37	M3GP 71MC 2	3GGP071330-••L	2743	73.8	74.4	71.7	0.8	0.94	4.9	1.26	2.3	2.8	0.00088	10	58
0.55	M3GP 71ME 2	3GGP071350-••L	2755	77.8	79.3	78.4	0.8	1.25	6.8	1.9	2.8	3.1	0.00045	11	56
0.75	M3GP 80MC 2	3GGP081330-••L	2879	80.7	81.0	78.8	0.8	1.6	7.2	2.5	3.4	4.2	0.001	17	57
1.1	M3GP 80ME 2	3GGP081350-••L	2865	82.7	83.8	83.1	0.8	2.3	7.2	3.7	3.5	4.1	0.0012	18	60
1.5	M3GP 90SLA 2	3GGP091010-••L	2901	84.2	84.8	83.8	0.9	2.9	7.7	4.93	2.1	3.5	0.0028	27	69
2.2	M3GP 90LA 2	3GGP091510-••L	2904	85.9	86.3	84.8	0.9	4.2	8.8	7.2	3.1	3.8	0.0036	30	64
3	M3GP 100MLA 2	3GGP101410-••L	2895	87.1	87.9	87.3	0.9	5.4	8.2	9.9	3.3	3.9	0.0013	42	68
4	M3GP 112ME 2	3GGP111350-••L	2882	88.1	89.9	90.9	0.9	6.9	8.3	13	2.9	3.7	0.0139	56	70
5.5	M3GP 132SMC 2	3GGP131230-••L	2908	89.2	89.5	88.5	0.9	9.8	7.6	18	2.3	3.8	0.0182	69	70
7.5	M3GP 132SME 2	3GGP131250-••L	2916	90.1	90.5	90.1	0.9	13.3	8.4	24.6	2.5	4.3	0.0203	75	70
11	M3GP 160MLA 2	3GGP161410-••L	2943	91.2	92.0	91.6	0.9	19.1	7.2	35.57	2.6	3.6	0.057	144	69
15	M3GP 160MLB 2	3GGP161420-••L	2947	91.9	92.2	91.8	0.9	26.5	8.2	48.49	3.2	4.2	0.063	152	69
18.5	M3GP 160MLC 2	3GGP161430-••L	2949	92.4	93.0	92.6	0.9	32	9.0	59.81	3.3	3.9	0.076	164	73
22	M3GP 180MLA 2	3GGP181410-••L	2956	92.7	93.1	92.7	0.9	37.7	7.8	70.98	3.4	3.8	0.11	205	73
30	M3GP 200MLA 2	3GGP201410-••L	2957	93.3	93.8	93.6	0.9	52.4	7.5	96.92	2.5	3.1	0.182	263	73
37	M3GP 200MLB 2	3GGP201420-••L	2960	93.7	94.2	94.1	0.9	64.2	8.2	119.5	3.1	3.4	0.222	289	73
45	M3GP 225SMA 2	3GGP221210-••L	2968	94.0	94.0	93.0	0.9	79.6	7.3	144.8	3.2	3.1	0.296	335	76
55	M3GP 250SMA 2	3GGP251210-••L	2968	94.3	93.7	93.6	0.9	94.8	6.8	177	2.4	3.0	0.426	400	76
75	M3GP 280SMB 2	3GGP281220-••L	2978	94.7	94.4	93.5	0.9	130	7.0	240	2.3	3.0	0.9	665	74
90	M3GP 280SMC 2	3GGP281230-••L	2975	95.0	95.0	94.2	0.9	158	6.4	289	2.1	2.8	0.99	690	74
110	M3GP 315SMB 2	3GGP311220-••L	2982	95.2	94.9	93.9	0.9	192	7.0	352	1.8	2.7	1.3	910	78
132	M3GP 315SMC 2	3GGP311230-••L	2982	95.4	95.4	94.6	0.9	229	6.8	422	2.0	2.8	1.5	965	78
160	M3GP 315SMD 2	3GGP311240-••L	2983	95.6	95.6	94.9	0.9	275	7.4	512	2.2	2.8	1.7	1025	78
200	M3GP 315MLA 2	3GGP311410-••L	2983	95.8	95.8	95.3	0.9	342	7.7	640	2.5	3.1	2.1	1190	81
250 [1]	M3GP 355SMA 2	3GGP351210-••L	2985	95.8	95.6	94.6	0.9	423	7.7	800	2.1	3.3	3	1600	83
315 [1]	M3GP 355SMB 2	3GGP351220-••L	2980	95.8	95.7	95.0	0.9	529	7.0	1009	2.1	3.0	3.4	1680	83
355 [1]	M3GP 355SMC 2	3GGP351230-••L	2984	95.8	95.8	95.0	0.9	605	7.2	1136	2.2	3.0	3.6	1750	83
3000 r/min = 2-poles		400 V 50 Hz						High-output design							
250	M3GP 315LKB 2	3GGP311820-••L	2983	95.8	96.0	95.5	0.9	419	7.7	800	2.5	3.3	2.9	1540	81

[1] -3dB(A) sound pressure level reduction with unidirectional fan construction. Direction of rotation must be stated when ordering, see variant codes 044 and 045

Equipment protection level and equipment group subdivision must be selected when ordering by selecting appropriate variant code;

334 Ex t, dust group IIIB T125 Db (non-conductive dust) acc. to IEC/EN60079-31
335 Ex t, dust group IIIB T125 Dc (non-conductive dust) acc. to IEC/EN60079-31
336 Ex t, dust group IIIC T125 Db (conductive dust) acc. to IEC/EN60079-31
337 Ex t, dust group IIIC T125 Dc (conductive dust) acc. to IEC/EN60079-31

Technical data for Ex t IIIB/IIIC T125 °C, Db/Dc, IP 65/IP 55
Dust ignition protection IE3 cast iron motors

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE3 efficiency class according to IEC 60034-30-1; 2014

Output kW	Motor type	Product code	Speed r/min	Efficiency IEC 60034--2-1; 2007 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor cos φ	Current I_N A	$\frac{I_s}{I_N}$	Torque T_N N_m	$\frac{T_l}{T_N}$	$\frac{T_b}{T_N}$	Moment of inertia J = 1/4 GD² kgm²	Weight kg	Sound pressure level L_{PA} dB
1500 r/min = 4-poles		400 V 50 Hz						CENELEC-design							
0.25	M3GP 71MD 4	3GGP072340-••L	1416	73.5	75.1	73.8	0.8	0.6	4.8	1.68	2.0	2.6	0.0009	11	45
0.37	M3GP 71MLE 4	3GGP072450-••L	1432	77.3	77.4	74.5	0.76	0.9	5.8	2.46	2.7	3.3	0.00122	15	45
0.55	M3GP 80MLC 4	3GGP082430-••L	1444	80.8	81.6	80.1	0.8	1.2	6.7	4	3.0	3.5	0.0028	20	45
0.75	M3GP 80MLE 4	3GGP082450-••L	1448	82.5	82.5	80.1	0.78	1.7	7.4	4.9	3.5	4.0	0.0033	22	50
1.1	M3GP 90LA 4	3GGP092510-••L	1443	84.1	84.6	83.5	0.76	2.4	5.2	7.26	3.4	4.2	0.0049	28	56
1.5	M3GP 90LB 4	3GGP092520-••L	1445	85.3	85.0	82.6	0.77	3.3	5.7	9.9	3.8	4.6	0.0067	32	56
2.2	M3GP 100LA 4	3GGP102510-••L	1448	86.7	89.0	86.1	0.81	4.5	7.5	14	2.3	3.6	0.0109	38	56
3	M3GP 100MLB 4	3GGP102420-••L	1444	87.7	88.4	87.6	0.81	6.1	7.0	19.8	3.3	4.1	0.0121	42	58
4	M3GP 112ME 4	3GGP112350-••L	1453	88.6	88.9	88.0	0.74	8.9	7.8	26	3.5	4.3	0.0188	52	59
5.5	M3GP 132SMB 4	3GGP132220-••L	1463	89.6	89.8	88.7	0.74	11.9	7.6	36	2.8	3.9	0.0295	68	70
7.5	M3GP 132SME 4	3GGP132250-••L	1462	90.4	90.8	90.2	0.76	15.7	7.9	49	3.0	4.0	0.0376	78	64
11	M3GP 160MLA 4	3GGP162410-••L	1477	91.4	91.8	91.1	0.82	21.1	7.6	71.27	2.6	3.3	0.11	160	61
15	M3GP 160MLB 4	3GGP162420-••L	1477	92.1	92.4	91.6	0.82	28.5	8.2	96.99	3.0	3.7	0.135	179	61
18.5	M3GP 180MLA 4	3GGP182410-••L	1481	92.6	93.2	92.9	0.83	34.9	7.2	119.3	2.8	3.0	0.219	215	60
22	M3GP 180MLB 4	3GGP182420-••L	1481	93.0	93.5	93.3	0.82	41.4	6.5	142	3.0	3.2	0.243	229	60
30	M3GP 200MLA 4	3GGP202410-••L	1483	93.6	93.8	93.4	0.84	54.8	7.5	193.2	2.7	3.2	0.385	292	63
37	M3GP 225SMA 4	3GGP222210-••L	1482	93.9	94.1	93.8	0.83	68.9	7.2	238.6	3.1	3.1	0.427	322	67
45	M3GP 225SMB 4	3GGP222220-••L	1482	94.2	94.4	94.0	0.84	82.3	8.0	290	3.2	3.5	0.525	357	66
55	M3GP 250SMA 4	3GGP252210-••L	1482	94.6	94.7	94.0	0.84	100	7.1	354.2	2.9	3.4	0.694	406	68
75	M3GP 280SMB 4	3GGP282220-••L	1485	95.0	95.2	94.8	0.86	133	6.4	483	2.3	2.8	1.38	645	75
90	M3GP 280SMC 4	3GGP282230-••L	1485	95.2	95.5	95.2	0.86	158	7.1	578	2.5	2.9	1.73	700	75
110	M3GP 315SMB 4	3GGP312220-••L	1489	95.4	95.5	94.9	0.84	198	7.0	705	2.1	3.0	2.43	930	71
132	M3GP 315SMC 4	3GGP312230-••L	1488	95.6	95.9	95.5	0.86	231	6.7	847	2.2	2.9	2.9	1000	71
160	M3GP 315SMD 4	3GGP312240-••L	1488	95.8	96.0	95.8	0.85	282	6.9	1026	2.2	3.0	3.2	1065	71
200	M3GP 315MLB 4	3GGP312420-••L	1487	96.0	96.4	96.4	0.86	351	6.8	1284	2.4	3.0	3.9	1220	74
250	M3GP 355SMA 4	3GGP352210-••L	1491	96.0	96.0	95.6	0.86	435	6.4	1601	2.1	2.9	5.9	1610	78
315	M3GP 355SMB 4	3GGP352220-••L	1491	96.0	96.1	95.7	0.85	550	7.3	2018	2.4	3.3	6.9	1780	78
355	M3GP 355SMC 4	3GGP352230-••L	1490	96.0	96.2	95.8	0.86	616	6.3	2273	2.3	2.8	7.2	1820	78
1500 r/min = 4-poles		400 V 50 Hz						High-output design							
250	M3GP 315LKA 4	3GGP312810-••L	1488	96.0	96.3	96.1	0.85	442	6.9	1604	2.5	3.2	4.4	1410	78

Equipment protection level and equipment group subdivision must be selected when ordering by selecting appropriate variant code;

334 Ex t, dust group IIIB T125 Db (non-conductive dust) acc. to IEC/EN60079-31
335 Ex t, dust group IIIB T125 Dc (non-conductive dust) acc. to IEC/EN60079-31
336 Ex t, dust group IIIC T125 Db (conductive dust) acc. to IEC/EN60079-31
337 Ex t, dust group IIIC T125 Dc (conductive dust) acc. to IEC/EN60079-31

Technical data for Ex t IIIB/IIIC T125 °C, Db/Dc, IP 65/IP 55
Dust ignition protection IE3 cast iron motors

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE3 efficiency class according to IEC 60034-30-1; 2014

Output kW	Motor type	Product code	Speed r/min	Efficiency IEC 60034--2-1; 2007 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor cos φ	Current I_N A	$\frac{I_s}{I_N}$	Torque T_N N_m	$\frac{T_l}{T_N}$	$\frac{T_b}{T_N}$	Moment of inertia J = 1/4 GD² kgm²	Weight kg	Sound pressure level L_{PA} dB
1000 r/min = 6-poles		400 V 50 Hz						CENELEC-design							
0.18	M3GP 71ME 6	3GGP073350-••L	887	63.9	64.3	59.8	0.74	0.57	3.2	1.9	1.9	2.2	0.0009	10	45
0.25	M3GP 80MB 6	3GGP083320-••L	942	68.6	67.0	61.7	0.61	0.82	4.8	2.5	2.7	2.9	0.0019	14	47
0.37	M3GP 80MC 6	3GGP083330-••L	936	73.5	73.9	71.1	0.67	1.06	5.1	3.8	2.6	2.9	0.0028	16	50
0.55	M3GP 80ME 6	3GGP083350-••L	933	77.2	77.9	75.9	0.68	1.52	5.0	5.6	2.7	2.9	0.0035	18	47
0.75	M3GP 90SLD 6	3GGP093040-••L	940	78.9	80.3	79.2	0.75	1.8	4.4	7.57	2.1	2.8	0.0056	29	44
1.1	M3GP 90LF 6	3GGP093560-••L	944	81.0	81.7	80.1	0.75	2.62	4.7	11.1	2.1	2.8	0.0068	33	44
1.5	M3GP 100MLB 6	3GGP103420-••L	960	82.5	82.5	80.1	0.68	3.8	5.4	14.9	2.7	3.4	0.012	41	49
2.2	M3GP 112MJ 6	3GGP113390-••L	962	84.3	85.5	84.7	0.68	5.3	4.2	21.8	1.4	2.3	0.0196	53	66
3	M3GP 132SMB 6	3GGP133220-••L	973	85.6	85.1	82.9	0.62	8	6.6	29.2	2.7	3.8	0.0355	75	57
4	M3GP 132SMF 6	3GGP133260-••L	971	86.8	86.5	84.7	0.62	10.7	6.6	39	2.7	3.8	0.0416	82	57
5.5	M3GP 132SMJ 6	3GGP133290-••L	966	88.0	89.1	88.9	0.73	12.3	4.2	54	1.7	2.7	0.0408	81	57
7.5	M3GP 160MLA 6	3GGP163410-••L	975	89.1	90.0	90.0	0.77	15.7	5.7	73.24	1.4	3.0	0.089	146	59
11	M3GP 160MLB 6	3GGP163420-••L	975	90.3	91.1	91.1	0.78	22.5	6.4	107.5	1.6	3.1	0.138	180	64
15	M3GP 180MLA 6	3GGP183410-••L	979	91.2	91.9	91.6	0.79	30.1	5.2	146.9	1.5	2.7	0.212	212	63
18.5	M3GP 200MLA 6	3GGP203410-••L	989	91.7	91.9	91.2	0.82	35.2	6.5	178.8	2.2	3.2	0.496	272	59
22	M3GP 200MLB 6	3GGP203420-••L	989	92.2	92.4	91.4	0.81	42.4	7.3	212.4	2.6	3.5	0.585	297	59
30	M3GP 225SMA 6	3GGP223210-••L	988	92.9	93.0	92.2	0.77	60.4	7.7	290.6	2.9	3.6	0.724	349	63
37	M3GP 250SMA 6	3GGP253210-••L	990	93.3	93.7	93.5	0.80	71.1	6.5	357	2.4	3.1	1.3	431	58
45	M3GP 280SMB 6	3GGP283220-••L	991	93.7	94.0	93.5	0.84	82	7.4	433	2.7	3.0	1.87	645	72
55	M3GP 280SMC 6	3GGP283230-••L	992	94.1	94.3	93.8	0.86	99	7.5	528	2.8	3.0	2.57	725	71
75	M3GP 315SMB 6	3GGP313220-••L	994	94.6	94.9	94.6	0.84	136	6.8	720	1.8	2.6	4.1	930	75
90	M3GP 315SMC 6	3GGP313230-••L	994	94.9	95.1	94.7	0.84	164	7.2	864	2.0	3.0	4.6	1000	76
110	M3GP 315SMD 6	3GGP313240-••L	994	95.1	95.3	95.0	0.83	200	7.3	1056	2.2	3.1	4.9	1040	75
132	M3GP 315MLB 6	3GGP313420-••L	995	95.4	95.5	95.1	0.82	242	7.3	1266	2.3	3.2	6.3	1200	72
160	M3GP 355SMA 6	3GGP353210-••L	993	95.6	95.8	95.6	0.82	292	6.7	1538	2.5	2.6	7.9	1520	75
200	M3GP 355SMB 6	3GGP353220-••L	993	95.8	96.2	96.1	0.82	365	6.7	1923	2.6	2.5	9.7	1680	75
250	M3GP 355SMC 6	3GGP353230-••L	993	95.8	96.1	95.8	0.81	465	7.7	2404	3.0	3.1	11.3	1820	75
315	M3GP 355MLB 6	3GGP353420-••L	993	95.8	96.1	96.0	0.83	571	6.8	3029	2.6	3.2	13.5	2180	76
355	M3GP 355LKA 6	3GGP353810-••L	993	95.8	96.0	95.9	0.81	653	7.5	3413	2.9	3.2	15.5	2500	76
1000 r/min = 6-poles		400 V 50 Hz						High-output design							
160	M3GP 315LKA 6	3GGP313810-••L	994	95.6	95.8	95.4	0.81	298	7.5	1535	2.2	3.1	7.3	1410	76

Equipment protection level and equipment group subdivision must be selected when ordering by selecting appropriate variant code;

334 Ex t, dust group IIIB T125 Db (non-conductive dust) acc. to IEC/EN60079-31
335 Ex t, dust group IIIB T125 Dc (non-conductive dust) acc. to IEC/EN60079-31
336 Ex t, dust group IIIC T125 Db (conductive dust) acc. to IEC/EN60079-31
337 Ex t, dust group IIIC T125 Dc (conductive dust) acc. to IEC/EN60079-31

Technical data for Ex t IIIB/IIIC T125 °C, Db/Dc, IP 65/IP 55
Dust ignition protection IE3 cast iron motors

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE3 efficiency class according to IEC 60034-30-1; 2014

Output kW	Motor type	Product code	Speed r/min	Efficiency IEC 60034--2-1; 2007 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor cos φ	Current I_N A	$\frac{I_s}{I_N}$	Torque T_N N_m	$\frac{T_l}{T_N}$	$\frac{T_b}{T_N}$	Moment of inertia J = 1/4 GD² kgm²	Weight kg	Sound pressure level L_{PA} dB
750 r/min = 8-poles		400 V 50 Hz						CENELEC-design							
0.12	M3GP 71ME 8	3GGP074350-••L	659	50.7	48.9	41.9	0.68	0.49	2.5	1.7	1.9	2.1	0.00107	11	43
0.18	M3GP 80MF 8	3GGP084360-••L	679	58.8	57.3	51.7	0.55	0.8	2.2	2.6	1.3	1.9	0.0035	18	45
0.25	M3GP 80MLG 8	3GGP084470-••L	674	64.1	66.4	64.1	0.58	0.92	2.3	3.5	1.3	1.9	0.0044	21	50
0.37	M3GP 90SLF 8	3GGP094060-••L	710	69.3	67.8	62.5	0.54	1.37	3.3	4.96	2.3	3.3	0.0056	28	50
0.55	M3GP 90LG 8	3GGP094570-••L	710	73.0	70.8	64.6	0.53	2	4.1	7.7	2.5	3.2	0.0072	32	53
0.75	M3GP 100LKD 8	3GGP104840-••L	713	75.0	75.3	71.7	0.63	2.2	3.3	10	1.6	2.3	0.0132	45	46
1.1	M3GP 100LKF 8	3GGP104860-••L	708	77.7	78.1	75.5	0.64	3.2	3.5	14.7	1.7	2.4	0.0132	45	53
1.5	M3GP 112MF 8	3GGP114360-••L	714	79.7	80.7	79.5	0.61	4.3	3.9	20.2	1.5	2.3	0.0204	53	55
2.2	M3GP 132SMD 8	3GGP134240-••L	707	81.9	82.4	81.1	0.64	5.9	4.1	29.7	1.9	2.6	0.0361	73	56
3	M3GP 132SMJ 8	3GGP134290-••L	706	83.5	85.2	84.8	0.65	7.9	4.4	40	2.0	2.6	0.0435	83	58
37	M3GP 280SMA 8	3GGP284210-••L	742	91.8	92.1	91.4	0.79	73	7.3	476	1.7	3.0	1.85	605	65
45	M3GP 280SMB 8	3GGP284220-••L	741	92.2	92.4	91.8	0.78	89.6	7.6	579	1.8	3.1	2.2	645	65
55	M3GP 315SMA 8	3GGP314210-••L	742	92.5	93.1	92.5	0.80	106	7.7	707	1.8	2.7	3.2	830	62
75	M3GP 315SMB 8	3GGP314220-••L	740	93.1	93.3	93.1	0.79	146	7.1	966	1.7	2.7	4.1	930	62
90	M3GP 315SMC 8	3GGP314230-••L	739	93.4	93.8	93.4	0.81	171	7.4	1159	1.8	2.7	4.9	1000	64
110	M3GP 315MLA 8	3GGP314410-••L	740	93.7	94.0	94.1	0.80	211	7.3	1419	1.8	2.7	5.8	1150	72
132	M3GP 355SMA 8	3GGP354210-••L	744	94.0	93.9	93.4	0.77	256	7.5	1694	1.5	2.6	7.9	1520	69
132	M3GP 355SMA 8	3GGP354210-••L	744	94.0	93.9	93.4	0.77	256	7.5	1694	1.5	2.6	7.9	1520	69
160	M3GP 355SMB 8	3GGP354220-••L	744	94.3	94.3	93.9	0.77	293	7.6	1926	1.6	2.6	9.7	1680	69
200	M3GP 355SMC 8	3GGP354230-••L	742	94.6	95.1	94.9	0.79	385	7.4	2576	1.6	2.6	11.3	1820	69
250 [1]	M3GP 355MLB 8	3GGP354420-••L	743	94.6	94.8	94.2	0.80	472	7.5	3213	1.6	2.7	13.5	2180	72

[1] For 400-415 V 50 Hz (380 V 50 Hz voltage code B)
Note: IE3 motors in frame sizes 160-250 on request

Equipment protection level and equipment group subdivision must be selected when ordering by selecting appropriate variant code;

334 Ex t, dust group IIIB T125 Db (non-conductive dust) acc. to IEC/EN60079-31
335 Ex t, dust group IIIB T125 Dc (non-conductive dust) acc. to IEC/EN60079-31
336 Ex t, dust group IIIC T125 Db (conductive dust) acc. to IEC/EN60079-31
337 Ex t, dust group IIIC T125 Dc (conductive dust) acc. to IEC/EN60079-31

Variant codes
Dust ignition protection Ex t cast iron motors

Code/Variants		Frame size 71	80	90	100	112	132	160	180	200	225	250	280	315	355	400	450
Administration																	
531	Sea freight packing	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
532	Packing of motor in vertical mounting position	-	-	-	-	-	-	-	-	•	•	•	•	•	-	-	-
533	Wooden sea freight packing	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
590	Mounting of customer supplied part other than coupling.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	-
Balancing																	
417	Vibration acc. to Grade B (IEC 60034-14).	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	-
423	Balanced without key.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
424	Full-key balancing	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Bearings and Lubrication																	
036	Transport lock for bearings.	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
037	Roller bearing at D-end.	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
040	Heat-resistant grease	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
043	SPM compatible nipples for vibration measurement	•	•	•	•	•	•	○	○	○	○	○	○	○	○	○	○
058	Angular contact bearing at D-end, shaft force away from bearing.	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
059	Angular contact bearing at N-end, shaft force towards bearing.	-	-	-	-	-	-	-	-	-	-	-	•	•	•	•	•
060	Angular contact bearing at D-end, shaft force towards bearing.	-	-	-	-	-	-	-	-	-	-	-	•	•	•	•	•
061	Angular contact bearing at N-end, shaft force away from bearing.	-	-	-	-	-	-	-	-	-	-	-	•	•	•	•	•
107	Pt100 2-wire in bearings.	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
128	Double PT100, 2-wire in bearings	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
129	Double PT100, 3-wire in bearings	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
130	Pt100 3-wire in bearings.	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
194	2Z bearings greased for life at both ends.	○	○	○	○	○	○	•	•	•	•	•	-	-	-	-	-
433	Outlet grease collector	-	-	-	-	-	-	-	-	-	-	-	•	•	•	•	•
506	Nipples for vibration measurement : SKF Marlin Quick Connect stud CMSS-2600-3	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
593	Bearings grease suitable for food and beverage industry.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
654	Provision for vibration sensors (M8x1)	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
795	Lubrication information plate	-	-	-	-	-	-	•	•	•	•	•	○	○	○	○	○
796	Grease nipples JIS B 1575 PT 1/8 Type A	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
797	Stainless steel SPM nipples	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
798	Stainless steel grease nipples	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
799	Grease nipples flat type DIN 3404, thread M10x1	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
800	Grease nipples JIS B 1575 PT 1/8“ pin type	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
Branch standard designs																	
178	Stainless steel / acid proof bolts.	○	○	○	○	○	○	•	•	•	•	•	•	•	•	•	•
204	Jacking bolts for foot mounted motors.	-	-	-	-	-	-	•	•	•	•	•	•	•	○	○	○
209	Non-standard voltage or frequency, (special winding).	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
396	Motor designed for ambient temperature -20 °C to -40 °C, with space heaters (code 450/451 must be added)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
397	Motor designed for ambient temperature -40 °C to -55 °C, with space heaters (code 450/451 must be added)	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
398	Motor designed for ambient temperature -20 °C to -40 °C	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
399	Motor designed for ambient temperature -40 °C to -55 °C	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
425	Corrosion protected stator and rotor core.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
524	Special run-out tolerances on flange and shaft for close coupled pump applications.	-	-	-	-	•	•	•	•	•	•	•	•	•	•	-	-
786	Special design shaft upwards (V3, V36, V6) for outdoor mounting.	-	•	•	•	•	•	•	•	•	•	•	-	-	-	-	-
Cooling system																	
044	Unidirectional fan for reduced noise level. Rotation clockwise seen from D-end. Available only for 2-pole motors.	-	-	-	-	-	-	-	-	-	-	-	•	•	•	•	•
045	Unidirectional fan for reduced noise level. Rotation counter clockwise seen from D-end. Available only for 2-pole motors.	-	-	-	-	-	-	-	-	-	-	-	•	•	•	•	•
068	Light alloy metal fan	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

Code/Variants		Frame size 71	80	90	100	112	132	160	180	200	225	250	280	315	355	400	450
183	Separate motor cooling (fan axial, N-end).	-	-	-	-	-	-	-	-	-	-	-	•	•	•	•	•
206	Steel fan	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
514	Separate motor cooling (fan on top)	-	-	-	-	-	-	-	-	-	-	-	•	•	•	•	•
791	Stainless steel fan cover	-	-	-	-	-	-	-	-	-	-	-	•	•	•	•	•
Coupling																	
035	Assembly of customer supplied coupling-half.	-	-	-	-	-	-	-	-	-	-	-	•	•	•	•	•
Documentation																	
141	Binding 2D main dimension drawing.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
374	Binding 2D motor detailed drawing	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
722	Rotor dimension drawing (incl. torosional stiffness)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Drain holes																	
065	Plugged existing drain holes.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
448	Draining holes with metal plugs.	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
Earthing Bolt																	
525	External earthing bolts on motor feet	-	•	•	•	•	•	○	○	○	○	○	•	•	•	•	•
Hazardous Environments																	
334	Ex t, Dust group III B T125C Db, IP6X (non-conductive dust) acc. IEC/EN60079-31.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	-
335	Ex t, Dust group III B T125C Dc, IP5X (non-conductive dust) acc. IEC/EN60079-31.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	-
336	Ex t, Dust group III C T125 Db, IP6X (conductive dust) acc. IEC/EN60079-31.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	-
337	Ex t, Dust group III C T125 Dc, IP6X (conductive dust) acc. IEC/EN60079-31.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	-
338	Rated for gas or dust, Ex nA IIC T3 Gc / Ex tc IIIB T125C Dc (non-conductive dust), IP5X.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	-
339	Rated for gas or dust, Ex nA IIC T3 Gc / Ex tc IIIC T125C Dc (conductive dust), IP6X.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	-
516	Ex i approved temperature detectors (Pt100)	-	-	-	-	-	-	-	-	-	-	-	•	•	•	•	•
807	CSA design, Class I, Div 2 Group A, B, C, D T3	-	-	-	-	-	-	-	-	-	-	-	•	•	•	•	-
813	Thermistor-based surface temperature protection T4 for frequency convertor duty.	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
814	Ex t (DIP) motors, temperature class T 150C.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Heating elements																	
450	Heating element, 100-120 V	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
451	Heating element, 200 - 240 V	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Insulation system																	
014	Winding insulation class H.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
405	Special winding insulation for frequency converter supply.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Marine																	
024	Fulfilling Bureau Veritas (BV) requirements, with certificate.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
025	Fulfilling Det Norske Veritas (DNV) requirements, with certificate.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
026	Fulfilling Lloyds Register of Shipping (LR) requirements, with certificate.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
027	Fulfilling American Bureau of Shipping (ABS) requirements, with certificate.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
049	Fulfilling Germanischer Lloyd (GL) requirements, with certificate.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
050	Fulfilling Registro Italiano Navale (RINA) requirements, with certificate.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
051	Fulfilling Russian Maritime Register of Shipping (RS) requirements, with certificate.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
096	Fulfilling Lloyds Register of Shipping (LR) requirements, without certificate (non-essential duty only)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
186	Fulfilling Det Norske Veritas (DNV) requirements, without certificate (non-essential duty only)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
481	Fulfilling Nippon Kaiji Kyokai (NK) requirements, with certificate.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
483	Fulfilling China Classification Societies (CCS) requirements (Beijing), with certificate.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
484	Fulfilling Korea Register of Shipping (KR) requirements, with certificate.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
491	Fulfilling Nippon Kaiji Kyokai (NK) requirements, without certificate.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
492	Fulfilling Registro Italiano Navale (RINA) requirements, without certificate.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
493	Fulfilling China Classification Societies (CCS) requirements (Beijing), without certificate.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

Code/Variants		Frame size 71	80	90	100	112	132	160	180	200	225	250	280	315	355	400	450
494	Fulfilling Korea Register of Shipping (KR) requirements, without certificate.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
496	Fulfilling Bureau Veritas (BV) requirements, without certificate(non-essential duty only)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
675	Fulfilling American Bureau of Shipping (ABS) requirements, without certificate (non-essential duty only)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
676	Fulfilling Germanischer Lloyd (GL) requirements, without certificate (non-essential duty only)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Mounting arrangements																	
008	IM 2101 foot/flange mounted, IEC flange, from IM 1001 (B34 from B3).	•	•	•	•	•	•	-	-	-	-	-	-	-	-	-	-
009	IM 2001 foot/flange mounted, IEC flange, from IM 1001 (B35 from B3).	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
047	IM 3601 flange mounted, IEC flange, from IM 3001 (B14 from B5).	•	•	•	•	•	•	-	-	-	-	-	-	-	-	-	-
066	Modified for specified mounting position differing from IM B3 (1001), IM B5 (3001), B14 (3601), IM B35 (2001), IM B34 (2101)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
305	Additional lifting lugs.	-	-	-	-	-	-	-	-	-	-	-	•	•	•	•	•
Painting																	
105	Paint thickness report.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
114	Special paint color, standard grade	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
115	Painting system C4M acc. to ISO 12944-2: 1998.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
168	Primer paint only.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
303	Painted insulation layer on inside of the terminal boxes.	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
710	Thermally sprayed zink metallizing with acrylic top coat	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
711	Painting system C5-M very high, acc. to ISO 12944-2:1998	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
754	Painting system C5M acc. to ISO 12944-2:1998	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Protection																	
005	Protective roof, vertical motor, shaft down.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
072	Radial seal at D-end. Not possible for 2-pole , 280 and 315 frames	•	•	•	•	•	•	-	-	-	-	-	-	-	-	-	-
073	Sealed against oil at D-end.	-	-	-	-	-	-	-	-	-	-	-	•	•	-	-	-
158	Degree of protection IP65.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	-
250	Degree of protection IP66	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
401	Protective roof, horizontal motor.	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
403	Degree of protection IP56.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	-
434	Degree of protection IP56, open deck.	-	-	-	-	-	-	-	-	-	-	-	•	•	•	•	•
783	Labyrinth sealing at D-end.	-	-	-	-	-	-	•	•	•	•	•	•	•	○	○	○
Rating & instruction plates																	
002	Restamping voltage, frequency and output, continuous duty.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
004	Additional text on std rating plate (max 12 digits on free text line).	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
095	Restamping output (maintained voltage, frequency), intermittent duty.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
126	Tag plate	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
135	Mounting of additional identification plate, stainless.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
139	Additional identification plate delivered loose.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
159	Additional plate with text „Made in ....“	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
161	Additional rating plate delivered loose.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
163	Frequency converter rating plate. Rating data according to quotation.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
181	Rating plate with ABB standard loadability values for VSD operation. Other auxiliaries for VSD operation to be selected as necessary.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
332	Baldor Catalogue #	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
333	Not for use in the USA	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
528	Rating plate sticker	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Shaft & rotor																	
069	Two shaft extensions according to catalog drawings.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
070	Special shaft extension at D-End, standard shaft material	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
155	Cylindrical shaft extension, D-end, without key-way.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
164	Shaft extension with closed keyway	○	○	○	○	○	○	○	○	○	○	○	•	•	•	•	•
165	Shaft extension with open keyway	•	•	•	•	•	•	•	•	•	•	•	○	○	○	○	○
410	Shaft material stainless steel	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
591	Special shaft extension according to customer specification.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
600	Special shaft extension at N-end, standard shaft material.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

Code/Variants		Frame size 71	80	90	100	112	132	160	180	200	225	250	280	315	355	400	450
630	Shaft material certificate 3.1/3.2 according to EN10204:2004	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•	•
Standards and Regulations																	
248	Design according to Petronas PTS 33.66.05.31-GEN. February 2010.	-	-	-	-	-	-	•	•	•	•	•	•	•	•	-	-
251	Shell DEP 33.66.05.31-GEN. February 2012.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
408	Fulfilling EISA Subtype II efficiency requirements, CC031A.									•	•	•	•	•	-	-	-
421	VIK design (Verband der Industriellen Energie- und Kraftwirtschaft e.V.).	-	-	-	-	-	-	-	-	-	-	-	•	•	•	•	-
505	VIK design with ABB standard shaft dimensions (Verband der Industriellen Energie- und Kraftwirtschaft e.V.).	-	-	-	-	-	-	-	-	-	-	-	-	•	•	•	-
540	China energy label	-	-	-	-	-	-	•	•	•	•	•	•	•	•	-	-
541	Inmetro certification												•	•	•	•	•
542	NBR design												•	•	-	-	-
543	Australian MEPS	-	•	•	•	•	•	•	•	•	•	•	•	•	•	-	-
547	Certificate of conformity according TR-CU 012/2011 for customs union RU, KZ, BY.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
782	Fulfilling CQST Certification requirements (China)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Stator winding temperature sensors																	
120	KTY 84-130 (1 per phase) in stator winding.	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
328	PTC - thermistors (3 in series), 120ºC, in stator winding	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
435	PTC - thermistors (3 in series), 130 ºC, in stator winding	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
439	PTC - thermistors (2x3 in series), 150 ºC, in stator winding	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
441	PTC - thermistors (3 in series, 130 ºC & 3 in series, 150 ºC), in stator winding	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
445	Pt100 2-wire in stator winding, 1 per phase	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
446	Pt100 2-wire in stator winding, 2 per phase	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
502	Pt100 3-wire in stator winding, 1 per phase	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
503	Pt100 3-wire in stator winding, 2 per phase	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
511	PTC thermistors (2 x 3 in series), 130 ºC, in stator winding	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Terminal box																	
019	Larger than standard terminal box.	•	•	•	•	•	•	-	-	-	-	-	•	•	•	•	-
021	Terminal box LHS (seen from D-end).	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	-
022	Cable entry LHS (seen from D-end).	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
157	Terminal box degree of protection IP65.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	-
180	Terminal box RHS (seen from D-end).	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	-
230	Standard metal cable gland.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	-	-
351	Terminal block turned according to cable entry	-	-	-	-	-	-	-	-	-	-	-	•	•	-	•	•
380	Separate terminal box for temperature detectors, std. material	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
400	4 x 90 degr turnable terminal box.	•	•	•	•	•	•	○	○	○	○	○	○	○	-	-	-
413	Extended cable connection, no terminal box.	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	-
418	Separate terminal box for auxiliaries, standard material.	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
447	Top mounted separate terminal box for monitoring equipment.	-	-	-	-	-	-	-	-	-	-	-	•	•	•	-	-
466	Terminal box at N-end.	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
468	Cable entry from D-end.	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	-
469	Cable entry from N-end.	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	-
526	Existing cable entries plugged	○	○	○	○	○	○	○	○	○	○	○	○	○	•	•	•
553	Terminal box degree of protection IP66.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	-
554	Painted steel flange for cable glands drilled and tapped according to order.	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
555	Aluminum flange for cable glands drilled and tapped according to order.	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
557	Nickel plated cable glands mounted according to order.	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
567	Separate terminal box material: cast Iron	-	-	-	-	-	-	○	○	○	○	○	•	•	•	•	•
568	Separate terminal box for heating elements, std. material	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
624	Prepared for BSP cable glands.	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
727	Stainless steel flange for cable glands drilled and tapped according to order.	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
729	Aluminum non-drilled flange for cable glands	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
730	Prepared for NPT cable glands.	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
731	Two standard metal cable glands.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
734	Standard cable gland, Ex d IIC, armoured cable.	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
735	Standard cable gland, Ex d IIC, non-armoured cable.	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
741	Motor equipped with Ex e terminal box (EN 50019).	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
743	Painted non-drilled flange in steel for cable glands	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•

Code/Variants		Frame size 71	80	90	100	112	132	160	180	200	225	250	280	315	355	400	450
744	Stainless steel non-drilled flange for cable glands.	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
745	Painted steel flange equipped with nickel plated brass cable glands	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
746	Stainless steel cable flange equipped with standard nickel plated brass cable glands	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
Testing																	
145	Type test report from a catalogue motor, 400V 50Hz.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
146	Type test with report for one motor from specific delivery batch.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
148	Routine test report.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
150	Customer witnessed testing. Specify test procedure with other codes.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
222	Torque/speed curve, type test and multi-point load test with report for one motor from specific delivery batch.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
560	Shaft voltage test.	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
561	Overspeed test.	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
562	Overvoltage test.	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
760	Vibration level test	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
761	Vibration spectrum test for one motor from specific delivery batch.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
762	Noise level test for one motor from specific delivery batch.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
763	Noise spectrum test for one motor from specific delivery batch.	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
764	Test for one motor from specific delivery batch with ABB frequency converter available at ABB test field. ABB standard test procedure.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Variable speed drives																	
470	Prepared for hollow shaft pulse tacho (L&L equivalent).	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
479	Mounting of other type of pulse tacho with shaft extension, tacho not included.	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
680	2048 pulse tacho, Ex d, tD, L&L 841910001	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•
701	Insulated bearing at N-end.	-	-	-	-	-	-	-	-	-	-	-	•	•	•	•	•
704	EMC cable entry.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
747	1024 pulse tacho, Ex d, tD, L&L 841910002	-	-	-	-	-	-	•	•	•	•	•	•	•	•	•	•

○ = Included as standard
• = Available as option
- = Not applicable

Mechanical design
Motor frame and drain holes

Motor frame
The motor frame, end shields and main terminal box are made of cast iron. Feet are integrated with the frame, except for sizes 160-250 with side mounted terminal box, which have detachable feet.

Motors can be supplied for foot mounting, flange mounting, and combinations of these.

Drain holes
Dust ignition protection motors are provided with drain holes fitted with plugs as standard. The plugs are made of plastic material and delivered in closed position.

When mounting arrangement differs from foot mounted IM B3, mention variant code 066 when ordering to ensure the drain plug is mounted in the lowest position.

Lifting lugs
The motors are provided as standard with lifting lugs according to the table below. For improved lifting possibilities can variant code 305 be added, please refer to the variant code section for information about availability.

Frame size	Type of lugs	Foot mounted motors	Flange mounted motors
71, 80	No lugs, weight of motors is less than 25 kg	-	-
90-132	Detachable eye bolt	2 pcs on top of motor diagonally placed, size M8	2 pcs on top of motor diagonally placed, size M8
160-200	Integrated in casting / detachable eye bolt	2 pcs on top of motor diagonally placed, integrated in frame casting	Locations for eye bolts: 4 pcs at N-end and 4 pcs at D-end. 2 pcs eye bolts size M12 delivered with each motor
225-250	Integrated in casting / detachable eye bolt	2 pcs on top of motor diagonally placed, integrated in frame casting	Locations for eye bolts: 4 pcs at N-end and 4 pcs at D-end. 2 pcs eye bolts size M16 delivered with each motor
280, 315	Detachable eye bolt	1 pcs close to terminal box on top, size M24	Locations for eye bolts: 4 pcs at N-end and 4 pcs at D-end, one location on top close to terminal box. 2 pcs eye bolts size M24 delivered with each motor
355	Detachable eye bolt	1 pcs close to terminal box on top, size M30	Locations for eye bolts: 4 pcs at N-end and 4 pcs at D-end, one location on top close to terminal box. 2 pcs eye bolts size M30 delivered with each motor
400	Detachable eye bolt	1 pcs close to terminal box on top, size M36	Locations for eye bolts: 4 pcs at N-end and 4 pcs at D-end, one location on top close to terminal box. 2 pcs eye bolts size M36 delivered with each motor
450	Detachable eye bolt	Locations for eye bolts: 4 pcs at N-end and 4 pcs at D-end, one location on top close to terminal box. 3 pcs eye bolts size M42 delivered with each motor	Locations for eye bolts: 4 pcs at N-end and 4 pcs at D-end, one location on top close to terminal box. 2 pcs eye bolts size M42 delivered with each motor

Heating elements

Heating elements are installed on stator winding coil heads to keep the winding free of corrosion in humid conditions. The power of the heating elements is shown in the table. You can order heating elements with variant code 450 or 451.

Motor size	71	80	90	100	112	132	160	180
Power (W)	25	25	25	25	25	25	25	25

Motor size	200	225	250	280	315	355	400	450
Power (W)	25	60	60	60	2x60	2x60	2x60	2x100

Motors for marine applications mounted on open deck may have heating element powers differing from the ones shown in this table.

Bearings

ABB's dust ignition protection motors are normally fitted with single-row deep-groove grease lubricated ball bearings, as shown in the table below.

If the bearing at the D-end is replaced with a roller bearing (NU- or NJ-), higher radial forces can be handled. Roller bearings are suitable for belt-drive applications and can be ordered with variant code 037.

When high axial forces are involved, angular-contact ball bearings should be used. When ordering a motor with an angular-contact ball bearing, specify also the method of mounting and the direction and magnitude of axial force to ensure that optimal bearing system design is chosen. The variant codes for ordering angular-contact ball bearings at D-end are 058 and 060.

Standard and alternative designs

		Standard design		Alternative design D-end	
		Deep groove ball bearings		Roller bearings (037)	Angular contact ball bearing (058, 060)
Motor size	Number of poles	D-end	N-end	D-end	D-end
71	2 - 8	6203-2Z/C3	6202-2Z/C3	NA	NA
80	2 - 8	6204-2Z/C3	6203-2Z/C3	NA	NA
90	2 - 8	6205-2Z/C3	6204-2Z/C3	NA	NA
100	2 - 8	6206-2Z/C3	6205-2Z/C3	NA	NA
112	2 - 8	6206-2Z/C3	6205-2Z/C3 [1]	NA	NA
132	2 - 8	6208-2Z/C3	6208-2Z/C3	NA	NA
160	2 - 12	6309/C3	6209/C3	NU 309 ECP/C3	7309 B
180	2 - 12	6310/C3	6209/C3	NU 310 ECP/C3	7310 B
200	4 - 12	6312/C3	6210/C3	NU 312 ECP/C3	7312 B
225	4 - 12	6313/C3	6212/C3	NU 313 ECP/C3	7313 B
250	4 - 12	6315/C3	6213/C3	NU 315 ECP/C3	7315 B
280	2	6316/C3	6316/C3	[2]	7316 B
	4 - 12	6316/C3	6316/C3	NU 316 ECP/C3	7316 B
315	2	6316/C3	6316/C3	[2]	7316 B
	4 - 12	6319/C3	6316/C3	NU 319 ECP/C3	7319 B
355	2	6316M/C3	6316M/C3	[2]	7316 B
	4 - 12	6322/C3	6316/C3	NU 322 ECP/C3	7322 B
400	2	6317M/C3	6317M/C3	[2]	7317 B
	4 - 12	6324/C3	6319/C3	NU 324 ECP/C3	7324 B
450	2	6317M/C3	6317M/C3	[2]	7317 B
	4 - 12	6326M/C3	6322/C3	NU 326 ECP/C3	7326 B

[1] N-end bearing 6206-2Z/C3 on IE3 motors
[2] On request

Axially-locked bearings

All motors with deep groove ball bearings are equipped as standard with an axially locked bearing at the D-end.

Transport locking

Motors with roller bearings or an angular-contact ball bearing are fitted with a transport lock before dispatch to prevent damage to bearings during transport. A warning label is attached to motors when transport locking is used.

Locking may also be fitted in other cases if severe transport conditions are expected.

Bearing seals

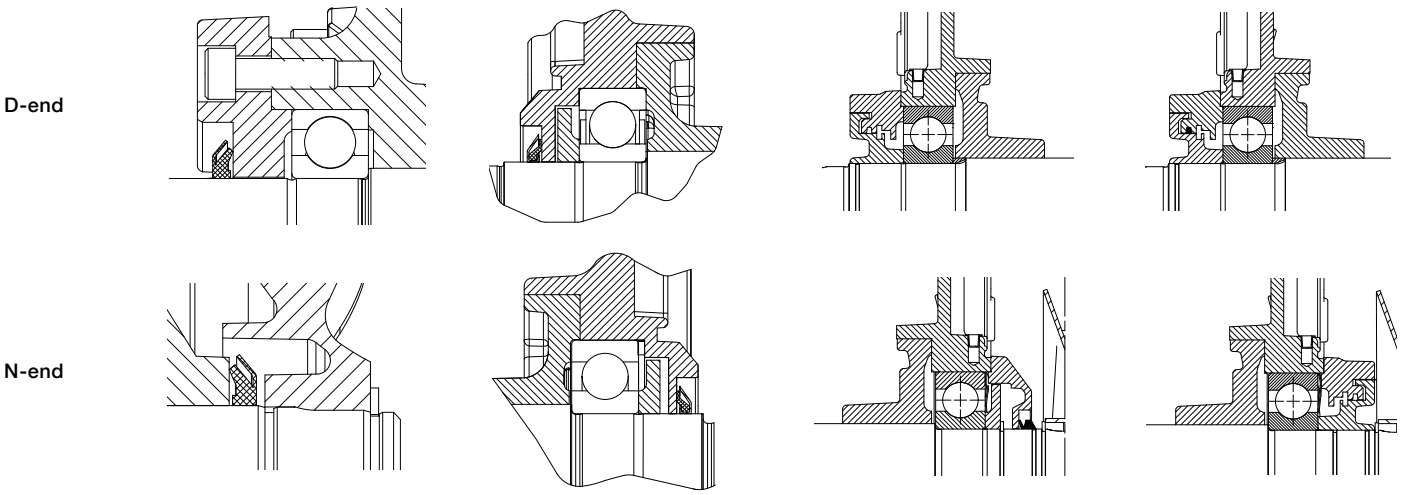
Table below present the standard and alternative and types of bearing seals per motor size.

Bearing seals for motor sizes 71-450

		Standard design		Alternative design	
Motor size	Number of poles	D-end	N-end	Radial seal at D-end (variant code 072) [1]	Labyrinth seal at D-end (variant code 783) [1]
71	2 – 8	Gamma seal	Gamma seal	Radial seal	NA
80	2 – 8	Gamma seal	Gamma seal	Radial seal	NA
90	2 – 8	Gamma seal	Gamma seal	Radial seal	NA
100	2 - 8	Gamma seal	Gamma seal	Radial seal	NA
112	2 – 8	Gamma seal	Gamma seal	Radial seal	NA
132	2 – 8	Gamma seal	Gamma seal	Radial seal	NA
160	2- 8	Gamma seal	Gamma seal	Radial seal	Labyrinth seal
180	2 – 8	Gamma seal	Gamma seal	Radial seal	Labyrinth seal
200	2 – 8	Gamma seal	Gamma seal	Radial seal	Labyrinth seal
225	2 – 8	Gamma seal	Gamma seal	Radial seal	Labyrinth seal
250	2 – 8	Gamma seal	Gamma seal	Radial seal	Labyrinth seal
280	2	Labyrinth seal	V-ring [2]	NA	Standard
	4 - 8	V-ring [2]	V-ring [2]	NA	Labyrinth seal
315SM, ML	2	Labyrinth seal	V-ring [2]	NA	Standard
	4 - 8	V-ring [2]	V-ring [2]	NA	Labyrinth seal
315LK	2- 8	Labyrinth seal	V-ring [2]	NA	Standard
355	2 - 12	Labyrinth seal	V-ring	NA	Standard
400	2	Labyrinth seal	Labyrinth seal	NA	Standard
400	4 - 12	Labyrinth seal	V-ring	NA	Standard
450	2 - 12	Labyrinth seal	Labyrinth seal	NA	Standard

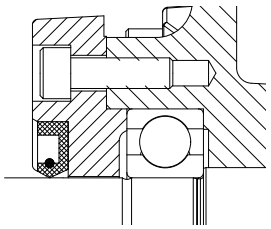
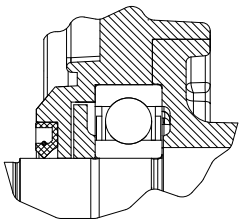
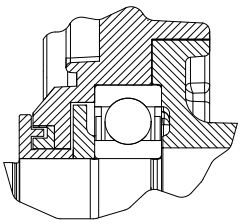
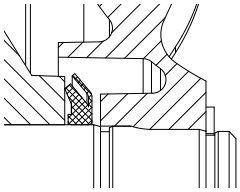
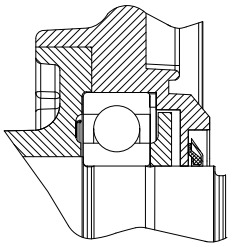
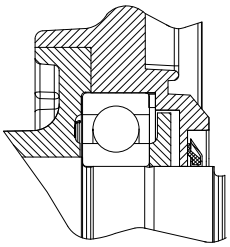
[1] N-end bearing seal of standard design, special N-end bearing seal arrangements on request
[2] Labyrinth seal as standard on IE3 version

Standard design



Motor size, seal type D-end / N-end	71-132, gamma/gamma seal	160-250, gamma/gamma seal	280, 315 2pole, 335 all pole numbers and 400 4-12 pole, labyrinth / V-ring seal	400 2-pole, 450 all pole numbes labyrinth/labyrinth seal

Alternative design

D-end			
N-end			
Motor size, seal type D-end / N-end	**80-132, VC072 radial/ gamma seals**	**160-250, VC072 radial/ gamma seals**	**160-250, VC783 labyrinth/ gamma seals**

Bearing life and lubrication

The nominal life L_{10h} of a bearing is defined according to ISO 281 as the number of operating hours achieved or exceeded by 90 % of identical bearings in a large test series under specified conditions. 50 % of bearings achieve at least five times this lifetime. The calculated bearing life L_{10h} for power transmission by means of coupling is for horizontally mounted motors in sizes up to 315 ≥ 100,000 hours.

Lubrication

On delivery, motors in frame size 160 and above are pre-lubricated with high-quality grease. Before first start-up, see instructions for re-lubrication and recommended grease in the installation, operation, maintenance and safety manual for low voltage motors for explosive atmospheres delivered together with the motor, or see the lubrication plate on the motor.

Motors with bearings greased for life

Motors in frame sizes 71-132 are equipped with bearings greased for life, while this is available as an option for frame sizes 160-250. Bearings are lubricated with high-quality, high-temperature grease. Bearing types are stated on the rating plate.

The approximate lifetime of bearings in four-pole motors is about 40 0000 duty hours. Lifetime is subject to the load conditions of the application run by the motor.

Motors with re-lubrication nipples

In frame sizes 160-400, the bearing system is provided with valve discs to ease lubrication. Motors are lubricated while running. The grease outlet opening has closing valves at both ends. These should be opened before greasing and closed 1-2 hours after re-greasing. This ensures that the construction is tight and bearings remain dust- and dirt-free.

A grease-collection method can be used optionally.

The following tables show lubrication intervals according to the L_1 principle for various nominal speeds in 25 °C ambient temperature. These values apply to horizontally mounted motors (B3) with 80 °C bearing temperature and high-quality grease containing lithium-complex soap and mineral or PAO-oil.

Lubrication intervals in duty hours for ball bearings

Frame size	Amount of grease g/bearing	Amount of grease g/N-end	Output kW	Speed 3600 r/min	Speed 3000 r/min	Output kW	Speed 1800 r/min	Speed 1500 r/min	Output kW	Speed 1000 r/min	Output kW	Speed 500-900 r/min
Ball bearings												
Lubrication intervals in duty hours												
160	13	13	≤ 18.5	9000	12 000	≤ 15	18 000	21 500	≤ 11	24 000	all	24 000
160	13	13	> 18.5	7500	10 000	> 15	15 000	18 000	> 11	22 500	all	24 000
180	15	15	≤ 22	7000	9000	≤ 22	15 500	18 500	≤ 15	24 000	all	24 000
180	15	15	> 22	6000	8500	> 22	14 000	17 000	> 15	21 000	all	24 000
200	20	15	≤ 37	5500	8000	≤ 30	14 500	17 500	≤ 22	23 000	all	24 000
200	20	15	> 37	3000	5500	> 30	10 000	12 000	> 22	16 000	all	20 000
225	23	20	≤ 45	4000	6500	≤ 45	13 000	16 500	≤ 30	22 000	all	24 000
250	23	20	> 45	1500	2500	> 45	5000	6000	> 30	8000	all	10 000
250	30	23	≤ 55	2500	4000	≤ 55	9000	11 500	≤ 37	15 000	all	18 000
250	30	23	> 55	1000	1500	> 55	3500	4500	> 37	6000	all	7000
280	35	35	all	1900	3200		-	-		-		-
280	40	40		-	-	all	7800	9600	all	13 900	all	15 000
315	35	35	all	1900	3200		-	-		-		-
315	55	40		-	-	all	5900	7600	all	11 800	all	12 900
355	35	35	all	1900	3200		-	-		-		-
355	70	40		-	-	all	4000	5600	all	9600	all	10 700
400	40	40	all	1500	2700		-			-	-	-
400	85	55		-	-	all	3200	4700	all	8600	all	9700
450	40	40	all	1500	2700		-	-		-		-
450	95	70		-	-	all	2500	3900	all	7700	all	8700

Lubrication intervals in duty hours for roller bearings

Frame size	Amount of grease g/bearing	Amount of grease g/N-end	Output kW	Speed 3600 r/min	Speed 3000 r/min	Output kW	Speed 1800 r/min	Speed 1500 r/min	Output kW	Speed 1000 r/min	Output kW	Speed 500-900 r/min
Roller bearings												
Lubrication intervals in duty hours												
160	13	13	≤ 18.5	4500	6000	≤ 15	9000	10 500	≤ 11	12 000	all	12 000
160	13	13	> 18.5	3500	5000	> 15	7500	9000	> 11	11 000	all	12 000
180	15	15	≤ 22	3500	4500	≤ 22	7500	9000	≤ 15	12 000	all	12 000
180	15	15	> 22	3000	4000	> 22	7000	8500	> 15	10500	all	12 000
200	20	15	≤ 37	2750	4000	≤ 30	7000	8500	≤ 22	11 500	all	12 000
200	20	15	> 37	1500	2500	> 30	5000	6000	> 22	8000	all	10 000
225	23	20	≤ 45	2000	3000	≤ 45	6500	8000	≤ 30	11 000	all	12 000
225	23	20	> 45	750	1250	> 45	2500	3000	> 30	4000	all	5000
250	30	23	≤ 55	1000	2000	≤ 55	4500	5500	≤ 37	7500	all	9000
250	30	23	> 55	500	750	> 55	1500	2000	> 37	3000	all	3500
280	35	35	all	900	1600		-	-		-		-
280	40	40		-	-	all	4000	5300	all	7000	all	8500
315	35	35	all	900	1600		-	-		-		-
315	55	40		-	-	all	2900	3800	all	5900	all	6500
355	35	35	all	900	1600		-	-		-		-
355	70	40		-	-	all	2000	2800	all	4800	all	5400
400	40	40	all	-	1300		-	-		-		-
400	85	55		-	-	all	1600	2400	all	4300	all	4800
450	40	40	all	-	1300		-	-		-		-
450	95	70		-	-	all	1300	2000	all	3800	all	4400

Radial forces

Pulley diameter

When the desired bearing life has been determined, the minimum permissible pulley diameter can be calculated with FR as follows:

$$D = \frac{1.9 \bullet 10^7 \bullet K \bullet P}{n \bullet F_R}$$

Where:	
D:	pulley diameter, mm
P:	power requirement, kW
n:	motor speed, r/min.
K:	belt tension factor, dependent on belt type and type of duty. A common value for V-belts is 2.5
F_R:	permissible radial force, refer to tables below.

Permissible loading on the shaft

The following table shows permissible radial forces on the shaft in Newtons, assuming zero axial force, a 25 °C ambient temperature, and normal conditions. The values are given for a calculated bearing life L_{10h} of 40 000 hours per motor size.

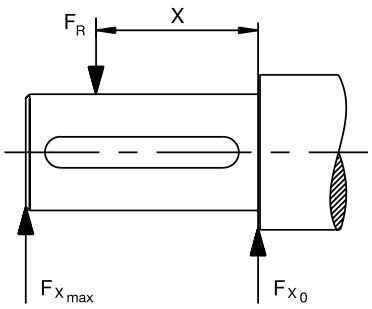
These calculated values further assume mounting position IM B3 (foot-mounted), with force directed sideways. In some cases, the strength of the shaft together with flame path dimensions affects permissible forces.

Permissible loads of simultaneous radial and axial forces can be supplied on request.

If the radial force is applied between points X0 and Xmax, the permissible force F_R can be calculated with the following formula:

$$F_R = F_{X0} - \frac{X}{E}(F_{X0} - F_{Xmax})$$

Where:	
E:	length of the shaft extension in the standard version



Permissible radial forces, motor sizes 71–132

			Basic design with deep groove ball bearings			
			Mounting arrangement IM B3			
			20,000 h		40,000 h	
Motor size	No. of poles	Length of shaft extension E (mm)	F_{X0}(N)	F_{Xmax}(N)	F_{X0}(N)	F_{Xmax}(N)
71	2	30	540	460	420	360
	4	30	700	605	555	480
	6	30	780	665	620	530
	8	30	860	730	685	580
80	2	40	710	600	385	350
	4	40	940	810	725	625
	6	40	1060	895	840	710
	8	40	1185	1020	940	810
90	2	50	820	690	650	545
	4	50	1035	870	820	690
	6	50	1185	995	940	790
	8	50	1300	1095	1035	870
100	2	60	1130	925	900	735
	4	60	1425	1165	1135	925
	6	60	1635	1335	1295	1060
	8	60	1820	1520	1445	1205
112	2	60	1170	980	925	775
	4	60	1475	1235	1170	980
	6	60	1690	1310	1340	1120
	8	60	1860	1310	1475	1235
132	2	80	1840	1500	1460	1190
	4	80	2320	1890	1840	1500
	6	80	2660	2165	2110	1715
	8	80	2925	2380	2320	1890

Permissible radial forces, motor sizes 160-280

Motor size	Poles	Length of shaft extension E (mm)	Ball bearings				Roller bearings			
			20,000 h		40,000 h		20,000 h		40,000 h	
			F_{X0}(N)	F_{Xmax}(N)	F_{X0}(N)	F_{Xmax}(N)	F_{X0}(N)	F_{Xmax}(N)	F_{X0}(N)	F_{Xmax}(N)
160 MLA	2	110	3540	2740	2955	2285	7100	4300	6140	4300
	4	110	4000	3100	3325	2570	8000	4300	6870	4300
	6	110	4170	3200	3440	2655	8600	4300	7270	4300
	8	110	4600	3585	3855	2985	9300	4300	7955	4300
160 MLB	2	110	3540	2740	2955	2270	7085	4300	6070	4300
	4	110	4085	3300	3370	2725	8300	4300	7055	4300
	6	110	4100	3355	3400	2755	8600	4300	7300	4300
	8	110	4200	3270	3455	2670	9000	4300	7570	4300
160 MLC	2	110	3400	2600	2855	2200	6800	4300	5885	4300
	4	110	3700	3000	3070	2485	7800	4300	6640	4300
	6	110	3600	2900	2870	2325	8000	4300	6700	4300
	8	110	4170	3370	3370	2725	9000	4300	7585	4300
160 MLD	2	110	3585	2900	3000	2440	7100	4300	6140	4300
	4	110	3400	2755	2755	2240	7600	4300	6370	4300
160 MLE	2	110	3185	2570	2640	2140	6785	4300	5770	4300
180 MLA	2	110	4100	3385	3455	2825	8125	5500	7025	5500
	4	110	4270	3485	3525	2885	8600	5500	7300	5500
	6	110	4700	3800	3855	3155	9400	5500	7900	5500
	8	110	4785	3900	3870	3170	9800	5500	8255	5500
180 MLB	2	110	4170	3400	3470	2825	7900	5500	6770	5500
	4	110	4185	3400	3440	2810	8500	5500	7200	5500
	6	110	4370	3570	3525	2885	9000	5500	7600	5500
180 MLC	4	110	3700	3055	3010	2470	7900	5500	6655	5440
200 MLA	2	110	5600	4685	4700	3925	10900	9100	9470	7900
	4	110	6285	5200	5240	4370	12500	9550	10700	8900
	6	110	6800	5700	5700	4770	13600	9550	11670	9550
	8	110	6800	5700	5600	4685	14100	9550	12000	9550
200 MLB	2	110	5670	4700	4700	3925	11000	9200	9500	7900
	4	110	5700	4700	4700	3925	12000	9550	10185	8500
	6	110	6400	5370	5300	4425	13200	9550	11200	9385
200 MLC	2	110	5000	4185	4185	3500	10400	8700	8900	7455
	4	110	5400	4500	4425	3685	11600	9550	9800	8200
	6	110	5800	4885	4740	3955	12500	9550	10600	8800
200 MLD	2	110	4985	4170	4170	3485	10400	8700	8900	7400
225 SMA	2	110	6400	5400	5355	4500	13300	10700	11500	9700
	4	140	7300	5900	6155	4970	15400	10250	13200	10250
	6	140	7600	6200	6370	5140	16400	10250	14000	10250
	8	140	8500	6900	7100	5725	17900	10250	15300	10250
225 SMB	2	110	6100	5185	5155	4340	13000	10700	11200	9455
	4	140	7085	5700	5885	4755	15100	10250	12900	10250
	6	140	7100	5700	5840	4700	16000	10250	13500	10250
	8	140	8000	6485	6600	5340	17300	10250	14700	10250
225 SMC	2	110	5600	4700	4685	3940	12600	10600	10770	9070
	4	140	6400	5200	5300	4285	14500	10250	12385	10000
225 SMD	2	110	5500	4640	4600	3880	12420	10460	10640	8960
	4	140	5800	4700	4725	3800	13500	10250	11400	9270
250 SMA	2	140	7700	6285	6500	5285	17100	10900	14900	10900
	4	140	8700	7000	7300	5900	19800	13800	17000	13785
	6	140	9400	7600	7800	6355	21600	13800	18400	13800
	8	140	9600	7800	7900	6400	22700	13800	19300	13800
250 SMB	2	140	7100	5800	6000	4885	16700	10900	14400	10900
	4	140	7800	6300	6470	5240	18900	13800	16200	13100
	6	140	8900	7200	7355	5955	21200	13800	18000	13800
250 SMC	2	140	6800	5500	5670	4600	16300	10900	14000	10900
	4	140	7400	6000	6055	4900	18100	13800	15400	12485
	6	140	8200	6600	6670	5400	20300	13800	17200	13800
280 SM_	2	140	7300	6000	5800	4900	20400	6000	16500	6000
	4	140	9200	7800	7300	6200	25100	9200	20300	9200
	6	140	10600	8900	8400	7000	28300	9200	23000	9200
	8	140	11700	9200	9200	7800	30900	9200	25100	9200
280 ML_	2	140	7400	6200	5800	5000	20600	6200	16700	6200
	4	140	9200	7900	7300	6200	25000	9500	20300	9500
	6	140	10500	9000	8300	7100	28300	9400	22900	9400
	8	140	11600	9500	9200	7900	30800	9500	25000	9500

Permissible radial forces, motor sizes 315-400

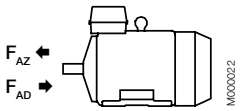
Motor size	Poles	Length of shaft extension E (mm)	Ball bearings				Roller bearings			
			20,000 h		40,000 h		20,000 h		40,000 h	
			F_{X0}(N)	F_{Xmax}(N)	F_{X0}(N)	F_{Xmax}(N)	F_{X0}(N)	F_{Xmax}(N)	F_{X0}(N)	F_{Xmax}(N)
315 SM_	2	140	7300	6000	5800	4950	20300	6000	16500	6000
	4	170	11400	9400	9000	7450	32500	9600	26600	9600
	6	170	13000	9600	10300	8500	37000	9600	30000	9600
	8	170	14400	9600	11400	9400	40300	9600	32700	9600
315 ML_	2	140	7400	6400	5850	5050	20600	5850	16700	5850
	4	170	11500	9700	9100	7650	32700	13600	26500	13600
	6	170	13200	11100	10400	8800	36900	13600	29900	13600
	8	170	14500	12200	11500	9700	40200	13600	32600	13600
315 LK_	2	140	7400	6550	5800	5150	20800	5550	16800	5550
	4	170	11500	10000	9100	7850	33100	13350	26800	13350
	6	170	13200	11400	10450	9050	37300	13350	30300	13350
	8	170	14600	12600	11550	10000	40800	13350	33100	13350
355 SM_	2	140	7350	6450	5750	5050	20600	7200	16700	7200
	4	210	15200	12600	12000	9950	45500	14000	36900	14000
	6	210	17500	14000	13800	11400	51400	14000	41700	14000
	8	210	19300	14000	15250	12600	56000	14000	45500	14000
355 ML_	2	140	7350	6550	5750	5100	20800	6750	16800	6750
	4	210	15300	12900	12000	10100	45900	13600	37200	13600
	6	210	17600	13600	13900	11600	51500	13600	42100	13600
	8	210	19400	13600	15300	12900	56000	13600	45900	13600
355 LK_	2	140	7350	6650	5650	5100	21000	6550	17000	6550
	4	210	15200	13000	11850	10200	46000	13000	37300	13000
	6	210	17500	13000	13700	11900	52000	13000	42000	13000
	8	210	19400	13000	15200	13000	56500	13000	46000	13000
400 L_	2	170	7650	6850	4400	3900	23900	9050	19350	9050
	4	210	15600	13550	12150	10550	52500	16000	43300	16000
	6	210	17800	15450	13850	12000	60000	16000	48800	16000
	8	210	19700	16000	15350	13350	65700	16000	53200	16000
400 LK_	2	170	7650	6850	4400	3900	23900	9050	19350	9050
	4	210	15600	11500	12150	10550	52500	11500	43300	11500
	6	210	17800	11500	13850	11500	60000	11500	48800	11500
	8	210	19700	11500	15350	11500	65700	11500	53200	11500

Axial forces

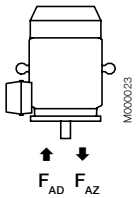
The following tables present permissible axial forces on the shaft in Newtons, assuming zero radial force, a 25 °C ambient temperature, and normal conditions. The values are given for a calculated bearing life of 20,000 and 40,000 hours per motor size.

At 60 Hz, the values must be reduced by 10 percent, and for two-speed motors, the higher speed determines permissible axial force. Permissible loads of simultaneous radial and axial forces can be supplied on request.

For axial force F_{AD}, it is assumed that the D-bearing is locked with a locking ring.



Mounting arrangement IM B3



Mounting arrangement IM V1

Permissible axial forces, motor sizes 71-132

			Mounting arrangement IM B3				Mounting arrangement IM V1			
			Deep groove ball bearings				Deep groove ball bearings			
		Length of shaft extension	20,000 h		40,000 h		20,000 h		40,000 h	
Motor size	Poles	E (mm)	F_{AD}(N)	F_{AZ}(N)	F_{AD}(N)	F_{AZ}(N)	F_{AD}(N)	F_{AZ}(N)	F_{AD}(N)	F_{AZ}(N)
71	2	30	615	285	505	175	630	275	520	165
	4	30	760	430	615	285	790	410	645	265
	6	30	870	540	695	365	890	525	720	355
	8	30	960	630	765	435	985	615	785	415
80	2	40	880	300	735	155	915	280	770	135
	4	40	1075	495	880	300	1130	455	935	260
	6	40	1215	635	985	405	1270	600	1040	370
	8	40	1330	750	1070	490	1400	705	1140	450
90	2	50	780	500	620	340	840	455	680	300
	4	50	985	705	775	495	1070	650	860	440
	6	50	1140	860	890	610	1225	800	975	555
	8	50	1265	985	985	705	1355	925	1075	645
100	2	60	925	570	735	350	1285	510	1060	290
	4	60	1480	860	1190	570	1600	780	1305	490
	6	60	1690	1070	1350	730	1815	995	1470	650
	8	60	1865	1245	1480	860	1995	1160	1610	775
112	2	60	1155	595	935	375	1290	505	1070	280
	4	60	1445	885	1155	595	1595	785	1300	495
	6	60	1655	1095	1315	755	1810	995	1465	650
	8	60	1830	1270	1445	885	1985	1170	1600	780
132	2	80	1765	965	1420	620	1925	855	1580	510
	4	80	2210	1410	1755	955	2420	1270	1965	815
	6	80	2535	1735	2000	1200	2770	1580	2235	1045
	8	80	2800	2000	2205	1405	3055	1835	2455	1235

Permissible axial forces, motor sizes 160-280

Motor size	Poles	Length of shaft extension E (mm)	Mounting arrangement IM B3				Mounting arrangement IM V1			
			Deep groove ball bearings				Deep groove ball bearings			
			20,000 h		40,000 h		20,000 h		40,000 h	
			F_{AD}(N)	F_{AZ}(N)	F_{AD}(N)	F_{AZ}(N)	F_{AD}(N)	F_{AZ}(N)	F_{AD}(N)	F_{AZ}(N)
160 MLA	2	110	2850	2850	2325	2325	3100	2578	2570	2048
	4	110	3450	3450	2775	2775	3820	3150	3120	2450
	6	110	3690	3690	2970	2970	4100	3410	3325	2635
	8	110	4155	4155	3315	3315	4440	3845	3640	3045
160 MLB	2	110	2850	2850	2325	2325	3120	2570	2580	2030
	4	110	3435	3435	2760	2760	3880	3085	3180	2385
	6	110	3600	3600	2880	2880	4120	3240	3360	2480
	8	110	3750	3750	2970	2970	4140	3450	3340	2650
160 MLC	2	110	2775	2775	2280	2280	3080	2500	2560	1980
	4	110	3150	3150	2535	2535	3620	2770	2985	2135
	6	110	3135	3135	2490	2490	3680	2700	3005	2025
	8	110	3675	3675	2910	2910	4240	3260	3445	2465
160 MLD	2	110	2865	2865	2330	2330	3220	2540	2665	1985
	4	110	2900	2900	2320	2320	3420	2470	2820	1870
160 MLE	2	110	2500	2500	2025	2025	2900	2150	2420	1670
180 MLA	2	110	3300	3300	2700	2700	3660	2940	3060	2340
	4	110	3600	3600	2920	2920	4160	3150	3460	2450
	6	110	4140	4140	3320	3320	4800	3675	3940	2815
	8	110	4220	4220	3360	3360	4960	3740	4040	2820
180 MLB	2	110	3340	3340	2725	2725	3760	2960	3125	2320
	4	110	3580	3580	2900	2900	4220	3095	3500	2375
	6	110	3800	3800	3040	3040	4500	3285	3700	2485
180 MLC	4	110	3220	3220	2560	2560	3880	2660	3220	2000
200 MLA	2	110	4460	4460	3640	3640	5000	3965	4200	3125
	4	110	5000	5260	4260	4260	5000	4680	5000	3640
	6	110	5000	5480	4720	4720	5000	5265	5000	4065
	8	110	5000	5880	4700	4700	5000	5195	5000	3955
200 MLB	2	110	4440	4440	3620	3620	5000	3905	4220	3085
	4	110	4720	4720	3840	3840	5000	4060	4700	3120
	6	110	5000	5480	4420	4420	5000	4800	5000	3660
200 MLC	2	110	3940	3940	3180	3180	4600	3385	3880	2665
	4	110	4480	4480	3620	3620	5000	3775	4520	2875
	6	110	4980	4980	3980	3980	5000	4165	5000	3105
200 MLD	2	110	3940	3940	3200	3200	4660	3370	3925	2635
225 SMA	2	110	4980	4980	4060	4060	5000	4375	4780	3455
	4	140	5000	6080	4920	4920	5000	5445	5000	4225
	6	140	5000	6520	5000	5260	5000	5735	5000	4395
	8	140	5000	7420	5000	5960	5000	6535	5000	5095
225 SMB	2	110	4860	4860	3960	3960	5000	4245	4780	3345
	4	140	5000	5880	4780	4780	5000	5175	5000	3995
	6	140	5000	6020	4840	4840	5000	5155	5000	3915
	8	140	5000	6940	5000	5560	5000	6055	5000	4635
225 SMC	2	110	4380	4380	3540	3540	5000	3670	4440	2900
	4	140	5000	5240	4260	4260	5000	4445	5000	3425
225 SMD	2	110	4320	4320	3480	3480	5000	3590	4400	2790
	4	140	4800	4800	3820	3820	5000	3895	5000	2935
250 SMA	2	140	6000	6080	4920	4920	6000	5345	5840	4225
	4	140	6000	7140	5820	5820	6000	6300	6000	4920
	6	140	6000	7880	6000	6380	6000	6950	6000	5350
	8	140	6000	8200	6000	6600	6000	7125	6000	5385
250 SMB	2	140	5620	5620	4540	4540	6000	4830	5640	3810
	4	140	6000	6320	5100	5100	6000	5325	6000	4085
	6	140	6000	7480	6000	6040	6000	6370	6000	4830
250 SMC	2	140	5260	5260	4220	4220	6000	4395	5400	3415
	4	140	5960	5960	4760	4760	6000	4900	6000	3700
	6	140	6000	6860	5520	5520	6000	5575	6000	4135
280 SM_	2	140	6200	4250	4900	2900	7550	3150	6200	1800
	4	140	8000	6000	6250	4250	9600	4550	7800	2750
	6	140	7250	9250	7150	5150	11150	5500	9000	3350
	8	140	10300	8300	7950	5950	12200	7000	9850	4700
280 ML_	2	140	6100	4100	4800	2800	8150	2750	6800	1400
	4	140	7800	5800	6000	4000	10450	4050	8650	2250
	6	140	8950	6950	6900	4900	12350	4750	10250	2600
	8	140	10000	8000	7700	5700	13450	5800	11050	3450

Permissible axial forces, motor sizes 315-400

Motor size	Poles	Length of shaft extension E (mm)	Mounting arrangement IM B3				Mounting arrangement IM V1			
			Deep groove ball bearings				Deep groove ball bearings			
			20,000 h		40,000 h		20,000 h		40,000 h	
			F_{AD}(N)	F_{AZ}(N)	F_{AD}(N)	F_{AZ}(N)	F_{AD}(N)	F_{AZ}(N)	F_{AD}(N)	F_{AZ}(N)
315 SM_	2	140	6180	4200	4850	2850	7950	2600	6600	1300
	4	170	9400	7400	7250	5250	11750	5500	9550	3300
	6	170	10900	8900	8350	6350	13600	6300	11050	3750
	8	170	12000	10000	9200	7000	15350	7900	12450	5000
315 ML_	2	140	6050	4050	4750	2750	8650	2300	7300	[1]
	4	170	9250	7250	7100	5100	12500	5050	10300	2900
	6	170	10650	8650	8100	6100	14900	5800	12350	3250
	8	170	11500	9900	8900	6800	15400	6300	13600	3400
315 LK_	2	140	6000	3950	4650	2650	9100	1350	7750	[1]
	4	170	9100	7150	7000	5000	13100	3850	10900	1700
	6	170	10500	8500	7950	5950	15700	4100	13100	1550
	8	170	11750	9750	8900	6900	16900	6300	14100	3450
355 SM_	2	140	3050	6850	1750	5550	6350	4250	4950	2900
	4	210	8600	12400	5900	9700	13250	8600	10450	5850
	6	210	10550	14350	7300	11100	15650	9580	12350	6270
	8	210	12200	16000	8550	12350	17350	12500	13600	8900
355 ML_	2	140	2900	6700	1600	5400	7100	3700	5750	2350
	4	210	8360	12150	5650	9450	14600	7950	11850	5150
	6	210	10100	13900	6900	10700	18050	8600	14700	5300
	8	210	12000	15800	7300	11000	21100	11650	17000	7600
355 LK_	2	140	2650	6450	1350	5150	8250	2650	6900	1300
	4	210	8200	12000	5450	9250	15650	6600	12850	3800
	6	210	9900	13700	6700	10500	19100	7050	15800	3750
	8	210	11450	15250	7800	11600	21200	8700	17500	5000
400 L, LK_	2	170	2150	7150	[1]	5800	8650	2150	7220	[1]
	4	210	7100	13100	4300	10300	16050	6400	13150	3400
	6	210	8850	14850	5500	11500	18450	6750	15100	3400
	8	210	10450	16450	6750	12750	20100	8350	16450	4700

[1] On request.

Terminal box
Standard terminal box

Protection and mounting options
The degree of protection for the standard terminal box is IP 55 or IP65 depending on the equipment protection level and dust category. It complies with the requirements of the protection method ‘t’ dust ignition protection and prevents all ignition sources such as sparks, excessive over heating etc. All terminal box seals are of uninterrupted type fulfilling the requirements for Ex t motors. By default, terminal boxes are mounted on top of the motor at D-end. Side mounted terminal box is possible in frame sizes 160-400. Mounting at N-end is possible for the larger frame sizes. Please refer to the variant code section for more details.

Turnability
The standard terminal boxes for motor sizes 160 - 315 can be turned 4*90°and in sizes 355-450 2*180° after delivery. For sizes 355-450 is also mounting of terminal box with opening towards D or N-end possible using the relevant variant codes when ordering, this is needed to get the terminal block turned in the right position. For motors in size 71-132 is 4*90° turnable terminal box optional, this can be ordered with variant code 400.

Cable entries
Terminal box is provided as standard with tapped holes for cable glands, no cable glands are included as standard, the entry holes are closed with Ex t approved blanking plugs made of nickel plated brass. Please refer to the table on next page for further information about amount and size of threaded holes and plugs.

Different types of cable glands are available as option, suitable for either armoured and non-armoured cables, please refer to the Terminal box alternatives section for more details.

Cable type and terminations
Terminations are suitable for copper and aluminum cables (Al- cables on request for motor sizes 160 to 250). Cables are connected to terminals by cable lugs, which are not included in the delivery.

Earthing bolts
The motors are as standard provided with at least one earthing bolt inside the terminal box and another on the frame. The earthing bolt on the frame is located on top close to the terminal box, motors in size 160-250 is the earthing bolt located on RHS foot (seen from D-end).

Ordering
To ensure the delivery of desired terminations and cable entries for the motor, state the cable type, quantity, size, outer diameter and possibly type of cable glands needed when ordering.

See section Variant codes for all options available.

Standard delivery

Standard delivery if no other information is provided.

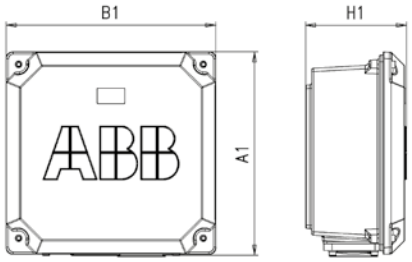
Motor size	Pole number	Terminal box type	Size of gland plate opening on terminal box	45° angle adaper	Amount and size of threaded plugged holes or cable sealing end unit	Max. Connectable core cross section mm2/phase	Number and size of terminal bolts
IE2 and IE3 motors							
71	2-8	integr.	-	-	2xM16x1.5	1x2.5	6 x M4
80	2-8	integr.	-	-	2xM25x1.5	1x4	6 x M4
90	2-8	integr.	-	-	2xM25x1.5	1x6	6 x M5
100-132	2-8	integr.	-	-	2xM32x1.5	1x10	6 x M5
160-180	2-8	63	B	-	2xM40x1.5	1x35	6 x M6
200-250	2-8	160	C	-	2xM63x1.5	1x70	6 x M10
280	2-8	370/1	D	-	2xM63x1.5	2x150	6 x M12
315SM_, ML_	2-8	370/1	D	-	2xM63x1.5	2x240	6 x M12
315LKA, LKB	2-4	370/1	D	-	2xM63x1.5	2x240	6 x M12
315LKC	2-4	750/1	E	-	2xM75x1.5	4x240	6 x M12
315LK_	6-8	370/1	D	-	2xM63x1.5	2x240	6 x M12
355SMA - SMC	2-4	750/1	E	-	2xM75x1.5	4x240	6 x M12
355SMA, SMB	6-8	370/1	D	-	2xM63x1.5	2x240	6 x M12
355SMC	6	750/1	E	-	2xM75x1.5	4x240	6 x M12
355SMC	8	370/1	D	-	2xM63x1.5	2x240	6 x M12
355MLA	2-4	750/1	E	-	2xM75x1.5	4x240	6 x M12
355MLB, LK_	2-4	750/1	E	-	2xM75x1.5	4x240	6 x M12
355ML_, LK_	6-8	750/1	E	-	2xM75x1.5	4x240	6 x M12
400	2-8	750/1	E	-	2xM75x1.5	4x240	6 x M12
450 LA	2	1200/1	E	-	2xM75x1.5	6x240	6 x M12
450 LA	4	1200/1	E	-	2xM75x1.5	6x240	6 x M12
450 LB, LC	2-4	1200/1	E	-	2xM75x1.5	6x240	6 x M12
450 LA	6	750/1	E	-	2xM75x1.5	4x240	6 x M12
450 LB, LC	6	1200/1	E	-	2xM75x1.5	6x240	6 x M12
450	8	750/1	E	-	2xM75x1.5	4x240	6 x M12
Auxilary cable entries							
160-450	2-8				2xM20x1.5	1 x 2.5	

Motor size	Earthing on frame	Earthing in main terminal box
71 - 112	M4	M4
132	M5	M5
160 - 250	clamp	M6
280 - 400	M10	2xM10
450	M10	4xM12

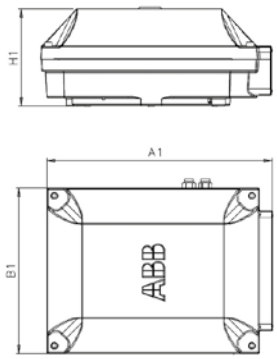
Terminal box
Terminal box dimensions

For motor sizes 71 to 132 the terminal box is integrated in motor frame and the dimensions for terminal boxes can be found in the motor dimension drawings in ABB Library.

To match the correct terminal box with motor sizes 160-450, find the motor type and correspondent terminal box type on the previous page. The box types and heir dimensions are presented on this page.



Terminal box type 63 and 160

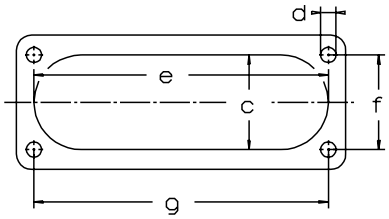


Terminal box type 370/1, 750/1 and 1200/1

Terminal box types acc. to current capacity	A1	B1	H1	Gland plate opening
63	248	248	109	B
160	291	302	154	C
370/1	467	348	207	D
750 /1	549	433	231	E
1200/1	740	591	290	E

Dimensions for terminal box inlets

Corresponds to motor sizes 160 and above



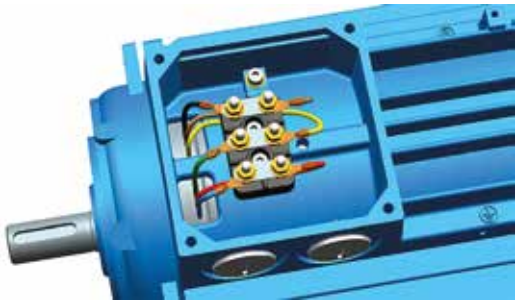
Flange opening	c mm	e mm	f mm	g mm	d amount and sizes of bolts
B	31	120	30	120	4xM6
C	71	194	62	193	4xM6
D	98	284	80	292	6xM10
E	120	365	100	360	6xM12

Terminal box
Terminal boxes and boards

The pictures below show standard terminal boxes and the corresponding terminal boards for various motor sizes.

Motor sizes 71-132

Integrated terminal box for motor sizes 71-132. Tapped holes for cable entries.



Terminal board for motor sizes 71-80.

Terminal board for motor sizes 90-112, IE2, and 90-100, IE3.

Terminal board for motor size 132, IE2, and motor sizes 112-132, IE3.

Motor sizes 160-250

Terminal box for motor sizes 160-250. Connection flanges with tapped cable entries.

Terminal board for motor sizes 160-250.

Terminal box alternatives

Optional cable termination parts

There is a broad selection of cable termination accessories available to allow a safe and reliable termination of one or several supply cables. The most common options are explained in this chapter.

How to order

- Check first that the terminal box itself allows mounting of the desired cable and cores (refer to table showing standard delivery for each motor size). If very large cable are used might it be necessary to use a larger terminal box and larger terminal board than standard
- Select the right cable gland(s) or unit based on the diameter of the cables(s) and suitability for cable type
- Select appropriate adapter or flange to allow mounting on opening in terminal box

Ordering example

Motor and supply cables	110kW, 4-pole, 400V 50Hz, IE2. Cables needed: 1 pcs outer diameter 42mm steel wire armoured cable, single cross section 120 mm². Cables coming from below.
Motor	M3GP 315SMA 4, B3
Adapter (to allow entry of cables coming from below)	Not possible
Cable glands Ex t suitable for armoured cables (an M50 gland will suit this cable)	Variant code 734 (specify cable dimensions)
Gland plate made of steel drilled and tapped with 1 pcs M50 hole (non-std size)	Variant code 554 (1 pcs M50 x 1.5 threaded hole to be specified)

Cable glands

The motors are delivered as standard with plugged cable entries as described in the previous section. There is a broad selection of different type of cable glands available which are suitable for different types of cable and outer diameter ranges.

Size of threaded opening for cable gland	Cable gland(s) nickel plated brass, Ex t, for non armoured cable, variant code 230 or 731	EMC Cable gland(s) nickel plated brass, Ex t, for non armoured cable, variant code 704	Cable gland Ex d / Ex t for armoured cable with double sealing, variant code 734	
Metric (std)	Cable outer diameter, mm	Cable outer diameter, mm	Cable outer diameter, mm	Inner sheath diameter, mm
M16 x 1.5	4-8	4-8	7-12	4.5-8
M20 x 1.5	4-12	4-12	10-16	6-10
M25 x 1.5	-	-	13.5-19	10-14
M25 x 1.5 *)	10-18	10-18	19-25	14-18
M32 x 1.5	14-24	14-24	25-30	18-23
M40 x 1.5	22-32	22-32	30-36	23-28
M50 x 1.5	-	-	36-40	28-32
M50 x 1.5 *)	26-35	26-35	40-46	32-37
M63 x 1.5	-	-	46-53	37-43
M63 x 1.5 *)	35-45	35-45	53-60	43-50
M75 x 1.5	46-62	46-62	58-70	48-60
M90 x 1.5	-		78-90	68-80
M100 x 1.5	-		88-100	78-90

*) = High capacity version, delivered as standard with the variant code

Threaded openings for cable glands with NPT thread (variant code 730)

The motors are delivered as standard with openings for cable glands with metric threads as listed in the section describing the standard terminal box. If glands with NPT threads will be used must variant code 730 be ordered. If nothing else is stated on the orderer will the sizes in tables below be delivered.

Motor frame size	Main cable entries	NPT plug
160-180	2 x 1 ¼”	1 x 1 ¼”
200-250	2 x 1 ½”	1 x 1 ½”
280	2 x 2”	1 x 2”
315-450	2 x 3”	1 x 3”

Motor frame size	Cable entries for auxiliaries	NPT plug
160-450	2 x ¾”	2 x ¾”

Gland plates with threaded openings for cable glands of nonstandard size

If the standard size of threaded openings for cable glands does not suit the gland size and cable that will be used can openings of nonstandard size also be delivered, either by fitting a reducers to make the openings smaller or by increasing the amount or size of holes. The maximum possible size and amount for each gland plate size is listed below. Threaded openings of non-standard size can be ordered using variant code 554.

Gland plate size	Maximum amount and size of threaded holes
B	2 x M40
C	2 x M63
D	2 x M90 or 3 x M75
E	2 x M90 or 4 x M75

Gland plates of non-standard material

The standard material used in gland plates is steel. Gland plates made of aluminum or stainless steel are optional, either with cable glands or blind without threaded holes. Please refer to the variant code section for more information.

Auxiliary terminal box

It is possible to equip motors from frame size 160 upwards with one or several auxiliary terminal boxes for connection of auxiliaries like heaters or temperature detectors. The standard auxiliary terminal box is made of aluminium, except frame sizes 160-250, where cast iron boxes are used.

Connection terminals are of spring-loaded type for quick and easy connection. These are suitable for up to 2.5 mm^2 wires. The auxiliary terminal boxes are equipped with an earthing terminal. The first auxiliary terminal box is located on the right-hand side at D-end as standard. The standard cable entry is 2 x M20 with plugged entries. If cable glands are needed must these be ordered using the variant codes described earlier in this section.

Related variant codes	
380	Separate terminal box for temperature detectors
418	Separate terminal box for auxiliaries
567	Separate terminal box material: cast Iron
568	Separate terminal box for heating elements

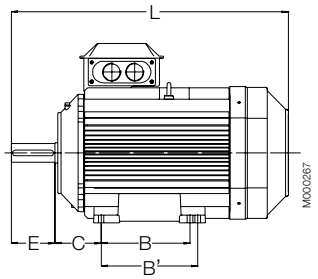
Small auxiliary aluminum terminal box for motor sizes 280-450
(variant codes 418, 568, 380, 569)
The size of terminal box ordered with these codes depends on the number of accessories ordered.
80 x 125 mm, max 12 strips.
Earthing size M4

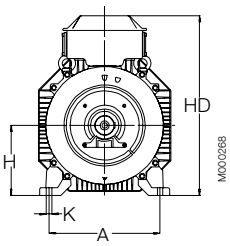
Large auxiliary aluminum terminal box for motor sizes 280-450.
The size of terminal box ordered with these codes depends on the number of accessories ordered.
80 x 250 mm, max 30 strips. Earthing size M4

Auxiliary cast iron terminal box for motor size 160-250 (variant code 418).
111x162 mm

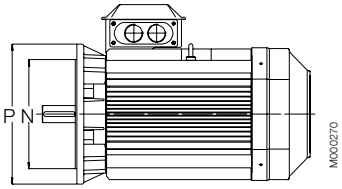
Auxiliary cast iron terminal box for motor sizes 280-450
(variant code 567)
208 x 180 mm

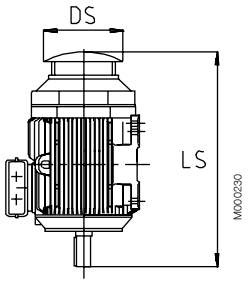
Dimension drawings
Dust ignition protection Ex t case iron motors, 2D and 3D



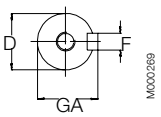


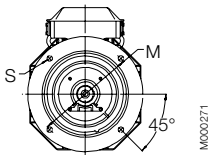
Foot-mounted motor IM 1001, IM B3



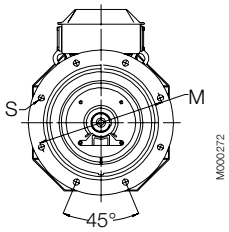


Flange-mounted motor IM 3001, IM B5

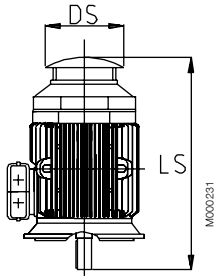




Sizes 80 to 200



Sizes 225 to 450



Protective roof, variant code 005

Motor size	IM 1001, IM B3 AND IM 3001, IM B5										IM 1001, IM B3							IM 3001, IM B5				Protective roof		
	D poles		GA poles		F poles		E poles		L max poles		A	B	B'	C	HD	K	H	M	N	P	S	DS	LS	
	2	4-8	2	4-8	2	4-8	2	4-8	2	4-6													2	4-8
71M_	14	14	16	16	5	5	30	30	264	264	112	90	-	45	178	7	71	130	110	160	10	139	272	272
71ML_	14	14	16	16	5	5	30	30	294	294	112	90	-	45	178	7	71	130	110	160	10	139	302	302
80M_	19	19	21.5	21.5	6	6	40	40	331	331	125	100	-	50	194	10	80	165	130	200	12	157	331	331
80ML_	19	19	21.5	21.5	6	6	40	40	363	363	125	100	112	50	194	10	80	165	130	200	12	157	363	363
90SL_	24	24	27	27	8	8	50	50	356	356	140	100	125	56	218	10	90	165	130	200	12	177	368	368
90L_	24	24	27	27	8	8	50	50	390	390	140	100	125	56	218	10	90	165	130	200	12	177	402	402
100L_	28	28	31	31	8	8	60	60	381	381	160	140	-	63	247	12	100	215	180	250	15	197	395	395
100ML_	28	28	31	31	8	8	60	60	403	403	160	140	-	63	247	12	100	215	180	250	15	197	417	417
100LK_	28	28	31	31	8	8	60	60	435	435	160	140	160	63	247	12	100	215	180	250	15	197	449	449
112 (IE2)	28	28	31	31	8	8	60	60	403	403	190	140	-	70	259	12	112	215	180	250	15	197	417	417
112 (IE3)	28	28	31	31	8	8	60	60	442	403	190	140	-	70	258	12	112	215	180	250	15	222	483	483
132	38	38	41	41	10	10	80	80	532	532	216	140	178	89	300	12	132	265	230	300	15	261	552	552
160	42	42	45	45	12	12	110	110	681	681	254	210	254	108	421	14.5	160	300	250	350	19	305	733	733
180	48	48	51.5	51.5	14	14	110	110	726	726	279	241	279	121	461	14.6	180	300	250	350	19	346	779	779
200	55	55	59	59	16	16	110	110	821	821	318	267	305	133	528	18.5	200	350	300	400	19	386	875	875
225	55	60	59	64	16	18	110	140	849	849	356	286	311	149	573	18.5	225	400	350	450	19	425	902	932
250	60	65	64	69	18	18	140	140	884	884	406	311	349	168	626	24	250	500	450	550	19	471	937	937
280	65	75	69	79.5	18	20	140	140	1088	1088	457	368	419	190	759	24	280	500	450	550	18	555	1 180	1190
315SM_	65	80	69	85	18	22	140	170	1174	1204	508	406	457	216	852	30	315	600	550	660	23	624	1 290	1320
315ML_	65	90	69	95	18	25	140	170	1285	1315	508	457	508	216	852	30	315	600	550	660	23	624	1 401	1431
315LK_	65	90	69	95	18	25	140	170	1491	1521	508	508	560	216	852	28	315	600	550	660	23	624	1 607	1637
355SM_	70	100	74.5	106	20	28	140	210	1409	1479	610	500	560	254	958/944 [1]	35	355	740	680	800	23	720	1 476	1546
355ML_	70	100	74.5	106	20	28	140	210	1514	1584	610	560	630	254	958	35	355	740	680	800	23	720	1 528	1703
355LK_	70	100	74.5	106	20	28	140	210	1764	1834	610	630	710/900	254	958	35	355	740	680	800	23	720	1 633	1703
400L_	80	110	85	116	22	28	170	210	1851	1891	710	900	1000	224	1045	35	400	940	880	1000	28	810	1 860	1900
400LK_	80	100	85	106	22	28	170	210	1851	1891	686	710	800	280	1045	35	400	740	680	800	24	810	1 860	1900
450	-	120	-	127	-	32	-	210	-	2187	800	1000	1120	250	1169/1293 [2]	42	450	1080	1000	1150	28	966	-	2342

[1] With 750/370 terminal box
[2] With 1200/750 terminal box

IM B14 (IM3601), IM 3602

Motor size	LA	M	N	P	S	T	S	T
71	8	85	70	105	M6	2.5	M6	2.5
80	8	100	80	120	M6	3	M6	3
90	10	115	95	140	M8	3	M8	3
100	10	130	110	160	M8	3.5	M8	3.5
112	10	130	110	160	M8	3.5	M8	3.5
132	12	165	130	200	M10	3.5	M10	3.5

In all dimension drawings: The tables give the main dimensions in mm. For detailed drawings please see our web-pages 'www.abb.com/motors&generators' or contact ABB.

Tolerances:	
A, B	± 0,8
D, DA	ISO k6 < Ø 50mm
	ISO m6 > Ø 50mm
F, FA	ISO h9
H	-0.5
N	ISO j6
C, CA	± 0.8

Certificate examples

IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
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Certificate No.: IECEx LCI 07.0001 Issue No.:0 History:

Status: Current

Date of Issue: 2007-01-12 Page 1 of 3

Applicant: **ABB Oy, Motors**
Strömbergin Puistotie 5A
P.O. Box 633
65101 VAASA
Finland

Electrical Apparatus: **M3GP80-450 & M3LP400-450 series, 13 cage induction motor types**
Optional accessory:

Type of Protection: **Non sparking Ex nA and dust protection Ex tD.**

Marking: **Ex nA II T3, Ex tD A21/A22 T125**

Approved for issue on behalf of the IECEx Certification Body: Marc GILLAUX

Position: Ex-Certification Manager

Signature. (for printed version)

Date: 12 JAN. 2007

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3. The Status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

Certificate issued by:

Laboratoire Central des Industries Electriques (LCIE)
33 Avenue du General Leclerc
FR-92260 Fontenay-aux-Roses
France

M000730

1 ATTESTATION D'EXAMEN CE DE TYPE

2 **Appareil ou système de protection** destiné à être utilisé en atmosphères explosibles **(Directive 94/9/CE)**

3 Numéro de l'attestation d'examen CE de type
LCIE 00 ATEX 3016

4 Appareil ou système de protection :
Moteur asynchrone
Type : M3GP160 ..., M3GP180 ... (Génération H)

5 Demandeur : ABB Oy Motors
Adresse : Strömbergin Puistotie 5A
FIN - 65101 VAASA - Finland

6 Fabricant : ABB Oy Motors
Adresse : Strömbergin Puistotie 5A
FIN - 65101 VAASA - Finland

7 Cet appareil ou système de protection et ses variantes éventuelles acceptées sont décrits dans l'annexe de la présente attestation et dans les documents descriptifs cités en référence.

8 Le LCIE, organisme notifié sous la référence 0081 conformément à l'article 9 de la directive 94/9/CE du Parlement européen et du Conseil du 23 mars 1994, certifie que cet appareil ou système de protection est conforme aux exigences essentielles de sécurité et de santé pour la conception et la construction d'appareils et de systèmes de protection destinés à être utilisés en atmosphères explosibles, données dans l'annexe II de la directive.
Les résultats des vérifications et essais figurent dans le rapport confidentiel N° 90248-581521.

9 Le respect des exigences essentielles de sécurité et de santé est assuré par la conformité à :
- EN 61241-0 (2006)
- EN 61241-1 (2004)

10 La signe X lorsqu'il est placé à la suite du numéro de l'attestation, indique que cet appareil ou système de protection est soumis aux conditions spéciales pour une utilisation sûre, mentionnées dans l'annexe de la présente attestation.

11 Cette attestation d'examen CE de type concerne uniquement la conception et la construction de l'appareil ou du système de protection spécifié, conformément à l'annexe III de la directive 94/9/CE.
Des exigences supplémentaires de la directive sont applicables pour la fabrication et la fourniture de l'appareil ou du système de protection. Ces dernières ne sont pas couvertes par la présente attestation.

12 Le marquage de l'appareil ou du système de protection doit comporter les informations détaillées au point 15.

Fontenay-aux-Roses, le 16 mars 2009

Le responsable de certification ATEX
ATEX certification manager

Marc GILLAUX

1 EC TYPE EXAMINATION CERTIFICATE

2 **Equipment or protective system** intended for use in potentially explosive atmosphere **(Directive 94/9/EC)**

3 EC type examination certificate number
LCIE 00 ATEX 3016

4 Equipment or protective system :
Asynchronous motor
Type : M3GP160 ..., M3GP180 ... (Generation H)

5 Applicant : ABB Oy Motors
Address : Strömbergin Puistotie 5A
FIN - 65101 VAASA - Finland

6 Manufacturer : ABB Oy Motors
Address : Strömbergin Puistotie 5A
FIN - 65101 VAASA - Finland

7 This equipment or protective system and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

8 LCIE, notified body number 0081 in accordance with article 9 of the Directive 94/9/EC of the European Parliament and the Council of 23 March 1994, certifies that this equipment or protective system has been found to comply with the essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.
The examination and test results are recorded in confidential report N° 90248-581521.

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with :
- EN 61241-0 (2006)
- EN 61241-1 (2004)

10 If the sign X is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC type examination certificate relates only to the design and construction of this specified equipment or protective system in accordance with annex III to the directive 94/9/EC.
Further requirements of the directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

12 The marking of the equipment or protective system shall include informations as detailed at 15.

M000731

ABB

EU DECLARATION OF CONFORMITY

The Manufacturer: ABB Oy
Motors and Generators
P.O. Box 633
Strömbergin Puistotie 5A
FIN - 65101 Vaasa, Finland

ABB Sp.z o.o
27 Placydowska Str.
PL-95-070 Aleksandrow Lodzki
Poland

This declaration of conformity is issued under the sole responsibility of the manufacturer.

The products: 3-phase induction motors of series M3AA, M3DP, M3GP, M3HP, M3JP, M3JC, M3JM, M3KP and M3KC as listed in this document on the pages 2 ...3 having correspondent name plate markings covered by those as listed.

The motors of the declaration described above are in conformity with the relevant Union harmonisation legislation:

Directive 94/9/EC (until April 19th, 2016) and Directive 2014/34/EU (from April 20th, of April 2016)

Directive 2009/125/EC (ErP of 20th November 2009)
The motors that are marked as IE2, IE3 or IE4 are in conformity with the requirements set in the Commission Regulation (EU) No. 4/2014 of 5 January 2014 amending Regulation (EC) No. 640/2009.

Efficiency classes as defined in the standard EN 60034-30:2009.

Directive 2011/65/EU
Motors are in conformity with the Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment. Technical documentation based on the standard EN 50581:2012

The following harmonised standards are applied in relation to which conformity is declared:
EN 60079-0:2012, EN 60079-1:2007, EN 60079-7:2007, EN 60079-15:2010, EN 60079-31:2009 and relevant parts of the EN 60034 –series of standards.

The conformity of the end product according to the Directive 2006/42/EC has to be established by the commissioning party when the motor is fitted to the machinery.

Note: Motors have to be installed and maintained according to the relevant standards and instructions of ABB Oy, Motors and Generators. When installed in converter supplied applications, additional requirements must be respected regarding the motor as well as the installation as described in the appropriate dedicated addendum.

Notified Bodies (ExNB): LCIE (0081), Av. Du Général Leclerc, 33, 92260 Fontenay-aux-Roses, France and VTT Expert Services Ltd (0537), Otakaari 7B, 02044 Espoo, Finland

Signed for and on behalf of: ABB Oy, Motors and Generators and ABB Sp.z.o.o

Place and date of issue: Vaasa, Finland, 2015-11-26

Harri Mykkänen
Vice President

Title

Document: 3GZF500630-309G

ABB Oy

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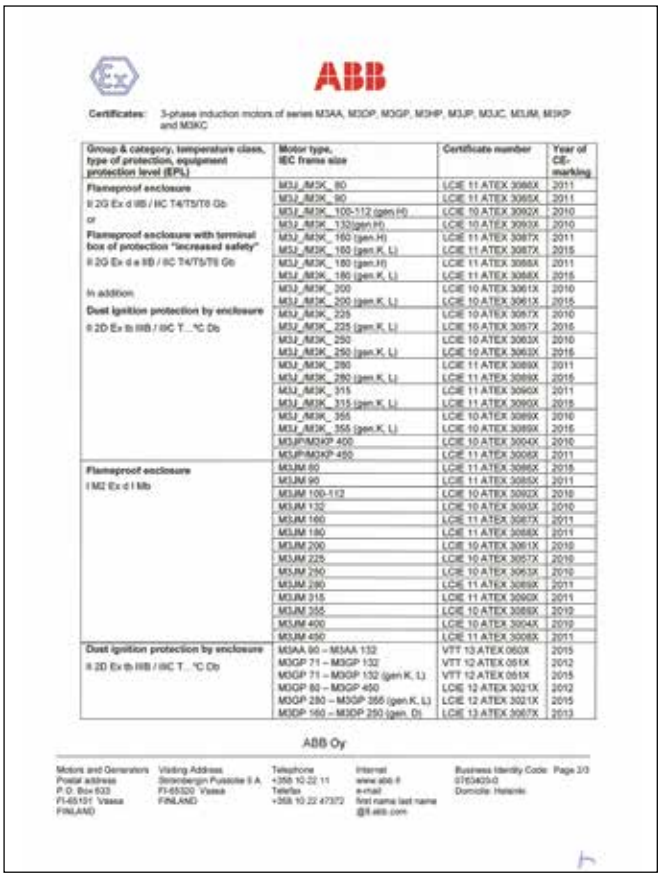
Business Identity Code: Page 1/3
0763403-0
Domicile: Helsinki

M000725-1a



ABB

Certificates: 3-phase induction motors of series M3AA, M3DP, M3GP, M3HP, M3JP, M3JC, M3JM, M3KP and M3KC

Group & category, temperature class, type of protection, equipment protection level (EPL)	Motor type, IEC frame size	Certificate number	Year of CE-marking
Flameproof enclosure	M3J_M3K_ 80	LCIE 11 ATEX 3086X	2011
II 2G Ex d IIB / IIC T4/T5/T6 Gb	M3J_M3K_ 90	LCIE 11 ATEX 3085X	2011
or	M3J_M3K_ 100-112 (gen.H)	LCIE 10 ATEX 3092X	2010
Flameproof enclosure with terminal box of protection "increased safety"	M3J_M3K_ 132(gen.H)	LCIE 10 ATEX 3093X	2010
II 2G Ex d e IIB / IIC T4/T5/T6 Gb	M3J_M3K_ 160 (gen.H)	LCIE 11 ATEX 3087X	2011
	M3J_M3K_ 160 (gen.K, L)	LCIE 11 ATEX 3087X	2015
In addition:	M3J_M3K_ 180 (gen.H)	LCIE 11 ATEX 3088X	2011
Dust ignition protection by enclosure	M3J_M3K_ 180 (gen.K, L)	LCIE 11 ATEX 3088X	2015
II 2D Ex tb IIIB / IIIC T...°C Db	M3J_M3K_ 200	LCIE 10 ATEX 3091X	2010
	M3J_M3K_ 200 (gen.K, L)	LCIE 10 ATEX 3091X	2015
	M3J_M3K_ 225	LCIE 10 ATEX 3057X	2010
	M3J_M3K_ 225 (gen.K, L)	LCIE 10 ATEX 3057X	2016
	M3J_M3K_ 250	LCIE 10 ATEX 3063X	2010
	M3J_M3K_ 250 (gen.K, L)	LCIE 10 ATEX 3063X	2016
	M3J_M3K_ 280	LCIE 11 ATEX 3089X	2011
	M3J_M3K_ 280 (gen.K, L)	LCIE 11 ATEX 3089X	2015
	M3J_M3K_ 315	LCIE 11 ATEX 3090X	2011
	M3J_M3K_ 315 (gen.K, L)	LCIE 11 ATEX 3090X	2015
	M3J_M3K_ 355	LCIE 10 ATEX 3089X	2010
	M3J_M3K_ 355 (gen.K, L)	LCIE 10 ATEX 3089X	2016
	M3JP/M3KP 400	LCIE 10 ATEX 3004X	2010
	M3JP/M3KP 450	LCIE 11 ATEX 3006X	2011
Flameproof enclosure	M3JM 80	LCIE 11 ATEX 3086X	2015
I M2 Ex d I Mb	M3JM 90	LCIE 11 ATEX 3085X	2011
	M3JM 100-112	LCIE 10 ATEX 3092X	2010
	M3JM 132	LCIE 10 ATEX 3093X	2010
	M3JM 160	LCIE 11 ATEX 3087X	2011
	M3JM 180	LCIE 11 ATEX 3088X	2011
	M3JM 200	LCIE 10 ATEX 3091X	2010
	M3JM 225	LCIE 10 ATEX 3057X	2010
	M3JM 250	LCIE 10 ATEX 3063X	2010
	M3JM 280	LCIE 11 ATEX 3089X	2011
	M3JM 315	LCIE 11 ATEX 3090X	2011
	M3JM 355	LCIE 10 ATEX 3089X	2010
	M3JM 400	LCIE 10 ATEX 3004X	2010
	M3JM 450	LCIE 11 ATEX 3006X	2011
Dust ignition protection by enclosure	M3AA 90 – M3AA 132	VTT 13 ATEX 060X	2015
II 2D Ex tb IIIB / IIIC T...°C Db	M3GP 71 – M3GP 132	VTT 12 ATEX 051X	2012
	M3GP 71 – M3GP 132 (gen.K, L)	VTT 12 ATEX 051X	2015
	M3GP 80 – M3GP 450	LCIE 12 ATEX 3021X	2012
	M3GP 280 – M3GP 355 (gen.K, L)	LCIE 12 ATEX 3021X	2015
	M3DP 160 – M3DP 250 (gen. D)	LCIE 13 ATEX 3067X	2013

ABB Oy

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Business Identity Code: Page 2/3
0763403-0
Domicile: Helsinki

M000725-2a

Motors in brief
Dust ignition protection cast iron motors, size 71 to 180

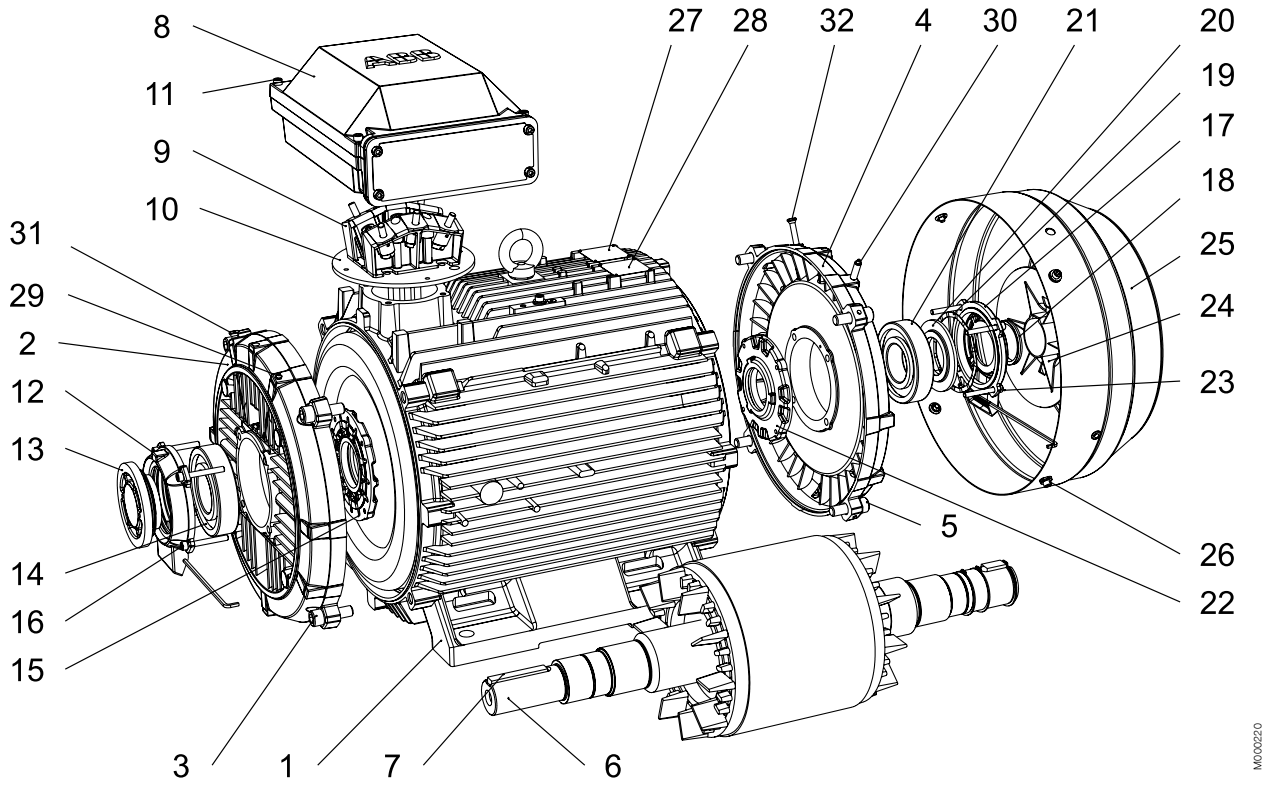
Motor size			71	80	90	100	112	132	160	180
Stator	Material		Cast iron, EN-GLJ-150 or better						Cast iron, EN-GJL-200 or better	
	Paint colour shade		Blue, Munsell 8B 4.5/3.25							
	Corrosion class		C3 medium according to ISO/EN 12944-5							
Feet			Cast iron, EN-GLJ-150 or better, integrated with stator						Cast iron, EN-GJL-200 or better, integrated with stator	
Bearing end shields	Material		Cast iron, EN-GLJ-150 or better						Cast iron, EN-GJL-200 or better	
	Paint colour shade		Blue, Munsell 8B 4.5/3.25							
	Corrosion class		C3 medium according to ISO/EN 12944-5							
Bearings	D-end	2-8 pole	6203-2Z/C3	6204-2Z/C3	6205-2Z/C3	6206-2Z/C3	6206-2Z/C3	6208-2Z/C3	6309/C3	6310/C3
	N-end	2- 8 pole	6202-2Z/C3	6203-2Z/C3	6204-2Z/C3	6205-2Z/C3	6205-2Z/C3	6208-2Z/C3	6209/C3	6209/C3
Axially-locked bearings	Inner bearing cover		As standard, locked at D-end							
Bearing seal			Gamma ring							
Lubrication			Permanent grease lubrication.						Regreasable bearings	
SPM-nipples			Optional						As standard	
Rating plate	Material		Stainless steel							
Terminal box	Frame material		Cast iron, EN-GLJ-150 or better						Cast iron, EN-GJL-200 or better	
	Cover material		Cast iron, EN-GLJ-150 or better						Cast iron, EN-GJL-200 or better	
	Screws		Acid proof steel A4-80							
Connections	Cable entries		2xM16 plugged	2 x M25 plugged		2 x M32 plugged			2 x M40 + 2 x M20 plugged	
	Terminals		6 terminals for connection with cable lugs (not included)							
Fan	Material		Polypropylene. Reinforced with glass fibre.							
Fan cover	Material		Steel						Hot dip galvanized steel	
	Paint colour shade		Blue, Munsell 8B 4.5/3.25							
	Corrosion class		C3 medium according to ISO/EN 12944-5							
Stator winding	Material		Copper							
	Insulation		Insulation class F							
	Winding protection		3 pcs thermistors							
Rotor winding	Material		Pressure die-cast aluminum							
Balancing			Half key balancing							
Key ways			Closed							
Heating elements	On request		25 W							
Drain holes			Closed							
External earthing bolt			As standard							
Enclosure			IP 55							
Cooling method			IC 411							

Motors in brief
Dust ignition protection cast iron motors, size 200 to 400

Motor size			200	225	250	280	315	355	400
Stator	Material		Cast iron, EN-GJL-200 or better						
	Paint colour shade		Blue, Munsell 8B 4.5/3.25						
	Corrosion class		C3 medium according to ISO/EN 12944-5						
Feet			Cast iron, EN-GJL-200 or better, integrated with stator						
Bearing end shields	Material		Cast iron, EN-GJL-200 or better						
	Paint colour shade		Blue, Munsell 8B 4.5/3.25						
	Corrosion class		C3 medium according to ISO/EN 12944-5						
Bearings	D-end	2-pole	6312/C3	6313/C3	6315/C3	6316/C3	6316/C3	6316M/C3	6317/C3
		4-12 -pole	6312/C3	6313/C3	6315/C3	6316/C3	6319/C3	6322/C3	6324/C3
	N-end	2-pole	6210/C3	6212/C3	6213/C3	6316/C3	6319/C3	6316M/C3	6317/C3
		4-12 -pole	6210/C3	6212/C3	6213/C3	6316/C3	6316/C3	6316/C3	6319/C3
Axially-locked bearings	Inner bearing cover		As standard, locked at D-end						
Bearing seal			Gamma ring			V-ring or labyrinth seal			
Lubrication			Regreasable bearings						
SPM-nipples			As standard						
Rating plate	Material		Stainless steel						
Terminal box	Frame material		Cast iron, EN-GJL-200 or better						
	Cover material		Cast iron, EN-GJL-200 or better						
	Cover screws material		Steel 8.8, zinc electroplated and chromated						
Connections	Cable entries		2 x M63 + 2 x M20 plugged			2 x M63 + 2 x M20 plugged		Refer to page 226	
	Terminals		6 terminals for connection with cable lugs (not included)						
Fan	Material		Aluminum						
Fan cover	Material		Hot dip galvanized steel						
	Paint colour shade		Blue, Munsell 8B 4.5/3.25						
	Corrosion class		C3 medium according to ISO/EN 12944-5						
Stator winding	Material		Copper						
	Insulation		Insulation class F						
	Winding protection		3 pcs thermistors						
Rotor winding	Material		Pressure die-cast aluminum						
Balancing			Half key balancing						
Key ways			Closed key way			Open key away			
Heating elements	Optional		25 W	60 W			120 W		
Drain holes			As standard						
External earthing bolt			As standard						
Enclosure			IP 55 or IP 65 depending on EPL and dust group						
Cooling method			IC 411						

Motor construction
Dust ignition protection cast iron motors, Ex t

Typical exploded view of cast iron motors, frame size 315



1	Stator frame
2	Endshield, D-end
3	Screws for endshield, D-end
4	Endshield, N-end
5	Screws for endshield, N-end
6	Rotor with shaft
7	Key, D-end
8	Terminal box
9	Terminal board
10	Intermediate flange
11	Screws for terminal box cover
12	Outer bearing cover, D-end
13	Valve disc with labyrinth seal, D-end; standard in 2-pole motors (V-ring in 4-8 pole)
14	Bearing, D-end
15	Inner bearing cover, D-end
16	Screws for bearing cover, D-end
17	Outer bearing cover, N-end
18	Seal, N-end
19	Wave spring
20	Valve disc, N-end
21	Bearing, N-end
22	Inner bearing cover, N-end
23	Screws for bearing cover, N-end
24	Fan
25	Fan cover
26	Screws for fan cover
27	Rating plate
28	Regreasing plate
29	Grease nipple, D-end
30	Grease nipple, N-end
31	SPM nipple, D-end
32	SPM nipple, N-end

Dust ignition protection aluminum motors / Protection by enclosure Ex t IIIB/IIIC T125 °C, Db/Dc

Totally enclosed squirrel cage three phase low voltage motors, Sizes 71-280, 2.2 to 90 kW

Ordering information

When placing an order, specify motor type, size and product code according to the following example.

Example	
Motor type	M3AA 160 MLA
Pole number	4
Mounting arrangement (IM-code)	IM B3 (IM 1001)
Rated output	11 kW
Product code	3GAA162410-ADG
Variant codes if needed	

Explanation of the product code

Motor type	Motor size	Product code	Mounting arrangement code, Voltage and frequency code, Generation code	Variant codes
M3AA	160MLA	3GAA 162 410 - ADG		340, etc.
		1 2 3 4 5 6 7	8 9 10 11 12 13 14	

Positions 1 - 4

3GGP: Totally enclosed fan cooled squirrel cage motor with cast iron frame, dust ignition proof
3GAA: Totally enclosed fan cooled squirrel cage motor with aluminum frame, dust ignition proof

Positions 5 and 6

IEC-frame

06	63
07	71
08:	80
09:	90
10:	100
11:	112
13:	132
16:	160
18:	180
20:	200
22:	225
25:	250
28:	280
31:	315
35:	355
40:	400

Position 7

Speed (Pole pairs)

1:	2 poles
2:	4 poles
3:	6 poles
4:	8 poles
5:	10 poles

Positions 8 to 10

Serial number

Position 11

- (Dash)

Position 12

Mounting arrangement

A:	Foot-mounted, top-mounted terminal box
R:	Foot-mounted, terminal box RHS seen from D-end
L:	Foot-mounted, terminal box LHS seen from D-end
B:	Flange-mounted, large flange
C:	Flange-mounted, small flange (sizes 71 to 112)
H:	Foot- and flange-mounted, terminal box top-mounted
J:	Foot- and flange-mounted, small flange with tapped holes
S:	Foot- and flange-mounted, terminal box RHS seen from D-end
T:	Foot- and flange-mounted, terminal box LHS seen from D-end
V	Flange-mounted, special flange
F:	Foot- and flange-mounted. Special flange

Position 13

Voltage and frequency

Single-speed motors

B:	380 VΔ 50 Hz
D:	400 VΔ, 415 VΔ, 690 VY 50 Hz
E:	500 VΔ 50 Hz
F:	500 VY 50 Hz
S:	230 VΔ, 400 VY, 415 VY 50 Hz
T:	660 VΔ 50 Hz
U:	690 VΔ 50 Hz
X:	Other rated voltage, connection or frequency, 690 V maximum

Position 14

Generation code

G, H...

The product code must be, if needed, followed by variant codes.

Explanation of technical data pages:

The two bullets in the product code indicate choice of mounting arrangements, voltage and frequency code (see ordering information page).

Efficiency values are given according to IEC 60034-2-1; 2007. Please note that the values are not comparable without knowing the testing method. ABB has calculated the efficiency values according to indirect method, stray load losses (additional losses) determined from measuring.

I_s / I_N = Starting current
T_l / T_N = Locked rotor torque
T_b / T_N = Pull-out torque

Rating plates

The rating plates are in table form giving values for speed, output, current and power factor at different voltages, there are two rows available for different voltages, usually is the corresponding voltages for star and delta connection stamped. Other voltage and frequency combinations are possible and can be ordered with variant codes 002 or 209. Please refer to the variant code section.

The following information will be shown on the motor rating plate:

- Lowest nominal efficiency at 100%, 75% and 50% rated load
- Efficiency level
- Year of manufacture
- Type of protection
- Apparatus group
- Temperature class
- Identification number for notified body (category 2 motors only)
- Certificate number ATEX and IECEx (if available)

Aluminum motors size 90-132

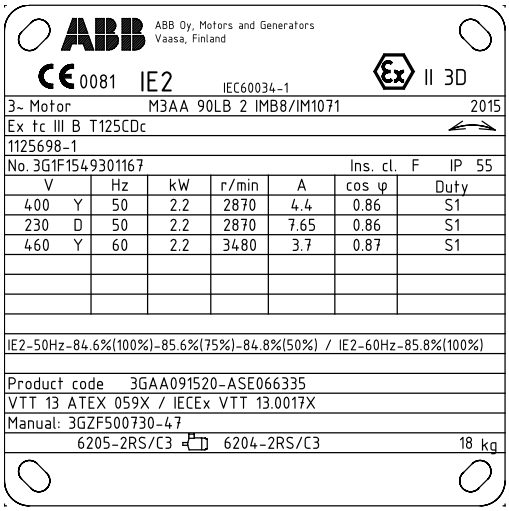


ABB Oy, Motors and Generators
Vaasa, Finland

CE 0081 IE2 IEC60034-1 Ex II 3D

3~ Motor	M3AA 90LB 2 IMB8/IM1071					2015
Ex tc III B T125CDc						
1125698-1						
No. 3G1F1549301167					Ins. cl. F	IP 55
V	Hz	kW	r/min	A	cos φ	Duty
400 Y	50	2.2	2870	4.4	0.86	S1
230 D	50	2.2	2870	7.65	0.86	S1
460 Y	60	2.2	3480	3.7	0.87	S1
IE2-50Hz-84.6%(100%)-85.6%(75%)-84.8%(50%) / IE2-60Hz-85.8%(100%)						
Product code 3GAA091520-ASE066335						
VTT 13 ATEX 059X / IECEx VTT 13.0017X						
Manual: 3GZF500730-47						
6205-2RS/C3		6204-2RS/C3				18 kg

Aluminum motors size 160, 180

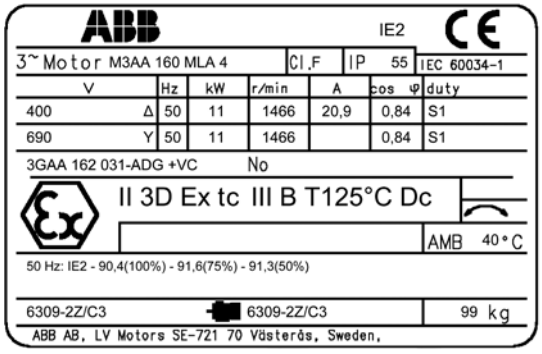


ABB IE2 CE

3~ Motor M3AA 160 MLA 4				Cl.F	IP 55	IEC 60034-1
V	Hz	kW	r/min	A	cos φ	duty
400 Δ	50	11	1466	20,9	0,84	S1
690 Y	50	11	1466		0,84	S1
3GAA 162 031-ADG +VC			No			
Ex II 3D Ex tc III B T125°C Dc						
				AMB	40 °C	
50 Hz: IE2 - 90,4(100%) - 91,6(75%) - 91,3(50%)						
6309-2Z/C3		6309-2Z/C3			99 kg	
ABB AB, LV Motors SE-721 70 Västerås, Sweden.						

M000761a

Aluminum motors size 200-250

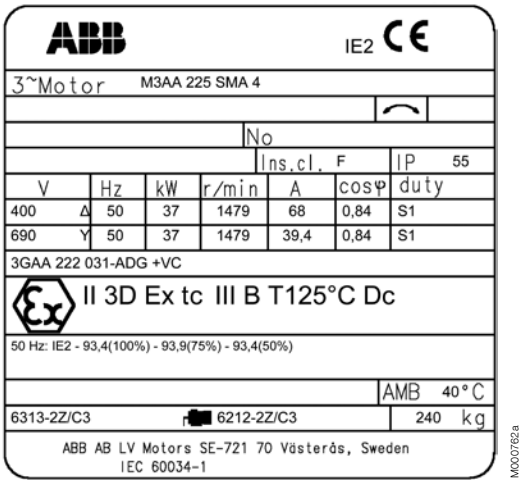


ABB IE2 CE

3~Motor M3AA 225 SMA 4						
No						
Ins.cl. F					IP 55	
V	Hz	kW	r/min	A	cosφ	duty
400 Δ	50	37	1479	68	0,84	S1
690 Y	50	37	1479	39,4	0,84	S1
3GAA 222 031-ADG +VC						
Ex II 3D Ex tc III B T125°C Dc						
50 Hz: IE2 - 93,4(100%) - 93,9(75%) - 93,4(50%)						
				AMB	40°C	
6313-2Z/C3		6212-2Z/C3			240 kg	
ABB AB LV Motors SE-721 70 Västerås, Sweden IEC 60034-1						

M000762a

Technical data for Ex t IIIB/IIIC T125 °C Db/Dc, IP 65/IP 55
Dust ignition protection aluminum motors

ATEX Certified

IP 65/55 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30-1; 2014

Output kW	Motor type	Product code	Speed r/min	Efficiency Full load 100%	3/4 load 75%	1/2 load 50%	Power factor cos φ	Current I_N A	$\frac{I_s}{I_N}$	Torque T_N N_m	$\frac{T_l}{T_N}$	$\frac{T_b}{T_N}$	Moment of inertia J = 1/4 GD² kgm²	Weight kg	Sound pressure level L_{PA} dB
3000 r/min = 2-poles		400 V 50 Hz						CENELEC-design							
3	M3AA 100LB 2	3GAA101520-••E	2920	86.40	86.10	84.00	0.9	5.8	9.3	9.8	3.3	3.9	0.005	25	62
4	M3AA 112MB 2	3GAA111320-••E	2885	86.10	87.00	88.00	0.9	7.6	7.6	13.2	2.5	2.8	0.0062	30	68
5.5	M3AA 132SB 2	3GAA131120-••E	2915	88.00	88.10	86.90	0.8	11.0	7.9	18.0	2.6	3.6	0.016	52	73
7.5	M3AA 132SC 2	3GAA131130-••E	2915	88.50	89.10	88.50	0.9	13.6	7.6	24.5	2.2	3.2	0.022	52	73
11	M3AA 160MLA 2	3GAA161410-••G	2938	90.60	91.50	91.10	0.9	19.2	7.5	35.7	2.4	3.1	0.044	91	69
15	M3AA 160MLB 2	3GAA161420-••G	2934	91.50	92.40	92.20	0.9	26.0	7.5	48.8	2.5	3.3	0.053	105	69
18.5	M3AA 160MLC 2	3GAA161430-••G	2932	92.00	93.10	93.10	0.9	31.5	7.5	60.2	2.9	3.4	0.063	123	69
22	M3AA 180MLA 2	3GAA181410-••G	2952	92.20	92.70	92.20	0.9	39.5	7.7	71.1	2.8	3.3	0.076	132	69
30	M3AA 200MLA 2	3GAA201410-••G	2956	93.10	93.50	92.80	0.9	51.6	7.7	96.9	2.7	3.1	0.178	210	72
37	M3AA 200MLB 2	3GAA201420-••G	2959	93.40	93.70	92.90	0.9	63.5	8.2	119	3.0	3.3	0.196	225	72
45	M3AA 225SMA 2	3GAA221210-••G	2961	93.60	93.90	93.10	0.9	78.8	6.7	145	2.5	2.5	0.244	263	74
55	M3AA 250SMA 2	3GAA251210-••G	2967	94.10	94.40	93.80	0.9	95.8	6.8	177	2.2	2.7	0.507	304	75
75	M3AA 280SMA 2	3GAA281210-••G	2968	94.40	94.70	94.30	0.9	128	7.1	241	2.5	2.8	0.583	389	75
90 [1]	M3AA 280SMB 2	3GAA281220-••G	2971	94.90	95.20	94.70	0.9	153	7.8	289	2.6	3.2	0.644	425	75
3000 r/min = 2-poles		400 V 50 Hz						High-output design							
30	M3AA 180MLB 2	3GAA181420-••G	2950	92.70	93.50	93.30	0.9	53.0	7.9	97.1	2.8	3.3	0.092	149	69
45	M3AA 200MLC 2	3GAA201430-••G	2957	93.30	93.80	93.20	0.9	79.1	8.1	145	3.1	3.3	0.196	225	72
55	M3AA 225SMB 2	3GAA221220-••G	2961	93.90	94.30	93.60	0.9	96.0	6.5	177	2.4	2.5	0.274	286	74
75	M3AA 250SMB 2	3GAA251220-••G	2970	94.50	94.80	94.40	0.9	128	7.6	241	2.8	3.1	0.583	351	75

[1] Temperature rise class F

Equipment protection level and equipment group subdivison must be selected when ordering by choosing appropriate variant code;

Sizes 90-132
334 Ex t, Dust group III B T125C Db, IP6X (non-conductive dust) acc. IEC/EN60079-31
335 Ex t, Dust group III B T125C Dc, IP5X (non-conductive dust) acc. IEC/EN60079-31
336 Ex t, Dust group III C T125 Db, IP6X (conductive dust) acc. IEC/EN60079-31
337 Ex t, Dust group III C T125 Dc, IP6X (conductive dust) acc. IEC/EN60079-31

Sizes 160-280
340 Ex t, Dust group III B T125C Dc (non-conductive dust) with manufacturers declaration

Technical data for Ex t IIIB/IIIC T125 °C Db/Dc, IP 65/IP 55
Dust ignition protection aluminum motors

ATEX Certified

IP 65/55 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30-1; 2014

Output kW	Motor type	Product code	Speed r/min	Efficiency Full load 100%	3/4 load 75%	1/2 load 50%	Power factor cos φ	Current I_N A	$\frac{I_s}{I_N}$	Torque T_N N_m	$\frac{T_l}{T_N}$	$\frac{T_b}{T_N}$	Moment of inertia J = 1/4 GD² kgm²	Weight kg	Sound pressure level L_{PA} dB
1500 r/min = 4-poles		400 V 50 Hz						CENELEC-design							
2.2	M3AA 100LC 4	3GAA102530-••E	1450	86.4	86.2	84.1	0.79	4.6	7.3	14.4	2.8	3.4	0.009	25	54
3	M3AA 100LD 4	3GAA102540-••E	1445	85.7	86.1	85.1	0.79	6.3	7.0	19.8	2.4	3.0	0.011	28	63
4	M3AA 112MB 4	3GAA112320-••E	1445	86.7	86.5	85.2	0.75	8.8	7.3	26.4	3.1	3.4	0.0126	34	64
5.5	M3AA 132M 4	3GAA132300-••E	1465	89.0	89.5	88.6	0.79	10.9	6.3	36.0	1.9	2.6	0.038	48	66
7.5	M3AA 132MA 4	3GAA132310-••E	1460	89.1	89.8	89.4	0.79	14.7	6.4	49.0	1.8	2.6	0.048	59	63
11	M3AA 160MLA 4	3GAA162410-••G	1466	90.4	91.6	91.3	0.84	20.9	6.8	71.6	2.2	2.8	0.081	99	62
15	M3AA 160MLB 4	3GAA162420-••G	1470	91.4	92.3	92.2	0.83	28.5	7.1	97.4	2.6	3.0	0.099	118	62
18.5	M3AA 180MLA 4	3GAA182410-••G	1477	91.9	92.8	92.6	0.84	34.5	7.2	119	2.6	2.9	0.166	146	62
22	M3AA 180MLB 4	3GAA182420-••G	1475	92.3	93.3	93.2	0.84	40.9	7.3	142	2.6	3.0	0.195	163	62
30	M3AA 200MLA 4	3GAA202410-••G	1480	93.2	94.0	93.7	0.84	55.2	7.4	193	2.8	3.0	0.309	218	63
37	M3AA 225SMA 4	3GAA222210-••G	1479	93.4	93.9	93.4	0.84	68.0	7.1	238	2.6	2.9	0.356	240	66
45	M3AA 225SMB 4	3GAA222220-••G	1480	93.9	94.3	93.9	0.85	81.3	7.5	290	2.8	3.2	0.44	273	66
55	M3AA 250SMA 4	3GAA252210-••G	1480	94.4	94.9	94.6	0.85	98.9	7.0	354	2.6	2.9	0.765	314	67
75	M3AA 280SMA 4	3GAA282210-••G	1478	94.3	94.9	94.6	0.85	135	7.1	484	2.8	3.0	0.866	389	67
90 [1]	M3AA 280SMB 4	3GAA282220-••G	1478	94.6	95.4	95.2	0.84	163	7.7	581	3.2	3.4	0.941	418	67
1500 r/min = 4-poles		400 V 50 Hz						High-output design							
18.5	M3AA 160MLC 4	3GAA162430-••G	1469	91.4	92.4	92.2	0.84	34.7	7.6	120	3.0	3.2	0.11	127	62
22 [1]	M3AA 160MLD 4	3GAA162440-••G	1463	91.6	93.0	93.2	0.85	40.7	6.9	143	2.5	2.9	0.125	140	62
37	M3AA 200MLB 4	3GAA202420-••G	1479	93.4	94.4	94.4	0.85	67.2	7.1	238	2.6	2.9	0.343	234	63
55	M3AA 225SMC 4	3GAA222230-••G	1478	94.0	94.6	94.4	0.85	99.3	7.4	355	2.9	3.1	0.474	287	66
68	M3AA 250SMB 4	3GAA252220-••G	1481	94.6	95.0	94.7	0.84	123	7.9	438	3.1	3.5	0.866	350	67
75 [1]	M3AA 250SMB 4	3GAA252220-••G	1478	94.4	95.1	94.8	0.85	134	7.3	484	2.8	3.1	0.866	350	67

[1] Temperature rise class F

Equipment protection level and equipment group subdivison must be selected when ordering by choosing appropriate variant code;

Sizes 90-132
334 Ex t, Dust group III B T125C Db, IP6X (non-conductive dust) acc. IEC/EN60079-31
335 Ex t, Dust group III B T125C Dc, IP5X (non-conductive dust) acc. IEC/EN60079-31
336 Ex t, Dust group III C T125 Db, IP6X (conductive dust) acc. IEC/EN60079-31
337 Ex t, Dust group III C T125 Dc, IP6X (conductive dust) acc. IEC/EN60079-31

Sizes 160-280
340 Ex t, Dust group III B T125C Dc (non-conductive dust) with manufacturers declaration

Technical data for Ex t IIIB/IIIC T125 °C Db/Dc, IP 65/IP 55
Dust ignition protection aluminum motors

IP 65/55 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30-1; 2014

Output kW	Motor type	Product code	Speed r/min	Efficiency Full load 100%	3/4 load 75%	1/2 load 50%	Power factor cos φ	Current I_N A	$\frac{I_s}{I_N}$	Torque T_N N_m	$\frac{T_l}{T_N}$	$\frac{T_b}{T_N}$	Moment of inertia J = 1/4 GD² kgm²	Weight kg	Sound pressure level L_{PA} dB
1000 r/min = 6-poles		400 V 50 Hz						CENELEC-design							
1.5	M3AA 100LC 6	3GAA103530-••E	945	80.3	81.4	80.7	0.73	3.6	3.9	15.1	1.7	2.0	0.009	26	49
2.2	M3AA 112MB 6	3GAA113320-••E	955	81.9	81.8	79.2	0.72	5.3	5.2	21.9	1.8	2.2	0.01	34	56
3	M3AA 132S 6	3GAA133100-••E	960	83.3	82.9	80.5	0.65	7.7	4.3	29.8	1.6	2.3	0.031	46	57
4	M3AA 132MB 6	3GAA133320-••E	975	86.4	85.8	83.1	0.70	9.4	7.3	39.2	2.1	4.4	0.045	54	57
5.5	M3AA 132MC 6	3GAA133330-••E	965	86.1	85.6	83.0	0.67	13.3	6.2	54.3	2.5	2.8	0.049	59	61
7.5	M3AA 160MLA 6	3GAA163410-••G	975	88.5	89.9	89.7	0.79	15.4	7.4	73.4	1.7	3.2	0.087	98	59
11	M3AA 160MLB 6	3GAA163420-••G	972	89.3	90.6	90.5	0.79	22.5	7.5	108	1.9	2.9	0.114	125	59
18.5	M3AA 200MLA 6	3GAA203410-••G	988	91.6	92.2	91.7	0.80	36.4	6.7	178	2.3	2.9	0.382	196	63
22	M3AA 200MLB 6	3GAA203420-••G	987	92.0	92.9	92.7	0.82	42.0	6.6	212	2.2	2.8	0.448	218	63
30	M3AA 225SMA 6	3GAA223210-••G	986	92.6	93.3	92.8	0.83	56.2	7.0	290	2.6	2.9	0.663	266	63
37	M3AA 250SMA 6	3GAA253210-••G	989	93.1	93.8	93.4	0.82	69.9	6.8	357	2.4	2.7	1.13	294	63
45 [1]	M3AA 280SMA 6	3GAA283210-••G	988	93.2	94.0	93.9	0.84	82.9	6.8	434	2.4	2.6	1.37	378	63
55 [1]	M3AA 280SMB 6	3GAA283220-••G	988	93.2	94.1	94.0	0.84	101	7.1	531	2.6	2.8	1.5	404	63
1000 r/min = 6-poles		400 V 50 Hz						High-output design							
15	M3AA 160MLC 6	3GAA163430-••G	971	89.7	91.2	91.2	0.77	31.3	7.3	147	1.8	3.6	0.131	138	59
30 [1]	M3AA 200MLC 6	3GAA203430-••G	985	92.0	93.1	92.8	0.83	56.7	6.9	290	2.3	2.8	0.531	245	63
37	M3AA 225SMB 6	3GAA223220-••G	985	93.1	94.0	94.0	0.83	69.1	6.6	358	2.3	2.6	0.821	300	63
45	M3AA 250SMB 6	3GAA253220-••G	989	93.4	94.1	93.9	0.83	83.7	7.0	434	2.5	2.7	1.37	341	63
52 [1]	M3AA 250SMC 6	3GAA253230-••G	989	93.3	94.0	93.8	0.83	96.9	7.4	502	2.8	2.9	1.5	367	63
55 [1]	M3AA 250SMC 6	3GAA253230-••G	988	93.2	94.1	94.0	0.84	101	7.1	531	2.6	2.8	1.5	367	63

[1] Temperature rise class F

Equipment protection level and equipment group subdivison must be selected when ordering by choosing appropriate variant code;

Sizes 90-132
334 Ex t, Dust group III B T125C Db, IP6X (non-conductive dust) acc. IEC/EN60079-31
335 Ex t, Dust group III B T125C Dc, IP5X (non-conductive dust) acc. IEC/EN60079-31
336 Ex t, Dust group III C T125 Db, IP6X (conductive dust) acc. IEC/EN60079-31
337 Ex t, Dust group III C T125 Dc, IP6X (conductive dust) acc. IEC/EN60079-31

Sizes 160-280
340 Ex t, Dust group III B T125C Dc (non-conductive dust) with manufacturers declaration

Variant codes
Dust ignition protection Ex t aluminum motors

Code/Variant		Frame size 90	100	112	132	160	180	200	225	250	280
Balancing											
417	Vibration acc. to Grade B (IEC 60034-14).	•	•	•	•	•	•	•	•	•	•
423	Balanced without key.	•	•	•	•	•	•	•	•	•	•
424	Full-key balancing	•	•	•	•	•	•	•	•	•	•
Bearings and Lubrication											
036	Transport lock for bearings.	•	•	•	•	•	•	•	•	•	•
037	Roller bearing at D-end.	•	•	•	•	•	•	•	•	•	•
039	Cold-resistant grease	•	•	•	•	-	-	-	-	-	-
040	Heat-resistant grease	•	•	•	•	-	-	-	-	-	-
041	Bearings regreasable via grease nipples.	-	-	-	-	•	•	•	•	•	○
043	SPM compatible nipples for vibration measurement	-	-	•	•	•	•	•	•	•	○
057	2RS bearings at both ends.	○	○	○	○	•	•	•	•	•	•
058	Angular contact bearing at D-end, shaft force away from bearing.	•	•	•	•	•	•	•	•	•	•
059	Angular contact bearing at N-end, shaft force towards bearing.	•	•	•	•	•	•	•	•	•	•
188	63-series bearing in D-end	○	○	○	•	○	○	○	○	○	○
796	Grease nipples JIS B 1575 PT 1/8 Type A	-	-	-	-	•	•	•	•	•	•
797	Stainless steel SPM nipples	-	-	•	•	•	•	•	•	•	•
798	Stainless steel grease nipples	-	-	-	-	•	•	•	•	•	•
Branch standard designs											
071	Cooling Tower duty	-	-	•	•	•	•	•	•	•	•
142	Manilla connection.	•	•	•	•	•	•	•	•	•	•
178	Stainless steel / acid proof bolts.	•	•	•	•	•	•	•	•	•	•
209	Non-standard voltage or frequency, (special winding).	•	•	•	•	•	•	•	•	•	•
217	Cast iron D-end shield (on aluminum motor).	•	•	•	•	○	○	○	○	○	○
425	Corrosion protected stator and rotor core.	•	•	•	•	•	•	•	•	•	•
Cooling system											
053	Metal fan cover.	○	○	○	○	○	○	○	○	○	○
068	Light alloy metal fan	○	○	○	○	○	○	○	○	○	○
075	Cooling method IC418 (without fan).	-	-	-	-	-	-	-	-	-	-
183	Separate motor cooling (fan axial, N-end).	-	-	-	-	-	-	-	-	-	-
189	Separate motor cooling, IP44, 400V, 50Hz (fan axial, N-end).	-	-	-	-	-	-	-	-	-	-
141	Binding 2D main dimension drawing.	•	•	•	•	•	•	•	•	•	•
Drain holes											
065	Plugged existing drain holes.	•	•	•	•	•	•	•	•	•	•
Earthing Bolt											
067	External earthing bolt.	○	○	○	○	○	○	○	○	○	○
Hazardous Environments											
334	Ex t, Dust group III B T125C Db, IP6X (non-conductive dust) acc. IEC/EN60079-31.	•	•	•	•	-	-	-	-	-	-
335	Ex t, Dust group III B T125C Dc, IP5X (non-conductive dust) acc. IEC/EN60079-31.	•	•	•	•	-	-	-	-	-	-
336	Ex t, Dust group III C T125 Db, IP6X (conductive dust) acc. IEC/EN60079-31.	•	•	•	•	-	-	-	-	-	-
337	Ex t, Dust group III C T125 Dc, IP6X (conductive dust) acc. IEC/EN60079-31.	•	•	•	•	-	-	-	-	-	-
340	Dust group III B T125C Dc (non-conductive dust) with manufacturers declaration. Musta täppä 160-280	-	-	-	-	•	•	•	•	•	•
452	DIP/Ex tD acc. to ATEX directive 94/9/EC , T= 125 °C, cat. 3D, IP55	-	-	-	-	•	•	•	•	•	•
Heating elements											
450	Heating element, 100-120 V	•	•	•	•	•	•	•	•	•	•
451	Heating element, 200 - 240 V	•	•	•	•	•	•	•	•	•	•
Insulation system											
014	Winding insulation class H.	•	•	•	•	•	•	•	•	•	•
405	Special winding insulation for frequency converter supply.	•	•	•	•	•	•	•	•	•	•
406	Winding for supply > 690 <= 1000 volts	-	-	-	-	-	-	-	-	-	-
Mounting arrangements											
007	IM 3001 flange mounted, IEC flange, from IM 1001 (B5 from B3).	-	-	-	-	•	•	•	•	•	•

Code/Variant		Frame size 90	100	112	132	160	180	200	225	250	280
008	IM 2101 foot/flange mounted, IEC flange, from IM 1001 (B34 from B3).	•	•	•	•	•	-	-	-	-	-
009	IM 2001 foot/flange mounted, IEC flange, from IM 1001 (B35 from B3).	•	•	•	•	•	•	•	•	•	•
047	IM 3601 flange mounted, IEC flange, from IM 3001 (B14 from B5).	•	•	•	•	•	-	-	-	-	-
048	IM 3001 flange mounted, IEC flange, from IM 3601 (B5 from B14).	•	•	•	•	-	-	-	-	-	-
066	Modified for specified mounting position differing from IM B3 (1001), IM B5 (3001), B14 (3601), IM B35 (2001), IM B34 (2101)	•	•	•	•	•	•	•	•	•	•
080	(IM 3001) Flange mounted, DIN A-flange.	•	•	-	-	-	-	-	-	-	-
090	(IM 2101) foot/flange mounted, DIN C-flange, from IM 1001 (B34 from B3).	•	•	-	-	-	-	-	-	-	-
091	(IM 2001) foot/flange mounted, DIN A-flange, from IM 1001 (B35 from B3).	•	•	-	-	-	-	-	-	-	-
093	IM 3601 flange mounted, IEC flange, from IM 1001 (B14 from B3).	•	•	•	-	-	-	-	-	-	-
200	Flange ring holder.	•	•	•	•	-	-	-	-	-	-
218	Flange ring FT 85.	•	-	-	-	-	-	-	-	-	-
219	Flange ring FT 100.	•	-	-	-	-	-	-	-	-	-
220	Flange ring FF 100.	•	-	-	-	-	-	-	-	-	-
223	Flange ring FF 115.	•	-	-	-	-	-	-	-	-	-
224	Flange ring FT 115.	•	-	-	-	-	-	-	-	-	-
226	Flange ring FF 130.	•	•	•	-	-	-	-	-	-	-
227	Flange ring FT 130.	•	•	•	-	-	-	-	-	-	-
229	Flange FT 130.	-	•	•	-	-	-	-	-	-	-
233	Flange ring FF 165.	•	•	•	-	-	-	-	-	-	-
234	Flange ring FT 165.	•	•	•	-	-	-	-	-	-	-
235	Flange FF 165.	•	-	-	-	-	-	-	-	-	-
236	Flange FT 165.	-	-	-	•	-	-	-	-	-	-
243	Flange ring FF 215.	-	-	•	•	-	-	-	-	-	-
244	Flange ring FT 215.	-	•	•	•	-	-	-	-	-	-
245	Flange FF 215.	-	•	•	-	-	-	-	-	-	-
253	Flange ring FF 265.	-	-	-	•	-	-	-	-	-	-
254	Flange ring FT 265.	-	-	-	•	-	-	-	-	-	-
255	Flange FF 265.	-	-	-	•	-	-	-	-	-	-
260	Flange FT 115.	•	-	-	-	-	-	-	-	-	-
306	IM 1001 foot mounted, from IM 3601 (B3 from B14).	•	•	•	•	-	-	-	-	-	-
307	IM 2101 foot/flange mounted, IEC flange, from IM 3601 (B34 from B14).	•	•	•	•	-	-	-	-	-	-
308	IM 2001 foot/flange mounted, IEC flange, from IM 3601 (B35 from B14).	•	•	•	•	-	-	-	-	-	-
309	IM 1001 foot mounted, from IM 3001 (B3 from B5).	•	•	•	•	-	-	-	-	-	-
310	IM 2101 foot/flange mounted, IEC flange, from IM 3001 (B34 from B5).	•	•	•	•	-	-	-	-	-	-
311	IM 2001 foot/flange mounted, IEC flange, from IM 3001 (B35 from B5).	•	•	•	•	-	-	-	-	-	-
312	IM 1001 foot mounted, from IM 2101 (B3 from B34).	•	•	•	•	-	-	-	-	-	-
313	IM 3601 flange mounted, IEC flange, from IM 2101 (B14 from B34).	•	•	•	-	-	-	-	-	-	-
314	IM 3001 flange mounted, IEC flange, from IM 2101 (B5 from B34).	•	•	•	-	-	-	-	-	-	-
315	IM 2001 foot/flange mounted, IEC flange, from IM 2101 (B35 from B34).	•	•	•	•	-	-	-	-	-	-
316	IM 1001 foot mounted, from IM 2001 (B3 from B35).	•	•	•	•	-	-	-	-	-	-
317	IM 3601 flange mounted, IEC flange, from IM 2001 (B14 from B35).	•	•	•	-	-	-	-	-	-	-
319	IM 2101 foot/flange mounted, IEC flange, from IM 2001 (B34 from B35).	•	•	•	•	-	-	-	-	-	-
Painting											
114	Special paint color, standard grade	•	•	•	•	•	•	•	•	•	•
Protection											
005	Protective roof, vertical motor, shaft down.	•	•	•	•	•	•	•	•	•	•
072	Radial seal at D-end. Not possible for 2-pole , 280 and 315 frames	•	•	•	•	•	•	•	•	•	•
158	Degree of protection IP65.	•	•	•	•	•	•	•	•	•	•
211	Weather protected, IP xx W	•	•	•	•	•	•	•	•	•	•
403	Degree of protection IP56.	•	•	•	•	•	•	•	•	•	•

Code/Variant		Frame size 90	100	112	132	160	180	200	225	250	280
404	Degree of protection IP56, without fan and fan cover.	-	-	-	-	-	-	-	-	-	-
784	Gamma-seal at D-end.	○	○	○	○	•	•	•	•	•	•
Rating & instruction plates											
002	Restamping voltage, frequency and output, continuous duty.	•	•	•	•	•	•	•	•	•	•
004	Additional text on std rating plate (max 12 digits on free text line).	•	•	•	•	•	•	•	•	•	•
095	Restamping output (maintained voltage, frequency), intermittent duty.	•	•	•	•	•	•	•	•	•	•
098	Stainless rating plate.	•	•	•	•	•	•	•	•	•	•
135	Mounting of additional identification plate, stainless.	•	•	•	•	•	•	•	•	•	-
138	Mounting of additional identification plate, aluminium.	•	•	•	•	•	•	•	•	•	•
139	Additional identification plate delivered loose.	•	•	•	•	•	•	•	•	•	•
159	Additional plate with text „Made in ....“	•	•	•	•	•	•	•	•	•	•
160	Additional rating plate affixed.	•	•	•	•	•	•	•	•	•	•
161	Additional rating plate delivered loose.	•	•	•	•	•	•	•	•	•	•
163	Frequency converter rating plate. Rating data according to quotation.	•	•	•	•	•	•	•	•	•	•
198	Aluminum rating plate.	○	○	○	•	○	○	○	○	○	○
332	Baldor Catalogue #	•	•	•	•	•	•	•	•	•	•
333	Not for use in the USA	•	•	•	•	•	•	•	•	•	•
Shaft & rotor											
069	Two shaft extensions according to catalog drawings.	•	•	•	•	•	•	•	•	•	•
070	Special shaft extension at D-End, standard shaft material	•	•	•	•	-	-	-	-	-	-
131	Motor delivered with half key (key not exceeding shaft diameter)	•	•	•	•	•	•	•	•	•	•
156	Cylindrical shaft extension, N-end, without key-way.	•	•	•	•	-	-	-	-	-	-
165	Shaft extension with open keyway	•	•	•	•	•	•	•	•	•	•
410	Shaft material stainless steel	•	•	-	-	-	-	-	-	-	-
591	Special shaft extension according to customer specification.	•	•	•	•	•	•	•	•	•	•
600	Special shaft extension at N-end, standard shaft material.	•	•	•	•	-	-	-	-	-	-
Standards and Regulations											
010	Fulfilling CSA Safety Certificate.	•	•	•	•	•	•	•	•	•	•
242	Fulfilling CSA Energy Efficiency Verification IE2 (code 010 included)	-	-	-	-	•	•	•	•	•	•
408	Fulfilling EISA Subtype II efficiency requirements, CC031A.	-	-	-	-	•	•	•	•	•	•
543	Australian MEPS	•	•	•	•	•	•	•	•	•	-
Stator winding temperature sensors											
435	PTC - thermistors (3 in series), 130 °C, in stator winding	•	•	•	•	•	•	•	•	•	•
436	PTC - thermistors (3 in series), 150 °C, in stator winding	•	•	•	•	○	○	○	○	○	○
437	PTC - thermistors (3 in series), 170 °C, in stator winding	•	•	•	•	•	•	•	•	•	•
439	PTC - thermistors (2x3 in series), 150 °C, in stator winding	•	•	•	•	•	•	•	•	•	•
440	PTC - thermistors (3 in series, 110°C & 3 in series, 130°C), in stator winding.	•	•	•	•	-	-	-	-	-	-
441	PTC - thermistors (3 in series, 130 °C & 3 in series, 150 °C), in stator winding	•	•	•	•	•	•	•	•	•	•
442	PTC - thermistors (3 in series, 150 °C & 3 in series, 170 °C), in stator winding	•	•	•	•	•	•	•	•	•	•
Terminal box											
015	Motor supplied in D connection.	•	•	•	•	•	•	•	•	•	•
017	Motor supplied in Y connection.	•	•	-	-	•	•	•	•	•	•
021	Terminal box LHS (seen from D-end).	-	-	-	-	-	-	•	•	•	•
136	Extended cable connection, standard terminal box.	•	•	•	•	-	-	-	-	-	-
137	Extended cable connection, low terminal box, „Flying leads“.	•	•	•	•	-	-	-	-	-	-
180	Terminal box RHS (seen from D-end).	-	-	-	-	-	-	•	•	•	•
230	Standard metal cable gland.	•	•	•	•	•	•	•	•	•	•
467	Lower than standard terminal box and rubber extended cable. Cable length 2 m	-	-	•	•	•	•	•	•	•	•
729	Aluminum non-drilled flange for cable glands	-	-	-	-	-	-	•	•	•	•
731	Two standard metal cable glands.	-	•	•	•	•	•	•	•	•	•
739	Prepared for metric cable glands according to DIN 42925, draft aug. 1999.	-	-	•	•	-	-	-	-	-	-
Testing											
140	Test confirmation.	-	-	-	-	•	•	•	•	•	•
145	Type test report from a catalogue motor, 400V 50Hz.	•	•	•	•	•	•	•	•	•	•
146	Type test with report for one motor from specific delivery batch.	•	•	•	•	•	•	•	•	•	•
147	Type test with report for motor from specific delivery batch, customer witnessed.	•	•	•	•	•	•	•	•	•	•

Code/Variant		Frame size									
		90	100	112	132	160	180	200	225	250	280
148	Routine test report.	•	•	•	•	•	•	•	•	•	•
153	Reduced test for classification society.	•	•	•	•	•	•	•	•	•	•
221	Type test and multi-point load test with report for one motor from specific delivery batch.	•	•	•	•	•	•	•	•	•	•
222	Torque/speed curve, type test and multi-point load test with report for one motor from specific delivery batch.	•	•	•	•	•	•	•	•	•	•
760	Vibration level test	•	•	•	•	•	•	•	•	•	•
762	Noise level test for one motor from specific delivery batch.	•	•	•	•	•	•	•	•	•	•
763	Noise spectrum test for one motor from specific delivery batch.	•	•	-	-	-	-	-	-	-	-
Variable speed drives											
701	Insulated bearing at N-end.	-	-	-	-	•	•	•	•	•	•
704	EMC cable entry.	•	•	•	•	•	•	•	•	•	•

○ = Included as standard
• = Available as option
- = Not applicable

Mechanical design
Motor frame and drain holes

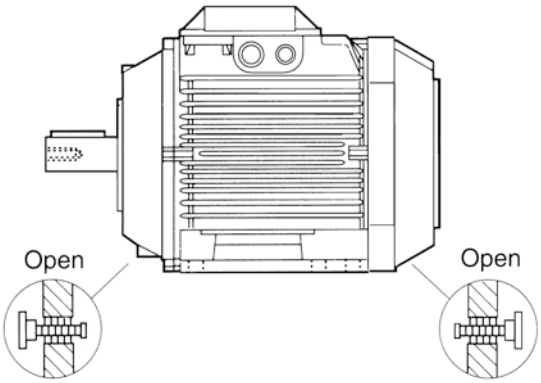
Motor frame
The motor frame is made of aluminum alloy. Frame size 90-180 have aluminum feet and sizes 200-280 have cast iron feet.

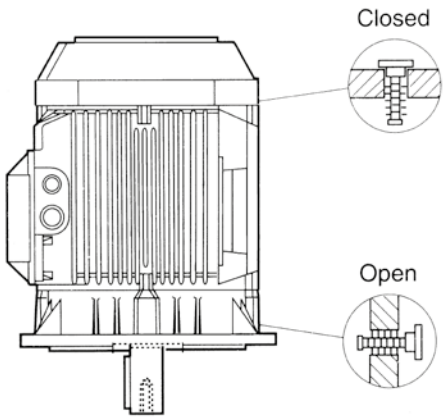
The bearing end shield of sizes 90-132 are made of aluminum, and those of 160 to 280 are made of cast iron.

Motors can be supplied for foot mounting, flange mounting, and combinations of these.

Drain holes
Dust ignition protection motors are provided with drain holes fitted with plugs as standard. The plugs are made of plastic material and delivered in closed position.

When mounting arrangement differs from foot mounted IM B3, mention variant code 066 when ordering to ensure the drain plug is mounted in the lowest position.





Bearings

ABB's alumimum dust ignition protrection motors are as standard fitted with single-row ball bearings according to the table below.

Standard design: Deep groove ball bearings

		Foot and flange mounted motor	
Motor size		D-end	N-end
90		6205-2RSH/C3	6204-2RSH/C3
100		6306-2RS1/C3	6205-2RSH/C3
112		6306-2RS1/C3	6205-2RSH/C3
132		6208-2RS1/C3	6206-2RS1/C3
160		6309-2Z/C3	6209-2Z/C3
180		6310-2Z/C3	6209-2Z/C3
200		6312-2Z/C3	6210-2Z/C3
225		6313-2Z/C3	6212-2Z/C3
250		6315-2Z/C3	6213-2Z/C3
280	2-pole	6315/C3	6213/C3
280	4-8 pole	6316/C3	6213/C3

Axially-locked bearings

All motors with deep groove ball bearings are equipped as standard with an axially locked bearing at the D-end. For sizes 90-132 is the locking done by a spring washer at N-end pushing the rotor towards D-end.

Bearing seals

Motors in sizes 90-132 are provided with gamma seals at both D and N-end, motors in sizes 160-280 have V-rings at both ends. The sizes 90-132 have in addition to the shaft seals 2RS type bearings with rubber seals for improved protection.

Bearing life and lubrication

The nominal life L_{10h} of a bearing is defined according to ISO 281 as the number of operating hours achieved or exceeded by 90 % of identical bearings in a large test series under specified conditions. 50 % of bearings achieve at least five times this lifetime. The life time is dependent on various factors such as bearing load, motor speed, operating temperature and the purity of the grease. The permissible radial and axial loading for different motor sizes is shown in the tables on following pages.

The tables are valid for 50Hz.

Lubrication

Motors in size 90-250 are delivered with greased for life shielded bearings as standard, as an option are also regreasable bearings with grease nipples available for sizes 160-250. Motors of size 280 are provided with regreasable bearings as standard.

Radial forces

Pulley diameter

When the desired bearing life has been determined, the minimum permissible pulley diameter can be calculated with FR as follows:

$$D = \frac{1.9 \bullet 10^7 \bullet K \bullet P}{n \bullet F_R}$$

Where:	
D:	pulley diameter, mm
P:	power requirement, kW
n:	motor speed, r/min.
K:	belt tension factor, dependent on belt type and type of duty. A common value for V-belts is 2.5
F_R:	permissible radial force, refer to tables below.

Permissible loading on the shaft

The following table shows permissible radial forces on the shaft in Newtons, assuming zero axial force, a 25 °C ambient temperature, and normal conditions. The values are given for a calculated bearing life L_{10h} of 40 000 hours per motor size.

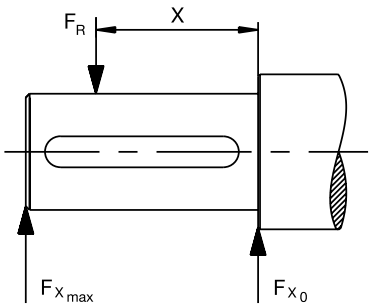
These calculated values further assume mounting position IM B3 (foot-mounted), with force directed sideways. In some cases, the strength of the shaft together with flame path dimensions affects permissible forces

Permissible loads of simultaneous radial and axial forces can be supplied on request.

If the radial force is applied between points X0 and Xmax, the permissible force F_R can be calculated with the following formula:

$$F_R = F_{X0} - \frac{X}{E}(F_{X0} - F_{Xmax})$$

Where:	
E:	length of the shaft extension in the standard version



Permissible radial forces, motor sizes 90-132

Motor size	Poles	Length of shaft extension E (mm)	Ball bearings Basic design with deep groove ball bearings			
			25000 hours		40000 hours	
			F_{X0} (N)	F_{Xmax} (N)	F_{X0} (N)	F_{Xmax} (N)
90	2-8	50	1010	810	1010	810
100	2-8	60	2280	1800	2280	1800
112	2-8	60	2280	1800	2280	1800
132	2-8	80	2120	1610	2120	1610

Permissible radial forces, motor sizes 160-280

Motor size	Poles	Length of shaft extension E (mm)	Ball bearings Basic design with deep groove ball bearings			
			20 000 hrs		40 000 hrs	
			F_{X0}(N)	F_{Xmax}(N)	F_{X0}(N)	F_{Xmax}(N)
160	2	110	4760	3860	4100	3320
	4	110	5180	4200	4380	3545
	6	110	5160	4180	4360	3540
	8	110	6280	4300	5320	4300
180	2	110	6060	4960	5280 [1]	4305 [1]
	4	110	4800	3940	4020	3300
	6	110	6280	5140	5280	4380
	8	110	6960	5500	5880	4800
200	2	110	7800	6500	6760 [2]	5640 [2]
	4	110	8400	7020	7180	5980
	6	110	8960	7480	7600	6340
	8	110	10480	8740	8940	7400
225	2	110	8520	7180	7360 [3]	6200 [3]
	4	140	8380	6780	7200	5820
	6	140	10 960	8860	9360	7560
	8	140	12 100	9780	10 340	8360
250	2	140	10 480 [4]	8500 [4]	9080 [4]	7360 [4]
	4	140	10 840	8780	9380	7600
	6	140	12 600	10 220	10 700	8680
	8	140	14 660	11 880	12 540	10 160
280	2	140	6780	5500	5680	4600
	4	140	8060	6540	6640	5380
	6	140	8980	7280	7360	5960
	8	140	9180	7460	7460	6060

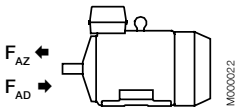
[1] The maximum lifetime of the grease is 38000 h
[2] The maximum lifetime of the grease is 27000 h
[3] The maximum lifetime of the grease is 23000 h
[4] The maximum lifetime of the grease is 16000 h

Axial forces

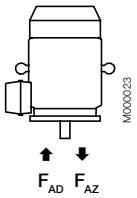
The following tables present permissible axial forces on the shaft in Newtons, assuming zero radial force, a 25 °C ambient temperature, and normal conditions. The values are given for a calculated bearing life of 20,000 and 40,000 hours per motor size.

At 60 Hz, the values must be reduced by 10 percent, Permissible loads of simultaneous radial and axial forces can be supplied on request.

For axial force F_{AD}, it is assumed that the D-bearing is locked with a locking ring.



Mounting arrangement IM B3



Mounting arrangement IM V1

Permissible axial forces, motor sizes 90-280

		Mounting arrangement IM B3, deep groove ball bearings				Mounting arrangement IM V1, deep groove ball bearings			
		20 000 hours		40 000 hours		20 000 hours		40 000 hours	
Motor size	Poles	F_{AD} (N)	F_{AZ} (N)	F_{AD} (N)	F_{AZ} (N)	F_{AD} (N)	F_{AZ} (N)	F_{AD} (N)	F_{AZ} (N)
90	2	885	485	720	320	945	450	775	280
	4	1170	650	945	425	1245	600	1020	375
	6	1270	870	1005	605	1360	815	1095	550
	8	1410	1010	1110	710	1485	960	1185	660
100	2	1620	1120	1280	780	1710	1060	1370	715
	4	2065	1565	1615	1115	2180	1485	1735	1035
	6	2390	1890	1860	1360	2510	1815	1980	1285
	8	2660	2160	2065	1565	2780	2080	2185	1485
112 M, MB	2	1615	1115	1275	775	1725	1040	1385	700
	4	2060	1560	1610	1110	2210	1460	1110	1010
	6	2385	1885	1860	1360	2540	1785	2010	1260
	8	2655	2155	2060	1560	2790	2055	2195	1475
132 M, MA	4	2245	1645	1760	1160	2460	1505	1970	1015
	6	2595	1980	2025	1425	2815	1850	2245	1280
	8	2875	2270	2240	1640	3130	2115	2490	1470
132 MC	6	2580	1980	2010	1410	2885	1780	2315	1210
132 MBA	4	2235	1635	1750	1150	2495	1465	2010	980
132 S	6	2600	2000	2030	1435	2780	1885	2210	1315
	8	2885	2285	2245	1645	3100	2145	2460	1505
132 SB	2	1760	1160	1400	800	1910	1075	1540	705
132 SBB, SC	2	1760	1160	1395	795	1945	1045	1575	670
132 SMB, SMC	2	2210	1610	1740	1140	2435	1470	1950	985
	4	2840	2240	2205	1605	3150	2035	2515	1400
132 SMD	4	2830	2200	2230	1595	3195	1995	2560	1355
132 SME	2	2210	1610	1730	1130	2490	1425	2005	940
160	2	4160	4160	3425	3425	4560	3810	3860	3110
	4	4740	4740	3920	3920	5260	4310	4440	3490
	6	4840	4840	4000	4000	5400	4420	4540	3560
	8	5980	5980	4920	4920	6560	5580	5460	4480
180	2	5480	5480	4600 [1]	4600 [1]	5920	5115	5060 [1]	4255 [1]
	4	4360	4360	3540	3540	5080	3860	4240	3020
	6	5980	5980	4940	4630	6000	5445	5600	4385
	8	6000	6620	5460	5460	6000	6120	6000	4900
200	2	5000	6880	5000 [2]	5700 [2]	5000	6350	5000 [2]	5230 [2]
	4	5000	7660	5000	6340	5000	6950	5000	5650
	6	5000	8300	5000	6880	5000	7505	5000	6025
	8	5000	9880	5000	8160	5000	9215	5000	7435
225	2	5000	7380	5000 [3]	6120 [3]	5000	6770	5000 [3]	5490 [3]
	4	5000	7600	5000	6220	5000	6795	5000	5475
	6	5000	10140	5000	8420	5000	9270	5000	7490
	8	5000	11 420	5000	9460	5000	10 595	5000	8535
250	2	6000 [4]	9020 [4]	6000 [4]	7500 [4]	6000 [4]	8335 [4]	6000 [4]	6755 [4]
	4	6000	9800	6000	8040	6000	8820	6000	7120
	6	6000	11520	6000	9520	6000	10 275	6000	8235
	8	6000	13 700	6000	11 380	6000	12 645	6000	10 205
280	2	5260	5260	4220	4220	6400	4400	5420	3420
	4	6500	6500	5160	5160	7920	5400	6640	4120
	6	7500	7500	6040	6040	8500	6180	7840	4640
	8	7740	7740	6180	6180	8500	6435	7980	4775

[1] The maximum lifetime of the grease is 38 000 h
[2] The maximum lifetime of the grease is 27 000 h
[3] The maximum lifetime of the grease is 23 000 h
[4] The maximum lifetime of the grease is 16 000 h

Terminal box

Protection and mounting
The degree of protection for the standard terminal box is IP 55. It complies with the requirements of the protection method ‘t’ dust ignition protection and prevents all ignition sources such as sparks, excessive over heating etc. All terminal box seals are of uninterrupted type fulfilling the requirements for Ex t motors. By default, terminal boxes are mounted on top of the motor at D-end.

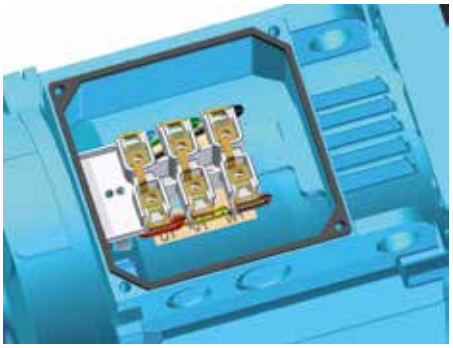
Turnability
The terminal box of motors in size 90-180 are integrated with the frame which means that the box itself cannot be rotated. There are however cable entries both on RHS and LHS to allow cabling from either side. Motors in size 200-280 have a terminal box made of deep drawn steel mounted on top of the stator, the box itself cannot be rotated but there are two openings with detachable gland plates, one on RHS and another on LHS of the box allowing cable entry from both sides.

Cable entries
Terminal box is provided as standard with plugged holes for cable glands, no cable glands are included as standard, the knockout entry holes and cable flange holes are closed with Ex t approved blanking plugs.

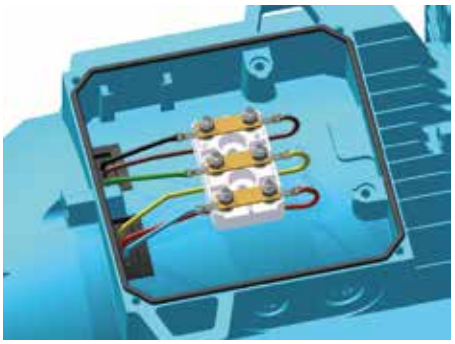
Cable type and terminations
Terminations are suitable for copper cables. Cables are connected to terminals by cable lugs, the lugs are not included in the delivery.

Earthing bolts
The motors are as standard provided with at least one earthing bolt inside the terminal box and another on the frame. The earthing bolt on the frame is located on top close to the terminal box.

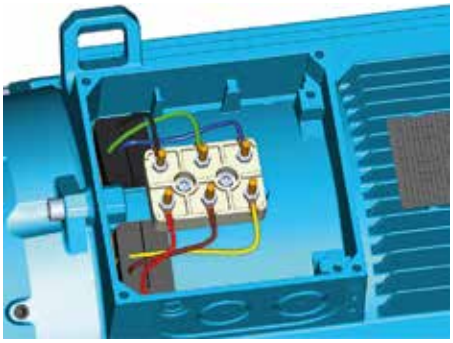
Terminal box
Terminal boxes and boards



Terminal box size 90-112



Terminal box size 132



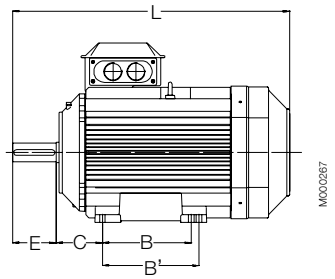
Terminal box size 160 and 180

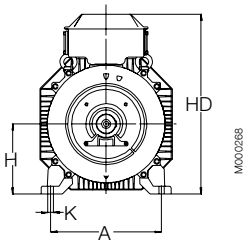
Terminal box size 200-280

Terminal box openings

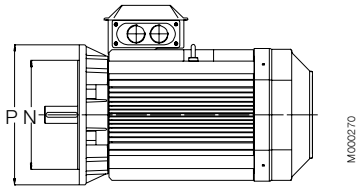
Motor size	Plugged cable entry	Terminal bolt size	Maximum connectable Cu-cable earea, mm^2
90-112	2 x (M25 + M20)	6 x M4 (screw)	6
132	2 x (M25 + M20)	6 x M5	10
160, 180	2 x (2 x M40) + M16	6 x M6	35
200-250	1 x (2 x M40 + M16)	6 x M10	70
280	1 x (2 x M63 + M16)	6 x M10	70

Dimension drawings
Dust ignition proof Ex tD (DIP) aluminum motors

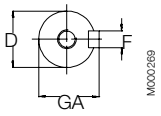


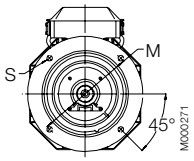


Foot-mounted motor IM 1001, IM B3

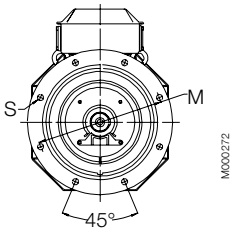


Flange-mounted motor IM 3001, IM B5





Sizes 90 to 200



Sizes 225 to 250

	IM 1001, IM B3 AND IM 3001, IM B5											IM 1001, IM B3							IM3001, IM B5			
	D poles		GA poles		F poles		E poles		L max poles		O	A	B	B'	C	HD	K	H	M	N	P	S
Motor size	2	4-8	2	4-8	2	4-8	2	4-8	2	4-8												
M3AA 90S	24	24	27	27	8	8	50	50	288	288	30	140	100	-	56	217	10	90	165	130	200	12
90L	24	24	27	27	8	8	50	50	313	313	30	140	125	-	56	217	10	90	165	130	200	12
90LD	24	24	27	27	8	8	50	50	335	335	30	140	125	-	56	217	10	90	165	130	200	12
100	28	28	31	31	8	8	60	60	355	355	35	160	140	-	63	237	12	100	215	180	250	15
100LD	28	28	31	31	8	8	60	60	377	377	35	160	140	-	63	237	12	100	215	180	250	15
112	28	28	31	31	8	8	60	60	397	397	35	190	140	-	70	249	12	112	215	180	250	15
132 [1]	38	38	41	41	10	10	80	80	458.5	458.5	50	216	140	178	89	296	12	132	265	230	300	14.5
132 [2]	38	38	41	41	10	10	80	80	498.5	498.5	50	216	140	178	89	321	12	132	265	230	300	14.5
160 [3]	42	42	45	45	12	12	110	110	584	584	50	254	210	254	108	370	15	160	300	250	350	19
160 [4]	42	42	45	45	12	12	110	110	681	681	50	254	210	254	108	370	15	160	300	250	350	19
180	48	48	51.5	51.5	14	14	110	110	726	726	55	279	241	279	121	405	15	180	300	250	350	19
200	55	55	59	59	16	16	110	110	821	821	55	318	267	305	133	532	18	200	350	300	400	19
225	55	60	59	64	16	18	110	140	850	880	60	356	286	311	149	579	18	225	400	350	450	19
250	60	65	64	69	18	18	140	140	884	884	65	406	311	349	168	627	22	250	500	450	550	19
280	65	75	69	79.5	18	20	140	140	884	884	65	457	368	419	190	627	24	280	500	450	550	19

[1] All types except [2]
[2] SM_
[3] MLA 2, MLB 2, MLA 4, MLA 6, MLA 8 and MLB 8
[4] All remining types, i.e. MLC 2, MLD 2, MLE 2, MLB 4, MLC 4, MLD 4 and MLC 8
[5] O = minimum free distance between fan cover air inlet and obstacle preventing air flow

IM 3601, IM B14

Motor size	LA	M	N	P	S	T
90	13	115	95	140	M8	3
100	14	130	110	160	M8	3.5
112	14	130	110	160	M8	3.5
132	18	165	165	200	M10	3.5

Tolerances:	
A, B	ISO js14
C	± 0.8
D	ISO k6 < Ø 50mm
	ISO m6 > Ø 50mm
F	ISO h9
H	-0,5
N	ISO j6

In all dimension drawings: The tables give the main dimensions in mm. For detailed drawings please see our web-pages 'www.abb.com/motors&generators' or contact ABB.

Motors in brief

Dust ignition protection aluminum motors, 2D and 3D, size 90 to 280

Motor size	M3AA	90	100	112	132	160	180	200	225	250	280
Stator and end shields	Material	Die-cast aluminum alloy						Extruded aluminum alloy			
	Paint colour shade	Minsell blue 8B 4.5/3.25									
	Corrosion class	C3 medium accrding ISO/EN 12944-5									
Feet	Material	Integrated aluminum feet				Separate aluminum feet		Separate cast iron feet			
End shields	Material	Die-cast aluminum alloy				Cast iron					
Bearings	D-end	6205-2RSH/C3	6306-2RS1/C3	6306-2RS1/C3	6208-2RS1/C3	6309-2Z/C3	6310-2Z/C3	6312-2Z/C3	6313-2Z/C3	6315-2Z/C3	6316/C3 1)
	N-end	6204-2RSH/C3	6205-2RSH/C3	6205-2RSH/C3	6206-2RS1/C3	6209-2Z/C3	6209-2Z/C3	6210-2Z/C3	6212-2Z/C3	6213-2Z/C3	6213/C3
Axially-locked bearings		Locked at D-end									
Bearing seal	D-end	Gamma seal				V-ring					
	N-end	Gamma seal				V-ring					
Lubrication		Permanently lubricated shielded bearing									Regreasable
Measuring nipples for condition monitoring of the bearings	Material	Optional									
Rating plate	Material	Aluminum									
Terminal box	Frame and cover	Die-cast aluminum alloy, integrated in stator						Deep-drawn steel sheet, bolted on stator			
	Openings	2x (M25+M20) plugged				(2x M40 + M16) + (2x M40) plugged		2x M40 + M16 plugged			2x M63 + M16 plugged
	Terminals	6 terminals									
Fan	Material	Aluminum									
Fan cover	Material	Steel									
Stator winding	Material	Copper									
	Insulation	Insulation class F									
	Winding protection	Optional				3 PCS PTC Thermistors					
Rotor winding	Material	Die cast aluminum									
Balancing method		Half key balancing									
Key way		Closed key way									
Drain holes		Drain holes with closable plastic plugs, closed on delivery									
Enclosure		IP65 or IP55 depending on dust group and EPL				IP55					
Cooling method		IC411									

1) 6315/C3 for 2-pole motors