

# Flameproof Motors

Aluminium 56-180

EN



ORANGE1  
HOLDING

## A dynamic, strong and ambitious Group:

Orange1 Holding is an international renown Group, one of the most important European manufacturers of single-phase and three-phase asynchronous electric motors. It has an annual capacity of more than 1 million motors and 5 million electric stators with an annual turnover of approx 235 million euro and more than 1600 workers in 15 production facilities. The group, established in 1971 by Leone Donazzan, chaired today by his son Armando Donazzan, is strongly focused on technological innovation, performance and customization to meet individual clients requirements.



Elpromtech, member of Orange1 Holding since 2011, is known worldwide for the production of explosion proof motors ATEX, IECEx, cETLus, EAC for hazardous areas. It also offers products suitable for powerpack applications , lifting , garage equipments, compactors and hydraulic applications in general , encapsulated motors for ambient with high humidity as car wash systems, offshore applications and food industry , motors with integrated frequency drive to get very sophisticated controls minimizing the overall dimensions of the product. This peculiarity makes Elpromtech world leader for the market in which maximum reliability, technological innovation and high quality are required.



## Flameproof motors

Series of aluminium motors completely modular. The feet and flanges can be mounted without affecting the Ex type of protection. This permits a big advantage in the warehouse management. Applying feet and flanges it is possible to realize every requested mounting arrangement and this operation can be made without any problem for ATEX and IECEx motor approval.

## New series

**Motors for  
Hazardous Location  
for North America  
market**

**Catalogue:**  
AC Explosion Proof Motors

Elpromtech Explosion Proof Motors range approved by CSA in compliance with CSA and UL standard , Nema and IEC mounting

Class I Division 1 Groups C, D T4  
Class II Division 1 Groups E, F, G  
Tamb = -25 °C to +40 °C

From 80 to 160 IEC frame size and from 56 to 256 Nema frame size

# 1. Tolerances and standards of reference



## 1.1 Mechanical and Electrical tolerances

Symbol	Description	Tolerance	
<b>A</b>	Distance between centre-lines of fixing holes (end view)	± 1 mm	
<b>AB</b>	Overall dimensions across the feet (end view)	+ 2 %	
<b>AC</b>	Diameter of the motor (without terminal box)	+ 2 %	
<b>B</b>	Distance between centre-lines of fixing holes (side view)	± 1 mm	
<b>C - CA</b>	Distance from the shaft end shoulder to the centre-line of nearest mounting holes in the feet	± 3 mm	
<b>D - DA</b>	Diameter of the shaft extension.	∅ 11 – 28 ∅ 32 – 48 ∅ ≥ 55	j6 k6 m6
<b>E - EA</b>	Length of the shaft extension from the shoulder	∅ < 55 mm ∅ > 60 mm	0,3 mm + 0,5 mm
<b>F - FA</b>	Width of the keyway of the shaft extension	h9	
<b>GA - GC</b>	Distance from the top of the key to the opposite surface of the shaft extension	+ 0,2 mm	
<b>H</b>	Distance between the centre-line of the shaft to the bottom of the feet	H ≤ 250 H ≤ 280	- 0,5 mm - 1 mm
<b>HD</b>	Distance from the top of the terminal box and to the bottom of the feet	+ 2 %	
<b>K</b>	Diameter of the holes or width of the slots in the feet of the motor	+ 3 %	
<b>L</b>	Overall length of the motor with a single shaft extension	+ 1 %	
<b>M</b>	Pitch circle diameter of the fixing holes	± 0,8 mm	
<b>N</b>	Diameter of the spigot	∅ < 230 ∅ ≥ 250	j6 h6
<b>P</b>	Outside diameter of the flange	± 1 mm	
<b>R</b>	Distance from the shaft shoulder to the mounting surface of the flange	± 3 mm	
<b>S</b>	Diameter of the fixing holes in the mounting flange or nominal diameter of thread	+ 3 %	
	Distance from the shaft shoulder to the mounting surface of the flange with locked bearing	± 0,5 mm	
	Mass of the motor	- 5 a + 10 %	
<b>Nominal voltage, <math>V_N</math></b>		± 5%	
<b>Efficiency, <math>\eta</math></b>		-15% of (1- $\eta$ )	
<b>Power factor, <math>\cos \phi</math></b>		-1/6 of (1-cos $\phi$ ) min 0.02, max 0.07	
<b>Slip (rpm) (full load and nominal ambient temperature), <math>P_N</math></b>		± 20% if $P_N \geq 1$ kW ± 30% if $P_N < 1$ kW	
<b>Locked rotor current, <math>I_A</math></b>		+20%	
<b>Locked rotor torque, <math>M_A</math></b>		-15% +25%	
<b>Breakdown torque, <math>M_{max}</math></b>		-10% con $M_{max}/M_N \geq 1.6$	
<b>Minimum torque, <math>M_{min}</math></b>		-15%	
<b>Moment of Inertia, <math>J</math></b>		± 10%	
<b>Sound intensity level (sound pressure) <math>L_{pFA}</math></b>		+3 dBA	

## 1.2 Standards of reference

Title	EU CENELEC	International IEC
EU	EN 60034-1	IEC 60034-1
CENELEC	EN 60034-2	IEC 60034-2
International	EN 60034-5	IEC 60034-5
IEC	EN 60034 -6	IEC 60034 -6
Rotating electrical machines / Part 7: Classification of types of construction, mounting arrangements and terminal box position (IM Code)	EN 60034-7	IEC 60034-7
Rotating electrical machines / Part 9: Noise limits	EN 60034-9	IEC 60034-9
Rotating electrical machines / Part 12: Starting performance of single-speed three-phase cage induction motors	EN 60034-12	IEC 60034-12
Rotating electrical machines / Part 14: Mechanical vibration of certain machines with shaft heights 56 mm and higher Measurement, evaluation and limits of vibration severity	EN 60034-14	IEC 60034-14
General purpose three-phase induction motors having standard dimensions and outputs. Frame numbers 56 to 315 and flange numbers 65 to 740	EN 50347	IEC 60072-1
Degrees of protection provided by enclosures (IP Code)	EN 60259	IEC 60529
Electrical apparatus for explosive gas atmospheres / Part 0: General requirements	EN 60079-0	IEC 60079-0
Electrical apparatus for explosive gas atmospheres / Part 1: Flameproof enclosures 'd'	EN 60079-1	IEC 60079-1
Electrical apparatus for explosive gas atmospheres / Part 7: Increased safety "e"	EN 60079-7	IEC 60079-7
Explosive atmospheres / Part 31: Equipment dust ignition protection by enclosure "t"	EN 60069-31	IEC 60079-31

## 2. Guide to motor choice



**First step is the classification of hazardous places in zones. The end user shall classify the hazardous areas under his own responsibility.** Directive 1999/92/EC provides information regarding 'Classification of places where explosive atmosphere may occur'. The corresponding standards of reference are EN 60079-10-1 for gas and EN 60079-10-2 for dust. Here below we give you a synthetic step by step guide to the choice of the motors.

Zone Classification (presence of explosive atmosphere)		Electrical apparatus ATEX marking					
		(1) Group	(2) Category	(3) Type of protection	(4) Gas group Dust group	IP Degree	(5) GAS Temperature class (6) DUST Surface temperature
GAS	0	II	1G	Electrical apparatus not allowed			
	1	II	2G	Ex eb 'increased safety'	IIA, IIB, IIC	IP54	T1=450°C T2=300°C T3=200°C T4=135°C T5=100°C T6=85°C
				Ex db 'flameproof enclosure'		-	
2	II	3G	Ex nAc 'non sparking'	IIA, IIB, IIC	IP54	T1=450°C T2=300°C T3=200°C T4=135°C T5=100°C T6=85°C	
POLVERI	20	II	1D	Electrical apparatus not allowed			T125°C
	21	II	2D	Ex tb 'protection by enclosure t'	IIIC, IIIB, IIIA	IP6X	
	22	II	3D	Ex tc 'protection by enclosure t'	IIIB, IIIA	IP5X	

### (1) Group II

Comprises equipment intended for use in other places likely to become endangered by explosive atmospheres (surface plants different from mines).

### (2) Group II is sub-divided into 3 categories:

**Category 1:** very high level of protection / **Category 2:** high level of protection / **Category 3:** normal level of protection

### (3) Elprom motors O-M series can have the following types of protection:

**Ex db** motor and terminal box (GAS)

**Ex dbeb** motor Ex d and terminal board Ex e (GAS)

**Ex tb** protection by enclosure t (DUST)

### (4) GAS group

**IIC** Hydrogen, Acetylene, carbon disulfide

**IIB** Diethyl ether, Ethylene etc.

**IIA** Propane, Butane, pentane, natural gas etc.

### DUST group

**IIIC** Conductive dust

**IIIB** Non-conductive dust

**IIIA** Combustible fibers

### (5) (GAS)

In function of their maximum surface temperature the motors are classified in a temperature class.

### (6) (DUST)

The surface temperature must be less or equal than the minimum value between Tmax1 e Tmax2 where:

**Tmax1 = 2/3 Tcl** with Tcl ignition temperature in °C of the dust cloud.

**Tmax2 = TI - 75 °C** with TI ignition temperature in °C of a 5mm layer of dust.

# GAS- Main inflammable substances



Inflammable substance	Group of GAS	temperature of ignition	Temp. Class	Inflammable substance	Group of GAS	temperature of ignition	Temp. Class
2-Methylpentane	IIA	300	T2	Ethyl formate	IIA	440	T2
Amyl acetate	IIA	360	T2	Methyl formate	IIA	450	T1
Butyl-n acetate	IIA	425	T2	Natural gas	IIA	482	T1
Ethyl acetate	IIA	426	T2	Isobutane	IIA	460	T1
Isobutyl acetate	IIA	420	T2	Isoheptane	IIA	220	T3
Methyl acetate	IIA	502	T1	Isohexane	IIA	264	T3
Propil acetate	IIA	430	T2	Isooctane	IIA	410	T2
Vinyl acetate	IIA	425	T2	Isoprene	IIA	220	T3
Acetone	IIA	465	T1	Methane	IIA	537	T1
Methanol	IIA	464	T1	Methylcyclopentane	IIA	258	T3
Brome thane	IIA	511	T1	Methylamine	IIA	430	T2
Butane	IIA	287	T3	Methylmetacrylate	IIA	430	T2
Butane - 1	IIA	384	T2	Paraldehyde	IIA	239	T3
Butane - 2	IIA	325	T2	Pentane	IIA	258	T3
Cycloexano	IIA	259	T3	Pyridine	IIA	483	T1
Cycloexanol	IIA	300	T2	Propane	IIA	470	T1
Cyclohexanone	IIA	419	T2	Propylamine	IIA	318	T2
Cyclohexene	IIA	244	T3	Propylbenzene	IIA	450	T1
Cyclopropane	IIA	498	T1	Propylene	IIA	455	T1
Cymene (p)	IIA	436	T2	Styrene	IIA	490	T1
Chloro-benzene	IIA	637	T1	Toluene	IIA	480	T1
Acetyl chloride	IIA	390	T2	m-Xylene	IIA	522	T1
Allyl chloride	IIA	390	T2	o-Xylene	IIA	464	T1
Chlorbutane	IIA	240	T3	p-Xilene	IIA	528	T1
Chloroethane	IIA	495	T1	1,2 Butadiene	IIB	430	T2
Vinyl chloride	IIA	472	T1	1,3 Butadiene	IIB	430	T2
Dichlorobenzene	IIA	648	T1	Dioxane	IIB	245	T3
Dichloroethylene 1,1	IIA	570	T1	Diethyl ether	IIB	160	T4
Dichloroethylene 1,2	IIA	441	T2	Ethyl vinyl ether	IIB	200	T3
Diethylamine	IIA	312	T2	Methyl vinyl ether	IIB	350	T2
Dimethylamine	IIA	400	T2	Acrylate ethyl	IIB	350	T2
Dimethylaniline	IIA	371	T2	Ethylene	IIB	425	T2
Dimethylbutane 2,3	IIA	405	T2	LPG	IIB	365	T2
Dimethylpentane 2,3	IIA	330	T2	Sulphurated Hydrogen	IIB	260	T3
Heptane	IIA	215	T3	Methylacrylate	IIB	415	T2
Hexane	IIA	233	T3	Carbon monoxide	IIB	605	T1
Heptane	IIA	515	T1	Ethylene oxide	IIB	435	T2
Ethylacetoacetate	IIA	350	T2	Propylene oxide	IIB	430	T2
Ethylamine	IIA	385	T2	Acetylene	IIC	305	T2
Ethylmercaptane	IIA	295	T3	Hydrogen	IIC	500	T1
Butyl formate	IIA	320	T2	Carbon disulfide	IIC	95	T6

# DUST- Main inflammable substances



Substance	Medium largeness particles (µm)	LEL (g/m3)	Cloud ignition temperature Tci (°C)	Layer 5mm thick ignition temperature TI (°C)
Aluminium	10	60	560	430
Bronze	18	750	390	260
Iron	12	500	580	>450
Graphite	7	30	600	680
Lamp-black (carbon black)	13	15	620	435
Sulphur	20	30	280	260
Paper		100	620	370
Cellulose (93% sweet wood, 6% hard wood)	14	15	420	335
wood flour	60		470	305
Wood (50% pear tree and 50% kernel)	35	100	500	340
Wood (beech)	61		490	310
Wood (pear tree)	27	100	500	320
Sawdust of wood	65		470	290
Cork	42	30	470	300
Cacao	3	125	460-540	245
Coffee	10	25	360	450
Cereals (mixed powders)	37	125	510	300
Wheat flour	56-125	60	480	>450
Soy flour	20	200	620	280
Gelatine	65	60	560	>450
Wheat		100	470	220
Dry milk	165	60	460	330
Milk sugar	22	60-125	450	>450
Rye			415-470	325
Buttermilk	400		450	420
Tobacco		60	485	290
Black tea	76	125	510	300
Sugar	32	30	360	>450
Powdered sugar	17	60	350	>450

## 3. Motor characteristics

### 3.1 Range of motors

Ex Elprom motors are manufactured in compliance with all the European standards concerning equipment and protective systems for potentially explosive atmosphere in compliance with the European Directive ATEX 94/9/CE (better known as ATEX) and IECEx Scheme. Here below in the table we show you the range of motors for each type of protection. In the following pages we will talk about testing and certificates, main features of these motors and possible options always depending on the type of protection.

Type	Frame size	Pole N°	Output range (kW)	Type of protection	Temperature class Surface temperature	Tamb max range (°C)
<b>3-ph (*) 1 speed</b>	56-180	2	0,12 – 30	Ex db Ex dbeb Ex tb	T3 T4 T5 T125°C	Ta –40°C +60°C Ta –40°C +60°C Ta –40°C +40°C Ta –40°C +60°C
	56-180	4	0,12 – 22			
	56-180	6	0,18 – 15			
	71-180	8	0,18 – 11			
<b>3-ph 2 speeds Constant Torque</b>	71-180	4/2	0,22/0,33 – 18,5/22	Ex db Ex dbeb Ex tb	T3 T4 T125°C	Ta –40°C +60°C Ta –40°C +60°C Ta –40°C +60°C
	71-180	8/4	0,11/0,18 – 9,9/16			
	71-180	6/4	0,11/0,18 – 8,1/13			
	71-180	8/6	0,08/0,12 – 6/8			
<b>3-ph 2 speeds Quadratic Torque</b>	71-180	4/2	0,06/0,25 – 6/24	Ex db Ex dbeb Ex tb	T3 T4 T125°C	Ta –40°C +60°C Ta –40°C +60°C Ta –40°C +60°C
	71-180	8/4	0,05/0,25 – 5,5/22			
	80-180	6/4	0,1/0,3 – 6,25/18,5			
	80-180	8/6	0,09/0,33 – 5,2/10			
<b>1-ph (**) 1 speed</b>	56-112	2	0,09 – 4	Ex db Ex dbeb Ex tb	T3 T4 T125°C Ca	Ta –40°C +60°C Ta –40°C +60°C Ta –40°C +60°C
	56-112	4	0,06 – 3			
	71-100	6	0,12 – 1,1			

(\*) If provided of Thermal Protection (normally PTC) inside the windings, can be driven by frequency converters.

(\*\*) The capacitor of the single phase motors is put inside a special Ex d cylindrical enclosure fitted on the motor itself. Otherwise it must be placed in a safe area.

### 3.2 Testing and certificates

Motors for hazardous areas have to be officially approved by a recognized test organization, authorized to issue test certificates, to ensure compliance with standards for this type of equipment. Motors are defined and classified according to the categories and protection type which are defined in the corresponding standards. Depending on the nature of the atmosphere, it is responsibility of the user to determine which group and which maximum surface temperature should be specified for the motor installation. The Ex motors manufactured by Elprom are manufactured in compliance with all the European and International standards concerning equipments and protective systems for explosive atmosphere (European Directive 2014/34 EU better known as ATEX, and IECEx Scheme and EAC).

#### The motors have been tested by a Notified Laboratory which released:

- EC Type Certificate , Product Quality assurance Notification (ATEX)
- CoC Certificate of Conformity, ExTR Test Report, QAR Quality assurance Report
- EAC certificate

It means that all the Ex motors are manufactured in compliance with the technical drawings and documents approved by the Notified Body after testing the motors (performing type test as written in the EN standards) and the production of such motors follows all the procedures requested by the Directive. Every year the Production of Ex motors is evaluated by a Notified Body in order to verify that all the procedures are constantly respected.

#### Each motor or batch of motors will be despatched together with the following documents:

- EC Declaration of Conformity / IECEx CoC copy / EAC certificate
- Installation manual and safety instructions where are written all the indication regarding the installations of the motors and the important instructions regarding the type/s of protection of the motors.



### 3.3 Main features

ELPROM Ex electric motors are manufactured and tested in compliance with all the EN/IEC standards and also in compliance with the main European Directives (2014/34 EU 'ATEX', 2014/30 EU 'EMC Electro Magnetic Compatibility', 2006/42/EC 'Machinery', 2011/65/CE 'RoHS' II and with IECEx Scheme and EAC standards).

#### ATEX characteristics:

Suitable for Surface plants different from mines (Group II)

#### Presence of GAS:

Type of protection	'Ex db' or 'Ex dbeb'
GAS group	IIC (suitable IIB and IIA)
Temperature class	T3, T4 E T5 (suitable also for T2, T1)
Ambient temperature range	-40°C +60°C for temperature class T3 -40°C +60°C for temperature class T4 -40°C +40°C for temperature class T5

#### Zone 1 and Zone 2

#### Presence of DUST:

Type of protection	Ex tb IP66 (IP65 for Ex dbeb)
DUST groups	IIIC (suitable IIIB and IIIA)
Surface Temperature	T125°C
Ambient temperature range	-40°C +60°C

#### Zone 21 and Zone 22

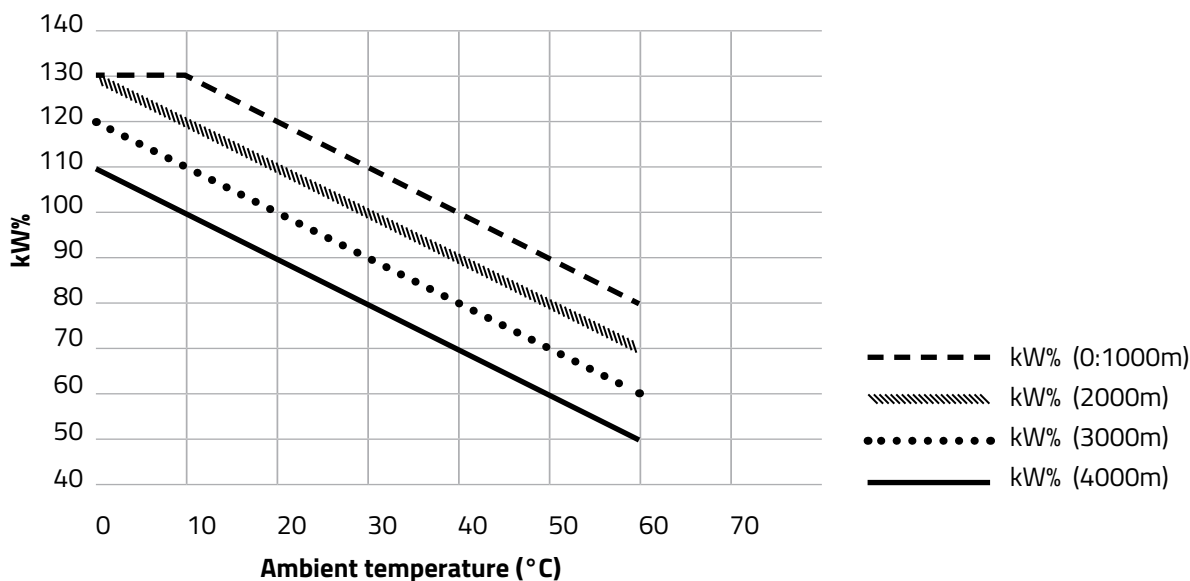
All the motors are asynchronous with squirrel cage rotor, wound stator, closed and externally ventilated in compliance with EN 60034-6 (IC 411).

The supply voltages allowed can exceed the nominal value of  $\pm 5\%$ . On demand  $\pm 10\%$ .

All the electrical and mechanical features and the testing methods comply with the standard EN 60034-1.

The power ratings of the motors is designed suitable for the following site operating (in according to EN 60034-1): ambient air temperature 40°C, altitude max 1000m above sea-level. For site operating conditions deviating from those values, below you find the diagram of the estimation of derating of the motor power (method 1a-Tab.9).

#### Derating of the Motor Power





**The dimensions** of the motors comply with EN 50347 and IEC 60072-1, the mounting arrangements B3, B5, B14 comply with EN 60034-7. All the geometrical dimensions are unified according to the tables UNEL 13113-71; 13117-71; 13118- 7; IEC 60072-1.

**The IP degrees of protection** of the motors comply with IEC/EN 60034-5 and EN 60259.

**Insulation class** All the motors have an insulation class F in compliance with IEC/EN 60034-1. Insulation class H on request.

**The bearings** are single row deep grooves ball bearings, preloaded by a wave spring.

**Duty** The motors are normally made for S1 duty; otherwise intermittent duties (S2, S3, S9 with motor protector).

**Single-phase motors** Capacitor placed in a safe Ex d cylindrical box fitted to the motor.

**Windings** Made using enamelled copper wires are insulated with two layers (insulation class H). They are painted with another layer of varnish and after this placed in an oven for the drying process. It is also possible to tropicalize the windings using special additional varnish with high hygroscopic characteristics so to be used in places with an humidity >60% (see options)

**Rotors** Die-cast aluminium squirrel cage or aluminium alloy (Al-Si Silumin).

**The shafts** of the motors and the keys-shaft comply IEC 60072-1. Special shaft are made on request (see options).

**Frame** (in compliance with EN 50347). Die-cast aluminium with high mechanical strength, with a good thermal conductivity and light weight. The feet can be mounted on the motor frame in 3 different positions, in the bottom or on right and left side.

**Terminal box** The terminal box in case of motor B3, is normally on the top of the motor. As the feet are removable also on the sides of the frame it is possible to have the terminal box on both sides of the motor too.

**Flanges and shields** (in compliance with EN 503471). Die-cast aluminium, with dimensions as per standard IEC 60072-1, or with special shapes on request: The motor is completely modular so that the flanges can be mounted or removed depending on the needs without affecting the Ex type of protection (as the flange are mounted on the front shield).

**Ventilation** (in compliance with EN 60034-6). Self-ventilated motors IC 411. Depending on the type of protection the fan can be in plastic or in aluminium. On demand: forced ventilation motors (IC 416). See the drawing in the catalogue.

Ex db, Ex dbeb	Plastic fan
Ex tb	Antistatic plastic or aluminium fan

**Fan cover** Zinc-plated steel sheet.

**Noise** (in compliance with IEC/EN 60034-9)

### 3.4 Main Options

**Axially locked shaft** Motors with a locked bearing on the front shield using an elastic metal ring. This solution is necessary in case of alternative axial stress (ie. Bevel gear pinion with alternative load or motion, frequent start-up under load or with high inertia) so to create axial movement of the shaft and bumps on the bearings.

**Low temperatures motors (-40 °C)** They have to be fitted with special bearing, metallic fan, metallic cable gland and plugs or made with special plastic materials. In these cases, if there is a risk of condensation, it is better to fit the motors with "anti-condensation heaters".

**Anti-condensation Heaters** For motors installed in cold and wet places, with significant temperature ranges, moisture condensation can be dangerous for the resistance of the winding insulation. Upon request, we can apply appropriate heaters directly on the heads of winding. The terminals are connected to a terminal board inside the connection box of the motor. The heaters are available at 110V and 220 V, with a tolerance of +/- 10%

**Tropicalization of windings** If the motors are installed outdoors or in high humidity areas, the windings may be tropicalized with a special varnish with high hygroscopic characteristics in order to protect the insulation materials by the condensation. This protection avoids the reduction of the insulation properties of the windings.

**Insulation Class H (180°C)** For motors installed in places with working condition very hard

**Efficiency level (IE2 and IE3 level)** The International Electrotechnical Commission (IEC) has introduced standards relating to energy efficient motors. IEC 60034-2-1 specifies rules concerning efficiency testing methods and IEC 60034-30 defines efficiency classes for a wide range of electric motors connected direct on line. High efficiency IE2 / Premium efficiency IE3.

**Inverter duty motors** All these motors can be driven by a converter. In this case they must be fitted with thermal protections inside the windings, as written on the certificates.

The maximum load of a converter-driven motor depends on:

- the kind of modulation, switching frequency of the converter and supply of the converter (single-phase or three-phase)
- design of the motor: temperature rise, level of magnet's flux, type of the forced ventilation.

See the table of the derating power on the electrical data section shows the estimation of the continuous torque of the motor as a function of frequency, with different cooling designation: IC 411 (self-ventilation) and IC 416 (forced ventilation).

**Special voltages and frequencies** - The standard three phase motors are produced at the following nominal voltages and frequencies: 230/400V-50 Hz and 265/460V-60Hz (Constant torque) up to MEC 112; 400/690V-50 Hz 460-60Hz (Constant torque) for MEC 132-180.

The standard single phase motors are produced at the following nominal voltages and frequencies: 230V-50Hz

The motors can run at a different nominal voltage with a tolerance of +/- 5%. On request ±10%. On customer request, we can produce motors with special voltage and frequency.

**Special shafts** - On customer request, it is possible to supply motors with special shaft (according to the customer drawing). It is necessary to send the drawing to our Technical Department for a feasibility study. It is possible to supply motors with shaft of different material from the standard (C40), using Stainless Steel or others, with standard or special dimensions.

**Special flanges** - Due to the modular flange assembling it is possible to have, on request special flanges.

**Rain fan cover** - For outdoor applications, vertical mounting, DE shaft down (V5, V1, V18) it is suggested to assemble a special cowl with a rain cover. It is available for all the frame sizes.

**Thermistors (PTC Positive Temperature Coefficient)** - They must be used in case of motors driven by inverters.

They are fitted inside the windings in number of 3 with a series connection to be connected to an appropriate tripping device that cuts off the motor's supply in case the winding reaches the thermal probe limit temperature. On request will be available protectors with different temperature setting in respect of the maximum Temperature class or surface temperature of the motor.

**Thermal cut-off (bimetallic probes)** - Motors with 1 or 2 thermal protectors with normally closed contact in series connection.

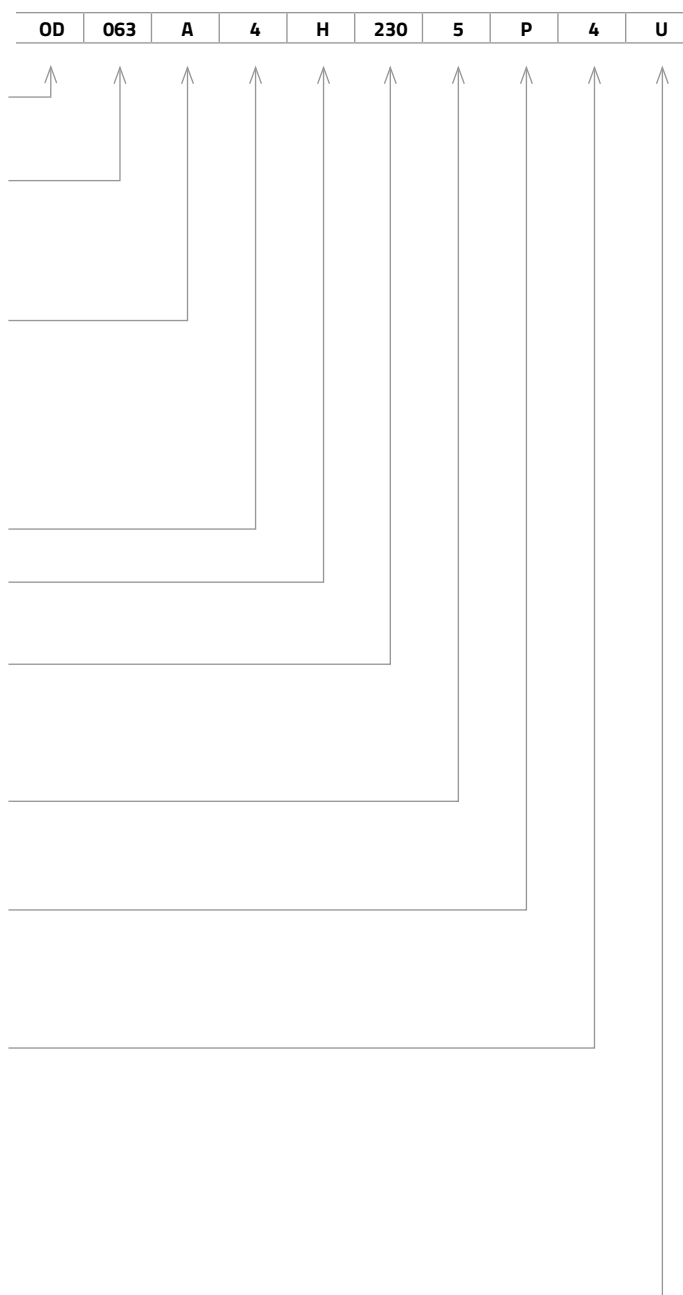
The series of contact shall be connected to an appropriate tripping device that cuts off the motor's supply in case the winding reaches the thermal probe limit temperature. On request will be available protectors with different temperature setting in respect of the maximum Temperature class or surface temperature of the motor.

**PT100** - It is a device that increases its resistance according to the increasing of the temperature. It is useful for continuous measuring of the winding temperature, properly connected to an electronic equipment.

**Painting (against corrosion)** - The Elprom motors have diecasted aluminium components and sandblasted. If it is not requested the motors are supplied unpainted. On specific request it is possible to have motors with epoxy paint, with the customer requested colour. Max thickness 0,2mm. Other paints with anti salt characteristics are available on request; contact our Technical Department.

### 3.5 Motors identification

MOTOR TYPE	
<b>MD</b>	Single phase Ex d
<b>ME</b>	Single phase Ex de
<b>OD</b>	Three phase Ex d
<b>OE</b>	Three phase Ex de
MOTOR SHAFT HEIGHT	
56, 63, 71, 80, 90, 100, 112, 132, 160, 180	
STATOR DIMENSION	
<b>A, B</b>	56-63-71-80
<b>S, L</b>	90 - 132 - 160 - 180
<b>K, M</b>	100 - 132 - 160 - 180
POLES	
<b>2, 4, 6</b>	Single phase motors
<b>2, 4, 6, 8</b>	Three phase motors, 1 speed
<b>3, 5, 7, 9</b>	Three phase motors, 2 speed (2/4, 4/8, 4/6, 6/8 poles). Constant torque
<b>C, D, E, F</b>	Three phase motors, 2 speed (2/4, 4/8, 4/6, 6/8 poles). Quadratic torque
MOUNTING ARRANGEMENTS (SEE TABLE 1)	
SUPPLY VOLTAGE	
Indicated the lower voltage (i.e.: 230 for 230/400)	
FREQUENCY	
<b>5</b>	50Hz
<b>6</b>	60Hz
<b>7</b>	50/60Hz
PROTECTION (IP AND EX)	
<b>P</b>	Motor 2G
<b>Q</b>	Motor 2GD
TEMPERATURE CLASS	
<b>3</b>	Temperature class T3 (200°C)
<b>4</b>	Temperature class T4 (135°C)
<b>5</b>	Temperature class T5 (100°C)
THERMAL PROTECTOR	
<b>-</b>	without thermal protectors
<b>3</b>	PTO- temperature classe T3
<b>4</b>	PTO- temperature classe T4
<b>5</b>	PTO- temperature classe T5
<b>P</b>	PTC- temperature classe T3
<b>U</b>	PTC- temperature classe T4
<b>V</b>	PTC- temperature classe T5



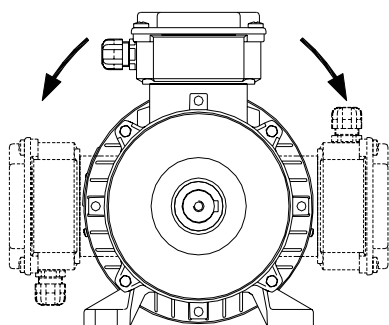
**Table 1 (mounting arrangements)**

<b>A</b>	B14 rain canopy	<b>R</b>	B3/B5 lateral left terminal box
<b>B</b>	B3 lateral right terminal box	<b>S</b>	B3 lateral left terminal box
<b>C</b>	B14 Reduced standard shaft	<b>T</b>	B3+B5 lateral left terminal box
<b>D</b>	B14 Enlarged	<b>V</b>	B14 reduced shaft
<b>E</b>	B5 Reduced standard shaft	<b>W</b>	B3/B14
<b>F</b>	B5	<b>X</b>	B3/B5
<b>G</b>	B5 rain canopy	<b>Y</b>	B3/B5 Reduced flange and shaft
<b>H</b>	B3 terminal box on the top	<b>Z</b>	B14 Reduced flange and shaft
<b>I</b>	B3/B14 Reduced flange and shaft	<b>0</b>	Without flange and feet
<b>J</b>	B B3/B14 lateral left terminal box	<b>1</b>	B14 Enlarged two sizes
<b>K</b>	B3/B14 reduced flange	<b>2</b>	B14 reduced with reduced shaft
<b>L</b>	B5 Reduced flange and shaft	<b>3</b>	B3 rain canopy
<b>M</b>	B3/B14 lateral right terminal box	<b>4</b>	B3/B14 Enlarged flange
<b>P</b>	B5 Reduced shaft	<b>5</b>	B3/B14 rain canopy
<b>Q</b>	B14	<b>6</b>	B14 Enlarged two sizes + rain canopy

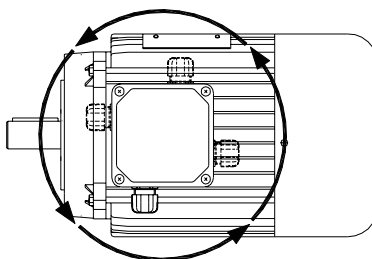
## 4. Terminal box, cable entries and connections



As the feet can be mounted on the frame, it is possible to fix them in 3 different positions so to have the possibility to have the terminal box on the top or on the right and left sides of the motor (see picture 1). At the same time the terminal box can be mounted on the motor so to have the cable entries where it is necessary. So the cable entries can be in the four different positions (see picture 2).



picture 1



picture 2

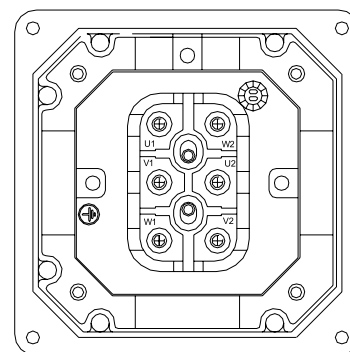
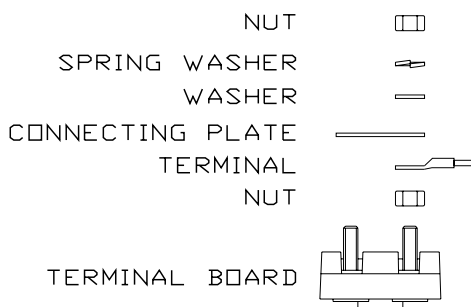
Motor size	cable glands			
	EX d motor		Ex de motor	
	Mains	Aux	Mains	Aux
63	M20	M20	M20	M20
71	M20	M20	M20	M20
80	M20	M20	M20	M20
90	M20	M20	M20	M20
100	M20	M20	M20	M20
112	M20	M20	M20	M20
132	M25	M20	M25	M20
160	M25/M32	M20	M32	M20
180	M32	M20	M32	M20

### Cable connection on the terminal board

#### Motors 'Ex de' (only ATEX approved)

The flameproof motors with increased safety terminal box are built with a special terminal board and the cable glands shall be certified in compliance with EN 60079-7.

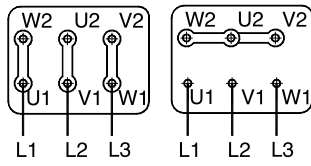
In the picture you can see the special terminal board complying with EN 60079-7. In case of motor fitted with thermal protection heaters etc. the wires of these devices will be connected when possible to the auxiliary pins of a 8 pins terminal board. If it is not possible they must be connected to the cable by welding the wires of the device to the cable wires and insulating them using a thermo sheath.



#### Motors 'Ex d'

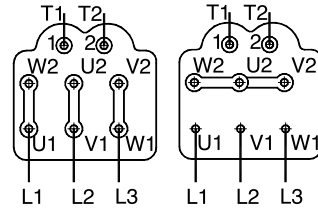
For these type of motors there is no need of a special terminal board and the cable glands shall be certified in compliance with IEC/EN 60079-1.

Three phase 1 speed 2 - 4 - 6 - 8 poles (6 wires)



Delta Connection (Lower voltage)

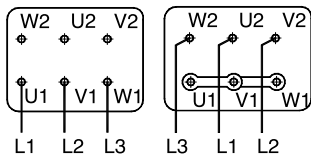
Star Connection (Higher voltage)



Delta Connection (Lower voltage)

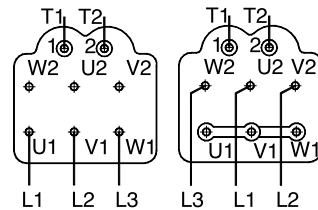
Star Connection (Higher voltage)

Three phase double speed 1 winding



Low speed

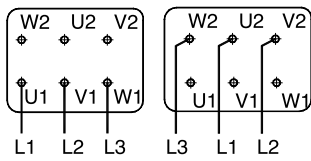
High speed



Low speed

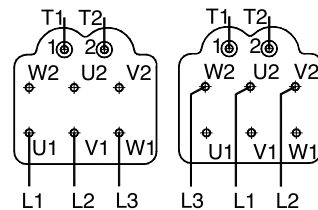
High speed

Three phase double speed 2 separate windings



Low speed

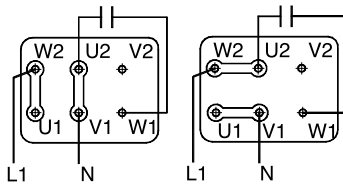
High speed



Low speed

High speed

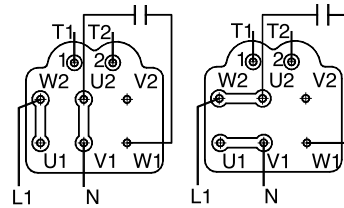
Single phase 4 wires



Clockwise rotation

Counter clockwise rotation

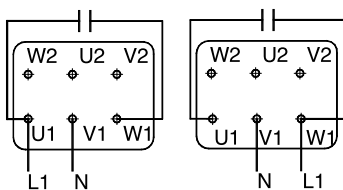
Single phase 4 wires with thermal protection



Clockwise rotation

Counter clockwise rotation

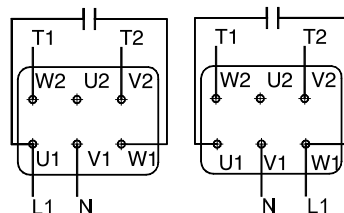
Single phase 3 wires



Clockwise rotation

Counter clockwise rotation

Single phase 3 wires with thermal protection



Clockwise rotation

Counter clockwise rotation

# 5. Mechanical Characteristics

## Mounting arrangements

### Foot mounted

IM 1001 (IM B3)	IM 1051 (IM B6)	IM 1061 (IM B7)	IM 1071 (IM B8)	M 1011 (IM V5)	IM 1031 (IM V6)

### Flange mounted

IM 3001 (IM B5)	IM 3011 (IM V1)	IM 3031 (IM V3)	IM 3601 (IM B14)	IM 3611 (IM V18)	IM 3631 (IM V19)

### Foot-flange mounted

IM 2001 (IM B35)	IM 2011 (IM V15)	IM 2031 (IM V36)	IM 2101 (IM B34)	IM 2111 (IM V58)	IM 2131 (IM V69)

## Main components

In the table here below we show the main components of the motors and the material they are made of.

component	Material	Note
Frame	Aluminium	Removable feet (aluminium)
End- shields	Aluminium	
Flange B5	Aluminium	
Flange B14	Aluminium	
Terminal box	Aluminium	
Shaft	Steel C40	
Rotor	Magnetic lamination die-cast aluminium	
Stator	Magnetic lamination	
Windings	enamelled copper wires (two layers)	
V-Ring	NBR rubber	Special material: VITON
Bearings	Deep groove ball bearings	See Below
Fan	Plastic (Ex D, Ex de), Aluminium or antistatic plastic (Ex tb)	

Motor size	Bearings		Seals	
	Drive end	Non-drive end	Drive end	Non-drive end
63	6202-ZZ	6202-ZZ	v-Ring Ø15	v-Ring Ø15
71	6202-ZZ	6202-ZZ	v-Ring Ø15	v-Ring Ø15
80	6204-ZZ	6204-ZZ	v-Ring Ø20	v-Ring Ø20
90	6205-ZZ	6205-ZZ	v-Ring Ø25	v-Ring Ø25
100	6206-ZZ	6206-ZZ	v-Ring Ø30	v-Ring Ø30
112	6306-ZZ	6306-ZZ	v-Ring Ø30	v-Ring Ø30
132	6308-ZZ	6308-ZZ	v-Ring Ø40	v-Ring Ø40
160	6309-ZZ	6309-ZZ	v-Ring Ø45	v-Ring Ø45
180	6310-ZZ	6310-ZZ	v-Ring Ø50	v-Ring Ø50

The motors are normally fitted with permanently greased bearings of type ZZ, lubricated with a special grease G-15 and have a service max temperature of 150°C.

The bearing life time for aluminium motors is approximately (depending on application and load conditions):

- 2 and 2/4 pole motors, 10 000 - 20 000 duty hours
- 4 to 8 pole motors, 20 000 - 40 000 duty hours

Both on drive end and non-drive end are mounted V-ring seals in order to have the IP66 protection.

## 5.1 Permissible radial and axial forces on the shaft end

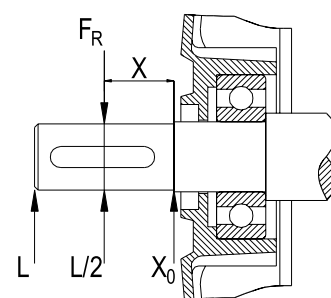
The following tables give the permissible radial and axial forces in Newton.

### 5.1.1 Permissible radial load

Here we show the permissible radial load (FR) that can be applied to three different positions (X0, L/2 and L where L is the length of the shaft axis) on the shaft-end, supposing motors running at 50Hz and bearings life time at least 20,000 hours for 2 poles motors and 40,000 hours for 4-6-8 poles. For service on 60Hz reduce values by 10%. Take the higher speed as reference for double pole motors.

This the formula to calculate FR in a point of the shaft with generic position X:  $F_R = F_{X0} - (F_{X0} - F_L)X/L$

Motor size	Shaft length L (mm)	2 poles			4 poles			6 poles			8 poles		
		X0	L/2	L	X0	L/2	L	X0	L/2	L	X0	L/2	L
63	23	390	365	340	390	365	340	450	420	390	-	-	-
71	30	490	450	410	490	450	410	560	515	470	610	565	520
80	40	650	590	530	650	590	530	750	680	610	820	745	670
90S	50	720	645	570	720	645	570	820	735	650	910	815	720
90L	50	720	650	580	720	650	580	830	750	670	920	830	740
100	60	1020	920	820	1020	920	820	1160	1045	930	1290	1165	1040
112	60	1410	1280	1150	1410	1280	1150	1610	1455	1300	1780	1610	1440
132	80	1510	1345	1180	1510	1345	1180	1510	1430	1350	1910	1700	1490
160	110	2810	2465	2195	2810	2465	2195	3217	2821	2512	3541	3105	2765
180	110	3239	3000	2794	3239	3000	2794	3708	3434	3198	4081	3780	3520



For Belt drive applications the maximum radial load FR is given by:

**FR = maximum radial load [N] = (P + F)** where:

**P = pulley weight [N]**

**F = belt tension [N] = (2 · K · M)/D** where:

**K = belt tension factor (K = 3 for normal flat belt without idler pulley; K = 2,2 for V-belt; K = 2 for normal flat belt with idler pulley)**

**D = pulley diameter [m]**

**M = torque [Nm] = 9550 · P/n** where:

**P = output [kW]**

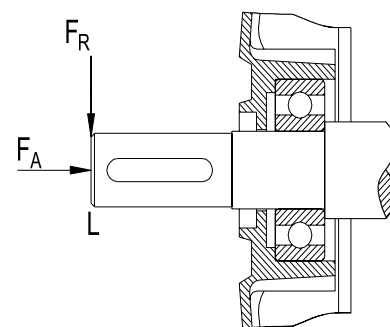
**n = speed in [1/min]**



## 5.1.2 Permissible axial load (with additional radial load applied at the end of the shaft)

In the table below we show the additional axial load ( $F_A$ ) allowable if the maximum radial load ( $F_R$ ) is applied on L. The lower is radial load, the bigger is allowable axial load. Axial load calculations have been carried out in three different foot mounting operating conditions:

horizontal (**B3**), vertical shaft-down (**V5**) and vertical shaft-up (**V6**), supposing the case of thrust **T** or pull **P** force.



### Permissible axial load (with maximum radial load applied on L)

Dimensions in mm

IM 1001 (IM B3)				M 1011 (IM V5)				IM 1031 (IM V6)															
2 poles		4 poles		6 poles		8 poles		2 poles		4 poles		6 poles		8 poles		2 poles		4 poles		6 poles		8 poles	
T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P
240	110	240	110	280	120	290	120	230	120	130	120	270	130	280	130	230	120	130	120	270	130	280	130
300	140	300	130	350	160	380	170	280	160	280	150	330	180	360	190	280	160	280	150	330	180	360	190
400	190	400	180	460	210	510	240	370	220	360	220	420	250	470	280	370	220	360	220	420	250	470	280
430	200	430	210	500	230	550	260	400	230	390	250	460	270	510	300	400	230	390	250	460	270	510	300
440	200	440	200	510	240	560	260	400	240	390	250	460	290	510	310	400	240	390	250	460	290	510	310
620	290	610	290	710	330	780	370	560	350	530	370	630	410	700	450	560	350	530	370	630	410	700	450
860	400	850	400	980	460	1080	500	780	480	740	510	870	570	970	610	780	480	740	510	870	570	970	610
910	440	910	430	1040	500	1150	550	770	590	740	610	870	670	960	720	770	590	740	610	870	670	960	720
1058	1058	1333	1333	1525	1525	1679	1679	1401	714	1676	989	1869	1182	2022	1336	1401	714	1676	989	1869	1182	2022	1336
1065	1065	1342	1342	1536	1536	1691	1691	1498	615	1772	889	1965	1082	2118	1643	1498	615	1772	889	1965	1082	2118	1643

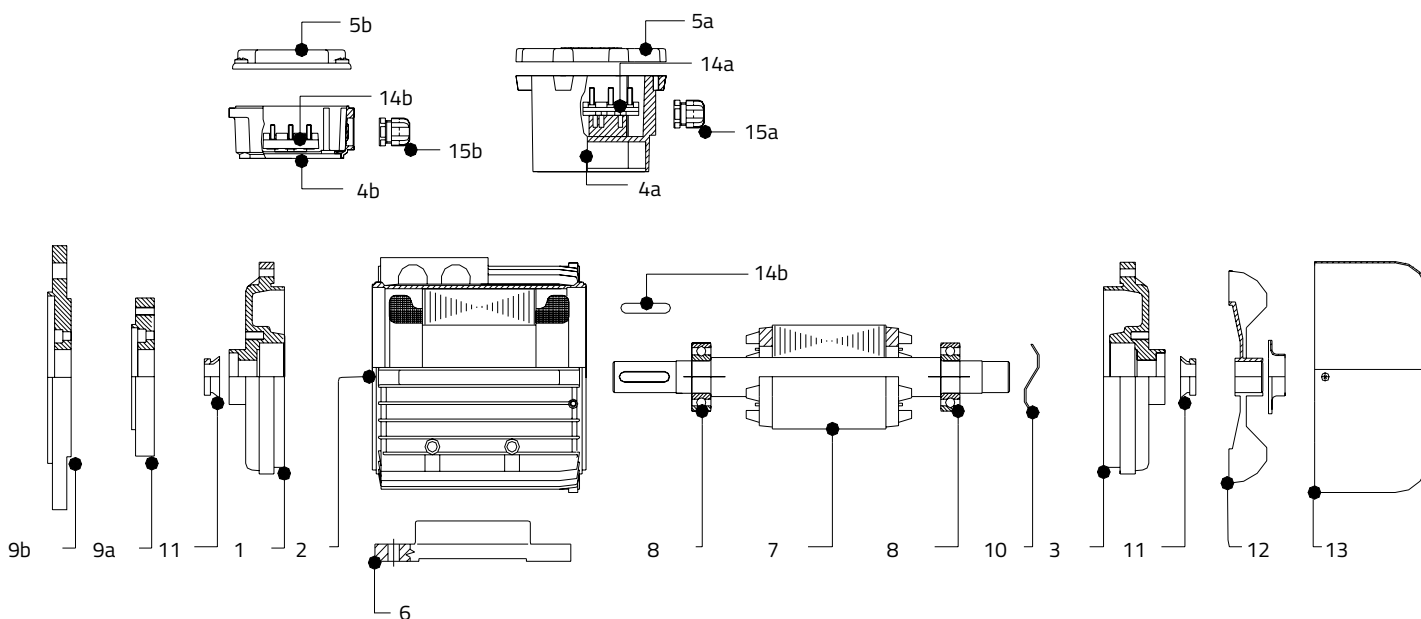
## 6. Spare parts, overhauls and repairs

### 6.1 Personnel qualification

Overhauls and repairs must be carried out only by qualified people in accordance with the standard EN 60079-17 or national standards (last edition). Qualified people must have knowledge about explosion protection. Repairs must be made regarding the rules as define in EN 60079-19 standard. These repairs can only be done under the control or in agreement with ELPROM or by an ATEX and IECEx certified workshop. In case these rules are not respected, the product won't be covered by Elprom ATEX and IECEx certifications anymore.

### 6.2 Spare parts

All motors components must be replaced with original spare parts. In these case contact ELPROM directly and provide the serial number of the motor in order to be authorized for the repair or the motor itself.



- |           |                                 |            |                                 |
|-----------|---------------------------------|------------|---------------------------------|
| <b>1</b>  | Drive End shield                | <b>9a</b>  | B14 flange (removable)          |
| <b>2</b>  | Frame complete with winding     | <b>9b</b>  | B5 flange (removable)           |
| <b>3</b>  | Non Drive End shield            | <b>10</b>  | Wave spring                     |
| <b>4a</b> | Ex d terminal box               | <b>11</b>  | Shaft seals (V-ring)            |
| <b>4b</b> | Ex e terminal box               | <b>12</b>  | Fan (complete of fixing collar) |
| <b>5a</b> | Ex d Terminal box cover         | <b>13</b>  | Fan cover                       |
| <b>5b</b> | Ex e terminal box cover         | <b>14a</b> | Ex d terminal board             |
| <b>6</b>  | Feet (removable)                | <b>14b</b> | Ex e terminal board             |
| <b>7</b>  | Shaft complete of rotor and key | <b>15a</b> | Ex d cable gland (metallic)     |
| <b>8</b>  | Bearings                        | <b>15b</b> | Ex e Cable gland (plastic)      |

## 7. Electrical data



Here below we give some information about all the types of motors.

### THREE PHASE 1 SPEED

- Asynchronous motor, squirrel cage rotor, self ventilated (IC411).
- Duty S1, Insulation class "F", 230/400V - 50 Hz.

In case of motors driven by INVERTER:

- Motor must be equipped with PTC thermistor.
- Motor driven by frequency converter means not to have a voltage and current not perfectly sinusoidal with consequently increase of losses and heating of the motor.
- Speed variation affects also the ventilation.
- The stress on the bearings increases and they shall be checked more frequently; for this reason the operating period with a speed above 3600 rpm shall never exceed 10% of the complete working cycle.

Normally the motors are 230/400V 50Hz but on request is possible to have special voltage and frequency.

### THREE PHASE 2 SPEEDS

- Asynchronous motor, squirrel cage rotor, self ventilated (IC411).
- Duty S1, Insulation class "F", 400V - 50 Hz

Poles	Connections	CONSTANT TORQUE (GENERAL PURPOSE)		QUADRATIC TORQUE (CENTRIFUGAL MACHINES)	
		High Speed	Low Speed	High Speed	Low Speed
2/4 – 4/8	Dahlander	YY	Δ	YY	Y
4/6 – 6/8	2 Separate windings	Y	Y	Y	Y

### SINGLE-PHASE MOTORS 1 SPEED

- Asynchronous motor, squirrel cage rotor, self ventilated (IC411).
- Duty S1, Insulation class "F", 230V - 50 Hz.

The capacitor will be fitted inside a special 'Ex d' box and mounted on the motor.

In case of external capacitor, it must be placed in a safe area where an explosive atmosphere is not present.

# Electrical data - Flameproof Motors



## 2 POLES - THREE PHASE MOTORS 1 SPEED 3000 - 400V 50Hz

Type	[kW]	rpm	$\eta$ (%)	$\text{Cos}\phi$	$I_N$ [A]	$M_N$ [Nm]	$I_A/I_N$	$M_A/M_N$	$M_{\text{max}}/M_N$	$J_{\text{rotor}}$ [kgm <sup>2</sup> ]	[kg]
56B2	0,12	2680	45	0,76	0,50	0,43	3,0	2,0	2,9	0,00016	5
63A2	0,18	2825	56	0,76	0,62	0,61	3,9	2,6	3,6	0,00017	5.5
63B2	0,25	2750	60	0,83	0,74	0,87	3,3	1,8	2,5	0,00022	5.5
71A2	0,37	2900	71	0,70	1,20	1,22	5,7	4,5	5,0	0,00035	7.5
71B2	0,55	2840	70	0,78	1,45	1,85	4,9	3,3	3,4	0,00045	7.5
80A2	0,75	2870	73	0,72	2,00	2,5	5,3	3,0	4,0	0,00068	10
80B2	1,1	2830	72	0,86	2,60	2,7	4,1	2,0	2,7	0,00088	10
90S2	1,5	2870	73	0,80	3,70	5,1	4,3	2,6	2,6	0,00118	13.5
90L2	2,2	2860	79	0,80	5,00	7,2	4,4	2,7	3,2	0,00180	15.5
100L2	3,0	2840	76	0,86	6,6	10	4,7	1,8	3,1	0,00279	20
112M2	4,0	2900	76	0,84	9,2	13,2	6,2	2,6	3,2	0,00544	28
112L2	5,5	2900	86	0,84	11,0	18,3	6,6	3,7	2,7	+20mm	31
132K2	5,5	2910	80	0,87	11,5	18,1	4,6	2,6	2,8	0,00993	45
132S2	7,5	2920	88	0,80	15,3	24,7	6,2	2,6	3,3	0,01316	48
132M2	9,3	2930	88	0,88	19,0	30,0	7,5	2,8	3,0	0,01410	58
132L2	11,0	2940	88	0,88	21,4	36,0	7,0	2,6	3,6	0,01520	61
160K2	11,0	2900	83	0,91	21,0	36,3	4,7	2,3	2,6	0,03275	115
160M2	15,0	2930	80	0,85	28,0	48,9	5,0	1,8	2,8	0,04519	120
160L2	18,5	2910	84	0,91	35,0	60,7	4,6	2,0	2,3	0,05393	130
180N2	22,0	2930	90	0,87	41,7	71,7	7,6	2,0	2,7	0,06180	160
180L2	30,0	2930	91	0,88	54,0	97,0	8,5	3,5	3,7	0,07200	180

## 4 POLES - THREE PHASE MOTORS 1 SPEED 1500 - 400V 50Hz

Type	[kW]	rpm	$\eta$ (%)	$\text{Cos}\phi$	$I_N$ [A]	$M_N$ [Nm]	$I_A/I_N$	$M_A/M_N$	$M_{\text{max}}/M_N$	$J_{\text{rotor}}$ [kgm <sup>2</sup> ]	[kg]
56B4	0,09	1380	53	0,65	0,37	0,63	3,1	2,2	3,0	0,00020	5
63A4	0,12	1370	56	0,70	0,44	0,84	2,8	2,3	2,4	0,00021	5.5
63B4	0,18	1370	60	0,67	0,65	1,25	2,6	2,3	2,4	0,00029	5.5
71A4	0,25	1425	55	0,65	0,95	1,70	4,1	2,9	3,1	0,00073	7
71B4	0,37	1390	66	0,73	1,15	2,52	3,5	2,4	2,2	0,00080	7
80A4	0,55	1390	58	0,71	1,75	3,75	4,5	2,5	3,2	0,00092	10
80B4	0,75	1410	68	0,75	2,1	5,10	3,9	2,1	2,6	0,00128	11
90S4	1,1	1420	71	0,70	3,3	7,50	3,9	2,8	3,2	0,00203	13.5
90L4	1,5	1415	74	0,78	3,8	10,1	4,2	2,2	3,1	0,00265	16
100K4	2,2	1420	80	0,77	5,2	14,7	4,3	1,7	2,8	0,00450	20
100L4	3,0	1430	83	0,74	7,1	20,0	4,8	2,0	3,3	0,00599	23
112M4	4,0	1440	82	0,77	9,1	26,4	5,1	2,0	3,2	0,01112	30
132S4	5,5	1455	85	0,81	11,5	36,3	5,1	2,1	2,8	0,02311	42
132M4	7,5	1450	88	0,82	15,6	50,0	5,7	2,4	3	0,02953	56
132L4	9,3	1450	88	0,82	20,2	61,2	4,8	2,0	2,6	0,03200	60
160M4	11,0	1465	88	0,75	24,1	72,0	5,4	2,3	2,7	0,06167	100
160L4	15,0	1455	89	0,78	31,2	100,2	5,2	2,1	2,6	0,08276	125
180M4	18,5	1460	89	0,79	38,0	121,0	6,3	3,5	2,8	0,12360	160
180L4	22,0	1460	91	0,84	42,0	143,0	5,9	2,1	2,6	0,1493	180

# Electrical data - Flameproof Motors



## THREE PHASE MOTORS 1 SPEED 1000 - 400V 50Hz

Type	[kW]	rpm	$\eta$ (%)	$\text{Cos}(\varphi)$	$I_N$ [A]	$M_N$ [Nm]	$I_A/I_N$	$M_A/M_N$	$M_{\text{max}}/M_N$	$J_{\text{rotor}}$ [kgm <sup>2</sup> ]	[kg]
63B6	0,12	900	40	0,60	0,80	1,32	1,8	2,4	2,6	0,00029	6
71A6	0,18	900	62	0,70	0,61	1,95	3,0	2,0	2,3	0,00060	7
71B6	0,25	900	66	0,71	0,77	2,70	3,3	2,7	5,4	0,00080	7,5
80A6	0,37	940	56	0,65	1,4	3,80	3,2	2,4	3,0	0,00220	10
80B6	0,55	930	63	0,65	2,0	5,72	2,7	2,3	2,4	0,00282	11
90S6	0,75	920	64	0,73	2,3	7,80	3,4	2,0	2,3	0,00265	13
90L6	1,1	920	66	0,80	3,0	11,5	3,5	1,8	2,1	0,00342	16
100L6	1,5	950	76	0,65	4,4	15,3	4,1	2,2	3,1	0,01033	22
112M6	2,2	940	78	0,73	5,6	22,6	3,6	2,0	2,2	0,01603	37
132S6	3,0	970	81	0,73	7,8	29,6	5,3	1,7	2,7	0,03159	45
132K6	4,0	960	84	0,74	9,2	40,0	5,0	2,0	2,9	0,03786	51
132M6	5,5	950	85	0,74	12,5	54,2	5,0	1,6	2,2	0,04541	55
160M6	7,5	970	89	0,76	16	74	5,7	2	3	0,09345	100
160L6	11	960	89	0,80	22,5	109	5,4	1,9	3,0	0,12728	120
180L6	15	960	88	0,86	29	149	5,4	1,7	2,2	0,2263	160

## THREE PHASE MOTORS 1 SPEED 750 - 400V 50Hz

Type	[kW]	rpm	$\eta$ (%)	$\text{Cos}(\varphi)$	$I_N$ [A]	$M_N$ [Nm]	$I_A/I_N$	$M_A/M_N$	$M_{\text{max}}/M_N$	$J_{\text{rotor}}$ [kgm <sup>2</sup> ]	[kg]
80A8	0,18	690	49	0,60	0,95	2,5	2,4	2,2	3,0	0,00141	10
80B8	0,25	700	55	0,60	1,3	3,6	2,9	2,4	2,6	0,00251	11
90S8	0,37	690	63	0,67	1,3	5,2	2,7	1,6	1,9	0,00376	13
90L8	0,55	680	65	0,70	1,9	7,7	2,7	1,5	2,7	0,00551	15
100K8	0,75	715	64	0,60	2,9	10	3,8	2,1	3,1	0,00775	20
100L8	1,1	680	63	0,70	3,6	15,4	2,9	1,7	1,8	0,01033	22
112M8	1,5	710	74	0,71	4,1	20,2	3,3	1,2	2,0	0,01870	37
132S8	2,2	725	79	0,60	6,8	30	3,6	2,1	2,4	0,03223	48
132L8	3	710	79	0,72	7,6	41	2,8	1,2	1,7	0,04000	56
160S8	4	710	82	0,78	9	53,1	4,1	2	2,3	0,08000	85
160M8	5,5	715	85	0,76	12,7	73	4	2	2,4	0,09200	95
160L8	7,5	720	87	0,70	17,8	98,9	4,0	1,9	2,4	0,11200	110
180L8	11	720	87	0,69	27,0	145	5,4	2,3	3,3	0,2791	155

# Electrical data - Flameproof Motors



## THREE MOTORS 2 SPEEDS - CONSTANT TORQUE 1500/3000 - 400V 50Hz

Type	[kW]	Poles	rpm	$\eta(\%)$	$\text{Cos}\phi$	IN [A]	MN [Nm]	IA/IN	MA/MN	Jrotor [kgm <sup>2</sup> ]	[kg]
71A3	0,22	4	1380	57	0,66	0,8	1,1	3,2	1,9	0,0005	7
	0,33	2	2760	53	0,71	1	1,4	3,8	1,8		
71B3	0,4	4	1380	68	0,62	1,2	1,6	3,2	1,9	0,0008	7,5
	0,5	2	2800	60	0,7	1,25	2,1	4,2	1,8		
80A3	0,45	4	1430	68	0,62	1,5	1,9	3,9	2	0,0014	9
	0,6	2	2880	67	0,76	1,9	2,6	4,1	2		
80B3	0,6	4	1450	67	0,71	2,2	2,6	4	2	0,0017	11
	0,8	2	2890	72	0,81	2,6	3,9	4,3	2		
90S3	0,8	4	1440	69	0,72	2,6	4,4	4,5	2,3	0,0033	13
	1,1	2	2890	73	0,82	3,4	6,4	5	2		
90L3	1,1	4	1420	69	0,76	3,2	5,6	4,3	2,4	0,004	15
	1,6	2	2880	70	0,81	4,8	8,5	4,9	2,3		
100M3	1,5	4	1430	75	0,79	4	10,5	6	2,4	0,0075	20
	2,2	2	2850	77	0,85	5,7	16,8	6	2,3		
100L3	2,2	4	1440	77	0,85	5,7	13,8	6,2	2,5	0,0086	25
	3	2	2870	77	0,84	8,1	23	6	2,3		
112M3	3,3	4	1450	78	0,87	7	1,1	6,2	2,5	0,013	30
	4	2	2900	77	0,88	9,1	1,4	6	2,3		
132S3	4,8	4	1450	84	0,87	9,5	32	6,3	2,2	0,02311	42
	5,9	2	2840	84	0,85	12,1	19,5	7,1	2,3		
132M3	5,5	4	1440	85	0,84	11,1	44	6,5	2,1	0,02953	56
	7,5	2	2860	86	0,86	13,9	25	7,3	2,3		
132L3	6	4	1450	85	0,84	12,1	50	6,2	2,2	0,032	60
	8	2	2900	85	0,87	14,9	30,5	7,4	2,3		
160M3	8,8	4	1460	88	0,85	17	58,5	6,4	2,2	0,0627	100
	11	2	2915	82	0,89	22	36	7,2	2,2		
160L3	12	4	1450	87	0,84	23,7	79	6,5	2,4	0,0801	110
	15	2	2910	84	0,91	28,3	49	7,4	2,5		
180M3	15	4	1460	83	0,88	29,5	98	5,6	2	0,127	160
	18,5	2	2930	82	0,9	36	60	6,4	2,1		
180L3	18,5	4	1460	90	0,78	38	121	5,8	2,1	0,1488	180
	22	2	2960	89	0,84	42,5	71	6,6	2,2		

## THREE MOTORS 2 SPEEDS - CONSTANT TORQUE 750/1500 - 400V 50Hz

Type	[kW]	Poles	rpm	$\eta(\%)$	$\text{Cos}\phi$	IN [A]	MN [Nm]	IA/IN	MA/MN	Jrotor [kgm <sup>2</sup> ]	[kg]
71A5	0,11	8	670	40	0,72	0,8	1,3	2,4	1,4	0,0018	7
	0,18	4	1370	68	0,62	0,9	1,4	3,4	1,1		
71B5	0,15	8	670	42	0,71	1,1	1,5	2,4	1,4	0,002	7,5
	0,3	4	1370	70	0,75	1,2	1,5	3,5	1,1		
80A5	0,22	8	700	50	0,67	1,3	2,2	2,4	1,6	0,0023	10
	0,45	4	1420	71	0,75	1,4	2,3	3,5	1,5		
80B5	0,37	8	700	54	0,69	2	3,1	2,6	1,6	0,003	11
	0,55	4	1410	75	0,74	2,4	2,9	3,6	1,5		
90S5	0,37	8	680	62	0,7	3	4,5	3,2	1,7	0,0035	13
	0,75	4	1400	71	0,75	4,9	4,4	4	2		
90L5	0,6	8	700	60	0,89	2,50	7,8	3,5	1,4	0,0043	15
	1,1	4	1350	71	0,60	2,45	8,2	2,7	1,8		
100M5	0,7	8	700	70	0,68	5	6,9	5	2,5	0,0077	20
	1,1	4	1430	79	0,77	5,2	6,8	5,2	2,2		
100L5	1,1	8	710	72	0,74	5,2	9,1	5,2	2,4	0,0086	22
	1,8	4	1430	80	0,81	5,5	8,9	5,5	2,3		
112M5	1,4	8	710	78	0,65	5,3	11,5	5,2	2,5	0,012	37
	2,6	4	1430	81	0,85	5,7	12	5,5	2,3		
132S5	1,85	8	700	82	0,75	4,4	25	4,1	1,6	0,03	50
	3,3	4	1440	83	0,83	6,8	22	4,9	1,6		
132M5	2,4	8	710	82	0,76	5,5	33	4,3	1,7	0,04	55
	4,8	4	1430	85	0,81	10	32	5,2	1,7		
132L5	3	8	720	84	0,75	7	40	4,5	1,8	0,045	59
	5,5	4	1440	85	0,83	11,5	36	5,5	1,8		
160M5	4,8	8	715	86	0,76	10,7	63	4,7	1,8	0,919	100
	7,5	4	1450	87	0,84	17,1	49	5,7	1,9		
160L5	6,6	8	720	86	0,87	12,8	88	5,6	1,9	0,1218	110
	10	4	1450	83	0,84	20,7	66	6,8	1,9		
180M5	8,1	8	730	85	0,61	22,5	84	5,3	2	0,2067	160
	13	4	1460	81	0,87	26,5	105	6,6	2		
180L5	9,9	8	730	87	0,61	27	129	5,3	1,9	0,2067	180
	16	4	1460	85	0,88	31	104	6,5	1,9		

# Electrical data - Flameproof Motors



## THREE MOTORS 2 SPEEDS CONSTANT TORQUE 1000/1500 - 400V 50Hz

Type	[kW]	Poles	rpm	$\eta$ (%)	$\text{Cos}\phi$	IN [A]	MN [Nm]	IA/IN	MA/MN	Jrotor [kgm2]	[kg]
71BL	0,1	6	900	53	0,71	0,38	1,1	2,4	1,4	0,0008	7,5
	0,2	4	1400	70	0,75	0,55	1,3	3,3	1,4		
80AL	0,2	6	905	62	0,72	0,65	2,1	2,5	1,5	0,0022	9
	0,4	4	1400	71	0,75	1,1	2,9	3,4	1,4		
80BL	0,3	6	910	66	0,73	0,9	3	3,1	1,5	0,00282	10
	0,5	4	1405	71	0,74	1,38	3,4	3,6	1,5		
90SL	0,45	6	910	70	0,73	1,26	4,6	4,3	1,5	0,00265	13
	0,65	4	1405	76	0,75	1,65	4,5	5,8	1,6		
90LL	0,6	6	910	70	0,74	1,66	6,3	3,6	1,6	0,00342	16
	0,95	4	1400	77	0,76	2,36	6,4	5,5	1,5		
100ML	0,9	6	910	74	0,74	2,4	9,3	4,1	1,7	0,00775	22
	1,4	4	1415	81	0,73	3,2	9,4	5,7	1,8		
100LL	1,1	6	910	74	0,74	2,9	12,1	2,9	1,6	0,01033	26
	1,85	4	1415	80	0,81	4,1	12,4	5,8	1,6		
112ML	1,6	6	940	81	0,77	3,66	16,2	4,3	1,7	0,01603	37
	2,4	4	1420	82	0,85	4,95	16,5	6,1	1,8		
132KL	2	6	940	81	0,8	4,46	20,2	3,9	1,6	0,03223	48
	3	4	1450	82	0,87	6	20	5,9	1,9		
132SL	2,6	6	940	83	0,77	5,8	25,9	4,5	1,8	0,036	54
	4	4	1450	83	0,82	8,4	26,3	6,1	2		
132ML	3	6	960	80	0,8	6,6	30,3	4,4	1,7	0,038	59
	4,4	4	1440	84	0,89	9	29	6,3	1,9		
132LL	3,3	6	940	85	0,76	7,3	33	4,7	1,7	0,04	62
	5,15	4	1440	84	0,82	10,7	33,5	6,8	1,9		
160ML	4,4	6	950	82	0,79	9,9	43,9	4,4	1,8	0,919	100
	6,6	4	1460	86	0,83	13,4	43	6,8	1,9		
160LL	5,9	6	950	81	0,8	13,2	58	4,9	1,8	0,1218	110
	8,8	4	1460	83	0,84	18,2	57,7	6,8	1,9		
180ML	7,5	6	970	84	0,7	18,5	73	5,2	1,9	0,2067	160
	11	4	1460	88	0,84	21,5	71	6,6	2		
180LL	8,8	6	960	86	0,72	20,5	86	5	1,8	0,2067	180
	13	4	1470	88	0,85	25	84	6,5	2		

## THREE MOTORS 2 SPEEDS CONSTANT TORQUE 750/1000 - 400V 50Hz

Type	[kW]	Poles	rpm	$\eta$ (%)	$\text{Cos}\phi$	IN [A]	MN [Nm]	IA/IN	MA/MN	Jrotor [kgm2]	[kg]
71BM	0,08	8	690	49	0,61	0,44	1,1	2,2	1,3	0,0008	7,5
	0,12	6	900	50	0,71	0,53	1,3	2,4	1,4		
80BM	0,13	8	690	52	0,6	0,63	1,9	2,1	1,5	0,0022	9
	0,15	6	935	50	0,71	0,68	1,5	2,6	1,5		
80BM	0,15	8	685	49	0,6	0,82	2,2	2,2	1,4	0,00282	10
	0,25	6	930	52	0,72	1	2,7	3,2	1,5		
90SM	0,25	8	650	60	0,6	1	3,8	3,1	2,5	0,00265	13
	0,35	6	910	55	0,74	1,35	3,6	3,8	1,4		
90LM	0,3	8	685	61	0,6	1,35	4,3	3,4	1,6	0,00342	16
	0,6	6	935	60	0,76	2	6,1	3,8	1,5		
100MM	0,55	8	700	68	0,63	1,9	7,4	3,6	1,6	0,00775	22
	0,8	6	920	65	0,77	2,35	8,2	4	1,5		
100LM	0,65	8	700	68	0,66	2,2	8,8	3,7	1,6	0,01033	26
	1	6	930	67	0,75	2,9	10,5	4,1	1,6		
112MM	1	8	710	65	0,7	3,3	13,4	3,9	1,6	0,01603	37
	1,5	6	960	75	0,72	4,2	15	4	1,7		
132SM	1,3	8	720	68	0,65	4,1	17,4	4	1,8	0,036	54
	1,85	6	950	73	0,71	5,2	18,5	4,2	1,6		
132MM	1,85	8	720	70	0,67	5,9	24,7	4,2	1,8	0,038	59
	2,55	6	960	75	0,73	6,9	25,2	4,1	1,8		
132LM	2	8	730	74	0,65	5,9	26,4	4,1	1,9	0,04	62
	3	6	980	79	0,75	7,3	29,6	4,2	1,8		
160MM	2,8	8	725	78	0,7	7,5	37,2	4,2	1,9	0,919	100
	4	6	980	82	0,75	9,4	39,3	4,3	1,9		
160LM	4	8	730	78	0,75	9,9	53	4,2	1,9	0,1218	110
	5,5	6	985	84	0,74	12,9	53,5	4,3	1,9		
180MM	5	8	720	77	0,75	12,5	66	4,3	1,8	0,2067	160
	6,5	6	970	83	0,75	15	64	4,1	1,7		
180LM	6	8	715	78	0,74	15	80	4,2	1,9	0,2067	180
	8	6	960	85	0,78	17,5	79	4,4	1,8		



# Electrical data - Flameproof Motors



## THREE MOTORS 2 SPEEDS QUADRATIC TORQUE 1500/3000 - 400V 50Hz

Type	[kW]	Poles	rpm	$\eta$ (%)	Cos $\phi$	IN [A]	MN [Nm]	IA/IN	MA/MN	Jrotor [kgm <sup>2</sup> ]	[kg]
71AC	0,09	4	1410	33	0,7	0,4	0,6	2,8	1,8	0,0005	7
	0,37	2	2790	59	0,8	1,1	1,3	3,5	1,8		
71BC	0,14	4	1410	65	0,7	0,45	1	2,9	1,9	0,0008	7,5
	0,5	2	2800	60	0,7	1,9	1,7	3,6	1,8		
80AC	0,18	4	1415	66	0,79	0,5	1,2	3,5	2,2	0,0014	10
	0,75	2	2800	63	0,76	2,26	2,6	4	1,8		
80BC	0,25	4	1415	70	0,81	0,64	1,7	3,7	2,2	0,0017	11
	1,1	2	2810	66	0,81	3	3,7	4,1	1,8		
905C	0,37	4	1420	64	0,81	1	2,5	3,9	2,2	0,0033	13,5
	1,5	2	2820	66	0,82	4	5,1	4,5	2		
90LC	0,55	4	1400	67	0,87	1,3	3,7	4,4	2,1	0,004	16,5
	2,2	2	2860	70	0,89	5	7,5	4,4	1,9		
100MC	0,62	4	1420	73	0,89	1,42	4,2	5,3	2	0,005	20
	2,6	2	2820	77	0,92	5,3	8,8	5,6	2,1		
100LC	0,75	4	1415	73	0,9	1,6	5,1	5	2	0,0075	22
	3,3	2	2800	78	0,92	6,64	11,3	5,6	2,1		
112MC	1,1	4	1425	79	0,85	2,4	7,5	5	2,3	0,0086	37
	4,4	2	2900	80	0,82	9,5	14,5	5,6	2,1		
1325C	2	4	1450	75	0,81	4,7	13,1	5,9	2,1	0,02311	42
	6,5	2	2890	83	0,92	12,4	21,5	6,1	2,2		
132MC	2,5	4	1440	89	0,8	4,9	16,5	6,4	2,3	0,02953	56
	8,5	2	2900	91	0,83	15,9	28,2	6,7	2,3		
132LC	2,8	4	1440	85	0,83	5,6	18,6	6,5	2,3	0,032	60
	9,2	2	2900	88	0,85	17,4	30,5	6,8	2,4		
160MC	3	4	1450	69	0,82	7,9	19,6	4,3	2,2	0,036	100
	12	2	2930	76	0,90	25,9	39,0	6,1	3,5		
160LC	4,4	2	1460	79	0,80	10,4	28,5	6,9	2,0	0,0534	110
	16	4	2930	86	0,94	28,4	52	7,3	2,1		
180MC	5	4	1460	75	0,85	11,4	32,6	7,1	2,3	0,075	160
	18	2	2960	79	0,89	37	58	8,3	2,6		
180LC	6	4	1480	89	0,83	11,8	39	9,6	3,1	0,075	180
	24	2	2960	90	0,87	44,5	77,4	9,6	3,3		

## THREE MOTORS 2 SPEEDS QUADRATIC TORQUE 750/1500 - 400V 50Hz

Type	[kW]	Poles	rpm	$\eta$ (%)	Cos $\phi$	IN [A]	MN [Nm]	IA/IN	MA/MN	Jrotor [kgm <sup>2</sup> ]	[kg]
71AD	0,05	8	700	28	0,68	0,36	0,7	2,3	2,8	0,0018	7
	0,25	4	1400	70	0,75	0,69	1,7	3	2,2		
71BD	0,07	8	680	33	0,7	0,45	1,1	1,4	1,2	0,002	7,5
	0,37	4	1380	59	0,8	1,1	2,6	2,5	1,2		
80AD	0,1	8	700	38	0,66	0,58	1,4	2	2,3	0,0023	10
	0,55	4	1405	75	0,74	1,43	3,7	4,4	2,2		
80BD	0,15	8	690	48	0,66	0,7	2,1	2,4	1,5	0,003	11
	0,75	4	1410	70	0,76	1,9	5,1	4,1	1,7		
905D	0,25	8	710	54	0,7	0,96	3,4	2,9	2,8	0,0043	13,5
	0,9	4	1415	77	0,75	2,75	6,1	4	2,3		
90LD	0,3	8	710	57	0,7	1,1	4	1,3	3	0,0048	16,5
	1,2	4	1420	80	0,79	3,4	8,1	4,2	2,3		
100MD	0,45	8	710	61	0,68	1,6	6,1	3	2	0,0077	20
	1,9	4	1390	80	0,8	4,1	13,1	5	3		
100LD	0,55	8	720	68	0,7	1,68	7,3	3	2,4	0,0086	22
	2,2	4	1440	84	0,85	4,86	14,6	6	2,5		
112MD	0,75	8	720	70	0,68	2,27	9,9	3	2,4	0,012	37
	3	4	1450	83	0,85	6,6	19,8	6	2,6		
1325D	1,1	8	710	72	0,73	3,1	15	3,5	1,9	0,03	50
	4,4	4	1450	85	0,82	9,2	29,0	5,8	2,2		
132MD	1,5	8	700	79	0,64	4,33	20	3,9	1,8	0,04	55
	5,9	4	1440	86	0,84	11,9	39	6,2	2,1		
132LD	1,85	8	700	80	0,7	4,9	25,0	4,3	1,9	0,045	59
	7,5	4	1450	87	0,84	14,9	50,0	6,7	2,1		
160MD	8,8	8	710	82	0,75	6	32,8	3,9	2,9	0,0627	100
	2,5	4	1450	83	0,84	18,4	58,3	6,8	2,2		
160LD	12	8	715	83,5	0,74	7,48	42,2	4	2,1	0,0801	110
	3,2	4	1460	88	0,85	23,30	78,6	6,8	2,2		
180MD	4	8	730	66	0,7	12,5	53,5	4,6	2	0,127	160
	16	4	1460	89	0,85	30,5	103,5	7	2,6		
180LD	5,5	8	730	82	0,56	17,2	71,8	4,2	3,1	0,1488	180
	22	4	1460	89	0,8	45	143	6,7	3,7		

# Electrical data - Flameproof Motors



## THREE MOTORS 2 SPEEDS QUADRATIC TORQUE 1000/1500 - 400V 50Hz

Type	[kW]	Poles	rpm	$\eta$ (%)	$\text{Cos}\phi$	IN [A]	MN [Nm]	IA/IN	MA/MN	Jrotor [kgm <sup>2</sup> ]	[kg]
71BE	0,1	6	900	63	0,72	0,5	1,4	1,4	1,8	0,0008	7,5
	0,3	4	1400	71	0,75	0,95	2,1	2,6	2		
80AE	0,13	6	900	33	0,7	0,5	1,4	1,7	1,1	0,0022	10
	0,44	4	1405	59	0,8	1,02	3	3,2	1,5		
80BE	0,18	6	905	72	0,75	0,65	1,9	2,3	1,2	0,00282	11
	0,59	4	1405	76	0,8	1,6	3,9	3,5	1,7		
90SE	0,3	6	900	68	0,76	0,83	3,1	3,1	1,6	0,00265	13,5
	0,9	4	1400	77	0,75	2,25	6,1	4,1	2,1		
90LE	0,4	6	910	74	0,74	1,1	4,2	2,9	1,3	0,00342	16,5
	1,15	4	1420	80	0,79	2,6	7,5	4,1	1,8		
100ME	0,6	6	930	80	0,75	1,44	6,1	3,9	1,8	0,00775	20
	1,8	4	1410	80	0,83	3,67	12,1	5,1	2,1		
100LE	0,7	6	940	80	0,75	2,1	7,5	3	1,5	0,01033	22
	2,2	4	1440	82	0,87	4,9	15,2	3,8	1,7		
112ME	0,9	6	940	81	0,79	2	9,1	4	1,9	0,01603	37
	3	4	1450	84	0,82	6,3	19,8	5,5	2		
132KE	1,2	6	945	80	0,75	2,9	11,8	4,9	1,7	0,03223	48
	4	4	1450	84	0,82	8,4	26	6,3	2,1		
132SE	1,4	6	970	69	0,6	5,00	14,0	5,2	1,9	0,036	54
	4,8	4	1460	75	0,81	11,30	31,2	6,6	1,9		
132ME	1,7	6	960	64	0,62	6,4	17	4,8	1,9	0,038	59
	5,5	4	1455	77	0,81	12,8	36	5,4	2,1		
132LE	2	6	950	78	0,55	7,90	20,1	5,2	1,9	0,04	62
	6,6	4	1460	89	0,72	15,30	43,2	6,7	1,9		
160ME	2,5	6	985	72	0,72	7,2	24,2	5,9	2,3	0,0627	100
	7,5	4	1470	81	0,85	16,4	49	7,2	2,2		
160LE	11	6	960	73	0,72	9,30	32,0	6,1	2,3	0,0801	110
	3,3	4	1450	84	0,85	22,80	72,0	6,9	2,2		
180ME	5,2	6	960	65	0,57	21	51,7	6	1,6	0,127	160
	15	4	1450	81	0,85	31,5	98,8	6,9	1,8		
180LE	6,25	6	960	66	0,62	22	61,8	6,2	1,6	0,1488	180
	18,5	4	1450	84	0,88	36	122	7	1,8		

## THREE MOTORS 2 SPEEDS QUADRATIC TORQUE 750/1000 - 400V 50Hz

Type	[kW]	Poles	rpm	$\eta$ (%)	$\text{Cos}\phi$	IN [A]	MN [Nm]	IA/IN	MA/MN	Jrotor [kgm <sup>2</sup> ]	[kg]
80BF	0,09	8	680	57	0,62	0,4	1,3	1,9	1,4	0,0022	10
	0,33	6	920	55	0,7	1,32	3,4	3,1	1,8		
80BF	0,12	8	685	55	0,63	0,5	1,7	2,1	1,4	0,00282	11
	0,4	6	935	58	0,7	1,48	4	2,9	1,8		
90SF	0,19	8	690	55	0,62	0,85	2,7	2,1	1,5	0,00265	13,5
	0,48	6	925	61	0,65	1,78	4,8	3,1	1,9		
90LF	0,25	8	700	52	0,62	1,2	3,5	2,3	1,7	0,00342	16,5
	0,66	6	900	60	0,8	2	7,1	3,2	2		
100MF	0,37	8	720	50	0,65	1,75	4,8	3,5	1,8	0,00775	20
	0,9	6	960	67	0,68	2,85	8,9	4,1	1,9		
100LF	0,45	8	720	52	0,64	2,1	5,9	3,4	1,4	0,01033	22
	1,1	6	950	70	0,7	3,35	11,2	3,9	1,6		
112M	0,75	8	720	61	0,68	2,8	10,1	3,5	1,7	0,01603	37
	1,5	6	970	75	0,74	3,9	15,1	4,4	2,1		
132SF	0,9	8	720	62	0,66	3,2	11,9	3,7	1,8	0,036	54
	2,2	6	960	75	0,75	5,6	22,2	4,4	2,2		
132MF	1,2	8	730	61	0,63	4,8	15,6	3,8	1,8	0,038	59
	3	6	970	77	0,82	6,9	29,7	4,8	2,1		
132LF	1,5	8	720	65	0,7	4,9	20,1	3,8	2,1	0,04	62
	3,7	6	970	80	0,77	8,8	36,5	5,1	2,1		
160MF	5,5	8	730	84	0,65	6,7	32,5	4,2	2,3	0,092	100
	2,5	6	980	88	0,75	12,3	53,5	5,5	2,2		
160LF	7,5	8	720	81	0,8	9,1	53,2	3,9	2,1	0,1218	110
	4	6	970	84	0,85	15,3	73,5	5,7	2,1		
180MF	4,5	8	725	80	0,75	11	59	4,3	2,2	0,2067	160
	9	6	960	83	0,78	20	89	5,8	2,3		
180LF	5,2	8	720	80	0,72	23,5	69	4,1	2	0,2067	180
	10	6	960	79	0,78	13	99	5,6	2,1		

# Electrical data - Flameproof Motors



## SINGLE MOTORS 1 SPEED RUNNING CAPACITOR 3000 - 230V 50Hz

Type	[kW]	rpm	$\eta$ (%)	$\text{Cos}\phi$	$I_N$ [A]	$M_N$ [Nm]	$I_A/I_N$	$M_A/M_N$	$M_{\text{max}}/M_N$	C [ $\mu\text{F}$ ]	$J_{\text{rotor}}$ [kgm <sup>2</sup> ]	[kg]
56B2	0,12	2880	43	0,94	1,3	0,4	3,4	0,4	2,9	8	0,00030	6
63A2	0,18	2870	55	0,99	1,5	0,6	3,2	0,4	2,1	12,5	0,00030	6
63B2	0,25	2800	59	0,95	1,81	0,85	2,6	0,4	1,7	12,5	0,00035	6
71A2	0,37	2860	65	0,95	2,56	1,23	3,6	0,6	2,0	16	0,00046	7,5
71B2	0,55	2840	66	0,99	3,42	1,85	3,3	0,7	2,0	25	0,00056	8
80A2	0,75	2860	70	0,99	4,55	2,52	3,8	0,5	1,8	30	0,00097	9,5
80B2	1,1	2820	72	0,99	6,8	3,7	2,8	0,4	1,5	30	0,01000	11
90S2	1,5	2810	67	0,99	9,75	5,1	2,7	0,6	1,7	70	0,00150	14
90L2	2,2	2815	67	0,99	14,5	7,6	2,8	0,3	2,0	90	0,00190	16
100M2	2,2	2710	63	0,99	14,4	7,4	2,5	0,7	1,5	95	0,00370	25
100L2	3,0	2815	72	0,99	17,8	10,0	2,5	0,6	1,5	120	0,00530	27

## SINGLE MOTORS 1 SPEED RUNNING CAPACITOR 1500 - 230V 50Hz

Type	[kW]	rpm	$\eta$ (%)	$\text{Cos}\phi$	$I_N$ [A]	$M_N$ [Nm]	$I_A/I_N$	$M_A/M_N$	$M_{\text{max}}/M_N$	C [ $\mu\text{F}$ ]	$J_{\text{rotor}}$ [kgm <sup>2</sup> ]	[kg]
56B4	0,09	1420	50	0,97	0,80	0,59	3,0	0,7	2,1	6,3	0,00038	6
63A4	0,12	1380	50	0,95	1,10	0,84	2,2	0,7	1,5	8	0,00040	6
63B4	0,18	1355	57	0,99	1,38	1,27	1,8	0,6	1,2	10	0,00045	6
71A4	0,25	1450	58	0,96	2,00	1,66	4,0	0,5	2,5	16	0,00080	8
71B4	0,37	1430	63	0,99	2,55	2,5	2,9	1,1	1,7	20	0,00090	8,5
80A4	0,55	1440	66	0,96	3,70	3,7	3,5	0,6	2,0	25	0,00096	10
80B4	0,75	1410	70	0,99	4,74	5,1	2,6	0,6	1,5	30	0,00120	12
90S4	1,1	1440	67	0,94	7,60	7,4	3,4	0,4	2,0	40	0,00260	15
90L4	1,5	1430	70	0,99	9,40	10,1	2,6	0,4	1,5	45	0,00320	18
100K4	2,2	1430	75	0,99	12,6	14,9	2,7	0,4	1,3	55	0,00590	25
112M4	3,0	1410	76	0,99	17,0	20	3,2	0,4	1,5	70	0,01200	37

## SINGLE MOTORS 1 SPEED RUNNING CAPACITOR 1000 - 230V 50Hz

Type	[kW]	rpm	$\eta$ (%)	$\text{Cos}\phi$	$I_N$ [A]	$M_N$ [Nm]	$I_A/I_N$	$M_A/M_N$	$M_{\text{max}}/M_N$	C [ $\mu\text{F}$ ]	$J_{\text{rotor}}$ [kgm <sup>2</sup> ]	[kg]
71A6	0,12	945	47	0,95	1,16	1,2	3,0	0,9	2,1	10	0,00080	8
71B6	0,18	930	61	0,95	1,60	1,8	2,7	0,6	1,4	12,5	0,00090	8,5
80A6	0,25	955	55	0,96	2,10	2,2	2,7	0,5	1,8	16	0,00096	10
80B6	0,37	920	60	0,99	2,75	3,2	2,0	0,5	1,3	20	0,00120	12
90S6	0,55	930	62	0,99	3,86	5,9	2,4	0,4	1,5	30	0,00260	15
90L6	0,75	920	68	0,99	4,81	7,8	2,2	0,4	1,4	35	0,00320	18
100L6	1,1	940	73	0,97	6,74	11,1	3,0	0,5	1,5	50	0,00590	25

2 Poles	P [kW] 50Hz	Mn	IC411 Self-ventilated			IC411 Self-ventilated		
			Constant Torque Range Frequency (Hz) 5+50 Range Speed (rpm) 300+3000			Constant Torque Range Frequency (Hz) 10+50 Range Speed (rpm) 600+3000		
			P [kW]		Mn [Nm]	P [kW]		Mn [Nm]
			Min Speed	Max Speed		Min Speed	Max Speed	
63A2	0,18	0,61	0,012	0,12	0,39	0,024	0,12	0,4
63B2	0,25	0,87	0,016	0,16	0,56	0,034	0,17	0,6
71A2	0,37	1,24	0,024	0,24	0,79	0,054	0,27	0,9
71B2	0,55	1,85	0,035	0,35	1,18	0,077	0,39	1,3
80A2	0,75	2,5	0,048	0,48	1,6	0,108	0,54	1,8
80B2	1,1	3,68	0,07	0,70	2,33	0,16	0,79	2,65
90S2	1,5	5,1	0,096	0,96	3,26	0,218	1,09	3,7
90L2	2,2	7,2	0,14	1,41	4,61	0,318	1,59	5,2
100K2	3,0	10	0,19	1,92	6,4	0,432	2,16	7,2
112M2	4,0	13,2	0,26	2,56	8,45	0,576	2,88	9,5
112L2	5,5	18,1	0,35	3,5	11,58	0,790	3,95	13
132S2	7,5	24,7	0,48	4,8	15,81	1,081	5,40	17,8
132M2	9,3	30	0,60	6,0	19,2	1,339	6,70	21,6
132L2	11,0	36	0,70	7,0	23,04	1,583	7,91	25,9
160K2	11,0	36,2	0,70	7,0	23,1	1,579	7,90	26
160M2	15,0	48,9	0,96	9,6	31,2	2,160	10,80	35,2
160L2	18,5	60,7	1,18	11,8	38,7	2,621	13,10	43
180N2	22,0	71,7	1,40	14,0	45,7	3,160	15,80	51,5
180L2	30,0	97,8	1,92	19,2	62,5	4,265	21,32	69,5
4 Poles			Range Frequency (Hz) 5+50 Range Speed (rpm) 150+1500			Range Frequency (Hz) 10+50 Range Speed (rpm) 300+1500		
63A4	0,12	0,8	0,008	0,08	0,51	0,018	0,09	0,60
63B4	0,18	1,25	0,012	0,12	0,80	0,026	0,13	0,90
71A4	0,25	1,68	0,016	0,16	1,08	0,036	0,18	1,20
71B4	0,37	2,56	0,02	0,24	1,64	0,052	0,26	1,80
80A4	0,55	3,75	0,04	0,35	2,40	0,079	0,40	2,70
80B4	0,75	5,1	0,05	0,48	3,26	0,11	0,54	3,70
90S4	1,1	7,5	0,07	0,70	4,80	0,16	0,79	5,40
90L4	1,5	10,16	0,10	0,96	6,50	0,22	1,08	7,30
100K4	2,2	14,8	0,14	1,41	9,47	0,32	1,59	10,70
100L4	3,0	20,1	0,19	1,92	12,86	0,43	2,16	14,50
112M4	4,0	26,5	0,26	2,6	16,96	0,58	2,88	19,1
132S4	5,5	36,3	0,35	3,5	23,23	0,79	4,0	26,1
132M4	7,5	50	0,48	4,8	32,00	1,08	5,4	36,0
132L4	9,3	61,2	0,59	5,9	39,00	1,34	6,7	44,0
160M4	11,0	71,7	0,70	7,0	45,70	1,58	7,9	51,5
160L4	15,0	98,4	0,95	9,5	62,40	2,14	10,7	70,1
180M4	18,5	121	1,18	11,8	77,00	2,66	13,3	87,0
180L4	22,0	143,8	1,41	14,1	92,00	3,15	15,7	103,0

Table of the derating power on the electrical data section shows the estimation of the continuous torque of the motor as a function of frequency, with different cooling designation: IC 411 (self-ventilation) and IC 416 (forced ventilation).

# Derating of the power as a function of frequency

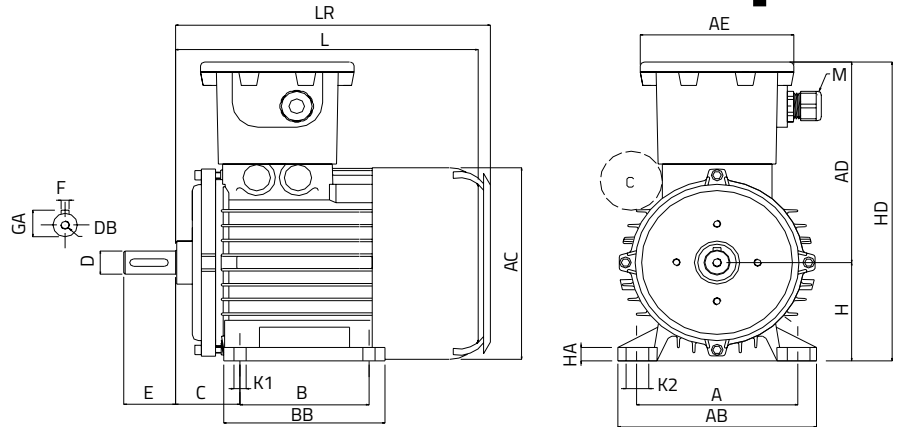


IC411 Self-ventilated			IC 411 Self-ventilated or IC 416 Forced ventilation			IC 411 Self-ventilated or IC 416 Forced ventilation			IC411 Self-ventilated	
Constant Torque Range Frequency (Hz) 25+50 Range Speed (rpm) 1500+3000			Constant Torque Range Frequency (Hz) 50+87 Range Speed (rpm) 3000+5200 Motor at 400V at Y and inverter supply 400Vac			Constant Torque Range Frequency (Hz) 50+87 Range Speed (rpm) 3000+5200 Motor at 230V at Δ and inverter supply 400Vac			Quadratic Torque Range Frequency (Hz) 5+50 Range Speed (rpm) 300+3000	
P [kW]		Mn [Nm]	P [kW]		Mn [Nm]	P [kW]		Mn [Nm]	P [kW]	Mn [Nm]
Min Speed	Max Speed		Min Speed	Max Speed		Min Speed	Max Speed			
0,08	0,16	0,54	0,09	0,16	0,32	0,15	0,27	0,52	0,18	0,61
0,11	0,22	0,77	0,13	0,23	0,45	0,21	0,37	0,73	0,25	0,87
0,16	0,33	1,1	0,19	0,34	0,65	0,31	0,55	1,05	0,37	1,24
0,25	0,49	1,65	0,29	0,51	0,98	0,48	0,84	1,62	0,55	1,85
0,33	0,67	2,23	0,41	0,71	1,36	0,62	1,07	2,05	0,75	2,5
0,49	0,98	3,29	0,59	1,02	1,97	0,93	1,61	3,1	1,1	3,68
0,67	1,34	4,54	0,76	1,33	2,6	1,21	2,10	4,1	1,5	5,1
0,98	1,96	6,41	1,16	2,02	3,8	1,83	3,19	6	2,2	7,2
1,34	2,7	8,9	1,62	2,82	5,4	2,49	4,33	8,3	3,0	10
			Range Frequency (Hz) 50-70 Range Speed (rpm) 3000+4200			Range Frequency (Hz) 50-70 Range Speed (rpm) 3000+4200				
1,78	3,6	11,75	2,94	4,12	9,7	3,67	5,13	12,1	4,0	13,2
2,4	4,9	16,11	4,07	5,70	13,4	5,20	7,27	17,1	5,5	18,1
3,3	6,7	21,98	5,50	7,69	18,1	7,04	9,86	23,2	7,5	24,7
4,1	8,3	26,7	6,82	9,55	22,0	8,80	12,33	28,4	9,3	30
4,9	9,8	32,04	8,04	11,25	26,3	10,36	14,50	33,9	11,0	36
			Range Frequency (Hz) 50-60 Range Speed (rpm) 3000+3600			Range Frequency (Hz) 50-60 Range Speed (rpm) 3000+3600				
4,9	9,8	32,2	9,57	11,48	31,5	10,87	13,05	35,8	11,0	36,2
6,7	13,3	43,5	13,19	15,83	43,0	14,85	17,82	48,4	15,0	48,9
8,2	16,4	53,7	16,30	19,56	53,5	18,31	21,98	60,1	18,5	60,7
9,8	19,5	63,7	19,48	23,38	63,5	21,75	26,11	70,9	22,0	71,7
13,4	26,7	87,1	26,69	32,03	87,0	29,70	35,64	96,8	30,0	97,8
4 Poles			Range Frequency (Hz) 50+87 Range Speed (rpm) 1500+2600			Range Frequency (Hz) 50+87 Range Speed (rpm) 1500+2600			Range Frequency (Hz) 5+50 Range Speed (rpm) 150+1500	
0,053	0,11	0,71	0,066	0,11	0,44	0,10	0,17	0,66	0,12	0,8
0,055	0,11	0,77	0,10	0,18	0,72	0,15	0,26	1,03	0,18	1,25
0,082	0,16	1,10	0,13	0,23	0,90	0,21	0,36	1,38	0,25	1,68
0,12	0,24	1,65	0,20	0,34	1,35	0,30	0,53	2,10	0,37	2,56
0,16	0,33	2,23	0,29	0,51	2,01	0,45	0,79	3,08	0,55	3,75
0,22	0,45	3,05	0,40	0,70	2,72	0,61	1,07	4,18	0,75	5,1
0,33	0,67	4,54	0,59	1,03	4,03	0,90	1,57	6,2	1,1	7,5
0,47	0,95	6,41	0,80	1,39	5,42	1,23	2,14	8,3	1,5	10,16
0,66	1,32	8,90	1,17	2,0	7,9	1,80	3,14	12,1	2,2	14,8
0,88	1,75	11,75	1,6	2,8	10,7	2,5	4,3	16,5	3,0	20,1
1,22	2,4	16,11	2,2	3,8	14,3	3,3	5,7	21,7	4,0	26,5
1,67	3,3	21,98	2,9	5,1	19,3	4,5	7,8	29,7	5,5	36,3
2,21	4,4	29,50	4,0	6,9	26,5	6,2	10,7	41,0	7,5	50
2,43	4,9	32,04	5,0	8,6	32,6	7,6	13,2	50,0	8,8	59
4,9	9,8	63,70	5,9	10,2	38,2	9,0	15,7	58,7	11,0	71,7
6,6	13,2	86,90	8,1	14,1	53,1	12,2	21,2	80,1	15,0	98,4
8,2	16,4	107,00	10,0	17,3	65,2	15,2	26,4	99,1	18,5	121,0
9,7	19,4	127,00	11,7	20,4	76,8	17,9	31,1	117,0	22,0	143,9

## 8. Overall dimensions

### IMB3 Ex d

Dimensions in mm

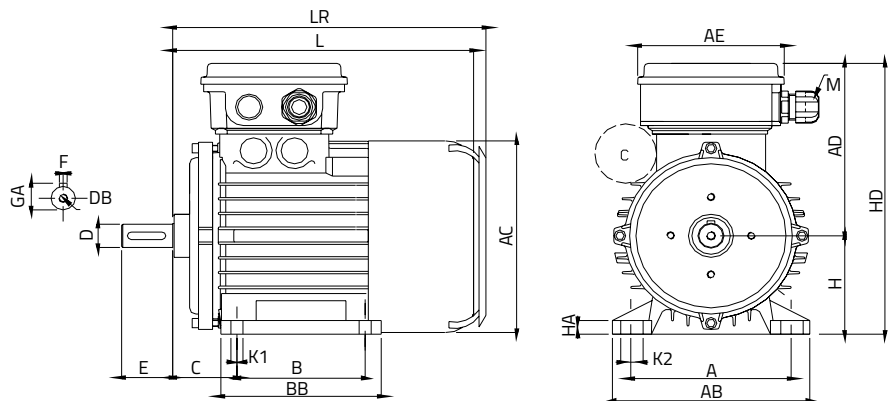


Size	B	A	HA	BB	AB	AC	AD	AE	C	H	HD	L	LR	K1	K2	M	D	E	GA	F	DB
<b>56</b>	*	*	*	*	*	<b>121</b>	<b>150</b>	<b>119</b>	*	*	*	<b>210</b>	<b>220</b>	*	*	<b>M20</b>	<b>9</b>	<b>20</b>	<b>10,2</b>	<b>3</b>	<b>M4x10</b>
63	80	100	10	105	120	121	150	119	40	63	203	200	210	7	12	M20	11	23	12,5	4	M4X10
71	90	112	11	108	136	136	159	119	45	71	220	225	235	7	12	M20	14	30	16	5	M5X25
80	100	125	11	125	154	154	163	119	50	80	243	245	255	9,5	17,5	M20	19	40	21,5	6	M6X16
90S	100	140	13	130	174	174	173	119	56	90	263	260	270	9,5	17,5	M20	24	50	27	8	M8X19
90L	125	140	13	155	174	174	173	119	56	90	263	285	295	9,5	17,5	M20	24	50	27	8	M8X19
100	140	160	14	175	192	192	186	119	63	100	286	315	327	11,2	21,2	M20	28	60	31	8	M10X22
112	140	190	14	175	224	216	195	119	70	112	307	338	352	11,2	21,2	M20	28	60	31	8	M10X22
132S	140	216	17	180	260	255	221	136	89	132	353	378	418	12,5	30	M25	38	80	41	10	M12X28
132L	178	216	17	218	260	255	221	136	89	132	353	432	445	12,5	30	M25	38	80	41	10	M12X28
160S	210	254	23	264	318	318	299	199	108	160	459	509	539	14,5	30	M25/32	42	110	45	12	M16X36
160L	254	254	23	308	318	318	299	199	108	160	459	549	579	14,5	30	M25/32	42	110	45	12	M16X36
180M	241	279	25	291	318	346	316	199	121	180	496	613	643	13	38	M32	48	110	52	14	M16X36
180L	279	279	25	329	318	346	316	199	121	180	496	613	643	13	38	M32	48	110	52	14	M16X36

\*: Size 56 only flanged motors / C: Exd enclosure for capacitor

### IMB3 Ex de

Dimensions in mm



Size	B	A	HA	BB	AB	AC	AD	AE	C	H	HD	L	LR	K1	K2	M	D	E	GA	F	DB
<b>56</b>	*	*	*	*	*	<b>121</b>	<b>113</b>	<b>101</b>	*	*	*	<b>210</b>	<b>220</b>	*	*	<b>M20</b>	<b>9</b>	<b>20</b>	<b>10,2</b>	<b>3</b>	<b>M4x10</b>
63	80	100	10	105	120	121	113	101	40	63	176	200	210	7	12	M20	11	23	12,5	4	M4X10
71	90	112	11	108	136	136	122	101	45	71	193	225	235	7	12	M20	14	30	16	5	M5X25
80	100	125	11	125	154	154	143	114	50	80	223	245	255	9,5	17,5	M20	19	40	21,5	6	M6X16
90S	100	140	13	130	174	174	148	114	56	90	238	260	270	9,5	17,5	M20	24	50	27	8	M8X19
90L	125	140	13	155	174	174	188	114	56	90	238	285	295	9,5	17,5	M20	24	50	27	8	M8X19
100	140	160	14	175	192	192	159	114	63	100	259	315	327	11,2	21,2	M20	28	60	31	8	M10X22
112	140	190	14	175	224	216	171	114	70	112	283	338	352	11,2	21,2	M20	28	60	31	8	M10X22
132S	140	216	17	180	260	255	194	124	89	132	326	395	418	12,5	30	M25	38	80	41	10	M12X28
132L	178	216	17	218	260	255	194	124	89	132	326	432	445	12,5	30	M25	38	80	41	10	M12X28
160S	210	254	23	264	318	318	244	186	108	160	404	509	539	14,5	30	M32	42	110	45	12	M16X36
160L	254	254	23	308	318	318	244	186	108	160	404	549	579	14,5	30	M32	42	110	45	12	M16X36
180M	241	279	25	291	318	346	270	186	121	180	450	613	643	13	38	M32	48	110	52	14	M16X36
180L	279	279	25	329	318	346	270	186	121	180	450	613	643	13	38	M32	48	110	52	14	M16X36

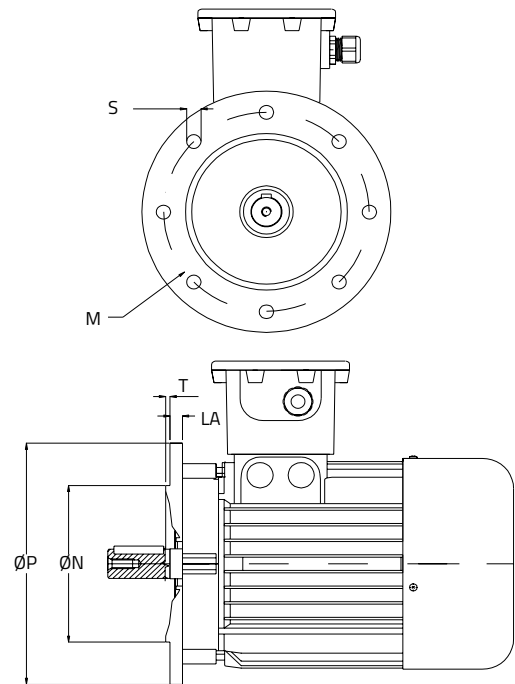
\*: Size 56 only iflanged motors / C: Exd enclosure for capacitor

## IMB5 Ex d - Ex de

Dimensions in mm

Size	Ø P	Ø N	LA	M	T	S
56	120	80	10,5	100	3	7
63	140	95	10,5	115	3	9
	160*	110	10,5	130	3,5	9
71	140*	95	10,5	115	3	9
	160	110	10,5	130	3,5	9
	200*	130	11,5	165	3,5	12
80	160*	110	10,5	130	3,5	9
	200	130	11,5	165	3,5	12
90	160*	110	10,5	130	3,5	9
	200	130	11,5	165	3,5	12
100	200*	130	11,5	165	3,5	12
	250	180	15	215	4	13
112	200*	110	10,5	130	3,5	9
	250	180	15	215	4	13
132	250*	180	20	215	4	13
	300	230	20	265	4	13
160	350	250	22	300	5	18
180	350	250	22	300	5	18

\* Reduced or enlarged flange version

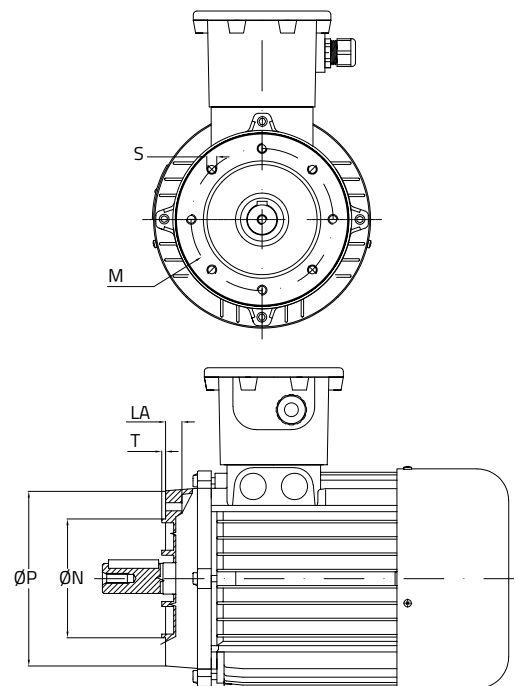


## IMB14 Ex d - Ex de

Dimensions in mm

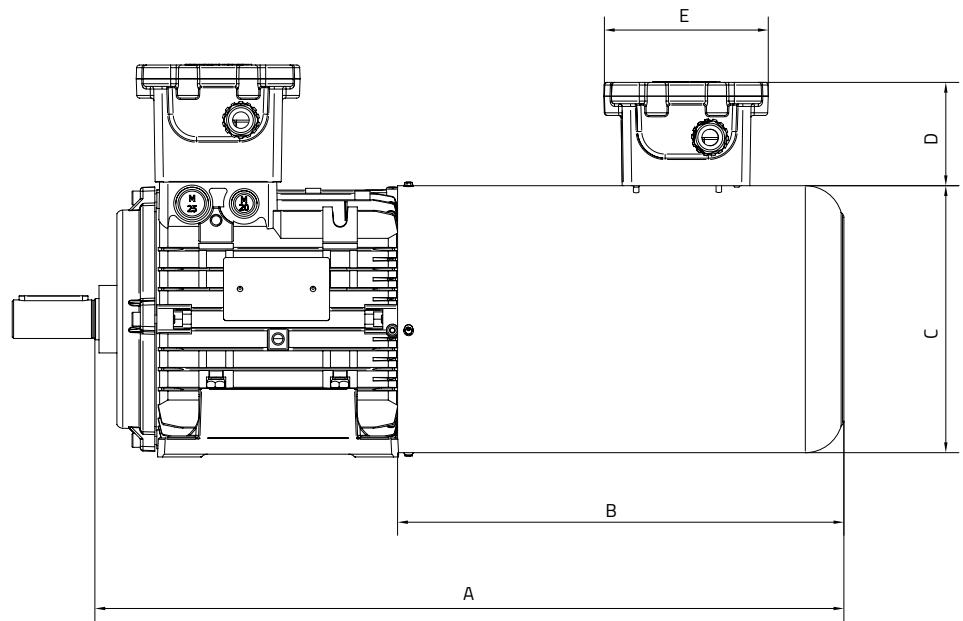
Size	Ø P	Ø N	LA	M	T	S
56	80	50	13	65	2,5	M5
63	90	60	13	75	2,5	M5
	105*	70	13	85	2,5	M6
71	90*	60	13	75	2,5	M5
	105	70	13	85	2,5	M6
	120*	80	13	100	3	M6
80	105*	70	15	85	2,5	M6
	120	80	15	100	3	M6
	140*	95	15	115	3	M8
90	120*	80	15	100	3	M6
	140	95	15	115	3	M8
	160*	110	16	130	3,5	M8
100	140*	95	15	115	3	M8
	160	110	16	130	3,5	M8
112	140*	95	15	115	3	M8
	160	110	16	130	3,5	M8
132	160	110	20	130	3,5	M8
	200	130	20	165	4	M10
160	250	180	24	215	4	M12
180	250	180	24	215	4	M12

\* Reduced or enlarged flange version





# Overall dimensions



## Servoventilated motor Exd

Dimensions in mm

Size	A	B	C	D	E
80	481	317	Ø154	75	119
90S	492	317	Ø174	75	119
90L	517	317	Ø174	75	119
100	544	324	Ø192	75	119
112	559	327	Ø216	75	119
132S	599	342	Ø255	75	119
132L	639	342	Ø255	75	119
160S	814	455	Ø309	75	119
160L	864	455	Ø309	75	119
180	904	455	Ø346	75	119

# Certifications

**IECEX Certificate of Conformity**  
INTERNATIONAL ELECTROTECHNICAL COMMISSION  
IEC Certification Scheme for Explosive Atmospheres

Certificate No.: IECEx EUT 14.0001X  
Status: Current  
Date of issue: 2017-03-10  
Applicant: Elpromtech S.r.l.  
Equipment: Selen O-M three-phase and single-phase asynchronous squirrel cage motor, supplied by mains or inverter  
Optional accessory: Terminal box and capacitor box  
Type of Protection: Flameproof enclosures "d". Equipment dust ignition protection by enclosure "T", increased safety "n"  
Marking: Ex db IIC T3, T4 or T5  
Ex db IIC T120°C  
Ex db ex IIC T3, T4 or T5  
Ex db IIC T120°C

Approved for issue on behalf of the IECEx: Daniele Buzathri  
Certification Body: Head of IECEx CB  
Signature: (for printed version)  
Date:

1. This certificate and schedule may only be reproduced in full.  
2. This certificate is not transferable and remains the property of the issuing body.  
3. The status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

Certificate issued by: Eurofins Product Testing Italy S.r.l.  
Via Cuerngrà, n.21 - 10156 Torino - Italia

**EU-TYPE EXAMINATION CERTIFICATE**

(1) Equipment and Protective System intended for use in potentially explosive atmospheres Directive 2014/54/EU - Annex II

(2) Certificate Number: EPT 17 ATEX 2588 X Issue 0  
(3) Equipment: Electric motor  
(4) Series: O-M  
(5) Manufacturer: ELPROMTECH S.r.l.  
(6) Address: Via Maritima n° 93, 43122 Parma - Italia  
(7) This equipment and its accepted variations are specified in the annex to this Certificate.  
(8) Eurofins Product Testing Italy S.r.l., Notified Body n. 0477 in accordance with Article 21 of the Directive 2014/54/EU of the European Parliament and of the Council of 26 February 2014, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II of the Directive.  
(9) The examination and test results are recorded in the confidential Report N° EPT\_17\_REL\_0254408  
(10) Compliance with the essential health and safety requirements is assured through the verification of them and by compliance with the standards:  
EN 60079-0:2012-A11:2013, EN 60079-1:2014, EN 60079-3:2014, EN 60079-7:2015  
(11) If the sign "X" is placed after the Certificate number, it indicates that the equipment is subject to the special conditions for safe use specified in the annex to this Certificate.  
(12) This EU-TYPE EXAMINATION CERTIFICATE relates only to the design, the exam and the tests of the specified equipment.  
Further requirements of the Directive 2014/54/EU apply to the manufacture and supply of this equipment. These requirements are not object of this Certificate.

II 2G Ex db IIC T3 Gb	or	II 2G Ex db IIC T3	-40°C ≤ T <sub>amb</sub> ≤ +60°C
II 2G Ex db IIC T3 Gb	or	II 2G Ex db IIC T3 Gb	-40°C ≤ T <sub>amb</sub> ≤ +60°C
II 2G Ex db IIC T4 Gb	or	II 2G Ex db IIC T4	-40°C ≤ T <sub>amb</sub> ≤ +60°C
II 2G Ex db IIC T4 Gb	or	II 2G Ex db IIC T4	-40°C ≤ T <sub>amb</sub> ≤ +60°C
II 2G Ex db IIC T5 Gb	or	II 2G Ex db IIC T5	-40°C ≤ T <sub>amb</sub> ≤ +60°C
II 2G Ex db IIC T5 Gb	or	II 2G Ex db IIC T5	-40°C ≤ T <sub>amb</sub> ≤ +60°C
II 2D Ex db IIC T120°C	or	II 2D Ex db IIC T120°C	-40°C ≤ T <sub>amb</sub> ≤ +60°C

Place and date of issue: Torino, 2017-03-08

ACCREDIA  
Daniele Buzathri  
Eurofins  
Director Eurofins Product Testing Italy S.r.l.

**ТАМОЖЕННЫЙ СОЮЗ**  
**СЕРТИФИКАТ СООТВЕТСТВИЯ**  
№ TC\_RU\_C-IT.M062.B.03921  
Серия RU № 0398340

Орган по сертификации: продукция Общество с ограниченной ответственностью «ПРОММАШ ТЕСТ», Место нахождения: 115114, Российская Федерация, город Москва, Дербовская набережная, дом 11, помещение 60. Фактический адрес: 115114, Российская Федерация, город Москва, Дербовская набережная, дом 11, помещение 60. Телефон: +7 (495) 775-48-41, факс: +7 (495) 775-48-41, адрес электронной почты: info@prommash-test.ru. Аттестат аккредитации регистрационный № РОСС RU.0001.11.M062 выдан 01.12.2014 года Федеральной службой по аккредитации

Заявитель: Общество с ограниченной ответственностью «ЭСК Бельгия», Место нахождения: 105037, Российская Федерация, город Москва, улица 3-я Парковая, дом 9, офис 18. Фактический адрес: 105037, Российская Федерация, город Москва, улица 3-я Парковая, дом 9, офис 18. Телефон: +7 (495) 184-7574, факс: +7 (495) 184-7574, адрес электронной почты: ds@company2000@rambler.com

Изготовитель: «Проммаш Т.И.» Место нахождения: ИТАЛИЯ, Via Marco Sauro, 19, 36061 - Battanello del Gruppo (VI) Фактический адрес: ИТАЛИЯ, Via Mantova, 93, 43122 - Parma (PR)

Продукция: Электродвигатели серии J2-K2, серия J2-K3, серия O-M и серия PSM. Маркировка производится в соответствии с требованиями (базис №06-073048 - 027049). Оборудование выпускается по технической документации изготовителя для работы на промышленных средах в соответствии с требованиями технического регламента ТР ТС 012/2011.

КОД ТН ВЭД ТС 8501 53 810 0

СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ Технического регламента Таможенного союза ТР ТС 012/2011 "О безопасности оборудования для работы во взрывоопасных средах"

СЕРТИФИКАТ ВЫДАН НА ОСНОВАНИИ - акта о результатах анализа производства "Проммаш Т.И." от 22.04.2016 года, протокола испытаний №06-0137-2015-06, 0238-2015-06, 0239-2015-06 от 07.09.2015 года, 6270-2015-06 от 08.09.2015 года. Испытательная лаборатория Общество с ограниченной ответственностью «Центр научных исследований, испытаний и сертификации», Адрес: № РОСС RU.0001.21.AB01, срок действия до 21.07.2016 года.

АОПОДПИСАТЕЛЬНАЯ ИНФОРМАЦИЯ Срок службы, срок и условия хранения указаны в Руководстве по эксплуатации.

СРОК ДЕЙСТВИЯ 30.05.2016 ПО 29.05.2021

И.В. Модина  
А.В. Наваскин

**Certificate of Compliance**

Certificate: 70162622 Master Contract: 256222  
Project: 70165136 Date Issued: March 12, 2018

Issued to: E.PROMTECH srl  
Piazza della Repubblica 28  
Milano (MI), 20124  
Italy

Attention: E. Mignacco

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US (indicating that products have been manufactured to the requirements of both Canadian and US Standards) or with adjacent indicator 'US' for US only or without either indicator for Canada only

Issued by: B Spencer

**PRODUCTS**  
CLASS 4228 01 - MOTORS AND GENERATORS for Hazardous Locations  
Class I Division 1 Groups C, D T4  
Class II Division 1 Groups E, F, G  
Tamb = -25 °C to +40 °C

Series S-T, Squirrel cage induction motors TEFC, Types SH and TH. Permanently connected. Continuously rated 0.18 to 18.5 kW (0.25 to 25 hp); 600V or less, 50 or 60 Hz; 2, 4 or 6 pole; Insulation Class F; IEC Frame Size 71 to 160; Nema Frame Size N48 to N256.

**Conditions of Acceptability**  
1. CAUTION: The motor shall not be used where the atmosphere contains methanol or acetic acid.  
2. The motor shall be supplied with an instruction sheet or a wiring diagram, or both, for the temperature-limiting device circuit on a plate or tag.  
3. The motor shall be provided with installation, operation and maintenance instructions.



ORANGE1  
HOLDING

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#04 - 05/2018

