DISAI
Automatic Systems
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Hazardous Areas Motors

Ex d | Ex de | Ex nA

Low, Medium and High Voltage

- BFG range
- BFGC range
- W22XB / BFG8 range
- W22XC / BFGC8 range
- W22XM / BFGM8 range
- BFN range

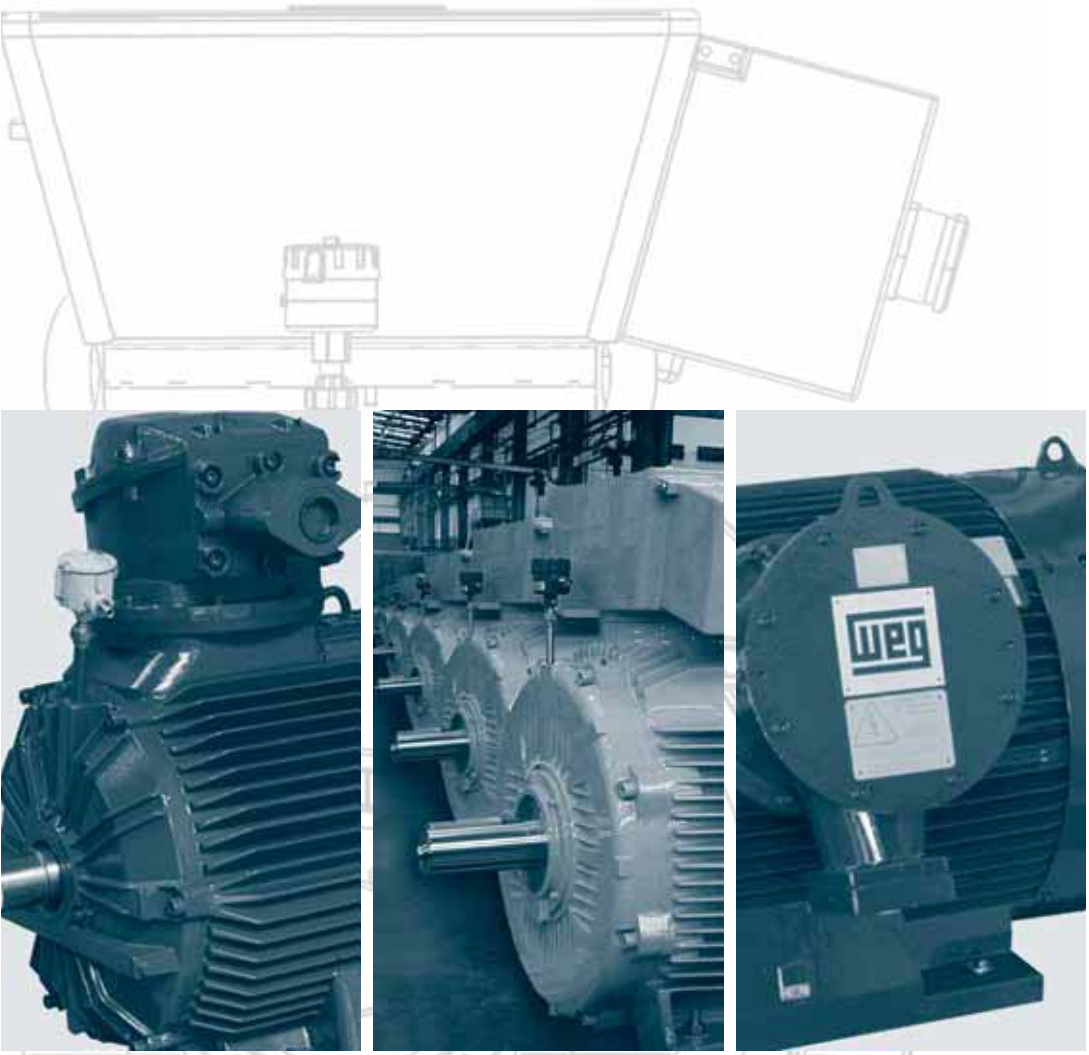


TABLE OF CONTENTS

1 GENERAL TECHNICAL INFORMATION

1.1 - Explosive Atmospheres 3

1.2 - Standards and Classification of Explosive Atmospheres 3
1.2.1 - ATEX Directives 3
1.2.2 - IECEx Scheme 3
1.2.3 - EN / IEC Standards 4
1.2.3.1 - Zone Classifications 4
1.2.3.2 - Classification of Areas Gas and Vapours 4
1.2.3.3 - Classification of Areas Combustible Dusts 5
1.2.3.4 - Classification of Groups 6
1.2.3.5 - Classes of Temperature 7

1.3 - Protection Categories for Electrical Motors 7
1.3.1 - Type Ex d - Flameproof 7
1.3.2 - Type Ex de - Flameproof Motors with increased safety terminal box 7
1.3.3 - Type Ex nA - Non Sparking Motors 8

1.4 - General Construction Standards 8

2 GENERAL PRODUCT INFORMATION

2.1 - WEG Ranges of Hazardous Areas Motors 9

2.2 - Markings and Rating / Certification Nameplates 10
2.2.1 - Markings of Equipment 10
2.2.2 - Certificates of Equipment 11
2.2.3 - Certification Bodies 11
2.2.4 - Rating / Certification Nameplates 11

2.3 - Scope of Certifications 13

2.4 - Certifications Standards and Ex Notified Bodies per Range 14

2.5 - Terminal Boxes Technical Information 15
2.5.1 - Main Supply Terminal Boxes 15
2.5.2 - Auxilary Terminal Boxes 25

2.6 - Bearings Information 28
2.6.1 - Bearings Arrangement and permissible loads on shafts 28
2.6.2 - Bearings Lubrication Intervals 29

3 LOW VOLTAGE MOTORS

3.1 - Low Voltage Flameproof Motors - BFG6 / BFGC3 / BFGC4 / BFGC8 (71-225) 31
3.1.1 - Product Specification - All BFG(C) 31
3.1.2 - Electrical Data Flameproof Motors IIB - BFG6 33
3.1.3 - Electrical Data Flameproof Motors IIC - BFGC3 / BFGC4 / BFGC8 (71-225) 34
3.1.4 - Outline Dimensions Flameproof Motors IIB - BFG6 36
3.1.5 - Outline Dimensions Flameproof Motors IIC - BFGC3 / BFGC4 / BFGC8 (71-225) 37

3.2 - Low Voltage Flameproof Motors - BFG(C)8 / W22XB(C) / BFGM8 / W22XM 40
3.2.1 - Product Specification 40
3.2.2 - Electrical Data Flameproof Motors IIB - BFG8 / W22XB / BFGM8 / W22XM 42
3.2.3 - Electrical Data Flameproof Motors IIC - BFGC8 / W22XC / BFGM8 / W22XM 43
3.2.4 - Outline Dimensions Flameproof Motors IIB - BFG8 / W22XB / BFGM8 / W22XM 44
3.2.5 - Outline Dimensions Flameproof Motors IIC - BFGC8 / W22XC / BFGM8 / W22XM 54

3.3 - Low Voltage Non Sparking Motors 64
3.3.1 - Product Specification - BFN6 64
3.3.2 - Electrical Data Non Sparking Motors BFN6 - II T3 66
3.3.3 - Outline Dimensions Non Soarking Motors - BFN6 68

4 MEDIUM VOLTAGE MOTORS

4.1 - Medium Voltage Flameproof Motors - BFG6 / BFGC3 / BFGC4 / BFGC8 70
4.1.1 - Product Specification - All BFG(C) 70
4.1.2 - Electrical Data Flameproof Motors IIB - BFG6 72
4.1.3 - Electrical Data Flameproof Motors IIC - BFGC3 / BFGC4 / BFGC8 73
4.1.4 - Outline Dimensions Flameproof Motors IIB - BFG6 74
4.1.5 - Outline Dimensions Flameproof Motors IIC - BFGC3 / BFGC4 / BFGC8 75

4.2 - Medium Voltage Flameproof Motors - BFG(C)8 / W22XB(C) / BFGM8 / W22XM 76
4.2.1 - Product Specification 76
4.2.2 - Electrical Data Flameproof Motors IIB - BFG8 / W22XB / BFGM8 / W22XM 78
4.2.3 - Electrical Data Flameproof Motors IIC - BFGC8 / W22XC / BFGM8 / W22XM 79
4.2.4 - Outline Dimensions Flameproof Motors IIB - BFG8 / W22XB / BFGM8 / W22XM 80
4.2.5 - Outline Dimensions Flameproof Motors IIC - BFGC8 / W22XC / BFGM8 / W22XM 90

4.3 - Medium Voltage Non Sparking Motors - BFN6 100
4.3.1 - Product Specification 100
4.3.2 - Electrical Data Non Sparking Motors BFN6 - II T3 102
4.3.3 - Outline Dimensions Non Sparking Motors - BFN6 104

5 HIGH VOLTAGE MOTORS

5.1 - High Voltage Flameproof Motors - BFG(C)8 / W22XB(C) / BFGM8 / W22XM 106
5.1.1 - Product Specification 106
5.1.2 - Electrical Data Flameproof Motors IIB - BFG8 / W22XB / BFGM8 / W22XM 108
5.1.3 - Electrical Data Flameproof Motors IIC - BFGC8 / W22XC / BFGM8 / W22XM 109
5.1.4 - Outline Dimensions Flameproof Motors IIB - BFG8 / W22XB / BFGM8 / W22XM 110
5.1.5 - Outline Dimensions Flameproof Motors IIC - BFGC8 / W22XC / BFGM8 / W22XM 114

6 INQUIRY / ORDER CHECK LIST

6.1 - Basic Motor Data and Features 118

6.2 - Site & Working Conditions 118

1. GENERAL TECHNICAL INFORMATION

1.1 EXPLOSIVE ATMOSPHERES:

Every time that dangerous quantities and concentration of flammable gas, vapors mixture or dust clouds exists, risk of explosions may arise.
Also, layers of combustible dusty may ignite and act as ignitions sources for explosive atmospheres.
Therefore to minimize these risks measures must be taken by equipment suppliers/installers and respective end users.

WEG has many years in the design and operation of motors to be used in the most severe application regarding Hazardous Areas and special applications under the most severe duty requirements.

1.2 STANDARDS AND CLASSIFICATION OF EXPLOSIVE ATMOSPHERES:

1.2.1 ATEX DIRECTIVES

The ATEX Directives were adopted by the European Union (UE) to facilitate the free trade between the member states by aligning the technical and legal requirements for products intended for use in potentially explosive atmospheres.
There are two main Directives, sharing the responsibilities between the Manufacturer and the End User:

- The ATEX Manufacturers Directive 94/9/EC, also known as ATEX 95, places the responsibilities on the manufacturers: It specifies the Essencial Health and Safety Requirements, that must be met by the equipment intended to be used in potentially explosive atmospheres, and defines two different groups which are subdivided in five equipment groups as indicated in 1.2.3.4 of this catalogue.

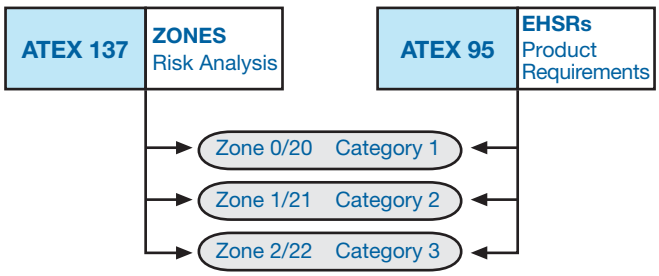
  In order to meet the ATEX Directive products must comply with the Essential Requirements of this Directive and is also required to follow a Conformity Assessment Procedure.

  The ATEX product markings can be easily recognized by the symbol Ex, that indicates the explosion protection and by the CE mark that certifies the conformity with this Directive.

  This assessment procedure involves obtaining the EC Type Examination certificate for products (requires the involvement of a Notified Body except for category 3 products), the Production Quality Assurance (assessed by a Notified Body that issues the QAN – Quality Assessment Notification and periodically makes the audits) and an internal control of production (where the manufacturer carries out the necessary work to guarantee that the products are in compliance with the ATEX Directive).

- The ATEX User Directive 99/92/EC, also known as ATEX 137, describes the minimum requirements for the improvement of the health and safety of workers with relation to potentially explosive atmospheres.
  It classifies the environment into **zones** and outlines which **category** of equipment that can be used in each zone.

This Directive concentrates on the duties of the End User whose responsibilities are mainly:
- The assessment of risks
- Preparation of an Explosion Protection Document
- The provision of suitable warning signs for areas where explosive atmospheres may be formed.
  The safety of an installation in a Hazardous Area is the result of co-operation between the equipment manufacturer, the installer and the end user.



1.2.2 IECEx SCHEME

The objective of the IECEx System is to facilitate international trade in equipment and services for use in explosive atmospheres, while maintaining the required level of safety. IECEx System is accepted in many countries and aims to be the world approval system for electrical equipment to be installed in potentially explosive atmospheres.

The IECEx International Certification System comprises four different schemes:
- The IECEx Certified Equipment Scheme
- The IECEx Certified Service Facilities Scheme
- The IECEx Conformity Mark Licensing System
- The IECEx Certified Persons Scheme

WEG, as a manufacturer of electric motors for potentially explosive atmospheres, introduced a new range of motors - BFG(C)8 and W22XB(C) series - that are in compliance with the IECEx Certified Equipment Scheme.

The IECEx Scheme applies IEC Standards for products design. To achieve IECEx Product Certification is mandatory to involve an ExCB (IECEx Approved Certification Body) to test the products and samples according to the IEC Standards and issue the ExTR (IECEx Test Report).
IECEx Product Certifications also requires the involvement of an ExCB to audit the Quality Assurance System of the manufacturers (that must be previously assessed and in conformity with ISO 9001). From the audit success a QAR (IECEx Quality Assessment Report) is issued.

With the ExTR, Product Documentation and QAR, the IECEx CoC (Certificate of Conformity) can be issued by the ExCB.

1.2.3 EN/IEC STANDARDS

The implementation of ATEX Directives are supported by the CENELEC (EN) standards regarding the enclosure protections of electric motors to be used in potentially explosive atmospheres, as well as the hazardous areas classification criteria, depending on the presence of Gas and/or Combustible Dusts.

WEG refers below the main applicable EN/IEC recently updated Standards:

EN / IEC 60079 – 0 –	Explosive Atmospheres Equipment – General requirements
EN / IEC 60079 – 1 –	Explosive Atmospheres Equipment protection by flameproof enclosures “d”
EN / IEC 60079 – 7 –	Explosive Atmospheres Equipment protection by increased safety “e”
EN / IEC 60079 – 10 –	Electrical apparatus for explosive gas atmospheres Classification of hazardous areas
EN / IEC 60079 – 14 –	Explosive Atmospheres Electrical installations design, selection and erection
EN / IEC 60079 – 15 –	Electrical apparatus for explosive gas atmospheres Construction, test and marking of type of protection “n” electrical apparatus
EN / IEC 60079 – 17 –	Explosive Atmospheres Electrical installations inspection and maintenance
EN / IEC 60079 – 19 –	Explosive Atmospheres Equipment repair, overhaul and reclamation
EN / IEC 61241 – 0 –	Electrical apparatus for use in the presence of combustible dust General requirements
EN / IEC 61241 – 1 –	Electrical apparatus for use in the presence of combustible dust Protection by enclosures “tD”
EN / IEC 61241 – 10 –	Electrical apparatus for use in the presence of combustible dust Classification of areas where combustible dusts are or may be present
EN / IEC 61241 – 14 –	Electrical apparatus for use in the presence of combustible dust Selection and installation
EN / IEC 61241 – 17 –	Electrical apparatus for use in the presence of combustible dust Inspection and maintenance of electrical installation in hazardous areas (other than mines)
EN / IEC 61241 – 19 –	Electrical apparatus for use in the presence of combustible dust Repair and overhaul of electrical apparatus for combustible dust areas

1.2.3.1 ZONE CLASSIFICATIONS:

The EN/IEC Standards classify the risk areas into **zones** and **groups**:

- The **zones** are of classified according with type of atmosphere Gases or Dusts and the respective to frequency and period of time that the explosive atmosphere is present.
- The division into **groups** is based on the aggressiveness of the environment.

1.2.3.2 CLASSIFICATION OF AREAS - GAS AND VAPOURS

EN/IEC 60079-10 – Classification of Hazardous Areas – Gas Areas

- This standard concerns with hazardous area classification where flammable gas and vapours risks may arise.
- Does not apply to mines susceptible to firedamp neither to areas where ignitable dusts or fibres presence risks may arise.

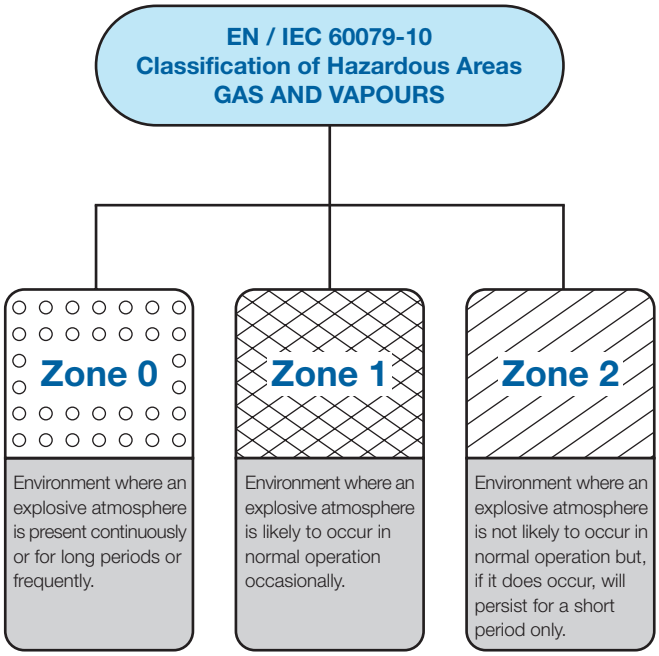
Explosive Gas Atmosphere

Exists where flammable substances in the form of gas, vapours, mist or dust are mixed with air under atmospheric conditions and in case of an ignition combustion spreads throughout the unconsumed mixture.

Hazardous Area (Gas)

Area in wich an explosive gas atmosphere is present, or may be expected to be present, in quantities such as to require special precautions for the constructions, installations and use of apparatus.

Hazardous Areas are classified into zones (Gases on the frequency of the occurrence and duration of on explosive gas atmosphere).



1.2.3.3 CLASSIFICATION OF AREAS - COMBUSTIBLE DUSTS

EN/IEC 61241-10 – Classifications of areas where combustible dusts are or may be present

Combustible dust

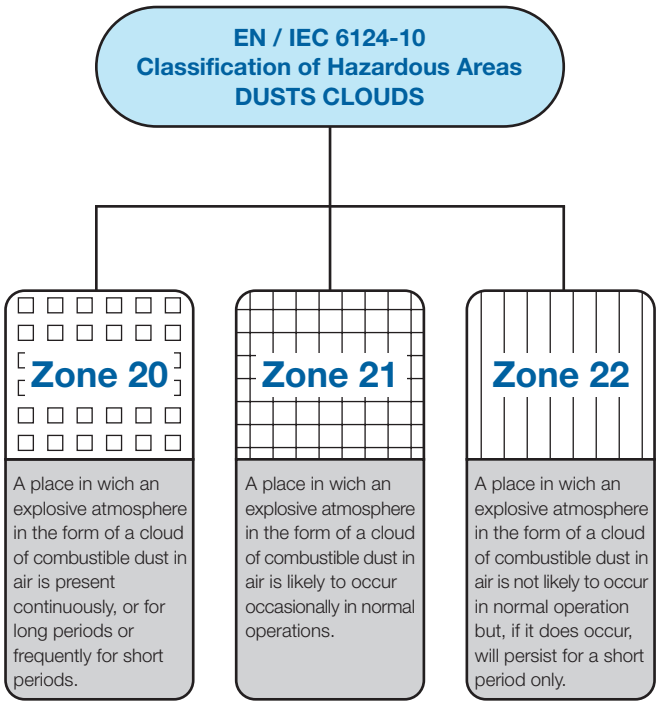
Dust, fibres or flyings that can burns or glow in air and could form explosive mixtures with air at atmosphere pressure and normal temperatures.

Explosive dust atmosphere

Mixture with air, under atmospheric conditions, of flammable substances in the form of dust, fibres or flyings in wich, after ignition, combustion spreads throughout the unconsumed mixture.

Hazardous Area (Dust)

Area in wich combustible dust in cloud form is, or can be expected to be, present in quantities such as to require special precautions for the constructions and use of equipment in order to present ignition of explosive dust/air mixtures.
Based on the likelihood of the formation of potentially explosive dust/air mixtures, the areas can be designated according to diagram below.



For dust layers the nature of house keeping assures an essential control to their thickness.

For a “good” level of house keeping dust layers are kept to negligible thickeness and the risk of the occurrence of explosive dust clouds from layers and the risk of fire due to layers has been removed.

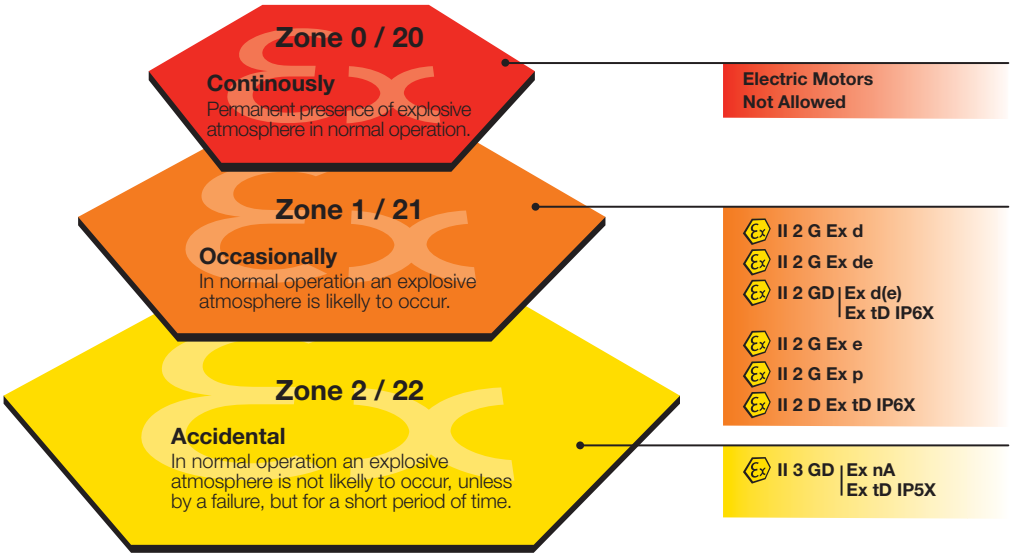
The max surface temperature, for dust layers up to 5mm is:

$$T_{max} = T_5mm - 75\ ºC$$

Where T_5mm is the minimum ignition temperature of a 5mm dust layers.

For higher dust layer other rules must be applied according with EN/IEC 61241-10

In summary the Hazardous Areas are classified as follows:



1.2.3.4 CLASSIFICATION OF GROUPS

CENELEC / IEC Standards provide a criteria which determine the classification of the equipment into groups and categories according to EN / IEC 60079-0:

Group Classification:

GROUP I (Mines)	
Categories	
M1	Equipment designed to operate on environments where the explosive atmosphere is present frequently.
M2	Equipment that must be powered off if there is any risk of explosion. Explosive atmosphere is present frequently.

Category Classification:

GROUP II* (Surface Industry)			
Categories			Zone
1	Equipment with high degree of protection. Explosive atmosphere is present continuously or for long periods of time.	1G (gas) 1D (dust)	0 (gas) 20 (dust)
2	Equipment with high degree of protection. Explosive atmosphere may occur occasionally.	2G (gas) 2D (dust)	1 (gas) 21 (dust)
3	Equipment with normal degree of protection. The explosive atmosphere will probably not occur.	3G (gas) 3D (dust)	2 (gas) 22 (dust)

* Gases are subdivided into IIA, IIB and IIC, as per EN / IEC Standards.

Sub-Group Classification for Gases of Explosive Atmospheres:

GROUPS	Underground Explosive Atmospheres	Equipment manufactured for underground operation mines	I	Methane may be present (firedamp)
	Other Explosive Atmosphere	Equipment manufactured for other types of industry (surface industry), being subdivided based on the characteristics of the materials present	IIA	acetone, ammonia, benzene, butane, butanol, alcohol butylic, ethane, ethanol, acetate of ethyl, gasoline, hepthanes, hexanes, natural gas, methanol, naphtha, propane, propanol, toluene, esthirene, solvents in general
			IIB	acetaldeide, cyclopropane, diethylic ether, ethene, monoxide of carbon
			IIC	acetylene, butadiene, oxide of ethene, hydrogen, oxide ofpropylene, gases containing over 30% of hydrogen

Note: For a better understanding of a complete identification of Areas and Groups, please see the markings on paragraph 2.2

1.2.3.5 CLASSES OF TEMPERATURE

The minimum temperature that causes an explosion of a gas, vapour of explosive mixture is called ignition temperature. To avoid any risk of explosion, the motor surface temperature must always stay below the ignition temperature of the explosive mixture.

The internal and external temperature of the electrical equipment must be strictly followed to avoid ignition of an explosive mixture. The equipment is classified into classes of temperature, as per table below:

Class of Temperature (C)		Maximum motor surface temperature (C)	Ignition temperature of the explosive mixture (C)
EN / IEC 60079-0	NEC		
T1	T1	450	>450
T2	T2	300	>300
	T2A	280	>280
	12B	260	>260
	T2C	230	>230
	T2D	215	>215
T3	T3	200	>200
	T3A	180	>180
	T3B	165	>165
	T3C	160	>160
T4	T4	135	>135
	T4A	120	>120
T5	T5	100	>100
T6	T6	85	>85

1.3 PROTECTION CATEGORIES FOR ELECTRIC MOTORS

1.3.1 TYPE Ex d – FLAMEPROOF (according to EN/IEC 60079-1)

It is a type of protection where the parts that may flame an explosive atmosphere are closed into enclosures which are capable to withstand a pressure during an internal explosion of an explosive mixture and it avoids such explosion to go out from this enclosure to an external explosive atmosphere. An induction electric motor (of any protection) is not totally sealed, that is, air flows in and out.

While the motor is in operation, it heats up and the internal air gets to a higher pressure compared to the external pressure (air is blown out); when motor is switched-off, the internal pressure decreases, allowing in this way entrance of air (which in this case is contaminated).

The motor surfaces do not need to be totally enclosed to avoid flame propagation. The minimum opening required to avoid passage of flames depends on the gas or vapour that is present. Therefore, there will always be flame passages through the motor enclosure. The safety level on an explosion proof motor is on the fact that it must ensure that all flame passages never exceed the standardized dimensions and that the motor is physically suitable to withstand an internal explosion without transmitting it to the external environment.

Ex d protection will not allow that an internal explosion propagates to the external environment. To ensure safety to the system, WEG provides a control of the openings and the finishing of joints once these are responsible for the volume of gases exchanged between inside and outside of the motor.

Flame propagation between motor interior and external atmosphere is guaranteed by constructive joints and gaps. Internal pressure that can result of an explosion in the interior of the motor is guaranteed by the enclosure resistance (frame, endshields, internal bearing covers, terminal boxes and some adaptors).

The main characteristics of **Ex d** motors are as follows:

- Reinforced frame, terminal box and endshields
- Greater contact surface (interference) between motor components
- Reduced clearance between motor shaft and bearing cap to avoid transmission of sparks and the external environment
- All components (frames, endshields, terminal box and terminal box lids) are submitted to overpressure test in factory.
- Guaranty of external surface temperature of the motor according with the correspondent Class of temperature (ex. T4 – 135ºC). The tests on WEG prototypes comprehend a full evaluation of the external surface temperatures with motor supplied with electrical limit conditions.

Applications:

- Environments containing flammables gas or vapour continuously, intermittently or periodically in enough amounts to generate explosive or flammable mixtures arising out of repairs or maintenance services.
- The locations defined as **Zones 1** and **2**, **Groups IIA**, **IIB** and **IIC** are those where the following gases are found present: oil, naphtha, benzene, ammonia, propane, diethylic ether, acetone, alcohol, industrial methane, natural gas, as well hydrogen and acetylene.
- The main applications including pumps, fans, blowers, crushers, conveyor systems, mills, cranes and other applications located in areas that require explosion proof motors.

1.3.2 TYPE Ex de – FLAMEPROOF MOTORS WITH INCREASED SAFETY TERMINAL BOX (according to EN/IEC 60079-1 and EN/IEC 60079-7)

Ex de motors differ from **Ex d** motors only on the configuration of terminals and terminal box. The terminal box with increased safety terminals prevents from any ignition source that may occur such as sparks, excessive heating, etc.

Motors with flameproof enclosures “d” with Increased Safety terminal boxes “e” can be used also in zone 1. The protection principle of increased safety terminal boxes is acting in the causes that can start an ignition (ex. Sparks, materials overheating, cables movements, etc) and not in preventing that an internal explosion is sustained inside the enclosure (like flameproof enclosures “d”). Most of WEG increased safety terminal boxes have the constructive principles of flameproof enclosures “d” with additional Increased Safety requirements.

The main characteristics of **Ex de** motors are:

- Terminal box components as well as connection cables must be firmly fastened (without allowing any movement)
- Special terminal block / bushings to avoid arcs and sparks and higher air and surface distances between to conductive parts (clearances and creepages)
- Double grounding must be provided (one on the frame and the other inside the terminal box)

Applications:

- Same as described for Ex d motors.

1.3.3 TYPE Ex nA – NON SPARKING MOTORS (according to EN/IEC 60079-15)

This type of protection is applied to electric equipment which do not cause ignition of an explosive atmosphere under normal operating conditions and in certain abnormal conditions.

The design and constructive principles for these apparatus must guarantee that in normal operation a spark or arc is prevented from causing ignition in a surrounding explosive atmosphere and that the internal and external surfaces temperatures do not overpass the maximum surface temperature certified.

Ex nA motors don’t require certification by a third party Notified Body (a manufactures conformity declaration is sufficient). Nevertheless the **Ex nA** motors manufactured by WEG have certification by Ex NB BASEEFA.

Assessment risk

For **Ex nA** motors with output power exceeding 100kW **an assessment risk for rotors** must be made for possible air gap sparking (motors with service duties S1 and S2 with an average starting frequency in normal operation not exceeding 1 start per week are excluded from this assessment risk). The assessment risk consists in a punctuation table where a score is calculated based in rotor construction and some application characteristics. If the score exceeds 5, special measures must be made to guarantee that the apparatus will not contain explosive gas atmosphere at the time of starting. WEG equips the motors that exceed the score of 5 with provision for a pre-start ventilation system (this system is customer’s responsibility).

For **Ex nA** motors with rated voltage greater than 1kV **an assessment risk for stators** must be made for possible incendivity of winding insulation system. The assessment risk consists also in a punctuation table where a score is calculated based in the application and site conditions. If the score exceeds 6, special measures must be made to guarantee that the apparatus will not contain explosive gas atmosphere at the time of starting. WEG equips its motors that exceed the score of 6 with space heaters and also with a provision for pre-start ventilation system (this system is customers responsibility).
The assessment risk is a subject that must have the responsibility of the customer and manufacturer. It’s a combined work that is mandatory according with the present standard. WEG always makes the assessment risk in the enquiry stage.

The **Ex nA** motor enclosure is built identically to a safe TEFC motor.

The main characteristics of **Ex nA** motors are as follows:

- Terminal box components as well as connection cables must be firmly fastened (without allowing any movement)
- T3 classification as per maximum internal and external surface temperature
- Increased safety terminal blocks / bushings to avoid arcs and sparks and higher air and surface distances between to conductive parts (clearances and creepages)
- Construction particularities to avoid arcs or sparks between static and rotating parts during normal operation:
  - specific air gaps
  - rubbing seals materials
  - rotor construction
  - fans material and peripherical speeds

Applications:

Environment where an explosive atmosphere will probably not be present under normal operating conditions and, if any, this will be for short period of time, that is, an explosive atmosphere may be present accidentally.
The environments are classified as Zone 2, groups IIA, IIB and IIC. The most common gases included in this classification are: acetone, ammonia, benzene, butane, butanol, buthylic alcohol, ethane, ethanol, acetate of ethyl, gasoline, heptanes, hexanes, natural gas, methanol, oil naphtha, propane, propanol, toluene, esthyrene, solvents in general, acetaldehyde, cyclopropane, diethylic ether, ethane, monoxide of carbon, acetylene, butadiene, oxide of ethane, hydrogen, oxide of propylene and gases containing over 30% of hydrogen.

1.4 GENERAL CONSTRUCTION STANDARDS

Beyond the particular requirements for Hazardous Areas, the WEG electric motors are manufactured in compliance with General EN/IEC and equivalent National Standards related with construction and performance. The main applicable Standards are described below:

EN / IEC 60034-1	Rating and performance
EN 50347 and IEC 60072	Outputs and Dimensions
EN / IEC 60034-5	Mechanical protection
EN / IEC 60034-6	Cooling method
EN / IEC 60034-7	Mounting arrangements
EN / IEC 60085	Insulation class
EN / IEC 60034-8	Terminals identification and rotation
EN / IEC 60034-9	Noise limits
EN / IEC 60034-14	Balancing and vibration limits

2. GENERAL PRODUCT INFORMATION

2.1 WEG RANGES OF HAZARDOUS AREAS MOTORS

WEG has two different lines of motors for hazardous areas included in this catalogue:

- The line composed by the motor series BFG6, BFGC3, 4 and 8 (71-225) comprising our current range;
- The new line composed by the motor series BFG(C)8 and W22XB(C) in its final stage of certification, more flexible with larger optional certified executions covering a wide range of working conditions and applications in Oil & Gas. This line is integrated in a strategic W22 project of WEG.

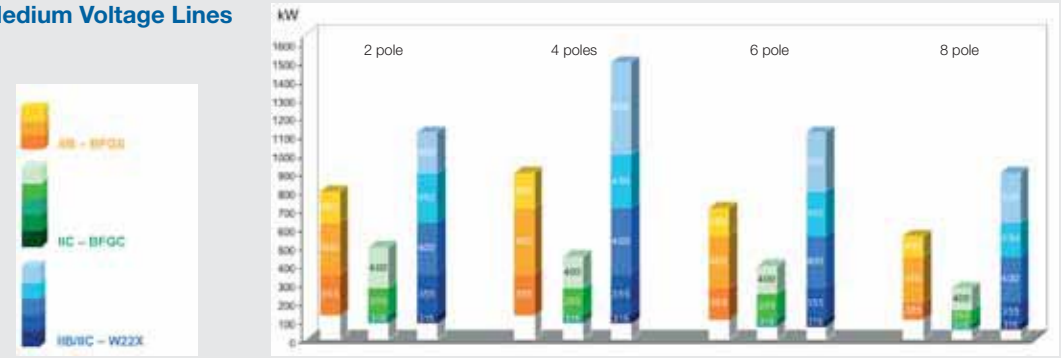
For a more comprehensive reading, these lines are separated by electrical and technical characteristics and in the graphic below is indicated these lines matching.

Key for motor designations:

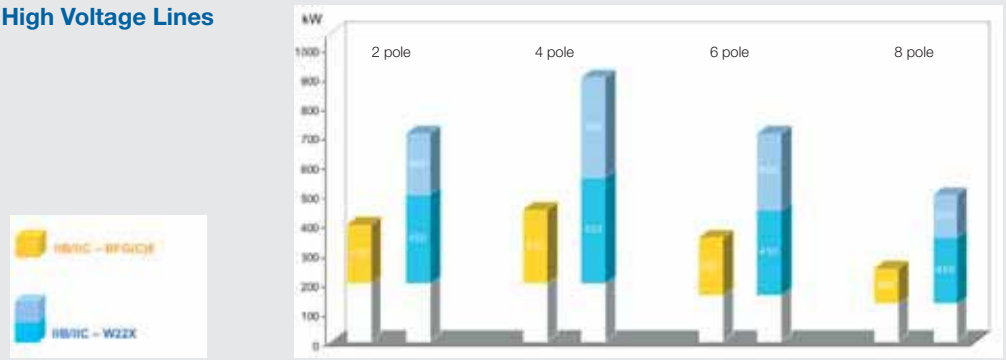
		Terminal Box	
		Standard Ex d	Increased Safety Ex e
GROUP II	Gases Group IIB	BFG6 BFG8 W22XB	BFGE6 BFGE8 W22XBE
	Gases Group IIC	BFGC3 BFGC4 BFGC8 W22XC	BFGCE3 BFGCE4 BFGCE8 W22XCE
GROUP I	Mines (Category M2)	BFGM8 W22XM	BFGME8 W22XME

Low Voltage Lines

Medium Voltage Lines



High Voltage Lines



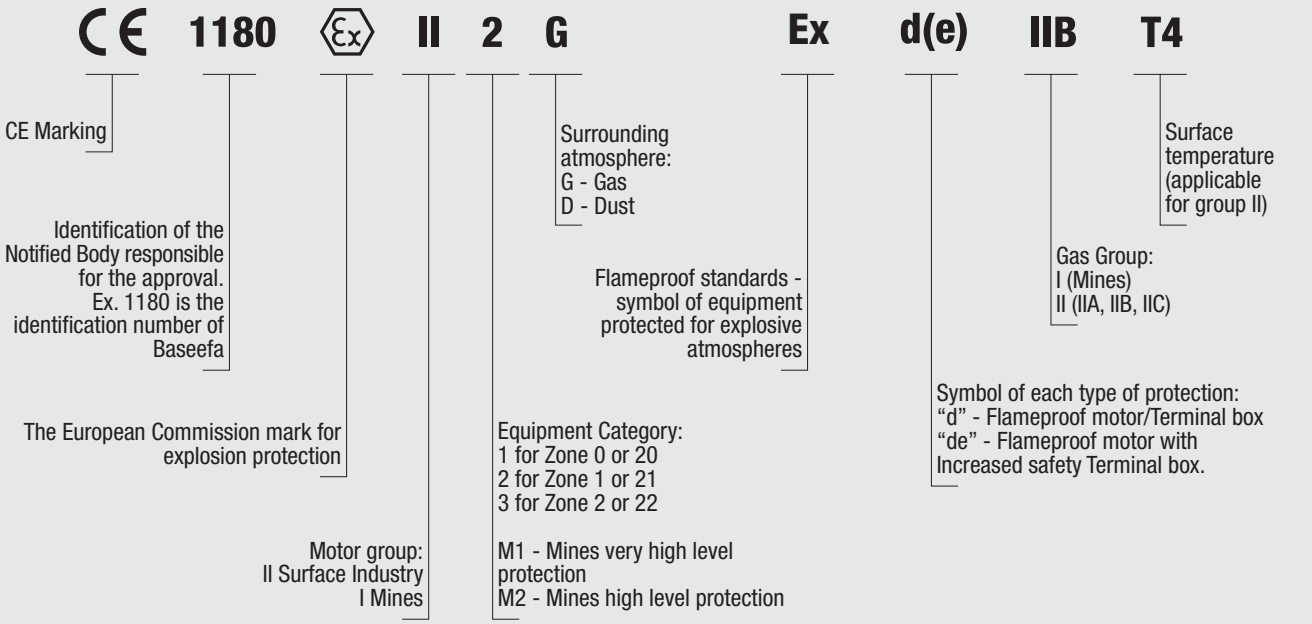
2.2 MARKINGS AND RATING / CERTIFICATION NAMEPLATES

2.2.1 MARKINGS OF EQUIPMENT

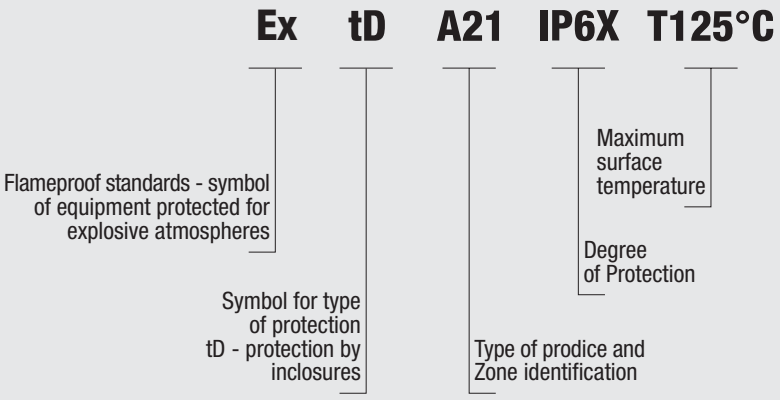
Examples of marking are given acording to ATEX, EN and IEC standards.

Directive 94/9/CE (ONLY ATEX)

EN/IEC 60079 - 0 (Gas Atmosphere) (ATEX; IEC and IECEx)



EN/IEC 61241 - 0 (Combustible Dust) (ATEX; IEC and IECEx)



Examples of markings:

Non sparking (Gas): CE 1180 Ex II 3 G Ex nA II T3

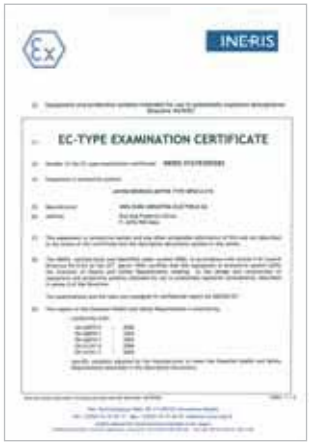
Flameproof (Gas): CE 1180 Ex II 2 G Ex IIC T4

Flameproof (Gas and Dust with Increased Safety Terminal Box): CE 1180 Ex II GD Ex de IIC T4 – Ex tD A21 IP6X T125ºC

2.2.2 CERTIFICATES OF EQUIPMENT

Example of Identification | IECEx: INE 08.009X
ATEX: INERIS 08 ATEX 0013X

Example of Certificates



Marine Certification

The WEG motors meet and also can be certified according to the requirements of all Marine Classification Societies member of IACS to permit the use of Hazardous Areas motors on Marine Applications: ABS; BV; CCS; DNV; GL; KR; LR; NK; RINA; RS, etc

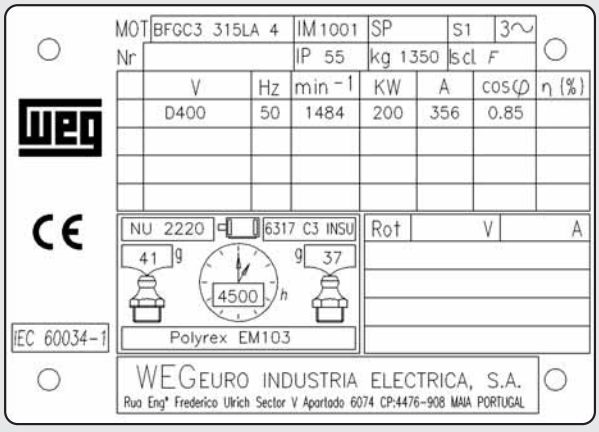
2.2.3 CERTIFICATION BODIES

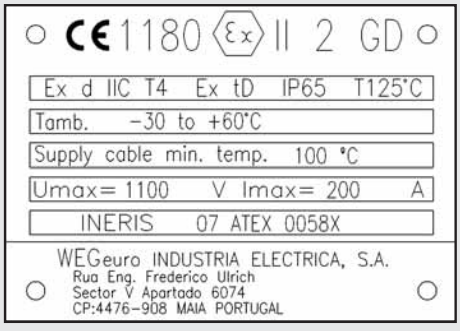
All the flameproof and Non Sparking motors manufactured by WEG meet ATEX directive 94/9/CE with QAN (Quality Assessment Notification) for Production facility issued by Baseefa (2001), and product EC type (Examination Certificate) issued by ISSeP, PTB and INERIS according to CENELEC standards.

The new lines BFG(C)8 and W22XB(C) also meet the IECEx scheme with QAR (Quality Assessment Report) production facility quality audit issued by Baseefa, Ex TR (IECEx Test Report) for product type issued by INERIS and IECEx CoC (Certificate of Conformity) also issued by INERIS.

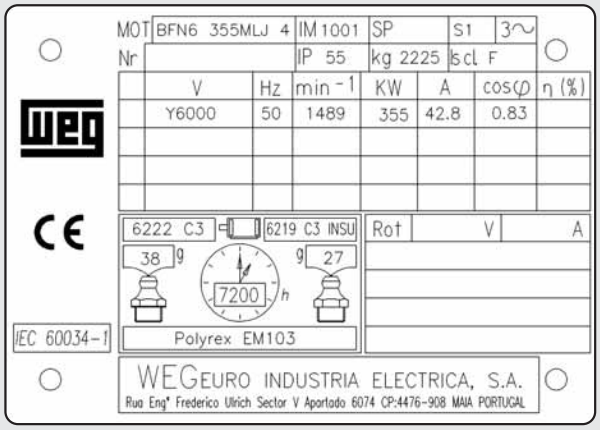
2.2.4 RATING / CERTIFICATION NAMEPLATES

Some examples of Rating and Certification nameplates are given for better understanding of markings:

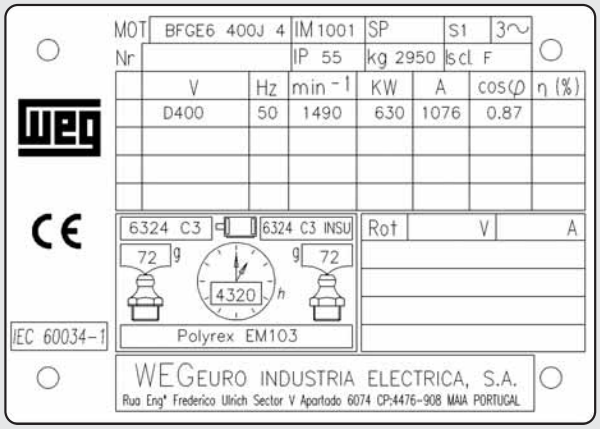




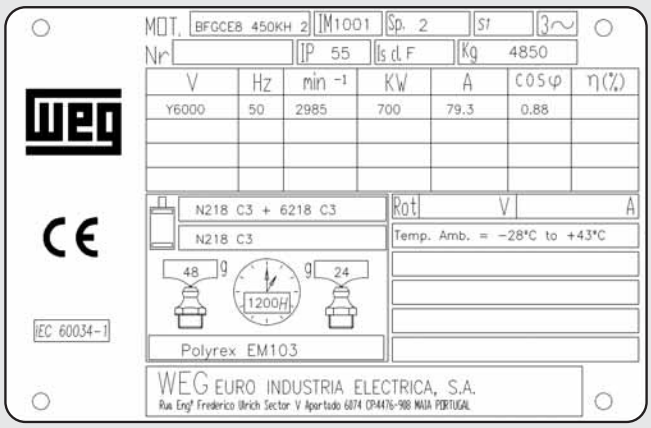
Motor: Ex d IIC
GD
ATEX

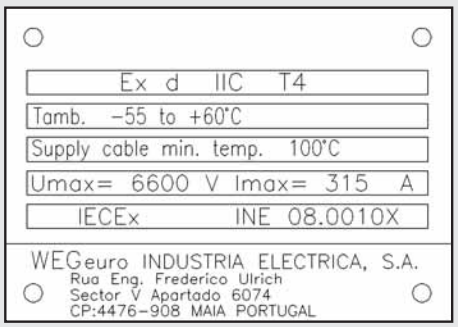


Motor: Ex nA
G
ATEX

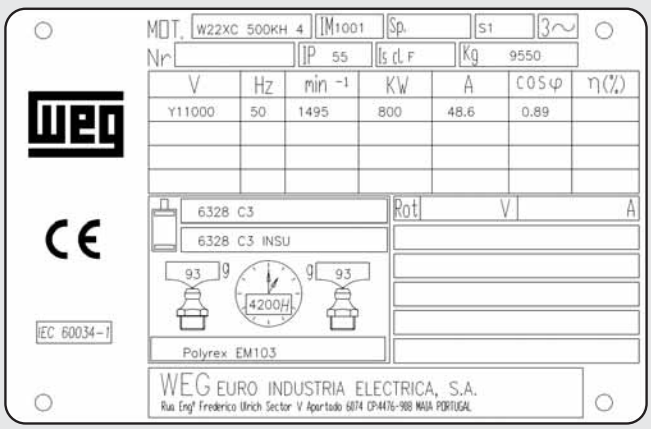


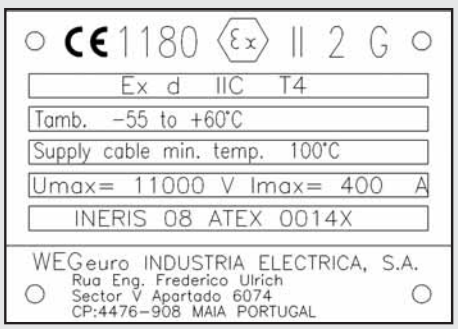
Motor: Ex de IIB
G
ATEX





Motor: Ex d IIC
G
IECEx





Motor: Ex d IIC
G
ATEX

2.3 SCOPE OF CERTIFICATIONS

	Certification itens	Ex d and Ex de												
		W22XB/W22XC		BFG(C)8		BFG6			BFGC3			BFGC4		
	Motor	500 KH (IIB/IIC)	355 MLJ (IIB/IIC) (f - BF)	450 KH (IIB/IIC)	400 LJ/G (IIB/IIC)	450 KH (IIB)	400 LJ/LJ/G (IIB)	355 MLJ (IIB)	400 LA (IIC)	355 MA/LA (IIC)	315 MA/LA (IIC)	315SM (IIC)	280 SM (IIC)	250 SM (IIC)
	RATINGS													
Voltages / Speeds	P(kW) - LV 2 pole (≤1,1kV)	1120	450	710	630	710	630	450	500	355	250	132	90	55
	P(kW) - LV 4 pole (≤1,1kV)	1400	500	900	800	900	800	500	560	400	250	132	90	55
	P(kW) - LV 6 pole (≤1,1kV)	1120	355	710	560	710	630	400	500	315	200	90	55	37
	P(kW) - LV 8 pole (≤1,1kV)	900	315	630	500	630	560	355	450	280	160	75	45	30
	P(kW) - MV 2 pole (≤6,6kV)	1120	355	800	630	800	630	355	500	315	132			
	P(kW) - MV 4 pole (≤6,6kV)	1500	355	900	630	900	710	355	500	280	132			
	P(kW) - MV 6 pole (≤6,6kV)	1120	280	710	560	710	560	280	400	250	110			
	P(kW) - MV 8 pole (≤6,6kV)	900	200	560	450	560	450	200	280	160	90			
	P(kW) - HV 2 pole (≤11,0kV)	710		450										
	P(kW) - HV 4 pole (≤11,0kV)	900		450										
	P(kW) - HV 6 pole (≤11,0kV)	710		355										
	P(kW) - HV 8 pole (≤11,0kV)	500		250										
Standard & Optional Features Certified	IIB	●	●	●	●	●	●	●						
	IIC	●	●	●	●				●	●	●	●	●	●
	LV	●	●	●	●	●	●	●	●	●	●	●	●	●
	MV	●	●	●	●	●	●	●	●	●	●			
	HV (0)	●		●										
	Ex II 2 G - Ex d(e) IIC T4 or Ex d(e) IIB T4 (Zone 1)	●	●	●	●	●	●	●	●	●	●	●	●	●
	Ex II 2 GD - Ex d(e) IIC T4 or Ex d(e) IIB T4 - Ex tD A21 IP65 T125C°	o	o	o	o		o				o			o
	Ex II 2 GD - Ex d(e) IIC T4 or Ex d(e) IIB T4 - Ex tD A21 IP65 T135C°	o	o	o	o	o	o	o	o	o	o	o	o	o
	Ex I M2	o	o	o	o									
	IP55	●	●	●	●	●	●	●	●	●	●	●	●	●
	IP56	o	o	o	o	o	o	o	o	o	o	o	o	o
	IP65	o	o	o	o	o	o	o	o	o	o	o	o	o
	IP66	o	o	o	o									
	ATEX	●	●	●	●	● (11)	●	●	● (11)	●	●	● (11)	● (11)	●
	IECEx	o	o	o	o									
	GOST / GOSGORTECHNADZOR	o	o	o	o	o	o	o	o	o	o	o	o	o
	Marine	o	o	o	o	o	o	o	o	o	o	o	o	o
	T4	●	●	●	●	●	●	●	●	●	●	●	●	●
	T5	o	o	o	o		o	o			o			o
	50 Hz (1)	●	●	●	●	●	●	●	●	●	●	●	●	●
	60 Hz (1)	o	o	o	o	o	o	o	o	o	o	o	o	o
	Insulation class F	●	●	●	●	●	●	●	●	●	●	●	●	●
	Insulation class H (2)	o	o	o	o	o	o	o	o	o	o	o	o	o
	Temperature rise class B	●	●	●	●	●	●	●	●	●	●	●	●	●
	Temperature rise class F	o	o	o	o	o	o	o	o	o	o	o	o	o
	Terminal box on top	●	●	●	●	●	●	●	●	●	●	●	●	●
	Terminal box on left/right side	o	o	o	o	o	o	o	o	o	o	o	o	o
	Epoxy painting (202E)	●	●	●	●	●	●	●	●	●	●	●	●	●
	Painting plans (202P, 211E, 211P, 212E and 212P)	o	o	o	o	o	o	o	o	o	o	o	o	o
	Frequency converter T4 (3)	o	o	o	o	o	o	o	o	o	o	o	o	o
	Horizontal mounting	●	●	●	●	●	●	●	●	●	●	●	●	●
	Vertical mounting (4)	o	o	o	o	o	o	o	o	o	o	o	o	o
	Bearings	●	●	●	●	●	●	●	●	●	●	●	●	●
	Sleeve-bearings (2 poles motors) (5)	o(12)	o	o(12)	o (12)	o	o	o						
	Sleeve-bearings (= 4 poles motors) (5)	o	o	o	o	o	o	o						
	Insulated bearing	o	o	o	o	o	o	o	o	o	o	o	o	o
	2nd power terminal box	o	o	o	o	o	o	o	o	o	o			
	Auxiliary terminal box (6)	o	o	o	o	o	o	o	o	o	o	o	o	o
	2nd auxiliary terminal box	o	o	o	o	o	o	o	o	o	o			
	3rd auxiliary terminal box	o	o	o	o	o	o	o	o	o	o			
	Power terminal box with Icc whitstanding value - tested	o	o	o	o	o	o	o						
	Phase segregated terminal box (fault withstanding type)	o	o	o	o	o	o	o	o	o	o			
	Drain and breathing device	o	o	o	o	o	o				o			o
	Flying leads	o	o	o	o	o	o	o	o	o	o	o	o	o
	Forced ventilation	o	o	o	o	o	o	o	o	o	o	o	o	o
	Without fan (7)	o	o	o	o	o	o	o	o	o	o	o	o	o
	Motor with fan and 2 flanges	o	o	o	o	o	o	o	o	o	o	o	o	o
	Windings thermal protections (8)	o	o	o	o	o	o	o	o	o	o	o	o	o
	Bearings thermal protections (8)	o	o	o	o	o	o	o	o	o	o	o	o	o
	Space heaters (8)	o	o	o	o	o	o	o	o	o	o	o	o	o
	Provistion for SPM adaptors	o	o	o	o	o	o	o	o	o	o	o	o	o
	Equipped with vibration/position/acceleration/speed measurement devices	o	o	o	o	o	o	o	o	o	o	o	o	o
	Equipped with encoder or tacho	o	o	o	o	o	o	o	o	o	o	o	o	o
	Equipped with CTs (current transformers) (9)	o	o	o	o									
	Equipped with surge capacitors for main supply (9)	o	o	o	o									
	Equipped with surge arresters for main supply (9)	o	o	o	o									
	Equipped with surge arresters in auxiliary terminal box (9)	o	o	o	o									
	Service S1	●	●	●	●	●	●	●	●	●	●	●	●	●
	Service S2 to S10 (10)	o	o	o	o	o	o	o	o	o	o	o	o	o
	-20°C≤Ambient temp≤40°C	●	●	●	●	●	●	●	●	●	●	●	●	●
	-20°C≤Ambient temp≤60°C	o	o	o	o	o (13)	o (13)			o	o			
	-40°C≤Ambient temp≤60°C	o	o	o	o			o (13)	o	o	o (13)	o	o	o (13)
	-55°C Ambient temp≤60°C	o	o	o	o									

Standards:
EN/IEC 60079-0; EN/IEC 60079-1; EN/IEC 60079-7
EN/IEC 61241-0; EN/IEC 61241-1

● Standard executions o Optional executions Not available

(0) Maximum 11kV.
(1) 50Hz: For sleeve-bearings execution in 2 pole motors frame size 500 - analysis case by case / 60Hz: Not available for bearings in 2 pole motors frame sizes 500. For sleeve-bearings execution in 2 pole motors frames size 450 and 500 - analysis case by case.
(2) Only for LV motors.
(3) F/F by default. F/B under request. Not available for sleeve bearings IIB motors. Max amb. temp. range -40°C to +60ºC. Winding trip device is mandatory.
(4) Not available for 2 pole motors frame sizes 450 and 500. Not available also for all motors with sleeve-bearing execution.
(5) Only available for IIB motors.
(6) Standard for MV and HV motors.
(7) Working on air flow.
(8) LV motors: Standard is 1xPTC/phase. MV and HV motors: Standard is 1xPT100/phase + 1xPT100/bearing + Heaters.
(9) Not available for 'Ex de' execution.
(10) Specific type test in first manufactured motor.
(11) Certification according EN 50014; EN 50018;EN 50019; EN50281-1-1.
(12) 50Hz, 60Hz and VSD operation: analysis case by case.
(13) BFG6 450 and BFG6 400: -20°C up to +50°C; BFG6 355: -20°C up to +55°C; BFGC3 315: -30°C up to +60°C; BFGC4 250: -28°C up to +50°C.
General note: Some optionals may not be available in IECEx product or Group I product. Please consult before order.

2.4 CERTIFICATION STANDARDS AND Ex NOTIFIED BODIES PER RANGE

In the folowing tables is a resume of certification standards per WEG motors ranges:

Line:	BFGC3
Possible markings:	Ex d IIC T4 / Ex de IIC T4

Motors	Certification standards	Voltage	Ex NB	ATEX / IECEx
BFGC3 315 MA/LA	EN 60079-0: 2006 EN 60079-1: 2004 EN 60079-7: 2003 EN 61241-0: 2006 EN 61241-1: 2004	LV and MV	INERIS	ATEX
BFGC3 355 MA/LA	EN 60079-0: 2006 / IEC 60079-0: 2004 EN 60079-1: 2004 / IEC 60079-1: 2003 EN 60079-7: 2007 / IEC 60079-7: 2006 EN 61241-0: 2006 / IEC 61241-0: 2004 EN 61241-1: 2004 / IEC 61241-1: 2004		ISSeP	
BFGC3 400 LA	EN 50014: 1997 A1 e A2: 1999 EN 50018: 2000 A1: 2002 EN 50281-1-1 ñ 1998			

Line:	BFGC4
Possible markings:	Ex d IIC T4 / Ex de IIC T4

Motors	Certification standards	Voltage	Ex NB	ATEX / IECEx
BFGC4 250 M	EN 60079-0: 2004 EN 60079-1: 2004 EN 60079-7: 2003 EN 50281-1-1- 1998 A1	LV	INERIS	ATEX
BFGC4 280 SA/MA	EN 50014: 1997 A1 e A2: 1999 EN 50018: 2000 A1: 2002 EN 50281-1-1- 1998		ISSeP	
BFGC4 315 SA/MA				

Line:	BFG6
Possible markings:	Ex d IIB T4 / Ex de IIB T4

Motors	Certification standards	Voltage	Ex NB	ATEX / IECEx
BFG6 355 MLJ	EN 60079-0: 2006 / IEC 60079-0: 2004 EN 60079-1: 2004 / IEC 60079-1: 2003 EN 60079-7: 2007 / IEC 60079-7: 2006 EN 61241-0: 2006 / IEC 61241-0: 2004 EN 61241-1: 2004 / IEC 61241-1: 2004	LV and MV	ISSeP	ATEX
BFG6 400 L/J/G	EN 60079-0: 2004 EN 60079-1: 2004 EN 60079-7: 2003 EN 50281-1-1- 1998 A1		INERIS	
BFG6 450 KH	EN 50014: 1997 A1 e A2: 1999 EN 50018: 2000 A1: 2002 EN 50019: 1994 e 2000 EN 50281-1-1- 1998 + A1:2002		ISSeP	

Line:	BFN6
Possible markings:	Ex nA II T3

Motors	Certification standards	Voltage	Ex NB	ATEX / IECEx
BFN6 315 L	EN 60079-0: 2004 EN 60079-15: 2005	LV and MV	Baseefa	ATEX
BFN6 355 MLJ				
BFN6 400 L/J/G				
BFN6 450 KH				
BFN6 500 H				

Line:	BFG(C)8 and W22X
Possible markings:	Ex d I / Ex de I / Ex d IIB T4 / Ex d IIC T4 / Ex de IIC T4

Motors	Certification standards	Voltage	Ex NB	ATEX / IECEx
W22X 355 MLJ	EN 60079-0: 2006 / IEC 60079-0: 2004 EN 60079-1: 2007 / IEC 60079-1: 2003 EN 60079-7: 2007 / IEC 60079-7: 2001 EN 61241-0: 2006 / IEC 61241-0: 2004 EN 61241-1: 2004 / IEC 61241-1: 2004	LV and MV	INERIS	ATEX IECEx
BFG(C)8 400 LJ/G				
BFG(C)8 450 KH		LV, MV and HV		
W22X 500 KH				

2.5 TERMINAL BOXES TECHNICAL INFORMATION

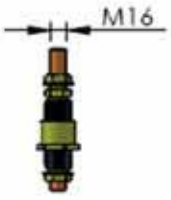
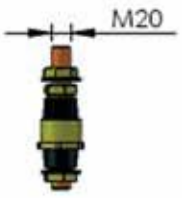
The certification of the new BFG(C)8 and W22XB(C) series allows the motor frame to be equiped with a different sizes and types of terminal boxes. The type of terminal boxes per motor frame are indicated on outline dimensions tables and details are given herafter.

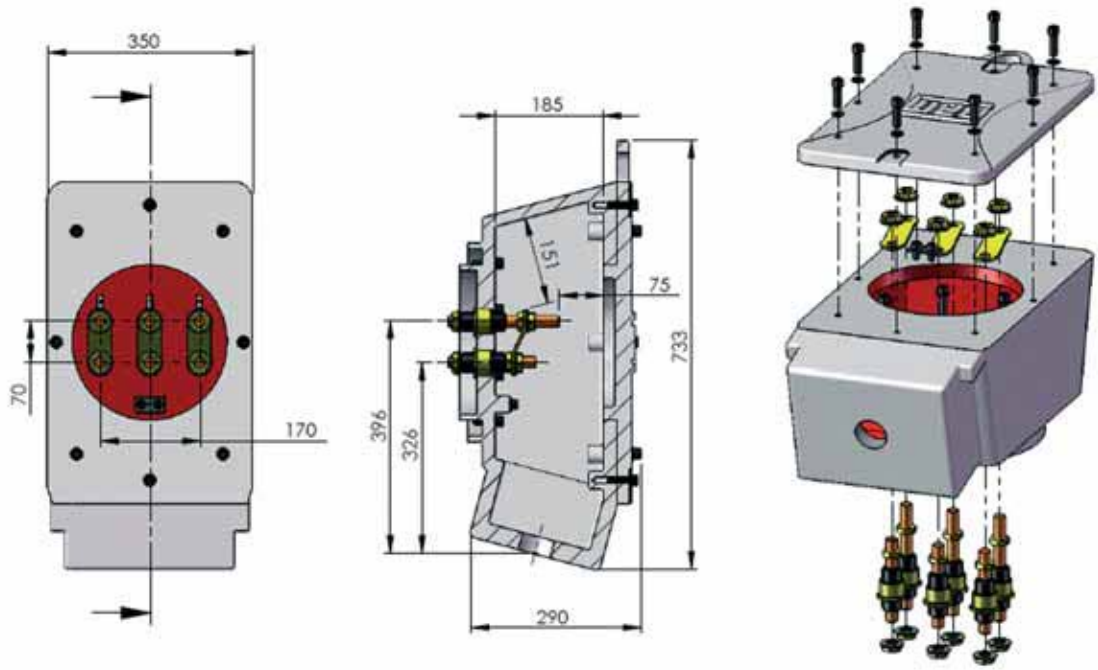
Note regarding all terminal boxes:
Special attention shell be given to cable entry diemeters to all main and auxiliary terminal boxes in order to choose the correct type and syze of cable gland wich makes part of motor protection enclosure.

2.5.1 MAIN SUPPLY TERMINAL BOXES

Standard Terminal Box for Flameproof Motors - G(D) - Ex d I / Ex d IIB/C
Terminal Box: CEFGH 340
Low Voltage: ≤ 1100 V

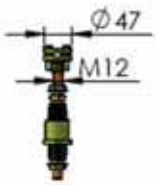
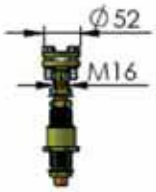
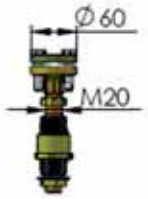
Grounding	Quant.	2			
	Cable Max.	185 mm²			
	Material	Stainless Steel			
	I ≤ 545 A	545 A < I ≤ 690 A	690 A < I ≤ 900 A	900 A < I ≤ 1090 A	
Entrance Holes	2 x M63 x 1,5	2 x M63 x 1,5	2 x M63 x 1,5	4 x M63 x 1,5	
Cable Type	3 Core - 2x(3x300+1G150)	3 Core - 2x(3x300+1G150)	3 Core - 2x(3x300+1G150)	3 Core - 2x(3x300+1G150)	
Bushing / Terminal	6 x M12	6 x M16	6 x M20	6 x M20	
Cross Section Cable max.	300	300	300	300	
Cable Mechanical Protection	Armoured and non armoured				
Fault Level	-	-	-	-	
Fault Level (peak)	-	-	-	-	
Protection Level	IP 66				

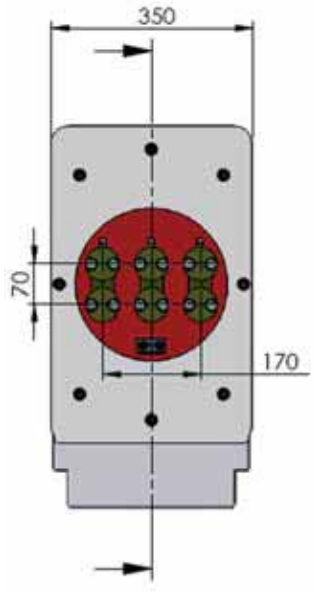
Bushing / Terminal		
M12	M16	M20
		

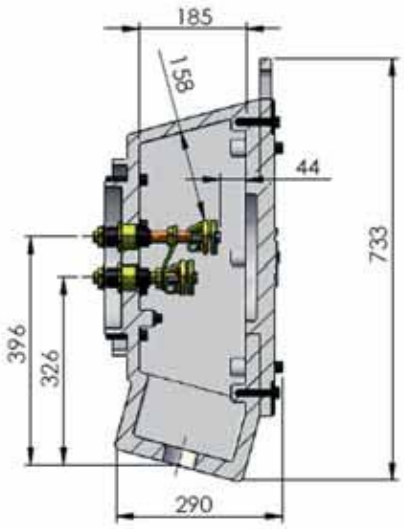


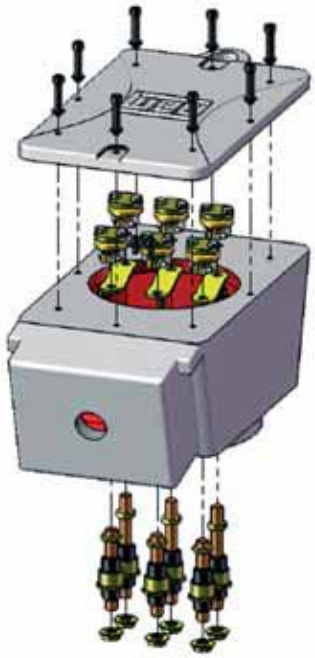
Notes: - *All the dimensions are in millimetres.*
- *Please, do not use these dimensions for construction.*
- *Certified drawings under request.*
- *For other special executions please refer to us.*
- *The dimensions shown are subject to change without prior notice.*

MAIN SUPPLY TERMINAL BOXES

Standard Terminal Box for Flameproof Motors - G(D) - Ex de I / Ex de IIB/C Terminal Box: CEFGH 340 Low Voltage: ≤ 1100 V					
Grounding	Quant.	2			
	Cable Max.	185 mm²			
	Material	Stainless Steel			
	I ≤ 545 A	545 A < I ≤ 690 A	690 A < I ≤ 900 A	900 A < I ≤ 1090 A	
Entrance Holes	2 x M63 x 1,5	2 x M63 x 1,5	2 x M63 x 1,5	4 x M63 x 1,5	
Cable Type	3 Core - 2x(3x95+1G50)	3 Core - 2x(3x150+1G95)	3 Core - 2x(3x300+1G150)	3 Core - 2x(3x300+1G150)	
Bushing / Terminal	6 x M12	6 x M16	6 x M20	6 x M20	
Cross Section Cable max.	95	150	300	300	
Cable Mechanical Protection	Armoured and non armoured				
Fault Level	-	-	-	-	
Fault Level (peak)	-	-	-	-	
Protection Level	IP 66				
Bushing / Terminal					
M12	M16	M20			
					







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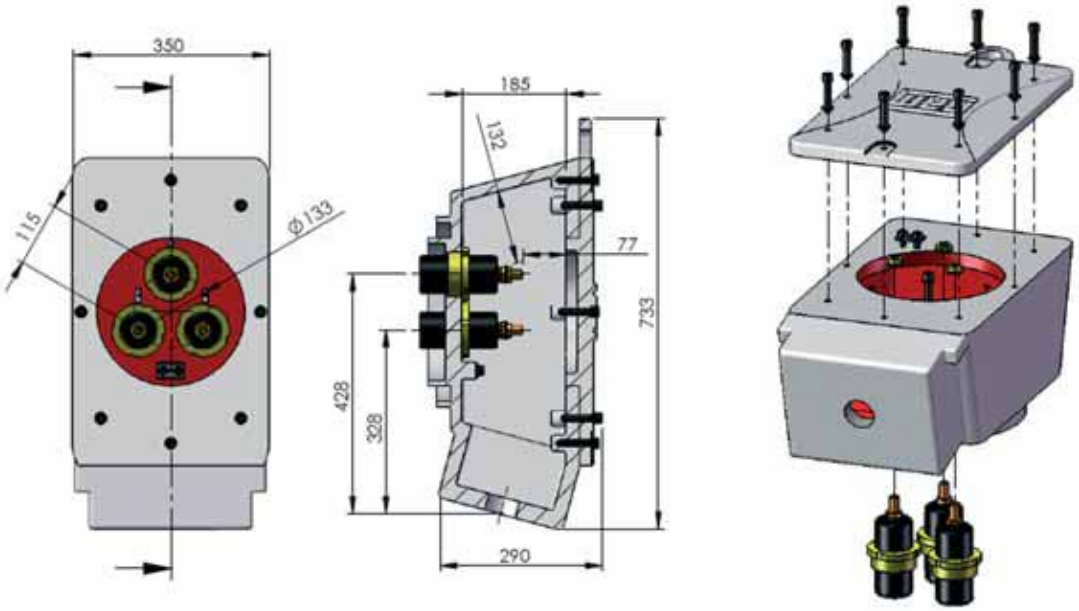
MAIN SUPPLY TERMINAL BOXES

Standard Terminal Box for Flameproof Motors - G(D) - Ex d I / Ex d IIB/C Terminal Box: CEFGH 340 Medium Voltage: 1100 V < V ≤ 6600 V			
Grounding	Quant.	2	
	Cable Max.	185 mm²	
	Material	Stainless Steel	
	I ≤ 315 A	315 A < I ≤ 400 A	
Entrance Holes	1 x M63 x 1,5	3 x M63 x 1,5	
Cable Type	3 Core - 1x(3x120)	1 Core - 3x(1x500)	
Bushing / Terminal	3 x M12	3 x M16	
Cross Section Cable max.	120	500	
Cable Mechanical Protection	Armoured and non armoured		
Fault Level	25 kA for 0,25s (with min.120 mm² section cable)	30 kA for 0,25s (with min.120 mm² section cable)	
Fault Level (peak)	65 kA (with min.120 mm² section cable)	78 kA (with min.120 mm² section cable)	
Protection Level		IP 66	
Bushing / Terminal			
M12		M16	



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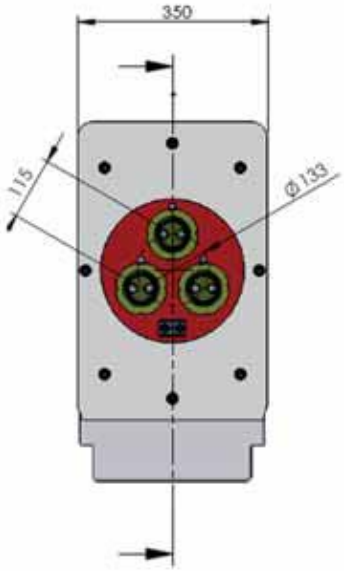
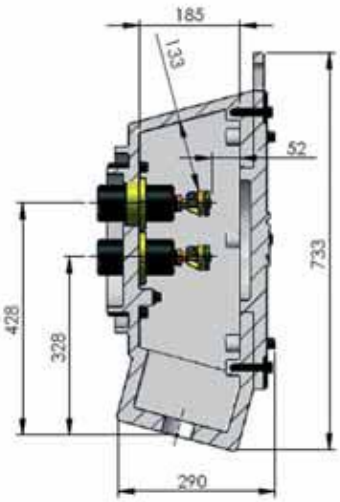
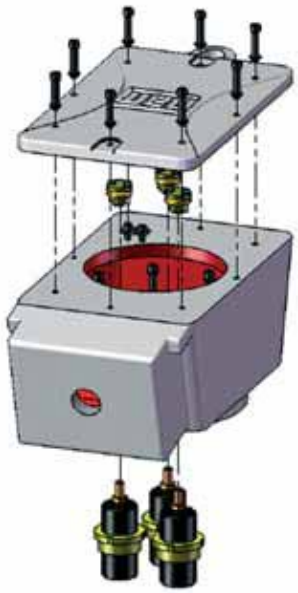
MAIN SUPPLY TERMINAL BOXES

Standard Terminal Box for Flameproof Motors - G(D) - Ex de I / Ex de IIB/C Terminal Box: CEFGH 340 Medium Voltage: 1100 V < V ≤ 6600 V			
Grounding	Quant.	2	
	Cable Max.	185 mm²	
	Material	Stainless Steel	
	I ≤ 315 A	315 A < I ≤ 400 A	
Entrance Holes	1 x M63 x 1,5	3 x M63 x 1,5	
Cable Type	3 Core - 1x(3x95)	1 Core - 3x(1x150)	
Bushing / Terminal	3 x M12	3 x M16	
Cross Section Cable max.	95	150	
Cable Mechanical Protection	Armoured and non armoured		
Fault Level	25 kA for 0,25s (with min.120 mm² section cable)	30 kA for 0,25s (with min.120 mm² section cable)	
Fault Level (peak)	65 kA (with min.120 mm² section cable)	78 kA (with min.120 mm² section cable)	
Protection Level		IP 66	
Bushing / Terminal			
M12		M16	







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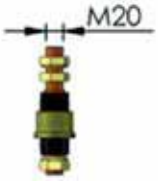
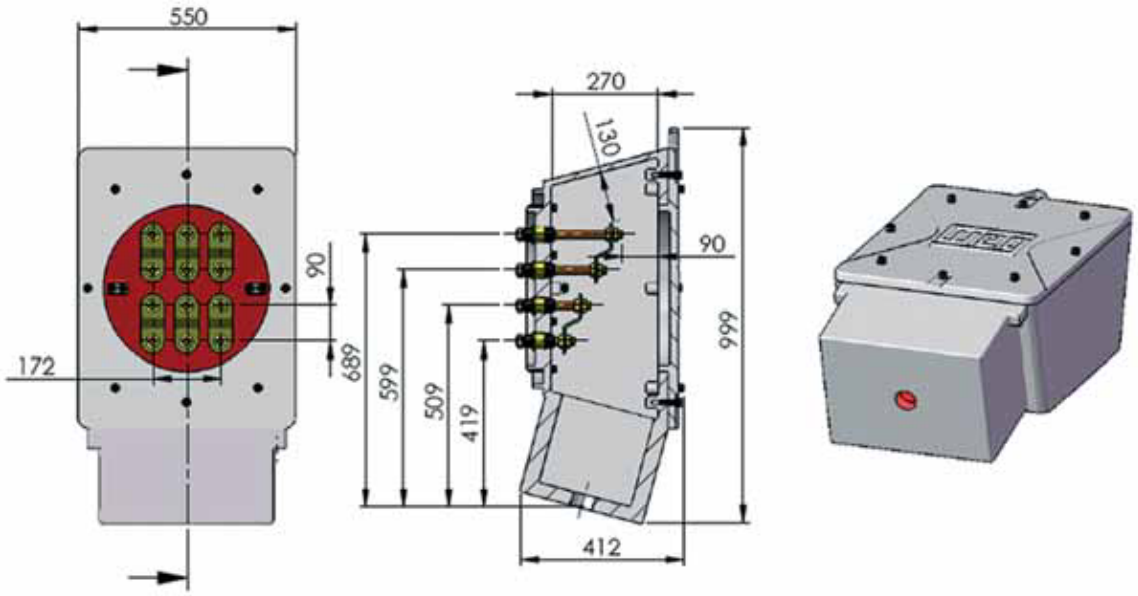
MAIN SUPPLY TERMINAL BOXES

Standard Terminal Box for Flameproof Motors - G(D) - Ex d I / Ex d IIB/C Terminal Box: CEFGH 500 Low Voltage: ≤ 1100 V			
Grounding	Quant.	2	
	Cable Max.	185 mm²	
	Material	Stainless Steel	
	1090 A < I ≤ 1385 A	1385 A < I ≤ 1900 A	
Entrance Holes	4 x M63 x 1,5	4 x M63 x 1,5	
Cable Type	3 Core - 3x(3x300+1G150)	3 Core - 4x(3x300+1G150)	
Bushing / Terminal	12 x M16	12 x M20	
Cross Section Cable max.	300	300	
Cable Mechanical Protection	Armoured and non armoured		
Fault Level	-	-	
Fault Level (peak)	-	-	
Protection Level		IP 66	
Bushing / Terminal			
M16		M20	
			



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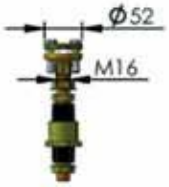
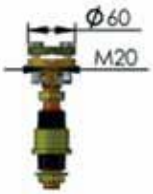
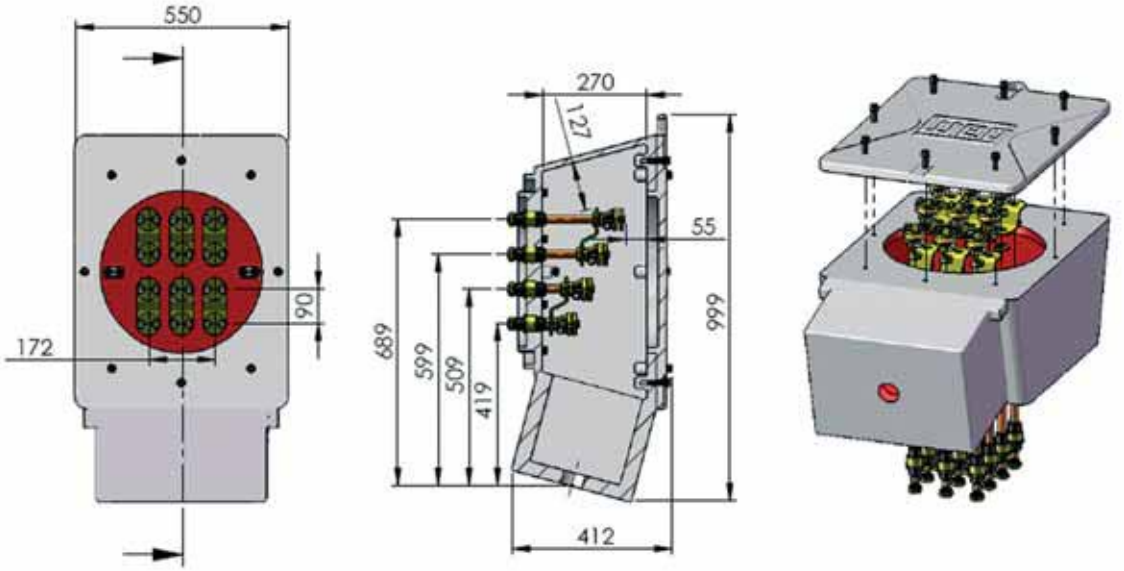
MAIN SUPPLY TERMINAL BOXES

Standard Terminal Box for Flameproof Motors - G(D) - Ex de I / Ex de IIB/C Terminal Box: CEFGH 500 Low Voltage: ≤ 1100 V			
Grounding	Quant.	2	
	Cable Max.	185 mm²	
	Material	Stainless Steel	
	1090 A < I ≤ 1385 A	1385 A < I ≤1900 A	
Entrance Holes	4 x M63 x 1,5	4 x M63 x 1,5	
Cable Type	3 Core - 4x(3x150+1G90)	3 Core - 4x(3x300+1G150)	
Bushing / Terminal	12 x M16	12 x M20	
Cross Section Cable max.	150	300	
Cable Mechanical Protection	Armoured and non armoured		
Fault Level	-	-	
Fault Level (peak)	-	-	
Protection Level		IP 66	
Bushing / Terminal			
M16		M20	
			



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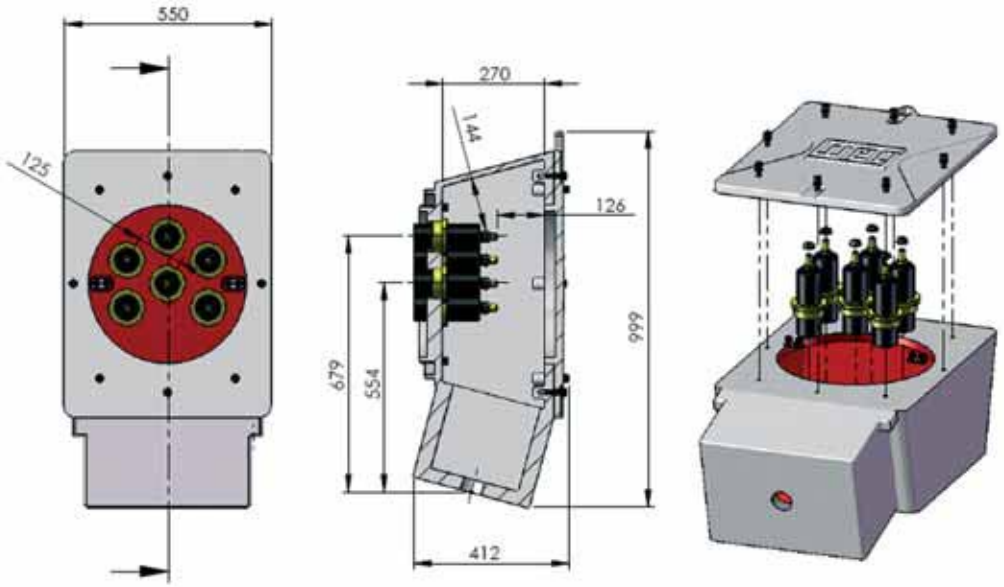
MAIN SUPPLY TERMINAL BOXES

Standard Terminal Box for Flameproof Motors - G(D) - Ex d I / Ex d IIB/C Terminal Box: CEFGH 500 Medium Voltage: 1100 V < V ≤ 6600 V			
Grounding	Quant.	2	
	Cable Max.	185 mm²	
	Material	Stainless Steel	
	400 A < I ≤ 630 A	630 A < I ≤ 800 A	
Entrance Holes	3 x M63 x 1,5	3 x M63 x 1,5	
Cable Type	1 Core - 3x(1x500)	1 Core - 3x(1x500)	
Bushing / Terminal	6 x M12	6 x M16	
Cross Section Cable max.	500	500	
Cable Mechanical Protection	Armoured and non armoured		
Fault Level	25 kA for 0,25s (with min. 120 mm2 section cable)	30 kA for 0,25s (with min. 120 mm2 section cable)	
Fault Level (peak)	65 kA for 0,25s (with min. 120 mm2 section cable)	78 kA for 0,25s (with min. 120 mm2 section cable)	
Protection Level		IP 66	
Bushing / Terminal			
M12		M16	



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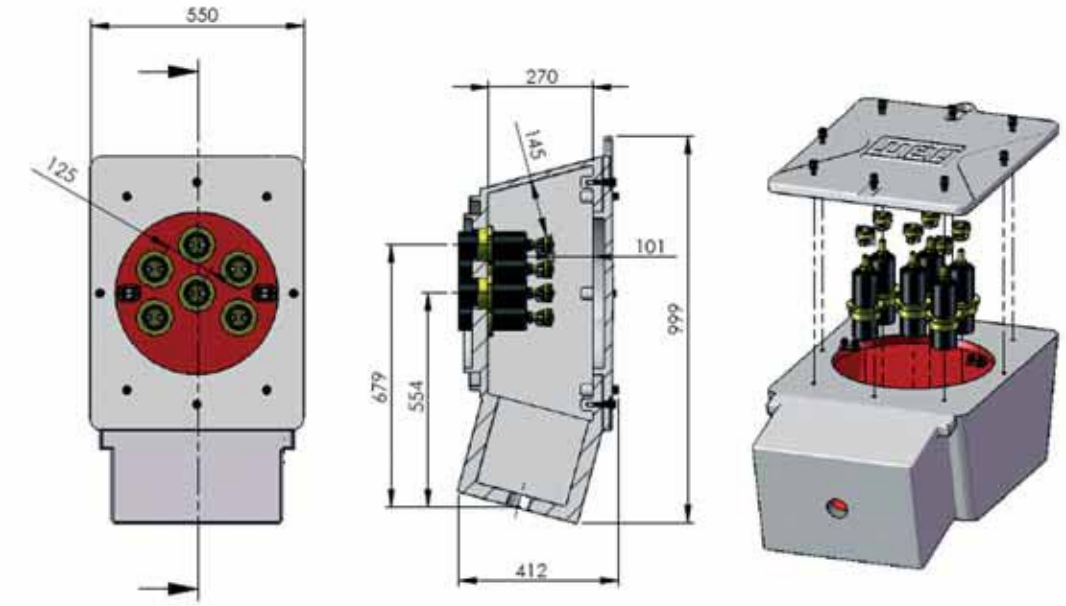
MAIN SUPPLY TERMINAL BOXES

Standard Terminal Box for Flameproof Motors - G(D) - Ex de I / Ex de IIB/C Terminal Box: CEFGH 500 Medium Voltage: 1100 V < V ≤ 6600 V			
Grounding	Quant.	2	
	Cable Max.	185 mm²	
	Material	Stainless Steel	
	400 A < I ≤ 630 A	630 A < I ≤ 800 A	
Entrance Holes	3 x M63 x 1,5	3 x M63 x 1,5	
Cable Type	3 Core - 2x(3x95)	3 Core - 2x(3x120)	
Bushing / Terminal	6 x M12	6 x M16	
Cross Section Cable max.	95	120	
Cable Mechanical Protection	Armoured and non armoured		
Fault Level	25 kA for 0,25s (with min. 120 mm2 section cable)	30 kA for 0,25s (with min. 120 mm2 section cable)	
Fault Level (peak)	65 kA for 0,25s (with min. 120 mm2 section cable)	78 kA for 0,25s (with min. 120 mm2 section cable)	
Protection Level		IP 66	
Bushing / Terminal			
M12		M16	



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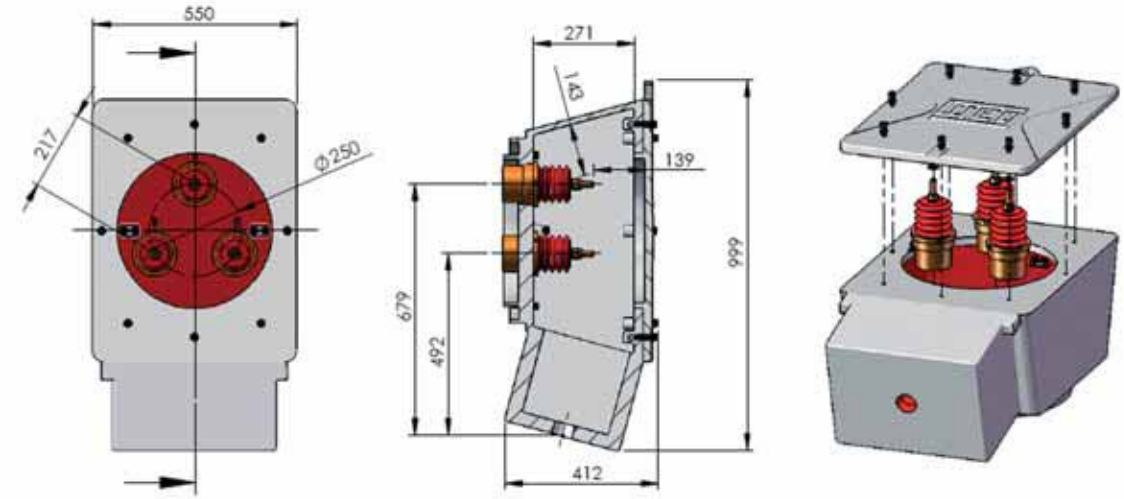
MAIN SUPPLY TERMINAL BOXES

Standard Terminal Box for Flameproof Motors - G(D) - Ex d I / Ex d IIB/C Terminal Box: CEFGH 500 High Voltage: 6600 V < V ≤ 11000 V			
Grounding	Quant.	2	
	Cable Max.	185 mm²	
	Material	Stainless Steel	
	I ≤ 200 A	200 A < I ≤ 400 A	
Entrance Holes	1 x M63 x 1,5	3 x M50 x 1,5	
Cable Type	3 Core - 1x(3x50)	1 Core - 3x(1x400)	
Bushing / Terminal	3 x M16	3 x M16	
Cross Section Cable max.	50	400	
Cable Mechanical Protection	Armoured and non armoured		
Fault Level	30 kA for 0,25s (with min. 120 mm2 section cable)		
Fault Level (peak)	78 kA (with min. 120 mm2 section cable)		
Protection Level		IP 66	
Bushing / Terminal			
M16			



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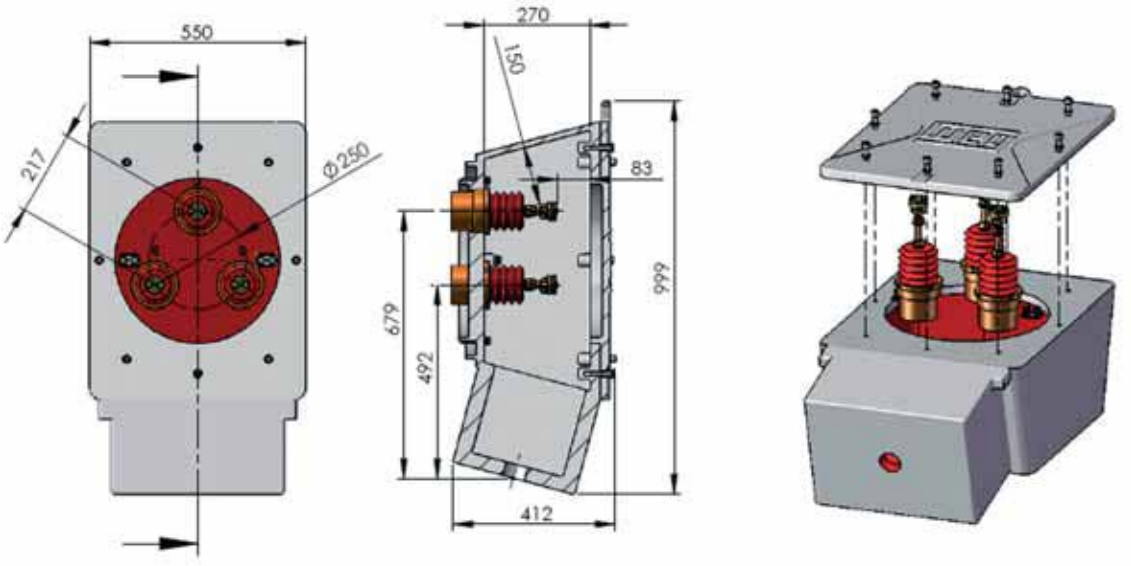
MAIN SUPPLY TERMINAL BOXES

Standard Terminal Box for Flameproof Motors - G(D) - Ex de I / Ex de IIB/C Terminal Box: CEFGH 500 High Voltage: 6600 V < V ≤ 11000 V			
Grounding	Quant.	2	
	Cable Max.	185 mm²	
	Material	Stainless Steel	
	I ≤ 200 A	200 A < I ≤ 400 A	
Entrance Holes	1 x M63 x 1,5	3 x M50 x 1,5	
Cable Type	3 Core - 1x(3x50)	1 Core - 3x(1x150)	
Bushing / Terminal	3 x M16	3 x M16	
Cross Section Cable max.	50	150	
Cable Mechanical Protection	Armoured and non armoured		
Fault Level	30 kA for 0,25s (with min. 120 mm² section cable)		
Fault Level (peak)	78 kA (with min. 120 mm² section cable)		
Protection Level		IP 66	
Bushing / Terminal			
M16			



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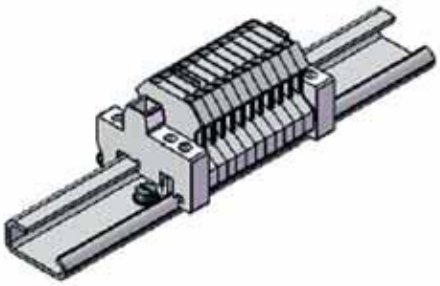
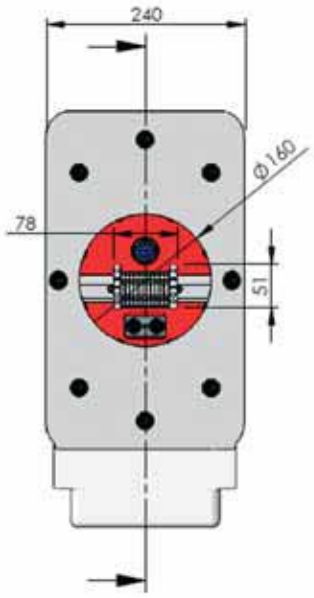
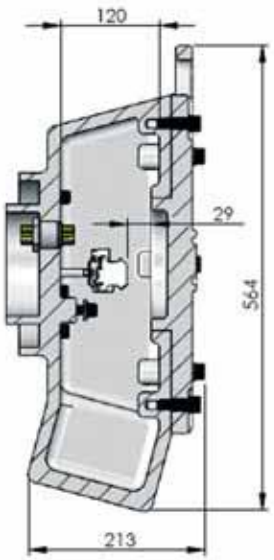
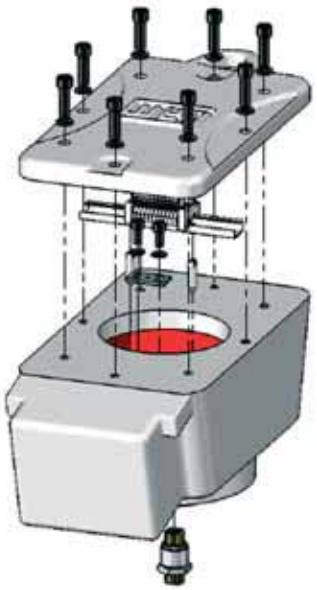
2.5.2 AUXILARY TERMINAL BOXES

Auxiliary Terminal Box for Flameproof Motors G/D - Ex d(e) I / Ex d(e) IIB/C	
Terminal Box: CEFGH 220	
Grounding	
Quant.	2
Cable Max.	185 mm²
Material	Stainless Steel
Technical data:	
Voltage (max.)	800 V
Current (max.)	24 A
Cross section of cables (max.)	2,5 mm²/cable
Max. number of connectors	32
Protection Level	IP 66
Terminal Connection	
	







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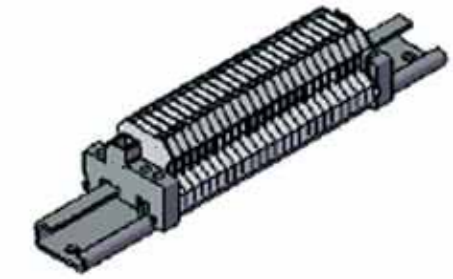
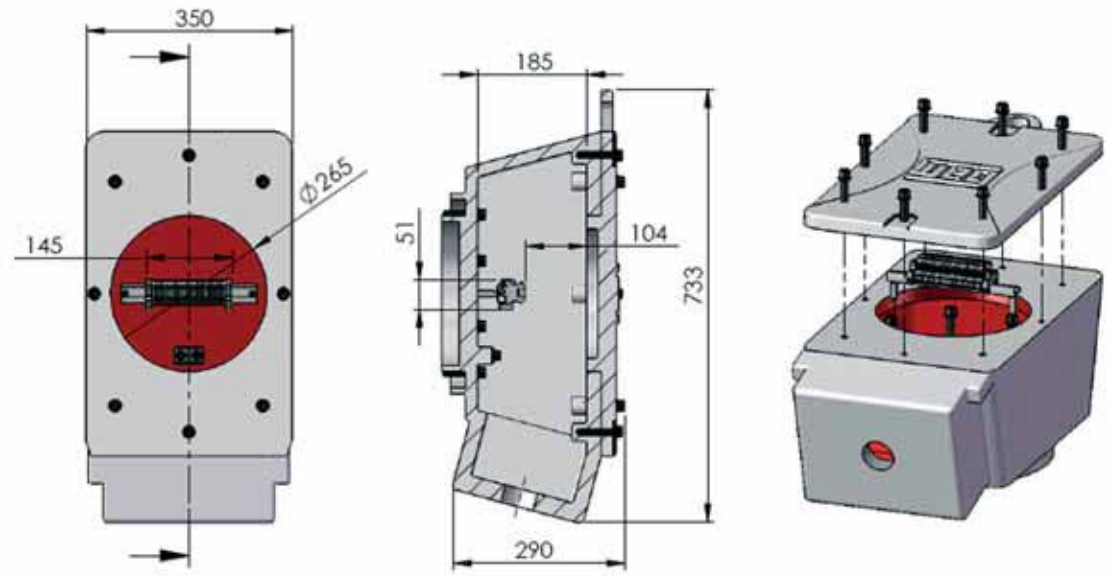
AUXILARY TERMINAL BOXES

Auxiliary Terminal Box for Flameproof Motors G/D - Ex d(e) I / Ex d(e) IIB/C	
Terminal Box: CEFGH 340	
Grounding	
Quant.	2
Cable Max.	185 mm²
Material	Stainless Steel
Technical data:	
Voltage (max.)	800 V
Current (max.)	24 A
Cross section of cables (max.)	2,5 mm²/cable
Max. number of connectors	50
Protection Level	IP 66
Terminal Connection	





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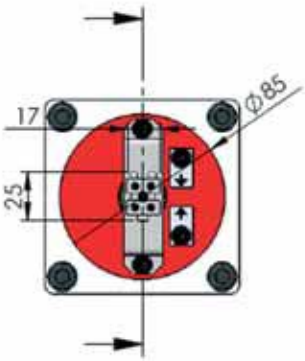
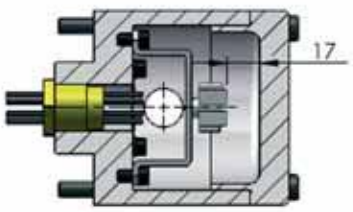
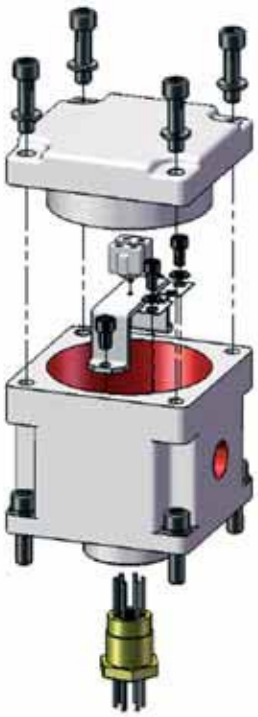
AUXILARY TERMINAL BOXES

Space Heater Terminal Box for Flameproof Motors G/D - Ex d(e) I / Ex d(e) IIB/C		
Terminal Box: CG47		
Grounding		
Quant.	2	
Cable Max.	4 mm²	
Material	Stainless Steel	
Technical data:		
Voltage (max.)	440 V	
Current (max.)	23 A	
Cross section of cables (max.)	2,5 mm²/cable	
Connectors	2	
Protection Level	IP 66	
Terminal Connection		







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2.6 BEARINGS INFORMATION

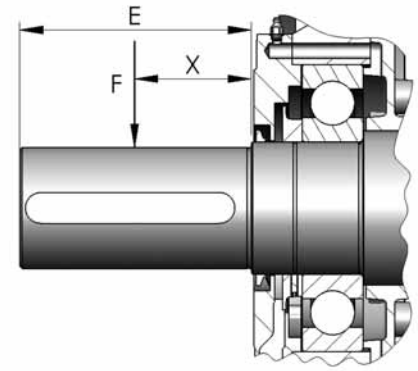
The information given is for the new BFG(C)8 and W22XB(C) motors series.

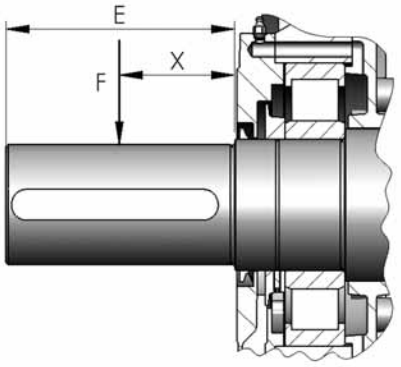
2.6.1 BEARINGS ARRANGEMENTS AND PERMISSIBLE LOADS ON SHAFTS

The table indicates the maximum permissible radial loads in N based on foot-mounted motors IM1001(B3) with load perpendicular to motor shaft axis as shown in figure below.
In the case of simultaneous radial and axial loads, please refer to us.

PERMISSIBLE RADIAL BEARING LOAD

The indicated values are calculated based on bearings lifetime of 40.000 hours and for the solutions:
- Ball bearings with shaft material C45E (standard)
- Roller bearings with 42CrMo4 (optional)





		Ball Bearings - Standard						Roller Bearings - Optional					
Motor	Polarity	Bearings		E [mm]	X [mm]	Shaft material	Maximum Load F [N]	Bearings		E [mm]	X [mm]	Shaft material	Maximum Load F [N]
		DE	NDE					DE	NDE				
W22X(B/C) 355MLJ	2P	6316C3	6316C3	140	70	C45E	2400	NU316C3	6316C3	140	70	42CrMo4	13000
	4P	6322C3	6322C3	210	105		4000	NU322C3	6322C3	210	105		27000
	6P						4500						30000
	8P						5300						34000
BFG(C)8 400LJ	2P	6318C3	6318C3	170	85	C45E	2000	Under Request				42CrMo4	-
	4P	6324C3	6324C3	210	105		3300	NU324C3	6324C3	210	105		26900
	6P						4000						33000
	8P						4500						36000
BFG(C)8 400G	2P	6318C3	6318C3	170	85	C45E	1200	Under Request				42CrMo4	-
	4P	6324C3	6324C3	210	105		2500	NU324C3	6324C3	210	105		25000
	6P						2800						27000
	8P						3000						29000
BFG(C)8 450KH	2P	N218C3 + 6218C3	N218C3	170	85	C45E	-	N218C3 + 6218C3	N218C3	170	85	42CrMo4	-
	4P	6326C3	6326C3	210	105		5300	NU326C3	6326C3	210	105		30000
	6P						5700						35000
	8P						6000						38000
W22X(B/C) 500KH	2P	NU220C3 + 6020C3	NU220C3	170	85	C45E	-	NU220C3 + 6220C3	NU220C3	170	85	42CrMo4	-
	4P	6328C3	6328C3	250	125		4000	NU328C3	6328C3	250	125		20000
	6P						5000						24000
	8P						5700						26000

The maximum permissible loads are also valid for Mines Flameproof Motors.
For any other special execution, higher load or different points of application, please refer to us.

2.6.2 BEARINGS LUBRICATION INTERVALS

In the following tables are defined the lubrication intervals and quantity of grease, needed to ensure the correct bearings lubrication at standard working conditions:
- Grease Polyrex EM103;
- Ambient temperature: From -20ºC up to 40ºC;
- Bearing lifetime: 40.000 hours.
- Frequency: 50Hz

Horizontal Motors

Standard Construction

Motor	Polarity	DE Bearings	Lubrication interval [h]	Quant. [g]	NDE Bearings	Lubrication interval [h]	Quant. [g]
W22X(B/C) 355MLJ	2P	6316C3	3300	33	6316C3	3300	33
	4P	6322C3	6000	60	6322C3	6000	60
	6P		9900			9900	
	8P		12700			12700	
BFG(C)8 400LJ	2P	6318C3	2500	41	6318C3	2500	41
	4P	6324C3	5400	72	6324C3	5400	72
	6P		9100			9100	
	8P		11900			11900	
BFG(C)8 400G	2P	6318C3	2500	41	6318C3	2500	41
	4P	6324C3	5400	72	6324C3	5400	72
	6P		9100			9100	
	8P		11900			11900	
BFG(C)8 450KH	2P	N218C3 + 6218C3	1200	48	N218C3	1200	24
	4P	6326C3	4700	81	6326C3	4700	81
	6P		8400			8400	
	8P		11200			11200	
W22X(B/C) 500KH	2P	NU220C3 + 6020C3	1000	31/18*	NU220C3	1000	31
	4P	6328C3	4200	93	6328C3	4200	93
	6P		7700			7700	
	8P		10500			10500	

(*) Two grease nipples

Vertical Motors

Standard Construction

Motor	Polarity	DE Bearings	Lubrication interval [h]	Quant. [g]	NDE Bearings	Lubrication interval [h]	Quant. [g]
W22X(B/C) 355MLJ	2P	7316	1650	33	6316C3	3300	33
	4P	7322	3000	60	6322C3	6000	60
	6P		4950			9900	
	8P		6350			12700	
BFG(C)8 400LJ	2P	7318	1250	41	6318C3	2500	41
	4P	7324	2700	72	6324C3	5400	72
	6P		4550			9100	
	8P		5950			11900	
BFG(C)8 400G	2P	7318	1250	41	6318C3	2500	41
	4P	7324	2700	72	6324C3	5400	72
	6P		4550			9100	
	8P		5950			11900	
BFG(C)8 450KH	2P	-	-	-	-	-	-
	4P	7326	2350	81	6326C3	4700	81
	6P		4200			8400	
	8P		5600			11200	
W22X(B/C) 500KH	2P	-	-	-	-	-	-
	4P	7328	2100	93	6328C3	4200	93
	6P		3850			7700	
	8P		5250			10500	

Horizontal Motors

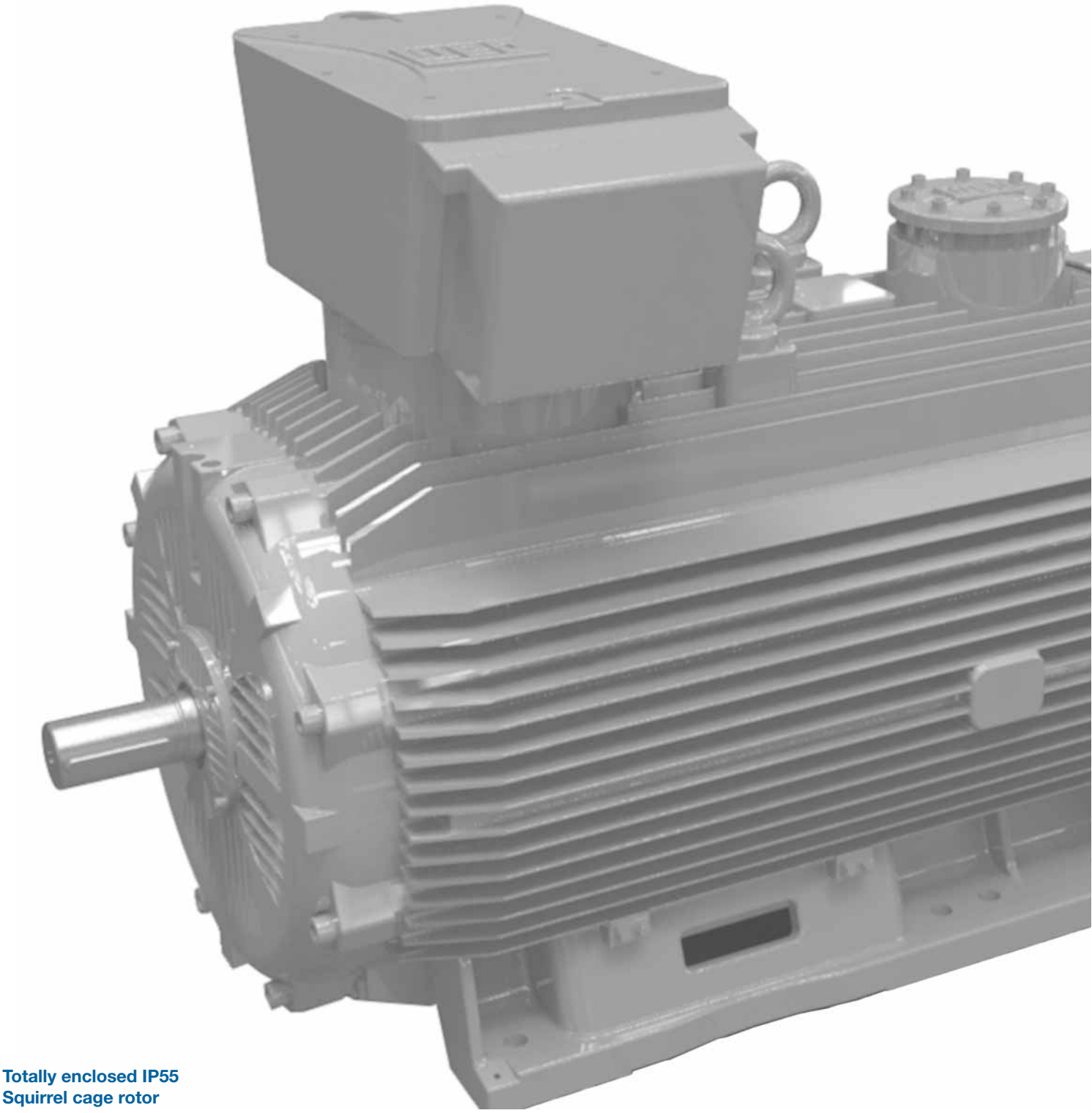
Optional construction - solution with roller bearings at Drive End.

Motor	Polarity	DE Bearings	Lubrication interval [h]	Quant. [g]	NDE Bearings	Lubrication interval [h]	Quant. [g]
W22X(B/C) 355MLJ	2P	NU316C3	1100	33	6316C3	3300	33
	4P	NU322C3	2900	60	6322C3	6000	60
	6P		6100			9900	
	8P		8800			12700	
BFG(C)8 400LJ	4P	NU324C3	2400	72	6324C3	5400	72
	6P		5400			9100	
	8P		8000			11900	
BFG(C)8 400G	4P	NU324C3	2400	72	6324C3	5400	72
	6P		5400			9100	
	8P		8000			11900	
BFG(C)8 450KH	4P	NU326C3	2000	81	6326C3	4700	81
	6P		4700			8400	
	8P		7300			11200	
W22X(B/C) 500KH	4P	NU328C3	1700	93	6328C3	4200	93
	6P		4200			7700	
	8P		6600			10500	

Notes: - The indicated values are given either to the standard (ball bearings) and optional (roller bearings) constructions.
- For other working conditions or temperatures, please refer to us.

3. LOW VOLTAGE MOTORS FOR HAZARDOUS AREAS

Flameproof - BFG Series
Flameproof - BFGC Series
Flameproof - W22XB / BFG8 Series
Flameproof - W22XC / BFGC8 Series
Flameproof - W22XM / BFGM8 Series
Non Sparking - BFN Series



Totally enclosed IP55
Squirrel cage rotor

3.1 LOW VOLTAGE FLAMEPROOF MOTORS BFG6 / BFGC3 / BFGC4 AND BFGC8 (71-225)

3.1.1 PRODUCT SPECIFICATION - ALL BFG(C) SERIES

Range

The present catalogue refers to TEFC Flameproof, Low Voltage, three phase, squirrel cage induction motors, ribbed frames, **BFGC** series with shaft height from 71 to 400 mm, and **BFG** series with shaft height 355, 400 and 450 mm, with the following powers:

Motor series BFGC (IIC)		Motor series BFG (IIB)	
KW	**RPM**	**KW**	**RPM**
0,37 up to 500 kW	3000 RPM	250 up to 710 kW	3000 RPM
0,25 up to 560 kW	1500 RPM	250 up to 900 kW	1500 RPM
0,18 up to 500 kW	1000 RPM	200 up to 710 kW	1000 RPM
0,12 up to 450 kW	750 RPM	160 up to 630 kW	750 RPM

This range of motors up to 90kW 2 and 4 Pole comply with efficiency classification EFF2 as established between CEMEP and European Community.

Particular specifications and standards related to hazardous areas

The motor series **BFG** and **BFGC** comply with European Standards listed on paragraph 1.2.2, and are suitable for the following Groups of Gases and Temperature Classes:

- motor series **BFGC**: Gases of group **IIC**, and temperature class **T4**
- motor series **BFG**: Gases of group **IIB,** and temperature class **T4**

Under request, are available other temperature classes.

These motor series have the CE marking in compliance with European Directive 94/4/EC (ATEX), and are classified as equipment **Group II** (Surface Industries), suitable to use on the following zones:

- category **2**, for Zones **1** and **2** – Gases and Vapours (**G**), frame sizes up to **225** included.
- category **2**, for Zones **1** and **21** – Gases, Vapours and Dust **(GD)**, frame sizes **250** and above.
- category **3**, for Zones **2** and **22** – Gases, Vapours and Dust **(GD)**, frame sizes **250** and above.

Special design to suit Zone **21** will be available on request.

As standard execution, the motors are fitted with flameproof terminal boxes for gases of **Group IIB** or **IIC**, with specification code **Ex d, IIB** or **Ex d**, **IIC**. Under request and as an alternative execution, these motors can be fitted with an Increased Safety terminal box. In this case the description code is **Ex de**, **IIB** or **Ex de**, **IIC**.
The flameproof motors in this catalogue are certified according to the above standards, by the Notified Bodies ISSEP (formerly INIEX) in Belgium, PTB in Germany and INERIS in France all accredited organizations by EU.

Construction

- Mechanical protection: IP 55.
- Insulation: Class F.
- Temperature rise: 80 K.
- Frames: are in **cast iron.**
- Terminal boxes: are in cast iron.
- Endshields: are in cast iron.
- Fans:
  - Up to frame size 315 are in **polypropylene**.
  - On frames 355 and above, are in **polypropylene, aluminium alloy** or **fabricated steel**.
- Fan cover: in **cast iron** or **pressed steel**, capable to withstand impact of 7 Joule.
- Finish: industrial paint system, standard **color RAL 5010 (IIB)** and **RAL 7001 (IIC)**.

Voltage and frequency

- **Frame sizes up to 315 included:**
  As standard, these motors are wound to operate on the following voltage range:

Δ 230 V - 50Hz Y 400 V - 50Hz	Up to and including 2,2 kW (*)
Δ 400 V - 50Hz	For powers 3 kW and above

(*) – under request available higher outputs

The electrical data described in the present catalogue, is based on the standard supply voltages shown above. Depending on actual supply voltages/frequencies, this data may vary slightly but the variations will generally remain within the tolerances given by **IEC 60034-1**.

- Frame sizes 355 and above:
  These motors are spot wound for fixed voltage and frequency. The electrical data presented in this catalogue refers to 400V, 50Hz.
  For both cases, and under request, are available voltages up to 690V, and frequencies 50 or 60Hz

Basic design

- **Cooling method:**

IC 411 in accordance with standard IEC 60034-6 - motors cooled by an external fan.

- **Detachable feet and flanges:**

Motors frame sizes 71 up to 160 have detachable feet and flanges from the motor frame, allowing stock modifications from foot to flange, or to foot and flange, without to disassemble the motor. On frame sizes between 71 and 90, all flanges either B5 or B14 are interchangeable.

Direction of rotation:

On frame sizes up to 315 (all speeds) and frames 355/400 (4 pole and above), as standard the motors are fitted with a bi-directional fan.
On remaining frames the fans are unidirectional, leaving the factory as standard on CW direction viewed from shaft end with the phase sequence of U, V, and W. In these cases the direction of rotation must be specified with order.

Electrical connection:

The terminal boxes are provided with 6 terminals, to connect the motors to the mains supply, allowing the star/delta starting for powers 3kW and above.

Terminal boxes:

On **BFGC** motors frame sizes 80 up to 225, the main terminal box is located on top of motor frame, allowing rotation of every 90º to suit cable entry from 4 directions.
The **BFGC4** motors and on **BFG** motors, the main terminal box is located at top of motor frame and can be rotated by 180º to suit cable entry from left or right hand side.
On **BFGC3** motors, as standard, the main terminal box is located on right hand side, with option of left hand side.
As standard, the supply cable entries are on the right hand side when viewed from shaft end.
The motors frame 71 have the terminal box on fixed position on top, with cable entry orientated to N.D.E. direction.
Note: customer shell refer cable entry direction with order.

Protections/Auxiliaries:

As standard the **BFG** and **BFGC** motors are fitted with 3 PTC thermistors, (triple, 2 wire), connected in the main terminal box.
Under request the motors can be fitted with anti-condensation heaters, or other type of protections on windings and connected into auxiliary terminal box.
On **BFGC3** Series (frames 315-400), the auxiliary terminal box is located on opposite side of mains terminal box.
When thermal protections on bearings are required, the connections are made in two individual auxiliary terminal boxes located on D.E and N.D.E side as standard configuration.
It is also possible as option, to have these protections connected into a single auxiliary terminal box used for other protections/auxiliaries.

Earth connection:

All motors are equipped with an earth screw inside of terminal box. A second external earth connection is also provided on motor frame, on foot or on flange, depending on mounting form.

Terminal box entries and cable glands:

As standard, the motors are not supplied with cable glands and the number of entry holes and respective dimensions are described on outline dimensions tables. However, considering that the cable entry makes part of the protection enclosure it is recommended that the motors are supplied from factory fitted with cable glands. For this it is necessary to specify with the order the complete cabling details (number of cables, specification, section and diameters), so that the motors can be supplied from factory fitted with suitable glands.

Bearings:

Up to frame size 225, the motors are equipped on both sides with deep groove ball bearings, sealed for life and pre-loaded by an axial spring washer.
The BFGC motors with frame sizes 250 and above are equipped with a roller bearing on one side and a deep groove ball bearing on the other.
On BFG series, the motors are equipped on both sides with deep groove ball bearings, pre-loaded by an axial spring washer or springs. As optional execution they can be fitted with sleeve bearings.
In the case of pulley/belt drive transmission, the drive end bearing can be replaced by a roller bearing.
On vertical mounting motors, the bearings can be thrust bearing types and are defined according to the axial loads involved on the application.

Lubrication:

As standard, motors up to frame size 225 have the bearings sealed for life. However under request is available accessible lubrication on frames 160 and above.
For frames 250 and above, the motors are equipped with grease relief valves and relubrication nipples.

Balancing:

The motors are dynamically balanced with half-key to meet the vibration limits of standard **IEC 60034-14**, **Grade A**.
Grade B can be provided under request.
On frames 315 and above, the D.E. and N.D.E. endshields are designed to fit, under request, optional captors for vibration monitoring detectors or other devices.
Note: Full standard and optional features are detailed on paragraph 2.3

3.1.2 ELECTRICAL DATA - BFG6 SERIES

IIB T4

Flameproof Motors - Ex d IIB T4 (Ex tD A21 IP6X T 135°C)
Flameproof Motors with Increased Safety Terminal Box - Ex de IIB T4 (Ex tD A21 IP6X T 135°C)

Low Voltage

Output		Frame IEC	T_n (Nm)	I_s/I_n	T_s/T_n	T_{max}/T_n	Inertia J Kgm²	Allowable locked rotor time Hot/Cold (s)	Weight Kg	Sound dB (A)	400 V, 50Hz							
											rpm min⁻¹	% of full load						I_n(A)
												Efficiency η			Power Factor Cos φ			
KW	HP											50	75	100	50	75	100	
II Pole - 3000 min-1																		
250	340	BFG6 355MLJ	801	6,2	1,5	2,9	2,9	17	1450	80	2980	94,3	95,7	96,2	0,82	0,87	0,89	421
280	380	BFG6 355MLJ	898	6,0	1,5	2,7	3,2	16	1600	80	2978	94,8	96,0	96,4	0,84	0,88	0,89	471
315	425	BFG6 355MLJ	1009	6,6	1,8	3,0	3,4	10	1700	80	2980	95,1	96,2	96,6	0,83	0,88	0,90	523
355	480	BFG6 355MLJ	1138	6,6	1,7	3,0	3,9	11	1800	80	2980	95,4	96,3	96,7	0,83	0,88	0,90	589
400	540	BFG6 355MLJ	1281	7,3	2,2	3,1	4,5	7	2050	80	2982	96,0	96,8	97,1	0,84	0,89	0,90	661
450	610	BFG6 355MLJ (1)	1441	7,5	2,2	3,2	5,0	7	2150	80	2983	96,0	96,8	97,1	0,84	0,88	0,90	743
450	610	BFG6 400L	1440	7,5	2,0	3,4	8,0	7	2450	80	2985	95,5	96,6	97,1	0,84	0,89	0,91	735
500	675	BFG6 400L	1600	7,5	1,9	3,2	8,4	6	2600	80	2985	95,9	96,9	97,3	0,85	0,89	0,91	815
560	755	BFG6 400J	250	7,6	2,3	3,4	9,4	5	2950	80	2987	96,0	96,9	97,3	0,85	0,89	0,91	913
630	850	BFG6 400J (1)	2014	8,2	2,8	3,6	10,3	5	3300	80	2987	96,4	97,1	97,3	0,88	0,91	0,91	1027
630	850	BFG6 400G (3)	2014	7,5	1,0	3,1	11,7	17	3800	80	2987	96,5	97,0	97,5	0,88	0,91	0,91	1025
710	960	BFG6S 450KH (2)(3)(4)	2269	6,8	1,3	2,9	23,0	9	4400	80	2988	96,3	97,2	97,6	0,88	0,90	0,91	669
IV Pole - 1500 min-1																		
250	340	BFG6 355MLJ	1605	6,7	2,0	2,3	5,3	10	1450	80	1488	94,3	95,5	96,0	0,74	0,82	0,85	442
280	380	BFG6 355MLJ	1797	6,9	2,1	2,4	5,9	9	1550	80	1488	94,6	95,8	96,2	0,72	0,82	0,85	494
315	425	BFG6 355MLJ	2022	6,9	2,1	2,4	6,6	9	1650	80	1488	95,0	96,0	96,4	0,75	0,82	0,85	555
355	480	BFG6 355MLJ	2277	7,4	2,6	2,6	7,4	6	1850	80	1489	96,1	96,3	96,5	0,73	0,81	0,85	625
400	540	BFG6 355MLJ	2567	7,0	2,5	2,5	8,7	6	2100	80	1488	95,5	96,3	96,6	0,78	0,84	0,87	687
450	610	BFG6 355MLJ	2888	7,1	2,4	2,4	9,8	7	2250	80	1488	95,7	96,5	96,8	0,76	0,84	0,87	771
500	675	BFG6 355MLJ (1)	3209	6,9	2,2	2,3	9,8	6	2250	80	1488	95,6	96,4	96,7	0,76	0,84	0,87	858
500	675	BFG6 400L	3205	6,7	1,6	2,6	13,9	16	2700	80	1490	96,4	96,9	97,0	0,79	0,85	0,87	855
560	755	BFG6 400L	3589	6,8	1,7	2,5	14,7	13	2750	80	1490	96,5	97,0	97,1	0,78	0,85	0,87	957
630	850	BFG6 400J	4038	7,5	2,1	2,8	15,8	9	2950	80	1490	96,4	96,9	97,1	0,75	0,83	0,87	1076
710	960	BFG6 400J (1)(4)	4551	6,5	1,8	2,0	16,3	10	3050	80	1490	95,8	96,5	96,6	0,79	0,85	0,86	715
710	960	BFG6 400G (3)(4)	4542	7,5	2,5	2,4	18,2	5	3450	80	1493	96,5	96,6	97,0	0,80	0,86	0,87	704
800	1080	BFG6 400G (1)(3)(4)	5114	7,5	2,7	2,5	20,1	5	3800	80	1494	96,5	96,6	97,0	0,80	0,86	0,87	793
800	1080	BFG6 450KH (3)(4)	5121	7,0	2,0	2,9	22,6	13	4600	86	1492	96,2	97,0	97,3	0,78	0,85	0,87	791
800	1215	BFG6 450KH (3)(4)	5761	7,0	1,2	2,0	25	27	5400	86	1492	96,5	97,1	97,3	0,83	0,86	0,87	890
VI Pole - 1000 min-1																		
200	270	BFG6 355MLJ	1927	7,0	1,9	2,2	8,7	24	1550	76	991	94,0	95,2	95,4	0,73	0,80	0,83	365
250	340	BFG6 355MLJ	2409	7,0	1,9	2,1	10,4	24	1700	76	991	94,6	95,6	95,8	0,72	0,80	0,83	454
280	380	BFG6 355MLJ	2698	7,2	2,3	2,4	11,8	18	1950	76	991	94,8	95,8	96,0	0,72	0,80	0,84	501
315	425	BFG6 355MLJ	3039	7,0	2,3	2,5	13,1	17	2150	76	990	95,1	95,9	96,0	0,74	0,82	0,85	557
355	480	BFG6 355MLJ	3424	7,0	2,4	2,5	14,8	15	2450	76	990	95,3	96,0	96,1	0,74	0,82	0,85	627
400	540	BFG6 355MLJ (1)	3855	7,6	2,7	2,7	16,0	12	2400	76	991	95,4	96,1	96,3	0,73	0,81	0,85	705
400	540	BFG6 400 L	3843	7,2	2,0	2,6	21,4	17	2400	76	994	95,4	96,2	96,5	0,73	0,81	0,84	712
450	610	BFG6 400L	4319	7,3	2,4	2,7	24,0	13	2800	76	995	95,2	96,2	96,5	0,71	0,80	0,84	801
500	675	BFG6 400J	4804	7,4	2,4	2,6	28	12	3000	76	994	95,7	96,4	96,6	0,77	0,83	0,85	879
560	755	BFG6 400J (1)(3)	5375	7,4	2,2	2,4	28	6	3350	76	995	95,5	96,4	96,6	0,75	0,82	0,85	984
560	755	BFG6 400G (3)	5375	7,6	2,4	2,1	31	6	3700	76	995	96,0	96,4	96,5	0,80	0,84	0,85	985
630	850	BFG6 400G (1)(3)	6041	7,8	2,6	2,7	36	5	4300	76	996	96,0	96,4	96,5	0,79	0,84	0,85	1109
630	850	BFG6 450KH (3)	6053	5,5	1,0	2,2	47	29	4650	78	994	96,1	96,8	97,0	0,80	0,85	0,86	1090
710	960	BFG6 450KH (3)(4)	6821	6,0	1,2	2,2	53	20	5050	78	994	96,2	96,9	97,2	0,78	0,84	0,86	711
VIII Pole - 750 min-1																		
160	215	BFG6 355MLJ	2059	6,5	1,7	2,0	12,4	32	1300	70	742	94,0	94,9	95,1	0,70	0,78	0,81	300
200	270	BFG6 355MLJ	2571	6,5	1,9	2,1	14,6	31	1500	70	743	94,3	95,2	95,4	0,68	0,77	0,81	374
250	340	BFG6 355MLJ	3213	6,5	2,0	2,2	18,1	28	1850	70	743	94,7	96,5	95,6	0,68	0,77	0,81	466
280	380	BFG6 355MLJ	3599	6,5	2,3	2,3	20,5	23	2000	70	743	95,1	95,8	95,8	0,70	0,78	0,81	521
315	425	BFG6 355MLJ	4049	6,7	2,5	2,5	21,8	18	2200	70	743	95,0	95,4	95,6	0,69	0,77	0,81	587
355	480	BFG6 355MLJ (1)	4563	7,0	2,5	2,5	21,8	15	2200	70	743	95,0	95,4	95,4	0,69	0,77	0,81	663
355	480	BFG6 400L	4551	7,0	2,9	2,9	29	14	2250	70	745	94,9	95,8	96,1	0,66	0,76	0,81	658
400	540	BFG6 400L	5128	7,0	3,1	3,1	32	11	2750	70	745	95,2	95,9	96,1	0,67	0,76	0,81	742
450	610	BFG6 400J (3)	5761	7,5	3,4	3,4	38	5	3350	70	746	95,6	96,3	96,5	0,68	0,78	0,82	821
500	675	BFG6 400G (3)	6418	6,0	1,8	2,7	44	13	4350	70	744	95,6	96,3	96,5	0,70	0,79	0,82	912
560	755	BFG6 400G (1)(3)	7188	6,0	1,8	2,7	49	11	4850	70	744	95,6	96,3	96,5	0,70	0,79	0,82	1021
560	755	BFG6 450KH (3)	7169	7,2	2,1	2,4	74	14	5100	76	746	95,0	96,0	96,3	0,74	0,80	0,82	1024
630	850	BFG6 450KH (1)(3)	8065	7,4	2,2	2,5	81	13	5400	76	746	95,0	96,0	96,3	0,74	0,80	0,82	1152

(1) - Temperature rise class F at full load (2) - Standard motor with sleeve bearings (3) - Copper Rotor (4) - Rated current at 690V

T_n = Full load torque I_s / I_n = Locked rotor current T_s / T_n = Locked rotor torque T_{max} / T_n = Breakdown torque I_n = Full load current

Notes: - The motors can also operate on a 60Hz supply, except frame 450 2 pole.
- To obtain electrical data for 60Hz, please refer to us
- All values are according to IEC 60034-1 tolerances.
- The indicated values for sound pressure levels are @ 1m no load, with 3 dB(A) tolerance.
- This data can be changed without prior notice.

Standard voltage, connection and frequency:
400 V Δ 50Hz
690V Y 50Hz

3.1.3 ELECTRICAL DATA - BFGC3 / BFGC4 / BFGC8 SERIES

IIC T4

Flameproof Motors - Ex d IIC T4 (Ex tD A21 IP6X T 135°C frames ≥ 250)

Low Voltage

Flameproof Motors with Increased Safety Terminal Box - Ex de IIC T4 (Ex tD A21 IP6X T 135°C frames ≥ 250)

II and IV Pole

Output		Frame IEC	T_n (Nm)	I_s/I_n	T_s/T_n	T_{max}/T_n	Inertia J Kgm²	Allowable locked rotor time Hot/Cold (s)		Weight Kg	Sound dB (A)	400 V, 50Hz							
												rpm	% of full load						I_n(A)
													Efficiency η			Power Factor Cos φ			
KW	HP											min^{-1}	50	75	100	50	75	100	
II Pole - 3000 min-1																			
0.37	0.50	BFGC8 71M	1.26	4.2	3.0	2.8	0.00034			15		2800	56	59.5	59.5	0.55	0.83	0.86	1
0.55	0.75	BFGC8 71M	1.87	5.5	2.9	3.1	0.00042			16		2805	67.0	70	70.0	0.55	0.83	0.86	1
0.75	1.0	BFGC8 80M	2.6	5.4	2.3	2.6	0.00063			24		2790	69.0	72.0	72.0	0.60	0.88	0.89	2
1.1	1.5	BFGC8 80M	3.8	6.1	2.6	2.9	0.00079			26		2790	75.0	77.0	77.0	0.57	0.84	0.87	2
1.5	2.0	BFGC8 90S	5.1	6.3	2.5	2.8	0.00124			32		2830	75.0	77.0	77.0	0.57	0.84	0.87	3
2.2	3.0	BFGC8 90L	7.4	6.9	2.8	2.7	0.00155			34		2845	80.5	82.0	82.0	0.58	0.85	0.88	4
3	4	BFGC8 100L	10.0	7.1	2.5	2.9	0.00251			42.5		2865	81.0	83.0	83.5	0.57	0.84	0.87	6
4	5.5	BFGC8 112M	13.2	7.6	2.5	3.0	0.00451			58		2890	83.0	84.0	84.5	0.58	0.85	0.88	8
5.5	7.5	BFGC8 132S	18.1	6.6	2.7	2.8	0.00967			77		2910	83.0	84.0	84.5	0.58	0.85	0.88	11
7.5	10	BFGC8 132S	24.5	7.9	2.7	3.1	0.01225			84		2925	84.0	85.0	85.5	0.60	0.88	0.89	15
11	15	BFGC8 160M	36	6.9	2.8	3.0	0.02943			148		2940	80.0	81.0	80.6	0.58	0.85	0.88	22
15	20	BFGC8 160M	49	7.7	3.0	3.2	0.03912			166		2940	81.0	83.0	83.0	0.65	0.89	0.92	29
18.5	25	BFGC8 160L	60	8.0	3.3	3.0	0.0459			178		2945	84.5	86.0	86.1	0.64	0.88	0.91	32
22	30	BFGC8 180M	72	7.2	2.4	2.9	0.06151			205		2930	90.0	92.0	92.0	0.60	0.88	0.89	39
30	40	BFGC8 200L	98	7.3	2.1	2.8	0.10442			240		2930	91.0	93.0	93.0	0.58	0.85	0.88	53
37	50	BFGC8 200L	121	7.3	2.2	2.9	0.12739			250		2930	91.0	93.0	93.5	0.60	0.88	0.89	64
45	60	BFGC8 225M	146	7.2	2.0	2.6	0.22155			375		2945	91.0	93.0	93.5	0.58	0.85	0.88	79
55	75	BFGC4 250MA	178	6.8	2.1	2.7	0.32	36		450	77	2958	90.9	92.4	93.0	0.87	0.91	0.91	93.8
75	100	BFGC4 280SA (1)	242	8.2	2.9	3.2	0.40	16		580	77	2963	91.3	93.3	94.0	0.82	0.88	0.90	128
90	120	BFGC4 280MA	290	8.4	2.9	3.0	0.50	15		620	77	2959	93.1	94.3	94.5	0.88	0.90	0.90	153
110	150	BFGC4 315SA	353	7.0	2,0	2.3	1.10	11		750	79	2976	92.8	94.2	94.6	0.80	0.85	0.86	195
132	180	BFGC4 315MA	423	6.8	2.0	2.2	1.24	9		890	79	2977	93.4	94.7	95.1	0.83	0.88	0.89	225
160	215	BFGC3 315MA	513	6.8	1.9	3.1	1.6	14		1050	82	2978	93.9	95.1	95.9	0.81	0.88	0.90	268
200	270	BFGC3 315MA	641	7.0	1.7	3.2	2.0	15		1150	82	2978	94.7	95.6	96.2	0.84	0.89	0.91	330
250	340	BFGC3 315LA	801	7.5	1.8	2.9	2.3	11		1250	82	2981	95.3	96.3	96.6	0.82	0.89	0.91	410
250	340	BFGC3 355MA	801	6.2	1.5	2.9	2.9	17		1750	80	2980	94.3	95.7	96.2	0.82	0.87	0.89	421
280	380	BFGC3 355MA	898	6.0	1.5	2.7	3.2	16		1900	80	2978	94.8	96.0	96.4	0.84	0.88	0.89	471
315	425	BFGC3 355MA	1009	6.6	1.8	3.0	3.4	10		2000	80	2980	95.1	96.2	96.6	0.83	0.88	0.90	523
355	480	BFGC3 355LA (1)	1138	6.6	1.7	3.0	3.9	11		2100	80	2980	95.4	96.3	96.7	0.83	0.88	0.90	589
355	480	BFGC3 400LA	1136	7.5	1.8	3.4	6.4	9		2500	80	2985	95.8	96.7	97.1	0.84	0.89	0.90	586
400	540	BFGC3 400LA	1280	7.1	1.7	3.1	7.1	9		2800	80	2984	96.1	96.9	97.2	0.86	0.89	0.90	660
450	610	BFGC3 400LA	1440	7.5	2.0	3.4	8.0	7		3000	80	2985	95.5	96.6	97.1	0.84	0.89	0.91	735
500	675	BFGC3 400LA (1)	1600	7.5	1.5	3.2	8.0	9		3000	80	2985	95.9	96.9	97.3	0.85	0.89	0.91	815
IV Pole - 1500 min-1																			
0.25	0.33	BFGC8 71M	1.8	3.8	2.2	2.5	0.00051			15		1355	56.0	59.5	59.5	0.43	0.75	0.8	1
0.37	0.50	BFGC8 71M	2.6	3.8	2.3	2.9	0.00063			16		1350	60.0	63.0	63.0	0.45	0.76	0.81	1
0.55	0.75	BFGC8 80M	3.7	4.6	2.3	2.7	0.00098			24		1410	69.0	72.0	72.0	0.45	0.76	0.81	1
0.75	1.00	BFGC8 80M	5.1	5.0	2.4	2.6	0.00125			26		1400	74.0	76.0	76.0	0.43	0.75	0.8	2
1.1	1.50	BFGC8 90S	7.5	5.4	2.3	2.4	0.00204			32		1410	78.0	79.0	79.0	0.51	0.81	0.84	2
1.5	2.00	BFGC8 90L	10.2	5.8	2.5	2.6	0.0026			35		1405	78.0	79.0	79.0	0.51	0.81	0.84	3
2.2	3.00	BFGC8 100L	15.0	5.1	2.1	2.2	0.00388			42.5		1405	78.0	79.0	79.0	0.51	0.81	0.84	5
3	4.00	BFGC8 100L	20.5	5.3	2.1	2.3	0.00499			46		1400	80.0	81.0	81.0	0.51	0.81	0.84	6
4	5.50	BFGC8 112M	26.8	6.6	2.2	2.8	0.01014			60		1430	84.0	85.0	85.0	0.51	0.81	0.84	8
5.5	7.50	BFGC8 132S	37	5.5	2.3	2.7	0.02113			84		1435	83.0	84.0	84.5	0.55	0.83	0.86	11
7.5	10.00	BFGC8 132M	50	6.5	2.8	2.9	0.02793			93.5		1445	85.0	87.0	87.0	0.53	0.82	0.85	15
11	15.0	BFGC8 160M	72	6.7	2.7	2.8	0.05417			159		1470	85.0	87.0	87.0	0.49	0.80	0.83	22
15	20	BFGC8 160L	98	6.3	2.6	2.7	0.07116			178		1460	85.0	87.0	87.5	0.53	0.82	0.85	29
18.5	25	BFGC8 180M	121	6.5	2.5	2.3	0.1129			215		1460	90.0	92.0	92.0	0.51	0.81	0.84	35
22	30	BFGC8 180L	144	6.4	2.5	2.3	0.1339			236		1460	90.0	92.0	92.5	0.55	0.83	0.86	40
30	40	BFGC8 200L	196	6.2	2.2	3.0	0.21298			250		1460	91.0	93.0	93.0	0.49	0.80	0.83	56
37	50	BFGC8 225S	242	6.3	2.2	2.8	0.36225			310		1465	91.0	93.0	93.5	0.51	0.81	0.84	68
45	60	BFGC8 225M	293	6.2	2.3	2.8	0.42845			390		1465	92.0	94.0	94.0	0.49	0.80	0.83	83
55	75	BFGC4 250MA	354	6.6	1.8	2.4	0.67	14		465	79	1482	91.7	92.7	93.0	0.71	0.79	0.83	103
75	100	BFGC4 280SA (1)	484	7.1	1.6	2.6	0.64	15		600	80	1480	93.9	94.3	94.0	0.70	0.79	0.83	139
90	120	BFGC4 280MA	581	6.9	1.9	2.3	1.13	15		650	80	1480	93.4	93.6	94.0	0.77	0.84	0.86	161
110	150	BFGC4 315SA	711	7.5	3.0	3.2	1.35	7		850	85	1477	94.0	94.6	94.5	0.73	0.81	0.84	200
132	180	BFGC4 315MA	854	7.6	3.0	3.3	1.61	7		900	85	1476	94.4	94.8	94.6	0.76	0.83	0.85	237
160	215	BFGC3 315MA	1029	6.8	2.0	2.5	2.6	17		1250	82	1485	93.9	95.0	95.3	0.74	0.82	0.86	282
200	270	BFGC3 315MA	1287	6.9	2.1	2.5	2.6	13		1350	82	1484	93.9	95.0	95.3	0.73	0.81	0.85	356
250	340	BFGC3 315LA	1608	7.5	2.5	2.5	3.7	9		1450	82	1485	94.9	95.8	96.0	0.75	0.83	0.86	437
250	340	BFGC3 355MA	1605	6.7	2.0	2.3	5.3	10		1750	80	1488	94.3	95.5	96.0	0.74	0.82	0.85	442
280	380	BFGC3 355MA	1797	6.9	2.1	2.4	5.9	9		1800	80	1488	94.6	95.8	96.2	0.72	0.82	0.85	494
315	425	BFGC3 355MA	2022	6.9	2.1	2.4	6.6	9		1950	80	1488	95.0	96.0	96.4	0.75	0.82	0.85	555
355	480	BFGC3 355MA	2277	7.4	2.6	2.6	7.4	6		2150	80	1489	96.1	96.3	96.5	0.73	0.81	0.85	625
400	540	BFGC3 355LA (1)	2567	7.0	2.5	2.5	8.7	6		2400	80	1488	95.5	96.3	96.6	0.78	0.84	0.87	687
400	540	BFGC3 400LA	2564	6.3	1.5	2.5	11.4	19		2600	85	1490	94.9	95.8	96.1	0.81	0.86	0.87	691
450	610	BFGC3 400LA	2884	6.7	1.6	2.6	12.7	17		2900	80	1490	96.1	96.6	97.0	0.80	0.85	0.87	770
500	675	BFGC3 400LA	3205	6.7	1.6	2.6	13.9	16		3100	80	1490	96.4	96.9	97.0	0.79	0.85	0.87	855
560	755	BFGC3 400LA (1)	3582	7.5	2.0	2.8	13.9	10		3100	80	1493	96.5	97.0	97.1	0.78	0.85	0.87	957

(1) - Temperature rise class F at full load (2) - Standard motor with sleeve bearings (3) - Copper Rotor (4) - Rated current at 690V

T_n = Full load torque I_s / I_n = Locked rotor current T_s / T_n = Locked rotor torque T_{max} / T_n = Breakdown torque I_n = Full load current

Notes: - The motors can also operate on a 60Hz supply.
- To obtain electrical data for 60Hz, please refer to us
- All values are according to IEC 60034-1 tolerances.
- The indicated values for sound pressure levels are @ 1m no load, with 3 dB(A) tolerance.
- This data can be changed without prior notice.

Standard voltage, connection and frequency:
400V D 50Hz
690V Y 50Hz

IIC T4

Low Voltage

VI and VIII Pole

Output KW	Output HP	Frame IEC	T_n (Nm)	I_s/I_n	T_s/T_n	T_{max}/T_n	Inertia J Kgm²	Allowable locked rotor time Hot/Cold (s)	Weight Kg	Sound dB (A)	400 V, 50Hz rpm min⁻¹	% of full load Efficiency η 50	Efficiency η 75	Efficiency η 100	Power Factor Cos φ 50	Power Factor Cos φ 75	Power Factor Cos φ 100	I_n(A)
VI Pole - 1000 min-1																		
0.18	0.25	BFGC8 71M	1.9	3.1	2.1	2.3	0.00081		15		930	56.0	59.5	60.0	0.3	0.55	0.65	0.7
0.25	0.33	BFGC8 71M	2.6	3.7	2.2	2.5	0.00101		16		940	59.5	63.5	64.0	0.3	0.59	0.67	0.9
0.37	0.50	BFGC8 80M	3.8	3.6	2.3	2.5	0.00191		25		925	62.0	66.5	67.0	0.34	0.65	0.72	1.1
0.55	0.75	BFGC8 80M	5.7	4.1	2.35	2.5	0.00239		26.5		915	69.0	72.0	72.0	0.36	0.67	0.74	1.5
0.75	1.00	BFGC8 90S	7.8	3.7	1.8	2.1	0.00323		32		915	67.0	70.0	70.0	0.36	0.67	0.74	2.1
1.1	1.50	BFGC8 90L	11.5	4.1	2.1	2.3	0.00419		35		915	71.0	73.0	73.0	0.35	0.66	0.73	3.0
1.5	2.00	BFGC8 100L	15.4	4.7	2.2	2.3	0.00657		46		930	74.0	76.0	76.0	0.4	0.72	0.77	3.7
2.2	3.00	BFGC8 112M	21.9	6.1	2.6	2.7	0.0158		60		960	80.5	82.0	82.0	0.41	0.73	0.78	5.0
3	4.00	BFGC8 132S	29	6.3	2.3	2.5	0.02722		84		975	81.0	83.0	83.5	0.42	0.73	0.79	6.6
4	5.50	BFGC8 132M	40	6.3	2.4	2.9	0.03229		88		960	81.0	83.0	83.0	0.43	0.75	0.8	8.8
5.5	7.50	BFGC8 132M	55	6.1	2.3	2.9	0.03838		95		955	81.0	83.0	83.5	0.45	0.76	0.81	11.8
7.5	10.00	BFGC8 160M	74	6.7	2.7	2.4	0.08121		161		970	84.5	86.0	86.0	0.43	0.75	0.8	15.8
11	15.00	BFGC8 160L	109	6.0	2.2	2.3	0.10916		182		965	85.5	88.0	88.5	0.4	0.72	0.77	23.5
15	20	BFGC8 180L	148	5.2	1.9	2.3	0.227		236		965	86.0	89.0	89.5	0.41	0.73	0.78	31
18.5	25	BFGC8 200L	183	6.0	1.9	2.4	0.24369		240		965	89.0	91.0	91.0	0.45	0.76	0.81	36
22	30	BFGC8 200L	219	6.0	1.9	2.4	0.27888		250		965	89.0	91.0	91.5	0.45	0.76	0.81	43
30	40	BFGC8 225M	293	5.8	1.8	2.5	0.66117		390		975	90.0	92.0	92.5	0.49	0.8	0.83	56
37	50	BFGC4 250MA (1)	359	6.2	2.4	2.6	0.68	10	450	72	984	89.0	90.3	90.2	0.64	0.75	0.80	74.0
45	60	BFGC4 280SA (1)	437	6.7	2.6	2.7	0.82	9	610	72	983	90.0	91.0	90.8	0.68	0.77	0.81	88.3
55	75	BFGC4 280MA	533	7.0	2.3	2.3	1.07	13	650	72	985	92.8	92.8	92.3	0.72	0.80	0.82	105
75	100	BFGC4 315SA (1)	727	7.3	2.8	3.0	1.95	6	700	72	985	90.0	91.5	91.7	0.59	0.70	0.76	155
90	120	BFGC4 315MA	874	7.0	2.4	2.4	2.29	12	850	72	983	92.5	93.4	93.4	0.94	0.96	0.86	162
110	150	BFGC3 315MA	1063	7.4	2.6	2.9	4.3	20	1150	76	988	92.8	94.1	94.4	0.71	0.80	0.83	203
132	180	BFGC3 315MA	1276	7.4	2.5	2.6	4.9	17	1250	76	988	93.2	94.4	94.6	0.71	0.80	0.83	243
160	215	BFGC3 315MA	1547	7.4	2.4	2.5	6.2	17	1350	76	988	93.9	94.8	94.8	0.73	0.81	0.84	290
200	270	BFGC3 315LA	1935	7.3	2.4	2.5	7.6	17	1500	76	987	94.4	95.2	95.1	0.74	0.81	0.84	361
200	270	BFGC3 355MA	1927	7.0	1.9	2.2	8.7	24	1850	76	991	94.0	95.2	95.4	0.73	0.80	0.83	365
250	340	BFGC3 355MA	2409	7.0	1.9	2.1	10.4	24	2000	76	991	94.6	95.6	95.8	0.72	0.80	0.83	454
280	380	BFGC3 355MA	2698	7.2	2.3	2.4	11.8	18	2250	76	991	94.8	95.8	96.0	0.72	0.80	0.84	501
315	425	BFGC3 355LA (1)	3039	7.0	2.3	2.5	13.1	17	2450	76	990	95.1	95.9	96.0	0.74	0.82	0.85	557
315	425	BFGC3 400LA	3026	7.0	1.9	2.6	17.5	21	2700	76	994	95.4	96.1	96.2	0.76	0.83	0.85	556
355	480	BFGC3 400LA	3411	7.0	1.8	2.4	19.5	22	2900	76	994	95.7	96.3	96.4	0.78	0.83	0.85	625
400	540	BFGC3 400LA	3843	7.2	2.0	2.6	21.4	17	3100	76	994	95.4	96.2	96.5	0.73	0.81	0.84	712
450	610	BFGC3 400LA	4319	7.3	2.4	2.7	24.0	13	3250	76	995	95.2	96.2	96.5	0.71	0.80	0.84	801
500	675	BFGC3 400LA (1)	4804	7.5	2.4	2.3	24.0	11	3250	76	994	95.7	96.4	96.6	0.76	0.82	0.84	889
VIII Pole - 750 min-1																		
0.12	0.16	BFGC8 71M	1.75	2.4	1.8	2.1	0.00101		16		655	42	44.5	45.0	0.34	0.64	0.71	0.5
0.18	0.25	BFGC8 80M	2.53	2.9	2.1	2.2	0.00191		25		680	57	60	61.0	0.3	0.55	0.65	0.7
0.25	0.33	BFGC8 80M	3.52	3.1	2.1	2.3	0.00239		26.5		680	54	57	58.0	0.32	0.61	0.68	0.9
0.37	0.50	BFGC8 90S	5.2	3.0	1.7	2	0.00323		32		685	61.0	65.0	66.0	0.3	0.55	0.65	1.3
0.55	0.75	BFGC8 90L	7.7	3.1	1.75	2.1	0.00419		35		685	66.0	69.0	69.0	0.3	0.57	0.66	1.8
0.75	1.00	BFGC8 100L	10.4	3.5	1.8	2.1	0.00657		42.5		690	66.0	69.0	69.0	0.33	0.62	0.69	2.3
1.1	1.50	BFGC8 100L	15.0	3.8	1.9	2.2	0.00857		46		695	67.0	70.0	70.0	0.34	0.63	0.70	3.3
1.5	2.00	BFGC8 112M	20.2	4.3	2	2.5	0.0158		60		710	76.0	78.0	78.0	0.3	0.59	0.67	4.2
2.2	3.00	BFGC8 132S	30	4.3	1.9	2.2	0.02606		79		710	78.0	79.0	79.0	0.36	0.67	0.74	5.5
3	4.00	BFGC8 132M	40	4.8	2.1	2.3	0.03446		85		710	79.0	80.0	80.0	0.38	0.7	0.76	7.2
4	5.50	BFGC8 160M	53	4.8	1.8	2.3	0.0688		146		720	81.0	83.0	82.6	0.34	0.64	0.71	10.0
5.5	7.50	BFGC8 160M	74	4.8	1.8	2.1	0.08939		160		715	83.0	84.0	84.0	0.34	0.64	0.71	13.4
7.5	10.00	BFGC8 160L	99	5.8	2.3	2.1	0.12027		182		725	84.5	86.0	86.5	0.36	0.69	0.75	16.7
11	15.00	BFGC8 180L	147	4.2	1.8	2.5	0.227		236		715	85.0	87.0	86.7	0.36	0.67	0.74	25.0
15	20	BFGC8 200L	196	4.5	2.1	2.5	0.37827		250		720	89.0	91.0	91.0	0.47	0.78	0.82	29
18.5	25	BFGC8 225S	249	4.6	2.1	2.6	0.57008		310		710	89.0	91.0	91.0	0.42	0.73	0.79	37
22	30	BFGC8 225M	294	4.6	2.1	2.6	0.67806		390		715	89.0	91.0	91.5	0.4	0.72	0.77	45
30	40	BFGC4 250MA (1)	389	6.0	2.2	2.2	0.82	13	450	70	737	90.5	91.2	90.8	0.59	0.69	0.74	64.4
37	50	BFGC4 280SA (1)	479	5.7	2.4	2.4	0.99	14	610	70	737	89.4	90.3	90.0	0.59	0.69	0.74	80.2
45	60	BFGC4 280MA	582	6.5	2.6	2.6	1.26	17	630	70	739	91.1	92.1	92.0	0.57	0.68	0.73	96.7
55	75	BFGC4 315SA	713	5.3	2.3	2.5	1.95	11	800	70	737	88.8	90.7	91.1	0.54	0.65	0.71	123
75	100	BFGC4 315MA	973	5.2	2.6	2.6	2.43	22	900	73	736	90.8	92.0	92.1	0.56	0.66	0.71	166
90	120	BFGC3 315MA	1161	7.1	2.8	2.9	5.5	23	1150	73	740	92.8	93.9	94.0	0.64	0.74	0.79	175
110	150	BFGC3 315MA	1420	7.1	2.8	2.9	6.7	17	1250	73	740	93.3	94.0	94.0	0.66	0.75	0.79	214
132	180	BFGC3 315MA	1704	7.0	2.5	2.5	7.9	16	1300	73	740	92.9	94.0	94.1	0.67	0.76	0.79	256
160	215	BFGC3 315LA (1)	2065	7.2	2.6	2.6	9.3	9	1450	73	740	92.8	94.0	94.2	0.65	0.75	0.79	310
160	215	BFGC3 355MA	2059	6.5	1.7	2.0	12.4	32	1900	70	742	94.0	94.9	95.1	0.70	0.78	0.81	300
200	270	BFGC3 355MA	2571	6.5	1.9	2.1	14.6	31	2000	70	743	94.3	95.2	95.4	0.68	0.77	0.81	374
250	340	BFGC3 355LA	3213	6.5	2.0	2.2	18.1	28	2350	70	743	94.7	95.5	95.6	0.68	0.77	0.81	466
280	380	BFGC3 355LA	3599	6.5	2.3	2.3	20.5	23	2450	70	743	95.1	95.8	95.8	0.70	0.78	0.81	521
280	380	BFGC3 400LA	3589	7.0	2.2	2.5	27	24	2600	73	745	95.4	96.0	96.0	0.73	0.80	0.82	513
315	425	BFGC3 400LA	4038	7.0	2.8	2.8	28	16	3000	70	745	94.6	96.5	96.7	0.68	0.77	0.82	573
355	480	BFGC3 400LA	4551	7.0	2.9	2.9	29	14	3200	70	745	94.9	95.8	96.1	0.66	0.76	0.81	658
400	540	BFGC3 400LA	5128	7.0	3.1	3.1	32	11	3450	70	745	95.2	95.9	96.1	0.67	0.76	0.81	742
450	610	BFGC3 400LA (1)	5768	6.5	2.5	2.6	32	12	3450	70	745	95.6	96.1	96.2	0.68	0.78	0.81	834

(1) - Temperature rise class F at full load (2) - Standard motor with sleeve bearings (3) - Copper Rotor (4) - Rated current at 690V

T_n = Full load torque I_s / I_n = Locked rotor current T_s / T_n = Locked rotor torque T_{max} / T_n = Breakdown torque I_n = Full load current

Notes: - The motors can also operate on a 60Hz supply.
- To obtain electrical data for 60Hz, please refer to us
- All values are according to IEC 60034-1 tolerances.
- The indicated values for sound pressure levels are @ 1m no load, with 3 dB(A) tolerance.
- This data can be changed without prior notice.

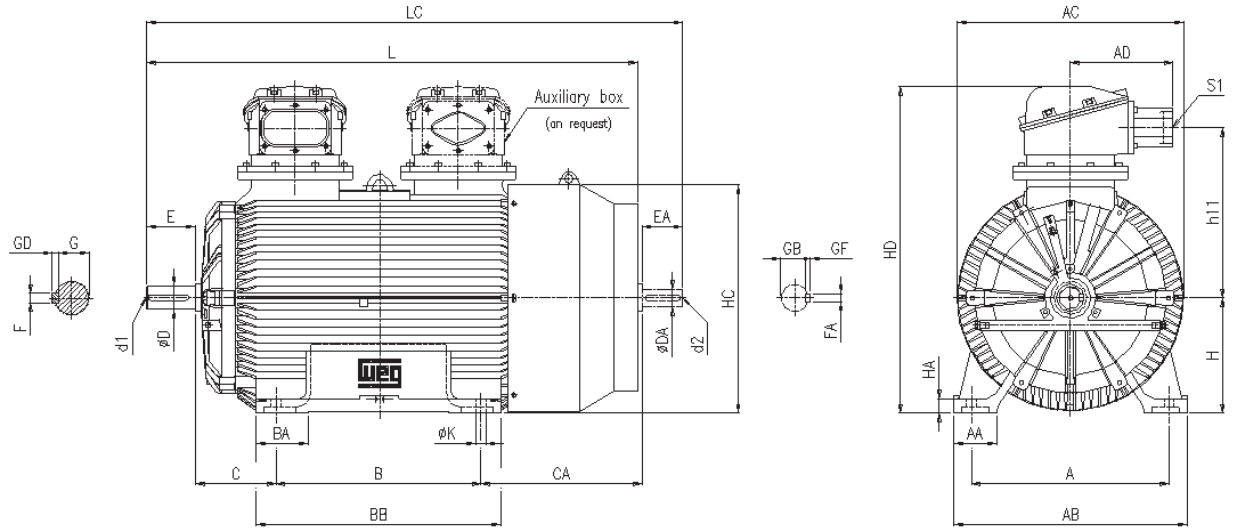
Standard voltage, connection and frequency:
400V D 50Hz
690V Y 50Hz

3.1.4 OUTLINE DIMENSIONS - BFG6 SERIES

IIB T4

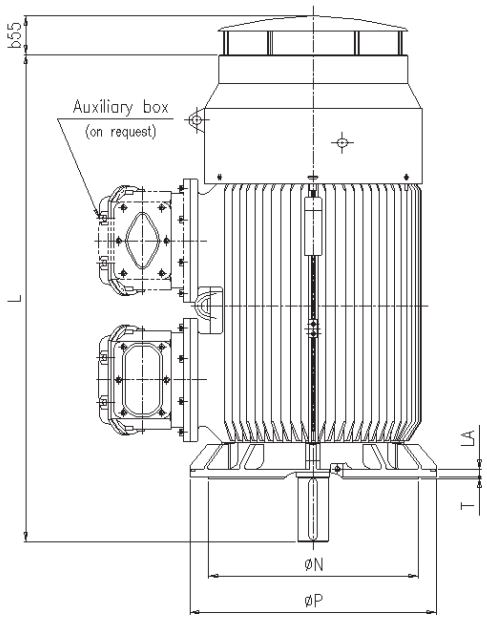
Low Voltage

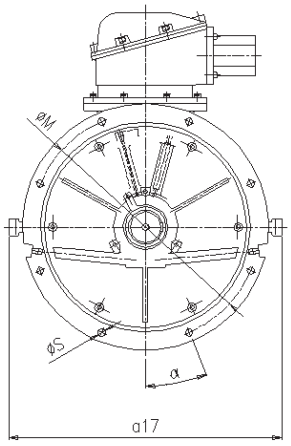
Flameproof Motors - Ex d IIB T4 (Ex tD A21 IP6X T 135°C)
Flameproof Motors with Increased Safety Terminal Box - Ex de IIB T4 (Ex tD A21 IP6X T 135°C)



Frame	A	AA	AB	AC	AD	B	BA	BB	C	CA	Shaft dimensions										H	HA	HC	HD	H11	K	L	LC	S1	d1	d2	Bearings		
											D	E	F	G	GD	DA	EA	FA	GB	GF												D.E.	N.D.E.	
355MLJ (1)	610	130	730	705	356	560 630	170	920	254	515	100m6	210	28	90	16	80m6	170	22	71	14	355	45	707,5	1051	555	28	1764	1949	2xM63x1,5 + 1xM63x1,5	DS M24	DS M20	6222 C3	6219 C3	(3)
355MLJ (2)						800					75m6	140	20	67,5	12	60m6	140	18	53	11							1694	1849		DS M20		6219 C3		(4)
400L (1)	686	150	810	785,5		710	180	850	280	560	100m6	210	28	100	16	80m6	170	22	71	14	400	50	793	1132	590	35	1745	1930		DS M24		6324 C3		
400L (2)											80m6	170	22	71	14	60m6	140	18	53	11							1705	1860		DS M20		6318 C3		(4)
400J (1)						900		1040			110m6	210	28	100	16	80m6	170	22	71	14							1935	2110		DS M24		6324 C3		
400J (2)											80m6	170	22	71	14	60m6	140	18	53	11							1895	2050		DS M20		6318 C3		(4)
400 G (1)						1120		1280			110m6	210	28	100	16	80m6	170	22	71	14							2175	2350		DS M24		6324 C3		
400G (2)											80m6	170	22	71	14	60m6	140	18	53	11							2135	2290		DS M20		6318 C3		(4)
450KH (1)	750	180	940	896		900	230	1310	250	515	120m6	210	32	109	18	100m6	210	28	90	16	450	60	898	1187	596	42	2129	2354		DS M24		6326 C3		
450KH (2)						1120			-		85m6	170	22	76	14	75m6	140	20	67,5	12							-	-		DS M20		Sleeve Bearing		(4)

NOTES: (1) 1500, 1000 and 750 rpm (2) 3000 rpm (3) or 6222 C3 for 4 poles and plus machines, N.D.E. (4) For 60 Hz please refer to us





Frame	"FF" flange dimensions											
	Flange	L	LA	M	N	P	T	S	α	Nr. holes	a17	b55
355 MLJ (1)	FF-740	1749	25	740	680	800		24			910	125
355 MLJ (2)		1679										
400 L (1)	FF-940	1730	28	940	880	1000	6	28	22,5°	8	980	131
400 L (2)		1690										
400 J (1)		1920										
400 J (2)		1880										
400 G (1)		2160										
400 G (2)		2120										
450 KH (1)	FF-1080	2118	30	1080	1000	1150					1140	151
450 KH (2)		-										

NOTES: (1) 1500, 1000 and 750 rpm (2) 3000 rpm
(See note below)

Notes: - All the dimensions are in millimeters.
- For all vertical applications or unusual coupling conditions, the customer shall inform the load figure with the inquiry/order.
- Construction drawings with guaranteed values are available under request.
- Shaft dimensions for 2 poles motors, only for direct coupling.
- For motor frames 450, 2 pole, V1 refer to us.
- Execution with auxiliary terminal box and second shaft end available on request.
- "Exde" execution dimensions under request.
- For vertical mounting, the D.E. bearing is replaced by an angular contact type.
- The average values shown are subject to change without prior notice.

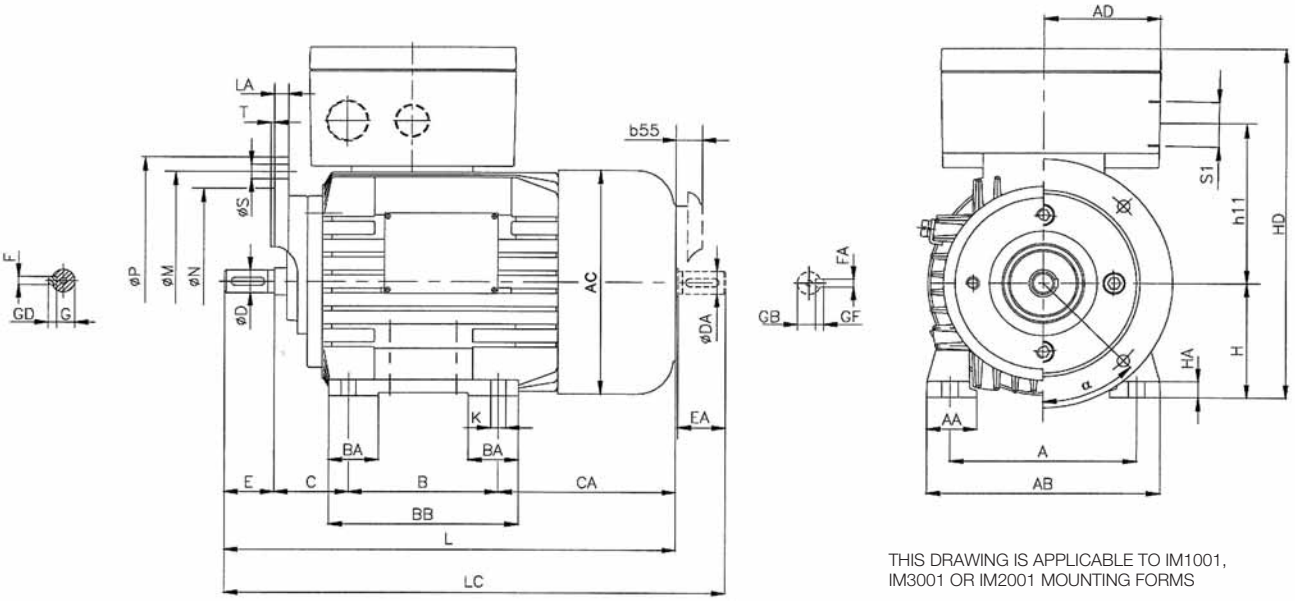
3.1.5 OUTLINE DIMENSIONS - BFGC3 / BFGC4 / BFGC8 (71-225) SERIES

IIC T4

Low Voltage

Flameproof Motors - Ex d IIC T4
Flameproof Motors with Increased Safety Terminal Box - Ex de IIC T4

BFGC8 IMB3T; IMB5; IMV1



THIS DRAWING IS APPLICABLE TO IM1001, IM3001 OR IM2001 MOUNTING FORMS

Frame	A	AA	AB	AC	AD	B	BA	BB	C	CA	Shaft Dimensions										H	HA	HD	h11	K	L	LC	S1	d1	d2	Bearings	
											D	E	F	G	GD	DA	EA	FA	GB	GF											D.E.	N.D.E
71	112	30	140	139	–	90	30	114	45	106	14	30	5	11	5	14	30	5	11	5	71		218		9	271	307		M5	M5	6203	6203
80	125	32	160	157		100	35	130	50	127	19	40	6	16	6	19	40	6	15.5	6	80	10	249	132	10	317	362	1xM25x1,5	M6	M6	6204	6204
90S	140	35	180	177			60	155	56	129	24	50	8	20	7	24	50	8	20	7	90		271	140		360	415		M8	M8	6205	6205
90L						125																										
100L	160	45	205	195	79	140	45	175	63	153	28	60		24		28	60		24		100	17	288	153	12	416	481	1xM32x1,5	M10	M10	6206	6206
112M	190	50	235	219				180	70	168											112	15	311	149		438	504	2xM32x1,5				
132S	216	55	266	258			75	218	89	225	38	80	10	33	8	38	80	10	33	8	132	18	350	181		534	619		M12	M12	6208	6208
132M						178				187																						
160M	254	60	312	310	144	210	90	300	108	239	42	110	12	37		42	110	12	37		160	21	436		14	667	785	2xM40x1,5	M16	M16	6309	6309
160L						254																										
180M	279	70	348	352	99	241	80	295	121	249	48		14	42	9	48		14	42	9	180		492	260		721	841				6310	6310
180L						279		333		250																761	881					
200L	318	80	398	392	128	305	90	395	133	269	55	140	16	49	10	55	140	16	49	10	200		543		18	817	937	2xM50x1,5	M20	M20	6312	6312
225S	356		436	438		286		346	149	248	60		18	53	11	60		18	53	11	225		593	285		823	973				6313	6313
225M (1)						311		371		283																883	1033					
225M (2)											55	110	16	49	10	55	110	16	49	10						853	973					

NOTES: (1) 1500, 1000 and 750 rpm (2) 3000 rpm

Frame	"FF" Flange Dimensions									Nr. holes
	Flange	LA	M	N	P	T	S	a	b55	
71	FF-130	10	130	110	160	3.5	9	45°	21	4
80	FF-165		165	130	200		12		23	
90S/L									30	
100L	FF-215	11	215	180	250	4	14		35	
112M									35	
132S/M	FF-265	16	265	230	300				35	
160M/L	FF-300	19	300	250	350	5	18		35	
180M/L		15							58	
200L	FF-350	18	350	300	400				64	
225S	FF-400		400	350	450			22.5°	58	8
225M (1)									58	
225M (2)									58	

Notes: - All the dimensions are in millimeters
- For all vertical applications or unusual coupling conditions, the customer shall inform the load figure with the inquiry/order.
- Construction drawings with guaranteed values are available under request.
- Shaft dimensions for 2 pole motors, only for direct coupling
- Execution with second shaft end available on request
- 'Ex de' execution dimensions under request
- The average values shown are subject to change without prior notice

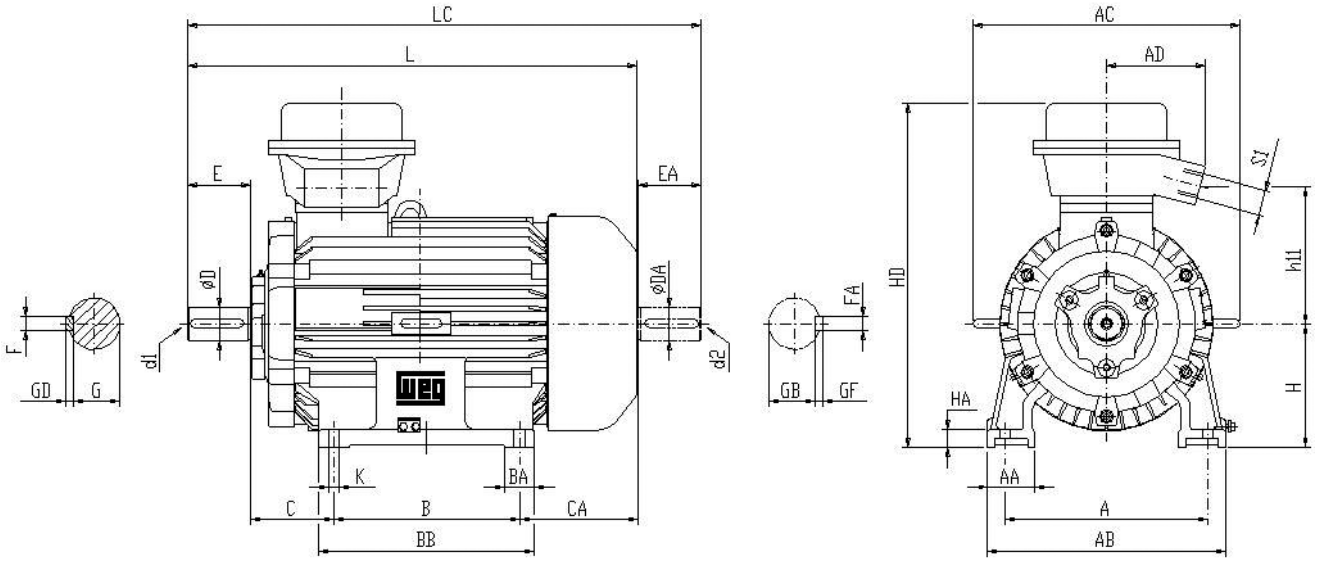
OUTLINE DIMENSIONS

IIC T4

Flameproof Motors - Ex d IIC T4 (Ex tD A21 IP6X T 135°C)
Flameproof Motors with Increased Safety Terminal Box - Ex de IIC T4 (Ex tD A21 IP6X T 135°C)

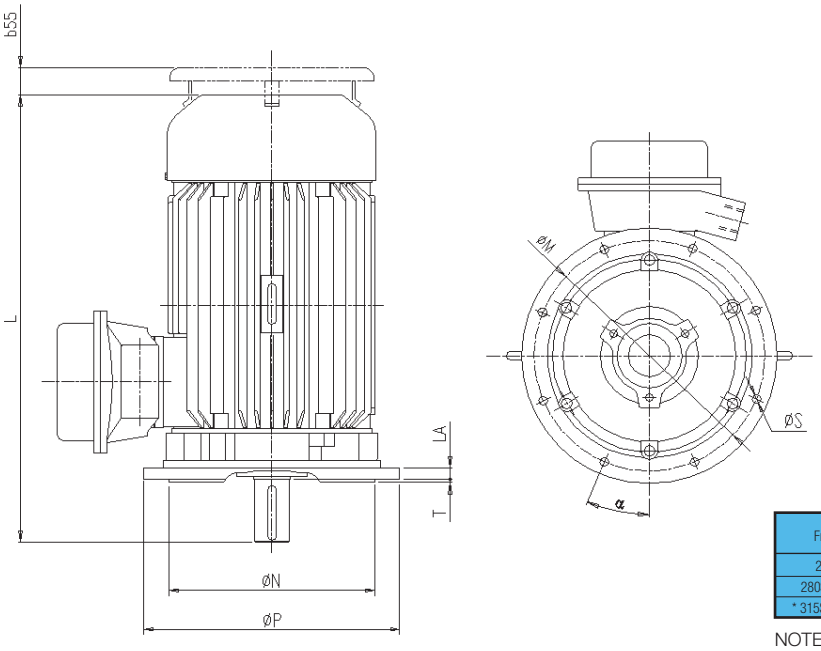
Low Voltage

BFGC4 IMB3T; IMB5; IMV1



Frame	A	AA	AB	AC	AD	B	BA	BB	C	CA	Shaft Dimensions D	E	F	G	GD	DA	EA	FA	GB	GF	H	HA	HD	h11	K	L	LC	S1	d1	d2	Bearings D.E.	N.D.E
250M (1)	406	100	506	-	244	349	120	406	168	207	65m6	140	18	58	11	60m6	140	18	53	11	250	32	748	307	24	856	1004	2xM63x1,5 + 1xM20x1,5	DS M20		NU 314	6314 C3
250M (2)											60m6			53																			
280SA (1)	457	105	537			368		438	190	236	75m6		20	67,5	12						280	40	778			926	1074				NU 316	6314 C3
280SA (2)											65m6		18	58	11																6314 C3	NU314
280MA (1)						419		525		272	75m6		20	67,5	12											1013	1161				NU 316	6314 C3
280MA (2)											65m6		18	58	11																6314 C3	NU314
* 315SA (1)	508	120	628			406	120	526	216	326	80m6	170	22	71	14						315	45	845	339	28	1110	1258				NU 317	6314 C3
* 315SA (2)											65m6	140	18	58	11											1080	1228				6314 C3	NU314
* 315MA (1)						457		577			80m6	170	22	71	14											1161	1309				NU 317	6314 C3
* 315MA (2)											65m6	140	18	58	11											1131	1279				6314 C3	NU314

NOTES: (1) 1500, 1000 and 750 rpm (2) 3000 rpm (*) BFGC4 Series



Frame	"FF" Flange Dimensions Flange	LA	M	N	P	T	S	α	b55	Nr. holes
250M	FF-500	21	500	450	550	5	18,5	22,5º	60	8
280SA/MA										
* 315SA/MA	FF-600	25	600	550	660	6	24		70	

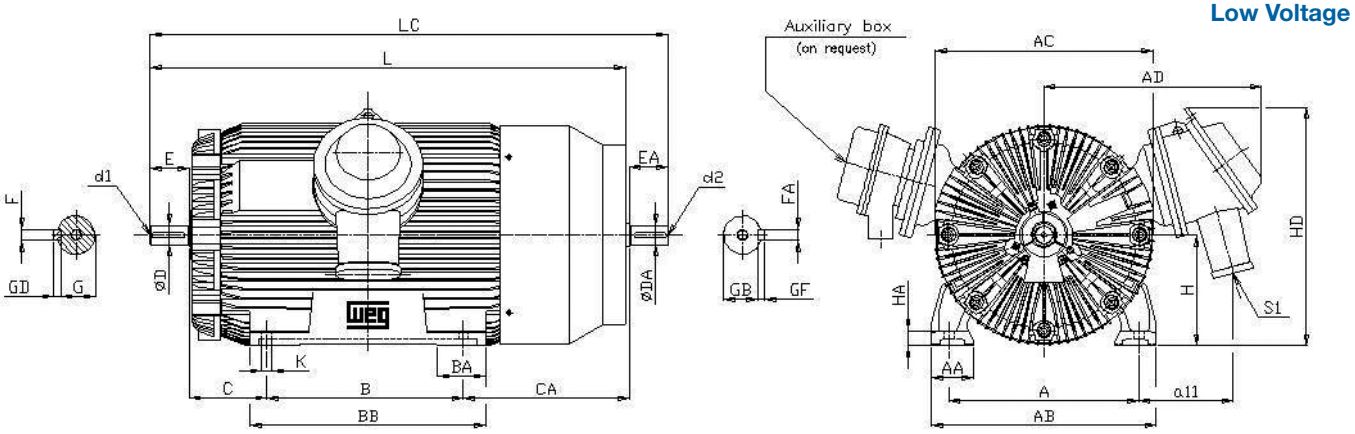
NOTES: (*) BFGC4 Series

Notes:
- *All the dimensions are in millimeters*
- *For all vertical applications or unusual coupling conditions, the customer shall inform the load figure with the inquiry/order.*
- *Construction drawings with guaranteed values are available under request.*
- *Shaft dimensions for 2 pole motors, only for direct coupling*
- *Execution with auxiliary terminal box available, for some ranges, on request*
- *If required terminal box entry on left hand side, please refer to us.*
- *Execution with second shaft end available on request*
- *'Ex de' execution dimensions under request*
- *The average values shown are subject to change without prior notice*

BFGC3 IMB3T; IMV1

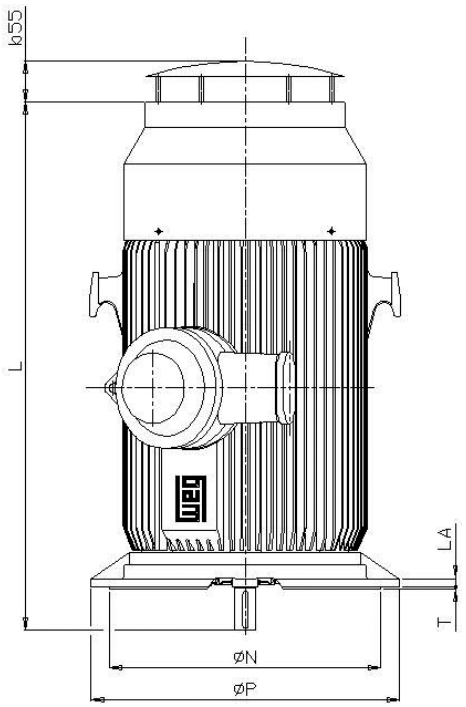
IIC T4

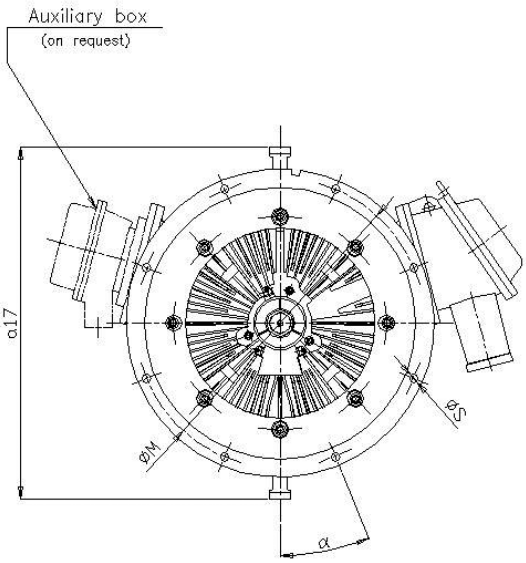
Low Voltage



Frame	A	AA	AB	AC	AD	a11	B	BA	BB	C	CA	Shaft Dimensions										H	HA	HD	K	L	LC	S1	d1	d2	Bearings	
												D	E	F	G	GD	DA	EA	FA	GB	GF										D.E.	N.D.E
* 315MA (1)	508	130	632	622	716	360	457	150	613	216	426	90m6	170	25	81	14	60m6	140	18	53	11	315	43	735	28	1254	1409	2xM63x1,5 + 1xM20x1,5	DSM24	DSM20	NU2220	6317 C3	
* 315MA (2)												70m6	140	20	62,5	12										1224	1379		DSM20		6317 C3	NU317	(3)
* 315LA (1)							508		664			90m6	170	25	81	14										1305	1460		DSM24		NU2220	6317 C3	
* 315LA (2)												70m6	140	20	62,5	12										1275	1430		DSM20		6317 C3	NU317	(3)
355MA (1)	610	145	730	713	741	334	560	175	800	254	589	95m6	170	25	86	14	80m6	170	22	71	14	355	49	785		1558	1743		DSM24		NU320	6320 C3	
355MA (2)												70m6	140	20	62,5	12	60m6	140	18	53	11					1528	1683		DSM20		6317 C3	NU317	(3)
355LA (1)							630		860		579	95m6	170	25	86	14	80m6	170	22	71	14					1618	1803		DSM24		NU320	6320 C3	
355LA (2)												70m6	140	20	62,5	12	60m6	140	18	53	11					1588	1743		DSM20		6317 C3	NU317	(3)
400LA (1)	686	150	810	785,5	786	341	710		850	280	599	110m6	210	28	100	16	80m6	170	22	71	14	400	55	860	35	1784	1969		DSM24		NU324	6324 C3	
400LA (2)												70m6	140	20	62,5	12	60m6	140	18	53	11					1714	1869		DSM20		6317 C3	NU317	(3)

NOTES: (1) 1500, 1000 and 750 rpm (2) 3000 rpm (3) For 60 Hz please refer to us (*) BFGC3 Series





Frame	"FF" Flange Dimensions									Nr. holes	a17	Bearings	
	Flange	b55	LA	M	N	P	T	S	α			D.E.	N.D.E
* 315MA/LA (1)	FF-600	116,5	22	600	550	660	6	24	22,5°	8	906	7220	6317 C3
* 315MA/LA (2)												6317 C3	6317 C3 (3)
355MA/LA (1)	FF-740	125	25	740	680	800					952	7320	6320 C3
355MA/LA (2)												7317	6317 (3)
400LA (1)	FF-940	132	28	940	880	1000		28			1010	7324	6324 C3
400LA (2)												7317	6317 C3 (3)

NOTES: (1) 1500, 1000 and 750 rpm (2) 3000 rpm
(3) For 60 Hz please refer to us (*) BFGC3 Series

Notes:
- *All the dimensions are in millimeters.*
- *For all vertical applications or unusual coupling conditions, the customer shall inform the load figure with the inquiry/order.*
- *Construction drawings with guaranteed values are available under request.- Shaft dimensions for 2 pole motors, only for direct coupling.*
- *Execution with auxiliary terminal box available, for some ranges, on request.*
- *If required terminal box entry on left hand side, please refer to us.*
- *Execution with second shaft end available on request.*
- *'Ex de' execution dimensions under request.*
- *The average values shown are subject to change without prior notice.*

3.2 LOW VOLTAGE FLAMEPROOF MOTORS BFG(C)8; W22XB(C); BFGM8; W22XM

3.2.1 PRODUCT SPECIFICATION

Range

The present catalogue refers to TEFC Flameproof, Low Voltage, three phase, squirrel cage induction motors, up to 1100V, ribbed frames, **BFG(C)8** and **W22XB(C**) series with shaft height from 355 to 500 mm, with the following powers:

Motor series BFG(C)8 and W22XB(C):

KW	RPM
450 up to 1120 kW	3000 RPM
500 up to 1400 kW	1500 RPM
400 up to 1120 kW	1000 RPM
315 up to 900 kW	750 RPM

Particular specifications and standards related to hazardous areas

The motor series **BFG(C)8** and **W22XB(C)** comply with European Standards listed on paragraph 1.2.2, and are suitable for the following Groups of Gases and Temperature Classes:

GROUP I, mines category **M2**
GROUP II, surface industry, Gases of **Group IIB**, and temperature class **T4**
GROUP II, surface industry, Gases of **Group IIC**, and temperature class **T4**

Under request, are available other temperature classes.

These motor series have the CE marking in compliance with European Directive **94/4/EC (ATEX)**, and can be marked as equipment **GROUP I (Mines susceptible of firedamp)** or **GROUP II (surface Industries)**.

The motors of **GROUP II** , are suitable to use on the following zones:
Category **2**, for **Zones 1** and **21** – Gases, Vapours and Dust **(GD)**.
Category **3**, for **Zones 2** and **22** – Gases, Vapours and Dust **(GD)**.
Category **M2** for Mines

Special design to suit **Zone 21** will be available on request.

These motor series are also certified according to the **IECEx scheme**.

As standard execution, the motors are fitted with flameproof terminal boxes for gases of **Group IIB** or **IIC**, with specification code **Ex d**, **IIB** or **Ex d**, **IIC**. Under request and as an alternative execution, these motors can be fitted with an Increased Safety terminal box. In this case the description code is **Ex de**, **IIB** or **Ex de**, **IIC**.
This line of flameproof motors is certified according to the above standards, by the Notified Body INERIS in France, accredited organization by EU.

Construction

Mechanical protection: IP 55 as **Group II**, or **IP65** as **Group I**.
Insulation: Class **F**.
Temperature rise: 80 K.
Frames: are in **cast iron**.
Terminal boxes: are in **cast iron**.
Endshields: are in **cast iron**.
Fans: metallic, in **aluminium alloy** or **fabricated steel**.
Fan cover: in **cast iron** or **fabricated steel**, capable to withstand impact of **20 Joule**.
Finish: industrial paint system, standard color **RAL 5010 (IIB)** or **RAL 7001 (IIC)**.

Voltage and frequency

As standard, these motors are wound to operate on the following voltage and frequency: D 400 V - 50HZ , spot wound.
If when supplied at D 400 V - 50HZ , corresponds a current higher than 1090A, as standard, the motors are wound for Y 690V, 50HZ.
The electrical data described in the present catalogue, is based on the standard supply voltages shown above i.e. 400V – 50HZ, and 690V when the current is higher than 1090A if supplied at 400V. For both cases and under request, are available voltages up to 1100V, 50 or 60HZ, with a maximum rated current of 1900A.
Depending on actual supply voltages/frequencies, this data may vary slightly but the variations will generally remain within the tolerances given by **IEC 60034-1**.

Basic design

Cooling method:

IC 411 in accordance with standard **IEC 60034-6** - motors cooled by an external fan.

Direction of rotation:

On frame sizes 355/400 (4 pole and above), as standard the motors are fitted with a bi-directional fan.
On remaining frames the fans are unidirectional, leaving the factory as standard on CW direction viewed from shaft end with the phase sequence of U, V, and W. In these cases the direction of rotation must be specified with order.

Electrical connection:

For currents up to 1090A, the terminal boxes are provided with 6 terminals.
For currents higher than 1090A, the terminal boxes are provided with 12 terminals.

- **Terminal boxes:**

  On these motor series, the main terminal box is located at top of motor frame allowing rotation every 180° to suit cable entry from left or right hand side.

  Note: customer shall refer cable entry direction with order. As standard, in all motors, the supply cable entries are on the right hand side when viewed from shaft end.

- **Protections/Auxiliaries:**

  As standard the **BFG(C)8** and **W22XB(C)** motor series are fitted with 3 PTC thermistors, (triple, 2 wire), connected in to the mains terminal box.
  Under request the motors can be fitted with anti-condensation heaters, or other type of protections on windings and connected into auxiliary terminal box.
  When thermal protections on bearings are required, the connections are made in two individual auxiliary terminal boxes located on D.E and N.D.E side as standard configuration.
  It is also possible as option, to have these protections connected into a single auxiliary terminal box used for the other protections/auxiliaries.

- **Earth connection:**

  All motors are equipped with an earth screw inside of terminal box. A second external earth connection is also provided on motor frame, on foot or on flange, depending on mounting form.

- **Terminal box entries and cable glands:**

  As standard, the motors are not supplied with cable glands and the number of entry holes and respective dimensions are described on outline dimensions tables. However, considering that the cable entry makes part of the protection enclosure it is recommended that the motors are supplied from factory fitted with cable glands.
  For this it is necessary to specify with the order the complete cabling details (number of cables, specification, section and diameters), so that the motors can be supplied from factory fitted with suitable glands.

- **Bearings:**

  These motor series are equipped on both sides with deep groove ball bearings, pre-loaded by an axial spring washer or springs. Motors frame sizes 450 and 500, 2 pole, are equipped with a 3 bearings arrangement (ball + roller bearings on DE and roller bearing on NDE).
  As optional execution, the motors GROUP IIB can be fitted with sleeve bearings.
  In the case of pulley/belt drive transmission, the drive end bearing can be replaced by a roller bearing.
  On vertical mounting motors, the bearings can be thrust bearing types and are defined according to the axial loads involved on the application.

- **Lubrication:**

  As standard, the bearings are grease lubricated. For all frames, the motors are equipped with grease relief valves and relubrication nipples.

- **Balancing:**

  The motors are dynamically balanced with half-key to meet the vibration limits of standard **IEC 60034-14**, **Grade A. Grade B** can be provided under request.
  On all frames, the D.E. and N.D.E. endshields are designed to fit, under request, optional captors for vibration monitoring detectors or other devices.

Full standard and optional features are detailed on paragraph 2.3.

3.2.2 ELECTRICAL DATA - BFG8; W22XB; BFGM8; W22XM SERIES

IIB T4
I (M2)

Low Voltage

Flameproof Motors - Ex d IIB T4 (Ex tD A21 IP6X T 125°C)
Flameproof Motors with Increased Safety Terminal Box - Ex de IIB T4 (Ex tD A21 IP6X T 125°C)
Flameproof Motors for Mines - Ex d I M2
Flameproof Motors for Mines with Increased Safety Terminal Box - Ex de I M2

Output KW	Output HP	Frame IEC	T_n (Nm)	I_s/I_n	T_s/T_n	T_{max}/T_n	Inertia J Kgm²	Allowable locked rotor time Hot/Cold (s)	Weight Kg	Sound dB (A)	400 V, 50Hz rpm min⁻¹	% of full load Efficiency η 50	Efficiency η 75	Efficiency η 100	Power Factor Cos φ 50	Power Factor Cos φ 75	Power Factor Cos φ 100	I_n(A)
II Pole - 3000 min-1																		
250	340	W22XB 355MLJ	801	6,2	1,5	2,9	2,9	17	1450	80	2980	94,3	95,7	96,2	0,82	0,87	0,89	421
280	380	W22XB 355MLJ	898	6,0	1,5	2,7	3,2	16	1600	80	2978	94,8	96,0	96,4	0,84	0,88	0,89	471
315	425	W22XB 355MLJ	1009	6,6	1,8	3,0	3,4	10	1700	80	2980	95,1	96,2	96,6	0,83	0,88	0,90	523
355	480	W22XB 355MLJ	1138	6,6	1,7	3,0	3,9	11	1800	80	2980	95,4	96,3	96,7	0,83	0,88	0,90	589
400	540	W22XB 355MLJ	1281	7,3	2,2	3,1	4,5	7	2050	80	2982	96,0	96,8	97,1	0,84	0,89	0,90	661
450	610	W22XB 355MLJ (1)	1441	7,5	2,2	3,2	5,0	7	2150	80	2983	96,0	96,8	97,1	0,84	0,88	0,90	743
450	610	BFG8 400LJ	1440	7,5	2,0	3,4	8,0	7	2450	80	2985	95,5	96,6	97,1	0,84	0,89	0,91	735
500	675	BFG8 400LJ	1600	7,5	1,9	3,2	8,4	6	2600	80	2985	95,9	96,9	97,3	0,85	0,89	0,91	815
560	755	BFG8 400LJ	1790	7,6	2,3	3,4	9,4	5	2950	80	2987	96,0	96,9	97,3	0,85	0,89	0,91	913
630	850	BFG8 400LJ (1)	2014	8,2	2,8	3,6	10,3	5	3300	80	2987	96,4	97,1	97,3	0,88	0,91	0,91	1027
630	850	BFG8 400G (3)	2014	7,5	1,0	3,1	11,7	17	3800	80	2987	96,5	97,0	97,5	0,88	0,91	0,91	1025
710	960	BFG8 450KH (3)(4)	2269	6,8	1,3	2,9	23,0	9	4400	80	2988	96,3	97,2	97,6	0,88	0,90	0,91	669
800	1080	W22XB 500KH (3)(4)																
900	1215	W22XB 500KH (3)(4)																
1000	1350	W22XB 500KH (3)(4)																
1120	1515	W22XB 500KH (3)(4)																
IV Pole - 1500 min -1																		
250	340	W22XB 355MLJ	1605	6,7	2,0	2,3	5,3	10	1450	80	1488	94,3	95,5	96,0	0,74	0,82	0,85	442
280	380	W22XB 355MLJ	1797	6,9	2,1	2,4	5,9	9	1550	80	1488	94,6	95,8	96,2	0,72	0,82	0,85	494
315	425	W22XB 355MLJ	2022	6,9	2,1	2,4	6,6	9	1650	80	1488	95,0	96,0	96,4	0,75	0,82	0,85	555
355	480	W22XB 355MLJ	2277	7,4	2,6	2,6	7,4	6	1850	80	1489	96,1	96,3	96,5	0,73	0,81	0,85	625
400	540	W22XB 355MLJ	2567	7,0	2,5	2,5	8,7	6	2100	80	1488	95,5	96,3	96,6	0,78	0,84	0,87	687
450	610	W22XB 355MLJ	2888	7,1	2,4	2,4	9,8	7	2250	80	1488	95,7	96,5	96,8	0,76	0,84	0,87	771
500	675	W22XB 355MLJ (1)	3209	6,9	2,2	2,3	9,8	6	2250	80	1488	95,6	96,4	96,7	0,76	0,84	0,87	858
500	675	BFG8 400LJ	3205	6,7	1,6	2,6	13,9	16	2700	80	1490	96,4	96,9	97,0	0,79	0,85	0,87	855
560	755	BFG8 400LJ	3589	6,8	1,7	2,5	14,7	13	2750	80	1490	96,5	97,0	97,1	0,78	0,85	0,87	957
630	850	BFG8 400LJ	4038	7,5	2,1	2,8	15,8	9	2950	80	1490	96,4	96,9	97,1	0,75	0,83	0,87	1076
710	960	BFG8 400LJ (1)(4)	4551	6,5	1,8	2,0	16,3	10	3050	80	1490	95,8	96,5	96,6	0,79	0,85	0,86	715
710	960	BFG8 400G (3)(4)	4542	7,5	2,5	2,4	18,2	5	3450	80	1493	96,5	96,6	97,0	0,80	0,86	0,87	704
800	1080	BFG8 400G (1)(3)(4)	5114	7,5	2,7	2,5	20,1	5	3800	80	1494	96,5	96,6	97,0	0,80	0,86	0,87	793
800	1080	BFG8 450KH (3)(4)	5121	7,0	2,0	2,9	22,6	13	4600	86	1492	96,2	97,0	97,3	0,78	0,85	0,87	791
900	1215	BFG8 450KH (1)(3)(4)	5761	7,0	1,2	2,0	25	20	5400	86	1492	96,5	97,1	97,3	0,83	0,86	0,87	890
900	1215	W22XB 500KH (3)(4)	5753	7,0	0,7	2,4	52	20	8000	86	1494	96,5	97,2	97,5	0,84	0,85	0,88	878
1000	1350	W22XB 500KH (3)(4)	6392	7,0	0,7	2,4	57	20	8400	86	1494	96,5	97,2	97,5	0,84	0,85	0,88	975
1120	1515	W22XB 500KH (3)(4)	7155	7,0	0,7	2,4	62	20	9300	86	1495	96,5	97,2	97,5	0,84	0,85	0,88	1092
1250	1690	W22XB 500KH (3)(4)	7985	7,5	0,8	2,6	69	20	10300	86	1495	96,5	97,2	97,5	0,84	0,85	0,88	1219
1400	1890	W22XB 500KH (3)(4)	8943	7,5	0,8	2,5	78	20	11600	86	1495	96,5	97,2	97,5	0,84	0,85	0,88	1365
VI Pole - 1000 min -1																		
200	270	W22XB 355MLJ	1927	7,0	1,9	2,2	8,7	20	1550	76	991	94,0	95,2	95,4	0,73	0,80	0,83	365
250	340	W22XB 355MLJ	2409	7,0	1,9	2,1	10,4	20	1700	76	991	94,6	95,6	95,8	0,72	0,80	0,83	454
280	380	W22XB 355MLJ	2698	7,2	2,3	2,4	11,8	18	1950	76	991	94,8	95,8	96,0	0,72	0,80	0,84	501
315	425	W22XB 355MLJ	3039	7,0	2,3	2,5	13,1	17	2150	76	990	95,1	95,9	96,0	0,74	0,82	0,85	557
355	480	W22XB 355MLJ	3424	7,0	2,4	2,5	14,8	15	2250	76	990	95,3	96,0	96,1	0,74	0,82	0,85	627
400	540	BFG8 400LJ	3843	7,2	2,0	2,6	21,4	17	2400	76	994	95,4	96,2	96,5	0,73	0,81	0,84	712
450	610	BFG8 400LJ	4319	7,3	2,4	2,7	24,0	13	2800	76	995	95,2	96,2	96,5	0,71	0,80	0,84	801
500	675	BFG8 400LJ	4804	7,4	2,4	2,6	28	12	3000	76	994	95,7	96,4	96,6	0,77	0,83	0,85	879
560	755	BFG8 400G (3)	5375	6,5	1,9	3,0	31	8	3700	76	995	96,5	97,0	97,0	0,80	0,84	0,85	980
630	850	BFG8 450KH (3)(4)	6053	5,5	1,0	2,2	47	20	4650	78	994	96,1	96,8	97,0	0,80	0,85	0,86	632
710	960	BFG8 450KH (1)(3)(4)	6821	6,0	1,2	2,2	53	20	5050	78	994	96,2	96,9	97,2	0,78	0,84	0,86	711
710	960	W22XB 500KH (3)(4)	6815	5,5	0,8	2,3	73	20	8000	80	995	96,5	97,0	97,2	0,80	0,84	0,86	711
800	1080	W22XB 500KH (3)(4)	7678	5,5	0,8	2,3	82	20	8400	80	995	96,5	97,0	97,2	0,80	0,84	0,86	801
900	1215	W22XB 500KH (3)(4)	8638	5,5	0,8	2,2	90	20	9300	80	995	96,5	97,0	97,2	0,80	0,84	0,86	901
1000	1350	W22XB 500KH (3)(4)	9598	5,5	0,8	2,2	100	20	10300	80	995	96,5	97,0	97,2	0,80	0,84	0,86	1001
1120	1515	W22XB 500KH (1)(3)(4)	10750	5,5	0,8	2,2	113	20	11600	80	995	96,5	97,0	97,2	0,80	0,84	0,86	1121
VIII Pole - 750 min-1																		
160	215	W22XB 355MLJ	2059	6,5	1,7	2,0	12,4	20	1300	70	742	94,0	94,9	95,1	0,70	0,78	0,81	300
200	270	W22XB 355MLJ	2571	6,5	1,9	2,1	14,6	20	1500	70	743	94,3	95,2	95,4	0,68	0,77	0,81	374
250	340	W22XB 355MLJ	3213	6,5	2,0	2,2	18,1	20	1850	70	743	94,7	95,5	95,6	0,68	0,77	0,81	466
280	380	W22XB 355MLJ	3599	6,5	2,3	2,3	20,5	20	2000	70	743	95,1	95,8	95,8	0,70	0,78	0,81	521
315	425	W22XB 355MLJ (1)	4049	6,7	2,5	2,5	21,8	18	2200	70	743	95,0	95,4	95,6	0,69	0,77	0,81	587
315	425	BFG8 400LJ	4038	7,0	2,8	2,8	26	14	2250	70	745	95,6	96,5	96,7	0,68	0,77	0,82	573
355	480	BFG8 400LJ	4551	7,0	2,9	2,9	29	14	2500	70	745	94,9	95,8	96,1	0,66	0,76	0,81	658
400	540	BFG8 400LJ	5128	7,0	3,1	3,1	32	11	2750	70	745	95,2	95,9	96,1	0,67	0,76	0,81	742
450	610	BFG8 400LJ (3)	5761	7,5	3,4	3,4	38	5	3350	70	746	95,6	96,3	96,5	0,68	0,78	0,82	821
500	675	BFG8 400G (3)	6418	6,0	1,8	2,7	44	13	4350	70	744	95,6	96,3	96,5	0,70	0,79	0,82	912
560	755	BFG8 450KH (3)	7169	7,2	2,1	2,4	74	14	5100	76	746	95,0	96,0	96,3	0,74	0,80	0,82	1024
630	850	BFG8 450KH (1)(3)(4)	8065	7,4	2,2	2,5	81	13	5400	76	746	95,0	96,0	96,3	0,74	0,80	0,82	668
630	850	W22XB 500KH (3)(4)	8054	6,0	0,8	2,2	101	20	8400	80	747	96,0	96,5	97,0	0,74	0,80	0,82	663
710	960	W22XB 500KH (3)(4)	9077	6,0	0,8	2,1	111	20	9300	80	747	96,0	96,5	97,0	0,74	0,80	0,82	747
800	1080	W22XB 500KH (3)(4)	10228	6,0	0,9	2,1	124	20	10300	80	747	96,0	96,5	97,0	0,74	0,80	0,82	842
900	1215	W22XB 500KH (1)(3)(4)	11506	6,0	0,9	2,2	139	20	11600	80	747	96,0	96,5	97,0	0,74	0,80	0,82	947

Available on request

(1) - Temperature rise class F at full load (2) - Standard motor with sleeve bearings (3) - Copper Rotor (4) - Rated current at 690V

T_n = Full load torque I_s / I_n = Locked rotor current T_s / T_n = Locked rotor torque T_{max} / T_n = Breakdown torque I_n = Full load current

Notes: - Motor frame 500, 2 pole 50Hz, available under request.
- The motors can also operate on a 60Hz supply. For motors frames 450 and 500 2 pole, please refer to us.
- To obtain electrical data for 60Hz, please refer to us
- All values are according to IEC 60034-1 tolerances.
- The indicated values for sound pressure levels are @ 1m no load, with 3 dB(A) tolerance.
- This data can be changed without prior notice.

Standard voltage, connection and frequency:
400V D 50Hz
690V Y 50Hz

3.2.3 ELECTRICAL DATA - BFGC8; W22XC; BFGM8; W22XM SERIES

IIC T4
I (M2)

Low Voltage

Flameproof Motors - Ex d IIC T4 (Ex tD A21 IP6X T 125°C)
Flameproof Motors with Increased Safety Terminal Box - Ex de IIC T4 (Ex tD A21 IP6X T 125°C)
Flameproof Motors for Mines - Ex d I M2
Flameproof Motors for Mines with Increased Safety Terminal Box - Ex de I M2

Output		Frame IEC	T_n (Nm)	I_s/I_n	T_s/T_n	T_{max}/T_n	Inertia J Kgm²	Allowable locked rotor time Hot/Cold (s)	Weight Kg	Sound dB (A)	400 V, 50Hz							
											rpm	% of full load						I_n(A)
												Efficiency η			Power Factor Cos φ			
KW	HP										min⁻¹	50	75	100	50	75	100	
II Pole - 3000 min-1																		
250	340	W22XC 355MLJ	801	6,2	1,5	2,9	2,9	17	1450	80	2980	94,3	95,7	96,2	0,82	0,87	0,89	421
280	380	W22XC 355MLJ	898	6,0	1,5	2,7	3,2	16	1600	80	2978	94,8	96,0	96,4	0,84	0,88	0,89	471
315	425	W22XC 355MLJ	1009	6,6	1,8	3,0	3,4	10	1700	80	2980	95,1	96,2	96,6	0,83	0,88	0,90	523
355	480	W22XC 355MLJ	1138	6,6	1,7	3,0	3,9	11	1800	80	2980	95,4	96,3	96,7	0,83	0,88	0,90	589
400	540	W22XC 355MLJ	1281	7,3	2,2	3,1	4,5	7	2050	80	2982	96,0	96,8	97,1	0,84	0,89	0,90	661
450	610	W22XC 355MLJ (1)	1441	7,5	2,2	3,2	5,0	7	2150	80	2983	96,0	96,8	97,1	0,84	0,88	0,90	743
450	610	BFGC8 400LJ	1440	7,5	2,0	3,4	8,0	7	2450	80	2985	95,5	96,6	97,1	0,84	0,89	0,91	735
500	675	BFGC8 400LJ	1600	7,5	1,9	3,2	8,4	6	2600	80	2985	95,9	96,9	97,3	0,85	0,89	0,91	815
560	755	BFGC8 400LJ	1790	7,6	2,3	3,4	9,4	5	2950	80	2987	96,0	96,9	97,3	0,85	0,89	0,91	913
630	850	BFGC8 400LJ (1)	2014	8,2	2,8	3,6	10,3	5	3300	80	2987	96,4	97,1	97,3	0,88	0,91	0,91	1027
630	850	BFGC8 400G (3)	2014	7,5	1,0	3,1	11,7	17	3800	80	2987	96,5	97,0	97,5	0,88	0,91	0,91	1025
710	960	BFGC8 450KH (3)(4)	2269	6,8	1,3	2,9	23,0	9	4400	80	2988	96,3	97,2	97,6	0,88	0,90	0,91	669
800	1080	W22XC 500KH (3)(4)																
900	1215	W22XC 500KH (3)(4)																
1000	1350	W22XC 500KH (3)(4)																
1120	1515	W22XC 500KH (3)(4)																
IV Pole - 1500 min -1																		
250	340	W22XC 355MLJ	1605	6,7	2,0	2,3	5,3	10	1450	80	1488	94,3	95,5	96,0	0,74	0,82	0,85	442
280	380	W22XC 355MLJ	1797	6,9	2,1	2,4	5,9	9	1550	80	1488	94,6	95,8	96,2	0,72	0,82	0,85	494
315	425	W22XC 355MLJ	2022	6,9	2,1	2,4	6,6	9	1650	80	1488	95,0	96,0	96,4	0,75	0,82	0,85	555
355	480	W22XC 355MLJ	2277	7,4	2,6	2,6	7,4	6	1850	80	1489	96,1	96,3	96,5	0,73	0,81	0,85	625
400	540	W22XC 355MLJ	2567	7,0	2,5	2,5	8,7	6	2100	80	1488	95,5	96,3	96,6	0,78	0,84	0,87	687
450	610	W22XC 355MLJ	2888	7,1	2,4	2,4	9,8	7	2250	80	1488	95,7	96,5	96,8	0,76	0,84	0,87	771
500	675	W22XC 355MLJ (1)	3209	6,9	2,2	2,3	9,8	6	2250	80	1488	95,6	96,4	96,7	0,76	0,84	0,87	858
500	675	BFGC8 400LJ	3205	6,7	1,6	2,6	13,9	16	2700	80	1490	96,4	96,9	97,0	0,79	0,85	0,87	855
560	755	BFGC8 400LJ	3589	6,8	1,7	2,5	14,7	13	2750	80	1490	96,5	97,0	97,1	0,78	0,85	0,87	957
630	850	BFGC8 400LJ	4038	7,5	2,1	2,8	15,8	9	2950	80	1490	96,4	96,9	97,1	0,75	0,83	0,87	1076
710	960	BFGC8 400LJ (1)(4)	4551	6,5	1,8	2,0	16,3	10	3050	80	1490	95,8	96,5	96,6	0,79	0,85	0,86	715
710	960	BFGC8 400G (3)(4)	4542	7,5	2,5	2,4	18,2	5	3450	80	1493	96,5	96,6	97,0	0,80	0,86	0,87	704
800	1080	BFGC8 400G (1)(3)(4)	5114	7,5	2,7	2,5	20,1	5	3800	80	1494	96,5	96,6	97,0	0,80	0,86	0,87	793
800	1080	BFGC8 450KH (3)(4)	5121	7,0	2,0	2,9	22,6	13	4600	86	1492	96,2	97,0	97,3	0,78	0,85	0,87	791
900	1215	BFGC8 450KH (1)(3)(4)	5761	7,0	1,2	2,0	25	20	5400	86	1492	96,5	97,1	97,3	0,83	0,86	0,87	890
900	1215	W22XC 500KH (3)(4)	5753	7,0	0,7	2,4	51	20	8000	86	1494	96,5	97,2	97,5	0,84	0,85	0,88	878
1000	1350	W22XC 500KH (3)(4)	6392	7,0	0,7	2,4	57	20	8400	86	1494	96,5	97,2	97,5	0,84	0,85	0,88	975
1120	1515	W22XC 500KH (3)(4)	7155	7,0	0,7	2,4	62	20	9300	86	1495	96,5	97,2	97,5	0,84	0,85	0,88	1092
1250	1690	W22XC 500KH (3)(4)	7985	7,5	0,8	2,6	69	20	10300	86	1495	96,5	97,2	97,5	0,84	0,85	0,88	1219
1400	1890	W22XC 500KH (3)(4)	8943	7,5	0,8	2,5	78	20	11600	86	1495	96,5	97,2	97,5	0,84	0,85	0,88	1365
VI Pole - 1000 min -1																		
200	270	W22XC 355MLJ	1927	7,0	1,9	2,2	8,7	20	1550	76	991	94,0	95,2	95,4	0,73	0,80	0,83	365
250	340	W22XC 355MLJ	2409	7,0	1,9	2,1	10,4	20	1700	76	991	94,6	95,6	95,8	0,72	0,80	0,83	454
280	380	W22XC 355MLJ	2698	7,2	2,3	2,4	11,8	18	1950	76	991	94,8	95,8	96,0	0,72	0,80	0,84	501
315	425	W22XC 355MLJ	3039	7,0	2,3	2,5	13,1	17	2150	76	990	95,1	95,9	96,0	0,74	0,82	0,85	557
355	480	W22XC 355MLJ	3424	7,0	2,4	2,5	14,8	15	2250	76	990	95,3	96,0	96,1	0,74	0,82	0,85	627
400	540	BFGC8 400LJ	3843	7,2	2,0	2,6	21,4	17	2400	76	994	95,4	96,2	96,5	0,73	0,81	0,84	712
450	610	BFGC8 400LJ	4319	7,3	2,4	2,7	24,0	13	2800	76	995	95,2	96,2	96,5	0,71	0,80	0,84	801
500	675	BFGC8 400LJ	4804	7,4	2,4	2,6	28	12	3000	76	994	95,7	96,4	96,6	0,77	0,83	0,85	879
560	755	BFGC8 400G (3)	5375	6,5	1,9	3,0	31	8	3700	76	995	96,5	97,0	97,0	0,80	0,84	0,85	980
630	850	BFGC8 450KH (3)(4)	6053	5,5	1,0	2,2	47	20	4650	78	994	96,1	96,8	97,0	0,80	0,85	0,86	632
710	960	BFGC8 450KH (1)(3)(4)	6821	6,0	1,2	2,2	53	20	5050	78	994	96,2	96,9	97,2	0,78	0,84	0,86	711
710	960	W22XC 500KH (3)(4)	6815	5,5	0,8	2,3	73	20	8000	80	995	96,5	97,0	97,2	0,80	0,84	0,86	711
800	1080	W22XC 500KH (3)(4)	7678	5,5	0,8	2,3	82	20	8400	80	995	96,5	97,0	97,2	0,80	0,84	0,86	801
900	1215	W22XC 500KH (3)(4)	8638	5,5	0,8	2,2	90	20	9300	80	995	96,5	97,0	97,2	0,80	0,84	0,86	901
1000	1350	W22XC 500KH (3)(4)	9598	5,5	0,8	2,2	100	20	10300	80	995	96,5	97,0	97,2	0,80	0,84	0,86	1001
1120	1515	W22XC 500KH (1)(3)(4)	10750	5,5	0,8	2,2	113	20	11600	80	995	96,5	97,0	97,2	0,80	0,84	0,86	1121
VIII Pole - 750 min-1																		
160	215	W22XC 355MLJ	2059	6,5	1,7	2,0	12,4	20	1300	70	742	94,0	94,9	95,1	0,70	0,78	0,81	300
200	270	W22XC 355MLJ	2571	6,5	1,9	2,1	14,6	20	1500	70	743	94,3	95,2	95,4	0,68	0,77	0,81	374
250	340	W22XC 355MLJ	3213	6,5	2,0	2,2	18,1	20	1850	70	743	94,7	95,5	95,6	0,68	0,77	0,81	466
280	380	W22XC 355MLJ	3599	6,5	2,3	2,3	20,5	20	2000	70	743	95,1	95,8	95,8	0,70	0,78	0,81	521
315	425	W22XC 355MLJ (1)	4049	6,7	2,5	2,5	21,8	18	2200	70	743	95,0	95,4	95,6	0,69	0,77	0,81	587
315	425	BFGC8 400LJ	4038	7,0	2,8	2,8	26	14	2250	70	745	95,6	96,5	96,7	0,68	0,77	0,82	573
355	480	BFGC8 400LJ	4551	7,0	2,9	2,9	29	14	2500	70	745	94,9	95,8	96,1	0,66	0,76	0,81	658
400	540	BFGC8 400LJ	5128	7,0	3,1	3,1	32	11	2750	70	745	95,2	95,9	96,1	0,67	0,76	0,81	742
450	610	BFGC8 400LJ (3)	5761	7,5	3,4	3,4	38	5	3350	70	746	95,6	96,3	96,5	0,68	0,78	0,82	821
500	675	BFGC8 400G (3)	6418	6,0	1,8	2,7	44	13	4350	70	744	95,6	96,3	96,5	0,70	0,79	0,82	912
560	755	BFGC8 450KH (3)	7169	7,2	2,1	2,4	74	14	5100	76	746	95,0	96,0	96,3	0,74	0,80	0,82	1024
630	850	BFGC8 450KH (1)(3)(4)	8065	7,4	2,2	2,5	81	13	5400	76	746	95,0	96,0	96,3	0,74	0,80	0,82	668
630	850	W22XC 500KH (3)(4)	8054	6,0	0,8	2,2	101	20	8400	80	747	96,0	96,5	97,0	0,74	0,80	0,82	663
710	960	W22XC 500KH (3)(4)	9077	6,0	0,8	2,1	111	20	9300	80	747	96,0	96,5	97,0	0,74	0,80	0,82	747
800	1080	W22XC 500KH (3)(4)	10228	6,0	0,9	2,1	124	20	10300	80	747	96,0	96,5	97,0	0,74	0,80	0,82	842
900	1215	W22XC 500KH (1)(3)(4)	11506	6,0	0,9	2,2	139	20	11600	80	747	96,0	96,5	97,0	0,74	0,80	0,82	947

Available on request

(1) - Temperature rise class F at full load (2) - Standard motor with sleeve bearings (3) - Copper Rotor (4) - Rated current at 690V

T_n = Full load torque I_s / I_n = Locked rotor current T_s / T_n = Locked rotor torque T_{max} / T_n = Breakdown torque I_n = Full load current

Notes: - Motor frame 500, 2 pole 50Hz, available under request.
- The motors can also operate on a 60Hz supply. For motors frames 450 and 500 2 pole, please refer to us.
- To obtain electrical data for 60Hz, please refer to us
- All values are according to IEC 60034-1 tolerances.
- The indicated values for sound pressure levels are @ 1m no load, with 3 dB(A) tolerance.
- This data can be changed without prior notice.

Standard voltage, connection and frequency:
400V D 50Hz
690V Y 50Hz

3.2.4 OUTLINE DIMENSIONS - BFG8; W22XB; BFGM8; W22XM SERIES

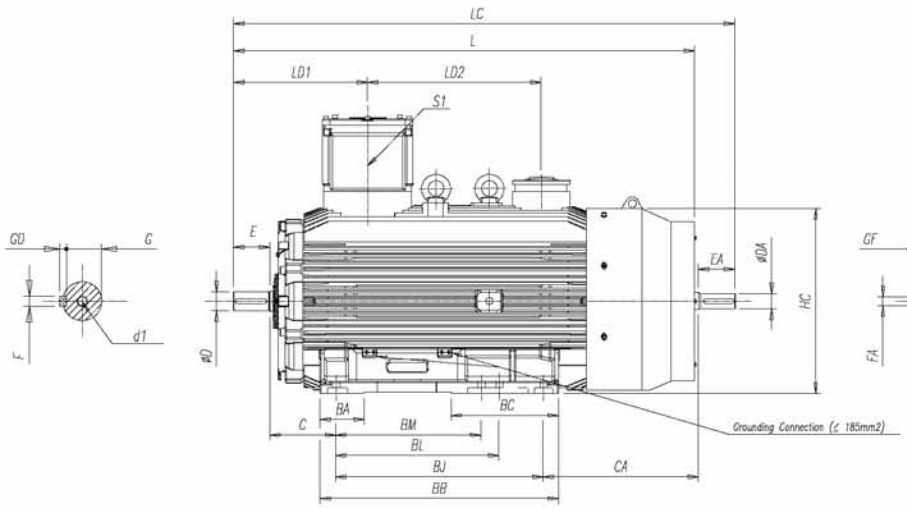
IIB T4
I (M2)

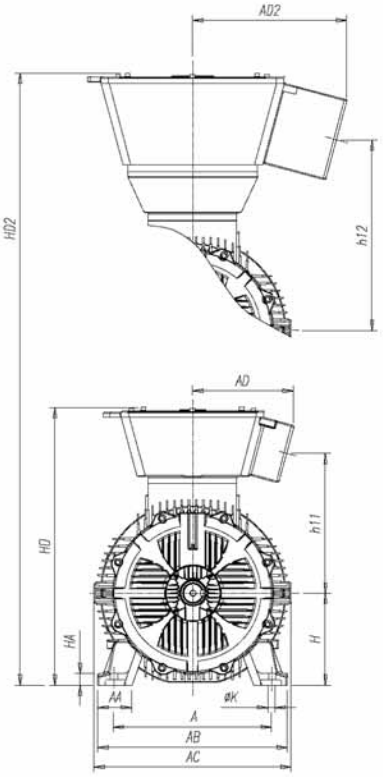
Low Voltage

Flameproof Motors - Ex d IIB T4 (Ex tD A21 IP6X T 125°C)
Flameproof Motors with Increased Safety Terminal Box - Ex de IIB T4 (Ex tD A21 IP6X T 125°C)

Flameproof Motors for Mines - Ex d I M2
Flameproof Motors for Mines with Increased Safety Terminal Box - Ex de I M2

W22XB 355MLJ IMB3T





Poles	A	AA	AB	AC	AD(1)	BA	BB	BC	BM	BL	BJ	C	CA	H	HA	HC	HD(1)	h11(1)	K	L	LC	LD1	LD2
2P	610	130	730	760	388	170	920	415	560	630	800	254	600	355	45	712	1072	540	28	1779	1934	517	670
4P+																				1849	2034	587	

	Shaft dimensions												Bearings		Power terminal box - S1 (1)
Poles	D	E	F	G	GD	DA	EA	FA	GB	GF	d1	d2	D.E	N.D.E	CEFGH 340
2P	75m6	140	20h9	67,5	12	60	140	18h9	53	11	DSM20	DSM20	6316C3	6316C3	I≤900A: 2xM63x1,5 + 1xM20x1,5
4P+	100m6	210	28h9	90	16	80	170	22h9	71	14	DSM24		6322C3	6322C3	900A<I≤1090A: 4xM63x1,5 + 1xM20x1,5

I > 1090A				
Poles	AD2	HD2	h12	**Power terminal box** - CEFGH 500 - S1
2P	594	1340	727	1090A<I≤1900A: 4xM63x1,5 + 1xM20x1,5
4P+				

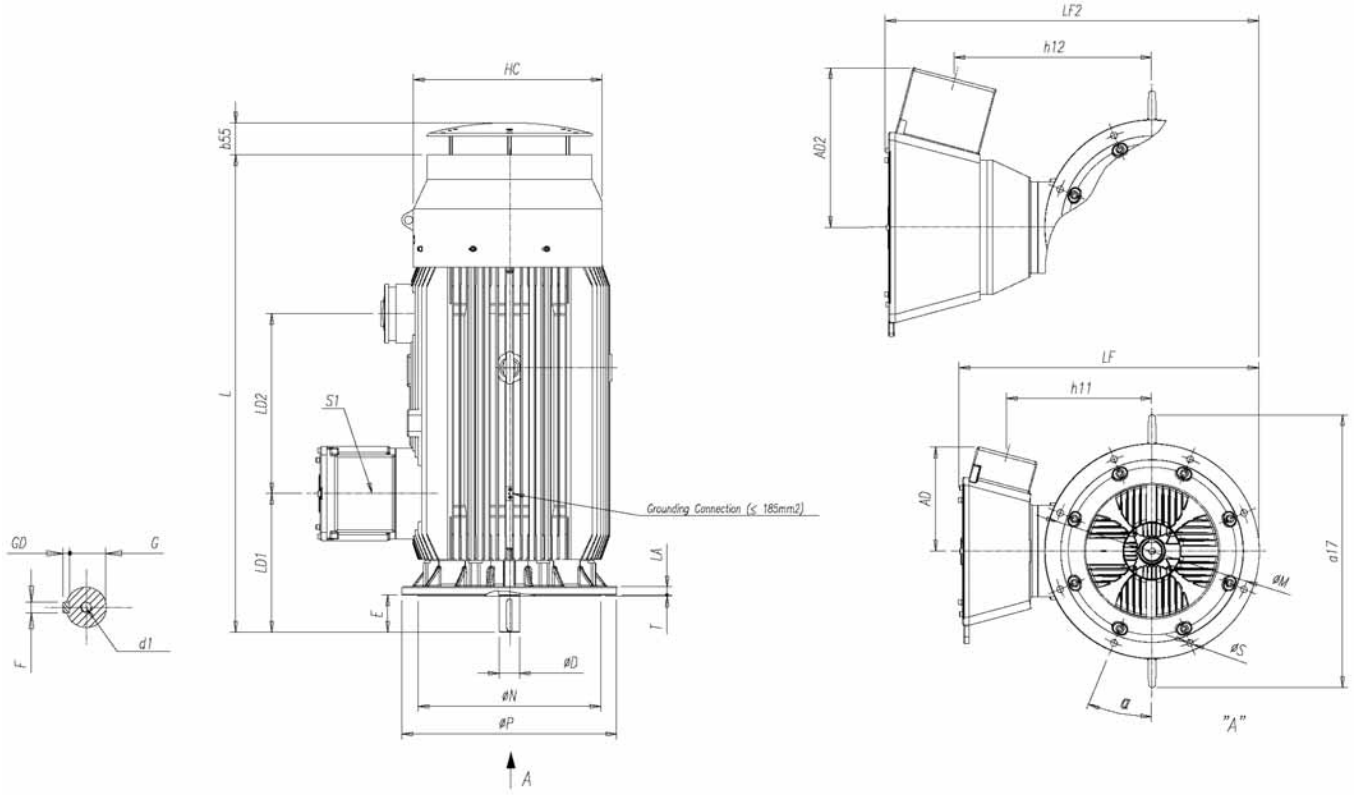
Notes: - (1) I ≤ 1090A
- All the dimensions are in millimeters.
- Please, do not use these dimensions for construction. Certified drawings under request.
- External thrust shall be informed at the time of Inquiry/Order.
- Executions with auxiliary terminal box and second shaft end are optional and available under request.
- For other special executions please refer to us.
- The dimensions shown are subject to change without prior notice.

OUTLINE DIMENSIONS

IIB T4
I (M2)

Low Voltage

W22XB 355MLJ IMV1



Poles	AD(1)	HC	h11(1)	L	LA	LD1	LD2	LF(1)	b55	a17	M	N	P	T	S	Nr. Holes	α
2P	388	702,5	540	1779	30	517	670	1117	118	1015	740	680	800	6	24	8	22,5º
4P+				1849		587											

	Shaft dimensions						Bearings		Power terminal box - S1 (1)
Poles	D	E	F	G	GD	d1	D.E	N.D.E	CEFGH340
2P	75m6	140	20h9	67,5	12	DSM20	7316	6316C3	I≤900A: 2xM63x1,5 + 1xM20x1,5
4P+	100m6	210	28h9	90	16	DSM24	7322	6322C3	900A< I ≤1090A: 4xM63x1,5 + 1xM20x1,5

I > 1090A				
Poles	AD2	LF2	h12	Power terminal box - CEFGH 500 - S1
2P	594	1386	727	1090A<I≤1900A: 4xM63x1,5 + 1xM20x1,5
4P+				

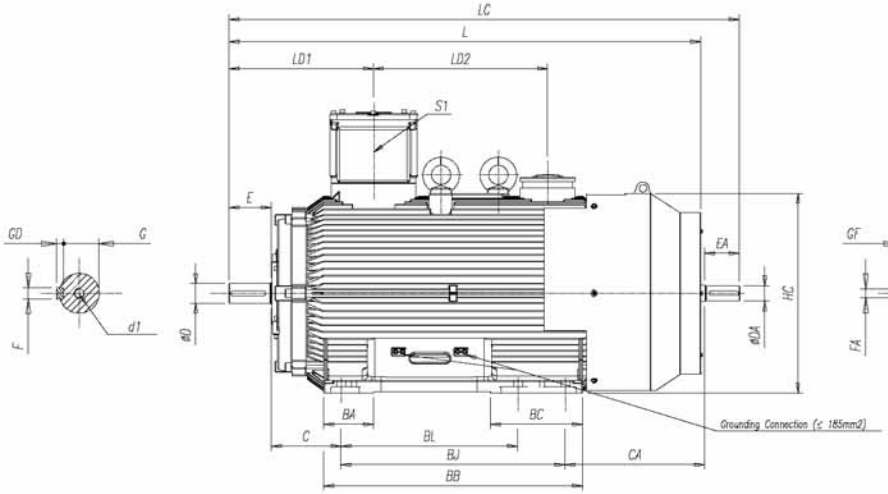
Notes: - (1) I ≤ 1090A
- All the dimensions are in millimeters.
- Please, do not use these dimensions for construction. Certified drawings under request.
- External thrust shall be informed at the time of Inquiry/Order.
- Executions with auxiliary terminal box and second shaft end are optional and available under request.
- For other special executions please refer to us.
- The dimensions shown are subject to change without prior notice.

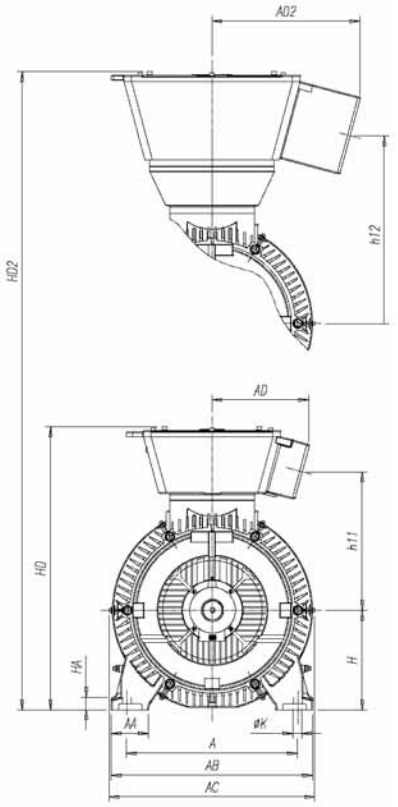
OUTLINE DIMENSIONS

IIB T4
I (M2)

Low Voltage

BFG8 400LJ IMB3T





Poles	A	AA	AB	AC	AD(1)	BA	BB	BC	BL	BJ	C	CA	H	HA	HC	HD(1)	h11(1)	K	L	LC	LD1	LD2
2P	686	150	810	827	388	200	1040	370	710	900	280	560	400	50	802	1139	557	35	1895	2050	580	700
4P+																			1935	2120	620	

	Shaft dimensions												Bearings		Power terminal box - S1 (1)
Poles	D	E	F	G	GD	DA	EA	FA	GB	GF	d1	d2	D.E.	N.D.E.	CEFGH 340
2P	80m6	170	22h9	71	14	60	140	18h9	53	11	DSM20	DSM20	6318C3	6318C3	I≤900A: 2xM63x1,5 + 1xM20x1,5
4P+	110m6	210	28h9	100	16	80	170	22h9	71	14	DSM24		6324C3	6324C3	900A<I≤1090A: 4xM63x1,5 + 1xM20x1,5

I > 1090A				
Poles	AD2	HD2	h12	Power terminal box - CEFGH 500 - S1
2P	594	1408	747	1090A<I≤1900A: 4xM63x1,5 + 1xM20x1,5
4P+				

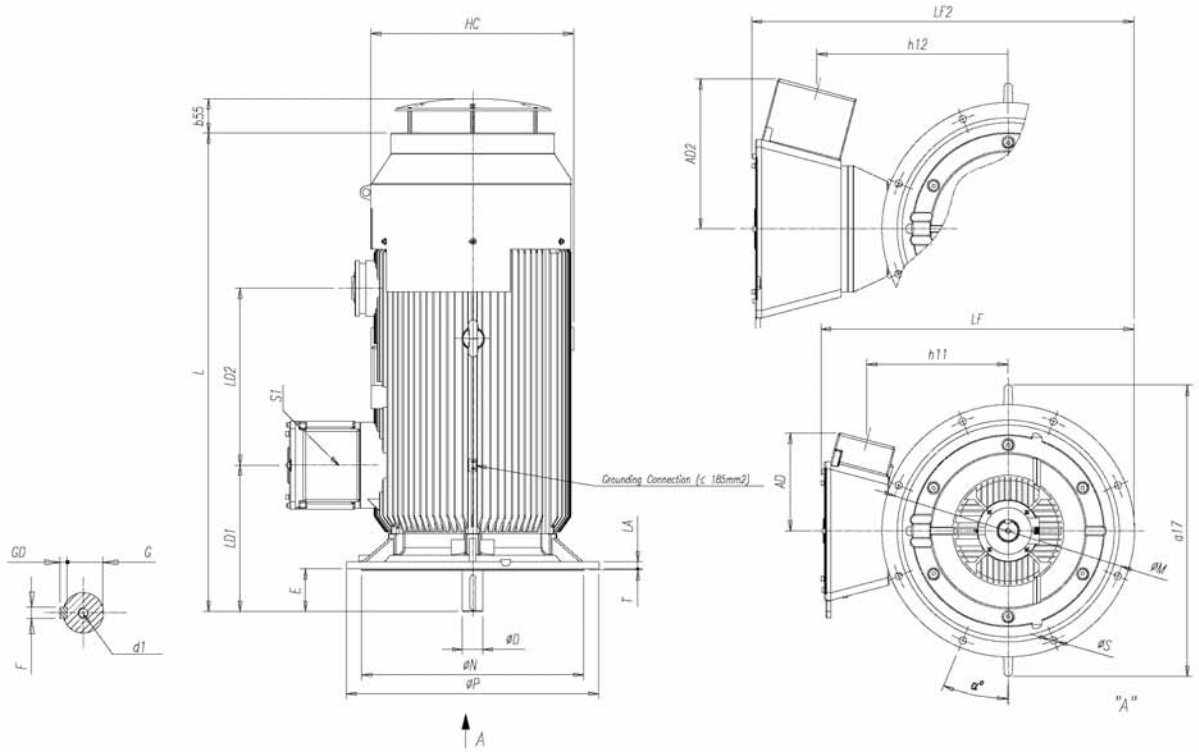
Notes: - (1) I ≤ 1090A
- All the dimensions are in millimeters.
- Please, do not use these dimensions for construction. Certified drawings under request.
- External thrust shall be informed at the time of Inquiry/Order.
- Executions with auxiliary terminal box and second shaft end are optional and available under request.
- For other special executions please refer to us.
- The dimensions shown are subject to change without prior notice.

OUTLINE DIMENSIONS

IIB T4
I (M2)

Low Voltage

BFG8 400LJ IMV1



Poles	AD (1)	HC	h11 (1)	L	LA	LD1	LD2	LF (1)	a17	b55	M	N	P	T	S	Nr. Holes	α
2P	388	802	558	1895	28	580	700	1240	1154	136	940	880	1000	6	28	8	22,5º
4P+				1935		620											

	Shaft dimensions						Bearings		Power terminal box - S1 (1)
Poles	D	E	F	G	GD	d1	D.E	N.D.E	CEFGH 340
2P	80m6	170	22h9	71	14	DSM20	7318	6318C3	I≤900A : 2xM63x1,5 + 1xM20x1,5
4P+	110m6	210	28h9	100	16	DSM24	7324	6324C3	900A< I ≤1090A : 4xM63x1,5 + 1xM20x1,5

I > 1090A				
Poles	AD2	LF2	h12	Power terminal box - CEFGH 500 - S1
2P	594	1507	747	1090A< I ≤1900A : 4xM63x1,5 + 1xM20x1,5
4P+				

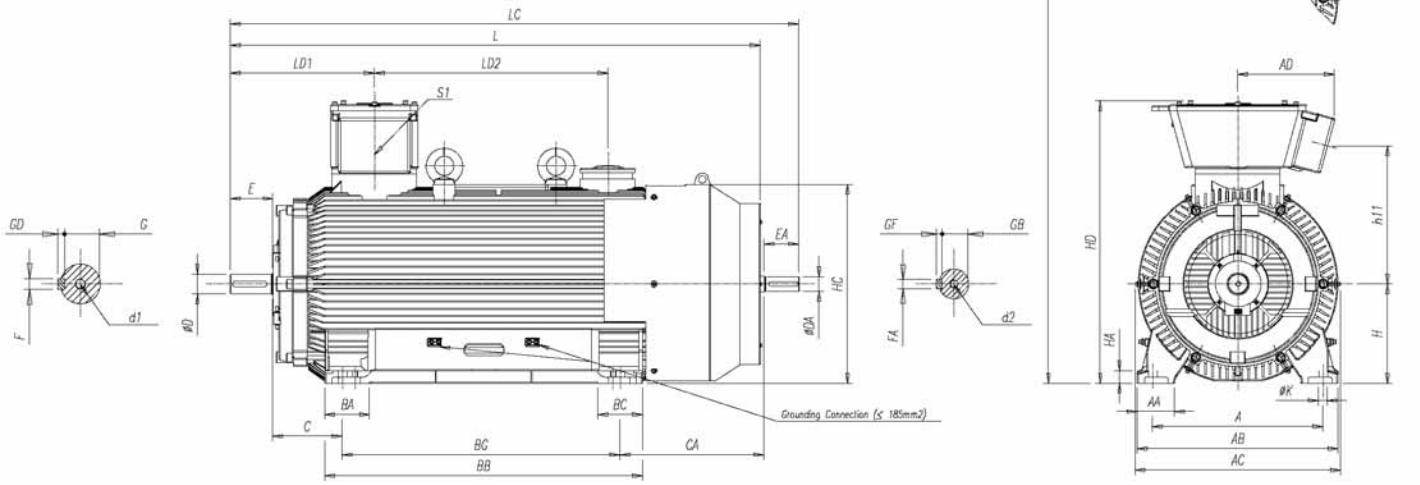
Notes: - (1) I ≤ 1090A
- All the dimensions are in millimeters.
- Please, do not use these dimensions for construction. Certified drawings under request.
- External thrust shall be informed at the time of Inquiry/Order.
- Executions with auxiliary terminal box and second shaft end are optional and available under request.
- For other special executions please refer to us.
- The dimensions shown are subject to change without prior notice.

OUTLINE DIMENSIONS

IIB T4
I (M2)

Low Voltage

BFG8 400G IMB3T



Poles	A	AA	AB	AC	AD (1)	BA	BB	BC	BG	C	CA	H	HA	HC	HD (1)	h11 (1)	K	L	LC	LD1	LD2
2P	686	150	810	827	388	180	1280	180	1120	280	580	400	50	802	1139	557	35	2135	2290	580	940
4P+																		2175	2360	620	

	Shaft dimensions												Bearings		Power terminal box - S1 (1)
Poles	D	E	F	G	GD	DA	EA	FA	GB	GF	d1	d2	D.E	N.D.E	CEFGH 340
2P	80m6	170	22h9	71	14	60	140	18h9	53	11	DSM20	DSM20	6318C3	6318C3	I≤900A: 2xM63x1,5 + 1xM20x1,5
4P+	110m6	210	28h9	100	16	80	170	22h9	71	14	DSM24		6324C3	6324C3	900A<I ≤1090A: 4xM63x1,5 + 1xM20x1,5

I > 1090A				
Poles	AD2	HD2	h12	**Power terminal box** - CEFGH 500 - S1
2P	594	1408	747	1090A<I ≤1900A: 4xM63x1,5 + 1xM20x1,5
4P+				

Notes: - (1) I ≤ 1090A
- All the dimensions are in millimeters.
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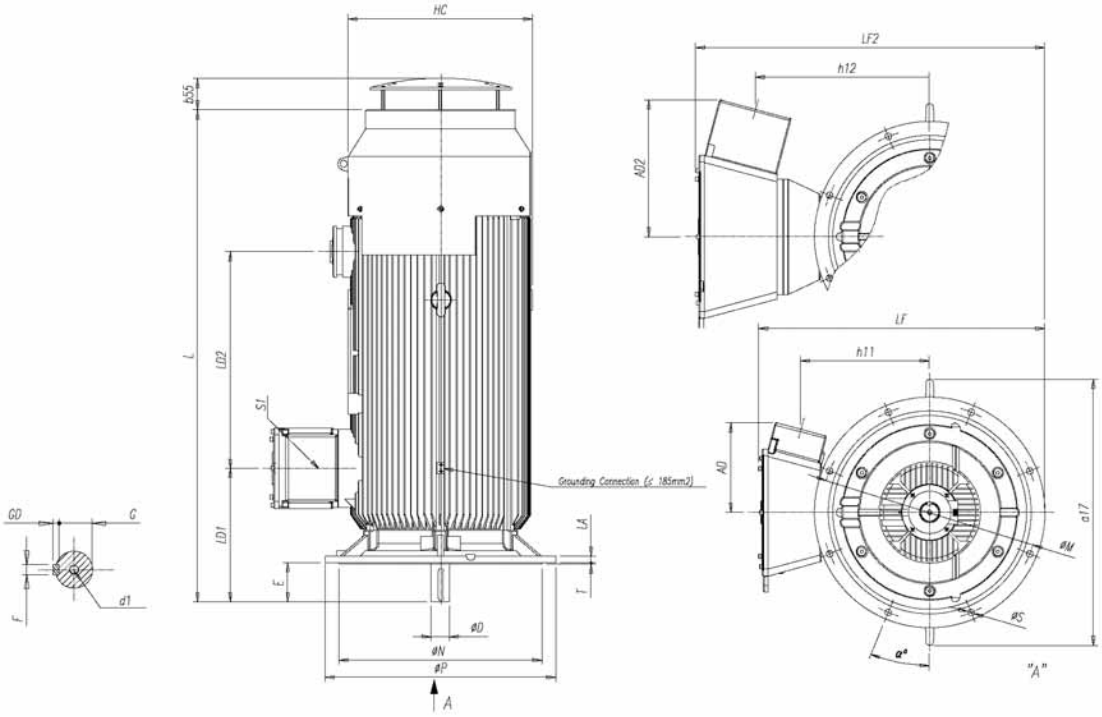
OUTLINE DIMENSIONS

IIB T4
I (M2)

Low Voltage

BFG8 400G IMV1



Poles	AD (1)	HC	h11 (1)	L	LA	LD1	LD2	LF (1)	a17	b55	M	N	P	T	S	Nr. Holes	α
2P	388	802	558	2135	28	580	940	1240	1154	136	940	880	1000	6	28	8	22,5º
4P+				2175		620											

	Shaft dimensions						Bearings		Power terminal box - S1 (1)
Poles	D	E	F	G	GD	d1	D.E	N.D.E	CEFGH340
2P	80m6	170	22h9	71	14	DSM20	7318	6318C3	I≤900A : 2xM63x1,5 + 1xM20x1,5
4P+	110m6	210	28h9	100	16	DSM24	7324	6324C3	900A< I ≤1090A : 4xM63x1,5 + 1xM20x1,5

I > 1090A				
Poles	AD2	LF2	h12	Power terminal box - CEFGH 500 - S1
2P	594	1507	747	1090A< I ≤ 1900A : 4xM63x1,5 + 1xM20x1,5
4P+				

Notes: - (1) I ≤ 1090A
- All the dimensions are in millimeters.
- Please, do not use these dimensions for construction. Certified drawings under request.
- External thrust shall be informed at the time of Inquiry/Order.
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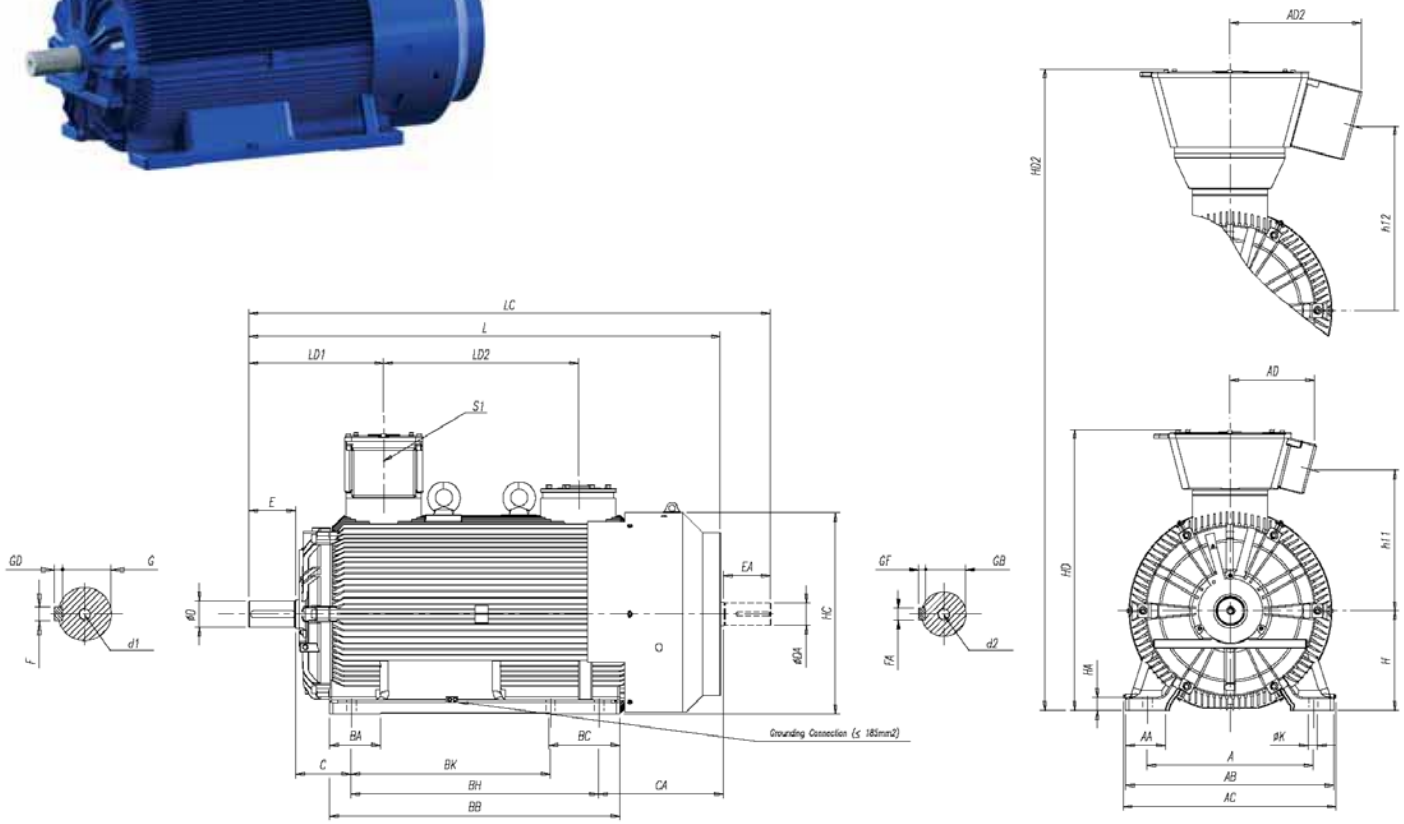
OUTLINE DIMENSIONS

IIB T4
I (M2)

Low Voltage

BFG8 450KH IMB3T



Poles	A	AA	AB	AC	AD(1)	BA	BB	BC	BK	BH	C	CA	H	HA	HC	HD(1)	h11(1)	K	L	LC	LD1	LD2
2P	750	180	940	957	388	230	1310	320	900	1120	250	564	450	60	908	1269	654	42	2089	2244	568	880
4P+																			2129	2354	608	

	Shaft dimensions												Bearings		Power terminal box - S1 (1)
Poles	D	E	F	G	GD	DA	EA	FA	GB	GF	d1	d2	D.E.	N.D.E.	CEFGH 340
2P	85m6	170	22h9	76	14	75	140	20h9	67,5	12	DSM20	DSM20	N218C3 + 6218C3	N218	I≤900A : 2xM63x1,5 + 1xM20x1,5
4P+	120m6	210	32h9	109	18	100	210	28h9	90	16	DSM24	DSM20	6326C3	6326C3	900A< I ≤1090A : 4xM63X1,5 + 1xM20x1,5

I > 1090A				
Poles	AD2	HD2	h12	**Power terminal box** - CEFGH 500 - S1
2P	594	1562	853	1090A<I≤1900A : 4xM63x1,5 + 1xM20x1,5
4P+				

Notes: - (1) I ≤ 1090A
- All the dimensions are in millimeters.
- Please, do not use these dimensions for construction. Certified drawings under request.
- External thrust shall be informed at the time of Inquiry/Order.
- Executions with auxiliary terminal box and second shaft end are optional and available under request.
- For other special executions please refer to us.
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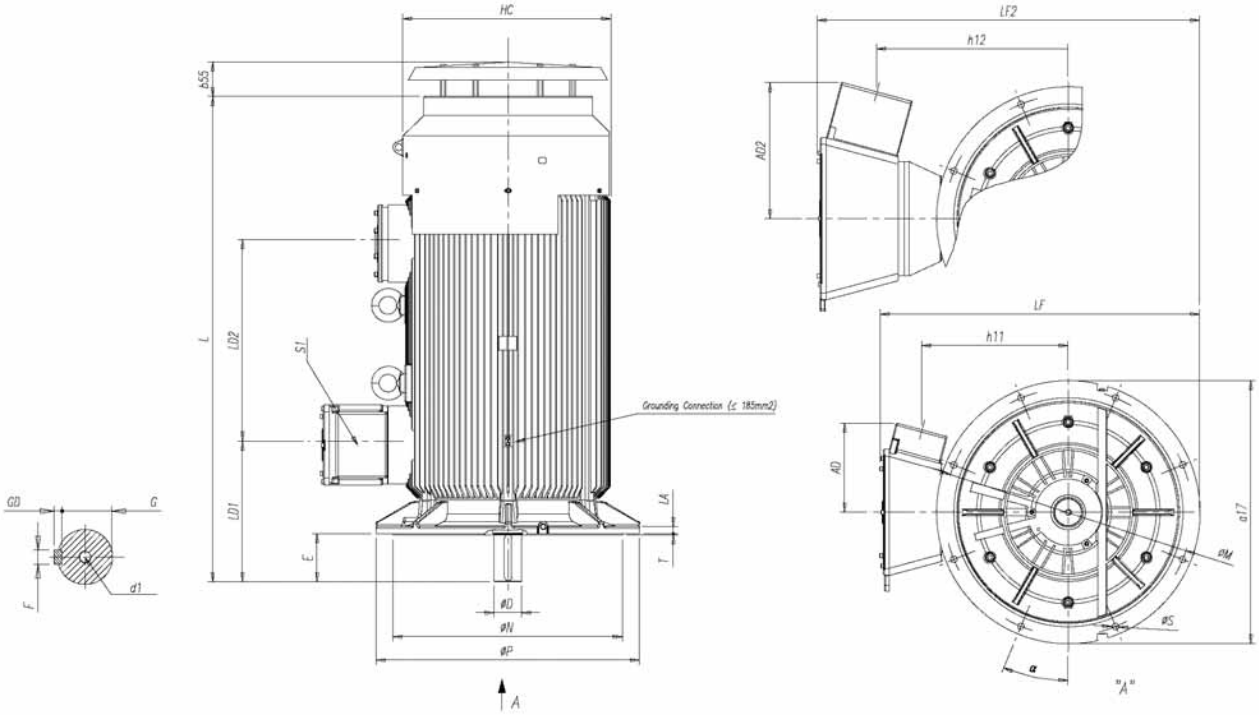
OUTLINE DIMENSIONS

IIB T4
I (M2)

Low Voltage

BFG8 450KH IMV1



Poles	AD(1)	HC	h11(1)	L	LA	LD1	LD2	LF(1)	a17	b55	M	N	P	T	S	Nr. Holes	α
4P+	388	908	654	2129	30	608	880	1394	1150	153	1080	1000	1150	6	30	8	22,5º

	Shaft dimensions						Bearings		Power terminal box - S1 (1)
Poles	D	E	F	G	GD	d1	D.E	N.D.E	CEFGH 340
4P+	120m6	210	32h9	109	18	DSM24	7326	6326C3	I≤900A : 2xM63x1,5 + 1xM20x1,5 900A< I ≤1090A : 4xM63x1,5 + 1xM20x1,5

I > 1090A				
Poles	AD2	LF2	h12	Power terminal box - CEFGH 500 - S1
4P+	594	1688	853	1090A< I ≤1900A : 4xM63x1,5 + 1xM20x1,5

Notes: - (1) I ≤ 1090A
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- Please, do not use these dimensions for construction. Certified drawings under request.
- External thrust shall be informed at the time of Inquiry/Order.
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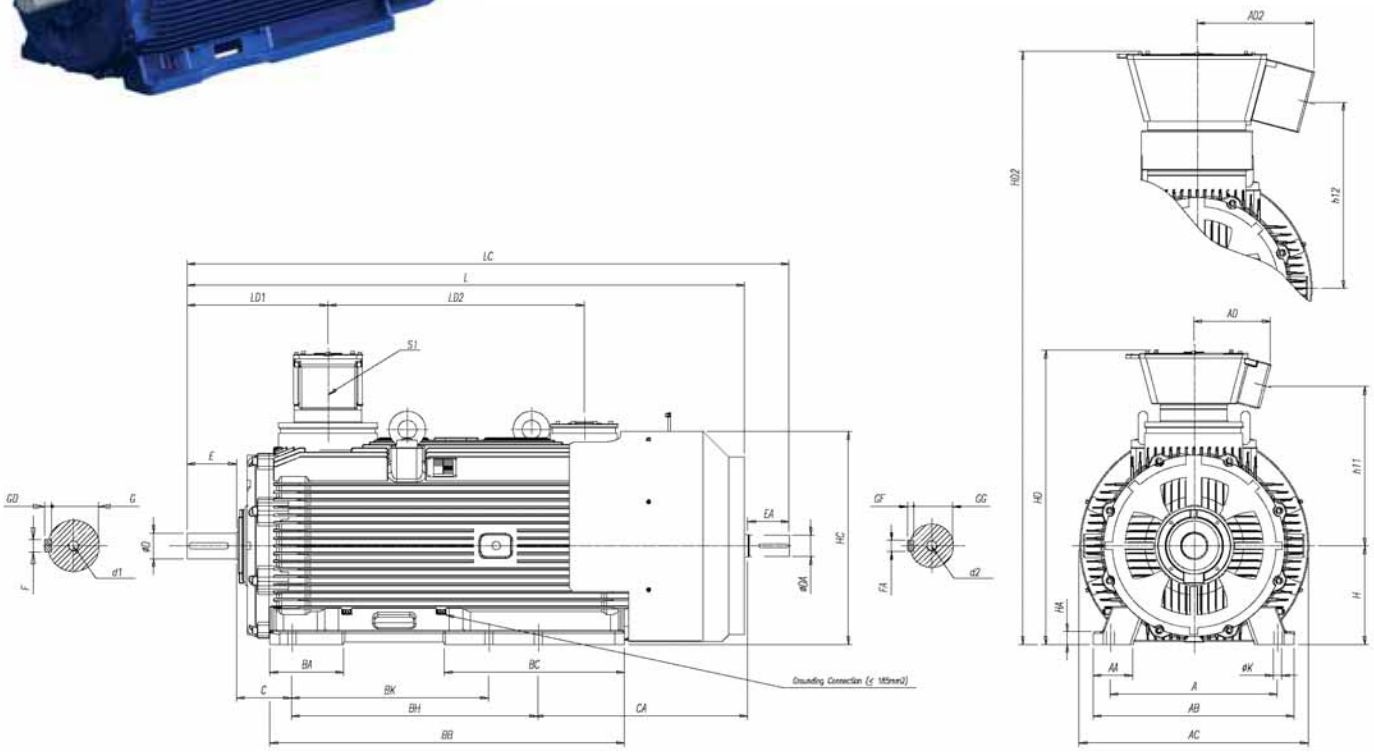
OUTLINE DIMENSIONS

IIB T4
I (M2)

Low Voltage

W22XB 500KH IMB3T



Poles	A	AA	AB	AC	AD(1)	BA	BB	BC	BK	BH	C	CA	H	HA	HC	HD(1)	h11(1)	K	L	LC	LD1	LD2
2P	850	200	1020	1162	388	375	1800	915	1000	1250	280	1080	500	65	1081	1490	808	42	2750	2905	635	1300
4P+																			2830	3055	715	

	Shaft dimensions												Bearings		Power terminal box - S1 (1)
Poles	D	E	F	G	GD	DA	EA	FA	GB	GF	d1	d2	D.E	N.D.E	CEFGH 340
2P	90m6	170	25	81	14	75	140	20	67,5	12	DSM24	DSM20	NU220C3 + 6020C3	NU220C3	I≤900A: 2xM63x1,5 + 1xM20x1,5
4P+	130m6	250	32	119	18	110	210	28	100	16	DSM24	DSM24	6328C3	6328C3	900A< I ≤1090A: 4xM63X1,5 + 1xM20x1,5

I > 1090A				
Poles	AD2	HD2	h12	Power terminal box - CEFGH 500 - S1
2P	594	1704	946	1090A<I ≤1900A: 4xM63x1,5 + 1xM20x1,5
4P+				

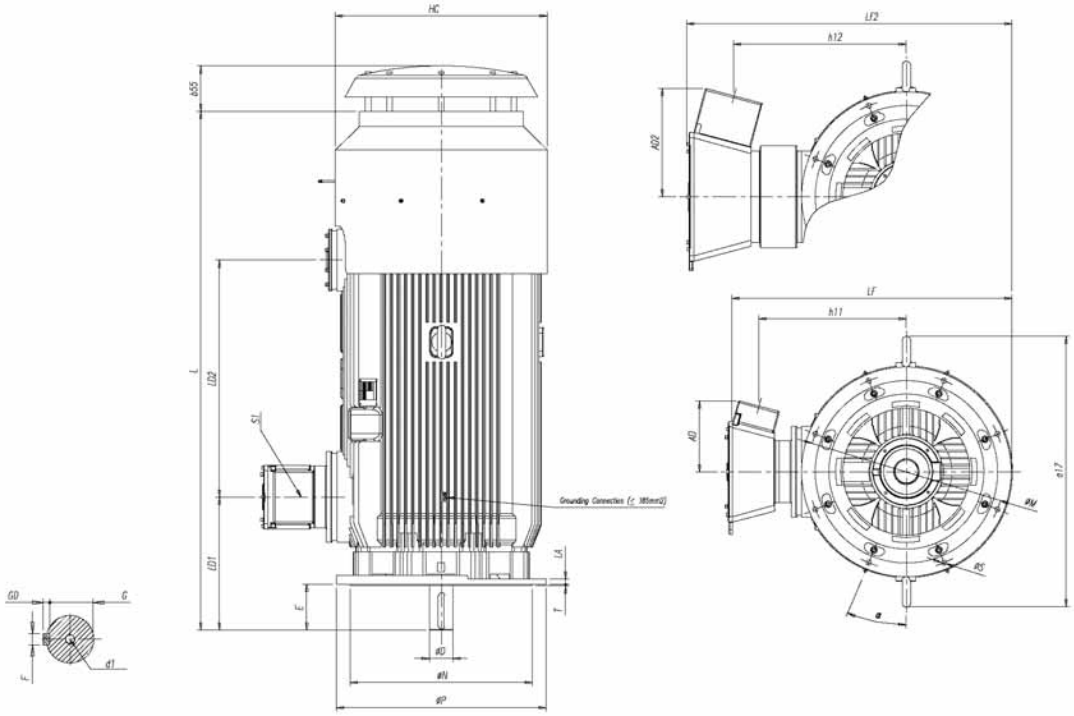
Notes: - (1) I ≤ 1090A
- All the dimensions are in millimeters.
- Please, do not use these dimensions for construction. Certified drawings under request.
- External thrust shall be informed at the time of Inquiry/Order.
- Executions with auxiliary terminal box and second shaft end are optional and available under request.
- For other special executions please refer to us.
- The dimensions shown are subject to change without prior notice.

OUTLINE DIMENSIONS

IIB T4
I (M2)

Low Voltage

W22XB 500KH IMV1



Poles	AD(1)	HC	h11(1)	L	LA	LD1	LD2	LF(1)	a17	b55	M	N	P	T	S	Nr. Holes	α
4P+	388	1162	808	2830	30	715	1300	1536	1482	250	1080	1000	1150	7	28	8	22,5º

	Shaft dimensions						Bearings		Power terminal box - S1 (1)
Poles	D	E	F	G	GD	d1	D.E	N.D.E	CEFGH340
4P+	130m6	250	32h9	119	18	DSM24	7328	6328C3	I≤900A : 2xM63x1,5 + 1xM20x1,5 900A< I ≤1090A : 4xM63x1,5 + 1xM20x1,5

I > 1090A				
Poles	AD2	LF2	h12	Power terminal box - CEFGH 500 - S1
4P+	594	1785	946	1090A< I ≤1900A : 4xM63x1,5 + 1xM20x1,5

Notes: - (1) I ≤ 1090A
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- External thrust shall be informed at the time of Inquiry/Order.
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3.2.5 OUTLINE DIMENSIONS - BFGC8; W22XC; BFGM8; W22XM SERIES

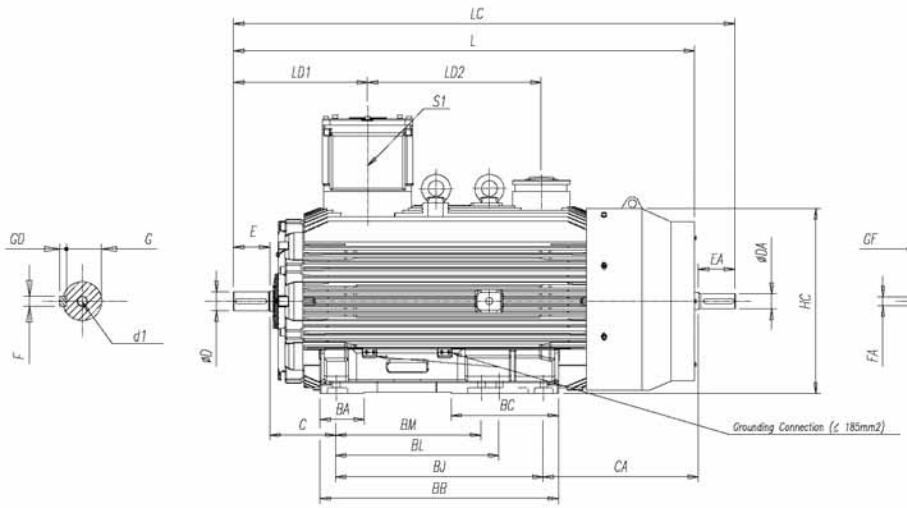
IIC T4
I (M2)

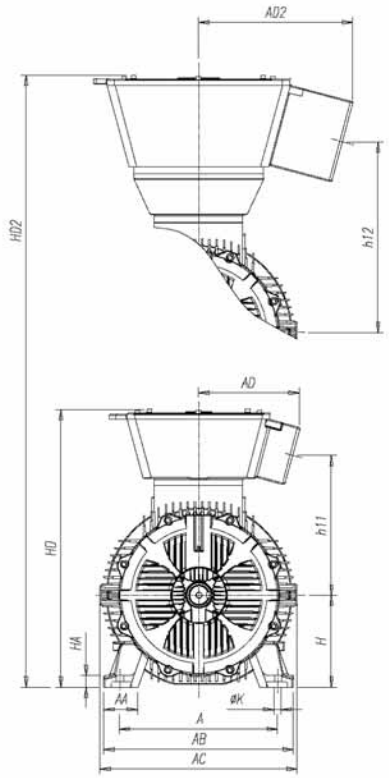
Low Voltage

Flameproof Motors - Ex d IIC T4 (Ex tD A21 IP6X T 125°C)
Flameproof Motors with Increased Safety Terminal Box - Ex de IIC T4 (Ex tD A21 IP6X T 125°C)

Flameproof Motors for Mines - Ex d I M2
Flameproof Motors for Mines with Increased Safety Terminal Box - Ex de I M2

W22XC 355MLJ IMB3T





Poles	A	AA	AB	AC	AD(1)	BA	BB	BC	BM	BL	BJ	C	CA	H	HA	HC	HD(1)	h11(1)	K	L	LC	LD1	LD2
2P	610	130	730	760	388	170	920	415	560	630	800	254	600	355	45	712	1072	540	28	1779	1934	517	670
4P+																				1849	2034	587	

	Shaft dimensions												Bearings		Power terminal box - S1 (1)
Poles	D	E	F	G	GD	DA	EA	FA	GB	GF	d1	d2	D.E	N.D.E	CEFGH 340
2P	75m6	140	20h9	67,5	12	60	140	18h9	53	11	DSM20	DSM20	6316C3	6316C3	I≤900A: 2xM63x1,5 + 1xM20x1,5
4P+	100m6	210	28h9	90	16	80	170	22h9	71	14	DSM24		6322C3	6322C3	900A<I≤1090A: 4xM63x1,5 + 1xM20x1,5

I > 1090A				
Poles	AD2	HD2	h12	Power terminal box - CEFGH 500 - S1
2P	594	1340	727	1090A<I≤1900A: 4xM63x1,5 + 1xM20x1,5
4P+				

Notes: (1) I ≤ 1090A
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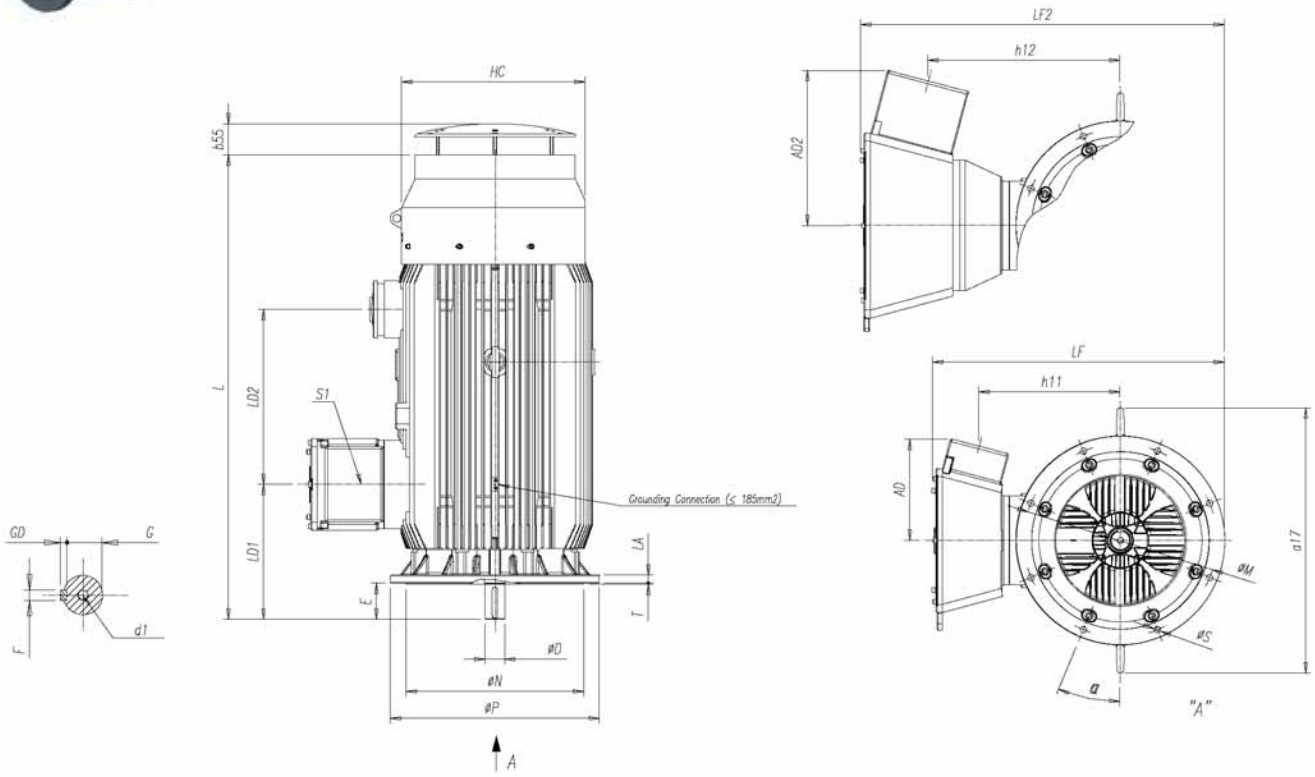
OUTLINE DIMENSIONS

IIC T4
I (M2)

Low Voltage

W22XC 355MLJ IMV1



Poles	AD(1)	HC	h11(1)	L	LA	LD1	LD2	LF(1)	b55	a17	M	N	P	T	S	Nr. Holes	α
2P	388	702,5	540	1779	30	517	670	1117	118	1015	740	680	800	6	24	8	22,5º
4P+				1849		587											

	Shaft dimensions						Bearings		Power terminal box - S1 (1)
Poles	D	E	F	G	GD	d1	D.E	N.D.E	CEFGH340
2P	75m6	140	20h9	67,5	12	DSM20	7316	6316C3	I≤900A: 2xM63x1,5 + 1xM20x1,5
4P+	100m6	210	28h9	90	16	DSM24	7322	6322C3	900A< I ≤1090A: 4xM63x1,5 + 1xM20x1,5

I > 1090A				
Poles	AD2	LF2	h12	Power terminal box - CEFGH 500 - S1
2P	594	1386	727	1090A<I ≤1900A: 4xM63x1,5 + 1xM20x1,5
4P+				

Notes: (1) I ≤ 1090A
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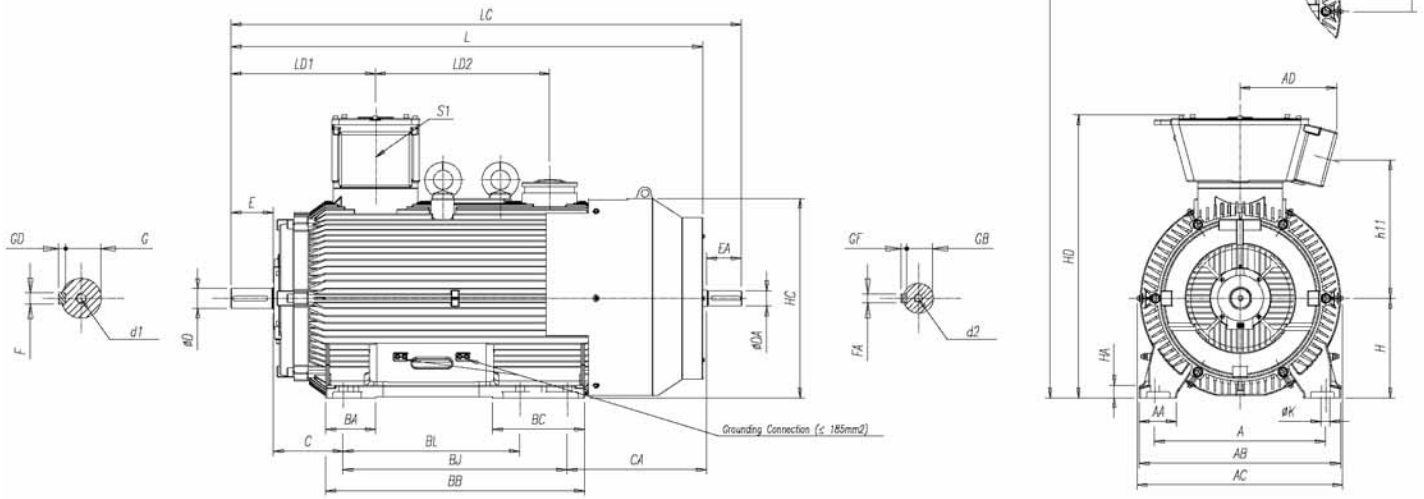
OUTLINE DIMENSIONS

IIC T4
I (M2)

Low Voltage

BFGC8 400LJ IMB3T



Poles	A	AA	AB	AC	AD(1)	BA	BB	BC	BL	BJ	C	CA	H	HA	HC	HD(1)	h11(1)	K	L	LC	LD1	LD2
2P	686	150	810	827	388	200	1040	370	710	900	280	560	400	50	802	1139	557	35	1895	2050	580	700
4P+																			1935	2120	620	

	Shaft dimensions												Bearings		Power terminal box - S1 (1)
Poles	D	E	F	G	GD	DA	EA	FA	GB	GF	d1	d2	D.E.	N.D.E.	CEFGH 340
2P	80m6	170	22h9	71	14	60	140	18h9	53	11	DSM20	DSM20	6318C3	6318C3	I≤900A: 2xM63x1,5 + 1xM20x1,5
4P+	110m6	210	28h9	100	16	80	170	22h9	71	14	DSM24		6324C3	6324C3	900A<I≤1090A: 4xM63x1,5 + 1xM20x1,5

I > 1090A				
Poles	AD2	HD2	h12	Power terminal box - CEFGH 500 - S1
2P	594	1408	747	1090A<I≤1900A: 4xM63x1,5 + 1xM20x1,5
4P+				

Notes: (1) I ≤ 1090A

- *All the dimensions are in millimeters.*
- *Please, do not use these dimensions for construction. Certified drawings under request.*
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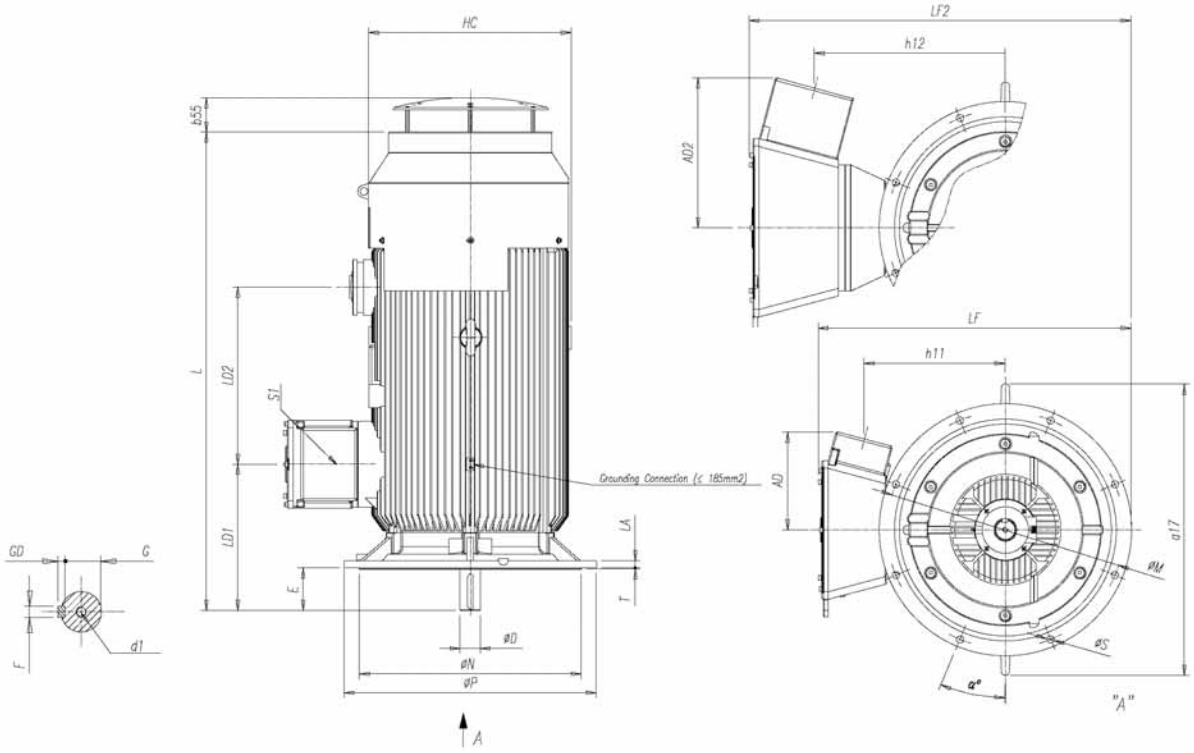
OUTLINE DIMENSIONS

IIC T4
I (M2)

Low Voltage

BFGC8 400LJ IMV1



Poles	AD (1)	HC	h11 (1)	L	LA	LD1	LD2	LF (1)	a17	b55	M	N	P	T	S	Nr. Holes	α
2P	388	802	558	1895	28	580	700	1240	1154	136	940	880	1000	6	28	8	22,5º
4P+				1935		620											

	Shaft dimensions						Bearings		Power terminal box - S1 (1)
Poles	D	E	F	G	GD	d1	D.E	N.D.E	CEFGH340
2P	80m6	170	22h9	71	14	DSM20	7318	6318C3	I≤900A : 2xM63x1,5 + 1xM20x1,5
4P+	110m6	210	28h9	100	16	DSM24	7324	6324C3	900A<I ≤1090A : 4xM63x1,5 + 1xM20x1,5

I > 1090A				
Poles	AD2	LF2	h12	Power terminal box - CEFGH 500 - S1
2P	594	1507	747	1090A<I ≤1900A : 4xM63x1,5 + 1xM20x1,5
4P+				

Notes: (1) I ≤ 1090A
- All the dimensions are in millimeters.
- Please, do not use these dimensions for construction. Certified drawings under request.
- External thrust shall be informed at the time of Inquiry/Order.
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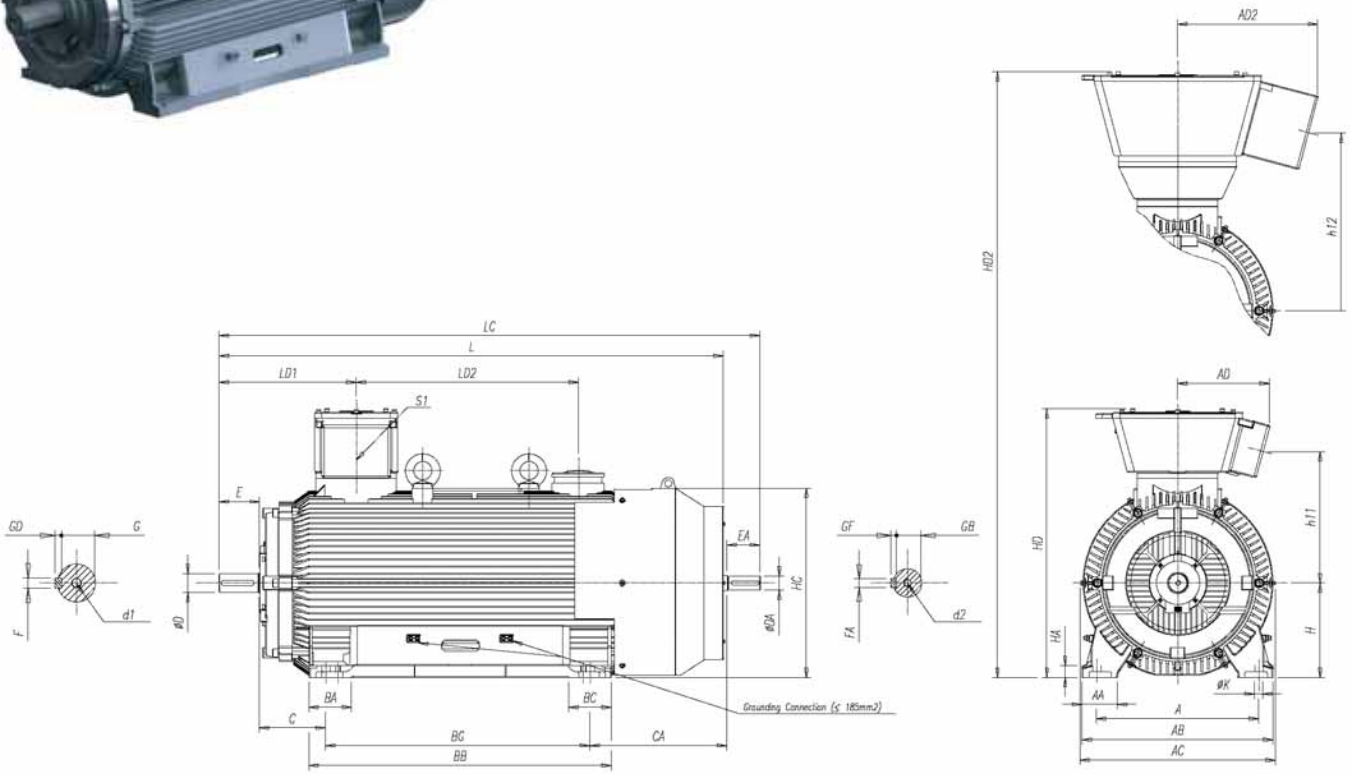
OUTLINE DIMENSIONS

IIC T4
I (M2)

Low Voltage

BFGC8 400G IMB3T



Poles	A	AA	AB	AC	AD (1)	BA	BB	BC	BG	C	CA	H	HA	HC	HD (1)	h11 (1)	K	L	LC	LD1	LD2
2P	686	150	810	827	388	180	1280	180	1120	280	580	400	50	802	1139	557	35	2135	2290	580	940
4P+																		2175	2360	620	

	Shaft dimensions												Bearings		Power terminal box - S1 (1)
Poles	D	E	F	G	GD	DA	EA	FA	GB	GF	d1	d2	D.E	N.D.E	CEFGH 340
2P	80m6	170	22h9	71	14	60	140	18h9	53	11	DSM20	DSM20	6318C3	6318C3	I≤900A: 2xM63x1,5 + 1xM20x1,5
4P+	110m6	210	28h9	100	16	80	170	22h9	71	14	DSM24		6324C3	6324C3	900A<I ≤1090A: 4xM63x1,5 + 1xM20x1,5

I > 1090A				
Poles	AD2	HD2	h12	Power terminal box - CEFGH 500 - S1
2P	594	1408	747	1090A<I ≤1900A: 4xM63x1,5 + 1xM20x1,5
4P+				

Notes: (1) I ≤ 1090A

- *All the dimensions are in millimeters.*
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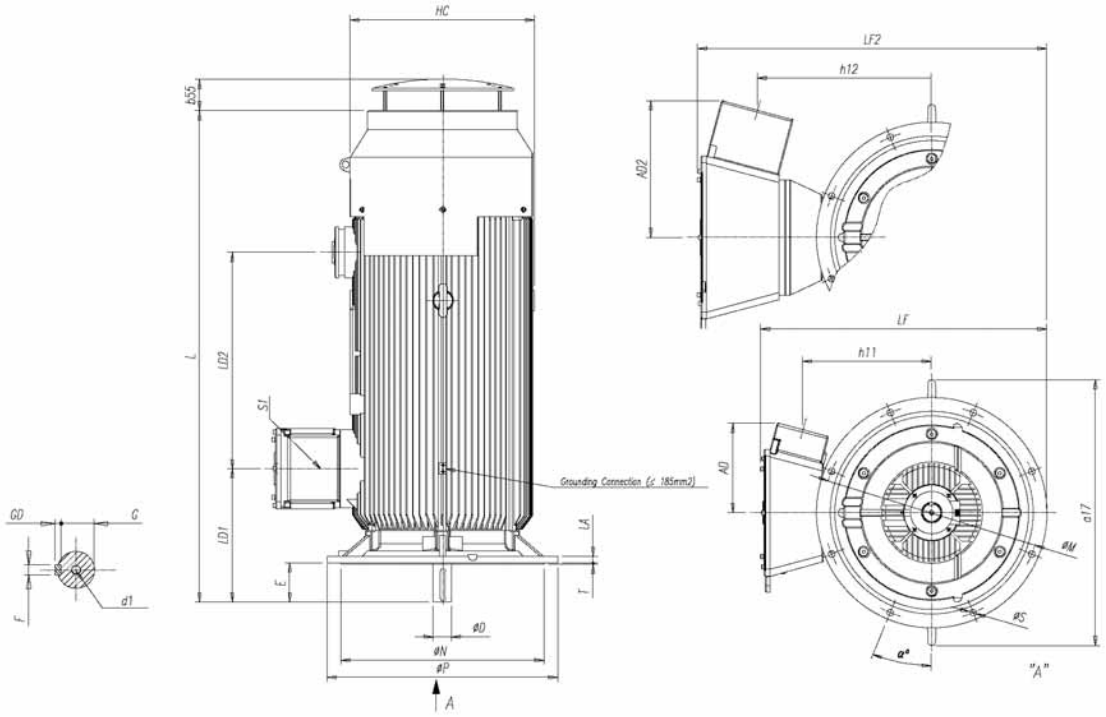
OUTLINE DIMENSIONS

IIC T4
I (M2)

Low Voltage

BFGC8 400G IMV1



Poles	AD (1)	HC	h11 (1)	L	LA	LD1	LD2	LF (1)	a17	b55	M	N	P	T	S	Nr. Holes	α
2P	388	802	558	2135	28	580	940	1240	1154	136	940	880	1000	6	28	8	22,5º
4P+				2175		620											

	Shaft dimensions						Bearings		Power terminal box - S1 (1)
Poles	D	E	F	G	GD	d1	D.E	N.D.E	CEFGH340
2P	80m6	170	22h9	71	14	DSM20	7318	6318C3	I≤900A : 2xM63x1,5 + 1xM20x1,5
4P+	110m6	210	28h9	100	16	DSM24	7324	6324C3	900A< I ≤1090A : 4xM63x1,5 + 1xM20x1,5

I > 1090A				
Poles	AD2	LF2	h12	Power terminal box - CEFGH 500 - S1
2P	594	1507	747	1090A<I≤1900A : 4xM63x1,5 + 1xM20x1,5
4P+				

Notes: (1) I ≤ 1090A
- *All the dimensions are in millimeters.*
- *Please, do not use these dimensions for construction. Certified drawings under request.*
- *External thrust shall be informed at the time of Inquiry/Order.*
- *Executions with auxiliary terminal box and second shaft end are optional and available under request.*
- *For other special executions please refer to us.*
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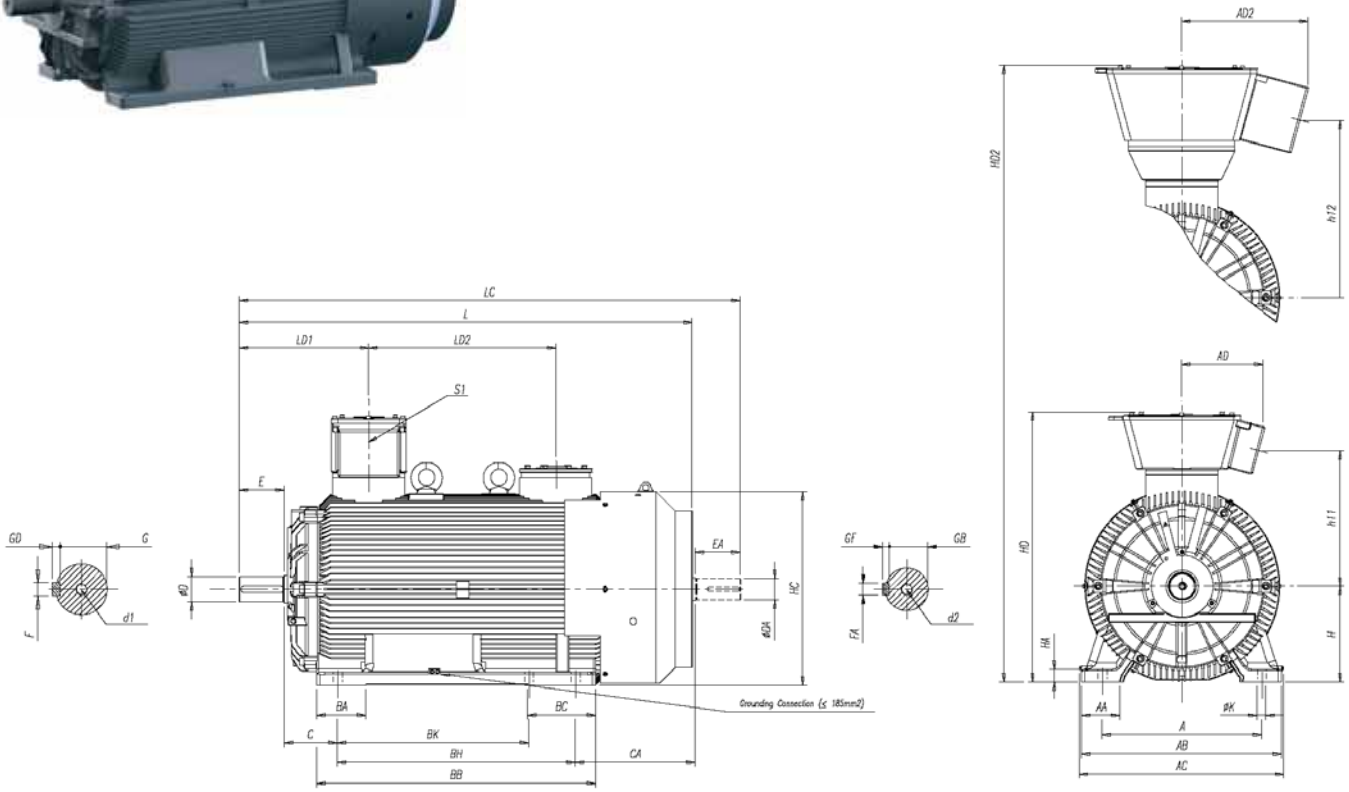
OUTLINE DIMENSIONS

IIC T4
I (M2)

Low Voltage

BFGC8 450KH IMB3T



Poles	A	AA	AB	AC	AD[1]	BA	BB	BC	BK	BH	C	CA	H	HA	HC	HD[1]	h11[1]	K	L	LC	LD1	LD2
2P	750	180	940	957	388	230	1310	320	900	1120	250	564	450	60	908	1269	654	42	2089	2244	568	880
4P+																			2129	2354	608	

	Shaft dimensions												Bearings		Power terminal box - S1 [1]
Poles	D	E	F	G	GD	DA	EA	FA	GB	GF	d1	d2	D.E.	N.D.E.	CEFGH 340
2P	85m6	170	22h9	76	14	75	140	20h9	67,5	12	DSM20	DSM20	N218C3 + 6218C3	N218	I≤900A : 2xM63x1,5 + 1xM20x1,5
4P+	120m6	210	32h9	109	18	100	210	28h9	90	16	DSM24	DSM20	6326C3	6326C3	900A< I ≤1090A : 4xM63X1,5 + 1xM20x1,5

I > 1090A				
Poles	AD2	HD2	h12	Power terminal box - CEFGH 500 - S1
2P	594	1562	853	1090A<I≤1900A: 4xM63x1,5 + 1xM20x1,5
4P+				

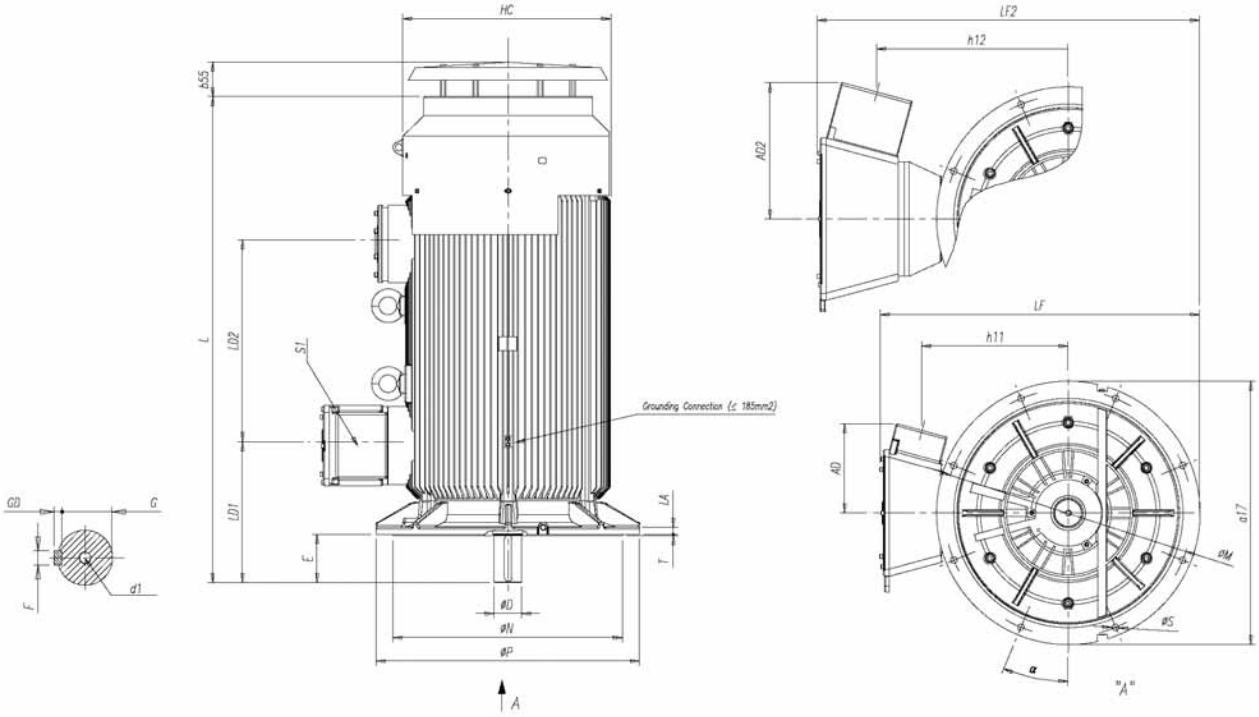
Notes: (1) I ≤ 1090A
- *All the dimensions are in millimeters.*
- *Please, do not use these dimensions for construction. Certified drawings under request.*
- *External thrust shall be informed at the time of Inquiry/Order.*
- *Executions with auxiliary terminal box and second shaft end are optional and available under request.*
- *For other special executions please refer to us.*
- *The dimensions shown are subject to change without prior notice.*

OUTLINE DIMENSIONS

IIC T4
I (M2)

Low Voltage

BFGC8 450KH IMV1



Poles	AD(1)	HC	h11(1)	L	LA	LD1	LD2	LF(1)	a17	b55	M	N	P	T	S	Nr. Holes	α
4P+	388	908	654	2129	30	608	880	1394	1150	153	1080	1000	1150	6	30	8	22,5º

	Shaft dimensions						Bearings		Power terminal box - S1 (1)
Poles	D	E	F	G	GD	d1	D.E.	N.D.E.	CEFGH 340
4P+	120m6	210	32h9	109	18	DSM24	7326	6326C3	I≤900A : 2xM63x1,5 + 1xM20x1,5 900A< I ≤1090A : 4xM63x1,5 + 1xM20x1,5

I > 1090A				
Poles	AD2	LF2	h12	Power terminal box - CEFGH 500 - S1
4P+	594	1688	853	1090A< I ≤1900A : 4xM63x1,5 + 1xM20x1,5

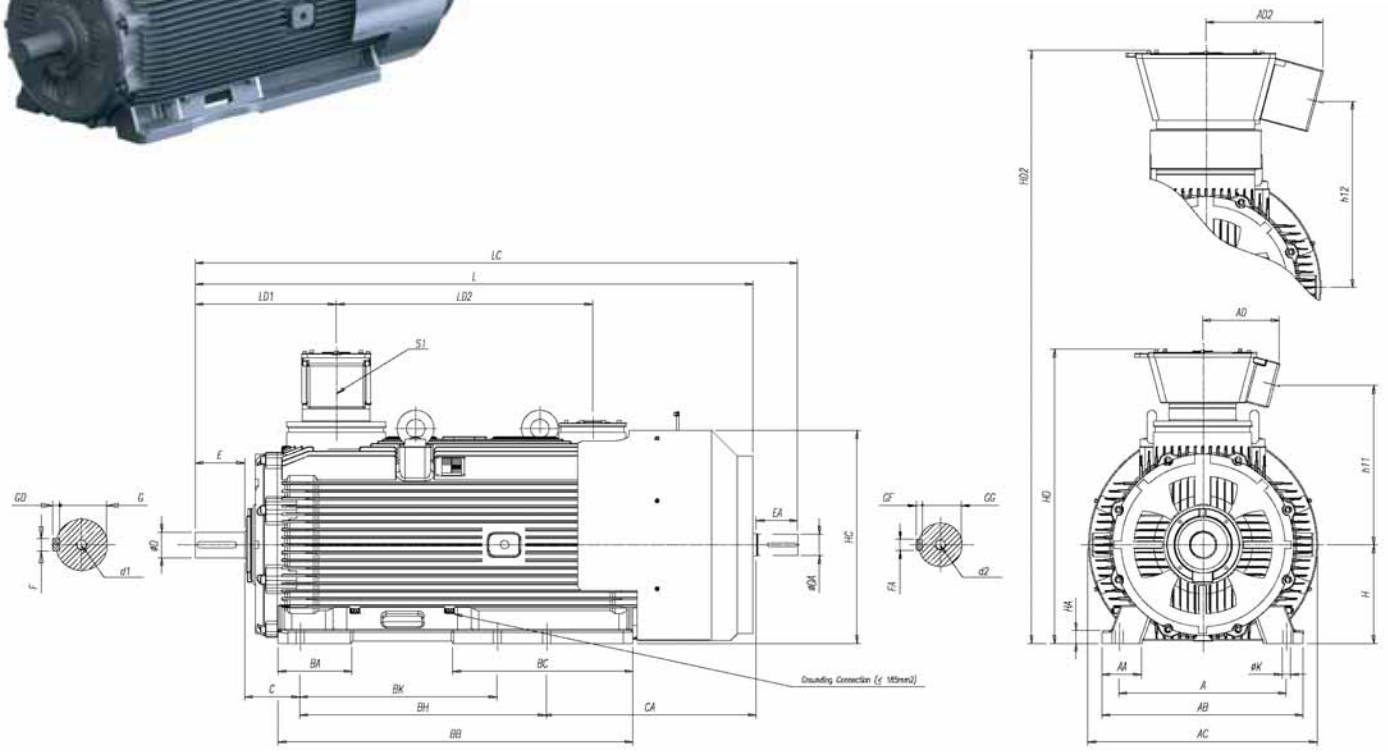
Notes: (1) I ≤ 1090A
- All the dimensions are in millimeters.
- Please, do not use these dimensions for construction. Certified drawings under request.
- External thrust shall be informed at the time of Inquiry/Order.
- Executions with auxiliary terminal box and second shaft end are optional and available under request.
- For other special executions please refer to us.
- The dimensions shown are subject to change without prior notice.

OUTLINE DIMENSIONS

IIC T4
I (M2)

Low Voltage

W22XC 500KH IMB3T



Poles	A	AA	AB	AC	AD(1)	BA	BB	BC	BK	BH	C	CA	H	HA	HC	HD(1)	h11(1)	K	L	LC	LD1	LD2
2P	850	200	1020	1162	388	375	1800	915	1000	1250	280	1080	500	65	1081	1490	808	42	2750	2905	635	1300
4P+																			2830	3055	715	

	Shaft dimensions												Bearings		Power terminal box - S1 (1)
Poles	D	E	F	G	GD	DA	EA	FA	GB	GF	d1	d2	D.E	N.D.E	CEFGH 340
2P	90m6	170	25	81	14	75	140	20	67,5	12	DSM24	DSM20	NU220C3 + 6020C3	NU220C3	I≤900A: 2xM63x1,5 + 1xM20x1,5
4P+	130m6	250	32	119	18	110	210	28	100	16	DSM24	DSM24	6328C3	6328C3	900A<I ≤1090A: 4xM63X1,5 + 1xM20x1,5

I > 1090A				
Poles	AD2	HD2	h12	Power terminal box - CEFGH 500 - S1
2P	594	1704	946	1090A<I ≤1900A: 4xM63x1,5 + 1xM20x1,5
4P+				

Notes: (1) I ≤ 1090A

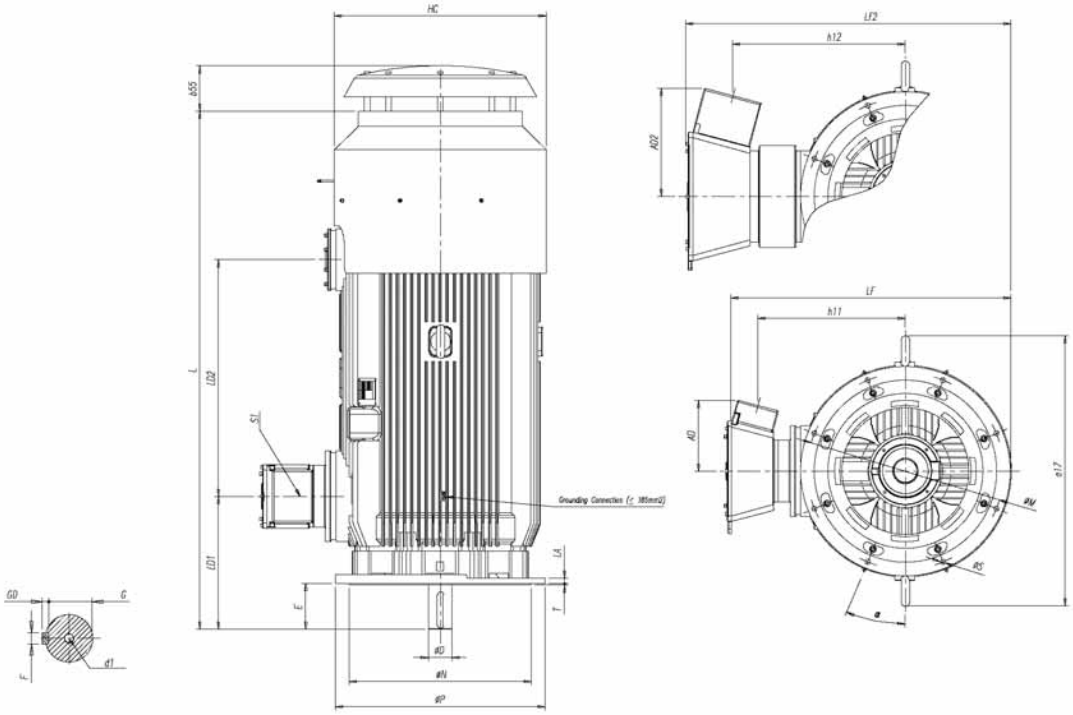
- *All the dimensions are in millimeters.*
- *Please, do not use these dimensions for construction. Certified drawings under request.*
- *External thrust shall be informed at the time of Inquiry/Order.*
- *Executions with auxiliary terminal box and second shaft end are optional and available under request.*
- *For other special executions please refer to us.*
- *The dimensions shown are subject to change without prior notice.*

OUTLINE DIMENSIONS

IIC T4
I (M2)

Low Voltage

W22XC 500KH IMV1



Poles	AD(1)	HC	h11(1)	L	LA	LD1	LD2	LF(1)	a17	b55	M	N	P	T	S	Nr. Holes	α
4P+	388	1162	808	2830	30	715	1300	1536	1482	250	1080	1000	1150	7	28	8	22,5º

	Shaft dimensions						Bearings		Power terminal box - S1 (1)
Poles	D	E	F	G	GD	d1	D.E	N.D.E	CEFGH340
4P+	130m6	250	32h9	119	18	DSM24	7328	6328C3	I≤900A : 2xM63x1,5 + 1xM20x1,5 900A< I ≤1090A : 4xM63x1,5 + 1xM20x1,5

I > 1090A				
Poles	AD2	LF2	h12	Power terminal box - CEFGH 500 - S1
4P+	594	1785	946	1090A< I ≤1900A : 4xM63x1,5 +1xM20x1,5

Notes: (1) I ≤ 1090A
- *All the dimensions are in millimeters.*
- *Please, do not use these dimensions for construction. Certified drawings under request.*
- *External thrust shall be informed at the time of Inquiry/Order.*
- *Executions with auxiliary terminal box and second shaft end are optional and available under request.*
- *For other special executions please refer to us.*
- *The dimensions shown are subject to change without prior notice.*

3.3 LOW VOLTAGE NON SPARKING MOTORS BFN6

3.3.1 PRODUCT SPECIFICATION

Range

The present catalogue refers to TEFC, Low Voltage, three phase, squirrel cage induction motors, ribbed frames, BFN series, with shaft height from 315 to 500 mm, with following powers:

KW		RPM
160 up to	1000 kW	3000 RPM
160 up to	1400 kW	1500 RPM
110 up to	1000 kW	1000 RPM
90 up to	900 kW	750 RPM

Even for outputs above 90kW, this range of motors has high efficiency design and is in line with the same levels of efficiency classification EFF2 as established between CEMEP and European Community.

Particular specifications related to Hazardous Areas

The motor series **BFN6** have the specification code **Ex nA**, and comply with European Standards listed on paragraph 1.2.2, for the gases group II and Temperature Class **T3**.

This motor series has the CE marking in compliance with European Directive **94/4/EC (ATEX)**, and are classified as equipment **Group II** (Surface Industries), Category **3**, suitable to use on **Zones 2** – Gases and Vapours **(G)**.
The Non Sparking motors in this catalogue are thirth party certified by Ex Notified Body Baseefa in UK, accredited organization by EU.

Construction

- **Mechanical protection**: IP55.
- **Insulation**: Class F.
- **Temperature rise**: 80 K.
- **Frames**: are in cast iron.
- **Terminal boxes**:
  For frame sizes 315L and above, the terminal boxes are separated from the motor frame and are in cast iron with a pressed steel cover. As standard, the terminal boxes are supplied with cable entry on right hand side viewed from the drive end, however, this may be rotated by 180º to permit cable entry on the left hand side.
  As option, special terminal box arrangement and sizes are available in fabricated steel
- **Endshields/flanges:** are in **cast iron**.
- **Fans:**
  For frames 315L and above, the fans are made from **polypropylene**, **aluminium alloy** or **fabricated steel**, depending on the frame sizes and the speeds.
- **Fan covers**: are in **pressed** or **fabricated steel**.
- **Finish**: Industrial paint system, standard color **RAL 5010**

Voltage and frequency

- **Frame size 315L:**
  As standard, these motors are wound to operate on either 50Hz or 60Hz, over the following voltage ranges:
  Δ 380-415V - 50Hz / 440-480V - 60 Hz

A tolerance of -5% up to +6% is permitted for any value of rated voltage within these intervals. The electrical data described in the present catalogue, is based on the standard supply voltage 400V. Depending on actual supply voltages/frequencies, this data may vary slightly but the variations will generally remain within the tolerancesgiven in **IEC 60034-1**.

- **Frame sizes 355 and above:**
  These motors are spot wound for any voltage within the following range:
  380V ≤ U ≤ 690V 50Hz for powers up to and including 630kW
  500V ≤ U ≤ 690V 50Hz for powers above 630kW

Basic design

- **Cooling method:**

The cooling method is IC 411 in accordance with standard **IEC 60034-6** - motors cooled by an external fan.

- **Direction of rotation:**

On frame sizes 315 (all speeds) and frames 355/400 (4 pole and above), as standard the motors are fitted with a bi-directional fan. On remaining frames the fans are unidirectional, leaving the factory as standard on CW direction viewed from shaft end with the phase sequence of U, V, and W. In these cases the direction of rotation must be specified with order.

- **Terminal boxes:**

On **BFN6** motors, the main and auxiliary terminal box, are located at top of motor frame and can be rotated by 180º to suit cable entry from left or right hand side.
As standard the cable entries are on the right hand side when viewed from shaft end.

Note: customer shell refer cable entry direction with order.

- **Protections/Auxiliaries:**

As standard the **BFN6** motors frame sizes 315 and above are fitted with 3 PTC thermistors (triple, 2 wire), connected in to the main terminal box. Under request the motors can be fitted with anti-condensation heaters, or other type of protections either on windings and bearings connected in to auxiliary terminal box.

- **Earth connection:**

  All motors are equipped with an earth screw inside of terminal box. A second external earth connection is also provided on motor frame, on foot or on flange depending on mounting form.

- **Bearings:**

  The bearing types indicated on this catalogue, refer to standard horizontal mounting form and for direct coupling. On frame sizes 315L and above, the motors are equipped on both sides with deep groove ball bearings, pre-loaded by an axial springwasher or springs, except the 2 pole motors frames 450 and 500, which are fitted with 3 bearings arrangement (roller+ball in DE and roller in NDE).
  As optional execution under request, sleeve bearings can also be fitted in all frame sizes and polarities (self declaration or certification on request).
  In the case of pulley/belt drive transmission, the drive end bearing can be replaced by a roller bearing.
  On vertical mounting motors, the bearings can be thrust bearing types and are defined according to the axial loads involved on the application.

- **Lubrication:**

  As standard, when the motors are equipped with ball, roller, or other type of bearings, they are grease lubricated. Grease nipples and relief valves are provided to allow re-lubrication while the motor is running.
  When the motors are fitted with sleeve bearings, as standard they are self lubricate type.

- **Balancing:**

  The motors are dynamically balanced with a half key, to meet the vibration limits of standard **IEC 60034-14**, **Grade A**. Under request **Grade B** can be provided. The D.E. and N.D.E. endshields are designed to fit, under request, optional captors for vibration monitoring detectors or other devices.

3.3.2 ELECTRICAL DATA - BFN6 SERIES

II T3

Non Sparking Motors - Ex nA

Low Voltage

II and IV Pole

Output		Frame IEC	T_n (Nm)	I_s/I_n	T_s/T_n	T_{max}/T_n	Inertia J Kgm²	Allowable locked rotor time Hot/Cold (s)	Weight Kg	Sound dB (A)	400 V, 50Hz							
											rpm min⁻¹	% of full load						I_n(A)
												Efficiency η			Power Factor Cos φ			
KW	HP											50	75	100	50	75	100	
II Pole - 3000 min-1																		
160	215	BFN6 315L	513	6.8	1,9	3,1	1,6	14	1050	82	2978	93,9	95,3	95,9	0,81	0,88	0,90	268
200	270	BFN6 315L	641	7.0	1,7	3,2	2,0	15	1150	82	2978	94,7	95,6	96,2	0,84	0,89	0,91	330
250	340	BFN6 315L	801	7.5	1,8	2,9	2,3	11	1250	82	2981	95,3	96,3	96,6	0,82	0,89	0,91	411
250	340	BFN6 355MLJ	801	6.2	1,5	2,9	2,9	17	1450	80	2980	94,3	95,7	96,2	0,82	0,87	0,89	421
280	380	BFN6 355MLJ	898	6.0	1,5	2,7	3,2	16	1600	80	2978	94,8	96,0	96,4	0,84	0,88	0,89	471
315	425	BFN6 355MLJ	1009	6.6	1,8	3,0	3,4	10	1700	80	2980	95,1	96,2	96,6	0,83	0,88	0,90	523
355	480	BFN6 355MLJ	1138	6.6	1,7	3,0	3,9	11	1800	80	2980	95,4	96,3	96,7	0,83	0,88	0,90	589
400	540	BFN6 355MLJ	1281	7.3	2,2	3,1	4,5	7	2050	80	2982	96,0	96,8	97,1	0,84	0,89	0,90	661
450	610	BFN6 355MLJ (1)	1441	7.5	2,2	3,2	5,0	7	2150	80	2983	96,0	96,8	97,1	0,84	0,88	0,90	743
450	610	BFN6 400L	1440	7.5	2,0	3,4	8,0	7	2450	80	2985	95,5	96,6	97,1	0,84	0,89	0,91	735
500	675	BFN6 400L	1600	7.5	1,9	3,2	8,4	6	2600	80	2985	95,9	96,9	97,3	0,85	0,89	0,91	815
560	755	BFN6 400J	1790	7.6	2,3	3,4	9,4	5	2950	80	2987	96,0	96,9	97,3	0,85	0,89	0,91	913
630	850	BFN6 400J (1)	2014	8.2	2.8	3.6	10,3	5	3300	80	2987	96,4	97,1	97,3	0,88	0,91	0,91	1027
630	850	BFN6 400G (3)	2014	7.5	1.0	3.1	11.7	17	3800	80	2987	96,5	97,0	97,5	0,88	0,91	0,91	1025
710	960	BFN6 450KH (3)(4)	2269	6.8	1.3	2,9	23.0	9	4400	80	2988	96,3	97,2	97,6	0,88	0,90	0,91	669
800	1080	BFN6 500H (3)(4)																
900	1215	BFN6 500H (3)(4)							Available on request									
1000	1350	BFN6 500H (3)(4)																
IV Pole - 1500 min-1																		
160	215	BFN6 315L	1029	6.8	2.0	2.5	2.6	17	1050	82	1485	93.9	95.0	95.3	0.74	0.82	0.86	282
200	270	BFN6 315L	1287	6.9	2.1	2.5	2.6	13	1150	82	1484	93.9	95.0	95.3	0.73	0.81	0.85	356
250	340	BFN6 315L	1608	7.5	2.5	2.5	3.7	9	1250	82	1485	94.9	95.8	96.0	0.75	0.83	0.86	437
250	340	BFN6 355MLJ	1605	6.7	2.0	2.3	5.3	10	1450	80	1488	94.3	95.5	96.0	0.74	0.82	0.85	442
280	380	BFN6 355MLJ	1797	6.9	2.1	2.4	5.9	9	1550	80	1488	94.6	95.8	96.2	0.72	0.82	0.85	494
315	425	BFN6 355MLJ	2022	6.9	2.1	2.4	6.6	9	1650	80	1488	95.0	96.0	96.4	0.75	0.82	0.85	555
355	480	BFN6 355MLJ	2277	7.4	2.6	2.6	7.4	6	1850	80	1489	96.1	96.3	96.5	0.73	0.81	0.85	625
400	540	BFN6 355MLJ	2567	7.0	2.5	2.5	8.7	6	2100	80	1488	95.5	96.3	96.6	0.78	0.84	0.87	687
450	610	BFN6 355MLJ (1)	2888	7.1	2.4	2.4	9.8	7	2250	80	1488	95.7	96.5	96.8	0.76	0.84	0.87	771
450	610	BFN6 400L	2884	6,7	1,6	2,6	12,7	16	2500	80	1490	96,1	96,6	97,0	0,80	0,85	0,87	770
500	675	BFN6 400L	3205	6.7	1.6	2.6	13.9	16	2700	80	1490	96.4	96.9	97.0	0.79	0.85	0.87	855
560	755	BFN6 400J	3589	6.8	1.7	2.6	14.7	13	2750	80	1490	96.5	97.0	97.1	0.78	0.85	0.87	957
630	850	BFN6 400J	4038	7.5	2.1	2.8	15.8	9	2950	80	1490	96.4	96.9	97.1	0.75	0.83	0.87	1076
710	960	BFN6 400J (1)(4)	4551	6.5	1.8	2.0	16.3	10	3050	80	1490	95.8	96.5	96.6	0.79	0.85	0.86	715
710	960	BFN6 400G (3)(4)	4542	7.5	2.5	2.4	18.2	5	3450	80	1493	96.5	96.6	97.0	0.80	0.86	0.87	704
800	1080	BFN6 400G (1)(3)(4)	5114	7.5	2.7	2.5	20.1	5	3800	86	1494	96.5	96.6	97.0	0.80	0.86	0.87	793
800	1080	BFN6 450KH (3)(4)	5121	70	2.0	2.9	22.6	13	4600	86	1492	96.2	97.0	97.3	0.78	0.85	0.87	791
900	1215	BFN6 450KH (3)(4)	5761	7.0	1.2	2.0	25.1	20	5400	86	1492	96.5	97.1	97.3	0.83	0.86	0.87	890
1000	1350	BFN6 500H (3)(4)	6397	7.5	1.7	2.5	49.7	5	8000	86	1493	96.3	97.0	97.2	0.83	0.86	0.87	989
1120	1515	BFN6 500H (3)(4)	7164	7.5	1.9	2.6	58.7	5	8400	86	1493	96.5	97.1	97.3	0.84	0.87	0.87	1107
1250	1690	BFN6 500H (3)(4)	7990	7.5	1.8	2.6	67.8	5	8700	86	1493	96.5	97.1	97.3	0.84	0.87	0.87	1236
1400	1890	BFN6 500H (1)(3)(4)	8955	7.5	1.9	2.7	72.3	5	9500	86	1493	96.5	97.1	97.3	0.84	0.87	0.87	1384

(1) - Temperature rise class F at full load (2) - Standard motor with sleeve bearings (3) - Copper rotor (4) - Rated current at 690V

T_n = Full load torque I_s / I_n = Locked rotor current T_s / T_n = Locked rotor torque T_{max} / T_n = Breakdown torque I_n = Full load current

Notes: - Motor frame 500, 2 pole 50Hz, available under request.
- The motors can also operate on a 60Hz supply. For motors frames 450 and 500 2 pole, please refer to us.
- To obtain electrical data for 60Hz, please refer to us
- All values are according to IEC 60034-1 tolerances.
- The indicated values for sound pressure levels are @ 1m no load, with 3 dB(A) tolerance.
- This data can be changed without prior notice.

Standard voltage, connection and frequency:
400V Δ 50Hz
690V Y 50Hz

VI and VIII Pole

Output		Frame IEC	T_n (Nm)	I_s/I_n	T_s/T_n	T_{max}/T_n	Inertia J Kgm²	Allowable locked rotor time Hot/Cold (s)	Weight Kg	Sound dB (A)	400V, 50Hz							
											rpm min⁻¹	% of full load						I_n(A)
												Efficiency η			Power Factor Cos φ			
KW	HP											50	75	100	50	75	100	
VI Pole - 1000 min-1																		
110	150	BFN6 315L	1063	7,4	2,6	2,9	4,3	20	1050	76	988	92,8	94,1	94,4	0,71	0,80	0,83	203
132	180	BFN6 315L	1276	7,4	2,5	2,6	4,9	17	1150	76	988	93,2	94,4	94,6	0,71	0,80	0,83	243
160	215	BFN6 315L	1547	7,4	2,4	2,5	6,2	17	1200	76	988	93,9	94,8	94,8	0,73	0,81	0,84	290
200	270	BFN6 315L	1935	7,3	2,4	2,5	7,6	17	1350	76	987	94,4	95,2	95,1	0,74	0,81	0,84	361
200	270	BFN6 355MLJ	1927	7,0	1,9	2,2	8,7	20	1550	76	991	94,0	95,2	95,4	0,73	0,80	0,83	365
250	340	BFN6 355MLJ	2409	7,0	1,9	2,1	10,4	20	1700	76	991	94,6	95,6	95,8	0,72	0,80	0,83	454
280	380	BFN6 355MLJ	2698	7,2	2,3	2,4	11,8	18	1950	76	991	94,8	95,8	96,0	0,72	0,80	0,84	501
315	425	BFN6 355MLJ	3039	7,0	2,3	2,5	13,1	17	2150	76	990	95,1	95,9	96,0	0,74	0,82	0,85	557
355	480	BFN6 355MLJ	3424	7,0	2,4	2,5	14,8	15	2250	76	990	95,3	96,0	96,1	0,74	0,82	0,85	627
400	540	BFN6 355MLJ (1)	3855	7,6	2,7	2,7	16,0	12	2400	76	991	95,4	96,1	96,3	0,73	0,81	0,85	705
400	540	BFN6 400L	3843	7,2	2,0	2,6	21,4	17	2400	76	994	95,4	96,2	96,5	0,73	0,81	0,84	712
450	610	BFN6 400L	4319	7,3	2,4	2,7	24,0	13	2800	76	995	95,2	96,2	96,5	0,71	0,80	0,84	801
500	675	BFN6 400J	4804	7,4	2,4	2,6	28,1	12	3000	76	994	95,7	96,4	96,6	0,77	0,83	0,85	879
560	755	BFN6 400J (1)(3)	5375	7,4	2,2	2,4	27,8	6	3350	76	995	95,5	96,4	96,6	0,75	0,82	0,85	984
560	755	BFN6 400G (3)	5375	7,6	2,4	2,1	31,2	6	3700	76	995	96,0	96,4	96,5	0,80	0,84	0,85	985
630	850	BFN6 400G (1)(3)	6041	7,8	2,6	2,7	35,8	5	4300	76	996	96,0	96,4	96,5	0,79	0,84	0,85	643
630	850	BFN6 450KH (3)	6053	5,5	1,0	2,2	47,4	20	4650	78	994	96,1	96,8	97,0	0,80	0,85	0,86	1090
710	960	BFN6 450KH (3)(4)	6821	6,0	1,2	2,2	52,9	20	5050	78	994	96,2	96,9	97,2	0,78	0,84	0,86	711
800	1080	BFN6 500H (3)(4)	7671	5,5	0,6	3,1	70,5	20	8400	80	996	95,8	96,8	97,2	0,78	0,84	0,86	801
900	1215	BFN6 500H (3)(4)	8630	6,5	0,8	3,5	79,3	20	8700	80	996	95,6	96,7	97,3	0,80	0,85	0,86	900
1000	1350	BFN6 500H (1)(3)(4)	9598	5,7	0,7	3,1	88,1	20	9100	80	995	95,6	96,7	97,3	0,80	0,85	0,87	988
VIII Pole - 750 min-1																		
90	120	BFN6 315L	1161	7,1	2,8	2,9	5,5	20	950	73	740	92,8	93,9	94,0	0,64	0,74	0,79	175
110	150	BFN6 315L	1420	7,1	2,8	2,9	6,7	17	1100	73	740	93,3	94,0	94,0	0,66	0,75	0,79	214
132	180	BFN6 315L	1704	7,0	2,5	2,5	7,9	16	1250	73	740	92,9	94,0	94,1	0,67	0,76	0,79	256
160	215	BFN6 315L (1)	2065	7,2	2,6	2,6	9,3	9	1300	73	740	92,8	94,0	94,2	0,65	0,75	0,79	310
160	215	BFN6 355MLJ	2059	6,5	1,7	2,0	12,4	20	1300	70	742	94,0	94,9	95,1	0,70	0,78	0,81	300
200	270	BFN6 355MLJ	2571	6,5	1,9	2,1	14,6	20	1500	70	743	94,3	95,2	95,4	0,68	0,77	0,81	374
250	340	BFN6 355MLJ	3213	6,5	2,0	2,2	18,1	20	1850	70	743	95,7	96,5	96,6	0,68	0,77	0,81	466
280	380	BFN6 355MLJ	3599	6,5	2,3	2,3	20,5	20	2000	70	743	95,1	95,8	95,8	0,70	0,78	0,81	521
315	425	BFN6 355 MLJ (1)	4049	6,7	2,5	2,5	21,8	18	2200	70	743	95,0	95,5	95,5	0,69	0,77	0,81	587
315	425	BFN6 400L	4038	7,0	2,8	2,8	25,7	14	2250	70	745	95,6	96,5	96,7	0,68	0,77	0,82	573
355	480	BFN6 400L	4551	7,0	2,9	2,9	28,8	14	2500	70	745	94,9	95,8	96,1	0,66	0,76	0,81	658
400	540	BFN6 400L	5128	7,0	3,1	3,1	31,1	11	2750	70	745	95,2	95,9	96,1	0,67	0,76	0,81	742
450	610	BFN6 400J (3)	5761	7,5	3,4	3,4	37,7	5	3350	70	746	95,6	96,3	96,5	0,68	0,78	0,82	821
500	675	BFN6 400G (3)	6418	6,0	1,8	2,7	44,4	13	4350	70	744	95,6	96,3	96,5	0,70	0,79	0,82	912
560	755	BFN6 450G (1)(3)	7188	6,0	1,8	2,7	49,2	11	4850	70	744	95,6	96,3	96,5	0,70	0,79	0,82	1021
560	755	BFN6 450KH (3)	7169	7,2	2,1	2,4	73,5	14	5100	76	746	95,0	96,0	96,3	0,74	0,80	0,82	1024
630	850	BFN6 450KH (1)(3)	8065	7,4	2,2	2,5	80,8	13	5400	76	746	95,0	96,0	96,3	0,74	0,80	0,82	668
630	850	BFN6 500H (3)	8054	6,0	0,8	2,5	86,9	20	7600	80	747	95,6	96,4	96,6	0,73	0,80	0,83	657
710	960	BFN6 500H (3)(4)	9077	6,0	0,8	2,5	98,5	20	8100	80	747	95,6	96,4	96,6	0,73	0,80	0,83	741
800	1080	BFN6 500H (3)(4)	10228	6,0	0,8	2,5	111,0	20	8400	80	747	95,6	96,4	96,6	0,73	0,80	0,83	835
900	1215	BFN6 500H (1)(3)(4)	11521	6,0	0,8	2,1	122,6	20	8700	80	746	95,6	96,4	96,6	0,73	0,80	0,83	939

(1) - Temperature rise class F at full load (2) - Standard motor with sleeve bearings (3) - Copper Rotor (4) - Rated current at 690V

T_n = Full load torque I_s / I_n = Locked rotor current T_s / T_n = Locked rotor torque T_{max} / T_n = Breakdown torque I_n = Full load current

Notes: - Motor frame 500, 2 pole 50Hz, available under request.
- The motors can also operate on a 60Hz supply.
- To obtain electrical data for 60Hz, please refer to us
- All values are according to IEC 60034-1 tolerances.
- The indicated values for sound pressure levels are @ 1m no load, with 3 dB(A) tolerance.
- This data can be changed without prior notice.

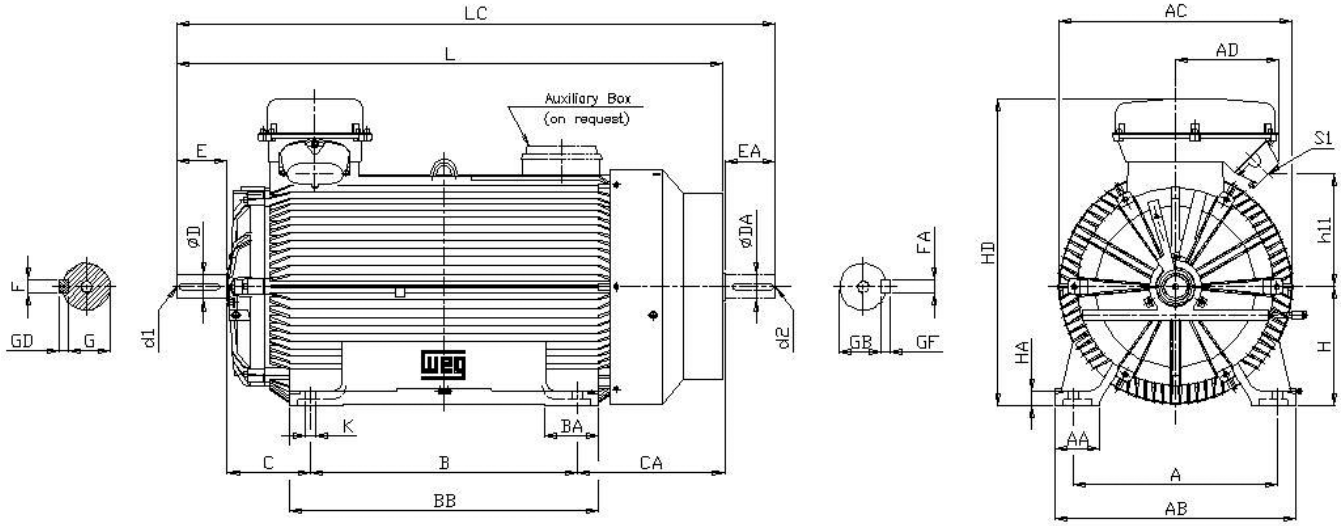
Standard voltage, connection and frequency:
400V Δ 50Hz
690V Y 50Hz

3.3.3 OUTLINE DIMENSIONS - BFN6 SERIES

II T3

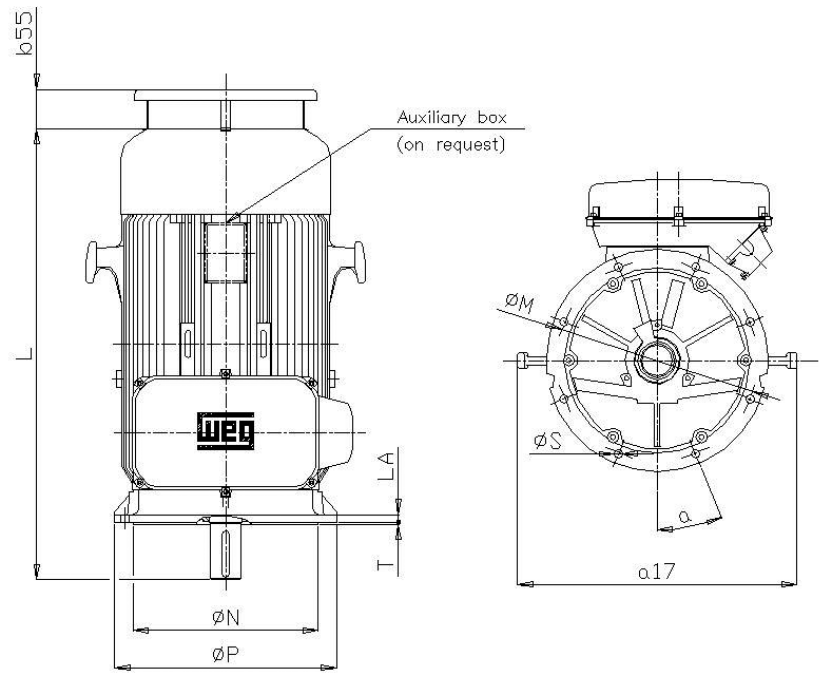
Non Sparking Motors - Ex nA

Low Voltage



Frame	A	AA	AB	AC	AD	B	BA	BB	C	CA	Shaft Dimensions D	E	F	G	GD	DA	EA	FA	GB	GF	H	HA	HD	h11	K	L	LC	S1	d1	d2	Bearings D.E.	N.D.E	
315L (1)	508	125	632	622		508	155	610	216	445	90m6	170	25	81	14	70m6	140	20	62,5	12	315	40	863	286		1327	1479		DSM24		6319 C3		
315L (2)											70m6	140	20	62,5	12	60m6	140	18	53	11						1297	1449		DSM20		6316 C3	6219 C3	
355MLJ (1)	610	130	730	705		560 630 800	170	920	254	530	100m6	210	28	90	16	80m6	170	22	71	14	355	45	932	315	28	1779	1964		DSM24		6222 C3		(3)
355MLJ (2)											75m6	140	20	67,5	12	60m6	140	18	53	11						1709	1864		DSM20		6219 C3		(4)
400L (1)	686	150	810	785,5	358	710	180	850	280	575	110m6	210	28	100	16	80m6	170	22	71	14	400	50	1032	370	35	1760	1945	2xM63x1,5 + 1xM20x1,5	DSM24	DSM20	6324 C3		
400L (2)											80m6	170	22	71	14	60m6	140	18	53	11						1720	1875		DSM20		6318 C3		(4)
400J (1)						900		1040			110m6	210	28	100	16	80m6	170	22	71	14						1950	2135		DSM24		6324 C3		
400J (2)											80m6	170	22	71	14	60m6	140	18	53	11						1910	2065		DSM20		6318 C3		(4)
400G (1)						1120		1280			110m6	210	28	100	16	80m6	170	22	71	14						2190	2375		DSM24		6324 C3		
400G (2)											80m6	170	22	71	14	60m6	140	18	53	11						2150	2305		DSM20		6318 C3		(4)
450KH (1)	750	180	940	896,5		900 1120	230	1310	250	564	120m6	210	32	109	18	100m6	210	28	90	16	450	60	1152	436	42	2129	2354		DSM24		6326 C3		
450KH (2)	Available on request																																(4)
500K (1)	850	180	1020	994	358	1000	300	1310	280	920	130m6	250	32	119	18	110m6	210	28	100	16	500	65	1260	496	42	2435	2660	2xM63x1,5 + 1xM20x1,5	DSM24		6328 C3		
500K (2)	Available on request																																
500H (1)	850	180	1020	994	358	1250	300	1560	280	920	130m6	250	32	119	18	110m6	210	28	100	16	500	65	1260	496	42	2685	2910	2xM63x1,5 + 1xM20x1,5	DSM24	DSM24	6328 C3		
500H (2)	Available on request																																

NOTES: (1) 1500, 1000 and 750 rpm (2) 3000 rpm (3) or 6222 C3 for 4 poles and plus machines, N.D.E (4) For 60Hz please refer to us



Frame	"FF" Flange Dimensions Flange	b55	LA	M	N	P	T	S	∝	Nr. holes	a17
315 L	FF-600	116,5	22	600	550	660	6	24	22,5°	8	830
355 MLJ	FF-740	125	25	740	680	800					910
400 L/J/G	FF-940	131	28	940	880	1000		28			980
450 KH	FF-1080		30	1080	1000	1150					1140
500 KH							7				1340

* 2 pole motors under request.

Notes: - All the dimensions are in millimeters.
- *For all vertical applications or unusual coupling conditions, the customer shall inform the load figure with the inquiry/order.*
- *Construction drawings with guaranteed values are available under request.*
- *Shaft dimensions for 2 pole motors, only for direct coupling.*
- *For motor frames 450 and 500, 2 pole, V1 refer to us.*
- *Execution with auxiliary terminal box and second shaft end available on request.*
- *Terminal boxes for motors with rated current higher than 1000A, entry dimensions: 4xM63x1,5. Other dimensions on request.*
- *For vertical mounting, the D.E. bearing is replaced by an angular contact type, except for frame 315L (replaced by 7220 (1) or 7219 (2)).*
- *The average values shown are subject to change without prior notice.*

4. MEDIUM VOLTAGE MOTORS FOR HAZARDOUS AREAS

Flameproof - BFG Series
Flameproof - BFGC Series
Flameproof - W22XB/BFG8 Series
Flameproof - W22XC/BFGC8 Series
Flameproof - W22XM/BFGM8 Series
Non Sparking - BFN Series

Totally enclosed IP55
Squirrel cage rotor

4.1 MEDIUM VOLTAGE FLAMEPROOF MOTORS BFG6 / BFGC3 / BFGC4 AND BFGC8

4.1.1 PRODUCT SPECIFICATION - ALL BFG(C) SERIES

Range

The present catalogue refers to TEFC Flameproof, Medium Voltage, three phase, squirrel cage induction motors up to 6600V, ribbed frames, **BFGC3** series with shaft height from 315 to 400 mm, and **BFG6** series with shaft height 355, 400 and 450 mm, with the following powers:

Motor series BFGC (IIC):

KW	RPM
90 up to 500 kW	3000 RPM
90 up to 500 kW	1500 RPM
90 up to 400 kW	1000 RPM
90 up to 280 kW	750 RPM

Motor series BFG (IIB):

KW	RPM
160 up to 800 kW	3000 RPM
160 up to 900 kW	1500 RPM
132 up to 710 kW	1000 RPM
90 up to 560 kW	750 RPM

Particular specifications and standards related to Hazardous Areas

The motor series **BFGC** and **BFG** comply with European Standards listed on paragraph 1.2.2 and are suitable for the following Groups of Gases and Temperature Classes:

- motor series **BFGC**: Gases of **Group IIC** and temperature class **T4**
- motor series **BFG**: Gases of **Group IIB** and temperature class **T4**

Under request, are available other temperature classes on these motor series.
These motor series have the CE marking in compliance with European Directive **94/4/EC (ATEX)**, and are classified as equipment group II (Surface Industries), suitable to use on the following zones:

- category **2**, for Zones **1** and **2** – Gases and Vapours **(G)**.
- category **3**, for Zone **22** – Dust **(D)**.

Special design to suit Zone **21** will be available on request.

As standard execution, the motors are fitted with flameproof terminal boxes for gases of group **IIB** or **IIC**, with specification code **Ex d**, **IIB or Ex d**, **IIC**. Under request and as an alternative execution these motors can be fitted with an Increased Safety terminal box. In this case the description code is **Ex de**, **IIB** or **Ex de**, **IIC**
The flameproof motors in this catalogue are certified according to the above standards, by the Notified Body ISSEP (formerly INIEX) in Belgium, INERIS in France, both accredited organization by EU.

Construction

- **Mechanical protection**: IP 55.
- **Insulation**: Class F.
- **Temperature rise**: 80 K.
- **Frames**: are in cast iron.
- **Terminal boxes**: are in cast iron.
- **Endshields**: are in cast iron.
- **Fans**:
  - on frame size 315 are in polypropylene.
  - on frames 355 and above, are in polypropylene, aluminium alloy or fabricated steel.
- **Fan cover**: in cast iron or pressed steel, capable to withstand impact of 7 Joule.
- **Finish**: industrial paint system, standard color **RAL 5010 (IIB)** and **RAL 7001(IIC)**.

Voltage and frequency

The performance data referred in the present catalogue is for motors operating with a voltage of **6000V** ± 5% and a frequency of **50Hz** ± 2%, on continuous service.
For voltages of **6600V** all figures are equivalent, except the rated current (In), which shall be multiplied by a factor of 0,9.Under request are available other voltages up to **6600V**, and frequencies **50** or **60Hz**.

Basic design

Cooling method:

IC 411 in accordance with standard **IEC 60034-6** - motors cooled by an external fan.

Direction of rotation:

On frame sizes 315 (all speeds) and frames 355/400 (4 pole and above), as standard the motors are fitted with a bi-directional fan.
On remaining frames the fans are unidirectional, leaving the factory as standard on CW direction viewed from shaft end with the phase sequence of U, V, and W. In these cases the direction of rotation must be specified with the order.

Electrical connection:

3 terminals are provided for star connection with neutral point connected inside the windings.

Terminal boxes:

On BFG6 motors, the main terminal box is located at top of motor frame and can be rotated by 180° to permit the cable entry from left or right hand side.
On **BFGC3** motors, as standard, the mains terminal box is located on right hand side with option of left hand side. As standard, in all motors, the supply cable entries are on right hand side when viewed from shaft end.
Note: Customer shell refer cable entry directions with order.

Protections/Auxiliaries:

As standard the BFG and BFGC medium voltage motors are fitted with the following protections:
- 3 RTD's - Pt 100 – on windings, 1 per phase, 3 wires
- 2 RTD's - Pt 100 – on bearings, 1 per bearing, 3 wires
- Anti-condensation heaters – 230V

As option under request, the motors can be fitted with other number or type of protections either on windings and bearings. Protection/Auxiliaries are connected in two auxiliary terminal boxes.
On **BFGC3** Series, the auxiliary terminal box is located on opposite side of mains terminal box. The thermal protections on bearings are made in two individual auxiliary terminal boxes located on D.E and N.D.E side as standard configuration.It is also possible as option to have these protections connected in to a single auxiliary terminal box used for other Protections/Auxiliaries.

Earth connection:

All motors are equipped with an earth screw inside of terminal box. A second external earth connection is also provided on motor frame, on foot or on flange depending on mounting form.

Terminal box entries and cable glands:

As standard, the motors are not supplied with cable glands

and the number of entry holes and respective dimensions are described on outline dimensions tables. However, considering that the cable entry makes part of the protection enclosure is recommended that the motors are supplied from factory fitted with cable glands. For this is necessary to specify with the order the complete cabling details (number of cables, specification, section and diameters), so that the motors can be supplied from factory fitted with suitable glands.

Bearings:

The **BFGC3** motors are equipped with a roller bearing on one side and a deep groove ball bearing on the other.
The **BFG6** motors are equipped on both sides with deep groove ball bearings, pre-loaded by an axial spring washer or springs, except 2 pole motors with frame sizes 450 which are manufactured as standard with 3 bearings arrangement (roller + ball in DE and roller in NDE).
As optional execution under request, **BFG6** motors can also be fitted with sleeve bearings. In the case of pulley/belt drive transmission, the drive end bearing can be replaced by a roller bearing. On vertical mounting motors, the bearings can be thrust bearing types and are defined according to the axial loads involved on the application.

Lubrication:

Ball or roller bearings are grease lubricated with lithium complex based grease. Grease nipples and relief valves are provided to allow re-lubrication while the motor is running.

Balancing:

The motors are dynamically balanced with half-key to meet the vibration limits of standard **IEC 60034-14**, Grade **A**.
Grade **B** can be provided under request.
The D.E. and N.D.E. endshields are designed to fit, under request, optional captors for vibration monitoring detectors or other devices.
Note: Full standard and optional features are detailed on paragraph 2.3.

4.1.2 ELECTRICAL DATA - BFG6 SERIES

IIB T4

Flameproof Motors - Ex d IIB T4 (Ex tD A21 IP6X T 135°C)
Flameproof Motors with Increased Safety Terminal Box - Ex de IIB T4 (Ex tD A21 IP6X T 135°C)

Medium Voltage

Output		Frame IEC	T_n (Nm)	I_s/I_n	T_s/T_n	T_{max}/T_n	Inertia J Kgm²	Allowable locked rotor time Hot/Cold (s)	Weight Kg	Sound dB (A)	6000V							
											rpm min⁻¹	% of full load						I_n(A)
												Efficiency η			Power Factor Cos φ			
KW	HP											50	75	100	50	75	100	
II Pole - 3000 min-1																		
160	215	BFG6 355MLJ	512	6,0	1,3	2,5	2,4	20	1700	80	2983	94,0	95,2	95,6	0,81	0,87	0,88	18,3
200	270	BFG6 355MLJ	640	6,0	1,3	2,5	2,6	20	1800	80	2983	94,4	95,3	95,7	0,83	0,86	0,88	22,9
250	340	BFG6 355MLJ	800	6,3	1,5	2,7	3,4	18	1900	80	2983	94,8	95,8	96,0	0,83	0,87	0,88	28,5
280	380	BFG6 355MLJ	896	6,9	1,8	3,0	3,4	12	1950	80	2985	95,4	96,0	96,2	0,78	0,84	0,86	32,6
315	425	BFG6 355MLJ	1008	6,8	1,6	2,7	3,7	12	2000	80	2985	95,6	96,2	96,4	0,84	0,87	0,88	35,7
355	480	BFG6 355MLJ (1)	1136	6,8	1,8	2,9	4,2	11	2250	80	2985	95,7	96,3	96,5	0,85	0,88	0,89	39,8
355	480	BFG6 400L	1137	6,7	1,6	2,7	5,0	9	2700	80	2982	95,4	96,2	96,5	0,78	0,84	0,86	41,2
400	540	BFG6 400L	1281	6,7	1,6	2,7	5,7	9	2800	80	2982	95,4	96,2	96,5	0,78	0,84	0,86	46,4
450	610	BFG6 400J	1441	6,5	1,5	2,6	6,9	9	3000	80	2982	96,1	96,6	96,6	0,81	0,85	0,86	52,1
500	675	BFG6 400J	1601	6,6	1,6	2,7	7,4	8	3200	80	2983	96,0	96,7	96,9	0,79	0,85	0,87	57,1
560	755	BFG6 400G (3)	1790	7,5	1,1	3,3	11,7	19	3850	80	2988	96,3	96,8	97,0	0,84	0,89	0,90	61,7
630	850	BFG6 400G (1)(3)	2014	7,5	1,2	3,2	11,7	14	3900	80	2988	96,3	96,9	97,1	0,84	0,89	0,90	69,4
630	850	BFG6S 450KH (2)(3)	2013	5,5	0,7	2,3	11,9	20	4600	80	2989	96,3	96,9	97,2	0,83	0,87	0,87	77,1
710	960	BFG6S 450KH (2)(3)	2268	5,5	0,7	2,3	13,4	20	4700	80	2989	96,3	96,9	97,2	0,83	0,87	0,87	80,8
800	1080	BFG6S 450KH (1)(2)(3)	2555	7,0	0,8	3,0	13,6	18	4850	80	2990	96,3	97,1	97,3	0,83	0,88	0,89	88,9
IV Pole - 1500 min-1																		
160	215	BFG6 355MLJ	1026	5,7	1,3	2,5	4,5	20	1675	80	1489	93,5	94,7	95,0	0,77	0,83	0,83	19,4
200	270	BFG6 355MLJ	1283	6,0	1,3	2,5	5,1	20	1725	80	1489	93,8	94,8	95,2	0,74	0,81	0,83	24,4
250	340	BFG6 355MLJ	1603	6,0	1,3	2,5	5,8	20	1925	80	1489	93,7	95,2	95,7	0,74	0,81	0,83	30,3
280	380	BFG6 355MLJ	1796	6,1	1,3	2,6	5,9	20	2025	80	1489	94,5	95,5	95,8	0,69	0,78	0,82	34,3
315	425	BFG6 355MLJ	2020	6,3	1,4	2,6	6,6	20	2125	80	1489	95,0	95,8	96,0	0,71	0,80	0,83	38,0
355	480	BFG6 355MLJ (1)	2277	6,3	1,4	2,6	7,3	20	2225	80	1489	95,2	96,0	96,2	0,71	0,80	0,83	42,8
355	480	BFG6 400L	2274	6,5	1,5	2,6	8,0	19	2600	80	1491	95,2	96,2	96,5	0,71	0,80	0,83	42,6
400	540	BFG6 400L	2562	6,5	1,5	2,6	9,0	19	2700	80	1491	95,2	96,2	96,5	0,71	0,80	0,83	48,1
450	610	BFG6 400J	2882	6,8	1,5	2,7	10,4	19	3050	80	1491	95,9	96,5	96,6	0,72	0,80	0,83	54,0
500	675	BFG6 400J	3203	6,8	1,5	2,6	10,8	19	3175	80	1491	95,8	96,5	96,7	0,70	0,79	0,83	59,9
560	755	BFG6 400J (3)	3589	6,8	0,8	2,7	11,4	20	3350	80	1490	95,9	96,6	96,8	0,73	0,81	0,84	66,3
630	850	BFG6 400G (3)	4041	6,1	0,6	2,5	13,9	20	4100	85	1489	95,6	96,3	96,3	0,78	0,83	0,84	74,9
710	960	BFG6 400G (1)(3)	4554	6,5	0,7	2,6	13,9	20	4100	85	1489	95,4	96,2	96,4	0,73	0,81	0,84	84,4
710	960	BFG6 450KH	4545	6,3	1,3	2,4	23,3	19	4750	86	1492	96,1	96,8	97,0	0,74	0,82	0,84	83,8
800	1080	BFG6 450KH (3)	5117	6,4	0,7	2,8	26	20	5150	86	1493	96,3	96,8	97,0	0,76	0,83	0,86	92,3
900	1215	BFG6 450KH (1)(3)	5761	6,4	0,7	2,4	26	20	5300	86	1492	96,5	96,9	97,0	0,78	0,84	0,86	104
VI Pole - 1000 min-1																		
132	180	BFG6 355MLJ	1273	6,2	1,3	2,3	5,8	20	1600	76	990	93,7	94,5	94,5	0,69	0,78	0,81	16,6
160	215	BFG6 355MLJ	1543	6,2	1,3	2,4	6,9	20	1700	76	990	94,2	94,8	94,8	0,70	0,79	0,82	19,8
200	270	BFG6 355MLJ	1929	6,3	1,4	2,4	7,9	20	1800	76	990	94,0	95,0	95,2	0,66	0,77	0,81	25,0
250	340	BFG6 355MLJ	2412	6,3	1,4	2,4	10,0	20	2050	76	990	94,5	95,4	95,5	0,67	0,77	0,81	31,1
280	380	BFG6 355MLJ (1)	2701	6,3	1,4	2,4	10,0	20	2175	76	990	94,7	95,5	95,6	0,66	0,77	0,81	34,8
280	380	BFG6 400L	2698	6,5	1,1	2,5	9,2	20	2500	76	991	95,3	95,8	95,6	0,66	0,77	0,81	34,8
315	425	BFG6 400L	3036	6,5	1,1	2,5	10,3	20	2600	76	991	95,3	95,8	95,6	0,66	0,77	0,81	39,1
355	480	BFG6 400L	3421	6,5	1,1	2,5	12,1	20	2750	76	991	94,3	95,3	95,8	0,67	0,77	0,81	44,0
400	540	BFG6 400J	3851	6,7	1,0	2,5	15,9	20	2950	76	992	96,6	96,5	96,4	0,73	0,77	0,81	49,3
450	610	BFG6 400J (3)	4328	5,9	0,6	2,1	15,1	20	3450	76	993	95,9	96,1	96,1	0,75	0,80	0,83	54,3
500	675	BFG6 400G (3)	4814	6,0	0,6	2,1	15,5	20	3650	76	992	96,0	96,2	96,2	0,74	0,80	0,83	60,3
560	755	BFG6 400G (1)(3)	5391	6,0	0,6	2,0	17,1	20	3850	76	992	96,4	96,4	96,3	0,75	0,80	0,83	67,4
560	755	BFG6 450KH	5386	6,5	1,0	2,2	35	20	4650	78	993	96,1	96,4	96,5	0,77	0,82	0,84	66,5
630	850	BFG6 450KH (3)	6053	6,0	0,8	2,9	40	20	5000	78	994	95,2	96,1	96,4	0,73	0,81	0,84	74,9
710	960	BFG6 450KH (3)	6821	6,0	0,8	2,9	44	20	5150	78	994	95,5	96,3	96,5	0,74	0,82	0,85	83,3
VIII Pole - 750 min-1																		
90	120	BFG6 355MLJ	1158	5,9	1,1	2,5	5,6	20	1450	74	742	90,5	92,5	93,0	0,54	0,66	0,72	12,9
110	150	BFG6 355MLJ	1418	5,8	1	2,4	5,6	20	1575	74	741	90,8	92,8	93,3	0,54	0,66	0,72	15,8
132	180	BFG6 355MLJ	1701	5,8	1	2,4	6,0	20	1750	74	741	91,0	93,0	93,5	0,54	0,66	0,72	18,9
160	215	BFG6 355MLJ	2062	5,8	1	2,4	7,2	20	1950	74	741	91,5	93,5	94,0	0,54	0,66	0,72	22,7
200	270	BFG6 355MLJ (1)	2578	5,8	1	2,4	8,3	20	2250	74	741	92,5	94,0	94,5	0,55	0,67	0,73	27,9
200	270	BFG6 400L	2574	5,5	0,7	2,1	14,6	20	2550	74	742	93,1	94,2	94,5	0,58	0,69	0,74	27,5
250	340	BFG6 400L	3218	5,5	0,7	2,1	15,6	20	2675	74	742	93,1	94,2	94,5	0,58	0,69	0,74	34,4
280	380	BFG6 400L	3604	5,6	0,7	2,1	16,6	20	2850	74	742	93,6	94,5	94,8	0,60	0,71	0,75	37,9
315	425	BFG6 400J	4054	5,0	0,7	2,1	17,2	20	3125	74	742	95,8	96,0	95,7	0,68	0,76	0,79	40,1
355	480	BFG6 400J (3)	4569	5,0	0,7	2,1	18,5	20	3475	74	742	95,7	95,9	95,7	0,67	0,76	0,79	45,2
400	540	BFG6 400G (3)	5141	5,4	0,9	2,0	21,0	20	4500	74	743	95,4	95,7	95,6	0,70	0,77	0,80	50,3
450	610	BFG6 400G (1)(3)	5784	5,6	1,0	2,1	23,8	9	5000	74	743	95,4	95,8	95,7	0,70	0,77	0,80	56,6
450	610	BFG6 450KH (3)	5784	6,0	0,6	2,1	45	20	5500	76	743	93,8	94,8	95,3	0,66	0,76	0,81	56,1
500	675	BFG6 450KH (3)	6418	6,0	0,7	2,3	46	20	5850	76	744	94,0	95,0	95,5	0,66	0,76	0,81	62,2
560	755	BFG6 450KH (3)	7169	6,0	0,7	2,4	61	20	5750	76	746	95,7	96,2	96,5	0,71	0,78	0,80	69,8

(1) - Temperature rise class F at full load (2) - Standard motor with sleeve bearings (3) - Copper rotor (4) - Rated current at 690V

T_n = Full load torque I_s / I_n = Locked rotor current T_s / T_n = Locked rotor torque T_{max} / T_n = Breakdown torque I_n = Full load current

Notes: - The motors can also operate on a 60Hz supply. For motors frames 450 and 500 2 pole, please refer to us.
- To obtain electrical data for 60Hz, please refer to us
- All values are according to IEC 60034-1 tolerances.
- The indicated values for sound pressure levels are @ 1m no load, with 3 dB(A) tolerance.
- This data can be changed without prior notice.

Standard voltage, connection and frequency:
6000V Y 50Hz

4.1.3 ELECTRICAL DATA - BFGC3 / BFGC4 / BFGC8 SERIES

IIC T4

Flameproof Motors - Ex d IIC T4 (Ex tD A21 IP6X T 135°C frames ≥ 250)
Flameproof Motors with Increased Safety Terminal Box - Ex de IIC T4 (Ex tD A21 IP6X T 135°C frames ≥ 250)

Medium Voltage

Output		Frame IEC	T_n (Nm)	I_s/I_n	T_s/T_n	T_{max}/T_n	Inertia J Kgm²	Allowable locked rotor time Hot/Cold (s)	Weight Kg	Sound dB (A)	6000V							
											rpm min⁻¹	% of full load						I_n(A)
												Efficiency η			Power Factor Cos φ			
KW	HP											50	75	100	50	75	100	
II Pole - 3000 min-1																		
90	125	BFGC3 315MA	288	6,7	1,7	2,7	1,0	20	1180	82	2982	91,3	93,1	93,8	0,67	0,76	0,81	11,4
110	150	BFGC3 315MA	353	6,1	1,6	2,4	1,1	20	1220	82	2980	91,7	93,5	94,2	0,69	0,78	0,83	13,5
132	180	BFGC3 315LA	423	6,5	1,7	2,5	1,2	20	1300	82	2980	92,2	94,0	94,8	0,71	0,80	0,84	16,0
160	215	BFGC3 355MA	512	6,0	1,3	2,5	2,4	20	1700	80	2983	94,0	95,2	95,6	0,81	0,87	0,88	18,3
200	270	BFGC3 355MA	640	6,0	1,3	2,5	2,6	20	1800	80	2983	94,4	95,3	95,7	0,83	0,86	0,88	22,9
250	340	BFGC3 355LA	800	6,3	1,5	2,7	3,4	18	1900	80	2983	94,8	95,8	96,0	0,83	0,87	0,88	28,5
280	380	BFGC3 355LA	896	6,9	1,8	3,0	3,4	12	1950	80	2985	95,4	96,0	96,2	0,78	0,84	0,86	32,6
315	425	BFGC3 355LA (1)	1008	6,8	1,6	2,7	3,7	12	2000	80	2985	95,6	96,2	96,4	0,84	0,87	0,88	35,7
315	425	BFGC3 400LA	1008	6,1	1,4	2,5	5,5	14	2775	80	2984	94,8	95,6	95,9	0,79	0,84	0,86	36,8
355	480	BFGC3 400LA	1137	6,0	1,4	2,4	5,6	12	2850	80	2983	95,0	95,7	96,0	0,79	0,84	0,86	41,4
400	540	BFGC3 400LA	1281	6,7	1,6	2,7	5,7	9	2900	80	2982	95,4	96,2	96,5	0,78	0,84	0,86	46,4
450	610	BFGC3 400LA	1441	6,5	1,5	2,6	6,9	9	3000	80	2982	96,1	96,6	96,6	0,81	0,85	0,86	52,1
500	675	BFGC3 400LA (1)	1601	6,6	1,6	2,7	7,4	8	3050	80	2983	96,0	96,7	96,9	0,79	0,85	0,87	57,1
IV Pole - 1500 min-1																		
90	125	BFGC3 315MA	580	5,7	1,9	2,0	1,7	20	1150	82	1483	91,6	93,0	93,3	0,66	0,74	0,77	12,0
110	150	BFGC3 315MA	708	6,1	2,1	2,1	1,9	19	1200	82	1484	91,7	93,1	93,5	0,65	0,73	0,76	14,8
132	180	BFGC3 315LA	849	6,5	2,3	2,3	2,2	14	1350	82	1485	92,2	93,6	94,0	0,63	0,72	0,75	18,0
160	215	BFGC3 355MA	1026	5,7	1,3	2,5	4,4	20	1850	80	1489	92,5	94,7	95	0,77	0,83	0,83	19,5
200	270	BFGC3 355MA	1283	6,0	1,3	2,5	5,1	20	1950	80	1489	93,8	94,8	95,2	0,74	0,81	0,83	24,4
250	340	BFGC3 355LA	1603	6,0	1,3	2,6	5,8	20	2100	80	1489	93,7	95,2	95,7	0,74	0,81	0,83	30,3
280	380	BFGC3 355LA (1)	1796	6,1	1,5	2,6	6,1	20	2150	80	1489	93,8	95,3	95,8	0,71	0,79	0,82	34,5
280	380	BFGC3 400LA	1795	6,1	1,6	2,7	7,0	20	2400	80	1490	95,3	95,9	96,0	0,72	0,80	0,83	33,8
315	425	BFGC3 400LA	2019	6,1	1,6	2,7	7,5	20	2800	80	1490	94,9	95,9	96,2	0,75	0,82	0,83	38,0
355	480	BFGC3 400LA	2275	6,2	1,6	2,6	8,0	20	2900	80	1490	95,1	96,1	96,4	0,74	0,81	0,83	42,7
400	540	BFGC3 400LA	2562	6,5	1,5	2,6	9,0	20	3000	80	1491	95,2	96,2	96,5	0,71	0,80	0,83	48,1
450	610	BFGC3 400LA	2882	6,8	1,5	2,7	10,4	20	3150	80	1491	95,9	96,5	96,6	0,72	0,80	0,83	54,0
500	675	BFGC3 400LA (1)	3203	6,8	1,5	2,6	10,8	19	3150	80	1491	95,8	96,5	96,7	0,70	0,79	0,83	59,9
VI Pole - 1000 min-1																		
90	125	BFGC3 315MA	870	6,5	1,6	2,9	2,9	19	1200	76	988	88,9	90,8	91,3	0,63	0,73	0,78	12,2
110	150	BFGC3 315LA (1)	1063	6,5	1,7	2,8	3,2	18	1350	76	988	89,2	91,1	91,6	0,62	0,72	0,77	15,0
110	150	BFGC3 355MA	1061	6,5	1,6	2,7	5,2	20	1900	76	990	92,6	93,6	94,1	0,70	0,79	0,81	13,9
132	180	BFGC3 355MA	1273	6,2	1,3	2,3	5,8	20	2000	76	990	93,7	94,5	94,5	0,69	0,78	0,81	16,6
160	215	BFGC3 355MA	1543	6,2	1,3	2,4	6,9	20	2100	76	990	94,2	94,8	94,8	0,70	0,79	0,82	19,8
200	270	BFGC3 355MA	1929	6,3	1,4	2,4	7,9	20	2200	76	990	94,0	95,0	95,2	0,66	0,77	0,81	25,0
250	340	BFGC3 355LA	2412	6,3	1,4	2,4	10,0	20	2350	76	990	94,5	95,4	95,5	0,67	0,77	0,81	31,1
280	380	BFGC3 400LA	2698	6,4	1,0	2,4	11,9	20	2850	76	991	94,0	95,0	95,5	0,67	0,77	0,81	34,8
315	425	BFGC3 400LA	3036	6,5	1,1	2,5	10,3	20	2950	76	991	95,3	95,8	95,6	0,66	0,77	0,81	39,1
355	480	BFGC3 400LA	3421	6,5	1,1	2,5	12,1	20	3200	76	991	94,3	95,3	95,8	0,67	0,77	0,81	44,0
400	540	BFGC3 400LA	3851	6,7	1,0	2,5	15,9	20	3400	76	992	96,6	96,5	96,4	0,73	0,77	0,81	49,3
VIII Pole - 750 min-1																		
90	120	BFGC3 315LA (1)	1169	5,0	0,7	1,9	2,0	20	1400	73	735	88,0	90,0	90,5	0,54	0,65	0,72	13,3
90	120	BFGC3 355MA	1158	5,9	1,1	2,5	5,6	20	1850	74	742	90,5	92,5	93,0	0,54	0,66	0,72	12,9
110	150	BFGC3 355MA	1418	5,8	1,0	2,4	5,6	20	1975	74	741	90,8	92,8	93,3	0,54	0,66	0,72	15,8
132	180	BFGC3 355MA	1701	5,8	1,0	2,4	6,0	20	2150	74	741	91,0	93,0	93,5	0,54	0,66	0,72	18,9
160	215	BFGC3 355LA	2062	5,8	1,0	2,4	7,2	20	2350	74	741	91,5	93,5	94,0	0,54	0,66	0,72	22,7
200	270	BFGC3 400LA	2574	5,5	0,7	2,1	14,2	20	2950	74	742	93,1	94,2	94,4	0,58	0,70	0,74	27,5
250	340	BFGC3 400LA	3218	5,5	0,7	2,1	15,6	20	3125	74	742	93,1	94,2	94,5	0,58	0,69	0,74	34,4
280	380	BFGC3 400LA	3604	5,6	0,7	2,1	16,6	20	3300	74	742	93,6	94,5	94,8	0,60	0,71	0,75	37,9

(1) - Temperature rise class F at full load (2) - Standard motor with sleeve bearings (3) - Copper rotor (4) - Rated current at 690V

T_n = Full load torque I_s / I_n = Locked rotor current T_s / T_n = Locked rotor torque T_{max} / T_n = Breakdown torque I_n = Full load current

Notes: - The motors can also operate on a 60Hz supply. For motors frames 450 and 500 2 pole, please refer to us.
- To obtain electrical data for 60Hz, please refer to us
- All values are according to IEC 60034-1 tolerances.
- The indicated values for sound pressure levels are @ 1m no load, with 3 dB(A) tolerance.
- This data can be changed without prior notice.

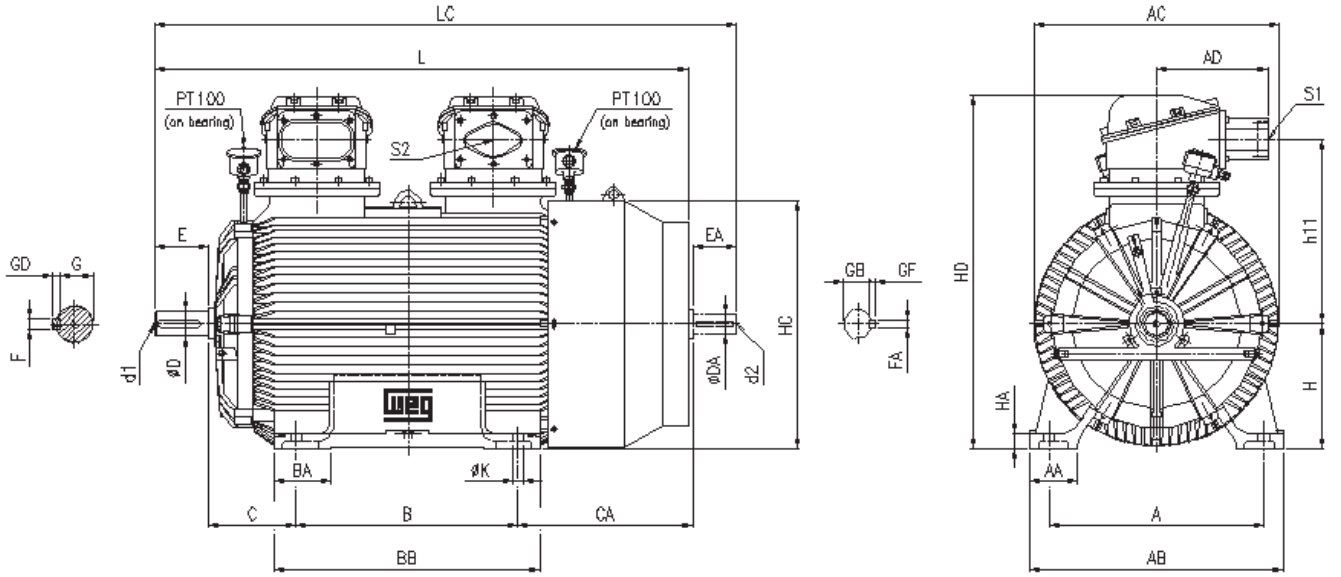
Standard voltage, connection and frequency:
6000V Y 50Hz

4.1.4 OUTLINE DIMENSIONS - BFG6 SERIES

IIB T4

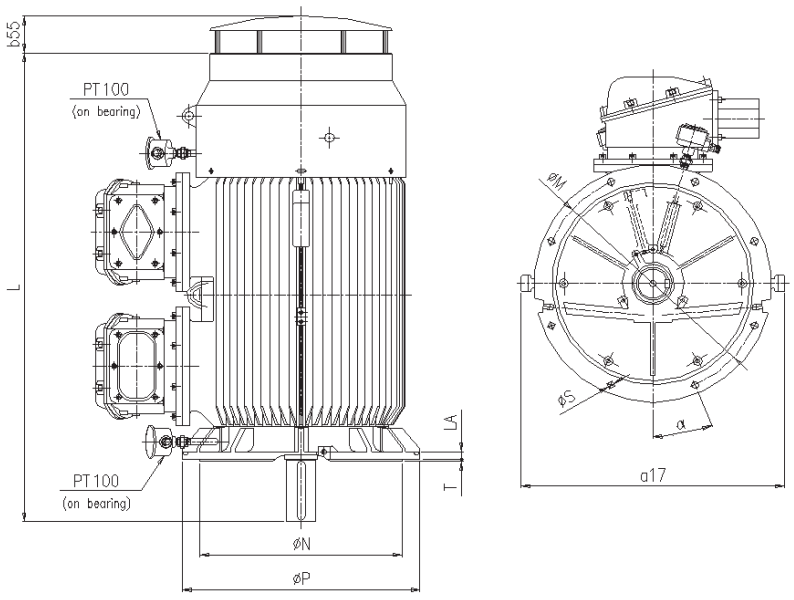
Medium Voltage

Flameproof Motors - Ex d IIB T4 (Ex tD A21 IP6X T 135°C)
Flameproof Motors with Increased Safety Terminal Box - Ex de IIB T4 (Ex tD A21 IP6X T 135°C)



Frame	A	AA	AB	AC	AD	B	BA	BB	C	CA	Shaft Dimensions										H	HA	HC	HD	h11	K	L	LC	S1	S2	d1	d2	Bearings		
											D	E	F	G	GD	DA	EA	FA	GB	GF												D.E.	N.D.E.	
355 MLJ (1)	610	130	730	705		560 630 800	170	920	254	515	100m6	210	28	90	16	80m6	170	22	71	14	355	45	707,5	1052	556	28	1764	1949			DS M24		6222 C3	6219 C3	(3)
355 MLJ (2)											75m6	140	20	67,5	12	60m6	140	18	53	11							1694	1849			DS M20		6219 C3		(4)
400 L (1)	686	150	810	785,5	356	710	180	850	280	560	110m6	210	28	100	16	80m6	170	22	71	14	400	50	793	1132	591	35	1745	1930	1xM63x1,5	2xM20x1,5	DS M24	DS M20	6324 C3		
400 L (2)											80m6	170	22	71	14	60m6	140	18	53	11							1705	1860			DS M20		6318 C3		(4)
400 J (1)						900		1040			110m6	210	28	100	16	80m6	170	22	71	14							1935	2110			DS M24		6324 C3		
400 J (2)											80m6	170	22	71	14	60m6	140	18	53	11							1895	2050			DS M20		6318 C3		(4)
400 G (1)						1120		1280			110m6	210	28	100	16	80m6	170	22	71	14							2175	2350			DS M24		6324 C3		
400 G (2)											80m6	170	22	71	14	60m6	140	18	53	11							2135	2190			DS M20		6318 C3		(4)
450 KH (1)	750	180	940	896		800	230	1310	250	515	120m6	210	32	109	18	100m6	210	28	90	16	450	60	898	1187	596	42	2129	2354			DS M24		6326 C3		
450 KH (2)						1120			-		85m6	170	22	76	14	75m6	140	20	67,5	12							-	-			DS M20		Sleeve Bearing		(4)

NOTES: (1) 1500, 1000 and 750 rpm (2) 3000 rpm (3) or 6222 C3 for 4 poles and plus machines, N.D.E. (4) For 60 Hz please refer to us



Frame	"FF" flange dimensions											
	Flange	L	LA	M	N	P	T	S	α	Nr. holes	a17	b55
355 MLJ (1)	FF-740	1749	25	740	680	800	6	24	22,5°	8	910	125
355 MLJ (2)		1679										
400 L (1)	FF-940	1730	28	940	880	1000		28			980	131
400 L (2)		1690										
400 J (1)		1920										
400 J (2)		1880										
400 G (1)		2160										
400 G (2)		2120										
450 KH (1)	FF-1080	2118	30	1080	1000	1150					1140	151
450 KH (2)		-										

NOTES: (1) 1500, 1000 and 750 rpm (2) 3000 rpm
(See note below)

Notes: - All the dimensions are in millimeters.
- For all vertical applications or unusual coupling conditions, the customer shall inform the load figure with the inquiry/order.
- Construction drawings with guaranteed values are available under request.
- Shaft dimensions for 2 pole motors, only for direct coupling.
- For motor frames 450, 2 pole, V1 refer to us.
- Execution with second shaft end available on request.
- "EExde" execution dimensions under request.
- For vertical mounting, the D.E. bearing is replaced by an angular contact type.
- The average values shown are subject to change without prior notice.

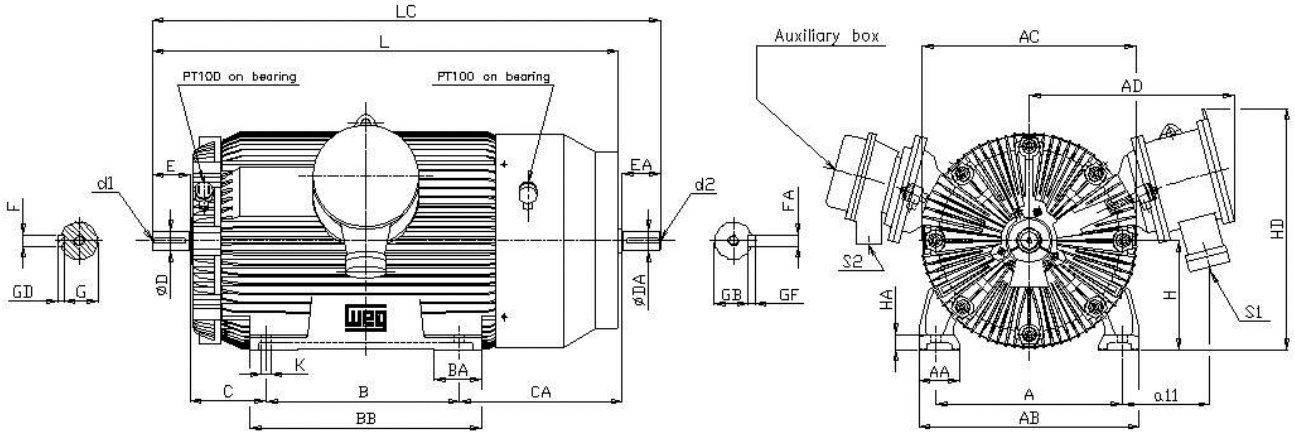
4.1.5 OUTLINE DIMENSIONS - BFGC3 / BFGC4 / BFGC8 SERIES

IIC T4

Medium Voltage

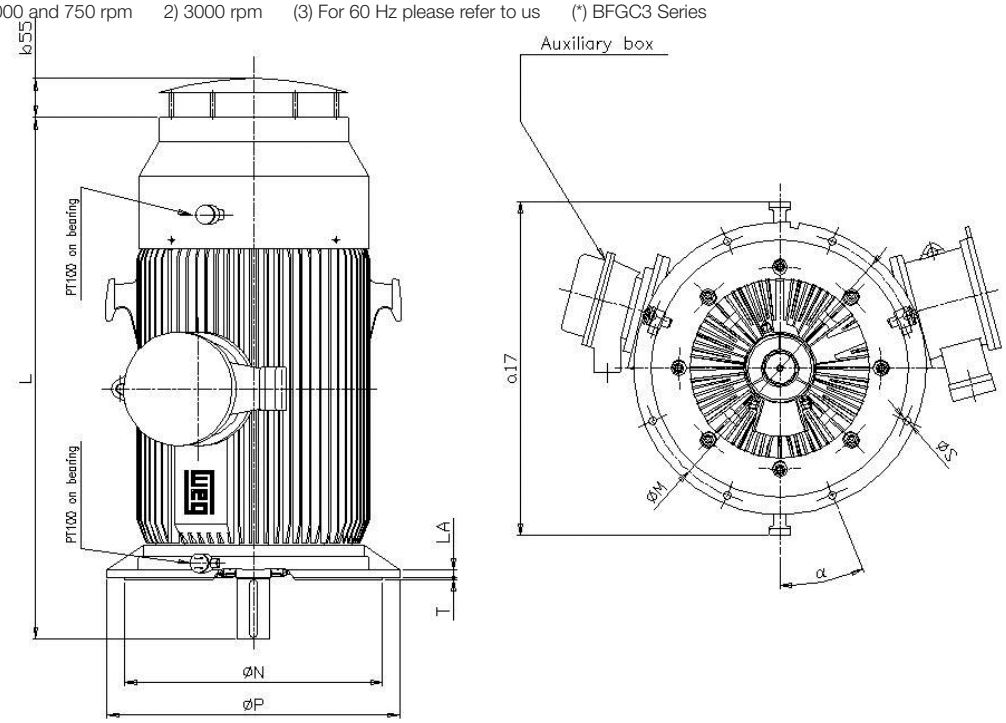
Flameproof Motors - Ex d IIC T4
Flameproof Motors with Increased Safety Terminal Box - Ex de IIC T4

BFGC8 IMB3T; IMB5; IMV1



Frame	A	AA	AB	AC	AD (3)	a11	B	BA	BB	C	CA	Shaft Dimensions										H	HA	HD (3)	K	L	LC	S1	S2	d1	d2	Bearings	
												D	E	F	G	GD	DA	EA	FA	GB	GF											D.E.	N.D.E
* 315MA (1)	508	130	632	622	686	340	457	150	613	216	426	90m6	170	25	81	14	60m6	140	18	53	11	315	43	762	28	1254	1409	1xM63x1,5	2xM20x1,5	DSM24	DSM20	NU2220	6317 C3
* 315MA (2)												70m6	140	20	62,5	12										1224	1379			DSM20		6317 C3	NU317 (3)
* 315LA (1)							508		664			90m6	170	25	81	14										1305	1460			DSM24		NU2220	6317 C3
* 315LA (2)												70m6	140	20	62,5	12										1275	1430			DSM20		6317 C3	NU317 (3)
355MA (1)	610	145	730	713	710	314	560	175	800	254	589	95m6	170	25	86	14	80m6	170	22	71	14	355	49	812		1558	1743			DSM24		NU320	6320 C3
355MA (2)												70m6	140	20	62,5	12	60m6	140	18	53	11					1528	1683			DSM20		6317 C3	NU317 (3)
355LA (1)							630		860		579	95m6	170	25	86	14	80m6	170	22	71	14					1618	1803			DSM24		NU320	6320 C3
355LA (2)												70m6	140	20	62,5	12	60m6	140	18	53	11					1588	1743			DSM20		6317 C3	NU317 (3)
400LA (1)	686	150	810	785,5	756	321	710		850	280	599	110m6	210	28	100	16	80m6	170	22	71	14	400	55	885	35	1784	1969			DSM24		NU324	6324 C3
400LA (2)												70m6	140	20	62,5	12	60m6	140	18	53	11					1714	1869			DSM20		6317 C3	NU317 (3)

NOTES: (1) 1500, 1000 and 750 rpm 2) 3000 rpm (3) For 60 Hz please refer to us (*) BFGC3 Series



Frame	"FF" Flange Dimensions									Nr. holes	a17	Bearings	
	Flange	b55	LA	M	N	P	T	S	α			D.E.	N.D.E
* 315MA/LA (1)	FF-600	116,5	22	600	550	660	6	24	22,5°	8	906	7220	6317 C3
* 315MA/LA (2)												6317 C3	6317 C3
355MA/LA (1)	FF-740	125	25	740	680	800					952	7320	6320 C3
355MA/LA (2)												7317	6317 C3
400LA (1)	FF-940	132	28	940	880	1000		28			1010	7324	6324 C3
400LA (2)												7317	6317 C3

NOTES: (1) 1500, 1000 and 750 rpm (2) 3000 rpm
(3) For 60 Hz please refer to us (*) BFGC3 Series

Notes: - All the dimensions are in millimeters.
- For all vertical applications or unusual coupling conditions, the customer shall inform the load figure with the inquiry/order.
- Construction drawings with guaranteed values are available under request.
- Shaft dimensions for 2 pole motors, only for direct coupling.
- If required terminal box entry on left hand side, please refer to us.
- Execution with second shaft end available on request.
- 'EEx de' execution dimensions under request.
- The average values shown are subject to change without prior notice.

4.2 MEDIUM VOLTAGE FLAMEPROOF MOTORS BFG(C)8; W22XB(C); BFGM8; W22XM

4.2.1 PRODUCT SPECIFICATION

Range

The present catalogue refers to TEFC Flameproof, Medium Voltage, three phase, squirrel cage induction motors, up to 6600V, ribbed frames, **BFG(C)8** and **W22XB(C)** series with shaft height from 355 to 500 mm, with the following powers:

Motor series BFG(C)8 and W22XB(C):

KW	RPM
355 up to 1120 kW	3000 RPM
355 up to 1500 kW	1500 RPM
280 up to 1120 kW	1000 RPM
200 up to 900 kW	750 RPM

Particular specifications and standards related to hazardous areas

The motor series **BFG(C)8** and **W22XB(C)** comply with European Standards listed on paragraph 1.2.2, and are suitable for the following Groups, Groups of Gases and Temperature Classes:

GROUP I, mines category **M2**
GROUP II, surface industry, Gases of group **IIB**, and temperature class **T4**
GROUP II, surface industry, Gases of group **IIC**, and temperature class **T4**
Under request, are available other temperature classes.

These motor series have the CE marking in compliance with European Directive **94/4/EC (ATEX),** and can be marked as equipment **GROUP I (mines susceptible of firedamp)** or **GROUP II (surface Industries).**

The motors of GROUP II **,** are suitable to use on the following zones:
Category **2**, for Zones **1** and **21** – Gases, Vapours and Dust **(GD)**.
Category **3**, for Zones **2** and **22** – Gases, Vapours and Dust **(GD)**.
Category **M2** for Mines
Special design to suit Zone **21** will be available on request.

These motor series are also certified according to the **IECEx scheme.**

As standard execution, the motors are fitted with flameproof terminal boxes for gases of group **IIB** or **IIC**, with specification code **Ex d, IIB** or **Ex d, IIC**. Under request and as an alternative execution, these motors can be fitted with an Increased Safety terminal box. In this case the description code is **Ex de, IIB** or **Ex de, IIC**.
This line of flameproof motors is certified according to the above standards, by the Notified Body INERIS in France, accredited organization by EU.

Construction

Mechanical protection: IP 55 as **Group II**, or **IP65** as **Group I**.
Insulation: Class **F**.
Temperature rise: 80 K.
Frames: are in **cast iron.**
Terminal boxes: are in **cast iron.**
Endshields: are in **cast iron**.
Fans: metallic, in **aluminium alloy** or **fabricated steel**.
Fan cover: in **cast iron** or **fabricated steel,** capable to withstand impact of **20 Joule**.
Finish: industrial paint system, standard **color RAL 5010 (IIB)** or **RAL 7001 (IIC).**

Voltage and frequency

The performance data referred in the present catalogue is for motors operating with a voltage of **6000V** ± 5% and a frequency of **50HZ** ± 2%, on continuous service
For voltages of 6600V all figures are equivalent, except the rated current (In), which shall be multiplied by a factor of 0,9 (indicative figure).
Under request are available other voltages up to 6600V, and frequencies 50HZ or 60HZ, with a maximum rated current of 800A.

Basic design

Cooling method:

IC 411 in accordance with standard **IEC 60034-6** - motors cooled by an external fan.

Direction of rotation:

On frame sizes 355/400 (4 pole and above), as standard the motors are fitted with a bi-directional fan.
On remaining frames the fans are unidirectional, leaving the factory as standard on CW direction viewedfrom shaft end with the phase sequence of U, V, and W. In these cases the direction of rotation must be specified with order.

Electrical connection:

3 terminals are provided for star connection, with neutral point connected inside the windings.

Terminal boxes:

On these motor series, the main terminal box is located at top of motor frame allowing rotation every 180° to suit cable entry from left or right hand side.
Note: customer shall refer cable entry direction with order.
As standard, in all motors, the supply cable entries are on the right hand side when viewed from shaft end.

Protections/Auxiliaries:

As standard the **BFG(C)8** and **W22XB(C)** medium voltage motors are fitted with the following protections:
- 3 RTD's - Pt 100 – on windings, 1 per phase, 3 wires
- 2 RTD's - Pt 100 – on bearings, 1 per bearing, 3 wires
- Anti-condensation heaters – 230V

As option under request, the motors can be fitted with other number or type of protections either on windings and bearings. Protection/Auxiliaries are connected in two auxiliary terminal boxes.
The thermal protections on bearings are made in two individual auxiliary terminal boxes located on D.E and N.D.E side as standard configuration.
It is also possible as option to have these protections connected in to a single auxiliary terminal box used for other Protections/Auxiliaries.

Earth connection:

All motors are equipped with an earth screw inside of terminal box. A second external earth connection is also provided on motor frame, on foot or on flange, depending on mounting form.

Terminal box entries and cable glands:

As standard, the motors are not supplied with cable glands and the number of entry holes and respective dimensions are described on outline dimensions tables. However, considering that the cable entry makes part of the protection enclosure it is recommended that the motors are supplied from factory fitted with cable glands.
For this it is necessary to specify with the order the complete cabling details (number of cables, specification, section and diameters), so that the motors can be supplied from factory fitted with suitable glands.

Bearings:

These motor series are equipped on both sides with deep groove ball bearings, pre-loaded by an axial spring washer or springs. Motors frame sizes 450 and 500, 2 pole, are equipped with a 3 bearings arrangement (ball + roller bearings on DE and roller bearing on NDE).
As optional execution, the motors GROUP IIB can be fitted with sleeve bearings.
In the case of pulley/belt drive transmission, the drive end bearing can be replaced by a roller bearing.
On vertical mounting motors, the bearings can be thrust bearing types and are defined according to the axial loads involved on the application.

Lubrication:

As standard, the bearings are grease lubricated. For all frames, the motors are equipped with grease relief valves and relubrication nipples.

Balancing:

The motors are dynamically balanced with half-key to meet the vibration limits of standard **IEC 60034-14**, grade **A**.
Grade **B** can be provided under request.
On all frames, the D.E. and N.D.E. endshields are designed to fit, under request, optional captors for vibration monitoring detectors or other devices.

Full standard and optional features are detailed on paragraph 2.3.

4.2.2 ELECTRICAL DATA - BFG8; W22XB; BFGM8; W22XM SERIES

IIB T4
I (M2)

Flameproof Motors - Ex d IIB T4 (Ex tD A21 IP6X T 125°C)
Flameproof Motors with Increased Safety Terminal Box - Ex de IIB T4 (Ex tD A21 IP6X T 125°C)

Medium Voltage

Flameproof Motors for Mines - Ex d I M2
Flameproof Motors for Mines with Increased Safety Terminal Box - Ex de I M2

6000 V

Output KW	Output HP	Frame IEC	T_n (Nm)	I_s/I_n	T_s/T_n	T_{max}/T_n	Inertia J Kgm²	Allowable locked rotor time Hot/Cold (s)	Weight Kg	Sound dB (A)	rpm min^{-1}	% of full load: Efficiency η 50	Efficiency η 75	Efficiency η 100	Power Factor Cos φ 50	Power Factor Cos φ 75	Power Factor Cos φ 100	I_n(A)
II Pole - 3000 min-1																		
160	215	W22XB 355MLJ	512	6,0	1,3	2,5	2,4	20	1700	80	2983	94,0	95,2	95,6	0,81	0,87	0,88	18,3
200	270	W22XB 355MLJ	640	6,0	1,3	2,5	2,6	20	1800	80	2983	94,4	95,3	95,7	0,83	0,86	0,88	22,9
250	340	W22XB 355MLJ	800	6,3	1,5	2,7	3,4	18	1900	80	2983	94,8	95,8	96,0	0,83	0,87	0,88	28,5
280	380	W22XB 355MLJ	896	6,9	1,8	3,0	3,4	12	1950	80	2985	95,4	96,0	96,2	0,78	0,84	0,86	32,6
315	425	W22XB 355MLJ	1008	6,8	1,6	2,7	3,7	14	2000	80	2985	95,6	96,2	96,4	0,84	0,87	0,88	35,7
355	480	W22XB 355MLJ (1)	1136	6,8	1,8	2,9	4,2	11	2250	80	2985	95,7	96,3	96,5	0,85	0,88	0,89	39,8
355	480	BFG8 400LJ	1137	6,7	1,6	2,7	5,0	9	2700	80	2982	95,4	96,2	96,5	0,78	0,84	0,86	41,2
400	540	BFG8 400LJ	1281	6,7	1,6	2,7	5,7	9	2800	80	2982	95,4	96,2	96,5	0,78	0,84	0,86	46,4
450	610	BFG8 400LJ	1441	6,5	1,5	2,6	6,9	9	3000	80	2982	96,1	96,6	96,6	0,81	0,85	0,86	52,1
500	675	BFG8 400LJ	1601	6,6	1,6	2,7	7,4	8	3200	80	2983	96,0	96,7	96,9	0,79	0,85	0,87	57,1
560	755	BFG8 400G (3)	1790	7,5	1,1	3,3	11,7	19	3850	80	2988	96,3	96,8	97,0	0,84	0,89	0,90	61,7
630	850	BFG8 400G (1)(3)	2014	7,5	1,2	3,2	11,7	14	3900	80	2988	96,3	96,9	97,1	0,84	0,89	0,90	69,4
630	850	BFG8 450KH (3)	2013	5,5	0,7	2,3	11,9	20	4600	80	2989	96,3	96,9	97,2	0,83	0,87	0,87	71,7
710	960	BFG8 450KH (3)	2268	5,5	0,7	2,3	13,4	20	4700	80	2989	96,3	96,9	97,2	0,83	0,87	0,87	80,8
800	1080	BFG8 450KH (1)(3)	2555	7,0	0,8	3,0	13,6	20	4850	80	2990	96,5	97,1	97,3	0,83	0,88	0,89	88,9
800	1080	W22XB 500KH (3)																
900	1215	W22XB 500KH (3)																
1000	1350	W22XB 500KH (3)																
1120	1515	W22XB 500KH (3)																
												Available on request						
IV Pole - 1500 min -1																		
160	215	W22XB 355MLJ	1026	5,7	1,3	2,5	4,4	20	1675	80	1489	93,5	94,7	95,0	0,77	0,83	0,83	19,5
200	270	W22XB 355MLJ	1283	6,0	1,3	2,5	5,1	20	1725	80	1489	93,8	94,8	95,2	0,74	0,81	0,83	24,4
250	340	W22XB 355MLJ	1603	6,0	1,3	2,5	5,8	20	1925	80	1489	93,7	95,2	95,7	0,74	0,81	0,83	30,3
280	380	W22XB 355MLJ	1796	6,1	1,3	2,6	5,9	20	2025	80	1489	94,5	95,5	95,8	0,69	0,78	0,82	34,3
315	425	W22XB 355MLJ	2020	6,3	1,4	2,6	6,6	20	2125	80	1489	95,0	95,8	96,0	0,71	0,80	0,83	38,0
355	480	W22XB 355MLJ (1)	2277	6,3	1,4	2,6	7,3	20	2225	80	1489	95,2	96,0	96,2	0,71	0,80	0,83	42,8
355	480	BFG8 400LJ	2274	6,5	1,5	2,6	8,5	20	2600	80	1491	95,2	96,2	96,5	0,71	0,80	0,83	42,6
400	540	BFG8 400LJ	2562	6,5	1,5	2,6	9,0	20	2700	80	1491	95,2	96,2	96,5	0,71	0,80	0,83	48,1
450	610	BFG8 400LJ	2882	6,8	1,5	2,7	10,4	20	3050	80	1491	95,9	96,5	96,6	0,72	0,80	0,83	54,0
500	675	BFG8 400LJ	3203	6,8	1,5	2,6	10,8	19	3175	80	1491	95,8	96,5	96,7	0,70	0,79	0,83	59,9
560	755	BFG8 400LJ (3)	3589	6,8	0,8	2,7	11,4	19	3350	80	1490	95,9	96,6	96,8	0,73	0,81	0,84	66,3
630	850	BFG8 400G (1)(3)	4041	6,1	0,6	2,5	13,9	20	4100	85	1489	95,6	96,3	96,3	0,78	0,83	0,84	74,9
630	850	BFG8 450KH	4083	6,3	1,3	2,4	21,0	19	4800	86	1492	96,1	96,8	97,0	0,74	0,82	0,84	74,4
710	960	BFG8 450KH	4545	6,3	1,3	2,4	23,3	19	4750	86	1492	96,1	96,8	97,0	0,74	0,82	0,84	83,8
800	1080	BFG8 450KH (3)	5117	6,4	0,7	2,8	26	19	5150	86	1493	96,3	96,8	97,0	0,76	0,83	0,86	92,3
900	1215	BFG8 450KH (1)(3)	5761	6,4	0,7	2,4	26	19	5300	86	1492	96,5	96,9	97,0	0,78	0,84	0,86	104
900	1215	W22XB 500KH (3)	5749	5,6	0,7	2,1	59	20	9850	86	1495	95,5	96,6	97,0	0,81	0,86	0,87	103
1000	1350	W22XB 500KH (3)	6388	5,6	0,7	2,1	61	20	10050	86	1495	95,5	96,6	97,0	0,81	0,86	0,87	114
1120	1515	W22XB 500KH (3)	7155	5,3	0,7	2,1	65	20	10250	86	1495	96,0	96,8	97,2	0,82	0,86	0,87	127
1250	1690	W22XB 500KH (3)	7985	5,3	0,7	2,1	69	20	10400	86	1495	96,1	96,9	97,2	0,82	0,86	0,87	142
1400	1890	W22XB 500KH (3)	8943	5,6	0,7	2,1	72	20	10630	86	1495	96,1	96,9	97,2	0,82	0,86	0,87	159
1500	2025	W22XB 500KH (3)	9595	5,3	0,7	2,0	75	20	10800	86	1493	96,1	96,9	97,2	0,82	0,86	0,87	171
VI Pole - 1000 min -1																		
132	180	W22XB 355MLJ	1273	6,2	1,3	2,3	5,8	20	1600	76	990	93,7	94,5	94,5	0,69	0,78	0,81	16,6
160	215	W22XB 355MLJ	1543	6,2	1,3	2,4	6,9	20	1700	76	990	94,2	94,8	94,8	0,70	0,79	0,82	19,8
200	270	W22XB 355MLJ	1929	6,3	1,4	2,4	7,9	20	1800	76	990	94,0	95,0	95,2	0,66	0,77	0,81	25,0
250	340	W22XB 355MLJ	2412	6,3	1,4	2,4	10,0	20	2050	76	990	94,5	95,4	95,5	0,67	0,77	0,81	31,1
280	380	W22XB 355MLJ (1)	2701	6,3	1,4	2,4	10,0	20	2175	76	990	94,7	95,5	95,6	0,66	0,77	0,81	34,8
280	380	BFG8 400LJ	2698	6,5	1,1	2,5	9,5	20	2500	76	991	95,3	95,8	95,6	0,66	0,77	0,81	34,8
315	425	BFG8 400LJ	3036	6,5	1,1	2,5	10,3	20	2600	76	991	95,3	95,8	95,6	0,66	0,77	0,81	39,1
355	480	BFG8 400LJ	3421	6,5	1,1	2,5	12,1	20	2750	76	991	94,3	95,3	95,8	0,67	0,77	0,81	44,0
400	540	BFG8 400LJ	3851	6,7	1,0	2,5	12,9	20	2950	76	992	96,6	96,5	96,4	0,73	0,77	0,81	49,3
450	610	BFG8 400G (3)	4328	5,9	0,6	2,1	15,1	20	3450	76	993	95,9	96,1	96,1	0,75	0,80	0,83	54,3
500	675	BFG8 400G (3)	4814	6,0	0,6	2,1	15,5	20	3650	76	992	96,0	96,2	96,2	0,74	0,80	0,83	60,3
560	755	BFG8 400G (1)(3)	5391	6,0	0,6	2,0	17,1	20	3850	76	992	96,4	96,4	96,3	0,75	0,80	0,83	67,4
560	755	BFG8 450KH	5386	6,5	1,0	2,2	35	20	4650	78	993	96,1	96,4	96,5	0,77	0,82	0,84	66,5
630	850	BFG8 450KH (3)	6053	6,0	0,8	2,9	40	20	5000	78	994	95,2	96,1	96,4	0,73	0,81	0,84	74,9
710	960	BFG8 450KH (1)(3)	6821	6,0	0,8	2,9	44	20	5150	78	994	95,5	96,3	96,5	0,74	0,82	0,85	83,3
710	960	W22XB 500KH (3)	6815	6,0	0,7	2,4	71	20	9300	80	995	96,7	97,1	97,2	0,74	0,82	0,84	83,7
800	1080	W22XB 500KH (3)	7678	6,0	0,7	2,4	81	20	10400	80	995	96,7	97,1	97,2	0,74	0,82	0,84	94,3
900	1215	W22XB 500KH (3)	8638	6,0	0,7	2,4	91	20	10650	80	995	96,9	97,3	97,3	0,75	0,82	0,84	106
1000	1350	W22XB 500KH (3)	9598	6,0	0,7	2,4	96	20	11100	80	995	96,9	97,3	97,3	0,75	0,82	0,84	118
1120	1515	W22XB 500KH (1)(3)	10750	6,0	0,7	2,4	101	20	11750	80	995	97,1	97,4	97,4	0,75	0,82	0,84	132
VIII Pole - 750 min-1																		
90	120	W22XB 355MLJ	1158	5,9	1,1	2,5	5,6	20	1450	74	742	90,5	92,5	93,0	0,54	0,66	0,72	12,9
110	150	W22XB 355MLJ	1418	5,8	1	2,4	5,6	20	1575	74	741	90,8	92,8	93,3	0,54	0,66	0,72	15,8
132	180	W22XB 355MLJ	1701	5,8	1	2,4	6,0	20	1750	74	741	91,0	93,0	93,5	0,54	0,66	0,72	18,9
160	215	W22XB 355MLJ	2062	5,8	1	2,4	7,2	20	1950	74	741	91,5	93,5	94,0	0,54	0,66	0,72	22,7
200	270	W22XB 355MLJ (1)	2578	5,8	1	2,4	8,3	20	2250	74	741	92,5	94,0	94,5	0,55	0,67	0,73	27,9
200	270	BFG8 400LJ	2574	5,5	0,7	2,1	14,6	17	2675	74	742	93,1	94,2	94,5	0,58	0,69	0,74	27,5
250	340	BFG8 400LJ	3218	5,5	0,7	2,1	15,6	17	2675	74	742	93,1	94,2	94,5	0,58	0,69	0,74	34,4
280	380	BFG8 400LJ	3604	5,6	0,7	2,1	16,6	17	2850	74	742	93,6	94,5	94,8	0,60	0,71	0,75	37,9
315	425	BFG8 400LJ (1)(3)	4054	5,0	0,7	2,1	17,2	17	3125	74	742	95,8	96,0	95,7	0,68	0,76	0,79	40,1
355	480	BFG8 400G (3)	4569	5,0	0,7	2,1	18,5	17	3475	74	742	95,7	95,9	95,7	0,67	0,76	0,79	45,2
400	540	BFG8 400G (3)	5141	5,4	0,9	2,0	21,0	17	4500	74	743	95,4	95,7	95,6	0,70	0,77	0,80	50,3
450	610	BFG8 400G (1)(3)	5784	5,6	1,0	2,1	23,8	9	5000	74	743	95,4	95,8	95,7	0,70	0,77	0,80	56,6
450	610	BFG8 450KH (3)	5776	6,0	0,7	2,3	40	20	5850	76	744	94,0	95,0	95,5	0,66	0,76	0,81	56,0
500	675	BFG8 450KH (3)	6418	6,0	0,7	2,3	46	20	5850	76	744	94,0	95,0	95,5	0,66	0,76	0,81	62,2
560	755	BFG8 450KH (1)(3)	7169	6,0	0,7	2,4	61	20	5750	76	746	95,7	96,2	96,5	0,71	0,78	0,80	69,8
560	755	W22XB 500KH (3)	7169	5,3	0,8	2,4	130	20	10500	80	746	97,0	97,3	97,0	0,73	0,80	0,80	69,4
630	850	W22XB 500KH (3)	8065	5,3	0,8	2,4	134	20	10500	80	746	97,0	97,3	97,0	0,73	0,80	0,80	78,1
710	960	W22XB 500KH (3)	9089	5,6	0,8	2,4	137	20	10600	80	746	97,0	97,2	97,0	0,72	0,79	0,80	88,0
800	1080	W22XB 500KH (3)	10241	5,2	0,8	2,3	149	20	11200	80	746	97,1	97,3	97,0	0,73	0,80	0,80	99,2
900	1215	W22XB 500KH (1)(3)	11521	5,5	0,8	2,3	159	20	11800	80	746	97,1	97,3	97,1	0,72	0,79	0,80	111

(1) - Temperature rise class F at full load (2) - Standard motor with sleeve bearings (3) - Copper rotor (4) - Rated current at 690V

T_n = Full load torque
I_s / I_n = Locked rotor current
T_s / T_n = Locked rotor torque
T_{max} / T_n = Breakdown torque
I_n = Full load current

Notes:
- *Motor frame 500, 2 pole 50Hz, available under request*
- *The motors can also operate on a 60Hz supply. For motors frames 450 and 500 2 pole, please refer to us.*
- *To obtain electrical data for 60Hz, please refer to us*
- *All values are according to IEC 60034-1 tolerances.*
- *The indicated values for sound pressure levels are @ 1m no load, with 3 dB(A) tolerance.*
- *This data can be changed without prior notice.*

Standard voltage, connection and frequency:
6000V Y 50Hz

4.2.3 ELECTRICAL DATA - BFGC8; W22XC; BFGM8; W22XM SERIES

IIC T4
I (M2)

Flameproof Motors - Ex d IIC T4 (Ex tD A21 IP6X T 125°C)
Flameproof Motors with Increased Safety Terminal Box - Ex de IIC T4 (Ex tD A21 IP6X T 125°C)

Medium Voltage

Flameproof Motors for Mines - Ex d I M2
Flameproof Motors for Mines with Increased Safety Terminal Box - Ex de I M2

6000 V

Output		Frame IEC	T_n (Nm)	I_s/I_n	T_s/T_n	T_{max}/T_n	Inertia J Kgm²	Allowable locked rotor time Hot/Cold (s)	Weight Kg	Sound dB (A)	rpm min⁻¹	% of full load						I_n(A)
												Efficiency η			Power Factor Cos φ			
KW	HP											50	75	100	50	75	100	
II Pole - 3000 min-1																		
160	215	W22XC 355MLJ	512	6,0	1,3	2,5	2,4	20	1700	80	2983	94,0	95,2	95,6	0,81	0,87	0,88	18,3
200	270	W22XC 355MLJ	640	6,0	1,3	2,5	2,6	20	1800	80	2983	94,4	95,3	95,7	0,83	0,86	0,88	22,9
250	340	W22XC 355MLJ	800	6,3	1,5	2,7	3,4	18	1900	80	2983	94,8	95,8	96,0	0,83	0,87	0,88	28,5
280	380	W22XC 355MLJ	896	6,9	1,8	3,0	3,4	12	1950	80	2985	95,4	96,0	96,2	0,78	0,84	0,86	32,6
315	425	W22XC 355MLJ	1008	6,8	1,6	2,7	3,7	14	2000	80	2985	95,6	96,2	96,4	0,84	0,87	0,88	35,7
355	480	W22XC 355MLJ (1)	1136	6,8	1,8	2,9	4,2	11	2250	80	2985	95,7	96,3	96,5	0,85	0,88	0,89	39,8
355	480	BFGC8 400LJ	1137	6,7	1,6	2,7	5,0	9	2700	80	2982	95,4	96,2	96,5	0,78	0,84	0,86	41,2
400	540	BFGC8 400LJ	1281	6,7	1,6	2,7	5,7	9	2800	80	2982	95,4	96,2	96,5	0,78	0,84	0,86	46,4
450	610	BFGC8 400LJ	1441	6,5	1,5	2,6	6,9	9	3000	80	2982	96,1	96,6	96,6	0,81	0,85	0,86	52,1
500	675	BFGC8 400LJ	1601	6,6	1,6	2,7	7,4	8	3200	80	2983	96,0	96,7	96,9	0,79	0,85	0,87	57,1
560	755	BFGC8 400G (3)	1790	7,5	1,1	3,3	11,7	19	3850	80	2988	96,3	96,8	97,0	0,84	0,89	0,90	61,7
630	850	BFGC8 400G (1)(3)	2014	7,5	1,2	3,2	11,7	14	3900	80	2988	96,3	96,9	97,1	0,84	0,89	0,90	69,4
630	850	BFGC8 450KH (3)	2013	5,5	0,7	2,3	11,9	20	4600	80	2989	96,3	96,9	97,2	0,83	0,87	0,87	71,7
710	960	BFGC8 450KH (3)	2268	5,5	0,7	2,3	13,4	20	4700	80	2989	96,3	96,9	97,2	0,83	0,87	0,87	80,8
800	1080	BFGC8 450KH (1)(3)	2555	7,0	0,8	3,0	13,6	20	4850	80	2990	96,5	97,1	97,3	0,83	0,88	0,89	88,9
800	1080	W22XC 500KH (3)																
900	1215	W22XC 500KH (3)																
1000	1350	W22XC 500KH (3)																
1120	1515	W22XC 500KH (3)																
												Available on request						
IV Pole - 1500 min -1																		
160	215	W22XC 355MLJ	1026	5,7	1,3	2,5	4,4	20	1675	80	1489	93,5	94,7	95,0	0,77	0,83	0,83	19,5
200	270	W22XC 355MLJ	1283	6,0	1,3	2,5	5,1	20	1725	80	1489	93,8	94,8	95,2	0,74	0,81	0,83	24,4
250	340	W22XC 355MLJ	1603	6,0	1,3	2,5	5,8	20	1925	80	1489	93,7	95,2	95,7	0,74	0,81	0,83	30,3
280	380	W22XC 355MLJ	1796	6,1	1,3	2,6	5,9	20	2025	80	1489	94,5	95,5	95,8	0,69	0,78	0,82	34,3
315	425	W22XC 355MLJ	2020	6,3	1,4	2,6	6,6	20	2125	80	1489	95,0	95,8	96,0	0,71	0,80	0,83	38,0
355	480	W22XC 355MLJ (1)	2277	6,3	1,4	2,6	7,3	20	2225	80	1489	95,2	96,0	96,2	0,71	0,80	0,83	42,8
355	480	BFGC8 400LJ	2274	6,5	1,5	2,6	8,5	20	2600	80	1491	95,2	96,2	95,5	0,71	0,80	0,83	42,6
400	540	BFGC8 400LJ	2562	6,5	1,5	2,6	9,0	20	2700	80	1491	95,2	96,2	96,5	0,71	0,80	0,83	48,1
450	610	BFGC8 400LJ	2882	6,8	1,5	2,7	10,4	20	3050	80	1491	95,9	96,5	96,6	0,72	0,80	0,83	54,0
500	675	BFGC8 400LJ	3203	6,8	1,5	2,6	10,8	19	3175	80	1491	95,8	96,5	96,7	0,70	0,79	0,83	59,9
560	755	BFGC8 400LJ (3)	3589	6,8	0,8	2,7	11,4	19	3350	80	1490	95,9	96,6	96,8	0,73	0,81	0,84	66,3
630	850	BFGC8 400G (1)(3)	4041	6,1	0,6	2,5	13,9	20	4100	85	1489	95,6	96,3	96,3	0,78	0,83	0,84	74,9
630	850	BFGC8 450KH	4033	6,3	1,3	2,4	21,0	19	4600	86	1492	96,1	96,8	97,0	0,74	0,82	0,84	74,4
710	960	BFGC8 450KH	4545	6,3	1,3	2,4	23,3	19	4750	86	1492	96,1	96,8	97,0	0,74	0,82	0,84	83,8
800	1080	BFGC8 450KH (3)	5117	6,4	0,7	2,8	26	19	5150	86	1493	96,3	96,8	97,0	0,76	0,83	0,86	92,3
900	1215	BFGC8 450KH (1)(3)	5761	6,4	0,7	2,4	26	19	5300	86	1492	96,5	96,9	97,0	0,78	0,84	0,86	104
900	1215	W22XC 500KH (3)	5749	5,6	0,7	2,1	59	20	9850	86	1495	95,5	96,6	97,0	0,81	0,86	0,87	103
1000	1350	W22XC 500KH (3)	6388	5,6	0,7	2,1	61	20	10050	86	1495	95,5	96,6	97,0	0,81	0,86	0,87	114
1120	1515	W22XC 500KH (3)	7155	5,3	0,7	2,1	65	20	10250	86	1495	96,0	96,8	97,2	0,82	0,86	0,87	127
1250	1690	W22XC 500KH (3)	7985	5,3	0,7	2,1	69	20	10400	86	1495	96,1	96,9	97,2	0,82	0,86	0,87	142
1400	1890	W22XC 500KH (3)	8943	5,6	0,7	2,1	72	20	10630	86	1495	96,1	96,9	97,2	0,82	0,86	0,87	159
1500	2025	W22XC 500KH (3)	9595	5,3	0,7	2,0	75	20	10800	86	1493	96,1	96,9	97,2	0,82	0,86	0,87	171
VI Pole - 1000 min -1																		
132	180	W22XC 355MLJ	1273	6,2	1,3	2,3	5,8	20	1600	76	990	93,7	94,5	94,5	0,69	0,78	0,81	16,6
160	215	W22XC 355MLJ	1543	6,2	1,3	2,4	6,9	20	1700	76	990	94,2	94,8	94,8	0,70	0,79	0,82	19,8
200	270	W22XC 355MLJ	1929	6,3	1,4	2,4	7,9	20	1800	76	990	94,0	95,0	95,2	0,66	0,77	0,81	25,0
250	340	W22XC 355MLJ	2412	6,3	1,4	2,4	10,0	20	2050	76	990	94,5	95,4	95,5	0,67	0,77	0,81	31,1
280	380	W22XC 355MLJ (1)	2701	6,3	1,4	2,4	10,0	20	2175	76	990	94,7	95,5	95,6	0,66	0,77	0,81	34,8
280	380	BFGC8 400LJ	2698	6,5	1,1	2,5	9,5	20	2500	76	991	95,3	95,8	95,6	0,66	0,77	0,81	34,8
315	425	BFGC8 400LJ	3036	6,5	1,1	2,5	10,3	20	2600	76	991	95,3	95,8	95,6	0,66	0,77	0,81	39,1
355	480	BFGC8 400LJ	3421	6,5	1,1	2,5	12,1	20	2750	76	991	94,3	95,3	95,8	0,67	0,77	0,81	44,0
400	540	BFGC8 400LJ	3851	6,7	1,0	2,5	12,9	20	2950	76	992	96,6	96,5	96,4	0,73	0,77	0,81	49,3
450	610	BFGC8 400G (3)	4328	5,9	0,6	2,1	15,1	20	3450	76	993	95,9	96,1	96,1	0,75	0,80	0,83	54,3
500	675	BFGC8 400G (3)	4814	6,0	0,6	2,1	15,5	20	3650	76	992	96,0	96,2	96,2	0,74	0,80	0,83	60,3
560	755	BFGC8 400G (1)(3)	5391	6,0	0,6	2,0	17,1	20	3850	76	992	96,4	96,4	96,3	0,75	0,80	0,83	67,4
560	755	BFGC8 450KH	5386	6,5	0,7	2,2	35	20	4650	78	993	96,1	96,4	96,5	0,77	0,82	0,84	66,5
630	850	BFGC8 450KH (3)	6053	6,0	1,0	2,9	40	20	5000	78	994	95,2	96,1	96,4	0,73	0,81	0,84	74,9
710	960	BFGC8 450KH (1)(3)	6821	6,0	0,8	2,9	44	20	5150	78	994	95,5	96,3	96,5	0,74	0,82	0,85	83,3
710	960	W22XC 500KH (3)	6815	6,0	0,8	2,4	71	20	9300	80	995	96,7	97,1	97,2	0,74	0,82	0,84	83,7
800	1080	W22XC 500KH (3)	7678	6,0	0,7	2,4	81	20	10400	80	995	96,7	97,1	97,2	0,74	0,82	0,84	94,3
900	1215	W22XC 500KH (3)	8638	6,0	0,7	2,4	91	20	10650	80	995	96,9	97,3	97,3	0,75	0,82	0,84	106
1000	1350	W22XC 500KH (3)	9598	6,0	0,7	2,4	96	20	11100	80	995	96,9	97,3	97,3	0,75	0,82	0,84	118
1120	1515	W22XC 500KH (1)(3)	10750	6,0	0,7	2,4	101	20	11750	80	995	97,1	97,4	97,4	0,75	0,82	0,84	132
VIII Pole - 750 min-1																		
90	120	W22XC 355MLJ	1158	5,9	1,1	2,5	5,6	20	1450	74	742	90,5	92,5	93,0	0,54	0,66	0,72	12,9
110	150	W22XC 355MLJ	1418	5,8	1	2,4	5,6	20	1575	74	741	90,8	92,8	93,3	0,54	0,66	0,72	15,8
132	180	W22XC 355MLJ	1701	5,8	1	2,4	6,0	20	1750	74	741	91,0	93,0	93,5	0,54	0,66	0,72	18,9
160	215	W22XC 355MLJ	2062	5,8	1	2,4	7,2	20	1950	74	741	91,5	93,5	94,0	0,54	0,66	0,72	22,7
200	270	W22XC 355MLJ (1)	2578	5,8	1	2,4	8,3	20	2250	74	741	92,5	94,0	94,5	0,55	0,67	0,73	27,9
200	270	BFGC8 400LJ	2574	5,5	0,7	2,1	14,6	17	2675	74	742	93,1	94,2	94,5	0,58	0,69	0,74	27,5
250	340	BFGC8 400LJ	3218	5,5	0,7	2,1	15,6	17	2675	74	742	93,1	94,2	94,5	0,58	0,69	0,74	34,4
280	380	BFGC8 400LJ	3604	5,6	0,7	2,1	16,6	17	2850	74	742	93,6	94,5	94,8	0,60	0,71	0,75	37,9
315	425	BFGC8 400LJ (1)(3)	4054	5,0	0,7	2,1	17,2	17	3125	74	742	95,8	96,0	95,7	0,68	0,76	0,79	40,1
355	480	BFGC8 400G (3)	4569	5,0	0,7	2,1	18,5	17	3475	74	742	95,7	95,9	95,7	0,67	0,76	0,79	45,2
400	540	BFGC8 400G (3)	5141	5,4	0,9	2,0	21,0	17	4500	74	743	95,4	95,7	95,6	0,70	0,77	0,80	50,3
450	610	BFGC8 400G (1)(3)	5784	5,6	1,0	2,1	23,8	9	5000	74	743	95,4	95,8	95,7	0,70	0,77	0,80	56,6
450	610	BFGC8 450KH (3)	5776	6,0	0,7	2,3	40	20	5850	76	744	94,0	95,0	95,5	0,66	0,76	0,81	56,0
500	675	BFGC8 450KH (3)	6418	6,0	0,7	2,3	46	20	5850	76	744	94,0	95,0	95,5	0,66	0,76	0,81	62,2
560	755	BFGC8 450KH (1)(3)	7169	6,0	0,7	2,4	61	20	5750	76	746	95,7	96,2	96,5	0,71	0,78	0,80	69,8
560	755	W22XC 500KH (3)	7169	5,3	0,8	2,4	130	20	10500	80	746	97,0	97,3	97,0	0,73	0,80	0,80	69,4
630	850	W22XC 500KH (3)	8065	5,3	0,8	2,4	134	20	10500	80	746	97,0	97,3	97,0	0,73	0,80	0,80	78,1
710	960	W22XC 500KH (3)	9089	5,6	0,8	2,4	137	20	10600	80	746	97,0	97,2	97,0	0,72	0,79	0,80	88,0
800	1080	W22XC 500KH (3)	10241	5,2	0,8	2,3	149	20	11200	80	746	97,1	97,3	97,0	0,73	0,80	0,80	99,2
900	1215	W22XC 500KH (1)(3)	1152	5,5	0,8	2,3	159	20	11800	80	746	97,1	97,3	97,1	0,72	0,79	0,80	111

(1) - Temperature rise class F at full load (2) - Standard motor with sleeve bearings (3) - Copper rotor (4) - Rated current at 690V

Notes:
- *Motor frame 500, 2 pole 50Hz, available under request*
- *The motors can also operate on a 60Hz supply. For motors frames 450 and 500 2 pole, please refer to us.*
- *To obtain electrical data for 60Hz, please refer to us*
- *All values are according to IEC 60034-1 tolerances.*
- *The indicated values for sound pressure levels are @ 1m no load, with 3 dB(A) tolerance.*
- *This data can be changed without prior notice.*

Standard voltage, connection and frequency:
6000V Y 50Hz

T_n = Full load torque
I_s / I_n = Locked rotor current
T_s / T_n = Locked rotor torque
T_{max} / T_n = Breakdown torque
I_n = Full load current

4.2.4 OUTLINE DIMENSIONS - BFG8; W22XB; BFGM8; W22XM SERIES

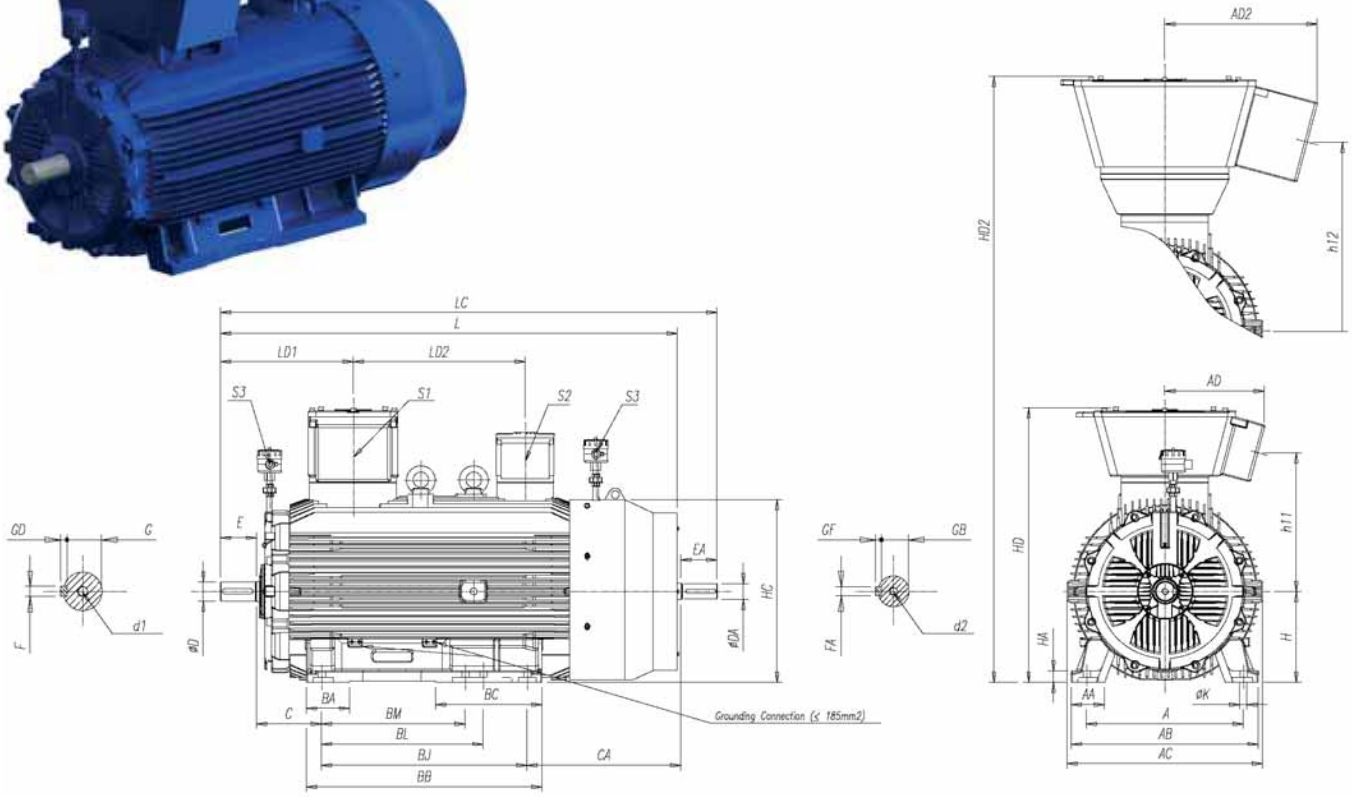
IIB T4
I (M2)

Medium Voltage

Flameproof Motors - Ex d IIB T4 (Ex tD A21 IP6X T 125°C)
Flameproof Motors with Increased Safety Terminal Box - Ex de IIB T4 (Ex tD A21 IP6X T 125°C)

Flameproof Motors for Mines - Ex d I M2
Flameproof Motors for Mines with Increased Safety Terminal Box - Ex de I M2

W22XB 355MLJ IMB3T



Poles	A	AA	AB	AC	AD(1)	BA	BB	BC	BM	BL	BJ	C	CA	H	HA	HC	HD(1)	h11(1)	K	L	LC	LD1	LD2
2P	610	130	730	760	388	170	920	415	560	630	800	254	600	355	45	712	1072	540	28	1779	1934	517	670
4P+																				1849	2034	587	

	Shaft dimensions												Bearings	
Poles	D	E	F	G	GD	DA	EA	FA	GB	GF	d1	d2	D.E	N.D.E
2P	75m6	140	20h9	67,5	12	60	140	18h9	53	11	DSM20	DSM20	6316C3	6316C3
4P+	100m6	210	28h9	90	16	80	170	22h9	71	14	DSM24		6322C3	6322C3

	Power terminal box - S1 (1)	Auxiliary terminal box - S2	Auxiliary terminal box - S3
Pole	CEFGH340	CEFGH220	Pt 100 Bearing Box
2P 4P+	I≤315A: 1xM63x1,5 315A<I≤400A: 3xM63x1,5	2xM20x1,5	1x1/2" NPT

I > 400A				
Poles	AD2	HD2	h12	Power terminal box - CEFGH 500 - S1
2P 4P+	594	1340	727	400A<I≤1200A: 3xM63x1,5

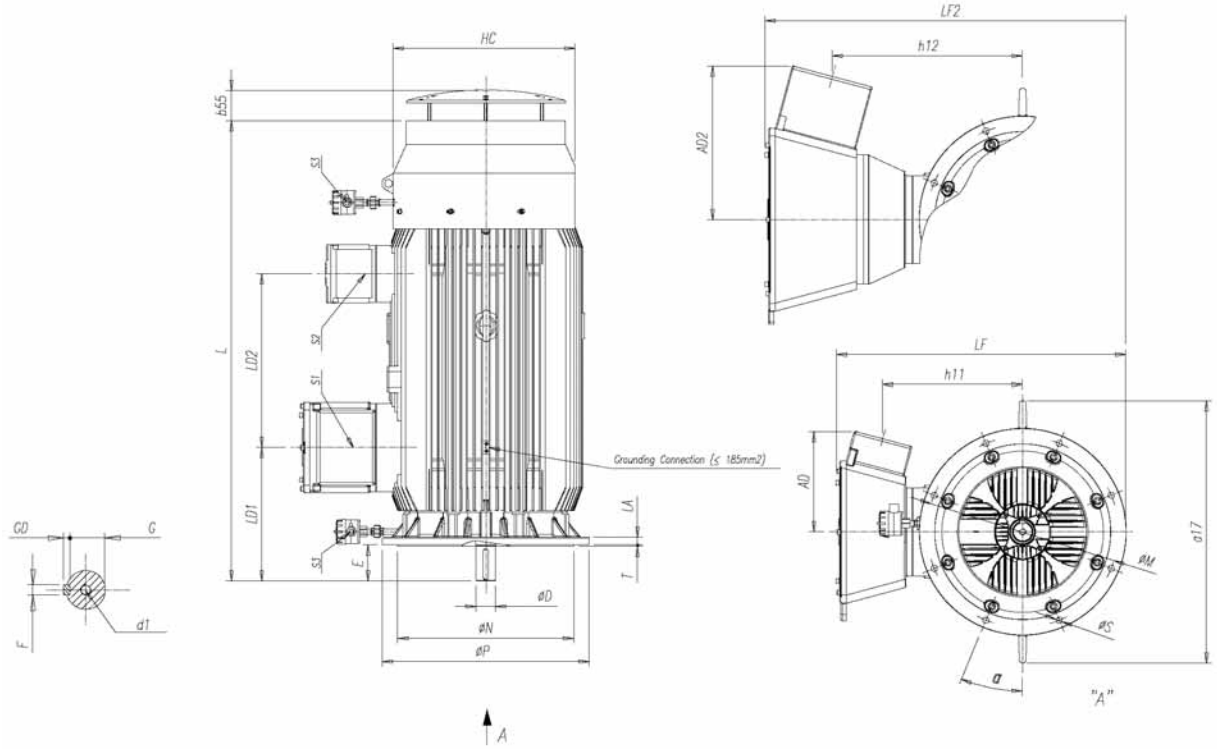
Notes: - (1) I ≤ 400A
- All the dimensions are in millimeters.
- Please, do not use these dimensions for construction. Certified drawings under request.
- External thrust shall be informed at the time of Inquiry/Order.
- Executions with auxiliary terminal box and second shaft end are optional and available under request.
- For other special executions please refer to us.
- The dimensions shown are subject to change without prior notice.

OUTLINE DIMENSIONS

IIB T4
I (M2)

Medium Voltage

W22XB 355MLJ IMV1



Poles	AD[1]	HC	h11[1]	L	LA	LD1	LD2	LF[1]	b55	a17	M	N	P	T	S	Nr. Holes	α
2P	388	702,5	540	1779	30	517	670	1117	118	1015	740	680	800	6	24	8	22,5º
4P+				1849		587											

	Shaft dimensions						Bearings		Power terminal box - S1 [1]	Auxiliary terminal box - S2	Auxiliary terminal box - S3
Poles	D	E	F	G	GD	d1	D.E	N.D.E	CEFGH340	CEFGH220	Pt 100 Bearing Box
2P	75m6	140	20h9	67,5	12	DSM20	7316	6316C	I≤315A: 1xM63x1,5	2xM20x1,5	1 x 1/2" NPT
4P+	100m6	210	28h9	90	16	DSM24	7322	6322C	315A<I ≤400A: 3xM63x1,5		

I > 400A				
Poles	AD2	LF2	h12	Power terminal box - CEFGH 500 - S1
2P	594	1386	727	400A<I ≤1200A: 3xM63x1,5
4P+				

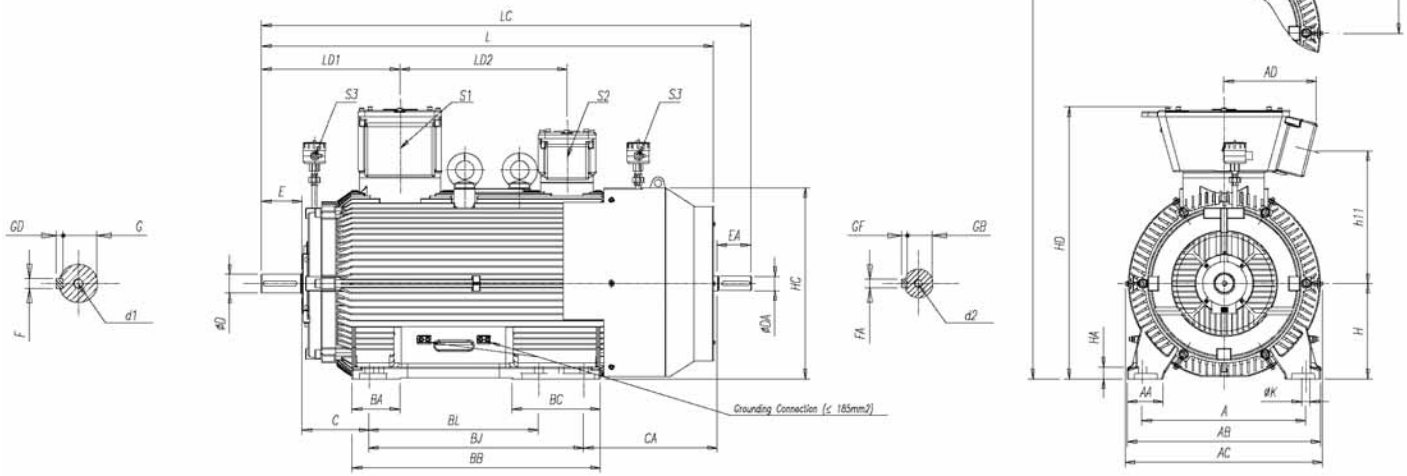
Notes: - (1) I ≤ 400A
- All the dimensions are in millimeters.
- Please, do not use these dimensions for construction. Certified drawings under request.
- External thrust shall be informed at the time of Inquiry/Order.
- Executions with auxiliary terminal box and second shaft end are optional and available under request.
- For other special executions please refer to us.
- The dimensions shown are subject to change without prior notice.

OUTLINE DIMENSIONS

IIB T4
I (M2)

Medium Voltage

BFG8 400LJ IMB3T



Poles	A	AA	AB	AC	AD(1)	BA	BB	BC	BL	BJ	C	CA	H	HA	HC	HD(1)	h11(1)	K	L	LC	LD1	LD2
2P	686	150	810	827	388	200	1040	370	710	900	280	560	400	50	802	1139	557	35	1895	2050	580	700
4P+																			1935	2120	620	

	Shaft dimensions												Bearings	
Poles	D	E	F	G	GD	DA	EA	FA	GB	GF	d1	d2	D.E.	N.D.E.
2P	80m6	170	22h9	71	14	60	140	18h9	53	11	DSM20	DSM20	6318C3	6318C3
4P+	110m6	210	28h9	100	16	80	170	22h9	71	14	DSM24		6324C3	6324C3

	Power terminal box - S1(1)	Auxiliary terminal box - S2	Auxiliary terminal box - S3
Poles	CEFGH 340	CEFGH 220	Pt 100 Bearing Box
2P	I≤315A: 1xM63x1,5	2xM20x1,5	1/2" NPT
4P+	315A<I≤400A: 3xM63x1,5		

I > 400A				
Poles	AD2	HD2	h12	Power terminal box - CEFGH 500 - S1
2P	594	1408	747	400A<I≤1200A: 3xM63x1,5
4P+				

Notes: - (1) I ≤ 400A
- All the dimensions are in millimeters.
- Please, do not use these dimensions for construction. Certified drawings under request.
- External thrust shall be informed at the time of Inquiry/Order.
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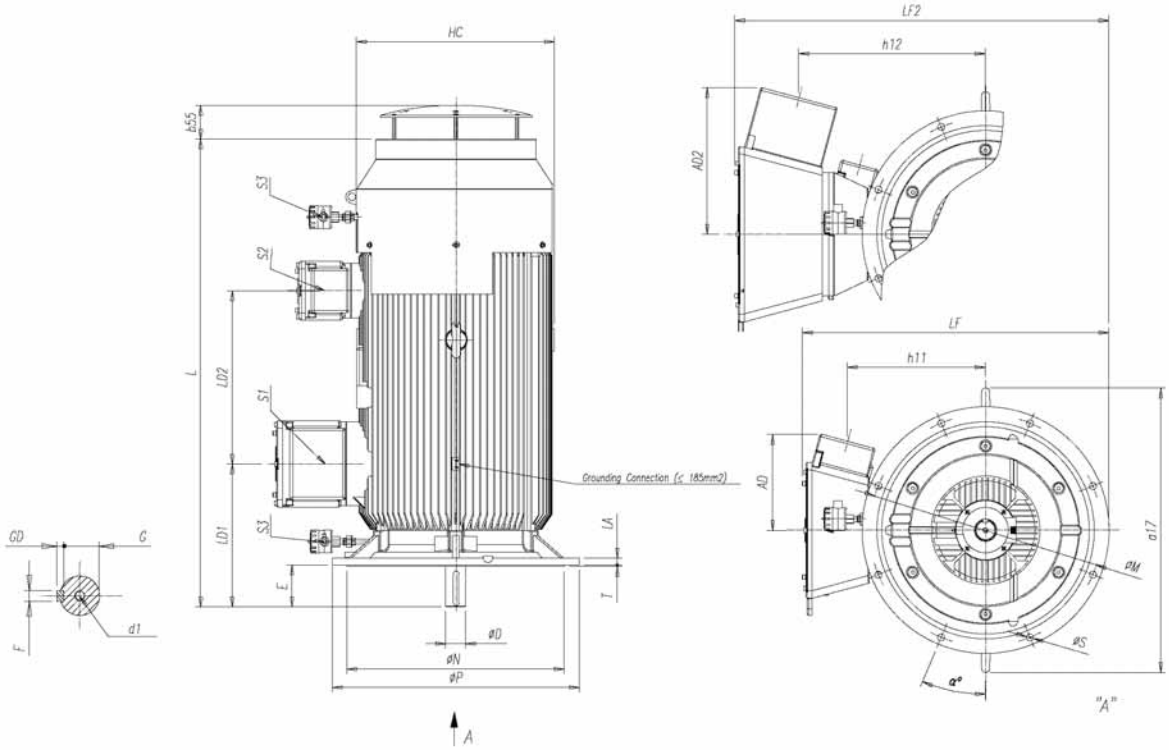
OUTLINE DIMENSIONS

IIB T4
I (M2)

Medium Voltage

BFG8 400LJ IMV1



Poles	AD[1]	HC	h11[1]	L	LA	LD1	LD2	LF[1]	a17	b55	M	N	P	T	S	Nr. Holes	α
2P	388	802	558	1895	28	580	700	1240	1154	136	940	880	1000	6	28	8	22,5º
4P+				1935		620											

	Shaft dimensions						Bearings		Power terminal box - S1[1]	Auxiliary terminal box - S2	Auxiliary terminal box - S3
Poles	D	E	F	G	GD	d1	D.E	N.D.E	CEFGH 340	CEFGH 220	Pt 100 Bearing Box
2P	80m6	170	22h9	71	14	DSM20	7318	6318C3	I ≤ 315A: 1xM63x1,5	2xM20x1,5	1x1/2" NPT
4P+	110m6	210	28h9	100	16	DSM24	7324	6324C3	315A < I ≤ 400A: 3xM63x1,5		

I > 400A				
Poles	AD2	LF2	h12	Power terminal box - CEFGH 500 - S1
2P	594	1507	747	400A < I ≤ 1200A: 3xM63x1,5
4P+				

Notes: - (1) I ≤ 400A
- All the dimensions are in millimeters.
- Please, do not use these dimensions for construction. Certified drawings under request.
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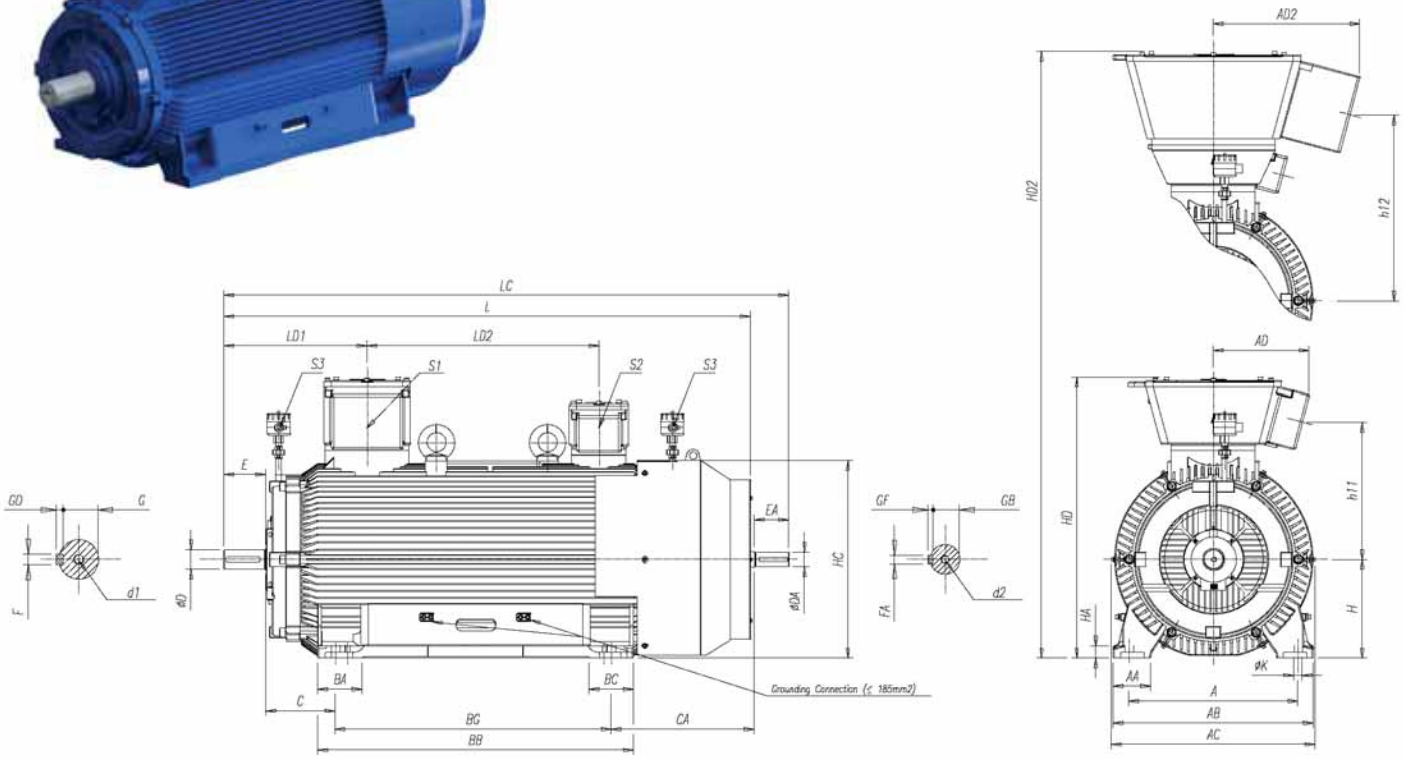
OUTLINE DIMENSIONS

IIB T4
I (M2)

Medium Voltage

BFG8 400G IMB3T



Poles	A	AA	AB	AC	AD(1)	BA	BB	BC	BG	C	CA	H	HA	HC	HD(1)	h11(1)	K	L	LC	LD1	LD2
2P	686	150	810	827	388	200	1280	180	1120	280	580	400	50	802	1139	557	35	2135	2290	580	940
4P+																		2175	2360	620	

	Shaft dimensions												Bearings	
Poles	D	E	F	G	GD	DA	EA	FA	GB	GF	d1	d2	D.E	N.D.E
2P	80m6	170	22h9	71	14	60	140	18h9	53	11	DSM20	DSM20	6318C3	6318C3
4P+	110m6	210	28h9	100	16	80	170	22h9	71	14	DSM24		6324C3	6324C3

	Power terminal box - S1(1)	Auxiliary terminal box - S2	Auxiliary terminal box - S3
Poles	CEFGH 340	CEFGH 220	Pt 100 Bearing Box
2P	I≤315A: 1xM63x1,5	2xM20x1,5	1/2" NPT
4P+	315A<I≤400A: 3xM63x1,5		

I > 400A				
Poles	AD2	HD2	h12	Power terminal box - CEFGH 500 - S1
2P	594	1408	747	400A<I≤1200A: 3xM63x1,5
4P+				

Notes: - (1) I ≤ 400A
- All the dimensions are in millimeters.
- Please, do not use these dimensions for construction. Certified drawings under request.
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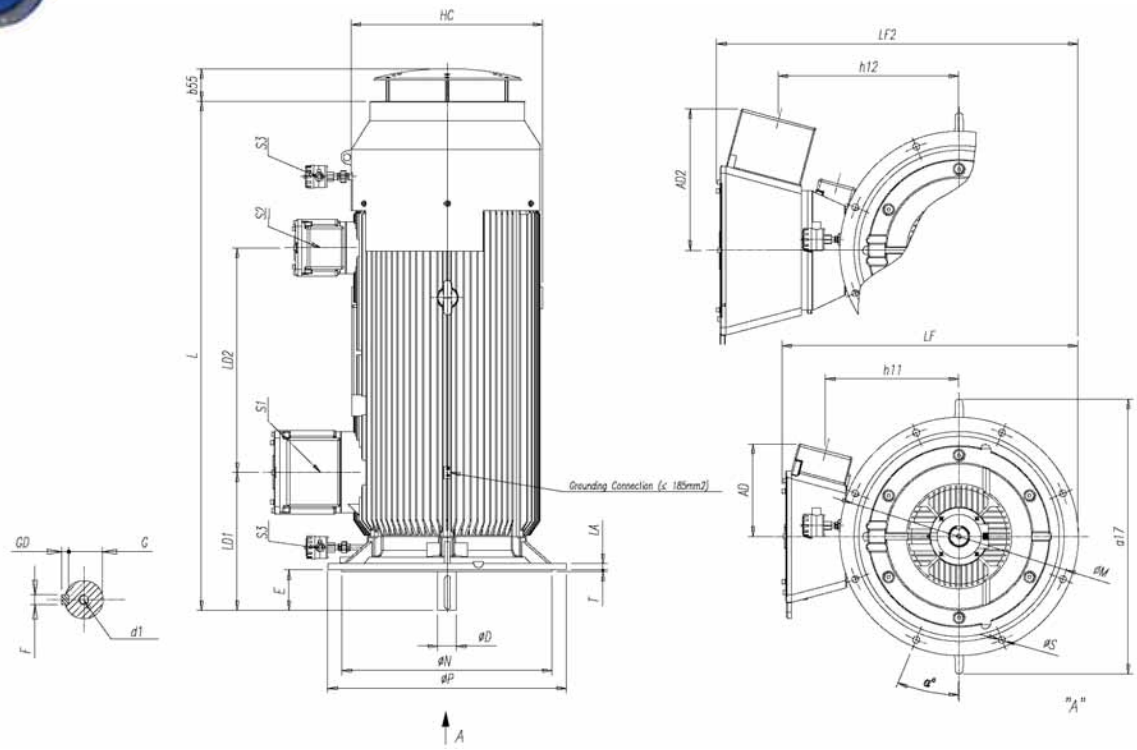
OUTLINE DIMENSIONS

IIB T4
I (M2)

Medium Voltage

BFG8 400G IMV1



Poles	AD(1)	HC	h11(1)	L	LA	LD1	LD2	LF(1)	a17	b55	M	N	P	T	S	Nr. Holes	α
2P	388	802	558	2135	28	580	940	1240	1154	136	940	880	1000	6	28	8	22,5º
4P+				2175		620											

	Shaft dimensions						Bearings		Power terminal box - S1(1)	Auxiliary terminal box - S2	Auxiliary terminal box - S3
Poles	D	E	F	G	GD	d1	D.E.	N.D.E.	CEFGH 340	CEFGH 220	Pt 100 Bearing Box
2P	80m6	170	22h9	71	14	DSM20	7318	6318C3	I ≤ 315A: 1xM63x1,5	2xM20x1,5	1x1/2" NPT
4P+	110m6	210	28h9	100	16	DSM24	7324	6324C3	315A < I ≤ 400A: 3xM63x1,5		

I > 400A				
Poles	AD2	LF2	h12	Power terminal box - CEFGH 500 - S1
2P	594	1507	747	400A < I ≤ 1200A: 3xM63x1,5
4P+				

Notes: - (1) I ≤ 400A
- All the dimensions are in millimeters.
- Please, do not use these dimensions for construction. Certified drawings under request.
- External thrust shall be informed at the time of Inquiry/Order.
- Executions with auxiliary terminal box and second shaft end are optional and available under request.
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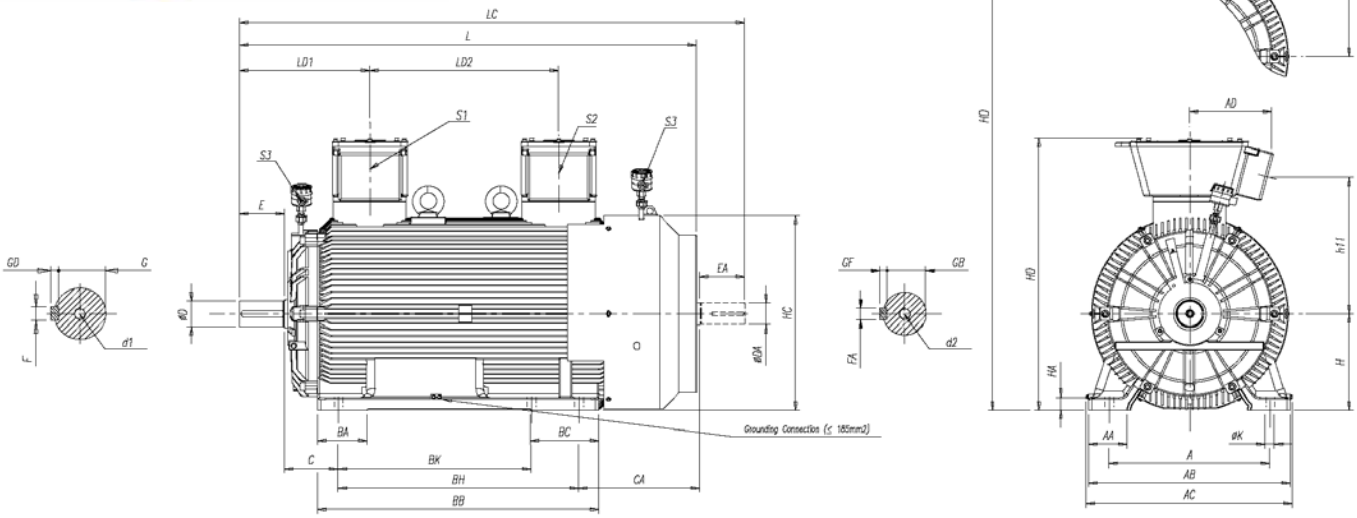
- The dimensions shown are subject to change without prior notice.

OUTLINE DIMENSIONS

IIB T4
I (M2)

Medium Voltage

BFG8 450KH IMB3T



Poles	A	AA	AB	AC	AD(1)	BA	BB	BC	BK	BH	C	CA	H	HA	HC	HD(1)	h11(1)	K	L	LC	LD1	LD2
2P	750	180	940	957	388	230	1310	320	900	1120	250	564	450	60	908	1269	654	42	2089	2244	568	880
4P+																			2129	2354	608	

	Shaft dimensions												Bearings	
Poles	D	E	F	G	GD	DA	EA	FA	GB	GF	d1	d2	D.E	N.D.E
2P	85m6	170	22h9	76	14	75	140	20h9	67,5	12	DSM20	DSM20	N218 + 6218C3	N218
4P+	120m6	210	32h9	109	18	100	210	28h9	90	16	DSM24	DSM20	6326C3	6326C3

	Power terminal box - S1(1)	Auxiliary terminal box - S2	Auxiliary terminal box - S3
Poles	CEFGH 340	CEFGH 220	Pt 100 Bearing Box
2P	I≤315A: 1xM63x1,5	2xM20x1,5	1 x 1/2" NPT
4P+	315A<I≤400A: 3xM63x1,5		

I > 400A				
Poles	AD2	HD2	h12	Power terminal box - CEFGH 500 - S1
2P	594	1562	853	400A<I≤1200A: 3xM63x1,5
4P+				

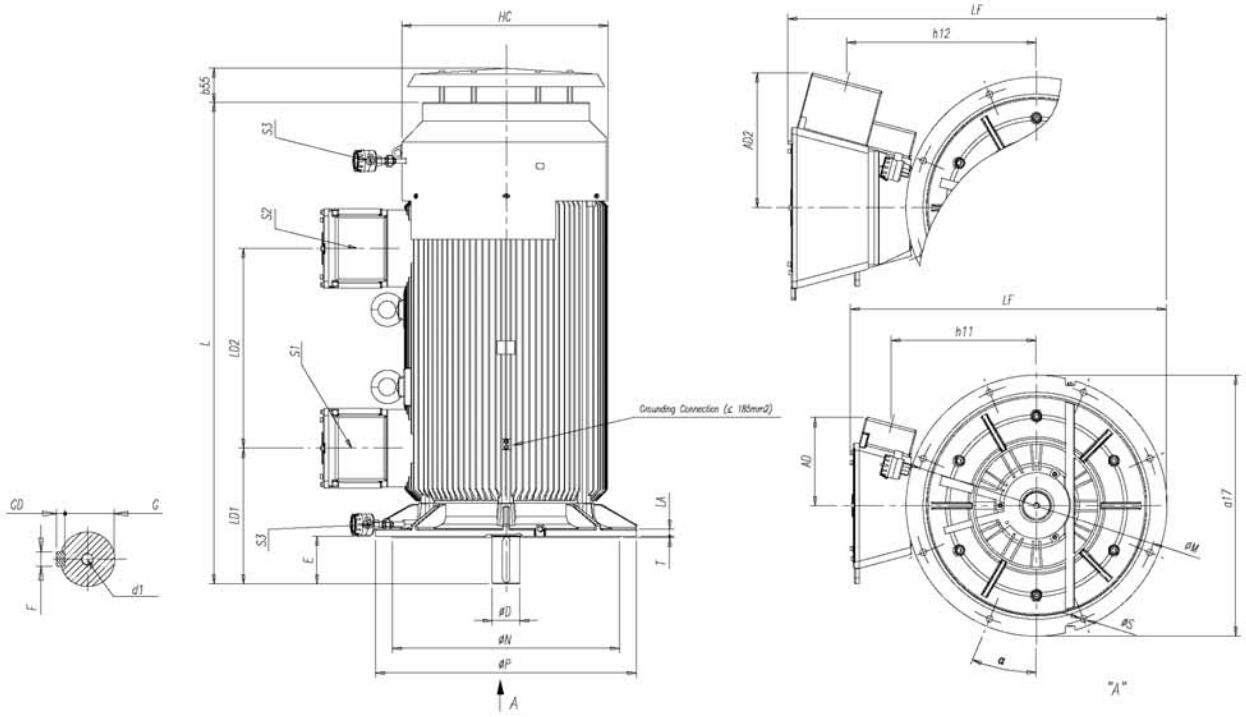
Notes: - (1) I ≤ 400A
- All the dimensions are in millimeters.
- Please, do not use these dimensions for construction. Certified drawings under request.
- External thrust shall be informed at the time of Inquiry/Order.
- Executions with auxiliary terminal box and second shaft end are optional and available under request.
- For other special executions please refer to us.
- The dimensions shown are subject to change without prior notice.

OUTLINE DIMENSIONS

IIB T4
I (M2)

Medium Voltage

BFG8 450KH IMV1



Poles	AD[1]	HC	h11[1]	L	LA	LD1	LD2	LF[1]	a17	b55	M	N	P	T	S	Nr. Holes	α
4P+	388	908	654	2129	30	608	880	1394	1150	153	1080	1000	1150	6	30	8	22,5º

	Shaft dimensions						Bearings		Power terminal box - S1[1]	Auxiliary terminal box - S2	Auxiliary terminal box - S3
Poles	D	E	F	G	GD	d1	D.E	N.D.E	CEFGH340	CEFGH220	Pt 100 Bearing Box
4P+	120m6	210	32h9	109	18	DSM24	7326	6326C3	I ≤315A: 1xM63x1,5 315A<I ≤400A: 3xM63x1,5	2xM20x1,5	1x1/2" NPT

I > 400A				
Poles	AD2	LF2	h12	**Power terminal box** - CEFGH 500 - S1
4P+	594	1688	853	400A<I ≤1200A: 3xM63x1,5

Notes: - (1) I ≤ 400A
- All the dimensions are in millimeters.
- Please, do not use these dimensions for construction. Certified drawings under request.
- External thrust shall be informed at the time of Inquiry/Order.
- Executions with auxiliary terminal box and second shaft end are optional and available under request.
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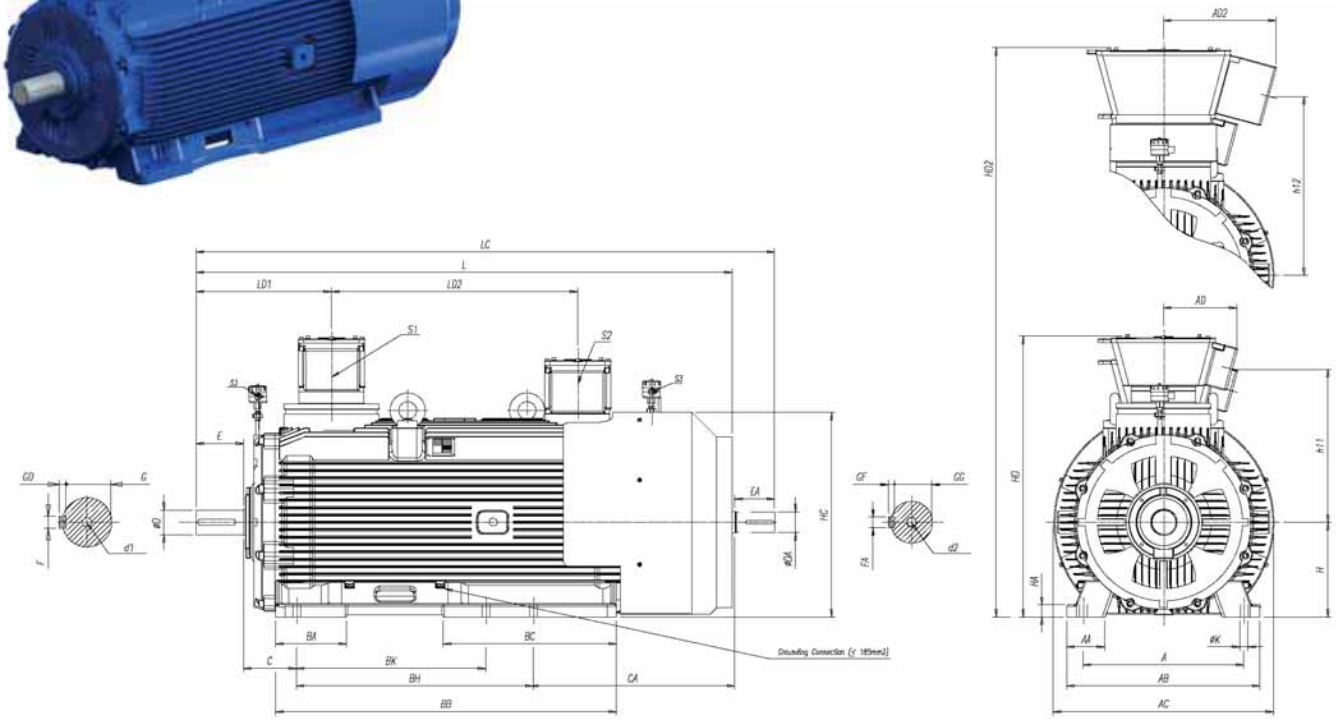
OUTLINE DIMENSIONS

IIB T4
I (M2)

Medium Voltage

W22XB 500KH IMB3T



Poles	A	AA	AB	AC	AD(1)	BA	BB	BC	BK	BH	C	CA	H	HA	HC	HD(1)	h11(1)	K	L	LC	LD1	LD2
2P	850	200	1020	1162	388	375	1800	915	1000	1250	280	1080	500	65	1081	1490	808	42	2750	2905	635	1300
4P+																			2830	3055	715	

	Shaft dimensions												Bearings	
Poles	D	E	F	G	GD	DA	EA	FA	GB	GF	d1	d2	D.E	N.D.E
2P	90m6	170	25	81	14	75	140	20	67,5	12	DSM24	DSM20	NU220C3 + 6220C3	6220C3
4P+	130m6	250	32	119	18	110	210	28	100	16	DSM24	DSM24	6328C3	6328C3

	Power terminal box - S1 (1)	Auxiliary terminal box - S2	Auxiliary terminal box - S3
Poles	CEFGH340	CEFGH340	Pt Bearing Box
2P	I≤315A: 1xM63x1,5	2xM20x1,5	1x1/2" NPT
4P+	315A<I≤400A: 3xM63x1,5		

I > 400A				
Poles	AD2	HD2	h12	Power terminal box - CEFGH 500 - S1
2P	594	1704	946	400A<I≤1200A: 3xM63x1,5
4P+				

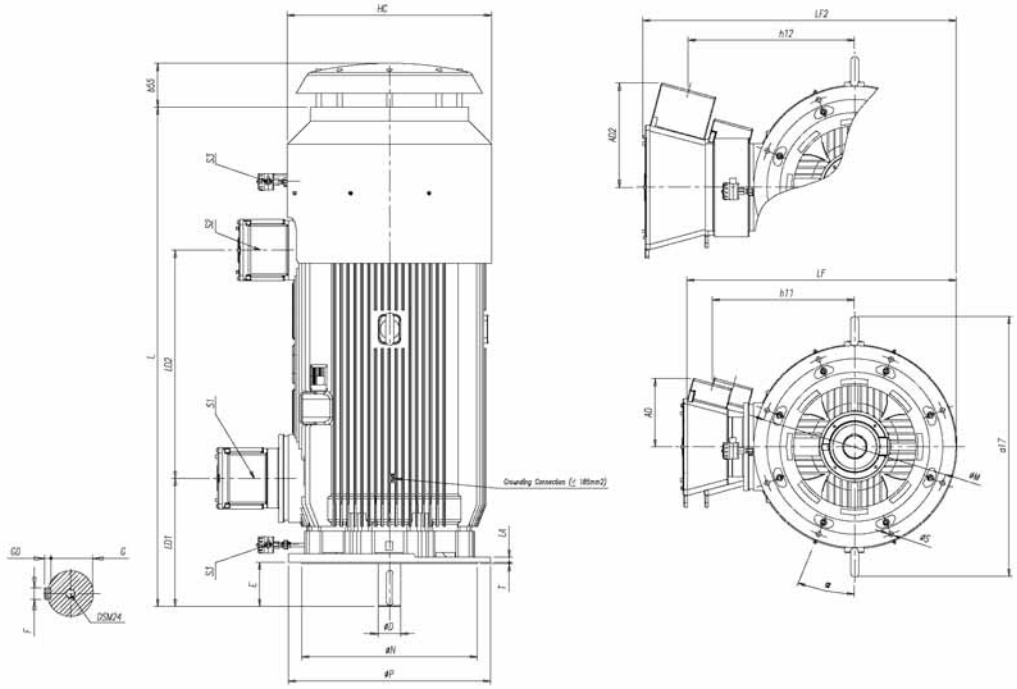
Notes: - (1) I ≤ 400A
- All the dimensions are in millimeters.
- Please, do not use these dimensions for construction. Certified drawings under request.
- External thrust shall be informed at the time of Inquiry/Order.
- Executions with auxiliary terminal box and second shaft end are optional and available under request.
- For other special executions please refer to us.
- The dimensions shown are subject to change without prior notice.

OUTLINE DIMENSIONS

IIB T4
I (M2)

Medium Voltage

W22XB 500KH IMV1



Poles	AD[1]	HC	h11[1]	L	LA	LD1	LD2	LF[1]	a17	b55	M	N	P	T	S	Nr. Holes	α
4P+	388	1162	808	2830	30	715	1300	1536	1482	250	1080	1000	1150	7	28	8	22,5º

	Shaft dimensions						Bearings		Power terminal box - S1 [1]	Auxiliary terminal box - S2	Auxiliary terminal box - S3
Poles	D	E	F	G	GD	d1	D.E	N.D.E	CEFGH340	CEFGH340	Pt 100 Bearin Box
4P+	130m6	250	32h9	119	18	DSM24	7328	6328C3	I≤315A: 1xM63x1,5 315A<I ≤400A: 3xM63x1,5	2xM20x1,5	1x 1/2" NPT

I > 400A				
Poles	AD2	LF2	h12	Power terminal box - CEFGH 500 - S1
4P+	594	1785	946	400A<I≤1200A: 3xM63x1,5

Notes: - (1) I ≤ 400A
- All the dimensions are in millimeters.
- Please, do not use these dimensions for construction. Certified drawings under request.
- External thrust shall be informed at the time of Inquiry/Order.
- Executions with auxiliary terminal box and second shaft end are optional and available under request.
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4.2.5 OUTLINE DIMENSIONS - BFGC8; W22XC; BFGM8; W22XM SERIES

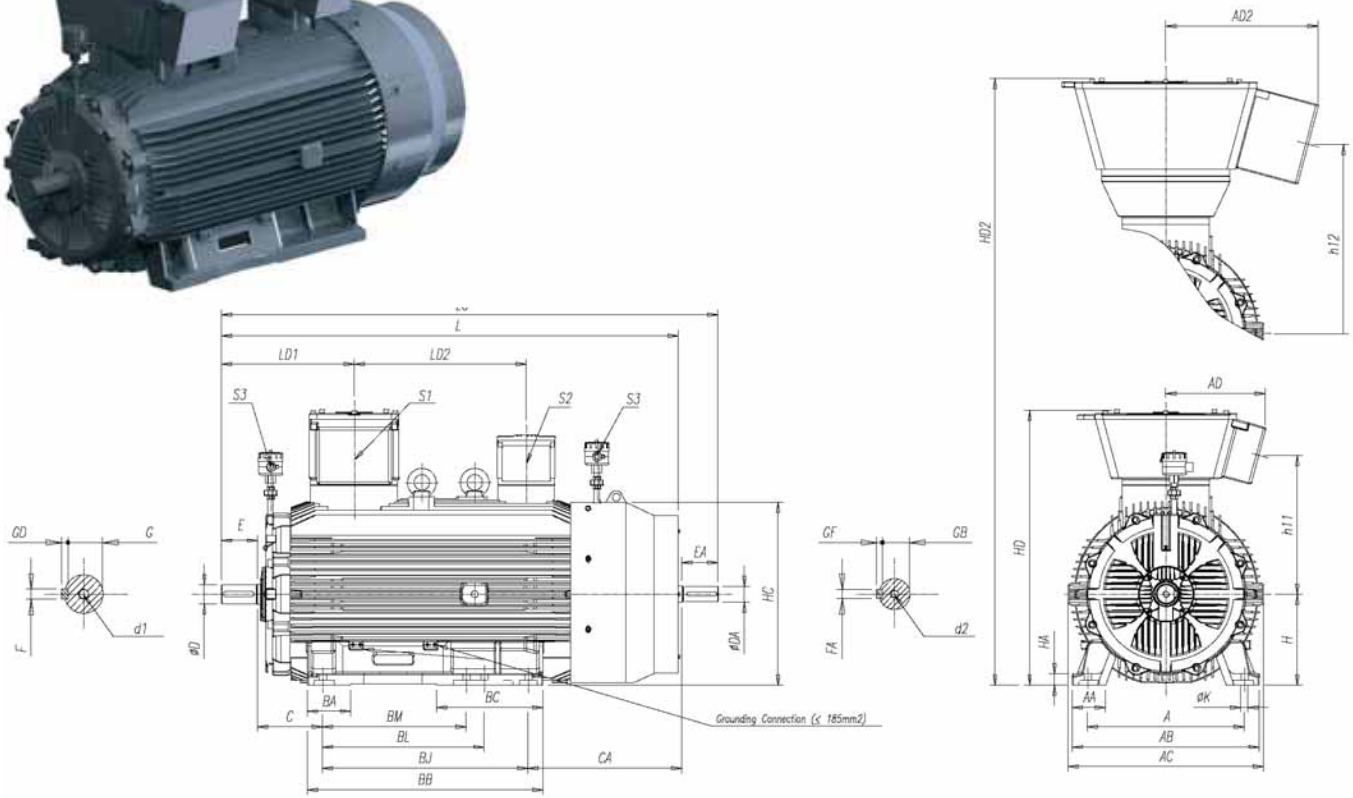
IIC T4
I (M2)

Medium Voltage

Flameproof Motors - Ex d IIC T4 (Ex tD A21 IP6X T 125°C)
Flameproof Motors with Increased Safety Terminal Box - Ex de IIC T4 (Ex tD A21 IP6X T 125°C)

Flameproof Motors for Mines - Ex d I M2
Flameproof Motors for Mines with Increased Safety Terminal Box - Ex de I M2

W22XC 355MLJ IMB3T



Poles	A	AA	AB	AC	AD(1)	BA	BB	BC	BM	BL	BJ	C	CA	H	HA	HC	HD(1)	h11(1)	K	L	LC	LD1	LD2
2P	610	130	730	760	388	170	920	415	560	630	800	254	600	355	45	712	1072	540	28	1779	1934	517	670
4P+																				1849	2034	587	

	Shaft dimensions												Bearings	
Poles	D	E	F	G	GD	DA	EA	FA	GB	GF	d1	d2	D.E.	N.D.E.
2P	75m6	140	20h9	67,5	12	60	140	18h9	53	11	DSM20	DSM20	6316C3	6316C3
4P+	100m6	210	28h9	90	16	80	170	22h9	71	14	DSM24		6322C3	6322C3

	Power terminal box - S1 (1)	Auxiliary terminal box - S2	Auxiliary terminal box - S3
Pole	CEFGH340	CEFGH220	Pt 100 Bearing Box
2P	I≤315A: 1xM63x1,5	2xM20x1,5	1x1/2" NPT
4P+	315A<I≤400A: 3xM63x1,5		

I > 400A				
Poles	AD2	HD2	h12	Power terminal box - CEFGH 500 - S1
2P	594	1340	727	400A<I≤1200A: 3xM63x1,5
4P+				

Notes: (1) I ≤ 400A
- *All the dimensions are in millimeters.*
- *Please, do not use these dimensions for construction. Certified drawings under request.*
- *External thrust shall be informed at the time of Inquiry/Order.*
- *Executions with auxiliary terminal box and second shaft end are optional and available under request.*
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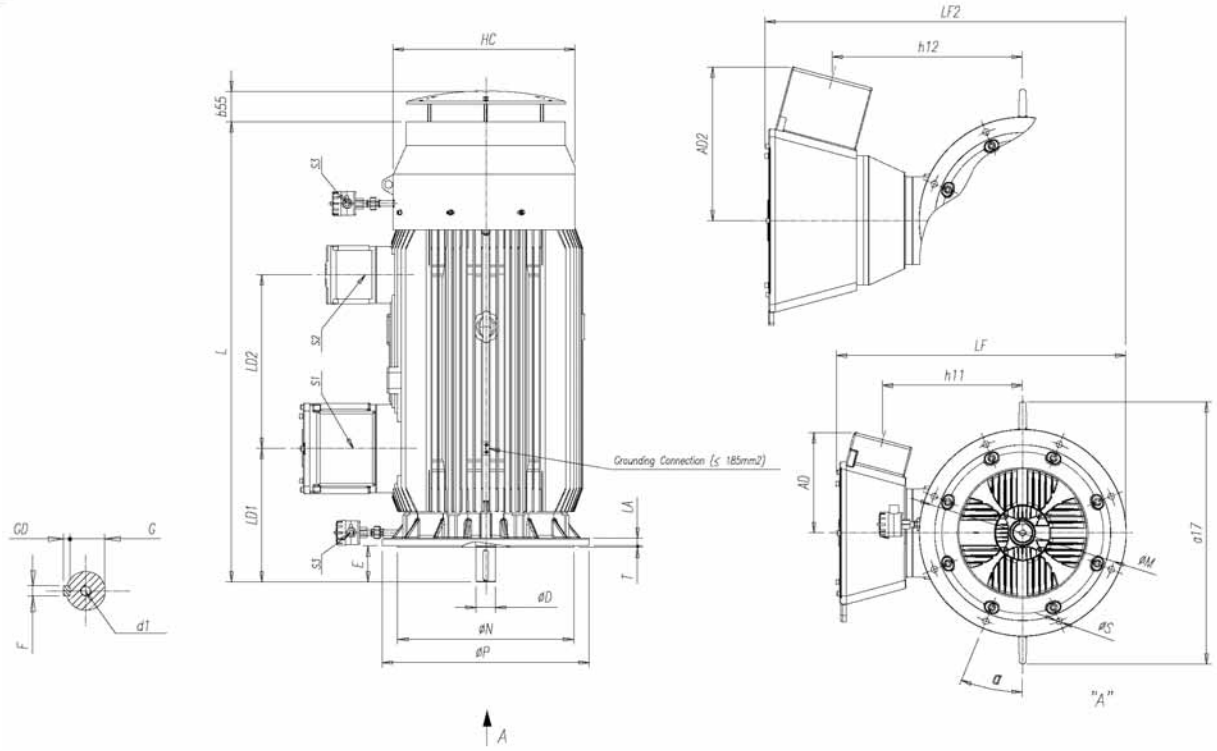
OUTLINE DIMENSIONS

IIC T4
I (M2)

Medium Voltage

W22XC 355MLJ IMV1



Poles	AD(1)	HC	h11(1)	L	LA	LD1	LD2	LF(1)	b55	a17	M	N	P	T	S	Nr. Holes	α
2P	388	702,5	540	1779	30	517	670	1117	118	1015	740	680	800	6	24	8	22,5º
4P+				1849		587											

	Shaft dimensions						Bearings		Power terminal box - S1 (1)	Auxiliary terminal box - S2	Auxiliary terminal box - S3
Poles	D	E	F	G	GD	d1	D.E	N.D.E	CEFGH 340	CEFGH 220	Pt 100 Bearing Box
2P	75m6	140	20h9	67,5	12	DSM20	7316	6316C	I≤315A: 1xM63x1,5	2xM20x1,5	1 x 1/2" NPT
4P+	100m6	210	28h9	90	16	DSM24	7322	6322C	315A<I ≤400A: 3xM63x1,5		

I > 400A				
Poles	AD2	LF2	h12	Power terminal box - CEFGH 500 - S1
2P	594	1386	727	400A<I ≤1200A: 3xM63x1,5
4P+				

Notes: (1) I ≤ 400A
- *All the dimensions are in millimeters.*
- *Please, do not use these dimensions for construction. Certified drawings under request.*
- *External thrust shall be informed at the time of Inquiry/Order.*
- *Executions with auxiliary terminal box and second shaft end are optional and available under request.*
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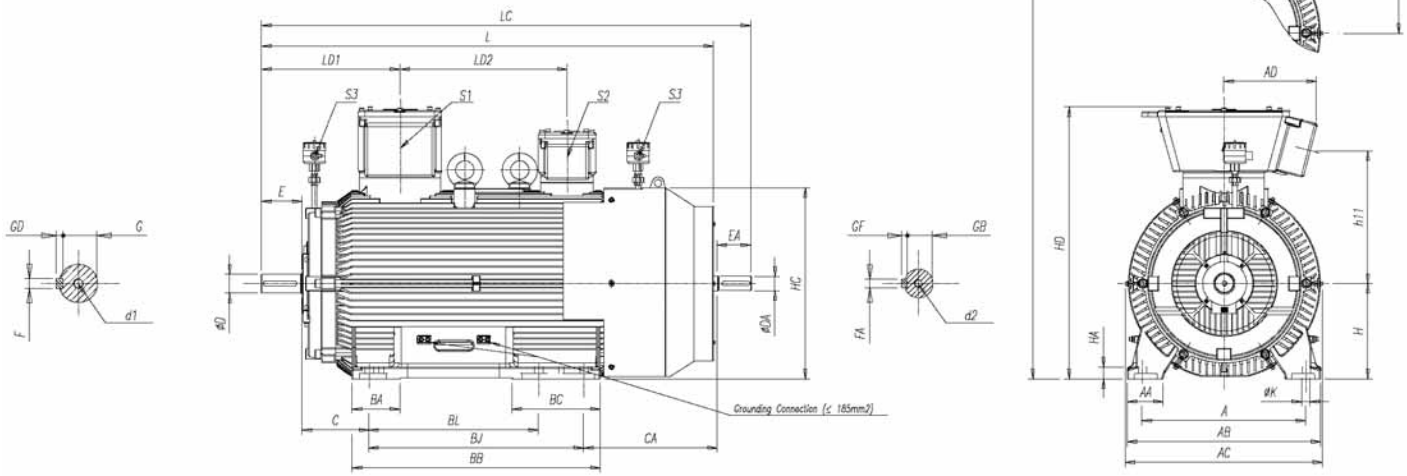
OUTLINE DIMENSIONS

IIC T4
I (M2)

Medium Voltage

BFGC8 400LJ IMB3T



Poles	A	AA	AB	AC	AD(1)	BA	BB	BC	BL	BJ	C	CA	H	HA	HC	HD(1)	h11(1)	K	L	LC	LD1	LD2
2P	686	150	810	827	388	200	1040	370	710	900	280	560	400	50	802	1139	557	35	1895	2050	580	700
4P+																			1935	2120	620	

	Shaft dimensions												Bearings	
Poles	D	E	F	G	GD	DA	EA	FA	GB	GF	d1	d2	D.E.	N.D.E.
2P	80m6	170	22h9	71	14	60	140	18h9	53	11	DSM20	DSM20	6318C3	6318C3
4P+	110m6	210	28h9	100	16	80	170	22h9	71	14	DSM24		6324C3	6324C3

	Power terminal box - S1(1)	Auxiliary terminal box - S2	Auxiliary terminal box - S3
Poles	CEFGH 340	CEFGH 220	Pt 100 Bearing Box
2P	I≤315A: 1xM63x1,5	2xM20x1,5	1/2" NPT
4P+	315A<I≤400A: 3xM63x1,5		

I > 400A				
Poles	AD2	HD2	h12	Power terminal box - CEFGH 500 - S1
2P	594	1408	747	400A<I≤1200A: 3xM63x1,5
4P+				

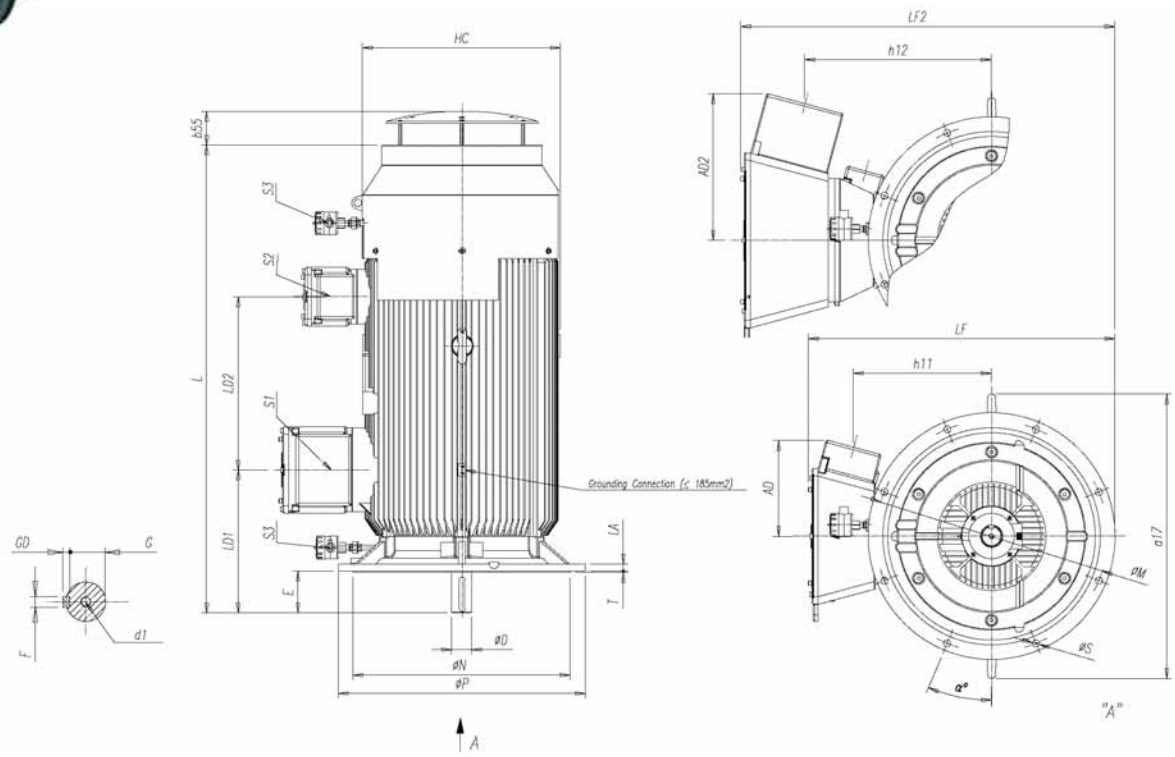
Notes: (1) I ≤ 400A
- *All the dimensions are in millimeters.*
- *Please, do not use these dimensions for construction. Certified drawings under request.*
- *External thrust shall be informed at the time of Inquiry/Order.*
- *Executions with auxiliary terminal box and second shaft end are optional and available under request.*
- *For other special executions please refer to us.*
- *The dimensions shown are subject to change without prior notice.*

OUTLINE DIMENSIONS

IIC T4
I (M2)

Medium Voltage

BFGC8 400LJ IMV1



Poles	AD(1)	HC	h11(1)	L	LA	LD1	LD2	LF(1)	a17	b55	M	N	P	T	S	Nr. Holes	α
2P	388	802	558	1895	28	580	700	1240	1154	136	940	880	1000	6	28	8	22,5º
4P+				1935		620											

	Shaft dimensions						Bearings		Power terminal box - S1(1)	Auxiliary terminal box - S2	Auxiliary terminal box - S3
Poles	D	E	F	G	GD	d1	D.E.	N.D.E.	CEFGH 340	CEFGH 220	Pt 100 Bearing Box
2P	80m6	170	22h9	71	14	DSM20	7318	6318C3	I ≤ 315A: 1xM63x1,5	2xM20x1,5	1x1/2" NPT
4P+	110m6	210	28h9	100	16	DSM24	7324	6324C3	315A < I ≤ 400A: 3xM63x1,5		

I > 400A				
Poles	AD2	LF2	h12	Power terminal box - CEFGH 500 - S1
2P	594	1507	747	400A < I ≤ 1200A: 3xM63x1,5
4P+				

Notes: (1) I ≤ 400A
- *All the dimensions are in millimeters.*
- *Please, do not use these dimensions for construction. Certified drawings under request.*
- *External thrust shall be informed at the time of Inquiry/Order.*
- *Executions with auxiliary terminal box and second shaft end are optional and available under request.*
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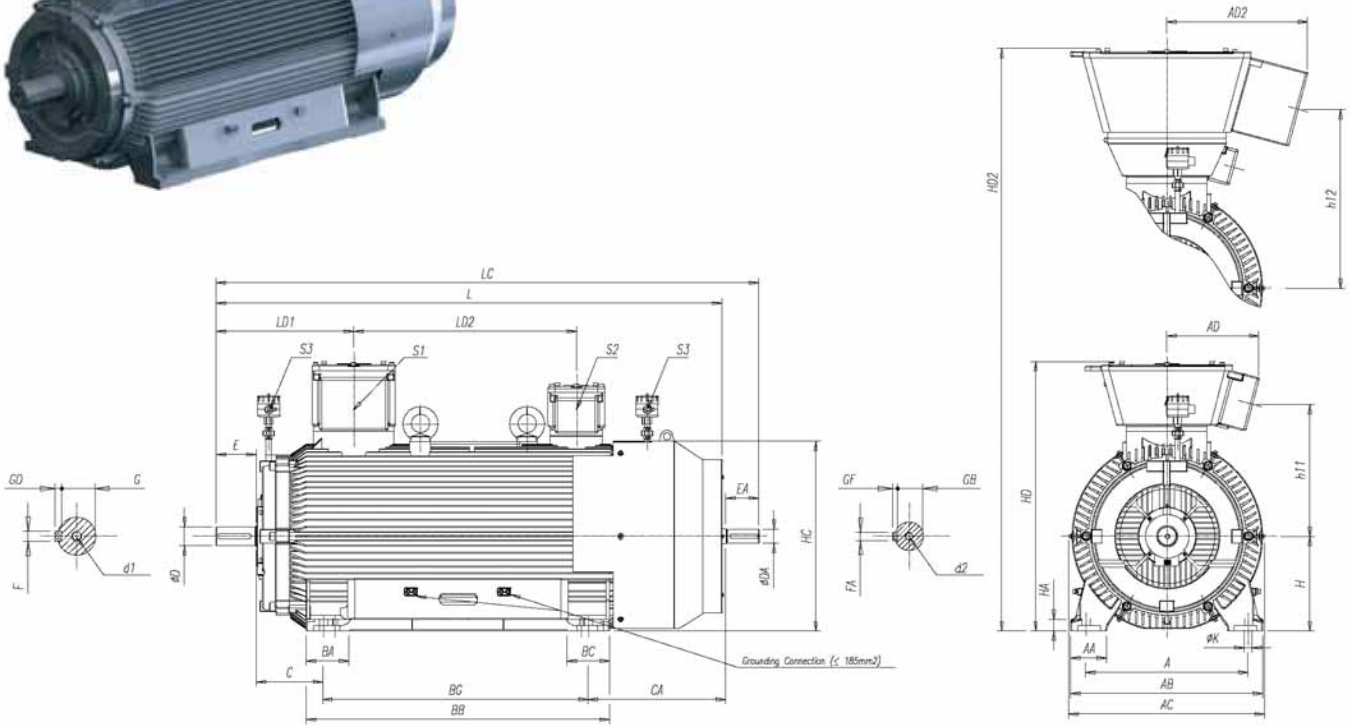
OUTLINE DIMENSIONS

IIC T4
I (M2)

Medium Voltage

BFGC8 400G IMB3T



Poles	A	AA	AB	AC	AD(1)	BA	BB	BC	BG	C	CA	H	HA	HC	HD(1)	h11(1)	K	L	LC	LD1	LD2
2P	686	150	810	827	388	200	1280	180	1120	280	580	400	50	802	1139	557	35	2135	2290	580	940
4P+																		2175	2360	620	

	Shaft dimensions												Bearings	
Poles	D	E	F	G	GD	DA	EA	FA	GB	GF	d1	d2	D.E.	N.D.E.
2P	80m6	170	22h9	71	14	60	140	18h9	53	11	DSM20	DSM20	6318C3	6318C3
4P+	110m6	210	28h9	100	16	80	170	22h9	71	14	DSM24		6324C3	6324C3

	Power terminal box - S1(1)	Auxiliary terminal box - S2	Auxiliary terminal box - S3
Poles	CEFGH 340	CEFGH 220	Pt 100 Bearing Box
2P	I≤315A: 1xM63x1,5	2xM20x1,5	1/2" NPT
4P+	315A<I≤400A: 3xM63x1,5		

I > 400A				
Poles	AD2	HD2	h12	Power terminal box - CEFGH 500 - S1
2P	594	1408	747	400A<I≤1200A: 3xM63x1,5
4P+				

Notes: (1) I ≤ 400A
- *All the dimensions are in millimeters.*
- *Please, do not use these dimensions for construction. Certified drawings under request.*
- *External thrust shall be informed at the time of Inquiry/Order.*
- *Executions with auxiliary terminal box and second shaft end are optional and available under request.*
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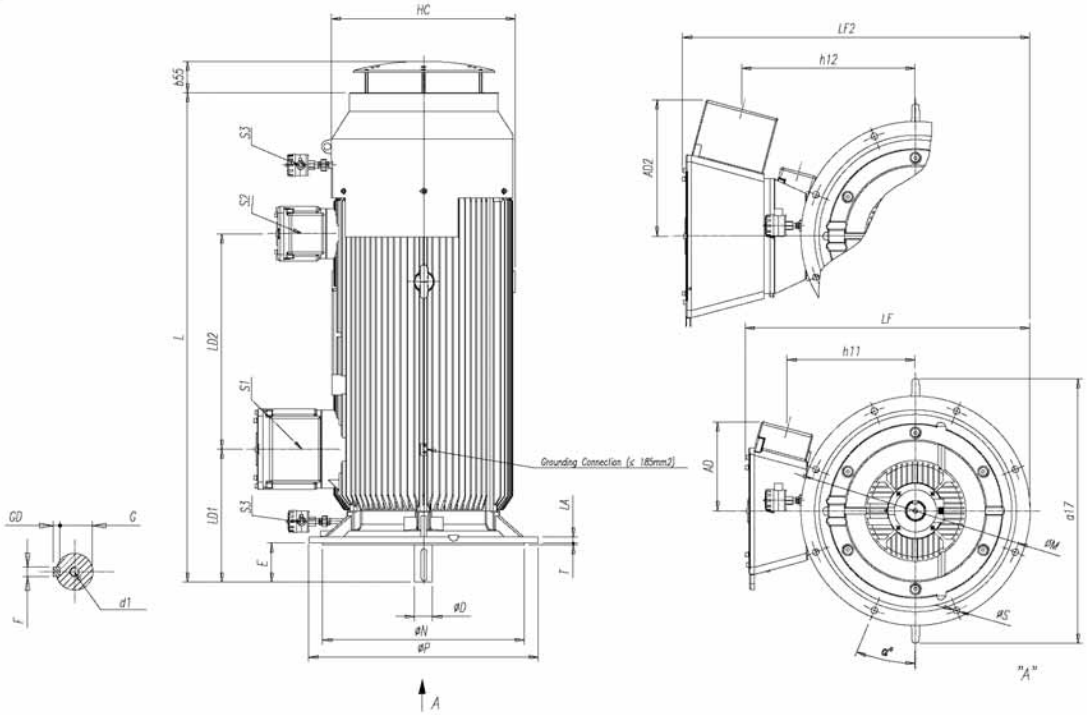
- *The dimensions shown are subject to change without prior notice.*

OUTLINE DIMENSIONS

IIC T4
I (M2)

Medium Voltage

BFGC8 400G IMV1



Poles	AD[1]	HC	h11[1]	L	LA	LD1	LD2	LF[1]	a17	b55	M	N	P	T	S	Nr. Holes	α
2P	388	802	558	2135	28	580	940	1240	1154	136	940	880	1000	6	28	8	22,5º
4P+				2175		620											

	Shaft dimensions						Bearings		Power terminal box - S1[1]	Auxiliary terminal box - S2	Auxiliary terminal box - S3
Poles	D	E	F	G	GD	d1	D.E	N.D.E	CEFGH 340	CEFGH 220	Pt 100 Bearing Box
2P	80m6	170	22h9	71	14	DSM20	7318	6318C3	I ≤ 315A: 1xM63x1,5	2xM20x1,5	1x1/2" NPT
4P+	110m6	210	28h9	100	16	DSM24	7324	6324C3	315A < I ≤ 400A: 3xM63x1,5		

I > 400A				
Poles	AD2	LF2	h12	Power terminal box - CEFGH 500 - S1
2P	594	1507	747	400A < I ≤ 1200A: 3xM63x1,5
4P+				

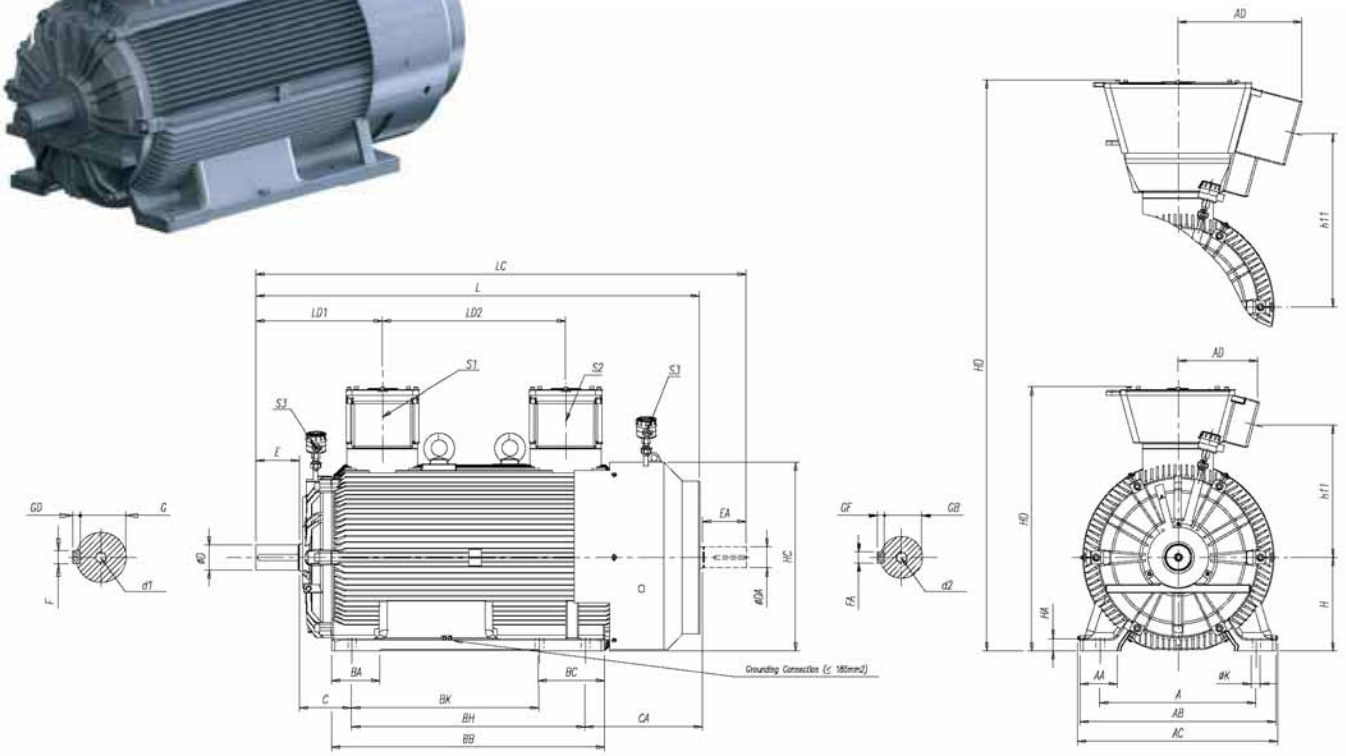
Notes: (1) I ≤ 400A
- *All the dimensions are in millimeters.*
- *Please, do not use these dimensions for construction. Certified drawings under request.*
- *External thrust shall be informed at the time of Inquiry/Order.*
- *Executions with auxiliary terminal box and second shaft end are optional and available under request.*
- *For other special executions please refer to us.*
- *The dimensions shown are subject to change without prior notice.*

OUTLINE DIMENSIONS

IIC T4
I (M2)

Medium Voltage

BFGC8 450KH IMB3T



Poles	A	AA	AB	AC	AD(1)	BA	BB	BC	BK	BH	C	CA	H	HA	HC	HD(1)	h11(1)	K	L	LC	LD1	LD2
2P	750	180	940	957	388	230	1310	320	900	1120	250	564	450	60	908	1269	654	42	2089	2244	568	880
4P+																			2129	2354	608	

	Shaft dimensions												Bearings	
Poles	D	E	F	G	GD	DA	EA	FA	GB	GF	d1	d2	D.E	N.D.E
2P	85m6	170	22h9	76	14	75	140	20h9	67,5	12	DSM20	DSM20	N218 + 6218C3	N218
4P+	120m6	210	32h9	109	18	100	210	28h9	90	16	DSM24	DSM20	6326C3	6326C3

	Power terminal box - S1(1)	Auxiliary terminal box - S2	Auxiliary terminal box - S3
Poles	CEFGH 340	CEFGH 340	Pt 100 Bearing Box
2P	I≤315A: 1xM63x1,5	2xM20x1,5	1 x 1/2" NPT
4P+	315A<I≤400A: 3xM63x1,5		

I > 400A				
Poles	AD2	HD2	h12	Power terminal box - CEFGH 500 - S1
2P	594	1562	853	400A<I≤1200A: 3xM63x1,5
4P+				

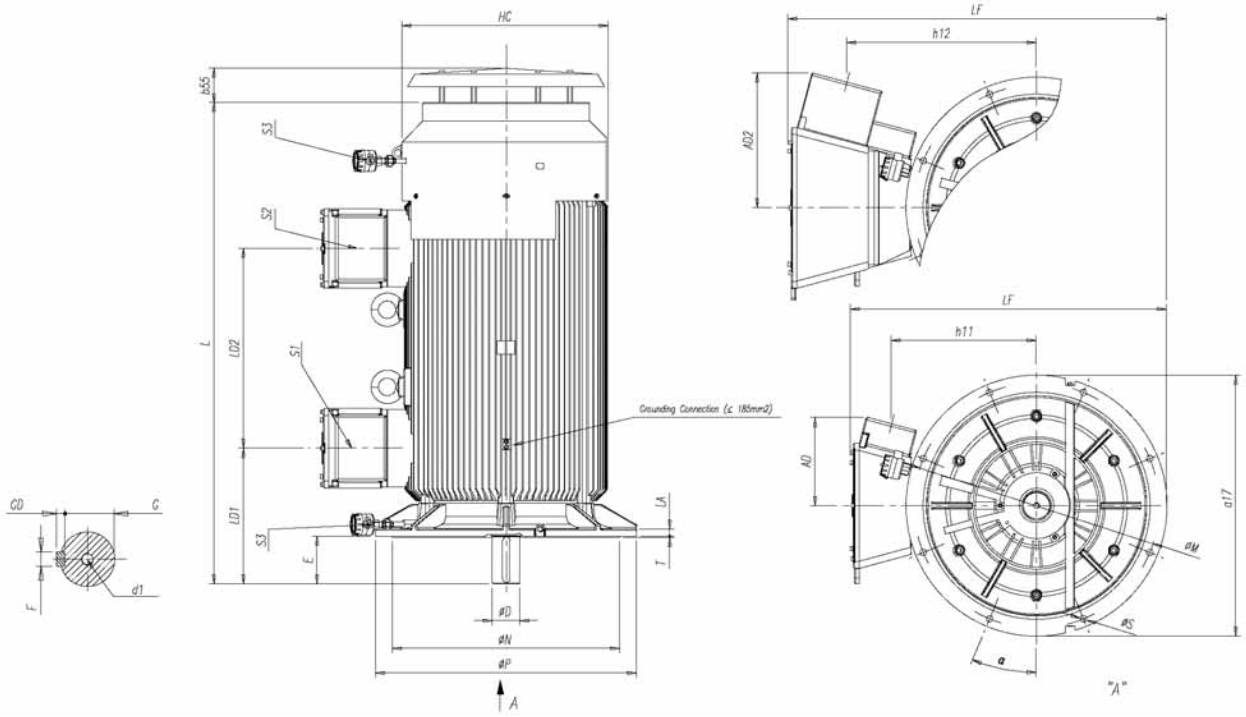
Notes: (1) I ≤ 400A
- *All the dimensions are in millimeters.*
- *Please, do not use these dimensions for construction. Certified drawings under request.*
- *External thrust shall be informed at the time of Inquiry/Order.*
- *Executions with auxiliary terminal box and second shaft end are optional and available under request.*
- *For other special executions please refer to us.*
- *The dimensions shown are subject to change without prior notice.*

OUTLINE DIMENSIONS

IIC T4
I (M2)

Medium Voltage

BFGC8 450KH IMV1



Poles	AD(1)	HC	h11(1)	L	LA	LD1	LD2	LF(1)	a17	b55	M	N	P	T	S	Nr. Holes	α
4P+	388	908	654	2129	30	608	880	1394	1150	153	1080	1000	1150	6	30	8	22,5º

	Shaft dimensions						Bearings		Power terminal box - S1(1)	Auxiliary terminal box - S2	Auxiliary terminal box - S3
Poles	D	E	F	G	GD	d1	D.E	N.D.E	CEFGH340	CEFGH340	Pt 100 Bearing Box
4P+	120m6	210	32h9	109	18	DSM24	7326	6326C3	I ≤315A: 1xM63x1,5 315A<I ≤400A: 3xM63x1,5	2xM20x1,5	1x1/2" NPT

I > 400A				
Poles	AD2	LF2	h12	**Power terminal box** - CEFGH 500 - S1
4P+	594	1688	853	400A<I ≤1200A: 3xM63x1,5

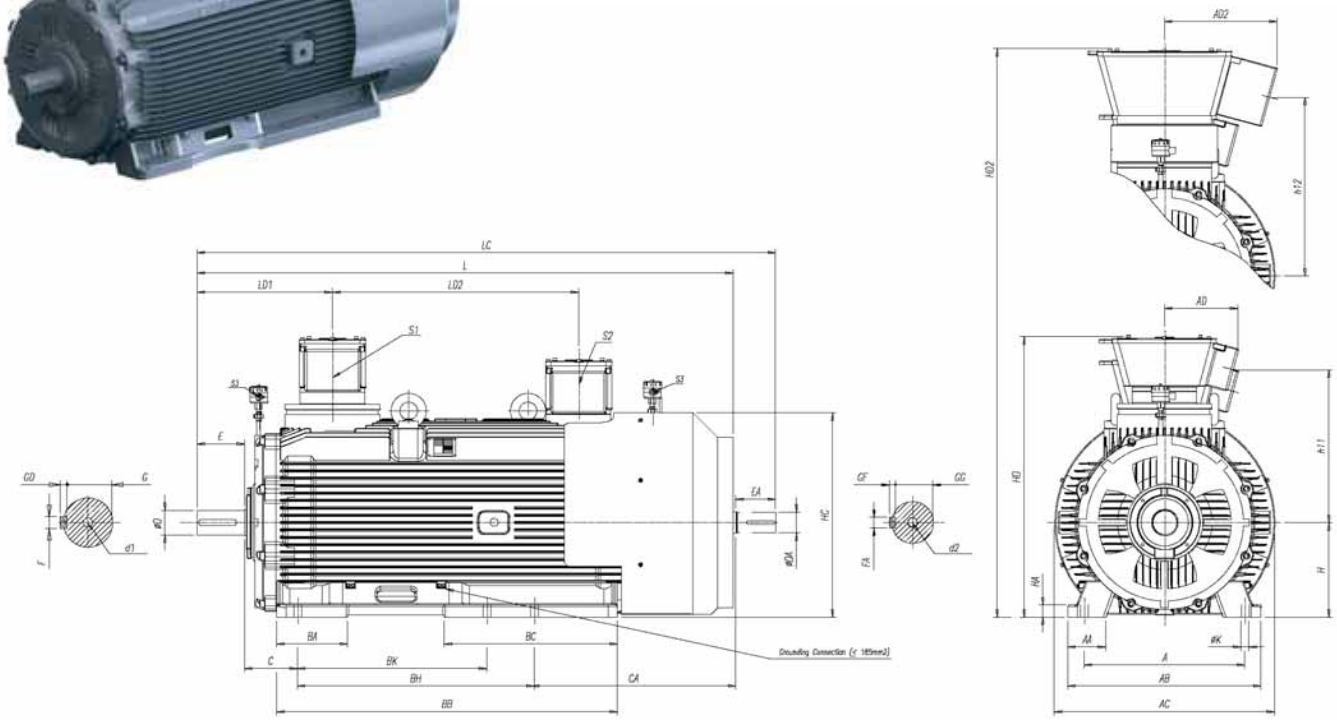
Notes: (1) I ≤ 400A
- All the dimensions are in millimeters.
- Please, do not use these dimensions for construction. Certified drawings under request.
- External thrust shall be informed at the time of Inquiry/Order.
- Executions with auxiliary terminal box and second shaft end are optional and available under request.
- For other special executions please refer to us.
- The dimensions shown are subject to change without prior notice.

OUTLINE DIMENSIONS

IIC T4
I (M2)

Medium Voltage

W22XC 500KH IMB3T



Poles	A	AA	AB	AC	AD(1)	BA	BB	BC	BK	BH	C	CA	H	HA	HC	HD(1)	h11(1)	K	L	LC	LD1	LD2
2P	850	200	1020	1162	388	375	1800	915	1000	1250	280	1080	500	65	1081	1490	808	42	2750	2905	635	1300
4P+																			2830	3055	715	

	Shaft dimensions												Bearings	
Poles	D	E	F	G	GD	DA	EA	FA	GB	GF	d1	d2	D.E	N.D.E
2P	90m6	170	25	81	14	75	140	20	67,5	12	DSM24	DSM20	NU220C3 + 6020C3	NU220C3
4P+	130m6	250	32	119	18	110	210	28	100	16	DSM24	DSM24	6328C3	6328C3

	Power terminal box - S1 (1)	Auxiliary terminal box - S2	Auxiliary terminal box - S3
Poles	CEFGH340	CEFGH340	Pt Bearing Box
2P	I≤315A: 1xM63x1,5	2xM20x1,5	1x1/2" NPT
4P+	315A<I≤400A: 3xM63x1,5		

I > 400A				
Poles	AD2	HD2	h12	Power terminal box - CEFGH 500 - S1
2P	594	1704	946	400A<I≤1200A: 3xM63x1,5
4P+				

Notes: (1) I ≤ 400A
- *All the dimensions are in millimeters.*
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- *External thrust shall be informed at the time of Inquiry/Order.*
- *Executions with auxiliary terminal box and second shaft end are optional and available under request.*
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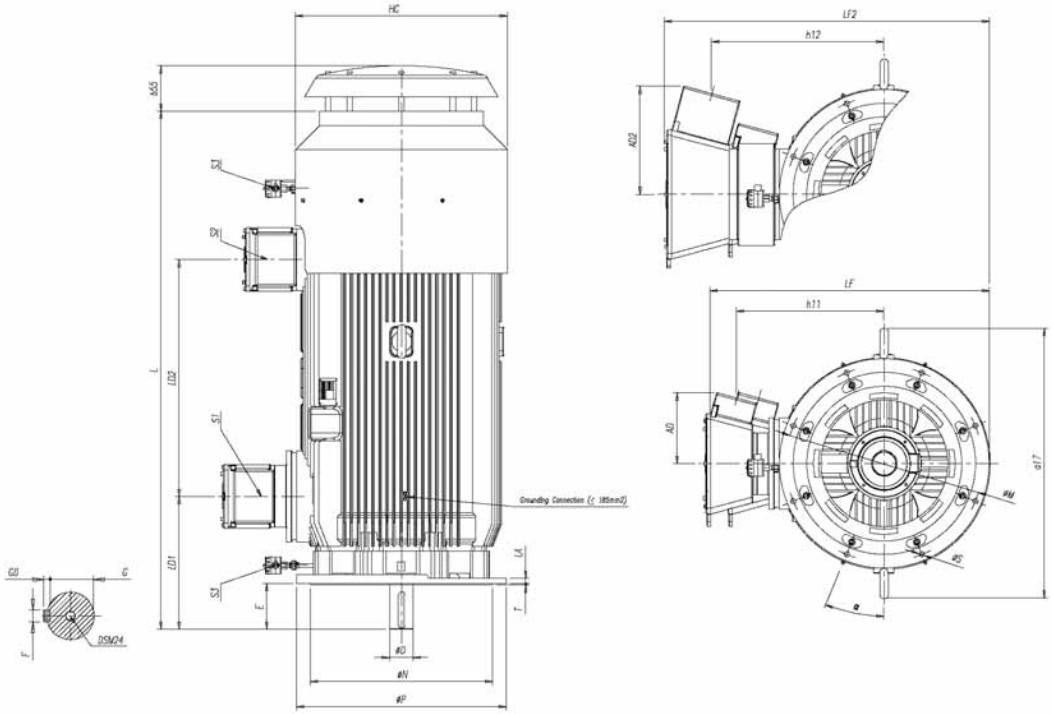
- *The dimensions shown are subject to change without prior notice.*

OUTLINE DIMENSIONS

IIC T4
I (M2)

Medium Voltage

W22XC 500KH IMV1



Poles	AD[1]	HC	h11[1]	L	LA	LD1	LD2	LF[1]	a17	b55	M	N	P	T	S	Nr. Holes	α
4P+	388	1162	808	2830	30	715	1300	1536	1482	250	1080	1000	1150	7	28	8	22,5º

	Shaft dimensions						Bearings		Power terminal box - S1 [1]	Auxiliary terminal box - S2	Auxiliary terminal box - S3
Poles	D	E	F	G	GD	d1	D.E	N.D.E	CEFGH340	CEFGH340	Pt 100 Bearin Box
4P+	130m6	250	32h9	119	18	DSM24	7328	6328C3	I≤315A: 1xM63x1,5 315A< I ≤400A: 3xM63x1,5	2xM20x1,5	1x 1/2" NPT

I > 400A				
Poles	AD2	LF2	h12	Power terminal box - CEFGH 500 - S1
4P+	594	1785	946	400A< I ≤1200A: 3xM63x1,5

Notes: (1) I ≤ 400A
- All the dimensions are in millimeters.
- Please, do not use these dimensions for construction. Certified drawings under request.
- External thrust shall be informed at the time of Inquiry/Order.
- Executions with auxiliary terminal box and second shaft end are optional and available under request.
- For other special executions please refer to us.
- The dimensions shown are subject to change without prior notice.

4.3 MEDIUM VOLTAGE NON SPARKING MOTORS BFN6

4.3.1 PRODUCT SPECIFICATION

Range

The present catalogue refers to TEFC, high voltage, three phase, squirrel cage induction motors up to 6600 V, ribbed frames, **BFN** series, with shaft height from 315 to 500 mm, with following powers:

KW	RPM	
90 up to 1000 kW	3000 RPM	
90 up to 1400 kW	1500 RPM	Under request, are
90 up to 1120 kW	1000 RPM	available higher outputs
90 up to 900 kW	750 RPM	on this motor series.

Particular specifications related to Hazardous Areas

The motor series **BFN6** have the specification code **Ex nA**, and comply with European Standards listed on paragraph 1.2.2 for the gases **Group II** and Temperature Class T3.

This motor series has the CE marking in compliance with European Directive 94/4/EC (ATEX), and are classified as equipment **Group II** (Surface Industries), Category **3**, suitable to use on **Zones 2**. – Gases and Vapours **(G)**.
The Non Sparking motors in this catalogue are thirth part certified by Ex Notified Body Baseefa in UK, accredited organization by EU.

Construction

- **Mechanical protection:** IP 55
- **Insulation:** class F
- **Temperature rise:** 80 K
- **Main components:**
  Frame: **cast iron**
  Terminal box: **cast iron**, with **pressed steel** cover
  Endshields: **cast iron**
  Fan: **aluminium, steel** or **polypropylene**
  Fan cover: **steel**
- **Finish:** industrial paint system, standard color **RAL 5010**

Voltage and frequency

The performance data referred on the present catalogue is for motors operating with a voltage of **6000V** ± 5% and a frequency of **50Hz** ± 2%, on continuous service.
For voltages of **6600V** all figures are equivalent, except the rated current (In), which shall be multiplied by a factor of 0,9.
Under request are available other voltages up to **6600V**, and frequencies **50** or **60Hz**.

Basic design

Cooling method:

The cooling method is IC 411 in accordance with standard IEC 60034-6 - motors cooled by an external fan.

Direction of rotation:

On frame sizes 315 (all speeds) and frames 355/400 (4 pole and above), as standard the motors are fitted with a bi-directional fan.
On remaining frames, the fans are unidirectional, leaving the factory as standard CW direction viewed from shaft end with the phasesequence of U, V, and W. In these cases the direction of rotation must be specified with the order.

Electrical connection:

3 terminals are provided for star connection with neutral point connected inside the windings.

Terminal boxes:

On **BFN6** motors, the main and auxiliary terminal box, are located at top of motor frame and can be rotated by 180° to suit cable entryfrom left or right hand side.
As standard the cables entries are foreseen on right hand side when viewed from D.E side.
Note: customer shell refer cable entry direction with order.

Protections/Auxiliaries:

As standard the BFN medium voltage motors are fitted with the following protections:
- 3 RTD's - Pt 100 – on windings, 1 per phase, 3 wires
- 2 RTD's - Pt 100 – on bearings, 1 per bearing, 3 wires
- Anti-condensation heaters – 230V

All auxiliaries are connected in to an auxiliary terminal box.
As option under request, the motors can be fitted with other number or type of protections either on windings and bearings.

Earth connection:

All motors are equipped with an earth screw inside of terminal box. A second external earth connection is also provided on motor frame, on foot or on flange depending on mounting form.

Bearings:

The bearings indicated on this catalogue refer to standard horizontal mounting form and for direct coupling.
On frame sizes 315L and above, the motors are equipped on both sides with deep groove ball bearings, pre-loaded by an axial springwasher or springs, except the 2 pole motors frames 450 and 500, which are fitted with 3 bearings arrangement (roller + ball in DE and roller in NDE).
As optional execution under request, sleeve bearings can also be fitted in all frame sizes and polarities (self declaration or certification on request). In the case of pulley/belt drive transmission, the drive end bearing can be replaced by a roller bearing.

On vertical mounting motors, the bearings can be thrust bearing types and are defined according to the axial loads involved on the application.

- **Lubrication:**

As standard, when the motors are equipped with ball, roller, or other type of bearings, they are grease lubricated. Grease nipples and relief valves are provided to allow re-lubrication while the motor is running.
When the motors are fitted with sleeve bearings, as standard they are self lubricated type

- **Balancing:**

The motors are dynamically balanced with half-key to meet the vibration limits of standard IEC 60034-14, **Grade A.** **Grade B** can be provided under request.
The D.E. and N.D.E. endshields are designed to fit, under request, optional captors for vibration monitoring detectors or other devices.

4.3.2 ELECTRICAL DATA - BFN6 SERIES

II T3

Non Sparking Motors - Ex nA

Medium Voltage

II and IV Pole

Output KW	Output HP	Frame IEC	T_n (Nm)	I_s/I_n	T_s/T_n	T_{max}/T_n	Inertia J Kgm²	Allowable locked rotor time Hot/Cold (s)	Weight Kg	Sound dB (A)	6000V rpm min⁻¹	% of full load Efficiency η 50	Efficiency η 75	Efficiency η 100	Power Factor Cos φ 50	Power Factor Cos φ 75	Power Factor Cos φ 100	I_n(A)
II Pole - 3000 min-1																		
90	120	BFN6 315L	288	6,7	1,7	2,7	1,0	20	1180	82	2982	91,3	93,1	93,8	0,67	0,76	0,81	11,4
110	150	BFN6 315L	353	6,1	1,6	2,4	1,1	20	1220	82	2980	91,7	93,5	94,2	0,69	0,78	0,83	13,5
132	180	BFN6 315L	423	6,5	1,7	2,5	1,2	20	1300	82	2980	92,2	94,0	94,8	0,71	0,80	0,84	16,0
160	215	BFN6 355MLJ	512	6,0	1,3	2,5	2,4	20	1700	80	2983	94,0	95,2	95,6	0,81	0,87	0,88	18,3
200	270	BFN6 355MLJ	640	6,0	1,3	2,5	2,6	20	1800	80	2983	94,4	95,3	95,7	0,83	0,86	0,88	22,9
250	340	BFN6 355MLJ	800	6,3	1,5	2,7	3,4	18	1900	80	2983	94,8	95,8	96,0	0,83	0,87	0,88	28,5
280	380	BFN6 355MLJ	896	6,9	1,8	3,0	3,4	12	1950	80	2985	95,4	96,0	96,2	0,78	0,84	0,86	32,6
315	425	BFN6 355MLJ	1008	6,8	1,6	2,7	3,7	14	2000	80	2985	95,6	96,2	96,4	0,84	0,87	0,88	35,7
355	480	BFN6 355MLJ	1136	6,8	1,8	2,9	4,2	11	2250	80	2985	95,7	96,3	96,5	0,85	0,88	0,89	39,8
400	540	BFN6 355MLJ (1)	1280	7,0	1,9	3,0	4,1	5	2250	80	2985	95,7	96,3	96,5	0,83	0,86	0,88	45,3
400	540	BFN6 400L	1281	6,7	1,6	2,7	5,7	9	2800	80	2982	95,4	96,2	96,5	0,78	0,84	0,86	46,4
450	610	BFN6 400J	1441	6,5	1,5	2,6	6,9	9	3000	80	2982	96,1	96,6	96,6	0,81	0,85	0,86	52,1
500	675	BFN6 400J	1601	6,6	1,6	2,7	7,4	8	3200	80	2983	96,0	96,7	96,9	0,79	0,85	0,87	57,1
560	755	BFN6 400J (1)(3)	1790	7,5	1,1	3,3	11,7	19	3850	80	2988	96,3	96,8	97,0	0,84	0,89	0,90	61,7
560	755	BFN6 400G (3)	1790	7,5	1,1	3,3	11,7	19	3850	80	2988	96,3	96,8	97,0	0,84	0,89	0,90	61,7
630	850	BFN6 400G (1)(3)	2014	7,5	1,2	3,2	11,7	14	3900	80	2988	96,3	96,9	97,1	0,84	0,89	0,90	69,4
630	850	BFN6 450KH (3)	2013	5,5	0,7	2,3	11,9	20	4600	80	2989	96,3	96,9	97,2	0,83	0,87	0,87	71,7
710	960	BFN6 450KH (3)	2268	5,5	0,7	2,3	13,4	20	4700	80	2989	96,3	96,9	97,2	0,83	0,87	0,87	80,8
800	1080	BFN6 450KH (1)(3)	2555	7,0	0,8	3,0	13,6	20	4850	80	2990	96,5	97,1	97,3	0,83	0,88	0,89	88,9
800	1080	BFN6 500H (3)																
900	1215	BFN6 500H (3)							Available on request									
1000	1350	BFN6 500H (3)																
IV Pole - 1500 min-1																		
90	120	BFN6 315L	580	5,7	1,9	2,0	1,7	20	1050	82	1483	91,6	93,0	93,3	0,66	0,74	0,77	12,0
110	150	BFN6 315L	708	6,1	2,1	2,1	1,9	19	1100	82	1484	91,7	93,1	93,5	0,65	0,73	0,76	14,8
132	180	BFN6 315L	849	6,5	2,3	2,3	2,2	14	1200	82	1485	92,2	93,6	94,0	0,63	0,72	0,75	18,0
160	215	BFN6 355MLJ	1026	5,7	1,3	2,5	4,4	20	1675	80	1489	93,5	94,7	95,0	0,77	0,83	0,83	19,5
200	270	BFN6 355MLJ	1283	6,0	1,3	2,5	5,1	20	1725	80	1489	93,8	94,8	95,2	0,74	0,81	0,83	24,4
250	340	BFN6 355MLJ	1603	6,0	1,3	2,5	5,8	20	1925	80	1489	93,7	95,2	95,7	0,74	0,81	0,83	30,3
280	380	BFN6 355MLJ	1796	6,1	1,3	2,6	5,9	20	2025	80	1489	94,5	95,5	95,8	0,69	0,78	0,82	34,3
315	425	BFN6 355MLJ	2020	6,3	1,4	2,6	6,6	20	2125	80	1489	95,0	95,8	96,0	0,71	0,80	0,83	38,0
355	480	BFN6 355MLJ	2277	6,3	1,4	2,6	7,3	20	2225	80	1489	95,2	96,0	96,2	0,71	0,80	0,83	42,8
400	540	BFN6 355MLJ (1)	2565	6,0	1,5	2,6	7,6	20	2275	80	1489	94,5	95,8	96,2	0,71	0,78	0,83	48,2
400	540	BFN6 400L	2562	6,5	1,5	2,6	9,0	20	2700	80	1491	95,2	96,2	96,5	0,71	0,80	0,83	48,1
450	610	BFN6 400J	2882	6,8	1,5	2,7	10,4	21	3050	80	1491	95,9	96,5	96,6	0,72	0,80	0,83	54,0
500	675	BFN6 400J	3203	6,8	1,5	2,6	10,8	19	3175	80	1491	95,8	96,5	96,7	0,70	0,79	0,83	59,9
560	755	BFN6 400J (3)	3589	6,3	0,8	2,7	11,4	20	3350	80	1490	95,9	96,6	96,8	0,73	0,81	0,84	66,3
630	850	BFN6 400J (3)	4041	6,1	0,6	2,5	13,9	20	4100	85	1489	95,6	96,3	96,3	0,78	0,83	0,84	74,9
710	960	BFN6 400G (1)(3)	4554	6,5	0,7	2,6	13,9	20	4100	85	1489	95,4	96,2	96,4	0,73	0,81	0,84	84,4
710	960	BFN6 450KH	4545	6,3	1,3	2,4	23,3	19	4750	86	1492	96,1	96,8	97,0	0,74	0,82	0,84	83,8
800	1080	BFN6 450KH (3)	5117	6,4	0,7	2,8	26,1	20	5150	86	1493	96,3	96,8	97,0	0,76	0,83	0,86	92,3
900	1215	BFN6 450KH (3)	5761	6,4	0,7	2,4	26,1	20	5300	86	1492	96,5	96,9	97,0	0,78	0,84	0,86	104
1000	1350	BFN6 500H (3)	6388	5,6	0,7	2,1	61,1	20	10050	91	1495	95,5	96,6	97,0	0,81	0,86	0,87	114
1120	1515	BFN6 500H (3)	7155	5,3	0,7	2,1	65,0	20	10250	91	1495	96,0	96,8	97,2	0,82	0,86	0,87	127
1250	1690	BFN6 500H (3)	7985	5,3	0,7	2,1	69,4	20	10400	91	1495	96,0	96,9	97,2	0,82	0,86	0,87	142
1400	1890	BFN6 500H (1)(3)	8943	5,6	0,7	2,1	72,2	20	10630	91	1495	96,1	96,9	97,2	0,82	0,86	0,87	159

(1) - Temperature rise class F at full load (2) - Standard motor with sleeve bearings (3) - Copper rotor (4) - Rated current at 690V

T_n = Full load torque I_s / I_n = Locked rotor current T_s / T_n = Locked rotor torque T_{max} / T_n = Breakdown torque I_n = Full load current

Notes: - Motor frame 500, 2 pole, 50Hz available under request.
- The motors can also operate on a 60Hz supply. For motors frames 450 and 500 2 pole, please refer to us.
- To obtain electrical data for 60Hz, please refer to us
- All values are according to IEC 60034-1 tolerances.
- The indicated values for sound pressure levels are @ 1m no load, with 3 dB(A) tolerance.
- This data can be changed without prior notice.

Standard voltage, connection and frequency:
6000V Y 50Hz

VI and VIII Pole

Output		Frame IEC	T_n (Nm)	I_s/I_n	T_s/T_n	T_{max}/T_n	Inertia J Kgm²	Allowable locked rotor time Hot/Cold (s)	Weight Kg	Sound dB (A)	6000V							
											rpm min⁻¹	% of full load						I_n(A)
												Efficiency η			Power Factor Cos φ			
KW	HP											50	75	100	50	75	100	
VI Pole - 1000 min-1																		
90	120	BFN6 315L	870	6,5	1,6	2,9	2,9	11	1100	76	988	88,9	90,8	91,3	0,63	0,73	0,78	12,2
110	150	BFN6 315L	1063	6,5	1,7	2,8	3,2	10	1200	76	988	89,2	91,1	91,6	0,62	0,72	0,77	15,0
132	180	BFN6 355MLJ	1273	6,2	1,3	2,3	5,8	20	1600	76	990	93,7	94,5	94,5	0,69	0,78	0,81	16,6
160	215	BFN6 355MLJ	1543	6,2	1,3	2,4	6,9	20	1700	76	990	94,2	94,8	94,8	0,70	0,79	0,82	19,8
200	270	BFN6 355MLJ	1929	6,3	1,4	2,4	7,9	20	1800	76	990	94,0	95,0	95,2	0,66	0,77	0,81	25,0
250	340	BFN6 355MLJ	2412	6,3	1,4	2,4	10,0	20	2050	76	990	94,5	95,4	95,5	0,67	0,77	0,81	31,1
280	380	BFN6 355MLJ	2701	6,3	1,4	2,2	10,0	20	2175	76	990	94,7	95,5	95,6	0,66	0,77	0,81	34,8
315	425	BFN6 355MLJ (1)	3042	6,2	1,5	2,4	10,0	20	2200	76	989	94,2	95,2	95,7	0,72	0,78	0,81	39,1
315	425	BFN6 400L	3036	6,5	1,1	2,5	10,3	20	2600	76	991	95,3	95,8	95,6	0,66	0,77	0,81	39,1
355	480	BFN6 400L	3421	6,5	1,1	2,5	12,1	20	2750	76	991	94,3	95,3	95,8	0,67	0,77	0,81	44,0
400	540	BFN6 400J	3851	6,7	1,0	2,5	12,9	20	2950	76	992	96,6	96,5	96,4	0,73	0,77	0,81	49,3
450	610	BFN6 400J (3)	4328	5,9	0,6	2,1	15,1	20	3450	76	993	95,9	96,1	96,1	0,75	0,80	0,83	54,3
500	675	BFN6 400J (3)	4814	6,0	0,6	2,1	15,5	20	3650	76	992	96,0	96,2	96,2	0,74	0,80	0,83	60,3
560	755	BFN6 400G (1)(3)	5391	6,0	0,6	2,0	17,1	20	3850	76	992	96,4	96,4	96,3	0,75	0,80	0,83	67,4
560	755	BFN6 450KH	5386	6,5	1,0	2,2	35,1	20	4650	78	993	96,1	96,4	96,5	0,77	0,82	0,84	66,5
630	850	BFN6 450KH (3)	6053	6,0	0,8	2,9	40,0	20	5000	78	994	95,2	96,1	96,4	0,73	0,81	0,84	74,9
710	960	BFN6 450KH (3)	6821	6,0	0,8	2,9	43,6	20	5150	78	994	95,5	96,3	96,5	0,74	0,82	0,85	83,3
800	1080	BFN6 450KH (1)(3)	7686	6,0	0,7	2,8	43,6	20	5150	78	994	95,8	96,4	96,5	0,76	0,83	0,85	93,8
800	1080	BFN6 500H (3)	7678	6,0	0,7	2,4	80,9	20	10400	80	995	97,7	97,1	97,2	0,74	0,82	0,84	94,6
900	1215	BFN6 500H (3)	8638	6,0	0,7	2,4	91,0	20	10650	80	995	96,9	97,3	97,3	0,75	0,82	0,84	106
1000	1350	BFN6 500H (3)	9598	6,0	0,7	2,4	95,8	20	11100	80	995	96,9	97,3	97,3	0,75	0,82	0,84	118
1120	1515	BFN6 500H (3)	10750	6,0	0,7	2,4	101	20	11750	80	995	97,1	97,4	97,4	0,75	0,82	0,84	132
VIII Pole - 750 min-1																		
90	120	BFN6 315L (1)	1169	5,0	0,7	1,9	2,0	20	1400	73	735	88,0	90,0	90,5	0,54	0,65	0,72	13,3
90	120	BFN6 355MLJ	1158	5,9	1,1	2,5	5,6	20	1450	74	742	90,5	92,5	93,0	0,54	0,66	0,72	12,9
110	150	BFN6 355MLJ	1418	5,8	1,0	2,4	5,6	20	1575	74	741	90,8	92,8	93,3	0,54	0,66	0,72	15,8
132	180	BFN6 355MLJ	1701	5,8	1,0	2,4	6,0	20	1750	74	741	91,0	93,0	93,5	0,54	0,66	0,72	18,9
160	215	BFN6 355MLJ	2062	5,8	1,1	2,4	7,2	20	1950	74	741	91,5	93,5	94,0	0,54	0,66	0,72	22,7
200	270	BFN6 355MLJ (1)	2578	5,8	1,0	2,4	8,3	20	2250	74	741	92,5	94,0	94,5	0,55	0,67	0,73	27,9
200	270	BFN6 400L	2574	5,5	0,7	2,1	14,6	20	2500	74	742	93,1	94,2	94,5	0,58	0,69	0,74	27,5
250	340	BFN6 400L	3218	5,5	0,7	2,1	15,6	20	2675	74	742	93,1	94,2	94,5	0,58	0,69	0,74	34,4
280	380	BFN6 400L	3604	5,6	0,7	2,1	16,6	20	2850	74	742	93,6	94,5	94,8	0,60	0,71	0,75	37,9
315	425	BFN6 400J (3)	4054	5,0	0,7	2,1	17,2	20	3125	74	742	95,8	96,0	95,7	0,68	0,76	0,79	40,1
355	480	BFN6 400J (3)	4569	5,0	0,7	2,1	18,5	20	3475	74	742	95,7	95,9	95,7	0,67	0,76	0,79	45,2
400	540	BFN6 400G (3)	5141	5,4	0,9	2,0	21,0	20	4250	74	743	95,4	95,7	95,6	0,70	0,77	0,80	50,3
450	610	BFN6 400G (1)(3)	5784	5,6	1,0	2,1	23,8	9	4750	74	743	95,4	95,8	95,7	0,70	0,77	0,80	56,6
450	610	BFN6 450KH (3)	5776	6,0	0,7	2,3	41,0	20	5600	76	744	94,0	95,0	95,5	0,66	0,76	0,81	56,0
500	675	BFN6 450KH (3)	6418	6,0	0,7	2,3	45,5	20	5850	76	744	94,0	95,0	95,5	0,66	0,76	0,81	62,2
560	755	BFN6 450KH (1)(3)	7198	6,0	0,7	2,3	55,5	20	5950	76	743	94,0	95,0	95,5	0,66	0,76	0,81	69,7
560	755	BFN6 500H (3)	7169	5,5	1,0	2,2	80,1	20	6600	80	746	94,8	95,8	96,3	0,70	0,78	0,82	68,2
630	850	BFN6 500H (3)	8065	6,0	1,1	2,6	92,7	20	6825	80	746	95,0	96,0	96,5	0,70	0,78	0,82	76,5
710	960	BFN6 500H (3)	9077	6,0	1,1	2,6	101,2	20	7250	80	747	95,2	96,2	96,7	0,70	0,78	0,82	86,3
800	1080	BFN6 500H (3)	10228	6,0	1,1	2,6	113,8	20	8200	80	747	95,2	96,2	96,7	0,70	0,78	0,82	97,1
900	1215	BFN6 500H (3)	Available on request															

(1) - Temperature rise class F at full load (2) - Standard motor with sleeve bearings (3) - Copper rotor (4) - Rated current at 690V

T_n = Full load torque I_s / I_n = Locked rotor current T_s / T_n = Locked rotor torque T_{max} / T_n = Breakdown torque I_n = Full load current

Notes: - Motor frame 500, 2 pole, 50Hz available under request.
- The motors can also operate on a 60Hz supply.
- To obtain electrical data for 60Hz, please refer to us
- All values are according to IEC 60034-1 tolerances.
- The indicated values for sound pressure levels are @ 1m no load, with 3 dB(A) tolerance.
- This data can be changed without prior notice.

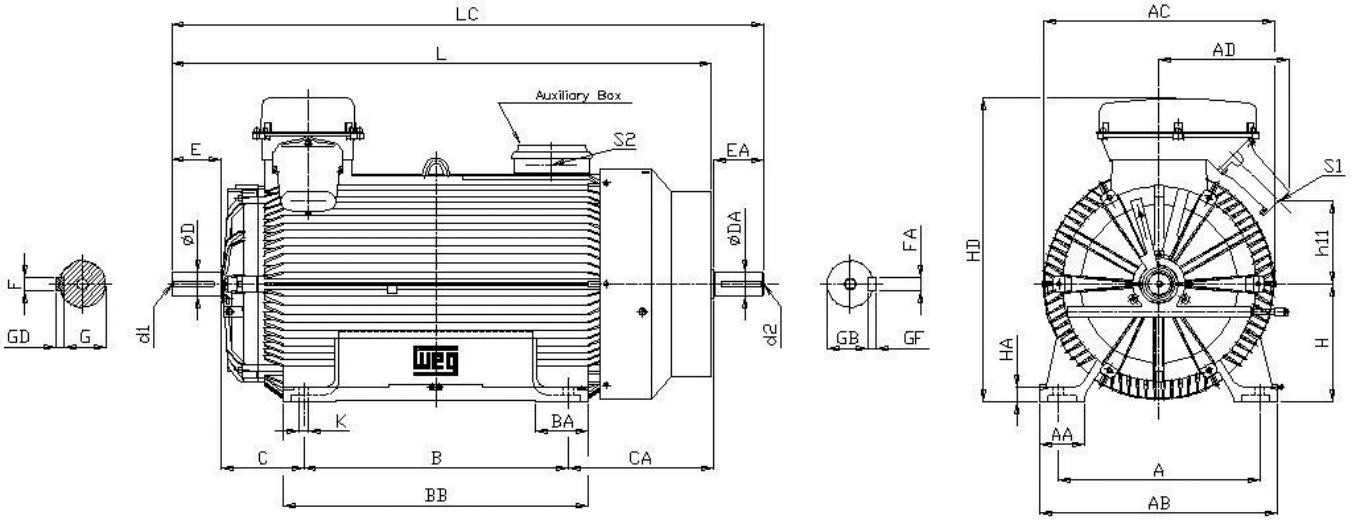
Standard voltage, connection and frequency:
6000V Y 50Hz

4.3.3 OUTLINE DIMENSIONS - BFN6 SERIES

II T3

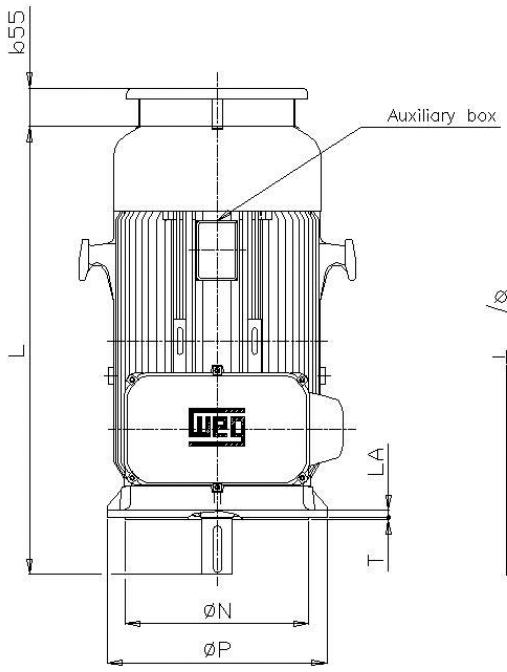
Non Sparking Motors - Ex nA

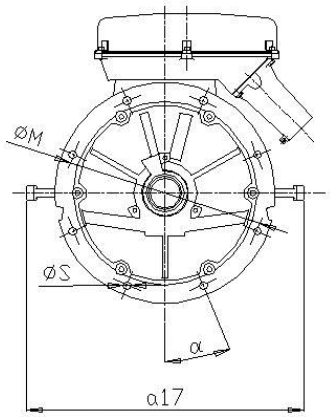
Medium Voltage



Frame	A	AA	AB	AC	AD	B	BA	BB	C	CA	Shaft Dimensions D	E	F	G	GD	DA	EA	FA	GB	GF	H	HA	HD	h11	K	L	LC	S1	S2	d1	d2	Bearings D.E.	N.D.E	
315L (1)	508	125	632	622	442	508	155	610	216	445	90m6	170	25	81	14	70m6	140	20	62,5	12	315	40	863	204	28	1327	1479	1xM63x1,5	3xM20x1,5	DSM24	DSM20	6319 C3	6219 C3	
315L (2)											70m6	140	20	62,5	12	60m6	140	18	53	11						1297	1449			DSM20		6316 C3		
355MLJ (1)	610	130	730	705		560 630 800	170	920	254	530	100m6	210	28	90	16	80m6	170	22	71	14	355	45	932	234		1779	1964			DSM24		6222 C3		(3)
355MLJ (2)											75m6	140	20	67,5	12	60m6	140	18	53	11						1709	1864			DSM20		6219 C3		(4)
400L (1)	686	150	810	785,5		710	180	850	280	575	110m6	210	28	100	16	80m6	170	22	71	14	400	50	1032	282	35	1760	1945			DSM24		6324 C3		
400L (2)											80m6	170	22	71	14	60m6	140	18	53	11						1720	1875			DSM20		6318 C3		(4)
400J (1)						900		1040			110m6	210	28	100	16	80m6	170	22	71	14						1950	2135			DSM24		6324 C3		
400J (2)											80m6	170	22	71	14	60m6	140	18	53	11						1910	2065			DSM20		6318 C3		(4)
400G (1)						1120		1280			110m6	210	28	100	16	80m6	170	22	71	14						2190	2375			DSM24		6324 C3		
400G (2)											80m6	170	22	71	14	60m6	140	18	53	11						2150	2305			DSM20		6318 C3		(4)
450KH (1)	750	180	940	896,5		900 1120	230	1310	250	564	120m6	210	32	109	18	100m6	210	28	90	16	450	60	1152	352	42	2129	2354			DSM24		6326 C3		
450KH (2)	Available on request																																		(4)
500K (1)	850	180	1020	994	442	1000	300	1310	280	920	130m6	250	32	119	18	110m6	210	28	100	16	500	65	1260	410	42	2435	2660	1xM63x1,5	3xM20x1,5	DSM24		6328 C3		
500K (2)	Available on request																																		
500H (1)	850	180	1020	994	442	1250	300	1560	280	920	130m6	250	32	119	18	110m6	210	28	100	16	500	65	1260	410	42	2685	2910	1xM63x1,5	3xM20x1,5	DSM24	DSM24	6328 C3		
500H (2)	Available on request																																		

NOTES: (1) 1500, 1000 and 750 rpm (2) 3000 rpm (3) or 6222 C3 for 4 poles and plus machines, N.D.E (4) For 60Hz please refer to us





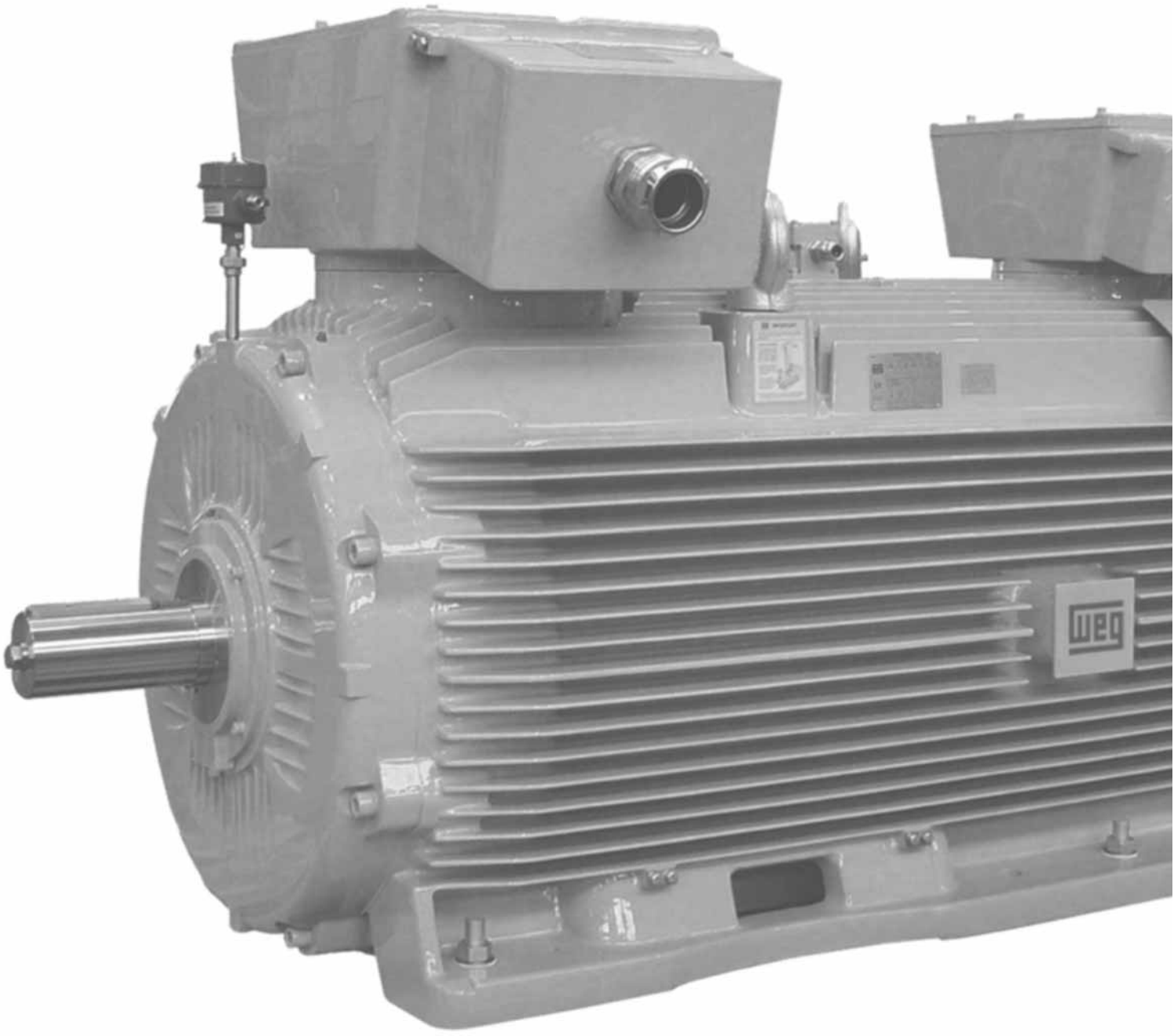
Frame	"FF" Flange Dimensions Flange	b55	LA	M	N	P	T	S	α	Nr. holes	a17
315 L	FF-600	116,5	22	600	550	660	6	24	22,5°	8	830
355 MLJ	FF-740	125	25	740	680	800					910
400 L/J/G	FF-940	131	28	940	880	1000		28			980
450 KH	FF-1080		30	1080	1000	1150	7				1140
500 KH											1340

* 2 pole motors under request.

Notes: - All the dimensions are in millimeters.
- *For all vertical applications or unusual coupling conditions, the customer shall inform the load figure with the inquiry/order.*
- *Construction drawings with guaranteed values are available under request.*
- *Shaft dimensions for 2 pole motors, only for direct coupling.*
- *For motor frames 450 and 500, 2 pole, V1 refer to us.*
- *If required terminal box entry on left hand side, please refer to us.*
- *Execution with second shaft end available on request.*
- *For vertical mounting, the D.E. bearing is replaced by an angular contact type, except for frame 315L (replaced by 7220 (1) or 7219 (2)).*
- *The average values shown are subject to change without prior notice.*

5. HIGH VOLTAGE MOTORS FOR HAZARDOUS AREAS

Flameproof - W22XB / BFG8 Series
Flameproof - W22XC / BFGC8 Series
Flameproof - W22XM / BFGM8 Series



Totally enclosed IP55
Squirrel cage rotor

5.1 HIGH VOLTAGE FLAMEPROOF MOTORS BFG(C)8 / W22XB(C) / BFGM8 / W22XM

5.1.1 PRODUCT SPECIFICATION

Range

The present catalogue refers to TEFC Flameproof, High Voltage, three phase, squirrel cage induction motors, up to 11000V, ribbed frames, **BFG(C)8** and **W22XB(C)** series with shaft height 450 and 500 mm, with the following powers:

Motor series BFG(C)8 and **W22XB(C):**

KW	RPM
450 up to 710 kW	3000 RPM
450 up to 900 kW	1500 RPM
355 up to 710 kW	1000 RPM
250 up to 500 kW	750 RPM

Particular specifications and standards related to hazardous areas

The motor series **BFG(C)8** and **W22XB(C)** comply with European Standards listed on paragraph 1.2.2, and are suitable for the following Groups, Groups of Gases and Temperature Classes:

GROUP I, mines category **M2**
GROUP II, surface industry, Gases of group **IIB**, and temperature class **T4**
GROUP II, surface industry, Gases of group **IIC**, and temperature class **T4**
Under request, are available other temperature classes.

These motor series have the CE marking in compliance with European Directive **94/4/EC (ATEX),** and can be marked as equipment **GROUP I (mines susceptible of firedamp)** or **GROUP II (surface Industries).**

The motors of GROUP II **,** are suitable to use on the following zones:
Category **2**, for Zones **1** and **21** – Gases, Vapours and Dust **(GD)**.
Category **3**, for Zones **2** and **22** – Gases, Vapours and Dust **(GD)**.
Category **M2** for Mines
Special design to suit Zone **21** will be available on request.

These motor series are also certified according to the **IECEx scheme.**

As standard execution, the motors are fitted with flameproof terminal boxes for gases of group **IIB** or **IIC**, with specification code **Ex d, IIB** or **Ex d, IIC**. Under request and as an alternative execution, these motors can be fitted with an Increased Safety terminal box. In this case the description code is **Ex de, IIB** or **Ex de, IIC**.
This line of flameproof motors is certified according to the above standards, by the Notified Body INERIS in France, accredited organization by EU.

Construction

Mechanical protection: IP 55 as **Group II**, or **IP65** as **Group I**.
Insulation: Class **F**.
Temperature rise: 80 K.
Frames: are in **cast iron.**
Terminal boxes: are in **cast iron.**
Endshields: are in **cast iron**.
Fans: metallic, in **aluminium alloy** or **fabricated steel**.
Fan cover: in **cast iron** or **fabricated steel,** capable to withstand impact of **20 Joule**.
Finish: industrial paint system, standard **color RAL 5010 (IIB)** or **RAL 7001 (IIC).**

Voltage and frequency

The performance data referred in the present catalogue is for motors operating with a voltage of **11000V** ± 5% and a frequency of **50HZ** ± 2%, on continuous service.
Under request are available lower voltages, and frequencies 50HZ or 60HZ, with a maximum rated current of 400A.

Basic design

Cooling method:

IC 411 in accordance with standard **IEC 60034-6** - motors cooled by an external fan.

Direction of rotation:

On frame sizes 355/400 (4 pole and above), as standard the motors are fitted with a bi-directional fan.
On remaining frames the fans are unidirectional, leaving the factory as standard on CW direction viewedfrom shaft end with the phase sequence of U, V, and W. In these cases the direction of rotation must be specified with order.

Electrical connection:

3 terminals are provided for star connection, with neutral point connected inside the windings.

Terminal boxes:

On these motor series, the main terminal box is located at top of motor frame allowing rotation every 180° to suit cable entry from left or right hand side.
Note: customer shall refer cable entry direction with order.
As standard, in all motors, the supply cable entries are on the right hand side when viewed from shaft end.

- **Protections/Auxiliaries:**

As standard the BFG(C)8 and W22XB(C) medium voltage motors are fitted with the following protections:
- 3 RTD's - Pt 100 – on windings, 1 per phase, 3 wires
- 2 RTD's - Pt 100 – on bearings, 1 per bearing, 3 wires
- Anti-condensation heaters – 230V

As option under request, the motors can be fitted with other number or type of protections either on windings and bearings. Protection/Auxiliaries are connected in two auxiliary terminal boxes.
The thermal protections on bearings are made in two individual auxiliary terminal boxes located on D.E and N.D.E side as standard configuration.
It is also possible as option to have these protections connected in to a single auxiliary terminal box used for other Protections/Auxiliaries.

- **Earth connection:**

All motors are equipped with an earth screw inside of terminal box. A second external earth connection is also provided on motor frame, on foot or on flange, depending on mounting form.

- **Terminal box entries and cable glands:**

As standard, the motors are not supplied with cable glands and the number of entry holes and respective dimensions are described on outline dimensions tables. However, considering that the cable entry makes part of the protection enclosure it is recommended that the motors are supplied from factory fitted with cable glands.
For this it is necessary to specify with the order the complete cabling details (number of cables, specification, section and diameters), so that the motors can be supplied from factory fitted with suitable glands.

- **Bearings:**

These motor series are equipped on both sides with deep groove ball bearings, pre-loaded by an axial spring washer or springs. Motors frame sizes 450 and 500, 2 pole, are equipped with a 3 bearings arrangement (ball + roller bearings on DE and roller bearing on NDE).
As optional execution, the motors GROUP IIB can be fitted with sleeve bearings.
In the case of pulley/belt drive transmission, the drive end bearing can be replaced by a roller bearing.
On vertical mounting motors, the bearings can be thrust bearing types and are defined according to the axial loads involved on the application.

- **Lubrication:**

As standard, the bearings are grease lubricated. For all frames, the motors are equipped with grease relief valves and relubrication nipples.

- **Balancing:**

The motors are dynamically balanced with half-key to meet the vibration limits of standard **IEC 60034-14**, grade **A**.
Grade **B** can be provided under request.
On all frames, the D.E. and N.D.E. endshields are designed to fit, under request, optional captors for vibration monitoring detectors or other devices.

Full standard and optional features are detailed on paragraph 2.3.

5.1.2 ELECTRICAL DATA - BFG8 / W22XB / BFGM8 / W22XM SERIES

IIB T4
I (M2)

Flameproof Motors - Ex d IIB T4 (Ex tD A21 IP6X T 135°C)
Flameproof Motors with Increased Safety Terminal Box - Ex de IIB T4 (Ex tD A21 IP6X T 135°C)

High Voltage

Output		Frame IEC	T_n (Nm)	I_s/I_n	T_s/T_n	T_{max}/T_n	Inertia J Kgm²	Allowable locked rotor time Hot/Cold (s)	Weight Kg	Sound dB (A)	11000 V							
											rpm min⁻¹	% of full load						I_n(A)
												Efficiency η			Power Factor Cos φ			
KW	HP											50	75	100	50	75	100	
II Pole - 3000 min-1																		
355	480	BFG8 450KH (3)	1134	7,0	0,7	3,0	7,6	20	3900	80	2990	96,0	96,5	96,7	0,80	0,85	0,88	21,9
400	540	BFG8 450KH (3)	1278	7,0	0,7	3,0	8,2	20	4200	80	2990	96,0	96,6	96,8	0,82	0,87	0,88	24,6
450	610	BFG8 450KH (3)	1437	7,1	0,7	3,1	8,8	20	4500	80	2991	96,0	96,6	96,8	0,81	0,86	0,88	27,7
500	675	W22XB 500KH (3)																
560	755	W22XB 500KH (3)																
630	850	W22XB 500KH (3)																
710	960	W22XB 500KH (3)																
IV Pole - 1500 min-1																		
355	480	BFG8 450KH (3)	2274	5,8	0,7	3,2	10,7	20	4100	86	1491	95,5	96,0	96,0	0,73	0,82	0,85	22,8
400	540	BFG8 450KH (3)	2562	6,0	0,8	3,4	11,6	20	4400	86	1491	95,5	96,0	96,0	0,73	0,82	0,85	25,7
450	610	BFG8 450KH (3)	2882	6,0	0,8	3,3	12,3	20	4700	86	1491	95,6	96,0	96,2	0,73	0,82	0,85	28,9
630	850	W22XB 500KH (3)	4024	6,7	1,0	2,8	44,5	20	7850	86	1495	95,0	96,0	96,5	0,82	0,87	0,88	38,9
710	960	W22XB 500KH (3)	4535	6,7	1,0	2,7	49,3	20	8690	86	1495	95,0	96,3	96,7	0,84	0,88	0,89	43,3
800	1080	W22XB 500KH (3)	5110	6,7	1,1	2,7	54,3	20	9550	86	1495	95,4	96,5	97,0	0,84	0,88	0,89	48,6
900	1215	W22XB 500KH (3)	5749	6,8	1,1	2,7	59,3	20	10400	86	1495	95,5	96,5	97,0	0,84	0,88	0,89	54,7
VI Pole - 1000 min-1																		
280	380	BFG8 450KH (3)	2693	5,5	0,8	3,1	11,3	20	4250	78	993	94,0	95,0	95,2	0,60	0,72	0,77	20,0
315	425	BFG8 450KH (3)	3029	5,5	0,8	3,1	11,9	20	4450	78	993	94,0	95,0	95,2	0,62	0,73	0,78	22,3
355	480	BFG8 450KH (3)	3418	5,5	0,8	3,1	13,4	20	5000	78	992	94,2	95,1	95,3	0,64	0,74	0,79	24,7
500	675	W22XB 500KH (3)	4794	6,3	0,9	2,6	56,4	20	8650	80	996	96,5	97,0	97,0	0,71	0,80	0,83	32,6
560	755	W22XB 500KH (3)	5369	6,3	0,9	2,6	59,1	20	9030	80	996	96,5	97,0	97,0	0,81	0,80	0,83	36,5
630	850	W22XB 500KH (3)	6041	6,5	0,9	2,7	64,5	20	9850	80	996	96,5	97,0	97,0	0,81	0,80	0,83	41,1
710	960	W22XB 500KH (3)	6808	6,5	0,9	2,6	70,0	20	10650	80	996	96,5	97,0	97,0	0,81	0,80	0,83	46,3
VIII Pole - 750 min-1																		
200	270	BFG8 450KH (3)	2557	6,5	1,2	3	27,3	20	5200	76	747	93,0	94,4	94,4	0,56	0,68	0,76	14,6
250	340	BFG8 450KH (3)	3196	6,5	1,2	3	31,0	20	5850	76	747	93,0	94,4	94,4	0,56	0,68	0,76	18,3
400	540	W22XB 500KH (3)	5114	5,0	0,6	2,2	80,1	20	8900	80	747	96,3	96,5	96,5	0,73	0,79	0,80	27,2
450	610	W22XB 500KH (3)	5753	5,0	0,6	2,2	87,4	20	9700	80	747	96,3	96,5	96,5	0,73	0,79	0,80	30,6
500	675	W22XB 500KH (3)	6392	5,1	0,7	2,3	96,1	20	10600	80	747	96,3	96,5	96,5	0,73	0,79	0,80	34,0

Available on request

(1) - Temperature rise class F at full load (2) - Standard motor with sleeve bearings (3) - Copper rotor (4) - Rated current at 690V

T_n = Full load torque I_s / I_n = Locked rotor current T_s / T_n = Locked rotor torque T_{max} / T_n = Breakdown torque I_n = Full load current

Notes: - Motor frame 500, 2 pole 50Hz, available under request.
- The motors can also operate on a 60Hz supply. For motors frames 450 and 500 2 pole, please refer to us.
- To obtain electrical data for 60Hz, please refer to us
- All values are according to IEC 60034-1 tolerances.
- The indicated values for sound pressure levels are @ 1m no load, with 3 dB(A) tolerance.
- This data can be changed without prior notice.

Standard voltage, connection and frequency:
11000V Y 50Hz

5.1.3 ELECTRICAL DATA - BFGC8 / W22XC / BFGM8 / W22XM SERIES

IIC T4
I (M2)

Flameproof Motors - Ex d IIC T4 (Ex tD A21 IP6X T 135°C frames ≥ 250)
Flameproof Motors with Increased Safety Terminal Box - Ex de IIC T4 (Ex tD A21 IP6X T 135°C)

High Voltage

Output		Frame IEC	T_n (Nm)	I_s/I_n	T_s/T_n	T_{max}/T_n	Inertia J Kgm²	Allowable locked rotor time Hot/Cold (s)	Weight Kg	Sound dB (A)	11000 V							
											rpm min⁻¹	% of full load						I_n(A)
												Efficiency η			Power Factor Cos φ			
KW	HP											50	75	100	50	75	100	
II Pole - 3000 min-1																		
355	480	BFGC8 450KH (3)	1134	7,0	0,7	3,0	7,6	20	3900	80	2990	96,0	96,5	96,7	0,80	0,85	0,88	21,9
400	540	BFGC8 450KH (3)	1278	7,0	0,7	3,0	8,2	20	4200	80	2990	96,0	96,6	96,8	0,82	0,87	0,88	24,6
450	610	BFGC8 450KH (3)	1437	7,1	0,7	3,1	8,8	20	4500	80	2991	96,0	96,6	96,8	0,81	0,86	0,88	27,7
500	675	W22XC 500KH (3)																
560	755	W22XC 500KH (3)																
630	850	W22XC 500KH (3)																
710	960	W22XC 500KH (3)																
IV Pole - 1500 min-1																		
355	480	BFGC8 450KH (3)	2274	5,8	0,7	3,2	10,7	20	4100	86	1491	95,5	96,0	96,0	0,73	0,82	0,85	22,8
400	540	BFGC8 450KH (3)	2562	6,0	0,8	3,4	11,6	20	4400	86	1491	95,5	96,0	96,0	0,73	0,82	0,85	25,7
450	610	BFGC8 450KH (3)	2882	6,0	0,8	3,3	12,3	20	4700	86	1491	95,6	96,0	96,2	0,73	0,82	0,85	28,9
630	850	W22XC 500KH (3)	4024	6,7	1,0	2,8	44,5	20	7850	86	1495	95,0	96,0	96,5	0,82	0,87	0,88	38,9
710	960	W22XC 500KH (3)	4535	6,7	1,0	2,7	49,3	20	8690	86	1495	95,0	96,3	96,7	0,84	0,88	0,89	43,3
800	1080	W22XC 500KH (3)	5110	6,7	1,1	2,7	54,3	20	9550	86	1495	95,4	96,5	97,0	0,84	0,88	0,89	48,6
900	1215	W22XC 500KH (3)	5749	6,8	1,1	2,7	59,3	20	10400	86	1495	95,5	96,5	97,0	0,84	0,88	0,89	54,7
VI Pole - 1000 min-1																		
280	380	BFGC8 450KH (3)	2693	5,5	0,8	3,1	11,3	20	4250	78	993	94,0	95,0	95,2	0,60	0,72	0,77	20,0
315	425	BFGC8 450KH (3)	3029	5,5	0,8	3,1	11,9	20	4450	78	993	94,0	95,0	95,2	0,62	0,73	0,78	22,3
355	480	BFGC8 450KH (3)	3418	5,5	0,8	3,1	13,4	20	5000	78	992	94,2	95,1	95,3	0,64	0,74	0,79	24,7
500	675	W22XC 500KH (3)	4794	6,3	0,9	2,6	56,4	20	8650	80	996	96,5	97,0	97,0	0,71	0,80	0,83	32,6
560	755	W22XC 500KH (3)	5369	6,3	0,9	2,6	59,1	20	9030	80	996	96,5	97,0	97,0	0,81	0,80	0,83	36,5
630	850	W22XC 500KH (3)	6041	6,5	0,9	2,7	64,5	20	9850	80	996	96,5	97,0	97,0	0,81	0,80	0,83	41,1
710	960	W22XC 500KH (3)	6808	6,5	0,9	2,6	70,0	20	10650	80	996	96,5	97,0	97,0	0,81	0,80	0,83	46,3
VIII Pole - 750 min-1																		
200	270	BFGC8 450KH (3)	2557	6,5	1,2	3	27,3	20	5200	76	747	93,0	94,4	94,4	0,56	0,68	0,76	14,6
250	340	BFGC8 450KH (3)	3196	6,5	1,2	3	31,0	20	5850	76	747	93,0	94,4	94,4	0,56	0,68	0,76	18,3
400	540	W22XC 500KH (3)	5114	5,0	0,6	2,2	80,1	20	8900	80	747	96,3	96,5	96,5	0,73	0,79	0,80	27,2
450	610	W22XC 500KH (3)	5753	5,0	0,6	2,2	87,4	20	9700	80	747	96,3	96,5	96,5	0,73	0,79	0,80	30,6
500	675	W22XC 500KH (3)	6392	5,1	0,7	2,3	96,1	20	10600	80	747	96,3	96,5	96,5	0,73	0,79	0,80	34,0

Available on request

(1) - Temperature rise class F at full load (2) - Standard motor with sleeve bearings (3) - Copper rotor (4) - Rated current at 690V

T_n = Full load torque I_s / I_n = Locked rotor current T_s / T_n = Locked rotor torque T_{max} / T_n = Breakdown torque I_n = Full load current

Notes: - Motor frame 500, 2 pole 50Hz, available under request.
- The motors can also operate on a 60Hz supply. For motors frames 450 and 500 2 pole, please refer to us.
- To obtain electrical data for 60Hz, please refer to us
- All values are according to IEC 60034-1 tolerances.
- The indicated values for sound pressure levels are @ 1m no load, with 3 dB(A) tolerance.
- This data can be changed without prior notice.

Standard voltage, connection and frequency:
11000V Y 50Hz

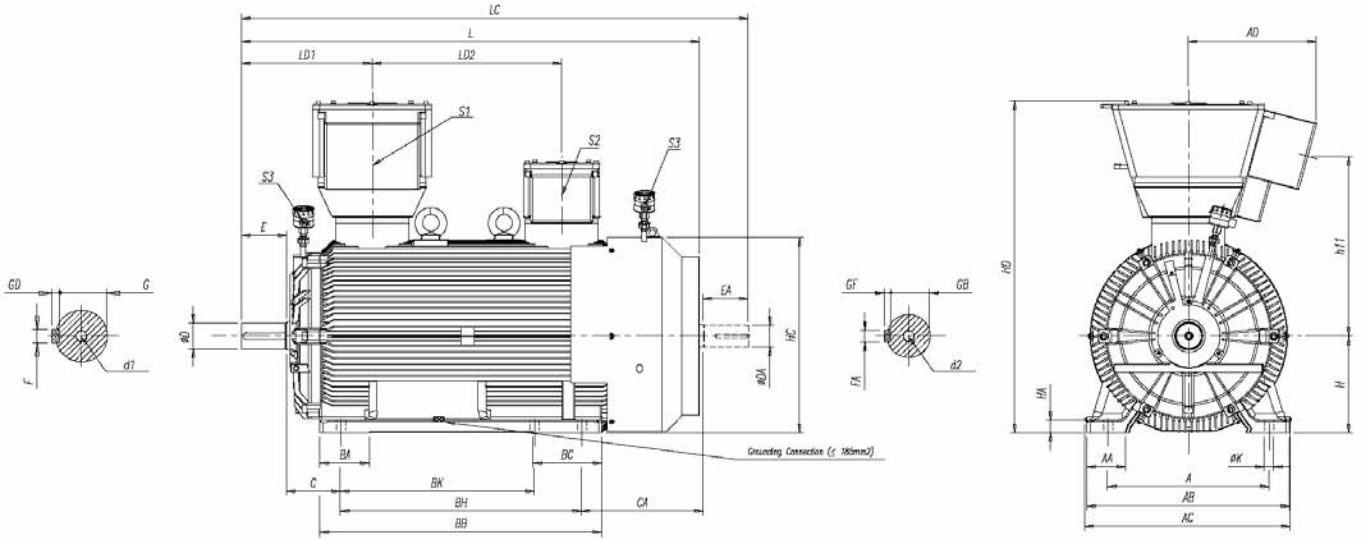
5.1.4 OUTLINE DIMENSIONS - BFG8 / W22XB / BFGM8 / W22XM SERIES

IIB T4
I (M2)

Flameproof Motors - Ex d IIB T4 (Ex tD A21 IP6X T 135°C)
Flameproof Motors with Increased Safety Terminal Box - Ex de IIB T4 (Ex tD A21 IP6X T 135°C)

High Voltage

BFG8 450KH IMB3T



Poles	A	AA	AB	AC	AD	BA	BB	BC	BK	BH	C	CA	H	HA	HC	HD	h11	K	L	LC	LD1	LD2
2P	750	180	940	957	594	230	1310	320	900	1120	250	564	450	60	908	1562	853	42	2089	2244	568	880
4P+																			2129	2354	608	

	Shaft dimensions												Bearings	
Poles	D	E	F	G	GD	DA	EA	FA	GB	GF	d1	d2	D.E	N.D.E
2P	85m6	170	22h9	76	14	75	140	20h9	67,5	12	DSM20	DSM20	N218 + 6218C3	N218
4P+	120m6	210	32h9	109	18	100	210	28h9	90	16	DSM24	DSM20	6326C3	6326C3

	Power terminal box - S1	Auxiliary terminal box - S2	Auxiliary terminal box - S3
Pole	CEFGH500	CEFGH340	Pt 100 Bearing Box
2P	I≤200A: 1xM63x1,5	2xM20x1,5	1x1/2" NPT
4P+	200A<I≤400A: 3xM50x1,5		

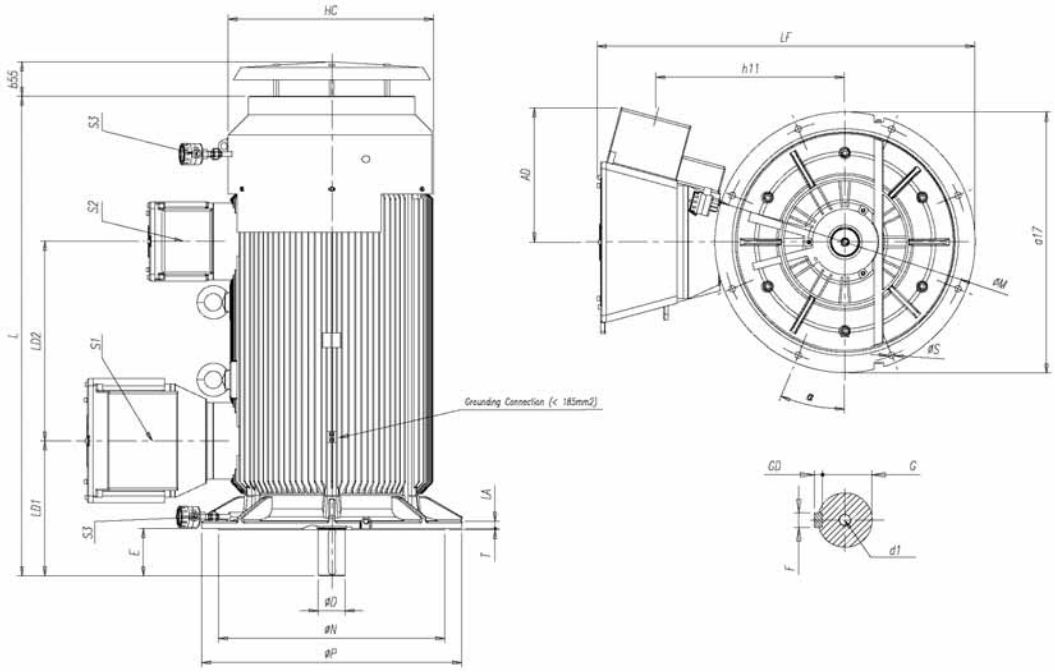
Notes: - All the dimensions are in millimeters.
- Please, do not use these dimensions for construction. Certified drawings under request.
- External thrust shall be informed at the time of Inquiry/Order.
- Executions with auxiliary terminal box and second shaft end are optional and available under request.
- For other special executions please refer to us.
- The dimensions shown are subject to change without prior notice.

OUTLINE DIMENSIONS

IIB T4
I (M2)

High Voltage

BFG8 450KH IMV1



Poles	AD	HC	h11	L	LA	LD1	LD2	LF	a17	b55	M	N	P	T	S	Nr. Holes	α
4P+	388	908	654	2129	30	608	880	1688	1150	153	1080	1000	1150	6	30	8	22,5º

Pole	AD	HC	h11	L	LA	LD1	LD2	LF	M	N	P	T	a17	S	Nr. Holes	α
4P+	594	908	853	2129	30	608	880	1507	1080	1000	1150	6	1150	30	8	22,5º

	Shaft dimensions						Bearings		Power terminal box - S1	Auxiliary terminal box - S2	Auxiliary terminal box - S3
Poles	D	E	F	G	GD	d1	D.E	N.D.E	CEFGH 500	CEFGH 340	Pt 100 Bearing Box
4P+	120m6	210	32h9	109	18	DSM24	7326	6326C3	I≤200A : 1xM63x1,5 200A< I ≤400A : 3xM50x1,5	2xM20x1,5	1x 1/2"NPT

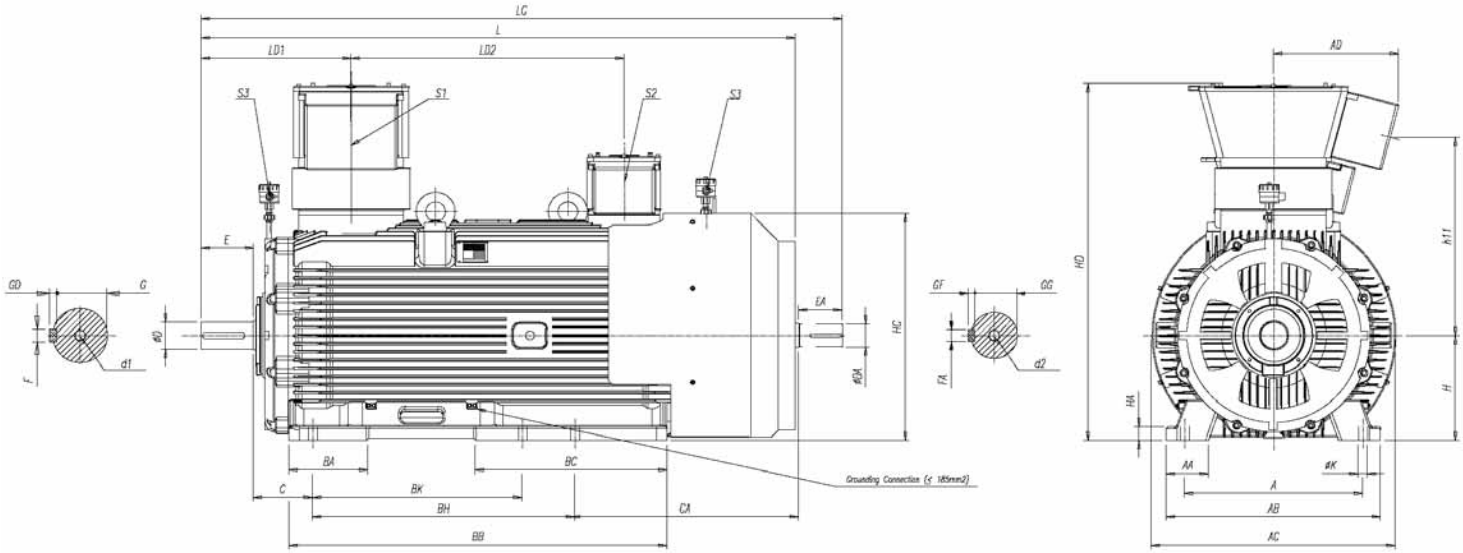
Notes: - All the dimensions are in millimeters.
- Please, do not use these dimensions for construction. Certified drawings under request.
- External thrust shall be informed at the time of Inquiry/Order.
- Executions with auxiliary terminal box and second shaft end are optional and available under request.
- For other special executions please refer to us.
- The dimensions shown are subject to change without prior notice.

OUTLINE DIMENSIONS

IIB T4
I (M2)

High Voltage

W22XB 500KH IMB3T



Poles	A	AA	AB	AC	AD	BA	BB	BC	BK	BH	C	CA	H	HA	HC	HD	h11	K	L	LC	LD1	LD2
2P	850	200	1020	1162	594	375	1800	915	1000	1250	280	1080	500	65	1081	1704	945	42	2750	2905	635	1300
4P+																			2830	3055	715	

	Shaft dimensions												Bearings	
Poles	D	E	F	G	GD	DA	EA	FA	GB	GF	d1	d2	D.E	N.D.E
2P	90m6	170	25	81	14	75	140	20	67,5	12	DSM24	DSM20	NU220C3 + 6020C3	NU220C3
4P+	130m6	250	32	119	18	110	210	28	100	16	DSM24	DSM20	6328C3	6328C3

	Power terminal box - S1	Auxiliary terminal box - S2	Auxiliary terminal box - S3
Poles	CEFGH500	CEFGH340	Pt 100 Bearingbox
2P	I≤200A: 1xM63x1,5	2xM20x1,5	1x1/2" NPT
4P+	200A<I≤400A: 3xM50x1,5		

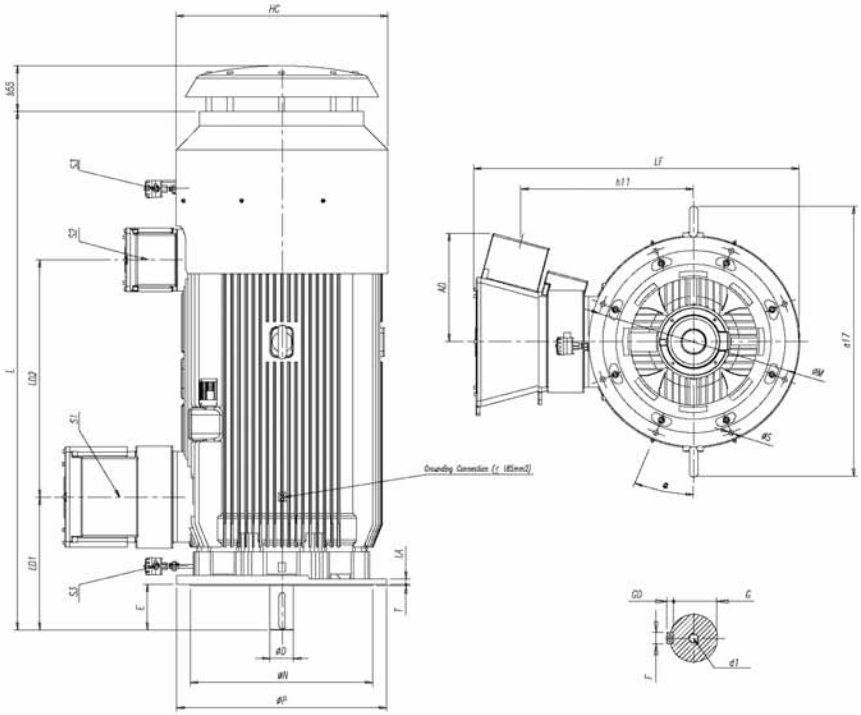
Notes: - All the dimensions are in millimeters.
- Please, do not use these dimensions for construction. Certified drawings under request.
- External thrust shall be informed at the time of Inquiry/Order.
- Executions with auxiliary terminal box and second shaft end are optional and available under request.
- For other special executions please refer to us.
- The dimensions shown are subject to change without prior notice.

OUTLINE DIMENSIONS

IIB T4
I (M2)

High Voltage

W22XB 500KH IMV1



Poles	AD	HC	h11	L	LA	LD1	LD2	LF	a17	b55	M	N	P	T	S	Nr. Holes	α
4P+	594	1162	945	2830	30	715	1300	1785	1482	250	1080	1000	1150	7	28	8	22,5º

	Shaft dimensions						Bearings	
Poles	D	E	F	G	GD	d1	D.E	N.D.E
4P+	130m6	250	32h9	119	18	DSM24	7328	6328C3

	Power terminal box - S1	Auxiliary terminal box - S2	Auxiliary terminal box - S3
Poles	CEFGH 500	CEFGH 340	Pt Bearing Box
4P+	I≤200A: 1xM63x1,5 200A<I≤400A: 3xM50x1,5	2xM20x1,5	1x1/2" NPT

Notes: - All the dimensions are in millimeters.
- Please, do not use these dimensions for construction. Certified drawings under request.
- External thrust shall be informed at the time of Inquiry/Order.
- Executions with auxiliary terminal box and second shaft end are optional and available under request.
- For other special executions please refer to us.
- The dimensions shown are subject to change without prior notice.

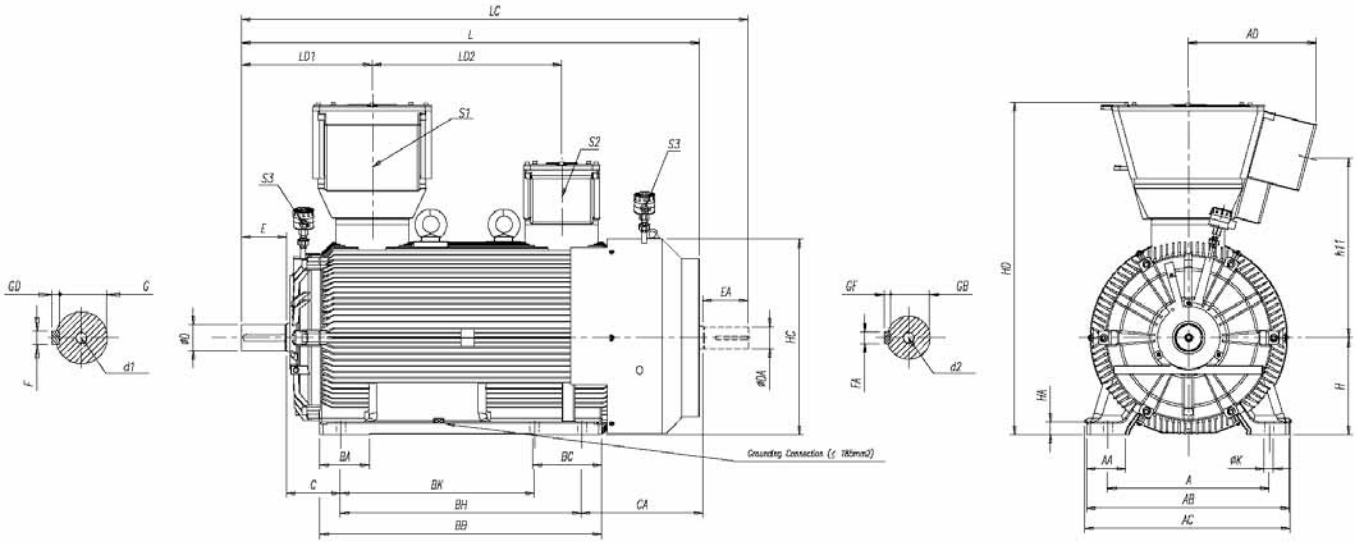
5.1.5 OUTLINE DIMENSIONS - BFGC8 / W22XC / BFGM8 / W22XM SERIES

IIC T4
I (M2)

Flameproof Motors - Ex d IIC T4
Flameproof Motors with Increased Safety Terminal Box - Ex de IIC T4

High Voltage

BFGC8 450KH IMB3T



Poles	A	AA	AB	AC	AD	BA	BB	BC	BK	BH	C	CA	H	HA	HC	HD	h11	K	L	LC	LD1	LD2
2P	750	180	940	957	594	230	1310	320	900	1120	250	564	450	60	908	1562	853	42	2089	2244	568	880
4P+																			2129	2354	608	

	Shaft dimensions												Bearings	
Poles	D	E	F	G	GD	DA	EA	FA	GB	GF	d1	d2	D.E	N.D.E
2P	85m6	170	22h9	76	14	75	140	20h9	67,5	12	DSM20	DSM20	N218C3 + 6218C3	N218
4P+	120m6	210	32h9	109	18	100	210	28h9	90	16	DSM24	DSM20	6326C3	6326C3

	Power terminal box - S1	Auxiliary terminal box - S2	Auxiliary terminal box - S3
Pole	CEFGH500	CEFGH340	Pt 100 Bearing Box
2P	I≤200A: 1xM63x1,5	2xM20x1,5	1x1/2" NPT
4P+	200A<I≤400A: 3xM50x1,5		

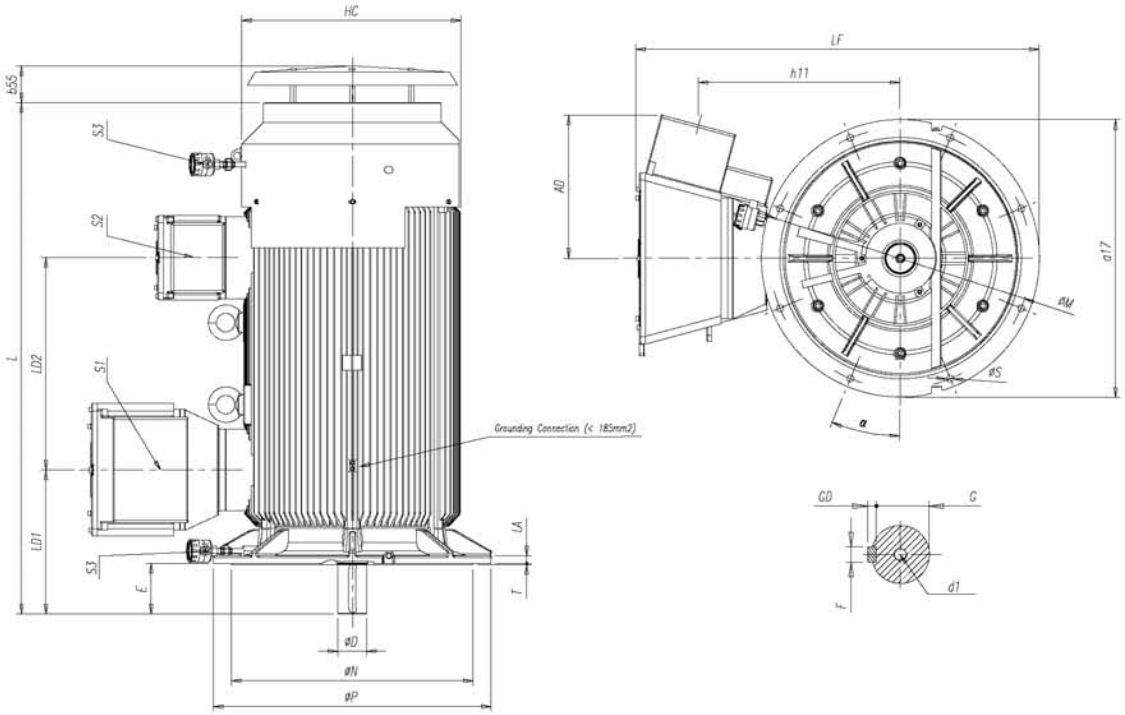
Notes: - All the dimensions are in millimeters.
- Please, do not use these dimensions for construction. Certified drawings under request.
- External thrust shall be informed at the time of Inquiry/Order.
- Executions with auxiliary terminal box and second shaft end are optional and available under request.
- For other special executions please refer to us.
- The dimensions shown are subject to change without prior notice.

OUTLINE DIMENSIONS

IIC T4
I (M2)

High Voltage

BFGC8 450KH IMV1



Pole	AD	HC	h11	L	LA	LD1	LD2	LF	M	N	P	T	a17	S	Nr. Holes	α
4P+	594	908	853	2129	30	608	880	1688	1080	1000	1150	6	1150	30	8	22,5º

	Shaft dimensions						Bearings		Power terminal box - S1	Auxiliary terminal box - S2	Auxiliary terminal box - S3
Poles	D	E	F	G	GD	d1	D.E	N.D.E	CEFGH 500	CEFGH 340	Pt 100 Bearing Box
4P+	120m6	210	32h9	109	18	DSM24	7326	6326C3	I≤200A : 1xM63x1,5 200A< I ≤400A : 3xM50x1,5	2xM20x1,5	1x 1/2"NPT

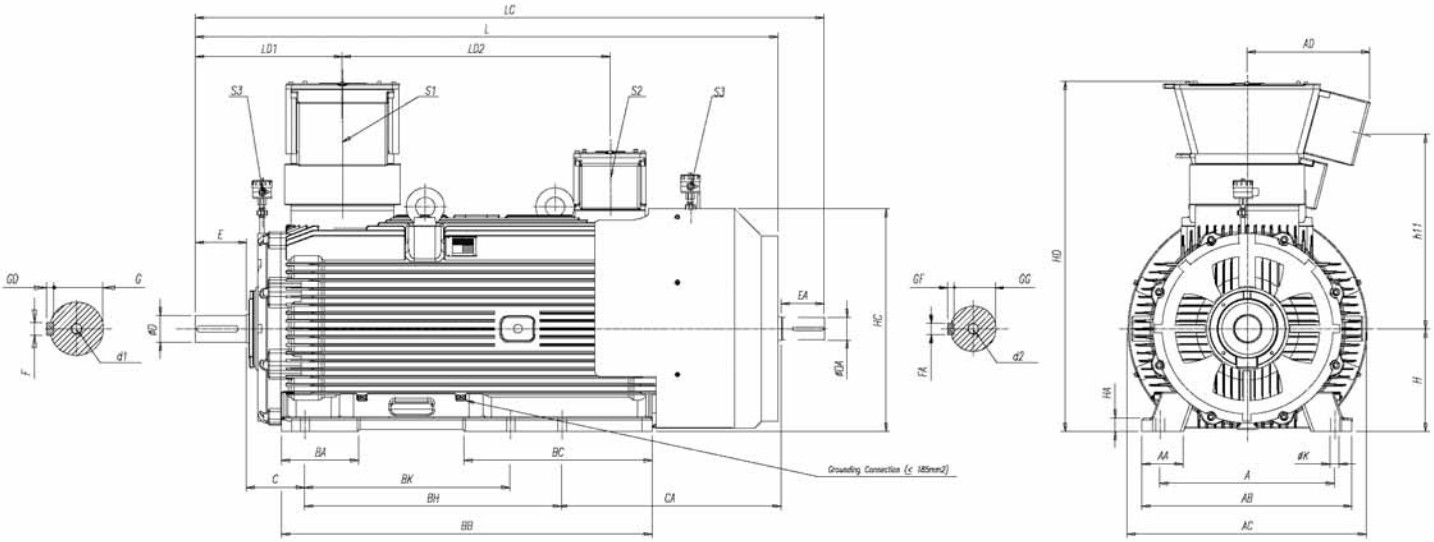
Notes: - All the dimensions are in millimeters.
- Please, do not use these dimensions for construction. Certified drawings under request.
- External thrust shall be informed at the time of Inquiry/Order.
- Executions with auxiliary terminal box and second shaft end are optional and available under request.
- For other special executions please refer to us.
- The dimensions shown are subject to change without prior notice.

OUTLINE DIMENSIONS

IIC T4
I (M2)

High Voltage

W22XC 500KH IMB3T



Poles	A	AA	AB	AC	AD	BA	BB	BC	BK	BH	C	CA	H	HA	HC	HD	h11	K	L	LC	LD1	LD2
2P	850	200	1020	1162	594	375	1800	915	1000	1250	280	1080	500	65	1081	1704	945	42	2750	2905	635	1300
4P+																			2830	3055	715	

	Shaft dimensions												Bearings	
Poles	D	E	F	G	GD	DA	EA	FA	GB	GF	d1	d2	D.E	N.D.E
2P	90m6	170	25	81	14	75	140	20	67,5	12	DSM24	DSM20	NU220C3 + 6020C3	NU220C3
4P+	130m6	250	32	119	18	110	210	28	100	16	DSM24	DSM20	6328C3	6328C3

	Power terminal box - S1	Auxiliary terminal box - S2	Auxiliary terminal box - S3
Poles	CEFGH500	CEFGH340	Pt 100 Bearingbox
2P	I≤200A: 1xM63x1,5	2xM20x1,5	1x1/2" NPT
4P+	200A<I≤400A: 3xM50x1,5		

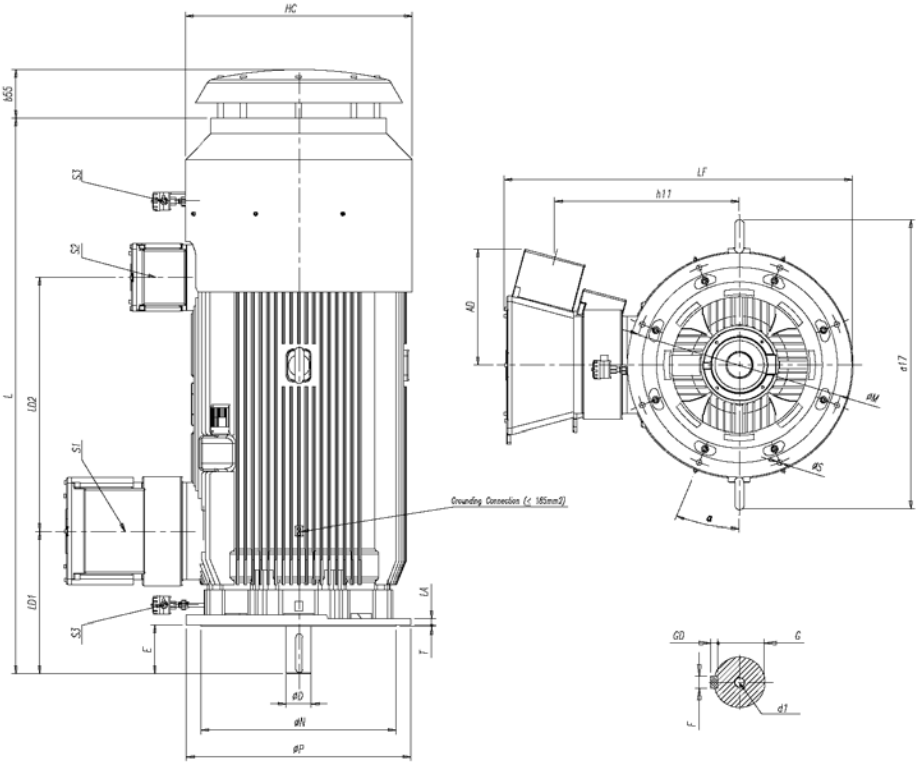
Notes: - All the dimensions are in millimeters.
- Please, do not use these dimensions for construction. Certified drawings under request.
- External thrust shall be informed at the time of Inquiry/Order.
- Executions with auxiliary terminal box and second shaft end are optional and available under request.
- For other special executions please refer to us.
- The dimensions shown are subject to change without prior notice.

OUTLINE DIMENSIONS

IIC T4
I (M2)

High Voltage

W22XC 500KH IMV1 (IEC)



Poles	AD	HC	h11	L	LA	LD1	LD2	LF	a17	b55	M	N	P	T	S	Nr. Holes	α
4P+	594	1162	945	2830	30	715	1300	1785	1482	250	1080	1000	1150	7	28	8	22,5º

	Shaft dimensions						Bearings		Power terminal box - S1	Auxiliary terminal box - S2	Auxiliary terminal box - S3
Poles	D	E	F	G	GD	d1	D.E	N.D.E	CEFGH500	CEFGH340	Pt 100 Bearin Box
4P+	130m6	250	32h9	119	18	DSM24	7328	6328C3	I≤200A : 1xM63x1,5 200A< I ≤400A : 3xM50x1,5	2xM20x1,5	1x 1/2" NPT

Notes: - All the dimensions are in millimeters.
- Please, do not use these dimensions for construction. Certified drawings under request.
- External thrust shall be informed at the time of Inquiry/Order.
- Executions with auxiliary terminal box and second shaft end are optional and available under request.
- For other special executions please refer to us.
- The dimensions shown are subject to change without prior notice.

6. ORDER CHECK LIST

This check list refers the essential information to be transmitted with inquiry/order for Hazardous Area Motor. The max. details provided will help both WEG/COSTUMER to sellect/supply the corret motor to the application.

6.1 BASIC MOTOR DATA AND FEATURES:

Standards : (Motor construction / Safe & Hazardous areas)

Basic Design:

- Rating: (kW)
- Frequency: (Hz)
- Poles/speed:
- Insulation cl: (F)
- Motor tem. prise: (K)
- Design amb. temp.: (40°C)
- Mounting form IM:
- Paint Scheme/Color:
- Duty: (S1)
- Service factor: (1,0)
- Balancing grade: (A / B)
- Rotation: (CW / CCW - viewed from D.E. side)

Motor Protection Enclosure Ex:

- Zone: (1 / 21 or 2 / 22)
- Motor Ex protection: (Ex d; Ex de; Ex nA)
- Terminal box Ex protection: (Ex d; Ex e; phase segregated; other)
- Hazardous area: (G - Gas; D - Dust; GD - Gas & Dust)
- Gas group: I: (mines)
  - II: (surface) (IIA; IIB; IIC)
- Temp. class: (T1; T2; T3; T4...T6)
- Certification required: (ATEX / IECEx)

Supply terminal box arrangement:

- 2nd power term. box: ☐
  - CTs (current transformers):
  - Neutral point
  - Other:

Auxiliaries & Accessories:

- Protection on windings:
  - Thermistor: (PTC / NTC)
  - PT100: Nº/phase:
    - Nº wires:
    - Alarm: (°C)
    - Trip: (°C)
  - Auxiliary t. box: ☐
- Protection on bearings:
  - Thermistor: (PTC / NTC)
  - PT100: Nº/phase:
    - Nº wires:
    - Alarm: (°C)
    - Trip: (°C)
  - Auxiliary t. box: ☐ Same t. box of windings protections
    ☐ 2nd aux t. box
    ☐ 2 separate t. boxes (1/endshield)
- A.C. heaters: (V)
  - Individual t. box: ☐

Cable Entry Details:

- Cable entry direction: (RHS; LHS - viewed D.E. side)
- Nº of cable entries:
  - Supply t. box:
  - Auxiliary t. boxe(s):
  - Glands thread size(s):
- Supply/Instrrumentation cable information:
  - Nº cables:
  - Type of cables: (armoured/non armoured)
  - Cables diametre: Ext:
    - Armour:
- Cable glands supplied with motor: ☐ (WEG can supply glands acc. to info provided about cables):
  - Cable glands size(s):
  - Cable glands type(s):

6.2 SITE & WORKING CONDITIONS:

Starting:

- Starting method:
  - ☐ DOL:
  - ☐ VSD: speed range:
  - ☐ Soft starter:
  - ☐ Starter/Delta:
  - ☐ Other:
- Duty (if different from S1):
- Service factor (if different from 1,0):
- Nº starts/hour: Cold:
  - Hot:

Coupling:

- ☐ Direct:
- ☐ Pulley/Belt: Pulleys diam.:
  - Nº/Type belts.:
- ☐ Gearbox: Gearbox ratio:

Ambient Conditions:

- Ambient temp.: (°C)
- Min. temp.: (°C)
- Max. temp.: (°C)
- Humidity: (%)
- Altitude: (m.a.s.l.)
- Enviroment: (Saline; Alcaline; Marine; Petrochemical; Sulphur (H_2S); Other.....)

Driven Machine Data:

- Driven machine type: (centrifugal fan/pump; reciprocating pump/compressor; blower; mills; cranes; conveyor belt;.....)
- Absorved power: (kW)
- Driven machine torque curve: (Quadratic; constant; other.....)
- Starting torque: (Kg m^2)
- Rated torque: (Kg m^2)
- Load inertia: (J or PD^2)

NOTES

NOTES

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