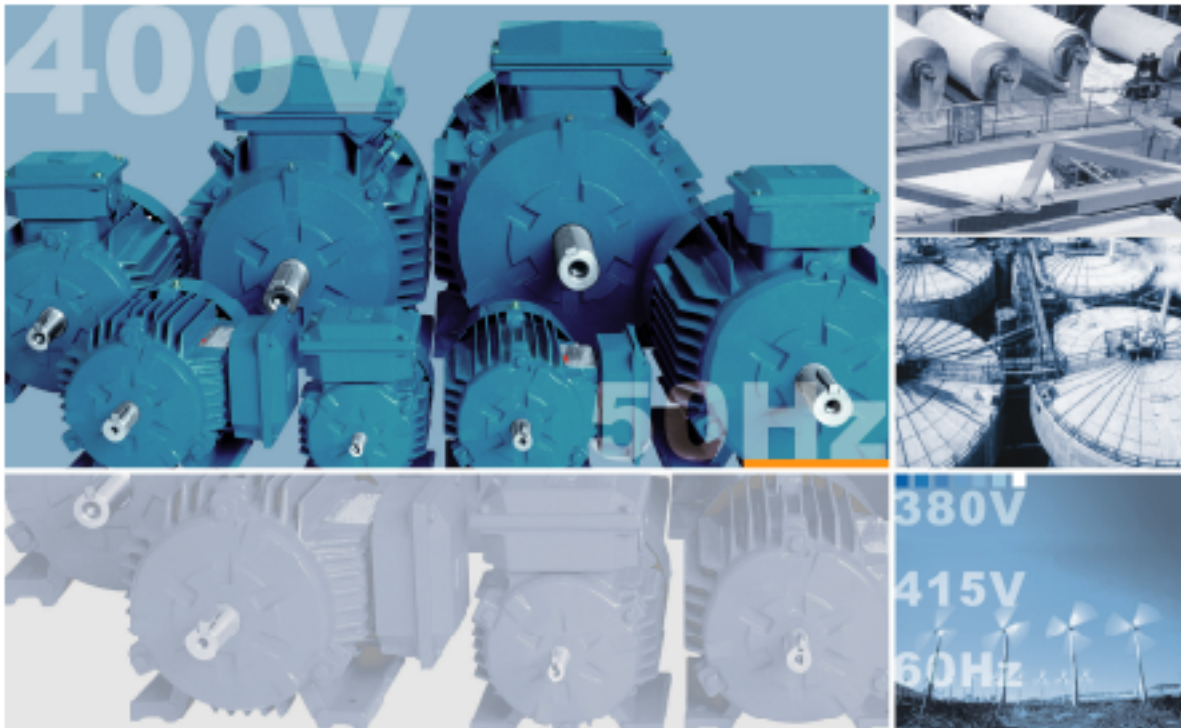


IEC Low-voltage Induction Motors in Cast Iron Frames

including EU efficiency classifications





Making you more competitive

ABB LV Motors knows about customer needs. For over 100 years we have been designing motors for every need and application. With a reputation for quality that is second to none, our offering is further complemented by our 24-hour availability, unsurpassed reliability and leading technology evident in our eBusiness solutions. For top performance and high efficiency motors combined with a unique and complete service offering, customers continually choose the ABB brand. From the most demanding industries to standard applications, our customers can rest assured that their needs are being met.



Technical Features

M2QA series of three phase induction motors is a member of the ABB M2000 family with EU efficiency class. The motors are designed and manufactured according to IEC34, IEC72, DIN42673, BS4999, AS1359, GB755, GB10069, and Q/JBQS27. The electrical and mechanical performances of ABB M2QA motors are excellent.

High efficiency

1. 1kw-90kW 2P and 4P, in S1 duty, M2QA motors are among the class 2 of CEMEP- EU standard, saving energy and operating costs.

Voltage ranges of extra versatility

A wide range of voltages can be up to max. 690 V, for 50 Hz and 60 Hz available

Reliable windings

To ensure long lifetime, the windings are made of the latest available materials in class F protection and temperature rise limited to class B (80k) in standard motors

Strong corrosion protection

The motors are made to withstand aggressive environ as standard and they are designed for long lifetime. For motors with regreasing possibilities. They have strong and effective protection

against corrosion

Bearings with high load capacity

All motors are provided with deep-groove ball bearings, the lifetime is extended. Cast iron motors in sizes 71-250 are greased for life, and those in sizes 280-355 have a regreasing device as a standard.

Low noise level

The M2QA range has been designed with to minimize motors noise levels, by means of improving magnetic and electrical design, ventilator condition, and structure assembling size and technology.

Additional windings protection

PTC thermistors, them-switches and Anti-condensation heaters on request.

Mechanical Design

Totally enclosed fan cooled IP55
Heavy duty design, manufactured from extra corrosion resistant cast iron materials to be used in all kind of environment. The motor is mechanically very strong and robust and as standard designed for additional energy saving through frequency converter drives. Drain holes and plugs as standard in sizes 280 to 355

Flexible cable entry direction
Terminal boxes are mounted on the top of the motots, right or left. Terminal boxes of motor size

71-132 can rotate $4 \times 90^\circ$,and those of 160-355 can rotate $2 \times 180^\circ$.All are easy to refit.

Powerful refit available

The motors satisfy the requirements of a wide range of environments and applications, such as improving protection, insulation level, regreasing facilities, dust-proof, sealing rings, rainproof are available, a full range of options are listed in pages 19-20.

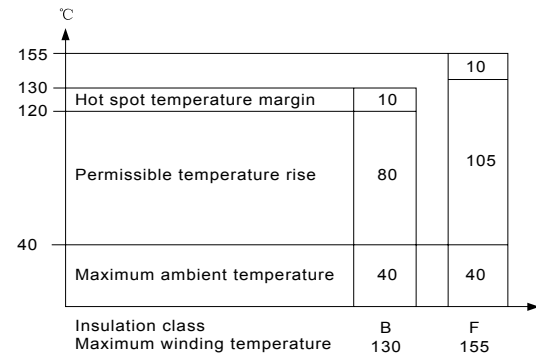
Insulation and insulation classes

According to IEC 60085, insulating materials are divided into insulation classes. Each class has a designation corresponding to the temperature that is the upper limit of the range of application of the insulating material under normal operating condition.

The winding insulation of a motor is determined on the basis of the temperature rise in the motor and the ambient temperature. The insulation is normally dimensioned for the hottest point in the motor at its normal rated output and at ambient temperature of 40 °C. Motors subjected to ambient temperatures above 40 °C will generally have to be derated.

In most cases, the standard rated outputs of motors from ABB Motors are based on the temperature rise for insulation class B. Where the temperature rise is according to class F, this is specified in the data tables.

However, all the motors are designed with class F insulation, which permits a higher temperature rise than class B. The motors, therefore, have a generous over-load margin. If temperature rise to class F is allowed, the outputs given in the tables can generally be increased by about 12%.



Temperature limits are according to standards. The extra thermal margin when using class F insulation with class B temperature rise makes the motors more reliable.

Motors For Other Voltages

Motors wound for a given voltage at 50Hz can also be used for other voltage. Recalculation factors for current and torque are given below; efficiency, power factor and speed remain.

approximately the same.

Guaranteed values available on request.

Motor wound for	230V	400V	500V	690V				
Connected to 50Hz	220V	230V	380V	415V	500V	550V	660V	690V
% of values at 400V, 50Hz								
Output	100	100	100	100	100	100	100	100
I_N	182	174	105	98	80	75	61	58
I_S/I_N	90	100	90	106	100	119	90	100
T_S/T_N	90	100	90	106	100	119	90	100
T_{max}/T_N	90	100	90	106	100	119	90	100

Motors wound for a given voltage at 60Hz can also be used for other voltage. Approximate recalculation factors for current and torque given are beside; efficiency, power factor and speed remain approximately the same.
Guaranteed values available on request.

Motor wound for	460V	60 Hz	575V60Hz
Connected to 60 Hz	440V	48 Hz	575
% of values at 460V,60Hz			
Output	100	100	100
I _N	105	96	80
I _S /I _N	90	109	100
T _S /T _N	90	109	100
T _{max} /T _N	90	109	100

ABB Motors reserves the right to change the design, technical specification and dimensions without prior notice.

Bearings and terminal boxes

The motors are normally fitted with single-row deep groove ball bearings as listed in the table beside. Terminal boxes are mounted on top of the motor. The terminal box of motor sizes 71 to 132 can be turned

4 x90 ° and in motors sizes 160 to 355 rotated 2 x180 °

Degree of protection of the standard terminal box is IP55. The motors are supplied with 2 cable entries as a standard according to the table below

Type	Poles	Standard bearing type D-end	bearing type N-end	Cable entry mm	Type	Poles	Standard bearing type D-end	bearing type N-end	Cable entry mm				
71M	2,4,6	6202	VVC3	6202	VVC3	2-M16 X1.5	250M	2	6314	C3	6214	C3	2-M63 X1.5
80M	2,4,6	6204	DDUC3	6204	DDUC3	2-M25 X1.5	250M	4,6,8	6314	C3	6214	C3	2-M63 X1.5
90S	2,4,6	6205	DDUC3	6205	DDUC3	2-M25 X1.5	280S	2	6316	C4	6316	C4	2-M63 X1.5
90L	2,4,6	6205	DDUC3	6205	DDUC3	2-M25 X1.5	280S	4,6,8	6316	C3	6316	C3	2-M63 X1.5
100L	2,4,6,8	6206	DDUC3	6206	DDUC3	2-M32 X1.5	280M	2	6316	C4	6316	C4	2-M63 X1.5
112M	2,4,6,8	6207	DDUC3	6206	DDUC3	2-M32 X1.5	280M	4,6,8	6316	C3	6316	C3	2-M63 X1.5
132S	2,4,6,8	6208	DDUC3	6207	DDUC3	2-M32 X1.5	315S	2	6316	C4	6316	C4	2-M63 X1.5
132M	2,4,6,8	6208	DDUC3	6207	DDUC3	2-M32 X1.5	315S	4,6,8	6319	C3	6319	C3	2-M63 X1.5
160M	2,4,6,8	6309	ZZC3	6209	ZZC3	2-M40 X1.5	315M	2	6316	C4	6316	C4	2-M63 X1.5
160L	2,4,6,8	6309	ZZC3	6209	ZZC3	2-M40 X1.5	315M	4,6,8	6319	C3	6319	C3	2-M63 X1.5
180M	2,4,6,8	6310	ZZC3	6210	ZZC3	2-M40 X1.5	315L	2	6316	C4	6316	C4	2-M63 X1.5
180L	2,4,6,8	6310	ZZC3	6210	ZZC3	2-M40 X1.5	315L	4,6,8	6319	C3	6319	C3	2-M63 X1.5
200L	2,4,6,8	6312	ZZC3	6212	ZZC3	2-M50 X1.5	355M	2	6319M	C4	6319M	C4	2-M63 X1.5
225S	4,6,8	6313	ZZC3	6213	ZZC3	2-M50 X1.5	355M	4,6,8	6322	C3	6319	C3	2-M63 X1.5
225M	2	6313	ZZC3	6213	ZZC3	2-M50 X1.5	355L	2	6319M	C4	6319M	C4	2-M63 X1.5
225M	4,6,8	6313	ZZC3	6213	ZZC3	2 M50 X1.5	355L	4,6,8	6322	C3	6319	C3	2-M63 X1.5

Rating plate

For motor sizes 71 to 132 the rating plate gives one current value for the voltage area. That is the highest current that can occur within the voltage area with the given output.

ABB ABB Motors						CE
3~Mot. M2QA 90S2A						IEC34-1
M2QA091101-ASA						EFF2
6205/03		6205/03		IP55	C . F	
V	Hz	r/min	kw	cos φ	A	
220-240Æ	50	2850	1.5	0.87	5.58	
380-420Y	50	2850	1.5	0.87	3.23	
440-480Y	60	3420	1.73	0.87	3.30	
No 32911117711				21	kg	

For motor sizes 160 to 355 the rating plate is in table form giving values for speed, current and power factor for six voltages.

ABB ABB Motors								CE
3~motor M2QA180L4A								EFF2
IEC 180L 48								
S1				No 29229936				
Cert.no				Ins.c . F		IP 55		
V	Hz	kw	r/min	A	cos φ	IA/IN	tE/S	
690Y	50	22	1470	22.86	0.88			
400Æ	50	22	1470	39.44	0.88			
660Y	50	22	1465	23.37	0.90			
380Æ	50	22	1465	40.59	0.90			
415Æ	50	22	1475	38.90	0.86			
440Æ	60	25.3	1764	40.06	0.89			
Cat.no M2QA182501-ADA								
6310/C3				6210/C3		186 kg		
IEC 34-1								

Pulley diameter

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

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

where:

D=diameter of pulley, 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

Permissible loadings on the shaft end

The tables below give the permissible radial force in Newtons, assuming zero axial force. The values are based on normal conditions at 50 Hz and calculated bearing lives for motor sizes 71 to 355 of 20000 hours and 40000 hours.

Motor are foot-mounted IM B3 version with force directed sideways. In some cases the strength of

the shaft affects the permissible forces.

At 60 Hz the values must be reduced by 10%. For two-speed motors, the values must be based on the hinger speed.

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

Permissible radial forces

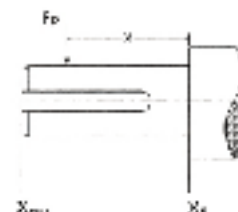
Motor sizes 71 to 355

Motor size	20000 hourse Ball bearings								40000 hourse Ball bearings							
	2-pole		4-pole		6-pole		8-pole		2-pole		4-pole		6-pole		8-pole	
	X_0	X_{max}	X_0	X_{max}	X_0	X_{max}	X_0	X_{max}	X_0	X_{max}	X_0	X_{max}	X_0	X_{max}	X_0	X_{max}
71M	381.1	322.2	479.6	405.4	555.1	469.2	-	-	302.5	255.7	380.7	321.8	440.5	372.4	-	-
80M	624.2	509.4	788.3	643.3	906.7	739.9	996.7	813.4	495.4	404.3	625.7	510.6	719.6	587.3	791.1	645.6
90S	686.0	542.2	869.5	687.2	1000.1	790.4	1095.4	865.8	544.5	430.4	690.1	545.4	793.8	627.3	869.5	687.2
90L	696.4	564.2	884.7	716.8	1015.1	822.5	1112.0	901.0	552.7	447.8	702.2	568.9	805.7	652.8	882.6	715.1
100L	979.4	784.8	1233.9	988.8	1419.1	1137.2	1565.7	1254.6	777.3	622.9	979.4	784.8	1126.4	902.6	1242.7	995.8
112M	1257.8	1014.4	1592.1	1283.9	1831.1	1476.7	2020.1	1629.1	998.3	805.1	1263.6	1019.1	1453.3	1172.0	1603.4	1293.1
132S	1435.0	1121.7	1820.5	1423.1	2079.1	1625.3	2299.1	1797.2	1138.9	890.3	1444.9	1129.5	1650.2	1290.0	1824.8	1426.5
132M	-	-	1840.2	1476.3	2106.5	1689.9	2329.4	1868.7	-	-	1460.6	1171.7	1672.0	1341.3	1848.8	1483.2
160M	1544.0	1199.8	1947.5	1513.4	2231.9	1734.4	2465.0	1915.6	1225.5	952.3	1545.7	1201.2	1771.5	1376.6	1956.5	1520.4
160L	1562.7	1242.9	1971.2	1567.8	2259.0	1796.7	2495.0	1984.4	1240.4	986.5	1564.5	1244.3	1793.0	1426.0	1980.3	1575.0
180M	2983.6	2371.3	3759.1	2987.7	-	-	-	-	2368.1	1882.1	2983.6	2371.3	-	-	-	-
180L	-	-	3801.5	3073.0	4351.6	3517.7	4800.4	3880.5	-	-	3017.2	2439.0	3453.9	2792.0	3810.1	3080.0
200L	4089.8	3376.8	5161.5	4261.7	5908.5	4878.5	6517.9	5381.7	3246.1	2680.2	4096.7	3382.6	4689.6	3872.1	5173.3	4271.5
225S	-	-	5762.8	4526.4	-	-	7260.7	5702.9	-	-	4574.0	3592.6	-	-	5762.8	4526.4
225M	4591.0	3811.1	5790.9	4594.2	6643.9	5271.0	7296.0	5788.4	3643.9	3024.9	4596.2	3646.4	5273.3	4183.6	5790.9	4594.2
250M	5111.6	4170.0	6439.9	5253.6	7388.1	6027.2	8113.0	6618.5	4057.0	3309.7	5111.1	4169.6	5863.7	4783.5	6438.9	5252.8
280S	6000.2	4956.7	7570.1	6253.5	8679.2	7169.8	9537.5	7878.8	4761.8	3933.7	6007.7	4962.9	6888.0	5690.1	7569.1	6252.7
280M	6048.5	5059.3	7631.5	6383.4	8750.0	7318.9	9615.4	8042.8	4799.8	4014.8	6056.1	5065.6	6943.7	5808.1	7630.5	6382.5
315S	6602.4	5627.1	9533.5	7882.0	10916.1	9025.1	12028.5	9944.8	5239.0	4465.1	7565.3	6254.8	8662.6	7162.0	9545.4	7891.8
315M	6677.1	5793.3	9647.8	8145.0	11047.2	9326.4	12173.2	10277.0	5297.9	4596.7	7655.6	6463.1	8766.3	7400.7	9659.8	8155.1
315L	6675.9	5792.3	9648.0	8145.1	11045.3	9324.7	12171.2	10275.3	5296.6	4595.6	7655.4	6462.9	8764.6	7399.1	9657.9	8153.5
355M	8280.0	6790.0	14060.0	11529.0	16089.0	13193.0	-	-	5612.0	4602.0	1100.0	9102.0	12741.0	10448.0	-	-
355L	8372.0	6865.0	14136.0	11592.0	16175.0	13264.0	-	-	5612.0	4658.0	1100.0	9213.0	12741.0	10575.0	-	-

If the radial force is applied between points X_0 and X_{max} , the permissible force F_R can be calculated from the following formula:

$$F_R = F_{X_0} - X/E(F_{X_0} - F_{X_{MAX}})$$

E=length of shaft extension in basic version



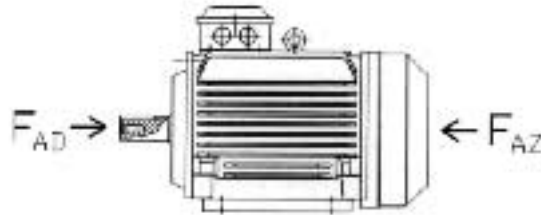
Permissible axial forces

The following tables give the permissible axial forces in Newton, assuming zero radial force. The values are based on normal conditions at 50 Hz with standard bearings and calculated bearing lives of 20000 and 40000 hours.

At 60 Hz the values are to be reduced by 10%

For two-speed motors, the values are to be based on the higher speed. The permissible loads of simultaneous radial and axial forces will be supplied on request.

Given axial forces F_{AD} , assumes D-bearing locked by means of locking ring.



Mounting arrangement IM B3

Motor size	20000 hours								40000 hours Ball bearings							
	2-pole		4-pole		6-pole		8pole		2-pole		4-pole		6-pole		8pole	
	F_{AD} N	F_{AZ} N	F_{AD} N	F_{AZ} N	F_{AD} N	F_{AZ} N	F_{AD} N	F_{AZ} N	F_{AD} N	F_{AZ} N	F_{AD} N	F_{AZ} N	F_{AD} N	F_{AZ} N	F_{AD} N	F_{AZ} N
71M	268.3	268.3	362.9	362.9	438.6	438.6	--	--	198.6	198.6	267.8	267.8	325.0	325.0	--	--
80M	434.8	434.8	592.9	592.9	712.6	712.6	804.0	804.0	320.6	320.6	436.1	436.1	528.4	528.4	595.6	595.6
90S	471.8	471.8	647.0	647.0	778.2	778.2	873.0	873.0	347.1	347.1	475.4	475.4	576.4	576.4	647.0	647.0
90L	471.8	471.8	648.9	648.9	778.2	778.2	873.0	873.0	341.7	341.7	477.0	477.0	576.4	576.4	647.0	647.0
100L	648.3	648.3	883.7	883.7	1058.3	1058.3	1202.6	1202.6	475.6	475.6	648.3	648.3	781.5	781.5	891.5	891.5
112M	843.0	843.0	1157.0	1157.0	1382.8	1382.8	1574.2	1574.2	617.1	617.1	848.0	848.0	1019.4	1019.4	1167.3	1167.3
132S	947.2	947.2	1302.3	1302.3	1542.7	1542.7	1764.0	1764.0	692.5	692.5	955.5	955.5	1135.8	1135.8	1306.7	1306.7
132M	--	--	1297.9	1297.9	1542.7	1542.7	1764.0	1764.0	--	--	952.6	952.6	1135.8	1135.8	1306.7	1306.7
160M	1017.7	1017.7	1382.1	1382.1	1651.2	1651.2	1881.4	1881.4	743.1	743.1	1019.2	1019.2	1214.3	1214.3	1391.0	1391.0
160L	1017.7	1017.7	1382.1	1382.1	1651.2	1651.2	1881.4	1881.4	743.1	743.1	1019.2	1019.2	1214.3	1214.3	1391.0	1391.0
180M	1972.9	1972.9	2665.0	2665.0	--	--	--	--	1441.7	1441.7	1972.9	1972.9	--	--	--	--
180L	--	--	2665.0	2665.0	3197.1	3197.1	3626.4	3626.4	--	--	1972.9	1972.9	2346.4	2346.4	2673.2	2673.2
200L	2569.6	2569.6	3489.1	3489.1	4197.9	4197.9	4754.7	4754.7	1888.2	1888.2	2575.9	2575.9	3077.9	3077.9	3499.8	3499.8
225S	--	--	3904.5	3904.5	--	--	5309.0	5309.0	--	--	2878.0	2878.0	--	--	3904.5	3904.5
225M	2873.4	2873.4	3904.5	3904.5	4718.4	4718.4	5309.0	5309.0	2117.4	2117.4	2878.0	2878.0	3457.5	3457.5	3904.5	3904.5
250M	3225.3	3225.3	4378.4	4378.4	5293.1	5293.1	5955.9	5955.9	2379.2	2379.2	3225.3	3225.3	3879.3	3879.3	4378.4	4378.4
280S	3714.9	3714.9	5007.7	5007.7	6087.7	6087.7	6924.2	6924.2	2766.7	2766.7	3721.9	3721.9	4509.5	4509.5	5077.7	5077.7
280M	3714.9	3714.9	5077.7	5077.7	6087.7	6087.7	6924.2	6924.2	2766.7	2766.7	3721.9	3721.9	4509.5	4509.5	5077.7	5077.7
315S	3963.9	3963.9	6141.0	6141.0	7292.2	7292.2	8300.9	8300.9	2965.5	2965.5	4478.5	4478.5	5357.8	5357.8	6153.3	6153.3
315M	3963.9	3963.9	6141.0	6141.0	7292.2	7292.2	8300.9	8300.9	2965.5	2965.5	4478.5	4478.5	5357.8	5357.8	6153.3	6153.3
315L	3964.7	3964.7	6143.0	6143.0	7929.2	7929.2	8300.9	8300.9	2965.8	2965.8	4479.5	4479.5	5357.8	5357.8	6153.3	6153.3
355	5775	2310	8100	4050	9484	5160	10080	8420	4675	1460	5770	2030	6411	2611	7106	3366

Ordering information

Sample order

When placing an order, the motor type, size and product code must be specified. The product code of the motor is composed in various ways, in accordance with the following examples.

A	B	C					-	D, E, F
M2QA	100L2A	M2QA	10	1	5 10	-	A D C	
		1-4	5-6	7	8-10	11	12 13 14	

- A Motor type
- B Motor size
- C Product code
- D Mounting arrangement code
- E Voltage and frequency code
- F Generation code

Explanation of the product code(C,D,E,F):

Positions 1 to 4

M2QA=Totally enclosed fan cooled squirrel cage motor with cast iron frame

Positions 5 and 6

IEC frame

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

Positions 7

Speed(pole pairs)

1 = 2poles	6 = 12poles
2 = 4poles	7 = > 12poles
3 = 6poles	8 = Two-speed motors
4 = 8poles	9 = multi-speed motors
5 = 10poles	

Positions 8 to 10

Running number series

Positions 11

-(dash)

Positions 12

Mounting arrangement

- A =Foot-mounted, top-mounted terminal box
- R =Foot-mounted, terminal box on RHS, seen from D-end
- L =Foot-mounted, terminal box on LHS seen from D-end
- B =Flange-mounted, large flange
- C =Flange-mounted, small flange size(71-112)
- H =Foot-and flange-mounted

Positions 13

Voltage and frequency code

See tables on appropriate page

Positions 14

Generation code

C

The product code must be, if need, followed by variant codes:
Please see pages 6-8.

Motors for EU motor efficiency levels

A new Europe-wide agreement will ensure that the efficiency levels of electric motors manufactured in Europe are clearly displayed. In contrast to the American legislation on motor manufacturers an incentive to qualify for a higher class.

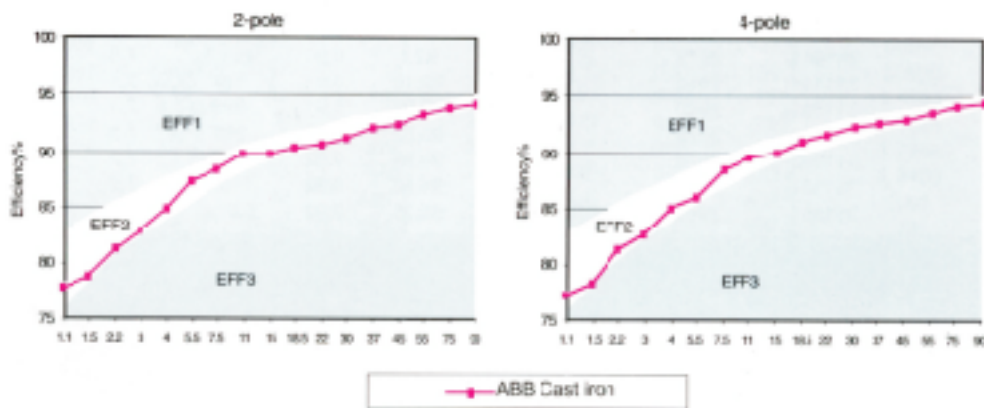
ABB is one of only a handful of leading motor manufacturers in Europe, to have a motor range to meet or exceed the minimum efficiencies stated in the highest level of the EU agreement of LV motors.

These efficiencies levels apply to 2-and-4-pole, three phase squirrel cage induction motors, rated for 400V.

50Hz, with S1 duty classes with the output 1.1 to 90kW, which account for the largest volume on the market.

The efficiency of motors from different manufacturers are collated in a database, EURODEEM, published by the European Commission, it is accessible over the Internet at <http://uamest.jrc.it/projects/eem/eurodeem.htm>.

Standard three phase induction motors, 400V 50Hz-ABB motor efficiency levels



EU efficiency classes

Output kW	2-pole Boarderline EFF2/EFF3	2-pole Boarderline EFF1/EFF2	4-pole Boarderline EFF2/EFF3	4-pole Boarderline EFF1/EFF2
1.1	76.2	82.8	76.2	82.8
1.5	78.5	84.1	78.5	85
2.2	81	85.6	81	86.4
3	82.6	86.7	82.6	87.4
4	84.2	87.6	84.2	88.3
5.5	85.7	88.6	85.7	89.2
7.5	87	89.5	87	90.1
11	88.4	90.5	88.4	91
15	89.4	91.3	89.4	91.5
18.5	90	91.8	90	92.2
22	90.5	92.2	90.5	92.6
30	91.4	92.9	91.4	93.2
37	92	93.3	92	93.6
45	92.5	93.7	92.5	93.9
55	93	94	93	94.2
75	93.6	94.6	93.6	94.7
90	93.9	95	93.9	95

400V50Hz													
Output kw	Type designation	Product code	Speed n r/min	Efficiency		Power factor $\cos\phi$	Current		Torque				
				Full	3/4		I_N	I_s	T_N	T_s	T_{MAX}		
				load 100%	load 75%		A	I_N	Nm	$\frac{T_s}{T_N}$	$\frac{T_{MAX}}{T_N}$		
				3000r/min=2poles		Basic design							
0.37	M2QA	71M2A	M2QA	071301-	2780	70	68.02	0.815	0.94	6.1	1.27	2.2	2.2
0.55		71M2B		071302-	2785	73	72.38	0.82	1.33	6.1	1.89	2.2	2.2
0.75		80M2A		081301-	2840	75	75.48	0.85	1.70	6.1	2.52	2.2	2.2
1.1		80M2B		081302-	2855	78	77.86	0.845	2.40	7.0	3.68	2.2	2.2
1.5		90S2A		091101-	2850	79	78.96	0.87	3.15	7.0	5.03	2.2	2.2
2.2		90L2A		091501-	2850	81.5	81.82	0.86	4.53	7.0	7.37	2.2	2.2
3		100L2A		101501-	2860	83	83.16	0.88	5.93	7.0	10.02	2.2	2.2
4		112M2A		111301-	2900	85	84.56	0.90	7.55	7.0	13.17	2.2	2.2
5.5		132S2A		131101-	2920	87.5	87.87	0.89	10.2	7.0	17.99	2.2	2.2
7.5		132S2B		131102-	2920	88.5	90.12	0.9	13.6	7.0	24.53	2.2	2.2
11		160M2A		161301-	2930	90	90.52	0.89	19.82	6.5	35.85	2.5	3.0
15		160M2B		161302-	2920	90	90.10	0.89	27.03	6.5	49.06	2.5	3.2
18.5		160L2A		161501-	2930	90.5	90.86	0.90	32.78	6.5	60.30	2.5	3.2
22		180M2A		181301-	2940	90.8	91.02	0.90	38.86	6.5	71.46	2.3	2.8
30		200L2A		201501-	2955	91.4	91.10	0.90	52.64	6.5	96.95	2.2	2.7
37		200L2B		201502-	2955	92.2	91.83	0.90	64.36	6.5	119.6	2.3	2.7
45		225M2A		221301-	2970	92.6	92.16	0.89	78.81	7.0	144.7	2.5	2.8
55		250M2A		251301-	2960	93.4	91.7	0.89	96.50	7.5	177.4	2.4	3.0
75		280S2A		281101-	2972	94	92.3	0.90	128	7.5	241.0	2.5	3.3
90		280M2A		281301-	2972	94.3	92.4	0.90	153.5	7.5	289.2	2.3	3.2
110		315S2A		311101-	2980	94	92.16	0.91	187	7.1	352.5	1.8	2.2
132		315M2A		311301-	2980	94.5	92.96	0.91	223	7.1	423.0	1.8	2.2
160		315L2A		311501-	2979	94.6	93.52	0.92	267	7.2	512.9	1.8	2.2
*200		315L2B		311502-	2978	94.8	93.95	0.92	332	7.2	641.4	1.8	2.2
*250		355M2A		351301-	2980	95.4	94.50	0.92	415.7	7.1	802	2.3	2.8
*315		355L2A		351501-	2980	96.0	95.25	0.92	520.4	6.9	1011	2	2.8

400V50Hz													
Output kw	Type designation	Product code	Speed n r/min	Efficiency		Power factor $\cos\phi$	Current		Torque				
				Full	3/4		I_N	I_s	T_N	T_s	T_{MAX}		
				load 100%	load 75%		A	I_N	Nm	$\frac{T_s}{T_N}$	$\frac{T_{MAX}}{T_N}$		
				1500r/min=4poles		Basic design							
0.25	M2QA	71M4A	M2QA	072301-	1395	65.5	63.28	0.72	0.77	5.2	1.71	2.1	2.0
0.37		71M4B		072302-	1395	68.5	69.38	0.75	1.04	5.2	2.53	2.1	2.0
0.55		80M4A		082301-	1410	73.5	71.39	0.72	1.50	5.2	3.73	2.4	2.0
0.75		80M4B		082302-	1415	74.5	75.15	0.755	1.93	6.0	5.06	2.4	2.2
1.1		90S4A		092101-	1400	77.5	77.82	0.775	2.56	6.0	7.50	2.3	2.2
1.5		90L4A		092501-	1390	78.5	79.16	0.79	3.50	6.0	10.31	2.3	2.2
2.2		100L4A		102501-	1430	81.5	82.32	0.805	4.85	6.0	14.69	2.3	2.2
3		100L4B		102502-	1420	82.8	82.51	0.83	6.30	6.5	20.18	2.3	2.2
4		112M4A		112301-	1430	85	84.63	0.82	8.29	6.5	26.71	2.3	2.2
5.5		132S4A		132101-	1430	86	87.07	0.85	10.9	6.5	36.73	2.3	2.2
7.5		132M4A		132301-	1440	88.5	88.26	0.85	14.4	6.5	49.74	2.3	2.2
11		160M4A		162301-	1460	89.5	90.01	0.85	20.87	6.5	71.95	2.4	2.8
15		160L4A		162501-	1460	90	90.38	0.86	27.97	6.5	98.12	2.3	2.4
18.5		180M4A		182301-	1470	91	90.88	0.86	34.12	6.5	120.2	2.3	3.0
22		1890L4A		182501-	1470	92	89.98	0.88	39.44	6.5	142.9	2.4	3.0
30		200L4A		202501-	1470	92.2	91.83	0.88	53.37	6.5	194.9	2.2	2.8
37		225S4A		222101-	1480	92.6	91.16	0.85	67.85	7.0	238.8	2.2	2.8
45		225M4A		222301-	1480	92.8	91.66	0.87	80.45	7.0	290.4	2.2	2.8
55		250M4A		252301-	1480	93.4	91.3	0.87	98.5	7.0	354.9	2.4	3.0
75		280S4A		282101-	1480	94	93.9	0.87	133	6.5	484	2.4	2.6
90		280M4A		282301-	1480	94.3	94.6	0.87	158.7	7.2	580.7	2.3	2.8
110		315S4A		312101-	1486	94.5	93.51	0.88	192	6.9	706.9	2.1	2.2
132		315M4A		312301-	1486	94.8	94.01	0.88	229	6.9	848.3	2.1	2.2
160		315L4A		312501-	1485	94.9	94.51	0.89	275	6.9	1029	2.1	2.2
200		315L4B		312502-	1485	95	94.18	0.89	343	6.9	1286	2.1	2.2
*250		355M4A		352301-	1490	95.3	94.5	0.90	420.7	6.9	1594	2.1	2.6
*315		355L4A		352501-	1490	95.6	94.83	0.90	528.4	7.0	2008	2.1	2.3

Code letters For supplementing the product code

Code letters For voltage and-frequency(product code position 13)

¹Insulation Class F Temperature rise Class F

A	B	D	E	F	H
380VY50Hz	380V/Æ50Hz	380~420V/Æ50Hz 660~690VY50Hz 440~480 ¹ V/Æ60Hz	500V/Æ50Hz 575V/Æ60Hz	500VY50Hz 575VY60Hz	415V/Æ50Hz
S	T	U	X		
220~240V/Æ50Hz 380~420VY50Hz 440~480VY60Hz	660V/Æ50Hz	690V/Æ50Hz	Other rated voltage connection or frequency, max,690V	¹ 480V not stamped on sizes 160 to 355	

380V 50Hz						415V 50Hz							
Output kW	Type desingation	Speed n r/min	Effi- ciency η %	Power factor $\cos\phi$	Crrrent A	Speed n r/min	Effi- ciency η %	Power factor $\cos\phi$	Crrrent A	Moment of inertia $J=GD^2/4$ kgm ²	Weight kg	Sound pressure level Lp dB(A)	
3000r/min=2 poles						Basic design							
0.37	M2QA	71M2A	2765	70	0.83	0.97	2795	70	0.79	0.93	0.00030	10	56
0.55		71M2B	2780	73	0.835	1.37	2800	73	0.79	1.33	0.00037	11	56
0.75		80M2A	2825	75.5	0.86	1.75	2855	75	0.85	1.64	0.00091	16	57
1.1		80M2B	2840	77.5	0.855	2.52	2870	78	0.83	2.37	0.00107	17	58
1.5		90S2A	2835	79	0.895	3.23	2865	79	0.86	3.08	0.00135	21	61
2.2		90L2A	2835	81.5	0.89	4.61	2865	81	0.83	4.56	0.00163	24	61
3		100L2A	2845	83	0.895	6.14	2875	83.5	0.855	5.85	0.00402	33	65
4		112M2A	2885	85	0.915	7.82	2915	85	0.87	7.53	0.00671	42	67
5.5		132S2A	2905	87.5	0.90	10.7	2935	88	0.875	9.94	0.01241	58	70
7.5		132S2B	2905	87.5	0.90	14.5	2935	89	0.9	13.1	0.01491	63	70
11		160M2A	2918	90	0.91	20.41	2930	90	0.87	19.54	0.0436	112	72
15		160M2B	2917	90	0.91	27.82	2932	90	0.88	26.35	0.0551	122	72
18.5		160L2A	2920	90.5	0.91	34.13	2935	90.5	0.89	31.95	0.06549	142	72
22		180M2A	2940	90.8	0.91	40.45	2955	90.8	0.88	38.30	0.08805	170	75
30		200L2A	2950	91.2	0.91	54.90	2960	91.3	0.89	51.38	0.14821	235	81
37		200L2B	2950	91.7	0.91	67.36	2960	92.3	0.89	62.65	0.16822	254	81
45		225M2A	2965	92.2	0.90	82.39	2975	92.6	0.87	77.71	0.29345	328	81
55		250M2A	2956	93.2	0.90	100	2962	93.5	0.88	93.50	0.3784	390	84
75		280S2A	2967	94	0.91	131.9	2975	93.8	0.91	133.5	0.587	504	85
90		280M2A	2967	94.3	0.91	159	2975	94.1	0.91	159.7	0.615	560	85
110		315S2A	2978	94	0.92	193	2982	94	0.90	181	1.4083	910	88
132		315M2A	2978	94.5	0.92	231	2982	94.5	0.90	216	1.5584	1010	88
160		315L2A	2976	94.6	0.93	276	2980	94.6	0.91	259	1.7256	1070	88
*200		315L2B	2976	94.8	0.93	345	2980	94.8	0.91	323.0	1.9405	1120	88
*250		355M2A	2978	95.4	0.92	435.1	2982	95.4	0.91	405.1	3.05	1438	89
*315		355L2A	2978	96.0	0.92	544.8	2982	96.0	0.91	507.2	3.6	1726	89

380V 50Hz						415V 50Hz							
Output kW	Type desingation	Speed n r/min	Effi- ciency η %	Power factor $\cos\phi$	Crrrent A	Speed n r/min	Effi- ciency η %	Power factor $\cos\phi$	Crrrent A	Moment of inertia $J=GD^2/4$ kgm ²	Weight kg	Sound pressure level Lp dB(A)	
1500r/min=4 poles						Basic design							
0.25	M2QA	71M4A	1385	66	0.74	0.78	1405	64	0.69	0.79	0.00053	11	43
0.37		71M4B	1385	69	0.78	1.05	1405	68	0.71	1.07	0.00066	11	45
0.55		80M4A	1400	73.5	0.75	1.52	1420	72.5	0.68	1.55	0.00145	16	46
0.75		80M4B	1405	74.5	0.78	1.97	1425	74	0.72	1.96	0.00174	17	46
1.1		90S4A	1390	77	0.80	2.72	1410	77.5	0.745	2.65	0.00254	21	52
1.5		90L4A	1380	78.5	0.80	3.64	1400	78.5	0.765	3.48	0.00317	25	52
2.2		100L4A	1420	81.5	0.824	4.98	1440	81.4	0.775	4.85	0.00679	32	53
3		100L4B	1410	82.5	0.85	6.5	1430	82.7	0.818	6.17	0.00862	36	53
4		112M4A	1420	84.5	0.84	8.57	1440	85	0.795	8.24	0.01306	45	56
5.5		132S4A	1420	85.5	0.87	11.3	1440	86.5	0.83	10.7	0.02673	60	59
7.5		132M4A	1430	88	0.85	15.2	1450	88	0.84	14.1	0.03432	73	59
11		160M4A	1455	89.5	0.87	21.46	1463	89.5	0.83	20.60	0.06543	116	66
15		160L4A	1452	90	0.88	28.78	1461	90	0.85	27.28	0.09349	137	66
18.5		180M4A	1465	91	0.88	35.10	1470	91	0.82	34.49	0.16049	170	66
22		180L4A	1465	91.5	0.90	40.59	1475	91.5	0.86	38.90	0.18046	186	66
30		200L4A	1465	92.3	0.89	55.47	1470	86.8	0.87	55.25	0.2819	254	71
37		225S4A	1475	92.3	0.85	71.65	1480	92	0.82	68.23	0.37	308	73
45		225M4A	1475	92.6	0.88	83.90	1480	92.8	0.85	79.37	0.42	335	73
55		250M4A	1477	93.2	0.88	102	1482	93.6	0.86	95.2	0.78	450	76
75		280S4A	1475	93.8	0.88	138	1485	94.1	0.86	128.9	1.10	534	78
90		280M4A	1475	94.1	0.88	165.1	1485	94.4	0.86	154.2	1.35	592	78
110		315S4A	1483	94.5	0.89	199	1488	94.5	0.87	186	2.8596	930	80
132		315M4A	1483	94.8	0.89	238	1488	94.8	0.87	223	3.1848	1030	80
160		315L4A	1482	94.9	0.90	285	1487	94.9	0.88	267	3.6765	1050	86
200		315L4B	1482	95	0.90	355	1487	95	0.88	333	4.2516	1100	86
*250		355M4A	1488	95.3	0.905	440.4	1492	95.3	0.895	407.8	6.77	1546	87
*315		355L4A	1488	95.6	0.905	553.2	1492	95.6	0.895	506.5	8.2	1821	87

Code letters For supplementing the product code

Code letters For voltage and-frequency(product code position 13)

Insulation Class F Temperature rise Class F

A	B	D	E	F	H
380VY50Hz	380V/Æ50Hz	380~420V/Æ50Hz 660~690VY50Hz 440~480 ¹⁾ V/Æ60Hz	500V/Æ50Hz 575V/Æ60Hz	500VY50Hz 575VY60Hz	415V/Æ50Hz
S	T	U	X		
220~240V/Æ50Hz 380~420VY50Hz 440~480VY60Hz	660V/Æ50Hz	690V/Æ50Hz	Other rated voltage connection or frequency, max,690V		¹⁾ 480V not stamped on sizes 160 to 355

400V 50Hz													
Output kW	Type designation	Product code	Speed n r/min	Efficiency		Power factor cos φ	Crrrent		T _N N _m	Torque			
				Full	3/4		I _N	I _S		T _S	T _{MAX}		
				load	load		A	I _N		T _N	T _N		
				100% η	75% η								
1000r/min=6 poles Basic design													
0.18	M2QA	71M6A	M2QA	073301-	910	55	50.06	0.65	0.73	4.0	1.89	1.8	1.8
0.25		71M6B		073302-	890	60	58.32	0.65	0.93	4.0	2.68	1.8	1.8
0.37		80M6A		083301-	930	63	63.22	0.66	1.29	5.0	3.80	1.9	1.8
0.55		80M6B		083302-	925	65	65.08	0.68	1.80	5.0	5.68	1.9	1.8
0.75		90S6A		093101-	920	71	70.22	0.72	2.12	5.0	7.79	2.0	2.2
1.1		90L6		093501-	920	73	73.06	0.74	2.94	5.0	11.42	2.0	2.2
1.5		100L6		103501-	940	76	75.28	0.765	3.78	5.5	15.24	2.0	2.2
2.2		112M6		113301-	940	80	81.16	0.76	5.23	5.5	22.35	2.0	2.2
3		132S6A		133101-	960	82.5	83.55	0.78	6.73	6.5	29.84	2.0	2.2
4		132M6A		133301-	960	84	84.18	0.77	8.93	6.5	39.79	2.0	2.2
5.5		132M6B		133302-	960	86	85.63	0.79	11.7	6.5	54.71	2.0	2.2
7.5		160M6A		163301-	970	88	85.28	0.78	15.77	6.0	73.84	2.0	2.3
11		160L6A		163501-	970	88.5	88.56	0.78	23.00	6.0	108.3	2.2	2.3
15		180L6A		183501-	980	89	89.12	0.82	29.67	6.0	146.2	2.3	2.8
18.5		200L6B		203501-	980	90.3	90.22	0.82	36.06	6.0	180.3	2.2	2.8
22		200L6B		203502-	980	90.4	90.32	0.83	42.32	6.0	214.4	2.1	2.8
30		225M6A		223301-	980	90.8	89.20	0.78	61.14	6.6	292.3	2.2	2.8
37		250M6A		253301-	980	92.2	92.4	0.88	66.5	6.8	360.6	2.3	2.8
45		280S6A		283101-	982	92.6	91.3	0.86	82	6.5	437.6	2.3	2.4
55		280M6A		283301-	982	93	91.2	0.87	98.4	7.0	534.9	2.3	2.5
75		315S6A		313101-	990	93.5	93.21	0.86	135	7.4	723.5	2.0	2.0
90		315M6A		313301-	990	93.8	91.86	0.86	162	7.4	868.2	2.0	2.0
110		315L6A		313501-	990	94.3	93.52	0.87	194	6.8	1061.1	2.0	2.0
132		315L6B		313502-	990	94.5	93.82	0.87	232	6.8	1273.3	2.0	2.0
*160		355M6A		353301	990	94.7	93.85	0.89	274	6.8	1530	2.1	2.4
*200		355M6B		353302	990	94.9	93.95	0.89	341.8	6.7	1913	2.0	2.3
*250		355L6A		353501	990	95.1	94.15	0.89	421.6	6.7	2391	2.0	2.4

400V 50Hz													
Output kW	Type designation	Product code	Speed n r/min	Efficiency		Power factor cos φ	Crrrent		T _N N _m	Torque			
				Full	3/4		I _N	I _S		T _S	T _{MAX}		
				load	load		A	I _N		T _N	T _N		
				100% η	75% η								
750r/min=8 poles Basic design													
0.18	M2QA	80M8A	M2QA	084301-	700	51	50.12	0.60	0.85	3.3	2.46	1.8	1.9
0.25		80M8B		084302-	700	54.5	53.28	0.60	1.11	3.6	3.41	1.8	1.9
0.37		90S8A		094101-	700	62.5	62.07	0.605	1.42	4.4	5.05	1.8	1.9
0.55		90L8A		094501-	700	63.5	63.34	0.605	2.07	4.7	7.50	1.8	2.0
0.75		100L8A		104501-	700	70	70.08	0.64	2.42	5.0	10.23	1.8	2.0
1.1		100L8B		104502-	700	71.5	70.28	0.645	3.45	5.0	15.01	1.8	2.0
1.5		112M8A		114301-	700	75	75.39	0.675	4.27	5.0	20.46	1.8	2.0
2.2		132S8A		134101-	710	81	81.78	0.70	5.60	5.5	29.59	1.8	2.0
3		132SM8A		134301-	710	81	81.38	0.75	7.13	5.5	40.35	1.8	2.0
4		160M8A		164301-	720	84	83.98	0.73	9.42	5.5	53.06	2.1	2.5
5.5		160M8B		164302-	720	85.5	85.62	0.74	12.55	5.5	72.95	2.1	2.5
7.5		160L8A		164501-	720	86.5	85.82	0.74	16.91	5.5	99.5	2.1	2.5
11		180L8A		184501-	730	87.7	86.96	0.77	23.51	5.4	143.9	2.0	2.8
15		200L8A		204501-	730	89	89.38	0.76	32.01	5.5	196.2	2.3	2.8
18.5		225S8A		224101-	740	90	89.12	0.75	39.56	5.5	238.8	2.1	2.8
22		225M8A		224301-	740	90.5	8.16	0.75	46.78	6.0	283.9	2.2	2.8
30		250M8A		254301-	740	91.3	90.10	0.79	60	6.5	387.2	2.3	2.6
37		280S8A		284101-	740	91.8	91.7	0.79	74.2	6.0	477.5	2.1	2.6
45		280M8A		284301-	740	92.4	91.1	0.79	89.5	6.0	580.7	2.1	2.7
55		315S8A		314101-	740	92.8	91.52	0.82	105	6.9	709.8	1.8	2.0
75		315M8A		314301-	740	93	91.93	0.82	143	7.0	967.9	1.8	2.0
90		315L8A		314501-	740	93.8	93.22	0.82	170	7.1	1161.5	1.8	2.0
110		315L8B		314502-	740	94	92.38	0.82	204	6.4	1419.6	1.8	2.0

Code letters For supplementing the product code

Code letters For voltage and-frequency(product code position 13)

Insulation Class F Temperature rise Class F

A	B	D	E	F	H
380VY50Hz	380V/Æ50Hz	380~420V/Æ50Hz 660~690VY50Hz 440~480 ¹⁾ V/Æ60Hz	500V/Æ50Hz 575V/Æ60Hz	500VY50Hz 575VY60Hz	415V/Æ50Hz
S	T	U	X		
220~240V/Æ50Hz 380~420VY50Hz 440~480VY60Hz	660V/Æ50Hz	690V/Æ50Hz	Other rated voltage connection or frequency, max,690V		¹⁾ 480V not stamped on sizes 160 to 355

		380V 50Hz				415V 50Hz							
Output kW	Type designation	Speed n r/min	Effi- ciency η %	Power factor cos φ	Crrrent A	Speed n r/min	Effi- ciency η %	Power factor cos φ	Crrrent A	Moment of inertia J=GD ² /4 kgm ²	Weight kg	Sound pressure level Lp dB(A)	
1000r/min=6 poles Basic design													
0.18	M2QA	71M6A	905	55.5	0.685	0.72	915	52.5	0.62	0.77	0.00056	10	42
0.25		71M6B	885	60	0.65	0.98	895	59	0.62	0.95	0.00074	11	42
0.37		80M6A	925	63.5	0.695	1.29	935	62	0.625	1.33	0.00159	17	45
0.55		80M6B	920	65	0.71	1.82	930	65.5	0.655	1.79	0.00196	18	45
0.75		90S6A	915	71	0.755	2.13	925	70.5	0.69	2.15	0.00292	21	48
1.1		90L6A	915	73	0.77	2.98	925	73	0.705	2.98	0.00379	25	48
1.5		100L6A	935	76	0.79	3.8	945	75.5	0.755	3.73	0.00999	32	51
2.2		112M6A	935	79	0.77	5.5	945	80	0.745	5.14	0.01559	40	54
3		132S6A	955	82	0.81	6.87	965	82.5	0.76	6.66	0.03116	55	56
4		132M6A	955	84	0.77	9.39	965	84	0.75	8.84	0.04074	65	56
5.5		132M6B	945	85.5	0.795	12.3	955	86	0.78	11.4	0.05332	75	56
7.5		160M6A	968	88	0.79	16.39	975	88	0.75	15.81	0.09231	119	61
11		160L6A	966	88.5	0.80	23.61	975	88.5	0.75	23.06	0.12970	140	62
15		180L6A	980	89	0.84	30.48	985	89	0.79	29.68	0.2418	180	63
18.5		200L6A	975	90.6	0.84	36.94	980	90.1	0.79	36.16	0.34174	231	64
22		200L6B	975	90.9	0.84	43.79	980	90.1	0.81	41.93	0.46837	254	64
30		225M6A	980	90.5	0.78	64.57	980	90.9	0.76	60.41	0.62691	308	66
37		250M6A	978	92	0.90	68.5	982	92.3	0.86	64.9	0.97	382	68
45		280S6A	977	92.4	0.87	85.1	985	92.7	0.85	79.5	1.25	482	69
55		280M6A	977	92.8	0.88	102.3	985	93.1	0.86	95.6	1.485	532	70
75		315S6A	988	93.5	0.87	140	991	93.5	0.84	133	3.1942	920	70
90		315M6A	988	93.8	0.87	168	991	93.8	0.84	159	3.723	1010	70
110		315L6A	988	94.3	0.88	201	991	94.3	0.85	191	4.2564	1060	70
132		315L6B	988	94.5	0.88	241	991	94.5	0.85	229	5.1577	1120	70
*160		355M6A	988	94.7	0.9	285.2	992	94.7	0.88	267.1	7.8	1360	75
*200		355M6B	988	94.9	0.9	355.8	992	94.9	0.88	333.2	9.1	1551	75
*250		355L6A	988	95.1	0.905	441.3	992	95.1	0.89	410.9	11.4	2057	75

		380V 50Hz				415V 50Hz							
Output kW	Type designation	Speed n r/min	Effi- ciency η %	Power factor cos φ	Crrrent A	Speed n r/min	Effi- ciency η %	Power factor cos φ	Crrrent A	Moment of inertia J=GD ² /4 kgm ²	Weight kg	Sound pressure level Lp dB(A)	
750r/min=8 poles Basic design													
0.18	M2QA	80M8A	695	51	0.61	0.88	705	51.5	0.595	0.82	0.00111	16	42
0.25		80M8B	695	54	0.61	1.16	705	54.5	0.595	1.08	0.00326	17	42
0.37		90S8A	695	62	0.61	1.49	705	62.5	0.60	1.38	0.00541	21	46
0.55		90L8A	695	63	0.61	2.18	705	63.5	0.60	2.01	0.00756	24	46
0.75		100L8A	695	70	0.67	2.43	705	69	0.635	2.39	0.00971	31	53
1.1		100L8B	695	71.5	0.68	3.45	705	70.5	0.625	3.47	0.01186	34	53
1.5		112M8A	695	75	0.68	4.47	705	75	0.67	4.16	0.01559	42	55
2.2		132S8A	705	80.5	0.745	5.6	715	80.5	0.685	5.55	0.03625	56	55
3		132M8A	705	81	0.78	7.22	715	81	0.725	7.11	0.04141	64	56
4		160M8A	715	84	0.76	9.52	720	84	0.70	9.46	0.0676	105	58
5.5		160M8B	715	85.5	0.76	12.86	720	85.5	0.70	12.78	0.09524	125	58
7.5		160L8A	715	86.5	0.77	17.11	722	86.5	0.70	17.23	0.12122	142	58
11		180L8A	725	87.7	0.79	24.12	730	87.7	0.74	23.58	0.23645	176	61
15		200L8A	725	88.9	0.78	32.86	730	88.8	0.74	31.75	0.37103	235	63
18.5		225S8A	740	89.9	0.75	41.69	745	90.3	0.71	40.14	0.53287	290	65
22		225M8A	740	90.4	0.76	48.65	745	90.3	0.71	47.74	0.65825	302	65
30		250M8A	738	91.1	0.80	63	741	91.4	0.78	58.8	0.975	392	67
37		280S8A	735	91.6	0.80	76.7	740	91.9	0.78	71.8	1.25	488	68
45		280M8A	735	92.2	0.80	92.7	740	92.5	0.78	86.8	1.485	548	68
55		315S8A	736	92.8	0.83	108	741	92.8	0.80	103	3.6842	930	65
75		315M8A	736	93	0.83	148	741	93	0.80	140	4.9591	1010	68
90		315L8A	736	93.8	0.83	176	741	93.8	0.80	167	5.8205	1070	68
110		315L8B	736	94	0.84	212	741	94	0.80	204	6.7537	1140	68

Code letters For supplementing the product code

Code letters For voltage and-frequency(product code position 13)

Insulation Class F Temperature rise Class F

A	B	D	E	F	H
380VY50Hz	380V/Æ50Hz	380~420V/Æ50Hz 660~690VY50Hz 440~480 ¹⁾ V/Æ60Hz	500V/Æ50Hz 575V/Æ60Hz	500VY50Hz 575VY60Hz	415V/Æ50Hz
S	T	U	X		
220~240V/Æ50Hz 380~420VY50Hz 440~480VY60Hz	660V/Æ50Hz	660V/Æ50Hz	Other rated voltage connection or frequency, max,690V		¹⁾ 480V not stamped on sizes 160 to 355

460V 60Hz															
Output kW	Type designation	Product code	Speed n r/min	Efficiency Full load 100% η	Power factor cos ϕ	Crrrent		Torque			Moment of inertia J=GD ² /4 kgm ²	Weight kg	Sound pressure level Lp dB(A)		
						I _N A	I _S I _N	T _N Nm	T _S T _N	T _{MAX} T _N					
						3600r/min=2 poles			Basic design						
0.43	M2QA	71M2A	M2QA	071301-	3340	70	0.83	0.97	6.1	1.23	2.2	2.2	0.00030	10	59
0.63		71M2B		071302-	3340	73	0.84	1.35	6.1	1.80	2.2	2.2	0.00037	11	59
0.86		80M2A		081301-	3410	75	0.88	1.71	6.1	2.41	2.2	2.2	0.00091	16	60
1.27		80M2B		081302-	3430	78	0.88	2.43	7.0	3.54	2.2	2.2	0.00107	17	61
1.73		90S2A		091101-	3420	79	0.87	3.30	7.0	4.83	2.2	2.2	0.00135	21	64
2.53		90L2A		091501-	3440	81.5	0.86	4.74	7.0	7.02	2.2	2.2	0.00163	24	64
3.45		100L2A		101501-	3430	83	0.89	6.13	7.0	9.61	2.2	2.2	0.00402	33	68
4.60		112M2A		111301-	3480	85	0.91	7.85	7.0	12.62	2.2	2.2	0.00671	42	70
6.33		132S2A		131101-	3510	87.5	0.90	10.55	7.0	17.22	2.2	2.2	0.01241	58	73
8.6		132S2B		131102-	3510	88.5	0.91	14.01	7.0	23.40	2.2	2.2	0.01491	63	73
12.7		160M2A		161301-	3515	91.5	0.91	20.02	6.5	34.50	2.5	3.0	0.0436	112	75
17.3		160M2B		161302-	3517	91.6	0.91	27.24	6.5	46.98	2.5	3.2	0.0551	122	75
21.3		160L2A		161501-	3520	91.8	0.91	33.46	6.5	57.79	2.5	3.2	0.06549	142	75
25.3		180M2A		181301-	3528	92.1	0.90	40.05	6.5	68.48	2.3	2.8	0.08805	170	78
34.5		200L2A		201501-	3550	91.4	0.91	54.42	6.5	92.81	2.2	2.7	0.14821	235	84
42.6		200L2B		201502-	3550	91.2	0.91	67.33	6.5	114.6	2.3	2.7	0.16822	254	84
51.8		225M2A		221301-	3560	92.2	0.90	81.91	7.0	139	2.5	2.8	0.29345	328	84
63		250M2A		251301-	3559	93.8	0.91	96.9	7.5	169.1	2.4	3.0	0.3784	390	87
86		280S2A		281101-	3565	94	0.91	131.9	7.5	230.4	2.5	3.3	0.587	504	88
104		280M2A		281301-	3565	94.3	0.91	159	7.5	278.6	2.3	3.2	0.615	560	88
127		315S2A		311101-	3576	94.5	0.92	183	7.1	339.2	1.8	2.2	1.4083	910	91
152		315M2A		311301-	3576	95	0.92	218	7.1	405.9	1.8	2.2	1.5584	1010	91
184		315L2A		311501-	3575	95	0.93	261	7.2	491.5	1.8	2.2	1.7256	1070	91
*230		315L2B		311502-	3575	95.2	0.93	326	7.2	614.4	1.8	2.2	1.9405	1120	91
*287.5		355M2A		351301	3576	95.7	0.915	412.1	7.1	769	2.2	2.7	3.05	1438	92
*362.5		355L2A		351501	3576	96.2	0.915	516.9	6.9	970	1.9	2.7	3.6	1726	92

460V 60Hz															
Output kW	Type designation	Product code	Speed n r/min	Efficiency Full load 100% η	Power factor cos ϕ	Crrrent		Torque			Moment of inertia J=GD ² /4 kgm ²	Weight kg	Sound pressure level Lp dB(A)		
						I _N A	I _S I _N	T _N Nm	T _S T _N	T _{MAX} T _N					
						1800r/min=4 poles			Basic design						
0.29	M2QA	71M4A	M2QA	072301-	1670	65.5	0.74	0.79	5.2	1.66	2.1	2.0	0.00053	11	46
0.43		71M4B		072302-	1670	68.5	0.76	1.08	5.2	2.46	2.1	2.0	0.00066	11	48
0.63		80M4A		082301-	1690	73.5	0.75	1.50	5.2	3.56	2.4	2.0	0.00145	16	49
0.86		80M4B		082302-	1680	74.5	0.77	1.97	6.0	4.89	2.4	2.2	0.00174	17	49
1.27		90S4A		092101-	1680	77.5	0.775	2.77	6.0	7.22	2.3	2.2	0.00254	21	55
1.73		90L4A		092501-	1670	78.5	0.80	3.61	6.0	9.89	2.3	2.2	0.00317	25	55
2.53		100L4A		102501-	1720	81.5	0.82	4.97	6.0	14.05	2.3	2.2	0.00679	32	56
3.45		100M4B		102502-	1700	82.8	0.86	6.36	6.5	19.38	2.3	2.2	0.00862	36	56
4.60		112M4A		112301-	1720	85	0.825	8.61	6.5	25.54	2.3	2.2	0.01306	45	59
6.33		132S4A		132101-	1700	86	0.86	11.23	6.5	35.56	2.3	2.2	0.02673	60	62
8.6		132M4A		132301-	1730	88.5	0.86	14.83	6.5	47.47	2.3	2.2	0.03432	73	62
12.7		160M4A		162301-	1755	91	0.87	21.06	6.5	69.11	2.4	3.8	0.06543	116	69
17.3		160L4A		162501-	1752	91.6	0.88	28.17	6.5	94.30	2.3	2.4	0.09349	137	69
21.3		180M4A		182301-	1764	92.8	0.87	34.62	6.5	115.3	2.3	3.0	0.16049	170	69
25.3		180L4A		182501-	1764	93.1	0.89	40.06	6.5	137.0	2.4	3.1	0.18046	186	69
34.5		200L4A		202501-	1765	92.6	0.89	54.96	6.5	186.7	2.2	2.8	0.2819	254	74
42.6		225S4A		222101-	1770	92.6	0.85	71.02	7.0	229.8	2.2	2.8	0.37	308	76
51.8		225M4A		222301-	1770	92.8	0.88	83.23	7.0	279.5	2.2	2.8	0.42	335	76
63		250M4A		252301-	1779	93.8	0.89	99.70	7.0	338.2	2.4	3.0	0.78	450	79
86		280S4A		282101-	1775	94	0.88	136.4	6.5	462.7	2.4	2.6	1.10	534	81
104		280M4A		282301-	1775	94.3	0.88	164.4	7.2	559.5	2.3	2.8	1.35	592	81
127		315S4A		312101-	1783	95	0.89	189	6.9	680.2	2.1	2.2	2.8596	930	83
152		315M4A		312301-	1783	95.1	0.89	222	6.9	814.1	2.1	2.2	3.1848	1030	83
184		315L4A		312501-	1782	95.3	0.90	269	6.9	986.1	2.1	2.2	3.6765	1050	89
230		315L4B		312502-	1782	95.4	0.90	336	6.9	1232.6	2.1	2.2	4.2516	1100	89
*287.5		355M4A		352301	1788	95.6	0.905	417.1	6.9	1538	2.0	2.5	6.77	1546	90
*362.5		355L4A		352501	1788	95.8	0.905	524.8	7.0	1939	2.0	2.2	8.20	1821	90

Code letters For supplementing the product code

Code letters For voltage and-frequency(product code position 13)

Insulation Class F Temperature rise Class F

A	B	D	E	F	H
380VY50Hz	380V/Æ50Hz	380~420V/Æ50Hz 660~690VY50Hz 440~480 ¹⁾ V/Æ60Hz	500V/Æ50Hz 575V/Æ60Hz	500VY50Hz 575VY60Hz	415V/Æ50Hz
S	T	U	X		
220~240V/Æ50Hz 380~420VY50Hz 440~480VY60Hz	660V/Æ50Hz	690V/Æ50Hz	Other rated voltage connection or frequency, max,690V		¹⁾ 480V not stamped on sizes 160 to 355

460V 60Hz														
Output kW	Type designation	Product code	Speed n r/min	Efficiency Full load 100% η	Power factor cos ϕ	Crrrent		Torque			Moment of inertia J=GD ² /4 kgm ²	Weight kg	Sound pressure level Lp dB(A)	
						I _N A	I _S I _N	T _N Nm	T _S T _N	T _{MAX} T _N				
1200r/min=6 poles Basic design														
0.21	M2QA	71M6A	M2QA 073301-	1090	55	0.66	0.76	4.0	1.84	1.8	1.8	0.00056	10	45
0.29		71M6B	073302-	1070	60	0.66	0.96	4.0	2.59	1.8	1.8	0.00074	11	45
0.43		80M6A	083301-	1101	63	0.67	1.34	5.0	3.72	1.9	1.9	0.00159	17	48
0.63		80M6B	083302-	1101	65	0.68	1.87	5.0	5.45	1.9	1.9	0.00196	18	48
0.86		90S6A	093101-	1105	71	0.73	2.18	5.0	7.43	2.0	2.2	0.00292	21	51
1.27		90L6A	093501-	1100	73	0.75	3.04	5.0	11.03	2.0	2.2	0.00379	25	51
1.73		100L6A	103501-	1130	76	0.77	3.88	5.5	14.62	2.0	2.2	0.00999	32	54
2.53		112M6A	113301-	1145	80	0.765	5.42	5.5	21.10	2.0	2.2	0.01559	40	57
3.45		132S6A	133101-	1150	82.5	0.79	6.95	6.5	28.65	2.0	2.2	0.03116	55	59
4.60		132M6A	133301-	1150	84	0.79	9.10	6.5	38.20	2.0	2.2	0.04074	65	59
6.33		132M6B	133302-	1150	86	0.80	12.07	6.5	52.57	2.0	2.2	0.05332	75	59
8.6		160M6A	163301-	1167	88	0.79	16.23	6.0	70.38	2.0	2.3	0.09231	119	64
12.7		160L6A	163501-	1166	89.9	0.80	23.17	6.0	104.0	2.2	2.3	0.12970	140	65
17.3		180L6A	183501-	1176	91.1	0.83	30.03	6.0	140.5	2.3	2.8	0.2418	180	66
21.3		200L6A	203501-	1175	90.9	0.84	36.62	6.0	173.1	2.2	2.8	0.34174	231	67
25.3		200L6B	203502-	1175	90	0.85	43.39	6.0	205.6	2.1	2.8	0.46837	254	67
34.5		225M6A	223301-	1180	90.9	0.78	63.85	6.6	279.2	2.2	2.8	0.62691	308	69
42.6		250M6A	253301-	1179	92.8	0.89	67.80	6.8	345.1	2.3	2.8	0.97	382	71
51.8		280S6A	283101-	1175	92.6	0.87	84.4	6.5	421	2.3	2.4	1.25	482	72
63		280M6A	283301-	1175	93	0.88	101	7.0	512	2.3	2.5	1.485	532	73
86		315S6A	313101-	1188	93.8	0.87	132	7.4	691.3	2.0	2.0	3.1942	920	78
104		315M6A	313301-	1188	94	0.87	160	7.4	836.0	2.0	2.0	3.723	1010	73
127		315L6A	313501-	1188	94.5	0.88	192	6.8	1020.9	2.0	2.0	4.2564	1060	73
152		315L6B	313502-	1188	95	0.88	228	6.8	1221.9	2.0	2.0	5.1577	1120	73
*184		355M6A	353301-	1188	94.9	0.9	270.4	6.8	1481	2	2.3	7.8	1360	78
*230		355M6B	353302-	1188	95.1	0.9	337.3	6.7	1852	1.9	2.2	9.1	1551	78
*287.5		355L6A	353501-	1188	95.3	0.9	420.7	6.7	2315	1.9	2.3	11.4	2057	78

460V 60Hz														
Output kW	Type designation	Product code	Speed n r/min	Efficiency Full load 100% η	Power factor cos ϕ	Crrrent		Torque			Moment of inertia J=GD ² /4 kgm ²	Weight kg	Sound pressure level Lp dB(A)	
						I _N A	I _S I _N	T _N Nm	T _S T _N	T _{MAX} T _N				
900r/min=8 poles Basic design														
0.21	M2QA	80M8A	M2QA 084301-	820	53.8	0.54	0.91	3.3	2.45	1.8	1.9	0.00111	16	45
0.29		80M8B	084302-	820	58.6	0.55	1.13	3.6	3.38	1.8	1.9	0.00326	17	45
0.43		90S8A	094101-	830	61.7	0.56	1.56	4.4	4.95	1.8	1.9	0.00541	21	49
0.63		90L8A	094501-	830	63.8	0.58	2.14	4.7	7.25	1.8	2.0	0.00756	24	49
0.86		100L8A	104501-	840	70	0.64	2.52	5.0	9.78	1.8	2.0	0.00971	31	56
1.27		100L8B	104502-	840	71.5	0.65	3.59	5.0	14.44	1.8	2.0	0.01186	34	56
1.73		112M8A	114301-	850	75	0.685	4.42	5.0	19.44	1.8	2.0	0.1559	42	58
2.53		132S8A	134101-	860	81	0.71	5.77	5.5	28.09	1.8	2.0	0.03625	56	58
3.45		132M8A	134301-	860	81	0.77	7.26	5.5	38.31	1.8	2.0	0.04141	64	59
4.60		160M8A	164301-	865	88	0.76	9.03	5.5	50.79	2.1	2.5	0.0676	105	61
6.33		160M8B	164302-	866	85.9	0.76	12.72	5.5	69.81	2.1	2.5	0.09524	125	61
8.6		160L8A	164501-	865	86.5	0.77	16.94	5.5	94.9	2.1	2.5	0.12122	142	61
12.7		180L8A	184501-	876	86	0.78	24.85	5.4	138.5	2.0	2.8	0.23645	176	64
17.3		200L8A	204501-	875	89	0.78	32.69	5.5	188.8	2.3	2.8	0.37103	235	66
21.3		225S8A	224101-	890	90	0.75	41.41	5.5	228.6	2.1	2.8	0.53287	290	68
25.3		225M8A	224301-	890	90.5	0.76	48.27	6.0	271.5	2.2	2.8	0.65825	302	68
34.5		250M8A	254301-	891	92.1	0.80	61.50	6.5	369.8	2.3	2.6	0.975	392	70
42.6		280S8A	284101-	885	91.8	0.80	76.1	6.0	459.7	2.1	2.6	1.25	488	71
51.8		280M8A	284301-	885	92.4	0.80	92	6.0	559	2.1	2.7	1.485	548	71
63		315S8A	314101-	888	93.2	0.83	102	6.9	677.5	1.8	2.0	3.6842	930	68
86		315M8A	314301-	888	93.5	0.83	139	7.0	924.9	1.8	2.0	4.9591	1010	71
104		315L8A	314501-	888	94	0.83	164	7.1	1118.5	1.8	2.0	5.8205	1070	71
127		315L8B	314502-	888	94.5	0.84	201	6.4	1365.8	1.8	2.0	6.737	1140	71

Code letters For supplementing the product code

Code letters For voltage and-frequency(product code position 13)

Insulation Class F Temperature rise Class F

A	B	D	E	F	H
380VY50Hz	380VΔ50Hz	380~420VΔ50Hz 660~690VY50Hz 440~480 ¹⁾ VΔ60Hz	500VΔ50Hz 575VΔ60Hz	500VY50Hz 575VY60Hz	415VΔ50Hz
S	T	U	X		
220~240VΔ50Hz 380~420VY50Hz 440~480VY60Hz	660VΔ50Hz	690VΔ50Hz	Other rated voltage connection or frequency, max,690V		¹⁾ 480V not stamped on sizes 160 to 355

Dimension drawing

Foot-mounted motor designation IM B3, IM B6, IM B7, IM B8, IM V5, IM V6

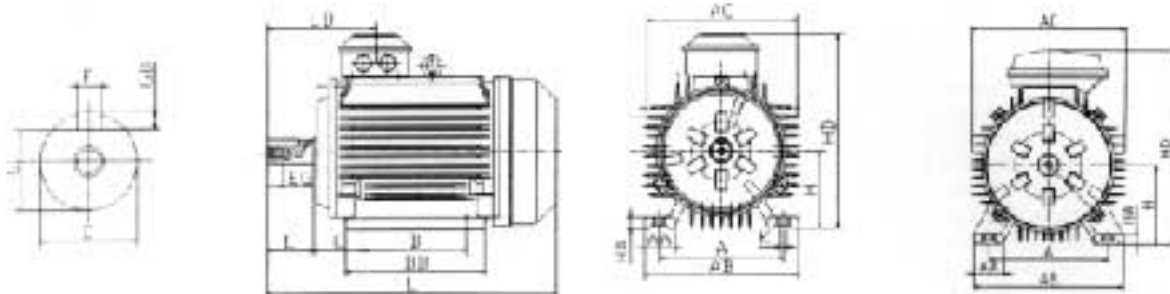
Flange-mounted, mounting designation IM B5, IM V1, IM V3

Foot-and flang-mounted, mounting designation IM B35, IM V15, IM V36

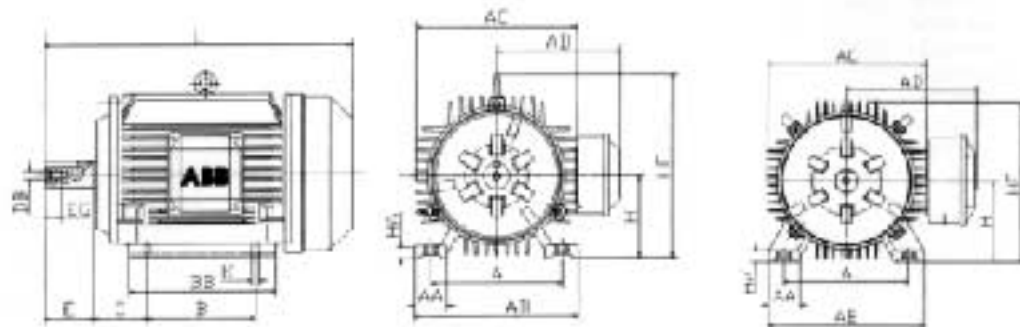
Cast iron motor

Type M2QA71-355

three phase motor, foot mounted, terminal box top-mounted



three phase motor foot mounted, terminal box on right hand side



Type M2QA	Poles	A	AA	AB	AC	B	BB	C	D	E	F	G	GD	DB	EG
71M	2-6	112	30	145	145	90	110	45	14 - j6	30	5	11	5	M5	12.5
80M	2-8	125	35	160	165	100	135	50	19 - j6	40	6	15.5	6	M6	16
90S	2-8	140	35	175	180	100	140	56	24 - j6	50	8	20	7	M8	19
90L	2-8	140	35	175	180	125	165	56	24 - j6	50	8	20	7	M8	19
100L	2-8	160	40	200	205	140	180	63	28 - j6	60	8	24	7	M10	22
112M	2-8	190	50	235	225	140	190	70	28 - j6	60	8	24	7	M10	22
132S	2-8	216	55	270	265	140	205	89	38 - k6	80	10	33	8	M12	28
132M	2-8	216	55	270	265	178	240	89	38 - k6	80	10	33	8	M12	28
160M	2-8	254	60	325	330	210	265	108	42 - k6	110	12	37	8	M16	36
160L	2-8	254	60	325	330	254	310	108	42 - k6	110	12	37	8	M16	36
180M	2-4	279	70	350	355	241	315	121	48 - k6	110	14	42.5	9	M16	36
180L	4-8	279	70	355	355	279	350	121	48 - k6	110	14	42.5	9	M16	36
200L	2-8	318	70	390	395	305	380	133	55 - m6	110	16	49	10	M20	39
225S	4-8	356	75	435	440	286	380	149	60 - m6	140	18	53	11	M20	39
225M	2	356	75	435	450	311	405	149	55 - m6	110	16	49	10	M20	39
225M	4-8	356	75	435	450	311	405	149	60 - m6	140	18	53	11	M20	39
250M	2	406	80	490	515	349	455	168	60 - m6	140	18	53	11	M20	39
250M	4-8	406	80	490	515	349	455	168	65 - m6	140	18	58	11	M20	39
280S	2	457	85	555	585	368	490	190	65 - m6	140	18	58	11	M20	39
280S	4-8	457	85	555	585	368	490	190	75 - m6	140	20	67.5	12	M20	39
280M	2	457	85	555	585	419	540	190	65 - m6	140	18	58	11	M20	39
280M	4-8	457	85	555	585	419	540	190	75 - m6	140	20	67.5	12	M20	39
315S	2	508	120	640	630	406	575	216	65 - m6	140	18	58	11	M20	42
315S	4-8	508	120	640	630	406	575	216	80 - m6	170	22	71	14	M20	42
315M	2	508	120	640	630	457	685	216	65 - m6	140	18	58	11	M20	42
315M	4-8	508	120	640	630	457	685	216	80 - m6	170	22	71	14	M20	42
315L	2	508	120	640	630	508	685	216	65 - m6	140	18	58	11	M20	42
315L	4-8	508	120	640	630	508	685	216	80 - m6	170	22	71	14	M20	42
355M	2	610	120	730	710	560	750	250	70 - m6	140	20	62.5	12	M20	42
355M	4-6	610	120	730	710	560	750	250	100 - m6	210	28	90	16	M24	47
355L	2	610	120	730	710	630	750	250	70 - m6	140	20	62.5	12	M20	42
355L	4-6	610	120	730	710	630	750	250	100 - m6	210	28	90	16	M24	47

Dimension drawing

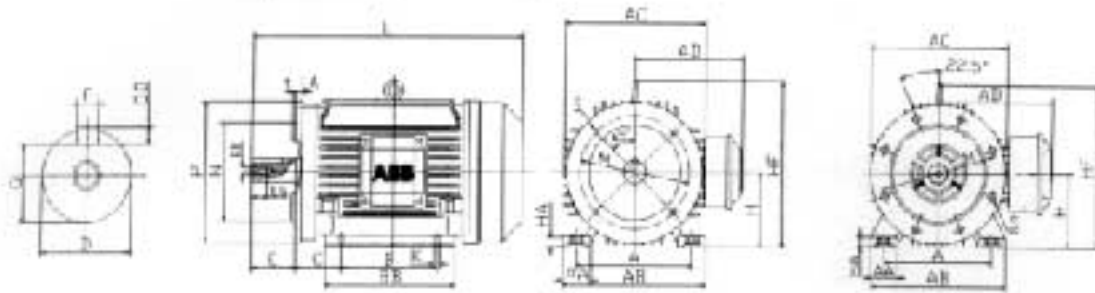
Foot-mounted motor designation IM B3, IM B6, IM B7, IM B8, IM V5, IM V6

Flange-mounted, mounting designation IM B5, IM V1, IM V3

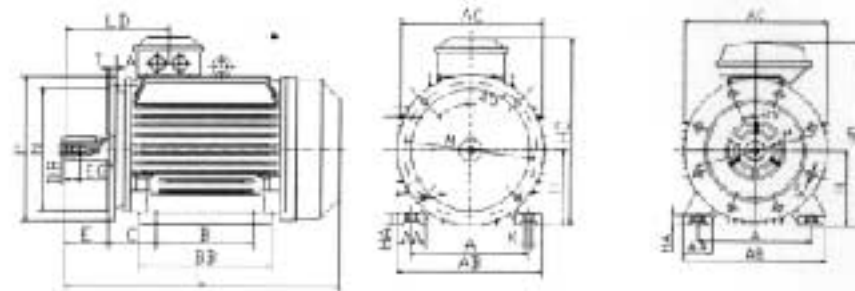
Foot-and flange-mounting designation IM B35, IM V15, IM V36

Cast iron motor
Type M2QA71-355

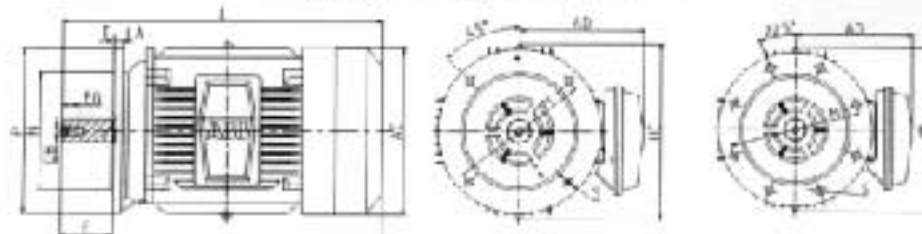
three phase motor, foot-and flange-mounted, terminal box mounted on right hand side



three phase motor, foot-and flange-mounted, terminal box top-mounted



three phase motor, flange mounted



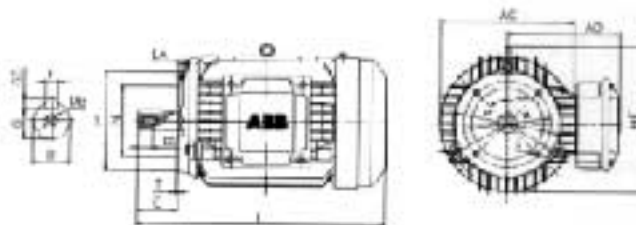
Type M2QA	Poles	H	HA	HD	HF	K	L	LD	AD	LA	M	N	P	S	T	HE
71M	2-6	71	10	200	---	7	255	100	120	9	130	110	160	4-10	3.5	165
80M	2-8	80	12	225	170	10	285	116	145	9	165	130	200	4-12	3.5	200
90S	2-8	90	12	240	185	10	310	128	150	10	165	130	200	4-12	3.5	200
90L	2-8	90	12	240	185	10	335	128	150	10	165	130	200	4-12	3.5	200
100L	2-8	100	14	275	245	12	380	138	175	11	215	180	250	4-15	4	270
112M	2-8	112	15	290	265	12	395	144	185	11	215	180	250	4-15	4	278
132S	2-8	132	18	335	300	12	465	169	205	12	265	230	300	4-15	4	320
132M	2-8	132	18	335	300	12	505	169	205	12	265	230	300	4-15	4	320
160M	2-8	160	22	415	380	15	600	250	255	15	300	250	350	4-19	5	400
160L	2-8	160	22	415	380	15	645	250	255	15	300	250	350	4-19	5	400
180M	2-4	180	22	450	420	15	670	270	270	18	300	250	350	4-19	5	420
180L	4-8	180	22	450	420	15	710	270	270	18	300	250	350	4-19	5	420
200L	2-8	200	25	510	470	19	770	285	305	20	350	300	400	4-19	5	470
225S	4-8	225	28	560	520	19	820	340	335	20	400	350	450	8-19	5	520
225M	2	225	28	560	520	19	815	310	335	20	400	350	450	8-19	5	520
225M	4-8	225	28	560	520	19	840	340	335	20	400	350	450	8-19	5	520
250M	2	250	30	645	580	24	930	360	395	22	500	450	550	8-19	5	655
250M	4-8	250	30	645	580	24	930	360	395	22	500	450	550	8-19	5	655
280S	2	280	35	715	645	24	975	355	435	22	500	450	550	8-19	5	725
280S	4-8	280	35	715	645	24	975	355	435	22	500	450	550	8-19	5	725
280M	2	280	35	715	645	24	1040	355	435	22	500	450	550	8-19	5	725
280M	4-8	280	35	715	645	24	1040	355	435	22	500	450	550	8-19	5	725
315S	2	315	45	870	---	28	1190	400	555	24	600	550	660	8-24	6	905
315S	4-8	315	45	870	---	28	1220	430	555	24	600	550	660	8-24	6	905
315M	2	315	45	870	---	28	1300	400	555	24	600	550	660	8-24	6	905
315M	4-8	315	45	870	---	28	1330	430	555	24	600	550	660	8-24	6	905
315L	2	315	45	870	---	28	1300	400	555	24	600	550	660	8-24	6	905
315L	4-8	315	45	870	---	28	1330	430	555	24	600	550	660	8-24	6	905
355M	2	355	52	1010	---	35	1495	424	655	25	740	680	800	8-24	6	1010
355M	4-6	355	52	1010	---	35	1565	494	655	25	740	680	800	8-24	6	1010
355L	2	355	52	1010	---	35	1495	424	655	25	740	680	800	8-24	6	1010
355L	4-6	355	52	1010	---	35	1565	494	655	25	740	680	800	8-24	6	1010

Dimension drawing

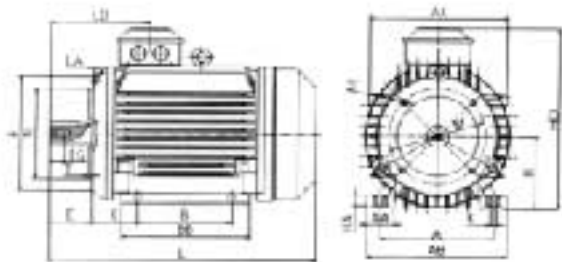
Flange-mound;IM B14,IM V18,IM V19
Foot-and flang-mounted;IMB34

cast iron motor
Type M2QA71-160

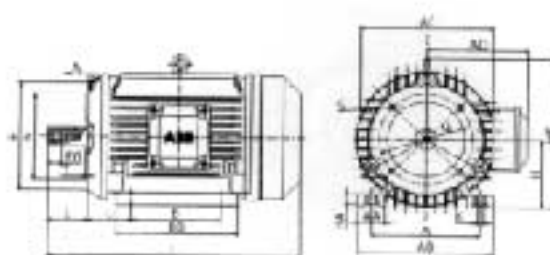
Flange-mounted motor,small flange IM B14



Terminal box top-mounted IM B34

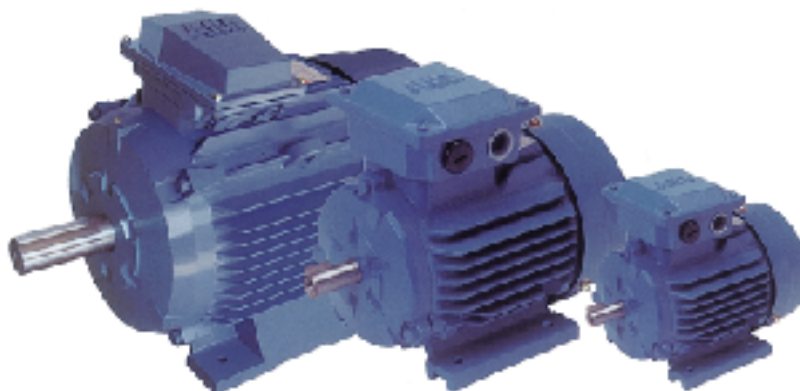


Terminal box side-mounted IM B34



Type	Pole	A	AA	AB	AC	B	BB	C	D	E	F	G	GD	DB	EG	H	HA	HD	K	L	LD	AD	LA	HE	HF
M2QA 71M	2-6	112	30	145	145	90	120	45	14	30	5	11	5	M5	12.5	71	10	200	7	255	100	120	9	145	-
80M	2-8	125	35	165	165	100	135	50	19	40	6	15.5	6	M6	16	80	12	225	10	285	116	145	9	200	185
90S	2-8	140	35	175	180	100	140	56	24	50	8	20	7	M8	19	90	12	240	10	310	128	150	10	200	195
90L	2-8	140	35	175	180	125	165	56	24	50	8	20	7	M8	19	90	12	240	10	335	128	150	10	200	195
100L	2-8	160	40	200	205	140	180	63	28	60	8	24	7	M10	22	100	14	275	12	380	138	175	11	270	245
112M	2-8	190	50	235	225	140	190	70	28	60	8	24	7	M10	22	112	15	290	12	395	144	185	11	278	265
132S	2-8	216	55	270	265	140	205	89	38	80	10	33	8	M12	28	132	18	335	12	465	169	205	15	320	300
132M	2-8	216	55	270	265	178	240	89	38	80	10	33	8	M12	28	132	18	335	12	505	169	205	15	320	300
160M	2-8	254	60	325	330	210	265	108	42	110	12	37	8	M16	36	160	22	415	15	600	250	255	20	400	380
160L	2-8	254	60	325	330	254	310	108	42	110	12	37	8	M16	36	160	22	415	15	645	250	255	20	400	380

Type	Pole	Size	P	M	N	S	T
M2QA 71M	2-6	C105	105	85	70	M6	2.5
71M	2-6	C140	140	115	95	M6	3.0
80M	2-8	C120	120	100	80	M6	3.0
80M	2-8	C160	160	130	110	M8	3.5
90S	2-8	C140	140	115	95	M8	3.0
90S	2-8	C160	160	130	110	M8	3.5
90L	2-8	C140	140	115	95	M8	3.0
90L	2-8	C160	160	130	110	M8	3.5
100L	2-8	C160	160	130	110	M8	3.5
100L	2-8	C200	200	165	130	M10	3.5
112M	2-8	C160	160	130	110	M8	3.5
112M	2-8	C200	200	165	130	M10	3.5
132S	2-8	C200	200	165	130	M10	3.5
132M	2-8	C200	200	165	130	M10	3.5
160M	2-8	C250	250	215	180	M12	4
160L	2-8	C250	250	215	180	M12	4

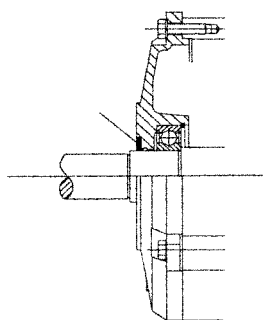


Bearing seals

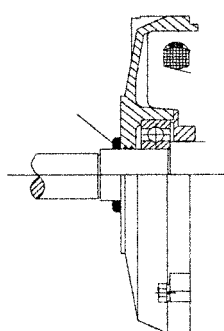
The motors are as standard provided with seals according to table below.

Motor size	Description D-end	Standard design Axial seal D-end	Alternative design Radial seal (DIN 3760) Variant code 072		
71	Sealed bearings (2RS) and axial seal, gamma ring, at D-end	RB15 x 30 x 4			
80		RB20 x 35 x 4			
90		RB25 x 40 x 4			
100		RB30 x 47 x 4.5			
112		RB35 x 52 x 4.5			
132		RB40 x 57 x 4.5			
160	Axial seal, gamma ring, at D-end	RB45 x 62 x 4.5			
180		RB50 x 70 x 5.5			
200		RB60 x 80 x 5.5			
225		RB65 x 85 x 5.5			
250	Radial seals, at both-ends		TC70 x 85 x 10		
280			TC80 x 100 x 10		
315			2p	TC80 x 100 x 10	
			4-8p	TC95 x 120 x 12	
355			2p	TC95 x 120 x 12	
			4-8p	TC95 x 120 x 12 TC110 x 140 x 12	

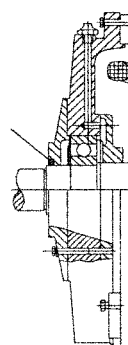
Motor sizes
71-132



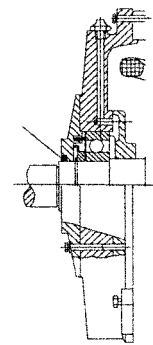
Motor sizes
160-225



Motor size
250-280



Motor sizes
315-355



Variant codes

Code*) Variant	Motor size					
	71- 80	90- 100	112- 132	160- 180	200- 355	
Balancing						
052	Balancing to grade R(IEC60034-14)	M	M	M	M	M
426	Half key balancing	S	S	S	S	S
Bearings and lubrication						
037	Roller bearing at D-end	NA	NA	NA	R	R
039	Cold resistant grease	M	M	M	M	M
040	Heat resistant grease	R	R	R	R	R
041	Regreasable bearings	NA(71-112)	M(132-225)		S(250-355)	
057	2RS bearings at both ends	S(71-132)	R(160-250)		NA(280-355)	
043	SPM nipples. Frame sizes 112-132 only foot mounted B3	NA(71-100)	P(112-132)	R(160-225)	NA(250-355)	
Branch standard designs						
178	Stainless steel/acid proof bolts	R	R	R	R	R
425	Corrosion protected stator and rotor core	S	S	S	S	S
785	Reinforced tropicalisation	R	R	R	R	R
Cooling system						
044	Unidirectional fan, clockwise seen from D-end	NA(71-250)		P(280-355)		
045	Unidirectional fan, counter clockwise seen from D-end	NA(71-250)			P(280-355)	
068	Aluminum fan	M	M	M	M	M
075	Cooling method IC418(without fan)	P	P	P	P	P
183	Separate motor cooling fan(fan axial, N-end)	R	R	R	R	R
Drain holes						
066	Modified drain hole position(for specified IM xxxx)	M	M	M	M	M
076	Drain holes with plugs	M	M	M	M	M
Earthing bolt						
067	External earthing bolt	M	M	M	M	M
Mounting arrangements						
008	IM2101 foot/flange mounted, IEC flange,from IM1001(B34 from B3)	M(71-160)			NA(180-355)	
009	IM2001 foot/flange mounted, IEC flange,from IM1001(B35 from B3)	M	M	M	M	M
047	IM3601 flange mounted, IEC flange,from IM13001(B14 from B5)	M(71-160)			NA(180-355)	
048	IM3001 flange mounted, IEC flange,from IM13601(B5 from B14)		M(71-160)		NA(180-355)	
078	(IM3601) Flange mounted, DIN C-flange		M(71-160)		NA(180-355)	
090	(IM2101) foot/flange mounted, DIN C-flange, from IM1001(B34 from B3)	M(71-160)			NA(180-355)	
091	(IM2001) foot/flange mounted, DIN A-flange, from IM1001(B35 from B3)	M	M	M	M	M
Painting						
114	Special paint colour, standard grade	M	M	M	M	M
Rating & instruction plates						
002	Restamping voltage, frequency and output, continuous duty	M	M	M	M	M
003	Individual serial number	S	S	S	S	S
013	Restamping to output for class F temperature rise	M	M	M	M	M
095	Restamping output(maintained voltage, frequency)intermittent duty	M	M	M	M	M
098	Stainless rating plate	S	S	S	S	S
138	Mounting of customer plate	M	M	M	M	M
139	Additional identification plate delivered loose	R	R	R	R	R
150	Instruction plates and maintenance instructions in non-standard language	M	M	M	M	M
161	Additional rating plate delivered loose	M	M	M	M	M
212	Restamping to class B output	R	R	R	R	R

*)Certain variant codes cannot be used together

R=On request

S=Included as standard

M=Modification of stocked motor or during new production

P=With new production only

NA=Not applicable

Code*) Variant	Motor size					
	71-80	90-100	112-132	160-180	200-355	
Stator winding temperature sensors						
032	Bimetal detector, in stator winding	M	M	M	M	M
033	PTC-thermister, in stator winding	M	M	M	S	S
034	PT100 resistance element, in stator winding	M	M	M	M	M
121	Bimetal detectors, break type(NCC), (3 in series), 130°C in stator winding	M	M	M	M	M
122	Bimetal detectors, break type(NCC), (3 in series), 150°C in stator winding	M	M	M	M	M
123	Bimetal detectors, break type(NCC), (3 in series), 170°C in stator winding	M	M	M	M	M
125	Bimetal detectors, break type(NCC), (2x3 in series), 130°C in stator winding	M	M	M	M	M
127	Bimetal detectors, break type(NCC), (3 in series), 130°C & 3 in series, 150°C in stator winding	M	M	M	M	M
321	Bimetal detectors, colsing type(NO), (3 in parallel), 130°C in stator winding	M	M	M	M	M
322	Bimetal detectors, colsing type(NO), (3 in parallel), 150°C in stator winding	M	M	M	M	M
323	Bimetal detectors, colsing type(NO), (3 in parallel), 170°C in stator winding	M	M	M	M	M
435	PTC-thermistors(3 in series), 130°C, in stator winding	M	M	M	M	M
436	PTC-thermistors(3 in series), 150°C, in stator winding	M	M	M	M	M
437	PTC-thermistors(3 in series), 170°C, in stator winding	M	M	M	M	M
439	PTC-thermistors(2x3 in series), 150°C, in stator winding	M	M	M	M	M
441	PTC-thermistors(3 in series 150°C & 3 in series 150°C in stator winding	M	M	M	M	M
442	PTC-thermistors(3 in series 150°C & 3 in series 150°C in stator winding	M	M	M	M	M
445	PT100 resistance element(1 per phase)	M	M	M	M	M
446	PT100 resistance element(2 per phase)	M	M	M	M	M
Terminal box						
015	Δ Connection in terminal box (reconnection from Y)	M	M	M	M	M
017	Y connection in terminal box (reconnection from Δ)	M	M	M	M	M
021	Terminal box LHS(seen from D-end)	M(80-250)		R(280-355)		
180	Terminal box RHS(seen from D-end)	M(80-250)		R(280-355)		
230	Standard cable glands	M	M	M	M	M
465	Terminal box on top	S	S	S	S	S
468	Cable entry from D-end	M	R	R	R	R
469	Cable entry from N-end	M	R	R	R	R
Testing						
140	Test confirmation	R	R	R	R	R
145	Type test report from test of identical motor	M	M	M	M	M
148	Routine test report(only 400 V)	S	S	S	S	S
Shaft & rotor						
165	Shaft extension with open key-way	S	S	S	S	S
070	One or two special shaft extensions, std shaft material	R(71-250)		P(280-355)		
Protection						
005	Protective roof, vertical motor, shaft down	M	M	M	M	M
211	IPW55	NA	P(90-250)		NA(280-355)	
401	Protective roof, horizontal motor	M	M	M	M	M
403	Degree of protection IP56	M	M	M	M	M
Heating element						
450	Heating element, 100-120V	M	M	M	M	M
451	Heating element, 200-240V	M	M	M	M	M
Insulation system						
014	Winding insulation class H	R	R	R	R	R
405	Special winding insulation for frequency converter supply	R	R	R	R	R
Packing/sea freight packing						
902	Sea freight packing	M	M	M	M	M

M2QA cast iron motors in brief, basic design

Motor size		71	80	90	100	112	132	160
Stator	Material	Cast iron HT150 GB/T9439						
	Paint colour shade	Blue, Munsell 8B 4.5/3.25/ NCS 4822 B05G						
	Paint thickness	Two-pack 821 Acid Polyurethane Enamel, thickness \ominus 60 μ m						
Bearing end shields	Material	Cast iron HT150 GB/T9439						
	Paint colour shade	Blue, Munsell 8B 4.5/3.25/ NCS 4822 B05G						
	Paint thickness	Two-pack 821 Acid Polyurethane Enamel, thickness \ominus 60 μ m						
Bearings	D-end	6202 VV C3	6204 DDU C3	6205 DDU C3	6206 DDU C3	6207 DDU C3	6208 DDU C3	6309 ZZ C3
	N-end	6202 VV C3	6204 DDU C3	6205 DDU C3	6206 DDU C3	6206 DDU C3	6207 DDU C3	6209 ZZ C3
Axially-locked bearings	Spring ring	As standard, locked at D-end						
Lubrication		Greased for life						
Rating plate	Material	Stainless steel						
Terminal box	Frame material	Cast iron HT150 GB/T9439						
	Cover material	Cast iron HT150 GB/T9439						
Connections	Cable entries	2-M16x1.5	2-M25x1.5	2-M25x1.5	2-M32x1.5	2-M32x1.5	2-M32x1.5	1-M10x1.5 2-M40x1.5
	Terminals	6 terminals for connection						
Fan	Material	Reinforced glass fiber						
Fan cover	Material	Steel						
	Paint colour shade	Blue, Munsell 8B 4.5/3.25/ NCS 4822 B05G						
	Paint thickness	Two-pack 821 Acid Polyurethane Enamel, thickness \ominus 60 μ m						
Stator winding	Material	Copper						
	Insulation	Insulation class F						
	Winding protection	On request						
Rotor winding	Material	Pressure die-cast aluminium						
Balancing method		Half key balancing as standard						
Key ways		Open key way						
Enclosure		IP 55						
Cooling method		IC 411						

*) For vertical -mounted motors, pls see the specification on the rating plate.

M2QA cast iron motors in brief, basic design

Motor size		180	200	225	250	280	315	355	
Stator	Material	Cast iron HT150 GB/T9439							Cast iron HT200 GB/T9439 except vartical-mounted
	Paint colour shade	Blue, Munsell 8B 4.5/3.25/ NCS 4822 B05G							
	Paint thickness	Two-pack 821 Acid Polyurethane Lacquer Enamel, thickness \approx 60 μ m							
Bearing end shields	Material	Cast iron HT150 GB/T9439							Cast iron HT200 GB/T9439 except vartical-mounted
	Paint colour shade	Blue, Munsell 8B 4.5/3.25/ NCS 4822 B05G							
	Paint thickness	Two-pack 821 Acid Polyurethane Enamel, thickness \approx 60 μ m							
Bearings	D-end 2 pole 4 to 8 pole	6310 ZZ C3	6312 ZZ C3	6313 ZZ C3	6314 C3 *	6316/C4 6316/C3	6316/C4 6319/C3	6319M/C4 6322/C3	
	N-end 2 pole 4 to 8 pole	6210 ZZ C3	6212 ZZ C3	6213 ZZ C3	6214 C3*	6316/C4 * 6316/C3	6316/C4 * 6319/C3	6319m/C4* 6319/C3	
Axially-locked bearings	Inner bearing cover	Spring ring Locked at D-end	As standard, locked at D-end		As standard Locked at ND-end				
Lubrication		Greased for life or regreasable			Regreasable bearings				
Rating plate	Material	Stainless steel							
Terminal box	Frame material	Cast iron HT150 GB/T9439			Cast iron HT200 GB/T9439				
	Cover material	Cast iron HT150 GB/T9439			Cast iron HT200 GB/T9439				
Connections	Cable entries	1-M16x1.5 2-M40x1.5	1-M16x1.5 2-M50x1.5	1-M16x1.5 2-M50x1.5	1-M20x1.5 2-M63x1.5	1-M20x1.5 2-M63x1.5	2-M20x1.5 2-M63x1.5		
	Terminals	6 terminals for connection							
Fan	Material	Reinforced glass fiber				Reinforced glass fiber or aluminium			
Fan cover	Material	Steet							
	Paint colour shade	Blue, Munsell 8B 4.5/3.25/ NCS 4822 B05G							
	Paint thickness	Two-pack 821 Acid Polyurethane Lacquer Enamel, thickness \approx 60 μ m							
Stator winding	Material	Copper							
	Insulation	Insulation class F							
	Winding protection	On request				3 PTC thermistors as standard, 150 \rightarrow			
Rotor winding	Material	Pressure die-cast aluminium							
Balancing method		Half key balancing as standard							
Key ways		Open key way							
Enclosure		IP 55							
Cooling method		IC 411							

ABB Motors reserves the right to change the design, technical specification and dimensions without prior notice.

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