

**Power, Control &
Green Solutions**

elsto



Drives & Controls | Stokvis Group 

Three phase cast iron
Three phase aluminium
Brake
Single phase
IE1/ IE2/IE3/IE4
ATEX EXd/ EXe
Stainless steel
Vibration
Circular saw/Low shaft

Electric motors



English

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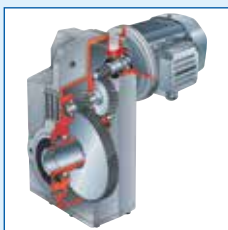
Elsto Drives & Controls is a specialized supplier of mechanical drives and the associated control systems, that has evolved over a number of years from a traditional importer/supplier of mechanical drives into a provider of integral solutions in the field of drive and control technology.

Elsto Drives & Controls has establishments on five locations in the Netherlands. The central point in both a geographical and business sense is the corporate headquarters in Voorhout. Next to selling products from the extensive standard programme, the emphasis here lies for an important part on the design, manufacturing, assembly and testing of customer specific transmission systems and control systems.

Elsto Drives & Controls is part of the ELSTO organization that next to ELSTO Drives and Controls consists of: Stolk Transmission Services and Elsto Services. Stolk Transmission Services operates from Hoogerheide and Elsto Services caters for the most southern part of the Netherlands from Weert in the Limburg Province. All ELSTO entities have their own specialism, and some can show a track record in transmission systems reaching back over a hundred years.

The ELSTO organization is part of the Stokvis Holding, an organization with activities in the fields of transmission and control systems, winches and capstans, lift technology, goods handling, water treatment, marine services, machine construction and transport equipment. See for the other ELSTO and Stokvis activities www.stokvis.eu

Drives



The drives part of Drives & Controls specializes in mechanical drives in the broadest sense of the word. Basis is the very extensive programme of Bonfiglioli Riduttori that ranges from small worm gear reducers to very large planetary reducers and everything in between.

In addition to this a very wide and deep programme of transmission components as motors, couplings and linear drives from reputable manufacturers as AEG-Lafert, Pfaff-silberblau, Desch, Euromotori en Tecnoingrannagi is available.

A knowledgeable and experienced sales staff translates the customer requirements into an optimal solution, that thanks to wide and deep ELSTO programme can quite often be realised using only standard components. Nearly 20.000 m² of warehouse space makes it possible to supply most of the 150.000 articles from stock, and the in-house workshop ensure that where required the stock items can be modified to suit the customer requirements such as alternative voltages, fitting of an encoder or a nonstandard paint job.

In all cases an optimal and efficient solution is the starting point, efficient in respect to cost, ease of use and energy consumption.

Core values are reliable deliveries and affordable quality.

Controls



Elsto Controls is specialized in the development, design, manufacture and testing of control cabinets and control systems for machines and installations, efficient, cost effective, and always with customer satisfaction as the guiding principle.

Again the availability of a wide and deep programme of high grade components is the basis. Frequency inverters by Bonfiglioli Vectron play an important role, but above all it is the knowledge and resourcefulness of the ELSTO engineers that make the difference.

By often thinking outside the box a bit, the most creative and profitable solutions are created, and this capability has drawn a fair number of reputable Dutch manufactures to ELSTO for the development and production of their electromechanical subassemblies.

Elsto Controls as player on many fields has earned her reputation from milking robots to deep sea winches with heave, but also for simple but energy efficient pump drives ELSTO is your ideal partner.

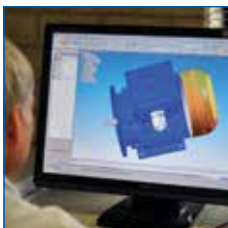
Elsto engineers take care of ready to fit reliable solutions that have been thoroughly tested before shipment, to ensure a trouble free installation and operation.

Thanks to the structure and culture within the ELSTO organization Drives & Controls are an ideal partner for the effective realization of projects. Starting from a certain project complexity or size a dedicated project team is formed. Primarily to bundle the knowledge and capabilities within the own organization, but also to analyse which expertise from outside partners is required.

A proper analysis of the customer requirements and an open communication about possibilities, impossibilities and costs ensure both a technically and commercially successful project.

Accurate feedback monitoring and communication during the project, but also careful support after conclusion of the project are vital for its success.

Engineering



A substantial part of the Elsto success can be attributed to the creativity and resourcefulness of the sales and engineering staff. Extensive knowledge of the product range and production facilities within the Stokvis organization enables the both departments to create suitable and responsible solutions for almost any problem. They do not only solve the problems, but do so in a very economical and responsible manner.

The size of the Elsto engineering department has grown with increase in the number of customer specific products. The department is, next to creating the requested custom solutions for the current production, responsible for the development of new products and technologies for future markets and applications.

Next to the engineers a number of product specialists are available who act as consultant or project leader during the development of larger or smaller projects. Be it a customer specific project or a project concerning standard components, the product specialist will guide the project from start to end ensuring a correct and timely delivery.

Services



With our own maintenance teams we are able to offer our high workshop quality also out in the field. Maintaining your equipment, replacing tired drive components by new or overhauled ones or perform service state inspections by means of heat and vibration analysis, we cover the complete MRO spectrum and always with durability and energy conservation in mind. We also offer a maintenance data logging system that can prove very valuable to maintain a clear vision of the general condition of your equipment. We also undertake major refits and preventive maintenance projects, where required in close cooperation with other expert companies.

Testing

With our “green” testing grid we can test generators, DC and AC motors up to 300 kW can be tested under full load conditions, and be subjected to extensive diagnostics.

Emergency service

Thanks to our 24/7 emergency service we are ready to assist you with break downs, and replace broken parts from our own or from consignment stocks. Consignment stocks are an ideal way to prevent a prolonged production interruption caused by parts with a delivery time. We offer made to measure service contracts with a guaranteed 24/7 response to make sure you can be sure.

Certification

Certified quality is of prime importance to our customers and to us, and therefore we are one of only a few fully certified companies in the Netherlands that can perform maintenance and overhaul work on ATEX motorreducers.

Specials



If even the extensive Elsto programme has no suitable solution available, you will find the Elsto organization at its best. Be it single piece or the series production of a customer specific design, Elsto has the experience, the knowledge and the facilities to create the optimum solution for a given application, optimum solutions also known as specials.

Manufacturing facilities with state of the art conventional and CNC equipment are an integral part of the Stokvis organisation, and enable Elsto Drives & Controls to produce the customer specific bespoke solution almost regardless of volume and complexity.

Over the years specials have become an important activity for Elsto Drives & Controls, and at this moment in time more than fifty percent of the Elsto staff is involved with the realisation of customer specific products in one way or the other. Almost all work can be handled within the Stokvis organization, which next to the experienced and competent staff guarantees excellent quality and short delivery times.

System Solutions



What is a system solution?

A system solution makes it possible to carry out a certain task or a succession of tasks safely, correctly and efficiently by cleverly combining driving and controlling the machine(s).

With an integrated system solution not only the tasks are managed, but also the complete energy cycle. In both cases simple operation and maintenance are required just as the use of generally accepted industry standards in their construction.

Both stationary and mobile system solutions exist. With stationary solutions the motors, gearboxes and controls remain in one spot and the process takes place around them, production lines, manufacturing machines or luggage transport systems are typical examples.

With mobile systems the motors, gearboxes and controls move along with the process. Often the energy supply for these applications is separate from the public grid, examples are the movement of vehicles and vessels and the operation of the equipment carried by them.

Services

Next to engineering, production, supply and commissioning ELSTO Drives & Controls is firmly committed to her service and MRO activities. ELSTO is your partner of choice for all types of after sales activities.

Repairs

All types of electro-mechanical drive components can be repaired or overhauled in our workshops.

In house winding, VPI impregnating and balancing of electric motors and generators up to 3,5 tonnes of rotor weight is our speciality, and reflect the origins of the Stolck company.

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Elsto motors		<p>DEE Series</p> <p>IEC 63 - 225M</p> <p>0,18 - 45 kW</p>	<p>Aluminium three phase motors</p> <p>Single speed</p> <p>3000 / 1500 / 1000rpm</p> <p>IE1 / IE2 / IE3</p>
		<p>DHG Series</p> <p>IEC 80 - 355L</p> <p>0,75 - 315 kW</p>	<p>Cast iron three phase motors</p> <p>Single speed</p> <p>3000 / 1500 / 1000 / 750rpm</p> <p>IE1 / IE2 / IE3</p>
		<p>BT/BS Series</p> <p>64 - 146mm</p> <p>0,2 - 5,7 kW</p> <p>0,65 - 18,2 Nm</p>	<p>Compact three phase motors</p> <p>Single speed</p> <p>3000 - 5000rpm</p> <p>IE4</p>
AEG-Lafert motors		<p>AM Series</p> <p>IEC 56 - 160</p> <p>0,09 - 22 kW</p>	<p>Aluminium three phase motors</p> <p>ééntoerig 3000/1500/1000/750rpm</p> <p>Pole change motor</p> <p>Dahlander/separate windings</p> <p>IE1 / IE2 / IE3 / IE4</p>
		<p>AMM(E) Series</p> <p>IEC 56 - 100</p> <p>0,09 - 2,2 kW</p>	<p>Aluminium single phase motors</p> <p>Single speed 3000/1500/1000rpm</p> <p>With an de without starting condenser</p>
		<p>AMK-AC-S Series</p> <p>IEC 63 - 132</p> <p>0,09 - 11 kW</p>	<p>Aluminium brake motors</p> <p>3 different brake executions</p> <p>Single speed</p> <p>3000/1500/1000/750rpm</p> <p>IE1 / IE2</p>

ATEX motors		<p>J- /ASNA-series</p> <p>IEC 56 - 255M</p> <p>0,09 - 315 kW</p>	<p>non-sparking motors (Exe II T4)</p> <p>Aluminium and Cast iron</p> <p>Single speed/Pole change</p> <p>Single phase</p> <p>IE1 / IE2</p>
		<p>ELD-series</p> <p>IEC 56 - 112M</p> <p>0,12 - 4 kW</p>	<p>Aluminium flameproof motors (Exd)</p> <p>Single speed/Pole change</p> <p>Single phase</p>
		<p>ASA(F)-series</p> <p>IEC 56 - 112M</p> <p>0,12 - 4 kW</p>	<p>– Cast iron flameproof motors (Exd)</p> <p>Single speed</p> <p>With brake</p> <p>IE1 / IE2</p>
		<p>VR-series</p> <p>IEC 63 - 280</p> <p>2 - 700 Nm</p>	<p>Flameproof modular brake (Exd)</p> <p>B5/B5 Sandwich execution</p> <p>AC or DC brake coil</p>
Circular saw motors		<p>ET/EM-series</p> <p>Grootte 48 - 80</p> <p>0,37 - 11kW</p>	<p>– Circular saw motors/ Low shaft motors</p> <p>1500 / 3000rpm</p> <p>Three- and single phase</p> <p>Optional brake</p> <p>48-80 frame size</p>
Vibrating motors		<p>KBM/KBC series</p> <p>0,09 - 18,7 kW</p> <p>1 - 4120 kgcm</p>	<p>Vibrating motors</p> <p>Three- and single phase</p> <p>Single speed</p> <p>3000/1500/1000/750 rpm</p> <p>Pneumatic vibration motors also available</p>

Efficiency

Over the last few years our three phase motor programme has been refreshed and extended to cater for the growing demand of energy efficient motors. In large parts of the world energy conservation legislation dictates new standards new electric motors have to meet.

High Efficiency, Premium Efficiency and Super Premium Efficiency three phase motors are labelled respectively IE2, IE3 and IE4 in Europe, and are required to meet the IEC 60034-30:2008 and IEC 60034-1-2:2007 standards.

For the North American market the motors have to comply with the EPA Act Regulation (Energy Policy Act, 1992) and the EISA Directive (Energy Independence and Security Act: 2007). To comply with the demands in the regulations, the UL (Underwriters Laboratories Inc.) has included the demands in the UL mark of approval.

Commonly used symbols and standards

Symbol	Unit	Description
$\cos\phi$	–	Phase shift
f_m	–	Correction factor
l	–	Duty factor
I_N	A	Nominal current
I_S	A	Starting current
J_C	Kgm ²	Load inertia
J_M	Kgm ²	Motor inertia
K_C	–	Torque factor
K_d	–	Load factor
K_J	–	Inertia factor
M_A	Nm	Starting torque
M_B	Nm	Brake torque
M_N	Nm	Nominal torque
M_L	Nm	Load torque
M_S	Nm	Starting torque
η	–	Efficiency
η_d	%	Dynamic efficiency
η_s	%	Static efficiency
n	rpm	Nominal motor speed
n_{max}	rpm	Maximum permitted motor speed
P_B	W	Power absorption potential of brake at 20°C
P_n	kW	Nominal power
P_r	kW	Absorbed power
S	-	Service factor
t_1	ms	Brake response time, standard rectifier
t_{1s}	ms	Brake response time, fast switching rectifier
t_2	ms	Brake response time, demagnetizing brake coil
t_{2c}	ms	Brake response time, demagnetizing brake coil and disconnecting DC current
t_{brake}	ms	Overall brake response time
t_a	°C	Ambient temperature
t_f	min	Duty factor with constant load
t_r	min	Off time
W	J	Brake energy between two positions
W_{max}	mm	Maximum brake energy per application
X_1	ms	Distance to engagement point (on outgoing shaft)
Z	1/h	Permitted number of starts under load
Z_0	1/h	Maximum permitted number of starts unloaded (relative duty factor $l = 50\%$)

Quality

Strict quality control assures the flawless operation and reliability of the products. The quality is confirmed by the ISO 9001 Certificate.

Safety

Our motors comply with the requirements of the International Standard IEC 60034 for rotating electrical machines as well as with the following European Directives: Low Voltage Directive (LV) 2006/95/EC, Electromagnetic Compatibility Directive (EMC) 2004/108/EC and RoHS Directive 2011/65/EC on the restriction of hazardous substances in electrical and electronic equipment.

All products comply with the requirements of the Directive Machines (MD) 2006/42/EC. In accordance with this Directive, induction motors are components and intended solely for integration into other machines. Commissioning is forbidden until conformity of the end-product with the Machine Directive is proved.



The CE marking was applied for the first time in 1995.

Before operating the motor, observe and obey the safety instructions provided in our Operating Instructions and check the compliance with Regulation EN 60204-1. Also check the applicable additional local standards.



Motors compliant with many other standards are available on request.



Motors approved by CSA



Motors approved by CQC (small motors)

Efficiency classes

Efficiencies are harmonized to the International Standard IEC 60034-30;2008 that states new efficiency levels:



Standard Efficiency IE1



High Efficiency IE2
Premium Efficiency IE3



Super premium Efficiency IE4

The efficiency levels are in accordance with the testing method IEC 60034-2-1;2007.



High Efficiency motors according to EPA legislation. Verified by UL Underwriters Laboratories Inc.



Premium Efficiency motors according to EISA (Energy Independence and Security Act). Since 19 December 2010 EISA makes it compulsory to use Premium Efficiency (IE3) motors in the US and Canada as the minimum efficiency class. The act covers motors from 0,75 kW (1 hp) to 375 kW (500 hp). The requirements of the act are incorporated in the UL (Underwriters Laboratories) certification.



Motors with the China Energy Label

The need to reduce the worldwide energy consumption and CO² emission volumes is now generally accepted. In the EC the primary driving force behind the reduction (or at least a reduction in its growth) energy consumption and CO₂ emission volumes is the European Committee.

The reduction of the energy consumption of electric motors plays an important role in these reduction plans. The amount of electric and fossil energy used is immense. On a world-wide basis ca 40% (EC 60%) of all electrical energy is used up in industrial activities, of which no less than 2/3 is used in electrical motors.

The total energy consumption of electrical motors In the EC was in 2005 already 1067 TWh, and when no action would be taken, this will rise to 1252 TWh in 2020. To battle the ever increasing use of energy, the EC directive 2009/125/EC was introduced, which is best known to the general public for its introduction of brightly coloured stickers on washing machines or fridges in the shops and the gradual disappearance of the classic light bulb.

To regulate the power consumption in electric motors, the regulation 640/2009 was introduced to support the goals of directive 2009/125/EC.

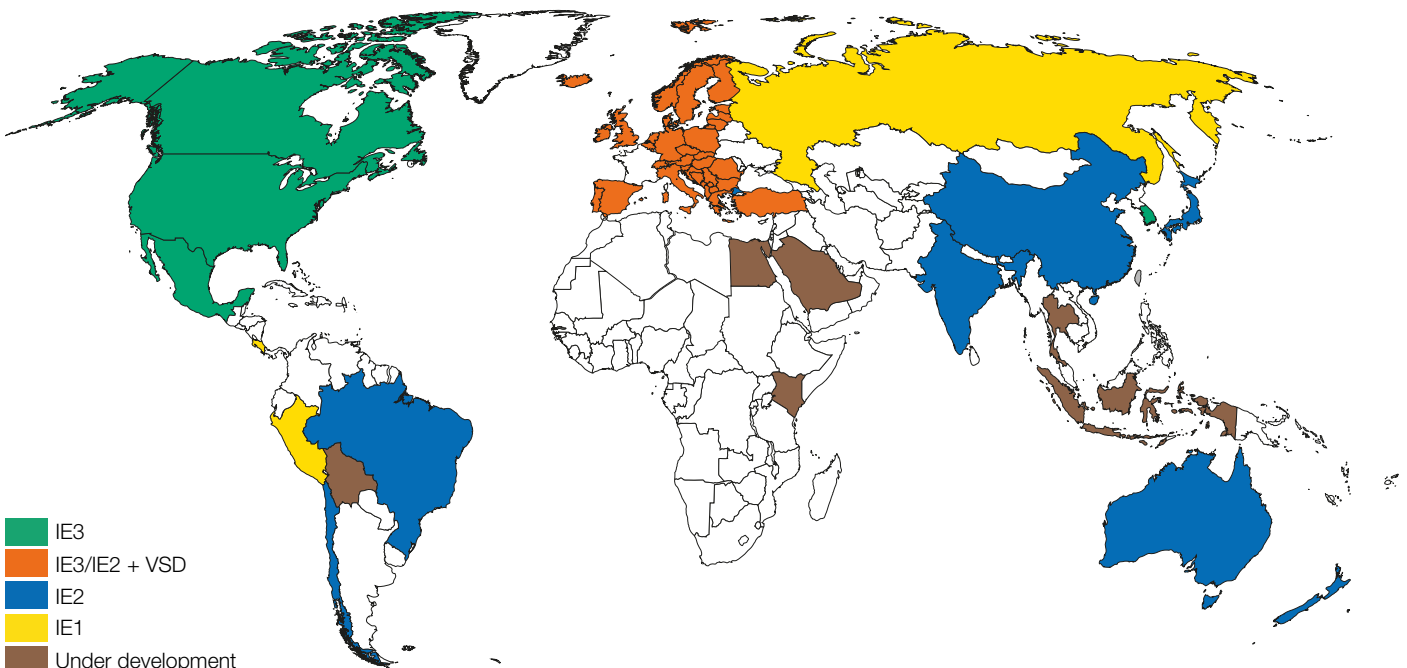
The regulation should increase the efficiency of electric motors, which will result in a total saving over the period 2010 – 2020 of approximately 5500 PJ (PetaJoule) of fossil fuel which equates about 135 TWh of electrical energy compared to a situation in which nothing is done.

The regulation is based on IEC standard 60034-30 from 2008 published by the International Electro technical Commission *1). Below an overview of present and future IEC efficiency classes, and the relevant currently EC adopted classes.

IEC	IE1	IE2	IE3	IE4	IE5
	Standard	High	Premium	Super premium	Ultra premium
EU	IE1	IE2	IE3	--	--

*1) The International Electro technical Commission (IEC) is an non-profit NGO that is responsible for the preparation and publishing of regulations and standards for electrics, electronics and related areas. Worldwide the IEC is seen as the leading body for the creation of electro technical standards. Next to standards that concern the performance and efficiency testing of electric motors, also the physical dimensions (frame sizes, shaft dimensions) and interchangeability are governed by the IEC.

Below an overview of the (compulsory) efficiency classes per region or country.



Country/Area	Product range	Law/Regulation	MEPS	Next steps
EUROPE	400 V ± 10%; 50 Hz 7,5/0.75 - 375 kW - 2-6 poles	EC 4/2014 60034-30-1:2014	IE3 or IE2 with VS motors from 0,75 to 375 kW	TBD
SWITZERLAND	400 V ± 10%; 50 Hz 0.75 - 375 kW - 2-6 poles	EC 4/2014 60034-30-1:2014	IE3 or IE2 with VSD motors from 7,5 to 375 kW IE2 motors < 7,5 kW compulsory 01.01.2015	TBD
TURKEY	400 V ± 10%; 50 Hz 0.75 - 375 kW - 2-6 poles	EC 4/2014 60034-30-1:2014	IE3 or IE2 (only with VSD) motors from 0,75 to 375 kW IE2 motors < 7,5 kW compulsory 01.01.2015	TBD
RUSSIA	up to 690 V ± 10%; 50 Hz 1 - 400 kW – alle poles	GOST R 51677-2000	-	-
USA	460 V ± 10%; 60 Hz 1 - 200 HP - 2-6 poles	Nema EPAAct EISA 2007	IE3 0-500 HP	-
CANADA	460 V/575 V ± 10%; 60 Hz 1 - 200 HP - 2-6 poles	CSA C390-10	IE3	No further changes are expected in the near future.
MEXICO	460 V ± 10%; 60 Hz 1 - 200 HP - 2-6 poles	NOM-016-ENER 2010 CSA 390	IE2	Will follow USA model
BRAZIL	220/380/440/460/480 V ± 10%; 60 Hz 0.75 - 250 kW - 2-8 poles	NBR 17094-1 Regulation 553	IE2	It is expected that the scope of regulation will be extended
CHILE	380/400/420/440/460/690 V ± 10%; 50 Hz 0.75 - 7.5 kW - 2-6 poles	NCH 3086	IE2	-
AUSTRALIA NEW ZEALAND	415/690 V ± 10%; 50 Hz 0.75 - 186 kW - 2-8 poles	AS/NZS 1359.5-2004	IE2	IE3 expected for near future
CHINA	380 V ± 10%; 50 Hz 0.55 - 315 kW - 2-6 poles	GB 18613-2012	IE3 motors from 0,75 to 375 kW	-
HONG KONG	380 V ± 10%; 50 Hz 0.75 - 375 kW - 2-6 poles	Mandatory Buildings Energy Efficiency Bill	IE3 or IE2 with VSD motors from 0,75 to 375 kW	TBD
INDIA	415/690 V ± 10%; 50 Hz 0.37 - 315 kW - 2-8 poles	IS:12615	IE2	-
ISRAEL	400 V ± 10%; 50 Hz 0.75 - 185 kW - 2-8 pool	IS:5289	IE2	-
JAPAN	200/220/400/440 V ± 10%; 50/60 Hz 0.2 - 160 kW - 2-6 pool	JIS C 4210 JIS C 4212	IE3	-
KOREA	up to 600 V ± 10%; 60 Hz 0.75 - 200 kW - 2-6 pool	IEC 60034-30-1:2014	IE3 motors from 0,75 to 200 kW	TBD
SINGAPORE	415 V ± 10%; 50 Hz 1.1 - 90 kW - 2-4 pool	SS530:2006	IE2	Only government projects compulsory IE2
SAUDI ARABIA	380/460 V ± 5%; 60 Hz All kW - all poles	No regulation	-	-
UNITED ARAB EMIRATES	400 V ± 10%; 50 Hz 0.75 - 375 kW - 2-6 pool	No regulation	-	-

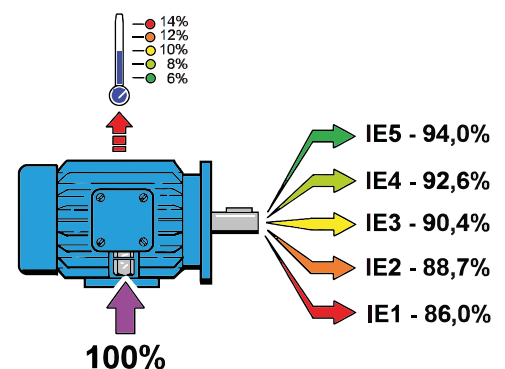
All effective regulations are based on IEC 60034-30 and IEC 60034-30-1. Locally additional regulations or requirements may be applicable, ranging from the application of certain stickers and registration with the authorities (Korea), the application of NEMA markings, values and certificate numbers (USA) or nothing at all (Saudi Arabia). For each export situation the requirements for the point of destination should be thoroughly examined and communicated at the ordering stage.

How efficient are electric motors?

During the transition of electrical energy into mechanical energy some of the energy is lost in the form of heat. Both mechanical and electrical causes are responsible for this. The more heat a motor produces, the more questionable its efficiency.

On the right side an example of the effect of an higher efficiency class of a 7,5 kW motor running at 50Hz.

The efficiency of the motor is not only effected by the motor design, but also by the motor size. The difference in motor efficiency is the significant in smaller motors, and the least significant in larger motors. The table on the next page illustrates this quite clearly.



S-SELD-EN-EMOT-001-V01

4 pole 50 Hz motor					
	IE1	IE2	IE3	IE4	IE5*
0,37 kW	66,1%	72,7%	77,3%	81,1%	85%
0,75 kW	72,1%	79,6%	82,5%	85,7%	88%
7,5 kW	86,0%	88,7%	90,4%	92,6%	94%
75 kW	92,7%	94,0%	95,0%	96,0%	97%

The motor efficiency can be increased by specifying better bearings and seals, but primarily by using different and better materials for the windings, rotor and stator. In particular for the level of efficiency required for IE 5, alternative construction and control principles must be employed.

* Estimated values

The savings for each motor seems to be very modest, but by virtue of the immense amount of motors installed worldwide the combined total saving is very significant as can be seen in the table below.

Estimated EU consumption in TWh in 2020			
	Use	Savings	Percentage
Without any action	1252	-	-
IE2	1207	45	3,6
IE2 + IE3	1209	43	3,5
IE3	1188	65	5,2
IE3 in combination with inverters	1114	139	11,1

Sources: EUP Lot 11 motors (2008) – EC Commission staff working document SEC (2009) 1013

How many electric motors are there in the EC?

In 2005 alone 9 million three phase electric motors (0,75 – 200 kW) were sold. These 9 million motors represent 87% of all electric motors in this power range irrespective of operating principle.

See the table below for an overview based on the nominal power of the motors.

Three phase motors 0,75 – 200 kW				
	0,75-7,5 kW	7,5-37 kW	37-75 kW	75-200 kW
Market share in %	79,1	16,5	3,3	1,1
Power in % of the market	28,2	37,6	19,6	14,6
Power in GW	22,5	30,0	15,6	11,6

Sources: EUP Lot 11 motors (2008) – EC Commission staff working document SEC (2009) 1013

The above data only refer to motor sales, the installed number of motors is even more staggering as can be seen in the table below.

Installed number of motors in millions in the EU-15 industrial sector							
Power kW	2000	2005	2010	2015	2020	2025	2030
0,75-7,5	46,0	49,0	52,7	55,4	57,3	59,2	60,1
7,5-37	4,71	5,39	5,74	6,48	6,71	6,39	7,04
37-75	1,22	1,30	1,39	1,46	1,51	1,56	1,59
>75	0,76	0,81	0,87	0,91	0,95	0,98	0,99
Totaal	53,4	56,9	61,1	64,26	66,5	68,6	69,7

Sources: EUP Lot 11 motors (2008) – EC Commission staff working document SEC (2009) 1013

Installed number of motors in millions in the EU-15 service sector							
Power kW	2000	2005	2010	2015	2020	2025	2030
0,75-7,5	23,8	27,7	32,2	36,6	40,2	43,2	45,4
7,5-37	2,36	2,75	3,19	3,62	3,98	4,28	4,5
37-75	0,23	0,27	0,32	0,36	0,40	0,43	0,45
>75	0,04	0,04	0,05	0,06	0,06	0,07	0,07
Totaal	26,4	30,8	35,7	40,6	44,6	48,0	50,5

Sources: EUP Lot 11 motors (2008) – EC Commission staff working document SEC (2009) 1013

EU 15 lidstaten :

Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, Great Britain.
Data are extrapolated data on the basis of the then (2008) available figures for installed motors, and growth of the energy consumption.

Three phase motors over 0,75 kW only form the proverbial tip of the iceberg with a market share of only 2,72%. Three phase motors with a capacity of less than 0,75 kW have no less than a 96% market share.

Why a regulation?

For OEM (who are responsible for 80% of the total market volume) purchase costs are often more interesting than energy efficiency. The implementation of the regulation provides a strong incentive for OEM to use more efficient motors, but also stimulates the motor manufacturers to develop even more efficient motors. The regulation is therefore an important step in the reduction of the use of energy.

For the end-user the energy use of his machine does play an important part in the Total Cost of Ownership, and can in some cases even be decisive. The total cost of ownership of the electric motor itself consists of no less than 96% of energy costs, and can, depending on the size of the installed motor, the total cost of ownership of the motors(s) can have a sizeable effect on the TCO of the machine as a whole. In that sense the use of more energy efficient motors can for OEM mean more than just “keeping to the rules”, it can also be a strong sales argument.

Timescale

For new motors the full IE3 requirement for motors over 0,75 kW is in force.

In the replacement market things will move much slower as can be seen in the below table showing the average life expectancy of electric motors.

	Average life expectancy of electric motors (with repairs)		
	1,0-7,5 kW	7,5-75 kW	75-250 kW
Life expectancy in years	12	15	20

Source: EU Lot 11 Motors (2008)

Most likely the above figures will not represent the actual rejuvenation of the installed motors, while in many cases the economic life expectancy of the machines or installations the motors are used in is less than that of the motors.

Which motors are effected by the regulation?

Electric three phase squirrel cage motors wound for 50 or 60 Hz with a fixed motor speed, and a maximum voltage of 1000V and executed with 2, 4 or 6 poles.

With a continuous power *1) of:
0,75 to 375 kW

**1) With continuous power reference is made to the S1 performance or S3 use with a duty cycle of over 80% and S6 use. If a different /shorter duty cycle is applicable this shorter duty cycle must be indicated on the motor type plate to prevent the not to comply with the regulation.*

Motors controlled by an frequency inverter should at least comply with the IE2 efficiency requirements.

From this general requirement certain motors are exempted, primarily motors that have to work under certain environments (ATEX, submerged etc.) and in two specific mechanical instances.

These mechanical instances are, a brake is fitted to the motor or the motor is an integral part of a machine. For more information on this subject, the ELSTO Sales office should be contacted.

Efficiency values FOR 50 Hz according to IEC 60034-30-1:2014

Efficiency standard calculation according to IEC 60034-2-1;2007

Output kW	Standard Efficiency - IE1			High Efficiency - IE2			Premium Efficiency - IE3		
	2 poles	4 poles	6 poles	2 poles	4 poles	6 poles	2 poles	4 poles	6 poles
0.12	45.0	50.0	38.3	53.6	59.1	50.6	60.8	64.8	57.7
0.18	52.8	57.0	45.5	60.4	64.7	56.6	65.9	69.9	63.9
0.20	54.6	58.5	47.6	61.9	65.9	58.2	67.2	71.1	65.4
0.25	58.2	61.5	52.1	64.8	68.5	61.6	69.7	73.5	68.6
0.37	63.9	66.0	59.7	69.5	72.7	67.6	73.8	77.3	73.5
0.40	64.9	66.8	61.1	70.4	73.5	68.8	74.6	78.0	74.4
0.55	69.0	70.0	65.8	74.1	77.1	73.1	77.8	80.8	77.2
0.75	72.1	72.1	70.0	77.4	79.6	75.9	80.7	82.5	78.9
1,1	75,0	75,0	72,9	79,6	81,4	78,1	82,7	84,1	81,0
1,5	77,2	77,2	75,2	81,3	82,8	79,8	84,2	85,3	82,5
2,2	79,7	79,7	77,7	83,2	84,3	81,8	85,9	86,7	84,3
3	81,5	81,5	79,7	84,6	85,5	83,3	87,1	87,7	85,6
4	83,1	83,1	81,4	85,8	86,6	84,6	88,1	88,6	86,8
5,5	84,7	84,7	83,1	87,0	87,7	86,0	89,2	89,6	88,0
7,5	86,0	86,0	84,7	88,1	88,7	87,2	90,1	90,4	89,1
11	87,6	87,6	86,4	89,4	89,8	88,7	91,2	91,4	90,3
15	88,7	88,7	87,7	90,3	90,6	89,7	91,9	92,1	91,2
18,5	89,3	89,3	88,6	90,9	91,2	90,4	92,4	92,6	91,7
22	89,9	89,9	89,2	91,3	91,6	90,9	92,7	93,0	92,2
30	90,7	90,7	90,2	92,0	92,3	91,7	93,3	93,6	92,9
37	91,2	91,2	90,8	92,5	92,7	92,2	93,7	93,9	93,3
45	91,7	91,7	91,4	92,9	93,1	92,7	94,0	94,2	93,7
55	92,1	92,1	91,9	93,2	93,5	93,1	94,3	94,6	94,1
75	92,7	92,7	92,6	93,8	94,0	93,7	94,7	95,0	94,6
90	93,0	93,0	92,9	94,1	94,2	94,0	95,0	95,2	94,9
110	93,3	93,3	93,3	94,3	94,5	94,3	95,2	95,4	95,1
132	93,5	93,5	93,5	94,6	94,7	94,6	95,4	95,6	95,4
160	93,7	93,8	93,8	94,8	94,9	94,8	95,6	95,8	95,6
200-375	94,0	94,0	94,0	95,0	95,1	95,0	95,8	96,0	95,8

Efficiency values FOR 60 Hz according to IEC 60034-30-1:2014

Efficiency standard calculation according to IEC 60034-2-1;2007

Output kW	Standard Efficiency - IE1			High Efficiency - IE2			Premium Efficiency - IE3		
	2 poles	4 poles	6 poles	2 poles	4 poles	6 poles	2 poles	4 poles	6 poles
0.12	57.5	62.0	48.0	59.5	64.0	50.5	62.0	66.0	64.0
0.18	62.0	66.0	52.5	64.0	68.0	55.0	65.6	69.5	67.5
0.25	64.0	68.0	57.5	68.0	70.0	59.5	69.5	73.4	71.4
0.37	70.0	70.0	62.0	72.0	72.0	64.0	73.4	78.2	75.3
0.55	72.0	74.0	66.0	74.0	75.5	68.0	76.8	81.1	81.7
0.75	77.0	78.0	73.0	75.5	82.5	80.0	77.0	85.5	82.5
1,1	78,5	79,0	75,0	82,5	84,0	85,5	84,0	86,5	87,5
1,5	81,0	81,5	77,8	84,0	84,0	86,5	85,5	86,5	88,5
2,2	81,5	83,0	78,5	85,5	87,5	87,5	86,5	89,5	89,5
3,7	84,5	85,0	83,5	87,5	87,5	87,5	88,5	89,5	89,5
5,5	86,0	87,0	85,0	88,5	89,5	89,5	89,5	91,7	91,0
7,5	87,5	87,5	86,0	89,5	89,5	89,5	90,2	91,7	91,0
11	87,5	88,5	89,0	90,2	91,0	90,2	91,0	92,4	91,7
15	88,5	89,5	89,5	90,2	91,0	90,2	91,0	93,0	91,7
18,5	89,5	90,5	90,2	91,0	92,4	91,7	91,7	93,6	93,0
22	89,5	91,0	91,0	91,0	92,4	91,7	91,7	93,6	93,0
30	90,2	91,7	91,7	91,7	93,0	93,0	92,4	94,1	94,1
37	91,5	92,4	91,7	92,4	93,0	93,0	93,0	94,5	94,1
45	91,7	93,0	91,7	93,0	93,6	93,6	93,6	95,0	94,5
55	92,4	93,0	92,1	93,0	94,1	93,6	93,6	95,4	94,5
75	93,0	93,2	93,0	93,6	94,5	94,1	94,1	95,4	95,0
90	93,0	93,2	93,0	94,5	94,5	94,1	95,0	95,4	95,0
110	93,0	93,5	94,1	94,5	95,0	95,0	95,0	95,8	95,8
150	94,1	94,5	94,1	95,0	95,0	95,0	95,4	96,2	95,8
185-375	94,1	94,5	94,1	95,4	95,4	95,0	95,8	96,2	95,8

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Applicable standards

ELECTRICAL	Rating and performance	IEC 60034-1
	Methods for determining losses and efficiency using tests	IEC 60034-2
	Standard method for determining losses and efficiency from tests	IEC 60034-2-1
	Efficiency classes of single speed, three-phase, cage-induction motors (IE-code)	IEC 60034-30
	Terminal markings and direction of rotation	IEC 60034-8
	Starting performance	IEC 60034-12
	Standard voltages	IEC 60038
	Insulating materials	IEC 60085

MECHANICAL	Dimensions and output ratings	IEC 60072
	Mounting dimensions and relationship frame sizes-output ratings, IM B3, IM B5, IM B14	IEC 60072
	Cylindrical shaft ends for electric motors	IEC 60072
	Degrees of protection	IEC 60034-5
	Methods of cooling	IEC 60034-6
	Mounting arrangements	IEC 60034-7
	Noise limits	IEC 60034-9
	Mechanical vibration	IEC 60034-14
	Mounting flanges	DIN 42948
	Tolerances of mounting and shaft extensions	DIN 42955
	Classification of environmental conditions	IEC 60721-2-1
	Mechanical vibration; balancing	ISO 8821
	Verhoogde veiligheid 'e'	IEC 60079-7
	Bescherming van materiaal door beveiliging 'n'	IEC 60079-15
	Bescherming van elektrische apparatuur tegen mechanische schade (IK codering)	IEC 60081-1 IEC 60068-2-75
	Classificatie voor omgevingsomstandigheden	IEC 60721-2-1
	Algemene voorschriften van elektrische apparatuur voor plaatsen waar ontploffingsgevaar kan heersen	IEC 61241-0
	Bescherming voor behuizing 'tD'	IEC 61241-1
Mechanische trillingen; balancering	ISO 8821	

Electrical tolerances

For industrial motors to EN 60034-1, certain tolerances must be allowed on guaranteed values, taking into consideration the necessary tolerances for the manufacture of such motors and the materials used.

The standard includes the following remarks:

1. It is not intended that guarantees necessarily have to be given for all or any of the items involved. Quotations including guaranteed values subject to tolerances should say so, and the tolerances should be in accordance with the table.
2. Attention is drawn to the different interpretation of the term guarantee. In some countries a distinction is made between guaranteed values and typical or declared values.
3. Where a tolerance is stated in only one direction, the value is not limited in the other direction.

Unit	Values for	Tolerance
η	Efficiency (by indirect determination)	- 15% (1 - η) at $P_N \leq 150$ kW - 10% (1 - η) at $P_N > 150$ kW
$\cos \varphi$	Power factor	$\frac{1 - \cos \varphi}{6}$, minimum 0,02 maximum 0,07
s	Slip (at rated load and at working temperature)	± 20 % of the guaranteed slip at $P_N \geq 1$ kW ± 30 % of the guaranteed slip at $P_N < 1$ kW
I_A	(in the starting circuit envisaged)	+ 20 % of the guaranteed starting current (no lower limit)
M_A	Breakaway torque	- 15 % en + 25 % of the guaranteed breakaway torque (+ 25 % may be exceeded by agreement)
M_S	Pull-up torque	- 15 % of the guaranteed value
M_K	Pull-out torque	- 10 % of the guaranteed value (after allowing for this tolerance, M_K / M_{IN} not less than)
J	Moment of inertia	± 10 % of the guaranteed value
L_{pA}	Noise level (Sound pressure)	+3 dBA of the indicated value

Mechanical tolerances

According to IEC 60072-1, the following tolerances on mechanical dimensions of electric motors are permitted:

Unit	Values for	Tolerance
H	Shaft height	- up to 250 -0,5 mm - over 250 -1 mm
D-DA	Diameter of shaft end ¹⁾	- from 11 to 28 mm j6 - from 38 to 48 mm k6 - from 55 to 100 mm m6
F-FA	Hub key width	h9
N	Flange spigot	- up to 132 j6 - over size 132 h6

1) Centering holes in shaft extension to DIN 332 part 2

Additional tolerances

Size	Description	Tolerance
A	Width distance between the centre lines of the mounting holes	± 1 mm
AB	Width over mounting feet	+ 2 %
AC	Stator diameter/Fan cover diameter (without terminal box)	+ 2 %
B	Length distance between the centre lines of the mounting holes	± 1 mm
C-CA	Distance between shaft abutment and centre line of the nearest mounting hole	± 3 mm
E-EA	Length of shaft measured from abutment	$\varnothing < 55$ mm -0,3 mm $\varnothing > 60$ mm +0,5 mm
GA-GC	Distance between top of key and bottom of shaft	+0,2 %
HD	Distance between top of terminal box and bottom of feet	+ 2 %
K	Diameter or width of holes in motor feet	+ 3 %
L	Overall length of motor without secondary shaft end	+ 1 %
M	Diameter of pitch circle of mounting holes	$\pm 0,8$ mm
P	Outside diameter of flange	± 1 mm
R	Distance between abutment and flange mounting surface	± 3 mm
S	Mounting hole diameter in flange (or equivalent thread size)	+ 3 %
	Distance between abutment and flange mounting surface with closed bearing	$\pm 0,5$ mm
	Motor weight	- 5 % en + 10 %

Mounting arrangements

Mounting arrangements for rotating electrical machines are designated according to IEC 60034-7,

<p>Foot mounting</p>						
<p>CEI 2-14 IEC 34-7 code I IEC 34-7 code II</p>	<p>B3 IM B3 IM 1001</p>	<p>V5 IM V5 IM 1011</p>	<p>V6 IM V6 IM 1031</p>	<p>B6 IM B6 IM 1051</p>	<p>B7 IM B7 IM 1061</p>	<p>B8 IM B8 IM 1071</p>
<p>Flange mounting with trough holes</p>						
<p>CEI 2-14 IEC 34-7 code I IEC 34-7 code II</p>	<p>B5 IM B5 IM 3001</p>	<p>V1 IM V1 IM 3011</p>	<p>V3 IM V3 IM 3031</p>			
<p>Flange mounting with threaded holes</p>						
<p>CEI 2-14 IEC 34-7 code I IEC 34-7 code II</p>	<p>B14 IM B14 IM 3601</p>	<p>V18 IM V18 IM 3611</p>	<p>V19 IM V19 IM 3631</p>			
<p>Foot and flange mounting with trough holes</p>						
<p>CEI 2-14 IEC 34-7 code I IEC 34-7 code II</p>	<p>B3/B5 IM B35 IM 2001</p>	<p>V5/V1 IM V15 IM 2011</p>	<p>V6/V3 IM V36 IM 22031</p>	<p>B6/B5 IM B6/IM B5 IM 2051</p>	<p>B7/B5 IM B7/IM B5 IM 2061</p>	<p>B8/B5 IM B8/IM B5 IM 2071</p>
<p>Foot and flange mounting with threaded holes</p>						
<p>CEI 2-14 IEC 34-7 code I IEC 34-7 code II</p>	<p>B3/B14 IM B34 IM 2101</p>	<p>V5/V18 IM V15 IM 2111</p>	<p>V6/V19 IM V36 IM 2131</p>	<p>B6/B14 IM B6/IM B14 IM 2151</p>	<p>B7/B14 IM B7/IM B14 IM 2161</p>	<p>B8/B14 IM B8/IM B14 IM 2171</p>

Foot mounting	Flange mounting	Motors without endshield
IM B3 (IM 1001)	IM B5 (IM 3001) Flange type A to DIN 42 948 at drive end	IM B9 (IM 9101) without endshield and without ball bearings on drive end
IM B6 (IM 1051)	IM V1 (IM 3011) Flange type A to DIN 42 948 at drive end	IM V1 (IM 3011) Flange type A to DIN 42 948 at drive end
IM B7 (IM 1061)	IM V3 (IM 3031) Flange type A to DIN 42 948 at drive end	IM V9 (IM 9131) without endshield and without ball bearings on drive end
IM B8 (IM 1071)	IM B35 (IM 2001) Flange type A to DIN 42 948 at drive end	IM B15 (IM 1201) without endshield and without ball bearings on drive end
IM V5 (IM 1011)	IM B14 (IM 3601) Flange type C to DIN 42 948 at drive end	-
IM V6 (IM 1031)	IM V18 (IM 3611) Flange type C to DIN 42 948 at drive end	-
IM B34 (IM 2101) Flange type C to DIN 42 948 at drive end	IM V19 (IM 3631) Flange type C to DIN 42 948 at drive end	-

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Degrees of protection

Degrees of mechanical protection for machines are designated in accordance with IEC 60034-5 by the letters IP and two characteristic numerals.

First numeral: Protection against contact with foreign objects and ingress of foreign bodies

IP	Description
0	No special protection
1	Protection against solid foreign bodies larger than 50 mm (Example: inadvertent contact with the hand)
2	Protection against solid foreign bodies larger than 12 mm (Example: inadvertent contact with the fingers)
3	Protection against solid foreign bodies larger than 2.5 mm (Example: Wires, tools)
4	Protection against solid foreign bodies larger than 1 mm (Example: Wires, bands)
5	Protection against dust (harmful deposits of dust)
6	Complete protection against dust

Second numeral: Protection against ingress of water

IP	Description
0	No special protection
1	Protection against vertically falling water drops (condensation)
2	Protection against dripping water when inclined by up to 15°
3	Protection against waterspray at up to 60° from vertical
4	Protection against water splashed from any direction
5	Protection against water projected by a nozzle from any direction
6	Protection against heavy seas or water projected in powerful jets
7	7 Protection when submerged between 0.15 and 1 m.
8	8 Protection when continuously submerged in water at conditions agreed between the manufacturer and the user

Voltage

For the rated voltage of the motors, EN 60034-1 allows a tolerance of + 5 %. According to IEC 60038, the mains voltages may have a tolerance of + 10 %. Therefore the three-phase motors are designed for the following rated voltage ranges (exceptions are shown in the data tables):

Mains voltage to IEC 60038	Rated voltage range of motor
230 V ± 10%	218-242 V ± 5%
400 V ± 10%	380-420 V ± 5%
690 V ± 10%	655-725 V ± 5%

Within the rated motor voltage range, the permissible maximum temperature is not exceeded. When the motors are operated at the limits of the voltage tolerance, the permissible over-temperature of the stator winding may be exceeded by 10 K. Nameplates are marked with the maximum rated currents within the stated voltage ranges.

For brake motors, for motors in 500 V, 50 Hz design, and all not standard voltages, no voltage range is marked. The voltage tolerances to EN 60034-1 apply.

Frequency

Three-phase 50 Hz motors can also be operated on 60 Hz mains, provided the mains voltage increases proportionally to the frequency. The relative values for starting and breakaway torque remain nearly unchanged and slightly increase for the starting current. The rated speed increases by the factor 1.2 and output by factor 1.15. Should a motor designed for 50 Hz be operated at 60 Hz without the voltage being increased, the rated output of the motor cannot be increased. Under these operating conditions, rated speed increases by factor 1.2.

The relative values for starting and breakaway torque are reduced by factor 0.82 and for starting current by factor 0.9. Additionally to the voltage range for 50 Hz operation, three-phase single-speed motors (not brake motors) are also marked with the voltage range for 60 Hz operation.

Current

For three-phase motors the rated currents listed in the data tables apply to an operating voltage of 400 V. The conversion to other operating voltages, with output and frequency remaining unchanged, is to be made as follows:

Nominal voltage (V)	230	380	400	440	500	660	690
Conversion factor x I _N	1,74	1,05	1,0	0,91	0,80	0,61	0,58

Torque

$$\text{Rated torque in Nm} = 9550 \times \frac{\text{Rated power in kW}}{\text{Rated speed in min}^{-1}}$$

Output

The outputs stated in this catalogue are for constant load in continuous running duty S1 according to EN 60034-1, based on an ambient temperature of 40° C and installation at altitudes up to 1000 m above sea level. For severe operating conditions, e.g. high switching rate, long run-up time or electric braking, a thermal reserve is necessary, which could call for higher thermal class or the use of a motor with a higher rating. In those cases we recommend contacting the ELSTO sales office.

Overload

At operating temperature three-phase motors are capable of withstanding an overload for 15 seconds at 1.5 times the rated torque at rated voltage. This overload is according to EN 60034-1 and will not result in excessive heating. Utilizing thermal class F, motors can be operated continuously with an overload of 12%, unless the motors are already utilized to thermal class

Motor output at 50 Hz	230 V Δ 400 V Y	400 V Δ 690 V Y	500 V Y	500 V Δ	690 V Δ
< 3 kW	standard	on request	on request	on request	-
4 to 5.5 kW	standard	standard	on request	on request	on request
≥ 7.5 kW	on request	standard	on request	on request	on request

Noise

The noise level of an electrical machine is determined by measuring the sound pressure level in accordance with curve A of the sound level meter to EN 60651 and is indicated in dB (A). The permitted noise levels of electrical machines are fixed in EN 60034-9 (IEC 34-9). The noise level of our motors is well below these limit values. Air-borne sound measurements are carried out in an anechoic testing chamber to EN 21680-ISO 1680 with a speed corresponding to a mains frequency of 50 Hz and the number of poles.

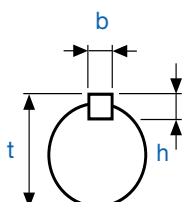
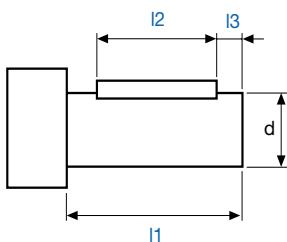
Vibration

The amplitude of vibration in electric motors is governed by EN 60034-14 Mechanical vibration of rotating electrical machines with shaft heights 56 and larger - methods of measurement and limits.

Standard motors are designed to vibration grade A (normal), vibration grade B is available at extra cost.

Rotors are at present dynamically balanced with half key fitted as per DIN ISO 8821, other balancing methods only on request.

- H = balanced with a half key
- F = balanced with a full key
- N = balanced without a key



Frame size	Poles	D x l1	b x h	l2	l3	t
56		9 x 20	3 x 3	15	2,5	10,2
63		11 x 23	4 x 4	15	4	12,5
71		14 x 30	5 x 5	20	6	16
80		19 x 40	6 x 6	30	6	21,5
90		24 x 50	8 x 7	40	6	27
100		28 x 60	8 x 7	50	6	31
112		28 x 60	8 x 7	50	6	31
132		38 x 80	10 x 8	70	6	41
160		42 x 110	12 x 8	100	6	45
180		48 x 110	14 x 9	90	5	51,5
200		55 x 110	16 x 10	90	5	59
225	2	55 x 110	16 x 10	90	5	59
225	4	60 x 140	18 x 11	110	5	64
250	2	60 x 140	18 x 11	110	5	64
250	4	65 x 140	20 x 11	110	5	74,5
280	2	65 x 140	18 x 11	110	5	69
280	4	75 x 140	20 x 12	140	5	85
315	2	65 x 140	18 x 11	125	5	69
315	4	80 x 170	22 x 14	160	5	85

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Vibration limits according to IEC 60034-14

Vibration grade	Maximum vibration values (frame size)		
	IEC 63 - 132	IEC 160 - 280	IEC 315
A	1,6	2,2	2,8
B	0,7	1,1	1,8

Insulation and temperature rise

Class F insulation to EN 60034-1 is used throughout. Standard design motors are intended for operation at 40° C ambient temperature with class B temperature rise only, with an over-temperature limit of 80 K. The rated voltage has to fall within the limits stipulated in IEC 60038. Exceptions are shown on the table below.

Temperature rise (ΔT^*) and maximum temperatures at the hottest points of the winding (T_{max}) according to the EN 60034-1 temperature classes.

	ΔT^*	T_{max}
Class B	80 K	125° C
Class F	105 K	155° C
Class H	125 K	180° C

¹⁾ Measurement by resistance method

Output reduction at ambient temperatures over 40

Ambient temperature	45° C	50° C	55° C	60° C
Class B Reduction of nominal output to approx.	95 %	90 %	85 %	80 %

When a winding is utilized to temperature class F (105K), no output reduction is required up to an ambient temperature of 55°C. This does not apply to motors which in their standard design are already utilized to thermal class F.

Installation at altitudes of more than 1000 m above sea level (see also EN 60034-1)

Altitude of installation	2000 m	3000 m	4000 m
At 40° C ambient temperature and insulation class B. Rated output reduced to approx	92 %	84 %	76 %
At 40° C ambient temperature and insulation class F. Rated output reduced to approx	89 %	79 %	68 %
Full nominal output to data tables with thermal class B and ambient temperature of	32° C	24° C	16° C
Full nominal output to data tables with thermal class F and ambient temperature of	30° C	19° C	9° C

Starting rate

The permissible number of starts per hour can be taken as given in the table below, provided the following conditions are met.

- Additional moment of inertia ions are met. inertia of the rotor
- Load torque rising with the square of the speed up to nominal torque
- Starts are at even intervals.

Frame size IEC	Permissible no. of starts per hour for		
	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

For the permissible number of starts for pole-changing motors and brake motors please consult the ELSTO sales office, indicating the complete operating conditions.

Use of frequency inverters

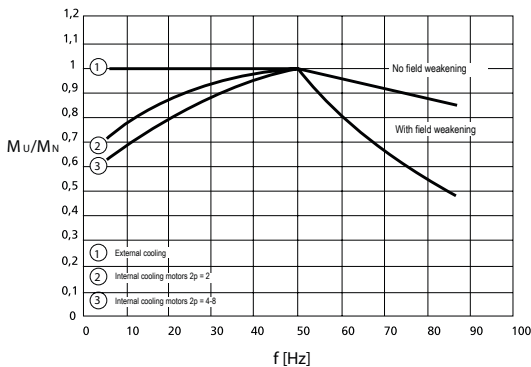
Motors frame sizes 90 upwards in standard design are suitable for operation on static frequency inverters, taking into account the following remarks:

- Maximum inverter output voltage 500V at peak voltages $\hat{U} < 1460V$ and $du/dt < 13 \text{ kV/us}$.
For higher inverter output voltages or stresses, a special insulation is required.
- With square characteristic of the load torque, motors can be driven with their rated torque.
- For constant torque, the rated torque of motors with internal cooling must be reduced due to reduced cooling air inlet. Depending on the control range, the use of an (optional) external fan would be advisable.
- The motors frame size 56 – 80 can be operated on single-phase inverters up to maximum 60 Hz. The motors frame sizes 90 – 112 are suitable for a maximum output frequency of the inverter of 60 Hz (e.g. applications with square torque, control range 1:10, such as pumps and fans). From frame size 132 upwards, motors designed Δ/Y 230/400 V, 50 Hz can be operated in delta with a maximum frequency of 87 Hz (observe mechanical limit speed).

For higher frequencies, special motors are available on request.

Note: 75 kW, 2 poles and up - insulated bearings are recommended when inverter fed.

Torque characteristics of three-phase motors driven by frequency converters.



Noise

Depending on the operating point and inverter type, inverter-fed motors produce between approx. 4 - 10 dB(A) higher noise values than when supplied from the mains. For motors driven with a frequency over 50 Hz, more fan noise is produced. We recommend the use of an independantly driven fan.

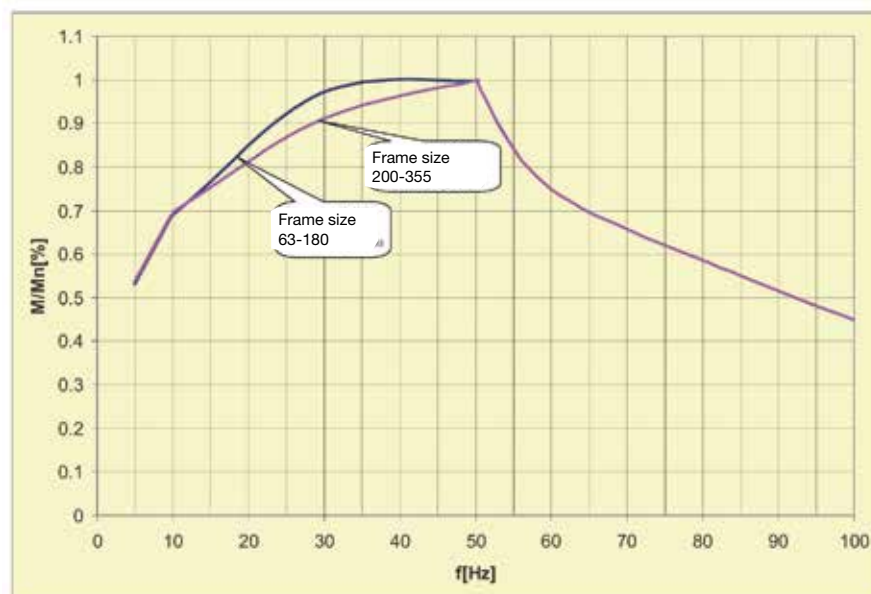
Maximum cable length between inverter and motor

Output [kW]	Voltage [V]	Maximum cable length (m) with cable cross section [mm ²]				
		30 mm ²	45 mm ²	60 mm ²	90 mm ²	150 mm ²
1.1	220-230	1.0	1.0	1.0	1.0	1.5
	380-400	1.0	1.0	1.0	1.0	1.5
1.5	220-230	1.0	1.0	1.5	1.5	1.5
	380-400	1.0	1.0	1.0	1.5	1.5
2.2	220-230	1.5	1.5	1.5	1.5	2.5
	380-400	1.5	1.5	1.5	1.5	2.5
3	220-230	2.5	2.5	2.5	4	4
	380-400	2.5	2.5	2.5	2.5	2.5
4	220-230	2.5	2.5	4	4	4
	380-400	2.5	2.5	2.5	2.5	4.
5.5	220-230	4	4	6	6	6
	380-400	4	4	4	4	6
7.5	220-230	6	6	6	10	10
	380-400	4	4	6	6	6
11	220-230	6	6	10	10	16
	380-400	4	4	6	6	10
15	220-230	6	6	10	10	16
	380-400	6	6	6	10	10
18.5	220-230	10	10	16	16	25
	380-400	10	10	10	16	16
22	220-230	10	16	16	25	25
	380-400	10	10	10	16	16
30	220-230	16	16	25	25	35
	380-400	10	10	16	16	25
37	220-230	25	25	35	35	50
	380-400	16	16	25	25	35
45	220-230	25	25	35	50	50
	380-400	25	25	25	35	50
55	220-230	25	25	35	50	-
	380-400	25	25	35	35	50
75	220-230	35	35	50	-	-
	380-400	25	25	35	50	50
90	220-230	35	35	50	-	-
	380-400	25	25	35	50	50
110	220-230	-	-	-	-	-
	380-400	25	25	35	50	50
132	220-230	-	-	-	-	-
	380-400	35	35	35	50	50
160	220-230	-	-	-	-	-
	380-400	50	50	50	70	70
200	220-230	-	-	-	-	-
	380-400	50	50	50	70	70
250	220-230	-	-	-	-	-
	380-400	70	70	70	90	90
280	220-230	-	-	-	-	-
	380-400	70	70	70	90	90
315	220-230	-	-	-	-	-
	380-400	90	90	90	120	120

Maximum permissible motor speed

Frame size	rpm		
	2 pole	4 pole	6 pole
<100	5200	3600	2400
112	5200	3600	2400
132	4500	2700	2400
160	4500	2700	2400
180	4500	2700	2400
200	4500	2300	1800
225	3600	2300	1800
250	3600	2300	1800
280	3600	2300	1800
315	3600	2300	1800
355	3600	2300	1800

Torque/Frequency



Cooling

The motor surface is being cooled by means of a cooling fan. The cooling effect of the fan is bi-directional, therefore the sense of rotation of the motor has no effect on the cooling performance.

Paint finish

Normal finish: Suitable for climate group “Moderate” according to IEC 60721-2-1, e.g. indoor and outdoor installation.

For short periods: up to 100% rel. humidity at temperatures up to + 30 °C.

Continuously: up to 85% rel. humidity at temperatures up to +25 to +30 °C

Special finish available on request.

Connection diagrams single speed motors

Windings of standard three-phase single speed motors can be connected either in star or delta connection.

Star connection

A star connection is obtained by connecting W2, U2, V2 terminals to each other and the U1, V1, W1 terminals to the mains. The phase current and voltage are:

$$I_{ph} = I_n ; U_{ph} = U_n / \sqrt{3}$$

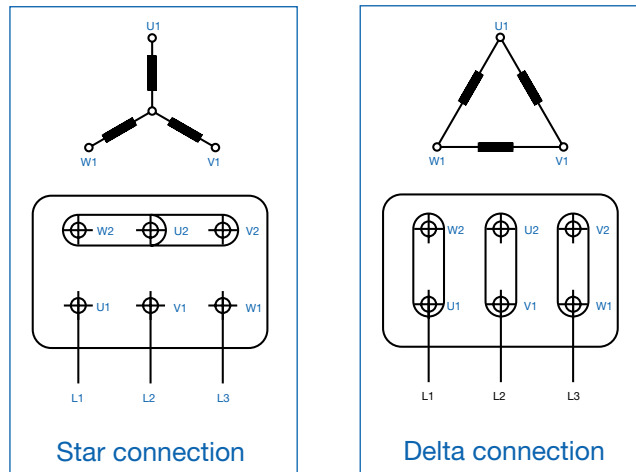
where I_n is the line current and U_n the line voltage referred to the star connection.

Delta connection

A delta connection is obtained by connecting the end of a phase to the beginning of the next phase. The phase current I_{ph} and the phase voltage U_{ph} are:

$$I_{ph} = I_n / \sqrt{3} ; U_{ph} = U_n$$

where I_n and U_n are referred to the delta connection.



Star -delta starting

Star-delta starting allows a peak current reduction. It can be used only when the reduced starting torque obtained is higher than the resistant torque.

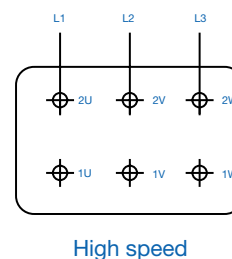
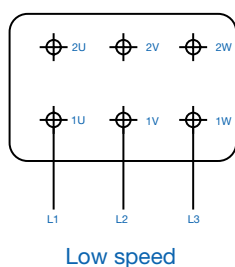
It should be noted that the torque of an induction squirrel-cage motor is directly proportional to the square of the voltage. Motors whose rated voltage with delta connection corresponds to the mains voltage, can be started with the star-delta method. All motors can be supplied with windings designed for star-delta starting (for example: 400 V Δ / 690 V*).

Connection diagrams two speed motors

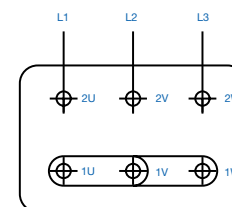
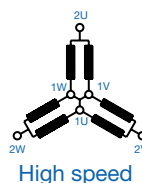
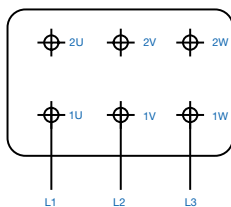
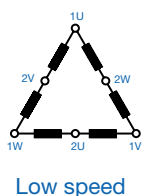
Standard pole-changing motors are designed for single voltage and direct-on-line starting.

When the ratio between the two speeds is from 1 to 2, the standard motors have one single winding (Dahlander connection). For the other speeds, the motors have two separate windings.

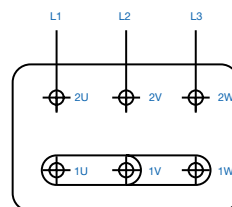
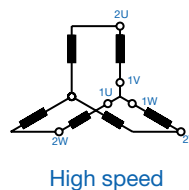
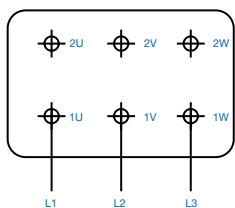
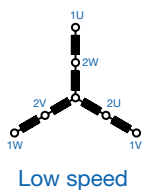
Two separate windings



Dahlander connection High Δ/YY (single windings) for pole change motors with constant torque characteristic.



Dahlander connection Y/YY YY (single windings) for pole change motors with constant torque characteristic.

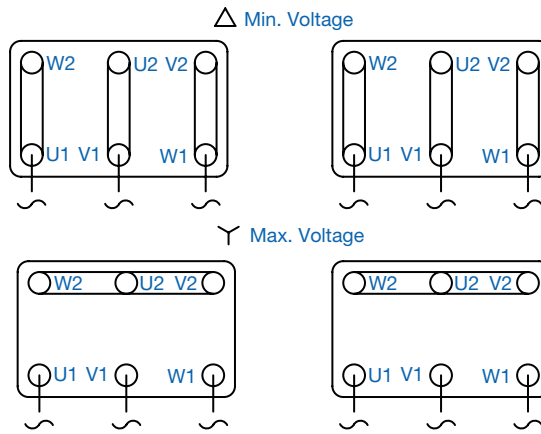


Connection diagrams brake motors

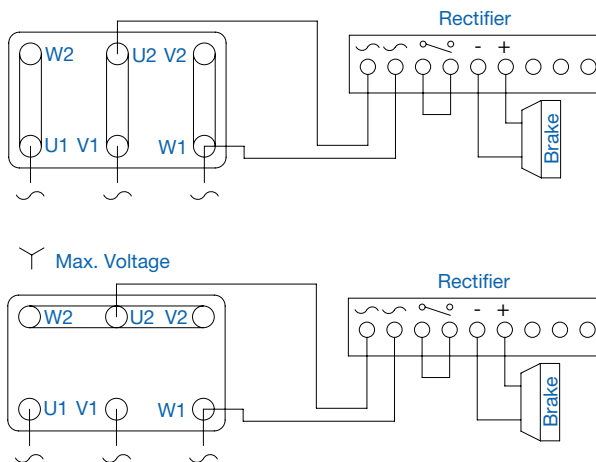
Brake motors can be executed with either an AC or a DC magnetic coil to operate the brake. The AC brake coil is directly connected to the motor terminal block. DC brake coils are connected to a rectifier, which itself is connected to the motor terminal block.

Note: For motors connected to a frequency inverter the brake supply cannot be taken of the motor terminal block. Due to the frequency variations on the motor terminals the brake will not function or not function properly.

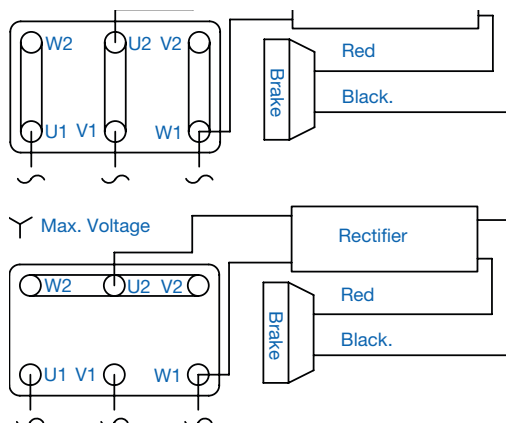
Brake motor with an AC brake coil Type AMAC



Brake motor with a DC brake coil and fast acting rectifier Type AMK



Brake motor with a DC brake coil and standard rectifier Type AMS



Connection diagrams single phase motors

Single-phase motors are designed for single-rated voltage. Standard voltage is 230V – 50 Hz.

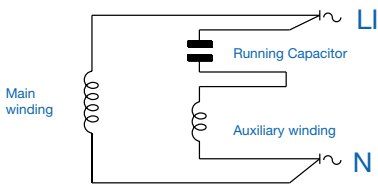
On request motors suitable for a double voltage (AMD and AMDE series) are available.

The windings (main and auxiliary winding) are connected to the capacitor supplied with the motor.

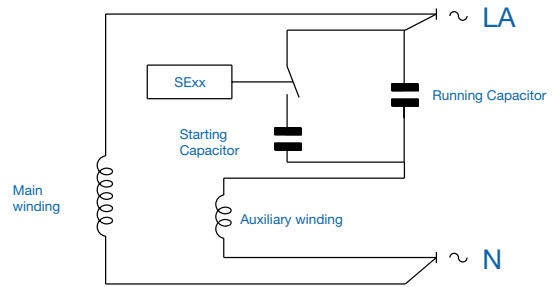
The direction of rotation can be reversed by inverting the winding ends as follows:

- Main winding for motors with one supply voltage
- Auxiliary winding for dual voltage motors

AMM Series



AMME Series

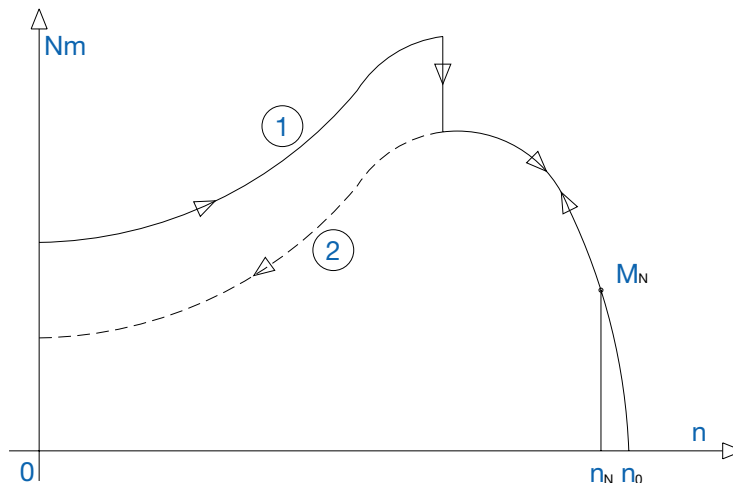


SExx - Electronic device for connection of starting capacitor.

Electronic starting device (SExx)

Single-phase motors with one single capacitor generally have lower starting torques than the full load torque. When higher starting torques are required, the motor is equipped with an additional starting electrolytic capacitor. It is connected by the electronic starting device (SE XX) at the moment of starting and disconnected automatically at the pull-out torque (see figure). From this point only the torque characteristic for the running capacitor (characteristic 2) is valid.

Characteristic 1 is not reversible. The starting capacitor is reconnected only when restarting the motor. In case of overload, characteristic 2 has to be applied.

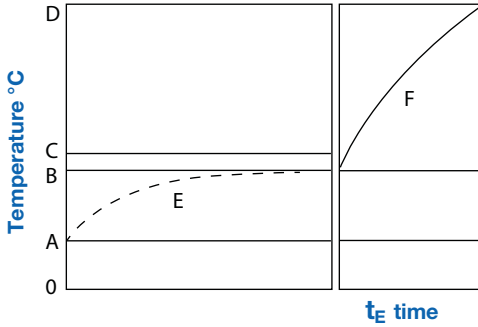


Thermal protection

The decision on a particular type of thermal protection should be taken according to the actual operating conditions. Motors may be protected by means of current-dependent thermal protection switches, overcurrent relays and temperature detectors.

Thermal protection is required if one of the below requirements is met.

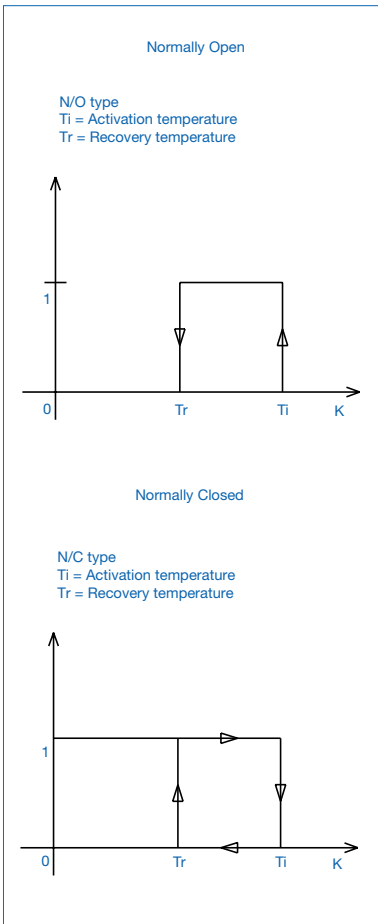
- 1) When used in combination with a current dependant component to prevent exceeding the temperature limit, the starting current ratio I_A/I_N must be established and noted. (t_E not shorter than 5 sec. and I_A/I_N not greater than 10). To ensure the temperature limit is not exceeded, the response time should be less than t_E .
- 2) When using sensors that monitor the winding temperature as part of the overheating protection, the starting current ratio I_A/I_N must be established and noted. There is no need to establish time t_E .



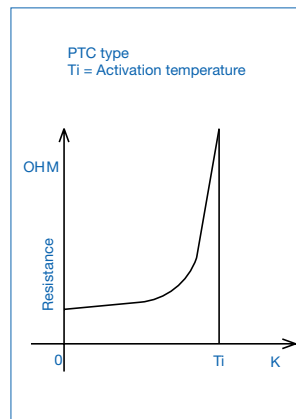
- O = temp. °C
- B = temp. at nominal load and unfavourable voltage conditions
- C = max. temp. permitted for insulation class
- D = max. temp.
- E = temperature increase of motor at nominal output and minimal voltage conditions
- F = temperature increase of motor with blocked rotor, t_E = max. permitted time with blocked rotor.

Thermal protection is possible as follows:

- Thermal protection switch with bimetal release
- Thermistor protection with semiconductor temperature detectors (PTC) in the stator winding in connection with release (if required, with additional motor protection switch).
- Bimetal temperature detector as N/C or N/O in the stator winding (if required, with additional motor protection switch).
- Resistance thermometer for monitoring winding and bearing temperature.



Operational diagram with thermal protection



Operational diagram with thermal resistance protection

Connection examples

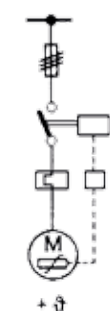
Protection method



Motor protection switch with thermal and electromagnetic overcurrent release

Protection against:

- Overload in continuous service
- Locked rotor



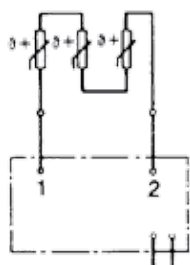
Contactor with overcurrent relay Thermistor protection and fuse

In service against:

- Overload in continuous service
- Long starting and braking periods
- High switching rate

In case of fault against:

- Obstruction of cooling
- Increased ambient temperature
- Single-phase operation
- Frequency fluctuations
- Switching against locked rotor



Semiconductor temperature detector with release

In service against:

- Overload in continuous service
- Long starting and braking periods
- High switching rate

In case of fault against:

- Obstruction of cooling
- Increased ambient temperature
- Single-phase operation
- Frequency fluctuations
- Switching against locked rotor

Auxiliaries

Encoders (standard design)

Pulses per revolution	200-2048
Max outputs frequency	100 kHz
Power supply	5Vdc
Electronics	line driver
Current consumption without load	100 mA
Outputs 2 signals with rectangular pulses	A, B
2 signals with inverted rectangular pulses	A, B
zero pulse and inverted zero pulse	
Pulse displacement between outputs	90°
Protection	IP 54
Max speed	3000 (6000) min -1
Operating temperature	-10°C ÷ 85°C

Options

The motors can be fitted with numerous options. It is however possible that for technical reasons or applicable rules and regulations not all options can be fitted to all motor types. It is also possible that some combination of options is not possible. Please consult the ELSTO sales office for further information and possibilities.

Special voltages and frequencies

The standard voltage and frequency for our electric motors is (Y/A) 230-400V- 50 Hz (<3kW) or 400/690V (>3kW) and single phase motors 230V – 50 Hz. The motors may also be connected to a 60 Hz 254V or 440V supply. Motors for alternative voltages such as, 115V, 190V, 210V, 480V, 500V etc. can be supplied in either 50 or 60Hz versions.

Improved protection

The lowest standard protection class for our motors is IP54. On request higher protection grades such as IP 55 and IP 67 can be supplied. Also Totally Enclosed Non Ventilated (TENV) motors are available or motors with potted windings.

Non-standard bearings

The following non-standard bearing options exist;

- Fixed bearings for axial fixation of the rotor shaft
- Pre-tensioned bearings for zero play operation
- Alternative bearings such as; - Alternative bearings such as;
 - Angular contact bearings
 - Spherical roller bearings
 - Alternative tolerance classes (C3 is standard)
 - Bearings with additional sealing (2RS)
 - Bearings with heat resistant seals (VITON®)
 - Back stop bearings (against running back of the machine)

Non-standard motor flanges

Depending on make and type of motor, enlarged or reduced diameter motor flanges are available. The possible options are listed in the preamble for each chapter. Customer specific made to measure motor flanges are possible, please contact the ELSTO sales office for the possibilities.

Non-standard primary or secondary motor shafts

Non-standard dimensions for both primary and secondary motor shafts can be supplied to order.

Next to non-standard diameters, non-standard lengths are available, just as a secondary motor shaft in combination with a cooling fan.

Balancing

Motors in standard execution, are balanced according balancing class A with a half-height key. Other balancing classes are available on request.

- Higher grade of balancing (class B)
- Balanced with full height key (class F)
- Balanced without key (class N)

Noise reduced execution

In a number of applications reduced motor noise levels are required. A number of modifications is available to reduce the noise level of the motor. Please contact the ELSTO sales office for more information

Rain cover

For motors that are mounted with the primary motor shaft pointing downwards, (Mounting positions V1, V5 and V18) a rain cover can be fitted to the motor to prevent the ingress of water and dirt.

Tropical Insulation

For motors that are operated under outdoor or very wet conditions, the windings can be treated with a special varnish that possesses hydrophobic characteristics. The varnish protects the windings against moisture and condensation and prevents deterioration of the insulating qualities.

Drain holes

To drain off any condensation that has formed inside the motor, the motors can be provided with drain holes. The drain holes can be closed off with a drain plug. When ordering a motor with drain holes, please clearly specify the mounting position and where the lowest point of the motor will be when installed.

Standstill or anti condensation heating

With motors that are subjected to severe temperature fluctuations, condensation on the inside of the motors during stand still may form. The formation of condensation can be prevented by installing heating elements in the stator housing. The values for the heating elements are listed in the table below.

Frame size	Supply voltage	Absorbed power
IEC	Volt	Watt
80	110 or 230	8
90 - 100	110 or 230	22
112 - 160	110 or 230	25 -40
180 - 225	110 or 230	50
250 - 280	110 or 230	50
315	110 or 230	75

Note: During operation of the motor the stand still heating **MUST** be switched off.

Temperature sensors

To enable the thermal protection of the motor temperature sensors can be installed in the motor.

The temperature sensors are placed inside the windings to provide the most accurate results.

There are a number of different temperature sensors available;

- Clixon; Thermal switch working according the bi metal principle
- PTC; Thermal switch working according the semi-conductor principle
- PT100; Thermal sensor that provides a constant measurement

Note: In some motors temperature sensors are fitted as standard.

Revolution counters

To provide the (inverter) control circuit with the exact number of motor revolutions, the motors can be fitted with revolution counters.

The following executions are available;

- Incremental encoder (ND side) to measure the relative number of revolutions
- Absolute encoder (ND side) to measure the absolute number of revolutions
- Tacho generator to measure the revolutions per minute
- Ring pulse generator to count the number of pulses per motor revolution

Independent cooling

When the motor is controlled by means of a frequency inverter, there is the risk that the standard cooling fan will not provide sufficient cooling at prolonged low speed operation of the motor. Motor overheating or a forced reduction of the permissible available torque will result. By installing in independently driven cooling fan the above problems can be prevented. The independent cooling unit is fitted at the rear of the motor, with the mechanical standard fan being removed. The independent cooling motor is connected to an external electrical supply which is usually single phase 230 or three phase 230/400.

Special paint finish K1

This paint system is suitable for use according to directive IEC 60721-2-1, in outdoor installations in aggressive and maritime environments For short periods: up to 100% rel. humidity at temperatures up to +35°C.

Continuously: up to 98% rel. humidity at temperatures up to +30 °C.

Certifications and approvals

For export and special purposes the motors can be supplied with the following certifications and approvals;

- CSA / UL approval
- GL marine approval
 - Lloyd's Register of Shipping
 - Bureau Veritas
 - Det Norske Veritas
 - American Bureau of Shipping
 - Maritime Register of Shipping
 - China Register of Shipping
 - China Classification Society
 - Registro Italiano Navale

Against surcharge original CE declarations of conformity can be supplied.

Use and Installation

The motors are designed for operation at altitudes are desiaabove sea-level and at ambient temperatures of up to 40ati. Exceptions are indicated on the rating plate. The motors conform to degree of protection IP 55 according to IEC 60034-51 as standard. Higher protection classes are available on request for most motors, and the degree of protection is indicated on the rating plate.

The standard design for horizontal mounting is suitable for indoor and protected outdoor installation, climate group moderate with an air temperature -20° to +40° C.

Additional measures are required when the motor is used in one of the following situations;

- Unprotected outdoor installation or severe climatic conditions
- High humidity
- Dusty conditions
- Aggressive environments (gaseous, vapours or dust)
- Coastal regions
- Termites and other pests
- Vertical installation

The additional measures are;

- Protective cowl (for vertical shaft-down motors)
- For vertical shaft-up motors additional bearing seal and flange drainage
- Special paint finish
- Treatment of winding with protective moisture-proof varnish
- Anti-condensation heating (possibly winding heating)
- Condensation drain holes
- Angular contact bearings for vertical installation

Please contact the ELSTO sales office to correctly define the additional measures.

Belt and chain drive

The data apply only to the normal drive end shaft extension of IM B3 motors with one speed.

Calculation of belt/chain drive:

$$F_R = \frac{19120 \cdot P \cdot k}{D_1 \cdot n}$$

F_R = Radial shaft load in N

P = Output in kW

n = Speed in min⁻¹ rpm

D_1 = Pulley diameter in m

k = Belt tension factor, varying with the type of belt, assumed to be approximately:

3-4 for normal flat belt without idler pulley

2-2.5 for normal flat belt with idler pulley

2.2-2.5 for V-belt

For exact data the information provided by the belt manufacturer should be consulted.

Information required for ordering

Motors for normal continuous duty (S1) and normal operating conditions

Quantity

Model/type

Output (for pole-changing motors, outputs referred to speeds): kW

Speed (for pole-changing motors, outputs referred to speeds): min-1

Direction of rotation (as seen from the driving end)

Mounting arrangement (acc. to IEC 60034-7)

Degree of protection of motor and terminal box (to IEC 60034-5).

Supply voltage: V

Frequency: Hz

Starting methode (direct, star/delta/inverter)

Location of the terminal box

Application/machine to be driven

Dimensions of cables, if these differ from those allocated by VDE 0100, referred to an ambient temperature of 40° C, and if aluminium conductors are used. It should also be stated when parallel conductors are being used.

Additional information required for special designs

Second or non-standard shaft extension

Radial sealing ring

Paint coating

Corrosive protection

Vibration level

Anti-condensation heating

Temperature detectors

Noise requirements

Mechanical or electrical brake

Special requirements/requests

Additional information for special duties

S 2: min (short-time duty)

S 3: % - ... min (intermittent duty)

S 4: % - JM ... kgm² - Jext ... kgm² (intermittent duty with starting)

S 5: % - JM ... kgm² - Jext ... kgm² (intermittent duty with electric braking)

S 6: % - min (continuous-operation periodic duty with intermittent load)

S 7: JM ... kgm² - Jext ... kgm² (continuous-operation periodic duty with electric braking)

S 8: JM ... kgm² - Jext ... kgm² (continuous-operation periodic duty with speed changes)

S 9: kW (continuous duty with non-periodic load and speed variations).

For this duty type suitable full load values should be taken as the overload concept.

S10: p/Δt r TL (Duty with discrete constant loads).

Additional information for special operating conditions

Starting conditions (no-load or loaded starting)

Shock loads

Load torque curve during run-up (characteristic)

Moment of inertia of the driven machine

Description of the type of drive (direct coupling, flat or V-belt, straight or helical gears, sprocket, crank, eccentric cam, etc.).

Radial force (or diameter of drive element): N

Direction of force and point of application (distance from shaft shoulder or width of drive element): mm

Axial force and direction of application (pull/thrust): N

Ambient conditions (e.g. increased humidity, dust accumulation, corrosive gases or vapours, increased or extremely low ambient temperature, outdoor installation, installation at altitudes over 1000 m above sea level, external vibration, etc.)

General

With the ELSTO brand three phase motors we present a quality product with an attractive price. The programme consists of the Aluminium DEE series and the Cast Iron DHG series. The aluminium motors come with the pedigree of decades of reliable use, and proven robustness. A few years ago the mechanical design was updated and the motors are thus available in an IE3 version next to the already existing IE1 and IE2 versions that also benefited from the update. All DEE motors can be executed with a motor brake.

The Cast Iron DHG series is part of the ELSTO programme since 2005. Just like the aluminium version available in IE2, IE3 and the option of fitting a motor brake. The standard programme reaches up to frame size 355, and on request motors up to frame size 455 with a nominal power of 1100 kW can be supplied.

Both series can be fitted with numerous options as described in the introduction section of this catalogue.

DEE series aluminium three phase motors

Series	Type	IE class	Frame size	Speed	Power
			IEC	rpm	kW
DEE	E3T	IE3	80 - 225M	3000	0,75 - 45
			80 - 225M	1500	0,75 - 45
			90 - 225M	1000	0,75 - 30
	E2T	IE2	71 - 225M	3000	0,37 - 45
			71 - 225M	1500	0,25 - 45
			90 - 225M	1000	0,75 - 30
	ET/ES	IE1	63 - 80	3000	0,18 - 0,55
			63 - 80	1500	0,12 - 0,55
			71 - 90S	1000	0,12 - 0,55



DHG series cast iron three phase motors

Series	Type	IE class	Frame size	Speed	Power
			IEC	rpm	kW
DHG	H3G	IE3	80 - 355L	3000	0,75 - 375
			80 - 355L	1500	0,55- 375
			90 - 355L	1000	0,75 - 315
DHG	H2G	IE2*1	80 - 355L	3000	0,75 - 315
			80 - 355L	1500	0,55- 315
			90 - 355L	1000	0,75 - 250
DHG	HG	IE1*2	80L	3000	0,75
			80L	1500	0,75
			80L	1000	0,75
			80L	750	0,75



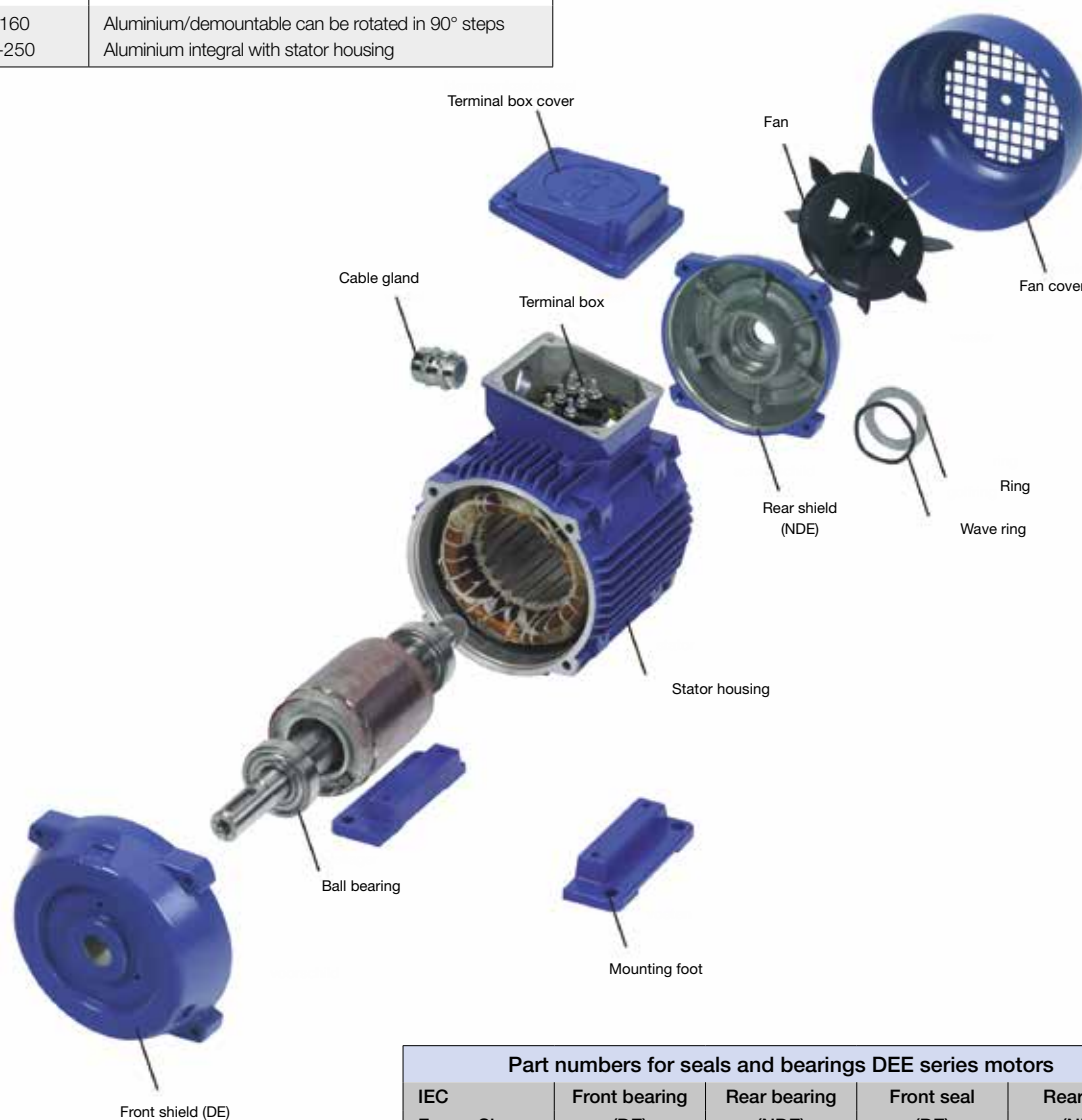
Motors are supplied as standard in IP 55, in RAL 5010 (Blue) and fitted with plastic ferrules.

*1 above 0,75 kW, only for use in combination with a frequency inverter or as brake motor.

*2 only available up to 0,75 kW and for special applications

Materials used in DEE series motors

Part	IEC frame size	Material/execution
Stator housing	63-250	Aluminium
Shields	63-160 180-250	Aluminium Cast steel
Fan	63-250	Plastic
Fan cover	63-160 180-250	Sheet metal Plastic
Mounting feet	63-160 180-250	Aluminium/demountable/ mountable on 3 motor sides Aluminium/demountable
Terminal box	63-160 180-250	Aluminium/demountable can be rotated in 90° steps Aluminium integral with stator housing



Part numbers for seals and bearings DEE series motors				
IEC Frame Size	Front bearing (DE)	Rear bearing (NDE)	Front seal (DE)	Rear seal (NDE)
63	6201-2Z	6201-2Z	12x22x7	12x22x7
71	6202-2Z	6202-2Z	15x24x5	15x24x5
80	6204-2Z	6204-2Z	20x30x7	20x30x7
90	6305-2Z	6205-2Z	25x40x7	25x40x7
100	6306-2Z	6205-2Z	30x47x7	25x40x7
112	6306-2Z	6206-2Z	30x47x7	30x47x7
132	6208-2Z	6208-2Z	40x62x10	40x62x10
160	6309-2Z	6209-2Z	45x72x10	45x72x10
180	6310-2Z	6310-2Z	50x80x10	50x80x10
200	6312-2Z	6312-2Z	60x90x10	60x90x10
225	6313-2Z	6313-2Z	65x100x13	65x100x13
250/2p	6315	6313-2Z	70x112x12	65x100x13
250/4p	6315	6313-2Z	75x112x12	65x100x13

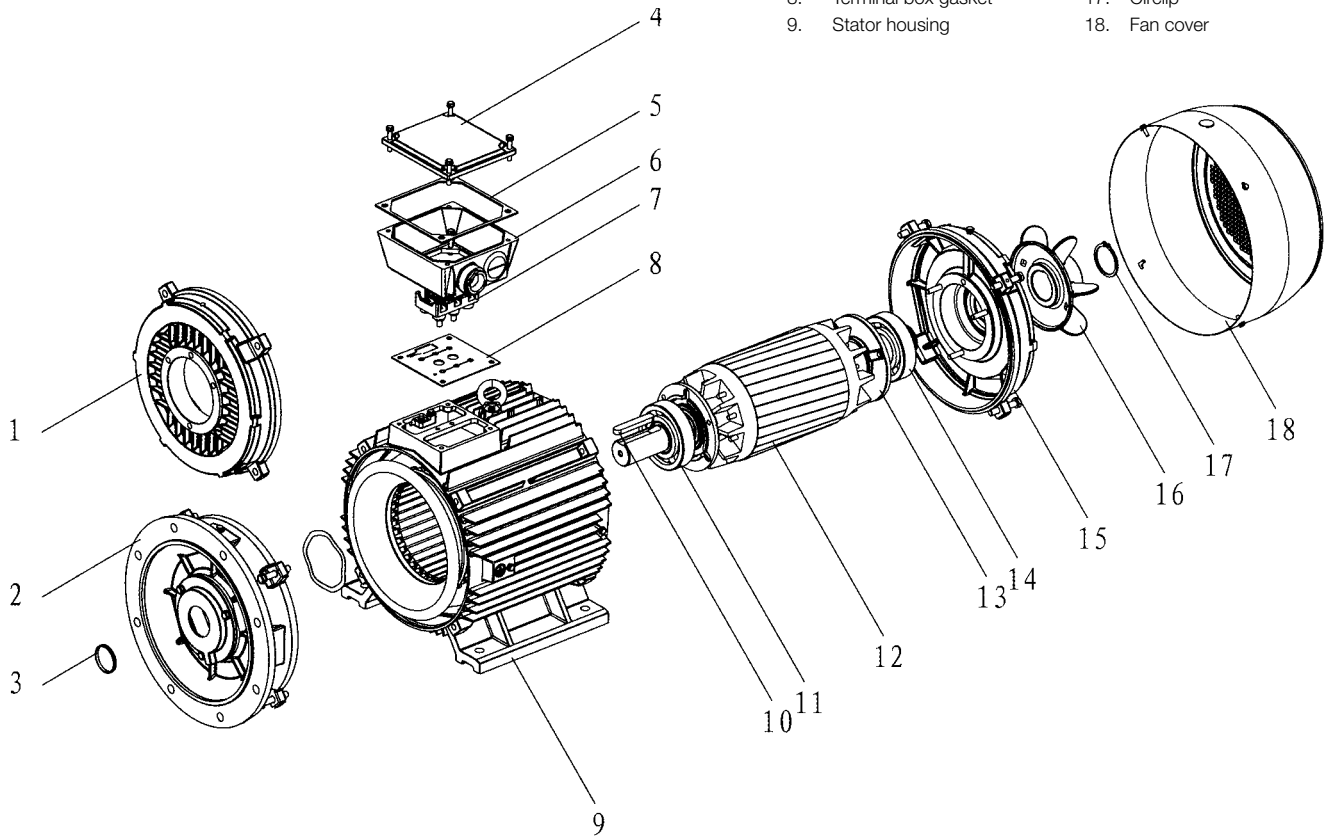
Lubrication of DEE series motors

All DEE series motors are provided with Life time lubrication

Materials used in DHG series motors

Part	IEC frame size	Material/execution
Stator housing	80-355	Cast iron
Shields	80-355	Cast iron
Fan	80-355	Plastic
Fan cover	80-355	Sheet metal
Mounting feet	80-355	Cast iron integral with stator housing
Terminal box	80-355	Cast iron integral with stator housing

- | | |
|------------------------------|-----------------------|
| 1. Front shield (DE) | 10. Key |
| 2. Mounting flange | 11. Bearing (DE) |
| 3. Oil seal | 12. Rotor |
| 4. Terminal box cover | 13. Bearing cover |
| 5. Terminal box cover gasket | 14. Bearing (NDE) |
| 6. Terminal box | 15. Rear shield (NDE) |
| 7. Terminal block | 16. Fan |
| 8. Terminal box gasket | 17. Circlip |
| 9. Stator housing | 18. Fan cover |



Elsto motors

Part numbers for seals and bearings DHG series motors					
IEC Frame Size	numer poles n	Horizontal mounting		Vertical mounting	
		Front bearing	Rear bearing	Front seal	Rear seal
		DE	NDE	DE	NDE
80	2-8	6204 ZZ C3	6204 ZZ C3	6204 ZZ C3	6204 ZZ C3
90	2-8	6205 ZZ C3	6205 ZZ C3	6205 ZZ C3	6205 ZZ C3
100	2-8	6206 ZZ C3	6206 ZZ C3	6206 ZZ C3	6206 ZZ C3
112	2-8	6306 ZZ C3	6306 ZZ C3	6306 ZZ C3	6306 ZZ C3
132	2-8	6308 ZZ C3	6308 ZZ C3	6308 ZZ C3	6308 ZZ C3
160	2-8	6309 C3	6309 C3	6309 C3	6309 C3
180	2-8	6311 C3	6311 C3	6311 C3	6311 C3
200	2-8	6312 C3	6312 C3	6312 C3	6312 C3
225	2-8	6313 C3	6313 C3	6313 C3	6313 C3
250	2-8	6314 C3	6314 C3	6314 C3	7314
280	2	6314 C3	6314 C3	6314 C3	7314
280	4-8	6317 C3	6317 C3	6317 C3	7317
315	2	6316 C3	6316 C3	6316 C3	7316
315	4-8	N319	6319 C3	N319	7319
355	2	6319 C3	6319 C3	6319 C3	7319
355	4-8	N322	6322 C3	N322	7322

Lubrication of DHG series motors				
IEC Frame Size	Lubrication interval at 70°C operating temperature			Grease volume gram
	Operating hours [h]			
	3600 rpm	1800 rpm	<1200 rpm	
80	Life-time lubrication			
90	Life-time lubrication			
100	Life-time lubrication			
112	Life-time lubrication			
132	Life-time lubrication			
160	6000	12000	18000	13
180	4000	11000	16000	15
200	3500	8500	13000	20
225	3000	6000	9000	22
250	2000	5000	8000	23
280	1200	-	-	30
280	-	4000	6000	30
315	1200	-	-	30
315	-	2000	3000	45
355	1200	-	-	30
355	-	1400	2200	60

S-S-ELD-EN-EMOT-001-V01

Single speed														2 pole - 3000 rpm			IE1	
Type code	IEC	P _n	n _n	I _n 400V	I _a / I _n		η			cos φ	M _n	M _a / M _n		M _k / M _n	J	LpA	Weight	
	size	kW	rpm	A	Y	Δ	100%	75%	50%		Nm	Y	Δ		kgm ²	dB	kg	
ET 63M2A	63	0,18	2800	0,6	4,2		61,8	62,8	59,4	0,79	0,62	2,3		2,4	0,00017	52	4,5	
ET 63M2B	63	0,25	2800	0,7	4,2		64,8	65,7	62,3	0,81	0,86	2,2		2,3	0,00022	52	5	
ET 71M2A	71	0,37	2800	1,1	4,3		65,7	66,7	63,2	0,81	1,27	2		2,4	0,00028	54	6	
ET 71M2B	71	0,55	2820	1,4	5		67,7	68,7	66,1	0,84	1,87	2,2		2,5	0,00036	54	7	

Single speed														4 pole - 1500 rpm			IE1	
Type code	IEC	P _n	n _n	I _n 400V	I _a / I _n		η			cos φ	M _n	M _a / M _n		M _k / M _n	J	LpA	Weight	
	size	kW	rpm	A	Y	Δ	100%	75%	50%		Nm	Y	Δ		kgm ²	dB	kg	
ET 63M4A	63	0,12	1365	0,5	2,8		52,8	52,6	49,2	0,64	0,84	2		2,3	0,0002	41	4,5	
ET 63M4B	63	0,18	1380	0,7	3,2		59,6	59,4	51,9	0,62	1,25	2,2		2,4	0,00025	41	5	
ET 71M4A	71	0,25	1390	0,9	3,5		61,1	61	57,5	0,67	1,72	2,2		2,4	0,00071	45	6	
ET 71M4B	71	0,37	1390	1,15	4		66,9	66,1	61,2	0,69	2,55	2,3		2,6	0,00095	45	7	
ET 80M4A	80	0,55	1400	1,6	4,5		68,8	69	65,9	0,72	3,76	2,3		2,5	0,00168	49	9	

Single speed														6 pole - 1000 rpm			IE1	
Type code	IEC	P _n	n _n	I _n 400V	I _a / I _n		η			cos φ	M _n	M _a / M _n		M _k / M _n	J	LpA	Weight	
	size	kW	rpm	A	Y	Δ	100%	75%	50%		Nm	Y	Δ		kgm ²	dB	kg	
ET 71M6A	71	0,18	900	0,8	3		54,2	54,5	51,9	0,57	1,91	2		2,4	0,00068	42	6	
ET 71M6B	71	0,25	910	0,9	3,1		60,1	60,5	58,3	0,65	2,63	2		2,4	0,0009	42	7	
ET 80M6A	80	0,37	920	1,3	3,3		64,1	64,4	61,8	0,64	3,84	2,1		2,4	0,0016	49	9	
ET 80M6B	80	0,55	920	1,85	3,2		67	67,4	64,6	0,63	5,71	2,1		2,5	0,00196	49	10	

Single speed **2 pole - 3000 rpm** **IE2**

Type code	IEC	P _n kW	n rpm	I _n 400V A	I _a /I _n	η			cos φ	M _n Nm	M _a /M _n	M _k /M _n	J kgm²	LpA dB	Weight kg
	size					100%	75%	50%							
E2T 71 M2C	71	0,37	2860	1,1	8,1	75,9	76,0	73,5	0,80	1,27	4,0	4,2	0,00067	54	8
E2T 71 M2D	71	0,55	2870	1,25	8,2	77,2	77,3	74,8	0,82	1,87	4,1	4,3	0,00086	54	9,5
E2T 80 M2B	80	0,75	2875	1,75	8,1	77,4	77,0	73,6	0,80	2,48	4,1	4,4	0,00109	58	11
E2T 80 M2D	80	1,1	2885	2,4	8,1	79,6	79,7	77,1	0,84	3,65	4,1	4,5	0,00150	58	13
E2T 90 L2C	90L	1,5	2890	3,3	8,2	81,3	80,8	77,6	0,78	4,91	3,8	4,4	0,00182	62	17,5
E2T 90 L2D	90L	2,2	2880	4,4	8,3	83,2	83,8	82,7	0,89	7,29	3,9	4,5	0,00182	62	18
E2T 100 L2C	100L	3	2885	5,8	9,6	84,6	85,1	84,0	0,88	9,93	4,3	5,1	0,00335	64	26
E2T 112 M2C	112M	4	2895	7,7	9,5	85,8	86,0	84,7	0,87	13,10	4,2	5,0	0,00489	67	31
E2T 132 S2C	132S	5,5	2935	10,2	9,1	87,0	86,9	85,1	0,87	17,85	3,5	4,0	0,01410	70	47
E2T 132 M2A	132M	7,5	2925	13,6	9,1	88,1	87,7	85,9	0,90	24,50	3,6	4,1	0,01596	70	53
E2T 160 M2B	160M	11	2945	19,4	8,1	89,4	89,1	87,7	0,90	35,55	2,8	3,6	0,02644	71	70
E2T 160 L2A	160L	15	2935	25,7	8,2	90,3	90,5	89,7	0,92	48,77	3,5	4,0	0,03317	71	82
E2T 160 L2C	160L	18,5	2945	31,4	8,1	91,4	90,9	91,0	0,92	60,03	3,3	4,0	0,04075	71	92
E2T 180 M2A	180M	22	2960	37,5	7,8	91,3	91,3	90,2	0,90	71,34	2,6	3,8	0,06193	77	112
E2T 200 L2B	200L	30	2960	55,1	8,2	92,0	91,4	89,9	0,85	96,60	2,9	4,5	0,11917	80	162
E2T 200 L2C	200L	37	2960	65,0	8,0	92,5	92,4	91,0	0,91	119,60	2,9	4,5	0,15010	80	179
E2T 225 M2B	225M	45	2960	82,1	8,1	92,9	92,6	91,1	0,85	144,75	2,5	3,9	0,23505	81	251

Single speed **4 pole - 1500 rpm** **IE2**

Type code	IEC	P _n kW	n rpm	I _n 400V A	I _a /I _n	η			cos φ	M _n Nm	M _a /M _n	M _k /M _n	J kgm²	LpA dB	Weight kg
	size					100%	75%	50%							
E2T 71 M4C	71	0,25	1415	0,8	4,6	74,0	74,5	73,3	0,70	1,72	2,6	3,8	0,00095	45	9
E2T 71 M4D	71	0,37	1420	0,95	4,6	76,1	76,6	75,4	0,71	2,54	2,6	3,8	0,00095	45	9,5
E2T 80 M4C	80	0,55	1425	1,45	5,0	78,1	78,6	77,3	0,71	3,75	3,1	3,6	0,00205	49	12
E2T 80 M4D	80	0,75	1430	1,9	5,5	79,6	79,1	76,0	0,72	4,98	3,2	3,5	0,00268	49	12,5
E2T 90 L4C	90L	1,1	1430	2,4	7,0	81,4	81,9	80,3	0,83	7,26	3,2	3,7	0,00365	54	17,5
E2T 90 L4D	90L	1,5	1440	3,4	7,3	82,8	82,0	79,2	0,75	9,98	3,5	4,0	0,00365	55	18
E2T 100 L4C	100L	2,2	1440	5,0	8,0	84,3	83,8	81,2	0,73	14,54	4,1	4,4	0,00545	56	25
E2T 100 L4D	100L	3	1435	6,6	7,5	85,5	85,8	84,0	0,76	19,97	3,8	4,2	0,00581	56	26
E2T 112 M4D	112M	4	1440	8,4	8,6	86,6	86,6	85,0	0,79	26,20	3,2	4,3	0,01123	58	34
E2T 132 M4B	132M	5,5	1460	11,3	8,7	87,7	87,6	85,1	0,78	35,93	3,2	4,3	0,02763	61	55
E2T 132 M4C	132M	7,5	1460	15,0	9,5	88,7	88,5	86,6	0,81	49,40	3,2	4,5	0,02980	61	57
E2T 160 M4B	160M	11	1460	22,2	8,0	89,8	90,4	89,1	0,79	71,85	2,9	3,9	0,05547	63	77
E2T 160 L4A	160L	15	1460	28,8	8,0	90,6	90,8	89,9	0,83	97,58	2,7	3,5	0,06922	63	92
E2T 180 M4B	180M	18,5	1455	35,1	7,5	91,2	91,4	90,6	0,84	120,85	2,4	3,4	0,11220	69	120
E2T 180 L4B	180L	22	1460	40,6	7,5	91,6	91,7	90,8	0,86	143,22	2,6	3,5	0,12773	69	135
E2T 200 L4D	200L	30	1470	55,7	8,0	92,3	92,3	91,4	0,85	193,58	2,9	3,6	0,26448	70	168
E2T 225 M4C	225M	37	1480	69,0	8,2	92,7	92,3	90,8	0,84	238,27	3,3	3,9	0,36429	71	260
E2T 225 M4D	225M	45	1480	83,3	8,0	93,1	93,0	91,9	0,83	290,18	3,3	3,9	0,43513	71	289

Single speed **6 pole - 1000 rpm** **IE2**

Type code	IEC	P _n kW	n rpm	I _n 400V A	I _a /I _n	η			cos φ	M _n Nm	M _a /M _n	M _k /M _n	J kgm²	LpA dB	Weight kg
	size					100%	75%	50%							
E2T 90 L6C	90L	0,75	940	2,2	4,2	75,9	76,4	73,2	0,67	7,62	2,5	2,8	0,00371	53	18
E2T 90 L6D	90L	1,1	940	3,2	4,4	78,1	77,6	74,8	0,65	11,20	2,6	2,9	0,00444	53	19,5
E2T 100 L6D	100L	1,5	945	3,9	4,7	79,8	79,5	76,7	0,71	15,19	2,6	3,0	0,00570	56	26
E2T 112 M6C	112M	2,2	950	5,3	4,9	81,8	82,4	80,7	0,71	22,12	2,7	3,0	0,00916	58	29
E2T 132 M6A	132M	3	970	8,0	5,7	83,3	82,3	79,4	0,64	29,54	2,0	2,5	0,02057	62	45
E2T 132 M6B	132M	4	970	10,4	5,8	84,6	83,7	80,3	0,65	39,38	2,2	2,6	0,02070	62	54
E2T 132 M6C	132M	5,5	975	12,5	5,5	86,0	85,6	83,8	0,74	53,98	2,1	2,6	0,02709	62	57
E2T 160 L6B	160L	7,5	975	18,9	6,0	87,2	87,0	84,9	0,66	73,61	2,2	3,0	0,07040	63	89
E2T 160 L6C	160L	11	975	24,9	6,0	88,7	88,2	86,1	0,68	109,50	2,2	3,0	0,07663	63	99
E2T 180 L6A	180L	15	980	32,1	6,5	89,7	89,1	87,3	0,73	148,50	2,1	2,9	0,18369	63	115
E2T 200 L6B	200L	18,5	980	36,0	6,0	90,4	90,5	89,7	0,81	180,65	1,85	2,7	0,27088	64	159
E2T 200 L6C	200L	22	975	43,6	6,0	90,9	91,4	90,2	0,79	215,27	1,85	2,7	0,31281	64	171
E2T 225 M6B	225M	30	980	57,3	6,1	91,7	91,8	91,3	0,81	292,05	1,8	2,5	0,49334	65	234

Due to IE regulations, IE 2 motors may only be supplied in combination with motor mounted brake and/or a frequency inverter.

S-SEL-D-EN-EMOT-001-V01

Single speed															2 pole - 3000 rpm			IE3
Type code	IEC	P _n	n	I _n 400V	I _a /I _n	η			cos φ	M _n	M _a /M _n	M _k /M _n	J	LpA	Weight			
	size	kW	rpm	A		100%	75%	50%		Nm			kgm ²	dB	kg			
E3T 80 M2C	80	0,75	2880	1,7	8,0	80,7	80,6	77,8	0,87	2,53	4,0	4,3	0,00109	58	11			
E3T 80 M2D	80	1,1	2895	2,2	8,1	82,7	81,8	78,5	0,85	3,65	4,0	4,3	0,00150	58	13			
E3T 90 L2C	90L	1,5	2905	3,1	8,2	84,2	83,5	80,4	0,83	4,94	3,8	4,3	0,00182	62	17,5			
E3T 90 L2D	90L	2,2	2900	4,2	8,3	85,9	85,8	84,8	0,86	7,24	3,9	4,4	0,00182	62	18			
E3T 100 L2D	100L	3	2915	5,5	9,6	87,1	85,6	82,0	0,89	9,81	4,3	5,1	0,00335	64	26			
E3T 112 M2C	112M	4	2915	7,4	9,5	88,1	87,8	85,6	0,87	13,20	4,2	5,0	0,00489	67	31			
E3T 132 S2C	132S	5,5	2930	9,7	9,0	89,2	88,6	86,6	0,91	17,99	3,5	3,9	0,01410	70	47			
E3T 132 M2A	132M	7,5	2935	13,2	9,0	90,1	89,6	87,7	0,91	24,50	3,6	4,0	0,01596	70	53			
E3T 160 L2A	160L	11	2955	20,1	8,9	91,2	90,9	89,5	0,91	35,55	3,5	4,0	0,03317	71	85			
E3T 160 L2C	160L	15	2945	26,2	8,9	91,9	92,3	90,7	0,92	48,77	3,5	4,0	0,04075	71	94			
E3T 160 L2D	160L	18,5	2945	32,2	9,0	92,4	92,8	91,1	0,92	60,03	3,6	4,0	0,04075	71	95			
E3T 180M2A	180M	22	2965	37,1	7,5	92,7	92,7	91,6	0,92	71,34	2,6	3,6	0,06193	77	112			
E3T 200L2C	200L	30	2965	54,1	7,6	93,3	92,7	90,9	0,87	96,6	2,1	3,6	0,11917	80	168			
E3T 200L2D	200L	37	2965	64,7	8,6	93,7	93	91,2	0,9	119,6	2,2	3,7	0,1501	80	179			
E3T 225M2C	225M	45	2965	81,9	8,5	94	93,7	92,2	0,87	144,75	2,3	3,6	0,23505	81	235			

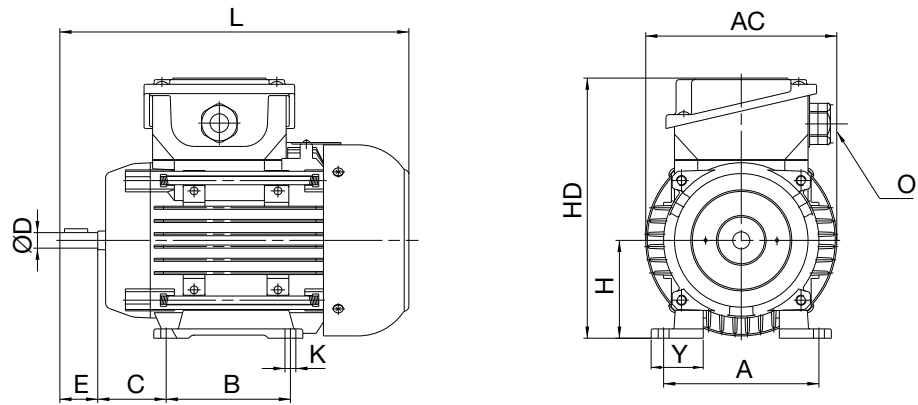
Single speed															4 pole - 1500 rpm			IE3
Type code	IEC	P _n	n	I _n 400V	I _a /I _n	η			cos φ	M _n	M _a /M _n	M _k /M _n	J	LpA	Weight			
	size	kW	rpm	A		100%	75%	50%		Nm			kgm ²	dB	kg			
E3T 80 M4D	80	0,75	1440	1,8	5,5	82,5	82,2	79,8	0,73	4,99	3,2	3,5	0,00268	49	12,5			
E3T 90 L4C	90L	1,1	1440	2,3	7,0	84,1	83,5	80,4	0,82	7,35	3,2	3,7	0,00365	54	17,5			
E3T 90 L4D	90L	1,5	1450	3,6	7,3	85,3	85,0	82,5	0,71	10,02	3,5	4,0	0,00365	55	19,5			
E3T 100 L4C	100L	2,2	1450	4,9	8,0	86,7	86,2	83,5	0,78	14,59	4,1	4,4	0,00545	56	25			
E3T 100 L4D	100L	3	1455	6,6	7,5	87,7	87,9	85,9	0,75	19,97	3,8	4,2	0,00581	56	26			
E3T 112 M4D	112M	4	1455	8,2	8,6	88,6	88,5	87,1	0,79	26,34	3,2	4,3	0,01123	58	34			
E3T 132 M4B	132M	5,5	1465	11,1	8,7	89,6	89,2	86,9	0,79	36,20	3,2	4,3	0,02763	61	55			
E3T 132 M4C	132M	7,5	1465	14,9	9,5	90,4	90,5	88,9	0,81	49,40	3,2	4,5	0,02980	61	57			
E3T 160 L4A	160L	11	1465	22,5	8,1	91,4	91,6	90,1	0,81	71,85	2,9	3,8	0,06922	63	92			
E3T 160 L4B	160L	15	1470	29,3	8,2	92,1	92,3	90,6	0,83	97,58	2,9	3,8	0,07040	63	99			
E3T 180M4B	180M	18,5	1460	34,1	7,7	92,6	93,2	92,8	0,87	120,85	2,4	3,4	0,1122	69	126			
E3T 180L4B	180L	22	1465	39,9	7,7	93	93,2	92,7	0,87	143,22	2,6	3,5	0,12773	69	135			
E3T 200L4D	200L	30	1475	55,3	8	93,6	93,6	92,7	0,86	193,58	2,9	3,6	0,26448	70	183			
E3T 225M4C	225M	37	1485	68,9	7,5	93,9	93,5	92	0,85	238,27	3	3,5	0,36429	71	260			
E3T 225M4D	225M	45	1485	83	7,7	94,2	94,1	93	0,85	290,18	3	3,5	0,43513	71	280			

Single speed															6 pole - 1000 rpm			IE3
Type code	IEC	P _n	n	I _n 400V	I _a /I _n	η			cos φ	M _n	M _a /M _n	M _k /M _n	J	LpA	Weight			
	size	kW	rpm	A		100%	75%	50%		Nm			kgm ²	dB	kg			
E3T 90 L6C	90L	0,75	940	2,1	4,2	78,9	79,4	76,1	0,66	7,62	2,5	2,8	0,00371	54	18,5			
E3T 90 L6D	90L	1,1	940	3,1	4,4	81,0	80,5	77,6	0,65	11,20	2,6	2,9	0,00444	54	20			
E3T 100 L6D	100L	1,5	945	3,8	4,7	82,5	82,2	79,3	0,72	15,19	2,6	3,0	0,00570	57	26,5			
E3T 112 M6C	112M	2,2	950	5,2	4,9	84,3	84,9	83,2	0,71	22,12	2,7	3,0	0,00916	59	29,5			
E3T 132 M6A	132M	3	970	7,9	5,7	85,6	84,6	81,6	0,64	29,54	2,0	2,5	0,02057	63	45,5			
E3T 132 M6B	132M	4	970	10,1	5,8	86,8	85,9	82,4	0,65	39,38	2,2	2,6	0,02070	54	54,5			
E3T 132 M6C	132M	5,5	975	12,1	5,5	88,0	87,6	85,8	0,74	53,98	2,1	2,6	0,02790	54	57,5			
E3T 160 M6B	160M	7,5	975	18,8	6,0	89,1	88,9	86,8	0,66	73,61	2,2	3,0	0,07040	65	103,5			
E3T 160 L6B	160L	11	980	24,7	6,1	90,3	89,8	87,7	0,68	109,50	2,3	3,2	0,07663	65	114,5			
E3S 180 L6B	180L	15	980	32	6,5	91,2	90,6	88,8	0,73	148,50	2,1	2,9	0,18369	67	136,5			
E3S 200 L6C	200L	18,5	980	35,9	6,0	91,7	91,8	91,0	0,81	180,65	1,9	2,7	0,27088	65	159			
E3S 200 L6D	200L	22	975	43,5	6,0	92,2	92,7	91,5	0,79	215,27	1,9	2,7	0,31281	66	171			
E3S 225 M6B	225M	30	980	57,1	6,1	92,9	93,0	92,5	0,81	292,05	1,8	2,5	0,49334	66	234			

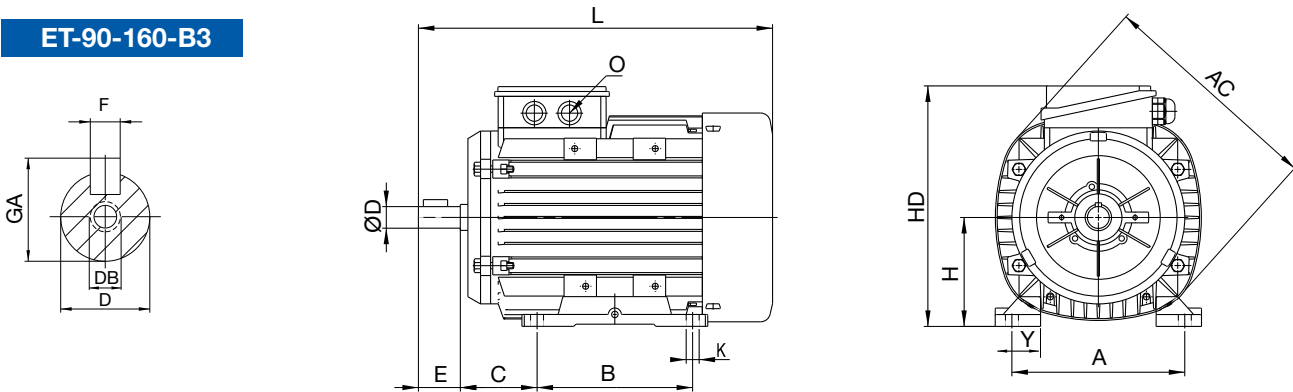
B3 Foot mounted version

IEC	Poles	Motor dimensions			Feet dimensions						Shaft dimensions				
		AC mm	L mm	O	B mm	A mm	H mm	HD mm	K mm	C mm	D mm	E mm	GA mm	F mm	DB
63	all	123	219,5	1xM20	80	100	63	174	7	40	11	23	12,5	4	M4
71	all	138	252,5	1xM20	90	112	71	190	7	45	14	30	16	5	M5
80	all	158	283,5	1xM20	100	125	80	195	10	50	19	40	21,5	6	M6
90S	all	193	296,5	1xM25	100	140	90	222	10	56	24	50	27	8	M8
90L	all	193	316,5/344,5	1xM25	125	140	90	218	10	56	24	50	27	8	M8
100L	all	217	352/377	1xM25	140	160	100	236,5	12	63	28	60	31	8	M10
112M	all	232	395,5	2xM25	140	190	112	256	12	70	28	60	31	8	M10
132S	all	279	440,5	2xM32	140	216	132	305	12	89	38	80	41	10	M10
132M	all	279	475,5	2xM32	178	216	132	305	12	89	38	80	41	10	M12
160M	all	302	576	2xM32	210	254	160	341	15	108	42	110	45	12	M16
160L	all	302	576	2xM32	254	254	160	341	15	108	42	110	45	12	M16
180M	all	370	629	2xM40	241	279	180	387	15	121	48	110	51,5	14	M16
180L	all	370	629	2xM40	279	279	180	387	15	121	48	110	51,5	14	M16
200L	all	415	665	2xM50	305	318	200	435	19	133	55	110	59	16	M20
225S	all	45	465	2xM50	286	356	225	504	19	149	60	140	64	18	M20
225M	2p	456	735	2xM50	311	356	225	485	19	149	55	110	59	16	M20
225M	≥4p	456	765	2xM50	311	356	225	485	19	149	60	140	64	18	M20

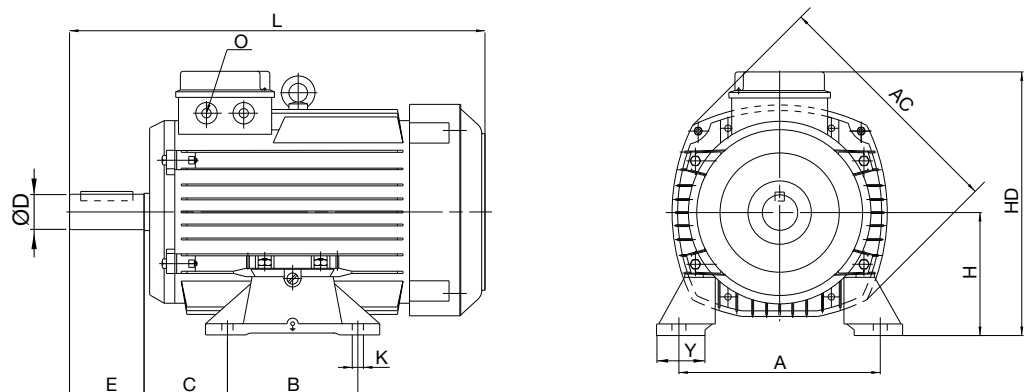
ET-63-80-B3



ET-90-160-B3



ES-180-250-B3

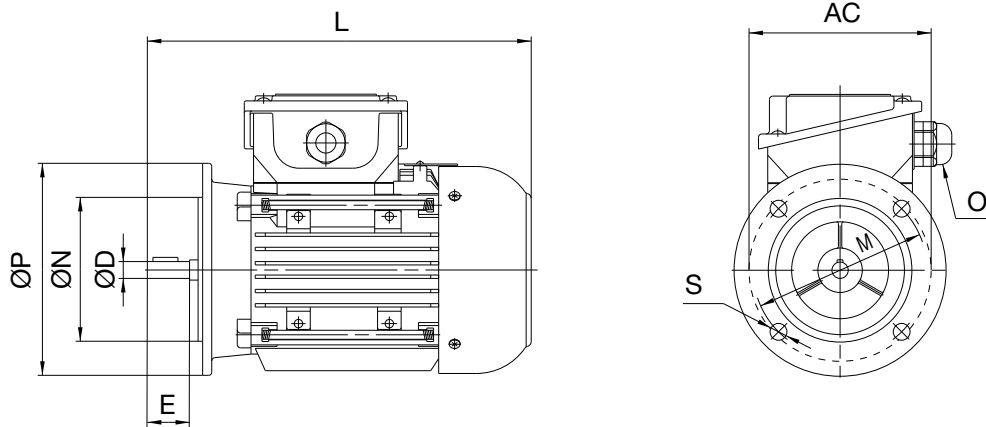


S-S-ELD-EN-EMOT-001-V01

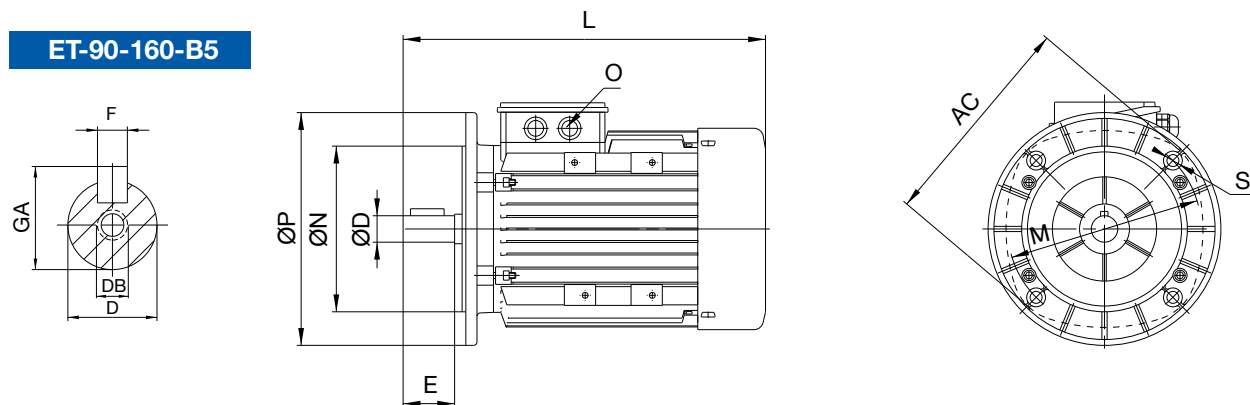
B5 Large flange mounted version

code		Motor dimensions			Flange dimensions				Shaft dimensions				
IEC	Poles	AC	L	O	P	N	M	S	D	E	GA	F	DB
		mm	mm		mm	mm	mm	mm	mm	mm	mm	mm	mm
63	all	123	219,5	1xM20	140	95	115	10	11	23	12,5	4	M4
71	all	138	252,5	1xM20	160	110	130	10	14	30	16	5	M5
80	all	158	283,5	1xM20	200	130	165	12	19	40	21,5	6	M6
90S	all	193	296,5	1xM25	200	130	165	12	24	50	27	8	M8
90L	all	193	316,5/344,5	1xM25	200	130	165	12	24	50	27	8	M8
100L	all	217	352/377	1xM25	250	180	215	15	28	60	31	8	M10
112M	all	232	395,5	2xM25	250	180	215	15	28	60	31	8	M10
132S	all	279	440,5	2xM32	300	230	265	15	38	80	41	10	M10
132M	all	279	475,5	2xM32	300	230	265	15	38	80	41	10	M12
160M	all	302	576	2xM32	350	250	300	19	42	110	45	12	M16
160L	all	302	576	2xM32	350	250	300	19	42	110	45	12	M16
180M	all	370	629	2xM40	350	250	300	19	48	110	51,5	14	M16
180L	all	370	629	2xM40	350	250	300	19	48	110	51,5	14	M16
200L	all	415	665	2xM50	400	300	350	19	55	110	59	16	M20
225S	all	45	465	2xM50	450	350	400	19	60	140	64	18	M20
225M	2p	456	735	2xM50	450	350	400	19	55	110	59	16	M20
225M	>4p	456	765	2xM50	450	350	400	19	60	140	64	18	M20

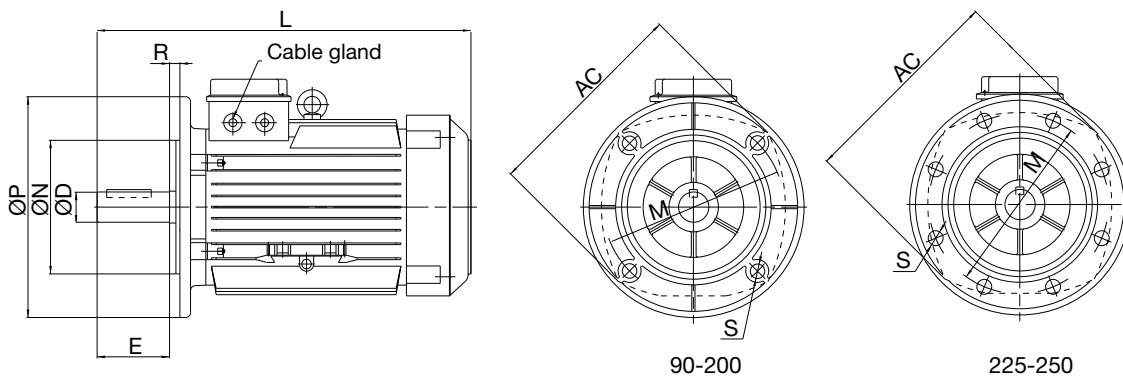
ET-63-80-B5



ET-90-160-B5



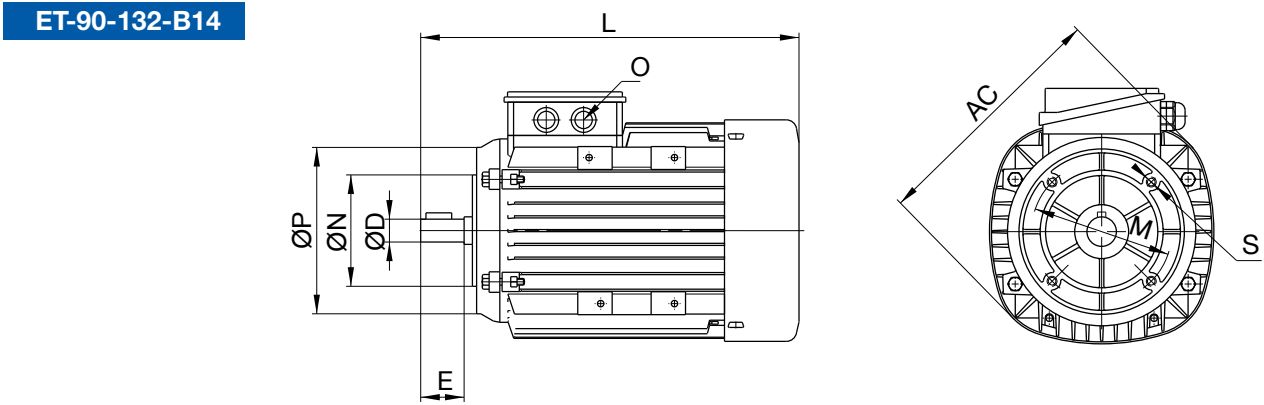
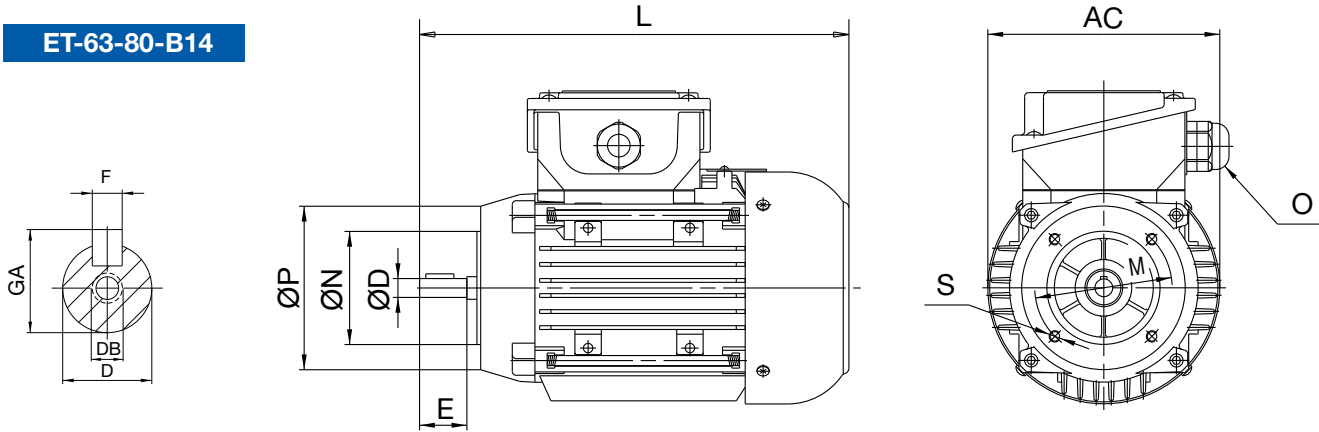
ES-180-250-B5



B14a Small flange mounted version

IEC	Motor dimensions			Flange dimensions B14a				Flange dimensions B14b				Shaft dimensions				
	AC	L	O	P	N	M	S	P	N	M	S	D	E	GA	F	DB
	mm	mm		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
63	123	219,5	1xM20	90	60	75	M5	120	80	100	M6	11	23	12,5	4	M4
71	138	252,5	1xM20	105	70	85	M6	140	95	115	M8	14	30	16	5	M5
80	158	283,5	1xM20	120	80	100	M6	160	110	130	M8	19	40	21,5	6	M6
90S	193	296,5	1xM25	140	95	115	M8	160	110	130	M8	24	50	27	8	M8
90L	193	316,5/344,5	1xM25	140	95	115	M8	160	110	130	M8	24	50	27	8	M8
100L	217	352/377	1xM25	160	110	130	M8	200	130	165	M10	28	60	31	8	M10
112M	232	395,5	2xM25	160	110	130	M8	200	130	165	M10	28	60	31	8	M10
132S	279	440,5	2xM32	160	110	130	M8	200	130	165	M10	38	80	41	10	M10
132M	279	475,5	2xM32	160	110	130	M8	200	130	165	M10	38	80	41	10	M12

Elsto motors

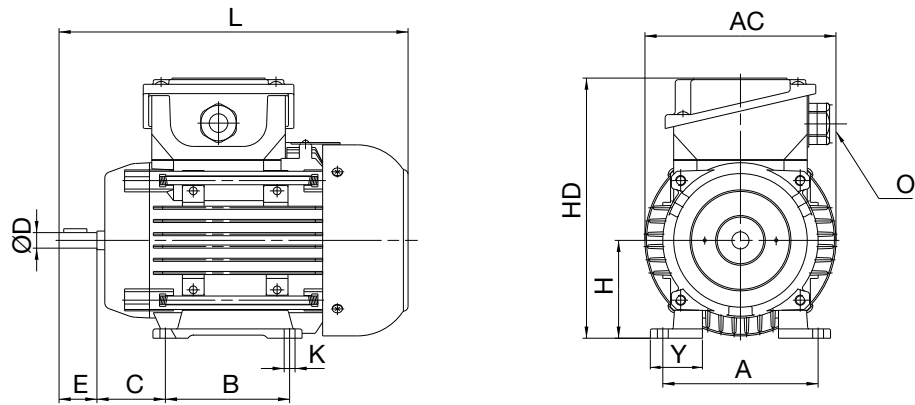


S-S-ELD-EN-EMOT-001-V01

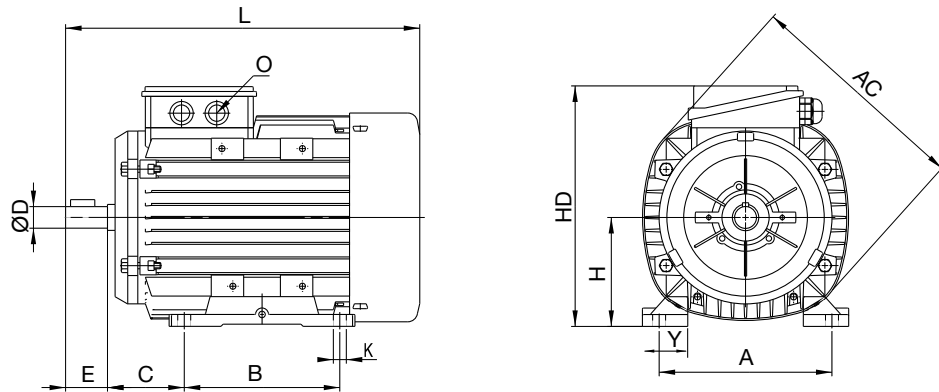
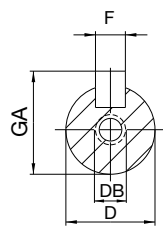
B3 Foot mounted version

IEC	Poles	Motor dimensions			Feet dimensions						Shaft dimensions				
		AC	L	O	B	A	H	HD	K	C	D	E	GA	F	DB
		mm	mm		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
80M	all	158	283,5	1*M20	100	125	80	207	10	50	19	40	21,5	6	M6
90L	2p / 4p 1,1kW	193	296,5	1*M25	100	140	90	222	10	56	24	50	27	8	M8
90L	4p 1,5kW	193	344,5	1*M25	125	140	90	222	10	56	24	50	27	8	M8
100L	2p / 4p 2,2kW	217	352	1*M25	140	160	100	241	12	63	28	60	31	8	M10
100L	4p 3kW	217	380	1*M25	140	160	100	241	12	63	28	60	31	8	M10
112M	all	232	395,5	2*M25	140	190	112	261	12	70	28	60	31	8	M10
132S	all	279	440,5	2*M32	140	216	132	314	12	89	38	80	41	10	M10
132M	all	279	475,5	2*M32	140	216	132	314	12	89	38	80	41	10	M12
160L	all	300	576	2*M32	254	254	160	360	15	108	42	110	45	12	M16
180M	all	370	689	2*M40	241	279	180	452	15	121	48	110	51,5	14	M20
180L	all	370	689	2*M40	241	279	180	452	15	121	48	110	51,5	14	M20
200L	2p	415	699	2*M50	305	318	200	472	19	133	55	110	59	16	M20
225M4C	all	456	765	2*M50	286	356	225	485	19	149	60	140	64	18	M20
200L	all	415	665	2xM50	305	318	200	435	19	133	55	110	59	16	M20
225S	all	45	465	2xM50	286	356	225	504	19	149	60	140	64	18	M20
225M	2p	456	735	2xM50	311	356	225	485	19	149	55	110	59	16	M20
225M	≥4p	456	765	2xM50	311	356	225	485	19	149	60	140	64	18	M20

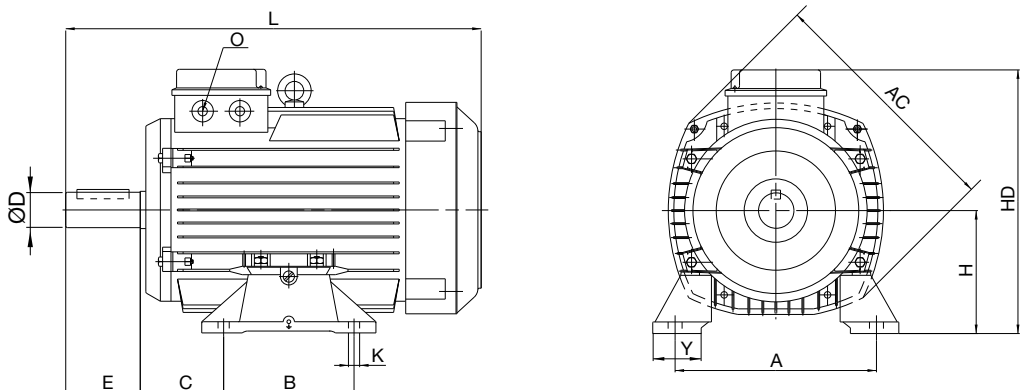
E3T-63-80-B3



E3T-90-160-B3



E3S-180-250-B3

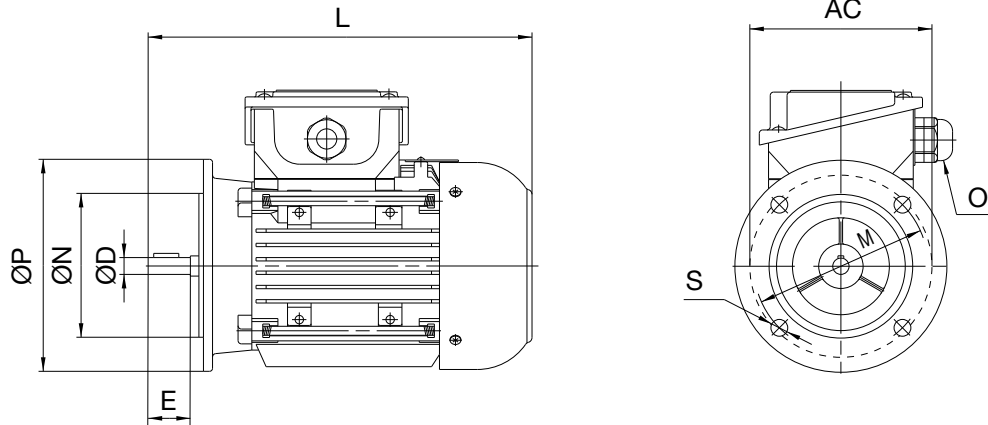


B5 Large flange mounted version

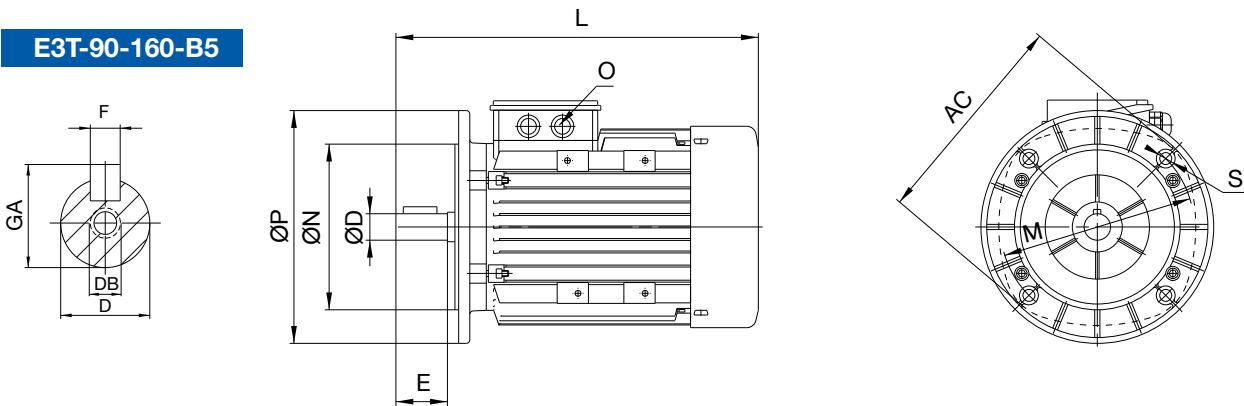
code	IEC	Poles	Motor dimensions			Flange dimensions				Shaft dimensions				
			AC	L	O	P	N	M	S	D	E	GA	F	DB
			mm	mm		mm	mm	mm	mm	mm	mm	mm	mm	mm
80M		all	158	283,5	1*M20	200	130	165	12	19	40	21,5	6	M6
90L		2p / 4p 1,1kW	193	296,5	1*M25	200	130	165	12	24	50	27	8	M8
90L		4p 1,5kW	193	344,5	1*M25	200	130	165	12	24	50	27	8	M8
100L		2p / 4p 2,2kW	217	352	1*M25	250	180	215	15	28	60	31	8	M10
100L		4p 3kW	217	380	1*M25	250	180	215	15	28	60	31	8	M10
112M		all	233	395,5	2*M25	250	180	215	15	28	60	31	8	M10
132S		all	279	440,5	2*M32	300	230	265	15	38	80	41	10	M10
132M		all	279	475,5	2*M32	300	230	265	15	38	80	41	10	M12
160L		all	300	576	2*M32	350	250	300	19	42	110	45	12	M16
180M		all	300	629	2*M40	350	250	300	19	48	110	51,5	14	M20
180L		all	300	629	2*M40	350	250	300	19	48	110	51,5	14	M20
200L		all	350	665	2*M50	400	300	350	19	55	110	59	16	M20
225M		all	456	765	2*M50	450	350	400	19	60	140	64	18	M20

Elsto motors

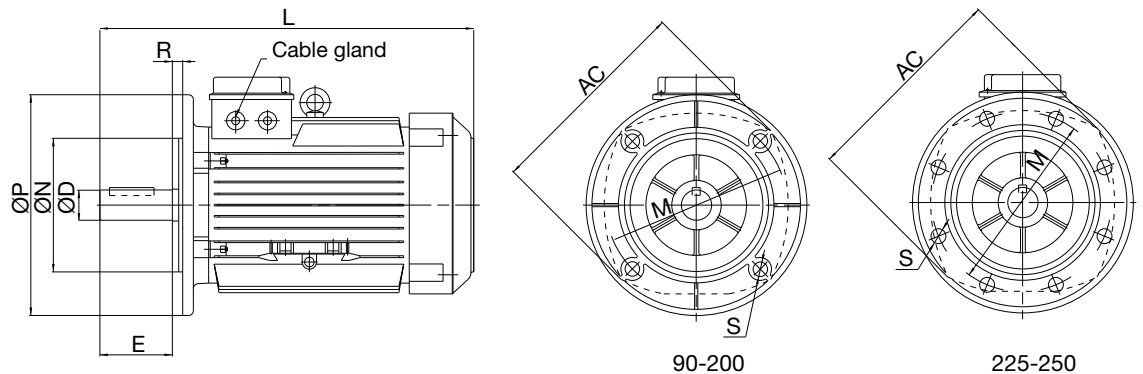
E3T-63-80-B5



E3T-90-160-B5



E3S-180-250-B5

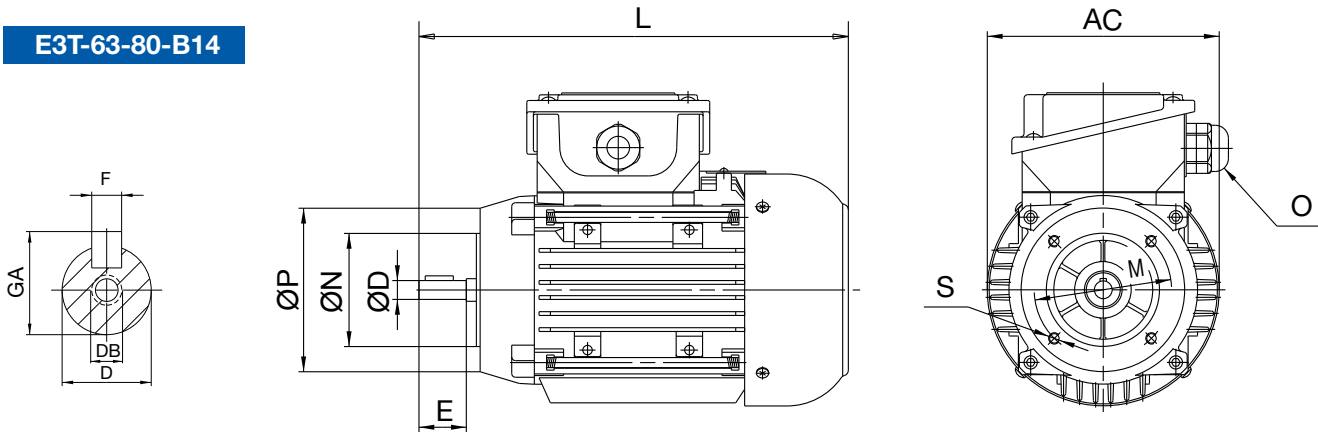


S-S-ELD-EN-EMOT-001-V01

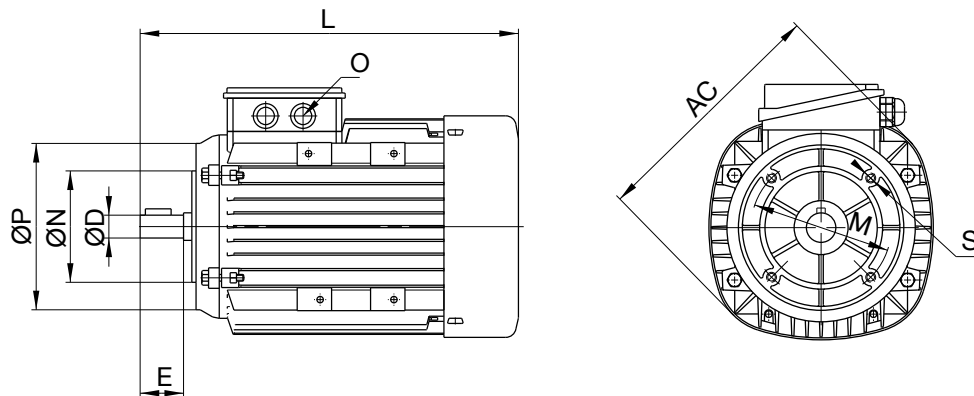
B14a Small flange mounted version

IEC	Poles	Motor dimensions			flange dimensions B14a				flange dimensions B14b				Shaft dimensions					
		AC	L	O	P	N	M	S	P	N	M	S	D	E	GA	F	DB	
		mm	mm		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
80M	all	158	283,5	1*M20	120	80	100	M6	160	110	130	M8	19	40	21,5	6	M6	
90L	2p / 4p 1,1kW	193	296,5	1*M25	140	95	115	M8	160	110	130	M8	24	50	27	8	M8	
90L	4p 1,5kW	193	344,5	1*M25	140	95	115	M8	160	110	130	M8	24	50	27	8	M8	
100L	2p / 4p 2,2kW	217	352	1*M25	160	110	130	M8	200	130	165	M10	28	60	31	8	M10	
100L	4p 3kW	217	380	1*M25	160	110	130	M8	200	130	165	M10	28	60	31	8	M10	
112M	all	232	395,5	2*M25	160	110	130	M8	200	130	165	M10	28	60	31	8	M10	
132S	all	279	440,5	2*M32	200	130	165	M10	250	180	215	M12	38	80	41	10	M10	
132M	all	279	475,5	2*M32	200	130	165	M10	250	180	215	M12	38	80	41	10	M12	

E3T-63-80-B14



E3T-90-132-B14



Single speed												4 pole - 1500 rpm		IE1
Type code	IEC size	P _n kW	n rpm	I _n A	I _a /I _n	η	cos φ	M _n Nm	M _a /M _n	M _k /M _n	J kgm ²	LwA dB	Gew. kg	
HG-80M1-4	80	0,55	1390	1,5	5,5	71,4	0,75	3,8	2,2	2,4	0,002	58	13	

Single speed												6 pole - 1000 rpm		IE1
Type code	IEC size	P _n kW	n rpm	I _n A	I _a /I _n	η	cos φ	M _n Nm	M _a /M _n	M _k /M _n	J kgm ²	LwA dB	Gew. kg	
HG-80M1-6	80	0,37	890	1,2	4,4	62,5	0,7	4	1,9	2,3	0,002	54	15	
HG-80M2-6	80	0,55	890	1,7	4,5	65	0,72	5,9	2,1	2,4	0,003	54	16	

Single speed												8 pole - 750 rpm		IE1
Type code	IEC size	P _n kW	n rpm	I _n A	I _a /I _n	η	cos φ	M _n Nm	M _a /M _n	M _k /M _n	J kgm ²	LwA dB	Gew. kg	
HG-80M1-8	80	0,18	630	0,84	2,9	51,2	0,61	2,8	2	2,2	0,002	52	15	
HG-80M2-8	80	0,25	640	1,09	3	54,2	0,61	3,7	2,1	2,4	0,003	52	17	
HG-90S-8	90S	0,37	660	1,41	3,4	62,2	0,61	5,4	2	2,2	0,004	56	21	
HG-90L-8	90L	0,55	660	2,05	3,5	63,3	0,61	8	2,1	2,3	0,004	56	24	
HG-100L1-8	100L	0,75	690	2,29	3,5	70,5	0,67	10,4	2	2,2	0,008	59	28	
HG-100L2-8	100L	1,1	690	3,18	3,6	72,4	0,69	15,2	2,2	2,4	0,01	59	33	
HG-112M-8	112M	1,5	690	4,2	3,9	74,5	0,7	20,8	2,4	2,6	0,017	61	45	
HG-132S-8	132S	2,2	710	5,6	4,3	79,3	0,71	29,6	2,3	2,5	0,031	64	51	
HG-132M-8	132M	3	710	7,4	4,4	80,1	0,73	40,4	2,2	2,4	0,04	64	61	
HG-160M1-8	160M	4	720	9,7	4,4	81,6	0,73	53,1	2,2	2,5	0,075	68	89	
HG-160M2-8	160M	5,5	720	12,9	5	83,3	0,74	73	2,2	2,4	0,093	68	107	
HG-160L-8	160L	7,5	720	16,8	5,7	85,9	0,75	99,5	2,1	2,3	0,126	68	120	
HG-180L-8	180L	11	730	24,1	5,6	87,8	0,75	144	2,3	2,5	0,203	70	158	
HG-200L-8	200L	15	730	32,3	5,5	88,3	0,76	196,3	2,1	2,4	0,339	73	228	
HG-225S-8	225S	18,5	730	39	5,6	90,2	0,76	242,1	2,2	2,6	0,491	73	258	
HG-225M-8	225M	22	740	44,8	5,4	90,8	0,78	284	2,1	2,4	0,547	73	282	
HG-250M-8	250M	30	740	60,1	5,3	91,2	0,79	387,3	2,2	2,5	0,83	75	367	
HG-280S-8	280S	37	740	73,6	5,6	91,8	0,79	477,7	2,3	2,7	1,39	76	468	
HG-280M-8	280M	45	740	89,4	5,2	92	0,79	581	2,1	2,8	1,65	76	515	
HG-315S-8	315S	55	740	105,3	5,7	93,1	0,81	710,1	1,9	2,5	4,79	82	752	
HG-315M-8	315M	75	740	142,6	5,9	93,7	0,81	968,3	2,1	2,8	5,58	82	870	
HG-315L1-8	315L	90	740	168,5	6,2	94	0,82	1162	2,3	2,9	6,37	82	976	
HG-315L2-8	315L	110	740	205,6	6	94,2	0,82	1420	2,2	2,8	7,23	82	1096	
HG-355M1-8	355M	132	740	246	5,03	94,6	0,82	1704	1,86	2,22	7,55	90	1556	
HG-355M2-8	355M	160	740	298	5,28	94,7	0,81	2066	2,03	2,3	11,73	90	1704	
HG-355L-8	355L	200	740	370	5,42	94,8	0,82	2582	2,12	2,33	12,86	90	1989	

Single speed												2 pole - 3000 rpm		IE2
Type code	IEC size	P _n kW	n rpm	I _n A	I _a /I _n	η	cos φ	M _n Nm	M _a /M _n	M _k /M _n	J kgm ²	LwA dB	Weight kg	
H2G-801-2	80	0,75	2840	1,7	6,8	77,5	0,83	2,5	2,3	2,4	0,0008	62	18	
H2G-802-2	80	1,1	2840	2,3	7,3	82,8	0,83	3,7	2,3	2,6	0,0009	62	20	
H2G-90S-2	90S	1,5	2850	3,1	7,6	84,1	0,84	5	2,5	2,8	0,0012	67	26	
H2G-90L-2	90L	2,2	2850	4,4	7,5	85,6	0,85	7,4	2,4	2,7	0,0014	67	30	
H2G-100L-2	100L	3	2880	5,7	7,5	86,7	0,87	9,9	2,4	2,6	0,004	74	37	
H2G-112M-2	112M	4	2880	7,5	7,5	87,6	0,88	13,3	2,3	2,4	0,0057	77	47	
H2G-132S1-2	132S	5,5	2880	10,2	7,6	88,6	0,88	18,2	2,2	2,7	0,0112	79	65	
H2G-132S2-2	132S	7,5	2900	13,6	7,2	89,5	0,89	24,7	2,3	2,3	0,0134	79	73	
H2G-160M1-2	160M	11	2910	19,7	7,3	90,5	0,89	36,1	2,2	2,3	0,0391	81	122	
H2G-160M2-2	160M	15	2930	26,6	7,5	91,3	0,89	48,9	2,2	2,3	0,0464	81	133	
H2G-160L-2	160L	18,5	2930	32,7	7,6	91,8	0,89	60,3	2,4	2,7	0,0567	81	152	
H2G-180M-2	180M	22	2930	38,7	7,7	92,2	0,89	71,7	2,2	2,3	0,0783	83	192	
H2G-200L1-2	200L	30	2930	52,4	7	92,9	0,89	97,8	2,4	2,6	0,1277	84	252	
H2G-200L2-2	200L	37	2950	64,3	7	93,3	0,89	119,8	2,2	2,3	0,1432	84	275	
H2G-225M-2	225M	45	2970	77,9	7,1	93,7	0,89	144,7	2,2	2,3	0,24	86	315	
H2G-250M-2	250M	55	2970	94,9	7,1	94	0,89	176,9	2,2	2,3	0,3214	89	417	
H2G-280S-2	280S	75	2970	128,6	6,5	94,6	0,89	241,2	2	2,3	0,5964	91	571	
H2G-280M-2	280M	90	2970	153,6	6,8	95	0,89	289,4	2,1	2,4	0,6953	91	607	
H2G-315S-2	315S	110	2980	184,9	7	95,4	0,9	352,5	2	2,4	1,2154	92	965	
H2G-315M-2	315M	132	2980	221,9	7	95,4	0,9	423	2,2	2,6	1,5965	92	1067	
H2G-315L1-2	315L	160	2980	266	6,8	95,4	0,91	512,8	2,1	2,4	1,8128	92	1151	
H2G-315L2-2	315L	200	2980	332,5	7,2	95,4	0,91	640,9	2,3	2,7	2,0806	92	1253	
H2G-355M-2	355M	250	2980	415,2	7,1	95,8	0,91	801,2	2	2,2	3,6668	100	1638	
H2G-355L2-2	355L	315	2980	521,5	7,1	95,8	0,91	1009,5	2	2,2	4,223	100	1834	

IE2 motors may only be supplied in combination with a motor mounted brake and/or frequency inverter.

Single speed												4 pole - 1500 rpm		IE2
Type code	IEC size	P _n kW	n rpm	I _n A	I _a /I _n	η	cos φ	M _n Nm	M _a /M _n	M _k /M _n	J kgm ²	LwA dB	Weight kg	
H2G-802-4	80	0,75	1390	1,8	6,5	82,3	0,75	5,2	2,3	2,6	0,0026	56	20	
H2G-90S-4	90S	1,1	1405	2,5	6,6	83,8	0,75	7,5	2,3	2,5	0,0026	59	26	
H2G-90L-4	90L	1,5	1405	3,4	6,9	85	0,75	10,2	2,4	2,7	0,0031	59	29	
H2G-100L1-4	100L	2,2	1425	4,5	7,5	86,4	0,81	14,7	2,3	2,6	0,0073	64	37	
H2G-100L2-4	100L	3	1425	6	7,6	87,4	0,82	20,1	2,3	2,7	0,0073	64	40	
H2G-112M-4	112M	4	1440	8	7,7	88,3	0,82	26,5	2,3	2,7	0,0099	65	52	
H2G-132S-4	132S	5,5	1440	10,9	7,5	89,2	0,82	36,5	2,1	2,4	0,0223	71	70	
H2G-132M-4	132M	7,5	1445	14,5	7,4	90,1	0,83	49,6	2,2	2,5	0,0308	71	84	
H2G-160M-4	160M	11	1460	20,5	7,5	91	0,85	72	2,3	2,6	0,078	73	135	
H2G-160L-4	160L	15	1460	27,4	7,5	91,8	0,86	98,1	2,2	2,4	0,0957	73	156	
H2G-180M-4	180M	18,5	1470	33,7	7,7	92,2	0,86	120,2	2,4	2,7	0,1446	76	196	
H2G-180L-4	180L	22	1475	39,9	7,8	92,6	0,86	142,4	2,2	2,5	0,1643	76	215	
H2G-200L-4	200L	30	1475	54	7,2	93,2	0,86	194,2	2,2	2,5	0,2725	76	275	
H2G-225S-4	225S	37	1480	66,3	7,3	93,6	0,86	238,8	2,2	2,6	0,4222	78	328	
H2G-225M-4	225M	45	1480	80,4	7,4	93,9	0,86	290,4	2,2	2,4	0,4878	78	355	
H2G-250M-4	250M	55	1480	98	7,4	94,2	0,86	354,9	2,2	2,7	0,6864	79	453	
H2G-280S-4	280S	75	1480	129,9	6,7	94,7	0,88	484	2,3	2,5	1,1648	80	596	
H2G-280M-4	280M	90	1480	155,4	6,9	95	0,88	580,7	2,3	2,5	1,5184	80	693	
H2G-315S-4	315S	110	1480	189,1	6,9	95,4	0,88	709,8	2,2	2,6	3,2344	88	1012	
H2G-315M-4	315M	132	1480	227	6,9	95,4	0,88	851,8	2,3	2,7	3,4216	88	1147	
H2G-315L1-4	315L	160	1480	272	6,9	95,4	0,89	1032,4	2,2	2,6	3,9416	88	1224	
H2G-315L2-4	315L	200	1485	340	6,9	95,4	0,89	1286,2	2,3	2,4	4,6696	88	1331	
H2G-355M-4	355M	250	1490	418,5	6,9	95,8	0,9	1602,3	2,2	2,4	5,8968	95	1650	
H2G-355L2-4	355L	315	1490	527,3	6,9	95,8	0,9	2019	2,2	2,3	6,9264	95	1804	

IE2 motors may only be supplied in combination with a motor mounted brake and/or frequency inverter.

Single speed												6 pole - 1000 rpm		IE2
Type code	IEC size	P _n kW	n rpm	I _n A	I _a /I _n	η	cos φ	M _n Nm	M _a /M _n	M _k /M _n	J kgm ²	LwA dB	Weight kg	
H2G-90S-6	90S	0,75	910	1,9	5,8	77,7	0,72	7,9	2,1	2,4	0,0032	57	24	
H2G-90L-6	90L	1,1	910	2,7	5,9	79,9	0,73	11,5	2,3	2,5	0,0042	57	28	
H2G-100L-6	100L	1,5	920	3,6	6	81,5	0,74	15,6	2,1	2,3	0,0074	61	34	
H2G-112M-6	112M	2,2	940	5,1	6	83,4	0,74	22,4	2,2	2,3	0,0147	65	45	
H2G-132S-6	132S	3	960	6,9	6,2	84,9	0,74	29,8	2,1	2,3	0,0305	69	60	
H2G-132M1-6	132M	4	960	9,1	6,8	86,1	0,74	39,8	2	2,2	0,0378	69	69	
H2G-132M2-6	132M	5,5	960	12,1	7,1	87,4	0,75	54,7	2	2,3	0,0473	69	82	
H2G-160M-6	160M	7,5	970	15,6	6,7	89	0,78	73,8	2,2	2,5	0,0924	73	116	
H2G-160L-6	160L	11	970	22,3	6,9	90	0,79	108,3	2,1	2,4	0,1218	73	143	
H2G-180L-6	180L	15	970	29,4	7,2	91	0,81	147,7	2	2,2	0,2174	73	181	
H2G-200L1-6	200L	18,5	970	36	7,2	91,5	0,81	182,1	2,2	2,4	0,3308	73	230	
H2G-200L2-6	200L	22	970	42,1	7,3	92	0,82	216,6	2,2	2,5	0,378	73	239	
H2G-225M-6	225M	30	980	57,8	7,1	92,5	0,81	292,3	2,1	2,5	0,5744	74	301	
H2G-250M-6	250M	37	980	68,4	7,1	93	0,84	360,6	2,2	2,4	0,8757	76	387	
H2G-280S-6	280S	45	980	80,8	7,2	93,5	0,86	438,5	2,1	2	1,47	78	501	
H2G-280M-6	280M	55	980	98,4	7,2	93,8	0,86	536	2,1	2	1,7325	78	547	
H2G-315S-6	315S	75	990	135,2	6,7	94,2	0,85	723,5	2	2,3	4,3155	83	976	
H2G-315M-6	315M	90	990	163,7	6,7	94,5	0,84	868,2	2	2,3	4,494	83	1007	
H2G-315L1-6	315L	110	990	196,6	6,7	95	0,85	1061,1	2	2,3	5,7225	83	1097	
H2G-315L2-6	315L	132	990	233,2	6,7	95	0,86	1273,3	2	2,3	6,426	83	1168	
H2G-355M1-6	355M	160	990	279,4	6,7	95	0,87	1543,4	2	2,2	9,2925	85	1554	
H2G-355M2-6	355M	200	990	349,3	6,7	95	0,87	1929,3	2	2,2	10,028	85	1768	
H2G-355L-6	355L	250	990	436,6	6,7	95	0,87	2411,6	2	2,2	10,815	85	1902	

IE2 motors may only be supplied in combination with a motor mounted brake and/or frequency inverter.

Single speed 2 pole - 3000 rpm IE3

Type code	IEC	P _n kW	n rpm	I _n 400V A	I _a /I _n	η			cos φ	M _n Nm	M _a /M _n	M _k /M _n	J kgm ²	LpA dB	Weight kg
	size					100%	75%	50%							
H3G-801-2	80	0,75	2855	1,6	7	80,7%	81,2%	79,7%	0,82	2,5	2,3	2,3	0,001	62	19
H3G-802-2	80	1,1	2855	2,3	7,3	82,7%	82,0%	78,9%	0,83	3,7	2,2	2,3	0,002	62	20
H3G-90S-2	90S	1,5	2875	3,1	7,6	84,2%	84,7%	83,1%	0,84	5,0	2,2	2,3	0,002	67	23
H3G-90L-2	90L	2,2	2875	4,3	7,6	85,9%	85,5%	82,9%	0,85	7,3	2,2	2,3	0,003	67	32
H3G-100L-2	100L	3	2880	5,7	7,8	87,1%	87,2%	85,9%	0,87	9,9	2,2	2,3	0,006	74	46
H3G-112M-2	112M	4	2900	7,4	8,3	88,1%	88,4%	87,5%	0,88	13,2	2,2	2,3	0,009	77	50
H3G-132S1-2	132S1	5,5	2900	10,1	8,3	89,2%	88,9%	87,3%	0,88	18,1	2	2,3	0,024	79	66
H3G-132S2-2	132S2	7,5	2900	13,7	7,9	90,1%	90,0%	88,5%	0,88	24,7	2	2,3	0,029	79	68
H3G-160M1-2	160M1	11	2940	19,6	8,1	91,2%	91,1%	89,8%	0,89	35,7	2	2,3	0,067	81	115
H3G-160M2-2	160M2	15	2940	26,5	8,1	91,9%	91,8%	90,7%	0,89	48,7	2	2,3	0,080	81	125
H3G-160L-2	160L	18,5	2940	32,5	8,2	92,4%	92,3%	90,4%	0,89	60,1	2	2,3	0,097	81	147
H3G-180M-2	180M	22	2955	38,5	8,2	92,7%	92,6%	91,6%	0,89	71,1	2	2,3	0,137	83	195
H3G-200L1-2	200L1	30	2965	52,1	7,6	93,3%	93,2%	92,1%	0,89	96,6	2	2,3	0,227	84	243
H3G-200L2-2	200L2	37	2965	64,0	7,6	93,7%	93,5%	92,3%	0,89	119,2	2	2,3	0,269	84	258
H3G-225M-2	225M	45	2970	76,8	7,7	94,0%	93,6%	92,4%	0,9	144,7	2	2,3	0,360	86	324
H3G-250M-2	250M	55	2975	93,5	7,7	94,3%	94,1%	93,0%	0,9	176,6	2	2,3	0,791	89	432
H3G-280S-2	280S	75	2975	127,0	7,1	94,7%	94,3%	93,0%	0,9	240,8	1,8	2,3	0,960	91	560
H3G-280M-2	280M	90	2975	151,9	7,1	95,0%	94,6%	94,3%	0,9	288,9	1,8	2,3	1,157	91	603
H3G-315S-2	315S	110	2980	185,3	7,1	95,2%	94,8%	93,6%	0,9	352,5	1,8	2,3	1,662	92	880
H3G-315M-2	315M	132	2980	221,9	7,1	95,4%	95,0%	93,9%	0,9	423,0	1,8	2,3	1,874	92	960
H3G-315L1-2	315L1	160	2980	265,5	7,2	95,6%	95,0%	94,2%	0,91	512,8	1,8	2,3	2,146	92	1030
H3G-315L-2	315L	185	2980	306,6	7,2	95,7%	95,1%	94,3%	0,91	592,9	1,8	2,2	2,481	92	1326
H3G-315L2-2	315L2	200	2980	331,1	7,2	95,8%	95,1%	94,2%	0,91	640,9	1,8	2,2	2,448	92	1358
H3G-355M1-2	355M1	220	2980	364,3	7,2	95,8%	95,2%	94,5%	0,91	705,0	1,6	2,2	2,693	100	1694
H3G-355M2-2	355M2	250	2980	413,9	7,2	95,8%	95,2%	94,5%	0,9	801,2	1,6	2,2	4,034	100	1802
H3G-355L1-2	355L1	280	2980	463,6	7,2	95,8%	95,2%	94,5%	0,9	897,3	1,6	2,2	4,518	100	1920
H3G-355L2-2	355L2	315	2980	521,5	7,2	95,8%	95,2%	94,5%	0,91	1009,5	1,6	2,2	4,645	100	2017
H3G-3551-2	355	355	2980	587,8	7,2	95,8%	95,2%	94,5%	0,91	1137,6	1,6	2,2	5,242	104	2130
H3G-3552-2	355	375	2980	620,9	7,2	95,8%	95,2%	94,5%	0,91	1201,7	1,6	2,2	5,536	104	2398

Single speed 4 pole - 1500 rpm IE3

Type code	IEC	P _n kW	n rpm	I _n 400V A	I _a /I _n	η			cos φ	M _n Nm	M _a /M _n	M _k /M _n	J kgm ²	LpA dB	Gew. kg
	size					100%	75%	50%							
H3G-802-4	80	0,75	1400	1,7	6,6	82,5%	82,0%	79,2%	0,75	5,1	2,3	2,3	0,003	56	20
H3G-90S-4	90S	1,1	1425	2,5	6,8	84,1%	83,5%	80,5%	0,76	7,4	2,3	2,3	0,004	59	27
H3G-90L-4	90L	1,5	1425	3,3	7	85,3%	85,0%	82,6%	0,77	10,1	2,3	2,3	0,005	59	30
H3G-100L1-4	100L1	2,2	1440	4,5	7,6	86,7%	86,6%	85,1%	0,81	14,6	2,3	2,3	0,012	64	41
H3G-100L2-4	100L2	3	1440	6,0	7,6	87,7%	87,8%	86,2%	0,82	19,9	2,3	2,3	0,016	64	46
H3G-112M-4	112M	4	1450	7,9	7,8	88,6%	88,5%	87,0%	0,82	26,3	2,2	2,3	0,022	65	57
H3G-132S-4	132S	5,5	1455	10,7	7,9	89,6%	89,7%	88,7%	0,83	36,1	2	2,3	0,060	71	70
H3G-132M-4	132M	7,5	1455	14,3	7,5	90,4%	90,6%	90,2%	0,84	49,2	2	2,3	0,071	71	85
H3G-160M-4	160M	11	1465	20,4	7,7	91,4%	91,2%	91,0%	0,85	71,7	2,2	2,3	0,137	73	130
H3G-160L-4	160L	15	1465	27,3	7,8	92,1%	91,9%	91,7%	0,86	97,8	2,2	2,3	0,171	73	150
H3G-180M-4	180M	18,5	1470	33,5	7,8	92,6%	92,7%	91,8%	0,86	120,2	2	2,3	0,238	76	185
H3G-180L-4	180L	22	1475	39,7	7,8	93,0%	93,3%	92,9%	0,86	142,4	2	2,3	0,259	76	216
H3G-200L-4	200L	30	1475	53,8	7,3	93,6%	93,3%	92,1%	0,86	194,2	2	2,3	0,459	76	260
H3G-225S-4	225S	37	1480	66,1	7,4	93,9%	94,0%	93,5%	0,86	238,8	2	2,3	0,656	78	337
H3G-225M-4	225M	45	1480	80,2	7,4	94,2%	94,3%	93,8%	0,86	290,4	2	2,3	0,758	78	344
H3G-250M-4	250M	55	1480	97,6	7,4	94,6%	94,3%	93,5%	0,86	354,9	2,2	2,3	1,078	79	455
H3G-280S-4	280S	75	1485	129,5	6,9	95,0%	94,7%	93,5%	0,88	482,3	2	2,3	1,800	80	590
H3G-280M-4	280M	90	1485	155,1	6,9	95,2%	94,9%	93,7%	0,88	578,8	2	2,3	2,130	80	634
H3G-315S-4	315S	110	1485	187,0	7	95,4%	95,5%	94,6%	0,89	707,4	2	2,2	3,415	88	940
H3G-315M-4	315M	132	1485	223,9	7	95,6%	95,4%	95,1%	0,89	848,9	2	2,2	3,807	88	980
H3G-315L1-4	315L1	160	1485	270,9	7,1	95,8%	95,5%	95,3%	0,89	1029,0	2	2,2	3,423	88	1060
H3G-315L-4	315L	185	1485	312,9	7,1	95,9%	95,5%	95,2%	0,89	1189,7	2	2,2	3,958	88	1483
H3G-315L2-4	315L2	200	1485	334,1	7,1	96,0%	95,6%	95,2%	0,9	1286,2	2	2,2	5,262	88	1200
H3G-355M1-4	355M1	220	1490	367,5	7,1	96,0%	95,7%	95,1%	0,9	1410,1	2	2,2	5,449	88	1560
H3G-355M2-4	355M2	250	1490	417,7	7,1	96,0%	95,7%	95,1%	0,9	1602,3	2,0	2,2	6,192	95	1815
H3G-355L1-4	355L1	280	1490	467,8	7,1	96,0%	95,7%	95,1%	0,9	1794,6	2,0	2,2	6,935	95	1870
H3G-355L2-4	355L2	315	1490	526,2	7,1	96,0%	95,7%	95,1%	0,9	2018,9	2	2,2	7,273	95	1984
H3G-3551-4	355	355	1490	606,5	7	96,0%	95,7%	95,1%	0,88	2275,3	1,7	2,2	8,196	102	2291
H3G-3552-4	355	375	1490	640,7	7	96,0%	95,7%	95,1%	0,88	2403,5	1,7	2,2	8,658	102	2376

Single speed													6 pole - 1000 rpm			IE3	
Type code	IEC	P _n	n	I _n 400V	I _a /I _n	η			cos φ	M _n	M _a /M _n	M _k /M _n	J	LpA	Weight		
	size	kW	rpm	A		100%	75%	50%		Nm			kgm ²	dB	kg		
H3G-90S-6	90S	0,75	935	1,9	6	78,9%	79,0%	76,7%	0,71	7,7	2	2,1	0,004	57	25		
H3G-90L-6	90L	1,1	940	2,7	6	81,0%	79,8%	78,6%	0,73	11,2	2	2,1	0,006	57	29		
H3G-100L-6	100L	1,5	945	3,6	6,5	82,5%	82,3%	80,1%	0,73	15,2	2	2,1	0,016	61	43		
H3G-112M-6	112M	2,2	950	5,1	6,6	84,3%	84,5%	83,8%	0,74	22,1	2	2,1	0,039	65	47		
H3G-132S-6	132S	3	960	6,8	6,8	85,6%	85,8%	84,3%	0,74	29,8	2	2,1	0,035	69	59		
H3G-132M1-6	132M1	4	960	9,0	6,8	86,8%	86,9%	84,9%	0,74	39,8	2	2,1	0,043	69	67		
H3G-132M2-6	132M2	5,5	960	12,0	7	88,0%	88,2%	86,2%	0,75	54,7	2	2,1	0,056	69	78		
H3G-160M-6	160M	7,5	970	15,4	7	89,1%	89,2%	87,8%	0,79	73,8	2	2,1	0,140	73	119		
H3G-160L-6	160L	11	970	22,0	7,2	90,3%	90,5%	89,4%	0,80	108,3	2	2,1	0,192	73	148		
H3G-180L-6	180L	15	975	29,3	7,3	91,2%	91,4%	90,8%	0,81	146,9	2	2,1	0,319	73	197		
H3G-200L1-6	200L1	18,5	975	36,0	7,3	91,7%	92,0%	91,4%	0,81	181,2	2	2,1	0,446	73	230		
H3G-200L2-6	200L2	22	975	42,5	7,4	92,2%	92,4%	91,9%	0,81	215,5	2	2,1	0,557	73	251		
H3G-225M-6	225M	30	985	56,2	6,9	92,9%	93,1%	92,0%	0,83	290,9	2	2,1	0,832	74	330		
H3G-250M-6	250M	37	985	68,1	7,1	93,3%	93,3%	92,5%	0,84	358,7	2	2,1	1,447	76	426		
H3G-280S-6	280S	45	985	81,6	7,3	93,7%	92,6%	91,4%	0,85	436,3	2	2,0	2,252	78	535		
H3G-280M-6	280M	55	985	98,1	7,3	94,1%	93,9%	93,0%	0,86	533,2	2	2,0	2,726	78	576		
H3G-315S-6	315S	75	990	136,2	6,6	94,6%	94,5%	93,8%	0,84	723,5	2	2,0	3,984	83	840		
H3G-315M-6	315M	90	990	161,0	6,7	94,9%	94,7%	94,1%	0,85	868,2	2	2,0	4,500	83	900		
H3G-315L1-6	315L1	110	990	196,4	6,7	95,1%	94,9%	94,6%	0,85	1061,1	2	2,0	5,607	83	980		
H3G-315L2-6	315L2	132	990	232,2	6,8	95,4%	95,1%	94,7%	0,86	1273,3	2	2,0	6,935	83	1100		
H3G-355M1-6	355M1	160	990	280,9	6,8	95,6%	95,3%	94,5%	0,86	1543,4	1,8	2,0	10,222	85	1709		
H3G-355M-6	355M	185	990	324,5	6,8	95,7%	95,3%	94,5%	0,86	1784,6	1,8	2,0	10,630	85	1830		
H3G-355M2-6	355M2	200	990	346,4	6,8	95,8%	95,4%	94,6%	0,87	1929,3	1,8	2,0	11,031	85	1945		
H3G-355L1-6	355L1	220	990	381,0	6,8	95,8%	95,4%	94,6%	0,87	2122,2	1,8	2,0	11,072	85	2018		
H3G-355L2-6	355L2	250	990	433,0	6,8	95,8%	95,4%	94,6%	0,87	2411,6	1,8	2,0	11,897	85	2092		
H3G-3551-6	355	280	990	484,9	6,8	95,8%	95,4%	94,6%	0,87	2701,0	1,8	2,0	13,692	91	2100		
H3G-3552-6	355	315	990	551,9	6,8	95,8%	95,4%	94,6%	0,86	3038,6	1,8	2,0	14,990	91	2299		

Elsto motors

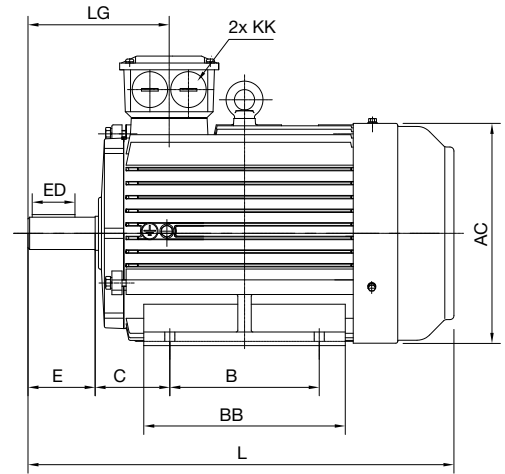
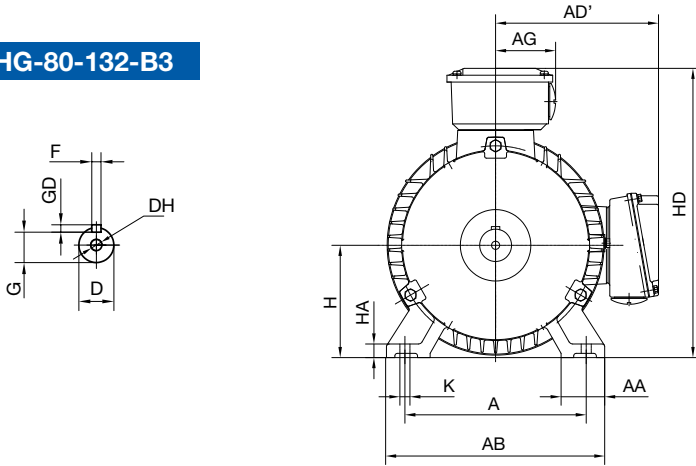
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B3 Foot mounted version

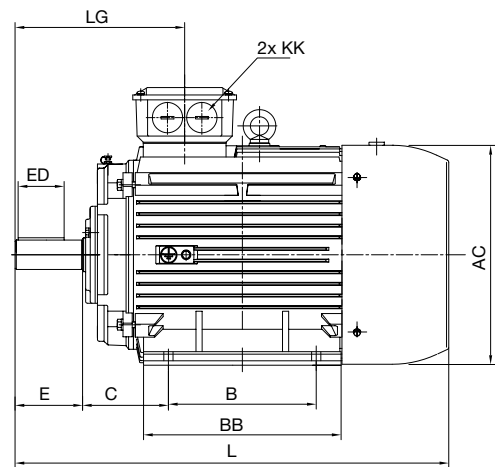
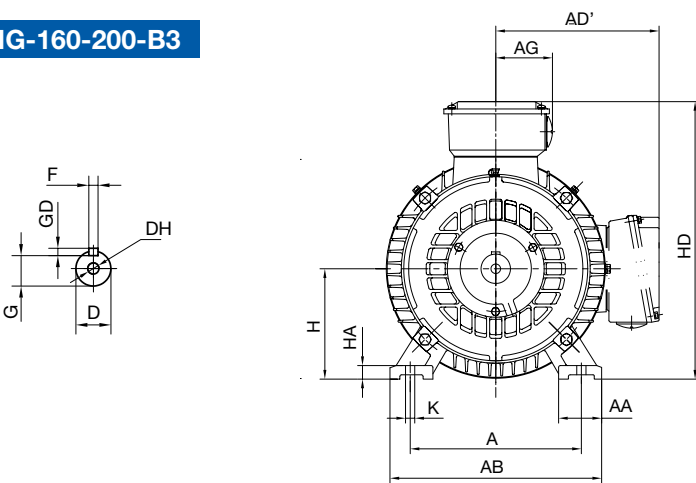
IEC Frame size	Poles	A	AA	AB	AC	AD'	AG	B	BB	C	D	DH	E	ED	F	G	GD	H	HA	HD-top	K	KK	L*	LG
80M	2-8	125	34	165	175	140	51	100	142	50	19	M6X16	40	22	6	15,5	6	80	10	220	10	M24x1,5	305	112
90S	2-8	140	36	180	195	150	60	100	180	56	24	M8X19	50	32	8	20	7	90	12,5	260	10	M24x1,5	360	132
90L	2-8	140	36	180	195	150	60	125	210	56	24	M8X19	50	32	8	20	7	90	12,5	260	10	M24x1,5	390	132
100L	2-8	160	40	205	215	160	60	140	233	63	28	M10X22	60	40	8	24	7	100	14	275	12	M24x1,5	435	153
112M	2-8	190	45	230	240	185	75	140	252	70	28	M10X22	60	40	8	24	7	112	14	300	12	M30X2	480	144
132S	2-8	216	52	270	275	205	75	140	220	89	38	M12X28	80	56	10	33	8	132	16	345	12	M30X2	510	167
132M	2-8	216	52	270	275	205	75	178	258	89	38	M12X28	80	56	10	33	8	132	16	345	12	M30X2	550	167
160M	2-8	254	65	320	330	250	95	210	305	108	42	M16X36	110	90	12	37	8	160	19	425	14,5	M36x2	655	270
160L	2-8	254	65	320	330	250	95	254	325	108	42	M16X36	110	80	12	37	8	160	19	425	14,5	M36x2	685	270
180M	2-8	279	74	350	380	270	95	241	330	121	48	M16X36	110	90	14	42,5	9	180	22	460	14,5	M36x2	728	277
180L	2-8	279	74	350	380	270	95	279	370	121	48	M16X36	110	80	14	42,5	9	180	22	460	14,5	M36x2	768	277
200L	2-8	318	85	395	420	325	120	305	370	133	55	M20X42	110	90	16	49	10	200	25	475	18,5	M48x2	760	298
225S	4-8	356	80	436	465	335	120	286	355	149	60	M20X42	140	100	18	53	11	225	28	515	18,5	M48x2	825	340
225M	2	356	80	436	465	335	120	311	380	149	55	M20X42	110	80	16	49	10	225	28	515	18,5	M48x2	820	310
225M	4-8	356	80	436	465	335	120	311	380	149	60	M20X42	140	100	18	53	11	225	28	515	18,5	M48x2	850	340
250M	2	406	88	495	520	370	160	349	440	168	60	M20X42	140	100	18	53	11	250	33	480	24	M64X2	925	360
250M	4-8	406	88	495	520	370	160	349	440	168	65	M20X42	140	100	18	58	11	250	33	480	24	M64X2	925	360
280S	2	457	109	550	570	395	160	368	495	190	65	M20X42	140	100	18	58	11	280	35	640	24	M64X2	960	350
280S	4-8	457	109	550	570	395	160	368	495	190	75	M20X42	140	100	20	67,5	12	280	35	640	24	M64X2	975	350
280M	2	457	109	550	570	395	160	419	535	190	65	M20X42	140	100	18	58	11	280	35	640	24	M64X2	1000	350
280M	4-8	457	109	550	570	395	160	419	535	190	75	M20X42	140	100	20	67,5	12	280	35	640	24	M64X2	1015	350
315S	2	508	120	635	650	495	195	406	565	216	65	M20X42	140	100	18	58	11	315	45	750	28	M64X2	1160	387
315M	2	508	120	635	650	495	195	457	675	216	65	M20X42	140	100	18	58	11	315	45	750	28	M64X2	1270	387
315L	2	508	120	635	650	495	195	508	675	216	65	M20X42	140	100	18	58	11	315	45	750	28	M64X2	1270	387
315S	4-8	508	120	635	650	495	195	406	565	216	80	M20X42	170	130	22	71	14	315	45	750	28	M64X2	1190	417
315M	4-8	508	120	635	650	495	195	457	675	216	80	M20X42	170	130	22	71	14	315	45	750	28	M64X2	1300	417
315L	4-8	508	120	635	650	495	195	508	675	216	80	M20X42	170	130	22	71	14	315	45	750	28	M64X2	1300	417
355M	2	610	125	735	735	640	330	560	775	254	75	M24X50	140	110	20	67,5	12	355	49	1000	28	M72X2	1500	420
355L	2	610	125	735	735	640	330	630	775	254	75	M24X50	140	110	20	67,5	12	355	49	1000	28	M72X2	1500	420
355M	4-8	610	125	735	735	640	330	560	775	254	95	M24X50	170	140	25	86	14	355	49	1000	28	M72X2	1530	450
355L	4-8	610	125	735	735	640	330	630	775	254	95	M24X50	170	140	25	86	14	355	49	1000	28	M72X2	1530	450

*) Some IE3 frame sizes may be longer than comparable IE1/IE2 motors.
Full dimensional information on IE3 motors was not available at the time of printing.

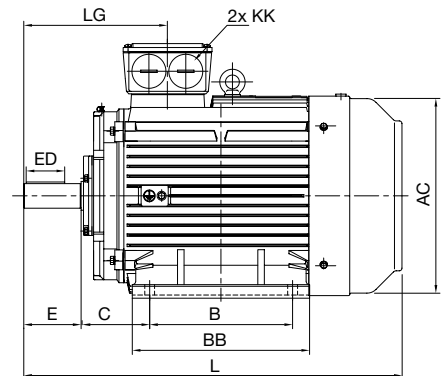
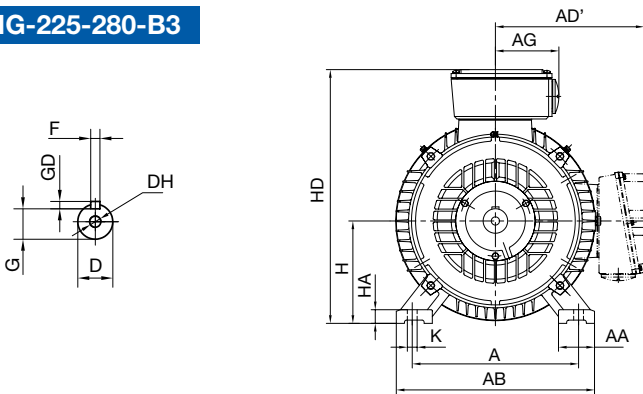
HG-80-132-B3



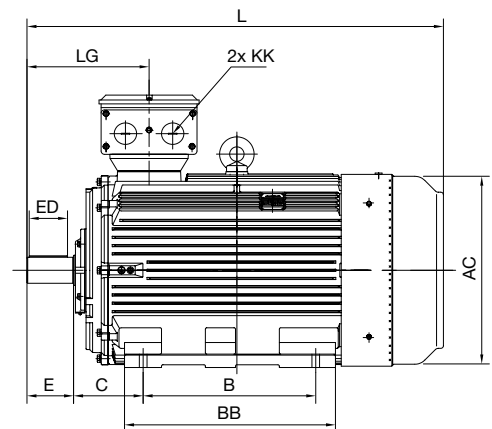
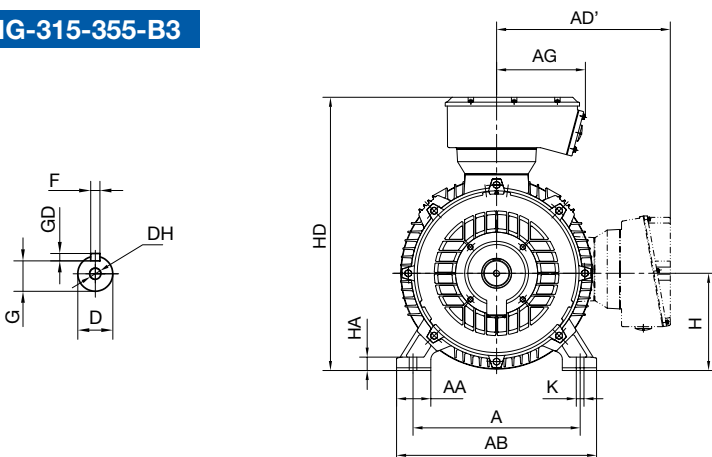
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HG-225-280-B3



HG-315-355-B3



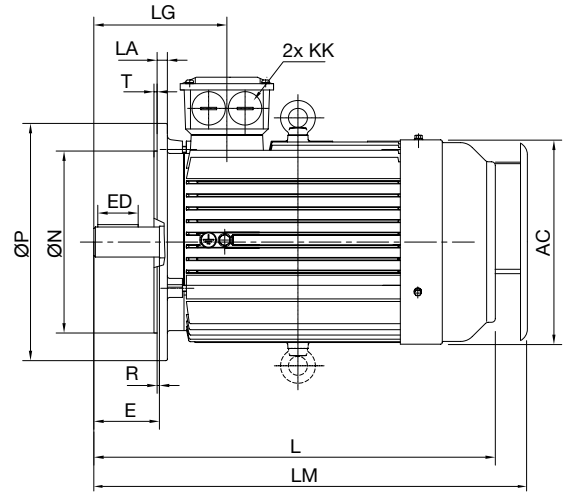
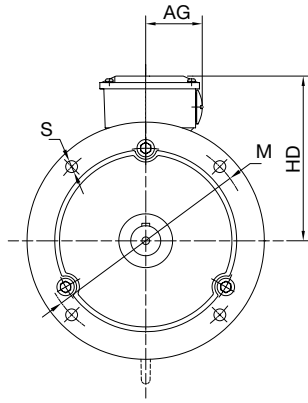
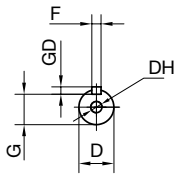
S-S-ELD-EN-EMOT-001-V01

B5 Large flange mounted version

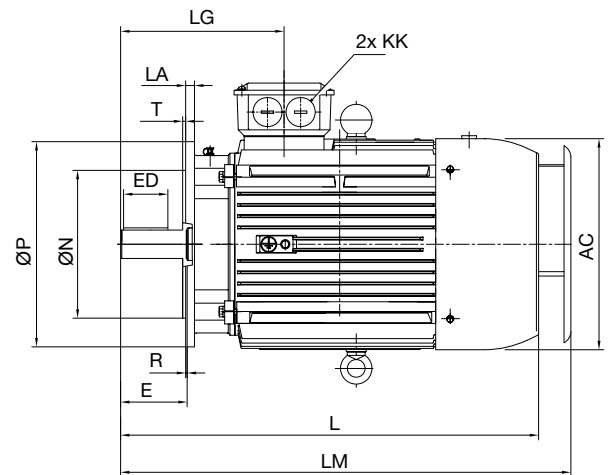
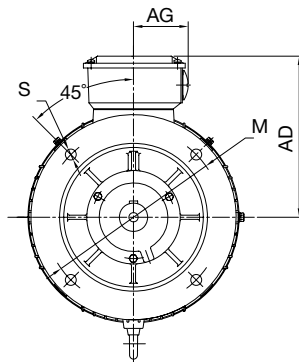
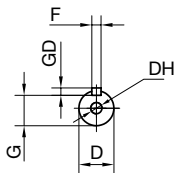
IEC Frame size	Poles	AC	AD	AG	D	DH	E	ED	F	G	GD	KK	L*	LA	LG	LM	M	N	P	S	T
80	2-8	175	140	51	19	M6X16	40	22	6	15,5	6	M24x1,5	305	14	112	-	165	130	200	12	3,5
90S	2-8	195	150	60	24	M8X19	50	32	8	20	7	M24x1,5	360	12	132	-	165	130	200	12	3,5
90 L	2-8	195	150	60	24	M8X19	50	32	8	20	7	M24x1,5	390	12	132	-	165	130	200	12	3,5
100L	2-8	215	160	60	28	M10X22	60	40	8	24	7	M24x1,5	435	14	153	-	215	180	250	14,5	4
112M	2-8	240	185	75	28	M10X22	60	40	8	24	7	M30X2	480	12	144	-	215	180	250	14,5	4
132S	2-8	275	205	75	38	M12X28	80	56	10	33	8	M30X2	510	13	167	-	265	230	300	14,5	4
132M	2-8	275	205	75	38	M12X28	80	56	10	33	8	M30X2	550	13	167	-	265	230	300	14,5	4
160M	2-8	330	250	95	42	M16X36	110	90	12	37	8	M36x2	655	15	268	720	300	250	350	18,5	5
160L	2-8	330	250	95	42	M16X36	110	80	12	37	8	M36x2	685	15	268	720	300	250	350	18,5	5
180M	2-8	380	270	95	48	M16X36	110	90	14	42,5	9	M36x2	728	15	277	803	300	250	350	18,5	5
180L	2-8	380	270	95	48	M16X36	110	80	14	42,5	9	M36x2	768	15	277	843	300	250	350	18,5	5
200L	2-8	420	325	120	55	M20X42	110	90	16	49	10	M48x2	760	17	300	845	350	300	400	18,5	5
225S	4-8	465	335	120	60	M20X42	140	100	18	53	11	M48x2	825	19	340	894	400	350	450	18,5	5
225M	2	465	335	120	55	M20X42	110	80	16	49	10	M48x2	820	19	310	889	400	350	450	18,5	5
225M	4-8	465	335	120	60	M20X42	140	100	18	53	11	M48x2	850	19	340	919	400	350	450	18,5	5
250M	2	520	370	160	60	M20X42	140	100	18	53	11	M64X2	925	20	360	1051	500	450	550	18,5	5
250M	4-8	520	370	160	65	M20X42	140	100	18	58	11	M64X2	925	20	360	1051	500	450	550	18,5	5
280S	2	570	395	160	65	M20X42	140	100	18	58	11	M64X2	960	22	350	1090	500	450	550	18,5	5
280S	4-8	570	395	160	75	M20X42	140	100	20	67,5	12	M64X2	975	22	350	1090	500	450	550	18,5	5
280M	2	570	395	160	65	M20X42	140	100	18	58	11	M64X2	1000	22	350	1090	500	450	550	18,5	5
280M	4-8	570	395	160	75	M20X42	140	100	20	67,5	12	M64X2	1015	22	350	1090	500	450	550	18,5	5
315S	2	650	495	195	65	M20X42	140	100	18	58	11	M64X2	1160	24	387	1258	600	550	660	24	6
315M	2	650	495	195	65	M20X42	140	100	18	58	11	M64X2	1270	24	387	1368	600	550	660	24	6
315L	2	650	495	195	65	M20X42	140	100	18	58	11	M64X2	1270	24	387	1368	600	550	660	24	6
315S	4-8	650	495	195	80	M20X42	170	130	22	71	14	M64X2	1190	24	417	1288	600	550	660	24	6
315M	4-8	650	495	195	80	M20X42	170	130	22	71	14	M64X2	1300	24	417	1398	600	550	660	24	6
315L	4-8	650	495	195	80	M20X42	170	130	22	71	14	M64X2	1300	24	417	1398	600	550	660	24	6
355M	2	735	645	330	75	M24X50	140	110	20	67,5	12	M72X2	1500	25	420	1590	740	680	800	24	6
355L	2	735	645	330	75	M24X50	140	110	20	67,5	12	M72X2	1500	25	420	1590	740	680	800	24	6
355M	4-8	735	645	330	95	M24X50	170	140	25	86	14	M72X2	1530	25	450	1620	740	680	800	24	6
355L	4-8	735	645	330	95	M24X50	170	140	25	86	14	M72X2	1530	25	450	1720	740	680	800	24	6

*) Some IE3 frame sizes may be longer than comparable IE1/IE2 motors.
 Full dimensional information on IE3 motors was not available at the time of printing.

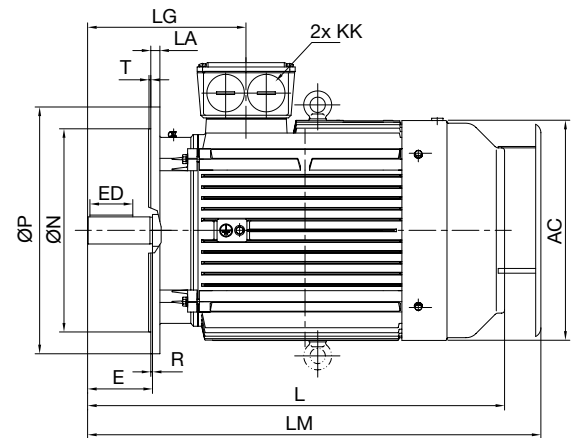
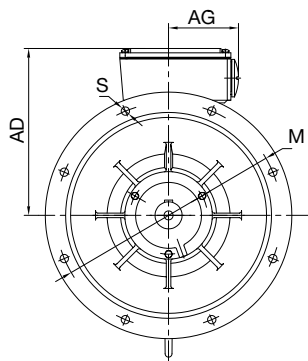
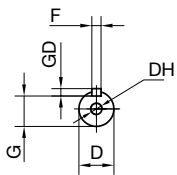
HG-80-132-B5



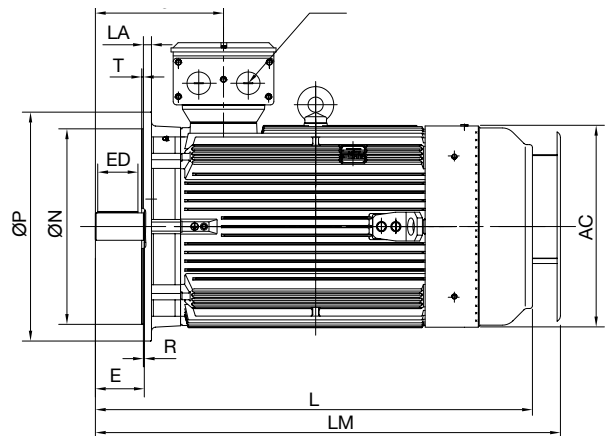
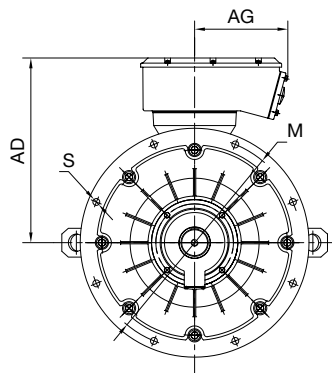
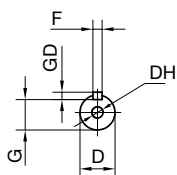
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HG-225-280-B5



HG-315-355-B5

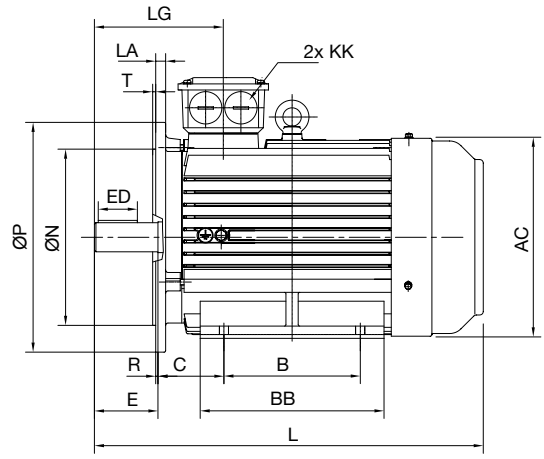
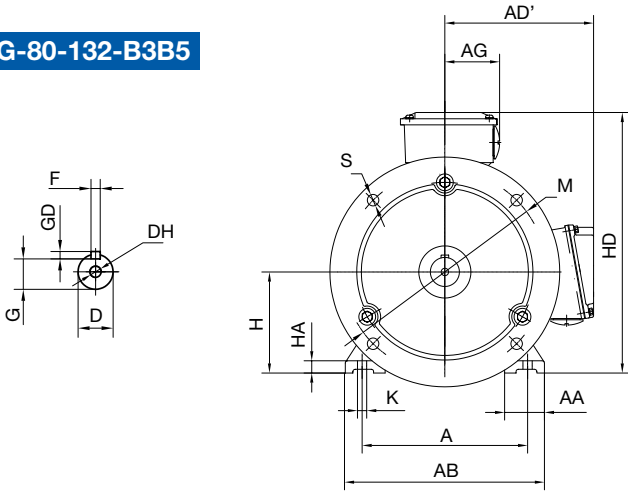


B3/B5 Large flange/foot mounted version

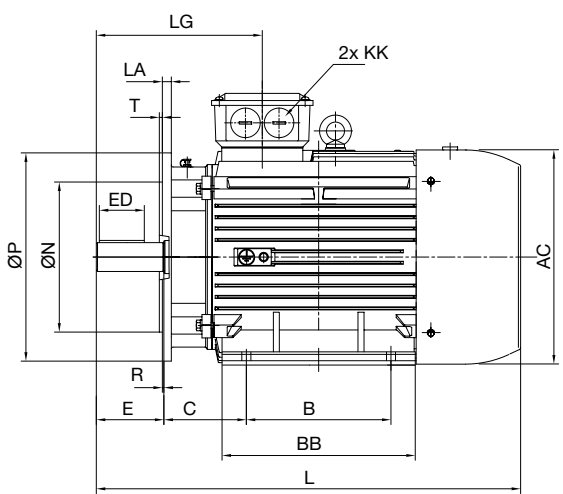
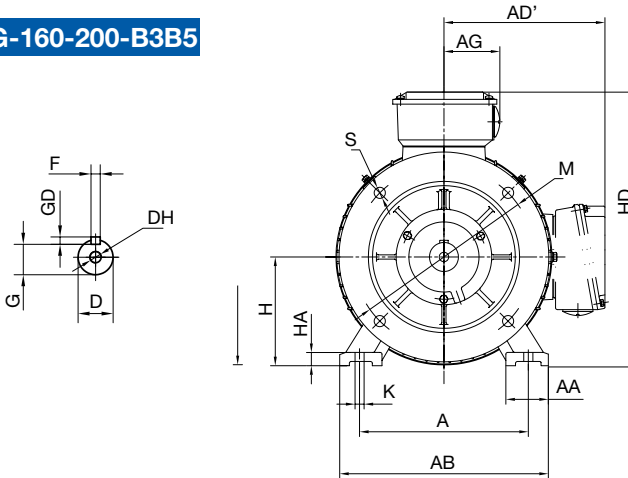
IEC size	Poles	A	AA	AB	AC	AD'	AG	B	BB	C	D	DH	E	ED	F	G	GD	H	HA	HD	K	KK	L*	LA	LG	M	N	P	S	T
80	2-8	125	34	165	175	140	51	100	142	50	19	M6X16	40	22	6	15,5	6	80	10	220	10	M24x1,5	305	14	112	165	130	200	12	3,5
90S	2-8	140	36	180	195	150	60	100	180	56	24	M8X19	50	32	8	20	7	90	12,5	260	10	M24x1,5	360	12	132	165	130	200	12	3,5
90L	2-8	140	36	180	195	150	60	125	210	56	24	M8X19	50	32	8	20	7	90	12,5	260	10	M24x1,5	390	12	132	165	130	200	12	3,5
100L	2-8	160	40	205	215	160	60	140	233	63	28	M10X22	60	40	8	24	7	100	14	275	12	M24x1,5	435	14	153	215	180	250	14,5	4
112M	2-8	190	45	230	240	185	75	140	252	70	28	M10X22	60	40	8	24	7	112	14	300	12	M30X2	480	12	144	215	180	250	14,5	4
132S	2-8	216	52	270	275	205	75	140	220	89	38	M12X28	80	56	10	33	8	132	16	345	12	M30X2	510	13	167	265	230	300	14,5	4
132M	2-8	216	52	270	275	205	75	178	258	89	38	M12X28	80	56	10	33	8	132	16	345	12	M30X2	550	13	167	265	230	300	14,5	4
160M	2-8	254	65	320	330	250	95	210	305	108	42	M16X36	110	90	12	37	8	160	19	425	14,5	M36x2	655	15	268	300	250	350	18,5	5
160L	2-8	254	65	320	330	250	95	254	325	108	42	M16X36	110	80	12	37	8	160	19	425	14,5	M36x2	685	15	268	300	250	350	18,5	5
180M	2-8	279	74	350	380	270	95	241	330	121	48	M16X36	110	90	14	42,5	9	180	22	460	14,5	M36x2	728	15	277	300	250	350	18,5	5
180L	2-8	279	74	350	380	270	95	279	370	121	48	M16X36	110	80	14	42,5	9	180	22	460	14,5	M36x2	768	15	277	300	250	350	18,5	5
200L	2-8	318	85	395	420	325	120	305	370	133	55	M20X42	110	90	16	49	10	200	25	475	18,5	M48x2	760	17	300	350	300	400	18,5	5
225S	4-8	356	80	436	465	335	120	286	355	149	60	M20X42	140	100	18	53	11	225	28	515	18,5	M48x2	825	19	340	400	350	450	18,5	5
225M	2	356	80	436	465	335	120	311	380	149	55	M20X42	110	80	16	49	10	225	28	515	18,5	M48x2	820	19	310	400	350	450	18,5	5
225M	4-8	356	80	436	465	335	120	311	380	149	60	M20X42	140	100	18	53	11	225	28	515	18,5	M48x2	850	19	340	400	350	450	18,5	5
250M	2	406	88	495	520	370	160	349	440	168	60	M20X42	140	100	18	53	11	250	33	480	24	M64X2	925	20	360	500	450	550	18,5	5
250M	4-8	406	88	495	520	370	160	349	440	168	65	M20X42	140	100	18	58	11	250	33	480	24	M64X2	925	20	360	500	450	550	18,5	5
280S	2	457	109	550	570	395	160	368	495	190	65	M20X42	140	100	18	58	11	280	35	640	24	M64X2	960	22	350	500	450	550	18,5	5
280S	4-8	457	109	550	570	395	160	368	495	190	75	M20X42	140	100	20	67,5	12	280	35	640	24	M64X2	975	22	350	500	450	550	18,5	5
280M	2	457	109	550	570	395	160	419	535	190	65	M20X42	140	100	18	58	11	280	35	640	24	M64X2	1000	22	350	500	450	550	18,5	5
280M	4-8	457	109	550	570	395	160	419	535	190	75	M20X42	140	100	20	67,5	12	280	35	640	24	M64X2	1015	22	350	500	450	550	18,5	5
315S	2	508	120	635	650	495	195	406	565	216	65	M20X42	140	100	18	58	11	315	45	750	28	M64X2	1160	24	387	600	550	660	24	6
315M	2	508	120	635	650	495	195	457	675	216	65	M20X42	140	100	18	58	11	315	45	750	28	M64X2	1270	24	387	600	550	660	24	6
315L	2	508	120	635	650	495	195	508	675	216	65	M20X42	140	100	18	58	11	315	45	750	28	M64X2	1270	24	387	600	550	660	24	6
315S	4-8	508	120	635	650	495	195	406	565	216	80	M20X42	170	130	22	71	14	315	45	750	28	M64X2	1190	24	417	600	550	660	24	6
315M	4-8	508	120	635	650	495	195	457	675	216	80	M20X42	170	130	22	71	14	315	45	750	28	M64X2	1300	24	417	600	550	660	24	6
315L	4-8	508	120	635	650	495	195	508	675	216	80	M20X42	170	130	22	71	14	315	45	750	28	M64X2	1300	24	417	600	550	660	24	6
355M	2	610	125	735	735	640	330	560	775	254	75	M24X50	140	110	20	67,5	12	355	49	1000	28	M72X2	1500	25	420	740	680	800	24	6
355L	2	610	125	735	735	640	330	630	775	254	75	M24X50	140	110	20	67,5	12	355	49	1000	28	M72X2	1500	25	420	740	680	800	24	6
355M	4-8	610	125	735	735	640	330	560	775	254	95	M24X50	170	140	25	86	14	355	49	1000	28	M72X2	1530	25	450	740	680	800	24	6
355L	4-8	610	125	735	735	640	330	630	775	254	95	M24X50	170	140	25	86	14	355	49	1000	28	M72X2	1530	25	450	740	680	800	24	6

*) Some IE3 frame sizes may be longer than comparable IE1/IE2 motors.
Full dimensional information on IE3 motors was not available at the time of printing.

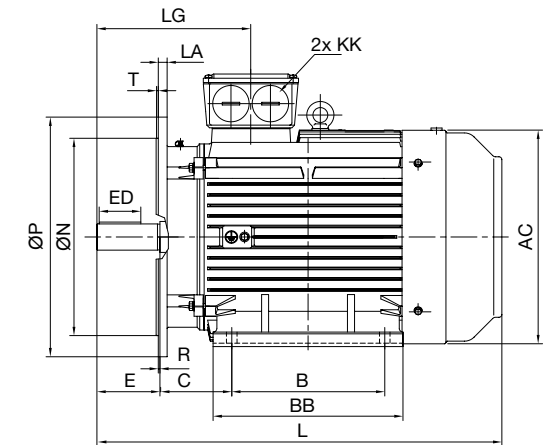
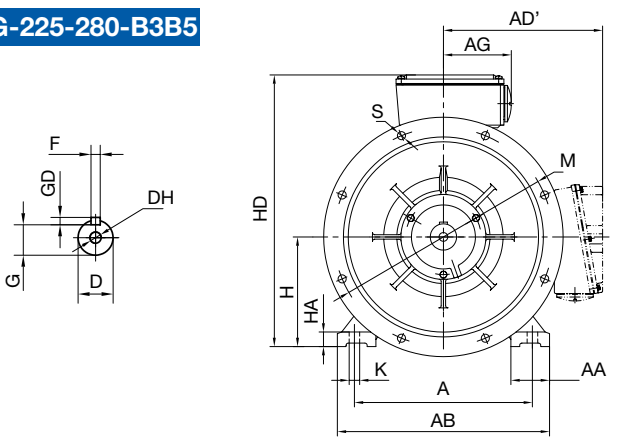
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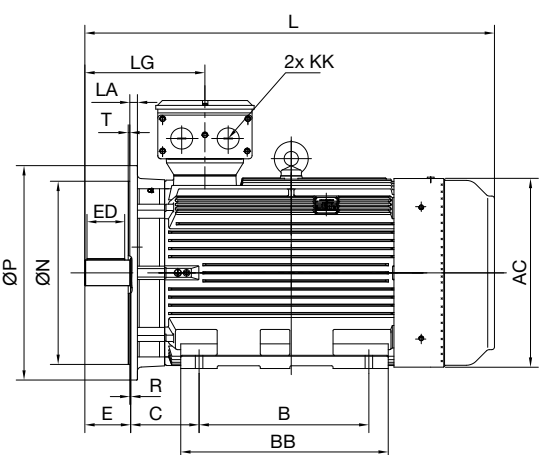
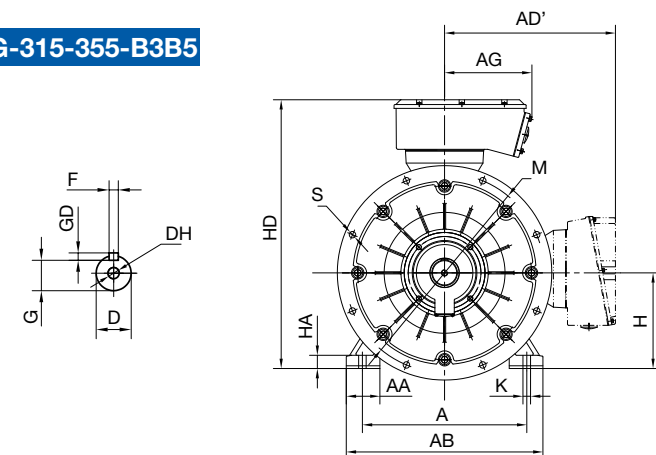
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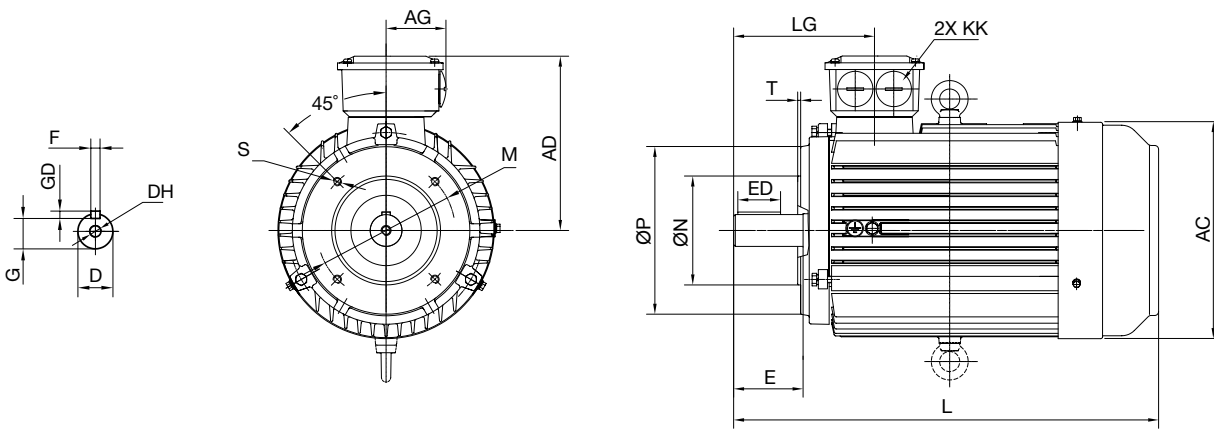


S-S-ELD-EN-EMOT-001-V01

B14a Small flange mounted version

IEC Frame size	AC	AD	AG	D	DH	E	ED	F	G	GD	KK	L*	LG	M	N	P	S	T
80M	175	150	51	19	M6X16	40	22	6	15,5	6	M24X1,5	295	140	100	80	120	M6	3
90S	190	165	60	24	M8X19	50	32	8	20	7	M24X1,5	320	156	115	95	140	M8	3
90L	190	165	60	24	M8X19	50	32	8	20	7	M24X1,5	345	168,5	115	95	140	M8	3
100L	215	170	60	28	M10X22	60	40	8	24	7	M24X1,5	385	193	130	110	160	M8	3,5
112M	236	195	75	28	M10X22	60	40	8	24	7	M30X2	410	200	130	110	160	M8	3,5
132S	275	215	75	38	M12X28	80	56	10	33	8	M30X2	480	239	165	130	200	M10	3,5
132M	275	215	75	38	M12X28	80	56	10	33	8	M30X2	520	258	165	130	200	M10	3,5
160M	330	265	95	42	M16X36	110	80	12	37	8	M36X2	610	270	215	180	250	M12	4
160L	330	265	95	42	M16X36	110	80	12	37	8	M36X2	655	270	215	180	250	M12	4

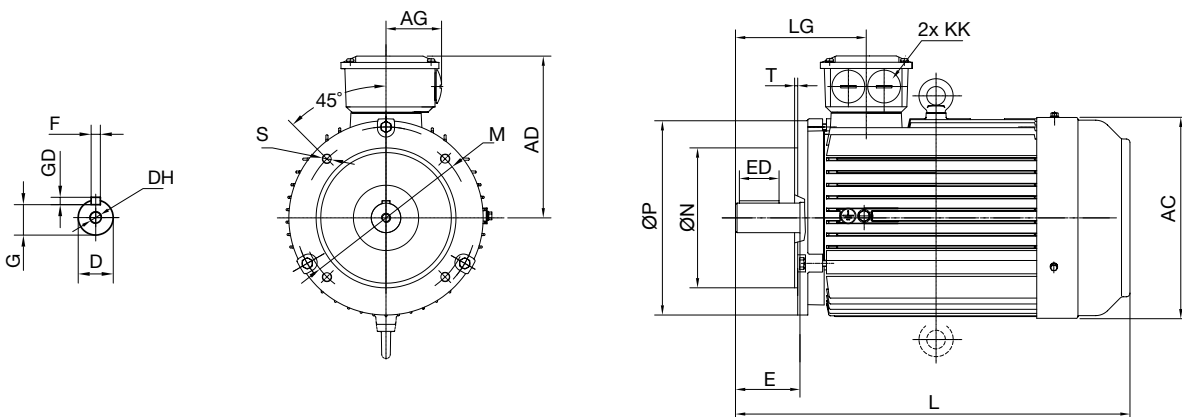
*) Some IE3 frame sizes may be longer than comparable IE1/IE2 motors.
Full dimensional information on IE3 motors was not available at the time of printing.



B14b Small flange mounted version

IEC Frame size	AC	AD	AG	D	DH	E	ED	F	G	GD	KK	L*	LG	M	N	P	S	T
80M	175	150	51	19	M6X16	40	22	6	15,5	6	M24X1,5	295	140	130	110	160	M8	3,5
90S	190	165	60	24	M8X19	50	32	8	20	7	M24X1,5	320	156	130	110	160	M8	3,5
90L	190	165	60	24	M8X19	50	32	8	20	7	M24X1,5	345	168,5	130	110	160	M8	3,5
100L	215	170	60	28	M10X22	60	40	8	24	7	M24X1,5	385	193	165	130	200	M10	3,5
112M	236	195	75	28	M10X22	60	40	8	24	7	M30X2	410	200	165	130	200	M10	3,5
132S	275	215	75	38	M12X28	80	56	10	33	8	M30X2	480	239	215	180	250	M12	4
132M	275	215	75	38	M12X28	80	56	10	33	8	M30X2	520	258	215	180	250	M12	4
160M	330	265	95	42	M16X36	110	80	12	37	8	M36X2	610	270	265	230	300	M12	4
160L	330	265	95	42	M16X36	110	80	12	37	8	M36X2	655	270	265	230	300	M12	4

*) Some IE3 frame sizes may be longer than comparable IE1/IE2 motors.
Full dimensional information on IE3 motors was not available at the time of printing.



ELSTO compact three phase IE4 motors

The ELSTO IE4 compact three phase motors are executed as three phase AC motors with a PM rotor. Easily recognizable by the square motor frame, the motors are fully compatible with the whole Bonfiglioli gearbox programme. The motors transform the electrical energy into mechanical energy in such an efficient manner that that very little energy is translated into heat, enabling the motors to be used without a (power consuming) fan.

The motors are designed for sensorless operation in combination with a frequency inverter. Not all frequency inverters are suitable for operating this type of motor. In the ELSTO delivery programme the Bonfiglioli/Vectron inverter types AgilE (AGL type) and Cube (ACU type) are eminently suitable for this type of operation. These inverters are available for 200-240V +10% 50/60Hz and 340-480V +10% 50/60Hz.

Amongst the many Vectron inverter capabilities the following functions are noteworthy; STO function (Safe Torque Off) for emergency operation, speed and torque control, PLC functionality and pressure and flow control circuits. The Cube model is also suitable for positioning purposes. For the selection of the most suitable inverter, a selection diagram is included in this publication.

Execution of the BT/BS series motors

The BT/BS series three phase motors are of the 8 pole type and executed with grease filled 2RS bearings and an IP 54 protection. The motors are fitted with PTC temperature sensors, and class F insulation for the windings. Standard execution is with a 0,5 metre motor cable with a Molex Power Connector or a round MIL connector. For matching counter connectors and confectioned cables refer to the options section.

The compact motors are also available with an integrated parking brake. Specifying this option does not alter the exterior dimensions.

Series	Brake torque	Voltage	Power	Weight	Inertia
	Nm	Vdc	W	kg	kgcm ²
BT1	2	24	9	0,4	0,02
BT2	10	24	16	0,8	0,4
BS2	10	24	16	0,8	0,4
BS3	28	24	22	2,0	1,0



Available options

- Integrated parking brake
- Integrated resolver or encoder
- Molex counter connector supplied loose
- Threaded MIL counter connector supplied loose
- MIL connector confectioned motor cables with lengths of 3, 5 and 10 metres

The motors can also be combined with many standard Bonfiglioli reducers.

Thanks to their compact design the PLR and PLI series gearboxes are ideal to be combined with the compact three phase motors.

See the diagram below for the available combinations.

Motor/reductor	PLR62	PLI62	PLR81	PLI81	PLR105	PLI105	PSR120
BT1	X	X	X	X			
BT2			X	X	X	X	
BS2					X	X	
BS3					X	X	X

See for further details the ELSTO low noise reductor catalogue.

Specifications

Type	Torque ¹ Nm	Speed ² rpm	Power ² W	Voltage ³ V	Current ² A	Efficiency %	B emf ² Vs	Inertia kgcm ²	Weight kg
BT11-2	0,65	3000	200	230	1,0	92	0,38	0,18	1,3
BT13-2	1,00	3000	315	230	1,5	92	0,38	0,19	1,5
BT17-2	1,70	3000	530	230	3,0	92	0,33	0,26	1,9
BT21-3	2,10	3000	650	230	3,1	93	0,49	0,23	3,8
BT23-3	2,60	3000	820	230	3,8	93	0,49	0,25	4,1
BT27-3	4,10	3000	1300	230	6,1	93	0,45	0,40	6,2
BS28-3	5,20	3000	1650	230	6,8	94	0,45	0,60	8,6
BS29-3	6,35	3000	2000	230	7,9	93	0,47	0,79	10,3

Type	Torque ¹ Nm	Speed ² rpm	Power ² W	Voltage ³ V	Current ² A	Efficiency %	B emf ² Vs	Inertia kgcm ²	Weight kg
BT11-2	0,65	5000	200 *)	400	1,0	92	0,38	0,18	1,3
BT13-2	1,00	5000	315 *)	400	1,5	92	0,38	0,19	1,5
BT17-2	1,70	5000	530 *)	400	3,0	92	0,33	0,26	1,9
BT21-5	2,10	3000	650	400	1,9	93	0,80	0,23	3,8
BT23-5	2,60	3000	820	400	2,4	93	0,80	0,25	4,1
BT27-5	4,10	3000	1300	400	3,7	93	0,80	0,40	6,2
BS28-5	5,20	3000	1650	400	3,8	94	0,78	0,60	8,6
BS29-5	6,35	3000	2000	400	4,4	93	0,84	0,79	10,3
BS32-5	9,6	3000	3000	400	6,7	93	0,83	2,35	16,5
BS34-5	13,9	3000	4350	400	9,1	94	0,88	3,46	21,6
BS36-5	18,2	3000	5700	400	12,7	95	0,83	4,57	26,8

*) Power at 3000 rpm – speed up to 5000 rpm possible for brief period.

¹ Power at 3000 rpm – speed up to 5000 rpm possible for brief period

² Values depending on selected type of winding

³ Nominal supply voltage to inverter

Inverter selection diagram

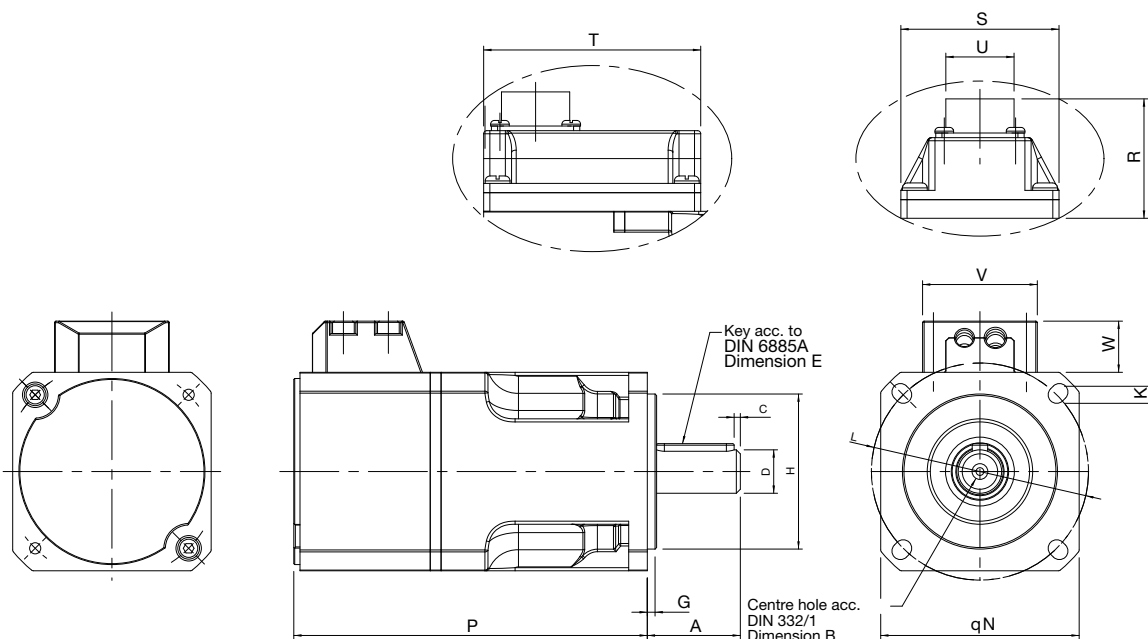
The selection is based on a 1,5 times nominal motor torque.

When a 2 times nominal torque is required, the next bigger inverter should be selected.

Type	Torque Nm	Speed rpm	Power W	Inverter 230 V	I nom. A	I max. A	Inverter 230 V	I nom. A	I max. A
BT11-2	0,65	3000	200	AGL202-03	1,3	2,0	ACU201-01	1,6	3,2
BT13-2	1,00	3000	315	AGL202-05	1,5	2,2	ACU201-01	1,6	3,2
BT17-2	1,70	3000	530	AGL202-09	3,0	4,5	ACU201-05	3,0	4,5
BT21-3	2,10	3000	650	AGL202-11	3,5	5,3	ACU201-07	4,0	6,0
BT23-3	2,60	3000	820	AGL202-13	5,0	7,5	ACU201-07	4,0	6,0
BT27-3	4,10	3000	1300	AGL202-18	9,0	13,5	ACU201-11	7,0	10,5
BS28-3	5,20	3000	1650	AGL202-18	9,0	13,5	ACU201-11	7,0	10,5
BS29-3	6,35	3000	2000	AGL202-18	9,0	13,5	ACU201-13	9,5	14,3

Type	Torque Nm	Speed rpm	Power W	Inverter 400 V	I nom. A	I max. A	Inverter 400 V	I nom. A	I max. A
BT11-2	0,65	5000	200 *)	AGL402-03	1,2	1,8	ACU401-03	1,6	3,2
BT13-2	1,05	5000	330 *)	AGL402-05	1,5	2,3	ACU401-03	1,6	3,2
BT17-2	1,75	5000	550 *)	AGL402-09	3,0	4,5	ACU401-09	3,2	4,8
BT21-5	2,10	3000	650	AGL402-07	2,1	3,2	ACU401-07	2,4	3,6
BT23-5	2,60	3000	820	AGL402-09	3,0	4,5	ACU401-09	3,2	4,8
BT27-5	4,10	3000	1300	AGL402-11	4,0	6,0	ACU401-11	3,8	5,7
BS28-5	5,20	3000	1650	AGL402-11	4,0	6,0	ACU401-12	4,2	6,3
BS29-5	6,35	3000	2000	AGL402-13	5,5	8,2	ACU401-13	5,8	8,7
BS32-5	9,6	3000	3000	AGL402-15	7,5	11,2	ACU401-15	7,8	11,7
BS34-5	13,9	3000	4350	AGL402-18	9,5	14,2	ACU401-19	14,0	21,0
BS36-5	18,2	3000	5700	AGL402-19	13,0	19,5	ACU401-19	14,0	21,0

Dimensions



Type	A	B	C	D	E	G	H	K	L	N	P	R	S	T	U	V	W
BT11	30	M5	2	14	5x25	3	50	5,5	70	∅ 64	114	39	51	70	22	∅ 37	16,5
BT13	30	M5	2	14	5x25	3	50	5,5	70	∅ 64	114	39	51	70	22	∅ 37	16,5
BT17	30	M5	2	14	5x25	3	50	5,5	70	∅ 64	142	39	51	70	22	∅ 37	16,5
BT21	40	M6	3	19	6x30	3	70	6,5	90	∅ 82	140	39	51	70	22	∅ 37	16,5
BT23	40	M6	3	19	6x30	3	70	6,5	90	∅ 82	140	39	51	70	22	∅ 37	16,5
BT27	40	M6	3	19	6x30	3	70	6,5	90	∅ 82	176	39	51	70	22	∅ 37	16,5
BS28	40	M6	3	19	6x30	2,5	95	9,5	115	∅ 104	257					∅ 95	56
BS29	40	M6	3	19	6x30	2,5	95	9,5	115	∅ 104	299					∅ 95	56
BS32	50	M8	5	24	8x35	3	130	11	165	∅ 146	290					∅ 95	56
BS34	50	M8	5	24	8x35	3	130	11	165	∅ 146	341					∅ 95	56
BS36	50	M8	5	24	8x35	3	130	11	165	∅ 146	392					∅ 95	56

Dimension P (Length) remains unchanged with a motor brake fitted. The motor types BT1 and BT2 are fitted with a 0,5 metre cable with Molex Power Connector as standard, alternatively a round MIL connector can be fitted. The motor types BS2 and BS3 are executed with a terminal box.

S-S-ELD-EN-EMOT-001-V01

Delivery programme

The delivery programme of the AEG-Lafert premium class motors in this publication includes IE2 and IE3 motors.

Next to the motors shown in this publication, IE4 motors with optionally available integrated inverters and the direct drive (lift) motors are available. The available pole change and single phase motors can also be fitted with a motor brake as an optional extra.

Series	Model	IE class	IEC frame size	Speed [rpm]	Brake torque [Nm]	Power [kW]
AM	Standard three phase motor	1	56 - 71	3000		0,09 - 0,55
			56 - 80	1500		0,09 - 0,55
			71 - 80	1000		0,18 - 0,55
			71 - 90	750		0,12 - 0,55
AMHE	Standard three phase motor	2	71 - 160	3000		0,75 - 22
			80 - 160	1500		0,75 - 15
			90 - 160	1000		0,75 - 11
AMPE	Standard three phase motor	3	90 - 160	3000		1,5 - 22
			90 - 160	1500		1,1 - 15
HPS	Super premium three phase motor	4	71 - 90	4500		1,1 - 7,5
			71 - 132	3000		0,75 - 30
			71 - 132	1500		0,55 - 18,5
AM	Pole change (2 speed) three phase motor with constant torque	-	63 - 160	1500/3000		0,2 - 15
			71 - 160	750/1500		0,09 - 10,3
			71 - 160	1500/1000		0,15 - 11
			80 - 160	1000/750		0,18 - 5,9
AMV	Pole change (2 speed) three phase motor with quadratic torque (for ventilators and pumps)	-	63 - 160	1500/3000		0,07 - 18,5
			71 - 160	750/1500		0,08 - 15
			71 - 160	1500/1000		0,08 - 13
			80 - 160	1000/750		0,11 - 7
AMM	Single phase motors without starting condenser	-	56 - 100	3000		0,12 - 2,2
			56 - 100	1500		0,09 - 2,2
			71 - 100	1000		0,18 - 1,5
AMME	Single phase motors with starting condenser	-	63 - 100	3000		0,12 - 2,2
			63 - 100	1500		0,12 - 2,2
			71 - 100	1000		0,15 - 1,5
AMK	Three phase brake motor with K type DC brake	1	63 - 132	3000	5 - 90	0,18 - 15
			63 - 132	1500	5 - 90	0,12 - 11
			71 - 132	1000	12 - 90	0,18 - 5,5
			71 - 132	750	12 - 90	0,12 - 3
AMAC	Three phase brake motor with three phase AC brake	1	63 - 132	3000	4 - 90	0,18 - 15
			63 - 132	1500	4 - 90	0,12 - 11
			71 - 132	1000	10 - 90	0,18 - 5,5
			71 - 132	750	10 - 90	0,12 - 3
AMS	Three phase motor with parking brake	1	63 - 132	3000	3 - 30	0,18 - 15
			63 - 132	1500	3 - 30	0,12 - 11
			71 - 132	1000	4 - 30	0,18 - 5,5
			71 - 132	750	4 - 30	0,12 - 3
AMHEK	Three phase brake motor with K type DC brake	2	71 - 132	3000	12 - 90	0,75 - 11
			80 - 132	1500	20 - 90	0,75 - 7,5
AMHEAC	Three phase brake motor with three phase AC brake	2	71 - 132	3000	10 - 90	0,75 - 11
			80 - 132	1500	20 - 90	0,75 - 7,5
AMHES	Three phase motor with parking brake	2	71 - 132	3000	4 - 30	0,75 - 11
			80 - 132	1500	7 - 30	0,75 - 7,5

Permissible axial forces

Maximum permissible axial forces with no radial forces being present*

Grootte	Horizontal shaft position				Vertical shaft position- Upwards force				Vertical shaft position - Downwards force			
	3000	1500	1000	750	3000	1500	1000	750	3000	1500	1000	750
	min ⁻¹	min ⁻¹	min ⁻¹	min ⁻¹	min ⁻¹	min ⁻¹	min ⁻¹	min ⁻¹	min ⁻¹	min ⁻¹	min ⁻¹	min ⁻¹
	kN	kN	kN	kN	kN	kN	kN	kN	kN	kN	kN	kN
56	0,16	0,21	-	-	0,18	0,22	-	-	0,15	0,19	-	-
63	0,19	0,26	-	-	0,21	0,28	-	-	0,17	0,24	-	-
71	0,23	0,33	0,33	0,37	0,26	0,35	0,36	0,39	0,21	0,30	0,31	0,34
80	0,32	0,44	0,46	0,50	0,34	0,47	0,48	0,53	0,29	0,41	0,43	0,47
90	0,34	0,48	0,49	0,54	0,38	0,47	0,53	0,58	0,31	0,44	0,46	0,51
100	0,48	0,68	0,70	0,77	0,54	0,74	0,76	0,83	0,43	0,62	0,64	0,71
112	0,48	0,68	0,70	0,77	0,56	0,75	0,77	0,84	0,40	0,60	0,62	0,69
132 S	0,80	1,13	1,16	1,28	1,00	1,32	1,36	1,47	0,61	0,93	0,97	1,08
132 M	0,78	1,09	1,13	1,24	0,99	1,30	1,33	1,45	0,58	0,89	0,92	1,03
160 M	0,84	1,18	1,21	1,33	1,18	1,52	1,56	1,68	0,50	0,83	0,87	0,99
160 L	0,82	1,15	1,18	1,30	1,18	1,51	1,55	1,67	0,46	0,79	0,82	0,94

Indicated values are for 50 Hz, values for 60 Hz should be reduced by 10%

*Taking the direction of the force into consideration

*With radial forces present the maximum permissible axial forces may have to be reduced

Permissible radial forces

Maximum permissible radial forces for standard bearings with no axial being forces present.

Normal life-time = 20.000 hours (Lh10)

Fr = Maximum permissible radial force in kN with the force acting at the middle point of the shaft.

Frame size	3000	1500	1000	750
	min ⁻¹	min ⁻¹	min ⁻¹	min ⁻¹
	kN	kN	kN	kN
56	0,34	0,42	-	-
63	0,38	0,48	-	-
71	0,46	0,58	0,67	0,73
80	0,59	0,83	0,86	0,94
90	0,67	0,94	0,97	1,07
100	0,92	1,29	1,33	1,47
112	0,93	1,30	1,34	1,48
132 S	1,35	1,90	1,96	2,15
132 M	1,40	1,97	2,03	2,23
160 M	1,55	2,17	2,23	2,46
160 L	1,58	2,22	2,29	2,52

Special end shields and flanges

Overview of reduced and enlarged mounting flanges

Frame size	Reduced flanges		Enlarged flanges	
	IM B5 ¹⁾	IM B14	IM B5	IM B14
56	-	-	-	63
63	56	56	71 ³⁾	71-80
71	56-63	63	80-90	80-90
80	63-71	63-71	-	90-100
90S-L	63-71	71-80	100 ³⁾	100-112
100 L	71-80	90	-	132
112 M	80 ²⁾ -90 ²⁾	90	132 ⁷⁾	132
132 S	112 ²⁾	112	-	160 ¹⁾ ⁴⁾
132 M	112	112	160 ⁴⁾	160
160 M	-	132	-	-
160 L	-	132	-	-

Options for the application of enlarged flanges

Frame size	IM B3	IM B5	IM B14
56	-	-	-
63	6203-6205	6203	6203-6205
71	6204-6205	6204-6205	6204-6205
80	6205-6206	6205-6206	6205-6206
90 S-L	6206	6206-6308	6206
100 L	6306	6306-6208	6306
112 M	6208	6208	6208
132 S	6308-6309	6308	6308 ⁴⁾
132 M	6308-6309	6308-6309	6309
160 M	-	6310	6310
160 L	-	6310	6310

Aluminium end shields with steel reinforcements

Frame size	Frontshield		Rear shield	
	DE	NDE	IM B5	IM B14
71	V	V	V	-
80	V	V	V	V
90 S-L	V	V	-	-
100 L	V	V	V	-
112 M	V	V	V	-
132 S	-	-	-	-
132 M	-	-	V ⁵⁾	-
160 M	-	-	-	-
160 L	-	-	-	-

Please consult the ELSTO sales office for the use of progressive motors (increased power output for the respective frame size)

Cast iron end shields and flanges

Frame size	Front shield		Rear shield		Aanwezigheid smeernippel			
	DE	NDE	IM B5	IM B14	DE	NDE	IM B5	IM B14
71	-	-	-	-	-	-	-	-
80	V ⁶⁾	V ⁶⁾	-	-	-	-	-	-
90 S-L	V ⁶⁾	V ⁶⁾	-	-	-	-	-	-
100 L	V ⁶⁾	V ⁶⁾	-	-	-	-	-	-
112 M	V ⁶⁾	V ⁶⁾	-	-	-	-	-	-
132 S	V	V	V	V	-	-	V	V
132 M	V	V	V	V	V	V	V	V
160 M	V	V	V	V	V	V	V	V
160 L	V	V	V	V	V	V	V	V

A = Available NA = Not applicable

- 1) Not available for all outputs
- 2) Cast iron end shields with slotted holes
- 3) Not interchangeable with standard execution

- 4) Cast iron end shield
- 5) Only available with an oversize bearing (6308)
- 6) Special design
- 7) Only available with an oversize bearing (6208)

TERMINAL BOX

The standard position for the terminal box (viewed from the driven end) is on top of the motor.

For motors with mounting positions IM B6, IM B7, IM B8, IM V5 and IM V6 the location of the terminal box is the same as for IM B3 motors.

Motors with frame sizes 71-160 have removable mounting feet that can be placed on different sides of the motor. By changing the position of the mounting feet the relative position of the terminal box is also changed.

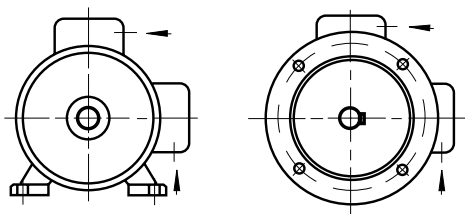
For other frame sizes a position other than the standard one should be indicated when ordering the motor.

The positions of the cable entry openings can be adapted to suit the existing supply cable situation by rotating the terminal box in steps of 90°. If special accessories such as temperature sensors, stand still heating etc. are to be used this should be indicated when ordering the motor.

If a plastic terminal box is fitted to the motor, only plastic glands may be used.

When using shielded cables, a metal terminal box must be used.

Direction of cable entries



Frame size	IP class	Thread for cable entry		Max. cable section mm ²	Terminal thread	Max. external cable dia mm
		Metric ¹⁾	Pg ²⁾			
56 - 71	IP 55	1 x M16/1 x M20	1 x Pg 11/1 x Pg 13.5	2.5	M4	12
80	IP 55	1 x M25/1 x M20	1 x Pg 13.5/1 x Pg 16	2.5	M4	16
90 - 112	IP 55	1 x M25/1 x M20	1 x Pg 13.5/1 x Pg 16	4	M5	16
132	IP 55	2 x M32	2 x Pg 21	4	M5	20
160	IP 55	2 x M40	2 x Pg 29	16	M6	28

¹⁾ Pitch 1,5

²⁾ Pg thread to DIN 40 430 (on request)

³⁾ Terminal box with removable cable entry plate

Material

AEG Lafert motors						
AEG Lafert motors	Stator	End shield	Mounting flange	Terminal box	Fan	Fan cover
56-112	Aluminium	Aluminium*1	Aluminium*1	Plastic*2	Aluminium*1	Plastic*3
132-160	Aluminium	Aluminium*1	Aluminium*1	Aluminium	Aluminium*1	Sheet metal

¹⁾ IEC 112-132 cast iron optional

²⁾ Aluminium optional

³⁾ Sheet metal optional (standard for AMBY, AMBZ and AMS frame size 112)

Noise levels

The noise levels in the table below are valid at 50 Hz and the required supply voltage with a tolerance of + 3 db(A). At 60 Hz the values are 3 – 5 db(A) higher. Noise pressure level (LpA) and Noise power level (LwA) are valid for three phase single speed motors with outputs and dimensions according to IEC60072.

Frame size	2 pole		4 pole		6 pole		8 pole	
	LwA	LpA	LwA	LpA	LwA	LpA	LwA	LpA
56	57	48	47	38				
63	58	49	47	38				
71	61	52	51	42	49	40		
80	72	60	60	48	52	40	47	35
90	74	62	61	49	58	46	54	42
100	78	66	62	50	62	51	58	46
112	80	68	65	53	65	53	58	46
132	81	72	71	59	69	57	64	52
160	87	74	75	62	71	58	69	56

Bearings

Standard design bearings have permanent lubrication. ¹⁾

Standard bearings are Life lubricated. Ball bearings according ISP215 (DIN 625)

Classification of bearings (standard design) ¹⁾ AEG-LAFERT MOTORS				
IEC/pole	Bearings IE2 Motors		Bearings IE3 Motors	
	DE - NDE	Dimensions	DE - NDE	Dimensions
56/2+4	6201-2Z - 6201-2Z	12x32x10	6201-2Z - 6201-2Z	12x32x10
63/2+4	6202-2Z - 6202-2Z	15x35x11	6202-2Z - 6202-2Z	15x35x11
71/2-8	6203-2Z - 6203-2Z	17x40x12	6203-2Z - 6203-2Z	17x40x12
80/2-8	6204-2Z C3 - 6204-2Z C3	20x47x14	6204-2Z C3 - 6204-2Z C3	20x47x14
90/2-8	6205-2Z C3 - 6205-2Z C3	25x52x15	6205-2Z C3 - 6205-2Z C3	25x52x15
100/2-8	6206 2Z C3 - 6206 2Z C3	30x62x16	6206 2Z C3 - 6206 2Z C3	30x62x16
112/2-8	6306 2Z C3 - 6306 2Z C3	30x72x19	6306 2Z C3 - 6306 2Z C3	30x72x19
132/2-8	6208-2Z C3 - 6308-2Z C3	40x80x18	6208-2Z C3 - 6308-2Z C3	40x80x18
160/2-8	6309-C3 - 6309-C3	45x100x25	6309-C3 - 6309-C3	45x100x25
180/2-8	6311-C3 - 6311-C3	55x120x29	6311-C3 - 6311-C3	55x120x29
200/2-8	6312-C3 - 6312-C3	60x130x31	6312-C3 - 6312-C3	60x130x31
225/2-8	6313-C3 - 6313-C3	65x140x33	6313-C3 - 6313-C3	65x140x33
250/2-8	6314-C3 - 6314-C3	70x150x35	6314-C3 - 6314-C3	70x150x35
280/2	6316 C3 - 6316 C3	80x170x39	6314 C3 - 6314 C3	70x150x35
280/4-8	6316 C3 - 6316 C3	80x170x39	6317 C3 - 6317 C3	80x170x39
315/2	6317 C3 - 6317 C3	85x180x41	6317 C3 - 6317 C3	85x180x41
315/4-8	NU319 C3 – 6319 C3	95x200x45	NU319 C3 – 6319 C3	95x200x45

Standard design bearings have permanent lubrication.

1) For non-standard design bearings please consult the ELSTO sales office.

Roller bearings are available as an option, please consult the ELSTO sales office.

Bearing arrangement AEG-LAFERT MOTORS

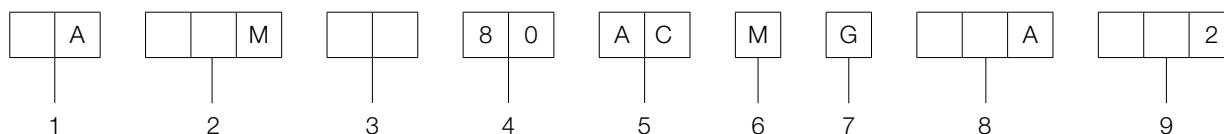
Frame size	Bearing DE	Bearing NDE	Spring loaded
56 - 160 Standard motors	Non locating bearing	Non locating bearing	NDE
63 - 160 Brake motors	Non locating bearing	Locating bearing	DE
180 - 315 Standard motors	Locating bearing	Non locating bearing	NDE

Relubrication intervals AEG-LAFERT MOTORS for operating temperatures up to 70° C (hours)							
Frame size	3000 RPM		1500 RPM		1000 RPM		volume (gr)
	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical	
80 - 160	Lubricated for life						-
180	4000	2000	9000	4500	13000	7500	15
200	3500	1750	8000	4000	12000	6000	20
225	3000	1500	7500	3750	11000	5500	23
250	2000	1000	7000	3500	10000	5000	26
280	1500	750	6500	3250	9000	4500	40
315	1000	500	4000	2000	8000	4000	55

Type coding

No	Designation	Code	Description
1	Working principle	A	Asynchronous three phase motor
2	Cooling	M	Surface cooling with motor shaft driven fan
3	Motor type	Empty	Three phase motor IE1
		HE	Three phase motor IE2
		PE	Three phase motor IE3
		V	Pole change motor with quadratic torque
		M	Single phase motor without starting capacitor
		ME	Single phase motor with starting capacitor
4	Frame size	56, 63, 71, 80, 90, 100, 112, 132, 160	
5	Type rem	K	Dynamic DC brake
		AC	Dynamic AC brake
		S	Parking brake (DC)
6	Frame length	Z	-
		S	Short
		M	Medium
		L	Long
7	Mechanical design and power	A	
		B	
		
		Z	
8	Frame material	A	Aluminium
		G	Cast iron
9	Number of poles	2 - 4/2	
		4 - 8/4	
		6 - 4/6	
		8 - 6/8	

Example



Single speed														2 pole - 3000 rpm		IE1
Type code	P _n	n _n	M _n	IE1 η			cos φ	I _n		I _a / I _n	M _a / M _n	M _s / M _n	M _k / M _n	J	Weight	
	kW	rpm	Nm	50%	75%	100%		400 V	380-420 V					10 ⁻³ kgm ²	kg	
AM 56Z AA 2	0,09	2810	0,3	49	53	59	0,67	0,35	0,4	3,9	3,8	3,8	3,9	0,09	3,4	
AM 56Z BA 2	0,12	2800	0,4	51	56	62	0,68	0,4	0,45	3,5	3,4	3,4	3,5	0,1	3,5	
AM 63Z AA 2	0,18	2790	0,6	54	58	63	0,73	0,6	0,65	3,7	3	3	3,1	0,14	3,6	
AM 63Z BA 2	0,25	2790	0,9	57	62	66	0,7	0,8	0,75	4,5	3,2	3,2	3,3	0,17	4,1	
AM 63Z CA 2	0,37	2800	1,3	54	58	65	0,7	1,2	1,25	4,6	3,4	3,3	3,4	0,2	4,4	
AM 71Z AA 2	0,37	2820	1,3	58	64	70	0,78	1	1,2	4,7	3,6	3,4	3,6	0,32	5,8	
AM 71Z BA 2	0,55	2830	1,9	57	64	71	0,77	1,5	1,6	4,8	3,2	3,1	3,3	0,37	6,2	

Single speed														4 pole - 1500 rpm		IE1
Type code	P _n	n _n	M _n	IE1 η			cos φ	I _n		I _a / I _n	M _a / M _n	M _s / M _n	M _k / M _n	J	Weight	
	kW	rpm	Nm	50%	75%	100%		400 V	380-420 V					10 ⁻³ kgm ²	kg	
AM 56Z AA 4	0,06	1300	0,4	42	44	48	0,7	0,28	0,32	2,6	2,1	2	2,1	0,14	2,7	
AM 56Z BA 4	0,09	1330	0,6	43	47	51	0,74	0,35	0,4	2,5	2,2	2,1	2,2	0,16	2,9	
AM 63Z AA 4	0,12	1350	0,8	46	50	57	0,65	0,5	0,55	2,4	2	1,9	2	0,25	3,3	
AM 63Z BA 4	0,18	1330	1,3	47	50	58	0,7	0,65	0,7	2,3	1,9	1,8	1,9	0,27	4,1	
AM 63Z CA 4	0,25	1360	1,8	49	52,5	58	0,74	0,85	0,9	2,7	2,2	2	2,1	0,3	4,2	
AM 71Z AA 4	0,25	1340	1,8	55	59	64	0,66	0,9	1	3,2	1,9	1,8	2	0,65	5,7	
AM 71Z BA 4	0,37	1370	2,6	60	63	67	0,67	1,2	1,25	3,3	2,2	2,1	2,2	0,76	6	
AM 71Z CA 4	0,55	1380	3,8	61	64	69	0,68	1,7	1,8	3,6	2,4	2,3	2,4	1	7,3	
AM 80Z AA 4	0,55	1400	3,8	67	69	70	0,72	1,6	1,7	3,6	2,6	2,5	2,6	1,38	8,2	

Single speed														6 pole - 1000 rpm		IE1
Type code	P _n	n _n	M _n	IE1 η			cos φ	I _n		I _a / I _n	M _a / M _n	M _s / M _n	M _k / M _n	J	Weight	
	kW	rpm	Nm	50%	75%	100%		400 V	380-420 V					10 ⁻³ kgm ²	kg	
AM 71Z AA 6	0,18	880	2	46	48	53	0,6	0,85	0,9	2,2	1,6	1,5	1,6	1	6,1	
AM 71Z BA 6	0,25	880	2,7	46	50	54	0,62	1,1	1,2	2,5	1,7	1,6	1,7	1,19	6,6	
AM 80Z AA 6	0,37	920	3,8	47	58	60	0,7	1,25	1,3	2,7	1,6	1,6	2,1	1,83	8	
AM 80Z BA 6	0,55	920	5,7	60	64	68	0,67	1,75	1,8	2,9	2,2	2,1	2,1	2,36	9,4	

Single speed														8 pole - 750 rpm		IE1
Type code	P _n	n _n	M _n	IE1 η			cos φ	I _n		I _a / I _n	M _a / M _n	M _s / M _n	M _k / M _n	J	Weight	
	kW	rpm	Nm	50%	75%	100%		400 V	380-420 V					10 ⁻³ kgm ²	kg	
AM 71Z AA 8	0,12	670	1,7	40	44	50	0,55	0,65	0,7	2,4	2,5	2,4	2,5	0,76	6	
AM 80Z AA 8	0,25	680	3,5	40	47	51	0,62	1,1	1,2	2,2	1,8	1,9	2	1,83	8	
AM 90S AA 8	0,37	680	5,2	52	58	59	0,53	1,7	1,8	2,1	1,4	1,3	1,6	2,91	11,4	
AM 90L BA 8	0,55	680	7,7	52	58	59	0,54	2,5	2,7	2,1	1,4	1,3	1,6	4,4	15	
AM 100L AA 8	0,75	690	10,5	59	64	65	0,65	2,6	2,8	3,0	1,6	1,5	1,7	6,35	17,6	
AM 100L BA 8	1,1	690	15,2	59	67	68	0,62	3,9	4,0	3,0	1,9	1,3	1,6	9	22,6	
AM 112M AA 8	1,5	696	20,6	66	69	70	0,66	4,6	4,8	4,0	1,8	2,0	2,4	15,35	35	
AM 132S ZA 8	2,2	710	29,6	79,3	80,5	78,8	0,64	6,4	6,6	3,4	1,7	1,6	1,7	28,90	45,5	
AM 132M ZA 8	3	710	40,4	81,3	82	79,8	0,67	8,1	9,2	3,6	1,7	1,6	1,9	37,40	54,5	
AM 160M YA 8	4	700	54,6	84,9	84,5	84,4	0,72	9,5	9,7	4,5	1,8	1,6	2,2	76,70	75	
AM 160M ZA 8	5,5	720	72,9	85,6	85,2	85	0,73	12,8	13,3	4,0	1,8	1,6	2,3	103,70	92	
AM 160L ZA 8	7,5	710	100,9	86,3	85,8	85,5	0,74	17,1	17,8	4,0	1,8	1,6	2,3	136	113	

Single speed													2 pole – 3000 rpm		IE2
Type code	P _n	n _n	M _n	efficiency η at load			cos φ	I _n	I _a / I _n	M _a / M _n	M _s / M _n	M _k / M _n	J	Weight	
	kW	rpm	Nm	50%	75%	100%		400 V					10 ⁻³ kgm ²	kg	
AMHE 71Z AA 2	0,75	2865	2,5	75,0	78,1	79,4	0,71	1,9	5,2	3,1	3,0	3,1	0,69	8,2	
AMHE 80Z AA 2	0,75	2900	2,5	77,3	78,5	80,5	0,78	1,7	8,4	3,6	3,4	3,6	0,7	9,5	
AMHE 80Z BA 2	1,1	2880	3,6	79,5	81,2	81,5	0,78	2,5	9,5	3,6	3,4	3,6	0,89	11,1	
AMHE 80Z CA 2	1,5	2880	5,0	80,5	82,1	82,4	0,78	3,4	7,8	3,5	3,4	3,6	1,1	13,5	
AMHE 90S AA 2	1,5	2880	5,0	81,0	82,8	82,8	0,80	3,2	10,1	3,6	3,1	4,0	1,56	14,0	
AMHE 90L CA 2	2,2	2860	7,3	82,5	84,0	84,0	0,85	4,4	10,1	3,5	3,2	3,7	1,8	16,0	
AMHE 90L DA 2	3	2880	9,9	85,0	86,0	85,6	0,82	6,1	9,9	3,5	3,3	3,8	2,0	18,0	
AMHE 100L AA 2	3	2920	9,8	84,1	85,8	85,5	0,84	5,9	10,3	3,5	3,0	4,0	4,05	22,8	
AMHE 100L BA 2	4	2920	13,1	85,2	86,4	86,1	0,86	7,8	10,4	3,3	3,0	3,8	4,1	22,8	
AMHE 112M AA 2	4	2940	13,0	85,5	87,0	86,8	0,88	7,6	10,7	2,9	2,1	3,3	6,48	27,4	
AMHE 112M BA 2	5,5	2920	18,0	85,8	87,4	87,3	0,88	10,4	9,9	3,0	2,1	3,2	8,58	34,0	
AMHE 112M CA 2	7,5	2900	24,7	86,5	88,3	88,3	0,87	14,2	9,1	3,0	2,2	3,4	10,50	36,0	
AMHE 132S YA 2	5,5	2900	18,1	86,0	88,0	87,9	0,89	10,2	8,6	2,7	2,3	3,2	14,0	46,0	
AMHE 132S ZA 2	7,5	2900	24,7	86,3	88,6	88,4	0,89	13,8	8,9	2,8	2,5	3,3	16,0	53,0	
AMHE 132M ZA 2	9,2	2920	30,1	88,4	89,9	90,0	0,87	16,9	9,4	3,2	3	3,8	17,5	58,0	
AMHE 132M RA 2	11	2920	36,0	88,1	90,0	89,7	0,90	19,8	9,7	3,8	2,6	4,0	17,5	58,0	
AMHE 132M TA 2	15	2920	49,1	88,9	90,6	90,3	0,89	27,0	9,7	3,8	2,2	4,0	21,0	75,0	
AMHE 160M YA 2	11	2930	35,9	88,9	90,2	90,0	0,87	20,4	9,3	2,4	2,2	3,1	51,75	77,0	
AMHE 160M ZA 2	15	2930	48,9	90,0	91,0	90,8	0,88	27,2	9,6	2,5	2,3	3,1	55,4	87,1	
AMHE 160L ZA 2	18,5	2935	60,2	90,3	91,6	91,2	0,88	33,3	9,6	2,8	2,4	3,4	59,7	97,5	
AMHE 160L TA 2	22	2935	71,6	91,0	91,7	91,5	0,89	38,6	9,9	3,0	2,6	3,7	64,0	108,7	

Single speed													4 pole – 1500 rpm		IE2
Type code	P _n	n _n	M _n	efficiency η at load			cos φ	I _n	I _a / I _n	M _a / M _n	M _s / M _n	M _k / M _n	J	Weight	
	kW	rpm	Nm	50%	75%	100%		400 V					10 ⁻³ kgm ²	kg	
AMHE 80Z AA 4	0,75	1430	5,0	79,2	80,3	80,2	0,76	1,8	5,5	2,8	2,7	3,0	2,5	11,0	
AMHE 90S AA 4	1,1	1430	7,3	81,4	82,7	82,5	0,77	2,5	6,1	4,0	3,9	4,1	3,73	18,0	
AMHE 90L BA 4	1,5	1430	10,0	81,0	83,5	83,0	0,77	3,4	7,9	3,9	3,8	4,0	3,73	19,0	
AMHE 100L AA 4	2,2	1450	14,5	84,0	85,3	85,1	0,74	5,1	6,0	3,2	3	3,4	5,58	22,4	
AMHE 100L BA 4	3	1440	19,9	82,6	84,7	86,4	0,77	6,5	8,5	3,4	3,1	3,6	7,3	26,5	
AMHE 112M AA 4	4	1450	26,3	86,0	87,3	87,1	0,78	8,5	6,1	3,1	2,8	3,3	13,3	30,4	
AMHE 132S RA 4	5,5	1450	36,2	87,5	88,3	88,1	0,78	11,4	7,4	3,3	2,7	3,6	30,0	55,0	
AMHE 132M TA 4	7,5	1450	49,4	88,5	89,4	89,2	0,74	16,4	7,4	3,0	2,4	3,3	36,0	65,0	
AMHE 160M ZA 4	11	1460	71,9	89,4	90,3	90,1	0,82	22,0	7,9	2,3	2,1	2,9	105,0	108,0	
AMHE 160L ZA 4	15	1460	98,1	90,6	91,2	91,0	0,84	29,0	7,4	2,5	2,2	3,1	120,7	114,0	

Single speed													6 pole – 1000 rpm		IE2
Type code	P _n	n _n	M _n	efficiency η at load			cos φ	I _n	I _a / I _n	M _a / M _n	M _s / M _n	M _k / M _n	J	Weight	
	kW	rpm	Nm	50%	75%	100%		400 V					10 ⁻³ kgm ²	kg	
AMHE 90S AA 6	0,75	925	7,7	75,3	75,8	76,2	0,65	2,2	4,6	1,7	1,6	1,8	4,78	15	
AMHE 90L BA 6	1,1	935	11,2	78,5	78,7	78,9	0,67	3	4,2	1,8	1,8	2,3	6,45	20,3	
AMHE 100L AA 6	1,1	950	11,1	75,7	77,6	79,5	0,67	3	5,5	1,9	1,9	2,4	7,48	19,4	
AMHE 100L BA 6	1,5	950	15,1	78,5	79,4	79,8	0,69	3,9	5,5	2,1	1,5	2,2	11,6	27,1	
AMHE 112M AA 6	2,2	960	21,9	79,4	81	81,8	0,73	5,3	6,1	3,1	2,2	3,1	18,7	39	
AMHE 132S YA 6	3	960	29,8	82,3	82,9	83,5	0,58	8,9	5,6	2,2	1,4	3,2	37,7	55,8	
AMHE 132M YA 6	4	955	40	84,1	84,8	85,2	0,66	10,3	5,8	2,1	1,2	2,9	44,4	65,5	
AMHE 132M TA 6	5,5	970	54,1	85	86,2	86,5	0,75	12,2	7	1,9	1,1	2,7	54,1	64,1	
AMHE 160M YA 6	5,5	975	53,9	84,7	85,6	86,1	0,78	11,7	7,4	2,3	2,3	3	75,2	70,5	
AMHE 160M ZA 6	7,5	970	73,8	85,8	87,3	87,5	0,78	15,8	7,7	3	2,8	3,8	103	96,6	
AMHE 160L ZA 6	9,2	965	91	86,3	87,4	88,2	0,83	18,1	8,3	3,1	2,7	3,5	125	103	
AMHE 160L TA 6	11	965	108,9	87,9	88,2	88,7	0,79	22,5	8	2,7	2,4	3,2	156	129	

IE2 motors may only be supplied in combination with a motor mounted brake and/or frequency inverter.

Single speed 2 pole – 3000 rpm IE3

Type code	P _n kW	n _n rpm	M _n Nm	efficiency η at load			cos φ	I _n 400 V	I _a / I _n	M _a / M _n	M _s / M _n	M _k / M _n	J 10 ⁻³ kgm ²	Weight kg
				50%	75%	100%								
AMPE 80Z AA 2	0,75	2910	2,5	82	81,2	77,8	0,78	1,7	8,9	4,7	4,5	4,8	0,7	9,5
AMPE 80Z BA 2	1,1	2870	3,7	82,7	81,7	78,7	0,76	2,4	9,3	5	4,9	5,3	0,9	11,1
AMPE 80Z CA 2	1,5	2810	5,1	84,2	82,2	78,8	0,76	3,6	7,8	4,9	3,7	4,3	1,1	13,5
AMPE 90S AA 2	1,5	2875	5	84,2	84,8	83,2	0,85	3	8,4	3,6	3,2	3,8	1,6	14
AMPE 90L BA 2	2,2	2880	7,3	86,5	86,2	85	0,82	4,6	9,2	4	3,8	4,2	1,8	16
AMPE 90L DA 2	3	2865	10	87,1	86,3	85,2	0,8	6,3	8,7	4,5	4	4,6	2	18
AMPE 100L AA 2	3	2900	9,9	87,1	85,8	82,3	0,89	5,6	8,8	5,5	3,5	4,5	4,1	22,8
AMPE 100L BA 2	4	2920	13,1	88,1	87,2	85,4	0,81	8,2	10,9	6,1	5,2	5,7	7,3	26,5
AMPE 112M AA 2	4	2910	13,1	88,1	87,8	86,8	0,93	7	9,6	3,6	3	4	6,5	27,4
AMPE 112M BA 2	5,5	2935	17,9	89,2	88,3	85,6	0,87	10,2	11,2	4,2	3,5	4,3	8,6	33,6
AMPE 112M CA 2	7,5	2930	24,5	90,1	89,7	88	0,84	14,4	10,4	4,5	3,5	4,6	10,5	36
AMPE 132S ZA 2	5,5	2920	18	89,2	88,5	88	0,9	10	8,9	3	2,5	3,6	14	46
AMPE 132S TA 2	7,5	2910	24,6	90,1	89,2	88,6	0,92	13,1	8,9	3	2,6	3,6	16	53
AMPE 132M ZA 2	9,2	2930	30	90,7	89,8	88,6	0,89	16,5	10,1	3,7	3,3	4	17,5	58
AMPE 132M RA 2	11	2935	35,8	91,2	90,8	90	0,89	19,9	9,7	4,4	3,5	4,6	25	59
AMPE 132M TA 2	15	2915	49,2	91,9	92,2	91	0,88	26,8	9,6	3,7	2,6	3,8	28	68
AMPE 160M YA 2	11	2950	35,6	91,2	89,8	87,4	0,89	19,7	9,1	4	3	4,2	51,7	87,8
AMPE 160M ZA 2	15	2940	48,7	91,9	91,3	91	0,89	26,7	9,7	4,7	3,5	4,8	53,4	88,9
AMPE 160L ZA 2	18,5	2950	59,9	92,4	92,8	91,6	0,88	33	10,7	4,6	3,1	4,7	64	104
AMPE 160L TA 2	22	2950	71,3	92,7	93,7	92,2	0,87	39,4	10,4	4,5	3	4,6	64	104

Single speed 4 pole – 1500 rpm IE3

Type code	P _n kW	n _n rpm	M _n Nm	efficiency η at load			cos φ	I _n 400 V	I _a / I _n	M _a / M _n	M _s / M _n	M _k / M _n	J 10 ⁻³ kgm ²	Weight kg
				50%	75%	100%								
AMPE 80Z AA 4	0,75	1435	5	82,5	81,5	80,7	0,74	1,8	5,5	2,7	2,6	2,8	2,5	11
AMPE 90S AA 4	1,1	1440	7,3	84,1	84,3	83,3	0,75	2,5	7,1	4,3	3,4	4,4	3,6	15,8
AMPE 90L BA 4	1,5	1430	10	85,3	85,2	84,1	0,72	3,6	6,6	4,3	3,8	4,4	3,7	16,4
AMPE 100L AA 4	2,2	1455	14,4	86,7	86,2	83,2	0,63	5,9	7,2	3,7	3	3,9	5,9	22,8
AMPE 100L BA 4	3	1440	19,9	87,7	87,1	85,1	0,73	6,8	8,1	4,1	3,8	4,1	7,3	26,5
AMPE 112M BA 4	4	1450	26,4	88,6	88,3	87,2	0,8	8,2	8,5	2,7	2,4	3,5	16,4	36
AMPE 132S ZA 4	5,5	1450	36,2	89,6	90,2	89,8	0,84	10,6	8,7	3,7	3,2	4,3	36	65
AMPE 132M ZA 4	7,5	1465	48,9	90,4	90,9	89,9	0,78	15,3	8,2	4,4	3,1	5,1	45	79
AMPE 132M TA 4	9,2	1455	60,4	91	91,1	88,6	0,74	19,7	8,2	4,9	3,3	5,5	57	98
AMPE 160M ZA 4	11	1475	71,3	91,4	91,5	90,5	0,77	22,4	10,1	2,5	2,2	3,1	105	108
AMPE 160L ZA 4	15	1465	97,8	92,1	92,5	91,8	0,78	30,5	8,9	3,2	2,1	2,8	120,7	114

Single speed 6 pole – 1000 rpm IE3

Type code	P _n kW	n _n rpm	M _n Nm	efficiency η at load			cos φ	I _n 400 V	I _a / I _n	M _a / M _n	M _s / M _n	M _k / M _n	J 10 ⁻³ kgm ²	Weight kg
				50%	75%	100%								
AMPE 90S AA 6	0,75	940	7,6	78,9	79,2	78,1	0,62	2,2	4,6	1,7	1,6	1,8	6	18,1
AMPE 90L BA 6	1,1	935	11,2	81	81,2	79,1	0,64	3,1	4,2	1,8	1,7	2,3	6,5	19
AMPE 100L AA 6	1,1	960	10,9	81	81,3	78,9	0,65	3	6,2	2,2	1,8	2,8	11,6	25
AMPE 100L BA 6	1,5	920	15,6	82,5	82,7	81,1	0,68	3,8	5,7	1,7	1,3	2,3	14,2	26
AMPE 112M BA 6	2,2	920	22,8	84,3	85,1	83,3	0,68	5,4	5,3	2	1,8	2,4	20,1	34,2
AMPE 132S YA 6	3	975	29,4	85,6	85,8	84,1	0,65	8	5,5	2,1	1,9	3,1	37,7	42
AMPE 132M YA 6	4	975	39,2	86,8	87,1	85,2	0,66	10,3	5,4	2,2	1,7	3,2	44,4	46
AMPE 132M TA 6	5,5	975	53,9	88	88,1	87,1	0,64	14,2	5,4	2,1	1,8	2,9	54,1	48
AMPE 160M YA 6	5,5	975	53,9	88	88,5	87,5	0,77	11,8	8,6	2,2	1,8	2,8	103	84
AMPE 160LM ZA 6	7,5	980	73,1	89,1	89,3	88,3	0,78	15,7	8,7	2,4	1,9	3,1	132	97
AMPE 160L ZA 6	9,2	970	87,6	89,8	90,1	88,9	0,74	19,9	8,3	3,1	2,2	3,5	136	105
AMPE 160L TA 6	11	970	108,3	90,3	90,4	89,1	0,78	22,9	8	2,7	2,4	3,2	136	105

Dahlander with Δ/YY connection – constant torque

Two speed 4/2 pole – 1500/3000 rpm

Type code	P _n		n _n		M _n		η		cos φ		I _n				I _a / I _n		M _a / M _n		J	Weight
	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2	10 ⁻³ kgm ²	
	kW		rpm		Nm		100%				400 V		380-420 V							
AM 63Z AA 4/2	0,20	0,30	1345	2700	1,4	1,1	56	65	0,65	0,81	0,8	0,83	0,89	0,88	2,4	3,2	2,1	2,1	0,40	4,6
AM 71Z AA 4/2	0,30	0,45	1374	2830	2,1	1,5	61	66	0,78	0,73	1,0	1,35	1,2	1,5	3,3	3,0	2,3	2,1	0,76	6,3
AM 80Z AA 4/2	0,45	0,60	1390	2760	3,1	2,1	64	68,8	0,75	0,80	1,4	1,6	1,5	1,7	3,8	4,0	2,3	2,2	1,58	8,3
AM 80Z BA 4/2	0,55	0,75	1435	2850	3,7	2,5	70	71,2	0,67	0,77	1,7	2,0	1,8	2,1	4,5	5,0	2,6	2,8	2,00	11,5
AM 80Z CA 4/2	0,8	1,1	1425	2830	5,4	3,7	76,1	77,2	0,70	0,79	2,2	2,6	2,5	2,8	4,5	4,9	2,5	2,7	2,41	14,7
AM 90L AA 4/2	1,2	1,55	1435	2850	8	5,2	77,4	78,3	0,71	0,79	3,2	3,7	3,4	3,9	4,7	5,1	2,6	2,7	3,10	15,6
AM 90L BA 4/2	1,6	2,0	1390	2810	11	6,8	73,5	75,5	0,78	0,86	4,0	4,6	4,1	4,7	4,1	5,5	2,7	2,6	3,73	17,1
AM 100L AA 4/2	1,8	2,5	1420	2865	12,1	8,3	78,5	77,4	0,76	0,84	4,5	5,6	4,7	5,8	5,2	5,5	2,2	2,2	4,60	21,4
AM 100L BA 4/2	2,2	3,0	1410	2830	14,9	10,1	74,6	71,4	0,72	0,82	5,9	7,4	6,1	7,7	4,2	4,3	1,8	2,0	4,60	22,5
AM 100L CA 4/2	2,6	3,3	1430	2890	17,4	10,9	82,6	78,6	0,78	0,76	5,9	8,0	6,1	8,5	4,7	5,5	1,9	2,2	5,58	23,2
AM 112M AA 4/2	3,3	4,4	1410	2800	22,4	15	77,4	75,4	0,82	0,85	7,5	9,9	7,8	10,6	4,5	5,1	2,1	2,4	13,30	36,1
AM 132S ZA 4/2	4,4	5,5	1450	2925	29	18	83,0	84,6	0,70	0,87	11,0	10,8	12,0	11,8	4,4	7,2	2,2	2,7	13,83	42,6
AM 132M ZA 4/2	6,6	8,1	1460	2920	43,2	26,5	85,4	84,5	0,76	0,90	14,7	15,4	15,5	16,4	5,5	7,5	2,6	2,9	17,13	51,4
AM 160M ZA 4/2	8,8	11,0	1460	2940	57,6	35,7	87,1	87,5	0,79	0,91	18,5	20,0	19,0	21,0	5,5	7,5	2,0	1,9	51,75	94,0
AM 160L ZA 4/2	12,5	15,0	1470	2955	81,2	48,5	89,4	90,0	0,74	0,90	27,4	26,8	29,0	28,2	4,8	7,4	2,1	2,3	64,00	108,7

AEG Lafert motors

Dahlander with Δ/YY - connection – constant torque

Two speed 8/4 pole – 750/1500 rpm

Type code	P _n		n _n		M _n		η		cos φ		I _n				I _a / I _n		M _a / M _n		J	Weight
	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2	10 ⁻³ kgm ²	
	kW		rpm		Nm		100%				400 V		380-420 V							
AM 71Z AA 8/4	0,09	0,15	610	1310	1,4	1,1	40	56	0,61	0,75	0,53	0,52	0,59	0,57	2,5	3,2	1,6	1,6	0,71	6,3
AM 80Z AA 8/4	0,18	0,37	700	1370	2,5	2,6	43,2	58,7	0,63	0,83	1	1,1	1,1	1,2	2,6	3,4	1,8	1,6	1,97	7,9
AM 80Z BA 8/4	0,26	0,51	700	1360	3,5	3,6	44,1	61,2	0,6	0,88	1,2	1,4	1,3	1,5	2,5	3,6	2	1,6	2,47	9,2
AM 90S AA 8/4	0,37	0,75	690	1385	5,1	5,2	52,2	67,1	0,58	0,82	1,8	2	1,9	2,1	2,8	3,9	1,9	1,8	3,18	13,5
AM 90L BA 8/4	0,5	1	690	1410	6,9	6,8	52,2	72,5	0,58	0,8	2,4	2,4	2,5	2,5	3,3	4	2,3	1,9	4,78	15,7
AM 100L AA 8/4	0,7	1,4	700	1440	9,5	9,3	57,2	78,5	0,5	0,78	3,5	3,3	3,7	3,4	2,8	4,3	2,1	1,9	5,58	21,9
AM 100L BA 8/4	0,9	1,8	690	1415	12,5	12,1	62	76	0,56	0,87	3,8	4	4	4,3	2,5	4,5	1,9	1,8	6	23,7
AM 112M AA 8/4	1	1,8	710	1445	13,5	11,9	66,1	78,5	0,61	0,82	4,1	4,1	4,4	4,2	3,9	6,3	2,2	2,1	14,18	31,7
AM 112M BA 8/4	1,3	2,6	705	1420	17,6	17,5	70	76,3	0,65	0,88	4,6	5,7	4,8	5,9	3,2	4,8	2,1	2	16,7	34,2
AM 132S ZA 8/4	2,1	3,7	710	1440	28,2	24,5	70,2	76,1	0,66	0,84	6,5	8,4	6,7	8,6	4	5,2	1,9	1,7	29,5	42,5
AM 132M ZA 8/4	2,6	4,8	715	1450	34,7	31,6	71,6	78,8	0,6	0,8	8,8	11	9,8	12	4,3	5,5	2,3	1,8	37,75	55,5
AM 160M YA 8/4	4	6,3	710	1410	53,8	42,7	80	81	0,64	0,88	11,3	12,8	12,3	13,5	4,6	6,5	1,8	1,7	81,25	88,5
AM 160L YA 8/4	4,8	7,5	730	1470	62,8	48,7	80	85	0,65	0,85	13,2	15	14	16	4,5	6,5	1,8	1,6	105,75	106,5
AM 160L ZA 8/4	5,9	10,3	725	1450	77,7	67,8	81	87	0,66	0,88	16,1	19,5	17	20,4	5	6	1,9	1,6	127,5	110,5

S-SEL-D-EN-EMOT-001-V01

Separate windings – constant torque

Two speed 6/4 pole – 1000/1500 rpm

Type code	P _n		n _n		M _n		η		cos φ		I _n				I _a / I _n		M _a / M _n		J	Weight
	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2	10 ⁻³ kgm ²	
	kW		rpm		Nm		100%				400 V		380-420 V						kg	
AM 71Z AA 6/4	0,15	0,22	900	1430	1,6	1,5	44	61	0,64	0,7	0,68	0,78	0,73	0,83	3,4	1,9	1,8	1,5	6,2	0,73
AM 80Z AA 6/4	0,26	0,37	905	1385	2,7	2,6	48,1	61,4	0,8	0,82	1	1,1	1,1	1,1	2,6	3,7	1,3	1,7	8,3	1,97
AM 80Z BA 6/4	0,37	0,55	900	1380	3,9	3,8	51,1	60,5	0,82	0,64	1,3	1,5	1,4	1,6	2,7	3,7	1,2	1,6	10	2,47
AM 90S AA 6/4	0,5	0,75	930	1400	5,1	5,1	64	63	0,61	0,81	1,9	2,2	2,1	2,3	3,5	3	1,8	1,4	13,4	4,1
AM 90L BA 6/4	0,65	1	920	1380	6,7	6,9	67,1	68,8	0,62	0,81	2,3	2,6	2,5	2,8	3,4	2,9	1,6	1,1	16,4	4,78
AM 100L AA 6/4	0,8	1,2	940	1460	8,1	7,8	67,9	76	0,7	0,66	2,5	3,5	2,6	3,8	3	4,7	1,5	2,1	24,4	4,6
AM 100L BA 6/4	1	1,6	935	1445	10,2	10,6	69,5	77,6	0,63	0,73	3,3	4,1	3,5	4,3	3	5,8	1,7	2,8	33,2	5,58
AM 112M AA 6/4	1,3	1,8	950	1445	13,1	11,9	69,5	74,6	0,78	0,85	3,6	4,2	3,7	4,4	3,8	5,9	1,3	1,9	33,3	14,18
AM 112M BA 6/4	1,85	2,6	950	1445	18,6	17,2	71,6	73,8	0,73	0,86	5,2	6	5,4	6,2	4,4	6,1	1,7	2	37	17,53
AM 132S ZA 6/4	2,2	3,1	965	1440	21,8	20,6	78	80	0,74	0,8	5,5	7	6	7,5	5,6	5,8	2	2,1	41,9	22,4
AM 132M ZA 6/4	2,6	4	975	1470	25,5	26	79,3	81	0,74	0,83	6,4	8,6	7	9,3	5,2	7,7	1,9	2	51	29,25
AM 160M YA 6/4	3,7	5,5	970	1480	36,4	35,5	81,4	84	0,73	0,79	9	12	9,6	12,9	4,5	7,5	1,6	2,5	88,5	81,25
AM 160M ZA 6/4	4,8	7,5	960	1465	47,7	48,9	82,6	85	0,75	0,83	11,2	15,4	11,5	15,8	4,6	7,4	1,6	2,4	88,5	81,25
AM 160L ZA 6/4	6,6	11	960	1470	65,7	71,5	83,8	86	0,75	0,86	15,2	21,6	16	22,5	5	7,2	1,8	2,3	106,5	105,75

Separate windings – constant torque

Two speed 8/6 pole – 750/1000 rpm

Type code	P _n		n _n		M _n		η		cos φ		I _n				I _a / I _n		M _a / M _n		J	Weight
	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2	10 ⁻³ kgm ²	
	kW		rpm		Nm		100%				400 V		380-420 V						kg	
AM 80Z AA 8/6	0,18	0,37	700	915	2,5	3,9	44,2	51,1	0,65	0,81	1	1,3	1	1,4	2,5	2,8	1,7	1,4	9,5	2,47
AM 90L AA 8/6	0,3	0,55	710	950	4	5,5	45,1	65,2	0,52	0,62	1,8	2	1,9	2,1	2,6	3,9	1,9	2,5	16,2	4,78
AM 100L AA 8/6	0,45	0,75	720	960	6	7,5	61,8	72,6	0,54	0,67	2	2,2	2,1	2,3	2,9	4,1	1,9	1,9	23,4	6,73
AM 112M AA 8/6	0,65	0,95	715	965	8,7	9,4	62,1	65,2	0,7	0,78	2,2	3	2,3	3,2	3,8	4,5	1,7	1,4	32	14,18
AM 112M BA 8/6	0,75	1,5	720	970	9,9	14,8	64,6	75,3	0,6	0,66	2,8	4,4	3	4,6	3,8	4,6	2,1	2,2	36,2	18,7
AM 132S ZA 8/6	1,2	2,2	730	970	15,7	21,7	66	73,5	0,6	0,69	4,4	6,3	4,8	6,6	3,7	4,5	1,7	1,6	42,5	29,5
AM 132M ZA 8/6	1,7	3	730	980	22,2	29,2	72,5	78,2	0,64	0,72	5,3	7,7	5,9	8,2	4,3	5,4	1,7	1,7	55,5	37,75
AM 160M YA 8/6	2,6	4,8	730	970	34	47,3	74	83	0,7	0,8	7,3	10,5	7,7	11	3,6	4,8	1,8	1,9	88	112,7
AM 160M ZA 8/6	3,3	5,9	730	970	43,2	58,1	73	83,2	0,6	0,76	10,9	13,5	11,4	14,5	5	6,5	2,1	2,2	97,5	150,25

Dahlander with Δ/YY - connection – quadratic torque

Two speed																					4/2 pole – 1500/3000 rpm	
Type code	P _n		n _n		M _n		η		cos φ		I _n				I _a / I _n		M _a / M _n		J	Weight		
	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2	10 ⁻³ kgm ²		kg	
	kW		rpm		Nm		100%				400 V		380-420 V									
AMV 63Z AA 4/2	0,07	0,33	1350	2700	0,5	1,2	55	60	0,7	0,8	0,25	0,95	0,27	1,1	2,5	2,6	1,8	1,6	0,37	5		
AMV 71Z AA 4/2	0,08	0,37	1350	2870	0,6	1,2	60	64	0,65	0,68	0,3	1,3	0,35	1,4	3,2	4,3	2	2,8	0,82	7,9		
AMV 71Z BA 4/2	0,12	0,55	1430	2835	0,8	1,9	70	68	0,65	0,72	0,4	1,6	0,42	1,7	4,1	4	3	2,8	1,08	10		
AMV 80Z AA 4/2	0,15	0,75	1400	2710	1	2,6	70	68	0,68	0,8	0,45	1,9	0,45	2	2,6	4,6	2,8	2,9	1,58	8,3		
AMV 80Z BA 4/2	0,22	1,1	1420	2820	1,5	3,7	70	73	0,75	0,84	0,6	2,5	0,65	2,6	4,6	4,7	2,7	2,9	2	11,5		
AMV 90L AA 4/2	0,3	1,5	1400	2830	2	5,1	69	70	0,7	0,84	0,9	3,5	1	3,7	4,7	5	2,7	3	3,13	15,6		
AMV 90L BA 4/2	0,44	2,2	1430	2830	2,9	7,4	74	72	0,76	0,89	1,1	4,8	1,2	5	4,5	5,2	2,6	2,8	3,73	17,1		
AMV 100L AA 4/2	0,5	2,5	1430	2840	3,3	8,4	72	73	0,77	0,88	1,3	5,3	1,4	5,6	4,6	5	2,2	2,3	4,6	21,4		
AMV 100L BA 4/2	0,6	3	1440	2850	4	10,1	78	77	0,79	0,87	1,3	6,2	1,4	6,5	4,5	4,5	2,2	2,1	5,58	23,2		
AMV 112M AA 4/2	0,75	3,7	1440	2850	5	12,4	74	72	0,8	0,9	1,7	7,9	1,9	2,2	4,5	5,1	2	2,4	13,3	36,1		
AMV 112M BA 4/2	0,9	4,5	1440	2850	6	15,1	75	73	0,82	0,9	2	9,5	2,1	9,8	4,5	5,5	2	2,3	14,75	40		
AMV 132S AA 4/2	1,1	5,5	1440	2880	7,3	18,2	81,5	84,8	0,78	0,9	2,5	10,4	2,6	11	5	6	2,1	2,8	13,83	42,6		
AMV 132S BA 4/2	1,5	7	1440	2900	9,9	23,1	82	86	0,78	0,92	3,4	12,8	3,8	13	5,3	6,5	2,2	2,9	13,83	42,6		
AMV 132M CA 4/2	1,9	8	1450	2930	12,5	26,1	83,7	88	0,82	0,87	4	15,1	4	16	5,5	7	2,2	3	17,13	51,4		
AMV 160M AA 4/2	2,8	11	1440	2940	18,6	35,7	82,5	88,2	0,78	0,9	6,3	20	7	20,4	5	7,5	2	2,1	51,75	94		
AMV 160M BA 4/2	3,3	13,5	1440	2920	21,9	44,2	83	88,5	0,8	0,92	7,2	24	7,5	24	5,5	7,5	2	2,2	51,75	94		
AMV 160L CA 4/2	4,4	18,5	1450	2940	29	60,1	85,5	89,5	0,83	0,92	9	32,5	9,5	33	5,5	7,5	2	2,2	64	108,7		

AEG Lafert motors

Dahlander with Δ/YY - connection – constant torque

Two speed																					8/4 pole – 750/1500 rpm	
Type code	P _n		n _n		M _n		η		cos φ		I _n				I _a / I _n		M _a / M _n		J	Weight		
	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2	10 ⁻³ kgm ²		kg	
	kW		rpm		Nm		100%				400 V		380-420 V									
AMV 71Z AA 8/4	0,08	0,37	660	1370	1,2	2,6	26	57	0,63	0,72	0,6	1,25	0,65	1,35	2,8	3,4	1,9	1,7	1,24	6,8		
AMV 80Z AA 8/4	0,12	0,55	685	1420	1,7	3,7	50	69	0,6	0,74	0,58	1,53	0,65	1,6	1,9	3,3	1,4	1,5	2,47	9,2		
AMV 80Z BA 8/4	0,18	0,75	660	1380	2,6	5,2	53	67	0,73	0,81	0,65	1,9	0,7	2	2	3,5	1,6	1,7	2,41	10,6		
AMV 90L AA 8/4	0,18	1,1	680	1400	2,5	7,5	60	70	0,65	0,82	0,9	2,7	1	2,8	2,8	4	1,5	2	2,98	15,7		
AMV 90L CA 8/4	0,4	1,6	675	1400	5,7	10,9	61,5	75	0,64	0,79	1,8	4	1,8	4,1	3,1	5	1,6	2,2	3,7	19,6		
AMV 100L AA 8/4	0,45	2,2	680	1420	6,3	14,8	63,1	75,3	0,6	0,8	1,7	5	1,9	5,3	2,7	4,7	1,7	2	5,58	21,9		
AMV 100L BA 8/4	0,6	2,6	680	1435	8,4	17,3	64	76,2	0,63	0,75	2,2	6,5	2,3	6,7	2,7	4,8	1,7	2,2	6	23,7		
AMV 112M AA 8/4	0,7	3,3	690	1420	9,7	22,2	62	78	0,7	0,8	2,2	7,4	2,3	7,6	3,4	6,5	1,8	2,4	16,7	34,2		
AMV 112M CA 8/4	1	4	720	1420	13,3	26,9	60	77	0,7	0,82	3,1	8,6	3,3	9	3,5	5	2,3	1,9	19,5	40		
AMV 132S AA 8/4	1,1	4,5	725	1450	14,5	29,6	77	85,5	0,58	0,82	3,6	9,3	4	9,7	3,5	5,4	2,2	2,7	22,4	41,9		
AMV 132M BA 8/4	1,4	5,5	720	1440	18,6	36,5	78	86	0,62	0,82	4,2	11,3	4,5	12	3,6	5,5	2	2,5	29,25	51		
AMV 132M CA 8/4	1,8	7,5	720	1450	23,9	49,4	78,2	86,5	0,64	0,86	5,2	14,6	5,5	15	4,6	6	2	2,5	37,25	65		
AMV 160M ZA 8/4	2,2	10	720	1450	29,2	65,9	80	88	0,61	0,83	6,6	19,9	6,8	20,4	3,5	6	1,8	1,7	81,25	88,5		
AMV 160L ZA 8/4	3,2	15	720	1450	42,4	98,8	81	90	0,61	0,88	9,4	27,3	9,8	28	3,5	6,5	1,7	1,8	105,75	106,5		

S-S-ELD-EN-EMOT-001-V01

Separate windings – quadratic torque

Two speed 6/4 pole – 1000/1500 rpm

Type code	P _n		n _n		M _n		η		cos φ		I _n				I _a / I _n		M _a / M _n		J	Weight
	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2	400 V		380-420 V		n1	n2	n1	n2	10 ⁻³ kgm ²	
	kW		rpm		Nm		100%													kg
AMV 71Z AA 6/4	0,08	0,25	900	1370	0,4	1,7	40	60	0,7	0,8	0,4	0,75	0,45	0,8	2,5	3	1,6	1,6	6,7	1,15
AMV 71Z BA 6/4	0,13	0,37	880	1360	1,4	2,6	44	62	0,7	0,8	0,6	1	0,7	1,1	2,6	3,2	1,6	1,6	7,2	1,24
AMV 80Z AA 6/4	0,18	0,55	920	1380	1,9	3,8	42	60	0,82	0,83	0,75	1,6	0,8	1,7	2,4	3,5	1	1,6	8,3	1,97
AMV 80Z BA 6/4	0,25	0,75	940	1400	2,5	5,1	60	70	0,72	0,82	0,8	1,8	0,9	1,9	2,6	4,2	1,3	1,6	14	4,05
AMV 90S AA 6/4	0,24	0,75	950	1400	2,4	5,1	60	70	0,72	0,82	0,8	1,9	0,9	2	2,6	4,2	1,3	1,6	14	4,05
AMV 90L BA 6/4	0,37	1,1	930	1400	3,8	7,5	60	70	0,74	0,81	1,2	2,8	1,3	3	2,7	4,3	1,2	1,6	16,4	4,78
AMV 90L CA 6/4	0,5	1,5	950	1420	5	10,1	64	73	0,7	0,8	1,52	3,52	1,6	3,7	2,6	4,8	1,3	1,5	20,5	5,98
AMV 100L AA 6/4	0,6	1,85	920	1400	6,2	12,6	64	74	0,73	0,8	1,9	4,6	2,1	4,8	3,1	4,8	1,5	1,8	23,4	6,73
AMV 100L BA 6/4	0,75	2,2	950	1420	7,5	14,8	66	76	0,75	0,79	2,1	5,1	2,2	5,3	3,5	5	1,3	1,7	22,6	9,25
AMV 112M AA 6/4	1	3	970	1440	9,8	19,9	73	80	0,65	0,81	3	6,6	3,2	6,8	4,6	5,8	2,1	2,5	30,4	13,3
AMV 132S AA 6/4	1,3	3,8	970	1460	12,8	24,9	75	85	0,72	0,8	3,5	8,1	4	8,5	4	6,5	1,7	2,2	41,9	22,4
AMV 132M BA 6/4	1,5	4,4	970	1460	14,8	28,8	78,2	86	0,73	0,85	3,8	8,7	4,3	9,2	4,4	6,5	1,7	2,2	51	29,25
AMV 132M CA 6/4	1,8	5,5	970	1460	17,7	36	80	86,8	0,74	0,84	4,4	10,9	4	12	4,7	7	1,8	2,6	65	37,25
AMV 132M DA 6/4	2,2	6,3	970	1460	21,7	41,2	81	86,8	0,73	0,84	5,4	12,5	5	13,5	4,8	7,2	1,9	2,6	66	37,25
AMV 160M AA 6/4	2,5	7,5	975	1470	24,5	48,7	83	87,5	0,75	0,83	5,8	14,9	6	15,6	4,5	8,3	1,9	2,5	88,5	81,25
AMV 160L BA 6/4	3,7	11	970	1470	36,4	71,5	84,2	88	0,73	0,81	8,7	22,5	9	23,4	4,8	8	1,8	2,4	106,5	105,75
AMV 160L CA 6/4	4	13	970	1460	39,4	85	84,5	88	0,72	0,81	9,5	26,3	10	27,5	4,8	8	1,9	2,4	106,5	105,75

Separate windings – quadratic torque

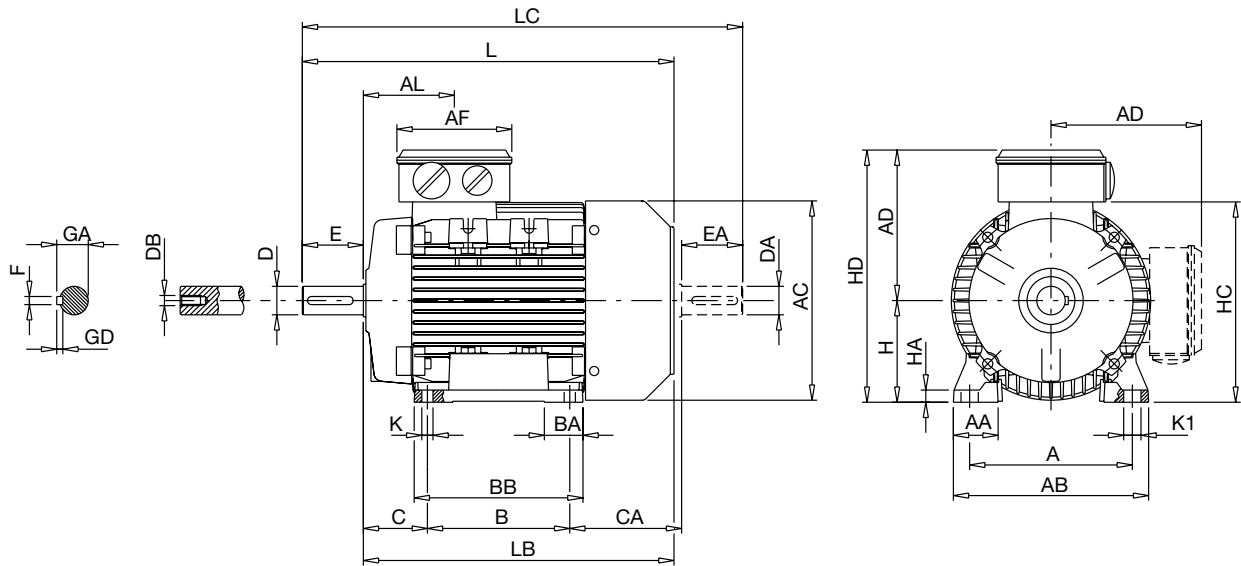
Two speed 8/6 pole – 750/1000 rpm

Type code	P _n		n _n		M _n		η		cos φ		I _n				I _a / I _n		M _a / M _n		J	Weight
	n1	n2	n1	n2	n1	n2	n1	n2	n1	n2	400 V		380-420 V		n1	n2	n1	n2	10 ⁻³ kgm ²	
	kW		rpm		Nm		100%													kg
AMV 80Z AA 8/6	0,11	0,25	720	930	1,5	2,6	49	53	0,62	0,79	0,55	0,9	0,7	1	3	2,9	1,8	1,6	7,9	1,97
AMV 80Z BA 8/6	0,15	0,37	715	920	2	3,8	47	52	0,63	0,81	0,8	1,3	0,9	1,4	2,8	2,8	1,9	1,4	9,5	2,47
AMV 90L AA 8/6	0,22	0,55	740	960	2,8	5,5	47	65	0,51	0,62	1,4	2	1,5	2,1	2,9	3,9	2,1	2,5	16,2	4,78
AMV 90L BA 8/6	0,3	0,75	720	940	4	7,6	45,5	64	0,52	0,67	1,85	2,5	1,9	2,7	2,6	3,4	1,9	2,2	16,2	4,78
AMV 100L AA 8/6	0,45	1,1	710	950	6,1	11,1	58	70,6	0,67	0,71	1,7	3,1	1,8	3,3	2,8	4,3	1,3	2	22	9,43
AMV 112M AA 8/6	0,6	1,5	720	970	8	14,8	65	75,8	0,6	0,65	2,3	4,4	2,5	3,7	3,4	5,5	2,1	2,8	39	18,7
AMV 132S ZA 8/6	0,9	2,2	715	970	12	21,7	69	78	0,55	0,67	3,5	6,1	4	6,7	4	4,8	1,6	1,6	42,5	29,5
AMV 132M YA 8/6	1,2	3	715	960	16	29,8	72	80	0,55	0,7	4,4	7,8	4,8	8,2	4,1	4,8	1,6	1,6	55,5	37,75
AMV 132M ZA 8/6	1,6	4	715	960	21,4	39,8	74	81	0,6	0,78	5,2	9,2	5,6	9,8	4,4	5,3	1,7	1,7	64,1	44,5
AMV 160M YA 8/6	2,2	5,5	730	970	28,8	54,1	76	83	0,6	0,77	7	12,5	7,5	13,5	5,6	5,7	1,9	1,6	88	112,7
AMV 160M ZA 8/6	3	7	730	970	39,2	68,9	77	84	0,65	0,8	8,7	15	9,3	16	5,8	6	2,2	1,7	97,5	150,25

AM - series **B3 Foot mounted**

IEC	H	A	B	C	K	AB	BB	CA	AD	HD	AC	HC	HA	K1	L	LB	LC	AL	AF	BA	AA	D/DA	E/EA	F/FA	GD/GF	GA/GC	DB/DC
56	56	90	71	36	6	107	86	64	92	148	110	109	8	9	188	168	211	61	92	27	27	9	20	3	3	10,2	M3
63	63	100	80	40	7	120	100	72	96	159	124	120	8	11	211	188	238	63	92	29	30	11	23	4	4	12,5	M4
71	71	112	90	45	8	135	108	83	110	181	139	142	9	11	246	216	278	69	92	28	31	14	30	5	5	16	M5
80	80	125	100	50	10	153	125	89	129	209	160	162	9,5	14	272	232	319	79	116	28,5	34,5	19	40	6	6	21,5	M6
90S	90	140	100	56	10	170	150	116	138	228	180	181	11	15	317	267	372	85	116	28/53	37	24	50	8	7	27	M8
90L	90	140	125	56	10	170	150	91	138	228	180	181	11	15	317	267	372	85	116	28/53	37	24	50	8	7	27	M8
100	100	160	140	63	11	192	166	110	145	245	196	198	12	17	366	306	433	91	116	38	44	28	60	8	7	31	M10
112	112	190	140	70	12,5	220	175	126	161	273	225	226	15	19	388	328	456	91,5	116	46	48	28	60	8	7	31	M10
132S	132	216	140	89	12	256	180	134	195	327	248	261	17	20	442	362	523	100	133	45	59	38	80	10	8	41	M12
132M	132	216	178	89	12	256	218	136	195	327	248	261	17	20	482	402	563	120	133	45	59	38	80	10	8	41	M12
132M	132	216	178	89	12	256	218	166	195	327	248	261	17	20	500	420	593	120	133	45	59	38	80	10	8	41	M12
160M	160	254	210	108	14	320	270	180	238	398	317	316	23	18	608	498	718	146	150	65	76	42	110	12	8	45	M16
160L	160	254	254	108	14	320	310	180	238	398	317	316	23	18	652	542	762	168	150	65	76	42	110	12	8	45	M16
160L	160	254	254	108	14	320	310	210	238	398	317	316	23	18	678	568	778	168	150	65	76	42	110	12	8	45	M16

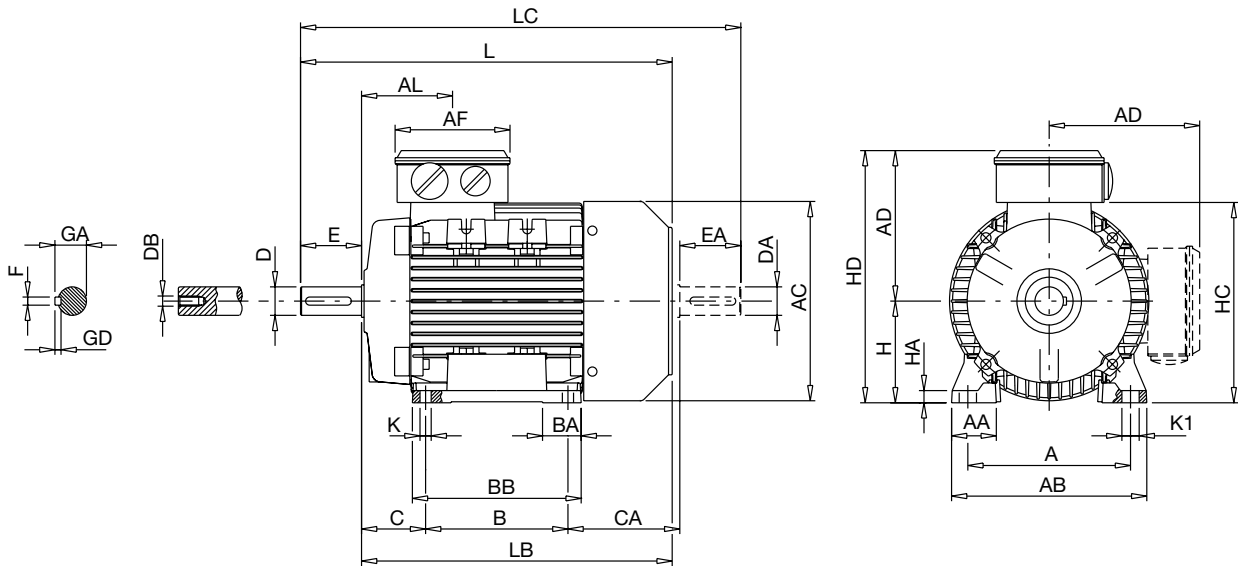
AEG Lafert motors



S-S-ELD-EN-EMOT-001-V01

AMHE/AMPE - series **B3 Foot mounted**

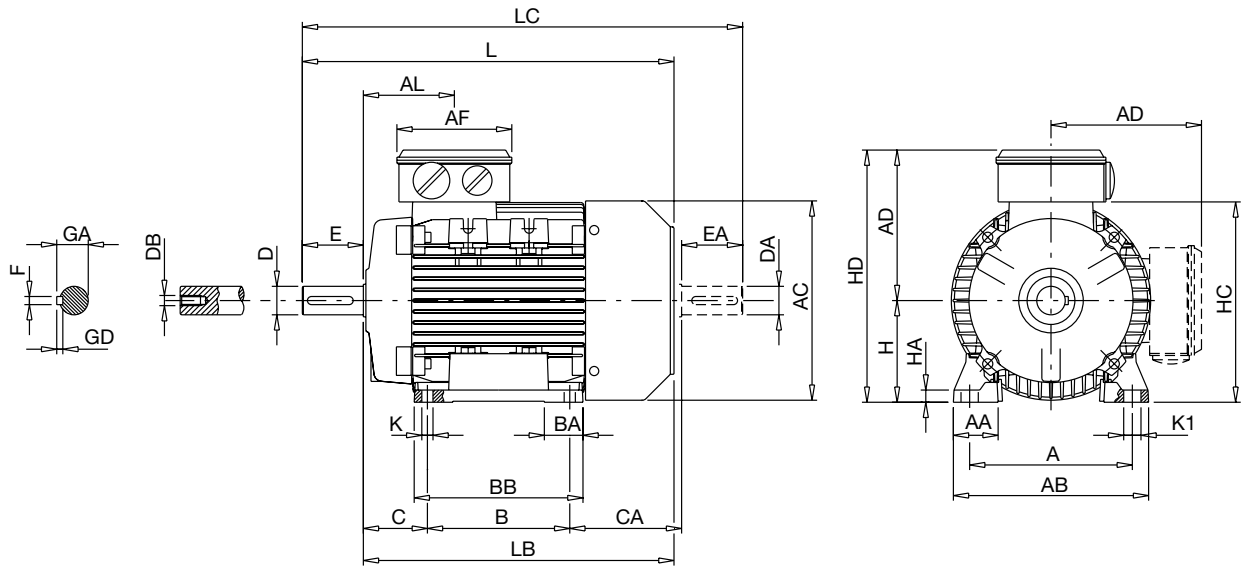
IEC	p.	kW	H	A	B	C	K	AB	BB	CA	AD	HD	AC	HC	HA	K1	L	LB	LC	AL	AF	BA	AA	D/DA	E/EA	F/FA	GD/GF	GA/GC	DB/DC
71	2	0,75	71	112	90	45	8	135	108	83	110	181	139	142	9	11	246	216	278	69	92	28	31	14	30	5	5	16	M5
80	2-4	al	80	125	100	50	10	153	125	89	129	209	160	162	9,5	14	272	232	319	79	116	28,5	34,5	19	40	6	6	21,5	M6
90S	2-4	al	90	140	100	56	10	170	150	116	138	228	180	181	1	15	317	267	372	85	116	28/53	37	24	50	8	7	27	M8
90L	2	2,2	90	140	125	56	10	170	150	91	138	228	180	181	11	15	317	267	372	85	116	28/53	37	24	50	8	7	27	M8
	2	3	90	140	125	56	10	170	150	114	138	228	180	181	11	15	340	290	395	85	116	28/53	37	24	50	8	7	27	M8
	4	1,5	90	140	125	56	10	170	150	91	138	228	180	181	11	15	317	267	372	85	116	28/53	37	24	50	8	7	27	M8
100	2	al	100	160	140	63	11	192	166	110	145	245	196	198	12	17	366	306	433	91	116	38	44	28	60	8	7	31	M10
	4	2,2	100	160	140	63	11	192	166	110	145	245	196	198	12	17	366	306	433	91	116	38	44	28	60	8	7	31	M10
	4	3	100	160	140	63	11	192	166	144	145	245	194	198	12	17	400	340	467	91	116	38	44	28	60	8	7	31	M10
112	2	4-5,5	112	190	140	70	12,5	220	176	126	160	272	225	225	15	19	388	328	456	92	116	46	48	28	60	8	7	31	M10
	2	7,5	112	190	140	70	12,5	220	176	148	160	272	222	225	15	19	410	350	478	92	116	46	48	28	60	8	7	31	M10
	4	al	112	190	140	70	12,5	220	176	126	160	272	225	225	15	19	388	328	456	92	116	46	48	28	60	8	7	31	M10
132S	2	5,5	132	216	140	89	12	256	180	134	194	326	248	261	17	20	445	365	523	100	133	45	59	38	80	10	8	41	M12
	2	7,5	132	216	140	89	12	256	180	154	194	326	248	261	17	20	465	385	543	100	133	45	59	38	80	10	8	41	M12
	4	5,5	132	216	140	89	12	256	180	134	194	326	248	261	17	20	445	365	523	100	133	45	59	38	80	10	8	41	M12
132M	2	9,2-11	132	216	178	89	12	256	218	156	194	326	248	261	17	20	505	425	583	120	133	45	59	38	80	10	8	41	M12
	2	15	132	216	178	89	12	256	218	207	194	326	248	261	17	20	556	476	634	120	133	45	59	38	80	10	8	41	M12
	4	al	132	216	178	89	12	256	218	136	194	326	248	261	17	20	485	405	563	120	133	45	59	38	80	10	8	41	M12
160M	2-4	al	160	254	210	108	14	320	270	180	238	398	317	316	23	18	608	498	668	146	150	65	76	42/28	110/60	12/8	8/7	45/31	M16/M10
160L	2-4	al	160	254	254	108	14	320	310	180	238	398	317	316	23	18	652	542	712	168	150	65	76	42/28	110/60	12/8	8/7	45/31	M16/M10



AMEE - series **B3 Foot mounted**

IEC	p.	kW	H	A	B	C	K	AB	BB	CA	AD	HD	AC	HC	HA	K1	L	LB	LC	AL	AF	BA	AA	D/DA	E/EA	F/FA	GD/GF	GA/GC	DB/DC
71	2	0,75	71	112	90	45	8	135	107	81	110	181	139	142	9	11	246	216	278	69	92	28	31	14	30	5	5	16	M5
80	2-4	all	80	125	100	50	10	153	125	89	129	209	160	162	9,5	14	272	232	319	79	116	29	35	19	40	6	6	21,5	M6
90S	2-4-6	all	90	140	100	56	10	170	150	116	138	228	180	181	11	15	317	267	372	85	116	28/53	37	24	50	8	7	27	M8
90L	2-4-6	all	90	140	125	56	10	170	150	91	138	228	180	181	11	15	317	267	372	85	116	28/53	37	24	50	8	7	27	M8
100	2-4-6	all	100	160	140	63	11	192	166	110	145	245	196	198	12	17	366	306	433	91	116	38	44	28	60	8	7	31	M10
112	2	4-5,5	112	190	140	70	12,5	220	176	126	160	272	225	225	15	19	388	328	456	92	116	46	48	28	60	8	7	31	M10
	2	7,5	112	190	140	70	12,5	220	176	148	160	272	222	225	15	19	410	350	478	92	116	46	48	28	60	8	7	31	M10
	4	4	112	190	140	70	12,5	220	176	126	160	272	225	225	15	19	388	328	456	92	116	46	48	28	60	8	7	31	M10
	4	5,5	112	190	140	70	12,5	220	176	148	160	272	222	225	15	19	410	350	478	92	116	46	48	28	60	8	7	31	M10
	6	all	112	190	140	70	12,5	220	176	126	160	272	225	225	15	19	388	328	456	92	116	46	48	28	60	8	7	31	M10
132S	2-4-6	all	132	216	140	89	12	256	180	134	194	326	248	261	17	20	445	365	523	102	133	45	59	38	80	10	8	41	M12
132M	2	9,2	132	216	178	89	12	256	218	136	194	326	248	261	17	20	485	405	563	122	133	45	59	38	80	10	8	41	M12
	2	11	132	216	178	89	12	256	218	156	194	326	248	261	17	20	505	425	583	122	133	45	59	38	80	10	8	41	M12
	2	15	132	216	178	89	12	256	218	207	194	326	248	261	17	20	556	476	634	122	133	45	59	38	80	10	8	41	M12
	4	7,5	132	216	178	89	12	256	218	136	194	326	248	261	17	20	485	405	563	122	133	45	59	38	80	10	8	41	M12
	4	9,2	132	216	178	89	12	256	218	156	194	326	248	261	17	20	505	425	583	122	133	45	59	38	80	10	8	41	M12
	6	4	132	216	178	89	12	256	218	136	194	326	248	261	17	20	485	405	563	122	133	45	59	38	80	10	8	41	M12
	6	5,5	132	216	178	89	12	256	218	156	194	326	248	261	17	20	505	425	583	122	133	45	59	38	80	10	8	41	M12
160M	2-4-6	all	160	254	210	108	14	320	270	180	238	398	317	316	23	18	608	498	668	146	150	65	76	42/28	110/60	12/8	8/7	45/31	M16/M10
160L	2-4-6	all	160	254	254	108	14	320	310	180	238	398	317	316	23	18	652	542	712	168	150	65	76	42/28	110/60	12/8	8/7	45/31	M16/M10

AEG Lafert motors



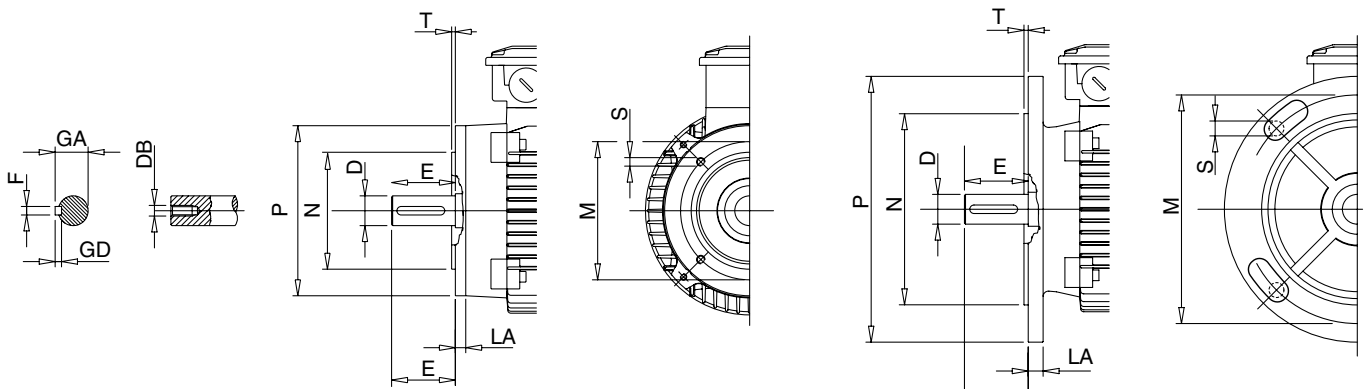
S-S-ELD-EN-EMOT-001-V01

B14a/B14b/B5 Flanges

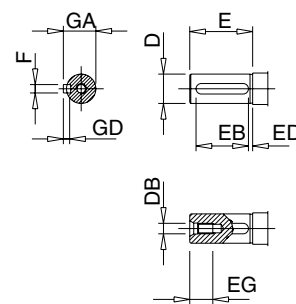
IEC	B14a					
	P	N	LA	M	T	S
56	80	50	8	65	2,5	M5
63	90	60	8	75	2,5	M5
71	105	70	8	85	2,5	M6
80	120	80	9	100	3	M6
90	140	95	9	115	3	M8
100	160	110	10	130	3,5	M8
112	160	110	10	130	3,5	M8
132	200	130	30	165	3,5	M10
160	250	180	12	215	4	M12

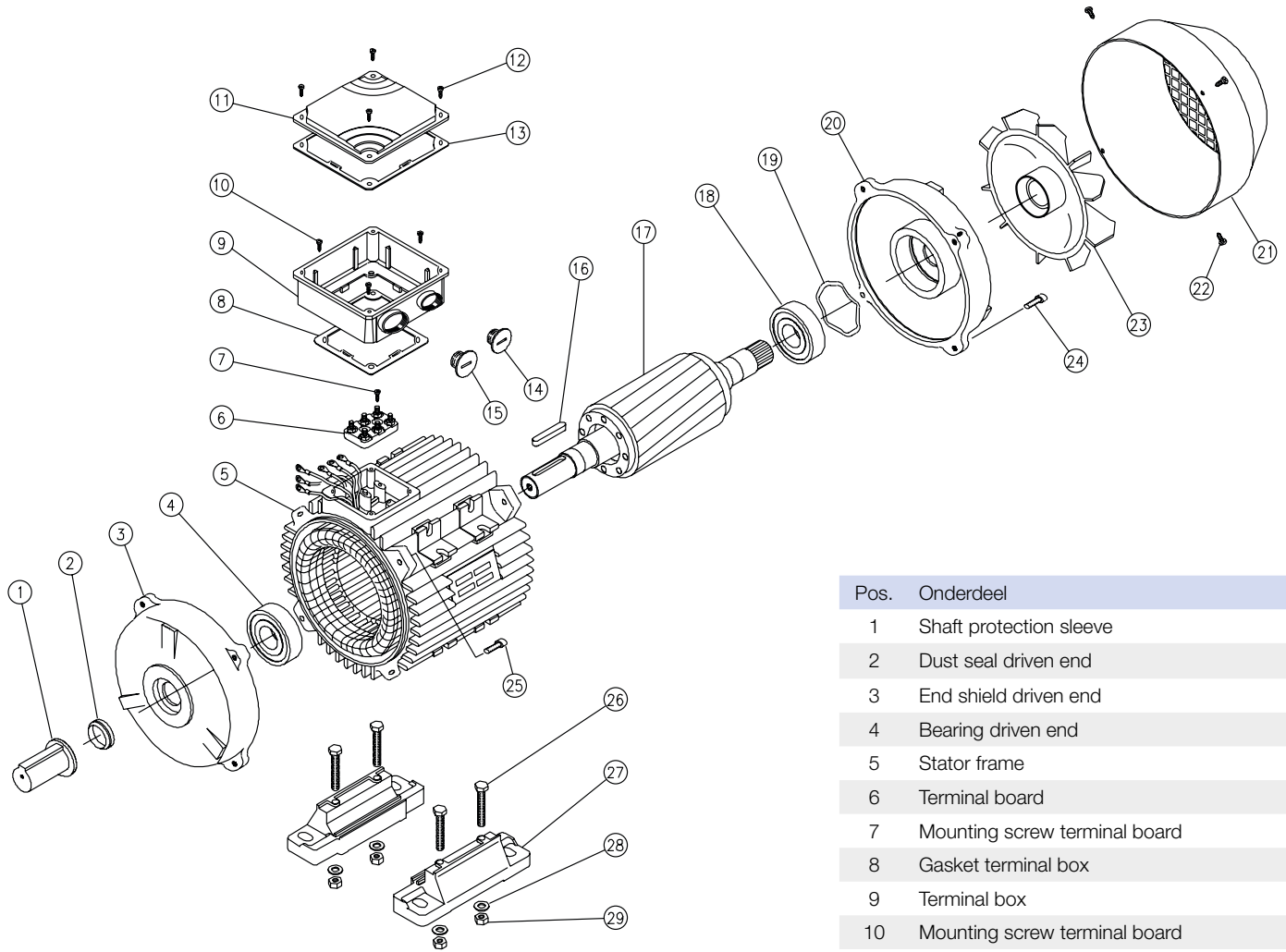
B14b						
P	N	LA	M	T	S	
105	70	8	85	2,5	M6	
120	80	8	100	2,5	M6	
140	95	8	115	3	M8	
160	110	8,5	130	3,5	M8	
160	110	9	130	3,5	M8	
200	130	12	165	3,5	M10	
200	130	12	165	3,5	M10	
250	180	12	215	4	M12	
300	230	12	265	5	M16	

B5						
P	N	LA	M	T	S	
100	80	120	2,5	7	M6	
115	95	140	3	8	M8	
130	110	160	3,5	10	M8	
165	130	200	3,5	10	M10	
165	130	200	3,5	12	M10	
215	180	250	4	14	M12	
215	180	250	4	14	M12	
265	230	300	4	14	M12	
300	250	350	5	15	M16	



IEC	Shaft dimensions									
	D	E	F	h9	GD	GA	DB	EG	EB	ED
56	9	j6	20	3	3	10,2	M3	10	15	2,5
63	11	j6	23	4	4	12,5	M4	10	15	4
71	14	j6	30	5	5	16	M5	12,5	20	4
80	19	j6	40	6	6	21,5	M6	16	30	4
90	24	j6	50	8	7	27	M8	19	40	4
100	28	j6	60	8	7	31	M10	22	50	4
112	28	j6	60	8	7	31	M10	22	50	4
132	38	k6	80	10	8	41	M12	28	70	4
160	42	k6	110	12	8	45	M16	36	100	4





Pos.	Onderdeel
1	Shaft protection sleeve
2	Dust seal driven end
3	End shield driven end
4	Bearing driven end
5	Stator frame
6	Terminal board
7	Mounting screw terminal board
8	Gasket terminal box
9	Terminal box
10	Mounting screw terminal board
11	Terminal box lid
12	Mounting screw terminal board lid
13	Gasket terminal board lid
14	Blank gland plug
15	Blank gland plug
16	Key
17	Rotor complete
18	Bearing non-driven end
19	Pre-load washer
20	End shield non-driven end
21	Fan cover
22	Mounting screw fan cover
23	Fan
24	Mounting bolt end shield non-driven end
25	Mounting bolt end shield driven end
26	Mounting bolt motor feet
27	Motor feet
28	Motor feet washer
29	Motor feet nut

Only motors with a 71-160 frame size have removable feet for easy change of terminal box position.

Mandatory energy efficiency regulations for energy using products (EuPs) and energy related products (ErPs) have been enforced by the European Union. To meet the upcoming deadlines for the implementation of these regulations, Lafert have developed high efficiency AC motors meeting both IE2 and IE3 levels. Permanent Magnet (PM) electric motors have been developed to meet IE4 and IE 5 levels.

The IE4 motors in the present AEG/Lafert programme belong to the HPS series, and are based on the Surface Mounted Permanent Magnet Motor (SMPM) principle. Permanent magnet electric motors typically use rare earth elements such as Samarium and Neodymium in the construction of the magnet elements.

The commodity price of such elements has been increasing year on year over the past decade. Therefore, in order to address these market challenges, Lafert have introduced an innovative, cost effective Interior Permanent Magnet Electric Motor (IPM) design that will be better positioned to enjoy a key competitive edge. The new IPM design will be launched under the name HPF.

Innovation of the Product

The new sensorless IPM design has been constructed without the use of rare earth element magnets. The HPF range from Lafert offers an energy efficient IE4 compliant motor with a sustainable cost base.

Leveraging Leading-Edge Technologies

Lafert's Leading-Edge AC induction motor design and manufacturing capabilities have facilitated the development of this uniquely engineered product. In order to develop the HP Motor, Lafert used a combination of product designs inspired by the brushless servo motors electrical design and the AC induction motor design and the ACeEngineer. With higher efficiencies than standard AC induction motors they also enhance the power/weight ratio, thereby allowing for significant size and weight reductions of up to 50%.

Lafert place great emphasis on materials research. This has resulted in reduced dependency on rare earth magnets, allowing the use of more readily available permanent magnets, which ensures price and supply stability into the future. Following this development work Lafert have introduced a second generation of PM Synchronous Motors, named HPF, achieving IE4 Super Premium Efficiency level, with more stable and reduced production costs without applying rare earth magnets.

Value Added Features & Benefits

The HPF series is primarily targeted toward HVAC applications in pumps, fans, compressors, and blowers, where there is an emphasis on reducing the operating cost or weight, and size of the motors. Lafert also offer flexibility in terms of design, customizing the active and mechanical parts of the motor to suit specific customer requirements.

Product overview

- Integral construction (HPI range) or stand-alone drive (HPS/HPF range).
- Sensorless control or with speed transducer.
- IPM (Interior Permanent Magnets) or SMPM (Surface Mounted Permanent Magnets) design, depending on the performance demand.

General Specifications

- Wide power output 0.37 to 30 kW
- three-phase 380-480 V, 50/60 Hz
- Torque: 2 Nm to 100 Nm
- Compact range in IEC frames: 71 - 90 - 112 - 132
- Speed range up to 6000 rpm

New Generation PM IE4 motor HPF series	Current Generation PM IE4 motor HPS series
<p>Design</p> <p>IPM Design - Interior Permanent Magnets</p> <p>Cost efficient Design - No rare earth magnets - Stable price structure</p> <p>Controlled by standard drives - Sensorless or closed loop speed control Available with encoder/resolver or in sensorless execution Innovatief hoge flux rotor ontwerp voor een hoge draaimomentdichtheid.</p> <p>Available with encoder/resolver or in sensorless execution</p> <p>Available as stand-alone motor (HPF) or as motor/drive integrated (HPI)</p>	<p>Design</p> <p>SMPM Design - Surface Mounted Permanent Magnets High flux rare earth magnets</p> <p>Controlled by standard drives - Sensorless or closed loop speed control</p> <p>Magnets shape and placement carefully optimized for higher performance</p> <p>Magneetvorm en- plaats zorgvuldig geoptimaliseerd voor hogere prestaties.</p> <p>Available with encoder/resolver or in sensorless execution</p> <p>Available as stand-alone motor (HPS) or as motor/drive integrated (HPI)</p>
<p>Performance</p> <p>Energy efficiency according to IE4</p> <p>Increased inertia, low cogging torque for stable high speed control</p> <p>Improved performance for HVAC applications</p> <p>Frame size reductions and weight savings up to 40%</p>	<p>Performance</p> <p>Energy efficiency according to IE4</p> <p>High performance due to low inertia, high peak torque</p> <p>Designed for light Servo and higher performance applications</p> <p>Frame size reductions and weight savings up to 50%</p>
<p>Target Applications</p> <p>Water Pumps</p> <p>Fans, Heating and Air Conditioning</p> <p>Cooling and Air Compressors</p> <p>Blowers</p>	<p>Target Applications</p> <p>Cost efficient light Servo Applications</p> <p>Conveyors, Material Handling</p> <p>Air Compressors</p> <p>Vacuum Pumps</p>

HPS - STAND ALONE MOTOR 1500 rpm											IE 4
Type code	Size	Rated speed	Rated power	Rated torque	Peak torque	Voltage constant	Torque constant	BEMF at rated speed	Rated current	Efficiency HPS	Weight
		n 1/min	Pn kW	Mn Nm	Mpk Nm	Ke Vs	Kt Nm/A	En Vrs	In Arms	η%	Kg
HPS71 1500 12	71	1500	0.55	3.5	10.5	1.73	3	272	1.2	86.0%	4.8
HPS71 1500 16	71	1500	0.75	4.8	14.4	1.73	3	272	1.6	87.0%	5.4
HPS71 1500 23	71	1500	1.1	7.0	21.0	1.73	3	272	2.3	87.8%	6.2
HPS71 1500 32	71	1500	1.5	9.6	28.8	1.73	3	272	3.2	88.5%	7.0
HPS90 1500 32	71	1500	1.5	9.6	28.8	1.73	3	272	3.2	88.5%	7.0
HPS90 1500 47	S-L	1500	2.2	14.0	42.0	1.73	3	272	4.7	91.5%	12.0
HPS90 1500 64	S-L	1500	2.2	14.0	42.0	1.73	3	272	4.7	91.5%	12.0
HPS90 1500 85	S-L	1500	3.0	19.1	57.3	1.73	3	272	6.4	92.0%	14.0
HPS112 1500 85	S-L	1500	4.0	25.5	76.4	1.73	3	272	8.5	92.3%	17.0
HPS112 1500 117	M	1500	5.5	35.0	105.1	1.73	3	272	11.7	92.5%	26.0
HPS112 1500 159	M	1500	7.5	47.8	143.3	1.73	3	272	15.9	93.1%	30.0
HPS112 1500 233	M	1500	11.0	70.0	210.1	1.73	3	272	23.3	93.8%	33.0
HPS132 1500 233	XL	1500	11.0	70.0	210.1	1.73	3	272	23.3	94.0%	51.0
HPS132 1500 318	XXL	1500	15.0	95.5	286.5	1.73	3	272	31.8	94.4%	58.0
HPS132 1500 393	XXL	1500	18.5	117.8	353.4	1.73	3	272	39.3	94.8%	65.0

HPS - STAND ALONE MOTOR 1800 rpm											IE 4
Type code	Size	Rated speed	Rated power	Rated torque	Peak torque	Voltage constant	Torque constant	BEMF at rated speed	Rated current	Efficiency HPS	Weight
		n 1/min	Pn kW	Mn Nm	Mpk Nm	Ke Vs	Kt Nm/A	En Vrs	In Arms	η%	Kg
HPS71 1800 12	71	1800	0.55	2.9	8.8	1.45	2.5	272	1.2	87.7%	4.8
HPS71 1800 16	71	1800	0.75	4.0	11.9	1.45	2.5	272	1.6	88.4%	5.4
HPS71 1800 23	71	1800	1.1	5.8	17.5	1.45	2.5	272	2.3	88.9%	6.2
HPS71 1800 32	71	1800	1.5	8.0	23.9	1.45	2.5	272	3.2	89.4%	7
HPS90 1800 32	S-L	1800	1.5	8.0	23.9	1.45	2.5	272	3.2	91.2%	10
HPS90 1800 46	S-L	1800	2.2	11.7	35.0	1.45	2.5	272	4.6	91.6%	12
HPS90 1800 64	S-L	1800	3.0	15.9	47.7	1.45	2.5	272	6.3	92.1%	14
HPS90 1800 84	S-L	1800	4.0	21.2	63.7	1.45	2.5	272	8.4	92.4%	17
HPS112 1800 84	M	1800	4.0	21.2	63.7	1.45	2.5	272	8.4	92.5%	23
HPS112 1800 116	M	1800	5.5	29.2	87.5	1.45	2.5	272	11.6	92.6%	26
HPS112 1800 158	M	1800	7.5	39.8	119.4	1.45	2.5	272	15.8	93.3%	30
HPS112 1800 232	XL	1800	11.0	58.4	175.1	1.45	2.5	272	23.2	94.0%	33
HPS132 1800 232	M	1800	11.0	58.4	175.1	1.45	2.5	272	23.2	94.2%	51
HPS132 1800 317	XXL	1800	15.0	79.6	238.7	1.45	2.5	272	31.7	94.6%	58
HPS132 1800 391	XXL	1800	18.5	98.1	294.4	1.45	2.5	272	39.1	94.9%	65

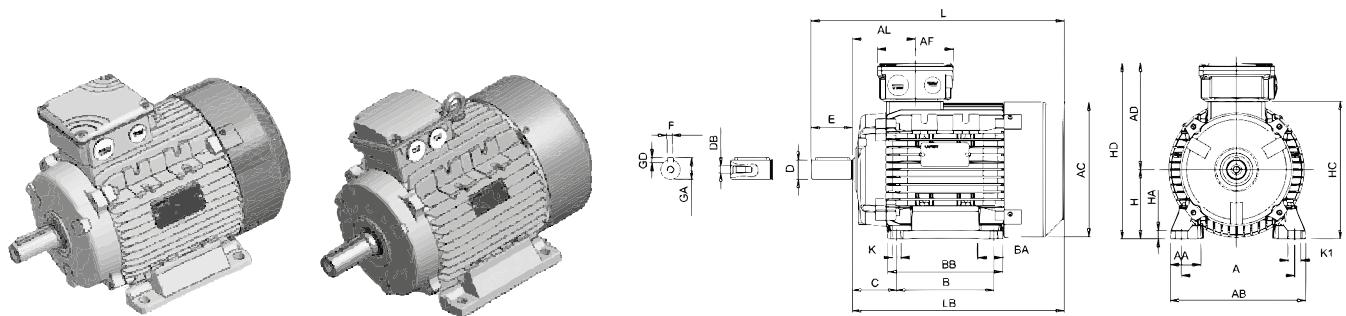
HPS Stand-alone motor - 3000 rpm											IE 4
Type code	IEC size	Pn kW	n rpm	In 400V A	η 100%	Mn Nm	Mpk Nm	Ke Vs	Kt Nm/A	Kn Vrs	Weight kg
HPS71 300016	71	0,75	3000	1,6	89.7	2.4	7.2	0,87	1,5	272	4.8
HPS71 3000 23	71	1,1	3000	2,3	90.5	3.5	10.5	0,87	1,5	272	5.4
HPS71 3000 32	71	1,5	3000	3,2	91.2	4.8	14.3	0,87	1,5	272	6.0
HPS71 3000 47	71	2,2	3000	4,7	91.4	7.0	21.0	0,87	1,5	272	6.6
HPS90 3000 47	S-L	2,2	3000	4,7	91.5	7.0	21.0	0,87	1,5	272	10
HPS90 3000 64	S-L	3,0	3000	6,4	92.1	9.6	28.7	0,87	1,5	272	12
HPS90 3000 85	S-L	4,0	3000	8,5	92.6	12.7	38.2	0,87	1,5	272	14
HPS90 3000 117	S-L	5,5	3000	11,7	93.1	17.5	52.5	0,87	1,5	272	16
HPS112 3000 117	M	5,5	3000	11,7	92.9	17.5	52.5	0,87	1,5	272	23
HPS112 3000 159	M	7,5	3000	15,9	93.7	23.9	71.6	0,87	1,5	272	26
HPS112 3000 233	M	11,0	3000	23,3	94.1	35.0	105.1	0,87	1,5	272	30
HPS112 3000 318	M	15,0	3000	31,8	94.2	47.8	143.3	0,87	1,5	272	33
HPS132 3000 318	XL	15,0	3000	31,8	94.2	47.8	143.3	0,87	1,5	272	51
HPS132 3000 393	XXL	18,5	3000	39,3	93.8	58.9	176.7	0,87	1,5	272	58
HPS132 3000 467	XXL	22,0	3000	46,7	94.9	70.0	210.1	0,87	1,5	272	65
HPS132 3000 636	XXL	30,0	3000	63,6	95.0	95.4	286.0	0,87	1,5	272	72

HPS Stand-alone motor - 3600 rpm IE 4

Type code	Size	Rated speed	Rated power	Rated torque	Peak torque	Voltage constant	Torque constant	BEMF at rated speed	Rated current	Efficiency HPS	Weight
		n 1/min	Pn kW	Mn Nm	Mpk Nm	Ke Vs	Kt Nm/A	En Vrs	In Arms	η %	Kg
HPS71 3600 16	71	3600	0.75	2.0	6.0	0.73	1.26	272	1.6	90.0%	4.8
HPS71 3600 23	71	3600	1.1	2.9	8.8	0.73	1.26	272	2.3	90.9%	5.4
HPS71 3600 32	71	3600	1.5	4.0	11.9	0.73	1.26	272	3.2	91.6%	6
HPS71 3600 46	71	3600	2.2	5.8	17.5	0.73	1.26	272	4.6	91.8%	6.6
HPS90 3600 46	S-L	3600	2.2	5.8	17.5	0.73	1.26	272	4.6	91.7%	10
HPS90 3600 63	S-L	3600	3.0	8.0	23.9	0.73	1.26	272	6.3	92.4%	12
HPS90 3600 84	S-L	3600	4.0	10.6	31.8	0.73	1.26	272	8.4	92.8%	14
HPS90 3600 116	S-L	3600	5.5	14.6	43.8	0.73	1.26	272	11.6	93.3%	16
HPS112 3600 116	M	3600	5.5	14.6	43.8	0.73	1.26	272	11.6	93.2%	23
HPS112 3600 158	M	3600	7.5	19.9	59.7	0.73	1.26	272	15.8	93.9%	26
HPS112 3600 232	M	3600	11.0	29.2	87.5	0.73	1.26	272	23.2	94.3%	30
HPS112 3600 317	M	3600	15.0	39.8	119.4	0.73	1.26	272	31.7	94.5%	33
HPS132 3600 317	M	3600	15.0	39.8	119.4	0.73	1.26	272	31.7	94.2%	51
HPS132 3600 391	XL	3600	18.5	49.1	147.2	0.73	1.26	272	39.1	94.6%	58
HPS132 3600 465	XXL	3600	22.0	58.4	175.1	0.73	1.26	272	46.5	95.0%	65
HPS132 3600 634	XXL	3600	30.0	79.6	238.7	0.73	1.26	272	63.4	95.1%	72

HPS Stand-alone motor - 4500 rpm IE 4

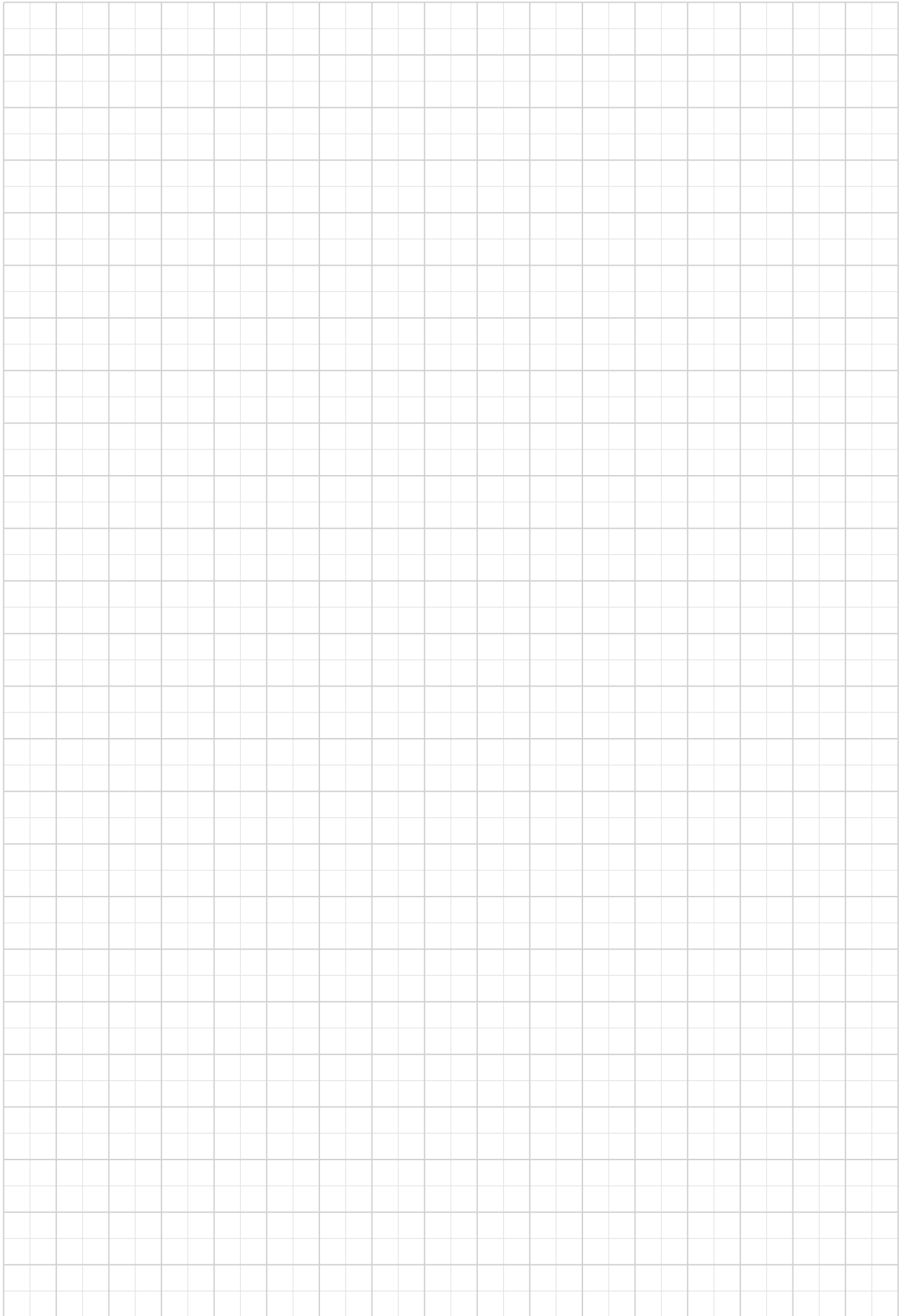
Type code	Size	Rated speed	Rated power	Rated torque	Peak torque	Voltage constant	Torque constant	BEMF at rated speed	Rated current	Efficiency HPS	Weight
		n 1/min	Pn kW	Mn Nm	Mpk Nm	Ke Vs	Kt Nm/A	En Vrs	In Arms	η %	Kg
HPS71 4500 23	71	4500	1.1	2.3	7.0	0.58	1	272	2.3	90.0%	4.8
HPS71 4500 32	71	4500	1.5	3.2	9.6	0.58	1	272	3.2	91.0%	5.4
HPS71 4500 47	71	4500	2.2	4.7	14.0	0.58	1	272	4.7	91.8%	6.2
HPS71 4500 64	71	4500	3.0	6.4	19.1	0.58	1	272	6.4	91.9%	7
HPS90 4500 64	S-L	4500	3.0	6.4	19.1	0.58	1	272	6.4	91.8%	10
HPS90 4500 85	S-L	4500	4.0	8.5	25.5	0.58	1	272	8.5	92.4%	12
HPS90 4500 117	S-L	4500	5.5	11.7	35.0	0.58	1	272	11.7	93.0%	14
HPS90 4500 159	S-L	4500	7.5	15.9	47.8	0.58	1	272	15.9	93.5%	17



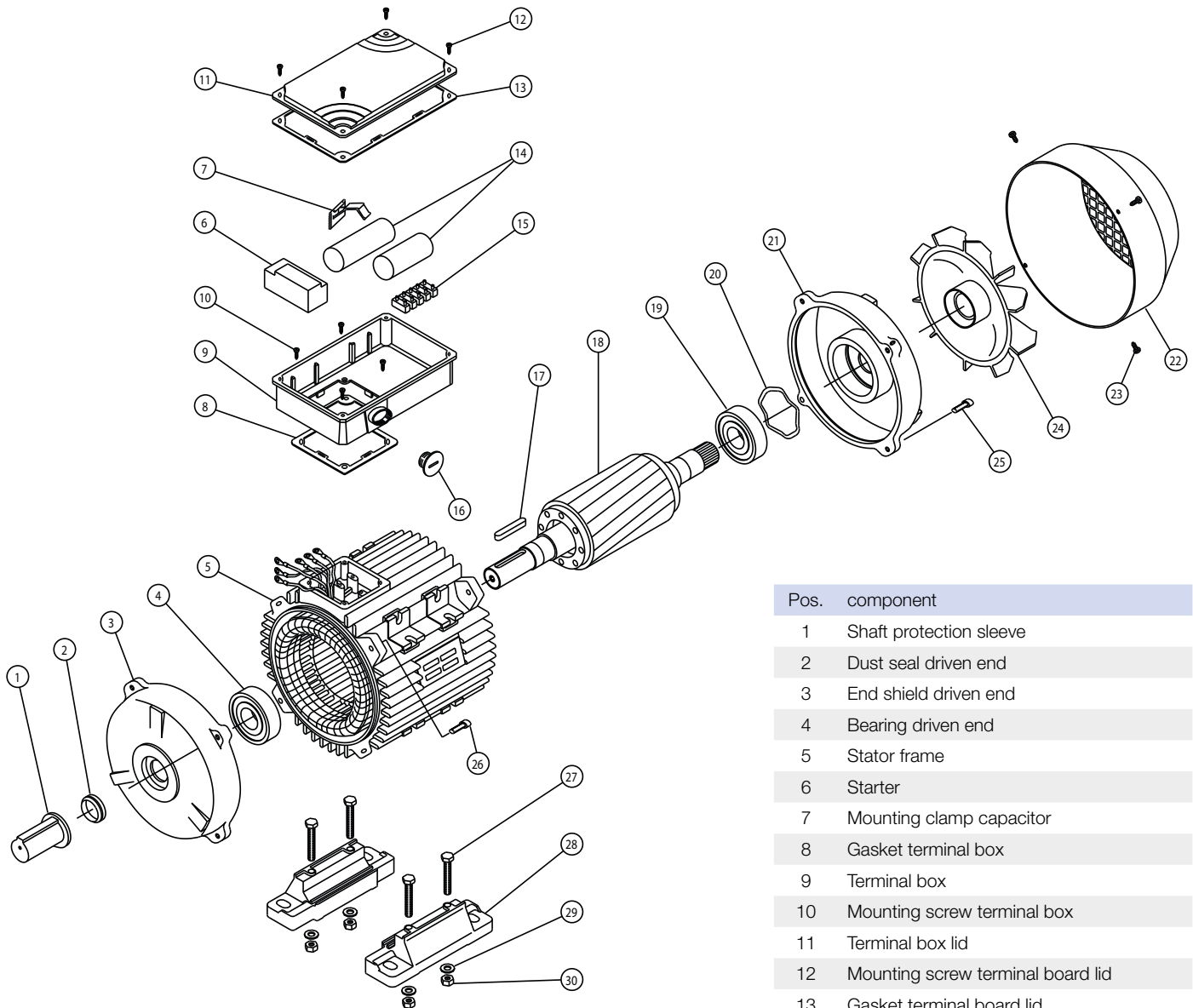
HPS frame size 71-90-112-132 IM B3 aluminium execution

Motor type	L	LB	AL	AF	D/DA	E/EA	F/FA	GD	GA/GC	DB	H	A	B	C	K ¹⁾	AB	BB	AA	BA	AD ²⁾	HD	AC	HC	HA	K1
71	245	215	75	93	14	30	5	5	16	M5	71	112	90	45	7	144	109	30	22	112	183	142	142	9	17
90S	317	267	85	110	24	50	8	7	27	M8	90	140	100	56	10	170	150	37	28/53	148	238	180	181	11	15
90L	317	267	85	110	24	50	8	7	27	M8	90	140	125	56	10	170	150	37	28/53	148	238	180	181	11	15
112M	388	328	92	110	28	60	8	7	31	M10	112	190	140	70	12.5	220	175	48	46	171	238	225	226	15	19
112XL	410	350	92	110	28	60	8	7	31	M10	112	190	140	70	12.5	220	175	48	46	171	238	225	226	15	19
132M	482	402	120	133	38	80	10	8	41	M12	132	216	178	89	12	256	218	59	45	195	327	248	261	17	20
132XL	505	425	120	133	38	80	10	8	41	M12	132	216	178	89	12	256	218	59	45	195	327	248	261	17	20
132XXL	556	476	120	133	38	80	10	8	41	M12	132	216	178	89	12	256	218	59	45	195	327	248	261	17	20

S-S-ELD-EN-EMOT-001-V01



Parts single phase motors



Pos.	component
1	Shaft protection sleeve
2	Dust seal driven end
3	End shield driven end
4	Bearing driven end
5	Stator frame
6	Starter
7	Mounting clamp capacitor
8	Gasket terminal box
9	Terminal box
10	Mounting screw terminal box
11	Terminal box lid
12	Mounting screw terminal board lid
13	Gasket terminal board lid
14	Capacitor
15	Connecting block
16	Blank gland plug
17	Key
18	Rotor complete
19	Bearing non-driven end
20	Pre-loaded washer
21	End shield non-driven side
22	Fan cover
23	Mounting screw fan cover
24	Fan
25	Mounting bolt end shield non-driven end
26	Mounting bolt end shield driven end
27	Mounting bolt motor feet
28	Motor feet
29	Motor feet washer
30	Motor feet nut

AEG Lafert motors

Without starting capacitor 2 pole – 3000 rpm

Type code	P _n	n _n	M _n	η	cos φ	I _n		I _a / I _n	M _a / M _n	M _k / M _n	J	Weight
	kW	rpm	Nm	100%		230 V	220-240 V				10 ⁻³ kgm ²	kg
AMM 56Z AA 2	0,12	2600	0,4	47	0,9	1,2	1,3	1,3	1,3	1,8	0,09	3
AMM 63Z AA 2	0,18	2710	0,6	58,5	0,98	1,2	1,3	3	1,2	1,8	0,14	5
AMM 63Z BA 2	0,25	2760	0,9	68,6	0,95	1,7	1,9	3,2	1	1,6	0,18	5,5
AMM 71Z AA 2	0,37	2780	1,3	57,6	0,89	3,1	3,3	3,1	0,8	1,9	0,41	7,1
AMM 71Z BA 2	0,55	2740	1,9	69	0,89	3,9	4,1	3,5	0,7	1,7	0,55	8,5
AMM 80Z AA 2	0,75	2800	2,6	65	0,95	5,3	5,5	4,1	0,6	2	1,05	11,4
AMM 80Z BA 2	1,1	2730	3,8	74	0,97	6,5	6,6	3,6	0,5	1,6	1,08	11,8
AMM 90S AA 2	1,1	2830	3,7	68	0,94	7,5	8	4	0,4	2	1,62	15,3
AMM 90L BA 2	1,5	2835	5,1	73	0,9	9,3	9,6	3,9	0,5	2,1	1,87	17,3
AMM 90L CA 2	1,8	2790	6,2	73	0,99	10,8	11,2	4	0,6	2	2,09	18,7
AMM 90L DA 2	2,2	2770	7,6	73	0,9	14,6	15,4	4,3	0,2	1,8	2,11	19,3
AMM 100L AA 2	2,2	2795	7,5	75	0,98	12,8	13,1	4,3	0,4	1,5	4,05	24,5

Without starting capacitor 4 pole – 1500 rpm

Type code	P _n	n _n	M _n	η	cos φ	I _n		I _a / I _n	M _a / M _n	M _k / M _n	J	Weight
	kW	rpm	Nm	100%		230 V	220-240 V				10 ⁻³ kgm ²	kg
AMM 56Z AA 4	0,09	1340	0,6	45	0,89	1	1,1	1,9	0,5	1,2	0,14	3,5
AMM 63Z AA 4	0,12	1385	0,8	50	0,97	1	1,1	2,8	0,7	1,5	0,27	4,5
AMM 63Z BA 4	0,18	1280	1,3	50	0,97	1,6	1,7	2	0,8	1,2	0,34	4,9
AMM 71Z AA 4	0,25	1270	1,9	52,1	0,89	2,5	2,7	2,4	0,7	1,5	0,82	7,2
AMM 71Z BA 4	0,37	1370	2,6	62	0,88	2,8	3,1	2,9	0,8	1,2	1,08	8,5
AMM 80Z AA 4	0,37	1390	2,5	60	0,96	2,8	2,9	3,2	0,5	1,9	2	9,8
AMM 80Z BA 4	0,55	1390	3,8	67	0,88	4	4,2	3,2	0,5	1,8	2,41	11,3
AMM 80Z CA 4	0,75	1445	5	73	0,9	4,9	5,1	4,4	0,3	1,9	2,7	12,8
AMM 90L AA 4	1,1	1415	7,4	70	0,93	7,4	7,8	3,6	0,5	1,5	3,13	15,4
AMM 90L BA 4	1,5	1430	10	79	0,94	9	9,3	4,3	0,5	1,7	3,73	17,6
AMM 100L AA 4	1,8	1380	12,5	70	0,96	12	12,4	3,6	0,3	1,5	5,83	22,8
AMM 100L BA 4	2,2	1450	14,5	81	0,97	12,5	12,7	4,6	0,4	1,7	6	23,8

Without starting capacitor 6 pole – 1000 rpm

Type code	P _n	n _n	M _n	η	cos φ	I _n		I _a / I _n	M _a / M _n	M _k / M _n	J	Weight
	kW	rpm	Nm	100%		230 V	220-240 V				10 ⁻³ kgm ²	kg
AMM 71Z AA 6	0,18	840	2	48	0,87	1,9	2	2,7	0,8	1,6	0,9	6,3
AMM 80Z AA 6	0,25	900	2,7	56	0,95	2,2	2,4	2,3	0,3	1,8	2	8,8
AMM 80Z BA 6	0,37	925	3,8	60	0,96	2,8	3	2,6	0,4	1,3	2,47	10
AMM 90L AA 6	0,55	950	5,5	72	0,95	3,4	3,5	3,4	0,4	1,2	5,2	16,5
AMM 90L BA 6	0,75	890	8	71	0,96	4,8	4,9	3,2	0,5	1,5	5,85	18
AMM 100L AA 6	1,1	950	11,1	69	0,96	7,1	7,7	2,9	0,2	1,3	6,73	19
AMM 100L BA 6	1,5	870	16,5	66	0,98	10	10,2	2,5	0,4	1,4	9,43	22,5

With starting capacitor 2 pole – 3000 rpm

Type code	P _n	n _n	M _n	η	cos φ	I _n		I _a / I _n	M _a / M _n	M _k / M _n	J	Weight
	kW	rpm	Nm	100%		230 V	220-240 V				10 ⁻³ kgm ²	kg
AMME 63Z AA 2	0,12	2810	0,4	67,1	0,9	0,9	1	2,5	1,9	1,5	0,11	4,5
AMME 63Z BA 2	0,18	2800	0,6	58,5	0,98	1,2	1,3	3	1,6	1,8	0,14	5
AMME 63Z CA 2	0,25	2760	0,9	68,6	0,95	1,7	1,9	3,2	1,7	1,6	0,18	5,5
AMME 71Z AA 2	0,37	2780	1,3	57,6	0,89	3,1	3,3	3,1	2,5	1,9	0,41	7,1
AMME 71Z BA 2	0,55	2740	1,9	69	0,89	3,9	4,1	3,5	1,9	1,7	0,55	8,5
AMME 80Z AA 2	0,75	2800	2,6	65	0,95	5,3	5,5	5,3	2,9	2	1,05	11,4
AMME 80Z BA 2	1,1	2730	3,8	74	0,97	6,5	6,6	4	2,9	1,6	1,08	11,8
AMME 90S AA 2	1,1	2830	3,7	68	0,94	7,5	8	5,2	2,4	2	1,62	15,3
AMME 90L BA 2	1,5	2835	5,1	73	0,9	9,3	9,6	5,1	2,5	2,1	1,87	17,3
AMME 90L CA 2	1,8	2790	6,2	73	0,99	10,8	11,2	3,7	1,6	2	2,09	18,7
AMME 90L DA 2	2,2	2770	7,6	73	0,9	14,6	15,4	4	1,8	1,8	2,11	19,3
AMME 100L AA 2	2,2	2795	7,5	75	0,98	12,8	13,1	4,3	1,8	1,8	4,05	24,5

With starting capacitor 4 pole – 1500 rpm

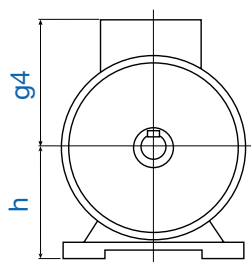
Type code	P _n	n _n	M _n	η	cos φ	I _n		I _a / I _n	M _a / M _n	M _k / M _n	J	Weight
	kW	rpm	Nm	100%		230 V	220-240 V				10 ⁻³ kgm ²	kg
AMME 63Z AA 4	0,12	1385	0,8	50	0,97	1	1,1	2,8	1,2	1,5	0,27	4,5
AMME 63Z BA 4	0,18	1280	1,3	50	0,97	1,6	1,7	2	1,9	1,2	0,34	4,9
AMME 71Z AA 4	0,25	1270	1,9	52,1	0,89	2,5	2,7	2,4	3	1,5	0,82	7,2
AMME 71Z BA 4	0,29	1275	2,2	56,1	0,95	2,4	2,5	4	3	1,6	0,95	7,8
AMME 71Z CA 4	0,37	1370	2,6	62	0,88	2,8	3,1	2,9	2,5	1,2	1,08	8,5
AMME 80Z AA 4	0,37	1390	2,5	60	0,96	2,8	2,9	2,5	1,8	1,9	2	9,8
AMME 80Z BA 4	0,55	1390	3,8	67	0,88	4	4,2	3,3	2,3	1,8	2,41	11,3
AMME 80Z CA 4	0,75	1445	5	73	0,9	4,9	5,1	5,4	2,4	2	2,7	12,8
AMME 90L AA 4	1,1	1415	7,4	70	0,93	7,4	7,8	4,8	2	1,5	3,13	15,4
AMME 90L BA 4	1,5	1430	10	79	0,94	9	9,3	4,7	1,8	1,7	3,73	17,6
AMME 100L AA 4	1,8	1380	12,5	70	0,96	12	12,4	3,2	1,5	1,5	5,83	22,8
AMME 100L BA 4	2,2	1450	14,5	81	0,97	12,5	12,7	4,6	1	1,7	6	23,8

With starting capacitor 6 pole – 1000 rpm

Type code	P _n	n _n	M _n	η	cos φ	I _n		I _a / I _n	M _a / M _n	M _k / M _n	J	Weight
	kW	rpm	Nm	100%		230 V	220-240 V				10 ⁻³ kgm ²	kg
AMME 71Z AA 6	0,15	865	1,7	43	0,83	1,8	1,9	1,8	1,9	1,2	1,24	8
AMME 80Z AA 6	0,25	900	2,7	56	0,95	2,2	2,4	2,3	1,3	1,8	2	8,8
AMME 80Z BA 6	0,37	925	3,8	60	0,96	2,8	3	2,7	2	1,3	2,47	10
AMME 90L AA 6	0,55	950	5,5	72	0,95	3,4	3,5	3,8	2,5	1,2	5,2	16,5
AMME 90L BA 6	0,75	890	8	71	0,96	4,8	4,9	3	3,4	1,5	5,85	18
AMME 100L AA 6	1,1	950	11,1	69	0,96	7,1	7,7	2,4	1,4	1,3	6,73	19
AMME 100L BA 6	1,5	870	16,5	66	0,98	10	10,2	2,5	2	1,4	9,43	22,5

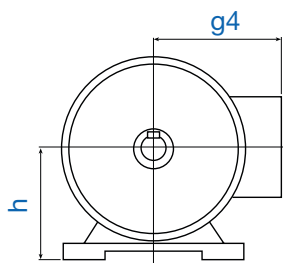
Dimensions of AEG-Lafert single phase motors

Standard design

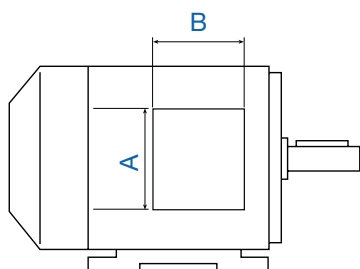


Terminal box on top

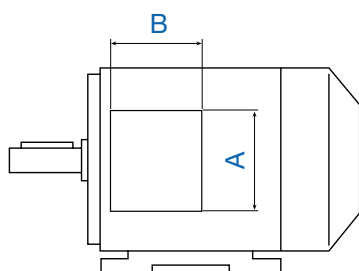
IEC Frame size	G ₄	A	B	Material
56	115	120	148	Plastic UL 94 V0
63	120	120	148	Plastic UL 94 V0
71	129	120	148	Plastic UL 94 V0
80	150	135	173	Plastic UL 94 V0
90	160	135	173	Plastic UL 94 V0
100	166	135	173	Plastic UL 94 V0



Terminal at the side



Left ¹⁾

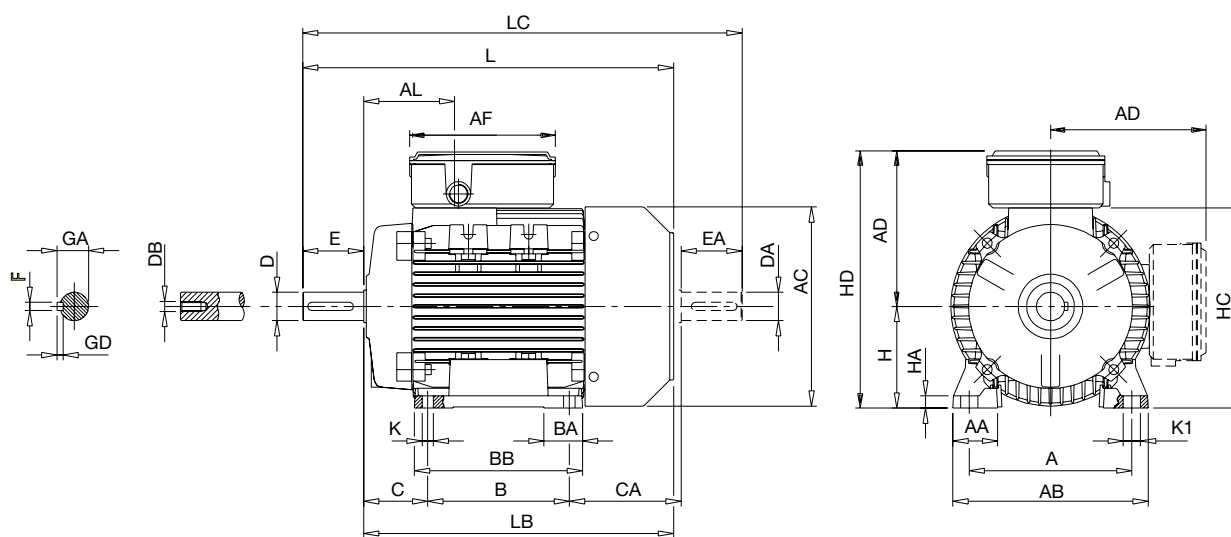


Right

¹⁾ With frame sizes 80-100 the position of the terminal box is close to the driven end of the motor.

B3 Foot mounted version

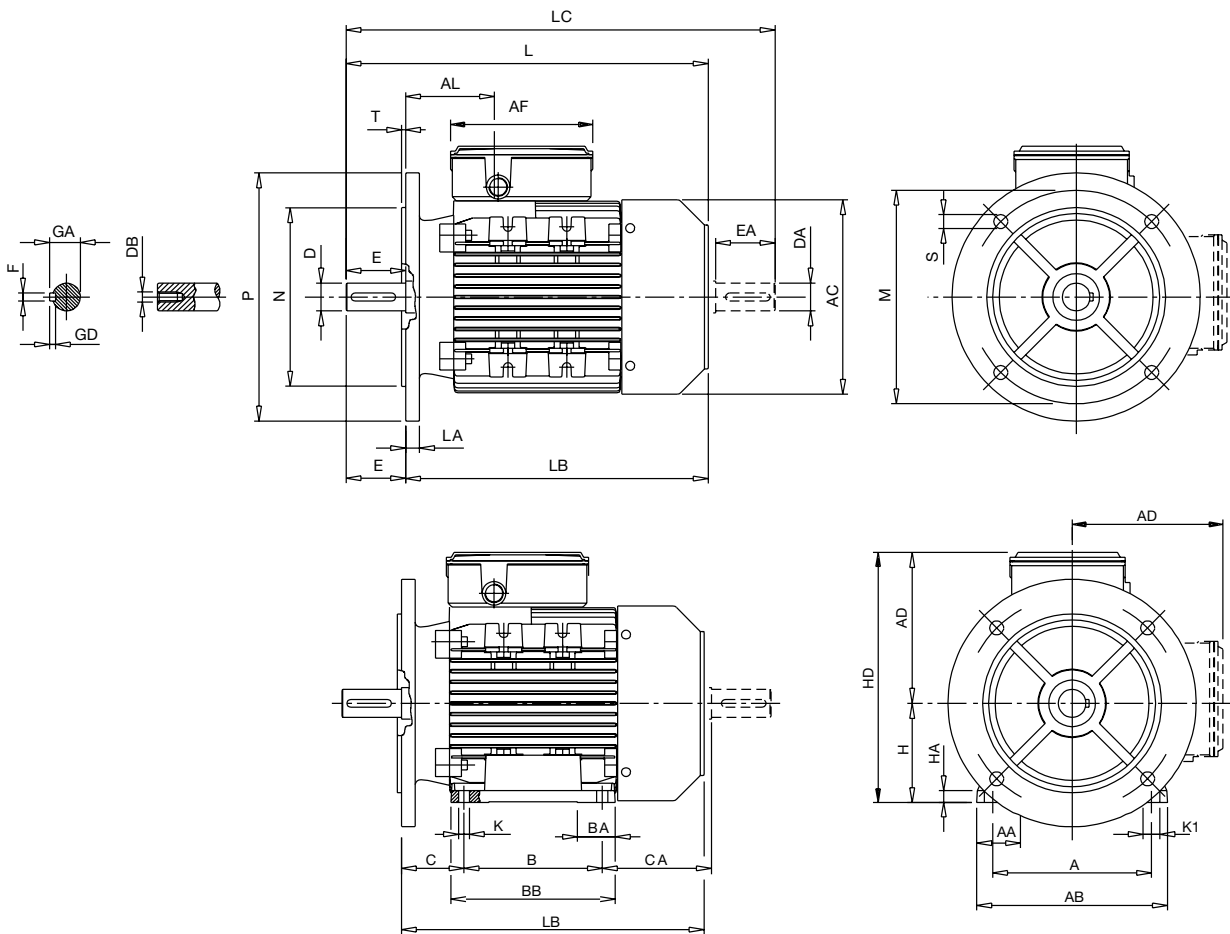
Size	H	A	B	C	K	AB	BB	CA	AD	HD	AC	HC	HA	K1	L	LB	LC	AL	AF	BA	AA	D/DA	E/EA	F	GD	GA	DB
56	56	90	71	36	6	107	86	64	116	172	110	109	8	9	188	168	211	61	147	27	27	9j6	20	3	3	10,2	M3
63	63	100	80	40	7	120	100	72	120	183	124	120	8	11	211	188	238	63	147	29	30	11j6	23	4	4	12,5	M4
71	71	112	90	45	8	135	108	83	134	205	139	142	9	11	246	216	278	69	147	28	31	14j6	30	5	5	16	M5
80	80	125	100	50	10	153	125	89	150	230	160	162	9,5	14	272	232	319	79	173	28,5	34,5	19j6	40	6	6	21,5	M6
90S	90	140	100	56	10	170	150	116	160	250	180	181	11	15	317	267	372	85	173	28/53	37	24j6	50	8	7	27	M8
90L	90	140	125	56	10	170	150	91	160	250	180	181	11	15	317	267	372	85	173	28/53	37	24j6	50	8	7	27	M8
100	100	160	140	63	11	192	166	110	166	266	196	198	12	17	366	306	433	91	173	38	44	28j6	60	8	7	31	M10



AEG Lafert motors

B5 Large flange - B3/B5 foot/flange mounted version

Size	M	N	P	T	LA	S	H	A	B	C	K	CA	BB	AA	AB	BA	AD	HD	AC	HA	K1	L	LB	LC	AL	AF	D/DA	E/EA	F	GD	GA	DB
56	100	80	120	2,5	7	7	56	90	71	36	6	64	86	27	107	27	116	172	110	8	9	188	168	211	61	147	9j6	20	3	3	10,2	M3
63	115	95	140	3	8	9,5	63	100	80	40	7	72	100	30	120	29	120	183	124	8	11	211	188	238	63	147	11j6	23	4	4	12,5	M4
71	130	110	160	3,5	10	9,5	71	112	90	45	8	83	108	31	135	28	134	205	139	9	11	246	216	278	69	147	14j6	30	5	5	16	M5
80	165	130	200	3,5	10	11,5	80	125	100	50	10	89	125	34,5	153	28,5	150	230	160	9,5	14	272	232	319	79	173	19j6	40	6	6	21,5	M6
90S	165	130	200	3,5	12	11,5	90	140	100	56	10	116	150	37	170	28/53	160	250	180	11	15	317	267	372	85	173	24j6	50	8	7	27	M8
90L	165	130	200	3,5	12	11,5	90	140	125	56	10	91	150	37	170	28/53	160	250	180	11	15	317	267	372	85	173	24j6	50	8	7	27	M8
100	215	180	250	4	14	14	100	160	140	63	11	110	166	44	192	38	166	266	196	12	17	366	306	433	91	173	28j6	60	8	7	31	M10



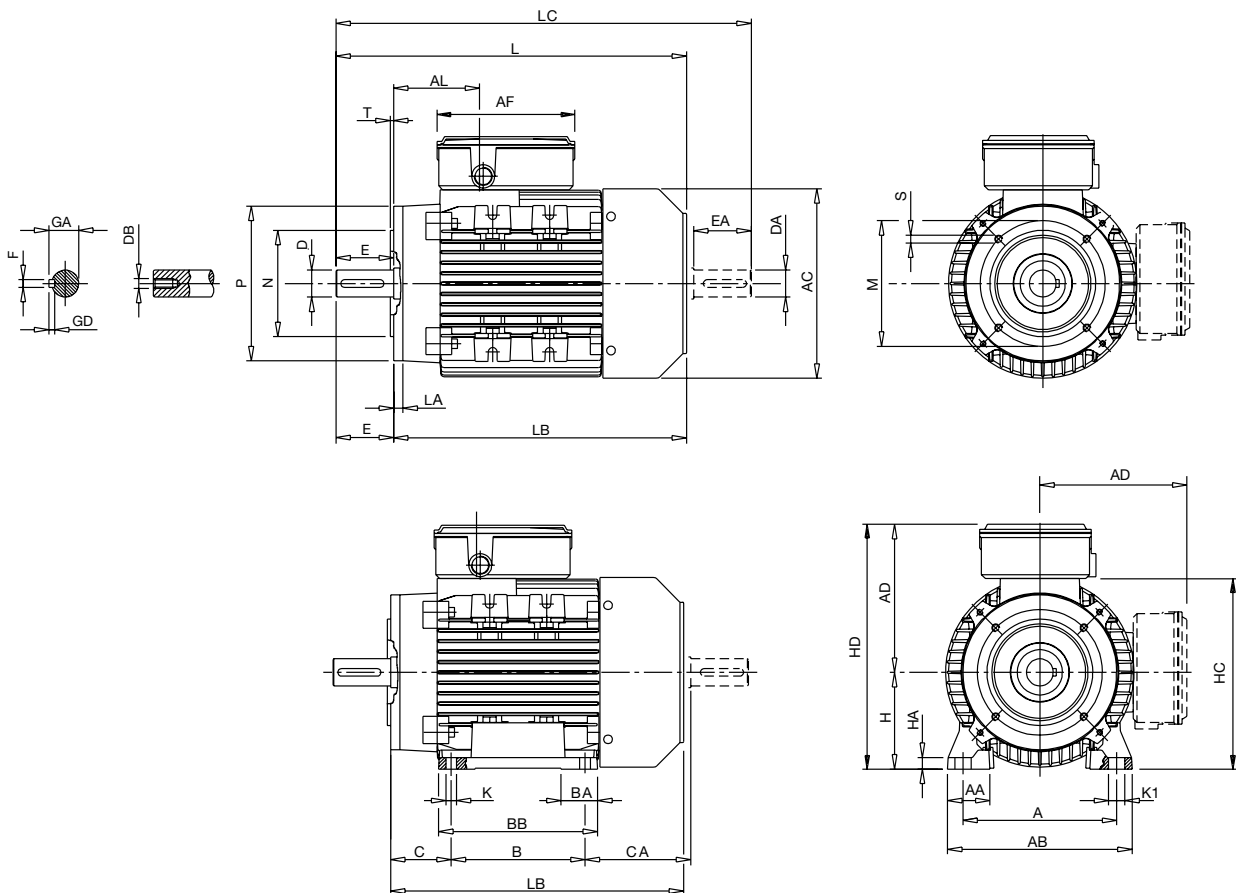
B14 Small flange - B3/B14 foot/flange mounted version

Size	B14a					
	IEC	P	N	LA	M	T
56	80	50	8	65	2,5	M5
63	90	60	8	75	2,5	M5
71	105	70	8	85	2,5	M6
80	120	80	9	100	3	M6
90S	140	95	9	115	3	M8
90L	140	95	9	115	3	M8
100	160	110	10	130	3,5	M8

B14b					
P	N	LA	M	T	S
105	70	8	85	2,5	M6
120	80	8	100	2,5	M6
140	95	8	115	3	M8
160	110	8,5	130	3,5	M8
160	110	9	130	3,5	M8
160	110	9	130	3,5	M8
200	130	12	165	3,5	M10

Size	L	LB	LC	AL	AF	D/DA	E/EA	F/FA	GD	GA/GC	DB	H	A	B	C	K	AB	BB	AA	BA	CA	AD	HD	AC	HC	HA	K1
56	188	168	211	61	147	9j6	20	3	3	10,2	M3	56	90	71	36	6	107	86	27	27	64	116	172	110	109	8	9
63	211	188	238	63	147	11j6	23	4	4	12,5	M4	63	100	80	40	7	120	100	30	29	72	120	183	124	120	8	11
71	246	216	278	69	147	14j6	30	5	5	16	M5	71	112	90	45	8	135	108	31	28	83	134	205	139	142	9	11
80	272	232	319	79	173	19j6	40	6	6	21,5	M6	80	125	100	50	10	153	125	34,5	28,5	89	150	230	160	162	9,5	14
90S	317	267	372	85	173	24j6	50	8	7	27	M8	90	140	100	56	10	170	150	37	28/53	116	160	250	180	181	11	15
90L	317	267	372	85	173	24j6	50	8	7	27	M8	90	140	125	56	10	170	150	37	28/53	91	160	250	180	181	11	15
100	366	306	433	91	173	28j6	60	8	7	31	M10	100	160	140	63	11	192	166	44	38	110	166	266	196	198	12	17

AEG Lafert motors



S-S-ELD-EN-EMOT-001-V01

Specifications brake motors

Available in three versions:

- **K series** Fitted with a dynamic 190V DC brake (other voltages available on request) with multiple rectifiers.
Available rectifiers: 230 and 400V, fast acting, slow acting.
- **AC series** Fitted with a dynamic three phase 230/400V brake (other voltages available on request)
- **S series** Fitted with a parking brake 190V DC brake (other voltages available on request) with multiple rectifiers.
Available rectifiers: 230 and 400V, fast acting, slow acting. THIS BRAKE IS NOT SUITABLE FOR DYNAMIC APPLICATIONS

Brake motor specifications:

Available in frame sizes IEC 63 – 160

Output range from 0,12 to 22 kW

Polarity: 2, 4, 6, 8

Double braking surface

Asbestos-free friction surfaces

Electromagnetic spring-loaded brake with release in case of power supply interruption

Progressive and noiseless braking

High braking torque ($M_b > 1,5 M_n$)

Adjustable braking torque for K and AC series (50%, 75%, 100% of $M_{b\ max}$)

Suitable for a high number of stops per hour

Available with a large number of options

Table of the main brake features

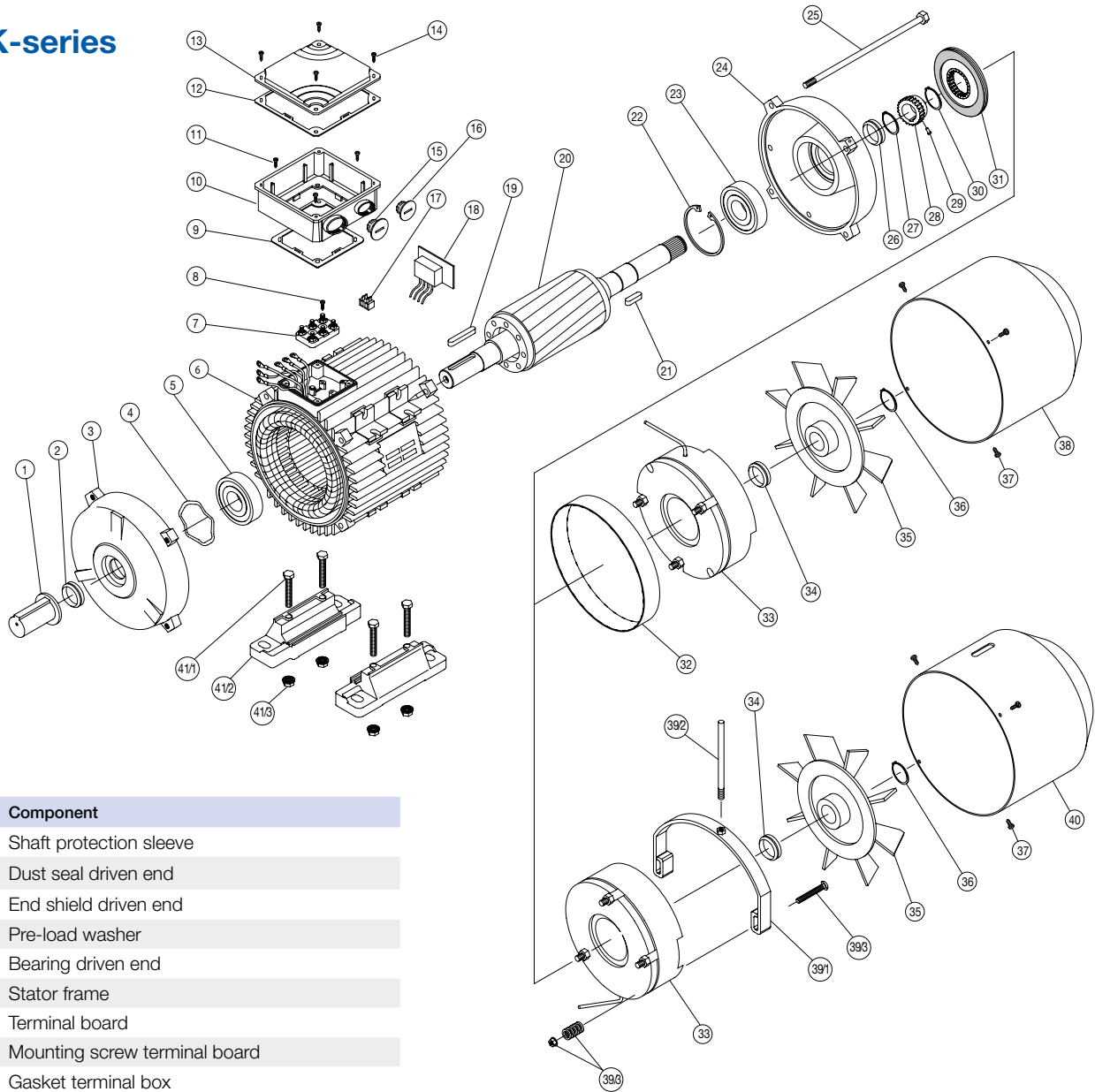
Brake type K	IEC frame size	Static brake torque $M_b^{1)}$	Airgap	Absorbed power
	IEC	Nm	mm	W
K01	63	5	0,15 ...0,5	15
K02	71	12	0,2 ...0,6	20
K04	80	20	0,2 ...0,7	30
K05	90 / 100	40	0,2 ...0,7	45
K06	112	60	0,2 ...0,7	50
K07	132	90	0,2 ...0,7	55

Brake type AC	IEC frame size	Static brake torque $M_b^{1)}$	Airgap	Absorbed power
	IEC	Nm	mm	W
AC01	63	4,5	0,15 ...0,5	17
AC02	71	10	0,2 ...0,6	22
AC04	80	20	0,2 ...0,7	27
AC05	90 / 100	40	0,2 ...0,7	39
AC06	112	60	0,2 ...0,7	61
AC07	132	90	0,2 ...0,7	69

Brake type MS	IEC frame size	Static brake torque $M_b^{1)}$	Airgap	Absorbed power
	IEC	Nm	mm	A
MS063	63	3	0,25 ...0,5	0,1
MS071	71	4	0,25 ...0,5	0,1
MS080	80	7	0,25 ...0,5	0,16
MS090	90	7	0,25 ...0,5	0,16
MS100	100 / 112	13	0,3 ...0,55	0,2
MS132	132 / 160	30	0,35 ...0,6	0,27

¹⁾ Tolerance values + 20%
Max. permitted brake rpm 3600

AMK-series



Pos	Component
1	Shaft protection sleeve
2	Dust seal driven end
3	End shield driven end
4	Pre-load washer
5	Bearing driven end
6	Stator frame
7	Terminal board
8	Mounting screw terminal board
9	Gasket terminal box
10	Terminal box
11	Mounting screw terminal board
12	Terminal box lid
13	Mounting screw terminal board lid
14	Gasket terminal board lid
15	Blank gland plug
16	Blank gland plug
17	Brake terminal board for frame sizes 63-112 ^{a)}
18	Rectifier
19	Key
20	Rotor complete
21	Bearing non-driven end
22	End shield non-driven end
23	Fan cover
24	Mounting screw fan cover ^{b)}
25	Tie rod
26	Dust seal (for IP 55 versions only)
27	Circlip
28	Brake hub
29	Anti-vibration spring/O ring
30	Circlip

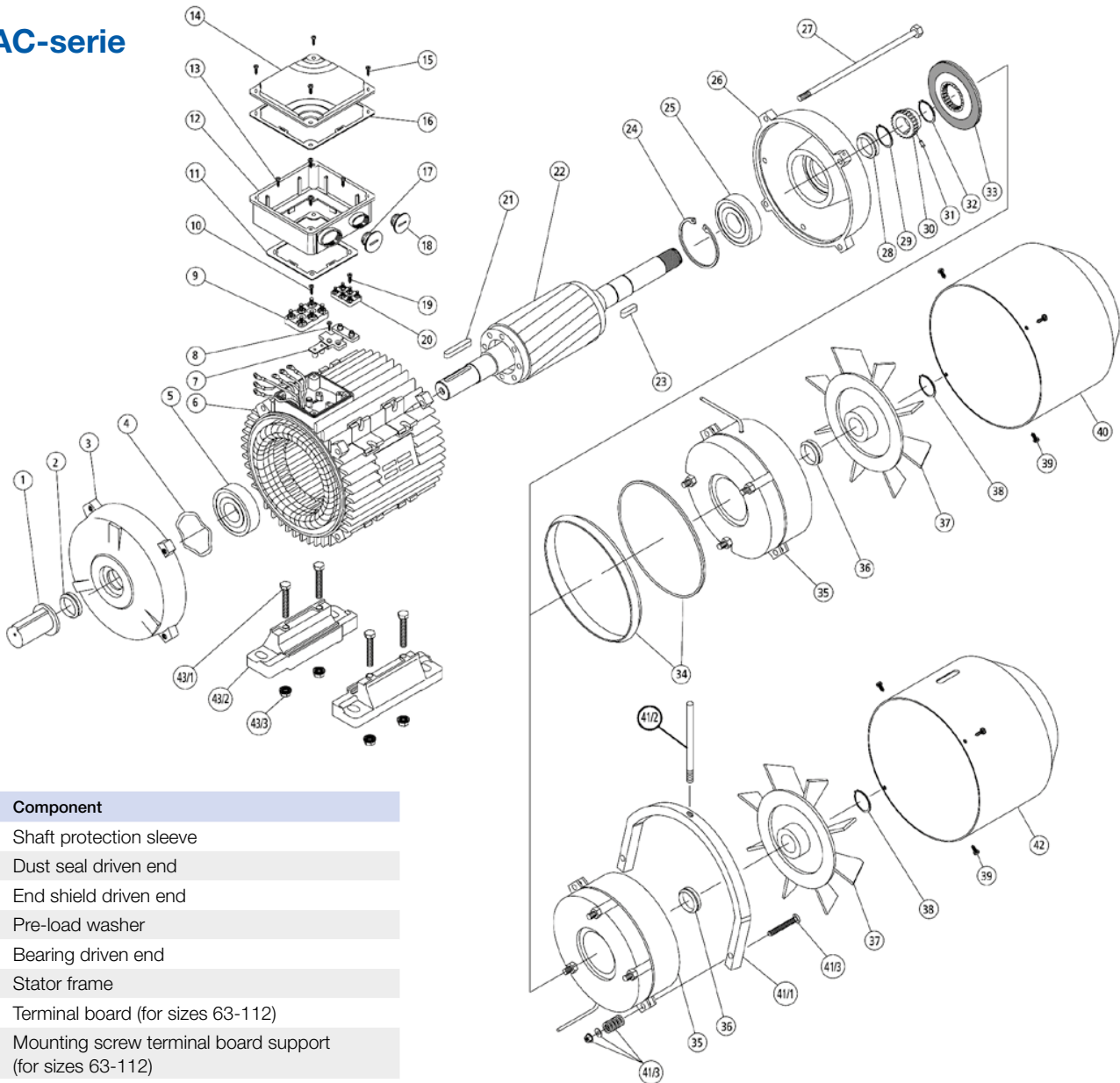
Pos	Component
31	Brake disc
32	Brake gasket (for IP 55 versions only)
33	Pre-assembled part of the brake (electromagnet, brake anchor, braking springs, fixing screws, guiding pipes, fastening nuts)
34	Dust seal (for IP 55 versions only)
35	Fan
36	Circlip (only for sizes 100 and 112)
37	Mounting screw fan cover
38	Fan cover
39	Hand release: 39/1 Hand lever - 39/2 Releasing lever - 39/3 Adjustment and mounting kit
40	Fan cover for use with hand release
41	Foot kit (1 foot): 41/1 Mounting screw - 41/2 Foot - 41/3 Nut ^{c)}

^{a)} For frame sizes > 112 the brake terminal is on the rectifier
^{b)} For frame sizes 63 and 71, with braking flange
^{c)} For frame sizes 132-160 washer and nut

S-S-ELD-EN-EMOT-001-V01

AEG Lafert motors

AMAC-serie



Pos	Component
1	Shaft protection sleeve
2	Dust seal driven end
3	End shield driven end
4	Pre-load washer
5	Bearing driven end
6	Stator frame
7	Terminal board (for sizes 63-112)
8	Mounting screw terminal board support (for sizes 63-112)
9	Motor terminal board
10	Mounting screw motor terminal board support
11	Gasket terminal box
12	Terminal box
13	Mounting screw motor board
14	Gasket terminal box lid
15	Terminal box lid
16	Mounting screw terminal board lid
17	Blank gland plug
18	Blank gland plug
19	Mounting screw brake terminal board lid (for frame sizes 63-112a)
20	Brake terminal board for frame sizes 63-112 ^{a)}
21	Key
22	Rotor complete
23	Brake key
24	Circlip
25	Bearing non-driven end
26	End shield non-driven end)
27	Tie rod
28	Dust seal (for IP 55 versions only)
29	Circlip
30	Brake hub

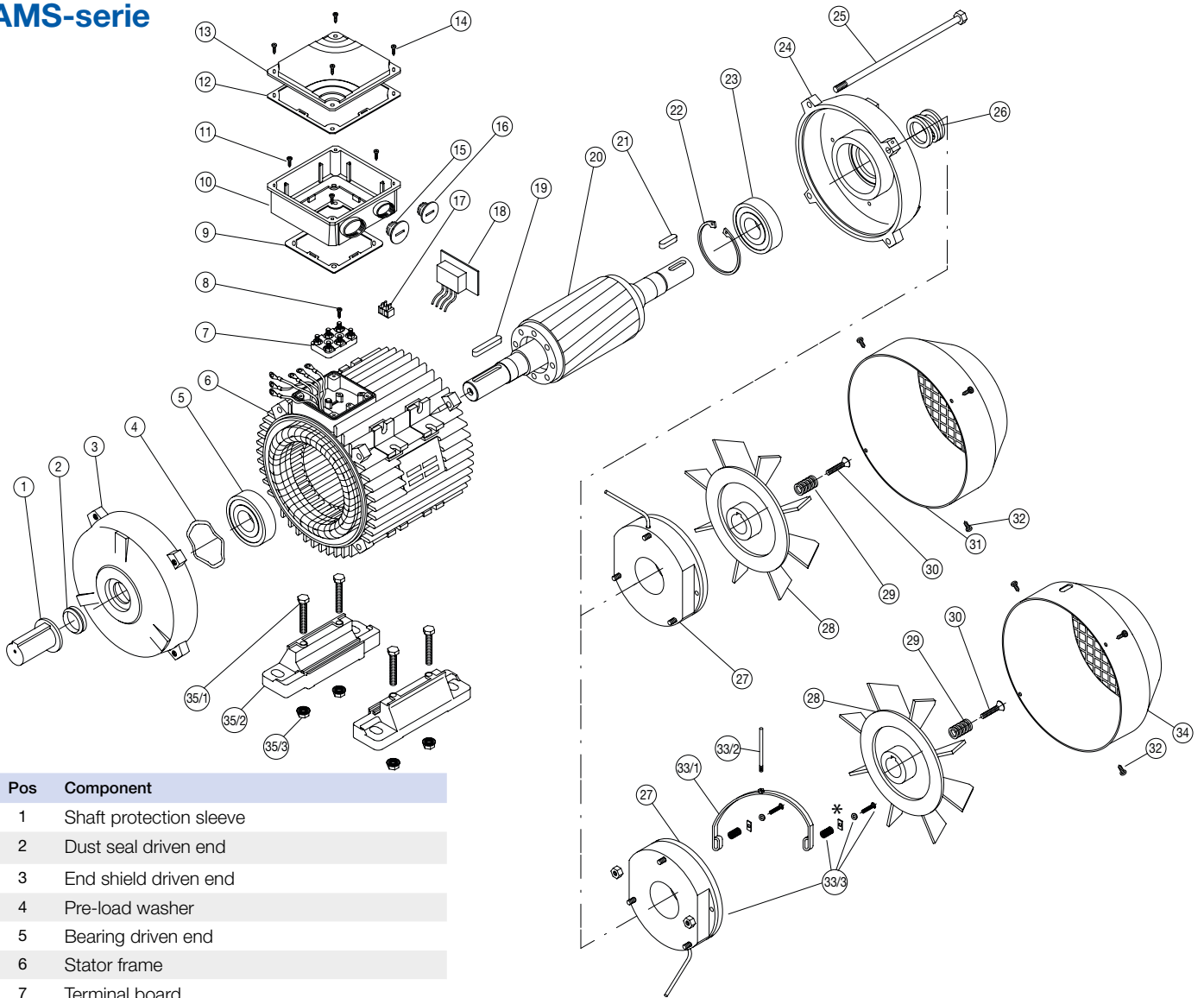
Pos	Component
31	Anti-vibration spring/O ring
32	Circlip
33	Brake disc
34	Brake gasket (for IP 55 versions only)
35	Pre-assembled part of the brake (electromagnet, brake anchor, braking springs, fixing screws, guiding pipes, fastening nuts)
36	Dust seal (for IP 55 versions only)
37	Fan
38	Circlip (only for sizes 100 and 112)
39	Mounting screw fan cover ^{b)}
40	Fan cover
41	Hand release: 41/1 Hand lever 41/2 Releasing lever 41/3 Adjustment and mounting kit
42	Fan cover for use with hand release
43	Foot kit (1 foot): 41/1 Mounting screw 41/2 Foot - 41/3 Nut ^{c)}

^{a)} For frame sizes > 112 the brake terminal is on the rectifier

^{b)} For frame sizes 63 and 71, with braking flange

^{c)} For frame sizes 132-160 washer and nut

AMS-serie



Pos	Component
1	Shaft protection sleeve
2	Dust seal driven end
3	End shield driven end
4	Pre-load washer
5	Bearing driven end
6	Stator frame
7	Terminal board
8	Mounting screw terminal board
9	Gasket terminal box
10	Terminal box
11	Mounting screw terminal board
12	Gasket terminal box lid
13	Terminal box lid
14	Mounting screw terminal board lid
15	Blank gland plug
16	Blank gland plug
17	Brake terminal board
18	Rectifier
19	Key
20	Rotor complete
21	Brake key
22	Circlip
23	Bearing non-driven end
24	End shield non-driven end
25	Tie rod
26	Main brake spring
27	Pre-assembled part of the brake (electromagnet, brake anchor, braking springs, fixing screws, guiding pipes, fastening nuts)
28	Brake fan (with fixed washer)

Pos	Component
29	Auxiliary brake spring
30	Air gap adjustment/fixing screw
31	Fan cover
32	Mounting screw fan cover ^{a)}
33	Hand release: 33/1 Hand lever 33/2 Releasing lever 33/3 Adjustment and mounting kit
34	Fan cover for use with hand release
35	Foot kit (1 foot): 41/1 Mounting screw 41/2 Foot 41/3 Nut ^{b)}

^{a)} For frame sizes > 112, the mounting feet are an integral part of the frame.
^{b)} For frame sizes 132, nut and ring
^{γ)} Distance piece for frame sizes 100-132 only.

S-S-ELD-EN-EMOT-001-V01

AEG Lafert motors

Motor specifications												
2 pole – 3000 rpm											IE1	
Type code	P _n	n _n	M _n	IE1 η			cos φ	I _n		I _a / I _n	M _a / M _n	M _s / M _n
	kW	rpm	Nm	50%	75%	100%		400 V	380-420V			
AM... 63Z AA 2	0,18	2790	0,6	54,0	58,0	63,0	0,73	0,60	0,65	3,7	3,0	3,1
AM... 63Z BA 2	0,25	2790	0,9	57,0	62,0	66,0	0,70	0,80	0,75	4,5	3,2	3,3
AM... 63Z CA 2	0,37	2800	1,3	54,0	58,0	65,0	0,70	1,20	1,25	4,6	3,4	3,4
AM... 71Z AA 2	0,37	2820	1,3	58,0	64,0	70,0	0,78	1,0	1,2	4,7	3,6	3,6
AM... 71Z BA 2	0,55	2830	1,9	57,0	64,0	71,0	0,77	1,5	1,6	4,8	3,2	3,3
AM... 71Z CA 2	0,75	2800	2,6	58,9	65,7	72,6	0,76	2,0	2,1	5,2	3,1	3,1
AM... 80Z AA 2	0,75	2840	2,5	66,3	71,5	73,0	0,78	1,9	2,0	5,0	2,8	2,9
AM... 80Z BA 2	1,1	2810	3,7	72,1	75,0	75,3	0,82	2,5	2,6	4,6	2,4	2,9
AM... 80Z CA 2	1,5	2825	5,1	74,7	77,5	77,8	0,83	3,3	3,4	5,0	2,9	3,3
AM... 90S AA 2	1,5	2830	5,1	75,6	78,7	78,6	0,82	3,4	3,5	5,0	3,1	3,0
AM... 90S BA 2	1,8	2805	6,1	74,9	78,0	78,2	0,80	4,2	4,3	4,5	2,6	2,5
AM... 90L CA 2	2,2	2860	7,3	81,5	82,8	81,8	0,81	4,9	4,9	7,1	4,1	4,0
AM... 90L DA 2	3	2860	10,0	78,7	81,8	82,2	0,80	6,6	6,8	7,2	3,9	3,8
AM... 100L AA 2	3	2860	10,0	78,9	81,4	81,5	0,85	6,4	6,7	6,0	3,1	3,3
AM... 100L BA 2	4	2835	13,5	81,1	82,5	81,7	0,88	8,0	8,1	6,2	2,9	2,9
AM... 100L CA 2	5,5	2865	18,3	83,7	84,6	83,3	0,86	11,1	11,3	7,2	3,5	4,1
AM... 112M AA 2	4	2880	13,3	81,9	84,0	83,5	0,82	8,4	8,7	8,0	3,4	3,6
AM... 112M BA 2	5,5	2900	18,1	83,6	84,7	85,0	0,86	10,9	11,2	7,8	3,5	3,6
AM... 112M CA 2	7,5	2900	24,7	86,7	87,8	87,1	0,87	14,3	14,8	8,7	4,0	4,0
AM... 132S YA 2	5,5	2890	18,2	83,2	84,7	85,0	0,83	11,3	11,4	6,0	2,2	2,3
AM... 132S ZA 2	7,5	2880	24,9	85,6	86,7	86,1	0,87	14,5	14,9	6,4	2,9	3,1
AM... 132M ZA 2	9,2	2900	30,3	84,7	86,8	87,0	0,84	18,4	18,8	7,0	2,8	3,2
AM... 132M RA 2	11	2880	36,5	87,1	88,1	88,0	0,85	21,3	21,7	6,9	3,2	3,8
AM... 132M TA 2	15	2920	49,1	86,4	88,6	88,9	0,83	29,5	30,5	7,0	3,2	3,7

Brake specifications 2 pole - 3000 rpm (continued) IE1

Type code	AMK					AMAC					AMS			
	J	M _B max		Z _L	Weight	J	M _B max		Z _L	Gew.	J	M _B	Z _L	Weight
		std	option				std	option						
	10 ⁻³ kgm ²	Nm	Nm	c/h	kg	10 ⁻³ kgm ²	Nm	Nm	c/h	kg	10 ⁻³ kgm ²	Nm	c/h	kg
AM... 63Z AA 2	0,19	3,5		6300	5,7	0,19	3,5		7100	5,5	0,43	3	3550	5,1
AM... 63Z BA 2	0,21	3,5		6300	6,2	0,21	3,5		7100	6,0	0,45	3	3150	5,6
AM... 63Z CA 2	0,24	3,5		6000	6,5	0,24	3,5		6700	6,3	0,48	3	3150	5,9
AM... 71Z AA 2	0,38	3,5	7,5	5000	8,2	0,38	3,5	7,5	5600	8,0	0,81	4	2650	7,6
AM... 71Z BA 2	0,48	7,5		4750	9,3	0,48	7,5		5300	9,0	0,87	4	2650	8,0
AM... 71Z CA 2	0,57	7,5		4500	10,3	0,57	7,5		5000	10,0	0,96	4	2360	9,0
AM... 80Z AA 2	0,70	7,5	15	3350	12,6	0,70	7,5	15	3750	12,3	1,59	7	1700	11,2
AM... 80Z BA 2	0,91	15		3150	14,6	0,91	15		3550	14,5	1,75	7	1700	12,3
AM... 80Z CA 2	1,07	15		2650	16,2	1,07	15		3000	16,1	1,91	7	1400	13,9
AM... 90S AA 2	1,39	15	40	3150	18,7	1,39	15	40	3550	18,6	2,31	7	1400	15,7
AM... 90S BA 2	1,39	15	40	3150	18,7	1,39	15	40	3550	18,6	2,31	7	1400	15,7
AM... 90L CA 2	1,84	15	40	2500	22,0	1,84	15	40	2800	21,9	2,76	7	1200	19,0
AM... 90L DA 2	2,32	40		2360	26,5	2,32	40		2650	27,2	3,06	7	1120	21,7
AM... 100L AA 2	2,71	40	75	2360	27,9	2,71	40	75	2650	28,6	5,3	13	1120	23,6
AM... 100L BA 2	3,23	40	75	2120	28,3	3,23	40	75	2360	29,0	5,8	13	1000	24
AM... 100L CA 2	4,26	40	75	2000	34,5	4,26	40	75	2230	35,2	6,9	13	900	30,2
AM... 112M AA 2	5,0	40	75	1120	33,8	5,0	40	75	1250	34,5	7,6	13	750	29,0
AM... 112M BA 2	6,1	40	75	1000	36,9	6,1	40	75	1120	37,6	8,7	13	670	32,1
AM... 112M CA 2	8,8	75		900	46,5	8,8	75		1000	47,9	10,9	13	600	38,3
AM... 132S YA 2	10,4	75	150	710	55	10,4	75	150	800	56	14,2	30	560	46,5
AM... 132S ZA 2	13,1	75	150	670	61	13,1	75	150	750	62	17,0	30	480	52
AM... 132M ZA 2	14,1	75	150	600	66	14,1	75	150	670	67	18,0	30	430	57
AM... 132M RA 2	16,9	75	150	550	70	16,9	75	150	610	72	20,8	30	380	62
AM... 132M TA 2	22,0	150		500	81	22	150		555	83				

AEG Lafert motors

S-S-ELD-EN-EMOT-001-V01

Motor specifications 4 pole - 1500 rpm IE1

Type code	P _n kW	n _n rpm	M _n Nm	IE1 η			cos φ	I _n		I _a / I _n	M _a / M _n	M _s / M _n
				50%	75%	100%		400 V	380-420V			
AM... 63Z AA 4	0,12	1350	0,8	46,0	50,0	57,0	0,65	0,50	0,55	2,4	2,0	2,0
AM... 63Z BA 4	0,18	1330	1,3	47,0	50,0	58,0	0,70	0,65	0,70	2,3	1,9	1,9
AM... 63Z CA 4	0,25	1360	1,8	49,0	52,5	58,0	0,74	0,85	0,90	2,7	2,2	2,1
AM... 71Z AA 4	0,25	1340	1,8	55,0	59,0	64,0	0,66	0,90	1,00	3,2	1,9	2,0
AM... 71Z BA 4	0,37	1370	2,6	60,0	63,0	67,0	0,67	1,20	1,25	3,3	2,2	2,2
AM... 71Z CA 4	0,55	1380	3,8	61,0	64,0	69,0	0,68	1,70	1,80	3,6	2,4	2,4
AM... 80Z AA 4	0,55	1400	3,8	67,0	69,0	70,0	0,72	1,6	1,7	3,6	2,6	2,6
AM... 80Z BA 4	0,75	1410	5,1	68,7	70,8	72,4	0,72	2,1	2,2	4,4	2,8	2,8
AM... 80Z CA 4	1,1	1385	7,6	73,4	75,7	75,2	0,77	2,8	2,9	4,4	2,5	2,6
AM... 90S AA 4	1,1	1400	7,5	75,8	76,0	75,4	0,78	2,7	2,9	5,2	2,5	2,8
AM... 90L BA 4	1,5	1400	10,2	77,6	77,8	77,5	0,78	3,6	3,7	5,7	2,8	3,0
AM... 90L CA 4	1,8	1380	12,5	76,3	76,5	75,9	0,81	4,2	4,3	5,5	2,7	2,9
AM... 90L DA 4	2,2	1400	15,0	78,3	78,5	77,9	0,77	5,3	5,5	4,8	2,9	3,2
AM... 100L AA 4	2,2	1435	14,6	76,5	79,1	79,9	0,74	5,4	5,6	5,3	2,5	2,7
AM... 100L BA 4	3,0	1425	20,1	82,0	83,0	81,6	0,78	6,8	6,9	4,6	2,4	2,5
AM... 100L CA 4	4,0	1400	27,3	80,8	81,8	80,4	0,78	9,2	9,3	6,0	2,6	2,9
AM... 112M AA 4	4,0	1430	26,7	83,2	83,9	83,1	0,82	8,5	8,8	6,3	2,2	2,8
AM... 112M BA 4	5,5	1430	36,7	84,1	84,8	84,0	0,83	11,4	11,7	6,5	2,2	2,9
AM... 132S ZA 4	5,5	1430	36,7	87,2	87,1	86,1	0,82	11,3	11,7	5,8	3,0	3,0
AM... 132M ZA 4	7,5	1440	49,7	87,3	87,2	86,2	0,83	15,3	15,5	6,8	3,1	3,1
AM... 132M RA 4	9,2	1440	61,0	86,5	87,5	87,3	0,86	17,7	17,9	8,0	3,5	3,5
AM... 132M TA 4	11,0	1440	72,9	83,5	83,9	84,5	0,87	21,5	22,0	8,3	3,1	3,3

Brake specifications 4 pole - 1500 rpm (continued) IE1

Type code	AMK					AMAC					AMS			
	J	M _B max		Z _L	Weight	J	M _B max		Z _L	Gew.	J	M _B	Z _L	Weight
	10 ⁻³ kgm ²	std	option	c/h	kg	10 ⁻³ kgm ²	std	option	c/h	kg	10 ⁻³ kgm ²	Nm	c/h	kg
AM... 63Z AA 4	0,31	3,5		13200	5,4	0,31	3,5		15000	5,2	0,54	3	7500	4,8
AM... 63Z BA 4	0,35	3,5		12500	6,2	0,35	3,5		14000	6,0	0,59	3	7500	5,6
AM... 63Z CA 4	0,38	3,5		11800	6,3	0,38	3,5		13200	6,1	0,61	3	6700	5,7
AM... 71Z AA 4	0,70	3,5	7,5	7500	8,1	0,70	3,5	7,5	8500	7,9	1,13	4	5000	7,5
AM... 71Z BA 4	0,87	7,5		7250	9,1	0,87	7,5		8150	8,8	1,26	4	4850	7,8
AM... 71Z CA 4	1,11	7,5		6900	10,4	1,11	7,5		7800	10,1	1,50	4	4500	9,1
AM... 80Z AA 4	1,49	7,5	15	6700	12,4	1,49	7,5	15	6700	12,1	2,37	7	4250	11,0
AM... 80Z BA 4	1,93	15		6300	14,4	1,93	15		6300	14,3	2,77	7	4000	12,1
AM... 80Z CA 4	2,33	15		6000	15,7	2,33	15		6000	15,6	3,16	7	3750	13,4
AM... 90S AA 4	2,36	15	40	5000	18,0	2,36	15	40	5650	17,9	3,28	7	3550	15,5
AM... 90L BA 4	3,12	40		4750	21,1	3,12	40		5350	21,8	3,85	7	3350	16,3
AM... 90L CA 4	3,69	40		4550	22,3	3,69	40		5150	23,0	4,43	7	3250	17,5
AM... 90L DA 4	3,98	40		4300	24,8	3,98	40		4850	25,5	4,71	7	3150	20,0
AM... 100L AA 4	4,83	40	75	4500	28,1	4,83	40	75	5050	28,8	7,4	13	2500	23,8
AM... 100L BA 4	6,08	40	75	4250	31,1	6,08	40	75	4800	31,8	8,7	13	2350	26,8
AM... 100L CA 4	7,24	75		4000	37,0	7,24	75		4500	38,4	9,3	13	2200	29,3
AM... 112M AA 4	11,60	75		2500	42,4	11,60	75		2800	43,8	13,7	13	1500	34,2
AM... 112M BA 4	14,42	75		2240	46,9	14,42	75		2500	48,3	16,5	13	1320	38,7
AM... 132S ZA 4	22,02	75	150	2000	60	22,02	75	150	2250	61	25,9	30	1180	51
AM... 132M ZA 4	28,70	75	150	1800	69	28,70	75	150	2000	70	32,6	30	1000	60
AM... 132M RA 4	33,41	150		1500	87	33,41	150		1690	89	35,9	30	800	74
AM... 132M TA 4	33,41	150		1500	87	33,41	150		1690	89	35,9	30	800	74

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Motor specifications 6 pole - 1000 rpm IE1

Type code	P _n kW	n _n rpm	M _n Nm	IE1 η			cos φ	I _n		I _a / I _n	M _a / M _n	M _s / M _n
				50%	75%	100%		400 V	380-420V			
AM... 71Z AA 6	0,18	880	2,0	46,0	48,0	53,0	0,60	0,85	0,9	2,2	1,6	1,6
AM... 71Z BA 6	0,25	880	2,7	46,0	50,0	54,0	0,62	1,10	1,2	2,5	1,7	1,7
AM... 80Z AA 6	0,37	920	3,8	47,0	58,0	60,0	0,70	1,25	1,3	2,7	1,6	2,1
AM... 80Z BA 6	0,55	920	5,7	60,0	64,0	68,0	0,67	1,75	1,8	2,9	2,2	2,1
AM... 90S AA 6	0,75	910	7,9	70,5	72,5	71,5	0,63	2,4	2,5	2,9	1,7	1,7
AM... 90L BA 6	1,1	920	11,4	72,0	73,5	73,0	0,66	3,3	3,4	3,0	1,7	1,7
AM... 100L AA 6	1,5	930	15,4	73,3	75,8	75,3	0,69	4,2	4,4	3,7	1,8	2,3
AM... 100L BA 6	1,8	940	18,3	74,6	77,1	76,6	0,67	5,1	5,3	4,2	2,4	2,8
AM... 112M AA 6	2,2	940	22,4	77,0	79,0	78,0	0,74	5,3	5,4	4,4	2,4	2,6
AM... 112M CA 6	3	940	30,5	81,8	82,8	82,8	0,74	7,0	7,2	5,3	2,9	2,9
AM... 132S ZA 6	3	950	30,2	79,5	81,5	81,3	0,72	7,4	7,5	4,9	2,0	2,4
AM... 132M YA 6	4	950	40,2	81,4	83,1	82,7	0,71	9,9	10,5	4,5	2,2	2,5
AM... 132M ZA 6	5,5	950	55,3	82,2	83,6	83,6	0,71	13,5	13,5	4,1	2,2	2,2

Motor specifications 8 pole - 750 rpm IE1

Type code	P _n kW	n _n rpm	M _n Nm	IE1 η			cos φ	I _n		I _a / I _n	M _a / M _n	M _s / M _n
				50%	75%	100%		400 V	380-420V			
AM... 71Z AA 8	0,12	670	1,7	40	44	50	0,55	0,65	0,70	2,4	2,5	2,5
AM... 80Z AA 8	0,25	680	3,5	40	47	51	0,62	1,1	1,2	2,2	1,8	2,0
AM... 90S AA 8	0,37	680	5,2	52	58	59	0,53	1,7	1,8	2,1	1,4	1,6
AM... 90L BA 8	0,55	680	7,7	52	58	59	0,54	2,5	2,7	2,1	1,4	1,6
AM... 100L AA 8	0,75	690	10,4	59	64	65	0,65	2,6	2,8	3,0	1,6	1,7
AM... 100L BA 8	1,1	690	15,2	59	67	68	0,62	3,9	4,0	3,0	1,9	1,6
AM... 112M AA 8	1,5	696	20,6	66	69	70	0,66	4,6	4,8	4,0	1,8	2,4
AM... 132S ZA 8	2,2	710	29,6	79,3	80,5	78,8	0,64	6,40	6,6	3,4	1,7	1,7
AM... 132M ZA 8	3,0	710	40,4	81,3	82,0	79,8	0,67	8,10	8,4	3,6	1,7	1,9

Brake specifications

6 pole - 1000 rpm (continued)

IE1

Motor type	AMK					AMAC					AMS			
	J	M _{b max}		Z _L	Weight	J	M _{b max}		Z _L	Weight	J	M _b	Z _L	Weight
		std	option				std	option						
10 ⁻³ kgm ²	Nm	Nm	c/h	kg	10 ⁻³ kgm ²	Nm	Nm	c/h	kg	10 ⁻³ kgm ²	Nm	c/h	kg	
AM... 71Z AA 6	1,14	7,5		16000	9,2	1,14	7,5		18000	8,9	1,53	4	10000	7,9
AM... 71Z BA 6	1,30	7,5		15000	9,7	1,30	7,5		16800	9,4	1,68	4	9500	8,4
AM... 80Z AA 6	1,94	7,5	15	9000	12,2	1,94	7,5	15	10100	11,9	2,82	7	6300	10,8
AM... 80Z BA 6	2,52	15		8500	14,5	2,52	15		9550	14,4	3,35	7	6000	12,2
AM... 90S AA 6	3,07	15	40	6700	17,6	3,07	15	40	7500	17,5	4	7	5300	14,6
AM... 90L BA 6	4,73	40		6300	22,8	4,73	40		7050	23,5	5	7	5000	18,0
AM... 100L AA 6	6,7	40	75	5600	26,1	6,7	40	75	6300	26,8	9	13	4500	21,8
AM... 100L BA 6	9,3	40	75	4750	30,6	9,3	40	75	5300	31,3	12	13	3750	26,3
AM... 112M AA 6	13,2	40	75	3150	35,5	13,2	40	75	3500	36,2	16	13	2650	30,7
AM... 112M CA 6	18,8	75		3000	52	18,8	75		3350	53	21	13	2500	43,7
AM... 132S ZA 6	22,3	75	150	2000	55	22,3	75	150	2250	56	26	30	1600	46,2
AM... 132M YA 6	29,8	75	150	1800	60	29,8	75	150	2000	62	34	30	1500	52
AM... 132M ZA 6	39,7	150		1700	77	39,7	150		1900	80	42	30	1400	65

AEG Lafert motors

Brake specifications

8 pole - 750 rpm (continued)

IE1

Type code	AMK					AMAC					AMS			
	J	M _{b max}		Z _L	Weight	J	M _{b max}		Z _L	Weight	J	M _b	Z _L	Weight
		std	option				std	option						
10 ⁻³ kgm ²	Nm	Nm	c/h	kg	10 ⁻³ kgm ²	Nm	Nm	c/h	kg	10 ⁻³ kgm ²	Nm	c/h	kg	
AM... 71Z AA 8	0,87	7,5		18000	9,1	0,87	7,5		20250	8,8	1,26	4	15000	7,8
AM... 80Z AA 8	1,94	7,5	15	15000	12,2	1,94	7,5	15	16750	11,9	2,82	7	11200	10,8
AM... 90S AA 8	3,07	15	40	8000	17,4	3,07	15	40	9000	17,3	4,00	7	6300	14,4
AM... 90L BA 8	4,54	15	40	7500	21,0	4,54	15	40	8400	20,9	5,5	7	6000	18,0
AM... 100L AA 8	6,7	40	75	6700	26,2	6,7	40	75	7550	26,9	9,3	13	5000	21,9
AM... 100L BA 8	9,3	40	75	6000	31,2	9,3	40	75	6750	31,9	11,9	13	4500	26,9
AM... 112M AA 8	15,7	40	75	3550	44,5	15,7	40	75	4000	45,2	18,3	13	3150	39,7
AM... 132S ZA 8	29,8	75	150	2500	63	29,8	75	150	2800	65	33,7	30	2000	55
AM... 132M ZA 8	39,7	150		2240	76	39,7	150		2500	74	42,2	30	1800	64

Motor specifications 2 pole - 3000 rpm IE2

Type code	P _n kW	n _n rpm	M _n Nm	IE1 η			cos φ	I _n 400 V	I _a / I _n	M _a / M _n	M _k / M _n
				50%	75%	100%					
AMHE ... 71Z AA 2	0,75	2865	2,5	75,0	78,1	79,4	0,71	1,9	5,2	3,1	3,1
AMHE ... 80Z AA 2	0,75	2900	2,5	77,3	78,5	80,5	0,78	1,7	7,0	3,6	3,6
AMHE ... 80Z BA 2	1,1	2880	3,6	79,5	81,2	81,5	0,78	2,5	6,8	3,6	3,6
AMHE ... 80Z CA 2	1,5	2880	5,0	80,5	82,1	82,4	0,78	3,4	7,0	3,5	3,6
AMHE ... 90S AA 2	1,5	2880	5,0	81,0	82,8	82,8	0,80	3,2	8,1	3,6	4,0
AMHE ... 90L CA 2	2,2	2860	7,3	82,5	84,0	84,0	0,85	4,4	8,5	3,5	3,7
AMHE ... 100L AA 2	3	2920	9,8	84,1	85,8	85,5	0,84	5,9	8,0	3,5	4,0
AMHE ... 100L BA 2	4	2920	13,1	85,2	86,4	86,1	0,86	7,8	8,2	3,3	3,8
AMHE ... 112M AA 2	4	2940	13,0	85,5	87,0	86,8	0,88	7,6	8,0	2,9	3,3
AMHE ... 112M BA 2	5,5	2920	18,0	85,8	87,4	87,3	0,88	10,4	8,0	3,0	3,2
AMHE ... 132S YA 2	5,5	2900	18,1	86,0	88,0	87,9	0,89	10,2	7,3	2,7	3,2
AMHE ... 132S ZA 2	7,5	2900	24,7	86,3	88,6	88,4	0,89	13,8	7,5	2,8	3,3
AMHE ... 132M ZA 2	9,2	2920	30,1	88,4	89,9	90,0	0,87	16,9	8,8	3,2	3,8
AMHE ... 132M RA 2	11	2920	36,0	88,1	90,0	89,7	0,90	19,8	7,5	2,8	3,4

Motor specifications 4 pole - 1500 rpm IE2

Motor type	P _n kW	n _n rpm	M _n Nm	IE1 η			cos φ	I _n 400 V	I _a / I _n	M _a / M _n	M _k / M _n
				50%	75%	100%					
AMHE ... 80Z AA 4	0,75	1430	5,0	79,2	80,3	80,2	0,76	1,8	5,5	2,8	3,0
AMHE ... 90S AA 4	1,1	1430	7,3	81,4	82,7	82,5	0,77	2,5	6,1	4,0	4,1
AMHE ... 90L BA 4	1,5	1430	10,0	82,0	83,5	83,0	0,77	3,4	6,4	3,9	4,0
AMHE ... 100L AA 4	2,2	1450	14,5	84,0	85,3	85,1	0,74	5,1	6,0	3,2	3,4
AMHE ... 100L BA 4	3	1440	19,9	85,3	86,6	86,4	0,77	6,5	6,3	3,4	3,6
AMHE ... 112M AA 4	4	1450	26,3	86,0	87,3	87,1	0,78	8,5	6,1	3,1	3,3
AMHE ... 132S RA 4	5,5	1450	36,2	87,5	88,3	88,1	0,84	10,8	7,4	3,0	3,3
AMHE ... 132M TA 4	7,5	1450	49,4	88,5	89,4	89,2	0,85	14,4	7,4	3,0	3,3

Brake specifications **2 pole - 3000 rpm (continued)** **IE2**

Type code	AMK					AMAC					AMS			
	J	M _{b max}		Z _L	Weight	J	M _{b max}		Z _L	Gew.	J	M _b	Z _L	Weight
		std	option				std	option						
	10 ⁻³ kgm ²	Nm	Nm	c/h	kg	10 ⁻³ kgm ²	Nm	Nm	c/h	kg	10 ⁻³ kgm ²	Nm	c/h	kg
AMHE ... 71Z AA 2	0,63	7,5		4500	10,3	0,63	7,5		5000	10,0	1,02	3	2360	9,0
AMHE ... 80Z AA 2	0,86	7,5	15	2650	15,3	0,86	7,5	15	3000	15	1,75	7	1400	13,9
AMHE ... 80Z BA 2	1,07	15		2500	17,5	1,07	15		2800	17,2	1,91	7	1300	16,0
AMHE ... 80Z CA 2	1,31	15		2650	16,2	1,31	15		3000	16,1	2,15	7	1400	13,9
AMHE ... 90S AA 2	1,69	15	40	2500	22,0	1,69	15	40	2800	21,9	2,61	7	1250	19,0
AMHE ... 90L CA 2	2,13	15	40	2400	25,6	2,13	15	40	2700	26,1	3,06	7	1120	21,7
AMHE ... 100L AA 2	3,23	40	75	2060	32,2	3,23	40	75	2290	32,9	5,8	13	950	27,9
AMHE ... 100L BA 2	3,87	40	75	2000	34,5	3,87	40	75	2230	35,2	6,5	13	900	30,2
AMHE ... 112M AA 2	6,1	40	75	950	42,9	6,1	40	75	1065	44,0	8,7	13	630	36,0
AMHE ... 112M BA 2	8,3	40	75	900	45,8	8,3	40	75	1000	46,5	10,9	13	600	38,3
AMHE ... 132S ZA 2	13,1	75	150	670	61	13,1	75	150	750	62	17,0	30	480	52,0
AMHE ... 132S TA 2	15,0	75	150	550	70	15,0	75	150	610	72	18,9	30	380	62,0
AMHE ... 132M ZA 2	18,7	75	150	500	77	18,7	75	150	555	78				
AMHE ... 132M RA 2	18,7	75	150	500	77	18,7	75	150	555	78				

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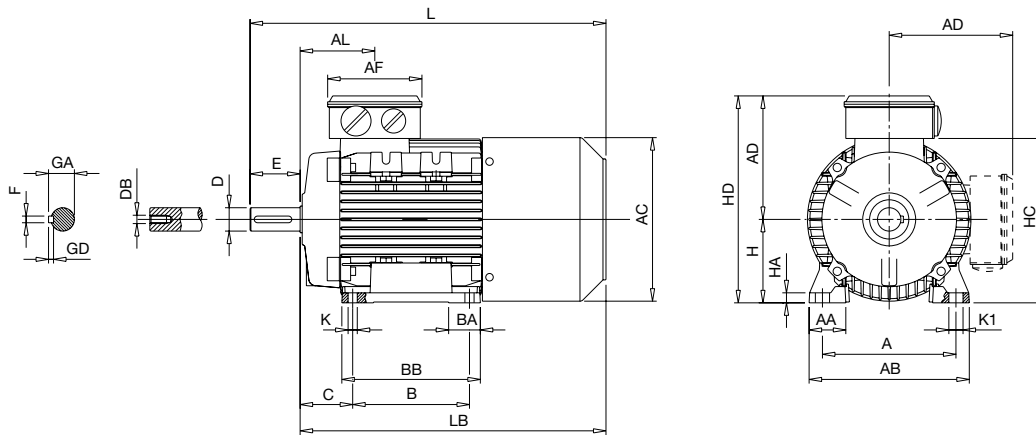
Brake specifications **4 pole - 1500 rpm (continued)** **IE2**

Type code	AMK					AMAC					AMS			
	J	M _{b max}		Z _L	Weight	J	M _{b max}		Z _L	Gew.	J	M _b	Z _L	Weight
		std	option				std	option						
	10 ⁻³ kgm ²	Nm	Nm	c/h	kg	10 ⁻³ kgm ²	Nm	Nm	c/h	kg	10 ⁻³ kgm ²	Nm	c/h	kg
AMHE ... 80Z AA 4	2,6	15		5800	15,7	2,6	15		5800	15,7	3,5	7	3500	14,3
AMHE ... 90S AA 4	2,9	15	40	4650	20,5	2,9	15	40	5250	20,4	3,8	7	3250	17,5
AMHE ... 90L BA 4	3,7	40		4150	24,8	3,7	40		4700	25,5	4,4	7	3000	20,0
AMHE ... 100L AA 4	5,7	40	75	4250	31,1	5,7	40	75	4800	31,8	8,3	13	2350	26,8
AMHE ... 100L BA 4	7,2	40	75	4050	33,6	7,24	40	75	4550	34,3	9,3	13	2000	29,3
AMHE ... 112M AA 4	13,0	75		2370	44,7	13,0	75		2650	46,1	15,1	13	1410	36,5
AMHE ... 132S RA 4	25,4	75	150	1800	69	25,4	75	150	2000	70	29,2	30	1000	60
AMHE ... 132M TA 4	33,4	75	150	1500	87	33,4	75	150	1690	89	35,9	30	800	74

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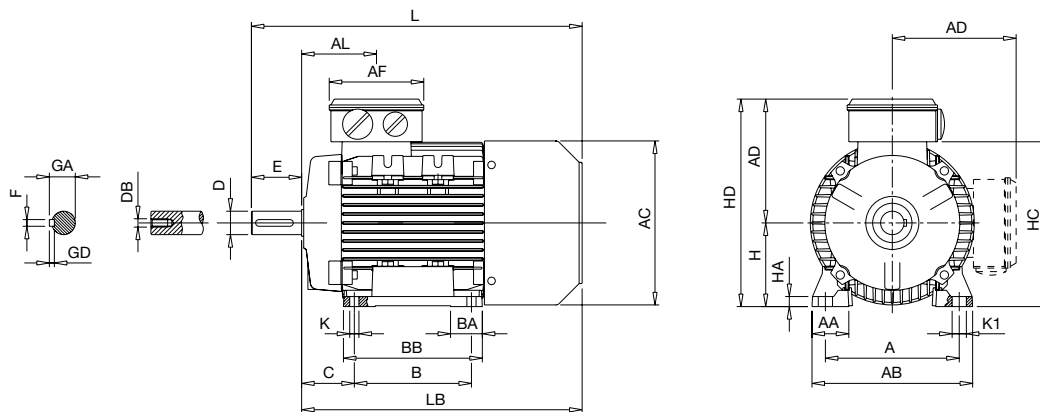
Brake type K/AC B3 voet

IEC	H	A	B	C	K	AB	BB	AD	HD	AC	HC	HA	K1	L	LB	AL	AF	BA	AA	D	E	F	GD	GA	DB
63	63	100	80	40	7	120	100	96	159	124	120	8	11	267	244	63	92	29	30	11	23	4	4	12,5	M4
71	71	112	90	45	8	135	108	110	181	138	142	8	11	300	270	69	92	28	31	14	30	5	5	16	M5
80	80	125	100	50	10	153	125	129	208	156	161	9,5	14	350	310	79	116	29	35	19	40	6	6	21,5	M6
90S	90	140	100	56	10	170	150	137	227	178	180	11	15	403	353	85	116	28/53	37	24	50	8	7	27	M8
90L	90	140	125	56	10	170	150	137	227	178	180	11	15	403	353	85	116	28/53	37	24	50	8	7	27	M8
100	100	160	140	63	11	192	166	144	244	192	197	12	17	465	405	91	116	38	44	28	60	8	7	31	M10
112	112	190	140	70	12,5	220	175	160	272	222	225	15	19	487	427	92	116	46	48	28	60	8	7	31	M10
132S	132	216	140	89	12	256	180	194	326	259	261	17	20	592	512	100	133	45	59	38	80	10	8	41	M12
132M	132	216	178	89	12	256	218	194	326	259	261	17	20	612	532	120	133	45	59	38	80	10	8	41	M12



Brake type S B3 voet

IEC	H	A	B	C	K	AB	BB	AD	HD	AC	HC	HA	K1	L	LB	AL	AF	BA	AA	D	E	F	GD	GA	DB
63	63	100	80	40	7	120	100	96	159	124	120	8	11	226	203	63	92	29	30	11	23	4	4	12,5	M4
71	71	112	90	45	8	135	108	110	181	139	142	9	11	255	225	69	92	28	31	14	30	5	5	16	M5
80	80	125	100	50	9,5	153	125	128	208	157	161	9,5	14	294	254	79	116	29	35	19	40	6	6	21,5	M6
90S	90	140	100	56	10	170	150	137	227	177	180	11	15	340	290	85	116	28/53	37	24	50	8	7	27	M8
90L	90	140	125	56	10	170	150	137	227	177	180	11	15	340	290	85	116	28/53	37	24	50	8	7	27	M8
100	100	160	140	63	11	192	166	144	244	196	197	12	17	379	319	91	116	38	44	28	60	8	7	31	M10
112	112	190	140	70	12,5	220	176	160	272	222	225	15	19	396	336	92	116	46	48	28	60	8	7	31	M10
132S	132	216	140	89	12	256	180	194	326	248	261	17	20	480	400	100	133	45	59	38	80	10	8	41	M12
132M	132	216	178	89	12	256	218	194	326	248	261	17	20	500	420	120	133	45	59	38	80	10	8	41	M12

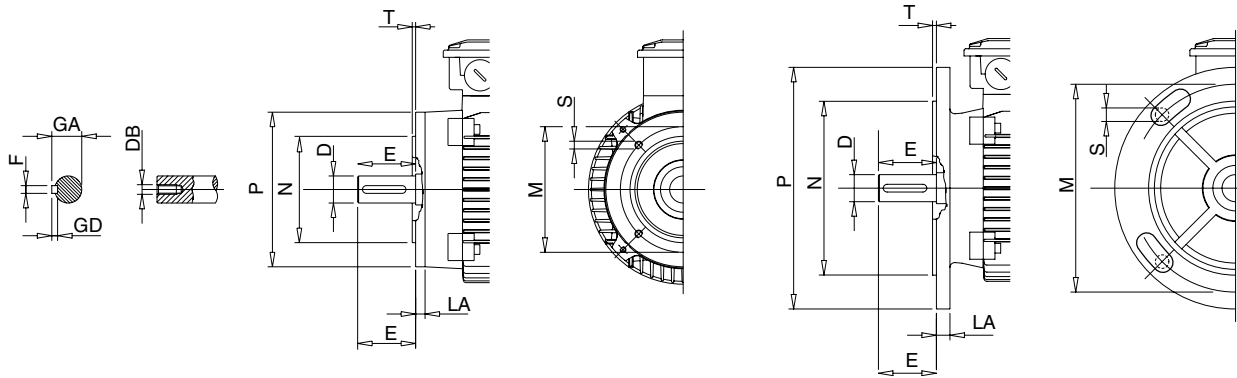


Remtype K / AC / S B5/B14 Flanges

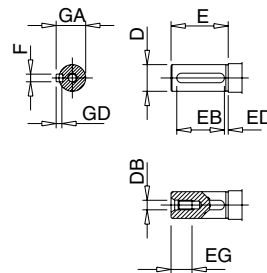
Size	B14a					
	IEC	P	N	LA	M	T
63	90	60	8	75	2,5	M5
71	105	70	8	85	2,5	M6
80	120	80	9	100	3	M6
90	140	95	9	115	3	M8
100	160	110	10	130	3,5	M8
112	160	110	10	130	3,5	M8
132	200	130	30	165	3,5	M10

B14b					
P	N	LA	M	T	S
120	80	8	100	2,5	M6
140	95	8	115	3	M8
160	110	8,5	130	3,5	M8
160	110	9	130	3,5	M8
200	130	12	165	3,5	M10
200	130	12	165	3,5	M10
250	180	12	215	4	M12

B5					
M	N	P	T	LA	S
115	95	140	3	8	M8
130	110	160	3,5	10	M8
165	130	200	3,5	10	M10
165	130	200	3,5	12	M10
215	180	250	4	14	M12
215	180	250	4	14	M12
265	230	300	4	14	M12



Size	Shaft dimensions									
	IEC	D	E	Fh9	GD	GA	DB	EG	EB	ED
63		11j6	23	4	4	12,5	M4	10	15	4
71		14j6	30	5	5	16	M5	12,5	20	4
80		19j6	40	6	6	21,5	M6	16	30	4
90		24j6	50	8	7	27	M8	19	40	4
100		28j6	60	8	7	31	M10	22	50	4
112		28j6	60	8	7	31	M10	22	50	4
132		38k6	80	10	8	41	M12	28	70	4



AEG Lafert motors

1. General

ATEX motors and brakes are intended for use in areas where an explosion risk is present due to the presence of gasses, dust or liquids.

Typical applications for ATEX motors and brakes are:

- Chemical industry
- Petrochemical industry
- Drilling rigs
- Oil pipe lines
- Gas pipe lines
- Pharmaceutical industry
- Printing industry
- Power stations
- Shipping
- Production companies
- Waste processing
- Processing rice, sugar or wheat
- Bulk goods transfer

These explosion proof motors can be supplied in the following executions:

- Ex d and Ex de explosion proof motors
- Ex d and Ex de explosion proof brake motors
- Ex d explosion proof modular brakes with IEC flange mounting
- Ex na Spark free motors

2. Delivery programme of explosion proof motors

Aluminium motors

		Frame size								
Ex-d	Flameproof enclosure	56	63	71	80	90	100	112	-	-
Ex-de		56	63	71	80	90	100	112	-	-
Ex-nA	Spark proof motors	56	63	71	80	90	100	112	132	160

Cast iron motors

		Frame size															
Ex-d	Flameproof enclosure	-	63	71	80	90	100	112	132	160	180	200	225	250	280	315	355
Ex-de		-	-	-	80	90	100	112	132	160	180	200	225	250	280	315	355
Ex-d	Flameproof brake motors	-	-	-	80	90	100	112	132	160	180	200	225	250	280	315	355
Ex-nA	Spark proof motors	-	63	71	80	90	100	112	132	160	180	200	225	250	280	315	355

Cast iron modular brakes

		Frame size										
Ex-d	Flameproof enclosure	56	63	71	80	90	100	112	132	160	180	200
Ex-de		56	63	71	80	90	100	112	132	160	180	200

Flameproof motors

- Ex d, Ex de
- Frame sizes in Aluminium IEC 56 – 112
- Frame sizes in Cast iron IEC 63 – 355
- ATEX group 2G, 2GD
- Pressure class IIC
- Temperature class T4 – T6
- A21 tD
- Protection class IP55, IP56, IP 65, IP66
- Power range 0,09 – 315kW
- 1 – 2 speed three phase motors

Flameproof brake motors

- Ex d
- Frame sizes IEC 80 – 280
- ATEX group 2G, 2GD
- Pressure class IIC
- Temperature class T4
- A21 tD
- Protection class IP55, IP56, IP 65, IP66
- Power range 0,18 – 90kW
- 1 speed three phase motors
- Flameproof brake

Spark proof motors

- Ex nA
- Frame sizes IEC 63 – 355
- ATEX group 3G
- Pressure class II
- Temperature class T4
- A21 tD
- Protection class IP55, IP56, IP 65, IP66
- Power range 0,09 – 315 kW
- 1 – 2 speed three phase motors

Flameproof modular IEC brakes

- Ex d
- Frame sizes IEC 80 – 280
- ATEX group 2G, 2GD
- Pressure class IIC
- Temperature class T4 – T6
- A21 tD
- Protection class IP66

Certification

The motors are compliant with the applicable European legislation.

3. ATEX classification

Appropriate electric motors can be used almost without any restrictions in areas with an explosion risk.

Needless to say, the motors need to be designed and built in such a way that the motors themselves cannot cause an explosion, and that in the event of an explosion they do not cause any extra damage.

An explosion can take only place if the three conditions below are present at the same time and at the same place:

- An explosive atmosphere due to the presence of flammable gas, dust above the lower flammable threshold.
- Presence of oxygen
- Presence of an ignition source.

ATEX compliant equipment eliminates at least one of the above prerequisites and therewith makes an explosion impossible.

For practical purposes electric motors can be divided into four different types of explosion proofing:

- Pressurized motors (symbol Ex – p)
- Flameproof motors (symbol Ex – d)
- Increased safety motors (symbol Ex – e)
- Non sparking motors (symbol Ex – n)

Flameproof motors may have additional letter (symbol Ex – de) that indicates the combination of a flameproof motor with an increased safety junction box .



This symbol indicates the equipment is explosion proof according to directive 2014/34/EU

4. Dangerous areas and zones.

Dangerous areas are areas in which an explosion can take place under certain specific conditions.

These conditions are called an explosive atmosphere, which is defined as a mixture of dangerous substances with air (oxygen), under atmospheric conditions, in the form of a gas, vapour, mist or dust in which, after ignition has occurred, combustion (rapidly) spreads to the entire unburned mixture.

The end-user needs to classify the dangerous areas under his own responsibility as outlined in directive 1999/92/EC.

Standard IEC 61241-10 gives instructions for the classification of dangerous areas regarding the chemical and physical nature and the amount of materials present based on frequency and duration at which an explosion can occur.

The following guidelines are applicable:

- NEN-EN-IEC 60079-10-1 (2015) Classification of areas – Explosive gas atmospheres
- NEN-EN-IEC 60079-10-2 (2015) Classification of areas – Explosive dust atmospheres

Zones in which gas can be present

If the explosion risk is the result of the presence of gas, vapours or a mixture of inflammable substances, EC Directive 1999/92/EC ATEX 153 distinguishes three different zones:

Zone 0 Areas in which continuously or for prolonged periods of time an explosive atmosphere can be present. Only electric equipment with a double protection can be installed in this area.

Zone 1 Areas in which under normal circumstances an explosive atmosphere easily can develop.

Only flameproof or Increased safety motors can be installed in this area (for increased safety motors restrictions are applicable).

- Spaces in the immediate vicinity of zone 0

- Spaces in the immediate vicinity of passage openings

- Spaces in the immediate vicinity of fill or drain openings

- Spaces in the immediate vicinity of equipment, security systems and vulnerable components made of glass, ceramics or similar materials.

- Spaces in the immediate vicinity of insufficiently sealing glands as can be found in pumps and valves.

Zone 2 Areas in which rarely an explosive atmosphere is present and if so, only for a brief period.
Flameproof or Increased safety motors can be installed in this area just as Non sparking motors.
Remark: Zone 2 conditions can also be found in spaces surrounding zone 0 and 1 areas.

Zones in which inflammable dust can be present

If the explosion risk is the result of the presence inflammable dust, EC Directive 1999/92/EC (ATEX 153) distinguishes three different zones:

Zone 20 Areas in which continuously or for prolonged periods of time an explosive atmosphere can be present. Electrical equipment cannot be installed in this zone.

Remark: Generally these conditions can occur in tanks, pipes and containers.

Zone 21 Areas in which under normal circumstances an explosive atmosphere easily can develop.
Motors that comply tot the ATEX directive and have an IP6X protection can be installed in this area.

Remark: A zone 21 situation can for example also exist in spaces close to loading and unloading docks for powdery substances, in spaces covered in a thin layer of powder, or spaces where during normal operating conditions an inflammable/explosive powder concentration can be present in the air.

Zone 22 Areas in which rarely an explosive atmosphere is present and if so, only for a brief period.
If conductive dust is present, electric motors that comply to the ATEX regulations in combination with an IP6X protection can be installed, if the dust is non-conductive, motors with an IP5X protection and a declaration of conformity issued by the manufacturer can be used.

Remark: A zone 22 situation can also exist in spaces near equipment, safety systems and components that contain a powder, and from which powder leakage is possible that could lead to the buildup of powder layers (examples are milling of salt, where a powder leaks away to form a layer).

Notes:

1. A powder haze, dust layers and little heaps of inflammable dust must be considered as potential sources of an explosive atmosphere.
2. "Normal circumstances" mean the operation of the equipment or installation within the design parameters.

Table 2: Overview of zone and equipment classification

Zone	Explosion risk 1)	Group 2)	Category 3)	Equipment protection	Gas group 4)	IP class	Temperature class (GAS) 5) Surface temperature (DUST)
GAS							
0	Permanent	II	1G	-	IIA, IIB, IIC	IP54	T1 = 450°C T2 = 300°C T3 = 200°C T4 = 135°C T5 = 100°C T6 = 85°C
1	Possible		2G	Ex e Ex d			
2	Unlikely		3G	Ex nA			
DUST							
20	Permanent	II	1D	-	IIIC, IIIB, IIIA	IP6X	T125°C
21	Possible		2D	Ex tb			
22	Unlikely		3D	Ex tc			

Table 2a: Overview of zone and product classification

Explosion risk 1)	Zone	Product Group 2)	Product Category 3)			Product Level (EPL) 4)			
GAS									
Permanent	0	II	1G		2G	3G	Ga	Gb	Gc
Possible	1								
Unlikely	2								

Explosion risk 1)	Zone	Product Group 2)	Product Category 3)			Product Level (EPL) 4)			
DUST									
Permanent	20	II	1D		2D	3D	Da	Db	Dc
Possible	21								
Unlikely	22								

- 1) Permanent = Present continuously or long periods
Possible = Occur in normal operation occasionally
Unlikely = Rarely occur in normal operation and for short periods only
- 2) Group I = Underground mining activities (outside the standard delivery programme)
Group II = Above ground activities
- 3) Category 1 = Very high level of protection
Category 2 = High level of protection
Category 3 = Normal level of protection
G = GAS -- D = DUST
- 4) EPL = Equipment Protection Level
For equipment selection according to IEC 60079-10-1/-14/-17.

Table 2b: Classification of explosion groups

Explosion group					
GAS I)			DUST II)		
IIA	IIB	IIC	IIIA	IIIB	IIIC

I) GAS group (selection)

IIA = Ammonia, Methane, Propane, Ethanol, n-Butane, Petrol, Diesel, n-Hexane, Acetaldehyde.

IIB = City gas, Acrylic nitrile, Ethylene, Ethyl glycol, Carbon hydrogen, Ethyl ether.

IIC = Hydrogen, Acetylene, Carbon disulphide.

(see for full list table “Inflammable gasses divided in groups (IIA, IIB, IIC) and listed according their ignition temperature” below)

II) Dust group

IIIA = Flammable fibres

IIIB = Non-conductive dust

IIIC = Conductive dust

GAS

Denotes the maximum temperature to be found in or on the equipment.

This value should always be lower than the ignition temperature of the gas, vapour or mist concerned.

DUST

$T_{max1} = 2/3 \cdot T_{cl}$ in which T_{cl} is the ignition temperature in °C of the dust cloud.

$T_{max2} = T_I - 75^\circ\text{C}$ in which T_I is the ignition temperature in °C of a 5 mm thick dust layer.

5. Equipment classification

The European ATEX 114 directive 2014/34/EU classifies equipment into three separate categories, based on the different levels of protection provided. Equipment with a “higher” safety classification can also be used in areas requiring a “lower” protection classification.

Table 3: Equipment category classification

Protection level guaranteed by equipment	Mines Categories	Surface	
		Gas category	Combustible dust category
Very high	M1	1G	1D
High	M2	2G	2D
Normal	-	3G	3D

Below two examples of an Ex code (Gas and Dust) to explain the composition of the code

GAS	European Ex - marking	Equipment group	Category	Type of explosive atmosphere	Code	Type of protection	Gas group	Temperature class
		II	2	G	Ex	e	II	T3

DUST	European Ex - marking	Equipment group	Category	Type of explosive atmosphere	Code	Type of protection	IP class	Temperature class
		II	2	D	Ex	tD	IP65	T125°C

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ATEX motors

6. Equipment classification

Electrical equipment is classed in two standardized groups.

Group I: Electrical equipment for use in mines and areas where mine gas or coal dust can be present.

Group II: Electrical equipment for use in above ground areas where other explosion risks can be present.

Type of atmosphere

G = Gas *Explosive atmosphere that consists of a mixture of air and combustible materials in the form of a gas, vapour or mist.*

D = Dust *Explosive atmosphere that consists of a cloud of combustible dust in the air.*

Before explaining the different types of protection that can be used in gas or dust atmospheres first an explanation of the relationship between “zones” and “categories”.

Zones are only used with equipment in group II, where the zoning differs between mining and above ground use.

Equipment group II		
Category	Type of atmosphere	Suitable for zone
1	G	0 – 1 – 2
	D	20 – 21 – 22
2	G	1 – 2
	D	21 – 22
3	G	2
	D	22

Below an overview of the different types of protection that can be used in the different zones.

For reasons of clarity the GAS and DUST are treated separately.

7. Equipment protection in explosive gas (GAS) atmospheres

The types of protection can differ, and each specific type is intended for a specific situation.

Explosive atmosphere: GAS			
For zone	Type of protection	Description	EU standard
0, 1, 2	Ex i ^{*1)}	Intrinsically safe	EN 60079-11
0, 1, 2	Ex m ^{*2)}	Encapsulated (with resin)	EN 60079-18
1, 2	Ex d	Flameproof casing	EN 60079-1
1, 2	Ex e	Increased safety	EN 60079-7
1, 2	Ex o	Oil filled	EN 60079-6
1, 2	Ex p	Internal overpressure	EN 60079-2
1, 2	Ex q	Powder filled	EN 60079-5
2	Ex n	Non sparking	EN 60079-15

*1) Ex ia for zone 0-1-2 --- Ex ib for 1 – 2 --- Ex ic for 2

*2) Ex ma for zone 0-1-2 --- Ex mb for 1 – 2 --- Ex mc for 2

Explosive atmosphere: DUST			
For zone	Type of protection	Description	EU standard
20, 21, 22	Ex iD * ¹⁾	Intrinsically safe	EN 60079-11
20, 21, 22	Ex mD * ²⁾	Encapsulated (with resin)	EN 60079-18
21, 22	Ex pD	Internal overpressure	EN 60079-2
20, 21, 22	Ex tD *³⁾	Dust explosion proof	EN 60079-31

*¹⁾ Ex iaD for zone 20-21-22 -- Ex ibD for 21 – 22 --- Ex ic for 22
 *²⁾ Ex maD for zone 20 – 21 - 22 -- Ex mbD for 21 – 22 --- Ex mcD for 22
 *³⁾ Ex taD for zone 20 -21- 22 -- Ex mb for 21 – 22 --- Ex mc for 22

Increased safety, Ex e

The design of the actual motor prevents sparking, arcing or overheating during operation (including starting and locked rotor situations), that exceeds the self-ignition temperature of the surrounding, possibly explosive, atmosphere. This applies to both the inside and the surface of the motor. This is achieved by paying special attention to the dimensioning and construction, which involves;

- Prescribed minimum values for creep and air distances
- Use of tracking proof insulation materials
- Ensuring all electrical and mechanical and assemblies are fastened properly
- A minimum distance between stationary and rotating components (airgap, ventilation etc.)
- Limited temperature increase, taking locked rotor situations and normal operation under the worst possible conditions regarding temperature (in case of very adversary voltage conditions).

Non sparking design, Ex nA

Here the design of the actual motor prevents sparking or arcing providing the motor is operated within the operational limits provided by the manufacturer. Most important difference with Ex e is that overheating as a result of repeated starting or locked rotor situations is not covered by this type of protection.

Gas group

The equipment casings intended for above ground use with protection grade “d” (flameproof) are divided up in three sub groups on the basis of the inflammable substances they are intended for. The groups are: IIA, IIB and IIC. Equipment with a “higher” safety classification can also be used in areas requiring a “lower” protection classification, e.g. IIB equipment can be used in a group IIA application or group IIC equipment can be used in both IIA or IIB applications.

Explosive atmosphere: Air + GAS: classification of GAS group	
Group	Description
I	Electrical equipment for mine gas (Methane)
II	Electrical equipment for explosive gas environments other than mines
As a result of the type of protection (“d”, “I”, “nC” and “nL”) GAS group II has been divided in subgroups IIA, IIB and IIC according to the relevant European standards regarding these types of protection (see the table linking the gasses to their respective groups)	
IIC	Hydrogen, Acetylene etc.
IIB	Diethyl ether, Ethylene etc.
IIA	Propane, Butane etc.

8. Ignition temperatures of gasses and vapours

Combustible gasses and vapours are divided into classes based on their ignition temperature and in groups on the basis of their volatility. On the type plate of the motor information about the zone and temperature is provided in which the motor may be installed, and according to which class motor and junction box are executed.

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ATEX motors

Inflammable gasses divided in groups (IIA, IIB, IIC) and listed according their ignition temperature

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

9. Temperature classes (for GAS atmospheres)

Electrical equipment is divided into six classes on the basis of the maximum temperature that can be reached by the equipment under the conditions described in the relevant standards.

- For equipment with protection systems “d” and “p” this is the outside surface temperature.
- For equipment with protection systems “e” and “e” this is the temperature at any internal or external point .

Table 4: Temperature classes

Temperature at which the environment self-ignites (in °C)	Temperature class	Max attainable temperature of the electrical equipment (in °C) in an 40°C ambient temperature
>450	T1	450
300 - 450	T2	300
200 - 300	T3	200
135 - 200	T4	135
100 - 135	T5	100
85 - 100	T6	85

In the following table some of the more common inflammable gasses are listed, divided according to their ignition temperature and temperature class. For other gasses the ELSTO sales office should be contacted.

10. Means of equipment protection in explosive dust (DUST) atmospheres

The types of protection can differ, and each specific type is intended for a specific situation.

Explosive atmosphere: DUST (clouds and deposits)			
Category	Type of protection	Description	EU standard
1	Ex iD	Intrinsically safe	EN 61241-11
2	Ex tD A21	Flameproof casing “tD”	EN 61241-1
2	Ex mD	Encapsulated (with resin)	EN 61241-18
2	Ex pD	Internal overpressure	EN 61241-4
3	Ex tD A22	Flameproof casing “tD”	EN 61241-1
3	Ex n	Non sparking	EN 60079-15

Protection by means of a dust proof enclosure “tD” or “t” (Ex tD or Ex t)

This type of protection prevents any type of dust explosion while:

- The IP classification prevents the ingress of dust
- The maximum equipment surface temperature does not exceeds the limit temperature
- There are no sparks present outside the casing

Maximum surface temperature (DUST)

The maximum surface temperature of the equipment should not rise above the minimum ignition temperature of a dust cloud, or the smolder temperature of a dust layer.

In the vicinity of a dust cloud the maximum permissible surface temperature of the equipment is;

$$T_{max(1)} = 2/3 \cdot T_{cl} \quad \text{in which } T_{cl} = \text{the ignition temperature of the dust cloud in } ^\circ\text{C}$$

If combustible dust deposits are present the following is applicable;

$$T_{max(2)} = T_1 - 75 \text{ } ^\circ\text{C} \quad \text{in which } T_1 = \text{the ignition temperature of a 5 mm thick dust layer.}$$

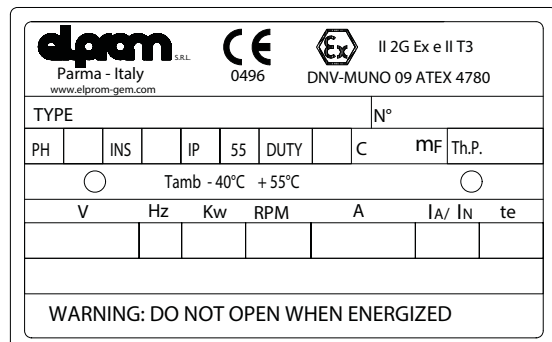
The surface temperature of the device must be equal or lower than the lower of the two values $T_{max(1)}$ of $T_{max(2)}$.

Most common types of inflammable dust listed according their ignition temperature					
	Product	Average particle size in (um)	Lower explosion threshold LEL (g/m ³)	Cloud ignition temperature T _{cl} (°C)	5 mm layer ignition temperature T _I (°C)
Metal alloys	Aluminium	10	60	560	430
	Bronze	18	750	390	260
	Iron	12	500	580	>450
	Graphite	7	30	600	680
	Lamp soot	13	15	620	435
	Sulphur	20	30	280	260
Wood, wood products and fibres	Paper		100	620	370
	Cellulose (93% soft wood – 6% hard wood)	14	15	420	335
	Wood flour	60		470	305
	Cellulose (50% pear – 50% kernel)	35	100	500	340
	Wood (Beach)	61		490	310
	Wood (Pear)	27	100	500	320
	Sawdust (wood)	65		470	290
Cork	42	30	470	300	
Agricultural products	Cocoa	3	125	460-540	245
	Coffee	10	25	360	450
	Grain (mixed powder)	37	125	510	300
	Wheat flour	56-125	60	480	>450
	Soybean meal	20	200	620	280
	Gelatin	65	60	560	>450
	Wheat		100	470	220
	Milk powder	165	60	460	330
	Milk sugar	22	60-125	450	>450
	Rye			415-470	325
	Buttermilk	400		450	420
	Tobacco		60	485	290
	Black tea	76	125	510	300
	Sugar	32	30	360	>450
Powdered sugar	17	60	350	>450	

ATEX motors classification and application

ATEX motors are suited for general applications in areas with a gas or dust explosion risk. Below an explanation of motor markings and the intended applications.

2.3.1 Motor Ex “e” (zone 1 and 2)

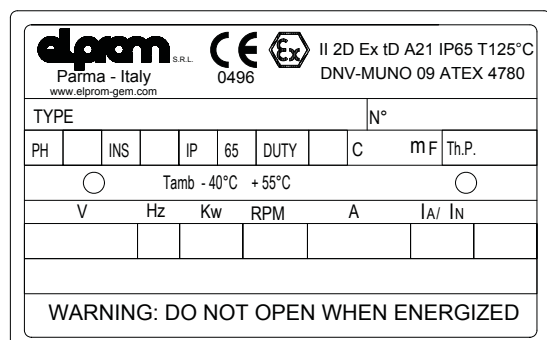


	Conformity marking in accordance with European guide lines
0496	Code number Product Quality Assurance Notification body
	Explosion safety marking
II	Group (above ground industrial applications other than mining)
2	Category (high protection level)
G	Explosive atmosphere due to presence of inflammable gas, vapour or mist (GAS)
Ex e	Type of protection (GAS)
II	GAS group
T3, T4	Temperature class of the motor (GAS)
Tamb	Ambient temperature range
DNV-MUNO 09 ATEX 4780	Type certificate number

The motors can be used for:

- Above ground industrial applications other than mining (Group II)
- Zone 1 and zone 2 (GAS) (category 2G)
- Ex “e” type protection
- Gas in groups IIC, IIB and IIA
- Temperature classes T4, T3, T2 and T1
- Ambient temperatures -40°C to +55°C for temperature class T3
-40°C to +40°C for temperature class T4

2.3.2 Motor Ex “tD” (zone 21 and 22)

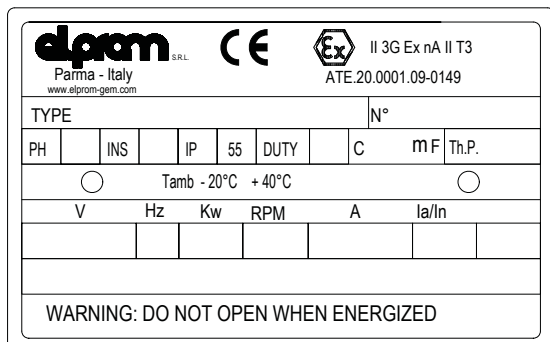


	Conformity marking in accordance with European guide lines
0496	Code number Product Quality Assurance Notification body
	Explosion safety marking
II	Group (above ground industrial applications other than mining)
2	Category (high protection level)
D	Explosive atmosphere due to presence of clouds of inflammable dust (DUST)
Ex tD	Type of protection (DUST)
A21	Application type A, suitable for zone 21
IP65	IP rating of motor
T125°C	Maximum temperature of motor surface
Tamb	Ambient temperature range
DNV-MUNO 09 ATEX 4780	Type certificate number

The motors can be used for:

- Above ground industrial applications other than mining (Group II)
- Zone 21 and zone 22 (DUST) (category 2D)
- Ex “tD” type protection A21-IP65
- Suitable for conductive and non-conductive materials
- Surface temperature classes T125°C
- Ambient temperatures -40°C to +55°C

2.3.3 Motor Ex 'nA' (zone 2)

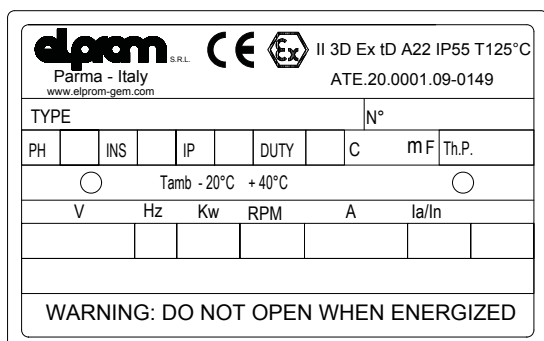


	Conformity marking in accordance with European guide lines
	Explosion safety marking
II	Group (above ground industrial applications other than mining)
3	Category (normal protection level)
G	Explosive atmosphere due to presence of inflammable gas, vapour or mist (GAS)
Ex nA	Type of protection (GAS)
II	GAS group
T3, T4	Temperature class of the motor (GAS)
Tamb	Ambient temperature range
ATE.20.0001.09-0149	Type certificate number

The motors can be used for:

- Above ground industrial applications other than mining (Group II)
- Zone 1 (GAS)
- Ex “nA” type protection
- Gas in groups IIC, IIB and IIA
- Temperature classes T4, T3, T2 and T1
- Ambient temperatures -20°C to +40°C

2.3.4 Motor Ex 'tD' A22 (zone 22)



	Conformity marking in accordance with European guide lines
	Explosion safety marking
II	Group (above ground industrial applications other than mining)
3	Category (normal protection level)
D	Explosive atmosphere due to presence of inflammable gas, vapour or mist (GAS)
Ex tD	Type of protection (GAS)
A22	GAS group
IP55	Temperature class of the motor (GAS)
T125 °C	Ambient temperature range
Tamb	Type certificate number
ATE.20.0001.09-0149	Typecertificaat nummer

The motors can be used for:

- Above ground industrial applications other than mining (Group II)
- Zone 22 (DUST) (Category 3D)
- Ex “tD” A22 IP55 type protection
- Suitable for non-conductive materials only
- Surface temperature classes T125°C
- Ambient temperatures -20°C to +40°C

2.3.5 Combination of two different methods of protection

It is possible to combine different protection methods from the same category to make a motor suitable for operation in both DUST and GAS environments. The marking of a motor with combined protection is shown in the example below.

II 2GD Ex e II T3 (or T4) Ex tD A21 IP56 T125 (Zone 1 and 2, Zone 21 and 22)

II 3GD Ex nA II T3 (or T4) Ex tD A22 IP55 T125 (Zone 2, Zone 22)

11. Selection of the electric motor

The classification of explosion risked zones and the appropriate explosion safety classes is governed by Directive 1999/92/EG (ATEX 137). The safety level is determined by the classification of the motor (e.g. "2G"). Explosion safe motors of a higher category may be used in areas where a motor of a lower category should be used.

Table 6: Selection of danger zones in environments where inflammable gasses are present.

Explosive atmosphere	Danger zone	Protection guaranteed by motor	Motor category	Protection class
Always present	0	very high	1G	IEC EN 60079-26
Possible	1	high	2G	Ex d Ex de Ex e
Unlikely	2	normal	3G	Ex nA

Table 7: Selection of danger zones in environments where inflammable dust is present.

Explosive atmosphere	Danger zone	Protection guaranteed by motor	Motor category	Protection class
Always present	20	very high	1D	not available
Possible	21	high	2D	Ex tD - A21 - IP6x
Unlikely	22 Conductive materials	normal	2D	Ex tD - A21 - IP6x
Unlikely	22 Non conductive materials	normal	3D	Ex tD - A22 - IP6x

12. Certification

Certification of aluminium motors

Motors for hazardous environments must be officially approved by an acknowledged body that is authorised to issue test certificates. This is to ensure that motors so tested are fully compliant with the applicable standards. Motors are rated and classified according to the category and type of protection as laid down in the regulations. It is the responsibility of the end-user to determine the correct group and surface temperature for the motor depending on the environment (atmosphere) the motor is to be used in.

Elprom Ex motors are designed and produced in compliance with all European standards that apply to devices and safety systems intended to be used in areas with an explosion risk as outlined in the EC ATEX directive 2014/34/EC (better known as ATEX114).

The motors are tested by an acknowledged laboratory and issued with:

- EC Type certificate
- Declaration of quality control

This means that all Ex motors are being produced in accordance with the technical drawings and documents that have been approved by the certifying body after testing the motors (type testing according to the procedure required in the EC standards).

Every 18 months the production of the Ex motors is audited by an acknowledged body to ensure the continuous and strict compliance with all procedures.

Each motor or batch of motors is shipped with the following documents:

- EC declaration of conformity
- Installation and safety instructions. In these instructions all relevant information is provided regarding installation, use and the type or types of motor protection.

The end-user is responsible for determining the correct explosion safety class, zoning, motor category and maximum motor surface temperature depending on the environment/situation the motor is installed in.

The end-user is also responsible for the correct installation, use and maintenance of the motor.

The ATEX conformance certificates are valid throughout the EC area.

The relevant product certificates will dictate the ambient temperatures the motors may be used in.

13. Properties of cast iron motors

- Closed fan cooled frame protected at IP 55 with IP56, 65 or 66 available optionally.
- Motor dimensions according to IEC 60027 standard
- Junction box :
Available in flameproof (Ex d) or Increased safety (Ex e) execution.
Top mounted junction box
Cable entry side rotatable over 4 x 90°
- Motor frame and junction box for frame sizes IEC 80 – 355 are fully insulated to prevent the transfer of explosions
- The winding ends are connected to the terminal board by means of explosion proof mounting material.
- The frame is finished on the outside with an epoxy coating, while the type plate and fasteners are executed in stainless steel.
- The frame is made of cast iron, and the end shields and junction box are reinforced to cope with the forces caused by an explosion
- Low friction shaft seals
- The certificates of conformity are also valid for *);
Installation above 1000 metres above sea level
Deviant voltages and frequencies
Frequency inverter operation of the motor
Motor temperature monitoring with temperature feelers

*) As per the ATEX type certificates

ATEX motors

Junction box

Table 12a: IPE gland and cable specifications

IEC Frame size	Gland thread	Supply cable diametre (mm) (min. – max.)
63	IPE 16	10,5
71		
80		
90		
100	IPE 21	9,5 - 18,5
112		
132	IPE 29	17,4 - 26,4
160		
180		
200		
225	IPE 36	23,4 - 32
250		
280	IPE 42	29 - 38
315		
Connection options	IPE 16	10,5

Table 12b: Metric gland and cable specifications

IEC Frame size	Gland thread	Supply cable diametre (mm) (min. – max.)
63	M25 x 1,5	10,5
71		
80		
90		
100	M32 x 1,5	9,5 - 18,5
112		
132	M40 x 1,5	17,4 - 26,4
160		
180		
200		
225	M50 x 1,5	23,4 - 35
250		
280	M63 x 1,5	29 - 44
315-355		
Connection options	M20 x 1,5	10,5

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Permissible radial forces FR [N]

IEC Frame size IEC	Number of poles			
	2	4	6	8
	FR [N]			
63	240	270		
71	305	395	435	520
80	480	610	645	708
90	530	690	740	820
100	655	828	905	1025
112	800	940	1030	1150
132	1290	1480	1600	1760
160	2250	2800	3150	3600
180	2600	3200	3700	4150
200	2970	3740	4130	4415
225	3360	4200	4520	4700
250	3360	4830	5200	5550
280	5060	7100	7900	8650
315	6100	9300	10500	11200
355	4500	8500	8800	9100

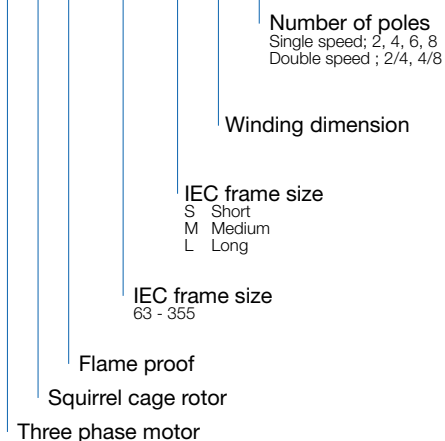
Bearings

Table 11: Standard motor – closed lubricated for life bearings

IEC Frame size	Front (DE)		Rear (NDE)	
	2 pole	4-8 pole	2 pole	4-8 pole
63	6202ZZ		6202ZZ	
71	6203ZZ		6203ZZ	
80	6304ZZ		6304ZZ	
90	6305ZZ		6305ZZ	
100	6306ZZ		6306ZZ	
112	6307ZZ		6307ZZ	
132	6308ZZ		6308ZZ	
160	6310ZZ		6310ZZ	
180	6311ZZ		6311ZZ	
200	6312ZZ		6312ZZ	
225	6313ZZ		6313ZZ	
250	6313ZZ	6314ZZ	6313ZZ	
280	6314	6316	6314	
315S/M	6315	6317	6315	
315M/L	6316	6319	6316	6319
355	6319	6322	6319	6322

Type coding

A S A 132 M a 4



13. Properties of aluminium motors

The IP classification of the motors is according to EN 60034-5. As explained in chapter 2.3 the degree of protection is dependent on the type of protection.

- Ex e: IP 55 (IP 54 minimum as prescribed in EN 60079-7)
- Ex nA: IP 55 (IP 54 minimum as prescribed in EN 60079-15)
- Ex tD A22: IP 55 for non-conductive dust (IP 5X minimum as prescribed in EN 60241-1)
- Ex tD A21: IP 65 (or IP66) for -conductive dust (IP 6X minimum as prescribed in EN 60241-1)

Single phase motors Ex e and Ex nA: Capacitors placed in an Ex compliant cylindrical tube on the motor
 Ex tD (A21 and A22): Enlarged junction box on motor to house the capacitors

Ventilation (in accordance with EN 60034-6)
 Self-ventilating motors IC 411. Depending on the type of protection, the fan is made from plastic or aluminum.
 Ex e, Ex nA, Plastic fan
 Ex tD A21, Ex tD A22 Anti-static plastic or aluminum fan

Fan cover
 Zinc plated sheet metal

Materials

Part name	IEC frame size	Material	Remark
Frame	56	Aluminium	Integral feet
	63 - 160		Removable feet
End shield	56 - 100	Aluminium	
Flange B5	56 - 132	Aluminum	
	160	Cast iron	
Flange B14	56 - 160	Aluminum EN AB46100	
Junction box	56 - 160	Aluminum	
Shaft	56 - 160	C40 Steel	
Rotor	56 - 160	Die cast aluminum with magnetic lamination	
Stator	56 - 160	Magnetic lamination	
Windings	56 - 160	Varnished copper wire	
V-ring	56 - 160	Nitrile rubber	Special material, Viton, silicone
Oil seal	56 - 160	Nitrile rubber	Special material, Viton, silicone
Bearings	56 - 160	Grooved	
Fan	56 - 160	Plastic fan (EX e, Ex nA) Anti-static plastic or aluminum (Ex tD A22m Ex td A22)	

IEC Frame Size	No of poles	Bearings		Seals	
		Front bearing (DE)	Rear bearing (NDE)	Front bearing (DE)	Rear bearing (NDE)
56	2-8	6201-ZZ	6201-ZZ	V-ring Ø 12	V-ring Ø 12
63	2-8	6202-ZZ	6202-ZZ	V-ring Ø 15	V-ring Ø 15
71	2-8	6202-ZZ	6202-ZZ	V-ring Ø 15	V-ring Ø 15
80	2-8	6204-ZZ	6204-ZZ	V-ring Ø 20	V-ring Ø 20
90	2-8	6205-ZZ	6205-ZZ	V-ring Ø 25	V-ring Ø 25
100	2-8	6206-ZZ	6206-ZZ	V-ring Ø 30	V-ring Ø 30
112	2-8	6306-ZZ	6306-ZZ	V-ring Ø 30	V-ring Ø 30
132	2-8	6308-ZZ C3	6308-ZZ C3	V-ring Ø 40	V-ring Ø 40
160	2-8	6309-ZZ C3	6309-ZZ C3	V-ring Ø 45	V-ring Ø 45

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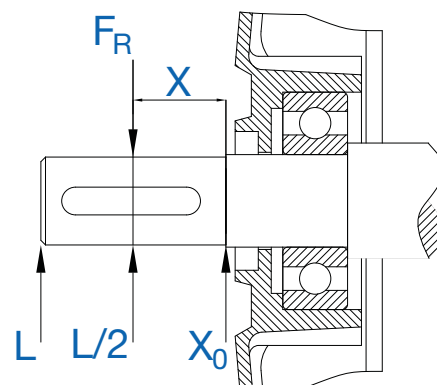
ATEX motors

Maximum radial load F_R [N]

In the table below the maximum permissible loads (F_R) are given for three different positions on the motor shaft (X_0 , $L/2$ and L , in which L is the shaft length) of the motor shaft. The calculation is based on the nominal motor speed at 50 Hz and a 20.000 hour life expectancy for 2 pole motors, and a 40.000 hour life expectancy for 4, 6 and 8 pole motors. For the nominal motor speed at 60 Hz the values must be reduced with 10%. For pole change motors the highest of the available speeds must be used.

The position X on the shaft can be calculated as follows:

$$F_R = F_{X_0} - (F_{X_0} - F_L) X / L$$



Specifications

IEC Frame size	Shaft length	2 pole			4 pole			6 pole			8 pole		
		X_0	$L/2$	L	X_0	$L/2$	L	X_0	$L/2$	L	X_0	$L/2$	L
56	20	350	325	300	350	325	300	-	-	-	-	-	-
63	23	390	365	340	390	365	340	450	420	390	-	-	-
71	30	490	450	410	490	450	410	560	515	470	610	565	520
80	40	650	590	530	650	590	530	750	680	610	820	745	670
90S	50	720	645	570	720	645	570	820	735	650	910	815	720
90L	50	720	650	580	720	650	580	830	750	670	920	830	740
100	60	1020	920	820	1020	920	820	1160	1045	930	1290	1165	1040
112	60	1410	1280	1150	1410	1280	1150	1610	1455	1300	1780	1610	1440
132S	80	1510	1345	1180	1510	1345	1180	1510	1430	1350	1910	1700	1490
132L	80	1520	1370	1220	1520	1370	1220	1540	1465	1390	1910	1720	1530
160S	110	2750	2455	2160	2750	2455	2160	2750	2600	2450	3430	3055	2680
160L	110	2750	2470	2190	2750	2470	2190	2770	2630	2490	3450	3100	2750

For envelopment drives (V belt / toothed belt / roller chain) the maximum radial load can be calculated as follows.

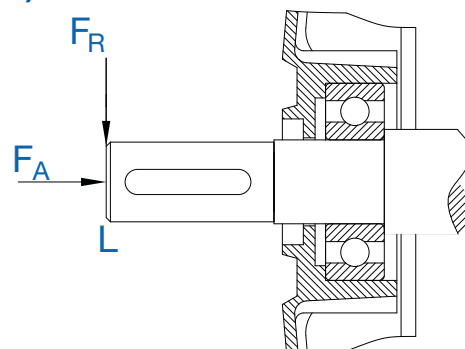
F_R = Maximum radial load [N] = (P + F) in which:

- P = weight of pulley (sprocket)
- F = envelopment force [N] = $(2P \cdot K \cdot M) / D$ in which:
 - K is envelopment factor (K = 3 for a (toothed) belt without tensioner
K = 2, 2 for a V – belt
K = 2 for a toothed belt with tensioner
 - D = disc diameter [m]
 - M = torque [Nm] = $9550 \cdot P / n$ in which:
 - P = driving power [kW]
 - n = shaft speed [1/min]

Maximum axial shaft load F_A [N] (with the maximum radial load on L)

In the table below the maximum permissible axial load is shown with the maximum radial load on L being applied.

The higher of the two values is the radial loading, the lower value is the axial loading.

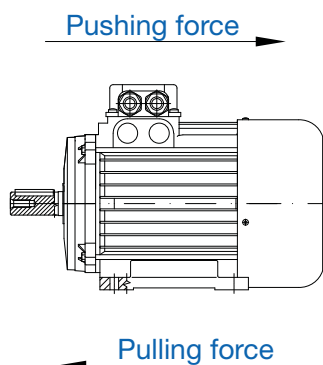


IEC frame size	B3								V5								V6							
	2 pole		4 pole		6 pole		8 pole		2 pole		4 pole		6 pole		8 pole		2 pole		4 pole		6 pole		8 pole	
	push	pull	push	pull	push	pull	push	pull	push	pull	push	pull	push	pull	push	pull	push	pull	push	pull	push	pull	push	pull
56	220	100	220	100	-	-	-	-	230	90	230	90	-	-	-	-	220	100	220	100	-	-	-	-
63	240	110	240	110	280	120	290	120	250	100	250	100	290	110	290	110	230	120	130	120	270	130	280	130
71	300	140	300	130	350	160	380	170	320	120	320	110	370	140	400	150	280	160	280	150	330	180	360	190
80	400	190	400	180	460	210	510	240	430	160	440	140	500	170	550	200	370	220	360	220	420	250	470	280
90S	430	200	430	210	500	230	550	260	460	170	470	170	540	190	590	220	400	230	390	250	460	270	510	300
90L	440	200	440	200	510	240	560	260	480	160	490	150	560	190	610	210	400	240	390	250	460	290	510	310
100	620	290	610	290	710	330	780	370	680	230	690	210	790	250	860	290	560	350	530	370	630	410	700	450
112	860	400	850	400	980	460	1080	500	950	320	960	290	1090	350	1190	390	780	480	740	510	870	570	970	610
132S	910	440	910	430	1040	500	1150	550	1050	300	1080	260	1210	330	1320	380	770	590	740	610	870	670	980	720
132L	920	430	920	430	1050	500	1170	550	1080	270	1130	220	1260	290	1380	340	760	590	710	640	840	710	960	760
160S	1680	800	1670	800	1920	920	2120	1010	1940	540	1970	500	2220	620	2420	710	1420	1060	1370	1100	1620	1220	1730	1370
160L	1700	800	1680	800	1930	920	2140	1010	1990	510	2090	390	2340	510	2550	600	1410	1090	1390	1100	1520	1330	1730	1420

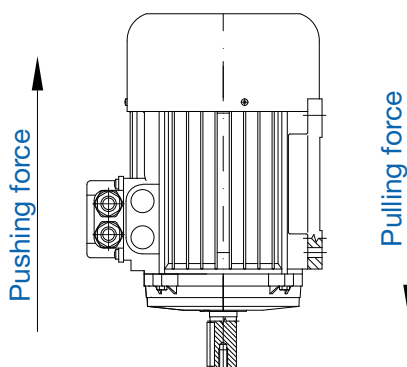
ATEX motors

The permissible axial push and pull forces are calculated for three different mounting positions; Horizontal (B3), Vertical with the motor shaft pointing downwards (V5) and Vertical with the motor shaft pointing upwards (V6).

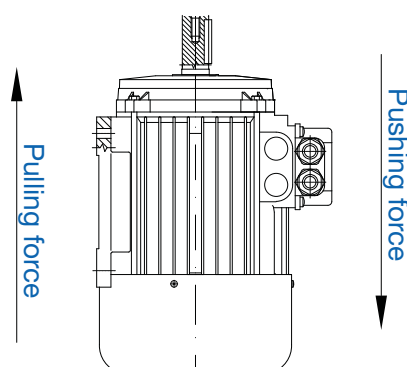
Mounting position B3



Mounting position V5



Montagepositie V6



Single speed 2 pole – 3000 rpm II 2G Ex e II T3 (or T4)

400V 50Hz														
Type code	P kW	n _n rpm	η	cos φ	I _n A	M _n Nm	I _a /I _n	M _a /M _n	M _{max} /M _n	tE (s)			J _{rotor} kgm ²	Weight kg
										T3 40°C	T3 55°C	T4 40°C		
J2 56A2	0,09	2750	64%	0,67	0,32	0,31	3,83	3	3,2	55	48	23	0,00010	2,2
J2 56B2	0,12	2680	50%	0,76	0,5	0,43	2,9	2	2,8	38	32	12	0,00012	2,5
J2 63A2	0,18	2870	55%	0,66	0,72	0,6	4,3	3,3	4,6	47	41	21	0,00017	3
J2 63B2	0,25	2820	60%	0,73	0,82	0,84	4	2,4	3,3	45	39	19	0,00022	3
J2 71A2	0,37	2850	71%	0,78	1	1,24	4,5	2,4	2,7	16	14	(*)	0,00035	5
J2 71B2	0,55	2840	70%	0,78	1,45	1,85	4,9	3,3	3,4	12	10	(*)	0,00045	5
J2 80A2	0,75	2900	75%	0,72	2	2,47	4,9	3	3,2	16	13	(*)	0,00068	8
J2 80B2	1,1	2810	72%	0,88	2,5	3,74	4	4	2,7	11	9	(*)	0,00088	10
J2 90S2	1,5	2860	67%	0,83	3,9	5	5,2	1,6	3,2	21	18	(*)	0,00118	12
J2 90L2	2,2	2840	70%	0,85	5,4	7,2	5,1	3,7	3,9	13	10	(*)	0,00180	14
J2 100L2	3	2890	77%	0,84	6,7	9,9	5,4	2	2,8	21	18	(*)	0,00279	18
J2 112M2	4	2910	78%	0,83	9,2	13,2	8,2	2,4	2,8	11	9	(*)	0,00544	26
J2 132K2	5,5	2910	80%	0,87	11,5	18,1	5,9	2,6	2,8	14	11	(*)	0,00993	43
J2 132S2	7,5	2900	79%	0,9	15,2	24,71	6,3	3	2,7	11	9	(*)	0,01316	45
J2 160K2	11	2900	83%	0,91	21	36,24	4,7	2,3	2,6	21	17	(*)	0,03275	95
J2 160M2	15	2930	80%	0,85	28	48,91	5	1,8	2,8	27	22	(*)	0,04519	100
J2 160L2	18,5	2910	84%	0,91	35	60,74	4,6	2	2,3	19	15	(*)	0,05393	110

Single speed 4 pole – 1500 rpm II 2G Ex e II T3 (or T4)

400V 50Hz														
Type code	P kW	n _n rpm	η	cos φ	I _n A	M _n Nm	I _a /I _n	M _a /M _n	M _{max} /M _n	tE (s)			J _{rotor} kgm ²	Weight kg
										T3 40°C	T3 55°C	T4 40°C		
J2 56A4	0,06	1400	35%	0,6	0,41	0,41	2,5	2,3	2,5	46	40	17	0,00015	2,2
J2 56B4	0,09	1370	50%	0,6	0,43	0,63	2,8	2,3	2,5	32	28	11	0,00015	2,4
J2 63A4	0,12	1350	56%	0,75	0,44	0,88	2,5	1,8	2	38	34	16	0,00021	3
J2 63B4	0,18	1350	56%	0,67	0,66	1,3	2,5	2,1	2,2	45	39	17	0,00029	3
J2 71A4	0,25	1400	55%	0,81	0,84	1,7	3,8	2,4	2,8	33	28	10	0,00073	5,5
J2 71B4	0,37	1410	66%	0,68	1,2	2,52	3,9	2,5	2,9	26	22	7	0,00080	5,5
J2 80A4	0,55	1430	68%	0,71	1,75	3,75	4,3	2,7	3,2	27	22	7	0,00092	7
J2 80B4	0,75	1410	72%	0,75	2,1	5,1	3,9	2,3	2,4	27	25	8	0,00128	10
J2 90S4	1,1	1420	71%	0,7	3,3	7,5	3,7	2,8	3,2	27	22	7	0,00203	11
J2 90L4	1,5	1415	75%	0,78	3,8	10,16	4,2	2,2	3,1	18	15	(*)	0,00265	13
J2 100K4	2,2	1440	77%	0,77	5,8	14,5	4,9	2	2,3	17	14	(*)	0,00450	18
J2 100L4	3	1430	78%	0,75	7,43	20,1	3,9	2	2,4	17	14	(*)	0,00599	21
J2 112M4	4	1440	84%	0,76	8,2	26,4	5,8	2,5	3,2	14	12	(*)	0,01112	28
J2 132S4	5,5	1460	87%	0,81	11,2	36	4,8	2	2,9	22	19	(*)	0,02311	37
J2 132M4	7,5	1440	87%	0,82	15,5	50,2	5,5	2	2,4	12	10	(*)	0,02953	52
J2 160M4	11	1450	81%	0,86	22,8	72,48	5,3	2	2,4	16	13	(*)	0,06167	80
J2 160L4	15	1430	86%	0,84	30	100,22	4,7	1,8	2	19	16	(*)	0,08276	105

Single speed **6 pole – 1000 rpm** **II 2G Ex e II T3 (or T4)**

400V 50Hz														
Type code	P	n _n	η	cos φ	I _n	M _n	I _a /I _n	M _a /M _n	M _{max} /M _n	tE (s)			J _{rotor}	Weight
										T3	T3	T4		
	kW	rpm			A	Nm				40°C	55°C	40°C	kgm ²	kg
J2 71A6	0,18	900	55%	0,7	0,8	2	2,8	2,4	2,8	32		26	0,00060	5,7
J2 71B6	0,25	910	63%	0,6	1	2,7	2,9	3,1	3,3	39		33	0,00080	6,5
J2 80A6	0,37	940	58%	0,66	1,4	3,76	4	2,7	3,2	20		17	0,00220	8
J2 80B6	0,55	920	65%	0,7	1,65	5,71	3,8	2,3	2,4	25		21	0,00282	10
J2 90S6	0,75	930	71%	0,7	2,2	7,9	3,5	2,3	2,4	27		23	0,00265	12
J2 90L6	1,1	910	67%	0,75	3,2	11,6	3,7	2,3	2,5	22		19	0,00342	15
J2 100L6	1,5	940	78%	0,68	4	15,3	4,1	2,6	2,9	25		21	0,01033	20
J2 112M6	2,2	930	78%	0,78	5,2	22,6	5	3,2	3,4	16		14	0,01603	35
J2 132S6	3	920	81%	0,73	7,3	31,15	5	2,2	2,5	20		17	0,03159	40
J2 132K6	4	960	84%	0,74	9,2	40	5	2	2,9	18		15	0,03786	47
J2 132M6	5,5	950	85%	0,74	12,5	54,2	5	1,6	2,2	13		10	0,04541	52
J2 160M6	7,5	970	89%	0,76	16	74	5,7	2	3	11		9	0,09345	80
J2 160L6	11	960	89%	0,8	22,5	109	5,4	1,9	2,6	8		7	0,12728	100

ATEX motors

Single speed **8 pole – 750 rpm** **II 2G Ex e II T3 (or T4)**

400V 50Hz														
Type code	P	n _n	η	cos φ	I _n	M _n	I _a /I _n	M _a /M _n	M _{max} /M _n	tE (s)			J _{rotor}	Weight
										T3	T3	T4		
	kW	rpm			A	Nm				40°C	55°C	40°C	kgm ²	kg
J2 80A8	0,18	690	49%	0,6	0,95	2,5	2,8	2,7	3	34	28	6	0,00141	8,6
J2 80B8	0,25	700	55%	0,55	1,2	3,6	2,9	2,8	3,2	32	26	5	0,00251	10
J2 90S8	0,37	680	60%	0,67	1,3	5,2	3	1,6	2	44	37	11	0,00376	12
J2 90L8	0,55	690	65%	0,65	1,9	7,7	3	2,4	2,7	41	34	10	0,00551	14
J2 100K8	0,75	700	65%	0,65	2,6	10	3,4	2,3	2,5	27	22	5	0,00775	18
J2 100L8	1,1	700	63%	0,69	3,6	15,2	3,7	2,2	2,6	21	17	(*)	0,01033	20
J2 112M8	1,5	710	77%	0,72	3,9	20,2	3,7	1,3	2,2	24	20	(*)	0,01870	35
J2 132S8	2,2	710	75%	0,67	6,4	30	3,4	1,6	2,5	28	23	7	0,03223	45
J2 132L8	3	700	78%	0,79	7	41	4	1,6	2	29	25	9	0,04000	53
J2 160S8	4	710	82%	0,78	9	53,1	4,1	2	2,3	13	11	(*)	0,08000	65
J2 160M8	5,5	715	85%	0,76	12,7	73	4	2	2,4	12	10	(*)	0,09200	72
J2 160L8	7,5	720	86%	0,97	15,9	98,2	4,2	1,9	2,4	14	12	(*)	0,11200	89

Dahlander Y/YY connection – quadratic torque

Two speed		4/2 pole – 1500/3000 rpm					II 2G Ex e II T3 (or T4)			
400V 50Hz										
Type code	P kW	n _n rpm	I _n A	I _a /I _n	M _a /M _n	M _{max} /M _n	Thermal protection		J _{rotor} kgm ²	Weight kg
							T3 °C	T4 °C		
J2 71A3	0,22/0,33	1380/2760	0,8/1	3,2/3,8	1,9/1,8	2,3/2,3	150	120	0,00050	6
J2 71B3	0,4/0,5	1380/2800	1,2/1,25	3,2/4,2	1,9/1,8	2,2/2,2	150	120	0,00080	6,5
J2 80A3	0,45/0,6	1430/2880	1,5/1,9	3,9/4,1	2/2	2,3/2,3	150	120	0,00140	8
J2 80B3	0,6/0,8	1450/2890	2,2/2,6	4/4,3	2/2	2,3/2,3	150	120	0,00170	10
J2 90S3	0,8/1,1	1440/2890	2,6/3,4	4,5/5	2,3/2	2,6/2,5	150	120	0,00330	12
J2 90L3	1,1/1,5	1420/2880	3,2/4,8	4,3/4,9	2,4/2,3	2,7/2,4	150	120	0,00400	15
J2 90L3A	1,3/1,7	1430/2850	3,6/4,6	4,5/5	2,6/2,4	2,7/2,4	150	120	0,00500	16
J2 100M3	1,5/2,2	1430/2850	4/5,7	6/6	2,4/2,3	2,6/2,5	150	120	0,00750	18
J2 100L3	2,2/3	1440/2870	5,7/8,1	6,2/6	2,5/2,3	2,6/2,5	150	120	0,00860	23
J2 112M3	3,3/4	1450/2900	7/9,1	6,2/6	2,5/2,3	2,6/2,3	150	120	0,01300	28
J2 132S3	4,5/5,5	1430/2900	10/11,5	6,3/6	2,6/2,4	2,9/2,8	150	120	0,01600	53
J2 132M3	6,5/8,1	1450/2890	13,2/16	6,2/6	2,6/2,5	2,9/2,7	150	120	0,02300	55
J2 132L3	8/9,5	1450/2930	18/22	5,8/5,5	2,6/2,5	2,9/2,7	150	120	0,03300	58
J2 160S3	9,3/11	1460/2930	20/25	5,6/5,3	2,4/2,3	2,8/2,6	150	120	0,06200	85
J2 160M3	12/14	1460/2930	26/32	6,2/6	2,4/2,3	2,8/2,6	150	120	0,06500	91
J2 160L3	12,5/18,5	1460/2930	27/35	6,3/6	2,3/2,1	2,8/2,4	150	120	0,07400	105

Dahlander aansluiting Y/YY connection – quadratic torque

Two speed		8/4 pole – 750/1500 rpm					II 2G Ex e II T3 (or T4)			
400V 50Hz										
Type code	P kW	n _n rpm	I _n A	I _a /I _n	M _a /M _n	M _{max} /M _n	Thermal protection		J _{rotor} kgm ²	Weight kg
							T3 °C	T4 °C		
J2 71A5	0,11/0,18	670/1370	0,8/0,9	2,4/3,4	1,4/1,1	2/1,8	150	120	0,00180	6,3
J2 71B5	0,15/0,3	670/1370	1,1/1,2	2,4/3,5	1,4/1,1	2/1,8	150	120	0,00200	6,5
J2 80A5	0,22/0,45	700/1420	1,3/1,4	2,4/3,5	1,6/1,5	2/1,8	150	120	0,00230	8,7
J2 80B5	0,37/0,55	700/1410	2/1,4	2,6/3,6	1,6/1,5	2,2/1,8	150	120	0,00300	8,2
J2 90S5	0,6/1,1	700/1420	2,8/2,5	3,2/4	1,7/2	2,2/1,8	150	120	0,00430	12,5
J2 100M5	0,7/1,1	700/1430	3,5/3	5/5,2	2,5/2,2	2,8/2,4	150	120	0,00770	18
J2 100L5	1,1/1,8	710/1430	5/4,6	5,2/5,5	2,4/2,3	2,8/2,4	150	120	0,00860	20
J2 112M5	1,4/2,6	710/1430	5,3/5,3	5,2/5,5	2,5/2,3	2,8/2,6	150	120	0,01200	35
J2 132S5	2,4/4,5	720/1440	4,8/8	5,2/5,2	2,5/2,3	2,8/2,4	150	120	0,03000	45
J2 132M5	2,6/4,1	720/1430	8/10,5	5,3/5,4	2,5/2,3	2,8/2,4	150	120	0,04000	50
J2 132L5	3/5,5	720/1440	8,7/12	5,3/5,4	2,4/2,2	2,8/2,5	150	120	0,05500	54
J2 160M5	4,1/6,4	720/1440	12,7/13,8	5,2/5,3	2,4/2,2	2,8/2,5	150	120	0,11200	85

Without starting capacitor

Single speed		2 pole – 3000 rpm						II 2G Ex e II T3 (or T4)						
230V 50Hz														
Type code	P	n_n	η	$\cos \varphi$	I_n	M_n	I_a/I_n	M_a/M_n	M_{max}/M_n	C	Thermal protection		J_{rotor}	Weight
	kW	rpm			A	Nm				μF	T3 °C	T4 °C	kgm ²	kg
K2 56A2	0,09	2740	65%	0,86	0,7	0,31	2,3	0,6	1,5	3	150	120	0,00012	2
K2 56B2	0,12	2760	76%	0,86	0,8	0,42	2,6	0,6	1,5	4	150	120	0,00015	2,6
K2 63A2	0,18	2780	76%	0,86	1,2	0,62	2,9	0,6	1,4	4	150	120	0,00030	4,3
K2 63B2	0,25	2780	60%	0,9	2	0,86	2,9	0,65	1,5	6	150	120	0,00035	4,5
K2 71A2	0,37	2790	50%	0,9	3,6	1,27	3,1	0,7	1,4	10	150	120	0,00046	6
K2 71B2	0,55	2800	58%	0,9	4,6	1,88	3,1	0,63	1,4	16	150	120	0,00056	6,5
K2 80A2	0,75	2830	59%	0,92	6	2,53	3,2	0,7	1,4	25	150	120	0,00097	8
K2 80B2	1,1	2800	64%	0,94	8	3,75	3,3	0,7	1,6	30	150	120	0,01000	10
K2 90S2	1,5	2850	71%	0,9	10,2	5,03	3,3	0,6	1,8	40	150	120	0,00150	12
K2 90L2	1,5	2850	69%	0,9	10,5	5,03	3,4	0,55	1,5	40	150	120	0,00190	14
K2 100M2	2,2	2850	71%	0,9	15	7,38	3,5	0,55	1,7	60	150	120	0,00370	23
K2 100L2	3	2850	66%	0,9	22	10,06	3,6	0,6	1,8	80	150	120	0,00530	25
K2 112M2	4	2890	69%	0,97	26	13,22	3,6	0,65	1,8	100	150	120	0,00700	38

ATEX motors

Without starting capacitor

Single speed		4 pole – 1500 rpm						II 2G Ex e II T3 (or T4)						
230V 50Hz														
Type code	P	n_n	η	$\cos \varphi$	I_n	M_n	I_a/I_n	M_a/M_n	M_{max}/M_n	C	Thermal protection		J_{rotor}	Weight
	kW	rpm			A	Nm				μF	T3 °C	T4 °C	kgm ²	kg
K2 56A4	0,06	1340	53%	0,94	0,9	0,43	2,6	0,6	1,5	2	150	120	0,00018	2,6
K2 56B4	0,09	1350	55%	0,95	1	0,64	2,6	0,6	1,5	4	150	120	0,00020	2,8
K2 63A4	0,12	1360	58%	0,93	1,3	0,84	2,8	0,63	1,4	4	150	120	0,00040	3,4
K2 63B4	0,18	1360	59%	0,95	1,4	1,26	2,8	0,62	1,5	6,3	150	120	0,00045	3,6
K2 71A4	0,25	1400	59%	0,94	2,5	1,71	3	0,55	1,4	10	150	120	0,00080	6,5
K2 71B4	0,37	1400	59%	0,93	3,6	2,53	3,2	0,56	1,4	10	150	120	0,00090	7,2
K2 80A4	0,55	1410	60%	0,94	4,8	3,73	3,2	0,45	1,4	16	150	120	0,00096	8
K2 80B4	0,75	1410	63%	0,96	5,4	5,08	3,3	0,5	1,6	20	150	120	0,00120	10
K2 90S4	1,1	1400	65%	0,95	8	7,51	3,4	0,45	1,5	30	150	120	0,00260	13
K2 90L4	1,5	1410	67%	0,93	10,5	10,16	3,5	0,44	1,8	40	150	120	0,00320	15
K2 100M4	2,2	1415	70%	0,96	15,6	14,85	3,8	0,55	1,6	45	150	120	0,00590	22
K2 112M4	3	1430	75%	0,98	20	20,04	3,9	0,45	1,8	70	150	120	0,01200	34

S-S-ELD-EN-EMOT-001-V01

Single speed **2 pole – 3000 rpm** **II 3G Ex nA II T3 (or T4)**

400V 50Hz													
Type code	P kW	n _n rpm	η	cos φ	I _n A	M _n Nm	I _a /I _n	M _a /M _n	M _{max} /M _n	Thermal protection		J _{rotor} kgm ²	Weight kg
										T4 °C	T5 °C		
J3 56A2	0,09	2750	64%	0,67	0,32	0,31	3,83	3	3,2	-	120	0,00010	2,2
J3 56B2	0,12	2680	50%	0,76	0,5	0,43	2,9	2	2,8	-	120	0,00012	2,5
J3 63A2	0,18	2870	55%	0,66	0,72	0,6	4,3	3,3	4,6	-	120	0,00017	3
J3 63B2	0,25	2820	60%	0,73	0,82	0,84	4	2,4	3,3	-	120	0,00022	3
J3 71A2	0,37	2850	71%	0,78	1	1,24	4,5	2,4	2,7	-	120	0,00035	5
J3 71B2	0,55	2840	70%	0,78	1,45	1,85	4,9	3,3	3,4	-	120	0,00045	5
J3 80A2	0,75	2900	75%	0,72	2	2,47	4,9	3	3,2	-	120	0,00068	8
J3 80B2	1,1	2810	72%	0,88	2,5	3,74	4	4	2,7	-	120	0,00088	10
J3 90S2	1,5	2860	67%	0,83	3,9	5	5,2	1,6	3,2	-	120	0,00118	12
J3 90L2	2,2	2840	70%	0,85	5,4	7,2	5,1	3,7	3,9	-	120	0,00180	14
J3 100L2	3	2890	77%	0,84	6,7	9,9	5,4	2	2,8	-	120	0,00279	18
J3 112M2	4	2910	78%	0,83	9,2	13,2	8,2	2,4	2,8	-	120	0,00544	26
J3 132K2	5,5	2910	80%	0,87	11,5	18,1	5,9	2,6	2,8	-	120	0,00993	43
J3 132S2	7,5	2900	79%	0,9	15,2	24,71	6,3	3	2,7	-	120	0,01316	45
J3 132L2	9,3	2930	80%	0,88	19	30,33	5,8	2,4	2,7	-	120	0,01642	49
J3 160K2	11	2900	83%	0,91	21	36,24	4,7	2,3	2,6	-	120	0,03275	95
J3 160M2	15	2930	80%	0,85	28	48,91	5	1,8	2,8	-	120	0,04519	100
J3 160L2	18,5	2910	84%	0,91	35	60,74	4,6	2	2,3	-	120	0,05393	110

Single speed **4 pole – 1500 rpm** **II 3G Ex nA II T3 (or T4)**

400V 50Hz													
Type code	P kW	n _n rpm	η	cos φ	I _n A	M _n Nm	I _a /I _n	M _a /M _n	M _{max} /M _n	Thermal protection		J _{rotor} kgm ²	Weight kg
										T3 °C	T4 °C		
J3 56A4	0,06	1400	35%	0,6	0,41	0,41	2,5	2,3	2,5	-	120	0,00015	2,2
J3 56B4	0,09	1370	50%	0,6	0,43	0,63	2,8	2,3	2,5	-	120	0,00015	2,4
J3 63A4	0,12	1350	56%	0,75	0,44	0,88	2,5	1,8	2	-	120	0,00021	3
J3 63B4	0,18	1350	56%	0,67	0,66	1,3	2,5	2,1	2,2	-	120	0,00029	3
J3 71A4	0,25	1400	55%	0,81	0,84	1,7	3,8	2,4	2,8	-	120	0,00073	5,5
J3 71B4	0,37	1410	66%	0,68	1,2	2,52	3,9	2,5	2,9	-	120	0,00080	5,5
J3 80A4	0,55	1430	68%	0,71	1,75	3,75	4,3	2,7	3,2	-	120	0,00092	7
J3 80B4	0,75	1410	72%	0,75	2,1	5,1	3,9	2,3	2,4	-	120	0,00128	10
J3 90S4	1,1	1420	71%	0,7	3,3	7,5	3,7	2,8	3,2	-	120	0,00203	11
J3 90L4	1,5	1415	75%	0,78	3,8	10,16	4,2	2,2	3,1	-	120	0,00265	13
J3 100K4	2,2	1440	77%	0,77	5,8	14,5	4,9	2	2,3	-	120	0,00450	18
J3 100L4	3	1430	78%	0,75	7,43	20,1	3,9	2	2,4	-	120	0,00599	21
J3 112M4	4	1440	84%	0,76	8,2	26,4	5,8	2,5	3,2	-	120	0,01112	28
J3 132S4	5,5	1460	87%	0,81	11,2	36	4,8	2	2,9	-	120	0,02311	37
J3 132M4	7,5	1440	87%	0,82	15,5	50,2	5,5	2	2,4	-	120	0,02953	52
J3 132L4	9,3	1430	81%	0,83	20	62,14	5,5	3	3,2	-	120	0,03321	53
J3 160M4	11	1450	81%	0,86	22,8	72,48	5,3	2	2,4	-	120	0,06167	80
J3 160L4	15	1430	86%	0,84	30	100,22	4,7	1,8	2	-	120	0,08276	105

Single speed 6 pole – 1000 rpm II 3G Ex nA II T3 (or T4)

400V 50Hz													
Type code	P kW	n _n rpm	η	cos φ	I _n A	M _n Nm	I _a /I _n	M _a /M _n	M _{max} /M _n	Thermal protection		J _{rotor} kgm ²	Weight kg
										T3 °C	T4 °C		
J3 71B6	0,18	900	55%	0,7	0,8	2	2,8	2,4	2,8	-	120	0,00060	5,7
J3 71B6	0,25	910	63%	0,6	1	2,7	2,9	3,1	3,3	-	120	0,00080	6,5
J3 80A6	0,37	940	58%	0,66	1,4	3,76	4	2,7	3,2	-	120	0,00220	8
J3 80B6	0,55	920	65%	0,7	1,65	5,71	3,8	2,3	2,4	-	120	0,00282	10
J3 90S6	0,75	930	71%	0,7	2,2	7,9	3,5	2,3	2,4	-	120	0,00265	12
J3 90L6	1,1	910	67%	0,75	3,2	11,6	3,7	2,3	2,5	-	120	0,00342	15
J3 100L6	1,5	940	78%	0,68	4	15,3	4,1	2,6	2,9	-	120	0,01033	20
J3 112M6	2,2	930	78%	0,78	5,2	22,6	5	3,2	3,4	-	120	0,01603	35
J3 132S6	3	920	81%	0,73	7,3	31,15	5	2,2	2,5	-	120	0,03159	40
J3 132K6	4	960	84%	0,74	9,2	40	5	2	2,9	-	120	0,03786	47
J3 132M6	5,5	950	85%	0,74	12,5	54,2	5	1,6	2,2	-	120	0,04541	52
J3 160M6	7,5	970	89%	0,76	16	74	5,7	2	3	-	120	0,09345	80
J3 160L6	11	960	89%	0,8	22,5	109	5,4	1,9	2,6	-	120	0,12728	100

ATEX motors

Single speed 4 pole – 1500 rpm II 3G Ex nA II T3 (or T4)

400V 50Hz													
Type code	P kW	n _n rpm	η	cos φ	I _n A	M _n Nm	I _a /I _n	M _a /M _n	M _{max} /M _n	Thermal protection		J _{rotor} kgm ²	Weight kg
										T3 °C	T4 °C		
J3 80A8	0,18	690	49%	0,6	0,95	2,5	2,8	2,7	3	-	120	0,00141	8,6
J3 80B8	0,25	700	55%	0,55	1,2	3,6	2,9	2,8	3,2	-	120	0,00251	10
J3 90S8	0,37	680	60%	0,67	1,3	5,2	3	1,6	2	-	120	0,00376	12
J3 90L8	0,55	690	65%	0,65	1,9	7,7	3	2,4	2,7	-	120	0,00551	14
J3 100K8	0,75	700	65%	0,65	2,6	10	3,4	2,3	2,5	-	120	0,00775	18
J3 100L8	1,1	700	63%	0,69	3,6	15,2	3,7	2,2	2,6	-	120	0,01033	20
J3 112M8	1,5	710	77%	0,72	3,9	20,2	3,7	1,3	2,2	-	120	0,01870	35
J3 132S8	2,2	710	75%	0,67	6,4	30	3,4	1,6	2,5	-	120	0,03223	45
J3 132L8	3	700	78%	0,79	7	41	4	1,6	2	-	120	0,04000	53
J3 160S8	4	710	82%	0,78	9	53,1	4,1	2	2,3	-	120	0,08000	65
J3 160M8	5,5	715	85%	0,76	12,7	73	4	2	2,4	-	120	0,09200	72
J3 160L8	7,5	720	86%	0,97	15,9	98,2	4,2	1,9	2,4	-	120	0,11200	89

Dahlander with Y/YY connection – quadratic torque

Two speed 4/2 pole – 1500/3000 rpm II 3G Ex nA II T3 (or T4)

400V 50Hz										
Type code	P kW	n _n rpm	I _n A	I _a /I _n	M _a /M _n	M _{max} /M _n	Thermal protection		J _{rotor} kgm ²	Weight kg
							T3 °C	T4 °C		
J3 71A3	0,22/0,33	1380/2760	0,8/1	3,2/3,8	1,9/1,8	2,3/2,3	-	120	0,00050	6
J3 71B3	0,4/0,5	1380/2800	1,2/1,25	3,2/4,2	1,9/1,8	2,2/2,2	-	120	0,00080	6,5
J3 80A3	0,45/0,6	1430/2880	1,5/1,9	3,9/4,1	2/2	2,3/2,3	-	120	0,00140	8
J3 80B3	0,6/0,8	1450/2890	2,2/2,6	4/4,3	2/2	2,3/2,3	-	120	0,00170	10
J3 90S3	0,8/1,1	1440/2890	2,6/3,4	4,5/5	2,3/2	2,6/2,5	-	120	0,00330	12
J3 90L3	1,1/1,5	1420/2880	3,2/4,8	4,3/4,9	2,4/2,3	2,7/2,4	-	120	0,00400	15
J3 90L3A	1,3/1,7	1430/2850	3,6/4,6	4,5/6	2,6/2,4	2,7/2,4	-	120	0,00500	16
J3 100M3	1,5/2,2	1430/2850	4/5,7	6/6	2,4/2,3	2,6/2,5	-	120	0,00750	18
J3 100L3	2,2/3	1440/2870	5,7/8,1	6,2/6	2,5/2,3	2,6/2,5	-	120	0,00860	23
J3 112M3	3,3/4	1450/2900	7/9,1	6,2/6	2,5/2,3	2,6/2,4	-	120	0,01300	28
J3 132S3	4,5/5,5	1430/2900	10/11,5	6,3/6	2,6/2,4	2,9/2,8	-	120	0,01600	53
J3 132M3	6,5/8,1	1450/2890	13,2/16	6,2/6	2,6/2,6	2,9/2,7	-	120	0,02300	55
J3 132L3	8/9,5	1450/2930	18/22	5,8/5,5	2,6/2,5	2,9/2,7	-	120	0,03300	58
J3 160M3	9,3/11	1460/2930	20/25	5,6/5,3	2,4/2,3	2,8/2,6	-	120	0,06200	85
J3 160M3B	12/14	1460/2930	26/32	6,2/6	2,4/2,3	2,8/2,6	-	120	0,06500	91
J3 160L3	12,5/18,5	1460/2930	27/35	6,3/6	2,3/2,1	2,8/2,4	-	120	0,07400	105

Two speed 8/4 pole – 750/1500 rpm II 3G Ex nA II T3 (or T4)

400V 50Hz										
Type code	P kW	rpm	I _n A	I _a /I _n	M _a /M _n	M _{max} /M _n	Thermal protection		J _{rotor} kgm ²	Weight kg
							T3 °C	T4 °C		
J3 71A5	0,11/0,18	670/1370	0,8/0,9	2,4/3,4	1,4/1,1	2/1,8	-	120	0,00180	6,3
J3 71B5	0,15/0,3	670/1370	1,1/1,2	2,4/3,5	1,4/1,1	2/1,8	-	120	0,00200	6,5
J3 80A5	0,22/0,45	700/1420	1,3/1,4	2,4/3,5	1,6/1,5	2/1,8	-	120	0,00230	8,7
J3 80B5	0,37/0,55	700/1410	2/1,4	2,6/3,6	1,6/1,5	2,2/1,8	-	120	0,00300	8,2
J3 90S5	0,6/1,1	700/1420	2,8/2,5	3,2/4	1,7/2	2,2/1,8	-	120	0,00430	12,5
J3 100M5	0,7/1,1	700/1430	3,5/3	5/5,2	2,5/2,2	2,8/2,4	-	120	0,00770	18
J3 100L5	1,1/1,8	710/1430	5/4,6	5,2/5,5	2,4/2,3	2,8/2,4	-	120	0,00860	20
J3 112M5	1,4/2,6	710/1430	5,3/5,3	5,2/5,5	2,5/2,3	2,8/2,6	-	120	0,01200	35
J3 132S5	2,4/4,5	720/1440	4,8/8	5,2/5,2	2,5/2,3	2,8/2,4	-	120	0,03000	45
J3 132M5	2,6/4,1	720/1430	8/10,5	5,3/5,4	2,5/2,3	2,8/2,4	-	120	0,04000	50
J3 132L5	3/5,5	720/1440	8,7/12	5,3/5,4	2,4/2,2	2,8/2,5	-	120	0,05500	54
J3 160M5	4,1/6,4	720/1440	12,7/13,8	5,2/5,3	2,4/2,2	2,8/2,5	-	120	0,11200	85

Without starting capacitor

Single speed											2 pole – 3000 rpm			II 3G Ex nA II T3 (or T4)		
230V 50Hz																
Type code	P kW	n _n rpm	η	cos φ	I _n A	M _n Nm	I _a /I _n	M _a /M _n	M _{max} /M _n	C μF	Thermal protection		J _{rotor} kgm ²	Weight kg		
											T3 °C	T4 °C				
K3 56A2	0,09	2740	65%	0,86	0,7	0,31	2,3	0,6	1,5	3	-	120	0,00012	2		
K3 56B2	0,12	2760	76%	0,86	0,8	0,42	2,6	0,6	1,5	4	-	120	0,00015	2,6		
K3 63A2	0,18	2780	76%	0,86	1,2	0,62	2,9	0,6	1,4	4	-	120	0,00030	4,3		
K3 63B2	0,25	2780	60%	0,9	2	0,86	2,9	0,65	1,5	6	-	120	0,00035	4,5		
K3 71A2	0,37	2790	50%	0,9	3,6	1,27	3,1	0,7	1,4	10	-	120	0,00046	6		
K3 71B2	0,55	2800	58%	0,9	4,6	1,88	3,1	0,63	1,4	16	-	120	0,00056	6,5		
K3 80A2	0,75	2830	59%	0,92	6	2,53	3,2	0,7	1,4	25	-	120	0,00097	8		
K3 80B2	1,1	2800	64%	0,94	8	3,75	3,3	0,7	1,6	30	-	120	0,01000	10		
K3 90S2	1,5	2850	71%	0,9	10,2	5,03	3,3	0,6	1,8	40	-	120	0,00-	12		
K3 90L2	1,5	2850	69%	0,9	10,5	5,03	3,4	0,55	1,5	40	-	120	0,00190	14		
K3 90L2	2,2	2730	76%	0,9	14	7,7	3,2	0,55	1,6	60	-	120	0,00210	15		
K3 100M2	2,2	2850	71%	0,9	15	7,38	3,5	0,55	1,7	60	-	120	0,00370	23		
K3 100L2	3	2850	66%	0,9	22	10,06	3,6	0,6	1,8	80	-	120	0,00530	25		
K3 112M2	4	2890	69%	0,97	26	13,22	3,6	0,65	1,8	100	-	120	0,00700	38		

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Single speed											4 pole – 1500 rpm			II 3G Ex nA II T3 (or T4)		
230V 50Hz																
Type code	P kW	n _n rpm	η	cos φ	I _n A	M _n Nm	I _a /I _n	M _a /M _n	M _{max} /M _n	C μF	Thermal protection		J _{rotor} kgm ²	Weight kg		
											T3 °C	T4 °C				
K3 56A4	0,06	1340	53%	0,94	0,9	0,43	2,6	0,6	1,5	2	-	120	0,00018	2,6		
K3 56B4	0,09	1350	55%	0,95	1	0,64	2,6	0,6	1,5	4	-	120	0,00020	2,8		
K3 63A4	0,12	1360	58%	0,93	1,3	0,84	2,8	0,63	1,4	4	-	120	0,00040	3,4		
K3 63B4	0,18	1360	59%	0,95	1,4	1,26	2,8	0,62	1,5	6,3	-	120	0,00045	3,6		
K3 71A4	0,25	1400	59%	0,94	2,5	1,71	3	0,55	1,4	10	-	120	0,00080	6,5		
K3 71B4	0,37	1400	59%	0,93	3,6	2,53	3,2	0,56	1,4	10	-	120	0,00090	7,2		
K3 80A4	0,55	1410	60%	0,94	4,8	3,73	3,2	0,45	1,4	16	-	120	0,00096	8		
K3 80B4	0,75	1410	63%	0,96	5,4	5,08	3,3	0,5	1,6	20	-	120	0,00120	10		
K3 90S4	1,1	1400	65%	0,95	8	7,51	3,4	0,45	1,5	30	-	120	0,00260	13		
K3 90L4	1,5	1410	67%	0,93	10,5	10,16	3,5	0,44	1,8	40	-	120	0,00320	15		
K3 100L4	2,2	1415	70%	0,96	15,6	14,85	3,8	0,55	1,6	45	-	120	0,00590	22		
K3 112M4	3	1430	75%	0,98	20	20,04	3,9	0,45	1,8	70	-	120	0,01200	34		

S-S-ELD-EN-EMOT-001-V01

Single speed 2 pole – 3000 rpm II 2D Ex tD A21 T125

400V 50Hz													
Type code	P		η	$\cos \varphi$	I_n	M_n	I_a/I_n	M_a/M_n	M_{max}/M_n	Surface temperature	IP class	J_{rotor}	Weight
	kW	rpm			A	Nm				°C		kgm ²	kg
J2 56A2	0,09	2750	64%	0,67	0,32	0,31	3,83	3	3,2	125	IP65	0,00010	2,2
J2 56B2	0,12	2680	50%	0,76	0,5	0,43	2,9	2	2,8	125	IP65	0,00012	2,5
J2 63A2	0,18	2870	55%	0,66	0,72	0,6	4,3	3,3	4,6	125	IP65	0,00017	3
J2 63B2	0,25	2820	60%	0,73	0,82	0,84	4	2,4	3,3	125	IP65	0,00022	3
J2 71A2	0,37	2850	71%	0,78	1	1,24	4,5	2,4	2,7	125	IP65	0,00035	5
J2 71B2	0,55	2840	70%	0,78	1,45	1,85	4,9	3,3	3,4	125	IP65	0,00045	5
J2 80A2	0,75	2900	75%	0,72	2	2,47	4,9	3	3,2	125	IP65	0,00068	8
J2 80B2	1,1	2810	72%	0,88	2,5	3,74	4	4	2,7	125	IP65	0,00088	10
J2 90S2	1,5	2860	67%	0,83	3,9	5	5,2	1,6	3,2	125	IP65	0,00118	12
J2 90L2	2,2	2840	70%	0,85	5,4	7,2	5,1	3,7	3,9	125	IP65	0,00180	14
J2 100L2	3	2890	77%	0,84	6,7	9,9	5,4	2	2,8	125	IP65	0,00279	18
J2 112M2	4	2910	78%	0,83	9,2	13,2	8,2	2,4	2,8	125	IP65	0,00544	26
J2 132K2	5,5	2910	80%	0,87	11,5	18,1	5,9	2,6	2,8	125	IP65	0,00993	43
J2 132S2	7,5	2900	79%	0,9	15,2	24,71	6,3	3	2,7	125	IP65	0,01316	45
J2 160K2	11	2900	83%	0,91	21	36,24	4,7	2,3	2,6	125	IP65	0,03275	95
J2 160M2	15	2930	80%	0,85	28	48,91	5	1,8	2,8	125	IP65	0,04519	100
J2 160L2	18,5	2910	84%	0,91	35	60,74	4,6	2	2,3	125	IP65	0,05393	110

Single speed 4 pole – 1500 rpm II 2D Ex tD A21 T125

400V 50Hz													
Type code	P		η	$\cos \varphi$	I_n	M_n	I_a/I_n	M_a/M_n	M_{max}/M_n	Surface temperature	IP class	J_{rotor}	Weight
	kW	rpm			A	Nm				°C		kgm ²	kg
J2 56A4	0,06	1400	35%	0,6	0,41	0,41	2,5	2,3	2,5	125	IP65	0,00015	2,2
J2 56B4	0,09	1370	50%	0,6	0,43	0,63	2,8	2,3	2,5	125	IP65	0,00015	2,4
J2 63A4	0,12	1350	56%	0,75	0,44	0,88	2,5	1,8	2	125	IP65	0,00021	3
J2 63B4	0,18	1350	56%	0,67	0,66	1,3	2,5	2,1	2,2	125	IP65	0,00029	3
J2 71A4	0,25	1400	55%	0,81	0,84	1,7	3,8	2,4	2,8	125	IP65	0,00073	5,5
J2 71B4	0,37	1410	66%	0,68	1,2	2,52	3,9	2,5	2,9	125	IP65	0,00080	5,5
J2 80A4	0,55	1430	68%	0,71	1,75	3,75	4,3	2,7	3,2	125	IP65	0,00092	7
J2 80B4	0,75	1410	72%	0,75	2,1	5,1	3,9	2,3	2,4	125	IP65	0,00128	10
J2 90S4	1,1	1420	71%	0,7	3,3	7,5	3,7	2,8	3,2	125	IP65	0,00203	11
J2 90L4	1,5	1415	75%	0,78	3,8	10,16	4,2	2,2	3,1	125	IP65	0,00265	13
J2 100K4	2,2	1440	77%	0,77	5,8	14,5	4,9	2	2,3	125	IP65	0,00450	18
J2 100L4	3	1430	78%	0,75	7,43	20,1	3,9	2	2,4	125	IP65	0,00599	21
J2 112M4	4	1440	84%	0,76	8,2	26,4	5,8	2,5	3,2	125	IP65	0,01112	28
J2 132S4	5,5	1460	87%	0,81	11,2	36	4,8	2	2,9	125	IP65	0,02311	37
J2 132M4	7,5	1440	87%	0,82	15,5	50,2	5,5	2	2,4	125	IP65	0,02953	52
J2 160M4	11	1450	81%	0,86	22,8	72,48	5,3	2	2,4	125	IP65	0,06167	80
J2 160L4	15	1430	86%	0,84	30	100,22	4,7	1,8	2	125	IP65	0,08276	105

Single speed **6 pole – 1000 rpm** **II 2D Ex tD A21 T125**

400V 50Hz													
Type code	P	n _n	η	cos φ	I _n	M _n	I _a /I _n	M _a /M _n	M _{max} /M _n	Surface temperature	IP class	J _{rotor}	Weight
	kW	rpm			A	Nm				°C		kgm ²	kg
J2 71B6	0,18	900	55%	0,7	0,8	2	2,8	2,4	2,8	125	IP65	0,00060	5,7
J2 71B6	0,25	910	63%	0,6	1	2,7	2,9	3,1	3,3	125	IP65	0,00080	6,5
J2 80A6	0,37	940	58%	0,66	1,4	3,76	4	2,7	3,2	125	IP65	0,00220	8
J2 80B6	0,55	920	65%	0,7	1,65	5,71	3,8	2,3	2,4	125	IP65	0,00282	10
J2 90S6	0,75	930	71%	0,7	2,2	7,9	3,5	2,3	2,4	125	IP65	0,00265	12
J2 90L6	1,1	910	67%	0,75	3,2	11,6	3,7	2,3	2,5	125	IP65	0,00342	15
J2 100L6	1,5	940	78%	0,68	4	15,3	4,1	2,6	2,9	125	IP65	0,01033	20
J2 112M6	2,2	930	78%	0,78	5,2	22,6	5	3,2	3,4	125	IP65	0,01603	35
J2 132S6	3	920	81%	0,73	7,3	31,15	5	2,2	2,5	125	IP65	0,03159	40
J2 132K6	4	960	84%	0,74	9,2	40	5	2	2,9	125	IP65	0,03786	47
J2 132M6	5,5	950	85%	0,74	12,5	54,2	5	1,6	2,2	125	IP65	0,04541	52
J2 160M6	7,5	970	89%	0,76	16	74	5,7	2	3	125	IP65	0,09345	80
J2 160L6	11	960	89%	0,8	22,5	109	5,4	1,9	2,6	125	IP65	0,12728	100

ATEX motors

Single speed **8 pole – 750 rpm** **II 2D Ex tD A21 T125**

400V 50Hz													
Type code	P	n _n	η	cos φ	I _n	M _n	I _a /I _n	M _a /M _n	M _{max} /M _n	Surface temperature	IP class	J _{rotor}	Weight
	kW	rpm			A	Nm				°C		kgm ²	kg
J2 80A8	0,18	690	49%	0,6	0,95	2,5	2,8	2,7	3	125	IP65	0,00141	8,6
J2 80B8	0,25	700	55%	0,55	1,2	3,6	2,9	2,8	3,2	125	IP65	0,00251	10
J2 90S8	0,37	680	60%	0,67	1,3	5,2	3	1,6	2	125	IP65	0,00376	12
J2 90L8	0,55	690	65%	0,65	1,9	7,7	3	2,4	2,7	125	IP65	0,00551	14
J2 100K8	0,75	700	65%	0,65	2,6	10	3,4	2,3	2,5	125	IP65	0,00775	18
J2 100L8	1,1	700	63%	0,69	3,6	15,2	3,7	2,2	2,6	125	IP65	0,01033	20
J2 112M8	1,5	710	77%	0,72	3,9	20,2	3,7	1,3	2,2	125	IP65	0,01870	35
J2 132S8	2,2	710	75%	0,67	6,4	30	3,4	1,6	2,5	125	IP65	0,03223	45
J2 132L8	3	700	78%	0,79	7	41	4	1,6	2	125	IP65	0,04000	53
J2 160S8	4	710	82%	0,78	9	53,1	4,1	2	2,3	125	IP65	0,08000	65
J2 160M8	5,5	715	85%	0,76	12,7	73	4	2	2,4	125	IP65	0,09200	72
J2 160L8	7,5	720	86%	0,97	15,9	98,2	4,2	1,9	2,4	125	IP65	0,11200	89

Dahlander with Y/YY connection – quadratic torque

Two speed		4/2 pole – 1500/3000 rpm					II 2D Ex tD A21 T125			
400V 50Hz										
Type code	P kW	n _n rpm	I _n A	I _a /I _n	M _a /M _n	M _{max} /M _n	Surface temperature °C	IP class	J _{rotor} kgm ²	Weight kg
J3 71A3	0,22/0,33	1380/2760	0,8/1	3,2/3,8	1,9/1,8	2,3/2,3	125	IP65	0,00050	6
J3 71B3	0,4/0,5	1380/2800	1,2/1,25	3,2/4,2	1,9/1,8	2,2/2,2	125	IP65	0,00080	6,5
J3 80A3	0,45/0,6	1430/2880	1,5/1,9	3,9/4,1	2/2	2,3/2,3	125	IP65	0,00140	8
J3 80B3	0,6/0,8	1450/2890	2,2/2,6	4/4,3	2/2	2,3/2,3	125	IP65	0,00170	10
J3 90S3	0,8/1,1	1440/2890	2,6/3,4	4,5/5	2,3/2	2,6/2,5	125	IP65	0,00330	12
J3 90L3	1,1/1,5	1420/2880	3,2/4,8	4,3/4,9	2,4/2,3	2,7/2,4	125	IP65	0,00400	15
J3 90L3A	1,3/1,7	1430/2850	3,6/4,6	4,5/6	2,6/2,4	2,7/2,4	125	IP65	0,00500	16
J3 100M3	1,5/2,2	1430/2850	4/5,7	6/6	2,4/2,3	2,6/2,5	125	IP65	0,00750	18
J3 100L3	2,2/3	1440/2870	5,7/8,1	6,2/6	2,5/2,3	2,6/2,5	125	IP65	0,00860	23
J3 112M3	3,3/4	1450/2900	7/9,1	6,2/6	2,5/2,3	2,6/2,4	125	IP65	0,01300	28
J3 132S3	4,5/5,5	1430/2900	10/11,5	6,3/6	2,6/2,4	2,9/2,8	125	IP65	0,01600	53
J3 132M3	6,5/8,1	1450/2890	13,2/16	6,2/6	2,6/2,6	2,9/2,7	125	IP65	0,02300	55
J3 132L3	8/9,5	1450/2930	18/22	5,8/5,5	2,6/2,5	2,9/2,7	125	IP65	0,03300	58
J3 160M3	9,3/11	1460/2930	20/25	5,6/5,3	2,4/2,3	2,8/2,6	125	IP65	0,06200	85
J3 160M3B	12/14	1460/2930	26/32	6,2/6	2,4/2,3	2,8/2,6	125	IP65	0,06500	91
J3 160L3	12,5/18,5	1460/2930	27/35	6,3/6	2,3/2,1	2,8/2,4	125	IP65	0,07400	105

Two speed		8/4 pole – 750/1500 rpm					II 2D Ex tD A21 T125			
400V 50Hz										
Type code	P kW	n _n rpm	I _n A	I _a /I _n	M _a /M _n	M _{max} /M _n	Surface temperature °C	IP class	J _{rotor} kgm ²	Weight kg
J3 71A5	0,11/0,18	670/1370	0,8/0,9	2,4/3,4	1,4/1,1	2/1,8	150°C	120°C	0,00180	6,3
J3 71B5	0,15/0,3	670/1370	1,1/1,2	2,4/3,5	1,4/1,1	2/1,8	150°C	120°C	0,00200	6,5
J3 80A5	0,22/0,45	700/1420	1,3/1,4	2,4/3,5	1,6/1,5	2/1,8	150°C	120°C	0,00230	8,7
J3 80B5	0,37/0,55	700/1410	2/1,4	2,6/3,6	1,6/1,5	2,2/1,8	150°C	120°C	0,00300	8,2
J3 90S5	0,6/1,1	700/1420	2,8/2,5	3,2/4	1,7/2	2,2/1,8	150°C	120°C	0,00430	12,5
J3 100M5	0,7/1,1	700/1430	3,5/3	5/5,2	2,5/2,2	2,8/2,4	150°C	120°C	0,00770	18
J3 100L5	1,1/1,8	710/1430	5/4,6	5,2/5,5	2,4/2,3	2,8/2,4	150°C	120°C	0,00860	20
J3 112M5	1,4/2,6	710/1430	5,3/5,3	5,2/5,5	2,5/2,3	2,8/2,6	150°C	120°C	0,01200	35
J3 132S5	2,4/4,5	720/1440	4,8/8	5,2/5,2	2,5/2,3	2,8/2,4	150°C	120°C	0,03000	45
J3 132M5	2,6/4,1	720/1430	8/10,5	5,3/5,4	2,5/2,3	2,8/2,4	150°C	120°C	0,04000	50
J3 132L5	3/5,5	720/1440	8,7/12	5,3/5,4	2,4/2,2	2,8/2,5	150°C	120°C	0,05500	54
J3 160M5	4,1/6,4	720/1440	12,7/13,8	5,2/5,3	2,4/2,2	2,8/2,5	150°C	120°C	0,11200	85

Without starting capacitor

Single speed														2 pole – 3000 rpm		II 2D Ex tD A21 T125	
400V 50Hz																	
Type code	P	n _n	η	cos φ	I _n	M _n	I _a /I _n	M _a /M _n	M _{max} /M _n	C	Surface temperature	IP class	J _{rotor}	Weight			
	kW	rpm			A	Nm				μF	°C		kgm ²	kg			
K2 56A2	0,09	2740	65%	0,86	0,7	0,31	2,3	0,6	1,5	3	125	IP65	0,00012	2			
K2 56B2	0,12	2760	76%	0,86	0,8	0,42	2,6	0,6	1,5	4	125	IP65	0,00015	2,6			
K2 63A2	0,18	2780	76%	0,86	1,2	0,62	2,9	0,6	1,4	4	125	IP65	0,00030	4,3			
K2 63B2	0,25	2780	60%	0,9	2	0,86	2,9	0,65	1,5	6	125	IP65	0,00035	4,5			
K2 71A2	0,37	2790	50%	0,9	3,6	1,27	3,1	0,7	1,4	10	125	IP65	0,00046	6			
K2 71B2	0,55	2800	58%	0,9	4,6	1,88	3,1	0,63	1,4	16	125	IP65	0,00056	6,5			
K2 80A2	0,75	2830	59%	0,92	6	2,53	3,2	0,7	1,4	25	125	IP65	0,00097	8			
K2 80B2	1,1	2800	64%	0,94	8	3,75	3,3	0,7	1,6	30	125	IP65	0,01000	10			
K2 90S2	1,5	2850	71%	0,9	10,2	5,03	3,3	0,6	1,8	40	125	IP65	0,00150	12			
K2 90L2	1,5	2850	69%	0,9	10,5	5,03	3,4	0,55	1,5	40	125	IP65	0,00190	14			
K2 90L2	2,2	2730	76%	0,9	14	7,7	3,2	0,55	1,6	60	125	IP65	0,00210	15			
K2 100M2	2,2	2850	71%	0,9	15	7,38	3,5	0,55	1,7	60	125	IP65	0,00370	23			
K2 100L2	3	2850	66%	0,9	22	10,06	3,6	0,6	1,8	80	125	IP65	0,00530	25			
K2 112M2	4	2890	69%	0,97	26	13,22	3,6	0,65	1,8	100	125	IP65	0,00700	38			

ATEX motors

Single speed														4 pole – 1500 rpm		II 2D Ex tD A21 T125	
400V 50Hz																	
Type code	P	n _n	η	cos φ	I _n	M _n	I _a /I _n	M _a /M _n	M _{max} /M _n	C	Surface temperature	IP class	J _{rotor}	Weight			
	kW	rpm			A	Nm				μF	°C		kgm ²	kg			
K2 56A4	0,06	1340	53%	0,94	0,9	0,43	2,6	0,6	1,5	2	125	IP65	0,00018	2,6			
K2 56B4	0,09	1350	55%	0,95	1	0,64	2,6	0,6	1,5	4	125	IP65	0,00020	2,8			
K2 63A4	0,12	1360	58%	0,93	1,3	0,84	2,8	0,63	1,4	4	125	IP65	0,00040	3,4			
K2 63B4	0,18	1360	59%	0,95	1,4	1,26	2,8	0,62	1,5	6,3	125	IP65	0,00045	3,6			
K2 71A4	0,25	1400	59%	0,94	2,5	1,71	3	0,55	1,4	10	125	IP65	0,00080	6,5			
K2 71B4	0,37	1400	59%	0,93	3,6	2,53	3,2	0,56	1,4	10	125	IP65	0,00090	7,2			
K2 80A4	0,55	1410	60%	0,94	4,8	3,73	3,2	0,45	1,4	16	125	IP65	0,00096	8			
K2 80B4	0,75	1410	63%	0,96	5,4	5,08	3,3	0,5	1,6	20	125	IP65	0,00120	10			
K2 90S4	1,1	1400	65%	0,95	8	7,51	3,4	0,45	1,5	30	125	IP65	0,00260	13			
K2 90L4	1,5	1410	67%	0,93	10,5	10,16	3,5	0,44	1,8	40	125	IP65	0,00320	15			
K2 100M4	2,2	1415	70%	0,96	15,6	14,85	3,8	0,55	1,6	45	125	IP65	0,00590	22			
K2 112M4	3	1430	75%	0,98	20	20,04	3,9	0,45	1,8	70	125	IP65	0,01200	34			

S-S-ELD-EN-EMOT-001-V01

Single speed 2 pole – 3000 rpm II 3D Ex tD A22 T125

400V 50Hz													
Type code	P	n _n	η	cos φ	I _n	M _n	I _a /I _n	M _a /M _n	M _{max} /M _n	Surface temperature	IP class	J _{rotor}	Weight
	kW	rpm			A	Nm				°C		kgm ²	kg
J3 56A2	0,09	2750	64%	0,67	0,32	0,31	3,83	3	3,2	125	IP55	0,00010	2,2
J3 56B2	0,12	2680	50%	0,76	0,5	0,43	2,9	2	2,8	125	IP55	0,00012	2,5
J3 63A2	0,18	2870	55%	0,66	0,72	0,6	4,3	3,3	4,6	125	IP55	0,00017	3
J3 63B2	0,25	2820	60%	0,73	0,82	0,84	4	2,4	3,3	125	IP55	0,00022	3
J3 71A2	0,37	2850	71%	0,78	1	1,24	4,5	2,4	2,7	125	IP55	0,00035	5
J3 71B2	0,55	2840	70%	0,78	1,45	1,85	4,9	3,3	3,4	125	IP55	0,00045	5
J3 80A2	0,75	2900	75%	0,72	2	2,47	4,9	3	3,2	125	IP55	0,00068	8
J3 80B2	1,1	2810	72%	0,88	2,5	3,74	4	4	2,7	125	IP55	0,00088	10
J3 90S2	1,5	2860	67%	0,83	3,9	5	5,2	1,6	3,2	125	IP55	0,00118	12
J3 90L2	2,2	2840	70%	0,85	5,4	7,2	5,1	3,7	3,9	125	IP55	0,00180	14
J3 100L2	3	2890	77%	0,84	6,7	9,9	5,4	2	2,8	125	IP55	0,00279	18
J3 112M2	4	2910	78%	0,83	9,2	13,2	8,2	2,4	2,8	125	IP55	0,00544	26
J3 132K2	5,5	2910	80%	0,87	11,5	18,1	5,9	2,6	2,8	125	IP55	0,00993	43
J3 132S2	7,5	2900	79%	0,9	15,2	24,71	6,3	3	2,7	125	IP55	0,01316	45
J3 132L2	9,3	2930	80%	0,88	19	30,33	5,8	2,4	2,7	125	IP55	0,01642	49
J3 160K2	11	2900	83%	0,91	21	36,24	4,7	2,3	2,6	125	IP55	0,03275	95
J3 160M2	15	2930	80%	0,85	28	48,91	5	1,8	2,8	125	IP55	0,04519	100
J3 160L2	18,5	2910	84%	0,91	35	60,74	4,6	2	2,3	125	IP55	0,05393	110

Single speed 4 pole – 1500 rpm II 3D Ex tD A22 T125

400V 50Hz													
Type code	P	n _n	η	cos φ	I _n	M _n	I _a /I _n	M _a /M _n	M _{max} /M _n	Surface temperature	IP class	J _{rotor}	Weight
	kW	rpm			A	Nm				°C		kgm ²	kg
J3 56A4	0,06	1400	35%	0,6	0,41	0,41	2,5	2,3	2,5	125	IP55	0,00015	2,2
J3 56B4	0,09	1370	50%	0,6	0,43	0,63	2,8	2,3	2,5	125	IP55	0,00015	2,4
J3 63A4	0,12	1350	56%	0,75	0,44	0,88	2,5	1,8	2	125	IP55	0,00021	3
J3 63B4	0,18	1350	56%	0,67	0,66	1,3	2,5	2,1	2,2	125	IP55	0,00029	3
J3 71A4	0,25	1400	55%	0,81	0,84	1,7	3,8	2,4	2,8	125	IP55	0,00073	5,5
J3 71B4	0,37	1410	66%	0,68	1,2	2,52	3,9	2,5	2,9	125	IP55	0,00080	5,5
J3 80A4	0,55	1430	68%	0,71	1,75	3,75	4,3	2,7	3,2	125	IP55	0,00092	7
J3 80B4	0,75	1410	72%	0,75	2,1	5,1	3,9	2,3	2,4	125	IP55	0,00128	10
J3 90S4	1,1	1420	71%	0,7	3,3	7,5	3,7	2,8	3,2	125	IP55	0,00203	11
J3 90L4	1,5	1415	75%	0,78	3,8	10,16	4,2	2,2	3,1	125	IP55	0,00265	13
J3 100K4	2,2	1440	77%	0,77	5,8	14,5	4,9	2	2,3	125	IP55	0,00450	18
J3 100L4	3	1430	78%	0,75	7,43	20,1	3,9	2	2,4	125	IP55	0,00599	21
J3 112M4	4	1440	84%	0,76	8,2	26,4	5,8	2,5	3,2	125	IP55	0,01112	28
J3 132S4	5,5	1460	87%	0,81	11,2	36	4,8	2	2,9	125	IP55	0,02311	37
J3 132M4	7,5	1440	87%	0,82	15,5	50,2	5,5	2	2,4	125	IP55	0,02953	52
J3 132L4	9,3	1430	81%	0,83	20	62,14	5,5	3	3,2	125	IP55	0,03321	53
J3 160M4	11	1450	81%	0,86	22,8	72,48	5,3	2	2,4	125	IP55	0,06167	80
J3 160L4	15	1430	86%	0,84	30	100,22	4,7	1,8	2	125	IP55	0,08276	105

Single speed 6 pole – 1000 rpm II 3D Ex tD A22 T125

400V 50Hz													
Type code	P	n _n	η	cos φ	I _n	M _n	I _a /I _n	M _a /M _n	M _{max} /M _n	Surface temperature	IP class	J _{rotor}	Weight
	kW	rpm			A	Nm				°C		kgm ²	kg
J3 71B6	0,18	900	55%	0,7	0,8	2	2,8	2,4	2,8	125	IP55	0,00060	5,7
J3 71B6	0,25	910	63%	0,6	1	2,7	2,9	3,1	3,3	125	IP55	0,00080	6,5
J3 80A6	0,37	940	58%	0,66	1,4	3,76	4	2,7	3,2	125	IP55	0,00220	8
J3 80B6	0,55	920	65%	0,7	1,65	5,71	3,8	2,3	2,4	125	IP55	0,00282	10
J3 90S6	0,75	930	71%	0,7	2,2	7,9	3,5	2,3	2,4	125	IP55	0,00265	12
J3 90L6	1,1	910	67%	0,75	3,2	11,6	3,7	2,3	2,5	125	IP55	0,00342	15
J3 100L6	1,5	940	78%	0,68	4	15,3	4,1	2,6	2,9	125	IP55	0,01033	20
J3 112M6	2,2	930	78%	0,78	5,2	22,6	5	3,2	3,4	125	IP55	0,01603	35
J3 132S6	3	920	81%	0,73	7,3	31,15	5	2,2	2,5	125	IP55	0,03159	40
J3 132K6	4	960	84%	0,74	9,2	40	5	2	2,9	125	IP55	0,03786	47
J3 132M6	5,5	950	85%	0,74	12,5	54,2	5	1,6	2,2	125	IP55	0,04541	52
J3 160M6	7,5	970	89%	0,76	16	74	5,7	2	3	125	IP55	0,09345	80
J3 160L6	11	960	89%	0,8	22,5	109	5,4	1,9	2,6	125	IP55	0,12728	100

ATEX motors

Single speed 8 pole – 750 rpm II 3D Ex tD A22 T125

400V 50Hz													
Type code	P	n _n	η	cos φ	I _n	M _n	I _a /I _n	M _a /M _n	M _{max} /M _n	Surface temperature	IP class	J _{rotor}	Weight
	kW	rpm			A	Nm				°C		kgm ²	kg
J3 80A8	0,18	690	49%	0,6	0,95	2,5	2,8	2,7	3	125	IP55	0,00141	8,6
J3 80B8	0,25	700	55%	0,55	1,2	3,6	2,9	2,8	3,2	125	IP55	0,00251	10
J3 90S8	0,37	680	60%	0,67	1,3	5,2	3	1,6	2	125	IP55	0,00376	12
J3 90L8	0,55	690	65%	0,65	1,9	7,7	3	2,4	2,7	125	IP55	0,00551	14
J3 100K8	0,75	700	65%	0,65	2,6	10	3,4	2,3	2,5	125	IP55	0,00775	18
J3 100L8	1,1	700	63%	0,69	3,6	15,2	3,7	2,2	2,6	125	IP55	0,01033	20
J3 112M8	1,5	710	77%	0,72	3,9	20,2	3,7	1,3	2,2	125	IP55	0,01870	35
J3 132S8	2,2	710	75%	0,67	6,4	30	3,4	1,6	2,5	125	IP55	0,03223	45
J3 132L8	3	700	78%	0,79	7	41	4	1,6	2	125	IP55	0,04000	53
J3 160S8	4	710	82%	0,78	9	53,1	4,1	2	2,3	125	IP55	0,08000	65
J3 160M8	5,5	715	85%	0,76	12,7	73	4	2	2,4	125	IP55	0,09200	72
J3 160L8	7,5	720	86%	0,97	15,9	98,2	4,2	1,9	2,4	125	IP55	0,11200	89

IMPORTANT:

Use of frequency inverter

Three phase motors can be operated with a frequency inverter. If a frequency inverter is used, the motors must be executed with temperature sensors in the windings. The sensors must be connected to a suitable switch, that interrupts the electrical supply to the motor the moment the windings reach the upper temperature limit.

S-S-ELD-EN-EMOT-001-V01

Dahlander with Y/YY connection – quadratic torque

Two speed		4/2 pole – 1500/3000 rpm					II 3D Ex tD A22 T125			
400V 50Hz										
Type code	P	n _n	I _n	I _a /I _n	M _a /M _n	M _{max} /M _n	Surface temperature	IP class	J _{rotor}	Weight
	kW	rpm	A				°C		kgm ²	kg
J3 71A3	0,22/0,33	1380/2760	0,8/1	3,2/3,8	1,9/1,8	2,3/2,3	125	IP55	0,00050	6
J3 71B3	0,4/0,5	1380/2800	1,2/1,25	3,2/4,2	1,9/1,8	2,2/2,2	125	IP55	0,00080	6,5
J3 80A3	0,45/0,6	1430/2880	1,5/1,9	3,9/4,1	2/2	2,3/2,3	125	IP55	0,00140	8
J3 80B3	0,6/0,8	1450/2890	2,2/2,6	4/4,3	2/2	2,3/2,3	125	IP55	0,00170	10
J3 90S3	0,8/1,1	1440/2890	2,6/3,4	4,5/5	2,3/2	2,6/2,5	125	IP55	0,00330	12
J3 90L3	1,1/1,5	1420/2880	3,2/4,8	4,3/4,9	2,4/2,3	2,7/2,4	125	IP55	0,00400	15
J3 90L3A	1,3/1,7	1430/2850	3,6/4,6	4,5/6	2,6/2,4	2,7/2,4	125	IP55	0,00500	16
J3 100M3	1,5/2,2	1430/2850	4/5,7	6/6	2,4/2,3	2,6/2,5	125	IP55	0,00750	18
J3 100L3	2,2/3	1440/2870	5,7/8,1	6,2/6	2,5/2,3	2,6/2,5	125	IP55	0,00860	23
J3 112M3	3,3/4	1450/2900	7/9,1	6,2/6	2,5/2,3	2,6/2,4	125	IP55	0,01300	28
J3 132S3	4,5/5,5	1430/2900	10/11,5	6,3/6	2,6/2,4	2,9/2,8	125	IP55	0,01600	53
J3 132M3	6,5/8,1	1450/2890	13,2/16	6,2/6	2,6/2,6	2,9/2,7	125	IP55	0,02300	55
J3 132L3	8/9,5	1450/2930	18/22	5,8/5,5	2,6/2,5	2,9/2,7	125	IP55	0,03300	58
J3 160M3	9,3/11	1460/2930	20/25	5,6/5,3	2,4/2,3	2,8/2,6	125	IP55	0,06200	85
J3 160M3B	12/14	1460/2930	26/32	6,2/6	2,4/2,3	2,8/2,6	125	IP55	0,06500	91
J3 160L3	12,5/18,5	1460/2930	27/35	6,3/6	2,3/2,1	2,8/2,4	125	IP55	0,07400	105

Two speed		8/4 pole – 750/1500 rpm					II 3D Ex tD A22 T125			
400V 50Hz										
Type code	P	n _n	I _n	I _a /I _n	M _a /M _n	M _{max} /M _n	Surface temperature	IP class	J _{rotor}	Weight
	kW	rpm	A				°C		kgm ²	kg
J3 71A5	0,11/0,18	670/1370	0,8/0,9	2,4/3,4	1,4/1,1	2/1,8	125	IP55	0,00180	6,3
J3 71B5	0,15/0,3	670/1370	1,1/1,2	2,4/3,5	1,4/1,1	2/1,8	125	IP55	0,00200	6,5
J3 80A5	0,22/0,45	700/1420	1,3/1,4	2,4/3,5	1,6/1,5	2/1,8	125	IP55	0,00230	8,7
J3 80B5	0,37/0,55	700/1410	2/1,4	2,6/3,6	1,6/1,5	2,2/1,8	125	IP55	0,00300	8,2
J3 90S5	0,6/1,1	700/1420	2,8/2,5	3,2/4	1,7/2	2,2/1,8	125	IP55	0,00430	12,5
J3 100M5	0,7/1,1	700/1430	3,5/3	5/5,2	2,5/2,2	2,8/2,4	125	IP55	0,00770	18
J3 100L5	1,1/1,8	710/1430	5/4,6	5,2/5,5	2,4/2,3	2,8/2,4	125	IP55	0,00860	20
J3 112M5	1,4/2,6	710/1430	5,3/5,3	5,2/5,5	2,5/2,3	2,8/2,6	125	IP55	0,01200	35
J3 132S5	2,4/4,5	720/1440	4,8/8	5,2/5,2	2,5/2,3	2,8/2,4	125	IP55	0,03000	45
J3 132M5	2,6/4,1	720/1430	8/10,5	5,3/5,4	2,5/2,3	2,8/2,4	125	IP55	0,04000	50
J3 132L5	3/5,5	720/1440	8,7/12	5,3/5,4	2,4/2,2	2,8/2,5	125	IP55	0,05500	54
J3 160M5	4,1/6,4	720/1440	12,7/13,8	5,2/5,3	2,4/2,2	2,8/2,5	125	IP55	0,11200	85

Without starting capacitor

Single speed 2 pole – 3000 rpm II 3D Ex tD A22 T125

400V 50Hz														
Type code	P	n _n	η	cos φ	I _n	M _n	I _a /I _n	M _a /M _n	M _{max} /M _n	C	Surface temperature	IP class	J _{rotor}	Weight
	kW	rpm			A	Nm				μF	°C		kgm ²	kg
K3 56A2	0,09	2740	65%	0,86	0,7	0,31	2,3	0,6	1,5	3	125	IP55	0,00012	2
K3 56B2	0,12	2760	76%	0,86	0,8	0,42	2,6	0,6	1,5	4	125	IP55	0,00015	2,6
K3 63A2	0,18	2780	76%	0,86	1,2	0,62	2,9	0,6	1,4	4	125	IP55	0,00030	4,3
K3 63B2	0,25	2780	60%	0,9	2	0,86	2,9	0,65	1,5	6	125	IP55	0,00035	4,5
K3 71A2	0,37	2790	50%	0,9	3,6	1,27	3,1	0,7	1,4	10	125	IP55	0,00046	6
K3 71B2	0,55	2800	58%	0,9	4,6	1,88	3,1	0,63	1,4	16	125	IP55	0,00056	6,5
K3 80A2	0,75	2830	59%	0,92	6	2,53	3,2	0,7	1,4	25	125	IP55	0,00097	8
K3 80B2	1,1	2800	64%	0,94	8	3,75	3,3	0,7	1,6	30	125	IP55	0,01000	10
K3 90S2	1,5	2850	71%	0,9	10,2	5,03	3,3	0,6	1,8	40	125	IP55	0,00150	12
K3 90L2	1,5	2850	69%	0,9	10,5	5,03	3,4	0,55	1,5	40	125	IP55	0,00190	14
K3 90L2	2,2	2730	76%	0,9	14	7,7	3,2	0,55	1,6	60	125	IP55	0,00210	15
K3 100L2	2,2	2850	71%	0,9	15	7,38	3,5	0,55	1,7	60	125	IP55	0,00370	23
K3 100LB2	3	2850	66%	0,9	22	10,06	3,6	0,6	1,8	80	125	IP55	0,00530	25
K3 112M2	4	2890	69%	0,97	26	13,22	3,6	0,65	1,8	100	125	IP55	0,00700	38

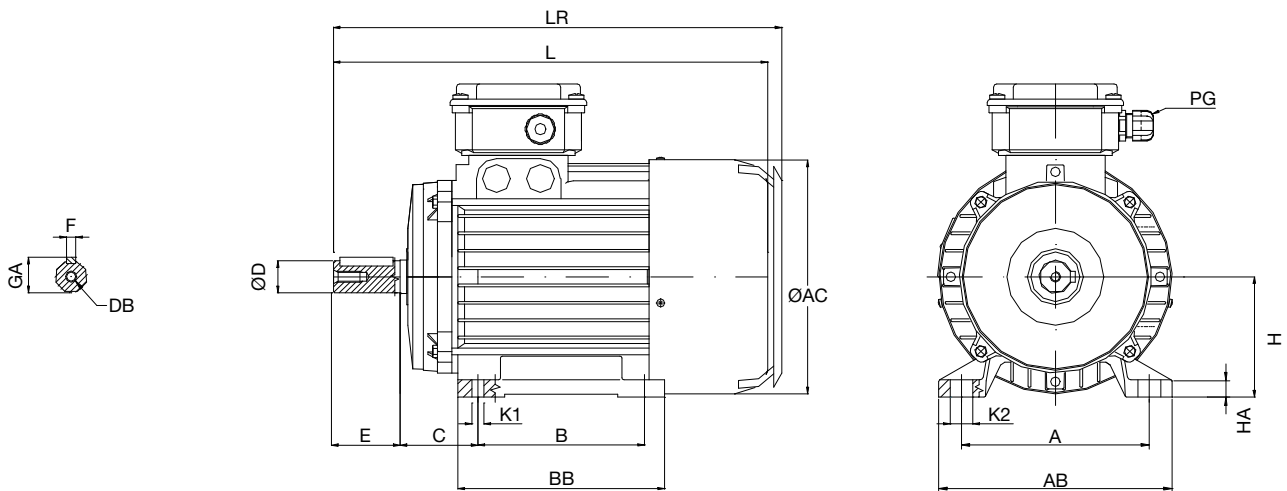
ATEX motors

Single speed 4 pole – 1500 rpm II 3D Ex tD A22 T125

400V 50Hz														
Type code	P	n _n	η	cos φ	I _n	M _n	I _a /I _n	M _a /M _n	M _{max} /M _n	C	Surface temperature	IP class	J _{rotor}	Weight
	kW	rpm			A	Nm				μF	°C		kgm ²	kg
K3 56A4	0,06	1340	53%	0,94	0,9	0,43	2,6	0,6	1,5	2	125	IP55	0,00018	2,6
K3 56B4	0,09	1350	55%	0,95	1	0,64	2,6	0,6	1,5	4	125	IP55	0,00020	2,8
K3 63A4	0,12	1360	58%	0,93	1,3	0,84	2,8	0,63	1,4	4	125	IP55	0,00040	3,4
K3 63B4	0,18	1360	59%	0,95	1,4	1,26	2,8	0,62	1,5	6,3	125	IP55	0,00045	3,6
K3 71A4	0,25	1400	59%	0,94	2,5	1,71	3	0,55	1,4	10	125	IP55	0,00080	6,5
K3 71B4	0,37	1400	59%	0,93	3,6	2,53	3,2	0,56	1,4	10	125	IP55	0,00090	7,2
K3 80A4	0,55	1410	60%	0,94	4,8	3,73	3,2	0,45	1,4	16	125	IP55	0,00096	8
K3 80B4	0,75	1410	63%	0,96	5,4	5,08	3,3	0,5	1,6	20	125	IP55	0,00120	10
K3 90S4	1,1	1400	65%	0,95	8	7,51	3,4	0,45	1,5	30	125	IP55	0,00260	13
K3 90L4	1,5	1410	67%	0,93	10,5	10,16	3,5	0,44	1,8	40	125	IP55	0,00320	15
K3 100M4	2,2	1415	70%	0,96	15,6	14,85	3,8	0,55	1,6	45	125	IP55	0,00590	22
K3 112M4	3	1430	75%	0,98	20	20,04	3,9	0,45	1,8	70	125	IP55	0,01200	34

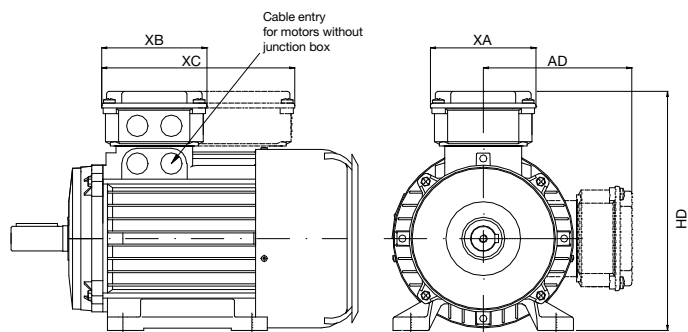
B3 Foot mounted version

IEC Frame size	B	A	HA	BB	AB	AC	C	H	L	LR	K1	K2	Gland	Ø D	E	GA	F	DB
56	71	90	9	90	108	109	36	56	188	196	6	11	M16	9	20	10,2	3	M3X10
63	80	100	10	105	120	121	40	63	211	221	7	12	M16	11	23	12,5	4	M4X10
71	90	112	11	108	136	136	45	71	246	257	7	12	M20	14	30	16	5	M5X25
80	100	125	11	125	154	154	50	80	276	277	9,5	17,5	M20	19	40	21,5	6	M6X16
90S	100	140	13	130	174	174	56	90	302	314	9,5	17,5	M20	24	50	27	8	M8X19
90L	125	140	13	155	174	174	56	90	327	339	9,5	17,5	M20	24	50	27	8	M8X19
100	140	160	14	175	192	192	63	100	364	376	11,2	21,2	M20	28	60	31	8	M10X22
112	140	190	14	175	224	216	70	112	387	400	11,2	21,2	M32	28	60	31	8	M10X22
132S	140	216	17,5	180	260	255	89	132	458	471	12,5	30	M32	38	80	41	10	M12X28
132L	178	216	17,5	218	260	255	89	132	495	508	12,5	30	M32	38	80	41	10	M12X28
160S	210	254	23	264	318	318	108	160	597	615	14,5	30	M32	42	110	45	12	M16X36
160L	254	254	23	308	318	318	108	160	641	659	14,5	30	M32	42	110	45	12	M16X36



Dimensions with differing junction box mounting positions

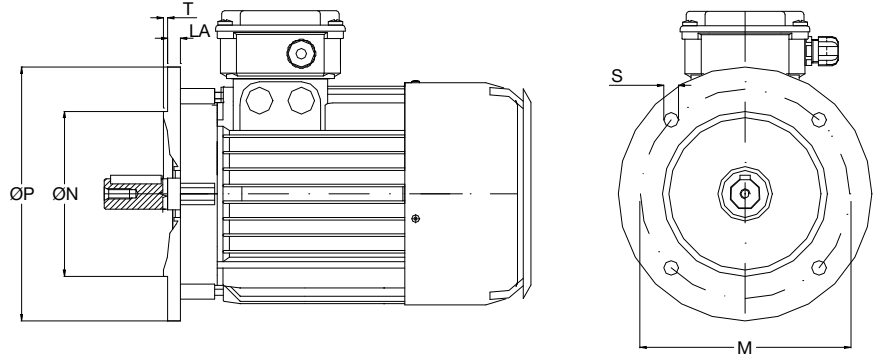
IEC Frame size	Motor with junction box						No Junction box
	AD	HD	XA	XB	XA(1)	XC(1)	HD (2)
56	108	164	97	97	111	153	129
63	113	176	97	97	111	153	141
71	122	193	97	97	111	153	158
80	143	223	110,5	110,5	130	206	178
90	148	238	110,5	110,5	130	206	193
100	159	259	110,5	110,5	130	206	214
112	171	283	110,5	110,5	130	206	238
132L	197	329	118,5	118,5	130	206	-
160L	244	404	186	186	-	-	-



- (1) Enlarged junction box for 1 phase Ex tD motors or other special applications.
- (2) Motors from frame size 56 up to and incl. 112 can be supplied without junction box, but with cables.

B5 Large flange mounted version

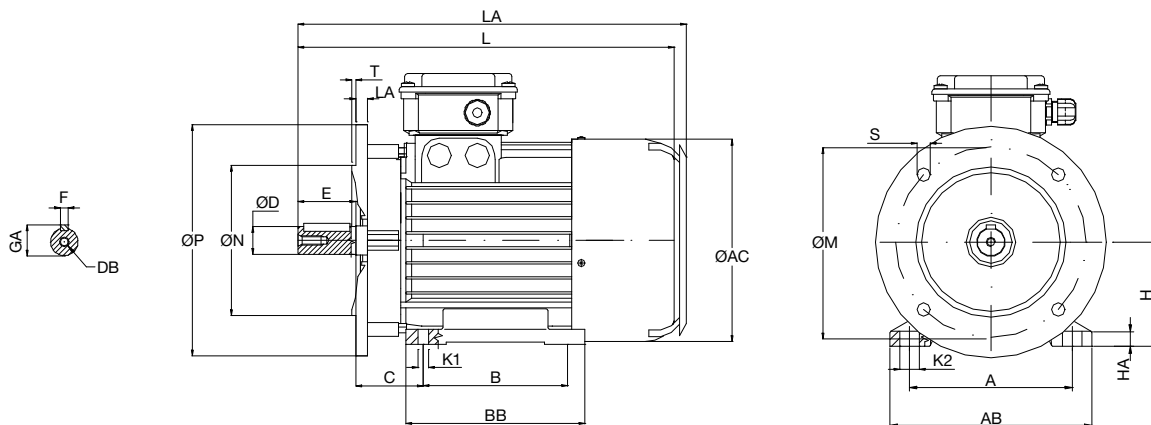
IEC Frame size	Flange dimensions					
	Ø P	Ø N	LA	M	T	S
56	120	80	9	100	3	7
63	140	95	11	115	3	9
71	140*	95	11	115	3	9
	160	110	10,5	130	3,5	9
80	160*	110	10,5	130	3,5	9
	200	130	11,5	165	3,5	12
90	160*	110	10,5	130	3,5	9
	200	130	11,5	165	3,5	12
100	200*	130	11,5	165	3,5	12
	250	180	15,5	215	4	14
112	160*	110	10,5	130	3,5	9
	250	180	15,5	215	4	14
132	250*	180	15,5	215	4	14
	300	230	20,7	265	4	14
160	350	250		300	5	18



* Enlarged or reduced version

IM B35 (see above for flange dimensions)

IEC Frame size	B	A	HA	BB	AB	AC	C	H	L	LR	K1	K2	PG	Ø D	E	GA	F	DB
56	71	90	9	90	108	109	36	56	188	196	6	11	M16	9	20	10,2	3	M3X10
63	80	100	10	105	120	121	40	63	211	221	7	12	M16	11	23	12,5	4	M4X10
71	90	112	11	108	136	136	45	71	246	257	7	12	M20	14	30	16	5	M5X25
80	100	125	11	125	154	154	50	80	276	277	9,5	17,5	M20	19	40	21,5	6	M6X16
90S	100	140	13	130	174	174	56	90	302	314	9,5	17,5	M20	24	50	27	8	M8X19
90L	125	140	13	155	174	174	56	90	327	339	9,5	17,5	M20	24	50	27	8	M8X19
100	140	160	14	175	192	192	63	100	364	376	11,2	21,2	M20	28	60	31	8	M10X22
112	140	190	14	175	224	216	70	112	387	400	11,2	21,2	M32	28	60	31	8	M10X22
132S	140	216	17,5	180	260	255	89	132	458	471	12,5	30	M32	38	80	41	10	M12X28
132L	178	216	17,5	218	260	255	89	132	495	508	12,5	30	M32	38	80	41	10	M12X28
160S	210	254	23	264	318	318	108	160	597	615	14,5	30	M32	42	110	45	12	M16X36
160L	254	254	23	308	318	318	108	160	641	659	14,5	30	M32	42	110	45	12	M16X36

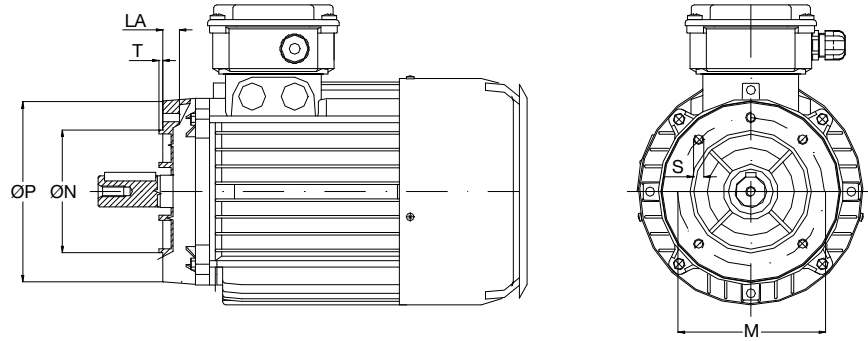


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ATEX motors

B14 Small flange mounted version

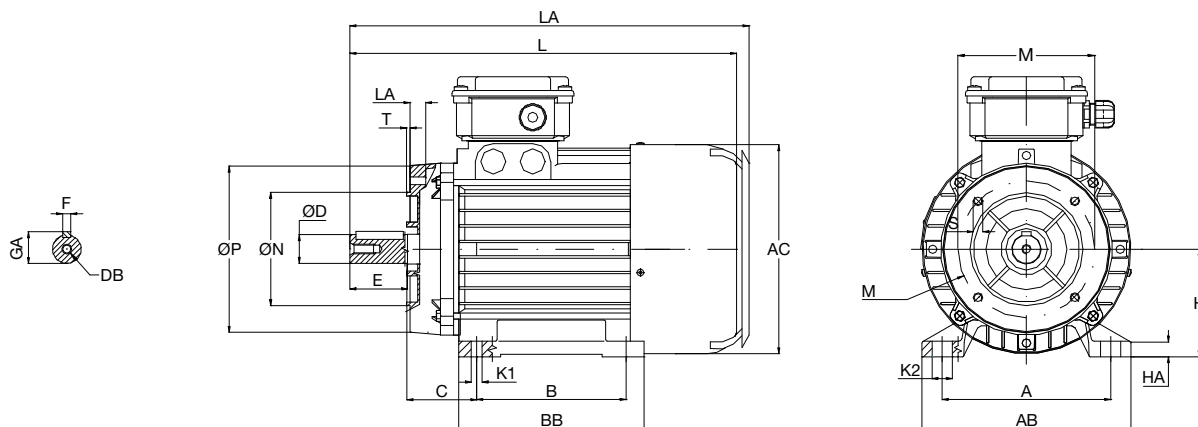
IEC Frame size	Flange dimensions					
	Ø P	Ø N	LA	M	T	S
56	80	50	8	65	2,5	M5
63	80*	50	9	65	2,5	M5
	90	60	9	75	2,5	M5
	105*	70	15	85	2,5	M6
	120*	80	15	100	3	M6
71	90*	60	12	75	2,5	M5
	105	70	12	85	2,5	M6
	120*	80	13	100	3	M6
	140*	95	20	115	3	M8
80	105*	70	12	85	2,5	M6
	120	80	12	100	3	M6
	140*	95	20	115	3	M8
	160*	110	20	130	3,5	M8
90	120*	80	15	100	3	M6
	140	95	15	115	3	M8
	160*	110	20	130	3,5	M8
100	120*	80	16	100	3	M6
	160	110	16	130	3,5	M8
	200*	130	20	165	4	M10
112	140*	95	16	115	3	M8
	160	110	16	130	3,5	M8
132	200	130	19	165	4	M10
160	250	180	24	215	4	M12



* Enlarged or reduced version

IM B34 (see above for flange dimensions)

IEC Frame size	B	A	HA	BB	AB	AC	C	H	L	LR	K1	K2	PG	Ø D	E	GA	F	DB
56	71	90	9	90	108	109	36	56	188	196	6	11	M16	9	20	10,2	3	M3X10
63	80	100	10	105	120	121	40	63	211	221	7	12	M16	11	23	12,5	4	M4X10
71	90	112	11	108	136	136	45	71	246	257	7	12	M20	14	30	16	5	M5X25
80	100	125	11	125	154	154	50	80	276	277	9,5	17,5	M20	19	40	21,5	6	M6X16
90S	100	140	13	130	174	174	56	90	302	314	9,5	17,5	M20	24	50	27	8	M8X19
90L	125	140	13	155	174	174	56	90	327	339	9,5	17,5	M20	24	50	27	8	M8X19
100	140	160	14	175	192	192	63	100	364	376	11,2	21,2	M20	28	60	31	8	M10X22
112	140	190	14	175	224	216	70	112	387	400	11,2	21,2	M32	28	60	31	8	M10X22
132S	140	216	17,5	180	260	255	89	132	458	471	12,5	30	M32	38	80	41	10	M12X28
132L	178	216	17,5	218	260	255	89	132	495	508	12,5	30	M32	38	80	41	10	M12X28
160S	210	254	23	264	318	318	108	160	597	615	14,5	30	M32	42	110	45	12	M16X36
160L	254	254	23	308	318	318	108	160	641	659	14,5	30	M32	42	110	45	12	M16X36



The exploded view is provided for information only.

The dismantling, repair or overhaul of ATEX motors must only be carried out by qualified and certified personnel in accordance with standard EN 60079-17, EN 60079-19 and or local applicable standards.

Repairs can only be done under the control or agreement with the manufacturer/distributor by an ATEX certified workshop.

Dismantling, repair or overhaul of ATEX motors by non-qualified and certified personnel renders the ATEX certification of the equipment in question void.

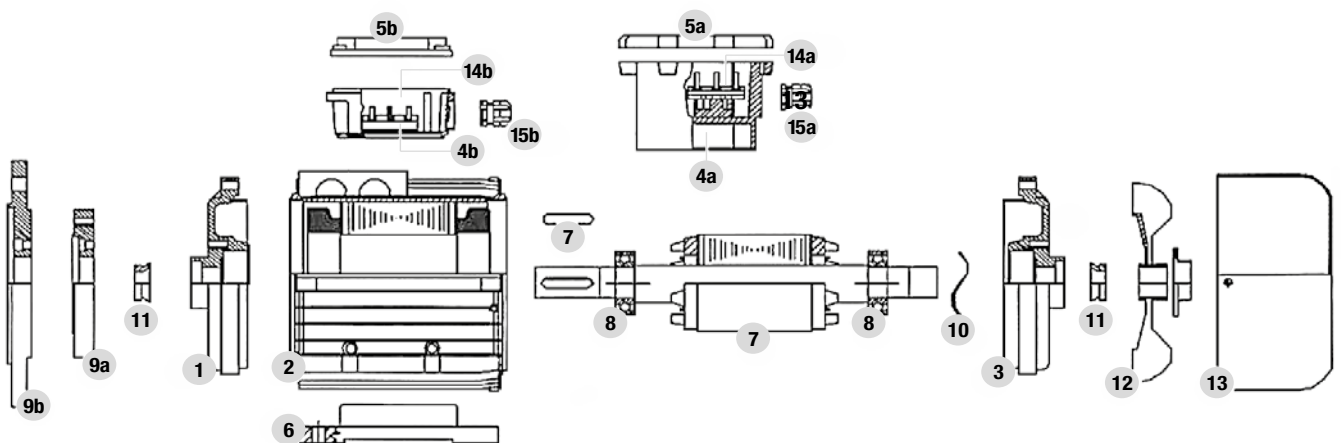
ELSTO services can provide certified repair an overhaul of ATEX motors with original spares in her own workshops.

For other certified repair and overhaul establishments it is possible to order the required spare parts.

It is of very great importance to provide all the relevant information when ordering the part(s) such as serial number, certificate numbers, part required etc.

List of Main Spare Parts

1	Drive end shield	9a	B14 Flange (removable)
2	Frame complete with windings	9b	B5 Flange (removable)
3	Non drive end shield	10	Wave spring
4a	Ex d Terminal box	11	Shaft seals (V-ring)
4b	Ex e Terminal box	12	Fan (complete with fixing collar)
5a	Ex d Terminal box cover	13	Fan cover
5b	Ex e Terminal box cover	14a	Ex d Terminal board
6	Feet (removable)	14b	Ex e Terminal board
7	Motor shaft complete with rotor and key	15a	Ex d Cable gland (metal)
8	Bearings	15b	Ex e Cable gland (plastic)



Single speed 2 pole - 3000rpm IE1 - Ex-nA

Type code	P _n kW	n _n rpm	I _{nom} A (400V)	η %	cos φ	I _a / I _n	M _a / M _n	M _k / M _n	J Kgm ²	L _{PA} dB(A)	Weight kg
ASNA 80a-2	0,75	2675	1,59	70	0,86	5,2	2,7	2,7	0,00125	62	16
ASNA 80b-2	1,1	2675	2,19	74	0,87	4,8	2,7	2,7	0,00133	62	17
ASNA 90S-2	1,5	2680	2,95	76	0,87	5,5	2,4	2,4	0,00259	67	22
ASNA 90L-2	2,2	2700	4,14	78	0,87	5,0	2,4	2,4	0,00318	67	24
ASNA 100L-2	3	2830	5,6	79	0,83	7	3,5	3,6	0,0053	74	31
ASNA 112M-2	4	2850	7,4	82	0,89	6,8	2,9	3,3	0,00744	72	38
ASNA 132S-2	5,5	2860	10,1	83	0,86	6,5	2,8	2,8	0,01538	75	58
ASNA 132M-2	7,5	2850	14,1	84	0,87	5,5	2,2	2,5	0,02097	78	61
ASNA 160Ma-2	11	2850	19,6	83	0,86	6,5	2,2	2,4	0,03267	83	88
ASNA 160Mb-2	15	2870	26,6	85	0,86	6,5	2,4	2,7	0,04155	84	102
ASNA 160L-2	18,5	2880	32,1	85	0,86	6,8	2,5	2,8	0,05043	84	115
ASNA 180M-2	22	2910	38,1	89	0,89	7,6	2,6	2,9	0,0959	86	136
ASNA 200La-2	30	2920	52,3	89	0,91	7,0	2,6	2,9	0,15335	86	184
ASNA 200Lb-2	37	2920	64,2	89	0,92	7,5	2,6	2,9	0,16952	86	204
ASNA 225M-2	45	2920	75,3	89	0,91	7,5	2,6	2,9	0,24606	86	224
ASNA 250M-2	55	2935	92	91	0,92	7,5	2,2	2,4	0,32111	86	292
ASNA 280S-2	75	2950	130	92	0,90	7,5	2,2	2,4	0,54955	88	381
ASNA 280M-2	90	2950	155	92	0,90	7,8	2,0	2,2	0,61098	92	408
ASNA 315S-2	110	2960	183	93	0,90	7,5	2,1	2,5	1,03957	94	544
ASNA 315M-2	132	2960	214	93	0,90	7,5	2,1	2,2	1,28301	95	600
ASNA 315MX-2	160	2975	264	94,8	0,92	7,5	2,3	2,4	1,93201	98	800
ASNA 315LY-2	200	2975	329	94,5	0,92	7,5	2,3	2,4	2,17095	98	870
ASNA 355Ma-2	250	2975	431	95,1	0,88	6,3	2,2	2,8	3,42549	99	1300
ASNA 355Mb-2	280	2975	483	95,1	0,88	6,0	2,0	2,5	3,80611	99	1380
ASNA 355L-2	315	2975	542	95,3	0,88	6,3	2,3	2,9	4,09156	99	1510

Single speed 4 pole - 1500rpm IE1 - Ex-nA

Type code	P _n kW	n _n rpm	I _{nom} A (400V)	η %	cos φ	I _a / I _n	M _a / M _n	M _k / M _n	J Kgm ²	L _{PA} dB(A)	Weight kg
ASNA 80a-4	0,55	1350		61	0,73	4,5	2,4	2,5	0,00178	62	16
ASNA 80b-4	0,75	1380	1,78	69	0,73	4,5	2,7	2,8	0,00223	62	17
ASNA 90S-4	1,1	1360	2,68	72	0,77	4,5	2,5	2,5	0,00383	60	22
ASNA 90L-4	1,5	1380	3,33	74	0,77	5,0	3,0	2,5	0,00504	59	24
ASNA 100La-4	2,2	1420	4,87	78	0,78	5,0	2,4	2,5	0,00718	68	31
ASNA 100Lb-4	3	1410	6,64	81	0,78	5,5	2,4	2,5	0,00989	67	33
ASNA 112M-4	4	1410	7,69	83	0,80	5,5	2,4	2,6	0,01506	67	40
ASNA 132S-4	5,5	1445	9,9	85	0,83	6,0	2,4	2,6	0,03298	64	61
ASNA 132M-4	7,5	1400	14,5	85	0,81	6,0	2,4	2,6	0,04459	67	75
ASNA 160M-4	11	1430	19,2	86	0,89	6,0	2,2	2,4	0,07376	67	99
ASNA 160L-4	15	1440	26,2	87	0,89	6,5	2,2	2,4	0,09395	69	109
ASNA 180M-4	18,5	1450	33,3	89	0,87	6,0	2,3	2,4	0,15058	77	136
ASNA 180L-4	22	1450	39,1	89	0,87	6,0	2,3	2,4	0,16676	79	153
ASNA 200L-4	30	1460	54,6	90	0,87	6,5	2,3	2,4	0,25429	79	204
ASNA 225S-4	37	1470	64,0	91	0,88	7,2	2,3	2,5	0,38739	79	214
ASNA 225M-4	45	1470	79,7	92	0,86	7,2	2,2	2,5	0,45649	82	224
ASNA 250M-4	55	1470	94	2	0,88	7,7	2,3	2,5	0,57024	82	292
ASNA 280S-4	75	1470	128	92	0,88	7,7	2,4	2,4	0,93753	82	401
ASNA 280M-4	90	1470	154	92	0,90	8	1,9	2,0	1,06163	89	428
ASNA 315S-4	110	1470	181	93	0,90	7,5	2,1	2,2	1,64532	85	544
ASNA 315M-4	132	1470	230	93	0,88	8	2,3	2,3	1,83922	81	612
ASNA 315MX-4	160	1480	251	93,5	0,88	6,5	2,1	2,2	3,30966	94	782
ASNA 315LZ-4	200	1480	344	94,5	0,88	6,5	2,1	2,2	4,12175	94	894
ASNA 355Ma-4	250	1485	430	95,3	0,88	6,5	2,3	2,3	6,79104	96	1530
ASNA 355Mb-4	280	1485	476	95,5	0,89	6,3	2,4	2,4	7,52559	96	1630
ASNA 355L-4	315	1485	535	95,5	0,89	6,6	2,5	2,5	7,99833	96	1850

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Single speed 6 pole - 1000rpm IE1 - Ex-nA

Type code	P _n kW	n _n rpm	I _{nom} A (400V)	η %	cos φ	I _a / I _n	M _a / M _n	M _k / M _n	J Kg·m ²	L _{pA} dB(A)	Weight kg
ASNA 80a-6	0,37	900		60	0,70	3,0	2,0	2,3	0,00282	48	16
ASNA 80b-6	0,55	900		61	0,71	3,5	2,2	2,2	0,00399	58	17
ASNA 90S-6	0,75	920	1,89	67	0,73	3,5	1,9	2,0	0,00578	56	22
ASNA 90L-6	1,1	920	2,76	70	0,73	4,5	1,9	2,2	0,00764	60	24
ASNA 100Lb-6	1,5	945	3,68	72	0,73	4,5	2,0	2,2	0,01239	67	32
ASNA 112M-6	2,2	935	4,71	75	0,78	5,5	2,0	2,1	0,02157	63	39
ASNA 132S-6	3	954	6,69	76	0,73	6,0	2,1	2,8	0,0361	65	61
ASNA 132Ma-6	4	945	8,84	82	0,79	6,0	2,1	2,4	0,04984	66	68
ASNA 132Mb-6	5,5	955	10,8	84	0,76	6,5	2,1	2,4	0,07128	57	75
ASNA 160M-6	7,5	940	14,8	83	0,79	6,0	2,1	2,3	0,1082	65	95
ASNA 160L-6	11	950	21,4	86	0,84	6,0	2,1	2,5	0,14863	67	109
ASNA 180L-6	15	960	27,6	88	0,82	6,5	2,3	2,6	0,25152	73	153
ASNA 200La-6	18,5	970	34,2	90	0,87	7,0	2,1	2,1	0,36314	73	194
ASNA 200Lb-6	22	970	38,9	90	0,8w7	7,0	2,1	2,4	0,45198	76	204
ASNA 225M-6	30	970	54,2	91	0,88	7,0	2,0	2,1	0,68931	76	238
ASNA 250M-6	37	970	65,1	90	0,88	7,0	2,0	2,1	0,85997	76	292
ASNA 280S-6	45	975	78,9	92	0,86	6,2	1,9	2,0	1,42072	74	401
ASNA 280M-6	55	965	100	91,5	0,86	6,7	2,0	2,1	1,61384	76	428
ASNA 315S-6	75	975	133	92	0,88	7,3	2,4	2,5	2,71489	72	544
ASNA 315M-6	90	975	156	92	0,9	7,5	2,3	2,4	3,04248	88	612
ASNA 315MX-6	110	985	196	93	0,85	6,5	2	2,2	5,25397	89	755
ASNA 315LX-6	132	985	234	93	0,85	6,5	2	2,2	5,25397	91	758
ASNA 315LY-6	160	985	282	94	0,85	6,5	2	2,2	5,90525	91	823
ASNA 355M-6	200	987	341	95,1	0,89	6,0	2,1	2,1	8,90799	94	1530
ASNA 355L-6	250	989	430	95,3	0,88	7,0	2,5	2,5	9,79879	94	1600

ATEX motors

Single speed 8 pole - 750rpm IE1 - Ex-nA

Type code	P _n kW	n _n rpm	I _{nom} A (400V)	η %	cos φ	I _a / I _n	M _a / M _n	M _k / M _n	J Kg·m ²	L _{pA} dB(A)	Weight kg
ASNA 80a -8	0,18	660		45	0,61	2,9	2,7	3,0	0,00282	46	16
ASNA 80b -8	0,25	670		50	0,62	3,0	2,7	3,0	0,00399	46	17
ASNA 90S -8	0,37	680		55	0,63	3,0	2,7	2,9	0,00578	50	22
ASNA 90L -8	0,55	690		60	0,65	3,3	2	2,3	0,00764	50	24
ASNA 100La-8	0,75	700		61	0,70	4,0	1,8	1,9	0,01116	61	29
ASNA 100Lb-8	1,1	700		66	0,67	4,0	2,2	1,9	0,01542	59	33
ASNA 112M -8	1,5	705		70	0,71	4,0	1,7	1,8	0,02157	60	39
ASNA 132S -8	2,2	710		75	0,65	5,0	1,8	2,0	0,03999	62	61
ASNA 132M -8	3	712		82	0,70	5,0	1,8	1,8	0,05569	63	75
ASNA 160Ma-8	4	710		82	0,70	5,0	1,9	2,0	0,09365	63	88
ASNA 160Mb-8	5,5	720		82	0,70	5,0	1,9	2,0	0,13246	66	95
ASNA 160L -8	7,5	720		82	0,70	5,0	1,9	2,0	0,14863	67	109
ASNA 180L -8	11	720		86	0,75	5,0	1,8	2,0	0,25152	68	153
ASNA 200L -8	15	720		88	0,76	6,0	1,8	2,0	0,45198	70	204
ASNA 225S -8	18,5	720		90	0,79	6,0	1,8	2,0	0,58399	71	235
ASNA 225M -8	22	720		90	0,81	6,0	1,8	2,0	0,68931	72	238
ASNA 250M -8	30	720		90	0,81	6,0	1,8	2,0	0,85997	72	292
ASNA 280S -8	37	725		89	0,79	6,0	1,8	2,0	1,42072	72	401
ASNA 280M -8	45	725		90	0,8	6,0	1,8	2,0	1,61384	73	428
ASNA 315S -8	55	730		91	0,82	6,5	1,8	2,0	2,71489	79	544
ASNA 315M -8	75	730		91	0,82	6,0	1,8	2,0	3,04248	82	612
ASNA 315MX-8	90	735		93	0,8	5,9	1,8	2,0	5,25397	84	755
ASNA 315LY-8	110	735		93	0,8	5,9	1,8	2,0	5,90525	84	816
ASNA 315LZ-8	132	735		93	0,8	5,5	1,8	2,0	6,55214	87	1100
ASNA 355M-8	160	739		95,0	0,38	6,0	2,0	2,0	8,90799	901	1550
ASNA 355L-8	200	739		95,1	0,38	5,5	2,0	2,0	9,79879	901	1630

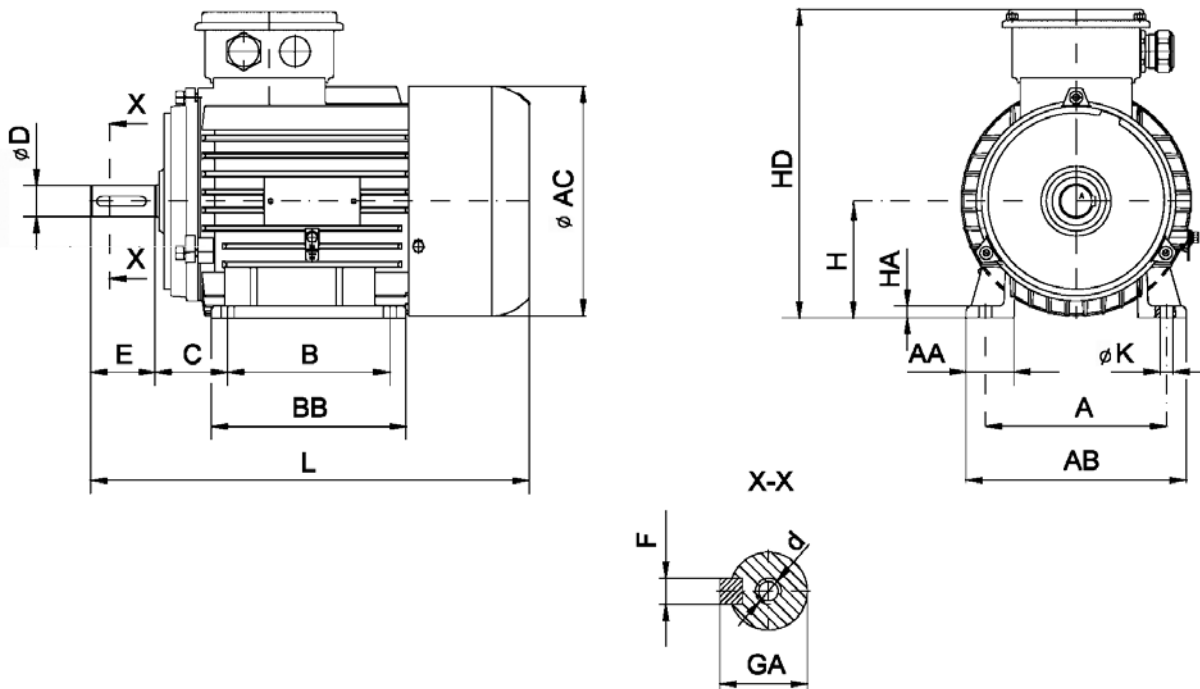
S-S-ELD-EN-EMOT-001-V01

ASNA

B3 Foot mounted version

IE1 - Ex-nA

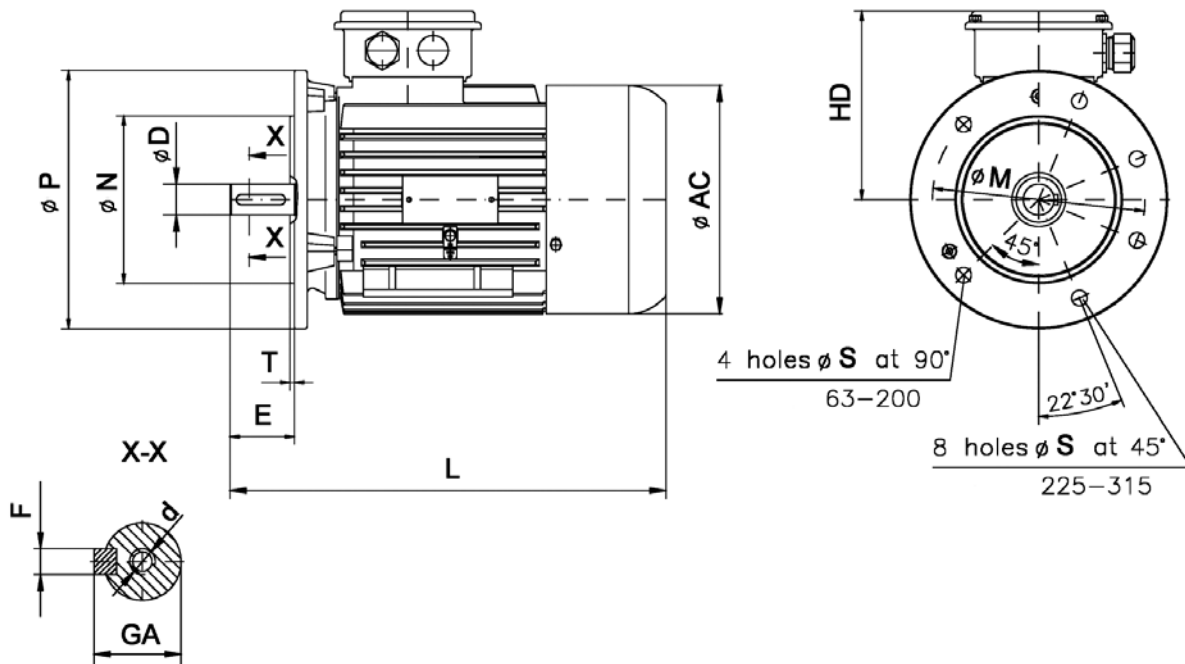
IEC Frame size	A	B	C	H	K	D		E		Fh9		GA		d		AA	AB	BB	HA	AC	HD	L				
						nom.		tol.	2 pole	4-8 pole	2 pole	4-8 pole	2 pole	4-8 pole	2 pole							4-8 pole	2 pole	4-8 pole	2 pole	4-8 pole
						2 pole	4-8 pole																			
63	100	80	40	63	7	11	j6	23	4	12,5	M4	31	131	104	9	125	162	258								
71	112	90	45	71	7	14	j6	30	5	16	M5	37	141	125	9	140	182	295								
80	125	100	50	80	10	19	j6	40	6	21,5	M6	35	155	125	9	158	216	287								
90S	140	100	56	90	10	24	j6	50	8	27	M8	37	170	150	9	177	238	339								
90L	140	125	56	90	10	24	j6	50	8	27	M8	37	170	150	9	177	238	339								
100L	160	140	63	100	12	28	j6	60	8	31	M10	47	200	176	10	199	257	387								
112M	190	140	70	112	12	28	j6	60	8	31	M10	55	224	176	12	222	284	406								
132S	216	140	89	132	12	38	k6	80	10	41	M12	68	264	220	14	263	333	496								
132M	216	178	89	132	12	38	k6	80	10	41	M12	68	264	220	14	263	333	496								
160M	254	210	108	160	14,5	42	k6	110	12	45	M16	84	310	298	14	315	404	630								
160L	254	254	108	160	14,5	42	k6	110	12	45	M16	84	310	298	14	315	404	630								
180M	279	241	121	180	14,5	48	k6	110	14	51,5	M16	72	350	295	18	355	438	668								
180L	279	279	121	180	14,5	48	k6	110	14	51,5	M16	72	350	335	18	355	438	708								
200L	318	305	133	200	18,5	55	m6	110	16	59	M20	70	380	367	17	395	490	780								
225S	356	286	149	225	18,5	-	60	m6	-	140	-	18	-	64	M20	80	425	358	22	445	535	-	840			
225M	356	311	149	225	18,5	55	60	m6	110	140	16	18	59	64	M20	80	425	383	22	445	535	835	865			
250M	406	349	168	250	24	60	65	m6	140	140	18	18	64	69	M20	95	490	440	20	494	620	925	925			
280S	457	368	190	280	24	65	75	m6	140	140	18	20	69	79,5	M20	125	540	523	20	494	677,5		986			
280M	457	419	190	280	24	65	75	m6	140	140	18	20	69	79,5	M20	125	540	523	20	494	677,5		986			
315 S	508	406	216	315	28	65	80	m6	140	170	18	22	69	85	M20	130	590	580	25	554	819	1105	1232			
M		457																								
315 L	508	457	216	315	28	65	80	m6	140	170	18	22	69	85	M20	130	590	607	25	623	819	1135	1292			
355Ma	610	560	254	355	28	70	100	m6	140	210	20	28	74,5	106	M20	M24	110	714	695	32	698	920	1370	1480		
355Mb	610	560	254	355	28	70	100	m6	140	210	20	28	74,5	106	M20	M24	110	714	695	32	698	920	1370	1480		
355L	610	630	254	355	28	70	100	m6	140	210	20	28	74,5	106	M20	M24	110	714	765	32	698	920	1450	1560		



B5 Large flange mounted version **IE1 - Ex-nA**

IEC Frame size	M	N	P	S	T	D		E		Fh9		GA		d		AC	HD	L				
						nom.		tol.	2 pole	4-8 pole	2 pole	4-8 pole	2 pole	4-8 pole	2 pole			4-8 pole	2 pole	4-8 pole	2 pole	4-8 pole
						2 pole	4-8 pole															
63	115	95	140	10	3	11	j6	23	4	12,5	M4	125	99	258								
71	130	110	160	10	3,5	14	j6	30	5	16	M5	140	111	295								
80	165	130	200	12	3,5	19	j6	40	6	21,5	M6	158	136	287								
90S	165	130	200	12	3,5	24	j6	50	8	27	M8	177	148	339								
90L	165	130	200	12	3,5	24	j6	50	8	27	M8	177	148	339								
100L	215	180	250	14,5	4	28	j6	60	8	31	M10	199	157	387								
112M	215	180	250	14,5	4	28	j6	60	8	31	M10	222	172	406								
132S	265	230	300	14,5	4	38	k6	80	10	41	M12	263	201	496								
132M	265	230	300	14,5	4	38	k6	80	10	41	M12	263	201	496								
160M	300	250	350	18,5	5	42	k6	110	12	45	M16	315	244	630								
160L	300	250	350	18,5	5	42	k6	110	12	45	M16	315	244	630								
180M	300	250	350	18,5	5	48	k6	110	14	51,5	M16	355	258	668								
180L	300	250	350	18,5	5	48	k6	110	14	51,5	M16	355	258	708								
200L	350	300	400	18,5	5	55	m6	110	16	59	M20	395	290	780								
225S	400	350	450	18,5	5	-	60	m6	-	140	-	18	-	64	M20	445	370	-	840			
225M	400	350	450	18,5	5	55	60	m6	110	140	16	18	59	64	M20	445	310	835	865			
250M	500	450	550	18,5	5	60	65	m6	140	140	18	18	64	69	M20	494	370	925	925			
280S	500	450	550	18,5	5	65	75	m6	140	140	18	20	69	79,5	M20	494	397,5	986				
280M	500	450	550	18,5	5	65	75	m6	140	140	18	20	69	79,5	M20	494	397,5	986				
315SM	600	550	660	24	6	65	80	m6	140	170	18	22	69	85	M20	554	504	1105	1232			
315ML	600	550	660	24	6	65	80	m6	140	170	18	22	69	85	M20	623	504	1135	1292			
355Ma	740	680	800	24	6	70	100	m6	140	210	20	28	74,5	106	M20	M24	698	565	1370	1480		
355Mb	740	680	800	24	6	70	100	m6	140	210	20	28	74,5	106	M20	M24	698	565	1370	1480		
355L	740	680	800	24	6	70	100	m6	140	210	20	28	74,5	106	M20	M24	698	565	1450	1560		

ATEX motors



S-S-ELD-EN-EMOT-001-V01

ASNA high efficiency

Single speed			2 pole - 3000rpm				IE2 - Ex-nA				
Type code	P _n	n _n	I _{nom}	η			cos φ	I _a / I _n	M _a / M _n	M _k / M _n	m
	kW	rpm		A (400V)	100%	75%					
E2-ASNA 80a-2	0,75	2865	1,59	80,3	79,5	76,1	0,85	6,3	4,1	4,3	17
E2-ASNA 80b-2	1,1	2850	2,19	80,5	79,7	76,3	0,90	5,6	2,3	2,5	19
E2-ASNA 90Sa-2	1,5	2850	2,95	81,6	82,1	78,5	0,89	5,2	3,3	3,4	22
E2-ASNA 90L-2	2,2	2820	4,14	83,3	83,8	80,2	0,92	5,7	2,3	2,7	26
E2-ASNA 100La-2	3	2830	5,6	85,2	86,5	83,2	0,92	6,1	3,2	3,5	36
E2-ASNA 112Ma-2	4	2885	7,4	86,7	86,4	84,4	0,91	7,7	2,7	2,7	44
E2-ASNA 132Sa-2	5,5	2930	10,1	88,6	88,3	86,0	0,85	7,7	3,6	3,9	64
E2-ASNA 132Sb-2	7,5	2920	14,1	88,1	87,8	85,5	0,88	7,1	3,3	3,8	74
E2-ASNA 160Ma-2	11	2925	19,6	91,0	90,6	89,8	0,90	7,0	2,3	2,4	100
E2-ASNA 160Mb-2	15	2925	26,6	92,2	91,8	91,0	0,90	7,0	2,2	2,4	128
E2-ASNA 160L-2	18,5	2925	32,1	92,4	92,0	91,2	0,91	7,0	2,3	2,5	143
E2-ASNA 180M-2	22	2945	38,1	91,5	91,4	89,8	0,92	7,5	1,9	2,1	180
E2-ASNA 200La-2	30	2930	52,3	92,3	92,1	90,8	0,90	6,4	2,5	2,5	291
E2-ASNA 200Lb-2	37	2945	64,2	92,6	92,4	91,1	0,90	7,3	2,9	2,9	294
E2-ASNA 225M-2	45	2955	75,3	93,5	93,7	92,9	0,91	7,7	3,0	3,6	389
E2-ASNA 250M-2	55	2943	92	93,4	93,6	92,8	0,92	7,8	2,7	3,5	475
E2-ASNA 280S-2	75	2950	130	94,2	94,2	93,5	0,89	6,1	1,8	1,8	480
E2-ASNA 280M-2	90	2960	155	94,3	94,0	92,8	0,89	6,8	2,6	2,6	506
E2-ASNA 315S-2	110	2964	183	95,1	95,1	94,3	0,93	7,5	2,2	2,7	760
E2-ASNA 315M-2	132	2965	214	95,5	95,3	94,6	0,93	7,6	2,5	2,5	860
E2-ASNA 315MX-2	160	2975	264	95,3	94,9	93,2	0,92	7,0	1,9	1,9	1080
E2-ASNA 315LY-2	200	2980	329	95,5	95,1	93,4	0,92	7,0	2,1	2,1	1150
E2-ASNA 355M-2	250	2980	431	95,1	94,9	93,5	0,88	6,3	2,2	2,8	1300
E2-ASNA 355La-2	280	2980	483	95,1	94,8	93,4	0,88	6,0	2,0	2,5	1440
E2-ASNA 355Lb-2	315	2980	542	95,2	94,8	93,2	0,88	6,3	2,3	2,9	1510

Single speed			4 pole - 1500rpm				IE2 - Ex-nA				
Type code	P _n	n _n	I _{nom}	η			cos φ	I _a / I _n	M _a / M _n	M _k / M _n	m
	kW	rpm		A (400V)	100%	75%					
E2-ASNA 80b-4	0,75	1425	1,78	79,8	78,5	75,8	0,77	5,6	2,5	2,5	20
E2-ASNA 90Sb-4	1,1	1415	2,68	82,5	82,1	80,1	0,85	6,3	2,6	2,6	28
E2-ASNA 90L-4	1,5	1420	3,33	82,8	82,4	80,4	0,78	6,2	2,9	2,9	33
E2-ASNA 100La-4	2,2	1442	4,87	85,1	85,7	82,5	0,77	5,1	2,3	2,4	36
E2-ASNA 100Lb-4	3	1437	6,64	85,7	86,0	83,7	0,76	5,6	2,7	3,2	43
E2-ASNA 112Mb-4	4	1430	7,69	86,8	87,7	87,0	0,86	5,9	2,3	2,5	48
E2-ASNA 132Sb-4	5,5	1464	9,9	88,9	88,5	87,9	0,86	6,5	2,2	2,4	80
E2-ASNA 132M-4	7,5	1455	14,5	90,0	89,6	89,0	0,83	7,3	2,4	2,9	91
E2-ASNA 160M-4	11	1461	19,2	90,9	90,2	87,7	0,91	7,9	2,1	2,7	120
E2-ASNA 160L-4	15	1452	26,2	90,9	90,1	87,8	0,91	7,3	2,0	2,8	124
E2-ASNA 180M-4	18,5	1471	33,3	92,6	92,5	91,5	0,87	7,7	2,3	2,8	195
E2-ASNA 180L-4	22	1470	39,1	92,3	92,2	90,5	0,88	7,8	2,3	2,8	218
E2-ASNA 200La-4	30	1479	54,6	92,7	92,3	90,8	0,86	7,8	2,3	2,5	298
E2-ASNA 225S-4	37	1473	64,0	92,6	84,4	74,4	0,90	7,1	2,0	2,5	322
E2-ASNA 225M-4	45	1475	79,7	93,7	93,6	92,7	0,87	7,8	2,3	2,3	392
E2-ASNA 250M-4	55	1475	94	94,3	94,4	93,8	0,89	7,9	2,1	2,1	481
E2-ASNA 280S-4	75	1480	128	94,9	94,7	94,1	0,88	7,9	2,8	3,2	506
E2-ASNA 280M-4	90	1480	154	94,9	94,8	94,1	0,89	7,2	2,4	3,0	585
E2-ASNA 315S-4	110	1476	181	94,7	94,5	93,5	0,91	7,3	2,0	2,3	802
E2-ASNA 315M-4	132	1474	230	95,0	95,6	95,1	0,87	7,5	2,1	2,2	852
E2-ASNA 315MX-4	160	1478	251	95,0	94,8	93,8	0,87	7,2	2,3	2,6	1080
E2-ASNA 315LZ-4	200	1481	344	95,3	95,2	94,2	0,88	6,8	2,9	2,9	1150
E2-ASNA 355M-4	250	1485	430	95,3	94,9	93,9	0,88	6,5	2,3	2,3	1530
E2-ASNA 355La-4	280	1485	476	95,5	95,0	94,2	0,89	6,3	2,4	2,4	1780
E2-ASNA 355Lb-4	315	1485	535	95,5	95,1	94,5	0,89	6,6	2,5	2,5	1850

Single speed 6 pole - 1000rpm IE2 - Ex-nA

Type code	P _n kW	n _n rpm	I _{nom} A (400V)	η			cos φ	I _a / I _n I _n	M _a / M _n M _n	M _k / M _n M _n	m kg
				100%	75%	50%					
E2-ASNA 90Sb-6	0,75	948	1,89	76,2	74,7	70,3	0,75	4,6	2,1	2,3	27
E2-ASNA 90L-6	1,1	950	2,76	78,1	76,6	73,2	0,74	5,1	2,4	2,9	38
E2-ASNA 100Lb-6	1,5	965	3,68	80,4	79,0	74,8	0,73	5,7	2,2	2,2	40
E2-ASNA 112Mb-6	2,2	955	4,71	82,9	82,7	79,5	0,81	5,8	2,1	2,1	49
E2-ASNA 132Sa-6	3	962	6,69	84,8	79,9	77,4	0,77	6,5	2,2	2,9	70
E2-ASNA 132Ma-6	4	962	8,84	84,6	84,4	80,4	0,74	6,6	2,3	2,6	76
E2-ASNA 132Mb-6	5,5	955	10,8	87,0	86,4	84,4	0,82	6,5	2,4	2,6	86
E2-ASNA 160M-6	7,5	964	14,8	87,2	87,8	86,7	0,85	5,8	2,0	2,9	101
E2-ASNA 160L-6	11	965	21,4	88,9	90,1	90,0	0,84	5,6	1,9	1,9	134
E2-ASNA 180L-6	15	975	27,6	91,5	91,4	89,9	0,86	7,8	2,2	2,8	205
E2-ASNA 200La-6	18,5	977	34,2	90,5	90,5	89,5	0,87	7,7	2,3	3,3	257
E2-ASNA 200Lb-6	22	979	38,9	91,7	91,5	90,8	0,89	7,8	2,1	2,8	273
E2-ASNA 225M-6	30	982	54,2	93,2	93,5	92,6	0,86	7,4	2,2	2,6	324
E2-ASNA 250M-6	37	980	65,1	92,5	92,4	92,2	0,89	7,6	2,4	3,1	403
E2-ASNA 280S-6	45	980	78,9	93,1	93,2	92,3	0,89	7,4	2,0	2,8	550
E2-ASNA 280M-6	55	980	100	94,5	94,7	94,2	0,84	7,9	2,8	3,2	589
E2-ASNA 315S-6	75	982	133	94,4	94,5	93,9	0,86	7,5	2,2	2,2	792
E2-ASNA 315M-6	90	981	156	94,4	94,7	94,4	0,89	6,7	1,9	2,1	892
E2-ASNA 315MX-6	110	988	196	94,3	94,2	93,2	0,87	6,5	2,5	2,5	1080
E2-ASNA 315LY-6	132	985	234	94,6	94,9	94,7	0,86	5,4	2,2	2,2	1157
E2-ASNA 315LZ-6	160	985	282	94,8	95,1	94,9	0,86	5,4	2,0	2,0	1234
E2-ASNA 355M-6	200	987	341	95,1	94,8	94	0,89	6,0	2,1	2,1	1780
E2-ASNA 355L-6	250	989	430	95,3	95	94,3	0,88	7,0	2,5	2,5	1850

ATEX motors

ASNA high efficiency

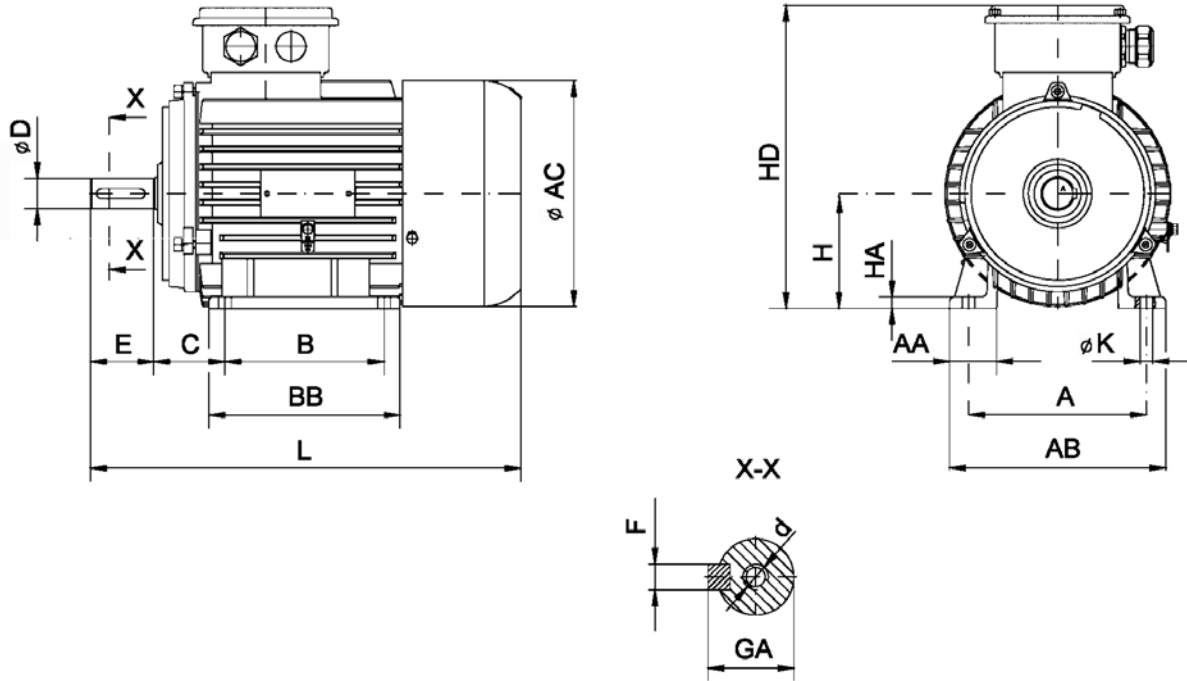
B3 Foot mounted version

IE2 - Ex-nA

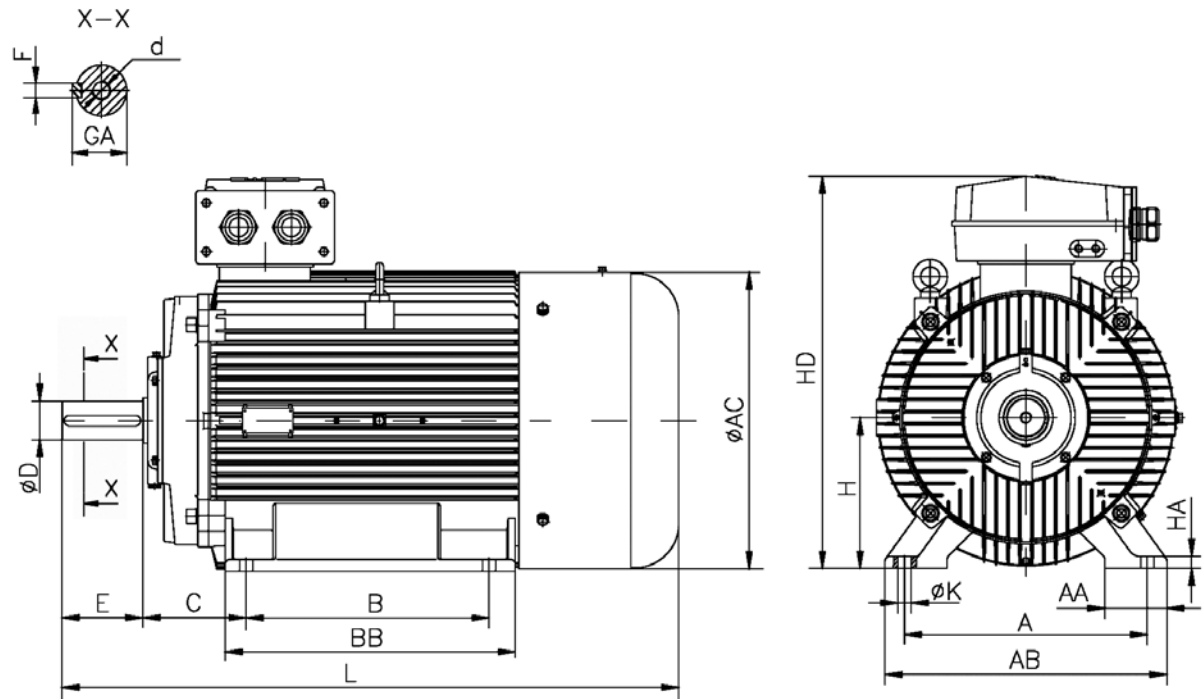
IEC Frame size	A	B	C	H	K	D		E		Fh9		GA		d		AA	AB	BB	HA	AC	HD	L			
						nom.	tol.	2 pole	4-6 pole	2 pole	4-6 pole	2 pole	4-6 pole	2 pole	4-6 pole							2 pole	4-6 pole	2 pole	4-6 pole
80	125	100	50	80	10	19	j6	40	6	21,5	M6	35	155	125	9	158	216	310							
90S	140	100	56	90	10	24	j6	50	8	27	M8	37	170	150	9	177	238	339							
90La	140	125	56	90	10	24	j6	50	8	27	M8	37	170	150	9	177	238	339							
90Lb	140	125	56	90	10	24	j6	50	8	27	M8	37	170	150	9	177	238	411							
100L	160	140	63	100	12	28	j6	60	8	31	M10	47	200	176	10	199	257	410							
112M	190	140	70	112	12	28	j6	60	8	31	M10	55	224	176	12	222	284	406							
132S	216	140	89	132	12	38	k6	80	10	41	M12	68	264	220	14	263	333	565							
132M	216	178	89	132	12	38	k6	80	10	41	M12	68	264	220	14	263	333	565							
160M	254	210	108	160	14.5	42	k6	110	12	45	M16	84	310	298	14	315	404	630							
160L	254	254	108	160	14.5	42	k6	110	12	45	M16	84	310	298	14	315	404	630							
180M	279	241	121	180	14.5	48	k6	110	14	51,5	M16	80	360	340	25	357	498	788							
180L	279	279	121	180	14.5	48	k6	110	14	51,5	M16	80	360	340	25	357	498	788							
200La, Lb	318	305	133	200	18.5	55	m6	110	16	59	M20	82	400	380	25	396	581	991							
225S	356	286	149	225	18.5	-	60	m6	-	140	-	18	-	64	M20	100	440	430	20	446	636	-	1006		
225M	356	311	149	225	18.5	55	60	m6	110	140	16	18	59	64	M20	100	440	430	20	446	636	976	1006		
250M	406	349	168	250	24	60	65	m6	140	140	18	18	64	69	M20	120	500	480	20	446	660	1056	1056		
280S	457	368	190	280	24	65	75	m6	140	140	18	20	69	79,5	M20	125	540	523	20	494	678	1067	1067		
280M	457	419	190	280	24	65	75	m6	140	140	18	20	69	79,5	M20	125	540	523	20	494	678	1067	1067		
315S	508	406	216	315	28	65	80	m6	140	170	18	22	69	85	M20	130	590	580	25	554	819	1161	1191		
315M	508	457	216	315	28	65	80	m6	140	170	18	22	69	85	M20	130	590	580	25	554	819	1161	1191		
315MX	508	457	216	315	28	65	80	m6	140	170	18	22	69	85	M20	130	590	607	25	623	819	1310	1370		
315LY	508	508	216	315	28	65	80	m6	140	170	18	22	69	85	M20	130	590	607	25	623	819	1310	1370		
315LZ	508	508	216	315	28	65	80	m6	140	170	18	22	69	85	M20	130	590	607	25	623	819	1310	1370		
355M	610	560	254	355	28	70	100	m6	140	210	20	28	74.5	106	M20	M24	110	714	695	32	698	920	1496	1565	
355La	610	630	254	355	28	70	100	m6	140	210	20	28	74.5	106	M20	M24	110	714	765	32	698	920	1576	1645	
355Lb	610	630	254	355	28	70	100	m6	140	210	20	28	74.5	106	M20	M24	110	714	765	32	698	920	1576	1645	

ASNA high efficiency

IM 1001-80-160-B3



IM 1001-180-355-B3



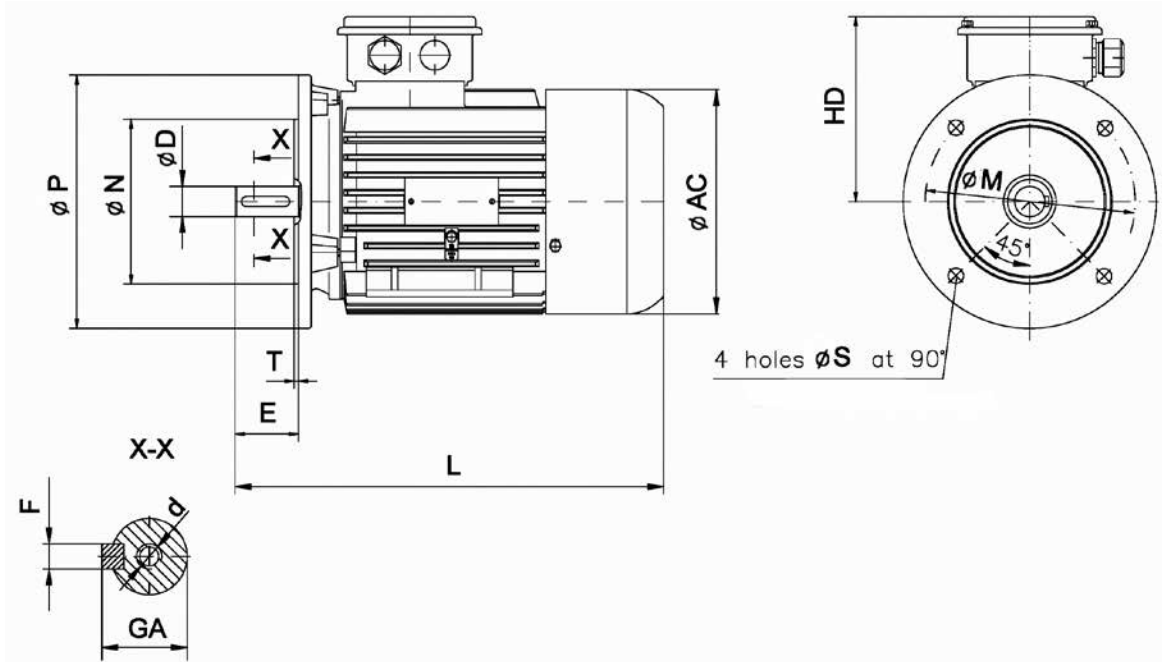
ATEX motors

B5 Large flange mounted version

IE2 - Ex-nA

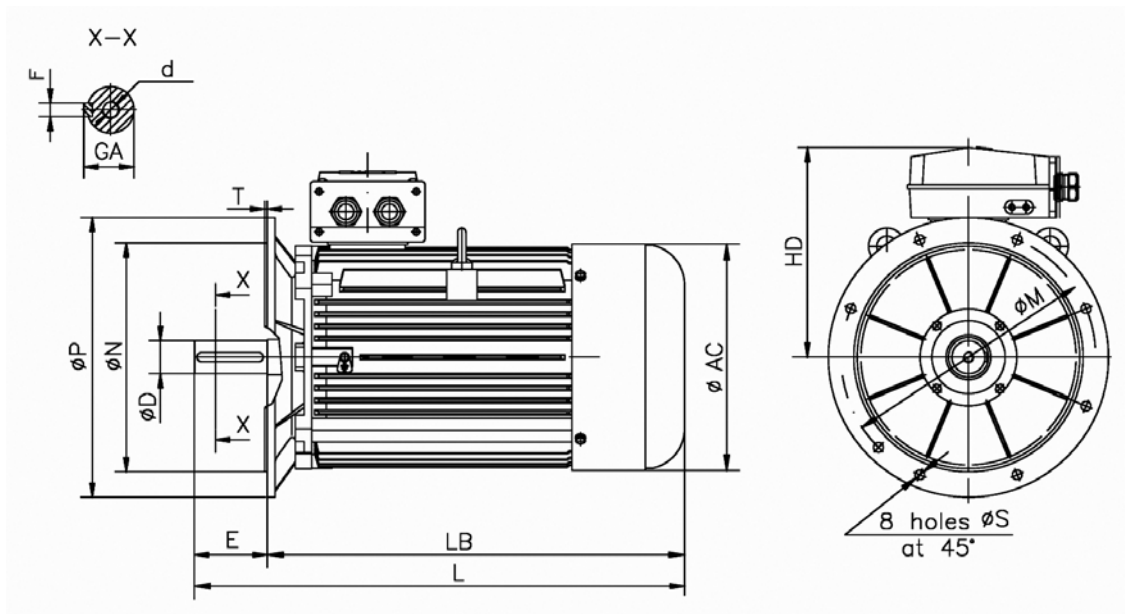
IEC Frame size	M	N _{j6}	P	S	T	D		E		F _{H9}		GA		d		AC	HD	LB		L		
						nom.		tol.	2 pole	4,6 pole	2 pole	4,6 pole	2 pole	4,6 pole	2 pole			4,6 pole	2 pole	4,6 pole		
						2 pole	4,6 pole														2 pole	4,6 pole
80	165	130	200	12	3,5	19	j6	40	6	21,5	M6	158	136			310						
90S	165	130	200	12	3,5	24	j6	50	8	27	M8	177	148			339						
90L	165	130	200	12	3,5	24	j6	50	8	27	M8	177	148			339						
100L	215	180	250	14,5	4	28	j6	60	8	31	M10	199	157			410						
112M	215	180	250	14,5	4	28	j6	60	8	31	M10	222	172			406						
132S	265	230	300	14,5	4	38	k6	80	10	41	M12	263	201			565						
132M	265	230	300	14,5	4	38	k6	80	10	41	M12	263	201			565						
160M	300	250	350	18,5	5	42	k6	110	12	45	M16	315	244			630						
160L	300	250	350	18,5	5	42	k6	110	12	45	M16	315	244			630						
180M	300	250	350	18,5	5	48	k6	110	14	51,5	M16	357	318			788						
180L	300	250	350	18,5	5	48	k6	110	14	51,5	M16	357	318			788						
200La,b	350	300	400	18,5	5	55	m6	110	16	59	M20	396	381			991						
225S	400	350	450	18,5	5	-	60	m6	-	140	-	18	-	64	M20	446	411	-	866	-	1006	
225M	400	350	450	18,5	5	55	60	m6	110	140	16	18	59	64	M20	446	411	866	866	976	1006	
250M	500	450	550	18,5	5	60	65	m6	140	140	18	18	64	69	M20	446	435	916	916	1056	1056	
280S	500	450	550	18,5	5	65	75	m6	140	140	18	20	69	79,5	M20	494	398	927			1067	
280M	500	450	550	18,5	5	65	75	m6	140	140	18	20	69	79,5	M20	494	398	927			1067	
315S	600	550	660	24	6	65	80	m6	140	170	18	22	69	85	M20	554	504	1021	1021	1161	1191	
315M	600	550	660	24	6	65	80	m6	140	170	18	22	69	85	M20	554	504	1021	1021	1161	1191	
315MX	600	550	660	24	6	65	80	m6	140	170	18	22	69	85	M20	623	504	1170	1200	1310	1370	
315LY	600	550	660	24	6	65	80	m6	140	170	18	22	69	85	M20	623	504	1170	1200	1310	1370	
315LZ	600	550	660	24	6	65	80	m6	140	170	18	22	69	85	M20	623	504	1170	1200	1310	1370	
355M	740	680	800	24	6	70	100	m6	140	210	20	28	74.5	106	M20	M24	698	565	1356	1355	1496	1565
355La	740	680	800	24	6	70	100	m6	140	210	20	28	74.5	106	M20	M24	698	565	1436	1435	1576	1645
355Lb	740	680	800	24	6	70	100	m6	140	210	20	28	74.5	106	M20	M24	698	565	1436	1435	1576	1645

IM 1001-80-200-B5



ATEX motors

IM 1001-225-355-B5

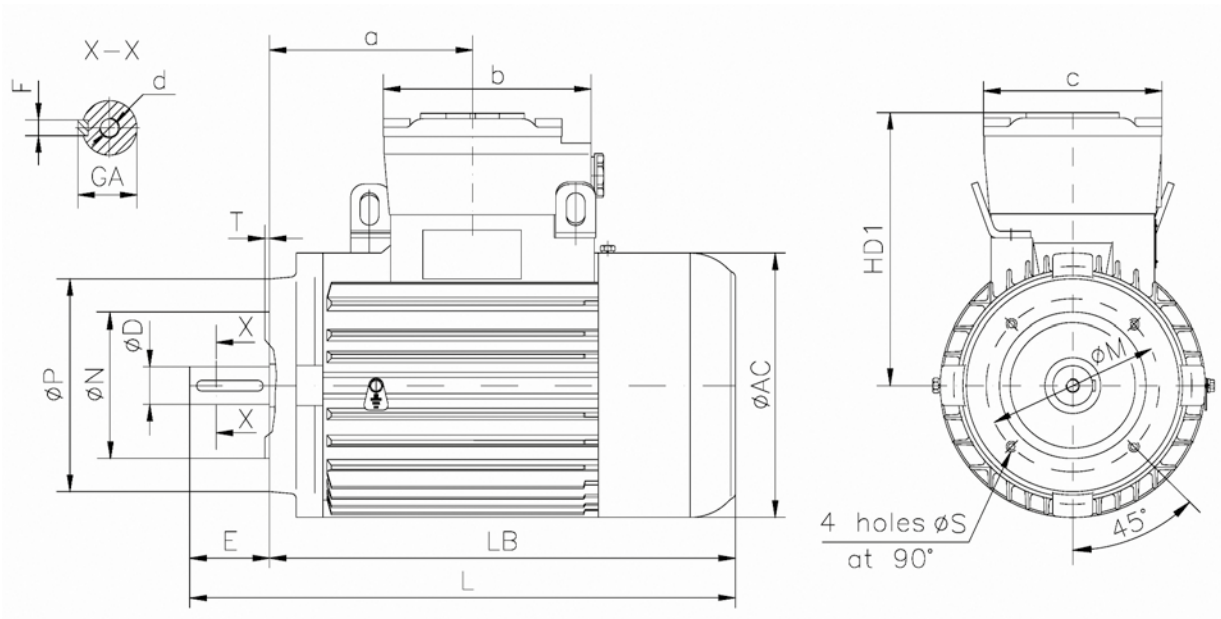


ASNA high efficiency

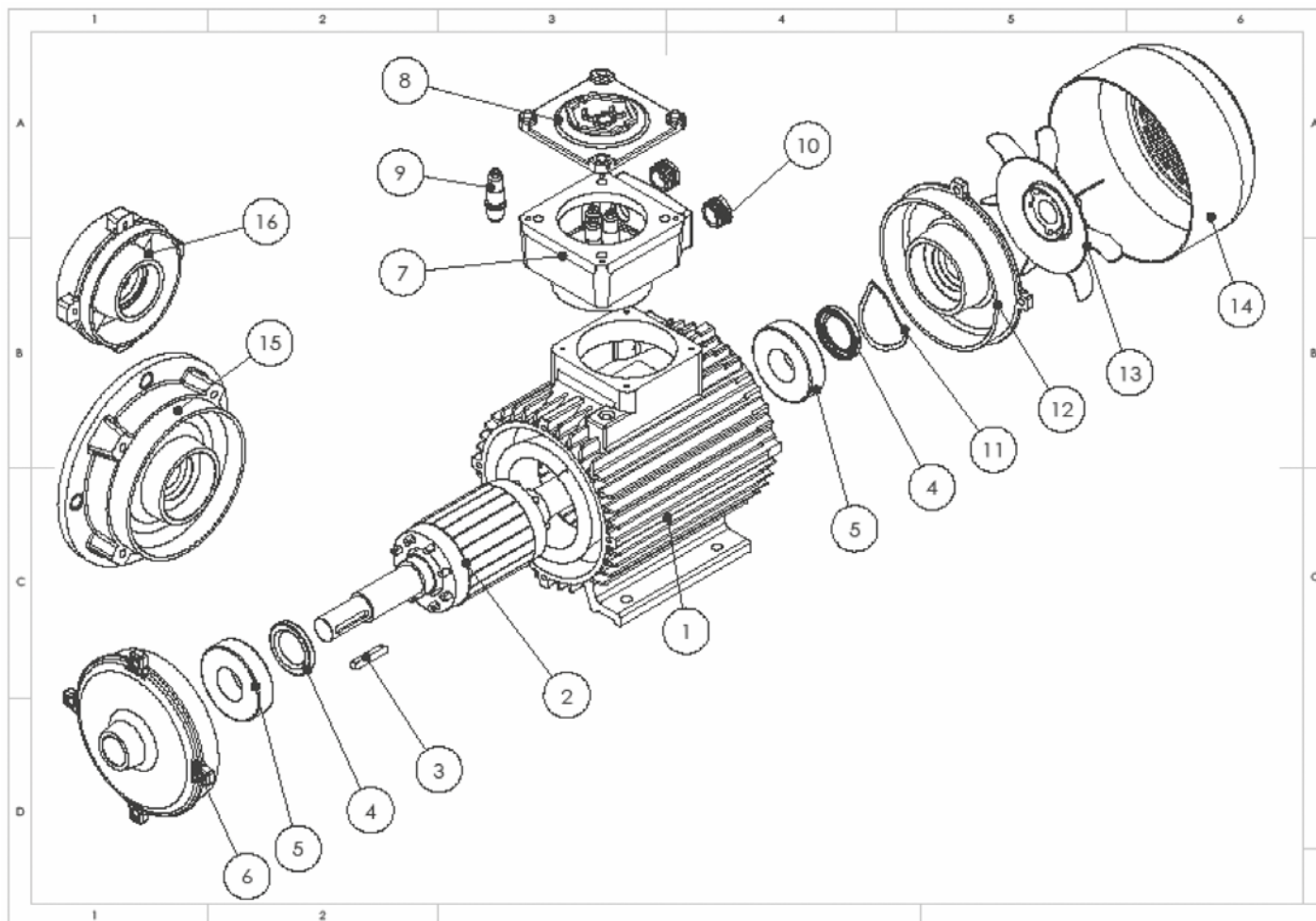
B14 Small flange mounted version

IE2 - Ex-nA

IEC Frame size	Flange	M	N _{j6}	P	S	T	D	E	F _{h9}	GA	d	AC	HD1	LB	L	a	b	c
63	F75	75	60	90	M5	2,5	11j6	23	4	12,5	M4	125	137	236	259	100	105	95
	F100	100	80	120	M6	3												
71	F85	85	70	105	M6	2,5	14j6	30	5	16	M5	140	151	265	295	80	105	95
	F115	115	95	140	M8	3												
80	F100	100	80	120	M6	3	19j6	40	6	21,5	M6	158	174	275	315	125	125	120
	F130	130	110	160	M8	3,5												
90S	F115	115	95	140	M8	3	24j6	50	8	27	M8	177	182	311	361	140	125	120
	F130	130	110	160	M8	3,5												
90L	F115	115	95	140	M8	3	24j6	50	8	27	M8	177	182	311	361	140	125	120
	F130	130	110	160	M8	3,5												
100LW	F130	130	110	160	M8	3,5	28j6	60	8	31	M10	199	207	352	412	155	160	135
	F165	165	130	200	M10	3,5												
100LX	F130	130	110	160	M8	3,5	28j6	60	8	31	M10	199	207	377	437	165	160	135
	F165	165	130	200	M10	3,5												
112M	F130	130	110	160	M8	3,5	28j6	60	8	31	M10	221	220	396	456	175	160	135
	F165	165	130	200	M10	3,5												
132S	F165	165	130	200	M10	3,5	38k6	80	10	41	M12	263	268	443	523	200	175	160
	F215	215	180	250	M12	4												
132M	F165	165	130	200	M10	3,5	38k6	80	10	41	M12	263	268	490	570	225	175	160
	F215	215	180	250	M12	4												
160	F215	215	180	250	M12	4	42k6	110	12	45	M16	317	311	550	660	245	210	195
	F265	265	230	300	M12	4												



S-S-ELD-EN-EMOT-001-V01



ATEX motors

Pops	Part
1.	Stator
2.	Rotor
3.	Key
4.	Oil seal
5.	Bearing
6.	Bearing shield DE
7.	Junction box
8.	Junction box cover
9.	Connection clamp
10.	Cable entry/ Gland entry
11.	Spring washer
12.	Bearing shield NDE
13.	Fan
14.	Fan cover
15.	Flange B5
16.	Flange B14 (IEC 80-160)

S-S-ELD-EN-EMOT-001-V01

Single speed 3000 rpm II 2G Ex d(e) Ex tD A21

400V 50Hz											
Type code	P kW	n _n rpm	η %	cos φ	I _n A	M _n Nm	I _a /I _n	M _a /M _n	M _{max} /M _n	J _{rotor} kgm ²	Weight kg
56B2	0,12	2850	50	0,76	0,5	0,43	4,8	3,6	3,8	0,00016	3,5
63A2	0,18	2825	56	0,76	0,62	0,61	3,9	2,6	3,6	0,00017	4
63B2	0,25	2750	60	0,83	0,74	0,87	3,3	1,8	2,5	0,00022	4
71A2	0,37	2850	71	0,78	1	1,24	4,5	2,4	2,7	0,00035	6
71B2	0,55	2840	70	0,78	1,45	1,85	4,9	3,3	3,4	0,00045	6,5
80A2	0,75	2870	73	0,72	2	2,5	5,3	3	4	0,00068	9
80B2	1,1	2830	72	0,86	2,6	2,7	4,1	2	2,7	0,00088	11
90S2	1,5	2850	68	0,83	3,95	5,1	4,2	2,4	2,6	0,00118	13
90L2	2,2	2840	70	0,85	5,4	7,2	5,1	3,7	3,9	0,00180	15
100L2	3	2900	75	0,8	7,3	10	5,4	2,2	3,8	0,00279	20
112M2	4	2910	78	0,83	9,2	13,2	8,2	2,4	2,8	0,00544	28

Single speed 1500 rpm II 2G Ex d(e) Ex tD A21

400V 50Hz											
Type code	P kW	n _n rpm	η %	cos φ	I _n A	M _n Nm	I _a /I _n	M _a /M _n	M _{max} /M _n	J _{rotor} kgm ²	Weight kg
56A4	0,09	1450	50	0,63	0,46	0,63	2,4	2,7	3,1	0,00020	3,5
63A4	0,12	1420	50	0,53	0,71	0,8	2,7	3,3	3,9	0,00021	4
63B4	0,18	1380	53	0,65	0,76	1,25	2,6	2,1	2,5	0,00029	4
71A4	0,25	1400	55	0,81	0,84	1,7	3,8	2,4	2,8	0,00073	6,5
71B4	0,37	1410	66	0,68	1,2	2,52	3,9	2,5	2,9	0,00080	7
80A4	0,55	1430	68	0,71	1,75	3,75	4,3	2,7	3,2	0,00092	8
80B4	0,75	1410	72	0,75	2,1	5,1	3,9	2,3	2,4	0,00128	11
90S4	1,1	1420	71	0,7	3,3	7,5	3,7	2,8	3,2	0,00203	12
90L4	1,5	1415	75	0,78	3,8	10,16	4,2	2,2	3,1	0,00265	14
100K4	2,2	1440	77	0,77	5,8	14,5	4,9	2	2,3	0,00450	20
100L4	3	1420	79	0,81	6,8	20,3	4,4	1,9	2,7	0,00599	23
112M4	4	1450	84	0,76	9,1	26,4	4,8	2,2	3,5	0,01112	30

Single speed 1000 rpm II 2G Ex d(e) Ex tD A21

400V 50Hz											
Type code	P kW	n _n rpm	η %	cos φ	I _n A	M _n Nm	I _a /I _n	M _a /M _n	M _{max} /M _n	J _{rotor} kgm ²	Weight kg
71A6	0,18	900	62	0,7	0,61	1,95	3	2	2,3	0,00060	7
71B6	0,25	910	63	0,6	1	2,7	2,9	3,1	3,3	0,00080	7,5
80A6	0,37	940	58	0,66	1,4	3,76	4	2,7	3,2	0,00220	9
80B6	0,55	930	65	0,65	2	5,72	2,7	2,3	2,4	0,00282	11
90S6	0,75	930	71	0,7	2,2	7,9	3,5	2,3	2,4	0,00265	13
90L6	1,1	910	67	0,75	3,2	11,6	3,7	2,3	2,5	0,00342	16
100L6	1,5	940	78	0,68	4	15,3	4,1	2,6	2,9	0,01033	22
112M6	2,2	930	78	0,78	5,2	22,6	5	3,2	3,4	0,01603	37

Single speed 750 rpm II 2G Ex d(e) Ex tD A21

400V 50Hz											
Type code	P kW	n _n rpm	η %	cos φ	I _n A	M _n Nm	I _a /I _n	M _a /M _n	M _{max} /M _n	J _{rotor} kgm ²	Weight kg
80A8	0,18	690	49	0,6	0,95	2,5	2,8	2,7	3	0,00141	10
80B8	0,25	700	55	0,55	1,2	3,6	2,9	2,8	3,2	0,00251	11
90S8	0,37	680	60	0,67	1,3	5,2	3	1,6	2	0,00376	13
90L8	0,55	690	65	0,65	1,9	7,7	3	2,4	2,7	0,00551	15
100K8	0,75	700	65	0,65	2,6	10	3,4	2,3	2,5	0,00775	20
100L8	1,1	700	63	0,69	3,6	15,2	3,7	2,2	2,6	0,01033	22
112M8	1,5	710	77	0,72	3,9	20,2	3,7	1,3	2,2	0,01870	37

Two speed - constant torque **1500/3000 rpm** **II 2G Ex d(e) Ex tD A21**

400V 50Hz Dahlander										
Type code	P kW	n _n rpm	η %	cos φ	I _n A	M _n Nm	I _a /I _n	M _a /M _n	J _{rotor} kgm ²	Weight kg
71A3 4/2	0,22/0,33	1380/2760	57/53	0,66/0,71	0,8/1	1,1/1,4	3,2/3,8	1,9/1,8	0,0005	7
71B3 4/2	0,4/0,5	1380/2800	68/60	0,62/0,7	1,2/1,25	1,6/2,1	3,2/4,2	1,9/1,8	0,0008	7,5
80A3 4/2	0,45/0,6	1430/2880	68/67	0,625/0,76	1,5/1,9	1,9/2,6	3,9/4,1	2/2	0,0014	9
80B3 4/2	0,6/0,8	1450/2890	67/72	0,71/0,81	2,2/2,6	2,6/3,9	4/4,3	2/2	0,0017	11
90S3 4/2	0,8/1,1	1440/2890	69/73	0,72/0,82	2,6/3,4	4,4/6,4	4,5/5	2,3/2	0,0033	13
90L3 4/2	1,1/1,6	1420/2880	69/70	0,76/0,81	3,2/4,8	5,6/8,5	4,3/4,9	2,4/2,3	0,004	15
100M3 4/2	1,5/2,2	1430/2850	75/77	0,79/0,85	4/5,7	10,5/16,8	6/6	2,4/2,3	0,0075	20
100L3 4/2	2,2/3	1440/2870	77/77	0,85/0,84	5,7/8,1	13,8/23	6,2/6	2,5/2,3	0,0086	25
112M3 4/2	3,3/4	1450/2900	78/77	0,87/0,88	7/9,1	1,1/1,4	6,2/6	2,5/2,3	0,013	30

Two speed - constant torque **750/1500 rpm** **II 2G Ex d(e) Ex tD A21**

400V 50Hz Dahlander										
Type code	P kW	n _n rpm	η %	cos φ	I _n A	M _n Nm	I _a /I _n	M _a /M _n	J _{rotor} kgm ²	Weight kg
71A5 8/4	0,11/0,18	670/1370	40/68	0,72/0,62	0,8/0,9	1,3/1,4	2,4/3,4	1,4/1,1	0,0018	7
71B5 8/4	0,15/0,3	670/1370	42/70	0,71/0,75	1,1/1,2	1,5/1,5	2,4/3,5	1,4/1,1	0,002	7,5
80A5 8/4	0,22/0,45	700/1420	50/71	0,67/0,75	1,3/1,4	2,2/2,3	2,4/3,5	1,6/1,5	0,0023	10
80B5 8/4	0,37/0,55	700/1410	54/75	0,69/0,74	2/2,4	3,1/2,9	2,6/3,6	1,6/1,5	0,003	11
90S5 8/4	0,37/0,75	680/1400	62/71	0,7/0,75	3/4,9	4,5/4,4	3,2/4	1,7/2	0,0035	13
90L5 8/4	0,6/1,1	700/1420	67/77	0,7/0,75	3,2/4	4,5/4,4	3,2/4	1,7/2	0,0043	15
100M5 8/4	0,7/1,1	700/1430	70/79	0,68/0,77	5/5,2	6,9/6,8	5/5,2	2,5/2,2	0,0077	20
100L5 8/4	1,1/1,8	710/1430	72/80	0,74/0,81	5,2/5,5	9,1/8,9	5,2/5,5	2,4/2,3	0,0086	22
112M5 8/4	1,4/2,6	710/1430	78/81	0,65/0,85	5,3/5,7	11,5/12	5,2/5,5	2,5/2,3	0,012	37

ATEX motors

Two speed - constant torque **1000/1500 rpm** **II 2G Ex d(e) Ex tD A21**

400V 50Hz Separate windings										
Type code	P kW	n _n rpm	η %	cos φ	I _n A	M _n Nm	I _a /I _n	M _a /M _n	J _{rotor} kgm ²	Weight kg
71BL 6/4	0,1/0,2	900/1400	53/70	0,71/0,75	0,38/0,55	1,1/1,3	2,4/3,3	1,4/1,4	0,0008	7,5
80AL 6/4	0,2/0,4	905/1400	62/71	0,72/0,75	0,65/1,1	2,1/2,9	2,5/3,4	1,5/1,4	0,0022	9
80BL 6/4	0,3/0,5	910/1405	66/71	0,73/0,74	0,9/1,38	3/3,4	3,1/3,6	1,5/1,5	0,00282	10
90SL 6/4	0,45/0,65	910/1405	70/76	0,73/0,75	1,26/1,65	4,6/4,5	4,3/5,8	1,5/1,6	0,00265	13
90LL 6/4	0,6/0,95	910/1400	70/77	0,74/0,76	1,66/2,36	6,3/6,4	3,6/5,5	1,6/1,5	0,00342	16
100ML 6/4	0,9/1,4	910/1415	74/81	0,74/0,73	2,4/3,2	9,3/9,4	4,1/5,7	1,7/1,8	0,00775	22
100LL 6/4	1,1/1,85	910/1415	74/80	0,74/0,81	2,9/4,1	12,1/12,4	2,9/5,8	1,6/1,6	0,01033	26
112ML 6/4	1,6/2,4	940/1420	81/82	0,77/0,85	3,66/4,95	16,2/16,5	4,3/6,1	1,7/1,8	0,01603	37
112M5 8/4	1,4/2,6	710/1430	78/81	0,65/0,85	5,3/5,7	11,5/12	5,2/5,5	2,5/2,3	0,012	37

Two speed - constant torque **750/1000 rpm** **II 2G Ex d(e) Ex tD A21**

400V 50Hz Separate windings										
Type code	P kW	n _n rpm	η %	cos φ	I _n A	M _n Nm	I _a /I _n	M _a /M _n	J _{rotor} kgm ²	Weight kg
71B9 8/6	0,08/0,12	690/900	49/50	0,61/0,71	0,44/0,53	1,1/1,3	2,2/2,4	1,3/1,4	0,0008	7,5
80B9 8/6	0,13/0,15	690/935	52/50	0,6/0,71	0,63/0,68	1,9/1,5	2,1/2,6	1,5/1,5	0,0022	9
80B9 8/6	0,15/0,25	685/930	49/52	0,6/0,72	0,82/1	2,2/2,7	2,2/3,2	1,4/1,5	0,00282	10
90S9 8/6	0,25/0,35	650/910	60/55	0,6/0,74	1/1,35	3,8/3,6	3,1/3,8	2,5/1,4	0,00265	13
90L9 8/6	0,3/0,6	685/935	61/60	0,6/0,76	1,35/2	4,3/6,1	3,4/3,8	1,6/1,5	0,00342	16
100M9 8/6	0,55/0,8	700/920	68/65	0,63/0,77	1,9/2,35	7,4/8,2	3,6/4	1,6/1,5	0,00775	22
100L9 8/6	0,65/1	700/930	68/67	0,66/0,75	2,2/2,9	8,8/10,5	3,7/4,1	1,6/1,6	0,01033	26
112M9 8/6	1/1,5	710/960	65/75	0,7/0,72	3,3/4,2	13,4/15	3,9/4	1,6/1,7	0,01603	37
112M5 8/4	1,4/2,6	710/1430	78/81	0,65/0,85	5,3/5,7	11,5/12	5,2/5,5	2,5/2,3	0,012	37

S-SELD-EN-EMOT-001-V01

Two speed - quadratic torque **1500/3000 rpm** **II 2G Ex d(e) Ex tD A21**

400V 50Hz Dahlander										
Type code	P kW	n _n rpm	η %	cos φ	I _n A	M _n Nm	I _a /I _n	M _a /M _n	J _{rotor} kgm ²	Weight kg
71A3 4/2	0,09/0,37	1410/2790	33/59	0,7/0,8	0,4/1,1	0,6/1,3	2,8/3,5	1,8/1,8	0,0005	7
71B3 4/2	0,14/0,5	1410/2800	65/60	0,7/0,7	0,45/1,9	1/1,7	2,9/3,6	1,9/1,8	0,0008	7,5
80A3 4/2	0,18/0,75	1415/2800	66/63	0,79/0,76	0,5/2,26	1,2/2,6	3,5/4	2,2/1,8	0,0014	10
80B3 4/2	0,25/1,1	1415/2810	70/66	0,81/0,81	0,64/3	1,7/3,7	3,7/4,1	2,2/1,8	0,0017	11
90S3 4/2	0,37/1,5	1420/2820	64/66	0,81/0,82	1/4	2,5/5,1	3,9/4,5	2,2/2	0,0033	13,5
90L3 4/2	0,55/2,2	1400/2860	67/70	0,87/0,89	1,3/5	3,7/7,5	4,4/4,4	2,1/1,9	0,004	16,5
100M3 4/2	0,62/2,6	1420/2820	73/77	0,89/0,92	1,42/5,3	4,2/8,8	5,3/5,6	2/2,1	0,005	20
100L3 4/2	0,75/3,3	1415/2800	73/78	0,9/0,92	1,6/6,64	5,1/11,3	5/5,6	2/2,1	0,0075	22
112M3 4/2	4,4/1,1	2890/1440	76/76	0,95/0,9	8,5/2,3	14,6/7,4	5,4/5	2/1,9	0,0086	37

Two speed - quadratic torque **750/1500 rpm** **II 2G Ex d(e) Ex tD A21**

400V 50Hz Dahlander										
Type code	P kW	n _n rpm	η %	cos φ	I _n A	M _n Nm	I _a /I _n	M _a /M _n	J _{rotor} kgm ²	Weight kg
71A5 8/4	0,05/0,25	700/1400	28/70	0,68/0,75	0,36/0,69	0,7/1,7	2,3/3	2,8/2,2	0,0018	7
71B5 8/4	0,07/0,37	680/1380	33/59	0,7/0,8	0,45/1,1	1,1/2,6	1,4/2,5	1,2/1,2	0,002	7,5
80A5 8/4	0,1/0,55	700/1405	38/75	0,66/0,74	0,58/1,43	1,4/3,7	2/4,4	2,3/2,2	0,0023	10
80B5 8/4	0,15/0,75	690/1410	48/70	0,66/0,76	0,7/1,9	2,1/5,1	2,4/4,1	1,5/1,7	0,003	11
90S5 8/4	0,25/0,9	710/1415	54/77	0,7/0,75	0,96/2,75	3,4/6,1	2,9/4	2,8/2,3	0,0043	13,5
90L5 8/4	0,3/1,2	710/1420	57/80	0,7/0,79	1,1/3,4	4/8,1	1,3/4,2	3/2,3	0,0048	16,5
100M5 8/4	0,45/1,9	710/1390	61/80	0,68/0,8	1,6/4,1	6,1/13,1	3/5	2/3	0,0077	20
100L5 8/4	0,55/2,2	720/1440	68/84	0,7/0,85	1,68/4,86	7,3/14,6	3/6	2,4/2,5	0,0086	22
112M5 8/4	0,75/3	720/1450	70/83	0,68/0,85	2,27/6,6	9,9/19,8	3/6	2,4/2,6	0,012	37

Two speed - quadratic torque **1000/1500 rpm** **II 2G Ex d(e) Ex tD A21**

400V 50Hz Separate windings										
Type code	P kW	n _n rpm	η %	cos φ	I _n A	M _n Nm	I _a /I _n	M _a /M _n	J _{rotor} kgm ²	Weight kg
71BL 6/4	0,1/0,3	900/1400	63/71	0,72/0,75	0,5/0,95	1,4/2,1	1,4/2,6	1,8/2	0,0008	7,5
80AL 6/4	0,13/0,44	900/1405	33/59	0,7/0,8	0,5/1,02	1,4/3	1,7/3,2	1,1/1,5	0,0022	10
80BL 6/4	0,18/0,59	905/1405	72/76	0,75/0,8	0,65/1,6	1,9/3,9	2,3/3,5	1,2/1,7	0,00282	11
90SL 6/4	0,3/0,9	900/1400	68/77	0,76/0,75	0,83/2,25	3,1/6,1	3,1/4,1	1,6/2,1	0,00265	13,5
90LL 6/4	0,4/1,15	910/1420	74/80	0,74/0,79	1,1/2,6	4,2/7,5	2,9/4,1	1,3/1,8	0,00342	16,5
100ML 6/4	0,6/1,8	930/1410	80/80	0,75/0,83	1,44/3,67	6,1/12,1	3,9/5,1	1,8/2,1	0,00775	20
100LL 6/4	0,7/2,2	940/1440	80/82	0,75/0,87	2,1/4,9	7,5/15,2	3/3,8	1,5/1,7	0,01033	22
112ML 6/4	0,9/3	940/1450	81/84	0,79/0,82	2/6,3	9,1/19,8	4/5,5	1,9/2	0,01603	37

Two speed - quadratic torque **750/1000 rpm** **II 2G Ex d(e) Ex tD A21**

400V 50Hz Separate windings										
Type code	P kW	n _n rpm	η %	cos φ	I _n A	M _n Nm	I _a /I _n	M _a /M _n	J _{rotor} kgm ²	Weight kg
80B9 8/6	0,09/0,33	680/920	57/55	0,62/0,7	0,4/1,32	1,3/3,4	1,9/3,1	1,4/1,8	0,0022	10
80B9 8/6	0,12/0,4	685/935	55/58	0,63/0,7	0,5/1,48	1,7/4	2,1/2,9	1,4/1,8	0,00282	11
90S9 8/6	0,19/0,48	690/925	55/61	0,62/0,65	0,85/1,78	2,7/4,8	2,1/3,1	1,5/1,9	0,00265	13,5
90L9 8/6	0,25/0,66	700/900	52/60	0,62/0,8	1,2/2	3,5/7,1	2,3/3,2	1,7/2	0,00342	16,5
100M9 8/6	0,37/0,9	720/960	50/67	0,65/0,68	1,75/2,85	4,8/8,9	3,5/4,1	1,8/1,9	0,00775	20
100L9 8/6	0,45/1,1	720/950	52/70	0,64/0,7	2,1/3,35	5,9/11,2	3,4/3,9	1,4/1,6	0,01033	22
112M9 8/6	0,75/1,5	720/970	61/75	0,68/0,74	2,8/3,9	10,1/15,1	3,5/4,4	1,7/2,1	0,01603	37
112M9 8/6	1/1,5	710/960	65/75	0,7/0,72	3,3/4,2	13,4/15	3,9/4	1,6/1,7	0,01603	37

S-S-ELD-EN-EMOT-001-V01

Single speed 3000 rpm II 2G Ex d(e) Ex tD A21

230V 50Hz without starting capacitor												
Motor type	P	n _n	η	cos φ	I _n	M _n	I _a /I _n	M _a /M _n	M _{max} /M _n	C	J _{rotor}	Weight
	kW	rpm	%		A	Nm				μF	kgm ²	kg
56B2	0,12	2770	46	0,95	1,17	0,43	2,3	1	1,9	4	0,00030	4,5
63A2	0,18	2780	76	0,86	1,2	0,62	2,9	0,6	1,4	4	0,00030	5,5
63B2	0,25	2780	60	0,9	2	0,86	2,9	0,65	1,5	6	0,00035	6
71A2	0,37	2790	50	0,9	3,6	1,27	3,1	0,7	1,4	10	0,00046	7,5
71B2	0,55	2800	58	0,9	4,6	1,88	3,1	0,63	1,4	16	0,00056	8
80A2	0,75	2830	59	0,92	6	2,53	3,2	0,7	1,4	25	0,00097	9,5
80B2	1,1	2800	64	0,94	8	3,75	3,3	0,7	1,6	30	0,01000	11
90S2	1,5	2850	71	0,9	10,2	5,03	3,3	0,6	1,8	40	0,00150	13
90L2	1,5	2850	69	0,9	10,5	5,03	3,4	0,55	1,5	40	0,00190	15
100M2	2,2	2850	71	0,9	15	7,38	3,5	0,55	1,7	60	0,00370	25
100L2	3	2850	66	0,9	22	10,06	3,6	0,6	1,8	80	0,00530	27
112M2	4	2890	69	0,97	26	13,22	3,6	0,65	1,8	100	0,00700	40

Single speed 1500 rpm II 2G Ex d(e) Ex tD A21

230V 50Hz without starting capacitor												
Motor type	P	n _n	η	cos φ	I _n	M _n	I _a /I _n	M _a /M _n	M _{max} /M _n	C	J _{rotor}	Weight
	kW	rpm	%		A	Nm				μF	kgm ²	kg
56B2	0,09	1350	55	0,95	1	0,64	2,6	0,6	1,5	4	0,00038	4
63A4	0,12	1360	58	0,93	1,3	0,84	2,8	0,63	1,4	4	0,00040	5
63B4	0,18	1360	59	0,95	1,4	1,26	2,8	0,62	1,5	6,3	0,00045	5,5
71A4	0,25	1400	59	0,94	2,5	1,71	3	0,55	1,4	10	0,00080	8
71B4	0,37	1400	59	0,93	3,6	2,53	3,2	0,56	1,4	10	0,00090	8,5
80A4	0,55	1410	60	0,94	4,8	3,73	3,2	0,45	1,4	16	0,00096	10
80B4	0,75	1410	63	0,96	5,4	5,08	3,3	0,5	1,6	20	0,00120	12
90S4	1,1	1400	65	0,95	8	7,51	3,4	0,45	1,5	30	0,00260	15
90L4	1,5	1410	67	0,93	10,5	10,16	3,5	0,44	1,8	40	0,00320	18
100M4	2,2	1415	70	0,96	15,6	14,85	3,8	0,55	1,6	45	0,00590	25
112M4	3	1430	75	0,98	20	20,04	3,9	0,45	1,8	70	0,01200	37

Single speed 750 rpm II 2G Ex d(e) Ex tD A21

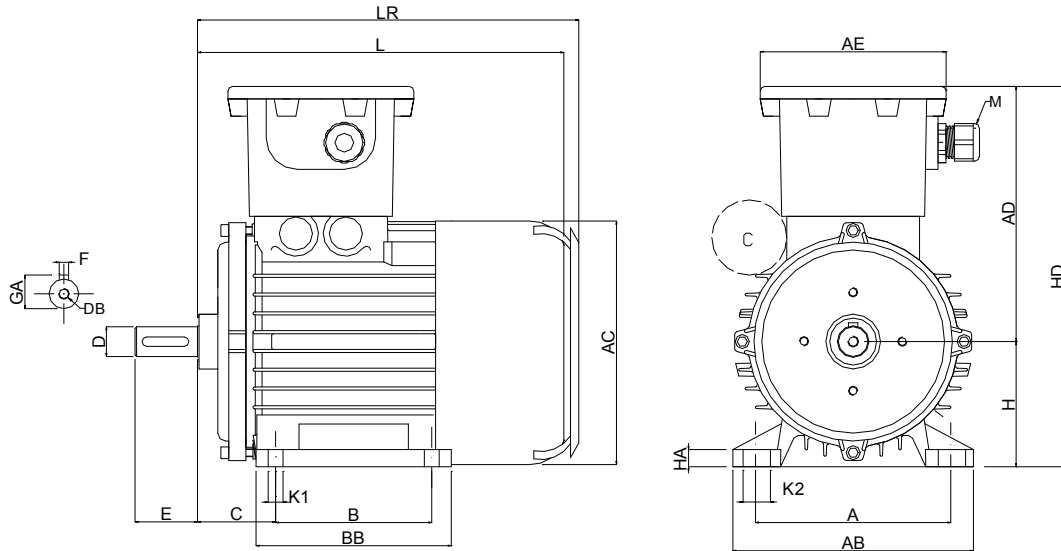
230V 50Hz without starting capacitor												
Motor type	P	n _n	η	cos φ	I _n	M _n	I _a /I _n	M _a /M _n	M _{max} /M _n	C	J _{rotor}	Weight
	kW	rpm	%		A	Nm				μF	kgm ²	kg
71A6	0,12	910	61	0,83	1,30	1,2	2,5	0,6	1,4	8	0,00080	8
71B6	0,18	930	61	0,91	1,60	1,8	2,7	0,6	1,4	12,5	0,00090	8,5
80A6	0,25	920	62	0,92	2,40	2,2	2,8	0,6	1,4	16	0,00096	10
80B6	0,37	920	65	0,85	2,90	3,2	2,9	0,7	1,8	20	0,00120	12
90S6	0,55	910	65	0,85	4,20	5,9	2,9	0,7	1,7	25	0,00260	15
90L6	0,75	920	68	0,90	5,90	8,1	3,1	0,7	1,9	32	0,00320	18
100M6	1,10	920	69	0,90	8,10	11,5	3,1	0,7	1,9	45	0,00590	25

ATEX motors

S-S-ELD-EN-EMOT-001-V01

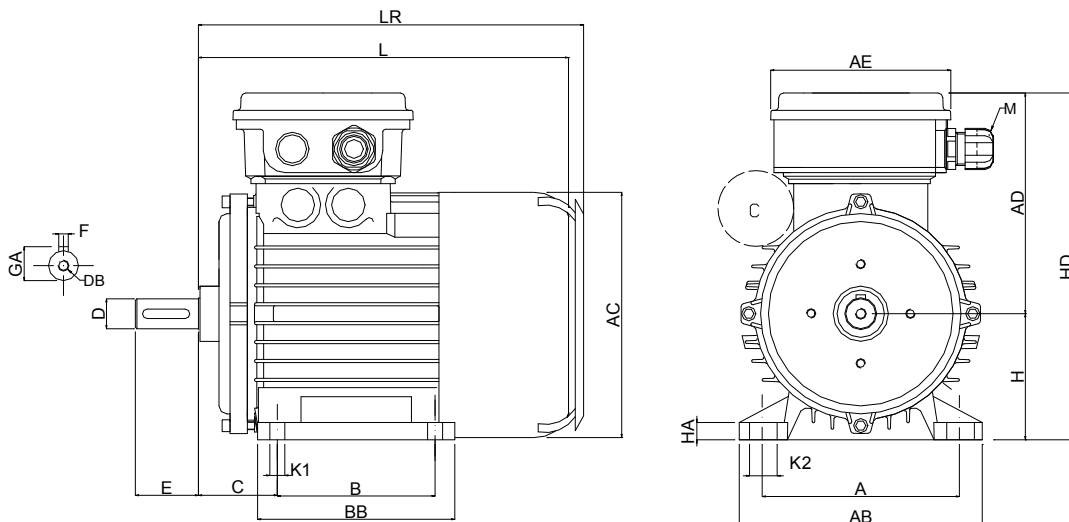
B3 Foot mounted version **Ex d**

IEC Frame size	B	A	HA	BB	AB	AC	AD	AE	C	H	HD	L	LR	K1	K2	M	D	E	GA	F	DB
63	80	100	10	105	120	121	150	119	40	63	203	200	210	7	12	M20	11	23	12,5	4	M4X10
71	90	112	11	108	136	136	159	119	45	71	230	225	235	7	12	M20	14	30	16	5	M5X25
80	100	125	11	125	154	154	163	119	50	80	243	245	255	9,5	17,5	M20	19	40	21,5	6	M6X16
90S	100	140	13	130	174	174	173	119	56	90	263	260	270	9,5	17,5	M20	24	50	27	8	M8X19
90L	125	140	13	155	174	174	173	119	56	90	263	285	295	9,5	17,5	M20	24	50	27	8	M8X19
100	140	160	14	175	192	192	186	119	63	100	286	315	327	11,2	21,2	M20	28	60	31	8	M10X22
112	140	190	14	175	224	216	195	119	70	112	307	338	352	11,2	21,2	M20	28	60	31	8	M10X22



B3 Foot mounted version **Ex de**

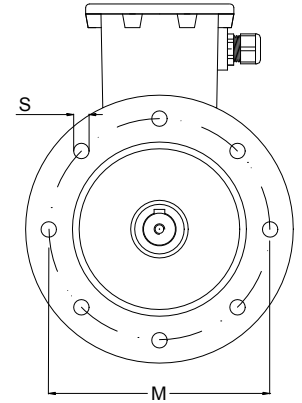
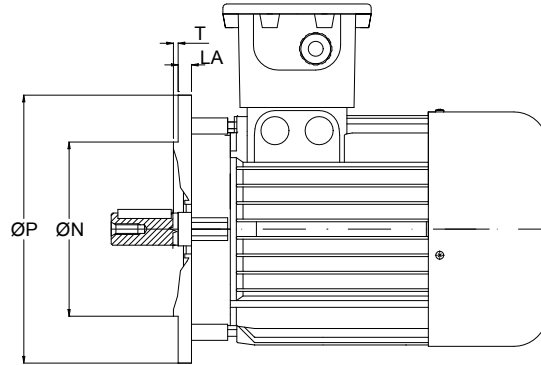
IEC Frame size	B	A	HA	BB	AB	AC	AD	AE	C	H	HD	L	LR	K1	K2	M	D	E	GA	F	DB
63	80	100	10	105	120	121	113	101	40	63	176	200	210	7	12	M20	11	23	12,5	4	M4X10
71	90	112	11	108	136	136	122	101	45	71	193	225	235	7	12	M20	14	30	16	5	M5X25
80	100	125	11	125	154	154	143	114	50	80	223	245	255	9,5	17,5	M20	19	40	21,5	6	M6X16
90S	100	140	13	130	174	174	148	114	56	90	238	260	270	9,5	17,5	M20	24	50	27	8	M8X19
90L	125	140	13	155	174	174	148	114	56	90	238	285	295	9,5	17,5	M20	24	50	27	8	M8X19
100	140	160	14	175	192	192	159	114	63	100	259	315	327	11,2	21,2	M20	28	60	31	8	M10X22
112	140	190	14	175	224	216	171	114	70	112	283	338	352	11,2	21,2	M20	28	60	31	8	M10X22



B5 Large flange mounted version

Ex d(e)

IEC Frame size	Flange dimensions					
	Ø P	Ø N	LA	M	T	S
56	120	80	10,5	100	3	7
63	140	95	10,5	115	3	9
	160*	110	10,5	130	3,5	9
71	140*	95	10,5	115	3	9
	160	110	10,5	130	3,5	9
	200*	130	11,5	165	3,5	12
80	160*	110	10,5	130	3,5	9
	200	130	11,5	165	3,5	12
90	160*	110	10,5	130	3,5	9
	200	130	11,5	165	3,5	12
100	200*	130	11,5	165	3,5	12
	250	180	15	215	4	14,5
112	200*	110	10,5	130	3,5	9
	250	180	15	215	4	14,5



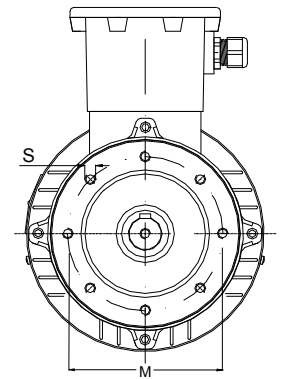
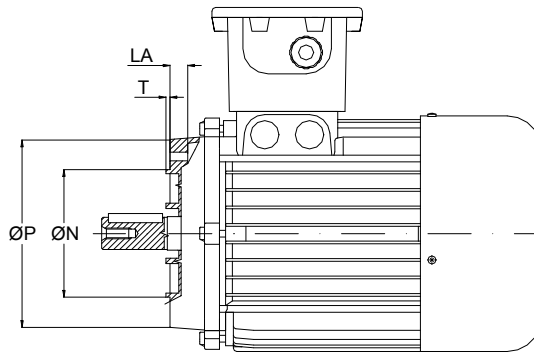
* enlarged or reduced version

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B14 Small flange mounted version

Ex d(e)

IEC Frame size	Flange dimensions					
	Ø P	Ø N	LA	M	T	S
56	80	50	13	65	2,5	M5
63	90	60	13	75	2,5	M5
	105*	70	13	85	2,5	M6
71	90*	60	13	75	2,5	M5
	105	70	13	85	2,5	M6
	120*	80	13	100	3	M6
80	105*	70	15	85	2,5	M6
	120	80	15	100	3	M6
	140*	95	15	115	3	M8
90	120*	80	15	100	3	M6
	140	95	15	115	3	M8
	160*	110	16	130	3,5	M8
100	140*	95	15	115	3	M8
	160	110	16	130	3,5	M8
112	140*	95	15	115	3	M8
	160	110	16	130	3,5	M8



* enlarged or reduced version

ASA IE1

Single speed	2 pole - 3000rpm					IE1 - Ex d / Ex de IIC T4			
Type code	P _n kW	n _n rpm	I _{nom} A (400V)	η %	cos φ	I _a / I _n	M _a / M _n	M _k / M _n	Weight kg
ASA 63a-2	0,18	2630	0,54	63,6	0,75	3,5	3,1	3,1	11
ASA 63b-2	0,25	2685	0,69	67,8	0,77	3,8	3,1	3,1	12
ASA 71a-2	0,37	2700	0,94	71,2	0,8	3,4	2,4	2,4	16
ASA 71b-2	0,55	2790	1,34	72	0,82	3,7	2,7	2,7	17
ASA 80a-2	0,75	2700	1,72	75	0,84	4,5	2,3	2,6	21
ASA 80b-2	1,1	2700	2,44	76,6	0,85	4,5	2,5	2,6	24
ASA 90S-2	1,5	2720	3,28	78,5	0,84	5	2,5	2,5	29
ASA 90L-2	2,2	2800	4,58	81,5	0,85	5	2,8	2,8	36
ASA 100LW-2	3	2825	83,6	0,89	5,5	5,82	3,1	3,3	45
ASA 112M-2	4	2850	7,89	86,1	0,85	6,2	3,1	3,1	56
ASA 132Sa-2	5,5	2860	10,8	86,1	0,85	6,45	3,2	3,2	85
ASA 132Sb-2	7,5	2850	14,3	87,12	0,87	6,8	3,1	3,2	90
ASA 160Ma-2	11	2925	20,3	88,7	0,88	7	2,3	2,4	130
ASA 160Mb-2	15	2925	28,0	89,81	0,86	7	2,2	2,4	150
ASA 160L-2	18,5	2925	34,2	90,5	0,86	7	2,3	2,5	170
ASA 180M-2	22	2925	39,3	90,8	0,89	7,5	2,6	2,8	200
ASA 200La-2	30	2925	52,0	91,5	0,91	7	2,4	2,7	270
ASA 200Lb-2	37	2925	64,4	92,2	0,9	6,7	2,2	2,8	300
ASA 225M-2	45	2925	78,6	92,85	0,89	7	2	2,5	330
ASA 250M-2	55	2940	93,6	93,25	0,91	7	2,4	2,45	430
ASA 280S-2	75	2960	128	94	0,9	7,1	2,3	2,4	560
ASA 280M-2	90	2960	154	93,92	0,9	7,1	2	2,25	690
ASA 315S-2	110	2960	185	94,2	0,91	7,5	2,1	2,6	800
ASA 315M-2	132	2960	222	94,5	0,91	7,5	2,1	2,2	880
ASA 315MX-2	160	2975	271	94,8	0,9	7,5	2,3	2,4	1170
ASA 315LY-2	200	2975	339	94,69	0,9	7,5	2,3	2,4	1270
ASA 355M-2	250	2980	431	95,1	0,88	6,3	2,2	2,8	1495
ASA 355La-2	280	2980	483	95,1	0,88	6,0	2,0	2,5	1600
ASA 355Lb-2	315	2980	542	95,2	0,88	6,3	2,3	2,9	1815

ASA IE1

Single speed		4 pole - 1500rpm				IE1 - Ex d / Ex de IIC T4			
Type code	P _n kW	n _n rpm	I _{nom} A (400V)	η %	cos φ	I _a / I _n	M _a / M _n	M _k / M _n	Weight kg
ASA 63a-4	0,12	1295	0,40	62,7	0,69	3	2,4	2,4	12
ASA 63b-4	0,18	1305	0,58	63,5	0,7	3,3	2,7	2,7	13
ASA 71a-4	0,25	1420	0,77	67,3	0,7	4,1	2,4	2,7	15
ASA 71b-4	0,37	1360	1,05	71,6	0,71	3,5	2,6	2,6	16
ASA 80a-4	0,55	1400	1,55	72,1	0,71	4,5	2,3	2,6	22,5
ASA 80b-4	0,75	1360	2,01	74,66	0,72	4	2,3	2,6	23
ASA 90S-4	1,1	1395	2,76	76,8	0,75	4,7	2,7	2,6	28
ASA 90L-4	1,5	1400	3,48	78,8	0,79	4,6	2,3	2,5	36
ASA 100LW-4	2,2	1420	4,96	81,1	0,79	5	2,5	2,6	43
ASA 100LX-4	3	1410	6,44	83	0,81	4,8	2,5	2,6	48
ASA 112M-4	4	1420	7,9	85	0,86	5,8	2,6	2,8	58
ASA 132S-4	5,5	1445	11,0	87	0,83	6	2,5	2,7	90
ASA 132M-4	7,5	1455	14,7	87,5	0,84	6,5	2,1	2,3	103
ASA 160M-4	11	1450	20,3	88,7	0,88	6,3	2,2	2,4	145
ASA 160L-4	15	1450	27,5	89,5	0,88	6,5	2,3	2,4	160
ASA 180M-4	18,5	1450	33,9	90,5	0,87	6	2	2,4	200
ASA 180L-4	22	1460	40,6	91	0,86	6,2	2	2,3	218
ASA 200L-4	30	1460	54,4	91,5	0,87	7	2	2,6	300
ASA 225S-4	37	1460	65,6	92,5	0,88	7	2	2,6	330
ASA 225M-4	45	1460	79,4	93	0,88	7,4	2	2,4	350
ASA 250M-4	55	1460	96,7	93,3	0,88	7,1	2,5	2,6	430
ASA 280S-4	75	1470	127	93,8	0,91	7,25	2,4	2,4	590
ASA 280M-4	90	1470	155	94,1	0,89	7	1,9	2	690
ASA 315S-4	110	1470	185	94,3	0,91	7,1	2,1	2,2	800
ASA 315M-4	132	1470	224	94,54	0,90	7	2,3	2,3	880
ASA 315MX-4	160	1480	280	94,7	0,87	6,5	2,1	2,2	1150
ASA 315LZ-4	200	1480	345	95,21	0,88	6,5	2,1	2,2	1315
ASA 355M-4	250	1485	430	95,3	0,88	6,5	2,3	2,3	1795
ASA 355La-4	280	1485	476	95,5	0,89	6,3	2,4	2,4	1875
ASA 355Lb-4	315	1485	535	95,5	0,89	6,6	2,5	2,5	2150

ATEX motors

ASA IE1

Single speed	6 pole - 1000rpm					IE1 - Ex d / Ex de IIC T4			
Type code	P _n kW	n _n rpm	I _{nom} A (400V)	η %	cos φ	I _a / I _n	M _a / M _n	M _k / M _n	Weight kg
ASA 71a-6	0,18	895	0,58	61	0,74	3,2	2,3	2,4	15
ASA 71b-6	0,25	910	0,77	65,5	0,72	3,6	2,5	2,7	16
ASA 80a-6	0,37	910	1,09	67	0,73	3,6	2	2,5	22
ASA 80b-6	0,55	910	1,66	68,5	0,7	4	2,2	2,3	24
ASA 90S-6	0,75	910	1,99	71,5	0,76	3,2	2	3,4	30
ASA 90L-6	1,1	910	2,82	74	0,76	4	2,4	2,6	33
ASA 100LX-6	1,5	955	3,70	77	0,76	4,6	1,9	2,2	48
ASA 112M-6	2,2	960	5,29	79	0,76	5,7	2,2	2,3	57
ASA 132S-6	3	954	6,94	81	0,77	5,3	2,7	2,9	90
ASA 132Ma-6	4	945	8,81	84	0,78	5,5	2,1	2,2	100
ASA 132Mb-6	5,5	955	11,5	86,5	0,8	6	2,4	2,6	110
ASA 160M-6	7,5	960	15,6	88	0,79	6,5	2	2,1	140
ASA 160L-6	11	960	22,7	88,5	0,79	6,5	1,9	2,1	60
ASA 180L-6	15	960	30,4	89	0,8	6,5	1,8	2	225
ASA 200La-6	18,5	960	36,9	90,5	0,8	6,7	2,2	5	285
ASA 200Lb-6	22	960	42,2	91,73	0,82	6,2	2,2	3	300
ASA 225M-6	30	965	56,4	91,41	0,84	6,9	1,8	2,4	350
ASA 250M-6	37	975	68,3	92,01	0,85	7,2	2,7	2,7	430
ASA 280S-6	45	975	82,1	92	0,86	6,2	1,9	2	560
ASA 280M-6	55	980	100,1	92,2	0,86	6,7	2	2,1	690
ASA 315S-6	75	980	134	92,78	0,87	7,3	2,4	2,5	790
ASA 315M-6	90	985	158	93,5	0,88	7,5	2,3	2,4	880
ASA 315MX-6	110	985	199	93,96	0,85	6,5	2	2,2	1110
ASA 315LX-6	132	985	235	94,2	0,86	6,5	2	2,2	1110
ASA 315LY-6	160	985	284	94,5	0,86	6,5	2	2,2	1210
ASA 355M-6	200	987	341	95,1	0,89	6,0	2,1	2,1	1795
ASA 355L-6	250	989	430	95,3	0,88	7,0	2,5	2,5	1850

ASA IE1

Single speed	8 pole - 750rpm					IE1 - Ex d / Ex de IIC T4			
Type code	P_n kW	n_n rpm	I_{nom} A (400V)	η %	$\cos \varphi$	I_a / I_n	M_a / M_n	M_k / M_n	Weight kg
ASA 71-8	0,09	630	0,45	50	0,58	2,9	3	3,3	16
ASA 80a-8	0,18	660	0,80	53	0,61	2,9	3,1	3,3	22
ASA 80b-8	0,25	670	0,91	62	0,64	3	3,2	3,3	24
ASA 90S-8	0,37	680	1,28	66	0,63	3	2,9	3,1	31
ASA 90L-8	0,55	690	1,72	67	0,69	3,3	2,8	3	34
ASA 100LW-8	0,75	700	2,24	70	0,69	3,8	2	2,3	43
ASA 100LX-8	1,1	705	3,23	72,4	0,68	4,1	2	2,3	48
ASA 112M-8	1,5	725	4,08	74,7	0,71	4,5	1,4	1,9	58
ASA 132S-8	2,2	710	5,70	78,5	0,71	5,17	1,76	2,13	90
ASA 132M-8	3	712	7,23	82	0,73	5,84	1,8	1,84	110
ASA 160Ma-8	4	720	10,2	82	0,69	4,5	1,95	2	130
ASA 160Mb-8	5,5	720	13,5	84	0,7	5,2	2,1	2,2	140
ASA 160L-8	7,5	720	18,2	85	0,7	5	2	2,1	160
ASA 180L-8	11	720	24,3	86	0,76	5	1,8	1,9	225
ASA 200L-8	15	720	30,8	89,1	0,79	5,2	2	2,3	300
ASA 225S-8	18,5	720	36,6	90,1	0,81	6,5	1,8	2,2	345
ASA 225M-8	22	720	42,6	91	0,82	6,5	1,8	2	350
ASA 250M-8	30	730	58,7	91	0,81	6,5	2,2	2,3	430
ASA 280S-8	37	730	73,4	91	0,8	4,9	1,8	1,9	560
ASA 280M-8	45	730	8,3	92	0,8	6,2	2,1	2,5	690
ASA 315S-8	55	730	106	92,5	0,81	5,9	1,8	1,9	800
ASA 315M-8	75	735	142	93	0,82	5,5	1,8	2	880
ASA 315MX-8	90	735	181	93,1	0,77	5,9	1,8	2	1110
ASA 315LY-8	110	735	218	93,3	0,78	5,9	1,8	2	1200
ASA 315LZ-8	132	735	261	93,5	0,78	5,5	1,8	2	1280
ASA 355M-8	160	739	293	95	0,83	6	2	2	1795
ASA 355L-8	200	739	366	95,1	0,83	5,5	2	2	1875

ATEX motors

ASA IE1

B3 Foot mounted version **IE1 - Ex d / Ex de IIC T4**

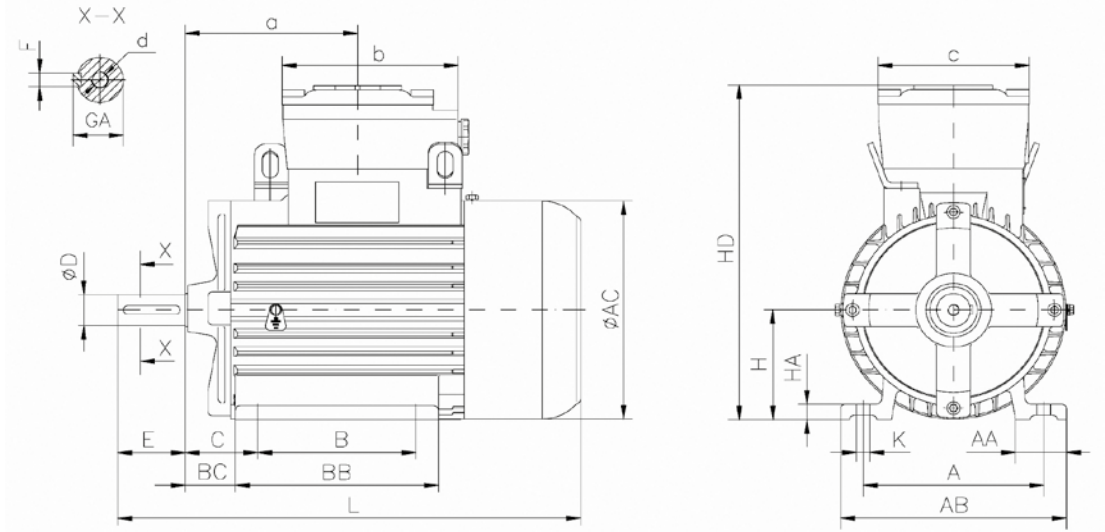
Type code	A	B	C	H _{0,5}	K	D _{j6}	E	F _{h9}	GA	d	AA	AB	BB	BC	HA	AC	HD	L	a	b	c
63	100	80	40	63	7	11	23	4	12,5	M4	31	131	104	28,5	9	125	200	259	100	105	95
71	112	90	45	71	7	14	30	5	16	M5	37	141	125	33	9	140	222	295	80	105	95
80	125	100	50	80	10	19	40	6	21,5	M6	35	160	152	35,5	12	158	254	315	125	125	120
90S	140	100	56	90	10	24	50	8	27	M8	40	180	147	39,5	13	177	272	361	140	125	120
90L	140	125	56	90	10	24	50	8	27	M8	40	180	172	39,5	13	177	272	361	140	125	120
100LW	160	140	63	100	12	28	60	8	31	M10	45	200	180	43	14	199	307	412	155	160	135
100LX	160	140	63	100	12	28	60	8	31	M10	45	200	200	43	14	199	307	437	165	160	135
112M	190	140	70	112	12	28	60	8	31	M10	45	224	200	50	15	221	332	456	175	160	135
132S	216	140	89	132	12	38 k6	80	10	41	M12	60	264	200	69	19	263	400	523	200	175	160
132M	216	178	89	132	12	38 k6	80	10	41	M12	60	264	250	69	19	263	400	570	225	175	160
160M	254	210	108	160	14,5	42 k6	110	12	45	M16	80	320	300	63	20	317	471	660	245	210	195
160L	254	254	108	160	14,5	42 k6	110	12	45	M16	80	320	300	63	20	317	471	660	245	210	195
180M	279	241	121	180	14,5	48 k6	110	14	51,5	M16	80	360	340	71	25	357	507	730	275	210	195
180L	279	279	121	180	14,5	48 k6	110	14	51,5	M16	80	360	340	71	25	357	507	730	275	210	195
200L	318	305	133	200	18,5	55 m6	110	16	59	M20	82	400	380	95	25	396	573	803	305	305	245

Single speed **IM 1001 - B3** **IE1 - Ex d / Ex de IIC T4**

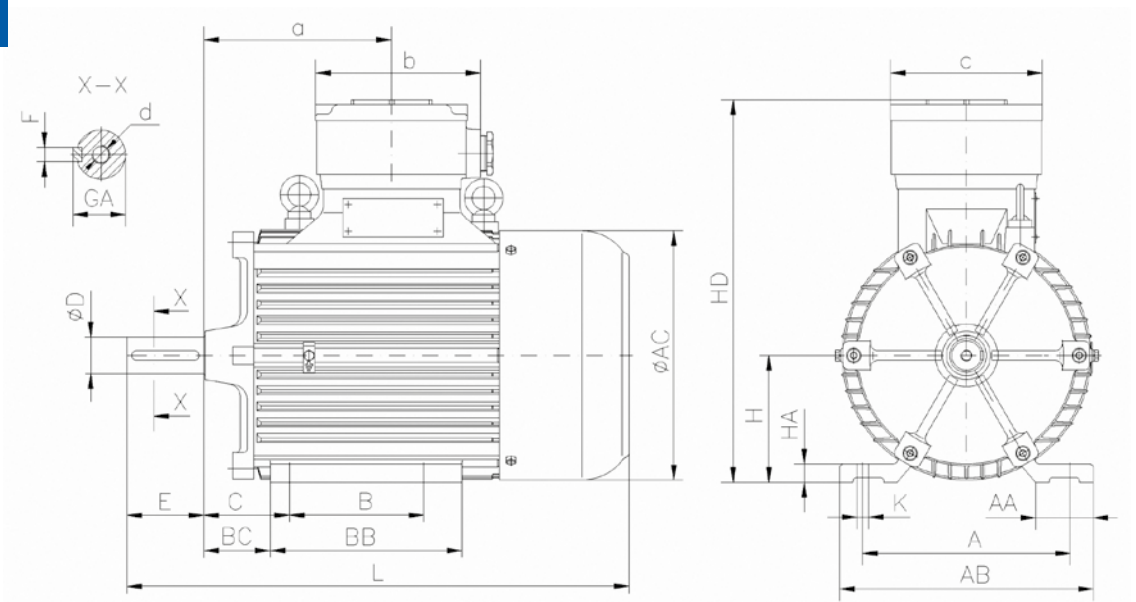
Type code	A	B	C	H	K	Dm6		E		F _{h9}		GA		d		AA	AB
						2 pole	4-8 pole	2 pole	4-8 pole	2 pole	4-8 pole	2 pole	4-8 pole	2 pole	4-8 pole		
225S	356	286	149	225	18,5	-	60	-	140	-	18	-	64	M20		100	440
225M	356	311	149	225	18,5	55	60	110	140	16	18	59	64	M20		100	440
250M	406	349	168	250	24	60	65	140	140	18	18	64	69	M20		120	500
280S	457	368	190	280	24	65	75	140	140	18	20	69	79,5	M20		120	550
280M	457	419	190	280	24	65	75	140	140	18	20	69	79,5	M20		120	550
315S	508	406	216	315	28	65	80	140	170	18	22	69	85	M20		130	630
315M	508	457	216	315	28	65	80	140	170	18	22	69	85	M20		130	630
315MX/LX	508	457	216	315	28	65	80	140	170	18	22	69	85	M20		120	626
315LY	508	508	216	315	28	65	80	140	170	18	22	69	85	M20		120	626
315LZ	508	508	216	315	28	65	80	140	170	18	22	69	85	M20		120	626
355M	610	560	254	355 ₋₁	28	70	100	140	210	20	28	74,5	106	M20	M24	110	714
355L	610	630	254	355 ₋₁	28	70	100	140	210	20	28	74,5	106	M20	M24	110	714

Type code	BB	BC	HA	AC	HD	L		a	b	c
						2 pole	4-8 pole			
225S	430	114	20	446	635	-	915	245	305	245
225M	430	114	20	446	635	885	915	245	305	245
250M	480	114	20	446	660	965	965	245	305	245
280S	460	147	18	500	758	1042	1042	275	380	295
280M	500	147	18	500	758	1082	1082	275	380	295
315S	528	151,5	27	560	826	1190	1220	300	380	295
315M	568	151,5	27	560	826	1230	1260	300	380	295
315MX/LX	588	176	27	620	857	1220	1280	315	380	295
315LY	588	176	27	620	857	1290	1350	315	380	295
315LZ	588	176	27	620	857	-	1350	315	380	295
355M	695	177	32	705	960	1490	1560	320	460	355
355L	695	177	32	705	960	1570	1640	320	460	355

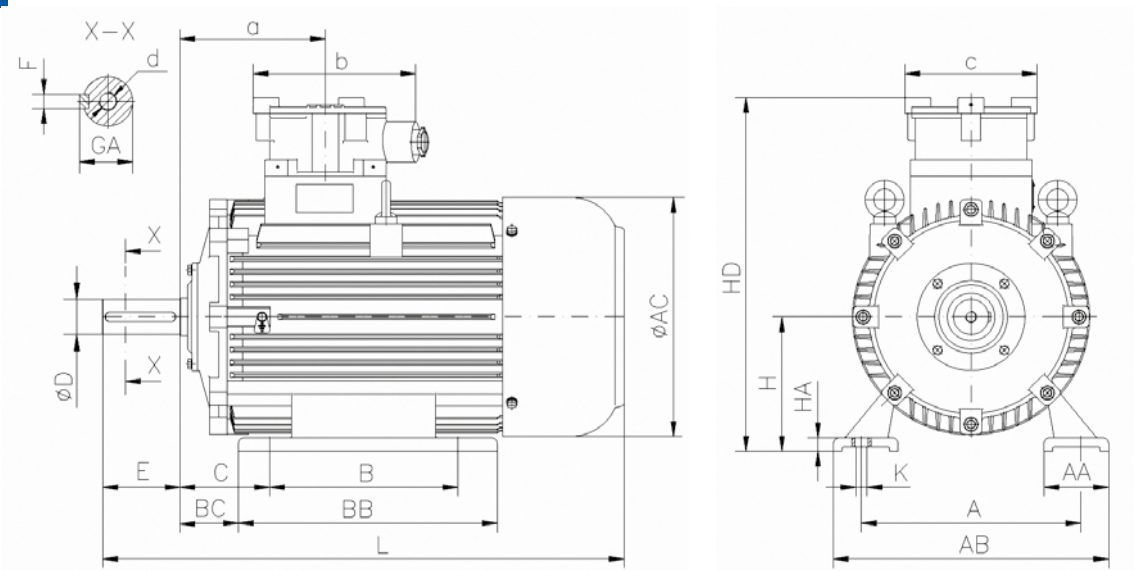
IEC 63-112 - B3



IEC132-200 - B3



IEC 225-355 - B3



ATEX motors

ASA IE1

B5 Large flange mounted version **IE1 - Ex d / Ex de IIC T4**

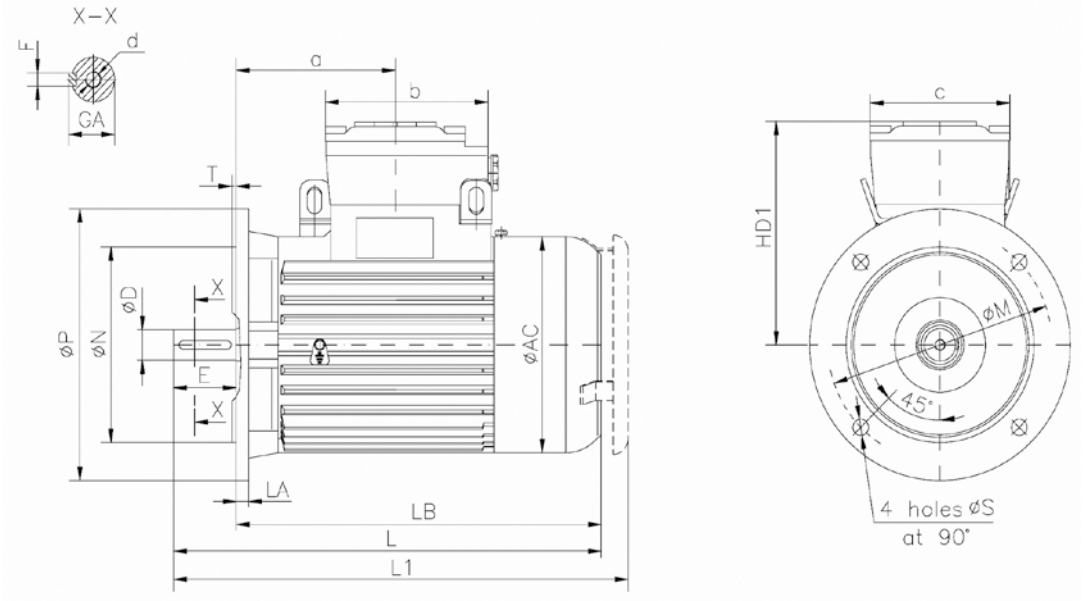
IEC Frame size	M	Nj6	P	S	T	Dj6	E	Fh9	GA	d	AC	HD1	LA	LB	L	a	b	c	L1
63	115	95	140	10	3	11	23	4	12,5	M4	125	137	8	236	259	100	105	95	273
71	130	110	160	10	3,5	14	30	5	16	M5	140	151	8	265	295	80	105	95	309
80	165	130	200	12	3,5	19	40	6	21,5	M6	158	174	10	275	315	125	125	120	346
90S	165	130	200	12	3,5	24	50	8	27	M8	177	182	10	311	361	140	125	120	392
90L	165	130	200	12	3,5	24	50	8	27	M8	177	182	10	311	361	140	125	120	392
100LW	215	180	250	14,5	4	28	60	8	31	M10	199	207	12	352	412	155	160	135	436
100LX	215	180	250	14,5	4	28	60	8	31	M10	199	207	12	377	437	165	160	135	461
112M	215	180	250	14,5	4	28	60	8	31	M10	221	220	12	396	456	175	160	135	474
132S	265	230	300	14,5	4	38 k6	80	10	41	M12	263	268	12	443	523	200	175	160	544
132M	265	230	300	14,5	4	38 k6	80	10	41	M12	263	268	12	490	570	225	175	160	591
160M	300	250	350	18,5	5	42 k6	110	12	45	M16	317	311	16	550	660	245	210	195	713
160L	300	250	350	18,5	5	42 k6	110	12	45	M16	317	311	16	550	660	245	210	195	713
180M	300	250	350	18,5	5	48 k6	110	14	51,5	M16	357	327	16	620	730	275	210	195	788
180L	300	250	350	18,5	5	48 k6	110	14	51,5	M16	357	327	16	620	730	275	210	195	788
200L	350	300	400	18,5	5	55	110	16	59	M20	396	373	16	693	803	305	305	245	849

B5 Large flange mounted version **IE1 - Ex d / Ex de IIC T4**

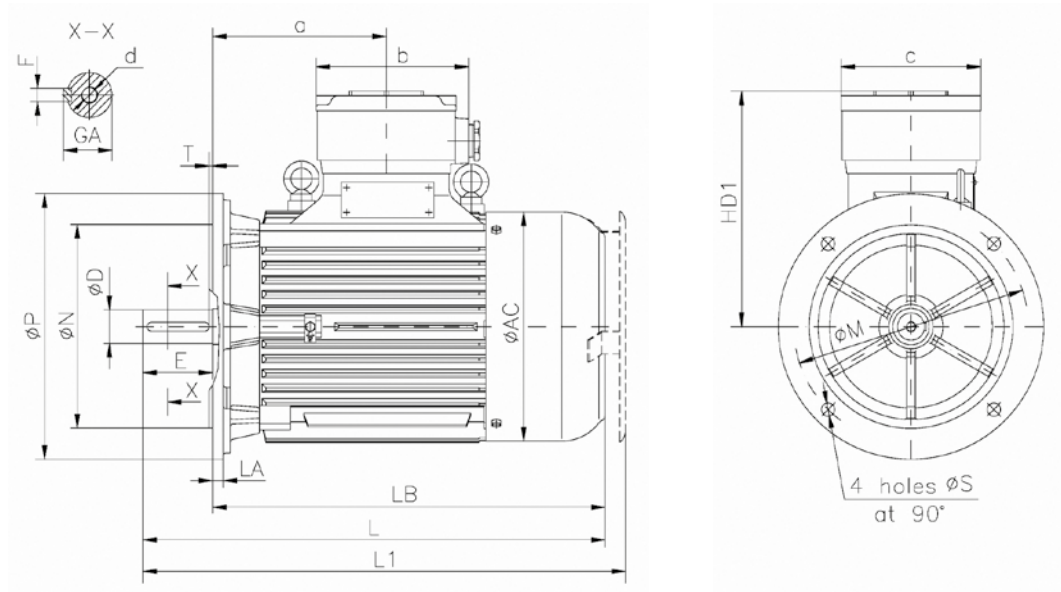
IEC Frame size	M	Nj6	P	S	T	Dm6		E		Fh9		GA		d		AC	HD1	LA
						2 pole	4-8 pole	2 pole	4-8 pole	2 pole	4-8 pole	2 pole	4-8 pole	2 pole	4-8 pole			
225S	400	350	450	18,5	5	-	60	-	140	-	18	-	64	M20	446	410	18	
225M	400	350	450	18,5	5	55	60	110	140	16	18	59	64	M20	446	410	18	
250M	500	450	550	18,5	5	60	65	140	140	18	18	64	69	M20	446	410	18	
280S	500	450	550	18,5	5	65	75	140	140	18	20	69	79,5	M20	500	478	20	
280M	500	450	550	18,5	5	65	75	140	140	18	20	69	79,5	M20	500	478	20	
315S	600	550	660	24	6	65	80	140	170	18	22	69	85	M20	560	511	20	
315M	600	550	660	24	6	65	80	140	170	18	22	69	85	M20	560	511	20	
315MX-LX	600	550	660	24	6	65	80	140	170	18	22	69	85	M20	620	542	25	
315LY	600	550	660	24	6	65	80	140	170	18	22	69	85	M20	620	542	25	
315LZ	600	550	660	24	6	65	80	140	170	18	22	69	85	M20	620	542	25	
355M	740	680	800	24	6	70	100	140	210	20	28	74,5	106	M20M24	705	605	35	
355L	740	680	800	24	6	70	100	140	210	20	28	74,5	106	M20M24	705	605	35	

IEC Frame size	LB		L		a	b	c	L1	
	2 pole	4-8 pole	2 pole	2p>2				2 pole	4-8 pole
225S	775		-	915	245	305	245	-	961
225M	775		885	915	245	305	245	934	961
250M	825		965	965	245	305	245	1011	1011
280S	902		1042	1042	275	380	295	1147	1147
280M	942		1082	1082	275	380	295	1187	1187
315S	1050		1190	1220	300	380	295	1290	1320
315M	1090		1230	1260	300	380	295	1330	1360
315MX-LX	1080	1110	1220	1280	315	380	295	1320	1380
315LY	1150	1180	1290	1350	315	380	295	1390	1450
315LZ	1180		-	1350	315	380	295	-	1450
355M	1350	1350	1490	1560	320	460	355	1610	1680
355L	1430	1430	1570	1640	320	460	355	1690	1760

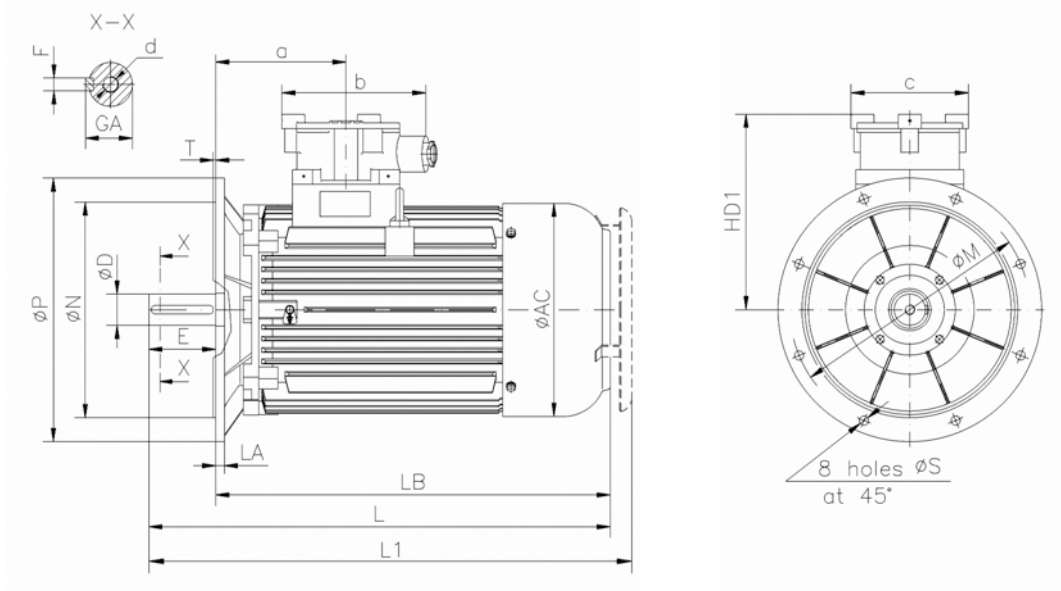
IEC 63-112 - B5



IEC 132-200 - B5



IEC 225-355 - B5



ATEX motors

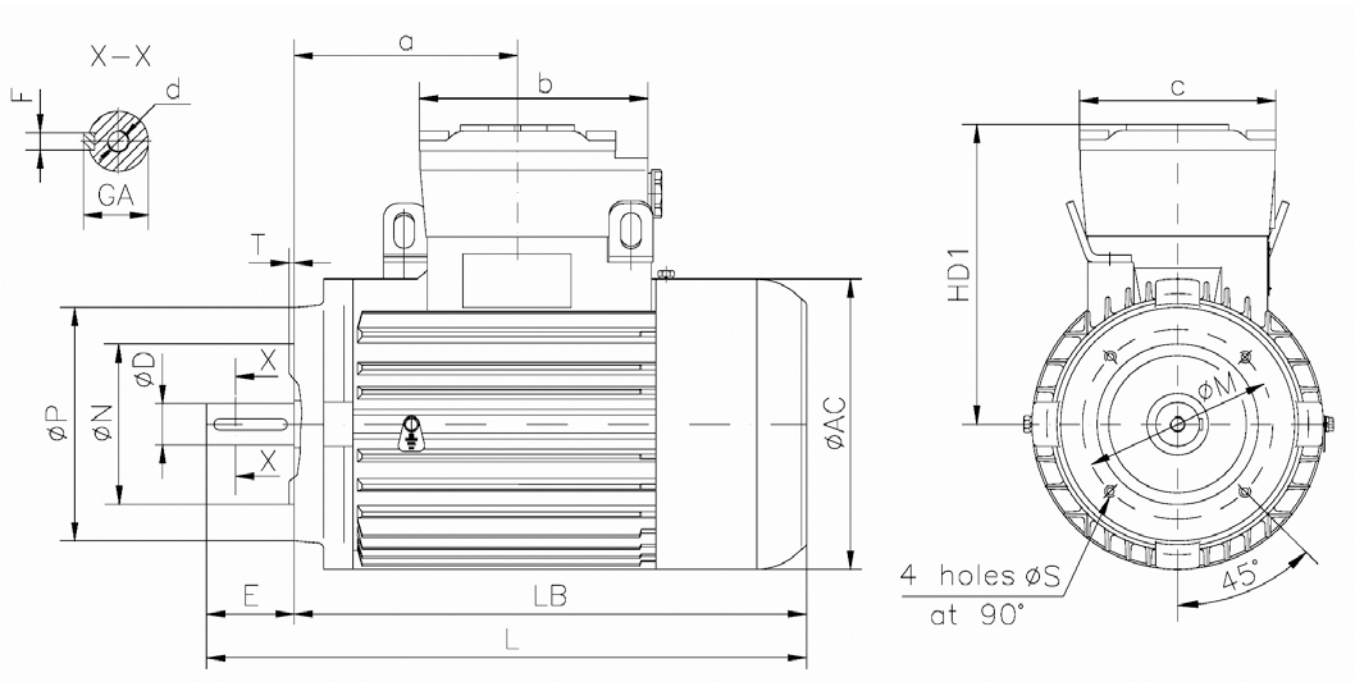
S-S-ELD-EN-EMOT-001-V01

ASA IE1

B14a Small flange mounted version

IE1 - Ex d / Ex de IIC T4

IEC Frame size	Flens	M	N _{j6}	P	S	T	D	E	F _{h9}	GA	d	AC	HD1	LB	L	a	b	c
63	F75	75	60	90	M5	2,5	11j6	23	4	12,5	M4	125	137	236	259	100	105	95
	F100	100	80	120	M6	3												
71	F85	85	70	105	M6	2,5	14j6	30	5	16	M5	140	151	265	295	80	105	95
	F115	115	95	140	M8	3												
80	F100	100	80	120	M6	3	19j6	40	6	21,5	M6	158	174	275	315	125	125	120
	F130	130	110	160	M8	3,5												
90S	F115	115	95	140	M8	3	24j6	50	8	27	M8	177	182	311	361	140	125	120
	F130	130	110	160	M8	3,5												
90L	F115	115	95	140	M8	3	24j6	50	8	27	M8	177	182	311	361	140	125	120
	F130	130	110	160	M8	3,5												
100LW	F130	130	110	160	M8	3,5	28j6	60	8	31	M10	199	207	352	412	155	160	135
	F165	165	130	200	M10	3,5												
100LX	F130	130	110	160	M8	3,5	28j6	60	8	31	M10	199	207	377	437	165	160	135
	F165	165	130	200	M10	3,5												
112M	F130	130	110	160	M8	3,5	28j6	60	8	31	M10	221	220	396	456	175	160	135
	F165	165	130	200	M10	3,5												
132S	F165	165	130	200	M10	3,5	38k6	80	10	41	M12	263	268	443	523	200	175	160
	F215	215	180	250	M12	4												
132M	F165	165	130	200	M10	3,5	38k6	80	10	41	M12	263	268	490	570	225	175	160
	F215	215	180	250	M12	4												
160	F215	215	180	250	M12	4	42k6	110	12	45	M16	317	311	550	660	245	210	195
	F265	265	230	300	M12	4												



E2 ASA IE2

Single speed 2 pole - 3000rpm IE2 - Ex d / Ex de IIC T4

Type code	P _n kW	n _n rpm	I _{nom} A (400V)	η			cos φ	I _a / I _n	M _a / M _n	M _k / M _n	Weight kg
				100%	75%	50%					
E2-ASA 80a-2	0,75	2865	1,59	80,3	79,5	76,1	0,85	6,3	4,1	4,3	22
E2-ASA 80b-2	1,1	2850	2,19	80,5	79,7	76,3	0,90	5,6	2,3	2,35	24
E2-ASA 90Sa-2	1,5	2850	2,95	81,6	82,1	78,5	0,89	5,2	3,3	3,4	30
E2-ASA 90L-2	2,2	2820	4,14	83,3	83,8	80,2	0,92	5,7	2,3	2,7	33
E2-ASA 100La-2	3	2830	5,6	85,2	86,5	83,2	0,92	6,1	3,2	3,5	46
E2-ASA 112Ma-2	4	2885	7,4	86,7	86,4	84,4	0,91	7,7	2,7	2,7	62
E2-ASA 132Sa-2	5,5	2930	10,1	88,6	88,3	86,0	0,85	7,7	3,6	3,9	97
E2-ASA 132Sb-2	7,5	2920	14,1	88,1	87,8	85,5	0,88	7,1	3,3	3,8	102
E2-ASA 160Ma-2	11	2925	19,6	91,0	90,6	89,8	0,90	7,0	2,3	2,4	153
E2-ASA 160Mb-2	15	2925	26,6	92,2	91,8	91,0	0,90	7,0	2,2	2,4	198
E2-ASA 160L-2	18,5	2925	32,1	92,4	92,0	91,2	0,91	7,0	2,3	2,5	220
E2-ASA 180M-2	22	2945	38,1	91,5	91,4	89,8	0,92	7,5	1,9	2,1	200
E2-ASA 200La-2	30	2930	52,3	92,3	92,1	90,8	0,90	6,4	2,5	2,5	316
E2-ASA 200Lb-2	37	2945	64,2	92,6	92,4	91,1	0,90	7,3	2,9	2,9	319
E2-ASA 225M-2	45	2955	75,3	93,5	93,7	92,9	0,91	7,7	3,0	3,6	414
E2-ASA 250M-2	55	2943	92	93,4	93,6	92,8	0,92	7,8	2,7	3,5	500
E2-ASA 280S-2	75	2950	130	94,2	94,2	93,5	0,89	6,1	1,8	1,8	614
E2-ASA 280M-2	90	2960	155	94,3	94,0	92,8	0,89	6,8	2,6	2,6	694
E2-ASA 315S-2	110	2964	183	95,1	95,1	94,3	0,93	7,5	2,2	2,7	829
E2-ASA 315M-2	132	2965	214	95,5	95,3	94,6	0,93	7,6	2,5	2,5	948
E2-ASA 315MX-2	160	2975	264	95,3	94,9	93,2	0,92	7,0	1,9	1,9	1130
E2-ASA 315LY-2	200	2980	329	95,5	95,1	93,4	0,92	7,0	2,1	2,1	1270
E2-ASA 355M-2	250	2980	431	95,1	94,9	93,5	0,88	6,3	2,2	2,8	1300
E2-ASA 355La-2	280	2980	483	95,1	94,8	93,4	0,88	6,0	2,0	2,5	1440
E2-ASA 355Lb-2	315	2980	542	95,2	94,8	93,2	0,88	6,3	2,3	2,9	1510

ATEX motors

Single speed 4 pole - 1500rpm IE2 - Ex d / Ex de IIC T4

Type code	P _n kW	n _n rpm	I _{nom} A (400V)	η			cos φ	I _a / I _n	M _a / M _n	M _k / M _n	Weight kg
				100%	75%	50%					
E2-ASA 80b-4	0,75	1425	1,78	79,8	78,5	75,8	0,77	5,6	2,5	2,5	24,5
E2-ASA 90Sb-4	1,1	1415	2,68	82,5	82,1	80,1	0,85	6,3	2,6	2,6	34
E2-ASA 90L-4	1,5	1420	3,33	82,8	82,4	80,4	0,78	6,2	2,9	2,9	37
E2-ASA 100La-4	2,2	1442	4,87	85,1	85,7	82,5	0,77	5,1	2,3	2,4	49
E2-ASA 100Lb-4	3	1437	6,64	85,7	86,0	83,7	0,76	5,6	2,7	3,2	54
E2-ASA 112Mb-4	4	1430	7,69	86,8	87,7	87,0	0,86	5,9	2,3	2,5	62
E2-ASA 132Sb-4	5,5	1464	9,9	88,9	88,5	87,9	0,86	6,5	2,2	2,4	103
E2-ASA 132M-4	7,5	1455	14,5	90,0	89,6	89,0	0,83	7,3	2,4	2,9	121
E2-ASA 160M-4	11	1461	19,2	90,9	90,2	87,7	0,91	7,9	2,1	2,7	170
E2-ASA 160L-4	15	1452	26,2	90,9	90,1	87,8	0,91	7,3	2,0	2,8	185
E2-ASA 180M-4	18,5	1471	33,3	92,6	92,5	91,5	0,87	7,7	2,3	2,8	215
E2-ASA 180L-4	22	1470	39,1	92,3	92,2	90,5	0,88	7,8	2,3	2,8	238
E2-ASA 200La-4	30	1479	54,6	92,7	92,3	90,8	0,86	7,8	2,3	2,5	323
E2-ASA 225S-4	37	1473	64,0	92,6	84,4	74,4	0,90	7,1	2,0	2,5	347
E2-ASA 225M-4	45	1475	79,7	93,7	93,6	92,7	0,87	7,8	2,3	2,3	417
E2-ASA 250M-4	55	1475	94	94,3	94,4	93,8	0,89	7,9	2,1	2,1	506
E2-ASA 280S-4	75	1480	128	94,9	94,7	94,1	0,88	7,9	2,8	3,2	658
E2-ASA 280M-4	90	1480	154	94,9	94,8	94,1	0,89	7,2	2,4	3,0	711
E2-ASA 315S-4	110	1476	181	94,7	94,5	93,5	0,91	7,3	2,0	2,3	840
E2-ASA 315M-4	132	1474	230	95,0	95,6	95,1	0,87	7,5	2,1	2,2	944
E2-ASA 315MX-4	160	1478	251	95,0	94,8	93,8	0,87	7,2	2,3	2,6	1140
E2-ASA 315LZ-4	200	1481	344	95,3	95,2	94,2	0,88	6,8	2,9	2,9	1305
E2-ASA 355M-4	250	1485	430	95,3	94,9	93,9	0,88	6,5	2,3	2,3	1795
E2-ASA 355La-4	280	1485	476	95,5	95,0	94,2	0,89	6,3	2,4	2,4	1875
E2-ASA 355Lb-4	315	1485	535	95,5	94,1	94,5	0,89	6,6	2,5	2,5	2150

S-S-ELD-EN-EMOT-001-V01

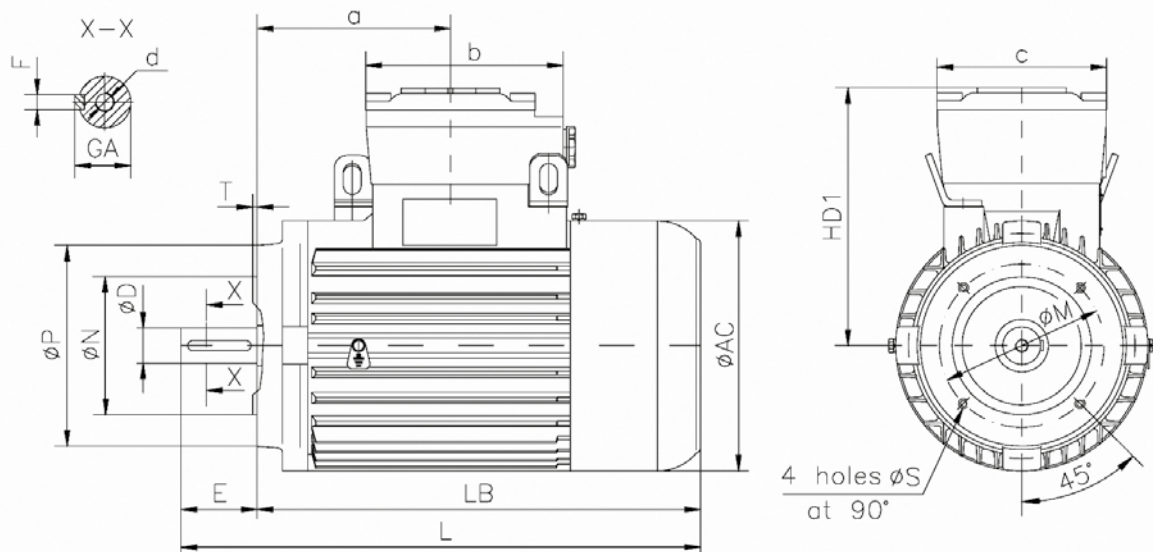
E2 ASA IE2

Single speed											
6 pole - 1000rpm											
IE2 - Ex d / Ex de IIC T4											
Type code	P _n	n _n	I _{nom}	η			cos φ	I _a / I _n	M _a / M _n	M _k / M _n	Weight
	kW	rpm	A (400V)	100%	75%	50%					kg
E2-ASA 90Sb-6	0,75	948	1,89	76,2	74,7	70,3	0,75	4,6	2,1	2,3	32,5
E2-ASA 90L-6	1,1	950	2,76	78,1	76,6	73,2	0,74	5,1	2,4	2,9	42
E2-ASA 100Lb-6	1,5	965	3,68	80,4	79,0	74,8	0,73	5,7	2,2	2,2	51
E2-ASA 112Mb-6	2,2	955	4,71	82,9	82,7	79,5	0,81	5,8	2,1	2,1	62
E2-ASA 132Sa-6	3	962	6,69	84,8	79,9	77,4	0,77	6,5	2,2	2,9	96
E2-ASA 132Ma-6	4	962	8,84	84,6	84,4	80,4	0,74	6,6	2,3	2,6	107
E2-ASA 132Mb-6	5,5	955	10,8	87,0	86,4	84,4	0,82	6,5	2,4	2,6	115
E2-ASA 160M-6	7,5	964	14,8	87,2	87,8	86,7	0,85	5,8	2,0	2,9	140
E2-ASA 160L-6	11	965	21,4	88,9	90,1	90,0	0,84	5,6	1,9	1,9	164
E2-ASA 180L-6	15	975	27,6	91,5	91,4	89,9	0,86	7,8	2,2	2,8	225
E2-ASA 200La-6	18,5	977	34,2	90,5	90,5	89,5	0,87	7,7	2,3	3,3	282
E2-ASA 200Lb-6	22	979	38,9	91,7	91,5	90,8	0,89	7,8	2,1	2,8	298
E2-ASA 225M-6	30	982	54,2	93,2	93,5	92,6	0,86	7,4	2,2	2,6	349
E2-ASA 250M-6	37	980	65,1	92,5	92,4	92,2	0,89	7,6	2,4	3,1	428
E2-ASA 280S-6	45	980	78,9	93,1	93,2	92,3	0,89	7,4	2,0	2,8	560
E2-ASA 280M-6	55	980	100	94,5	94,7	94,2	0,84	7,9	2,8	3,2	687
E2-ASA 315S-6	75	981	156	94,4	94,7	94,4	0,89	6,7	1,9	2,1	936
E2-ASA 315MX-6	110	988	196	94,3	94,2	93,2	0,87	6,5	2,5	2,5	1110
E2-ASA 315LY-6	132	985	234	94,6	94,9	94,7	0,86	5,4	2,2	2,2	1140
E2-ASA 315LZ-6	160	985	282	94,8	95,1	94,9	0,86	5,4	2,0	2,0	1210
E2-ASA 355M-6	200	987	341	95,1	94,8	94	0,89	6,0	2,1	2,1	1800
E2-ASA 355L-6	250	989	430	95,3	95	94,3	0,89	7,0	2,5	2,5	1850

E2 ASA IE2

	B14a Small flange mounted version											IE2 - Ex d / Ex de IIC T4						
IEC Frame size	Flens	M	N _{j6}	P	S	T	D	E	F _{h9}	GA	d	AC	HD1	LB	L	a	b	c
80a	F100	100	80	120	M6	3	19j6	40	6	21,5	M6	158	174	275	315	125	125	120
	F130	130	110	160	M8	3,5												
80b	F100	100	80	120	M6	3	19j6	40	6	21,5	M6	158	174	275	340	125	125	120
	F130	130	110	160	M8	3,5												
90Sa	F115	130	95	140	M8	3	24j6	50	8	27	M8	177	182	311	361	140	125	120
	F130	130	110	160	M8	3,5												
90Sb	F115	115	95	140	M8	3	24j6	50	8	27	M8	177	182	311	411	140	125	120
	F130	130	110	160	M8	3,5												
90L	F115	115	95	140	M8	3	24j6	50	8	27	M8	177	182	311	411	140	125	120
	F130	130	110	160	M8	3,5												
100La	F130	130	110	160	M8	3,5	28j6	60	8	31	M10	199	207	352	435	155	160	135
	F165	165	130	200	M10	3,5												
100Lb	F130	130	110	160	M8	3,5	28j6	60	8	31	M10	199	207	377	465	165	160	135
	F165	165	130	200	M10	3,5												
112Ma	F130	130	110	160	M8	3,5	28j6	60	8	31	M10	221	220	396	454	175	160	135
	F165	165	130	200	M10	3,5												
112Mb	F130	130	110	160	M8	3,5	28j6	60	8	31	M10	221	220	396	480	175	160	135
	F165	165	130	200	M10	3,5												
132Sa	F165	165	130	200	M10	3,5	38k6	80	10	41	M12	263	268	443	606	200	175	160
	F215	215	180	250	M12	4												
132Sb	F165	165	130	200	M10	3,5	38k6	80	10	41	M12	263	268	443	653	200	175	160
	F215	215	180	250	M12	4												
132M, Ma, Mb	F215	165	130	200	M10	3,5	38k6	80	10	41	M12	263	268	490	653	225	175	160
	F215	215	180	250	M12	4												
160M, Ma, Mb, L	F215	215	180	250	M12	4	42k6	110	12	45	M16	317	311	550	660	245	210	195
	F265	265	230	300	M12	4												

ATEX motors



S-S-ELD-EN-EMOT-001-V01

E2 ASA IE2

B3 Foot mounted version

IE2 - Ex d / Ex de IIC T4

Type code	A	B	C	H _{0,5}	K	D _{j6}	E	F _{h9}	GA	d	AA	AB	BB	BC	HA	AC	HD	L	a	b	c
80a	125	100	50	80	10	19	40	6	21,5	M6	35	160	152	35,5	12	158	254	315	125	125	120
80b	125	100	50	80	10	19	40	6	21,5	M6	35	160	152	35,5	12	158	254	340	125	125	120
90Sa	140	100	56	90	10	24	50	8	27	M8	40	180	147	39,5	13	177	272	361	140	125	120
90Sb	140	100	56	90	10	24	50	8	27	M8	40	180	147	39,5	13	177	272	411	140	125	120
90L	140	125	56	90	10	24	50	8	27	M8	40	180	172	39,5	13	177	272	411	140	125	120
100La	160	140	63	100	12	28	60	8	31	M10	45	200	180	43	14	199	307	435	155	160	135
100Lb	160	140	63	100	12	28	60	8	31	M10	45	200	200	43	14	199	307	465	165	160	135
112Ma	190	140	70	112	12	28	60	8	31	M10	45	224	200	50	15	221	332	454	175	160	135
112Mb	190	140	70	112	12	28	60	8	31	M10	45	224	200	50	15	221	332	480	175	160	135
132Sa	216	140	89	132	12	38k6	80	10	41	M12	60	264	200	69	19	263	400	606	200	175	160
132Sb	216	140	89	132	12	38k6	80	10	41	M12	60	264	200	69	19	263	400	653	200	175	160
132M, Ma, Mb	216	178	89	132	12	38k6	80	10	41	M12	60	264	250	69	19	263	400	653	225	175	160
160M, Ma, Mb	254	210	108	160	14,5	42k6	110	12	45	M16	80	320	300	63	20	317	471	660	245	210	195
160L	254	254	108	160	14,5	42k6	110	12	45	M16	80	320	300	63	20	317	471	660	245	210	195
180M	279	241	121	180	14,5	48k6	110	14	51,5	M16	80	360	340	71	25	357	507	730	275	210	195
180L	279	279	121	180	14,5	48k6	110	14	51,5	M16	80	360	340	71	25	357	507	730	275	210	195
200La, Lb	318	305	133	200	18,5	55m6	110	16	59	M20	82	400	380	95	25	396	573	945	305	305	245

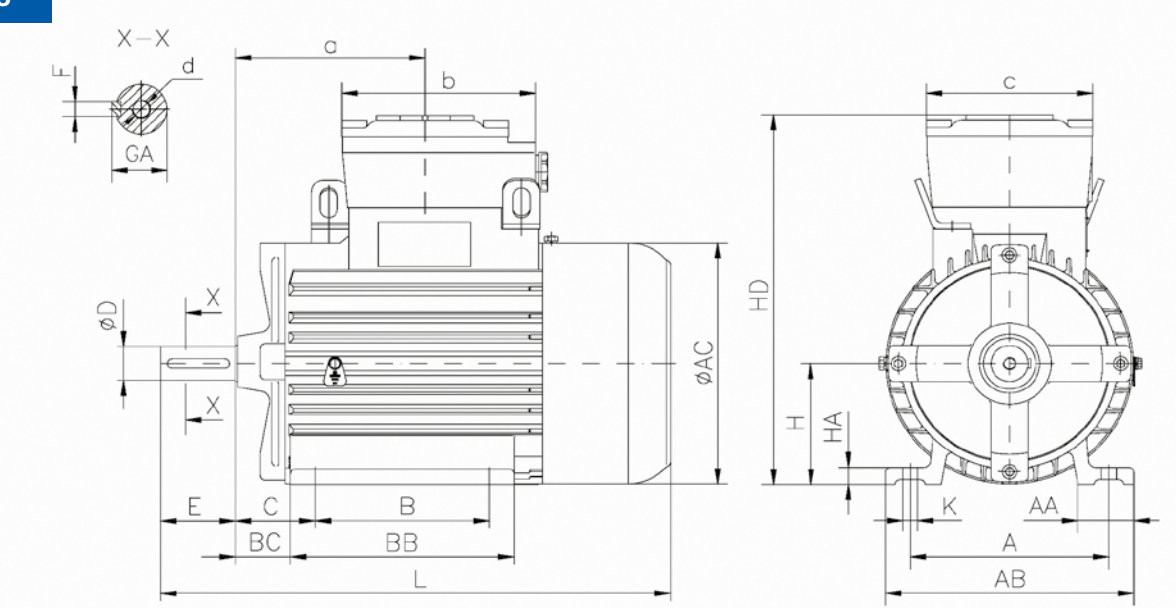
B3 Foot mounted version

IE2 - Ex d / Ex de IIC T4

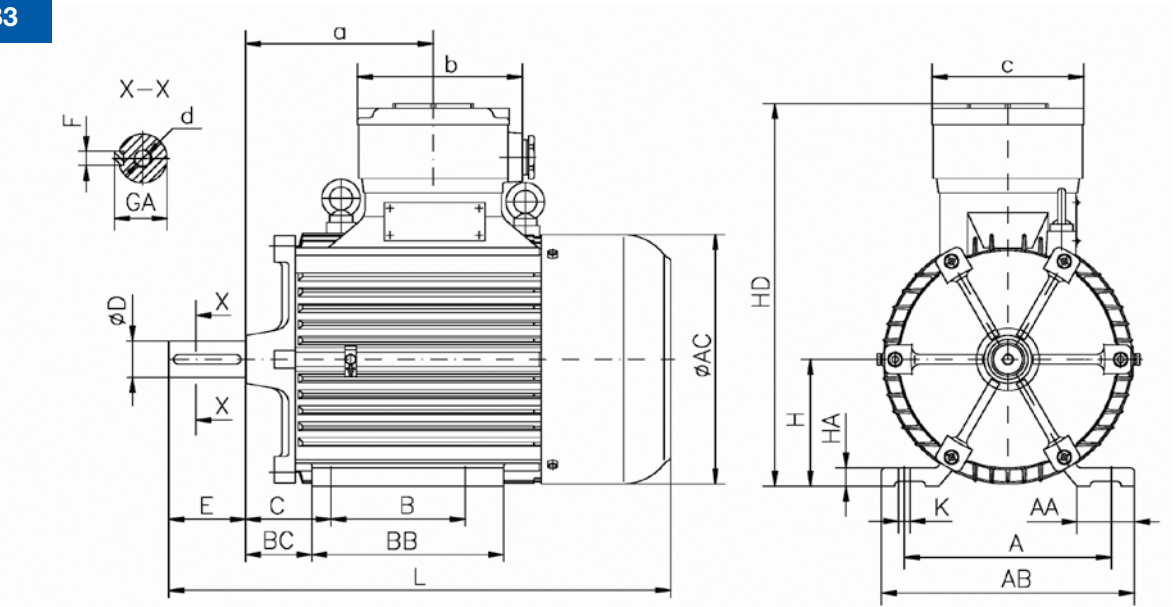
Type code	A	B	C	H	K	Dm6		E		F _{h9}		GA		d		AA	AB
						2 pole	4,6 pole	2 pole	4,6 pole	2 pole	4,6 pole	2 pole	4,6 pole	2 pole	4,6 pole		
225S	356	286	149	225 _{0,5}	18,5	-	60	-	140	-	18	-	64	M20		100	440
225M	356	311	149	225 _{0,5}	18,5	55	60	110	140	16	18	59	64	M20		100	440
250M	406	349	168	250 _{0,5}	24	60	65	140	140	18	18	64	69	M20		120	500
280S	457	368	190	280 ₁	24	65	75	140	140	18	20	69	79,5	M20		120	550
280M	457	419	190	280 ₁	24	65	75	140	140	18	20	69	79,5	M20		120	550
315S	508	406	216	315 ₁	28	65	80	140	170	18	22	69	85	M20		130	630
315M	508	457	216	315 ₁	28	65	80	140	170	18	22	69	85	M20		130	630
315MX	508	457	216	315 ₁	28	65	80	140	170	18	22	69	85	M20		120	626
315LY	508	508	216	315 ₁	28	65	80	140	170	18	22	69	85	M20		120	626
315LZ	508	508	216	315 ₁	28	65	80	140	170	18	22	69	85	M20		120	626
355M	610	560	254	355 ₁	28	70	100	140	210	20	28	74,5	106	M20	M24	110	714
355La	610	630	254	355 ₁	28	70	100	140	210	20	28	74,5	106	M20	M24	110	714

Type code	BB	BC	HA	AC	HD	L		a	b	c
						2 pole	4,6 pole			
225S	430	114	20	446	635	-	1006	245	235	235
225M	430	114	20	446	635	976	1006	245	235	235
250M	480	114	20	446	660	1056	1056	245	235	235
280S	460	147	18	500	758	1123	1123	275	335	295
280M	500	147	18	500	758	1163	1163	275	335	295
315S	528	151,5	27	560	826	1242	1272	300	335	295
315M	568	151,5	27	560	826	1282	1312	300	335	295
315MX	588	176	27	620	857	1295	1355	315	441	351
315LY	588	176	27	620	857	1365	1425	315	441	351
315LZ	588	176	27	620	857	-	1425	315	441	351
355M	695	177	32	705	960	1490	1560	320	460	355
355La	695	177	32	705	960	1570	1640	320	460	355

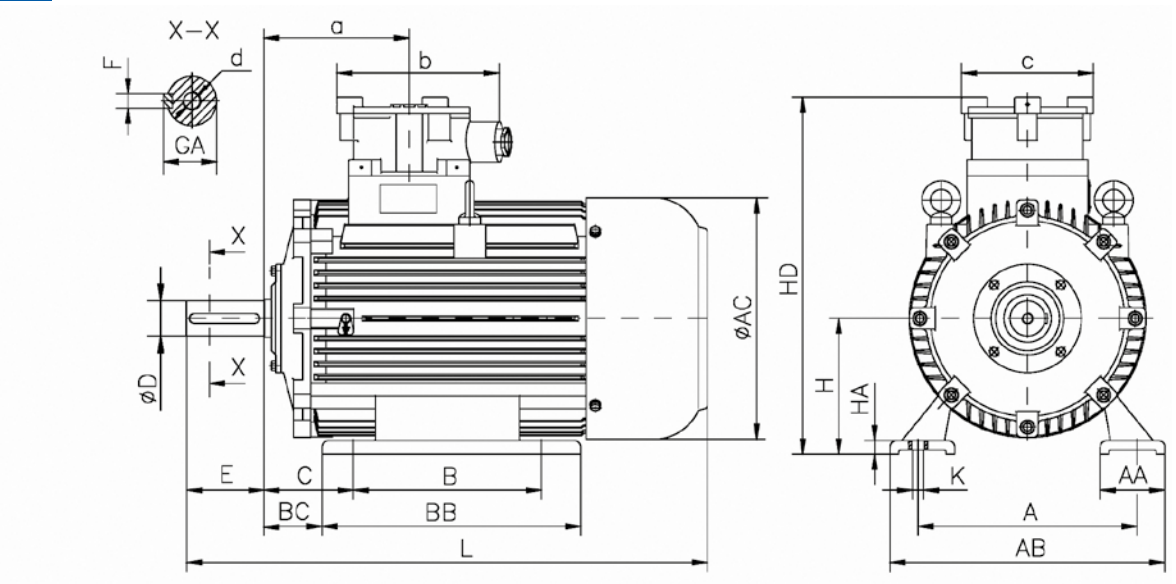
IEC 80-112 - B3



IEC 132-200 - B3



IEC 225-355 - B3



ATEX motors

S-SELD-EN-EMOT-001-V01

E2 ASA IE2

B5 Large flange mounted version

IE2 - Ex d / Ex de IIC T4

IEC Frame size	M	N _{j6}	P	S	T	D _{j6}	E	F _{H9}	GA	d	AC	HD1	LA	LB	L	a	b	c	L1
80a	165	130	200	12	3,5	19	40	6	21,5	M6	158	174	10	275	315	125	125	120	346
80b	165	130	200	12	3,5	19	40	6	21,5	M6	158	174	10	275	340	125	125	120	371
90Sa	165	130	200	12	3,5	24	50	8	27	M8	177	182	10	311	361	140	125	120	392
90Sb	165	130	200	12	3,5	24	50	8	27	M8	177	182	10	311	411	140	125	120	442
90L	165	130	200	12	3,5	24	50	8	27	M8	177	182	10	311	411	140	125	120	442
100La	215	180	250	14,5	4	28	60	8	31	M10	199	207	12	352	435	155	160	135	459
100Lb	215	180	250	14,5	4	28	60	8	31	M10	199	207	12	377	465	165	160	135	489
112Ma	215	180	250	14,5	4	28	60	8	31	M10	221	220	12	396	454	175	160	135	472
112Mb	215	180	250	14,5	4	28	60	8	31	M10	221	220	12	396	480	175	160	135	498
132Sa	265	230	300	14,5	4	38k6	80	10	41	M12	263	268	12	443	606	200	175	160	627
132Sb	265	230	300	14,5	4	38k6	80	10	41	M12	263	268	12	443	653	200	175	160	674
132M, Ma, Mb	265	230	300	14,5	4	38k6	80	10	41	M12	263	268	12	490	653	225	175	160	674
160M, Ma, Mb	300	250	350	18,5	5	42k6	110	12	45	M16	317	311	16	550	660	245	210	195	713
160L	300	250	350	18,5	5	42k6	110	12	45	M16	317	311	16	550	660	245	210	195	713
180M	300	250	350	18,5	5	48k6	110	14	51,5	M16	357	327	16	620	730	275	210	195	788
180L	300	250	350	18,5	5	48k6	110	14	51,5	M16	357	327	16	620	730	275	210	195	788
200La, Lb	350	300	400	18,5	5	55m6	110	16	59	M20	396	373	16	693	945	305	305	245	991

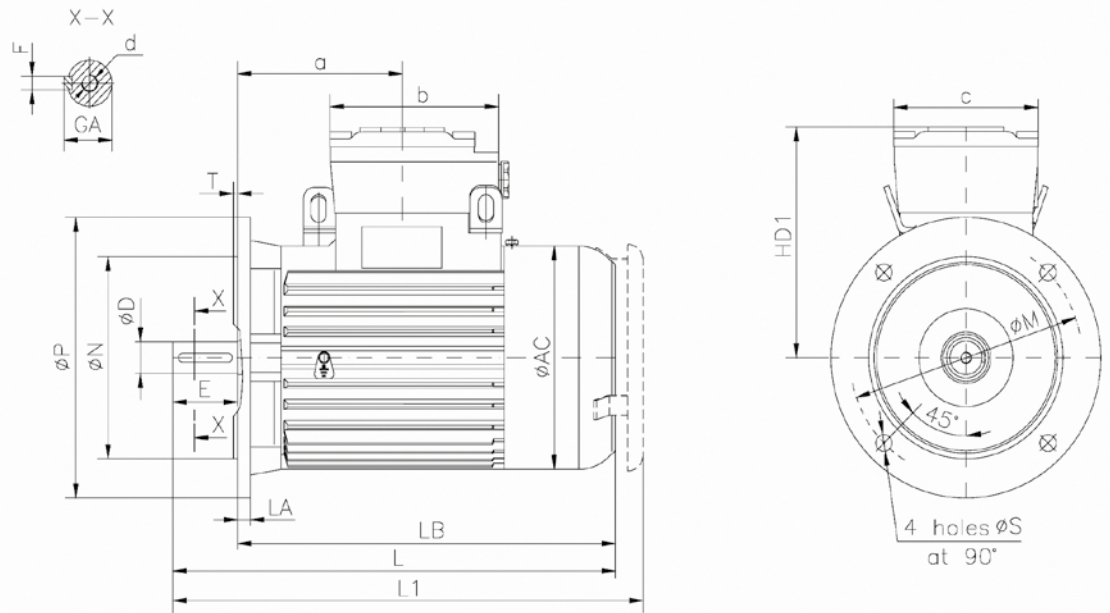
B5 grote flens

IE2 - Ex d / Ex de IIC T4

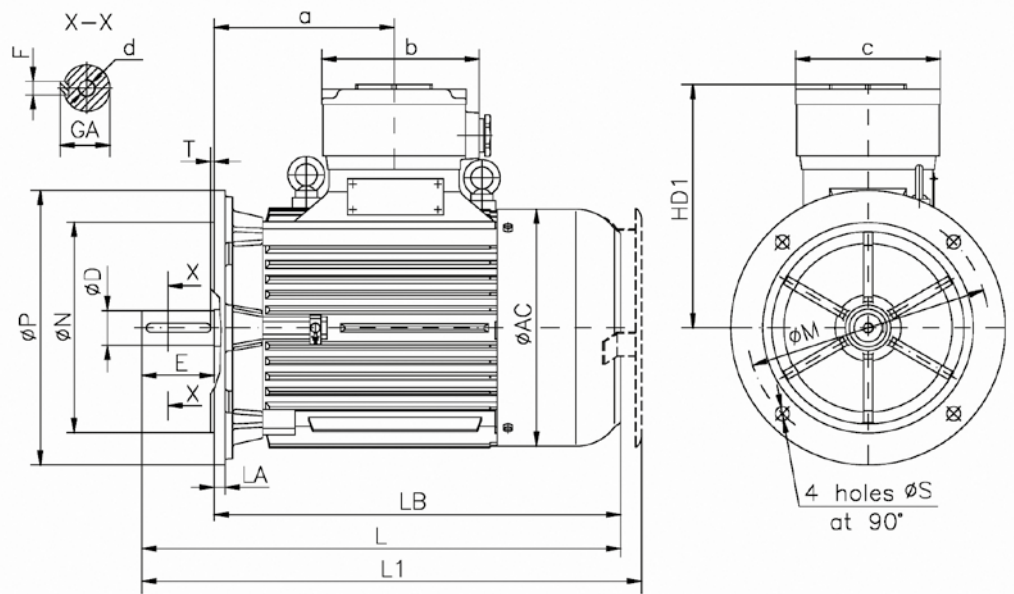
IEC Frame size	M	N _{j6}	P	S	T	D _{m6}		E		F _{H9}		GA		d		AC	HD1	LA
						2 pole	4,6 pole	2 pole	4,6 pole	2 pole	4,6 pole	2 pole	4,6 pole	2 pole	4,6 pole			
225S	400	350	450	18,5	5	-	60	-	140	-	18	-	64	M20		446	410	18
225M	400	350	450	18,5	5	55	60	110	140	16	18	59	64	M20		446	410	18
250M	500	450	550	18,5	5	60	65	140	140	18	18	64	69	M20		446	410	18
280S	500	450	550	18,5	5	65	75	140	140	18	20	69	79,5	M20		500	478	20
280M	500	450	550	18,5	5	65	75	140	140	18	20	69	79,5	M20		500	478	20
315S	600	550	660	24	6	65	80	140	170	18	22	69	85	M20		560	511	20
315M	600	550	660	24	6	65	80	140	170	18	22	69	85	M20		560	511	20
315MX	600	550	660	24	6	65	80	140	170	18	22	69	85	M20		620	542	25
315LY	600	550	660	24	6	65	80	140	170	18	22	69	85	M20		620	542	25
315LZ	600	550	660	24	6	65	80	140	170	18	22	69	85	M20		620	542	25
355M	740	680	800	24	6	70	100	140	210	20	28	74,5	106	M20	M24	M24	605	35
355L	740	680	800	24	6	70	100	140	210	20	28	74,5	106	M20	M24	M24	605	35

IEC Frame size	LB		L		a	b	c	L1	
	2 pole	4,6 pole	2 pole	4,6 pole				2 pole	4,6 pole
225S	866		-	1006	245	305	245	-	1055
225M	866		976	1006	245	305	245	1025	1055
250M	916		1056	1056	245	305	245	1102	1102
280S	983		1123	1123	275	380	295	1228	1228
280M	1023		1163	1163	275	380	295	1268	1268
315S	1102		1242	1272	300	380	295	1342	1372
315M	1142		1282	1312	300	380	295	1387	1412
315MX	1150	1185	1295	1355	315	380	295	1395	1455
315LY	1225	1255	1365	1425	315	380	295	1465	1525
315LZ	-	1255	-	1425	315	380	295	-	1525
355M	1350	1350	1490	1560	320	460	355	1610	1680
355L	1430	1430	1570	1640	320	460	355	1690	1760

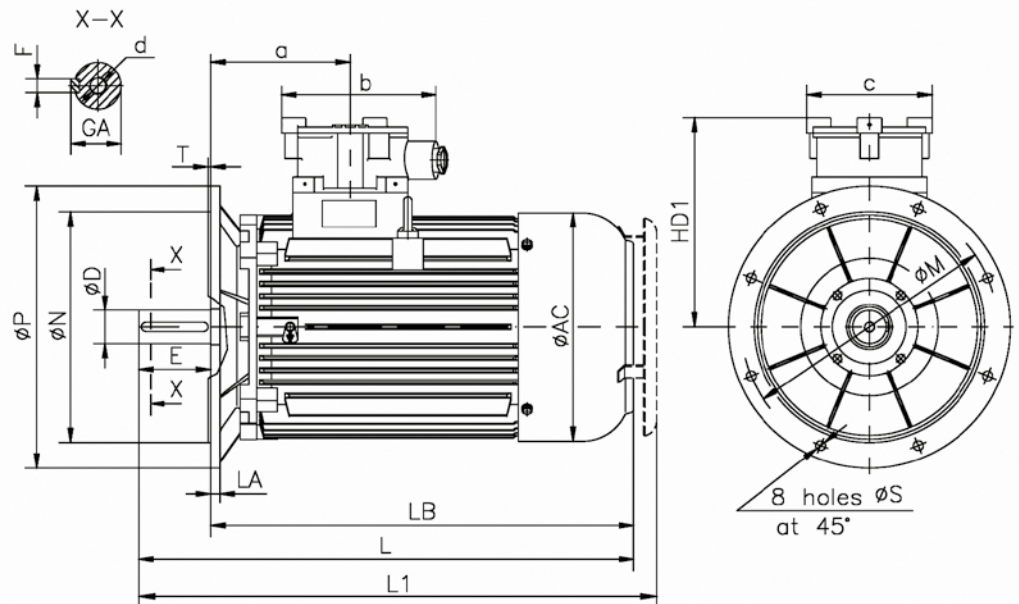
IEC 80-112 - B5



IEC 132-200 - B5



IEC 225-355 - B5



S-S-ELD-EN-EMOT-001-V01

ASAF

Single speed 4 pole w- 1500rpm Ex d / Ex de IIC T4

Type code	P _n kW	n _n rpm	η %	cos φ	I _a / I _n	M _a / M _n	J Kgm ²	M _{nom} Nm	M _{rem} Nm	Starts z/uur	Weight kg
ASAF 80a-4	0,55	1400	72,1	0,71	4,5	2,3	0,006	3,81	22	240	54,5
ASAF 80b-4	0,75	1360	74,66	0,72	4	2,3	0,007	5,15	22	240	55
ASAF 90S-4	1,1	1395	76,8	0,75	4,7	2,7	0,013	7,72	22	180	63
ASAF 90L-4	1,5	1400	78,8	0,79	4,6	2,3	0,014	10,3	22	180	66
ASAF 100La-4	2,2	1420	81,1	0,79	5,2	5	0,015	14,7	40	160	95
ASAF 100Lb-4	3	1410	83	0,81	4,8	2,5	0,020	20,1	40	120	98
ASAF 112M-4	4	1420	85	0,86	5,8	2,6	0,038	26,6	60	120	108
ASAF 132S-4	5,5	1445	87	0,83	6,2	5	0,044	36,3	150	90	168
ASAF 132M-4	7,5	1455	87,5	0,84	6,5	2,1	0,068	49,2	150	90	188
ASAF 160M-4	11	1450	88,7	0,88	6,3	2,2	0,080	73,0	180	90	227
ASAF 160L-4	15	1450	89,5	0,88	6,5	2,3	0,099	101	180	90	242
ASAF 180M-4	18,5	1450	90,5	0,87	6	2	0,130	121	335	70	335
ASAF 180L-4	22	1460	91	0,86	6,2	2	0,156	144	335	70	360
ASAF 200L-4	30	1460	91,5	0,87	7	2	0,255	196	460	70	450
ASAF 225S-4	37	1460	92,5	0,88	7	2	0,390	240	500	60	490
ASAF 225M-4	45	1460	93	0,88	7,4	2	0,455	292	500	60	505
ASAF 250M-4	55	1460	93,3	0,88	7,1	2,5	0,599	355	1200	40	655
ASAF 280S-4	75	1470	93,8	0,91	7,25	2,4	0,947	485	1500	30	860
ASAF 280M-4	90	1470	94,1	0,89	7,0	1,9	1,062	580	1500	30	960

Single speed 6 pole - 1000rpm Ex d / Ex de IIC T4

Type code	P _n kW	n _n rpm	η %	cos φ	I _a / I _n	M _a / M _n	J Kgm ²	M _{nom} Nm	M _{rem} Nm	Starts z/uur	Weight kg
ASAF 80a-6	0,37	910	67	0,73	3,6	2	0,011	3,9	22	320	54
ASAF 80b-6	0,55	910	68,5	0,7	4	2,2	0,012	5,74	22	320	55
ASAF 90S-6	0,75	910	71,5	0,76	3,2	2	0,013	7,70	22	240	63
ASAF 90L-6	1,1	910	74	0,76	4	2,4	0,017	11,4	22	240	66
ASAF 100Lb-6	1,5	955	77	0,76	4,6	1,9	0,020	15,0	40	220	98
ASAF 112M-6	2,2	960	79	0,76	5,7	2,2	0,043	21,9	60	220	107
ASAF 132S-6	3	954	81	0,77	5,3	2,7	0,048	29,7	150	160	168
ASAF 132Ma6	4	945	84	0,78	5,5	2,1	0,056	39,8	150	160	178
ASAF 132Mb6	5,5	955	86,5	0,8	6	2,4	0,062	54,9	150	160	188
ASAF 160M-6	7,5	960	88	0,79	6,5	2,0	0,078	75,0	180	120	222
ASAF 160L-6	11	960	88,5	0,79	6,5	1,9	0,108	108	180	120	242
ASAF 180L-6	15	960	89	0,8	6,5	1,8	0,165	148	335	120	360
ASAF 200La-6	18,5	960	90,5	0,8	6,7	2	0,188	180	460	100	435
ASAF 200Lb-6	22	960	91,73	0,82	6,2	2	0,250	214	460	100	450
ASAF 225M-6	30	965	91,41	0,84	6,9	1,8	0,310	292	500	100	525
ASAF 250M-6	37	975	92,01	0,85	7,2	2,7	0,365	361	1200	80	655
ASAF 280S-6	45	975	92,0	0,86	6,2	1,9	1,4211	440	1500	60	830
ASAF 280M-6	55	980	92,2	0,86	6,7	2,0	1,6151	535	1500	40	960

ASAF

Single speed		8 pole - 750rpm						Ex d / Ex de IIC T4			
Type code	P _n kW	n _n rpm	η %	cos φ	I _a / I _n	M _a / M _n	J Kgm ²	M _{nom} Nm	M _{rem} Nm	Starts z/uur	Weight kg
ASAF 80a-8	0,18	660	53	0,61	2,9	3,1	0,011	3,81	22	600	54
ASAF 80b-8	0,25	670	62	0,64	3	3,2	0,012	5,15	22	600	55
ASAF 90S-8	0,37	680	66	0,63	3	2,9	0,013	7,72	22	560	63
ASAF 90L-8	0,55	690	67	0,69	3,3	2,8	0,015	10,3	22	560	66
ASAF 100La-8	0,75	700	70	0,69	3,8	2	0,020	14,7	40	440	93
ASAF 100Lb-8	1,1	705	72,4	0,68	4,1	2	0,023	20,1	40	440	98
ASAF 112M-8	1,5	725	72,7	0,71	4,5	1,4	0,049	26,6	60	400	108
ASAF 132S-8	2,2	710	78,5	0,71	5,17	1,76	0,056	36,3	150	400	168
ASAF 132M-8	3	712	82	0,73	5,84	1,8	0,066	49,2	150	300	188
ASAF 160Ma8	4	720	82	0,69	4,5	1,95	0,078	73,0	180	300	212
ASAF 160Mb8	5,5	720	84	0,7	5,2	2,1	0,108	101	180	220	222
ASAF 160L-8	7,5	720	85	0,7	5	2	0,140	121	180	210	242
ASAF 180L-8	11	720	86	0,76	5	1,8	0,155	144	335	210	360
ASAF 200L-8	15	720	89,1	0,79	5,2	2	0,236	196	460	210	450
ASAF 225S-8	18,5	720	90,1	0,81	6,5	1,8	0,385	240	500	180	520
ASAF 225M-8	22	720	91	0,82	6,5	1,8	0,740	292	500	180	525
ASAF 250M-8	30	730	91	0,81	6,5	2,2	0,765	355	1200	120	655
ASAF 280S-8	37	730	91	0,80	5,5	1,8	1,4211	480	1500	80	830
ASAF 280M-8	45	730	92	0,80	6,2	2,1	1,6142	585	1500	60	960

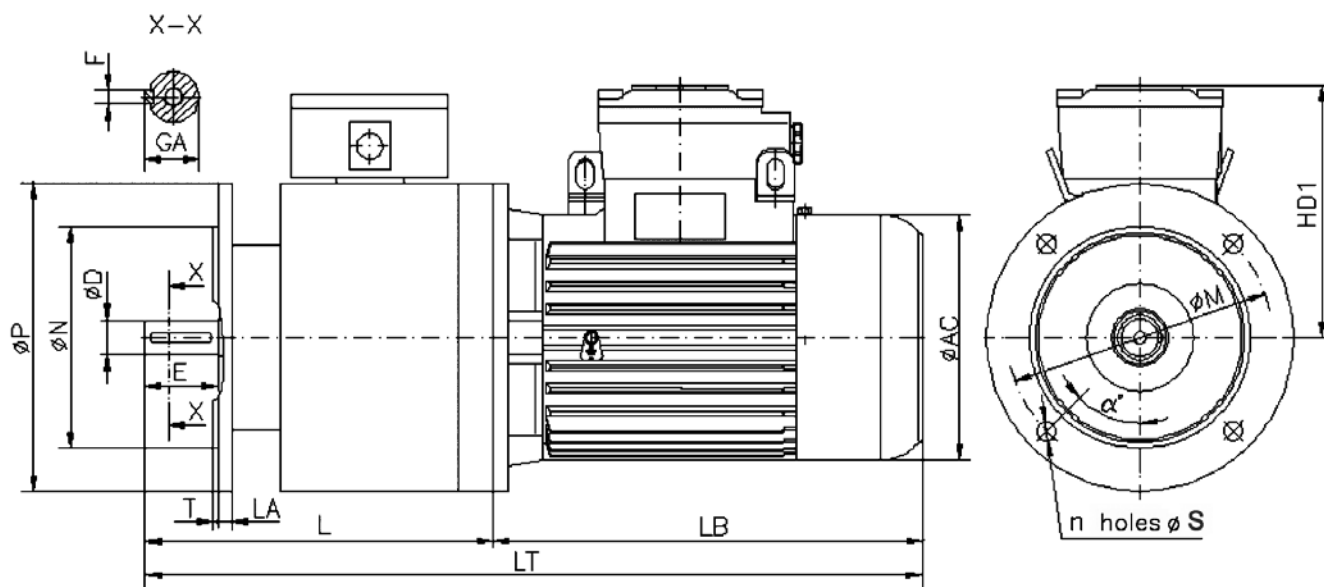
ATEX motors

ASAF

B5 Large flange mounted version

Ex d / Ex de IIC T4

IEC Frame size	M	N _{h8}	P	S	n	α°	T	D	E	F _{h9}	GA	LA	AC	HD1	L	LB	LT
80	165	130	200	11,5	4	45	3,5	19j6	40	6	21,5	12	158	172	236	275	511
90S	165	130	200	11,5	4	45	3,5	24j6	50	8	27	12	177	178	246	313	559
90L	165	130	200	11,5	4	45	3,5	24j6	50	8	27	12	177	178	246	313	559
100LW	215	180	250	14,5	4	45	4	28j6	60	8	31	14	199	205	275,5	350	625,5
100LX	215	180	250	14,5	4	45	4	28j6	60	8	31	14	199	205	275,5	375	650,5
112M	215	180	250	14,5	4	45	4	28j6	60	8	31	14	221	216	275,5	396	671,5
132S	265	230	300	14,5	4	45	5	38k6	80	10	41,5	18	263	263	322	443	765
132M	265	230	300	14,5	4	45	5	38k6	80	10	41,5	18	263	263	322	490	812
160M	300	250	350	18	4	45	5	42k6	110	12	45,5	18	317	310	354	550	904
160L	300	250	350	18	4	45	5	42k6	110	12	45,5	18	317	310	354	550	904
180M	300	250	350	18	4	45	5	48k6	110	14	51,5	21	357	340	411	620	1031
180L	300	250	350	18	4	45	5	48k6	110	14	51,5	21	357	340	411	620	1031
200L	350	300	400	18	4	45	5	55m6	110	16	59	21	396	373	411	690	1101
225S	400	350	450	18	8	22,5	5	60m6	140	18	64,4	21	446	410	441	775	1216
225M	400	350	450	18	8	22,5	5	60m6	140	18	64,4	21	446	410	441	775	1216
250M	500	450	550	18	8	22,5	5	65m6	140	18	69	26	446	410	439	825	1264
280S	500	450	550	18	8	22,5	5	75m6	140	20	79,5	26	500	478	450	902	1352
280M	500	450	550	18	8	22,5	5	75m6	140	20	79,5	26	500	478	450	902	1352



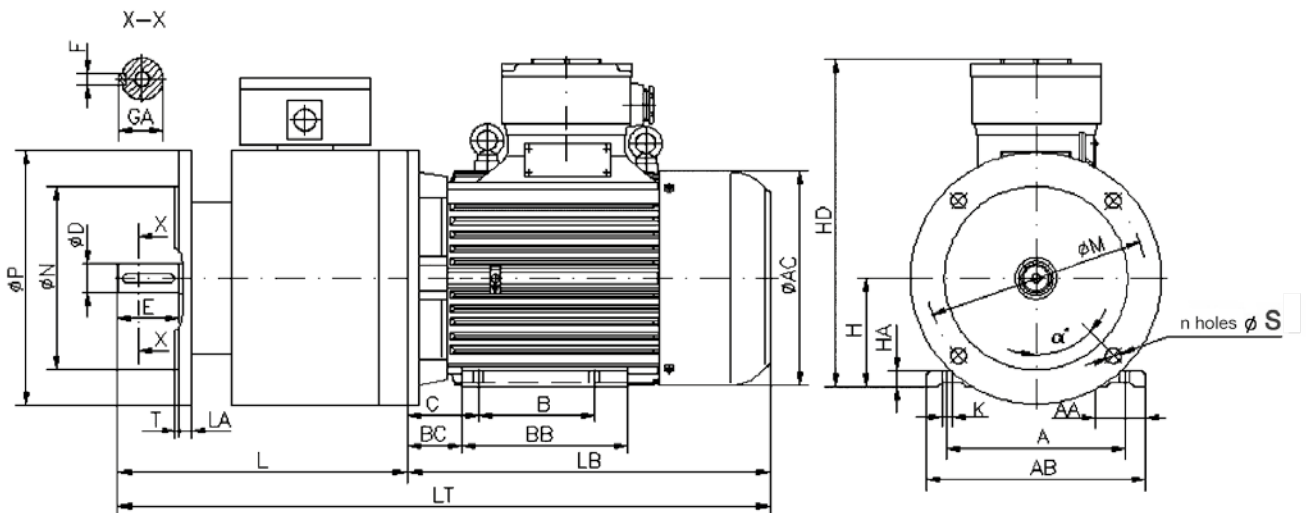
ASAF

B3/B5 Foot/flange mounted version

Ex d / Ex de IIC T4

IEC Frame size	M	N _{h8}	P	S	n	α°	T	D	E	F _{h9}	GA	LA	AC	HD1	L	LB	LT
80	165	130	200	11,5	4	45	3,5	19j6	40	6	21,5	12	158	172	236	275	511
90S	165	130	200	11,5	4	45	3,5	24j6	50	8	27	12	177	178	246	313	559
90L	165	130	200	11,5	4	45	3,5	24j6	50	8	27	12	177	178	246	313	559
100LW	215	180	250	14,5	4	45	4	28j6	60	8	31	14	199	205	275,5	350	625,5
100LX	215	180	250	14,5	4	45	4	28j6	60	8	31	14	199	205	275,5	375	650,5
112M	215	180	250	14,5	4	45	4	28j6	60	8	31	14	221	216	275,5	396	671,5
132S	265	230	300	14,5	4	45	5	38k6	80	10	41,5	18	263	263	322	443	765
132M	265	230	300	14,5	4	45	5	38k6	80	10	41,5	18	263	263	322	490	812
160M	300	250	350	18	4	45	5	42k6	110	12	45,5	18	317	310	354	550	904
160L	300	250	350	18	4	45	5	42k6	110	12	45,5	18	317	310	354	550	904
180M	300	250	350	18	4	45	5	48k6	110	14	51,5	21	357	340	411	620	1031
180L	300	250	350	18	4	45	5	48k6	110	14	51,5	21	357	340	411	620	1031
200L	350	300	400	18	4	45	5	55m6	110	16	59	21	396	373	411	690	1101
225S	400	350	450	18	8	22,5	5	60m6	140	18	64,4	21	446	410	441	775	1216
225M	400	350	450	18	8	22,5	5	60m6	140	18	64,4	21	446	410	441	775	1216
250M	500	450	550	18	8	22,5	5	65m6	140	18	69	26	446	410	439	825	1264
280S	500	450	550	18	8	22,5	5	75m6	140	20	79,5	26	500	478	450	902	1352
280M	500	450	550	18	8	22,5	5	75m6	140	20	79,5	26	500	478	450	942	1392

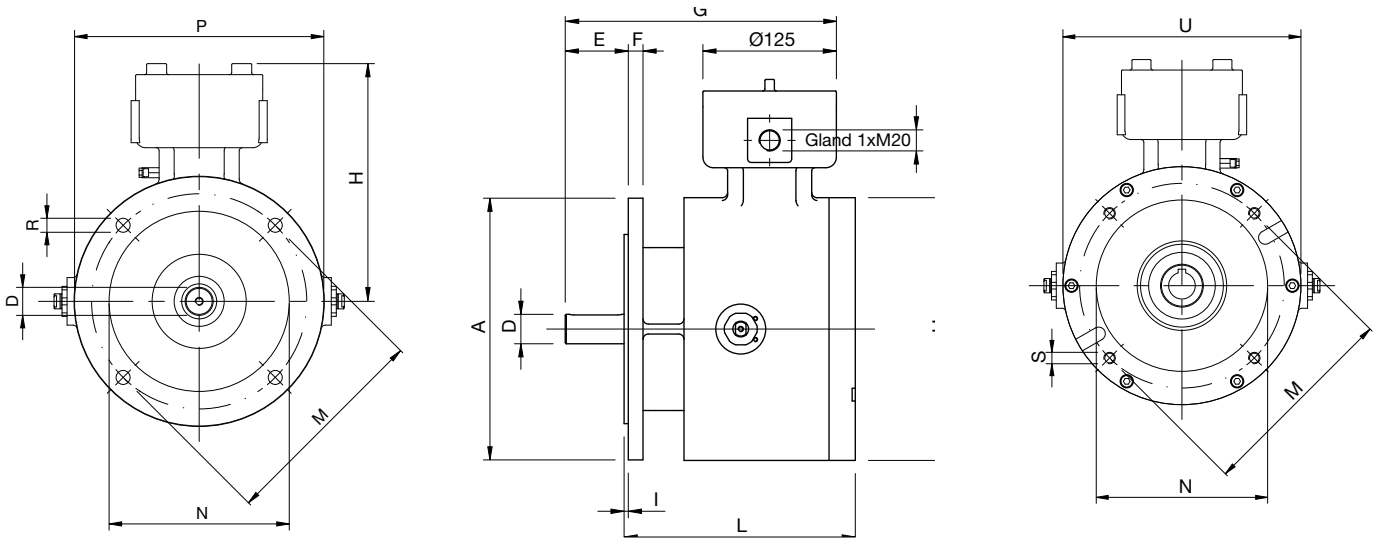
IEC Frame size	A	B	C	ØK	AA	AB	BB	BC	HA	HD
80	125	100	50	10	35	160	152	35,5	12	252
90S	140	100	56	10	40	180	147	39,5	13	268
90L	140	125	56	10	40	180	172	39,5	13	268
100LW	160	140	63	12	45	200	180	43	14	305
100LX	160	140	63	12	45	200	200	43	14	305
112M	190	140	70	12	45	224	200	50	15	328
132S	216	140	89	12	60	264	200	69	19	395
132M	216	178	89	12	60	264	250	69	19	395
160M	254	210	108	14,5	80	320	300	63	20	470
160L	254	254	108	14,5	80	320	300	63	20	470
180M	279	241	121	14,5	80	360	340	71	25	520
180L	279	279	121	14,5	80	360	340	71	25	520
200L	318	305	133	18,5	82	400	380	95	25	573
225S	356	286	149	18,5	100	440	430	114	20	635
225M	356	311	149	18,5	100	440	430	114	20	635
250M	406	349	168	24	120	500	480	114	20	660
280S	457	368	190	24	120	550	460	147	18	758
280M	457	419	190	24	120	550	500	147	18	758



S-S-ELD-EN-EMOT-001-V01

ATEX motors

Specifications



Brake coil voltage 230V three phase Ex d / Ex de IIC T5

Type code	IEC	Torque		t ₁	t _{brake}	n _{max} S1	P	Flange			IEC		F	I	L	R	S	U	H	G
		T _{max} Nm	T _{min} Nm					P	M	N	D	E								
EXDVR24-080B55	80	22	12	18	240	3600	100	200	165	130	19	40	12	3,5	196	11,5	M10	200	215	207
EXDVR24-090B55	90	22	12	18	240	3600	100	200	165	130	24	50	12	3,5	196	11,5	M10	200	215	217
EXDVR24-100B55	100	60	20	18	540	3600	240	250	215	180	28	60	14	4	216	14,5	M12	250	240	237
EXDVR24-112B55	112	60	20	18	540	3600	240	250	215	180	28	60	14	4	216	14,5	M12	250	240	237
EXDVR24-132B55	132	180	60	23	1080	3600	320	300	265	230	38	80	18	4	242	14,5	M12	300	265	278
EXDVR24-160B55	160	180	60	23	1080	2800	320	350	300	250	42	110	18	5	242	18	M16	300	265	310

Brake coil voltage 190V DC Ex d / Ex de IIC T5

Type code	IEC	Torque		t ₂	t _{brake}	n _{max} S1	P	Flange			IEC		F	I	L	R	S	U	H	G
		T _{max} Nm	T _{min} Nm					P	M	N	D	E								
EXDVR200-071B55	71	8	3	12	20	3600	40	160	130	110	14	30	10	3,5	145	9,5	M8	160	185	177
EXDVR200-080B55	80	22	12	20	40	3600	50	200	165	130	19	40	12	3,5	196	11,5	M10	200	215	207
EXDVR200-090B55	90	22	12	20	40	3600	50	200	165	130	24	50	12	3,5	196	11,5	M10	200	215	217
EXDVR200-100B55	100	60	20	25	90	3600	80	250	215	180	28	60	14	4	216	14,5	M12	250	240	237
EXDVR200-112B55	112	60	20	25	90	3600	80	250	215	180	28	60	14	4	216	14,5	M12	250	240	237
EXDVR200-132B55	132	180	60	30	180	3600	105	300	265	230	38	80	18	4	242	14,5	M12	300	265	278
EXDVR200-160B55	160	180	60	30	180	2800	105	350	300	250	42	110	18	5	242	18	M16	300	265	310
EXDVR200-180B55	180	460	300	90	230	2500	180	350	300	250	48	110	21	5	300	18	M16	400	282	367
EXDVR200-200B55	200	460	300	90	230	2500	180	400	350	300	55	110	21	5	300	18	M16	400	282	367
EXDVR200-225B55	225	460	300	90	230	2500	180	450	350	400	60	140	21	5	300	18	M16*	450	282	367
EXDVR200-250B55	250	1000	700	160	360	1800	210	550	450	500	65	140	26	5	310	18	M16*	550	328	379
EXDVR200-280B55	280	1200	700	160	360	1800	210	550	450	500	75	140	26	5	310	18	M16*	550	328	379

*) 8 mounting holes

Introduction

The ELSTO 304 series corrosion resistant steel motors, are intended for applications where water tightness and a good resistance against corrosion are required.

Primary areas of application are food and chemical industries, but also yacht building.

By using 304 grade corrosion resistant steel instead of the more costly and less machining friendly 316, the production is more efficient and more economical, while thanks to high gloss polishing an excellent resistance against corrosion is achieved.

In standard execution the motors are IP 67 protected and fitted with PTC contacts to signal high temperatures in an early stage.

By using high quality seals (food quality if required) and fittings, both good accessibility and good water tightness is guaranteed. The motor frame is TIG welded to create a very smooth outside surface, and executed with deep recesses on the mating surfaces to create a stable and 100% watertight joint with the front and rear shields.

MOTORMARKING

The motors surfaces are as smooth as possible, to give dirt no chance to stick to the motor. To get the surface as smooth as it is even the type plate had to go, and motor data and connection diagram are engraved in the motor housing, both durable and hygienic.

2 pole 3000 RPM TENV

Type code	IEC	P _n
	size	kW
NV 63A 2	63	0,18
NV 63B 2	63	0,25
NV 71A 2	71	0,37
NV 71B 2	71	0,55
NV 80A 2	80	0,75

4 pole 1500 RPM TENV

Type code	IEC	P _n
	size	kW
NV 63B 4	63	0,18
NV 71A 4	71	0,25
NV 71B 4	71	0,37
NV 80A 4	80	0,55
NV 80B 4	80	0,75

6 pole 1000 RPM TENV

Type code	IEC	P _n
	size	kW
NV 71A 6	71	0,18
NV 71B 6	71	0,25
NV 80A 6	80	0,37
NV 80B 6	80	0,55
NV 90S 6	90S	0,75

2 pole 3000 RPM TEFC

Type code	IEC	P _n
	size	kW
FC 80A 2	80	0,75
FC 80B 2	80	1,1
FC 80C 2	80	1,5
FC 90S 2	90S	1,5
FC 90L 2	90L	2,2
FC 100L 2	100L	3
FC 112M 2	112M	4
FC 132S 2	132S	5,5
FC 132M 2	132M	7,5

4 pole 1500 RPM TEFC

Type code	IEC	P _n
	size	kW
FC 71A 4	71	0,37
FC 80A 4	80	0,75
FC 90S 4	90S	1,1
FC 90L 4	90L	1,5
FC 100LA 4	100L	2,2
FC 100LB 4	100L	3
FC 112M 4	112M	4
FC 132S 4	132S	5,5
FC 132M 4	132M	7,5

6 pole 1000 RPM TEFC

Type code	IEC	P _n
	size	kW
FC 90S 6	90S	0,75
FC 90L 6	90L	1,1
FC 100LA 6	100L	1,5
FC 100LB 6	100L	2,2
FC 112M 6	112M	3
FC 132S 6	132S	4



INTRODUCTION

Circular saw and low shaft motors from the STD series are specifically designed for applications in which high power and compact dimensions in combination with a low motor shaft centre line are required.

Compared to standardised IEC motors, the square motor frame is particular to this type of motor, and enables different mounting methods.

In the motor frame T shaped slots are provided that accept mounting bolts to mount the motor to a mounting plate (build form B3). Optionally the motor can be fitted with an IEC standard B14 motor flange.

Supply voltage	ET ≤ 3 kW 230/400V 50Hz > 4 kW 400/690V 50Hz EM 230V 50Hz
Protection	IP55
Isolatieklasse	F
Duty factor	S6 60%
Finish	Unpainted
Bearings	2 RS

OPTIONS



- UL – CSA certification; motors are executed in a natural finish, and fitted with thrust bearings according to the applicable standards.
- ATEX certification; motors are executed according to the ATEX standards, and fitted with thrust bearings. We advise to use zone 2 and zone 22 type 3 GD motors.
- DC supplied safety brake (type FPC) for frame sizes 63 and 80. (see chapter “Safety brake” for more detailed information).
- Special shafts and flanges.

VERSIONS

The motors can be supplied in the following executions:

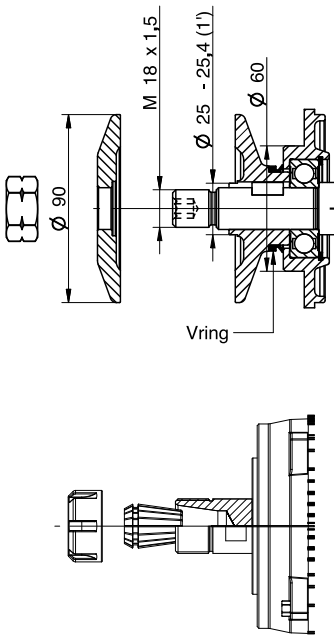
- B3 execution: *the motor is supplied with mounting flanges for the saw blade. The locknut can be supplied with either LH or RH thread. The rotating direction of the motor must be specified with the order. The motor shaft is axially fixated in the front flange.*
- B14 execution: *the motor shaft is cylindrical and executed with an IEC keyway. The motor can be supplied with a B14 motor flange, threaded holes and/or slots in the motor frame.*
- Saw flanges or conical clamping shaft according to DIN 6499.
- Three phase (400V – 50 Hz) or single phase (230V – 50 Hz).
- With or without safety brake.

Three phase			2 pole - 3000 rpm				ETSTD series				
Type code	P _n	n _n	I _n	I _a /I _n	η	cos φ	M _n	M _a /M _n	M _k /M _n	J	Weight
	kW	rpm	A	Y	100%		Nm			kgm ²	kg
E48Sb	0,55	2700	1,32	3,7	67	0,9	1,95	1,9	2	0,00019	5,6
E48Sc	0,75	2600	1,9	3,4	66	0,86	2,75	1,9	2	0,00025	6,5
E48Ma	1,1	2680	2,6	4	75	0,82	3,92	2,3	2,4	0,0003	8
E48M	1,3	2680	3,2	3,5	72	0,81	4,63	2,3	2,3	0,00037	9,5
E48Lb	1,5	2700	3,7	3,8	70	0,85	5,31	2,3	2,3	0,00043	10
E48Lc	1,7	2770	4,4	5	76	0,73	5,86	3,5	3,5	0,0005	10,5
E63Sa	1,1	2750	2,5	5,1	75	0,84	3,82	2,8	2,8	0,0006	10,7
E63Sb	1,5	2700	3,4	4	75	0,85	5,31	2,3	2,3	0,00075	11,5
E63Sc	1,85	2760	4,2	4,6	75	0,85	6,31	3,3	3,3	0,0009	12,5
E63La	2,2	2800	4,7	5,7	80	0,84	7,5	3	3	0,00103	15
E63Lb	3	2780	6,4	6	80	0,84	10,2	3,3	3,3	0,00115	17
E80Sa	3	2850	6,6	6	80	0,84	10	3,4	3,4	0,0016	25,5
E80Sb	4	2880	8,8	6,8	85	0,77	13,26	3,2	3,4	0,002	27,5
E80M	5,5	2880	11,7	6,3	87	0,78	18,24	3,6	3,6	0,00225	31,3
E80La	7,5	2850	14,6	5	85	0,87	25,2	3,1	3,1	0,00275	38,8
E80Lb	11	2840	22,8	6,8	84	0,83	37	3,5	4,1	0,00311	45

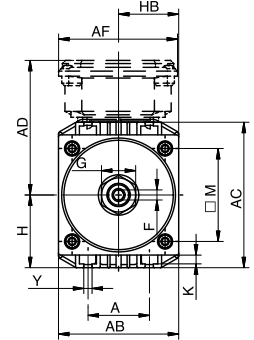
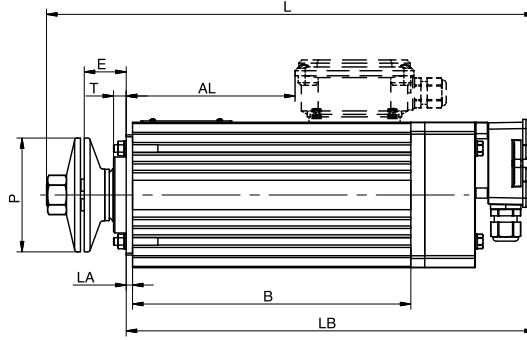
Three phase			4 pole - 1500 rpm				ETSTD series				
Type code	P _n	n _n	I _n	I _a /I _n	η	cos φ	M _n	M _a /M _n	M _k /M _n	J	Weight
	kW	rpm	A	Y	100%		Nm			kgm ²	kg
E48S	0,37	1400	1,5	3,5	65	0,55	2,5	3,9	3,9	0,00035	6,7
E48M	0,55	1350	1,7	3,2	67	0,7	3,9	2,6	2,6	0,00045	8,5
E63Sa	0,75	1380	2	3,5	74	0,72	5,19	2	2,1	0,0011	11,2
E63Sb	1,1	1400	2,7	3,9	76	0,77	7,5	2,3	2,3	0,00125	12,6
E63La	1,5	1350	3,9	3,3	73	0,76	10,6	2	2	0,0015	14
E63Lc	1,85	1350	4,8	4	73	0,76	13,1	2,2	2,2	0,00187	16,1
E80S	2,2	1380	5	5,6	80	0,8	15,22	3,3	3,3	0,0028	24,5
E80M	3	1370	6,8	4,4	78	0,82	20,9	2,2	2,2	0,00325	30

Single phase			2 pole - 3000 rpm				EMSTD series				
Type code	P _n	n _n	I _n	I _a /I _n	η	cos φ	M _n	M _a /M _n	M _k /M _n	J	Weight
	kW	rpm	A	Y	100%		Nm			kgm ²	kg
E48Sa	0,37	2650	3	10	60	0,9	1,33	2	0,7	0,00019	6,1
E48Sb	0,55	2700	4,1	16	63	0,93	1,95	2,5	0,6	0,00025	6,9
E48Ma	0,75	2750	5,1	20	65	0,98	2,6	3	0,5	0,0003	8,1
E48Mb	1,1	2700	7,4	20	68	0,93	3,89	2,7	0,35	0,00043	9,5
E63S	1,1	2800	7,1	25	75	0,9	3,75	2,8	0,4	0,00075	11
E63La	1,5	2800	9,6	30	73	0,93	5,11	3,8	0,5	0,0009	13
E63Lb	1,85	2750	12,4	35	70	0,93	6,42	3,5	0,5	0,001	14,6
E63Lc	2,2	2750	13,1	45	75	0,97	7,64	3,4	0,4	0,00115	17
E80Sb	2,2	2750	14	50	75	0,91	7,64	3,5	0,4	0,0014	26

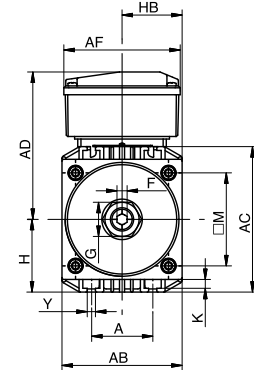
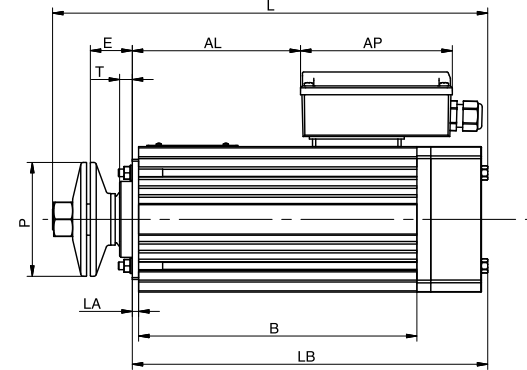
B3 Foot mounted Frame size 48



ET



EM



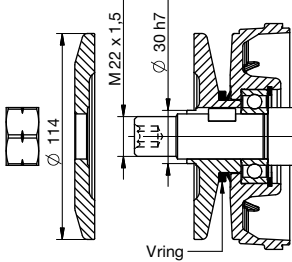
ET Three phase

EM Single phase

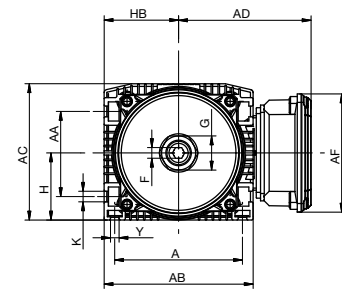
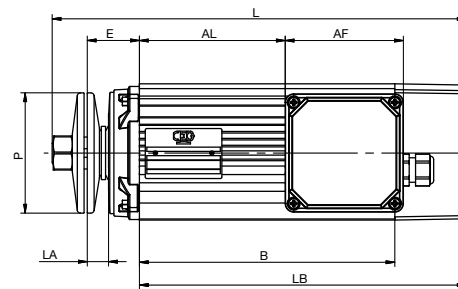
Motor type	A	AB	AC	B	E	F	G	H	HB	L	LB	K	Y	M	P	T	AD	AF	AL	LA	B	L	LB	AD	AF	AP
E.. 48S	48	95	115	150	33	8	27	57,5	47,5	321	259	7	6	73,5	90	10	109	94	63	5	150	279	212	115	92	121
E.. 48M	48	95	115	200	33	8	27	57,5	47,5	371	303	7	6	73,5	90	10	109	94	113	5	200	329	262	115	92	121
E.. 48L	48	95	115	220	33	8	27	57,5	47,5	391*	323	7	6	73,5	90	10	109	94	133	5						

* Pn ≥ 1,5 kW

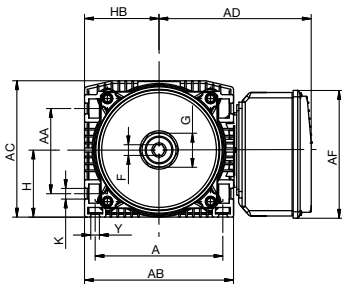
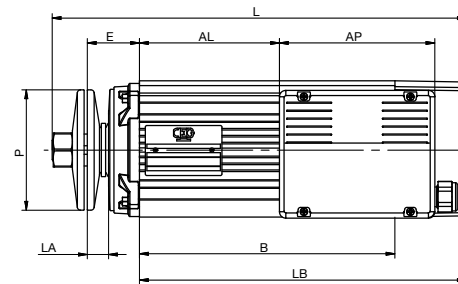
B3 Foot mounted Frame size 63



ET



EM



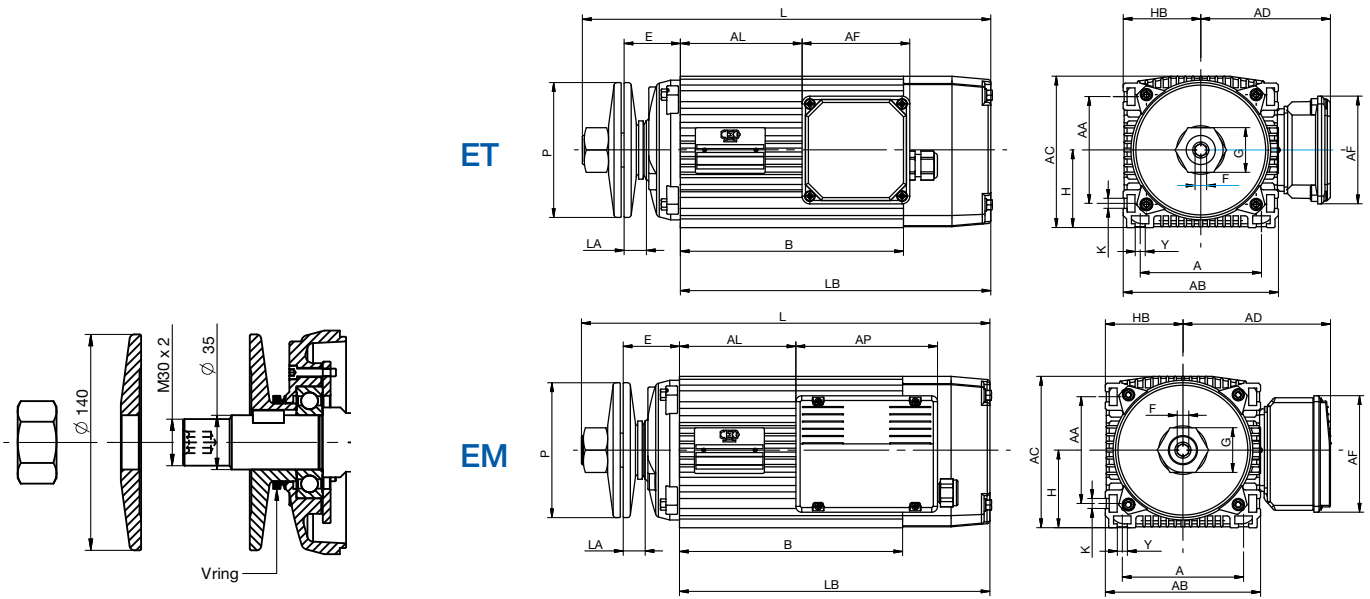
ET Three phase

EM Single phase

Motor type	A	AB	AC	AA	B	E	F	G	H	HB	L	LB	K	Y	P	AD	AF	AL	LA	AD	AF	AP	AL
E.. 63S	120	140	128	80	180	49	10	32	63	70	330	247	10	8	114	125	111	77	20	143	120	146	71
E.. 63L	120	140	128	80	240	49	10	32	63	70	390	307	10	8	114	125	111	137	20	143	120	146	131

Note: The dimensions of the braked and non-braked versions are the same

B3 Foot mounted Frame size 80



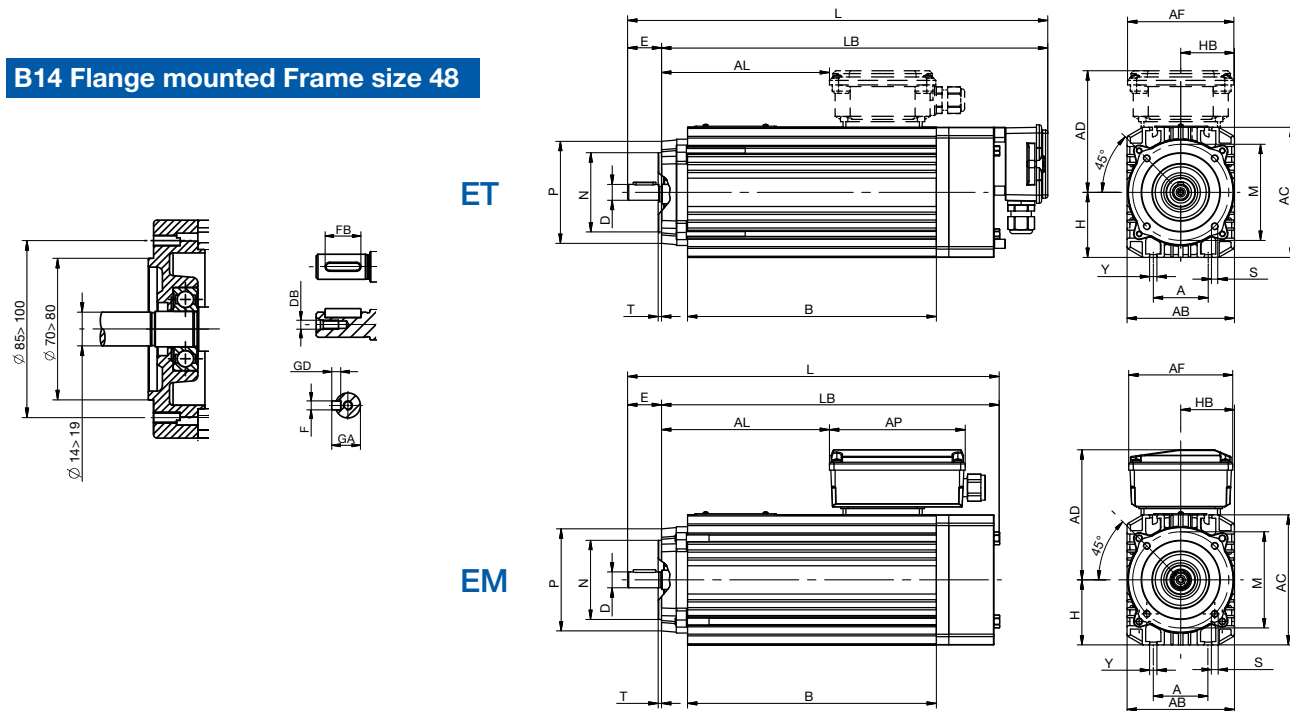
ET Three phase

EM Single phase

Motor type	A	AB	AC	AA	B	E	F	G	H	HB	L	LB	K	Y	P	AD	AF	AL	LA	AD	AF	AL	AP
E.. 80S	125	160	156	110	230	58	12	46	80	80	421	320	10	10	140	135	111	125	23	152	119	120	146
E.. 80M	125	160	156	110	280	58	12	46	80	80	471	370	10	10	140	135	111	175	23				
E.. 80L	125	160	156	110	350	58	12	46	80	80	541*	440	10	10	140	135	111	245	23				

* Pn ≥ 7,5 kW

B14 Flange mounted Frame size 48



ET Three phase

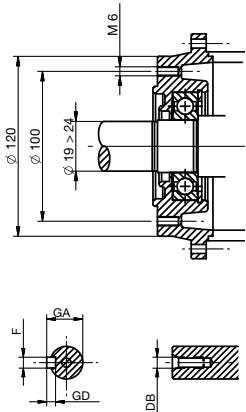
EM Single phase

Motor type	A	AB	AC	B	H	HB	L	LB	Y	P	N	M	T	S	D	E	F	FB	GD	AD	AF	AL	DB	HB	L	LB	FB	GA	AD	AF	AP
E.. 48S	48	95	115	150	57,5	47,5	301	271	6	90	70	85	3	M6	14	30	5	16,5	5	109	94	81	M5	47,5	260	230	20	21,5	115	92	121
E.. 48M	48	95	115	200	57,5	47,3	351	321	6	90	70	85	3	M6	14	30	5	16,5	5	109	94	131	M5	47,5	310	280	20	21,5	115	92	121
E.. 48L	48	95	115	220	57,5	47,5	383*	343	6	95x115	80	100	3	M6	19	40	6	21,5	6	109	94	153	M6								

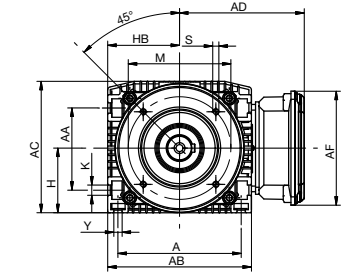
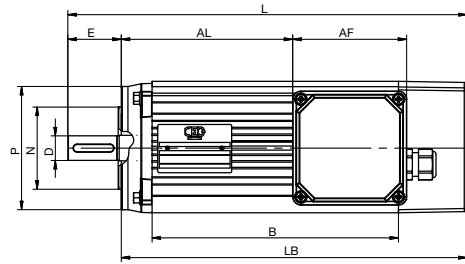
S-S-ELD-EN-EMOT-001-V01

Saw motors

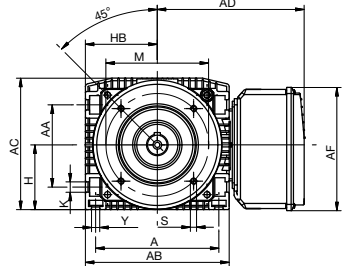
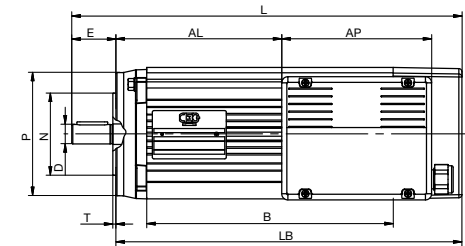
B14 Flange mounted Frame size 63



ET



EM

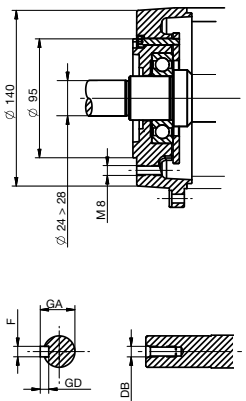


ET Three phase

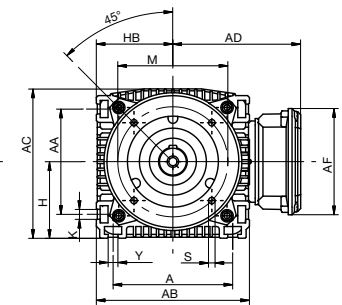
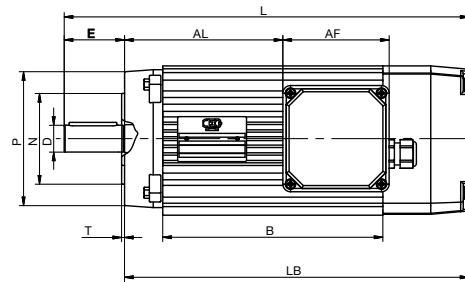
EM Single phase

Motor type	A	AB	AC	AA	B	H	HB	L	LB	Y	K	P	N	M	T	S	D	E	F	FB	GA	GD	AD	AF	AL	DB	AD	AF	AL	AP
E.. 63S	120	140	128	80	180	63	70	321	281	8	10	120	80	100	3	M6	19	40	6	30	21,5	6	125	111	111	M6	143	120	105	146
E.. 63L	120	140	128	80	240	63	70	391	336	8	10	120	80	100	3	M6	24	50	8	40	27	7	125	111	171	M8	143	120	165	146

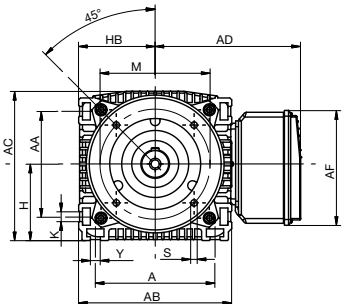
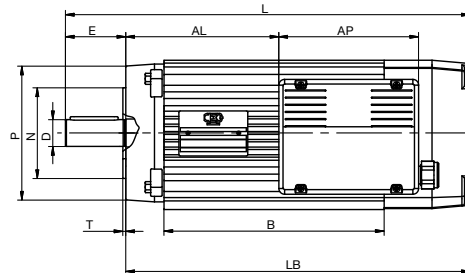
B14 Flange mounted Frame size 80



ET



EM



ET Three phase

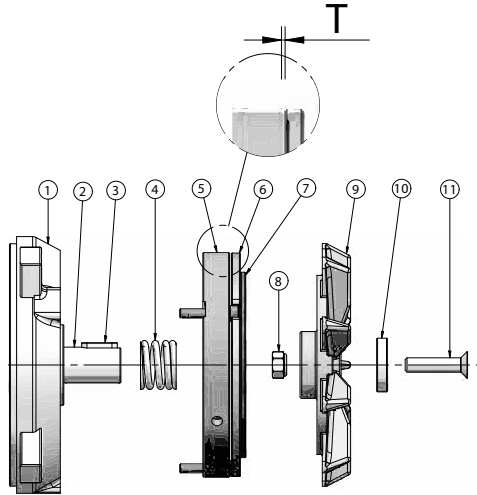
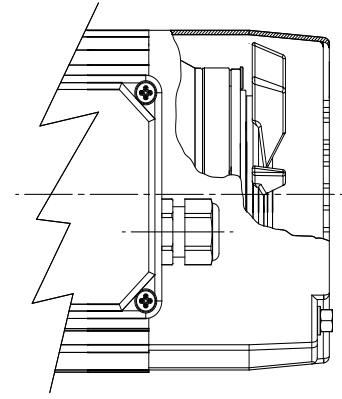
EM Single phase

Motor type	A	AB	AC	AA	B	H	HB	L	LB	K	Y	P	N	M	T	S	D	E	F	FB	GA	GD	AD	AF	AL	DB	L	LB	AD	AF	AL	AP
E.. 80S	125	160	156	110	230	80	80	410	360	10	10	140	95	115	3	M8	24	50	8	40	27	7	134	111	165	M8	410	360	152	120	160	146
E.. 80M	125	160	156	110	280	80	80	470	410	10	10	140	95	115	3	M8	28	60	8	50	31	7	134	111	215	M10						
E.. 80L	125	160	156	110	350	80	80	540*	480	10	10	140	95	115	3	M8	28	60	8	50	31	7	134	111	285	M10						

Note: The dimensions of the braked and non-braked versions are the same
 * Pn ≥ 7,5 kW

FPC safety brake

The FPC safety brake is suitable for applications where a gradual retardation of the motor shaft is required without specific further requirements. The friction brake provides a gradual and quiet means of stopping a machine to prevent damage or injury to man or machine. The braking force is generated by means of springs, that press the lined braking disc on the cast iron brake plate. The brake can be lifted by energizing the brake coil. This construction principle qualifies the brake as a safety brake while braking starts automatically the power supply to the motor/brake stops.

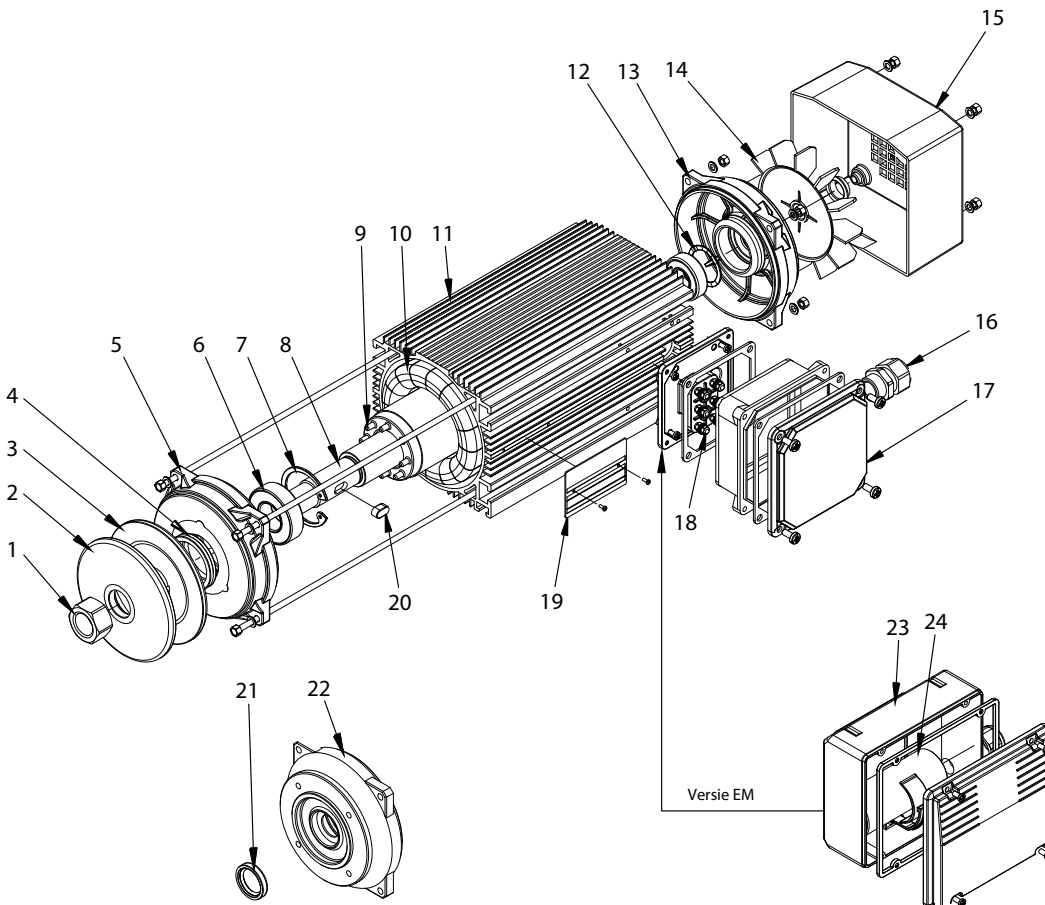


1. End shield
2. Shaft
3. Key
4. Spring
5. Brake coil
6. Brake plate
7. Brake disc
8. Locking nut
9. Fan
10. Ring
11. Adjustment screw

Supply voltage of brake: 230V (< 4kW)
 (by means of a rectifier) 400V (≥ 4kW)

Protection class of the brake: IP54

Parts



1. Saw blade nut
2. Saw blade clamping disc
3. Saw blade mounting disc
4. Dust excluder (V-ring)
5. End shield DE
6. Bearing
7. Circlip
8. Shaft
9. Rotor
10. Stator windings
11. Stator frame
12. Spring ring
13. End shield NDE
14. Fan (PVC)
15. Fan cover
16. Gland
17. Junction box (ET version)
18. Junction board
19. Type plate
20. Key
21. Seal
22. B14 mounting flange
23. Junction box (EM version)
24. Capacitor

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Saw motors

For more than 35 years, Koolen vibration motors has a reputation to envied in the world of vibratory An extended range of both electric and pneumatic vibration motors is available, and by the sheer diversity of the programme Koolen vibration motors are used in many industrial processes. The excellent quality of the product and its support has earned us an excellent reputation as manufacturer of vibration motors both at home and abroad. Since 1993 Koolen Industries is part of the Stokvis group. The family owned Stokvis group is a one of the mayor players on the Dutch and Belgian transmission market with an extended programme of transmission and control components and complete transmission solutions. Next to the products produced within the group, the group represents a number of reputable European transmission manufacturers. From product development in the R&D department to winding electric motors as a service activity, the Stokvis group spans the complete range from concept to support, all in one hand.

Applications

The Koolen Industries vibration motors from the KBM and KBC series are designed to be used in machines such as screens, separators, sieves, feed channels, draining installations and many other applications such as filter cleaning, compacting, emptying silos or de-grating.

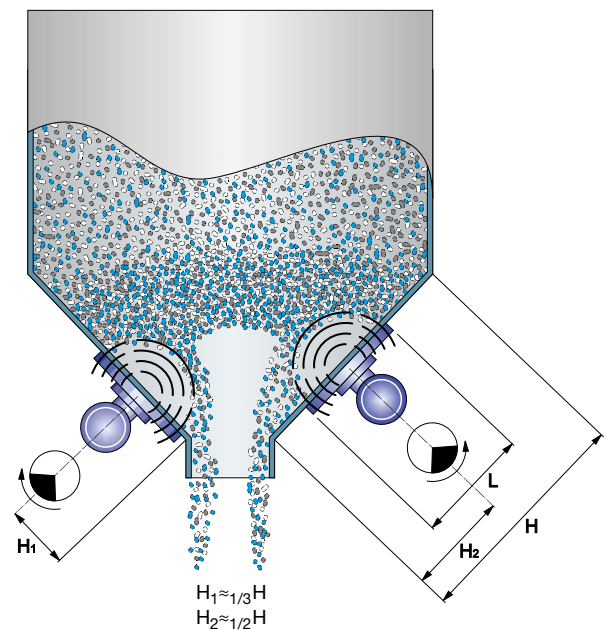
Some examples

Unloading bulk goods

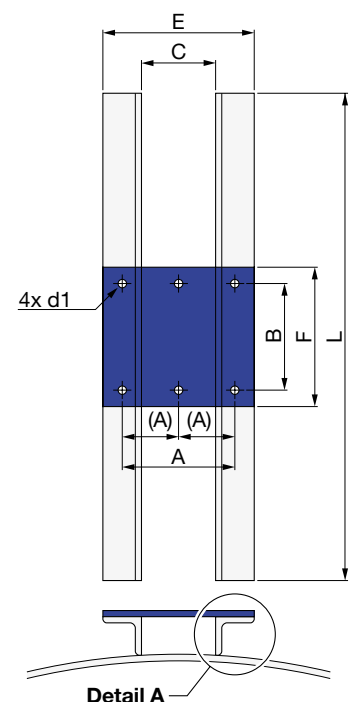
Moisture sensitive raw materials have the unpleasant tendency to adhere when stored. The unloading of adhesive raw materials is often a problem, which can be solved easily trough the use of vibration motors. Precisely directed vibration overcomes the adhesive forces adhesion and simultaneously reduces the friction between the individual particles of the raw material enabling the material to roll again.

Koolen vibration motors generate the required vibration forces.

For unloading bulk materials Koolen four pole motors are preferred, but in some cases multiple small two pole motors can do the job just as well. With the table below the right vibration motor can be selected for the specific task at hand. For more unconventional applications we are happy to advise.



Motor type	Wall thickness (t)	L profile	Length mm	C mm	E mm	F mm	A mm	B mm	a mm	d1 mm
KBM-1,5-2 KBM-4-4	1 - 2	25x25x3	500	37	87	135	62	106	6,0	9,0
KBM-2,5-2 KBM-6-4	2 - 3	30x30x5	500	35	95	130	75	105	6,0	9,0
KBM-4-2 KBM-16-4	3 - 4	40x40x6	600	30	110	160	70	130	8,0	9,0
KBM-6-2 KBM-30-4	4 - 6	50x50x8	600	40	140	180	90	140	12	11
KBM-12-2	6 - 9	60x60x10	800	40	160	195	100	160	12	13
KBM-18-2	9 - 12	70x70x10	1000	50	190	215	120	170	16	17



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Compacting

Through the use of vibration motors you can easily increase your storage capacity by increasing the density of the material. Prime example is maximizing the loading capacity of Big Bags where by reducing the free space between the individual particles to be bagged a more homogenous and denser mass and therewith a higher storage capacity is achieved. Another sector that use of this technique is the concrete industry. By using vibrating needles or vibrating surfaces water is driven out from poured concrete to increase its density.

The compacting process is simply the rearranging of material particles with the aid of gravity. For compacting multiple small Koolen vibration motors generally are used strategically placed on each part of the installation. For thus application two pole motors with a nominal speed of 3000 RPM at 50 Hz are the most suitable.

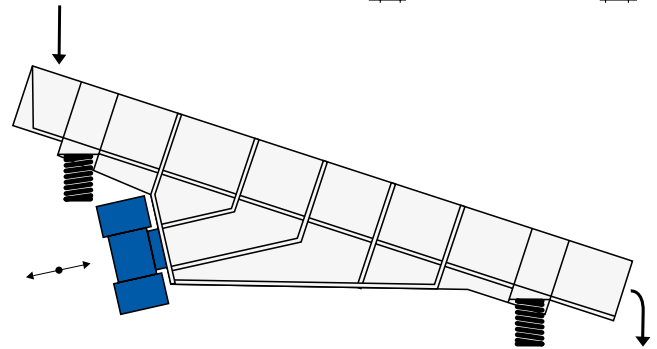
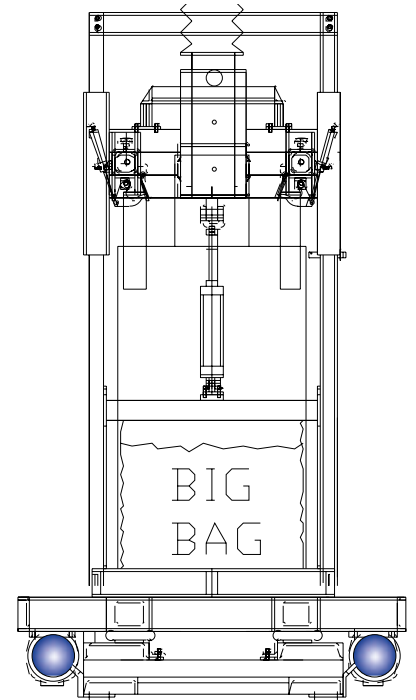
Transport

Vibration motors introduce movement into the production or storage process. By mounting Koolen vibration motors on a gutter under a certain angle materials can be transported. Transport in a desired direction and a controlled speed is possible by a chain of “micro jumps”.

Also the product mass can receive a supplementary treatment during the transport. Sieving, breaking, draining, washing, mixing or separating can be performed during in the transport phase.

For these type of applications Koolen four, six and eight pole motors are the most suitable.

Transport by vibration motors is based on the principle of directed vibration for which two vibration motors for each installation component are required. The motors must be controlled simultaneously and run in opposite directions.



Mechanical and electrical design

- Frame size KBM12-2, KBM30-4, KBM30-6 and all KBC motors the motor frame is executed in cast iron, smaller sizes are executed in aluminium.
- PTC contacts are standard from frame size KBC5-400-4, KBC5-815-6 and KBC5-851-8.
- Virtually all vibration motors are available in an ATEX version.
- From frame size KBC8 and upwards the motors can be supplied in a coupled version.
- Supply voltage: up to and incl. frame size KBC11- 230/400V, 50 Hz, frame size KBC 15 and KBC 20 – 400/690V, 50 Hz



For the selection of the correct Koolen vibration motors, the properties of the material to be moved play an important role. The correct value for the working force of the Koolen vibration motors can often only be established by trial and error. With the selection table and selection method shown below, a responsible selection can be made.

	Vibration form	Particle size	Normal Frequency Motor RPM at 50 Hz					n= 6000	n= 12000
			n= 600	n= 750	n= 1000	n= 1500	n= 3000		
Process									
Compacting									
* Concrete	I / I	-							
* Bulk goods	I / II	F M G							
Unloading									
* Vibrating floor	I	F M G							
* Silo	I	F M G							
* Filter cleaning	I	F							
Transport with									
* Separating	II	F M G							
* Sieving	II	G							
* Alignment	II	F							
* Sorting	II	M							
* Distributing	II	G							
Drainage	II								
Separation	II								
	Average amplitude (s) in mm		18	14	8,0	3,0	1,0		
	Possible amplitude (s) in mm		(10 - 26)	(10 - 18)	(4 - 10)	(1 - 5)	(0,4 - 2,0)		
	Motor weight factor (mf)		0,17	0,145	0,127	0,125	0,12		

Legend

Grain F = Fine
 M = Medium
 G = Coarse

Recommended motor speed
 Also useable

Vibration form

I

II

S-S-ELD-EN-EMOT-001-V01

- 1) Determine the most suitable motor speed and vibration character for your application.
- 2) Determine the average amplitude (Sn) required for the application and the accompanying motor weight (MF).
- 3) Determine the weight of the machine part (effective weight).
NOTE: Do **not include** the weight of the product in the channel in the calculation.
- 4) Calculate the torque required for the application with the following formula: $AM = MF \times G \text{ inst.} \times S/0,7$
- 5) Select from the motor models the type with the speed and torque matching your application.
NOTE: For elliptical vibration the value calculated under 4) can be used. For directional vibration, the value calculated under 4) must be divided by two, since two motors will be used.
- 6) Check the selection made with the following formula:

Directional vibration : $S_n = 20 \cdot AM \cdot 0,7 / G \text{ installation} + G \text{ motors}$
 Elliptical vibration : $S_n = 10 \cdot AM \cdot 0,7 / G \text{ installation} + G \text{ motor}$

In which: S_n = Amplitude of motor
 AM = Motor torque in daN /cm
 $G \text{ inst.}$ = Effective weight of the vibration system
 $G \text{ mot.}$ = Weight of the motor(s)
 MF = Motor mass factor

Pneumatic vibration motors

Specifications

Motor type	Weight	4 bar			5 bar			6 bar			7 bar			8 bar		
		n max.	centrifugal force	Air consumption	n max.	centrifugal force	Air consumption	n max.	centrifugal force	Air consumption	n max.	centrifugal force	Air consumption	n max.	centrifugal force	Air consumption
		RPM	daN	m³/min	RPM	daN	m³/min	RPM	daN	m³/min	RPM	daN	m³/min	RPM	daN	m³/min
KBG 13	0,43	15000	23	0,25	17000	29	0,27	18500	34	0,3	20000	40	0,35	21500	47	0,4
KBG 19	1,16	11000	57	0,35	12000	68	0,43	13000	79	0,5	14000	92	0,55	15500	113	0,64
KBG 25	1,9	6600	69	0,4	7200	82	0,54	7900	98	0,64	8500	114	0,71	9000	128	0,86
KBG 35	3	4000	72	0,53	4500	91	0,64	5100	117	0,73	5600	141	0,86	6000	161	1

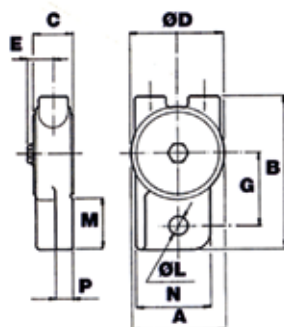
Dimensions [mm]

Type	Rie	A	B	C	Ø D	E	F	G	Ø L	M	N	P
KBG 13	1	53	87	24	53	16	***	42	11	31	40	11
KBG 19	2	130	86	43	72	28	44	100	11	36	31	13
KBG 25	2	133	107	53	89	33	56	102	13	37	38	15
KBG 35	2	147	123	68	105	41	64	115	13	38	40	16

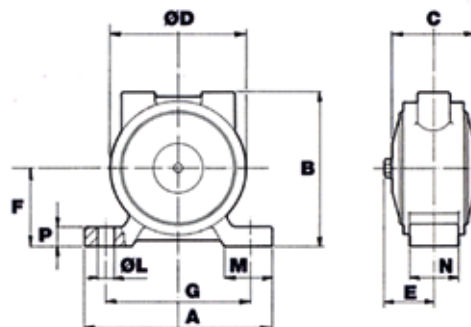
S-S-ELD-EN-EMOT-001-V01



KBG 13



KBG 19-35



Vibrating motors

2-pole 3000 rpm 230 V, 50 Hz, single phase

Type code	Supply voltage	Dynamic torque	Centrif. force	Weight	P _{max}	I _{nom}	I _a /I _n
		daN/cm	kN	kg	kW	A	
KBM1,3-2M	230V, 50Hz 1ph	1,3	0,65	3,45	0,1	0,45	1,6
KBM1,5-2M	230V, 50Hz 1ph	1,3	0,65	4,75	0,15	0,68	1,7
KBM1,8-2M	230V, 50Hz 1ph	1,8	0,91	3,55	0,11	0,5	1,7
KBM2,5-2M	230V, 50Hz 1ph	2,5	1,23	4,95	0,16	0,73	1,7
KBM4-2M	230V, 50Hz 1ph	3,7	1,83	5,3	0,16	0,73	1,7
KBM6-2M	230V, 50Hz 1ph	6	3,04	8,6	0,25	1,15	2,4
KBM12-2VM	230V, 50Hz 1ph	13	6,55	21	0,44	2,1	2,55

2-pole 3000 rpm, three phase

Type code	Supply voltage	Dynamic torque	Centrif. force	Weight	P _{max}	I _{nom}	I _a /I _n
		daN/cm	kN	kg	kW	A	
KBM1,3-2	230/400V,50Hz	1,3	0,65	3,45	0,1	0,18	2,6
KBM1,5-2	230/400V,50Hz	1,3	0,65	4,75	0,15	0,3	2,9
KBM1,8-2	230/400V,50Hz	1,8	0,91	3,55	0,1	0,18	2,6
KBM2,5-2	230/400V,50Hz	2,5	1,23	4,95	0,18	0,35	2,7
KBM4-2	230/400V,50Hz	3,7	1,83	5,3	0,18	0,35	2,7
KBM6-2	230/400V,50Hz	6,2	3,04	8,6	0,27	0,58	3,15
KBM12-2	230/400V,50Hz	13	6,55	21	0,5	0,98	4,45
KBM12-2V	230/400V,50Hz	13	6,55	21	0,5	0,98	4,45
KBM18-2	230/400V,50Hz	17,1	8,43	32	0,6	1	3,9
KBM20-2	230/400V,50Hz	21	10,3	34	0,72	1,2	3,8
KBM26-2	230/400V,50Hz	26	12,8	38	1,3	2,1	4
KBM32-2	230/400V,50Hz	32	15,8	45	1,5	2,4	5
KBM40-2	230/400V,50Hz	40	19,6	47	2	3,3	4,5

4-pole 1500 rpm, three phase

Type code	Supply voltage	Dynamic torque	Centrif. force	Weight	P _{max}	I _{nom}	I _a /I _n
		daN/cm	kN	kg	kW	A	
KBM2-4	230/400V,50Hz	2	0,24	3,55	0,075	0,16	1,6
KBM2,5-4	230/400V,50Hz	2,5	0,3	4,95	0,08	0,2	1,7
KBM4-4	230/400V,50Hz	4,3	0,54	5,45	0,095	0,21	1,8
KBM6-4	230/400V,50Hz	6,2	0,77	5,8	0,095	0,21	1,8
KBM16-4	230/400V,50Hz	16	2,03	10,9	0,18	0,45	2,5
KBM20-4	230/400V,50Hz	20	2,45	11,6	0,18	0,45	2,5
KBM30-4	230/400V,50Hz	32	3,96	24,5	0,31	0,66	3,25
KBM30-4V	230/400V,50Hz	32	3,96	24,5	0,31	0,66	3,25
KBM40-4	230/400V,50Hz	40	4,91	25,9	0,34	0,71	3,05
KBM40-4V	230/400V,50Hz	40	4,91	25,9	0,34	0,71	3,05
KBM55-4	230/400V,50Hz	56	6,96	34,5	0,475	0,92	3,9
KBC1-55-4	230/400V,50Hz	55	6,96	34,5	0,475	0,92	3,9
KBM90-4	230/400V,50Hz	87	10,8	40,7	0,6	1,16	3,65
KBC1-90-4	230/400V,50Hz	87	10,8	40,7	0,6	1,16	3,65
KBM115-4	230/400V,50Hz	115	14,2	51	0,95	1,5	4,1
KBC2-120-4	230/400V,50Hz	115	14,2	51	0,95	1,5	4,1
KBM165-4	230/400V,50Hz	165	20,4	58	1,2	2,2	4,2
KBC2-160-4	230/400V,50Hz	165	20,4	58	1,2	2,2	4,2
KBC3-200-4	230/400V,50Hz	216	26,7	85	1,7	3,3	5,9
KBC5-300-4	230/400V,50Hz	304	37,5	115	2,2	4,6	5,85
KBC5-400-4	230/400V,50Hz	397	48,9	155	3,3	5,4	4,2
KBC8-500-5	230/400V,50Hz	526	64,9	215	6	10,5	6
KBC8-640-4	230/400V,50Hz	650	80,2	242	7	11,5	5,4
KBC11-650-4	230/400V,50Hz	650	80,2	305	7	11,5	5,4
KBC11-700-4	230/400V,50Hz	716	88,4	320	7,5	12,5	5,2
KBC11-900-4	230/400V,50Hz	908	112,1	385	11	19	6,5

6-pole 1000 rpm, three phase

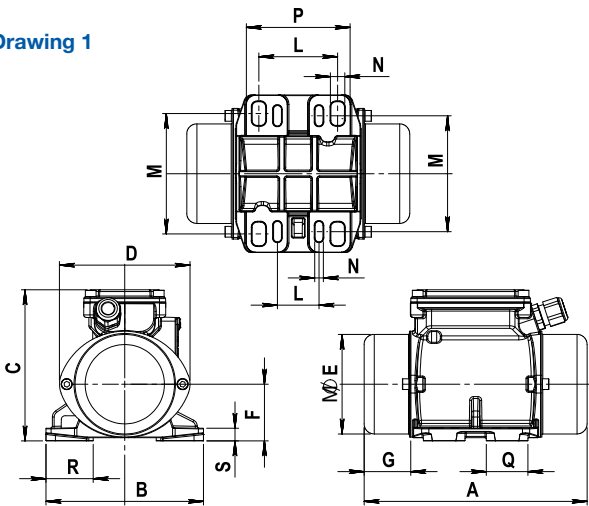
Type code	Supply voltage	Dynamic torque	Centrif. force	Weight	P _{max}	I _{nom}	I _a /I _n
		daN/cm	kN	kg	kW	A	
KBM6-6	230/400V,50Hz	6,2	0,34	5,8	0,085	0,35	1,5
KBM15-6	230/400V,50Hz	16,4	0,9	10,9	0,14	0,66	1,55
KBM30-6	230/400V,50Hz	32	1,77	24,5	0,24	0,53	2,4
KBM40-6	230/400V,50Hz	40	2,18	25,9	0,26	0,55	2,4
KBM60-6	230/400V,50Hz	56	3,09	34,5	0,32	0,7	2,85
KBC1-60-6	230/400V,50Hz	56	3,09	34,5	0,32	0,7	2,85
KBM90-6	230/400V,50Hz	87	4,8	40,6	0,45	0,95	3,05
KBC1-90-6	230/400V,50Hz	87	4,8	40,6	0,45	0,95	3,05
KBM165-6	230/400V,50Hz	165	9,05	57	0,72	1,4	3
KBC2-165-6	230/400V,50Hz	165	9,05	57	0,72	1,4	3
KBC2-200-6	230/400V,50Hz	200	11	65	0,8	1,6	3,4
KBM240-6	230/400V,50Hz	240	13,24	70	0,8	1,6	3,4
KBC2-240-6	230/400V,50Hz	240	13,24	70	0,8	1,6	3,4
KBC3-325-6	230/400V,50Hz	325	17,85	95	1,2	2,3	4,5
KBC3-350-6	230/400V,50Hz	350	19,2	103	1,2	2,3	4,5
KBC3-400-6	230/400V,50Hz	400	22	108	1,25	2,4	4,3
KBC5-520-6	230/400V,50Hz	520	28,45	138	2	4,4	4,8
KBC5-815-6	230/400V,50Hz	815	44,83	192	2,6	5	5,95
KBC8-1250-6	230/400V,50Hz	1250	68,43	274	5,5	9,5	5,1
KBC8-1530-6	230/400V,50Hz	1530	83,88	317	8	14,4	4,3
KBC11-1550-6	230/400V,50Hz	1550	85	370	8	14,4	4,3
KBC11-1730-6	230/400V,50Hz	1730	95	395	8,5	15	4,5
KBC11-2150-6	230/400V,50Hz	2150	118	414	9,8	17	5,4
KBC11-2400-6	230/400V,50Hz	2400	132	430	10	17,2	5,3
KBC15-2700-6	400/690V,50Hz	2700	147	650	11,5	20,5	5,9
KBC15-3200-6	400/690V,50Hz	3200	177	710	13	23,2	5,7
KBC20-4120-6	400/690V,50Hz	4120	226	920	18,7	30,1	4,7

8-pole 750 rpm, three phase

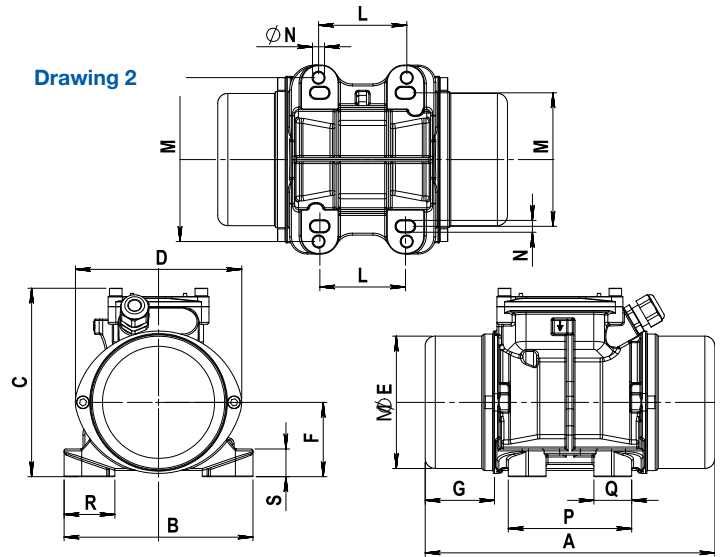
Type code	Supply voltage	Dynamic torque	Centrif. force	Weight	P _{max}	I _{nom}	I _a /I _n
		daN/cm	kN	kg	kW	A	
KBC1-60-8	230/400V,50Hz	56	1,74	34,5	0,24	0,62	2,25
KBC1-90-8	230/400V,50Hz	87	2,7	40,6	0,3	0,75	2,25
KBC2-165-8	230/400V,50Hz	165	5,1	57	0,45	1,3	2,4
KBC2-200-8	230/400V,50Hz	200	6,1	65	0,55	1,6	2,2
KBC2-240-8	230/400V,50Hz	240	7,45	70	0,55	1,6	2,2
KBC3-325-8	230/400V,50Hz	325	10,1	95	1,1	2,3	2,8
KBC3-350-8	230/400V,50Hz	350	10,8	103	1,15	2,4	3
KBC3-400-8	230/400V,50Hz	400	12,4	108	1,15	2,4	3
KBC5-520-8	230/400V,50Hz	520	16	138	1,6	4,4	3,5
KBC5-815-8	230/400V,50Hz	815	25,2	192	2,2	5,5	4,2
KBC8-1250-8	230/400V,50Hz	1250	38,5	274	4,5	9,2	3,5
KBC8-1530-8	230/400V,50Hz	1530	47,2	317	5,5	10,7	3,3
KBC11-1550-8	230/400V,50Hz	1550	47,9	380	5,8	11,3	3,3
KBC11-1730-8	230/400V,50Hz	1730	53,4	395	6	11,5	3,2
KBC11-2150-8	230/400V,50Hz	2150	66,3	414	7	13,6	3,1
KBC11-2400-8	230/400V,50Hz	2400	74,1	430	7,5	14,7	3,2
KBC15-3600-8	400/690V,50Hz	3600	110,9	710	9,4	20	5
KBC15-4300-8	400/690V,50Hz	4300	132,4	760	10,5	22,3	5,5
KBC20-6000-8	400/690V,50Hz	5823	179,4	1000	12,9	26,1	5,7
KBC20-6000-8	400/690V	5823	179,2	1000	12,9	26,1	5,7

NOTE :
Dynamic torque = 2 x Static torque

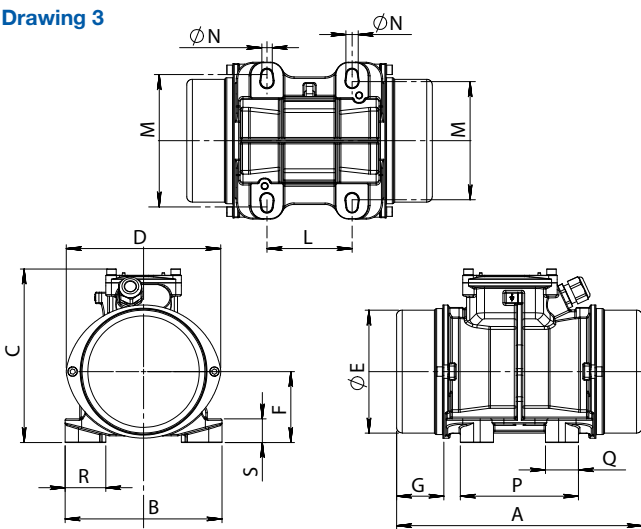
Drawing 1



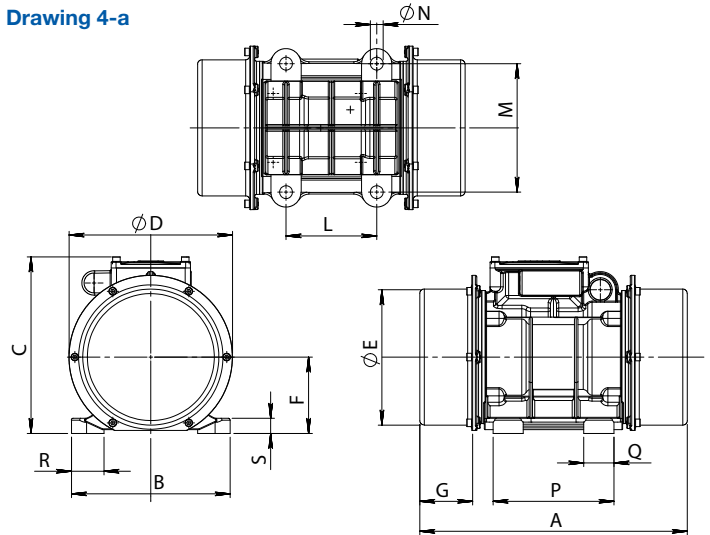
Drawing 2



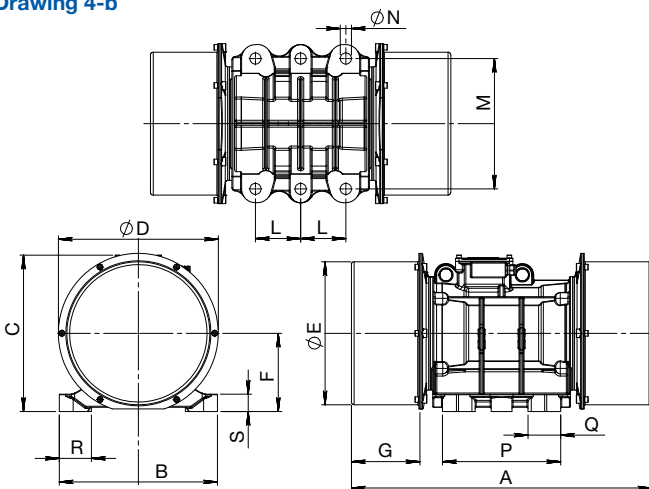
Drawing 3



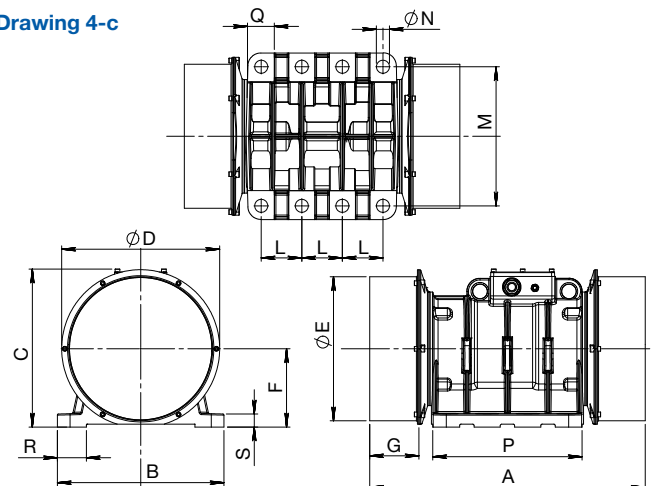
Drawing 4-a



Drawing 4-b



Drawing 4-c



S-S-ELD-EN-EMOT-001-V01

Vibrating motors

2-pole 3000 rpm

Type code	A	B	C	D	øE	F	G	L	M	øN	P	Q	R	S	Bolts	Gland	Drawing
KBM1,3-2M	177	125	120	104	79	45	37	62-65(33)	85-106(82-102)	9(7)	83	33	32,5	10	4xM8(4xM6)	M16x1,5	1
KBM1,5-2M	212	150	145	130	105	60	46	62-74(70)	106(130)	9	99	30	35	10	4xM8	M16x1,5	2
KBM1,8-2M	195	125	120	104	79	45	46	62-65(33)	85-106(82-102)	9(7)	83	33	32,5	10	4xM8(4xM6)	M16x1,5	1
KBM2,5-2M	212	150	145	130	105	60	46	62-74(70)	106(130)	9	99	30	35	10	4xM8	M16x1,5	2
KBM4-2M	212	150	145	130	105	60	46	62-74(70)	106(130)	9	99	30	35	10	4xM8	M16x1,5	2
KBM6-2M	260	166	185	160	130	75	50	90	125(140)	13(11)	120	30	40	12	4xM12(4xM10)	M20x1,5	3
KBM12-2M	288	190	205	187	151	85	54	100	160	13	136	33	40	16	4xM12	M20x1,5	4a
KBM12-2VM	288	190	205	187	151	85	54	105	140	13	136	33	40	16	4xM12	M20x1,5	4a

2-pole 3000 rpm

Type code	A	B	C	D	øE	F	G	L	M	øN	P	Q	R	S	Bolts	Gland	Drawing
KBM1,3-2	177	125	120	104	79	45	37	62-65(33)	85-106(82-102)	9(7)	83	33	32,5	10	4xM8(4xM6)	M16x1,5	1
KBM1,5-2	212	150	150	132	105	59	46	62-74(70)	106(130)	9	98	30	35	22	4xM8	M16x1,5	2
KBM1,8-2	195	125	120	104	79	45	46	62-65(33)	85-106(82-102)	9(7)	83	33	32,5	10	4xM8(4xM6)	M16x1,5	1
KBM2,5-2	212	150	150	132	105	59	46	62-74(70)	106(130)	9	98	30	35	22	4xM8	M16x1,5	2
KBM4-2	212	150	150	132	105	59	46	62-74(70)	106(130)	9	98	30	35	22	4xM8	M16x1,5	2
KBM6-2	260	166	184	164	130	75	50	90	125(140)	13(11)	125	35	38	25	4xM12(4xM10)	M20x1,5	3
KBM12-2	288	190	205	187	151	85	54	100	160	13	136	33	40	16	4xM12	M20x1,5	4a
KBM12-2V	288	190	205	187	151	85	54	105	140	13	136	33	40	16	4xM12	M20x1,5	4a
KBM18-2	355	210	236	216	181	101	71	120	170	17	160	40	43	20	4xM16	M20x1,5	4a
KBM20-2	355	210	236	216	181	101	71	120	170	17	160	40	43	20	4xM16	M20x1,5	4a
KBM26-2	374	240	234	216	181	101	71	100	180	17	140	40	55	35	4xM16	M20x1,5	4a
KBM32-2	446	245	260	258	219	122	86	140	190	17	190	40	45	25	4xM16	M20x1,5	4a
KBM40-2	446	245	260	258	219	122	86	140	190	17	190	40	45	25	4xM16	M20x1,5	4a

4-pole 1500 rpm

Type code	A	B	C	D	øE	F	G	L	M	øN	P	Q	R	S	Bolts	Gland	Drawing
KBM2-4	195	125	120	104	79	45	46	62-65(33)	85-106(82-102)	9(7)	83	33	32,5	10	4xM8(4xM6)	M16x1,5	1
KBM2,5-4	212	150	150	132	105	59	46	62-74(70)	106(130)	9	98	30	35	22	4xM8	M16x1,5	2
KBM4-4	212	150	150	132	105	59	46	62-74(70)	106(130)	9	98	30	35	22	4xM8	M16x1,5	2
KBM6-4	230	150	150	132	105	59	55	62-74(70)	106(130)	9	98	30	35	22	4xM8	M16x1,5	2
KBM16-4	298	166	184	164	130	75	69	90	125(140)	13(11)	125	35	38	25	4xM12(4xM10)	M20x1,5	3
KBM20-4	298	166	184	164	130	75	69	90	125(140)	13(11)	125	35	38	25	4xM12(4xM10)	M20x1,5	3
KBM30-4	350	190	205	187	151	85	85	100	160	13	136	33	40	16	4xM12	M20x1,5	4a
KBM30-4V	350	190	205	187	151	85	85	105	140	13	136	33	40	16	4xM12	M20x1,5	4a
KBM40-4	350	190	205	187	151	85	85	100	160	13	136	33	40	16	4xM12	M20x1,5	4a
KBM40-4V	350	190	205	187	151	85	85	105	140	13	136	33	40	16	4xM12	M20x1,5	4a
KBM55-4	355	210	236	216	181	101	71	120	170	17	160	40	43	20	4xM16	M20x1,5	4a
KBC1-55-4	355	210	236	216	181	101	71	140	170	17	175	35	43	20	4xM16	M20x1,5	4a
KBM90-4	415	210	236	216	181	101	101	120	170	17	160	40	43	20	4xM16	M20x1,5	4a
KBC1-90-4	415	210	236	216	181	101	101	140	170	17	175	35	43	20	4xM16	M20x1,5	4a
KBM115-4	446	245	260	258	219	122	86	140	190	17	190	40	45	25	4xM16	M20x1,5	4a
KBC2-120-4	446	220	260	258	219	122	86	140	170	22	187	45	45	25	4xM20	M20x1,5	4a
KBM165-4	488	245	260	258	219	122	107	140	190	17	190	40	45	25	4xM16	M20x1,5	4a
KBC2-160-4	488	220	260	258	219	122	107	140	170	22	187	45	45	25	4xM20	M20x1,5	4a
KBC3-200-4	520	275	282	278	239	132	106	140	170	22	210	55	70	27	4xM20	M20x1,5	4a
KBC5-300-4	580	310	390	325	283	172	102	83	229	22	250	62	65	35	6xM20	M25x1,5	4b
KBC5-400-4	600	310	390	355	309	172	106	83	229	22	250	62	65	35	6xM20	M25x1,5	4b
KBC8-500-4	638	360	414	398	347	191	105	105	280	26	290	70	70	35	6xM24	M25x1,5	4b
KBC8-640-4	652	360	414	398	347	191	105	105	280	26	290	70	70	35	6xM24	M25x1,5	4b
KBC11-650-4	706	400	448	460	411	225	118	125	320	32	350	80	85	42	6xM30	M30x1,5	4b
KBC11-700-4	706	400	448	460	411	225	118	125	320	32	350	80	85	42	6xM30	M30x1,5	4b
KBC11-900-4	783	400	448	460	411	225	118	125	320	32	350	80	85	42	6xM30	M30x1,5	4b

S-S-ELD-EN-EMOT-001-V01

6-pole 1000 rpm

Type code	A	B	C	D	øE	F	G	L	M	øN	P	Q	R	S	Bolts	Gland	Drawing
KBM6-6	230	150	145	130	105	60	55	62-74(70)	106(130)	9	99	30	35	10	4xM8	M16x1,5	2
KBM15-6	298	166	185	160	130	75	69	90	125(140)	13(11)	120	30	40	12	4xM12(4xM10)	M20x1,5	3
KBM30-6	350	190	205	187	151	85	85	100	160	13	136	33	40	16	4xM12	M20x1,5	4a
KBM40-6	350	190	205	187	151	85	85	100	160	13	136	33	40	16	4xM12	M20x1,5	4a
KBM60-6	355	210	236	216	181	101	71	120	170	17	160	40	43	20	4xM16	M20x1,5	4a
KBC1-60-6	355	210	236	216	181	101	71	140	170	17	175	35	43	20	4xM16	M20x1,5	4a
KBM90-6	415	210	236	216	181	101	101	120	170	17	160	40	43	20	4xM16	M20x1,5	4a
KBC1-90-6	415	210	236	216	181	101	101	140	170	17	175	35	43	20	4xM16	M20x1,5	4a
KBM165-6	488	245	260	258	219	122	107	140	190	17	190	40	45	25	4xM16	M20x1,5	4a
KBC2-165-6	488	220	260	258	219	122	107	140	170	22	187	45	45	25	4xM20	M20x1,5	4a
KBC2-200-6	544	220	260	258	219	122	135	140	170	22	187	45	45	25	4xM20	M20x1,5	4a
KBM240-6	544	245	260	135	219	122	258	140	190	17	190	40	45	25	4xM16	M20x1,5	4a
KBC2-240-6	544	220	260	258	219	122	135	140	170	22	187	45	45	25	4xM20	M20x1,5	4a
KBC3-325-6	580	275	282	278	239	132	136	140	170	22	210	55	70	27	4xM20	M20x1,5	4a
KBC3-350-6	635	275	282	278	239	132	160	140	170	22	210	55	70	27	4xM20	M20x1,5	4a
KBC3-400-6	635	275	282	278	239	132	160	140	170	22	210	55	70	27	4xM20	M20x1,5	4a
KBC5-520-6	650	310	390	325	283	172	137	83	229	22	250	62	65	35	6xM20	M25x1,5	4b
KBC5-815-6	707	310	390	355	309	172	160	83	229	22	250	62	65	35	6xM20	M25x1,5	4b
KBC8-1250-6	782	360	414	398	347	191	177	105	280	26	290	70	70	35	6xM24	M25x1,5	4b
KBC8-1530-6	846	360	414	398	347	191	202	105	280	26	290	70	70	35	6xM24	M25x1,5	4b
KBC11-1550-6	864	400	448	460	411	225	197	125	320	32	350	80	85	42	6xM30	M25x1,5	4b
KBC11-1730-6	864	400	448	460	411	225	197	125	320	32	350	80	85	42	6xM30	M25x1,5	4b
KBC11-2150-6	900	400	448	460	411	225	197	125	320	32	350	80	85	42	6xM30	M25x1,5	4b
KBC11-2400-6	900	400	448	460	411	225	197	125	320	32	350	80	85	42	6xM30	M25x1,5	4b
KBC15-2700-6	951	575	550	545	497	270	180	140	480	45	520	90	100	45	8xM42	M40x1,5	4c
KBC15-3200-6	951	575	550	545	497	270	180	140	480	45	520	90	100	45	8xM42	M40x1,5	4c
KBC20-4120-6	1100	615	600	595	541	300	220	140	520	45	545	90	100	50	8xM42	M40x1,5	4c

8-pole 750 rpm

Type code	A	B	C	D	øE	F	G	L	M	øN	P	Q	R	S	Bolts	Gland	Drawing
KBC1-60-8	355	210	236	216	181	101	71	140	170	17	175	35	43	20	4xM16	M20x1,5	4a
KBC1-90-8	415	210	236	216	181	101	101	140	170	17	175	35	43	20	4xM16	M20x1,5	4a
KBC2-165-8	488	220	260	258	219	122	107	140	170	22	187	45	45	25	4xM20	M20x1,5	4a
KBC2-200-8	544	220	260	258	219	122	135	140	170	22	187	45	45	25	4xM20	M20x1,5	4a
KBC2-240-8	544	220	260	258	219	122	135	140	170	22	187	45	45	25	4xM20	M20x1,5	4a
KBC3-325-8	580	275	282	278	239	132	136	140	170	22	210	55	70	27	4xM20	M20x1,5	4a
KBC3-350-8	635	275	282	278	239	132	160	140	170	22	210	55	70	27	4xM20	M20x1,5	4a
KBC3-400-8	635	275	282	278	239	132	160	140	170	22	210	55	70	27	4xM20	M20x1,5	4a
KBC5-520-8	650	310	390	325	283	172	137	83	229	22	250	62	65	35	6xM20	M25x1,5	4b
KBC5-815-8	707	310	390	355	309	172	160	83	229	22	250	62	65	35	6xM20	M25x1,5	4b
KBC8-1250-8	782	360	414	398	347	191	177	105	280	26	290	70	70	35	6xM24	M25x1,5	4b
KBC8-1530-8	846	360	414	398	347	191	202	105	280	26	290	70	70	35	6xM24	M25x1,5	4b
KBC11-1550-8	864	400	448	460	411	225	197	125	320	32	350	80	85	42	6xM30	M25x1,5	4b
KBC11-1730-8	864	400	448	460	411	225	197	125	320	32	350	80	85	42	6xM30	M25x1,5	4b
KBC11-2150-8	900	400	448	460	411	225	197	125	320	32	350	80	85	42	6xM30	M25x1,5	4b
KBC11-2400-8	900	400	448	460	411	225	197	125	320	32	350	80	85	42	6xM30	M25x1,5	4b
KBC15-3600-8	951	575	550	545	497	270	180	140	480	45	520	90	100	45	8xM42	M40x1,5	4c
KBC15-4300-8	1015	575	550	545	497	270	212	140	480	45	520	90	100	45	8xM42	M40x1,5	4c
KBC20-6000-8	1100	615	600	595	541	300	220	140	520	45	545	90	100	50	8xM42	M40x1,5	4c

Higher torque values on request.

NOTE: Dynamic torque = 2 x Static torque



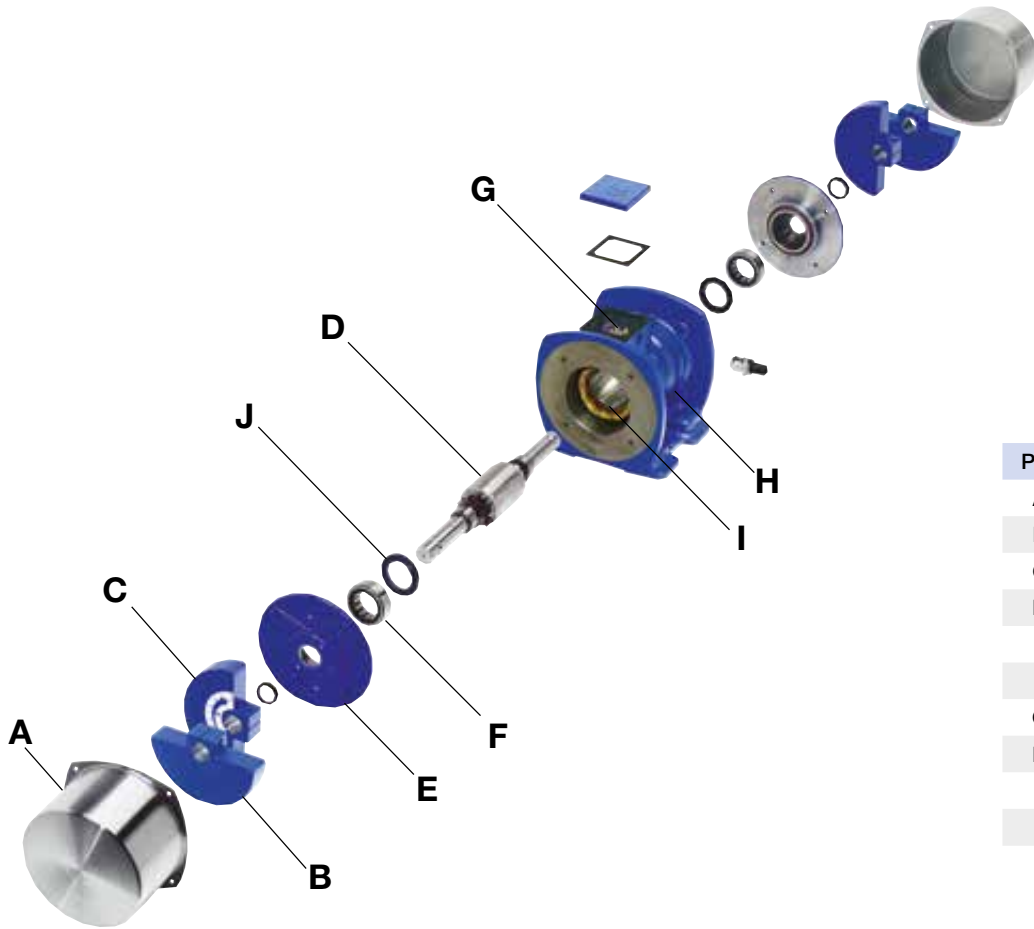
ATEX

All vibration motors of the KBM and KBC series can on request be supplied in an execution suitable for ATEX zone 22 (DUST) or ATEX zone 2 (GAS).

These motors are produced in conformance with the ATEX directive 94/9/CE according the below categories:

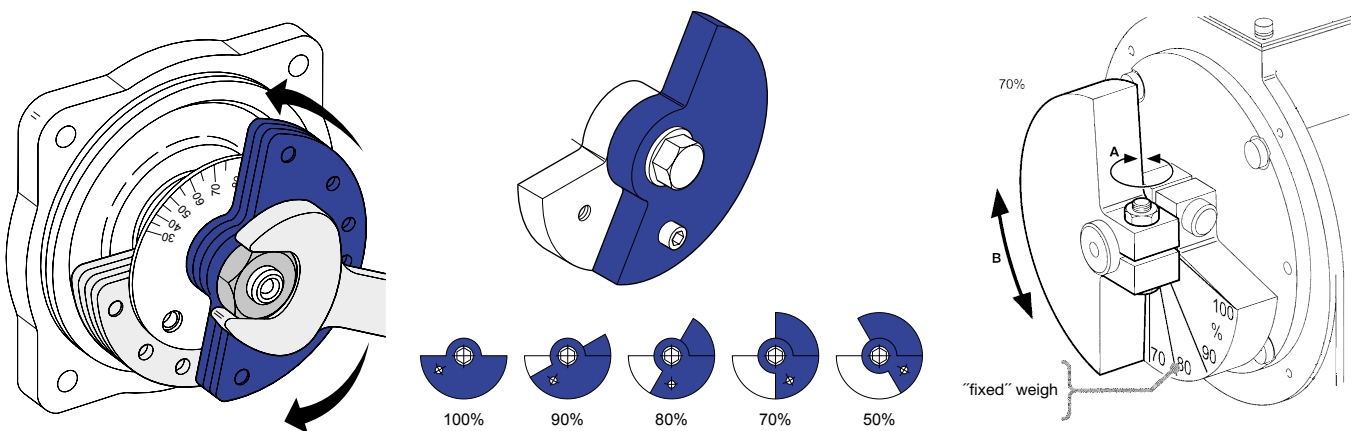
**3G EEx nA II T3
II 3D tD A22 IP65**

Exploded view with partslist



Pos	Part
A	Protective cover
B	Outer weight
C	Inner weight with scale
D	Rotor shaft
E	Bearing shield
F	Bearing
G	Junction box
H	Stator frame
I	Motor windings
J	Sealing ring

Adjustment of working torque



KBM-series

KBC-series

Drum motors are executed with an integrated motor reductor which results in a compact drive that can be closed off very well. This makes the drum motor the ideal choice to drive narrow conveyor belts or for applications that require a high degree of water and dust proofing.

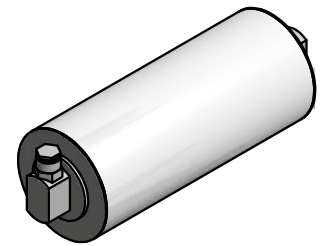
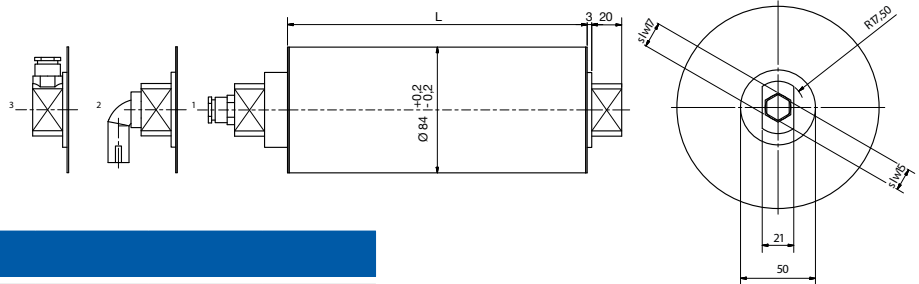
Drum motors show a very good resistance against water and dust being executed in IP 66, a property that will be valued highly in the food processing industry.

In combination with use of pressure washers and steam cleaners to comply to the very high hygiene standards in this industry the ELSTO drum motors provide sterling service.

The drum rollers can be executed in anodize aluminium or steel, and for the electrical connection, three different connection options are available. Should a standard motor not quite fit your application, an adapted version can be designed that very accurately suits your specifications. Ask the ELSTO sales department for the possibilities.

Mini 84

Standard diameter 84 mm
 Maximum standard length 650 mm
 Executed with a heavy duty shaft, lengths up to 900 mm are possible.

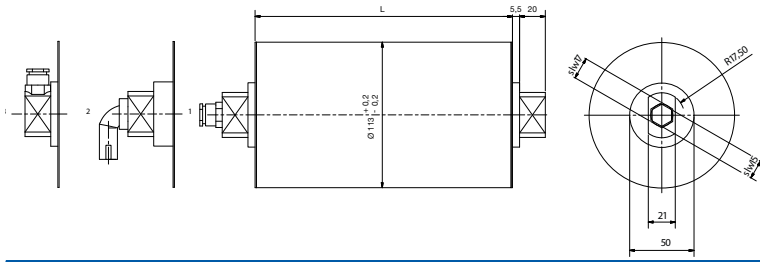


Mini Ø84					
Supply Voltage	Power	No. of reductor stages	Speed	Torque	Belt tension
V	kW	polen	m/s	Nm	N
1 x 230 3 x 230 3 x 415	0,06	3	0,08	31,9	630
		3	0,10	25,5	504
		3	0,11	23,2	458
		3	0,12	21	420
		3	0,15	16,8	336
		3	0,16	15,7	315
		3	0,19	13,3	265
		3	0,24	10,5	210
		2	0,32	7,9	158
		2	0,39	6,5	130
		2	0,46	5,5	109
		2	0,49	5,1	103
2	0,59	4,3	85		
1 x 230	0,09	3	0,12	31,5	630
		3	0,15	25,5	504
		3	0,16	23,9	472
3 x 230 3 x 415	0,12	3	0,19	26,9	530
		3	0,24	21,3	420
		2	0,32	15,5	315
		2	0,39	13,1	258
		2	0,46	11,1	219
		2	0,49	10,4	205
		2	0,59	8,6	172
		2	0,77	6,5	131

Piccolo 113

Standard diameter 113 mm. Maximum standard length 700 mm.
 Executed with a heavy duty shaft, lengths up to 1200 mm are possible.
 The gear wheels in the planetary reductor are made from a technical plastic as standard, and are suitable for light duty applications. Optionally the gear wheels can also be executed in steel. The drums are executed in aluminium (anodized on request) and stainless steel.





Piccolo Ø113

Supply	Power	No. of reductor stages	Speed	Torque	Belt tension	Min. length	No. of reductor stages	Speed	Torque	Belt tension	Min. length
V	kW	stages	m/s	Nm	N	mm	stages	m/s	Nm	N	mm
1 x 220/240	0,06	4	0,027	125,5	2222	256	3	0,20	17,0	300	256
		4	0,04	85,0	1500	256	3	0,26	13,0	231	256
		4	0,06	56,0	1000	256	3	0,31	11,0	194	256
		4	0,08	42,5	750	256	3	0,36	9,5	167	256
		3	0,12	28,0	500	256	2	0,50	7,0	120	256
		3	0,15	22,5	400	256	2	0,69	5,0	87	256
1 x 220/240	0,12	3	0,12	56,5	1000	256	3	0,36	19,0	333	256
		3	0,15	45,0	800	256	2	0,50	13,5	240	256
		3	0,20	34,0	600	256	2	0,69	10,0	174	256
		3	0,26	26,0	462	256	2	0,81	8,5	148	256
		3	0,31	22,0	387	256					
1 x 220/240	0,18	3	0,15	68,0	1200	276	2	0,50	20,5	360	276
		3	0,20	51,0	900	276	2	0,69	14,5	261	276
		3	0,26	39,0	692	276	2	0,81	12,5	222	276
		3	0,31	33,0	581	276	2	0,91	11,0	198	276
		3	0,36	28,5	500	276	2	1,05	9,5	171	276
1 x 220/240	0,25	3	0,20	70,5	1250	294	2	0,69	20,5	362	294
		3	0,26	54,5	962	294	2	0,81	17,5	309	294
		3	0,31	45,5	806	294	2	0,91	15,5	275	294
		3	0,36	39,0	694	294	2	1,05	13,5	238	294
		2	0,50	28,5	500	256					
1 x 220/240	0,37	3	0,26	80,0	1423	294	2	0,69	30,0	536	294
		3	0,31	67,5	1194	294	2	0,81	26,0	457	294
		3	0,36	58,0	1028	294	2	0,91	23,0	407	294
		3	0,50	42,0	740	294	2	1,05	20,0	352	294
3 x 380/415 3 x 220/240	0,06	4	0,03	124,0	2222	256	3	0,20	17,0	300	246
		4	0,04	84,0	1500	256	3	0,26	13,0	231	246
		4	0,06	56,0	1000	256	3	0,31	11,0	194	246
		4	0,08	42,0	750	256	3	0,36	9,5	167	246
		3	0,12	28,0	500	246	2	0,50	7,0	120	246
		3	0,15	22,5	400	246	2	0,69	5,0	87	246
3 x 380/415 3 x 220/240	0,12	4	0,08	84,0	1500	256	3	0,31	22,0	387	246
		3	0,12	56,5	1000	246	3	0,36	19,0	333	246
		3	0,15	45,0	800	246	2	0,50	13,5	240	246
		3	0,20	34,0	600	246	2	0,69	10,0	174	246
		3	0,26	26,0	462	246	2	0,81	8,5	148	246
3 x 380/415 3 x 220/240	0,18	3	0,12	84,0	1500	256	2	0,50	20,5	360	256
		3	0,15	68,0	1200	256	2	0,69	14,5	261	256
		3	0,20	51,0	900	256	2	0,81	12,5	222	256
		3	0,26	39,0	692	256	2	0,91	11,0	198	256
		3	0,31	33,0	581	256	2	1,05	9,5	171	256
		3	0,36	28,5	500	256					
3 x 380/415 3 x 220/240	0,25	3	0,20	70,5	1250	276	2	0,69	20,5	362	276
		3	0,26	54,5	962	276	2	0,81	17,5	309	276
		3	0,31	45,5	806	276	2	0,91	15,5	275	276
		3	0,36	39,0	694	276	2	1,05	13,5	238	276
		2	0,50	28,5	500	276					
3 x 380/415 3 x 220/240	0,37	3	0,26	80,0	1423	294	2	0,69	30,5	536	294
		3	0,31	67,5	1194	294	2	0,81	26,0	457	294
		3	0,36	58	1028	294	2	0,91	23,0	407	294
		2	0,50	42	740	294	2	1,05	20,0	352	294

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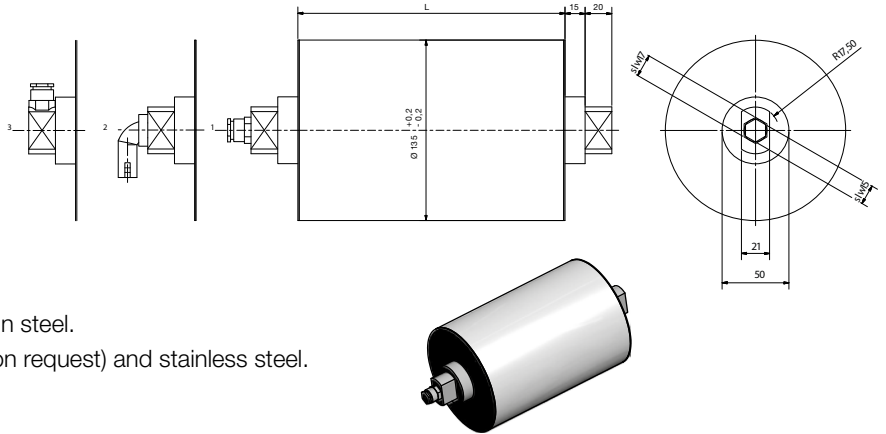
Midi 135

Standard diameter 135 mm.
 Maximum standard length 700 mm
 Executed with a heavy duty shaft,
 lengths up to 1200 mm are possible.

The gear wheels in the planetary reductor
 are made from a technical plastic as standard,
 and are suitable for light duty applications.

Optionally the gear wheels can also be executed in steel.

The drums are executed in aluminium (anodized on request) and stainless steel.



Midi Ø135

Supply	Power	No. of reductor stages	Speed	Torque	Belt tension	Min. length	No. of reductor stages	Speed	Torque	Belt tension	Min. length
V	kW	stages	m/s	Nm	N	mm	stages	m/s	Nm	N	mm
1 x 220/240 1 x 115	0,12	4	0,10	81,0	1200	300					
		3	0,14	58,0	857	300					
		3	0,18	45,0	667	300					
1 x 220/240	0,18	3	0,14	87,0	1286	300					
		3	0,18	67,5	1000	300					
		3	0,24	50,5	750	300					
		3	0,31	39,0	581	300					
1 x 220/240 1 x 115	0,25	3	0,14	121,0	1786	310					
		3	0,18	94,0	1389	310					
		3	0,24	70,0	1042	310					
		3	0,31	54,5	806	310					
1 x 220/240 1 x 115	0,37	3	0,36	47,0	694	310					
		3	0,27	104,0	1542	310	2	0,80	31,0	463	310
		3	0,31	80,5	1194	310	2	0,93	27,0	398	310
		3	0,36	69,5	1028	310	2	1,07	23,5	346	310
		3	0,41	61,0	902	310	2	1,25	20,0	296	310
		2	0,60	41,5	617	310					
1 x 220/240 1 x 115	0,50	3	0,31	109,0	1613	310	2	0,93	36,0	537	310
		3	0,41	82,0	1219	310	2	1,07	31,0	467	310
		2	0,60	56,0	833	310	2	1,25	27,0	400	310
		2	0,80	42,0	625	310					
3 x 380/415 3 x 220/240	0,18	3	0,14	87,0	1286	300					
		3	0,18	67,5	1000	300					
		3	0,24	50,5	750	300					
		3	0,31	39,0	581	300					
3 x 380/415 3 x 220/240	0,25	3	0,14	121,0	1786	310	3	0,36	47,0	694	310
		3	0,18	94,0	1389	310	3	0,41	41,0	610	310
		3	0,24	70,0	1042	310	3	0,60	28,0	417	310
		3	0,31	54,5	806	310	2	0,80	21,0	312	310
3 x 380/415 3 x 220/240	0,37	3	0,31	80,5	1194	320	2	0,93	27,0	398	320
		3	0,36	70,0	1028	320	2	1,07	23,5	346	320
		3	0,41	61,0	902	320	2	1,25	20,0	296	320
		2	0,6	42,0	617	320					
3 x 380/415 3 x 220/240	0,55	3	0,31	120,0	1774	310	2	0,93	40,0	591	310
		3	0,41	90,5	1341	310	2	1,07	34,5	514	310
		2	0,6	62,0	914	310	2	1,25	29,5	440	310
		2	0,8	46,5	688	310					

S-S-ELD-EN-EMOT-001-V01

Drum motors

Permanent magnet DC motors

BC/SHMP/PMDC series



The Permanent magnet DC motors have proven themselves over a prolonged period of time. The materials used and the electrical design make it possible to use the motors under demanding circumstances.

The motors can be used for four quadrant controls, and combined with low noise planetary gears from the PL series u are ensured of a compact but powerful drive.

BC	
Type code	Power kW
BC 110	0,09
BC 120	0,24
BC 140	0,45
BC 220	0,28
BC 240	0,4
BC 270	0,75
BC 310	1,4

SP 180V	
Type code	Power kW
56 SSH-2GPM	0,06
56 MSH-2GPM	0,1
56 LSH-2GPM	0,15
63 SSH-2GPM	0,06
63 MSH-2GPM	0,1
63 LSH-2GPM	0,15
71 ESSH-2GPM	0,18
71 SSH-2GPM	0,25
71 MSH-2GPM	0,35
71 LSH-2GPM	0,45
71 ELSH-2GPM	0,6
80 SSH-4GPM	0,75
80 MSH-4GPM	1,1
80 LSH-4GPM	1,5

PMDC	
Type code	Power kW
55PMDC5-24/30	0,029
70PMDC5-24/22	0,055
70PMDC5-24/30	0,070
90PMDC5-24/22	0,110
90PMDC5-24/30	0,150
90PMDC7-24/22	0,180
90PMDC7-24/30	0,230
110PMDC7-24/22	0,300
110PMDC7-24/30	0,400
110PMDC9-24/22	0,510
110PMDC9-24/30	0,700

Nominal power

0,02 – 1,4 kW

IEC frame sizes

56 – 80

Motor speeds

1.500, 2.000, 3.000 rpm

Supply voltage

12, 24, 36, 48, 65, 110, 180 V DC

Executions

Flange IM B5 and IM B14

Frame material

Aluminium

Cooling

Non ventilated (TENV) or fan cooled (TEFC)

Servo motors

BTD/BCR series



The BTD and BCR servo motors from Bonfiglioli Vectron stand out due to their compact size, high efficiency and suitability for heavy intermittent use.

The standard motors are protected according IP 65 (IP 67 optional) and fitted with well insulated PTC sensors.

The motors can also be fitted with 24 VDC brake.

For information feedback there is choice between a resolver or an hyperface absolute encoder.

BTD Serie	
Type code	Power kW
BTD-2-0026	0,26
BTD-2-0053	0,53
BTD-2-0074	0,74
BTD-2-0095	0,95
BTD-3-0095	0,95
BTD-3-0190	1,9
BTD-3-0325	3,25
BTD-3-0420	4,2
BTD-4-0410	4,1
BTD-4-0630	6,3
BTD-4-0860	8,6
BTD-5-1160	11,6
BTD-5-1490	14,9
BTD-5-1870	18,7
BTD-5-2730	27,3

BCR Serie	
Type code	Power kW
BCR-2-0020	0,2
BCR-2-0040	0,4
BCR-2-0060	0,6
BCR-2-0080	0,8
BCR-3-0065	0,65
BCR-3-0130	1,3
BCR-3-0250	2,5
BCR-3-0300	3,0
BCR-4-0100	1,0
BCR-4-0260	2,6
BCR-4-0530	5,3
BCR-4-0750	7,5
BCR-5-0660	6,6
BCR-5-1050	10,5
BCR-5-1350	13,5
BCR-5-1700	17,0
BCR-5-2200	22,0
BCR-6-1350	13,5
BCR-6-1900	19
BCR-6-2200	22
BCR-6-2900	29
BCR-7-2700	27
BCR-7-3200	32
BCR-7-4000	40
BCR-8-0400	40
BCR-8-0680	68
BCR-8-0930	93
BCR-8-1150	115

Torque

BTD: 0,26 – 27 Nm

BCR: 0,2 – 115 Nm

Motor speeds

BTD: 3000, 4500 rpm

BCR: 2000, 3000, 4500 rpm

Supply voltage

230 / 400 V AC

Inertia

Low values from 0,06 kgcm² to 190 kgcm²

Standards

CEE 73/23 (LVD) and CEE89/336 (EMC)

Certificates

CE, UL

DC brake

Optional 24 V DC

Direct drive and lift motors

M and T series



The M and T series dynamic high torque/lift motors are relatively new in the programme. Lift motors are that are used in combination with a pulley with a transmission ratio of 1:1 or 1:2.

During the development of these motors, efficiency, compact size, ride comfort and reduced noise levels all received detailed attention. The result are these almost vibration free motors, that compared to regular hydraulic traction motors are highly energy efficient. Only 1/3 of the energy required for a comparable hydraulic system is needed to operate the system. Thanks to the compact construction these brushless synchronous motors with integrated junction box can be mounted directly onto the application (e.g right on top of the lift cabin).

M series		
Type	Lifting power	Power
	kg	kW
M24.210.06	480	2,0
M24.240.06	320	1,8
M24.240.10	320	2,8
M24L.210.06	630	2,5
M24L.240.06	480	2,2
T24.210.10	630	4,1
T24.210.16	630	6,8
T24.240.10	480	3,7
T24.240.16	480	6,0
T32.210.16	800	11,1
T32.240.10	800	6,0
T32.240.16	800	9,8
T32.320.10	630	4,5
T32.320.16	630	7,4
T32.320.10D	320	2,3
T32.320.16D	320	3,8
T32.240.10	1,275	11,1
T32.240.16	1,275	18,0
T32.320.10	1,000	8,3
T32.320.16	1,000	13,5
T32.320.10	1,250	8,3
T32.320.16	1,250	13,5
T32L.320.10D	600	4,1
T32L.320.16D	600	6,9
T32L.400.10D	480	3,5
T32L.400.16D	480	5,5

Significant features of these motors are:

- Direct drive makes reductor unnecessary
- 16 and 24 pole motors
- Motor speeds up to 300 RPM
- High efficiency throughout the rev range
- Up to 70% energy saving compared to hydraulic systems
- Compact dimensions
- Low noise levels
- Very controllable dynamic movements
- High ride comfort and speed modulation trough variable voltage and frequency
- Many uses possible including continuous operation
- Maintenance free

Properties of the accompanying motor controllers:

- Simple adjustments and excellent control
- Feedback from motor encoder ensures excellent dynamic control
- Simple parameter management directly visible on the controller
- Pre-programmed speed and movement profiles
- Acceleration and deceleration individually adjustable
- Integrate brake lifter control
- Temperature control
- High switching frequency for a reduced motor noise
- Very accurate height adjustment

Orbit hydro motors

EMX series



One of the most significant features of the EMX series hydraulic orbit motors is the great variety in executions. A very broad range of displacements is available, and the design is very compact. Depending on the type of motor both metric and BSP porting is available.

All usual shaft executions are available, just like the different flange options in the range. Even a double output shaft is available.

For a number of models a special output shaft is available that enables the motors to be mounted directly on a wheel.

Displacement

8 - 630 cc

Power

1,7- 53,5 kW

Torque

11 - 188 Nm

Speed

95 - 1950 rpm

Output shafts

Cylindrical with key way

Conical with key way

Splined

Applications:

Conveyor belts

Agricultural equipment

Metal working equipment

Combined with reducers

Options

Wheel mounting

Dedicated reducers

Side or rear mounted connection ports

Metric or BSP connecting ports

Dedicated brake

Double output shaft

Heavy Duty Orbit hydro motors

EMHD series



The EMHD series are precision built hydraulic orbit motors with an high efficiency and excellent reliability. Depending on the type of motor both metric and BSP porting is available in rear and side connecting configurations.

All usual shaft executions are available, just like the different flange options in the range. Even a double output shaft is available.

For a number of models a special output shaft is available that enables the motors to be mounted directly on a wheel.

Displacement

160 - 800 cc

Power

11 - 67 kW

Torque

460 - 259 Nm

Speed

170 - 636 rpm

Output shafts

Cylindrical with key way

Conical with key way

Splined

Applications:

Conveyor belts

Agricultural equipment

Food processing industry

Winches and other marine equipment

Special vehicle construction (Pavers, graders etc.)

Combined with reducers

Markets:

Maritime

Forestry

Metalworking machines

Agricultural machines

Road construction equipment

Mining equipment

Special vehicle market

Options

Wheel mounting

Dedicated reducers

Side or rear mounted connection ports

Metric or BSP connecting ports

Frequency inverter for sensorless operation

AGILE series



The stylish and compact AGILE inverter is designed for controlling both asynchronous induction motors and permanent magnet motors.

The most significant of the many advantages are;

- Energy efficient and compact
- Safe Torque Off (STO) function
- Direct control (PM motors)
- Sensorless operation

400 V - 3 fase - 50 Hz

Type code	Power kW
AGL402 - 02	0,25
AGL402 - 03	0,37
AGL402 - 05	0,55
AGL402 - 07	0,75
AGL402 - 09	1,1
AGL402 - 11	1,5
AGL402 - 13	2,2
AGL402 - 15	3
AGL402 - 18	4
AGL402 - 19	5,5
AGL402 - 21	7,5
AGL402 - 22	9,2
AGL402 - 23	11

230 V - 1 fase - with filter

Type code	Power kW
AGL 202-05 1 FA	0,25
AGL 202-07 1 FA	0,37
AGL 202-11 1 FA	0,75
AGL 202-15 1 FA	1,5
AGL 202-18 1 FA	2,2

Nominal power (AGL402)

0,25 – 11 kW / 3-fase 360-480V / 50-60Hz ± 10 %

Nominal power (AGL202)

0,25 – 2,2 kW / 1-fase 200-240V / 50-60Hz ± 10%

Suitable for:

Asynchronous induction motors
Brushless permanent magnet motors

Programmable control functions

V/f steering for asynchronous motors
Sensorless vector steering for asynchronous and permanent magnet or brushless motors

Protection

IP20 (EN 60529)

Mechanical specifications

Fitted with grid filter
Integrated brake chopper
Short circuit and earth connect protection
Integrated safe torque off safety system
Programmable control ports
6 digital and two multi-functional A-D input ports
1 multi-functional I/O and 1 digital output port
1 multi-functional A/D pulse port, 1 alarm port
Powered ports ; + 24V DC, + 10 V DC
Optional separate 24V DC power port
Standard serial interfaces; RS232, RS485
Integrated Modbus, CANopen, VA bus and system bus

Software specificaties

Continuous motor control
Safe Torque Off function
Energy saving function
Pre-configured application configurations
Integrated application wizard
Alarm history
Motor and inverter memory
Auto diagnosis
Integrated PLC function with graphic display
Integrated oscilloscope function
Auto tuning

Options

Extension module; Memory card
Communication modules; Profibus-DP, CANopen, Modbus, Ethernet, VAbus TCP, Ethercat., Profinet
Software; PC Vplus suite

High Performance frequency inverter / Servo control

ACU series



A complete series of inverters for the control of both three phase and servo motors. The Active Cube series complies with the highest demands in the field of precise and dynamic control of electric motors.

- Positive control
- Safe Torque Off function
- Master – Slave configuration
- Sensorless direct control of permanent magnet motors

400 V - 3 fasen - 50 Hz

Type code	Power kW
ACU401 – 01	0,25
ACU401 – 03	0,37
ACU401 – 05	0,55
ACU401 – 07	0,75
ACU401 – 09	1,1
ACU401 – 11	1,5
ACU401 – 12	1,85
ACU401 – 13	2,2
ACU401 – 15	3
ACU401 – 18	4
ACU401 – 19	5,5
ACU401 – 21	7,5
ACU401 – 22	9,2
ACU401 – 23	11
ACU401 – 25	15
ACU401 – 27	18,5
ACU401 – 29	22
ACU401 – 31	30
ACU401 – 33	37
ACU401 – 35	45
ACU401 – 37	55
ACU401 – 39	65
ACU401 – 43	75
ACU401 – 45	90
ACU401 – 47	110
ACU401 – 49	132
ACU401 – 51	160
ACU401 – 53	200
ACU401 – 55	250
ACU401 – 57	315
ACU401 – 59	355
ACU401 – 61	400

Nominal power (ACU401)

0,25 – 400 kW / 3-fase 360-480V / 50-60Hz (±10%)

Nominal power (ACU201)

0,25 – 9,2 kW / 1-fase of 3 fase 200-240V / 50-60Hz (±10%)

Programmable control functions

Selectable Vector control function; sensorless control, sensorless field orientated control, field orientated control with speed sensor, field orientated control of synchronous motors with speed/position sensor.

Overload

150% during 60 s / 200% during 1 s

Switching frequency

2, 4, 8, 12, 16kHz

Protection

IP20 (EN 60529)

EMC Filter

Integrated up to 9,2 kW (EN 61800-3)

Mechanical specifications

Integrated safe torque off safety system
 Integrated brake chopper
 DC connection for standard encoders
 Resolver module for servo motor feedback
 Motor temperature monitoring
 Plug in high power connection (< 3 kW)
 Plug in programmable connections, 6 digital ports, 1 multifunctional input port, 1 digital output port, 1 multi-functional output port, 1 relay output (delayed action).

Software specifications

32 programmable motion characteristics
 36 homing functions according CANopen DS 4.02
 Adjustable and convertible units
 JOG function
 Absolute, relative, touch probe and gearing positioning mode

Options

Extension modules; analog and digital extension cards, extra encoder or resolver input ports, repeating frequency output, system bus.
 Absolute encoder formula for Hyperface, endat 2.1, SSI
 Communication modules; Profibus DP, CANopen, Modbus, Ethernet, VBus TCP, Ethercat, Profinet.
 Optional keyboard; removable KP500 with copying function, connection kit and holder.
 Software PC Vplus suite



Smart and affordable standard frequency inverter

S2U series



Powerful and effective motor management and intuitive controls are the significant features of the compact Bonfiglioli-Vectron frequency inverter of the S2U series. This inverter controls in an efficient manner both speed and torque of motors up to 2,2 kW. Simple installation and use combined with extended functionality and connection possibilities makes this inverter the idea choice for applications where high productivity and short development times are critical factors.

230V - 1 fase - 50Hz	
Type code	Power kW
S2U 230S - 02	0,20
S2U 230S - 03	0,40
S2U 230S - 07	0,75
S2U 230S - 11	1,50
S2U 230S - 13	2,20

Nominal power

0,20 – 2,2 kW / 3-fase 200-240V / 50-60Hz (+10 - 15%)

Type of control

V/f steering with automatic torque compensation function

Switching frequency

1 - 16 kHz

Protection

IP20 (EN 60529)

Mechanical specifications

5 capacities in 2 build sizes
 1 analog input port (voltage or current) selectable
 5 digital input ports
 1 analog output port (linear voltage)
 1 relay output (programmable function)
 RJ45 ethernet connection for communication with PC or Modbus
 Integrated keyboard with pot meter
 Integrated Modbus communication

Important functions

Configuration is fully exchangeable with the Vectron Synthesis series
 Selectable automatic restart after power cut
 2 settings ACC/DE – 4 S curves available
 Overload protection
 PID feedback
 Temporary torque increase
 L2t motor temperature monitoring
 Cooling plate overheating protection
 Selectable stop mode
 JOG frequency
 Alarm history
 DC brake control
 Protection against short power cuts
 Short circuit and earth connect protection
 Max current limitation

Synthesis series



Synthesis series	
Type code	Power
	kW
SYN10 S -001	0,2
SYN10 S -003	0,4
SYN10 S -005	0,75
SYN10 S -007	1,5
SYN10 S -009	2,2
SYN10 T -005	0,75
SYN10 T -007	1,5
SYN10 T -009	2,2

‘Low cost’ frequency inverter

Most significant features of the Synthesis series frequency inverters are the ease of operation and the integrated EMC filters, IP 65 protection (optional) and compact dimensions. The combination of a good performance, sturdy construction, high reliability and aggressive pricing makes the Synthesis series a strong contender in the inverter market.

Nominal power (Synthesis)

0,2 – 2,2 kW / 1-fase 200-240V / 45-66Hz

0,75 – 2,2 kW / 3-fase 200-240V / 380-460V / 45-66Hz

Type of control

V/f steering with increased torque and selectable programming

Overload

150% during 60s

Switching frequency

4 – 16 kHz

Protection

IP20 or optionally IP65 (EN 60529)

EMC filter

Standard integrated filter class A (EN 61800-3)

Mechanical specifications

Integrated brake resistor (SYN10 S -007/009 and all SYN 10 T)

DC connection (SYN10 S -007/009 and all SYN 10 T)

Inverter temperature monitoring

1 analog input port (v or I selectable)

4 digital input ports (programmable function)

1 analog output port (linear voltage)

1 relay output (programmable function)

Integrated keyboard with pot meter

Important functions

I²+ motor temperature monitoring

DC brake control

Selectable voltage and frequency characteristics

JOG frequency

Selectable automatic restart after power cut

Selectable stop mode

Automatic alarm reset

Alarm history

Protection against short power cuts

Overload protection

Short circuit and earth connect protection

Cooling plate overheating protection

Max current limitation

DCDC series



Direct Current controllers for battery power

For the electrical vehicle market ELSTO has an extensive programme of Direct Current controllers.

The controllers are available in a wide range of voltage and power options, and range from simple 1 quadrant to complex 4 quadrant versions. Information about the accompanying permanent magnet DC motors can be found elsewhere in this catalogue.

DCDC series	
Type code	Current
	A
UNI 4 12/24	4
UNI 8 12/24	8
Vortex 40 24	40
Vortex 75 24	75
Pro 120 24	120
Pro 120 48	120
Pro 150 24/48	150
4QD 200 24/36	200
4QD 200 48	200
4QD 300 24/36	300
4QD 300 48	300

Nominal output current (DCDC)

4 – 300 A

Voltages

12, 24, 36, 48 V DC

Specifications

- 1, 2 or 4 quadrant control
- Regenerative brake energy
- Parking brake control
- Fixed speed adjustments
- Tacho output
- Remote control option
- Increased torque
- Reversed polarity protection
- Over voltage protection
- Battery discharge protection
- Amperage limiter for controller and motor
- Thermal protection

BPM series	
Type code	Current
	A
BPM24-RT15BL	15
BPM24-RT20BL	20
BPM48-RT50BL	50
BPM24-RT100BL	100

Nominal output current (BPM)

15 – 100 A

Spanningen

12, 24, and 48 V DC

Specifications

- 4 quadrant control by means of an H bridge
- Stable motor speed by means of EMK feedback
- Compact execution



Starter panels and control boxes

Not only for the supply of components ELSTO can be your involved partner, also for the development, engineering and programming of complete drive systems ELSTO is the partner of choice.

With your application as starting point the specifications are drawn up, based on your requirements and our extended experience with control and drive systems.

Since ELSTO is active on many markets and in many disciplines our advice will often provide an original viewing angle that will often prove to be both technically and economically advantageous.

The control boxes are assembled in our own workshops, where experienced staff and up to date equipment are the most important ingredients for an efficient production and reliable products. The in-house engineering staff makes sure the boxes are designed according to the latest regulations, and are fully compliant with any special customer requirements.

Documentation is always important be it a complicated project or a “simple” starter panel.

Each delivery is complete with electrical diagrams, parts lists and written specifications, enabling correct installation, operation and maintenance.

The standard inverter used in the ELSTO controls is the Bonfiglioli-Vectron range of inverters, often combined with an PLC or an HMI. The complete software is written in-house, and the combination of control box and motors (often combined with reducers) is thoroughly tested and fine-tuned before the drive leaves our workshops.

The efficiency of installation and commissioning on site will benefit greatly from the attention the drive received before shipment, and ELSTO can also provide commissioning services on site.

Examples

- Position synchronous rotation of up to 32 shafts
- Torque current (Isq) motor torque control of up to 32 motors
- Positioning movements in many different guises
- Speed and torque control
- Winch controls for lifting and pulling winches
- Heave compensation and barge positioning

Control boxes are available up to 400 kW absorbed power.



ELSTO drives & Controls represents an impressive number of reputable manufacturers and brands. Next to the respected brands, ELSTO has an extensive range of ELSTO branded motors and controls, which guarantee our customers premium brand quality for a very competitive price.

Motors



Reducers

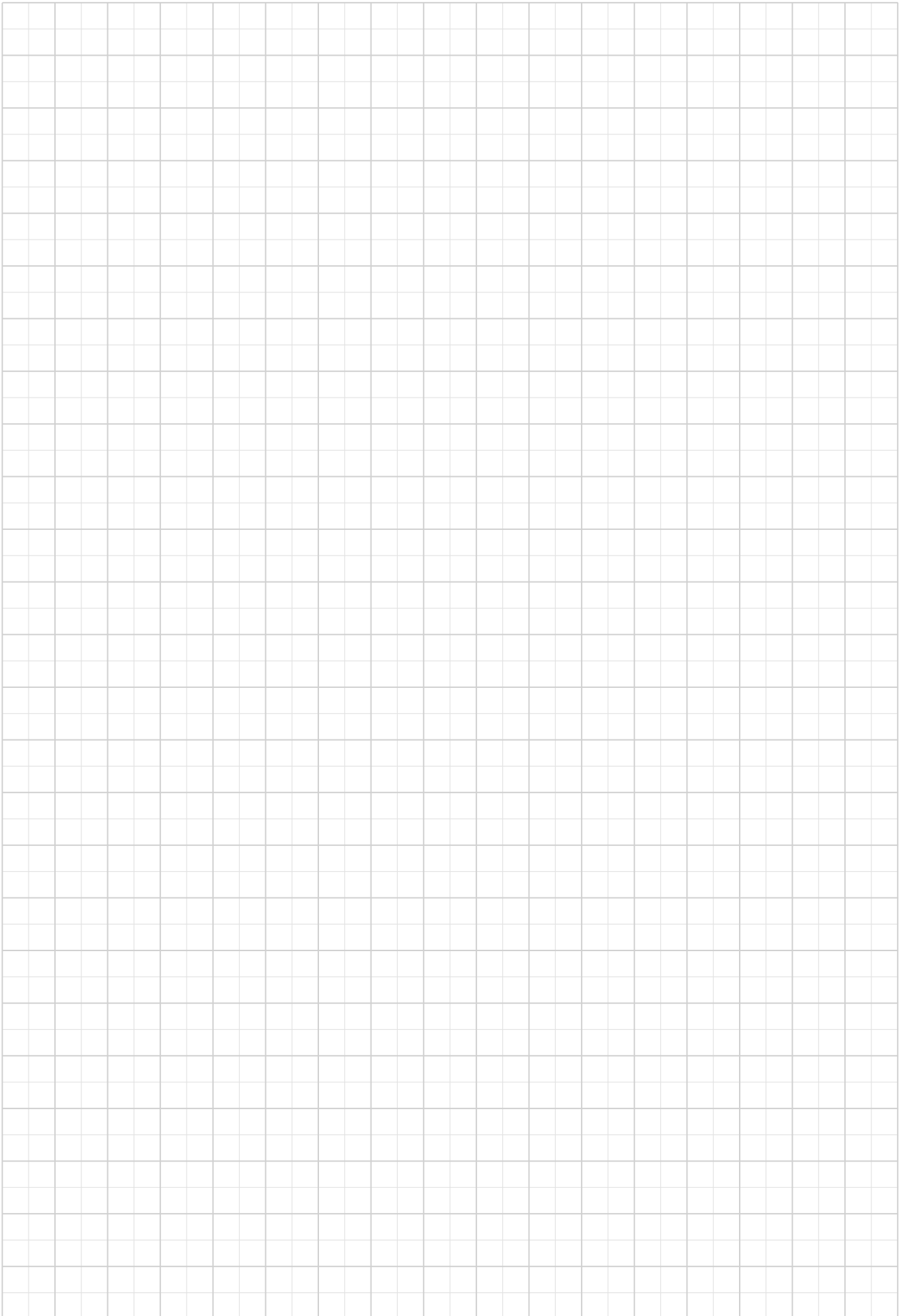


Controls

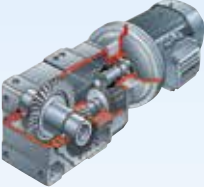





Components





Sales program

	<ul style="list-style-type: none"> • Frequency inverters/DC controllers • Servo controls/PLC's • Scada/adaptive control systems • Pulse generators/Encoders/Tacho's • Industrial control components 	<p>Controls</p>
	<ul style="list-style-type: none"> • Worm gears • Gearbox • Planetary gearbox • Servo drivers • Mobile drives 	<p>Reducers</p>
	<ul style="list-style-type: none"> • Three phase motors (with brake)/Single phase motors (with brake) • Servo motors (with brake)/DC motors (with brake) • ATEX/Explosion proof motors (with brake) • Vibrator motors • Hydraulic motors and brakes 	<p>Motors</p>
	<ul style="list-style-type: none"> • Rigid/Semi rigid couplings • Flexible/(High) elastic couplings • Start/Clutch couplings • Overrun/Safety couplings • Brake/Clutch combination units 	<p>Couplings</p>
	<ul style="list-style-type: none"> • Gear transmissions • Belt transmissions • Chain transmissions • Clamping bushes 	<p>Open transmissions</p>
	<ul style="list-style-type: none"> • Linear drives/Spindle drives • Brakes (Disc/Block/Hydraulic/Pneumatic) • Remote control cables • Universal bearings/Safety chucks/Winding shafts • Hydraulic valves and components 	<p>Components</p>
	<ul style="list-style-type: none"> • Winches/Hoists /Lifting and hoisting accessories • Lift tables/Lifting appliances • Cargo lifts/Domestic lifts • Internal logistic systems • Transport equipment 	<p>Transport</p>
	<ul style="list-style-type: none"> • Repair, Overhaul and maintenance of all makes and types of transmission components • MRO (Maintenance Repair Overhaul) • Diagnostics, preventive and corrective maintenance "On and of site" • Winding an balancing of electric motors and generators • Engineering and manufacturing of bespoke transmissions and refits • Design and production of controls systems and switch panels 	<p>Services</p>

- Sales of electro mechanical transmissions (motors, reducers, linear drives and components) and inverters.
- Engineering and production of bespoke transmission systems.



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- Engineering and production of control solutions and control boxes.
- Sales of frequency inverters, servo drives and integral control systems.



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- Regional Sales of electro mechanical transmissions and inverters.
- Repair, Overhaul and maintenance of all makes and types of transmission components.
- Maintenance Repair Overhaul.
- Winding and balancing of electric motors.



ELSTO Services

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- Maintenance Repair Overhaul.
- Preventive and corrective maintenance of transmissions on industrial plants.
- Overhaul of generator sets.
- Specialist in ATEX maintenance.
- Regional Sales of electro mechanical transmissions and inverters.



STOLK Services

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- Sales in België and Luxemburg of electro mechanical transmissions (motors, reducers, linear drives and components) and inverters.
- Engineering and production of bespoke transmission systems.



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