

Low voltage asynchronous motors Marine motors

Special catalogue 01-2009



Contents

Introduction _____	4
Technical explanations _____	7
Motors for operation on ships _____	13
Dimensions _____	19
Spare parts _____	33

The products featured in this catalogue can also be found in the interactive electronic catalogue V 6.0.

Additional information about the company and the products of the VEM Group are available via internet: www.vem-group.com.

The electronic catalogue can assist you in selecting and configuring VEM products. You can choose to print out data sheets and requests and the programme can display scaled and dimensioned drawings that can be downloaded in different 2D and 3D-data files. In addition to general information about the VEM group, you have access to catalogues, spare parts lists and operation and maintenance manuals of the individual product types.

Innovative drives made in Germany

Electric machines made by VEM have millions of applications around the globe. VEM stands for high-quality products such as large and special-purpose machines, standard motors and customized drives which have given reliable service in a variety of industries. Systems of all types use our motors, generators and drives for a wide range of voltages. They have stood the test for decades even under extreme conditions – whether in the dust and heat of mill trains, chemical plants with explosion hazards, or in the moist, salty air aboard ships.

Our quality assurance for the low voltage motor production is certified and monitored by Germanischer Lloyd Certification GmbH, Hamburg pursuant to DIN EN ISO 9001:2000, and by IBExU Institut für Sicherheitstechnik GmbH, notified body no. 0637 pursuant to Article 10(1) of RL 94/9/EC

Marine motors in world-wide applications

VEM has many years of experience in production of marine motors and holds approvals of all important ship classification societies. Thanks to our high performance calculation and engineering design departments the electric motors are designed completely in accordance with the individual requirements of the clients. In this process we work in close cooperation with partners from research and development. This cooperation results in products that rank among the most advanced in the market and set the pace for the next generation of motors.

The robust grey cast iron motors designed for sea-water protection are meant for operation on seagoing vessels as power unit for ancillary aggregates. When engineering these motors we have especially taken into account the special climatic and mechanic loads of these application ranges. The motors operate safe and reliable as drives for ventilators, pumps, capstans, rotating and hoisting gear on passenger and container vessels, but also on luxury yachts.

Quality products from VEM

When buying our quality products you can be sure that we have consequently implemented challenging aspects like energy saving and environmentally sound production processes. That means we develop cost-effective drive solutions for all sorts of marine applications individually adapted to your requirements. Our flexibility, the availability of the products and our high delivery reliability assist you at your world-wide investment projects.

Electric drives of all types are used throughout industry, and their properties are very often a key factor in making production efficient. The VEM range of three-phase asynchronous motors for low voltages meets customer requirements for versatility, better operating data, environmental acceptability and maximum reliability. More particularly, the following features are available:

- energy conservation as a result of high motor efficiencies
- universal applications, less storage with IP 55 protective system fitted in series (degrees up to IP 66 on request)
- improved service life, reliability and thermal overload capacity from series production in thermal class 155 (F) with thermal reserve (thermal class 180 (H) available as a special design)



- optional arrangement of connection box left/top/right
- environmentally acceptable with low-noise ventilation system
- availability to East European standards
- alternative availability of conventional IEC/DIN series and an advanced line of products based on IEC 60072 for mounting dimensions and sizes
- facilities for mounting components such as pulse generators, tachometers, brakes, speed monitors and external ventilation units to deal with today's (automatic) control tasks as required by customers.

Working with customers worldwide

Wherever clients require electric machines, we are partners in supporting and accompanying their projects, whether they are in Europe, the Middle East, Asia or the Americas. After all, proximity to customers and customer care are dear to us. You can use the know-how of VEM subsidiaries in Finland, Britain, Austria, Sweden and Singapore, and a dense distribution and service network with agencies in over 40 countries.

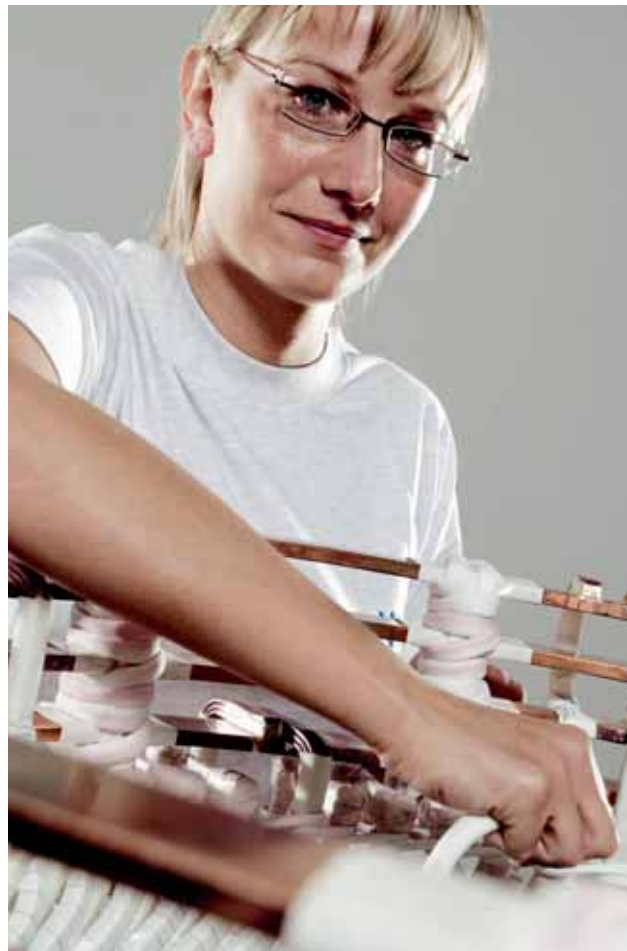
Range of low-voltage motors

Squirrel-cage and slip-ring motors in mechanical/electrical modifications:

- Three-phase motors for use aboard ships, squirrel-cage type 0.09 – 490 kW
- Three-phase motors to IEC/DIN, squirrel-cage type 0.06 – 500 kW
- Three-phase motors, squirrel-cage type 2.2 – 315 kW
- Three-phase brake motors 0.12 – 500 kW
- Three-phase motors, forced-ventilated, 0.25 – 500 kW
- Three-phase motors, water-cooled, 37 – 355 kW
- Three-phase roller table motors, 0.6 – 160 kW
- Explosion-proof three-phase motors, in types of protection:
 - Increased safety 0.12 – 315 kW
 - Flameproof enclosure 0.12 – 630 kW
 - Non-sparking 0.06 – 500 kW
 - for use in "Zone 21" 0.06 – 500 kW
 - for use in "Zone 22" 0.06 – 500 kW
- Variable-speed three-phase drives 0.75 – 430 kW
- Compact three-phase drives 0.55 – 22 kW
- Energy saving motors "EFF1" CEMEP 1.1 – 90 kW
- Energy saving motors "High Efficiency" EPAAct 1.0 – 500 HP
- Enhanced-efficiency motors to IEC/DIN, squirrel-cage type 0.06 – 500 kW
- Motors for use in mechanical smoke and heat exhaust ventilators, 0.12 – 500 kW
- Three-phase asynchronous generators 2.2 – 500 kVA
- Built-in motors 0.06 – 355 kW
- Single-phase motors 0.06 – 2.2 kW
- Permanent synchronous motors 500 – 13,500 Nm

Please note:

Our policy is one of constant product improvement. Designs, technical data and illustrations are subject to change and not binding until confirmed in writing by the supplier's works.





Application

Motors in sea-water design have to be equipped at a high technical level, because they are subject to special environmental and operational conditions. The requirements for reliability are high and they are also subject to special regulations. Motors in sea-water design are used as drives for ancillary units on board of ships and they comply with the special climatic and mechanic loads of these application ranges.

To ensure a high-quality engineering and technological design for new developments, reconstructions and repairs of ships the working procedures at the wharf and at the supplier factories are monitored by audits and approvals from the classification societies.

The design and approval regulations of the classification societies must be observed at design, production and testing of the motors. An existing TYPE APPROVAL CERTIFICATE from the classification society is the pre-requisite for permission to manufacture the goods to be delivered. When applying for it the manufacturer has to document by test, verification and material certificate that his product is qualified. The test, approval, certification and delivery are done according to the corresponding rules and approval regulations, whereas the internal

quality management or some inspector from the classification society is present. The motors are designed according to their planned location:

Operation on deck

Motors for "operation on deck" are designed for type of protection IP 56 without outer fan in the model series K10W or K11W and in the sizes 112 to 180. As the motors are designed without outer fan so that the cooling is done only by radiation of heat, the output of the motors decreases for continuous operation by 30 to 40% compared to the basic series. For details on electrical data please see the main catalogue "Low voltage asynchronous motors, IEC motors with squirrel-cage rotor", chapter "Non-ventilated motors" or ask the manufacturer.

Operation below deck

Motors for "operation below deck" are designed according to the required application

- type of protection IP 55 for general use, for example in engine rooms.
- type of protection IP 56 for use in rooms with danger of splash water or gushing water.

Standards and regulations

The motors in marine design can be manufactured and supplied according to the rules of the following classification societies

ABS	American Bureau of Shipping, USA
BV	Bureau Veritas, France
CCS	China Classification Society, China
DNV	Det Norske Veritas, Norway
GL	Germanischer Lloyd, Germany
LRS	Lloyds Register of Shipping, Great Britain
PRS	Polski Rejestr Statkow, Poland
RINA	REGISTRO ITALIANO NAVALE, Italy
RS	Register of Shipping, Russia

The main and ancillary motors on board are divided into "essential services" and "non-essential services" by the classification societies. This classification is important for questions concerning required spare parts and if a type approval and a manufacturing audit is mandatory for special motors.

Drives for essential services

Design according to the rules of the corresponding classification society. Based on a type approval certificate up to a limit output that depends on the classification society. For outputs above the limit an individual approval is required. In addition some classification societies ask for a production survey for motors with a specific limit output. Inspection certificate 3.1 according to EN 10204 Inspection certificate 3.2 according to EN 10204 only for specific limit output for some classification societies.

Drives for non-essential services

Design according to the rules of the corresponding classification society. A type approval certificate is not required and an individual approval is only done for motors with certificate. Inspection certificate 3.1 according to EN 10204 only for motors with certificate.

Technical data

The performance characteristics can be taken from the lists for motor selection data.

For more important hints for selection of three-phase asynchronous motors please refer to the VEM main catalogue "Low voltage asynchronous motors, IEC motors with squirrel-cage rotor".

If the operation on board of ship is only permitted under observance of additional regulations like gas or dust explosion protection, please use the corresponding motor series.

Dimensions and types of construction

The mounting and assembly dimensions comply with the values for the basic design of type series KPR/K10R or KPER/K11R.

The motors are available in types of construction IM B3, IM B35, IM V1 and IM B5 with observance of all restrictions that are valid for the basic design.

Rated voltages and frequencies

The following operating voltages and frequencies are available for the basic design:

380 V, 50 Hz
440 V, 60 Hz

Voltages and frequencies deviating from the above mentioned values on request. Motors operating in other power, voltage or frequency ranges not mentioned in this special catalogues available on request.

Overload

The motors comply with the following requirements of the named classification societies:

ABS no special requirements
BV 160% rated torque for 15 s
GL, RS 160% rated torque for 15 s.
The breakdown torque must not be reached.
LRS see BV

NV 160% rated torque for 15 s at rated frequency and rated voltage
DIN EN 60034 1.5x rated current at rated voltage for 2 min

The rated current is given in the data selection tables for rated voltages 380 and 440 V.

Approval, design inspection, certificates

VEM motors GmbH has obtained the TYPE APPROVAL CERTIFICATES for the motor types KPR 56 to 112
KPER 63 to 132T
K10R 112 to K10R 315
K11R 132 to K11R 315
from the following classification societies

Bureau Veritas
China Classification Society
Det Norske Veritas
Germanischer Lloyd
Lloyd's Register of Shipping
Russian Maritime Register of Shipping.

For copies of the certificates please refer to the internet <http://www.vem-group.com> in the heading Infocenter, field classifications/certificates, subject marine motors. The scanned original documents can be downloaded as pdf-files. They are subject to our revision service and therefore always updated.

Motors for marine applications according to other classification societies available on request, for example: ABS, RINA, Polski Rejestr Statkow and other.

Below please find a short overview of the specific design and approval requirements of the classification societies:

Motors in sea-water protection acc. to "Bureau Veritas"

<http://www.veristar.com>

Ambient temperature	45 °C
Thermal class	155 [F]
Limit temperature of the winding	95 K
Individual approval for essential drives	> 100 kW
Production survey for essential drives	-
Certification mark is stamped on the housing.	
Name plate	

marking English/French
ambient temperature 45 °C or other
separately agreed ambient temperature
designation "MV acc. to BV"



Motors in sea-water protection acc. to "Germanischer Lloyd"

<http://www.gl-group.com>

Ambient temperature	45 °C
Thermal class	155 [F]
Limit temperature of the winding	100 K
Bearing temperature for anti-friction bearing with special grease	75K
Individual approval for essential drives	≥ 50 kW for essential services
Production survey for essential drives	-
Name plate	marking German/English ambient temperature 45 °C or other separately agreed ambient temperature designation "SS nach GL"



VEM motors GmbH Wernigerode has the right to conduct self dependent tests according to the rules of the German Lloyd. In any case the certificates issued on this base will be checked and signed by the German Lloyd before approval.

Motors in sea-water protection acc. to "Det Norske Veritas"

<http://www.dnv.com>

Ambient temperature	45 °C
Thermal class	155 [F]
Limit temperature of the winding	100 K
Shaft steel	S355J2G3 with manufacturer's certificate 3.1 of manufacturers that are approved by DNV
Individual approval for essential drives	< 100 kW with manufacturer's certificate from 100 kW to < 300 kW DNV approval of shaft manufacturer and with manufacturer's certificate from 300 kW DNV approval
Production survey for essential drives	-
Name plate	marking English/French ambient temperature 45 °C or other separately agreed ambient temperature designation "MV acc. to DNV"



The factory certificate 3.1 includes the following text:
"DNV Rules for Ships, HSLC & MOU, TAC E-6737"

Motors in sea-water protection acc. to "Lloyd's Register of Shipping"

<http://www.lr.org/code/home.htm>

Ambient temperature	45 °C
Thermal class	155 [F]
Limit temperature of the winding	95 K
Shaft steel	manufacturers that are approved by LROS
Individual approval for essential drives	≥ 100 kW
Production survey for essential drives	≥ 100 kW
Name plate	marking English/French ambient temperature 45 °C or other separately agreed ambient temperature designation "MV acc. to LROS"



Motors in sea-water protection acc. to "Russian Maritime Register of Shipping"

<http://www.rs-head.spb.ru>

Ambient temperature	45 °C
Thermal class	155 [F]
Limit temperature of the winding	105 K
Individual approval for essential drives	> 55 kW
Production survey for essential drives	-
Name plate	marking English/Russian ambient temperature 45 °C or other separately agreed ambient temperature designation "MV acc. to RS"



The Russian Maritime Register of Shipping has authorized the quality management of VEM motors GmbH to inspect the motors based on the Agreement on Supervision No. 99.204.272 and the existing type approval certificate. The inspection documents have to be submitted for approval to the Russian Maritime Register of Shipping.

Motors in sea-water protection acc. to "China Classification Society"

<http://www.ccs.org.cn>

Ambient temperature	45 °C
Thermal class	155 [F]
Limit temperature of the winding	105 K for motors \geq 600 W and for motors with self-ventilation (IC410) 100 K for motors above 600 W
Shaft steel	for motors for propulsion and drives has to be approved by CCS (if the shaft is part of the main drive)
Individual approval for essential drives	> 50 kW for essential services
Production survey for essential drives	-
Name plate	marking English/French ambient temperature 45 °C or other separately agreed ambient temperature designation "MV acc. to CCS"



Motors in sea-water protection acc. to "American Bureau of Shipping"

<http://www.eagle.org>

Ambient temperature	50 °C for engine rooms 45 °C for all other locations
Thermal class	155 [F]
Limit temperature of the winding	95 K
Individual approval for essential drives	\geq 100 kW
Production survey for essential drives	\geq 100 kW
Name plate	marking German/English ambient temperature 45 °C or other separately agreed ambient temperature designation "MV acc. to ABS"



Verification of technical drawings for motors with output up to > 100 kW has been issued; for motors with outputs above that value an individual verification of technical drawings is required. The following information is essential for drawing verification and has to be submitted by the customer when placing the order:

- the wharf executing the contract, name, address
- ABS construction no. or name of the ship
- drive requirements of the motor

Motors in sea-water protection acc. to "Polski Rejestr Statkow"

<http://www.prs.pl>

When required individual approval through "German Lloyd"	
Ambient temperature	45 °C
Thermal class	155 [F]
Limit temperature of the winding	95 K
Individual approval for essential drives	\geq 50
Production survey for essential drives	-
Name plate	marking German/English ambient temperature 45 °C or other separately agreed ambient temperature designation "MV acc. to PRS"



Motors in sea-water protection acc. to "REGISTRO ITALIANO NAVALE"

<http://www.rina.org>

When required individual approval through "German Lloyd"	
Ambient temperature	45 °C
Thermal class	155 [F]
Limit temperature of the winding	95 K
Individual approval for essential drives	\geq 50
Production survey for essential drives	-
Name plate	marking German/English ambient temperature 45 °C or other separately agreed ambient temperature designation "MV acc. to RINA"



Fits: Shaft ends

Shaft ends	up to Ø 48	k6
	as of Ø 55	m6
Mating components		H7

Tolerances – Electrical parameters

The following tolerances are permitted as specified in DIN EN 60034-1:

Efficiency (when determined indirectly)	- 0.15 (1- η) for $P_N \leq 150$ kW - 0.1 (1- η) for $P_N > 150$ kW
Power factor	$\frac{1-\cos\varphi}{6}$ at least 0.02 at most 0.07
Slip (at standard load in warmed-up state)	$\pm 20\%$ for $P_N \geq 1$ kW $\pm 30\%$ for $P_N < 1$ kW
Starting current (in the planned starting connection)	+ 20% without lower limit
Starting torque	- 15% and + 25%
Pull-up torque	- 15%
Pull-out torque	- 10% (after application of this tolerance M_K/M still at least 1.6)
Moment of inertia	$\pm 10\%$
Noise level (Measurement area – sound intensity level)	+ 3 dB (A)

Taking necessary manufacturing tolerances and deviations in materials in the case of the raw materials used into account, these tolerances are permitted for three-phase asynchronous motors. The following remarks are given in the standard:

1. A guarantee of all or any of the values as specified in the table is not mandatory. Guaranteed values to which the permissible deviations should apply must be specified expressly in tenders. The permissible deviations must comply with the table.

2. Attention is drawn to the differences in the interpretation of the concept of a “guarantee”. In some countries, there is a differentiation between typical and declared values.

3. If a permissible deviation only applies in one direction, the value will not be limited in the other direction

Tolerances – Mechanical parameters

Letter codes acc. to DIN EN 50347	Meaning of the dimension	Fit or tolerance
B [a]	Spacing of feet fixing holes in axial direction	± 1 mm
P [a ₁]	Diameter or width across corners of flange	- 1 mm
A [b]	Spacing of feet fixing holes across axial direction	± 1 mm
N [b ₁]	Diameter of centring flange	up to diameter 230 mm j6 from diameter 250 mm h6
D, DA [d, d ₁]	Diameter of the cylindrical shaft end	up to diameter 48 mm k6 from diameter 55 mm m6
M [e ₁]	Pitch circle diameter of the mounting flange	± 0.8 mm
AB [f], AC [g]	Largest width of the motor (without terminal boxes)	+ 2%
H [h]	Shaft height (lowest edge of foot to centre of shaft end)	up to 250 -0.5 mm above 250 -1 mm
L, LC [k, k ₁]	Total length of the motor	+ 1%
HD [p]	Total height of the motor (lowest edge of foot)	+ 2%
K, K' [s, s ₁]	Diameter of the mounting holes of the foot or flange	+ 3%
GA, GC [t, t ₁]	Lowest edge of shaft end to the upper edge of the key	+ 0.2 mm
F, FA [u, u ₁]	Width of the key	h9
C, CA [w ₁ , w ₂]	Distance from the centre of the first foot mounting hole to the shaft shoulder or flange face	± 3 mm
	Distance from the shaft shoulder to the flange face in the case of fixed bearing on D-end	± 0.5 mm
	Distance from the shaft shoulder to the flange face	± 3 mm
m	Motor mass	- 5 bis + 10%

General technical data

The most important technical data is summarized in the following table.
Detailed information can be found in the catalogue part "Technical explanations".

Product line	Motor with squirrel-cage rotor, IEC/DIN
Rated output	0.09 kW to 450 kW (50 Hz) or 490 kW (60 Hz)
Sizes	56 to 355
Material of housing	Grey cast iron
Rated torque	0.60 Nm to 3,040 Nm
Types of circuit	Motors with one speed are designed with Δ /Y-circuit as standard. Pole changing motors have a circuit depending on the combination of pole numbers, see select lists in the main catalogue "Low voltage asynchronous motors".
Insulation of stator winding	Thermal class 155 [F], as option 155 [F(B)], 180 [H] according to EN 60034-1 (IEC 60034-1)
Type of protection	IP 55 according to EN 60034-5 (IEC 60034-5), as option IP 56 and higher
Type of cooling	IC 411 according to EN 60034-6 (IEC 60034-6)
Coolant temperature/ altitude of site	In correspondence with classification society rules -20 °C to 45 °C or 50 °C, altitude of site 1000 m above sea level
Rated voltage	Rated voltage range A according to EN 60034-1 (IEC 60034-1), standard voltage according to EN 60038 50 Hz, 380 V; 60 Hz, 440 V
Types of construction	IM B3, IM B35, IM B5 and derived types of construction according to EN 60034-7
Colour system	Special colour system "world wide", colour shade RAL 7031, blue-grey
Vibration grade	As standard grade "A" for motors without special vibration requirements
Shaft end	According to DIN 748 (IEC 60072), balancing "with half key"
Sound pressure level	According to DIN EN ISO 1680, tolerance +3dB. Data see technical explanations in the main catalogue "Low voltage asynchronous motors".
Limit speeds	Please refer to paragraph about limit speeds in the technical explanations in the main catalogue "LV Asynchronous motors".
Bearing design	Please refer to paragraph about bearings in the technical explanations in the main catalogue "LV Asynchronous motors".
Motor weights	Please refer to the technical selection lists.
Terminal box	Please refer to paragraph about terminal boxes in the technical explanations in the main catalogue "LV Asynchronous motors".
Documentation	An operation and maintenance manual, a connection diagram and a safety data sheet is attached to each motor.
Tolerances	Please refer to paragraph about tolerances in the technical explanations.
Options	Please refer to paragraph about modifications in the technical explanations in the main catalogue "LV Asynchronous motors".

Notes to dimensions

Dimensional designations according to EN 50 347 and IEC 60 072

Flange sizes in the dimensional tables are given in accordance to DIN 42948.

All dimensional data in mm

VEM motors GmbH reserves the right to change technical data without preceding information. Dimensional data in catalogues can lose their validity. Binding dimensional data can be requested from the VEM sales organisations.

Flange dimensions

Flanges with threadholes

Flange type acc. to EN 50 347	Flange type acc. to DIN 42948	LA c ₁	M e ₁	N b ₁	P a ₁	S s ₁	T f ₁
FT 65	C 80	6.5	65	50	80	M5	2.5
FT 75	C 90	8	75	60	90	M5	2.5
FT 85	C 105	8.5	85	70	105	M6	2.5
FT 100	C 120	8	100	80	120	M6	3
FT 115	C 140	10	115	95	140	M8	3
FT 130	C 160	10	130	110	160	M8	3.5
FT 165	C 200	12	165	130	200	M10	3.5
FT 215	C 250	12	215	180	250	M12	4

Flanges with through holes

Flange type acc. to EN 50 347	Flange type acc. to DIN 42948	LA c ₁	M e ₁	N b ₁	P a ₁	S s ₁	T f ₁
FF 100	A 120	9	100	80	120	7	3
FF 115	A 140	9	115	95	140	9	3
FF 130	A 160	9	130	110	160	9	3.5
FF 165	A 200	10	165	130	200	11	3.5
FF 215	A 250	11	215	180	250	14	4
FF 265	A 300	12	265	230	300	14	4
FF 300	A 350	13	300	250	350	18	5
FF 350	A 400	15	350	300	400	18	5
FF 400	A 450	16	400	350	450	18	5
FF 500	A 550	18	500	450	550	18	5
FF 600	A 660	22	600	550	660	22	6
FF 740	A 800	25	740	680	800	22	6

According to EN 50 347 the flanges FF have through holes and the flanges FT have threadholes.

The standard DIN 42948 for flanges A and C are still valid yet.

If non-standard coordinations of flange types are required, see flange coordination tables of this catalogue.

Tolerances for dimension N (b₁) see respective dimensional tables
LA (c₁) length of engagement

Flange versions

Type of construction IM B5 / IM 3001

	K10R K11R	63	71	80	90	100	100LX	112	132	132	132M4, MX6	160	160	180M4, L6, 8	180	200L, LX6	200LX2	225	250	280	315S, M	315MX	315MY, L, LX	355M, MY, L	
	K10R KPR	56	63	71	80	90	100	100	100	112	132	132	160	160	180	180	200	200	225	250	280	315S	315M	315M	
D in mm		88	100	115	131	145	164	164	164	185	216	216	266	266	300	300	335	335	378	428	488	488	530	624	
P a ₁	120 ¹⁾	120 ¹⁾	120 ¹⁾	120 ¹⁾	120 ¹⁾																				
N b ₁	80	80	80	80	80																				
M e ₁	100	100	100	100	100																				
S s ₁	7	7	7	7	7																				
P a ₁	140	140 ¹⁾	140 ¹⁾																						
N b ₁	95	95	95																						
M e ₁	115	115	115																						
S s ₁	9	9	9																						
P a ₁	160 ¹⁾	160 ¹⁾	160 ¹⁾	160 ¹⁾	160 ¹⁾	160 ¹⁾	160 ¹⁾	160 ¹⁾	160 ¹⁾																
N b ₁	110	110	110	110	110	110	110	110	110																
M e ₁	130	130	130	130	130	130	130	130	130																
S s ₁	9	9	9	9	9	9	9	9	9																
P a ₁			200	200	200 ¹⁾	200 ¹⁾	200 ¹⁾	200 ¹⁾	200 ¹⁾																
N b ₁			130	130	130	130	130	130	130																
M e ₁			165	165	165	165	165	165	165																
S s ₁			11	11	11	11	11	11	11																
P a ₁			250*	250*	250	250	250 ¹⁾	250 ¹⁾	250 ¹⁾																
N b ₁			180	180	180	180	180	180	180																
M e ₁			215	215	215	215	215	215	215																
S s ₁			14	14	14	14	14	14	14																
P a ₁			300 ¹⁾	300 ¹⁾	300 ¹⁾	300 ¹⁾	300 ¹⁾	300	300	300	300 ²⁾	300 ³⁾													
N b ₁			230	230	230	230	230	230	230	230	230	230													
M e ₁			265	265	265	265	265	265	265	265	265	265													
S s ₁			14	14	14	14	14	14	14	14	14	14													
P a ₁								350	350	350	350	350	350												
N b ₁								250	250	250	250	250	250												
M e ₁								300	300	300	300	300	300												
S s ₁								18	18	18	18	18	18												
P a ₁										400 ⁴⁾	400 ⁴⁾	400	400												
N b ₁										300	300	300	300												
M e ₁										350	350	350	350												
S s ₁										18	18	18	18												
P a ₁												450	450	450	450	450									
N b ₁												350	350	350	350	350									
M e ₁												400	400	400	400	400									
S s ₁												18	18	18	18	18									
P a ₁																									
N b ₁																									
M e ₁																									
S s ₁																									
P a ₁																									800
N b ₁																									680
M e ₁																									740
S s ₁																									22

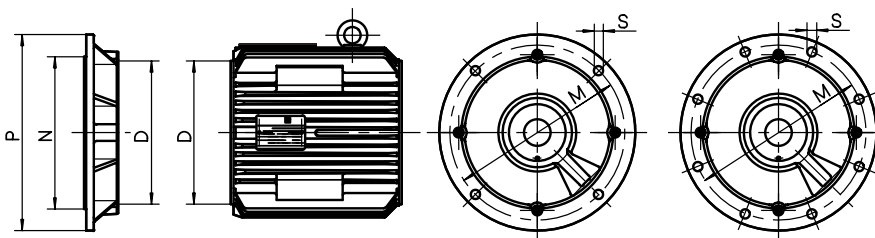
¹⁾ protruding flange

²⁾ Customer's flange fixing only by studs
³⁾ for shaft end diameter 42 mm: customer's flange fixing only by studs

⁴⁾ KPR flange (with corners)
⁶⁾ for shaft end diameter 50 mm

⁵⁾ not for high radial loads
 cylindrical roller bearing NU 2220
 not usable

Flange versions IM B5



Flange versions

Type of construction IM 2202

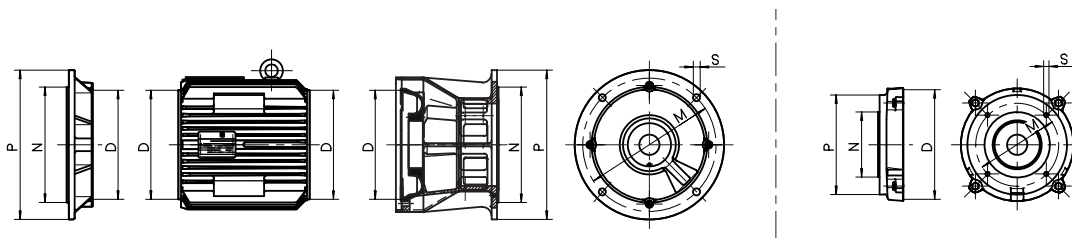
KPER K11R	63	71	80	90	100	100LX	112	132	132	132M4, MX6	160	160	180M4, L6, 8	180	200L, LX6	200LX2	225	250	280	315S, M	315MX	315MY, L, LX	355M, MY, L
K10R KPR	56	63	71	80	90	100	100	100	112	132	132	160	160	180	180	200	200	225	250	280	280	315S	315M
D in mm	88	100	115	131	145	164	164	164	185	216	216	266	266	300	300	335	335	378	428	488	488	530	624
P a ₁																							
N b ₁																							
M e ₁																							
S s ₁																							
P a ₁																							
N b ₁																							
M e ₁																							
S s ₁																							
P a ₁																							
N b ₁																							
M e ₁																							
S s ₁																							
P a ₁																							
N b ₁																							
M e ₁																							
S s ₁																							
P a ₁																							
N b ₁																							
M e ₁																							
S s ₁																							

Flange versions

Type of construction IM B14 K, G

KPER K11R	63	71	80	90	100	100LX	112	132	132	132M4, MX6	160	160	180M4, L6, 8	180	200L, LX6	200LX2	225	250	280	315S, M	315MX	315MY, L, LX	355M, MY, L
K10R KPR	56	63	71	80	90	100	100	100	112	132	132	160	160	180	180	200	200	225	250	280	280	315S	315M
D in mm	88	100	115	131	145	164	164	164	185	216	216	266	266	300	300	335	335	378	428	488	488	530	624
P a ₁	80	90	105																				
N b ₁	50	60	70																				
M e ₁	65	75	85																				
S s ₁	M5	M5	M6																				
P a ₁	90	105	120	120	140																		
N b ₁	60	70	80	80	95																		
M e ₁	75	85	100	100	115																		
S s ₁	M5	M6	M6	M6	M8																		
P a ₁	105 ¹⁾	120	140 ¹⁾	140	160	160	160	160	160														
N b ₁	70	80	95	95	110	110	110	110	110														
M e ₁	85	100	115	115	130	130	130	130	130														
S s ₁	M6	M6	M8	M8	M8	M8	M8	M8	M8														
P a ₁	120	140	160	160	200	200	200	200	200	250	250	300	300										
N b ₁	80	95	110	110	130	130	130	130	130	180	180	230	230										
M e ₁	100	115	130	130	165	165	165	165	165	215	215	265	265										
S s ₁	M6	M8	M8	M8	M10	M10	M10	M10	M10	M12	M12	M12	M12										

Flange versions IM 2202 and IM B14

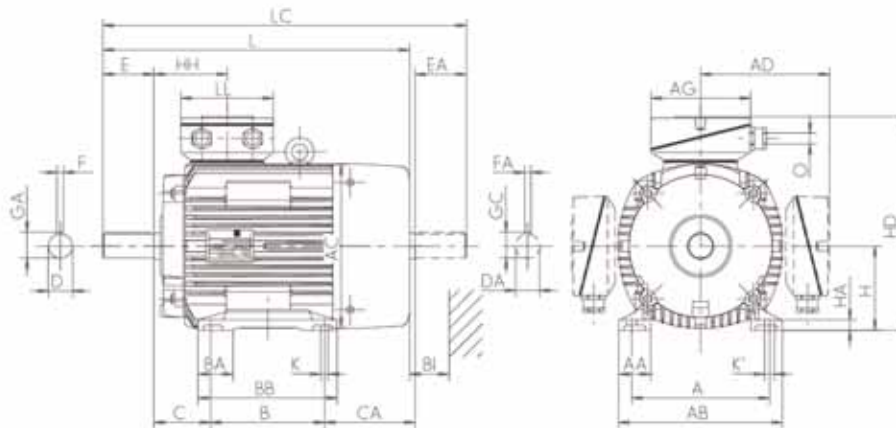


Three-phase motors with squirrel-cage rotor, marine version

Size 63 to 280

with surface ventilation, cooling method IC 411, degree of protection IP 55

Type of construction IM B3 [IM 1001]



Type designation	Flange size	A b	AA n	AB f	AC g	AD g1	B a	BA m	BB e	C w1	CA w2	D d	DA d1	DB*)	E l	EA l1	F u	FA u1
KPER 63K2,4,6	FF 115	100	28	128	109	-	80	-	100	40	39	11	11	M4	23	23	4	4
KPER 63G2,4,6	FF 115	100	28	128	109	-	80	-	100	40	39	11	11	M4	23	23	4	4
KPER 71K2,4,6,8	FF 130	112	32	138	124	-	90	-	116	45	43.5	14	14	M5	30	30	5	5
KPER 71G2,4,6,8	FF 130	112	32	138	124	-	90	-	116	45	43.5	14	14	M5	30	30	5	5
KPER 80K2,4,6,8	FF 165	125	38	168	139	-	100	-	125	50	63	19	19	M6	40	40	6	6
KPER 80G2,4,6,8	FF 165	125	38	168	139	-	100	-	125	50	63	19	19	M6	40	40	6	6
KPER 90S2,4,6,8	FF 165	140	40	178	157	-	100	-	130	56	74	24	22	M8	50	50	8	6
KPER 90L2,4,6,8	FF 165	140	40	178	157	-	125	-	155	56	71	24	22	M8	50	50	8	6
KPER 100L2,4,6,8	FF 215	160	45	192	177	-	140	-	175	63	73	28	24	M10	60	50	8	8
KPER 100LX4,8	FF 215	160	32	188	196	-	140	-	171	63	102	28	28	M10	60	60	8	8
KPER 112M2	FF 215	190	50	224	196	-	140	-	180	70	95	28	28	M10	60	60	8	8
KPER 112M6,8	FF 215	190	50	224	196	-	140	-	180	70	95	28	28	M10	60	60	8	8
KPER 112MX2	FF 215	190	50	224	196	-	140	-	180	70	129	28	28	M10	60	60	8	8
KPER 112M4	FF 215	190	50	224	196	-	140	-	180	70	129	28	28	M10	60	60	8	8
K11R 132S2	FF 265	216	50	256	217	178	140	55	180	89	153	38	32	M12	80	80	10	10
K11R 132SX2	FF 265	216	50	256	217	178	140	55	180	89	173	38	32	M12	80	80	10	10
K11R 132S4,6,8	FF 265	216	50	256	217	178	140	55	180	89	153	38	32	M12	80	80	10	10
K11R 132M4	FF 265	216	50	256	258	199	178	55	218	89	138	38	38	M12	80	80	10	10
K11R 132MX6	FF 265	216	50	256	258	199	178	55	218	89	138	38	38	M12	80	80	10	10
K11R 132M6,8	FF 265	216	50	256	217	178	178	55	218	89	135	38	32	M12	80	80	10	10
K11R 160M2	FF 300	254	55	296	258	214	210	60	257	108	135	42	38	M16	110	80	12	10
K11R 160M4,6,8	FF 300	254	55	296	258	214	210	60	257	108	135	42	38	M16	110	80	12	10
K11R 160MX8	FF 300	254	55	296	258	199	210	60	257	108	135	42	38	M16	110	80	12	10
K11R 160MX2	FF 300	254	55	296	313	242	210	60	257	108	148	42	42	M16	110	110	12	12
K11R 160L2,4,6,8	FF 300	254	55	296	313	242	254	60	301	108	142	42	42	M16	110	110	12	12
K11R 180M2	FF 300	279	62	328	351	261	241	65	288	121	169	48	48	M16	110	110	14	14
K11R 180M4	FF 300	279	62	328	313	242	241	65	288	121	142	48	42	M16	110	110	14	12
K11R 180L4	FF 300	279	62	328	351	261	279	65	326	121	176	48	48	M16	110	110	14	14
K11R 180L6,8	FF 300	279	62	328	313	242	279	65	326	121	104	48	42	M16	110	110	14	12
K11R 200L2,4,6,8	FF 350	318	70	372	351	261	305	70	360	133	138	55	48	M20	110	110	16	14
K11R 200LX6	FF 350	318	70	372	351	261	305	70	360	133	138	55	48	M20	110	110	16	14
K11R 200LX2	FF 350	318	70	372	390	300	305	70	360	133	193	55	55	M20	110	110	16	16
K11R 225S4,8	FF 400	356	75	413	390	300	286	75	343	149	196	60	55	M20	140	110	18	16
K11R 225M2	FF 400	356	75	413	390	300	311	75	368	149	211	55	55	M20	110	110	16	16
K11R 225M4	FF 400	356	75	413	390	300	311	75	368	149	211	60	55	M20	140	110	18	16
K11R 225M6,8	FF 400	356	75	413	390	300	311	75	368	149	171	60	55	M20	140	110	18	16
K11R 250M2	FF 500	406	84	471	440	358	349	84	412	168	210	60	55	M20	140	110	18	16
K11R 250M4,6,8	FF 500	406	84	471	440	358	349	84	412	168	210	65	55	M20	140	110	18	16
K11R 280S2	FF 500	457	94	522	490	386	368	96	431	190	234	65	65	M20	140	140	18	18
K11R 280S4,6,8	FF 500	457	94	522	490	386	368	96	431	190	234	75	65	M20	140	140	20	18
K11R 280M2	FF 500	457	94	522	490	386	419	96	482	190	229	65	65	M20	140	140	18	18
K11R 280M4,6,8	FF 500	457	94	522	490	386	419	96	482	190	229	75	65	M20	140	140	20	18

*) Centre holes acc. to DIN 332-DS

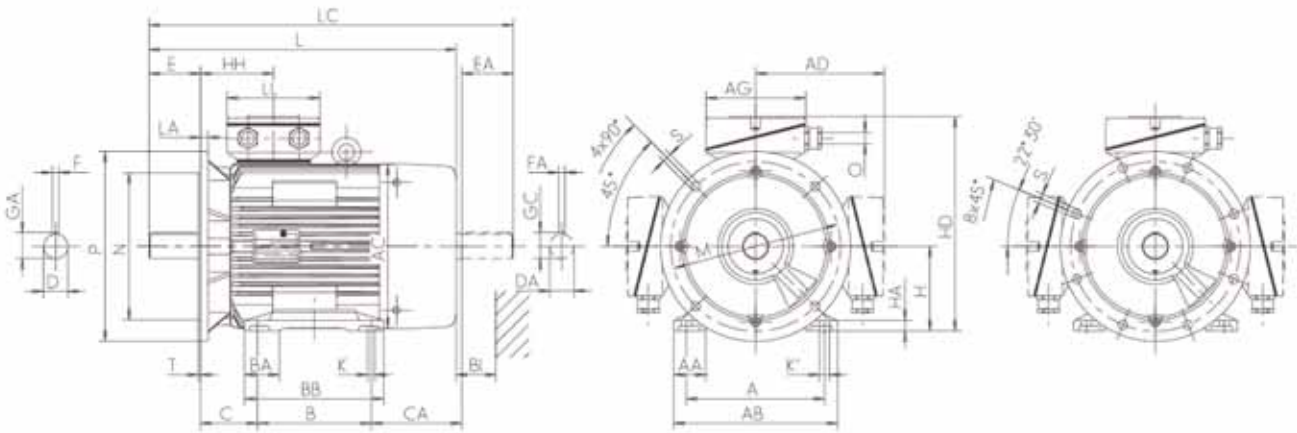
Three-phase motors with squirrel-cage rotor, marine version

Size 63 to 280

with surface ventilation, cooling method IC 411, degree of protection IP 55

Type of construction IM B35 [IM 2001]

Flange dimensions see page 20/21



Type designation	GA t	GC t1	H h	HA c	HD p	HD**) p	HH A	K s	K' s'	L k	LC k1	KK Type	AG	LL	O	Hole pattern	Bl. Bl
KPER 63K2,4,6	12.5	12.5	63	10	161	a.A.	58	8	8	179	205	KA 05	92	92	M20x1.5	4L	14
KPER 63G2,4,6	12.5	12.5	63	10	161	a.A.	58	8	8	179	205	KA 05	92	92	M20x1.5	4L	14
KPER 71K2,4,6,8	16	16	71	11	175	a.A.	61	8	8	206	239	KA 05	92	92	M20x1.5	4L	14
KPER 71G2,4,6,8	16	16	71	11	175	a.A.	61	8	8	206	239	KA 05	92	92	M20x1.5	4L	14
KPER 80K2,4,6,8	21.5	21.5	80	12	191	a.A.	67	10	10	249	293	KA 05	92	92	M20x1.5	4L	16
KPER 80G2,4,6,8	21.5	21.5	80	12	191	a.A.	67	10	10	249	293	KA 05	92	92	M20x1.5	4L	16
KPER 90S2,4,6,8	27	24.5	90	14	210	a.A.	70	10	10	275	330	KA 05	92	92	M25x1.5	4L	16
KPER 90L2,4,6,8	27	24.5	90	14	210	a.A.	70	10	10	297	352	KA 05	92	92	M25x1.5	4L	16
KPER 100L2,4,6,8	31	27	100	15	227	a.A.	75	12	12	331	386	KA 05	92	92	M25x1.5	4L	18
KPER 100LX4,8	31	31	100	11	237	a.A.	77	12	12	357	425	KA 05	92	92	M25x1.5	4L	20
KPER 112M2	31	31	112	18	249	a.A.	77	12	12	357	425	KA 05	92	92	M25x1.5	4L	20
KPER 112M6,8	31	31	112	18	249	a.A.	77	12	12	391	459	KA 05	92	92	M25x1.5	4L	20
KPER 112MX2	31	31	112	18	249	a.A.	77	12	12	391	459	KA 05	92	92	M25x1.5	4L	20
KPER 112M4	31	31	112	18	249	a.A.	77	12	12	391	459	KA 05	92	92	M25x1.5	4L	20
K11R 132S2	41	35	132	16	310	257	108	12	12	459	542	KK 25 A	156	145	M30x2	4L	35
K11R 132SX2	41	35	132	16	310	257	108	12	12	479	562	KK 25 A	156	145	M30x2	4L	35
K11R 132S4,6,8	41	35	132	16	310	257	108	12	12	459	542	KK 25 A	156	145	M30x2	4L	35
K11R 132M4	41	41	132	16	331	279	114	12	12	481	565	KK 25 A	156	145	M30x2	4L	35
K11R 132MX6	41	41	132	16	331	279	114	12	12	481	565	KK 25 A	156	145	M30x2	4L	35
K11R 132M6,8	41	35	132	16	310	257	108	12	12	479	562	KK 25 A	156	145	M30x2	4L	35
K11R 160M2	45	41	160	18	374	307	114	15	15	559	643	KK 63 A	193	167	M36x2	4L	35
K11R 160M4,6,8	45	41	160	18	374	307	114	15	15	559	643	KK 63 A	193	167	M36x2	4L	35
K11R 160MX8	45	41	160	18	374	307	114	15	15	559	643	KK 63 A	193	167	M36x2	4L	35
K11R 160MX2	45	45	160	18	402	336	138	15	20	571	686	KK 63 A	193	167	M36x2	4L	35
K11R 160L2,4,6,8	45	45	160	18	402	336	138	15	20	609	724	KK 63 A	193	167	M36x2	4L	35
K11R 180M2	51.5	51.5	180	20	441	369	147	15	20	635	751	KK 63 A	193	167	M36x2	4L	35
K11R 180M4	51.5	45	180	20	422	356	138	15	20	609	724	KK 63 A	193	167	M36x2	4L	35
K11R 180L4	51.5	51.5	180	20	441	369	147	15	20	680	796	KK 63 A	193	167	M36x2	4L	35
K11R 180L6,8	51.5	45	180	20	422	369	138	15	20	609	724	KK 63 A	193	167	M36x2	4L	35
K11R 200L2,4,6,8	59	51.5	200	22	461	389	147	19	25	680	796	KK 63 A	193	167	M36x2	4L	35
K11R 200LX6	59	51.5	200	22	461	389	147	19	25	680	796	KK 63 A	193	167	M36x2	4L	35
K11R 200LX2	59	59	200	22	500	417	168	19	25	727	851	KK 100 A	213	207	M45x2	4L	35
K11R 225S4,8	64	59	225	25	525	442	168	19	25	757	881	KK 100 A	213	207	M45x2	8L	40
K11R 225M2	59	59	225	25	525	442	168	19	25	767	891	KK 100 A	213	207	M45x2	8L	40
K11R 225M4	64	59	225	25	525	442	168	19	25	797	921	KK 100 A	213	207	M45x2	8L	40
K11R 225M6,8	64	59	225	25	525	442	168	19	25	757	881	KK 100 A	213	207	M45x2	8L	40
K11R 250M2	64	59	250	28	608	484	177	24	30	862	977	KK 200 A	282	242	M56x2	8L	45
K11R 250M4,6,8	69	59	250	28	608	484	177	24	30	862	977	KK 200 A	282	242	M56x2	8L	45
K11R 280S2	69	69	280	32	666	546	206	24	30	924	1072	KK 200 A	282	242	M56x2	8L	50
K11R 280S4,6,8	79.5	69	280	32	666	546	206	24	30	924	1072	KK 200 A	282	242	M56x2	8L	50
K11R 280M2	69	69	280	32	666	546	206	24	30	970	1118	KK 200 A	282	242	M56x2	8L	50
K11R 280M4,6,8	79.5	69	280	32	666	546	206	24	30	970	1118	KK 200 A	282	242	M56x2	8L	50

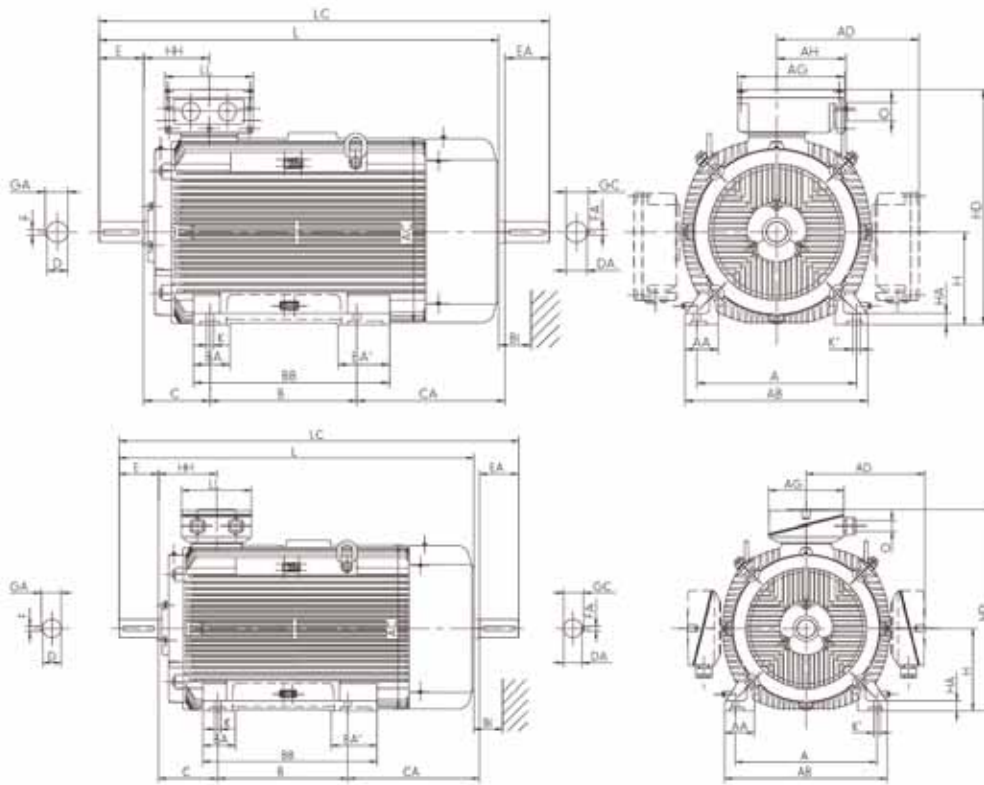
**) Terminal box left/right

Three-phase motors with squirrel-cage rotor, marine version

Size 315

with surface ventilation, cooling method IC 411, degree of protection IP 55

Type of construction IM B3 [IM 1001]



Type designation	Flange size	A b	AA n	AB f	AC g	AD g1	B a	BA m	BA' m1	BB e	C w1	CA w2	D d	DA d1	DB*)	E l	EA l1	F u	FA u1
K11R 315S2	FF 600	508	126	590	550	416	406	120	-	503	216	316	65	65	M20	140	140	18	18
K11R 315S4,6,8	FF 600	508	126	590	550	416	406	120	-	503	216	316	80	70	M20	170	140	22	20
K11R 315M2	FF 600	508	126	590	550	416	457	120	-	554	216	320	65	65	M20	140	140	18	18
K11R 315M4,6,8	FF 600	508	126	590	550	416	457	120	-	554	216	320	80	70	M20	170	140	22	20
K11R 315MX2	FF 600	508	126	590	550	416	457	120	150	554	216	400	65	65	M20	140	140	18	18
K11R 315MX4	FF 600	508	126	590	550	416	457	120	150	554	216	400	80	70	M20	170	140	22	20
K11R 315MX6,8	FF 600	508	126	590	550	416	457	120	150	554	216	320	80	70	M20	170	140	22	20
K11R 315MX10,12	FF 600	508	126	590	550	416	457	120	150	554	216	320	80	70	M20	170	140	22	20
K11R 315MY2	FF 600	508	110	590	610	498	457	120	-	573	216	495	65	65	M20	140	140	18	18
K11R 315MY4,6,8	FF 600	508	110	590	610	498	457	120	-	573	216	495	80	70	M20	170	140	22	20
K11R 315L2	FF 600	508	110	590	610	498	508	120	-	624	216	539	65	65	M20	140	140	18	18
K11R 315L4,6,8	FF 600	508	110	590	610	498	508	120	-	624	216	564	80	70	M20	170	140	22	20
K11R 315LX2	FF 600	508	110	590	610	481	508	120	-	624	216	684	65	65	M20	140	140	18	18
K11R 315LX4	FF 600	508	110	590	610	481	508	120	-	624	216	689	80	70	M20	170	140	22	20
K11R 315LX6,8	FF 600	508	110	590	610	498	508	120	-	624	216	564	80	70	M20	170	140	22	20

*) Centre holes acc. to DIN 332-DS

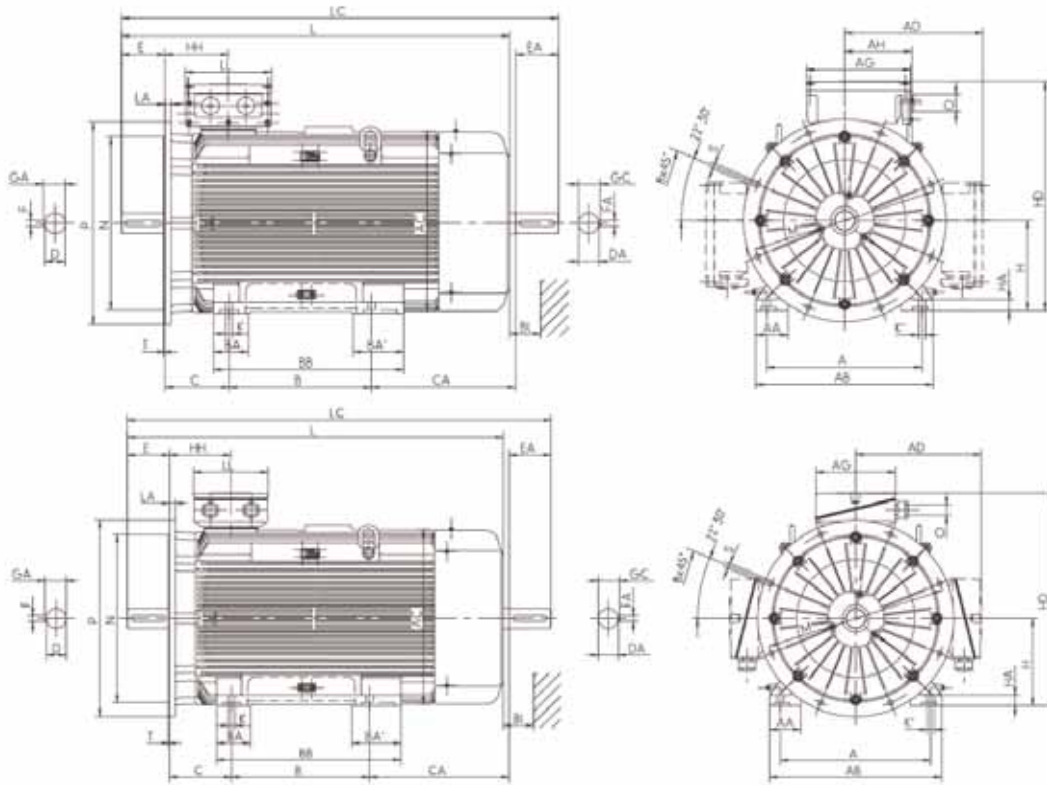
Three-phase motors with squirrel-cage rotor, marine version

Size 315

with surface ventilation, cooling method IC 411, degree of protection IP 55

Type of construction IM B35 [IM 2001]

Flange dimensions see page 20/21



Type designation	GA t	GC t1	H h	HA c	HD p	HD**) p	HH A	K s	K' s'	L k	LC k1	KK Type -	AG x	LL z	AH -	O r	Bl. Bl
K11R 315S2	69	69	315	44	731	595	211	28	35	1050	1218	KK 200 A	282	242	-	M56x2	55
K11R 315S4,6,8	85	74.5	315	44	731	595	211	28	35	1080	1248	KK 200 A	282	242	-	M56x2	55
K11R 315M2	69	69	315	44	731	595	211	28	35	1105	1273	KK 200 A	282	242	-	M56x2	55
K11R 315M4,6,8	85	74.5	315	44	731	595	211	28	35	1135	1303	KK 200 A	282	242	-	M56x2	55
K11R 315MX2	69	69	315	44	731	595	211	28	35	1185	1353	KK 200 A	282	242	-	M56x2	55
K11R 315MX4	85	74.5	315	44	731	595	211	28	35	1210	1383	KK 200 A	282	242	-	M56x2	55
K11R 315MX6,8	85	74.5	315	44	731	595	211	28	35	1135	1303	KK 200 A	282	242	-	M56x2	55
K11R 315MX10,12	85	74.5	315	44	731	595	211	28	35	1135	1303	KK 200 A	282	242	-	M56x2	55
K11R 315MY2	69	69	315	44	774	628	230	28	35	1270	1448	KK 400 B	315	294	265	M72x2	55
K11R 315MY4,6,8	85	74.5	315	44	774	628	230	28	35	1300	1478	KK 400 B	315	294	265	M72x2	55
K11R 315L2	69	69	315	44	774	628	230	28	35	1390	1543	KK 400 B	315	294	265	M72x2	55
K11R 315L4,6,8	85	74.5	315	44	774	628	230	28	35	1420	1598	KK 400 B	315	294	265	M72x2	55
K11R 315LX2	69	69	315	44	796	628	230	28	35	1510	1688	KK 400 B	315	294	265	M72x2	55
K11R 315LX4	85	74.5	315	44	796	628	230	28	35	1540	1723	KK 400 B	315	294	265	M72x2	55
K11R 315LX6,8	85	74.5	315	44	796	628	230	28	35	1420	1598	KK 400 B	315	294	265	M72x2	55

**) Terminal box right/left

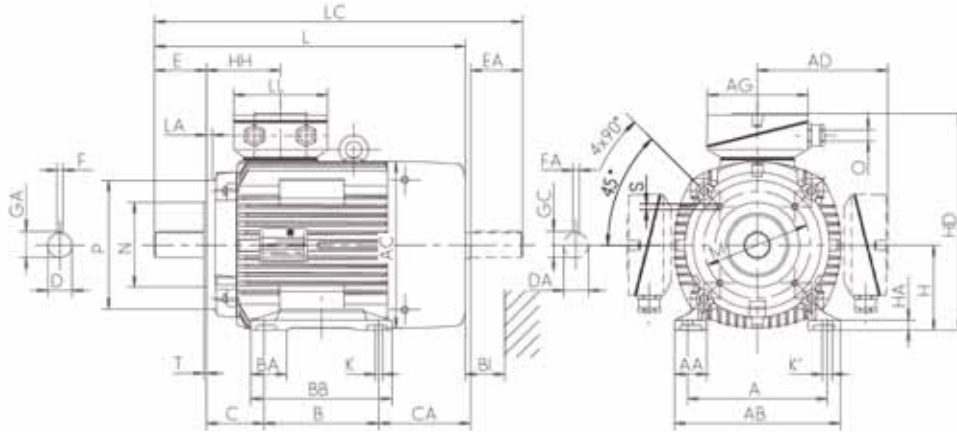
Three-phase motors with squirrel-cage rotor, marine version

Size 63 to 180

with surface ventilation, cooling method IC 411, degree of protection IP 55

Type of construction IM B34 [IM 2101]

Flange dimensions see page 20/21



Type designation	Flange sizes		A	AA	AB	AC	AD	B	BA	BB	C	CA	D	DA	DB ^{*)}	E	EA	F	FA
	small	big	b	n	f	g	g1	a	m	e	w1	w2	d	d1		l	l1	u	u1
KPER 63K2,4,6	FT 75	FT 100	100	28	128	109	-	80	-	100	40	39	11	11	M4	23	23	4	4
KPER 63G2,4,6	FT 75	FT 100	100	28	128	109	-	80	-	100	40	39	11	11	M4	23	23	4	4
KPER 71K2,4,6,8	FT 85	FT 115	112	32	138	124	-	90	-	116	45	43.5	14	14	M5	30	30	5	5
KPER 71G2,4,6,8	FT 85	FT 115	112	32	138	124	-	90	-	116	45	43.5	14	14	M5	30	30	5	5
KPER 80K2,4,6,8	FT 100	FT 130	125	38	168	139	-	100	-	125	50	63	19	19	M6	40	40	6	6
KPER 80G2,4,6,8	FT 100	FT 130	125	38	168	139	-	100	-	125	50	63	19	19	M6	40	40	6	6
KPER 90S2,4,6,8	FT 115	FT 130	140	40	178	157	-	100	-	130	56	74	24	22	M8	50	50	8	8
KPER 90L2,4,6,8	FT 115	FT 130	140	40	178	157	-	125	-	155	56	71	24	22	M8	50	50	8	8
KPER 100L2,4,6,8	FT 130	FT 165	160	45	192	177	-	140	-	175	63	73	28	24	M10	60	50	8	8
KPER 100LX4,8	FT 130	FT 165	160	32	188	196	-	140	-	171	63	102	28	28	M10	60	60	8	8
KPER 112M2	FT 130	FT 165	190	50	224	196	-	140	-	180	70	95	28	28	M10	60	60	8	8
KPER 112M6,8	FT 130	FT 165	190	50	224	196	-	140	-	180	70	95	28	28	M10	60	60	8	8
KPER 112MX2	FT 130	FT 165	190	50	224	196	-	140	-	180	70	129	28	28	M10	60	60	8	8
KPER 112M4	FT 130	FT 165	190	50	224	196	-	140	-	180	70	129	28	28	M10	60	60	8	8
K11R 132S2	FT 130	FT 165	216	50	256	217	178	140	55	180	89	153	38	32	M12	80	80	10	10
K11R 132SX2	FT 130	FT 165	216	50	256	217	178	140	55	180	89	173	38	32	M12	80	80	10	10
K11R 132S4,6,8	FT 130	FT 165	216	50	256	217	178	140	55	180	89	153	38	32	M12	80	80	10	10
K11R 132M4	FT 165	FT 215	216	50	256	258	199	178	55	218	89	138	38	38	M12	80	80	10	10
K11R 132MX6	FT 165	FT 215	216	50	256	258	199	178	55	218	89	138	38	38	M12	80	80	10	10
K11R 132M6,8	FT 130	FT 165	216	50	256	217	178	178	55	218	89	135	38	32	M12	80	80	10	10
K11R 160M2	FT 165	FT 215	254	55	296	258	214	210	60	257	108	135	42	38	M16	110	80	12	10
K11R 160M4,6,8	FT 165	FT 215	254	55	296	258	214	210	60	257	108	135	42	38	M16	110	80	12	10
K11R 160MX8	FT 165	FT 215	254	55	296	258	199	210	60	257	108	135	42	38	M16	110	80	12	10
K11R 160MX2	FT 215	FT 265	254	55	296	313	242	210	60	257	108	148	42	42	M16	110	110	12	12
K11R 160L2,4,6,8	FT 215	FT 265	254	55	296	313	242	254	60	301	108	142	42	42	M16	110	110	12	12
K11R 180M4	FT 265	-	279	62	328	313	242	241	65	288	121	142	48	42	M16	110	110	14	12
K11R 180L6,8	FT 265	-	279	62	328	313	242	279	65	326	121	104	48	42	M16	110	110	14	12

^{*)} Centre holes acc. to DIN 332-DS

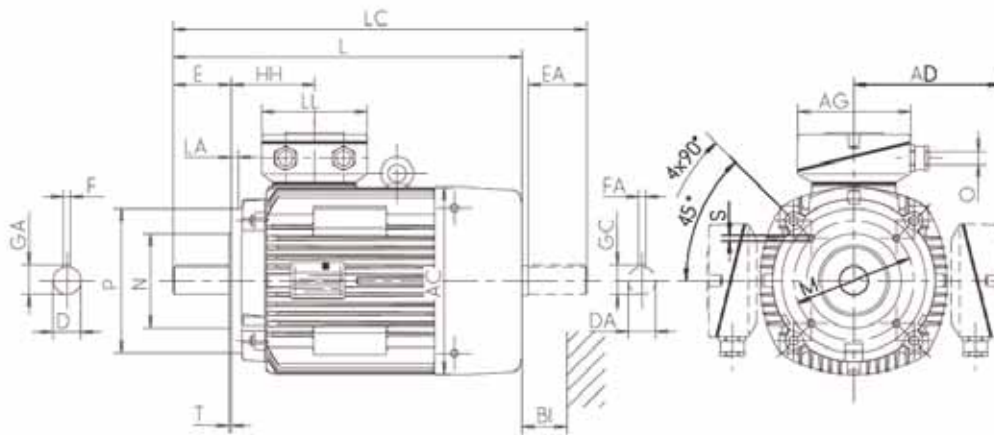
Three-phase motors with squirrel-cage rotor, marine version

Size 63 to 180

with surface ventilation, cooling method IC 411, degree of protection IP 55

Type of construction IM B14 [IM 3601]

Flange dimensions see page 20/21



Type designation	GA t	GC t1	H h	HA c	HD p	HD**) p	HH A	K s	K' s'	L k	LC k1	KK Type -	AG x	LL z	O r	Hole pattern	Bl. Bl.
KPER 63K2,4,6	12.5	12.5	63	10	168	a.A.	58	8	8	179	205	KA 05	92	92	M20x1.5	4L	14
KPER 63G2,4,6	12.5	12.5	63	10	168	a.A.	58	8	8	179	205	KA 05	92	92	M20x1.5	4L	14
KPER 71K2,4,6,8	16	16	71	11	184	a.A.	61	8	8	206	239	KA 05	92	92	M20x1.5	4L	14
KPER 71G2,4,6,8	16	16	71	11	184	a.A.	61	8	8	206	239	KA 05	92	92	M20x1.5	4L	14
KPER 80K2,4,6,8	21.5	21.5	80	12	211	a.A.	67	10	10	249	293	KA 05	92	92	M20x1.5	4L	16
KPER 80G2,4,6,8	21.5	21.5	80	12	211	a.A.	67	10	10	249	293	KA 05	92	92	M20x1.5	4L	16
KPER 90S2,4,6,8	27	24.5	90	14	220	a.A.	70	10	10	275	330	KA 05	92	92	M25x1.5	4L	16
KPER 90L2,4,6,8	27	24.5	90	14	220	a.A.	70	10	10	297	352	KA 05	92	92	M25x1.5	4L	16
KPER 100L2,4,6,8	31	27	100	15	252	a.A.	75	12	12	331	386	KA 05	92	92	M25x1.5	4L	18
KPER 100LX4,8	31	31	100	11	262	a.A.	77	12	12	357	425	KA 05	92	92	M25x1.5	4L	20
KPER 112M2	31	31	112	18	262	a.A.	77	12	12	357	425	KA 05	92	92	M25x1.5	4L	20
KPER 112M6,8	31	31	112	18	262	a.A.	77	12	12	391	459	KA 05	92	92	M25x1.5	4L	20
KPER 112MX2	31	31	112	18	262	a.A.	77	12	12	391	459	KA 05	92	92	M25x1.5	4L	20
KPER 112M4	31	31	112	18	262	a.A.	77	12	12	391	459	KA 05	92	92	M25x1.5	4L	20
K11R 132S2	41	35	132	16	328	275	108	12	12	459	542	KK 25 A	156	145	M30x2	4L	35
K11R 132SX2	41	35	132	16	328	275	108	12	12	479	562	KK 25 A	156	145	M30x2	4L	35
K11R 132S4,6,8	41	35	132	16	328	275	108	12	12	459	542	KK 25 A	156	145	M30x2	4L	35
K11R 132M4	41	41	132	16	349	297	114	12	12	481	565	KK 25 A	156	145	M30x2	4L	35
K11R 132MX6	41	41	132	16	349	297	114	12	12	481	565	KK 25 A	156	145	M30x2	4L	35
K11R 132M6,8	41	35	132	16	328	275	108	12	12	479	562	KK 25 A	156	145	M30x2	4L	35
K11R 160M2	45	41	160	18	389	322	114	15	15	559	643	KK 63 A	193	167	M36x2	4L	35
K11R 160M4,6,8	45	41	160	18	389	322	114	15	15	559	643	KK 63 A	193	167	M36x2	4L	35
K11R 160MX8	45	41	160	18	389	322	114	15	15	559	643	KK 63 A	193	167	M36x2	4L	35
K11R 160MX2	45	45	160	18	417	351	138	15	20	571	686	KK 63 A	193	167	M36x2	4L	35
K11R 160L2,4,6,8	45	45	160	18	417	351	138	15	20	609	724	KK 63 A	193	167	M36x2	4L	35
K11R 180M4	51.5	45	180	20	417	351	138	15	20	609	724	KK 63 A	193	167	M36x2	4L	35
K11R 180L6,8	51.5	45	180	20	417	364	138	15	20	609	724	KK 63 A	193	167	M36x2	4L	35

**) Terminal box left/right

Three-phase motors with squirrel-cage rotor, marine version

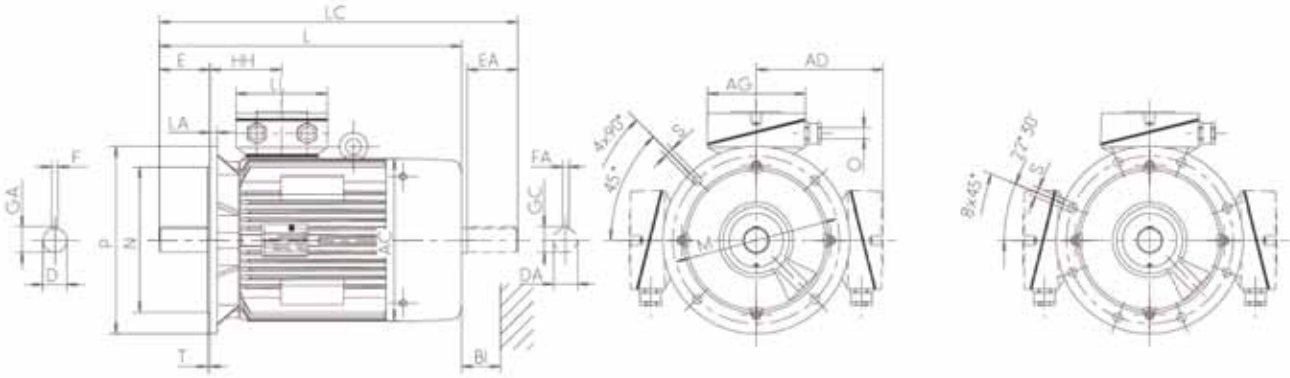
Size 63 to 280

with surface ventilation, cooling method IC 411, degree of protection IP 55

Type of construction IM B5 [IM 3001]

Type of construction IM V1 [IM 3011]

Flange dimensions see page 20/21



Type designation	Flange size	AC g	AD g1	D d	DA d1	DB*)	E l	EA l1	F u	FA u1	GA t	GC t1	H h	HH A	L k	LC k1	KK Type	AG	LL	O	Hole pattern	Bl. Bl
KPER 63K2,4,6	FF 115	109	-	11	11	M4	23	23	4	4	12.5	12.5	63	58	179	205	KA 05	92	92	M20x1.5	4L	14
KPER 63G2,4,6	FF 115	109	-	11	11	M4	23	23	4	4	12.5	12.5	63	58	179	205	KA 05	92	92	M20x1.5	4L	14
KPER 71K2,4,6,8	FF 130	124	-	14	14	M5	30	30	5	5	16	16	71	61	206	239	KA 05	92	92	M20x1.5	4L	14
KPER 71G2,4,6,8	FF 130	124	-	14	14	M5	30	30	5	5	16	16	71	61	206	239	KA 05	92	92	M20x1.5	4L	14
KPER 80K2,4,6,8	FF 165	139	-	19	19	M6	40	40	6	6	21.5	21.5	80	67	249	293	KA 05	92	92	M20x1.5	4L	16
KPER 80G2,4,6,8	FF 165	139	-	19	19	M6	40	40	6	6	21.5	21.5	80	67	249	293	KA 05	92	92	M20x1.5	4L	16
KPER 90S2,4,6,8	FF 165	157	-	24	22	M8	50	50	8	6	27	24.5	90	70	275	330	KA 05	92	92	M25x1.5	4L	16
KPER 90L2,4,6,8	FF 165	157	-	24	22	M8	50	50	8	6	27	24.5	90	70	297	352	KA 05	92	92	M25x1.5	4L	16
KPER 100L2,4,6,8	FF 215	177	-	28	24	M10	60	50	8	8	31	27	100	75	331	386	KA 05	92	92	M25x1.5	4L	18
KPER 100LX4,8	FF 215	196	-	28	28	M10	60	60	8	8	31	31	100	77	357	425	KA 05	92	92	M25x1.5	4L	20
KPER 112M2	FF 215	196	-	28	28	M10	60	60	8	8	31	31	112	77	357	425	KA 05	92	92	M25x1.5	4L	20
KPER 112M6,8	FF 215	196	-	28	28	M10	60	60	8	8	31	31	112	77	391	459	KA 05	92	92	M25x1.5	4L	20
KPER 112MX2	FF 215	196	-	28	28	M10	60	60	8	8	31	31	112	77	391	459	KA 05	92	92	M25x1.5	4L	20
KPER 112M4	FF 215	196	-	28	28	M10	60	60	8	8	31	31	112	77	391	459	KA 05	92	92	M25x1.5	4L	20
K11R 132S2	FF 265	217	178	38	32	M12	80	80	10	10	41	35	132	108	459	542	KK 25 A	156	145	M30x2	4L	35
K11R 132SX2	FF 265	217	178	38	32	M12	80	80	10	10	41	35	132	108	479	562	KK 25 A	156	145	M30x2	4L	35
K11R 132S4,6,8	FF 265	217	178	38	32	M12	80	80	10	10	41	35	132	108	459	542	KK 25 A	156	145	M30x2	4L	35
K11R 132M4	FF 265	258	199	38	38	M12	80	80	10	10	41	41	132	114	481	565	KK 25 A	156	145	M30x2	4L	35
K11R 132MX6	FF 265	258	199	38	38	M12	80	80	10	10	41	41	132	114	481	565	KK 25 A	156	145	M30x2	4L	35
K11R 132M6,8	FF 265	217	178	38	32	M12	80	80	10	10	41	35	132	108	479	562	KK 25 A	156	145	M30x2	4L	35
K11R 160M2	FF 300	258	214	42	38	M16	110	80	12	10	45	41	160	114	559	643	KK 63 A	193	167	M36x2	4L	35
K11R 160M4,6,8	FF 300	258	214	42	38	M16	110	80	12	10	45	41	160	114	559	643	KK 63 A	193	167	M36x2	4L	35
K11R 160MX8	FF 300	258	199	42	38	M16	110	80	12	10	45	41	160	114	559	643	KK 63 A	193	167	M36x2	4L	35
K11R 160MX2	FF 300	313	242	42	42	M16	110	110	12	12	45	45	160	138	571	686	KK 63 A	193	167	M36x2	4L	35
K11R 160L2,4,6,8	FF 300	313	242	42	42	M16	110	110	12	12	45	45	160	138	609	724	KK 63 A	193	167	M36x2	4L	35
K11R 180M2	FF 300	351	261	48	48	M16	110	110	14	14	51.5	51.5	180	147	635	751	KK 63 A	193	167	M36x2	4L	35
K11R 180M4	FF 300	313	242	48	42	M16	110	110	14	12	51.5	45	180	138	609	724	KK 63 A	193	167	M36x2	4L	35
K11R 180L4	FF 300	351	261	48	48	M16	110	110	14	14	51.5	51.5	180	147	680	796	KK 63 A	193	167	M36x2	4L	35
K11R 180L6,8	FF 300	313	242	48	42	M16	110	110	14	12	51.5	45	180	138	609	724	KK 63 A	193	167	M36x2	4L	35
K11R 200L2,4,6,8	FF 350	351	261	55	48	M20	110	110	16	14	59	51.5	200	147	680	796	KK 63 A	193	167	M36x2	4L	35
K11R 200LX6	FF 350	351	261	55	48	M20	110	110	16	14	59	51.5	200	147	680	796	KK 63 A	193	167	M36x2	4L	35
K11R 200LX2	FF 350	390	300	55	55	M20	110	110	16	16	59	59	200	168	727	851	KK 100 A	213	207	M45x2	4L	35
K11R 225S4,8	FF 400	390	300	60	55	M20	140	110	18	16	64	59	225	168	757	881	KK 100 A	213	207	M45x2	8L	40
K11R 225M2	FF 400	390	300	55	55	M20	110	110	16	16	59	59	225	168	767	891	KK 100 A	213	207	M45x2	8L	40
K11R 225M4	FF 400	390	300	60	55	M20	140	110	18	16	64	59	225	168	797	921	KK 100 A	213	207	M45x2	8L	40
K11R 225M6,8	FF 400	390	300	60	55	M20	140	110	18	16	64	59	225	168	757	881	KK 100 A	213	207	M45x2	8L	40
K11R 250M2	FF 500	440	358	60	55	M20	140	110	18	16	64	59	250	177	862	977	KK 200 A	282	242	M56x2	8L	45
K11R 250M4,6,8	FF 500	440	358	65	55	M20	140	110	18	16	69	59	250	177	862	977	KK 200 A	282	242	M56x2	8L	45
K11R 280S2	FF 500	490	386	65	65	M20	140	140	18	18	69	69	280	206	924	1072	KK 200 A	282	242	M56x2	8L	50
K11R 280S4,6,8	FF 500	490	386	75	65	M20	140	140	20	18	79.5	69	280	206	924	1072	KK 200 A	282	242	M56x2	8L	50
K11R 280M2	FF 500	490	386	65	65	M20	140	140	18	18	69	69	280	206	970	1118	KK 200 A	282	242	M56x2	8L	50
K11R 280M4,6,8	FF 500	490	386	75	65	M20	140	140	20	18	79.5	69	280	206	970	1118	KK 200 A	282	242	M56x2	8L	50

*) Centre holes acc. to DIN 332-DS

**) Terminal box left/right

Three-phase motors with squirrel-cage rotor, marine version

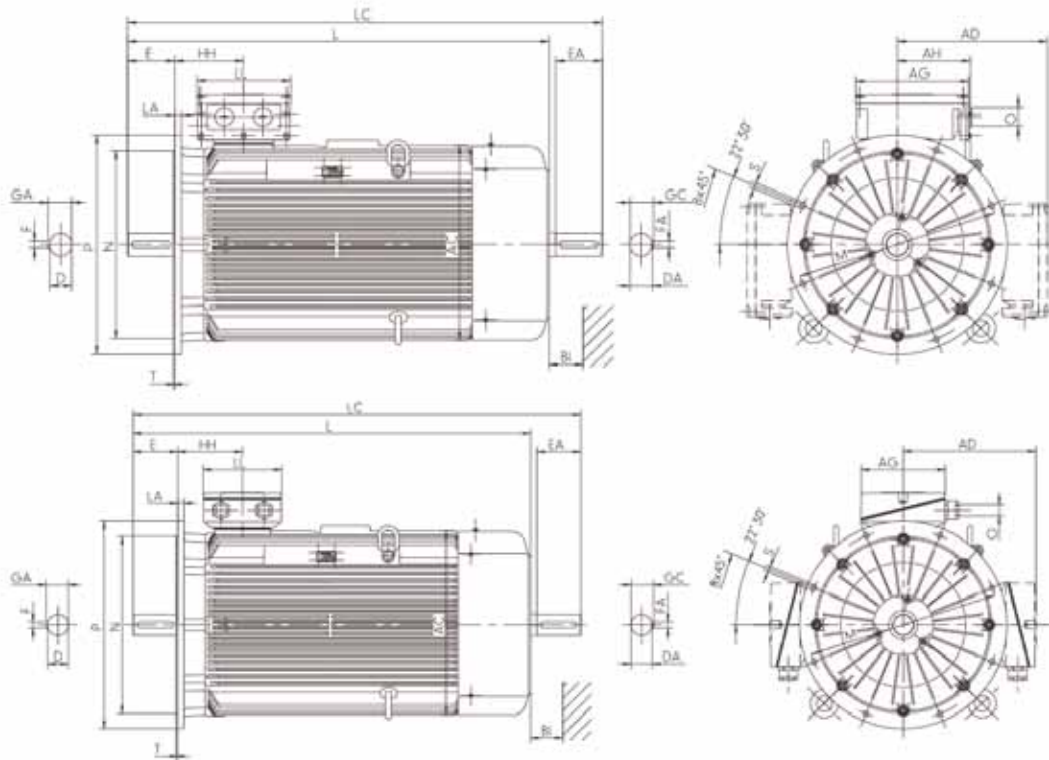
Size 315

with surface ventilation, cooling method IC 411, degree of protection IP 55

Type of construction IM B5 [IM 3001] up to size 315 MY

Type of construction IM V1 [IM 3011]

Flange dimensions see page 20/21



Type designation	Flange size	AC g	AD g1	D d	DA d1	DB*)	E l	EA l1	F u	FA u1	GA t	GC t1	H h	HH A	L k	LC k1	KK Type	AG x	LL z	AH -	O r	BI. BI
K11R 315S2	FF 600	550	416	65	65	M20	140	140	18	18	69	69	315	211	1050	1218	KK 200 A	282	242	-	M56x2	55
K11R 315S4,6,8	FF 600	550	416	80	70	M20	170	140	22	20	85	74.5	315	211	1080	1248	KK 200 A	282	242	-	M56x2	55
K11R 315M2	FF 600	550	416	65	65	M20	140	140	18	18	69	69	315	211	1105	1273	KK 200 A	282	242	-	M56x2	55
K11R 315M4,6,8	FF 600	550	416	80	70	M20	170	140	22	20	85	74.5	315	211	1135	1303	KK 200 A	282	242	-	M56x2	55
K11R 315MX2	FF 600	550	416	65	65	M20	140	140	18	18	69	69	315	211	1185	1353	KK 200 A	282	242	-	M56x2	55
K11R 315MX4	FF 600	550	416	80	70	M20	170	140	22	20	85	74.5	315	211	1215	1383	KK 200 A	282	242	-	M56x2	55
K11R 315MX6,8	FF 600	550	416	80	70	M20	170	140	22	20	85	74.5	315	211	1135	1303	KK 200 A	282	242	-	M56x2	55
K11R 315MX10,12	FF 600	550	416	80	70	M20	170	140	22	20	85	74.5	315	211	1135	1303	KK 200 A	282	242	-	M56x2	55
K11R 315MY2	FF 600	610	498	65	65	M20	140	140	18	18	69	69	315	230	1270	1448	KK 400 B	315	294	265	M72x2	55
K11R 315MY4,6,8	FF 600	610	498	80	70	M20	170	140	22	20	85	74.5	315	230	1300	1478	KK 400 B	315	294	265	M72x2	55
K11R 315L2	FF 600	610	498	65	65	M20	140	140	18	18	69	69	315	230	1390	1543	KK 400 B	315	294	265	M72x2	55
K11R 315L4,6,8	FF 600	610	498	80	70	M20	170	140	22	20	85	74.5	315	230	1420	1598	KK 400 B	315	294	265	M72x2	55
K11R 315LX2	FF 600	610	481	65	65	M20	140	140	18	18	69	69	315	230	1510	1688	KK 400 B	315	294	265	M72x2	55
K11R 315LX4	FF 600	610	481	80	70	M20	170	140	22	20	85	74.5	315	230	1540	1723	KK 400 B	315	294	265	M72x2	55
K11R 315LX6,8	FF 600	610	498	80	70	M20	170	140	22	20	85	74.5	315	230	1420	1598	KK 400 B	315	294	265	M72x2	55

*) Centre holes acc. to DIN 332-DS

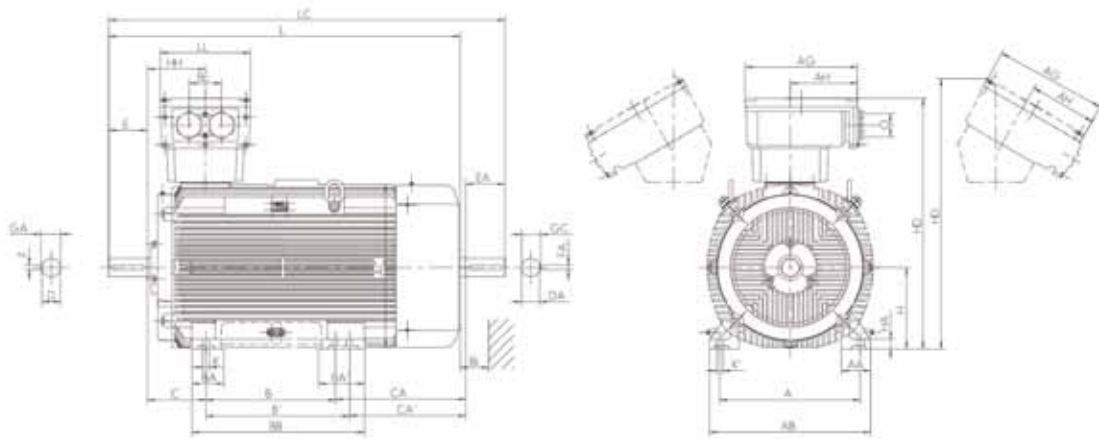
**) Terminal box right/left

Three-phase motors with squirrel-cage rotor, marine version

Size 355

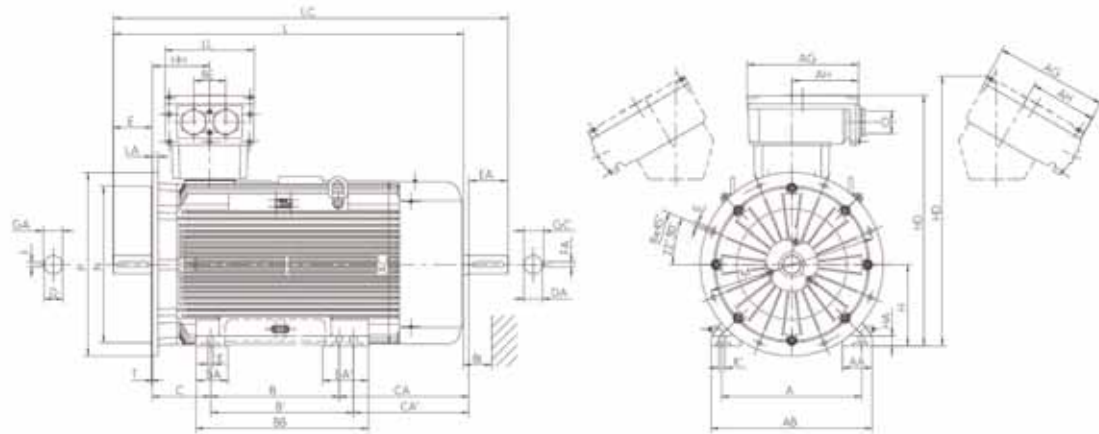
with surface ventilation, cooling method IC 411, degree of protection IP 55

Type of construction IM B3 [IM 1001]



Type of construction IM B35 [IM 2001]

Flange dimensions see page 20/21



Type designation	Flange size	A b	AA n	AB f	AC g	B a	BA m	BA' m1	BB e	C w1	CA w2	D d	DA d1	DB*)	E l	EA l1	F u	FA u1
K22R 355MY2,M2	FF 740	610	130	700	715	560	140	200	750	254	561	80	80	M20	170	170	22	22
K22R 355MY4,6,8	FF 740	610	130	700	715	560	140	200	750	254	561	100	80	M24	210	170	28	22
K22R 355M4	FF 740	610	130	700	715	560	140	200	750	254	561	100	80	M24	210	170	28	22
K22R 355M6,8	FF 740	610	130	700	715	560	140	200	750	254	561	100	80	M24	210	170	28	22
K22R 355MX6,8	FF 740	610	130	700	715	560	140	200	750	254	681	100	80	M24	210	170	28	22
K22R 355MX2	FF 740	610	130	700	715	560	140	200	750	254	681	80	80	M20	170	170	22	22
K22R 355LY2,L2	FF 740	610	130	700	715	630	140	200	750	254	611	80	80	M20	170	170	22	22
K22R 355MX4	FF 740	610	130	700	715	560	140	200	750	254	681	100	80	M24	210	170	28	22
K22R 355LY4,6,8,L4	FF 740	610	130	700	715	630	140	200	750	254	611	100	80	M24	210	170	28	22

Type designation	GA t	GC t1	H h	HA c	HD p	HD**) p	HH A	K s	K' s'	L k	LC k1	KK Type	AG x	LL z	AH -	BE -	O r	Bl. Bl
K22R 355MY2,M2	85	85	355	44	1091	1172	250	28	35	1530	1715	KK 630 A	496	390	301	140	M72x2	60
K22R 355MY4,6,8	106	85	355	44	1091	1172	250	28	35	1570	1755	KK 630 A	496	390	301	140	M72x2	60
K22R 355M4	106	85	355	44	1091	1172	250	28	35	1570	1755	KK 630 A	496	390	301	140	M72x2	60
K22R 355M6,8	106	85	355	44	1091	1172	250	28	35	1570	1755	KK 630 A	496	390	301	140	M72x2	60
K22R 355MX6,8	106	85	355	44	1091	1172	327	28	35	1690	1875	KK 630 A	496	390	301	140	M72x2	60
K22R 355MX2	85	85	355	44	1083	1174	327	28	35	1650	1835	KK 1000 A	615	474	385	200	M72x2	60
K22R 355LY2,L2	85	85	355	44	1083	1174	327	28	35	1650	1835	KK 1000 A	615	474	385	200	M72x2	60
K22R 355MX4	106	85	355	44	1083	1174	327	28	35	1690	1875	KK 1000 A	615	474	385	200	M72x2	60
K22R 355LY4,6,8,L4	106	85	355	44	1083	1174	327	28	35	1690	1875	KK 1000 A	615	474	385	200	M72x2	60

*) Centre holes acc. to DIN 332-DS

**) Terminal box tilted left/right

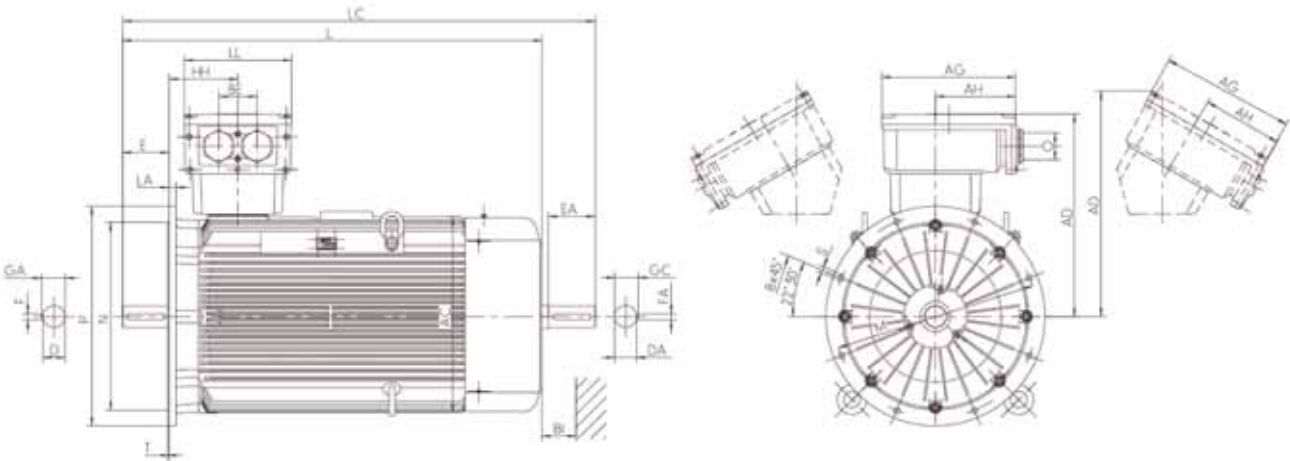
Three-phase motors with squirrel-cage rotor, marine version

Size 355

with surface ventilation, cooling method IC 411, degree of protection IP 55

Type of construction IM V1 [IM 3011]

Flange dimensions see page 20/21



Type designation	Flange size	AC g	AD g1	AD** g1	D d	DA d1	DB*)	E l	EA l1	F u	FA u1	GA t	GC t1	H h	HH A	L k	LC k1	KK Type	AG x	LL z	AH -	BE -	O r	Bl. Bl
K22R 355MY2,M2	FF 740	715	736	817	80	80	M20	170	170	22	22	85	85	355	250	1530	1715	KK 630 A	496	390	301	140	M72x2	60
K22R 355MY4,6,8	FF 740	715	736	817	100	80	M24	210	170	28	22	106	85	355	250	1570	1755	KK 630 A	496	390	301	140	M72x2	60
K22R 355M4	FF 740	715	736	817	100	80	M24	210	170	28	22	106	85	355	250	1570	1755	KK 630 A	496	390	301	140	M72x2	60
K22R 355M6,8	FF 740	715	736	817	100	80	M24	210	170	28	22	106	85	355	250	1570	1755	KK 630 A	496	390	301	140	M72x2	60
K22R 355MX6,8	FF 740	715	736	817	100	80	M24	210	170	28	22	106	85	355	327	1690	1875	KK 630 A	496	390	301	140	M72x2	60
K22R 355MX2	FF 740	715	728	819	80	80	M20	170	170	22	22	85	85	355	327	1650	1835	KK 1000 A	615	474	385	200	M72x2	60
K22R 355LY2,L2	FF 740	715	728	819	80	80	M20	170	170	22	22	85	85	355	327	1650	1835	KK 1000 A	615	474	385	200	M72x2	60
K22R 355MX4	FF 740	715	728	819	100	80	M24	210	170	28	22	106	85	355	327	1690	1875	KK 1000 A	615	474	385	200	M72x2	60
K22R 355LY4,6,8,L4	FF 740	715	728	819	100	80	M24	210	170	28	22	106	85	355	327	1690	1875	KK 1000 A	615	474	385	200	M72x2	60

*) Centre holes acc. to DIN 332-DS

**) Terminal box tilted left/right

General information

Responsibility for the delivery of spare motors and spare parts

Spare parts available up to 5 years after phase-out of a series. After more than 5 years, VEM gives technical information about the whole motor and components respectively and supplies, if requested, spare parts (if still available) or technical documents for manufacturing of spare parts.

Data for spare part order

Ordering spare parts, the following data must be specified:

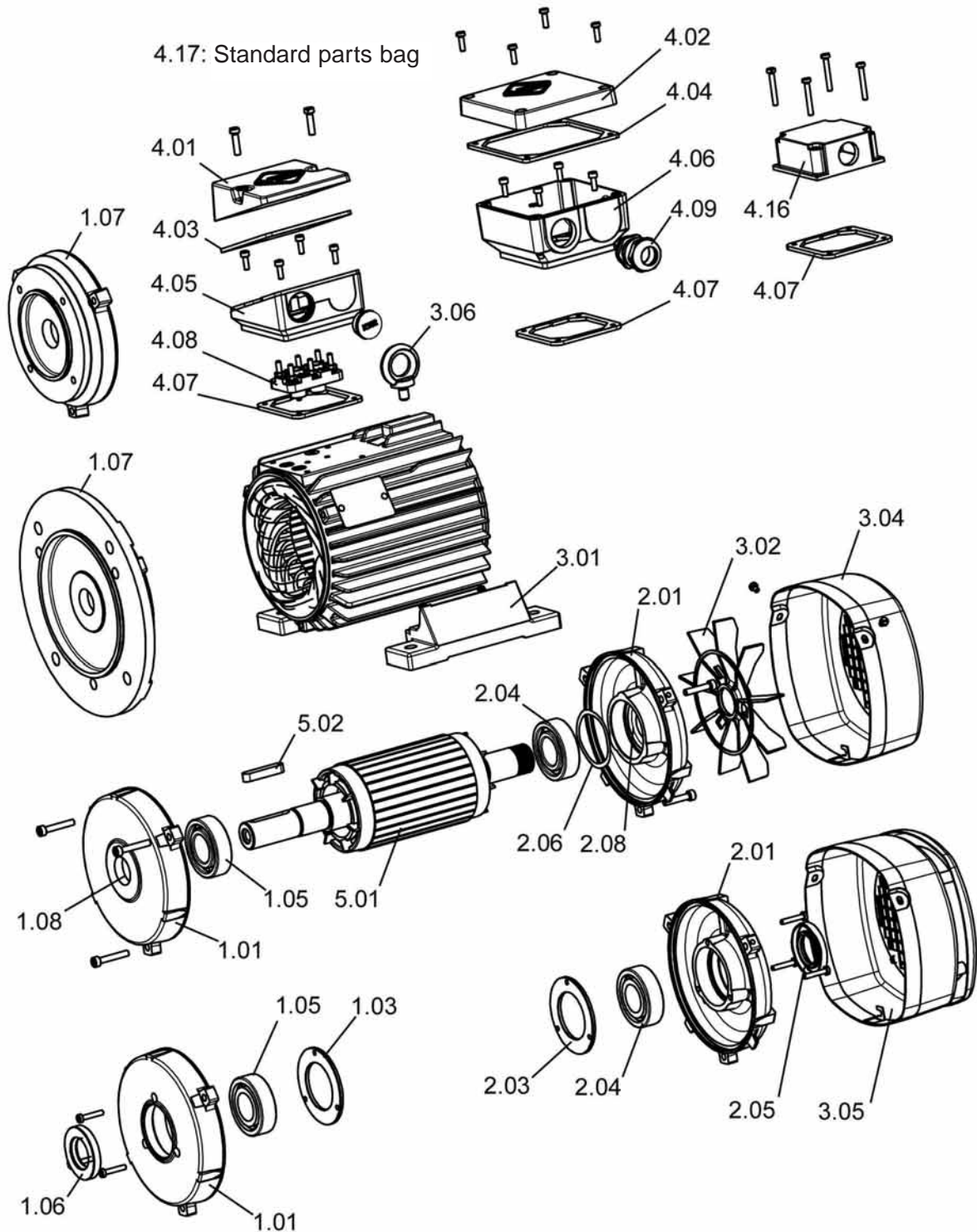
- Motor designation and motor number (factory number)
- Designation of the spare part
- Year of manufacturing

Spare parts summary

Item No.	Designation
1.01	End shield D-end
1.02	Bearing cover, D-end, external
1.03	Bearing cover, D-end, internal
1.04	Disc spring/wave washer, D-end, not for roller bearings
1.05	Antifriction bearing D-end
1.06	V-type rotary seal D-end
1.07	Flange end shield
1.08	Felt ring D-end
2.01	End shield N-end
2.02	Bearing cover, N-end, external
2.03	Bearing cover, N-end, internal
2.04	Antifriction bearing N-end
2.05	V-type rotary seal N-end
2.06	Disc spring N-end (or D-end)
2.08	Felt ring N-end
3.01	1 pair of motor feet
3.02	Fan
3.03	Fan cover, plastics
3.04	Fan cover, sheet steel
3.05	Fan cover with canopy
3.06	Lifting eye bolt
4.01/4.02	Terminal box cover
4.03/4.04	Terminal box cover gasket
4.05/4.06	Terminal box base
4.07	Terminal box base cover
4.08	Terminal plate
4.09	Cable gland
4.10	Screw plug
4.11	Cable gland for thermal winding protection
4.12	Terminal for thermal winding protection
4.13	Clamp
4.14	Sealing components
4.15	Adapter plate
4.16	Flat terminal plate
4.17	Standard parts bag
5.01	Rotor complete
5.02	Key
6.01	Grease thrower ring, D-end
6.02	Grease thrower ring, N-end
6.03	Labyrinth gland, D- and N-end
6.04	Guide disc, D-end
6.05	Guide disc, N-end

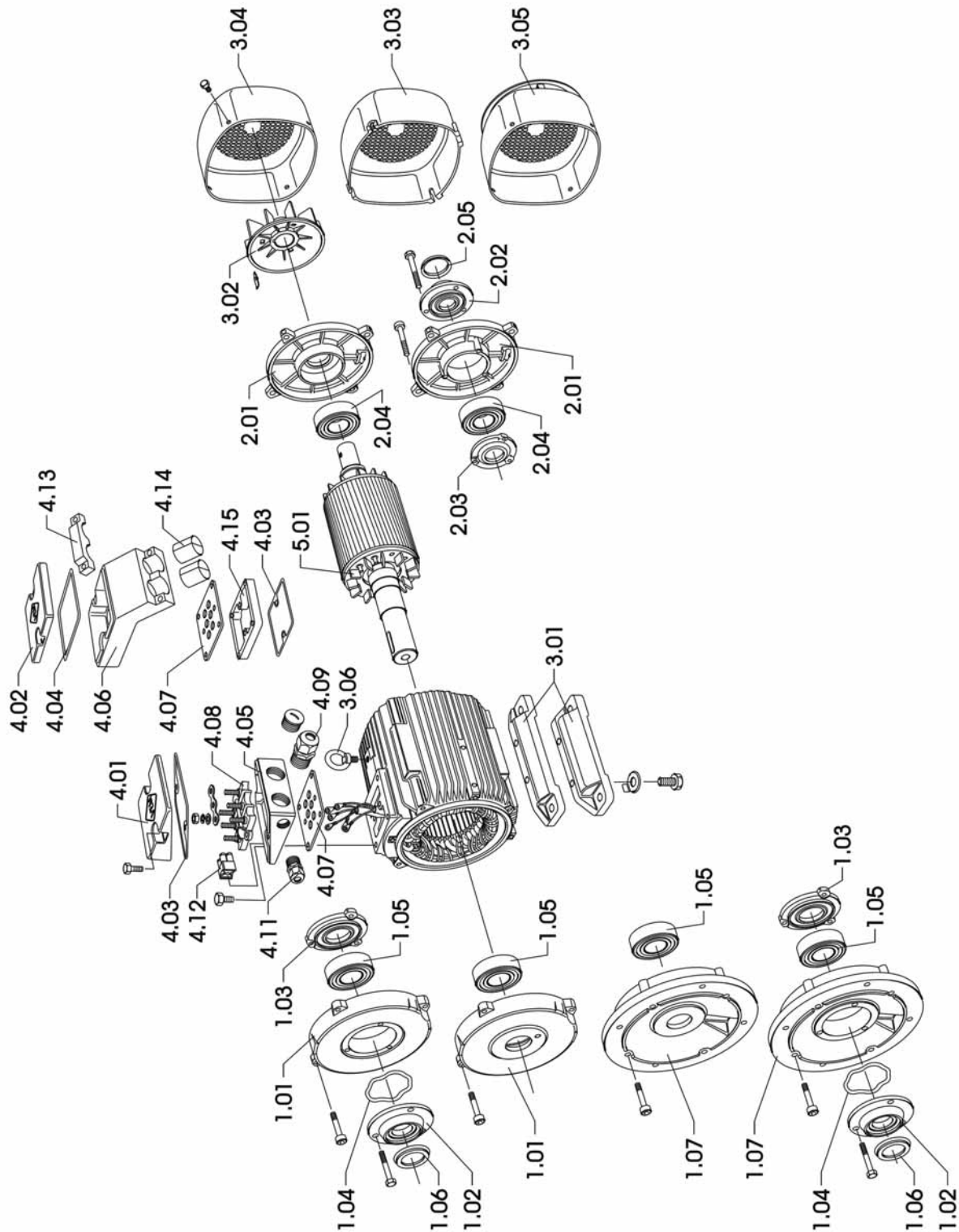
Three-phase asynchronous motor with squirrel-cage rotor, basic version KPER 63 – 112

(Example, delivered version may differ in details)



Three-phase asynchronous motor with squirrel-cage rotor, basic version K1.R 112 – 315 and K22R 355

(Example, delivered version may differ in details)



VEM motors GmbH
Carl-Friedrich-Gauss-Strasse 1
38855 Wernigerode
Germany
Phone: +49 (0)39 43/68 0
Fax: +49 (0)39 43/68 24 40
E-mail: motors@vem-group.com
www.vem-group.com

A world on the move

