ELECTRIC MOTORS
GENERAL CATALOGUE

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ELECTRIC MOTORS

NEW ENERGY FOR **YOUR BUSINESS**

seipee S.p.A.

SINCE 1972 ELECTRIC MOTORS FOR
INDUSTRIAL APPLICATIONS

ABOUT

Seipee products comply with product-related directives, as outlined in all EU countries, to guarantee an appropriate safety level. For each product, a Declaration of Conformity is issued according to the
"Low Voltage Directive" 2006/95/EC.

UNI EN ISO 9001:2015

Seipee has chosen the ISO 9001 Quality System as the reference standard for all its work.
This desire is manifested in commitment to continuous improvement of the quality and reliability of its products; sales activities, planning, purchase materials, production and after-sales service are the means by which Seipee can achieve this goal.

MEMBER OF ANIE AND CONFINDUSTRIA

Seipee is a member of ANIE (National Federation of Electrotechnical and Electronic Companies), a division of the electrotechnical and electronic sector of Confindustria that is considered a reference in terms of every technical aspect in its sector and regulations in force

The Energy association, founded on the merger of Production, Transmission and Distribution Industries, has gained the necessary weight over time to become the interlocutor with national and international institutions with the aim of promoting greater rationality and efficiency of the system for the user's benefit.

The competence to deal with any topic relating to the energy sector is the foundation of the association that makes it the centre of the professional, industrial and commercial interests of members, to encourage a more open and aware dialogue with customers all around the world, in compliance with the legislation.

In this context, members guarantee the customer a wide pre-sales consultation, a complete range of products manufactured according to the standards of quality, environmental impact and after-sales support to provide prompt answers to the user's service needs.

RESPONSABILITY RELATING TO PRODUCTS AND THEIR USE

The Customer is responsible for the correct choice and use of the product in relation to their industrial and/ or commercial needs. The Customer is always responsible for safe application of the product.

In drawing up the catalogue, utmost care was taken to ensure the accuracy of the information. However, Seipee cannot accept direct or indirect liability for any errors, omissions or outdated data.

Due to constant developments, Seipee reserves the right to make changes at any time to the content of this document that in any case should never be considered binding.

The Customer is ultimately responsible for the choice of product, unless otherwise duly formalised in writing and signed by the parties

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1 CERTIFICATIONS AND REFERENCE REGULATIONS

1.1 MAIN WORLDWIDE CONFORMITY MARKINGS

CONFORMITY MARKING FOR THE EUROPEAN MARKET

There are several specific marks indicating compliance of the products with safety regulations in force in different countries.

To comply with the standards and requirements of the European market, it is necessary to ensure compliance with the standard **EN 60204-1** and the safety instructions, to be reported on the user manual of the manufacturer of the electric motor in question.
Seipee motors comply with the International Standard **IEC 60034** for rotating electric machines as required in all countries in the European Community, to ensure an appropriate safety standard.

Each product is issued an "EC Declaration of Conformity" relating to the following directives:

- **Low Voltage Directive 2014/35/EU** on the harmonisation of member state legislation relating to release on the market of electrical material designed for use within certain voltage limits.
- **Electromagnetic Compatibility Directive 2014/30/EU** on the harmonisation of member state legislation relating to electromagnetic compatibility.
- **RoHS Directive 2011/65/EU and Dir. Annex 2015/863/EU** on the restriction of use of certain hazardous substances in electronic and electrical equipment.
- **REACH Directive 2006/1907/EU** on the registration, evaluation, authorisation and restriction of chemical substances.
- **Regulation (EC) No.2019/1781** on the application method of the **Directive 2009/125/EC** of the European Parliament and Council on specifications for eco-compatible design of electric motors.
- **Directive 2009/125/EC** relating to institution of a framework to draft specifications for eco-compatible design of energy-related products.

The CE mark is compulsory for the European market.

CONFORMITY MARKING FOR NON-EUROPEAN MARKETS

Seipee motors are available on request with suitable conformity markings for sale in the main non-European markets:

Motors compliant with the standards and requirements of **the Canadian and US market**, approved by UL Enderwriters Laboratories Inc.

Motors compliant with the standards and requirements of **the Eurasia economic zone (Russia, etc.)**, approved by SERCONS.

UK Conformity Assessed, for motors released on **the UK market** (England, Wales, Scotland)

Motors compliant with the standards and requirements of **the Chinese market**, approved by CQC. All Seipee motors compliant with CCC have power ≤ 1.1kW.

1.2 IEC INTERNATIONAL PERFORMANCE STANDARDS

PERFORMANCE STANDARD

The international standard **IEC 60034:30-1:2014** identifies a common international basis for the design and classification of electric motors and defines the new performance classes implemented in the European Union.

- **IE1 Standard Efficiency**
- **IE2 High Efficiency**
- **IE3 Premium Efficiency**
- **IE4 Super Premium Efficiency**

The IEC performance classes are determined by the nominal power (P_N), the nominal voltage (U_N), based on operation at 50 Hz and the reference ambient temperature (T_{amb} = 25 ºC).

■ MINIMUM EFFICIENCIES η_{η} FOR THE EFFICIENCY IE2 AT 50 HZ (%)

Nominal Power	Number of poles			
kW	2	4	6	8
0,12	53,6	59,1	50,6	39,8
0,18	60,4	64,7	56,6	45,9
0,20	61,9	65,9	58,2	47,4
0,25	64,8	68,5	61,6	50,6
0,37	69,5	72,7	67,6	56,1
0,40	70,4	73,5	68,8	57,2
0,55	74,1	77,1	73,1	61,7
0,75	77,4	79,6	75,9	66,2
1,1	79,6	81,4	78,1	70,8
1,5	81,3	82,8	79,8	74,1
2,2	83,2	84,3	81,8	77,6
3	84,6	85,5	83,3	80,0
4	85,8	86,6	84,6	81,9
5,5	87,0	87,7	86,0	83,8
7,5	88,1	88,7	87,2	85,3
11	89,4	89,8	88,7	86,9
15	90,3	90,6	89,7	88,0
18,5	90,9	91,2	90,4	88,6
22	91,3	91,6	90,9	89,1
30	92,0	92,3	91,7	89,8
37	92,5	92,7	92,2	90,3
45	92,9	93,1	92,7	90,7
55	93,2	93,5	93,1	91,0
75	93,8	94,0	93,7	91,6
90	94,1	94,2	94,0	91,9
110	94,3	94,5	94,3	92,3
132	94,6	94,7	94,6	92,6
160	94,8	94,9	94,8	93,0
200 ~ 1000	95,0	95,1	95,0	93,5

■ MINIMUM EFFICIENCIES η_{η} FOR THE EFFICIENCY IE3 AT 50 HZ (%)

Nominal Power	Number of poles			
kW	2	4	6	8
0,12	60,8	64,8	57,7	50,7
0,18	65,9	69,9	63,9	58,7
0,20	67,2	71,1	65,4	60,6
0,25	69,7	73,5	68,6	64,1
0,37	73,8	77,3	73,5	69,3
0,40	74,6	78,0	74,4	70,1
0,55	77,8	80,8	77,2	73,0
0,75	80,7	82,5	78,9	75,0
1,1	82,7	84,1	81,0	77,7
1,5	84,2	85,3	82,5	79,7
2,2	85,9	86,7	84,3	81,9
3	87,1	87,7	85,6	83,5
4	88,1	88,6	86,8	84,8
5,5	89,2	89,6	88,0	86,2
7,5	90,1	90,4	89,1	87,3
11	91,2	91,4	90,3	88,6
15	91,9	92,1	91,2	89,6
18,5	92,4	92,6	91,7	90,1
22	92,7	93,0	92,2	90,6
30	93,3	93,6	92,9	91,3
37	93,7	93,9	93,3	91,8
45	94,0	94,2	93,7	92,2
55	94,3	94,6	94,1	92,5
75	94,7	95,0	94,6	93,1
90	95,0	95,2	94,9	93,4
110	95,2	95,4	95,1	93,7
132	95,4	95,6	95,4	94,0
160	95,6	95,8	95,6	94,3
200 ~ 1000	95,8	96,0	95,8	94,6

■ MINIMUM EFFICIENCIES η_{η} FOR THE EFFICIENCY IE4 AT 50 HZ (%)

Nominal Power	Number of poles			
kW	2	4	6	8
0,12	66,5	69,8	64,9	62,3
0,18	70,8	74,7	70,1	67,2
0,20	71,9	75,8	71,4	68,4
0,25	74,3	77,9	74,1	70,8
0,37	78,1	81,1	78,0	74,3
0,40	78,9	81,7	78,7	74,9
0,55	81,5	83,9	80,9	77,0
0,75	83,5	85,7	82,7	78,4
1,1	85,2	87,2	84,5	80,8
1,5	86,5	88,2	85,9	82,6
2,2	88,0	89,5	87,4	84,5
3	89,1	90,4	88,6	85,9
4	90,0	91,1	89,5	87,1
5,5	90,9	91,9	90,9	88,3
7,5	91,7	92,6	91,3	89,3
11	92,6	93,3	92,3	90,4
15	93,3	93,9	92,9	91,2
18,5	93,7	94,2	93,4	91,7
22	94,0	94,5	93,7	92,1
30	94,5	94,9	94,2	92,7
37	94,8	95,2	94,5	93,1
45	95,0	95,4	94,8	93,4
55	95,3	95,7	95,1	93,7
75	95,6	96,0	95,4	94,2
90	95,8	96,1	95,6	94,4
110	96,0	96,3	95,8	94,
132	96,2	96,4	96,0	94,9
160	96,3	96,6	96,2	95,1
from 200 to 249	96,5	96,7	96,3	95,4
from 250 to 314	96,5	96,7	96,5	95,4
from 315 to 1000	96,5	96,7	96,6	95,4

1.3 STANDARDS AND AUTHORISATION

Seipee motors comply with the following standards and reference legislation:

Standard	IEC	DIN VDE	CEI EN /HD
Nominal and operational characteristics	IEC 60034-1	DIN EN 60034-1 VDE 0530-1	EN 60034-1
Rot. machine casings levels of protection (IP code)	IEC 60034-5	DIN EN 60034-5 VDE 0530-5	EN 60034-5
Cooling methods (IC code)	IEC 60034-6	DIN EN 60034-6 VDE 0530-6	EN 60034-6
Types of construction and types of installation (IM code)	IEC 60034-7	DIN EN 60034-7 VDE 0530-7	EN 60034-7
Marking of terminals and rotation direction	IEC 60034-8	DIN EN 60034-8 VDE 0530-8	EN 60034-8
Official Journal of the European Union L272/75 Regulation of the European Parliament establishing eco-design requirements in order to place motors on the market and put them into service, including integrated in other products. **(For all member states of the European Union)**	–	Regulation (EC) No. 2019/1781 of the Commission on 1 October 2019	
Efficiency classes for three-phase asynchronous motors single speed (IE code)	IEC 60034-30 IEC 60034-30-1	DIN EN 60034-30 VDE 0530-30 VDE 0530-30-1	EN 60034-30 EN 60034-30-1
Efficiency classes for three-phase asynchronous motors single speed (IE code)	IEC 60034-2 IEC 60034-2-1 IEC 60034-2-2 IEC 60034-2-3	DIN EN 60034-2 VDE 0530-2 DIN EN 60034-2-1 VDE 0530-2-1 DIN EN 60034-2-2 VDE 0530-2-2 DIN EN 60034-2-3 VDE 0530-2-3	EN 60034-2 EN 60034-2-1 EN 60034-2-2 EN 60034-2-3
Noise limits	IEC 60034-9	DIN EN 60034-9 VDE 0530-9	EN 60034-9
Mechanical vibrations	IEC 60034-14	DIN EN 60034-14 VDE 0530-14	EN 60034-14
Standardised dimensions and power	IEC 60072-1	DIN EN 50347	EN 50347
Coupling flanges	IEC 60072	DIN 42948	UNEL 13501
Cylindrical shaft ends	IEC 60072	DIN 748-1 DIN 748-3	UNEL 13502
Key and keyway	IEC 60072	DIN 6885-1	EN 50347 UNEL 13501
Coupling dimensions and motor power in IM B3 format	IEC 60072	DIN 42673	UNEL 13113
Coupling dimensions and motor power in IM B5 format	IEC 60072	DIN 42677	UNEL 13117
Coupling dimensions and motor power in IM B14 format	IEC 60072	DIN 42677	UNEL 13118
Starting performance of single-speed three-phase cage induction motors	IEC 60034-12	DIN EN 60034-12 VDE 0530-1	EN 60034-12
Thermal protection	IEC 60034-11	DIN EN 60034-11 VDE 0530-11	EN 60034-11
IEC standard voltages	IEC 60038	DIN IEC 60038	CEI 8-6 HD 472
Electronic variable speed drive	IEC/TS 60034-17	DIN TS 60034-17 VDE 0530-17	TS 60034-17

Standard	IEC	DIN VDE	CEI EN /HD
Shaft-head threaded centre-hole	-	DIN 332-2	UNI 9321
Metric cable glands for electrical installations	-	DIN EN 50262	EN 50262
Vibration limits	-	DIN ISO 10816	UNI ISO 10816
Classification of insulating materials	IEC 60085	DIN IEC 60085 VDE 0580	EN 60085
Terminal box cable entries for three-phase cage induction motors at rated voltages from 400V to 690V	-	DIN 42925	-

The motors also meet the adequate provisions of **IEC60034-1** the following foreign standards:

Country	Standard
United Kingdom	BS5000 / BS4999
Belgium	NBNC 51 - 101
Australia	AS 1359
Norway	NEK - IEC 34 - 41/69/49
France	NFC 51
Germany	DIN VDE 0530
Austria	OEVE M 10
Switzerland	SEV 3009
Netherlands	NEN 3173
Sweden	SEN 260101
Denmark	DS 5002
Poland	PN 72/E - 0600

2 SAFETY

2.1 GENERAL SAFETY WARNINGS

ATTENTION
These warnings must be read and followed to ensure the safety, correct installation, operation and proper maintenance of the machinery.

You are advised to consult the Use and Maintenance Manual, available on our website **www.seipee.it** before proceeding with product use.

GENERAL WARNINGS

All Seipee three-phase, single-phase, double-pole and self-braking asynchronous motors are not usable in the supply condition, but are intended for incorporation in equipment or a machine.

Therefore, the motor must not be operated until the product in which it must be incorporated is declared compliant with the provisions of the relevant directives.

The staff using and operating the motor must be properly trained and qualified and be subject to control by the plant managers. They must be familiar with local health, safety and legislation requirements.

Ignoring such instructions may invalidate the applicable warranties

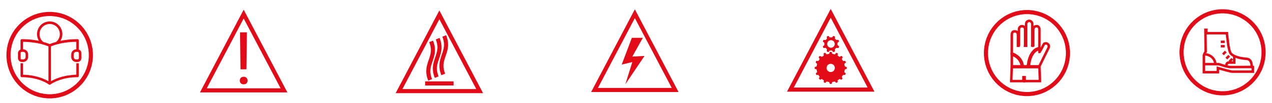
Low-voltage rotating electrical machines contain live parts, rotating or moving parts, surface and interior parts with temperatures above 50°C in normal operation.

Improper use of the motors and/or removal or disconnection of the protective devices can cause serious damage to people, animals and property.

We also decline all liability for damage caused by improper use of the motors and/or the removal or disconnection of the electrical and mechanical protections. Always disconnect the motor from the power supply before operating on it or on the equipment connected to it.

The JM, GM and JMM series motors are not manufactured in Italy.

In case of malfunction or doubt about the use of the equipment, please contact info@seipee.it



2.2 INSTALLATION AND START-UP

Before starting the electric motor, check the overall preservation of the mechanical parts, check free rotation of the motor shaft, and that the gaskets and motor cable gland are installed correctly.
Verify all electrical terminals in terminal blocks are connected and that the values are compatible with those of the network on which it will be powered.

The electric motor must be operated exclusively at the nominal characteristics of the plate.
The electric motor shall be installed and maintained in accordance with EU Applicable Standards.

Always ground the motor before connecting it to the power supply.

Before start-up, ensure adequate ventilation and sufficient space to ensure proper air circulation (at least ¼ of the diameter of the opening of the air intake).

Avoid proximity to high heat sources.

If there are condensate drainage holes, they must always be directed downwards.

In case of humid environments and possible formation of condensation, it is necessary to open the holes periodically acting on the screws placed in the lower part of the housing.

When moisture formation in windings is suspected, it is essential to check the insulation resistance between windings and towards the ground with a special tool.

The isolation resistance at a temperature of 25°C must exceed the reference value, that is 100 MΩ measured with 500 or 1000V DC.

The insulation resistance value halves every 20°C of ambient temperature increase.
Immediately after measurement, the terminals have dangerous voltages, therefore **always** discharge the motor phases towards the ground at the end of the test.

Commissioning or testing with the key fixed only by means of the shaft protection plug is strictly forbidden as the key could be projected by centrifugal force.

The end user has full responsibility for the foundation preparation; the metal foundations must be properly treated and painted to avoid corrosion.
The foundations must be flat and sufficiently rigid to withstand any stresses produced by the electric motor in the event of a short circuit.

They must be carefully designed and dimensioned in such a way to avoid the transfer of vibrations to the motor and the onset of vibrations due to resonance phenomena.

Joints and pulleys must be mounted on the motor shaft only using equipment and tools that do not damage the bearings and seals of the motor. Never use metal rods or levers to mount or remove joints and pulleys by pivoting against the motor body.

In the event of direct coupling or joint coupling, the motor must be aligned with the axis of the coupled machine. If necessary, apply an elastic or flexible joint to prevent damage to bearings, vibration and shaft breakage.

In the event of coupling with a strap, the axis of the motor must be parallel to the axis of the coupled machine. The pulley overhang must be as small as possible. **Excessive strap tension damages bearings and can cause motor shaft breakage.**

Balancing of the standard motor is performed using a key, so joints and pulleys must be balanced after machining the compartment of the key, with the same method indicated for the motor.

For motors with B14 and B34 construction, the useful screwing depths of the screws on the holes in the flanges **must never exceed** twice the thread diameter in order not to damage the winding of the motor (e.g. thread flange M5 = working depth of screwing 10 mm max).

After installation, close the terminal box, taking care the seals are not damaged and that they are well positioned in their compartment to ensure the degree of protection indicated on the plate is guaranteed.

All motors are equipped with cable glands or setup for their possible mounting. Unused ones must be closed to protect the motor against the entry of solid bodies, liquids and moisture.

The cable glands must be tight around the cable and the bending radius of the cables must not allow water entry. Ensure use of cable glands with compartments that conform to the type of protection and the diameter of the cable used.

It is necessary to check the rotation direction of the motors before coupling to the user machine, when this can cause damage to people and/or property.

To invert the direction of rotation in single-pole, three-phase motors, switch the connections of any two power cables.

For auxiliary equipment connections (heaters, thermistors, bimetallic probes, etc.) always refer to the **Use and Maintenance Manual available on our website**.

For inverter connections, if present, always refer to the specific manuals of the supplier of the electronics depending on the inverter used.

For motors with special connections other than those indicated and motors with brakes, always refer to the specific diagrams provided with the motor or the Use and Maintenance Manual available on our website.

• 2.3 MOVEMENT

CONTROL ON RECEIPT

On receipt of the motor, it is essential to immediately check that it has not suffered damage during transport. If any kind of damage is found, it must be immediately contested to the carrier by reporting the details on the transport document.

TRANSPORT AND STORAGE

The motor must be stored in a covered, dry and dust-free place.

During transport avoid impacts, falls and exposure to moisture, which could very quickly deteriorate the motor insulation.

Motors with cylindrical and/or oblique roller bearings must always have the shaft locked during transport. It is recommended to rotate the shaft periodically by hand to avoid the migration of the lubricating grease on the rotating parts.

LIFTING

The motors must be raised and handled using appropriate accident prevention devices at all times and in accordance with current legislation, if necessary, using the appropriate eyebolts supplied to the motor.

Do not lift the motor connected to other components using its eyebolts.

The lifting eyebolts must be tightened before use.

During lifting operations, ensure that appropriate equipment is used and that the dimensions of the lifting hooks conform to the eyebolts on the motor, taking care not to damage auxiliary equipment and connecting cables to the motor.

• 2.4 MAINTENANCE

Any intervention on the motor must only be carried out after removing voltage to the motor, any auxiliary circuits (such as anti-condensate heaters, external fans, brakes, etc.), if necessary, on any frequency converter and having ensured no accidental start-up can take place.

The capacitor in single-phase motors can maintain a charge that can be measured between the motor terminals even when the motor has come to a halt, so it is always necessary to discharge to ground.

The motor must be inspected at regular intervals, at least annually. In harsh and humid environments the intervals should be reduced according to the environmental condition.

Check the motor is running without noise or abnormal vibrations.

If such noise and abnormal vibrations occur, check the foundation of the motor and balancing of the coupled machine.

Ensure the ventilation is not hindered to avoid overheating and any breakage; keep the motor clean from dust, oil, water and processing residues..

Check the power cables of the motor, brake and auxiliary equipment do not show signs of deterioration and the connections are firmly tightened; check intactness and equipotential of the ground cables.

Check the locking screws of the motor and coupling system are properly tightened without cracking or damage.

Check the tension of any straps (high tension significantly reduces the life of the bearings and could also cause breakage of the shaft end).

Check the condition of the seals and grease them periodically as these components are subject to wear.

Ensure the thermal protection devices are not bypassed and are properly calibrated.

Periodically open the condensate drainage holes if present.

Check the condition of the bearings at regular intervals; shielded or watertight bearings (lubricated for life) that do not require greasing should be replaced at the end of their life.

Unshielded bearings are equipped with greasers and require lubrication at regular intervals (for intervals, types and quantities of grease see the label on the motor or consult the technical catalogue).

Only use original spare parts.

For self-braking motors, check the brake gap, the thickness of the brake pad and the release lever clearance (see the technical catalogue).

• 2.5 DISPOSAL

ATTENTION

The symbol of the crossed bar on electrical and electronic equipment (EEE) or on packaging indicates the product at the end of its useful life must be collected separately and not disposed of with other mixed urban waste.

Comply with the national legal provisions for disposal of the machine or waste generated in the individual stages of the life cycle.

For further information on disposal, please contact the local authorities or manufacturer’s site.

TECHNICAL
MECHANICAL DESIGN

3.

3 MECHANICAL DESIGN

3.1 HOUSING AND EXTERNAL COMPONENTS (ACCORDING TO CEI IEC 71-1))

JM, JMM, JMD SERIES

Die-cast aluminium light alloy housing with excellent thermal conductivity and excellent corrosion resistance.
100, 112, 132, 160 size motors have an eyebolt that can be used for lifting the motor.

The feet can be faced, with the possibility of installation on the 3 sides of the motor in order to have the terminal box on the desired side: IM B3, B5, B35, B14, B34. The IMB3 motor is as standard supplied with a top terminal box.

As standard, the IMB3 motor is supplied with top terminal box..

The terminal box can be orientated in 90° steps, also in light aluminium alloy.

Shields and flanges are also made of die-cast aluminium light alloy, the bearing compartments are reinforced with steel size 90. Flange B14 on JM 160 motor also available in cast iron.

The lifting ring or eyebolt, for the motor only, is present starting from size 100 to 450.

GM, GMD SERIES

Housing in cast iron with lifting eyebolt. The cast iron feet are firmly on the housing

The terminal box is adjustable in 90° steps. As standard, the IMB3 motor is supplied with top terminal box. The option of the terminal box is available on request.

Shields and flanges are entirely manufactured in cast iron.

Standard top position and near control side, with standard power supply cables input on the right hand side for JM and GM, and on the side opposite control for JMM motors.

Terminal board to power motor with 6 terminals.

Ground terminal positioned inside the terminal box.
External additional terminal for GM 315...450..

3.2 PAINTING

The JM, JMM and JMD series motors are powder painted, while the GM and GMD series have bicomponent paint suitable to resist normal industrial environments and allow further finishing with monocomponent synthetic paint.

JM 56 ~ 160, JMM 56 ~ 100, JMD 80 ~ 160 SERIES
RAL 9006 - White Aluminium
GM 160 ~ 450, GMD 180 ~ 250 SERIES
RAL 5010 - Blue

3.3 ROTOR

Squirrel cage in die-cast aluminium or (Al-Si) Silumin alloy.

3.4 SHAFTS

They are manufactured in steel C40/C45 (UNI8373-7847), unified according to CEI-IEC72-1 with standardised cylindrical ends, head threaded hole and key. The GM series has an axially locked motor shaft.

3.5 KEYS

In stainless steel C40 with unified size according to CEI IEC 72-1

• 3.7 STRUCTURAL FORMATS AND MOUNTING POSITIONS

The structural formats outlined by legislation **IEC 60034-7** are **IM B3, IM B5, IM B14** and combined formats **IM B35 (B3/B5)** and **IM B34 (B3/B14).**

Motors can also be operated in the corresponding vertical-axis structural formats; when requesting the motor specify its complete IM code to verify any restrictions.

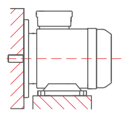
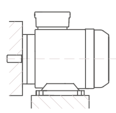
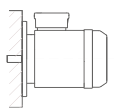
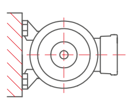
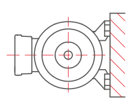
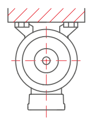
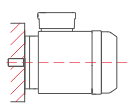
The motor plate indicates the structural format with horizontal axis. The structural formats and mounting positions are shown in the following table

ATTENTION

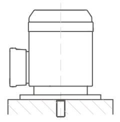
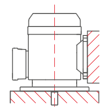
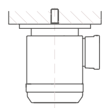
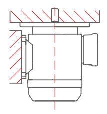
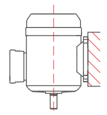
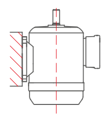
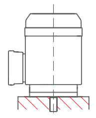
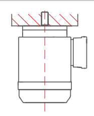
It is important to indicate the type of structural format desired on ordering, since execution of the motor depends in part on its structural format.

Tab. 3.7

■ HORIZONTAL MOUNTING (IM B**)

Designation		SIZE 56–160	SIZE 180–250	SIZE 280–315	SIZE 355–450
IM B3 - IM 1001 Feet		●	●	●	●
IM B35 - IM 2001 Feet and flange with through holes		●	●	●	●
IM B34 - IM 2101 Feet and flange with threaded holes		●			
IM B5 - IM 3001 Flange with threaded holes		●	●	○	○
IM B6 - IM 1051 Feet		●	●	○	
IM B7 - IM 1061 Feet		●	●	○	
IM B8 - IM 1071 Feet		●	●	○	
IM B14 - IM 3601 Flange for threaded holes		●			

■ VERTICAL MOUNTING (IM V**)

Designation		SIZE 56–160	SIZE 180–250	SIZE 280–315	SIZE 355–450
IM V1 - IM 3011 Flange with threaded holes		●	●	●	○
IM V15 - IM 2011 Feet and flange with threaded holes		●	●	●	○
IM V3 - IM 3031 Flange with threaded holes		●	●	○	
IM V36 - IM 2031 Feet and flange with threaded holes		●	●	○	
IM V5 - IM 1011 Feet		●	●	○	
IM V6 - IM 1031 Feet		●	●	○	
IM V18 - IM 3611 Flange for threaded holes		●			
IM V19 - IM 3631 Flange for threaded holes		●			

Legend: ● Possibile; ○ Optional; Empty = not possible.

• 3.8 BEARINGS

TYPE AND DIMENSIONS

Seipee uses bearings selected for specific use on electric motors.
The JM, JMM and JMD series aluminium motors are equipped with rigid radial ball bearings, single-crown, double-shield and lubrication for life.
The cast iron GM and GMD series motors to size 250 are instead equipped with closed bearings ZZ with clearance C3 and lubrication for life. From axle height of 280 upwards, they are equipped with open bearings, also with clearance C3 and they are therefore equipped with a greaser, for the necessary periodic lubrication of the bearings and relevant exhausted grease drainage
The characteristics of the bearings for the standard motors are given in the following table

■ TYPE AND DIMENSIONS OF STANDARD MOTOR BEARINGS

Tab. 3.8

Motor Size, poles		Horizontal mounting IM B3, B35, B34, B5, B6, B7, B8, B14 – Drive end	Horizontal mounting – Non drive end	Vertical mounting IM V1, V15, V5, V18, V6 – Drive end	Vertical mounting – Non drive end	Dimensions Bearings [$Ø_i$ x $Ø_e$ x H]
JM JMM 56		6201 ZZ C3		6201 ZZ C3		12x32x10
JM JMM 63		6201 ZZ C3		6201 ZZ C3		12x32x10
JM JMM 71		6202 ZZ C3		6202 ZZ C3		15x35x11
JM JMM JMD 80		6204 ZZ C3		6204 ZZ C3		20x47x14
JM JMM JMD 90		6205 ZZ C3		6205 ZZ C3		25x52x15
JM JMM JMD 100		6206 ZZ C3		6206 ZZ C3		30x62x16
JM JMD 112		6306 ZZ C3		6306 ZZ C3		30x72x19
JM JMD 132		6308 ZZ C3		6308 ZZ C3		40x90x23
JM JMD 160		6309 ZZ C3		6309 ZZ C3		45x100x25
GM 160		6309 ZZ C3		6309 ZZ C3		45x100x25
GM GMD 180		6311 ZZ C3		6311 ZZ C3		55x120x29
GM GMD 200		6312 ZZ C3		6312 ZZ C3		60x130x31
GM GMD 225		6313 ZZ C3		6313 ZZ C3		65x140x33
GM GMD 250		6314 ZZ C3		6314 ZZ C3		70x150x35
GM 280	2	6314 C3		6314 C3		70x150x35
	4 ~ 8	6317 C3		6317 C3		85x180x41
GM 315	2	6317 C3		6317 C3		85x180x41
	4 ~ 8	NU 319 E	6319 C3	6319 C3 [1]	6319 C3 [2]	95x200x45
GM 355	2	6319 C3		6319 C3[1]	6319 C3 [2]	95x200x45
	4 ~ 8	NU 322 E	6322 C3	6322 C3[1]	6322 C3 [2]	110x240x50
GM 355X	2	6319 C3	6319 C3	6319 C3[1]	7319 B	95x200x45
	4 ~ 8	NU 324 E	6324 C3	6324 C3[1]	7324 B	120x260x55
GM 400	2	6317 C3	6317 C3	6317 C3[1]	7317 B	85x180x41
	4 ~ 8	NU 326 E	6326 C3	6326 C3[1]	7326 B	130x280x58
GM 450	2	NU 222 E+6222 C3	NU 222 E	NU 222 E+6222 C3	7222 B	110x200x38
	4 ~ 8	NU 228 E+6228 C3	NU228 E	NU 228 E+6228 C3	7228 B	140x250x42

1) The cylindrical roller bearing can only be used if the bearing is subjected to a constant radial load.
Otherwise it is necessary to request the motor with the ball bearing

2) For high axial loads, request the motor with the series 7 angular contact ball bearing.
3) On the GM series the bearing is axially locked as standard. On the JM series it is possible to lock the front bearing on request.

LUBRICATION AND MAINTENANCE

For amounts of grease (g) and re-lubrication interval (h), always refer to the label on the motor fan cover.

For refilling, proceed by means of the two greasers, one on the shield/flange on the control side and one on the shield on the side opposite control.

It is also necessary to unscrew the exhaust plug (located at the bottom of the shield/flange) and top up according to the indicated amounts of grease.
To open the NDE side drain plug, if there is no hole and pipe on the fan cover, it is necessary to remove the fan cover and unscrew the drain plug placed behind the fan on the bearings cover

NOTE

In some models the drainage hole is placed directly on the shield!
Close the hole with the plug and reassemble the fan cover if it has been previously disassembled.
At this point you can continue with the normal procedure.

If the re-lubrication interval is less than six months, all the existing grease must be completely replaced after 2-3 refills at the latest.

If the re-lubrication interval is longer than six months, all the grease must be replaced every six months.

To completely replace the used grease, if the supports are accessible, it is advisable to remove the existing grease and re-lubricate the bearing manually.

The free space inside the bearing should be filled with fresh grease, while the space in the support should be filled 30 - 50%.

The amount of grease in the space around the bearing should not be excessive in order to avoid causing a local rise in temperature which would be harmful to both the grease and the bearing.

Take special care not to introduce impurities into the bearing or support at this stage of maintenance.

Be careful not to put too much grease inside the support, and once the operation is complete, screw the drain plug back on.

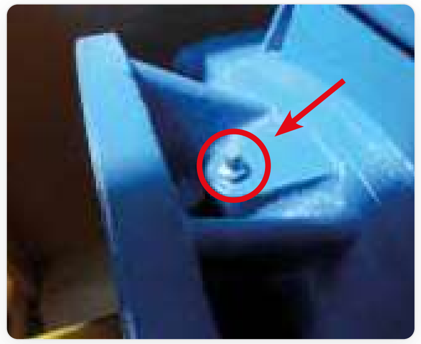
With very frequent lubrication intervals, you are advised to apply automatic greasing systems that simplify the operation

Regular lubrication is necessary for the life of the bearings and therefore for operation of the motor.
It is recommended to use lithium grease with a good quality mineral oil base.

It is recommended to use lithium grease with a good quality mineral oil base.

Recommended brands
Shell Gadus S2 V100 2, SKF LGMT 2, Mobil Mobilux EP 2, Esso Beacon EP 2, BP Energrease LS 2 e TOTAL ALTIS SH2.

■ Position **greaser on control side**

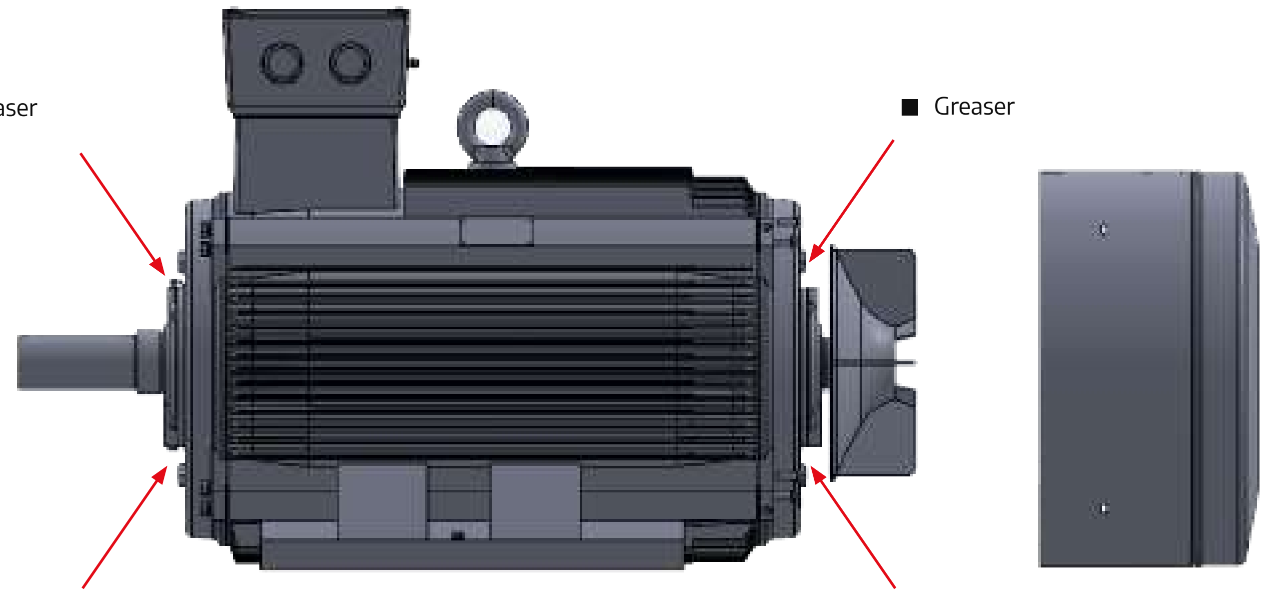


■ Position **greaser on opposite side**

■ Position **drain plug/screw**

■ Greaser

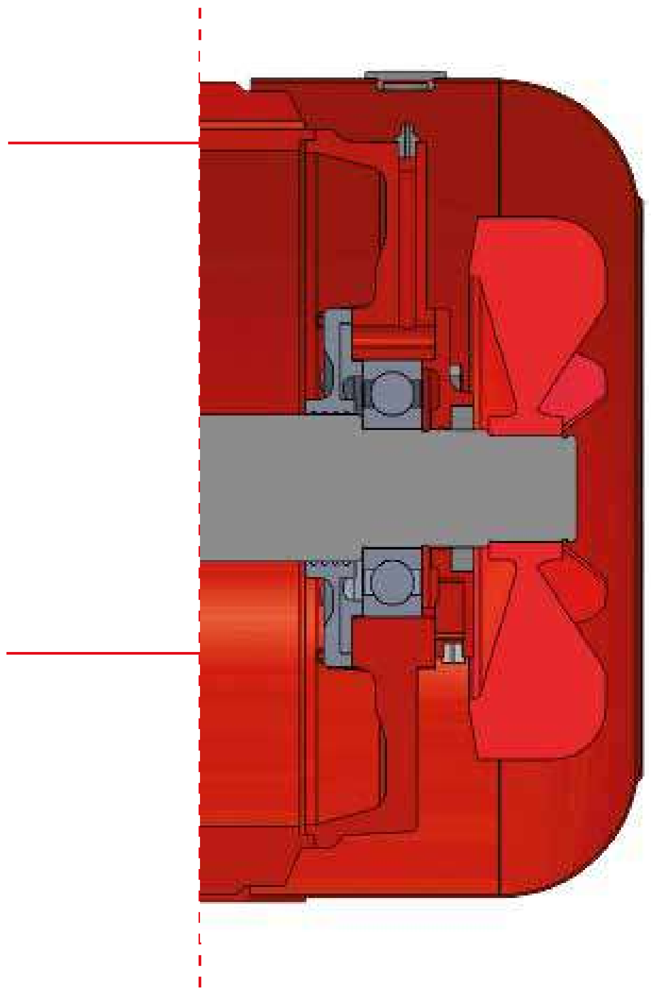
■ Greaser



■ Drain plug

■ Drain plug

■ Greaser



■ Drain plug

BEARINGS LUBRICATION

Motor	Lubrication interval* [h]																Grease [g]	
	Coupling side								Coupling opposite side									
	50 Hz Poles				60 Hz Poles				50 Hz Poles				60 Hz Poles					
	2	4	6	8	2	4	6	8	2	4	6	8	2	4	7	8	2	4~8
160*	3250	5450	7000	8300	2600	5000	6200	7500	3250	5450	7000	8300	2600	5000	6200	7500	13	
180*	2750	5250	6750	8000	2100	4750	6000	7250	2750	5250	6750	8000	2100	4750	6000	7250	18	
200*	2500	5000	6500	7700	1850	4500	5750	7100	2500	5000	6500	7700	1850	4500	5750	7100	20	
225*	2250	4800	6000	7450	1500	4300	5400	6900	2250	4800	6000	7450	1500	4300	5400	6900	23	
250*	2000	4650	5300	7250	1150	4150	4750	6600	2000	7650	5300	7250	1150	4150	4750	6600	26	
280	2000	4300	5000	6900	1150	3800	4250	6400	2000	4300	5000	6900	1150	3800	4250	6400	26	37
315	1200	3000	4800	5500	500	2100	4000	5000	1200	3900	5750	7200	500	3500	5100	6200	37	45
355	700	2300	4300	5250	220	1600	3750	4800	700	3650	5250	6500	220	3000	4700	5900	45	60
355X	350	1900	4100	5000	100	1750	3500	4500	700	1900	4100	5000	250	1750	3500	4500	54	86
400	350	1600	3900	4800	100	1100	3100	4300	350	3200	4800	6200	250	2800	4300	5300	54	81
450	300	1300	3000	4500	100	800	2700	4000	300	2750	4500	5800	150	1750	4000	4600	65	93

* = **Valid for good quality lithium grease,** working temperature not exceeding 90°C, applications with horizontal motor shaft and nominal loads. i.

For applications with vertical motor shaft halve the values in the table.

For working temperatures over 90 °C halve the values in the table every 15 °C temperature increase.

The maximum working temperature, relating to lithium grease with a good quality mineral oil base is equal to 110°C.

ELECTRICAL INSULATED BEARING

The rolling bearings of electric motors are potentially subject to current passages that quickly damage the surfaces of runners and rolling bodies and degrade their grease.

The risk of damage increases in the increasingly popular electric motors equipped with frequency converters, especially in applications with sudden variations in speed. In bearings on such motors, there is an additional risk due to the presence of high frequency currents caused by the parasitic capacities existing within the motor.

The electrically insulated bearing has the outer surface of the external ring coated with a layer of aluminium oxide 100 µm thick, able to withstand voltages of 1,000 V d.c., practically eliminating issues caused by current passage.

Seipee recommends using electrically insulated bearings in motors equipped with frequency converters from size 250.

3.9 MAXIMUM APPLICABLE RADIAL LOADS

For belt-pulley coupling, the end of the motor shaft carrying the pulley is subject to radial force $F_{r,N}$ applied to a distance x [mm] from the support on the end of the shaft length E.

The maximum radial load relatively applicable relates to the mechanical strength of the motor shaft and not bearing duration.

MAXIMUM APPLICABLE RADIAL LOADS AT 50 HZ

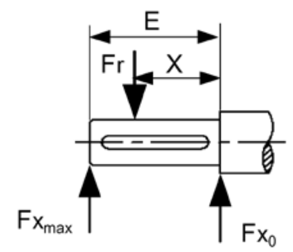
Tab. 3.9

Motor	E [mm]		Radial forces- F_0 (no axial forces) [N]							
			2 Pol.		4 Pol.		6 Pol.		8 Pol.	
	2 Pol.	4~8 Pol.	X_{max} (x = E)	X_0 (x = 0)	X_{max} (x = E)	X_0 (x = 0)	X_{max} (x = E)	X_0 (x = 0)	X_{max} (x = E)	X_0 (x = 0)
25.000 hours										
56	20		200	240	200	240	-	-	-	-
63	23		400	490	400	490	400	490	-	-
71	30		740	815	740	815	740	815	740	815
80	40		970	1120	970	1120	970	1120	970	1120
90 S	50		1050	1210	1050	1210	1050	1210	1050	1210
90 L	50		1050	1210	1050	1210	1050	1210	1050	1210
100 L	60		1800	2280	1800	2280	1800	2280	1800	2280
112 M	60		1800	2280	1800	2280	1800	2280	1800	2280
132 S-M	80		2100	2600	2100	2600	2100	2600	2100	2600
20.000 hours										
160 M	110		2740	3540	3300	4085	3355	4100	3270	4200
160 L	110		2600	3400	3000	3700	2900	3600	3370	4170
180 M	110		3385	4100	3485	4270	-	-	-	-
180 L	110		-	-	3485	4270	3800	4700	3900	4785
200 L	110		4685	5600	5200	6285	5700	6800	5700	6800
225 S	110	140	-	-	5900	7300	-	-	6900	8500
225 M	110	140	5185	6100	5700	7085	5700	7100	6485	8000
250 M	140		6285	7700	7000	8700	7600	9400	7800	9600
280 S	140		6000	7300	7800	9200	8900	10600	9200	11700
280 M	140		6000	7300	7800	9200	8900	10600	9200	11700
315 S	140	170	6000	7300	9400	11400	9600	13000	9600	14400
315 M-L	140	170	6400	7400	9700	11500	11100	13200	12200	19500
355 M-L	170	210	6550	7350	12900	15300	13600	17600	13600	19400
355 X	170	210	6550	7350	13000	15200	13600	17500	13000	19400
400 M-L	170	210	6850	7650	11500	15600	11500	17800	11500	19700
450 M-L	170	210	-	-	15200	17000	17000	19000	19000	21300

For operation at a certain frequency ff different from 50 Hz, multiply the table values for (50 / ff)(1 / 3).
For longer bearing lives, multiply the table loads by the following factors: 0.87 (30,000 hours); 0.79 (40,000 hours); 0.74 (50,000 hours). For the JMM series, reduce the loads outlined in the table by 20%.

If the radial load is applied between sections X_0 (x = 0) e X_{max} (x = E) at a distance X [mm] from section X_0, its maximum value $F_{r\,max,X}$ can be assumed equal to:

$$F_{rmax,X} = F_{rmax,Xo} - \frac{F_{rmax,Xo} - F_{rmax,Xmax}}{E} \cdot X$$



where:

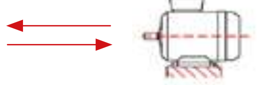
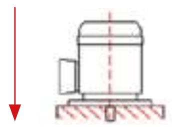
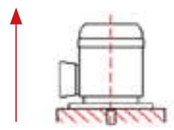
$F_{r\,max,Xo}$ [N]: Maximum radial load corresponding to section X_0
$F_{r\,max,X\,max}$ [N]: Maximum radial load corresponding to section X_{max}
E [mm]: Distance of shaft end from support

• 3.10 MAXIMUM APPLICABLE AXIAL LOADS

The maximum axial loads applicable without application of additional radial loads* are outlined in the following table::

Tab. 3.10

■ MAXIMUM APPLICABLE AXIAL LOADS AT 50 HZ

Motor	Axial forces - F_a (no radial forces) [N]											
Drawings	F_a 				F_a 				F_a 			
poles	**2**	**4**	**6**	**8**	**2**	**4**	**6**	**8**	**2**	**4**	**6**	**8**
56	233	267	-	-	153	183	-	-	230	275	-	-
63	293	443	493	-	257	307	357	-	385	460	535	-
71	410	547	640	723	413	550	647	730	620	825	970	1095
80	553	732	867	980	562	743	878	985	843	1115	1318	1478
90 S	593	788	927	1048	605	800	943	1060	908	1200	1415	1590
90 L	593	788	927	1048	605	800	943	1060	908	1200	1415	1590
100 L	883	1270	1550	1785	888	1278	1562	1793	1333	1918	2343	2690
112 M	880	1265	1547	1780	890	1276	1563	1795	1335	1915	2345	2693
132 S	1273	1677	1993	2240	1293	1720	2022	2274	1940	2580	3033	3412
160 M	1900	2300	2460	2770	1899	2343	2510	2762	2849	3515	3765	4143
160 L	1910	2100	2090	2450	1920	2130	2127	2500	2880	3195	3190	3750
180 M	2227	2400	-	-	2200	2437	-	-	3300	3655	-	-
180 L	-	2387	2533	2813	-	2438	2595	2900	-	3658	3893	4350
200 L	2973	3420	3620	3627	2988	3227	3422	3398	4483	4840	5133	5098
225 S	-	3693	-	4140	-	3482	-	3845	-	5223	-	5768
225 M	2920	3413	3673	3980	3082	3392	3385	3685	4623	5088	5078	5528
250 M	4027	4380	4627	4733	3782	4100	4317	4375	5673	6150	6475	6563
280 S	3483	4667	5500	6200	3567	4717	5550	6400	5350	7075	8325	9600
280 M	3483	4667	5500	6200	3567	4717	5550	6400	5350	7075	8325	9600
315 S	3460	5600	6600	7333	3517	5750	6633	7750	5275	8625	9950	11625
315M-L	3367	5500	6433	7217	3800	6050	7167	7733	5700	9075	10750	11600
355M-L	3300	7000	8300	9400	3783	7733	9210	11200	5675	11600	13825	16800
355 X	3033	6733	7867	8900	3633	7417	8717	9967	5450	11125	13075	14950
400 M-L	3100	6733	7900	8967	3600	7483	8400	9483	5400	11225	14600	14225
450 M-L	-	7033	8000	9200	-	8133	9900	11100	-	12200	14850	16650

For operation at a certain frequency ff different from 50 Hz, multiply the table values for (50 / ff)(1 / 3).
For longer bearing lives, multiply the table loads by the following factors: 0.79 (30,000 hours); 0.71 (40,000 hours); 0.66 (50,000 hours).
For the JMM series, reduce the loads outlined in the table by 20%.

* Consult Seipee motors for the direction of the forces

• 3.11 DYNAMIC BALANCING

The dynamic balancing of the rotor is performed with half a key inserted in the end of the shaft, in accordance with **ISO 21940:20121.**

Seipee motors are designed as standard with "N" degree of vibration; it is possible to supply motors with "R" degree of vibration on request. The limit values for mechanical vibration are given in the following table:

Tab. 3.11

■ MAXIMUM INTENSITY OF MECHANICAL VIBRATIONS

	Axis height H [mm]	56 < H ≤ 132			132 < H ≤ 280			280 > H		
Vibration degree	**Mounting**	**Movement [µm]**	**Speed [mm/s]**	**Accelerazione [m/s²]**	**Move. [µm]**	**Speed [mm/s]**	**Accel. [m/s²]**	**Move. [µm]**	**Speed [mm/s]**	**Accel. [m/s²]**
N normal	Free suspension	25	1,6	2,5	35	2,2	3,5	45	2,8	4,4
	Rigid mounting	21	1,3	2,0	29	1,8	2,8	37	2,3	3,6
R reduced	Free suspension	11	0,7	1,1	18	1,1	1,7	29	1,8	2,8
	Rigid mounting				14	0,9	1,4	24	1,5	2,4

ATTENTION

The position and dimension of the key is outlined in the technical drawings for each motor series..

• 3.12 SOUND LEVELS

The sound power values permitted for rotating electrical machinery are established in Standard **EN 60034-9**.

The noise level is calculated **by the sound pressure level**, from the average of the values measured at 1m from the external surface of the motor in the free field and in the reflective plane, in accordance with Directive **EN 60651** and indicated in dB(A).
The speed depends on the network frequency and the number of poles on the motor.

Values shown in the table are valid for the empty motor and 50 Hz frequency at nominal voltage,
with a tolerance of +3db(A).

Values at 60 Hz frequency are 2dB(A) higher than values shown in the table.

For switchable pole motors, the values will be those corresponding to the highest speed.

■ PRESSURE AND SOUND POWER

Tab. 3.14

Motor	JM, GM, GMD, JMM, JMK, GMK Series								IE3/IE2 - JM, GM, GMD, JMM, JMK, GMK Series							
	2 poles at no load		4 poles at no load		6 poles at no load		8 poles at no load		2 poles at no load		4 poles at no load		6 poles at no load		8 poles at no load	
	L pA	L wA	L pA	L wA	L pA	L wA	L pA	L wA	L pA	L wA	L pA	L wA	L pA	L wA	L pA	L wA
56	48	57	43	52	-	-	-	-	-	-	-	-	-	-	-	-
63	50	61	44	53	39	50	-	-	50	61	44	53	39	50	-	-
71	54	65	47	56	41	53	40	51	54	65	47	56	41	53	40	51
80	59	70	50	59	44	55	42	53	56	67	46	57	44	55	42	53
90	62	74	52	61	47	58	45	56	58	69	48	58	45	57	45	56
100	66	77	56	65	51	62	48	59	63	75	50	60	48	60	48	59
112	67	78	59	68	53	65	52	63	65	76	55	67	52	64	52	63
132	70	81	61	72	58	69	54	66	67	78	59	71	55	67	54	66
160	74	86	63	75	60	72	57	70	69	80	62	72	57	69	55	68
180	75	89	65	78	62	74	59	71	70	80	63	75	59	71	58	70
200	76	90	66	79	63	75	61	73	72	84	64	76	61	73	60	72
225	77	91	67	81	64	76	62	74	74	86	65	78	62	74	61	73
250	79	93	71	83	66	78	63	75	77	91	66	79	63	75	62	74
280	80	94	75	86	69	82	66	79	78	92	69	82	66	79	63	76
315	81	95	77	90	73	86	70	83	80	94	74	87	71	83	69	82
355	84	98	82	96	79	92	86	89	82	97	80	93	77	89	87	90
400	86	100	85	98	82	96	80	93	86	100	83	96	80	92	82	95
450	88	102	87	100	84	97	81	94	88	102	87	100	84	97	81	94

• 3.13 IP DEGREE OF PROTECTION

The degree of mechanical protection is established in accordance with IEC 60034-5 and is indicated by the writing IP followed by two characteristic digits.

In Seipee motors, the IP55 standard protection against water and dust penetration is guaranteed by a sealing ring mounted on the front shield. The sealing rings have good vibration resistance and good thermal stability and are resistant to diluted acids and mineral oils.

IP XY -► X = solid bodies Y = liquids

■ PROTECTION AGAINST SOLID BODIES

Degree	Level of protection
0	No protection
1	Protection against solid bodies over 50 mm
2	Protection against solid bodies over 12 mm
3	Protection against solid bodies over 2.5 mm
4	Protection against solid bodies over 1 mm
5	Protection against solid bodies (no harmful deposits)
6	No dust entry

■ PROTECTION AGAINST LIQUIDS

Degree	Level of protection
0	No protection
1	Protected against vertical falling drops of water (condensate)
2	Protected against vertical falling drops of water with an inclination up to 15°
3	Protected against rainwater with an inclination up to 60°
4	Protected against water sprays from all directions
5	Protected against water sprays from all directions
6	Protected against pressure water jets (similar to sea waves)
7	Protected against temporary submersion (between 0.15 and 1 m)
8	Protected against the effects of continuous submersion

• 3.14 VENTILATION

In compliance with **standard IEC 60034-6**, Seipee motors are ventilated with cooling methods **IC411**, i.e. the “machine cooled by its own surface using ambient liquid (air) that circulates along the machine”.

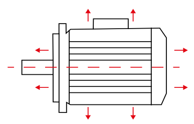
Cooling is carried out by a fan external to the motor body, with two-directional radial blades, fitted on the NDE shaft and protected by a special fan cover in steel sheeting

ATTENTION

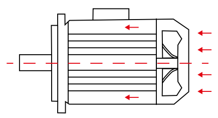
Accidental shuttering of the fan cover grate can also affect motor cooling.
It is recommended to maintain a minimum distance of ¼ of the diameter of the opening of the air intake between the end of the fan cover and any obstacle.

■ VENTILATION MODE

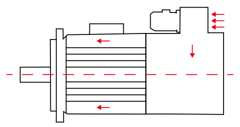
IC 410 — Machine closed, cooled from the surface by natural conversion and radiation. No external fan.



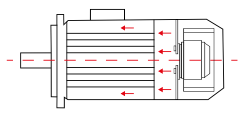
IC 411 — Machine closed. Smooth or grooved ventilated housing. External fan, assembled on the shaft.



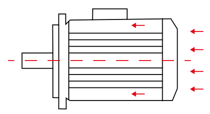
IC 416 R* — Machine closed. Smooth or grooved closed housing. Radial external automated fan (R) supplied with the machine for specific applications



IC 416 — Machine closed. Smooth or grooved closed housing. Axial external automated fan supplied with the machine.



IC 418 — Machine closed. Smooth or grooved closed housing. No external fan. Ventilation ensured by the air flow coming from outside.



Use of asynchronous motors with speed variation using variator for frequency or voltage, makes particular precautions compulsory.

This is because, in case of prolonged operation at low speed, the ventilation loses its effectiveness, and it is therefore advisable to install a forced ventilation system with constant flow

Vice versa, in the event of prolonged operation at high speeds, the noise emitted by the ventilation system may exceed the limits indicated in tab. 3.12, it is therefore recommended to opt for a forced ventilation system.

The characteristics of the servo-fan and the variation **ΔL** of the measurement **LB** (see “motor dimensions”) are outlined in the following table

■ AUXILIARY AXIAL FAN CHARACTERISTICS

Tab. 3.14

Motor Size	Poles	Phases	V ~ ± 10%	Hz	$W_{ass.}$	$A_{ass.}$	Poles	Protection	Weight [Kg]	ΔL [mm]
63	2~8	1	230	50/60	17/13	0,13/0,10	2	IP54	1,1	60
71	2~8	1	230	50/60	17/13	0,13/0,10	2	IP54	1,0	70
		3	Y 400	50	55	0,26			2,2	130
80	2~8	1	230	50/60	17/13	0,13/0,10	2	IP54	1,2	65
		3	Y 400	50	55	0,26			2,3	110
90	2~8	1	230	50/60	31/24	0,24/0,18	2	IP54	1,6	70
		3	Y 400	50	55	0,26			2,4	110
100	2~8	1	230	50/60	31/24	0,24/0,18	2	IP54	1,6	75
		3	Y 400	50/60	45/43	0,13/0,09			2,1	
112	2~8	1	230	50/60	70/65	0,35/0,30	2	IP54	2,2	85
		3	Y 400	50/60	45/43	0,13/0,09			2,5	
132	2~8	1	230	50/60	64/78	0,30/0,34	2	IP55	2,8	70
		3	Y 400	50/60	77/101	0,32/0,36	4		7,0	
160	2~8	3	400/480	50/60	43/62	0,31/0,35	4	IP55	8,0	120
180	2~8	3	400/480	50/60	97/138	0,32/0,35	4	IP55	9,0	140
200	2~8	3	400/480	50/60	81/116	0,22/0,24	6	IP55	11,0	195
225	2~8	3	400/480	50/60	115/169	0,25/0,28	6	IP55	12,0	180
250	2~8	3	400/480	50/60	114/168	0,24/0,27	6	IP55	14,0	225
280	2~8	3	400/480	50/60	187/262	0,64/0,70	8	IP55	19,0	230
315	2~8	3	400/480	50/60	199/285	0,64/0,70	8	IP55	24,0	210
355	2~8	3	400/480	50/60	238/349	0,64/0,72	8	IP55	29,0	215
355X	2~8	3	400/480	50/60	238/349	0,64/0,72	8	IP55	29,0	360
400	2	3	Δ 400	50	2600	5,0	4	IP54	33,5	380
	4~8			50	2530	4,9			33,5	
450	4~8	Consult Seipee for more information								

The auxiliary ventilation power terminals are located inside an auxiliary terminal box attached to the fan cover. Before making the electrical connection make sure the power supply corresponds to the electrical data shown on the plate.

NOTE

Check the rotation direction of the three-phase fan corresponds to that indicated by the arrow placed on the fan cover, otherwise reverse two of the three phases of power supply.

3.15 ELECTRICAL DESIGN

3.16 STATIC WINDING SYSTEM

Seipee motors are built with **a class F insulation system**, in compliance with **EN 60034-1.** Class F/B insulation system for all motors with standardised power; Class B or B/F insulation system for the remaining single-phase and three-phase motors.
Double glazed copper wire with an autoclave impregnation system is used with high quality resins, which allow use in a tropical climate without the need for further treatments. Accurate separation of phase windings (in cavity or head); accurate insulation of the "braid" (cables at the beginning of the phase).
All Seipee motors are equipped with phase separators for inverter duty.
It is possible to perform class H insulation on request.

INSULATION CLASS B (130)

- Nominal ambient 40 °C
- Maximum temperature margin permitted 80K
- Temperature margin on hot point 10K

INSULATION CLASS F (155)

- Nominal ambient 40 °C
- Maximum temperature margin permitted 105K
- Temperature margin on hot point 10K

INSULATION CLASS H (180)

- Nominal ambient 40 °C
- Maximum temperature margin permitted 125K
- Temperature margin on hot point 10K

3.17 POWER YIELD BASED ON AMBIENT TEMPERATURE

Standard motors have **class F insulation and can operate in ambient temperature ranging between -15 °C and +40 °C.** With ambient temperature over 40°C there is a reduction in power supply.

Ambient temperature [°C]	25	30 - 40	45	50	55	60
P / P_N	1,07	1,00	0,95	0,90	0,85	0,80

3.18 POWER YIELD BASED ON ALTITUDE

The performances reported in the catalogue refer to operating altitude below 1000 metres above sea level. With altitudes over 1000 metres above sea level, there is a reduction in power supply.

Altitude s.l.m. [m]	0 ~ 1000	1500	2000	2500	3000	3500	4000
P / P_N	1,00	0,97	0,93	0,89	0,85	0,80	0,74

3.19 WINDING PROTECTION AGAINST OVER-TEMPERATURE

The temperature probes are indispensable for protection of the electric motor from over-temperature.
The terminals of the thermal protection probes are located inside the terminal box.

KLIXON ® BIMETALLIC THERMAL PROBES (PTO)

As standard on motors JM 160 and GM 160 ~ 450

Characteristics

They are three probes connected in series with normally closed contact inserted in the motor winding.

The contact opens when the winding temperature reaches and exceeds the intervention value.

$V_{N,\,max}$ = 250 [V]
$I_{N,\,max}$ = 1.6 [A]

THERMISTOR THERMAL PROBES (PTC)

As standard on all motors ≥0.75kW

Characteristics

These are three thermistors connected in series inserted in the winding in accordance with DIN 44081/44082, for connection to specific release equipment.

There is a sudden change in resistance that causes the release when the winding temperature reaches and exceeds the intervention value.
150 C for class F insulation (standard)
160 C for class H insulation

TEMPERATURE SENSOR PT100

Optional available on request

Characteristics

This is a temperature sensor in accordance with DIN 751, for connection to specific release equipment.

Winding: three PT100 sensors inserted in the winding, one for each phase. Terminals are located inside the motor terminal box.

Bearings: a PT100 sensor inserted on the bearing support (control side, side opposite control). Terminals placed inside a shunt box fastened to the motor housing.

3.20 OVERLOAD

At the operating temperature, the three-phase motors are able to sustain an overload of 1.5 times the nominal torque for 15 seconds at the nominal voltage. This overload complies with **EN 60034-1** and does not cause excessive motor heating.

3.21 HOURLY START-UPS

The maximum number of permitted hourly starts is given in the following table, provided that the additional moment of inertia of the rotor: load torque increasing with the speed square up to the nominal torque and starts at constant intervals.

Axis height	Number of permitted hourly start-ups		
	2 poles	4 poles	6 poles
56-71	100	250	350
80-100	60	140	160
112-132	30	60	80
160-180	15	30	50
200-225	8	15	30
250-315	4	8	12

• 3.22 THREE-PHASE MOTOR POWER SUPPLY DIFFERENT FROM NOMINAL VALUES

Seipee electric motors with three-phase power supply are designed for use on the European mains **230/400V ± 10% at 50Hz.**

This means that the same motor can also be connected to the following electrical mains:
220/380V ±5% - 230/400V ±10% - 240/415V ±5%

The same electric motors can operate with frequency at 60hz with different electrical performances and quantities, as shown in the following table

■ THREE-PHASE MOTOR NON-NOMINAL POWER SUPPLY

Tab. 3.22

Nominal power supply	Alternative supply					Corrective factors with reference to nominal supply at 50 Hz					
	Frequency	Voltage [V]				P	n	I	T	I_s	$T_{s,} T_{max}$
	[Hz]	diff. %	Δ	Y	diff. %	[kW]	[min⁻¹]	[A]	[Nm]	[A]	[Nm]
Δ 230 [V] / Y 400 [V]	50	-4,3%: :	220	380 :	-5,0%	1	1	0,95 ÷ 1,05	1	0,96	0,90
		4,3% :	240	415 :	3,8%	1	1	0,95 ÷ 1,05	1	1,04	1,08
	60	-20,6% (1)	220	380 (1)	-20,8%	1	1,19	0,95 ÷ 1,05	0,84	0,79	0,63
		-17,0% (1)	230	400 (1)	-16,7	1	1,2	0,95	0,85	0,83	0,80
		-7,9% (2)	255	440 (2)	-8,3%	1,1	1,2	0,95 ÷ 1	0,92	0,92	0,84
		-4,3% :	**265**	**460 :**	**-4,2%**	**1,15**	**1,2**	**0,95 ÷ 1,05**	**1**	**0,96**	**0,92**
		Nom. :	278	480 :	Nom.	1,2	1,2	1	1	1	1
Δ 400 [V]	50	-5,0% :	380	--	--	1	1	0,95 ÷ 1,05	1	0,95	0,90
		3,8% :	415	-	--	1	1	0,95 ÷ 1,05	1	1,04	1,08
	60	-20,8% (1)	380	--	--	1	1,19	0,95 ÷ 1,05	0,84	0,79	0,63
		-17,0% (1)	400	--	--	1	1,2	0,95	0,85	0,83	0,80
		-8,3% (2)	440	--	--	1,1	1,2	0,95 ÷ 1	0,92	0,92	0,84
		-4,2% :	**460**	**--**	**--**	**1,15**	**1,2**	**0,95 ÷ 1,05**	**1**	**0,96**	**0,92**
		Nom. :	480	--	--	1,2	1,2	1	1	1	1

(1) = Supply voltage not recommended for heavy duty and prolonged motor operation. The motor can work with this power supply, but it must have full load start-ups; the power required must not exceed the nominal value. Over-temperature of the motor can be greater.
(2) = The motor can work with this power supply, but must not have full load start-ups.

* Consult Seipee for voltages and frequencies not indicated in the table

ATTENTION

The motor yield can vary when powered at voltage/frequency values different from nominal ones.

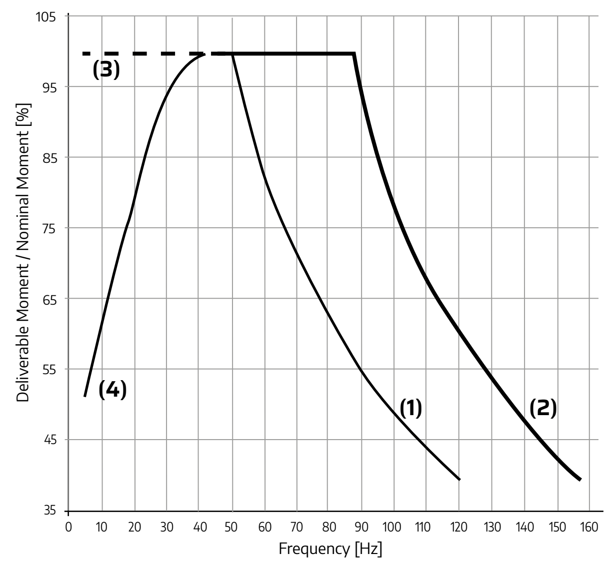
• 3.23 INVERTER-ACTIVATED MOTORS

Tall Seipee asynchronous three-phase motors in standard configuration are equipped with winding with phase separators for use with inverters..

The following information must be taken into account:
Maximum output voltage of the inverter on the motor UN ≤ 500V with peak of U_{peak} ≤ 1500V and voltage gradients dU/dt ≤1,5 kV/μs. For situations where higher voltages or peaks are required, it is necessary to provide special insulation systems for which the manufacturer must be consulted.

The torque (T) that can be delivered from the Seipee motor, under inverter follows the graphic below.
The motors designed at Δ/Y 230/400V 50Hz can work with delta connection at a maximum frequency of 87Hz. You are however advised to comply with the mechanical speed limit

Curve (1) Indicates the decay of the torque available to the motor shaft when we enter the constant power area: the decay begins when the voltage on the motor phases reaches a value equal to that of the inverter power supply and the frequency increases beyond the nominal value expressed on the plate.
Under the conditions described above, the couple decays according to the following formula: T = Tn / 2π x f [Hz].
In this operating mode the current absorbed by the motor with applied load must NOT exceed the nominal value.
Curve (2) Indicates the decay of the torque when, through the inverter, the motor phases connected in delta are powered with the voltage value foreseen for the star connection.
In this mode it is possible to increase the constant torque operating area of the motor up to a speed value proportional to: fn [Hz] x √3 (Eg with fn = 50 Hz we obtain 87Hz).
By increasing the number of revolutions by √3, keeping the torque constant at the nominal value, we will have an increase in the mechanical power that can be supplied by the motor equal to: P [kW] = Pn x √3.
ATTENTION:
1) in this configuration the motor will absorb, at nominal load, the current value in delta connection (In = IΔ) expressed on the plate.
It is recommended NOT to exceed this value.
1) The values to be set in the frequency converter (inverter) relating to:
- Rated voltage **Vn [Vac]**
- Rated frequency **fn [Hz]**
- Nominal power **Pn [kW]**
- Nominal revolutions **n [RPM]**
They must be increased by √3 (x 1.732) with respect to the values expressed in the plate for the delta connection.
Point (3) For applications with constant torque <35 Hz the motor needs to be servo ventilated. With operation <50Hz with servo-ventilated or self-ventilated motor with intermittent service, the torque remains constant.
Curve (4) Nominal torque in Nm = 9550 x (nominal power [kW] / rotation speed [min-1]). The nominal torque of self-ventilated motors with operation <50 Hz is reduced as indicated in the graph below. Depending on the adjustment range, it is advisable to use an auxiliary forced ventilation.



▶ Depending on the operating point, the type of inverter and the switching frequency, motors generate higher noise levels, ranging from approximately 4 to 10 dB (A), compared to motors powered directly from the mains
This increase includes the contribution due to the increase fan speed, therefore the use of forced ventilation is recommended.
▶ Seipee recommends using electrically insulated bearings from size 250 for motor under inverter use

GENERAL TECHNICAL CHARACTERISTICS

• 3.24 TOLERANCES

All industrial motors compliant with **standard EN 60034-1,** are subject **to permitted tolerances in production**, established on the basis of guaranteed values. The standard outlines the following::

1

The tolerances outlined below must be guaranteed. On the contrary, this must be stipulated.

2

Attention should be paid to the different interpretation of the term "guarantee". In fact, in some countries, there is a difference between guaranteed values and characteristic or declared values.

3

When you specify a tolerance in only one sense, the value has no limits in the other sense.

ELECTRICAL TOLERANCES

Characteristic	Tolerances
Performance η	-0.15 (1 - η) a P_N ≤ 150Kw -0.1 (1 - η) a P_N > 150Kw
Power factor cos φ	(1 - cos φ) / 6 [minimum 0.02, maximum 0.07]
Sliding s	±20% of sliding a $P_{N \geq 1kW}$ ±30% of sliding a $P_{N < 1kW}$
Blocked rotor current I_A	+20% of the guaranteed starting current (no lower limit)
Starting torque M_A	-15% e +25% of the guaranteed starting torque
Maximum torque M_K	-10%
Moment of inertia J	± 10%

MECHANICAL TOLERANCES

The dimensions of the asynchronous motors are indicated in **standard IEC 60072-1,** which indicates the following permitted tolerances::

Characteristic	Designation	Tolerances	
Axis height	H	Up to 250 Over 250	-0,5 mm -1 mm
Diameter of the shaft end	D	From 11 to 28 mm From 38 to 48 mm From 55 to 100 mm	j6 k6 m6
Width of key	F		H9
Flange centring	M	Up to 132 Over 132	J6 H6

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TYPE OF
SERVICE

4.

4 TYPES OF SERVICE

4.1 SERVICE TYPES

The values of the motors indicated in the tables refer to motors **operating in service mode S1**, **continuous operation with constant load.**

Load: the set of values of electrical and mechanical quantities characterising the requirements imposed on a rotating machine by an electrical circuit or a mechanical device, at a given moment.

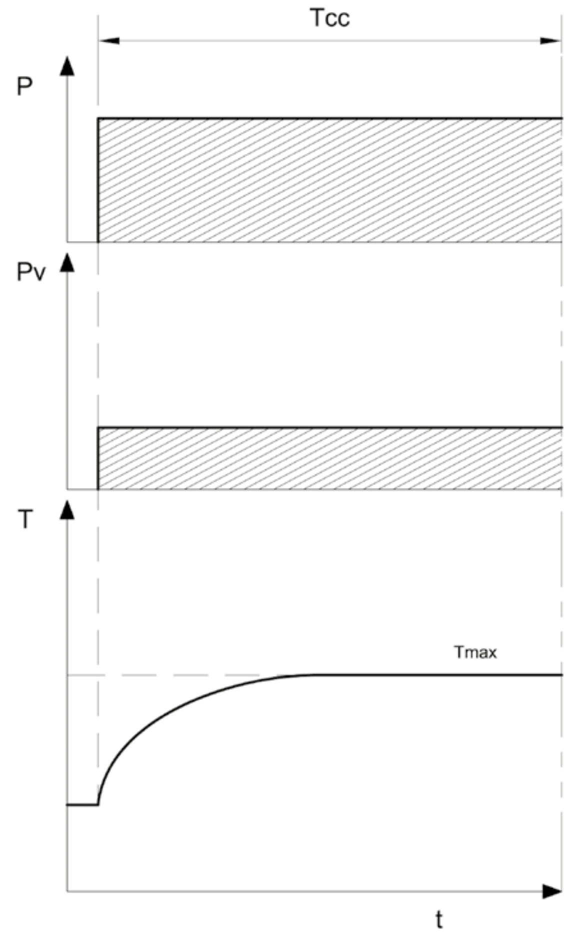
Service: the definition of the load or loads to which the machinery is subjected, including (if applicable) the starting, electric braking, no load operation and rest periods, and their duration and sequence over time**.**

The **standards EN 60034-1** also cover the following types of service:

CONTINUOUS SERVICE – SERVICE S1

Sufficient duration constant load operation on reaching thermal balance.

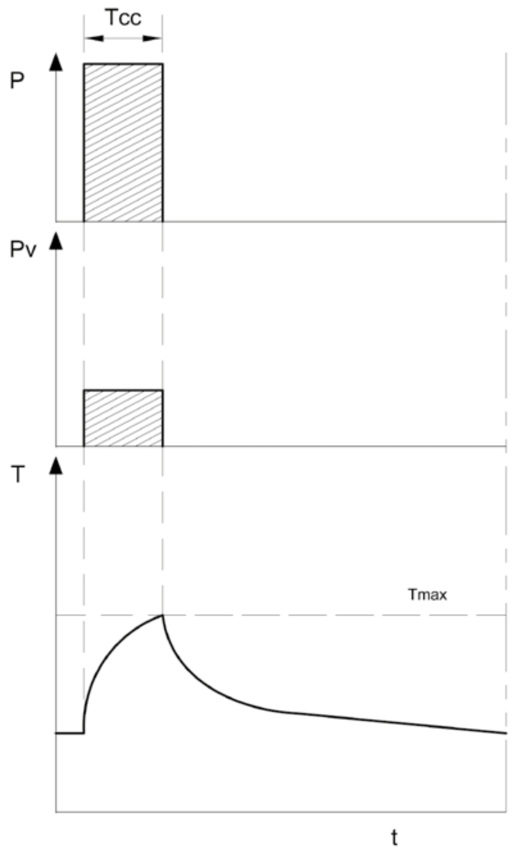
P = Load
Pv = Electrical losses
T = Temperature
t = Time
Tcc = Operating time at constant load
Tmax = Maximum temperature reached



LIMITED DURATION SERVICE – SERVICE S2

Constant load operation for a certain period of time, under that required to reach thermal equilibrium, followed by a rest period at sufficient duration to re-establish equality between the temperature of the machine and that of the cooling fluid, with a tolerance of 2 K.

P = Load
Pv = Electrical losses
T = Temperature
t = time
Tcc = Operating time at constant load
Tmax = Maximum temperature reached

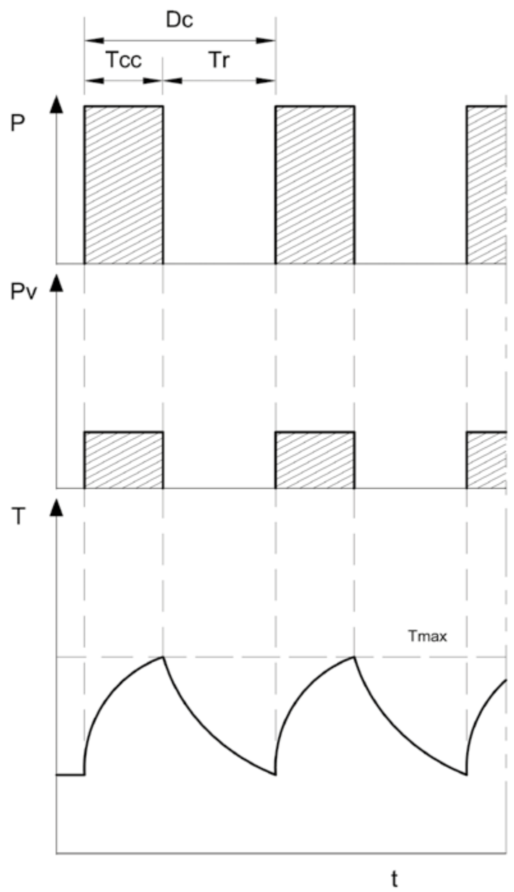


PERIODIC INTERMITTENT SERVICE – SERVICE S3

Sequence of identical operating cycles, each including a period of constant load operation and a rest period. In this service, the cycle is such the starting current does not significantly influence over-temperature.
The periodic service implies the thermal equilibrium is not reached during the load period.

P = Load
Pv = Electrical losses
T = Temperature
t = time
Dc = Duration of a cycle
Tcc = Operating time at constant load
Tr = Rest time
Tmax = Maximum temperature reached

Intermittency ratio = Tcc / (Tcc+Tr) * 100%

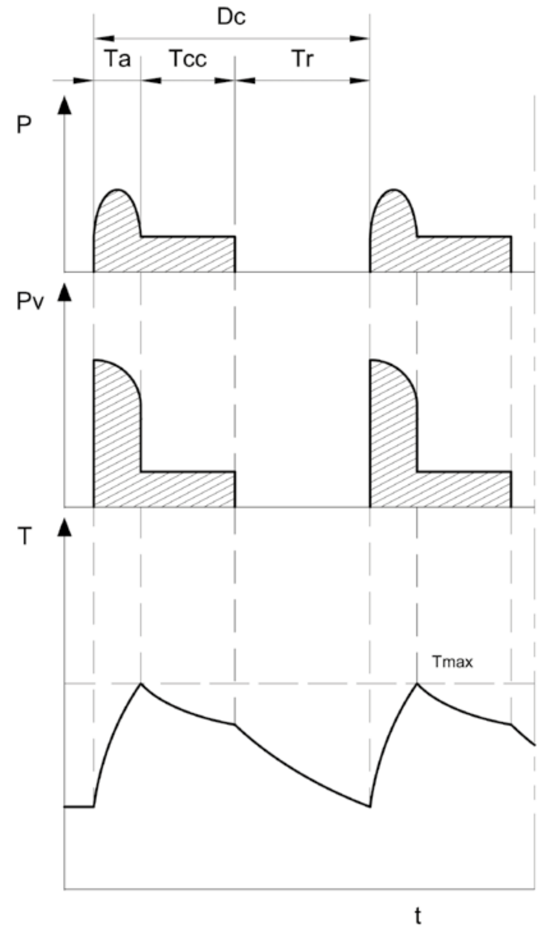


PERIODIC INTERMITTENT SERVICE WITH STARTING – SERVICE S4

Sequence of identical operating cycles, each including a non-marginal starting phase, a period of constant load operation and a rest period.
The periodic service implies the thermal equilibrium is not reached during the load period.

P = Load
Pv = Electrical losses
T = Temperature
t = time
Dc = Duration of a cycle
Ta = Starting or acceleration time
Tcc = Tempo di funzionamento a carico costante
Tr = Rest time
Tmax = Maximum temperature reached

Intermittency ratio = (Ta+Tcc) / (Ta+Tcc+Tr) * 100%



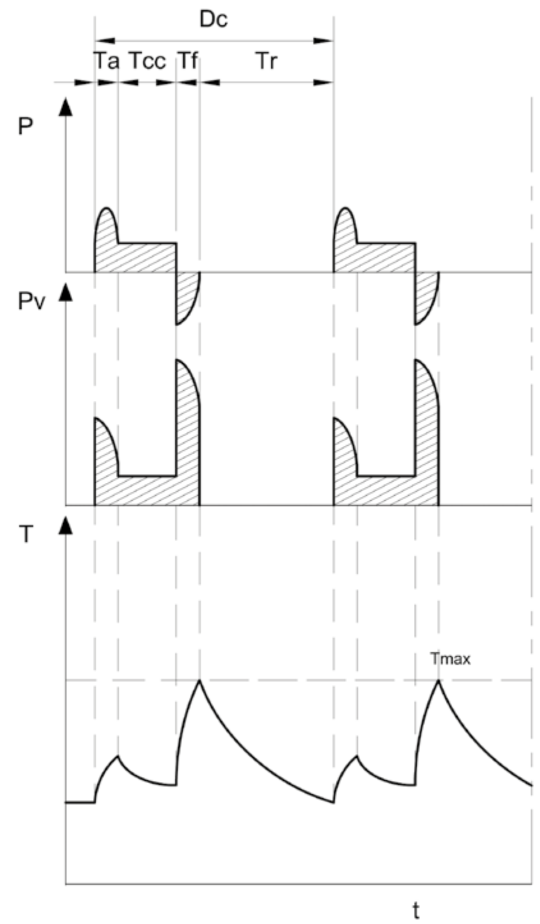
PERIODIC INTERMITTENT SERVICE WITH ELECTRICAL BRAKING – SERVICE S5

Sequence of identical operating cycles, each including a starting phase, a period of constant load operation, a rapid electrical braking phase and a rest period.

The periodic service implies the thermal equilibrium is not reached during the load period.

P = Load
Pv = Electrical losses
T = Temperature
t = time
Dc = Duration of a cycle
Ta = Starting or acceleration time
Tcc = Operating time at constant load
Tf = Electrical braking time
Tr = Rest time
Tmax = Maximum temperature reached

Intermittency ratio = (Ta+Tcc+Tf) / (Ta+Tcc+Tf+Tr) * 100%



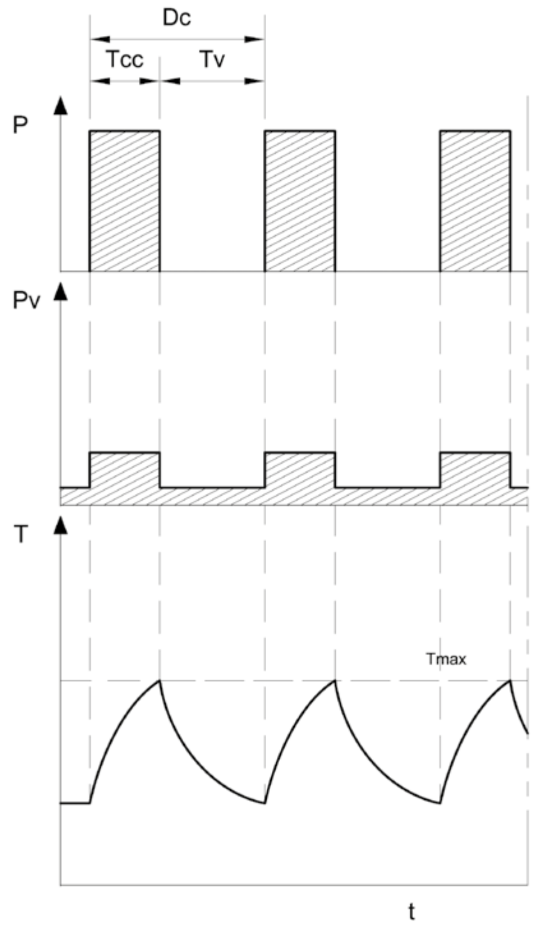
PERIODIC INTERRUPTED SERVICE - SERVICE S6

Sequence of identical operating cycles, each including a period of constant load operation and an operating period with no load. There are no rest periods.

The periodic service implies the thermal equilibrium is not reached during the load period.

P = Load
Pv = Electrical losses
T = Temperature
t = time
Dc = Duration of a cycle
Tcc = Operating time at constant load
Tv = No load operating time
Tmax = Maximum temperature reached

Intermittency ratio = Tcc / (Tcc+Tv) * 100%

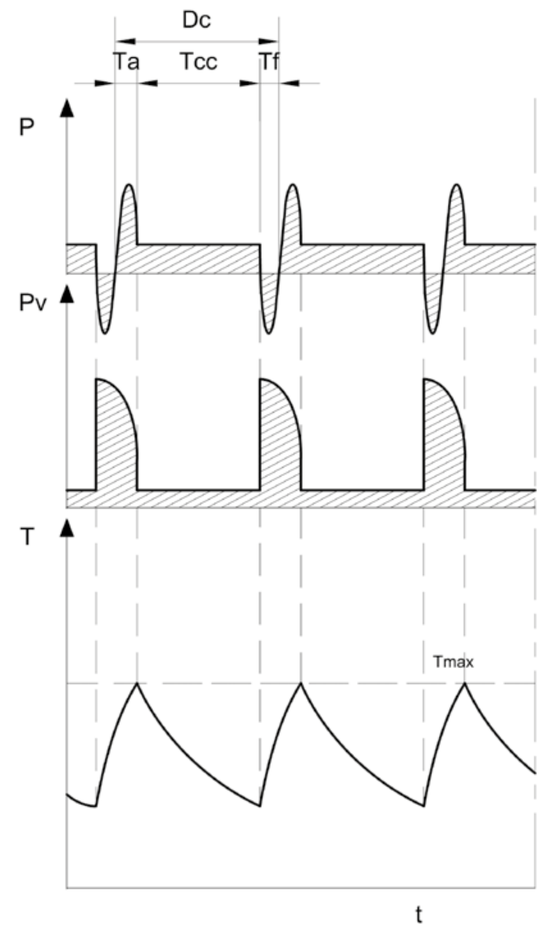


PERIODIC INTERMITTENT SERVICE WITH ELECTRICAL BRAKING - SERVIZIO S7

Sequence of identical operating cycles, each including a starting phase, a period of constant load operation and an electrical braking phase.
There are no rest periods.
The periodic service implies the thermal equilibrium is not reached during the load period.

P = Load
Pv = Electrical losses
T = Temperature
t = time
Dc = Duration of a cycle
Ta = Starting or acceleration time
Tcc = Operating time at constant load
Tf = Electrical braking time
Tmax = Maximum temperature reached

Intermittency ratio = 1



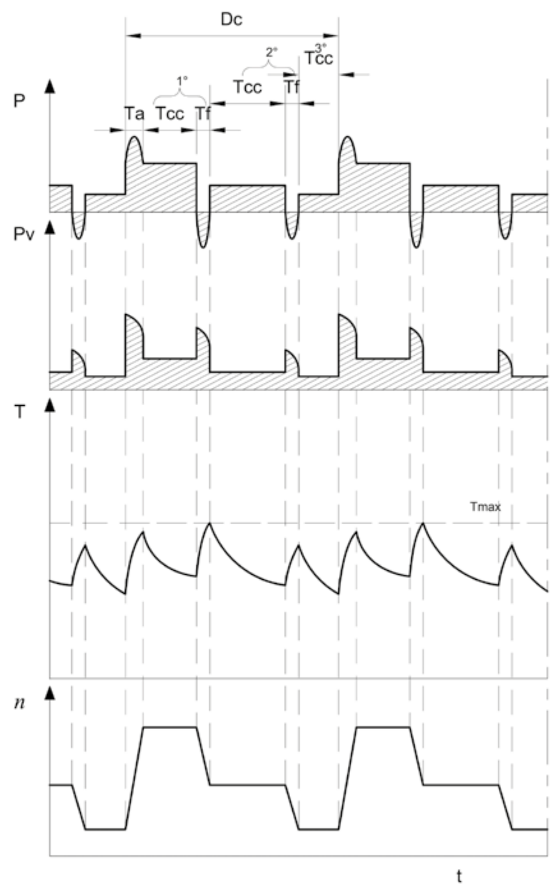
PERIODIC SERVICE INTERRUPTED WITH VARIATION RELATING TO LOAD AND SPEED - SERVICE S8

Sequence of identical operating cycles, each comprising a period of constant load operation corresponding to a predetermined rotational speed, followed by one or more operating periods with other constant loads corresponding to different rotational speeds (achieved for example by changing the number of poles in the case of induction motors).

There are no rest periods.
The periodic service implies the thermal equilibrium is not reached during the load period.

P = Load
Pv = Electrical losses
T = Temperature
n = Speed
t = time
Dc = Duration of a cycle
Tf 1° - 2° - 3° = Electrical braking time
Ta = Starting or acceleration time
Tcc 1° - 2° - 3° = Constant load operating time
Tmax = Maximum temperature reached

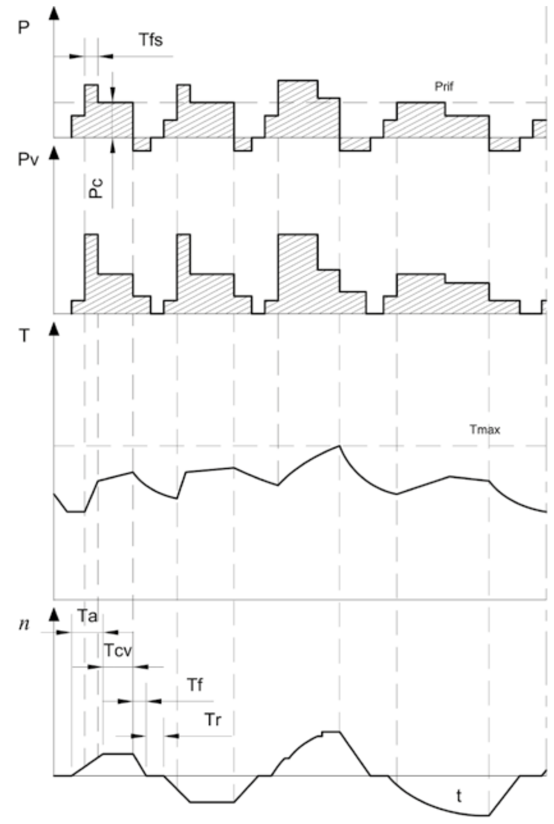
Intermittency ratio =
(Ta+Tcc1) / (Ta+Tcc1+Tf1+Tcc2+Tf2+Tcc3) * 100%
(Tf1+Tcc2) / (Ta+Tcc1+Tf1+Tcc2+Tf2+Tcc3) * 100%
(Tf2+Tcc3) / (Ta+Tcc1+Tf1+Tcc2+Tf2+Tcc3) * 100%



SERVICE WITH NON-PERIODIC VARIATIONS OF LOAD AND SPEED - SERVICE S9

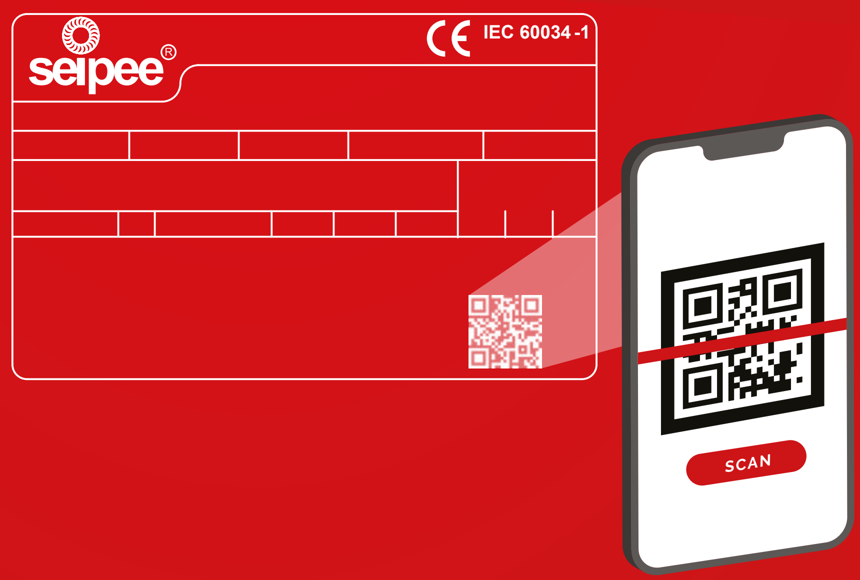
Service in which the load and speed vary in a non-periodic manner in the permitted operating field. This service includes overloads frequently applied which can be broadly higher than full load values.

P = Load
Pv = Electrical losses
T = Temperature
n = Speed
t = time
Ta = Starting or acceleration time
Tcv = Variable load operating time
Tf = Electrical braking time
Tr = Rest time
Tfs = Overload operating time
Pc = Full load
Tmax = Maximum temperature reached



NAME OF
MOTOR

Did you know that we have updated the Seipee motor plates with QR Code that allow you to consult, with a single touch, the technical manual of your motor?



5.

seipee

5 NAME OF MOTOR

To make an order, you must indicate some essential information:

1. **Efficiency:** IE4 – IE3 – IE2
2. **Motor type:** 1ph (single-phase) / 3ph (three-phase)
3. **Speed or number of poles:** 2 – 4 – 6 – 8 poli / 1000- 1500 – 3000rpm
4. **Motor series:** JM - GM - JMD - GMD – JMK - GMK – JMM etc.
5. **Axis height:** 56 - 63 - 71 - 80 - 90 - 100 - 112 - 132 - 160 - 180 - 200 - 225 - 250 - 280 - 315 - 355 - 400 etc.
6. **Power:** 0,37 kW, etc.
7. **Structural format:** B3 – B5 – B5V1 – B3/B5 – B14 – B3/B14 etc.
8. **Voltage and frequency:** 230-400V 50Hz / 400-690V 50Hz / 230-460V 60Hz etc.
9. **Possible accessories or non-standard executions:** see respective chapter

EXAMPLE OF MOTOR ORDER

IE3 - 3ph - 4 Poli - JM - 112Ma - 4 kW - B5 - 230-400 V 50 Hz

1 Efficiency	2 Type	3 Speed/Poles	4 Series	5 Axis heigth	6 Power	7 Shape	8 Voltage/Frequency
IE4, IE3, IE2	1ph	2, 4, 6, 8, 4/6, 4/8	JM / GM	56 ~ 450	[kW]	B3, B5, B14, B35, B34	230-400V 50Hz
			JMK / GMK				400-690V 50Hz
	3ph		JMD / GMD				230-460V 60Hz
			JMM				etc

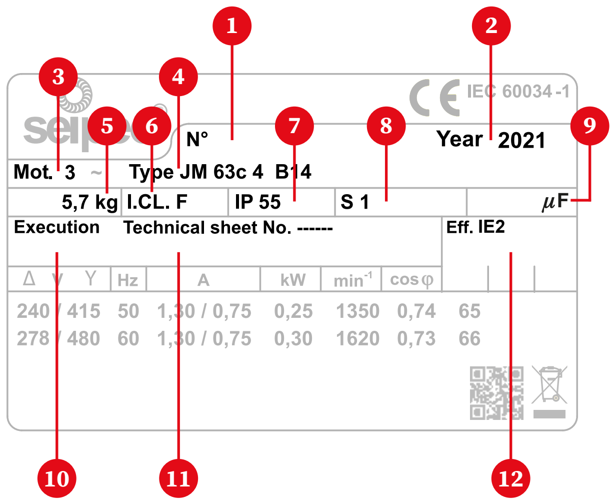
The following pages will use the following symbols and units of measurement:

cos φ	=	Nominal power factor	
η	=	Performance (P_{resa} / $P_{absorbed}$)	
I_N	=	Nominal current	
I_S	=	Inrush current	
J	=	Moment of inertia	
n_N	=	Nominal speed	
P_N	=	Nominal power	[kW]
Tmax	=	Maximum torque	[Nm]
T_N	=	Nominal torque	[Nm]
T_S	=	Peak torque	[Nm]
Øi	=	Internal diameter	[mm]
Øe	=	External diameter	[mm]
C	=	Running capacitor	[μF]
C_E	=	Starting capacitor	[μF]
*	=	Power or corresponding power	

• 5.1 PLATE DATA

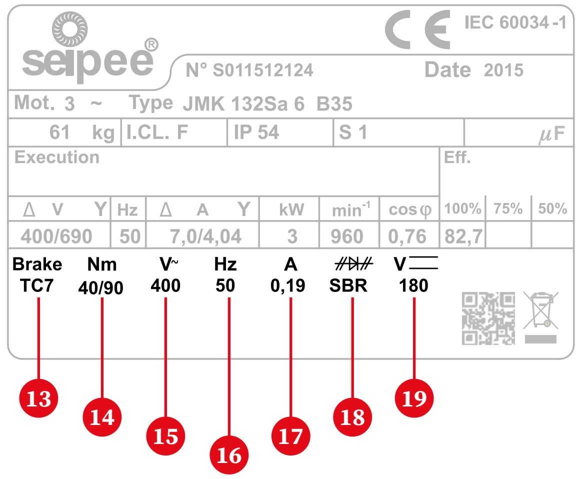
All motors are supplied with an aluminium plate All the plates are laser etched and bear the electric motor data in compliance with reference legislation

EXAMPLE JM / JMM SERIES



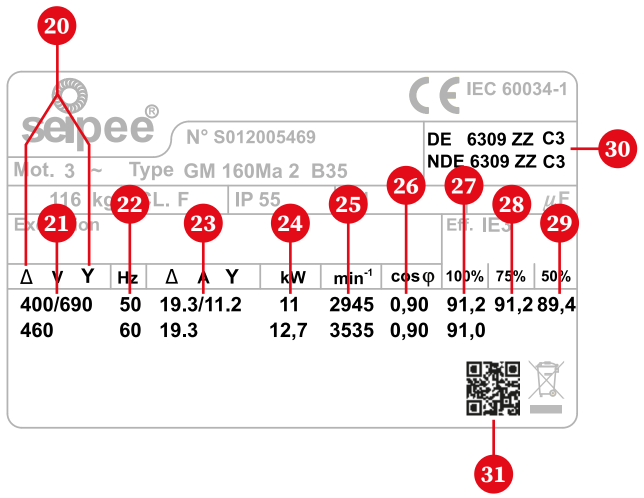
1. Serial number
2. Year
3. Number of phases
4. Type of motor / size / number of poles / designation / mounting type
5. Weight of motor
6. Insulation class
7. Protection class
8. Duty
9. Capacitor capacitance (JMM series)
10. Auxiliary capacitor capacitance (JMM series)
11. Special mounting type, if applicable
12. Efficiecy class if possible

EXAMPLE MOTORS WITH BRAKE



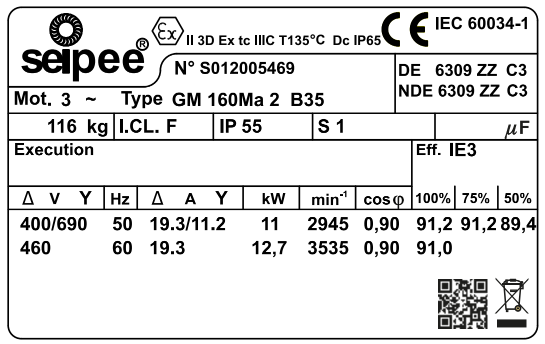
13. Brake type
14. Braking torque
15. Brake nominal voltage in a.c.
16. Brake frequency
17. Current absortion of the brake
18. Rectifier type (only on c.c.)
19. Brake Nominal voltage in d.c.

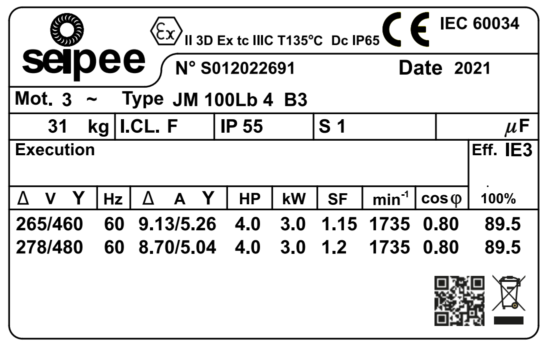
EXAMPLE SERIE GM/GMM SERIES

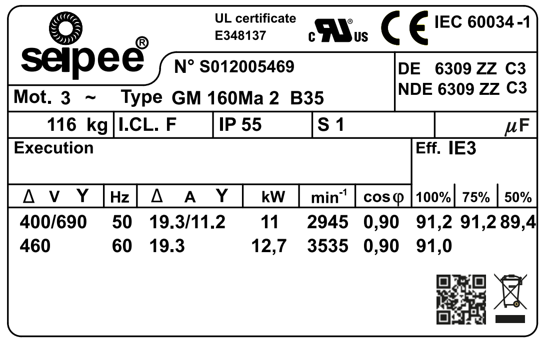


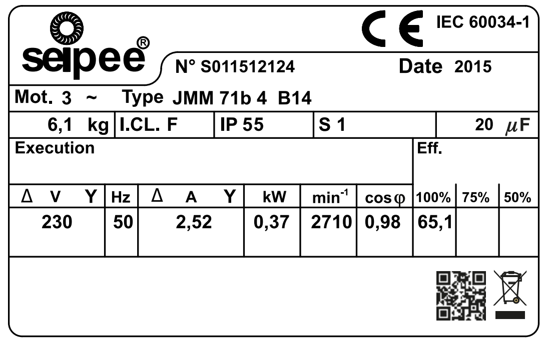
20. Phase connection
21. Brake nominal
22. Rated frequency
23. Current rating
24. Rated power
25. Rated speed
26. Power factor
27. Efficiency Full load 100%
28. Efficiency 75% load
29. Efficiency 50% load
30. Size and type of bearings
31. QR Code

OTHER EXAMPLES









NAME OF MOTOR

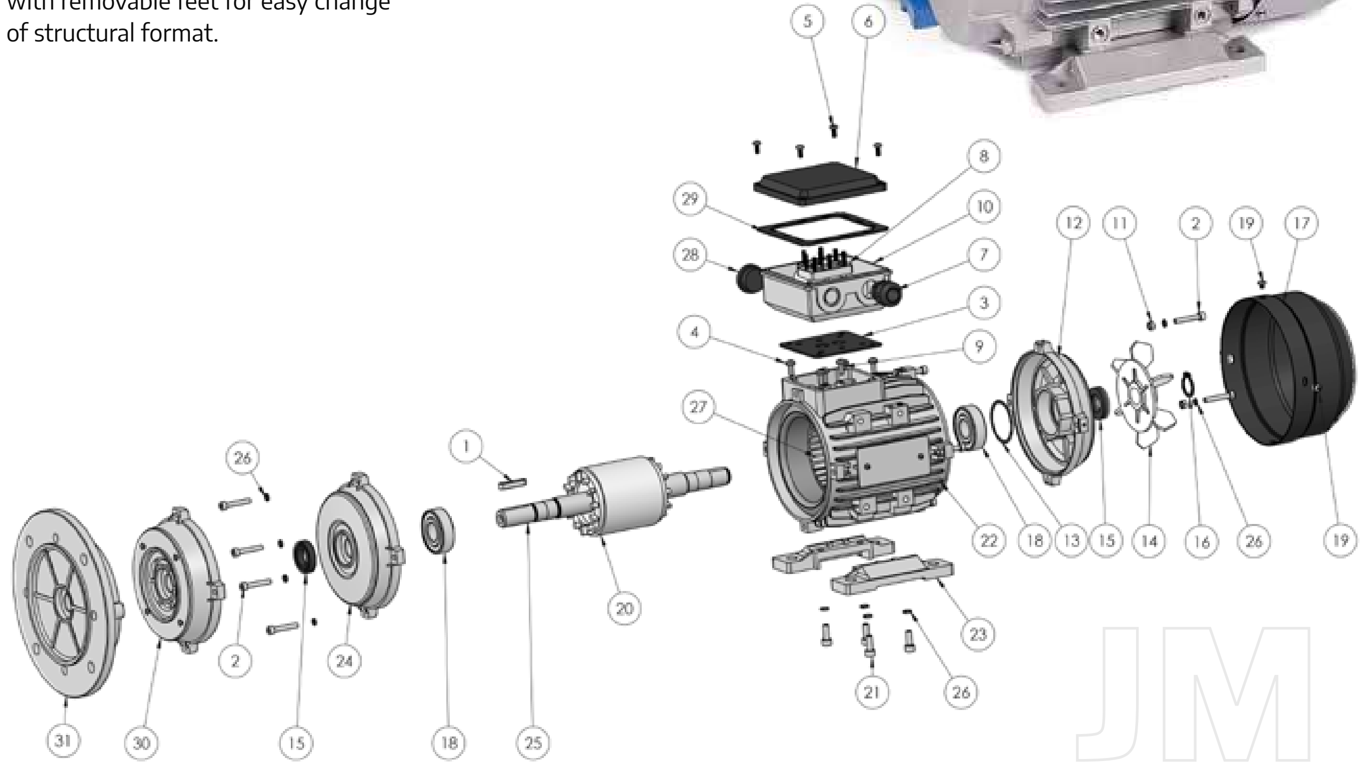
JM-GM
THREE-PHASE MOTORS

6.

6 JM-GM THREE-PHASE MOTORS

6.1 COMPONENTS

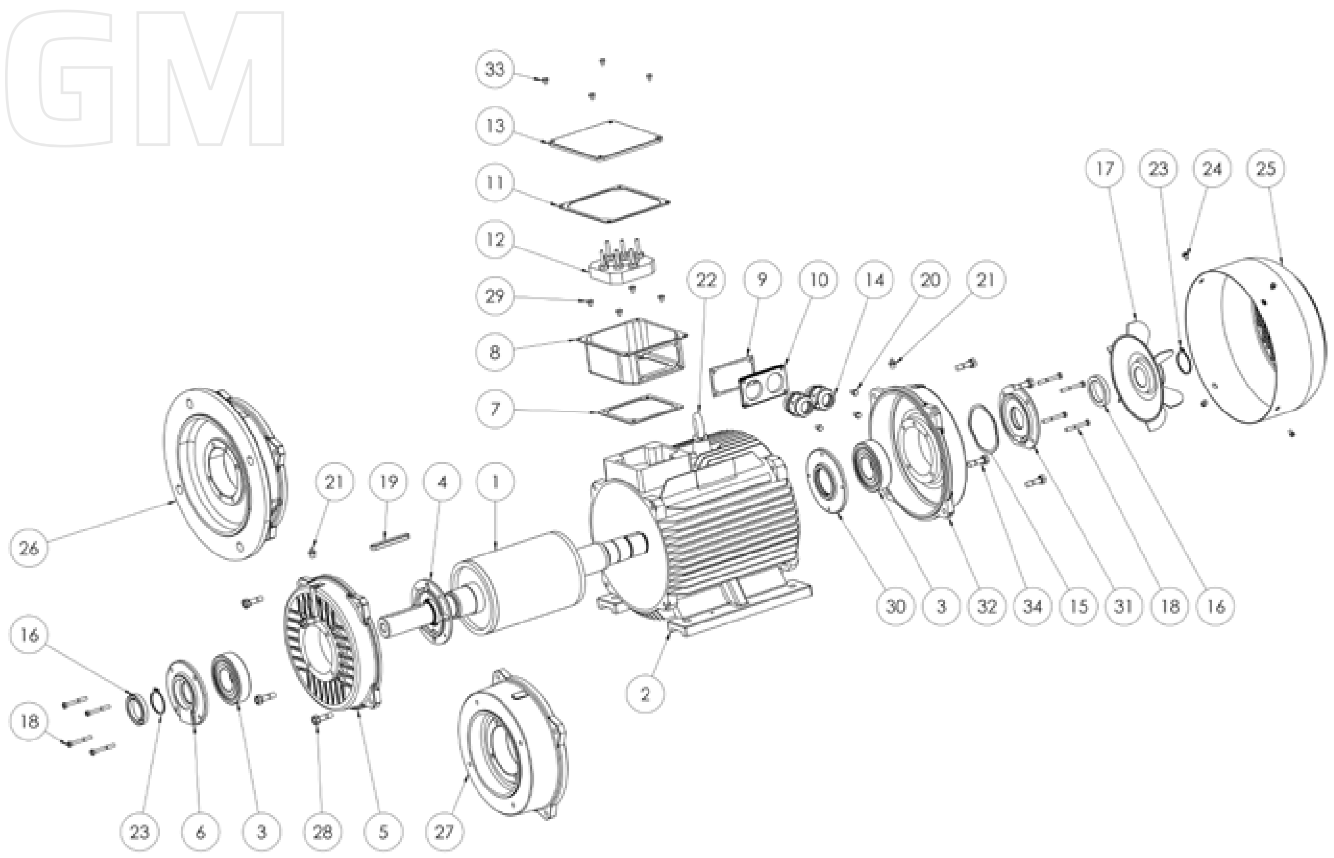
JM SERIES
JM Motors Series size 56 TO 160, in aluminium, with removable feet for easy change of structural format.



1) Key
2) Tie-rod
3) Terminal box gasket
4) Terminal box locking screw
5) Terminal board cover locking screw
6) Terminal board cover
7) Cable gland
8) Terminal board
9) Terminal board locking screw
10) Terminal box
11) Nut
12) Shield B3 side opposite control
13) Preload spring
14) Fan
15) Sealing ring
16) Safety flexible ring
17) Fan cover
18) Bearings
19) Fan cover locking screw
20) Rotor
21) Feet fastening screw for IMB3
22) Housing
23) Foot for IMB3
24) Shield on control side for IMB3
25) Shaft
26) Washer
27) Stator
28) Plug
29) Terminal box cover gasket
30) Flange IMB14
31) Flange IMB5

GM SERIES

GM series motors size 160 to 450, in cast iron,
with fused feet.



1) Shaft with rotor
2) Housing
3) Bearing
4) Control side bearing locking internal flange
5) Shield on control side
6) Control side bearing locking external flange
7) Terminal box gasket
8) Terminal box
9) Terminal box tab gasket
10) Terminal box tab
11) Terminal box cover gasket
12) Terminal board
13) Terminal box cover
14) Cable gland
15) Preload spring
16) Sealing ring
17) Fan
18) Bearing locking external flange fastening screw
19) Key
20) Terminal box tab screw
21) Greaser
22) Lifting eyebolts
23) Safety flexible ring
24) Locking screw
25) Fan cover
26) Flange IMB5
27) Flange IMB14 (size Gm 160 only)
28) Shield locking screw IMB3 on control side
29) Terminal box locking screw
30) Side opposite control bearing locking internal flange
31) Side opposite control bearing locking external flange
32) Shield on side opposite control IMB3
33) Terminal box cover locking screw
34) Shield locking screw IMB3 on side opposite control

• 6.2 ELECTRICAL CONNECTIONS

Single-speed three-phase motor windings can be connected star or delta.

The delta connection is obtained by connecting the end of a phase with the beginning of the next phase.
The phase current I_{ph} and the phase voltage U_{ph} are respectively:
$I_{ph} = I_n / \sqrt{3}$; $U_{ph} = U_n$

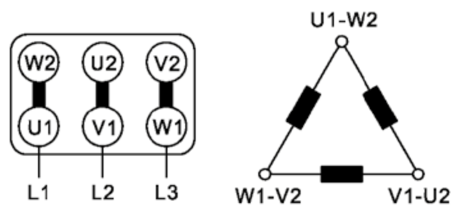
Where I_n is the line current and U_n the voltage relating to the delta connection.

The star connection is obtained by connecting W2, U2 and V2 and powering U1, V1, W1.
The phase current I_{ph} and the phase voltage U_{ph} are respectively:
$I_{ph} = I_n$; $U_{ph} = Un / \sqrt{3}$

Where I_n e U_n refers to the star connection.

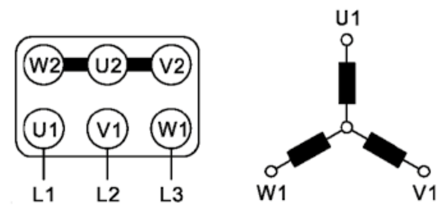
■ MINIMUM VOLTAGE DELTA CONNECTION

Δ



■ MAXIMUM VOLTAGE STAR CONNECTION

Y



Starting of the star-triangle motor allows reduced inrush current by reducing the starting torque, and can therefore only be implemented if the obtained starting torque is higher than the resistant torque.

The inrush current of an asynchronous motor is directly proportional to the square of the voltage, therefore the motors whose nominal delta voltage corresponds to the mains voltage can be started with the star-triangle method

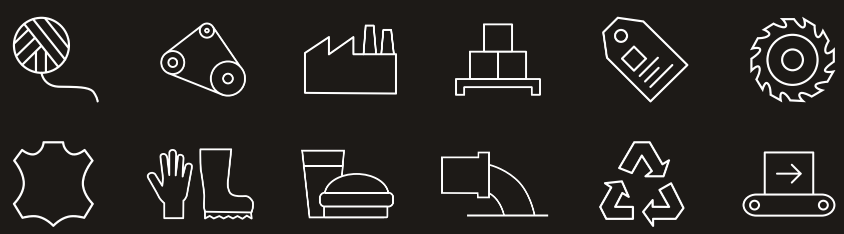
THREE-PHASE MOTORS

THREE-PHASE ASYNCHRONOUS
IE4 JM-GM MOTORS

Size	JM	Size	GM
80 ~ 160		160 ~ 355	

Power	JM	Power	GM
0.75 ~ 18.5 kW		11 ~ 315 kW	

Polarity	JM	Polarity	GM
2, 4, 6 poles		2, 4, 6 poles	



Sectors of use

• 6.3 JM IE4 ELECTRICAL DATA

JM 2 POLES IE4 SERIES

Tab. 6.3.1

IE4	JM Motor	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	cosφ	η 100%	η 75%	η 50%	I_S/I_N	T_S/T_N	T_{max}/T_N	J Kg m²	Weight Kg
ΔY 230/400V 50Hz	80 a	0,75	2910	2,46	1,58	0,82	83,5	83,5	81,8	7,0	2,3	2,3	0,0013	11
	80 b	1,1	2920	3,60	2,25	0,83	85,2	85,2	83,5	7,3	2,2	2,3	0,0016	11,6
	90 S	1,5	2930	4,89	2,98	0,84	86,5	86,5	84,8	7,6	2,2	2,3	0,0018	16
	90 La	2,2	2930	7,17	4,25	0,85	88,0	88,0	86,2	7,6	2,2	2,3	0,0024	20,6
	100 La	3	2935	9,8	5,59	0,87	89,1	89,1	87,3	7,8	2,2	2,3	0,0040	24,5
	112 Ma	4	2940	13,0	7,29	0,88	90,0	90,0	88,2	8,3	2,2	2,3	0,0080	42
Δ 400V 50Hz	132 Sa	5,5	2945	17,8	9,92	0,88	90,9	90,9	89,1	8,3	2,0	2,3	0,0180	46
	132 Sb	7,5	2950	24,3	13,40	0,88	91,7	91,7	89,9	7,9	2,0	2,3	0,0240	52
	160 Ma	11	2960	35,5	19,30	0,89	92,6	92,6	90,7	8,1	2,0	2,3	0,0480	95
	160Mb	15	2960	48,4	26,10	0,89	93,3	93,3	91,4	8,1	2,0	2,3	0,0600	103
	160 La	18,5	2960	59,7	32,00	0,89	93,7	93,7	91,8	8,2	2,0	2,3	0,0708	115

JM 4 POLES IE4 SERIES

Tab. 6.3.2

IE4	JM Motor	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	cosφ	η 100%	η 75%	η 50%	I_S/I_N	T_S/T_N	T_{max}/T_N	J Kg m²	Weight Kg
ΔY 230/400V 50Hz	80 b	0,75	1430	5,01	1,68	0,75	85,7	85,7	84,0	6,6	2,3	2,3	0,0031	12,9
	90 S	1,1	1445	7,27	2,40	0,76	87,2	87,2	85,5	6,8	2,3	2,3	0,0037	16,8
	90 La	1,5	1450	9,88	3,19	0,77	88,2	88,2	86,4	7,0	2,3	2,3	0,0044	20
	100 La	2,2	1455	14,4	4,38	0,81	89,5	89,5	87,7	7,6	2,3	2,3	0,0076	26
	100 Lb	3	1455	19,7	5,84	0,82	90,4	90,4	88,6	7,6	2,3	2,3	0,0095	31,3
	112 Ma	4	1460	26,2	7,73	0,82	91,1	91,1	89,3	7,8	2,2	2,3	0,0134	39,2
Δ 400V 50Hz	132 Sa	5,5	1470	35,7	10,40	0,83	91,9	91,9	90,1	7,9	2,0	2,3	0,0305	51,2
	132 Ma	7,5	1470	48,7	13,90	0,84	92,6	92,6	90,7	7,5	2,0	2,3	0,0415	65
	160 Ma	11	1475	71,2	20,00	0,85	93,3	93,3	91,4	7,7	2,2	2,3	0,0988	97,3
	160 La	15	1475	97,1	26,80	0,86	93,9	93,9	92,0	7,8	2,2	2,3	0,1160	109

JM 6 POLES IE4 SERIES

Tab. 6.3.3

IE4	JM Motor	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	cosφ	η 100%	η 75%	η 50%	I_S/I_N	T_S/T_N	T_{max}/T_N	J Kg m²	Weight Kg
ΔY 230/400V 50Hz	90 S	0,75	950	7,54	1,84	0,71	82,7	82,7	81,0	6,0	2,0	2,1	0,0042	17,2
	90 La	1,1	955	11,0	2,57	0,73	84,5	84,5	82,8	6,0	2,0	2,1	0,0047	22,4
	100 La	1,5	960	14,9	3,45	0,73	85,9	85,9	84,2	6,5	2,0	2,1	0,0090	33,5
	112 Ma	2,2	965	21,8	4,91	0,74	87,4	87,4	85,7	6,6	2,0	2,1	0,0170	38,6
Δ 400V 50Hz	132 Sa	3	970	29,5	6,60	0,74	88,6	88,6	86,8	6,8	2,0	2,1	0,0310	46
	132 Ma	4	975	39,2	8,72	0,74	89,5	89,5	87,7	6,8	2,0	2,1	0,0380	54
	132 Mb	5,5	975	53,9	11,70	0,75	90,5	90,5	88,7	7,0	2,0	2,1	0,0480	61,8
	160 Ma	7,5	980	73,1	15,00	0,79	91,3	91,3	89,5	7,0	2,0	2,1	0,0950	88,3
	160 La	11	980	107,2	21,50	0,80	92,3	92,3	90,5	7,2	2,0	2,1	0,1200	125

THREE-PHASE MOTORS

• 6.4 GM IE4 ELECTRICAL DATA

GM 2 POLES IE4 SERIES

Tab. 6.4.1

IE4	GM Motor	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	COSφ	η 100%	η 75%	η 50%	I_S/I_N	T_S/T_N	T_{max}/T_N	J Kg m²	Weight Kg
Δ 400V 50Hz	160 Ma	11	2960	35,49	19,3	0,89	92,6	92,6	90,7	8,1	2,0	2,3	0,0480	133
	160 Mb	15	2960	48,39	26,1	0,89	93,3	93,3	91,4	8,1	2,0	2,3	0,0600	146
	160 La	18,5	2960	59,68	32,0	0,89	93,7	93,7	91,8	8,2	2,0	2,3	0,0708	160
	180 M	22	2965	70,85	38,0	0,89	94,0	94,0	92,1	8,2	2,0	2,3	0,1116	221
	200 La	30	2970	96,46	51,5	0,89	94,5	94,5	92,6	7,6	2,0	2,3	0,1680	260
	200 Lb	37	2970	118,96	63,3	0,89	94,8	94,8	92,9	7,6	2,0	2,3	0,1956	309
	225 M	45	2975	144,44	76,0	0,90	95,0	95,0	93,1	7,7	2,0	2,3	0,2940	370
	250 M	55	2975	176,54	92,6	0,90	95,3	95,3	93,4	7,7	2,0	2,3	0,4000	520
	280 S	75	2980	240,33	126	0,90	95,6	95,6	93,7	7,1	1,8	2,3	0,7800	570
	280 M	90	2982	288,21	151	0,90	95,8	95,8	93,9	7,1	1,8	2,3	0,8520	630
	315 S	110	2980	352,49	184	0,90	96,0	96,0	94,1	7,1	1,8	2,3	1,5600	985
	315 M	132	2980	422,99	220	0,90	96,2	96,2	94,3	7,1	1,8	2,3	2,4000	1050
	315 Mb	160	2980	512,71	264	0,91	96,3	96,3	94,4	7,2	1,8	2,3	2,8200	1160
	315 Lb	200	2980	640,89	329	0,91	96,5	96,5	94,6	7,2	1,8	2,2	3,2400	1200
	355 M	250	2985	799,77	411	0,91	96,5	96,5	94,6	7,2	1,6	2,2	4,0800	2050
	355 L	315	2985	1007,71	518	0,91	96,5	96,5	94,6	7,2	1,6	2,2	4,6800	2380

GM 4 POLES IE4 SERIES

Tab. 6.4.2

IE4	GM Motor	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	COSφ	η 100%	η 75%	η 50%	I_S/I_N	T_S/T_N	T_{max}/T_N	J Kg m²	Weight Kg
Δ 400V 50Hz	160 Ma	11	1475	71,22	20,0	0,85	93,3	93,3	91,4	7,7	2,2	2,3	0,0988	146
	160 La	15	1475	97,11	26,8	0,86	93,9	93,9	92,0	7,8	2,2	2,3	0,1160	156
	180 M	18,5	1480	119,37	33,0	0,86	94,2	94,2	92,3	7,8	2,0	2,3	0,1720	181
	180 L	22	1480	141,95	39,1	0,86	94,5	94,5	92,6	7,8	2,0	2,3	0,2050	210
	200 La	30	1480	193,57	53,1	0,86	94,9	94,9	93,0	7,3	2,0	2,3	0,3360	280
	225 S	37	1485	237,93	65,2	0,86	95,2	95,2	93,3	7,4	2,0	2,3	0,5250	373
	225 M	45	1485	289,37	79,2	0,86	95,4	95,4	93,5	7,4	2,0	2,3	0,5980	390
	250 M	55	1485	353,68	96,5	0,86	95,7	95,7	93,8	7,4	2,2	2,3	0,8420	553
	280 S	75	1490	480,67	128	0,88	96,0	96,0	94,1	6,9	2,0	2,3	1,4760	655
	280 M	90	1490	576,80	154	0,88	96,1	96,1	94,2	6,9	2,0	2,3	1,8060	730
	315 S	110	1490	704,98	185	0,89	96,3	96,3	94,4	7,0	2,0	2,2	4,2460	980
	315 M	132	1490	845,98	222	0,89	96,4	96,4	94,5	7,0	2,0	2,2	4,4530	1031
	315 Mb	160	1490	1025,43	269	0,89	96,6	96,6	94,7	7,1	2,0	2,2	5,1240	1093
	315 Lb	200	1490	1281,78	332	0,90	96,7	96,7	94,8	7,1	2,0	2,2	6,1000	1240
	355 M	250	1490	1602,23	415	0,90	96,7	96,7	94,8	7,1	2,0	2,2	8,4180	1754
	355 L	315	1490	2018,81	522	0,90	96,7	96,7	94,8	7,1	2,0	2,2	10,6140	1960

seipee

GM 6 POLES IE4 SERIES

Tab. 6.4.3

IE4	GM Motor	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	COSφ	η 100%	η 75%	η 50%	I_S/I_N	T_S/T_N	T_{max}/T_N	J Kg m²	Weight Kg
Δ 400V 50Hz	160 Ma	7,5	980	73,08	15,0	0,79	91,3	91,3	89,5	7,0	2,0	2,1	0,0950	140
	160 La	11	980	107,19	21,5	0,80	92,3	92,3	90,5	7,2	2,0	2,1	0,1200	160
	180 L	15	985	145,42	28,8	0,81	92,9	92,9	91,0	7,3	2,0	2,1	0,2200	245
	200 La	18,5	985	179,35	35,3	0,81	93,4	93,4	91,5	7,3	2,0	2,1	0,3700	265
	200 Lb	22	985	213,28	41,8	0,81	93,7	93,7	91,8	7,4	2,0	2,1	0,4200	285
	225 M	30	990	289,37	55,4	0,83	94,2	94,2	92,3	6,9	2,0	2,1	0,5500	335
	250 M	37	990	356,89	67,3	0,84	94,5	94,5	92,6	7,1	2,0	2,1	0,8500	471
	280 S	45	990	434,06	80,6	0,85	94,8	94,8	92,9	7,3	2,0	2,0	1,4200	530
	280 M	55	990	530,52	97,1	0,86	95,1	95,1	93,2	7,3	2,0	2,0	1,7000	670
	315 S	75	990	723,43	135,0	0,84	95,4	95,4	93,5	6,6	2,0	2,0	4,2000	960
	315 M	90	990	868,12	160,0	0,85	95,6	95,6	93,7	6,7	2,0	2,0	4,9000	1070
	315 La	110	990	1061,03	195,0	0,85	95,8	95,8	93,9	6,7	2,0	2,0	5,5000	1160
	315 Lb	132	990	1273,24	231,0	0,86	96,0	96,0	94,1	6,8	2,0	2,0	6,5000	1250
	355 Ma	160	990	1543,32	279,0	0,86	96,2	96,2	94,3	6,8	1,8	2,0	10,1000	1780
	355 Mb	200	990	1929,15	345,0	0,87	96,3	96,3	94,4	6,8	1,8	2,0	11,2000	1900
	355 L	250	990	2411,44	430,0	0,87	96,5	96,5	94,6	6,8	1,8	2,0	13,0000	2100

6.5 JM IE4 DIMENSIONAL DATA

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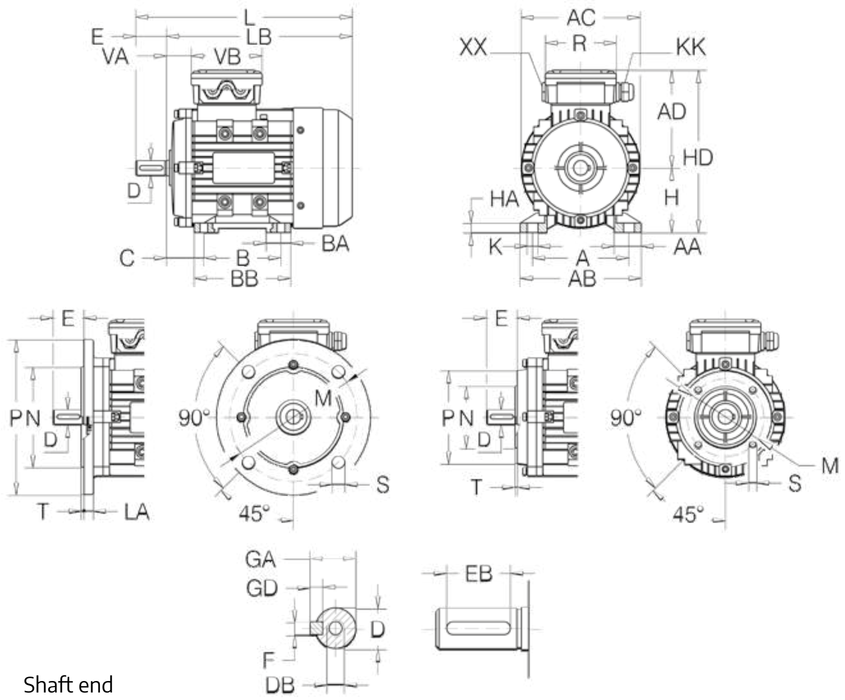
B14



Shaft end

JM SERIES

Tab. 6.5.1

JM Motor			Main Overall Dimension						Feet									Flange						
			AC	AD	H	HD	LB	L	A	B	C	AB	BB	AA	BA	HA	K	IM	M	NJ6	P	LA	T	S
80		2-4	158	129	80	209	250	290	125	100	50	157	125	35	31	8	10	B5	165	130	200	12	3,5	N°4 12
																		B14	100	80	120	--	3	N°4 M6
90	S	2-4-6	175	140	90	230	275	325	140	100	56	173	125	37	32	10	10	B5	165	130	200	12	3,5	N°4 12
	L						300	350		125			150					B14	115	95	140	--	3	N°4 M8
100	L	2-4-6	198	156	100	256	338	398	160	140	63	196	172	40	39	11	12	B5	215	180	250	13	4	N°4 15
																		B14	130	110	160	--	3,5	N°4 M8
112	M	2-4-6	219	166	112	278	387	447	190	140	70	227	180	41	43	12	12	B5	215	180	250	14	4	N°4 15
																		B14	130	110	160	--	3,5	N°4 M8
132	S	2-4-6	258	188	132	320	395	475	216	140	89	262	186	51	46	15	12	B5	265	230	300	14	4	N°4 15
	M						433	513		178			224					B14	165	130	200	--	3,5	N°4 M10
160	M	2-4-6	315	242	160	402	499	609	254	210	108	304	260	55	50	18	15	B5	300	250	350	15	5	N°4 19
	L						543	653		254			304					B14	215	180	250	--	4	N°4 M12

JM SERIES

Tab. 6.5.2

JM Motor		Shaft - End							Shaft - Seals						Terminal - Box					
						Key			Flange-End			Drive End DE Non drive end NDE			Term.	Cable gland				
		D	DB	E	GA	F	GD	EB	Øi	Øe	H	Øi	Øe	H	N°-Ø	N°-KK	N°-XX	VA	VB	R
80	2-4	19	M6	40	21,5	6	6	30	20	35	7	20	35	7	6-M4	1- M20X1,5	1-plug	24,5	101	101
90	2-4-6	24	M8	50	27	8	7	40	25	40	7	25	40	7	6-M4	1- M25X1,5	1-plug	40,5	109	109
100	2-4-6	28	M10	60	31	8	7	50	30	47	7	30	47	7	6-M4	1- M25X1,5	1-plug	34	109	109
112	2-4-6	28	M10	60	31	8	7	50	30	47	7	30	47	7	6-M5	2-M25X1,5	--	33,2	117,5	117,5
132	2-4-6	38	M12	80	41	10	8	65	40	62	7	40	62	7	6-M5	2-M32X1,5	--	41,2	117,5	117,5
160	2-4-6	42	M16	110	45	12	8	90	45	62	12	45	62	12	6-M6	2-M40x1,5	1-M16x1,5	75	167	167

seipee

6.6 GM IE4 DIMENSIONAL DATA

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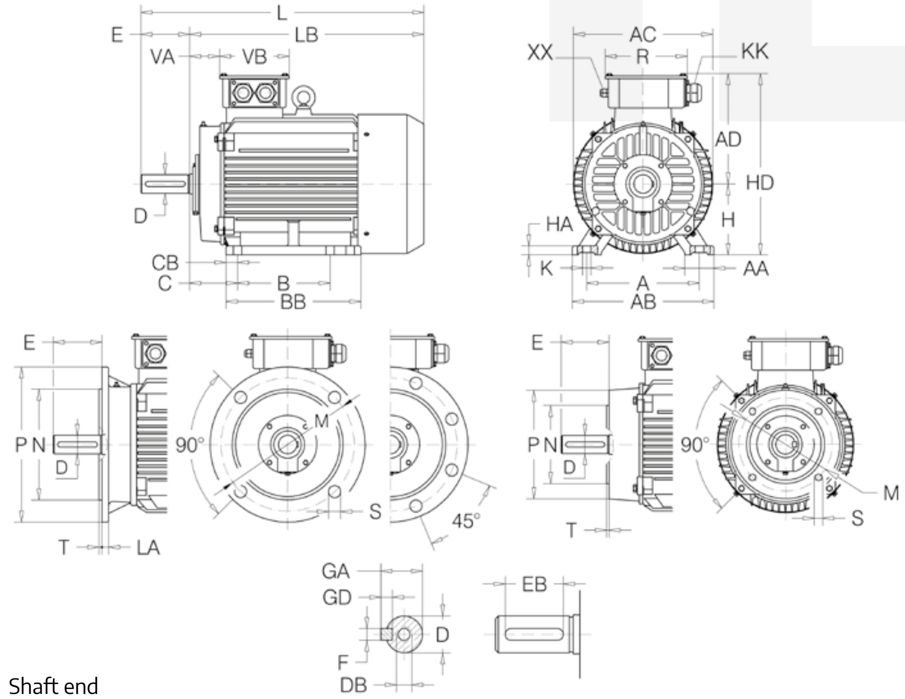


Shaft end

GM SERIES

Tab. 6.6.1

GM Motor			Main Overall Dimension						Feet										Flange						
			AC	AD	H	HD	LB	L	A	B	C	AB	BB	AA	CB	HA	K	IM	M	NJ6	P	LA	T	S
160	M	2-4-6	335	256	160	416	523	633	254	210	108	320	260	65	26	20	15	B5	300	250	350	15	5	N°4 19
	L						593	703		254			304					B14	215	180	250	--	4	N°4 M12
180	M	2-4	363	271	180	451	616	726	279	241	121	350	311	70	35	22	15	B5	300	250	350	15	5	N°4 19
	L	4-6					651	761		279			349											
200	L	2-4-6	418	312	200	512	752	862	318	305	133	390	370	70	32	25	18	B5	350	300	400	17	5	N°4 19
225	S	4	465	334	225	559	740	880	356	286	149	432	370	75	46	28	19	B5	400	350	450	20	5	N° 8 19
225	M	2	465	334	225	559	775	885	356	311	149	433	395	75	46	28	19	B5	400	350	450	20	5	N° 8 19
		4-6						915																
250	M	2-4-6	525	379	250	629	840	980	406	349	168	486	445	80	55	30	24	B5	500	450	550	22	5	N° 8 19
280	S	2	588	412	280	692	840	980	457	368	190	545	485	85	69	35	24	B5	500	450	550	22	5	N° 8 19
		4-6																						
280	M	2 4-6	588	412	280	692	880	1020	457	419	190	545	536	85	69	35	24	B5	500	450	550	22	5	N° 8 19
315	S	2	620	530	315	845	1060	1200	508	406	216	630	570	120	84	45	28	B5	600	550	660	22	6	N° 8 24
		4-6						1230																
315	M	2	620	530	315	845	1170	1310	508	457	216	630	680	120	84	45	28	B5	600	550	660	22	6	N° 8 24
		4-6					1164	1340																
315	L	2	620	530	315	845	1170	1310	508	508	216	630	680	120	84	45	28	B5	600	550	660	22	6	N° 8 24
		4-6					1164	1340																
355	M	2	698	645	355	1000	1360	1500	610	560	254	730	750	120	68	52	28	B5	740	680	800	25	6	N° 8 24
		4-6						1570																
355	L	2	698	645	355	1000	1360	1500	610	630	254	730	750	120	68	52	28	B5	740	680	800	25	6	N° 8 24
		4-6						1570																

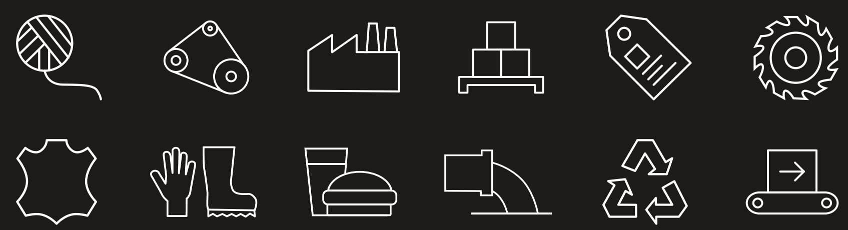
GM SERIES

Tab. 6.6.2

GM Motor			Shaft - End							Shaft - Seals						Terminal - Box					
							Key			Flange-End			Drive End DE Non drive end NDE			Term.	Cable gland				
			D	DB	E	GA	F	GD	EB	Øi	Øe	H	Øi	Øe	H	N°-Ø	N°-KK	N°-XX	VA	VB	R
160	**M L**	**2-4-6**	42	M16	110	45	12	8	90	45	62	8/12	45	62	8/12	6-M6	2-M40x1,5	1-M16x1,5	67	152	185
180	**M**	**2-4**	48	M16	110	51,5	14	9	100	55	75	8/12	55	75	8/12	6-M6	2-M40x1,5	1-M16x1,5	82	152	185
	L	**4-6**																			
200	**L**	**2-4-6**	55	M20	110	59	16	10	100	60	80	8/12	60	80	8/12	6-M8	2-M50x1,5	1-M16x1,5	92	190	224
225	**S**	**4**	60	M20	140	64	18	11	125	65	90	10/12	65	90	10/12	6-M8	2-M50x1,5	1-M16x1,5	95	190	224
225	**M**	**2**	55	M20	110	59	16	10	100	60	80	8/12	60	80	8/12	6-M8	2-M50x1,5	1-M16x1,5	95	190	224
		4-6	60		140	64	18	11	125	65	90	10/12	65	90	10/12						
250	**M**	**2**	60	M20	140	64	18	11	125	65	90	10/12	65	90	10/12	6-M10	2-M63x1,5	1-M16x1,5	88	220	283
		4-6	65			69				70	90	10/12	70	90	10/12						
280	**S**	**2**	65	M20	140	69	18	11	125	70	90	10/12	70	90	10/12	6-M10	2-M63x1,5	1-M16x1,5	96	220	283
		4-6	75			79,5	20	12		85	110	10/12	85	100	10/12						
280	**M**	**2**	65	M20	140	69	18	11	125	70	90	10/12	70	90	10/12	6-M10	2-M63x1,5	1-M16x1,5	96	220	283
		4-6	75			79,5	20	12		85	110	10/12	85	100	10/12						
315	**S**	**2**	65	M20	140	69	18	11	125	85	110	10/12	85	110	10/12	6-M12/16	2-M63x1,5	1-M16x1,5	117	280	320
		4-6	80		170	85	22	14	140	95	120	10/12	95	120	10/12						
315	**M**	**2**	65	M20	140	69	18	11	125	85	110	10/12	85	110	10/12	6-M12/16	2-M63x1,5	1-M16x1,5	117	280	320
		4-6	80		170	85	22	14	140	95	120	10/12	95	120	10/12						
315	**L**	**2**	65	M20	140	69	18	11	125	85	110	10/12	85	110	10/12	6-M12/16	2-M63x1,5	1-M16x1,5	117	280	320
		4-6	80		170	85	22	14	140	95	120	10/12	95	120	10/12						
355	**M**	**2**	75	M20	140	79,5	20	12	125	95	120	10/12	95	120	10/12	6-M20	2-M63x1,5	1-M16x1,5	117	330	380
		4-6	100	M24	210	106	28	16	180	110	140	10/12	110	140	10/12						
355	**L**	**2**	75	M20	140	79,5	20	12	125	95	120	10/12	95	120	10/12	6-M20	2-M63x1,5	1-M16x1,5	117	330	380
		4-6	100	M24	210	106	28	16	180	110	140	10/12	110	140	10/12						

THREE-PHASE ASYNCHRONOUS
IE3 JM-GM MOTORS

Size	JM	Size	GM
80 ~ 160		**160 ~ 450**	
Power	JM	Power	GM
0.75 ~ 18.5 kW		**11 ~ 1000 kW**	
Polarity	JM	Polarity	GM
2, 4, 6, 8 poles		**2, 4, 6, 8 poles**	



Sectors of use

• 6.7 JM IE3 ELECTRICAL DATA

JM 2 POLES IE3 SERIES — Tab. 6.7.1

IE3	JM Motor	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	COSφ 100%	η 100%	η 75%	η 50%	I_S/I_N	T_S/T_N	T_{max}/T_N	J Kg m²	Weight Kg
Δ/Y 230/400V 50Hz	80 a	0,75	2880	2,49	1,62	0,83	80,7	80,7	79,1	6,8	2,3	2,3	0,0013	10
	80 b	1,1	2880	3,65	2,31	0,83	82,7	82,7	81,0	7,3	2,3	2,3	0,0016	11
	80 c*	1,5	2895	4,95	3,10	0,83	84,2	84,2	82,5	7,5	2,3	2,3	0,0017	13
	90 S	1,5	2895	4,95	3,10	0,83	84,2	84,2	82,5	7,6	2,3	2,3	0,0018	14
	90 La	2,2	2895	7,26	4,35	0,85	85,9	85,9	84,2	7,8	2,3	2,3	0,0024	18
	90 Lb*	3	2895	9,90	5,64	0,88	87,1	87,1	85,4	8,1	2,3	2,3	0,0026	19
	100 L	2,2	2895	7,26	4,35	0,85	85,9	86,2	85,4	7,8	2,4	2,7	0,0032	22,5
	100 La	3	2895	9,90	5,65	0,88	87,1	87,1	85,4	8,1	2,3	2,3	0,0035	24
	100 Lb*	4	2900	13,2	7,45	0,88	88,1	89,7	89,8	8,0	2,6	3,1	0,0040	26
	112 Ma	4	2900	13,2	7,45	0,88	88,1	88,1	86,3	8,3	2,3	2,3	0,0080	26
	112 Mb*	5,5	2930	17,9	10,1	0,88	89,2	89,2	87,4	8	2,2	2,3	0,0092	36
	112 Mc*	7,5	2930	24,4	13,7	0,88	90,1	90,1	88,3	7,8	2,2	2,3	0,0112	42
Δ 400V 50Hz	132 Sa	5,5	2930	17,9	10,1	0,88	89,2	89,2	87,4	8,0	2,2	2,3	0,0180	43
	132 Sb	7,5	2930	24,4	13,7	0,88	90,1	90,1	88,3	7,8	2,2	2,3	0,0240	49
	132 Ma	9,25	2940	30,0	16,8	0,88	90,1	90,1	88,3	7,8	2,2	2,3	0,0250	57
	132 Mb*	11	2945	35,7	19,3	0,90	91,2	91,2	89,4	7,9	2,2	2,3	0,0270	59
	132 Mc*	15	2945	48,6	25,9	0,91	91,9	91,9	90,1	8,0	2,2	2,3	0,0380	73
	160 Ma	11	2945	35,7	19,3	0,90	91,2	91,2	89,4	7,9	2,2	2,3	0,0430	85
	160Mb	15	2945	48,6	25,9	0,91	91,9	91,9	90,1	8,0	2,2	2,3	0,0480	98
	160 La	18,5	2940	60,1	32,5	0,89	92,4	92,4	90,6	8,1	2,2	2,3	0,0580	108
	160 Lb*	22	2955	71,1	38,1	0,90	92,70	92,70	90,80	8,2	2,2	2,3	0,0930	118

JM 4 POLES IE3 SERIES — Tab. 6.7.2

IE3	JM Motor	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	COSφ 100%	η 100%	η 75%	η 50%	I_S/I_N	T_S/T_N	T_{max}/T_N	J Kg m²	Weight Kg
Δ/Y 230/400V 50Hz	80 b	0,75	1420	5,04	1,77	0,74	82,5	82,5	80,9	6,3	2,3	2,3	0,0022	12
	80 c*	1,1	1445	7,27	2,55	0,74	84,1	84,1	82,4	6,5	2,3	2,3	0,0023	18
	90 S	1,1	1435	7,32	2,52	0,75	84,1	84,1	82,4	6,5	2,3	2,3	0,0025	16
	90 La	1,5	1435	9,98	3,38	0,75	85,3	85,3	83,6	6,6	2,3	2,3	0,0034	20
	90 Lb*	1,85	1435	12,3	3,95	0,78	86,7	86,7	85,0	6,7	2,3	2,3	0,0036	20,5
	90 Lc*	2,2	1435	14,6	4,68	0,78	86,7	86,7	85,0	6,9	2,3	2,3	0,0038	21
	100 La	2,2	1445	14,5	4,52	0,81	86,7	86,7	85,0	6,9	2,3	2,3	0,0067	26
	100 Lb	3	1445	19,8	6,02	0,82	87,7	87,7	85,9	7,5	2,3	2,3	0,0081	31
	112 Ma	4	1450	26,3	7,95	0,82	88,6	88,6	86,8	7,6	2,3	2,3	0,0130	38
	112 Mc*	5,5	1460	36,0	11,1	0,80	89,6	89,6	87,8	7,7	2,0	2,3	0,0150	41
Δ 400V 50Hz	132 Sa	5,5	1465	35,9	10,8	0,82	89,6	89,6	87,8	7,7	2,0	2,3	0,0250	50
	132 Ma	7,5	1465	48,9	14,4	0,83	90,4	90,4	88,6	7,5	2,0	2,3	0,0350	60
	132 Mb	9,25	1460	60,5	18,0	0,82	90,4	90,4	88,6	7,5	2,0	2,3	0,0420	62
	132 Mc*	11	1465	71,7	21,2	0,82	91,4	91,4	89,6	7,4	2,2	2,3	0,0510	73
	160 Ma	11	1475	71,2	20,4	0,85	91,4	91,4	89,6	7,4	2,2	2,3	0,0755	93
	160 La	15	1475	97,1	27,3	0,86	92,1	92,1	90,3	7,5	2,2	2,3	0,0925	108

JM 6 POLES IE3 SERIES

Tab. 6.7.3

IE3	JM Motor	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	COSφ 100%	η 100%	η 75%	η 50%	I_s/I_N	T_s/T_N	T_{max}/T_N	J Kg m²	Weight Kg
Δ/Y 230/400V 50Hz	**90 S**	**0,75**	935	7,66	2,25	0,61	78,9	78,9	77,3	5,8	2,1	2,1	0,0033	15
	90 La	**1,1**	945	11,1	2,84	0,69	81,0	81,0	79,4	5,9	2,1	2,1	0,0040	19
	100 La	**1,5**	945	15,2	3,80	0,69	82,5	82,5	80,9	6,0	2,1	2,1	0,0075	25
	112 Ma	**2,2**	955	22,0	5,31	0,71	84,3	84,3	82,6	6,0	2,1	2,1	0,0170	31
Δ 400V 50Hz	**132 Sa**	**3**	965	29,7	7,12	0,71	85,6	85,6	83,9	6,2	2,0	2,1	0,0310	42
	132 Ma	**4**	965	39,6	9,37	0,71	86,8	86,8	85,1	6,8	2,0	2,1	0,0380	50
	132 Mb	**5,5**	965	54,4	12,0	0,75	88,0	88,0	86,2	7,1	2,0	2,1	0,0480	61
	160 Ma	**7,5**	970	73,8	15,8	0,77	89,1	89,1	87,3	6,7	2,1	2,1	0,0850	84
	160 La	**11**	970	108,3	22,3	0,79	90,3	90,3	88,5	6,9	2,1	2,1	0,1200	116

JM 8 POLES IE3 SERIES

Tab. 6.7.4

IE3	JM Motor	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	COSφ 100%	η 100%	η 75%	η 50%	I_s/I_N	T_s/T_N	T_{max}/T_N	J Kg m²	Weight Kg
Δ / Y 230 / 400V 50 Hz	**100 La**	**0,75**	710	10,1	2,29	0,63	75,0	75,3	72,0	3,5	1,7	2,1	0,00635	17,5
	100 Lb	**1,1**	710	14,8	3,19	0,64	77,7	78,0	74,5	3,5	1,7	2,1	0,00834	19,7
	112 Ma	**1,5**	710	20,2	4,18	0,65	79,7	80,1	76,6	4,2	1,8	2,1	0,01395	25,6
Δ 400V 50Hz	**132 Sa**	**2,2**	720	29,2	5,88	0,66	81,9	82,3	77,8	5,5	2,0	2,0	0,03213	35,5
	132 Ma	**3**	720	39,8	7,74	0,67	83,5	83,8	79,8	5,5	2,0	2,0	0,04060	45
	160 Ma	**4**	720	53,0	10,0	0,68	84,8	85,2	81,2	6,0	1,9	2,1	0,07104	60
	160 Mb	**5,5**	720	72,9	13,5	0,68	86,2	86,6	81,8	6,0	2,0	2,2	0,08623	72
	160 La	**7,5**	720	99,5	18,0	0,69	87,3	87,7	83,2	6,0	1,9	2,2	0,11308	92

* Power or power/size not standardized

• 6.8 GM IE3 ELECTRICAL DATA

GM 2 POLES IE3 SERIES

Tab. 6.8.1

IE3	GM Motor	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	COSφ 100%	η 100%	η 75%	η 50%	I_s/I_N	T_s/T_N	T_{max}/T_N	J Kg m²	Weight Kg
Δ 400V 50Hz	**160 Ma**	**11**	2945	35,67	19,3	0,90	91,2	91,2	89,4	7,9	2,2	2,3	0,0430	116
	160 Mb	**15**	2945	48,64	25,9	0,91	91,9	91,9	90,1	8,0	2,2	2,3	0,0480	124
	160 La	**18,5**	2940	60,09	32,5	0,89	92,4	92,4	90,6	8,1	2,2	2,3	0,0580	138
	180 M	**22**	2955	71,09	38,1	0,90	92,7	92,7	90,8	8,2	2,2	2,3	0,0980	182
	180 L	**30**	2960	96,78	52,1	0,89	93,3	93,3	92,4	7,8	2,6	3,0	0,1200	233
	200 La	**30**	2960	96,78	52,1	0,89	93,3	93,3	91,4	7,5	2,2	2,3	0,1400	250
	200 Lb	**37**	2960	119,37	62,6	0,91	93,7	93,7	91,8	7,5	2,2	2,3	0,1700	259
	225 M	**45**	2965	144,93	78,5	0,88	94,0	94,0	92,1	7,6	2,2	2,3	0,2800	324
	250 M	**55**	2970	176,84	94,6	0,89	94,3	94,3	92,4	7,6	2,2	2,3	0,4000	426
	280 S	**75**	2975	240,74	127	0,90	94,7	94,7	92,8	6,9	2,0	2,3	0,6500	533
	280 M	**90**	2975	288,89	154	0,89	95,0	95,0	93,1	7,0	2,0	2,3	0,7500	612
	280 Mb	**110**	2975	353,08	185	0,90	95,2	95,2	93,3	7,1	2,0	2,2	0,9149	660
	315 S	**110**	2975	353,08	185	0,90	95,2	95,2	93,3	7,1	2,0	2,2	1,4500	905
	315 M	**132**	2975	423,70	222	0,90	95,4	95,4	93,5	7,1	2,0	2,2	2,1000	995
	315 L	**160**	2980	512,71	268	0,90	95,6	95,6	93,7	7,1	2,0	2,2	2,4000	1119
	315 Lb	**200**	2980	640,89	331	0,91	95,8	95,8	93,9	7,1	2,0	2,2	2,6000	1150
	355 M	**250**	2980	801,12	409	0,92	95,8	95,8	93,9	7,1	2,0	2,2	3,1000	1948
	355 Mb	**280**	2980	897,25	459	0,92	95,8	95,8	93,9	7,1	2,0	2,2	3,4000	2150
	355 L	**315**	2980	1009,41	516	0,92	95,8	95,8	93,9	7,1	2,0	2,2	3,6000	2356
	355 Lc	**355**	2980	1137,58	583	0,92	95,8	95,8	93,9	6,9	2,0	2,5	13,2000	2650
	355 Xa	**355**	2980	1137,67	581	0,92	95,8	95,6	93,8	5,7	1,7	2,4	5,4500	2000
	355 Xb	**400**	2980	1281,88	655	0,92	95,8	95,6	93,8	7,3	2,3	3,0	6,4300	2135
	355 Xc	**450**	2980	1442,11	737	0,92	95,8	95,6	93,8	6,0	1,9	2,5	6,9900	2215
	400 Ma	**400**	2985	1279,73	670	0,90	95,8	95,5	93,7	4,9	1,5	2,0	8,0100	2630
	400 Mb	**450**	2985	1439,70	753	0,90	95,8	95,5	93,7	7,0	2,2	2,8	8,4300	2756
	400 La	**500**	2985	1599,66	837	0,90	95,8	95,5	93,7	5,6	1,8	2,3	9,4900	2886
	400 Lb	**560**	2985	1791,62	938	0,90	95,8	95,5	93,7	4,6	1,5	2,0	10,3300	2997

GM 4 POLES IE3 SERIES

Tab. 6.8.2

IE3	GM Motor	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	COSφ 100%	η 100%	η 75%	η 50%	I_s / I_N	T_s / T_N	T_{max} / T_N	J Kg m²	Weight Kg
Δ 400V 50Hz	160 Ma	11	1475	71,22	20,4	0,85	91,4	91,4	89,6	7,4	2,2	2,3	0,0750	123
	160 La	15	1475	97,11	27,3	0,86	92,1	92,1	90,3	7,5	2,2	2,3	0,0920	141
	180 M	18,5	1470	120,18	34,3	0,84	92,6	92,6	90,7	7,5	2,2	2,3	0,1420	175
	180 L	22	1470	142,91	40,2	0,85	93,0	93,0	91,1	7,7	2,2	2,3	0,1600	209
	180 Lb	30	1475	194,22	53,8	0,86	93,6	93,6	91,7	7,8	2,0	2,3	0,1880	215
	200 L	22	1470	142,91	39,7	0,86	93,0	93,0	91,1	7,8	2,0	2,3	0,1900	245
	200 La	30	1475	194,22	53,8	0,86	93,6	93,6	91,7	7,8	2,2	2,3	0,2650	275
	225 S	37	1485	237,93	66,1	0,86	93,9	93,9	92,0	7,2	2,2	2,3	0,4100	324
	225 M	45	1485	289,37	79,3	0,87	94,2	94,2	92,3	7,3	2,2	2,3	0,4730	359
	225 Mb	55	1485	353,68	96,5	0,87	94,6	94,6	92,7	7,7	2,3	2,6	0,5030	370
	250 M	55	1485	353,68	96,5	0,87	94,6	94,6	92,7	7,4	2,2	2,3	0,6700	433
	280 S	75	1485	482,29	129	0,88	95,0	95,0	93,1	7,4	2,2	2,3	1,1300	568
	280 M	90	1485	578,75	157	0,87	95,2	95,2	93,3	6,7	2,2	2,3	1,4700	649
	315 S	110	1485	707,36	189	0,88	95,4	95,4	93,5	6,9	2,2	2,2	3,1500	935
	315 M	132	1485	848,83	226	0,88	95,6	95,6	93,7	6,9	2,2	2,2	3,6500	1020
	315 La	160	1485	1028,88	274	0,88	95,8	95,8	93,9	6,9	2,2	2,2	4,1500	1090
	315 Lb	200	1490	1281,78	342	0,88	96,0	96,0	94,1	6,9	2,2	2,2	4,7500	1233
	355 M	250	1490	1602,23	427	0,88	96,0	96,0	94,1	6,9	2,2	2,2	6,5500	1744
	355 Mb	280	1490	1794,50	478	0,88	96,0	96,0	94,1	6,9	2,2	2,2	7,4000	1850
	355 L	315	1490	2018,81	538	0,88	96,0	96,0	94,1	6,9	2,2	2,2	8,2500	1950
	355 Xa	355	1490	2275,17	602	0,89	96,0	96,0	94,1	6,7	2,2	2,5	9,9500	2200
	355 Xb	400	1488	2567,20	668	0,90	96,0	96,1	95,2	7,1	2,1	2,9	11,94	2256
	355 Xc	450	1489	2886,17	752	0,90	96,0	96,1	95,2	7,5	2,3	3,0	13,62	2400
	400 Ma	355	1492	2272,12	594	0,90	96,0	96,0	94,0	6,4	1,9	2,4	14,5000	2650
	400 Mb	400	1489	2565,48	668	0,90	96,0	96,1	95,2	7,2	1,8	3,1	14,6500	2771
	400 Mc	450	1489	2886,17	752	0,90	96,0	96,1	95,2	7,5	2,0	3,1	16,6400	2891
	400 La	500	1489	3206,85	835	0,90	96,0	96,1	95,2	8,0	2,1	3,1	19,0100	3002
	400 Lb	560	1490	3589,26	936	0,90	96,0	96,1	95,2	8,3	2,2	3,2	22,1800	3213
	400 Lc	630	1490	4037,92	1052	0,90	96,0	96,1	95,2	7,4	2,0	3,0	23,7600	3324
	450 Ma	560	1490	3589,26	935	0,90	96,1	96,2	95,3	6,4	1,8	2,5	19,2200	3498
	450 Mb	630	1490	4037,92	1051	0,90	96,1	96,2	95,3	6,2	1,7	2,4	20,8700	3697
	450 La	710	1490	4550,67	1185	0,90	96,1	96,2	95,3	5,0	1,5	2,1	22,3200	3798
	450 Lb	800	1490	5127,52	1335	0,90	96,1	96,2	95,3	7,4	2,2	2,8	29,1200	4267
	450 Lc	900	1490	5768,46	1502	0,90	96,1	96,2	95,3	6,0	1,7	2,3	32,0300	4475
	450 Ld	1000	1490	6409,40	1669	0,90	96,1	96,2	95,3	5,0	1,5	2,1	34,4500	4642

GM 6 POLES IE3 SERIES

Tab. 6.8.3

IE3	GM Moto	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	COSφ 100%	η 100%	η 75%	η 50%	I_s / I_N	T_s / T_N	T_{max} / T_N	J Kg m²	Weight Kg
Δ 400V 50Hz	160 Ma	7,5	970	73,83	15,8	0,77	89,1	89,1	87,3	6,7	2,1	2,1	0,0950	118
	160 La	11	970	108,29	22,3	0,79	90,3	90,3	88,5	6,9	2,1	2,1	0,1200	138
	180 L	15	980	146,16	29,3	0,81	91,2	91,2	89,4	7,2	2,0	2,1	0,2100	193
	180 Lb*	18,5	980	180,27	35,9	0,81	91,7	91,7	89,9	7,2	2,1	2,1	0,2400	205
	200 La	18,5	980	180,27	35,9	0,81	91,7	91,7	89,9	7,2	2,1	2,1	0,3200	230
	200 Lb	22	980	214,37	41,5	0,83	92,2	92,2	90,4	7,3	2,1	2,1	0,3650	243
	225 M	30	980	292,33	55,5	0,84	92,9	92,9	91,0	7,1	2,0	2,1	0,5500	302
	250 M	37	985	358,70	68,1	0,84	93,3	93,3	91,4	7,1	2,1	2,1	0,8500	390
	280 S	45	985	436,26	81,6	0,85	93,7	93,7	91,8	7,2	2,1	2,0	1,4000	505
	280 M	55	985	533,21	99,3	0,85	94,1	94,1	92,2	7,2	2,1	2,0	1,7000	570
	315 S	75	985	727,10	135	0,85	94,6	94,6	92,7	6,7	2,0	2,0	4,1500	815
	315 M	90	985	872,52	161	0,85	94,9	94,9	93,0	6,7	2,0	2,0	4,8000	955
	315 La	110	985	1066,42	194	0,86	95,1	95,1	93,2	6,7	2,0	2,0	5,4800	1015
	315 Lb	132	985	1279,70	232	0,86	95,4	95,4	93,5	6,7	2,0	2,0	6,1500	1120
	315 Lc	160	990	1543,32	281	0,86	95,6	95,6	93,7	6,7	2,0	2,0	6,4000	1250
	355 Ma	160	990	1543,32	281	0,86	95,6	95,6	93,7	6,7	2,0	2,0	6,5500	1591
	355 Mb	200	990	1929,15	342	0,88	95,8	95,8	93,9	6,7	2,0	2,0	6,5500	1720
	355 L	250	990	2411,44	428	0,88	95,8	95,8	93,9	6,7	2,0	2,0	8,2500	1870
	355 Xa	315	994	3026,19	546	0,87	95,8	95,8	93,9	6,3	2,2	2,3	14,0000	2350
	355 Xb	355	994	3410,46	615	0,87	95,8	95,8	93,9	6,3	2,2	2,3	14,9000	2520
	355 Xc	400	992	3850,81	701	0,86	95,8	95,6	94,6	6,3	1,9	2,4	20,4800	2720
	400 Ma	315	994	3026,19	550	0,86	95,8	95,8	93,8	6,2	2,1	2,2	18,9000	2905
	400 Mb	355	994	3410,46	618	0,87	95,8	95,8	93,8	6,2	2,1	2,2	20,0000	2940
	400 La	400	994	3843,06	709	0,85	95,8	95,6	94,6	7,3	2,4	3,1	23,3200	2991
	400 Lb	450	994	4323,44	798	0,85	95,8	95,6	94,6	6,2	2,0	2,6	24,7200	3071
	400 Lc	500	994	4803,82	886	0,85	95,8	95,6	94,6	7,2	2,4	3,0	27,9800	3256
	400 Ld	560	994	5380,28	993	0,85	95,8	95,6	94,6	7,2	2,4	3,0	31,2400	3438
	450 Ma	500	994	4803,82	865	0,87	95,9	95,7	94,7	6,6	2,2	2,4	35,2200	3890
	450 Mb	560	994	5380,28	969	0,87	95,9	95,7	94,7	6,2	2,0	2,2	40,3600	4066
	450 La	630	994	6052,82	1090	0,87	95,9	95,7	94,7	6,2	2,0	2,2	44,0300	4234
	450 Lb	710	994	6821,43	1228	0,87	95,9	95,7	94,7	6,3	2,1	2,3	48,4300	4434
	450 Lc	800	994	7686,12	1384	0,87	95,9	95,7	94,7	6,1	2,0	2,2	56,5000	4797

GM 8 POLES IE3 SERIES

Tab. 6.8.4

IE3	GM Motor	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	COSφ 100%	η 100%	η 75%	η 50%	I_s/I_N	T_s/T_N	T_{max}/T_N	J Kg m²	Weight Kg
Δ 400V 50Hz	160 Ma	4	720	53,0	9,3	0,73	84,8	84,8	82,1	5,4	2,3	2,8	0,0766	102
	160 Mb	5,5	720	72,9	12,4	0,74	86,2	85,3	83,5	5,6	2,4	2,8	0,1052	113
	160 La	7,5	720	99,5	16,5	0,75	87,3	86,4	84,1	5,5	2,3	2,6	0,1435	132
	180 L	11	730	144	23,9	0,75	88,6	87,7	85,4	6,2	2,4	2,8	0,2493	171
	200 La	15	730	196	31,8	0,76	89,6	88,9	86,6	5,8	2,1	2,5	0,3824	217
	225 S	18,5	740	239	39,0	0,76	90,1	89,0	86,9	6,8	2,2	2,7	0,5828	259
	225 M	22	740	284	44,9	0,78	90,6	89,5	87,7	6,5	2,0	2,5	0,6661	278
	250 M	30	740	387	60,0	0,79	91,3	90,4	88,6	6,0	2,4	2,8	1,0819	373
	280 S	37	740	478	73,6	0,79	91,8	90,9	89,4	5,9	2,3	2,6	1,8803	484
	280 M	45	740	581	89,2	0,79	92,2	91,4	90,1	5,9	2,3	2,6	2,2360	536
	315 S	55	740	710	106	0,81	92,5	91,6	90,4	5,6	2,0	2,3	4,2151	721
	315 M	75	740	968	144	0,81	93,1	92,0	90,9	5,5	2,0	2,2	5,3744	865
	315 L	90	740	1161	170	0,82	93,4	92,3	91,3	6,0	2,3	2,4	7,1658	972
	315 Lb	110	740	1420	207	0,82	93,7	92,8	91,7	5,5	2,0	2,2	8,8519	1077
	355 M	132	740	1703	247	0,82	94,0	93,1	92,0	5,9	2,3	2,3	13,575	1518
	355 Mb	160	740	2065	299	0,82	94,3	93,6	92,5	5,3	2,0	2,1	16,076	1630
	355 La	200	740	2581	368	0,83	94,6	94,0	93,0	5,3	2,0	2,0	20,363	1819
	355 Xa	132	740	1703	247	0,82	94,0	93,1	92,0	5,9	2,3	2,3	13,575	1518
	355 Xb	160	740	2065	299	0,82	94,3	93,6	92,5	5,3	2,0	2,1	16,076	1630
	355 Xc	200	740	2581	368	0,83	94,6	94,0	93,0	5,3	2,0	2,0	20,363	1819
	400 Ma	250	744	3209	495	0,77	94,6	94,3	93,4	5,3	1,8	2,1	26,845	2900
	400 Mb	280	744	3594	555	0,77	94,6	94,3	93,4	5,5	1,9	2,1	28,300	2995
	400 La	315	744	4043	624	0,77	94,6	94,3	93,4	5,8	1,9	2,1	30,550	3102
	400 Lb	355	744	4557	703	0,77	94,6	94,3	93,4	6,8	1,8	2,6	33,278	3230
	400 Lc	400	744	5134	782	0,78	94,6	94,3	93,4	7,2	2,0	3,7	37,100	3410
	450 La	400	744	5134	735	0,83	94,7	94,4	93,5	4,9	1,9	2,4	38,160	3850
	450 Lb	450	744	5776	826	0,83	94,7	94,4	93,5	4,6	1,6	1,9	40,360	4046
	450 Lc	500	744	6418	918	0,83	94,7	94,4	93,5	4,5	1,6	1,8	44,030	4215
	450 Ld	560	744	7188	1028	0,83	94,7	94,4	93,5	4,5	1,6	1,8	48,430	4412
	450 Le	630	744	8087	1157	0,83	94,7	94,4	93,5	4,2	1,5	1,7	52,830	4615

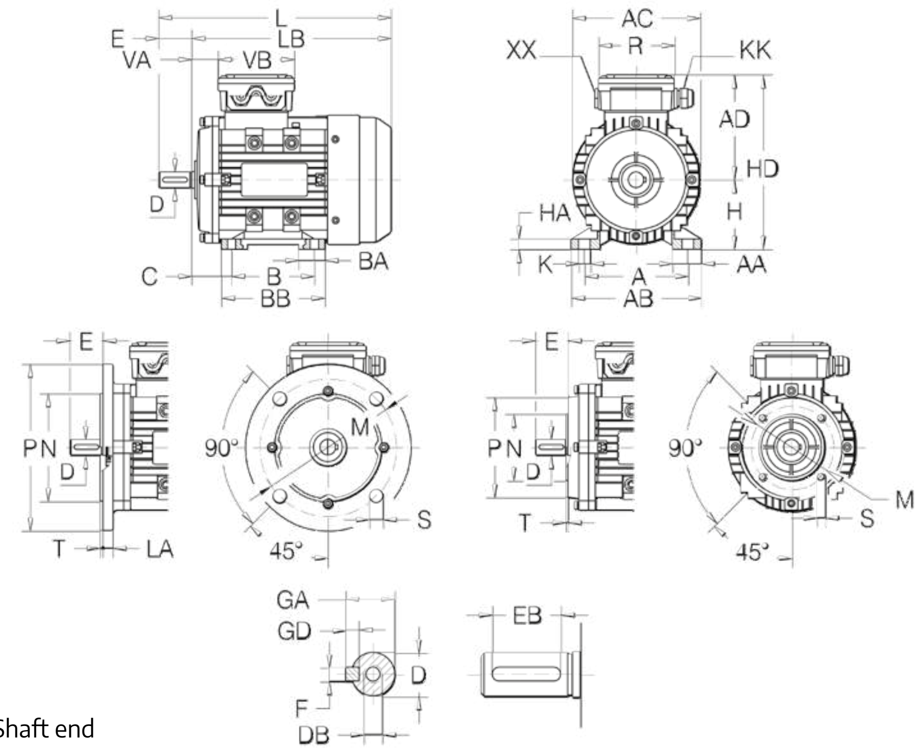
• 6.9 JM IE3 DIMENSIONAL DATA

B3

B5

B14

Shaft end



JM IE3 SERIES

Tab. 6.9.1

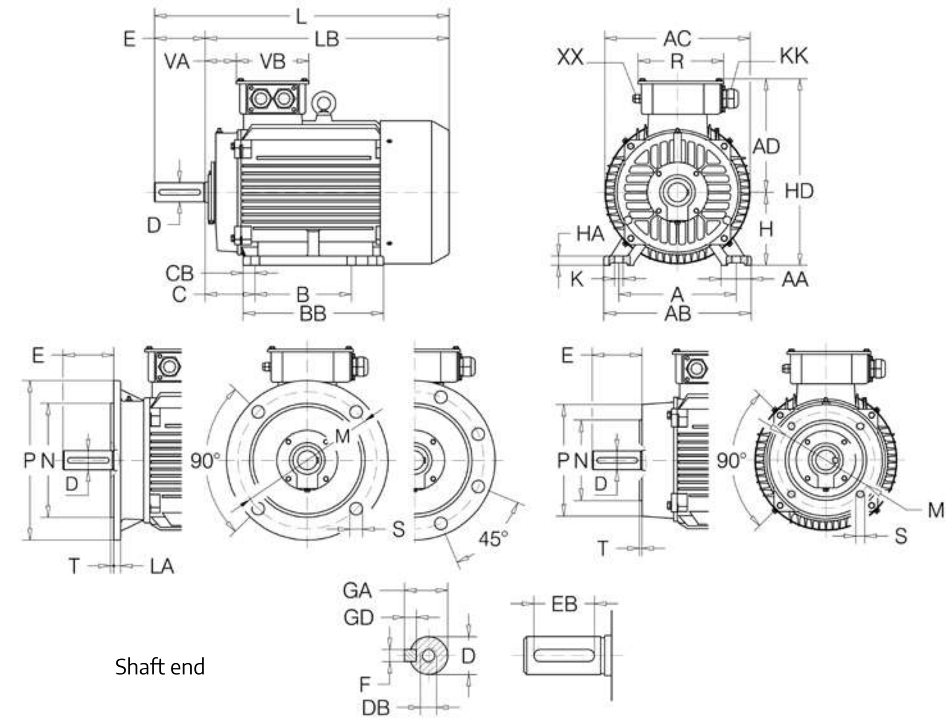
JM Motor			Main Overall Dimension AC	AD	H	HD	LB	L	Feet A	B	C	AB	BB	AA	BA	HA	K	Flange IM	M	NJ6	P	LA	T	S
80		2-4	157	135	80	215	255	295	125	100	50	160	130	35	35	11	10x13	B5	165	130	200	10	3,5	N°4 12
																		B14	100	80	120	--	3	N°4 M6
90	S	2-4-6	174	143	90	233	285	335	140	100/125	56	175	155	35	33	12	10x13	B5	165	130	200	12	3,5	N°4 12
	L						315	365		125								B14	115	95	140	--	3	N°4 M8
100	L	2-4-6-8	198	153	100	253	340	400	160	140	63	198	176	50	42	15	12x16	B5	215	180	250	13	4	N°4 15
																		B14	130	110	160	--	3,5	N°4 M8
112	M	2-4-6-8	220	174	112	286	375	435	190	140	70	220	180	55	42	15	12x15	B5	215	180	250	14	4	N°4 15
																		B14	130	110	160	--	3,5	N°4 M8
132	S	2-4-6-8	258	193	132	325	420	500	216	140	89	252	224	58	73	15	12x15	B5	265	230	300	14	4	N°4 15
	M						445	525		178								B14	165	130	200	--	3,5	N°4 M10
160	M	2-4-6-8	314	235	160	395	530	640	254	210	108	290	293	54	90	17	15x20	B5	300	250	350	15	5	N°4 19
	L									254								B14	215	180	250	--	4	N°4 M12

JM IE3 SERIES

Tab. 6.9.2

JM Motor			Shaft - End			Key				Shaft - Seals: Flange-End			Drive End DE Non drive end NDE.			Terminal - Box: Term.	Cable gland				
			D	DB	E	GA	F	GD	EB	Øi	Øe	H	Øi	Øe	H	N°-Ø	N°-KK	N°-XX	VA	VB	R
80		2-4	19 j6	M6	40	21,5	6	6	32	20	35	7	20	35	7	6-M4	1- M20X1,5	1-plug	27,5	105	105
90	S L	2-4-6	24 j6	M8	50	27	8	7	40	25	37	7	25	37	7	6-M4	1- M25X1,5	1-plug	32	105	105
100	L	2-4-6-8	28 j6	M10	60	31	8	7	50	30	42	7	30	42	7	6-M5	1-M25X1.5	1-plug	27	105	105
112	M	2-4-6-8	28 j6	M10	60	31	8	7	50	30	44	7	30	44	7	6-M5	2-M25X1.5		32	112	119
132	S M	2-4-6-8	38 k6	M12	80	41	10	8	70	40	58	8	40	58	8	6-M5	2-M32X1.5		37	112	119
160	M L	2-4-6-8	42 k6	M16	110	45	12	8	90	45	65	8	45	65	8	6-M6	2-M40X1.5		65	146	146

• 6.10 GM 2-4-6-8 POLES IE3 DIMENSIONAL DATA



GM IE3 SERIES

Tab. 6.10.1

GM Motor			Main Overall Dimension						Feet									Flange						
			AC	AD	H	HD	LB	L	A	B	C	AB	BB	AA	CB	HA	K	IM	M	NJ6	P	LA	T	S
160	M L	2-4-6-8	315	247	160	407	548	658	254	210 254	108	314	302	65	24	19	14,5	B5 B14	300 215	250 180	350 250	15 	5 4	N°4 18,5 N°4 M12
180	M L	2 4-6-8	357	268	180	448	611	721	279	241 279	121	345	320	68	20,5	22	14,5	B5	300	250	350	15	5	N°4 18,5
200	L	2-4-6-8	398	307	200	507	671	781	318	305	133	388	353	78	24	25	18,5	B5	350	300	400	17	5	N°4 18,5
225	S	2-4-6-8	447	328	225	553	691	831	356	286	149	431	348	75	31	28	18,5	B5	400	350	450	19	5	N° 8 18,5
225	M	2 4-6-8	447	328	225	553	716	826 856	356	311	149	431	373	75	31	28	18,5	B5	400	350	450	19	5	N° 8 18,5
250	M	2-4-6-8	486	367	250	617	797	937	406	349	168	484	445	100	49	33	24	B5	500	450	550	22	5	N° 8 18,5
280	S	2 4-6-8	548	396	280	676	828 847	968 987	457	368	190	546	485	105	69	35	24	B5	500	450	550	22	5	N° 8 18,5
280	M	2 4-6-8	548	396	280	676	879 898	1019 1038	457	419	190	546	536	105	69	35	24	B5	500	450	550	22	5	N° 8 18,5
315	S	2 4-6-8	623	481	315	796	1006 1036	1146 1206	508	406	216	624	511	125	59	45	28	B5	600	550	660	24	6	N° 8 24
315	M	2 4-6-8	623	481	315	796	1116 1146	1256 1316	508	457	216	624	621	125	59	45	28	B5	600	550	660	24	6	N° 8 24
315	L	2 4-6-8	623	481	315	796	1116 1146	1256 1316	508	508	216	624	621	125	59	45	28	B5	600	550	660	24	6	N° 8 24
355	M	2 4-6-8	700	644	355	999	1470	1610 1680	610	560	254	730	850	120	68	50	28	B5	740	680	800	25	6	N° 8 24
355	L	2 4-6-8	700	644	355	999	1470	1610 1680	610	630	254	730	850	120	68	50	28	B5	740	680	800	25	6	N° 8 24
355	X	4-6-8	745	584	355	939	1709	1919	630	800	224	760	1110	140	100	49	35	B5	740	680	800	25	6	N°8 24
400	M	2 4-6-8	850	710	400	1110	1785	1955 1995	686	630	280	806	1090	120	58	45	35	B5	940	880	1000	25	6	N°8 28
400	L	2 4-6-8	850	710	400	1110	1785	1955 1995	686	710	280	806	1090	120	58	45	35	B5	940	880	1000	25	6	N°8 28
450		2 4-6-8	1030	1000	450	1450	2210	2380 2420	800	1000	280	980	1495	225	75	55	42	B5	940 1080	880 1000	1000 1150	25 33	6	N°8 28

THREE-PHASE MOTORS

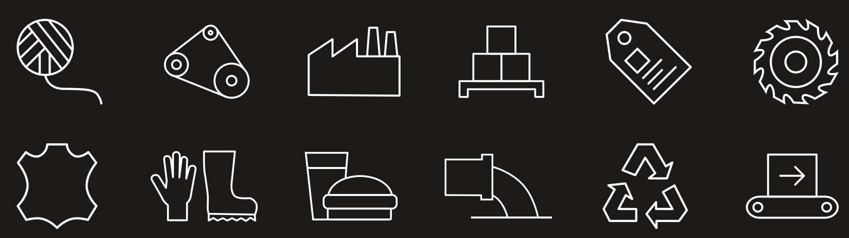
GM IE3 SERIES

Tab. 6.10.2

GM Motor			Shaft - End							Shaft - Seals						Terminal - Box					
							Key			Flange-End			Drive End DE Non drive end NDE			Term.	Cable gland				
			D	DB	E	GA	F	GD	EB	Øi	Øe	H	Øi	Øe	H	N°-Ø	N°-KK	N°-XX	VA	VB	R
160		**2-4-6-8**	42	M16	110	45	12	8	90	45	70	8	45	70	8	6-M6	2-M40x1,5	1-M16x1,5	71	158	166
180		**2-4-6-8**	48	M16	110	51,5	14	9	100	55	80	8	55	80	8	6-M6	2-M40x1,5	1-M16x1,5	83	158	166
200		**2-4-6-8**	55	M20	110	59	16	10	100	60	85	8	60	85	8	6-M8	2-M50x1,5	1-M16x1,5	88	200	216
225	**S**	**4-8**	60	M20	140	64	18	11	125	65	90	10	65	90	10	6-M8	2-M50x1,5	1-M16x1,5	98	200	216
225	**M**	**2**	55	M20	110	59	16	10	100	65	90	10	65	90	10	6-M8	2-M50x1,5	1-M16x1,5	98	200	216
		4-6-8	60		140	64	18	11	125												
250	**M**	**2**	60	M20	140	64	18	11	125	70	95	10	70	95	10	6-M10	2-M63x1,5	1-M16x1,5	105	224	245
		4-6-8	65			69															
280		**2**	65	M20	140	69	18	11	125	70	95	10	70	95	10	6-M10	2-M63x1,5	1-M16x1,5	104	224	245
		4-6-8	75			79,5	20	12		85	110	12	85	110	12						
315		**2**	65	M20	140	69	18	11	125	80	105	10	80	105	10	6-M12/16	2-M63x1,5	1-M16x1,5	97	311	343
		4-6-8	80		170	85	22	14	140	95	120	12	95	120	12						
355		**2**	75	M20	140	79,5	20	12	125	95	120	12	95	120	12	6-M20	2-M63x1,5	1-M16x1,5	120	374	408
		4-6-8	100	M24	210	106	28	16	180	110	140	12	110	140	12						
355	**X**	**4-6-8**	100	M24	210	106	28	16	180	120	150	12	110	140	12	6-M20	4-M63x1,5	1-M16x1,5	193	366	442
400	**M**	**2**	80	M20	170	85	22	14	140	85	110	12	85	110	12	6-M16	4-M63x1,5	1-M16x1,5	147	430	640
		4-6-8	110	M24	210	116	28	16	180	130	160	12	130	160	12						
400	**L**	**2**	80	M20	170	85	22	14	140	85	110	12	85	110	12	6-M16	4-M63x1,5	1-M16x1,5	147	430	640
		4-6-8	110	M24	210	116	28	16	180	130	160	12	130	160	12						
450		**2**	95	M24	170	100	25	14	140	110	130	10/12	110	130	10/12	12-ø14	4-M63x1,5	1-M16x1,5	125	570	780
		4-6-8	130	M24	210	137	32	18	180	140	165	10/13	140	165	10/13						

THREE-PHASE ASYNCHRONOUS
IE2 JM MOTORS

Size	JM
56 ~ 80	
Power	**JM**
0.12 ~ 0.55 kW	
Polarity	**JM**
2, 4, 6, 8 poles	



Sectors of use

6.11 JM IE2 ELECTRICAL DATA

JM 2 POLES IE2 SERIES

Tab. 6.11.1

IE2	JM Motor	Poles	P_N kW	n_N min⁻¹	T_N Nm	I_N (400 V) A	COSφ 100%	η 100%	η 75%	η 50%	I_s/I_N	T_s/T_N	T_{max}/T_N	J Kg m²	Weight Kg
Δ / Y - 230 / 400 V - 50 Hz	56 b	2	0,12	2660	0,43	0,47	0,69	53,6	53,8	50,5	3,5	3,0	3,0	0,00013	3,2
	63 a	2	0,18	2710	0,63	0,57	0,75	60,4	61,2	57,5	4,4	3,1	3,2	0,00015	3,5
	63 b	2	0,25	2710	0,88	0,71	0,78	64,8	65,5	62,3	4,5	2,8	3,0	0,00017	4,0
	63 c*	2	0,37	2730	1,29	0,97	0,79	69,5	70,3	66,8	4,4	3,0	3,1	0,00020	4,4
	71 a	2	0,37	2730	1,29	0,97	0,79	69,5	70,3	66,8	5,6	2,4	3,1	0,00031	5,6
	71 b	2	0,55	2760	1,90	1,36	0,79	74,1	74,8	72,1	5,5	2,8	3,2	0,00038	6,3
	71 c*	2	0,75	2760	2,60	1,71	0,82	77,4	77,9	74,3	5,6	2,8	2,9	0,00047	7,1

JM 4 POLES IE2 SERIES

Tab. 6.11.2

IE2	JM Motor	Poles	P_N kW	n_N min⁻¹	T_N Nm	I_N (400 V) A	COSφ 100%	η 100%	η 75%	η 50%	I_s/I_N	T_s/T_N	T_{max}/T_N	J Kg m²	Weight Kg
Δ / Y - 230 / 400 V - 50 Hz	63 a	4	0,12	1350	0,85	0,46	0,64	59,1	59,8	56,4	3,1	2,4	2,8	0,00027	3,9
	63 b	4	0,18	1350	1,27	0,62	0,65	64,7	65,3	62,5	3,3	2,5	2,6	0,00034	4,3
	63 c	4	0,25	1350	1,77	0,80	0,66	68,5	69,5	66,2	3,4	2,5	2,5	0,00041	5,0
	71 a	4	0,25	1350	1,77	0,73	0,72	68,5	69,3	65,6	4,4	2,6	2,7	0,00056	5,4
	71 b	4	0,37	1370	2,58	0,99	0,74	72,7	73,3	69,3	4,6	3,0	3,0	0,00071	6,5
	71 c*	4	0,55	1380	3,81	1,37	0,75	77,1	77,8	74,3	4,5	2,8	2,9	0,00092	7,2
	80 a	4	0,55	1370	3,83	1,37	0,75	77,1	77,8	74,3	5,4	2,3	2,6	0,00145	8,2

JM 6 POLES IE2 SERIES

Tab. 6.11.3

IE2	JM Motor	Poles	P_N kW	n_N min⁻¹	T_N Nm	I_N (400 V) A	COSφ 100%	η 100%	η 75%	η 50%	I_s/I_N	T_s/T_N	T_{max}/T_N	J Kg m²	Weight Kg
Δ / Y - 230 / 400 V - 50 Hz	63 b	6	0,12	850	1,35	0,55	0,62	50,6	51,6	48,5	2,2	2,0	2,1	0,00052	5,3
	71 a	6	0,18	880	1,95	0,70	0,66	56,6	57,4	53,2	2,8	2,0	2,4	0,00084	6,0
	71 b	6	0,25	900	2,65	0,84	0,70	61,6	62,4	58,3	3,0	2,1	2,3	0,00097	6,5
	71 c*	6	0,37	900	3,93	1,13	0,70	67,6	68,6	64,3	3,1	2,2	2,4	0,00115	7,2
	80 a	6	0,37	900	3,93	1,13	0,70	67,6	68,6	64,3	4,1	2,1	2,5	0,00160	8,2
	80 b	6	0,55	900	5,84	1,51	0,72	73,1	73,9	70,1	4,2	2,1	2,4	0,00204	9,9

JM 8 POLES IE2 SERIES

Tab. 6.11.4

IE2	JM Motor	Poles	P_N kW	n_N min⁻¹	T_N Nm	I_N (400 V) A	COSφ 100%	η 100%	η 75%	η 50%	I_s/I_N	T_s/T_N	T_{max}/T_N	J Kg m²	Weight Kg
Δ / Y - 230 / 400 V - 50 Hz	71 B	8	0,12	690	1,66	0,74	0,59	39,8	40,6	36,5	2,0	1,9	1,9	0,00084	6,8
	80 a	8	0,18	680	2,53	0,93	0,61	45,9	46,7	42,1	3,1	2,0	2,5	0,00202	9,9
	80 b	8	0,25	680	3,51	1,17	0,61	50,6	51,6	47,5	3,3	2,2	2,5	0,00232	10,9
	90 S	8	0,37	680	5,20	1,51	0,63	56,1	56,8	53,4	2,9	1,6	1,9	0,00327	14,8
	90 La	8	0,55	680	7,72	1,98	0,65	61,7	62,3	58,4	3,0	1,8	1,9	0,00428	17,2

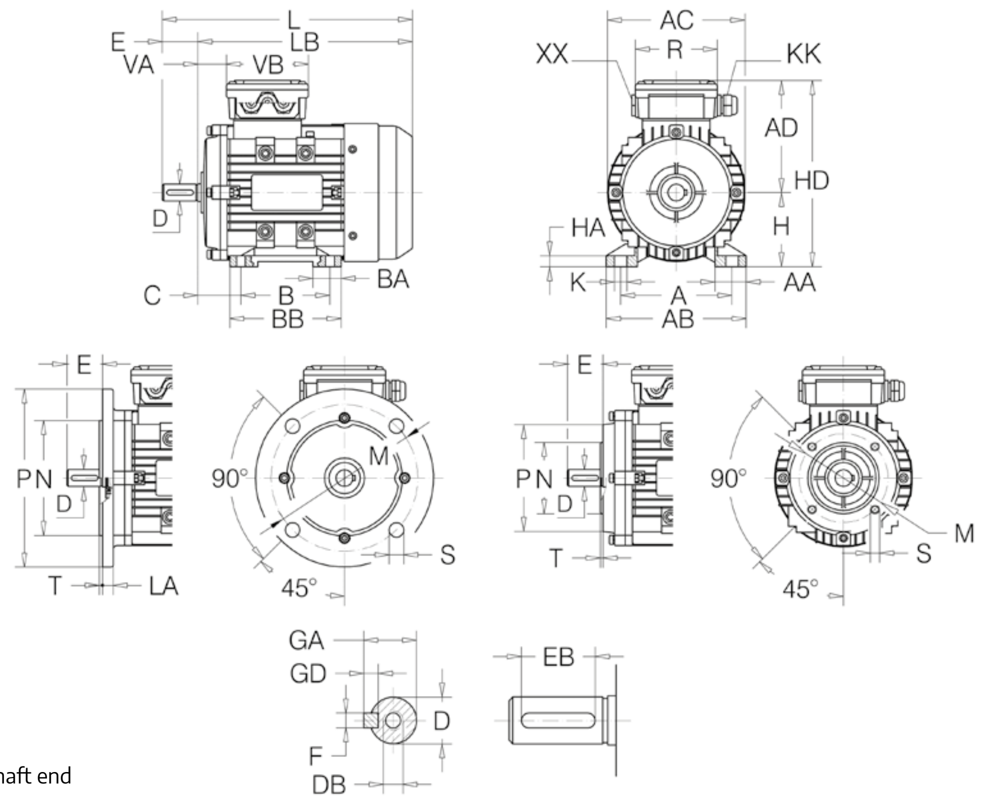
* Power or power/size not standardized

• 6.12 JM 2-4-6-8 POLES IE2 DIMENSIONAL DATA

B3

B5

B14



Shaft end

JM IE2 SERIES

Tab. 6.12.1

JM - JMD Motor		Main Overall Dimension						Feet									Flange						
		AC	AD	H	HD	LB	L	A	B	C	AB	BB	AA	BA	HA	K	IM	M	NJ6	P	LA	T	S
56	2-4-6	112	98	56	154	176	196	90	71	36	110	89	20	20	6	6x9	B5	100	80	120	8	3	N°4 ø7
																	B14	65	50	80	--	2,5	N°4 M5
63	2-4-6	122	110	63	173	200	223	100	80	40	120	103	28	26	8,5	7x10	B5	115	95	140	9	3	N°4 ø9
																	B14	75	60	90	--	2,5	N°4 M5
71	2-4-6-8	139	116	71	187	231	261	112	90	45	133	106	28	23	10	7x10	B5	130	110	160	9	3,5	N°4 ø10
																	B14	85	70	105	--	2,5	N°4 M6
80	2-4-6-8	157	135	80	215	254	294	125	100	50	160	130	35	35	11	10x13	B5	165	130	200	10	3,5	N°4 ø12
																	B14	100	80	120	--	3	N°4 M6

JM IE2 SERIES

Tab. 6.12.2

JM - JMD Motor		Shaft - End							Shaft - Seals						Terminal - Box					
						Key			Flange-End			Drive End DE Non drive end NDE			Term.	Cable gland				
		D	DB	E	GA	F	GD	EB	Øi	Øe	H	Øi	Øe	H	N°-Ø	N°-KK	N°-XX	VA	VB	R
56	2-4-6	9 j6	M4	20	10,2	3	3	12	12	22	5	12	22	5	6-M4	1-M16x1,5	1-M16x1,5	14	88	88
63	2-4-6	11 j6	M4	23	12,5	4	4	16	12	24	7	12	24	7	6-M4	1-M20x1,5	1-M20x1,5	17	95	95
71	2-4-6-8	14 j6	M5	30	16	5	5	22	15	25	7	15	25	7	6-M4	1-M20x1,5	1-M20x1,5	21	94	94
80	2-4-6-8	19 j6	M6	40	21,5	6	6	32	20	35	7	20	35	7	6-M4	1-M20x1,5	1-M20x1,5	27,5	105	105

THREE-PHASE ASYNCHRONOUS
IE1 JM-GM MOTORS

Size	JM	Size	GM
56 ~ 160		160 ~ 450	
Power	**JM**	**Power**	**GM**
0.09 ~ 18.5 kW		11 ~ 1000 kW	
Polarity	**JM**	**Polarity**	**GM**
2, 4, 6, 8 poles		2, 4, 6, 8 poles	

Sectors of use

6.13 IE1 MOTORS

6.14 JM ELECTRICAL DATA

All motors in this section of the catalogue are exclusively intended for export outside the European Economic Area.
Therefore, the sale of the aforementioned motors by Seipee is made under the sole responsibility of the buyer who assumes all legal obligations that result from completely exempting Seipee from any direct or indirect liability according to current legislation.

JM 2 POLES SERIES — Tab. 6.14.1

IE1	JM Motor	Poles	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	COSφ 100%	η 100%	I_S/I_N	T_S/T_N	T_{max}/T_N	J Kg m²	Weight Kg
Δ/Y 230/400V 50Hz	56 a	2	0,09	2670	0,32	0,34	0,66	58,0	3,4	2,3	2,7	0,00012	3
	56 b	2	0,12	2720	0,42	0,44	0,67	59,0	3,5	2,4	2,8	0,00015	3,6
	63 a	2	0,18	2720	0,63	0,5	0,80	65,0	4,2	2,9	3,1	0,00020	4,5
	63 b	2	0,25	2720	0,88	0,66	0,81	68,0	4,5	2,8	2,9	0,00028	4,9
	63 c*	2	0,37	2740	1,29	0,94	0,81	70,0	4,1	2,9	3,0	0,00033	5,3
	71 a	2	0,37	2740	1,29	0,94	0,81	70,0	5,4	2,9	3,1	0,00042	6
	71 b	2	0,55	2740	1,92	1,33	0,82	73,0	5,2	2,9	3,0	0,00051	6,3
	71 c*	2	0,75	2840	2,52	1,81	0,83	72,1	5,5	2,7	2,8	0,00063	6,6
	80 a	2	0,75	2840	2,52	1,81	0,83	72,1	5,6	2,8	2,9	0,00078	8,7
	80 b	2	1,1	2840	3,70	2,52	0,84	75,0	5,7	2,8	3,0	0,00103	9,2
	80 c*	2	1,5	2840	5,04	3,34	0,84	77,2	5,8	3,0	3,1	0,00127	10,5
	90 S	2	1,5	2840	5,04	3,34	0,84	77,2	5,9	3,0	3,2	0,00129	12
	90 La	2	2,2	2840	7,40	4,69	0,85	79,2	6,1	2,9	3,1	0,00160	15
	90 Lb*	2	3	2860	10,0	6,11	0,87	81,5	5,8	3,2	3,3	0,00210	15,5
	100 La	2	3	2860	10,0	6,11	0,87	81,5	6,4	2,6	3,0	0,00240	20
	100 Lb*	2	4	2880	13,3	7,9	0,88	83,1	6,1	2,5	2,8	0,00285	21,5
	112Ma	2	4	2880	13,3	7,9	0,88	83,1	6,6	2,3	2,9	0,00540	26
	112 Mb*	2	5,5	2900	18,1	10,7	0,88	84,7	6,5	2,5	2,9	0,00572	32
	112 Mc	2	7,5	2900	24,7	14,3	0,88	86	7,0	2,2	2,3	0,00985	34
Δ 400V 50Hz	132 Sa	2	5,5	2900	18,1	10,7	0,88	84,7	6,4	2,4	3,1	0,0120	38,5
	132 Sb	2	7,5	2900	24,7	14,3	0,88	86,0	6,1	2,3	2,8	0,0140	43
	132 Ma*	2	9,25	2900	30,5	17,3	0,89	86,9	7,5	2,7	3,0	0,0180	53
	132 Mb*	2	11	2930	35,9	20,4	0,89	87,6	6,0	1,9	2,4	0,0240	57
	132 Mc*	2	15	2930	48,9	27,4	0,89	88,7	5,9	2,1	2,3	0,0270	62
	160 Ma	2	11	2930	35,9	20,4	0,89	87,6	7,0	2,2	2,4	0,0340	73
	160 Mb	2	15	2930	48,9	27,4	0,89	88,7	6,9	1,9	2,3	0,0400	82
	160 La	2	18,5	2930	60,3	33,2	0,90	89,3	6,8	2,1	2,4	0,0450	90
	160 Lb*	2	22	2940	71,5	39,2	0,90	89,9	6,7	2,0	2,3	0,0490	96

THREE-PHASE MOTORS

JM 4 POLES SERIES

Tab. 6.14.2

IE1	JM Motor	Poles	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	COSφ 100%	η 100%	I_S/I_N	T_S/T_N	T_{max}/T_N	J Kg m²	Weight Kg
Δ/Y 230/400V - 50Hz	56 b	4	0,09	1325	0,65	0,45	0,59	49,0	2,8	2,2	2,3	0,00018	3,6
	56 c*	4	0,12	1310	0,87	0,42	0,72	57,0	2,8	2,2	2,3	0,00020	4,2
	63 a	4	0,12	1310	0,87	0,42	0,72	57,0	2,7	2,3	2,4	0,00022	4,5
	63 b	4	0,18	1310	1,31	0,59	0,73	60,0	2,9	2,3	2,3	0,00030	4,9
	63 c*	4	0,25	1350	1,77	0,75	0,74	65,0	2,7	2,4	2,4	0,00034	5,7
	71 a	4	0,25	1330	1,79	0,75	0,74	65,0	3,5	2,8	2,8	0,00044	6
	71 b	4	0,37	1330	2,66	1,06	0,75	67,0	3,4	2,5	2,6	0,00064	6,3
	71 c*	4	0,55	1340	3,92	1,49	0,75	71,1	3,6	2,4	2,4	0,00079	7,3
	80 a	4	0,55	1390	3,78	1,49	0,75	71,1	3,8	2,3	2,4	0,00103	8,1
	80 b	4	0,75	1390	5,15	1,98	0,76	72,1	4,0	2,2	2,3	0,00143	9,2
	80 c*	4	1,1	1390	7,56	2,75	0,77	75,0	4,0	2,3	2,3	0,00193	10,5
	90 S	4	1,1	1390	7,56	2,75	0,77	75,0	5,5	2,5	2,8	0,00230	13
	90 La	4	1,5	1390	10,3	3,55	0,79	77,2	5,4	2,3	2,6	0,00270	14,5
	90 Lb*	4	1,85	1390	12,7	4,40	0,80	78,2	6,8	2,3	3,1	0,00410	15,5
	90 Lc*	4	2,2	1390	15,1	4,90	0,82	79,2	5,0	2,7	2,9	0,00470	16
	100 La	4	2,2	1390	15,1	4,92	0,81	79,2	6,4	2,3	2,5	0,00540	18,8
	100 Lb	4	3	1410	20,3	6,48	0,82	81,5	5,8	2,2	2,6	0,00670	21,5
	100 Lc*	4	4	1410	27,1	8,47	0,82	83,1	5,7	2,3	2,6	0,00810	25
	112 Ma	4	4	1410	27,1	8,47	0,82	83,1	5,9	2,2	2,7	0,00950	28
	112 Mc*	4	5,5	1435	36,6	11,3	0,83	84,7	6,0	2,6	2,8	0,0115	32
Δ 400V - 50Hz	132 Sa	4	5,5	1435	36,6	11,3	0,83	84,7	6,4	2,2	2,8	0,0214	42
	132 Ma	4	7,5	1440	49,7	15,0	0,84	86,0	6,7	2,3	2,7	0,0296	48
	132 Mb*	4	9,25	1445	61,1	17,9	0,86	86,9	7,3	2,7	3,3	0,0395	59
	132 Mc*	4	11	1440	72,9	21,6	0,84	87,6	7,2	2,8	3,2	0,0496	69
	160 Ma	4	11	1440	72,9	21,6	0,84	87,6	6,7	2,2	2,5	0,0747	83
	160 La	4	15	1460	98,1	28,7	0,85	88,7	6,4	2,0	2,6	0,0918	92
	160 Lb*	4	18,5	1460	121	34,8	0,86	89,3	6,3	2,0	2,5	0,1080	98

JM 6 POLES SERIES

Tab. 6.14.3

IE1	JM Motor	Poles	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	COSφ 100%	η 100%	I_S/I_N	T_S/T_N	T_{max}/T_N	J Kg m²	Weight Kg
Δ / Y - 230/400 V - 50 Hz	63 b	6	0,12	840	1,36	0,63	0,60	46,0	3,0	2,0	2,1	0,00035	5,5
	71 a	6	0,18	850	2,02	0,70	0,66	56,0	2,5	2,6	2,6	0,00090	6,2
	71 b	6	0,25	850	2,81	0,90	0,68	59,0	2,7	2,5	2,5	0,00120	6,6
	71 c*	6	0,30	860	3,33	0,94	0,69	60,0	2,5	2,4	2,4	0,00130	6,9
	80 a	6	0,37	885	3,99	1,23	0,70	62,0	3,0	2,0	2,1	0,00140	8,2
	80 b	6	0,55	885	5,93	1,70	0,72	65,0	3,2	2,1	2,2	0,00150	9,2
	80 c*	6	0,75	910	7,87	2,15	0,72	70,0	3,1	2,1	2,2	0,00165	10
	90 S	6	0,75	910	7,87	2,15	0,72	70,0	3,5	1,9	2,2	0,00290	13
	90 La	6	1,1	910	11,5	2,98	0,73	72,9	3,7	2,0	2,3	0,00350	14
	90 Lb*	6	1,5	920	15,6	3,84	0,75	75,2	3,6	1,9	2,2	0,00440	15,6
	100 La	6	1,5	920	15,6	3,84	0,75	75,2	4,6	2,1	2,3	0,00690	21
	112 Ma	6	2,2	935	22,5	5,38	0,76	77,7	4,8	2,0	2,2	0,0140	27,5
Δ 400V - 50Hz	132 Sa	6	3	960	29,8	7,15	0,76	79,7	5,6	2,1	2,2	0,0286	36
	132 Ma	6	4	960	39,8	9,33	0,76	81,4	5,7	2,3	2,4	0,0357	43
	132 Mb	6	5,5	960	54,7	12,4	0,77	83,1	5,8	2,4	2,5	0,0449	54
	160 Ma	6	7,5	970	73,8	16,6	0,77	84,7	6,4	2,1	2,4	0,0810	83
	160 La	6	11	970	108,0	23,6	0,78	86,4	6,5	2,2	2,6	0,1160	94
	160 Lb*	6	15	970	148,0	30,5	0,81	87,7	6,6	2,3	2,5	0,1250	105

JM 8 POLES SERIES

Tab. 6.14.4

IE1	JM Motor	Poles	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	COSφ 100%	η 100%	I_S/I_N	T_S/T_N	T_{max}/T_N	J Kg m²	Weight Kg
Δ / Y - 230/400 V - 50 Hz	71 a	8	0,09	645	1,33	0,42	0,60	51,0	1,8	1,9	1,9	0,00120	6,0
	71 b	8	0,12	645	1,78	0,55	0,60	51,0	1,9	1,9	1,9	0,00130	6,3
	80 a	8	0,18	645	2,66	0,84	0,61	51,0	2,0	1,9	1,9	0,00200	8,6
	80 b	8	0,25	645	3,70	1,1	0,61	54,0	1,9	1,9	1,9	0,00240	9,5
	90 s	8	0,37	670	5,27	1,41	0,61	62,0	2,8	1,9	2,1	0,00350	13
	90 la	8	0,55	670	7,84	2,07	0,61	63,0	2,9	2,0	2,2	0,00430	14
	100 La	8	0,75	680	10,5	2,28	0,67	71,0	3,3	2,0	2,1	0,00980	22
	100 Lb	8	1,1	680	15,4	3,15	0,69	73,0	3,5	1,8	2,0	0,0112	24
	112 Ma	8	1,5	690	20,8	4,18	0,69	75,0	4,1	2,0	2,1	0,0200	28
Δ 400V - 50Hz	132 Sa	8	2,2	705	29,8	5,73	0,71	78,0	4,9	2,1	2,2	0,0360	45
	132 Ma	8	3	705	40,6	7,51	0,73	79,0	4,8	2,2	2,3	0,0500	55
	160 Ma	8	4	720	53,1	9,76	0,73	81,0	5,4	1,9	2,0	0,0950	85
	160 Mb	8	5,5	720	72,9	12,9	0,74	83,0	5,2	2,0	2,2	0,1090	89
	160 La	8	7,5	720	99,5	16,9	0,75	85,5	5,6	2,0	2,1	0,1380	94

* Power or power/size not standardized

6.15 GM ELECTRICAL DATA

GM 2 POLES SERIES

Tab. 6.15.1

IE1	GM Motor	Poles	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	COSφ 100%	η 100%	I_S/I_N	T_S/T_N	T_{max}/T_N	J Kg m²	Weight Kg
Δ - 400V - 50 Hz	160 Ma	2	11	2930	35,9	20,4	0,89	87,6	7,0	2,2	2,4	0,0340	110
	160 Mb	2	15	2930	48,9	27,4	0,89	88,7	7,3	2,1	2,5	0,0400	120
	160 La	2	18,5	2930	60,3	33,2	0,90	89,3	7,1	2,2	2,4	0,0450	135
	180 Ma	2	22	2940	71,5	39,2	0,90	89,9	7,0	2,1	2,3	0,0750	165
	180 Lb	2	30	2950	97,1	53	0,90	90,7	7,5	2,0	2,3	0,0820	182
	200 La	2	30	2950	97,1	53	0,90	90,7	6,9	2,0	2,5	0,1240	218
	200 Lb	2	37	2950	120	65,1	0,90	91,2	7,2	2,0	2,4	0,1390	230
	225 M	2	45	2960	145	78,7	0,90	91,7	7,3	2,2	2,4	0,2330	280
	225 Mb	2	55	2965	177	95,8	0,90	92,1	7,6	2,0	2,3	0,2460	321
	250 M	2	55	2965	177	95,8	0,90	92,1	7,1	2,0	2,3	0,3120	365
	250 Mb	2	75	2970	241	130	0,90	92,7	7,0	2,0	2,3	0,4350	425
	280 S	2	75	2970	241	130	0,90	92,7	7,3	2,2	2,4	0,5790	495
	280 M	2	90	2970	289	153	0,91	93,0	7,0	2,0	2,3	0,6750	531
	280 Mb	2	110	2975	353	187	0,91	93,3	7,1	1,8	2,2	0,7500	600
	280 Md*	2	132	2975	424	224	0,91	93,5	7,0	2,1	2,4	0,9150	705
	315 S	2	110	2975	353	187	0,91	93,3	7,1	1,9	2,3	1,1800	840
	315 Ma	2	132	2975	424	224	0,91	93,5	6,6	1,8	2,3	1,8200	980
	315 Mb	2	160	2975	514	268	0,92	93,8	6,7	1,9	2,3	2,0800	1055
	315 La	2	200	2975	642	334	0,92	94,0	7,0	1,8	2,2	2,3800	1110
	315 Lb	2	250	2980	801	417	0,92	94,0	7,1	1,6	2,2	2,6800	1200
	355 M	2	250	2980	801	417	0,92	94,0	6,6	1,8	2,3	3,0000	1900
	355 Mb	2	280	2980	897	468	0,92	94,0	6,8	1,9	2,3	3,3000	2200
	355 L	2	315	2980	1009	526	0,92	94,0	6,9	1,9	2,3	3,5000	2300
	355 Xa	2	355	2975	1139	585	0,93	94,0	6,6	1,7	2,8	12,520	2604
	355 Xb	2	400	2982	1281	654	0,92	96,0	6,8	1,8	2,7	13,260	3035
	355 Xc	2	450	2982	1441	735	0,92	96,1	6,4	1,7	2,7	14,210	3122
	400 Ma	2	400	2982	1281	654	0,92	96,0	6,9	1,6	2,8	14,950	3088
	400 Mb	2	450	2982	1441	735	0,92	96,1	7,3	1,7	2,7	15,670	3200
	400 La	2	500	2982	1601	815	0,92	96,3	6,1	1,7	2,8	20,070	3540
	400 Lb	2	560	2982	1793	912	0,92	96,3	5,5	1,8	2,7	22,300	3750
	400 Lc	2	630	2982	2017	1015	0,93	96,3	7,3	1,8	2,6	25,500	3990
	450 Ma	2	560	2986	1791	901	0,93	96,5	6,7	1,6	2,5	38,150	3800
	450 Mb	2	630	2984	2016	1012	0,93	96,6	6,6	1,6	2,5	43,300	4100
	450 La	2	710	2988	2269	1129	0,94	96,6	6,8	1,7	2,6	48,600	4540
	450 Lb	2	800	2986	2558	1270	0,94	96,7	6,7	1,8	2,7	52,900	4720
	450 Lc	2	900	2985	2879	1429	0,94	96,7	6,8	1,7	2,6	57,100	4935

GM 4 POLES SERIES

Tab. 6.15.2

IE1	GM Motor	Poles	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	COSφ 100%	η 100%	I_S/I_N	T_S/T_N	T_{max}/T_N	J Kg m²	Weight Kg
Δ - 400V - 50 Hz	160 Ma	4	11	1440	72,9	21,6	0,84	87,6	6,7	2,2	2,5	0,0747	110
	160 La	4	15	1460	98,1	28,7	0,85	88,7	6,4	2,0	2,6	0,0918	132
	160 Lb	4	18,5	1460	121,0	34,8	0,86	89,3	6,3	2,0	2,5	0,1080	135
	180 Ma	4	18,5	1460	121	34,8	0,86	89,3	6,7	2,1	2,8	0,1390	164
	180 L	4	22	1470	143	41,1	0,86	89,9	7,5	2,2	3,0	0,1580	182
	180 Lb	4	30	1470	195	55,5	0,86	90,7	7,1	2,3	2,4	0,2020	185
	200 La	4	30	1470	195	55,5	0,86	90,7	6,6	2,3	2,5	0,2620	244
	200 Lb	4	37	1470	240	67,3	0,87	91,2	7,2	2,3	2,6	0,2680	250
	225 S	4	37	1470	240	67,3	0,87	91,2	7,2	2,3	2,6	0,4060	258
	225 M	4	45	1475	291	81,4	0,87	91,7	7,0	2,2	2,4	0,4690	290
	250 M	4	55	1475	356	99,1	0,87	92,1	7,1	2,3	2,6	0,6600	388
	280 S	4	75	1480	484	134	0,87	92,7	6,6	2,3	2,5	1,1200	510
	280 M	4	90	1480	581	161	0,87	93,0	6,2	2,2	2,4	1,4600	606
	315 S	4	110	1480	710	193	0,88	93,3	7,0	2,2	2,4	3,1100	910
	315 Ma	4	132	1480	852	232	0,88	93,5	6,8	2,2	2,5	3,6200	985
	315 L	4	160	1480	1032	277	0,89	93,8	6,6	2,1	2,4	4,1300	1056
	315 Lb	4	200	1480	1290	345	0,89	94,0	6,9	2,2	2,4	4,7300	1128
	315 Lc*	4	250	1490	1602	427	0,90	94,0	6,9	2,1	2,2	5,3500	1245
	355 M	4	250	1490	1602	427	0,90	94,0	6,5	2,2	2,4	6,5000	1700
	355 L	4	315	1490	2019	537	0,90	94,0	6,2	2,1	2,3	8,2000	1900
	355 Xa	4	355	1490	2275	604	0,90	94,0	6,5	2,1	2,7	9,5000	2150
	355 Xb	4	400	1492	2560	668	0,90	96,0	6,1	2,0	2,6	10,600	2300
	355 Xc	4	450	1492	2880	751	0,90	96,1	6,3	1,8	2,5	11,500	2460
	355 Xd	4	500	1490	3204	862	0,88	95,1	7,8	2,2	2,7	16,240	2500
	400 Ma	4	355	1492	2272	597	0,91	94,0	6,2	1,7	2,5	13,300	2600
	400 Mb	4	400	1492	2560	668	0,90	96,0	6,4	1,8	2,6	14,950	2790
	400 Mc	4	450	1492	2880	751	0,90	96,1	6,3	1,8	2,7	15,630	3050
	400 La	4	500	1492	3200	832	0,90	96,4	6,2	1,9	2,6	18,410	3132
	400 Lb	4	560	1492	3584	932	0,90	96,4	6,6	2,0	2,5	19,620	3340
	400 Lc	4	630	1492	4032	1037	0,91	96,4	6,4	1,9	2,4	21,330	3580
	450 Ma	4	560	1492	3584	922	0,91	96,3	6,4	1,3	2,7	35,100	3584
	450 Mb	4	630	1492	4032	1037	0,91	96,4	6,9	1,5	2,5	39,500	3870
	450 La	4	710	1492	4544	1168	0,91	96,4	6,2	1,3	2,6	41,000	4360
	450 Lb	4	800	1492	5120	1285	0,93	96,6	6,9	1,5	2,3	45,600	4650
	450 Lc	4	900	1492	5760	1462	0,92	96,6	6,1	1,6	2,3	49,500	4732
	450 Ld	4	1000	1492	6400	1669	0,92	94,0	7,0	1,1	2,0	50,600	5700

GM 6 POLES SERIES

Tab. 6.15.3

IE1	GM Motor	Poles	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	COSφ 100%	η 100%	I_s/I_N	T_s/T_N	T_{max}/T_N	J Kg m²	Weight Kg
Δ - 400 V - 50 Hz	**160 Ma**	**6**	**7,5**	970	73,8	16,6	0,77	84,7	6,4	2,1	2,4	0,0747	115
	160 La	**6**	**11**	970	108,3	23,6	0,78	86,4	6,5	2,2	2,6	0,0918	130
	180 L	**6**	**15**	970	148	30,5	0,81	87,7	6,9	2,1	2,2	0,1580	178
	200 La	**6**	**18,5**	980	180	37,2	0,81	88,6	6,7	2,1	2,2	0,2620	210
	200 Lb	**6**	**22**	980	214	42,9	0,83	89,2	6,6	2,1	2,2	0,2800	227
	225 M	**6**	**30**	980	292	57,1	0,84	90,2	6,7	2,0	2,1	0,4690	265
	250 M	**6**	**37**	980	361	68,4	0,86	90,8	6,9	2,1	2,2	0,6600	370
	280 S	**6**	**45**	980	438	82,6	0,86	91,4	6,5	2,1	2,2	1,1200	490
	280 M	**6**	**55**	980	536	100,0	0,86	91,9	6,6	2,0	2,1	1,4600	540
	315 S	**6**	**75**	985	727	136	0,86	92,6	6,8	2,0	2,3	3,1100	800
	315 Ma	**6**	**90**	985	873	163	0,86	92,9	6,7	2,1	2,2	3,6200	920
	315 Mb	**6**	**110**	985	1066	198	0,86	93,3	6,6	2,0	2,1	4,1300	960
	315 L	**6**	**132**	985	1280	234	0,87	93,5	6,4	2,1	2,3	4,7300	1050
	315 Lc	**6**	**160**	985	1551	280	0,88	93,8	6,2	2,0	2,4	5,1500	1170
	355 Ma	**6**	**160**	985	1551	280	0,88	93,8	6,1	2,0	2,4	6,5000	1550
	355 Mb	**6**	**200**	985	1939	349	0,88	94,0	6,7	1,9	2,3	6,8000	1600
	355 L	**6**	**250**	985	2424	436	0,88	94,0	6,7	1,9	2,1	8,2000	1700
	355 Xa	**6**	**315**	994	3026	550	0,88	94,0	5,9	1,9	2,5	13,500	2310
	355 Xb	**6**	**355**	994	3410	620	0,88	94,0	5,8	2,0	2,4	14,300	2490
	355 Xc	**6**	**400**	990	3858	714	0,86	94,0	6,5	1,6	2,4	18,860	2980
	400 Ma	**6**	**315**	994	3026	552	0,88	94,0	5,7	1,8	2,3	18,210	3000
	400 Mb	**6**	**355**	994	3410	621	0,88	94,0	5,6	1,9	2,3	19,320	3410
	400 La	**6**	**400**	994	3843	700	0,86	95,9	6,1	1,9	2,4	21,860	3560
	400 Lb	**6**	**450**	994	4323	788	0,86	95,9	6,6	2,0	2,3	22,310	3840
	400 Lc	**6**	**500**	994	4803	873	0,86	96,1	6,2	1,8	2,2	23,520	3870
	400 Ld	**6**	**560**	994	5380	978	0,86	96,1	5,9	1,9	2,2	24,460	4140
	450 Ma	**6**	**500**	994	4803	874	0,86	96,0	6,2	1,6	2,3	49,300	3890
	450 Mb	**6**	**560**	994	5380	978	0,86	96,1	6,1	1,6	2,3	54,100	4200
	450 La	**6**	**630**	994	6052	1100	0,86	96,1	6,1	1,7	2,3	60,600	4620
	450 Lb	**6**	**710**	994	6821	1243	0,86	95,9	5,9	1,7	2,3	67,900	5080
	450 Lc	**6**	**800**	994	7686	1375	0,87	96,5	5,8	1,6	2,2	67,900	5080

GM 8 POLES SERIES

Tab. 6.15.4

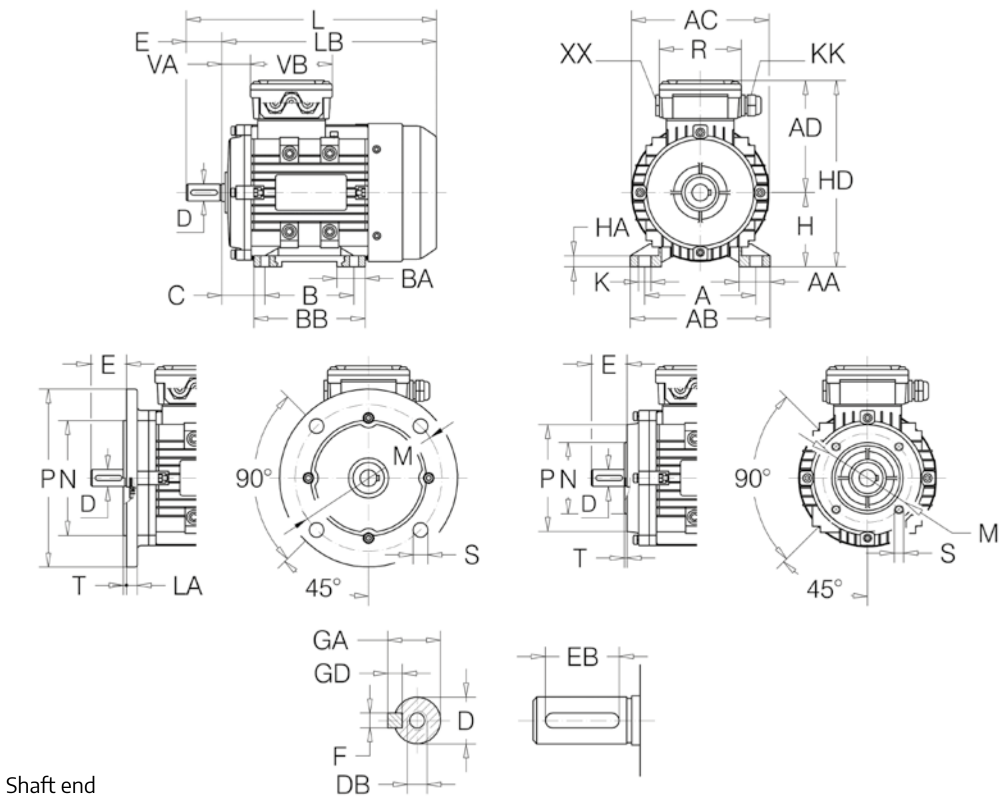
IE1	GM Motor	Poles	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	COSφ 100%	η 100%	I_s/I_N	T_s/T_N	T_{max}/T_N	J Kg m²	Weight Kg
Δ - 400 V - 50 Hz	**160 Ma**	**8**	**4**	720	53,1	9,76	0,73	81,0	5,6	2,0	2,2	0,0753	105
	160 La	**8**	**5,5**	720	72,9	12,9	0,74	83,0	5,8	2,1	2,3	0,0931	115
	160 La	**8**	**7,5**	720	99,5	16,9	0,75	85,5	5,7	2,0	2,1	0,1260	145
	180 Lb	**8**	**11**	730	144	23,8	0,76	87,5	5,7	1,9	2,2	0,2030	160
	200 La	**8**	**15**	730	196	32,4	0,76	88,0	6,0	2,0	2,2	0,3390	228
	225 S	**8**	**18,5**	730	242	39	0,76	90,0	6,2	1,9	2,2	0,4910	242
	225 M	**8**	**22**	730	288	45	0,78	90,5	6,4	2,0	2,0	0,5470	265
	250 M	**8**	**30**	735	390	60,2	0,79	91,0	6,1	1,9	2,1	0,8340	368
	280 S	**8**	**37**	735	481	73,9	0,79	91,5	6,5	1,9	2,3	1,6500	472
	280 M	**8**	**45**	735	585	89,4	0,79	92,0	6,4	2,0	2,2	1,9300	538
	315 S	**8**	**55**	735	715	106	0,81	92,8	6,5	1,8	2,1	4,7900	900
	315 Ma	**8**	**75**	735	974	144	0,81	93,0	6,5	1,9	2,2	5,5800	1000
	315 Mb	**8**	**90**	735	1169	169	0,82	93,8	6,3	1,9	2,3	6,3700	1055
	315 L	**8**	**110**	735	1429	206	0,82	94,0	6,2	1,8	2,2	7,2300	1118
	315 Lc	**8**	**132**	740	1703	254	0,82	91,5	6,4	1,8	2,0	7,4300	1160
	355 Ma	**8**	**132**	740	1703	248	0,82	93,7	6,4	1,7	2,1	7,9000	2000
	355 Mb	**8**	**160**	740	2065	299	0,82	94,2	6,4	1,8	2,2	10,300	2150
	355 L	**8**	**200**	740	2581	368	0,83	94,5	6,2	1,7	2,1	12,300	2250
	355 Xa	**8**	**250**	745	3204	451	0,84	95,3	6,1	1,7	2,3	14,530	2460
	355 Xb	**8**	**315**	745	4038	560	0,85	95,5	6,0	1,7	2,4	15,390	2750
	400 Ma	**8**	**250**	745	3204	451	0,84	95,3	6,3	1,8	2,5	25,600	2914
	400 Mb	**8**	**280**	745	3589	505	0,84	95,3	5,9	1,7	2,3	26,500	3170
	400 La	**8**	**315**	745	4038	560	0,85	95,5	6,1	1,8	2,4	27,900	3392
	400 Lb	**8**	**355**	745	4550	631	0,85	95,6	5,8	1,7	2,3	29,800	3592
	400 Lc	**8**	**400**	745	5127	710	0,85	95,6	6,4	1,6	2,4	31,300	3949
	450 Ma	**8**	**315**	746	4032	581	0,82	95,4	6,0	1,8	2,5	59,500	3840
	450 Mb	**8**	**355**	745	4550	654	0,82	95,5	5,7	1,7	2,4	64,500	4090
	450 La	**8**	**400**	745	5127	727	0,83	95,7	5,5	1,6	2,3	69,400	4350
	450 Lb	**8**	**450**	745	5768	818	0,83	95,7	5,4	1,6	2,2	75,200	4660
	450 Lc	**8**	**500**	745	6409	909	0,83	95,7	5,7	1,7	2,2	79,300	4870
	450 Ld	**8**	**560**	745	7178	1053	0,83	92,5	6,0	1,6	2,4	80,200	5550
	450 Le	**8**	**630**	745	8075	1184	0,83	92,5	6,5	1,8	2,3	81,600	5650

• 6.16 JM DIMENSIONAL DATA

B3

B5

B14



Shaft end

JM SERIES

Tab. 6.16.1

JM - JMD Motor			Main Overall Dimension AC	AD	H	HD	LB	L	Feet A	B	C	AB	BB	AA	BA	HA	K	Flange IM	M	NJ6	P	LA	T	S
56		**2-4-6**	112	97	56	153	170	190	90	71	36	110	90	30	21	8	6	**B5**	100	80	120	8	3	N°4 7
																		B14	65	50	80	--	2,5	N°4 M5
63		**2-4-6**	120	101	63	164	191	214	100	80	40	122	100	35	24	8	7	**B5**	115	95	140	10	3	N°4 10
																		B14	75	60	90	--	2,5	N°4 M5
71		**2-4-6-8**	137	108	71	179	212	242	112	90	45	133	110	35	24	8	7	**B5**	130	110	160	10	3,5	N°4 10
																		B14	85	70	105	--	2,5	N°4 M6
80		**2-4-6-8**	158	129	80	209	244	284	125	100	50	157	125	35	31	8	10	**B5**	165	130	200	12	3,5	N°4 12
																		B14	100	80	120	--	3	N°4 M6
90	**S**	**2-4-6-8**	175	142	90	232	270	320	140	100	56	173	125	37	31	10	10	**B5**	165	130	200	12	3,5	N°4 12
	L						295	345		125			150					**B14**	115	95	140	--	3	N°4 M8
100	**L**	**2-4-6-8**	198	156	100	256	338	398	160	140	63	196	172	40	39	11	12	**B5**	215	180	250	13	4	N°4 15
																		B14	130	110	160	--	3,5	N°4 M8
112	**M**	**2-4-6-8**	219	168	112	280	341	401	190	140	70	227	180	41	43	12	12	**B5**	215	180	250	14	4	N°4 15
																		B14	130	110	160	--	3,5	N°4 M8
132	**S**	**2-4-6-8**	258	190	132	322	395	475	216	140	89	262	186	51	46	15	12	**B5**	265	230	300	14	4	N°4 15
	M						433	513		178			224					**B14**	165	130	200	--	3,5	N°4 M10
160	**M**	**2-4-6-8**	316	242	160	402	500	610	254	210	108	304	260	55	50	18	15	**B5**	300	250	350	15	5	N°4 19
	L						545	655		254			304					**B14**	215	180	250	--	4	N°4 M12

JM SERIES

Tab. 6.16.2

JM - JMD Motor		Shaft - End							Shaft - Seals						Terminal - Box					
						Key			Flange-End			Drive End DE Non drive end NDE.			Term.	Flange-End				
		D	DB	E	GA	F	GD	EB	Øi	Øe	H	Øi	Øe	H	N°-Ø	N°-KK	N°-XX	VA	VB	R
56	**2-4-6**	9	M4	20	10,2	3	3	14	12	25	7	12	25	7	6-M4	1-M20x1,5	1-plug	18	80	80
63	**2-4-6**	11	M4	23	12,5	4	4	16	12	25	7	12	25	7	6-M4	1-M20x1,5	1-plug	29	87	87
71	**2-4-6-8**	14	M5	30	16	5	5	25	15	30	7	15	30	7	6-M4	1-M20x1,5	1-plug	40	87	87
80	**2-4-6-8**	19	M6	40	21,5	6	6	30	20	35	7	20	35	7	6-M4	1-M20x1,5	1-plug	31	87	87
90	**2-4-6-8**	24	M8	50	27	8	7	40	25	40	7	25	40	7	6-M4	1-M25x1,5	1-plug	31	106	106
100	**2-4-6-8**	28	M10	60	31	8	7	50	30	47	7	30	47	7	6-M4	1-M25x1,5	1-plug	31	106	106
112	**2-4-6-8**	28	M10	60	31	8	7	50	30	47	7	30	47	7	6-M5	2-M25x1,5	--	35	114	122
132	**2-4-6-8**	38	M12	80	41	10	8	65	40	62	7	40	62	7	6-M5	2-M32x1,5	--	43	114	122
160	**2-4-6-8**	42	M16	110	45	12	8	90	45	62	12	45	62	12	6-M6	2-M40x1,5	1-M16x1,5	78	156	167

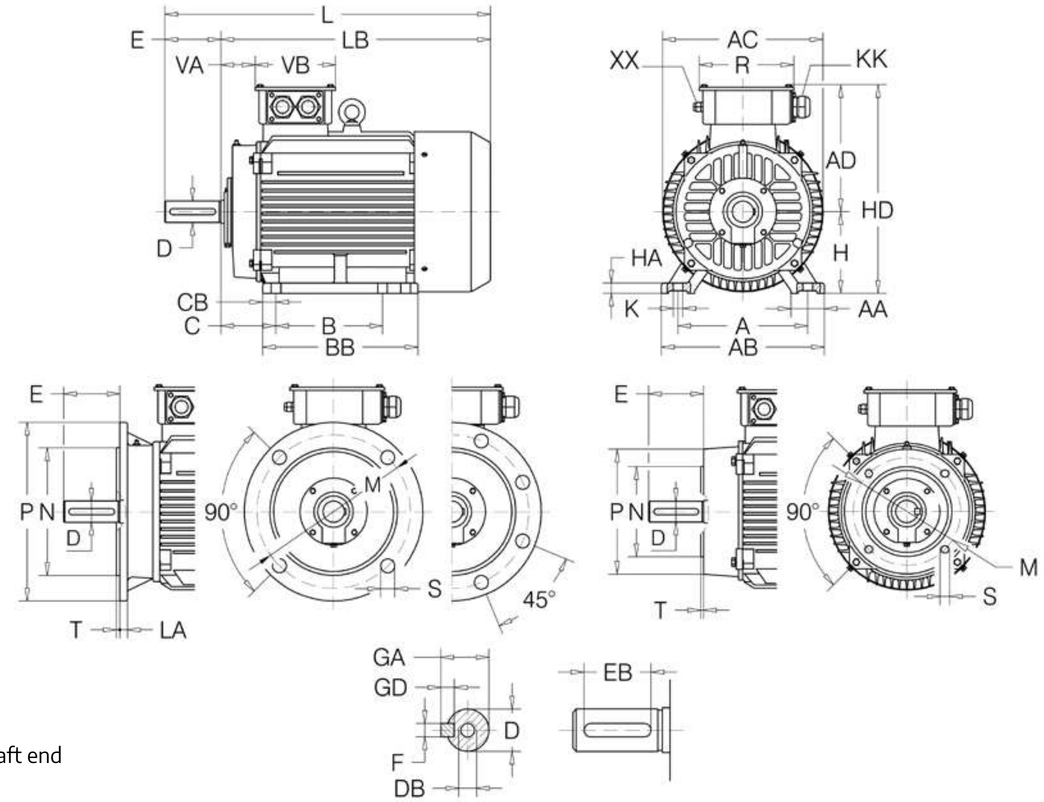
THREE-PHASE MOTORS

• 6.17 GM DIMENSIONAL DATA

B3

B5

B14



Shaft end

GM SERIES

Tab. 6.17.1

GM-GMD Motor			Main Overall Dimension						Feet									Flange						
			AC	AD	H	HD	LB	L	A	B	C	AB	BB	AA	CB	HA	K	IM	M	NJ6	P	LA	T	S
160	M	2-4-6-8	314	251	160	411	498	608	254	210	108	320	260	65	26	20	15	B5	300	250	350	15	5	N°4 19
	L						542	652		254			304					B14	215	180	250	--	4	N°4 M12
180	M	2-4-6-8	355	267	180	447	578	688	279	241	121	350	311	70	35	22	15	B5	300	250	350	15	5	N°4 19
	L						616	726		279			349											
200	L	2-4-6-8	397	299	200	499	669	779	318	305	133	390	370	70	32	25	18	B5	350	300	400	17	5	N°4 19
225	S	2-4-6-8	446	322	225	547	684	824	356	286	149	432	370	75	46	28	19	B5	400	350	450	20	5	N°8 19
225	M	2-4-6-8	446	322	225	547	709	819	356	311	149	433	395	75	46	28	19	B5	400	350	450	20	5	N°8 19
								849																
250	M	2-4-6-8	485	358	250	608	770	910	406	349	168	486	445	80	55	30	24	B5	500	450	550	22	5	N°8 19
280	S	2-4-6-8	547	387	280	667	842	982	457	368	190	545	485	85	69	35	24	B5	500	450	550	22	5	N°8 19
	M						893	1033		419			536											
315	S	2 4-6-8	620	527	315	842	1054	1194	508	406	216	630	570	120	84	45	28	B5	600	550	660	22	6	N°8 24
								1224																
315	M	2 4-6-8	620	527	315	842	1164	1304	508	457	216	630	680	120	84	45	28	B5	600	550	660	22	6	N°8 24
								1334																
315	L	2 4-6-8	620	527	315	842	1164	1304	508	508	216	630	680	120	84	45	28	B5	600	550	660	22	6	N°8 24
								1334																
355	M	2 4-6-8	698	642	355	997	1346	1486	610	560	254	730	750	120	68	52	28	B5	740	680	800	25	6	N°8 24
								1556																
355	L	2 4-6-8	698	642	355	997	1346	1486	610	630	254	730	750	120	68	52	28	B5	740	680	800	25	6	N°8 24
								1556																
355	X	2 4-6-8	770	765	355	1120	1710	1850	630	800	224	760	1140	135	88	52	35	B5	840	780	900	28	6	N°8 24
								1920																
400	M	2 4-6-8	860	680	400	1080	1770	1940	686	630	280	806	1090	120	57	45	35	B5	940	880	1000	25	6	N°8 28
								1980																
400	L	2 4-6-8	860	680	400	1080	1770	1940	686	710	280	806	1090	120	57	45	35	B5	940	880	1000	25	6	N°8 28
								1980																
450	L	2 4-6-8	960	820	450	1270	1880	2050	800	1000	250	990	1300	190	107	52	42	B5	940	880	1000	25	6	N°8 28
							1990	2200										B5	1080	1000	1150	33	6	N°8 28

GM SERIES

Tab. 6.17.2

GM-GMD Motor			Shaft - End							Shaft - End						Terminal - Box					
							Key			Flange-End			Drive End DE Non drive end NDE			Term.	Cable gland				
			D	DB	E	GA	F	GD	EB	Øi	Øe	H	Øi	Øe	H	N°-Ø	N°-KK	N°-XX	VA	VB	R
160		2-4-6-8	42	M16	110	45	12	8	90	45	62	8/12	45	62	8/12	6-M6	2-M40x1,5	1-M16x1,5	67	158	185
180		2-4-6-8	48	M16	110	51,5	14	9	100	55	75	8/12	55	75	8/12	6-M6	2-M40x1,5	1-M16x1,5	82	158	185
200		2-4-6-8	55	M20	110	59	16	10	100	60	80	8/12	60	80	8/12	6-M8	2-M50x1,5	1-M16x1,5	92	187	224
225	S	4-8	60	M20	140	64	18	11	125	65	90	10/12	65	90	10/12	6-M8	2-M50x1,5	1-M16x1,5	95	187	224
225	M	2	55	M20	110	59	16	10	100	60	80	8/12	60	80	8/12	6-M8	2-M50x1,5	1-M16x1,5	95	187	224
		4-6-8	60		140	64	18	11	125	65	90	10/12	65	90	10/12						
250		2	60	M20	140	64	18	11	125	65	90	10/12	65	90	10/12	6-M10	2-M63x1,5	1-M16x1,5	88	238	283
		4-6-8	65			69				70	90	10/12	70	90	10/12						
280		2	65	M20	140	69	18	11	125	70	90	10/12	70	90	10/12	6-M10	2-M63x1,5	1-M16x1,5	96	238	283
		4-6-8	75			79,5	20	12		85	110	10/12	85	110	10/12						
315		2	65	M20	140	69	18	11	125	85	110	10/12	85	110	10/12	6-M12/16	2-M63x1,5	1-M16x1,5	117	280	320
		4-6-8	80		170	85	22	14	140	95	120	10/12	95	120	10/12						
355		2	75	M20	140	79,5	20	12	125	95	120	10/12	95	120	10/12	6-M20	2-M63x1,5	1-M16x1,5	117	328	380
		4-6-8	100	M24	210	106	28	16	180	110	140	10/12	110	140	10/12						
355	X	2	75	M20	170	79,5	20	12	140	95	120	10/12	95	120	10/12	6-M20	3-M63x1,5	1-M16x1,5	--	--	--
		4-6-8	100	M24	210	106	28	16	180	120	140	10/12	120	140	10/12						
400	M	2	80	M20	170	85	22	14	140	90	115	10/12	90	115	10/12	6-M24	3-M63x1,5	1-M16x1,5	--	--	--
		4-6-8	110	M24	210	116	28	16	180	130	150	10/12	130	150	10/12						
400	L	2	80	M20	170	85	22	14	140	90	115	10/12	90	115	10/12	6-M24	3-M63x1,5	1-M16x1,5	--	--	--
		4-6-8	110	M24	210	116	28	16	180	130	150	10/12	130	150	10/12						
450	L	2	95	M24	170	100	25	14	140	110	130	10/12	110	130	10/12	6-M24	3-M63x1,5	1-M16x1,5	--	--	--
		4-6-8	130	M24	210	137	32	18	180	140	160	10/12	140	160	10/12	6-M24	3-M63x1,5	1-M16x1,5	--	--	--

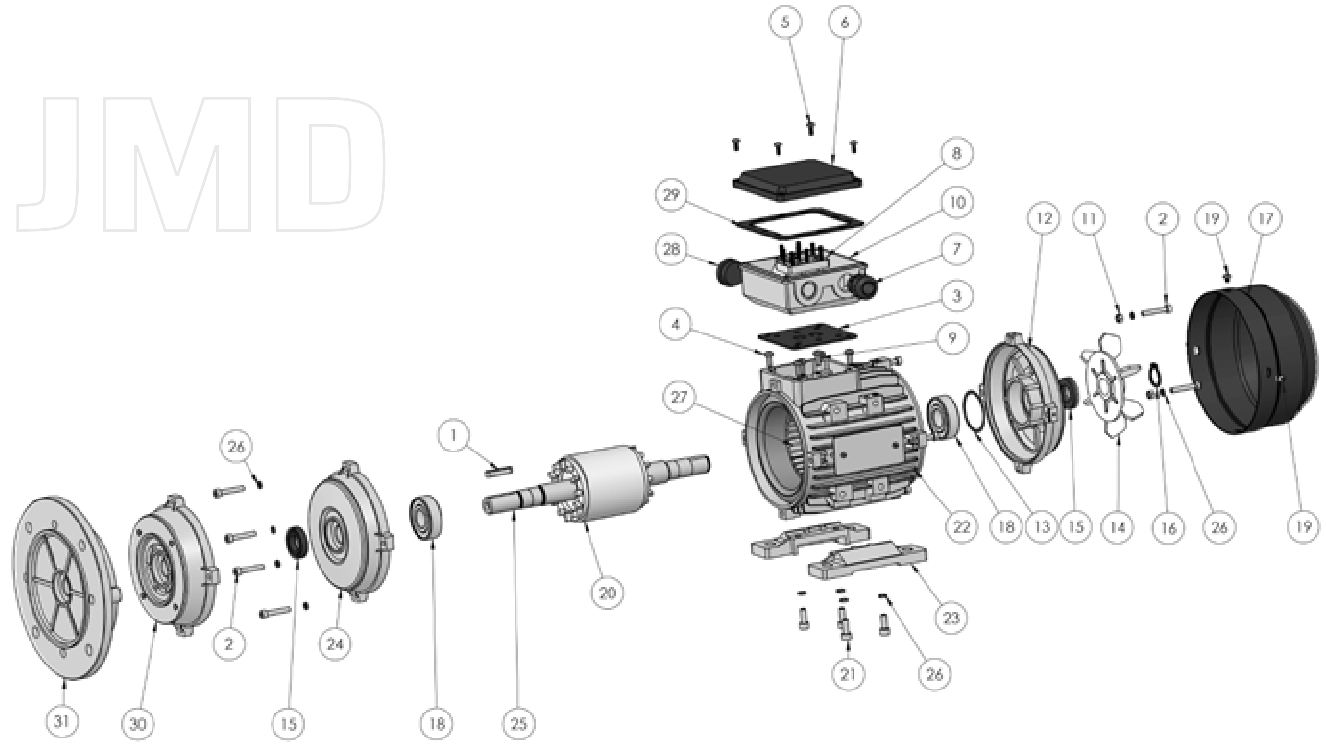
DOUBLE SPEED THREE-PHASE MOTORS **JMD-GMD**

7.

7 DOUBLE SPEED THREE-PHASE MOTORS

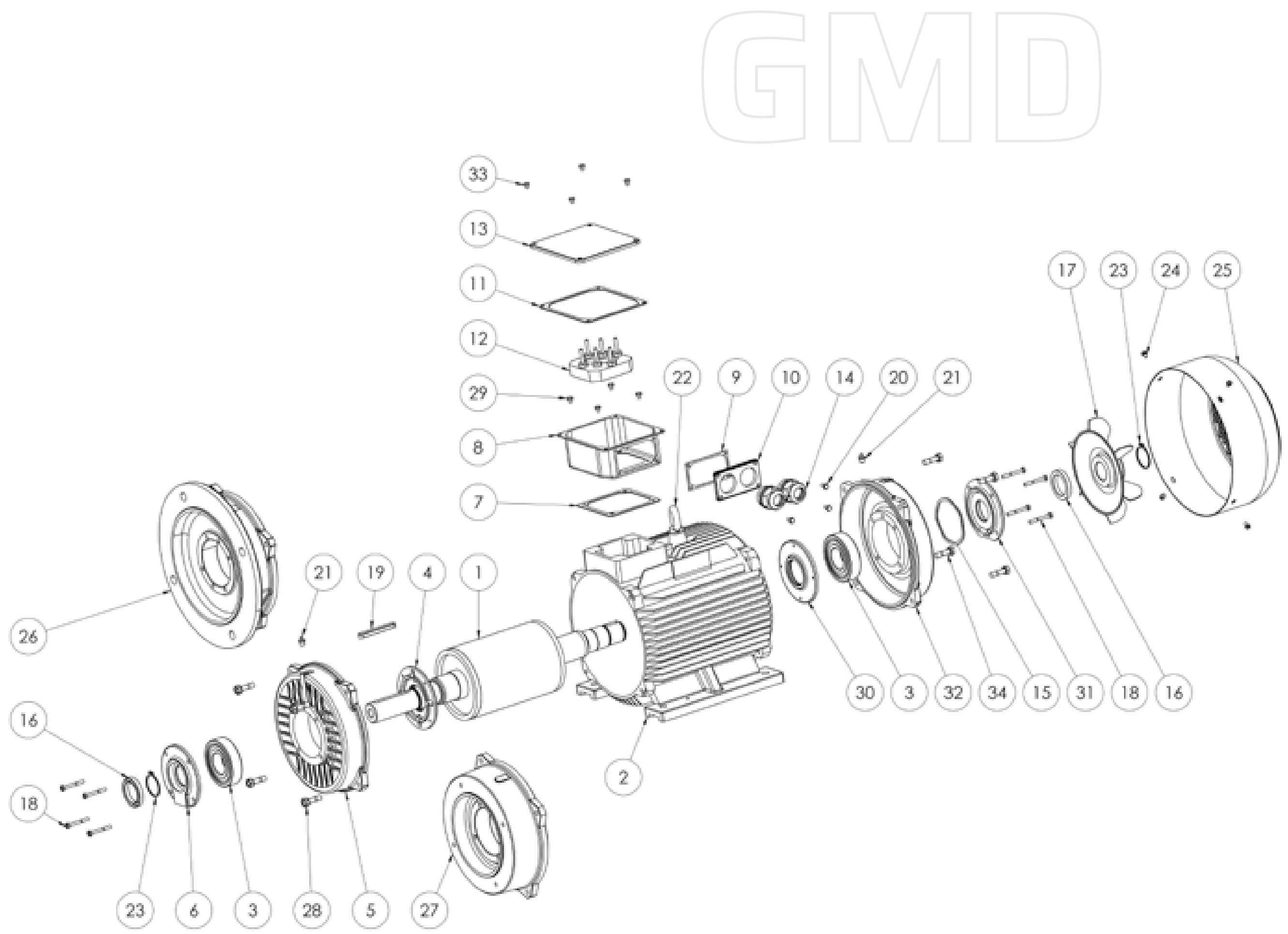
7.1 COMPONENTS

JMD SERIES
The JMD/GMD double speed three-phase motors are designed for a single voltage and for direct starting from the grid.



1) Key
2) Tie-rod
3) Terminal box gasket
4) Terminal box locking screw
5) Terminal board cover locking screw
6) Terminal board cover
7) Cable gland
8) Terminal board
9) Terminal board locking screw
10) Terminal box
11) Nut
12) Shield B3 side opposite control
13) Preload spring
14) Fan
15) Sealing ring
16) Safety flexible ring
17) Fan cover
18) Bearings
19) Fan cover locking screw
20) Rotor
21) Feet fastening screw for IMB3
22) Housing
23) Foot for IMB3
24) Shield on control side for IMB3
25) Shaft
26) Washer
27) Stator
28) Plug
29) Terminal box cover gasket
30) Flange IMB14
31) Flange IMB5

GMD SERIES



1) Shaft with rotor
2) Housing
3) Bearing
4) Control side bearing locking internal flange
5) Shield on control side
6) Control side bearing locking external flange
7) Terminal box gasket
8) Terminal box
9) Terminal box tab gasket
10) Terminal box tab
11) Terminal box cover gasket
12) Terminal board
13) Terminal box cover
14) Cable gland
15) Preload spring
16) Sealing ring
17) Fan
18) Bearing locking external flange fastening screw
19) Key
20) Terminal box tab screw
21) Greaser
22) Lifting eyebolts
23) Safety flexible ring
24) Locking screw
25) Fan cover
26) Flange IMB5
27) Flange IMB14 (size Gm 160 only)
28) Shield locking screw IMB3 on control side
29) Terminal box locking screw
30) Side opposite control bearing locking internal flange
31) Side opposite control bearing locking external flange
32) Shield on side opposite control IMB3
33) Terminal box cover locking screw
34) Shield locking screw IMB3 on side opposite control

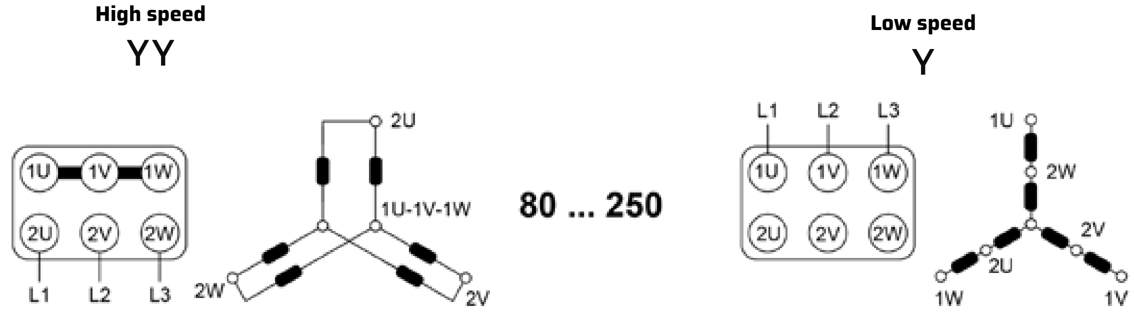
• 7.2 ELECTRICAL CONNECTIONS

When the ratio between the two speeds is 1 to 2, the standard motors of the JMD and GMD series are designed with a single winding.

For different speeds, two separate windings are present.

THREE-PHASE MOTOR CONNECTION WITH DUAL POLARITY (4-6 POLES)

THREE-PHASE MOTOR CONNECTION WITH DUAL POLARITY SINGLE WINDING (4-8 POLES)

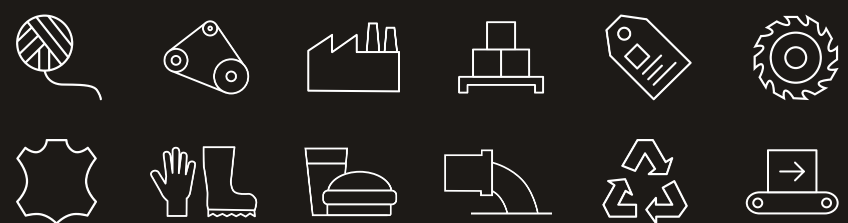


DOUBLE SPEED THREE-PHASE

MOTORS JMD-GMD

Size	JMD	Size	GMD
80 ~ 160		180 ~ 250	
Power	**JMD**	**Power**	**GMD**
0,3 ~ 13 kW		7,5 ~ 52 kW	
Polarity	**JMD**	**Polarity**	**GMD**
4-6, 4-8 poles		4-6, 4-8 poles	

Sectors of use



7.3 ELECTRICAL DATA JMD/GMD DOUBLE WINDING 4-6 POLES

JMD/GMD 4/6 POLES SERIES — Tab. 7.3.1

4/6 Poles	JMD/GMD Motor	Poles	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	COSφ 100%	η 100%	I_s/I_N	T_s/T_N	T_{max}/T_N	J Kg m²	Weight Kg
JMD Y/Y 400V - 50 Hz	80 a	4	0,30	1440	1,99	1,60	0,54	50,0	2,7	2,3	2,4	0,00143	9,5
		6	0,10	970	0,98	0,85	0,38	45,0	2,9	2,3	2,3		
	80 b	4	0,65	1415	4,39	1,78	0,76	69,0	3,5	1,6	2,3	0,00193	10
		6	0,25	940	2,54	0,9	0,73	55,0	3,0	1,7	2,1		
	90 S	4	0,90	1425	6,03	2,35	0,77	72,0	4,3	1,7	2,4	0,00250	14
		6	0,32	950	3,22	1,15	0,68	59,0	3,3	1,5	2,5		
	90 La	4	1,1	1435	7,32	3,2	0,68	73,0	4,5	2,3	2,9	0,00400	15,5
		6	0,4	972	3,93	1,83	0,54	58,0	3,4	2,5	3,2		
	90 Lb	4	1,4	1410	9,48	3,5	0,79	73,0	4,1	1,8	2,3	0,00470	16
		6	0,45	960	4,48	1,72	0,63	60,0	3,3	2,1	2,5		
	100 La	4	1,7	1440	11,3	4,6	0,74	72,0	5,5	1,9	2,2	0,00540	23
		6	0,6	950	6,03	2,25	0,64	60,0	3,8	2,0	2,3		
	100 Lb	4	2,2	1430	14,7	5,0	0,82	77,0	5,3	1,7	2,1	0,00670	25
		6	0,75	940	7,62	2,54	0,70	61,0	3,5	1,8	2,2		
	112 Ma	4	3	1450	19,8	6,9	0,82	77,0	5,7	1,9	2,2	0,0115	32
		6	0,9	965	8,91	2,75	0,71	67,0	4,4	1,8	2,1		
	132 Sa	4	4,2	1460	27,5	9,0	0,83	81,0	6,3	2,1	2,4	0,0214	45
		6	1,4	970	13,8	3,7	0,76	72,0	5,0	1,7	2,1		
	132 Ma	4	5,9	1465	38,5	11,3	0,88	86,0	8,1	2,2	2,5	0,0395	55
		6	2,6	965	25,7	6,74	0,72	77,0	6,2	1,6	2,3		
	132 Mb	4	6,5	1460	42,5	12,2	0,88	87,0	7,8	2,1	2,5	0,0496	59
		6	2,2	965	21,8	5,7	0,72	77,0	5,9	1,5	2,2		
	160 Ma	4	7,5	1470	48,7	14,9	0,85	86,0	8,0	2,0	2,4	0,0712	80
		6	2,7	975	26,4	6,9	0,72	78,0	6,0	1,7	2,1		
	160 Mb	4	9,5	1470	61,7	19	0,84	86,0	7,8	1,8	2,3	0,0747	85
		6	3,1	970	30,5	7,9	0,71	80,0	5,7	1,6	2,2		
	160 La	4	11	1470	71,5	22	0,83	87,0	7,9	1,9	2,4	0,0918	92
		6	3,6	975	35,3	8,7	0,74	81,0	6,1	1,8	2,3		
	160 Lb	4	12	1465	78,2	24,1	0,83	87,0	7,7	1,8	2,3	0,1080	98
		6	4	970	39,4	9,8	0,72	82,0	5,8	1,7	2,2		
GMD Y/Y 400V - 50 Hz	180 M	4	16	1475	104	30,0	0,88	87,0	7,8	1,9	2,4	0,1390	180
		6	5,5	975	53,9	12,3	0,78	83,0	6,2	1,8	2,3		
	180 L	4	20	1470	130	39,5	0,85	86,0	7,5	1,8	2,3	0,1580	185
		6	6,5	980	63,3	14,5	0,79	82,0	5,9	1,8	2,2		
	200 La	4	23	1480	148	45,5	0,84	87,0	7,5	1,9	2,4	0,2420	240
		6	7,2	980	70,2	16,5	0,76	83,0	6,3	1,7	2,3		
	200 Lb	4	26	1475	168	50,3	0,85	88,0	7,2	1,7	2,3	0,2830	250
		6	9,5	975	93,0	20,6	0,79	84,0	6,0	1,7	2,2		
	225 S	4	34	1480	219	62,9	0,87	89,0	7,4	1,9	2,4	0,4060	275
		6	11	980	107	23,4	0,81	84,0	6,3	1,8	2,3		
	225 M	4	39	1480	252	71,5	0,88	89,0	7,3	2,0	2,4	0,4690	310
		6	13	980	127	27,3	0,81	85,0	6,2	1,8	2,3		
	250 M	4	47	1480	303	84,2	0,90	90,0	7,5	1,9	2,4	0,6600	395
		6	16	980	156	32,3	0,84	85,0	6,7	1,9	2,3		

• 7.4 ELECTRICAL DATA JMD/GMD ONE WINDING 4-8 POLES

JMD/GMD 4/8 POLES SERIES

Tab. 7.4.1

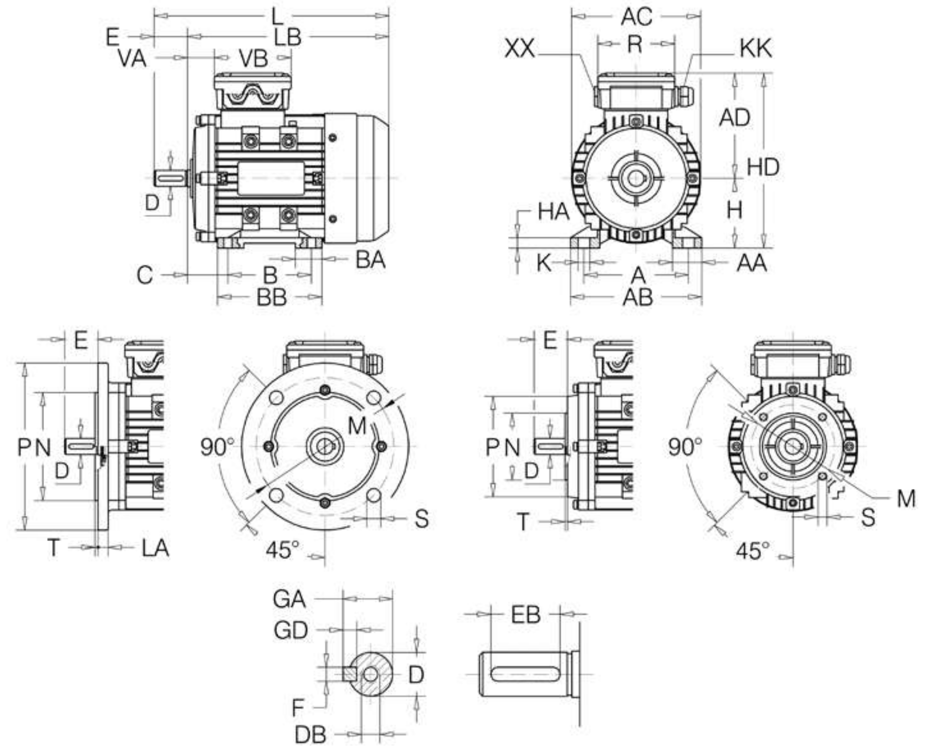
4/8 Poles	JMD/GMD Motor	Poles	P_N kW	n_N min⁻¹	T_N Nm	$I_{N (400 V)}$ A	COSφ 100%	η 100%	I_s / I_N	T_s / T_N	T_{max} / T_N	J Kg m²	Weight Kg
JMD Y/Y 400V - 50 Hz	80 b	4	**0,7**	1390	4,81	1,95	0,77	67,0	4,2	1,6	2,0	0,00193	10
		8	**0,16**	680	2,25	0,68	0,61	56,0	2,9	1,6	1,9		
	90 S	4	**1,0**	1400	6,82	2,57	0,78	72,0	4,3	1,8	2,3	0,00250	13
		8	**0,23**	680	3,23	0,93	0,62	58,0	2,7	1,7	2,1		
	90 La	4	**1,3**	1410	8,80	3,15	0,82	73,0	4,4	1,9	2,4	0,00400	16
		8	**0,33**	680	4,63	1,20	0,66	60,0	2,6	1,7	2,1		
	100 La	4	**2,2**	1420	14,8	4,90	0,82	75,0	5,1	2,1	2,4	0,00540	19
		8	**0,48**	695	6,60	1,85	0,58	64,0	3,6	1,9	2,2		
	100 Lb	4	**2,6**	1410	17,6	5,90	0,83	77,0	4,9	2,0	2,6	0,00670	22
		8	**0,65**	690	9,00	2,50	0,57	66,0	3,4	1,8	2,1		
	112 Ma	4	**3,6**	1450	23,7	7,65	0,81	84,0	6,5	2,5	2,9	0,0115	31
		8	**0,9**	715	12,0	3,10	0,60	70,0	3,6	2,2	2,6		
	132 Sa	4	**4,5**	1445	29,7	9,30	0,83	84,0	7,5	2,2	2,6	0,0214	43
		8	**1,1**	715	14,7	3,55	0,61	74,0	4,5	1,9	2,3		
	132Ma	4	**6,3**	1450	41,5	12,3	0,86	86,0	7,9	2,3	2,7	0,0496	57
		8	**1,5**	720	19,9	4,50	0,63	76,0	4,7	1,8	2,4		
	160 a	4	**9**	1445	59,5	18,3	0,84	85,0	6,6	2,2	2,6	0,0747	85
		8	**2,2**	710	29,6	6,30	0,64	79,0	3,4	1,7	2,1		
	160 La	4	**13**	1440	86,2	24,4	0,87	88,0	6,5	2,3	2,8	0,1080	94
		8	**3,2**	715	42,7	8,60	0,66	81,0	3,3	1,6	2,0		
GMD Y/Y 400 V - 50 Hz	180 M	4	**16**	1460	105	30,3	0,87	88,0	6,8	2,4	2,7	0,1390	164
		8	**4**	715	53,4	10,5	0,67	82,0	4,1	1,8	2,0		
	180 L	4	**22**	1460	144	42,4	0,86	88,0	6,9	2,3	2,6	0,1580	182
		8	**5,5**	720	72,9	14,0	0,68	83,0	4,4	1,7	1,9		
	200 La	4	**29**	1465	189	56,8	0,83	89,0	7,2	2,5	2,8	0,2830	245
		8	**7,5**	720	99,5	19,6	0,66	84,0	4,3	1,9	2,0		
	225 M	4	**40**	1475	259	74,6	0,86	90,0	7,4	2,5	2,7	0,4690	290
		8	**9,5**	730	124	25,0	0,64	86,0	4,5	1,9	2,0		
	250 M	4	**52**	1480	336	97,0	0,86	90,0	7,6	2,3	2,8	0,6600	390
		8	**13**	730	170	33,0	0,65	87,0	4,7	2,0	2,0		

• 7.5 JMD DIMENSIONAL DATA

B3

B5

B14



JMD SERIES

Tab. 7.5.1

JMD Motor			Main Overall Dimension AC	AD	H	HD	LB	L	Feet A	B	C	AB	BB	AA	BA	HA	K	Flange IM	M	NJ6	P	LA	T	S
80		4-6-8	158	129	80	209	244	284	125	100	50	157	125	35	31	8	10	B5	165	130	200	12	3,5	N°4 12
																		B14	100	80	120	--	3	N°4 M6
90	S	4-6-8	175	142	90	232	270	320	140	100	56	173	125	37	31	10	10	B5	165	130	200	12	3,5	N°4 12
	L						295	345		125			150					B14	115	95	140	--	3	N°4 M8
100	L	4-6-8	198	156	100	256	338	398	160	140	63	196	172	40	39	11	12	B5	215	180	250	13	4	N°4 15
																		B14	130	110	160	--	3,5	N°4 M8
112	M	4-6-8	219	168	112	280	341	401	190	140	70	227	180	41	43	12	12	B5	215	180	250	14	4	N°4 15
																		B14	130	110	160	--	3,5	N°4 M8
132	S	4-6-8	258	190	132	322	395	475	216	140	89	262	186	51	46	15	12	B5	265	230	300	14	4	N°4 15
	M						433	513		178			224					B14	165	130	200	--	3,5	N°4 M10
160	M	4-6-8	316	242	160	402	500	610	254	210	108	304	260	55	50	18	15	B5	300	250	350	15	5	N°4 19
	L						545	655		254			304					B14	215	180	250	--	4	N°4 M12

JMD SERIES

Tab. 7.5.2

JMD Motor		Shaft - End					Key		Shaft - Seals: Flange-End			Drive End DE Non drive end NDE			Terminal - Box: Term.	Cable gland				
		D	DB	E	GA	F	GD	EB	Øi	Øe	H	Øi	Øe	H	N°-Ø	N°-KK	N°-XX	VA	VB	R
80	4-6-8	19	M6	40	21,5	6	6	30	20	35	7	20	35	7	6-M4	1-M20x1,5	1-tappo	31	87	87
90	4-6-8	24	M8	50	27	8	7	40	25	40	7	25	40	7	6-M4	1-M25x1,5	1-tappo	31	106	106
100	4-6-8	28	M10	60	31	8	7	50	30	47	7	30	47	7	6-M4	1-M25x1,5	1-tappo	31	106	106
112	4-6-8	28	M10	60	31	8	7	50	30	47	7	30	47	7	6-M5	2-M25x1,5	--	35	114	122
132	4-6-8	38	M12	80	41	10	8	65	40	62	7	40	62	7	6-M5	2-M32x1,5	--	43	114	122
160	4-6-8	42	M16	110	45	12	8	90	45	62	12	45	62	12	6-M6	2-M40x1,5	1-M16x1,5	78	156	167

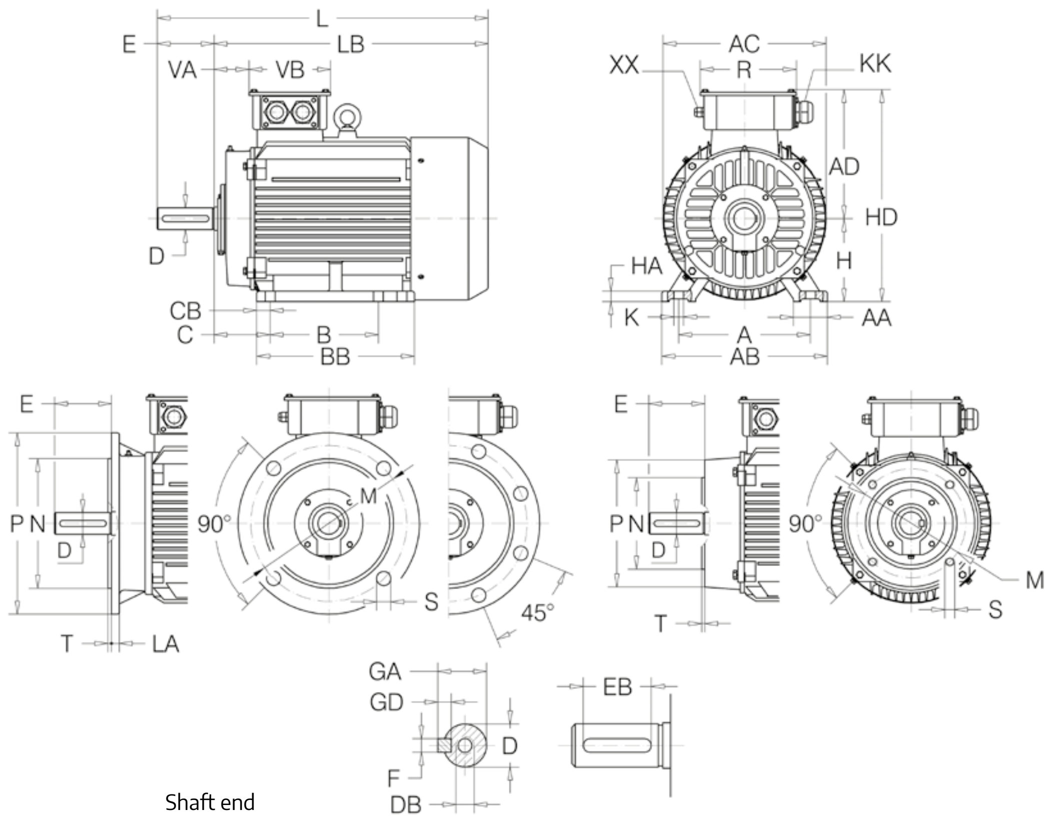
DOUBLE SPEED THREE-PHASE

• 7.6 GMD 180-250 DIMENSIONAL DATA

B3

B5

B14



Shaft end

GMD SERIES

Tab. 7.6.1

GMD Motor			Main Overall Dimension						Feet									Flange						
			AC	AD	H	HD	LB	L	A	B	C	AB	BB	AA	CB	HA	K	IM	M	NJ6	P	LA	T	S
180	**M**	**4/6**	357	265	180	445	580	690	279	241	121	350	311	70	35	22	15	**B5**	300	250	350	15	5	18
	L	**4/8**					620	730		279			349											
200	**L**	**4/6 4/8**	398	305	200	505	655	765	318	305	133	390	370	70	32	25	18	**B5**	350	300	400	17	5	19
225	**S**	**4/6 4/8**	448	325	225	550	670	810	356	286	149	432	370	75	46	28	18	**B5**	400	350	450	20	5	N° 8 19
225	**M**	**4/6**	448	325	225	550	695	805	356	311	149	433	395	75	46	28	19	**B5**	400	350	450	20	5	N° 8 19
		4/8						835																
250	**M**	**4/6 4/8**	490	365	250	615	775	915	406	349	168	486	445	80	55	30	24	**B5**	500	450	550	22	5	N° 8 19

GMD SERIES

Tab. 7.6.2

GMD Motor			Shaft - End							Shaft - Seals						Terminal - Box					
							Key			Flange-End			Drive End DE Non drive end NDE			Term.	Terminal - Box				
			D	DB	E	GA	F	GD	EB	Øi	Øe	H	Øi	Øe	H	N°-Ø	N°-KK	N°-XX	VA	VB	R
180		**4/6 4/8**	48	M16	110	51,5	14	9	100	55	72	8/12	55	72	8/12	6-M6	2-M40x1,5	1-M16x1,5	82	158	162
200		**4/6 4/8**	55	M20	110	59	16	10	100	60	80	8/12	60	80	8/12	6-M8	2-M50x1,5	1-M16x1,5	92	187	210
225	**S**	**4/6 4/8**	60	M20	140	64	18	11	125	65	90	10/12	65	90	10/12	6-M8	2-M50x1,5	1-M16x1,5	95	187	210
225	**M**	**4/6 4/8**	55	M20	110	59	16	10	100	60	80	8/12	60	80	8/12	6-M8	2-M50x1,5	1-M16x1,5	95	187	210
			60		140	64	18	11	125	65	90	10/12	65	90	10/12						
250		**4/6 4/8**	60	M20	140	64	18	11	125	70	90	10/12	70	90	10/12	6-M10	2-M63x1,5	1-M16x1,5	88	238	248
			65			69				70	90	10/12	70	90	10/12						

JMM SINGLE-PHASE
ASYNCHRONOUS MOTORS

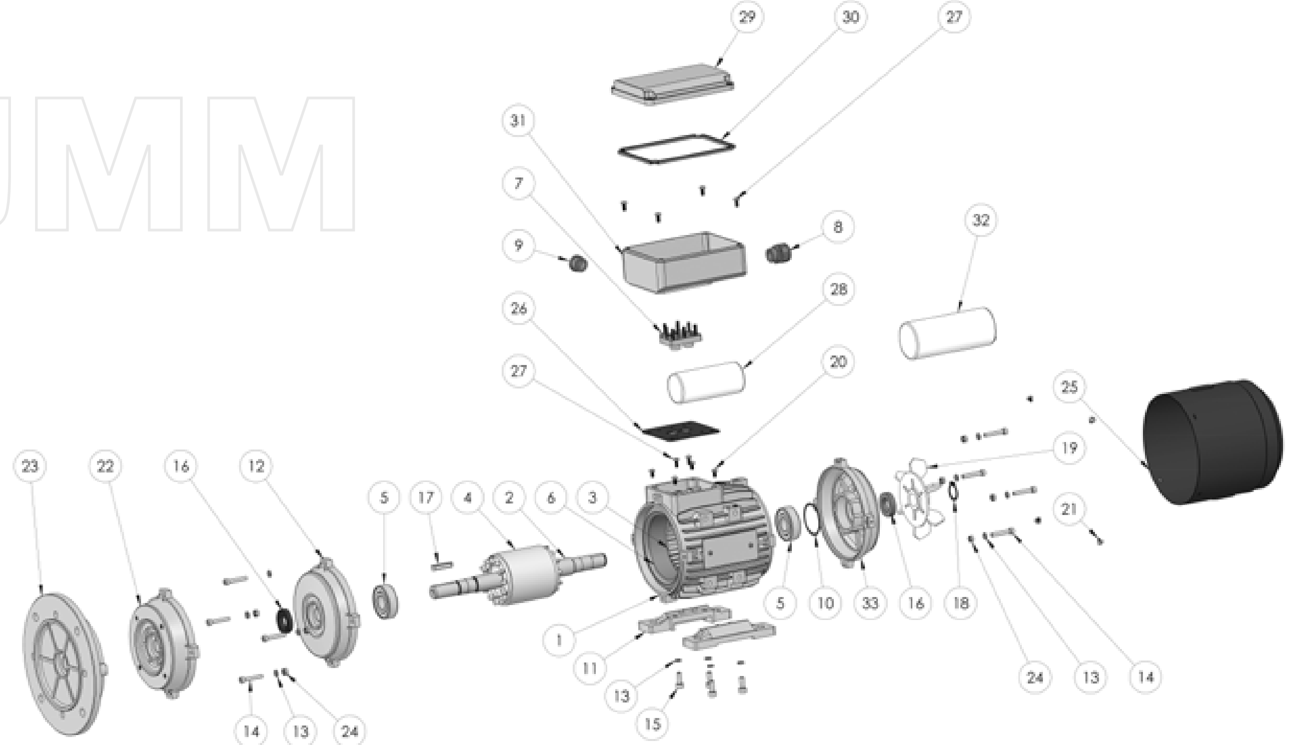
8.

8 SINGLE-PHASE MOTORS

8.1 COMPONENTS

JMM SERIES

JMM



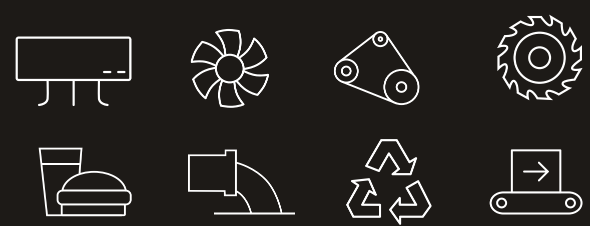
1) Housing
2) Shaft
3) Stator
4) Rotor
5) Bearing
6) Winding
7) Terminal board
8) Cable gland
9) Plug
10) Preload spring
11) Foot for IMB3
12) Shield on control side for IMB3
13) Washer
14) Fastening screw for IMB3-IMB5-IMB14
15) Feet fastening screw for IMB3
16) Sealing ring
17) Key
18) Safety flexible ring
19) Fan
20) Terminal box locking screw
21) Fan cover locking screw
22) Flange IMB14
23) Flange IMB5
24) Nut
25) Fan cover
26) Terminal box gasket
27) Terminal box cover screw
28) Running capacitor
29) Terminal box cover
30) Terminal box cover gasket
31) Terminal box
32) Electronic auxiliary capacitor
33) Shield B3 side opposite control

JMM SINGLE-PHASE
ASYNCHRONOUS MOTORS

Size	JMM
56 ~ 100	

Power	JMM
0.09 ~ 3 kW	

Polarity	JMM
2, 4 poles	



Sectors of use

• 8.2 JMM ELECTRICAL DATA

JMM 2 POLES SERIES

Tab. 8.2.1

2 Poli	JMM Motor	Poles	P_N kW	n_N min^{-1}	T_N Nm	I_N A	COSφ 100%	η 100%	I_S / I_N	T_s / T_N	T_{max} / T_N	C (450V) μF	C^E 2) μF	J Kg m²	Weight Kg
230 V - 50 Hz	**63 b**	2	**0,18**	2700	0,64	1,40	0,95	56,0	4,0	0,7	1,7	10	10	0,00032	4,0
	63 c	2	**0,25**	2700	0,88	1,90	0,95	57,0	4,0	0,7	1,7	12	10	0,00041	4,3
	71 b	2	**0,37**	2710	1,30	2,52	0,98	65,1	3,4	0,8	1,9	20	20	0,00065	6,1
	71 c	2	**0,55**	2745	1,91	3,72	0,94	68,3	3,8	0,8	2,0	25	20	0,00075	7,2
	80 b	2	**0,75**	2776	2,58	4,93	0,94	70,7	4,1	0,8	2,1	30	40	0,00110	10,5
	80 c	2	**1,1**	2733	3,84	6,75	0,96	73,5	4,1	0,9	1,9	40	40	0,00140	11,0
	80 d	2	**1,5**	2749	5,21	8,87	0,98	74,7	4,2	0,9	2,0	60	60	0,00145	11,1
	90 Sb	2	**1,5**	2749	5,21	8,87	0,98	74,7	3,6	0,9	1,8	50	60	0,00170	12,6
	90 Lb	2	**1,85**	2760	6,40	10,9	0,98	74,7	3,9	0,7	1,8	60	60	0,00210	13,1
	90 Lc	2	**2,2**	2743	7,66	12,9	0,98	75,3	3,9	0,6	1,9	70	85	0,00240	14,4
	100 La	2	**2,2**	2840	7,40	12,6	0,99	77,0	5,0	0,7	2,0	90	85	0,00250	20,8
	100 Lb	2	**3**	2850	10,1	16,3	0,99	80,4	5,3	0,8	2,1	90	85	0,00270	22,7

JMM 4 POLES SERIES

Tab. 8.2.2

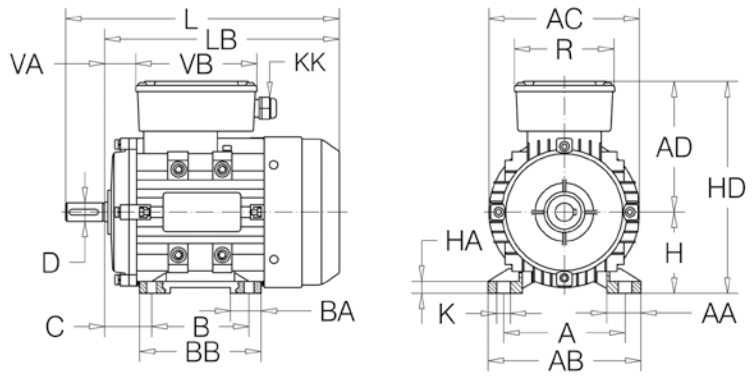
4 Poli	JMM Motor	Poles	P_N kW	n_N min^{-1}	T_N Nm	I_N A	COSφ 100%	η 100%	I_S / I_N	T_s / T_N	T_{max} / T_N	C (450V) μF	C^E 2) μF	J Kg m²	Weight Kg
230 V - 50 Hz	**56 c**	4	**0,09**	1377	0,62	0,88	0,95	46,9	2,3	0,8	1,7	6	10	0,00020	3,4
	63 b	4	**0,12**	1380	0,83	1,10	0,95	52,0	2,0	0,8	1,7	6	10	0,00036	3,9
	63 c	4	**0,18**	1387	1,24	1,66	0,92	51,6	2,5	0,8	1,8	12	10	0,00044	4,2
	71 b	4	**0,25**	1316	1,81	2,07	0,97	54,0	2,4	0,8	1,8	16	16	0,00081	6,1
	71 c	4	**0,37**	1348	2,62	2,63	0,98	62,6	2,8	0,8	1,7	20	16	0,00103	7,2
	80 b	4	**0,55**	1369	3,84	4,22	0,92	61,6	2,9	0,7	1,7	25	20	0,00180	11,0
	80 c	4	**0,75**	1342	5,34	4,89	0,97	68,7	3,0	0,7	1,7	35	30	0,00210	11,3
	90 Sb	4	**1,1**	1349	7,79	7,02	0,95	71,6	3,2	0,6	1,7	40	40	0,00270	12,6
	90 Lb	4	**1,5**	1372	10,4	9,22	0,95	74,8	3,7	0,7	1,7	50	60	0,00470	14,4
	90 Lc	4	**1,8**	1350	12,7	11,0	0,96	74,0	3,8	0,7	1,8	60	60	0,00500	19,8
	100 Lb	4	**2,2**	1408	14,9	12,3	0,99	78,5	4,2	0,5	1,9	70	85	0,00670	19,8
	100 Lc	4	**3**	1399	20,5	16,6	0,99	79,4	4,2	0,5	1,8	90	85	0,00810	22,5

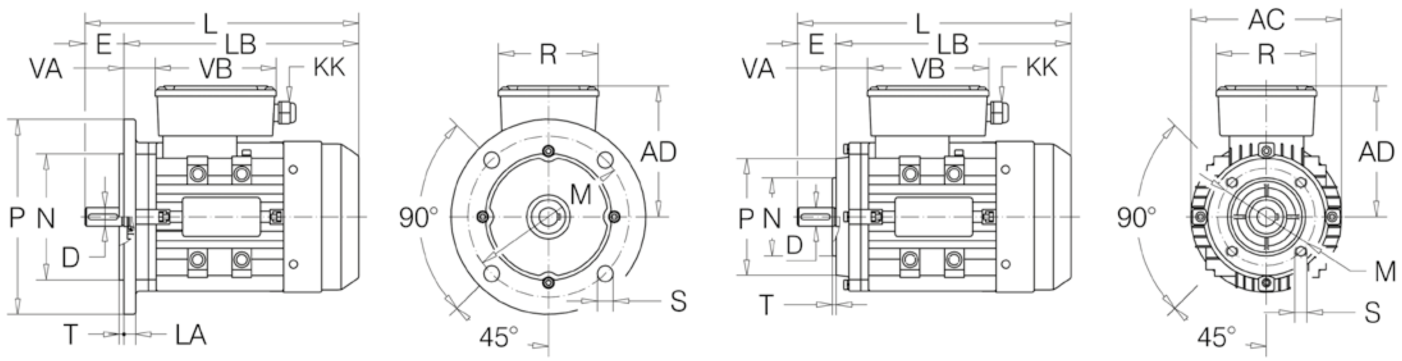
8.3 ELECTRICAL CONNECTIONS

SINGLE-PHASE MOTOR CONNECTION

8.4 JMM DIMENSIONAL DATA

B3

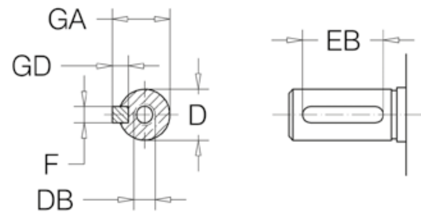




B5

B14

Shaft end



JMM SERIES

Tab. 8.4.1

JMM Motor			Main Overall Dimension AC	AD	H	HD	LB	L	Feet A	B	C	AB	BB	AA	BA	HA	K	Flange IM	M	NJ6	P	LA	T	S
56		2-4	113	112	56	168	176	196	90	71	36	110	89	20	20	6	6	B5	100	80	120	8	3	N°4 7
																		B14	65	50	80	--	2,5	N°4 M5
63		2-4	122	116	63	179	196	219	100	80	40	121	103	28	26	9	7	B5	115	95	140	9	3	N°4 9
																		B14	75	60	90	--	2,5	N°4 M5
71		2-4	139	123	71	194	231	261	112	90	45	133	106	28	23	10	7	B5	130	110	160	9	3,5	N°4 10
																		B14	85	70	105	--	2,5	N°4 M6
80		2-4	156	144	80	224	254	294	125	100	50	161	130	35	35	11	9	B5	165	130	200	10	3,5	N°4 12
																		B14	100	80	120	--	3	N°4 M6
90	S	2-4	174	150	90	240	236	286	140	100	56	174	130	35	33	12	10	B5	165	130	200	12	3,5	N°4 12
	L						286	336		125			155					B14	115	95	140	--	3	N°4 M8
100		2-4	198	165	100	265	332	392	160	140	63	197	175	50	42	15	12	B5	215	180	250	13	4	N°4 15
																		B14	130	110	160	--	3,5	N°4 M8

JMM SERIES

Tab. 8.4.2

JMM Motor		Shaft - End							Shaft - Seals						Terminal - Box					
						Key			Flange-End			Drive End DE Non drive end NDE			Term.	Cable gland				
		D	DB	E	GA	F	GD	EB	Øi	Øe	H	Øi	Øe	H	N°-Ø	N°-KK	N°-XX	VA	VB	R
56	4	9	M3	20	10,2	3	3	12	12	22	5	12	22	5	6-M4	PG 11	--	22	118	94
63	2-4	11	M4	23	12,5	4	4	16	12	24	7	12	24	7	6-M4	PG 11	--	23	118	94
71	2-4	14	M5	30	16	5	5	22	15	25	7	15	25	7	6-M4	PG 11	--	31	118	94
80	2-4	19	M6	40	21,5	6	6	32	20	35	7	20	35	7	6-M4	PG 11	--	32	141	112
90	2-4	24	M8	50	27	8	7	40	25	37	7	25	37	7	6-M4	PG 11	--	38	141	112
100	2-4	28	M10	60	31	8	7	50	30	42	7	30	42	7	6-M4	PG 11	--	30	141	112

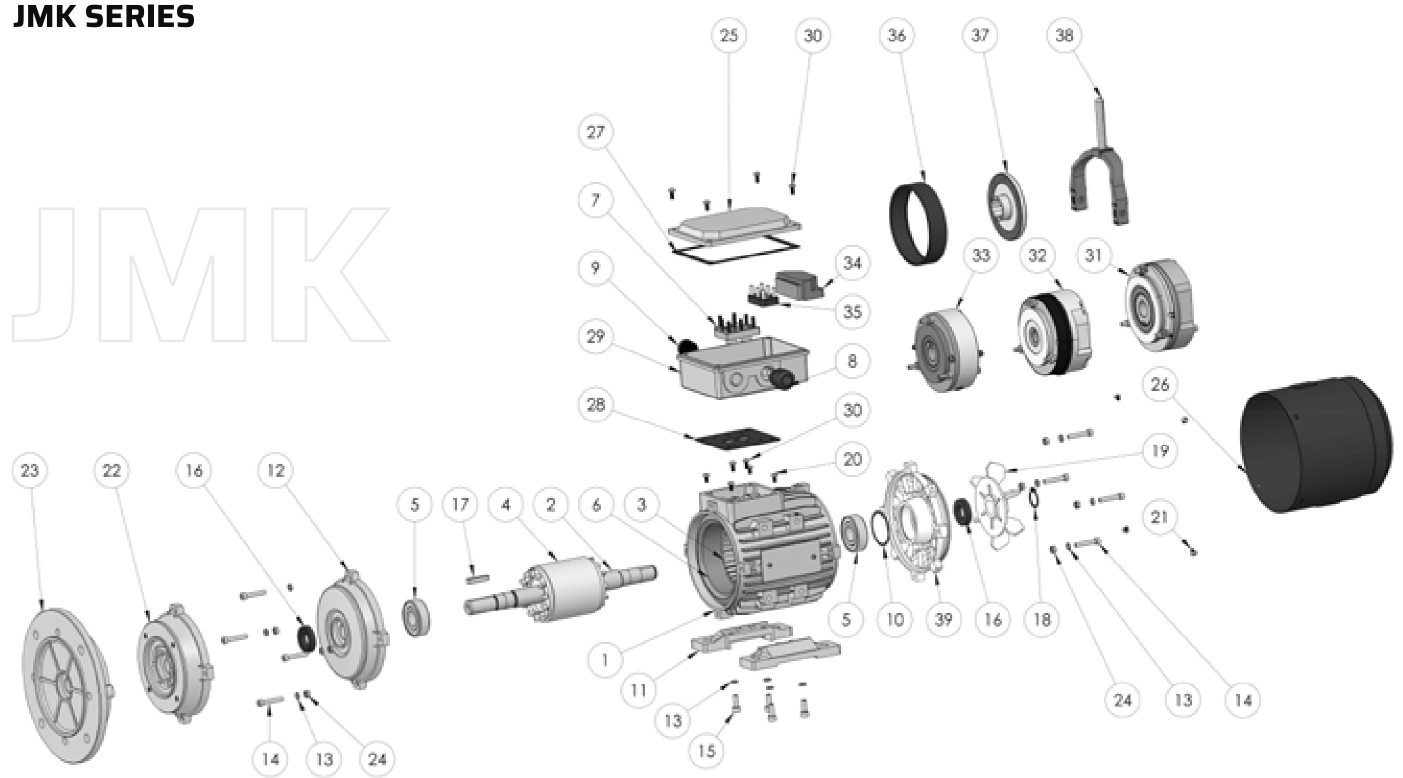
SELF-BRAKING MOTORS
JMK-GMK

9.

9 SELF-BRAKING MOTORS

9.1 COMPONENTS

JMK SERIES



1) Housing
2) Shaft
3) Stator
4) Rotor
5) Bearing
6) Winding
7) Terminal board
8) Cable gland
9) Plug
10) Preload spring
11) Foot for IMB3
12) Shield on control side for IMB3
13) Washer
14) Fastening screw for IMB3-IMB5-IMB14
15) Feet fastening screw for IMB3
16) Sealing ring
17) Key
18) Safety flexible ring
19) Fan
20) Terminal box locking screw
21) Fan cover locking screw
22) Flange IMB14
23) Flange IMB5
24) Nut
25) Terminal box cover
26) Fan cover
27) Terminal box gasket
28) Terminal box gasket
29) Terminal box
30) Terminal box cover screw
31) T.C. brake
32) T.A. brake
33) L.7. brake
34) Brake rectifier
35) Terminal board for brake A.C.
36) Brake protection with friction material
37) Brake pad with anti-sticking friction material
38) Release lever
39) Shield side opposite control

• 9.2 GENERAL CHARACTERISTICS

Standard asynchronous three-phase self-braking electric motor for general use in industrial applications, with cage rotor in short circuit, closed, self-ventilated externally (cooling method IC 411), thermal insulation class F/B suitable for inverter operation.

Designed to operate in continuous service (S1) at nominal voltage and frequency, working ambient air temperature: -15 ÷ +40 °C.
Maximum altitude: 1000 m above sea level.

JMK MOTORS SERIES

From an axis height of 63 to 160, power 0,12...18.5kW, 2-4-6-8-pole in die-cast aluminium light alloy.

Excellent thermal conductivity and excellent corrosion resistance.

Lifting ring starting with size 100.

Aluminium feet with the possibility of installation on the 3 sides of the motor in order to have the terminal box on the desired side: IM B3, IM B5, IM B14 and combined formats IM B35 (B3/B5) and IM B34 (B3/B14) / R, B, L, T. Standard on motor IM B3, it is supplied with a high terminal box (position T).

The motors can also be operated in the corresponding vertical-axis structural formats, however when requesting the motor specify its exact positioning.
The motor plate indicates the structural format with horizontal axis.

Terminal box and terminal cover in die-cast aluminium light alloy with bilateral cable input from size 63 ... 132. In size 160. standard two cable glands on the right hand side, on request on the left hand side. Ground terminal inside the terminal box, setup for a second ground clamp on the housing.

Terminal board to power a 6-terminal motor.

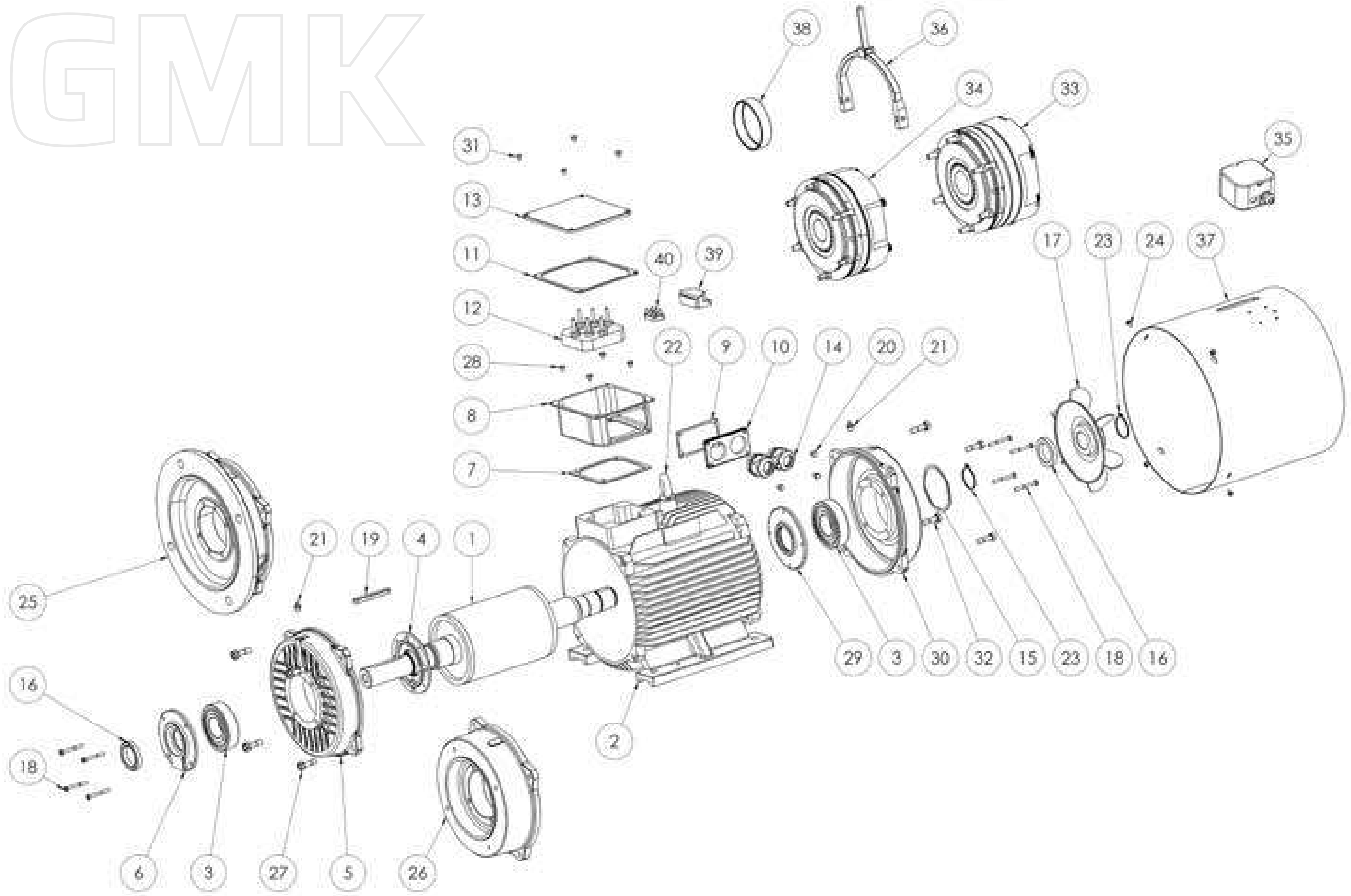
Shields and flanges all with tightening couplings "resting" and mounted on the housing with "tight" coupling. Shields and flanges on the shaft side made of die-cast aluminium light alloy, the bearing compartments are reinforced with steel sizes 80 ... 160. Shield on the side opposite coupling in cast iron.

JMK motors are powder coated RAL 9006 aluminium grey on the housing and with powder coated steel sheet fan/brake cover both internally and externally RAL 9005 black.

• 9.3 COMPONENTS

GMK SERIES

GMK



1) Shaft with rotor
2) Housing
3) Bearing
4) Control side bearing locking internal flange
5) Shield on control side
6) Control side bearing locking external flange
7) Terminal box gasket
8) Terminal box
9) Terminal box tab gasket
10) Terminal box tab
11) Terminal box cover gasket
12) Terminal board
13) Terminal box cover
14) Cable gland
15) Preload spring
16) Sealing ring
17) Fan
18) Bearing locking flange fastening screw
19) Key
20) Terminal box tab screw
21) Greaser
22) Lifting eyebolts
23) Safety flexible ring
24) Fan cover locking screw
25) Flange IMB5
26) Flange IMB14 (size GM 160 only)
27) Shield locking screw IMB3 on control side
28) Terminal box locking screw
29) Side opposite control bearing locking internal flange
30) Shield on side opposite control IMB3
31) Terminal box cover locking screw
32) Shield locking screw IMB3 on side opposite control
33) T.A. brake
34) T.C. brake.
35) Brake auxiliary box
36) Release lever
37) Fan cover
38) Brake protection in rubber
39) Brake rectifier
40) Terminal board for brake A.C.

MOTORI GMK SERIES

From an axis height 180 to 225, power 11...45kW 2-4-6-8-pole with **cast iron** housing with motor lifting eyebolt, **feet in cast iron firmly on the casing and shields and flanges in cast iron.**

As standard, the IMB3 motor is supplied with a top terminal box, and a side one on request.

Terminal box and terminal cover in steel (terminal box adjustable in 90° steps). Power cable input on the right side.

Ground terminal inside the terminal box, setup for a second ground clamp on the housing.

Terminal board to power a 6-terminal motor.

GMK motors are painted with combined nitro paint, in RAL 5010 blue with powder painted steel sheet fan/brake cover both internally and externally the same RAL.

Shields and flanges are entirely made with cast iron.

• 9.4 BEARINGS

Both the JMK and GMK series are equipped with rigid radial ball bearings with a crown, double-shield, lubricated for life, one of the best brands and selected for specific use on electric motors.

The shielded bearings ZZ, 2RS or DDU are lubricated for life with lithium grease for working temperature -15...+ 110 C, and therefore do not require maintenance.

Tab. 9.4.1

Motor	Horizontal IM B3, B35, B34, B5, B6, B7, B8, B14		Vertical IM V1, V15, V5, V18, V6		Dimensions Bearings
	Coupling side	Side opp. coup.	Coupling side	Side opp. coup.	[$Ø_i$ x $Ø_e$ x H]
JMK 63	6201-2RS/DDU	6202-2RS/DDU	6201-2RS/DDU	6202-2RS/DDU	12x32x10 / 15x35x11
JMK 71	6202-2RS/DDU	6203-2RS/DDU	6202-2RS/DDU	6203-2RS/DDU	15x35x11 / 17x40x1
JMK 80	6204-2RS/DDU		6204-2RS/DDU		20x47x14
JMK 90	6205-2RS/DDU		6205-2RS/DDU		25x52x1
JMK 100	6206-2RS/DDU		6206-2RS/DDU		30x62x16
JMK 112	6306-2RS/DDU	6207-2RS/DD	6306-2RS/DDU	6207-2RS/DDU	30x72x19 / 35x72x17
JMK 132	6308-2RS/DDU		6308-2RS/DDU		40x90x23
JMK 160	6309-2RS/DDU		6309-2RS/DDU		45x100x25
GMK 180	6311 ZZ C3	6311-2RS/DDU C3	6311 ZZ C3	6311-2RS/DDU C3	55x120x29
GMK 200	6312 ZZ C3	6312-2RS/DDU C3	6312 ZZ C3	6312-2RS/DDU C3	60x130x31
GMK 225	6313 ZZ C3	6313-2RS/DDU C	6313 ZZ C3	6313-2RS/DDU C3	65x140x33
GMK 250	6314 ZZ C3	6314-2RS/DDU C3	6314 ZZ C3	6314-2RS/DDU C3	70x150x35
GMK 280 2 GMK 280 2-4-6	6314 ZZ C3 6317 ZZ C3	6314-2RS/DDU C3 6317-2RS/DDU C3	6314 ZZ C3 6317 ZZ C3	6314-2RS/DDU C3 6317-2RS/DDU C3	70x150x35 85x180x41

seipee

• 9.5 SHAFT

Motor shaft in carbon steel with cylindrical ends, threaded hole in the head and key joined; motor shaft locked axially by two elastic rings: one on the shaft, the other on the rear shield.

Dynamic balance rotor with half key inserted in the end of the shaft.

On the opposite side, there is a threaded hole with the following dimensions:

JMK 63 = M4x12mm
JMK 71 = M5x15mm
JMK 80 = M6x15mm
JMK 90-100-112-132 = M8x25mm
JMK 160 = M10x25mm
GMK 180...280 = M10x25mm

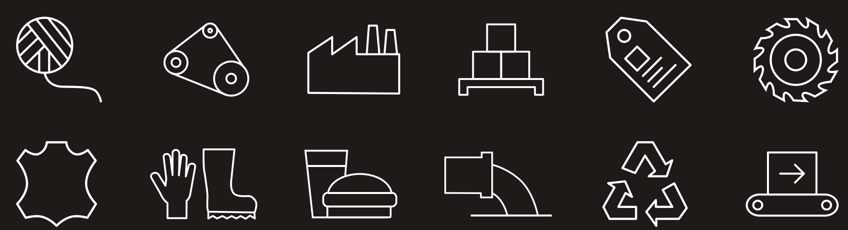
• 9.6 MOTOR CONNECTIONS

Motor power supply voltage:

Size 63 ... 112 -> standard voltage Δ 230 V / Y 400 V
Size 132 and 160 -> standard voltage Δ 400 V
Different voltages available on request.

SELF-BRAKING MOTORS
IE3

Size	JMK	Size	GMK
80 ~ 160		**180 ~ 225**	
Power	**JMK**	**Power**	**GMK**
0.75 ~ 18.5 kW		**15 ~ 90 kW**	
Polarity	**JMK**	**Polarity**	**GMK**
2, 4, 6, 8 poles		**2, 4, 6, 8 poles**	



Sectors of use

• 9.7 JMK IE3 ELECTRICAL DATA

JMK 2 POLES IE3 SERIES **Tab. 9.7.1**

IE3	JMK Motor	Poles	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	COSφ 100%	η 100%	η 75%	η 50%	I_S / I_N	T_S / T_N	T_{max} / T_N	J Kg m²	Weight Kg
Δ / Y - 230 / 400 V 50 Hz	**80 a**	2	**0,75**	2880	2,49	1,62	0,83	80,7	80,7	79,1	6,8	2,3	2,3	0,0014	13,3
	80 b	2	**1,1**	2880	3,65	2,31	0,83	82,7	82,7	81,0	7,3	2,3	2,3	0,0017	14,4
	80 c	2	**1,5**	2895	4,95	3,05	0,83	84,2	84,2	82,5	7,5	2,3	2,3	0,0018	15,5
	90 S	2	**1,5**	2895	4,95	3,10	0,83	84,2	84,2	82,5	7,6	2,3	2,3	0,0019	20,8
	90 La	2	**2,2**	2895	7,26	4,35	0,85	85,9	85,9	84,2	7,8	2,3	2,3	0,0025	22,8
	90 Lb*	2	**3**	2895	9,9	5,65	0,88	87,1	87,1	85,4	8,0	2,3	2,3	0,0030	27
	100 La	2	**3**	2895	9,9	5,65	0,88	87,1	87,1	85,4	8,1	2,3	2,3	0,0037	31,4
	100 Lb*	2	**4**	2900	13,2	7,45	0,88	88,1	88,1	86,3	8,1	2,3	2,3	0,0040	33,5
	112 Ma	2	**4**	2900	13,2	7,45	0,88	88,1	88,1	86,3	8,3	2,3	2,3	0,0085	42,5
	112 Mb*	2	**5,5**	2930	17,9	10,1	0,88	89,2	89,2	87,4	8	2,2	2,3	0,0095	47
Δ 400V 50Hz	**132 Sa**	2	**5,5**	2930	17,9	10,1	0,88	89,2	89,2	87,4	8,0	2,2	2,3	0,0195	59,5
	132 Sb	2	**7,5**	2930	24,4	13,7	0,88	90,1	90,1	88,3	7,8	2,2	2,3	0,0245	65
	132 Ma	2	**9,25**	2940	30,0	16,8	0,88	90,1	90,1	88,3	7,8	2,2	2,3	0,0260	74
	132 Mb*	2	**11**	2945	35,7	19,3	0,90	91,2	91,2	89,4	7,9	2,2	2,3	0,0280	76,4
	132 Mc*	2	**15**	2945	48,6	25,9	0,91	91,9	91,9	90,1	8,0	2,2	2,3	0,0400	80,5
	160 Ma	2	**11**	2945	35,7	19,3	0,90	91,2	91,2	89,4	7,9	2,2	2,3	0,0450	108
	160 Mb	2	**15**	2945	48,6	25,9	0,91	91,9	91,9	90,1	8,0	2,2	2,3	0,0500	122
	160 La	2	**18,5**	2940	60,1	32,5	0,89	92,4	92,4	90,6	8,1	2,2	2,3	0,0650	133
	160 Lb*	2	**22**	2955	71,1	38,1	0,90	92,70	92,70	90,80	8,2	2,2	2,3	0,0940	144

JMK 4 POLES IE3 SERIES

Tab. 9.7.2

IE3	JMK Motor	Poles	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	COSφ 100%	η 100%	η 75%	η 50%	I_s/I_N	T_s/T_N	T_{max}/T_N	J Kg m²	Weight Kg
Δ / Y - 230 / 400 V 50 Hz	80 b	4	0,75	1420	5,04	1,77	0,74	82,5	82,5	80,9	6,3	2,3	2,3	0,0023	15,5
	80 c*	4	1,1	1445	7,27	2,55	0,74	84,1	84,1	82,4	6,5	2,3	2,3	0,0025	17,7
	90 S	4	1,1	1435	7,32	2,52	0,75	84,1	84,1	82,4	6,5	2,3	2,3	0,0027	20,6
	90 La	4	1,5	1435	9,98	3,38	0,75	85,3	85,3	83,6	6,6	2,3	2,3	0,0037	25
	90 Lb*	4	1,85	1435	12,3	3,95	0,78	86,7	86,7	85,0	6,7	2,3	2,3	0,0043	25,5
	90 Lc*	4	2,2	1435	14,6	4,68	0,78	86,7	86,7	85,0	6,9	2,3	2,3	0,0051	26
	100 La	4	2,2	1445	14,5	4,52	0,81	86,7	86,7	85,0	6,9	2,3	2,3	0,0069	33,5
	100 Lb	4	3	1445	19,8	6,02	0,82	87,7	87,7	85,9	7,5	2,3	2,3	0,0084	39
	112 Ma	4	4	1450	26,3	7,95	0,82	88,6	88,6	86,8	7,6	2,3	2,3	0,0140	49,3
	112 Mc*	4	5,5	1460	36,0	11,1	0,80	89,6	89,6	87,8	7,7	2,0	2,3	0,0170	52,6
Δ 400V 50Hz	132 S	4	5,5	1465	35,9	10,8	0,82	89,6	89,6	87,8	7,7	2,0	2,3	0,0310	66
	132 Ma	4	7,5	1465	48,9	14,4	0,83	90,4	90,4	88,6	7,5	2,0	2,3	0,0370	77
	132 Mb*	4	9,25	1460	60,5	18,0	0,82	90,4	90,4	88,6	7,5	2,0	2,3	0,0500	79,5
	132 Mc*	4	11	1465	71,7	21,2	0,82	91,4	91,4	89,6	7,4	2,2	2,3	0,0530	91,5
	160 M	4	11	1475	71,2	20,4	0,85	91,4	91,4	89,6	7,4	2,2	2,3	0,0800	117
	160 L	4	15	1475	97,1	27,3	0,86	92,1	92,1	90,3	7,5	2,2	2,3	0,0980	133,5

JMK 6 POLES IE3 SERIES

Tab. 9.7.3

IE3	JMK Motor	Poles	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	COSφ 100%	η 100%	η 75%	η 50%	I_s/I_N	T_s/T_N	T_{max}/T_N	J Kg m²	Weight Kg
Δ / Y - 230 / 400V 50 Hz	90 S	6	0,75	935	7,66	2,25	0,61	78,9	78,9	77,3	5,8	2,1	2,1	0,0036	19,5
	90 La	6	1,1	945	11,1	2,84	0,69	81,0	81,0	79,4	5,9	2,1	2,1	0,0041	23,5
	100 L	6	1,5	945	15,2	3,80	0,69	82,5	82,5	80,9	6,0	2,1	2,1	0,0080	32,5
	100 M	6	2,2	955	22,0	5,31	0,71	84,3	84,3	82,6	6,0	2,1	2,1	0,0190	41,5
Δ 400V 50Hz	132 S	6	3	965	29,7	7,12	0,71	85,6	85,6	83,9	6,2	2,0	2,1	0,0340	62
	132 Ma	6	4	965	39,6	9,37	0,71	86,8	86,8	85,1	6,8	2,0	2,1	0,0400	69
	132 Mb	6	5,5	965	54,4	12,0	0,75	88,0	88,0	86,2	7,1	2,0	2,1	0,0500	78,5
	160 M	6	7,5	970	73,8	15,8	0,77	89,1	89,1	87,3	6,7	2,1	2,1	0,1100	107
	160 L	6	11	970	108,3	22,3	0,79	90,3	90,3	88,5	6,9	2,1	2,1	0,1300	142

JMK 8 POLES IE3 SERIES

Tab. 9.7.4

IE3	JMK Motor	Poles	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	COSφ 100%	η 100%	η 75%	η 50%	I_s/I_N	T_s/T_N	T_{max}/T_N	J Kg m²	Weight Kg
Δ / Y - 230 / 400 V 50 Hz	100 La	8	0,75	710	10,1	2,29	0,63	75,0	75,3	72,0	3,5	1,7	2,1	0,0099	29,5
	100 Lb	8	1,1	710	14,8	3,19	0,64	77,7	78,0	74,5	3,5	1,7	2,1	0,0115	31
	112 Ma	8	1,5	710	20,2	4,18	0,65	79,7	80,1	76,6	4,2	1,8	2,1	0,0260	41,5
Δ 400V 50Hz	132 Sa	8	2,2	720	29,2	5,88	0,66	81,9	82,3	77,8	5,5	2,0	2,0	0,0385	57
	132 Ma	8	3	720	39,8	7,74	0,67	83,5	83,8	79,8	5,5	2,0	2,0	0,0510	60
	160 Ma	8	4	720	53,0	10,0	0,68	84,8	85,2	81,2	6,0	1,9	2,1	0,1100	98
	160 Mb	8	5,5	720	72,9	13,5	0,68	86,2	86,6	81,8	6,0	2,0	2,2	0,1200	105
	160 L	8	7,5	720	99,5	18,0	0,69	87,3	87,7	83,2	6,0	1,9	2,2	0,1390	115

* Power or power/size not standardized

• 9.8 GMK IE3 ELECTRICAL DATA

GMK 2 POLES IE3 SERIES

Tab. 9.8.1

IE3	GMK Motor	Poles	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	COSφ 100%	η 100%	η 75%	η 50%	I_s/I_N	T_s/T_N	T_{max}/T_N	J Kg m²	Weight Kg
Δ 400V 50Hz	180 M	2	22	2955	71,1	38,1	0,90	92,7	92,7	90,8	8,2	2,2	2,3	0,1150	205
	200 La	2	30	2960	96,8	52,1	0,89	93,3	93,3	91,4	7,5	2,2	2,3	0,1700	285
	200 Lb	2	37	2960	119,4	62,6	0,91	93,7	93,7	91,8	7,5	2,2	2,3	0,2000	295
	225 M	2	45	2965	144,9	78,5	0,88	94,0	94,0	92,1	7,6	2,2	2,3	0,3000	360
	250 M	2	55	2970	176,8	94,6	0,89	94,3	94,3	92,4	7,6	2,2	2,3	0,4400	455
	280 S	2	75	2975	240,7	127	0,90	94,7	94,7	92,8	6,9	2,0	2,3	0,6900	585
	280 M	2	90	2975	288,9	154	0,89	95,0	95,0	93,1	7,0	2,0	2,3	0,8000	665

GMK 4 POLES IE3 SERIES

Tab. 9.8.2

IE3	GMK Motor	Poles	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	COSφ 100%	η 100%	η 75%	η 50%	I_s/I_N	T_s/T_N	T_{max}/T_N	J Kg m²	Weight Kg
Δ 400V 50Hz	180 M	4	18,5	1470	120,2	34,3	0,84	92,6	92,6	90,7	7,5	2,2	2,3	0,1470	195
	180 L	4	22	1470	142,9	40,2	0,85	93,0	93,0	91,1	7,7	2,2	2,3	0,1700	228
	200 L	4	30	1475	194,2	53,8	0,86	93,6	93,6	91,7	7,8	2,2	2,3	0,2750	310
	225 S	4	37	1485	237,9	66,1	0,86	93,9	93,9	92,0	7,2	2,2	2,3	0,4300	352
	225 M	4	45	1485	289,4	79,3	0,87	94,2	94,2	92,3	7,3	2,2	2,3	0,4900	387
	250 M	4	55	1485	353,7	96,5	0,87	94,6	94,6	92,7	7,4	2,2	2,3	0,7000	475
	280 S	4	75	1485	482,3	129	0,88	95,0	95,0	93,1	7,4	2,2	2,3	1,1800	618
	280 M	4	90	1485	578,7	157	0,87	95,2	95,2	93,3	6,7	2,2	2,3	1,5300	700

GMK 6 POLES IE3 SERIES

Tab. 9.8.3

IE3	GMK Motor	Poles	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	COSφ 100%	η 100%	η 75%	η 50%	I_s/I_N	T_s/T_N	T_{max}/T_N	J Kg m²	Weight Kg
Δ 400V 50Hz	180 L	6	15	980	146,2	29,3	0,81	91,2	91,2	89,4	7,2	2,0	2,1	0,2100	213
	200 La	6	18,5	980	180,3	35,9	0,81	91,7	91,7	89,9	7,2	2,1	2,1	0,3200	275
	200 Lb	6	22	980	214,4	41,5	0,83	92,2	92,2	90,4	7,3	2,1	2,1	0,3650	293
	225 M	6	30	980	292,3	55,5	0,84	92,9	92,9	91,0	7,1	2,0	2,1	0,5500	344
	250 M	6	37	985	358,7	68,1	0,84	93,3	93,3	91,4	7,1	2,1	2,1	0,8500	450
	280 S	6	45	985	436,3	81,6	0,85	93,7	93,7	91,8	7,2	2,1	2,0	1,4500	555
	280 M	6	55	985	533,2	99,3	0,85	94,1	94,1	92,2	7,2	2,1	2,0	1,7500	620

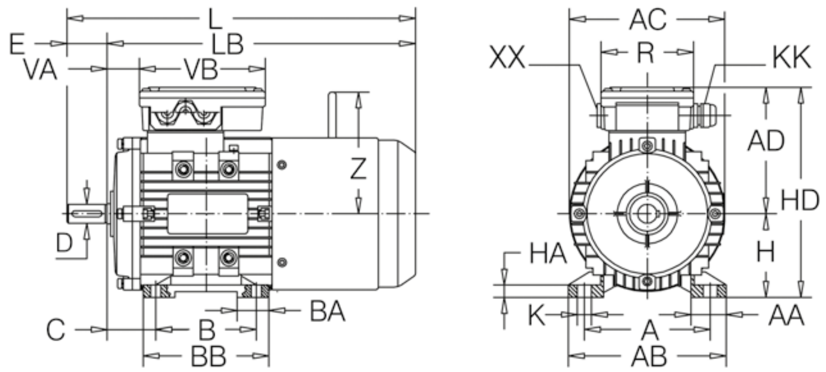
GMK 8 POLES IE3 SERIES

Tab. 9.8.4

IE3	GMK Motor	Poles	P_N	n_N	T_N	$I_{N (400 V)}$	COSφ	η	η	η	I_s/I_N	T_s/T_N	T_{max}/T_N	J	Weight
			kW	min⁻¹	Nm	A	100%	100%	75%	50%				Kg m²	Kg
Δ 400V 50Hz	180 L	8	11	730	144,0	23,9	0,75	88,6	87,7	85,4	6,1	2,2	2,4	0,2600	217
	200 La	8	15	730	196,2	31,8	0,76	89,6	88,9	86,6	6,0	2,1	2,3	0,4100	290
	225 S	8	18,5	740	239,0	39,0	0,76	90,1	89,0	86,9	6,4	2,2	2,4	0,5800	320
	225 M	8	22	740	284,0	44,9	0,78	90,6	89,5	87,7	6,5	2,1	2,5	0,6400	355
	250 M	8	30	740	387,0	60,0	0,79	91,3	90,4	88,6	6,2	2,2	2,4	0,9800	460
	280 S	8	37	740	478,0	73,6	0,79	91,8	90,9	89,4	6,4	2,1	2,3	1,9200	570
	280 M	8	45	740	581,0	89,2	0,79	92,2	91,4	90,1	6,4	2,1	2,3	2,250	635

• 9.9 JMK DIMENSIONAL DATA

B3



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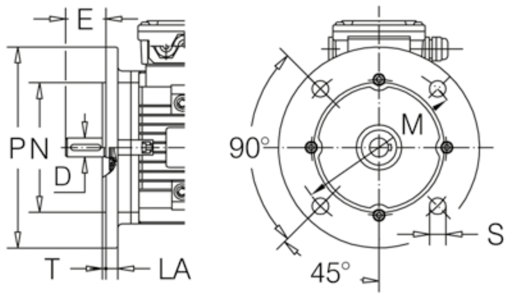

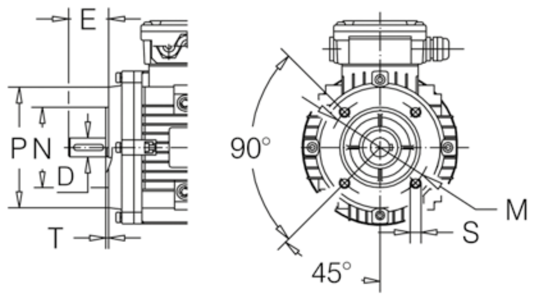

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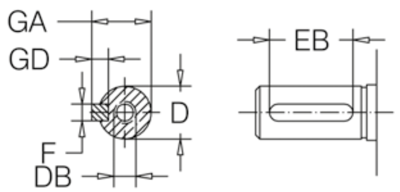

Shaft end

JMK IE3 SERIES

Tab. 9.9.1

JMK Motor			Main Overall Dimension							Feet									Flange						
			AC	AD	H	HD	Z	LB	L	A	B	C	AB	BB	AA	BA	HA	K	IM	M	NJ6	P	LA	T	S
80		2…8	156	139	80	219	136	335	375	125	100	50	161	130	35	35	11	9	B5	165	130	200	10	3,5	N°4 12
																			B14	100	80	120	--	3	N°4 M6
90	S	2…8	174	145	90	235	164	340	390	140	100	56	174	130	35	33	12	10	B5	165	130	200	12	3,5	N°4 12
	L							398	448		125			155					B14	115	95	140	--	3	N°4 M8
100		2…8	198	158	100	258	180	415	475	160	140	63	197	175	50	42	15	12	B5	215	180	250	13	4	N°4 15
																			B14	130	110	160	--	3,5	N°4 M8
112		2…8	221	174	112	286	188	452	512	190	140	70	220	180	55	42	15	12	B5	215	180	250	14	4	N°4 15
																			B14	130	110	160	--	3,5	N°4 M8
132	S	2…8	258	197	132	329	225	495	575	216	140	89	252	175	58	40	15	12	B5	265	230	300	14	4	N°4 15
	M							535	615		178			213					B14	165	130	200	--	3,5	N°4 M10
160	M	2…8	314	235	160	395	260	635	745	254	210	108	291	293	54	90	17	15	B5	300	250	350	15	5	N°4 20
	L										254								B14	215	180	250	--	4	N°4 M12

JMK IE3 SERIES

Tab. 9.9.2

JMK Motor			Shaft - End							Shaft - Seals						Terminal - Box					
							Key			Flange-End			Drive End DE Non drive end NDE			Term.	Cable gland	Plug			
			D	DB	E	GA	F	GD	EB	Øi	Øe	H	Øi	Øe	H	N°-Ø	N°-KK	N°-XX	VA	VB	R
80		2…8	19	M6	40	21,5	6	6	32	20	35	7	20	35	7	6-M4	1-M20x1,5	1-M20x1,5	28	140	105
90	S L	2…8	24	M8	50	27	8	7	40	25	37	7	25	40	7	6-M4	2-M25x1,5	2-M25x1,5	32	140	105
100	L	2…8	28	M10	60	31	8	7	50	30	42	7	30	52	7	6-M5	2-M25x1,5	2-M25x1,5	27	140	105
112	M	2…8	28	M10	60	31	8	7	50	30	44	7	35	52	7	6-M5	2-M25x1,5	2-M25x1,5	30	160	115
132	S M	2…8	38	M12	80	41	10	8	70	40	58	8	40	62	7	6-M5	2-M32x1,5	2-M32x1,5	52	160	115
160	M L	2…8	42	M16	110	45	12	8	90	45	65	8	45	75	10	6-M6	2-M40x1,5	--	65	143	146

SELF-BRAKING MOTORS

9.10 GMK DIMENSIONAL DATA

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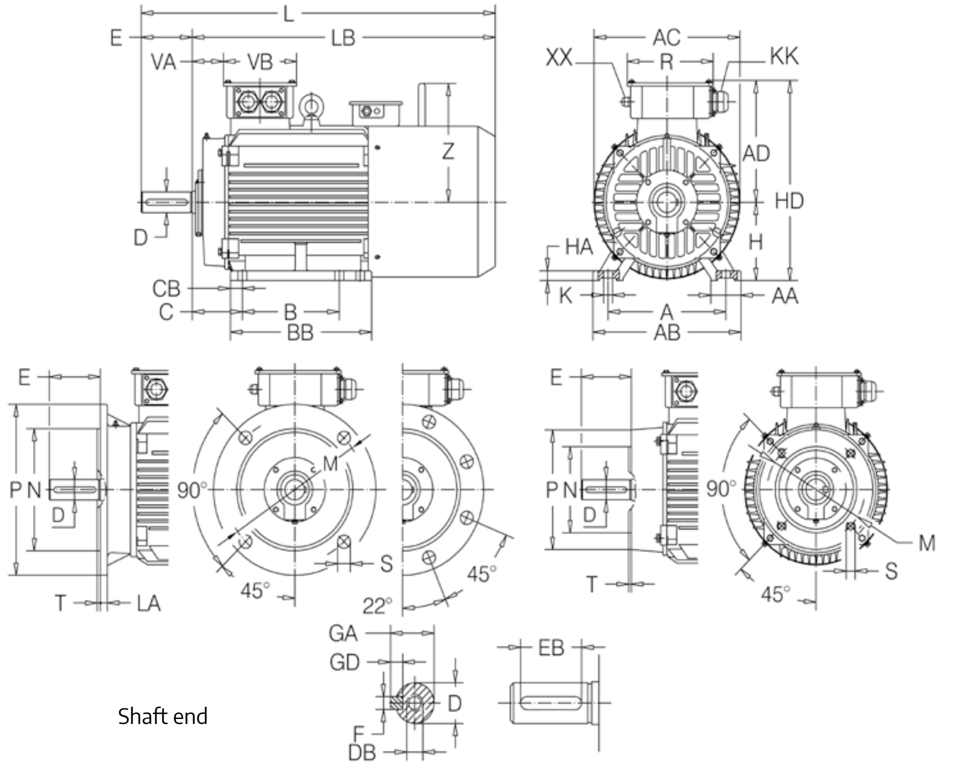


Shaft end

GMK IE3 SERIES **Tab. 9.10.1**

GMK Motor			Main Overall Dimension							Feet									Flange						
			AC	AD	H	HD	Z	LB	L	A	B	C	AB	BB	AA	CB	HA	K	IM	M	NJ6	P	LA	T	S
180	M	2-4	355	267	180	447	260	690	800	279	241	121	350	311	70	35	22	15	B5	300	250	350	15	5	N°4 19
	L	4-6-8						730	840		279			349											
200	L	2…8	397	299	200	499	260	800	910	318	305	133	390	370	70	32	25	18	B5	350	300	400	17	5	N°4 19
225	S	4…8	446	322	225	547	260	805	945	356	286	149	432	370	75	46	28	19	B5	400	350	450	20	5	N°8 19
225	M	2…8	446	322	225	547	260	830	940	356	311	149	433	395	75	46	28	19	B5	400	350	450	20	5	N°8 19
250	M	2…8	485	358	250	608	260	920	1060	406	349	168	486	445	80	55	30	24	B5	500	450	550	22	5	N°8 19
280	S	2…8	547	387	280	667	320	1100	1240	457	368	190	545	485	85	69	35	24	B5	500	450	550	22	5	N°8 19
	M							1150	1290		419			536											

GMK IE3 SERIES **Tab. 9.10.2**

GMK Motor			Shaft - End				Key			Shaft - Seals: Flange-End			Drive End DE Non drive end NDE			Shaft - Seals: Term.	Cable gland				
			D	DB	E	GA	F	GD	EB	Øi	Øe	H	Øi	Øe	H	N°-Ø	N°-KK	N°-XX	VA	VB	R
180		2-4-6-8	48	M16	110	51,5	14	9	100	55	75	8/12	55	90	8/10	6-M6	2-M40x1,5	1-M16x1,5	82	158	185
200		2-4-6-8	55	M20	110	59	16	10	100	60	80	8/12	60	90	8/10	6-M8	2-M50x1,5	1-M16x1,5	92	187	224
225	S	4-8	60	M20	140	64	18	11	125	65	90	10/12	65	90	8/10	6-M8	2-M50x1,5	1-M16x1,5	95	187	224
225	M	2	55	M20	110	59	16	10	100	60	80	8/12	65	90	8/10	6-M8	2-M50x1,5	1-M16x1,5	95	187	224
		4-6-8	60		140	64	18	11	125	65	90	10/12	65	90	8/10						
250		2 4-6-8	60	M20	140	64	18	11	125	65	90	10/12	70	90	8/10	6-M10	2-M63x1,5	1-M16x1,5	88	238	283
			65			69				70	90	10/12	70	90	8/10						
280		2	65	M20	140	69	18	11	125	70	90	10/12	70	90	8/10	6-M10	2-M63x1,5	1-M16x1,5	96	238	283
		4-6-8	75			79,5	20	12		85	110	10/12	70	90	8/10						

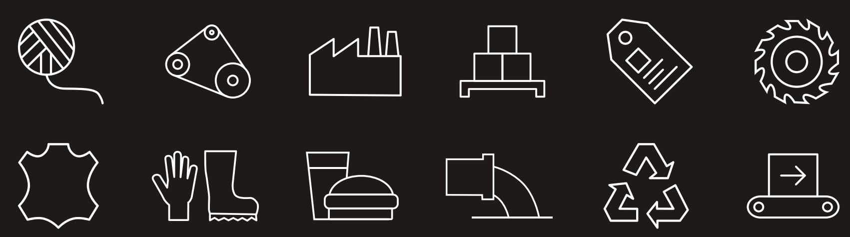
seipee S.p.A.

SELF-BRAKING MOTORS
IE2

Size	JMK
63 ~ 80	

Power	JMK
0.12 ~ 0.55 kW	

Polarity	JMK
2, 4, 6, 8 poli	



Sectors of use

• 9.11 JMK IE2 ELECTRICAL DATA

JMK 2 POLES IE2 SERIES

Tab. 9.11.1

IE2	JMK Motor	Poles	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	COSφ 100%	η 100%	η 75%	η 50%	I_s/I_N	T_s/T_N	T_{max}/T_N	J Kg m²	Weight Kg
Δ / Y - 230 / 400 V - 50 Hz	**63 a**	**2**	**0,18**	2710	0,63	0,57	0,75	60,4	61,2	57,5	4,4	3,1	3,2	0,00024	6,0
	63 b	**2**	**0,25**	2710	0,88	0,71	0,78	64,8	65,5	62,3	4,5	2,8	3,0	0,00031	6,4
	63 c*	**2**	**0,37**	2730	1,29	0,97	0,79	69,5	70,3	66,8	4,4	3,0	3,1	0,00036	6,9
	71 a	**2**	**0,37**	2730	1,29	0,97	0,79	69,5	70,3	66,8	5,6	2,4	3,1	0,00049	8,2
	71 b	**2**	**0,55**	2760	1,90	1,36	0,79	74,1	74,8	72,1	5,5	2,8	3,2	0,00057	8,8
	71 c*	**2**	**0,75**	2760	2,59	1,71	0,82	77,4	77,9	74,3	5,6	2,8	2,9	0,00068	9,5

JMK 4 POLES IE2 SERIES

Tab. 9.11.2

IE2	JMK Motor	Poles	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	COSφ 100%	η 100%	η 75%	η 50%	I_s/I_N	T_s/T_N	T_{max}/T_N	J Kg m²	Weight Kg
Δ / Y - 230 / 400 V - 50 Hz	**63 a**	**4**	**0,12**	1350	0,85	0,46	0,64	59,1	59,8	56,4	3,1	2,4	2,8	0,00028	6,4
	63 b	**4**	**0,18**	1350	1,27	0,62	0,65	64,7	65,3	62,5	3,3	2,5	2,6	0,00035	6,8
	63 c*	**4**	**0,25**	1350	1,77	0,80	0,66	68,5	69,5	66,2	3,4	2,5	2,5	0,00042	7,3
	71aa	**4**	**0,25**	1350	1,77	0,73	0,72	68,5	69,3	65,6	4,4	2,6	2,7	0,00057	8,6
	71 b	**4**	**0,37**	1370	2,58	0,99	0,74	72,7	73,3	69,3	4,6	3,0	3,0	0,00073	9,0
	71 c*	**4**	**0,55**	1380	3,81	1,37	0,75	77,1	77,8	74,3	4,5	2,8	2,9	0,00094	10,8
	80 a	**4**	**0,55**	1370	3,83	1,37	0,75	77,1	77,8	74,3	5,4	2,3	2,6	0,00190	12,5

JMK 6 POLES IE2 SERIES

Tab. 9.11.3

IE2	JMK Motor	Poles	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	COSφ 100%	η 100%	η 75%	η 50%	I_s/I_N	T_s/T_N	T_{max}/T_N	J Kg m²	Weight Kg
Δ 400V 50Hz	**63 a**	**6**	**0,12**	850	1,35	0,55	0,62	50,6	51,6	48,5	2,2	2,0	2,1	0,00053	7,0
	71 a	**6**	**0,18**	880	1,95	0,70	0,66	56,6	57,4	53,2	2,8	2,0	2,4	0,00110	8,5
	71 b	**6**	**0,25**	900	2,65	0,84	0,70	61,6	62,4	58,3	3,0	2,1	2,3	0,00120	9,0
	71 c*	**6**	**0,37**	900	3,93	1,13	0,70	67,6	68,6	64,3	3,1	2,2	2,4	0,00130	9,7
	80 a	**6**	**0,37**	900	3,93	1,13	0,70	67,6	68,6	64,3	4,1	2,1	2,5	0,00165	14
	80 b	**6**	**0,55**	900	5,84	1,51	0,72	73,1	73,9	70,1	4,2	2,1	2,4	0,00210	15

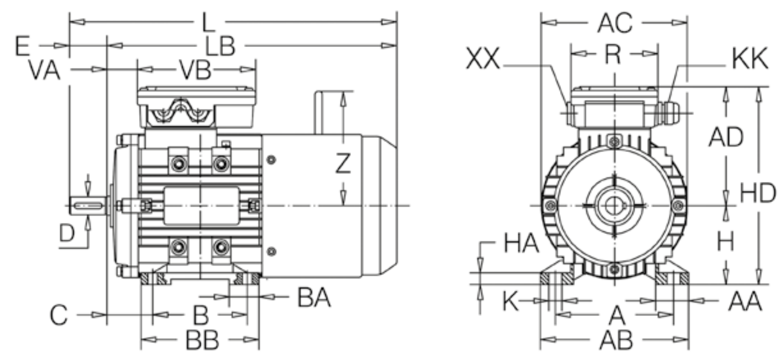
JMK 8 POLES IE2 SERIES

Tab. 9.11.4

IE2	JMK Motor	Poles	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	COSφ 100%	η 100%	η 75%	η 50%	I_s/I_N	T_s/T_N	T_{max}/T_N	J Kg m²	Weight Kg
Δ 400V 50Hz	**71 b**	**8**	**0,12**	690	1,66	0,74	0,59	39,8	40,6	36,5	2,0	1,9	1,9	0,00140	9,4
	80 a	**8**	**0,18**	680	2,53	0,93	0,61	45,9	46,7	42,1	3,1	2,0	2,5	0,00250	14,5
	80 b	**8**	**0,25**	680	3,51	1,17	0,61	50,6	51,6	47,5	3,3	2,2	2,5	0,00270	15
	90 S	**8**	**0,37**	680	5,20	1,51	0,63	56,1	56,8	53,4	2,9	1,6	1,9	0,00390	19
	90 La	**8**	**0,55**	680	7,72	1,98	0,65	61,7	62,3	58,4	3,0	1,8	1,9	0,00470	22

• 9.12 JMK DIMENSIONAL DATA

B3



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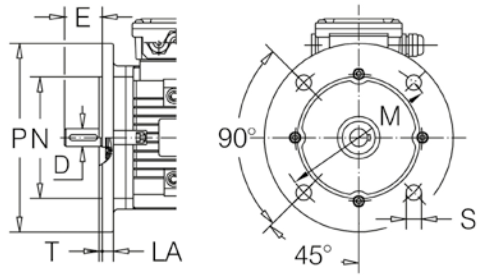

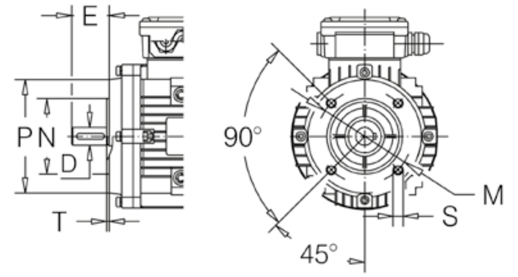

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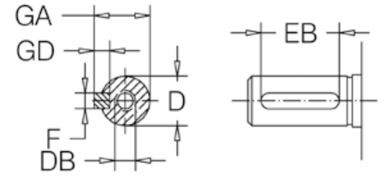


Shaft end

JMK A30-33 IE2 SERIES

Tab. 9.12.1

JMK Motor			Main Overall Dimension							Feet									Flange						
			AC	AD	H	HD	Z	LB	L	A	B	C	AB	BB	AA	BA	HA	K	IM	M	NJ6	P	LA	T	S
63		2…6	122	113	63	176	107	250	273	100	80	40	121	103	28	26	9	7	B5	115	95	140	9	3	N°4 9
																			B14	75	60	90	--	2,5	N°4 M5
71		2…8	140	118	71	189	116	290	320	112	90	45	133	106	28	23	10	7	B5	130	110	160	9	3,5	N°4 10
																			B14	85	70	105	--	2,5	N°4 M6
80		2…8	156	139	80	219	136	335	375	125	100	50	161	130	35	35	11	9	B5	165	130	200	10	3,5	N°4 12
																			B14	100	80	120	--	3	N°4 M6
90	S	2…8	174	145	90	235	164	325	375	140	100	56	174	130	35	33	12	10	B5	165	130	200	12	3,5	N°4 12
	L							375	425		125			155					B14	115	95	140	--	3	N°4 M8

JMK A31 IE2 SERIES

Tab. 9.12.2

JMK Motor			Shaft - End							Shaft - Seals						Terminal - Box					
							Key			Flange-End			Drive End DE Non drive end NDE			Term.	Cable gland	Plug			
			D	DB	E	GA	F	GD	EB	Øi	Øe	H	Øi	Øe	H	N°-Ø	N°-KK	N°-XX	VA	VB	R
63	M	2…6	11	M4	23	12,5	4	4	16	12	24	7	15	26	7	6-M4	1-M20x1,5	1-M20x1,5	15	119	94
71	M	2…8	14	M5	30	16	5	5	22	15	25	7	17	32	5	6-M4	1-M20x1,5	1-M20x1,5	23	119	94
80	M		19	M6	40	21,5	6	6	32	20	35	7	20	35	7	6-M4	1-M20x1,5	1-M20x1,5	28	140	105
90	S	2…8	24	M8	50	27	8	7	40	25	37	7	25	40	7	6-M4	2-M25x1,5	2-M25x1,5	32	140	105
	L																				

seipee S.p.A.

SELF-BRAKING MOTORS
IE1

Size	JMK
63 ~ 160	

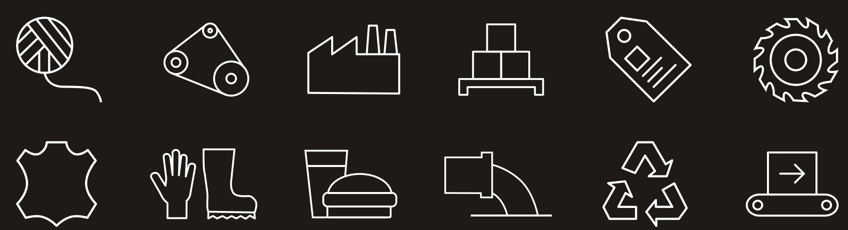
Size	GMK
150 ~ 225	

Power	JMK
0.12 ~ 18.5 kW	

Power	GMK
15 ~ 90 kW	

Polarity	JMK
2, 4, 6, 8 poles	

Polarity	GMK
2, 4, 6, 8 poles	



Sectors of use

• 9.13 JMK ELECTRICAL DATA

All motors in this section of the catalogue are exclusively intended for export outside the European Economic Area. Therefore, the sale of the aforementioned motors by Seipee is made under the sole responsibility of the buyer who assumes all legal obligations that result from completely exempting Seipee from any direct or indirect liability according to current legislation.

On the side opposite the control, there is a threaded hole with the following dimensions:

JMK 63 = M4x12mm, JMK 71 = M5x15mm, JMK 80 = M6x15mm, JMK 90-100-112-132 = M8x25mm, JMK 160 = M10x25mm, GMK 180...280 = M10x25mm

JMK 2 POLES SERIES

Tab. 9.13.1

IE1	JMK Motor	Poles	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	COSφ	η 100%	η 75%	η 50%	I_s / I_N	T_s / T_N	T_{max} / T_N	Weight Kg
Δ / Y - 230 / 400 V - 50 Hz	63 a	2	0,18	2730	0,63	0,53	0,76	64	60	55	4,2	2,9	3,1	5,8
	63 b	2	0,25	2730	0,87	0,69	0,77	68	63	57	4,5	2,8	2,9	6,2
	63 c*	2	0,37	2720	1,30	0,98	0,79	69	65	58	4,1	2,9	3,0	6,7
	71 a	2	0,37	2770	1,28	0,94	0,81	70	67	61	5,4	2,9	3,1	8,1
	71 b	2	0,55	2770	1,90	1,31	0,83	73	69	63	5,2	2,9	3,0	8,7
	71 c*	2	0,75	2740	2,61	1,73	0,83	75	70	63	5,5	2,7	2,8	9,4
	80 a	2	0,75	2800	2,56	1,85	0,80	73,6	72,0	67,7	5,6	2,8	2,9	12,3
	80 b	2	1,1	2820	3,72	2,44	0,85	76,4	76,1	73,0	5,7	2,8	3,0	13,1
	80 c*	2	1,5	2810	5,10	3,2	0,86	78,4	78,4	75,1	5,8	3,0	3,1	14,4
	90 S	2	1,5	2860	5,01	3,2	0,84	81,0	80,9	77,3	5,9	3,0	3,2	16,8
	90 La	2	2,2	2840	7,40	4,6	0,85	81,3	80,8	78,9	6,1	2,9	3,1	18,9
	90 Lb*	2	3	2830	10,1	6	0,86	84,0	83,8	81,0	5,8	3,2	3,3	19,7
	100 La	2	3	2860	10,0	6,1	0,86	82,9	82,7	80,6	6,3	2,8	3,0	26,1
	100 Lb	2	4	2850	13,4	8,05	0,87	82,8	82,5	80,1	6,1	3,0	3,1	29,5
	112 Ma	2	4	2880	13,3	8	0,85	84,5	83,8	81,3	6,6	2,8	2,9	37,5
	112 Mb*	2	5,5	2890	18,2	10,7	0,87	86,0	86,1	84,8	6,9	3,2	3,3	40,5
Δ - 400 V - 50 Hz	132 Sa	2	5,5	2900	18,1	10,6	0,87	86,0	86,0	84,2	7,1	2,9	3,1	58,5
	132 Sb	2	7,5	2900	24,7	14,1	0,88	87,4	87,5	86,1	7,0	3,2	3,4	62,5
	132 Ma*	2	9,25	2910	30,4	17,1	0,89	87,8	87,7	85,4	7,3	2,9	3,2	65,5
	132 Mb*	2	11	2900	36,2	20,4	0,89	88,0	88,2	86,9	7,7	3,2	3,4	71,5
	160 Ma	2	11	2930	35,9	20,4	0,88	88,6	88,3	86,8	7,2	2,9	3,4	93
	160 Mb	2	15	2920	49,1	27,3	0,89	89,5	89,5	87,6	7,0	2,8	3,2	102
	160 L	2	18,5	2930	60,3	32,9	0,90	90,5	90,1	88,6	7,4	2,7	3,1	109

JMK 4 POLES SERIES

Tab. 9.13.2

IE1	JMK Motor	Poles	P_N kW	n_N min^{-1}	T_N Nm	$I_{N (400 V)}$ A	COSφ	η 100%	η 75%	η 50%	I_s / I_N	T_s / T_N	T_{max} / T_N	Weight Kg
Δ / Y - 230 / 400 V - 50 Hz	63 a	4	0,12	1330	0,86	0,50	0,59	59	53	47	2,7	2,3	2,4	5,9
	63 b	4	0,18	1350	1,27	0,72	0,60	60	54	49	2,9	2,3	2,3	6,5
	63 c*	4	0,25	1340	1,78	0,91	0,64	62	57	52	2,7	2,4	2,4	7
	71 a	4	0,25	1360	1,76	0,85	0,65	65	61	57	3,5	2,8	2,8	8,1
	71 b	4	0,37	1370	2,58	1,1	0,71	68	66	60	3,4	2,5	2,6	8,9
	71 c*	4	0,55	1370	3,83	1,63	0,72	68	65	62	3,6	2,4	2,4	9,6
	80 a	4	0,55	1390	3,78	1,55	0,73	70	68	63	3,8	2,3	2,4	12,3

The table continues on the next page

SELF-BRAKING MOTORS

JMK 4 POLES SERIES

Tab. 9.13.2

IE1	JMK Motor	Poles	P_N kW	n_N min^{-1}	T_N Nm	$I_{N(400V)}$ A	COSφ	η 100%	η 75%	η 50%	I_s/I_N	T_s/T_N	T_{max}/T_N	Weight Kg
Δ/Y - 230/400V - 50 Hz	80 b	4	0,75	1380	5,19	2	0,74	73,2	71,1	65,9	4,0	2,2	2,3	13,1
	80 c*	4	1,1	1390	7,56	2,8	0,76	75,0	74,2	72,0	4,0	2,3	2,3	14,4
	90 S	4	1,1	1400	7,50	2,75	0,76	76,3	75,9	74,3	4,8	2,9	3,0	17,2
	90 La	4	1,5	1400	10,2	3,55	0,78	78,6	78,3	75,5	5,0	3,0	3,0	19
	90 Lb*	4	1,85	1390	12,7	4,15	0,82	78,7	78,8	75,3	4,9	2,6	2,7	20,2
	90 Lc*	4	2,2	1360	15,4	4,95	0,84	76,8	77,1	75,0	4,1	2,4	2,5	21,8
	100 La	4	2,2	1420	14,8	5,00	0,77	82,8	81,5	79,3	5,6	2,7	3,0	26,3
	100 Lb	4	3	1430	20,0	6,50	0,79	84,3	84,2	81,9	6,4	3,1	3,2	29,5
	100 Lc+	4	4	1410	27,1	8,47	0,82	83,1	83,4	82,0	6,5	3,1	3,2	30
	112 Ma	4	4	1435	26,6	8,35	0,82	84,3	84,5	83,0	5,8	2,5	2,7	38,5
	112 Mc*	4	5,5	1430	36,7	11,3	0,82	85,0	85,2	84,6	6,0	2,7	2,8	42
Δ - 400 V - 50 Hz	132 S	4	5,5	1440	36,5	11,2	0,83	86,2	85,4	84,1	6,9	2,6	3,1	60
	132 Ma	4	7,5	1440	49,7	14,7	0,84	87,9	87,6	86,2	7,3	3,6	3,7	67
	132 Mb	4	9,25	1445	61,1	18,2	0,83	88,2	88,1	86,9	7,6	3,0	3,4	71
	132 Mc*	4	11	1440	72,9	21	0,86	88,4	88,4	87,3	7,1	2,9	3,1	74
	160 M	4	11	1460	71,9	21,3	0,84	88,5	88,0	87,0	6,7	2,4	2,4	102
	160 L	4	15	1460	98,1	28,5	0,85	89,6	89,5	88,6	7,3	2,2	2,3	110
	160 lb	4	18,5	1460	121,0	34,8	0,86	89,3	89,1	88,2	6,3	2,0	2,5	116

JMK 6 POLES SERIES

Tab. 9.13.3

IE1	JMK Motor	Poles	P_N kW	n_N min^{-1}	T_N Nm	$I_{N(400V)}$ A	COSφ	η 100%	η 75%	η 50%	I_s/I_N	T_s/T_N	T_{max}/T_N	Weight Kg
Δ/Y - 230/400V - 50 Hz	63 b	6	0,12	870	1,32	0,63	0,60	46	42	39	3,0	2,0	2,1	6,5
	71 a	6	0,18	875	1,96	0,75	0,65	53	49	45	2,5	2,6	2,6	8,2
	71 b	6	0,25	885	2,70	0,93	0,66	59	56	51	2,7	2,5	2,5	8,9
	71 c*	6	0,30	870	3,29	1,1	0,68	58	57	52	2,5	2,4	2,4	9,6
	80 a	6	0,37	910	3,88	1,18	0,70	65	64	57	3,0	2,0	2,1	13,8
	80 b	6	0,55	905	5,80	1,65	0,72	67	66	59	3,2	2,1	2,2	14,8
	90 S	6	0,75	920	7,78	2,2	0,70	70,2	70,4	66,0	3,4	2,1	2,2	17,5
	90 La	6	1,1	920	11,4	2,95	0,74	73,0	73,0	69,0	3,8	2,2	2,4	19,5
	90 Lb*	6	1,5	910	15,7	4	0,74	73,5	72,8	68,3	3,6	2,2	2,2	21
	100 L	6	1,5	930	15,4	3,8	0,76	75,4	75,8	72,9	4,0	2,2	2,4	29
	112 M	6	2,2	930	22,6	5,5	0,74	77,9	78,8	76,3	5,2	2,6	2,7	40
Δ - 400V - 50Hz	132 S	6	3	960	29,8	7	0,76	82,7	82,5	80,0	5,7	2,2	2,5	61
	132 Ma	6	4	960	39,8	9	0,76	84,5	84,7	83,0	5,0	2,2	2,3	68
	132 Mb	6	5,5	955	55,0	11,7	0,79	85,4	85,4	83,9	5,7	2,6	2,8	72
	160 M	6	7,5	970	73,8	16,1	0,78	86,2	86,1	83,5	6,5	2,1	2,2	103
	160 L	6	11	970	108	22,9	0,79	87,6	87,8	86,0	6,4	2,0	2,1	111

JMK 8 POLES SERIES

Tab. 9.13.4

IE1	JMK Motor	Poles	P_N kW	n_N min^{-1}	T_N Nm	$I_{N(400V)}$ A	COSφ	η 100%	η 75%	η 50%	I_s/I_N	T_s/T_N	T_{max}/T_N	Weight Kg
Δ/Y - 230/400V - 50 Hz	71 a	8	0,09	645	1,33	0,42	0,60	43	40	36	1,8	1,9	1,9	8,0
	71 b	8	0,12	640	1,79	0,7	0,56	44	40	36	1,9	1,9	1,9	9,3
	71 c	8	0,18	670	2,57	0,96	0,54	50	46	40	2,0	1,9	1,9	10
	80 a	8	0,18	670	2,57	0,96	0,54	50	46	40	2,0	1,9	1,9	14
	80 b	8	0,25	640	3,73	1,12	0,58	56	52	46	1,9	1,9	1,9	14,6
	90 S	8	0,37	690	5,12	1,45	0,61	60	59	53	2,8	2,3	2,5	17,8
	90 L	8	0,55	695	7,56	2,15	0,60	61	60	54	2,9	2,2	2,4	20,5
	100 La	8	0,75	695	10,3	2,4	0,65	69	68	61	3,0	2,1	2,2	28
	100 Lb	8	1,1	695	15,1	3,4	0,67	70	69	63	3,3	2,2	2,3	30
	112 M	8	1,5	700	20,5	4,4	0,69	71	70	65	3,4	2,1	2,2	41
Δ - 400V - 50Hz	132 S	8	2,2	715	29,4	5,9	0,68	79,0	79,1	77,0	4,9	2,4	2,5	62
	132 M	8	3	710	40,3	7,4	0,73	81,1	80,7	79,2	4,8	2,6	2,7	70
	160 Ma	8	4	710	53,8	10,5	0,68	81,0	80,3	76,8	5,6	2,6	3,6	100
	160 Mb	8	5,5	710	74,0	13,6	0,71	82,0	81,4	77,8	5,5	2,5	2,8	111
	160 L	8	7,5	710	100,4	18,6	0,70	83,0	82,4	78,8	5,7	2,6	2,8	128

* Power or power/size not standardized

• 9.14 GMK ELECTRICAL DATA

GMK 2 POLES SERIES

Tab. 9.14.1

IE1	GMK Motor	Poles	P_N kW	n_N min^{-1}	T_N Nm	$I_{N(400V)}$ A	COSφ	η 100%	η 75%	η 50%	I_s/I_N	T_s/T_N	T_{max}/T_N	Weight Kg
Δ 400V - 50 Hz	180 M	2	22	2940	71,5	38,9	0,90	90,8	90,6	90,3	7,0	2,1	2,3	189
	200 La	2	30	2950	97,1	52,7	0,90	91,5	91,5	91,2	6,9	2,0	2,5	278
	200 Lb	2	37	2950	119,8	64,5	0,90	92,2	92,3	91,8	7,2	2,0	2,4	290
	225 M	2	45	2960	145,2	78,2	0,90	92,6	92,5	91,8	7,3	2,2	2,4	352
	250 M	2	55	2965	177,0	95,9	0,89	93,1	93,0	92,0	7,1	2,0	2,3	437
	280 S	2	75	2970	241,0	130	0,90	92,7	92,7	91,6	7,3	2,2	2,4	540
	280 M	2	90	2970	289,0	153	0,91	93,0	93,0	91,8	7,0	2,0	2,3	610

GMK 4 POLES SERIES

Tab. 9.14.2

IE1	GMK Motor	Poles	P_N kW	n_N min^{-1}	T_N Nm	$I_{N(400V)}$ A	COSφ	η 100%	η 75%	η 50%	I_s/I_N	T_s/T_N	T_{max}/T_N	Weight Kg
Δ 400V - 50 Hz	180 M	4	18,5	1460	121,0	34,6	0,86	90,2	90,2	91,1	6,7	2,1	2,8	188
	180 L	4	22	1470	142,9	41,0	0,85	91,2	91,1	91,9	7,5	2,2	3,0	206
	200 L	4	30	1470	194,9	55,0	0,86	91,7	92,3	92,4	6,6	2,3	2,5	305
	225 S	4	37	1475	239,5	66,4	0,87	92,3	92,4	93,0	7,2	2,3	2,6	335
	225 M	4	45	1475	291,3	80,4	0,87	92,7	92,7	93,2	7,0	2,2	2,4	362
	250 M	4	55	1480	355,0	98,0	0,87	93,4	93,5	93,0	7,1	2,3	2,6	460
	280 S	4	75	1480	484,0	134	0,87	92,7	92,7	92,2	6,6	2,3	2,5	555
	280 M	4	90	1480	581,0	161	0,87	93,0	93,0	92,5	6,2	2,2	2,4	651

GMK 6 POLES SERIES

Tab. 9.14.3

IE1	GMK Motor	Poles	P_N kW	n_N min⁻¹	T_N Nm	$I_{N (400 V)}$ A	COSφ	η 100%	η 75%	η 50%	I_s/I_N	T_s/T_N	T_{max}/T_N	Weight Kg
Δ - 400 V - 50Hz	180 L	6	15	970	147,7	30,0	0,81	88,6	88,7	88,3	6,9	2,1	2,2	202
	200 La	6	18,5	980	180,3	36,6	0,82	89,2	89,3	88,1	6,7	2,1	2,2	270
	200 Lb	6	22	980	214,4	42,4	0,83	90,0	90,2	89,3	6,6	2,1	2,2	288
	225 M	6	30	980	292,3	56,3	0,84	91,4	91,5	90,8	6,7	2,0	2,1	337
	250 M	6	37	980	361,0	67,4	0,86	91,8	91,9	91,0	6,9	2,1	2,2	442
	280 S	6	45	980	438,0	82,6	0,86	91,4	91,4	90,6	6,5	2,1	2,2	535
	280 M	6	55	980	536,0	100	0,86	91,9	91,9	91,0	6,6	2,0	2,1	585

GMK 8 POLES SERIES

Tab. 9.14.4

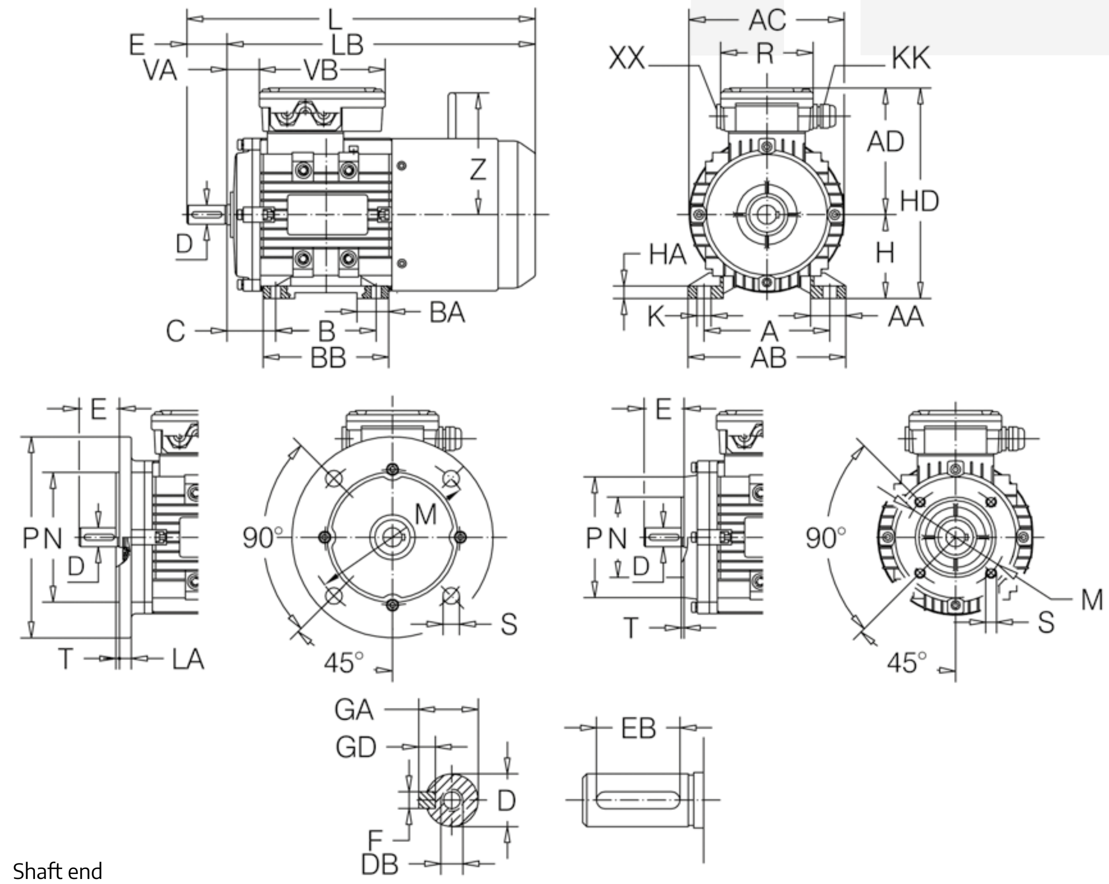
IE1	GMK Motor	Poles	P_N kW	n_N min⁻¹	T_N Nm	$I_{N (400 V)}$ A	COSφ	η 100%	η 75%	η 50%	I_s/I_N	T_s/T_N	T_{max}/T_N	Weight Kg
Δ - 400 V - 50Hz	180 L	8	11	730	143,9	23,8	0,77	87,2	87,6	87,1	5,7	1,9	2,2	184
	200 L	8	15	730	196,2	32,4	0,75	88,8	89,0	88,6	6,0	2,0	2,2	288
	225 S	8	18,5	730	242,0	39,0	0,76	90,1	90,1	89,7	6,2	1,9	2,2	314
	225 M	8	22	730	287,8	45,0	0,78	90,5	90,8	90,1	6,4	2,0	2,0	337
	250 M	8	30	735	390,0	60,8	0,79	90,2	90,4	90,0	6,1	1,9	2,1	440
	280 S	8	37	735	481,0	73,9	0,79	91,5	91,5	91,0	6,5	1,9	2,3	517
	280 M	8	45	735	585,0	89,4	0,79	92,0	92,0	91,5	6,4	2,0	2,2	583

• 9.15 JMK DIMENSIONAL DATA

B3

B5

B14



Shaft end

JMK IE1 SERIES

Tab. 9.15.1

JMK Motor			Main Overall Dimension AC	AD	H	HD	Z	LB	L	Feet A	B	C	AB	BB	AA	BA	HA	K	Flange IM	M	NJ6	P	LA	T	S
63		2...6	122	113	63	176	107	250	273	100	80	40	121	103	28	26	9	7	B5	115	95	140	9	3	N°4 9
																			B14	75	60	90	--	2,5	N°4 M5
71		2...8	140	118	71	189	116	290	320	112	90	45	133	106	28	23	10	7	B5	130	110	160	9	3,5	N°4 10
																			B14	85	70	105	--	2,5	N°4 M6
80		2...8	156	139	80	219	136	315	355	125	100	50	161	130	35	35	11	9	B5	165	130	200	10	3,5	N°4 12
																			B14	100	80	120	--	3	N°4 M6
90	S	2...8	174	145	90	235	164	325	375	140	100	56	174	130	35	33	12	10	B5	165	130	200	12	3,5	N°4 12
	L							375	425		125			155					B14	115	95	140	--	3	N°4 M8
100		2...8	198	158	100	258	180	410	470	160	140	63	197	175	50	42	15	12	B5	215	180	250	13	4	N°4 15
																			B14	130	110	160	--	3,5	N°4 M8
112		2...8	221	174	112	286	188	412	472	190	140	70	220	180	55	42	15	12	B5	215	180	250	14	4	N°4 15
																			B14	130	110	160	--	3,5	N°4 M8
132	S	2...8	258	197	132	329	225	460	540	216	140	89	252	175	58	40	15	12	B5	265	230	300	14	4	N°4 15
	M							500	580		178			213					B14	165	130	200	--	3,5	N°4 M10
160	M	2...8	314	235	160	395	260	615	725	254	210	108	291	293	54	90	17	15	B5	300	250	350	15	5	N°4 20
	L										254								B14	215	180	250	--	4	N°4 M12

SELF-BRAKING MOTORS

JMK IE1 SERIES

Tab. 9.15.2

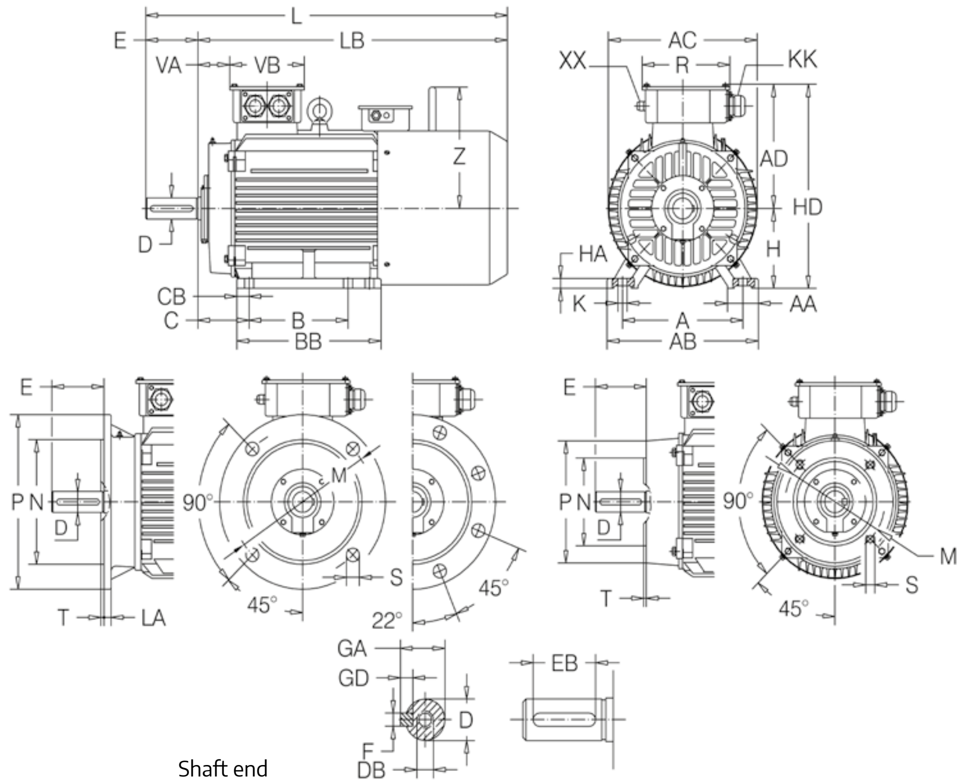
JMK Motor			Shaft - End							Shaft - Seals						Terminal - Box					
							Key			Flange-End			Drive End DE Non drive end NDE			Term.	Cable gland	Plug			
			D	DB	E	GA	F	GD	EB	Øi	Øe	H	Øi	Øe	H	N°-Ø	N°-KK	N°-XX	VA	VB	R
63	M	2...6	11	M4	23	12,5	4	4	16	12	24	7	15	26	7	6-M4	1-M20x1,5	1-M20x1,5	15	119	94
71	M	2...8	14	M5	30	16	5	5	22	15	25	7	17	32	5	6-M4	1-M20x1,5	1-M20x1,5	23	119	94
80	M	2...8	19	M6	40	21,5	6	6	32	20	35	7	20	35	7	6-M4	1-M20x1,5	1-M20x1,5	28	140	105
90	S L	2...8	24	M8	50	27	8	7	40	25	37	7	25	40	7	6-M4	2-M25x1,5	2-M25x1,5	32	140	105
100	L	2...8	28	M10	60	31	8	7	50	30	42	7	30	52	7	6-M5	2-M25x1,5	2-M25x1,5	27	140	105
112	M	2...8	28	M10	60	31	8	7	50	30	44	7	35	52	7	6-M5	2-M25x1,5	2-M25x1,5	30	160	115
132	S M	2...8	38	M12	80	41	10	8	70	40	58	8	40	62	7	6-M5	2-M32x1,5	2-M32x1,5	52	160	115
160	M L	2...6	42	M16	110	45	12	8	90	45	65	8	45	75	10	6-M6	2-M40x1,5	--	65	143	146

• 9.16 GMK DIMENSIONAL DATA

B3

B5

B14



Shaft end

GMK IE1 SERIES

Tab. 9.16.1

GMK Motor			Main Overall Dimension							Feet									Flange						
			AC	AD	H	HD	Z	LB	L	A	B	C	AB	BB	AA	CB	HA	K	IM	M	NJ6	P	LA	T	S
180	M	2-4	355	267	180	447	260	690	800	279	241	121	350	311	70	35	22	15	B5	300	250	350	15	5	N°4 19
	L	4-6-8						730	840		279			349											
200	L	2...8	397	299	200	499	260	800	910	318	305	133	390	370	70	32	25	18	B5	350	300	400	17	5	N°4 19
225	S	4...8	446	322	225	547	260	805	945	356	286	149	432	370	75	46	28	19	B5	400	350	450	20	5	N°8 19
225	M	2	446	322	225	547	260	830	940	356	311	149	433	395	75	46	28	19	B5	400	350	450	20	5	N°8 19
		4-6-8							970																
250	M	2...8	485	358	250	608	260	920	1060	406	349	168	486	445	80	55	30	24	B5	500	450	550	22	5	N°8 19
280	S	2...8	547	387	280	667	320	1100	1240	457	368	190	545	485	85	69	35	24	B5	500	450	550	22	5	N°8 19
	M							1150	1290		419			536											

GMK IE1 SERIES

Tab. 9.16.2

GMK Motor			Shaft - End							Shaft - Seals						Terminal - Box					
							Key			Flange-End			Drive End DE Non drive end NDE			Term.	Cable gland				
			D	DB	E	GA	F	GD	EB	Øi	Øe	H	Øi	Øe	H	N°-Ø	N°-KK	N°-XX	VA	VB	R
180		2-4-6-8	48	M16	110	51,5	14	9	100	55	75	8/12	55	90	8/10	6-M6	2-M40x1,5	1-M16x1,5	82	158	185
200		2-4-6-8	55	M20	110	59	16	10	100	60	80	8/12	60	90	8/10	6-M8	2-M50x1,5	1-M16x1,5	92	187	224
225	S	4...8	60	M20	140	64	18	11	125	65	90	10/12	65	90	8/10	6-M8	2-M50x1,5	1-M16x1,5	95	187	224
225	M	2	55	M20	110	59	16	10	100	60	80	8/12	65	90	8/10	6-M8	2-M50x1,5	1-M16x1,5	95	187	224
		4-6-8	60		140	64	18	11	125	65	90	10/12	65	90	8/10						
250		2	60	M20	140	64	18	11	125	65	90	10/12	70	90	8/10	6-M10	2-M63x1,5	1-M16x1,5	88	238	283
		4-6-8	65			69				70	90	10/12	70	90	8/10						
280		2	65	M20	140	69	18	11	125	70	90	10/12	70	90	8/10	6-M10	2-M63x1,5	1-M16x1,5	96	238	283
		4-6-8	75			79,5	20	12		85	110	10/12	70	90	8/10						

SELF-BRAKING MOTORS

BRAKES TABLES AND **RELEVANT CONNECTION DIAGRAMS**

• 9.17 BRAKES TABLES AND RELEVANT CONNECTION DIAGRAMS

The brake acts in the absence of power supply due to the force exerted by the springs.
By removing the power supply to the electro-magnet, the mobile anchor, by acting on the springs, presses the brake pad keyed onto the motor shaft against the rear shield, generating the braking torque.

By powering the brake, the electromagnet, overcoming the force of the springs, attracts the mobile anchor and releases the brake pad and the motor shaft.
The construction with multiple springs and the braking in the absence of the power supply make the equipment safe.

The JMK and GMK self-braking motors can be fitted with 3 types of brake:

1. Alternating current brake: series **TA**… , **GA**…
2. Direct current brake: series **TC**… , **GC**…
3. Direct current brake Intorq: series **L7**… , **L8**…

CHOICE OF BRAKE

To define the type of brake to use, you must **know the braking torque MF [Nm]** you need, this torque is based on the type of application required.

Data necessary for brake determination:

1) Total Overall Inertia of the rotating parts brought to the shaft of the electric motor ITOT [Kgm2]
2) no. rotations of the electric motor [rpm]
3) Braking time required t_F
4) The resistant load attributable to a resistant torque MR (e.g. load to keep suspended). . . etc.)
5) The number of activations made by the brake over time, typically no. of activations in an hour m [1/h].

Other data to take into account are ambient temperature, environmental conditions (e.g. the brake is installed in dusty or damp areas or both, brackish etc…) and the mounting position of the motor, horizontal, vertical with the drive shaft up or down, etc…).

DETERMINING THE BRAKING TORQUE
(simplified formula)

Notes:

P: nominal power of the motor [W]
n: N° of rotations [1/min]
s: function safety coefficient of the application (typically 2÷3).

You obtain:
The Braking Torque, known via the formula

$$M_F = \frac{P}{(2\pi \cdot \eta)/60} \cdot s$$

The MR Resistant Torque obtainable from one of the 4 notable cases outlined below that cover most real applications:

CASE 1 : Lifting of a weight Q [N] having, compared to the rotation axis, a moment MR [Nm]

The necessary braking torque is calculated using the formulas outlined below. Multiplying the result of these formulas by the safety coefficient s, generally equal to 2, the desired braking torque is obtained.

$$M_{Fs} = \frac{\frac{2\pi \cdot \eta}{60} \cdot I_{TOT}}{tf \cdot ct} - M_R$$

M_F $M_F = M_{Fs} \cdot S$

Where ct = 0.995 reduction coefficient of the intervention time

SELF-BRAKING MOTORS

CASE 2 : Lowering of a weight Q [N] having, compared to the rotation axis, a moment MR [Nm]

The necessary braking torque is calculated using the formulas outlined below. Multiplying the result of these formulas by the safety coefficient s, generally equal to 2, the desired braking torque is obtained.

$$M_{Fs} = \frac{\frac{2\pi\cdot\eta}{60}\cdot I_{TOT}}{tf\cdot ct} + M_R$$

$$M_F = M_{Fs}\cdot S$$

Where ct = 0.995 reduction coefficient of the intervention time

CASE 3 : : Resistant constant torque M_R [Nm] which opposes rotation of the motor

The necessary braking torque is calculated using the formulas outlined below. Multiplying the result of these formulas by the safety coefficient s, generally equal to 2, the desired braking torque is obtained.

$$M_{Fs} = \frac{\frac{2\pi\cdot\eta}{60}\cdot I_{TOT}}{tf\cdot ct} - M_R$$

$$M_F = M_{Fs}\cdot S$$

Where ct = 0.995 reduction coefficient of the intervention time

CASE 4 : Resistant constant torque M_R [Nm] which promotes rotation of the motor

$$M_{Fs} = \frac{\frac{2\pi\cdot\eta}{60}\cdot I_{TOT}}{tf\cdot ct} + M_R$$

$$M_F = M_{Fs}\cdot S$$

Where ct = 0.995 reduction coefficient of the intervention time

CHECKING THERMAL DISSIPATION OF THE BRAKE

During the braking phase, a certain amount of heat develops and it must be verified if the brake is able to dispose of it.

It is necessary to check that this amount of heat is compatible with the number of brake applications/hour that the brake has to perform.

CASE 1

$$L = I_{TOT}\cdot\frac{\left(\frac{2\pi\cdot\eta}{60}\right)^2}{2}\cdot\left(\frac{M_F}{M_F+M_R}\right)$$

CASE 2

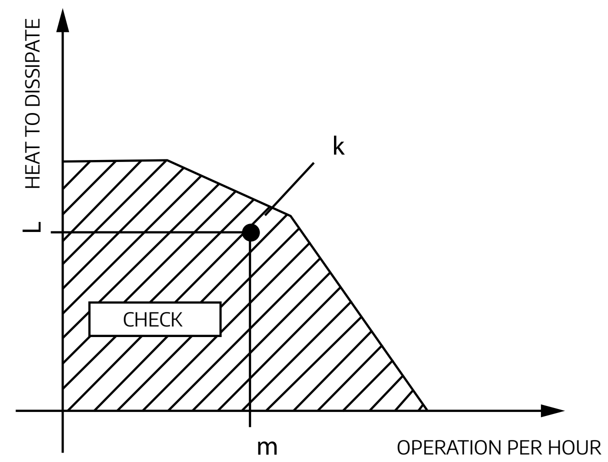
$$L = I_{TOT}\cdot\frac{\left(\frac{2\pi\cdot\eta}{60}\right)^2}{2}\cdot\left(\frac{M_F}{M_F-M_R}\right)$$

CASE 3 and 4

$$L = I_{TOT}\cdot\frac{\left(\frac{2\pi\cdot\eta}{60}\right)^2}{2}$$

I notice the number of manoeuvres/hour to be carried out using "Graphic 1" verifies the point K is under the curve limit of the selected type of brake.

GRAPHIC 1



If point K remains below the curve, the selected brake size meets the assumed load conditions.

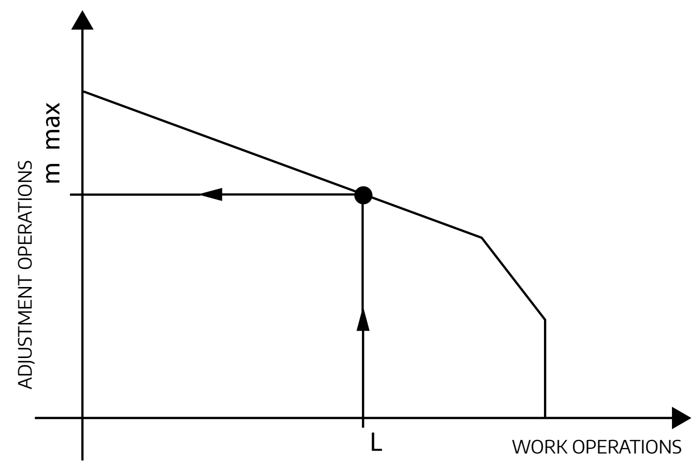
If this is not the case, change to a larger size and repeat the operation.

ADJUSTMENT OF THE AIR GAP

The maximum number of possible mmax manoeuvres before adjusting the air gap is obtained with "Graphic 2".

Enter on the x axis with the work L to dissipate and read the number of overall manoeuvres on the ordinates of the selected brake curve. In terms of time (hours), the adjustment is obtained with the following formula:

GRAPHIC 2



Hreg = mmaxm

The formula above allows calculation of consumption equal to a 0.1 mm air gap. The functionality of the brake is guaranteed by a maximum air gap value of 0.7 mm (consumption 0.5mm).

BRAKE OVERALL CHARACTERISTICS

Spring electromagnetic brakes, designed for service S1 *, IP54 with insulation class F, overtemperature class B

DI SERIE

- Brake pad in aluminium, series TA,TC size 1,2,3,4,5 and series L7 and L8. In steel: series TA, TC size 6,7,8 and series GA and GC.
- Double friction gasket, silent, without asbestos
- Toothed driving hub with anti-vibration o-ring (excluding brake L7, L8).
- No axial load on motor shaft during braking.
- High braking moment.
- Possibility of adjusting the braking moment continuously according to the type of use (excluding the L7 brake) as indicated in the tables of brake characteristics.
- Motors supplied as standard with a brake calibrated to 80% of the rated brake moment value (15%), used (excluding brake L7) as indicated in the brake characteristics tables.
- The minimum and nominal value of the braking moment (for brake L7 only the nominal value) are outlined on the motor plate.
- Brake connected to an auxiliary terminal board inside the terminal box. The power supply of the motor is always separate from that of the brake. In the TA and GA series brakes with auxiliary terminal board, while the TC, GC, L7, L8 series, both with rectifier. For brake connection, see “Brakes installation and maintenance”.

SUPPLIED ON REQUEST

- **Manual release lever** with automatic return (rod on the release lever corresponding to the terminal box, and is removable).
- Set up for manual rotation of the motor shaft using a hex male key on the side opposite control.
- The degree of protection IP55 (not possible for execution with a release lever and on series TC, L7, L8).
- Vast availability of special executions: servo-ventilator, encoder, release lever... (for the complete list, see the special executions chapter on page 145).

** For brakes in the TA and GA series, service S1 can only be guaranteed with motor ventilation.*

If the work cycle involves operating periods with excited coil (activated brake) and motor stopped or with a low number of rotations, it is indispensable to equip the self-braking motor with servo-ventilation.

ALTERNATING CURRENT BRAKE CHARACTERISTICS SERIES TA AND GA

- High insertion and disconnection speed to permit:
  - completely free start-up of the motor
  - a high braking frequency
- High number of brakes.
  - Good heat dissipation using the structure in die-cast aluminium.
- Mobile anchor with laminated magnetic core for faster and less electrical losses.
- The coil of the electromagnet is completely cemented with epoxy resin.
- Possibility of adjusting the braking moment.

Brake recommended for use where powerful and very fast braking is required.

AC BRAKES TA SERIES

Tab. 9.17.1

Motor		Brake	Static braking moment M_f Minimum [Nm]	M_f Nominal [Nm]	Power [W]	Δ 230V 50Hz [A]	Y 400V 50H [A]	Air gap [mm]	Release lever tie-rods clearance [mm]	Minimum thickness of brake pad [mm]
JMK	63	TA1	2	4,5	17	0,13	0,07	0,15÷0,50	0,8	5
JMK	71	TA2	3	10	22	0,16	0,09	0,20÷0,60	0,9	5,5
JMK	80	TA3	5	16	27	0,26	0,15	0,20÷0,60	0,9	6
JMK	90	TA4	8	20	29	0,30	0,17	0,25÷0,70	1	6,5
JMK	90	GA5	15	40	49	0,68	0,39	0,25÷0,70	1	6,5
JMK	100	TA5	15	40	49	0,68	0,39	0,25÷0,70	1	6,5
JMK	112	TA6	20	60	60	0,90	0,52	0,25÷0,70	1	6,5
JMK	132	TA7	30	90	69	1,18	0,68	0,30÷0,70	1	7
JMK	132	GA7	60	150	78	1,51	0,86	0,35÷0,70	1,2	7
JMK	160	TA8	60	200	130	1,40	0,80	0,30÷0,70	1	7,5
GMK	180	TA8D	130	400	130	1,40	0,80	0,35÷0,70	1	7,5
GMK	200	TA8D	130	400	130	1,40	0,80	0,35÷0,70	1	7,5
GMK	225	TA8D	130	400	130	1,40	0,80	0,35÷0,70	1	7,5

1. The braking moment can be reduced (see “brakes installation and maintenance”). You are not advised for safety reasons to calibrate the braking moment at values under the plate minimum.
2. The motor is supplied with a braking moment calibrated at 80 % (± 15%) of its nominal value, or with a braking moment equal to the nominal value.
3. ATTENTION: : Periodically adjust the air gap. Its value must always be between the table values.See “Installation and Maintenance” paragraph.
4. Clearance “g” for the minimum value of the air gap with optional release lever). Clearance “g” is reduced to decrease the thickness of the brake pad. Adjusting the air gap, the clearance “g” is automatically reset.

DIRECT CURRENT BRAKE CHARACTERISTICS

- Highly progressive intervention, both on starting the motor and in braking, due to less rapid direct current braking
- Maximum silence in interventions and operation.
- The electromagnet coil is completely cemented with epoxy resin and the mechanical parts are protected by a galvanising treatment.
- Possibility of adjusting the braking moment (excluding brake L7).

Brakes recommended for use where regular and silent braking is required

DC BRAKES TC and GC SERIES

Tab. 9.17.2

Motor		Brake	Static braking moment: M_f Minimum [Nm]	Static braking moment: M_f Nominal [Nm]	Values detected inbound of the rectifier: Power [W]	Values detected inbound of the rectifier: Δ 230V 50Hz [A]	Values detected inbound of the rectifier: Y 400V 50H [A]	Air gap [mm]	Release lever tie-rods clearance [mm]	Minimum thickness of the brake disk [mm]
JMK	63	**TC1**	2	5	17	0,08	0,05	0,15÷0,50	0,8	5
JMK	71	**TC2**	7	12	22	0,10	0,06	0,20÷0,60	0,9	5,5
JMK	80	**TC3**	8	16	27	0,13	0,08	0,20÷0,60	0,9	6
JMK	90	**TC4**	8	20	32	0,15	0,09	0,25÷0,70	1	6,5
JMK	90	**GC5**	18	40	40	0,17	0,10	0,25÷0,60	1	6,5
JMK	100	**TC5**	16	40	50	0,24	0,14	0,25÷0,70	1	6,5
JMK	112	**TC6**	25	60	60	0,29	0,17	0,25÷0,70	1	6,5
JMK	132	**TC7**	40	90	65	0,32	0,19	0,30÷0,70	1	7
JMK	132	**GC7**	40	150	65	0,32	0,19	0,35÷0,80	1,2	7
JMK	160	**TC8**	80	200	85	0,40	0,23	0,30÷0,70	1	7,5
GMK	180	**TC8D**	180	400	90	0,43	0,25	0,35÷0,70	1	8
GMK	200	**TC9D**	300	600	140	0,66	0,38	0,35÷0,70	1	8
GMK	225	**TC9D**	300	600	140	0,66	0,38	0,35÷0,70	1	8
GMK	250	**TC10***	500	800	160	0,73	0,42	0,35÷0,70	1	12
GMK	280	**TC10****	500	800	160	0,73	0,42	0,35÷0,70	1	12

* The TC9D reduced brake 300÷600Nm can also be assembled on request
** The TC10D increased brake 1000÷1500Nm can also be assembled on request

DC BRAKE INOTQ L7 L8 SERIES

Tab. 9.17.3

Motor		Brake	Static braking moment: M_f Minimum [Nm]	Static braking moment: M_f Nominal [Nm]	Values detected inbound of the rectifier: Power [W]	Values detected inbound of the rectifier: Δ 230V 50Hz [A]	Values detected inbound of the rectifier: Y 400V 50H [A]	Air gap [mm]	Release lever tie-rods clearance [mm]	Minimum thickness of the brake disk [mm]
JMK	63	**L7.06**	--	4	20	0,09	0,06	0,20÷0,50	1	5,5
JMK		**L8.06**	2	4						4,5
JMK	71	**L7.08**	--	8	25	0,12	0,07	0,20÷0,50	1	4,5
JMK		**L8.08**	4	8						5,5
JMK	80	**L7.X8**	--	12	25	0,12	0,07	0,20÷0,50	1	4,5
JMK		**L8.X8**	6	12						5,5
JMK	90	**L7.10**	--	16	30	0,14	0,08	0,20÷0,50	1	8,5
JMK		**L8.10**	8	16						7,5
JMK	100	**L7.12**	--	32	40	0,20	0,12	0,30÷0,75	1,5	9,2
JMK		**L8.12**	14	32						8
JMK	112	**L7.14**	--	60	50	0,24	0,14	0,30÷0,75	1,5	9,2
JMK		**L8.14**	25	60						7,5
JMK	132	**L7.16**	--	80	55	0,27	0,16	0,30÷0,75	1,5	10,7
JMK		**L8.16**	35	80						8
JMK	160	**L8.18**	65	150	85	0,40	0,23	0,40÷0,90	2	10
GMK	180	**L8.20**	115	260	100	0,46	0,27	0,40÷0,90	2	12
GMK	200	**L8.25**	175	400	110	0,50	0,30	0,40÷1,0	2	15,5

* Values reported on the motor nameplate.

** Recommended for heavy duty (on request).

1. The braking moment can be reduced (see "brakes installation and maintenance") (with the exception of the L7 series). You are not advised for safety reasons to calibrate the braking moment at values under the plate minimum.
2. The motor is supplied with a braking moment calibrated 80% (± 15%) of its nominal value, or with a braking moment equal to the nominal value.
3. ATTENTION: Periodically adjust the air gap (with the exception of the L7 series). Its value must always be between the table values.
4. Clearance "g" for the minimum value of the air gap with optional release lever). Clearance "g" is reduced to decrease the thickness of the brake pad. Adjusting the air gap, the clearance "g" is automatically reset.
5. The standard version motor is supplied with series L7 brake: on request, L8 series brake.

AC BRAKE POWER SUPPLY TA AND GA SERIES

Before powering the brake, ensure the supply voltage corresponds to the brake plate value.

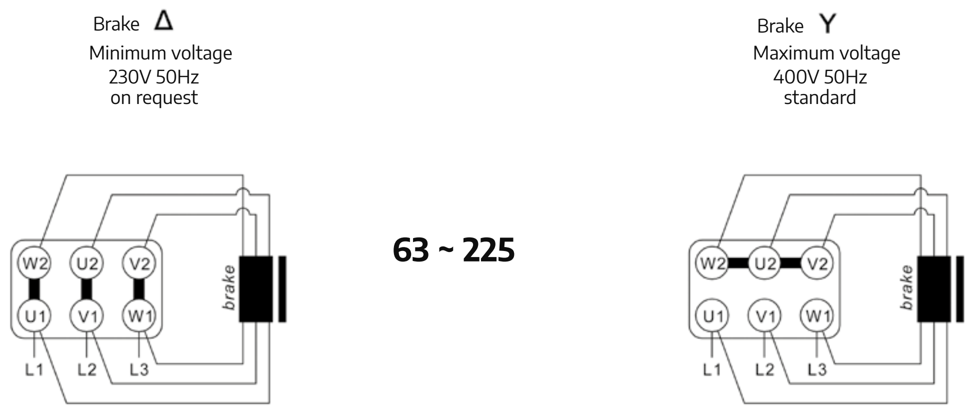
Power supply voltages :
- Motors power supply at **Δ 230 V / Y 400 V – 50 Hz** and motors at **Δ 400 V – 50 Hz**:

Brake coil at **Δ 230 V / Y 400 V – 50 Hz**, standard with brake connected to **Y for power supply at 400 V c.a. – 50 Hz**
- connection at Δ for power supply at 230 V c.a. and different power supply voltages on request.

Power supply voltages and frequency different from those available on request.

THREE-PHASE MOTOR TERMINAL BOARD CONNECTION DIAGRAM 2,4,6,8 poli

TA SERIES ALTERNATING CURRENT BRAKE CONNECTION DIAGRAM



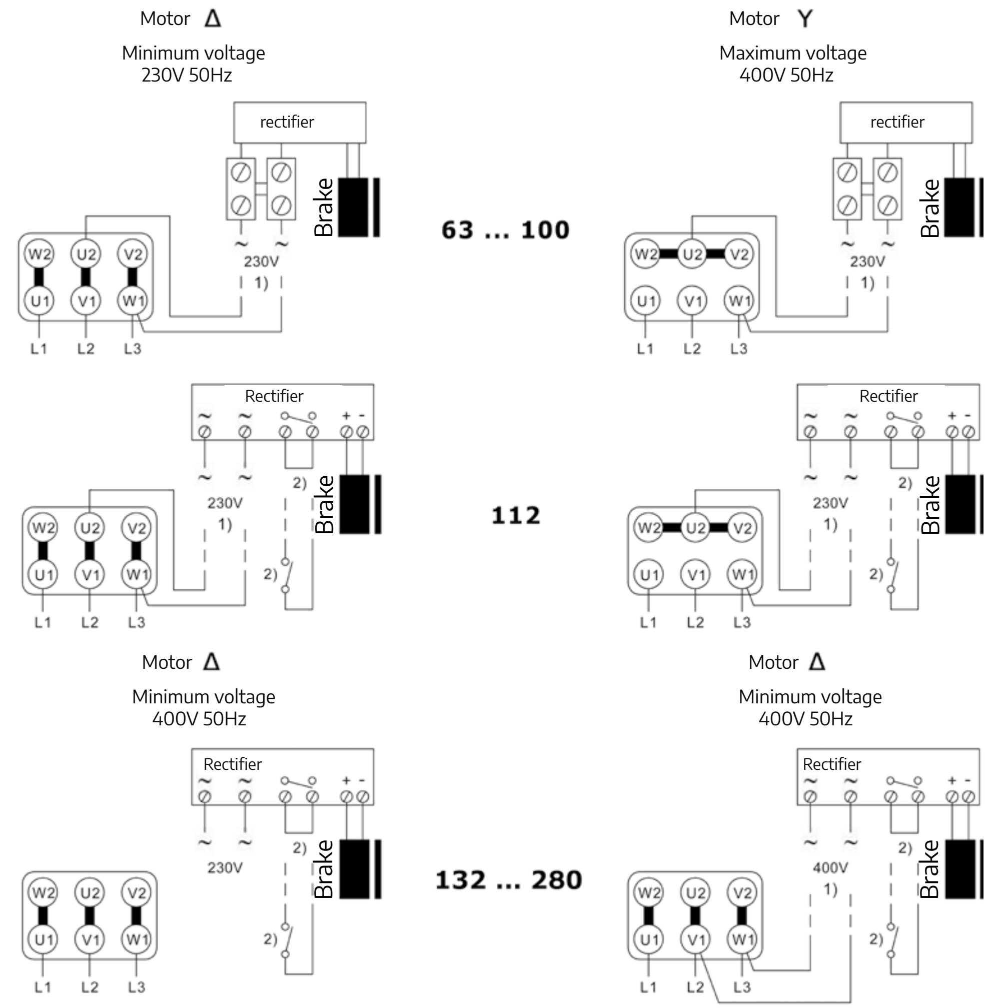
DIRECT CURRENT BRAKE POWER SUPPLY, TC, GC, L7, L8 SERIES

Before powering the brake, ensure the power supply voltage corresponds to the plate value of the brake.
Power supply voltage:

- Motors at Δ 230 V / Y 400 V – 50 Hz: standard power supply of rectifier at 230 V a.c. - 50/60 Hz (on request, rectifier power supply at 400 V a.c. - 50/60 Hz);
- Motors at Δ 400 V – 50 Hz: standard power supply of rectifier at 400 V a.c. 50/60 Hz. (on request, rectifier power supply equal to 230 V a.c. - 50/60 Hz.);
- Different power supply voltages available on request.

1) I motors are supplied with the rectifier connected to the auxiliary terminal board (size 112 to 160 with terminal board integrated in rectifier). On request, rectifier connection to the motor terminal board.
2) Rapid braking (the installation technician's responsibility). Motor size 90, 100 on request. The counter must work parallel to the motor power supply counter; the counters must be suitable for inductive load opening.

DIRECT CURRENT BRAKE CONNECTION, TC, L7, L8 SERIES



Available on request:
> manual release lever with automatic return (release lever rod in correspondence with the terminal box and removable).
> provision for manual rotation of the motor shaft by means of a hexagonal key on the side opposite the command.
> Degree of protection IP55 (not possible for execution with release lever and on TC, L7, L8 series).
> Wide availability of special executions: servo fan, encoder, release lever... (for completeness see the special executions chapter).

ADJUSTMENT OF BRAKING MOMENT

(With the exception of series L7 and L8)
The braking moment is directly proportional to compression of the brake spring.
The JM/GMK motor is supplied with the braking moment calibrated to 80 % ± 15% of its nominal value (series L7 at 100%). For a correct use of the self-braking motor, it is advisable to adjust the braking moment according to load, rotation speed and braking time. For general use, it is good practice to calibrate the braking moment to about 1.5 times the nominal torque of the motor. In any case, the value shall be within the limits given on the plate.

IT IS NOT RECOMMENDED:

a) to calibrate the braking moment at a value over the maximum plate value of series GA, GC, L8 since the brake can only partially lock, resulting in vibrations and overheating.

b) calibrate the braking moment to a value under the minimum plate value since variable braking can occur.

TA, GA, GC SERIES:

1) Turn the screws (3) (drawing page 145) regulating the braking moment uniformly, with a male hex key. With hourly rotation, the braking moment increases, with anti-clockwise rotation decreasing.
2) Check the calibration value of the braking moment using a torque wrench coupled to the end of the motor shaft.
.

In TA series, you can approximately know the value of the braking moment obtained after adjustment, measuring the distance (highlighted with the letter “A” [mm] see the following table and (drawing page 145) between the adjustment screw and the electric magnet.

BRAKES TA SERIES

Value of the braking moment [Nm] on varying the distance “A”									
	Brake size								
"A" [mm]	TA1	TA2	TA3	TA4	TA5	TA6	TA7	TA8	TA8D
0	4,5	10	16	20	40	60	90	200	400
1	3,8	8,3	13,3	16	35	53	77	128	256
2	3,1	6,6	10,5	12	30	46	64	107	214
3	2,4	5	8	8	25	39	51	86	172
4	1,7	3,6	5,3	4	20	32	38	64	128
5	1	1,7	2,6	-	15	25	26	43	86
6	0,3	-	-	-	10	18	13	23	46
7	-	-	-	-	5	11	-	-	-

The zone highlighted restricts the safety value

Serie TC, L8:

1) Turn the ring nut (3) (drawing page 145) adjusting the braking moment. With hourly rotation, the braking moment increases, with anti-clockwise rotation decreasing.

2) Check the calibration value of the braking moment using a torque wrench coupled to the end of the motor shaft. For values under the minimum number plate, the number of threads in the socket of the ring adjustment is insufficient; the ring could come off.

It is possible to approximate the value of the braking moment obtained after adjustment:
TC Series: the distance is measured (highlighted with the letter "B" [mm] see the following table and drawing on page 145) between the adjustment ring nut and the electric magnet.

BRAKES TC SERIES

Value of the braking moment [Nm] on varying the distance"B"											
	Brake size										
"B" [mm]	TC1	TC2	TC3	TC4	TC5	TC6	TC7	TC8	TC8D	TC9D	TC10
0	5	12	16	20	40	60	90	200	400	600	800
1	4,3	10	13,2	16	36	53	77	180	360	520	675
2	3,5	7	10,6	12	32	46	64	160	330	480	600
3	2,8	4,5	8	8	28	39	51	140	200	420	525
4	2,1	2	5,3	4	24	32	38	120	180	360	450
5	1,4	-	2,6	-	20	25	25	100	150	300	375
6	0,7	-	-	-	16	18	13	80	130	240	300
7	-	-	-	-	12	11	-	60	110	180	225

The zone highlighted restricts the safety value

L8 SERIES:

Count the rotation clicks of the ring nut (the ring can be loosened click after click, in anti-clockwise rotation, up to the maximum size C max. (see following table and drawing on page 145.)

L8 Series										
	Brake size									
Brake size	06	08	X8	10	12	14	16	18	20	25
[Nm][1)]	0,2	0,35	0,55	0,8	1,3	1,7	1,6	3,6	5,6	6,2
C max[mm]	7	7,5	7,5	7,5	11	11	13	14	17	21

SAFETY WARNINGS SELF-BRAKING MOTORS

Improper use of the motor, incorrect installation, removal of guards, elimination of safety devices, lack of maintenance, can cause serious damage to people and property.

Where there is a possibility that a brake malfunction may cause damage to people, property and production, use of the self-braking motor alone does **NOT** ensure an adequate level of safety and additional safety measures need to be put in place. Incorrect calibration of the braking moment and lack of regular maintenance may cause a brake malfunction.

Do not manually unlock the brake unless you are able to predict the consequences of this manoeuvre.

The release lever rod will not be left permanently installed on the brake during operation of the motor to avoid its inappropriate and hazardous use.

Therefore, the electric motor must be moved, installed, started up, maintained and repaired exclusively by qualified staff (according to IEC364).

Hazards: the electric motors have live parts, parts in motion and parts with temperatures over 50°C.

Use cables with a suitable section in order to avoid overheating and/or excessive voltage drop at the motor terminals.

Pay close attention to the terminal block connection (Δ ,Y) on the motor plate.

The minimum voltage refers to the Δ connection, the maximum Y voltage.

Star-delta start-up is only possible when the mains voltage corresponds to the delta value Δ.

Rotation direction: you are advised to check the rotation direction of the motor before coupling to the user machine, when an opposite rotation direction to the desired direction can cause damage to people and/or property (you are advised to cut the key at the end of the shaft to avoid its violent exit).

To modify the rotation direction of three-phase motors, simply invert two power supply phases of the line.

Ground: The metal parts of the motor that are not normally live must be connected to the ground using the appropriately marked terminal, placed inside the terminal box, always using a suitable section cable.

The installation technician and/or the user must ensure the brake is working properly.

Before the motor is started up, it is necessary to ensure the braking moment is suitable for the particular application and, if necessary, adjust it.

As standard, the motors are supplied with a separate brake supply from that of the motor.

It is possible to power the brake directly from the motor terminal board using special connection cables supplied to the motor, placed inside the terminal box.

For those operated with inverters, it is necessary to power the brake separately with cables especially prepared by the installation technician.

IMPORTANT:

Before starting the motor-brake unit, you must:

a) Before making the electrical connection make sure the power supply corresponds to the electrical data shown on the plate. Install the connection according to the diagrams shown in the sheet inside the terminal box.

b) verify the correct tightening of the electrical terminals and the ground terminal

c) close the terminal box by positioning the gasket correctly and screwing all the fixing screws on the cover to avoid altering the degree of protection declared on the plate

d) reassemble the fan cover and secure it with the appropriate screws

e) check the mechanical attachment of the coupled drive units and reassemble any guards (protective casing).

• 9.18 INSTALLATION AND MAINTENANCE OF SELF-BRAKING MOTORS

Receipt:
check the motor corresponds to the one ordered and that it was not damaged during transport.
Do not operate a damaged motor.

The eyebolts, if present, on the housing are used to lift the motor only.

For possible storage in the warehouse, the location must be covered, clean, dry, free of vibrations and corrosive agents.

After long storage periods in the warehouse or long periods of inactivity, **you are advised to check the insulation resistance between the windings and towards** the ground using a specific tool.

For operations with a temperature **different to -15 +40 °C and at altitudes over 1000 m, contact the Seipee technical office**. Use is not allowed in places with aggressive atmospheres, with danger of explosion.

In the installation, arrange the motor so there is a large air passage from the fan side; insufficient air circulation compromises heat exchange.

Avoid proximity to other heat sources that affect the temperature of both the cooling air and the motor by irradiation.

The foundation must be properly sized to ensure stability to the fixture.

Couplings
Check that the radial/axial load is within the values given in the table "Radial/axial forces" on page 26.

Tolerance H7 is recommended for the hole of the fitted units in the shaft ends.

Before coupling, clean and lubricate the contact surfaces to avoid seizure hazards.

Before coupling, clean and lubricate the contact surfaces to avoid seizure hazards.

It is advisable to heat any joints, pulleys up to 60-80 =C before mounting.

In direct coupling, align the motor with that of the driven machine.

In application of belt coupling, check: the centre line of the motor must always be parallel to the centre line of the machine being driven, the overhang of the pulley must be kept to a minimum, the tension of the straps must not be excessive in order not to impair the life of the bearings or cause the motor shaft to break.

The JMK series motors are balanced with **half key**;
to avoid vibrations and unbalancing, the transmission units are appropriately balanced before coupling.

The JMK series motors are balanced with half key;
to avoid vibrations and unbalancing, the transmission units are appropriately balanced before coupling.

PERIODIC MAINTENANCE OF BRAKES

Brake inspection operations must be performed with the brake electrically disconnected and after verifying the grounding connection.

Periodically check the air gap is within the values indicated in the respective tables (see "brake characteristics" section); an excessive gap makes the brake less silent and can prevent the release of the brake itself.

In addition, a gap above the maximum value can produce:

- a decrease in braking moment
- a total lack of braking due to the cancellation of clearance "g" of the tie rods on the release lever (for brakes with optional release lever); adjusting the air gap automatically restores clearance "g"
- partial release of the brake resulting in increased temperature and wear of the friction gasket.

ADJUSTMENT OF THE AIR GAP

TA, GA, TC, GC SERIES

- loosen the nuts (10) locking the brake screws (1) to the cast iron motor shield
- screw in the screws (1) holding the nuts (10) still until the minimum gap is reached (see the "brake characteristics" chapter)
- tighten the nuts (10) keeping the screws still (1)
- check the air gap near the columns using a feeler gauge.

L8 SERIES

- loosen the nuts (10) locking the brake to the cast iron motor shield
- turn the adjustment screws (10) regulating the air gap until the minimum air gap is reached (see the "brake characteristics"chapter)
- screw in the screws (1), keeping the adjustment screws (10) still
- check the air gap near the columns using a feeler gauge.

BRAKE PAD

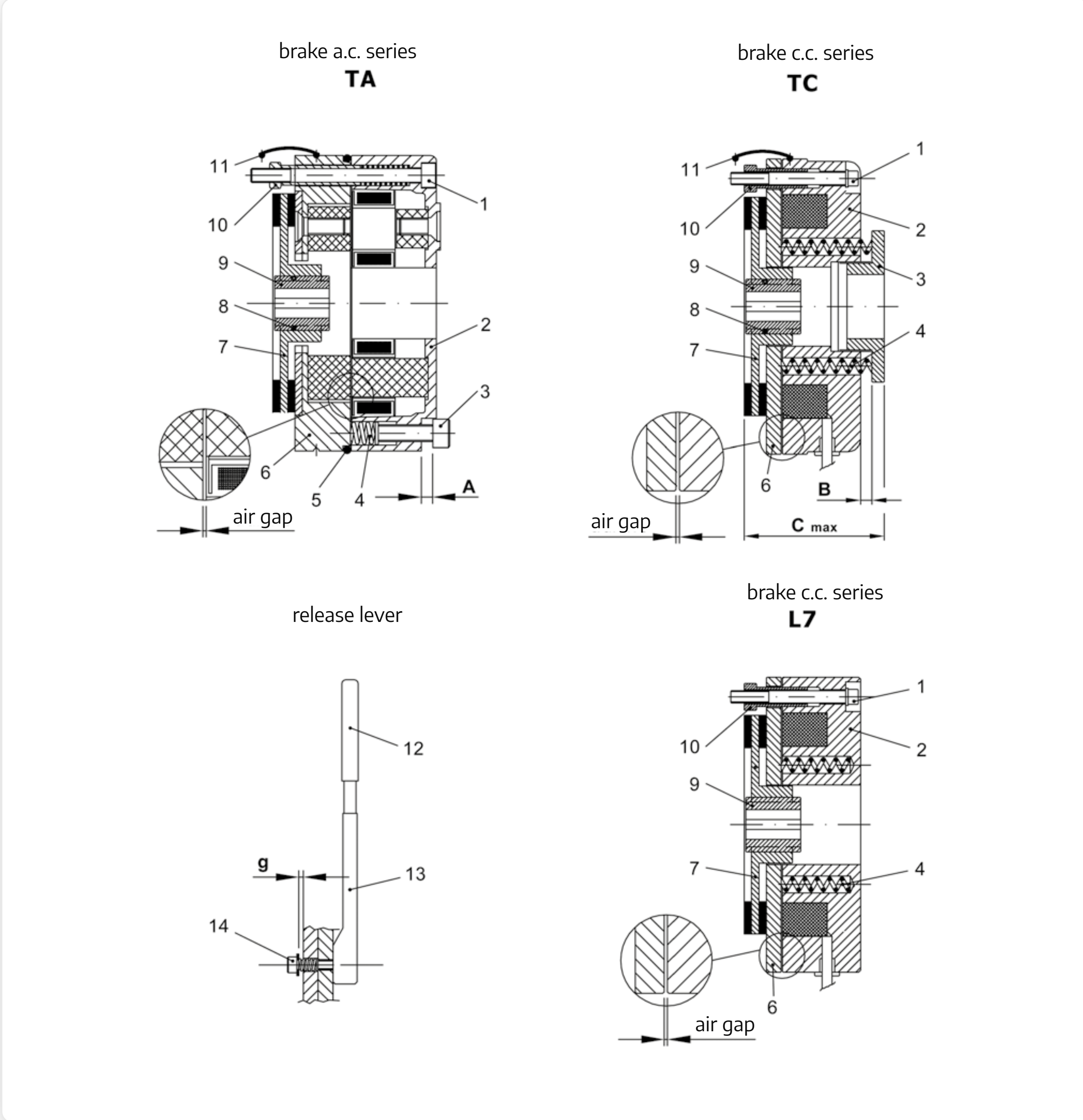
Check the thickness of the friction gasket on both sides. This value must not be under 1 mm per part. As necessary, replace the brake pad.

RELEASE LEVER

If the lever does not release the brake, reset clearance “g” indicated in the table (see “brake characteristics” chapter).

You are always advised to remove the handle once the operations are complete.

GA and GC



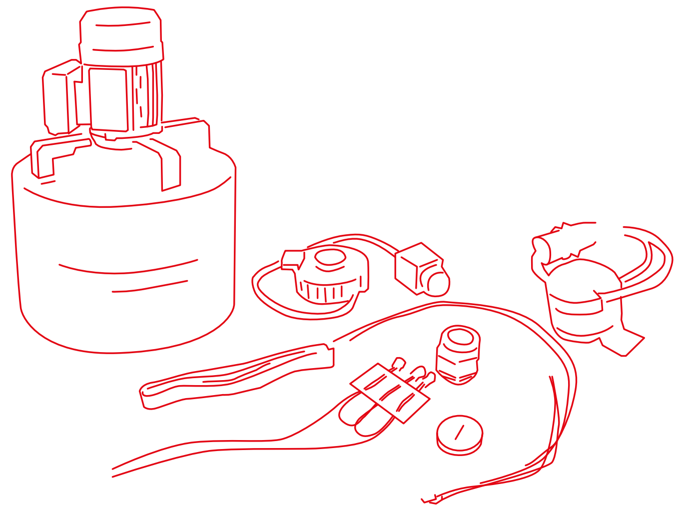
SPARE PARTS OF BRAKES

1) Locking screw
2) Electric magnet
3) Braking moment adjustment: cylindrical head screw with hexagon socket for TA series, grub screw with hexagon countersunk screw for GA and GC series, adjustment ring for TC and L8 series.
4) Braking spring
5) O-ring for IP 55 (TA and GA series)
6) Brake anchor
7) Brake pad
8) Anti-vibration o-ring
9) Driving hub
10) Air gap adjustment screw
11) Rubber protection
12) Handle (removable)
13) Body
14) Clearance “g” adjustment screw

EXECUTIONS
NON-STANDARD

10.

10 SPECIAL EXECUTIONS



1) WINDING

Non-standard voltages and/or frequencies
Seipee electric motors with three-phase power supply are designed for use on the European mains
230/400V ± 10% 50Hz.
This means that the same motor can also be connected to the following electrical mains:
- 220/380V ±5%
- 230/400V ±10%
- 240/415V ±5%

Special windings can be created on request with different voltages and/or frequencies.

Tropicalization
Tropicalization of winding consists in cold painting a product with remarkable hygroscopic qualities that ensures a certain refractory capacity against penetration of condensation in materials that must maintain optimal insulation.
It is indicated in situations where the motor is installed in environments where moisture content is particularly high.

Additional wrapping impregnation
It consists of a second impregnation cycle, recommended for:
- humid and corrosive environments (mildew);
- environments with strong mechanical and electromagnetic stress induced by inverters;
- in the presence of strong electrical agents (voltage peaks);
- in the presence of strong mechanical agents (induced mechanical or electromagnetic vibrations);

2) TERMINAL BOX

Side terminal box
As standard, the terminal box is in position T, i.e. on the top control side.
For motors with feet IM B3 and deriving structural formats, it is possible to place the terminal box R (right) or L (left), on request.
In self-braking motors, any release lever follows the position of the terminal box.
NDE terminal box
On request, the terminal box can be positioned on the NDE side (fan side) instead of the DE side (control side) as is standard.
Cables input
As standard, the cable glands are positioned on the right side of the terminal box. The position of the cables input can be rotated by 90° or 180° on request.

Cable gland type
The standard cable glands are made of polyamide, and the relative dimensions for each motor size are outlined in the tables of the dimensional data of the various series of motors.
On request, cable glands and metal plugs can be supplied, especially suitable for applications with temperatures outside the range -15/+40 C.

Cylindrical connector for quick motor cabling

Auxiliary capacitor (JMM series)
Auxiliary capacitor with built-in electronic circuit breaker for high starting point (MS/MN=approximately 1..1÷1.4).
It automatically enters at the start of the motor only for a time of 1.5 s (not suitable for applications with starting times > 1.5 s).

Warning: The time between starting and the next start must be > 6 s, to avoid causing damage to the circuit breaker.

3) MOTOR PROTECTION

Bimetal thermal probes (PTO)
Three probes connected in series with normally closed contact inserted in the motor winding. The contact is opened when the winding temperature reaches and exceeds the intervention value (150 C for motor in class F). VN,max. 250 [V], IN,max. 1.6 [A]
The terminals are placed inside the motor terminal box.

Standard on motors with axle height 160 to 450.

Thermistor thermal probes (PTC)
Three thermistors connected in series inserted in the winding conforming to DIN 44081/44082, to be connected to specific release equipment (the purchase of this equipment is charged to the buyer of the motor).

There is a sudden change in resistance (which causes the release) when the temperature of the winding reaches and exceeds the intervention value (150 C for motor in class F).
The terminals are placed inside the motor terminal box.

Standard on all motors with power over 0.75kw.

Temperature sensor PT 100 (resistance thermometer)
It is a temperature sensor that takes advantage of the variation in the resistivity of certain materials as temperature changes, in accordance with DIN-IEC 751.
Three PT 100 are inserted inside the winding, one for each phase. Terminals placed inside the motor terminal box must be connected to appropriate equipment (purchase of this equipment is charged to the buyer of the motor).

Temperature probe KTY84-130
Temperature sensor in silicon depending on the change in resistance with positive temperature coefficient.

Anti-condensation heater
It is recommended for motors operating in environments:
- with high humidity;
- with strong thermal excursions;
- with low temperature (possible ice formation);

It is a resistor fixed on coil heads that allows heating the winding of the stopped electric motor and then eliminates condensate inside the housing.

Structure: Glass fibre tape, in which a multi-wire resistor is inserted in nickel-chrome, covered with polyester adhesive tape reinforced with glass fibre filaments and an additional external glass fibre sleeve

Single-phase power supply 230V ac ±10% 50 / 60 Hz, absorbed power:
- 25 W for size 63 ... 90;
- 26 W for size 100 ... 112;
- 40 W for size 132 ... 160;
- 26 W for size 180 ... 200;
- 42 W for size 225 ... 250;
- 65 W for size 280;
- 99 W for size 315 ... 450;

The heater must not be powered during while the motor is running.
Terminals located inside the motor terminal box.

The anti-condensate heater is compulsory combined with the condensation drainage holes execution.
As standard on the GM 160...450 motors, on the side opposite the terminal box.
On placing the order, always specify the working position of the motor.
If, on installation, the plugs on the holes of the condensate exhaust located on the lower side of the electric motor have not been removed, they must be opened approximately every 5 months to allow leakage of the condensate created.

4) COLOURS AND PAINTING

Seipee motors are powder painted or painted with combined nitro paint to resist normal industrial environments and allow further finishing with monocomponent synthetic paint.

- JMM 56...100: RAL 9006 (White aluminium);
- JM 56...160: RAL 9006 (White aluminium);
- GM 160...450: RAL 5010 (blue);
- JMD 80...160: RAL 9006 (White aluminium);
- GMD 180...250: RAL 5010 (blue);
- JMK 63....160 RAL 9006 (White aluminium); Copriventola RAL 9005 (Black)
- GMK 180...280 RAL 5010 (blue);

The choice of painting treatment is a critical phase as it depends on the durability of the electric motor according to the environment in which it is to be placed.

According to standard UNI EN ISO 12944-1 the durability of the paint can be classified according to 3 classes:
Low (L) from 2 to 5 years.
Medium (M) from 5 to 10 years.
High (H) over 15 years.
Durability is indicated next to the corrosion category of the installation environment to allow the definition of the protection cycle able to operate in that environment and to ensure the required durability. The painting cycles that are carried out are fully compliant with the regulations.
ISO 12944 Classification:
C1 - C2 = Rural zones, low pollution. Heated buildings/neutral atmosphere.
C3 = Urban and industrial atmosphere. Moderate levels of sulphur dioxide. Production areas with high humidity.
C4 = Industrial and coastal. Chemical processing plants.
C5L = Industrial areas with high humidity and aggressive atmospheres.
C5M = Sea areas, offshore, estuaries, coastal areas with high salinity.

- Without paint: motor supplied with base primer only
- Painting in other hues: RAL to indicate on purchase order
- Special paint C3
- Special paint resistant to heavier environments C4 or C5.

5) EXECUTIONS ON BEARINGS

PT 100 on bearing
PT100 sensor inserted on the bearing support (control side, side opposite control). The terminals are placed inside a shunt box fastened to the motor housing. .

Electrically insulated bearing
The rolling bearings of electric motors are potentially subject to current passages that quickly damage the surfaces of runners and rolling bodies and degrade their grease.
The risk of damage increases in the increasingly popular electric motors equipped with frequency converters, especially in applications with sudden variations in frequency.
In bearings on such motors, there is an additional risk due to the presence of high frequency currents caused by the parasitic capacities existing within the motor. The electrically insulated bearing has the outer surface of the external ring coated with a layer of aluminium oxide 100 m thick, able to withstand voltages of 1,000 V d.c., practically eliminating issues caused by current passage.
It is usually installed on the NDE bearing.

For use in motors equipped with frequency converters: recommended starting from size 250.

• **Bearing 2RS**

• **Locked bearing as standard on GM motors, on request on JM series**

• **Oblique contact bearing**
For applications with important axial loads acting in one direction only (size 315 and higher)

• **Cylindrical roller bearing**
For applications with strong, constant radial loads (size 160 to 280).

• **Automatic single point greaser for bearings**
Automatic lubricators can be installed to ensure the correct amount of lubricant is delivered within a certain time using an inert gas cell.
This lubrication procedure allows more accurate control of the amount of lubricant supplied, compared to traditional manual re-lubrication techniques. It has a nominal delivery period that can vary between 1 month and 12 months and can also be temporarily deactivated if necessary.

Suitable for direct mounting in confined spaces and is particularly suitable for points requiring frequent lubrication, machine shutdown and safety implications. (only possible for motors with re-lubricating bearings, GM series size 160 and higher)

6) MECHANICAL EXECUTIONS AND DEGREES OF PROTECTION

- **Double output shaft** (on which radial loads are not permitted)
- **Shaft ends to drawing**
- **Standard shaft in stainless steel**
- **External screws in stainless steel**
- **Entire key balancing**
- **Balancing without key**
- **Flange tolerance in precise class**
- **Fan cover for textile environment**

Fan cover equipped with a special protective roof instead of the normal grate to avoid clogging with waste and dust from filaments in the textile environment.
The longitudinal dimensions of the motor increase by 30÷70mm according to size.

IP56 protection JM and GM series
Recommended for motors operating in very humid environments and/ or in the presence water sprays. The protection rating on the rating plate becomes IP56.
You should contact the technical office for vertical axis positioned motors.

IP65 protection JM and GM series
Recommended for motors working in dusty environments.
The protection rating on the rating plate becomes IP65.
You should contact the technical office for vertical axis positioned motors.

Condensate drain holes
As standard on the GM 160...450 motors, on the side opposite the terminal box.
On placing the order, always specify the working position of the motor.
If, on installation, the plugs on the holes of the condensate exhaust located on the lower side of the electric motor have not been removed, they must be opened approximately every 5 months to allow leakage of the condensate created.

Rain cover
Execution required for outdoor applications or in the presence of water splashes, with vertical shaft pointing downwards, type of construction (IM V5, IM V1, IM V18, IM V15, IM V17).
The LB dimension increases by:
- 35 mm size 56 ... 112;
- 45 mm size 132 ... 160;
- 65 mm size 180 ... 225;
- 85 mm size 250 ... 355;
- 120 mm size 355X ... 450

Execution for low temperatures
Standard motors can operate at room temperature up to -15°C with peaks up to -20°C.
For room temperature up to -30°C and above, special bearings and an anti-condensate heater are required. On request, we recommend the light alloy fan and the metal cable glands/plugs and in case of condensate formation the relative condensate drainage holes (in this case indicate the mounting position).

Execution for high temperatures
Standard three-phase motors can operate at room temperature up to 55°C with peaks up to 60°C, as long as the required power is lower than the plate power (as per General characteristics/Power yield based on ambient temperature Tab.........).
For an ambient temperature 60 ÷ 90°C, special bearings and sealing rings are necessary in fluorine rubber (viton). Wrapping in insulation class H, light alloy fan and metal cable glands/plugs are also recommended.

7) VENTILATION

IC418
Motor without fan and fan cover. Used in applications where cooling is ensured by the external environment.
IC416
Axial servo-fan IP54 indicated for:
- frequent start-ups and/or heavy start-up cycles
- with use of frequency or voltage variator

since, in the event of prolonged operation at low speed, the ventilation loses its effectiveness, it is therefore advisable to install a forced ventilation system with constant flow.
Vice versa, in the event of prolonged operation at high speeds, the noise emitted by the ventilation system can be annoying, and it is therefore recommended to opt for a forced ventilation system.
The characteristics of the servo-fan and the variation ΔL of the measurement LB (see “motor dimensions) are outlined on page 31 tab. 3.14.

The auxiliary ventilation power terminals are located inside an auxiliary terminal box attached to the fan cover. Before making the electrical connection make sure the power supply corresponds to the electrical data shown on the plate.

Important:
check the rotation direction of the three-phase fan.
Corresponds to that indicated by the arrow placed on the fan cover, otherwise reverse two of the three phases of power supply

On request, the servo-fan can be created in special versions: voltages, frequencies, working temperature according to client specifications as well as the single-phase, multi-voltage and IP 66 protection versions.

8) SPEED TRANSDUCERS

Standard incremental encoder with hollow shaft and elastic fastening connection cable equipped with military type male connector fastened to the motor.
The female connector is also supplied with relevant diagram for the connection

Characteristics:
- incremental optical type
- two-directional with zero channel (channels A, B, Z and respective denied channels)
- degree of protection IP 54
- max speed 6000 RPM (4000 RPM in continuous service S1)
- operating temperature -10 C +85 C
- resolution from 200 to 2048 pul. /rev; 1024 standard
- max load current 20 mA per channel
- supply voltage 5 ÷ 28 Vdc
- electronic configuration line driver / push-pull (in push-pull configuration do not connect A,B,Z denied channels)
- absorption with no load 100 mA.

Available executions:
- servo-ventilated motor with encoder
- self-ventilated motor with encoder

Measurement LB in two executions is subject to the same variation ΔL outlined in table (Characteristics of the auxiliary fan page 32 no. table 3.14).

On request, the following can be supplied:
- Incremental encoder with high degree of protection
- Absolute encoder
- Resolver

Only for the JMK and GMK Series:

Brake protection in rubber
It is used to prevent dust and/or water or other foreign bodies from entering the braking surfaces. Furthermore, consistently limit the dust from brake wear dispersing in the environment
It is applied around the brake in the appropriate slots provided. This execution is necessary for IP55

IP55 protection (not possible in execution with release lever).
TA and GA series brake: sealing ring on control side for IM B5 (V-ring for IM B3), dust-proof, water-proof rubber protection and V-ring on opposite side.

TC or L7 brake with IP66 protection (not possible in execution with release lever).

Brake pad with anti-sticking friction material (TA, GA, TC, GC series)
Eliminates danger of brake pad sticking. It is recommended for motors operating in environments:
- that are aggressive
- with high vapour concentrations
- near the sea (near saltwater)

Also recommended when the motor remains unused for long periods of time. (Attention: the nominal braking moment reduces by 10%)

Manual release lever
It frees the motor from the unpowered brake and returns to its initial position after the manoeuvre (automatic return). Useful for manual rotations in case of power failure and/or during installation. The handle of the lever can be removed and is located in correspondence with the terminal box (standard position). It is always advisable to remove the handle once the operations have been completed.

Manual rotation
It allows you to turn the motor shaft from the opposite the control side. A hex male key is used by inserting it in the central hole of the fan cover.
- measurement 3 for size 63;
- measurement 4 for 71;
- measurement 5 for 80;
- measurement 6 for 90 ... 132;
- measurement 8 for 160;

NOT possible with executions with Rain protection roof, Encoder and axial servo-fan.

Braking moment calibrated different to standard value.

Mechanical micrometer to signal wear or the brake Locked/Unlocked position

Micro-switch to signal brake opening/closure.

9) EXECUTIONS ACCORDING TO STANDARDS GUARDS

Execution according to standards

c UL US for the US and Canadian market, available on JM and GM series. Certificate No. E348137
The main variants are the insulation system of the winding class F certified UL, adaptation of air distances towards the ground and live parts.

Execution according to standards

EAC for the per Eurasian customs union (Russia, Belarus, Kazakhstan, Armenia and Kyrgyzstan) certified RU D-IT.AD53. B07480

CCC for the People's Republic of China

UK CA for the UK

DNV-GL for applications in a naval or marine environment

ATEX

The JM and GM (≤600V) series motors are supplied for use in environments with potentially explosive atmospheres according to ATEX 94/9/EC directive group II category 3D for zone 22 / 3G zone 2.
As standard, PTC 130°C and certified cable glands are installed ATEX.
Marking plate:

Ex ATEX II 3D Ex tc IIIC T125°C Dc IP65 zone 22
Ex ATEX II 3G Ex ec IIC T3 Gc zone 2

On request, the execution is possible Ex ATEX II 3G Ex ec IIC T4 Gc.

Legend:
II = Group of origin (use on surface);
3 = Protection category;
includes equipment designed to operate in accordance with the operating parameters established by the manufacturer and to ensure a normal level of protection; it may only be used in classified areas 2 or 22 non-conductive powders.
D = Powders per installation zone Dc (zona 22);
G = Gas per installation zone Gc (zona 2);
tc / ec = protection mode;
IIIC / IIC = equipment group of origin according to the nature of the explosive atmosphere;
T135°C = maximum surface temperature for atmospheres with presence of dust;
T3 / T4 = temperature class for atmospheres with presence of gas.

For inverter applications. it is always necessary to connect the supplied temperature probes to meet the thermal classes indicated in the marking.

The purchaser of the product will be responsible for taking appropriate technical and organisational measures and for assessing any possible risk of explosion to the health and safety of workers in potentially explosive areas (Directive 99/92/EC).
On receipt of the electric motor, make sure there is no damage or faults.
Before starting the motor, check the data on the plate, read the instruction manual carefully (supplied to the motor) and verify its suitability for the application requested

10) TECHNICAL DATA AND ADDITIONAL PLATES

- Double plate
- Sheet metal plate
- Additional instructions on the plate and the packaging label
- Test certificate
- Document with electrical data
- Document with dimensional drawing

NOTE

NOTE

NOTE

seipee

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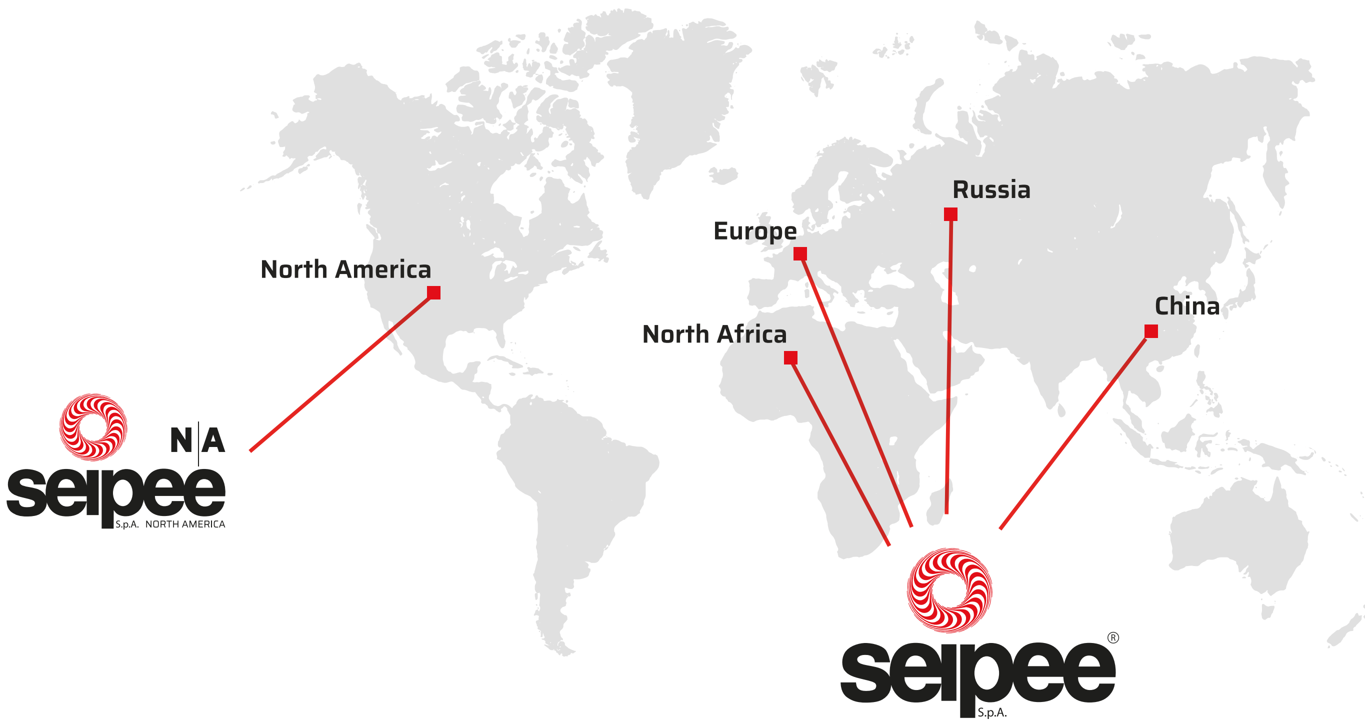

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