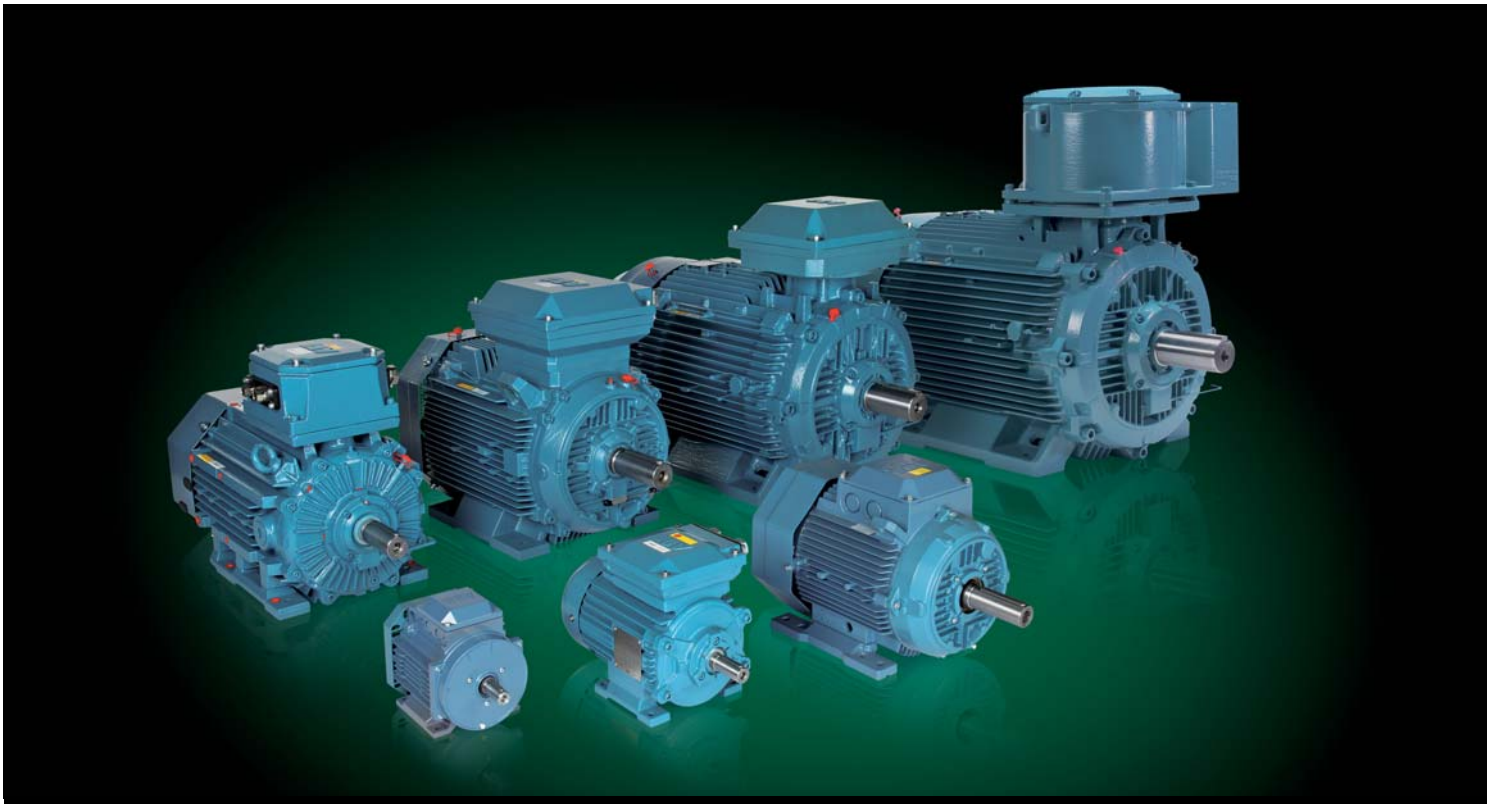

Catalog

Low voltage
Motors for explosive atmospheres

Power and productivity
for a better world™

We provide motors, generators and mechanical power transmission products, services and expertise to save energy and improve customers' processes over the total life cycle of our products, and beyond.

Low voltage motors for explosive atmospheres
Sizes 71 to 450, 0.25 to 1000 kW

General information

ATEX Directives 94/9/EC (“95”) and 1999/92/EC (“137”)

The ATEX Directives harmonize safety rules in line with the free trading principles of the European Community.

Responsibilities are split between the manufacturers and end users. Manufacturers have to comply with the “Essential Health and Safety Requirements” of the Products Directive 94/9/EC, or ATEX 95; and end users must prepare an Explosion Protection Document based on risk assessments of their “work places” and “work equipment” to fulfil the “minimum requirements” listed in the Worker Protection Directive 1999/92/EC or ATEX 137.

ABB low voltage motors for explosive atmospheres comply fully with the ATEX Products Directive 94/9/EC.

According to the regulations, low voltage motors for explosive atmospheres are exempted from the Low Voltage Directive, the EMC Directive and the Machinery Directive.

IECEx System

The IECEx System is a certification system which verifies compliance with IEC (International Electrotechnical Commission) standards relating to safety in explosive atmospheres. It covers equipment, service facilities and the competency of personnel.

Created in September 1999, the System aims “to facilitate international trade in equipment and services for use in explosive atmospheres, while maintaining the required level of safety…” (source: IECEx website, www.iecex.com). It is a voluntary system which provides an internationally accepted means of proving that products and services are in compliance with IEC standards. The voluntary and international aspects of the IECEx System differentiate it from certification under ATEX, for example, which is mandatory but applies only within the European Economic Area.

The IECEx System comprises global certification programs for both equipment and service facilities.

IECEx certification involves – in addition to product tests – assessment of quality control procedures and testing plans, audits of manufacturing plants, and routine on-going surveillance and inspections.

In addition, IECEx has established a comprehensive set of operational documents and procedures to develop a single internationally standardized approach to Ex testing and certification. The most important document is IECEx OD02, “Rules of procedure for equipment certification”.

The approach includes:

- A standardized “IECEx way of Ex Testing and Certification”. There is a single set of operational procedures, and Ex test procedures are always applied in the same way.
- A dedicated Technical and Operational Secretariat to maintain operations. Ex test procedures are evaluated and monitored on a centralized basis.

Who is responsible for the certification work?

A manufacturer needing to have equipment certified under the IECEx System can apply to an IECEx Competent Body (ExCB) in any member country. At present there are 30 IECEx member countries. The ExCB performs or coordinates the activities of certification.

A quality assessment of the manufacturer is undertaken by the ExCB itself, and the auditor issues an IECEx Quality Assessment Report (QAR).

Type testing of product samples is performed on behalf of the ExCB by an IECEx Assessment and Testing Laboratory (ExTL). On completion of its work the ExTL’s assessment engineer prepares an IECEx Test Report (ExTR).

The ExTR is then submitted to the ExCB for endorsement. Based on the QAR and ExTR, the ExCB then issues the Certificate of Conformity (CoC). The CoC provides internationally accepted verification that the equipment in question is in compliance with the relevant IEC standards.

Once formally issued by the ExCB, both the ExTR and QAR are registered on the IECEx Internet site. This provides verification that an ExTR and QAR exist for the product and manufacturer.

How do I know if a motor is IECEx certified?

IECEx certified motors show the certification number on their rating plate, for example: “IECEx LCI 05.0008”. In this case “LCI” indicates that the IECEx certificate was issued by LCIE, an IECEx approved Certification Body in France.

In addition, IECEx certificates are issued in electronic form and are publicly available on the IECEx website. They can therefore be viewed and printed by anyone with access to the Internet. See “Online Certificates” at www.iecex.com.

IECEx certification is particularly useful in certain markets. In Australia, New Zealand, and Singapore, for example, IECEx certificates are accepted, but not all IEC certificates are accepted. Certain other countries, including Russia, China and Korea, are prepared to accept ExTRs as a basis for their

own national certificates. There are also many countries that are willing to accept products covered by current IECEx certificates, even though the countries in question are not members of the IECEx Management Framework.

IECEx Conformity Mark License

The IECEx Conformity Mark System was introduced in 2008. IECEx Conformity Mark Licenses are issued by approved Certification Bodies in IECEx participating countries.

The IECEx Conformity Mark shows that a product has been granted an IECEx Certificate of Conformity. IECEx Certification confirms that the product has the appropriate protection for use in explosive atmospheres and that it has been manufactured under systems subject to ongoing surveillance by Certification Bodies. It is recognized in all the countries participating in the IECEx System, and it also means that the product can be supplied to the market without the need for additional tests.

ABB has been granted IECEx Certification for a wide range of low and high voltage motors, and these can therefore display the IECEx Conformity Mark. The hazardous area protection types provided by these motors include

- Flameproof Ex d, Ex de
- Non-sparking Ex nA
- Dust protection Ex t

The IECEx Conformity Mark License will considerably enhance ABB's ability to market its products globally. It complements ABB's existing ATEX approval.

Benefits of IECEx System for end users

A significant advantage of IECEx is that vendor certificates are available for inspection on the IECEx website. End users can therefore confirm the validity of IECEx certificates at any time - which is not possible with ATEX, for example. This increases end user confidence that the motor vendor will be committed to maintaining the necessary quality systems.

Under the quality based IECEx certification approach the interpretation of the standard is shared throughout the 30 participating countries and individual interpretations by Notified Bodies are not allowed. Another advantage of IECEx is that the Certificate of Conformity also covers EPL (equipment protection level) "c", see table on next page.

Which ABB motors and generators are IECEx certified?

All M3JP/M3KP 80–450 motors with protection types Ex d and Ex de, M3GP 80-450 with protection type Ex nA and M3GP 80-400 with protection type Ex t are IECEx certified.

Compliance on basis of recently updated standards

In complying with the ATEX 95 and ATEX 137 Directives, ABB follows the requirements of recently updated IEC and EN standards. Otherwise ABB follows the requirements of the IEC standards shown in the relevant certificates.

Main standards for explosive atmospheres:	
IEC/EN 60079-0	Equipment - General requirements
IEC/EN 60079-1	Equipment protection by flameproof enclosures "d"
IEC/EN 60079-7	Equipment protection by increased safety "e"
IEC/EN 60079-15	Equipment protection by type of protection "n"
IEC/EN 60079-31	Equipment dust ignition protection by enclosure "t"
IEC/EN 60079-14	Electrical installations design, selection and erection
IEC/EN 60079-17	Electrical installations inspections and maintenance
IEC/EN 60079-19	Equipment repair, overhaul and reclamation
IEC 60050-426	Equipment for explosive atmospheres
IEC/EN 60079-10	Classification of hazardous areas (gas areas)
IEC 60079-10-1	Classification of areas - Explosive gas atmospheres
IEC 60079-10-2	Classification of areas - Combustible dust atmospheres

Equipment protection levels (EPLs)

The latest revisions of the IEC and EN standards introduce the new concept of "equipment protection levels", which identify products according to the ignition risk they might cause. A motor's EPL therefore indicates its inherent ignition risk, regardless of its protection type. This makes the selection of equipment for different zones easier. EPLs also enable a true risk assessment approach, where the potential consequences of a possible explosion are taken into consideration. Please refer to the table on the next page for more information about EPLs and EPL markings.

All ABB's cast iron motors for explosive atmospheres, have already been certified according to the EPL standards.

Explosive atmospheres

There are systems in place worldwide to classify explosive atmospheres by zones, according to the risk posed by explosive gas (“G”) or dust (“D”).

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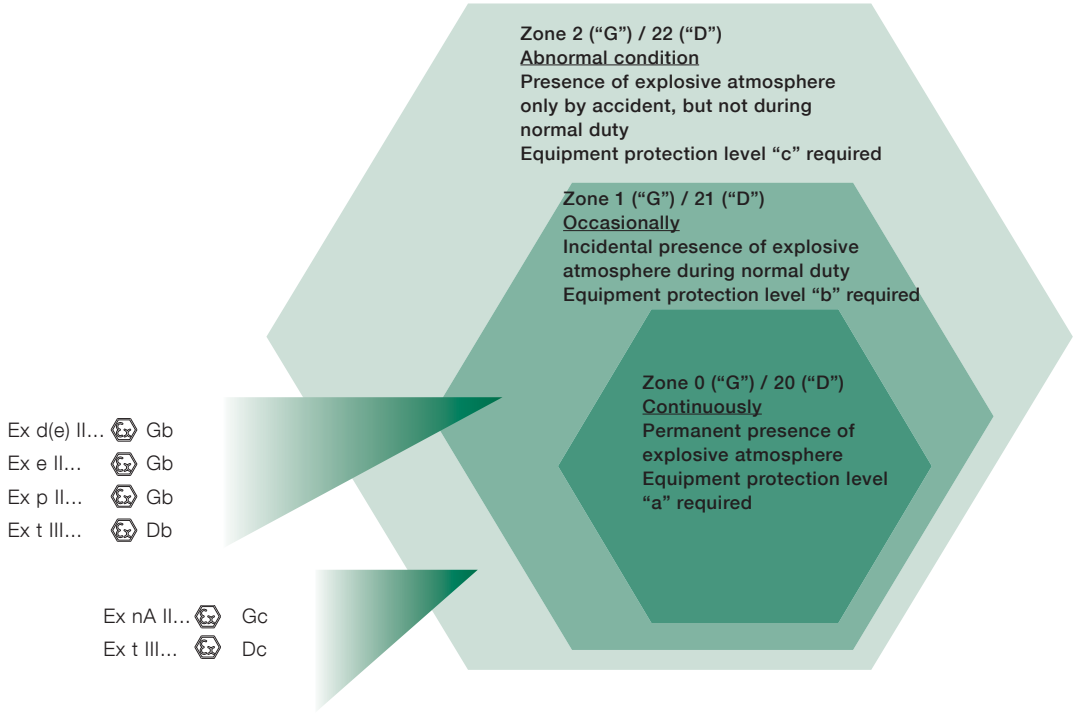
M000169



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Classification of explosive atmospheres according to CENELEC and IEC

The following standards define areas according to the presence of gas or dust in the atmosphere:

IEC/EN 60079-10-1 Gas
IEC/EN 60079-10-2 Dust

Standard IEC 60079-0 EN 60079-0			Installation Zone acc. to IEC 60079-10-x EN 60079-10-x	ATEX Directive 94/9/EC		Main motor protection types
Group	EPL	Protection level	Zones	Equipment group	Equipment category	
I	Ma	very high	NA	I	M1	NA
(Mines)	Mb	high		(Mines)	M2	
	Ga	very high	0		1G	NA
II	Gb	high	1		2G	Ex d/Ex de Ex p, Ex e
(Gas)	Gc	enhanced	2	II	3G	Ex nA
	Da	very high	20	(Surface)	1D	NA
III	Db	high	21		2D	Ex tb IP 65
(Dust)	Dc	enhanced	22		3D	Ex tc IP 65/IP 55

Marking of temperatures, gas groups and explosive atmospheres

To ensure equipment can be safely used in potentially explosive atmospheres, the explosive atmospheres where the equipment is installed must be known. The temperature class of equipment must be compared with the spontaneous ignition the equipment of the gas mixtures concerned, and in specific cases the gas group must be known (e.g. flame proof protection).

Classification

Gas classification

Tempera-ture class	Ignition temp. of gas/ vapor °C	Max. permitted temp. of equip-ment °C	Gas examples
T1	> 450	450	Hydrogen
T2	> 300 < 450	300	Ethanol
T3	> 200 < 300	200	Hydrogen sulfide
T4	> 135 < 200	135	Diethyl ether
T5	> 100 < 135	100	-
T6	> 85 < 100	85	Carbon disulfide

Gas subdivision

IIA	~120 gases and vapors, e.g. butane / petroleum / propane
IIB	~30 gases and vapors, e.g. ethylene / dimethyl ether / coke oven gas
IIC	three gases: hydrogen H_2/acetylene C_2H_2carbon disulfide CS_2

Marking of equipment protection for gas according to ATEX

CE Conformity marking

CE 0081 Ex II 2G

- CE marking
- Identification of the notified body responsible for the approval. 0081 is the identification number of LCIE
- The European Commission mark for Ex products
- Equipment group: II for surface industry
- Equipment category: 2G for gas environment demanding a high level of protection

Equipment protection marking for gas:

Ex d IIB T4 Gb

- Protection type Ex d = flameproof
- Equipment group IIB for gas group B
- Temperature class T4 = max. permitted 135 °C
- Equipment protection level = level b for gas

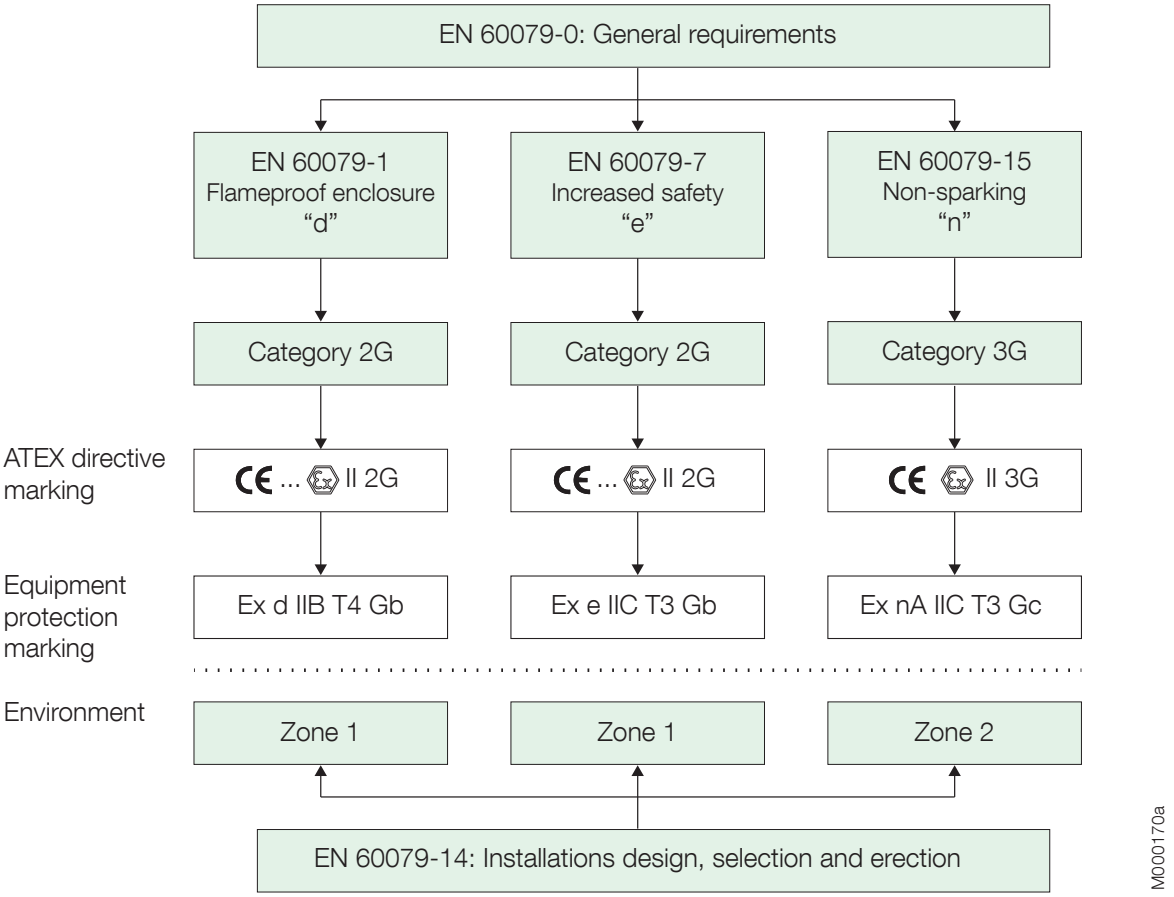
Marking of equipment protection for gas according to IEC

Example for gas:

Ex d IIB T4 Gb

- Protection type Ex d = flameproof
- Equipment group IIB for gas group B
- Temperature class T4 = max. permitted 135 °C
- Equipment protection level = level b for gas

Selection of products for explosive atmospheres EN Standard and ATEX Directive for gas environments



General information about explosive atmospheres

Preamble

In explosive atmospheres, it is of the utmost importance to ensure the safe use of electrical apparatus. To this end, many countries have regulations concerning both the design and use of such apparatus. These regulations are becoming increasingly harmonized within the framework of IEC recommendations and European Standards. The hazard may be due to an explosive atmosphere composed of a mixture of gas, vapors or dusts with air. This section is concerned only with safety in explosive gas atmospheres for which European Standards and IEC recommendations exist.

Flameproof enclosure Ex d and Ex de

The motor enclosure is designed in such a way that no internal explosion can be transmitted to the explosive atmosphere surrounding the motor. The enclosure must withstand, without damage, any pressure levels caused by an internal explosion. The shape, length and gap of joints of part assemblies, at shaft openings, cable entries, etc., shall be designed to allow for throttling and cooling of hot gases escaping outside. The standards emphasize the impact of an explosive atmosphere (for instance, explosion pressure) over constructional requirements of such apparatus.

Work on accessories of enclosure componenets is only permitted using prescribed tools. Cable entries must meet the requirements of this type of protection.

The temperature of the motor's external enclosure shall not exceed the self-ignition temperature of the explosive atmosphere of the installation area during operation. For this reason, rated output depends on this rated maximum temperature for the area in question.

No motor device outside the flameproof enclosure (e.g., ventilator) shall be a potential source of sparks, arcs or dangerous overheating.

Variants combining two types of protection usually combine “d” and “e” protection. The motor is designed with an Ex d flameproof enclosure, while the terminal box features Ex e increased safety protection. Such design combines the superior safety degree of the “d” type of protection with the high electrical connection requirements of increased safety motors.

Alleinschutz – thermistors as sole protection (optional)

Flameproof motors from ABB have been designed to use thermistors as the sole method of protection against overload. This construction, “Alleinschutz”, is available as an option, see variant codes.

“Alleinschutz” refers to the protection of a flameproof motor by a protective device which is triggered by thermistors. The thermistors and relays will switch off the motor in case of overheating before the temperature of the motor's external enclosure exceeds the temperature marking stamped on the rating plate.

Each motor ordered with thermistors as sole protection will be tested, with locked rotor, up to the point where the thermistors trigger the relay to turn off the motor. At the triggering temperature, the motor has to be within the certified temperature class limit.

Only approved relays can be used for “Alleinschutz”.

Please note that sizes 315 to 450 require special technical solutions, consult ABB.

Dual certification

Ex d/de motors can also be used for Dust/Ex t applications in zone 21. The following combinations are possible:

- Ex tb IIIB T125 °C Db, IP 65 for zone 21 + Ex d/de IIB/C T3 Gb
- Ex tb IIIC T125 °C Db, IP 65 for zone 21 + Ex d/de IIB/C T3 Gb

These features are possible due to the IP protection.

The ingress of dust is prevented and thus only the outside surface temperature class is important for both applications; T4 (=135 °C) for gas and T125 °C for dust.

Increased safety design, Ex e

The design of this motor type prevents the occurence in operation (including starting and locked rotor situations), in all inner and outer parts of the machine, of sparks, arcs or hot spots that could reach the self-ignition temperature of the surrounding, potentially explosive atmosphere.

This is ensured by applying constructional or dimensional provisions that mainly concern:

- specified minimum values for creepage distances and clearances
- use of tracking-proof isolating materials
- suppression of sharp angles where static electrical loads could build-up
- ensuring electrical and mechanical assemblies are tightly secured
- minimum backlash values between stationary and rotating parts (e.g. air gap, ventilator, etc.)
- temperature-rise limits, taking into account locked rotor, normal operation, accidental mechanical stalling of machine under the most adverse thermal conditions, i.e. when thermal equilibrium of machine is reached while in service.

Temperature rise limits should be considered for two operating aspects; normal operating conditions and accidental stalling conditions.

Temperature rise limits under normal operating conditions

The expected electrical lifespan of a motor depends on its temperature rise for a given insulation class, and on the motor winding temperature, during operation, which is not homogeneous due to the appearance of hot spots. For these reasons, a safety margin of 10 K is allowed between the winding's temperature rise at rated output, as measured by the change of resistance method, and the maximum temperature rise permitted by the winding insulation class.

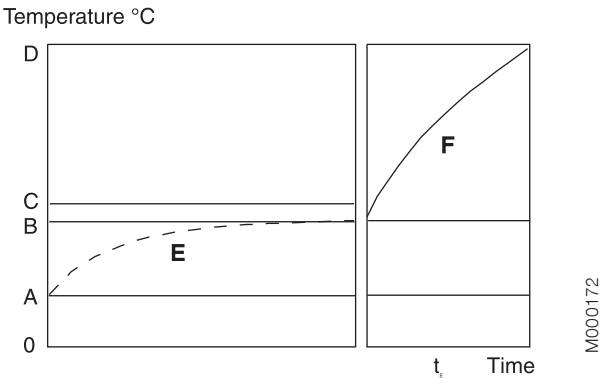


Figure 1.

O = Temperature 0 °C
A = Max. ambient temperature, reference 40 °C
B = Temperature at rated load and under worst voltage conditions
C = Max temperature as permitted by the insul. class
D = Max limit temperature as set by the nature of the potentially explosive atmosphere
E = Temperature-rise curve of motor at rated output and under worst voltage conditions
F = Temp. rise curve under stalled rotor conditions
t_E = Stalled rotor time

Temperature rise limits during short circuit under accidental stalling conditions

Should the machine stall while in operation, a shortcircuit current nearly equal to the starting current will develop, and stator and rotor winding temperatures will rise rapidly (see Figure 1).

To prevent this temperature value from exceeding the maximum limit temperature as set by the nature of the potentially explosive atmosphere (D in Figure 1), protection devices must trip within a specified time (t_E). This tripping time depends on the short-circuit current level or the short-circuit current to rated current ratio (I_A/I_N). Figures 2 and 3 show, for commonly used protection devices, the limiting ratio between short-circuit current inrush I_A/I_N and rotor stalling time t_E, according to the EN and IEC standards and "VIK" specification. VIK is an industry specification originating in Germany.

This type of protection is inappropriate for commutator machines or brake-motors which, by principle, are capable of producing arcs, sparks or hot spots.

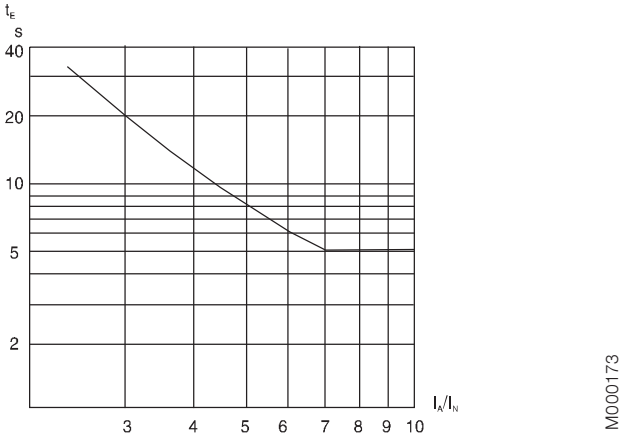


Figure 2. Min. value of time t_E as a function of I_A/I_N acc. to IEC/EN 60019-7

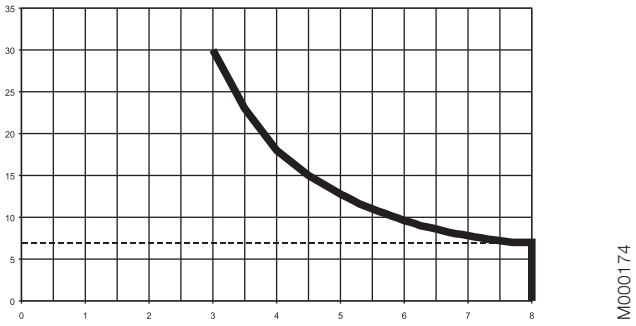


Figure 3. Min. value of time t_E as a function of I_A/I_N acc. to VIK.

Non-sparking design, Ex nA

The use of this type of protection is allowed in hazardous areas corresponding to zone 2. The design is known as "non-sparking" because the motor must be designed in such a way that no sparks can occur in any conditions, when used within the ratings specified by the manufacturer, and that no excessive temperatures occur under normal operating conditions, which excludes thermal requirements due to starting or accidental stalling.

Ex nA motors are certified according to the ATEX 95 Directive with a "voluntary type examination certificate", and according to the IEC Ex System with a normal certificate.

ABB also provides self-certified non-sparking motors, with a manufacturer Declaration of Conformity.

Dual certification

Ex nA motors with a cast iron frame can also be used for Dust/ Ex t –applications in zone 22. The following combinations are possible:

– Ex tc IIIB T125 °C Dc, IP 55 for zone 22 + Ex nA IIC T3
– Ex tc IIIC T125 °C Dc, IP 65 for zone 22 + Ex nA IIC T3

These features are possible due to the IP protection. Gases penetrate this protection, and thus the inside surface temperature class is T3 (200 °C). The ingress of dust, however, is prevented and dust determines the outside surface temperature class: T125°C.

Risk assessment and gas tests

Non-sparking (Ex nA) and increased safety (Ex e) motors have to meet tough requirements with regard to sparking. The latest IEC and EN standards specify criteria for risk assessment and gas environment tests for rotor and stator designs to show that the motors are spark-free in all operational conditions.
By testing and securing certification for its motors, ABB is helping to streamline the risk assessment process for its customers.

The alternative to testing and certification involves, in the majority of cases, equipping the motor with provision for pre-start ventilation. This means investing in a higher capacity air compressor, piping, and a ventilation control unit. It also requires an additional operation – pre-start ventilation – every time the motor is started.

Benefits of the ABB approach therefore include reduced initial capital expenditure, lower operating costs, and faster starting. Reliability is improved as no additional components are required. Most importantly, ABB's certified motors offer proven safety.

ABB's approach to meeting the new requirements

Following a program of gas environment tests in which all rotor and stator tests were passed, ABB has secured certification for its low voltage cast iron motors for explosive atmospheres with aluminum die cast rotor.

Dust ignition protection / Protection by enclosures "t" in explosive atmospheres

Combustible dust is hazardous as it can form potentially explosive atmospheres when dispersed in air. Furthermore, layers of combustible dust may ignite and act as an ignition source for an explosive atmosphere. Explosive atmospheres with dust can be found in a variety of industries such as agriculture, chemicals, plastics, food and beverage.

Selection and installation of electrical equipment

To ensure equipment can be safely used in explosive atmospheres with dust, it is vital that the following issues are taken into account when selecting product:

1. Type of dust:
- Will a cloud of dust be present around the product or
- will a layer of dust build up on the product and if so, what will be the maximum thickness of the layer between two cleaning/maintenance procedures.

2. Characteristics of the dust:
- Is the dust electrically conductive or non-conductive?

3. Ignition temperature of the dust:
- T_{Cl}: Ignition temperature of dust in a "cloud" or
- T_{5mm}: Ignition temperature of a 5 mm dust layer

Selection and installation of the product according to IEC/EN60079 part 14: Electrical installations design, selection and erection. Please see the tables on the pages 12 and 13.

This protection prevents any explosion of dust because:

- The ingress of dust into the motor is prevented by the IP protection, being either IP 55 ("dust protected") or IP 65 ("dust tight").
- The maximum surface temperature outside the motor must not exceed the temperature class for which the motor is certified.
- No sparks must occur outside the motor enclosure.

Certification: Ex tb IIIB/C T...°C Db (for zone 21) motors are certified according to ATEX with an EC type examination certificate and according to the IEC Ex System. Ex tc IIIB/C T...°C Dc (for zone 22) motors are certified according to ATEX with a "voluntary type examination certificate" and according to the IEC Ex System.

Dust classification

		T_{CL} (cloud) °C	T_{5mm} (layer) °C	Surface temperature provided that dust layer below 5 mm
Food/Feeder industry	Wheat	350	270	195
	Barley, corn	380	280	205
	Sugar	350	430	233
Natural materials	Wood	330	280	205
	Charcoal	520	230	195
	Hard coal	460	240	165
Chemicals	PVC	450	330	255
	Synth. rubber	470	220	145
	Sulfur	240	250	160

Source BIA-report 13/97 HVBG

Dust subdivisions

IIIA	combustible flyings
IIIB	non-conductive dust
IIIC	conductive dust

Marking of equipment protection for dust according to ATEX

CE Conformity marking

CE 0081 Ex II 2 D

- CE marking
- Identification of the notified body responsible for the approval. 0081 is the identification number of LCIE
- The European Commission mark for Ex products
- Equipment group: II for surface industry
- Equipment category: 2D for dust environment demanding a high level of protection

Equipment protection for dust:

Ex tc IIIC T125 °C Dc

- Protection by enclosure
- Equipment group IIIC for conductive dust
- Temperature class
- Equipment protection level = level c for dust

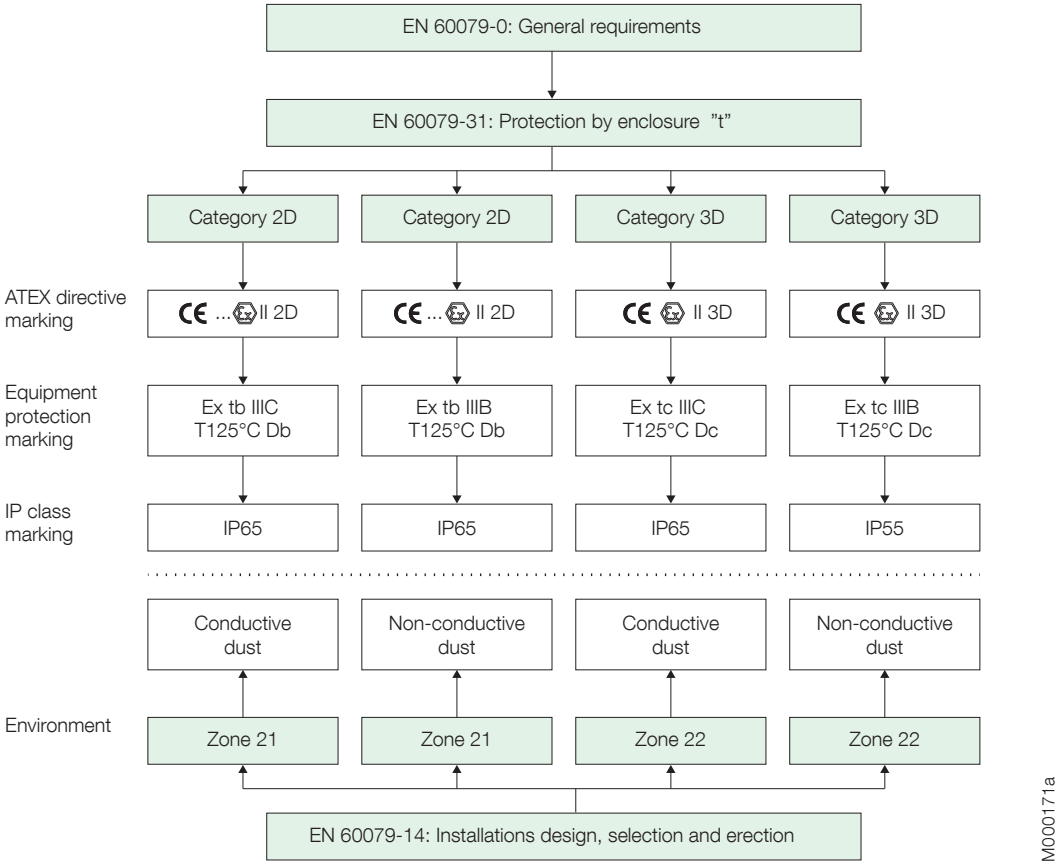
Marking of equipment protection for dust according to IEC

Example for dust:

Ex tc IIIC T125 °C Dc

- Protection by enclosure
- Equipment group IIIC for conductive dust
- Temperature class
- Equipment protection level = level c for dust

Selection of products for explosive atmospheres EN Standard and ATEX Directive for dust environments



Testing and certificates

Motors for explosive atmospheres have to be officially approved by a recognized test organization, authorized to issue test certificates, to ensure compliance with standards for this type of equipment.

ABB low voltage motors for explosive atmospheres are classified according to the categories, protection types and equipment protection type which are specified in the relevant standards.

Depending on the nature of the potentially explosive atmosphere, it is the responsibility of the user to determine which group and which maximum surface temperature should be specified for the motor installation.

The motors are rated and certified for ambient temperature between –20 °C and +40 °C according to standards. For ambient temperatures below –20 °C and above +40 °C certificates are available for most of the motors.

ABB's motors conform to the stringent standards set by CENELEC (European Committee for Electrotechnical Standardization) and IEC (International Electrotechnical Commission), and are approved by testing laboratories (ExNB/Notified Body) and certification bodies (ExCB).

The motors can be certified according to the ATEX Directive by any of the Notified Bodies "ExNB" of EU member countries. These motors are therefore acceptable in all EU countries and many other countries. In addition, IECEx certificates are available for the motors. These certificates can be issued by any registered IECEx certification body (ExCB) worldwide.

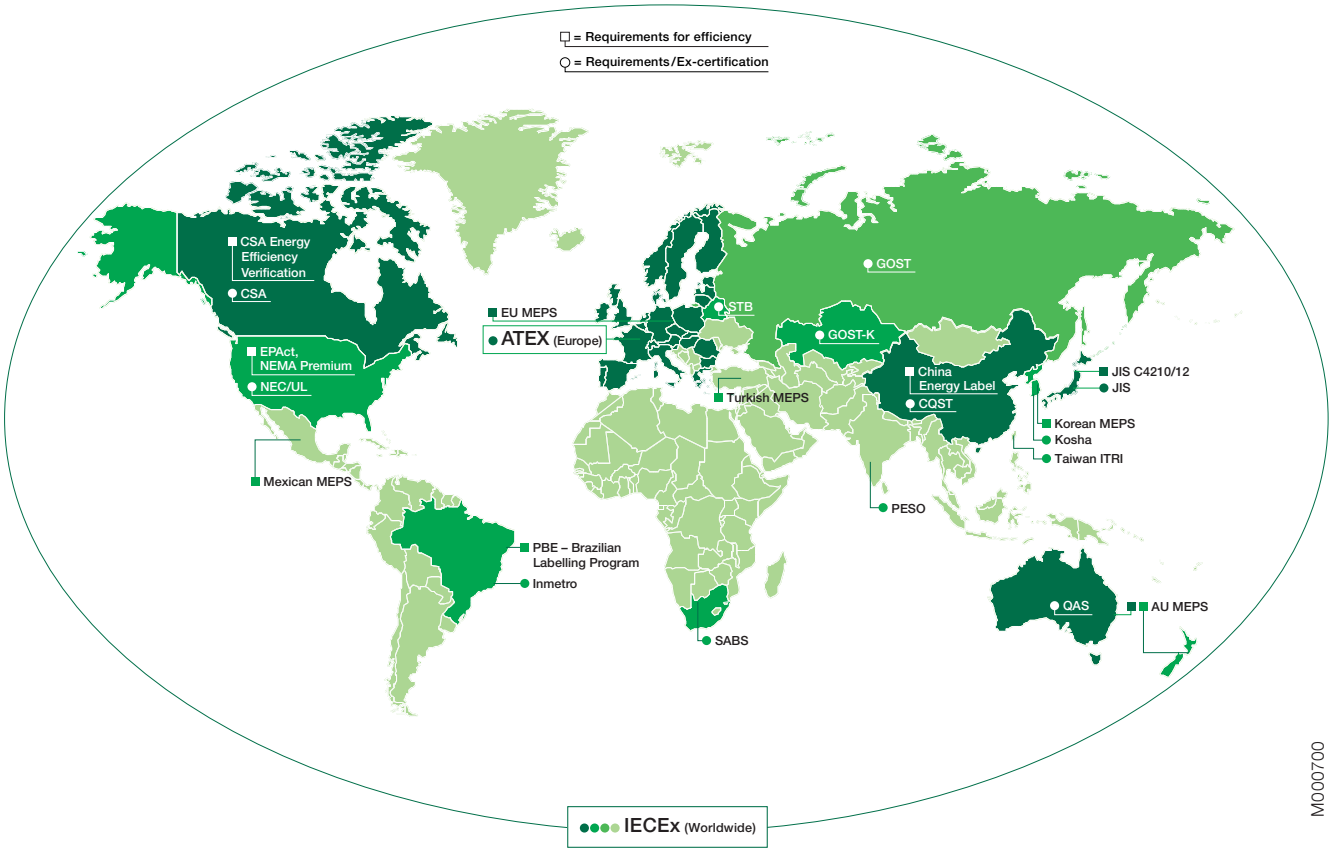
Typical national certificates available include GOST-R for Russia, GOST-K for Kazakhstan, INMETRO for Brazil and CQST for China. KOSHA certification for Korea is different, because the organization importing the motor to Korea has to apply on a case-by-case basis, and ABB delivers the required documentation to KOSHA in order to receive certification. Such national certifications are mainly obtained on the basis of IECEx or ATEX.

International motor efficiency standards

Since the validation of standard IEC/EN 60034-30, a worldwide energy efficiency classification system has existed for low voltage three-phase asynchronous motors. This system increases the level of harmonization in efficiency regulations around the world and it also covers motors for explosive atmospheres. IEC/EN 60034-30:2008 defines International Efficiency (IE) classes for single speed, three-phase, 50 and 60 Hz induction motors. The standard is part of an effort to unify motor testing procedures as well as efficiency and product labeling requirements to enable motor purchasers worldwide to easily recognize premium efficiency products. The efficiency levels defined in IEC/EN 60034-30 are based on test methods specified in IEC/EN 60034-2-1:2007.

To promote transparency in the market, IEC 60034-30 states that both the efficiency class and efficiency value must be shown on the motor rating plate and in product documentation. The documentation must clearly indicate the efficiency testing method used as the different methods can produce differing results.

As the scope of IEC/EN 60034-30 also covers for explosive atmospheres, these motors can be labeled with the IE -code. Ex-motors are already included in many MEPS (Minimum Energy Performance Standard) schemes around the world; Australia, the US, Canada, China, Korea and Brazil.



IEC/EN 60034-30:2008

IEC/EN 60034-30:2008 defines three International Efficiency (IE) classes for single speed, three-phase, cage induction motors. Additionally, IEC/TS 60034-31 specifies efficiency class IE4.

- IE1 = Standard efficiency (EFF2 in the former European classification scheme)
- IE2 = High efficiency (EFF1 in the former European classification scheme and identical to EPAct in the USA for 60 Hz)
- IE3 = Premium efficiency (identical to “NEMA Premium” in the USA for 60 Hz)
- IE4 = Super premium, according to IEC/TS 60034-31

Efficiency levels defined in IEC/EN 60034-30 are based on test methods specified in IEC/EN 60034-2-1:2007.

Compared to the former European efficiency classes defined by the CEMEP agreement the scope has been expanded.

IEC/EN 60034-30 covers almost all motors (for example standard, hazardous area, marine, brake motors)

- Single speed, three-phase, 50 Hz and 60 Hz
- 2-, 4- or 6-pole
- Rated output from 0.75 to 375 kW
- Rated voltage U_N up to 1000 V
- Duty type S1 (continuous duty) or S3 (intermittent periodic duty) with a rated cyclic duration factor of 80 % or higher
- Capable of operating direct online

The following motors are excluded from IEC 60034-30:

- Motors made solely for converter operation
- Motors completely integrated into a machine (for example, pump, fan or compressor) that cannot be tested separately from the machine

Minimum efficiency values defined in IEC 60034-30:2008 (based on test methods specified in IEC 60034-2-1:2007)

	IE1			IE2			IE3		
Output	Standard efficiency			High efficiency			Premium efficiency		
kW	2 pole	4 pole	6 pole	2 pole	4 pole	6 pole	2 pole	4 pole	6 pole
0.75	72.1	72.1	70.0	77.4	79.6	75.9	80.7	82.5	78.9
1.1	75.0	75.0	72.9	79.6	81.4	78.1	82.7	84.1	81.0
1.5	77.2	77.2	75.2	81.3	82.8	79.8	84.2	85.3	82.5
2.2	79.7	79.7	77.7	83.2	84.3	81.8	85.9	86.7	84.3
3	81.5	81.5	79.7	84.6	85.5	83.3	87.1	87.7	85.6
4	83.1	83.1	81.4	85.8	86.6	84.6	88.1	88.6	86.8
5.5	84.7	84.7	83.1	87.0	87.7	86.0	89.2	89.6	88.0
7.5	86.0	86.0	84.7	88.1	88.7	87.2	90.1	90.4	89.1
11	87.6	87.6	86.4	89.4	89.8	88.7	91.2	91.4	90.3
15	88.7	88.7	87.7	90.3	90.6	89.7	91.9	92.1	91.2
18.5	89.3	89.3	88.6	90.9	91.2	90.4	92.4	92.6	91.7
22	89.9	89.9	89.2	91.3	91.6	90.9	92.7	93.0	92.2
30	90.7	90.7	90.2	92.0	92.3	91.7	93.3	93.6	92.9
37	91.2	91.2	90.8	92.5	92.7	92.2	93.7	93.9	93.3
45	91.7	91.7	91.4	92.9	93.1	92.7	94.0	94.2	93.7
55	92.1	92.1	91.9	93.2	93.5	93.1	94.3	94.6	94.1
75	92.7	92.7	92.6	93.8	94.0	93.7	94.7	95.0	94.6
90	93.0	93.0	92.9	94.1	94.2	94.0	95.0	95.2	94.9
110	93.3	93.3	93.3	94.3	94.5	94.3	95.2	95.4	95.1
132	93.5	93.5	93.5	94.6	94.7	94.6	95.4	95.6	95.4
160	93.7	93.8	93.8	94.8	94.9	94.8	95.6	95.8	95.6
200	94.0	94.0	94.0	95.0	95.1	95.0	95.8	96.0	95.8
250	94.0	94.0	94.0	95.0	95.1	95.0	95.8	96.0	95.8
315	94.0	94.0	94.0	95.0	95.1	95.0	95.8	96.0	95.8
355	94.0	94.0	94.0	95.0	95.1	95.0	95.8	96.0	95.8
375	94.0	94.0	94.0	95.0	95.1	95.0	95.8	96.0	95.8

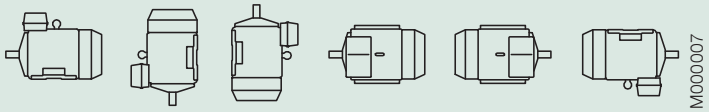
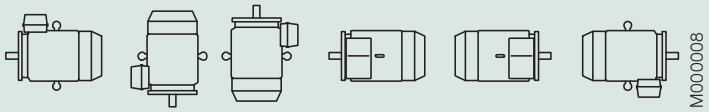
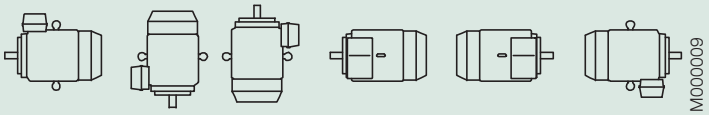
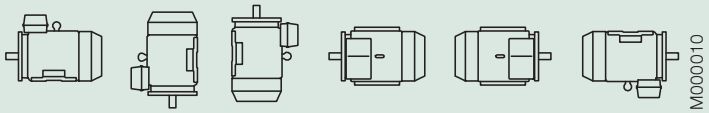
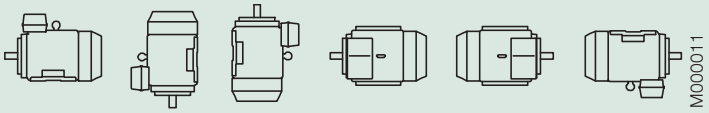
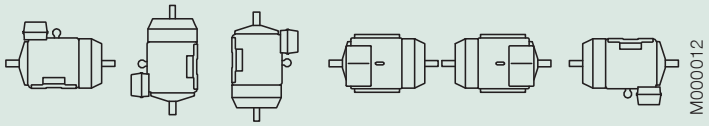
ABB and efficiency standards

As a global player committed to supplying safe, reliable and efficient motors, ABB designs and labels its motors for explosive atmospheres to comply with international efficiency standards published by the IEC. ABB determines efficiency values according to IEC/EN 60034-2-1 using the low uncertainty method (i.e. indirect method), with additional load losses determined by measurement.

As the world market leader, ABB offers the largest range of LV motors available. It has long advocated the need for efficiency in motors, and high efficiency products have formed the core of its portfolio for many years. The core of ABB's Ex range is based on a full range of IE2 motors – with many available from stock. Premium efficiency IE3 motors are also available for a major part of the range.

Low voltage general technical specification
Mechanical and electrical design

Mounting arrangements

	Code I/Code II						Product code pos. 12
Foot-mounted motor.	**IM B3** **IM 1001**	**IM V5** **IM 1011**	**IM V6** **IM 1031**	**IM B6** **IM 1051**	**IM B7** **IM 1061**	**IM B8** **IM 1071**	A = foot-mounted, term.box top R = foot-mounted, term.box RHS L = foot-mounted, term.box LHS
	 M000007						
Flange-mounted motor, large flange	**IM B5** **IM 3001**	**IM V1** **IM 3011**	**IM V3** **IM 3031**	***)** **IM 3051**	***)** **IM 3061**	***)** **IM 3071**	B = flange mounted, large flange
	 M000008						
Flange-mounted motor, small flange	**IM B14** **IM 3601**	**IM V18** **IM 3611**	**IM V19** **IM 3631**	***)** **IM 3651**	***)** **IM 3661**	***)** **IM 3671**	C = flange mounted, small flange
	 M000009						
Foot- and flange-mounted motor with feet, large flange	**IM B35** **IM 2001**	**IM V15** **IM 2011**	**IM V36** **IM 2031**	***)** **IM 2051**	***)** **IM 2061**	***)** **IM 2071**	H = foot/flange-mounted, term.box top S = foot/flange-mounted, term.box RHS T = foot/flange-mounted, term.box LHS
	 M000010						
Foot- and flange-mounted motor with feet, small flange	**IM B34** **IM 2101**	**IM V17** **IM 2111**	**IM 2131**	**IM 2151**	**IM 2161**	**IM 2171**	J = foot/flange-mounted, small flange
	 M000011						
Foot-mounted motor, shaft with free extensions	**IM 1002**	**IM 1012**	**IM 1032**	**IM 1052**	**IM 1062**	**IM 1072**	
	 M000012						

*) Not stated in IEC 60034-7.

Note: In the case of motors mounted with the shaft upwards , the user must provide some means to prevent water or other liquids from running down the shaft where this is expected to occur.

Voltage and frequency

The table values for output, speed, efficiency, power factor, starting torque and starting current apply at the rated voltage and frequency. These values will be affected if the supply voltage or frequency deviate from the rated values.

The motors can operate continuously at the rated output, with a long-term voltage deviation of 5 % from the specified value or range of values, and at the rated frequency without exceeding the temperature class stamped on the rating plate. The temperature rise of the winding may increase by 10 K, but without exceeding the insulation temperature class stamped on the rating plate. Voltage deviations of up to 10 % are permissible for short periods only.

If the motor is subject to continuous voltage variations of +/- 10 % this should be taken into consideration in the design. The permitted combinations of voltage and frequency tolerances are specified in IEC60034-1.

Surface treatment

ABB cast iron motors for explosive atmospheres are provided as standard with a painting system that corresponds to corrosion category C3M specified by ISO/EN 12944:2. ISO/EN 12944 divides durability into 3 ranges: low (L), medium (M) and high (H). Low (L) durability corresponds to 2-5 years, medium (M) to 5-15 years and high (H) to more than 15 years. ABB surface treatment corresponds to medium (M) durability.

Durability does not represent a guaranteed time span. Instead it is a technical consideration that can help the owner to set up a maintenance program. Maintenance is often required at more frequent intervals because of fading, chalking, a compination of factors, or wear and tear, or for other reasons.

Other corrosion categories (C4M and C5M) are available as options. In addition surface treatment according to Norsok requirements (755) for offshore environments is available as an option. Please see the variant code section for exact availability.

The standard ABB colour is Munsell Blue 8B 4.5/3.25. Other colours are available and can be ordered with variant code 114.

Classification of atmospheric environments according to ISO 12944:2 based on thickness loss.

Corrositivity categories	Outdoor atmospheres	Indoor atmospheres	ABB
C1 - Very low	-	Heated buildings with clean atmospheres, e.g. offices, shops, schools, hotels.	
C2	Atmospheres with low level of pollution. Mostly rural areas.	Unheated buildings where condensation may occur e.g. depots, sport halls	
C3 - Medium	Urban and industrial atmospheres, moderate sulfur dioxide pollution. Coastal areas with low salinity.	Production rooms with high humidity and some air pollution e.g. food-processing plants, laundries, breweries, dairies	Standard surface treatment
C4- High	Industrial areas and coastal areas with moderate salinity.	Chemical plants, swimming pools, coastal ship- and boatyards.	Optional surface treatment with variant code 115
C5-I - Very high	Industrial areas with high humidity and aggressive atmosphere.	Buildings or areas with almost permanent condensation and with high pollution.	
C5-M - Very high	Coastal and offshore areas with high salinity.	Buildings or areas with almost permanent condensation and with high pollution.	Optional surface treatment with variant code 754

Bearings

ABB policy regards reliability as a vital issue in bearing design as well as in bearing lubrication systems. ABB therefore, as standard, follows the L_1-principle for calculating regreasing intervals (meaning that 99 per cent of the bearings achieve or exceed the calculated grease lifetime). Lubrication intervals can also be calculated according to the L_{10} -principle, which means that 90 per cent of the motors are certain to achieve the interval time. L_{10} -values, which are normally double the L_1 -values, are available from ABB on request.

Motors with permanently greased bearings

Cast iron motors up to frame size 132 and aluminum motors up to frame size 250 are normally fitted with permanently greased bearings of type Z or 2Z. The exception is 2D DIP motors with aluminum frame sizes 63 to 132, which are fitted with 2RS bearings because higher protection is required.

Guidelines for bearing life time according to the L_1 principle:
Aluminum motors

- 2 pole motors, 10 000 - 20 000 duty hours [1)]
- 4 to 8 pole motors, 20 000 - 40 000 duty hours [1)]

Cast iron motors

- 2 pole motors, 20 000 duty hours [1)]
- 4 to 8 pole motors, 40 000 duty hours [1)]

[1)] depending on application and load conditions.

Motors fitted with grease nipples

Cast iron motors from frame size 160 are fitted with regreasable bearings as standard..

Lubricate the motor when operating.

For motors with lubrication systems it is recommended that a lubrication interval of two years is not exceeded in any case.

Lubrication

Lubricate the motor when operational. If a grease outlet plug is fitted, temporarily remove it when lubricating, or permanently remove it with auto lubrication. If the motor is fitted with a lubrication plate, use the values given, or use the values given in the table on the next page. These values are according to the L_1 -principle, which is the ABB standard for all motors.

The effectiveness of the motor lubrication should be checked by measuring the surface temperature of the bearing endshields during normal operating conditions.

If the measured temperature is +80 °C or above, the relubrication intervals must be shortened; i.e. the relubrication interval should be halved for every 15K increase in bearing temperature. If this is not possible, ABB recommends the use of lubricants suitable for high operating temperatures. These lubricants allow a normal relubrication interval and 15K increase in bearing temperature conditions.

The following formula can be used to roughly convert L_1 values to L_{10} values:

$$L_{10} = 2.0 \times L_1$$

Lubrication intervals according to L_1 principle

Frame size	Amount of grease g/DE-bearing	Amount of grease g/NDE-bearing	3600 r/min	3000 r/min	1800 r/min	1500 r/min	1000 r/min	500-900 r/min
Ball bearings								
Lubrication intervals in duty hours								
160	13	13	7100	8900	14300	16300	20500	21600
180	15	15	6100	7800	13100	15100	19400	20500
200	20	15	4300	5900	11000	13000	17300	18400
225	23	20	3600	5100	10100	12000	16400	17500
250	30	23	2400	3700	8500	10400	14700	15800
280	35	35	1900	3200	–	–	–	–
280	40	40	–	–	7800	9600	13900	15000
315	35	35	1900	3200	–	–	–	–
315	55	40	–	–	5900	7600	11800	12900
355	35	35	1900	3200	–	–	–	–
355	70	40	–	–	4000	5600	9600	10700
400	40	40	1500	2700	–	–	–	–
400	85	55	–	–	3200	4700	8600	9700
450	40	40	1500	2700	–	–	–	–
450	95	70	–	–	2500	3900	7700	8700
Roller bearings								
Lubrication intervals in duty hours								
160	13	13	3600	4500	7200	8100	10300	10800
180	15	15	3000	3900	6600	7500	9700	10200
200	20	15	2100	3000	5500	6500	8600	9200
225	23	20	1800	1600	5100	6000	8200	8700
250	30	23	1200	1900	4200	5200	7300	7900
280	35	35	900	1600	–	–	–	–
280	40	40	–	–	4000	5300	7000	8500
315	35	35	900	1600	–	–	–	–
315	55	40	–	–	2900	3800	5900	6500
355	35	35	900	1600	–	–	–	–
355	70	40	–	–	2000	2800	4800	5400
400	40	40	–	1300	–	–	–	–
400	85	55	–	–	1600	2400	4300	4800
450	40	40	–	1300	–	–	–	–
450	95	70	–	–	1300	2000	3800	4400

The values above are valid for horizontal mounting motors and maximum bearing operating temperature + 80 °C (ambient +25 °C). Refer to the motor manual Low voltage Motors for explosive atmospheres for more information.

Transport locking

Motors with roller bearings or angular contact ball bearings are fitted with a transport lock before despatch to prevent damage to the bearings during transport. When the transport lock is fitted, the motor is provided with a warning sign.

Locking may also be fitted in other cases where handling during transport could cause damage.

Axially-locked bearings

The table below shows axial locking of the bearings. See also variant code 042.

Aluminum motors

Motor size	Foot-mounted motors	Flange-mounted motors	
		Large flange	Small flange
71-132	D-end	D-end	D-end
160-280	D-end	D-end	-

Cast iron motors

Motor size	Foot-mounted motors	Flange-mounted motors
Non-sparking and Increased safety motors:		
71-450	D-end	D-end
Flameproof motors:		
80-450	D-end	D-end

Axial and radial forces

Please see separate sections. Detailed information about permissible loadings on the shaft end can be found under each motor protection type.

Low voltage motors and frequency converters for explosive atmospheres

Frequency converters provide significant benefits when used with motors for explosive atmospheres. The advantages include better process control through regulation of the motor speed, as well as energy savings, and therefore improved environmental performance.

Certain criteria must be taken into account to ensure the safety of the frequency converter and motor combination, as well as the maximum usability of the application. The requirements depend on the protection type in use and whether the motor is regarded as being one component within a wider system or a separate subsystem.

ABB offers motors for explosive atmospheres for use with variable speed drives with the following protection types: flameproof, increased safety (on request), non-sparking, and dust ignition protection. These motors are designed and certified for operation with frequency converters. Instructions for the different protection types, as well as for the most common types of converter, are provided below. If further information is needed, please do not hesitate to contact ABB.

A. Main requirements for hazardous area motors used with variable speed drives

1. Flameproof motors (Ex d, Ex de)

The standards specify that the motor must be dimensioned so that its maximum outer surface temperature is limited according to the temperature class. In most cases this requires either type tests or control of the outer surface temperature of the motor.

Most ABB flameproof motors for temperature class T4 have been type tested with ABB ACS800 converters utilizing Direct Torque Control (DTC) as well as with ABB ACS550 frequency converters, and these combinations can be selected using the loadability curves shown in Figures 2 and 4. Combined tests with the above mentioned converters are needed only if the limits of the loadability curves are exceeded. On such cases separate certification of the motor and converter combination may also be required.

In the case of other voltage source converters using pulse width modulation (PWM) with scalar or vector control, combined tests are needed to confirm the correct thermal performance of the motor. These tests can be avoided if the motor is fitted with thermal sensors to control the surface temperature. Such motors have the following additional markings on their rating plate: -“PTC” with the tripping temperature and “DIN 44081/82”.

In the case of voltage source PWM converters, with a minimum switching frequency of 3 kHz or higher, the instructions provided in section B/2.4 can be used for preliminary dimensioning.

For more information on using flameproof motors for temperature classes T5 and T6 with variable speed drives, please contact ABB.

2. Increased safety motors (Ex e)

The motor should always be tested together with the specified converter, and ABB therefore does not recommend the use of low voltage increased safety motors with variable speed drives.

3. Non-sparking motors (Ex nA)

According to the standards, the combination of motor and converter must be tested as a unit with the specified converter or a comparable one or dimensioned by calculation.

ABB non-sparking cast iron motors have been type tested with ABB ACS800 converters utilizing DTC control as well as with ABB ACS550 converters, and these combinations can be selected using the dimensioning instructions provided in section B/2.2. Combined tests with the above mentioned ACS800 and ACS550 converters are needed only if the limits of the loadability curves are exceeded. In such cases separate certification of the motor and converter combination may also be required.

In the case of other voltage source PWM converters, combined tests are needed to confirm the correct thermal behavior of the motor. For preliminary dimensioning purposes, the instructions provided in section B/2.4 can be used. The final values must be verified by combined tests.

4. Dust ignition protection motors (Ex t)

The standards specify that the motor must be dimensioned so that its maximum outer surface temperature is limited according to the temperature class (e.g. T125 °C or T150 °C). For more information on temperature classes lower than 125 °C, please contact ABB.

ABB Ex t motors (T125 °C and T150 °C) have been type tested with ACS800 converters utilizing DTC control as well as with ABB ACS550 converters, and these combinations can be selected using the dimensioning instructions provided in section B/2.4. Combined tests with above mentioned ACS800 and ACS550 converters are needed only if the limits of the loadability curves are exceeded. On such cases also separate certification of the motor and converter combination may be required.

In the case of any other voltage source PWM converter, combined tests are needed to confirm the correct thermal performance of the motor. These tests can be avoided if the motor is fitted with thermal sensors to control the surface temperature. Such motors have the following additional markings on their rating plate: -“PTC” with the tripping temperature and “DIN 44081/82”.

In the case of voltage source PWM converters with a minimum switching frequency of 3 kHz or higher, the instructions provided in section B/2.2 can be used for preliminary dimensioning.

B. Other safety criteria

These criteria are imposed by the competent bodies in order to ensure the safe use of motors with converters in explosive atmospheres.

1. Type tests and certification

ABB has type tested and certified the complete range of Ex d, Ex de, Ex nA and Ex t motors for operation with frequency converters. On request, ABB can supply type test reports based on the test procedure specified by the Notified Bodies for a representative number of motors with ACS800 and ACS550 converters.

For other voltage source PWM converters, in most cases a combined type test is required to ensure safe operation.

2. Motor dimensioning for variable speed applications

2.1 General

The voltage (or current) fed by the frequency converter is not purely sinusoidal. This may increase motor losses, vibration, and noise. Furthermore, a change in the distribution of the losses may affect the motor temperature balance and lead to increased temperature.

When the motor is operating at low speeds the cooling capacity of the ventilation fan is decreased, which reduces the motor's loadability. A separate constant speed fan can be used to increase cooling capacity and loadability at low speeds.

When dimensioning a motor for variable speed applications, the continuous thermal dimensioning and short time overloads should be considered.

2.2 Thermal dimensioning with ABB ACS800 converters utilizing DTC control

In the case of ABB ACS800 converters utilizing DTC control, dimensioning can be done using the loadability curves (or load capacity curves) in Figures 2 and 3. The loadability curves show the maximum permitted continuous output torque of the motor as a function of supply frequency. The output torque is given as a percentage of the motor's nominal torque.

The most convenient method to dimension the motor is to utilize ABB's DriveSize program. This tool can be downloaded from the ABB website (www.abb.com/ motors&generators)

The loadability curves are based on nominal supply voltage.

Note: the maximum speed of the motor must not be exceeded even if the loadability curves extend to 100 Hz.

2.3 Thermal dimensioning with ABB ACS550 converters

In the case of ABB ACS550 converters, dimensioning can be done using the loadability curves in Figures 4 and 5. Also in the case of ACS550 driven applications, the most convenient method to dimension the motor is to utilize ABB's DriveSize program.

Note 1. The loadability curves in Figures 4 and 5 are based on a switching frequency of 3 kHz.

Note 2. For constant torque applications the lowest permitted continuous operating frequency is 15 Hz.

Note 3. For quadratic torque applications the lowest continuous operating frequency is 5 Hz.

2.4 Thermal dimensioning with other voltage source PWM-type converters

For VSDs other than DTC-controlled ACS800 and ACS550 converters, preliminary dimensioning can be done using the loadability curves in Figures 4 and 5. The utilization of these curves assumes a minimum switching frequency of 3 kHz.

To ensure safe operation, the combination of motor and frequency converter must either be tested for the specific protection type or thermal sensors must be fitted to control the surface temperature. Frequencies below 15 Hz shall be avoided or tested separately.

Note: the actual thermal loadability of a motor may be lower than shown by the guideline curves.

2.5 Short time overloads

Short time overloading is usually possible with ABB flameproof motors. For the exact values, please see the motor's rating plate.

Overloadability is specified by three factors:

I_{OL} Maximum short time current

T_{OL} Length of permitted overload period

T_{COOL} Cooling time required after each overload period. During the cooling period the motor current and torque must remain below the limit of permitted continuous loadability.

3. Operating speed

When a motor is used with a frequency converter, its actual operating speed may deviate considerably from its nominal speed (i.e. the speed stamped on the rating plate). When operating at higher speeds, ensure that the highest permissible rotational speed of the motor, or the critical speed of the equipment as a whole, is not exceeded.

The permitted maximum speed must be stated on a rating plate. This can be either a separate plate or the regular plate required for variable speed drive motors.

4. Thermal protection of windings

Most ABB Ex motors are equipped with PTC thermistors to prevent the winding temperatures from exceeding the thermal limits of the insulation materials (usually Insulation Class F). Please check the product specific data in the corresponding section of this catalog.

In countries where the ATEX requirements are in force must, if the motor certificate so requires, the thermistors be connected to a thermistor circuit relay. The relay must function independently and that is dedicated to reliably trip off the supply to the motor according to the requirements of the “Essential Health and Safety Requirements” in Annex II, item 1.5.1 of the ATEX Directive 94/9/EC. The latest motor certificates, like for the flame proof motor range do no longer require connection of thermistors but connection is still recommended due to the additional protection the thermistors give.

In countries where the ATEX requirements are not in force, it is nevertheless recommended that the thermistors are connected to a thermistor circuit relay that functions independently and will reliably trip off the supply to the motor.

Note: local installation rules may either require certification of the relay or allow the thermistors to be connected to equipment other than a thermistor relay, such as the control inputs of a frequency converter.

Note: the above recommendations do not apply to increased safety “e” motors.

5. Rating plates

The following parameters must be shown on the rating plates of hazardous area motors intended for variable speed operation:

ABB Oy, Motors and Generators
Vaasa, Finland

CE 0081 IE2 Ex II 2G

3 ~ Motor	M3KP 132SMD 6 IMB3/IM1001					
Ex de II B T4 Gb						
616441-1			2012	No. 3GF12099869		
				Ins.cl. F		IP 55
V	Hz	kW	r/min	A	cos φ	Duty
690 Y	50	5.5	967	7.2	0.72	S1
400 D	50	5.5	967	12.5	0.72	S1
415 D	50	5.5	969	12.4	0.70	S1
IE2-87.6%(100%)-87.5%(75%)-85.7%(50%)						
Prod. code 3GKP133240-ADH						
LCIE 10 ATEX 3093 X / IECEx LCI 04.0009						
Manual: 3GZF500730-47				Nmax		r/min
6208-2Z/C3 6208-2Z/C3					105	kg

ABB IEC 60034-1

M000732

CONVERTER SUPPLY					
VALID FOR 380-415 V FWP 50 Hz					
3 ~ Motor M3KP 132SMD 6 IMB3/IM1001					
3GF12099869					
MIN. SWITCHING FREQ. FOR PWM CONV. 3 kHz					
I= 1,5 x IN tOL= 10 s tCOOL= 10 min					
Duty S9					
	ACS800 with DTC-CONTROL				
f [Hz]	5	20	45	50	60
T/Tn [%]	55	90	100	92	76
	ACS550				
f [Hz]	15	20	45	50	60
T/Tn [%]	75	85	95	87	71
PTC 140°C DIN 44081/-82					

ABB IEC 60034-1

M000733a

- speed or frequency range
- power range
- voltage or current range
- type of torque (constant or quadratic)
- converter type and required minimum switching frequency

These parameters shall be used while checking the suitability of a specific motor for its intended application and for setting the limits of operation for the converter.

C. Technical criteria

1. Lubrication

The effectiveness of the motor lubrication should be checked by measuring the surface temperature of the bearing endshields under normal operating conditions. For more information, see the “Manual for Motors for explosive atmospheres”.

In continuous operation at very low speeds, as well as at low temperatures, the lubrication capabilities of standard greases may not be sufficient, making it necessary to use special greases with additives.

If the motor is equipped with sealed bearings (i.e. bearings greased for life) any deviation in the operating temperature from the design temperature will result in a change in the lifetime of the bearing.

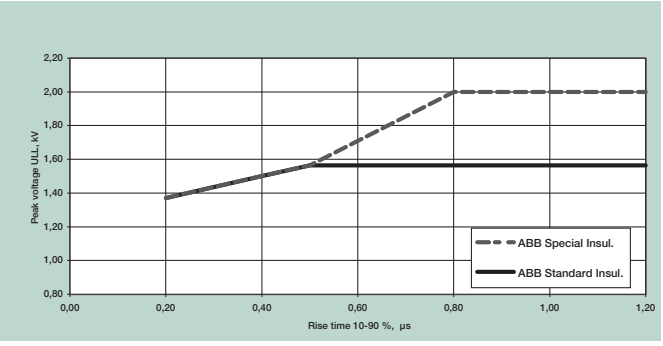
2. Winding insulation

The output voltage of voltage source frequency converters consists of steep voltage pulses. These pulses can be even higher and steeper when arriving at the motor terminals due to reflecting pulses in the cables. The motor’s insulation must therefore be selected according to the actual pulses at the motor terminals.

2.1 Phase to phase voltages

The maximum permitted phase to phase voltage peaks at the motor terminals as a function of pulse rise time can be seen in Figure 1.

Figure 1. Permitted phase to phase voltage peaks at motor terminals as a function of rise time.



M000408

The highest curve (“ABB Special Insulation”) applies to random wound motors with a special winding insulation for frequency converter supply, variant code 405. The “ABB Standard Insulation” curve applies to all other random wound motors covered by this catalog.

2.2 Phase to ground voltages

The permitted phase to ground voltage peaks at the motor terminals are:

Standard Insulation 1300 V peak

Special Insulation 1800 V peak

2.3 Selection of winding insulation for ACS800 and ACS550 supplied motors

In the case of ABB ACS800 and ACS550 single drives with a diode supply unit (uncontrolled DC voltage), the motor winding insulation and frequency converter output filters can be selected using Table 2.

Table 2. Selection of motor winding insulation and converter output filters for motors supplied by ABB ACS800 or ACS550 drives with uncontrolled DC voltage.

Nominal supply voltage U_N of converter	Winding insulation and filters required
Nominal supply voltage U_N of converter $U_N \leq 500$ V	ABB Standard insulation
Nominal supply voltage U_N of converter $U_N \leq 600$ V	ABB Standard insulation + dU/dt filters OR ABB Special insulation (variant code 405)
Nominal supply voltage U_N of converter $U_N \leq 690$ V	ABB Special insulation (variant code 405) AND dU/dt-filters at converter output
Nominal supply voltage U_N of converter $600 \text{ V} < U_N \leq 690$ V cable length > 150 m	ABB Special insulation (variant code 405)

For more information on dU/dt filters, please see relevant ABB Drives catalogs.

For more information on resistor braking and converters with controlled supply units, please contact ABB.

2.4 Selection of winding insulation with all other converters

The voltage stresses must be restricted so they remain below the accepted limits. The effect of any filters that are fitted must be taken into account when dimensioning the motor.

3. Bearing currents

Bearing voltages and currents must be avoided in all variable speed applications to ensure the reliability and safety of the application. For this purpose insulated bearings or bearing constructions, common mode filters and suitable cabling and grounding methods must be used.

3.1 Elimination of bearing currents with ABB ACS800 and ACS550 converters

In the case of ABB ACS800 and ACS550 converters with a diode supply unit (uncontrolled DC voltage), the following methods must be used to avoid harmful bearing currents in the motors:

Frame size	Preventive measures
250 and smaller	No action needed
280 – 315	Insulated non-drive end bearing
355 – 450	Insulated non-drive end bearing AND Common mode filter at the converter

Common mode filters

Common mode filters reduce common mode currents and thus decrease the risk of bearing currents. Common mode filters do not significantly affect the phase or main voltages on the motor terminals. For more information, please see ABB Drives catalogues

Insulated bearings

Bearings with aluminum oxide insulated and sealed inner or outer bores are used as standard. Hybrid bearings, i.e. bearings with non-conductive ceramic rolling elements, can also be used in special applications. More information on selection of the correct parts is available on request.

3.2 Elimination of bearing currents with all other converters

The user is responsible for protecting the motor and driven equipment from harmful bearing currents. The instructions provided in section 3.1 can be followed, but their effectiveness cannot be guaranteed in all cases.

4. Cabling, grounding and EMC

The use of a frequency converter places greater demands on the cabling and grounding of the drive system. To provide proper grounding and ensure compliance with any applicable EMC requirements, motors above 30 kW shall be cabled using shielded symmetrical cables and EMC glands, i.e. cable glands providing 360° bonding. Symmetrical and shielded cables are also highly recommended for smaller motors. For motors in frame size IEC 280 and upward, additional potential equalization between the motor frame and the driven equipment is needed, unless both are mounted on a common steel base. In this case, the high frequency conductivity of the connection provided by the steel base should be checked.

More information about grounding and cabling of variable speed drives can be found in the manual “Grounding and cabling of the drive system” (Code: 3AFY 61201998) and material on fulfilling the EMC requirements can be found in the relevant converter manuals.

Please note that proper cable glands providing 360° bonding, or equivalent, must also be used for the converter and safety switch, if fitted.

The correct grounding of the motor and driven equipment is also necessary for the avoidance of bearing voltages and currents.

D. Loadability curves of motors for explosive atmospheres

The loadability curves shown in Figures 2 and 3 are based on type tests using ACS800 frequency converters with DTC control. The loadability curves assume that the nominal frequency of the motor (i.e. field weakening point) is 50 Hz or 60 Hz and that the motor control mode (parameter 99.04) is DTC. The DriveSize dimensioning program also utilizes the same curves.

For VSDs other than DTC-controlled ACS800 converters, preliminary dimensioning can be done using the guideline loadability curves in Figures 4 and 5.

Loadability curves with ACS800 converters utilizing DTC control

Figure 2. Flameproof motors Ex d, Ex de T4, cast iron dust ignition protection motors Ex t T150 °C; nominal frequency of motor 50/60 Hz

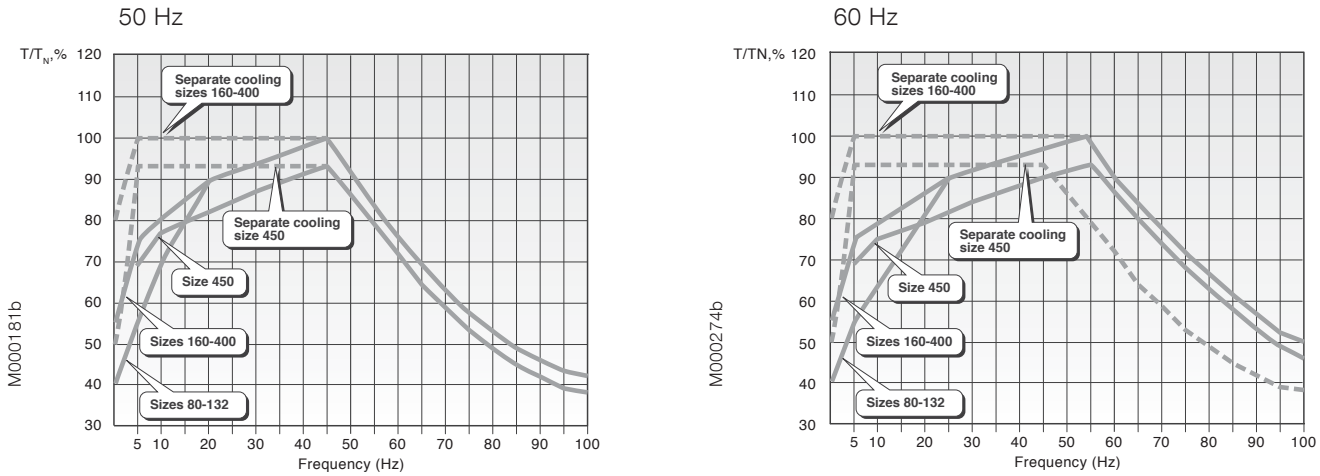
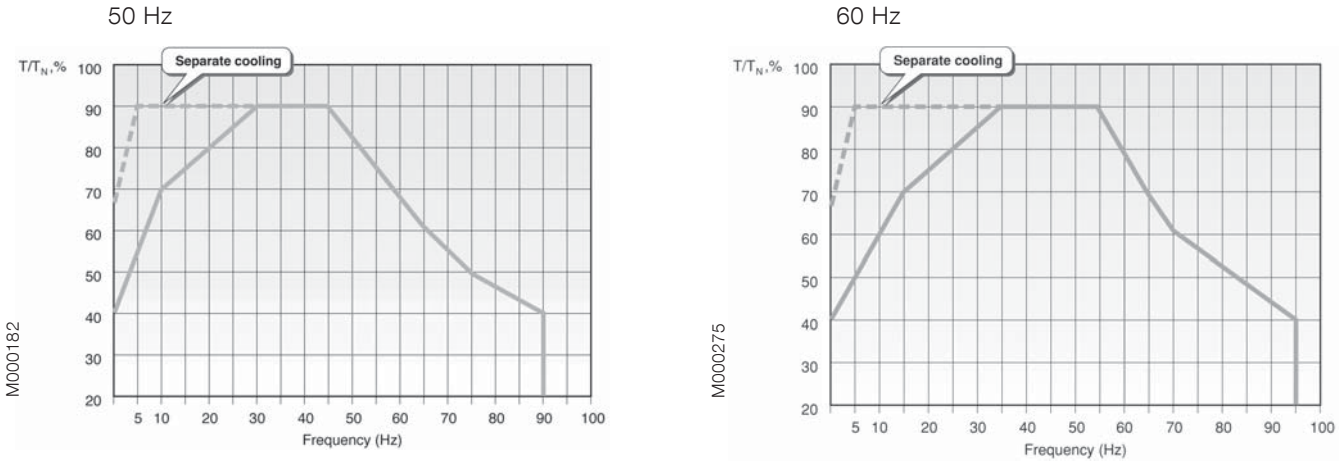


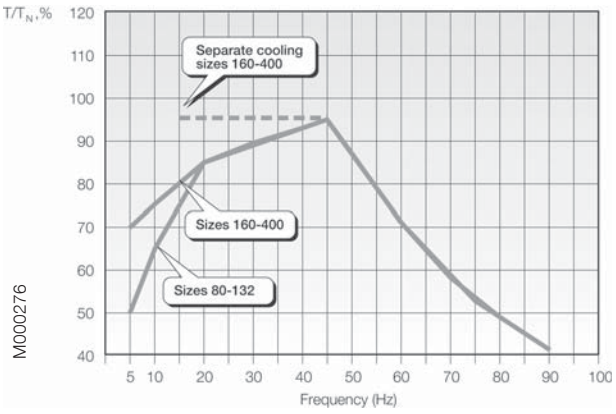
Figure 3. Non-sparking motors Ex nA, cast iron and aluminum dust ignition protection motors Ex t T125 °C; nominal frequency of motor 50/60 Hz



Guideline loadability curves with ACS550 converters and other voltage source PWM-type convereters

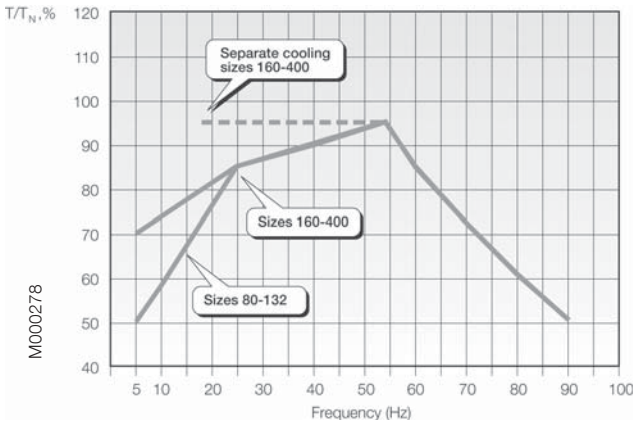
Figure 4. Flameproof motors Ex d, Ex de T4, cast iron dust ignition protection motors Ex t T150 °C; nominal frequency of motor 50/60 Hz

50 Hz



Note: Lower limit for constant torque is 15 Hz.

60 Hz



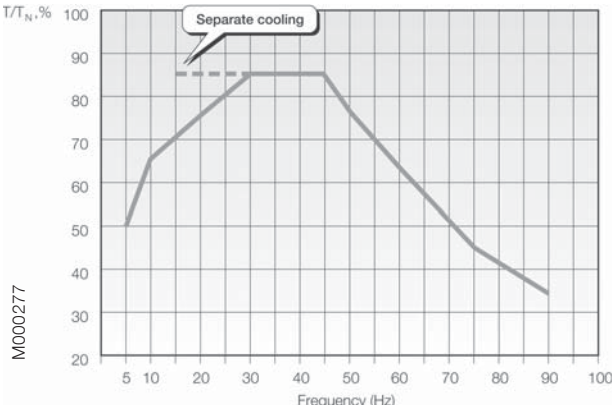
Note: Lower limit for constant torque is 18 Hz.

Note: Motors have to be protected against excessive surface temperatures by inbuild direct temperature control.

Loadability curves with ACS 550 converters

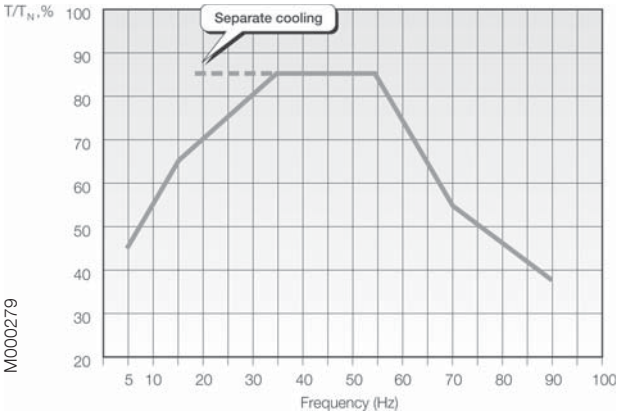
Figure 5. Non-sparking motors Ex nA , cast iron dust ignition protection motors Ex t T125 °C; nominal frequency of motor 50/60 Hz

50 Hz



Note: Lower limit for constant torque is 15 Hz.

60 Hz



Note: Lower limit for constant torque is 18 Hz.

Flameproof motors Ex d IIB/IIC T4 Gb
Totally enclosed squirrel cage three phase low voltage motors, Sizes 80 to 450, 0.55 to 710 kW

www.abb.com/motors&generators
> Motors for explosive atmospheres
>> Flameproof motors

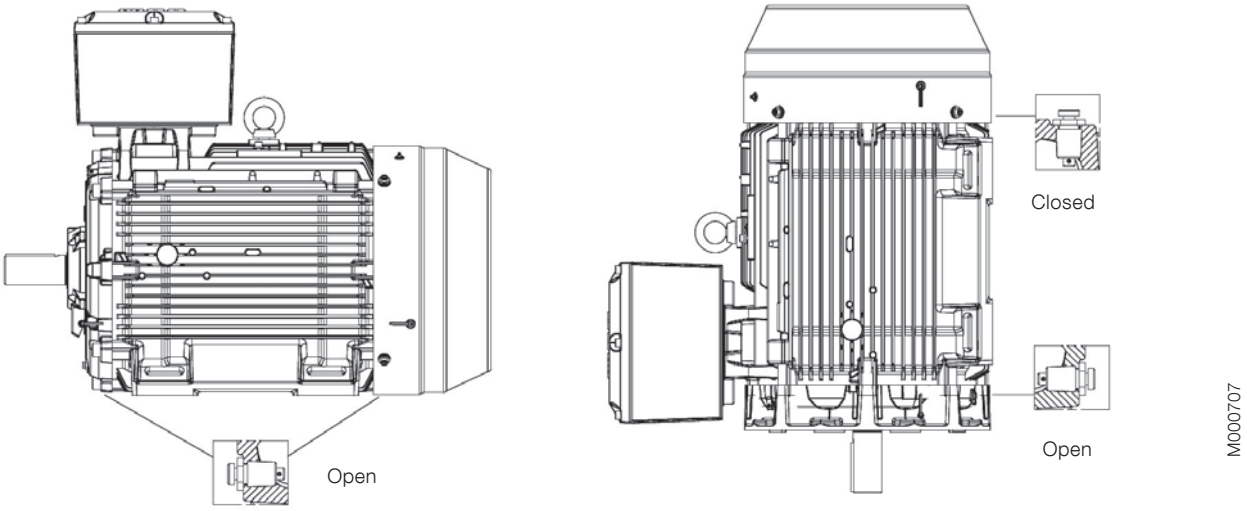
Mechanical design

Drain holes

Flameproof Ex d motors are provided without drain holes as standard.

Drain holes with certified metal plugs are available as an option. Please see variant code section.

Type of protection	Frame material	Frame size	Drain holes
Flameproof	Cast iron	80-132	not included
		160-450	optional



Bearing seals

The following bearing seals are used as standard, special seals like radial seal are available as option. Please see variant code section.

Bearing seals in Ex d motors (M3JP)

Frame size	Number of poles	D-end	N-end
80-250	2-12	Gamma ring	Gamma ring
280-355	2-12	Labyrinth seal	V-ring
400	2	Labyrinth seal	Labyrinth seal
400	4-12	Labyrinth seal	V-ring
450	6-12	Labyrinth seal	Labyrinth seal

Terminal box standard delivery

Terminal boxes are mounted on top of the motor at D-end as standard. The terminal boxes of motor sizes 80 to 250 can be turned 4x90° and in motor sizes 280 to 450 2x180° after delivery. When ordering Exd motors in sizes 280 to 450 with 4x90°, the position of the terminal box has to be defined in the order.

The degree of protection of standard terminal box is IP 55 and it complies with the requirements of this enclosure type and effectively prevents the transmission of an internal explosion to the surrounding, potentially explosive atmosphere.

If no ordering information on the cable is given, it is assumed to be p.v.c. -insulated non-armoured and termination parts are supplied according to the table below. To enable the supply of suitable terminations for the motor, please state cable type, quantity, size and outer diameter when ordering.

All Ex d motors are delivered as standard without cable glands. However, motors are provided with metal plugs according to the table below. Different glands can be provided separately as an option. Please see Alternatives section for details.

Note: For 500 V motor information please contact ABB!

Standard delivery if nothing else is informed

Cable entries for supply cables

Motor size	Pole number	Terminal box type	Threaded holes	Cable gland	Ex d plug	Single core cross section mm^2 for rated power	Terminal bolt size 6 x
80-90	2-8	25	1 x M25	-	-	10	M5
100-132	2-8	25	2 x M32	-	1 x M32	10	M5
160-180	2-8	63	2 x M40	-	1 x M40	35	M6
200-250	2-8	160	2 x M50	-	1 x M50	70	M10
280	2-8	210	2 x M63	-	1 x M63	2 x 150	M12
315	2-8	370	2 x M75	-	1 x M75	2 x 240	M12
355 SMA, SMB, SMC	2-4	750	2 x M75	-	1 x M75	4 x 240	M12
355 SMC	6	750	2 x M75	-	1 x M75	4 x 240	M12
355 SMC	8	370	2 x M75	-	1 x M75	2 x 240	M12
355 SMA, SMB	6-8	370	2 x M75	-	1 x M75	2 x 240	M12
355 ML, LK	2-8	750	2 x M75	-	1 x M75	4 x 240	M12
400	2-8	750	2 x M75	-	1 x M75	4 x 240	M12
450	6-8	750	2 x M75	-	1 x M75	4 x 240	M12

Auxiliary cable entries

Motor size	Pole number	Terminal box type	Cable gland	Ex d plug
80-132	2-8	1xM20	-	1xM20
160-450	2-8	2xM20	-	1xM20

Earthings on motor

Motor size	Frame	Terminal box
80-132	M6	M6
160-180	M6	M6
200-250	M8	M8
280-315	M10	2xM10
355-450	M10	2xM10

Examples of terminal boxes and connection parts
Below pictures show a collection of terminal boxes and connection parts.

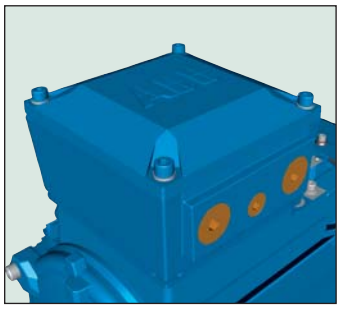

M000708

Fig 1. Terminal box for motor sizes 80 to 132

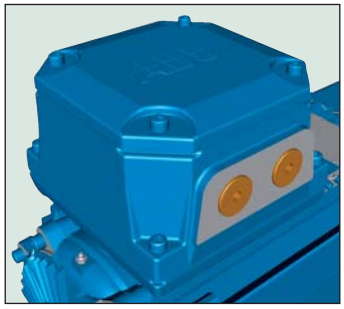

M000709

Fig 2. Terminal box for motor sizes 160 to 180

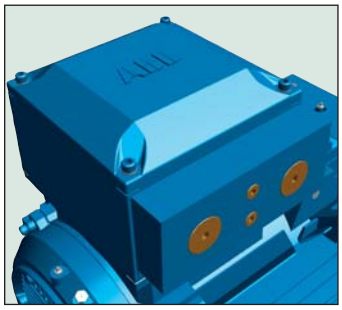

M000710

Fig 3. Terminal box for motor sizes 200 to 250

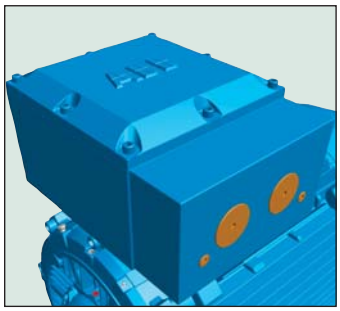

M000711

Fig 4. Terminal box for motor sizes 280 to 315

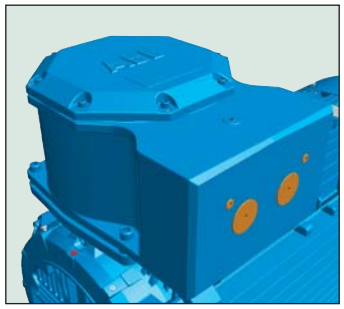

M000712

Fig 5. Terminal box for motor sizes 355 to 450

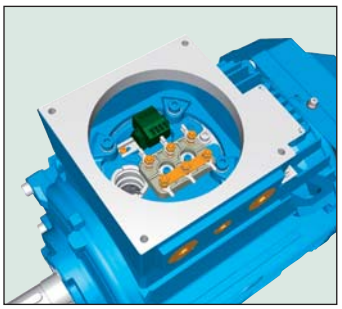

M000713

Fig 6. Terminal board for motor sizes 80 to 132

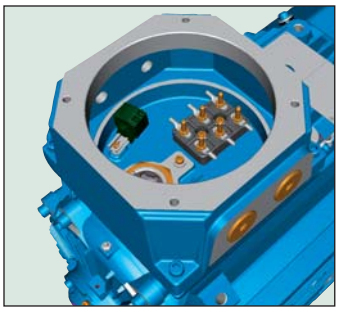

M000714

Fig 7. Terminal board for motor sizes 160 to 180

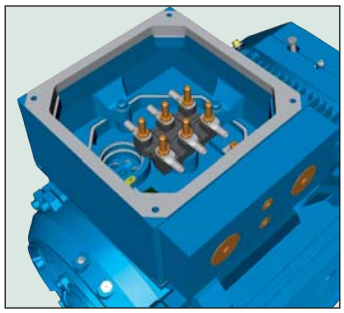

M000715

Fig 8. Terminal board for motor sizes 200 to 250

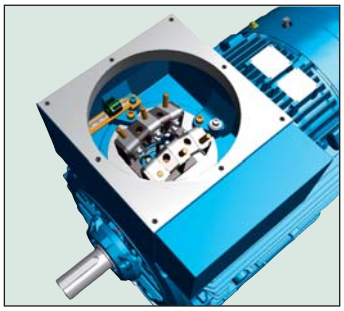

M000716

Fig 9. Terminal board for motor sizes 280 to 315

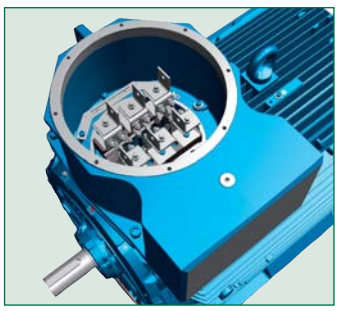

M000717

Fig 10. Terminal board for motor sizes 355 to 450

Terminal box alternatives, cast iron frame

Due to the construction of Ex d terminal box it is not possible to mount any connection flanges, adapters nor cable sealing end units on this type of terminal box.

Only for the cable gland type there are some alternatives. These can be found from the Variants section.

1. Main terminal box and maximum single core cross section

Larger than standard single core cross section is available using variant code 300 as option according to the table below.
Please check also the capacity of the cable entry to make sure the cables fit.

Standard terminal box	Max single cross section per phase mm^2
25	35
63	95
160	120
210	2 x 240
370	2 x 300
750	4 x 500

The accessories for using the maximum single core cross sections are not included as standard. For this option please use variant code 300 (Increased single core cross section). Each terminal box has got limited maximum cable entry size, please request if necessary.

NPT threads as option, variant code 730 = Prepared for NPT cable glands

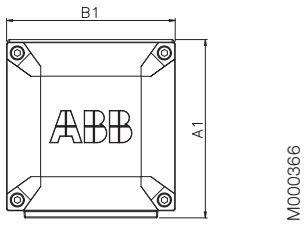
Motor size	Main cable entries Thread	NPT plug	Max. possible thread size
80-112	1x3/4"	-	1x1"
132	2x3/4"	1x3/4"	1x1"
160-180	2x1 1/4"	1x1 1/4"	1 or 2x1 1/2"
200-250	2x1 1/2"	1x1 1/2"	1 or 2x2"
280	2x2"	1x2"	1 or 2x3"
315-450	2x3"	1x3"	1 or 2x3"

Auxiliary cable entries (heaters, thermistors etc.)

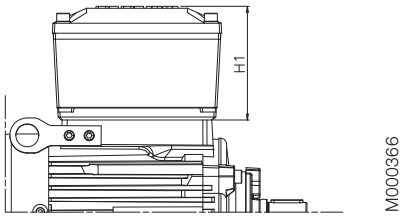
Motor size	Main cable entries Thread	NPT plug
80-132	1x3/4"	1x3/4"
160-450	2x3/4"	2x3/4"

Dimension drawings
Flameproof motors, Ex d

Terminal boxes, standard with 6 terminals

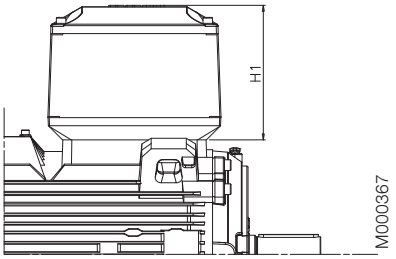


Motor sizes 80 to 132

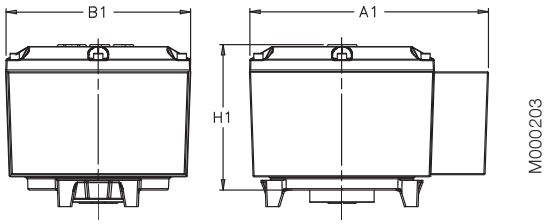


Motor sizes 160 to 180

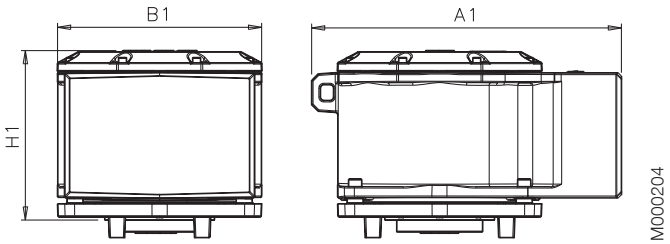
Motor sizes 200 to 250



Motor sizes 280 to 355



Motor sizes 355 to 450



Ex d - M3JP

Motor size	Terminal box	A1	B1	H1
80-132	25	180	170	114
160-180	63	251	242	127
200-250	160	339	291	226
280	210	465	370	260
315-355	370	790	490	420
355-450	750	707	466	387

For motor dimensions please see dimension drawings.

Permissible loadings on the shaft end

The following tables give the permissible radial and axial forces in Newton, assuming only radial or axial force is applied. Permissible loads of simultaneous radial and axial forces will be supplied on request.

The bearing life, L_{10}, is calculated according to ISO 281:1990/ Amd 2:2000 standard theory, which also takes the purity of the grease into consideration. An adequate lubrication is a necessary prerequisite for the table below.

The values are based on normal conditions at 50 Hz. At 60 Hz the values must be reduced by 10 %. For two-speed motors, the values must be based on the higher speed.

Motors are foot-mounted IM B3 version with force directed sideways. In some cases the strength of the shaft affects the permissible forces.

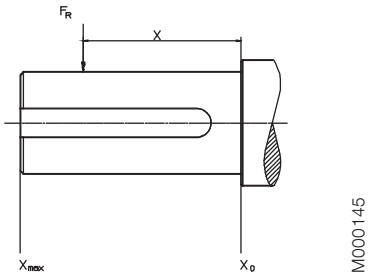
If flameproof motors Ex d sizes 160 and above are subject to high radial forces (eg, belt drive) they should be fitted with roller bearings. Permissible radial forces for IIB and IIC are found in table below and on next page.

Please note that motors type Ex d and IIC in size 250 and above with roller bearings may require detailed information about power transmission; please consult ABB.

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:

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

E = length of shaft extension in basic version



Cast iron motors

Permissible radial forces according to L_{10} principle

Flameproof motor Ex d IIB/IIC, motor sizes 80 to 132

Motor size	Poles	Length of shaft extention E (mm)	40,000 hours FX_0 (N)	Fx_{max} (N)
80	2	40	619	524
	4	40	780	663
	6	40	893	759
	8	40	983	834
90	2	50	561	473
	4	50	803	677
	6	50	919	775
	8	50	1011	853
100	2	60	553	457
	4	60	1050	868
	6	60	1267	1047
	8	60	1395	1153
112	2	60	553	457
	4	60	1050	868
	6	60	1267	1047
	8	60	1394	1152
132	2	80	1354	1112
	4	80	1772	1454
	6	80	2028	1665
	8	80	2234	1833

Cast iron motors

Permissible radial forces according to L_{10} principle

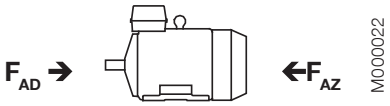
Flameproof motors Ex d IIB/IIC, motor sizes 160 to 450

Motor size	Poles	Lengt of shaft extension E (mm)	Ball bearings IIB [1] 40,000 hours		Ball bearings IIB/IIC		Roller bearings IIB [1]		Roller bearings IIC	
			FX_0 (N)	FX_{max}(N)	FX_0 (N)	FX_{max}(N)	FX_0 (N)	FX_{max}(N)	FX_0 (N)	FX_{max}(N)
160 ML_	2	110	2530	2120	2530	2120	6400	1800	6400	1800
	4	110	3180	2670	3180	2670	7600	1800	7600	1800
	6	110	3650	3040	3650	3040	7600	1800	7600	1800
	8	110	4020	3040	4020	3040	7600	1800	7600	1800
180 ML_	2	110	2900	2440	2900	2440	6970	2700	6970	2700
	4	110	3660	3080	3660	3080	8500	2700	8500	2700
	6	110	4190	3520	4190	3520	8500	2700	8500	2700
	8	110	4620	3880	4620	3880	8500	2700	8500	2700
200 ML_	2	110	3830	3150	3830	3150	9510	7000	9510	4200
	4	110	4820	3980	4820	3980	11710	7000	11710	4200
	6	110	5520	4550	5520	4550	13230	7000	13230	4200
	8	110	6080	5000	6080	5000	14420	7000	14420	4200
225 SM_	2	110	4350	3660	4350	3660	11650	7000	9300	3000
	4	140	5490	2800	5490	2800	14340	7200	9300	2200
	6	140	6280	2800	6280	2800	16190	7200	9300	2200
	8	140	6920	2800	6920	2800	17300	7200	9300	2200
250 SM_	2	140	5390	4350	5390	2900	15420	6700	NA	NA
	4	140	6790	5480	6790	2800	18980	9200	NA	NA
	6	140	7760	6270	3000	2800	21000	9200	NA	NA
	8	140	8550	6900	3000	2800	21000	9200	NA	NA
280 SM_	2	140	5840	4900	[2]	[2]	16550	6000	NA	NA
	4	140	7260	6110	[2]	[2]	20100	9200	NA	NA
	6	140	8300	6980	[2]	[2]	22690	9200	NA	NA
	8	140	9150	7700	[2]	[2]	24740	9200	NA	NA
315 SM_	2	140	5810	4960	[2]	[2]	16540	6000	NA	NA
	4	170	9030	7470	[2]	[2]	26590	9600	NA	NA
	6	170	10310	8530	[2]	[2]	39030	9600	NA	NA
	8	170	11370	9410	[2]	[2]	32740	9600	NA	NA
315 ML_	2	140	5850	5080	[2]	[2]	16710	5850	NA	NA
	4	170	9000	7620	[2]	[2]	26580	13040	NA	NA
	6	170	10270	8500	[2]	[2]	30010	10040	NA	NA
	8	170	11330	9380	[2]	[2]	32730	9940	NA	NA
355 SM_	2	140	5790	5090	[2]	[2]	NA	NA	NA	NA
	4-8	210	11930	9890	[2]	[2]	NA	NA	NA	NA
355 ML_	2	140	5770	5120	[2]	[2]	NA	NA	NA	NA
	4-8	210	11980	10090	[2]	[2]	NA	NA	NA	NA
355 LK_	2	140	5500	5000	[2]	[2]	NA	NA	NA	NA
	4-8	210	12050	10450	[2]	[2]	NA	NA	NA	NA
400 L_	2	170	[2]	[2]	[2]	[2]	NA	NA	NA	NA
	4-8	210	[2]	[2]	[2]	[2]	NA	NA	NA	NA
400 LK_	2	170	[2]	[2]	[2]	[2]	NA	NA	NA	NA
	4-8	210	[2]	[2]	[2]	[2]	NA	NA	NA	NA
450 L_	6-8	210	[2]	[2]	[2]	[2]	NA	NA	NA	NA

[1] IIB on request, require special construction.

[2] Flameproof motors Ex d IIC -sizes 280 to 315 only allowed for direct coupling application.

Permissible axial forces according to L_{10} principle

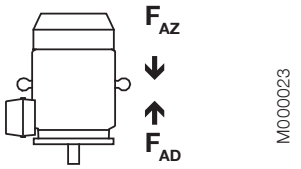


Flameproof motors Ex d, motor sizes 80 to 450.

Mounting arrangement IM B3

Motor size	40,000 hours							
	2-pole		4-pole		6-pole		8-pole	
	F_{AD} N	F_{AZ} N	F_{AD} N	F_{AZ} N	F_{AD} N	F_{AZ} N	F_{AD} N	F_{AZ} N
80	660	300	820	460	940	580	1030	670
90	740	220	900	380	1010	490	1110	590
100	1100	220	1320	430	1480	590	1610	720
112	1100	220	1320	430	1480	590	1610	720
132	1530	500	1870	840	2110	1080	2320	1280
160	2050	1440	2620	2010	3060	2440	3410	2790
180	2570	1470	3230	2130	3730	2630	4140	3040
200	3300	2040	4180	2920	4820	3560	5360	4100
225	3710	2240	4690	3230	5410	3940	6010	4540
250	5200	2100	6400	3310	7260	4160	8000	4900
280 SM_	4870	2870	6140	4140	7040	5040	7840	5840
315 SM_	4780	2780	7170	5170	8210	6210	9180	7180
315 ML_	4730	2730	7080	5080	8100	6100	9060	7070
355 SM_	1660	5460	5760	9560	7060	10860	8290	12090
355 ML_	1570	5370	5640	9440	6880	10680	8100	11900
355 LK_	1440	5240	5460	9260	6680	10480	[1]	[1]
400 L_	810	5810	4250	10250	5510	11510	6630	12630
400 LK_	810	5810	4250	10250	5410	11410	[1]	[1]
450 L_	NA	NA	NA	NA	5630	11630	6920	12920

[1] On request



Mounting arrangement IM V1

Motor size	40,000 hours							
	2-pole		4-pole		6-pole		8-pole	
	F_{AD} N	F_{AZ} N	F_{AD} N	F_{AZ} N	F_{AD} N	F_{AZ} N	F_{AD} N	F_{AZ} N
80	690	280	860	440	970	550	1070	650
90	780	190	950	340	1080	450	1170	540
100	1180	170	1430	360	1600	510	1730	640
112	1180	170	1430	360	1600	510	1730	640
132	1700	390	2080	690	2380	900	2580	1110
160	2440	1180	3160	1650	3590	2090	3950	2430
180	3120	1100	3980	1630	4490	2130	4890	2550
200	3960	1590	5030	2340	5820	2890	6370	3430
225	4570	1650	5770	2500	6660	3100	7280	3700
250	6240	1380	7720	2410	8930	3047	9690	3780
280 SM_	6440	1780	8170	2760	9580	3340	10380	4150
315 SM_	6950	1270	9820	3350	11760	3810	12740	4780
315 ML_	7280	940	10300	2870	12330	3240	13310	4210
355 SM_	5330	2890	11110	5820	13720	6270	14980	7530
355 ML_	5860	2360	11810	5130	14718	5280	15970	6540
355 LK_	6600	1630	12850	4080	15800	4190	[1]	[1]
400 L_	8010	730	13680	3650	16610	3840	18480	4530
400 LK_	8010	730	13680	3650	17180	3270	18480	4530
450 L_	NA	NA	NA	NA	22090	150	23600	1430

[1] On request

Rating plates

The rating plates are in table form giving values for speed, current and power factor for three voltages: 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 (both ATEX and IECEx are stamped on the rating plate as standard)

Motor sizes 80 to 450

ABB Oy, Motors and Generators
Vaasa, Finland

CE 0081 IE2 Ex II 2G

3 ~ Motor	M3JP 132SMB 2 IMB3/IM1001					
Ex d II B T4 Gb						
602109-1			2011	No. 3GF11095182		
				Ins.cl. F		IP 55
V	Hz	kW	r/min	A	cos φ	Duty
690 Y	50	5.5	2905	6	0.90	S1
400 D	50	5.5	2905	10.1	0.90	S1
415 D	50	5.5	2911	9.9	0.88	S1
IE2-87.0%(100%)-87.2%(75%)-85.8%(50%)						
Prod. code 3GJP131220-ADH						
LCIE 10 ATEX 3093 X / IECEx LCI 04.0009						
Manual: 3GZF500730-47				Nmax		r/min
6208-2Z/C3 6208-2Z/C3					101	kg

ABB IEC 60034-1

M000737

Ordering information

Sample order

When placing an order, please state the following minimum data in the order, as in example.

The product code of the motor is composed in accordance with the following example.

Motor type	**M3JP 160 MLA**
Pole number	**2**
Mounting arrangement (IM code)	**IM B3 (IM 1001)**
Rated output	**11 kW**
Product code	**3GJP161410-ADH**
Variant codes if needed	

Motor size

A B C D.E.F. G

M3JP 160 MLA 3GJP 161 410 - A D H 002 etc.

1 2 3 4 5 6 7 8 9 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
G Variant codes

Explanation of the product code:

Positions 1 - 4

3GJP = Totally enclosed frameproof motor E xd with cast iron frame

Positions 5 and 6

IEC-frame size

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
45 = 450

Position 7

Speed (pole pairs)

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

Position 8-10

Running number series

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 with clearance holes
C = Flange-mounted, small flange with tapped holes
V = Flange-mounted, Special flange
H = Foot/flange-mounted, large flange with clearance holes
J = Foot/flange-mounted, small flange with tapped holes
S = Foot/flange-mounted, terminal box RHS seen from D-end
T = Foot/flange-mounted, terminal box LHS seen from D-end
F = Foot/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**

Generation code is followed by variant codes according to the hazardous area, see below and on corresponding pages with variant codes:

461 Ex d(e) design, Group IIC

Flameproof cast iron motors
Technical data for Ex d IIB/IIC T4 Gb

IE2

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30; 2008

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 Nm	T_l/T_N	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**							
0.75		**M3JP**	**80 MA**	3GJP 081 310-••H	2861	80.1	79.4	76.2	0.87	1.55	7.3	2.5	3.7	3.8	0.0006	37	59
1.1		**M3JP**	**80 MB**	3GJP 081 320-••H	2833	81.6	82.2	80.6	0.87	2.2	5.9	3.7	3.0	3.2	0.0007	39	59
1.5		**M3JP**	**90 SLA**	3GJP 091 010-••H	2881	81.9	82.1	80.1	0.88	3	6.7	4.9	3.0	3.5	0.001	50	61
2.2		**M3JP**	**90 SLC**	3GJP 091 030-••H	2877	84.5	85.0	83.8	0.89	4.2	7.8	7.3	2.7	3.5	0.0014	53	61
3		**M3JP**	**100 LA**	3GJP 101 510-••H	2896	86.0	86.4	84.9	0.90	5.5	6.8	9.8	2.2	3.0	0.0036	70	65
4		**M3JP**	**112 MB**	3GJP 111 320-••H	2891	86.0	86.5	85.3	0.89	7.5	7.8	13.2	3.6	3.7	0.0043	73	65
5.5		**M3JP**	**132 SMB**	3GJP 131 220-••H	2905	87.0	87.2	85.8	0.90	10.1	6.9	18	2.4	3.3	0.009	101	71
7.5		**M3JP**	**132 SMD**	3GJP 131 240-••H	2914	88.3	88.7	87.6	0.90	13.6	7.6	24.5	2.8	3.6	0.012	109	71
11		**M3JP**	**160 MLA**	3GJP 161 410-••H	2931	90.1	90.5	89.6	0.89	19.7	7.2	35.8	2.6	3.1	0.043	213	71
15		**M3JP**	**160 MLB**	3GJP 161 420-••H	2929	91.2	91.9	91.4	0.89	26.6	7.2	48.9	3.0	3.5	0.052	222	71
18.5		**M3JP**	**160 MLC**	3GJP 161 430-••H	2934	91.8	92.2	91.8	0.90	32.3	7.5	60.2	2.8	3.4	0.062	233	69
22		**M3JP**	**180 MLA**	3GJP 181 410-••H	2938	91.7	92.2	91.7	0.90	38.4	7.0	71.5	2.5	3.1	0.089	265	69
30		**M3JP**	**200 MLA**	3GJP 201 410-••G	2956	93.2	93.6	93.0	0.88	52.7	7.4	96.9	3.0	3.2	0.15	310	74
37		**M3JP**	**200 MLC**	3GJP 201 430-••G	2954	93.6	94.0	93.4	0.89	64.1	7.5	119	2.8	3.2	0.19	340	75
45		**M3JP**	**225 SMB**	3GJP 221 220-••G	2968	93.9	93.8	92.9	0.87	79.5	7.2	144	2.7	3.0	0.26	400	76
55		**M3JP**	**250 SMA**	3GJP 251 210-••G	2975	94.3	94.1	93.0	0.89	94.5	7.8	176	2.4	3.1	0.49	460	75
75		**M3JP**	**280 SMA**	3GJP 281 210-••G	2978	94.3	94.1	92.8	0.88	130	7.6	240	2.1	3.0	0.8	725	77
90		**M3JP**	**280 SMB**	3GJP 281 220-••G	2976	94.6	94.5	93.5	0.90	152	7.4	288	2.1	2.9	0.9	765	77
110		**M3JP**	**315 SMA**	3GJP 311 210-••G	2982	94.9	94.4	92.9	0.86	194	7.6	352	2.0	3.0	1.2	980	78
132		**M3JP**	**315 SMB**	3GJP 311 220-••G	2982	95.1	94.8	93.6	0.88	227	7.4	422	2.2	3.0	1.4	1040	78
160		**M3JP**	**315 SMC**	3GJP 311 230-••G	2981	95.4	95.2	94.2	0.89	271	7.5	512	2.3	3.0	1.7	1125	78
200		**M3JP**	**315 MLA**	3GJP 311 410-••G	2980	95.7	95.7	94.9	0.90	335	7.7	640	2.6	3.0	2.1	1290	78
250	[3]	**M3JP**	**355 SMA**	3GJP 351 210-••G	2984	95.7	95.5	94.5	0.89	423	7.7	800	2.1	3.3	3	1790	83
315	[3]	**M3JP**	**355 SMB**	3GJP 351 220-••G	2980	95.7	95.7	95.1	0.89	533	7.0	1009	2.1	3.0	3.4	1870	83
355	[3]	**M3JP**	**355 SMC**	3GJP 351 230-••G	2984	95.7	95.7	95.2	0.88	608	7.2	1136	2.2	3.0	3.6	1940	83
400	[3]	**M3JP**	**355 MLA**	3GJP 351 410-••G	2982	96.9	96.6	95.9	0.88	677	7.1	1280	2.3	2.9	4.1	2190	83
450	[3]	**M3JP**	**355 MLB**	3GJP 351 420-••G	2983	97.1	97.0	96.4	0.90	743	7.9	1440	2.2	2.9	4.3	2270	83
500	[3]	**M3JP**	**355 LKA**	3GJP 351 810-••G	2982	96.9	96.9	96.5	0.90	827	7.5	1601	2.0	3.9	4.8	2510	83
560	[4]	**M3JP**	**400 LA**	3GJP 401 510-••G	2988	97.2	97.2	96.6	0.89	934	7.8	1789	2.1	3.4	7.9	3230	82
560	[4]	**M3JP**	**400 LKA**	3GJP 401 810-••G	2988	97.2	97.2	96.6	0.89	934	7.8	1789	2.1	3.4	7.9	3230	82
630	[4]	**M3JP**	**400 LB**	3GJP 401 520-••G	2987	97.4	97.4	96.9	0.89	1048	7.8	2014	2.2	3.4	8.2	3330	82
630	[4]	**M3JP**	**400 LKB**	3GJP 401 820-••G	2987	97.4	97.4	96.9	0.89	1048	7.8	2014	2.2	3.4	8.2	3330	82
710	[4]	**M3JP**	**400 LC**	3GJP 401 530-••G	2987	97.5	97.4	97.0	0.89	1180	7.8	2269	2.6	3.4	9.3	3580	82
710	[4]	**M3JP**	**400 LKC**	3GJP 401 830-••G	2987	97.5	97.4	97.0	0.89	1180	7.8	2269	2.6	3.4	9.3	3580	82
3000 r/min = 2-poles				**400 V 50 Hz**						**High-output design**							
22	[2]	**M3JP**	**160 MLD**	3GJP 161 440-••H	2929	91.2	91.6	91.0	0.90	38.6	7.3	71.7	2.7	3.4	0.07	239	77
30		**M3JP**	**180 MLB**	3GJP 181 420-••H	2943	92.5	93.0	92.6	0.90	52	6.8	97.3	2.3	3.1	0.13	298	78
37		**M3JP**	**180 MLC**	3GJP 181 430-••H	2947	92.8	93.0	92.5	0.90	63.9	7.9	119	2.9	3.6	0.13	298	77
45		**M3JP**	**200 MLE**	3GJP 201 450-••G	2944	93.3	93.6	93.0	0.88	79.1	7.3	145	2.9	3.1	0.22	345	79
55		**M3JP**	**225 SMC**	3GJP 221 230-••G	2965	93.9	93.9	92.9	0.88	96	7.1	177	2.6	3.0	0.29	420	80
67	[5]	**M3JP**	**225 SMD**	3GJP 221 240-••G	2966	93.9	93.7	92.6	0.86	119	7.4	215	2.8	3.2	0.31	430	78
75		**M3JP**	**250 SMB**	3GJP 251 220-••G	2969	94.0	94.0	93.2	0.89	129	7.9	241	2.6	3.2	0.57	500	80
90	[1] [2] [5]	**M3JP**	**250 SMC**	3GJP 251 230-••G	2965	94.0	94.2	93.7	0.90	153	7.7	289	2.6	3.1	0.59	510	80
110		**M3JP**	**280 SMC**	3GJP 281 230-••G	2978	95.1	95.0	94.2	0.90	185	7.9	352	2.4	3.0	1.15	825	77

[1] Temperature rise class F

[2] Efficiency class IE1

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

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

[5] For 400-415 V 50 Hz (380 V 50 Hz voltage code B)

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

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

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.

Flameproof cast iron motors
Technical data for Ex d IIB/IIC T4 Gb

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30; 2008

Output		Motor type		Product code		Speed	Efficiency IEC 60034--2-1; 2007 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor cos φ	Current I_N	I_s/I_N	Torque T_N	T_l/T_N	T_b/T_N	Moment of inertia J = 1/4 GD²	Weight	Sound pressure level L_{PA}
kW						r/min					A		Nm			kgm²	kg	dB
1500 r/min = 4-poles				**400 V 50 Hz**							**CENELEC-design**							
0.55		**M3JP**	**80 MA**	3GJP	082 310-••H	1421	76.6	76.6	73.7	0.73	1.41	4.9	3.6	2.3	2.7	0.001	38	59
0.75		**M3JP**	**80 MB**	3GJP	082 320-••H	1412	80.4	80.5	78.4	0.76	1.77	5.2	5	2.2	2.7	0.0012	40	59
1.1		**M3JP**	**90 SLA**	3GJP	092 010-••H	1432	83.3	83.3	80.7	0.77	2.4	5.9	7.3	2.8	3.5	0.002	51	54
1.5		**M3JP**	**90 SLC**	3GJP	092 030-••H	1431	83.2	82.8	80.4	0.79	3.2	6.5	10	2.3	3.0	0.003	53	54
2.2		**M3JP**	**100 LA**	3GJP	102 510-••H	1441	84.7	85.6	84.8	0.86	4.3	7.0	14.5	2.7	3.3	0.0075	70	52
3		**M3JP**	**100 LB**	3GJP	102 520-••H	1442	86.5	87.2	86.3	0.83	6	7.3	19.8	2.7	3.4	0.0081	72	52
4		**M3JP**	**112 MC**	3GJP	112 330-••H	1458	88.2	87.8	85.6	0.78	8.3	8.7	26.1	3.0	3.8	0.013	81	52
5.5		**M3JP**	**132 SMB**	3GJP	132 220-••H	1458	88.5	88.7	87.2	0.79	11.3	7.4	36	3.0	3.5	0.023	111	60
7.5		**M3JP**	**132 SMD**	3GJP	132 240-••H	1460	89.1	89.1	87.6	0.75	16.1	6.8	49	3.3	3.7	0.034	114	60
11		**M3JP**	**160 MLC**	3GJP	162 430-••H	1470	91.2	91.5	90.6	0.82	21.2	7.8	71.4	3.0	3.5	0.096	232	62
15		**M3JP**	**160 MLE**	3GJP	162 450-••H	1467	92.0	92.4	92.1	0.84	28	7.8	97.6	3.0	3.5	0.13	255	61
18.5		**M3JP**	**180 MLA**	3GJP	182 410-••H	1474	91.6	92.0	91.2	0.83	35.1	7.2	119	2.6	3.1	0.19	277	62
22		**M3JP**	**180 MLB**	3GJP	182 420-••H	1471	91.6	92.4	92.2	0.83	41.7	6.8	142	2.5	3.0	0.21	285	62
30		**M3JP**	**200 MLB**	3GJP	202 420-••G	1475	93.6	94.0	93.7	0.85	54.4	7.4	194	3.0	2.8	0.34	340	61
37		**M3JP**	**225 SMB**	3GJP	222 220-••G	1480	93.6	93.9	93.4	0.85	67.1	7.6	238	3.2	2.9	0.42	390	67
45		**M3JP**	**225 SMC**	3GJP	222 230-••G	1477	94.1	94.6	94.4	0.88	78.4	7.6	290	3.2	2.7	0.49	425	67
55		**M3JP**	**250 SMA**	3GJP	252 210-••G	1479	94.3	94.3	93.6	0.84	100	7.2	355	2.5	3.1	0.72	450	66
75		**M3JP**	**280 SMA**	3GJP	282 210-••G	1484	94.5	94.5	93.9	0.85	134	6.9	482	2.5	2.8	1.25	725	68
90		**M3JP**	**280 SMB**	3GJP	282 220-••G	1483	94.7	94.8	94.4	0.86	159	7.2	579	2.5	2.7	1.5	765	68
110		**M3JP**	**315 SMA**	3GJP	312 210-••G	1487	95.1	95.1	94.3	0.86	194	7.2	706	2.0	2.5	2.3	1000	70
132		**M3JP**	**315 SMB**	3GJP	312 220-••G	1487	95.4	95.4	94.7	0.86	232	7.1	847	2.3	2.7	2.6	1060	70
160		**M3JP**	**315 SMC**	3GJP	312 230-••G	1487	95.6	95.6	95.1	0.85	284	7.2	1027	2.4	2.9	2.9	1100	70
200		**M3JP**	**315 MLA**	3GJP	312 410-••G	1486	95.6	95.6	95.3	0.86	351	7.2	1285	2.5	2.9	3.5	1260	70
250		**M3JP**	**355 SMA**	3GJP	352 210-••G	1488	95.9	95.9	95.5	0.86	437	7.1	1604	2.3	2.7	5.9	1800	74
315		**M3JP**	**355 SMB**	3GJP	352 220-••G	1488	95.9	95.9	95.6	0.86	551	7.3	2021	2.3	2.8	6.9	1970	74
355		**M3JP**	**355 SMC**	3GJP	352 230-••G	1487	95.9	95.9	95.7	0.86	621	6.8	2279	2.4	2.7	7.2	2010	78
400		**M3JP**	**355 MLA**	3GJP	352 410-••G	1489	96.3	96.3	95.9	0.85	705	6.8	2565	2.3	2.6	8.4	2330	78
450		**M3JP**	**355 MLB**	3GJP	352 420-••G	1490	96.8	96.8	96.3	0.86	780	6.9	2884	2.3	2.9	8.4	2330	78
500		**M3JP**	**355 LKA**	3GJP	352 810-••G	1490	97.0	97.0	96.5	0.86	865	6.8	3204	2.0	3.0	10	2690	78
560		**M3JP**	**400 LA**	3GJP	402 510-••G	1491	96.8	96.8	96.3	0.85	982	7.4	3586	2.4	2.8	15	3200	78
560		**M3JP**	**400 LKA**	3GJP	402 810-••G	1491	96.8	96.8	96.3	0.85	982	7.4	3586	2.4	2.8	15	3200	78
630		**M3JP**	**400 LB**	3GJP	402 520-••G	1491	97.0	97.0	96.5	0.87	1077	7.6	4034	2.2	2.9	16	3580	78
630		**M3JP**	**400 LKB**	3GJP	402 820-••G	1491	97.0	97.0	96.5	0.87	1077	7.6	4034	2.2	2.9	16	3580	78
710	1)	**M3JP**	**400 LC**	3GJP	402 530-••G	1491	97.1	97.1	96.6	0.86	1227	7.6	4547	2.4	3.0	17	3680	78
710	1)	**M3JP**	**400 LKC**	3GJP	402 830-••G	1491	97.1	97.1	96.6	0.86	1227	7.6	4547	2.4	3.0	17	3680	78
1500 r/min = 4-poles				**400 V 50 Hz**							**High-output design**							
18.5		**M3JP**	**160 MLF**	3GJP	162 460-••H	1469	91.7	92.1	91.4	0.83	35	7.8	120	3.2	3.5	0.13	255	68
22	2)	**M3JP**	**160 MLG**	3GJP	162 470-••H	1466	90.8	91.1	90.4	0.81	43.1	7.9	143	3.3	3.6	0.13	255	68
30	1) 2)	**M3JP**	**180 MLC**	3GJP	182 430-••H	1473	92.2	92.3	91.6	0.81	57.9	7.1	194	2.8	3.2	0.248	304	66
37		**M3JP**	**200 MLC**	3GJP	202 430-••G	1475	93.0	93.1	92.3	0.82	70	7.5	239	3.5	3.2	0.34	340	73
55		**M3JP**	**225 SMD**	3GJP	222 240-••G	1483	94.3	94.5	93.9	0.83	101	7.4	354	3.4	2.9	0.55	445	68
62	2)	**M3JP**	**225 SME**	3GJP	222 250-••G	1477	93.5	93.7	93.0	0.84	113	7.7	400	3.5	2.9	0.55	445	74
75		**M3JP**	**250 SMB**	3GJP	252 220-••G	1476	94.3	94.5	94.2	0.86	133	7.6	485	2.8	3.2	0.88	505	73
86	2)	**M3JP**	**250 SMC**	3GJP	252 230-••G	1477	94.1	94.4	94.0	0.85	155	7.8	556	2.9	3.5	0.98	530	74
110		**M3JP**	**280 SMC**	3GJP	282 230-••G	1485	95.1	95.2	94.7	0.86	194	7.6	707	3.0	3.0	1.85	825	68

1) Temperature rise class F
2) Efficiency class IE1

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

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

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.

Flameproof cast iron motors
Technical data for Ex d IIB/IIC T4 Gb

IE2

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30; 2008

Output	Motor type		Product code		Speed	Efficiency IEC 60034--2-1; 2007 Full load	3/4 load	1/2 load	Power factor	Current I_N	I_s/I_N	Torque T_N	T_l/T_N	T_b/T_N	Moment of inertia J = 1/4 GD²	Weight	Sound pressure level L_{PA}
kW					r/min	100%	75%	50%	cos φ	A		Nm			kgm²	kg	dB
1000 r/min = 6-poles			**400 V 50 Hz**							**CENELEC-design**							
0.37	**M3JP**	**80 MA**	3GJP	083 310-••H	953	72.6	70.3	64.6	0.64	1.14	4.8	3.7	3.4	3.6	0.0022	38	50
0.55	**M3JP**	**80 MB**	3GJP	083 320-••H	938	72.9	71.7	67.0	0.70	1.55	4.3	5.5	2.8	2.9	0.0022	38	50
0.75	**M3JP**	**90 SLA**	3GJP	093 010-••H	946	77.9	77.1	73.4	0.69	2	4.9	7.5	2.1	2.8	0.0037	52	44
1.1	**M3JP**	**90 SLC**	3GJP	093 030-••H	933	78.5	78.8	76.3	0.71	2.8	4.7	11.2	1.8	2.4	0.0048	53	44
1.5	**M3JP**	**100 LA**	3GJP	103 510-••H	951	80.1	80.0	77.4	0.74	3.6	4.2	15	2.3	2.9	0.012	69	54
2.2	**M3JP**	**112 MB**	3GJP	113 320-••H	950	82.0	82.5	80.6	0.76	5	5.9	22.1	2.2	2.8	0.014	72	54
3	**M3JP**	**132 SMB**	3GJP	133 220-••H	961	83.3	83.0	80.4	0.77	6.7	6.1	29.8	2.1	3.0	0.032	105	57
4	**M3JP**	**132 SMC**	3GJP	133 230-••H	964	84.6	84.3	81.8	0.74	9.2	6.6	39.6	2.3	3.4	0.034	107	57
5.5	**M3JP**	**132 SMD**	3GJP	133 240-••H	967	87.6	87.5	85.7	0.72	12.5	6.9	54.3	2.3	3.4	0.039	109	62
7.5	**M3JP**	**160 MLA**	3GJP	163 410-••H	965	87.2	88.4	88.2	0.81	15.3	6.5	74.2	1.9	3.0	0.088	226	57
11	**M3JP**	**160 MLB**	3GJP	163 420-••H	972	90.1	90.8	90.4	0.81	21.7	7.8	108	2.3	3.5	0.126	253	65
15	**M3JP**	**180 MLB**	3GJP	183 420-••H	972	90.4	91.0	90.4	0.82	29.2	7.2	147	1.9	3.2	0.25	304	58
18.5	**M3JP**	**200 MLA**	3GJP	203 410-••G	983	90.9	91.1	90.2	0.82	35.8	7.1	179	3.2	3.1	0.37	300	66
22	**M3JP**	**200 MLB**	3GJP	203 420-••G	983	91.6	91.9	91.0	0.82	42.2	7.5	213	3.2	3.2	0.43	320	61
30	**M3JP**	**225 SMB**	3GJP	223 220-••G	985	92.2	92.6	92.2	0.82	57.2	7.4	290	3.4	3.0	0.64	385	61
37	**M3JP**	**250 SMA**	3GJP	253 210-••G	987	93.1	93.4	92.8	0.81	70.8	7.2	357	3.2	2.9	1.16	455	66
45	**M3JP**	**280 SMA**	3GJP	283 210-••G	990	93.4	93.6	93.1	0.84	82.7	7.0	434	2.5	2.5	1.85	705	66
55	**M3JP**	**280 SMB**	3GJP	283 220-••G	990	93.8	94.0	93.3	0.84	100	7.0	530	2.7	2.6	2.2	745	66
75	**M3JP**	**315 SMA**	3GJP	313 210-••G	992	94.4	94.4	93.5	0.82	139	7.4	721	2.4	2.8	3.2	930	70
90	**M3JP**	**315 SMB**	3GJP	313 220-••G	992	94.8	94.8	94.2	0.84	163	7.5	866	2.4	2.8	4.1	1030	70
110	**M3JP**	**315 SMC**	3GJP	313 230-••G	991	95.0	95.0	94.6	0.83	201	7.4	1059	2.5	2.9	4.9	1100	70
132	**M3JP**	**315 MLA**	3GJP	313 410-••G	991	95.3	95.4	94.9	0.83	240	7.5	1271	2.7	3.0	5.8	1250	68
160	**M3JP**	**355 SMA**	3GJP	353 210-••G	993	95.4	95.4	94.8	0.83	291	7.0	1538	2.0	2.6	7.9	1630	75
200	**M3JP**	**355 SMB**	3GJP	353 220-••G	993	95.7	95.7	95.1	0.84	359	7.2	1923	2.2	2.7	9.7	1790	75
250	**M3JP**	**355 SMC**	3GJP	353 230-••G	993	95.7	95.7	95.1	0.83	454	7.4	2404	2.6	2.9	11.3	2010	75
315	**M3JP**	**355 MLB**	3GJP	353 420-••G	992	95.7	95.7	95.2	0.83	572	7.0	3032	2.5	2.7	13.5	2370	75
355	**M3JP**	**355 LKA**	3GJP	353 810-••G	992	95.7	95.7	95.1	0.83	645	7.6	3417	2.7	2.9	15.5	2690	75
400	**M3JP**	**400 LA**	3GJP	403 510-••G	993	96.2	96.3	95.8	0.82	731	7.1	3846	2.3	2.7	17	3180	76
400	**M3JP**	**400 LKA**	3GJP	403 810-••G	993	96.2	96.3	95.8	0.82	731	7.1	3846	2.3	2.7	17	3180	76
450	**M3JP**	**400 LB**	3GJP	403 520-••G	994	96.6	96.6	96.1	0.82	819	7.4	4323	2.4	2.8	20.5	3430	76
450	**M3JP**	**400 LKB**	3GJP	403 820-••G	994	96.6	96.6	96.1	0.82	819	7.4	4323	2.4	2.8	20.5	3430	76
500	**M3JP**	**400 LC**	3GJP	403 530-••G	993	96.6	96.7	96.2	0.83	900	7.2	4808	2.5	2.7	22	3580	76
500	**M3JP**	**400 LKC**	3GJP	403 830-••G	993	96.6	96.7	96.2	0.83	900	7.2	4808	2.5	2.7	22	3580	76
560	**M3JP**	**400 LD**	3GJP	403 540-••G	993	96.9	96.9	96.4	0.85	981	7.4	5385	2.4	2.8	24	3680	77
560	**M3JP**	**400 LKD**	3GJP	403 840-••G	993	96.9	96.9	96.4	0.85	981	7.4	5385	2.4	2.8	24	3680	77
610	**M3JP**	**450 LA**	3GJP	453 510-••G	994	96.6	96.6	96.2	0.83	1098	7.1	5860	1.4	2.9	31	4320	81
1000 r/min = 6-poles			**400 V 50 Hz**							**High-output design**							
14 [1) 2)]	**M3JP**	**160 MLC**	3GJP	163 430-••H	969	89.2	89.4	88.0	0.75	30.2	7.9	137	2.8	3.9	0.126	253	64
18.5 [2)]	**M3JP**	**180 MLC**	3GJP	183 430-••H	975	90.1	90.2	88.7	0.74	40	7.2	181	2.0	3.2	0.25	304	61
30 [2)]	**M3JP**	**200 MLC**	3GJP	203 430-••G	983	91.6	91.7	90.5	0.80	59	7.5	291	3.5	3.4	0.49	340	65
37 [2)]	**M3JP**	**225 SMC**	3GJP	223 230-••G	983	92.1	92.5	92.1	0.83	69.8	7.1	359	3.0	2.8	0.75	415	64
45	**M3JP**	**250 SMB**	3GJP	253 220-••G	986	93.1	93.3	92.6	0.82	85	7.2	435	3.3	2.8	1.49	500	65
75	**M3JP**	**280 SMC**	3GJP	283 230-••G	990	94.2	94.5	94.1	0.84	136	7.3	723	2.8	2.7	2.85	825	66

[1)] Temperature rise class F
[2)] Efficiency class IE1

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

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

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.

Flameproof cast iron motors
Technical data for Ex d IIB/IIC T4 Gb

IP 55 - IC 411 - Insulation class F, temperature rise class B

Output	Motor type		Product code		Speed	Efficiency IEC 60034--2-1; 2007 Full load	3/4 load	1/2 load	Power factor	Current I_N	I_s/I_N	Torque T_N	T_l/T_N	T_b/T_N	Moment of inertia $J = 1/4\ GD^2$	Weight	Sound pressure level L_{PA}
kW					r/min	100%	75%	50%	cos φ	A		Nm			kgm²	kg	dB
750 r/min = 8-poles			**400 V 50 Hz**							**CENELEC-design**							
0.18	**M3JP**	**80 MA**	3GJP	084 310-••H	720	61.0	56.4	48.3	0.48	0.88	3.3	2.3	3.7	4.0	0.0022	38	36
0.25	**M3JP**	**80 MB**	3GJP	084 320-••H	705	63.8	61.1	54.6	0.58	0.97	3.2	3.3	2.6	2.8	0.0022	38	36
0.37	**M3JP**	**90 SLA**	3GJP	094 010-••H	696	67.0	67.0	63.1	0.63	1.26	3.0	5	2.0	2.2	0.0036	50	36
0.55	**M3JP**	**90 SLC**	3GJP	094 030-••H	695	68.7	68.5	64.4	0.61	1.89	3.1	7.5	2.2	2.4	0.0037	52	36
0.75	**M3JP**	**100 LA**	3GJP	104 510-••H	720	75.9	74.1	69.1	0.59	2.4	3.8	9.9	2.0	2.9	0.012	69	54
1.1	**M3JP**	**100 LB**	3GJP	104 520-••H	717	76.4	74.9	70.2	0.57	3.6	3.7	14.6	2.1	2.9	0.012	69	54
1.5	**M3JP**	**112 MC**	3GJP	114 330-••H	713	77.2	76.4	72.4	0.59	4.7	3.5	20	2.0	2.7	0.014	73	54
2.2	**M3JP**	**132 SMC**	3GJP	134 230-••H	720	80.1	79.8	76.7	0.65	6	4.7	29.1	2.0	2.9	0.034	107	59
3	**M3JP**	**132 SMD**	3GJP	134 240-••H	710	79.9	81.5	80.6	0.70	7.7	4.1	40.3	1.7	2.3	0.036	109	59
4	**M3JP**	**160 MLA**	3GJP	164 410-••H	722	86.7	87.4	86.6	0.71	9.3	5.4	52.9	1.7	2.8	0.133	251	59
5.5	**M3JP**	**160 MLB**	3GJP	164 420-••H	723	86.8	87.6	86.8	0.71	12.8	5.8	72.6	1.9	3.1	0.133	251	53
7.5	**M3JP**	**160 MLC**	3GJP	164 430-••H	718	85.5	86.3	85.5	0.70	18	5.7	99.7	2.1	3.1	0.133	251	55
11	**M3JP**	**180 MLB**	3GJP	184 420-••H	723	88.3	89.2	88.7	0.72	24.9	5.7	145	1.7	2.7	0.245	298	63
15	**M3JP**	**200 MLA**	3GJP	204 410-••G	734	89.9	90.3	89.6	0.79	30.4	7.0	195	2.4	3.2	0.45	315	56
18.5	**M3JP**	**225 SMA**	3GJP	224 210-••G	734	90.0	90.3	89.3	0.74	40	6.1	240	2.2	3.0	0.61	370	55
22	**M3JP**	**225 SMB**	3GJP	224 220-••G	732	90.6	91.2	90.6	0.77	45.5	6.5	287	2.2	2.9	0.68	385	56
30	**M3JP**	**250 SMA**	3GJP	254 210-••G	735	91.4	91.2	90.7	0.78	60.7	6.7	389	2.0	2.9	1.25	455	56
37	**M3JP**	**280 SMA**	3GJP	284 210-••G	741	92.7	92.7	91.6	0.78	73.8	7.3	476	1.7	3.0	1.85	705	65
45	**M3JP**	**280 SMB**	3GJP	284 220-••G	741	93.2	93.2	92.2	0.78	89.3	7.6	579	1.8	3.1	2.2	745	65
55	**M3JP**	**315 SMA**	3GJP	314 210-••G	742	93.4	93.5	92.7	0.81	104	7.1	707	1.6	2.7	3.2	930	62
75	**M3JP**	**315 SMB**	3GJP	314 220-••G	741	93.7	93.9	93.4	0.82	140	7.1	966	1.7	2.7	4.1	1030	62
90	**M3JP**	**315 SMC**	3GJP	314 230-••G	741	94.0	94.2	93.6	0.82	168	7.4	1159	1.8	2.7	4.9	1100	64
110	**M3JP**	**315 MLA**	3GJP	314 410-••G	740	94.0	94.3	94.0	0.83	203	7.3	1419	1.8	2.7	5.8	1250	72
132	**M3JP**	**355 SMA**	3GJP	354 210-••G	744	94.7	94.7	94.0	0.80	251	7.5	1694	1.5	2.6	7.9	1630	69
160	**M3JP**	**355 SMB**	3GJP	354 220-••G	744	95.2	95.2	94.5	0.80	303	7.6	2053	1.6	2.6	9.7	1790	69
200	**M3JP**	**355 SMC**	3GJP	354 230-••G	743	95.3	95.4	94.8	0.80	378	7.4	2570	1.6	2.6	11.3	1930	69
250	**M3JP**	**355 MLB**	3GJP	354 420-••G	743	95.4	95.5	95.0	0.80	472	7.5	3213	1.6	2.7	13.5	2370	72
315	**M3JP**	**400 LA**	3GJP	404 510-••G	744	96.1	96.2	95.8	0.81	584	7.0	4043	1.2	2.6	17	3180	71
315	**M3JP**	**400 LKA**	3GJP	404 810-••G	744	96.1	96.2	95.8	0.81	584	7.0	4043	1.2	2.6	17	3180	71
355	**M3JP**	**400 LB**	3GJP	404 520-••G	743	96.2	96.3	96.1	0.83	641	6.8	4562	1.2	2.5	21	3480	71
355	**M3JP**	**400 LKB**	3GJP	404 820-••G	743	96.2	96.3	96.1	0.83	641	6.8	4562	1.2	2.5	21	3480	71
400	**M3JP**	**400 LC**	3GJP	404 530-••G	744	96.3	96.4	96.0	0.82	731	7.4	5134	1.3	2.7	24	3680	71
400	**M3JP**	**400 LKC**	3GJP	404 830-••G	744	96.3	96.4	96.0	0.82	731	7.4	5134	1.3	2.7	24	3680	71
430	**M3JP**	**450 LA**	3GJP	454 510-••G	744	95.9	96.1	95.8	0.82	789	6.2	5519	1.0	2.6	26	3920	80
470	**M3JP**	**450 LB**	3GJP	454 520-••G	744	96.0	96.2	95.8	0.82	861	6.6	6032	1.1	2.7	29	4160	80
530	**M3JP**	**450 LC**	3GJP	454 530-••G	745	96.1	96.2	95.8	0.81	982	7.3	6793	1.3	3.0	35	4520	80
600	**M3JP**	**450 LD**	3GJP	454 540-••G	745	96.3	96.3	95.9	0.80	1124	7.9	7690	1.4	3.3	41	4960	80
750 r/min = 8-poles			**400 V 50 Hz**							**CENELEC-design**							
18.5	**M3JP**	**200 MLB**	3GJP	204 420-••G	734	89.8	90.2	89.6	0.80	37.1	6.9	240	2.2	3.2	0.54	335	57
30	**M3JP**	**225 SMC**	3GJP	224 230-••G	731	90.7	91.5	91.3	0.78	61.2	6.3	391	2.3	3.0	0.75	410	59
37	**M3JP**	**250 SMB**	3GJP	254 220-••G	737	92.2	91.7	91.0	0.78	74.2	7.5	479	2.3	3.4	1.52	500	59
55	**M3JP**	**280 SMC**	3GJP	284 230-••G	741	93.4	93.5	92.8	0.80	106	7.9	708	1.9	3.1	2.85	825	65

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

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

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.

Flameproof motors Ex d IIB/IIC T4 variant codes

Code [1]	Variant	Frame size														
		80	90	100	112	132	160	180	200	225	250	280	315	355	400	450
Administration																
531	Sea freight packing	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
532	Packing of motor in vertical mounting position	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P
533	Wooden sea freight packing	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Balancing																
052	Vibration acc. to Grade A (IEC 60034-14).	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
417	Vibration acc. to Grade B (IEC 60034-14).	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
423	Balanced without key.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
424	Full key balancing.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Bearings and Lubrication																
036	Transport lock for bearings	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P
037	Roller bearing at D-end	NA	NA	NA	NA	NA	M	M	M	M	M	M	P	NA	NA	NA
040	Heat resistant grease	S	S	S	S	S	P	P	P	P	P	P	P	P	P	P
041	Bearings regreasable via grease nipples	NA	NA	NA	NA	NA	S	S	S	S	S	S	S	S	S	S
043	SPM compatible nipples for vibration measurement	NA	NA	NA	NA	NA	S	S	S	S	S	S	S	S	S	S
058	Angular contact bearing at D-end, shaft force away from bearing	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P
107	Pt100 2-wire in bearings	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
128	Double Pt100, 2-wire in bearings	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
129	Double Pt100, 3-wire in bearings	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
130	Pt100 3-wire in bearings	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
194	2Z bearings greased for life at both ends	S	S	S	S	S	M	M	M	M	M	NA	NA	NA	NA	NA
433	Outlet grease collector	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P
506	Nipples for vibration measurement : SKF Marlin Quick Connect stud CMSS-2600-3	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
654	Provision for vibration sensors (M8x1)	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
795	Lubrication information plate	NA	NA	NA	NA	NA	M	M	M	M	M	S	S	S	S	S
796	Grease nipples JIS B 1575 Pt 1/8 Type A	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
797	Stainless steel SPM nipples	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
798	Stainless steel grease nipples	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
799	Grease nipples flat type DIN 3404, thread M10x1	NA	NA	NA	NA	NA	M	M	M	M	M	M	P	P	P	P
800	Grease nipples JIS B 1575 Pt 1/8" pin type	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
Brakes																
412	Built-on brake	R	R	R	R	R	R	R	R	NA	NA	NA	NA	NA	NA	NA
Branch standard designs																
178	Stainless steel / acid proof bolts.	S	S	S	S	S	M	M	M	M	M	M	P	P	P	P
204	Jacking bolts for foot mounted motors	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	S	S	S
209	Non-standard voltage or frequency, (special winding)	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
396	Motor designed for ambient temperature -20 °C to -40 °C, wtih space heaters (code 450/451 must be added)	P	P	P	P	P	P	P	P	P	P	P	P	P	P	NA
397	Motor designed for ambient temperature -40 °C to -55 °C, wtih space heaters (code 450/451 must be added)	P	P	P	P	P	P	P	P	P	P	P	P	P	P	NA

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Code [1]	Variant	Frame size														
		80	90	100	112	132	160	180	200	225	250	280	315	355	400	450
398	Motor designed for ambient temperature -20 °C to -40 °C	P	P	P	P	P	P	P	P	P	P	P	P	P	P	NA
399	Motor designed for ambient temperature -40 °C to -55 °C	P	P	P	P	P	P	P	P	P	P	P	P	P	P	NA
425	Corrosion protected stator and rotor core	S	S	S	S	S	S	S	S	S	S	P	P	P	P	P
786	Special design shaft upwards (V3, V36, V6) for outdoor mounting	P	P	P	P	P	P	P	P	P	P	R	R	NA	NA	NA
Cooling system																
044	Unidirectional fan for reduced noise level. Rotation clockwise seen from D-end. Available only for 2-pole motors	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	NA
045	Unidirectional fan for reduced noise level. Rotation counter clockwise seen from D-end. Available only for 2-pole motors	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	NA
068	Light alloy metal fan	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
075	Cooling method IC418 (without fan)	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
183	Separate motor cooling (fan axial, N-end)	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
206	Steel fan	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	NA
422	Separate motor cooling (fan top, N-end)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P
791	Stainless steel fan cover	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P
Coupling																
035	Assembly of customer supplied coupling-half	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P
Documentation																
141	Binding dimension drawing	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
Drain holes																
448	Draining holes with metal plugs	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
Earthing Bolt																
067	External earthing bolt	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Hazardous Environments																
334	Ex t, Dust group III B T125C Db (non-conductive dust) acc. IEC/EN60079-31	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
336	Ex t, Dust group III C T125 Db (conductive dust) acc. IEC/EN60079-31	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
461	Ex d(e) design, Group II C	M	M	M	M	M	M	M	M	M	M	P	P	P	P	NA
462	Ex d(e) design, temperature class T5	R	R	R	R	R	R	R	R	R	R	R	R	R	R	NA
463	Ex d(e) design, temperature class T6	R	R	R	R	R	R	R	R	R	R	NA	NA	NA	NA	NA
464	Alleinschutz' design. Certification of flame proof motor and protection device together	P	P	P	P	P	P	P	P	P	P	P	R	R	R	R
508	Exde from Exd	NA	NA	NA	NA	NA	M	M	NA	NA	NA	NA	NA	NA	NA	NA
812	Explosion protection according to IEC-standards	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
813	Thermistor-based surface temperature protection T4 for frequency convertor duty	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
814	Ex tD (DIP) motors, temperature class T 150 °C	M	M	M	M	M	M	M	M	M	M	M	P	P	P	NA
816	Pt-100-based surface temperature protection T4 for frequency convertor duty. 3-wire system	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
Heating elements																
450	Heating element, 100-120V	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
451	Heating element, 200-240V	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P

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		80	90	100	112	132	160	180	200	225	250	280	315	355	400	450
Insulation system																
014	Winding insulation class H	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
405	Special winding insulation for frequency converter supply	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Mounting arrangements																
007	IM 3001 flange mounted, IEC flange, from IM 1001 (B5 from B3)	M	M	M	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
008	IM 2101 foot/flange mounted, IEC flange, from IM 1001 (B34 from B3)	M	M	M	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
009	IM 2001 foot/flange mounted, IEC flange, from IM 1001 (B35 from B3)	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
047	IM 3601 flange mounted, IEC flange, from IM 3001 (B14 from B5)	M	M	M	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
066	Modified for specified mounting position differing from IM B3 (1001), IM B5 (3001), B14 (3601), IM B35 (2001) & IM B34 (2101)	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
093	IM 3601 flange mounted, IEC flange, from IM 1001 (B14 from B3)	M	M	M	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
228	Flange FF 130	M	M	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
229	Flange FT 130	M	M	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
235	Flange FF 165	S	S	M	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
236	Flange FT 165	M	M	M	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
245	Flange FF 215	NA	NA	S	S	M	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
246	Flange FT 215	NA	NA	M	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
255	Flange FF 265	NA	NA	NA	NA	S	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
256	Flange FT 265	NA	NA	NA	NA	M	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
257	Flange FF 100	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
258	Flange FT 100	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
259	Flange FF 115	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
260	Flange FT 115	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
305	Additional lifting lugs	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P
309	IM 1001 foot mounted, from IM 3001 (B3 from B5)	M	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA	NA	NA
311	IM 2001 foot/flange mounted, IEC flange, from IM 3001 (B35 from B5)	M	M	M	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Noise reduction																
055	Noise reduction cover for foot mounted motor	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	R	R	R	R	R
Painting																
105	Paint thickness report	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
111	Painting system C3M acc. to ISO 12944-5:2007	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
114	Special paint colour, standard grade	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
115	Painting system C4M acc. To ISO 12944-5: 2007	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
168	Primer paint only	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
303	Painted insulation layer on inside of the terminal boxes	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
710	Thermally sprayed zink metallizing with acrylic top coat	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
754	Painting system C5M acc. to ISO 12944-5:2007	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P

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Code [1]	Variant	Frame size														
		80	90	100	112	132	160	180	200	225	250	280	315	355	400	450
Protection																
005	Metal protective roof, vertical motor, shaft down	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
072	Radial seal at D-end	M	M	M	M	M	M	M	M	M	M	NA	NA	NA	NA	NA
073	Sealed against oil at D-end	P	P	P	P	P	P	P	P	P	P	P	P	NA	NA	NA
158	Degree of protection IP 65	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
401	Protective roof, horizontal motor	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
403	Degree of protection IP 56	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
434	Degree of protection IP 56, open deck	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	NA
783	Labyrinth sealing at D-end	P	P	P	P	P	P	P	P	P	P	S	S	S	S	S
Rating & instruction plates																
002	Restamping voltage, frequency and output, continuous duty	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
004	Additional text on std rating plate (max 12 digits on free text line)	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
095	Restamping output (maintained voltage, frequency), intermittent duty	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
126	Tag plate	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
135	Mounting of additional identification plate, stainless	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
139	Additional identification plate delivered loose	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
159	Additional plate with text “Made in ….”	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
161	Additional rating plate delivered loose	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
163	Frequency converter rating plate. Rating data according to quotation.	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
333	For export only	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
Shaft & rotor																
069	Two shaft extensions as per basic catalogue.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
070	One or two special shaft extensions, standard shaft material	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
164	Shaft extension with closed key-way	S	S	S	S	S	S	S	S	S	S	P	P	P	P	NA
165	Shaft extension with open key-way	P	P	P	P	P	P	P	P	P	P	S	S	S	S	S
410	Stainless steel shaft (standard or non-standard design)	R	R	R	R	R	R	R	R	R	R	P	P	P	P	P
Standards and Regulations																
151	Design according to SHELL DEP 33.66.05.31-Gen. June 2007	M	M	M	M	M	M	M	M	M	M	P	P	P	P	NA
540	China energy label	P	P	P	P	P	M	M	M	M	M	M	P	P	NA	NA
541	Inmetro certification	M	M	M	M	M	P	P	P	P	P	P	P	P	P	NA
775	Design according to SHELL DEP 33.66.05.31-Gen. January 1999 design.	M	M	M	M	M	M	M	M	M	M	M	P	P	P	NA
778	GOST Export/Import Certificate (Russia)	P	P	P	P	P	M	M	P	P	P	M	P	P	P	NA
779	SASO Export/Import Certificate (Saudi Arabia)	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
782	Fulfilling CQST Certification requirements (China)	M	M	M	M	M	M	M	M	M	M	M	P	P	P	NA
788	Documentation for Korean KOSHA certification	M	M	M	M	M	M	M	M	M	M	M	P	P	P	NA
802	GOST Kazakhstan certified	P	P	NA	NA	NA	P	P	P	P	P	P	P	P	NA	NA

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Code [1]	Variant	Frame size														
		80	90	100	112	132	160	180	200	225	250	280	315	355	400	450
Stator winding temperature sensors																
120	KTY 84-130 (1 per phase) in stator winding	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
121	Bimetal detectors, break type (NCC), (3 in series), 130 ºC, in stator winding	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
122	Bimetal detectors, break type (NCC), (3 in series), 150 ºC, in stator winding	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
123	Bimetal detectors, break type (NCC), (3 in series), 170 ºC, in stator winding	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P
125	Bimetal detectors, break type (NCC), (2x3 in series), 150 ºC, in stator winding	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
127	Bimetal detectors, break type (NCC), (3 in series, 130 °C & 3 in series, 150 °C), in stator winding.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
328	PTC - thermistors (3 in series), 120 °C, in stator winding	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
435	PTC - thermistors (3 in series), 130 °C in stator winding	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
436	PTC - thermistors (3 in series), 150 °C, in stator winding.	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
439	PTC - thermistors (2x3 in series), 150 °C, in stator winding.	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
441	PTC - thermistors (3 in series, 130 °C & 3 in series, 150 °C), in stator winding.	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
445	Pt-100 2-wire in stator winding, 1 per phase	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
446	Pt-100 2-wire in stator winding, 2 per phase	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
502	Pt-100 3-wire in stator winding, 1 per phase.	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
503	Pt-100 3-wire in stator winding, 2 per phase.	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
511	PTC thermistors (2 x 3 in series), 130 °C, in stator winding	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Terminal box																
021	Terminal box LHS (seen from D-end)	NA	NA	NA	NA	NA	P	P	NA	NA	NA	NA	NA	NA	NA	NA
070	Cable entry LHS (seen from D-end)	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
157	Terminal box degree of protection IP 65	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
180	Terminal box RHS (seen from D-end)	NA	NA	NA	NA	NA	P	P	NA	NA	NA	NA	NA	NA	NA	NA
300	Increased single core cross section	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
380	Separate terminal box for temperature detectors, std. material	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
400	4 x 90 degr. turnable terminal box	S	S	S	S	S	S	S	S	S	S	S	S	NA	NA	NA
402	Terminal box adapted for Al cables	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	S	S	S	S	S
418	Separate terminal box for auxiliaries, standard material	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
466	Terminal box at N-end	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P
468	Cable entry from D-end	M	M	M	M	M	M	M	M	M	M	M	P	R	R	NA
469	Cable entry from N-end	M	M	M	M	M	M	M	M	M	M	M	P	R	R	NA
567	Separate terminal box material: Cast Iron	NA	NA	NA	NA	NA	S	S	S	S	S	S	S	S	S	S
568	Separate terminal box for heating elements, std. material	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
728	Standard cable gland, Ex d IIB, armoured cable, double sealing	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
730	Prepared for NPT cable glands	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P

[1] Certain variant codes cannot be used simultaneously.

S = Included as standard
P = New manufacture only
M = On modification of a stocked motor; or on new manufacture, the number of number per order may be limited.
R = On request
NA = Not applicable.

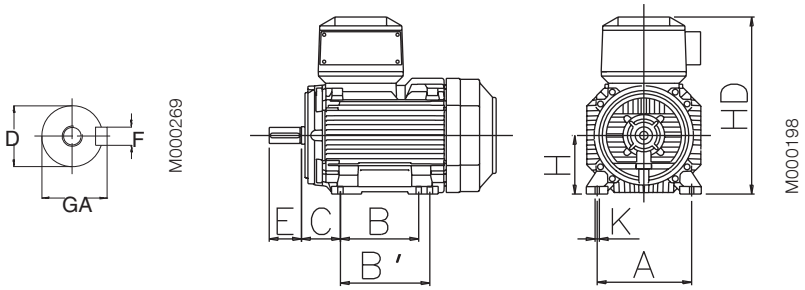
Code [1]	Variant	Frame size														
		80	90	100	112	132	160	180	200	225	250	280	315	355	400	450
732	Standard cable gland, Ex d IIB, armoured cable	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
733	Standard cable gland, Ex d IIB, non-armoured cable	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
734	Standard cable gland, Ex d IIC, armoured cable.	M	M	M	M	M	M	M	M	M	M	M	P	P	P	NA
735	Standard cable gland, Ex d IIC, non-armoured cable.	M	M	M	M	M	M	M	M	M	M	M	P	P	P	NA
Testing																
145	Type test report from a catalogue motor, 400 V 50 Hz	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
146	Type test with report for one motor from specific delivery batch.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
148	Routine test report	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
149	Test according to separate test specification.	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
150	Customer witnessed testing. Specify test procedure with other codes.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
222	Torque/speed curve, type test and multi-point load test with report for one motor from specific delivery batch.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
760	Vibration level test	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
761	Vibration spectrum test for one motor from specific delivery batch.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
762	Noise level test for one motor from specific delivery batch	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
763	Noise spectrum test for one motor from specific delivery batch.	R	R	R	R	R	P	P	P	P	P	P	P	P	P	P
764	Test for one motor from specific delivery batch with ABB frequency converter available at ABB test field. ABB standard test procedure.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Variable speed drives																
181	Rating plate with ABB standard loadability values for VSD operation. Other auxiliaries for VSD operation to be selected as necessary.	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
479	Mounting of other type of pulse tacho with shaft extension, tacho not included.	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
680	2048 pulse tacho, Ex d, tD, L&L 841910001	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
701	Insulated bearing at N-end.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	M	P	P	P	P
747	1024 pulse tacho, Ex d, tD, L&L 841910002	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P

[1] Certain variant codes cannot be used simultaneously.

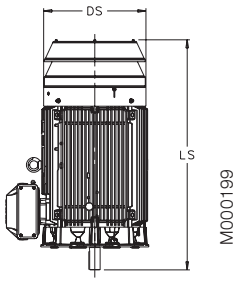
S = Included as standard
P = New manufacture only
M = On modification of a stocked motor; or on new manufacture, the number of number per order may be limited.
R = On request
NA = Not applicable.

Flameproof motors
Dimension drawings, Ex d

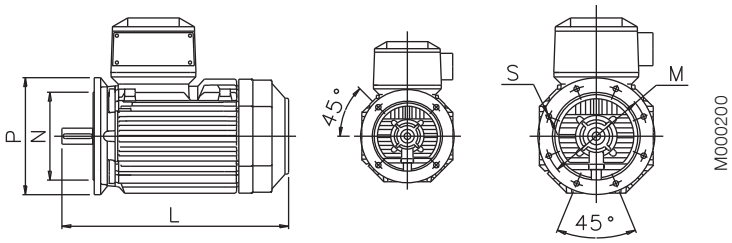
Foot-mounted motor IM 1001, IM B3



Motor with protection cover



Flange-mounted motor IM 3001, IM B5



Sizes 80 to 200 **Sizes 225 to 450**

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		O	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	4-8														2	4-8
80	19	19	21.5	21.5	6	6	40	40	340	340	20	125	100	125	50	290	10	80	165	130	200	12	160	360	360
90	24	24	27	27	8	8	50	50	405	405	20	140	100	125	56	315	10	90	165	130	200	12	180	430	430
100	28	28	31	31	8	8	60	60	480	480	25	160	140	–	63	335	10	100	215	180	250	14.5	195	505	505
112	28	28	31	31	8	8	60	60	480	480	25	190	140	–	70	350	12	112	215	180	250	14.5	195	505	505
132	38	38	41	41	10	10	80	80	560	560	30	216	140	178	89	390	12	132	265	230	300	14.5	260	590	590
160	42	42	45	45	12	12	110	110	808	808	45	254	210	254	108	495	14.5	160	300	250	350	18.5	328	756	756
180	48	48	51.5	51.5	14	14	110	110	826	826	50	279	241	279	121	535	14.5	180	300	250	350	18.5	359	756	756
200	55	55	59	59	16	16	110	110	774	774	70	318	267	305	133	616	18.5	200	350	300	400	18.5	414	844	844
225	55	60	59	64	16	18	110	140	841	871	80	356	286	311	149	663	18.5	225	400	350	450	18.5	462	921	951
250	60	65	64	69	18	18	140	140	875	875	90	406	311	349	168	726	24	250	500	450	550	18.5	506	965	965
280	65	75	69	79.5	18	20	140	140	1090	1090	100	457	368	419	190	862	24	280	500	450	550	18	555	1190	1190
315 SM_	65	80	69	85	18	22	140	170	1176	1206	115	508	406	457	216	929	30	315	600	550	660	23	624	1290	1320
315 ML_	65	90	69	95	18	25	140	170	1287	1317	115	508	457	508	216	929	30	315	600	550	660	23	624	1401	1431
355 SM_	70	100	74.5	106	20	28	140	210	1409	1479	130	610	500	560	254	1124	35	355	740	680	800	23	590	1480	1550
355 ML_	70	100	74.5	106	20	28	140	210	1514	1584	130	610	560	630	254	1124	35	355	740	680	800	23	590	1530	1600
355 LK_	70	100	74.5	106	20	28	140	210	1764	1834	130	610	630	710	254	1124	35	355	740	680	800	23	590	1635	1705
400 L_	80	110	85	126	22	28	170	210	1851	1891	150	710	900	800	224	1211	35	400	940	880	1000	28	590	1635	1705
400 LK_	80	100	85	106	22	28	170	210	1851	1891	150	686	710	800	280	1211	35	400	740	680	800	23	700	1860	1900
450	-	120 [1]	-	127 [1]	-	32 [1]	-	210 [1]	-	2071 [1]	180	800	1000	1120	250	1328	42	450	1080	1000	1150	28	On request		

[1] Size 450 pole numbers 6-8

IM 3601, IM B14 - Available flange alternatives; see also variant codes.

Flange size	Variant code	Flange dimension				Motor size 80-132				
		P	M	N	S	80	90	100	112	132
FT100	258	120	100	80	M6	S	M	NA	NA	NA
FT115	260	140	115	95	M8	M	S	NA	NA	NA
FT130	229	160	130	110	M8	M	M	S	S	NA
FT165	236	200	165	130	M10	M	M	M	M	S
FT215	246	250	215	180	M12	NA	NA	M	M	M
FT265	256	300	265	230	M12	NA	NA	NA	NA	M
FF100	257	120	100	80	Ø7	M	M	NA	NA	NA
FF115	259	140	115	95	Ø10	M	M	NA	NA	NA
FF130	228	160	130	110	Ø10	M	M	M	M	NA
FF165	235	200	165	130	Ø12	S	S	M	M	M
FF215	245	250	215	180	Ø14.5	NA	NA	S	S	M
FF265	255	300	265	230	Ø14.5	NA	NA	NA	NA	S

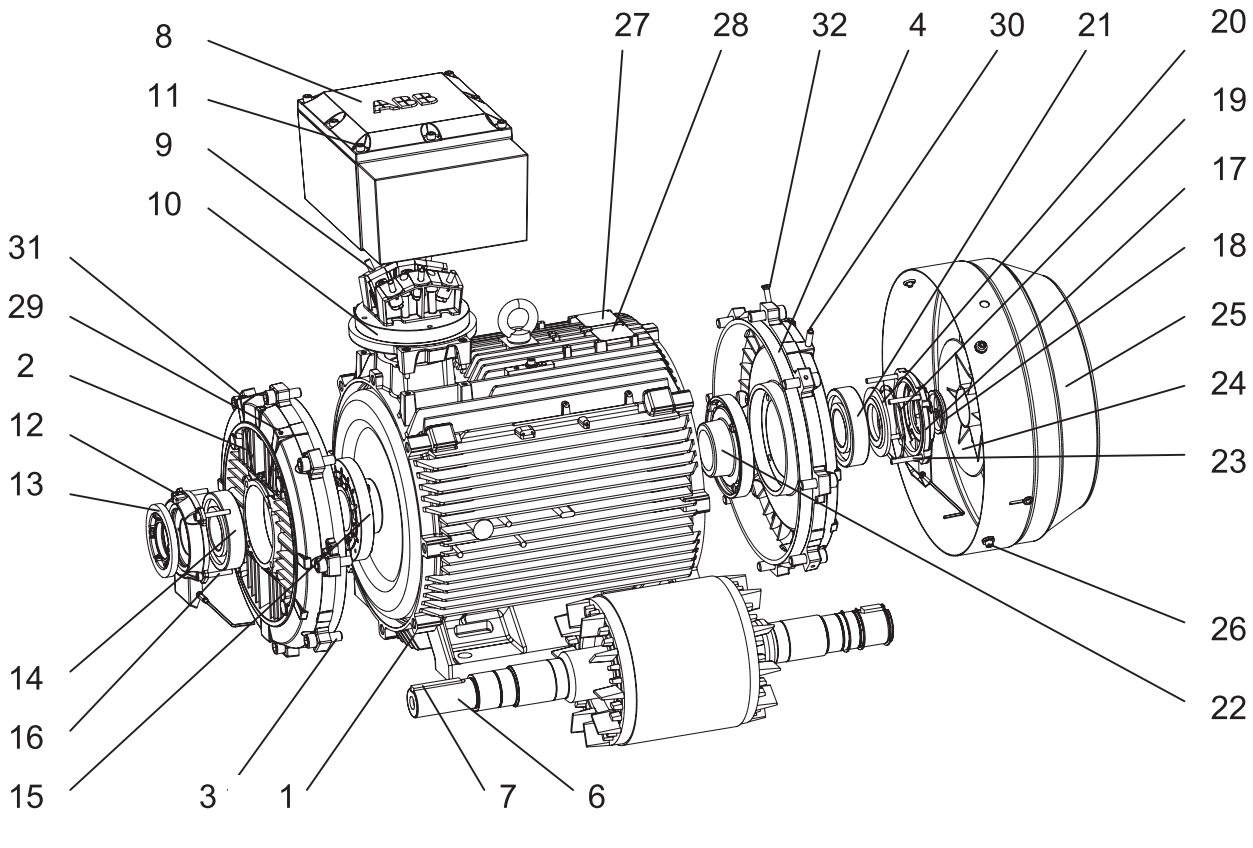
S = Standard flange M = Modification NA = Not applicable

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

Above table gives the main dimensions in mm. For detailed drawings please see our web-pages www.abb.com/motors&generators or contact ABB.

Flameproof motor construction Ex d



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
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 (280-315) Coil spring (355-450)
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

Certificate examples

IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres
for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: IECEx LCI 04.0006X issue No.:1
Certificate history: Issue No. 1 (2011-11-21) Issue No. 0 (2004-3-26)
Status: Current
Date of Issue: 2011-11-21 Page 1 of 6

Applicant: ABB Oy Motors and Generators
P.O. Box 633
Strömbergin Puistotie 5A
FIN-65101 VAASA
Finland

Electrical Apparatus: Three-phase AC motor - M3JP / M3KP 280
Optional accessory:

Type of Protection: Ex d, Ex de , Ex t

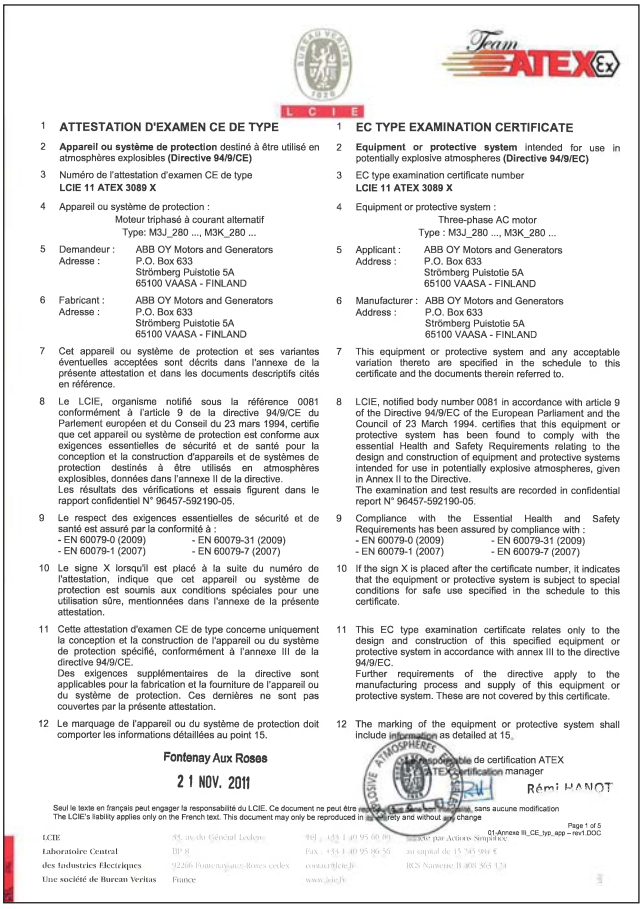
Marking: Ex d or de IIB or IIC T3 to T6 (*) Gb
Ex t IIIA or IIIB or IIIC T...°C (*) Db
IECEx LCI 04.0006X
IP5X, IP54, IP6X or IP64 (*)
(*) = depending on motor type and model as specified in manufacturer specifications.
For complete marking see additional information section

Approved for issue on behalf of the IECEx Certification Body: Michel BRENON
Position: Certification Officer Rémi HANOT
Signature: (for printed version)
Date: 21/11/2011

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
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

M000726a



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 11 ATEX 3089 X
4 Appareil ou système de protection :
Moteur triphasé à courant alternatif
Type: M3J_280 ..., M3K_280 ...
5 Demandeur : ABB OY Motors and Generators
Adresse : P.O. Box 633
Strömberg Puistotie 5A
65100 VAASA - FINLAND
6 Fabricant : ABB OY Motors and Generators
Adresse : P.O. Box 633
Strömberg Puistotie 5A
65100 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° 96457-592190-05.
9 Le respect des exigences essentielles de sécurité et de santé est assuré par la conformité à :
- EN 60079-0 (2009) - EN 60079-31 (2009)
- EN 60079-1 (2007) - EN 60079-7 (2007)
10 Le 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
21 NOV. 2011
Le Responsable de certification ATEX
ATEX Certification manager
Rémi HANOT

1 EC TYPE EXAMINATION CERTIFICATE
2 Equipment or protective system intended for use in potentially explosive atmospheres (Directive 94/9/EC)
3 EC type examination certificate number
LCIE 11 ATEX 3089 X
4 Equipment or protective system :
Three-phase AC motor
Type : M3J_280 ..., M3K_280 ...
5 Applicant : ABB OY Motors and Generators
Address : P.O. Box 633
Strömberg Puistotie 5A
65100 VAASA - FINLAND
6 Manufacturer : ABB OY Motors and Generators
Address : P.O. Box 633
Strömberg Puistotie 5A
65100 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° 96457-592190-05.
9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with :
- EN 60079-0 (2009) - EN 60079-31 (2009)
- EN 60079-1 (2007) - EN 60079-7 (2007)
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 information as detailed at 15.

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01-Annexe III_CE_typ_app – rev1.DOC

LCIE 33, av. du Général Leclerc BP 8 92260 Fontenay-aux-Roses cedex France
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Laboratoire Central des Industries Electriques
Une société de Bureau Veritas
Société par Actions Simplifiée au capital de 15 749 904 € RCS Nanterre B 408 363 121

M000727a

EC Declaration of Conformity

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

hereby declares that

the products: 3-phase induction motors, series M3JP, M3JC, M3KP and M3KC as listed on page 2 in this document, fulfill provisions of the relevant Council Directives:

Directive 94/9/EC (ATEX of 23rd March 1994)

by applying the following harmonized standards:

EN 60079-0 (2009), EN 60079-1 (2007), EN 60079-7 (2007) and EN 60079-31 (2009),

ABB Oy Motors and Generators declare on it's sole responsibility,

- that the state of the art of these standards do not modify the result of the assessment carried out by LCIE which issued the EC type examination certificates according to former editions of the standard series.

- that listed motors conform to the requirements of annex II of the directive 94/9/EC clause 1.2.7 by applying the standards series EN 60034.

Directive 2009/125/EC (EuP of 21st October 2009)

by fulfilling the requirements of the standard EN 60034-30: march 2009 in respect of the efficiency class.

Note: When installing motors for converter supply applications additional requirements must be respected regarding the motor as well as the installation, as described in the appropriate dedicated addendum.

Signed by
Title Juha-Pekka Kuokkala
Date Product Development Director
2012-02-07

document 3GZF500930-309

ABB Oy

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FINLAND

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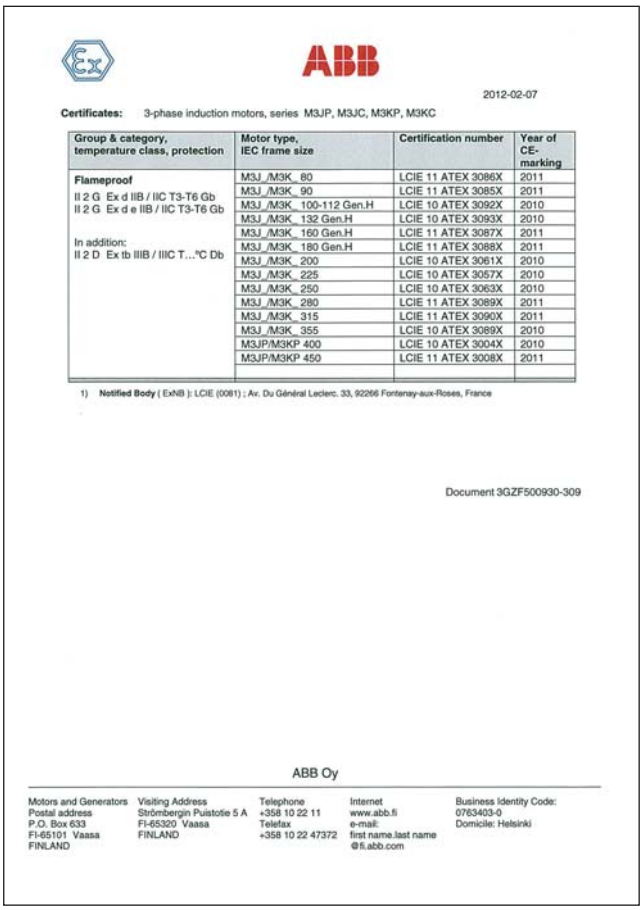
Domicile: Helsinki

M000725-1



2012-02-07

Certificates: 3-phase induction motors, series M3JP, M3JC, M3KP, M3KC

Group & category, temperature class, protection	Motor type, IEC frame size	Certification number	Year of CE-marking
Flameproof II 2 G Ex d IIB / IIC T3-T6 Gb II 2 G Ex d e IIB / IIC T3-T6 Gb	M3J_/M3K_ 80	LCIE 11 ATEX 3086X	2011
	M3J_/M3K_ 90	LCIE 11 ATEX 3085X	2011
	M3J_/M3K_ 100-112 Gen.H	LCIE 10 ATEX 3092X	2010
	M3J_/M3K_ 132 Gen.H	LCIE 10 ATEX 3093X	2010
	M3J_/M3K_ 160 Gen.H	LCIE 11 ATEX 3087X	2011
	M3J_/M3K_ 180 Gen.H	LCIE 11 ATEX 3088X	2011
In addition: II 2 D Ex tb IIIB / IIIC T...°C Db	M3J_/M3K_ 200	LCIE 10 ATEX 3061X	2010
	M3J_/M3K_ 225	LCIE 10 ATEX 3057X	2010
	M3J_/M3K_ 250	LCIE 10 ATEX 3063X	2010
	M3J_/M3K_ 280	LCIE 11 ATEX 3089X	2011
	M3J_/M3K_ 315	LCIE 11 ATEX 3090X	2011
	M3J_/M3K_ 355	LCIE 10 ATEX 3089X	2010
	M3JP/M3KP 400	LCIE 10 ATEX 3004X	2010
	M3JP/M3KP 450	LCIE 11 ATEX 3008X	2011

1) Notified Body (ExNB): LCIE (0081) ; Av. Du Général Leclerc. 33, 92266 Fontenay-aux-Roses, France

Document 3GZF500930-309

ABB Oy

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Business Identity Code:
0763403-0
Domicile: Helsinki

M000725-2

Flameproof motors Ex d in brief, basic design

Motor size			80	90	100	112	132	160	180
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			Forged steel, detachable feet						
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	2-12 -pole	6205-2Z/C3		6206-2Z/C3		6208-2Z/C3	6309/C3	6310/C3
	N-end	2-12 -pole	6204-2Z/C3	6205-2Z/C3	6206-2Z/C3		6208-2Z/C3	6309/C3	6310/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			–					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		Acidproof steel A4-80					Steel 8.8, zinc electroplated and chromated.	
Connections	Cable entries		1 x M25 x 1.5		1 x M32 x 1.5			2 x M40 x 1.5	
	Terminals		6 terminals for connection with cable lugs (not included)						
Fan	Material		Polyamide. Reinforced with glass fibre.					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 as standard						
Rotor winding	Material		Pressure die-cast aluminum						
Balancing			Half key balancing						
Key way			Closed						
Heating elements	On request		25 W						
Drain holes			–					Optional	
External earthing bolt			As standard						
Enclosure			IP 55						
Cooling method			IC 411						

Flameproof motors Ex d in brief, basic design

Motor size			200	225	250	280	315	355	400	450
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	6312M/C3	6313M/C3	6315M/C3	6316/C3		6316M/C3	6317M/C3	-
		4-12 -pole	6312/C3	6313/C3	6315/C3		6319/C3	6322/C3	6324/C3	6326M/C3
	N-end	2-pole	6310M/C3	6312M/C3	6313M/C3	6316/C3		6316M/C3	6317M/C3	-
		4-12 -pole	6310/C3	6312/C3	6313/C3	6316/C3			6319/C3	6322M/C3
Axially-locked bearings	Inner bearing cover		As standard, locked at D-end							
Bearing seal			Gamma-ring			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		2xM50x1.5			2xM63x1.5	2xM75x1.5			
	Terminals		6 terminals for connection with cable lugs (not included)							
Fan	Material		Polypropylene. Reinforced with glass fibre.					Polypropylene reinforced with glass fibre or 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 as standard							
Rotor winding	Material		Pressure die-cast aluminum							
Balancing			Half key balancing							
Key way			Closed			Open				
Heating elements	On request		25 W	60 W			120 W			200 W
Drain holes			Optional							
External earthing bolt			As standard							
Enclosure			IP 55							
Cooling method			IC 411							

Flameproof motors, Ex de IIB/IIC T4 Gb
Totally enclosed squirrel cage three phase low voltage motors, Sizes 80 to 450, 0.55 to 950 kW

www.abb.com/motors&generators
> Motors for explosive atmospheres
>> Flameproof motors

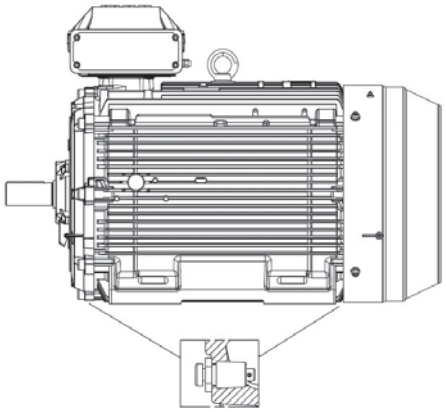
Mechanical design

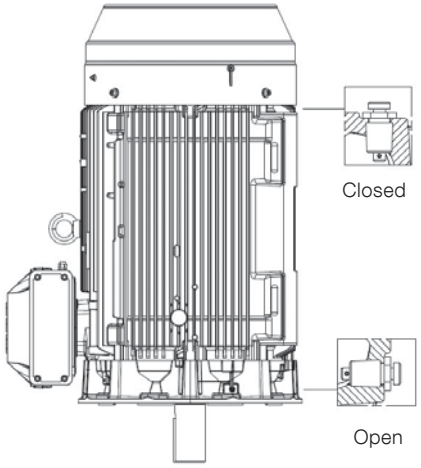
Drain holes

Flameproof Ex de motors are provided without drain holes as standard.

Drain holes with certified metal plugs are available as an option. Please see variant code section.

Type of protection	Frame material	Frame size	Drain holes
Flameproof	Cast iron	80-132	not included
		160-450	optional





M000724

Bearing seals

The following bearing seals are used as standard, special seals like radial seal are available as option. Please see variant code section.

Bearing seals in Ex de motors (M3KP)

Frame size	Number of poles	D-end	N-end
80-250	2-12	Gamma ring	Gamma ring
280-355	2-12	Labyrinth seal	V-ring
400	2	Labyrinth seal	Labyrinth seal
400	4-12	Labyrinth seal	V-ring
450	4-12	Labyrinth seal	Labyrinth seal

Terminal box standard delivery

Terminal boxes are mounted on top of the motor at D-end as standard. The terminal boxes of motor sizes 80 to 315 can be turned 4x90° and in motor sizes 355 to 450 2x180° after delivery. When ordering Ex de motors in sizes 280 to 450 with 4x90°, the position of the terminal box has to be defined in the order.

The degree of protection of standard terminal box is IP 55 and it complies with the requirements of this enclosure type and effectively prevents all ignition sources such as sparks, excessive overheating etc. The features of the terminal box are: no self loosening terminals, compliance with creepage distances and clearances specified in standards.

If no ordering information on the cable is given, it is assumed to be p.v.c. -insulated non-armoured and termination parts are supplied according to the table below. To enable the supply of suitable terminations for the motor, please state cable type, quantity, size and outer diameter when ordering.

All Ex de motors are delivered as standard with cable glands or cable sealing end units according to the table below. Different glands can be provided separately as an option. Please see Alternatives section for details.

Note: For 500 V motors information please contact ABB!

Please contact ABB for information about terminal boxes on motors rated both gas (Ex de) and dust (Ex t) environments.

Standard delivery 400/690 V (if nothing else informed)

Cable entries for supply cables

Motor size	Pole number	Terminal box type	Terminal box opening	45° adapter	Threaded holes	Cable gland	Cable sealing end unit	Cable outer diameter mm	Single core cross-section mm^2 for rated power	Terminal bolt size 6 x
80-90	2-8	25	B	-	1xM25	1xM25	-	1xØ10-16	10	M5
100-132	2-8	25	B	-	2xM32	2xM32	-	2xØ16-21	10	M5
160-180	2-8	63	B	-	2xM40	2xM40	-	2xØ18-27	35	M6
200-250	2-8	160	C	-	2xM50	2xM50	-	2xØ26-35	70	M10
280	2-8	210	C	-	2xM63	2xM63	-	2xØ32-49	2x150	M12
315SM, ML	2-8	370	D	-	2xM63	2xM63	-	2xØ32-49	2x240	M12
355 SMA, SMB, SMC	2-4	750	E	E-D	-	-	medium	2xØ48-60	4x240	M12
355 SMC	6	750	E	E-D	-	-	medium	2xØ48-60	4x240	M12
355 SMC	8	370	D	-	2xM63	2xM63	-	2xØ32-49	2x240	M12
355 SMA, SMB	6-8	370	D	-	2xM63	2xM63	-	2xØ32-49	2x240	M12
355 ML, LK	2-4	750	E	E-D	-	-	large	2xØ60-80	4x240	M12
355 ML, LK	6-8	750	E	E-D	-	-	medium	2xØ48-60	4x240	M12
400 L, LK	2-6	750	E	E-D	-	-	large	2xØ60-80	4x240	M12
400 L, LK	8	750	E	E-D	-	-	medium	2xØ48-60	4x240	M12
450	4-8	1200	E	E-2D	-	-	2xlarge	2xØ60-80	6x240	12xM12

Auxiliary cable entries

80-132	2-8	1xM20	1xM20	1xØ8-14	
160-450	2-8	2xM20	2xM20	1xØ8-14	

Earthings on motor

	Frame	Terminal box	Terminal box type
80-132	M6	M6	25
160-180	M6	M6	63
200-250	M8	M8	160
280-315	M10	2xM10	210, 370
355-400	M10	2xM10	750
450	M10	4xM12	1200

Examples of terminal boxes and connection parts
Below pictures show a collection of terminal boxes and connection parts.

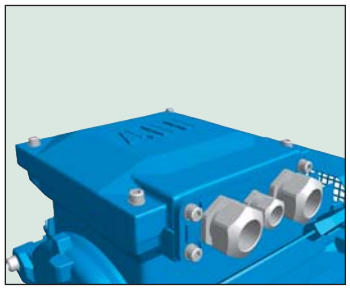

M000718

Fig 1. Terminal box for motor sizes 80 to132

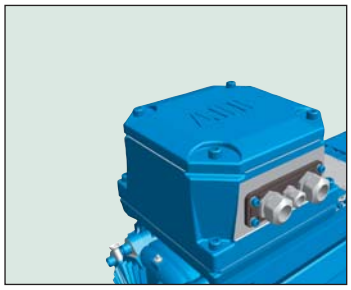

M000719

Fig 2. Terminal box for motor sizes 160 to 180

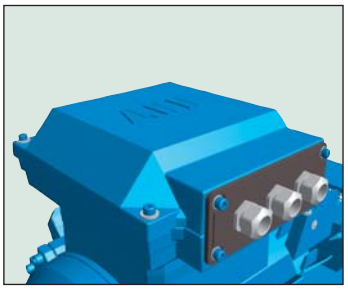

M000720

Fig 3. Terminal box for motor sizes 200 to 250

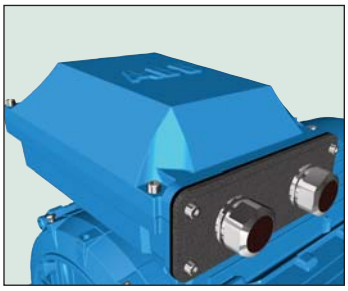

M000423

Fig 4. Terminal box for motor sizes 280 to 315 with connection flange and cable glands.

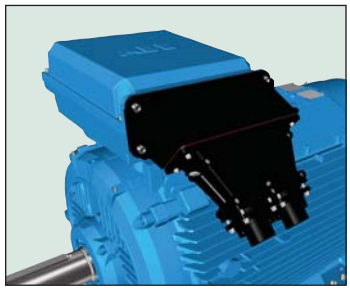

M000424

Fig 5. Terminal box for motor sizes 355 to 400, with adapter and cable sealing end unit.

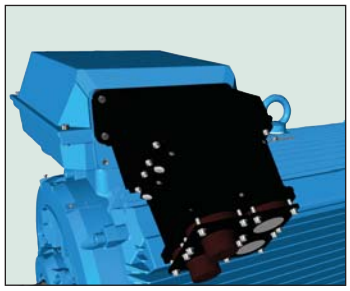

M000425

Fig 6. Terminal box for motor sizes 450, with adapter and cable sealing end unit.

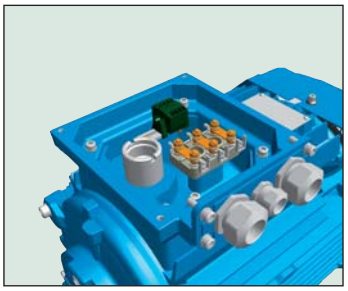

M000721

Fig 7. Terminal board for motor sizes 80 to 132

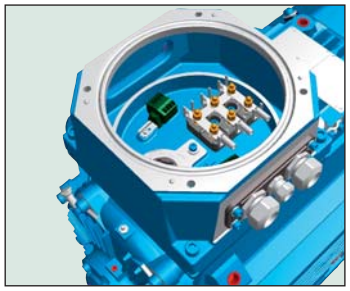

M000722

Fig 8. Terminal board for motor sizes 160 to 180

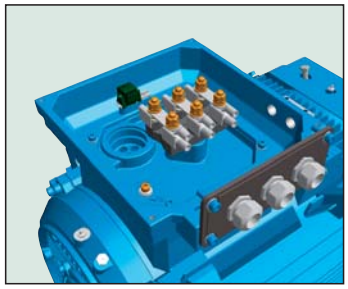

M000723

Fig 9. Terminal board for motor sizes 200 to 250

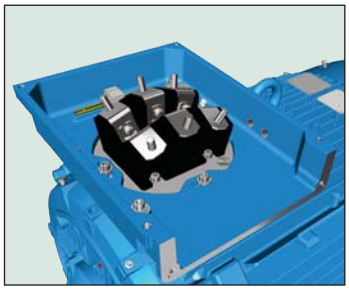

M000427

Fig 10. Terminal board for motor sizes 280 to 315.

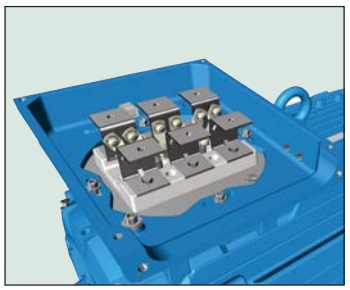

M000428

Fig 11. Terminal board for motor sizes 355 to 400.

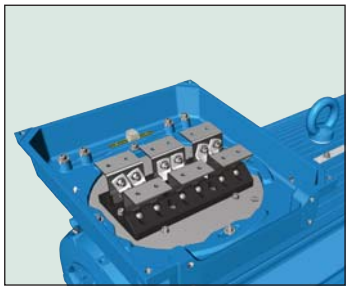
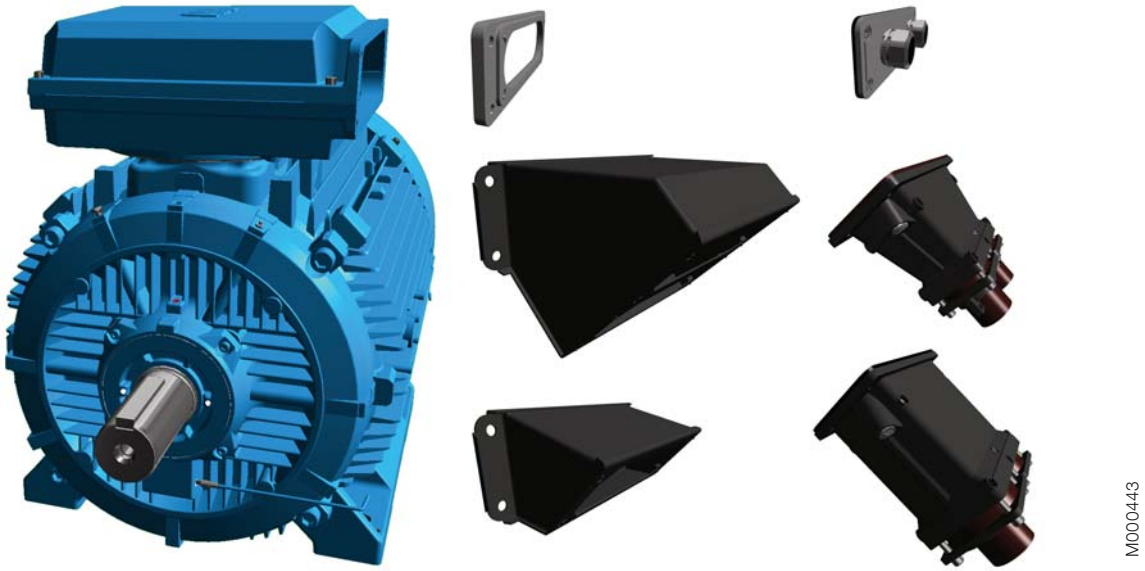

M000429

Fig 12. Terminal board for motor size 450.

Terminal box alternatives, cast iron frame

Optional adapters

There is a broad selection of cable termination accessories available to allow termination of one or several cables. The most common ones are explained below, for other options please contact ABB.



M000443

Main terminal box | **Adapters** | **Cable sealing end units, flange and glands**

How to order?

- Check first that the terminal box can allow mounting of the cable and cores (refer to motor type and terminal box type cross reference page 55).
- If very large cables are used might it be neccesary to use a larger terminal box than standard. Select the right cable gland(s) or cable sealing end unit(s) depending on outer diamater of the cable(s).
- Select a appropriate adapter and gland(s) and gland plate or cable sealing end unit.
- Note that turning the terminal box to a non standard position might limit the use of some adapters.

Ordering example

Motor	200 kW, 4 pole, 400 V 50 Hz,
Cables	cables needed: 2 pieces, outer diameter 58 mm, single cross section 185 mm, cables coming from below
Needed one terminal box for anticondensation heaters (220 V) and another for temperature detectors, terminal box material cast iron.	
Motor	M3KP 315 MLA 4, B3
Adapter	D-D (variant code 293)
Cable sealing end unit	Variant code 278
Auxiliaries	Variant codes 451, 380, 567, 568

1. Main terminal box and maximum single core cross section

Larger than standard single core cross section is available as option according to the table below. Also one size larger terminal box can be selected. Please check also the capacity of the cable entry to make sure the cables fit.

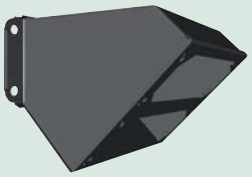
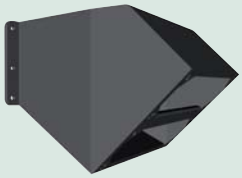
Standard terminal box			Variant code 019 larger terminal box than standard		
Terminal box type	Size of opening	Max single core cross section per phase mm²	Terminal box type	Size of opening	Max single core cross section per phase mm²
25	B	35	-	-	-
63	B	95	-	-	-
160	C	120	-	-	-
210	C	2 x 240	370	D	2 x 240
370	D	2 x 300	750	E	2 x 300
750	E	4 x 500	1200	E	4 x 500
1200	E	4 x 500	-	-	-

The accessories for using the maximum single core cross sections are not included as standard. For this option please use variant code 300 (Increased single core cross section). Each terminal box has got limited maximum cable entry size, please request if necessary.

2. Optional adapters

To allow easy termination of cables entering the terminal box from above or below is it recommended to use an angle adapter.

These can also be used to allow mounting of several cable sealing end units or gland plates on the terminal box for termination of more cables than one cable sealing end unit or gland plate can allow.

Adapter	Variant code	Opening towards terminal box	Gland plate or opening for cable sealing end unit	Material	Notes
 M000430	292	C	C	Steel	
 M000431	293	D	D	Steel	
 M000432	294	E	D	Steel	Included in std delivery with 750 type terminal box
 M000433	295	E	2 pcs D	Steel	Included in std delivery with 1200 type terminal box
 M000434	296	E	3 pcs D	Steel	Only possible on terminal box 1200
 M000435	444	E	2 pcs E	Steel	Only possible on terminal box 1200

Note: Black painted steel

3. Gland plate, maxium size of glands and material

Gland plates are delivered blind or drilled and tapped to accomodate glands to suit the cable diameter and amount of glands needed.

Standard gland plate material is siluminium, painted steel or stainless steel are available as options.

Size	Maximum size and number of glands, metric		
B	2xM40	3xM32	4xM40
C	2xM90	3xM50	7xM32
D	4xM90	4xM63	7xM50
E	6xM90	7xM63	9xM50

Related variant codes:

729 Cable flanges without holes / Blank gland plates.
730 Prepared for NPT glands
732 Standard cable gland, Ex d IIB, armoured cable.
733 Standard cable gland, Ex d IIB, non-armoured cable.
743 Painted non-drilled flange in steel for cable glands.
744 Stainless steel non-drilled flange for gable glands.
745 Painted steel cable flange equipped with nickle plated brass cable glands.
746 Stainless steel cable flange equipped with nickle plated brass cable glands.

4. Cable glands and cable sealing end units

Cable glands

Table below shows the selction of cable gland types and possible cable outer diameter of each size.

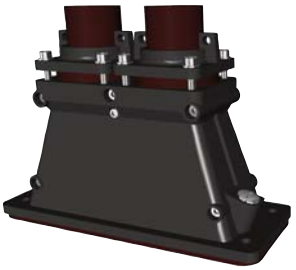
	Outer diameter, mm		
	Variant code 745 Painted steel flange equipped with brass cable glands	Variant code 737 Standard cable gland Ex e with clamping device acc. to EN-Standards	Variant code 704 EMC cable gland
Motor sizes 80-450:			
M20	8-14	8-14	8-14
M25	10-16	10-16	10-16
M32	16-21	16-21	16-21
M40	18-27	18-27	18-27
M50	26-35	26-35	26-35
M63	32-49	32-49	32-49
M75	46-60	NA	NA
M90	55-70	NA	NA

For armoured and NPT cable glands please contact ABB.

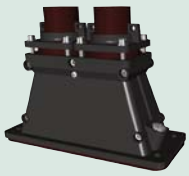
Cable sealing end unit

As an alternative to flanges and cable glands, cable sealing units can be used. These allow more space for spreading the cores for easy terminating on the terminals.

Cable sealing end units have rubber sealed entries for one or two main cables. In addition are there two plugged M20 holes for auxillary cables.



M000437

	Variant code	Opening towards terminal box	Cable outer diameter mm	Cable entry auxiliary cable	Accessories Variant code 704; EMC cable gland	Accessories Variant code 231; Clamping device
 M000436	277	C	1 or 2 pcs 48-60 mm *)	2 pcs plugged M20 holes	Optional	Optional
 M000437	278	D	1 or 2 pcs 48-60 mm *)	2 pcs plugged M20 holes	Optional	Optional
 M000438	279	D	1 or 2 pcs 60-80 mm *)	2 pcs plugged M20 holes	Optional	Optional

*) Depending on how the cable seal inside the cable sealing end unit is used also 40-52 mm is available.

5. Auxiliary terminal box

It's possible to equip the 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 aluminum and equipped with M20 glands for entry of the connection cables. As an option cast iron terminal box is available. In motor sizes 160 to 180 the material of auxiliary terminal box is cast iron.

Connection terminals are spring loaded type for quick and easy connection. These are suitable for up to 2.5 mm² wires. Auxiliary terminal boxes are equipped with an earthing terminal.

As standard the first auxiliary terminal box is located on RHS seen from D-end.

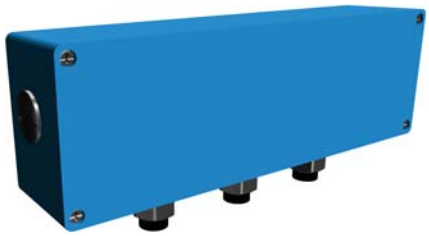
Related variant codes:

418 Separate terminal box for auxiliaries, standard material (all connections of temperature detectors and heaters will be put in same box)
380 Separate terminal box for temperature detectors, standard material
568 Separate terminal box for heating elements, standard material
569 Separater terminal box for brakes, standard material
567 Separate terminal box material: Cast iron

Small, aluminum auxiliary terminal box (80 x 125 mm, for max 12 wires) Earthing size M4

M000439

Large, aluminum auxiliary terminal box (80 x 250 mm, for max 30 wires) Earthing M4



M000440

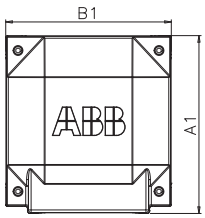
Cast iron auxiliary terminal box (211 x 188 mm, for max 30 wires) Earthing M6

M000441

Standard cable entry size M20. Number of entries depends on the terminal box type and number of selected auxiliaries.

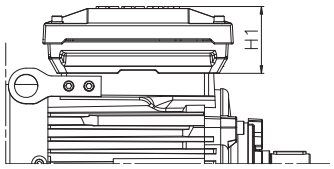
Dimension drawings
Flameproof motors, Ex de

Terminal boxes, standard with 6 terminals



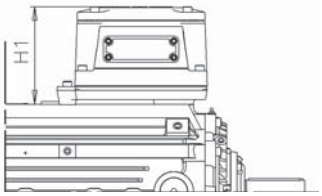
M000368

Motor sizes 80 to 132



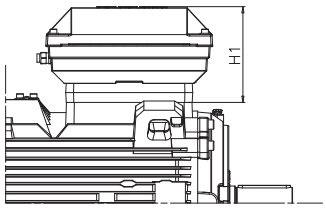
M000368

Motor sizes 160 to 180



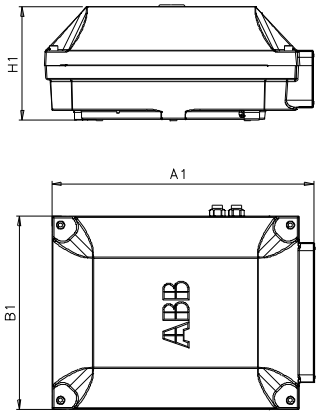
M000365

Motor sizes 200 to 250



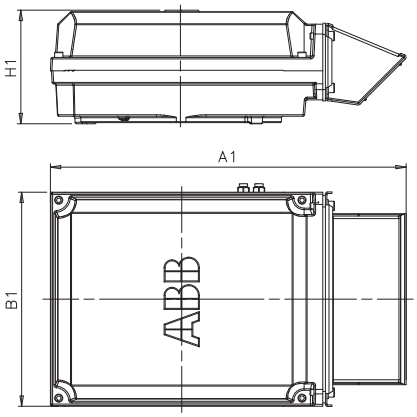
M000369

Motor sizes 280 to 315



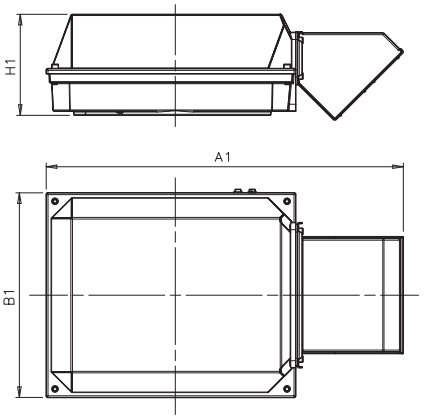
M000205

Motor sizes 355 to 400



M000206

Motor sizes 450



M000331

Ex de - M3KP

Motor size	Terminal box	A1	B1	H1
80-132	25	202	188	66
160-180	63	234	234	68
200-250	160	352	319	184
280	210	416	306	177
315, 355	370	451	347	200
355, 400	750	686	413	219
450	1200	1000	578	285

For motor dimensions please see dimension drawings.

Permissible loadings on the shaft end

The following tables give the permissible radial and axial forces in Newton, assuming only radial or axial force is applied. Permissible loads of simultaneous radial and axial forces will be supplied on request.

The bearing life, L_{10}, is calculated according to ISO 281:1990/ Amd 2:2000 standard theory, which also takes the purity of the grease into consideration. An adequate lubrication is a necessary prerequisite for the table below.

The values are based on normal conditions at 50 Hz. At 60 Hz the values must be reduced by 10 %. For two-speed motors, the values must be based on the higher speed.

Motors are foot-mounted IM B3 version with force directed sideways. In some cases the strength of the shaft affects the permissible forces.

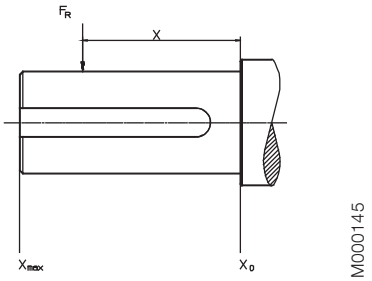
If flameproof motors Ex de sizes 160 and above are subject to high radial forces (eg, belt drive) they should be fitted with roller bearings. Permissible radial forces for IIB and IIC are found in table below and on next page.

Please note that motors type Ex de IIB and IIC in size 250 and above with roller bearings may require detailed information about power transmission; please consult ABB.

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:

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

E = length of shaft extension in basic version



Cast iron motors

Permissible radial forces according to L_{10} princible

Flameproof motor Ex de IIB/IIC, motor sizes 80 to 132

Motor size	Poles	Length of shaft extention E (mm)	Ball bearings 40,000 hours FX_0 (N)	FX_{max} (N)
80	2	40	619	524
	4	40	780	663
	6	40	893	759
	8	40	983	834
90	2	50	561	473
	4	50	803	677
	6	50	919	775
	8	50	1011	853
100	2	60	553	457
	4	60	1050	868
	6	60	1267	1047
	8	60	1395	1153
112	2	60	553	457
	4	60	1050	868
	6	60	1267	1047
	8	60	1394	1152
132	2	80	1354	1112
	4	80	1772	1454
	6	80	2028	1665
	8	80	2234	1833

Cast iron motors

Permissible radial forces according to L_{10} princible

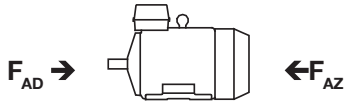
Flameproof motors Ex de IIB/IIC, motor sizes 160 to 450

Motor size	Poles	Lengt of shaft extension	Ball bearings IIB [1]		Ball bearings IIB/IIC		Roller bearings IIB [1]		Roller bearings IIC	
			40,000 hours							
		E (mm)	FX_0 (N)	FX_{max} (N)	FX_0 (N)	FX_{max} (N)	FX_0 (N)	FX_{max} (N)	FX_0 (N)	FX_{max} (N)
160 ML_	2	110	2530	2120	2530	2120	6400	1800	6400	1800
	4	110	3180	2670	3180	2670	7600	1800	7600	1800
	6	110	3650	3040	3650	3040	7600	1800	7600	1800
	8	110	4020	3040	4020	3040	7600	1800	7600	1800
180 ML_	2	110	2900	2440	2900	2440	6970	2700	6970	2700
	4	110	3660	3080	3660	3080	8500	2700	8500	2700
	6	110	4190	3520	4190	3520	8500	2700	8500	2700
	8	110	4620	3880	4620	3880	8500	2700	8500	2700
200 ML_	2	110	3830	3150	3830	3150	9510	7000	9510	4200
	4	110	4820	3980	4820	3980	11710	7000	11710	4200
	6	110	5520	4550	5520	4550	13230	7000	13230	4200
	8	110	6080	5000	6080	5000	14420	7000	14420	4200
225 SM_	2	110	4350	3660	4350	3660	11650	7000	9300	3000
	4	140	5490	2800	5490	2800	14340	7200	9300	2200
	6	140	6280	2800	6280	2800	16190	7200	9300	2200
	8	140	6920	2800	6920	2800	17300	7200	9300	2200
250 SM_	2	140	5390	4350	5390	2900	15420	6700	NA	NA
	4	140	6790	5480	6790	2800	18980	9200	NA	NA
	6	140	7760	6270	3000	2800	21000	9200	NA	NA
	8	140	8550	6900	3000	2800	21000	9200	NA	NA
280 SM_	2	140	5840	4900	[2]	[2]	16550	6000	NA	NA
	4	140	7260	6110	[2]	[2]	20100	9200	NA	NA
	6	140	8300	6980	[2]	[2]	22690	9200	NA	NA
	8	140	9150	7700	[2]	[2]	24740	9200	NA	NA
315 SM_	2	140	5810	4960	[2]	[2]	16540	6000	NA	NA
	4	170	9030	7470	[2]	[2]	26590	9600	NA	NA
	6	170	10310	8530	[2]	[2]	39030	9600	NA	NA
	8	170	11370	9410	[2]	[2]	32740	9600	NA	NA
315 ML_	2	140	5850	5080	[2]	[2]	16710	5850	NA	NA
	4	170	9000	7620	[2]	[2]	26580	13040	NA	NA
	6	170	10270	8500	[2]	[2]	30010	10040	NA	NA
	8	170	11330	9380	[2]	[2]	32730	9940	NA	NA
355 SM_	2	140	5790	5090	[2]	[2]	NA	NA	NA	NA
	4…	210	11930	9890	[2]	[2]	NA	NA	NA	NA
355 ML_	2	140	5770	5120	[2]	[2]	NA	NA	NA	NA
	4-8	210	11980	10090	[2]	[2]	NA	NA	NA	NA
355 LK_	2	140	5500	5000	[2]	[2]	NA	NA	NA	NA
	4-8	210	12050	10450	[2]	[2]	NA	NA	NA	NA
400 L_	2	170	[2]	[2]	[2]	[2]	NA	NA	NA	NA
	4-8	210	[2]	[2]	[2]	[2]	NA	NA	NA	NA
400 LK_	2	170	[2]	[2]	[2]	[2]	NA	NA	NA	NA
	4-8	210	[2]	[2]	[2]	[2]	NA	NA	NA	NA
450 L_	4-8	210	[2]	[2]	[2]	[2]	NA	NA	NA	NA

[1] IIB on request, requires special construction.

[2] Flameproof motor Ex de IIB/IIC - sizes 280-315 on allowed for direct coupling applications.

Permissible axial forces according to L_{10} princible

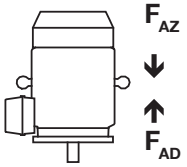


Cast iron motors, sizes 80 to 450

Mounting arrangement IM B3

Motor size	40,000 hours							
	2-pole		4-pole		6-pole		8-pole	
	F_{AD} N	F_{AZ} N	F_{AD} N	F_{AZ} N	F_{AD} N	F_{AZ} N	F_{AD} N	F_{AZ} N
80	660	300	820	460	940	580	1030	670
90	740	220	900	380	1010	490	1110	590
100	1100	220	1320	430	1480	590	1610	720
112	1100	220	1320	430	1480	590	1610	720
132	1530	500	1870	840	2110	1080	2320	1280
160	2050	1440	2620	2010	3060	2440	3410	2790
180	2570	1470	3230	2130	3730	2630	4140	3040
200	3300	2040	4180	2920	4820	3560	5360	4100
225	3710	2240	4690	3230	5410	3940	6010	4540
250	5200	2100	6400	3310	7260	4160	8000	4900
280 SM_	4870	2870	6140	4140	7040	5040	7840	5840
315 SM_	4780	2780	7170	5170	8210	6210	9180	7180
315 ML_	4730	2730	7080	5080	8100	6100	9060	7070
355 SM_	1660	5460	5760	9560	7060	10860	8290	12090
355 ML_	1570	5370	5640	9440	6880	10680	8100	11900
355 LK_	1440	5240	5460	9260	6680	10480	[1]	[1]
400 L_	810	5810	4250	10250	5510	11510	6630	12630
400 LK_	810	5810	4250	10250	5410	11410	[1]	[1]
450 L_	NA	NA	4450	10450	5630	11630	6920	12920

[1] On request



Mounting arrangement IM V1

Motor size	40,000 hours							
	2-pole		4-pole		6-pole		8-pole	
	F_{AD} N	F_{AZ} N	F_{AD} N	F_{AZ} N	F_{AD} N	F_{AZ} N	F_{AD} N	F_{AZ} N
80	690	280	860	440	970	550	1070	650
90	780	190	950	340	1080	450	1170	540
100	1180	170	1430	360	1600	510	1730	640
112	1180	170	1430	360	1600	510	1730	640
132	1700	390	2080	690	2380	900	2580	1110
160	2440	1180	3160	1650	3590	2090	3950	2430
180	3120	1100	3980	1630	4490	2130	4890	2550
200	3960	1590	5030	2340	5820	2890	6370	3430
225	4570	1650	5770	2500	6660	3100	7280	3700
250	6240	1380	7720	2410	8930	3047	9690	3780
280 SM_	6440	1780	8170	2760	9580	3340	10380	4150
315 SM_	6950	1270	9820	3350	11760	3810	12740	4780
315 ML_	7280	940	10300	2870	12330	3240	13310	4210
355 SM_	5330	2890	11110	5820	13720	6270	14980	7530
355 ML_	5860	2360	11810	5130	14718	5280	15970	6540
355 LK_	6600	1630	12850	4080	15800	4190	[1]	[1]
400 L_	8010	730	13680	3650	16610	3840	18480	4530
400 LK_	8010	730	13680	3650	17180	3270	18480	4530
450 L_	NA	NA	17940	910	22090	150	23600	1430

[1] On request

Rating plates

The rating plates are in table form giving values for speed, current and power factor for three voltages: 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 (both ATEX and IECEx are stamped on the rating plate as standard)

Motor sizes 80 to 450

ABB Oy, Motors and Generators
Vaasa, Finland

CE 0081 IE2 Ex II 2G

3 ~ Motor	M3KP 132SMD 6 IMB3/IM1001					
Ex de II B T4 Gb						
616441-1			2012	No. 3GF12099869		
				Ins.cl. F		IP 55
V	Hz	kW	r/min	A	cos φ	Duty
690 Y	50	5.5	967	7.2	0.72	S1
400 D	50	5.5	967	12.5	0.72	S1
415 D	50	5.5	969	12.4	0.70	S1
IE2-87.6%(100%)-87.5%(75%)-85.7%(50%)						
Prod. code 3GKP133240-ADH						
LCIE 10 ATEX 3093 X / IECEx LCI 04.0009						
Manual: 3GZF500730-47				Nmax		r/min
6208-2Z/C3 6208-2Z/C3					105	kg

ABB IEC 60034-1

M000732

Ordering information

Sample order

When placing an order, please state the following minimum data in the order, as in example.

The product code of the motor is composed in accordance with the following example.

Motor type	**M3KP 160 MLA**
Pole number	**2**
Mounting arrangement (IM code)	**IM B3 (IM 1001)**
Rated output	**11 kW**
Product code	**3GKP161410-ADH**
Variant codes if needed	

Motor size

A B C D.E.F. G

M3KP 160 MLA 3GKP 161 410 - A D H 002 etc.

1 2 3 4 5 6 7 8 9 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
G Variant codes

Explanation of the product code:

Positions 1 - 4

3GKP = Totally enclosed flameproof motor Ex de with cast iron frame

Positions 5 and 6

IEC-frame size

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
45 = 450

Position 7

Speed (pole pairs)

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

Position 8-10

Running number series

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 with clearance holes
C = Flange-mounted, small flange with tapped holes
V = Flange-mounted, Special flange
H = Foot/flange-mounted, large flange with clearance holes
J = Foot/flange-mounted, small flange with tapped holes
S = Foot/flange-mounted, terminal box RHS seen from D-end
T = Foot/flange-mounted, terminal box LHS seen from D-end
F = Foot/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**

Generation code is followed by variant codes according to the hazardous area, see below and on corresponding pages with variant codes:

461 Ex d(e) design, Group IIC

Flameproof cast iron motors
Technical data for Ex de IIB/IIC T4 Gb

IE2

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30; 2008

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 Nm	T_l / T_N	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**							
0.75		**M3KP**	**80 MA**	3GKP 081 310-••H	2861	80.1	79.4	76.2	0.87	1.55	7.3	2.5	3.7	3.8	0.0006	28	59
1.1		**M3KP**	**80 MB**	3GKP 081 320-••H	2833	81.6	82.2	80.6	0.87	2.2	5.9	3.7	3.0	3.2	0.0007	30	59
1.5		**M3KP**	**90 SLA**	3GKP 091 010-••H	2881	81.9	82.1	80.1	0.88	3	6.7	4.9	3.0	3.5	0.001	41	61
2.2		**M3KP**	**90 SLC**	3GKP 091 030-••H	2877	84.5	85.0	83.8	0.89	4.2	7.8	7.3	2.7	3.5	0.0014	44	61
3		**M3KP**	**100 LA**	3GKP 101 510-••H	2896	86.0	86.4	84.9	0.90	5.5	6.8	9.8	2.2	3.0	0.0036	61	65
4		**M3KP**	**112 MB**	3GKP 111 320-••H	2891	86.0	86.5	85.3	0.89	7.5	7.8	13.2	3.6	3.7	0.0043	64	65
5.5		**M3KP**	**132 SMB**	3GKP 131 220-••H	2905	87.0	87.2	85.8	0.90	10.1	6.9	18	2.4	3.3	0.009	92	71
7.5		**M3KP**	**132 SMD**	3GKP 131 240-••H	2914	88.3	88.7	87.6	0.90	13.6	7.6	24.5	2.8	3.6	0.012	100	71
11		**M3KP**	**160 MLA**	3GKP 161 410-••H	2931	90.1	90.5	89.6	0.89	19.7	7.2	35.8	2.6	3.1	0.043	207	71
15		**M3KP**	**160 MLB**	3GKP 161 420-••H	2929	91.2	91.9	91.4	0.89	26.6	7.2	48.9	3.0	3.5	0.052	216	71
18.5		**M3KP**	**160 MLC**	3GKP 161 430-••H	2934	91.8	92.2	91.8	0.90	32.3	7.5	60.2	2.8	3.4	0.062	227	69
22		**M3KP**	**180 MLA**	3GKP 181 410-••H	2938	91.7	92.2	91.7	0.90	38.4	7.0	71.5	2.5	3.1	0.089	259	69
30		**M3KP**	**200 MLA**	3GKP 201 410-••G	2956	93.2	93.6	93.0	0.88	52.7	7.4	96.9	3.0	3.2	0.15	290	74
37		**M3KP**	**200 MLC**	3GKP 201 430-••G	2954	93.6	94.0	93.4	0.89	64.1	7.5	119	2.8	3.2	0.19	320	75
45		**M3KP**	**225 SMB**	3GKP 221 220-••G	2968	93.9	93.8	92.9	0.87	79.5	7.2	144	2.7	3.0	0.26	380	76
55		**M3KP**	**250 SMA**	3GKP 251 210-••G	2975	94.3	94.1	93.0	0.89	94.5	7.8	176	2.4	3.1	0.49	440	75
75		**M3KP**	**280 SMA**	3GKP 281 210-••G	2978	94.3	94.1	92.8	0.88	130	7.6	240	2.1	3.0	0.8	645	77
90		**M3KP**	**280 SMB**	3GKP 281 220-••G	2976	94.6	94.5	93.5	0.90	152	7.4	288	2.1	2.9	0.9	685	77
110		**M3KP**	**315 SMA**	3GKP 311 210-••G	2982	94.9	94.4	92.9	0.86	194	7.6	352	2.0	3.0	1.2	900	78
132		**M3KP**	**315 SMB**	3GKP 311 220-••G	2982	95.1	94.8	93.6	0.88	227	7.4	422	2.2	3.0	1.4	960	78
160		**M3KP**	**315 SMC**	3GKP 311 230-••G	2981	95.4	95.2	94.2	0.89	271	7.5	512	2.3	3.0	1.7	1045	78
200		**M3KP**	**315 MLA**	3GKP 311 410-••G	2980	95.7	95.7	94.9	0.90	335	7.7	640	2.6	3.0	2.1	1210	78
250	3)	**M3KP**	**355 SMA**	3GKP 351 210-••G	2984	95.7	95.5	94.5	0.89	423	7.7	800	2.1	3.3	3	1630	83
315	3)	**M3KP**	**355 SMB**	3GKP 351 220-••G	2980	95.7	95.7	95.1	0.89	533	7.0	1009	2.1	3.0	3.4	1710	83
355	3)	**M3KP**	**355 SMC**	3GKP 351 230-••G	2984	95.7	95.7	95.2	0.88	608	7.2	1136	2.2	3.0	3.6	1780	83
400	3)	**M3KP**	**355 MLA**	3GKP 351 410-••G	2982	96.9	96.6	95.9	0.88	677	7.1	1280	2.3	2.9	4.1	2030	83
450	3)	**M3KP**	**355 MLB**	3GKP 351 420-••G	2983	97.1	97.0	96.4	0.90	743	7.9	1440	2.2	2.9	4.3	2110	83
500	3)	**M3KP**	**355 LKA**	3GKP 351 810-••G	2982	96.9	96.9	96.5	0.90	827	7.5	1601	2.0	3.9	4.8	2350	83
560	4)	**M3KP**	**400 LA**	3GKP 401 510-••G	2988	97.2	97.2	96.6	0.89	934	7.8	1789	2.1	3.4	7.9	3070	82
560	4)	**M3KP**	**400 LKA**	3GKP 401 810-••G	2988	97.2	97.2	96.6	0.89	934	7.8	1789	2.1	3.4	7.9	3070	82
630	4)	**M3KP**	**400 LB**	3GKP 401 520-••G	2987	97.4	97.4	96.9	0.89	1048	7.8	2014	2.2	3.4	8.2	3170	82
630	4)	**M3KP**	**400 LKB**	3GKP 401 820-••G	2987	97.4	97.4	96.9	0.89	1048	7.8	2014	2.2	3.4	8.2	3170	82
710	4)	**M3KP**	**400 LC**	3GKP 401 530-••G	2987	97.5	97.4	97.0	0.89	1180	7.8	2269	2.6	3.4	9.3	3420	82
710	4)	**M3KP**	**400 LKC**	3GKP 401 830-••G	2987	97.5	97.4	97.0	0.89	1180	7.8	2269	2.6	3.4	9.3	3420	82
3000 r/min = 2-poles				**400 V 50 Hz**						**High-output design**							
22	2)	**M3KP**	**160 MLD**	3GKP 161 440-••H	2929	91.2	91.6	91.0	0.90	38.6	7.3	71.7	2.7	3.4	0.07	233	77
30		**M3KP**	**180 MLB**	3GKP 181 420-••H	2943	92.5	93.0	92.6	0.90	52	6.8	97.3	2.3	3.1	0.13	292	78
37		**M3KP**	**180 MLC**	3GKP 181 430-••H	2947	92.8	93.0	92.5	0.90	63.9	7.9	119	2.9	3.6	0.13	292	77
45		**M3KP**	**200 MLE**	3GKP 201 450-••G	2944	93.3	93.6	93.0	0.88	79.1	7.3	145	2.9	3.1	0.22	325	79
55		**M3KP**	**225 SMC**	3GKP 221 230-••G	2965	93.9	93.9	92.9	0.88	96	7.1	177	2.6	3.0	0.29	400	80
67	5)	**M3KP**	**225 SMD**	3GKP 221 240-••G	2966	93.9	93.7	92.6	0.86	119	7.4	215	2.8	3.2	0.31	410	78
75		**M3KP**	**250 SMB**	3GKP 251 220-••G	2969	94.0	94.0	93.2	0.89	129	7.9	241	2.6	3.2	0.57	480	80
90	1) 2) 5)	**M3KP**	**250 SMC**	3GKP 251 230-••G	2965	94.0	94.2	93.7	0.90	153	7.7	289	2.6	3.1	0.59	490	80
110		**M3KP**	**280 SMC**	3GKP 281 230-••G	2978	95.1	95.0	94.2	0.90	185	7.9	352	2.4	3.0	1.15	745	77

1) Temperature rise class F
2) Efficiency class IE1
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
4) Unidirectional fan construction as standard. Direction of rotation must be stated when ordering, see variant codes 044 and 045
5) For 400-415 V 50 Hz (380 V 50 Hz voltage code B)

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

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

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.

Flameproof cast iron motors
Technical data for Ex de IIB/IIC T4 Gb

IE2

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30; 2008

Output		Motor type		Product code	Speed	Efficiency IEC 60034--2-1; 2007 Full load	3/4 load	1/2 load	Power factor	Current I_N	I_s/I_N	Torque T_N	T_l/T_N	T_b/T_N	Moment of inertia J = 1/4 GD²	Weight	Sound pressure level L_{PA}
kW					r/min	100%	75%	50%	cos φ	A		Nm			kgm²	kg	dB
1500 r/min = 4-poles				**400 V 50 Hz**						**CENELEC-design**							
0.55		M3KP	80 MA	3GKP 082 310-••H	1421	76.6	76.6	73.7	0.73	1.41	4.9	3.6	2.3	2.7	0.001	29	59
0.75		M3KP	80 MB	3GKP 082 320-••H	1412	80.4	80.5	78.4	0.76	1.77	5.2	5	2.2	2.7	0.0012	31	59
1.1		M3KP	90 SLA	3GKP 092 010-••H	1432	83.3	83.3	80.7	0.77	2.4	5.9	7.3	2.8	3.5	0.002	42	54
1.5		M3KP	90 SLC	3GKP 092 030-••H	1431	83.2	82.8	80.4	0.79	3.2	6.5	10	2.3	3.0	0.003	44	54
2.2		M3KP	100 LA	3GKP 102 510-••H	1441	84.7	85.6	84.8	0.86	4.3	7.0	14.5	2.7	3.3	0.0075	51	52
3		M3KP	100 LB	3GKP 102 520-••H	1442	86.5	87.2	86.3	0.83	6	7.3	19.8	2.7	3.4	0.0081	63	52
4		M3KP	112 MC	3GKP 112 330-••H	1458	88.2	87.8	85.6	0.78	8.3	8.7	26.1	3.0	3.8	0.013	72	52
5.5		M3KP	132 SMB	3GKP 132 220-••H	1458	88.5	88.7	87.2	0.79	11.3	7.4	36	3.0	3.5	0.023	102	60
7.5		M3KP	132 SMD	3GKP 132 240-••H	1460	89.1	89.1	87.6	0.75	16.1	6.8	49	3.3	3.7	0.034	105	60
11		M3KP	160 MLC	3GKP 162 430-••H	1470	91.2	91.5	90.6	0.82	21.2	7.8	71.4	3.0	3.5	0.096	226	62
15		M3KP	160 MLE	3GKP 162 450-••H	1467	92.0	92.4	92.1	0.84	28	7.8	97.6	3.0	3.5	0.13	249	61
18.5		M3KP	180 MLA	3GKP 182 410-••H	1474	91.6	92.0	91.2	0.83	35.1	7.2	119	2.6	3.1	0.19	271	62
22		M3KP	180 MLB	3GKP 182 420-••H	1471	91.6	92.4	92.2	0.83	41.7	6.8	142	2.5	3.0	0.21	279	62
30		M3KP	200 MLB	3GKP 202 420-••G	1475	93.6	94.0	93.7	0.85	54.4	7.4	194	3.0	2.8	0.34	320	61
37		M3KP	225 SMB	3GKP 222 220-••G	1480	93.6	93.9	93.4	0.85	67.1	7.6	238	3.2	2.9	0.42	370	67
45		M3KP	225 SMC	3GKP 222 230-••G	1477	94.1	94.6	94.4	0.88	78.4	7.6	290	3.2	2.7	0.49	405	67
55		M3KP	250 SMA	3GKP 252 210-••G	1479	94.3	94.3	93.6	0.84	100	7.2	355	2.5	3.1	0.72	430	66
75		M3KP	280 SMA	3GKP 282 210-••G	1484	94.5	94.5	93.9	0.85	134	6.9	482	2.5	2.8	1.25	645	68
90		M3KP	280 SMB	3GKP 282 220-••G	1483	94.7	94.8	94.4	0.86	159	7.2	579	2.5	2.7	1.5	685	68
110		M3KP	315 SMA	3GKP 312 210-••G	1487	95.1	95.1	94.3	0.86	194	7.2	706	2.0	2.5	2.3	920	70
132		M3KP	315 SMB	3GKP 312 220-••G	1487	95.4	95.4	94.7	0.86	232	7.1	847	2.3	2.7	2.6	980	70
160		M3KP	315 SMC	3GKP 312 230-••G	1487	95.6	95.6	95.1	0.85	284	7.2	1027	2.4	2.9	2.9	1020	70
200		M3KP	315 MLA	3GKP 312 410-••G	1486	95.6	95.6	95.3	0.86	351	7.2	1285	2.5	2.9	3.5	1180	70
250		M3KP	355 SMA	3GKP 352 210-••G	1488	95.9	95.9	95.5	0.86	437	7.1	1604	2.3	2.7	5.9	1640	74
315		M3KP	355 SMB	3GKP 352 220-••G	1488	95.9	95.9	95.6	0.86	551	7.3	2021	2.3	2.8	6.9	1810	74
355		M3KP	355 SMC	3GKP 352 230-••G	1487	95.9	95.9	95.7	0.86	621	6.8	2279	2.4	2.7	7.2	1850	78
400		M3KP	355 MLA	3GKP 352 410-••G	1489	96.3	96.3	95.9	0.85	705	6.8	2565	2.3	2.6	8.4	2170	78
450		M3KP	355 MLB	3GKP 352 420-••G	1490	96.8	96.8	96.3	0.86	780	6.9	2884	2.3	2.9	8.4	2170	78
500		M3KP	355 LKA	3GKP 352 810-••G	1490	97.0	97.0	96.5	0.86	865	6.8	3204	2.0	3.0	10	2530	78
560		M3KP	400 LA	3GKP 402 510-••G	1491	96.8	96.8	96.3	0.85	982	7.4	3586	2.4	2.8	15	3040	78
560		M3KP	400 LKA	3GKP 402 810-••G	1491	96.8	96.8	96.3	0.85	982	7.4	3586	2.4	2.8	15	3040	78
630		M3KP	400 LB	3GKP 402 520-••G	1491	97.0	97.0	96.5	0.87	1077	7.6	4034	2.2	2.9	16	3420	78
630		M3KP	400 LKB	3GKP 402 820-••G	1491	97.0	97.0	96.5	0.87	1077	7.6	4034	2.2	2.9	16	3420	78
710	1)	M3KP	400 LC	3GKP 402 530-••G	1491	97.1	97.1	96.6	0.86	1227	7.6	4547	2.4	3.0	17	3520	78
710	1)	M3KP	400 LKC	3GKP 402 830-••G	1491	97.1	97.1	96.6	0.86	1227	7.6	4547	2.4	3.0	17	3520	78
780		M3KP	450 LA	3GKP 452 510-••G	1491	96.7	96.6	96.0	0.85	1369	7.1	4995	1.4	3.0	23	4050	85
870		M3KP	450 LB	3GKP 452 520-••G	1492	96.8	96.7	96.2	0.85	1526	7.2	5568	1.4	3.0	25	4350	85
950		M3KP	450 LC	3GKP 452 530-••G	1491	96.9	96.9	96.5	0.85	1664	7.3	6084	1.4	3.0	30	4700	85
1500 r/min = 4-poles				**400 V 50 Hz**						**High-output design**							
18.5		M3KP	160 MLF	3GKP 162 460-••H	1469	91.7	92.1	91.4	0.83	35	7.8	120	3.2	3.5	0.13	249	68
22	2)	M3KP	160 MLG	3GKP 162 470-••H	1466	90.8	91.1	90.4	0.81	43.1	7.9	143	3.3	3.6	0.13	249	68
30	1) 2)	M3KP	180 MLC	3GKP 182 430-••H	1473	92.2	92.3	91.6	0.81	57.9	7.1	194	2.8	3.2	0.248	298	66
37		M3KP	200 MLC	3GKP 202 430-••G	1475	93.0	93.1	92.3	0.82	70	7.5	239	3.5	3.2	0.34	320	73
55		M3KP	225 SMD	3GKP 222 240-••G	1483	94.3	94.5	93.9	0.83	101	7.4	354	3.4	2.9	0.55	425	68
62	2) 5)	M3KP	225 SME	3GKP 222 250-••G	1477	93.5	93.7	93.0	0.84	113	7.7	400	3.5	2.9	0.55	425	74
75		M3KP	250 SMB	3GKP 252 220-••G	1476	94.3	94.5	94.2	0.86	133	7.6	485	2.8	3.2	0.88	485	73
86	2)	M3KP	250 SMC	3GKP 252 230-••G	1477	94.1	94.4	94.0	0.85	155	7.8	556	2.9	3.5	0.98	510	74
110		M3KP	280 SMC	3GKP 282 230-••G	1485	95.1	95.2	94.7	0.86	194	7.6	707	3.0	3.0	1.85	745	68

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

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

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

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.

Flameproof cast iron motors
Technical data for Ex de IIB/IIC T4 Gb

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30; 2008

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 Nm	T_l/T_N	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**							
0.37		**M3KP**	**80 MA**	3GKP 083 310-••H	953	72.6	70.3	64.6	0.64	1.14	4.8	3.7	3.4	3.6	0.0022	29	50
0.55		**M3KP**	**80 MB**	3GKP 083 320-••H	938	72.9	71.7	67.0	0.70	1.55	4.3	5.5	2.8	2.9	0.0022	29	50
0.75		**M3KP**	**90 SLA**	3GKP 093 010-••H	946	77.9	77.1	73.4	0.69	2	4.9	7.5	2.1	2.8	0.0037	41	44
1.1		**M3KP**	**90 SLC**	3GKP 093 030-••H	933	78.5	78.8	76.3	0.71	2.8	4.7	11.2	1.8	2.4	0.0048	44	44
1.5		**M3KP**	**100 LA**	3GKP 103 510-••H	951	80.1	80.0	77.4	0.74	3.6	4.2	15	2.3	2.9	0.012	60	54
2.2		**M3KP**	**112 MB**	3GKP 113 320-••H	950	82.0	82.5	80.6	0.76	5	5.9	22.1	2.2	2.8	0.014	63	54
3		**M3KP**	**132 SMB**	3GKP 133 220-••H	961	83.3	83.0	80.4	0.77	6.7	6.1	29.8	2.1	3.0	0.032	96	57
4		**M3KP**	**132 SMC**	3GKP 133 230-••H	964	84.6	84.3	81.8	0.74	9.2	6.6	39.6	2.3	3.4	0.034	98	57
5.5		**M3KP**	**132 SMD**	3GKP 133 240-••H	967	87.6	87.5	85.7	0.72	12.5	6.9	54.3	2.3	3.4	0.039	105	62
7.5		**M3KP**	**160 MLA**	3GKP 163 410-••H	965	87.2	88.4	88.2	0.81	15.3	6.5	74.2	1.9	3.0	0.088	220	57
11		**M3KP**	**160 MLB**	3GKP 163 420-••H	972	90.1	90.8	90.4	0.81	21.7	7.8	108	2.3	3.5	0.126	247	65
15		**M3KP**	**180 MLB**	3GKP 183 420-••H	972	90.4	91.0	90.4	0.82	29.2	7.2	147	1.9	3.2	0.25	298	58
18.5		**M3KP**	**200 MLA**	3GKP 203 410-••G	983	90.9	91.1	90.2	0.82	35.8	7.1	179	3.2	3.1	0.37	280	66
22		**M3KP**	**200 MLB**	3GKP 203 420-••G	983	91.6	91.9	91.0	0.82	42.2	7.5	213	3.2	3.2	0.43	300	61
30		**M3KP**	**225 SMB**	3GKP 223 220-••G	985	92.2	92.6	92.2	0.82	57.2	7.4	290	3.4	3.0	0.64	365	61
37		**M3KP**	**250 SMA**	3GKP 253 210-••G	987	93.1	93.4	92.8	0.81	70.8	7.2	357	3.2	2.9	1.16	435	66
45		**M3KP**	**280 SMA**	3GKP 283 210-••G	990	93.4	93.6	93.1	0.84	82.7	7.0	434	2.5	2.5	1.85	625	66
55		**M3KP**	**280 SMB**	3GKP 283 220-••G	990	93.8	94.0	93.3	0.84	100	7.0	530	2.7	2.6	2.2	665	66
75		**M3KP**	**315 SMA**	3GKP 313 210-••G	992	94.4	94.4	93.5	0.82	139	7.4	721	2.4	2.8	3.2	850	70
90		**M3KP**	**315 SMB**	3GKP 313 220-••G	992	94.8	94.8	94.2	0.84	163	7.5	866	2.4	2.8	4.1	950	70
110		**M3KP**	**315 SMC**	3GKP 313 230-••G	991	95.0	95.0	94.6	0.83	201	7.4	1059	2.5	2.9	4.9	1020	70
132		**M3KP**	**315 MLA**	3GKP 313 410-••G	991	95.3	95.4	94.9	0.83	240	7.5	1271	2.7	3.0	5.8	1170	68
160		**M3KP**	**355 SMA**	3GKP 353 210-••G	993	95.4	95.4	94.8	0.83	291	7.0	1538	2.0	2.6	7.9	1550	75
200		**M3KP**	**355 SMB**	3GKP 353 220-••G	993	95.7	95.7	95.1	0.84	359	7.2	1923	2.2	2.7	9.7	1710	75
250		**M3KP**	**355 SMC**	3GKP 353 230-••G	993	95.7	95.7	95.1	0.83	454	7.4	2404	2.6	2.9	11.3	1850	75
315		**M3KP**	**355 MLB**	3GKP 353 420-••G	992	95.7	95.7	95.2	0.83	572	7.0	3032	2.5	2.7	13.5	2210	75
355		**M3KP**	**355 LKA**	3GKP 353 810-••G	992	95.7	95.7	95.1	0.83	645	7.6	3417	2.7	2.9	15.5	2530	75
400		**M3KP**	**400 LA**	3GKP 403 510-••G	993	96.2	96.3	95.8	0.82	731	7.1	3846	2.3	2.7	17	3020	76
400		**M3KP**	**400 LKA**	3GKP 403 810-••G	993	96.2	96.3	95.8	0.82	731	7.1	3846	2.3	2.7	17	3020	76
450		**M3KP**	**400 LB**	3GKP 403 520-••G	994	96.6	96.6	96.1	0.82	819	7.4	4323	2.4	2.8	20.5	3270	76
450		**M3KP**	**400 LKB**	3GKP 403 820-••G	994	96.6	96.6	96.1	0.82	819	7.4	4323	2.4	2.8	20.5	3270	76
500		**M3KP**	**400 LC**	3GKP 403 530-••G	993	96.6	96.7	96.2	0.83	900	7.2	4808	2.5	2.7	22	3420	76
500		**M3KP**	**400 LKC**	3GKP 403 830-••G	993	96.6	96.7	96.2	0.83	900	7.2	4808	2.5	2.7	22	3420	76
560		**M3KP**	**400 LD**	3GKP 403 540-••G	993	96.9	96.9	96.4	0.85	981	7.4	5385	2.4	2.8	24	3520	77
560		**M3KP**	**400 LKD**	3GKP 403 840-••G	993	96.9	96.9	96.4	0.85	981	7.4	5385	2.4	2.8	24	3520	77
610		**M3KP**	**450 LA**	3GKP 453 510-••G	994	96.6	96.6	96.2	0.83	1098	7.1	5860	1.4	2.9	31	4150	81
680		**M3KP**	**450 LB**	3GKP 453 520-••G	995	96.7	96.7	96.2	0.84	1208	7.6	6526	1.5	2.9	37	4500	81
760		**M3KP**	**450 LC**	3GKP 453 530-••G	995	96.7	96.7	96.3	0.83	1366	7.8	7293	1.6	3.2	41	4800	81
1000 r/min = 6-poles				**400 V 50 Hz**						**High-output design**							
14	[1) 2)]	**M3KP**	**160 MLC**	3GKP 163 430-••H	969	89.2	89.4	88.0	0.75	30.2	7.9	137	2.8	3.9	0.126	247	64
18.5	[2)]	**M3KP**	**180 MLC**	3GKP 183 430-••H	975	90.1	90.2	88.7	0.74	40	7.2	181	2.0	3.2	0.25	298	61
30	[2)]	**M3KP**	**200 MLC**	3GKP 203 430-••G	983	91.6	91.7	90.5	0.80	59	7.5	291	3.5	3.4	0.49	320	65
37	[2)]	**M3KP**	**225 SMC**	3GKP 223 230-••G	983	92.1	92.5	92.1	0.83	69.8	7.1	359	3.0	2.8	0.75	395	64
45		**M3KP**	**250 SMB**	3GKP 253 220-••G	986	93.1	93.3	92.6	0.82	85	7.2	435	3.3	2.8	1.49	480	65
75		**M3KP**	**280 SMC**	3GKP 283 230-••G	990	94.2	94.5	94.1	0.84	136	7.3	723	2.8	2.7	2.85	745	66

[1)] Temperature rise class F
[2)] Efficiency class IE1

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

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

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.

Flameproof cast iron motors
Technical data for Ex de IIB/IIC T4 Gb

IP 55 - IC 411 - Insulation class F, temperature rise class B

Output				Speed	Efficiency IEC 60034--2-1; 2007 Full load	3/4 load	1/2 load	Power factor	Current I_N	I_s	Torque T_N	T_l	T_b	Moment of inertia J = 1/4 GD²	Weight	Sound pressure level L_{PA}
kW	Motor type		Product code	r/min	100%	75%	50%	cos φ	A	I_N	Nm	T_N	T_N	kgm²	kg	dB
750 r/min = 8-poles			**400 V 50 Hz**						**CENELEC-design**							
0.18	**M3KP**	**80 MA**	3GKP 084 310-••H	720	61.0	56.4	48.3	0.48	0.88	3.3	2.3	3.7	4.0	0.0022	29	36
0.25	**M3KP**	**80 MB**	3GKP 084 320-••H	705	63.8	61.1	54.6	0.58	0.97	3.2	3.3	2.6	2.8	0.0022	29	36
0.37	**M3KP**	**90 SLA**	3GKP 094 010-••H	696	67.0	67.0	63.1	0.63	1.26	3.0	5	2.0	2.2	0.0036	41	36
0.55	**M3KP**	**90 SLC**	3GKP 094 030-••H	695	68.7	68.5	64.4	0.61	1.89	3.1	7.5	2.2	2.4	0.0037	43	36
0.75	**M3KP**	**100 LA**	3GKP 104 510-••H	720	75.9	74.1	69.1	0.59	2.4	3.8	9.9	2.0	2.9	0.012	60	54
1.1	**M3KP**	**100 LB**	3GKP 104 520-••H	717	76.4	74.9	70.2	0.57	3.6	3.7	14.6	2.1	2.9	0.012	60	54
1.5	**M3KP**	**112 MC**	3GKP 114 330-••H	713	77.2	76.4	72.4	0.59	4.7	3.5	20	2.0	2.7	0.014	64	54
2.2	**M3KP**	**132 SMC**	3GKP 134 230-••H	720	80.1	79.8	76.7	0.65	6	4.7	29.1	2.0	2.9	0.034	98	59
3	**M3KP**	**132 SMD**	3GKP 134 240-••H	710	79.9	81.5	80.6	0.70	7.7	4.1	40.3	1.7	2.3	0.036	100	59
4	**M3KP**	**160 MLA**	3GKP 164 410-••H	722	86.7	87.4	86.6	0.71	9.3	5.4	52.9	1.7	2.8	0.133	245	59
5.5	**M3KP**	**160 MLB**	3GKP 164 420-••H	723	86.8	87.6	86.8	0.71	12.8	5.8	72.6	1.9	3.1	0.133	245	53
7.5	**M3KP**	**160 MLC**	3GKP 164 430-••H	718	85.5	86.3	85.5	0.70	18	5.7	99.7	2.1	3.1	0.133	245	55
11	**M3KP**	**180 MLB**	3GKP 184 420-••H	723	88.3	89.2	88.7	0.72	24.9	5.7	145	1.7	2.7	0.245	292	63
15	**M3KP**	**200 MLA**	3GKP 204 410-••G	734	89.9	90.3	89.6	0.79	30.4	7.0	195	2.4	3.2	0.45	295	56
18.5	**M3KP**	**225 SMA**	3GKP 224 210-••G	734	90.0	90.3	89.3	0.74	40	6.1	240	2.2	3.0	0.61	350	55
22	**M3KP**	**225 SMB**	3GKP 224 220-••G	732	90.6	91.2	90.6	0.77	45.5	6.5	287	2.2	2.9	0.68	365	56
30	**M3KP**	**250 SMA**	3GKP 254 210-••G	735	91.4	91.2	90.7	0.78	60.7	6.7	389	2.0	2.9	1.25	435	56
37	**M3KP**	**280 SMA**	3GKP 284 210-••G	741	92.7	92.7	91.6	0.78	73.8	7.3	476	1.7	3.0	1.85	625	65
45	**M3KP**	**280 SMB**	3GKP 284 220-••G	741	93.2	93.2	92.2	0.78	89.3	7.6	579	1.8	3.1	2.2	665	65
55	**M3KP**	**315 SMA**	3GKP 314 210-••G	742	93.4	93.5	92.7	0.81	104	7.1	707	1.6	2.7	3.2	850	62
75	**M3KP**	**315 SMB**	3GKP 314 220-••G	741	93.7	93.9	93.4	0.82	140	7.1	966	1.7	2.7	4.1	950	62
90	**M3KP**	**315 SMC**	3GKP 314 230-••G	741	94.0	94.2	93.6	0.82	168	7.4	1159	1.8	2.7	4.9	1020	64
110	**M3KP**	**315 MLA**	3GKP 314 410-••G	740	94.0	94.3	94.0	0.83	203	7.3	1419	1.8	2.7	5.8	1170	72
132	**M3KP**	**355 SMA**	3GKP 354 210-••G	744	94.7	94.7	94.0	0.80	251	7.5	1694	1.5	2.6	7.9	1550	69
160	**M3KP**	**355 SMB**	3GKP 354 220-••G	744	95.2	95.2	94.5	0.80	303	7.6	2053	1.6	2.6	9.7	1710	69
200	**M3KP**	**355 SMC**	3GKP 354 230-••G	743	95.3	95.4	94.8	0.80	378	7.4	2570	1.6	2.6	11.3	1850	69
250	**M3KP**	**355 MLB**	3GKP 354 420-••G	743	95.4	95.5	95.0	0.80	472	7.5	3213	1.6	2.7	13.5	2210	72
315	**M3KP**	**400 LA**	3GKP 404 510-••G	744	96.1	96.2	95.8	0.81	584	7.0	4043	1.2	2.6	17	3020	71
315	**M3KP**	**400 LKA**	3GKP 404 810-••G	744	96.1	96.2	95.8	0.81	584	7.0	4043	1.2	2.6	17	3020	71
355	**M3KP**	**400 LB**	3GKP 404 520-••G	743	96.2	96.3	96.1	0.83	641	6.8	4562	1.2	2.5	21	3320	71
355	**M3KP**	**400 LKB**	3GKP 404 820-••G	743	96.2	96.3	96.1	0.83	641	6.8	4562	1.2	2.5	21	3320	71
400	**M3KP**	**400 LC**	3GKP 404 530-••G	744	96.3	96.4	96.0	0.82	731	7.4	5134	1.3	2.7	24	3520	71
400	**M3KP**	**400 LKC**	3GKP 404 830-••G	744	96.3	96.4	96.0	0.82	731	7.4	5134	1.3	2.7	24	3520	71
430	**M3KP**	**450 LA**	3GKP 454 510-••G	744	95.9	96.1	95.8	0.82	789	6.2	5519	1.0	2.6	26	3750	80
470	**M3KP**	**450 LB**	3GKP 454 520-••G	744	96.0	96.2	95.8	0.82	861	6.6	6032	1.1	2.7	29	4000	80
530	**M3KP**	**450 LC**	3GKP 454 530-••G	745	96.1	96.2	95.8	0.81	982	7.3	6793	1.3	3.0	35	4350	80
600	**M3KP**	**450 LD**	3GKP 454 540-••G	745	96.3	96.3	95.9	0.80	1124	7.9	7690	1.4	3.3	41	4800	80
750 r/min = 8-poles			**400 V 50 Hz**						**CENELEC-design**							
18.5	**M3KP**	**200 MLB**	3GKP 204 420-••G	734	89.8	90.2	89.6	0.80	37.1	6.9	240	2.2	3.2	0.54	315	57
30	**M3KP**	**225 SMC**	3GKP 224 230-••G	731	90.7	91.5	91.3	0.78	61.2	6.3	391	2.3	3.0	0.75	390	59
37	**M3KP**	**250 SMB**	3GKP 254 220-••G	737	92.2	91.7	91.0	0.78	74.2	7.5	479	2.3	3.4	1.52	480	59
55	**M3KP**	**280 SMC**	3GKP 284 230-••G	741	93.4	93.5	92.8	0.80	106	7.9	708	1.9	3.1	2.85	745	65

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

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

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Flameproof motors Ex de IIB/IIC T4 Gb variant codes

Code [1]	Variant	Frame size														
		80	90	100	112	132	160	180	200	225	250	280	315	355	400	450
Administration																
531	Sea freight packing	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
532	Packing of motor in vertical mounting position	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P
533	Wooden sea freight packing	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Balancing																
052	Vibration acc. to Grade A (IEC 60034-14).	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
417	Vibration acc. to Grade B (IEC 60034-14).	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
423	Balanced without key.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
424	Full key balancing.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Bearings and Lubrication																
036	Transport lock for bearings.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P
037	Roller bearing at D-end.	NA	NA	NA	NA	NA	M	M	M	M	M	M	P	NA	NA	NA
040	Heat resistant grease.	S	S	S	S	S	P	P	P	P	P	P	P	P	P	P
041	Bearings regreasable via grease nipples.	NA	NA	NA	NA	NA	S	S	S	S	S	S	S	S	S	S
043	SPM compatible nipples for vibration measurement	NA	NA	NA	NA	NA	S	S	S	S	S	S	S	S	S	S
058	Angular contact bearing at D-end, shaft force away from bearing.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P
107	Pt100 2-wire in bearings.	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
128	Double Pt100, 2-wire in bearings	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
129	Double Pt100, 3-wire in bearings	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
130	Pt100 3-wire in bearings.	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
194	2Z bearings greased for life at both ends.	S	S	S	S	S	M	M	M	M	M	NA	NA	NA	NA	NA
433	Outlet grease collector	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P
506	Nipples for vibration measurement: SKF Marlin Quick Connect stud CMSS-2600-3	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
654	Provision for vibration sensors (M8x1)	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
795	Lubrication information plate	NA	NA	NA	NA	NA	M	M	M	M	M	S	S	S	S	S
796	Grease nipples JIS B 1575 Pt 1/8 Type A	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
797	Stainless steel SPM Nipples	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
798	Stainless steel grease nipples	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
799	Grease nipples flat type DIN 3404, thread M10x1	NA	NA	NA	NA	NA	M	M	M	M	M	M	P	P	P	P
800	Grease nipples JIS B 1575 Pt 1/8" pin type	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
Brakes																
412	Built-on brake.	R	R	R	R	R	R	R	R	NA	NA	NA	NA	NA	NA	NA
Branch standard designs																
178	Stainless steel / acid proof bolts.	S	S	S	S	S	M	M	M	M	M	M	P	P	P	P
204	Jacking bolts for foot mounted motors.	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	S	S	S
209	Non-standard voltage or frequency, (special winding).	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
396	Motor designed for ambient temperature -20 °C to -40 °C, wtih space heaters (code 450/451 must be added).	P	P	P	P	P	P	P	P	P	P	P	P	P	P	NA

[1] Certain variant codes cannot be used simultaneously.

S = Included as standard
P = New manufacture only
M = On modification of a stocked motor; or on new manufacture, the number of number per order may be limited.
R = On request
NA = Not applicable.

Code [1]	Variant	Frame size														
		80	90	100	112	132	160	180	200	225	250	280	315	355	400	450
397	Motor designed for ambient temperature -40 °C to -55 °C, wtih space heaters (code 450/451 must be added).	P	P	P	P	P	P	P	P	P	P	P	P	P	P	NA
398	Motor designed for ambient temperature -20 °C to -40 °C.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	NA
399	Motor designed for ambient temperature -40 °C to -55 °C.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	NA
425	Corrosion protected stator and rotor core.	S	S	S	S	S	S	S	S	S	S	P	P	P	P	P
786	Special design shaft upwards (V3, V36, V6) for outdoor mounting.	P	P	P	P	P	P	P	P	P	P	R	R	NA	NA	NA
Cooling system																
044	Unidirectional fan for reduced noise level. Rotation clockwise seen from D-end. Available only for 2-pole motors.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	NA
045	Unidirectional fan for reduced noise level. Rotation counter clockwise seen from D-end. Available only for 2-pole motors.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	NA
068	Light alloy metal fan	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
075	Cooling method IC418 (without fan).	R	R	R	R	R	R	R	R	R	R	R	R	R	NA	NA
183	Separate motor cooling (fan axial, N-end).	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
206	Steel fan	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	NA
422	Separate motor cooling (fan top, N-end).	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P
514	Separate motor cooling (fan on top)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P
791	Stainless steel fan cover	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P
Coupling																
035	Assembly of customer supplied coupling-half.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P
Documentation																
141	Binding dimension drawing.	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
Drain holes																
448	Draining holes with metal plugs.	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
Earthing Bolt																
067	External earthing bolt.	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Hazardous Environments																
334	Ex t, Dust group III B T125C Db (non-conductive dust) acc. IEC/EN60079-31	R	R	R	R	R	M	M	P	P	P	P	P	P	P	NA
336	Ex t, Dust group III C T125 Db (conductive dust) acc. IEC/EN60079-31	R	R	R	R	R	M	M	P	P	P	P	P	P	P	NA
461	Ex d(e) design, Group II C	M	M	M	M	M	M	M	M	M	M	P	P	P	P	NA
462	Ex d(e) design, temperature class T5.	R	R	R	R	R	R	R	R	R	R	R	R	R	R	NA
463	Ex d(e) design, temperature class T6.	R	R	R	R	R	R	R	R	R	R	NA	NA	NA	NA	NA
464	Alleinschutz' design. Certification of flame proof motor and protection device together.	P	P	P	P	P	P	P	P	P	P	P	R	R	R	R
507	Ex d from Ex de	NA	NA	NA	NA	NA	M	M	NA	NA	NA	NA	NA	NA	NA	NA
812	Explosion protection according to IEC-standards.	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
813	Thermistor-based surface temperature protection T4 for frequency convertor duty.	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P

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Code [1]	Variant	Frame size														
		80	90	100	112	132	160	180	200	225	250	280	315	355	400	450
814	Ex tD (DIP) motors, temperature class T 150 °C.	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
816	Pt-100-based surface temperature protection T4 for frequency convertor duty. 3-wire system.	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
Heating elements																
450	Heating element, 100-120V.	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
451	Heating element, 200-240V.	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
Insulation system																
014	Winding insulation class H.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
405	Special winding insulation for frequency converter supply.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Mounting arrangements																
007	IM 3001 flange mounted, IEC flange, from IM 1001 (B5 from B3).	M	M	M	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
008	IM 2101 foot/flange mounted, IEC flange, from IM 1001 (B34 from B3).	M	M	M	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
009	IM 2001 foot/flange mounted, IEC flange, from IM 1001 (B35 from B3).	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
047	IM 3601 flange mounted, IEC flange, from IM 3001 (B14 from B5).	M	M	M	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
066	Modified for specified mounting position differing from IM B3 (1001), IM B5 (3001), B14 (3601), IM B35 (2001) & IM B34 (2101)	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
093	IM 3601 flange mounted, IEC flange, from IM 1001 (B14 from B3).	M	M	M	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
228	Flange FF 130.	M	M	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
229	Flange FT 130.	M	M	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
235	Flange FF 165.	S	S	M	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
236	Flange FT 165.	M	M	M	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
245	Flange FF 215.	NA	NA	S	S	M	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
246	Flange FT 215.	NA	NA	M	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
255	Flange FF 265.	NA	NA	NA	NA	S	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
256	Flange FT 265.	NA	NA	NA	NA	M	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
257	Flange FF 100.	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
258	Flange FT 100.	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
259	Flange FF 115.	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
260	Flange FT 115.	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
305	Additional lifting lugs.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P
309	IM 1001 foot mounted, from IM 3001 (B3 from B5).	M	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA	NA	NA
311	IM 2001 foot/flange mounted, IEC flange, from IM 3001 (B35 from B5).	M	M	M	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Noise reduction																
055	Noise reduction cover for foot mounted motor	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	R	R	R	R	R
Painting																
105	Paint thickness report.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
111	Painting system C3M acc. to ISO 12944-5:2007	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S

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Code [1]	Variant	Frame size														
		80	90	100	112	132	160	180	200	225	250	280	315	355	400	450
114	Special paint colour, standard grade.	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
115	Painting system C4M acc. to ISO 12944-5:2007	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
168	Primer paint only.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
303	Painted insulation layer on inside of the terminal boxes.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
710	Thermally sprayed zink metallizing with acrylic top coat	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
754	Painting system C5M acc. to ISO 12944-5:2007	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Protection																
005	Metal protective roof, vertical motor, shaft down.	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
072	Radial seal at D-end.	M	M	M	M	M	M	M	M	M	M	NA	NA	NA	NA	NA
073	Sealed against oil at D-end.	P	P	P	P	P	P	P	P	P	P	P	P	NA	NA	NA
158	Degree of protection IP65.	M	M	M	M	M	M	M	M	M	M	M	P	P	P	NA
239	Opendeck saltwater execution	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	NA
240	Opendeck fresh water execution	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	NA
401	Protective roof, horizontal motor.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
403	Degree of protection IP 56	M	M	M	M	M	M	M	M	M	M	M	P	P	P	NA
404	Degree of protection IP56, without fan and fan cover.	NA	NA	NA	NA	NA	NA	NA	R	NA	NA	NA	NA	NA	NA	NA
434	Degree of protection IP 56, open deck.	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	NA
783	Labyrinth sealing at D-end.	P	P	P	P	P	P	P	P	P	P	P	P	S	S	S
Rating & instruction plates																
002	Restamping voltage, frequency and output, continuous duty.	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
004	Additional text on std rating plate (max 12 digits on free text line).	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
095	Restamping output (maintained voltage, frequency), intermittent duty.	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
126	Tag plate	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
135	Mounting of additional identification plate, stainless.	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
139	Additional identification plate delivered loose.	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
159	Additional plate with text "Made in ...."	M	M	M	M	M	M	M	M	M	M	M	M	M	P	P
161	Additional rating plate delivered loose.	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
163	Frequency converter rating plate. Rating data according to quotation.	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
333	For Export Only	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
Shaft & rotor																
069	Two shaft extensions as per basic catalogue.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
070	One or two special shaft extensions, standard shaft material.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
164	Shaft extension with closed key-way.	S	S	S	S	S	S	S	S	S	S	P	P	P	P	NA
165	Shaft extension with open key-way.	P	P	P	P	P	P	P	P	P	P	S	S	S	S	S
410	Stainless steel shaft (standard or non-standard design).	R	R	R	R	R	R	R	R	R	R	P	P	P	P	P

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Code [1]	Variant	Frame size														
		80	90	100	112	132	160	180	200	225	250	280	315	355	400	450
Standards and Regulations																
151	Design according to SHELL DEP 33.66.05.31-Gen. June 2007	M	M	M	M	M	M	M	M	M	M	P	P	P	P	NA
421	VIK design (Verband der Industriellen Energie- und Kraftwirtschaft e.V.).	P	P	P	P	P	M	M	M	M	M	P	P	P	P	P
482	Design according to Neste OY & Jacobs, specification N-114 E, rev 5, 1.12.2010	P	P	P	P	P	P	P	P	P	P	P	P	P	P	NA
504	Design according to Neste OY & Jacobs, specification N-114 E, rev 5, 01.12.2010 with SPM adapter	P	P	P	P	P	P	P	P	P	P	P	P	P	P	NA
505	VIK design with ABB standard shaft dimensions (Verband der Industriellen Energie- und Kraftwirtschaft e.V.).	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
540	China energy label	P	P	P	P	P	M	M	M	M	M	M	P	P	NA	NA
541	Inmetro certification	M	M	M	M	M	P	P	P	P	P	P	P	P	P	NA
775	Design according to SHELL DEP 33.66.05.31-Gen. January 1999 design.	M	M	M	M	M	M	M	M	M	M	M	P	P	P	NA
778	GOST Export/Import Certificate (Russia).	P	P	P	P	P	M	M	P	P	P	M	P	P	P	NA
779	SASO Export/Import Certificate (Saudi Arabia)	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
782	Fulfilling CQST Certification requirements (China)	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
788	Documentation for Korean KOSHA certification	M	M	M	M	M	M	M	M	M	M	M	P	P	P	NA
802	GOST Kazakhstan certified	P	P	NA	NA	NA	P	P	P	P	P	P	P	P	NA	NA
Stator winding temperature sensors																
120	KTY 84-130 (1 per phase) in stator winding.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
121	Bimetal detectors, break type (NCC), (3 in series), 130 ºC, in stator winding.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
122	Bimetal detectors, break type (NCC), (3 in series), 150 ºC, in stator winding.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
123	Bimetal detectors, break type (NCC), (3 in series), 170 ºC, in stator winding.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P
125	Bimetal detectors, break type (NCC), (2x3 in series), 150 °C, in stator winding.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
127	Bimetal detectors, break type (NCC), (3 in series, 130 °C & 3 in series, 150 °C), in stator winding.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
328	PTC - thermistors (3 in series), 120 °C, in stator winding	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
435	PTC - thermistors (3 in series), 130 °C, in stator winding.	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
436	PTC - thermistors (3 in series), 150 °C, in stator winding.	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
439	PTC - thermistors (2x3 in series), 150 °C, in stator winding.	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
441	PTC - thermistors (3 in series, 130 °C & 3 in series, 150 °C), in stator winding.	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
445	Pt-100 2-wire in stator winding, 1 per phase	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P

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Code [1]	Variant	Frame size														
		80	90	100	112	132	160	180	200	225	250	280	315	355	400	450
446	Pt-100 2-wire in stator winding, 2 per phase	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
502	Pt-100 3-wire in stator winding, 1 per phase.	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
503	Pt-100 3-wire in stator winding, 2 per phase.	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
511	PTC thermistors (2 x 3 in series), 130 °C, in stator winding	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Terminal box																
021	Terminal box LHS (seen from D-end).	NA	NA	NA	NA	NA	P	P	NA	NA	NA	NA	NA	NA	NA	NA
022	Cable entry LHS (seen from D-end).	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
157	Terminal box degree of protection IP 65.	M	M	M	M	M	M	M	M	M	M	M	P	P	P	NA
180	Terminal box RHS (seen from D-end).	NA	NA	NA	NA	NA	P	P	NA	NA	NA	NA	NA	NA	NA	NA
277	Cable sealing end unit, size small for C-opening	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	NA	NA	NA	NA
278	Cable sealing end unit, size medium for D-opening	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P
279	Cable sealing end unit, size large for D-opening	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P
292	Adapter C-C	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	NA	NA	NA	NA
293	Adapter D-D	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	NA	NA
294	Adapter E-D	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P
295	Adapter E-2D	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P
300	Increased single core cross section	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
380	Separate terminal box for temperature detectors, std. material	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
400	4 x 90 ° turnable terminal box.	S	S	S	S	S	S	S	S	S	S	S	S	NA	NA	NA
402	Terminal box adapted for Al cables.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	S	S	S	S	S
413	Extended cable connection, no terminal box.	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
418	Separate terminal box for auxiliaries, standard material.	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
466	Terminal box at N-end.	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P
468	Cable entry from D-end.	M	M	M	M	M	M	M	M	M	M	M	P	R	R	NA
469	Cable entry from N-end.	M	M	M	M	M	M	M	M	M	M	M	P	R	R	NA
567	Separate terminal box material: Cast Iron	NA	NA	NA	NA	NA	S	S	P	P	P	P	P	P	P	P
568	Separate terminal box for heating elements, std. material	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
728	Standard cable gland, Ex d IIB, armoured cable, double sealing.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
729	Aluminum non-drilled flange for cable glands	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
730	Prepared for NPT cable glands	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
732	Standard cable gland, Ex d IIB, armoured cable.	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
733	Standard cable gland, Ex d IIB, non-armoured cable.	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
734	Standard cable gland, Ex d IIC, armoured cable.	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
735	Standard cable gland, Ex d IIC, non-armoured cable.	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P

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736	Standard cable gland Ex e acc. to EN-standards.	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
737	Standard cable gland Ex e with clamping device acc. to EN-standards.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
743	Painted non-drilled flange in steel for cable glands	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
744	Stainless steel non-drilled flange for cable glands.	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
745	Painted steel flange equipped with nickle plated brass cable glands	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
746	Stainless steel cable flange equipped with standard nickle plated brass cable glands	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Testing																
145	Type test report from a catalogue motor, 400V 50Hz.	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
146	Type test with report for one motor from specific delivery batch.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
148	Routine test report.	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
149	Test according to separate test specification.	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
150	Customer witnessed testing. Specify test procedure with other codes.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
222	Torque/speed curve, type test and multi-point load test with report for one motor from specific delivery batch.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
241	Nuclear motor testing	P	P	P	P	P	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
760	Vibration level test	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
761	Vibration spectrum test for one motor from specific delivery batch.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
762	Noise level test for one motor from specific delivery batch.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
763	Noise spectrum test for one motor from specific delivery batch.	R	R	R	R	R	P	P	P	P	P	P	P	P	P	P
764	Test for one motor from specific delivery batch with ABB frequency converter available at ABB test field. ABB standard test procedure.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Variable speed drives																
181	Rating plate with ABB standard loadability values for VSD operation. Other auxiliaries for VSD operation to be selected as necessary.	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
479	Mounting of other type of pulse tacho with shaft extension, tacho not included.	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
680	2048 pulse tacho, Ex d, tD, L&L 841910001	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
701	Insulated bearing at N-end.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	M	P	P	P	P
704	EMC cable gland.	M	M	M	M	M	M	M	M	M	M	M	P	P	P	P
747	1024 pulse tacho, Ex d, tD, L&L 841910002	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P

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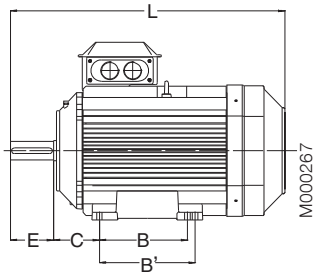
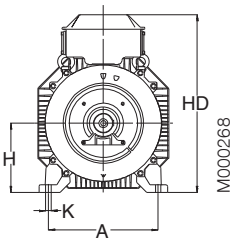
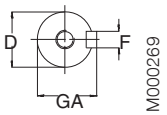
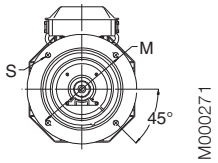
Flameproof motors
Dimension drawings, Ex de

Foot-mounted motor IM 1001, IM B3



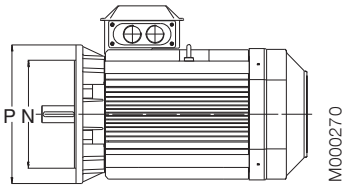


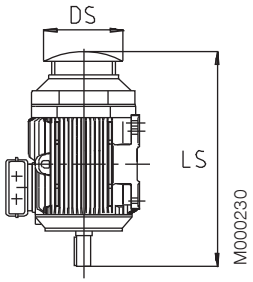


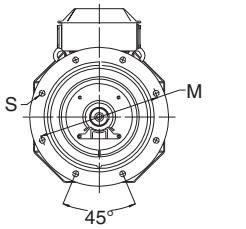


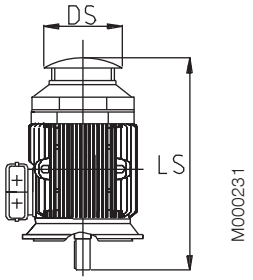
Sizes 80 to 200

Flange-mounted motor IM 3001, IM B5









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		O	A	B	B'	C	HD	K	H	M	N	P	S	DS	LS poles	
	2	4-8	2	4-8	2	4-8	2	4-8	2	4-8														2	4-8
80	19	19	21.5	21.5	6	6	40	40	340	340	20	125	100	125	50	235	10	80	165	130	200	12	160	360	360
90	24	24	27	27	8	8	50	50	405	405	20	140	100	125	56	260	10	90	165	130	200	12	180	430	430
100	28	28	31	31	8	8	60	60	480	480	25	160	140	–	63	280	12	100	215	180	250	14.5	195	505	505
112	28	28	31	31	8	8	60	60	480	480	25	190	140	–	70	295	12	112	215	180	250	14.5	195	505	505
132	38	38	41	41	10	10	80	80	560	560	30	216	140	178	89	340	12	132	265	230	300	14.5	260	590	590
160	42	42	45	45	12	12	110	110	808	808	45	254	210	254	108	499	14.5	160	300	250	350	18.5	328	756	756
180	48	48	51.5	51.5	14	14	110	110	826	826	50	279	241	279	121	539	14.6	180	300	250	350	18.5	359	756	756
200	55	55	59	59	16	16	110	110	774	774	70	318	267	305	133	573	18.5	200	350	300	400	18.5	414	844	844
225	55	60	59	64	16	18	110	140	841	871	80	356	286	311	149	620	18.6	225	400	350	450	18.5	462	921	951
250	60	65	64	69	18	18	140	140	875	875	90	406	311	349	168	683	24	250	500	450	550	18.5	506	965	965
280	65	75	69	79.5	18	20	140	140	1090	1090	100	457	368	419	190	768	24	280	500	450	550	18	555	1192	1192
315 SM_	65	80	69	85	18	22	140	170	1176	1206	115	508	406	457	216	858	30	315	600	550	660	23	624	1293	1323
315 ML_	65	90	69	95	18	25	140	170	1285	1315	115	508	457	508	216	858	30	315	600	550	660	23	624	1404	1434
355 SM_	70	100	62.5	90	20	28	140	210	1409	1479	130	610	500	560	254	984	35	355	740	680	800	23	720	1526	1596
355 ML_	70	100	62.5	90	20	28	140	210	1514	1584	130	610	560	630	254	984	35	355	740	680	800	23	720	1633	1703
355 LK_	70	100	62.5	90	20	28	140	210	1764	1834	130	610	710	900	254	984	35	355	740	680	800	23	720	1881	1951
400 L_	80	110	85	126	22	28	170	210	1851	1891	150	710	900	1000	224	1071	35	400	940	880	1000	28	810	1860	1900
400 LK_	80	100	85	106	22	28	170	210	1851	1891	150	686	710	800	280	1071	35	400	740	680	800	24	810	1860	1900
450	80	120	-	127	-	32	-	210	-	2071	180	800	1000	1120	250	1255	42	450	1080	1000	1150	28	On request		

IM 3601, IM B14 - Available flange alternative; see also variant codes.

Flange size	Variant code	Flange dimension				Motor size 80-132				
		P	M	N	S	80	90	100	112	132
FF100	258	120	100	80	M6	S	NA	NA	NA	NA
FF115	260	140	115	95	M8	M	S	NA	NA	NA
FF130	229	160	130	110	M8	M	M	S	S	NA
FF165	236	200	165	130	M10	NA	NA	NA	NA	S
FF215	246	250	215	180	M12	NA	NA	M	M	M
FF265	256	300	265	230	M12	NA	NA	NA	NA	M
FT100	257	120	100	80	M7	S	M	NA	NA	NA
FT115	259	140	115	95	M10	M	S	NA	NA	NA
FT130	228	160	130	110	M10	M	M	S	S	NA
FT165	235	200	165	130	M12	M	M	M	M	S
FT215	245	250	215	180	M14.5	NA	NA	M	M	M

S = Standard flange M = Modification NA = Not applicable

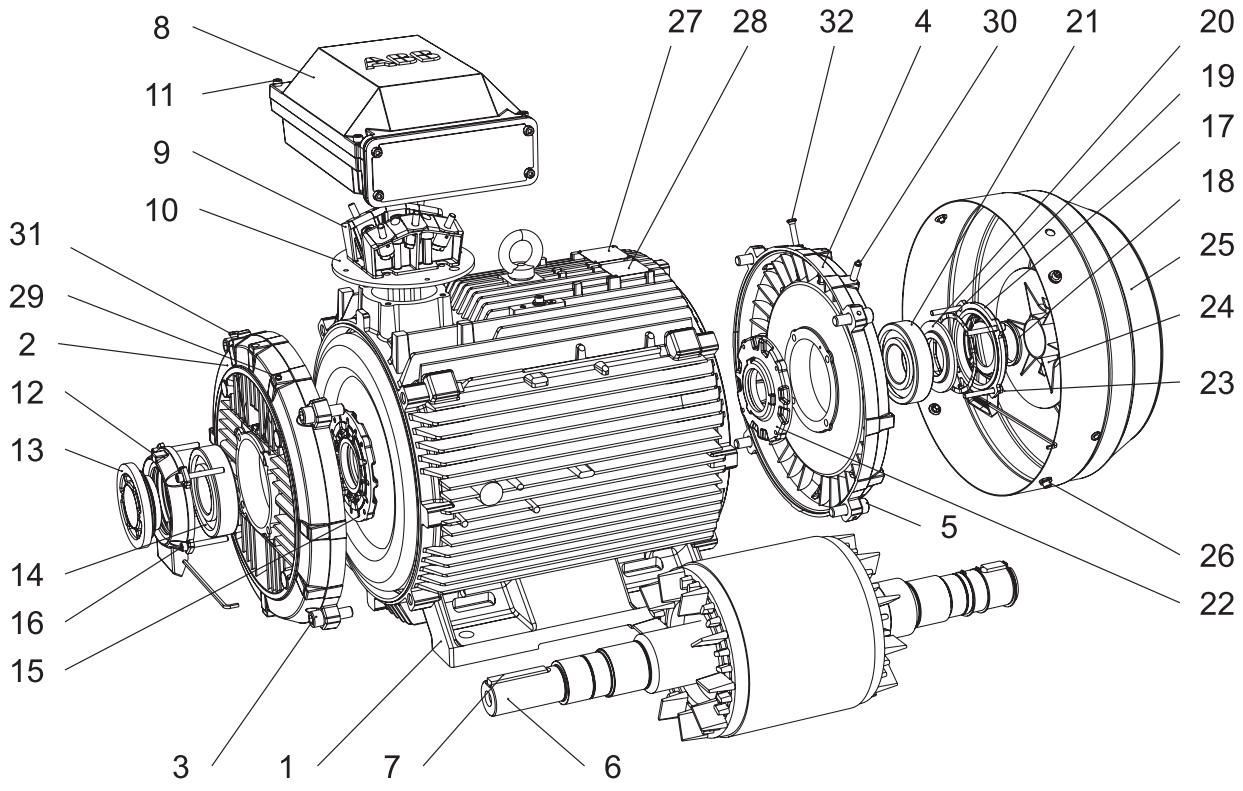
Tolerances:

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

Above table gives the main dimensions in mm. For detailed drawings please see our web-pages www.abb.com/motors&generators or contact ABB.

Flameproof motor construction Ex de

Typical exploded view of cast iron motors, frame size 315



1	Stator frame	**17**	Outer bearing cover, N-end
2	Endshield, D-end	**18**	Seal, N-end
3	Screws for endshield, D-end	**19**	Wave spring (280-315)
4	Endshield, N-end		Coil spring (355-450)
5	Screws for endshield, N-end	**20**	Valve disc, N-end
6	Rotor with shaft	**21**	Bearing, N-end
7	Key, D-end	**22**	Inner bearing cover, N-end
8	Terminal box	**23**	Screws for bearing cover, N-end
9	Terminal board	**24**	Fan
10	Intermediate flange	**25**	Fan cover
11	Screws for terminal box cover	**26**	Screws for fan cover
12	Outer bearing cover, D-end	**27**	Rating plate
13	Valve disc with labyrinth seal, D-end; standard in 2-pole motors (V-ring in 4-8 pole)	**28**	Regreasing plate
		29	Grease nipple, D-end
14	Bearing, D-end	**30**	Grease nipple, N-end
15	Inner bearing cover, D-end	**31**	SPM nipple, D-end
16	Screws for bearing cover, D-end	**32**	SPM nipple, N-end

Certificate examples

IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres
for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: IECEx LCI 04.0006X issue No.:1

Certificate history:
Issue No. 1 (2011-11-21)
Issue No. 0 (2004-3-26)

Status: Current

Date of Issue: 2011-11-21 Page 1 of 6

Applicant: **ABB Oy Motors and Generators**
P.O. Box 633
Strombergin Puistotie 5A
FIN-65101 VAASA
Finland

Electrical Apparatus: **Three-phase AC motor - M3JP / M3KP 280**
Optional accessory:

Type of Protection: **Ex d, Ex de , Ex t**

Marking: **Ex d or de IIB or IIC T3 to T6 (*) Gb**
Ex t IIIA or IIIB or IIIC T...°C (*) Db
IECEx LCI 04.0006X
IP5X, IP54, IP6X or IP64 (*)
(*) = depending on motor type and model as specified in manufacturer specifications.
For complete marking see additional information section

Approved for issue on behalf of the IECEx Certification Body: Michel BRENON

Position: Certification Officer Rémi HANOT

Signature: (for printed version)

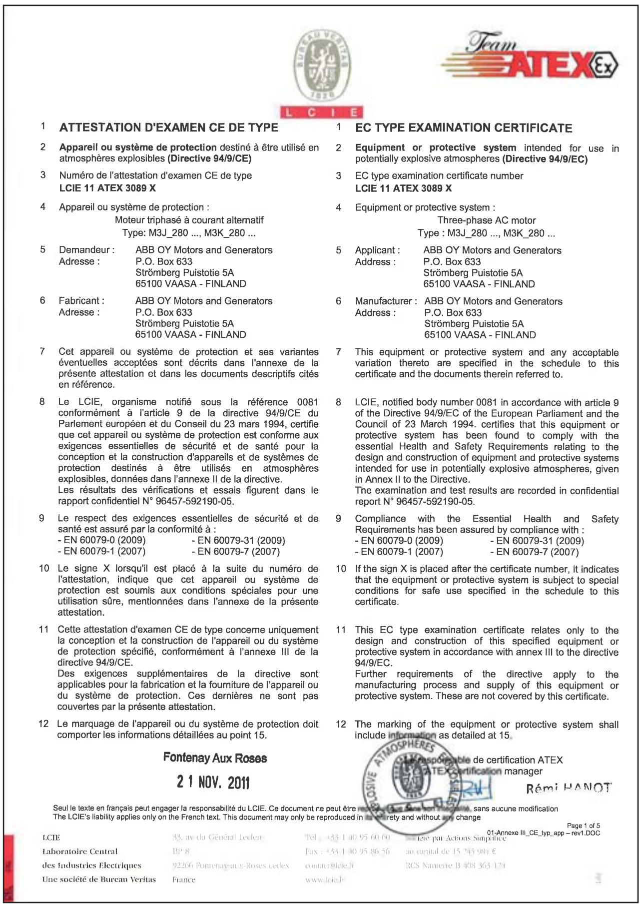
Date: 21/11/2011

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
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

M000726a



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 11 ATEX 3089 X

4 Appareil ou système de protection :
Moteur triphasé à courant alternatif
Type: M3J_280 ..., M3K_280 ...

5 Demandeur : ABB OY Motors and Generators
Adresse : P.O. Box 633
Strömberg Puistotie 5A
65100 VAASA - FINLAND

6 Fabricant : ABB OY Motors and Generators
Adresse : P.O. Box 633
Strömberg Puistotie 5A
65100 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° 96457-592190-05.

9 Le respect des exigences essentielles de sécurité et de santé est assuré par la conformité à :
- EN 60079-0 (2009) - EN 60079-31 (2009)
- EN 60079-1 (2007) - EN 60079-7 (2007)

10 Le 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.

1 **EC TYPE EXAMINATION CERTIFICATE**

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

3 EC type examination certificate number
LCIE 11 ATEX 3089 X

4 Equipment or protective system :
Three-phase AC motor
Type : M3J_280 ..., M3K_280 ...

5 Applicant : ABB OY Motors and Generators
Address : P.O. Box 633
Strömberg Puistotie 5A
65100 VAASA - FINLAND

6 Manufacturer : ABB OY Motors and Generators
Address : P.O. Box 633
Strömberg Puistotie 5A
65100 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° 96457-592190-05.

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with :
- EN 60079-0 (2009) - EN 60079-31 (2009)
- EN 60079-1 (2007) - EN 60079-7 (2007)

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 information as detailed at 15.

Fontenay Aux Roses

21 NOV. 2011

Le responsable de certification ATEX
ATEX certification manager
Rémi HANOT

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Page 1 of 5
01-Annexe III_CE_typ_app – rev1.DOC

LCIE | 33, av du Général Leclerc | Tél : +33 1 40 95 60 60 | Société par Actions Simplifiée
Laboratoire Central | BP 8 | Fax : +33 1 40 95 86 56 | au capital de 15 745 984 €
des Industries Electriques | 92266 Fontenay-aux-Roses cedex | contact@lcie.fr | RCS Nanterre B 408 363 174
Une société de Bureau Veritas | France | www.lcie.fr

M000727a

EC Declaration of Conformity

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

hereby declares that

the products: 3-phase induction motors, series M3JP, M3JC, M3KP and M3KC as listed on page 2 in this document, fulfill provisions of the relevant Council Directives:

Directive 94/9/EC (ATEX of 23rd March 1994)

by applying the following harmonized standards:

EN 60079-0 (2009), EN 60079-1 (2007), EN 60079-7 (2007) and EN 60079-31 (2009),

ABB Oy Motors and Generators declare on it's sole responsibility,

- that the state of the art of these standards do not modify the result of the assessment carried out by LCIE which issued the EC type examination certificates according to former editions of the standard series.

- that listed motors conform to the requirements of annex II of the directive 94/9/EC clause 1.2.7 by applying the standards series EN 60034.

Directive 2009/125/EC (EuP of 21st October 2009)

by fulfilling the requirements of the standard EN 60034-30: march 2009 in respect of the efficiency class.

Note: When installing motors for converter supply applications additional requirements must be respected regarding the motor as well as the installation, as described in the appropriate dedicated addendum.

Signed by

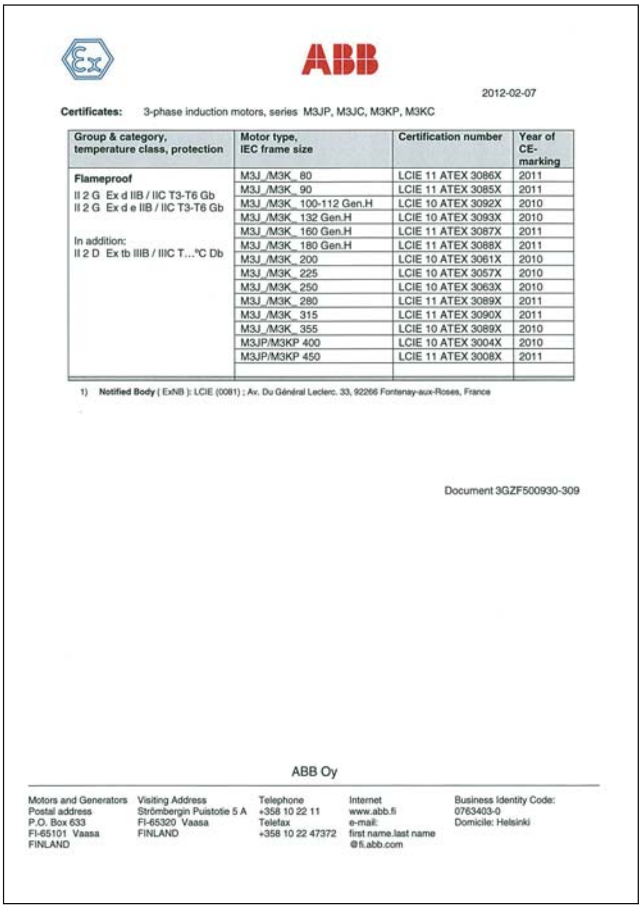
Juha-Pekka Kuokkala
Title Product Development Director
Date 2012-02-07

document 3GZF500930-309

ABB Oy

Motors and Generators	Visiting Address	Telephone	Internet	Business Identity Code:
Postal address	Strömbergin Puistotie 5 A	+358 10 22 11	www.abb.fi	0763403-0
P.O. Box 633	FI-65320 Vaasa	Telefax	e-mail:	Domicile: Helsinki
FI-65101 Vaasa	FINLAND	+358 10 22 47372	first name.last name	
FINLAND			@fi.abb.com	

M000725-1



2012-02-07

Certificates: 3-phase induction motors, series M3JP, M3JC, M3KP, M3KC

Group & category, temperature class, protection	Motor type, IEC frame size	Certification number	Year of CE-marking
Flameproof II 2 G Ex d IIB / IIC T3-T6 Gb II 2 G Ex d e IIB / IIC T3-T6 Gb In addition: II 2 D Ex tb IIIB / IIIC T...°C Db	M3J_/M3K_ 80	LCIE 11 ATEX 3086X	2011
	M3J_/M3K_ 90	LCIE 11 ATEX 3085X	2011
	M3J_/M3K_ 100-112 Gen.H	LCIE 10 ATEX 3092X	2010
	M3J_/M3K_ 132 Gen.H	LCIE 10 ATEX 3093X	2010
	M3J_/M3K_ 160 Gen.H	LCIE 11 ATEX 3087X	2011
	M3J_/M3K_ 180 Gen.H	LCIE 11 ATEX 3088X	2011
	M3J_/M3K_ 200	LCIE 10 ATEX 3061X	2010
	M3J_/M3K_ 225	LCIE 10 ATEX 3057X	2010
	M3J_/M3K_ 250	LCIE 10 ATEX 3063X	2010
	M3J_/M3K_ 280	LCIE 11 ATEX 3089X	2011
	M3J_/M3K_ 315	LCIE 11 ATEX 3090X	2011
	M3J_/M3K_ 355	LCIE 10 ATEX 3089X	2010
	M3JP/M3KP 400	LCIE 10 ATEX 3004X	2010
	M3JP/M3KP 450	LCIE 11 ATEX 3008X	2011

1) **Notified Body** (ExNB): LCIE (0081) ; Av. Du Général Leclerc. 33, 92266 Fontenay-aux-Roses, France

Document 3GZF500930-309

ABB Oy

Motors and Generators	Visiting Address	Telephone	Internet	Business Identity Code:
Postal address	Strömbergin Puistotie 5 A	+358 10 22 11	www.abb.fi	0763403-0
P.O. Box 633	FI-65320 Vaasa	Telefax	e-mail:	Domicile: Helsinki
FI-65101 Vaasa	FINLAND	+358 10 22 47372	first name.last name	
FINLAND			@fi.abb.com	

M000725-2

Flameproof motors Ex de in brief, basic design

Motor size			80	90	100	112	132	160	180
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			Forged steel, detachable feet						
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	2-12 pole	6205-2Z/C3		6206-2Z/C3		6208-2Z/C3	6309/C3	6310/C3
	N-end	2-12 pole	6204-2Z/C3	6205-2Z/C3	6206-2Z/C3		6208-2Z/C3	6309/C3	6310/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			-					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		Acidproof steel A4-80					Steel 8.8, zinc electroplated and chromated.	
Connections	Cable entries		1 x M25 x 1.5		2 x M32 x 1.5			2 x M40 x 1.5	
	Terminals		6 terminals for connection with cable lugs (not included)						
Fan	Material		Polyamide. Reinforced with glass fibre.					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 as standard						
Rotor winding	Material		Pressure die-cast aluminum						
Balancing			Half key balancing						
Key way			Closed key-way						
Drain holes			-					Optional	
External earthing bolt			As standard						
Enclosure			IP 55						
Cooling method			IC 411						

Flameproof motors Ex de in brief, basic design

Motor size			200	225	250	280	315	355	400	450
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	6312M/C3	6313M/C3	6315M/C3	6316/C3	6316/C3	6316M/C3	6317M/C3	-
		4-12 -pole	6312/C3	6313/C3	6315/C3		6319/C3	6322/C3	6324/C3	6326M/C3
	N-end	2-pole	6310M/C3	6312M/C3	6313M/C3	6316/C3		6316M/C3	6317M/C3	-
		4-12 -pole	6310/C3	6312/C3	6313/C3				6319/C3	6322/C3
Axially-locked bearings	Inner bearing cover		As standard, locked at D-end							
Bearing seal			Gamma-ring			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							Steel
	Cover screws material		Steel 8.8, zinc electroplated and chromated							
Connections	Cable entries		2 x M50 x 1.5			2 x M63 x 1.5		Refer to table on page 55		
	Terminals		6 terminals for connection with cable lugs (not included)							
Fan	Material		Polypropylene. Reinforced with glass fibre.					Polypropylene reinforced with glass fibre or 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 as standard							
Rotor winding	Material		Pressure die-cast aluminum							
Balancing			Half key balancing							
Key way			Close			Open				
Heating elements	On request		25 W	60 W			120 W			200W
Drain holes			Optional							
External earthing bolt			As standard							
Enclosure			IP 55							
Cooling method			IC 411							

Increased safety motors, Ex e II T3 Gb
Totally enclosed squirrel cage three phase low voltage motors, Sizes 80 to 400, 0.55 to 390 kW

www.abb.com/motors&generators
> Motors for explosive atmospheres
>> Increased safety motors

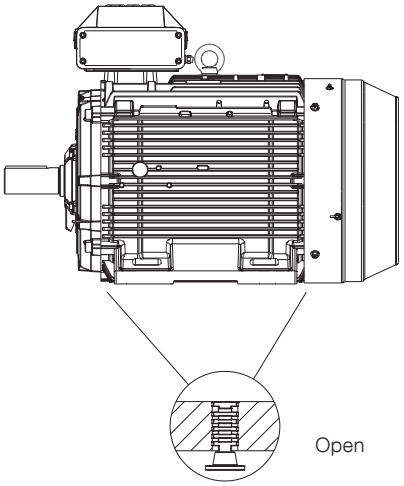
Mechanical design

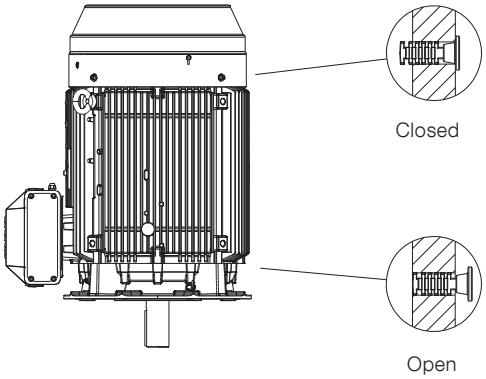
Drain holes

Increased safety Ex e motors in frame sizes 200 to 400 are fitted with drain holes and plugs as standard. Plugs are of plastic material and are delivered in open position.

Drain holes and plugs are available for frame sizes 80 to 180 as an option. Please see variant code section.

Type of protection	Frame material	Frame size	Drain holes
Increased safety	Cast iron	80-180	optional
		200-400	open





M0000178

Bearing seals

The following bearing seals are used as standard, special seals like radial seal are available as option. Please see variant code section.

Bearing seals in Ex e motors (M3HP)

Frame size	Number of poles	D-end	N-end
80-250	2-12	Gamma ring	Gamma ring
280-315	2	Labyrinth seal	V-ring
280-315	4-12	V-ring	V-ring
355	2	Labyrinth seal	V-ring
355	4-12	Labyrinth seal	V-ring
400	2	Labyrinth seal	Labyrinth
400	4-12	Labyrinth seal	V-ring

Terminal box standard delivery

Terminal boxes are mounted on top of the motor at D-end as standard. The terminal boxes of motor sizes 80 to 315 can be turned 4x90° and in motor sizes 355 and 400 2x180° after delivery. When ordering Ex e motors in sizes 280 to 400 with 4x90°, the position of the terminal box has to be defined in the order.

The degree of standard terminal box is IP 55 and it complies with the requirements of this enclosure type and effectively prevents all ignition sources such as sparks, excessive overheating etc. The features of the terminal box are: no self loosening terminals, compliance with creepage distances and clearances specified in standards.

If no ordering information on the cable is given, it is assumed to be p.v.c. -insulated non-armoured and termination parts are supplied according to the table below.

To enable the supply of suitable terminations for the motor, please state cable type, quantity, size and outer diameter when ordering.

All Ex e motors are delivered as standard with cable glands or cable sealing end units according to the below table. Different glands can be provided separately as an option. Please see Alternatives section for details.

Note: For 500 V motor information please contact ABB!

Standard delivery 400/690 V (if nothing else informed)

Cable entries for supply cables

Motor size	Pole number	Terminal box type	Terminal box opening	45° adapter	Threaded holes	Cable gland	Cable sealing end unit	Cable outer diameter mm	Single core cross-section mm^2 for rated power	Terminal bolt size 6 x
80-90	2-8	25	B	-	1xM25	1xM25	-	1xØ10-16	10	M5
100-132	2-8	25	B	-	2xM32	2xM32	-	2xØ16-21	10	M5
160-180	2-8	63	B	-	2xM40	2xM40	-	2xØ18-27	35	M6
200-250	2-8	160	B	-	2xM50	2xM50	-	2xØ26-35	70	M10
280	2-8	210	C	-	2xM63	2xM63	-	2xØ32-49	2x150	M12
315SM, ML	2-8	370	D	-	2xM63	2xM63	-	2xØ32-49	2x240	M12
355 SMA, SMB, SMC	2-4	750	E	E-D	-	-	medium	2xØ48-60	4x240	M12
355 SMC	6	750	E	E-D	-	-	medium	2xØ48-60	4x240	M12
355 SMC	8	370	D	-	2xM63	2xM63	-	2xØ32-49	2x240	M12
355 SMA, SMB	6-8	370	D	-	2xM63	2xM63	-	2xØ32-49	2x240	M12
355 ML, LK	2-4	750	E	E-D	-	-	large	2xØ60-80	4x240	M12
355 ML, LK	6-8	750	E	E-D	-	-	medium	2xØ48-60	4x240	M12
400 L, LK	2-6	750	E	E-D	-	-	large	2xØ60-80	4x240	M12
400 L, LK	8	750	E	E-D	-	-	medium	2xØ48-60	4x240	M12

Auxiliary cable entries

80-132	2-8		1xM20	1xM20	1xØ8-14
160-400	2-8		2xM20	2xM20	1xØ8-14

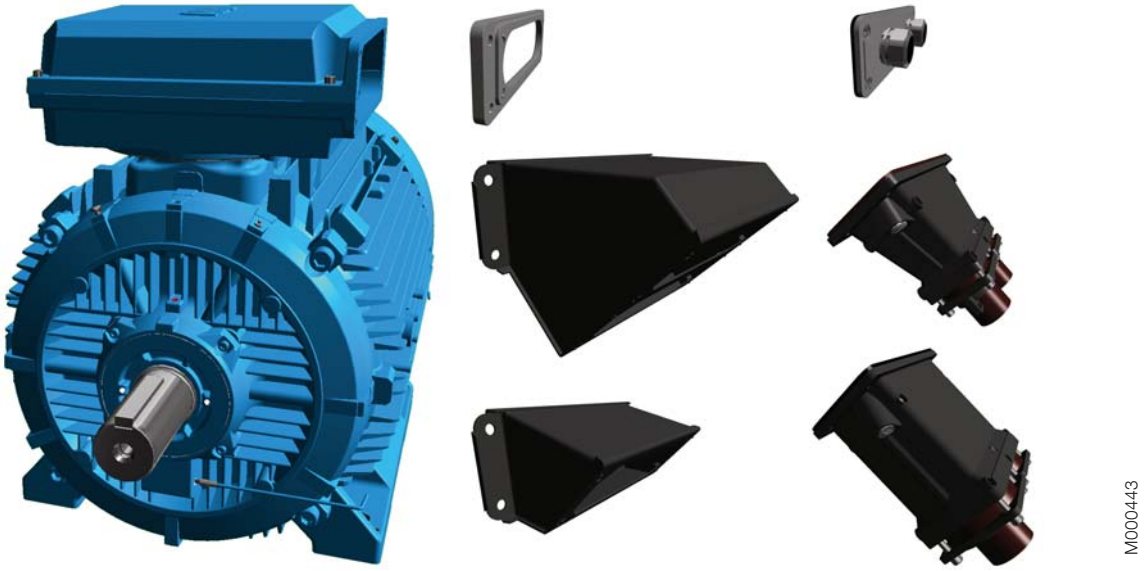
Earthings on motor

	Frame	Terminal box	Terminal box type
80-132	M6	M6	25
160-180	M6	M6	63
200-250	M8	M8	160
280-315	M10	2xM10	210, 370
355-400	M10	2xM10	750

Terminal box alternatives, cast iron frame

Optional adapters

There is a broad selection of cable termination accessories available to allow termination of one or several cables. The most common ones are explained below, for other options please contact ABB.



M000443

Main terminal box | **Adapters** | **Cable sealing end units, flange and glands**

How to order?

- Check first that the terminal box can allow mounting of the cable and cores (refer to motor type and terminal box type cross reference page 85).
- If very large cables are used might it be neccesary to use a larger terminal box than standard. Select the right cable gland(s) or cable sealing end unit(s) depending on outer diamater of the cable(s).
- Select a appropriate adapter and gland(s) and gland plate or cable sealing end unit.
- Note that turning the terminal box to a non standard position might limit the use of some adapters.

Ordering example

Motor	145 kW, 4 pole, 400 V 50 Hz,
Cables	cables needed: 2 pieces, outer diameter 58 mm, single cross section 185 mm, cables coming from below
Needed one terminal box for anticondensation heaters (220 V) and another for temperature detectors, terminal box material cast iron.	
Motor	M3HP 315 MLA 4, B3
Adapter	D-D (variant code 293)
Cable sealing end unit	Variant code 278
Auxiliaries	Variant codes 451, 380, 567, 568

1. Main terminal box and maximum single core cross section

Larger than standard single core cross section is available as option according to the table below. Also one size larger terminal box can be selected. Please check also the capacity of the cable entry to make sure the cables fit.

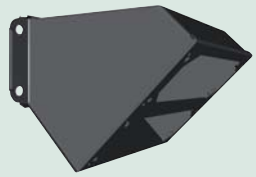
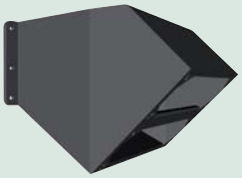
Standard terminal box			Variant code 019 larger terminal box than standard		
Terminal box type	Size of opening	Max single core cross section per phase mm^2	Terminal box type	Size of opening	Max single core cross section per phase mm^2
25	B	35	-	-	-
63	B	95	-	-	-
160	C	120	-	-	-
210	C	2 x 240	370	D	2 x 240
370	D	2 x 300	750	E	2 x 300
750	E	4 x 500	1200	E	4 x 500

The accessories for using the maximum single core cross sections are not included as standard. For this option please use variant code 300 (Increased single core cross section). Each terminal box has got limited maximum cable entry size, please request if necessary.

2. Optional adapters

To allow easy termination of cables entering the terminal box from above or below is it recommended to use an angle adapter.

These can also be used to allow mounting of several cable sealing end units or gland plates on the terminal box for termination of more cables than one cable sealing end unit or gland plate can allow.

Adapter	Variant code	Opening towards terminal box	Gland plate or opening for cable sealing end unit	Material	Notes
 M000430	292	C	C	Steel	
 M000431	293	D	D	Steel	
 M000432	294	E	D	Steel	Included in std delivery with 750 type terminal box
 M000433	295	E	2 pcs D	Steel	Included in std delivery with 1200 type terminal box
 M000434	296	E	3 pcs D	Steel	Only possible on terminal box 1200
 M000435	444	E	2 pcs E	Steel	Only possible on terminal box 1200

Note: Black painted steel

3. Gland plate, maxium size of glands and material

Gland plates are delivered blind or be drilled and tapped to accomodate glands to suit the cable diameter and amount of glands needed.

Standard gland plate material is siluminium, painted steel or stainless steel are available as options.

Size	Maximum size and number of glands, metric		
B	2xM40	3xM32	4xM20
C	2xM90	3xM50	7xM32
D	4xM90	4xM63	7xM50
E	6xM90	7xM63	9xM50

Related variant codes:

729 Cable flanges without holes / Blank gland plates.
730 Prepared for NPT glands
732 Standard cable gland, Ex d IIB, armoured cable.
733 Standard cable gland, Ex d IIB, non-armoured cable.
743 Painted non-drilled flange in steel for cable glands.
744 Stainless steel non-drilled flange for gable glands.
745 Painted steel cable flange equipped with nickle plated brass cable glands.
746 Stainless steel cable flange equipped with nickle plated brass cable glands.

4. Cable glands and cable sealing end units

Cable glands

Table below shows the selection of cable gland types and possible cable outer diameter of each size.

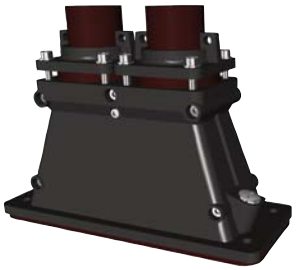
	Outer diameter, mm		
	Variant code 745 Painted steel flange equipped with brass cable glands	Variant code 737 Standard cable gland Ex e with clamping device acc. to EN-Standards	Variant code 704 EMC cable gland
Motor sizes 80-400:			
M20	8-14	8-14	8-14
M25	10-16	10-16	10-16
M32	16-21	16-21	16-21
M40	18-27	18-27	18-27
M50	26-35	26-35	26-35
M63	32-49	32-49	32-49
M75	46-60	NA	NA
M90	55-70	NA	NA

For armoured and NPT cable glands please contact ABB.

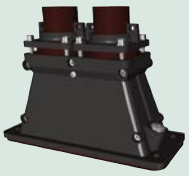
Cable sealing end unit

As an alternative to flanges and cable glands, cable sealing units can be used. These allow more space for spreading the cores for easy terminating on the terminals.

Cable sealing end units have rubber sealed entries for one or two main cables. In addition are there two plugged M20 holes for auxillary cables.



M000437

	Variant code	Opening towards terminal box	Cable outer diameter mm	Cable entry auxiliary cable	Accessories Variant code 704; EMC cable gland	Variant code 231; with clamping device
 M000436	277	C	1 or 2 pcs 48-60 mm *)	2 pcs plugged M20 holes	Optional	Optional
 M000437	278	D	1 or 2 pcs 48-60 mm *)	2 pcs plugged M20 holes	Optional	Optional
 M000438	279	D	1 or 2 pcs 60-80 mm *)	2 pcs plugged M20 holes	Optional	Optional

*) Depending on how the cable seal inside the cable sealing end unit is used also 40-52 mm is available.

5. Auxiliary terminal box

It's possible to equip the 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 and equipped with M20 glands for entry of the connection cables. As an option cast iron terminal box is available. In motor sizes 160 to 180 the material of auxiliary terminal box is cast iron.

Connection terminals are spring loaded type for quick and easy connection. These are suitable for up to 2.5 mm^2 wires. Auxiliary terminal boxes are equipped with an earthing terminal.

As standard the first auxiliary terminal box is located on RHS seen from D-end.

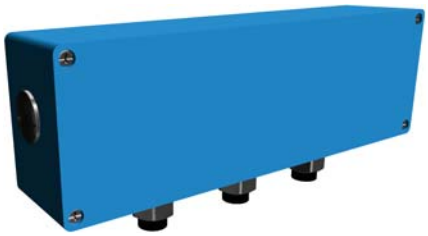
Related variant codes:

418 Separate terminal box for auxiliaries, standard material (all connections of temperature detectors and heaters will be put in same box)
380 Separate terminal box for temperature detectors, standard material
568 Separate terminal box for heating elements, standard material
569 Separate terminal box for brakes, standard material
567 Separate terminal box material: Cast iron

Small, aluminum auxiliary terminal box (80 x 125 mm, for max 12 wires) Earthing size M4

M000439

Large, aluminum auxiliary terminal box (80 x 250 mm, for max 30 wires) Earthing M4



M000440

Cast iron auxiliary terminal box (211 x 188 mm, for max 30 wires) Earthing M6

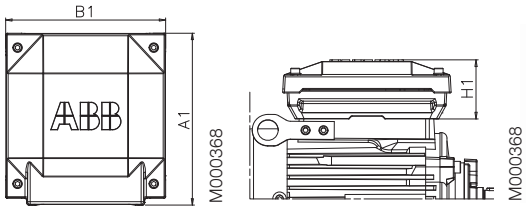
M000441

Standard cable entry size M20. Number of entries depends on the terminal box type and number of selected auxiliaries.

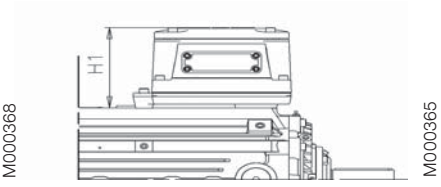
Dimension drawings
Increased safety motors, cast iron frame

Terminal boxes, standard design with 6 terminals

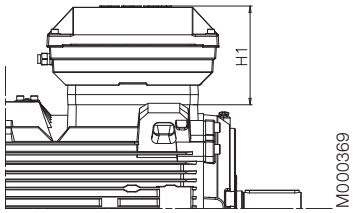
Motor sizes 80 to 132



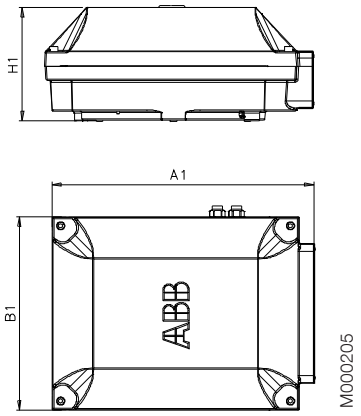
Motor sizes 160 to 180



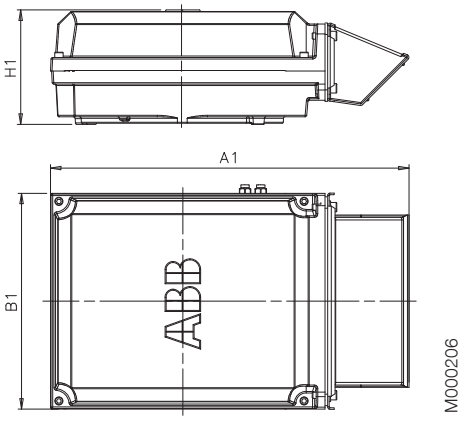
Motor sizes 200 to 250



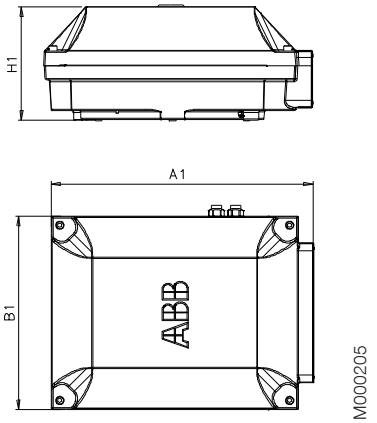
Motor sizes 280 to 315
Top- and side-mounted
Terminal boxes 210,370



Motor sizes 355 to 400
Top-mounted
Terminal box 750 + adapter



Motor sizes 355 to 400
Side-mounted
Terminal box 750



Ex e - M3HP

Motor size	Terminal box	A1	B1	H1
80-132	25	202	188	66
160-180	63	234	234	68
200-250	160	352	319	147
280-400	210	416	306	177
	370	451	347	200
	750 top-mounted	686	413	219
	750 side-mounted	525	413	219

For motor dimensions please see dimension drawings.

Permissible loadings on the shaft end

The following tables give the permissible radial and axial forces in Newton, assuming only radial or axial force is applied. Permissible loads of simultaneous radial and axial forces will be supplied on request.

The bearing life, L_{10}, is calculated according to ISO 281:1990/ Amd 2:2000 standard theory, which also takes the purity of the grease into consideration. An adequate lubrication is a necessary prerequisite for the table below.

The values are based on normal conditions at 50 Hz. At 60 Hz the values must be reduced by 10 %. For two-speed motors, the values must be based on the higher speed.

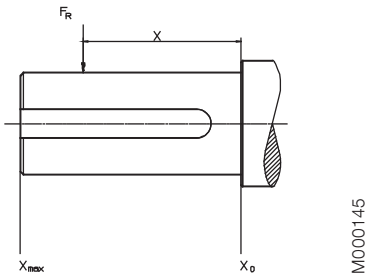
Motors are foot-mounted IM B3 version with force directed sideways. In some cases the strength of the shaft affects the permissible forces.

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.

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:

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

E = length of shaft extension in basic version



Cast iron motors

Permissible radial forces according to L_{10} principle

Increased safety motors Ex e II T4 Gb, motor sizes 80 to 132

Motor size	Poles	Length of shaft extention E (mm)	Ball bearings 40,000 hours FX_0 (N)	FX_{max} (N)
80	2	40	619	524
	4	40	780	663
	6	40	893	759
	8	40	983	834
90	2	50	561	473
	4	50	803	677
	6	50	919	775
	8	50	1011	853
100	2	60	553	457
	4	60	1050	868
	6	60	1267	1047
	8	60	1395	1153
112	2	60	553	457
	4	60	1050	868
	6	60	1267	1047
	8	60	1394	1152
132	2	80	1354	1112
	4	80	1772	1454
	6	80	2028	1665
	8	80	2234	1833

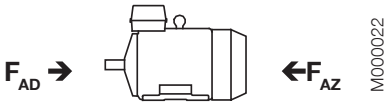
Cast iron motors

Permissible radial forces according to L_{10} principle

Increased safety motors Ex e II T4 Gb, motor sizes 160 to 400

Motor size	Poles	Lengt of.shaft extension E (mm)	Ball bearings 40,000 hours FX_0 [N]	Ball bearings 40,000 hours FX_{max} [N]	Roller bearings 40,000 hours FX_0 [N]	Roller bearings 40,000 hours FX_{max} [N]
160 ML_	2	110	2530	2120	6400	3160
	4	110	3180	2670	7880	3130
	6	110	3650	3060	8900	3140
	8	110	4020	3370	9700	3150
180 ML_	2	110	2900	2440	6970	4380
	4	110	3660	3080	8580	4360
	6	110	4190	3520	9700	4360
	8	110	4620	3880	10570	4370
200 ML_	2	110	3830	3160	9500	7100
	4	110	4830	3980	11710	7090
	6	110	5520	4550	13230	7080
	8	110	6080	5010	14420	7090
225 SM_	2	110	4350	3660	11650	7090
	4	140	5490	4420	14340	7340
	6	140	6280	5060	16190	7330
	8	140	6920	5570	17660	7330
250 SM_	2	140	4390	4350	15420	7360
	4	140	6790	5480	18980	9320
	6	140	7760	6270	21440	9330
	8	140	8550	6900	23370	9320
280 SM_	2	140	5840	4900	16500	6350
	4	140	7260	6110	20100	9690
	6	140	8300	6980	22690	9680
	8	140	9150	7700	24740	9690
315 SM_	2	140	5810	4960	16540	6280
	4	170	9030	7470	26590	10170
	6	170	10310	8530	30030	10160
	8	170	11360	9400	32740	10100
315 ML_	2	140	5850	5080	16710	6200
	4	170	9000	7620	26580	14570
	6	170	10270	8700	30010	14580
	8	170	11330	9590	32720	14510
315 LK_	2	140	5880	5210	16900	6080
	4	170	9090	7870	26950	14410
	6	170	10270	8890	30390	14210
	8	170	11360	9840	33150	14130
355 SM_	2	140	5790	5090	16790	7470
	4	210	11930	9890	36660	14590
	6	210	13630	11300	41390	14530
	8	210	15050	12470	45140	14460
355 ML_	2	140	5770	5120	16880	7110
	4	210	11980	10090	36960	14290
	6	210	13650	11500	41720	14210
	8	210	15090	12710	45503	14110
355 LK_	2	140	5670	5140	17030	6570
	4	210	12020	10420	37470	13850
	6	210	13680	11860	42290	13660
	8	210	15160	13150	46130	13510
400 L_	2	170	4450	3970	19390	8760
	4	210	12120	10550	43040	18600
	6	210	13750	11970	48570	17980
	8	210	15280	13310	52990	18180
400 LK_	2	170	4450	3970	19390	8760
	4	210	12120	10550	43040	18600
	6	210	13750	11970	48570	17980
	8	210	15280	13310	52990	18180

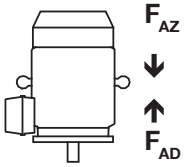
Permissible axial forces according to L_{10} principle



Cast iron motors, sizes 80 to 400

Mounting arrangement IM B3

Motor size	40,000 hours							
	2-pole		4-pole		6-pole		8-pole	
	F_{AD} N	F_{AZ} N	F_{AD} N	F_{AZ} N	F_{AD} N	F_{AZ} N	F_{AD} N	F_{AZ} N
80	660	300	820	460	940	580	1030	670
90	740	220	900	380	1010	490	1110	590
100	1100	220	1320	430	1480	590	1610	720
112	1100	220	1320	430	1480	590	1610	720
132	1530	500	1870	840	2110	1080	2320	1280
160	2050	1440	2620	2010	3060	2440	3410	2790
180	2570	1470	3230	2130	3730	2630	4140	3040
200	3300	2040	4180	2920	4820	3560	5360	4100
225	3710	2240	4690	3230	5410	3940	6010	4540
250	5200	2100	6400	3310	7260	4160	8000	4900
280 SM_	4870	2870	6140	4140	7040	5040	7840	5840
315 SM_	4780	2780	7170	5170	8210	6210	9180	7180
315 ML_	4730	2730	7080	5080	8100	6100	9060	7070
355 SM_	1660	5460	5760	9560	7060	10860	8290	12090
355 ML_	1570	5370	5640	9440	6880	10680	8100	11900
355 LK_	1440	5240	5460	9260	6680	10480	7810	11610
400 L_	810	5810	4250	10250	5510	11510	6630	12630
400 LK_	810	5810	4250	10250	5410	11410	6630	12630



Mounting arrangement IM V1

Motor size	40,000 hours							
	2-pole		4-pole		6-pole		8-pole	
	F_{AD} N	F_{AZ} N	F_{AD} N	F_{AZ} N	F_{AD} N	F_AZ N	F_AD N	F_{AZ} N
80	690	280	860	440	970	550	1070	650
90	780	190	950	340	1080	450	1170	540
100	1180	170	1430	360	1600	510	1730	640
112	1180	170	1430	360	1600	510	1730	640
132	1700	390	2080	690	2380	900	2580	1110
160	2440	1180	3160	1650	3590	2090	3950	2430
180	3120	1100	3980	1630	4490	2130	4890	2550
200	3960	1590	5030	2340	5820	2890	6370	3430
225	4570	1650	5770	2500	6660	3100	7280	3700
250	6240	1380	7720	2410	8930	3047	9690	3780
280 SM_	6440	1780	8170	2760	9580	3340	10380	4150
315 SM_	6950	1270	9820	3350	11760	3810	12740	4780
315 ML_	7280	940	10300	2870	12330	3240	13310	4210
355 SM_	5330	2890	11110	5820	13720	6270	14980	7530
355 ML_	5860	2360	11810	5130	14718	5280	15970	6540
355 LK_	6600	1630	12850	4080	15800	4190	17500	5000
400 L_	8010	730	13680	3650	16610	3840	18480	4530
400 LK_	8010	730	13680	3650	17180	3270	18480	4530

[1] On request

Rating plates

The rating plates are in table form giving values for speed, current and power factor for one voltage: 400 V 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: ATEX
- I_A/I_N
- t_E

Motor sizes 80 to 400

ABB Oy, Motors and Generators
Vaasa, Finland

CE 0081 IE2 Ex II 2G

3 ~ Motor	M3HP 100LB 4 IMV1/IM3011						
Ex e II C T3 Gb							
603841-20			2012	No. 3GF12099854			
S1				Ins.cl. F		IP 55	
V	Hz	kW	r/min	A	cos φ	IA/IN	tE/s
690 Y	50	3	1442	3.5	0.83	7	12

IE2-86.5%(100%)-87.2%(75%)-86.3%(50%)

Prod. code 3GHP102520-BDH

LCIE xx ATEX xxxx

Manual: 3GZF500730-47		Nmax	r/min
6206-2Z/C3	6206-2Z/C3	63	kg

ABB IEC 60034-1

M000738

Ordering information

Sample order

When placing an order, please state the following minimum data in the order, as in example.

The product code of the motor is composed in accordance with the following example.

Motor type	**M3HP 160 MLB**
Pole number	**2**
Mounting arrangement (IM code)	**IM B3 (IM 1001)**
Rated output	**8 kW**
Product code	**3GHP161420-ADE**
Variant codes if needed	

Motor size

A	B	C	D.E.F.	G
M3HP	**160 MLB**	**3GHP 161420**	**- A D H**	**002 etc.**
		1 2 3 4 5 6 7 8 9 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
G Variant codes

Explanation of the product code:

Positions 1 to 4

3GHP = Totally enclosed fan cooled squirrel cage motor with cast iron frame, increased safety

Positions 5 and 6

IEC-frame

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

Position 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 90 to 132)
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.

Increased safety cast iron motors
Technical data for Ex e II T3 Gb according to EN

IE2

IP 55, IC 411; Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30; 2008

ATEX Certified

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 Nm	T_l/T_N	T_b/T_N	Time tE 50 Hz	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**								
0.75		**M3HP**	**80 MA**	3GHP 081 310-••H	2861	80.1	79.4	76.2	0.87	1.55	7.3	2.5	3.7	3.8	15	0.0006	28	59
1.1		**M3HP**	**80 MB**	3GHP 081 320-••H	2833	81.6	82.2	80.6	0.87	2.2	5.9	3.7	3.0	3.2	11	0.0007	30	59
1.5		**M3HP**	**90 SLA**	3GHP 091 010-••H	2881	81.9	82.1	80.1	0.88	3	6.7	4.9	3.0	3.5	12	0.001	41	61
2.2		**M3HP**	**90 SLC**	3GHP 091 030-••H	2877	84.5	85.0	83.8	0.89	4.2	7.8	7.3	2.7	3.5	6	0.0014	44	61
3		**M3HP**	**100 LA**	3GHP 101 510-••H	2896	86.0	86.4	84.9	0.90	5.5	6.8	9.8	2.2	3.0	7	0.0036	61	65
3.7		**M3HP**	**112 MB**	3GHP 111 320-••H	2910	86.2	86.3	84.9	0.89	6.9	7.8	12.1	3.9	4.0	5	0.0043	64	65
5.5		**M3HP**	**132 SMB**	3GHP 131 220-••H	2905	87.0	87.2	85.8	0.90	10.1	6.9	18	2.4	3.3	9	0.009	92	71
7.5		**M3HP**	**132 SMD**	3GHP 131 240-••H	2914	88.3	88.7	87.6	0.90	13.6	7.6	24.5	2.8	3.6	5	0.012	100	71
8		**M3HP**	**160 MLB**	3GHP 161 420-••H	2939	91.0	90.7	88.8	0.91	14	7.2	25.9	2.8	3.5	15	0.052	216	69
11		**M3HP**	**160 MLC**	3GHP 161 430-••H	2932	90.3	90.4	89.3	0.92	19.5	6.9	35.8	2.6	3.4	9	0.062	227	69
12.5		**M3HP**	**160 MLD**	3GHP 161 440-••H	2944	92.5	92.6	92.2	0.91	21	7.6	40.5	2.8	3.4	8	0.07	233	69
15		**M3HP**	**180 MLB**	3GHP 181 420-••H	2947	91.0	91.1	90.1	0.91	26	7.1	48.6	2.2	3.0	15	0.13	292	69
18		**M3HP**	**180 MLC**	3GHP 181 430-••H	2960	93.3	93.6	93.0	0.91	31	7.6	58	2.4	3.2	11	0.13	292	69
22		**M3HP**	**200 MLC**	3GHP 201 430-••G	2956	91.9	91.7	90.2	0.90	38.5	6.9	71	2.6	3.5	10	0.21	305	72
25		**M3HP**	**200 MLE**	3GHP 201 450-••G	2957	93.8	93.9	93.0	0.90	44	7.0	80.7	2.9	3.8	9	0.22	310	72
30		**M3HP**	**225 SMB**	3GHP 221 220-••G	2963	92.3	92.0	90.5	0.91	51	7.4	96.6	2.1	3.0	10	0.31	365	74
36		**M3HP**	**225 SMD**	3GHP 221 240-••G	2965	93.3	93.2	92.1	0.92	60	8.0	115	2.3	3.2	7	0.36	395	74
40		**M3HP**	**250 SMB**	3GHP 251 220-••G	2973	93.2	93.0	91.6	0.91	67	7.8	128	2.2	3.0	8	0.66	475	74
47		**M3HP**	**250 SMC**	3GHP 251 230-••G	2972	93.7	93.6	92.6	0.91	80	7.8	151	2.3	3.0	6	0.69	495	74
60	1)	**M3HP**	**280 SMA**	3GHP 281 210-••G	2975	93.9	93.6	92.4	0.91	100	7.3	192	1.2	2.9	10	0.8	625	77
75	1)	**M3HP**	**280 SMB**	3GHP 281 220-••G	2975	94.2	94.0	93.0	0.91	125	7.6	240	1.2	2.9	8	0.9	665	77
77	1)	**M3HP**	**315 SMA**	3GHP 311 210-••G	2984	94.1	93.5	91.7	0.90	132	7.3	246	0.9	2.9	13	1.2	880	78
80	1)	**M3HP**	**280 SMC**	3GHP 281 230-••G	2975	94.3	94.2	93.2	0.92	132	7.4	256	1.2	2.8	7	1.15	725	77
90	1)	**M3HP**	**315 SMB**	3GHP 311 220-••G	2983	94.6	94.2	92.7	0.90	152	7.2	288	0.9	2.8	10	1.4	940	78
120	1)	**M3HP**	**315 SMC**	3GHP 311 230-••G	2982	95.1	94.9	93.7	0.91	201	7.4	384	1.0	2.9	6	1.7	1025	78
135	1)	**M3HP**	**315 MLA**	3GHP 311 410-••G	2983	95.3	95.1	94.1	0.92	222	8.0	432	1.2	3.0	6	2.1	1190	78
175	1)	**M3HP**	**355 SMA**	3GHP 351 210-••G	2987	95.9	95.5	94.4	0.91	290	7.4	559	0.8	3.2	10	3	1600	83
200	1)	**M3HP**	**355 SMB**	3GHP 351 220-••G	2986	96.1	95.8	94.8	0.91	333	7.3	639	0.8	3.2	7	3.4	1680	83
220	1)	**M3HP**	**355 MLA**	3GHP 351 410-••G	2983	96.2	96.0	94.9	0.91	363	7.1	704	0.9	3.0	8	4.1	2000	83
300	1)	**M3HP**	**355 LKA**	3GHP 351 810-••G	2986	96.7	96.6	96.0	0.92	488	7.4	959	0.9	3.2	6	4.8	2320	83
355	2)	**M3HP**	**400 LB**	3GHP 401 520-••G	2989	97.1	96.9	96.2	0.91	580	7.6	1134	0.7	3.4	7	8.2	3050	82
355	2)	**M3HP**	**400 LKB**	3GHP 401 820-••G	2989	97.1	96.9	96.2	0.91	580	7.6	1134	0.7	3.4	7	8.2	3050	82
400	2)	**M3HP**	**400 LC**	3GHP 401 530-••G	2988	97.1	97.0	96.4	0.92	645	7.5	1278	0.8	3.4	6	9.3	3300	82
400	2)	**M3HP**	**400 LKC**	3GHP 401 830-••G	2988	97.1	97.0	96.4	0.92	645	7.5	1278	0.8	3.4	6	9.3	3300	82

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

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

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

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

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.

Increased safety cast iron motors
Technical data for Ex e II T3 Gb according to EN

IE2

IP 55, IC 411; Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30; 2008

Output						Efficiency IEC 60034--2-1; 2007				Current		Torque						
kW	Motor type		Product code		Speed r/min	Full load 100%	3/4 load 75%	1/2 load 50%	Power factor cos φ	I_N A	I_s/I_N	T_N Nm	T_l/T_N	T_b/T_N	Time tE 50 Hz	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								
0.55	M3HP	80 MA	3GHP	082 310-••H	1421	76.6	76.6	73.7	0.73	1.41	4.9	3.6	2.3	2.7	20	0.001	29	59
0.75	M3HP	80 MB	3GHP	082 320-••H	1412	80.4	80.5	78.4	0.76	1.77	5.2	5	2.2	2.7	20	0.0012	29	59
1.1	M3HP	90 SLA	3GHP	092 010-••H	1432	83.3	83.3	80.7	0.77	2.4	5.9	7.3	2.8	3.5	20	0.002	42	54
1.5	M3HP	90 SLC	3GHP	092 030-••H	1431	83.2	82.8	80.4	0.79	3.2	6.5	10	2.3	3.0	0	0.003	44	54
2.2	M3HP	100 LA	3GHP	102 510-••H	1441	84.7	85.6	84.8	0.86	4.3	7.0	14.5	2.7	3.3	20	0.0075	61	52
3	M3HP	100 LB	3GHP	102 520-••H	1442	86.5	87.2	86.3	0.83	6	7.3	19.8	2.7	3.4	12	0.0081	63	52
3.7	M3HP	112 MC	3GHP	112 330-••H	1458	88.1	87.4	84.9	0.78	7.7	8.7	24.2	3.0	3.8	0	0.013	72	52
5.5	M3HP	132 SMB	3GHP	132 220-••H	1458	89.5	89.9	88.8	0.80	11	7.9	36	3.0	3.5	14	0.023	102	60
7.5	M3HP	132 SMD	3GHP	132 240-••H	1460	89.4	89.2	87.0	0.75	16.1	6.8	49	3.3	3.7	0	0.034	105	60
11	M3HP	160 MLC	3GHP	162 430-••H	1459	90.0	90.8	90.4	0.85	21	6.7	71.9	2.6	3.1	12	0.096	226	62
15	M3HP	160 MLE	3GHP	162 450-••H	1469	91.7	92.1	91.3	0.84	29	8.0	97.5	3.1	3.6	9	0.13	249	68
17	M3HP	180 MLB	3GHP	182 420-••H	1469	91.3	91.9	91.3	0.85	33	6.2	110	2.3	2.9	7	0.21	279	66
20	M3HP	180 MLC	3GHP	182 430-••H	1474	91.9	92.2	91.5	0.85	38	7.6	129	2.7	3.1	11	0.248	298	66
26	M3HP	200 MLA	3GHP	202 410-••G	1479	93.0	93.2	92.7	0.88	47	7.9	167	1.9	3.1	13	0.3	280	73
30	M3HP	200 MLB	3GHP	202 420-••G	1477	93.2	93.7	93.4	0.89	54	7.4	193	1.9	3.0	9	0.35	305	73
38	M3HP	225 SMB	3GHP	222 220-••G	1479	92.8	93.0	92.6	0.89	67	7.7	245	1.7	3.1	9	0.45	365	74
43	M3HP	225 SMC	3GHP	222 230-••G	1479	93.4	93.6	92.9	0.90	76	7.7	277	1.8	3.1	5	0.53	390	74
50	M3HP	250 SMA	3GHP	252 210-••G	1482	94.3	94.6	94.0	0.88	88	7.1	322	1.5	3.1	8	0.77	425	73
60	M3HP	250 SMB	3GHP	252 220-••G	1483	94.8	95.0	94.6	0.89	105	7.3	386	1.7	3.2	8	0.98	470	73
65	M3HP	280 SMA	3GHP	282 210-••G	1485	94.5	94.7	94.3	0.88	113	7.4	417	1.5	3.0	8	1.25	625	68
75	M3HP	280 SMB	3GHP	282 220-••G	1484	94.6	94.8	94.4	0.89	130	7.2	482	1.5	3.0	6	1.5	665	68
82	M3HP	280 SMC	3GHP	282 230-••G	1483	94.8	95.0	95.0	0.90	139	7.0	528	1.5	2.8	6	1.85	725	68
95	M3HP	315 SMA	3GHP	312 210-••G	1488	95.0	95.1	94.7	0.88	165	6.9	609	1.1	2.5	8	2.3	900	73
110	M3HP	315 SMB	3GHP	312 220-••G	1488	95.1	95.3	95.0	0.88	188	6.8	705	1.1	2.6	8	2.6	960	73
128	M3HP	315 SMC	3GHP	312 230-••G	1486	95.2	95.4	95.2	0.89	217	6.8	822	1.1	2.6	5	2.9	1000	73
145	M3HP	315 MLA	3GHP	312 410-••G	1487	95.6	95.8	95.5	0.89	245	6.9	931	1.1	2.6	5	3.5	1160	73
190	M3HP	355 SMA	3GHP	352 210-••G	1492	96.3	96.3	95.7	0.87	330	7.1	1216	1.0	2.9	9	5.9	1610	75
230	M3HP	355 SMB	3GHP	352 220-••G	1492	96.4	96.4	95.7	0.87	393	7.3	1472	1.1	3.1	6	6.9	1780	78
280	M3HP	355 MLA	3GHP	352 410-••G	1491	96.6	96.7	96.2	0.88	475	7.0	1793	1.1	3.0	5	8.4	2140	78
310	M3HP	355 LKA	3GHP	352 810-••G	1490	96.5	96.6	96.2	0.88	525	6.9	1986	1.1	2.9	7	10	2500	78
350	M3HP	400 LA	3GHP	402 510-••G	1491	96.9	96.9	96.5	0.89	590	6.4	2241	1.2	2.5	6	15	3200	78
350	M3HP	400 LKA	3GHP	402 810-••G	1491	96.9	96.9	96.5	0.89	590	6.4	2241	1.2	2.5	6	15	3200	78
390	M3HP	400 LC	3GHP	402 530-••G	1493	97.1	97.1	96.6	0.88	660	7.4	2494	1.0	2.7	6	17	3400	78
390	M3HP	400 LKC	3GHP	402 830-••G	1493	97.1	97.1	96.6	0.88	660	7.4	2494	1.0	2.7	6	17	3400	78

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

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

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.

Increased safety cast iron motors
Technical data for Ex e II T3 Gb according to EN

IE2

IP 55, IC 411; Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30; 2008

ATEX Certified

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 Nm	T_l/T_N	T_b/T_N	Time tE 50 Hz	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**								
0.37		**M3HP**	**80 MA**	3GHP	083 310-••H	953	72.6	70.3	64.6	0.64	1.14	4.8	3.7	3.4	3.6	20	0.0022	29	50
0.55		**M3HP**	**80 MB**	3GHP	083 320-••H	938	72.9	71.7	67.0	0.70	1.55	4.3	5.5	2.8	2.9	20	0.0022	29	50
0.75		**M3HP**	**90 SLA**	3GHP	093 010-••H	946	77.9	77.1	73.4	0.69	2	4.9	7.5	2.1	2.8	0	0.0037	41	44
1.1		**M3HP**	**90 SLC**	3GHP	093 030-••H	933	78.5	78.8	76.3	0.71	2.8	4.7	11.2	1.8	2.4	0	0.0048	44	44
1.5		**M3HP**	**100 LA**	3GHP	103 510-••H	951	80.1	80.0	77.4	0.74	3.6	4.2	15	2.3	2.9	20	0.012	60	54
2.2		**M3HP**	**112 MB**	3GHP	113 320-••H	950	82.0	82.5	80.6	0.76	5	5.9	22.1	2.2	2.8	18	0.014	63	54
3		**M3HP**	**132 SMB**	3GHP	133 220-••H	961	83.3	83.0	80.4	0.77	6.7	6.1	29.8	2.1	3.0	20	0.032	96	57
4		**M3HP**	**132 SMC**	3GHP	133 230-••H	964	84.6	84.3	81.8	0.74	9.2	6.6	39.6	2.3	3.4	17	0.034	98	57
5.5		**M3HP**	**132 SMD**	3GHP	133 240-••H	967	87.6	87.5	85.7	0.72	12.5	6.9	54.3	2.3	3.4	0	0.039	105	62
6.6		**M3HP**	**160 MLA**	3GHP	163 410-••H	973	87.4	87.8	86.8	0.80	13.8	7.3	64.7	2.1	3.4	14	0.088	220	57
7.5		**M3HP**	**160 MLB**	3GHP	163 420-••H	971	88.2	88.6	87.7	0.78	16	7.5	73.7	2.4	3.6	18	0.126	247	65
11	[1]	**M3HP**	**160 MLC**	3GHP	163 430-••H	971	88.4	88.9	88.1	0.77	23	7.3	108	2.6	3.8	7	0.126	247	65
14	[1]	**M3HP**	**180 MLB**	3GHP	183 420-••H	975	87.9	89.5	90.0	0.84	27.3	7.2	137	1.8	3.0	9	0.25	298	67
16.5		**M3HP**	**200 MLB**	3GHP	203 420-••G	984	91.8	92.0	91.1	0.85	31	7.0	160	3.2	3.3	23	0.47	290	65
20		**M3HP**	**200 MLC**	3GHP	203 430-••G	983	92.4	92.9	92.3	0.85	38	7.1	194	3.0	2.7	17	0.52	305	65
30		**M3HP**	**225 SMC**	3GHP	223 230-••G	985	92.9	93.1	92.7	0.84	56	7.0	290	2.9	3.0	7	0.78	380	64
37		**M3HP**	**250 SMB**	3GHP	253 220-••G	988	93.0	93.4	93.0	0.87	66	7.2	357	2.6	2.8	10	1.6	465	65
45		**M3HP**	**280 SMA**	3GHP	283 210-••G	986	93.1	93.5	93.3	0.88	79	6.7	435	1.5	2.8	13	1.85	605	66
50		**M3HP**	**280 SMB**	3GHP	283 220-••G	987	93.6	94.0	93.8	0.88	87	7.0	483	1.4	2.6	9	2.2	645	66
62		**M3HP**	**280 SMC**	3GHP	283 230-••G	986	93.8	94.3	94.2	0.88	106	7.6	600	1.5	2.6	6	2.85	725	66
72		**M3HP**	**315 SMA**	3GHP	313 210-••G	992	93.8	93.9	93.1	0.84	130	7.2	693	1.3	2.5	7	3.2	830	72
85		**M3HP**	**315 SMB**	3GHP	313 220-••G	991	94.0	94.3	93.8	0.87	148	7.3	819	1.3	2.4	6	4.1	930	72
100		**M3HP**	**315 SMC**	3GHP	313 230-••G	991	94.3	94.7	94.5	0.86	177	6.7	963	1.2	2.2	14	4.9	1000	72
120		**M3HP**	**315 MLA**	3GHP	313 410-••G	991	94.8	95.0	94.6	0.86	212	7.6	1156	1.3	2.5	5	5.8	1150	72
150		**M3HP**	**355 SMA**	3GHP	353 210-••G	993	95.5	95.5	94.9	0.84	268	6.8	1442	1.3	2.6	6	7.9	1510	75
180		**M3HP**	**355 SMB**	3GHP	353 220-••G	994	95.7	95.7	95.0	0.86	315	7.2	1729	1.3	2.6	5	9.7	1680	75
230		**M3HP**	**355 MLB**	3GHP	353 420-••G	993	95.9	96.0	95.5	0.85	405	7.1	2211	1.3	2.5	6	13.5	2180	75
260		**M3HP**	**355 LKA**	3GHP	353 810-••G	993	96.0	96.1	95.5	0.85	458	7.1	2500	1.4	2.6	6	15.5	2500	75
300		**M3HP**	**400 LA**	3GHP	403 510-••G	995	96.5	96.5	96.0	0.84	532	6.9	2879	1.3	2.5	6	17	2900	76
300		**M3HP**	**400 LKA**	3GHP	403 810-••G	995	96.5	96.5	96.0	0.84	532	6.9	2879	1.3	2.5	6	17	2900	76
350		**M3HP**	**400 LB**	3GHP	403 520-••G	995	96.7	96.7	96.2	0.84	620	7.4	3359	1.4	2.6	6	20.5	3150	76
350		**M3HP**	**400 LKB**	3GHP	403 820-••G	995	96.7	96.7	96.2	0.84	620	7.4	3359	1.4	2.6	6	20.5	3150	76

[1] Efficiency class IE1

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

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

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.

Increased safety cast iron motors
Technical data for Ex e II T3 Gb according to EN

ATEX Certified

IP 55, IC 411; Insulation class F, temperature rise class B

Output						Efficiency IEC 60034--2-1; 2007				Current		Torque						
kW	Motor type		Product code		Speed r/min	Full load 100%	3/4 load 75%	1/2 load 50%	Power factor cos φ	I_N A	I_s / I_N	T_N Nm	T_l / T_N	T_b / T_N	Time tE 50 Hz	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**								
0.18	**M3HP**	**80 MA**	3GHP	084 310-••H	720	61.0	56.4	48.3	0.48	0.88	3.3	2.3	3.7	4.0	30	0.0022	29	36
0.25	**M3HP**	**80 MB**	3GHP	084 320-••H	705	63.8	61.1	54.6	0.58	0.97	3.2	3.3	2.6	2.8	30	0.0022	29	36
0.37	**M3HP**	**90 SLA**	3GHP	094 010-••H	696	67.0	67.0	63.1	0.63	1.26	3.0	5	2.0	2.2	20	0.0036	41	36
0.55	**M3HP**	**90 SLC**	3GHP	094 030-••H	695	68.7	68.5	64.4	0.61	1.89	3.1	7.5	2.2	2.4	20	0.0037	43	36
0.75	**M3HP**	**100 LA**	3GHP	104 510-••H	720	75.9	74.1	69.1	0.59	2.4	3.8	9.9	2.0	2.9	20	0.012	60	54
1.1	**M3HP**	**100 LB**	3GHP	104 520-••H	717	76.4	74.9	70.2	0.57	3.6	3.7	14.6	2.1	2.9	20	0.012	60	54
1.5	**M3HP**	**112 MC**	3GHP	114 330-••H	713	77.2	76.4	72.4	0.59	4.7	3.5	20	2.0	2.7	20	0.014	64	54
2.2	**M3HP**	**132 SMC**	3GHP	134 230-••H	720	80.1	79.8	76.7	0.65	6	4.7	29.1	2.0	2.9	20	0.034	98	59
3	**M3HP**	**132 SMD**	3GHP	134 240-••H	710	79.9	81.5	80.6	0.70	7.7	4.1	40.3	1.7	2.3	20	0.036	100	59
3.5	**M3HP**	**160 MLA**	3GHP	164 410-••H	720	84.7	84.6	82.5	0.69	8.6	5.4	46.4	1.8	3.2	20	0.133	245	55
4.8	**M3HP**	**160 MLB**	3GHP	164 420-••H	724	85.8	85.8	83.6	0.70	12	5.9	63.3	2.0	3.4	20	0.133	245	55
6.6	**M3HP**	**160 MLC**	3GHP	164 430-••H	718	85.5	86.2	85.0	0.71	16	5.6	87.7	1.8	3.0	17	0.133	245	55
9.7	**M3HP**	**180 MLB**	3GHP	184 420-••H	722	86.6	86.7	85.4	0.79	21	6.0	128	1.7	2.8	20	0.245	292	63
15	**M3HP**	**200 MLB**	3GHP	204 420-••G	736	90.5	90.7	89.7	0.81	30.5	7.1	194	2.2	3.4	20	0.54	300	64
22	**M3HP**	**225 SMC**	3GHP	224 230-••G	735	91.5	91.8	91.0	0.82	43	6.8	285	2.1	3.3	21	0.75	375	65
27	**M3HP**	**250 SMA**	3GHP	254 210-••G	736	91.7	92.2	91.7	0.83	51	6.6	350	1.9	2.8	21	1.25	420	65
32	**M3HP**	**250 SMB**	3GHP	254 220-••G	737	92.4	92.7	92.0	0.83	61	7.0	414	2.0	2.9	13	1.52	465	65
37	**M3HP**	**280 SMA**	3GHP	284 210-••G	741	92.6	92.8	92.1	0.80	72	6.7	476	1.5	2.6	10	1.85	605	65
45	**M3HP**	**280 SMB**	3GHP	284 220-••G	738	92.8	93.2	93.0	0.82	85	6.4	582	1.3	2.6	10	2.2	645	65
55	**M3HP**	**280 SMC**	3GHP	284 230-••G	741	93.3	93.5	92.9	0.80	105	7.8	708	1.6	2.8	5	2.85	725	65
75	**M3HP**	**315 SMB**	3GHP	314 220-••G	743	94.0	94.3	94.1	0.80	145	6.5	963	1.1	2.2	10	4.1	930	62
90	**M3HP**	**315 SMC**	3GHP	314 230-••G	743	94.3	94.5	94.4	0.80	172	6.9	1156	1.2	2.3	6	4.9	1000	64
105	**M3HP**	**315 MLA**	3GHP	314 410-••G	743	94.3	94.5	94.3	0.80	200	7.2	1349	1.2	2.3	6	5.8	1150	72
132	**M3HP**	**355 SMB**	3GHP	354 220-••G	744	95.3	95.4	94.8	0.83	241	7.6	1694	1.3	2.4	7	9.7	1680	75
150	**M3HP**	**355 SMC**	3GHP	354 230-••G	744	95.5	95.5	94.9	0.80	283	7.3	1925	1.3	2.5	10	11.3	1820	75
180	**M3HP**	**355 MLB**	3GHP	354 420-••G	743	95.6	95.7	95.2	0.82	330	6.7	2313	1.2	2.4	6	13.5	2180	75
215	**M3HP**	**355 LKB**	3GHP	354 820-••G	744	95.8	95.8	95.2	0.81	400	7.5	2759	1.3	2.6	5	16.5	2600	75
230	**M3HP**	**400 LA**	3GHP	404 510-••G	745	96.3	96.3	95.7	0.82	420	7.0	2948	1.2	2.5	7	17	2900	71
230	**M3HP**	**400 LKA**	3GHP	404 810-••G	745	96.3	96.3	95.7	0.82	420	7.0	2948	1.2	2.5	7	17	2900	71
280	**M3HP**	**400 LB**	3GHP	404 520-••G	744	96.3	96.4	96.0	0.83	505	6.7	3593	1.1	2.2	6	21	3200	71
280	**M3HP**	**400 LKB**	3GHP	404 820-••G	744	96.3	96.4	96.0	0.83	505	6.7	3593	1.1	2.2	6	21	3200	71
315	**M3HP**	**400 LC**	3GHP	404 530-••G	744	96.4	96.5	96.1	0.83	566	6.8	4043	1.2	2.3	6	24	3400	71
315	**M3HP**	**400 LKC**	3GHP	404 830-••G	744	96.4	96.5	96.1	0.83	566	6.8	4043	1.2	2.3	6	24	3400	71

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

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

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.

Increased safety cast iron motors
Technical data for Ex e II T3 Gb according to VIK

IE2

IP 55, IC 411; Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30; 2008

ATEX Certified

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 Nm	T_l/T_N	T_b/T_N	Time tE 50 Hz	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**								
7.5	M3HP 160 MLB	3GHP 161 420-••H	2943	91.0	90.5	88.4	0.91	13.2	7.6	24.3	3.0	3.7	18	0.052	216	69
10	M3HP 160 MLC	3GHP 161 430-••H	2938	90.5	90.5	89.4	0.92	17.8	7.5	32.5	2.9	3.7	12	0.062	227	69
12.5	M3HP 160 MLD	3GHP 161 440-••H	2944	92.5	92.6	92.2	0.91	21.4	7.6	40.5	2.8	4.5	8	0.07	233	69
15	M3HP 180 MLB	3GHP 181 420-••H	2947	91.0	91.1	90.2	0.91	26	7.1	48.6	2.2	3.0	15	0.13	292	69
20	M3HP 200 MLC	3GHP 201 430-••G	2960	93.2	93.2	92.2	0.90	35	7.5	64.5	2.9	3.9	10	0.21	305	72
24	M3HP 200 MLE	3GHP 201 450-••G	2959	93.8	93.8	92.9	0.90	42	7.2	77.4	3.0	3.9	9	0.22	310	72
28 [1]	M3HP 225 SMC	3GHP 221 230-••G	2963	91.8	91.2	89.1	0.91	49	7.0	90.2	2.1	3.1	14	0.34	385	74
36	M3HP 250 SMB	3GHP 251 220-••G	2969	92.9	92.7	91.1	0.91	61	7.2	115	1.9	2.7	11	0.66	475	74
47 [2]	M3HP 280 SMA	3GHP 281 210-••G	2982	93.4	92.8	91.0	0.91	80	7.1	150	1.2	3.0	17	0.8	625	77
58 [2]	M3HP 280 SMB	3GHP 281 220-••G	2975	93.5	93.3	91.9	0.92	97	7.0	186	1.2	2.8	12	0.9	665	77
68 [2]	M3HP 315 SMA	3GHP 311 210-••G	2982	93.7	92.9	91.0	0.90	116	7.2	217	0.9	2.8	10	1.2	880	78
80 [2]	M3HP 315 SMB	3GHP 311 220-••G	2980	94.1	93.6	92.0	0.91	134	7.0	256	0.8	2.7	10	1.4	940	78
110 [2]	M3HP 315 SMC	3GHP 311 230-••G	2978	94.7	94.5	93.5	0.91	183	7.0	352	0.9	2.7	8	1.7	1025	78
125 [2]	M3HP 315 MLA	3GHP 311 410-••G	2983	95.0	94.9	94.1	0.92	205	7.6	400	1.0	2.8	10	2.1	1190	78
1500 r/min = 4 poles	**400 V 50 Hz**							**CENELEC-design**								
10	M3HP 160 MLC	3GHP 162 430-••H	1463	90.5	90.9	90.2	0.84	19.5	7.3	65.2	2.8	3.4	16	0.096	226	62
13.5	M3HP 160 MLE	3GHP 162 450-••H	1470	91.7	92.0	91.2	0.84	26	8.0	87.6	3.0	3.6	14	0.13	249	68
15	M3HP 180 MLB	3GHP 182 420-••H	1473	91.5	91.7	90.9	0.83	29.5	6.9	97.2	2.6	3.3	12	0.21	279	66
17.5	M3HP 180 MLC	3GHP 182 430-••H	1477	91.9	92.1	91.3	0.84	33	7.4	113	2.7	3.2	15	0.248	298	66
24	M3HP 200 MLA	3GHP 202 410-••G	1480	93.0	93.2	92.5	0.88	44	7.7	154	2.0	3.2	14	0.3	280	73
30	M3HP 225 SMB	3GHP 222 220-••G	1481	92.3	92.3	91.3	0.89	54	7.2	193	1.8	2.6	17	0.45	365	74
36	M3HP 225 SMC	3GHP 222 230-••G	1480	93.4	93.5	92.8	0.90	64	7.4	232	1.7	3.1	8	0.53	390	74
44	M3HP 250 SMB	3GHP 252 220-••G	1482	94.4	94.6	94.1	0.89	77	6.8	283	1.3	3.0	15	0.98	470	73
58	M3HP 280 SMA	3GHP 282 210-••G	1484	94.4	94.5	93.7	0.88	100	7.6	373	1.3	2.9	8	1.25	625	68
70	M3HP 280 SMB	3GHP 282 220-••G	1484	94.5	94.9	94.6	0.89	120	7.2	450	1.4	2.9	7	1.5	665	68
84	M3HP 315 SMA	3GHP 312 210-••G	1489	95.0	95.0	94.4	0.88	145	7.0	538	1.2	2.9	14	2.3	900	73
100	M3HP 315 SMB	3GHP 312 220-••G	1489	95.2	95.3	94.8	0.88	171	7.6	641	1.2	2.9	10	2.6	960	73
115	M3HP 315 SMC	3GHP 312 230-••G	1488	95.2	95.4	95.1	0.89	196	6.7	738	1.1	2.7	10	2.9	1000	73
135	M3HP 315 MLA	3GHP 312 410-••G	1489	95.6	95.7	95.3	0.89	227	7.4	865	1.3	2.8	7	3.5	1160	73
1000 r/min = 6 poles	**400 V 50 Hz**							**CENELEC-design**								
6.6	M3HP 160 MLA	3GHP 163 410-••H	973	87.4	87.8	86.9	0.80	13.8	7.3	64.7	2.1	3.4	14	0.088	220	57
9.7 [1]	M3HP 160 MLC	3GHP 163 430-••H	971	88.0	88.4	87.4	0.79	20	7.1	95.3	2.4	3.7	11	0.126	247	65
13.2	M3HP 180 MLB	3GHP 183 420-••H	965	89.9	90.7	89.2	0.81	26.1	7.4	130	1.7	3.0	12	0.25	298	67
16.5	M3HP 200 MLB	3GHP 203 420-••G	984	91.8	92.0	91.1	0.85	31	7.0	160	3.2	3.3	25	0.47	290	65
20	M3HP 200 MLC	3GHP 203 430-••G	983	92.4	92.9	92.3	0.85	38	7.1	194	3.0	2.7	16	0.52	305	65
27	M3HP 225 SMC	3GHP 223 230-••G	987	93.0	93.1	92.3	0.83	50	8.0	261	3.2	3.4	11	0.78	380	64
33	M3HP 250 SMB	3GHP 253 220-••G	989	93.8	94.1	93.4	0.87	59	7.4	318	2.8	3.0	10	1.6	465	65
40	M3HP 280 SMA	3GHP 283 210-••G	987	93.1	93.5	93.1	0.88	70	6.7	387	1.2	2.7	15	1.85	605	66
46	M3HP 280 SMB	3GHP 283 220-••G	988	93.4	93.8	93.7	0.88	80	7.0	444	1.3	2.7	11	2.2	645	66
64	M3HP 315 SMA	3GHP 313 210-••G	992	94.2	94.4	93.9	0.85	114	7.1	616	1.2	2.5	10	3.2	830	72
76	M3HP 315 SMB	3GHP 313 220-••G	992	94.2	94.5	94.2	0.87	133	7.3	731	1.2	2.3	8	4.1	930	72
92	M3HP 315 SMC	3GHP 313 230-••G	992	94.4	94.7	94.4	0.85	164	7.2	885	1.3	2.4	15	4.9	1000	72
110	M3HP 315 MLA	3GHP 313 410-••G	992	94.9	95.1	94.8	0.86	193	7.6	1058	1.3	2.5	7	5.8	1150	72

[1] Efficiency class IE1

[2] 3dB(A) sound pressure level reduction with unidirectional fan construction. Direction of rotation must be stated when ordering, see variant codes 044 and 045

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

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

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Increased safety cast iron motors
Technical data for Ex e II T3 Gb according to VIK

ATEX Certified

IP 55, IC 411; Insulation class F, temperature rise class B

Output			Speed	Efficiency IEC 60034--2-1; 2007				Current		Torque			Time	Moment of inertia	Weight	Sound pressure level
				Full load	3/4 load	1/2 load	Power factor	I_N	I_s/I_N	T_N	T_l/T_N	T_b/T_N	tE 50	J = 1/4 GD^2		L_{PA}
kW	Motor type	Product code	r/min	100%	75%	50%	cos φ	A		Nm			Hz	kgm^2	kg	dB
750 r/min = 8 poles		400 V 50 Hz						CENELEC-design								
3.5	M3HP 160 MLA	3GHP 164 410-••H	720	84.8	84.7	82.6	0.69	8.6	5.4	46.4	1.8	3.2	20	0.133	245	55
4.8	M3HP 160 MLB	3GHP 164 420-••H	724	85.8	85.8	83.6	0.70	11.5	5.9	63.3	2.0	3.4	20	0.133	245	55
6.6	M3HP 160 MLC	3GHP 164 430-••H	718	85.5	86.2	85.0	0.71	15.6	5.6	87.7	1.8	3.0	17	0.133	245	55
9.7	M3HP 180 MLB	3GHP 184 420-••H	722	86.7	86.8	85.4	0.79	21	6.0	128	1.7	2.8	20	0.245	292	63
13.2	M3HP 200 MLB	3GHP 204 420-••G	734	90.1	90.7	90.1	0.83	26	6.1	171	1.8	3.0	32	0.54	300	64
16.5	M3HP 225 SMB	3GHP 224 220-••G	736	91.3	91.4	90.2	0.81	33	6.6	214	2.0	3.0	25	0.68	350	65
20	M3HP 225 SMC	3GHP 224 230-••G	736	92.0	92.4	91.7	0.82	39	6.9	259	2.1	3.3	24	0.75	375	65
27	M3HP 250 SMA	3GHP 254 210-••G	736	91.7	92.2	91.7	0.83	51	6.6	350	1.9	2.8	16	1.25	420	59
33	M3HP 280 SMA	3GHP 284 210-••G	740	92.8	93.0	92.0	0.80	64	6.9	425	1.4	2.8	12	1.85	605	65
40	M3HP 280 SMB	3GHP 284 220-••G	741	93.1	93.3	92.7	0.80	77	7.0	515	1.5	2.9	15	2.2	645	65
50	M3HP 315 SMA	3GHP 314 210-••G	742	93.5	93.6	92.8	0.82	93	7.1	643	1.2	2.8	15	3.2	830	62
68	M3HP 315 SMB	3GHP 314 220-••G	744	94.0	94.1	93.3	0.79	131	7.2	872	1.2	2.4	12	4.1	930	62
80	M3HP 315 SMC	3GHP 314 230-••G	744	94.3	94.4	93.7	0.80	152	7.7	1026	1.3	2.6	10	4.9	1000	64
95	M3HP 315 MLA	3GHP 314 410-••G	743	94.3	94.6	94.3	0.81	178	7.1	1220	1.1	2.3	7	5.8	1150	72

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

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T_b / T_N = Pull-out torque

Efficiency values are given according to IEC 60034-2-1; 2007. Please note that the values are not comparable without knowing the testing method.
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Increased safety motors Ex e II T3 Gb variant codes

Code [1]	Variant	Frame size													
		80	90	100	112	132	160	180	200	225	250	280	315	355	400
Administration															
531	Sea freight packing	P	P	P	P	P	P	P	P	P	P	P	P	P	P
532	Packing of motor in vertical mounting position	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P
533	Wooden sea freight packing	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Balancing															
052	Vibration acc. to Grade A (IEC 60034-14).	S	S	S	S	S	S	S	S	S	S	S	S	S	S
417	Vibration acc. to Grade B (IEC 60034-14).	P	P	P	P	P	P	P	P	P	P	P	P	P	P
423	Balanced without key.	P	P	P	P	P	P	P	P	P	P	P	P	P	P
424	Full key balancing.	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Bearings and Lubrication															
036	Transport lock for bearings.	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
037	Roller bearing at D-end.	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
040	Heat resistant grease.	S	S	S	S	S	P	P	P	P	P	P	P	P	P
041	Bearings regreasable via grease nipples.	NA	NA	NA	NA	NA	S	S	S	S	S	S	S	S	S
043	SPM compatible nipples for vibration measurement	NA	NA	NA	NA	NA	S	S	S	S	S	S	S	S	S
058	Angular contact bearing at D-end, shaft force away from bearing.	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
107	Pt100 2-wire in bearings.	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
128	Double Pt100, 2-wire in bearings	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
129	Double Pt100, 3-wire in bearings	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
130	Pt100 3-wire in bearings.	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
194	2Z bearings greased for life at both ends.	S	S	S	S	S	P	P	P	P	P	NA	NA	NA	NA
433	Outlet grease collector	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P
506	Nipples for vibration measurement: SKF Marlin Quick Connect stud CMSS-2600-3	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
654	Provision for vibration sensors (M8x1)	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
795	Lubrication information plate	NA	NA	NA	NA	NA	P	P	P	P	P	S	S	S	S
796	Grease nipples JIS B 1575 Pt 1/8 Type A	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
797	Stainless steel SPM Nipples	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
798	Stainless steel grease nipples	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
799	Grease nipples flat type DIN 3404, thread M10x1	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
800	Grease nipples JIS B 1575 Pt 1/8" pin type	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
Brakes															
412	Built-on brake.	R	R	R	R	R	R	R	R	NA	NA	NA	NA	NA	NA
Branch standard designs															
178	Stainless steel / acid proof bolts.	S	S	S	S	S	P	P	P	P	P	P	P	P	P
204	Jacking bolts for foot mounted motors.	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	S	S
209	Non-standard voltage or frequency, (special winding).	P	P	P	P	P	P	P	P	P	P	P	P	P	P
425	Corrosion protected stator and rotor core.	S	S	S	S	S	S	S	S	S	S	P	P	P	P
786	Special design shaft upwards (V3, V36, V6) for outdoor mounting.	P	P	P	P	P	P	P	P	P	P	R	R	NA	NA
Cooling system															
044	Unidirectional fan for reduced noise level. Rotation clockwise seen from D-end. Available only for 2-pole motors.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P

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Code [1]	Variant	Frame size													
		80	90	100	112	132	160	180	200	225	250	280	315	355	400
045	Unidirectional fan for reduced noise level. Rotation counter clockwise seen from D-end. Available only for 2-pole motors.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P
068	Light alloy metal fan	P	P	P	P	P	P	P	P	P	P	P	P	P	P
206	Steel fan	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
422	Separate motor cooling (fan top, N-end).	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	R	R	R	R
791	Stainless steel fan cover	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P
Coupling															
035	Assembly of customer supplied coupling-half.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P
Documentation															
141	Binding dimension drawing.	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Drain holes															
065	Plugged existing drain holes.	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
448	Draining holes with metal plugs.	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
Earthing Bolt															
067	External earthing bolt.	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Hazardous Environments															
272	Ex e II acc. to ATEX directive 94/9/EC, temp. class T2.	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
Heating elements															
450	Heating element, 100-120 V	P	P	P	P	P	P	P	P	P	P	P	P	P	P
451	Heating element, 200-240 V	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Mounting arrangements															
008	IM 2101 foot/flange mounted, IEC flange, from IM 1001 (B34 from B3).	P	P	P	P	P	NA	NA	NA	NA	NA	NA	NA	NA	NA
009	IM 2001 foot/flange mounted, IEC flange, from IM 1001 (B35 from B3).	P	P	P	P	P	P	P	P	P	P	P	P	P	P
047	IM 3601 flange mounted, IEC flange, from IM 3001 (B14 from B5).	P	P	P	P	P	NA	NA	NA	NA	NA	NA	NA	NA	NA
066	Modified for specified mounting position differing from IM B3 (1001), IM B5 (3001), B14 (3601), IM B35 (2001) & IM B34 (2101)	P	P	P	P	P	P	P	P	P	P	P	P	P	P
228	Flange FF 130.	P	P	P	P	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
229	Flange FT 130.	P	P	P	P	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
235	Flange FF 165.	S	S	P	P	P	NA	NA	NA	NA	NA	NA	NA	NA	NA
236	Flange FT 165.	P	P	P	P	P	NA	NA	NA	NA	NA	NA	NA	NA	NA
245	Flange FF 215.	NA	NA	S	S	P	NA	NA	NA	NA	NA	NA	NA	NA	NA
246	Flange FT 215.	NA	NA	P	P	P	NA	NA	NA	NA	NA	NA	NA	NA	NA
255	Flange FF 265.	NA	NA	NA	NA	S	NA	NA	NA	NA	NA	NA	NA	NA	NA
256	Flange FT 265.	NA	NA	NA	NA	P	NA	NA	NA	NA	NA	NA	NA	NA	NA
257	Flange FF 100.	P	P	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
258	Flange FT 100.	P	P	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
259	Flange FF 115.	P	P	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
260	Flange FT 115.	P	P	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Painting															
105	Paint thickness report.	P	P	P	P	P	P	P	P	P	P	P	P	P	P
111	Painting system C3M acc. to ISO 12944-5:2007	S	S	S	S	S	S	S	S	S	S	S	S	S	S
114	Special paint colour, standard grade.	P	P	P	P	P	P	P	P	P	P	P	P	P	P

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Code [1]	Variant	Frame size													
		80	90	100	112	132	160	180	200	225	250	280	315	355	400
115	Painting system C4M acc. to ISO 12944-5:2007	P	P	P	P	P	P	P	P	P	P	P	P	P	P
168	Primer paint only.	P	P	P	P	P	P	P	P	P	P	P	P	P	P
303	Painted insulation layer on inside of the terminal boxes.	P	P	P	P	P	P	P	P	P	P	P	P	P	P
710	Thermally sprayed zink metallizing with acrylic top coat	P	P	P	P	P	P	P	P	P	P	P	P	P	P
754	Painting system C5M acc. to ISO 12944-5:2007	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Protection															
005	Metal protective roof, vertical motor, shaft down.	P	P	P	P	P	P	P	P	P	P	P	P	P	P
072	Radial seal at D-end.	P	P	P	P	P	P	P	P	P	P	NA	NA	NA	NA
073	Sealed against oil at D-end.	P	P	P	P	P	P	P	P	P	P	P	P	NA	NA
076	Draining holes with plugs in open position.	P	P	P	P	P	S	S	S	S	S	S	S	S	S
158	Degree of protection IP 65.	P	P	P	P	P	P	P	P	P	P	P	P	P	P
401	Protective roof, horizontal motor.	P	P	P	P	P	P	P	P	P	P	P	P	P	P
403	Degree of protection IP 56.	P	P	P	P	P	P	P	P	P	P	P	P	P	P
434	Degree of protection IP 56, open deck.	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
783	Labyrinth sealing at D-end.	P	P	P	P	P	P	P	P	P	P	P	P	S	S
Rating & instruction plates															
002	Restamping voltage, frequency and output, continuous duty.	P	P	P	P	P	P	P	P	P	P	P	P	P	P
004	Additional text on std rating plate (max 12 digits on free text line).	P	P	P	P	P	P	P	P	P	P	P	P	P	P
126	Tag plate	P	P	P	P	P	P	P	P	P	P	P	P	P	P
135	Mounting of additional identification plate, stainless.	P	P	P	P	P	P	P	P	P	P	P	P	P	P
139	Additional identification plate delivered loose.	P	P	P	P	P	P	P	P	P	P	P	P	P	P
159	Additional plate with text "Made in ...."	P	P	P	P	P	P	P	P	P	P	P	P	P	P
161	Additional rating plate delivered loose.	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Shaft & rotor															
069	Two shaft extensions as per basic catalogue.	P	P	P	P	P	P	P	P	P	P	P	P	P	P
070	One or two special shaft extensions, standard shaft material.	P	P	P	P	P	P	P	P	P	P	P	P	P	P
164	Shaft extension with closed key-way.	S	S	S	S	S	S	S	S	S	S	P	P	P	P
165	Shaft extension with open key-way.	P	P	P	P	P	P	P	P	P	P	S	S	S	S
410	Stainless steel shaft (standard or non-standard design).	R	R	R	R	R	R	R	R	R	R	P	P	P	P
Standards and Regulations															
151	Design according to SHELL DEP 33.66.05.31-Gen. June 2007	P	P	P	P	P	P	P	P	P	P	P	P	P	P
421	VIK design (Verband der Industriellen Energie- und Kraftwirtschaft e.V.).	P	P	P	P	P	P	P	P	P	P	P	P	P	P
482	Design according to Neste OY & Jacobs, specification N-114 E, rev 5, 1.12.2010	P	P	P	P	P	P	P	P	P	P	P	P	P	P
504	Design according to Neste OY & Jacobs, specification N-114 E, rev 5, 01.12.2010 with SPM adapter	P	P	P	P	P	P	P	P	P	P	P	P	P	P
505	VIK design with ABB standard shaft dimensions (Verband der Industriellen Energie- und Kraftwirtschaft e.V.).	P	P	P	P	P	P	P	P	P	P	P	P	P	P

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Code [1]	Variant	Frame size													
		80	90	100	112	132	160	180	200	225	250	280	315	355	400
775	Design according to SHELL DEP 33.66.05.31-Gen. January 1999 design.	P	P	P	P	P	P	P	P	P	P	P	P	P	P
779	SASO Export/Import Certificate (Saudi Arabia)	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Stator winding temperature sensors															
435	PTC - thermistors (3 in series), 130 °C, in stator winding.	S	S	S	S	S	S	S	S	S	S	S	S	S	S
440	PTC - thermistors (3 in series, 110 °C & 3 in series, 130°C), in stator winding.	P	P	P	P	P	P	P	P	P	P	P	P	P	P
445	Pt-100 2-wire in stator winding, 1 per phase	P	P	P	P	P	P	P	P	P	P	P	P	P	P
446	Pt-100 2-wire in stator winding, 2 per phase	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
502	Pt-100 3-wire in stator winding, 1 per phase.	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
503	Pt-100 3-wire in stator winding, 2 per phase.	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
511	PTC thermistors (2 x 3 in series), 130 °C, in stator winding	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Terminal box															
021	Terminal box LHS (seen from D-end).	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
022	Cable entry LHS (seen from D-end).	P	P	P	P	P	P	P	P	P	P	P	P	P	P
157	Terminal box degree of protection IP65.	P	P	P	P	P	P	P	P	P	P	P	P	P	P
180	Terminal box RHS (seen from D-end).	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
277	Cable sealing end unit, size small for C-opening	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	NA	NA	NA
278	Cable sealing end unit, size medium for D-opening	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P
279	Cable sealing end unit, size large for D-opening	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P
292	Adapter C-C	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	NA	NA	NA
293	Adapter D-D	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	NA
294	Adapter E-D	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P
295	Adapter E-2D	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P
380	Separate terminal box for temperature detectors, std. material	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
400	4 x 90 degr turnable terminal box.	S	S	S	S	S	S	S	S	S	S	S	S	NA	NA
402	Terminal box adapted for Al cables.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	S	S	S	S
413	Extended cable connection, no terminal box.	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
418	Separate terminal box for auxiliaries, standard material.	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
466	Terminal box at N-end.	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P
468	Cable entry from D-end.	P	P	P	P	P	P	P	P	P	P	P	P	R	R
469	Cable entry from N-end.	P	P	P	P	P	P	P	P	P	P	P	P	R	R
567	Separate terminal box material: Cast Iron	NA	NA	NA	NA	NA	S	S	P	P	P	P	P	P	P
568	Separate terminal box for heating elements, std. material	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
729	Aluminum non-drilled flange for cable glands	P	P	P	P	P	P	P	P	P	P	P	P	P	P
730	Prepared for NPT cable glands	P	P	P	P	P	P	P	P	P	P	P	P	P	P
732	Standard cable gland, Ex d IIB, armoured cable.	P	P	P	P	P	P	P	P	P	P	P	P	P	P
733	Standard cable gland, Ex d IIB, non-armoured cable.	P	P	P	P	P	P	P	P	P	P	P	P	P	P
736	Standard cable gland Ex e acc. to EN-standards.	S	S	S	S	S	S	S	S	S	S	S	S	S	S
737	Standard cable gland Ex e with clamping device acc. to EN-standards.	P	P	P	P	P	P	P	P	P	P	P	P	P	P
743	Painted non-drilled flange in steel for cable glands	P	P	P	P	P	P	P	P	P	P	P	P	P	P

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Code [1]	Variant	Frame size													
		80	90	100	112	132	160	180	200	225	250	280	315	355	400
744	Stainless steel non-drilled flange for cable glands.	P	P	P	P	P	P	P	P	P	P	P	P	P	P
745	Painted steel flange equipped with nickle plated brass cable glands	P	P	P	P	P	P	P	P	P	P	P	P	P	P
746	Stainless steel cable flange equipped with standard nickle plated brass cable glands	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Testing															
145	Type test report from a catalogue motor, 400 V 50 Hz.	P	P	P	P	P	P	P	P	P	P	P	P	P	P
146	Type test with report for one motor from specific delivery batch.	P	P	P	P	P	P	P	P	P	P	P	P	P	P
148	Routine test report.	P	P	P	P	P	P	P	P	P	P	P	P	P	P
150	Customer witnessed testing. Specify test procedure with other codes.	P	P	P	P	P	P	P	P	P	P	P	P	P	P
222	Torque/speed curve, type test and multi-point load test with report for one motor from specific delivery batch.	P	P	P	P	P	P	P	P	P	P	P	P	P	P
760	Vibration level test	P	P	P	P	P	P	P	P	P	P	P	P	P	P
761	Vibration spectrum test for one motor from specific delivery batch.	P	P	P	P	P	P	P	P	P	P	P	P	P	P
762	Noise level test for one motor from specific delivery batch.	P	P	P	P	P	P	P	P	P	P	P	P	P	P
763	Noise spectrum test for one motor from specific delivery batch.	R	R	R	R	R	P	P	P	P	P	P	P	P	P

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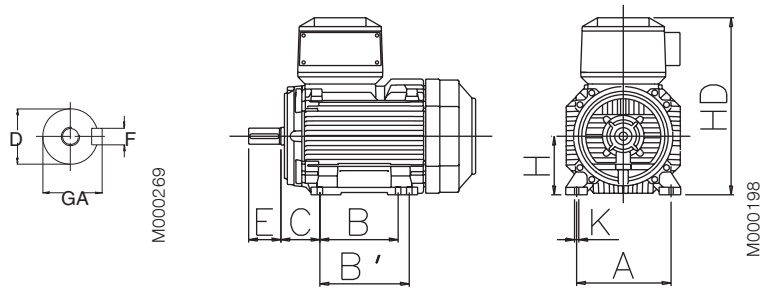
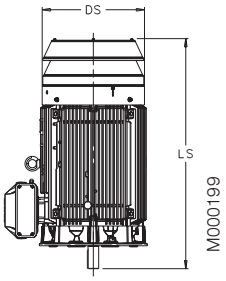
Increased safety motors, cast iron frame
Dimension drawings

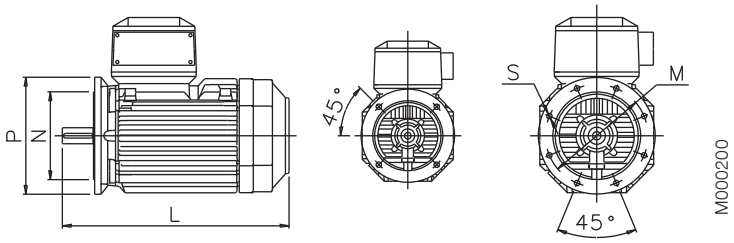
Foot-mounted motor IM 1001, IM B3



Protective roof, variant code 005



Flange-mounted motor IM 3001, IM B5



Sizes 80 to 200 Sizes 225 to 400

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		O	A	B	B'	C	HD	K	H	M	N	P	S	DS	LS poles	
	2	4-8	2	4-8	2	4-8	2	4-8	2	4-8														2	4-8
80	19	19	21.5	21.5	6	6	40	40	340	340	20	125	100	125	50	235	10	80	165	130	200	12	160	360	360
90	24	24	27	27	8	8	50	50	405	405	20	140	100	125	56	260	10	90	165	130	200	12	180	430	430
100	28	28	31	31	8	8	60	60	480	480	25	160	140	–	63	280	12	100	215	180	250	14.5	195	505	505
112	28	28	31	31	8	8	60	60	480	480	25	190	140	–	70	295	12	112	215	180	250	14.5	195	505	505
132	38	38	41	41	10	10	80	80	560	560	30	216	140	178	89	340	12	132	265	230	300	14.5	260	590	590
160	42	42	45	45	12	12	110	110	808	808	45	254	210	254	108	499	14.5	160	300	250	350	18.5	328	756	756
180	48	48	51.5	51.5	14	14	110	110	826	826	50	279	241	279	121	539	14.5	180	300	250	350	18.5	359	756	756
200	55	55	59	59	16	16	110	110	774	774	70	318	267	305	133	536	18.5	200	350	300	400	18.5	414	844	844
225	55	60	59	64	16	18	110	140	841	871	80	356	286	311	149	583	18.5	225	400	350	450	18.5	462	921	951
250	60	65	64	69	18	18	140	140	875	875	90	406	311	349	168	646	24	250	500	450	550	18.5	506	965	965
280	65	75	69	79.5	18	20	140	140	1088	1088	100	457	368	419	190	759	24	280	500	450	550	18	555	1190	1190
315 SM_	65	80	69	85	18	22	140	170	1174	1204	115	508	406	457	216	852	30	315	600	550	660	23	624	1290	1320
315 ML_	65	90	69	95	18	25	140	170	1285	1315	115	508	457	508	216	852	30	315	600	550	660	23	624	1401	1431
355 SM_	70	100	62.5	90	20	28	140	210	1409	1479	130	610	500	560	254	958	35	355	740	680	800	23	720	1476	1546
355 ML_	70	100	62.5	90	20	28	140	210	1514	1584	130	610	560	630	254	958	35	355	740	680	800	23	720	1528	1703
355 LK_	70	100	62.5	90	20	28	140	210	1764	1834	130	610	710	900	254	958	35	355	740	680	800	23	720	1633	1703
400 L_	80	110	85	126	22	28	170	210	1851	1891	150	710	900	1000	224	1045	35	400	940	880	1000	28	810	1860	1900
400 LK_	80	100	85	106	22	28	170	210	1851	1891	150	686	710	800	280	1045	35	400	740	680	800	24	810	1860	1900

IM 3601, IM B14 - Available flange alternatives; see also variant codes.

Flange size	Variant code	Flange dimension				Motor size 80-132				
		P	M	N	S	80	90	100	112	132
FT100	258	120	100	80	M6	S	M	NA	NA	NA
FT115	260	140	115	95	M8	M	S	NA	NA	NA
FT130	229	160	130	110	M8	M	M	S	S	NA
FT165	236	200	165	130	M10	M	M	M	M	S
FT215	246	250	215	180	M12	NA	NA	M	M	M
FT265	256	300	265	230	M12	NA	NA	NA	NA	M
FF100	257	120	100	80	Ø7	M	M	NA	NA	NA
FF115	259	140	115	95	Ø10	M	M	NA	NA	NA
FF130	228	160	130	110	Ø10	M	M	M	M	NA
FF165	235	200	165	130	Ø12	S	S	M	M	M
FF215	245	250	215	180	Ø14.5	NA	NA	S	S	M
FF265	255	300	265	230	Ø14.5	NA	NA	NA	NA	S

S = Standard flange M = Modification NA = Not applicable

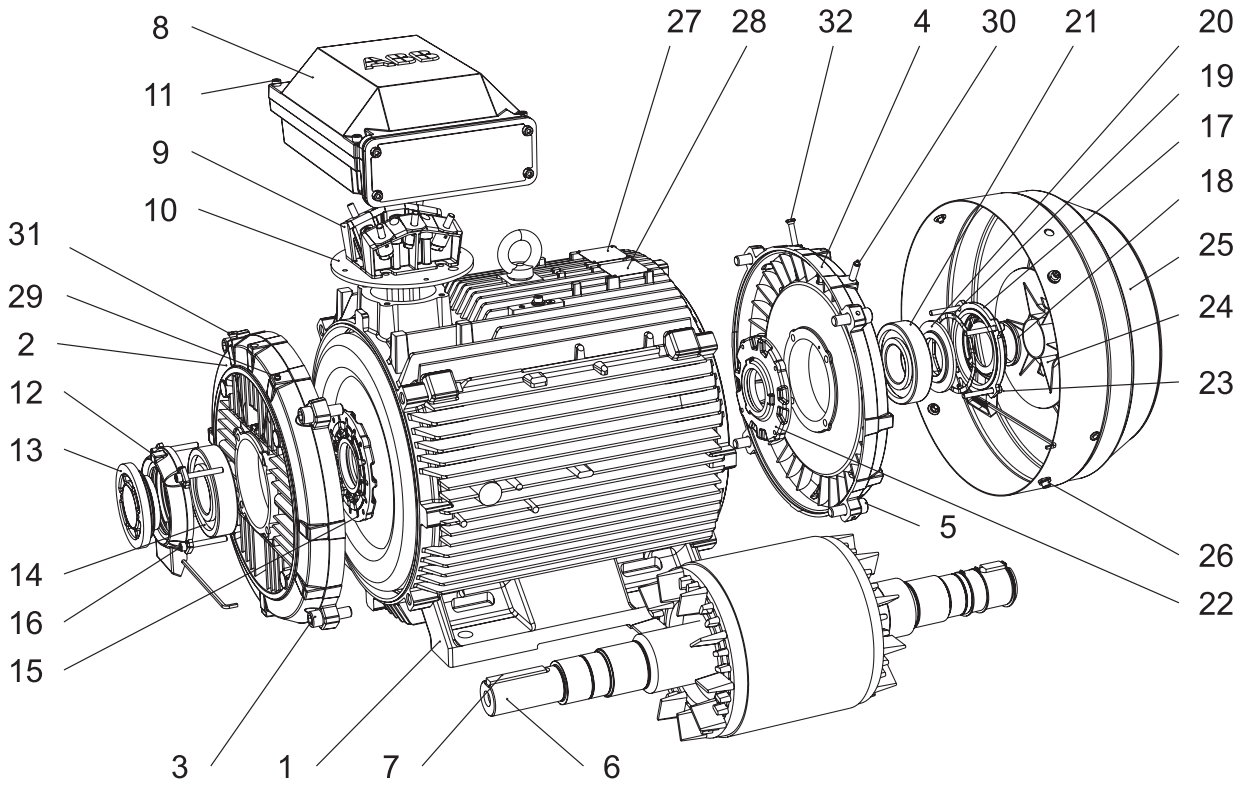
Tolerances:

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

Above table gives the main dimensions in mm. For detailed drawings please see our web-pages www.abb.com/motors&generators or contact ABB.

Increased safety motor construction

Typical exploded view of cast iron motors, frame size 315



1	Stator frame	**17**	Outer bearing cover, N-end
2	Endshield, D-end	**18**	Seal, N-end
3	Screws for endshield, D-end	**19**	Wave spring (280-315)
4	Endshield, N-end		Coil spring (355-400)
5	Screws for endshield, N-end	**20**	Valve disc, N-end
6	Rotor with shaft	**21**	Bearing, N-end
7	Key, D-end	**22**	Inner bearing cover, N-end
8	Terminal box	**23**	Screws for bearing cover, N-end
9	Terminal board	**24**	Fan
10	Intermediate flange	**25**	Fan cover
11	Screws for terminal box cover	**26**	Screws for fan cover
12	Outer bearing cover, D-end	**27**	Rating plate
13	Valve disc with labyrinth seal, D-end; standard in 2-pole motors (V-ring in 4-8 pole)	**28**	Regreasing plate
		29	Grease nipple, D-end
		30	Grease nipple, N-end
14	Bearing, D-end	**31**	SPM nipple, D-end
15	Inner bearing cover, D-end	**32**	SPM nipple, N-end
16	Screws for bearing cover, D-end		

Certificate examples

L C I E

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 09 ATEX 3023

4 Appareil ou système de protection :
Moteur asynchrone
Type : M3HP180... (Génération H)

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

6 Fabricant : ABB Oy Motors
Adresse : Strombergin 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° 91307-582851.

9 Le respect des exigences essentielles de sécurité et de santé est assuré par la conformité à :
- EN 60079-0 (2006) - EN 60079-7 (2007)
- EN 61241-0 (2006) - EN 61241-1 (2004)

10 Le 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 9 avril 2009

Marc GILLAUX
Le responsable de certification ATEX
ATEX certification manager

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Page 1 of 4
01-Annexe III_CE_typ_app - rev0.DOC

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Laboratoire Central — BP 8 — Fax : +33 1 40 95 86 56 — au capital de 15 745 984 €
des Industries Electriques — 92260 Fontenay-aux-Roses cedex — contact@lcie.fr — RCS Nanterre B 408 363 177
Une société du Bureau Veritas — France — www.lcie.fr

1 **EC TYPE EXAMINATION CERTIFICATE**

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

3 EC type examination certificate number
LCIE 09 ATEX 3023

4 Equipment or protective system :
Asynchronous motor
Type : M3HP180... (Generation H)

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

6 Manufacturer : ABB Oy Motors
Address : Strombergin 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° 91307-582851.

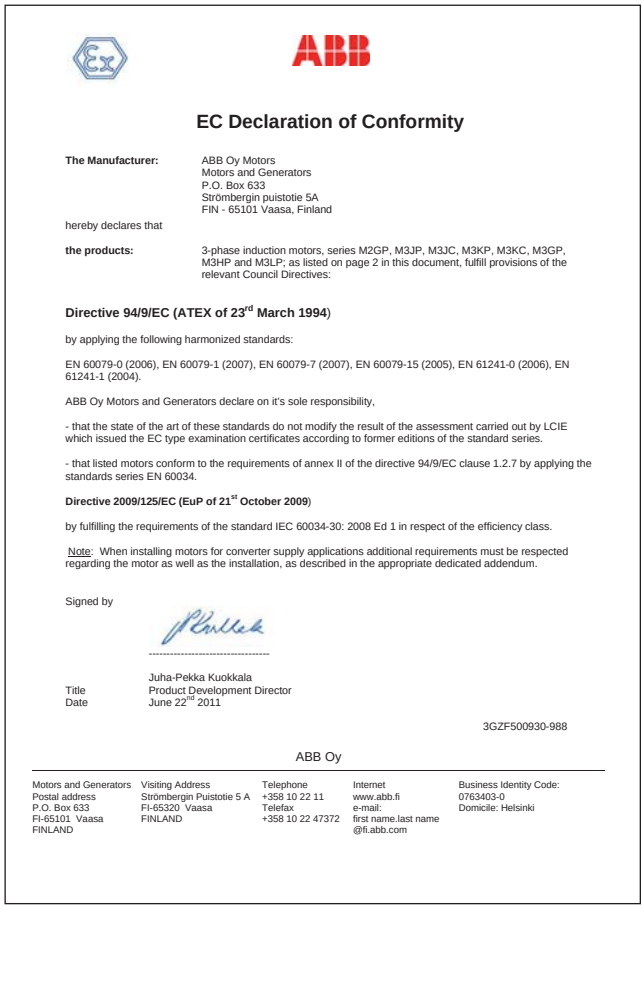
9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with :
- EN 60079-0 (2006) - EN 60079-7 (2007)
- EN 61241-0 (2006) - EN 61241-1 (2004)

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.

M000728



EC Declaration of Conformity

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

hereby declares that

the products: 3-phase induction motors, series M2GP, M3JP, M3JC, M3KP, M3KC, M3GP, M3HP and M3LP; as listed on page 2 in this document, fulfill provisions of the relevant Council Directives:

Directive 94/9/EC (ATEX of 23rd March 1994)

by applying the following harmonized standards:

EN 60079-0 (2006), EN 60079-1 (2007), EN 60079-7 (2007), EN 60079-15 (2005), EN 61241-0 (2006), EN 61241-1 (2004).

ABB Oy Motors and Generators declare on it's sole responsibility,

- that the state of the art of these standards do not modify the result of the assessment carried out by LCIE which issued the EC type examination certificates according to former editions of the standard series.

- that listed motors conform to the requirements of annex II of the directive 94/9/EC clause 1.2.7 by applying the standards series EN 60034.

Directive 2009/125/EC (EuP of 21st October 2009)

by fulfilling the requirements of the standard IEC 60034-30: 2008 Ed 1 in respect of the efficiency class.

Note: When installing motors for converter supply applications additional requirements must be respected regarding the motor as well as the installation, as described in the appropriate dedicated addendum.

Signed by

Juha-Pekka Kuokkala
Title Product Development Director
Date June 22nd 2011

3GZF500930-988

ABB Oy

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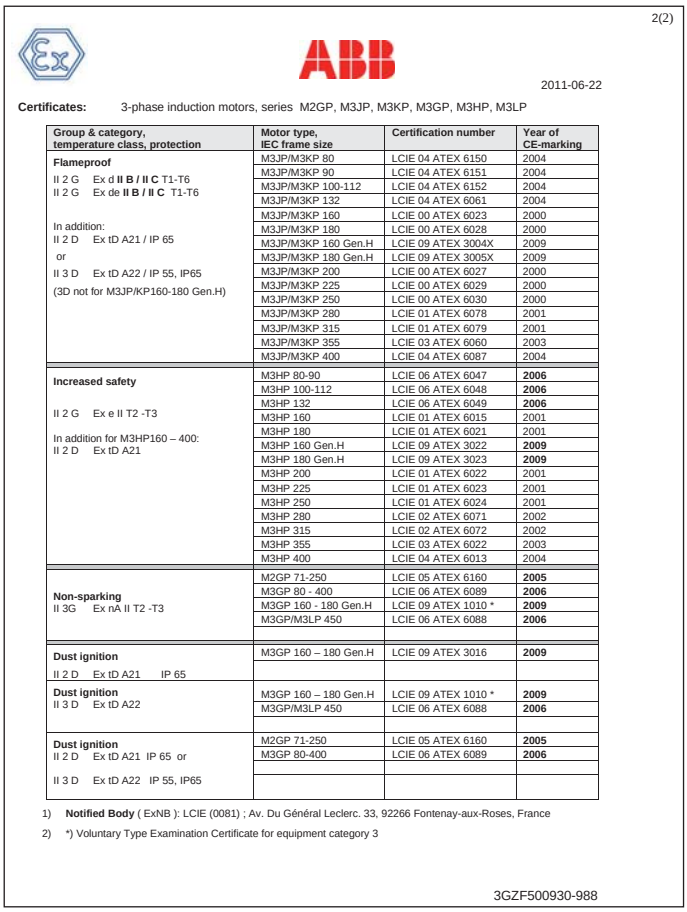
M000725-1a



2011-06-22

Certificates: 3-phase induction motors, series M2GP, M3JP, M3KP, M3GP, M3HP, M3LP

Group & category, temperature class, protection	Motor type, IEC frame size	Certification number	Year of CE-marking
Flameproof II 2 G Ex d **II B / II C** T1-T6 II 2 G Ex de **II B / II C** T1-T6 In addition: II 2 D Ex tD A21 / IP 65 or II 3 D Ex tD A22 / IP 55, IP65 (3D not for M3JP/KP160-180 Gen.H)	M3JP/M3KP 80	LCIE 04 ATEX 6150	2004
	M3JP/M3KP 90	LCIE 04 ATEX 6151	2004
	M3JP/M3KP 100-112	LCIE 04 ATEX 6152	2004
	M3JP/M3KP 132	LCIE 04 ATEX 6061	2004
	M3JP/M3KP 160	LCIE 00 ATEX 6023	2000
	M3JP/M3KP 180	LCIE 00 ATEX 6028	2000
	M3JP/M3KP 160 Gen.H	LCIE 09 ATEX 3004X	2009
	M3JP/M3KP 180 Gen.H	LCIE 09 ATEX 3005X	2009
	M3JP/M3KP 200	LCIE 00 ATEX 6027	2000
	M3JP/M3KP 225	LCIE 00 ATEX 6029	2000
	M3JP/M3KP 250	LCIE 00 ATEX 6030	2000
	M3JP/M3KP 280	LCIE 01 ATEX 6078	2001
	M3JP/M3KP 315	LCIE 01 ATEX 6079	2001
	M3JP/M3KP 355	LCIE 03 ATEX 6060	2003
	M3JP/M3KP 400	LCIE 04 ATEX 6087	2004
Increased safety II 2 G Ex e II T2 -T3 In addition for M3HP160 – 400: II 2 D Ex tD A21	M3HP 80-90	LCIE 06 ATEX 6047	**2006**
	M3HP 100-112	LCIE 06 ATEX 6048	**2006**
	M3HP 132	LCIE 06 ATEX 6049	**2006**
	M3HP 160	LCIE 01 ATEX 6015	2001
	M3HP 180	LCIE 01 ATEX 6021	2001
	M3HP 160 Gen.H	LCIE 09 ATEX 3022	**2009**
	M3HP 180 Gen.H	LCIE 09 ATEX 3023	**2009**
	M3HP 200	LCIE 01 ATEX 6022	2001
	M3HP 225	LCIE 01 ATEX 6023	2001
	M3HP 250	LCIE 01 ATEX 6024	2001
	M3HP 280	LCIE 02 ATEX 6071	2002
	M3HP 315	LCIE 02 ATEX 6072	2002
	M3HP 355	LCIE 03 ATEX 6022	2003
	M3HP 400	LCIE 04 ATEX 6013	2004
Non-sparking II 3G Ex nA II T2 -T3	M2GP 71-250	LCIE 05 ATEX 6160	**2005**
	M3GP 80 - 400	LCIE 06 ATEX 6089	**2006**
	M3GP 160 - 180 Gen.H	LCIE 09 ATEX 1010 *	**2009**
	M3GP/M3LP 450	LCIE 06 ATEX 6088	**2006**
Dust ignition II 2 D Ex tD A21 IP 65	M3GP 160 – 180 Gen.H	LCIE 09 ATEX 3016	**2009**
Dust ignition II 3 D Ex tD A22	M3GP 160 – 180 Gen.H	LCIE 09 ATEX 1010 *	**2009**
	M3GP/M3LP 450	LCIE 06 ATEX 6088	**2006**
Dust ignition II 2 D Ex tD A21 IP 65 or II 3 D Ex tD A22 IP 55, IP65	M2GP 71-250	LCIE 05 ATEX 6160	**2005**
	M3GP 80-400	LCIE 06 ATEX 6089	**2006**

1) **Notified Body** (ExNB): LCIE (0081) ; Av. Du Général Leclerc. 33, 92266 Fontenay-aux-Roses, France

2) *) Voluntary Type Examination Certificate for equipment category 3

3GZF500930-988

M000725-2a

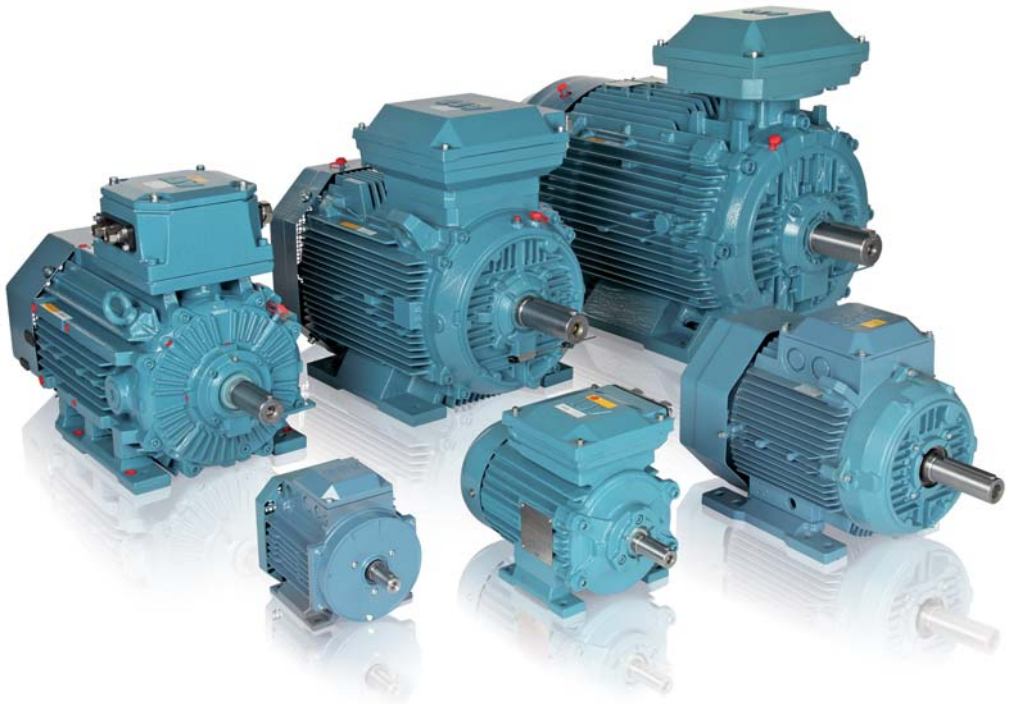
Increased safety motors with cast iron frame in brief, basic design

Motor size			80	90	100	112	132	160	180
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			Forged steel, detachable feet						
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	2-12 pole	6204-2Z/C3	6205-2Z/C3	6206-2Z/C3	6206-2Z/C3	6208-2Z/C3	6309/C3	6310/C3
	N-end	2-12 pole	6204-2Z/C3	6205-2Z/C3	6206-2Z/C3	6206-2Z/C3	6208-2Z/C3	6309/C3	6310/C3
Axially-locked bearings	Inner bearing cover		As standard, locked at D-end						
Bearing seal			Gamma-ring as standard						
Lubrication			Permanent grease 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		Acidproof steel A4-80					Steel 8.8, zinc electroplated and chromated.	
Connections	Cable entries		1 x M25 x 1.5		2 x M32 x 1.5			2 x M40 x 1.5	
	Terminals		6 terminals for connection with cable lugs (not included						
Fan	Material		Polyamide. Reinforced with glass fibre.					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 as standard						
Rotor winding	Material		Pressure die-cast aluminum						
Balancing			Half key balancing						
Key way			Closed						
Heating elements	On request		25 W						
Drain holes			-					As standard, closed on delivery	
External earthing bolt			As standard						
Enclosure			IP 55						
Cooling method			IC 411						

Increased safety motors with cast iron frame in brief, basic design

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	6312M/C3	6313M/C3	6315M/C3	6316/C3	6316/C3	6316M/C3	6317M/C3
		4-12 -pole	6312/C3	6313/C3	6315/C3		6319/C3	6322/C3	6324/C3
	N-end	2-pole	6310M/C3	6312M/C3	6313M/C3	6316/C3		6316M/C3	6317M/C3
		4-12 -pole	6310/C3	6312/C3	6313/C3				6319/C3
Axially-locked bearings	Inner bearing cover		As standard, locked at D-end						
Bearing seal			Gamma ring			V-ring or labyrinth seal, refer to table on page 84			
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 M50 x 1.5			2 x M63 x 1,5		Refer to table on page 85	
	Terminals		6 terminals for connection with cable lugs (not included)						
Fan	Material		Polypropylene. Reinforced with glass fibre.					Polypropylene reinforced with glass fibre or 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 as standard						
Rotor winding	Material		Pressure die-cast aluminum						
Balancing			Half key balancing						
Heating elements	On request		25 W	60 W			120 W		
Key way			Closed			Open			
Drain holes			As standard, open on delivery						
External earthing bolt			As standard						
Enclosure			IP 55						
Cooling method			IC 411						

Non-sparking motors Ex nA
Totally enclosed squirrel cage three phase low voltage motors, Sizes 71 to 450, 0.25 to 1000 kW



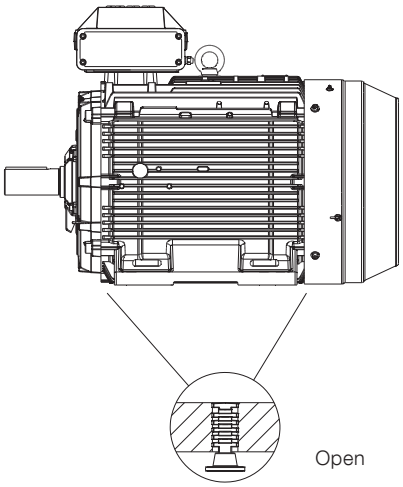
www.abb.com/motors&generators
> Motors for explosive atmospheres
>> Non-sparking motors

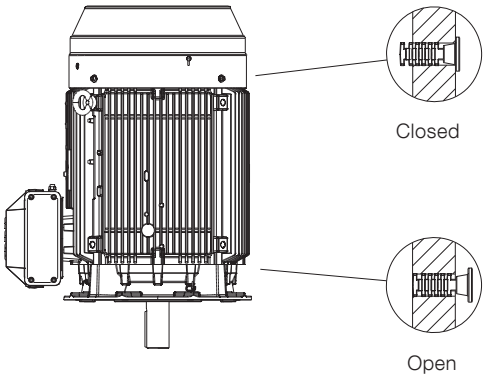
Mechanical design

Drain holes

Non-sparking Ex nA motors in frame sizes 71 to 132 and 200 to 450 are fitted with drain holes and plugs as standard.

Drain holes and plugs are available for frame sizes 160 to 180 as an option. Please see variant code section.





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Bearing seals

The following bearing seals are used as standars special seals like radial seal are available as option. Please see variant code section.

Bearing seals in Ex nA (M3GP) IE2 cast iron motors

Frame size	Number of poles	D-end	N-end
71-250	2-12	Gamma ring	Gamma ring
280-315	2	Labyrinth seal	V-ring
280-315	4-12	V-ring	V-ring
355	2	Labyrinth seal	V-ring
355	4-12	Labyrinth seal	V-ring
400	2	Labyrinth seal	Labyrinth
400	4-12	Labyrinth seal	V-ring
450	2-12	Labyrinth seal	Labyrinth

Bearing seals in Ex nA (M3GP) IE3 cast iron motors

Frame size	Number of poles	D-end	N-end
200-250	2-12	Gamma ring	Gamma ring
280-450	2-12	Labyrinth seal	Labyrinth seal

Bearing seals in Ex nA aluminum motors (M3AAN and M3AA)

Frame size	Number of poles	D-end	N-end
63-180	2-8	V-ring	Labyrinth seal
200-280	2-8	V-ring	V-ring

Terminal box standard delivery, cast iron frame

Terminal boxes are mounted on top of the motor at D-end as standard. Motors in sizes 71 to 132 have the terminal box integrated in the frame. The terminal box is provided with the gable gland openings on the right side seen from D-end. The terminal boxes of motor sizes 160 to 315 can be turned 4x90° and in motor sizes 355 to 450 2x180° after delivery. When ordering Ex nA motors in sizes 280 to 400 with 4x90°, the position of the terminal box has to be defined in the order.

The degree of standard terminal box is IP 55 and it complies with the requirements of this enclosure type and effectively prevents all ignition sources such as sparks, excessive overheating etc. The features of the terminal box are: no selfloosening terminals, compliance with creepage distances and clearances specified in standards.

If no ordering information on the cable is given, it is assumed to be p.v.c. -insulated non-armoured and termination parts are supplied according below.

To enable the supply of suitable terminations for the motor, please state cable type, quantity, size and outer diameter when ordering.

Ex nA motors in size 160 and larger are delivered as standard with cable glands or cable sealing end units according to the below table. Different glands can be provided separately as an option. Please see Alternatives section for details.

Note: For 500 V motor information please contact ABB!

Standard delivery 400/690 V (if nothing else is informed)

Motor size	Pole number	Terminal box type	Terminal box opening	45° adapter	Threaded holes	Cable gland	Cable sealing end unit	Cable outer diameter mm	Single core cross-section mm² for rated power	Terminal bolt size 6 x
71	2-8		-	-	1xM16	-	-		2,5	M4
80	2-8		-	-	1xM25	-	-		4	M4
90-132	2-8		-	-	1xM32	-	-		6	M5
160-180	2-8	63	B	-	2xM40	2xM40	-	2xØ18-27	35	M6
200-250	2-8	160	B	-	2xM50	2xM50	-	2xØ26-35	70	M10
280	2-8	210	C	-	2xM63	2xM63	-	2xØ32-49	2x150	M12
315SM, ML	2-8	370	D	-	2xM63	2xM63	-	2xØ32-49	2x240	M12
315LKA, LKB	2-4	370	D	-	2xM63	2xM63	-	2xØ32-49	2x240	M12
315LKC	2-4	750	E	E-D	-	-	medium	2xØ48-60	4x240	M12
315 LKA, LKB, LKC	6-8	370	D	-	2xM63	2xM63	-	2xØ32-49	2x240	M12
355 SMA, SMB, SMC	2-4	750	E	E-D	-	-	medium	2xØ48-60	4x240	M12
355 SMC	6	750	E	E-D	-	-	medium	2xØ48-60	4x240	M12
355 SMC	8	370	D	-	2xM63	2xM63	-	2xØ32-49	2x240	M12
355 SMA, SMB	6-8	370	D	-	2xM63	2xM63	-	2xØ32-49	2x240	M12
355 ML, LK	2-4	750	E	E-D	-	-	large	2xØ60-80	4x240	M12
355 ML, LK	6-8	750	E	E-D	-	-	medium	2xØ48-60	4x240	M12
400 L, LK	2-6	750	E	E-D	-	-	large	2xØ60-80	4x240	M12
400 L, LK	8	750	E	E-D	-	-	medium	2xØ48-60	4x240	M12
450	2-4	1200	E	E-2D	-	-	2x large	4xØ60-80	6x240	12 x M12
450 LA	6	750	E	E-D	-	-	large	2xØ60-80	4x240	M12
450 LB, LC	6	1200	E	E-2D	-	-	2x large	4xØ60-80	6x240	12 x M12
450	8	750	E	E-D	-	-	large	2xØ60-80	4x240	M12

Auxiliary cable entries

71	2-8	1 x M16	-	-
80	2-8	1 x M25	-	-
90-132	2-8	1 x M32	-	-
160-450	2-8	2xM20	2xM20	1xØ8-14

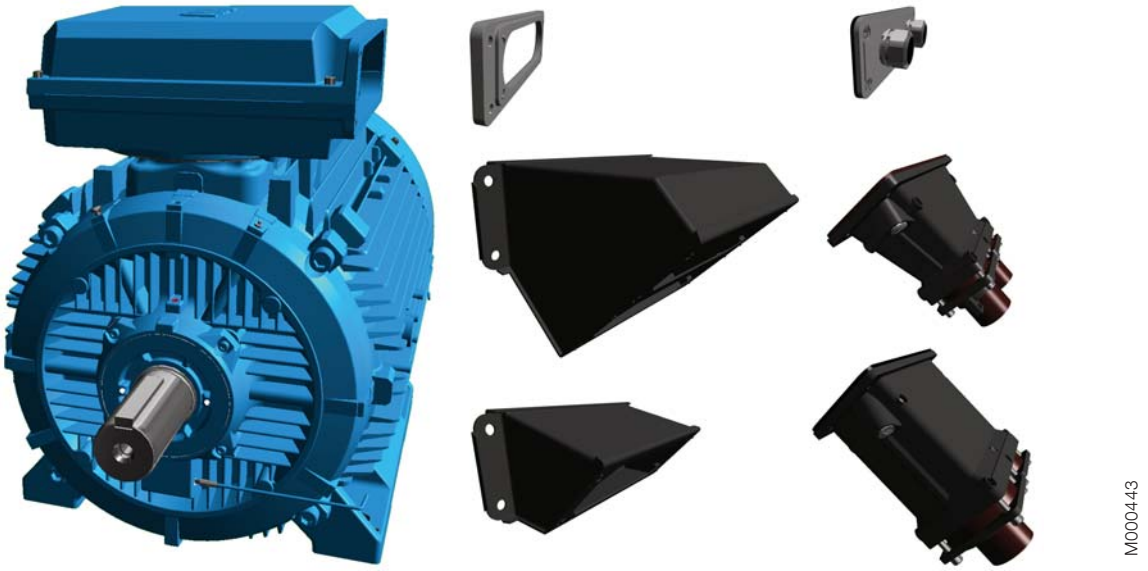
Earthings on motor

	Frame	Terminal box	Terminal box type
71-112	M4	M4	-
132	M5	M5	-
160-180	M6	M6	63
200-250	M8	M8	160
280-315	M10	2xM10	210, 370
355	M10	2xM10	370. 750
400	M10	2xM10	750
450	M10	2xM12	1200
450	M10	2xM10	750

Terminal box alternatives, cast iron frame

Optional adapters

There is a broad selection of cable termination accessories for the termination of one or several cables. The most common ones are presented below. Also other options are available, please contact ABB.



M000443

Main terminal box | Adapters | Cable sealing end units, flange and glands

How to order?

- Check first that the terminal box can allow mounting of the cable and cable cores (refer to motor type and terminal box type cross reference on the page 115).
- If very large cables are used, it may be neccesary to use a larger terminal box than standard. Select the right cable gland(s) or cable sealing end unit(s) depending on the outer diameter of the cable(s).
- Select the appropriate adapter, cable gland(s) and gland plate or cable sealing end unit.
- Note that turning the terminal box to a non standard position may limit the use of some adapters.

Ordering example

Motor	200 kW, 4 pole, 400 V 50 Hz,
Cables	cables needed: 2 pieces, outer diameter 58 mm, single cross section 185 mm, cables coming from below
Needed one terminal box for anticondensation heaters (220 V) and another for temperature detectors, terminal box material cast iron.	
Motor	M3GP 315 MLA 4, B3
Adapter	D-D (variant code 293)
Cable sealing end unit	Variant code 278
Auxiliaries	Variant codes 451, 380, 567, 568

1. Main terminal box and maximum single core cross section

Larger than standard single core cross section is available as option according to the table below. Also one size larger terminal box can be selected. Check also also the capacity of the cable entry to make sure the cables fit.

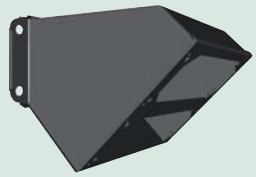
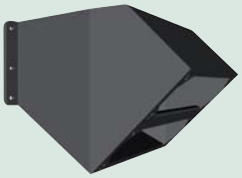
Standard terminal box			Variant code 019 larger terminal box than standard		
Terminal box type	Size of opening	Max single core cross section per phase mm²	Terminal box type	Size of opening	Max single core cross section per phase mm²
160	C	120	-	-	-
210	C	2 x 240	370	D	2 x 240
370	D	2 x 300	750	E	2 x 300
750	E	4 x 500	1200	E	4 x 500
1200	E	4 x 500	-	-	-

The accessories for using the maximum single core cross sections are not included as standard. For this option please use variant code 300 (Increased single core cross section). Each terminal box has got limited maximum cable entry size, please request if necessary.

2. Optional adapters

To allow easy termination of cables entering the terminal box from above or below , an angle adapter is recommended.

These can also be used to allow the of several cable sealing end units or gland plates on the terminal box for termination of more cables than one cable sealing end unit or gland plate can allow.

Adapter	Variant code	Opening towards terminal box	Gland plate or opening for cable sealing end unit	Material	Notes
 M000430	292	C	C	Steel	
 M000431	293	D	D	Steel	
 M000432	294	E	D	Steel	Included in std delivery with 750 type terminal box
 M000433	295	E	2 pcs D	Steel	Included in std delivery with 1200 type terminal box
 M000434	296	E	3 pcs D	Steel	Only possible on terminal box 1200
 M000435	444	E	2 pcs E	Steel	Only possible on terminal box 1200

Note: Black painted steel

3. Gland plate, maxium size of glands and material

Gland plates delivered blind or be drilled and tapped to accomodate glands to suit the cable diameter and amount of glands needed.

Standard gland plate material is siluminium, painted steel or stainless steel are available as options.

Size	Maximum size and number of glands, metric		
C	2xM90	3xM50	7xM32
D	4xM90	4xM63	7xM50
E	6xM90	7xM63	9xM50

Related variant codes:

729 Cable flanges without holes / Blank gland plates.
730 Prepared for NPT glands
732 Standard cable gland, Ex d IIB, armoured cable.
733 Standard cable gland, Ex d IIB, non-armoured cable.
743 Painted non-drilled flange in steel for cable glands.
744 Stainless steel non-drilled flange for gable glands.
745 Painted steel cable flange equipped with nickle plated brass cable glands.
746 Stainless steel cable flange equipped with nickle plated brass cable glands.

4. Cable glands and cable sealing end units

Cable glands

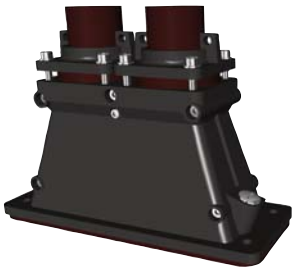
The table below shows the selction of cable gland types and the possible cable outer diameter of each size. For armoured and NPT cable glands please contact ABB.

	Outer diameter, mm		
	Variant code 745 Painted steel flange equipped with brass cable glands	Variant code 737 Standard cable gland Ex e with clamping device acc. to EN-Standards	Variant code 704 EMC cable gland
Motor sizes 71-450:			
M16	4-9	4-9	NA
M20	8-14	8-14	8-14
M25	10-16	10-16	10-16
M32	16-21	16-21	16-21
M40	18-27	18-27	18-27
M50	26-35	26-35	26-35
M63	32-49	32-49	32-49
M75	46-60	NA	NA
M90	55-70	NA	NA

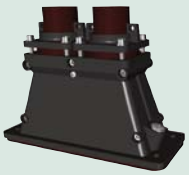
Cable sealing end unit

As an alternative to flanges and cable glands, cable sealing units can be used. These allow more space for spreading the cores for easy terminating on the terminals.

Cable sealing end units have rubber sealed entries for one or two main cables. In addition are there two plugged M20 holes for auxillary cables.



M000437

		Variant code	Opening towards terminal box	Cable outer diameter mm	Cable entry auxiliary cable	Accessories Variant code 704; EMC cable gland	Variant code 231; Standard cable gland with clamping device
	M000436	277	C	1 or 2 pcs 48-60 mm *)	2 pcs plugged M20 holes	Optional	Optional
	M000437	278	D	1 or 2 pcs 48-60 mm *)	2 pcs plugged M20 holes	Optional	Optional
	M000438	279	D	1 or 2 pcs 60-80 mm *)	2 pcs plugged M20 holes	Optional	Optional

*) The cable seal inside the cable sealing end unit can be used so that it is suitable for cable diameters 40 -52 mm.

5. Auxiliary terminal box

It's possible to equip the 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 aluminum and equipped with M20 glands for entry of the connection cables. As an option cast iron terminal box is available. In motor sizes 160 to 180 the material of auxiliary terminal box is cast iron.

Connection terminals are spring loaded type for quick and easy connection. These are suitable for up to 2.5 mm² wires. Auxiliary terminal boxes are equipped with an earthing terminal.

As standard the first auxiliary terminal box is located on RHS seen from D-end.

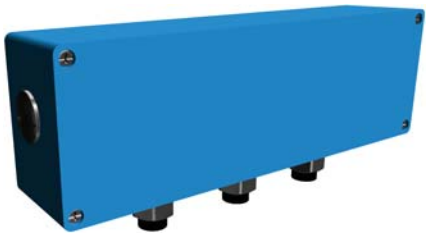
Related variant codes:

418 Separate terminal box for auxiliaries, standard material (all connections of temperature detectors and heaters will be put in same box)
380 Separate terminal box for temperature detectors, standard material
568 Separate terminal box for heating elements, standard material
569 Separate terminal box for brakes, standard material
567 Separate terminal box material: Cast iron

Small, aluminum auxiliary terminal box (80 x 125 mm, for max. 12 wires) Earthing size M4

M000439

Large, aluminum auxiliary terminal box (80 x 250 mm, for max. 30 wires) Earthing M4



M000440

Cast iron auxiliary terminal box (211 x 188 mm, for max. 30 wires) Earthing M6

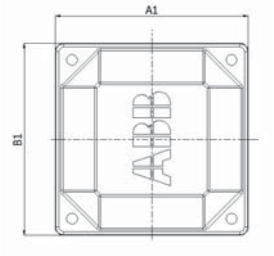
M000441

Standard cable entry size M20. Number of entries depends on the terminal box type and number of selected auxiliaries.

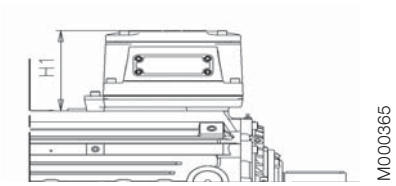
Dimension drawings
Non-sparking motors, cast iron frame

Terminal boxes, standard design with 6 terminals

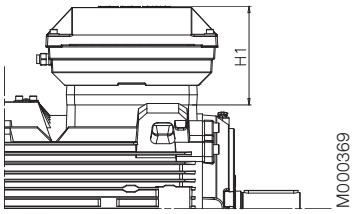
Motor sizes 71 to 132



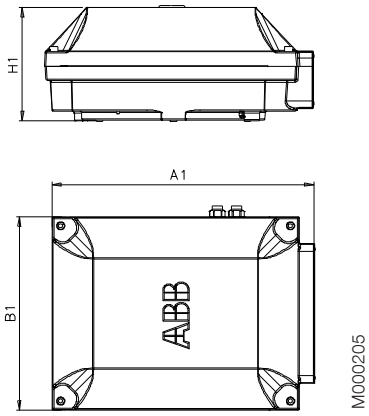
Motor sizes 160 to 180



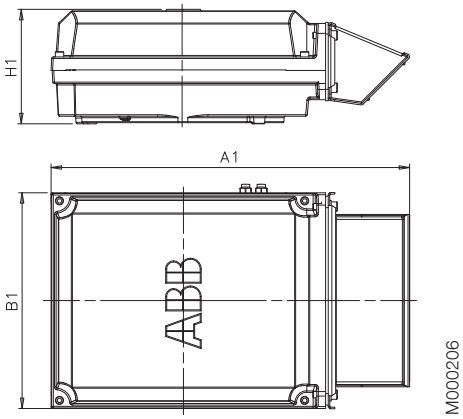
Motor sizes 200 to 250



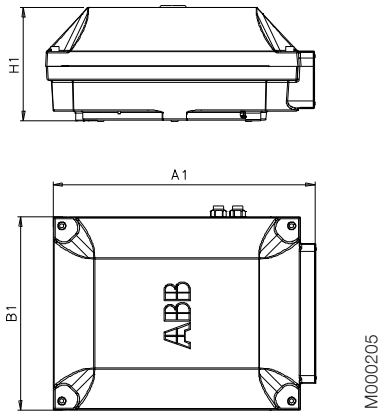
Motor sizes 280 to 315
Top- and side-mounted
Terminal boxes 210, 370



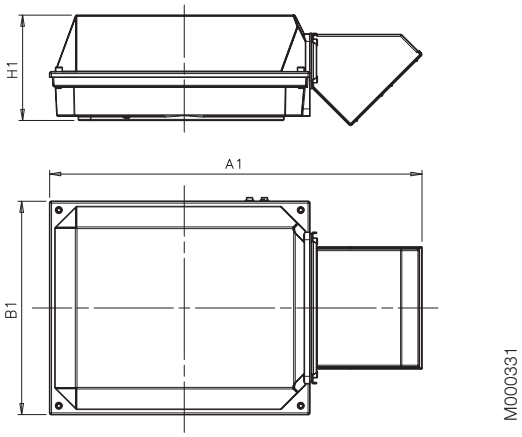
Motor sizes 355 to 450
Top-mounted
Terminal box 750 + adapter



Side-mounted
Terminal box 750



Motor sizes 450
Top-mounted
Terminal box 1200



Motor size	Terminal box	A1	B1	H1
71-80		105	105	-
90-112		118	118	-
132	25	169	169	-
160-180	63	243	243	179
200-250	160	352	319	147
280-400	210	416	306	177
315-355	370	451	347	200
355-450	750 top-mounted	686	413	219
355-400	750 side-mounted	525	413	219
450	1200 + E-2D adapter	1000	578	285
450	1200 + E-D adapter	855	578	285

Terminal box alternatives, aluminum frame

Sizes 71 to 180

The terminal box is made of aluminum alloy and is located on top of the stator. The lower part of the box is integrated with the stator. It is provided with two knockout openings on each side. Sizes 132 SM_ and 160 to 180 also have a third smaller opening. Cable glands are not included.

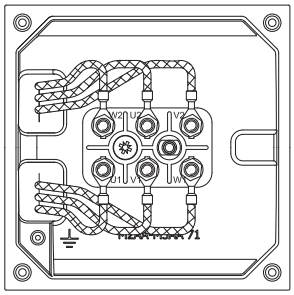
Sizes 200 to 280

The terminal box and cover are made of deep drawn steel and mounted on top of the stator. The box is bolted to the stator and is not rotatable. The size of the box is the same for all motors.

In the basic design the terminal box is provided with two FL 13 flange openings, one on each side. The opening on the right side, seen from the D-end, is supplied with a flange with two holes for M40 cable glands. On delivery the holes are sealed by means of plastic plugs. Cable glands are not supplied. The opening on the other side is provided with a cover flange.

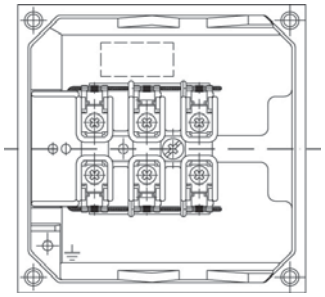
The motors can also be provided with an extra large terminal box, standard for voltage code S and frame size 280. See variant code 019 under the heading “Terminal box”. This will increase the dimension HD by 32 mm. The box is supplied with two FL 21 openings. The right opening is provided with a flange with two holes for M63 cable glands. The holes are sealed by means of plastic plugs. Cable glands are not supplied. The opening on the other side is provided with a cover flange. The box can also be provided with an FL 13 opening towards the N-end.

When new motors are manufactured the terminal box can be mounted on the left or the right side. See variant codes 021 and 180 under the heading “Terminal box”.



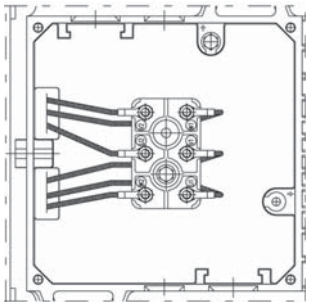
M000521

Terminal board for motor sizes 71 to 80



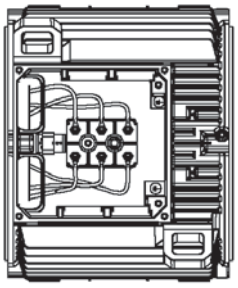
M000017

Terminal board for motor sizes 90 to 112



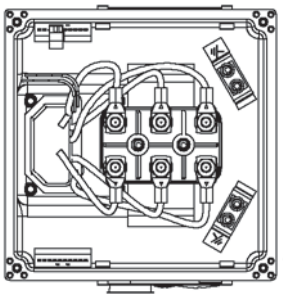
M000018

Terminal board for motor size 132



M000501

Terminal board for motor sizes 160 to 180



M000500

Terminal board for motor sizes 200 to 280

Connections

The terminal block is provided with six terminals for connecting Cu-cable. The terminals are marked in accordance with IEC 60034-8.

Connection openings

Motor size	Opening	Metric cable entry	Method of connection	Terminal bolt size	Maximum connectable Cu-cable area, mm²
71-80	Knock-out opening	2 x (2 x M20)	Cable lug	M4	4
90-112	Knock-out opening	2 x (M25 + M20)	Screw terminal	M4	6
132 [1]	Knock-out opening	2 x (M25 + M20)	Cable lug	M5	10
132 [2]	Knock-out opening	2 x (M40 x M32 + M12)	Cable lug	M6	35
160-180	Knock-out opening	2 x (2 x M40 + M16)	Cable lug	M6	35
200-250	2 x FL 13	1 x (2 x M40 + M16)	Cable lug	M10	70
280	2 x FL 21	1 x (2 x M63 + M16)	Cable lug	M10	70

[1] all types except [2]
[2] SM_

Permissible loadings on the shaft end

The following tables give the permissible radial and axial forces in Newton, assuming only radial or axial force is applied. Permissible loads of simultaneous radial and axial forces will be supplied on request.

The bearing life, L_{10}, is calculated according to ISO 281:1990/ Amd 2:2000 standard theory, which also takes the purity of the grease into consideration. An adequate lubrication is a necessary prerequisite for the table below.

The values are based on normal conditions at 50 Hz. At 60 Hz the values must be reduced by 10 %. For two-speed motors, the values must be based on the higher speed.

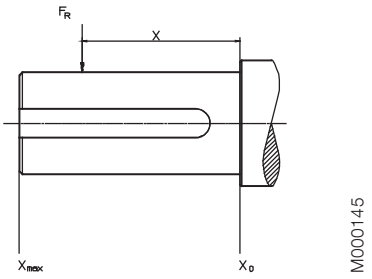
Motors are foot-mounted IM B3 version with force directed sideways. In some cases the strength of the shaft affects the permissible forces.

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.

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:

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

E = length of shaft extension in basic version



Cast iron motors, sizes 71 to 132
Permissible radial forces according to L_{10} principle
Non-sparking motors

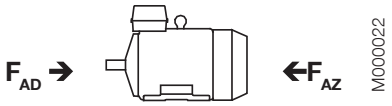
Motor size	No. of poles	Length of shaft extension E (mm)	Basic design with deep groove ball bearings 25,000 hrs FX_0(N)	25,000 hrs FX_{max}(N)	40,000 hrs FX_0(N)	40,000 hrs FX_{max}(N)
71	2	30	680	570	680	570
	4	30	680	570	680	570
	6	30	680	570	680	570
	8	30	680	570	680	570
80	2	40	930	750	930	750
	4	40	930	750	930	750
	6	40	930	750	930	750
	8	40	930	750	930	750
90	2	50	1010	810	1010	810
	4	50	1010	810	1010	810
	6	50	1010	810	1010	810
	8	50	1010	810	1010	810
100	2	60	1755	1385	1755	1385
	4	60	1755	1385	1755	1385
	6	60	1755	1385	1755	1385
	8	60	1755	1385	1755	1385
112	2	60	1755	1385	1755	1385
	4	60	1755	1385	1755	1385
	6	60	1755	1385	1755	1385
	8	60	1755	1385	1755	1385
132	2	80	2120	1610	2120	1610
	4	80	2120	1610	2120	1610
	6	80	2120	1610	2120	1610
	8	80	2120	1610	2120	1610

Cast iron motors, sizes 160 to 450
Permissible radial forces according to L_{10} principle

Non-sparking motors

Motor size	Poles	Length of shaft extension E (mm)	Ball bearings 40,000 hours FX_0 [N]	Ball bearings 40,000 hours FX_{max}[N]	Roller bearings 40,000 hours FX_0 [N]	Roller bearings 40,000 hours FX_{max}[N]
160 ML_	2	110	2530	2120	6400	3160
	4	110	3180	2670	7880	3130
	6	110	3650	3060	8900	3140
	8	110	4020	3370	9700	3150
180 ML_	2	110	2900	2440	6970	4380
	4	110	3660	3080	8580	4360
	6	110	4190	3520	9700	4360
	8	110	4620	3880	10570	4370
200 ML_	2	110	3830	3160	9500	7100
	4	110	4830	3980	11710	7090
	6	110	5520	4550	13230	7080
	8	110	6080	5010	14420	7090
225 SM_	2	110	4350	3660	11650	7090
	4	140	5490	4420	14340	7340
	6	140	6280	5060	16190	7330
	8	140	6920	5570	17660	7330
250 SM_	2	140	4390	4350	15420	7360
	4	140	6790	5480	18980	9320
	6	140	7760	6270	21440	9330
	8	140	8550	6900	23370	9320
280 SM_	2	140	5840	4900	16500	6350
	4	140	7260	6110	20100	9690
	6	140	8300	6980	22690	9680
	8	140	9150	7700	24740	9690
315 SM_	2	140	5810	4960	16540	6280
	4	170	9030	7470	26590	10170
	6	170	10310	8530	30030	10160
	8	170	11360	9400	32740	10100
315 ML_	2	140	5850	5080	16710	6200
	4	170	9000	7620	26580	14570
	6	170	10270	8700	30010	14580
	8	170	11330	9590	32720	14510
315 LK_	2	140	5880	5210	16900	6080
	4	170	9090	7870	26950	14410
	6	170	10270	8890	30390	14210
	8	170	11360	9840	33150	14130
355 SM_	2	140	5790	5090	16790	7470
	4	210	11930	9890	36660	14590
	6	210	13630	11300	41390	14530
	8	210	15050	12470	45140	14460
355 ML_	2	140	5770	5120	16880	7110
	4	210	11980	10090	36960	14290
	6	210	13650	11500	41720	14210
	8	210	15090	12710	45503	14110
355 LK_	2	140	5670	5140	17030	6570
	4	210	12020	10420	37470	13850
	6	210	13680	11860	42290	13660
	8	210	15160	13150	46130	13510
400 L_	2	170	4450	3970	19390	8760
	4	210	12120	10550	43040	18600
	6	210	13750	11970	48570	17980
	8	210	15280	13310	52990	18180
400 LK_	2	170	4450	3970	19390	8760
	4	210	12120	10550	43040	18600
	6	210	13750	11970	48570	17980
	8	210	15280	13310	52990	18180
450 L_	2	170	3890	3530	19430	8200
	4	210	13010	11560	50440	25300
	6	210	14730	13100	56920	22730
	8	210	16480	14640	62110	22370

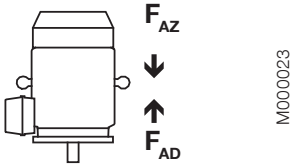
Permissible axial forces according to L_{10} principle



Cast iron motors, motor sizes 71 to 450

Mounting arrangement IM B3

Motor size	40,000 hours							
	2-pole		4-pole		6-pole		8-pole	
	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	515	215	630	330	710	410	780	480
80	650	315	810	470	925	595	1015	675
90	720	320	945	425	1005	605	1110	710
100	930	430	1265	765	1515	1015	1715	1215
112	925	425	1260	760	1510	1010	1710	1210
132	1400	800	1750	1150	2030	1435	2245	1645
160	2050	1440	2620	2010	3060	2440	3410	2790
180	2570	1470	3230	2130	3730	2630	4140	3040
200	3300	2040	4180	2920	4820	3560	5360	4100
225	3710	2240	4690	3230	5410	3940	6010	4540
250	5200	2100	6400	3310	7260	4160	8000	4900
280 SM_	4870	2870	6140	4140	7040	5040	7840	5840
315 SM_	4780	2780	7170	5170	8210	6210	9180	7180
315 ML_	4730	2730	7080	5080	8100	6100	9060	7070
355 SM_	1660	5460	5760	9560	7060	10860	8290	12090
355 ML_	1570	5370	5640	9440	6880	10680	8100	11900
355 LK_	1440	5240	5460	9260	6680	10480	7810	11610
400 L_	810	5810	4250	10250	5510	11510	6630	12630
400 LK_	810	5810	4250	10250	5410	11410	6630	12630
450 L_	550	5550	4450	10450	5630	11630	6920	12920



Mounting arrangement IM V1

Motor size	40,000 hours							
	2-pole		4-pole		6-pole		8-pole	
	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	530	200	650	320	745	390	815	455
80	690	290	865	430	980	550	1070	645
90	775	280	1020	375	1095	550	1185	660
100	1010	355	1375	675	1620	925	1825	1125
112	1020	350	1390	665	1640	915	1840	1110
132	150	705	2010	980	2210	1315	2460	1505
160	2440	1180	3160	1650	3590	2090	3950	2430
180	3120	1100	3980	1630	4490	2130	4890	2550
200	3960	1590	5030	2340	5820	2890	6370	3430
225	4570	1650	5770	2500	6660	3100	7280	3700
250	6240	1380	7720	2410	8930	3047	9690	3780
280 SM_	6440	1780	8170	2760	9580	3340	10380	4150
315 SM_	6950	1270	9820	3350	11760	3810	12740	4780
315 ML_	7280	940	10300	2870	12330	3240	13310	4210
355 SM_	5330	2890	11110	5820	13720	6270	14980	7530
355 ML_	5860	2360	11810	5130	14718	5280	15970	6540
355 LK_	6600	1630	12850	4080	15800	4190	17500	5000
400 L_	8010	730	13680	3650	16610	3840	18480	4530
400 LK_	8010	730	13680	3650	17180	3270	18480	4530
450 L_	NA	NA	17940	910	22090	150	23600	1430

[1] On request

Aluminum motors
Permissible radial forces according to L_{10} principle
Motors sizes 71 to 132

Motor size	No. of poles	Length of shaft extention E (mm)	Ball bearings Basic design with deep groove ball bearings				Alternative design with 63-series bearings			
			25,000 hours		40,000 hours		25,000 hours		40,000 hours	
			FX_0 (N)	FX_{max} (N)	F_{X0} (N)	FX_{max} (N)	FX_0 (N)	FX_{max} (N)	FX_0 (N)	FX_{max} (N)
71	2-8	30	680	570	680	570				
80	2-8	40	930	750	930	750				
90	2-8	50	1010	810	1010	810				
100	2-8	60	2280	1800	2280	1800				
112 M	2	60	1800	1420	1620	1280	2160	1700	2160	1700
	4	60	1790	1410	1590	1250	2160	1700	2160	1700
	6	60	1910	1510	1700	1340	2160	1700	2160	1700
	8	60	1940	1530	1720	1360	2160	1700	2160	1700
112 MB	2	60	1820	1470	1640	1330	2100	1700	2100	1700
	4	60	1770	1430	1560	1260	2100	1700	2100	1700
	6	60	1880	1520	1650	1340	2100	1700	2100	1700
	8	60	1930	1560	1690	1370	1700	2100	1700	2100
132 SA	2	80	3020	2360	2740	2140	4070	3180	3670	2870
132 SB	2	80	3020	2360	2730	2130	4060	3170	3670	2870
132 SC	2	80	3030	2430	2750	2200	3990	3200	3690	2960
132 S	4	80	3120	2440	2790	2180	4090	3200	3830	2990
132 M	4	80	3080	2410	2750	2150	4100	3200	3780	2950
132 MB	4	80	3050	2440	2710	2170	3990	3200	3740	3000
132 S	6	80	3280	2560	2910	2270	4100	3200	3990	3120
132 MA	6	80	3240	2530	2880	2250	4100	3200	3970	3100
132 MB	6	80	3200	2500	2840	2220	4100	3200	3930	3070
132 MC	6	80	3010	2510	2660	2220	3840	3200	3700	3090
132 S	8	80	3370	2630	2980	2330	4100	3200	4100	3200
132 M	8	80	3310	2590	2940	2300	4100	3200	4060	3170
132 MB	8	80	3280	2630	2910	2330	3990	3200	3990	3200

Motors sizes 160 to 280

Motor size	No. of poles	Length of shaft extention E (mm)	Ball bearings Basic design with deep groove ball bearings				Roller bearings Alternative design with roller bearings			
			25,000 hours		40,000 hours		25,000 hours		40,000 hours	
			FX_0(N)	FX_{max}(N)	FX_0(N)	FX_{max}(N)	FX_0(N)	FX_{max}(N)	FX_0(N)	FX_{max}(N)
160	2	110	4760	3860	4100	3320	6580	4300	5620	4300
	4	110	5180	4200	4380	3545	7340	4300	6180	4300
	6	110	5160	4180	4360	3540	7780	4300	6500	4300
	8	110	6280	4300	5320	4300	8860	4300	7440	4300
180	2	110	6060	4960	5280 [1]	4305 [1]	7600	5500	6560	5500
	4	110	4800	3940	4020	3300	7280	5500	6140	5500
	6	110	6280	5140	5280	4380	8680	5500	7280	5500
	8	110	6960	5500	5880	4800	9440	5500	7920	5500
200	2	110	7800	6500	6760 [2]	5640 [2]	10360	8640	8880	7400
	4	110	8400	7020	7180	5980	11560	9550	9800	8180
	6	110	8960	7480	7600	6340	12480	9550	10520	8780
	8	110	10480	8740	8940	7400	14100	9550	11920	9550
225	2	110	8520	7180	7360 [3]	6200 [3]	12320	10380	10560	8900
	4	140	8380	6780	7200	5820	13380	10250	11320	9160
	6	140	10960	8860	9360	7560	15860	10250	13420	10250
	8	140	12100	9780	10340	8360	17220	10250	14580	10250
250	2	140	10480 [4]	8500 [4]	9080 [4]	7360 [4]	16220	10900	13960	10900
	4	140	10840	8780	9380	7600	18020	13800	15320	13800
	6	140	12600	10220	10700	8680	20240	13800	17140	13800
	8	140	14660	11880	12540	10160	22680	13800	19220	13800
280	2	140	6780	5500	5680	4600	16280	13200	14000	11360
	4	140	8060	6540	6640	5380	19480	15780	16540	13400
	6	140	8980	7280	7360	5960	21920	17760	18580	15060
	8	140	9180	7460	7460	6060	22240	18020	18860	15300

[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

Permissible axial forces according to L_{10} principle

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 20,000 and 40,000 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. Without locking ring the F_{AD} forces should be reduced to 70 % of list value.

Aluminum motors, motor sizes 71 to 280

Mounting arrangement IM B3

Motor size	20,000 hours								40,000 hours							
	2-pole		4-pole		6-pole		8-pole		2-pole		4-pole		6-pole		8-pole	
	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
71	625	325	780	480	890	590	985	685	515	215	630	330	710	410	780	480
80	810	470	1015	675	1170	830	1300	960	650	315	810	470	925	595	1015	675
90	885	485	1170	650	1270	870	1410	1010	720	320	945	425	1005	605	1110	710
100	1620	1120	2065	1565	2390	1890	2660	2160	1280	780	1615	1115	1860	1360	2065	1565
112 M	-	-	-	-	-	-	2655	2155	-	-	-	-	-	-	2060	1560
112 MB	1615	1115	2060	1560	2385	1885	2655	2155	1275	775	1610	1110	1860	1360	2060	1560
132 M	-	-	2245	1645	-	-	2875	2270	-	-	1760	1160	-	-	2240	1640
132 MA	-	-	2245	1645	2595	1995	-	-	-	-	1760	1160	2025	1425	-	-
132 MC	-	-	-	-	2580	1980	-	-	-	-	-	-	2010	1410	-	-
132 MBA	-	-	2235	1635	-	-	-	-	-	-	1750	1150	-	-	-	-
132 S	-	-	-	-	2600	2000	2885	2285	-	-	-	-	2030	1435	2245	1645
132 SA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
132 SB	1770	1170	-	-	-	-	-	-	1400	800	-	-	-	-	-	-
132 SBB	1760	1160	-	-	-	-	-	-	1395	795	-	-	-	-	-	-
132 SC	1760	1160	-	-	-	-	-	-	1395	795	-	-	-	-	-	-
132 SMA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
132 SMB	2220	1620	2840	2240	-	-	-	-	1740	1140	2205	1605	-	-	-	-
132 SMC	2220	1620	-	-	-	-	-	-	1740	1140	-	-	-	-	-	-
132 SMD	-	-	2830	2200	-	-	-	-	-	-	2230	1595	-	-	-	-
132 SME	2210	1610	-	-	-	-	-	-	1730	1130	-	-	-	-	-	-
160	4160	4160	4740	4740	4840	4840	5980	5980	3425	3425	3920	3920	4000	4000	4920	4920
180	5480	5480	4360	4360	5980	5980	6000	6620	4600 [1]	4600 [1]	3540	3540	4940	4940	5460	5460
200	5000	6880	5000	7660	5000	8300	5000	9880	5000 [2]	5700 [2]	5000	6340	5000	6880	5000	8160
225	5000	7380	5000	7600	5000	10140	5000	11420	5000 [3]	6120 [3]	5000	6220	5000	8420	5000	9460
250	6000 [4]	9020 [4]	6000	9800	6000	11520	6000	13700	6000 [4]	7500 [4]	6000	8040	6000	9520	6000	11380
280	5260	5260	6500	6500	7500	7500	7740	7740	4220	4220	5160	5160	6040	6040	6180	6180

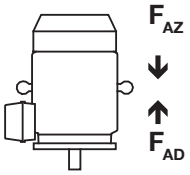
[1] The maximum lifetime of the grease is 38,000 h

[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

Permissible axial forces according to L_{10} principle



Aluminum motors, motor sizes 71 to 280

Mounting arrangement IM V1

Motor size	20,000 hours								40,000 hours							
	2-pole		4-pole		6-pole		8-pole		2-pole		4-pole		6-pole		8-pole	
	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
71	640	315	800	470	925	570	1020	665	530	200	650	320	745	390	815	455
80	845	450	1075	640	1225	795	1350	925	690	290	865	430	980	550	1070	645
90	945	450	1245	600	1360	815	1485	960	775	280	1020	375	1095	550	1185	660
100	1710	1060	2180	1485	2510	1815	2780	2080	1370	715	1735	1035	1980	1285	2185	1485
112 M	-	-	-	-	-	-	2790	2070	-	-	-	-	-	-	2195	1475
112 MB	1725	1040	2210	1460	2540	1785	2810	2055	1385	700	1110	1010	2010	1260	2210	1460
132 M	-	-	2460	1505	-	-	3130	2115	-	-	1970	1015	-	-	2490	1470
132 MA	-	-	2460	1505	2815	1850	-	-	-	-	1970	1015	2245	1280	-	-
132 MC	-	-	-	-	2885	1780	-	-	-	-	-	-	2315	1210	-	-
132 MBA	-	-	2495	1465	-	-	-	-	-	-	2010	980	-	-	-	-
132 S	-	-	-	-	2780	1885	3100	2145	-	-	-	-	2210	1315	2460	1505
132 SA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
132 SB	1910	1075	-	-	-	-	-	-	1540	705	-	-	-	-	-	-
132 SBB	1950	1050	-	-	-	-	-	-	1580	670	-	-	-	-	-	-
132 SC	1945	1045	-	-	-	-	-	-	1575	670	-	-	-	-	-	-
132 SMA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
132 SMB	2435	1480	3150	2035	-	-	-	-	1950	995	2515	1400	-	-	-	-
132 SMC	2445	1470	-	-	-	-	-	-	1960	985	-	-	-	-	-	-
132 SMD	-	-	3195	1995	-	-	-	-	-	-	2560	1355	-	-	-	-
132 SME	2490	1425	-	-	-	-	-	-	2005	940	-	-	-	-	-	-
160	4560	3810	5260	4310	5400	4420	6560	5580	3860	3110	4440	3490	4540	3560	5460	4480
180	5920	5115	5080	3860	6000	5445	6000	6120	5060 [1]	4255 [1]	4240	3020	5600	4385	6000	4900
200	5000	6350	5000	6950	5000	7505	5000	9215	5000 [2]	5230 [2]	5000	5650	5000	6025	5000	7435
225	5000	6770	5000	6795	5000	9270	5000	10595	5000 [3]	5490 [3]	5000	5475	5000	7490	5000	8535
250	6000 [4]	8335 [4]	6000	8820	6000	10275	6000	12645	6000 [4]	6755 [4]	6000	7120	6000	8235	6000	10205
280	6400	4400	7920	5400	8500	6180	8500	6435	5420	3420	6640	4120	7840	4640	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.

Rating plates

The rating plates are in table form giving values for speed, current and power factor for cast iron motors: 400V-415V-690V as standard. For aluminum motors there are one or two voltages in use; 230V-400V depending on the frame size. Other voltage and frequency combinations are possible and can be ordered with variant codes 002 or 209. Please see Variant code section.

Cast iron motors, sizes 160 to 450

ABB Oy, Motors and Generators
Vaasa, Finland

CE IE2 Ex II 3G

3 ~ Motor	M3GP 160MLE 4 IMB5/IM3001					
Ex nA IIC T3 Gc						
701201-2			2012	No. 3GF12128973		
				Ins.cl. F		IP 55
V	Hz	kW	r/min	A	cos φ	Duty
690 Y	50	15	1467	16.2	0.84	S1
400 D	50	15	1467	28	0.84	S1
415 D	50	15	1471	27.6	0.82	S1
IE2-92.0%(100%)-92.4%(75%)-92.1%(50%)						
Prod. code 3GGP162450-BDH						
LCIE 12 ATEX 1008X / IECEx LCI 09.0012X						
Manual: 3GZF500730-47				Nmax		r/min
6309/C3 6309/C3					249	kg

ABB IEC 60034-1

M000741a

Aluminum motors, sizes 71 to 80

Asea Brown Boveri, S.A.
C/ Illa de Buda, 55. 08192 Sant Quirze del Vallès (Barcelona), Spain

IE2 Ex II 3G CE

3~Motor M3AAN 80 C 2				IM3001	Ex nA II T3
3GAA081313-BSE			No. 3GE102208P4236	Cl. F	IP 55
6204-2Z/C3	6203-2Z/C3		2010	11 kg	
V	Hz	r/min	kW	A	Cosφ
230 D	50	2880	1,1	3,9	0,81
400 Y	50	2880	1,1	2,3	0,81
IE2-82,1(100%)-82,0(75%)-79,2(50%)					IEC 60034-1

M000705

Aluminum motors, sizes 200 to 280

ABB IE2 CE

3~Motor M3AA 225 SMB 4						
			No			
			Ins.cl. F		IP 55	
V	Hz	kW	r/min	A	cosφ	duty
400 Δ	50	45	1480	81,3	0,85	S1
690 Y	50	45	1480	47,1	0,85	S1
3GAA 222 032-ADG +VC						
Ex II 3G Ex nA II B T3 Gc						
50 Hz: IE2 - 93,9(100%) - 94,3(75%) - 93,9(50%)						
				AMB 40°C		
6313-2Z/C3	6212-2Z/C3			273 kg		
ABB AB LV Motors SE-721 70 Västerås, Sweden IEC 60034-1						

M000752a

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. For aluminum motors self certification.

Cast iron motors, sizes 71 to 132

ABB ABB Oy, Motors and Generators Vaasa, Finland IE2 Ex II 3G CE

3~Motor	M3GP 80 MB 2 IMB3/IM1001					Ex nA IIC T3 Gc
3GGP081322-ASB				No. 3GF12130647	Cl. F	IP 55
V		Hz	r/min	kW	A	cosφ	Duty
400	Y	50	2895	0.75	1.81	0.74	S1
230	D	50	2895	0.75	3.1	0.74	S1
IE2-80.6%(100%)-79.9%(75%)-76.2%(50%)							
VTT 12 ATEX 050X / IECEx VTT 12.0010X							705219-3
6204-2Z/C3 6203-2Z/C3						2012	28 kg
Manual: 3GZF500730-47						IEC 60034-1	

M000742a

Aluminum motors, sizes 160 to 180

ABB IE2 CE

3~ Motor M3AA 160 MLB 4					Cl.F	IP 55	IEC 60034-1
V		Hz	kW	r/min	A	cos φ	duty
400	Δ	50	15	1470	28,5	0,83	S1
690	Y	50	15	1470	16,5	0,83	S1
3GAA 162 032-ADG +VC				No			
Ex II 3G Ex nA II B T3 Gc							
					AMB 40°C		
50 Hz: IE2 - 91,4(100%) - 92,4(75%) - 92,2(50%)							
6309-2Z/C3			6209-2Z/C3			118 kg	
ABB AB, LV Motors SE-721 70 Västerås, Sweden.							

M000751a

Ordering information

Sample order

When placing an order, please state the following minimum data in the order, as in example.

The product code of the motor is composed in accordance with the following example.

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

Motor size

A B C D.E.F. G

M3GP 160 MLA 3GGP 161 410 - A D H 002 etc.

1 2 3 4 5 6 7 8 9 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
G Variant codes

Explanation of the product code:

Positions 1 to 4

3GGP = Totally enclosed fan cooled squirrel cage motor with cast iron frame, non-sparking

3GAA = Totally enclosed fan cooled squirrel cage motor with aluminum frame, non-sparking

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
45 = 450

Position 7

Speed (Pole pairs)

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

Position 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 to112)
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.

Non-sparking cast iron motors
Technical data for Ex nA II T3 Gc

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30; 2008

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 Nm	T_l/T_N	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**	**71 MA**	3GGP 071 321-••B	2768	74.8	74.7	71.0	0.78	0.91	4.5	1.27	2.2	2.3	0.00039	11	58
0.55		**M3GP**	**71 MB**	3GGP 071 322-••B	2813	77.8	78.3	76.0	0.79	1.29	5.6	1.86	2.4	2.5	0.00051	11	56
0.75		**M3GP**	**80 MB**	3GGP 081 322-••B	2895	80.6	79.9	76.2	0.74	1.81	7.7	2.4	4.2	4.2	0.001	16	57
1.1		**M3GP**	**80 MC**	3GGP 081 323-••B	2870	81.8	82.4	80.2	0.80	2.4	7.5	3.6	2.7	3.5	0.0012	18	60
1.5		**M3GP**	**90 SLB**	3GGP 091 322-••B	2900	82.2	84.1	82.7	0.86	3	7.5	4.9	2.5	2.6	0.00254	24	69
2.2		**M3GP**	**90 SLC**	3GGP 091 323-••B	2885	84.7	86.7	85.7	0.87	4.3	6.8	7.2	1.9	2.5	0.0028	25	64
3		**M3GP**	**100 LB**	3GGP 101 322-••B	2925	85.2	84.9	82.8	0.86	5.9	9.1	9.7	3.1	3.5	0.00528	36	68
4		**M3GP**	**112 MB**	3GGP 111 322-••B	2895	86.1	87.0	86.6	0.86	7.7	8.1	13.1	2.9	3.2	0.00575	37	70
5.5		**M3GP**	**132 SMB**	3GGP 131 322-••B	2865	88.0	88.6	88.0	0.86	10.4	7.0	18.3	2.0	2.7	0.01275	68	70
7.5		**M3GP**	**132 SMC**	3GGP 131 324-••B	2890	88.6	88.8	87.5	0.84	14.5	7.3	24.7	2.0	3.6	0.01359	70	70
11		**M3GP**	**160 MLA**	3GGP 161 410-••H	2931	90.1	90.5	89.6	0.89	19.7	7.2	35.8	2.6	3.1	0.043	207	71
15		**M3GP**	**160 MLB**	3GGP 161 420-••H	2929	91.2	91.9	91.4	0.89	26.6	7.2	48.9	3.0	3.5	0.052	216	71
18.5		**M3GP**	**160 MLC**	3GGP 161 430-••H	2934	91.8	92.2	91.8	0.90	32.3	7.5	60.2	2.8	3.4	0.062	227	69
22		**M3GP**	**180 MLA**	3GGP 181 410-••H	2938	91.7	92.2	91.7	0.90	38.4	7.0	71.5	2.5	3.1	0.089	259	69
30		**M3GP**	**200 MLA**	3GGP 201 410-••G	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**	**200 MLC**	3GGP 201 430-••G	2954	93.6	94.0	93.4	0.89	64.1	7.5	119	2.8	3.2	0.19	305	75
45		**M3GP**	**225 SMB**	3GGP 221 220-••G	2968	93.9	93.8	92.9	0.87	79.5	7.2	144	2.7	3.0	0.26	365	76
55		**M3GP**	**250 SMA**	3GGP 251 210-••G	2975	94.3	94.1	93.0	0.89	94.5	7.8	176	2.4	3.1	0.49	425	75
75		**M3GP**	**280 SMA**	3GGP 281 210-••G	2978	94.3	94.1	92.8	0.88	130	7.6	240	2.1	3.0	0.8	625	77
90		**M3GP**	**280 SMB**	3GGP 281 220-••G	2976	94.6	94.5	93.5	0.90	152	7.4	288	2.1	2.9	0.9	665	77
110		**M3GP**	**315 SMA**	3GGP 311 210-••G	2982	94.9	94.4	92.9	0.86	194	7.6	352	2.0	3.0	1.2	880	78
132		**M3GP**	**315 SMB**	3GGP 311 220-••G	2982	95.1	94.8	93.6	0.88	227	7.4	422	2.2	3.0	1.4	940	78
160		**M3GP**	**315 SMC**	3GGP 311 230-••G	2981	95.4	95.2	94.2	0.89	271	7.5	512	2.3	3.0	1.7	1025	78
200		**M3GP**	**315 MLA**	3GGP 311 410-••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**	**355 SMA**	3GGP 351 210-••G	2984	95.7	95.5	94.5	0.89	423	7.7	800	2.1	3.3	3	1600	83
315	3)	**M3GP**	**355 SMB**	3GGP 351 220-••G	2980	95.7	95.7	95.1	0.89	533	7.0	1009	2.1	3.0	3.4	1680	83
355	3)	**M3GP**	**355 SMC**	3GGP 351 230-••G	2984	95.7	95.7	95.2	0.88	608	7.2	1136	2.2	3.0	3.6	1750	83
400	3)	**M3GP**	**355 MLA**	3GGP 351 410-••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**	**355 MLB**	3GGP 351 420-••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**	**355 LKA**	3GGP 351 810-••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**	**355 LKB**	3GGP 351 820-••G	2983	97.0	97.0	96.5	0.90	925	8.0	1792	2.2	4.1	5.2	2460	83
560	4)	**M3GP**	**400 LA**	3GGP 401 510-••G	2988	97.2	97.2	96.6	0.89	934	7.8	1789	2.1	3.4	7.9	2950	82
560	4)	**M3GP**	**400 LKA**	3GGP 401 810-••G	2988	97.2	97.2	96.6	0.89	934	7.8	1789	2.1	3.4	7.9	2950	82
630	4)	**M3GP**	**400 LB**	3GGP 401 520-••G	2987	97.4	97.4	96.9	0.89	1048	7.8	2014	2.2	3.4	8.2	3050	82
630	4)	**M3GP**	**400 LKB**	3GGP 401 820-••G	2987	97.4	97.4	96.9	0.89	1048	7.8	2014	2.2	3.4	8.2	3050	82
710	4)	**M3GP**	**400 LC**	3GGP 401 530-••G	2987	97.5	97.4	97.0	0.89	1180	7.8	2269	2.6	3.4	9.3	3300	82
710	4)	**M3GP**	**400 LKC**	3GGP 401 830-••G	2987	97.5	97.4	97.0	0.89	1180	7.8	2269	2.6	3.4	9.3	3300	82
3000 r/min = 2-poles				**400 V 50 Hz**						**High-output design**							
22	2)	**M3GP**	**160 MLD**	3GGP 161 440-••H	2929	91.2	91.6	91.0	0.90	38.6	7.3	71.7	2.7	3.4	0.07	233	77
30		**M3GP**	**180 MLB**	3GGP 181 420-••H	2943	92.5	93.0	92.6	0.90	52	6.8	97.3	2.3	3.1	0.13	292	78
37		**M3GP**	**180 MLC**	3GGP 181 430-••H	2947	92.8	93.0	92.5	0.90	63.9	7.9	119	2.9	3.6	0.13	292	77
45	5)	**M3GP**	**200 MLE**	3GGP 201 450-••G	2944	93.3	93.6	93.0	0.88	79.1	7.3	145	2.9	3.1	0.22	310	79
55		**M3GP**	**225 SMC**	3GGP 221 230-••G	2965	93.9	93.9	92.9	0.88	96	7.1	177	2.6	3.0	0.29	385	80
67	5)	**M3GP**	**225 SMD**	3GGP 221 240-••G	2966	93.9	93.7	92.6	0.86	119	7.4	215	2.8	3.2	0.31	395	78
75		**M3GP**	**250 SMB**	3GGP 251 220-••G	2969	94.0	94.0	93.2	0.89	129	7.9	241	2.6	3.2	0.57	465	80
90	1) 2) 5)	**M3GP**	**250 SMC**	3GGP 251 230-••G	2965	94.0	94.2	93.7	0.90	153	7.7	289	2.6	3.1	0.59	475	80
110		**M3GP**	**280 SMC**	3GGP 281 230-••G	2978	95.1	95.0	94.2	0.90	185	7.9	352	2.4	3.0	1.15	725	77

1) Temperature rise class IF
2) Efficiency class IE1
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
4) Unidirectional fan construction as standard. Direction of rotation must be stated when ordering, see variant codes 044 and 045
5) For 400-415 V 50 Hz (380 V 50 Hz voltage code B)

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

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

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.

Non-sparking cast iron motors
Technical data for Ex nA II T3 Gc

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30; 2008

Output						Speed	Efficiency IEC 60034--2-1; 2007			Power	Current		Torque			Moment of inertia		Sound pressure
							Full load	3/4 load	1/2 load	factor	I_N	$\frac{I_s}{I_N}$	T_N	$\frac{T_l}{T_N}$	$\frac{T_b}{T_N}$	J = 1/4 GD²	Weight	level L_{PA}
kW		Motor type		Product code		r/min	100%	75%	50%	cos φ	A		Nm			kgm²	kg	dB
1500 r/min = 4-poles				**400 V 50 Hz**							**CENELEC-design**							
0.25		M3GP	71 MA	3GGP	072 321-••B	1365	68.3	70.8	69.7	0.81	0.65	3.5	1.74	1.9	2.0	0.00074	10	45
0.37		M3GP	71 MB	3GGP	072 322-••B	1380	72.4	74.5	74.6	0.83	0.88	4.0	2.5	1.6	2.1	0.00088	11	45
0.55		M3GP	80 MA	3GGP	082 321-••B	1415	74.5	73.8	70.0	0.73	1.45	5.0	3.7	2.0	2.8	0.00144	15	45
0.75		M3GP	80 MD	3GGP	082 324-••B	1430	81.0	80.7	77.3	0.73	1.83	5.3	5	2.7	3.2	0.00205	17	50
1.1		M3GP	90 SLB	3GGP	092 322-••B	1435	83.6	84.5	83.2	0.80	2.3	6.1	7.3	2.7	3.4	0.0044	25	50
1.5		M3GP	90 SLD	3GGP	092 325-••B	1430	84.3	85.6	84.7	0.83	3	6.3	10	2.7	3.4	0.0053	27	56
2.2		M3GP	100 LC	3GGP	102 323-••B	1450	85.9	85.1	83.4	0.78	4.7	6.4	14.4	2.9	3.6	0.00948	36	56
3		M3GP	100 LD	3GGP	102 324-••B	1450	86.8	87.0	85.4	0.79	6.3	7.7	19.7	2.9	3.4	0.011	38	58
4		M3GP	112 MB	3GGP	112 322-••B	1440	86.8	87.7	87.3	0.81	8.2	7.0	26.5	2.5	2.9	0.0125	44	59
5.5		M3GP	132 SMB	3GGP	132 322-••B	1460	89.0	89.8	88.9	0.80	11.1	5.9	35.9	1.7	2.4	0.03282	70	67
7.5		M3GP	132 SMC	3GGP	132 323-••B	1450	89.3	90.1	90.0	0.81	14.9	5.6	49.3	1.6	2.4	0.03659	73	64
11		M3GP	160 MLC	3GGP	162 430-••H	1470	91.2	91.5	90.6	0.82	21.2	7.8	71.4	3.0	3.5	0.096	226	62
15		M3GP	160 MLE	3GGP	162 450-••H	1467	92.0	92.4	92.1	0.84	28	7.8	97.6	3.0	3.4	0.13	249	61
18.5		M3GP	180 MLA	3GGP	182 410-••H	1474	91.6	92.0	91.2	0.83	35.1	7.2	119	2.6	3.1	0.19	271	62
22		M3GP	180 MLB	3GGP	182 420-••H	1471	91.6	92.4	92.2	0.83	41.7	6.8	142	2.5	3.0	0.21	279	62
30		M3GP	200 MLB	3GGP	202 420-••G	1475	93.6	94.0	93.7	0.85	54.4	7.4	194	3.0	2.8	0.34	305	61
37		M3GP	225 SMB	3GGP	222 220-••G	1480	93.6	93.9	93.4	0.85	67.1	7.6	238	3.2	2.9	0.42	355	67
45		M3GP	225 SMC	3GGP	222 230-••G	1477	94.1	94.6	94.4	0.88	78.4	7.6	290	3.2	2.7	0.49	390	67
55		M3GP	250 SMA	3GGP	252 210-••G	1479	94.3	94.3	93.6	0.84	100	7.2	355	2.5	3.1	0.72	415	66
75		M3GP	280 SMA	3GGP	282 210-••G	1484	94.5	94.5	93.9	0.85	134	6.9	482	2.5	2.8	1.25	625	68
90		M3GP	280 SMB	3GGP	282 220-••G	1483	94.7	94.8	94.4	0.86	159	7.2	579	2.5	2.7	1.5	665	68
110		M3GP	315 SMA	3GGP	312 210-••G	1487	95.1	95.1	94.3	0.86	194	7.2	706	2.0	2.5	2.3	900	70
132		M3GP	315 SMB	3GGP	312 220-••G	1487	95.4	95.4	94.7	0.86	232	7.1	847	2.3	2.7	2.6	960	70
160		M3GP	315 SMC	3GGP	312 230-••G	1487	95.6	95.6	95.1	0.85	284	7.2	1027	2.4	2.9	2.9	1000	70
200		M3GP	315 MLA	3GGP	312 410-••G	1486	95.6	95.6	95.3	0.86	351	7.2	1285	2.5	2.9	3.5	1160	74
250		M3GP	355 SMA	3GGP	352 210-••G	1488	95.9	95.9	95.5	0.86	437	7.1	1604	2.3	2.7	5.9	1610	74
315		M3GP	355 SMB	3GGP	352 220-••G	1488	95.9	95.9	95.6	0.86	551	7.3	2021	2.3	2.8	6.9	1780	74
350	3)	M3GP	355 SMC	3GGP	352 230-••G	1487	95.9	95.9	95.7	0.86	612	6.9	2247	2.4	2.7	7.2	1820	78
400	3)	M3GP	355 MLA	3GGP	352 410-••G	1489	96.3	96.3	95.9	0.85	705	6.8	2565	2.3	2.6	8.4	2140	78
450	3)	M3GP	355 MLB	3GGP	352 420-••G	1490	96.8	96.8	96.3	0.86	780	6.9	2884	2.3	2.9	8.4	2140	78
500		M3GP	355 LKA	3GGP	352 810-••G	1490	97.0	97.0	96.5	0.86	865	6.8	3204	2.0	3.0	10	2500	78
560	3)	M3GP	400 LA	3GGP	402 510-••G	1491	96.8	96.8	96.3	0.85	982	7.4	3586	2.4	2.8	15	3200	78
560	3)	M3GP	400 LKA	3GGP	402 810-••G	1491	96.8	96.8	96.3	0.85	982	7.4	3586	2.4	2.8	15	3200	78
630	3)	M3GP	400 LB	3GGP	402 520-••G	1491	97.0	97.0	96.5	0.87	1077	7.6	4034	2.2	2.9	16	3300	78
630	3)	M3GP	400 LKB	3GGP	402 820-••G	1491	97.0	97.0	96.5	0.87	1077	7.6	4034	2.2	2.9	16	3300	78
680	3)	M3GP	400 LC	3GGP	402 530-••G	1492	97.1	97.1	96.6	0.85	1189	7.9	4352	2.5	3.1	17	3400	78
680	3)	M3GP	400 LKC	3GGP	402 830-••G	1492	97.1	97.1	96.6	0.85	1189	7.9	4352	2.5	3.1	17	3400	78
800		M3GP	450 LA	3GGP	452 510-••G	1492	96.9	96.9	96.2	0.86	1385	7.0	5120	1.3	2.8	23	4050	85
900		M3GP	450 LB	3GGP	452 520-••G	1492	97.1	97.1	96.5	0.86	1555	7.0	5760	1.3	2.8	25	4350	85
1000	1)	M3GP	450 LC	3GGP	452 530-••G	1491	97.2	97.2	96.7	0.86	1726	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	160 MLF	3GGP	162 460-••H	1469	91.7	92.1	91.4	0.83	35	7.8	120	3.2	3.5	0.13	249	68
22	2)	M3GP	160 MLG	3GGP	162 470-••H	1466	90.8	91.1	90.4	0.81	43.1	7.9	143	3.3	3.6	0.13	249	68
30	1) 2)	M3GP	180 MLC	3GGP	182 430-••H	1473	92.2	92.3	91.6	0.81	57.9	7.1	194	2.8	3.2	0.248	298	66
37		M3GP	200 MLC	3GGP	202 430-••G	1475	93.0	93.1	92.3	0.82	70	7.5	239	3.5	3.2	0.34	305	73
55		M3GP	225 SMD	3GGP	222 240-••G	1483	94.3	94.5	93.9	0.83	101	7.4	354	3.4	2.9	0.55	410	68
60	2) 3)	M3GP	225 SME	3GGP	222 250-••G	1479	93.6	93.7	92.9	0.84	110	8.0	387	3.6	3.0	0.55	410	74
75	3)	M3GP	250 SMB	3GGP	252 220-••G	1476	94.3	94.5	94.2	0.86	133	7.6	485	2.8	3.2	0.88	470	73
86	2) 3)	M3GP	250 SMC	3GGP	252 230-••G	1477	94.1	94.4	94.0	0.85	155	7.8	556	2.9	3.5	0.98	495	74
110		M3GP	280 SMC	3GGP	282 230-••G	1485	95.1	95.2	94.7	0.86	194	7.6	707	3.0	3.0	1.85	725	68

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

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

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

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.

Non-sparking cast iron motors
Technical data for Ex nA II T3 Gc

IE2

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30; 2008

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 Nm	T_l/T_N	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**	**71 MA**	3GGP	073 321-••B	900	63.7	63.8	59.0	0.71	0.57	3.1	1.9	2.0	2.1	0.00089	10	42
0.25		**M3GP**	**71 MB**	3GGP	073 322-••B	895	67.2	67.2	62.6	0.69	0.77	3.4	2.6	2.2	2.3	0.0011	12	42
0.37		**M3GP**	**80 MA**	3GGP	083 321-••B	915	71.0	71.1	67.0	0.69	1.09	3.6	3.8	1.8	2.2	0.00187	15	47
0.55		**M3GP**	**80 MB**	3GGP	083 322-••B	920	73.9	75.0	72.8	0.71	1.51	3.8	5.7	1.8	2.2	0.00239	17	47
0.75		**M3GP**	**90 SLC**	3GGP	093 323-••B	960	78.7	77.3	72.5	0.58	2.3	4.5	7.4	2.3	3.1	0.00491	25	44
1.1		**M3GP**	**90 SLE**	3GGP	093 324-••B	930	78.2	78.6	76.4	0.66	3	4.0	11.2	1.9	2.3	0.0054	28	44
1.5		**M3GP**	**100 L**	3GGP	103 322-••B	950	82.2	82.9	81.6	0.69	3.8	4.0	15	1.5	1.1	0.00873	37	49
2.2		**M3GP**	**112 MB**	3GGP	113 322-••B	950	82.5	83.8	81.7	0.69	5.5	4.4	22.1	1.7	2.3	0.0125	44	66
3		**M3GP**	**132 SMB**	3GGP	133 321-••B	975	85.3	84.5	81.3	0.63	8	5.5	29.3	1.8	2.9	0.03336	69	57
4		**M3GP**	**132 SMB**	3GGP	133 322-••B	960	84.9	85.3	83.9	0.68	10	4.6	39.7	1.5	2.2	0.03336	69	57
5.5		**M3GP**	**132 SMF**	3GGP	133 324-••B	965	86.1	86.6	85.5	0.71	12.9	5.1	54.4	2.0	2.3	0.0487	86	57
7.5		**M3GP**	**160 MLA**	3GGP	163 410-••H	965	87.2	88.4	88.2	0.81	15.3	6.5	74.2	1.9	3.0	0.088	220	57
11		**M3GP**	**160 MLB**	3GGP	163 420-••H	972	90.1	90.8	90.4	0.81	21.7	7.8	108	2.3	3.5	0.126	247	65
15		**M3GP**	**180 MLB**	3GGP	183 420-••H	972	90.4	91.0	90.4	0.82	29.2	7.2	147	1.9	3.2	0.25	298	58
18.5		**M3GP**	**200 MLA**	3GGP	203 410-••G	983	90.9	91.1	90.3	0.82	35.8	7.1	179	3.2	3.1	0.37	265	66
22		**M3GP**	**200 MLB**	3GGP	203 420-••G	983	91.6	91.9	91.0	0.82	42.2	7.5	213	3.2	3.2	0.43	285	61
30		**M3GP**	**225 SMB**	3GGP	223 220-••G	985	92.2	92.6	92.2	0.82	57.2	7.4	290	3.4	3.0	0.64	350	61
37		**M3GP**	**250 SMA**	3GGP	253 210-••G	987	93.1	93.4	92.8	0.81	70.8	7.2	357	3.2	2.9	1.16	420	66
45		**M3GP**	**280 SMA**	3GGP	283 210-••G	990	93.4	93.6	93.1	0.84	82.7	7.0	434	2.5	2.5	1.85	605	66
55		**M3GP**	**280 SMB**	3GGP	283 220-••G	990	93.8	94.0	93.3	0.84	100	7.0	530	2.7	2.6	2.2	645	66
75		**M3GP**	**315 SMA**	3GGP	313 210-••G	992	94.4	94.4	93.5	0.82	139	7.4	721	2.4	2.8	3.2	830	70
90		**M3GP**	**315 SMB**	3GGP	313 220-••G	992	94.8	94.8	94.2	0.84	163	7.5	866	2.4	2.8	4.1	930	70
110		**M3GP**	**315 SMC**	3GGP	313 230-••G	991	95.0	95.0	94.6	0.83	201	7.4	1059	2.5	2.9	4.9	1000	70
132		**M3GP**	**315 MLA**	3GGP	313 410-••G	991	95.3	95.4	94.9	0.83	240	7.5	1271	2.7	3.0	5.8	1150	68
160		**M3GP**	**355 SMA**	3GGP	353 210-••G	993	95.4	95.4	94.8	0.83	291	7.0	1538	2.0	2.6	7.9	1520	75
200		**M3GP**	**355 SMB**	3GGP	353 220-••G	993	95.7	95.7	95.1	0.84	359	7.2	1923	2.2	2.7	9.7	1680	75
250		**M3GP**	**355 SMC**	3GGP	353 230-••G	993	95.7	95.7	95.1	0.83	454	7.4	2404	2.6	2.9	11.3	1820	75
315		**M3GP**	**355 MLB**	3GGP	353 420-••G	992	95.7	95.7	95.2	0.83	572	7.0	3032	2.5	2.7	13.5	2180	75
355		**M3GP**	**355 LKA**	3GGP	353 810-••G	993	95.7	95.7	95.1	0.83	645	6.8	3413	2.3	2.7	15.5	2500	78
400		**M3GP**	**400 LA**	3GGP	403 510-••G	993	96.2	96.3	95.8	0.82	731	7.1	3846	2.3	2.7	17	2900	76
400		**M3GP**	**400 LKA**	3GGP	403 810-••G	993	96.2	96.3	95.8	0.82	731	7.1	3846	2.3	2.7	17	2900	76
450		**M3GP**	**400 LB**	3GGP	403 520-••G	994	96.6	96.6	96.1	0.82	819	7.4	4323	2.4	2.8	20.5	3150	76
450		**M3GP**	**400 LKB**	3GGP	403 820-••G	994	96.6	96.6	96.1	0.82	819	7.4	4323	2.4	2.8	20.5	3150	76
500		**M3GP**	**400 LC**	3GGP	403 530-••G	993	96.6	96.7	96.2	0.83	900	7.2	4808	2.5	2.7	22	3300	76
500		**M3GP**	**400 LKC**	3GGP	403 830-••G	993	96.6	96.7	96.2	0.83	900	7.2	4808	2.5	2.7	22	3300	76
560		**M3GP**	**400 LD**	3GGP	403 540-••G	993	96.9	96.9	96.4	0.85	981	7.4	5385	2.4	2.8	24	3400	77
560		**M3GP**	**400 LKD**	3GGP	403 840-••G	993	96.9	96.9	96.4	0.85	981	7.4	5385	2.4	2.8	24	3400	77
630		**M3GP**	**450 LA**	3GGP	453 510-••G	994	96.7	96.8	96.4	0.84	1119	6.5	6052	1.1	2.5	31	4150	81
710		**M3GP**	**450 LB**	3GGP	453 520-••G	995	96.9	96.9	96.5	0.85	1244	7.0	6814	1.3	2.5	37	4500	81
800	[1]	**M3GP**	**450 LC**	3GGP	453 530-••G	995	96.9	97.0	96.6	0.84	1418	7.2	7677	1.3	2.7	41	4800	81
1000 r/min = 6-poles				**400 V 50 Hz**							**High-output design**							
14	[1] [2]	**M3GP**	**160 MLC**	3GGP	163 430-••H	969	89.2	89.4	88.0	0.75	30.2	7.9	137	2.8	3.9	0.126	247	64
18.5	[2]	**M3GP**	**180 MLC**	3GGP	183 430-••H	975	90.1	90.2	88.7	0.74	40	7.2	181	2.0	3.2	0.25	298	61
30	[2]	**M3GP**	**200 MLC**	3GGP	203 430-••G	983	90.8	91.2	90.2	0.81	58.8	7.5	291	3.5	3.4	0.49	305	65
37	[2]	**M3GP**	**225 SMC**	3GGP	223 230-••G	983	92.1	92.5	92.1	0.83	69.8	7.1	359	3.0	2.8	0.75	380	64
45		**M3GP**	**250 SMB**	3GGP	253 220-••G	986	93.1	93.3	92.6	0.82	85	7.2	435	3.3	2.8	1.49	465	65
75		**M3GP**	**280 SMC**	3GGP	283 230-••G	990	94.2	94.5	94.1	0.84	136	7.3	723	2.8	2.7	2.85	725	66

[1] Temperature rise class IF

[2] Efficiency class IE1

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

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

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.

Non-sparking cast iron motors
Technical data for Ex nA II T3 Gc

IP 55 - IC 411 - Insulation class F, temperature rise class B

Output		Motor type		Product code		Speed	Efficiency IEC 60034--2-1; 2007 Full load	3/4 load	1/2 load	Power factor	Current I_N	I_s/I_N	Torque T_N	T_l/T_N	T_b/T_N	Moment of inertia J = 1/4 GD²	Weight	Sound pressure level L_{PA}
kW						r/min	100%	75%	50%	cos φ	A		Nm			kgm²	kg	dB
750 r/min = 8-poles				**400 V 50 Hz**							**CENELEC-design**							
0.09		M3GP	71 MA	3GGP	074 101-••B	660	49.4	46.0	38.5	0.59	0.44	2.0	1.3	1.8	2.0	0.00089	11	40
0.12		M3GP	71 MB	3GGP	074 102-••B	670	51.4	47.5	39.9	0.56	0.6	2.1	1.71	2.8	2.4	0.0011	12	43
0.18		M3GP	80 MA	3GGP	084 101-••B	700	54.2	51.1	43.5	0.59	0.81	3.6	2.4	2.2	2.5	0.00187	15	45
0.25		M3GP	80 MB	3GGP	084 102-••B	680	58.6	58.1	52.3	0.65	0.94	3.0	3.5	2.0	1.9	0.00239	17	50
0.37		M3GP	90 SLB	3GGP	094 102-••B	705	66.3	64.0	57.1	0.54	1.49	2.8	5	1.4	2.2	0.00444	24	50
0.55		M3GP	90 SLC	3GGP	094 103-••B	655	61.8	65.6	65.2	0.67	1.91	2.3	8	1.3	1.5	0.00491	25	53
0.75		M3GP	100 LA	3GGP	104 101-••B	710	74.0	73.0	68.2	0.61	2.3	3.6	10	1.8	2.5	0.0072	30	46
1.1		M3GP	100 LB	3GGP	104 102-••B	695	76.0	76.5	74.6	0.66	3.1	3.4	15.1	1.7	2.2	0.00871	30	53
1.5		M3GP	112 M	3GGP	114 101-••B	690	74.4	75.9	74.1	0.70	4.1	3.2	20.7	1.4	1.9	0.0106	39	55
2.2		M3GP	132 SMA	3GGP	134 101-••B	715	79.7	80.8	78.7	0.66	6	3.2	29.3	1.1	1.7	0.03336	70	56
3		M3GP	132 SMB	3GGP	134 102-••B	715	79.9	80.8	79.1	0.64	8.4	4.7	40	1.2	1.8	0.04003	75	58
4		M3GP	160 MLA	3GGP	164 410-••H	722	86.7	87.4	86.6	0.71	9.3	5.4	52.9	1.7	2.8	0.133	245	59
5.5		M3GP	160 MLB	3GGP	164 420-••H	723	86.8	87.6	86.8	0.71	12.8	5.8	72.6	1.9	3.1	0.133	245	53
7.5		M3GP	160 MLC	3GGP	164 430-••H	718	85.5	86.3	85.5	0.70	18	5.7	99.7	2.1	3.1	0.133	245	55
11		M3GP	180 MLB	3GGP	184 420-••H	723	88.3	89.2	88.7	0.72	24.9	5.7	145	1.7	2.7	0.245	292	63
15		M3GP	200 MLA	3GGP	204 410-••G	734	89.9	90.3	89.6	0.79	30.4	7.0	195	2.4	3.2	0.45	280	56
18.5		M3GP	225 SMA	3GGP	224 210-••G	734	90.0	90.3	89.3	0.74	40	6.1	240	2.2	3.0	0.61	335	55
22		M3GP	225 SMB	3GGP	224 220-••G	732	90.6	91.2	90.6	0.77	45.5	6.5	287	2.2	2.9	0.68	350	56
30		M3GP	250 SMA	3GGP	254 210-••G	735	91.4	91.2	90.7	0.78	60.7	6.7	389	2.0	2.9	1.25	420	56
37		M3GP	280 SMA	3GGP	284 210-••G	741	92.7	92.7	91.6	0.78	73.8	7.3	476	1.7	3.0	1.85	605	65
45		M3GP	280 SMB	3GGP	284 220-••G	741	93.2	93.2	92.2	0.78	89.3	7.6	579	1.8	3.1	2.2	645	65
55		M3GP	315 SMA	3GGP	314 210-••G	742	93.4	93.5	92.7	0.81	104	7.1	707	1.6	2.7	3.2	830	62
75		M3GP	315 SMB	3GGP	314 220-••G	741	93.7	93.9	93.4	0.82	140	7.1	966	1.7	2.7	4.1	930	62
90		M3GP	315 SMC	3GGP	314 230-••G	741	94.0	94.2	93.6	0.82	168	7.4	1159	1.8	2.7	4.9	1000	64
110		M3GP	315 MLA	3GGP	314 410-••G	740	94.0	94.3	94.0	0.83	203	7.3	1419	1.8	2.7	5.8	1150	72
132		M3GP	355 SMA	3GGP	354 210-••G	744	94.7	94.7	94.0	0.80	251	7.5	1694	1.5	2.6	7.9	1520	69
160		M3GP	355 SMB	3GGP	354 220-••G	744	95.2	95.2	94.5	0.80	303	7.6	2053	1.6	2.6	9.7	1680	69
200		M3GP	355 SMC	3GGP	354 230-••G	743	95.3	95.4	94.8	0.80	378	7.4	2570	1.6	2.6	11.3	1820	69
250	2)	M3GP	355 MLB	3GGP	354 420-••G	743	95.4	95.5	95.0	0.80	472	7.5	3213	1.6	2.7	13.5	2180	72
315	2)	M3GP	400 LA	3GGP	404 510-••G	744	96.1	96.2	95.8	0.81	584	7.0	4043	1.2	2.6	17	2900	71
315	2)	M3GP	400 LKA	3GGP	404 810-••G	744	96.1	96.2	95.8	0.81	584	7.0	4043	1.2	2.6	17	2900	71
355	2)	M3GP	400 LB	3GGP	404 520-••G	743	96.2	96.3	96.1	0.83	641	6.8	4562	1.2	2.5	21	3200	71
355	2)	M3GP	400 LKB	3GGP	404 820-••G	743	96.2	96.3	96.1	0.83	641	6.8	4562	1.2	2.5	21	3200	71
400	2)	M3GP	400 LC	3GGP	404 530-••G	744	96.3	96.4	96.0	0.82	731	7.4	5134	1.3	2.7	24	3400	71
400	2)	M3GP	400 LKC	3GGP	404 830-••G	744	96.3	96.4	96.0	0.82	731	7.4	5134	1.3	2.7	24	3400	71
450		M3GP	450 LA	3GGP	454 510-••G	744	96.2	96.4	96.2	0.83	813	6.0	5775	1.0	2.5	26	3750	82
500		M3GP	450 LB	3GGP	454 520-••G	744	96.3	96.4	96.2	0.83	902	6.4	6417	1.0	2.6	29	4000	82
560		M3GP	450 LC	3GGP	454 530-••G	744	96.4	96.5	96.1	0.82	1022	7.0	7187	1.2	2.9	35	4350	82
630	1)	M3GP	450 LD	3GGP	454 540-••G	745	96.6	96.6	96.2	0.81	1162	7.6	8075	1.3	3.2	41	4800	82
750 r/min = 8-poles				**400 V 50 Hz**							**High-output design**							
18.5		M3GP	200 MLB	3GGP	204 420-••G	734	89.8	90.2	89.6	0.80	37.1	6.9	240	2.2	3.2	0.54	300	57
30		M3GP	225 SMC	3GGP	224 230-••G	731	90.7	91.5	91.3	0.78	61.2	6.3	391	2.3	3.0	0.75	375	59
37		M3GP	250 SMB	3GGP	254 220-••G	737	92.2	91.7	91.0	0.78	74.2	7.5	479	2.3	3.4	1.52	465	59
55		M3GP	280 SMC	3GGP	284 230-••G	741	93.4	93.5	92.8	0.80	106	7.9	708	1.9	3.1	2.85	725	65

[1] Temperature rise class F

[2] For 400-415 V 50 Hz (380 V 50 Hz voltage code B)

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

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

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.

Non-sparking premium efficiency cast iron motors IE3
Technical data for Ex nA II T3 Gc

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE3 efficiency class according to IEC 60034-30; 2008

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 Nm	T_l/T_N	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**							
30		**M3GP**	**200 MLE**	3GGP	201 450-••J	2957	94.1	94.3	93.7	0.87	52.8	7.7	96.8	2.9	3.3	0.22	310	75
37		**M3GP**	**200 MLF**	3GGP	201 460-••J	2958	94.6	94.8	94.3	0.86	65.6	8.3	119	3.2	3.5	0.22	310	75
45		**M3GP**	**225 SME**	3GGP	221 250-••J	2970	95.0	95.2	94.5	0.88	77.6	8.0	144	3.0	3.4	0.34	406	76
55		**M3GP**	**250 SMD**	3GGP	251 240-••J	2977	95.2	95.5	95.0	0.91	91.6	8.1	176	2.6	2.7	0.68	493	75
75		**M3GP**	**280 SMB**	3GGP	281 220-••K	2979	95.5	95.4	94.6	0.87	130	7.3	240	2.1	2.9	0.9	665	77
90		**M3GP**	**280 SMC**	3GGP	281 230-••K	2981	95.7	95.6	94.8	0.88	154	8.0	288	2.5	3.1	1.15	725	77
110		**M3GP**	**315 SMB**	3GGP	311 220-••K	2982	95.9	95.7	95.0	0.87	190	6.7	352	1.9	2.6	1.4	940	77
132		**M3GP**	**315 SMC**	3GGP	311 230-••K	2984	95.9	95.9	95.3	0.88	225	7.9	422	2.4	3.0	1.7	1025	77
160		**M3GP**	**315 MLA**	3GGP	311 410-••K	2982	96.1	96.1	95.8	0.90	267	7.3	512	2.2	2.7	2.1	1190	77
200		**M3GP**	**315 MLB**	3GGP	311 420-••K	2982	96.2	96.2	96.0	0.90	333	6.8	640	1.9	2.6	2.2	1220	77
200	[1]	**M3GP**	**355 SMA**	3GGP	351 210-••K	2984	96.2	96.1	95.5	0.89	337	7.6	640	2.0	3.1	3	1600	83
250		**M3GP**	**315 LKB**	3GGP	311 820-••K	2981	96.3	96.3	96.2	0.91	411	7.9	800	2.5	2.7	2.9	1540	77
250	[1]	**M3GP**	**355 SMB**	3GGP	351 220-••K	2983	96.3	96.3	95.9	0.90	416	7.6	800	2.2	3.0	3.4	1680	83
315	[1]	**M3GP**	**355 SMC**	3GGP	351 230-••K	2984	96.4	96.4	95.9	0.89	529	7.8	1008	2.3	2.8	3.6	1750	83
355	[1]	**M3GP**	**355 MLA**	3GGP	351 410-••K	2982	96.5	96.5	96.3	0.90	589	7.5	1136	2.3	2.6	4.1	2000	83
1500 r/min = 4-poles				**400 V 50 Hz**							**CENELEC-design**							
30		**M3GP**	**200 MLE**	3GGP	202 450-••J	1478	94.2	94.6	94.5	0.86	53.4	7.8	193	3.2	2.9	0.37	316	61
37		**M3GP**	**225 SME**	3GGP	222 250-••J	1482	94.6	95.0	94.8	0.88	64.1	7.6	238	2.9	3.3	0.55	410	67
45		**M3GP**	**225 SMF**	3GGP	222 260-••J	1479	94.8	95.2	95.0	0.87	78.7	8.0	290	3.2	3.4	0.59	416	67
55		**M3GP**	**250 SMC**	3GGP	252 230-••J	1483	95.3	95.4	95.0	0.86	96.8	7.3	354	2.7	3.4	0.98	495	66
75		**M3GP**	**280 SMB**	3GGP	282 220-••K	1486	95.7	95.8	95.3	0.85	133	7.4	481	2.5	2.8	1.5	665	66
90		**M3GP**	**280 SMC**	3GGP	282 230-••K	1487	95.9	96.0	95.5	0.85	159	7.9	577	2.9	3.0	1.85	725	66
110		**M3GP**	**315 SMC**	3GGP	312 230-••K	1490	96.3	96.3	95.7	0.85	193	7.8	704	2.4	3.1	2.9	1000	68
132		**M3GP**	**315 SMD**	3GGP	312 240-••K	1490	96.4	96.4	95.9	0.85	232	7.9	845	2.6	3.2	3.2	1065	68
160		**M3GP**	**315 MLB**	3GGP	312 420-••K	1489	96.4	96.4	96.1	0.86	278	7.9	1026	2.7	3.0	3.9	1220	68
200		**M3GP**	**315 LKB**	3GGP	312 820-••K	1490	96.5	96.5	96.3	0.87	343	7.6	1281	2.5	2.9	5	1520	74
200		**M3GP**	**355 SMA**	3GGP	352 210-••K	1490	96.5	96.5	96.3	0.87	343	7.3	1281	2.1	2.7	5.9	1610	74
250		**M3GP**	**315 LKC**	3GGP	312 830-••K	1491	96.6	96.6	96.4	0.87	429	7.8	1601	2.3	3.0	5.5	1600	74
250		**M3GP**	**355 SMB**	3GGP	352 220-••K	1491	96.6	96.6	96.3	0.87	429	7.8	1601	2.5	2.9	6.9	1780	74
315		**M3GP**	**355 SMC**	3GGP	352 230-••K	1491	96.7	96.7	96.3	0.85	553	7.4	2017	2.8	2.9	7.2	1820	74
355		**M3GP**	**355 MLA**	3GGP	352 410-••K	1491	96.7	96.7	96.4	0.86	616	7.9	2273	2.7	2.9	8.4	2140	74

[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

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

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

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.

Non-sparking premium efficiency cast iron motors IE3
Technical data for Ex nA II T3 Gc

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE3 efficiency class according to IEC 60034-30; 2008

Output						Efficiency IEC 60034--2-1; 2007				Current		Torque					
kW	Motor type		Product code		Speed r/min	Full load 100%	3/4 load 75%	1/2 load 50%	Power factor cos φ	I_N A	$\frac{I_s}{I_N}$	T_N Nm	$\frac{T_l}{T_N}$	$\frac{T_b}{T_N}$	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**							
18.5	**M3GP**	**200 MLC**	3GGP	203 430-••J	987	92.5	92.8	92.4	0.84	34.3	8.1	178	3.2	3.4	0.49	305	61
22	**M3GP**	**200 MLD**	3GGP	203 440-••J	986	92.9	93.3	92.9	0.84	40.6	8.2	213	3.3	3.4	0.54	314	61
30	**M3GP**	**225 SME**	3GGP	223 250-••J	989	94.0	94.2	93.8	0.85	54.1	7.9	289	2.5	3.2	0.92	410	61
37	**M3GP**	**250 SMD**	3GGP	253 240-••J	990	94.4	94.8	94.6	0.84	67.3	8.2	356	3.3	3.3	1.74	500	65
45	**M3GP**	**280 SMB**	3GGP	283 220-••K	991	94.8	94.9	94.2	0.86	79.6	6.9	433	2.4	2.6	2.2	680	65
55	**M3GP**	**280 SMC**	3GGP	283 230-••K	990	95.1	95.1	94.7	0.86	97	6.8	530	2.4	2.6	2.85	725	65
75	**M3GP**	**315 SMC**	3GGP	313 230-••K	993	95.3	95.3	94.8	0.84	135	7.0	721	2.2	2.8	4.9	1000	67
90	**M3GP**	**315 SMD**	3GGP	313 240-••K	994	95.5	95.5	94.9	0.83	163	7.2	864	2.4	2.9	4.9	1040	67
110	**M3GP**	**315 MLB**	3GGP	313 420-••K	993	95.5	95.5	95.1	0.84	197	6.9	1057	2.3	2.7	6.3	1200	68
132	**M3GP**	**315 LKA**	3GGP	313 810-••K	993	95.7	95.7	95.4	0.83	239	6.9	1269	2.4	2.7	7.3	1410	68
160	**M3GP**	**315 LKC**	3GGP	313 830-••K	994	95.9	95.9	95.5	0.83	290	7.4	1537	2.7	2.9	9.2	1600	68
160	**M3GP**	**355 SMB**	3GGP	353 220-••K	995	95.9	95.9	95.5	0.83	290	7.0	1535	2.1	2.7	9.7	1680	73
200	**M3GP**	**355 SMC**	3GGP	353 230-••K	995	96.0	96.0	95.7	0.83	362	7.3	1919	2.3	2.8	11.3	1820	73
250	**M3GP**	**355 MLB**	3GGP	353 420-••K	995	96.0	96.0	95.8	0.83	452	7.1	2399	2.3	2.7	13.5	2180	73
315	**M3GP**	**355 LKA**	3GGP	353 810-••K	994	96.0	96.0	95.8	0.83	570	6.9	3026	2.3	2.6	15.5	2500	76
355	**M3GP**	**355 LKB**	3GGP	353 820-••K	995	96.0	96.0	95.6	0.80	667	7.7	3407	2.7	2.9	16.5	2600	76

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

$\frac{I_s}{I_N}$ = Starting current
$\frac{T_l}{T_N}$ = Locked rotor torque
$\frac{T_b}{T_N}$ = Pull-out torque

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.

Non-sparking aluminum motors
Technical data for Ex nA

IE2

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30; 2008

ATEX Certified

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 Nm	T_l/T_N	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		**M3AAN 71 A**	3GAA 071 311-••E	2800	71.6	72.3	70.2	0.76	0.98	5.1	1.26	3.0	2.9	0.00035	4.9	58
0.55		**M3AAN 71 B**	3GAA 071 312-••E	2790	78.4	79.8	78.7	0.78	1.29	5.3	1.88	2.9	2.75	0.00045	5.9	58
0.75		**M3AAN 80 B**	3GAA 081 312-••E	2895	80.6	80.4	77.3	0.79	1.7	8.1	2.4	3.7	3.9	0.0009	10.5	60
1.1		**M3AAN 80 C**	3GAA 081 313-••E	2880	82.1	82.0	79.2	0.81	2.3	7.6	3.6	2.8	3.6	0.0012	11	60
1.5		**M3AAN 90 L**	3GAA 091 312-••E	2900	84.1	85.0	83.5	0.86	2.9	7.6	4.9	2.5	3.32	0.0024	16	60
2.2		**M3AAN 90 LB**	3GAA 091 313-••E	2875	84.6	85.7	85.5	0.85	4.4	6.9	7.3	2.8	3.2	0.0027	18	63
3		**M3AAN 100 LB**	3GAA 101 312-••E	2930	87.9	87.9	86.6	0.86	5.7	8.7	9.7	3.3	4	0.005	25	62
4		**M3AAN 112 MB**	3GAA 111 312-••E	2885	86.1	87.0	88.0	0.88	7.6	7.6	13.2	2.5	2.8	0.0062	30	68
5.5		**M3AAN 132 SB**	3GAA 131 312-••E	2915	88.0	88.5	87.6	0.82	11	7.9	18	2.6	3.6	0.016	42	73
7.5		**M3AAN 132 SC**	3GAA 131 313-••E	2915	88.5	88.7	88.1	0.87	14	7.6	24.5	2.2	3.2	0.022	56	73
11		**M3AA 160 MLA**	3GAA 161 031-••G	2938	90.7	91.5	91.1	0.91	19.2	7.5	35.7	2.4	3.1	0.044	91	69
15		**M3AA 160 MLB**	3GAA 161 036-••G	2934	91.5	92.5	92.2	0.91	26	7.5	48.8	2.5	3.3	0.053	105	69
18.5		**M3AA 160 MLC**	3GAA 161 037-••G	2932	92.0	93.1	93.1	0.92	31.5	7.5	60.2	2.9	3.4	0.063	123	69
22		**M3AA 180 MLA**	3GAA 181 031-••G	2952	92.2	92.7	92.2	0.87	39.5	7.7	71.1	2.8	3.3	0.076	132	69
30		**M3AA 200 MLA**	3GAA 201 035-••G	2956	93.1	93.5	92.9	0.90	51.6	7.7	96.9	2.7	3.1	0.178	210	72
37		**M3AA 200 MLB**	3GAA 201 036-••G	2959	93.4	93.7	93.0	0.90	63.5	8.2	119	3.0	3.3	0.196	225	72
45		**M3AA 225 SMA**	3GAA 221 031-••G	2961	93.6	93.9	93.1	0.88	78.8	6.7	145	2.5	2.5	0.244	263	74
55		**M3AA 250 SMA**	3GAA 251 031-••G	2967	94.1	94.4	93.8	0.88	95.8	6.8	177	2.2	2.7	0.507	304	75
75		**M3AA 280 SMA**	3GAA 281 031-••G	2968	94.5	94.8	94.3	0.89	128	7.1	241	2.5	2.8	0.583	389	75
90	[1]	**M3AA 280 SMB**	3GAA 281 032-••G	2971	95.0	95.2	94.8	0.89	153	7.8	289	2.6	3.2	0.644	425	75
3000 r/min = 2-poles			**400 V 50 Hz**						**High-output design**							
0.75	[2]	**M3AAN 71 C**	3GAA 071 003-••E	2785	76.6	77.1	76.4	0.80	1.76	5.3	2.5	3.2	3.2	0.00056	6.5	58
1.5	[1] [2]	**M3AAN 80 C**	3GAA 081 003-••E	2830	80.7	82.0	80.0	0.83	3.2	5.8	5	2.6	3	0.0011	11	60
2.7	[1] [2]	**M3AAN 90 LB**	3GAA 091 003-••E	2860	81.0	81.2	79.0	0.86	5.5	7.0	9	2.6	3	0.0027	18	68
4	[1] [2]	**M3AAN 100 LB**	3GAA 101 002-••E	2900	84.3	83.9	83.7	0.86	7.9	7.5	13.1	2.7	3.6	0.005	25	68
5.5	[1] [2]	**M3AAN 112 MB**	3GAA 111 102-••E	2850	86.4	87.0	87.4	0.90	10.2	7.2	18.4	3.4	3.4	0.0062	30	68
9.2	[1] [2]	**M3AAN 132 SBB**	3GAA 131 004-••E	2875	87.0	88.0	86.5	0.92	16.5	7.2	30.5	2.5	3	0.018	52	68
11		**M3AAN 132 SMB**	3GAA 131 315-••E	2900	90.3	90.8	90.4	0.87	20.2	8.5	36.2	2.7	3.7	0.01865	77	68
11	[1] [2]	**M3AAN 132 SC**	3GAA 131 003-••E	2890	88.7	89.5	89.3	0.89	20.1	8.1	36.3	2.8	3.4	0.018	52	68
15		**M3AAN 132 SMC**	3GAA 131 316-••E	2905	90.4	90.7	89.8	0.84	28.5	9.1	49.3	3.3	3.95	0.02	81	69
18.5		**M3AAN 132 SME**	3GAA 131 317-••E	2895	91.1	92.2	92.4	0.89	32.9	9.7	61	3.2	4.3	0.02559	93	68
22	[1] [2]	**M3AAN 132 SME**	3GAA 131 008-••E	2890	90.2	91.0	90.9	0.85	41.4	9.7	72.6	3.9	3.8	0.02559	91	69
30		**M3AA 180 MLB**	3GAA 181 032-••G	2950	92.8	93.5	93.3	0.88	53	7.9	97.1	2.8	3.3	0.092	149	69
45		**M3AA 200 MLC**	3GAA 201 033-••G	2957	93.3	93.8	93.2	0.88	79.1	8.1	145	3.1	3.3	0.196	225	72
55		**M3AA 225 SMB**	3GAA 221 032-••G	2961	93.9	94.3	93.6	0.88	96	6.5	177	2.4	2.5	0.274	286	74
75		**M3AA 250 SMB**	3GAA 251 032-••G	2970	94.6	94.9	94.4	0.89	128	7.6	241	2.8	3.1	0.583	351	75

[1] Temperature rise class F
[2] Efficiency class IE1

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

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

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.

Non-sparking aluminum motors
Technical data for Ex nA

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30; 2008

ATEX Certified

Output				Speed	Efficiency IEC 60034--2-1; 2007				Current		Torque			Moment of inertia	Weight	Sound pressure level
					Full load	3/4 load	1/2 load	Power factor	I_N	I_s	T_N	T_l	T_b	J = 1/4 GD²		
kW	Motor type	Product code		r/min	100%	75%	50%	cos φ	A	I_N	Nm	T_N	T_N	kgm²	kg	dB
1500 r/min = 4-poles		**400 V 50 Hz**							**CENELEC-design**							
0.25	**M3AAN 71 A**	3GAA	072 311-••E	1365	65.1	66.0	62.7	0.76	0.72	4.0	1.74	2.0	2.1	0.00066	5.2	45
0.37	**M3AAN 71 B**	3GAA	072 312-••E	1355	69.7	71.9	71.1	0.79	0.96	3.8	2.6	2.0	2.2	0.0008	5.9	45
0.55	**M3AAN 80 A**	3GAA	082 311-••E	1375	74.1	75.9	75.0	0.78	1.37	4.5	3.8	1.9	2.2	0.0013	8.5	50
0.75	**M3AAN 80 D**	3GAA	082 314-••E	1415	79.9	80.4	78.6	0.75	1.8	5.8	5	2.6	2.8	0.0016	12	50
1.1	**M3AAN 90 LB**	3GAA	092 314-••E	1435	83.7	84.1	83.0	0.78	2.4	6.6	7.3	2.9	3.2	0.0043	16	50
1.5	**M3AAN 90 LD**	3GAA	092 315-••E	1435	84.2	84.1	81.9	0.76	3.3	7.0	9.9	3.1	3.5	0.0048	17	50
2.2	**M3AAN 100 LC**	3GAA	102 313-••E	1450	87.1	86.8	84.8	0.78	4.6	7.3	14.4	2.8	3.4	0.009	25	54
3	**M3AAN 100 LD**	3GAA	102 314-••E	1445	85.7	86.1	85.1	0.79	6.3	7.0	19.8	2.4	3	0.011	28	63
4	**M3AAN 112 MB**	3GAA	112 312-••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	**M3AAN 132 M**	3GAA	132 312-••E	1465	89.0	89.8	89.1	0.79	11.2	6.3	35.8	1.9	2.6	0.038	48	66
7.5	**M3AAN 132 MA**	3GAA	132 314-••E	1460	89.1	89.9	89.5	0.79	15.3	6.4	49	1.8	2.6	0.048	59	63
11	**M3AA 160 MLA**	3GAA	162 031-••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 160 MLB**	3GAA	162 032-••G	1470	91.4	92.4	92.2	0.83	28.5	7.1	97.4	2.6	3	0.099	118	62
18.5	**M3AA 180 MLA**	3GAA	182 031-••G	1477	91.9	92.9	92.7	0.84	34.5	7.2	119	2.6	2.9	0.166	146	62
22	**M3AA 180 MLB**	3GAA	182 032-••G	1475	92.4	93.3	93.2	0.84	40.9	7.3	142	2.6	3	0.195	163	62
30	**M3AA 200 MLA**	3GAA	202 031-••G	1480	93.2	94.0	93.7	0.84	55.3	7.4	193	2.8	3	0.309	218	63
37	**M3AA 225 SMA**	3GAA	222 031-••G	1479	93.4	93.9	93.4	0.84	68	7.1	238	2.6	2.9	0.356	240	66
45	**M3AA 225 SMB**	3GAA	222 032-••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 250 SMA**	3GAA	252 031-••G	1480	94.4	95.0	94.7	0.85	98.9	7.0	354	2.6	2.9	0.765	314	67
75 [1]	**M3AA 280 SMA**	3GAA	282 031-••G	1478	94.3	95.0	94.7	0.85	135	7.1	484	2.8	3	0.866	389	67
85 [1]	**M3AA 280 SMB**	3GAA	282 032-••G	1480	94.9	95.3	95.0	0.84	153	8.0	548	3.4	3.6	0.941	418	67
1500 r/min = 4-poles		**400 V 50 Hz**							**High-output design**							
0.55	**M3AAN 71 C**	3GAA	072 003-••E	1375	69.0	69.3	68.5	0.76	1.51	4.2	3.8	2.4	2.4	0.0011	6.5	45
0.95 [1] [2]	**M3AAN 80 C**	3GAA	082 003-••E	1395	76.0	76.9	76.3	0.80	2.2	5.2	6.5	2.5	2.6	0.0023	10.5	50
1.1 [1] [2]	**M3AAN 80 C**	3GAA	082 004-••E	1395	76.7	77.5	77.9	0.79	2.6	5.0	7.5	2.5	2.5	0.0023	10.5	50
1.85 [1] [2]	**M3AAN 90 L**	3GAA	092 003-••E	1390	79.3	78.5	78.7	0.80	4.2	4.5	12.7	2.2	2.4	0.0043	16	50
2.2 [1] [2]	**M3AAN 90 LB**	3GAA	092 004-••E	1390	80.0	80.9	79.5	0.83	4.7	4.5	15.1	2.2	2.4	0.0048	17	50
4 [1] [2]	**M3AAN 100 LC**	3GAA	102 003-••E	1420	83.2	83.3	81.7	0.82	8.4	5.5	26.8	2.5	2.8	0.009	25	60
5.5 [1] [2]	**M3AAN 112 MB**	3GAA	112 102-••E	1420	85.1	85.5	84.5	0.80	11.6	6.0	36.9	2.7	3.1	0.0126	34	64
9.2 [1]	**M3AAN 132 MBA**	3GAA	132 004-••E	1455	89.8	90.5	89.5	0.84	17.6	7.5	60.3	2.1	2.8	0.048	59	59
11	**M3AAN 132 SMB**	3GAA	132 315-••E	1460	90.4	91.0	90.1	0.79	22.2	7.7	71.9	2.1	3.13	0.0433	83	65
15	**M3AAN 132 SMD**	3GAA	132 316-••E	1455	90.6	91.3	91.1	0.77	31	7.1	98.4	2.4	2.9	0.0517	92	67
18.5 [1] [2]	**M3AAN 132 SMD**	3GAA	132 007-••E	1445	89.4	90.0	89.5	0.78	38.2	6.7	122	2.3	2.6	0.05166	92	69
18.5	**M3AA 160 MLC**	3GAA	162 033-••G	1469	91.4	92.5	92.3	0.84	34.7	7.6	120	3.0	3.2	0.11	127	62
22	**M3AA 160 MLD**	3GAA	162 034-••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 200 MLB**	3GAA	202 032-••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 225 SMC**	3GAA	222 033-••G	1478	94.0	94.7	94.5	0.85	99.3	7.4	355	2.9	3.1	0.474	287	66
68	**M3AA 250 SMB**	3GAA	252 032-••G	1481	94.7	95.0	94.8	0.84	123	7.9	438	3.1	3.5	0.866	350	67

[1] Temperature rise class F
[2] Efficiency class IE1

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

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

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.

Non-sparking aluminum motors
Technical data for Ex nA

IE2

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30; 2008

ATEX Certified

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 Nm	T_l/T_N	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		**M3AAN 71 A**	3GAA 073 311-••E	895	60.4	60.0	55.0	0.73	0.58	3.1	1.92	1.9	2	0.00092	5.5	42
0.25		**M3AAN 71 B**	3GAA 073 312-••E	895	64.0	63.6	59.5	0.71	0.79	3.3	2.6	2.2	2.2	0.0012	6.5	42
0.37		**M3AAN 80 A**	3GAA 083 311-••E	910	69.9	71.4	68.8	0.73	1.04	3.6	3.8	1.6	2	0.002	9	47
0.55		**M3AAN 80 B**	3GAA 083 312-••E	905	72.1	73.4	71.2	0.69	1.59	3.3	5.8	1.8	1.9	0.0026	10	47
0.75		**M3AAN 90 LB**	3GAA 093 313-••E	930	77.6	76.2	75.6	0.71	1.96	4.0	7.7	2.0	2.3	0.0048	18	44
1.1	2)	**M3AAN 90 LD**	3GAA 093 314-••E	930	78.1	78.6	76.4	0.66	3	4.0	11.2	1.9	2.3	0.0056	20	44
1.5		**M3AAN 100 LC**	3GAA 103 312-••E	945	80.3	81.4	80.7	0.73	3.6	3.9	15.1	1.7	2	0.009	26	49
2.2	2)	**M3AAN 112 MB**	3GAA 113 312-••E	940	81.8	83.1	82.5	0.73	5.3	4.4	22.3	1.8	2.2	0.01	28	56
3		**M3AAN 132 S**	3GAA 133 311-••E	960	83.3	83.6	81.7	0.65	7.9	4.3	29.8	1.6	2.3	0.031	39	57
4		**M3AAN 132 MA**	3GAA 133 312-••E	960	84.9	85.3	83.9	0.68	10	4.6	39.7	1.5	2.18	0.038	46	61
5.5		**M3AAN 132 MC**	3GAA 133 314-••E	965	86.1	86.1	84.3	0.67	13.7	6.2	54.4	2.5	2.8	0.049	59	61
7.5		**M3AA 160 MLA**	3GAA 163 031-••G	975	88.6	89.9	89.7	0.79	15.4	7.4	73.4	1.7	3.2	0.087	98	59
11		**M3AA 160 MLB**	3GAA 163 032-••G	972	89.3	90.7	90.6	0.79	22.5	7.5	108	1.9	2.9	0.114	125	59
15		**M3AA 180 MLA**	3GAA 183 031-••G	981	90.5	91.4	91.0	0.77	31	6.5	146	1.8	2.8	0.192	162	59
18.5		**M3AA 200 MLA**	3GAA 203 031-••G	988	91.6	92.3	91.7	0.80	36.4	6.7	178	2.3	2.9	0.382	196	63
22		**M3AA 200 MLB**	3GAA 203 032-••G	987	92.0	93.0	92.8	0.82	42	6.6	212	2.2	2.8	0.448	218	63
30		**M3AA 225 SMA**	3GAA 223 031-••G	986	92.7	93.3	92.9	0.83	56.2	7.0	290	2.6	2.9	0.663	266	63
37		**M3AA 250 SMA**	3GAA 253 031-••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 280 SMA**	3GAA 283 031-••G	988	93.2	94.0	93.9	0.84	82.9	6.8	434	2.4	2.6	1.369	378	63
55	1)	**M3AA 280 SMB**	3GAA 283 032-••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**							
0.37		**M3AAN 71 C**	3GAA 073 003-••E	870	61.5	61.2	59.0	0.72	1.2	3.1	4	2.5	2.4	0.0015	7	44
0.75	1) 2)	**M3AAN 80 C**	3GAA 083 003-••E	905	70.1	70.3	69.1	0.76	2	3.9	7.9	2.5	2.4	0.0031	11	47
1.3	1) 2)	**M3AAN 90 LB**	3GAA 093 003-••E	910	74.4	72.6	68.7	0.71	3.5	4.0	13.6	1.9	2.2	0.0048	18	44
2.2	1) 2)	**M3AAN 100 LC**	3GAA 103 002-••E	940	78.0	74.0	71.2	0.71	5.7	4.5	22.3	1.9	2.3	0.009	26	49
3	1) 2)	**M3AAN 112 MB**	3GAA 113 102-••E	920	79.7	80.5	80.3	0.75	7.2	3.8	31.1	1.9	2.22	0.0126	32	76
15		**M3AA 160 MLC**	3GAA 163 033-••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 200 MLC**	3GAA 203 033-••G	985	92.0	93.1	92.9	0.83	56.7	6.9	290	2.3	2.8	0.531	245	63
37		**M3AA 225 SMB**	3GAA 223 034-••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 250 SMB**	3GAA 253 032-••G	989	93.4	94.1	93.9	0.83	83.7	7.0	434	2.5	2.7	1.369	341	63
55	1)	**M3AA 250 SMC**	3GAA 253 033-••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
2) Efficiency class IE1

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

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

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.

Non-sparking aluminum motors
Technical data for Ex nA

ATEX Certified

IP 55 - IC 411 - Insulation class F, temperature rise class B

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 Nm	T_l/T_N	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		**M3AAN 71 A**	3GAA 074 001-••E	660	49.4	46.0	38.5	0.59	0.44	2.0	1.3	2.4	2.3	0.00092	5.5	40
0.12		**M3AAN 71 B**	3GAA 074 002-••E	670	51.4	47.5	39.9	0.56	0.6	2.1	1.71	2.8	2.4	0.0012	6.5	43
0.18		**M3AAN 80 A**	3GAA 084 001-••E	685	63.5	62.0	56.3	0.62	0.65	2.8	2.5	1.6	2	0.0018	8.5	45
0.25		**M3AAN 80 B**	3GAA 084 002-••E	685	67.1	67.2	63.4	0.63	0.85	2.8	3.4	1.4	1.93	0.0024	9.5	50
0.37		**M3AAN 90 S**	3GAA 094 001-••E	695	59.4	56.3	49.1	0.54	1.66	2.7	5	1.6	2.1	0.0032	13	52
0.55		**M3AAN 90 L**	3GAA 094 002-••E	660	59.1	59.5	55.2	0.58	2.3	2.1	7.9	1.5	1.6	0.0043	16	52
0.75		**M3AAN 100 LA**	3GAA 104 001-••E	720	70.7	67.1	59.9	0.47	3.2	3.9	9.9	2.8	3.6	0.0069	20	46
1.1		**M3AAN 100 LB**	3GAA 104 002-••E	695	76.0	76.5	74.6	0.66	3.1	3.4	15.1	1.7	2.2	0.0082	23	53
1.5		**M3AAN 112 M**	3GAA 114 101-••E	690	74.4	75.9	74.1	0.70	4.1	3.2	20.7	1.4	1.87	0.01	28	55
2.2		**M3AAN 132 S**	3GAA 134 001-••E	715	82.9	83.0	80.8	0.62	6.1	3.4	29.3	1.3	1.9	0.0038	46	56
3		**M3AAN 132 M**	3GAA 134 002-••E	715	79.9	80.8	79.1	0.64	8.4	3.2	40	1.2	1.8	0.0045	53	58
4		**M3AA 160 MLA**	3GAA 164 031-••G	728	84.1	85.1	83.7	0.67	10.2	5.4	52.4	1.5	2.6	0.068	84	59
5.5		**M3AA 160 MLB**	3GAA 164 032-••G	726	84.7	86.0	84.9	0.67	13.9	5.6	72.3	1.4	2.6	0.085	98	59
7.5		**M3AA 160 MLC**	3GAA 164 033-••G	727	86.1	87.3	86.6	0.65	19.3	4.7	98.5	1.5	2.8	0.132	137	59
11		**M3AA 180 MLA**	3GAA 184 031-••G	731	86.8	88.4	87.8	0.67	27.3	4.4	143	1.8	2.6	0.214	175	59
15		**M3AA 200 MLA**	3GAA 204 031-••G	737	90.2	91.3	90.9	0.74	32.4	5.3	194	2.0	2.4	0.45	217	60
18.5		**M3AA 225 SMA**	3GAA 224 031-••G	739	91.0	92.0	91.5	0.73	40.1	5.2	239	2.0	2.3	0.669	266	63
22		**M3AA 225 SMB**	3GAA 224 032-••G	738	91.6	92.4	92.0	0.74	46.8	5.5	284	2.0	2.3	0.722	279	63
30		**M3AA 250 SMA**	3GAA 254 031-••G	742	92.4	92.9	92.3	0.71	66	5.8	386	2.6	2.4	1.404	340	63
37		**M3AA 280 SMA**	3GAA 284 031-••G	740	92.3	93.0	92.7	0.74	78.1	5.6	477	2.4	2.3	1.505	403	63
750 r/min = 8-poles			**400 V 50 Hz**						**High-output design**							
0.18	[1]	**M3AAN 71 C**	3GAA 074 003-••E	660	47.2	44.8	45.0	0.66	0.83	2.2	2.6	2.3	2.2	0.0015	7	40
0.37	[1]	**M3AAN 80 C**	3GAA 084 003-••E	700	57.5	56.0	55.0	0.62	1.49	3.3	5	2.5	2.5	0.0031	11	45
0.75	[1]	**M3AAN 90 LB**	3GAA 094 003-••E	680	63.1	59.8	53.0	0.60	2.8	3.0	10.5	1.8	2	0.0048	18	43
1.5	[1]	**M3AAN 100 LC**	3GAA 104 003-••E	670	70.0	65.2	63.8	0.70	4.4	3.3	21.3	1.8	2.2	0.009	26	46
2	[1]	**M3AAN 112 MB**	3GAA 114 102-••E	685	73.2	72.5	70.0	0.69	5.7	3.4	27.8	2.1	2.3	0.0126	32	52

[1] Temperature rise class F

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

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

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.

Non-sparking cast iron motors variant codes

Code [1]	Variant	Frame size															
		71	80	90	100	112	132	160	180	200	225	250	280	315	355	400	450
Administration																	
531	Sea freight packing	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P	P
532	Packing of motor in vertical mounting position	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P
533	Wooden sea freight packing	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Balancing																	
052	Vibration acc. to Grade A (IEC 60034-14).	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
417	Vibration acc. to Grade B (IEC 60034-14).	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	R
423	Balanced without key.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
424	Full key balancing.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Bearings and Lubrication																	
036	Transport lock for bearings.	NA	NA	NA	NA	NA	NA	M	M	M	M	M	M	M	M	P	P
037	Roller bearing at D-end.	NA	NA	NA	NA	NA	NA	M	M	M	M	M	M	M	M	P	P
040	Heat resistant grease.	S	S	S	S	S	S	P	P	P	P	P	P	P	P	P	P
041	Bearings regreasable via grease nipples.	NA	NA	NA	NA	NA	NA	S	S	S	S	S	S	S	S	S	S
042	Locked drive-end.	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
043	SPM compatible nipples for vibration measurement	P	P	P	P	P	P	S	S	S	S	S	S	S	S	S	S
058	Angular contact bearing at D-end, shaft force away from bearing.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
060	Angular contact bearing at D-end, shaft force towards bearing.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P
107	Pt100 2-wire in bearings.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
128	Double Pt100, 2-wire in bearings	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
129	Double Pt100, 3-wire in bearings	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
130	Pt100 3-wire in bearings.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
194	2Z bearings greased for life at both ends.	S	S	S	S	S	S	M	M	M	M	M	NA	NA	NA	NA	NA
433	Outlet grease collector	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P
506	Nipples for vibration measurement: SKF Marlin Quick Connect stud CMSS-2600-3	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
654	Provision for vibration sensors (M8x1)	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
795	Lubrication information plate	NA	NA	NA	NA	NA	NA	M	M	M	M	M	S	S	S	S	S
796	Grease nipples JIS B 1575 Pt 1/8 Type A	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
797	Stainless steel SPM Nipples	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
798	Stainless steel grease nipples	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
799	Grease nipples flat type DIN 3404, thread M10x1	NA	NA	NA	NA	NA	NA	M	M	M	M	M	M	M	M	P	P
800	Grease nipples JIS B 1575 Pt 1/8" pin type	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
Brakes																	
412	Built-on brake.	R	R	R	R	R	R	R	R	R	NA	NA	NA	NA	NA	NA	NA
Branch standard designs																	
178	Stainless steel / acid proof bolts.	S	S	S	S	S	S	M	M	M	M	M	M	M	M	P	P
204	Jacking bolts for foot mounted motors.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	S	S	S
209	Non-standard voltage or frequency, (special winding).	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
396	Motor designed for ambient temperature -20 °C to -40 °C, wtih space heaters (code 450/451 must be added).	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P

[1] Certain variant codes cannot be used simultaneously.

S = Included as standard
P = New manufacture only
M = On modification of a stocked motor; or on new manufacture, the number of number per order may be limited.
R = On request
NA = Not applicable.

Code [1]	Variant	Frame size															
		71	80	90	100	112	132	160	180	200	225	250	280	315	355	400	450
397	Motor designed for ambient temperature -40 °C to -55 °C, wtih space heaters (code 450/451 must be added).	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
398	Motor designed for ambient temperature -20 °C to -40 °C.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
399	Motor designed for ambient temperature -40 °C to -55 °C.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
425	Corrosion protected stator and rotor core.	P	P	P	P	P	P	S	S	S	S	S	P	P	P	P	P
786	Special design shaft upwards (V3, V36, V6) for outdoor mounting.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	R	R	NA	NA	NA
Cooling system																	
044	Unidirectional fan for reduced noise level. Rotation clockwise seen from D-end. Available only for 2-pole motors.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P
045	Unidirectional fan for reduced noise level. Rotation counter clockwise seen from D-end. Available only for 2-pole motors.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P
068	Light alloy metal fan	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P	P
183	Separate motor cooling (fan axial, N-end).	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
206	Steel fan	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	NA
422	Separate motor cooling (fan top, N-end).	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P
514	Separate motor cooling (fan on top)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P
791	Stainless steel fan cover	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P
Coupling																	
035	Assembly of customer supplied coupling-half.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P
Documentation																	
141	Binding dimension drawing.	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P	P
Drain holes																	
065	Plugged existing drain holes.	S	S	S	S	S	S	S	S	M	M	M	M	M	M	P	P
448	Draining holes with metal plugs.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
Earthing Bolt																	
067	External earthing bolt.	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Hazardous Environments																	
335	Ex t, Dust group III B T125C Dc (non-conductive dust) acc. IEC/EN60079-31	P	P	P	P	P	P	M	M	P	P	P	P	P	P	P	NA
337	Ex t, Dust group III C T125 Dc (conductive dust) acc. IEC/EN60079-31	P	P	P	P	P	P	M	M	P	P	P	P	P	P	P	NA
456	Ex nA design, fulfilling IEC 60079-15, with certificate.	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
480	Ex nA II acc. to ATEX directive 94/9/EC, temp. class T3.	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
807	CSA design, Class I, Div 2 Group A, B, C, D T3	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P
812	Explosion protection according to IEC-standards.	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
814	Ex tD (DIP) motors, temperature class T150 °C.	P	P	P	P	P	P	M	M	M	M	M	M	M	P	P	P
Heating elements																	
450	Heating element, 100-120V.	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P	P
451	Heating element, 200-240V.	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P	P

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Code [1]	Variant	Frame size															
		71	80	90	100	112	132	160	180	200	225	250	280	315	355	400	450
Insulation system																	
014	Winding insulation class H.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
405	Special winding insulation for frequency converter supply.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Mounting arrangements																	
305	Additional lifting lugs.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P
Noise reduction																	
055	Noise reduction cover for foot mounted motor	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	R	R	R	R	R
Painting																	
105	Paint thickness report.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
106	Paint thickness = 80 µm.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	S
111	Painting system C3M acc. to ISO 12944-5:2007	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	NA
114	Special paint colour, standard grade.	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P	P
115	Painting system C4M acc. to ISO 12944-5:2007	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
168	Primer paint only.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
303	Painted insulation layer on inside of the terminal boxes.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
754	Painting system C5M acc. to ISO 12944-5:2007	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
710	Thermally sprayed zinc metallaizing with acrylic top coat	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Protection																	
005	Metal protective roof, vertical motor, shaft down.	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P	P
072	Radial seal at D-end.	P	P	P	P	P	P	M	M	M	M	M	NA	NA	NA	NA	NA
073	Sealed against oil at D-end.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	NA	NA	NA
076	Draining holes with plugs in open position.	NA	NA	NA	NA	NA	NA	P	P	S	S	S	S	S	S	S	S
158	Degree of protection IP 65.	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P	NA
401	Protective roof, horizontal motor.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
403	Degree of protection IP 56.	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P	P
434	Degree of protection IP 56, open deck.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	R
783	Labyrinth sealing at D-end.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	S	S	S
Rating & instruction plates																	
002	Restamping voltage, frequency and output, continuous duty.	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P	P
004	Additional text on std rating plate (max 12 digits on free text line).	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
095	Restamping output (maintained voltage, frequency), intermittent duty.	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P	P
126	Tag plate	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
135	Mounting of additional identification plate, stainless.	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P	P
139	Additional identification plate delivered loose.	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P	P
159	Additional plate with text "Made in ...."	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P	P
161	Additional rating plate delivered loose.	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P	P
163	Frequency converter rating plate. Rating data according to quotation.	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P	P
333	For Export Only	P	P	P	P	P	P	M	M	M	M	M	M	M	M	M	M

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Code [1]	Variant	Frame size															
		71	80	90	100	112	132	160	180	200	225	250	280	315	355	400	450
Shaft & rotor																	
069	Two shaft extensions as per basic catalogue.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
070	One or two special shaft extensions, standard shaft material.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
164	Shaft extension with closed key-way.	S	S	S	S	S	S	S	S	S	S	S	P	P	P	P	R
165	Shaft extension with open key-way.	P	P	P	P	P	P	P	P	P	P	P	S	S	S	S	S
410	Stainless steel shaft (standard or non-standard design).	R	R	R	R	R	R	R	R	R	R	R	P	P	P	P	P
Standards and Regulations																	
151	Design according to SHELL DEP 33.66.05.31-Gen. June 2007	NA	NA	NA	NA	NA	NA	M	M	M	M	M	P	P	P	P	P
421	VIK design (Verband der Industriellen Energie- und Kraftwirtschaft e.V.).	NA	NA	NA	NA	NA	NA	P	P	M	M	M	P	P	P	P	R
482	Design according to Neste OY & Jacobs, specification N-114 E, rev 5, 1.12.2010	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
504	Design according to Neste OY & Jacobs, specification N-114 E, rev 5, 01.12.2010 with SPM adapter	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
505	VIK design with ABB standard shaft dimensions (Verband der Industriellen Energie- und Kraftwirtschaft e.V.).	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	NA
540	China energy label	P	P	P	P	P	P	M	M	M	M	M	M	M	M	NA	NA
541	Inmetro certification	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	NA
542	NBR design	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
775	Design according to SHELL DEP 33.66.05.31-Gen. January 1999 design.	P	P	P	P	P	P	M	M	M	M	M	M	M	P	P	NA
778	GOST Export/Import Certificate (Russia).	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
779	SASO Export/Import Certificate (Saudi Arabia)	P	P	P	P	P	P	M	M	M	M	M	M	M	P	P	P
782	Fulfilling CQST Certification requirements (China)	NA	NA	NA	NA	NA	NA	M	M	M	M	M	M	M	P	P	P
788	Documentation for Korean KOSHA certification	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P	NA
802	GOST Kazakhstan certified	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	NA
Stator winding temperature sensors																	
120	KTY 84-130 (1 per phase) in stator winding.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
328	PTC - thermistors (3 in series), 120 °C, in stator winding	NA	NA	NA	NA	NA	NA	M	M	M	M	M	M	M	M	P	P
435	PTC - thermistors (3 in series), 130 °C, in stator winding.	NA	NA	NA	NA	NA	NA	M	M	M	M	M	M	M	M	P	P
436	PTC - thermistors (3 in series), 150 °C, in stator winding.	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
439	PTC - thermistors (2x3 in series), 150 °C, in stator winding.	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P	P
441	PTC - thermistors (3 in series, 130 °C & 3 in series, 150 °C), in stator winding.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
445	Pt-100 2-wire in stator winding, 1 per phase	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
446	Pt-100 2-wire in stator winding, 2 per phase	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
502	Pt-100 3-wire in stator winding, 1 per phase.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
503	Pt-100 3-wire in stator winding, 2 per phase.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
511	PTC thermistors (2 x 3 in series), 130 °C, in stator winding	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P

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Code [1]	Variant	Frame size															
		71	80	90	100	112	132	160	180	200	225	250	280	315	355	400	450
Terminal box																	
019	Larger than standard terminal box.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	NA
021	Terminal box LHS (seen from D-end).	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	NA
022	Cable entry LHS (seen from D-end).	NA	NA	NA	NA	NA	NA	M	M	M	M	M	M	M	M	P	P
157	Terminal box degree of protection IP 65.	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P	NA
180	Terminal box RHS (seen from D-end).	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	NA
231	Standard cable glands with clamping device.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
277	Cable sealing end unit, size small for C-opening	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	NA	NA	NA	NA
278	Cable sealing end unit, size medium for D-opening	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P
279	Cable sealing end unit, size large for D-opening	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P
292	Adapter C-C	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	NA	NA	NA	NA
293	Adapter D-D	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	NA	NA
294	Adapter E-D	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P
295	Adapter E-2D	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	S
296	Adapter E-3D	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P
380	Separate terminal box for temperature detectors, std. material	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
400	4 x 90 degr turnable terminal box.	NA	NA	NA	NA	NA	NA	S	S	S	S	S	S	S	NA	NA	NA
402	Terminal box adapted for Al cables.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	S	S	S	S	S
413	Extended cable connection, no terminal box.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	NA
418	Separate terminal box for auxiliaries, standard material.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
447	Top mounted separate terminal box for monitoring equipment.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	M	M	M	NA	NA
466	Terminal box at N-end.	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P
468	Cable entry from D-end.	NA	NA	NA	NA	NA	NA	M	M	M	M	M	M	M	R	R	NA
469	Cable entry from N-end.	NA	NA	NA	NA	NA	NA	M	M	M	M	M	M	M	R	R	NA
567	Separate terminal box material: Cast Iron	NA	NA	NA	NA	NA	NA	S	S	P	P	P	P	P	P	P	P
568	Separate terminal box for heating elements, std. material	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
728	Standard cable gland, Ex d IIB, armoured cable, double sealing.	R	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
729	Aluminum non-drilled flange for cable glands	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
730	Prepared for NPT cable glands	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
732	Standard cable gland, Ex d IIB, armoured cable.	R	P	P	P	P	P	M	M	M	M	M	M	M	M	P	P
733	Standard cable gland, Ex d IIB, non-armoured cable.	R	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
734	Standard cable gland, Ex d IIC, armoured cable.	R	P	P	P	P	P	M	M	M	M	M	M	M	M	P	P
736	Standard cable gland Ex e acc. to EN-standards.	P	P	P	P	P	P	S	S	S	S	S	S	S	S	S	S
737	Standard cable gland Ex e with clamping device acc. to EN-standards.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
741	Motor equipped with Ex e terminal box (EN 50019).	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
743	Painted non-drilled flange in steel for cable glands	NA	NA	NA	NA	NA	NA	M	M	M	M	M	M	M	M	P	P
744	Stainless steel non-drilled flange for cable glands.	NA	NA	NA	NA	NA	NA	M	M	M	M	M	M	M	M	P	P

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Code [1]	Variant	Frame size															
		71	80	90	100	112	132	160	180	200	225	250	280	315	355	400	450
745	Painted steel flange equipped with nickle plated brass cable glands	NA	NA	NA	NA	NA	NA	M	M	M	M	M	M	M	M	P	P
746	Stainless steel cable flange equipped with standard nickle plated brass cable glands	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
Testing																	
145	Type test report from a catalogue motor, 400V 50Hz.	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P	P
146	Type test with report for one motor from specific delivery batch.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
148	Routine test report.	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P	P
149	Test according to separate test specification.	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
150	Customer witnessed testing. Specify test procedure with other codes.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
222	Torque/speed curve, type test and multi-point load test with report for one motor from specific delivery batch.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
241	Nuclear motor testing	NA	NA	NA	NA	NA	NA	P	P	P	P	P	NA	NA	NA	NA	NA
760	Vibration level test	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P	P
761	Vibration spectrum test for one motor from specific delivery batch.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
762	Noise level test for one motor from specific delivery batch.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
763	Noise spectrum test for one motor from specific delivery batch.	R	R	R	R	R	R	P	P	P	P	P	P	P	P	P	P
764	Test for one motor from specific delivery batch with ABB frequency converter available at ABB test field. ABB standard test procedure.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Variable speed drives																	
181	Rating plate with ABB standard loadability values for VSD operation. Other auxiliaries for VSD operation to be selected as necessary.	NA	NA	NA	NA	NA	NA	M	M	M	M	M	M	M	M	P	P
470	Prepared for hollow shaft pulse tacho (L&L equivalent).	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
479	Mounting of other type of pulse tacho with shaft extension, tacho not included.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
680	2048 pulse tacho, Ex d, tD, L&L 841910001	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
701	Insulated bearing at N-end.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	M	M	M	P	P
704	EMC cable gland.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P
747	1024 pulse tacho, Ex d, tD, L&L 841910002	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P	P

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Non-sparking aluminum motors variant codes

Code [1]	Variant	71	80	90	100	112	132	160	180	200	225	250	280
Balancing													
417	Vibration acc. to Grade B (IEC 60034-14).	NA	NA	P	P	P	P	R	R	R	R	R	R
423	Balanced without key.	P	P	P	P	P	P	R	R	R	R	R	R
424	Full key balancing.	P	P	P	P	P	P	P	P	P	P	P	P
Bearings and Lubrication													
036	Transport lock for bearings.	NA	NA	M	M	M	M	M	M	M	M	M	M
037	Roller bearing at D-end.	NA	NA	P	P	P	P	M	M	M	M	M	M
039	Cold resistant grease.	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA
040	Heat resistant grease.	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA
041	Bearings regreasable via grease nipples.	NA	NA	P	P	P	P	M	M	M	M	M	S
043	SPM compatible nipples for vibration measurement	NA	NA	R	R	R	R	M	M	M	M	M	M
057	2RS bearings at both ends.	M	M	M	M	M	M	M	M	M	M	M	M
058	Angular contact bearing at D-end, shaft force away from bearing.	NA	NA	M	M	M	M	M	M	M	M	M	M
059	Angular contact bearing at N-end, shaft force towards bearing.	NA	NA	M	M	M	M	M	M	M	M	M	M
188	63-series bearings.	NA	NA	M	S	M	M	S	S	S	S	S	S
194	2Z bearings greased for life at both ends.	S	S	S	S	S	S	S	S	S	S	S	R
195	Bearings greased for life.	S	S	S	S	S	S	S	S	S	S	S	R
796	Grease nipples JIS B 1575 Pt 1/8 Type A	NA	NA	NA	NA	NA	NA	M	M	M	M	M	M
797	Stainless steel SPM Nipples	NA	NA	R	R	R	R	M	M	M	M	M	M
798	Stainless steel grease nipples	NA	NA	NA	NA	NA	NA	M	M	M	M	M	M
Branch standard designs													
071	Cooling Tower duty	NA	NA	NA	NA	R	R	P	P	P	P	P	P
142	“Manilla connection”.	NA	NA	P	P	P	P	P	P	P	P	P	P
178	Stainless steel / acid proof bolts.	M	M	M	M	M	M	M	M	M	M	M	M
209	Non-standard voltage or frequency, (special winding).	P	P	P	P	P	P	P	P	P	P	P	P
217	Cast iron D-end shield (on aluminum motor).	NA	NA	M	M	M	M	S	S	S	S	S	S
232	Cast iron N-end shield (on aluminium motor).	NA	NA	NA	NA	NA	NA	S	S	S	S	S	S
425	Corrosion protected stator and rotor core.	P	P	P	P	P	P	P	P	P	P	P	P
Cooling system													
053	Metal fan cover.	M	M	M	M	M	M	S	S	S	S	S	S
068	Light alloy metal fan	M	M	M	M	M	M	M	M	M	M	M	M
075	Cooling method IC 418 (without fan).	R	R	P	P	P	P	NA	NA	NA	NA	NA	NA
189	Separate motor cooling, IP 44, 400V, 50Hz (fan axial, N-end).	NA	NA	NA	NA	NA	NA	R	R	R	R	R	R
Documentation													
141	Binding dimension drawing.	M	M	M	M	M	M	M	M	M	M	M	M
Drain holes													
065	Plugged existing drain holes.	M	M	M	M	M	M	M	M	M	M	M	M
Earthing Bolt													
067	External earthing bolt.	S	S	S	S	S	S	S	S	S	S	S	S

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Code [1]	Variant	71	80	90	100	112	132	160	180	200	225	250	280
Hazardous Environments													
452	DIP/Ex tD acc. to ATEX directive 94/9/EC, T= 125 °C, cat. 3D, IP 55	M	M	M	M	M	M	M	M	M	M	M	M
453	DIP/Ex tD acc. to ATEX directive 94/9/EC, T= 125 °C, cat. 2D, IP 65	NA	NA	P	P	NA	NA	NA	NA	NA	NA	NA	NA
480	Ex nA II acc. to ATEX directive 94/9/EC, temp. class T3.	M	M	M	M	M	M	M	M	M	M	M	M
Heating elements													
450	Heating element, 100-120V.	M	M	M	M	M	M	M	M	M	M	M	M
451	Heating element, 200-240V.	M	M	M	M	M	M	M	M	M	M	M	M
Insulation system													
014	Winding insulation class H.	R	R	P	P	P	P	P	P	P	P	P	P
405	Special winding insulation for frequency converter supply.	R	R	P	P	P	P	P	P	P	P	P	P
406	Winding for supply >690<=1000 Volts.	NA	NA	NA	NA	NA	NA	R	R	P	P	P	P
Mounting arrangements													
007	IM 3001 flange mounted, IEC flange, from IM 1001 (B5 from B3).	NA	NA	NA	NA	NA	NA	M	M	M	M	M	M
008	IM 2101 foot/flange mounted, IEC flange, from IM 1001 (B34 from B3).	M	M	M	M	M	M	M	NA	NA	NA	NA	NA
009	IM 2001 foot/flange mounted, IEC flange, from IM 1001 (B35 from B3).	M	M	M	M	M	M	M	M	M	M	M	M
047	IM 3601 flange mounted, IEC flange, from IM 3001 (B14 from B5).	M	M	M	M	M	M	M	NA	NA	NA	NA	NA
048	IM 3001 flange mounted, IEC flange, from IM 3601 (B5 from B14).	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA
066	Modified for non-standard mounting position (please specify IM xxxx), (must be ordered for all mounting arrangements excluding IM B3 (1001), IM B5 (3001), IM B35 (2001), B34 (2101) & B14 (3601).	M	M	M	M	M	M	M	M	M	M	M	M
200	Flange ring holder.	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA
218	Flange ring FT 85.	M	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA
219	Flange ring FT 100.	M	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA
220	Flange ring FF 100.	M	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA
223	Flange ring FF 115.	M	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA
224	Flange ring FT 115.	M	M	M	M	M	NA	NA	NA	NA	NA	NA	NA
226	Flange ring FF 130.	M	M	M	M	M	NA	NA	NA	NA	NA	NA	NA
227	Flange ring FT 130.	M	M	M	M	M	NA	NA	NA	NA	NA	NA	NA
229	Flange FT 130.	NA	NA	NA	M	M	NA	NA	NA	NA	NA	NA	NA
233	Flange ring FF 165.	M	M	M	M	M	NA	NA	NA	NA	NA	NA	NA
234	Flange ring FT 165.	M	M	M	M	M	NA	NA	NA	NA	NA	NA	NA
235	Flange FF 165.	NA	NA	M	NA	NA	NA	NA	NA	NA	NA	NA	NA
243	Flange ring FF 215.	NA	NA	NA	M	M	M	NA	NA	NA	NA	NA	NA
244	Flange ring FT 215.	NA	NA	NA	M	M	M	NA	NA	NA	NA	NA	NA
245	Flange FF 215.	NA	NA	NA	M	M	NA	NA	NA	NA	NA	NA	NA
255	Flange FF 265.	NA	NA	NA	NA	NA	M	NA	NA	NA	NA	NA	NA

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260	Flange FT 115.	NA	NA	M	NA	NA	NA	NA	NA	NA	NA	NA	NA
306	IM 1001 foot mounted, from IM 3601 (B3 from B14).	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA
307	IM 2101 foot/flange mounted, IEC flange, from IM 3601 (B34 from B14).	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA
308	IM 2001 foot/flange mounted, IEC flange, from IM 3601 (B35 from B14).	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA
309	IM 1001 foot mounted, from IM 3001 (B3 from B5).	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA
310	IM 2101 foot/flange mounted, IEC flange, from IM 3001 (B34 from B5).	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA
311	IM 2001 foot/flange mounted, IEC flange, from IM 3001 (B35 from B5).	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA
312	IM 1001 foot mounted, from IM 2101 (B3 from B34).	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA
315	IM 2001 foot/flange mounted, IEC flange, from IM 2101 (B35 from B34).	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA
316	IM 1001 foot mounted, from IM 2001 (B3 from B35).	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA
319	IM 2101 foot/flange mounted, IEC flange, from IM 2001 (B34 from B35).	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA
Painting													
114	Special paint colour, standard grade.	M	M	M	M	M	M	M	M	M	M	M	M
168	Primer paint only.	NA	NA	P	P	P	P	NA	NA	NA	NA	NA	NA
Protection													
005	Metal protective roof, vertical motor, shaft down.	M	M	M	M	M	M	M	M	M	M	M	M
072	Radial seal at D-end.	M	M	M	M	M	M	M	M	M	M	M	M
073	Sealed against oil at D-end.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	M	NA
158	Degree of protection IP 65.	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA
211	Weather protected, IP xx W.	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA
403	Degree of protection IP 56.	M	M	M	M	M	M	M	M	M	M	M	M
784	Gamma-seal at D-end.	M	M	M	M	M	M	M	M	M	M	M	M
Rating & instruction plates													
002	Restamping voltage, frequency and output, continuous duty.	M	M	M	M	M	M	R	R	R	R	R	R
003	Individual serial number.	M	M	M	M	M	M	S	S	S	S	S	S
004	Additional text on std rating plate (max 12 digits on free text line).	NA	NA	M	M	M	M	M	M	M	M	M	M
095	Restamping output (maintained voltage, frequency), intermittent duty.	M	M	M	M	M	M	R	R	R	R	R	R
098	Stainless rating plate.	M	M	M	M	M	M	M	M	M	M	M	M
135	Mounting of additional identification plate, stainless.	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA
138	Mounting of additional identification plate, aluminium.	M	M	M	M	M	M	M	M	M	M	M	M
139	Additional identification plate delivered loose.	M	M	M	M	M	M	M	M	M	M	M	M
160	Additional rating plate affixed.	P	P	M	M	M	M	M	M	M	M	M	M
161	Additional rating plate delivered loose.	M	M	M	M	M	M	M	M	M	M	M	M

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163	Frequency converter rating plate. Rating data according to quotation.	R	R	R	R	R	R	M	M	M	M	M	M
198	Aluminum rating plate.	S	S	S	S	S	M	S	S	S	S	S	S
Shaft & rotor													
069	Two shaft extensions as per basic catalogue.	NA	NA	P	P	P	P	P	P	P	P	P	P
070	One or two special shaft extensions, standard shaft material.	NA	NA	P	P	P	P	R	R	R	R	R	R
131	Motor delivered with half key (Key not exceeding shaft diameter)	NA	NA	M	M	M	M	M	M	M	M	M	M
165	Shaft extension with open key-way.	NA	NA	P	P	P	P	P	P	P	P	P	P
410	Stainless steel shaft (standard or non-standard design).	NA	NA	P	P	P	P	R	R	R	R	R	R
Standards and Regulations													
011	Fulfilling CSA Energy Efficiency Verification (code 010 included).	NA	NA	NA	NA	NA	NA	R	R	R	R	R	R
779	SASO Export/Import Certificate (Saudi Arabia)	NA	NA	NA	NA	NA	NA	M	M	M	M	M	M
Stator winding temperature sensors													
435	PTC - thermistors (3 in series), 130 °C, in stator winding.	M	M	M	M	M	M	M	M	M	M	M	M
436	PTC - thermistors (3 in series), 150 °C, in stator winding.	M	M	M	M	M	M	S	S	S	S	S	S
437	PTC - thermistors (3 in series), 170 °C, in stator winding.	M	M	P	P	M	M	M	M	M	M	M	M
439	PTC - thermistors (2x3 in series), 150 °C, in stator winding.	NA	NA	M	M	M	M	M	M	M	M	M	M
440	PTC - thermistors (3 in series, 110 °C & 3 in series, 130 °C), in stator winding.	NA	NA	P	P	P	P	R	R	R	R	R	R
441	PTC - thermistors (3 in series, 130 °C & 3 in series, 150 °C), in stator winding.	NA	NA	M	M	M	M	M	M	M	M	M	M
442	PTC - thermistors (3 in series, 150 °C & 3 in series, 170 °C), in stator winding.	NA	NA	P	P	M	M	M	M	M	M	M	M
445	Pt-100 2-wire in stator winding, 1 per phase	NA	NA	R	R	M	M	M	M	M	M	M	M
446	Pt-100 2-wire in stator winding, 2 per phase	NA	NA	R	R	R	R	M	M	M	M	M	M
Terminal box													
015	Motor supplied in D connection.	M	M	M	M	M	M	M	M	M	M	M	M
016	9 terminals in terminal box	NA	NA	P	P	P	P	NA	NA	NA	NA	NA	NA
017	Motor supplied in Y connection.	M	M	P	P	NA	NA	M	M	M	M	M	M
019	Larger than standard terminal box.	NA	NA	NA	NA	NA	NA	NA	NA	M	M	M	NA
021	Terminal box LHS (seen from D-end).	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P
022	Cable entry LHS (seen from D-end).	NA	NA	NA	NA	NA	NA	S	S	R	R	R	R
136	Extended cable connection, standard terminal box.	NA	NA	P	P	P	P	R	R	R	R	R	R
137	Extended cable connection, low terminal box, “Flying leads”.	P	P	P	P	P	P	R	R	R	R	R	R
180	Terminal box RHS (seen from D-end).	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P
230	Standard metal cable glands.	M	M	M	M	M	M	M	M	M	M	M	M
375	Standard plastic cable gland	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA
376	Two standard plastic cable glands	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA

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400	4 x 90 degr turnable terminal box.	NA	NA	NA	NA	NA	NA	R	R	NA	NA	NA	NA
402	Terminal box adapted for Al cables.	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P
413	Extended cable connection, no terminal box.	NA	NA	NA	NA	NA	NA	NA	NA	R	R	R	R
418	Separate terminal box for auxiliaries, standard material.	NA	NA	NA	R	R	R	M	M	M	M	M	M
467	Lower than standard terminal box and rubber extended cable. Cable length 2m.	NA	NA	NA	NA	NA	NA	R	R	R	R	R	R
729	Aluminum non-drilled flange for cable glands	NA	NA	NA	NA	NA	NA	NA	NA	M	M	M	M
731	Two standard metal cable glands.	M	M	M	M	M	M	M	M	M	M	M	M
736	Standard cable gland Ex e acc. to EN-standards.	M	M	M	M	M	M	R	R	R	R	R	R
737	Standard cable gland Ex e with clamping device acc. to EN-standards.	M	M	M	M	M	M	R	R	R	R	R	R
739	Prepared for metric cable glands according to DIN 42925, draft aug. 1999.	NA	NA	NA	NA	NA	NA	S	S	M	M	M	P
740	Prepared for PG cable glands.	NA	NA	NA	NA	NA	NA	M	M	M	M	M	M
Testing													
140	Test confirmation.	M	M	M	M	M	M	M	M	M	M	M	M
145	Type test report from a catalogue motor, 400V 50Hz.	M	M	M	M	M	M	M	M	M	M	M	M
146	Type test with report for one motor from specific delivery batch.	M	M	M	M	M	M	M	M	M	M	M	M
147	Type test with report for motor from specific delivery batch, customer witnessed.	M	M	M	M	M	M	M	M	M	M	M	M
148	Routine test report.	M	M	M	M	M	M	M	M	M	M	M	M
153	Reduced test for classification society.	M	M	M	M	M	M	M	M	M	M	M	M
221	Type test and multi-point load test with report for one motor from specific delivery batch.	M	M	M	M	M	M	M	M	M	M	M	M
222	Torque/speed curve, type test and multi-point load test with report for one motor from specific delivery batch.	NA	NA	P	P	P	P	M	M	M	M	M	M
760	Vibration level test	M	M	P	P	P	P	M	M	M	M	M	M
762	Noise level test for one motor from specific delivery batch.	M	M	P	P	P	P	M	M	M	M	M	M
763	Noise spectrum test for one motor from specific delivery batch.	NA	NA	P	P	NA	NA	R	R	R	R	R	R
Variable speed drives													
470	Prepared for hollow shaft pulse tacho (L&L equivalent).	R	R	R	R	R	R	M	M	M	M	M	M
474	Separate motor cooling (fan axial, N-end) and prepared for hollow shaft tacho (L&L equivalent).	R	R	R	R	R	R	R	R	R	R	R	R
476	Separate motor cooling (fan axial, N-end) and 1024 pulse tacho (L&L 861007455-1024).	R	R	R	R	R	R	R	R	R	R	R	R
477	Separate motor cooling (fan axial, N-end) and 2048 pulse tacho (L&L 861007455-2048).	R	R	R	R	R	R	R	R	R	R	R	R
570	Prepared for hollow shaft pulse tacho (L&L 503).	R	R	NA	NA	R	R	M	M	M	M	M	M

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Code [1]	Variant	71	80	90	100	112	132	160	180	200	225	250	280
574	Separate motor cooling (fan axial, N-end) and prepared for hollow shaft tacho (L&L 503).	NA	NA	NA	NA	NA	NA	R	R	R	R	R	R
578	Separate motor cooling, IP 44, 400V, 50Hz (fan axial, N-end) and prepared for hollow shaft tacho (L&L 503).	NA	NA	NA	NA	NA	NA	R	R	R	R	R	R
580	Separate motor cooling, IP 44, 400V, 50Hz (fan axial, N-end) and 1024 pulse tacho (L&L 503).	NA	NA	NA	NA	NA	NA	R	R	R	R	R	R
581	Separate motor cooling, IP 44, 400V, 50Hz (fan axial, N-end) and 2048 pulse tacho (L&L 503).	NA	NA	NA	NA	NA	NA	R	R	R	R	R	R
701	Insulated bearing at N-end.	NA	NA	NA	NA	NA	NA	NA	NA	M	M	M	M
704	EMC cable gland.	R	R	R	R	R	R	R	R	R	R	R	R

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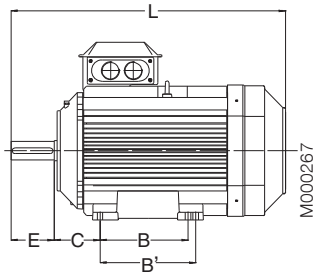
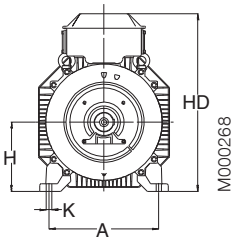
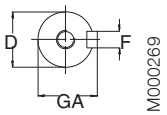
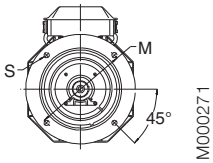
Non-sparking motors, cast iron frame
Dimension drawings

Foot-mounted motor IM 1001, IM B3



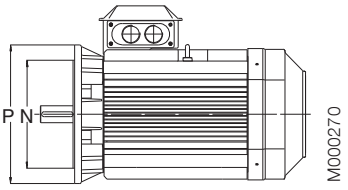


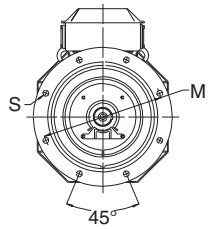




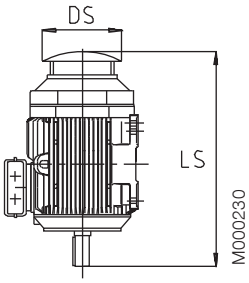
Sizes 80 to 200

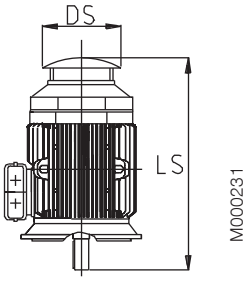
Flange-mounted motor IM 3001, IM B5





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		GA		F		E		L max		A	B	B'	C	HD	K	H	M	N	P	S	DS	LS	
	poles		poles		poles		poles		poles															
	2	4-8	2	4-8	2	4-8	2	4-8	2	4-6														
71	14	14	16	16	5	5	30	30	264	264	112	90	-	45	178	7	130	110	160	10	-	272.5	272.5	
80	19	19	21.5	21.5	6	6	40	40	321	321	125	100	-	50	195	10	165	130	200	12	-	331	331	360
90	24	24	27	27	8	8	50	50	357	357	140	100	125	56	219	10	165	130	200	12	-	368.5	368.5	430
100	28	28	31	31	8	8	60	60	381	381	160	140	-	63	247	12	215	180	250	15	-	395	395	505
112	28	28	31	31	8	8	60	60	403	403	190	140	-	70	259	12	215	180	250	15	-	417	417	505
132	38	38	41	41	10	10	80	80	533	533	216	140	178	89	300	12	265	230	300	15	-	551.5	551.5	590
160	42	42	45	45	12	12	110	110	808	808	254	210	254	108	499	14.5	160	300	250	350	18.5	328	756	756
180	48	48	51.5	51.5	14	14	110	110	826	826	279	241	279	121	539	14.6	180	300	250	350	18.5	359	756	756
200	55	55	59	59	16	16	110	110	774	774	318	267	305	133	536	18.5	200	350	300	400	18.5	414	844	844
225	55	60	59	64	16	18	110	140	841	871	356	286	311	149	583	18.6	225	400	350	450	18.5	462	921	951
250	60	65	64	69	18	18	140	140	875	875	406	311	349	168	646	24	250	500	450	550	18.5	506	965	965
280	65	75	69	79.5	18	20	140	140	1088	1088	457	368	419	190	759	24	280	500	450	550	18	555	1190	1190
315 SM_	65	80	69	85	18	22	140	170	1174	1204	508	406	457	216	852	30	315	600	550	660	23	624	1290	1320
315 ML_	65	90	69	95	18	25	140	170	1285	1315	508	457	508	216	852	30	315	600	550	660	23	624	1401	1431
355 SM_	70	100	62.5	90	20	28	140	210	1409	1479	610	500	560	254	958	35	355	740	680	800	23	720	1476	1546
355 ML_	70	100	62.5	90	20	28	140	210	1514	1584	610	560	630	254	958	35	355	740	680	800	23	720	1528	1703
355 LK_	70	100	62.5	90	20	28	140	210	1764	1834	610	710	900	254	958	35	355	740	680	800	23	720	1633	1703
400 L_	80	110	85	126	22	28	170	210	1851	1891	710	900	1000	224	1045	35	400	940	880	1000	28	810	1860	1900
400 LK_	80	100	85	106	22	28	170	210	1851	1891	686	710	800	280	1045	35	400	740	680	800	24	810	1860	1900
450	-	120	-	127	-	32	-	210	-	2187	800	1000	1120	250	1169	42	450	1080	1000	1150	28	On request		

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

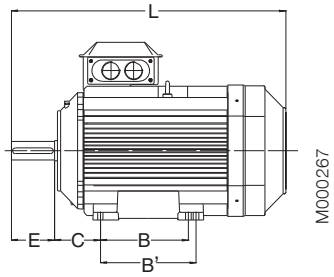
Tolerances:

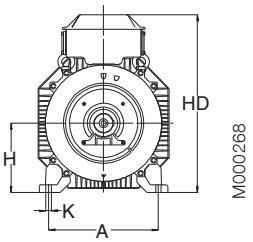
A, B	± 0,8
D, DA	ISO k6 < Ø 50mm
	ISO m6 > Ø 50mm
F, FA	ISO h9
H	-0.5
N	ISO j6
C, CA	± 0.8

Above table gives the main dimensions in mm. For detailed drawings please see our web-pages www.abb.com/motors&generators or contact ABB.

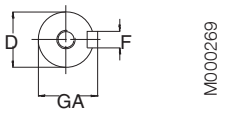
Non-sparking motors, aluminum frame
Dimension drawings

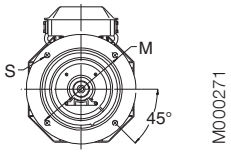
Foot-mounted motor IM 1001, IM B3



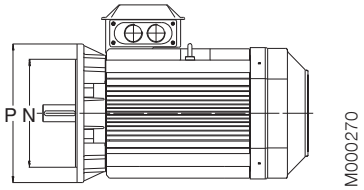


Sizes 90 to 200

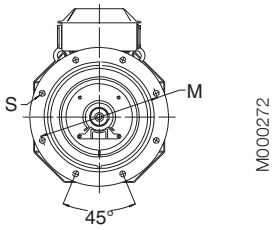




Flange-mounted motor IM 3001, IM B5



Sizes 225 to 250



Motor size		IM 1001, IM B3 AND IM 3001, IM B5										IM 1001, IM B3							IM 3001, IM B5			
		D poles		GA poles		F poles		E poles		L max poles		A	B	B'	C	HD	K	H	M	N	P	S
		2	4-8	2	4-8	2	4-8	2	4-8	2	4-8											
M3AAN	71	14	14	16	16	5	5	30	30	240	240	112	90	–	45	180	7	71	130	130	160	10
	80	19	19	21.5	21.5	6	6	40	40	265.5	265.5	125	100	–	50	193.5	10	80	165	130	200	12
M3AAN	90 S	24	24	27	27	8	8	50	50	282	282	140	100	–	56	212	10	90	165	130	200	12
	90 L	24	24	27	27	8	8	50	50	307	307	140	125	–	56	212	10	90	165	130	200	12
	100	28	28	31	31	8	8	60	60	349	349	160	140	–	63	236	12	100	215	180	250	15
	112	28	28	31	31	8	8	60	60	361	361	190	140	–	70	258	12	112	215	180	250	14.5
	132	38	41	41	41	10	10	80	80	447	447	216	140	178	89	295.5	12	132	265	230	300	14.5
M3AA	160 M/MA 2-8, L 2-6, LB 2-4	42	42	45	45	12	12	110	110	602.5	602.5	254	210	254	108	370	15	160	300	250	350	19
	160 L 8, LB 6-8	42	42	45	45	12	12	110	110	643.5	643.5	254	210	254	108	370	15	160	300	250	350	19
	180 M 2-4, L 6-8, LB 2	48	48	51.5	51.5	14	14	110	110	680	680	279	241	279	121	405	15	180	300	250	350	19
	180 L 4, LB 4-8	48	48	51.5	51.5	14	14	110	110	700.5	700.5	279	241	279	121	405	15	180	300	250	350	19
	200 MLD-2,-C 4	55	55	59	59	16	16	110	110	814	814	318	267	305	133	533	18	200	350	300	400	19
	200 all exc. above	55	55	59	59	16	16	110	110	774	774	318	267	305	133	533	18	200	350	300	400	19
	225 SMB, -C	55	55	59	59	16	16	110	110	836	836	356	286	311	149	578	18	225	400	350	450	19
	225 SMA,-B,-C	60	60	64	64	18	18	140	140	866	891	356	286	311	149	578	18	225	400	350	450	19
	225 SMD	55	60	59	64	16	18	110	140	861	891	356	286	311	149	578	18	225	400	350	450	19
	250 SMA,-B	60	65	64	69	18	18	140	140	875	875	406	311	349	168	626	22	250	500	450	550	19
	250 SMC	60	65	64	69	18	18	140	140	900	900	406	311	349	168	626	22	250	500	450	550	19
	280 SMA	65	75	69	79.5	18	20	140	140	875	875	457	368	419	190	656	24	280	500	450	550	19
	280 SMB	65	75	69	79.5	18	20	140	140	900	900	457	368	419	190	656	24	280	500	450	550	19
	280 SMB	65	75	69	79.5	18	20	140	140	900	900	457	368	419	190	656	24	280	500	450	550	19

IM 3601, IM B14

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

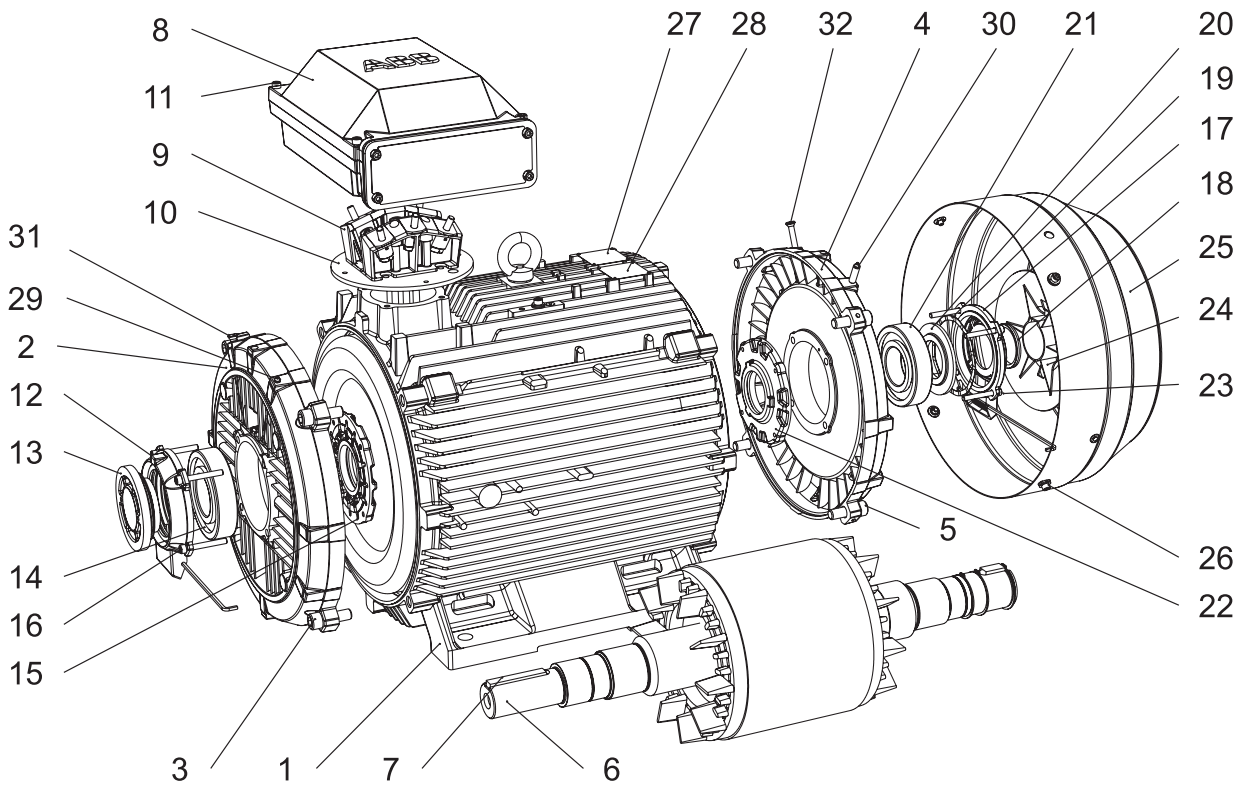
Tolerances:

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

Above table gives the main dimensions in mm. For detailed drawings please see our web-pages www.abb.com/motors&generators or contact ABB.

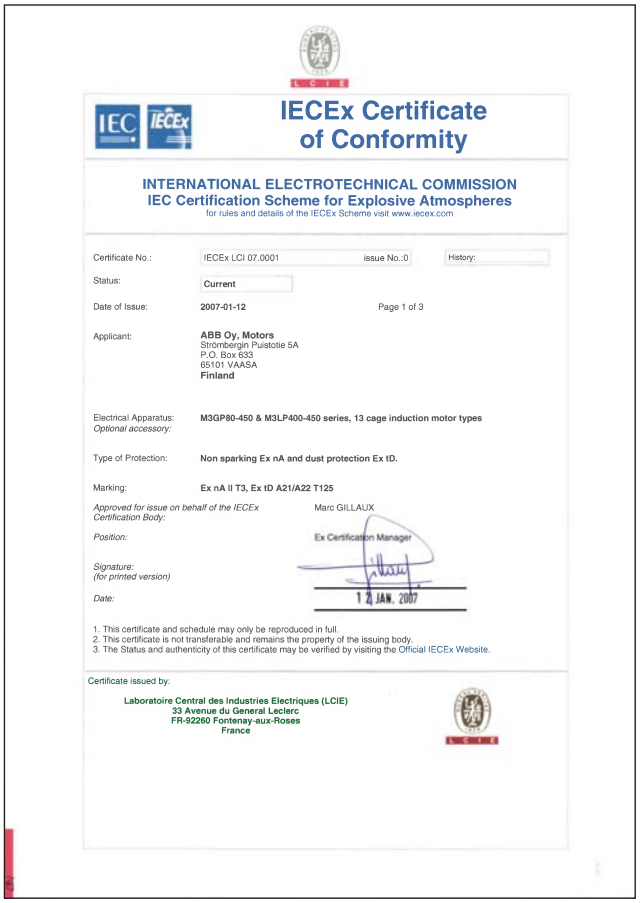
Non-sparking motor construction

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

Certificate examples



IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres
for rules and details of the IECEx Scheme visit www.iecex.com

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

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
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 09 ATEX 3016

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

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

6 Fabricant : ABB Oy Motors
Adresse : Strombergin 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 Le 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

1 **EC TYPE EXAMINATION CERTIFICATE**

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

3 EC type examination certificate number
LCIE 09 ATEX 3016

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

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

6 Manufacturer : ABB Oy Motors
Address : Strombergin 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.

Responsable de certification ATEX
ATEX certification manager
Marc GILLAUX

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The LCIE's liability applies only on the French text. This document may only be reproduced in its entirety and without any change

M000731

EC Declaration of Conformity

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

hereby declares that

the products: 3-phase induction motors, series M2GP, M3JP, M3JC, M3KP, M3KC, M3GP, M3HP and M3LP; as listed on page 2 in this document, fulfill provisions of the relevant Council Directives:

Directive 94/9/EC (ATEX of 23rd March 1994)

by applying the following harmonized standards:

EN 60079-0 (2006), EN 60079-1 (2007), EN 60079-7 (2007), EN 60079-15 (2005), EN 61241-0 (2006), EN 61241-1 (2004).

ABB Oy Motors and Generators declare on it's sole responsibility,

- that the state of the art of these standards do not modify the result of the assessment carried out by LCIE which issued the EC type examination certificates according to former editions of the standard series.

- that listed motors conform to the requirements of annex II of the directive 94/9/EC clause 1.2.7 by applying the standards series EN 60034.

Directive 2009/125/EC (EuP of 21st October 2009)

by fulfilling the requirements of the standard IEC 60034-30: 2008 Ed 1 in respect of the efficiency class.

Note: When installing motors for converter supply applications additional requirements must be respected regarding the motor as well as the installation, as described in the appropriate dedicated addendum.

Signed by

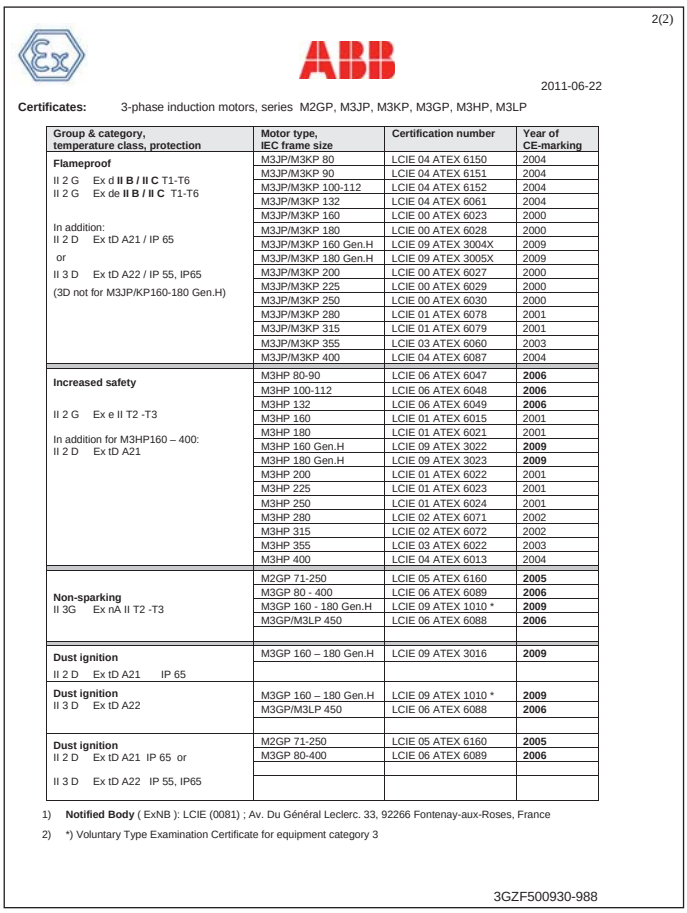
Juha-Pekka Kuokkala
Title Product Development Director
Date June 22nd 2011

3GZF500930-988

ABB Oy

Motors and Generators	Visiting Address	Telephone	Internet	Business Identity Code:
Postal address	Strömbergin Puistotie 5 A	+358 10 22 11	www.abb.fi	0763403-0
P.O. Box 633	FI-65320 Vaasa	Telefax	e-mail:	Domicile: Helsinki
FI-65101 Vaasa	FINLAND	+358 10 22 47372	first name.last name	
FINLAND			@fi.abb.com	

M000725-1a



2011-06-22

Certificates: 3-phase induction motors, series M2GP, M3JP, M3KP, M3GP, M3HP, M3LP

Group & category, temperature class, protection	Motor type, IEC frame size	Certification number	Year of CE-marking
Flameproof	M3JP/M3KP 80	LCIE 04 ATEX 6150	2004
II 2 G Ex d **II B / II C** T1-T6	M3JP/M3KP 90	LCIE 04 ATEX 6151	2004
II 2 G Ex de **II B / II C** T1-T6	M3JP/M3KP 100-112	LCIE 04 ATEX 6152	2004
	M3JP/M3KP 132	LCIE 04 ATEX 6061	2004
In addition:	M3JP/M3KP 160	LCIE 00 ATEX 6023	2000
II 2 D Ex tD A21 / IP 65	M3JP/M3KP 180	LCIE 00 ATEX 6028	2000
or	M3JP/M3KP 160 Gen.H	LCIE 09 ATEX 3004X	2009
II 3 D Ex tD A22 / IP 55, IP65	M3JP/M3KP 180 Gen.H	LCIE 09 ATEX 3005X	2009
(3D not for M3JP/KP160-180 Gen.H)	M3JP/M3KP 200	LCIE 00 ATEX 6027	2000
	M3JP/M3KP 225	LCIE 00 ATEX 6029	2000
	M3JP/M3KP 250	LCIE 00 ATEX 6030	2000
	M3JP/M3KP 280	LCIE 01 ATEX 6078	2001
	M3JP/M3KP 315	LCIE 01 ATEX 6079	2001
	M3JP/M3KP 355	LCIE 03 ATEX 6060	2003
	M3JP/M3KP 400	LCIE 04 ATEX 6087	2004
Increased safety	M3HP 80-90	LCIE 06 ATEX 6047	**2006**
	M3HP 100-112	LCIE 06 ATEX 6048	**2006**
II 2 G Ex e II T2 -T3	M3HP 132	LCIE 06 ATEX 6049	**2006**
	M3HP 160	LCIE 01 ATEX 6015	2001
In addition for M3HP160 – 400:	M3HP 180	LCIE 01 ATEX 6021	2001
II 2 D Ex tD A21	M3HP 160 Gen.H	LCIE 09 ATEX 3022	**2009**
	M3HP 180 Gen.H	LCIE 09 ATEX 3023	**2009**
	M3HP 200	LCIE 01 ATEX 6022	2001
	M3HP 225	LCIE 01 ATEX 6023	2001
	M3HP 250	LCIE 01 ATEX 6024	2001
	M3HP 280	LCIE 02 ATEX 6071	2002
	M3HP 315	LCIE 02 ATEX 6072	2002
	M3HP 355	LCIE 03 ATEX 6022	2003
	M3HP 400	LCIE 04 ATEX 6013	2004
Non-sparking	M2GP 71-250	LCIE 05 ATEX 6160	**2005**
II 3G Ex nA II T2 -T3	M3GP 80 - 400	LCIE 06 ATEX 6089	**2006**
	M3GP 160 - 180 Gen.H	LCIE 09 ATEX 1010 *	**2009**
	M3GP/M3LP 450	LCIE 06 ATEX 6088	**2006**
Dust ignition	M3GP 160 – 180 Gen.H	LCIE 09 ATEX 3016	**2009**
II 2 D Ex tD A21 IP 65			
Dust ignition	M3GP 160 – 180 Gen.H	LCIE 09 ATEX 1010 *	**2009**
II 3 D Ex tD A22	M3GP/M3LP 450	LCIE 06 ATEX 6088	**2006**
Dust ignition	M2GP 71-250	LCIE 05 ATEX 6160	**2005**
II 2 D Ex tD A21 IP 65 or	M3GP 80-400	LCIE 06 ATEX 6089	**2006**
II 3 D Ex tD A22 IP 55, IP65			

1) **Notified Body** (ExNB): LCIE (0081) ; Av. Du Général Leclerc. 33, 92266 Fontenay-aux-Roses, France

2) *) Voluntary Type Examination Certificate for equipment category 3

3GZF500930-988

M000725-2a

Non-sparking motors with cast iron frame in brief, basic design

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						Forged steel, detachable feet	
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		6208-2Z/C3	6309/C3	6310/C3
	N-end	2- 8 pole	6202-2Z/C3	6203-2Z/C3	6204-2Z/C3	6205-2Z/C3		6208-2Z/C3	6309/C3	6310/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			-						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		Steel 8.8, zinc electroplated and chromated							
Connections	Cable entries		2xM16	2 x M25		2 x M32			2 x M40 x 1.5	
	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							

Non-sparking motors with cast iron frame in brief, basic design

Motor size			200	225	250	280	315	355	400	450
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		6316M/C3	6317/C3	6317M/C3
		4-12 -pole					6319/C3	6322/C3	6324/C3	6326M/C3
	N-end	2-pole	6310/C3	6312/C3	6313/C3	6316/C3	6316/C3	6316M/C3	6317/C3	6317M/C3
		4-12 -pole						6316/C3	6319/C3	6322/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 M50 x 1.5			2 x M63 x 1.5		Refer to table on page 115		
	Terminals		6 terminals for connection with cable lugs (not included)							
Fan	Material		Polypropylene. Reinforced with glass fibre.					Polypropylene reinforced with glass fibre or 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			Open				
Heating elements	Optional		25 W	60 W			120 W			200 W
Drain holes			As standard, open on delivery							
External earthing bolt			As standard							
Enclosure			IP 55							
Cooling method			IC 411							

Non-sparking motors with aluminum frame in brief, basic design

Motor size			71	80	90	100	112	132
Stator	Material		Die-cast aluminum alloy					
	Paint colour shade		Munsell blue 8B 4.5/3.25					
	Surface treatment		Powder coating based on polyester resin, ≥ 30 µm					
Feet			Alumin alloy, integrated with stator					
Bearing end shields	Material		Die-cast aluminum alloy					
	Paint colour shade		Munsell blue 8B 4.5/3.25					
	Surface treatment		Powder coating based on polyester resin, ≥ 30 µm					
Bearings	D-end	2-8 pole	6203-2Z/C3	6204-2Z/C3	6205-2Z/C3	6206-2Z/C3	6206/C3	6208/C3
	N-end	2-8 pole	6202-2Z/C3	6203-2Z/C3	6204-2Z/C3	6205-2Z/C3	6205/C3	6206/C3
Axially-locked bearings	Inner bearing cover		D-end [1] with internal retaining ring		D-end [1] with inner bearing cover			
Bearing seal	D-end		V-ring					
	N-end		Labyrinth seal					
Lubrication			Permanently lubricated bearings					
Terminal box	Material		Die-cast aluminum alloy, base integrated with stator					
	Surface treatment		Powder coating based on polyester resin, ≥ 30 µm					
	Screws		Steel 5G, galvanised					
Connections	Knock-out openings		2 x (M20 + M20)		2 x (M25 + M20)			
	Terminal box		Caple lugs. 6 terminals.		Screw terminal. 6 terminals		Cable lugs. 6 terminals	
	Screws		M4				M5	
	Max Cu-area, mm2		4		6		10	
Fan	Material		Polypropylene reinforced with 20 % glass fibre.					
Fan cover	Material		Steel sheet					
Stator winding	Material		Copper					
	Insulation class		Insulation class F. Temperature rise class B, unless otherwise stated.					
	Winding protection		Optional					
Rotor winding	Material		Die-cast aluminum					
Balancing			Half key balancing					
Key ways			Closed					
Heating elements			8 W	25 W				
Drain holes			Drain holes with closable plastic plugs.					
External earthing bolt			As standard					
Enclosure			IP 55					
Cooling method			IC 411					

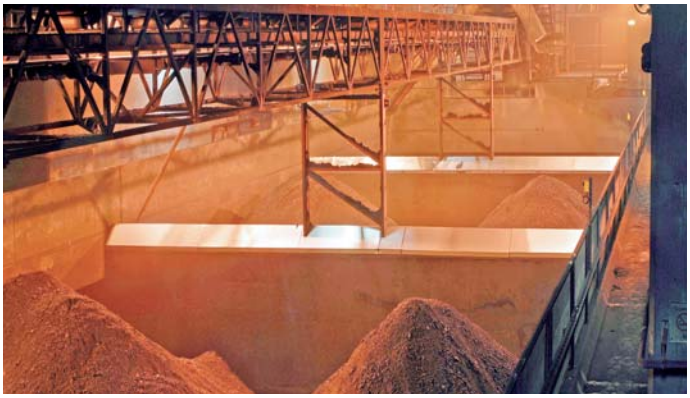
[1]) A spring washer at N-end presses the rotor agains D-end

Non-sparking motors with aluminum frame in brief, basic design

Motor size			160	180	200	225	250	280
Stator	Material		Die-cast aluminum alloy		Extruded aluminum alloy			
	Paint colour shade		Munsell blue 8B 4.5/3.25					
	Surface treatment		Polyester powder paint ≥ 50 µm					
Feet			Aluminum alloy, detachable feet		Cast iron, detachable feet.			Cast iron, detachable feet
Bearing end shields	Material		Cast iron					
	Paint colour shade		Munsell blue 8B 4.5/3.25					
	Surface treatment		Two-pack epoxy paint ≥ 100 µm					
Bearings	D-end	2-pole	6309-2Z/C3	6310-2Z/C3	6312-2Z/C3	6313-2Z/C3	6315-2Z/C3	6315/C3
		4-8 -pole						6316/C3
	N-end	2-pole	6209-2Z/C3		6210-2Z/C3	6212-2Z/C3	6213-2Z/C3	6213/C3
		4-8 -pole						
Axially-locked bearings	Inner bearing cover		D-end					
Bearing seal	D-end		V-ring		Outer and inner V-rings			
	N-end		Labyrinth seal		Outer and inner V-rings			
Lubrication			Permanently lubricated shielded bearings.					Valve lubrication
Terminal box	Material		Die-cast aluminum alloy base integrated with stator		Deep-drawn steel sheet, bolted to stator.			
	Surface treatment		Polyester powder paint ≥ 50 µm		Phosphated, polyester paint.			
	Screws		Steel 5G. Galvanised.					
Connections	Knock-out openings		(2 x M40) + (2 x M40 + M16)					2 x FL21
	Flange-openings				2 x FL13, 2 x M40 + 1 x M16			2 x M63
					2 x FL21, 2 x M63 + 1 x M16 (voltage code S)			1 x M16
	Terminal box		Caple lugs. 6 terminals.					
	Screws		M6		M10			
	Max Cu-area, mm^2		35		70			
Fan	Material		Polypropylene. Reinforced with 20% glass fibre.					
Fan cover	Material		Steel sheet. Galvanized.					
Stator winding	Material		Copper					
	Insulation class		Insulation class F. Temperature rise class B, unless otherwise stated.					
	Winding protection		PTC-thermistors, 150 °C					
Rotor winding	Material		Die-cast aluminum					
Balancing			Half key balancing					
Key ways			Closed					
Heating elements			25 W	50 W				
Drain holes			Drain holes with closable plastic plugs.					
External earthing bolt			As standard					
Enclosure			IP 55					
Cooling method			IC 411					

Dust ignition protection 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 710 kW

www.abb.com/motors&generators
> Motors for explosive atmospheres
>> Dust ignition protection motors



Mechanical design

Drain holes

Dust ignition protection motors in are delivered without drain holes or drain holes enclosed position.

Bearing seals

The following bearing seals are used as standard, special seals like radial seals are available as option. Please see variant code section.

Bearing seals in Ex t (M3GB) IE2 motors

Frame size	Number of poles	D-end	N-end
71-250	2-12	Gamma ring	Gamma ring
280-315	2	Labyrinth seal	V-ring
280-315	4-12	V-ring	V-ring
355	2	Labyrinth seal	V-ring
355	4-12	Labyrinth seal	V-ring
400	2	Labyrinth seal	Labyrinth
400	4-12	Labyrinth seal	V-ring

Bearing seals in Ex t (M3GP) IE2 motors

Frame size	Number of poles	D-end	N-end
200-250	2-12	Gamma ring	Gamma ring
280	2-12	Labyrinth seal	Labyrinth seal

Bearing seals in Ex t (M3AAD)aluminum motors 2D

Frame size	Number of poles	D-end	N-end
90-132	2-8	V-ring	V-ring

Bearing seals in Ex t (M3AAD and M3AA) aluminum motors 3D

Frame size	Number of poles	D-end	N-end
71-180	2-8	V-ring	Labyrinth seal
200-280	2-8	V-ring	V-ring

Terminal box standard delivery, cast iron frames

Terminal boxes are mounted on top of the motor at D-end as standard. Motors in sizes 71 to 132 have the terminal box integrated in the frame. The terminal box is provided with the cable gland openings on the right side seen from D-end. The terminal boxes of motor sizes 80 to 315 can be turned 4x90° and in motor sizes 355-400 2x180° after delivery. When ordering DIP motors in sizes 280 to 400 with 4x90°, the position of the terminal box has to be defined in the order.

The degree of protection of the standard terminal box is IP 55 or IP 65 according to the category and it complies with the requirements of this enclosure type and effectively prevents all ignition sources such as sparks, excessive overheating etc. The features of the terminal box are: no selfloosening terminals, compliance with creepage distances and clearances specified in standards. All terminal box seals are of uninterrupted type fulfilling the latest requiremets for Ex t motors.

If no ordering information on the cable is given, it is assumed to be p.v.c. -insulated non-armoured and termination parts are supplied according to the table on the following pages. To enable the supply of suitable terminations for the motor, please state cable type, quantity, size and outer diameter when ordering.

Ex t motors in size 160 and larger are delivered as standard with cable glands according to the below table. Different glands can be provided separately as an option.

Note: For 500 V motor information please contact ABB!

Standard delivery 400/690 V (if nothing else informed)

Motor size	Pole number	Terminal box type	Terminal box opening	Threaded holes	Cable gland	Cable outer diameter mm	Single core cross-section mm^2 for rated power	Terminal bolt size 6 x
71	2-8		-	1xM16	-		2.5	M4
80	2-8		-	1xM25	-		4	M4
90-132	2-8		-	1xM32	-		6	M5
160-180	2-8	63	B	2xM40	2xM40	2xØ19-27	35	M6
200-250	2-8	210/1	C	2xM50	2xM50	2xØ34-45	70	M10
280	2-8	370/1	D	2xM63	2xM63	2xØ32-49	2x150	M12
315SM, ML	2-8	370/1	D	2xM63	2xM63	2xØ32-49	2x240	M12
315LKA, LKB	2-4	370/1	D	2xM63	2xM63	2xØ32-49	2x240	M12
315LKC	2-4	750/1	E	2xM75	2xM75	2xØ46-60	4x240	M12
315 LKA, LKB, LKC	6-8	370/1	D	2xM63	2xM63	2xØ32-49	2x240	M12
355 SMA, SMB, SMC	2-6	750/1	E	2xM75	2xM75	2xØ46-60	4x240	M12
355 SMC	8	370/1	D	2xM63	2xM63	2xØ32-49	2x240	M12
355 SMA, SMB	6-8	370/1	D	2xM63	2xM63	2xØ32-49	2x240	M12
355 ML, LK	2-8	750/1	E	2xM75	2xM75	2xØ46-60	4x240	M12
400 L, LK	2-8	750/1	E	2xM75	2xM75	2xØ46-60	4x240	M12

Auxiliary cable entries

71	2-8	1xM16	-	-
80	2-8	1xM25	-	-
90-132	2-8	1xM20	-	-
160-400	2-8	2xM20	2xM20	1xØ8-14

Earthings on motor

	Frame	Terminal box
80-132	M6	M6
160-180	M6	M6
200-250	M8	M8
280-315	M10	2xM10
355-400	M10	2xM12

Terminal box alternatives, cast iron frame

Gland plate, maximum size of glands and material

Gland plate delivered blind or be drilled and tapped to accomodate glands to suit the cable diameter and amount of glands needed.

Motors in sizes 71 to 132 do not have a gland plate. For motors sizes 160 to 450 the standard gland plate material is steel. Stainless steel gland plates are available as option.

Size	Maximum size and number of glands, metric		
C	2xM90	3xM50	7xM32
D	4xM90	4xM63	7xM50
E	6xM90	7xM63	9xM50

Related variant codes:

729 Aluminum non-drilled flange for gable glands.
730 Prepared for NPT glands
732 Standard cable gland, Ex d IIB, armoured cable.
733 Standard cable gland, Ex d IIB, non-armoured cable.
743 Painted non-drilled flange in steel for cable glands.
744 Stainless steel non-drilled flange for gable glands.
745 Painted steel cable flange equipped with nickle plated brass cable glands.
746 Stainless steel cable flange equipped with nickle plated brass cable glands.

Cable glands and cable sealing end units

Cable glands

The table below shows the selction of cable gland types and possible cable outer diameter of each size. For armoured and NPT cable glands please contact ABB.

	Outer diameter, mm		
	Variant code 745 Painted steel flange equipped with brass cable glands	Variant code 737 Standard cable gland Ex e with clamping device acc. to EN-Standards	Variant code 704 EMC cable gland
Motor sizes 71-400:			
M16	4-9	4-9	NA
M20	8-14	8-14	8-14
M25	10-16	10-16	10-16
M32	16-21	16-21	16-21
M40	18-27	18-27	18-27
M50	26-35	26-35	26-35
M63	32-49	32-49	32-49
M75	46-60	NA	NA
M90	55-70	NA	NA

Auxiliary terminal box

It is possible to equip the 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 aluminum and equipped with M20 glands for entry of the connection cables. As an option cast iron terminal box is available. In motor sizes 160 to 180 the material of auxiliary terminal box is cast iron.

Connection terminals are of a spring-loaded type for quick and easy connection. These are suitable for up to 2.5 mm² wires. Auxiliary terminal boxes are equipped with an earthing terminal.

As standard the first auxiliary terminal box is located on RHS seen from D-end.

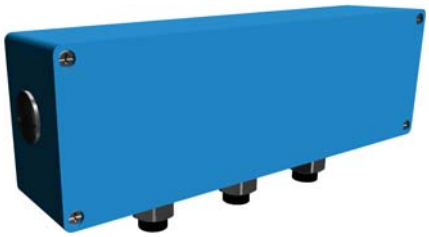
Related variant codes:

418 Separate terminal box for auxiliaries, standard material (all connections of temperature detectors and heaters will be put in same box).
380 Separate terminal box for temperature detectors, standard material.
568 Separate terminal box for heating elements, standard material.
569 Separate terminal box for brakes, standard material.
567 Separate terminal box material: Cast iron.

Small, aluminum auxiliary terminal box (80 x 125 mm, for max. 12 wires) Earthing size M4

M000439

Large, aluminum auxiliary terminal box (80 x 250 mm, for max. 30 wires) Earthing M4



M000440

Cast iron auxiliary terminal box (211 x 188 mm, for max. 30 wires) Earthing M6

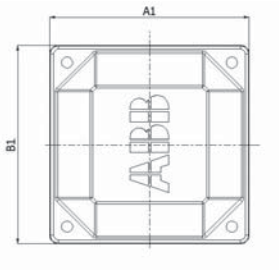
M000782

Standard cable entry size M20. Number of entries depends on the terminal box type and number of selected auxiliaries.

Dimension drawings
Dust ignition proof, cast iron frame

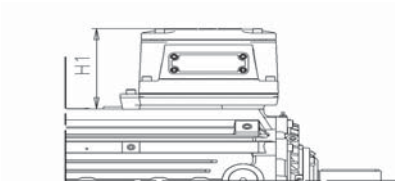
Terminal boxes, standard design with 6 terminals

Motor sizes 71 to 132



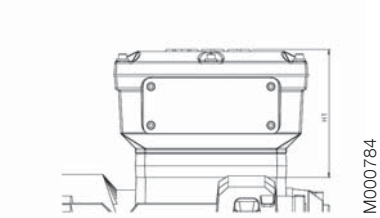
M000368c

Motor sizes 160 to 180



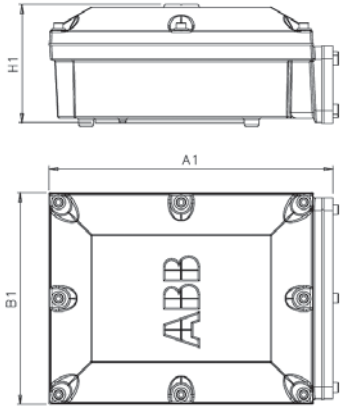
M000365

Motor sizes 200 to 250



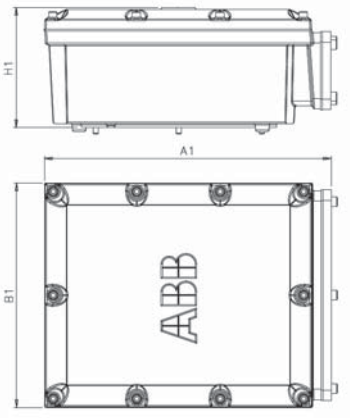
M000784

Motor sizes 280 to 355
Top- and side-mounted
Terminal boxes 160/1, 370/1



M000785

Motor sizes 315 to 400
Top- and side-mounted
Terminal box 750/1



M000786

Motor size	Terminal box	A1	B1	H1
71-80	-	105	105	-
90-112	-	118	118	-
132	-	169	169	-
160-180	63	243	243	179
200-250	160/1	352	319	205
280-355	370/1	470	350	195
315-400	750/1	550	435	235

Dimensions based on new Ex t terminal box with full uninterrupted seals.

Terminal box alternatives, aluminum frame

Sizes 71 to 180

The terminal box is made of aluminum alloy and is located on top of the stator. The lower part of the box is integrated with the stator. It is provided with two knockout openings on each side. Sizes 132 SM_ and 160 to 180 also have a third smaller opening. Cable glands are not included.

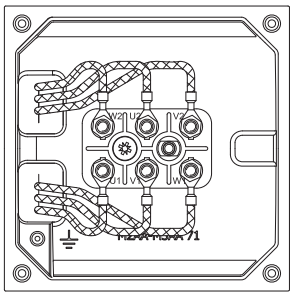
Sizes 200 to 280

The terminal box and cover are made of deep drawn steel and mounted on top of the stator. The box is bolted to the stator and is not rotatable. The size of the box is the same for all motors.

In the basic design the terminal box is provided with two FL 13 flange openings, one on each side. The opening on the right side, seen from the D-end, is supplied with a flange with two holes for M40 cable glands. On delivery the holes are sealed by means of plastic plugs. Cable glands are not supplied. The opening on the other side is provided with a cover flange.

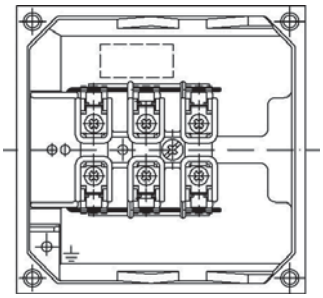
The motors can also be provided with an extra large terminal box, standard for voltage code S and frame size 280. See variant code 019 under the heading “Terminal box”. This will increase the dimension HD by 32 mm. The box is supplied with two FL 21 openings. The right opening is provided with a flange with two holes for M63 cable glands. The holes are sealed by means of plastic plugs. Cable glands are not supplied. The opening on the other side is provided with a cover flange. The box can also be provided with an FL 13 opening towards the N-end.

When new motors are manufactured the terminal box can be mounted on the left or the right side. See variant codes 021 and 180 under the heading “Terminal box”.



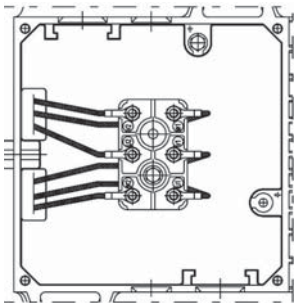
M000521

Terminal board for motor sizes 71 to 80



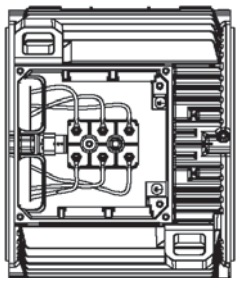
M000017

Terminal board for motor sizes 90 to 112



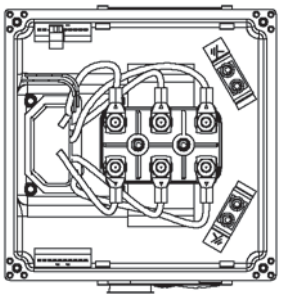
M000018

Terminal board for motor size 132



M000501

Terminal board for motor sizes 160 to 180



M000500

Terminal board for motor sizes 200 to 280

Connections

The terminal block is provided with six terminals for connecting Cu-cable. The terminals are marked in accordance with IEC 60034-8.

Connection openings

Motor size	Opening	Metric cable entry	Method of connection	Terminal bolt size	Maximum connectable Cu-cable area, mm²
71-80	Knock-out opening	2 x (2 x M20)	Cable lug	M4	4
90-112	Knock-out opening	2 x (M25 + M20)	Screw terminal	M4	6
132 [1]	Knock-out opening	2 x (M25 + M20)	Cable lug	M5	10
132 [2]	Knock-out opening	2 x (M40 x M32 + M12)	Cable lug	M6	35
160-180	Knock-out opening	2 x (2 x M40) + M16)	Cable lug	M6	35
200-250	2 x FL 13	1 x (2 x M40 + M16)	Cable lug	M10	70
280	2 x FL 21	1 x (2 x M63 + M16)	Cable lug	M10	70

[1] all types except [2] [2] SM_

Permissible loadings on the shaft end

The following tables give the permissible radial and axial forces in Newton, assuming only radial or axial force is applied. Permissible loads of simultaneous radial and axial forces will be supplied on request.

The bearing life, L_{10}, is calculated according to ISO 281:1990/ Amd 2:2000 standard theory, which also takes the purity of the grease into consideration. An adequate lubrication is a necessary prerequisite for the table below.

The values are based on normal conditions at 50 Hz. At 60 Hz the values must be reduced by 10 %. For two-speed motors, the values must be based on the higher speed.

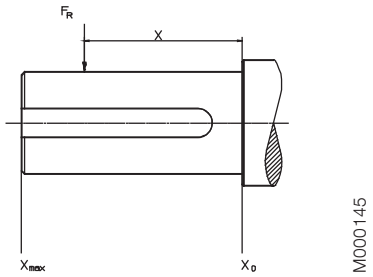
Motors are foot-mounted IM B3 version with force directed sideways. In some cases the strength of the shaft affects the permissible forces.

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.

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:

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

E = length of shaft extension in basic version



Cast iron motors, sizes 71 to 132
Permissible radial forces according to L_{10} principle

Dust igniton protection motors

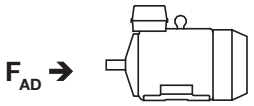
Motor size	No. of poles	Length of shaft extension E (mm)	Basic design with deep groove ball bearings 25,000 hrs FX_o(N)	25,000 hrs FX_{max}(N)	40,000 hrs FX_o(N)	40,000 hrs FX_{max}(N)
71	2	30	680	570	680	570
	4	30	680	570	680	570
	6	30	680	570	680	570
	8	30	680	570	680	570
80	2	40	930	750	930	750
	4	40	930	750	930	750
	6	40	930	750	930	750
	8	40	930	750	930	750
90	2	50	1010	810	1010	810
	4	50	1010	810	1010	810
	6	50	1010	810	1010	810
	8	50	1010	810	1010	810
100	2	60	1755	1385	1755	1385
	4	60	1755	1385	1755	1385
	6	60	1755	1385	1755	1385
	8	60	1755	1385	1755	1385
112	2	60	1755	1385	1755	1385
	4	60	1755	1385	1755	1385
	6	60	1755	1385	1755	1385
	8	60	1755	1385	1755	1385
132	2	80	2120	1610	2120	1610
	4	80	2120	1610	2120	1610
	6	80	2120	1610	2120	1610
	8	80	2120	1610	2120	1610

Cast iron motors, sizes 160 to 400
Permissible radial forces according to L_{10} principle

Dust ignition protection motors

Motor size	Poles	Lengt of shaft extension E (mm)	Ball bearings 40,000 hours		Roller bearings 40,000 hours	
			FX_0 [N]	FX_{max}[N]	FX_0 [N]	FX_{max}[N]
160 ML_	2	110	2530	2120	6400	3160
	4	110	3180	2670	7880	3130
	6	110	3650	3060	8900	3140
	8	110	4020	3370	9700	3150
180 ML_	2	110	2900	2440	6970	4380
	4	110	3660	3080	8580	4360
	6	110	4190	3520	9700	4360
	8	110	4620	3880	10570	4370
200 ML_	2	110	3830	3160	9500	7100
	4	110	4830	3980	11710	7090
	6	110	5520	4550	13230	7080
	8	110	6080	5010	14420	7090
225 SM_	2	110	4350	3660	11650	7090
	4	140	5490	4420	14340	7340
	6	140	6280	5060	16190	7330
	8	140	6920	5570	17660	7330
250 SM_	2	140	4390	4350	15420	7360
	4	140	6790	5480	18980	9320
	6	140	7760	6270	21440	9330
	8	140	8550	6900	23370	9320
280 SM_	2	140	5840	4900	16500	6350
	4	140	7260	6110	20100	9690
	6	140	8300	6980	22690	9680
	8	140	9150	7700	24740	9690
315 SM_	2	140	5810	4960	16540	6280
	4	170	9030	7470	26590	10170
	6	170	10310	8530	30030	10160
	8	170	11360	9400	32740	10100
315 ML_	2	140	5850	5080	16710	6200
	4	170	9000	7620	26580	14570
	6	170	10270	8700	30010	14580
	8	170	11330	9590	32720	14510
315 LK_	2	140	5880	5210	16900	6080
	4	170	9090	7870	26950	14410
	6	170	10270	8890	30390	14210
	8	170	11360	9840	33150	14130
355 SM_	2	140	5790	5090	16790	7470
	4	210	11930	9890	36660	14590
	6	210	13630	11300	41390	14530
	8	210	15050	12470	45140	14460
355 ML_	2	140	5770	5120	16880	7110
	4	210	11980	10090	36960	14290
	6	210	13650	11500	41720	14210
	8	210	15090	12710	45503	14110
355 LK_	2	140	5670	5140	17030	6570
	4	210	12020	10420	37470	13850
	6	210	13680	11860	42290	13660
	8	210	15160	13150	46130	13510
400 L_	2	170	4450	3970	19390	8760
	4	210	12120	10550	43040	18600
	6	210	13750	11970	48570	17980
	8	210	15280	13310	52990	18180
400 LK_	2	170	4450	3970	19390	8760
	4	210	12120	10550	43040	18600
	6	210	13750	11970	48570	17980
	8	210	15280	13310	52990	18180

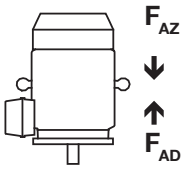
Permissible axial forces according to L_{10} principle



Cast iron motors, motor sizes 71 to 400

Mounting arrangement IM B3

Motor size	40,000 hours 2-pole		4-pole		6-pole		8-pole	
	FAD	F_{AZ}	F_{AD}	F_{AZ}	F_{AD}	F_{AZ}	F_{AD}	F_{AZ}
	N	N	N	N	N	N	N	N
71	515	215	630	330	710	410	780	480
80	650	315	810	470	925	595	1015	675
90	720	320	945	425	1005	605	1110	710
100	930	430	1265	765	1515	1015	1715	1215
112	925	425	1260	760	1510	1010	1710	1210
132	1400	800	1750	1150	2030	1435	2245	1645
160	2050	1440	2620	2010	3060	2440	3410	2790
180	2570	1470	3230	2130	3730	2630	4140	3040
200	3300	2040	4180	2920	4820	3560	5360	4100
225	3710	2240	4690	3230	5410	3940	6010	4540
250	5200	2100	6400	3310	7260	4160	8000	4900
280 SM_	4870	2870	6140	4140	7040	5040	7840	5840
315 SM_	4780	2780	7170	5170	8210	6210	9180	7180
315 ML_	4730	2730	7080	5080	8100	6100	9060	7070
355 SM_	1660	5460	5760	9560	7060	10860	8290	12090
355 ML_	1570	5370	5640	9440	6880	10680	8100	11900
355 LK_	1440	5240	5460	9260	6680	10480	7810	11610
400 L_	810	5810	4250	10250	5510	11510	6630	12630
400 LK_	810	5810	4250	10250	5410	11410	6630	12630



Mounting arrangement IM V1

Motor size	40,000 hours 2-pole		4-pole		6-pole		8-pole	
	F_{AD}	F_{AZ}	F_{AD}	F_{AZ}	F_{AD}	F_{AZ}	F_{AD}	F_{AZ}
	N	N	N	N	N	N	N	N
71	530	200	650	320	745	390	815	455
80	690	290	865	430	980	550	1070	645
90	775	280	1020	375	1095	550	1185	660
100	1010	355	1375	675	1620	925	1825	1125
112	1020	350	1390	665	1640	915	1840	1110
132	150	705	2010	980	2210	1315	2460	1505
160	2440	1180	3160	1650	3590	2090	3950	2430
180	3120	1100	3980	1630	4490	2130	4890	2550
200	3960	1590	5030	2340	5820	2890	6370	3430
225	4570	1650	5770	2500	6660	3100	7280	3700
250	6240	1380	7720	2410	8930	3047	9690	3780
280 SM_	6440	1780	8170	2760	9580	3340	10380	4150
315 SM_	6950	1270	9820	3350	11760	3810	12740	4780
315 ML_	7280	940	10300	2870	12330	3240	13310	4210
355 SM_	5330	2890	11110	5820	13720	6270	14980	7530
355 ML_	5860	2360	11810	5130	14718	5280	15970	6540
355 LK_	6600	1630	12850	4080	15800	4190	17500	5000
400 L_	8010	730	13680	3650	16610	3840	18480	4530
400 LK_	8010	730	13680	3650	17180	3270	18480	4530

[1] On request

Aluminum motors
Permissible radial forces according to L_{10} principle

Motor sizes 71 to 132

Motor size	No. of poles	Length of shaft extention E (mm)	Ball bearings Basic design with deep groove ball bearings				Alternative design with 63-series bearings			
			25,000 hours		40,000 hours		25,000 hours		40,000 hours	
			FX_0 (N)	FX_{max} (N)	F_{X0} (N)	FX_{max} (N)	FX_0 (N)	FX_{max} (N)	FX_0 (N)	FX_{max} (N)
71	2-8	30	680	570	680	570				
80	2-8	40	930	750	930	750				
90	2-8	50	1010	810	1010	810				
100	2-8	60	2280	1800	2280	1800				
112 M	2	60	1800	1420	1620	1280	2160	1700	2160	1700
	4	60	1790	1410	1590	1250	2160	1700	2160	1700
	6	60	1910	1510	1700	1340	2160	1700	2160	1700
	8	60	1940	1530	1720	1360	2160	1700	2160	1700
112 MB	2	60	1820	1470	1640	1330	2100	1700	2100	1700
	4	60	1770	1430	1560	1260	2100	1700	2100	1700
	6	60	1880	1520	1650	1340	2100	1700	2100	1700
	8	60	1930	1560	1690	1370	1700	2100	1700	2100
132 SA	2	80	3020	2360	2740	2140	4070	3180	3670	2870
132 SB	2	80	3020	2360	2730	2130	4060	3170	3670	2870
132 SC	2	80	3030	2430	2750	2200	3990	3200	3690	2960
132 S	4	80	3120	2440	2790	2180	4090	3200	3830	2990
132 M	4	80	3080	2410	2750	2150	4100	3200	3780	2950
132 MB	4	80	3050	2440	2710	2170	3990	3200	3740	3000
132 S	6	80	3280	2560	2910	2270	4100	3200	3990	3120
132 MA	6	80	3240	2530	2880	2250	4100	3200	3970	3100
132 MB	6	80	3200	2500	2840	2220	4100	3200	3930	3070
132 MC	6	80	3010	2510	2660	2220	3840	3200	3700	3090
132 S	8	80	3370	2630	2980	2330	4100	3200	4100	3200
132 M	8	80	3310	2590	2940	2300	4100	3200	4060	3170
132 MB	8	80	3280	2630	2910	2330	3990	3200	3990	3200

Motor sizes 160 to 280

Motor size	No. of poles	Length of shaft extention E (mm)	Ball bearings Basic design with deep groove ball bearings				Roller bearings Alternative design with roller bearings			
			25,000 hours		40,000 hours		25,000 hours		40,000 hours	
			FX_0(N)	FX_{max}(N)	FX_0(N)	FX_{max}(N)	FX_0(N)	FX_{max}(N)	FX_0(N)	FX_{max}(N)
160	2	110	4760	3860	4100	3320	6580	4300	5620	4300
	4	110	5180	4200	4380	3545	7340	4300	6180	4300
	6	110	5160	4180	4360	3540	7780	4300	6500	4300
	8	110	6280	4300	5320	4300	8860	4300	7440	4300
180	2	110	6060	4960	5280 [1]	4305 [1]	7600	5500	6560	5500
	4	110	4800	3940	4020	3300	7280	5500	6140	5500
	6	110	6280	5140	5280	4380	8680	5500	7280	5500
	8	110	6960	5500	5880	4800	9440	5500	7920	5500
200	2	110	7800	6500	6760 [2]	5640 [2]	10360	8640	8880	7400
	4	110	8400	7020	7180	5980	11560	9550	9800	8180
	6	110	8960	7480	7600	6340	12480	9550	10520	8780
	8	110	10480	8740	8940	7400	14100	9550	11920	9550
225	2	110	8520	7180	7360 [3]	6200 [3]	12320	10380	10560	8900
	4	140	8380	6780	7200	5820	13380	10250	11320	9160
	6	140	10960	8860	9360	7560	15860	10250	13420	10250
	8	140	12100	9780	10340	8360	17220	10250	14580	10250
250	2	140	10480 [4]	8500 [4]	9080 [4]	7360 [4]	16220	10900	13960	10900
	4	140	10840	8780	9380	7600	18020	13800	15320	13800
	6	140	12600	10220	10700	8680	20240	13800	17140	13800
	8	140	14660	11880	12540	10160	22680	13800	19220	13800
280	2	140	6780	5500	5680	4600	16280	13200	14000	11360
	4	140	8060	6540	6640	5380	19480	15780	16540	13400
	6	140	8980	7280	7360	5960	21920	17760	18580	15060
	8	140	9180	7460	7460	6060	22240	18020	18860	15300

[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

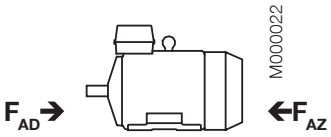
Permissible axial forces according to L_{10} principle

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 20,000 and 40,000 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 FAD, assumes D-bearing locked by means of locking ring. Without locking ring the FAD forces should be reduced to 70 % of list value.



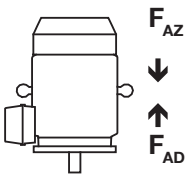
Aluminum motors, motor sizes 71 to 280

Mounting arrangement IM B3

Motor size	20,000 hours								40,000 hours							
	2-pole		4-pole		6-pole		8-pole		2-pole		4-pole		6-pole		8-pole	
	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
71	625	325	780	480	890	590	985	685	515	215	630	330	710	410	780	480
80	810	470	1015	675	1170	830	1300	960	650	315	810	470	925	595	1015	675
90	885	485	1170	650	1270	870	1410	1010	720	320	945	425	1005	605	1110	710
100	1620	1120	2065	1565	2390	1890	2660	2160	1280	780	1615	1115	1860	1360	2065	1565
112 M	-	-	-	-	-	-	2655	2155	-	-	-	-	-	-	2060	1560
112 MB	1615	1115	2060	1560	2385	1885	2655	2155	1275	775	1610	1110	1860	1360	2060	1560
132 M	-	-	2245	1645	-	-	2875	2270	-	-	1760	1160	-	-	2240	1640
132 MA	-	-	2245	1645	2595	1995	-	-	-	-	1760	1160	2025	1425	-	-
132 MC	-	-	-	-	2580	1980	-	-	-	-	-	-	2010	1410	-	-
132 MBA	-	-	2235	1635	-	-	-	-	-	-	1750	1150	-	-	-	-
132 S	-	-	-	-	2600	2000	2885	2285	-	-	-	-	2030	1435	2245	1645
132 SA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
132 SB	1770	1170	-	-	-	-	-	-	1400	800	-	-	-	-	-	-
132 SBB	1760	1160	-	-	-	-	-	-	1395	795	-	-	-	-	-	-
132 SC	1760	1160	-	-	-	-	-	-	1395	795	-	-	-	-	-	-
132 SMA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
132 SMB	2220	1620	2840	2240	-	-	-	-	1740	1140	2205	1605	-	-	-	-
132 SMC	2220	1620	-	-	-	-	-	-	1740	1140	-	-	-	-	-	-
132 SMD	-	-	2830	2200	-	-	-	-	-	-	2230	1595	-	-	-	-
132 SME	2210	1610	-	-	-	-	-	-	1730	1130	-	-	-	-	-	-
160	4160	4160	4740	4740	4840	4840	5980	5980	3425	3425	3920	3920	4000	4000	4920	4920
180	5480	5480	4360	4360	5980	5980	6000	6620	4600 [1]	4600 [1]	3540	3540	4940	4940	5460	5460
200	5000	6880	5000	7660	5000	8300	5000	9880	5000 [2]	5700 [2]	5000	6340	5000	6880	5000	8160
225	5000	7380	5000	7600	5000	10140	5000	11420	5000 [3]	6120 [3]	5000	6220	5000	8420	5000	9460
250	6000 [4]	9020 [4]	6000	9800	6000	11520	6000	13700	6000 [4]	7500 [4]	6000	8040	6000	9520	6000	11380
280	5260	5260	6500	6500	7500	7500	7740	7740	4220	4220	5160	5160	6040	6040	6180	6180

[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

Permissible axial forces according to L_{10} principle



Aluminum motors, motor sizes 71 to 280

Mounting arrangement IM V1

Motor size	20,000 hours								40,000 hours							
	2-pole		4-pole		6-pole		8-pole		2-pole		4-pole		6-pole		8-pole	
	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
71	640	315	800	470	925	570	1020	665	530	200	650	320	745	390	815	455
80	845	450	1075	640	1225	795	1350	925	690	290	865	430	980	550	1070	645
90	945	450	1245	600	1360	815	1485	960	775	280	1020	375	1095	550	1185	660
100	1710	1060	2180	1485	2510	1815	2780	2080	1370	715	1735	1035	1980	1285	2185	1485
112 M	-	-	-	-	-	-	2790	2070	-	-	-	-	-	-	2195	1475
112 MB	1725	1040	2210	1460	2540	1785	2810	2055	1385	700	1110	1010	2010	1260	2210	1460
132 M	-	-	2460	1505	-	-	3130	2115	-	-	1970	1015	-	-	2490	1470
132 MA	-	-	2460	1505	2815	1850	-	-	-	-	1970	1015	2245	1280	-	-
132 MC	-	-	-	-	2885	1780	-	-	-	-	-	-	2315	1210	-	-
132 MBA	-	-	2495	1465	-	-	-	-	-	-	2010	980	-	-	-	-
132 S	-	-	-	-	2780	1885	3100	2145	-	-	-	-	2210	1315	2460	1505
132 SA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
132 SB	1910	1075	-	-	-	-	-	-	1540	705	-	-	-	-	-	-
132 SBB	1950	1050	-	-	-	-	-	-	1580	670	-	-	-	-	-	-
132 SC	1945	1045	-	-	-	-	-	-	1575	670	-	-	-	-	-	-
132 SMA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
132 SMB	2435	1480	3150	2035	-	-	-	-	1950	995	2515	1400	-	-	-	-
132 SMC	2445	1470	-	-	-	-	-	-	1960	985	-	-	-	-	-	-
132 SMD	-	-	3195	1995	-	-	-	-	-	-	2560	1355	-	-	-	-
132 SME	2490	1425	-	-	-	-	-	-	2005	940	-	-	-	-	-	-
160	4560	3810	5260	4310	5400	4420	6560	5580	3860	3110	4440	3490	4540	3560	5460	4480
180	5920	5115	5080	3860	6000	5445	6000	6120	5060 [1]	4255 [1]	4240	3020	5600	4385	6000	4900
200	5000	6350	5000	6950	5000	7505	5000	9215	5000 [2]	5230 [2]	5000	5650	5000	6025	5000	7435
225	5000	6770	5000	6795	5000	9270	5000	10595	5000 [3]	5490 [3]	5000	5475	5000	7490	5000	8535
250	6000 [4]	8335 [4]	6000	8820	6000	10275	6000	12645	6000 [4]	6755 [4]	6000	7120	6000	8235	6000	10205
280	6400	4400	7920	5400	8500	6180	8500	6435	5420	3420	6640	4120	7840	4640	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.

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. For aluminum motors there are one or two voltages in use; 230V-400V depending on the frame size. 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. For aluminum motors self certification.

Cast iron motors, sizes 160 to 400

ABB Oy, Motors and Generators
Vaasa, Finland

CE 0081 IE2 Ex II 2D

3 ~ Motor M3GP 280SMC 4 IMB3/IM1001

Extb IIIC T125C Db

709035-1 2012 **No.** 3GF12131783

Ins.cl. F **IP** 65

V	Hz	kW	r/min	A	cos φ	Duty
690 Y	50	110	1485	112	0.86	S1
400 D	50	110	1485	194	0.86	S1
415 D	50	110	1486	189	0.85	S1

IE2-95.1%(100%)-95.2%(75%)-94.7%(50%)

Prod. code 3GGP282230-ADG336

LCIE 12 ATEX 3021X / IECEx LCI 07.0001X

Manual: 3GZF500730-47 **Nmax** r/min

6316/C3 6316/C3 725 kg

ABB IEC 60034-1

M000736a

Cast iron motors, sizes 71 to 132

ABB ABB Oy, Motors and Generators Vaasa, Finland IE2 Ex II 3D CE

3~Motor M3GP 90 SLC 2 IMB3/IM1001 Extc IIIB T125C Dc

3GGP091323-ASB No. 3GF12130638 Cl. F IP 55

V		Hz	r/min	kW	A	cosφ	Duty
400	Y	50	2885	2.2	4.3	0.87	S1
230	D	50	2885	2.2	7.4	0.87	S1

IE2-84.7%(100%)-86.7%(75%)-85.7%(50%)

VTT 12 ATEX 050X / IECEx VTT 12.0010X 705219-5

6205-2Z/C3 6204-2Z/C3 2012 28 kg

Manual: 3GZF500730-47 IEC 60034-1

M000737a

Aluminum motors, sizes 71 to 80

Asea Brown Boveri, S.A.
C/ Illa de Buda, 55. 08192 Sant Quirze del Vallès (Barcelona), Spain

IE2 Ex II 3D CE

3~Motor M3AAD 80 C 2 IM1001 Ex tD A22 T125°C

3GAA081313-ASE No. 3GE101508P0012 Cl. F IP 55

6204-2Z/C3 6203-2Z/C3 2010 11 kg

V	Hz	r/min	kW	A	Cosφ
230 D	50	2880	1,1	3,9	0,81
400 Y	50	2880	1,1	2,3	0,81

IE2-82,1(100%)-82,0(75%)-79,2(50%) IEC 60034-1

M000702

Aluminum motors, sizes 160 to 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 tD 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, sizes 200 to 280

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 tD 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

Ordering information

Sample order

When placing an order, please state the following minimum data in the order, as in example.

The product code of the motor is composed in accordance with the following example.

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

Motor size

A B C D.E.F. G

M3GP 160 MLA 3GGP 161 410 - A D H 002 etc.

1 2 3 4 5 6 7 8 9 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
G Variant codes

Explanation of the product code:

Positions 1 to 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	**11** = 112	**20** = 200	**35** = 355
07 = 71	**13** = 132	**22** = 225	**40** = 400
08 = 80	**16** = 160	**25** = 250	
09 = 90	**18** = 180	**28** = 280	
10 = 100	**20** = 200	**31** = 315	

Position 7

Speed (Pole pairs)

1 = 2 poles	**4** = 8 poles
2 = 4 poles	**5** = 10 poles
3 = 6 poles	

Position 8 to 10	**Position 11**
Serial number	- (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 to112)
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).

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

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.

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

IP 65 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30; 2008

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 Nm	T_l / T_N	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	71 MA	3GGP 071 321-••B	2768	74.8	74.7	71.0	0.78	0.91	4.5	1.27	2.2	2.3	0.00039	11	58
0.55		M3GP	71 MB	3GGP 071 322-••B	2813	77.8	78.3	76.0	0.79	1.29	5.6	1.86	2.4	2.5	0.00051	11	56
0.75		M3GP	80 MB	3GGP 081 322-••B	2895	80.6	79.9	76.2	0.74	1.81	7.7	2.4	4.2	4.2	0.001	16	57
1.1		M3GP	80 MC	3GGP 081 323-••B	2870	81.8	82.4	80.2	0.80	2.4	7.5	3.6	2.7	3.5	0.0012	18	60
1.5		M3GP	90 SLB	3GGP 091 322-••B	2900	82.2	84.1	82.7	0.86	3	7.5	4.9	2.5	2.6	0.00254	24	69
2.2		M3GP	90 SLC	3GGP 091 323-••B	2885	84.7	86.7	85.7	0.87	4.3	6.8	7.2	1.9	2.5	0.0028	25	64
3		M3GP	100 LB	3GGP 101 322-••B	2925	85.2	84.9	82.8	0.86	5.9	9.1	9.7	3.1	3.5	0.00528	36	68
4		M3GP	112 MB	3GGP 111 322-••B	2895	86.1	87.0	86.6	0.86	7.7	8.1	13.1	2.9	3.2	0.00575	37	70
5.5		M3GP	132 SMB	3GGP 131 322-••B	2865	88.0	88.6	88.0	0.86	10.4	7.0	18.3	2.0	2.7	0.01275	68	70
7.5		M3GP	132 SMC	3GGP 131 324-••B	2890	88.6	88.8	87.5	0.84	14.5	7.3	24.7	2.0	3.6	0.01359	70	70
11		M3GP	160 MLA	3GGP 161 410-••H	2931	90.1	90.5	89.6	0.89	19.7	7.2	35.8	2.6	3.1	0.043	207	71
15		M3GP	160 MLB	3GGP 161 420-••H	2929	91.2	91.9	91.4	0.89	26.6	7.2	48.9	3.0	3.5	0.052	216	71
18.5		M3GP	160 MLC	3GGP 161 430-••H	2934	91.8	92.2	91.8	0.90	32.3	7.5	60.2	2.8	3.4	0.062	227	69
22		M3GP	180 MLA	3GGP 181 410-••H	2938	91.7	92.2	91.7	0.90	38.4	7.0	71.5	2.5	3.1	0.089	259	69
30		M3GP	200 MLA	3GGP 201 410-••G	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	200 MLC	3GGP 201 430-••G	2954	93.6	94.0	93.4	0.89	64.1	7.5	119	2.8	3.2	0.19	305	75
45		M3GP	225 SMB	3GGP 221 220-••G	2968	93.9	93.8	92.9	0.87	79.5	7.2	144	2.7	3.0	0.26	365	76
55		M3GP	250 SMA	3GGP 251 210-••G	2975	94.3	94.1	93.0	0.89	94.5	7.8	176	2.4	3.1	0.49	425	75
75		M3GP	280 SMA	3GGP 281 210-••G	2978	94.3	94.1	92.8	0.88	130	7.6	240	2.1	3.0	0.8	625	77
90		M3GP	280 SMB	3GGP 281 220-••G	2976	94.6	94.5	93.5	0.90	152	7.4	288	2.1	2.9	0.9	665	77
110		M3GP	315 SMA	3GGP 311 210-••G	2982	94.9	94.4	92.9	0.86	194	7.6	352	2.0	3.0	1.2	880	78
132		M3GP	315 SMB	3GGP 311 220-••G	2982	95.1	94.8	93.6	0.88	227	7.4	422	2.2	3.0	1.4	940	78
160		M3GP	315 SMC	3GGP 311 230-••G	2981	95.4	95.2	94.2	0.89	271	7.5	512	2.3	3.0	1.7	1025	78
200		M3GP	315 MLA	3GGP 311 410-••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	355 SMA	3GGP 351 210-••G	2984	95.7	95.5	94.5	0.89	423	7.7	800	2.1	3.3	3	1600	83
315	3)	M3GP	355 SMB	3GGP 351 220-••G	2980	95.7	95.7	95.1	0.89	533	7.0	1009	2.1	3.0	3.4	1680	83
355	3)	M3GP	355 SMC	3GGP 351 230-••G	2984	95.7	95.7	95.2	0.88	608	7.2	1136	2.2	3.0	3.6	1750	83
400	3)	M3GP	355 MLA	3GGP 351 410-••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	355 MLB	3GGP 351 420-••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	355 LKA	3GGP 351 810-••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	355 LKB	3GGP 351 820-••G	2983	97.0	97.0	96.5	0.90	925	8.0	1792	2.2	4.1	5.2	2460	83
560	4)	M3GP	400 LA	3GGP 401 510-••G	2988	97.2	97.2	96.6	0.89	934	7.8	1789	2.1	3.4	7.9	2950	82
560	4)	M3GP	400 LKA	3GGP 401 810-••G	2988	97.2	97.2	96.6	0.89	934	7.8	1789	2.1	3.4	7.9	2950	82
630	4)	M3GP	400 LB	3GGP 401 520-••G	2987	97.4	97.4	96.9	0.89	1048	7.8	2014	2.2	3.4	8.2	3050	82
630	4)	M3GP	400 LKB	3GGP 401 820-••G	2987	97.4	97.4	96.9	0.89	1048	7.8	2014	2.2	3.4	8.2	3050	82
710	4)	M3GP	400 LC	3GGP 401 530-••G	2987	97.5	97.4	97.0	0.89	1180	7.8	2269	2.6	3.4	9.3	3300	82
710	4)	M3GP	400 LKC	3GGP 401 830-••G	2987	97.5	97.4	97.0	0.89	1180	7.8	2269	2.6	3.4	9.3	3300	82
3000 r/min = 2-poles				**400 V 50 Hz**						**High-output design**							
22	2)	M3GP	160 MLD	3GGP 161 440-••H	2929	91.2	91.6	91.0	0.90	38.6	7.3	71.7	2.7	3.4	0.07	233	77
30		M3GP	180 MLB	3GGP 181 420-••H	2943	92.5	93.0	92.6	0.90	52	6.8	97.3	2.3	3.1	0.13	292	78
37		M3GP	180 MLC	3GGP 181 430-••H	2947	92.8	93.0	92.5	0.90	63.9	7.9	119	2.9	3.6	0.13	292	77
45	5)	M3GP	200 MLE	3GGP 201 450-••G	2944	93.3	93.6	93.0	0.88	79.1	7.3	145	2.9	3.1	0.22	310	79
55		M3GP	225 SMC	3GGP 221 230-••G	2965	93.9	93.9	92.9	0.88	96	7.1	177	2.6	3.0	0.29	385	80
67	5)	M3GP	225 SMD	3GGP 221 240-••G	2966	93.9	93.7	92.6	0.86	119	7.4	215	2.8	3.2	0.31	395	78
75		M3GP	250 SMB	3GGP 251 220-••G	2969	94.0	94.0	93.2	0.89	129	7.9	241	2.6	3.2	0.57	465	80
90	1) 2) 5)	M3GP	250 SMC	3GGP 251 230-••G	2965	94.0	94.2	93.7	0.90	153	7.7	289	2.6	3.1	0.59	475	80
110		M3GP	280 SMC	3GGP 281 230-••G	2978	95.1	95.0	94.2	0.90	185	7.9	352	2.4	3.0	1.15	725	77

1) Temperature rise class F
2) Efficiency class IE1
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
4) Unidirectional fan construction as standard. Direction of rotation must be stated when ordering, see variant codes 044 and 045
5) For 400-450 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

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

IP 65 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30; 2008

Output				Speed	Efficiency IEC 60034-2-1; 2007				Current		Torque			Moment of inertia		Sound pressure level
					Full load	3/4 load	1/2 load	Power factor	I_N	I_s	T_N	T_l	T_b	$J = 1/4\ GD^2$		L_{PA}
kW		Motor type	Product code	r/min	100%	75%	50%	cos φ	A	I_N	Nm	T_N	T_N	kgm²	Weight kg	dB
1500 r/min = 4-poles			**400 V 50 Hz**						**CENELEC-design**							
0.25		M3GP 71 MA	3GGP 072 321-••B	1365	68.3	70.8	69.7	0.81	0.65	3.5	1.74	1.9	2.0	0.00074	10	45
0.37		M3GP 71 MB	3GGP 072 322-••B	1380	72.4	74.5	74.6	0.83	0.88	4.0	2.5	1.6	2.1	0.00088	11	45
0.55		M3GP 80 MA	3GGP 082 321-••B	1415	74.5	73.8	70.0	0.73	1.45	5.0	3.7	2.0	2.8	0.00144	15	45
0.75		M3GP 80 MD	3GGP 082 324-••B	1430	81.0	80.7	77.3	0.73	1.83	5.3	5	2.7	3.2	0.00205	17	50
1.1		M3GP 90 SLB	3GGP 092 322-••B	1435	83.6	84.5	83.2	0.80	2.3	6.1	7.3	2.7	3.4	0.0044	25	50
1.5		M3GP 90 SLD	3GGP 092 325-••B	1430	84.3	85.6	84.7	0.83	3	6.3	10	2.7	3.4	0.0053	27	56
2.2		M3GP 100 LC	3GGP 102 323-••B	1450	85.9	85.1	83.4	0.78	4.7	6.4	14.4	2.9	3.6	0.00948	36	56
3		M3GP 100 LD	3GGP 102 324-••B	1450	86.8	87.0	85.4	0.79	6.3	7.7	19.7	2.9	3.4	0.011	38	58
4		M3GP 112 MB	3GGP 112 322-••B	1440	86.8	87.7	87.3	0.81	8.2	7.0	26.5	2.5	2.9	0.0125	44	59
5.5		M3GP 132 SMB	3GGP 132 322-••B	1460	89.0	89.8	88.9	0.80	11.1	5.9	35.9	1.7	2.4	0.03282	70	67
7.5		M3GP 132 SMC	3GGP 132 323-••B	1450	89.3	90.1	90.0	0.81	14.9	5.6	49.3	1.6	2.4	0.03659	73	64
11		M3GP 160 MLC	3GGP 162 430-••H	1470	91.2	91.5	90.6	0.82	21.2	7.8	71.4	3.0	3.5	0.096	226	62
15		M3GP 160 MLE	3GGP 162 450-••H	1467	92.0	92.4	92.1	0.84	28	7.8	97.6	3.0	3.4	0.13	249	61
18.5		M3GP 180 MLA	3GGP 182 410-••H	1474	91.6	92.0	91.2	0.83	35.1	7.2	119	2.6	3.1	0.19	271	62
22		M3GP 180 MLB	3GGP 182 420-••H	1471	91.6	92.4	92.2	0.83	41.7	6.8	142	2.5	3.0	0.21	279	62
30		M3GP 200 MLB	3GGP 202 420-••G	1475	93.6	94.0	93.7	0.85	54.4	7.4	194	3.0	2.8	0.34	305	61
37		M3GP 225 SMB	3GGP 222 220-••G	1480	93.6	93.9	93.4	0.85	67.1	7.6	238	3.2	2.9	0.42	355	67
45		M3GP 225 SMC	3GGP 222 230-••G	1477	94.1	94.6	94.4	0.88	78.4	7.6	290	3.2	2.7	0.49	390	67
55		M3GP 250 SMA	3GGP 252 210-••G	1479	94.3	94.3	93.6	0.84	100	7.2	355	2.5	3.1	0.72	415	66
75		M3GP 280 SMA	3GGP 282 210-••G	1484	94.5	94.5	93.9	0.85	134	6.9	482	2.5	2.8	1.25	625	68
90		M3GP 280 SMB	3GGP 282 220-••G	1483	94.7	94.8	94.4	0.86	159	7.2	579	2.5	2.7	1.5	665	68
110		M3GP 315 SMA	3GGP 312 210-••G	1487	95.1	95.1	94.3	0.86	194	7.2	706	2.0	2.5	2.3	900	70
132		M3GP 315 SMB	3GGP 312 220-••G	1487	95.4	95.4	94.7	0.86	232	7.1	847	2.3	2.7	2.6	960	70
160		M3GP 315 SMC	3GGP 312 230-••G	1487	95.6	95.6	95.1	0.85	284	7.2	1027	2.4	2.9	2.9	1000	70
200		M3GP 315 MLA	3GGP 312 410-••G	1486	95.6	95.6	95.3	0.86	351	7.2	1285	2.5	2.9	3.5	1160	74
250		M3GP 355 SMA	3GGP 352 210-••G	1488	95.9	95.9	95.5	0.86	437	7.1	1604	2.3	2.7	5.9	1610	74
315		M3GP 355 SMB	3GGP 352 220-••G	1488	95.9	95.9	95.6	0.86	551	7.3	2021	2.3	2.8	6.9	1780	74
350	3)	M3GP 355 SMC	3GGP 352 230-••G	1487	95.9	95.9	95.7	0.86	612	6.9	2247	2.4	2.7	7.2	1820	78
400	3)	M3GP 355 MLA	3GGP 352 410-••G	1489	96.3	96.3	95.9	0.85	705	6.8	2565	2.3	2.6	8.4	2140	78
450	3)	M3GP 355 MLB	3GGP 352 420-••G	1490	96.8	96.8	96.3	0.86	780	6.9	2884	2.3	2.9	8.4	2140	78
500		M3GP 355 LKA	3GGP 352 810-••G	1490	97.0	97.0	96.5	0.86	865	6.8	3204	2.0	3.0	10	2500	78
560	3)	M3GP 400 LA	3GGP 402 510-••G	1491	96.8	96.8	96.3	0.85	982	7.4	3586	2.4	2.8	15	3200	78
560	3)	M3GP 400 LKA	3GGP 402 810-••G	1491	96.8	96.8	96.3	0.85	982	7.4	3586	2.4	2.8	15	3200	78
630	3)	M3GP 400 LB	3GGP 402 520-••G	1491	97.0	97.0	96.5	0.87	1077	7.6	4034	2.2	2.9	16	3300	78
630	3)	M3GP 400 LKB	3GGP 402 820-••G	1491	97.0	97.0	96.5	0.87	1077	7.6	4034	2.2	2.9	16	3300	78
680	3)	M3GP 400 LC	3GGP 402 530-••G	1492	97.1	97.1	96.6	0.85	1189	7.9	4352	2.5	3.1	17	3400	78
680	3)	M3GP 400 LKC	3GGP 402 830-••G	1492	97.1	97.1	96.6	0.85	1189	7.9	4352	2.5	3.1	17	3400	78
1500 r/min = 4-poles			**400 V 50 Hz**						**High-output design**							
18.5		M3GP 160 MLF	3GGP 162 460-••H	1469	91.7	92.1	91.4	0.83	35	7.8	120	3.2	3.5	0.13	249	68
22	2)	M3GP 160 MLG	3GGP 162 470-••H	1466	90.8	91.1	90.4	0.81	43.1	7.9	143	3.3	3.6	0.13	249	68
30	1) 2)	M3GP 180 MLC	3GGP 182 430-••H	1473	92.2	92.3	91.6	0.81	57.9	7.1	194	2.8	3.2	0.248	298	66
37		M3GP 200 MLC	3GGP 202 430-••G	1475	93.0	93.1	92.3	0.82	70	7.5	239	3.5	3.2	0.34	305	73
55		M3GP 225 SMD	3GGP 222 240-••G	1483	94.3	94.5	93.9	0.83	101	7.4	354	3.4	2.9	0.55	410	68
60	2) 3)	M3GP 225 SME	3GGP 222 250-••G	1479	93.6	93.7	92.9	0.84	110	8.0	387	3.6	3.0	0.55	410	74
75	3)	M3GP 250 SMB	3GGP 252 220-••G	1476	94.3	94.5	94.2	0.86	133	7.6	485	2.8	3.2	0.88	470	73
86	2) 3)	M3GP 250 SMC	3GGP 252 230-••G	1477	94.1	94.4	94.0	0.85	155	7.8	556	2.9	3.5	0.98	495	74
110		M3GP 280 SMC	3GGP 282 230-••G	1485	95.1	95.2	94.7	0.86	194	7.6	707	3.0	3.0	1.85	725	68

1) Temperature rise class F

2) Efficiency class IE1

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

Dust ignition protection cast iron motors IE2

Technical data for Ex t IIIB/IIIC T125 °C Db/Dc, IP 65/IP 55

IP 65 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30; 2008

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 Nm	T_l/T_N	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 71 MA**	3GGP 073 321-••B	900	63.7	63.8	59.0	0.71	0.57	3.1	1.9	2.0	2.1	0.00089	10	42
0.25		**M3GP 71 MB**	3GGP 073 322-••B	895	67.2	67.2	62.6	0.69	0.77	3.4	2.6	2.2	2.3	0.0011	12	42
0.37		**M3GP 80 MA**	3GGP 083 321-••B	915	71.0	71.1	67.0	0.69	1.09	3.6	3.8	1.8	2.2	0.00187	15	47
0.55		**M3GP 80 MB**	3GGP 083 322-••B	920	73.9	75.0	72.8	0.71	1.51	3.8	5.7	1.8	2.2	0.00239	17	47
0.75		**M3GP 90 SLC**	3GGP 093 323-••B	960	78.7	77.3	72.5	0.58	2.3	4.5	7.4	2.3	3.1	0.00491	25	44
1.1		**M3GP 90 SLE**	3GGP 093 324-••B	930	78.2	78.6	76.4	0.66	3	4.0	11.2	1.9	2.3	0.0054	28	44
1.5		**M3GP 100 L**	3GGP 103 322-••B	950	82.2	82.9	81.6	0.69	3.8	4.0	15	1.5	1.1	0.00873	37	49
2.2		**M3GP 112 MB**	3GGP 113 322-••B	950	82.5	83.8	81.7	0.69	5.5	4.4	22.1	1.7	2.3	0.0125	44	66
3		**M3GP 132 SMB**	3GGP 133 321-••B	975	85.3	84.5	81.3	0.63	8	5.5	29.3	1.8	2.9	0.03336	69	57
4		**M3GP 132 SMB**	3GGP 133 322-••B	960	84.9	85.3	83.9	0.68	10	4.6	39.7	1.5	2.2	0.03336	69	57
5.5		**M3GP 132 SMF**	3GGP 133 324-••B	965	86.1	86.6	85.5	0.71	12.9	5.1	54.4	2.0	2.3	0.0487	86	57
11		**M3GP 160 MLB**	3GGP 163 420-••H	972	90.1	90.8	90.4	0.81	21.7	7.8	108	2.3	3.5	0.126	247	65
15		**M3GP 180 MLB**	3GGP 183 420-••H	972	90.4	91.0	90.4	0.82	29.2	7.2	147	1.9	3.2	0.25	298	58
18.5		**M3GP 200 MLA**	3GGP 203 410-••G	983	90.9	91.1	90.3	0.82	35.8	7.1	179	3.2	3.1	0.37	265	66
22		**M3GP 200 MLB**	3GGP 203 420-••G	983	91.6	91.9	91.0	0.82	42.2	7.5	213	3.2	3.2	0.43	285	61
30		**M3GP 225 SMB**	3GGP 223 220-••G	985	92.2	92.6	92.2	0.82	57.2	7.4	290	3.4	3.0	0.64	350	61
37		**M3GP 250 SMA**	3GGP 253 210-••G	987	93.1	93.4	92.8	0.81	70.8	7.2	357	3.2	2.9	1.16	420	66
45		**M3GP 280 SMA**	3GGP 283 210-••G	990	93.4	93.6	93.1	0.84	82.7	7.0	434	2.5	2.5	1.85	605	66
55		**M3GP 280 SMB**	3GGP 283 220-••G	990	93.8	94.0	93.3	0.84	100	7.0	530	2.7	2.6	2.2	645	66
75		**M3GP 315 SMA**	3GGP 313 210-••G	992	94.4	94.4	93.5	0.82	139	7.4	721	2.4	2.8	3.2	830	70
90		**M3GP 315 SMB**	3GGP 313 220-••G	992	94.8	94.8	94.2	0.84	163	7.5	866	2.4	2.8	4.1	930	70
110		**M3GP 315 SMC**	3GGP 313 230-••G	991	95.0	95.0	94.6	0.83	201	7.4	1059	2.5	2.9	4.9	1000	70
132		**M3GP 315 MLA**	3GGP 313 410-••G	991	95.3	95.4	94.9	0.83	240	7.5	1271	2.7	3.0	5.8	1150	68
160		**M3GP 355 SMA**	3GGP 353 210-••G	993	95.4	95.4	94.8	0.83	291	7.0	1538	2.0	2.6	7.9	1520	75
200		**M3GP 355 SMB**	3GGP 353 220-••G	993	95.7	95.7	95.1	0.84	359	7.2	1923	2.2	2.7	9.7	1680	75
250		**M3GP 355 SMC**	3GGP 353 230-••G	993	95.7	95.7	95.1	0.83	454	7.4	2404	2.6	2.9	11.3	1820	75
315		**M3GP 355 MLB**	3GGP 353 420-••G	992	95.7	95.7	95.2	0.83	572	7.0	3032	2.5	2.7	13.5	2180	75
355		**M3GP 355 LKA**	3GGP 353 810-••G	993	95.7	95.7	95.1	0.83	645	6.8	3413	2.3	2.7	15.5	2500	78
400		**M3GP 400 LA**	3GGP 403 510-••G	993	96.2	96.3	95.8	0.82	731	7.1	3846	2.3	2.7	17	2900	76
400		**M3GP 400 LKA**	3GGP 403 810-••G	993	96.2	96.3	95.8	0.82	731	7.1	3846	2.3	2.7	17	2900	76
450		**M3GP 400 LB**	3GGP 403 520-••G	994	96.6	96.6	96.1	0.82	819	7.4	4323	2.4	2.8	20.5	3150	76
450		**M3GP 400 LKB**	3GGP 403 820-••G	994	96.6	96.6	96.1	0.82	819	7.4	4323	2.4	2.8	20.5	3150	76
500		**M3GP 400 LC**	3GGP 403 530-••G	993	96.6	96.7	96.2	0.83	900	7.2	4808	2.5	2.7	22	3300	76
500		**M3GP 400 LKC**	3GGP 403 830-••G	993	96.6	96.7	96.2	0.83	900	7.2	4808	2.5	2.7	22	3300	76
560		**M3GP 400 LD**	3GGP 403 540-••G	993	96.9	96.9	96.4	0.85	981	7.4	5385	2.4	2.8	24	3400	77
560		**M3GP 400 LKD**	3GGP 403 840-••G	993	96.9	96.9	96.4	0.85	981	7.4	5385	2.4	2.8	24	3400	77
800	[1]	**M3GP 450 LC**	3GGP 453 530-••G	995	96.9	97.0	96.6	0.84	1418	7.2	7677	1.3	2.7	41	4800	81
1000 r/min = 6-poles			**400 V 50 Hz**						**High-output design**							
14	[1] [2]	**M3GP 160 MLC**	3GGP 163 430-••H	969	89.2	89.4	88.0	0.75	30.2	7.9	137	2.8	3.9	0.126	247	64
18.5	[2]	**M3GP 180 MLC**	3GGP 183 430-••H	975	90.1	90.2	88.7	0.74	40	7.2	181	2.0	3.2	0.25	298	61
30	[2]	**M3GP 200 MLC**	3GGP 203 430-••G	983	90.8	91.2	90.2	0.81	58.8	7.5	291	3.5	3.4	0.49	305	65
37	[2]	**M3GP 225 SMC**	3GGP 223 230-••G	983	92.1	92.5	92.1	0.83	69.8	7.1	359	3.0	2.8	0.75	380	64
45		**M3GP 250 SMB**	3GGP 253 220-••G	986	93.1	93.3	92.6	0.82	85	7.2	435	3.3	2.8	1.49	465	65
75		**M3GP 280 SMC**	3GGP 283 230-••G	990	94.2	94.5	94.1	0.84	136	7.3	723	2.8	2.7	2.85	725	66

[1] Temperature rise class F

[2] Efficiency class IE1

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

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

IP 65 - IC 411 - Insulation class F, temperature rise class B

Output			Speed	Efficiency IEC 60034-2-1; 2007				Current		Torque			Moment of inertia		Sound pressure level L_{PA}
				Full load	3/4 load	1/2 load	Power factor	I_N	$\frac{I_s}{I_N}$	T_N	$\frac{T_l}{T_N}$	$\frac{T_b}{T_N}$	$J = 1/4\ GD^2$		
kW	Motor type	Product code	r/min	100%	75%	50%	cos φ	A		Nm			kgm²	Weight kg	dB
750 r/min = 8-poles		**400 V 50 Hz**						**CENELEC-design**							
0.09	M3GP 71 MA	3GGP 074 101-••B	660	49.4	46.0	38.5	0.59	0.44	2.0	1.3	1.8	2.0	0.00089	11	40
0.12	M3GP 71 MB	3GGP 074 102-••B	670	51.4	47.5	39.9	0.56	0.6	2.1	1.71	2.8	2.4	0.0011	12	43
0.18	M3GP 80 MA	3GGP 084 101-••B	700	54.2	51.1	43.5	0.59	0.81	3.6	2.4	2.2	2.5	0.00187	15	45
0.25	M3GP 80 MB	3GGP 084 102-••B	680	58.6	58.1	52.3	0.65	0.94	3.0	3.5	2.0	1.9	0.00239	17	50
0.37	M3GP 90 SLB	3GGP 094 102-••B	705	66.3	64.0	57.1	0.54	1.49	2.8	5	1.4	2.2	0.00444	24	50
0.55	M3GP 90 SLC	3GGP 094 103-••B	655	61.8	65.6	65.2	0.67	1.91	2.3	8	1.3	1.5	0.00491	25	53
0.75	M3GP 100 LA	3GGP 104 101-••B	710	74.0	73.0	68.2	0.61	2.3	3.6	10	1.8	2.5	0.0072	30	46
1.1	M3GP 100 LB	3GGP 104 102-••B	695	76.0	76.5	74.6	0.66	3.1	3.4	15.1	1.7	2.2	0.00871	30	53
1.5	M3GP 112 M	3GGP 114 101-••B	690	74.4	75.9	74.1	0.70	4.1	3.2	20.7	1.4	1.9	0.0106	39	55
2.2	M3GP 132 SMA	3GGP 134 101-••B	715	79.7	80.8	78.7	0.66	6	3.2	29.3	1.1	1.7	0.03336	70	56
3	M3GP 132 SMB	3GGP 134 102-••B	715	79.9	80.8	79.1	0.64	8.4	4.7	40	1.2	1.8	0.04003	75	58
4	M3GP 160 MLA	3GGP 164 410-••H	722	86.7	87.4	86.6	0.71	9.3	5.4	52.9	1.7	2.8	0.133	245	59
5.5	M3GP 160 MLB	3GGP 164 420-••H	723	86.8	87.6	86.8	0.71	12.8	5.8	72.6	1.9	3.1	0.133	245	53
7.5	M3GP 160 MLC	3GGP 164 430-••H	718	85.5	86.3	85.5	0.70	18	5.7	99.7	2.1	3.1	0.133	245	55
11	M3GP 180 MLB	3GGP 184 420-••H	723	88.3	89.2	88.7	0.72	24.9	5.7	145	1.7	2.7	0.245	292	63
15	M3GP 200 MLA	3GGP 204 410-••G	734	89.9	90.3	89.6	0.79	30.4	7.0	195	2.4	3.2	0.45	280	56
18.5	M3GP 225 SMA	3GGP 224 210-••G	734	90.0	90.3	89.3	0.74	40	6.1	240	2.2	3.0	0.61	335	55
22	M3GP 225 SMB	3GGP 224 220-••G	732	90.6	91.2	90.6	0.77	45.5	6.5	287	2.2	2.9	0.68	350	56
30	M3GP 250 SMA	3GGP 254 210-••G	735	91.4	91.2	90.7	0.78	60.7	6.7	389	2.0	2.9	1.25	420	56
37	M3GP 280 SMA	3GGP 284 210-••G	741	92.7	92.7	91.6	0.78	73.8	7.3	476	1.7	3.0	1.85	605	65
45	M3GP 280 SMB	3GGP 284 220-••G	741	93.2	93.2	92.2	0.78	89.3	7.6	579	1.8	3.1	2.2	645	65
55	M3GP 315 SMA	3GGP 314 210-••G	742	93.4	93.5	92.7	0.81	104	7.1	707	1.6	2.7	3.2	830	62
75	M3GP 315 SMB	3GGP 314 220-••G	741	93.7	93.9	93.4	0.82	140	7.1	966	1.7	2.7	4.1	930	62
90	M3GP 315 SMC	3GGP 314 230-••G	741	94.0	94.2	93.6	0.82	168	7.4	1159	1.8	2.7	4.9	1000	64
110	M3GP 315 MLA	3GGP 314 410-••G	740	94.0	94.3	94.0	0.83	203	7.3	1419	1.8	2.7	5.8	1150	72
132	M3GP 355 SMA	3GGP 354 210-••G	744	94.7	94.7	94.0	0.80	251	7.5	1694	1.5	2.6	7.9	1520	69
160	M3GP 355 SMB	3GGP 354 220-••G	744	95.2	95.2	94.5	0.80	303	7.6	2053	1.6	2.6	9.7	1680	69
200	M3GP 355 SMC	3GGP 354 230-••G	743	95.3	95.4	94.8	0.80	378	7.4	2570	1.6	2.6	11.3	1820	69
250	M3GP 355 MLB	3GGP 354 420-••G	743	95.4	95.5	95.0	0.80	472	7.5	3213	1.6	2.7	13.5	2180	72
315	M3GP 400 LA	3GGP 404 510-••G	744	96.1	96.2	95.8	0.81	584	7.0	4043	1.2	2.6	17	2900	71
315	M3GP 400 LKA	3GGP 404 810-••G	744	96.1	96.2	95.8	0.81	584	7.0	4043	1.2	2.6	17	2900	71
355	M3GP 400 LB	3GGP 404 520-••G	743	96.2	96.3	96.1	0.83	641	6.8	4562	1.2	2.5	21	3200	71
355	M3GP 400 LKB	3GGP 404 820-••G	743	96.2	96.3	96.1	0.83	641	6.8	4562	1.2	2.5	21	3200	71
400	M3GP 400 LC	3GGP 404 530-••G	744	96.3	96.4	96.0	0.82	731	7.4	5134	1.3	2.7	24	3400	71
400	M3GP 400 LKC	3GGP 404 830-••G	744	96.3	96.4	96.0	0.82	731	7.4	5134	1.3	2.7	24	3400	71
750 r/min = 8-poles		**400 V 50 Hz**						**High-output design**							
18.5	M3GP 200 MLB	3GGP 204 420-••G	734	89.8	90.2	89.6	0.80	37.1	6.9	240	2.2	3.2	0.54	300	57
30	M3GP 225 SMC	3GGP 224 230-••G	731	90.7	91.5	91.3	0.78	61.2	6.3	391	2.3	3.0	0.75	375	59
37	M3GP 250 SMB	3GGP 254 220-••G	737	92.2	91.7	91.0	0.78	74.2	7.5	479	2.3	3.4	1.52	465	59
55	M3GP 280 SMC	3GGP 284 230-••G	741	93.4	93.5	92.8	0.80	106	7.9	708	1.9	3.1	2.85	725	65

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

Dust ignition protection aluminum motors
Technical data for Category 2 D - T = 125 °C - IP 65

ATEX Certified

IP 65 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30; 2008

Output		Motor		Product code		Speed	Efficiency IEC 60034-2-1; 2007 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor cos φ	Current I_N	I_s/I_N	Torque T_N	T_l/T_N	T_b/T_N	Moment of inertia J = 1/4 GD²	Weight	Sound pressure level L_{PA}
kW		type				r/min					A		Nm			kgm²	kg	dB
3000 r/min = 2-poles				**400 V 50 Hz**							**CENELEC-design**							
1.5	2)	**M3AAD**	**90 S**	3GAA	091 001-••E	2895	78.5	77.2	71.6	0.75	3.6	6.4	4.9	2.3	3	0.0019	13	63
2.2	3)	**M3AAD**	**90 L**	3GAA	091 002-••E	2890	83.6	84.4	83	0.82	4.6	7.2	7.2	2.7	2.8	0.0024	16	63
3	3)	**M3AAD**	**100 L**	3GAA	101 001-••E	2905	85.4	85.8	84.4	0.81	6.2	7.5	9.8	2.6	3.2	0.0041	21	65
4	2)	**M3AAD**	**112 M**	3GAA	111 101-••E	2885	85.7	86.7	86.5	0.85	7.9	7.4	13.2	2.6	2.8	0.0061	26	67
5.5	2)	**M3AAD**	**132SA**	3GAA	131 001-••E	2845	85.8	86.4	86	0.87	10.6	6.8	18.4	2.8	3.2	0.014	38	75
7.5	2)	**M3AAD**	**132 SB**	3GAA	131 002-••E	2860	87	88	86	0.89	13.9	7.2	25	3	3.4	0.016	43	73
3000 r/min = 2-poles				**400 V 50 Hz**							**High-output design**							
2.7	1) 2)	**M3AAD**	**90 LB**	3GAA	091 003-••E	2860	81	81.2	79	0.86	5.5	7	9	2.6	3	0.0027	18	68
4	1) 2)	**M3AAD**	**100 LB**	3GAA	101 002-••E	2900	84.3	83.9	83.7	0.86	7.9	7.5	13.1	2.7	3.6	0.005	25	68
5.5	1) 2)	**M3AAD**	**112 MB**	3GAA	111 102-••E	2850	86.4	87	87.4	0.9	10.2	7.2	18.4	3.4	3.4	0.0062	30	68
9.2	1) 2)	**M3AAD**	**132 SBB**	3GAA	131 004-••E	2875	87	88	86.5	0.92	16.5	7.2	30.5	2.5	3	0.018	52	68
11	1) 2)	**M3AAD**	**132 SC**	3GAA	131 003-••E	2890	88.7	89.5	89.3	0.89	20.1	8.1	36.3	2.8	3.4	0.018	52	68
1500 r/min = 4-poles				**400 V 50 Hz**							**CENELEC-design**							
1.1	2)	**M3AAD**	**90 S**	3GAA	092 001-••E	1420	77.2	78.1	76	0.77	2.6	4.8	7.3	2	2.6	0.0032	13	50
1.5	2)	**M3AAD**	**90 L**	3GAA	092 002-••E	1420	81.3	81.9	80.1	0.75	3.5	5.8	10	2.8	3	0.0043	16	50
2.2	2)	**M3AAD**	**100 LA**	3GAA	102 001-••E	1430	82.3	83.4	82.5	0.78	4.9	5.6	14.6	2.2	2.6	0.0069	21	64
3	2)	**M3AAD**	**100 LB**	3GAA	102 002-••E	1430	84.6	85.7	84.2	0.78	6.5	6.4	20	2.5	3	0.0082	24	66
4	2)	**M3AAD**	**112 M**	3GAA	112 101-••E	1430	86	87.1	86.8	0.8	8.3	6.4	26.7	2.3	2.6	0.01	29	60
5.5	2)	**M3AAD**	**132 S**	3GAA	132 001-••E	1450	86.5	87	86.1	0.75	12.2	5.6	36.2	2.1	2.6	0.031	42	66
7.5	2)	**M3AAD**	**132 M**	3GAA	132 002-••E	1450	88.6	89.2	88.4	0.75	16.2	6.1	49.3	2.3	2.7	0.038	49	66
1500 r/min = 4-poles				**400 V 50 Hz**							**High-output design**							
1.85	1)	**M3AAD**	**90 L**	3GAA	092 003-••E	1390	79.3	78.5	78.7	0.8	4.2	4.5	12.7	2.2	2.4	0.0043	16	50
2.2	1)	**M3AAD**	**90 LB**	3GAA	092 004-••E	1390	80	80.9	79.5	0.83	4.7	4.5	15.1	2.2	2.4	0.0048	17	50
4	1)	**M3AAD**	**100 LC**	3GAA	102 003-••E	1420	83.2	83.3	81.7	0.82	8.4	5.5	26.8	2.5	2.8	0.009	25	60
5.5	1)	**M3AAD**	**112 MB**	3GAA	112 102-••E	1420	85.1	85.5	84.5	0.8	11.6	6	36.9	2.7	3.1	0.0126	34	64
9.2	3)	**M3AAD**	**132 MBA**	3GAA	132 004-••E	1455	89.8	90.5	89.5	0.84	17.6	7.5	60.3	2.1	2.8	0.048	59	59
1000 r/min = 6-poles				**400 V 50 Hz**							**CENELEC-design**							
0.75	2)	**M3AAD**	**90 S**	3GAA	093 001-••E	925	71.5	70.9	65.9	0.64	2.3	3.6	7.7	2.1	2.4	0.0032	13	44
1.1	2)	**M3AAD**	**90 L**	3GAA	093 002-••E	915	72.9	73.4	70	0.63	3.4	3.2	11.4	1.9	2.1	0.0043	16	44
1.5	2)	**M3AAD**	**100 L**	3GAA	103 001-••E	950	79.6	79.9	77.5	0.69	3.9	4.2	15	2	2.3	0.0082	23	49
2.2	3)	**M3AAD**	**112 M**	3GAA	113 101-••E	960	82.8	82.5	79.5	0.66	5.8	5.1	21.8	2.3	2.8	0.01	28	54
3	2)	**M3AAD**	**132 S**	3GAA	133 001-••E	960	82.5	82.9	80.9	0.68	7.7	4.3	29.8	1.8	2.3	0.031	39	57
4	2)	**M3AAD**	**132 MA**	3GAA	133 002-••E	965	83.6	83.2	80.8	0.65	10.6	5.1	39.5	2.1	2.5	0.038	46	61
5.5	2)	**M3AAD**	**132 MB**	3GAA	133 003-••E	960	83.8	84.3	82.9	0.71	13.3	5.3	54.7	2	2.4	0.045	54	57
1000 r/min = 6-poles				**400 V 50 Hz**							**High-output design**							
1.3	1) 2)	**M3AAD**	**90 LB**	3GAA	093 003-••E	910	74.4	72.6	68.7	0.71	3.5	4	13.6	1.9	2.2	0.0048	18	44
2.2	1) 2)	**M3AAD**	**100 LC**	3GAA	103 002-••E	940	78	74	71.2	0.71	5.7	4.5	22.3	1.9	2.3	0.009	26	49
3	1) 2)	**M3AAD**	**112 MB**	3GAA	113 102-••E	920	79.7	80.5	80.3	0.75	7.2	3.8	31.1	1.9	2.22	0.0126	32	76

1) Temperature rise class F
2) Efficiency class IE1
3) Efficiency class IE2

Dust ignition protection aluminum motors
Technical data for Category 2 D - T = 125 °C - IP 65

ATEX Certified

IP 65 - IC 411 - Insulation class F, temperature rise class B

Output		Motor				Speed	Efficiency IEC 60034-2-1; 2007			Power	Current		Torque			Moment of inertia	Weight	Sound pressure level
				Product code			Full load	3/4 load	1/2 load	factor	I_N	I_s	T_N	T_l	T_b	J = 1/4 GD^2		L_{PA}
kW		type				r/min	100%	75%	50%	cos φ	A	I_N	Nm	T_N	T_N	kgm^2	kg	dB
750 r/min = 8-poles				**400 V 50 Hz**							**CENELEC-design**							
0.37		**M3AAD**	**90 S**	3GAA	094 001-••E	695	59.4	56.3	49.1	0.54	1.66	2.7	5	1.6	2.1	0.0032	13	52
0.55		**M3AAD**	**90 L**	3GAA	094 002-••E	660	59.1	59.5	55.2	0.58	2.3	2.1	7.9	1.5	1.6	0.0043	16	52
0.75		**M3AAD**	**100 LA**	3GAA	104 001-••E	720	70.7	67.1	59.9	0.47	3.2	3.9	9.9	2.8	3.6	0.0069	20	46
1.1		**M3AAD**	**100 LB**	3GAA	104 002-••E	695	76.0	76.5	74.6	0.66	3.1	3.4	15.1	1.7	2.2	0.0082	23	53
1.5		**M3AAD**	**112 M**	3GAA	114 101-••E	690	74.4	75.9	74.1	0.70	4.1	3.2	20.7	1.4	1.9	0.01	28	55
2.2		**M3AAD**	**132 S**	3GAA	134 001-••E	715	82.9	83.0	80.8	0.62	6.1	3.4	29.3	1.3	1.9	0.0038	46	56
3		**M3AAD**	**132 M**	3GAA	134 002-••E	715	79.9	80.8	79.1	0.64	8.4	3.2	40	1.2	1.8	0.0045	53	58
750 r/min = 8-poles				**400 V 50 Hz**							**High-output design**							
0.75	[1]	**M3AAD**	**90 LB**	3GAA	094 003-••E	680	63.1	59.8	53.0	0.60	2.8	3.0	10.5	1.8	2.0	0.0048	18	43
1.5	[1]	**M3AAD**	**100 LC**	3GAA	104 003-••E	670	70.0	65.2	63.8	0.70	4.4	3.3	21.3	1.8	2.2	0.009	26	46
2	[1]	**M3AAD**	**112 MB**	3GAA	114 102-••E	685	73.2	72.5	70.0	0.69	5.7	3.4	27.8	2.1	2.3	0.0126	32	52

[1] Temperature rise class F

[2] Efficiency class IE1

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

IP 65 - IC 411 - Insulation class F, temperature rise class B
IE3 efficiency class according to IEC 60034-30; 2008

Output		Motor type		Product code		Speed	Efficiency IEC 60034-2-1; 2007 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor cos φ	Current I_N	I_s / I_N	Torque T_N	T_l / T_N	T_b / T_N	Moment of inertia J = 1/4 GD²	Weight	Sound pressure level L_{PA}
kW						r/min					A		Nm			kgm²	kg	dB
3000 r/min = 2-poles				**400 V 50 Hz**							**CENELEC-design**							
30		**M3GP**	**200 MLE**	3GGP	201 450••J	2957	94.1	94.3	93.7	0.87	52.8	7.7	96.8	2.9	3.3	0.22	310	75
37		**M3GP**	**200 MLF**	3GGP	201 460••J	2958	94.6	94.8	94.3	0.86	65.6	8.3	119	3.2	3.5	0.22	310	75
45		**M3GP**	**225 SME**	3GGP	221 250••J	2970	95.0	95.2	94.5	0.88	77.6	8.0	144	3.0	3.4	0.34	406	76
55		**M3GP**	**250 SMD**	3GGP	251 240••J	2977	95.2	95.5	95.0	0.91	91.6	8.1	176	2.6	2.7	0.68	493	75
75		**M3GP**	**280 SMB**	3GGP	281 220••K	2979	95.5	95.4	94.6	0.87	130	7.3	240	2.1	2.9	0.9	665	77
90		**M3GP**	**280 SMC**	3GGP	281 230••K	2981	95.7	95.6	94.8	0.88	154	8.0	288	2.5	3.1	1.15	725	77
110		**M3GP**	**315 SMB**	3GGP	311 220••K	2982	95.9	95.7	95.0	0.87	190	6.7	352	1.9	2.6	1.4	940	77
132		**M3GP**	**315 SMC**	3GGP	311 230••K	2984	95.9	95.9	95.3	0.88	225	7.9	422	2.4	3.0	1.7	1025	77
160		**M3GP**	**315 MLA**	3GGP	311 410••K	2982	96.1	96.1	95.8	0.90	267	7.3	512	2.2	2.7	2.1	1190	77
200		**M3GP**	**315 MLB**	3GGP	311 420••K	2982	96.2	96.2	96.0	0.90	333	6.8	640	1.9	2.6	2.2	1220	77
200	[1]	**M3GP**	**355 SMA**	3GGP	351 210••K	2984	96.2	96.1	95.5	0.89	337	7.6	640	2.0	3.1	3	1600	83
250		**M3GP**	**315 LKB**	3GGP	311 820••K	2981	96.3	96.3	96.2	0.91	411	7.9	800	2.5	2.7	2.9	1540	77
250	[1]	**M3GP**	**355 SMB**	3GGP	351 220••K	2983	96.3	96.3	95.9	0.90	416	7.6	800	2.2	3.0	3.4	1680	83
315	[1]	**M3GP**	**355 SMC**	3GGP	351 230••K	2984	96.4	96.4	95.9	0.89	529	7.8	1008	2.3	2.8	3.6	1750	83
355	[1]	**M3GP**	**355 MLA**	3GGP	351 410••K	2982	96.5	96.5	96.3	0.90	589	7.5	1136	2.3	2.6	4.1	2000	83
1500 r/min = 4-poles				**400 V 50 Hz**							**CENELEC-design**							
30		**M3GP**	**200 MLE**	3GGP	202 450••J	1478	94.2	94.6	94.5	0.86	53.4	7.8	193	3.2	2.9	0.37	316	61
37		**M3GP**	**225 SME**	3GGP	222 250••J	1482	94.6	95.0	94.8	0.88	64.1	7.6	238	2.9	3.3	0.55	410	67
45		**M3GP**	**225 SMF**	3GGP	222 260••J	1479	94.8	95.2	95.0	0.87	78.7	8.0	290	3.2	3.4	0.59	416	67
55		**M3GP**	**250 SMC**	3GGP	252 230••J	1483	95.3	95.4	95.0	0.86	96.8	7.3	354	2.7	3.4	0.98	495	66
75		**M3GP**	**280 SMB**	3GGP	282 220••K	1486	95.7	95.8	95.3	0.85	133	7.4	481	2.5	2.8	1.5	665	66
90		**M3GP**	**280 SMC**	3GGP	282 230••K	1487	95.9	96.0	95.5	0.85	159	7.9	577	2.9	3.0	1.85	725	66
110		**M3GP**	**315 SMC**	3GGP	312 230••K	1490	96.3	96.3	95.7	0.85	193	7.8	704	2.4	3.1	2.9	1000	68
132		**M3GP**	**315 SMD**	3GGP	312 240••K	1490	96.4	96.4	95.9	0.85	232	7.9	845	2.6	3.2	3.2	1065	68
160		**M3GP**	**315 MLB**	3GGP	312 420••K	1489	96.4	96.4	96.1	0.86	278	7.9	1026	2.7	3.0	3.9	1220	68
200		**M3GP**	**315 LKB**	3GGP	312 820••K	1490	96.5	96.5	96.3	0.87	343	7.6	1281	2.5	2.9	5	1520	74
200		**M3GP**	**355 SMA**	3GGP	352 210••K	1490	96.5	96.5	96.3	0.87	343	7.3	1281	2.1	2.7	5.9	1610	74
250		**M3GP**	**315 LKC**	3GGP	312 830••K	1491	96.6	96.6	96.4	0.87	429	7.8	1601	2.3	3.0	5.5	1600	74
250		**M3GP**	**355 SMB**	3GGP	352 220••K	1491	96.6	96.6	96.3	0.87	429	7.8	1601	2.5	2.9	6.9	1780	74
315		**M3GP**	**355 SMC**	3GGP	352 230••K	1491	96.7	96.7	96.3	0.85	553	7.4	2017	2.8	2.9	7.2	1820	74
355		**M3GP**	**355 MLA**	3GGP	352 410••K	1491	96.7	96.7	96.4	0.86	616	7.9	2273	2.7	2.9	8.4	2140	74

[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

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

IP 65 - IC 411 - Insulation class F, temperature rise class B
IE3 efficiency class according to IEC 60034-30; 2008

Output	Motor type		Product code		Speed	Efficiency IEC 60034-2-1; 2007 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor cos φ	Current I_N	I_s / I_N	Torque T_N	T_l / T_N	T_b / T_N	Moment of inertia J = 1/4 GD²	Weight	Sound pressure level L_{PA}
kW					r/min					A		Nm			kgm²	kg	dB
1000 r/min = 6-poles			400 V 50 Hz							CENELEC-design							
18.5	M3GP	200 MLC	3GGP	203 430••J	987	92.5	92.8	92.4	0.84	34.3	8.1	178	3.2	3.4	0.49	305	61
22	M3GP	200 MLD	3GGP	203 440••J	986	92.9	93.3	92.9	0.84	40.6	8.2	213	3.3	3.4	0.54	314	61
30	M3GP	225 SME	3GGP	223 250••J	989	94.0	94.2	93.8	0.85	54.1	7.9	289	2.5	3.2	0.92	410	61
37	M3GP	250 SMD	3GGP	253 240••J	990	94.4	94.8	94.6	0.84	67.3	8.2	356	3.3	3.3	1.74	500	65
45	M3GP	280 SMB	3GGP	283 220••K	991	94.8	94.9	94.2	0.86	79.6	6.9	433	2.4	2.6	2.2	680	65
55	M3GP	280 SMC	3GGP	283 230••K	990	95.1	95.1	94.7	0.86	97	6.8	530	2.4	2.6	2.85	725	65
75	M3GP	315 SMC	3GGP	313 230••K	993	95.3	95.3	94.8	0.84	135	7.0	721	2.2	2.8	4.9	1000	67
90	M3GP	315 SMD	3GGP	313 240••K	994	95.5	95.5	94.9	0.83	163	7.2	864	2.4	2.9	4.9	1040	67
110	M3GP	315 MLB	3GGP	313 420••K	993	95.5	95.5	95.1	0.84	197	6.9	1057	2.3	2.7	6.3	1200	68
132	M3GP	315 LKA	3GGP	313 810••K	993	95.7	95.7	95.4	0.83	239	6.9	1269	2.4	2.7	7.3	1410	68
160	M3GP	315 LKC	3GGP	313 830••K	994	95.9	95.9	95.5	0.83	290	7.4	1537	2.7	2.9	9.2	1600	68
160	M3GP	355 SMB	3GGP	353 220••K	995	95.9	95.9	95.5	0.83	290	7.0	1535	2.1	2.7	9.7	1680	73
200	M3GP	355 SMC	3GGP	353 230••K	995	96.0	96.0	95.7	0.83	362	7.3	1919	2.3	2.8	11.3	1820	73
250	M3GP	355 MLB	3GGP	353 420••K	995	96.0	96.0	95.8	0.83	452	7.1	2399	2.3	2.7	13.5	2180	73
315	M3GP	355 LKA	3GGP	353 810••K	994	96.0	96.0	95.8	0.83	570	6.9	3026	2.3	2.6	15.5	2500	76
355	M3GP	355 LKB	3GGP	353 820••K	995	96.0	96.0	95.6	0.80	667	7.7	3407	2.7	2.9	16.5	2600	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

Dust ignition protection aluminum motors
Technical data for Category 3D - T = 125 °C - IP 55

ATEX Certified

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30; 2008

Output		Motor		Product code	Speed	Efficiency IEC 60034-2-1; 2007 Full load	3/4 load	1/2 load	Power factor	Current I_N	I_s/I_N	Torque T_N	T_l/T_N	T_b/T_N	Moment of inertia J = 1/4 GD²	Weight	Sound pressure level L_{PA}
kW		type			r/min	100%	75%	50%	cos φ	A		Nm			kgm²	kg	dB
3000 r/min = 2-poles				**400 V 50 Hz**						**CENELEC-design**							
0.37		**M3AAD**	**71 A**	3GAA 071 311-E	2800	71.6	72.3	70.2	0.76	0.98	5.1	1.26	3.0	2.9	0.00035	4.9	58
0.55		**M3AAD**	**71 B**	3GAA 071 312-E	2790	78.4	79.8	78.7	0.78	1.29	5.3	1.88	2.9	2.8	0.00045	5.9	58
0.75		**M3AAD**	**80 B**	3GAA 081 312-E	2895	80.6	80.4	77.3	0.79	1.7	8.1	2.4	3.7	3.9	0.0009	10.5	60
1.1		**M3AAD**	**80 C**	3GAA 081 313-E	2880	82.1	82.0	79.2	0.81	2.3	7.6	3.6	2.8	3.6	0.0012	11	60
1.5		**M3AAD**	**90 L**	3GAA 091 312-E	2900	84.1	85.0	83.5	0.86	2.9	7.6	4.9	2.5	3.3	0.0024	16	60
2.2		**M3AAD**	**90 LB**	3GAA 091 313-E	2875	84.6	85.7	85.5	0.85	4.4	6.9	7.3	2.8	3.2	0.0027	18	63
3		**M3AAD**	**100 LB**	3GAA 101 312-E	2930	87.9	87.9	86.6	0.86	5.7	8.7	9.7	3.3	4.0	0.005	25	62
4		**M3AAD**	**112 MB**	3GAA 111 312-E	2885	86.1	87.0	88.0	0.88	7.6	7.6	13.2	2.5	2.8	0.0062	30	68
5.5		**M3AAD**	**132 SB**	3GAA 131 312-E	2915	88.0	88.5	87.6	0.82	11	7.9	18	2.6	3.6	0.016	42	73
7.5		**M3AAD**	**132 SC**	3GAA 131 313-E	2915	88.5	88.7	88.1	0.87	14	7.6	24.5	2.2	3.2	0.022	56	73
11		**M3AA**	**160 MLA**	3GAA 161 031-G	2938	90.7	91.5	91.1	0.91	19.2	7.5	35.7	2.4	3.1	0.044	91	69
15		**M3AA**	**160 MLB**	3GAA 161 036-G	2934	91.5	92.5	92.2	0.91	26	7.5	48.8	2.5	3.3	0.053	105	69
18.5		**M3AA**	**160 MLC**	3GAA 161 037-G	2932	92.0	93.1	93.1	0.92	31.5	7.5	60.2	2.9	3.4	0.063	123	69
22		**M3AA**	**180 MLA**	3GAA 181 031-G	2952	92.2	92.7	92.2	0.87	39.5	7.7	71.1	2.8	3.3	0.076	132	69
30		**M3AA**	**200 MLA**	3GAA 201 035-G	2956	93.1	93.5	92.9	0.90	51.6	7.7	96.9	2.7	3.1	0.178	210	72
37		**M3AA**	**200 MLB**	3GAA 201 036-G	2959	93.4	93.7	93.0	0.90	63.5	8.2	119	3.0	3.3	0.196	225	72
45		**M3AA**	**225 SMA**	3GAA 221 031-G	2961	93.6	93.9	93.1	0.88	78.8	6.7	145	2.5	2.5	0.244	263	74
55		**M3AA**	**250 SMA**	3GAA 251 031-G	2967	94.1	94.4	93.8	0.88	95.8	6.8	177	2.2	2.7	0.507	304	75
75		**M3AA**	**280 SMA**	3GAA 281 031-G	2968	94.5	94.8	94.3	0.89	128	7.1	241	2.5	2.8	0.583	389	75
90		**M3AA**	**280 SMB**	3GAA 281 032-G	2971	95.0	95.2	94.8	0.89	153	7.8	289	2.6	3.2	0.644	425	75
3000 r/min = 2-poles				**400 V 50 Hz**						**High-output design**							
0.75	[2]	**M3AAD**	**71 C**	3GAA 071 003-E	2785	76.6	77.1	76.4	0.80	1.76	5.3	2.5	3.2	3.2	0.00056	6.5	58
1.5	[1] [2]	**M3AAD**	**80 C**	3GAA 081 003-E	2830	80.7	82.0	80.0	0.83	3.2	5.8	5	2.6	3.0	0.0011	11	60
2.7	[1] [2]	**M3AAD**	**90 LB**	3GAA 091 003-E	2860	81.0	81.2	79.0	0.86	5.5	7.0	9	2.6	3.0	0.0027	18	68
4	[1] [2]	**M3AAD**	**100 LB**	3GAA 101 002-E	2900	84.3	83.9	83.7	0.86	7.9	7.5	13.1	2.7	3.6	0.005	25	68
5.5	[1] [2]	**M3AAD**	**112 MB**	3GAA 111 102-E	2850	86.4	87.0	87.4	0.90	10.2	7.2	18.4	3.4	3.4	0.0062	30	68
9.2	[1] [2]	**M3AAD**	**132 SBB**	3GAA 131 004-E	2875	87.0	88.0	86.5	0.92	16.5	7.2	30.5	2.5	3.0	0.018	52	68
11		**M3AAD**	**132 SMB**	3GAA 131 315-E	2900	90.3	90.8	90.4	0.87	20.2	8.5	36.2	2.7	3.7	0.01865	77	68
11	[1] [2]	**M3AAD**	**132 SC**	3GAA 131 003-E	2890	88.7	89.5	89.3	0.89	20.1	8.1	36.3	2.8	3.4	0.018	52	68
15		**M3AAD**	**132 SMC**	3GAA 131 316-E	2905	90.4	90.7	89.8	0.84	28.5	9.1	49.3	3.3	4.0	0.02	81	69
18.5		**M3AAD**	**132 SME**	3GAA 131 317-E	2895	91.1	92.2	92.4	0.89	32.9	9.7	61	3.2	4.3	0.02559	93	68
22	[1] [2]	**M3AAD**	**132 SME**	3GAA 131 008-E	2890	90.2	91.0	90.9	0.85	41.4	9.7	72.6	3.9	3.8	0.02559	91	69
30		**M3AA**	**180 MLB**	3GAA 181 032-G	2950	92.8	93.5	93.3	0.88	53	7.9	97.1	2.8	3.3	0.092	149	69
45		**M3AA**	**200 MLC**	3GAA 201 033-G	2957	93.3	93.8	93.2	0.88	79.1	8.1	145	3.1	3.3	0.196	225	72
55		**M3AA**	**225 SMB**	3GAA 221 032-G	2961	93.9	94.3	93.6	0.88	96	6.5	177	2.4	2.5	0.274	286	74
75		**M3AA**	**250 SMB**	3GAA 251 032-G	2970	94.6	94.9	94.4	0.89	128	7.6	241	2.8	3.1	0.583	351	75

[1] Temperature rise class F

[2] Efficiency class IE1

Dust ignition proof aluminum motors
Technical data for Category 3D - T = 125 °C - IP 55

ATEX Certified

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30; 2008

Output		Motor			Speed	Efficiency IEC 60034-2-1; 2007 Full load	3/4 load	1/2 load	Power factor	Current I_N	I_s/I_N	Torque T_N	T_l/T_N	T_b/T_N	Moment of inertia J = 1/4 GD²	Weight	Sound pressure level L_{PA}
kW		type		Product code	r/min	100%	75%	50%	cos φ	A		Nm			kgm²	kg	dB
1500 r/min = 4-poles				**400 V 50 Hz**						**CENELEC-design**							
0.25		**M3AAD**	**71 A**	3GAA 072 311-E	1365	65.1	66.0	62.7	0.76	0.72	4.0	1.74	2.0	2.1	0.00066	5.2	45
0.37		**M3AAD**	**71 B**	3GAA 072 312-E	1355	69.7	71.9	71.1	0.79	0.96	3.8	2.6	2.0	2.2	0.0008	5.9	45
0.55		**M3AAD**	**80 A**	3GAA 082 311-E	1375	74.1	75.9	75.0	0.78	1.37	4.5	3.8	1.9	2.2	0.0013	8.5	50
0.75		**M3AAD**	**80 D**	3GAA 082 314-E	1415	79.9	80.4	78.6	0.75	1.8	5.8	5	2.6	2.8	0.0016	12	50
1.1		**M3AAD**	**90 LB**	3GAA 092 314-E	1435	83.7	84.1	83.0	0.78	2.4	6.6	7.3	2.9	3.2	0.0043	16	50
1.5		**M3AAD**	**90 LD**	3GAA 092 315-E	1435	84.2	84.1	81.9	0.76	3.3	7.0	9.9	3.1	3.5	0.0048	17	50
2.2		**M3AAD**	**100 LC**	3GAA 102 313-E	1450	87.1	86.8	84.8	0.78	4.6	7.3	14.4	2.8	3.4	0.009	25	54
3		**M3AAD**	**100 LD**	3GAA 102 314-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		**M3AAD**	**112 MB**	3GAA 112 312-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		**M3AAD**	**132 M**	3GAA 132 312-E	1465	89.0	89.8	89.1	0.79	11.2	6.3	35.8	1.9	2.6	0.038	48	66
7.5		**M3AAD**	**132 MA**	3GAA 132 314-E	1460	89.1	89.9	89.5	0.79	15.3	6.4	49	1.8	2.6	0.048	59	63
11		**M3AA**	**160 MLA**	3GAA 162 031-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**	**160 MLB**	3GAA 162 032-G	1470	91.4	92.4	92.2	0.83	28.5	7.1	97.4	2.6	3.0	0.099	118	62
18.5		**M3AA**	**180 MLA**	3GAA 182 031-G	1477	91.9	92.9	92.7	0.84	34.5	7.2	119	2.6	2.9	0.166	146	62
22		**M3AA**	**180 MLB**	3GAA 182 032-G	1475	92.4	93.3	93.2	0.84	40.9	7.3	142	2.6	3.0	0.195	163	62
30		**M3AA**	**200 MLA**	3GAA 202 031-G	1480	93.2	94.0	93.7	0.84	55.3	7.4	193	2.8	3.0	0.309	218	63
37		**M3AA**	**225 SMA**	3GAA 222 031-G	1479	93.4	93.9	93.4	0.84	68	7.1	238	2.6	2.9	0.356	240	66
45		**M3AA**	**225 SMB**	3GAA 222 032-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**	**250 SMA**	3GAA 252 031-G	1480	94.4	95.0	94.7	0.85	98.9	7.0	354	2.6	2.9	0.765	314	67
75	[1]	**M3AA**	**280 SMA**	3GAA 282 031-G	1478	94.3	95.0	94.7	0.85	135	7.1	484	2.8	3.0	0.866	389	67
85	[1]	**M3AA**	**280 SMB**	3GAA 282 032-G	1480	94.9	95.3	95.0	0.84	153	8.0	548	3.4	3.6	0.941	418	67
1500 r/min = 4-poles				**400 V 50 Hz**						**High-output design**							
0.55		**M3AAD**	**71 C**	3GAA 072 003-E	1375	69.0	69.3	68.5	0.76	1.51	4.2	3.8	2.4	2.4	0.0011	6.5	45
0.95	[1] [2]	**M3AAD**	**80 C**	3GAA 082 003-E	1395	76.0	76.9	76.3	0.80	2.2	5.2	6.5	2.5	2.6	0.0023	10.5	50
1.1	[1] [2]	**M3AAD**	**80 C**	3GAA 082 004-E	1395	76.7	77.5	77.9	0.79	2.6	5.0	7.5	2.5	2.5	0.0023	10.5	50
1.85	[1] [2]	**M3AAD**	**90 L**	3GAA 092 003-E	1390	79.3	78.5	78.7	0.80	4.2	4.5	12.7	2.2	2.4	0.0043	16	50
2.2	[1] [2]	**M3AAD**	**90 LB**	3GAA 092 004-E	1390	80.0	80.9	79.5	0.83	4.7	4.5	15.1	2.2	2.4	0.0048	17	50
4	[1] [2]	**M3AAD**	**100 LC**	3GAA 102 003-E	1420	83.2	83.3	81.7	0.82	8.4	5.5	26.8	2.5	2.8	0.009	25	60
5.5	[1] [2]	**M3AAD**	**112 MB**	3GAA 112 102-E	1420	85.1	85.5	84.5	0.80	11.6	6.0	36.9	2.7	3.1	0.0126	34	64
9.2	[1]	**M3AAD**	**132 MBA**	3GAA 132 004-E	1455	89.8	90.5	89.5	0.84	17.6	7.5	60.3	2.1	2.8	0.048	59	59
11		**M3AAD**	**132 SMB**	3GAA 132 315-E	1460	90.4	91.0	90.1	0.79	22.2	7.7	71.9	2.1	3.1	0.0433	83	65
15		**M3AAD**	**132 SMD**	3GAA 132 316-E	1455	90.6	91.3	91.1	0.77	31	7.1	98.4	2.4	2.9	0.0517	92	67
18.5		**M3AA**	**160 MLC**	3GAA 162 033-G	1469	91.4	92.5	92.3	0.84	34.7	7.6	120	3.0	3.2	0.11	127	62
18.5	[1] [2]	**M3AAD**	**132 SMD**	3GAA 132 007-E	1445	89.4	90.0	89.5	0.78	38.2	6.7	122	2.3	2.6	0.05166	92	69
22		**M3AA**	**160 MLD**	3GAA 162 034-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**	**200 MLB**	3GAA 202 032-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**	**225 SMC**	3GAA 222 033-G	1478	94.0	94.7	94.5	0.85	99.3	7.4	355	2.9	3.1	0.474	287	66
68		**M3AA**	**250 SMB**	3GAA 252 032-G	1481	94.7	95.0	94.8	0.84	123	7.9	438	3.1	3.5	0.866	350	67

[1] Temperature rise class F

[2] Efficiency class IE1

Dust ignition proof aluminum motors
Technical data for Category 3D - T = 125 °C - IP 55

ATEX Certified

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30; 2008

Output		Motor		Product code	Speed	Efficiency IEC 60034-2-1; 2007			Power	Current		Torque			Moment of inertia	Weight	Sound pressure level
						Full load	3/4 load	1/2 load	factor	I_N	$\frac{I_s}{I_N}$	T_N	$\frac{T_l}{T_N}$	$\frac{T_b}{T_N}$	J = 1/4 GD²		L_{PA}
kW		type			r/min	100%	75%	50%	cos φ	A		Nm			kgm²	kg	dB
1000 r/min = 6-poles				**400 V 50 Hz**						**CENELEC-design**							
0.18		**M3AAD**	**71 A**	3GAA 073 311-E	895	60.4	60.0	55.0	0.73	0.58	3.1	1.92	1.9	2.0	0.00092	5.5	42
0.25		**M3AAD**	**71 B**	3GAA 073 312-E	895	64.0	63.6	59.5	0.71	0.79	3.3	2.6	2.2	2.2	0.0012	6.5	42
0.37		**M3AAD**	**80 A**	3GAA 083 311-E	910	69.9	71.4	68.8	0.73	1.04	3.6	3.8	1.6	2.0	0.002	9	47
0.55		**M3AAD**	**80 B**	3GAA 083 312-E	905	72.1	73.4	71.2	0.69	1.59	3.3	5.8	1.8	1.9	0.0026	10	47
0.75		**M3AAD**	**90 LB**	3GAA 093 313-E	930	77.6	76.2	75.6	0.71	1.96	4.0	7.7	2.0	2.3	0.0048	18	44
1.1	2)	**M3AAD**	**90 LD**	3GAA 093 314-E	930	78.1	78.6	76.4	0.66	3	4.0	11.2	1.9	2.3	0.0056	20	44
1.5		**M3AAD**	**100 LC**	3GAA 103 312-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	2)	**M3AAD**	**112 MB**	3GAA 113 312-E	940	81.8	83.1	82.5	0.73	5.3	4.4	22.3	1.8	2.2	0.01	28	56
3		**M3AAD**	**132 S**	3GAA 133 311-E	960	83.3	83.6	81.7	0.65	7.9	4.3	29.8	1.6	2.3	0.031	39	57
4		**M3AAD**	**132 MA**	3GAA 133 312-E	960	84.9	85.3	83.9	0.68	10	4.6	39.7	1.5	2.2	0.038	46	61
5.5		**M3AAD**	**132 MC**	3GAA 133 314-E	965	86.1	86.1	84.3	0.67	13.7	6.2	54.4	2.5	2.8	0.049	59	61
7.5		**M3AA**	**160 MLA**	3GAA 163 031-G	975	88.6	89.9	89.7	0.79	15.4	7.4	73.4	1.7	3.2	0.087	98	59
11		**M3AA**	**160 MLB**	3GAA 163 032-G	972	89.3	90.7	90.6	0.79	22.5	7.5	108	1.9	2.9	0.114	125	59
15		**M3AA**	**180 MLA**	3GAA 183 031-G	981	90.5	91.4	91.0	0.77	31	6.5	146	1.8	2.8	0.192	162	59
18.5		**M3AA**	**200 MLA**	3GAA 203 031-G	988	91.6	92.3	91.7	0.80	36.4	6.7	178	2.3	2.9	0.382	196	63
22		**M3AA**	**200 MLB**	3GAA 203 032-G	987	92.0	93.0	92.8	0.82	42	6.6	212	2.2	2.8	0.448	218	63
30		**M3AA**	**225 SMA**	3GAA 223 031-G	986	92.7	93.3	92.9	0.83	56.2	7.0	290	2.6	2.9	0.663	266	63
37		**M3AA**	**250 SMA**	3GAA 253 031-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**	**280 SMA**	3GAA 283 031-G	988	93.2	94.0	93.9	0.84	82.9	6.8	434	2.4	2.6	1.369	378	63
55	1)	**M3AA**	**280 SMB**	3GAA 283 032-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**							
0.37		**M3AAD**	**71 C**	3GAA 073 003-E	870	61.5	61.2	59.0	0.72	1.2	3.1	4	2.5	2.4	0.0015	7	44
0.75	1) 2)	**M3AAD**	**80 C**	3GAA 083 003-E	905	70.1	70.3	69.1	0.76	2	3.9	7.9	2.5	2.4	0.0031	11	47
1.3	1) 2)	**M3AAD**	**90 LB**	3GAA 093 003-E	910	74.4	72.6	68.7	0.71	3.5	4.0	13.6	1.9	2.2	0.0048	18	44
2.2	1) 2)	**M3AAD**	**100 LC**	3GAA 103 002-E	940	78.0	74.0	71.2	0.71	5.7	4.5	22.3	1.9	2.3	0.009	26	49
3	1) 2)	**M3AAD**	**112 MB**	3GAA 113 102-E	920	79.7	80.5	80.3	0.75	7.2	3.8	31.1	1.9	2.2	0.0126	32	76
15		**M3AA**	**160 MLC**	3GAA 163 033-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**	**200 MLC**	3GAA 203 033-G	985	92.0	93.1	92.9	0.83	56.7	6.9	290	2.3	2.8	0.531	245	63
37		**M3AA**	**225 SMB**	3GAA 223 034-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**	**250 SMB**	3GAA 253 032-G	989	93.4	94.1	93.9	0.83	83.7	7.0	434	2.5	2.7	1.369	341	63
55	1)	**M3AA**	**250 SMC**	3GAA 253 033-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

2) Efficiency class IE1

Dust ignition proof aluminum motors
Technical data for Category 3D - T = 125 °C - IP 55

ATEX Certified

IP 55 - IC 411 - Insulation class F, temperature rise class B

Output		Motor			Speed	Efficiency IEC 60034-2-1; 2007				Current		Torque			Moment of inertia		Sound pressure level
						Full load	3/4 load	1/2 load	Power factor	I_N	$\frac{I_s}{I_N}$	T_N	$\frac{T_l}{T_N}$	$\frac{T_b}{T_N}$	J = 1/4 GD²	Weight	L_{PA}
kW		type		Product code	r/min	100%	75%	50%	cos φ	A		Nm			kgm²	kg	dB
750 r/min = 8-poles				**400 V 50 Hz**						**CENELEC-design**							
0.09		**M3AAD**	**71 A**	3GAA 074 001-••E	660	49.4	46.0	38.5	0.59	0.44	2.0	1.3	2.4	2.3	0.00092	5.5	40
0.12		**M3AAD**	**71 B**	3GAA 074 002-••E	670	51.4	47.5	39.9	0.56	0.6	2.1	1.71	2.8	2.4	0.0012	6.5	43
0.18		**M3AAD**	**80 A**	3GAA 084 001-••E	685	63.5	62.0	56.3	0.62	0.65	2.8	2.5	1.6	2.0	0.0018	8.5	45
0.25		**M3AAD**	**80 B**	3GAA 084 002-••E	685	67.1	67.2	63.4	0.63	0.85	2.8	3.4	1.4	1.9	0.0024	9.5	50
0.37		**M3AAD**	**90 S**	3GAA 094 001-••E	695	59.4	56.3	49.1	0.54	1.66	2.7	5	1.6	2.1	0.0032	13	52
0.55		**M3AAD**	**90 L**	3GAA 094 002-••E	660	59.1	59.5	55.2	0.58	2.3	2.1	7.9	1.5	1.6	0.0043	16	52
0.75		**M3AAD**	**100 LA**	3GAA 104 001-••E	720	70.7	67.1	59.9	0.47	3.2	3.9	9.9	2.8	3.6	0.0069	20	46
1.1		**M3AAD**	**100 LB**	3GAA 104 002-••E	695	76.0	76.5	74.6	0.66	3.1	3.4	15.1	1.7	2.2	0.0082	23	53
1.5		**M3AAD**	**112 M**	3GAA 114 101-••E	690	74.4	75.9	74.1	0.70	4.1	3.2	20.7	1.4	1.9	0.01	28	55
2.2		**M3AAD**	**132 S**	3GAA 134 001-••E	715	82.9	83.0	80.8	0.62	6.1	3.4	29.3	1.3	1.9	0.0038	46	56
3		**M3AAD**	**132 M**	3GAA 134 002-••E	715	79.9	80.8	79.1	0.64	8.4	3.2	40	1.2	1.8	0.0045	53	58
4		**M3AA**	**160 MLA**	3GAA 164 031-••G	728	84.1	85.1	83.7	0.67	10.2	5.4	52.4	1.5	2.6	0.068	84	59
5.5		**M3AA**	**160 MLB**	3GAA 164 032-••G	726	84.7	86.0	84.9	0.67	13.9	5.6	72.3	1.4	2.6	0.085	98	59
7.5		**M3AA**	**160 MLC**	3GAA 164 033-••G	727	86.1	87.3	86.6	0.65	19.3	4.7	98.5	1.5	2.8	0.132	137	59
11		**M3AA**	**180 MLA**	3GAA 184 031-••G	731	86.8	88.4	87.8	0.67	27.3	4.4	143	1.8	2.6	0.214	175	59
15		**M3AA**	**200 MLA**	3GAA 204 031-••G	737	90.2	91.3	90.9	0.74	32.4	5.3	194	2.0	2.4	0.45	217	60
18.5		**M3AA**	**225 SMA**	3GAA 224 031-••G	739	91.0	92.0	91.5	0.73	40.1	5.2	239	2.0	2.3	0.669	266	63
22		**M3AA**	**225 SMB**	3GAA 224 032-••G	738	91.6	92.4	92.0	0.74	46.8	5.5	284	2.0	2.3	0.722	279	63
30		**M3AA**	**250 SMA**	3GAA 254 031-••G	742	92.4	92.9	92.3	0.71	66	5.8	386	2.6	2.4	1.404	340	63
37		**M3AA**	**280 SMA**	3GAA 284 031-••G	740	92.3	93.0	92.7	0.74	78.1	5.6	477	2.4	2.3	1.505	403	63
750 r/min = 8-poles				**400 V 50 Hz**						**High-output design**							
0.18	[1]	**M3AAD**	**71 C**	3GAA 074 003-••E	660	47.2	44.8	45.0	0.66	0.83	2.2	2.6	2.3	2.2	0.0015	7	40
0.37	[1]	**M3AAD**	**80 C**	3GAA 084 003-••E	700	57.5	56.0	55.0	0.62	1.49	3.3	5	2.5	2.5	0.0031	11	45
0.75	[1]	**M3AAD**	**90 LB**	3GAA 094 003-••E	680	63.1	59.8	53.0	0.60	2.8	3.0	10.5	1.8	2.0	0.0048	18	43
1.5	[1]	**M3AAD**	**100 LC**	3GAA 104 003-••E	670	70.0	65.2	63.8	0.70	4.4	3.3	21.3	1.8	2.2	0.009	26	46
2	[1]	**M3AAD**	**112 MB**	3GAA 114 102-••E	685	73.2	72.5	70.0	0.69	5.7	3.4	27.8	2.1	2.3	0.0126	32	52

[1] Temperature rise class F

Dust ignition protection Ex t cast iron motors variant codes

Code [1]	Variant	Frame size														
		71	80	90	100	112	132	160	180	200	225	250	280	315	355	400
Administration																
531	Sea freight packing	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P
532	Packing of motor in vertical mounting position	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P
533	Wooden sea freight packing	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Balancing																
052	Vibration acc. to Grade A (IEC 60034-14).	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
417	Vibration acc. to Grade B (IEC 60034-14).	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
423	Balanced without key.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
424	Full key balancing.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Bearings and Lubrication																
036	Transport lock for bearings.	NA	NA	NA	NA	NA	NA	M	M	M	M	M	M	M	M	P
037	Roller bearing at D-end.	NA	NA	NA	NA	NA	NA	M	M	M	M	M	M	M	M	P
040	Heat resistant grease.	S	S	S	S	S	S	P	P	P	P	P	P	P	P	P
041	Bearings regreasable via grease nipples.	NA	NA	NA	NA	NA	NA	S	S	S	S	S	S	S	S	S
043	SPM compatible nipples for vibration measurement	P	P	P	P	P	P	S	S	S	S	S	S	S	S	S
058	Angular contact bearing at D-end, shaft force away from bearing.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
060	Angular contact bearing at D-end, shaft force towards bearing.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P
107	Pt100 2-wire in bearings.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
128	Double Pt100, 2-wire in bearings	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
129	Double Pt100, 3-wire in bearings	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
130	Pt100 3-wire in bearings.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
194	2Z bearings greased for life at both ends.	S	S	S	S	S	S	M	M	M	M	M	NA	NA	NA	NA
433	Outlet grease collector	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P
506	Nipples for vibration measurement : SKF Marlin Quick Connect stud CMSS-2600-3	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
654	Provision for vibration sensors (M8x1)	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
795	Lubrication information plate	NA	NA	NA	NA	NA	NA	M	M	M	M	M	S	S	S	S
796	Grease nipples JIS B 1575 Pt 1/8 Type A	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
797	Stainless steel SPM nipples	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
798	Stainless steel grease nipples	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
799	Grease nipples flat type DIN 3404, thread M10x1	NA	NA	NA	NA	NA	NA	M	M	M	M	M	M	M	M	P
800	Grease nipples JIS B 1575 Pt 1/8" pin type	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
Brakes																
412	Built-on brake.	R	R	R	R	R	R	R	R	R	NA	NA	NA	NA	NA	NA
Branch standard designs																
178	Stainless steel / acid proof bolts.	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P
204	Jacking bolts for foot mounted motors.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	S	S
209	Non-standard voltage or frequency, (special winding).	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
396	Motor designed for ambient temperature -20 °C to -40 °C, wtih space heaters (code 450/451 must be added).	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
397	Motor designed for ambient temperature -40 °C to -55 °C, wtih space heaters (code 450/451 must be added).	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P

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		71	80	90	100	112	132	160	180	200	225	250	280	315	355	400
398	Motor designed for ambient temperature -20 °C to -40 °C.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
399	Motor designed for ambient temperature -40 °C to -55 °C.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
425	Corrosion protected stator and rotor core.	P	P	P	P	P	S	S	S	S	S	S	P	P	P	P
786	Special design shaft upwards (V3, V36, V6) for outdoor mounting.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	R	R	NA	NA
Cooling system																
044	Unidirectional fan for reduced noise level. Rotation clockwise seen from D-end. Available only for 2-pole motors.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P
045	Unidirectional fan for reduced noise level. Rotation counter clockwise seen from D-end. Available only for 2-pole motors.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P
068	Light alloy metal fan	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P
183	Separate motor cooling (fan axial, N-end).	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
206	Steel fan	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
422	Separate motor cooling (fan top, N-end).	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P
791	Stainless steel fan cover	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P
Coupling																
035	Assembly of customer supplied coupling-half.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P
Documentation																
141	Binding dimension drawing.	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P
Drain holes																
065	Plugged existing drain holes.	S	S	S	S	S	S	S	S	M	M	M	M	M	M	P
448	Draining holes with metal plugs.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
Earthing Bolt																
067	External earthing bolt.	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Hazardous Environments																
334	Ex t, Dust group III B T125C Db (non-conductive dust) acc. IEC/EN60079-31	P	P	P	P	P	P	M	M	P	P	P	P	P	P	P
335	Ex t, Dust group III B T125C Dc (non-conductive dust) acc. IEC/EN60079-31	P	P	P	P	P	P	M	M	P	P	P	P	P	P	P
336	Ex t, Dust group III C T125 Db (conductive dust) acc. IEC/EN60079-31	P	P	P	P	P	P	M	M	P	P	P	P	P	P	P
337	Ex t, Dust group III C T125 Dc (conductive dust) acc. IEC/EN60079-31	P	P	P	P	P	P	M	M	P	P	P	P	P	P	P
813	Thermistor-based surface temperature protection T4 for frequency convertor duty.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
814	Ex tD (DIP) motors, temperature class T 150C.	P	P	P	P	P	P	M	M	M	M	M	M	M	P	P
Heating elements																
450	Heating element, 100-120V.	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P
451	Heating element, 200-240V.	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P
Insulation system																
014	Winding insulation class H.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
405	Special winding insulation for frequency converter supply.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Mounting arrangements																
008	IM 2101 foot/flange mounted, IEC flange, from IM 1001 (B34 from B3).	P	P	P	P	P	P	NA	NA	NA	NA	NA	NA	NA	NA	NA

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		71	80	90	100	112	132	160	180	200	225	250	280	315	355	400
009	IM 2001 foot/flange mounted, IEC flange, from IM 1001 (B35 from B3).	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P
047	IM 3601 flange mounted, IEC flange, from IM 3001 (B14 from B5).	P	P	P	P	P	P	NA	NA	NA	NA	NA	NA	NA	NA	NA
066	Modified for specified mounting position differing from IM B3 (1001), IM B5 (3001), B14 (3601), IM B35 (2001) & IM B34 (2101)	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P
305	Additional lifting lugs.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P
Noise reduction																
055	Noise reduction cover for foot mounted motor	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	R	R	R	R
Painting																
105	Paint thickness report.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
111	Painting system C3M acc. to ISO 12944-5:2007	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
114	Special paint colour, standard grade.	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P
115	Painting system C4M acc. To ISO 12944-5:2007	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
168	Primer paint only.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
303	Painted insulation layer on inside of the terminal boxes.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
754	Painting system C5M acc. to ISO 12944-5:2007	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
710	Thermally sprayed zinc metallaizing with acrylic top coat	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Protection																
005	Metal protective roof, vertical motor, shaft down.	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P
072	Radial seal at D-end.	P	P	P	P	P	P	M	M	M	M	M	NA	NA	NA	NA
073	Sealed against oil at D-end.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	NA	NA
076	Draining holes with plugs in open position.	P	P	P	P	P	P	P	P	S	S	S	S	S	S	S
401	Protective roof, horizontal motor.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
403	Degree of protection IP56.	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P
783	Labyrinth sealing at D-end.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	S	S
Rating & instruction plates																
002	Restamping voltage, frequency and output, continuous duty.	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P
004	Additional text on std rating plate (max 12 digits on free text line).	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
095	Restamping output (maintained voltage, frequency), intermittent duty.	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P
126	Tag plate	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
135	Mounting of additional identification plate, stainless.	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P
139	Additional identification plate delivered loose.	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P
159	Additional plate with text "Made in ...."	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P
161	Additional rating plate delivered loose.	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P
163	Frequency converter rating plate. Rating data according to quotation.	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P
333	For Export Only	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P
Shaft & rotor																
069	Two shaft extensions as per basic catalogue.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
070	One or two special shaft extensions, standard shaft material.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P

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164	Shaft extension with closed key-way.	S	S	S	S	S	S	S	S	S	S	S	P	P	P	P
165	Shaft extension with open key-way.	P	P	P	P	P	P	P	P	P	P	P	S	S	S	S
410	Stainless steel shaft (standard or non-standard design).	R	R	R	R	R	R	R	R	R	R	R	P	P	P	P
Standards and Regulations																
151	Design according to SHELL DEP 33.66.05.31-Gen. June 2007	P	P	P	P	P	P	M	M	M	M	M	P	P	P	P
421	VIK design (Verband der Industriellen Energie- und Kraftwirtschaft e.V.).	NA	NA	NA	NA	NA	NA	M	M	M	M	M	P	P	P	P
482	Design according to Neste OY & Jacobs, specification N-114 E, rev 5, 1.12.2010	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
504	Design according to Neste OY & Jacobs, specification N-114 E, rev 5, 01.12.2010 with SPM adapter	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
505	VIK design with ABB standard shaft dimensions (Verband der Industriellen Energie- und Kraftwirtschaft e.V.).	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
540	China energy label	P	P	P	P	P	P	M	M	M	M	M	M	M	M	NA
541	Inmetro certification	NA	NA	NA	NA	NA	NA	R	R	R	R	R	R	R	R	R
542	NBR design	NA	NA	NA	NA	NA	NA	R	R	R	R	R	R	R	R	R
775	Design according to SHELL DEP 33.66.05.31-Gen. January 1999 design.	P	P	P	P	P	P	M	M	M	M	M	P	P	P	P
778	GOST Export/Import Certificate (Russia).	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
779	SASO Export/Import Certificate (Saudi Arabia)	P	P	P	P	P	P	M	M	M	M	M	M	M	P	P
782	Fulfilling CQST Certification requirements (China)	NA	NA	NA	NA	NA	NA	M	M	M	M	M	M	M	P	P
788	Documentation for Korean KOSHA certification	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P
802	GOST Kazakhstan certified	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
Stator winding temperature sensors																
120	KTY 84-130 (1 per phase) in stator winding.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
328	PTC - thermistors (3 in series), 120 °C, in stator winding	NA	NA	NA	NA	NA	NA	M	M	M	M	M	M	M	M	P
435	PTC - thermistors (3 in series), 130 °C, in stator winding.	NA	NA	NA	NA	NA	NA	M	M	M	M	M	M	M	M	P
436	PTC - thermistors (3 in series), 150 °C, in stator winding.	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
439	PTC - thermistors (2x3 in series), 150 °C, in stator winding.	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P
441	PTC - thermistors (3 in series, 130 °C & 3 in series, 150 °C), in stator winding.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
445	Pt-100 2-wire in stator winding, 1 per phase	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
446	Pt-100 2-wire in stator winding, 2 per phase	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
502	Pt-100 3-wire in stator winding, 1 per phase.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
503	Pt-100 3-wire in stator winding, 2 per phase.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
511	PTC thermistors (2 x 3 in series), 130 °C, in stator winding	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Terminal box																
019	Larger than standard terminal box.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P
021	Terminal box LHS (seen from D-end).	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P

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022	Cable entry LHS (seen from D-end).	NA	NA	NA	NA	NA	NA	M	M	M	M	M	M	M	M	P
157	Terminal box degree of protection IP65.	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P
180	Terminal box RHS (seen from D-end).	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
231	Standard cable glands with clamping device.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
380	Separate terminal box for temperature detectors, std. material	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
400	4 x 90 degr turnable terminal box.	NA	NA	NA	NA	NA	NA	S	S	S	S	S	S	S	NA	NA
402	Terminal box adapted for Al cables.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	S	S	S	S
413	Extended cable connection, no terminal box.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
418	Separate terminal box for auxiliaries, standard material.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
447	Top mounted separate terminal box for monitoring equipment.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	M	M	M	NA
466	Terminal box at N-end.	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P
468	Cable entry from D-end.	NA	NA	NA	NA	NA	NA	M	M	M	M	M	M	M	R	R
469	Cable entry from N-end.	NA	NA	NA	NA	NA	NA	M	M	M	M	M	M	M	P	P
567	Separate terminal box material: Cast Iron	NA	NA	NA	NA	NA	NA	S	S	P	P	P	P	P	P	P
568	Separate terminal box for heating elements, std. material	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
728	Standard cable gland, Ex d IIB, armoured cable, double sealing.	R	P	P	P	P	P	P	P	P	P	P	P	P	P	P
729	Aluminum non-drilled flange for cable glands	NA	NA	NA	NA	NA	NA	P	P	P	P	P	NA	NA	NA	NA
730	Prepared for NPT cable glands	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
732	Standard cable gland, Ex d IIB, armoured cable.	R	P	P	P	P	P	M	M	M	M	M	M	M	M	P
733	Standard cable gland, Ex d IIB, non-armoured cable.	R	P	P	P	P	P	P	P	P	P	P	P	P	P	P
734	Standard cable gland, Ex d IIC, armoured cable.	R	P	P	P	P	P	M	M	M	M	M	M	M	M	P
736	Standard cable gland Ex e acc. to EN-standards.	P	P	P	P	P	P	S	S	S	S	S	S	S	S	S
737	Standard cable gland Ex e with clamping device acc. to EN-standards.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
741	Motor equipped with Ex e terminal box (EN 50019).	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
743	Painted non-drilled flange in steel for cable glands	NA	NA	NA	NA	NA	NA	M	M	M	M	M	P	P	P	P
744	Stainless steel non-drilled flange for cable glands.	NA	NA	NA	NA	NA	NA	M	M	M	M	M	P	P	P	P
745	Painted steel flange equipped with nickle plated brass cable glands	NA	NA	NA	NA	NA	NA	S	S	S	S	S	S	S	S	P
746	Stainless steel cable flange equipped with standard nickle plated brass cable glands	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
Testing																
145	Type test report from a catalogue motor, 400V 50Hz.	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P
146	Type test with report for one motor from specific delivery batch.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
148	Routine test report.	P	P	P	P	P	P	M	M	M	M	M	M	M	M	P
149	Test according to separate test specification.	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
150	Customer witnessed testing. Specify test procedure with other codes.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
222	Torque/speed curve, type test and multi-point load test with report for one motor from specific delivery batch.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
760	Vibration level test	P	P	P	P	P	P	P	P	M	M	M	M	M	M	P

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Code [1]	Variant	Frame size														
		71	80	90	100	112	132	160	180	200	225	250	280	315	355	400
761	Vibration spectrum test for one motor from specific delivery batch.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
762	Noise level test for one motor from specific delivery batch.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
763	Noise spectrum test for one motor from specific delivery batch.	R	R	R	R	R	R	P	P	P	P	P	P	P	P	P
764	Test for one motor from specific delivery batch with ABB frequency converter available at ABB test field. ABB standard test procedure.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Variable speed drives																
181	Rating plate with ABB standard loadability values for VSD operation. Other auxiliaries for VSD operation to be selected as necessary.	NA	NA	NA	NA	NA	NA	M	M	M	M	M	M	M	M	P
470	Prepared for hollow shaft pulse tacho (L&L equivalent).	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
479	Mounting of other type of pulse tacho with shaft extension, tacho not included.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
680	2048 pulse tacho, Ex d, tD, L&L 841910001	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
701	Insulated bearing at N-end.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	M	M	M	P
704	EMC cable gland.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P
747	1024 pulse tacho, Ex d, tD, L&L 841910002	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P	P	P	P

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Dust ignition proof Ex tD (DIP) aluminum motors variant codes

Code [1]	Variant	Frame size											
		71	80	90	100	112	132	160	180	200	225	250	280
Balancing													
417	Vibration acc. to Grade B (IEC 60034-14).	NA	NA	P	P	P	P	R	R	R	R	R	R
423	Balanced without key.	P	P	P	P	P	P	R	P	P	P	P	P
424	Full key balancing.	P	P	P	P	P	P	P	P	P	P	P	P
Bearings and Lubrication													
036	Transport lock for bearings.	NA	NA	M	M	M	M	M	M	M	M	M	M
037	Roller bearing at D-end.	NA	NA	P	P	P	P	M	M	M	M	M	M
039	Cold resistant grease.	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA
040	Heat resistant grease.	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA
041	Bearings regreasable via grease nipples.	NA	NA	P	P	P	P	M	M	M	M	M	S
042	Locked drive-end.	S	S	S	S	S	S	S	S	S	S	S	S
043	SPM compatible nipples for vibration measurement	NA	NA	R	R	R	R	M	M	M	M	M	M
057	2RS bearings at both ends.	M	M	M	M	M	M	M	M	M	M	M	M
058	Angular contact bearing at D-end, shaft force away from bearing.	NA	NA	M	M	M	M	M	M	M	M	M	M
059	Angular contact bearing at N-end, shaft force towards bearing.	NA	NA	M	M	M	M	M	M	M	M	M	M
061	Angular contact bearing at N-end, shaft force away from bearing.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
188	63-series bearings.	NA	NA	M	S	M	M	S	S	S	S	S	S
194	2Z bearings greased for life at both ends.	S	S	NA	NA	NA	NA	S	S	S	S	S	R
195	Bearings greased for life.	S	S	NA	NA	NA	NA	S	S	S	S	S	R
796	Grease nipples JIS B 1575 Pt 1/8 Type A	NA	NA	NA	NA	NA	NA	M	M	M	M	M	M
797	Stainless steel SPM Nipples	NA	NA	R	R	R	R	M	M	M	M	M	M
798	Stainless steel grease nipples	NA	NA	NA	NA	NA	NA	M	M	M	M	M	M
Branch standard designs													
071	Cooling Tower duty	NA	NA	NA	NA	R	R	P	P	P	P	P	P
142	Manilla connection.	NA	NA	P	P	P	P	P	P	P	P	P	P
178	Stainless steel / acid proof bolts.	M	M	M	M	M	M	M	M	M	M	M	M
199	Extreme heavy duty design.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
209	Non-standard voltage or frequency, (special winding).	P	P	P	P	P	P	P	P	P	P	P	P
217	Cast iron D-end shield (on aluminum motor).	NA	NA	M	M	M	M	S	S	S	S	S	S
425	Corrosion protected stator and rotor core.	P	P	P	P	P	P	P	P	P	P	P	P
Cooling system													
053	Metal fan cover.	M	M	M	M	M	M	S	S	S	S	S	S
068	Light alloy metal fan	M	M	M	M	M	M	M	M	M	M	M	M
075	Cooling method IC418 (without fan).	R	R	P	P	P	P	NA	NA	NA	NA	NA	NA
Documentation													
141	Binding dimension drawing.	R	R	R	R	R	R	M	M	M	M	M	M
Drain holes													
065	Plugged existing drain holes.	M	M	M	M	M	M	M	M	M	M	M	M
Earthing Bolt													
067	External earthing bolt.	S	S	S	S	S	S	S	S	S	S	S	S

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		71	80	90	100	112	132	160	180	200	225	250	280
Hazardous Environments													
452	DIP/Ex tD acc. to ATEX directive 94/9/EC, T= 125 °C, cat. 3D, IP 55	M	M	M	M	M	M	M	M	M	M	M	M
453	DIP/Ex tD acc. to ATEX directive 94/9/EC, T= 125 °C, cat. 2D, IP 65	NA	NA	P	P	P	P	NA	NA	NA	NA	NA	NA
Heating elements													
450	Heating element, 100-120V.	M	M	M	M	M	M	M	M	M	M	M	M
451	Heating element, 200-240V.	M	M	M	M	M	M	M	M	M	M	M	M
Insulation system													
014	Winding insulation class H.	R	R	P	P	P	P	P	P	P	P	P	P
405	Special winding insulation for frequency converter supply.	R	R	P	P	P	P	P	P	P	P	P	P
406	Winding for supply >690<=1000 Volts.	NA	NA	NA	NA	NA	NA	R	R	P	P	P	P
Mounting arrangements													
007	IM 3001 flange mounted, IEC flange, from IM 1001 (B5 from B3).	NA	NA	NA	NA	NA	NA	M	M	M	M	M	M
008	IM 2101 foot/flange mounted, IEC flange, from IM 1001 (B34 from B3).	M	M	M	M	M	M	M	NA	NA	NA	NA	NA
009	IM 2001 foot/flange mounted, IEC flange, from IM 1001 (B35 from B3).	M	M	M	M	M	M	M	M	M	M	M	M
047	IM 3601 flange mounted, IEC flange, from IM 3001 (B14 from B5).	M	M	M	M	M	M	M	NA	NA	NA	NA	NA
048	IM 3001 flange mounted, IEC flange, from IM 3601 (B5 from B14).	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA
066	Modified for non-standard mounting position (please specify IM xxxx), (must be ordered for all mounting arrangements excluding IM B3 (1001), IM B5 (3001), IM B35 (2001), B34 (2101) & B14 (3601).	M	M	M	M	M	M	M	M	M	M	M	M
200	Flange ring holder.	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA
218	Flange ring FT 85.	M	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA
219	Flange ring FT 100.	M	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA
220	Flange ring FF 100.	M	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA
223	Flange ring FF 115.	M	M	M	NA	NA	NA	NA	NA	NA	NA	NA	NA
224	Flange ring FT 115.	M	M	M	M	M	NA	NA	NA	NA	NA	NA	NA
226	Flange ring FF 130.	M	M	M	M	M	NA	NA	NA	NA	NA	NA	NA
227	Flange ring FT 130.	M	M	M	M	M	NA	NA	NA	NA	NA	NA	NA
229	Flange FT 130.	NA	NA	NA	M	M	NA	NA	NA	NA	NA	NA	NA
233	Flange ring FF 165.	M	M	M	M	M	NA	NA	NA	NA	NA	NA	NA
234	Flange ring FT 165.	M	M	M	M	M	NA	NA	NA	NA	NA	NA	NA
235	Flange FF 165.	NA	NA	M	NA	NA	NA	NA	NA	NA	NA	NA	NA
243	Flange ring FF 215.	NA	NA	NA	M	M	M	NA	NA	NA	NA	NA	NA
244	Flange ring FT 215.	NA	NA	NA	M	M	M	NA	NA	NA	NA	NA	NA
245	Flange FF 215.	NA	NA	NA	M	M	NA	NA	NA	NA	NA	NA	NA
255	Flange FF 265.	NA	NA	NA	NA	NA	M	NA	NA	NA	NA	NA	NA
260	Flange FT 115.	NA	NA	M	NA	NA	NA	NA	NA	NA	NA	NA	NA
306	IM 1001 foot mounted, from IM 3601 (B3 from B14).	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA

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		71	80	90	100	112	132	160	180	200	225	250	280
307	IM 2101 foot/flange mounted, IEC flange, from IM 3601 (B34 from B14).	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA
308	IM 2001 foot/flange mounted, IEC flange, from IM 3601 (B35 from B14).	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA
309	IM 1001 foot mounted, from IM 3001 (B3 from B5).	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA
310	IM 2101 foot/flange mounted, IEC flange, from IM 3001 (B34 from B5).	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA
311	IM 2001 foot/flange mounted, IEC flange, from IM 3001 (B35 from B5).	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA
312	IM 1001 foot mounted, from IM 2101 (B3 from B34).	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA
315	IM 2001 foot/flange mounted, IEC flange, from IM 2101 (B35 from B34).	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA
316	IM 1001 foot mounted, from IM 2001 (B3 from B35).	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA
319	IM 2101 foot/flange mounted, IEC flange, from IM 2001 (B34 from B35).	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA
Painting													
114	Special paint colour, standard grade.	P	P	M	M	M	M	M	M	M	M	M	M
168	Primer paint only.	NA	NA	P	P	P	P	NA	NA	NA	NA	NA	NA
Protection													
005	Metal protective roof, vertical motor, shaft down.	M	M	M	M	M	M	M	M	M	M	M	M
072	Radial seal at D-end.	M	M	M	M	M	M	M	M	M	M	M	M
073	Sealed against oil at D-end.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	M	NA
158	Degree of protection IP 65.	M	M	M	M	M	M	M	M	M	M	M	M
211	Weather protected, IP xx W	NA	NA	P	P	P	M	NA	NA	NA	NA	NA	NA
403	Degree of protection IP 56.	M	M	M	M	M	M	M	M	M	M	M	M
404	Degree of protection IP 56, without fan and fan cover.	NA	NA	P	P	P	P	NA	NA	NA	NA	NA	NA
784	Gamma-seal at D-end.	NA	NA	M	M	M	M	M	M	M	M	M	M
Rating & instruction plates													
002	Restamping voltage, frequency and output, continuous duty.	M	M	M	M	M	M	R	R	R	R	R	R
003	Individual serial number.	M	M	M	M	M	M	S	S	S	S	S	S
004	Additional text on std rating plate (max 12 digits on free text line).	NA	NA	M	M	M	M	M	M	M	M	M	M
095	Restamping output (maintained voltage, frequency), intermittent duty.	M	M	M	M	M	M	R	R	R	R	R	R
098	Stainless rating plate.	M	M	M	M	M	M	M	M	M	M	M	M
135	Mounting of additional identification plate, stainless.	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA
138	Mounting of additional identification plate, aluminium.	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA
139	Additional identification plate delivered loose.	M	M	M	M	M	M	M	M	M	M	M	M
160	Additional rating plate affixed.	P	P	M	M	M	M	M	M	M	M	M	M
161	Additional rating plate delivered loose.	M	M	M	M	M	M	M	M	M	M	M	M
162	Rating plate fixed to stator.	S	S	S	S	S	S	S	S	S	S	S	S
163	Frequency converter rating plate. Rating data according to quotation.	R	R	R	R	R	R	M	M	M	M	M	M
198	Aluminum rating plate.	S	S	S	S	S	S	S	S	S	S	S	S

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Shaft & rotor													
069	Two shaft extensions as per basic catalogue.	NA	NA	P	P	P	P	P	P	P	P	P	P
070	One or two special shaft extensions, standard shaft material.	NA	NA	P	P	P	P	R	R	R	R	R	R
131	Motor delivered with half key (Key not exceeding shaft diameter)	NA	NA	M	M	M	M	M	M	M	M	M	M
164	Shaft extension with closed key-way.	NA	NA	NA	NA	NA	NA	S	S	S	S	S	S
165	Shaft extension with open key-way.	NA	NA	P	P	P	P	P	P	P	P	P	P
410	Stainless steel shaft (standard or non-standard design).	NA	NA	P	P	P	P	R	R	R	R	R	R
Standards and Regulations													
011	Fulfilling CSA Energy Efficiency Verification (code 010 included).	NA	NA	NA	NA	NA	NA	R	R	R	R	R	R
779	SASO Export/Import Certificate (Saudi Arabia)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Stator winding temperature sensors													
121	Bimetal detectors, break type (NCC), (3 in series), 130 °C, in stator winding.	M	M	M	M	M	M	M	M	M	M	M	M
122	Bimetal detectors, break type (NCC), (3 in series), 150 °C, in stator winding.	M	M	M	M	M	M	M	M	M	M	M	M
123	Bimetal detectors, break type (NCC), (3 in series), 170 °C, in stator winding.	M	M	M	M	M	M	M	M	M	M	M	M
124	Bimetal detectors, break type (NCC), (3 in series), 140 °C, in stator winding.	NA	NA	NA	NA	NA	NA	M	M	M	M	M	M
125	Bimetal detectors, break type (NCC), (2x3 in series), 150 °C, in stator winding.	NA	NA	M	M	M	M	M	M	M	M	M	M
127	Bimetal detectors, break type (NCC), (3 in series, 130 °C & 3 in series, 150 °C), in stator winding.	NA	NA	M	M	M	M	M	M	M	M	M	M
321	Bimetal detectors, closing type (NO), (3 in parallel), 130 °C, in stator winding.	M	M	M	M	M	M	R	R	R	R	R	R
322	Bimetal detectors, closing type (NO), (3 in parallel), 150 °C, in stator winding.	M	M	M	M	M	M	R	R	R	R	R	R
323	Bimetal detectors, closing type (NO), (3 in parallel), 170 °C, in stator winding.	NA	NA	P	P	P	P	R	R	R	R	R	R
325	Bimetal detectors, closing type (NO), (2x3 in parallel), 150 °C, in stator winding.	NA	NA	P	P	M	M	R	R	R	R	R	R
327	Bimetal detectors, closing type (NO), (3 in parallel, 130 °C & 3 in parallel, 150 °C), in stator winding.	NA	NA	P	P	M	M	R	R	R	R	R	R
435	PTC - thermistors (3 in series), 130 °C, in stator winding.	M	M	M	M	M	M	M	M	M	M	M	M
436	PTC - thermistors (3 in series), 150 °C, in stator winding.	M	M	M	M	M	M	S	S	S	S	S	S
437	PTC - thermistors (3 in series), 170 °C, in stator winding.	M	M	P	P	M	M	M	M	M	M	M	M
439	PTC - thermistors (2x3 in series), 150 °C, in stator winding.	NA	NA	M	M	M	M	M	M	M	M	M	M
440	PTC - thermistors (3 in series, 110 °C & 3 in series, 130 °C), in stator winding.	NA	NA	P	P	P	P	R	R	R	R	R	R
441	PTC - thermistors (3 in series, 130 °C & 3 in series, 150 °C), in stator winding.	NA	NA	M	M	M	M	M	M	M	M	M	M

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		71	80	90	100	112	132	160	180	200	225	250	280
442	PTC - thermistors (3 in series, 150 °C & 3 in series, 170 °C), in stator winding.	NA	NA	P	P	M	M	M	M	M	M	M	M
445	Pt-100 2-wire in stator winding, 1 per phase	NA	NA	R	R	M	M	M	M	M	M	M	M
446	Pt-100 2-wire in stator winding, 2 per phase	NA	NA	R	R	R	R	M	M	M	M	M	M
Terminal box													
015	Motor supplied in D connection.	M	M	M	M	M	M	M	M	M	M	M	M
016	9 terminals in terminal box	NA	NA	P	P	P	P	NA	NA	NA	NA	NA	NA
017	Motor supplied in Y connection.	M	M	P	P	NA	NA	M	M	M	M	M	M
019	Larger than standard terminal box.	NA	NA	NA	NA	NA	NA	NA	NA	M	M	M	NA
021	Terminal box LHS (seen from D-end).	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P
022	Cable entry LHS (seen from D-end).	NA	NA	NA	NA	NA	NA	S	S	R	R	R	R
136	Extended cable connection, standard terminal box.	NA	NA	P	P	P	P	R	R	R	R	R	R
137	Extended cable connection, low terminal box, “Flying leads”.	P	P	P	P	P	P	R	R	R	R	R	R
180	Terminal box RHS (seen from D-end).	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P
375	Standard plastic cable gland	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA
376	Two standard plastic cable glands	M	M	M	M	M	M	NA	NA	NA	NA	NA	NA
400	4 x 90 degr turnable terminal box.	NA	NA	NA	NA	NA	NA	R	R	NA	NA	NA	NA
402	Terminal box adapted for Al cables.	NA	NA	NA	NA	NA	NA	NA	NA	P	P	P	P
418	Separate terminal box for auxiliaries, standard material.	NA	NA	NA	R	R	R	M	M	M	M	M	M
465	Terminal box on top.	NA	NA	NA	NA	NA	NA	S	S	S	S	S	S
467	Lower than standard terminal box and rubber extended cable. Cable length 2m.	NA	NA	NA	NA	NA	NA	P	P	P	P	P	P
729	Aluminum non-drilled flange for cable glands	NA	NA	NA	NA	NA	NA	NA	NA	M	M	M	M
736	Standard cable gland Ex e acc. to EN-standards.	M	M	M	M	M	M	R	R	R	R	R	R
737	Standard cable gland Ex e with clamping device acc. to EN-standards	M	M	M	M	M	M	R	R	R	R	R	R
738	Prepared for metric cable glands.	NA	NA	NA	NA	NA	NA	S	S	S	S	S	S
739	Prepared for metric cable glands according to DIN 42925, draft aug. 1999.	NA	NA	NA	NA	NA	NA	S	S	M	M	M	P
740	Prepared for PG cable glands.	NA	NA	NA	NA	NA	NA	M	M	M	M	M	M
Testing													
140	Test confirmation.	M	M	M	M	M	M	M	M	M	M	M	M
145	Type test report from a catalogue motor, 400V 50Hz.	M	M	M	M	M	M	M	M	M	M	M	M
146	Type test with report for one motor from specific delivery batch.	M	M	M	M	M	M	M	M	M	M	M	M
147	Type test with report for motor from specific delivery batch, customer witnessed.	M	M	M	M	M	M	M	M	M	M	M	M
148	Routine test report.	M	M	M	M	M	M	M	M	M	M	M	M
153	Reduced test for classification society.	M	M	M	M	M	M	M	M	M	M	M	M
221	Type test and multi-point load test with report for one motor from specific delivery batch.	M	M	M	M	M	M	M	M	M	M	M	M
222	Torque/speed curve, type test and multi-point load test with report for one motor from specific delivery batch.	NA	NA	P	P	P	P	M	M	M	M	M	M
760	Vibration level test	M	M	P	P	P	P	M	M	M	M	M	M

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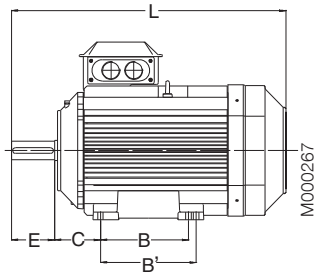
Code [1]	Variant	Frame size											
		71	80	90	100	112	132	160	180	200	225	250	280
762	Noise level test for one motor from specific delivery batch.	M	M	P	P	P	P	M	M	M	M	M	M
763	Noise spectrum test for one motor from specific delivery batch.	NA	NA	P	P	NA	NA	R	R	R	R	R	R
Variable speed drives													
470	Prepared for hollow shaft pulse tacho (L&L equivalent).	R	R	R	R	R	R	M	M	M	M	M	M
476	Separate motor cooling (fan axial, N-end) and 1024 pulse tacho (L&L 861007455-1024).	R	R	R	R	R	P	M	M	M	M	M	M
477	Separate motor cooling (fan axial, N-end) and 2048 pulse tacho (L&L 861007455-2048).	R	R	R	R	R	R	M	M	M	M	M	M
574	Separate motor cooling (fan axial, N-end) and prepared for hollow shaft tacho (L&L 503).	R	R	NA	NA	NA	NA	M	M	M	M	M	M
577	Separate motor cooling (fan axial, N-end) and 2048 pulse tacho (L&L 503).	R	R	NA	NA	NA	NA	M	M	M	M	M	M
578	Separate motor cooling, IP 44, 400V, 50Hz (fan axial, N-end) and prepared for hollow shaft tacho (L&L 503).	NA	NA	NA	NA	NA	NA	M	M	M	M	M	M
580	Separate motor cooling, IP 44, 400V, 50Hz (fan axial, N-end) and 1024 pulse tacho (L&L 503).	NA	NA	NA	NA	NA	NA	M	M	M	M	M	M
581	Separate motor cooling, IP 44, 400V, 50Hz (fan axial, N-end) and 2048 pulse tacho (L&L 503).	NA	NA	NA	NA	R	R	M	M	M	M	M	M
661	1024 Pulse tacho mounted, Hohner series 59, 11-30V	R	R	P	P	P	P	NA	NA	NA	NA	NA	NA
662	2048 Pulse tacho mounted, Hohner series 59, 11-30V	R	R	P	P	P	P	NA	NA	NA	NA	NA	NA
704	EMC cable gland.	NA	NA	M	M	M	M	M	M	M	M	M	M
Y/Δ starting													
117	Terminals for Y/Δ start at both speeds (two speed windings).	NA	NA	P	P	P	P	NA	NA	NA	NA	NA	NA
118	Terminals for Y/Δ start at high speed (two speed windings).	P	P	P	P	P	P	NA	NA	NA	NA	NA	NA

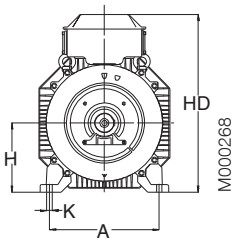
[1] Certain variant codes cannot be used simultaneously.

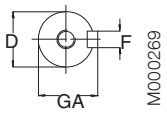
S = Included as standard
P = New manufacture only
M = On modification of a stocked motor; or on new manufacture, the number of number per order may be limited.
R = On request
NA = Not applicable.

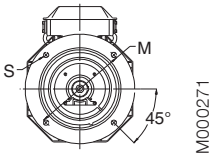
Ex t motors, cast iron frame, 2 D and 3D
Dimension drawings

Foot-mounted motor IM 1001, IM B3



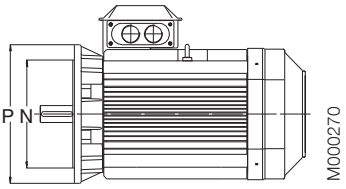


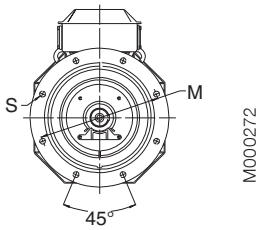




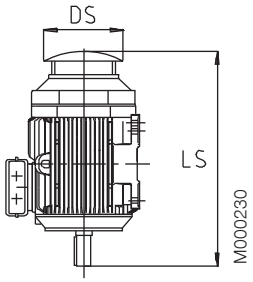
Sizes 71 to 200

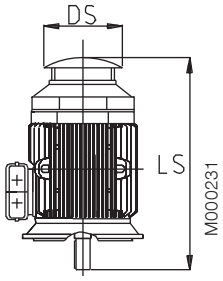
Flange-mounted motor IM 3001, IM B5





Sizes 225 to 355





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		GA		F		E		L max		A	B	B'	C	HD	K	H	M	N	P	S	DS	LS	
	poles		poles		poles		poles		poles														poles	
	2	4-8	2	4-8	2	4-8	2	4-8	2	4-8													2	4-8
71	14	14	16	16	5	5	30	30	264	264	112	90	-	45	178	7	130	110	160	10	-	272.5	272.5	-
80	19	19	21.5	21.5	6	6	40	40	321	321	125	100	-	50	195	10	165	130	200	12	-	331	331	360
90	24	24	27	27	8	8	50	50	357	357	140	100	125	56	219	10	165	130	200	12	-	368.5	368.5	430
100	28	28	31	31	8	8	60	60	381	381	160	140	-	63	247	12	215	180	250	15	-	395	395	505
112	28	28	31	31	8	8	60	60	403	403	190	140	-	70	259	12	215	180	250	15	-	417	417	505
132	38	38	41	41	10	10	80	80	533	533	216	140	178	89	300	12	265	230	300	15	-	551.5	551.5	590
160	42	42	45	45	12	12	110	110	808	808	254	210	254	108	499	14.5	160	300	250	350	18.5	328	756	756
180	48	48	51.5	51.5	14	14	110	110	826	826	279	241	279	121	539	14.5	180	300	250	350	18.5	359	756	756
200	55	55	59	59	16	16	110	110	774	774	318	267	305	133	594	18.5	200	350	300	400	18.5	414	844	844
225	55	60	59	64	16	18	110	140	841	871	356	286	311	149	641	18.5	225	400	350	450	18.5	462	921	951
250	60	65	64	69	18	18	140	140	875	875	406	311	349	168	704	24	250	500	450	550	18.5	506	965	965
280	65	75	69	79.5	18	20	140	140	1088	1088	457	368	419	190	777	24	280	500	450	550	18	555	1190	1190
315 SM_	65	80	69	85	18	22	140	170	1174	1204	508	406	457	216	847	30	315	600	550	660	23	624	1290	1320
315 ML_	65	90	69	95	18	25	140	170	1285	1315	508	457	508	216	847	30	315	600	550	660	23	624	1401	1431
355 SM_	70	100	62.5	90	20	28	140	210	1409	1479	610	500	560	254	974	35	355	740	680	800	23	720	1476	1546
355 ML_	70	100	62.5	90	20	28	140	210	1514	1584	610	560	630	254	974	35	355	740	680	800	23	720	1528	1703
355 LK_	70	100	62.5	90	20	28	140	210	1764	1834	610	710	900	254	974	35	355	740	680	800	23	720	1633	1703
400 L_	80	110	85	126	22	28	170	210	1851	1891	710	900	1000	224	1061	35	400	940	880	1000	28	810	1860	1900
400 LK_	80	100	85	106	22	28	170	210	1851	1891	686	710	800	280	1061	35	400	740	680	800	24	810	1860	1900

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

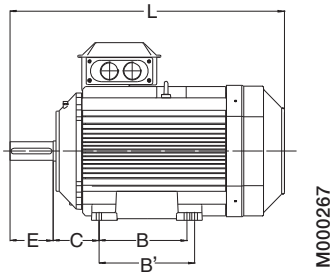
Tolerances:

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

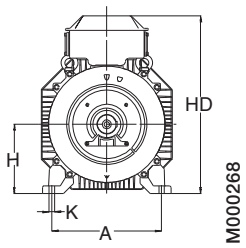
Above table gives the main dimensions in mm. For detailed drawings please see our web-pages www.abb.com/motors&generators or contact ABB.

Ex t motors, aluminum frame, 2 D and 3 D
Dimension drawings

Foot-mounted motor IM 1001, IM B3

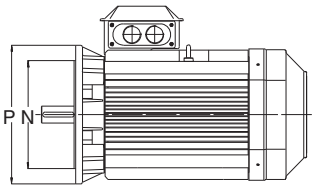


M000267



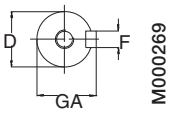
M000268

Flange-mounted motor IM 3001, IM B5

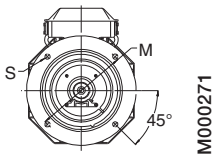


M000270

Shaft extension



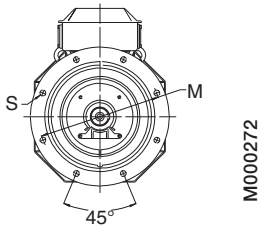
M000269



M000271

Sizes 90 to 200

Flanges



M000272

Sizes 225 to 280

Motor size		IM 1001. IM B3 AND IM 3001. IM B5											IM 1001. IM B3							IM 3001. IM B5				
		D poles		GA poles		F poles		E poles		L max poles		O [5]	A	B	B'	C	HD	K	H	M	N	P	S
		2	4-8	2	4-8	2	4-8	2	4-8	2	4-8												
M3AAD	71	14	14	16	16	5	5	30	30	240	240	20	112	90	-	45	180	7	71	130	110	160	10
	80	19	19	21.5	21.5	6	6	40	40	265.5	265.5	25	125	100	-	50	193.5	10	80	165	130	200	12
	90 S	24	24	27	27	8	8	50	50	284.5	284.5	30	140	100	-	56	217	10	90	165	130	200	12
	90 L	24	24	27	27	8	8	50	50	309.5	309.5	30	140	125	-	56	217	10	90	165	130	200	12
	90 LD	24	24	27	27	8	8	50	50	331.5	331.5	30	140	125	-	56	217	10	90	165	130	200	12
M3AAD	100	28	28	31	31	8	8	60	60	351	351	35	160	140	-	63	237	12	100	215	180	250	15
	112	28	28	31	31	8	8	60	60	393	393	35	190	140	-	70	249	12	112	215	180	250	15
	132 [1]	38	38	41	41	10	10	80	80	447	447	50	216	140	178	89	295.5	12	132	265	230	300	14.5
	132 [2]	38	38	41	41	10	10	80	80	550	550	50	216	140	178	89	321	12	132	265	230	300	14.5
M3AA	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 and MLB-2; MLA-4 poles; MLA-6 poles; MLA-8 and MLB-8 poles.

[4] Remaining variants, i.e. MLC-2, MLD-2 and MLE-2 poles; MLB-4, MLC-4 and MLD-4 poles; MLC-8 poles.

[5] 0 = Minimum free free distance for cooling

IM 3601, IM B14

Motor size	LA	M	N	P	S	T
71	11	85	70	105	M6	3
80	11	100	80	120	M6	3
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

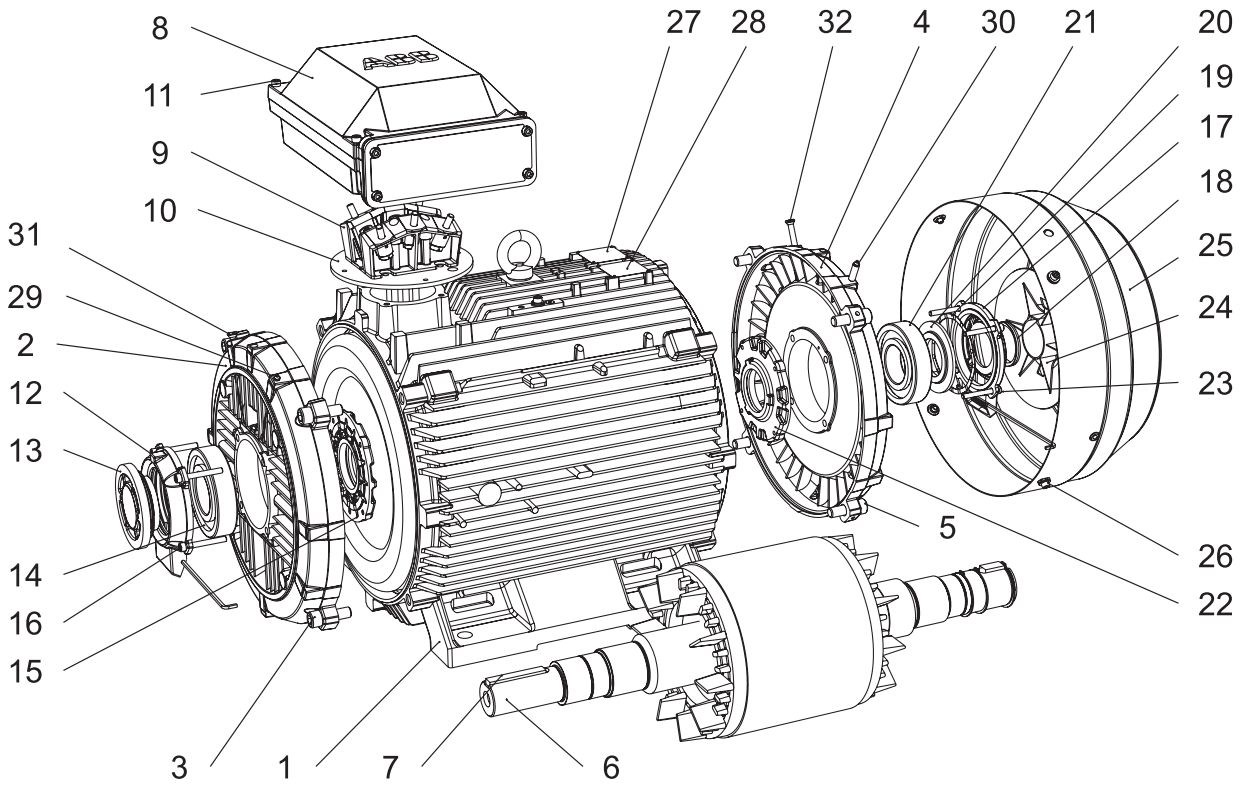
Tolerances:

A, B	± 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

Above table gives the main dimensions in mm. For detailed drawings please see our web-pages www.abb.com/motors&generators or contact ABB.

Dust ignition proof motor construction

Typical exploded view of cast iron motors, frame size 315



M000220

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

Certificate examples

IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres
for rules and details of the IECEx Scheme visit www.iecex.com

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

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
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 DE TYPE VOLONTAIRE**

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

3 Numéro de l'attestation d'examen de type **LCIE 09 ATEX 1010**

4 Appareil
Moteur asynchrone
Type : M3GP160 ..., M3GP180 ... (Génération H)

5 Demandeur : ABB Oy Motors
Adresse : Strombergin 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 certifie que cet appareil ou système de protection est conforme aux exigences essentielles de sécurité et de santé pour la conception d'appareils ou système de protection, électriques de catégorie 3 ou non électriques de catégorie 2 et 3, destinés à être utilisés en atmosphères explosibles, données dans l'annexe II de la directive 94/9/CE du Parlement européen et du Conseil du 23 mars 1994.

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 60079-0 (2006) - EN 61241-0 (2006)
- EN 60079-15 (2005) - EN 61241-1 (2004)

10 Le 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 de type concerne uniquement la conception, les vérifications et essais de l'appareil ou du système de protection spécifié, conformément à 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

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The LCIE's liability applies only on the French text. This document may only be reproduced in its entirety and without any change

1 **VOLUNTARY TYPE EXAMINATION CERTIFICATE**

2 **Equipment** intended for use in potentially explosive atmospheres **(Directive 94/9/EC)**

3 Type Examination Certificate number **LCIE 09 ATEX 1010**

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

5 applicant : ABB Oy Motors
Address : Strombergin Puistotie 5A
FIN - 65101 VAASA - Finland

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

8 LCIE certifies that this equipment or protective system has been found to comply with the essential Health and Safety Requirements that relate to the design of equipment or protective system, of category 3 electrical or categories 2 and 3 non electrical, which is intended for use in potentially explosive atmospheres, given in Annex II of the Directive 94/9/EC of the European Parliament and Council of 23 March 1994.

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 reference to :
- EN 60079-0 (2006) - EN 61241-0 (2006)
- EN 60079-15 (2005) - 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 type examination certificate relates only to the design, examination and tests of this specified equipment or protective system in accordance III to the directive 94/9/EC.

Further requirements of the Directive may 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.

Page 1 sur 4
03-Annexe III_fab_app - rev2.DOC

M000740

EC Declaration of Conformity

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

hereby declares that

the products: 3-phase induction motors, series M2GP, M3JP, M3JC, M3KP, M3KC, M3GP, M3HP and M3LP; as listed on page 2 in this document, fulfill provisions of the relevant Council Directives:

Directive 94/9/EC (ATEX of 23rd March 1994)

by applying the following harmonized standards:

EN 60079-0 (2006), EN 60079-1 (2007), EN 60079-7 (2007), EN 60079-15 (2005), EN 61241-0 (2006), EN 61241-1 (2004).

ABB Oy Motors and Generators declare on it's sole responsibility,

- that the state of the art of these standards do not modify the result of the assessment carried out by LCIE which issued the EC type examination certificates according to former editions of the standard series.

- that listed motors conform to the requirements of annex II of the directive 94/9/EC clause 1.2.7 by applying the standards series EN 60034.

Directive 2009/125/EC (EuP of 21st October 2009)

by fulfilling the requirements of the standard IEC 60034-30: 2008 Ed 1 in respect of the efficiency class.

Note: When installing motors for converter supply applications additional requirements must be respected regarding the motor as well as the installation, as described in the appropriate dedicated addendum.

Signed by

Juha-Pekka Kuokkala
Title Product Development Director
Date June 22nd 2011

3GZF500930-988

ABB Oy

Motors and Generators	Visiting Address	Telephone	Internet	Business Identity Code:
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P.O. Box 633	FI-65320 Vaasa	Telefax	e-mail:	Domicile: Helsinki
FI-65101 Vaasa	FINLAND	+358 10 22 47372	first name.last name	
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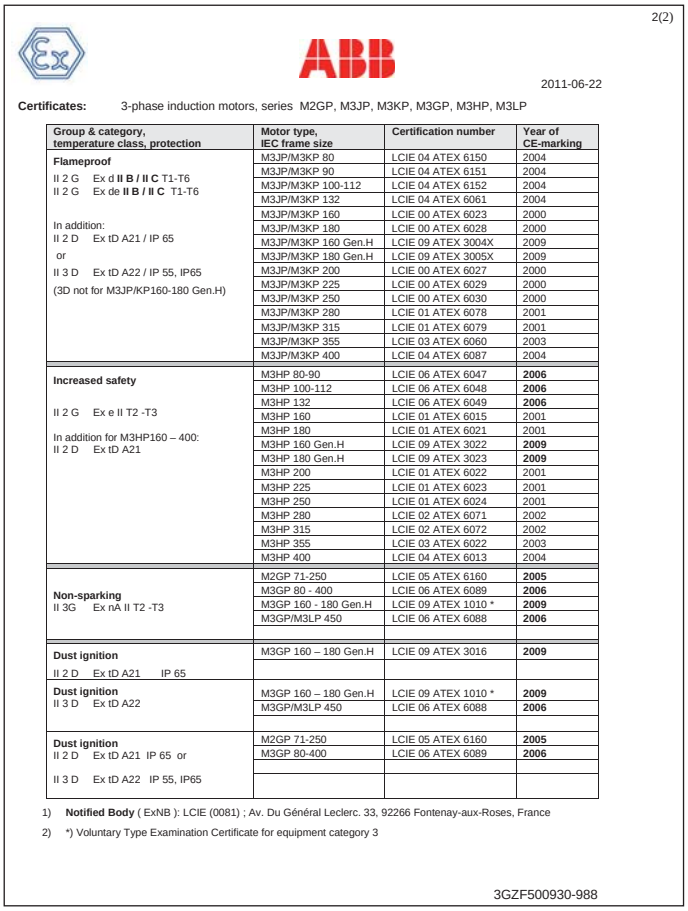

2011-06-22

Certificates: 3-phase induction motors, series M2GP, M3JP, M3KP, M3GP, M3HP, M3LP

Group & category, temperature class, protection	Motor type, IEC frame size	Certification number	Year of CE-marking
Flameproof	M3JP/M3KP 80	LCIE 04 ATEX 6150	2004
II 2 G Ex d **II B / II C** T1-T6	M3JP/M3KP 90	LCIE 04 ATEX 6151	2004
II 2 G Ex de **II B / II C** T1-T6	M3JP/M3KP 100-112	LCIE 04 ATEX 6152	2004
	M3JP/M3KP 132	LCIE 04 ATEX 6061	2004
In addition:	M3JP/M3KP 160	LCIE 00 ATEX 6023	2000
II 2 D Ex tD A21 / IP 65	M3JP/M3KP 180	LCIE 00 ATEX 6028	2000
or	M3JP/M3KP 160 Gen.H	LCIE 09 ATEX 3004X	2009
II 3 D Ex tD A22 / IP 55, IP65	M3JP/M3KP 180 Gen.H	LCIE 09 ATEX 3005X	2009
(3D not for M3JP/KP160-180 Gen.H)	M3JP/M3KP 200	LCIE 00 ATEX 6027	2000
	M3JP/M3KP 225	LCIE 00 ATEX 6029	2000
	M3JP/M3KP 250	LCIE 00 ATEX 6030	2000
	M3JP/M3KP 280	LCIE 01 ATEX 6078	2001
	M3JP/M3KP 315	LCIE 01 ATEX 6079	2001
	M3JP/M3KP 355	LCIE 03 ATEX 6060	2003
	M3JP/M3KP 400	LCIE 04 ATEX 6087	2004
Increased safety	M3HP 80-90	LCIE 06 ATEX 6047	**2006**
	M3HP 100-112	LCIE 06 ATEX 6048	**2006**
II 2 G Ex e II T2 -T3	M3HP 132	LCIE 06 ATEX 6049	**2006**
	M3HP 160	LCIE 01 ATEX 6015	2001
In addition for M3HP160 – 400:	M3HP 180	LCIE 01 ATEX 6021	2001
II 2 D Ex tD A21	M3HP 160 Gen.H	LCIE 09 ATEX 3022	**2009**
	M3HP 180 Gen.H	LCIE 09 ATEX 3023	**2009**
	M3HP 200	LCIE 01 ATEX 6022	2001
	M3HP 225	LCIE 01 ATEX 6023	2001
	M3HP 250	LCIE 01 ATEX 6024	2001
	M3HP 280	LCIE 02 ATEX 6071	2002
	M3HP 315	LCIE 02 ATEX 6072	2002
	M3HP 355	LCIE 03 ATEX 6022	2003
	M3HP 400	LCIE 04 ATEX 6013	2004
Non-sparking	M2GP 71-250	LCIE 05 ATEX 6160	**2005**
II 3G Ex nA II T2 -T3	M3GP 80 - 400	LCIE 06 ATEX 6089	**2006**
	M3GP 160 - 180 Gen.H	LCIE 09 ATEX 1010 *	**2009**
	M3GP/M3LP 450	LCIE 06 ATEX 6088	**2006**
Dust ignition	M3GP 160 – 180 Gen.H	LCIE 09 ATEX 3016	**2009**
II 2 D Ex tD A21 IP 65			
Dust ignition	M3GP 160 – 180 Gen.H	LCIE 09 ATEX 1010 *	**2009**
II 3 D Ex tD A22	M3GP/M3LP 450	LCIE 06 ATEX 6088	**2006**
Dust ignition	M2GP 71-250	LCIE 05 ATEX 6160	**2005**
II 2 D Ex tD A21 IP 65 or	M3GP 80-400	LCIE 06 ATEX 6089	**2006**
II 3 D Ex tD A22 IP 55, IP65			

1) **Notified Body** (ExNB): LCIE (0081) ; Av. Du Général Leclerc. 33, 92266 Fontenay-aux-Roses, France

2) *) Voluntary Type Examination Certificate for equipment category 3

3GZF500930-988

M000725-2a

Dust ignition protection cast iron motors in brief, basic design - 2D and 3D

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						Forged steel, detachable feet	
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		6208-2Z/C3	6309/C3	6310/C3
	N-end	2- 8 pole	6202-2Z/C3	6203-2Z/C3	6204-2Z/C3	6205-2Z/C3		6208-2Z/C3	6309/C3	6310/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			-						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		Steel 8.8, zinc electroplated and chromated							
Connections	Cable entries		2xM16	2 x M25		2 x M32			2 x M40 x 1.5	
	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							

Dust ignition protection cast iron motors in brief, basic design - 2D and 3D

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	6312M/C3	6313M/C3	6315M/C3	6316/C3		6316M/C3	6317/C3
		4-12 -pole	6312/C3	6313/C3	6315/C3		6319/C3	6322/C3	6324/C3
	N-end	2-pole	6310M/C3	6312M/C3	6313M/C3	6316/C3	6319/C3	6316M/C3	6317/C3
		4-12 -pole	6310/C3	6312/C3	6313/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			Optional		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 M50 x 1.5			2 x M63 x 1.5		Refer to page 163.	
	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						
Cooling method			IC 411						

Dust ignition motors with aluminum frame in brief, basic design - 2D

Motor size		90	100	112	132
Stator	Material	Die-cast aluminum alloy			
	Paint colour shade	Munsell blue 8B 4.5/3.25			
	Surface treatment	Polyester powder ≥ 30 µm			
Feet		Fixed feet.			
	Material	Aluminum alloy, integrated with stator			
Bearing end shields	Material	Die-cast aluminum alloy			
	Paint colour shade	Munsell blue 8B 4.5/3.25			
	Surface treatment	One-component polyester resin powder ≥ 30 µm			
Bearings	D-end	6205-2RS1/C3	6306-2RS1/C3		6208-2RS1/C3
	N-end	6204-2RS1/C3	6205-2RS1/C3		6206-2RS1/C3 [1] 6208-2RS1/C3 [2]
		[1] SA 2, SB 2, S 4, S 6, MB 6, S 8 and two-speed starts with S. [2] All types except [1]			
Axially-locked bearings	Inner bearing cover	D-end with inner bearing cover			
Bearing seal	D-end	V-ring			
	N-end	V-ring			
Lubrication		Permanently lubricated bearings. Grease temperature range -40 to +160 °C.			
Terminal box	Material	Die-cast aluminum alloy, base integrated with stator.			
	Surface treatment	Similar to stator.			
	Screws	Steel 8.8, zinc electroplated.			
Connections	Knock-out openings	2 x (M20 + M25)			2 x (M20 + M25)
	Terminal box	Screw terminal. 6 terminals.			Cable lugs. 6 terminals.
	Max Cu-area, mm2	6			10
Fan	Material	Aluminum fan			
Fan cover	Material	Steel			
Stator winding	Material	Copper			
	Insulation class	Insulation class F			
	Winding protection	PTC- thermistors, 150 °C			
Rotor winding	Material	Die-cast aluminum			
Balancing		Half key balancing			
Key ways		Closed key way			
Heating elements		25 W			
Drain holes		Not included, drain holes sealed on delivery.			
External earthing bolt		As standard.			
Enclosure		IP 65			
Cooling method		IC 411			

Dust ignition protection aluminum motors in brief, basic design - 3D

Motor size		71	80	90	100	112	132
Stator	Material	Die-cast aluminum alloy					
	Surface treatment	Munsell blue 8B 4.5/3.25					
		Polyester powder paint ≥ 30 µm					
Feet		Aluminum alloy, integrated with stator					
Bearing end shields	Material	Die-cast aluminum alloy					
	Surface treatment	Munsell blue 8B 4.5/3.25					
		Polyester powder paint ≥ 30 µm					
Bearings	D-end	6203-2Z/C3	6204-2Z/C3	6205-2Z/C3	6306-2Z/C3	6306/C3	6208/C3 [1)] 6308/C3 [2)]
	N-end	6202-2Z/C3	6203-2Z/C3	6204-2Z/C3	6205-2Z/C3	6205/C3	6206/C3
Axially-locked bearings	Inner bearing cover	D-end with internal retaining ring		D-end with inner bearing cover			
Bearing seal	D-end	V-ring					
	N-end	Labyrinth seal					
Lubrication		Permanently lubricated bearings. Grease temperature range -40 to +160 °C					
Terminal box	Material	Die-cast aluminum alloy, base integrated with stator					
	Surface treatment	Similar to stator					
	Screws	Steel 8.8, zinc electroplated.					
Connections	Knock-out openings	2 x (M20 + M20)		2 x (M20 + M25)			2 x (M40 + M32+ M12)[2)]
	Terminal box	Caple lugs. 6 terminals.		Screw terminal. 6.terminals			Cable lugs. 6 terminals
	Max Cu-area, mm^2	4		6			10 [1)] 32 [2)]
Fan	Material	Aluminum fan					
Fan cover	Material	Steel					
Stator winding	Material	Copper					
	Insulation class	Insulation class F					
	Winding protection	Optional					
Rotor winding	Material	Die-cast aluminum					
Balancing		Half key balancing					
Key ways		Closed key way					
Heating elements		8 W	25 W				
Drain holes		Drain holes with closable plastic plugs. Closed on delivery.					
External earthing bolt		As standard					
Enclosure		IP 55					
Cooling method		IC 411					

[1)] All types except [2)]

[2)] SM_

Dust ignition protection aluminum motors in brief, basic design - 3D

Motor size			160	180	200	225	250	280
Stator	Material		Die-cast aluminum alloy		Extruted aluminum alloy			
	Paint colour shade		Munsell blue 8B 4.5/3.25					
	Surface treatment		Polyester powder paint ≥ 50 µm					
Feet	Material		Aluminum alloy, detachable feet.		Cast iron, detachable feet. [1]			Cast iron, detachable feet
Bearing end shields	Material		Cast iron, EN-GJL-200 or better					
	Paint colour shade		Munsell blue 8B 4.5/3.25					
	Surface treatment		Two-pack epoxy paint ≥ 100 µm					
Bearings	D-end	2-pole	6309-2Z/C3	6310-2Z/C3	6312-2Z/C3	6313-2Z/C3	6315-2Z/C3	6315/C3
		4-8 -pole						6316/C3
	N-end	2-pole	6209-2Z/C3	6209-2Z/C3	6210-2Z/C3	6212-2Z/C3	6213-2Z/C3	6213/C3
		4-8 -pole						
Axially-locked bearings	Inner bearing cover		D-end					
Bearing seal	D- and N-end		V-ring					
Lubrication			Permanently lubricated shielded bearings.					Valve lubrication
Terminal box	Material		Die-cast aluminum alloy base integrated with stator		Deep-drawn steel sheet, bolted to stator.			
	Surface treatment		Similar to stator		Phosphated. Polyester paint.			
	Screws		Steel 8.8,zinc electroplated					
Connections	Knock-out openings		(2 x M40 + M16) + (2 x M40)					2 x FL21
	Flange-openings				2 x FL13, 2 x M40+ 1 x M16			2 x M63
					2 x FL21, 2 x M63 + 1 x M16 (voltage code S)			1 x M16
	Terminal box		Caple lugs. 6 terminals.					
	Screws		M6		M10			
	Max Cu-area, mm^2		35		70			
Fan	Material		Aluminum					
Fan cover	Material		Steel sheet. Galvanized.					
Stator winding	Material		Copper					
	Insulation class		Insulation class F. Temperature rise class B, unless otherwise stated.					
	Winding protection		3 pcs PTC-thermistors, 150 °C					
Rotor winding	Material		Die-cast aluminum					
Balancing method			Half key balancing					
Key ways			Closed keyway					
Heating elements			25 W	50 W				
Drain holes			Drain holes with closable plastic plugs. Closed on delivery.					
Enclosure			IP 55					
Cooling method			IC 411					

[1] Frame size 250, 2-pole, cast iron.

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Flameproof motors

Type of protection: Ex d IIB/IIC T4, Ex de, IIB/IIC T4
Features: 50/60 Hz, 2 - 18 poles, VSD application, acc. to Atex Directive and IEC standards

Motor type	IEC frame size	Output kW
Ribs cooled	355 - 500	100 - 1200 kW
Tubes cooled	500 - 900	800 - 8000 kW

Pressurized motors

Type of protection: Ex px (e) and Ex pz (e); Temperature classes T1-T4, Gas groups A, B anc C
Features: 50/60 Hz, 2-24 poles, VSD applications, acc. to ATEX Directive and IEC standards

Motor type	IEC frame size	Output kW
Induction motors	355 - 1000	up to 23 MW (31000 HP)
Synchronous motors	710 - 2500	up to 65 MW (87000 HP)

Increased safety motors

Type of protection: Ex e, Temperature classes T1-T3, Gas groups A, B and C
Features: 50/60 Hz, 2-24 poles, VSD applications, acc. to ATEX Directive and IEC standards

Motor type	IEC frame size	Output kW
Induction motors	355 - 630	up to 7.5 MW (10000 HP)

Non-sparking motors

Type of protection: Ex nA, T1-T4, Gas groups A,B and C
Features: 50/60 Hz, 2-24 poles, VSD applications, acc. to ATEX Directive and IEC standards, CSA/US certified

Motor type	IEC frame size	Output kW
Induction motors	315 - 1000	up to 23 MW (31000 HP)
Synchronous motors	710 - 2500	up to 65 MW (87000 HP)

Motors for North America (NEC and CEC)

Type of protection: Class I Division 2, Class I Zone 2, Class II Division 2, Class III; T1-T4
Features: 50/60 Hz, 2-24 poles, VSD applications, designed for North American markets, NEMA standards, CSA/US-certified

Motor type	IEC frame size	Output kW
Induction motors	315 - 1000	up to 23 MW (31000 HP)
Synchronous motors	710 - 2500	up to 65 MW (87000 HP)

More information for these motors can be found from web-pages: www.abb.com/motors&generators

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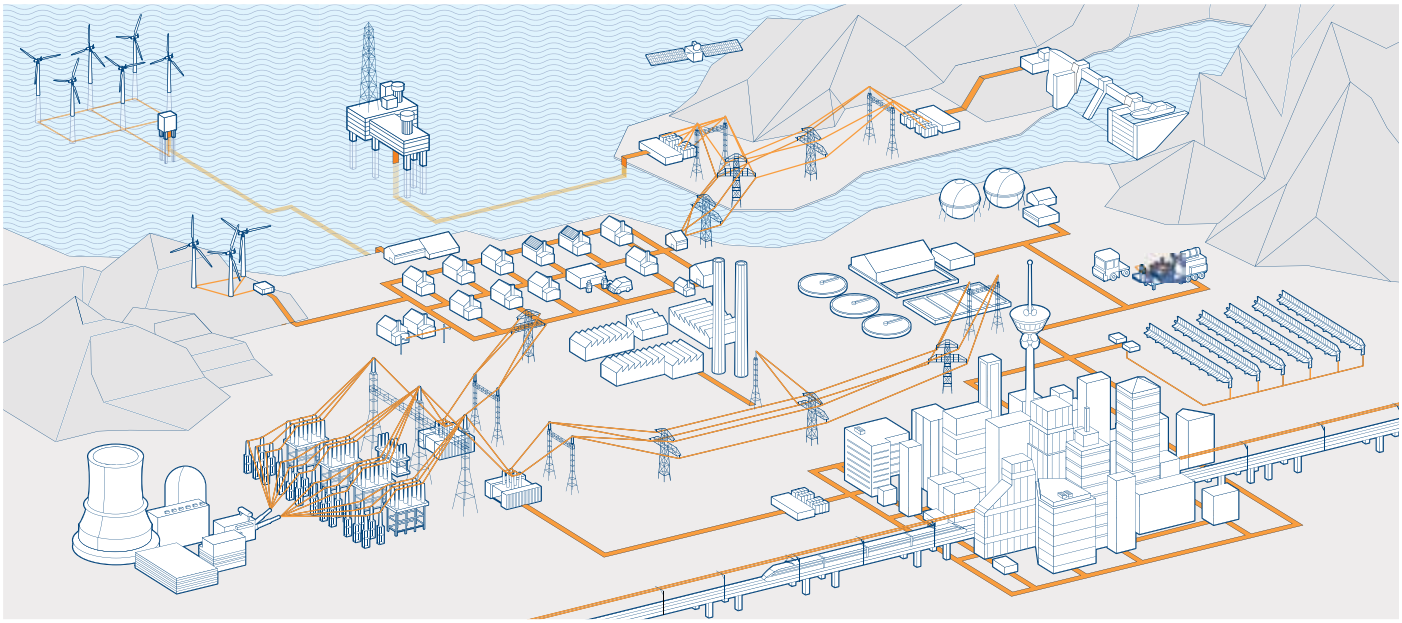

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Motors and generators for explosive atmospheres
- IEC and NEMA motors and generators, for all protection types

Synchronous motors

Synchronous generators
- Synchronous generators for diesel and gas engines
- Synchronous generators for steam and gas turbines

Wind power generators

Generators for small hydro

Other motors and generators
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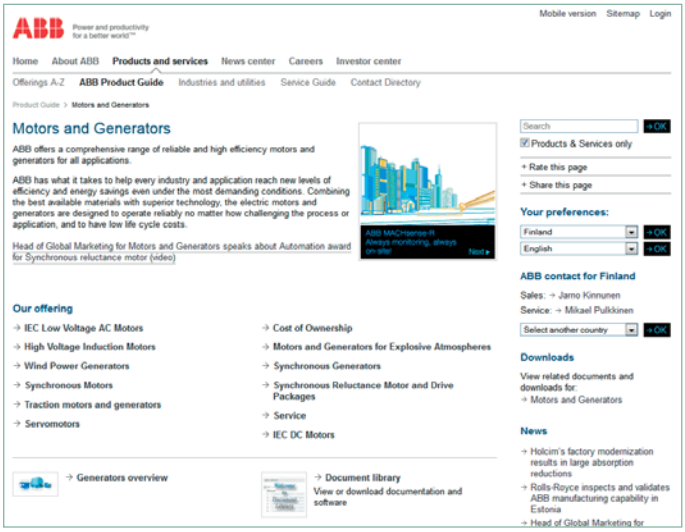

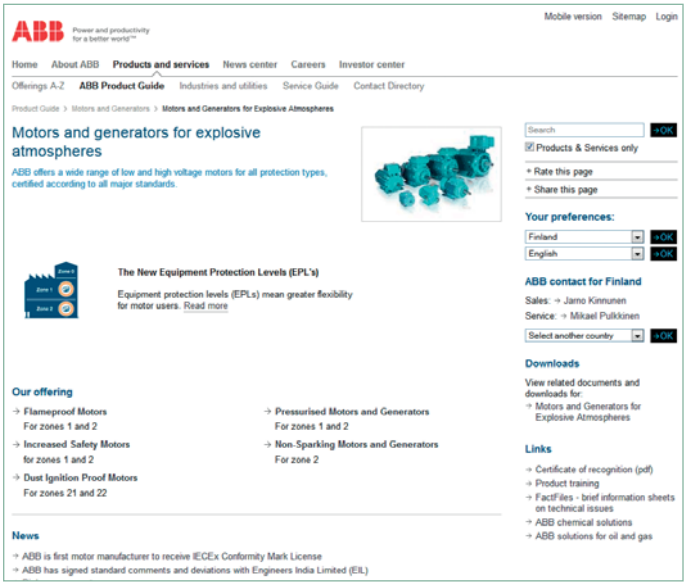

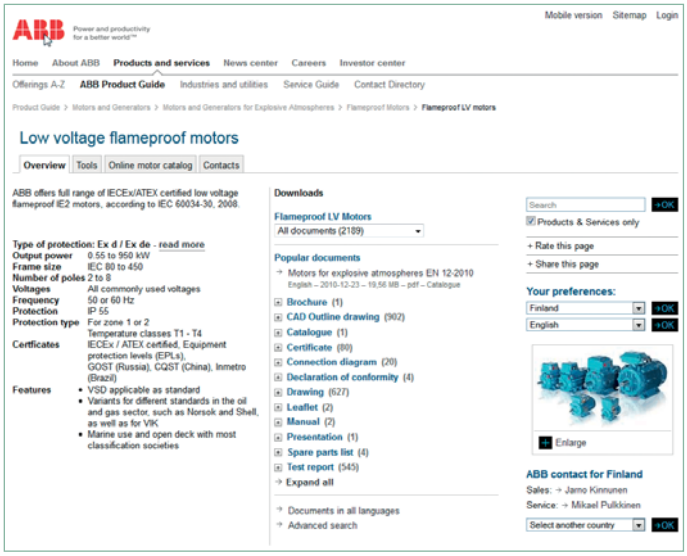

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