Low voltage asynchronous motors IEC motors with squirrel-cage rotor

Standard motors
Energy saving motors CEMEP
Energy saving motors EPAct
Non-ventilated motors
Forced-ventilated motors
Built-in motors

Main catalogue 01-2008

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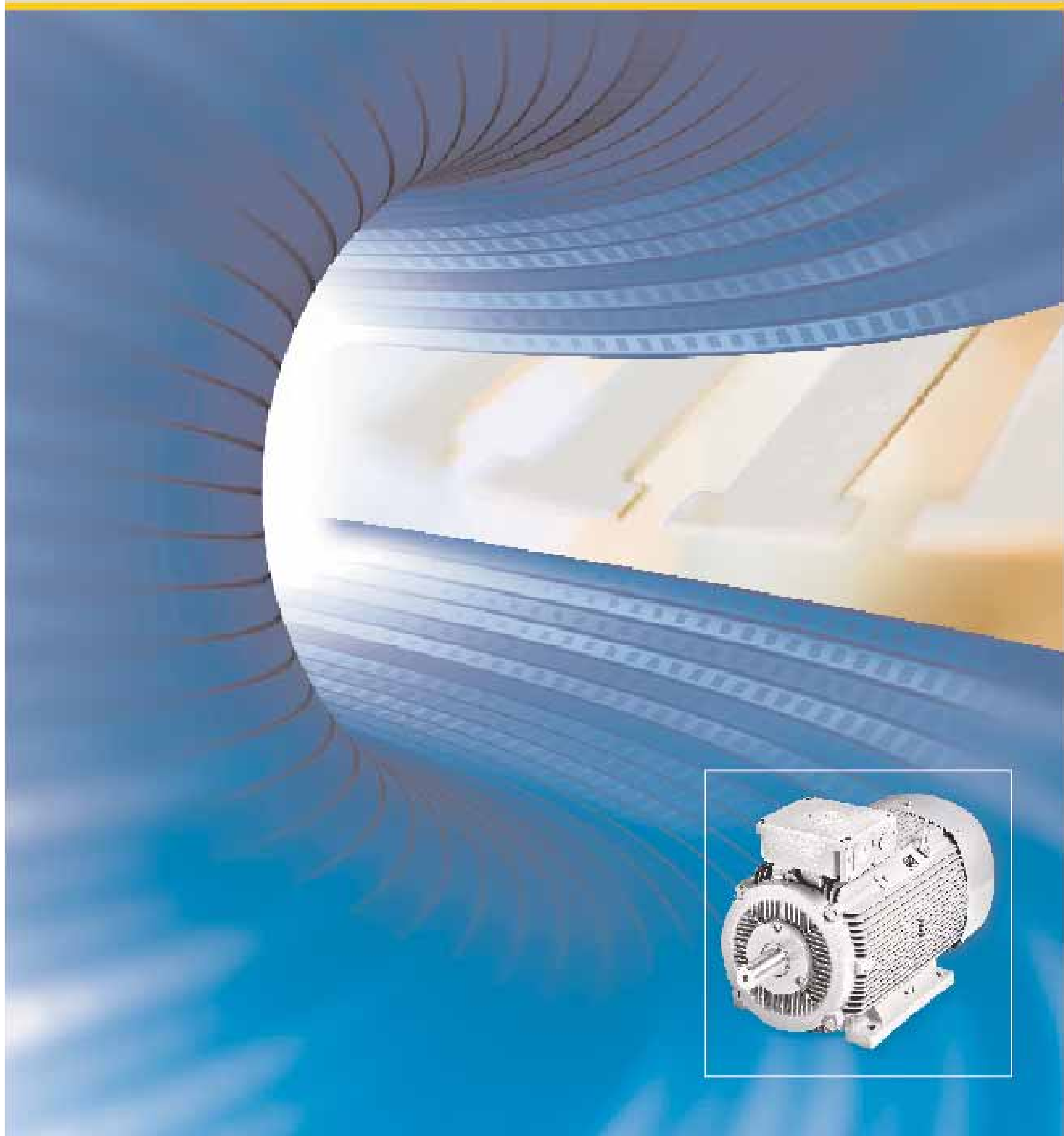
invalid:
Low voltage three-phase asynchronous motors
Main catalogue 2005

Contents

The products featured in this catalogue can also be found in the interactive electronic catalogue V 5.2. 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.

Introduction



Innovative drives made in Germany

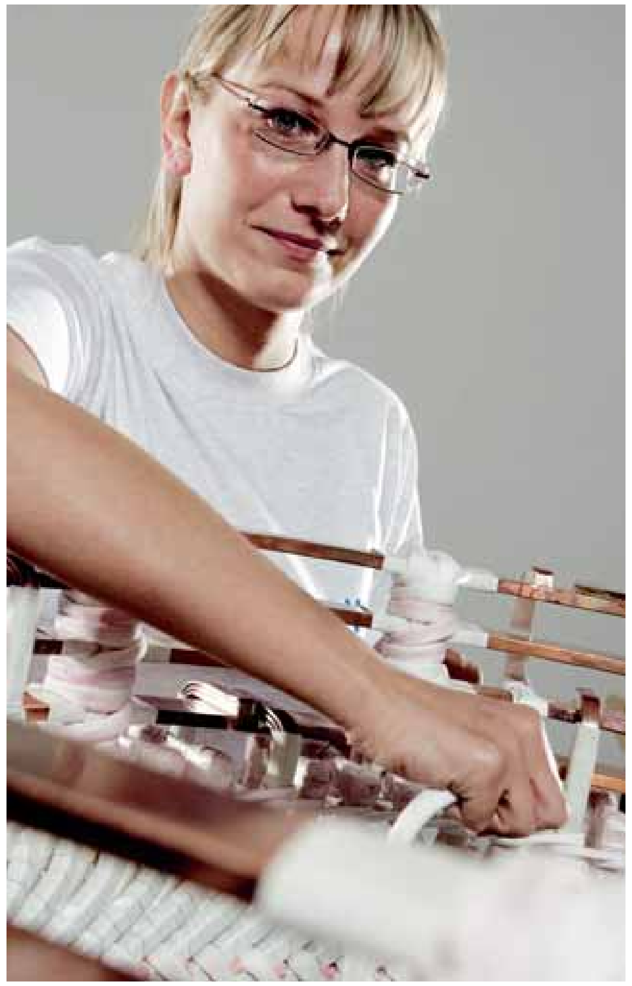
Electric machines made by VEM have millions of applications around the globe. VEM stands for high-quality products such as large and special-purpose machines, standard motors and customized drives which have given reliable service in a variety of industries. Systems of all types use our motors, generators 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. VEM products meet all relevant standards and regulations.

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

More than standard products

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)
- optional arrangement of connection box left/top/right
- 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)
- 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.



Caring for the environment

The VEM Group has long been committed to protecting and preserve the natural environment for this and following generations. We are working together with plant manufacturers to press ahead with the use of energy-optimized motors and drive systems for maximum conservation. The Voluntary Agreement made between CEMEP and the European Union, and the EU's “Motor Challenge Program” have shown that European manufacturers are committed to improving the efficiency of electric motors and seeking complete solutions in plant manufacture. The VEM group and its European subsidiaries have signed the Voluntary Agreement and acceded to the “Motor Challenge Program”. As a result, VEM

has completely stopped producing motors in efficiency class eff 3. We assist customers in the energy-conscious operation of plants and systems as a contribution to environmental protection and saving overheads.

Working with customers worldwide

Wherever clients require electric machines, we are partners in supporting and accompanying their projects, whether they be 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 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
- Three-phase motors for marine use acc. to the regulations of international classification societies, 0.06 – 440 kW

- Explosion-proof three-phase motors, in types of protection:
  Increased safety 0.12 – 335 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” EPAct 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 – 355 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.

1

IBExU Institut für Sicherheitstechnik GmbH
An-Institut der TU Bergakademie Freiberg

[1] **Mitteilung über die Anerkennung der Qualitätssicherung Produkt**

[2] Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen, **Richtlinie 94/9/EG**

[3] Mitteilungsnummer: **IBExU05ATEX Q008**

[4] Produktkategorie: Explosionsgeschützte Drehstrom-Asynchronmotoren

[5] Hersteller: VEM motors GmbH

[6] Anschrift: Carl-Friedrich-Gauß-Straße 1, D-38855 Wernigerode

[7] Fertigungsstätte: am Firmensitz

[8] IBExU Institut für Sicherheitstechnik GmbH, BENANNTE STELLE Nr. 0637 nach Artikel 9 der Richtlinie 94/9/EG des Europäischen Parlamentes und des Rates vom 23. März 1994, bestätigt dem Hersteller, daß er an der unter [7] aufgeführten Fertigungsstätte ein Qualitätssicherungssystem für die Endabnahme und Prüfung der unter [4] genannten Produktkategorie unterhält, das dem Anhang VII dieser Richtlinie genügt.

[9] Diese Mitteilung basiert auf dem Auditbericht Nr. IB-05-3-103 vom 01.08.2005. Sie ist gültig bis 10.07.2008. Diese Mitteilung kann zurückgezogen werden, wenn der Hersteller die Anforderungen des Anhangs VII nicht mehr erfüllt.
Die Ergebnisse des Überwachungsaudits des Qualitätssicherungssystems sind Bestandteil dieser Mitteilung.

[10] Gemäß Artikel 10 (1) der Richtlinie 94/9/EG ist hinter der CE-Kennzeichnung die Kenn-Nummer 0637 von IBExU als die benannte Stelle anzugeben, die in der Produktionsüberwachungsphase tätig wird.

IBExU Institut für Sicherheitstechnik GmbH
Fuchsmühlenweg 7 · D-09599 Freiberg
Tel.: 03731 3805.0 Fax: 03731 23650

Zertifizierungsstelle -Explosionsschutz-
Im Auftrag
(Dr. Lösch)

- Siegel -
(Kenn-Nr. 0637)

Freiberg, 09.08.2005

Bescheinigungen ohne Unterschrift und ohne Siegel haben keine Gültigkeit. Bescheinigungen dürfen nur unverändert weiterverbreitet werden.

Seite 1 von 1
IBExU05ATEX Q008

January 2007

VEM motors GmbH Elektromotorenwerk Wernigerode	Factory standard **EC Certificate of Conformity**	**EW-N 1200** Sheet 1 Page 2

VEM motors GmbH
Carl-Friedrich-Gauß-Str. 1
D-38855 Wernigerode

binding from: 01.01.2007 till:

The electrical apparatus
three-phase asynchronous motors with squirrel-cage rotor,
compact drives,
three-phase asynchronous motors with slip-ring rotor
of the series

KP./KPE./K10./K11./K12./K20./K21./K25.
BP./BPE./B10./B11./B20./B21.
AR., BR.
A10./A11./A20./A21.
SP./SPE./S10./S11.
WE1./W20./W21.
R10./R11./R20./R21.
K22. 355 / B22. 355
K2.B..
G10./G11./G20./G21./GS10./GS1.
CP./CPE./C10./C11.
YP./YPE./Y10./Y11./Y20./Y21.
K81R/K82R/B82R/K85./K86.
S81.
M21. 132 up to 180 (MMGE..., EDU
KU../KV../BU../YU..
Gear motors S(R)/14..., S(R)P4, S(R)K4..., SG..., SP...
KIXB...ARG...
followed by the motor type

are in conformity with the instructions of the following EU Directives:
2006/95/EG
Directive of the European Parliament and the Council from 12th December 2006 for harmonisation of legislative provisions of the member states concerning electrical equipment for operation within certain voltage limits

89/336/EWG
Directive about Electromagnetic Compatibility
amended by RL 91/263/EWG, 92/31/EWG and 93/68/EWG

The conformity with the instructions of these Directives is proved by the observation of following standards:
European Standard / German Standard
EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4
EN 55014-1, EN 55014-2
EN 61000-3-2, EN 61000-3-3
EN 60034-1, DIN EN 60034-2, EN 60034-5, EN 60034-6, EN 60034-9,
DIN IEC 60038
EN 61800-3 + A11
EN 60204-1

Wernigerode, 14th February 2008

Sauer
Managing Director

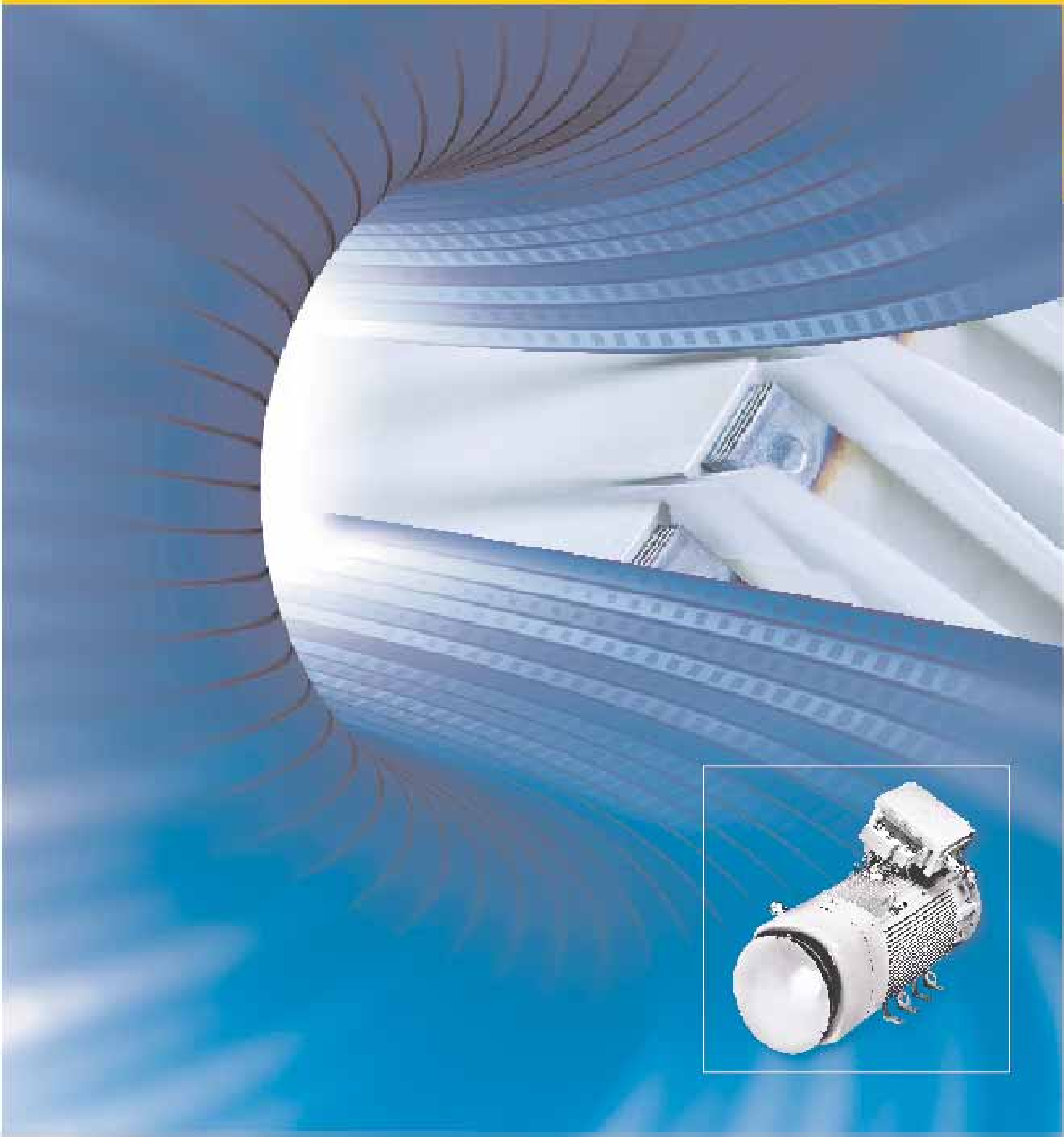
Beutner
Factory Manager

This certificate attests the conformity with the named Directives, however, it is not a promise of properties in the meaning of product liability.
In case of electronic communication, the signature does not appear.

Erarb.	Gepr.	Genehm.	Änderungszustand
E.K.			35/08

Technical explanations

2



Technical explanations

Standards and regulations

The motors comply with the relevant standards and regulations, particularly with the following:

Title	DIN EN	IEC
Rotating electrical machines, rating and performance	DIN EN 60034-1	IEC 60034-1 IEC 60085
Rotating electrical machines, methods for determining losses and efficiency	DIN EN 60034-2	IEC 60034-2
Three-phase asynchronous motors for general use, with standardised dimensions and outputs, frame sizes 56 – 315	DIN EN 50347	IEC 60072
Terminal markings and direction of rotation for rotating electrical machines	DIN EN 60034-8	IEC 60034-8
Rotating electrical machines, symbols for types of construction and erection	DIN EN 60034-7	IEC 60034-7
Built-in thermal protection	-	IEC 60034-11
Rotating electrical machines, methods of cooling	DIN EN 60034-6	IEC 60034-6
Rotating electrical machines, degrees of protection	DIN EN 60034-5	IEC 60034-5
Rotating electrical machines, mechanical vibrations	DIN EN 60034-14	IEC 60034-14
Rotating electrical machines, noise limits	DIN EN 60034-9	IEC 60034-9
Rotating electrical machines, starting performance of induction cage motors up to 660 V, 50 Hz	DIN EN 60034-12	IEC 60034-12
IEC standard voltages	DIN IEC 60038	IEC 60038

VEM motors conform furthermore to various foreign regulations which are aligned to IEC 60034-1
or else have taken over the latter’s stipulations as European standard EN 60034-1.
The following permissible temperature rise applies to the standards and regulations specified:

Regulations	Cooling air temperature	Permissible limits of temperature rise in K (measured by resistance method) isolation class				
Thermal class acc. to DIN EN 62114	°C	105 [A]	120 [E]	130 [B]	155 [F]	180 [H]
DIN EN 60034-1	40	60	75	80	105	125
IEC 60034-1	40	60	75	80	105	125
Great Britain	40	60	75	80	105	125
Italy	40	60	70	80	105	125
Sweden	40	60	70	80	105	125
Norway	40	60	-	80	105	125
Belgium	40	60	75	80	105	125
France	40	60	75	80	105	125
Switzerland	40	60	75	80	105	125

Motors for the North American Markets
For the US and Canadian markets, (in so far as motors as specified in IEC Norms are accepted) recognition of the motor series as specified by Underwriters‘ Laboratories Inc. (UL), both for the electrical insulation system and for the motor construction, was achieved.
It is possible to supply the motors as specified in the electrical regulations of NEMA MG1 “Motors and Generators”.

Motors with Certificates in accordance with the requirements of the Energy Policy and Conservation Act (EPAct) (CSA File 184535) for the minimum efficiency legally prescribed for the USA and Canada (Table 12 – 10 according to NEMA MG1 and C390 according to CSA) are available.
It must always be checked whether the motors are to be used in the USA or in Canada.

UL approval (UL Files E216022, E216143)
The approval shall apply to the type series A…, B…, K…, S…, W..., X..., Y... in frame sizes 56 to 355. In addition, the motors are designed electrically according to NEMA MG1-12. According to the UL regulations, motors are certified up to rated voltages of 600 V only.
The motors will be designated as shown below on their rating plates:
Additional data: Design Letter and Code Letter

cULus design
Under the same file number the UL approval is extended for cULus. The certificate comprises the type series A…, B…, K…, S…, W…, X… or Y... .
Thus, the UL certification shall be valid on both the US (USR) and the Canadian (CNR) markets. Certification according cULus shall apply to all motors of frame sizes 56 to 315.
There is no limitation as to the output of the motors.

CSA approval
According to the regulations of the "Canadian Standard Association" (CSA), the motors of type series K11R are in the frame size range 56 to 315 approved for rated voltages up to 690 V.
They are designated accordingly on the rating plate with the logo shown.
Components to be attached or built in must also be listed by CSA or manufactured in accordance with the approval.
Explosion-proof motors are subject neither to a UL, cULus nor CSA approval.
Motors with legally imposed minimum efficiencies are subject to additional regulations. See section entitled "Energy-saving motors according to EPAct".

Other approvals

CCC – China Compulsory Certification
In 2002 the China Compulsory Certification (CCC) was introduced as an obligatory certification and identification system in China. This certification system is intended to provide a unified standard for selected products in the PR of China. CCC has replaced the previously applicable identifiers CCEE (China Commission for Conformity of Electric Equipment) for domestic products and CCIB (China Commodity Inspection Bureau) for imported products.
Accordingly, small-power motors exported to China are subject to certification up to a certain power rating:
two-pole, synchronous speed 3,000 rpm: ≤ 2.2 kW
four-pole, synchronous speed 1,500 rpm: ≤ 1.1 kW
six-pole, synchronous speed 1,000 rpm: ≤ 0.75 kW
eight-pole, synchronous speed 750 rpm: ≤ 0.55 kW
Since 1 August 2003 the Chinese customs authority considers CCC as valid guideline for the import of these motors into China.

GOST-R
The GOST certification was introduced in Russia in 1992 for certain ranges of products with a view to consumer protection, safety and health protection. The certificates are required when importing the products into Russia and for possible inspections at a later stage such as by the Chamber of Commerce or by safety officers. They are urgently necessary for an uncomplicated export of goods to Russia. The VEM type series have been subjected to this certification and certified copies may be ordered, if required, against payment (see price list).

For the design of marine motors and explosion-proof motors refer to the catalogues "Low-voltage motors, Branch solutions – Machine construction, ventilation systems and ship building industry" and
"Low-voltage motors, motors for use in explosive atmospheres".

Progressive coordination of output

VEM three phase motors with squirrel-cage rotor are available in two type series that are both based on IEC 60072 with regard to their designs and frame sizes. (See table of motor selection data for type coordination).
The K11R/K21R/K22R series is conceived as a classic IEC/DIN series, i. e. the fixing dimensions and correspondence of output as specified in DIN EN 50347.

The K10R/K20R series have arisen from a progressive coordination of output in comparison with these DIN standards. They offer output up to two stages higher with the same frame size.
The variations (e. g. K25R) derived from both series with different output coordination can also be supplied as special versions.

Design version

Shaft height	Series	Material for Housing | End shields | Feet	Foot mounting
63 to 132T	KPER/K21R	Grey cast iron	bolted on
100 LX	KPER/K21R		cast on
132 to 280	K11R/K21R		bolted on
315	K11R/K21R		cast on
355	K22R		
56 to 100	KPR/K20R		cast on
112 to 250	K10R/K20R		bolted on
280 to 315	K10R/K20R		cast on

Degree of protection

Outline of possible degrees of protection according to DIN EN 60034-5, EN 60529:

against penetration of foreign matters		not protected	≥ 1.0 mm	protected from dust	dustproof
against contact with hazardous parts with …		not protected	wire	wire	
	1st charac. no.-->	0	4	5	6
against the ingress of water with harmful effects	2nd charac. no.				
not protected	0	IP 00			
splash water	4		IP 44	IP 54	
jet-water	5			IP 55	IP 65
heavy jet-water	6			IP 56	IP 66
temporary submerging	7			IP 57S[1]	IP 67

[1] S … standstill

The motors have condensate water drain holes in their end shields (with shaft heights up to 132T on request only). These are closed with plastic plugs.

The penetration of water along the shaft must be prevented by the user in all motors with the shaft end upwards.

In the case of flange motors in types of construction IM V3/IM V36, the collection of water in the flange end shield is prevented by a standard outlet hole. In cases of use or storage outdoors a protective roof or an additional cover are recommended to prevent long-term exposure to direct intensive solar radiation, rain, snow, dust or the fan being frozen up by a direct fall of snow or ice.

In such cases it is recommended to consult the manufacturer for technical clarification.

The motors are suitable for use in tropical areas. Recommended 60 % relative air humidity at a refrigerant temperature (KT) of 40 °C.
Ambient temperature: -20 °C to +40 °C
Installation altitude: ≤ 1,000 m

When using the motors in the open air or in a corrosive environment it is recommended to use non-rusting bolts (option). Deviating environmental regulations will be indicated on the rating plate. The data given on the rating plate shall in this case be applicable.

Cooling and ventilation

The motors are equipped with radial plastic or aluminium alloy fans, which cool independently of the direction of rotation of the motor (IC 411 as specified in DIN EN 60034-6).
For acoustic reasons, two-pole motors of the shaft height 355 are available with low-noise unidirectional fans only.
Attention is to be paid that a minimum distance of the fan cover from the wall is maintained (dimension BI) when the motor is being installed.

Types	Materials: Fan	Materials: Fan cover	
KPER/KPR/K21R 56-112	Plastic[1]	Sheet steel	Plastic[2]
K21R/K11R 132-225	Plastic[1]	Sheet steel	Plastic[2]
K21R/K11R 250-315L	Plastic[1]	Sheet steel	
K21R 315LX2, 4	Cast alluminium alloy	Sheet steel	
K22R 355	Cast alluminium alloy[3]	Sheet steel	
K20R 56-100	Plastic[1]	Sheet steel	Plastic[2]
K20R 112-200	Plastic[1]	Sheet steel	Plastic[2]
K20R 225-315L	Plastic[1]	Sheet steel	
K11R 132-160, 180 M4, L6, 8	Plastic[1]	Sheet steel	Plastic[2]

[1] Cast aluminium alloy possible at extra charge on request
[2] Possible at extra charge for special versions
[3] 2-pole with unidirectional fan

Rating plate

In standard design, the motor rating plate is normally marked in the German and English languages.
Other languages may be used with non-EU languages available against extra price.
The rating plate indicates the most important design data such as type designation and motor number, output, rated voltage and frequency, rated current, type of construction, degree of protection, power factor, speed, thermal class, bearing types and grease type.
The data may vary according to type. In the case of motors with relubricating device, the quantity of grease per lubrication event and the relubricating intervals are

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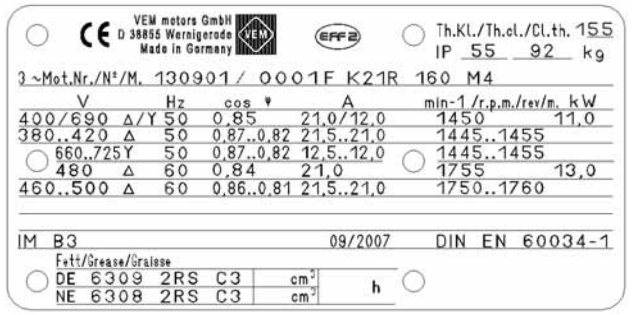
also indicated on the rating plate or an additional plate. The rating plates are fastened on the housing with grooved drive studs and cannot be lost. They may be made of aluminium or stainless steel (extra price). For additional plates it will be required to consult the manufacturer.



Rating plate example 1
Motor for rated voltage range

Rating plate example 2
Motor for rated voltage

Type designation, VEM low voltage motors

Examples: K21R 132 SX2 KR

K	2	1	R	132	S	X	2	KR		VIK
1	2	3	4	5	6	7	8	9	…	10

1 Design version
- K … Squirrel-cage motor
- W … Energy-saving motor

2 Design condition
- P, 1, 2

3 Standard characteristic number/letter
- 0 … Transnorm
- 1, 2, 5 DIN
- E … DIN, old series

4 Degree of protection/Cooling
- R … Fin cooled, squirrel-cage rotor, IP 55
- V … Fin cooled, squirrel-cage rotor, IP 56
- Q … Fin cooled, squirrel-cage rotor, IP 65
- O … Nonventilated, squirrel-cage rotor, IP 55
- W … Nonventilated, squirrel-cage rotor, IP 56
- M … Nonventilated, squirrel-cage rotor, IP 65
- F … Forced-air cooled, IP 55, stating the forced-air fan unit under special identifier

5 Shaft height in mm
- 63, 71, 80, 90, 100, 112, 132, 160, 180, 200, 225, 250, 280, 315, 355, 400

6 Foot length
- K … small
- G … large
- S … short
- M … medium
- L … long

7 Symbols for different output
- X, Y, Z …

8 Pole number
- 2, 4, 6, … pole-changing separated by dashes

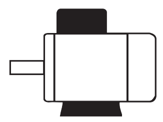
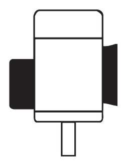
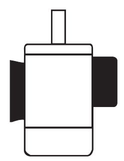
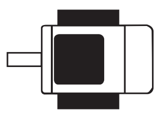
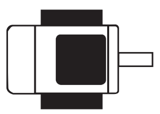
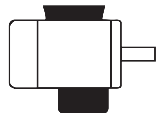
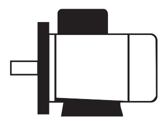
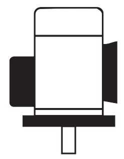
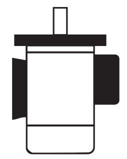
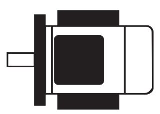
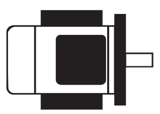
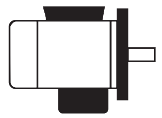
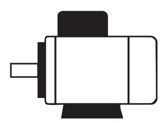
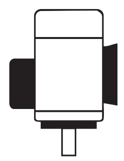
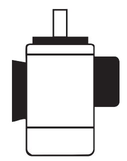
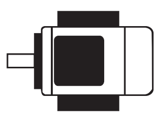
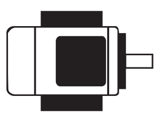
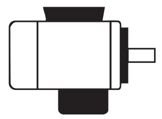
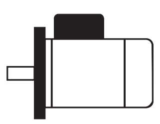
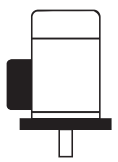
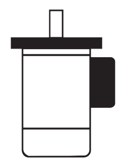
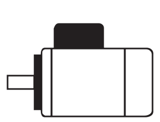
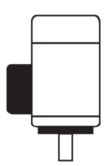
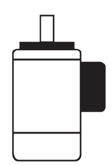
9…10 Special symbols
- KR … Terminal box, right hand
- VIK … VIK version
- … for further symbols refer to Modifications summary

Types of construction

The most frequently used types of construction are shown in the following table. Other types of construction on request. The type of construction is designated on the nameplate according to Code I, DIN EN 60034-7. Standard motors in sizes 56 – 200 that are ordered in the basic types of construction can also be used in the following other types of construction:

IM B3 in IM B5, IM B7, IM B8 and IM V6
IM B35 in IM 2051, IM 2061, IM 2071 and IM V36
IM B34 in IM 2151, IM 2161, IM 2171 and IM 2131
IM B5 in IM V3
IM B14 in IM V19

Motors of types IM V5, IM V1 or IM V18 may optionally be fitted with a protective roof to prevent smaller parts from falling into their interior. For types with the shaft end pointing upward the user must provide a suitable covering to prevent smaller parts from falling into the fan cover (see also standard IEC/EN 60079-0). The cooling air flow must not be obstructed by the covering. As from frame size 225, consultation with the manufacturer will be necessary for the types IM V5, IM V6, IM B6, IM B7 and IM B8. In the frame size range as of 315L, the types IM B5 and IM V3 are not available. To facilitate connection to mains, the terminal boxes of all types may be turned through 90 deg (except for motors with terminal box 630 and 1000, inclined – these may be turned through 180 deg only).

Basic type of construction	Derived types of construction				
IM B3 IM 1001 	IM V5 IM 1011 	IM V6 IM 1031 	IM B6 IM 1051 	IM B7 IM 1061 	IM B8 IM 1071 
IM B35 IM 2001 	IM V15 IM 2011 	IM V36 IM 2031 	– IM 2051 	– IM 2061 	– IM 2071 
IM B34 IM 2101 	– IM 2111 	– IM 2131 	– IM 2151 	– IM 2161 	– IM 2171 
IM B5 IM 3001 	IM V1 IM 3011 	IM V3 IM 3031 			
IM B14 IM 3601 	IM V18 IM 3611 	IM V19 IM 3631 			

2

Vibration behaviour and balancing

The permissible vibration intensities of electrical motors are specified in DIN EN 60034-14. The vibration intensity level A (normal, without designation on the rating plate) is achieved or improved by VEM motors in the basic version. The vibration intensity levels B (special identifier “SGB” in the type designation) can be supplied at extra cost. The following values are recommended as specified in DIN EN 60034-14:

Vibration intensity level	Shaft height H	56 ≤ H ≤ 132			132 ≤ H ≤ 280			280 > H		
	Motors installation	s_{eff} [µm]	v_{eff} [mms^{-1}]	a_{eff} [ms^2]	s_{eff} [µm]	v_{eff} [mms^{-1}]	a_{eff} [ms^2]	s_{eff} [µm]	v_{eff} [mms^{-1}]	a_{eff} [ms^2]
A	Free suspension	25	1.6	2.5	35	2.2	3.5	45	2.8	4.4
	Rigid mounting	21	1.3	2.0	29	1.8	2.8	37	2.3	3.6
B	Free suspension	11	0.7	1.1	18	1.1	1.7	29	1.8	2.8
	Rigid mounting	-	-	-	14	0.9	1.4	24	1.5	2.4

Level A is to be used for motors without special vibration requirements.
In free suspension mode this is largely identical with the previous level N. In the case of motors as of frame size 250 the limit values are increased in severity from 3.5 mm/s to 2.8 mm/s. This corresponds to the former limit value for R with speeds > 1,800 rpm.

Level B is to be used for motors with special vibration requirements.
In free suspension mode this is largely identical with the previous level S.

The frequency limits for vibration displacement/vibration velocity and vibration velocity/vibration acceleration are 10 Hz and 250 Hz, respectively. It should be noted that the measured values may deviate from the actual values by ±10 % due to the tolerance of the measuring instruments.

For routine tests on motors with speeds between 600 rpm and 3,600 rpm it will be sufficient according to DIN EN 60034-14 to measure the vibration velocity.

All rotors were subjected to a dynamic balancing test with half key installed. This balancing test is documented with the letter “H” following the motor number. On customer's request, the balancing test may be made with full key which will be identified by the letter “F” following the motor number.
In inverter operation with frequencies greater than 60 Hz, a special balancing test will have to be made for compliance with the required limit values (high-speed balancing, special identifier “HS” in the type designation).

Bearings/bearing lubrication

VEM motors are equipped with anti-friction bearings from respected manufacturers. The rated bearing lifetime is at least 20,000 h with the exploitation of the maximum permissible load. The rated bearing lifetime for motors installed in a horizontal position without additional axial loading is 40,000 h in the case of coupling service.

The versions
– fixed bearing at N-end
– without fixed bearing (floating bearing arrangement)
– permanent lubrication
– relubrication device
– heavy bearing on D-end (for increased lateral forces)
– easy bearing arrangement
and the
– bearing schedules
– disk spring or wave washer types
– V-ring types
– figures of bearing arrangement
  can be taken from the overviews of the bearing arrangements.

The respective flat grease nipples are contained in the tables of the design drawings. Motors in the normal versions with two deep groove ball bearings have preloaded bearings, where the preloading is implemented by a disk spring or a wave washer. Versions with cylindrical roller bearings on the D-end (heavy bearing arrangement VL) are excepted from the preloading. The “fixed bearing N-end” version is possible in the case of motors without a “fixed bearing”. Fixed bearing at D-end possible on request.
The most important prerequisite for achieving the normal bearing lifetime is correct lubrication, i.e. the use of the right kind of grease according to the application, the filling with the correct amount of grease and the maintenance of the subsequent relubrication periods.
The frame sizes 56 to 160 are equipped with life-lubricated bearings. These bearings are to be changed promptly in accordance with the usable grease life.
In the case of motors from size 180, the bearings must be relubricated promptly in accordance with the usable grease life. Under normal operating conditions, the lubrication filling will allow 10,000 operating hours for the 2-pole version and 20,000 operating hours for the 4-pole version without relubrication.

Under normal service conditions, for version with relubrication device, 2,000 or 4,000 operational hours will apply. A grease of type KE2R-40 as specified in DIN 51825 will be used as standard grease. The used grease is to be removed from the lubrication chamber in the external bearing cover after five relubrications. Information about bearing sizes, grease types and quantities and times for relubrication are to be taken from an additional plate (additional charge) attached to the motor.

As is practised with all other motor series, the bearings are relubricated after they have been thoroughly cleaned. Use should be made of the same grade of grease. Only the grease types specified by the motor manufacturer are allowed to be used as equivalent grades. Care should be taken to fill the open space of the bearing to approx. two-thirds of its capacity with grease only. Filling the bearings and bearing covers to full capacity will lead to elevated bearing temperatures and thus to a higher rate of abrasion.

Bearings having a relubrication device should be relubricated through the lubrication nipple with the motor running and observing the quantity of grease specified for the particular motor. For the relubrication intervals refer to the table below.

Frame size	Two-pole type	Four-pole and multi-pole type
112 to 280	2,000 h	4,000 h
315	2,000 h	4,000 h
355	2,000 h	3,000 h

Use of cylindrical roller bearings
Relatively large radial forces or masses can be taken up at the end of the motor shaft by the use of cylindrical roller bearings (“heavy bearing arrangement” VL). Examples: belt drive, pinion or heavy couplings. The minimum radial force at the shaft end must be a quarter of the permissible radial force. The permissible shaft end load is to be taken into account. The information can be taken from the tables and diagrams in the design selection data.

Important Note:
If the radial force falls below the minimum value, damage to the bearings can be caused within a few hours. Test runs in no-load state only permissible for a short period.

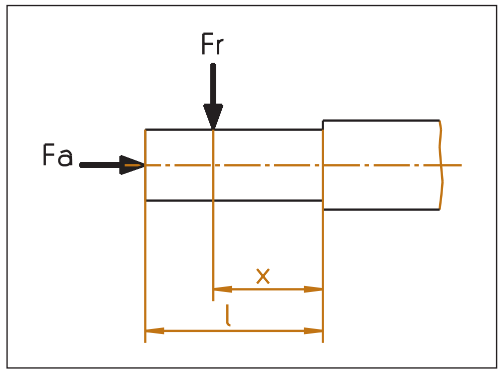
If the specified minimum radial force is not reached, we recommend the use of grooved ball bearings (“easy bearing arrangement” LL). The bearings can be changed on request.

Loading of bearing and shaft end
The design of the bearing and the shaft can only be varied within certain limits because of the international standardization of asynchronous motors. Therefore, an optimum design size has been selected.

Permissible shaft end loading
The size of the permissible shaft end loading is determined by the following principle criteria:

– permissible bending of the shaft
– shaft end fatigue strength
– bearing lifetime

The permissible shaft end loading (radial and axial forces) is based on a rated bearing lifetime of 20,000 hours and a security against fatigue failure of > 2.0.
The following figure is given as a load diagram.



F_r = radial shaft end loading
F_a = axial shaft end loading
l = shaft end length
x = distance of F_r point of application from shaft shoulder

The type-related data for the permissible axial shaft end load F_a and the permissible radial shaft end load $F_{r\,0.5}$ (at application point x : l = 0.5), $F_{r\,1.0}$ (at point of application x : l = 1.0) for the basic version and for the heavy bearing arrangement in the horizontal and vertical mounting positions of the motor are given in the tables on pages 37 to 40.

The permissible axial shaft loads for sizes 315 L, 315 LX and 355 are available on request. The permissible radial loads for motors mounted in horizontal and vertical positions are presented in dependence on the position of the point of application (taking the direction of the radial force in relation to gravity into account) on the shaft end. The permissible loads given apply to an installation of the motor practically free of vibration and load application planes as specified in the above presentation.
The checking of the shaft loading for size 355 will take place by the manufacturer on request.

In general, the loads F_r and F_a are dependent on the transmission members used, i.e. on the axial and radial forces occurring at these transmission members including their weights.

The forces are calculated according to mechanical formulas, e.g. for drive belt pulleys

$$F_r = 2 \cdot 10^7 \cdot \frac{P}{n \cdot D} \cdot c$$

where
F_r = Radial force in N
P = Rated motor output in kW (transfer output)
n = Rated motor speed
D = Belt pulley diameter in mm
c = Pre-tension factor as stated by the belt manufacturer (preferably 2.5 in the case of V-belts)

In practice, the radial force Fr is not always effective at x : l = 0.5. The permissible radial force in the range of x : l = 0.5 to x : l = 1.0 can be converted by linear interpolation.

If the calculated shaft loadings are larger than those permitted, it will be necessary to change the drive members. Among others, possibilities for this can be:
– Selection of a larger belt pulley diameter
– Use of V-belts instead of flat belts
– Selection of a different pinion diameter or skew angle of the toothed wheel
– Selection of a different coupling version, etc.

In general, care should be taken as far as possible that the resulting load application point of force F_r does not lie beyond the shaft end. However, if no solution is found, the manufacturer will be glad to check special constructions, with which problems of this sort can be solved.

Bearing control
For controlling the condition of the bearings the motors may be equipped with temperature sensors, shock pulse and vibration detectors or prepared for such equipment.

The temperature sensors mounted to the bearing points may be of type PT100 which can be of two-, three- or four-wire circuit design. These can be connected either in the main connection box or in separate additional boxes which are fixed to the main terminal box or motor housing depending on construction.

The wear monitoring function for the anti-friction bearings as of frame size 132 may be achieved by shock pulse detectors [SPM] mounted to the bearing end shields. This allows the wear to be monitored with mobile detecting units. For remote control it is also possible to use firmly wired shock pulse or vibration detectors.

Use of insulated bearings
Magnetic asymmetries will in mains-operated motors induce a voltage along the shaft. This shaft voltage leads to compensating currents between rotor and stator, which flow through the anti-friction bearings. If the voltage exceeds a threshold value of 500 mV, the bearings may be damaged. In VEM standard motors this value will in no case be exceeded due to their design.
The operation of the frequency inverter may intensify these effects with the inverter construction having a decisive influence. Pulse inverters will, depending on the timing frequency and the pulse modulation, generate particularly high-frequency voltages and currents. Output filters in the inverter will minimize these effects. To avoid bearing damage, the motors as of frame size 315MY designed for inverter operation will always be equipped with an insulated bearing on the N-side.
In addition to this precaution, care should be taken to provide for an appropriate earthing of the motor housing to allow the currents circulating between inverter and stator to flow off.

Shaft ends

The definition of the motor ends is made in accordance to IEC 6034-7:
D-end (DS): Drive end of the motor (driving side)
N-end (NS): End opposite to the drive (the side positioned opposite the DS) (Non-driving side)

Centring borings as specified in DIN 332, Sheets 1 and 2, Form DS.

The feather key and feather key ways for sizes 56 – 112 are executed as specified in DIN 6885 Sheet 1, Form A or B, and those for the sizes 132 – 355 are executed as specified in DIN 6885 Sheet 1, Form A. The feather key lengths for sizes 132 – 355 comply with DIN EN 50347.

Threads for press-on and dismantling devices:

Shaft end diameters	Thread
for 7 up to 10 mm	M3
from 10 to 13 mm	M4
from 13 to 16 mm	M5
from 16 to 21 mm	M6
from 21 to 24 mm	M8
from 24 to 30 mm	M10
from 30 to 38 mm	M12
from 38 to 50 mm	M16
from 50 to 85 mm	M20
from 85 to 130 mm	M24

The motors are always supplied with the feather key fitted.

The second shaft end is able to transfer the full nominal output in the case of coupling drive. The output transmission capability of the second shaft end is, in the case of belt, chain or pinion drive, available on request. The drive elements with key ways, such as belt pulleys or couplings, are to be balanced with a half feather key inserted with a balance quality grade of at least G 6.3 as specified in DIN ISO 1940-1.

True running characteristics of shaft ends
The true running characteristics of the shaft ends are in accordance with EN 50347. Optionally, the values may be reduced by 50 % (extra price).

Noise behaviour

The noise measurement is carried out at rated output, rated voltage and rated frequency, as specified in DIN EN ISO 3741. According to DIN EN 60034-9, the spatial mean value of the sound pressure level L_{pA} measured at a 1 m distance from the motor outline will be given as the noise intensity in dB(A).
The A-weighted sound power level L_{WA} at the measurement area dimension L_S (d = 1 m) will be given as

$L_{WA} = L_{pA} + L_S$ (dB)

The measurement area dimensions will be dependent on the geometry of the motor and are for

		L_S (dB)
Size	56 – 132	12
	160 – 225	13
	250 – 315	14
	355	15

The noise data for the basic types are quoted in tabular form. The tabular value +4 dB(A) will apply as an approximate value for motor in the 60 Hz version. Binding data about 60 Hz are available on request. Enquiries are necessary in the case of special series.

Winding and insulation

VEM motors of the type series K21./K20. are in standard design constructed according to thermal class 155 [F]. Use is made of high-grade enamel-insulated wires and insulating sheet materials in conjunction with a low-solvent impregnating resin. The standard insulation system is intended for rated voltages up to 725 V [mains supply] and ensures a high mechanical and electrical strength and a long service life of the motors. A design according to thermal class 180 [H] is available against extra price.

The windings are suitable for the use in frequency inverters as well. The maximum permissible load characteristics mentioned below shall apply to the type series/options:

	Voltage peaks	Rate of voltage rise
Type series K21./K20.		
Frame size 56 – 132T	Û ≤ 1,000 V	du/dt ≤ 0.5 kV/µs
Frame size 56 – 132T acc. Sp. 2945	Û ≤ 1,350 V	du/dt ≤ 1.0 kV/µs
Frame size 132 [K20. 112] to 355	Û ≤ 1,350 V	du/dt ≤ 1.5 kV/µs
Type series KU1./KU0.		
Frame size 56 – 132T acc. Sp. 9382	Û ≤ 1,560 V	du/dt ≤ 3.0 kV/µs
Frame size 132 [KU0. 112] to 355	Û ≤ 1,800 V	du/dt ≤ 5.0 kV/µs
Type series KV1./KV4./KV0.		
Frame size 132 [KV0. 112] to 355	Û ≤ 2,500 V	du/dt ≤ 5.0 kV/µs

For further information on the use of VEM motors on frequency inverters please refer to our catalogue entitled “Variable-speed drives”.

According to VIK Recommendation 04.2005, pt. 6.7/ NAMUR Recommendation NE38, the motors may be loaded with a maximum peak voltage according to DIN IEC 60034-17, fig. 6, to the amount of 1,350 V and a rate of voltage rise, du/dt, at the motor terminals of 1.5 kV/µs. Higher peak voltages are subject to agreement. Consequently, VIK motors as of frame size 132 [except for 132T] to 355 for inverter operation without a separately agreed peak voltage are designed as K2.R.

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Rated voltage and frequency

In the basic version, motors are supplied for the following rated voltages and frequencies:

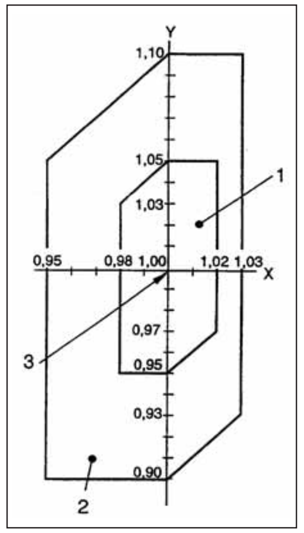
230/400 V Δ/Y, 50 Hz	220…240 V Δ/380…420 V Y, 50 Hz
400/690 V Δ/Y, 50 Hz	380…420 V Δ/660…725 V Y, 50 Hz
500 V, 50 Hz	475…525 V, 50 Hz
275/480 V Δ/Y, 60 Hz	265…290 V Δ/460…500 V Y, 60 Hz
600 V, 60 Hz	570…630 V, 60 Hz

The motors can be operated in networks in which the voltage at the rated frequency deviates from the rated value (rated voltage area A) by up to ±5 % without changing the rated output. The frequency in these networks can deviate by 2 % from the rated value in the case of the rated voltage.
The above-given standard voltages, specified as in DIN IEC 60038, will be taken as design points. Special voltages and frequencies on customer request.

Motors that are to be used for mains voltage with a general tolerance of ±10 % as specified in DIN IEC 60038 are to be selected according to the corresponding rated voltage listed in the technical tables. The rated voltage range restricted by U_u and U_o is also given there.

If the motors are connected to voltages between 95 % and 105 % of the rated voltage range – this will correspond to the relevant mains voltage value as specified in DIN IEC 60038 with ±10 % – it will already be permissible to exceed the permissible temperature rise of the stator winding at the voltage and frequency limits of the measuring range by approximately 10 K as specified in DIN EN 60034-1, without taking the permissible tolerances into account.

For the sizes K21R 56 – 112/K20R 56 – 100, the current at the upper voltage range U_o has been set at such a point that the motor protective switch is, even in no-load conditions and at +5 % tolerance, not triggered at the usual setting of 1.05 x I_n.



Voltage and frequency limits for motors as specified in DIN EN 60034-1

1 Range A
2 Range B
3 Design point
x Related frequency f/f_N
Y Related voltage U/U_N

Rated output

The rated output applies to continuous operation as specified in DIN EN 60034-1, related to a coolant temperature of 40 °C and an altitude of ≤ 1000 m above sea level, operating frequency 50 Hz and rated voltage. The series K11R / K21R and K10R / K20R have thermal reserves that enable the following type-dependent continuous loads:

– up to 10 % above the rated output at 40 °C coolant temperature
– rated output up to 50 °C coolant temperature
– rated output at an installation altitude up to 2,500 m

These conditions are only applicable alternatively; when more than one applies, it will be necessary to reduce output. Consultation with the manufacturer is recommended.

Motor torque

The design torque in Nm given at the motor shaft will be

$$M = 9550 \cdot \frac{P}{n}$$

where P = design output in kW
n = speed in rpm

The starting torque, pull-up torque and pull-out torque are given as multiples of the design torques in the motor selection data tables. If the voltage deviates from its rated value, the torques will change approximately quadratically.

Ambient temperature

The standard versions of all VEM motors are suitable for use under ambient temperatures from -20 °C to +40 °C. The motors can be used at ambient temperatures as low as -40 °C, but they have to be ordered accordingly.

For deviating ambient temperatures at places of installation below 1,000 m above sea level, the following factors shall apply for defining the permissible output levels depending on thermal class:

Refrigerant temperature °C	10	15	20	25	30	35	40	45	50	55	60	70
Factor Th. Cl. F	1.21	1.17	1.14	1.10	1.07	1.03	1.00	0.95	0.90	0.85	0.80	0.68

If frequent moisture condensation is to be expected at the place of installation of a motor, we recommend the use of anti-condensation heating devices or other appropriate precautions.

Installation altitude

Unless specified otherwise by the customer, it is assumed that the place of installation is not higher than 1,000 m above sea level.

If the motor is to be operated at an altitude above 1,000 m but below 4,000 m, the limit values for the overtemperature will not change while the rated output is subject to the following adjusting factors:

Installation altitude	Refrigerant temperature in °C					
above seal level in m	< 30	30 – 40	45	50	55	60
1,000	1.07	1.00	0.95	0.90	0.85	0.80
1,500	1.04	0.97	0.93	0.89	0.84	0.79
2,000	1.00	0.94	0.90	0.86	0.82	0.77
2,500	0.96	0.90	0.86	0.83	0.78	0.74
3,000	0.92	0.86	0.82	0.79	0.75	0.70
3,500	0.88	0.82	0.79	0.75	0.71	0.67
4,000	0.82	0.77	0.74	0.71	0.67	0.63

At an installation altitude > 4,000 m, the limit values for the overtemperature are subject to agreement between manufacturer and customer.

Overload capacity

All motors can be subjected to the following overload conditions as specified in DIN EN 60034-1:
– 1.5-fold rated current for 2 min.
– 1.6-fold rated torque for 15 sec.

Both conditions apply to rated voltage and rated frequency.

Design efficiency and power factor

The efficiency η and the power factor cos φ are given in the lists of the motor selection data.

Restarting during residual field and phase opposition

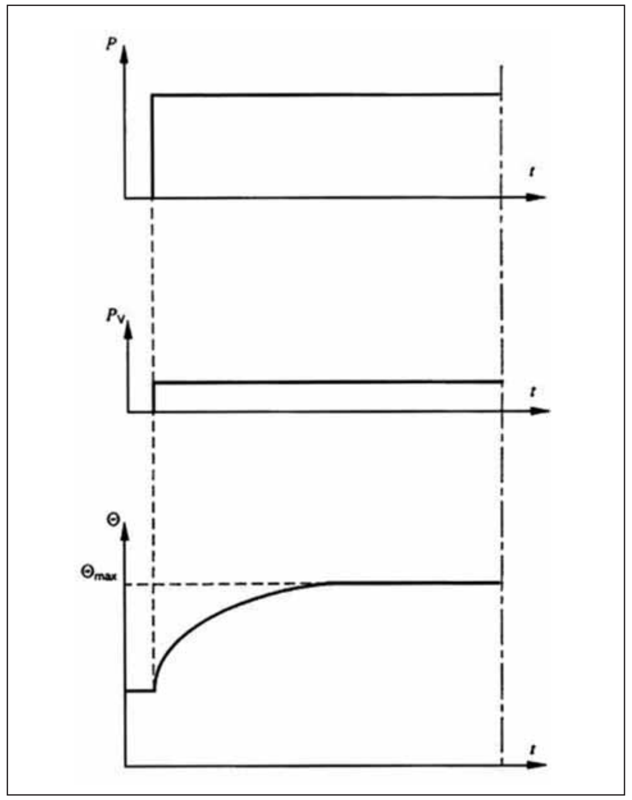
After switching off an electrical motor its winding will for a short time be subject to a voltage system as a result of the decaying magnetic field. Upon restart, transient electrodynamic reactions may occur for the motor. It is possible to restart all VEM motors after a network failure with 100 % residual field.

Motor protection

The following variations of motor protection are possible, if ordered:
– motor protection with thermistor temperature sensors in the stator winding
– bimetal temperature sensor as opener or closer in the stator winding
– silicon diodes KTY
– resistance thermometer to monitor winding or bearing temperature
– bearing vibration diagnosis

Duty types

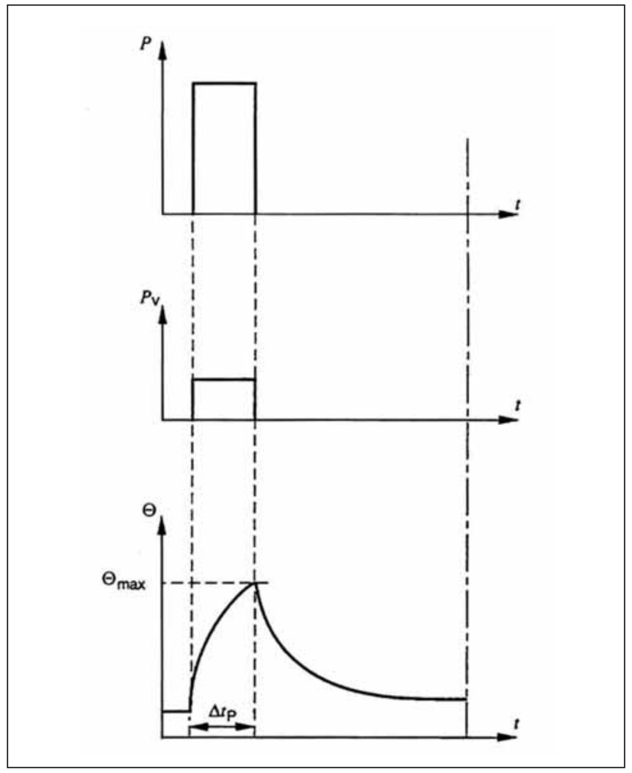
Special types of operation for switched operation, short-time operation or electrical braking are possible on request. The following nominal types of duty, which take thermal and mechanical conditions into account, are defined as specified in DIN EN 60034-1:



Duty type S1 – Continuous duty

Operation with constant load that lasts until the motor is able to reach thermal equilibrium. If there is no indication of the duty type on the rating plate, the motor is intended for S1continuous duty.
The design data for this duty type are given in the motor selection data.

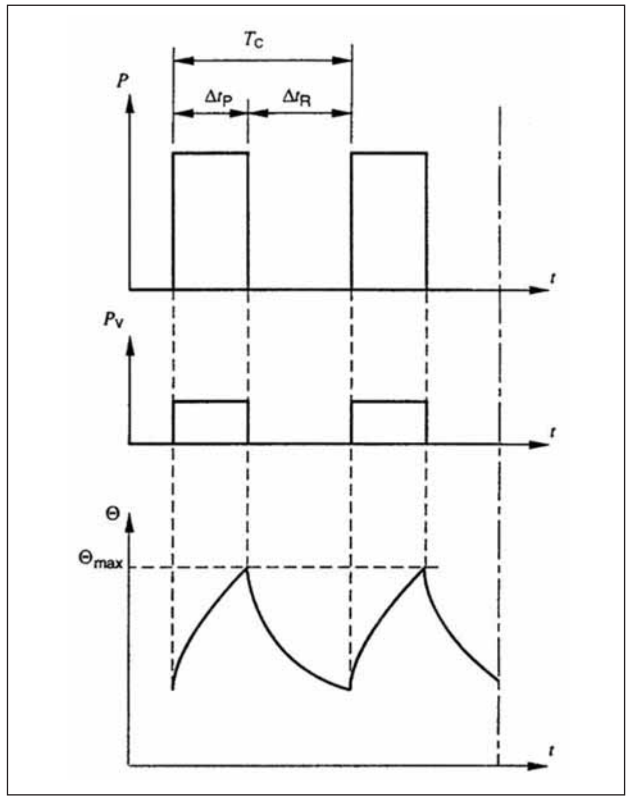
P Load
P_V Electric losses
Θ Temperature
$Θ_{max}$ Maximum temperature
t Time



Duty type S2 – Short-time operation

Operation at constant load not long enough to reach thermal equilibrium and a subsequent period at rest with a de-energised winding of such a length that the again decreased machine temperature is re-established to deviate by less than 2 K from the temperature of the coolant. In the case of S2 duty type, the length of the operation period is to be given.
For permissible motor outputs for VEM standard motors see the “Electronic Catalogue” of the VEM Group (from Version 5.0).

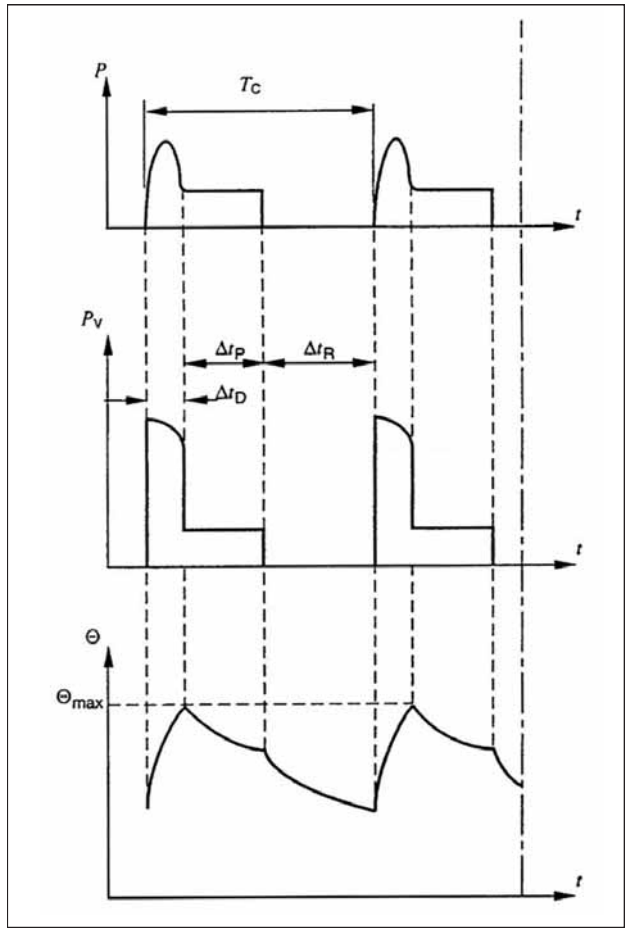
P Load
P_V Electric losses
Θ Temperature
Θ_{max} Maximum temperature
t Time
Δt_P Operation with constant load



Duty type S3 – Intermittent periodic duty

Operation that is composed of a sequence of identical cycles, each comprising an operating period at constant load and a period at rest with de-energised windings, where the starting current does not significantly affect the temperature rise. The duty type must be followed by the cyclic duration factor. Periodic operation means that a state of thermal equilibrium is not reached during the period of the load.

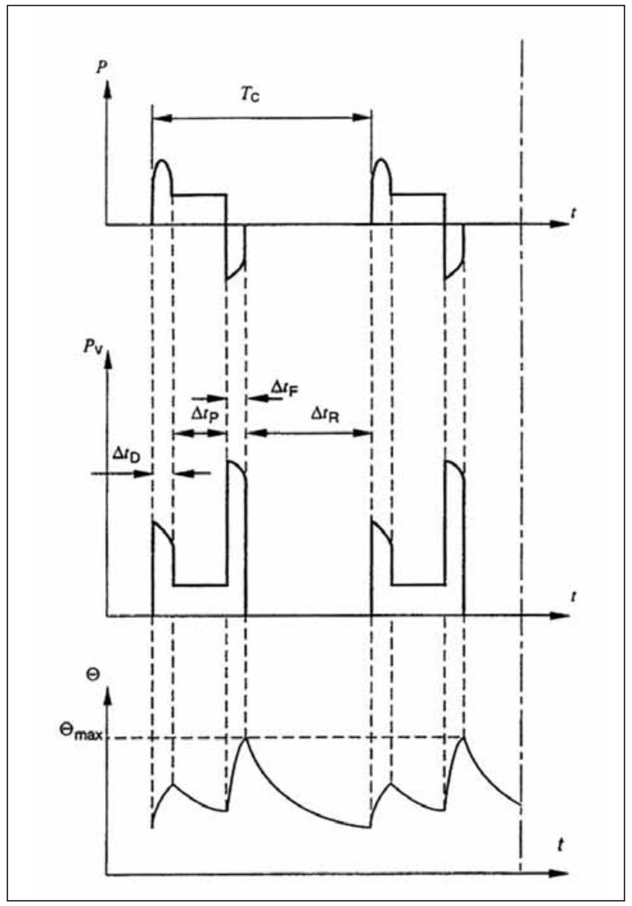
P Load
P_V Electric losses
Θ Temperature
Θ_{max} Maximum temperature
t Time
T_C Period of one cycle
Δt_P Operation with constant load
Δt_R At rest and de-energised
cyclic duration factor = $\Delta t_P / T_C$



Duty type S4 – Intermittent periodic duty with starting effect

Operation that is composed of a sequence of identical duty cycles, each of which comprises a significant period of starting, an operating period at constant load and a period at rest with de-energised windings. The information about this duty type must be followed by the cyclic duration factor, the mass moment of inertia of the motor and mass moment of inertia of the load, both of which will be related to the motor shaft. Periodic operation means that a state of thermal equilibrium is not reached during the period of the load.

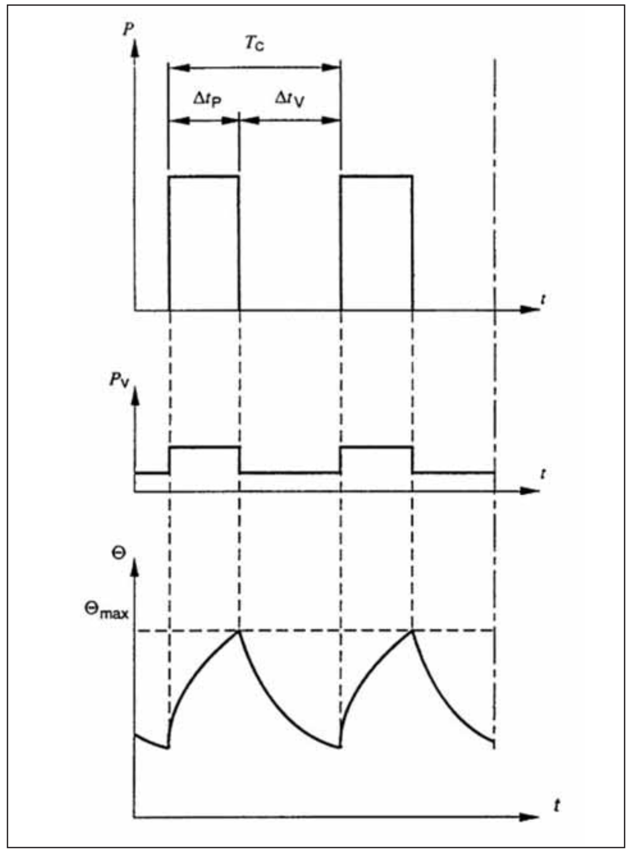
P Load
P_V Electric losses
Θ Temperature
Θ_{max} Maximum temperature
t Time
T_C Period of one cycle
Δt_D Starting time
Δt_P Operation with constant load
Δt_R At rest and de-energised
cyclic duration factor = $(\Delta t_D + \Delta t_P) / T_C$



Duty type S5 – Intermittent periodic operation with electric braking

Operation that is composed of a sequence of identical duty cycles, each of which comprises a starting period, an operating period at constant load, a period with electric braking and a period at rest with de-energised windings. The duty type will be followed by information about the cyclic duration factor, the mass moment of inertia of the motor and mass moment of inertia of the load, related to the motor shaft. Periodic duty means that a state of thermal equilibrium is not reached during the period of the load.

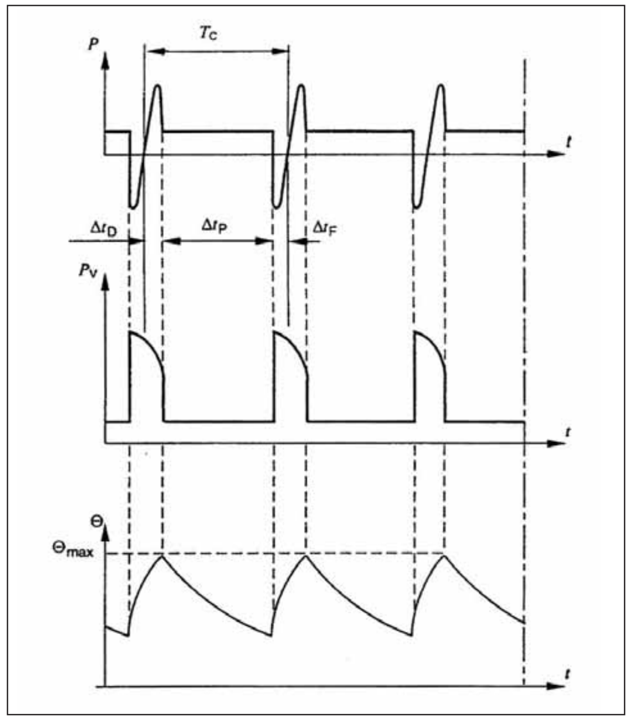
P Load
P_V Electric losses
Θ Temperature
Θ_{max} Maximum temperature
t Time
T_C Period of one cycle
Δt_D Starting time
Δt_P Operating with constant load
Δt_F Period with electric Breaking
Δt_R At rest and de-energised
cyclic duration factor = $(\Delta t_D + \Delta t_P + \Delta t_F) / T_C$



Duty type S6 – Continuous-operation periodic duty

Operation that is composed of a sequence of identical duty cycles, each of which comprises an operating period at constant load and period of operation at no-load. No period at rest with de-energised windings occurs. The duty type must be followed by information about the cyclic duration factor. Periodic operation means that a state of thermal equilibrium is not reached during the period of the load.

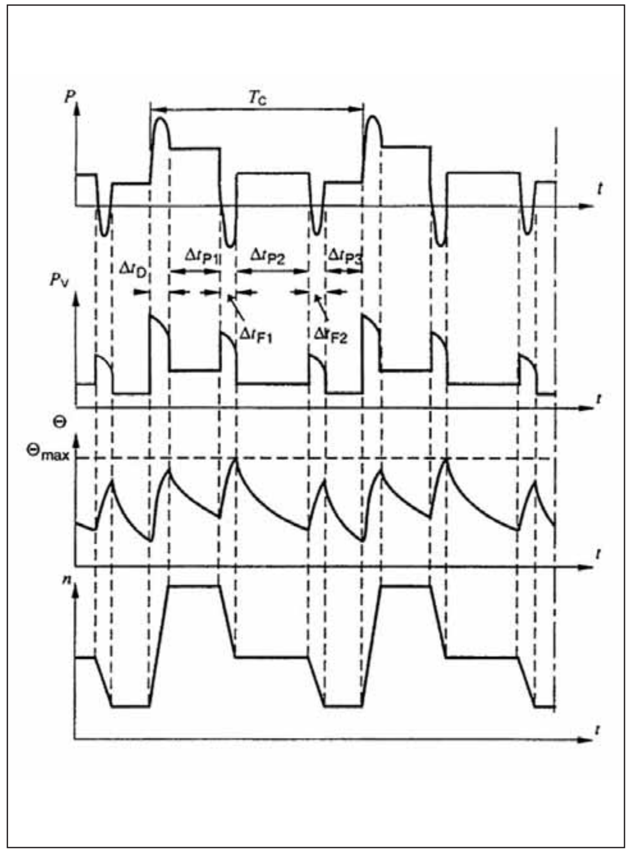
P Load
P_V Electric losses
Θ Temperature
Θ_{max} Maximum temperature
t Time
T_C Period of one cycle
Δt_D Starting time
Δt_P Operation with constant load
Δt_V Operation on no load
cyclic duration factor = $\Delta t_P / T_C$



Duty type S7 – Continuous-operation periodic duty with electric braking

Operation that is composed of a sequence of identical duty cycles, each of which comprises a starting period, an operating period at constant load and a period of electric braking. No period at rest with de-energised windings occurs. The duty type must be followed by the mass moment of inertia of the motor and mass moment of inertia of the load (both related to the motor shaft).

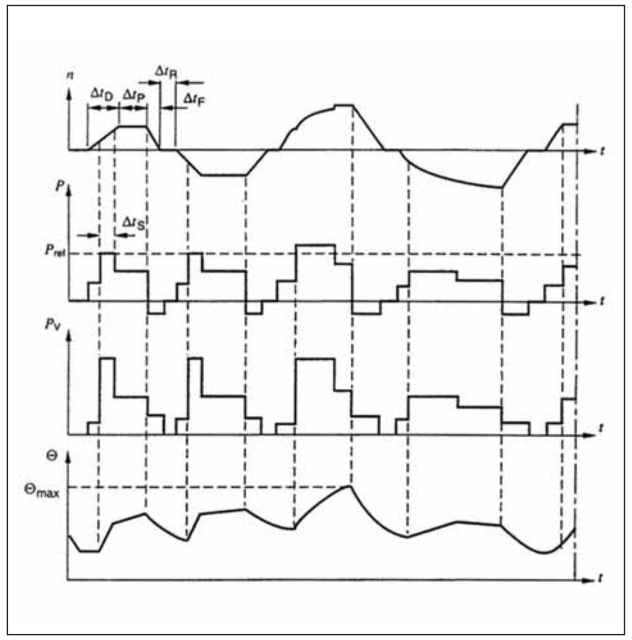
P Load
P_V Electric losses
Θ Temperature
Θ_{max} Maximum temperature
t Time
T_C Period of one cycle
Δt_D Starting time
Δt_P Operation with constant load
Δt_F Period with electric braking
cyclic duration factor = 1



Duty type S8 – Continuous-operation periodic duty with related load/speed changes

Duty type that is composed of a sequence of identical duty cycles, each of which comprises an operating period at constant load and at a specific speed and is followed by one or more operating periods with different constant loads according to the different speeds. (For example, this will be achieved by changing the number of poles of asynchronous motors.) No period at rest with de-energised windings occurs. The information must be followed by the mass moment of inertia of the motor and of the load (both related to the motor shaft), the load, the speed and the cyclic duration factor for each speed that comes into question.

P Load
P_V Electric losses
Θ Temperature
Θ_{max} Maximum temperature
n Speed
t Time
T_C Period of one cycle
Δt_D Starting time
Δt_P Operation with constant load (P1, P2, P3)
Δt_F Period with electric breaking (F1, F2)
cyclic duration factor = $(\Delta t_D + \Delta t_{P1})/T_C$
$(\Delta t_{F1} + \Delta t_{P2})/T_C$
$(\Delta t_{F2} + \Delta t_{P3})/T_C$



Duty type S9 – Duty with non-periodic load and speed variations

Duty where the load and the speed generally change nonperiodically within the permissible operating range. Overloads that can lie far above the reference load frequently occur during this duty. A constant load corresponding to the S1 mode of operation will be suitably selected as the reference value for the overload in the case of this duty type.

P Load
P_{ref} Reference load
P_V Electric losses
Θ Temperature
Θ_{max} Maximum temperature
n Speed
t Time
Δt_D Starting time
Δt_P Operation with constant load
Δt_F Period with electric breaking
Δt_R At rest and de-energised
Δt_S Operation under overload

Duty type S10 – Duty with individual constant loads

Operation that does not contain more than four individual load values (or equivalent loads), each of which is individually maintained for sufficient time to allow the machine to achieve the state of thermal equilibrium. The smallest load within this sequence of duty cycles may occupy a value of null (no-load or rest with de-energised windings).

A constant load according to the S1 mode of operation must be suitably selected for this mode of operation as the reference value for the individual loads.

Pole-changing motors

According to the load torque behaviour of the working machines, pole-changing motors are intended for drives with a constant load torque and those with a quadratically increasing load torque. The type of torque characteristics is given in the selection tables. The motors can only be designed for one specified voltage, e. g. 230 V, 400 V or 690 V and are generally intended for direct starting across the pole sequence. A 60 Hz version or special voltages acc. to IEC 60038 are possible.

Pole-changing is achieved by
– two separate windings
– one winding in Dahlander connection
– two separate windings, one of them in Dahlander connection
– two separate windings, both in Dahlander connection

While only a speed ratio of 1:2 can be reached in the case of the winding in Dahlander connection, two separate windings offer different speed ratios, but with lower outputs in relation to the same basic version. For separate windings, Y or Δ, will be executed and Δ/YY or Y/YY will be implemented for windings in Dahlander connection. Then, the connection schemes given in the lists of the motor selection data will apply in the case of the individual pole number stages. Star-delta switching can be implemented for the highest pole number (lowest speed) if its operational connection is Δ. In the case of two separate winding with at least one winding in Δ-connection, the non-live Δ-connection must be opened. Other pole number variations are possible.

Energy saving motors as specified in CEMEP “High Efficiency” eff1

Low-voltage motors in the power range 1.1 kW to 90 kW, two- and four-pole, are marked according to the “Voluntary Agreement of CEMEP” with

efficiency class EFF 2 (Improved Efficiency)

or EFF 1 (High Efficiency).

According to the classes it will be necessary to comply with certain minimum efficiency levels. Based on the well-tried motor series K21R, VEM developed the type series WE1R for the eff 1 efficiency class by using most modern magnetic materials, a special winding design and optimized bearing and ventilation concepts.
The efficiency is defined according to DIN EN 60034-2 / IEC 60034-2.
Outside of the range mentioned above, this type is available as series W21R in the power range 0.06 kW to 500 kW for motors with an increased efficiency.

Energy saving motors as specified in EPAct

The minimum regulations for efficiency of the Energy Policy and Conservation Act (EPCA) and the supplement of the Enery Policy Act of 1992 (EPAct) apply in the North American economic area. The determination of efficiency to be achieved (nominal and minimum values) are prescribed in the standards NEMA MG 1, Table 12 – 10 and CSA C390, Table 2 and 3. The determination of efficiency must be done analogously to IEEE 112 or C390. The WE1R series fulfils the requirements as specified in EPCA or EPAct. The determination of efficiency has been done as specified in IEEE 112 – 1996 method B. VEM Motors GmbH offers a complete WE1R ... EP, 2 and 4-pole series in a range of outputs from 1 Hp to 450 Hp at 60 Hz or to 400 Hp in the case of 50 Hz. The classification of output corresponds to that given in Standard NEMA MG1, Table 12 – 10. The series is certified with File No. 184535 by are designated CSA-E on the rating plate.

Forced-ventilated motors, cooling method IC 416

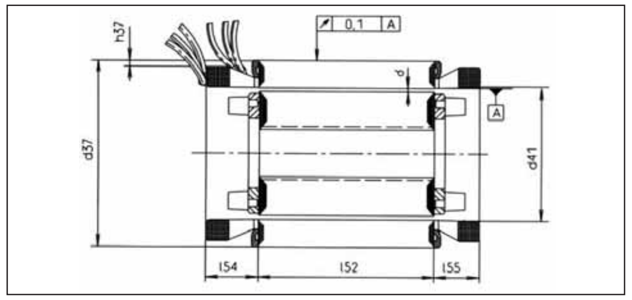
To improve the cooling effect during standstill periods at intermittent duty (S2-S5) it is possible to use forced-ventilated motors.It is also recommendable to use forced ventilation to increase the motor output avialable in the range of lower speeds (setting range 1:5, 1:10) when operated with a frequency inverter or to restrict the noise level when the motor is operated with frequencies > 60 Hz at a frequency inverter. According to the required degree of protection, radial (degree of protection from IP 55) or axial ventilation units (degree of protection up to IP 55) are used. In some cases, reductions of the degree of protection can sometimes result. On the forced-ventilation unit, there is a separate rating plate with the relevant type data. Attention must be paid to the direction of rotation when axial ventilation units are connected.

Non-ventilated motors, cooling method IC 410

The motors are designed without their own fan and fan cover. Up to size 250, the motors have completely closed bearing covers on the N-end; from size 280, the N-end is sealed by bearing covers made of grey cast iron as in the basic version. The rated output will be reduced according to the decreased cooling. The motor windings are adjusted to this reduced output. If non-ventilated motors are installed in a stream of cooling air, different outputs are possible on request, depending on the cooling effect achieved.

Built-in motors

Built-in motors can be supplied for special areas of application, in which the customer provides a housing or corresponding protection against the touching of live or moving parts and mechanical influences, realised in the machine or plant that is to be driven. Components consisting of wound stator cores and complete rotors or wound stator cores and rotor bodies are available according to customer preference. Electrical data on request.



Paint finish

Normal finish
• Suitable for “moderate” climatic group as specified in IEC 60721-2-1 Weather protected and non-weather protected locations, up to 100 % relative air humidity at temperatures up to +30 °C for a short time, up to 85 % relative air humidity at temperatures up to +25 °C continuously

Paint systems
Sizes 56 – 132T
- all components apart from plastic parts (terminal boxes, fan cover) and aluminium terminal boxes synthetic basic primer, layer thickness ≥ 30 µm
- finish coat water varnish with layer thicknesses 30 µm to 60 µm
- special request dual component paint, layer thickness ≥ 30 µm

Sizes 132 – 355
- water-dilutable zinc-phosphate-containing prime coat, layer thickness ≥ 30 µm
- top coat of two-component epoxy-base water varnish, layer thickness ≥ 40 µm

Special finish
• Suitable for the “world wide” climatic group as specified in IEC 60721-2-1
Open air positioning in atmospheres tending to be heavily stressed, up to 100 % relative air humidity at temperatures up +35 °C for a short time, up to 98 % relative air humidity at temperatures up to +30 °C continuously

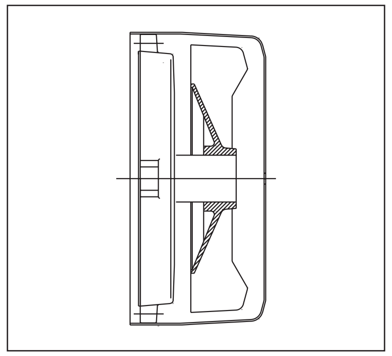
Paint systems
Size 56 – 132T
- all components synthetic basic primer, layer thickness ≥ 30 µm
- finish layer dual component varnish, layer thickness ≥ 60 µm

Sizes 132 – 355
- water-dilutable zinc-phosphate-containing prime coat, layer thickness ≥ 30 µm
- second coat on dual component basis, layer thickness ≥ 40 µm
- top coat of two-component epoxy-base water varnish, layer thickness ≥ 40 µm

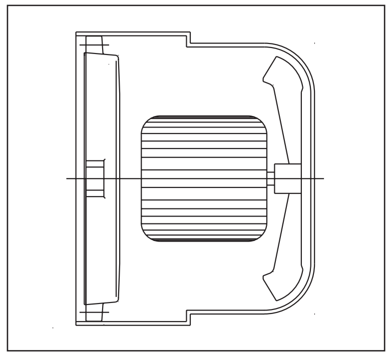
Special finishes on request
Standard colour RAL 7031 blue-grey
Additional special paint finish systems
- version for excessive thermal stress
- version for excessive chemical and radiation stress
- version for extreme ambient conditions, e.g. offshore areas
- special paint finish on customer’s request

Modular structure of the different series and modifications

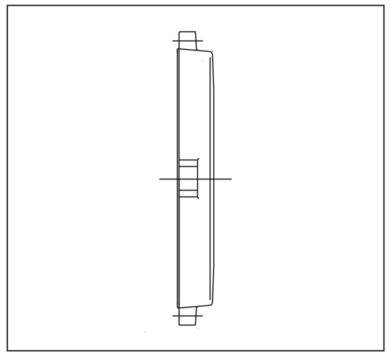
The design concept of the series permits the option of adding components to solve modern control tasks, such as a pulse generator, a tachogenerator, brakes, a speed monitor and forced-ventilation units according to the customer’s need.



Standard version
Cooling method IC 411
Self-ventilation
Series K21R, K20R, K22R



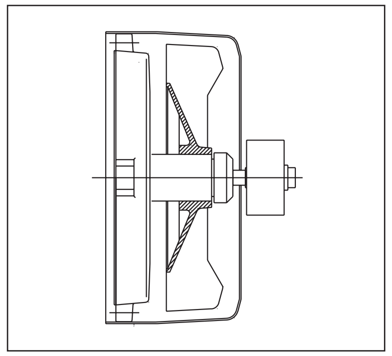
Special version
Cooling method IC 416
Forced-ventilation
Series K21F, K20F, K22F



Special version
Cooling method IC 410
Non-ventilated
Series K21O..(U[1]), K20O..(U[1]), K22O..

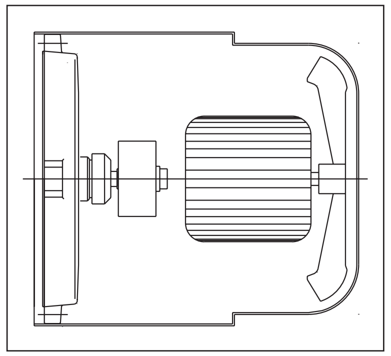
[1]) in the case of sizes ≤ 132T

2



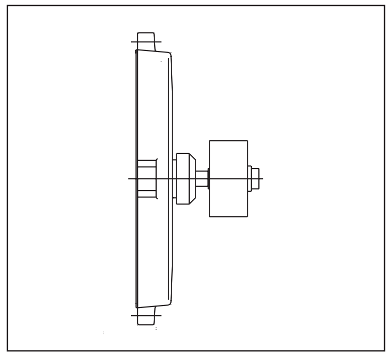
Special version
Cooling method IC 411
Self-ventilation
Series K21R, K20R, K22R

With built-on incremental sensor

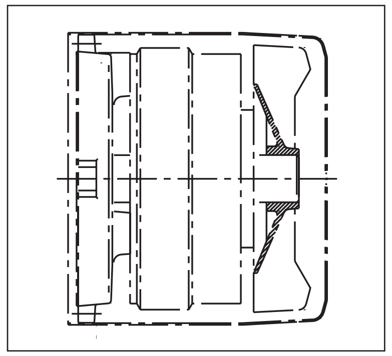


Special version
Cooling method IC 416
Forced-ventilation
Series K21F, K20F, K22F

With built-on incremental sensor

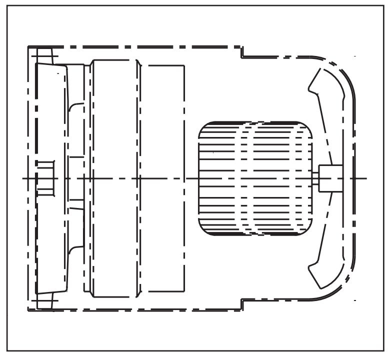


Special version
Cooling method IC 410
Non-ventilated
Series K21O..(U[1]), K20O..(U[1]), K22O..
With built-in incremental sensor



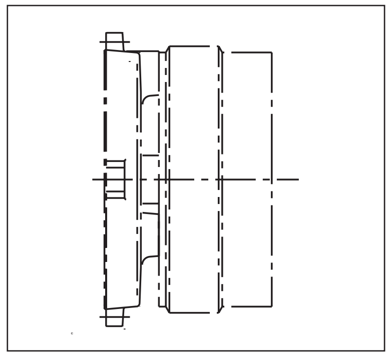
Special version
Cooling method IC 411
Self-ventilation
Series B21R, B20R, B22R

With built-on brake

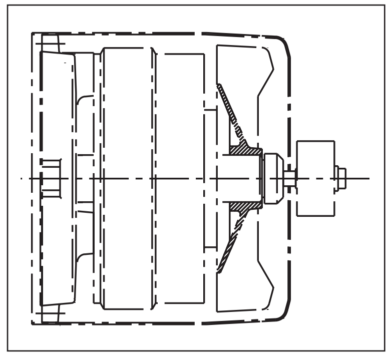


Special version
Cooling method IC 416
Forced-ventilation
Series B21F, B20F, B22F

With built-on brake

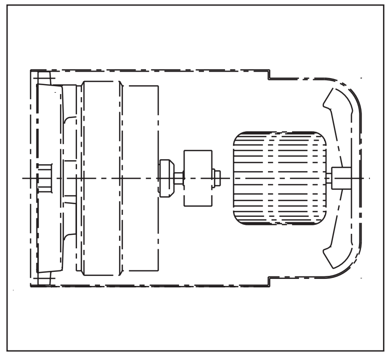


Special version
Cooling method IC 410
Non-ventilated
Series B21O..(U[1]), B20O..(U[1]), B22O..
With built-on brake



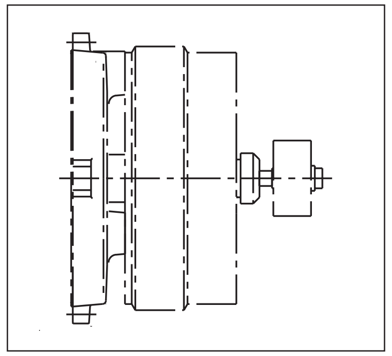
Special version
Cooling method IC 411
Self-ventilated
Series B21R, B20R, B22R

With built-on brake and incremental sensor



Special version
Cooling method IC 416
Forced-ventilation
Series B21F, B20F, B22F

With built-on brake and incremental sensor



Special version
Cooling method IC 410
Non-ventilated
Series B21O..(U[1]), B20O..(U[1]), B22O..
With built-on brake and incremental sensor

[1] in the case of sizes ≤ 132T

Fits: Shaft ends

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

Noise data

Measurement area related sound pressure level L_{pA}

for motors K21R, KU1R, K22R in standard version

	L_{pA} dB 2-pole	L_{pA} dB 4-pole	L_{pA} dB 6-pole	L_{pA} dB 8-pole
63 K	46	41	40	-
63 G	46	41	40	-
71 K	48	42	41	37
71 G	48	42	41	37
80 K	52	44	41	40
80 G	52	44	41	40
90 S	56	49	43	42
90 L	56	49	43	42
100 L	59	50	49	47
100 LX	-	50	-	47
112 M	61	53	51	50
112 MX	61	-	-	-
132 S	65	58	54	52
132 SX	65	-	-	-
132 M	-	60	54	52
132 MX	-	-	56	-
160 M	66	60	56	57
160 MX	67	-	-	57
160 L	67	62	61	57
180 M	72	62	-	-
180 L	-	64	61	58
200 L	72	64	62	61
200 LX	74	-	62	-
225 S	-	67	-	59
225 M	74	67	63	59
250 M	74	68	63	63
280 S	75	69	65	61
280 M	75	69	65	61
315 S	78	72	68	65
315 M	78	72	68	65
315 MX	79	76	70	65
315 MY	79	76	68	66
315 L	79	76	68	66
315 LX	79	76	68	66
355 MY, M, MX[1]	77[2]	77	70	68
355 LY, L[1]	77[2]	77	70	68

Low noise version[2]

	L_{pA} dB 2-pole
200 LX	65
225 S	-
225 M	65
250 M	65
280 S	66
280 M	66
315 S	68
315 M	68
315 MX	68
315 MY	68
315 L	70
315 LX	68

[1] series K22R
[2] with axial fan, rotation-sense dependable fan

The data given in the table are valid for nominal output, nominal voltage, and 50 Hz with tolerances of +3 dB. Noise measurement according to DIN EN 21 680 p. 1

Measurement area related sound pressure level L_{pA}

for motors K20R, KU0R in standard version

	L_{pA} dB 2-pole	L_{pA} dB 4-pole	L_{pA} dB 6-pole	L_{pA} dB 8-pole
56 K	46	41	40	-
56 G	46	41	40	-
63 K	48	42	41	37
63G	48	42	41	37
71 K	52	44	41	40
71 G	52	44	41	40
80 K	56	49	43	42
80 G	56	49	43	42
90 L	59	50	49	47
100 S	61	50	-	47
100 L	61	53	51	50
100 LX	-	-	-	-
112 M	65	58	54	52
112 MX	-	-	54	52
132 S	66	60	56	57
132 M	66	60	56	57
160 S	67	62	61	57
160 M	67	62	61	58
180 S	70	64	62	61
180 M	73	64	62	61
200 M	73	66	63	59
200 L	74	66	-	-
225 M	74	68	63	63
250 S	75	69	65	61
250 M	75	69	65	61
280 S	78	72	68	65
280 M	78	72	68	65
315 S	79	76	70	65
315 M	79	76	68	66
315 L	79	76	68	66
315 LX	79	76	68	66

The data given in the table are valid for nominal output, nominal voltage, and 50 Hz with tolerances of +3 dB. Noise measurement according to DIN EN 21 680 p. 1

2

Tolerances – Electrical parameters

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

Efficiency (when determined indirectly)	$-0.15\ (1-\eta)$ for $P_N \leq 150$ kW $-0.1\ \ (1-\eta)$ 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)	± 20 % for $P_N \geq 1$ kW ± 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	± 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	±3.0 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	±3.0 mm
m	Motor mass	-5 to +10 %

Limit speeds

When operating the motors in excess of the rated speed care should be taken to observe the limit values of the antifriction bearings, the strength of the rotating parts, the critical rotor speeds and the circumferential speed of the fans. The limit speeds listed in the table below may already require precautions to be taken such as special fans, special bearings or special balancing.

Type Series K21R, K21F	Synchronous speed at 50 Hz 3000 rpm	1500 rpm	1000 rpm	750 rpm
K21. 63	15000	12000	12000	-
K21. 71	14000	11000	11000	11000
K21. 80	13000	11000	10000	10000
K21. 90	11000	9000	9000	9000
K21. 100	10000	8000	8000	8000
K21. 100 LX	7000	6000	6000	6000
K21. 112	7000	6000	6000	6000
K21. 132	7000	3600	2400	1800
K21. 160	6000	3600	2400	1800
K21. 180	6000	3000	2000	1500
K21. 200	5000	3000	2000	1500
K21. 225	5000	3000	2000	1500
K21. 250	4500	3000	2000	1500
K21. 280	4300	3000	2000	1500
K21. 315 S, M	3800	3000	2000	1500
K21. 315 MX	3600[1)] 3000[2)]	3000	2000	1500
K21. 315 MY, L, LX	3600[1)] 3000[2)]	3000[1)] 2600[2)]	2000	1500
K22. 355	3600[1)] 3000[2)]	3000[1)] 2600[2)]	2000	1500

Type Series K20R, K20F	Synchronous speed at 50 Hz 3000 rpm	1500 rpm	1000 rpm	750 rpm
K20. 56	15000	12000	12000	-
K20. 63	14000	11000	11000	11000
K20. 71	13000	11000	10000	10000
K20. 80	11000	9000	9000	9000
K20. 90	10000	8000	8000	8000
K20. 100	7000	6000	6000	6000
K20. 112	7000	3600	2400	1800
K20. 132	7000	3600	2400	1800
K20. 160	6000	3000	2000	1500
K20. 180	6000	3000	2000	1500
K20. 200	5000	3000	2000	1500
K20. 225	4500	3000	2000	1500
K20. 250	4300	3000	2000	1500
K20. 280	3800	3000	2000	1500
K20. 315 S	3600[1)] 3000[2)]	3000	2000	1500
K20. 315 M, L	3600[1)] 3000[2)]	3000[1)] 2600[2)]	2000	1500

1) Light bearing (D-end grooved ball bearing)
2) Heavy bearing (D-end cylindrical roller bearing)

Bearing arrangement

Basic version, K2.R

Type	D-end						N-end				Figure		Fixed bearing
	Antifriction bearing	V-ring	γ-ring	Felt ring	Wave washer	Disc spring	Antifriction bearing	V-ring	Wave washer	Felt ring	DE	NDE	
K21R 63	6201 2Z C3	-	-	11.5x19	-	-	6201 2Z C3	-	32	12x22	1	2	none
K21R 71	6202 2Z C3	-	-	14.5x21	-	-	6202 2Z C3	-	35	15x24	1	2	none
K21R 80	6204 2Z C3	-	-	19.5x26	-	-	6204 2Z C3	-	47	20x32	1	2	none
K21R 90	6205 2Z C3	-	-	24.5x35	-	-	6205 2Z C3	-	52	25x40	1	2	none
K21R 100	6206 2Z C3	-	-	29.2x40	-	-	6205 2Z C3	-	52	25x40	1	2	none
K21R 100 LX	6206 2Z C3	-	-	29.2x40	-	-	6206 2Z C3	-	62	30x50	1	2	none
K21R 112 M	6206 2Z C3	-	-	29.2x40	-	-	6206 2Z C3	-	62	30x50	1	2	none
K21R 132 S2,4 T	6208 2RS C3	-	-	39x60	-	-	6206 2Z C3	-	62	30x50	1	2	none
K21R 132 S, SX2,M6,8	6208 2RS C3	-	-	-	80		6207 2RS C3	-	-	-	3	5	none
K21R 132 M4,MX6	6308 2RS C3	-	-	-	90	-	6308 2RS C3	-	-	-	3	5	none
K21R 160 M,MX8	6309 2RS C3	-	-	-	100	-	6308 2RS C3	-	-	-	3	5	none
K21R 160 MX2, L	6310 2RS C3	-	-	-	110	-	6309 2Rs C3	-	-	-	3	5	none
K21R 180 M4, L6, 8	6310 2RS C3	-	-	-	110	-	6309 2RS C3	-	-	-	3	5	none
K21R 180 M2, L4	6310 C3	50A	-	-	110	-	6310 C3	50A	-	-	6	8	N-end
K21R 200 L, LX6	6312 C3	60A	-	-	-	130	6310 C3	50A	-	-	6	8	N-end
K21R 200 LX2	6312 C3	60A	-	-	-	130	6312 C3	60A	-	-	6	8	N-end
K21R 225 M2	6312 C3	60A	-	-	-	130	6312 C3	60A	-	-	6	8	N-end
K21R 225 S4, 8, M4,6,8,	6313 C3	65A	-	-	-	140	6312 C3	60A	-	-	6	8	N-end
K21R 250 M2	6313 C3	65A	-	-	-	140	6313 C3	65A	-	-	6	8	N-end
K21R 250 M4,6,8	6314 C3	70A	-	-	-	150	6313 C3	65A	-	-	6	8	N-end
K21R 280 S2,M2	6314 C3	70A	-	-	-	150	6314 C3	70A	-	-	6	8	N-end
K21R 280 S4,6,8,M4,6,8	6316 C3	80A	-	-	-	170	6314 C3	70A	-	-	6	8	N-end
K21R 315 S2,M2	6316 C3	80A	-	-	-	170	6316 C3	80A	-	-	6	8	N-end
K21R 315 S4,6,8,M4,6,8	6317 C3	80A	-	-	-	180	6316 C3	80A	-	-	6	8	N-end
K21R 315 MX2	6317 C3	-	RB85	-	-	180	6316 C3	80A	-	-	13	16	N-end
K21R 315 MX4,6,8	6220 C3	-	RB100	-	-	180	6316 C3	80A	-	-	13	16	N-end
K21R 315 MY2	6317 C3	-	RB85	-	-	180	6317 C3[1)]	85A	-	-	18	19	N-end
K21R 315 MY4,6,8	6320 C3	-	RB100	-	-	215	6317 C3[1)]	85A	-	-	18	19	N-end
K21R 315 L2, LX2	6317 C3	-	RB85	-	-	180	6317 C3[1)]	85A	-	-	18	19	N-end
K21R 315 L4,6,8, LX4,6,8	6320 C3	-	RB100	-	-	215	6317 C3[1)]	85A	-	-	18	19	N-end
K22R 355 MY/M/MX/LY/L 2polig	6317 C3	-	RB85	-	-	180	6317 C3[1)]	85A	-	-	18	19	N-end
K22R 355 MY/M/MX/LY/L 4,6,8polig	6324 C3	120S	-	-	-	260	6317 C3[1)]	85A	-	-	18	19	N-end

1) for vertical types of mounting Q317 C3; figures 18, 21
From size K11R 315 MX standard version with relubrication device

Type	D-end						N-end				Figure		Fixed bearing
	Antifriction bearing	V-ring	γ-ring	Felt ring	Wave washer	Disc spring	Antifriction bearing	V-ring	Wave washer	Felt ring	DE	NDE	
K20R 56	6201 2Z C3	-	-	11.5x19	-	-	6201 2Z C3	-	32	12x22	1	2	none
K20R 63	6202 2Z C3	-	-	14.5x21	-	-	6202 2Z C3	-	35	15x24	1	2	none
K20R 71	6204 2Z C3	-	-	19.5x26	-	-	6204 2Z C3	-	47	20x32	1	2	none
K20R 80	6205 2Z C3	-	-	24.2x35	-	-	6205 2Z C3	-	52	25x40	1	2	none
K20R 90	6205 2Z C3	-	-	24.5x35	-	-	6205 2Z C3	-	52	25x40	1	2	none
K20R 100	6206 2Z C3	-	-	29.2x40	-	-	6206 2Z C3	-	62	30x50	1	2	none
K20R 112 M2,4,6,8	6207 2RS C3	-	-	-	72		6207 2RS C3	-	-	-	3	5	none
K20R 112 MX6,8	6207 2RS C3	-	-	-	72		6207 2RS C3	-	-	-	3	5	none
K20R 132 S,M	6308 2RS C3	-	-	-	90	-	6308 2RS C3	-	-	-	3	5	none
K20R 160 S,M	6310 2RS C3	-	-	-	110	-	6309 2RS C3	-	-	-	3	5	none
K20R 180 S2,M2	6310 C3	50A	-	-	110	-	6310 C3	50A	-	-	6	8	N-end
K20R 180 S4,6,8 ; M4,6,8	6312 C3	60A	-	-	-	130	6310 C3	50A	-	-	6	8	N-end
K20R 200 M2,L2	6312 C3	60A	-	-	-	130	6312 C3	60A	-	-	6	8	N-end
K20R 200 M4,6,8 ; L4,6,8	6313 C3	65A	-	-	-	140	6312 C3	60A	-	-	6	8	N-end
K20R 225 M2	6313 C3	65A	-	-	-	140	6313 C3	65A	-	-	6	8	N-end
K20R 225 M4,6,8	6314 C3	70A	-	-	-	150	6313 C3	65A	-	-	6	8	N-end
K20R 250 S2,M2	6314 C3	70A	-	-	-	150	6314 C3	70A	-	-	6	8	N-end
K20R 250 S4,6,8 ; M4,6,8	6316 C3	80A	-	-	-	170	6314 C3	70A	-	-	6	8	N-end
K20R 280 S2,M2	6316 C3	80A	-	-	-	170	6316 C3	80A	-	-	6	8	N-end
K20R 280 S4,6,8 ; M4,6,8	6317 C3	80A	-	-	-	180	6316 C3	80A	-	-	6	8	N-end
K20R 315 S2	6317 C3	-	RB85	-	-	180	6316 C3	80A	-	-	13	16	N-end
K20R 315 S4,6,8	6220 C3	-	RB100	-	-	180	6316 C3	80A	-	-	13	16	N-end
K20R 315 M2 ; L2	6317 C3	-	RB85	-	-	180	6317 C3[1)]	85A	-	-	18	19	N-end
K20R 315 M4,6,8 ; L4,6,8	6320 C3	-	RB100	-	-	215	6317 C3[1)]	85A	-	-	18	19	N-end

1) for vertical types of mounting Q317 C3; figures 18, 21
From size K10R 315 standard version with relubrication device

Bearing arrangement

Special version “heavy bearing arrangement” VL, K2.R

Type	D-end			N-end		Figure		Fixed bearing
	Antifriction bearing	V-ring	γ-ring	Antifriction bearing	V-ring	DE	NDE	
K21R 132 S, SX2,M6,8 VL	NU 208 E	40A	-	6207 RS C3	-	4	10	N-end
K21R 132 M4,MX6 VL	NU 308 E	40A	-	6308 RS C3	-	4	10	N-end
K21R 160 M, MX8 VL	NU 309 E	45A	-	6308 RS C3	-	4	10	N-end
K21R 160 MX2, L VL	NU 310 E	50A	-	6309 RS C3	-	7	10	N-end
K21R 180 M4, L6, 8 VL	NU 310 E	50A	-	6309 RS C3	-	7	10	N-end
K21R 180 M2, L4 VL	NU 310 E	50A	-	6310 C3	50A	7	9	N-end
K21R 200 L, LX6 VL	NU 312 E	60A	-	6310 C3	50A	7	9	N-end
K21R 200 LX2 VL	NU 312 E	60A	-	6312 C3	60A	7	9	N-end
K21R 225 M2 VL	NU 312 E	-	RB60	6312 C3	60A	7	9	N-end
K21R 225 S4, 8, M4,6,8 VL	NU 313 E	-	RB65	6312 C3	60A	7	9	N-end
K21R 250 M2 VL	NU 313 E	-	RB65	6313 C3	65A	7	9	N-end
K21R 250 M4,6,8 VL	NU 314 E	-	RB70	6313 C3	65A	7	9	N-end
K21R 280 S2,M2 VL	NU 314 E	-	RB70	6314 C3	70A	7	9	N-end
K21R 280 S4,6,8,M4,6,8 VL	NU 316 E	-	RB80	6314 C3	70A	7	9	N-end
K21R 315 S2,M2 VL	NU 316 E	-	RB80	6316 C3	80A	7	9	N-end
K21R 315 S4,6,8,M4,6,8 VL	NU 317 E	-	RB85	6316 C3	80A	7	9	N-end
K21R 315 MX2 VL	NU 317 E	-	RB85	6316 C3	80A	15	16	N-end
K21R 315 MX4,6,8 VL	NU 2220 E	-	RB100	6316 C3	80A	15	16	N-end
K21R 315 MY2 VL	NU 317 E	-	RB85	6317 C3[1)]	85A	20	19	N-end
K21R 315 MY4,6,8 VL	NU 320 E	-	RB100	6317 C3[1)]	85A	20	19	N-end
K21R 315 L2, LX2 VL	NU 317 E	-	RB85	6317 C3[1)]	85A	20	19	N-end
K21R 315 L4,6,8, LX4,6,8 VL	NU 320 E	-	RB100	6317 C3[1)]	85A	20	19	N-end
K22R 355 M/MX/L 2-pole VL	NU 317 E	-	RB85	6317 C3[1)]	85A	20	19	N-end
K22R 355 M/MX/L 4,6,8-pole VL	NU 324 E	120S	-	6317 C3[1)]	85A	20	19	N-end

1) for vertical types of mounting Q317 C3; figures 20, 21
From size K21R 315 MX standard version with relubrication device

Type	D-end			N-end		Figure		Fixed bearing
	Antifriction bearing	V-ring	γ-ring	Antifriction bearing	V-ring	DE	NDE	
K20R 112 M2,4,6,8 VL	NU 207 E	40A	-	6207 RS C3	-	4	10	N-end
K20R 112 MX6,8 VL	NU 207 E	40A	-	6207 RS C3	-	4	10	N-end
K20R 132 S,M VL	NU 308 E	40A	-	6308 RS C3	-	4	10	N-end
K20R 160 S,M VL	NU 310 E	50A	-	6309 RS C3	-	7	10	N-end
K20R 180 S2,M2 VL	NU 310 E	50A	-	6310 C3	50A	7	9	N-end
K20R 180 S4,6,8; M4,6,8 VL	NU 312 E	60A	-	6310 C3	50A	7	9	N-end
K20R 200 M2,L2 VL	NU 312 E	-	RB60	6312 C3	60A	7	9	N-end
K20R 200 M4,6,8; L4,6,8 VL	NU 313 E	-	RB65	6312 C3	60A	7	9	N-end
K20R 225 M2 VL	NU 313 E	-	RB65	6313 C3	65A	7	9	N-end
K20R 225 M4,6,8 VL	NU 314 E	-	RB70	6313 C3	65A	7	9	N-end
K20R 250 S2,M2 VL	NU 314 E	-	RB70	6314 C3	70A	7	9	N-end
K20R 250 S4,6,8; M4,6,8 VL	NU 316 E	-	RB80	6314 C3	70A	7	9	N-end
K20R 280 S2,M2 VL	NU 316 E	-	RB80	6316 C3	80A	7	9	N-end
K20R 280 S4,6,8; M4,6,8 VL	NU 317 E	-	RB85	6316 C3	80A	7	9	N-end
K20R 315 S2 VL	NU 317 E	-	RB85	6316 C3	80A	15	16	N-end
K20R 315 S4,6,8 VL	NU 2220 E	-	RB100	6316 C3	80A	15	16	N-end
K20R 315 M2; L2 VL	NU 317 E	-	RB85	6317 C3[1)]	85A	20	19	N-end
K20R 315 M4,6,8; L4,6,8 VL	NU 320 E	-	RB100	6317 C3[1)]	85A	20	19	N-end

1) for vertical types of mounting Q317 C3; figures 20, 21
From size K20R 315 standard version with relubrication device

Bearing arrangement

Relubrication device

Type			D-end Antifriction bearing	D-end V-ring	D-end γ-ring	D-end Wave washer	D-end Disc spring	N-end Antifriction bearing	N-end V-ring	Figure DE	Figure NDE	Fixed bearing
K21R	132	S, SX2,M6,8			at D-end not possible due to design version							
K21R	132	M4,MX6			at D-end not possible due to design version							
K21R	160	M,MX8			at D-end not possible due to design version							
K21R	160	MX2, L	6310 C3	-	RB50	110	-	6309 C3	45A	13	14	N-end
K21R	180	M4, L6, 8	6310 C3	-	RB50	110	-	6309 C3	45A	13	14	N-end
K21R	180	M2, L4	6310 C3	-	RB50	110	-	6310 C3	50A	13	14	N-end
K21R	200	L, LX6	6312 C3	-	RB60	-	130	6310 C3	50A	13	14	N-end
K21R	200	LX2	6312 C3	-	RB60	-	130	6312 C3	60A	13	14	N-end
K21R	225	M2	6312 C3	-	RB60	-	130	6312 C3	60A	13	14	N-end
K21R	225	S4, 8, M4,6,8,	6313 C3	-	RB65	-	140	6312 C3	60A	13	14	N-end
K21R	250	M2	6313 C3	-	RB65	-	140	6313 C3	65A	13	14	N-end
K21R	250	M4,6,8	6314 C3	-	RB70	-	150	6313 C3	65A	13	14	N-end
K21R	280	S2,M2	6314 C3	-	RB70	-	150	6314 C3	70A	13	14	N-end
K21R	280	S4,6,8,M4,6,8	6316 C3	-	RB80	-	170	6314 C3	70A	13	14	N-end
K21R	315	S2,M2	6316 C3	-	RB80	-	170	6316 C3	80A	13	14	N-end
K21R	315	S4,6,8,M4,6,8	6317 C3	-	RB85	-	180	6316 C3	80A	13	14	N-end
K21R	315	MX2			see basic version							
K21R	315	MX4,6,8			see basic version							
K21R	315	MY2			see basic version							
K21R	315	MY4,6,8			see basic version							
K21R	315	L2, LX2			see basic version							
K21R	315	L4,6,8, LX4,6,8			see basic version							
K22R	355	M/MX/L 2-pole			see basic version							
K22R	355	M/MX/L 4,6,8-pole			see basic version							

Type			D-end Antifriction bearing	D-end V-ring	D-end γ-ring	D-end Wave washer	D-end Disc spring	N-end Antifriction bearing	N-end V-ring	Figure DE	Figure NDE	Fixed bearing
K20R	112	M2,4,6,8	6207 C3	-	RB35	72	-	6207 C3	35A	13	14	N-end
K20R	112	MX6,8	6207 C3	-	RB35	72	-	6207 C3	35A	13	14	N-end
K20R	132	S,M	6308 C3	-	RB40	90	-	6308 C3	40A	13	14	N-end
K20R	160	S,M	6310 C3	-	RB50	110	-	6309 C3	45A	13	14	N-end
K20R	180	S2,M2	6310 C3	-	RB50	110	-	6310 C3	50A	13	14	N-end
K20R	180	S4,6,8 ; M4,6,8	6312 C3	-	RB60	-	130	6310 C3	50A	13	14	N-end
K20R	200	M2,L2	6312 C3	-	RB60	-	130	6312 C3	60A	13	14	N-end
K20R	200	M4,6,8 ; L4,6,8	6313 C3	-	RB65	-	140	6312 C3	60A	13	14	N-end
K20R	225	M2	6313 C3	-	RB65	-	140	6313 C3	65A	13	14	N-end
K20R	225	M4,6,8	6314 C3	-	RB70	-	150	6313 C3	65A	13	14	N-end
K20R	250	S2,M2	6314 C3	-	RB70	-	150	6314 C3	70A	13	14	N-end
K20R	250	S4,6,8 ; M4,6,8	6316 C3	-	RB80	-	170	6314 C3	70A	13	14	N-end
K20R	280	S2,M2	6316 C3	-	RB80	-	170	6316 C3	80A	13	14	N-end
K20R	280	S4,6,8 ; M4,6,8	6317 C3	-	RB85	-	180	6316 C3	80A	13	14	N-end
K20R	315	S2			see basic version							
K20R	315	S4,6,8			see basic version							
K20R	315	M2 ; L2			see basic version							
K20R	315	M4,6,8 ; L4,6,8			see basic version							

Bearing arrangement

Admissible axial and radial loads, K21R basic version, horizontal shaft position (in kN)

Size		2-pole F_a	2-pole $F_{r0.5}$	2-pole $F_{r1.0}$	4-pole F_a	4-pole $F_{r0.5}$	4-pole $F_{r1.0}$	6-pole F_a	6-pole $F_{r0.5}$	6-pole $F_{r1.0}$	8-pole F_a	8-pole $F_{r0.5}$	8-pole $F_{r1.0}$
K21R	56/63	0.05	0.32		0.09	0.39		0.16	0.39		-	-	
K21R	71	0.07	0.34		0.12	0.43		0.19	0.43		0.25	0.43	
K21R	80	0.13	0.58		0.24	0.73		0.36	0.73		0.46	0.73	
K21R	90	0.13	0.60		0.26	0.77		0.36	0.77		0.50	0.77	
K21R	100	0.15	0.77		0.31	0.86		0.34	0.86		0.52	0.86	
K21R	100/112	0.17	0.77		0.31	0.98		0.42	0.98		0.52	0.98	
K21R	132 S	0.75	1.15	1.03	1.05	1.45	1.29	1.4	1.65	1.47	1.4	1.85	1.65
K21R	132 SX	0.75	1.15	1.03	-	-	-	-	-	-	-	-	-
K21R	132 M	-	-	-	1.6	2.05	1.8	1.2	1.65	1.47	1.4	1.85	1.65
K21R	132 MX	-	-	-	-	-	-	1.9	2.3	2.05	-	-	-
K21R	160 M	1.1	2.0	1.8	1.5	2.5	2.2	1.9	2.9	2.6	2.1	3.25	2.8
K21R	160 MX	1.5	2.3	2.05	-	-	-	-	-	-	2.1	3.25	2.6
K21R	160 L	1.5	2.3	2.05	1.9	3.0	2.7	2.3	3.4	3.0	2.5	3.8	3.4
K21R	180 M	1.5	2.4	2.15	1.9	3.0	2.7	-	-	-	-	-	-
K21R	180 L	-	-	-	2.5	3.1	2.75	2.3	3.4	3.0	2.5	3.8	3.4
K21R	200 L	1.8	3.2	2.8	2.4	4.0	3.5	2.8	4.6	4.1	3.0	5.2	4.6
K21R	200 LX	2.5	3.2	2.8	-	-	-	2.8	4.6	4.1	-	-	-
K21R	225 S	-	-	-	3.0	4.4	3.9	-	-	-	4.2	5.6	5.0
K21R	225 M	2.5	3.2	2.8	3	4.4	3.9	3.5	5.1	4.5	4.2	5.6	5.0
K21R	250 M	2.5	3.4	3.0	3.5	4.9	4.3	3.8	5.6	5.0	4.5	6.3	5.6
K21R	280 S	3.5	5.05	4.6	4.5	7.5	6.8	5.0	8.7	8.0	6.0	9.6	8.9
K21R	280 M	4.0	5.1	4.6	4.5	7.5	6.9	5.0	8.7	8.05	6.0	9.7	9.0
K21R	315 S	4.5	5.9	5.4	6.0	7.3	6.7	7.0	8.5	7.6	7.5	9.5	8.7
K21R	315 M	4.5	5.9	5.4	6.0	7.3	6.8	7.0	8.3	7.8	7.5	9.4	8.8
K21R	315 MX	4.5	6.0	5.6	5.0	10.0	9.4	6.0	11.3	10.6	6.0	12.8	12.0
K21R	315 MY	6.0	9.6	9.0	6.0	9.6	9.0	7.0	11.1	10.7	7.5	12.5	12.3

Admissible axial and radial loads, K21R heavy bearing arrangement, horizontal shaft position (in kN)

Size		2-pole F_a	2-pole $F_{r0.5}$	2-pole $F_{r1.0}$	4-pole F_a	4-pole $F_{r0.5}$	4-pole $F_{r1.0}$	6-pole F_a	6-pole $F_{r0.5}$	6-pole $F_{r1.0}$	8-pole F_a	8-pole $F_{r0.5}$	8-pole $F_{r1.0}$
K21R	132 S	0.75	2.3	2.06	1.05	2.9	2.4	1.4	3.3	2.9	1.4	3.7	3.3
K21R	132 SX	0.75	2.3	2.06	-	-	-	-	-	-	-	-	-
K21R	132 M	-	-	-	1.6	4.1	3.6	1.2	3.3	2.9	1.4	3.7	3.3
K21R	132 MX	-	-	-	-	-	-	1.9	4.6	4.1	-	-	-
K21R	160 M	1.1	3.9	3.5	1.5	4.9	4.3	1.9	5.7	5.1	2.1	6.3	5.5
K21R	160 MX	1.5	4.5	4.0	-	-	-	-	-	-	2.1	6.3	5.1
K21R	160 L	1.5	4.5	4.0	1.9	5.9	5.3	2.3	6.6	5.9	2.5	7.4	6.6
K21R	180 M	1.5	4.7	4.2	1.9	5.9	5.3	-	-	-	-	-	-
K21R	180 L	-	-	-	2.5	6.0	5.4	2.3	6.6	5.9	2.5	7.4	6.6
K21R	200 L	1.8	6.1	5.3	2.4	7.6	6.7	2.8	8.7	7.8	3.0	9.9	8.8
K21R	200 LX	2.5	6.1	5.3	-	-	-	2.8	8.7	7.8	-	-	-
K21R	225 S	-	-	-	3.0	8.4	7.4	-	-	-	4.2	10.6	9.5
K21R	225 M	2.5	6.1	5.3	3	8.4	7.4	3.5	9.7	8.6	4.2	10.6	9.5
K21R	250 M	2.5	6.3	5.6	3.5	9.1	8.0	3.8	10.4	9.3	4.5	11.7	10.4
K21R	280 S	3.0	7.2	6.5	3.1	19.5	15.5	3.5	21.8	16.3	3.8	23.5	15.3
K21R	280 M	2.6	6.6	6.1	3.1	19.5	15.5	3.5	22.3	14.5	4.3	23.0	14.9
K21R	315 S	3.5	8.1	7.4	3.8	18.8	16.6	4.4	21.2	17.7	5.0	23.4	17.2
K21R	315 M	2.8	7.6	6.8	3.9	18.0	15.9	4.6	21.5	16.7	5.2	23.4	17.2
K21R	315 MX	3.4	18.3	16.6	3.7	26.0	21.7	4.1	28.5	18.4	4.5	31.5	20.3
K21R	315 MY	3.6	18.3	14.9	4.3	25.5	16.5	4.7	27.8	19.2	5.6	27.5	19.0

For sizes 315L, LX and 355 data on request

Bearing arrangement

Admissible axial and radial loads, K21R
basic version, vertical shaft position (in kN)

Size		2-pole			4-pole			6-pole			8-pole		
		F_a	$F_{r0.5}$	$F_{r1.0}$	F_a	$F_{r0.5}$	$F_{r1.0}$	F_a	$F_{r0.5}$	$F_{r1.0}$	F_a	$F_{r0.5}$	$F_{r1.0}$
K21R	56/63	0.05	0.32		0.09	0.39		0.16	0.39		-	-	
K21R	71	0.07	0.34		0.12	0.43		0.19	0.43		0.25	0.43	
K21R	80	0.13	0.58		0.24	0.73		0.36	0.73		0.46	0.73	
K21R	90	0.13	0.60		0.20	0.77		0.36	0.77		0.44	0.77	
K21R	100	0.15	0.58		0.24	0.86		0.34	0.86		0.44	0.86	
K21R	100/112	0.17	0.77		0.31	0.98		0.42	0.98		0.52	0.98	
K21R	132 S	0.7	1.2	1.06	0.9	1.5	1.33	1.1	1.75	1.55	1.25	1.9	1.68
K21R	132 SX	0.7	1.2	1.06	-	-	-	-	-	-	-	-	-
K21R	132 M	-	-	-	1.4	2.1	1.9	1.05	1.7	1.5	1.25	1.9	1.68
K21R	132 MX	-	-	-	-	-	-	1.65	2.4	2.1	-	-	-
K21R	160 M	0.95	2.1	1.9	1.3	2.6	2.3	1.5	3.0	2.7	1.75	3.3	2.8
K21R	160 MX	1.2	2.4	2.1	-	-	-	-	-	-	1.75	3.3	2.7
K21R	160 L	1.1	2.5	2.2	1.5	3.1	2.7	1.8	3.6	3.2	2.1	3.9	3.5
K21R	180 M	1.4	2.5	2.2	1.5	3.1	2.7	-	-	-	-	-	-
K21R	180 L	-	-	-	1.9	3.2	2.8	1.8	3.6	3.2	2.1	3.9	3.5
K21R	200 L	1.3	3.4	3.0	1.8	4.2	3.7	2.0	4.9	4.3	2.4	5.4	4.8
K21R	200 LX	1.9	3.4	3.0	-	-	-	2.0	4.8	4.2	-	-	-
K21R	225 S	-	-	-	2.3	4.6	4.1	-	-	-	3.2	6.0	5.3
K21R	225 M	1.7	3.4	3.0	2.2	4.8	4.2	2.7	5.4	4.8	3.3	5.9	5.2
K21R	250 M	1.8	3.8	3.4	2.4	5.3	4.7	3.0	6.1	5.4	3.3	6.7	5.9
K21R	280 S	2.0	5.5	5.0	3.0	8.1	7.4	3.8	9.3	8.6	4.0	10.3	9.5
K21R	280 M	2.0	5.6	5.1	2.3	8.2	7.6	3.0	9.5	8.9	3.0	10.6	9.9
K21R	315 S	2.5	6.5	6.0	3.0	8.3	7.5	3.0	9.5	8.7	4.0	10.5	9.6
K21R	315 M	2.5	6.6	6.1	3.0	8.4	7.8	3.0	9.7	9.1	4.0	10.8	10.2
K21R	315 MX	2.0	7.0	6.5	1.5	11.4	7.3	2.3	12.9	12.1	3.0	14.3	13.5
K21R	315 MY	1.5	7.0	6.6	1.5	11.5	10.9	1.5	13.5	13.0	2.0	15.1	14.8

Admissible axial and radial loads (in kN), K21R
heavy bearing arrangement, vertical shaft position (in kN)

Size		2-pole			4-pole			6-pole			8-pole		
		F_a	$F_{r0.5}$	$F_{r1.0}$	F_a	$F_{r0.5}$	$F_{r1.0}$	F_a	$F_{r0.5}$	$F_{r1.0}$	F_a	$F_{r0.5}$	$F_{r1.0}$
K21R	132 S	0.7	2.4	1.12	0.9	3.0	2.66	2.2	3.5	3.1	1.25	3.8	3.36
K21R	132 SX	0.7	2.4	1.12	-	-	-	-	-	-	-	-	-
K21R	132 M	-	-	-	1.4	4.2	3.8	1.05	3.4	3.0	1.25	3.8	3.36
K21R	132 MX	-	-	-	-	-	-	1.65	4.8	4.2	-	-	-
K21R	160 M	0.95	4.2	3.8	1.3	5.2	4.6	3.0	6.0	5.4	1.75	6.6	5.6
K21R	160 MX	1.2	4.8	4.2	-	-	-	-	-	-	1.75	6.6	5.4
K21R	160 L	1.1	4.9	4.3	1.5	6.0	5.3	1.8	7.0	6.2	2.1	7.6	6.8
K21R	180 M	1.4	4.9	4.3	1.5	6.0	5.3	-	-	-	-	-	-
K21R	180 L	-	-	-	1.9	6.2	5.5	1.8	7.0	6.2	2.1	7.6	6.8
K21R	200 L	1.3	6.6	5.9	1.8	8.2	7.2	2.0	9.6	8.4	2.4	10.5	9.4
K21R	200 LX	1.9	6.6	5.7	-	-	-	2.0	9.1	8.0	-	-	-
K21R	225 S	-	-	-	2.3	8.7	7.8	-	-	-	3.2	11.4	10.1
K21R	225 M	1.7	6.6	5.7	2.2	9.1	8.0	2.7	10.3	9.1	3.3	11.2	9.9
K21R	250 M	1.8	7.0	6.3	2.4	9.8	8.7	3.0	12.3	10.0	3.3	12.4	10.0
K21R	280 S	2.0	7.8	6.8	1.4	20.1	15.8	1.9	21.6	16.1	2.3	23.6	15.3
K21R	280 M	1.1	7.8	6.8	1.3	20.1	15.8	1.8	21.0	13.6	2.3	20.8	13.5
K21R	315 S	1.9	8.8	7.7	1.3	19.8	17.5	1.9	22.4	18.7	2.4	24.0	17.5
K21R	315 M	1.7	8.8	7.7	1.2	20.0	17.7	1.5	22.6	17.7	2.1	23.8	17.4
K21R	315 MX	0.9	19.0	16.8	0.8	27.0	23.9	0.8	28.6	18.5	1.2	28.6	18.5
K21R	315 MY	0.5	19.5	17.3	0.5	19.5	17.3	1.5	24.0	16.6	2.0	24.0	16.6

For sizes 315L, LX and 355 data on request

Bearing arrangement

Admissible axial and radial loads, K20R
basic version, horizontal shaft position (in kN)

Size		2-pole			4-pole			6-pole			8-pole		
		F_a	$F_{r0.5}$	$F_{r1.0}$	F_a	$F_{r0.5}$	$F_{r1.0}$	F_a	$F_{r0.5}$	$F_{r1.0}$	F_a	$F_{r0.5}$	$F_{r1.0}$
K20R	56	0.05	0.32		0.09	0.39		0.16	0.39		-	-	
K20R	63	0.07	0.34		0.12	0.43		0.19	0.43		0.25	0.43	
K20R	71	0.13	0.58		0.24	0.73		0.36	0.73		0.46	0.73	
K20R	80	0.13	0.60		0.20	0.77		0.36	0.77		0.44	0.77	
K20R	90	0.15	0.58		0.24	0.86		0.34	0.86		0.44	0.86	
K20R	100	0.17	0.77		0.31	0.98		0.42	0.98		0.52	0.98	
K20R	112 M	0.75	1.1	1.0	1.05	1.35	1.19	1.2	1.55	1.4	1.4	1.7	1.5
K20R	112 MX	-	-	-	-	-	-	1.2	1.55	1.4	1.4	1.7	1.5
K20R	132 S	-	-	-	0.8	1.95	1.7	1.0	2.35	2.1	1.1	2.6	2.3
K20R	132 M	0.7	1.6	1.4	0.8	1.95	1.7	1.0	2.35	2.1	1.1	2.6	2.3
K20R	160 S	1.7	2.3	2.0	1.9	3.0	2.7	2.3	3.4	3.0	2.5	3.8	3.7
K20R	160 M	1.5	2.3	2.0	1.9	3.0	2.7	2.3	3.4	3.0	2.5	3.8	3.7
K20R	180 S	1.7	2.3	2.0	2.4	4.1	3.6	2.8	4.6	4.1	3.0	5.1	4.5
K20R	180 M	1.7	2.3	2.0	2.4	4.1	3.6	2.8	4.6	4.1	3.0	5.1	4.5
K20R	200 M	2.4	3.2	2.8	3.0	4.4	3.9	3.5	5.0	4.4	4.3	5.6	5.0
K20R	200 L	2.4	3.2	2.8	3.0	4.4	3.9	-	-	-	-	-	-
K20R	225 M	1.9	2.5	2.2	3.5	5.1	4.5	3.8	5.8	5.1	4.5	6.4	5.7
K20R	250 S	3.5	5.05	4.6	4.5	7.5	6.8	5.0	8.7	8.0	6.0	9.6	8.9
K20R	250 M	4.0	5.1	4.6	4.5	7.5	6.9	5.0	8.7	8.05	6.0	9.7	9.0
K20R	280 S	4.5	5.9	5.4	6.0	7.3	6.7	7.0	8.5	7.6	7.5	9.5	8.7
K20R	280 M	4.5	5.9	5.4	6.0	7.3	6.8	7.0	8.3	7.8	7.5	9.4	8.8
K20R	315 S	4.5	6.0	5.6	5.0	10.0	9.4	6.0	11.3	10.6	6.0	12.8	12.0
K20R	315 M	6.0	9.6	9.0	6.0	9.6	9.0	7.0	11.1	10.7	7.5	12.5	12.3

Admissible axial and radial loads, K20R
heavy bearing arrangement, horizontal shaft position (in kN)

Size		2-pole			4-pole			6-pole			8-pole		
		F_a	$F_{r0.5}$	$F_{r1.0}$	F_a	$F_{r0.5}$	$F_{r1.0}$	F_a	$F_{r0.5}$	$F_{r1.0}$	F_a	$F_{r0.5}$	$F_{r1.0}$
K20R	112 M	0.75	2.2	2.4	1.05	2.7	2.38	1.2	3.1	2.8	1.4	3.4	3.0
K20R	112 MX	-	-	-	-	-	-	1.2	3.1	2.8	1.4	3.4	3.0
K20R	132 S	-	-	-	0.8	3.9	3.4	1.0	4.7	4.2	1.1	5.2	4.6
K20R	132 M	0.7	3.2	2.8	0.8	3.9	3.4	1.0	4.7	4.2	1.1	5.2	4.6
K20R	160 S	1.7	2.3	2.6	1.9	3.0	2.7	2.3	3.4	3.0	2.5	3.8	3.7
K20R	160 M	1.5	2.3	2.6	1.9	3.0	2.7	2.3	3.4	3.0	2.5	3.8	3.7
K20R	180 S	1.7	4.5	5.1	2.4	8.0	7.0	2.8	9.0	8.0	3.0	9.9	8.8
K20R	180 M	1.7	4.5	5.1	2.4	8.0	7.0	2.8	9.0	8.0	3.0	9.9	4.5
K20R	200 M	2.4	6.1	6.8	3.0	8.4	7.4	3.5	9.5	8.4	4.3	10.6	9.5
K20R	200 L	2.4	6.1	6.8	3.0	8.4	7.4	-	-	-	-	-	-
K20R	225 M	1.9	4.6	5.2	3.5	9.4	8.3	3.8	10.7	9.4	4.5	11.8	10.5
K20R	250 S	2.9	7.0	8.0	3.1	19.5	15.4	3.5	21.8	16.3	3.8	23.8	15.6
K20R	250 M	2.6	6.5	7.4	3.1	19.4	15.3	3.5	22.0	14.2	4.3	22.8	14.9
K20R	280 S	3.5	7.9	7.2	3.7	18.8	16.6	4.5	21.3	16.6	5.0	23.5	17.3
K20R	280 M	2.9	7.7	8.8	3.8	19.0	16.8	4.6	21.5	15.8	5.2	23.7	17.4
K20R	315 S	3.4	18.3	16.2	3.6	26.0	22.4	4.1	28.5	19.7	4.5	31.5	20.3
K20R	315 M	3.6	18.3	16.2	4.4	25.5	16.5	4.7	27.5	17.7	5.6	27.5	19.0

For size 315L data on request

Bearing arrangement

Admissible axial and radial loads, K20R
basic version, vertical shaft position (in kN)

Size		2-pole F_a	2-pole $F_{r\,0.5}$	2-pole $F_{r\,1.0}$	4-pole F_a	4-pole $F_{r\,0.5}$	4-pole $F_{r\,1.0}$	6-pole F_a	6-pole $F_{r\,0.5}$	6-pole $F_{r\,1.0}$	8-pole F_a	8-pole $F_{r\,0.5}$	8-pole $F_{r\,1.0}$
K20R	56	0.05	0.32		0.09	0.39		0.16	0.39		-	-	
K20R	63	0.07	0.34		0.12	0.43		0.19	0.43		0.25	0.43	
K20R	71	0.13	0.58		0.24	0.73		0.36	0.73		0.46	0.73	
K20R	80	0.13	0.60		0.20	0.77		0.36	0.77		0.44	0.77	
K20R	90	0.15	0.58		0.24	0.86		0.34	0.86		0.44	0.86	
K20R	100	0.17	0.77		0.31	0.98		0.42	0.98		0.52	0.98	
K20R	112 M	0.75	1.15	1.0	0.9	1.4	1.2	1.1	1.6	1.4	1.3	1.75	1.5
K20R	112 MX	-	-	-	-	-	-	1.05	1.6	1.4	1.25	1.75	1.5
K20R	132 S	-	-	-	0.7	2.0	1.8	0.8	2.3	2.0	0.9	2.6	2.3
K20R	132 M	0.5	1.65	1.45	0.65	2.15	1.9	0.75	2.45	2.2	0.85	2.7	2.4
K20R	160 S	1.1	2.4	2.1	1.6	3.05	2.7	1.8	3.5	3.1	2.2	3.9	3.5
K20R	160 M	1.2	2.4	2.1	1.6	3.05	2.7	1.8	3.6	3.2	2.1	4.0	3.5
K20R	180 S	1.4	2.5	2.1	1.8	4.1	3.6	2.1	4.8	4.2	2.5	5.2	4.6
K20R	180 M	1.3	2.6	2.3	1.8	4.3	3.8	2.0	5.0	4.4	2.4	5.4	4.8
K20R	200 M	1.8	3.4	3.0	2.4	4.7	4.2	2.75	5.4	4.8	3.2	5.9	5.2
K20R	200 L	1.7	3.4	3.0	2.2	4.8	4.2	-	-	-	-	-	-
K20R	225 M	1.5	2.8	2.5	2.5	5.4	4.8	3.0	6.2	5.5	3.5	6.8	6.0
K20R	250 S	2.0	5.5	5.0	3.0	8.1	7.4	3.8	9.3	8.6	4.0	10.3	9.5
K20R	250 M	2.0	5.6	5.1	2.3	8.2	7.6	3.0	9.5	8.9	3.0	10.6	9.9
K20R	280 S	2.5	6.5	6.0	3.0	8.3	7.5	3.0	9.5	8.7	4.0	10.5	9.6
K20R	280 M	2.5	6.6	6.1	3.0	8.4	7.8	3.0	9.7	9.1	4.0	10.8	10.2
K20R	315 S	2.0	7.0	6.5	1.5	11.4	7.3	2.3	12.9	12.1	3.0	14.3	13.5
K20R	315 M	1.5	7.0	6.6	1.5	11.5	10.9	1.5	13.5	13.0	2.0	15.1	14.8

Admissible axial and radial loads, K20R
heavy bearing arrangement, vertical shaft position (in kN)

Size		2-pole F_a	2-pole $F_{r\,0.5}$	2-pole $F_{r\,1.0}$	4-pole F_a	4-pole $F_{r\,0.5}$	4-pole $F_{r\,1.0}$	6-pole F_a	6-pole $F_{r\,0.5}$	6-pole $F_{r\,1.0}$	8-pole F_a	8-pole $F_{r\,0.5}$	8-pole $F_{r\,1.0}$
K20R	112 M	0.75	2.3	2.0	0.9	2.8	2.4	1.1	3.2	2.8	1.3	3.5	3.0
K20R	112 MX	-	-	-	-	-	-	1.05	3.2	2.8	1.25	3.5	3.0
K20R	132 S	-	-	-	0.7	4.0	3.6	0.8	4.6	4.0	0.9	5.2	4.6
K20R	132 M	0.5	3.3	2.9	0.65	4.3	3.8	0.75	4.9	4.4	0.85	5.4	4.8
K20R	160 S	1.1	4.7	4.1	1.6	5.9	5.3	1.8	6.8	6.0	2.2	7.6	6.8
K20R	160 M	1.2	4.7	4.1	1.6	5.9	5.3	1.8	7.0	6.2	2.1	7.8	6.8
K20R	180 S	1.4	4.9	4.1	1.8	8.0	7.0	2.1	9.4	8.2	2.5	10.1	9.0
K20R	180 M	1.3	5.1	4.5	1.8	8.4	7.4	2.0	9.8	8.6	2.4	10.5	9.4
K20R	200 M	1.8	6.5	5.7	2.4	8.9	8.0	2.75	10.3	9.1	3.2	11.2	9.9
K20R	200 L	1.7	6.5	5.7	2.2	9.1	8.0	-	-	-	-	-	-
K20R	225 M	1.5	5.3	4.8	2.5	10.3	9.1	3.0	11.8	10.5	3.5	12.9	11.4
K20R	250 S	1.9	7.8	6.8	1.4	20.4	16.0	1.8	22.6	17.0	2.2	23.8	15.4
K20R	250 M	1.1	8.0	8.0	1.3	20.1	15.8	1.8	20.8	13.4	2.2	20.6	13.3
K20R	280 S	1.9	9.1	8.1	1.4	19.8	17.5	1.9	22.4	18.7	2.4	24.1	17.7
K20R	280 M	1.7	9.3	8.1	1.2	20.1	17.8	1.5	22.5	17.6	2.1	23.9	17.6
K20R	315 S	0.9	19.2	17.0	0.8	27.0	23.1	0.8	28.5	18.4	1.5	28.5	18.4
K20R	315 M	0.5	20.5	18.1	0.5	20.5	13.2	1.4	24.0	15.5	2.0	24	15.5

For size 315L data on request

Bearing arrangement

Basic version, K25R

Type			D-end Antifriction bearing	D-end V-ring	D-end Felt ring	D-end Wave washer	D-end Disc spring	N-end Antifriction bearing	N-end V-ring	N-end Wave washer	N-end Felt ring	Figure DE	Figure NDE	Fixed bearing
K25R	56		6201 2Z C3	-	11.5x19	-	-	6201 2Z C3	-	32	12x22	1	2	none
K25R	63		6202 2Z C3	-	14.5x21	-	-	6202 2Z C3	-	35	15x24	1	2	none
K25R	71		6204 2Z C3	-	19.5x26	-	-	6204 2Z C3	-	47	20x32	1	2	none
K25R	80		6205 2Z C3	-	24.2x35	-	-	6205 2Z C3	-	52	25x40	1	2	none
K25R	90		6205 2Z C3	-	24.5x35	-	-	6205 2Z C3	-	52	25x40	1	2	none
K25R	100		6206 2Z C3	-	29.2x40	-	-	6206 2Z C3	-	62	30x50	1	2	none
K25R	112	M2,4,6,8	6207 2RS C3	-	-	72		6207 2RS C3	-	-	-	3	5	none
K25R	112	MX6,8	6207 2RS C3	-	-	72		6207 2RS C3	-	-	-	3	5	none
K25R	132	S,M	6308 2RS C3	-	-	90	-	6308 2RS C3	-	-	-	3	5	none
K25R	160	MY,M	6310 2RS C3	-	-	110	-	6309 2RS C3	-	-	-	3	5	none
K25R	180	MY2,M2	6310 C3	50A	-	110	-	6310 C3	50A	-	-	6	8	N-end
K25R	180	MY4,6,8 ; M4,6,8	6312 C3	60A	-	-	130	6310 C3	50A	-	-	6	8	N-end
K25R	200	M2,L2	6312 C3	60A	-	-	130	6312 C3	60A	-	-	6	8	N-end
K25R	200	M4,6,8 ; L4,6,8	6313 C3	65A	-	-	140	6312 C3	60A	-	-	6	8	N-end
K25R	225	M2	6313 C3	65A	-	-	140	6313 C3	65A	-	-	6	8	N-end
K25R	225	M4,6,8	6314 C3	70A	-	-	150	6313 C3	65A	-	-	6	8	N-end
K25R	250	MY2,M2	6314 C3	70A	-	-	150	6314 C3	70A	-	-	6	8	N-end
K25R	250	MY4,6,8 ; M4,6,8	6316 C3	80A	-	-	170	6314 C3	70A	-	-	6	8	N-end
K25R	280	S2,M2	6316 C3	80A	-	-	170	6316 C3	80A	-	-	6	8	N-end
K25R	280	S4,6,8 ; M4,6,8	6317 C3	80A	-	-	180	6316 C3	80A	-	-	6	8	N-end

1) for vertical types of mounting Q317 C3; figures 18, 21

Special version “heavy bearing arrangement“ VL

Type			D-end Antifriction bearing	D-end V-ring	D-end γ-ring	N-end Antifriction bearing	N-end V-ring	Figure DE	Figure NDE	Fixed bearing
K25R	112	M2,4,6,8 VL	NU 207 E	40A	-	6207 RS C3	-	4	10	N-end
K25R	112	MX6,8 VL	NU 207 E	40A	-	6207 RS C3	-	4	10	N-end
K25R	132	S,M VL	NU 308 E	40A	-	6308 RS C3	-	4	10	N-end
K25R	160	MY,M VL	NU 310 E	50A	-	6309 RS C3	-	7	10	N-end
K25R	180	MY2,M2 VL	NU 310 E	50A	-	6310 C3	50A	7	9	N-end
K25R	180	MY4,6,8 ; M4,6,8 VL	NU 312 E	60A	-	6310 C3	50A	7	9	N-end
K25R	200	M2,L2 VL	NU 312 E	-	RB60	6312 C3	60A	7	9	N-end
K25R	200	M4,6,8 ; L4,6,8 VL	NU 313 E	-	RB65	6312 C3	60A	7	9	N-end
K25R	225	M2 VL	NU 313 E	-	RB65	6313 C3	65A	7	9	N-end
K25R	225	M4,6,8 VL	NU 314 E	-	RB70	6313 C3	65A	7	9	N-end
K25R	250	MY2,M2 VL	NU 314 E	-	RB70	6314 C3	70A	7	9	N-end
K25R	250	S4,6,8 ; M4,6,8 VL	NU 316 E	-	RB80	6314 C3	70A	7	9	N-end
K25R	280	S2,M2 VL	NU 316 E	-	RB80	6316 C3	80A	7	9	N-end
K25R	280	S4,6,8 ; M4,6,8 VL	NU 317 E	-	RB85	6316 C3	80A	7	9	N-end

1) for vertical types of mounting Q317 C3; figures 20, 21

Relubrication device

Type				D-end Antifriction bearing	D-end V-ring	D-end γ-ring	D-end Wave washer	D-end Disc spring	N-end Antifriction bearing	N-end V-ring	Figure DE	Figure NDE	Fixed bearing
K25R	112	M2,4,6,8	1)	6207 C3	-	RB35	72	-	6207 C3	35A	13	14	N-end
K25R	112	MX6,8	1)	6207 C3	-	RB35	72	-	6207 C3	35A	13	14	N-end
K25R	132	S,M	1)	6308 C3	-	RB40	90	-	6308 C3	40A	13	14	N-end
K25R	160	MY,M	1)	6310 C3	-	RB50	110	-	6309 C3	45A	13	14	N-end
K25R	180	MY2,M2	1)	6310 C3	-	RB50	110	-	6310 C3	50A	13	14	N-end
K25R	180	MY4,6,8 ; M4,6,8	1)	6312 C3	-	RB60	-	130	6310 C3	50A	13	14	N-end
K25R	200	M2,L2		6312 C3	-	RB60	-	130	6312 C3	60A	13	14	N-end
K25R	200	M4,6,8 ; L4,6,8		6313 C3	-	RB65	-	140	6312 C3	60A	13	14	N-end
K25R	225	M2		6313 C3	-	RB65	-	140	6313 C3	65A	13	14	N-end
K25R	225	M4,6,8		6314 C3	-	RB70	-	150	6313 C3	65A	13	14	N-end
K25R	250	MY2,M2		6314 C3	-	RB70	-	150	6314 C3	70A	13	14	N-end
K25R	250	MY4,6,8 ; M4,6,8		6316 C3	-	RB80	-	170	6314 C3	70A	13	14	N-end
K25R	280	S2,M2		6316 C3	-	RB80	-	170	6316 C3	80A	13	14	N-end
K25R	280	S4,6,8 ; M4,6,8		6317 C3	-	RB85	-	180	6316 C3	80A	13	14	N-end

1) degree of protection IP 54

Bearing arrangement

Energy saving motors WE1R, W21R

Type	D-end: Antifriction bearing	D-end: Felt ring	D-end: V-ring	D-end: γ-ring	D-end: Wave washer	D-end: Disc spring	N-end: Antifriction bearing	N-end: Felt ring	N-end: V-ring	N-end: Wave washer	Figure DE	Figure NDE	Fixed bearing
WE1R 80	6205 2Z C3	-	-	-	-	-	6205 2Z C3	-	-	47	1	2	none
WE1R 90	6205 2Z C3	24.5x35	-	-	-	-	6205 2Z C3	25x40	-	52	1	2	none
WE1R 100	6206 2Z C3	29.2x40	-	-	-	-	6206 2Z C3	-	-	52	1	2	none
WE1R 100LX	6206 2Z C3	29.2x40	-	-	-	-	6206 2Z C3	30x50	-	62	1	2	none
WE1R 112M 2	6206 2Z C3	29.2x40	-	-	-	-	6206 2Z C3	30x50	-	62	1	2	none
WE1R 112M 4	6207 2RS C3	-	-	-	72	-	6207 2RS C3	-	-	-	3	5	none
WE1R 132S 2T	6208 2Z C3	39.2x50	-	-	-	-	6206 2Z C3	30x50	-	62	1	2	none
WE1R 132S 2, SX2	6208 2RS C3	-	-	-	80	-	6207 2RS C3	-	-	-	3	5	none
WE1R 132SY4, S4, M4	6308 2RS C3	-	-	-	90	-	6308 2RS C3	-	-	-	3	5	none
WE1R 160MY2, M2;M4	6309 2RS C3	-	-	-	100	-	6308 2RS C3	-	-	-	3	5	none
WE1R 160MX2, L2, L4	6310 2RS C3	-	-	-	110	-	6309 2RS C3	-	-	-	3	5	none
WE1R 180M 4,	6310 2RS C3	-	-	-	110	-	6309 2RS C3	-	-	-	3	5	none
WE1R 180M 2, L4	6310 C3	-	50A	-	110	-	6310 C3	-	50A	-	6	8	N-end
WE1R 200L 2, LX2	6312 C3	-	60A	-	-	130	6310 C3	-	50A	-	6	8	N-end
WE1R 200L 4	6312 C3	-	60A	-	-	130	6312 C3	-	60A	-	6	8	N-end
WE1R 225S 4, M4	6313 C3	-	65A	-	-	140	6312 C3	-	60A	-	6	8	N-end
WE1R 225M 2	6313 C3	-	65A	-	-	150	6313 C3	-	65A	-	6	8	N-end
WE1R 225S 4, M4	6313 C3	-	70A	-	-	140	6312 C3	-	60A	-	6	8	N-end
WE1R 250M 2	6313 C3	-	65A	-	-	140	6313 C3	-	65A	-	6	8	N-end
WE1R 250M 4	6314 C3	-	70A	-	-	150	6313 C3	-	65A	-	6	8	N-end
WE1R 280S 2, M2	6314 C3	-	70A	-	-	150	6314 C3	-	70A	-	6	8	N-end
WE1R 280S 4, M4	6316 C3	-	80A	-	-	170	6314 C3	-	70A	-	6	8	N-end

Type	D-end: Antifriction bearing	D-end: Felt ring	D-end: V-ring	D-end: γ-ring	D-end: Wave washer	D-end: Disc spring	N-end: Antifriction bearing	N-end: Felt ring	N-end: V-ring	N-end: Wave washer	Figure DE	Figure NDE	Fixed bearing
W21R 63	6202 2Z C3	14.5x21	-	-	-	-	6202 2Z C3	15x24	-	32	1	2	none
W21R 71	6204 2Z C3	19.5x26	-	-	-	-	6204 2Z C3	20x32	-	35	1	2	none
W21R 80	6205 2Z C3	24.2x35	-	-	-	-	6205 2Z C3	25x40	-	47	1	2	none
W21R 90	6205 2Z C3	24.2x35	-	-	-	-	6205 2Z C3	25x40	-	52	1	2	none
W21R 100	6206 2Z C3	29.2x40	-	-	-	-	6205 2Z C3	25x40	-	52	1	2	none
W21R 100LX	6206 2Z C3	29.2x40	-	-	-	-	6206 2Z C3	30x50	-	62	1	2	none
W21R 112	6206 2Z C3	29.2x40	-	-	-	-	6206 2Z C3	30x50	-	62	1	2	none
W21R 132S6,8 ; M6,8	6208 2RS C3	-	-	-	80		6207 2RS C3	-	-	-	3	5	none
W21R 132MX6	6308 2RS C3	-	-	-	90	-	6308 2RS C3	-	-	-	3	5	none
W21R 160M6,8 ; MX8	6309 2RS C3	-	-	-	100	-	6308 2RS C3	-	-	-	3	5	none
W21R 160L6	6310 2RS C3	-	-	-	110	-	6309 2RS C3	-	-	-	3	5	none
W21R 180L6,8	6310 2RS C3	-	-	-	110	-	6309 2RS C3	-	-	-	3	5	none
W21R 200L6,8 ; LX6	6312 C3	-	60A	-	-	130	6310 C3	-	50A	-	6	8	N-end
W21R 225S8, M6,8,	6313 C3	-	65A	-	-	140	6312 C3	-	60A	-	6	8	N-end
W21R 250M6,8	6314 C3	-	70A	-	-	150	6313 C3	-	65A	-	6	8	N-end
W21R 280S6,8 ; M6,8	6316 C3	-	80A	-	-	170	6314 C3	-	70A	-	6	8	N-end
W21R 315S2,M2	6316 C3	-	80A	-	-	170	6316 C3	-	80A	-	6	8	N-end
W21R 315S4,6,8,M4,6,8	6317 C3	-	80A	-	-	180	6316 C3	-	80A	-	6	8	N-end
W21R 315MX2	6317 C3	-	-	RB85	-	180	6316 C3	-	80A	-	13	16	N-end
W21R 315MX4,6,8	6220 C3	-	-	RB100	-	180	6316 C3	-	80A	-	13	16	N-end
W21R 315MY2	6317 C3	-	-	RB85	-	180	6317 C3[1)]	-	85A	-	18	19	N-end
W21R 315MY4,6,8	6320 C3	-	-	RB100	-	215	6317 C3[1)]	-	85A	-	18	19	N-end
W21R 315L2, LX2	6317 C3	-	-	RB85	-	180	6317 C3[1)]	-	85A	-	18	19	N-end
W21R 315L4,6,8 ; LX4,6,8	6320 C3	-	-	RB100	-	215	6317 C3[1)]	-	85A	-	18	19	N-end

1) for vertical types of mounting Q317 C3; figures 18, 21
W21R 315 MX; MY; L; LX standard version with relubrication device

Bearing arrangement

Energy saving motors WE1R according to EPAct

Type	D-end: Antifriction bearing	D-end: Felt ring	D-end: V-ring	D-end: γ-ring	D-end: Wave washer	D-end: Disc spring	N-end: Antifriction bearing	N-end: Felt ring	N-end: V-ring	Figure DE	Figure NDE	Wave washer	Fixed bearing
WE1R 80	6205 2Z C3	-	-	-	-	-	6205 2Z C3	-	-	2	2	47	none
WE1R 90	6205 2Z C3	24.5x35	-	-	-	-	6205 2Z C3	25x40	-	2	2	52	none
WE1R 100	6206 2Z C3	29.2x40	-	-	-	-	6206 2Z C3	-	-	2	2	52	none
WE1R 100LX	6206 2Z C3	29.2x40	-	-	-	-	6206 2Z C3	30x50	-	2	2	62	none
WE1R 112M	6206 2Z C3	29.2x40	-	-	-	-	6206 2Z C3	30x50	-	2	2	62	none
WE1R 132S 2T	6208 2Z C3	39.2x50	-	-	-	-	6206 2Z C3	30x50	-	2	2	62	none
WE1R 132S 2, SX2	6208 2RS C3	-	-	-	80	-	6207 2RS C3	-	-	3	5	-	none
WE1R 132SY4, S4, M4	6308 2RS C3	-	-	-	90	-	6308 2RS C3	-	-	3	5	-	none
WE1R 160MY2, M2;M4	6309 2RS C3	-	-	-	100	-	6308 2RS C3	-	-	3	5	-	none
WE1R 160MX2, L2, L4	6310 2RS C3	-	-	-	110	-	6309 2RS C3	-	-	3	5	-	none
WE1R 180M 4,	6310 2RS C3	-	-	-	110	-	6309 2RS C3	-	-	3	5	-	none
WE1R 180M 2, L4	6310 C3	-	50A	-	110	-	6310 C3	-	50A	6	8	-	N-end
WE1R 200L 2, LX2	6312 C3	-	60A	-	-	130	6310 C3	-	50A	6	8	-	N-end
WE1R 225S 4, M4	6313 C3	-	65A	-	-	140	6312 C3	-	60A	6	8	-	N-end
WE1R 225M 2	6313 C3	-	65A	-	-	150	6313 C3	-	65A	6	8	-	N-end
WE1R 225S 4, M4	6313 C3	-	70A	-		140	6312 C3	-	60A	6	8	-	N-end
WE1R 250M 2	6313 C3	-	65A	-	-	140	6313 C3	-	65A	6	8	-	N-end
WE1R 250M 4	6314 C3	-	70A	-	-	150	6313 C3	-	65A	6	8	-	N-end
WE1R 280S 2, M2	6314 C3	-	70A	-	-	150	6314 C3	-	70A	6	8	-	N-end
WE1R 280S 4, M4	6316 C3	-	80A	-	-	170	6314 C3	-	70A	6	8	-	N-end
WE1R 315S 2, M2	6316 C3	-	80A	-	-	170	6316 C3	-	80A	6	8	-	N-end
WE1R 315S 4, M4	6317 C3	-	85A	-	-	180	6316 C3	-	80A	6	8	-	N-end
WE1R 315MX2	6317 C3	-	-	RB85	-	180	6316 C3	-	80A	13	16	-	N-end
WE1R 315MX4	6220 C3	-	-	RB100	-	180	6316 C3	-	80A	13	16	-	N-end
WE1R 315MY2, L2, LX2	6317 C3	-	-	RB85	-	180	6317 C3[1)]	-	85A	18	19	-	N-end
WE1R 315MY4, L4, LX4	6320 C3	-	-	RB100	-	215	6317 C3[1)]	-	85A	18	19	-	N-end

1) for vertical types of mounting Q317 C3; figures 18, 21
WE1R 315 MX; MY; L; LX standard version with relubrication device

2

Bearing arrangement

Figures

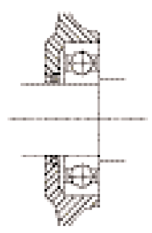
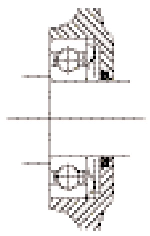


Figure 1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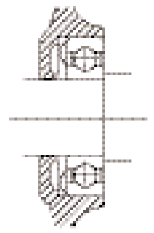
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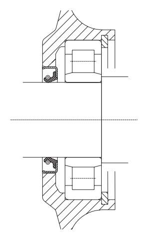
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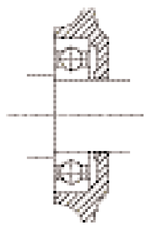
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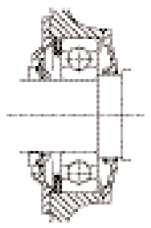
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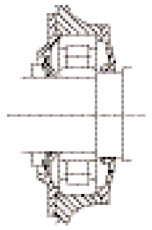
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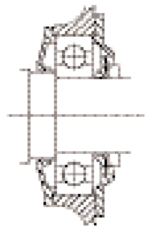
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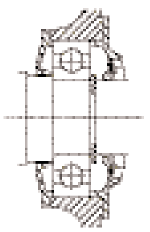
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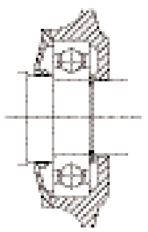
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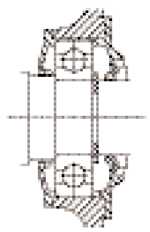


Figure 11

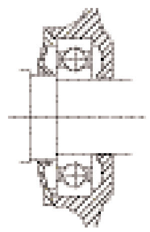
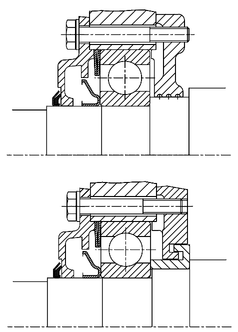


Figure 12

Bearing arrangement

Figures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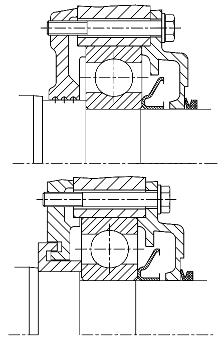
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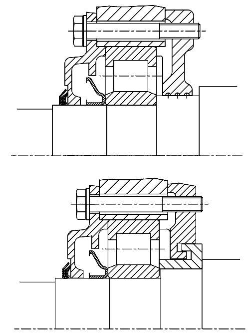
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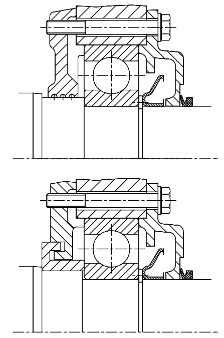
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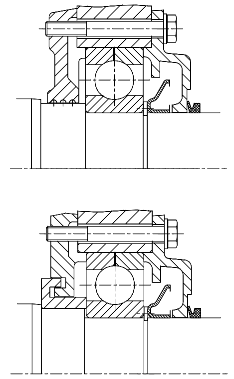
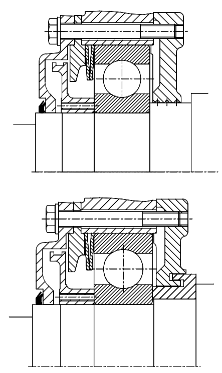


Figure 17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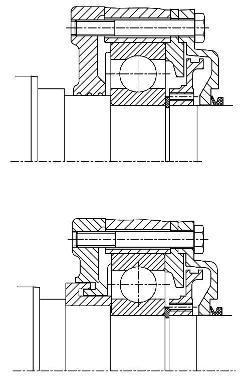
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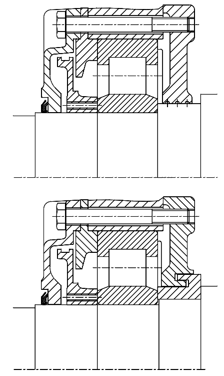
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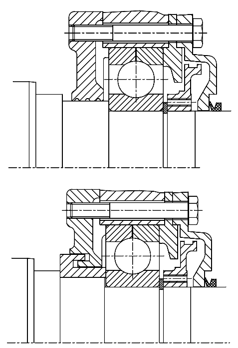
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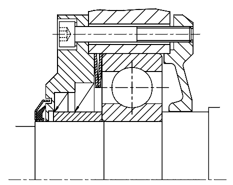


Figure 22

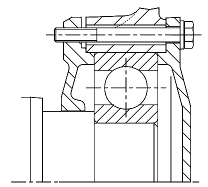


Figure 23

Terminal boxes

Standard version, sealed cable glands, power station design, VIK version

Type	Material	Adapter flange	Dimensions				Thread cable gland	Maximum cable diameter	Terminal plate	Number of terminals	Thread terminal stud	Thread protective conductor	Figure
			AG	LL	AH	BE	$\bigcirc$	$\bigcirc_{max}$					
			x	z	-	-	r	$..r_{max}$					
Standard version													
KA 05	Alu	-	92	92	-	-	M20x1.5	Ø 13 mm	K1M4	6	M4	M4	
KA 05	Alu	-	92	92	-	-	M25x1.5	Ø 17 mm	K1M4	6	M4	M4	
KA 05-13	Alu	-	104	112	-	-	M20x1.5	Ø 13 mm	K1M4	6	M4	M4	
KA 05-13	Alu	-	104	112	-	-	M25x1.5	Ø 17 mm	K1M4	6	M4	M4	
KA 05-13	Alu	-	104	112	-	-	M32x1.5	Ø 21 mm	K1M4	6	M4	M4	
KK 25 A	Alu	-	156	145	-	-	M32x1.5	Ø 21 mm	SB 5	6	M5	M6	01
KK 25 A SS	GG-15	-	143	134	-	-	M32x1.5	Ø 21 mm	SB 5	6	M5	M6	01
KK 63/25 A	Alu	-	193	167	-	-	M40x1.5	Ø 28 mm	SB 5	6	M5	M6	01
KK 63 A	Alu	-	193	167	-	-	M40x1.5	Ø 28 mm	SB 6	6	M6	M6	01
KK 63 A	GG-15	-	174	162	-	-	M40x1.5	Ø 28 mm	SB 6	6	M6	M6	01
KK 63 A	Alu	-	193	167	-	-	M50x1.5	Ø 35 mm	SB 6	6	M6	M6	01
KK 63 A	GG-15	-	174	162	-	-	M50x1.5	Ø 35 mm	SB 6	6	M6	M6	01
KK 100 A	GG-15	-	213	207	-	-	M50x1.5	Ø 35 mm	SB 8	6	M8	M8	01
KK 200/100 A	GG-15	-	282	242	-	-	M63x1.5	Ø 45 mm	SB 8	6	M8	M8	01
KK 200 A	GG-15	-	282	242	-	-	M63x1.5	Ø 45 mm	SB 10	6	M10	M10	01
KK 400 A	GG-15	-	315	294	-	-	M63x1.5	Ø 45 mm	SB 12	6	M12	M10	02
KK 400 B	GG-15	-	415	340	265	-	M63x1.5	Ø 45 mm	KM 12	6	M12	LK	03
KK 400 B	GG-15	-	415	340	265	-	M72x2	Ø 56.5 mm	KM 12	6	M12	LK	03
KK 630 A	GG-15	horizontal	496	390	301	140	M72x2	Ø 56.5 mm	KLP 630-20	6	M20	LK	04G
KK 630 A	GG-15	sloping	496	390	301	140	M72x2	Ø 56.5 mm	KLP 630-20	6	M20	LK	04S
KK 1000 A	GG-15	horizontal	615	474	385	200	M72x2	Ø 56.5 mm	KLSO 1000	6	StS	LK	05G
KK 1000 A	GG-15	sloping	615	474	385	200	M72x2	Ø 56.5 mm	KLSO 1000	6	StS	LK	05S
KK 1000 A	GG-15	horizontal	615	474	385	200	M80x2	Ø 68 mm	KLSO 1000	6	StS	LK	05G
KK 1000 A	GG-15	sloping	615	474	385	200	M80x2	Ø 68 mm	KLSO 1000	6	StS	LK	05S
Sealed cable glands													
VGK 200 A	GG-15	-	387	242	-	-	Ø 66	Ø 66 mm	SB 10	6	M10	M10	06
VGK 400 A	GG-15	-	422	296	-	-	Ø 95	Ø 95 mm	SB 12	6	M12	M10	06
Power station design													
KK 25 A KA	GG-15	-	143	134	-	-	M32x1.5	Ø 21 mm	KL 155	6	M5	M6	07
KK 63 A KA	GG-15	-	184	172	-	-	M40x1.5	Ø 28 mm	KL 155	6	M5	M6	07
KK 63 A KA	GG-15	-	184	172	-	-	M40x1.5	Ø 28 mm	K1 M6	6	M6	M6	07
KK 63/100 A KA	GG-15	-	223	214	-	-	M50x1.5	Ø 35 mm	K1 M6	6	M6	M6	07
KK 100 A KA	GG-15	-	213	207	-	-	M50x1.5	Ø 35 mm	K1 M8	6	M8	M8	07
KK 200 A KA	GG-15	-	285	258	-	-	M63x1.5	Ø 45 mm	K1 M10	6	M10	M10	07
KK 200 B KA	GG-15	-	330	270	200	-	M63x1.5	Ø 45 mm	K1 M10	6	M10	LK	03
KK 400 A KA	GG-15	-	315	306	-	-	M63x1.5	Ø 45 mm	KM 12	6	M12	M10	07
VIK version													
KA 05-13	Alu	-	104	112	-	-	M20x1.5	Ø 13 mm	K1M4	6	M4	M4	
KA 05-13	Alu	-	104	112	-	-	M25x1.5	Ø 17 mm	K1M4	6	M4	M4	
KA 05-13	Alu	-	104	112	-	-	M32x1.5	Ø 21 mm	K1M4	6	M4	M4	
KK 25 AV Ex e II	GG-15	-	143	134	-	-	M32x1.5	Ø 21 mm	KL 155	6	M5	M6	07
KK 63 AV Ex e II	GG-15	-	184	172	-	-	M40x1.5	Ø 28 mm	KL 155	6	M5	M6	07
KK 100/63 AV Ex e II	GG-15	-	223	214	-	-	M40x1.5	Ø 28 mm	KM 8/6	6	M6	M6	08
KK 100/63 AV Ex e II	GG-15	-	223	214	-	-	M50x1.5	Ø 35 mm	KM 8/6	6	M6	M6	08
KK 200 A-SB Ex e II	GG-15	-	335	270	200	-	M50x1.5	Ø 35 mm	KM 10/8	6	LK	LK	09
KK 200 A-SB Ex e II	GG-15	-	335	270	200	-	M63x1.5	Ø 45 mm	KM 10/8	6	LK	LK	09
KK 400 A-SB Ex e II	GG-15	-	415	340	265	-	M63x1.5	Ø 45 mm	KM 16/12	6	LK	LK	09
KK 630 A Ex e II	GG-15	horizontal	496	390	301	140	M75x1.5	Ø 45 mm	KLP 630-20	6	LK	LK	10G
KK 630 A Ex e II	GG-15	sloping	496	390	301	140	M75x1.5	Ø 45 mm	KLP 630-20	6	LK	LK	10S
KK 1000 A Ex e II	GG-15	horizontal	615	474	385	200	M80x1.5	Ø 68 mm	KLSO 1000	6	StS	LK	11G
KK 1000 A Ex e II	GG-15	sloping	615	474	385	200	M80x1.5	Ø 68 mm	KLSO 1000	6	StS	LK	11S

StS… contact rail
LK… strap terminal

Terminal boxes

Standard version, sealed cable glands, power station design

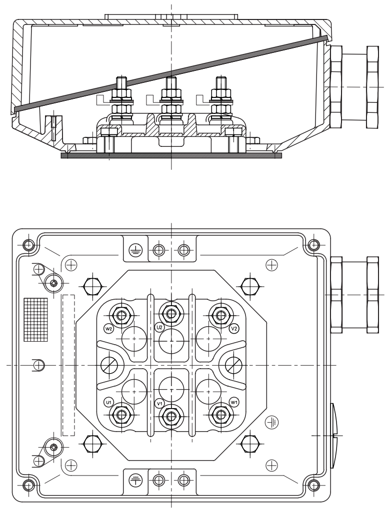


Fig. 01

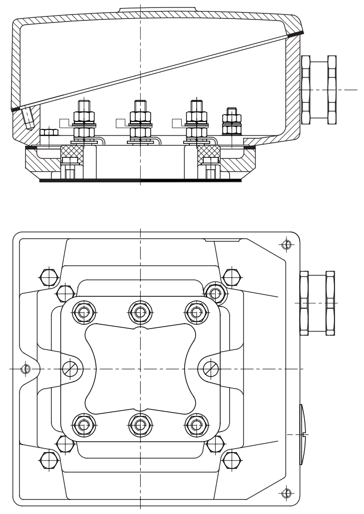


Fig. 02

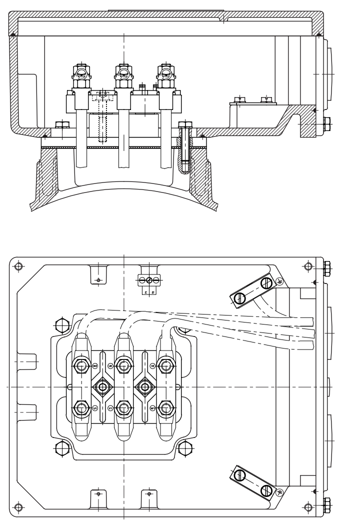


Fig. 03

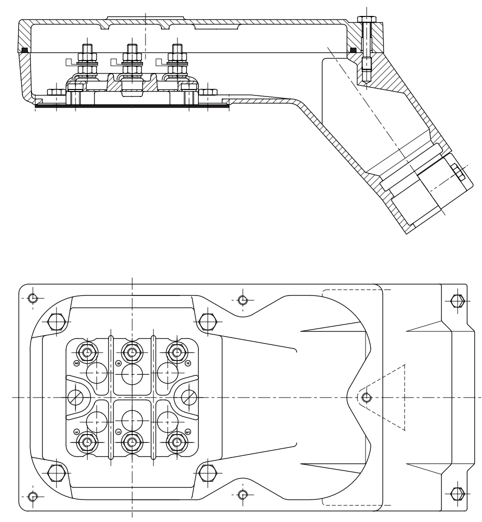


Fig. 06

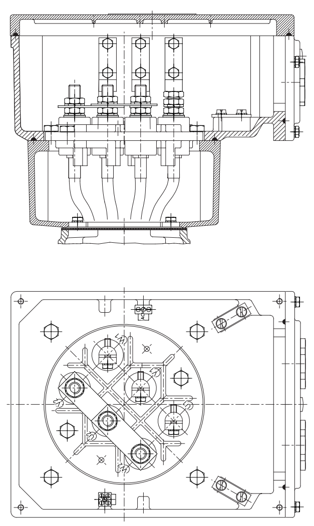


Fig. 04G

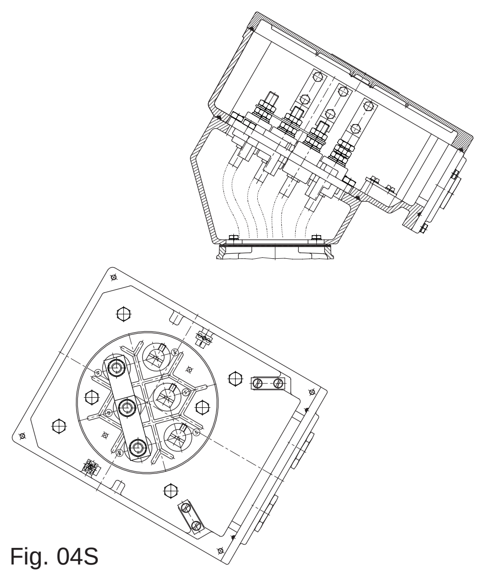


Fig. 04S

Terminal boxes

Standard version, power station design

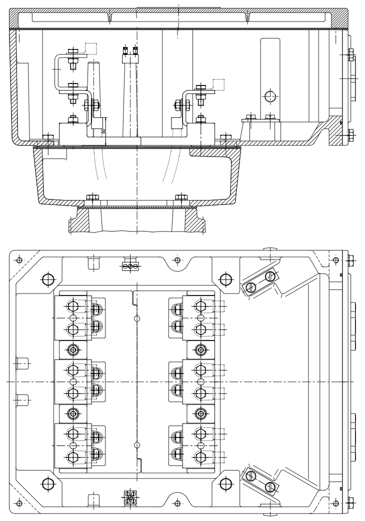


Fig. 05G

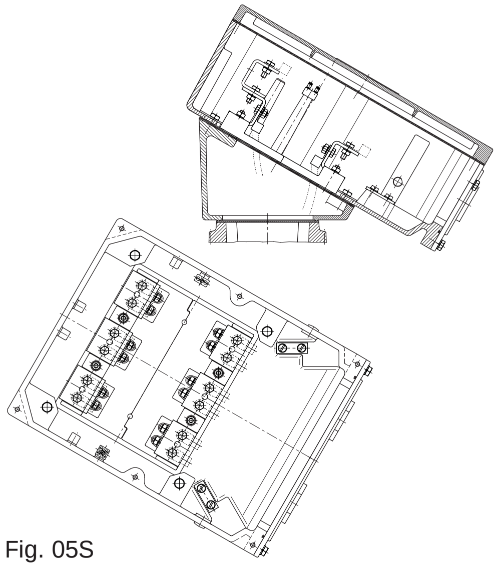


Fig. 05S

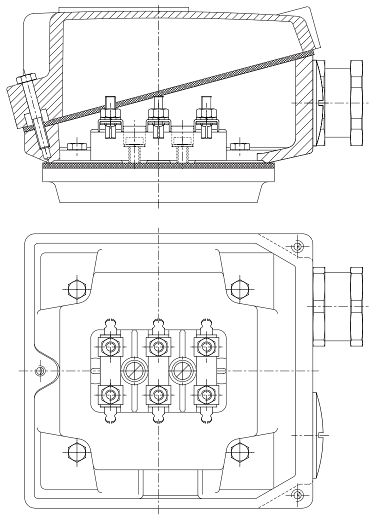


Fig. 07

Terminal boxes

VIK version

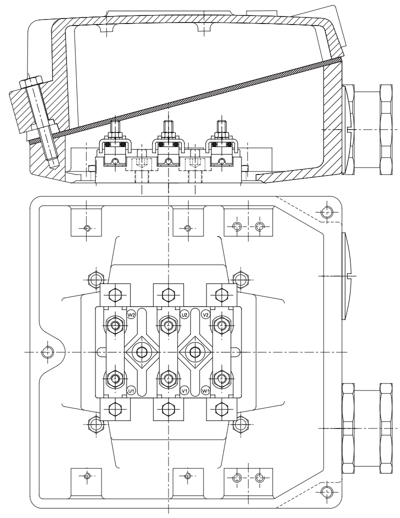


Fig. 08

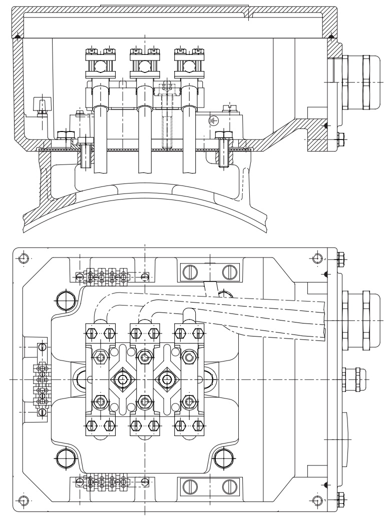


Fig. 09

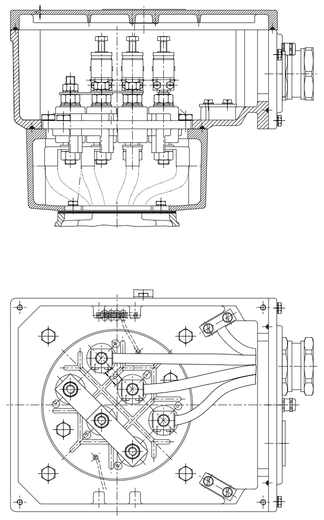


Fig. 10G

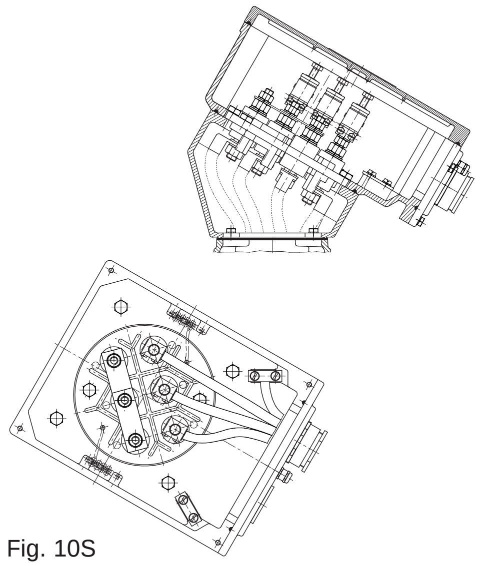


Fig. 10S

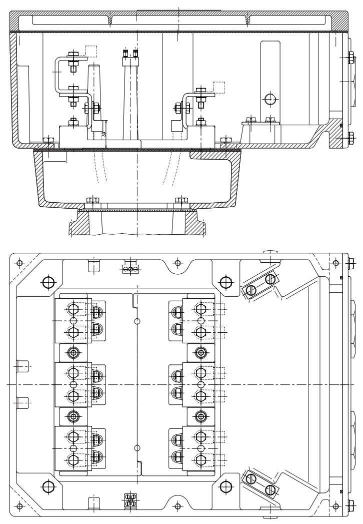


Fig. 11G

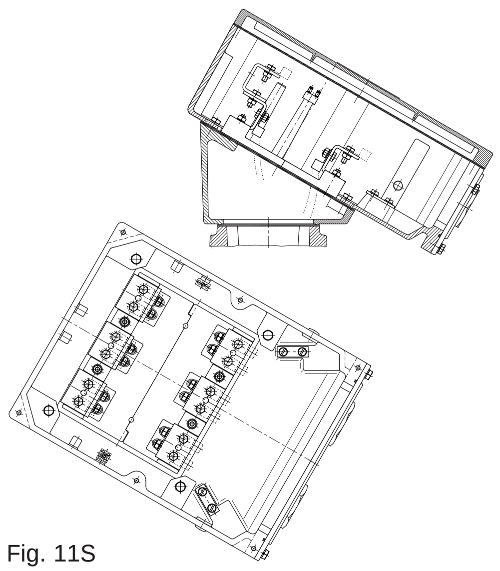
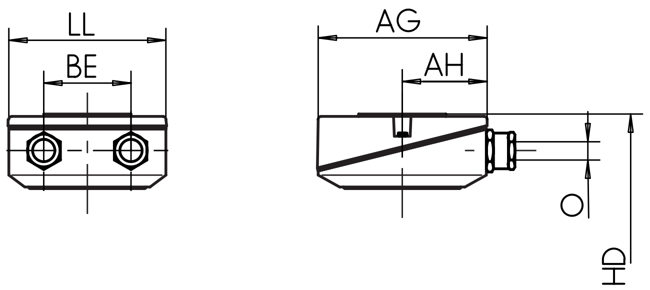


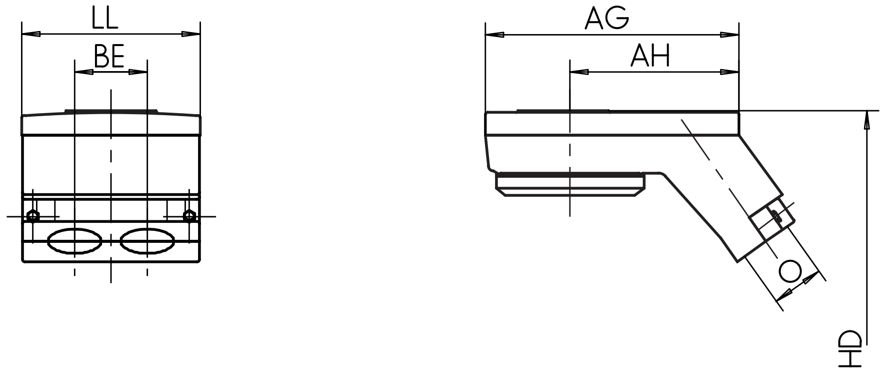
Fig. 11S

Terminal boxes

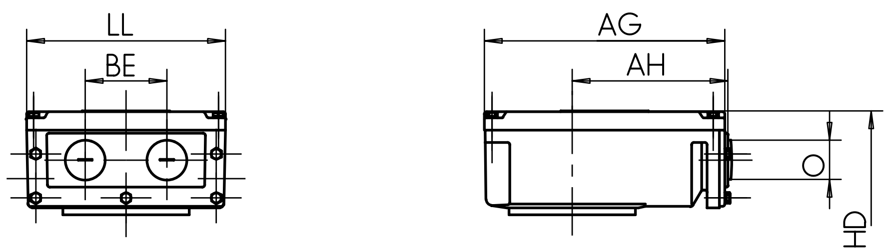
Dimensioning



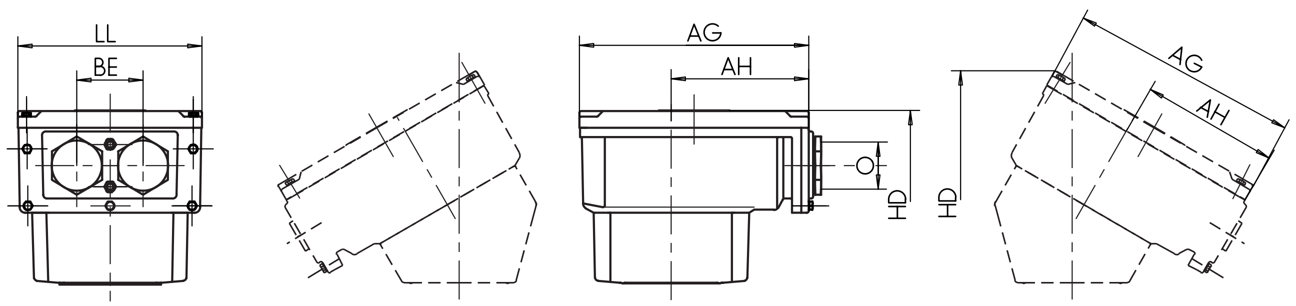
Standard connection box for screwed cable gland



Standard connection box with sealed cable gland



Standard connection box with cable entry plate



Standard connection box with straight or inclined intermediate flange

Modifications summary

Price-code	IEC/DIN Series KPE./K11./K21./B21./WE1./KU1./A21.	56	63	71	80	90	100	100LX, 112	132T	132	160	180	200	225	250	280	315S-MX	315MY	315L, LX	355MY-MX	355LY, L
	Transnorm Series KP./K10./K20./B20./WE0./KU0./A20.	-	56	63	71	80	90	100		112	132	160	180	200	225	250	280	315S-MX	315L, LX	-	-
	Electrical / winding monitoring																				
101	Other voltage and/or frequency/special winding	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
102	Multi-voltage type (12 terminals)	A	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
335	Multi-voltage type 1:2 (9 terminals)	-	X	X	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-
103	1 x PT100 (winding protection) four-wire circuit	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
130	1 x PT100 (winding protection) two-wire circuit	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
379	1 x PT100 (winding protection) two-wire circuit for inverter supply > 420 V (KU, KV, BM)	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
391	3 x PT100 (winding protection) four-wire circuit	A	A	A	A	A	A	A	A	X	X	X	X	X	X	X	X	X	X	X	X
392	3 x PT100 (winding protection) two-wire circuit	A	A	A	A	A	A	A	A	X	X	X	X	X	X	X	X	X	X	X	X
393	3 x PT100 (winding protection) two-wire circuit for inverter supply > 420 V (KU, KV, BM)	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
105	Y/Δ start for one speed (9 terminals)	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
106	Y/Δ start for two speeds (12 terminals)	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
128	3 PTC resistors	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
371	3 PTC resistors for inverter supply > 420 V (KU, KV, BM)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
129	6 PTC resistors	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
372	6 PTC resistors for inverter supply > 420 V (KU, KV, BM)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
87	Temperature sensor KTY 84-130 (1 pc.)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
377	Temperature sensor KTY 84-130 (1 pc.) for inverter supply > 420 V (KU, KV, BM)	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
131	3 Microtherm switches	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
378	3 Microtherm switches for inverter supply > 420 V (KU, KV, BM)	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
388	6 Microtherm switches	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
389	6 Microtherm switches for inverter supply > 420 V (KU, KV, BM)	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
139	Anti-condensation heating / heating tape (110 V or 220 V, 50 Hz)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
336	Anti-condensations heating EEX 2G/2D (110 V/220 V)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
171	Insulation class H (cold) (used acc. to F)	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
185	Insulation class H (hot), insulation class H	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
261	Insulation for voltages 1000 V (mains operation)	-	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	A	A	A	A
366	Special insulation for voltages 690 V	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
293	Insulation class F/B special sheet steel	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
164	Version as a generator	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
363	Auxiliary traction motor for inverter operation (BMU)	X	X	X	X	X	X	X	A	X	X	X	X	X	X	X	X	X	X	X	X
77	Auxiliary traction motor (BM) (incl. TII and vibration-resistant design)	X	X	X	X	X	X	X	A	X	X	X	X	X	X	X	X	X	X	X	X
	Connection system / cable entry																				
97	Terminal box, side-mounted (right, left)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Terminal box, inclined type	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	O	O
98	Terminal box, turned (entry D-side/N-side/left)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	A	A
156	Terminal lead length greater than 1,000 mm (for 6 conductors each, for each 500 mm started) (for built-in motors only)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-
158	Without terminal box, with cover plate (without cable price)	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
159	Without terminal box, with cover box (without cable price)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-
337	Without terminal box, with cover box/flat connections up to 1 m cable	X	X	X	X	X	X	X	X	-	-	-	-		-	-	-	-	-	-	-
187	Next bigger terminal box	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-
188	Additional terminal box (without accessories)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
196	Terminal box for auxiliary connections	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
279	Terminal box grey cast-iron 25/63 A	X	X	X	X	X	X	X	X	X	X	X	X		-	-	-	-	-	-	-
289	VIK terminal box	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
302	1,000 A terminal box 1)	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	X	X	X	-
310	630 A terminal box 2)	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	X	X	X	-
168	Housing, turned in longitudinal direction	K	K	K	K	K	K	K	K	X	X	X	X	X	X	X	X	X	X	X	X
357	Terminal box, N-side	X	X	X	X	X	X	X	X	K	K	K	K		K	K	K	K	K	K	K
	Degrees of protection / Standards and regulations																				
144	VEM power station design according to EW-N 8269 (KA)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
314	VIK version	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
374	Type of protection IP 54	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
125	Type of protection IP 56	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
85	Type of protection IP 57 S	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
170	Type of protection IP 65	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
169	Type of protection IP 66	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
304	Zone 21 EX II 2D IP 65	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	-	-
305	Zone 22 EX II 3D IP 55	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
137	Marine version IP 55	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
138	Marine version IP 56	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
307	Special marine version acc. to EWN 8278 (mechanical)	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
361	Vertical design (in case of ship application)	-	-	-	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X
189	Non-sparking version (EEx nA)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
382	Combined approval for USA, Canada (c UL us)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-
387	Approval for USA (UL)	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	X	X
192	CSA version	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	-	-
194	NEMA version (electrically)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
353	Version for harbour cranes according to EW-N 8233	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	A	A	A

Modifications summary

Price-code	IEC/DIN Series KPE./K11./K21./B21./WE1./KU1./A21.	56	63	71	80	90	100	100LX, 112	132T	132	160	180	200	225	250	280	315S-MX	315MY	315L, LX	355MY-MX	355LY, L
	Transnorm Series KP./K10./K20./B20./WE0./KU0./A20.	-	56	63	71	80	90	100		112	132	160	180	200	225	250	280	315S-MX	315L, LX	-	-
	Types of mounting																				
110	Without centring flange	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	A	A
375	Deviating flange according to catalogue	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
111	Version with welded feet (steel feet), types of construction IM B6, IM B7, IM B8, IM V5 [4], IM V6 [4]	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X	-	-	-	-	-
369	Version in vertical construction with Q bearings (required as of 315 MY)	-	-	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X
112	IM B35, IM V15 [4], IM V36	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
339	IM B35 K	-	X	X	X	X	X	X	-	-	-	-	-		-	-	-	-	-	-	-
113	IM B34	X	X	X	X	X	X	X	X	X	A	A	A		A	A	A	A	A	A	A
114	IM B5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	K	K	K
362	IM V3 [4]	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	A	A	A
356	IM V1 [4]	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
117	Canopy for fan cover	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
338	IM B5 K	-	X	X	X	X	X	X	-	-	-	-	-		-	-	-	-	-	-	-
115	IM B14, IM V18, IM V19	X	X	X	X	X	X	X	X	X	X	X	A		A	A	A	A	A	A	A
142	IM 2202 (IM B17, 2nd shaft end included)	-	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	-	-	-	-
352	Type B5 / furnace flange (standard size) / aluminium fan	-	-	X	X	X	X	X	X	-	-	-	-		-	-	-	-	-	-	-
288	PAD-mounted 8 foot holes under 45 deg	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	-	-
	Mechanical versions																				
107	Special shaft (shorter, thicker and thinner, 2nd shaft end included)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
108	Special shaft, 1 tapered shaft end	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
109	High-resistance rotor (Si 10)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
116	Aluminium fan	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
190	Grey cast-iron fan	-	-	-	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	-	-
195	Multi-wing fan (low noise version)	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	-	-
330	Plastic fan cover	X	X	X	X	X	X	X	X	X	K	K	K		K	K	K	K	K	K	K
333	Protective cover for encoder	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
383	Vibration intensity B	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
165	Balancing against zero	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
166	High-speed version (HS)	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
376	Balancing with full key	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
143	Non-ventilated version (K21R/K11R-O)	X	X	X	X	X	X	X	X	X	X	X	X	X	o	o	o	o	o	o	o
146	External earthing terminal on housing	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-
161	Dredger version (incl. TII, vibration-resistant)	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
162	Version for the textile industry	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-
163	Vibration-resistant version	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-
177	Flange accuracy R according to DIN 42955	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
199	Condensate drain plug	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
201	Condensate drain holes with felt plug (2 pieces)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
280	Additional foot holes at the top of the housing	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	-	-
285	Screen cut out from fan cover	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-
294	Housing with load bracket thread (2 pieces)	-	-	-	-	-	-	-	-	-	-	-	-		-	X	N	N	N	N	N
322	Special fan F/B	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	-
331	Foot contact face, milled	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	-
411	Housing with ring nut (lifting eye bolt)	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	-	-	-	-	-
386	Memory version	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
	Corrosion protection/painting																				
133	Special colour shades	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
135	Paint system 02 "World wide" (open air, humid interior)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
354	Paint system 04 (sea/seaport climate)	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
368	Paint system 06 (heat, humidity, open air)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
134	Paint system 07 (chemicals, heat, humidity, decontaminating capability)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
311	Paint system 09 "Offshore" (UV-resistant)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
136	Protection against elevated climatic requirements (TII)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
412	Climate-resistant rotor	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
173	Layer thicknesses increased by 30 µm each	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
200	Stainless steel external bolts	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
286	Fan cover sprayed with anticorrosion agent	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
287	Fan sprayed with epoxy resin varnish	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
351	Paint system acc. to special-drawing	X	X	X	X	X	X	X	X	-	-	-	-		-	-	-	-	-	-	-
315	Zinc-plated fan cover	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Attachments																				
96	Centric attachment of encoder (bell/intermediate flange, shaft end, coupling) (K21F, K21O)	A	A	A	A	A	A	A	A	X	X	X	X	X	X	X	X	X	X	X	X
99	Centric attachment by means of a flange end shield, N-side (IM 2202)	A	A	A	A	A	A	A	A	X	X	X	X	X	X	X	X	K	K	K	K
367	Centric attachment by means of combined mount	K	K	K	K	K	K	K	K	K	K	K	K		K	K	K	X	X	X	X
100	Attachment of tachometer and incremental encoder (put-on version)	A	A	A	A	A	A	A	A	X	X	X	X	X	X	X	X	X	X	X	X
150	Attachment of backstop (without lock)	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
358	Brake attachment	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X

Modifications summary

Price-code	IEC/DIN Series KPE./K11./K21./B21./WE1./KU1./A21.	56	63	71	80	90	100	100LX, 112	132T	132	160	180	200	225	250	280	315S-MX	315MY	315L, LX	355MY-MX	355LY, L
	Transnorm Series KP./K10./K20./B20./WE0./KU0./A20.	-	56	63	71	80	90	100		112	132	160	180	200	225	250	280	315S-MX	315L, LX	-	-
	Bearing arrangement																				
95	Oil-tight design (radial shaft sealing ring, N-side fixed bearing)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	A	A
118	Radial sealing ring, D-side (incl. N-side fixed bearing)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
119	Fixed bearing D-side	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
390	Fixed bearing, D-side, backlash-free	-	-	-	-	-	-	-	-	X	X	X	X	X	A	A	A	A	A	A	A
120	Fixed bearing N-side	X	X	X	X	X	X	X	X	X	X	X	N		N	N	N	N	N	N	N
121	Angular contact bearing D-side	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
122	Elevated transverse forces, D-side (incl. of fixed bearing, N-side)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
415	Insulated roller bearing	-	-	-	-	-	-	-	-	-	-	-	-		-	-	X	X	X	X	X
340	Reinforced bearing, D-side (inclusive of fixed bearing series 42..)	-	-	X	X	X	X	X	X	-	-	-	-		-	-	-	-	-	-	-
332	Labyrinth seal	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
342	Bearing sealing with combined seal, D-side	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	A	A
151	Bearing control with a temperature sensor for each bearing point (D-side/N-side) (without additional terminal box)			-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
153	Bearing control with PT100 (2 conductors) for each bearing point	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
154	Bearing control with PT100 (4 conductors) for each bearing point	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
193	Relubricating device	K	K	K	K	K	K	K	K	X	X	X	X	X	X	X	X	N	N	N	N
262	Insulated bearing, N-side	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
413	Insulated bearing, D-side									X	X	X	X	X	X	X	X	X	X	X	X
278	Flat lubricating nipple, stainless steel (for both sides)	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
394	Tapered lubricating nipple (for both sides)	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
321	Tapered lubricating nipple of stainless steel (for both sides)	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
283	SPM solid sensor with accessories (per bearing arrangement)	-	-	-	-	-	-	-	-	-	-	-	-		-	X	X	X	X	X	X
284	SPM prepared without nipple	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
152	SPM bearing control (with nipple) (2 pieces)	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
306	Bearing seal with radial shaft sealing ring 9RB	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
323	Double bearing seal, D-side (2 radial shaft sealing rings & grease compartment) [7]	-	-	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	X
364	Axial shaft sealing-ring	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
365	Gamma ring	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	N	N	K	K
127	Special grease	X	X	X	X	X	X	X	X	A	A	A	A	A	A	A	A	A	A	A	A
	Miscellaneous																				
147	2nd rating plate, loose	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
148	Customer's rating plate	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
414	Position plate	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
149	Stainless steel rating plate	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
253	Silicon-free design	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
410	Handling costs for items supplied by customer	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

N… standard version
X… special version at extra charge
O… without extra charge
K… not available
\- not applicable

1) K22. 355 MX2, 4 is standard version
2) K22. 355 MY, M und MX6, 8 is standard version
3) Thurm product range suitable for inverter application
4) additionally Q-bearing for IM V15, IM V3, IM V1, IM V5, IM V6 (from size 315 MY necessary)
5) only available for 200 LX2
6) relubrication device D-end not possible due to design version K21. 132 S, SX, M6, 8 und K21. 160M, MX8
7) not possible with relubrication device
8) relubrication device from size K21. 315 MX is included in standard version

Explanations of Modifications

Code	Modification	Description
Electrical/Winding control		
101	Other voltage and/or frequency/special winding	Version for voltages or frequencies other than specified by IEC/DIN or for special windings according to customer's request
102	Multi-voltage type (12 terminals)	Version for a multi-voltage motor in the ratio 1:2 with ΔΔ/Δ circuit
335	Multi-voltage type 1:2 (9 terminals)	Version for a multi-voltage motor in the ratio 1:2 with YY/Y circuit
103	1 x PT100 (winding protection) four-wire circuit	One temperature sensor PT100 of four-wire circuit type in the winding head of the drive side for the protection of the winding
130	1 x PT100 (winding protection) two-wire circuit	One temperature sensor PT100 of two-wire circuit type in the winding head of the drive side for the protection of the winding
379	1 x PT100 (winding protection) two-wire circuit for inverter supply > 420 V (KU, KV, BM)	One temperature sensor PT100 of two-wire circuit type in the winding head of the drive side for the protection of the winding, suitable for inverter operation at voltages > 420 V
391	3 x PT100 (winding protection) four-wire circuit	Three temperature sensors PT100 of four-wire circuit type in each phase for the protection of the winding
392	3 x PT100 (winding protection) two-wire circuit	Three temperature sensors PT100 of two-wire circuit type in each phase for the protection of the winding
393	3 x PT100 (winding protection) two-wire circuit for inverter supply > 420 V (KU, KV, BM)	Three temperature sensors PT100 of two-wire circuit type in each phase for the protection of the winding, suitable for inverter operation at voltages > 420 V
105	Y/Δ start for one speed (9 terminals)	Modification for pole-changing motors with two windings
106	Y/Δ start for two speeds (12 terminals)	Modification for pole-changing motors with two windings
128	3 PTC resistors	3 PTC resistor temperature sensors (PTC positive temperature coefficient), temperature-dependent semiconductor resistors with positive temperature coefficient, 1 sensor installed in each phase
371	3 PTC resistors for inverter supply > 420 V (KU, KV, BM)	as above, but special version for elevated voltage load in inverter mode of operation
129	6 PTC resistors	6 PTC resistor temperature sensors, temperature-dependent semiconductor resistors with positive temperature coefficient, 1 sensor installed in each phase on either side of the motor
372	6 PTC resistors for inverter supply > 420 V (KU, KV, BM)	as above, but special version for elevated voltage load in inverter mode of operation
87	Temperature sensor KTY 84-130 (1 pc.)	One temperature sensor on semiconductor base in the winding head of the drive side for the protection of the winding
377	Temperature sensor KTY 84-130 (1 pc.) for inverter supply > 420 V (KU, KV, BM)	One temperature sensor on semiconductor base in the winding head of the drive side for the protection of the winding, suitable for elevated voltage load in inverter mode of operation
131	3 Microtherm switches	Triple set of Microtherm switches in the winding head of the drive side for the protection of the winding
378	3 Microtherm switches for inverter supply > 420 V (KU, KV, BM)	Triple set of Microtherm switches in the winding head of the drive side for the protection of the winding, suitable for elevated voltage load in inverter mode of operation
388	6 Microtherm switches	Two triple sets of Microtherm switches in the winding head of the drive side for the protection of the winding
389	6 Microtherm switches for inverter supply > 420 V (KU, KV, BM)	Two triple sets of Microtherm switches in the winding head of the drive side for the protection of the winding, suitable for elevated voltage load in inverter mode of operation
139	Anti-condensation heating/heating tape (110 V or 220 V, 50 Hz)	Version with anti-condensation heating or a heating tape for standard applications
336	Anti-condensations heating EEX 2G/2D (110V/220V)	Version with anti-condensation heating or a heating tape for explosion-proof motors
171	Thermal class 180 [H/F] (cold) (used acc. to F)	Version in thermal class [th. cl.] 180 with an insulation that is utilized with th. cl. 155 at maximum
185	Thermal class 180 [H] (hot)	Version in thermal class H according to F with an insulation optimized for operation at elevated temperatures
261	Insulation for voltages 1000 V (mains operation)	Version for a motor operation at mains voltages > 725 V to 1,000 V
366	Special insulation for voltages 690 V	Version for inverter operation up to 690 V, named KV-design with a special insulation system
293	Special sheet steel	Version with a special electric sheet for ensuring a low power loss
164	Version as a generator	Version for generator operation with a winding specially modified to work with this mode of operation
363	Auxiliary traction motor for inverter operation (BMU)	Version for application as auxiliary traction motor (see below) for inverter operation
77	Auxiliary traction motor (BM) (incorporates TII and vibration-resistant design)	Version for application as auxiliary traction motor with the modifications TII and vibration-resistant design and with special terminal leads and two-fold impregnation of the winding

Explanations of Modifications

Code	Modification	Description
Connection system / Cable entry		
97	Terminal box, side-mounted (right, left) Terminal box, inclined type	Version with terminal box mounted on side of motor, either right or left
98	Terminal box, turned (entry D-side/N-side/left)	Version with terminal box mounted on top of the motor housing but turned relative to the shaft axis
156	Terminal lead length greater than 1,000 mm (for 6 conductors each, for each 500 mm started) (for built-in motors only)	Allowance for terminal lead cable lengths exceeding 1,000 mm or, in the case of versions with six conductors, for each 500 mm started; applies to built-in motors only
158	Without terminal box, with cover plate	Version of motor without terminal box but with a cover plate instead; the cable price is charged separately
159	Without terminal box, with cover box	Version of motor without terminal box but with a cover box instead; the cable price is charged separately
337	Without terminal box, with cover box/flat connections up to 1 m cable	Version of motor without terminal box but with a cover box instead and additional flat connections for the cables; the cable price is charged separately
187	Next bigger terminal box	Version in which a terminal box bigger by one stage is used on customer's request
188	Additional terminal box (without accessories)	Additional terminal box which is however supplied without any accessories
196	Terminal box for auxiliary connections	Additional terminal box in which the auxiliary connections are accommodated
279	Terminal box grey cast-iron 25/63 A	Terminal box of grey cast iron with a standard connection face but larger cable cross sections, suitable for 25 A or 63 A
289	VIK terminal box	Terminal box complying with the requirements of the VIK Recommendation 1, Three-phase Asynchronous Motors, Technical Requirements, 04/2005
302	1,000 A terminal box	Terminal box whose terminal board is suitable for a 1,000 A connection (busbars)
310	630 A terminal box	Terminal box whose terminal board is suitable for a 630 A connection
168	Housing, turned in longitudinal direction	Y version, connections are located on fan side
357	Terminal box, N-side	Terminal box on N-end plate

Code	Modification	Description
Types of protection / standards and regulations		
144	VEM power station design according to EW-N 8269 (KA)	Version with flexible terminal leads, climate-resistant rotor, terminal box dimensions according to VIK specifications, metallic cable glands and paint finish 02
314	VIK version	Version according to VIK Recommendation 1, Three-phase Asynchronous Motors, Technical Requirements, 04/2005
374	Type of protection IP 54	Type of protection according to DIN EN 60034-5: IP5x dust-protected, IPx4 splash water
125	Type of protection IP 56	Type of protection according to DIN EN 60034-5: IP5x dust-protected, IPx6 heavy jet-water
85	Type of protection IP 57 S	Type of protection according to DIN EN 60034-5: IP5x dust-protected, IPx7 S temporarily submerged at standstill
170	Type of protection IP 65	Type of protection according to DIN EN 60034-5: IP6x dust-protected, IPx5 jet-water
169	Type of protection IP 66	Type of protection according to DIN EN 60034-5: IP6x dust-protected, IPx6 heavy jet-water
304	Zone 21, Ex II 2D tD A21 IP65 T …°C (previously EX II 2D IP 65)	Zone 21 according to EN 61241-0:2006 and DIN EN 61241-1 (VDE 0170-15-1):2004
305	Zone 22, Ex II 3D tD A22 IP55 T …°C (previously EX II 3D IP 55)	Zone 22 according to EN 61241-0:2006 and DIN EN 61241-1 (VDE 0170-15-1):2004
137	Marine version IP 55	Marine version for below-deck operation, type of protection IP 55, according to Classification Society …
138	Marine version IP 56	Marine version for on-deck operation, type of protection IP 56, according to Classification Society …
307	Special marine version according to EW-N 8278 (mechanical)	Marine version according to factory standard without direct reference to a classification
361	Vertical design (in case of ship application)	Special bearing concept with Q bearings in vertical types used in marine applications
189	Non-Sparking version (Ex nA)	Version for use in explosive gas atmosphere according to EN 60079-15
382	Combined approval for USA, Canada (c UL us)	Version meeting both the US regulations (UL 1004) and the Canadian regulations (CSA C22.2.100)
387	Approval for the USA (UL)	Version meeting the US regulations (UL 1004)
192	CSA version	Version meeting the Canadian regulations (CSA C22.2.100)
194	NEMA version (electrical)	Version which meets the US regulations (NEMA-MG 1) with respect to the electrical properties
353	Version for harbour cranes according to EW-N 8233	Version according to EW-N 8233 with brake, cable entry on the right, welded fan hood, climate-resistant rotor, special terminal board, two-fold impregnation (Joule heat and vacuum), paint system 04

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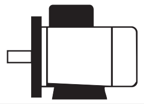
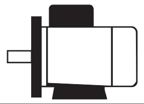
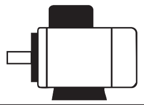
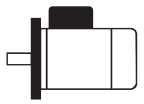
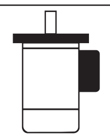
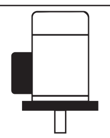
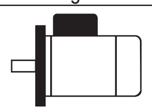
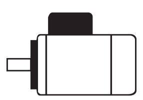
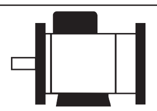
Explanations of Modifications

Code	Modification	Description
Types		
110	Without centring flange	Centring flange according to DIN EN 50347 not provided
375	Deviating flange according to catalogue	Flange layout deviating from catalogue and DIN EN 50347
111	Version with welded feet (steel feet)	Steel feet used instead of grey cast iron for the types IM B6, IM B7, IM B8, IM V5, IM V6
369	Version in vertical construction with Q bearings (required as of 315 MY)	Special bearings for taking up large axial forces; alternatively, a double bearing with two angular ball bearings may be used
112	IM B35, IM V15, IM V36	 Foot/flange design according to Code I, DIN EN 60034-7, flange with through-holes [FF]
339	IM B 35K	 Foot/flange design according to Code I, DIN EN 60034-7, smaller FF flange deviating from DIN EN 50347
113	IM B34	 Foot/flange design according to Code I, DIN EN 60034-7, flange with threaded holes [FT]
114	IM B5	 Flange design according to Code I, DIN EN 60034-7, flange with through-holes [FF]
362	IM V3	 Flange design according to Code I, DIN EN 60034-7, flange with through-holes [FF], shaft pointing up
356	IM V1	 Flange design according to Code I, DIN EN 60034-7, flange with through-holes [FF], shaft pointing down
117	Canopy for fan cover	Version designed to prevent that foreign objects fall into the fan of vertically mounted motors. The fan cover is provided with a protective roof larger in size than the circumscribed circle of the air inlet openings.
338	IM B5 K	 Flange design according to Code I, DIN EN 60034-7, smaller FF flange deviating from DIN EN 50347
115	IM B14, IM V18, IM V19	 Flange design according to Code I, DIN EN 60034-7, flange with threaded hole [FT]
142	IM 2202 (IM B17, 2nd shaft end included)	 Flange on D- and N-sides of motor, N-side flange designed as cast iron fan cover
352	Type B5/furnace flange (standard size)/aluminium fan	Special flange for furnace ventilation with integrated cooling wheel
288	PAD-mounted 8 foot holes under 45 deg	Motor without feet, mounted with threaded rods, threaded holes under 45 deg
Mechanical versions		
107	Special shaft	Shorter, thicker or thinner shaft, deviating from catalogue, inclusive of 2nd shaft end
108	Special shaft, 1 tapered shaft end	Special shaft with tapered shaft end, taper 1:10
109	High-resistance rotor (Si 10)	High-resistance rotor
116	Aluminium fan	Special fan of light metal casting construction (EN AC-AlSiCu1Mg according to DIN EN 1706, material number EN AC 45300)
190	Grey cast iron fan	Special fan of grey cast iron construction (EN GJL-200 according to DIN EN 1561)
195	Multi-wing fan (low-noise version)	Special unidirectional low-noise fan
330	Plastic fan cover	Fan cover made of PC moulding compound, MR-09 B5 according to DIN 7744
333	Protective cover for encoder	Cover hood for protecting the incremental transmitter
383	Vibration intensity B	Version with reduced vibration velocity acc. to EN 60034-14
165	Balancing against zero	Precision balance according to EW-N 8204 with very low vibration velocity

Explanations of Modifications

Code	Modification	Description
166	High-speed version (HS)	Version for motors intended for the use at speeds higher than those resulting from the frequencies 50/60 Hz (such as by inverter supply) and are therefore specially balanced
376	Balancing with full key	Version in which a balancing operation is carried out with full key instead of half key
143	Non-ventilated version (K21R/K11R-O) (FAN)	Version of the motor without fan
146	External earthing terminal on housing	Version in which an additional external earthing terminal is mounted to the housing
161	Dredger version (incl. TII, vibration-resistant)	Motors are vibration-resistant [see 163] and fitted with dust-protected bearings. Motors are always manufactured in combination with climatic protection TII
162	Version for the textile industry	Version using a special ventilation system which reduces the rate of accumulation of fibrous materials carried along by the cooling air on the motor, and IP55, thermal class F according to B and thermal winding protection
163	Vibration-resistant version	Motors can be used under sinusoidal vibrations for a vibration load up to 4g at a frequency of 20 to 60 Hz. The winding overhang is particularly stabilized according to the anticipated load. The terminal leads are of flexible type and the screwed joints are locked by suitable means
177	Flange accuracy R according to DIN 42955	Version with reduced concentricity and axial eccentricity tolerance R according to DIN 42955
199	Condensate drain plug	Screw plug for closing the condensate drain hole
201	Condensate drain holes with felt plug (2 nos.)	Hole at the lowest point of the housing or end plate (depending on type of motor) for draining the condensate accumulating in the motor interior, closed with a felt plug
280	Additional foot holes at the top of the housing	Foot holes that are additionally provided at the top of the motor housing
285	Screen cut out from fan cover	Version in which the screen was cut out from the fan cover
294	Housing with load bracket thread (2 nos.)	Version with two load bracket threads
322	Special fan F/B	Fan deviating from standard design
331	Foot contact face, milled	Version in which foot contact faces are milled into the housing
411	Housing with ring nut (lifting eye)	Version with a ring nut
386	Memory version	Version with RFID transponder for standard motors of shaft heights 112 to 355

Code	Modification	Description
Corrosion protection/paint coat		
133	Special colour shades	Paint coat according to customer's specification
135	Paint system 02 "World wide" (open air, humid interior)	Two-component EP prime coat and water-base top coat, layer thickness 110 µm
354	Paint system 04 (sea/seaport climate)	Two-component EP ceramic, filled, layer thickness 150 µm
368	Paint system 06 (heat, humidity, open air)	Two-component EP prime coat and top coat, layer thickness 110 µm
134	Paint system 07 (chemicals, heat, humidity, decontaminating capability)	Two layers of two-component EP prime coat, layer thickness 150 µm
311	Paint system 09 "Offshore" (UV-resistant)	Two-component EP zinc dust prime coat, two-component EP intermediate coat (containing micaceous iron ore) and two-component polyurethane top coat, layer thickness 240 µm
136	Protection against elevated climatic requirements (TII)	Version with climate-resistant rotor, clamping bolt and standard parts with surface protective coating, rating plate of high-grade steel, paint system 02
412	Climate-resistant rotor	Rotor with a protective paint coat, suitable for tropical climates
173	Layer thicknesses increased by 30 µm each	Allowance for paint layer thicknesses other than specified by the VEM paint systems
200	Stainless steel external bolts	All external bolts made of stainless steel
286	Fan cover sprayed with anticorrosion agent	Allowance for an additional layer of anticorrosion agent on the fan cover
287	Fan sprayed with epoxy resin varnish	Allowance for coating the fan with epoxy resin varnish
351	Paint system acc. to special-drawing 3135	Paint system based on customer's requests and recorded in special drawing 3135, mostly with plastic prime coat (30 µm) followed by paint coat according to customer's request
315	Zinc-plated fan cover	Allowance for zinc-plated fan cover

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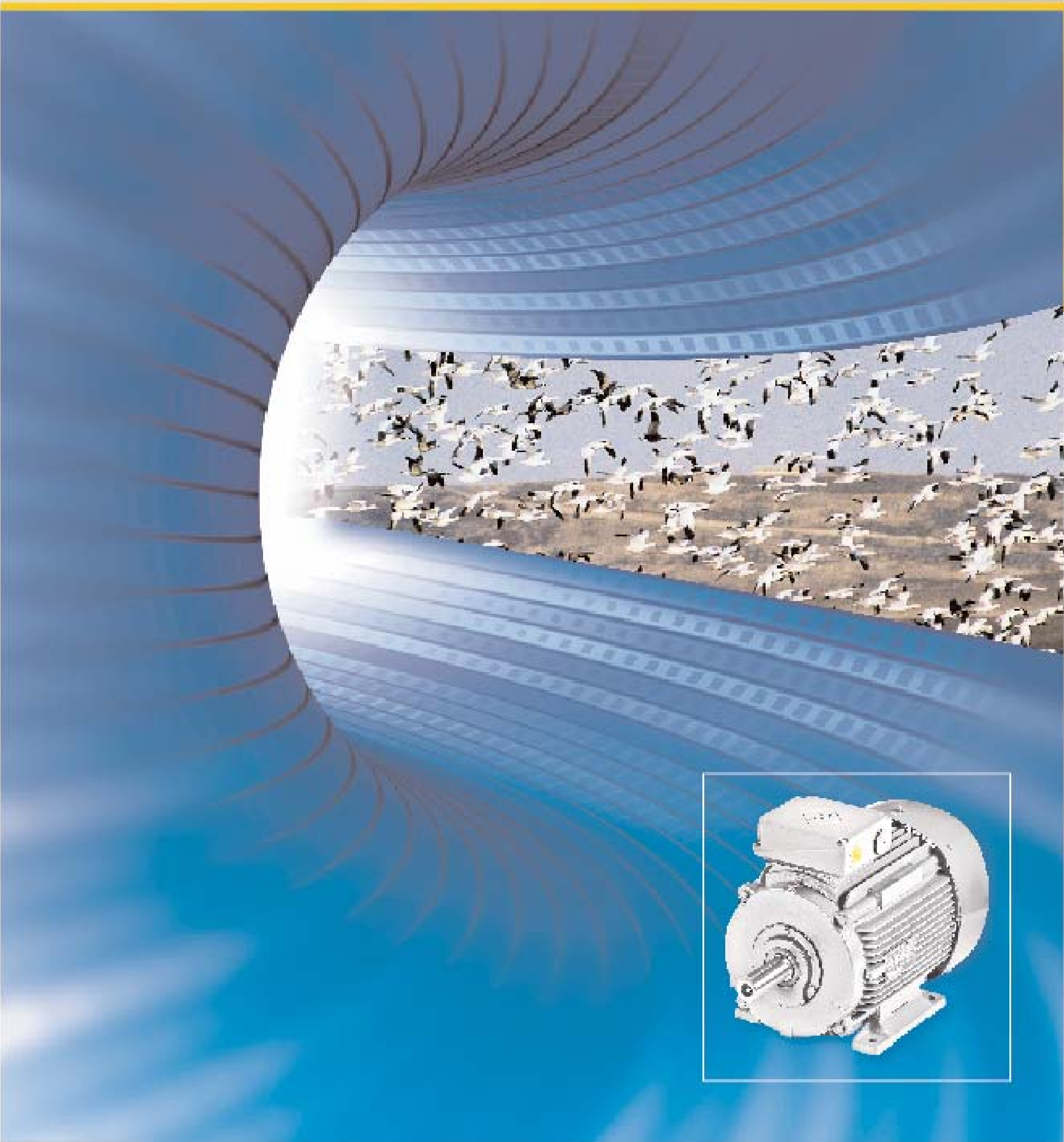
Explanations of Modifications

Code	Modification	Description
Attachments		
96	Centric attachment of encoder (bell/intermediate flange, shaft end, coupling) (K21F, K21O)	Allowance for the centric attachment of an incremental encoder
99	Centric attachment by means of a flange end shield, N-side (IM 2202)	Allowance for the centric attachment of an incremental encoder by means of a flange end shield on the N-side
367	Centric attachment by means of combined mount	Allowance for motors of frame size 315 if an incremental encoder is to be centrically attached
100	Attachment of tachometer and incremental encoder (put-on version)	Allowance for the attachment of tachometer and incremental encoder behind fan cover
150	Attachment of backstop (without lock)	Allowance for the attachment of a backstop
358	Brake attachment	Allowance for the attachment of a motor brake
Bearing arrangement		
95	Oil-tight design (radial shaft sealing ring, N-side fixed bearing)	Allowance for oil-tight design with radial shaft sealing ring and fixed bearing on N-side
118	Radial sealing ring, D-side (incl. N-side fixed bearing)	Allowance for the installation of a radial sealing ring on the D-side, inclusive of a fixed bearing on the N-side
119	Fixed bearing, D-side	Allowance for a fixed bearing on the D-side
390	Fixed bearing, D-side, backlash-free	Allowance for a backlash-free fixed bearing on the D-side
120	Fixed bearing, N-side	Allowance for a fixed bearing on the N-side
121	Angular ball bearing, D-side	Allowance for an angular ball bearing on the D-side
122	Elevated transverse forces, D-side (inclusive of fixed bearing, N-side)	Allowance for a motor design in which elevated transverse forces are taken into account on the D-side, inclusive of a fixed bearing on the N-side
415	Insulated roller bearing	Allowance for the installation of an insulated roller bearing
340	Reinforced bearing, D-side (inclusive of fixed bearing series 42..)	Allowance for a reinforced bearing on the D-side, inclusive of a fixed bearing from series 42..
332	Labyrinth seal	Allowance for the installation of a labyrinth seal
342	Bearing sealing with combined seal, D-side	Allowance for the installation of a combined seal for sealing the bearing on the D-side
151	Bearing control with a temperature sensor for each bearing point (D-side/N-side) (without additional terminal box)	Allowance for the installation of a temperature sensor for bearing control, for one bearing point each, without the use of an additional terminal box
153	Bearing control with PT100 (2 conductors) for each bearing point	Allowance for the installation of a bearing temperature control facility with one PT100 in two-conductor circuit design, for one bearing point each
154	Bearing control with PT 100 (4 conductors) for each bearing point	Allowance for the installation of a bearing temperature control facility with one PT100 in four-conductor circuit design, for one bearing point each
193	Relubricating device	Version with relubricating device
262	Insulated bearing, N-side	Installation of an insulated bearing on the N-side
413	Insulated bearing, D-side	Installation of an insulated bearing on the D-side
278	Flat lubricating nipple, stainless steel (for both sides)	Installation of a flat lubricating nipple on the D- and N-sides
394	Tapered lubricating nipple (for both sides)	Installation of a tapered lubricating nipple on the D- and N-sides
321	Tapered lubricating nipple of stainless steel (for both sides)	Installation of a tapered lubricating nipple of stainless steel on the D- and N-sides
283	SPM solid sensor with accessories (for each bearing point)	Installation of an SPM solid sensor with accessories, for one bearing point each
284	SPM prepared without nipple	Motor is prepared for the installation of an SPM sensor
152	SPM bearing control (with nipple) (2 pieces)	Installation of a bearing control facility with SPM sensor
306	Bearing seal with radial shaft sealing ring 9RB	Allowance for a bearing seal with radial shaft sealing ring 9RB
323	Double bearing seal, D-side (2 radial shaft sealing rings & grease compartment) [7)]	Allowance for a double bearing seal of the D-side with 2 radial shaft sealing rings and grease compartment
364	Axial shaft sealing ring	Allowance for the installation of an axial shaft sealing ring
365	Gamma ring	Allowance for the installation of a gamma ring
127	Special grease	Allowance for the use of a special grease
Miscellaneous		
147	2nd rating plate, loose	Allowance for the delivery of a second rating plate enclosed as loose item
148	Customer's rating plate	Allowance for the generation of a rating plate according to customer's request
414	Position plate	Allowance for the mounting of a position plate
149	Stainless steel rating plate	Allowance for a rating plate made of high-grade steel
253	Silicon-free design	Allowance for a motor design free of silicon
410	Handling costs for items supplied by customer	Allowance for the expenditure incurred by the handling of tools/equipment supplied by the customer

Standard motors

3



Basic version

General technical data

Motor selection data
Rated voltage range A,
50 Hz, 2- up to 24-pole
3000/1500/1000/750/600/500/375/300/250 rpm

Rated voltage range A,
60 Hz, 2- up to 8-pole
3600/1800/1200/900 rpm

Partial load data

Increased output K25R
Rated voltage range A,
50 Hz, 2- up to 8-pole
3000/1500/1000/750 rpm

Rated voltage range B,
50 Hz, 2- up to 8-pole
3000/1500/1000/750 rpm

Rated voltage range B,
60 Hz, 2- up to 8-pole
3600/1800/1200/900 rpm

Pole changing motors for two speeds
1500/3000 rpm, 1000/3000 rpm, 1000/1500 rpm,
750/3000 rpm, 750/1500 rpm, 750/1000 rpm,
500/3000 rpm, 500/1000 rpm

Pole changing motors for three speeds
750/1500/3000 rpm, 750/1000/1500 rpm

Pole changing motors for four speeds
500/750/1000/1500 rpm

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	0.06 kW to 500 kW
Sizes	56 to 355
Material of housing	Grey cast iron
Rated torque	0.25 Nm to 3,400 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
Insulation of stator winding	Thermal class 155, as option 155 [F(B)], 180 acc. to EN 60034-1 (IEC 60034-1)
Type of protection	IP 55 acc. to EN 60034-5 (IEC 60034-5), as option IP 56 and higher
Type of cooling	IC 411 acc. to EN 60034-6 (IEC 60034-6)
Coolant temperature/ altitude of site	as standard -20 °C up to +40 °C, altitude of site 1000 m above sea level
Rated voltage	Rated voltage ranges A and B acc. to EN 60034-1 (IEC 60034-1), standard voltage acc. to EN 60038 50 Hz, 230 V, 400 V, 500 V and 690 V 60 Hz, 275 V, 480 V and 600 V
Types of construction	IM B3, IM B35, IM B5 and derived types of construction acc. to EN 60034-7
Colour system	Standard colour system "moderate", colour shade RAL 7031, blue-grey, 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	Acc. to DIN 748 (IEC 60072), balancing "with half key"
Sound pressure level	Acc. to DIN EN ISO 1680, tolerance +3dB, data see catalogue part Technical explanations.
Limit speeds	Please refer to paragraph about limit speeds in the catalogue part Technical explanations.
Bearing design	Please refer to paragraph about bearings in the catalogue part Technical explanations.
Motor weights	Please refer to the technical selection lists.
Terminal boxes	Please refer to paragraph about terminal boxes in the catalogue part Technical explanations.
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 catalogue part Technical explanations.
Options	Please refer to paragraph about modifications in the catalogue part Technical explanations.

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Three-phase motors with squirrel-cage rotor

with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design point 400 V, 50 Hz

Type		P_B	M_B	n_B	EFF-	$\eta_{4/4B}$	$\eta_{3/4B}$	$\cos \varphi_B$	I_B 400 V	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
		kW	Nm	rpm	-	%	%	-	A	-	-	-	-	kgm²	kg
Synchronous speed 3000 rpm – 2-pole version															
K21O 56 K2 U		0.09	0.30	2840		70	67.5	0.74	0.25	4.9	2.3	2.3	2.8	0.00013	4.4
K21R 56 G2		0.12	0.41	2830		70.3	69.6	0.77	0.32	4.5	2.1	2.1	2.3	0.00013	4.5
K21R 63 K2	K20R 56 K2	0.18	0.62	2790		67.1	63.1	0.76	0.51	4.1	1.9	1.9	2.2	0.00013	4.9
K21R 63 G2	K20R 56 G2	0.25	0.85	2800		68.1	65.6	0.72	0.74	4.2	2.2	2.2	2.4	0.00015	5.2
K21R 71 K2	K20R 63 K2	0.37	1.27	2780		71.5	69.7	0.79	0.94	4.4	2.1	2.1	2.3	0.00025	6.7
K21R 71 G2	K20R 63 G2	0.55	1.89	2775		74.3	72.7	0.81	1.32	5.1	2.3	2.1	2.6	0.00032	7.6
K21R 80 K2	K20R 71 K2	0.75	2.54	2825		77.5	77.3	0.81	1.72	5.9	2.4	2.4	2.4	0.00057	10.7
K21R 80 G2	K20R 71 G2	1.1	3.71	2835	2	77.8	77.4	0.80	2.55	6.0	2.4	2.3	2.6	0.00072	11.5
K21R 90 S2	K20R 80 K2	1.5	5.04	2840	2	81.2	80.2	0.86	3.1	7.0	2.5	2.5	2.8	0.00132	16
K21R 90 L2	K20R 80 G2	2.2	7.37	2850	2	82	81.5	0.85	4.55	7.5	2.8	2.3	2.9	0.0017	19
K21R 100 L2	K20R 90 L2	3.0	10.0	2865	2	83.4	84.2	0.84	6.15	6.8	2.4	2.2	2.8	0.00275	25
K21R 112 M2	K20R 100 S2	4.0	13.2	2900	2	85	86.3	0.81	8.4	7.0	2.2	2.1	2.9	0.0045	32
K21R 132 S2 T	K20R 100 L2	5.5	18.2	2890	2	86.3	86.6	0.84	11	7.5	2.4	2.2	3.0	0.0055	40
K21R 132 SX2 T	K20R 100 LV2	7.5	24.9	2880	2	87	88	0.84	14.8	6.3	1.5	1.2	2.6	0.068	48
K21R 132 S2		5.5	18.4	2860	2	85.7	85.7	0.86	11	5.5	1.8	1.6	2.2	0.0081	52
K21R 132 SX2	K20R 112 M2	7.5	24.7	2900	2	87	87	0.86	14.5	6.6	1.8	1.3	2.5	0.011	57
K21R 160 M2	K20R 132 M2	11.0	36.2	2900	2	88.5	88.5	0.90	20	7.0	2.4	2.0	3.0	0.0258	81
K21R 160 MX2	K20R 160 S2	15.0	48.9	2930	2	89.4	89.4	0.90	27	7.1	2.2	1.7	2.9	0.0575	118
K21R 160 L2	K20R 160 M2	18.5	60.5	2920	2	90.5	89.5	0.92	32	7.2	2.1	1.6	2.8	0.0675	134
K21R 180 M2	K20R 180 S2	22	71.6	2935	2	91.8	91	0.92	37.5	6.8	1.7	1.4	2.6	0.105	165
K21R 200 L2	K20R 180 M2	30	97.5	2940	2	92.8	92	0.92	50.5	7.3	2.0	1.6	2.9	0.128	195
K21R 200 LX2	K20R 200 M2	37	120	2940	2	93	92	0.90	64	7.0	1.8	1.3	2.4	0.193	255
K21R 225 M2	K20R 200 L2	45	146	2940	1	93.7	93	0.91	76	7.5	1.8	1.4	2.7	0.22	290
K21R 250 M2	K20R 225 M2	55	178	2955	2	93.7	92.5	0.91	93	7.5	2.0	1.5	2.6	0.375	360
K21R 280 S2	K20R 250 S2	75	241	2970	1	94.6	93.5	0.92	124	7.5	2.0	1.6	2.6	0.65	490
K21R 280 M2	K20R 250 M2	90	289	2970	2	94.7	94.2	0.91	151	8.5	2.2	1.8	2.8	0.675	510
K21R 315 S2	K20R 280 S2	110	353	2975		95.4	94.5	0.91	183	8.5	1.5	1.3	2.5	1.21	720
K21R 315 M2	K20R 280 M2	132	424	2975		95.4	94.5	0.91	219	8.5	2.0	1.8	2.7	1.44	800
K21R 315 MX2	K20R 315 S2	160	514	2975		96	95	0.93	259	8.5	2.0	1.6	2.6	1.76	980
K21R 315 MY2	K20R 315 M2	200	643	2970		96	95.2	0.92	327	8.2	2.6	2.0	2.6	2.82	1170
K21R 315 L2	K20R 315 L2	250	803	2973		96.1	95.2	0.93	404	7.3	2.1	1.4	2.0	3.66	1460
K21R 315 LX2	K20R 315 LX2	315	1011	2980		96.7	96.7	0.92	511	8.6	2.7	1.7	2.4	4.43	1630
K22R 355 MY2		315	1007	2988		96.8	96.6	0.88	534	8.6	1.3	1.0	3.0	4.10	1900
K22R 355 M2		355	1138	2980		96.5	96.5	0.91	583	7.3	1.3	1.0	2.3	4.20	2000
K22R 355 MX2		400	1280	2985		96.8	96.7	0.90	663	8.5	1.9	1.3	3.2	5.50	2200
K22R 355 LY2		450	1441	2983		96.9	96.7	0.92	729	7.2	1.3	1.0	2.4	7.10	2400
K22R 355 L2		500	1560	2985		97.2	97	0.92	807	8.2	1.8	0.9	2.6	7.10	2400

Synchronous speed 1500 rpm – 4-pole version															
K21O 56 K4 U		0.06	0.41	1410		60.5	56.8	0.60	0.24	3.1	2.3	2.3	2.7	0.00019	4.3
K21R 56 G4		0.09	0.63	1375		62	61	0.68	0.31	3.2	1.9	1.9	2.2	0.00019	4.4
K21R 63 K4	K20R 56 K4	0.12	0.84	1370		57.5	56.7	0.68	0.44	3.2	1.9	1.8	2.2	0.00019	4.8
K21R 63 G4	K20R 56 G4	0.18	1.26	1360		61	56.5	0.66	0.65	3.3	2.0	2.0	2.3	0.00024	5.2
K21R 71 K4	K20R 63 K4	0.25	1.72	1385		64.6	62.3	0.72	0.78	3.6	1.8	1.8	2.1	0.0004	6.8
K21R 71 G4	K20R 63 G4	0.37	2.58	1370		67.8	66.9	0.74	1.06	3.8	2.0	2.0	2.2	0.0005	7.8
K21R 80 K4	K20R 71 K4	0.55	3.75	1400		71.5	69.3	0.69	1.6	4.1	2.1	2.0	2.3	0.00087	10.6
K21R 80 G4	K20R 71 G4	0.75	5.12	1400		73.5	70.8	0.70	2.1	4.6	2.2	2.1	2.3	0.00107	11.7
K21R 90 S4	K20R 80 K4	1.1	7.45	1410	2	76.6	75.3	0.79	2.62	5.5	2.3	2.2	2.5	0.00207	15.5
K21R 90 L4	K20R 80 G4	1.5	10.2	1400	2	78.8	77.9	0.81	3.4	5.5	2.5	2.4	2.6	0.0026	18
K21R 100 L4	K20R 90 L4	2.2	14.9	1410	2	81.2	82	0.79	4.95	6.0	2.5	2.3	2.7	0.004	23.5
K21R 100 LX4	K20R 100 S4	3	20	1430	2	82.6	82.6	0.79	6.65	6.5	2.5	2.2	2.9	0.00725	30
K21R 112 M4	K20R 100 L4	4	26.6	1435	2	84.2	83.6	0.78	8.8	6.9	2.6	2.5	3.2	0.009	37
K21R 132 S4 T	K20R 100 LX4	5.5	36.9	1425	2	86.3	85.3	0.78	11.8	6.3	2.5	2.4	2.9	0.011	47
K21R 132 S4	K20R 112 M4	5.5	36.5	1440	2	85.7	85.7	0.89	10.5	6.5	1.9	1.7	3.0	0.015	50
K21R 132 M4	K20R 132 S4	7.5	49.4	1450	2	87	86	0.84	15	6.0	2.0	1.7	2.9	0.028	70
K21R 160 M4	K20R 132 M4	11	72.5	1450	2	88.4	88	0.85	21	6.8	2.2	1.9	3.3	0.035	92
K21R 160 L4	K20R 160 S4	15	97.8	1465	2	89.4	89	0.86	28	7.3	2.5	2.0	3.0	0.078	120
K21R 180 M4	K20R 160 M4	18.5	121	1460	2	90	89.5	0.86	34.5	6.8	2.5	2.0	2.9	0.09	136
K21R 180 L4	K20R 180 S4	22	143	1465	2	90.5	90.5	0.84	42	6.5	2.0	1.8	2.6	0.138	170
K21R 200 L4	K20R 180 M4	30	196	1465	2	91.5	91	0.85	55.5	7.0	2.0	1.7	2.4	0.168	220
K21R 225 S4	K20R 200 M4	37	240	1470	2	92.5	91.5	0.86	67	7.0	2.0	1.7	2.5	0.275	270
K21R 225 M4	K20R 200 L4	45	292	1470	2	93	92.5	0.86	81	7.0	2.0	1.7	2.5	0.313	300
K21R 250 M4	K20R 225 M4	55	356	1475	2	93.5	93	0.86	98.5	7.0	2.2	1.7	2.3	0.525	375
K21R 280 S4	K20R 250 S4	75	484	1480	2	94.1	93.5	0.86	134	7.0	2.0	1.7	2.2	0.95	520
K21R 280 M4	K20R 250 M4	90	581	1480	2	94.6	93.5	0.86	160	7.0	2.1	1.6	2.2	1.1	580
K21R 315 S4	K20R 280 S4	110	707	1485		95.1	94.5	0.86	194	7.5	1.8	1.6	2.2	1.96	740
K21R 315 M4	K20R 280 M4	132	849	1485		95.1	94.5	0.86	233	7.0	1.8	1.5	2.2	2.27	840
K21R 315 MX4	K20R 315 S4	160	1032	1480		95	94.8	0.87	279	7.0	1.8	1.5	2.0	2.73	1000
K21R 315 MY4	K20R 315 M4	200	1286	1485		96	95	0.88	342	7.5	2.0	1.8	2.4	4.82	1200
K21R 315 L4	K20R 315 L4	250	1608	1485		96.1	95	0.90	417	8.0	2.0	1.6	2.3	5.93	1510
K21R 315 LX4	K20R 315 LX4	315	2019	1490		96.5	95.5	0.88	535	8.6	1.9	1.5	2.5	6.82	1630
K22R 355 MY4		315	2016	1492		95.6	95.5	0.85	560	7.1	1.4	1.0	2.9	5.60	1950
K22R 355 M4		355	2275	1490		96.8	96.5	0.84	630	8.1	1.8	1.0	3.1	7.9	2150
K22R 355 MX4		400	2557	1494		96.8	96.7	0.84	710	8.6	1.3	1.0	3.0	9.5	2400
K22R 355 LY4		450	2884	1490		96.8	96.7	0.82	818	8.0	1.2	1.0	3.0	10	2500
K22R 355 L4		500	3205	1490		96.7	96.4	0.79	945	7.9	1.1	1.0	3.0	10	2500

Three-phase motors with squirrel-cage rotor

with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design point 480 V, 60 Hz

Type		P_B	M_B	n_B	η_B	$\cos \varphi_B$	I_B 480 V	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
		kW	Nm	rpm	%	-	A	-	-	-	-	kgm²	kg
Synchronous speed 3600 rpm – 2-pole version													
K21O 56 K2 U		0.105	0.29	3460	71	0.68	0.25	5.8	2.6	2.6	3.3	0.00013	4.4
K21R 56 G2		0.14	0.39	3440	73	0.72	0.32	5.2	2.3	2.3	2.8	0.00013	4.5
K21R 63 K2	K20R 56 K2	0.21	0.59	3420	67	0.71	0.53	4.6	2.4	2.2	2.7	0.00013	4.9
K21R 63 G2	K20R 56 G2	0.3	0.84	3430	70	0.66	0.78	4.3	2.2	2.2	2.4	0.00015	5.2
K21R 71 K2	K20R 63 K2	0.44	1.24	3400	73	0.77	0.94	4.6	2.1	2.1	2.2	0.00025	6.7
K21R 71 G2	K20R 63 G2	0.65	1.85	3350	75	0.79	1.32	5.8	2.8	2.7	2.9	0.00032	7.6
K21R 80 K2	K20R 71 K2	0.9	2.5	3440	80	0.78	1.74	6.4	2.6	2.4	2.4	0.00057	10.7
K21R 80 G2	K20R 71 G2	1.3	3.61	3440	79	0.75	2.65	6.6	2.4	2.3	2.6	0.00072	11.5
K21R 90 S2	K20R 80 K2	1.8	5.00	3440	82	0.85	3.1	7.0	2.5	2.2	2.7	0.00132	16
K21R 90 L2	K20R 80 G2	2.6	7.18	3460	83	0.82	4.6	6.9	2.9	2.3	2.9	0.0017	19
K21R 100 L2	K20R 90 L2	3.6	9.91	3470	85.5	0.83	6.1	6.1	2.5	2.4	2.8	0.00275	25
K21R 112 M2	K20R 100 S2	4.8	13.1	3500	85	0.80	8.5	7.6	2.2	2.1	2.9	0.0045	32
K21R 132 S2 T	K20R 100 L2	6.6	18	3500	86	0.84	11	8.8	2.4	2.2	3.0	0.0055	40
K21R 132 SX2 T	K20R100LV2	9	24.7	3480	88	0.83	14.8	6.9	1.5	1.2	2.7	0.068	48
K21R 132 S2		6.6	18.4	3430	85.7	0.85	11	5.5	1.7	1.5	2.2	0.0081	52
K21R 132 SX2	K20R 112 M2	9	24.7	3480	87	0.86	14.5	6.6	1.8	1.3	2.4	0.011	57
K21R 160 M2	K20R 132 M2	13	35.7	3480	88	0.90	19.5	7.0	2.4	1.9	3.0	0.0258	81
K21R 160 MX2	K20R 160 S2	18	48.7	3530	89.6	0.90	27	7.1	2.2	1.7	2.9	0.0575	118
K21R 160 L2	K20R 160 M2	22	59.7	3520	90.5	0.92	32	7.2	2.1	1.6	2.8	0.0675	134
K21R 180 M2	K20R 180 S2	26	70.2	3535	92	0.92	37	7.0	1.7	1.4	2.6	0.105	165
K21R 200 L2	K20R 180 M2	36	96.8	3550	93	0.92	51	7.4	2.1	1.6	2.9	0.128	195
K21R 200 LX2	K20R 200 M2	44	118	3545	93	0.91	63	7.0	1.8	1.3	2.4	0.193	255
K21R 225 M2	K20R 200 L2	54	146	3535	93.7	0.90	77	7.5	1.8	1.4	2.7	0.22	290
K21R 250 M2	K20R 225 M2	66	178	3550	93.7	0.90	94	7.4	2.0	1.5	2.6	0.375	360
K21R 280 S2	K20R 250 S2	90	241	3570	94.5	0.91	126	7.5	2.0	1.6	2.6	0.65	490
K21R 280 M2	K20R 250 M2	105	281	3570	94.5	0.91	147	8.5	2.2	1.8	2.8	0.675	510
K21R 315 S2	K20R 280 S2	132	353	3575	95	0.91	184	8.5	1.5	1.3	2.5	1.21	720
K21R 315 M2	K20R 280 M2	158	422	3575	95.4	0.91	219	8.5	2.0	1.8	2.6	1.44	800
K21R 315 MX2	K20R 315 S2	190	507	3575	96	0.92	259	8.5	2.1	1.6	2.6	1.76	980
K21R 315 MY2	K20R 315 M2	225	602	3570	95.8	0.91	310	8.7	2.8	2.1	2.8	2.82	1170
K21R 315 L2	K20R 315 L2	300	803	3570	96.1	0.92	408	7.3	2.2	1.4	2.0	3.66	1460
K21R 315 LX2	K20R 315 LX2	340	908	3575	96.7	0.92	460	7.5	2.5	1.4	2.1	4.43	1630
K22R 355 MY2		340	data on request									4.10	1900
K22R 355 M2		400	data on request									4.20	2000
K22R 355 MX2		450	data on request									5.50	2200
K22R 355 LY2		500	data on request									7.10	2400
K22R 355 L2		550	data on request									7.10	2400

Synchronous speed 1800 rpm – 4-pole version													
K21O 56 K4 U		0.075	0.42	1710	63	0.60	0.24	3.5	2.5	2.5	2.9	0.00019	4.3
K21R 56 G4		0.105	0.59	1690	63	0.63	0.32	3.5	2.3	2.3	2.5	0.00019	4.4
K21R 63 K4	K20R 56 K4	0.14	0.79	1685	57	0.62	0.48	3.2	1.9	1.8	2.2	0.00019	4.8
K21R 63 G4	K20R 56 G4	0.21	1.19	1685	62	0.61	0.67	3.3	2.0	2.0	2.3	0.00024	5.2
K21R 71 K4	K20R 63 K4	0.3	1.7	1690	66	0.68	0.8	3.7	1.8	1.8	2.1	0.0004	6.8
K21R 71 G4	K20R 63 G4	0.44	2.49	1685	71	0.69	1.08	4.0	2.0	2.0	2.2	0.0005	7.8
K21R 80 K4	K20R 71 K4	0.65	3.63	1710	71	0.66	1.67	4.5	2.1	2.0	2.2	0.00087	10.6
K21R 80 G4	K20R 71 G4	0.9	5.03	1710	74	0.68	2.15	5.0	2.2	2.1	2.3	0.00107	11.7
K21R 90 S4	K20R 80 K4	1.3	7.22	1720	77	0.77	2.65	5.5	2.3	2.2	2.5	0.00207	15.5
K21R 90 L4	K20R 80 G4	1.8	10.1	1710	80	0.77	3.5	5.6	2.5	2.4	2.6	0.0026	18
K21R 100 L4	K20R 90 L4	2.6	14.4	1720	81	0.75	5.15	6.4	2.6	2.3	2.7	0.004	23.5
K21R 100 LX4	K20R 100 S4	3.6	19.9	1730	84	0.77	6.8	6.9	2.5	2.2	2.8	0.00725	30
K21R 112 M4	K20R 100 L4	4.8	26.4	1735	85	0.78	8.7	7.3	2.8	2.5	3.2	0.009	37
K21R 132 S4 T	K20R 100 LX4	6.6	36.6	1720	87	0.76	12.2	6.7	2.5	2.5	2.9	0.011	47
K21R 132 S4	K20R 112 M4	6.6	36.1	1745	84.5	0.88	11	6.5	1.9	1.7	3.0	0.015	50
K21R 132 M4	K20R 132 S4	9	49.1	1750	87	0.84	15	6.0	2.0	1.7	2.8	0.028	70
K21R 160 M4	K20R 132 M4	13	70.7	1755	88.4	0.84	21	6.9	2.2	1.9	3.3	0.035	92
K21R 160 L4	K20R 160 S4	18	97.4	1765	89.4	0.86	28	7.6	2.5	2.0	3.0	0.078	120
K21R 180 M4	K20R 160 M4	22	119	1760	90	0.85	35	6.7	2.5	2.0	2.8	0.09	136
K21R 180 L4	K20R 180 S4	26	141	1765	90.5	0.83	42	6.5	2.0	1.8	2.6	0.138	170
K21R 200 L4	K20R 180 M4	36	195	1765	91.5	0.84	56	7.0	2.0	1.7	2.4	0.168	220
K21R 225 S4	K20R 200 M4	44	237	1770	92.5	0.85	67	7.0	2.0	1.7	2.5	0.275	270
K21R 225 M4	K20R 200 L4	54	292	1770	93	0.85	82	7.0	2.0	1.7	2.5	0.313	300
K21R 250 M4	K20R 225 M4	66	355	1775	93	0.85	100	7.0	2.2	1.7	2.3	0.525	375
K21R 280 S4	K20R 250 S4	90	483	1780	94	0.85	135	7.0	2.0	1.7	2.1	0.95	520
K21R 280 M4	K20R 250 M4	105	563	1780	94.4	0.86	156	7.0	2.1	1.6	2.2	1.1	580
K21R 315 S4	K20R 280 S4	132	706	1785	95	0.85	197	7.5	1.8	1.6	2.2	1.96	740
K21R 315 M4	K20R 280 M4	158	848	1780	95	0.85	235	7.0	1.8	1.5	2.2	2.27	840
K21R 315 MX4	K20R 315 S4	190	1019	1780	94.8	0.86	280	7.0	1.8	1.5	2.0	2.73	1000
K21R 315 MY4	K20R 315 M4	225	1204	1785	96	0.87	324	7.7	2.1	1.9	2.5	4.82	1200
K21R 315 L4	K20R 315 L4	300	1605	1785	96.2	0.88	426	8.0	2.0	1.6	2.3	5.93	1510
K21R 315 LX4	K20R 315 LX4	340	1814	1790	96.9	0.88	480	9.5	2.1	1.7	2.8	6.82	1630
K22R 355 MY4		340	1814	1790	96.3	0.85	500	7.5	1.7	0.9	2.7	5.6	1950
K22R 355 M4		400	2134	1790	96.5	0.84	594	8.8	2.1	0.9	3.2	7.9	2150
K22R 355 MX4		440	2347	1790	96.5	0.84	653	9.0	1.2	1.1	3.4	9.5	2400
K22R 355 LY4		500	data on request									10	2500
K22R 355 L4		550	data on request									10	2500

Three-phase motors with squirrel-cage rotor

with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design point 400 V, 50 Hz

Type		P_B	M_B	n_B	EFF-	$\eta_{4/4B}$	$\eta_{3/4B}$	$\cos\varphi_B$	I_B 400 V	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
		kW	Nm	rpm	-	%	%	-	A	-	-	-	-	kgm²	kg
Synchronous speed 1000 rpm – 6-pole version															
K21R 63 K6	K20R 56 K6	0.09	0.96	895		50.5	45.3	0.56	0.46	2.5	2.0	2.0	2.4	0.00024	4.9
K21R 63 G6	K20R 56 G6	0.12	1.3	880		52	48	0.56	0.59	2.5	2.0	2.0	2.3	0.00027	5.7
K21R 71 K6	K20R 63 K6	0.18	1.86	925		58	54.5	0.51	0.88	2.8	1.6	1.6	2.1	0.00045	7.4
K21R 71 G6	K20R 63 G6	0.25	2.61	915		60	56.5	0.55	1.1	2.9	2.0	2.0	2.2	0.0006	8.3
K21R 80 K6	K20R 71 K6	0.37	3.86	915		66	62.5	0.66	1.22	3.4	2.0	2.0	2.0	0.0013	11
K21R 80 G6	K20R 71 G6	0.55	5.74	915		68	65.5	0.67	1.73	3.7	2.2	2.2	2.4	0.00175	12.5
K21R 90 S6	K20R 80 K6	0.75	7.66	935		70	67.5	0.64	2.43	4.5	2.4	2.4	2.6	0.00325	16
K21R 90 L6	K20R 80 G6	1.1	11.24	935		73	70	0.69	3.15	4.6	2.2	2.2	2.6	0.00425	19
K21R 100 L6	K20R 90 L6	1.5	15.16	945		76.4	76.2	0.73	3.9	4.6	2.1	2.0	2.4	0.00625	24
K21R 112 M6	K20R 100 L6	2.2	22.12	950		79.8	78.9	0.74	5.35	5.3	2.2	2.1	2.7	0.01225	33.5
K21R 132 S6 T	K20R 100 LX6	3	30.6	935		81.9	82.4	0.75	7.05	5.2	2.5	2.5	2.9	0.0139	39
K21R 132 S6	K20R 112 M6	3	30	955		78.5	78.5	0.82	6.7	5.7	1.8	1.6	2.7	0.018	46
K21R 132 M6	K20R 112 MX6	4	40	955		80	79	0.80	9	6.0	2.2	2.0	3.1	0.023	53
K21R 132 MX6	K20R 132 S6	5.5	55	955		83	83	0.83	11.5	5.0	1.8	1.5	2.3	0.043	70
K21R 160 M6	K20R 132 M6	7.5	74.6	960		85	84	0.82	15.5	5.5	2.0	1.6	2.5	0.053	86
K21R 160 L6	K20R 160 S6	11	109	965		85.2	85	0.86	21.5	5.0	2.0	1.7	2.3	0.113	114
K21R 180 L6	K20R 160 M6	15	148	965		86.	85	0.83	30.5	6.0	2.4	2.1	2.7	0.145	136
K21R 200 L6	K20R 180 S6	18.5	182	970		88.1	88	0.87	35	5.5	2.0	1.7	2.4	0.228	175
K21R 200 LX6	K20R 180 M6	22	217	970		88.8	88.5	0.87	41	6.2	2.2	1.8	2.6	0.268	200
K21R 225 M6	K20R 200 M6	30	294	973		90.4	90	0.89	54	6.5	2.2	1.7	2.5	0.443	265
K21R 250 M6	K20R 225 M6	37	362	975		91	90.8	0.89	66	6.5	2.2	1.7	2.3	0.825	360
K21R 280 S6	K20R 250 S6	45	439	980		92	92	0.87	81	6.0	2.0	1.5	2.0	1.28	465
K21R 280 M6	K20R 250 M6	55	536	980		92.5	92	0.88	97.5	6.5	2.3	1.7	2.4	1.48	520
K21R 315 S6	K20R 280 S6	75	727	985		93.7	93	0.87	133	7.0	2.0	1.6	2.4	2.63	690
K21R 315 M6	K20R 280 M6	90	868	990		94.4	93.5	0.88	156	7.0	2.0	1.7	2.4	3.33	800
K21R 315 MX6	K20R 315 S6	110	1061	990		94	93.8	0.88	192	7.5	2.2	1.7	2.6	3.6	880
K21R 315 MY6	K20R 315 M6	132	1273	990		95	94.7	0.88	228	7.5	2.0	1.7	2.4	6	1050
K21R 315 L6	K20R 315 L6	160	1551	985		95.3	95	0.89	272	7.5	2.3	1.9	2.4	6.67	1250
K21R 315 LX6	K20R 315 LX6	200	1929	990		95	94.7	0.87	349	8.3	2.2	2.0	2.7	8.6	1460
K22R 355 MY6		200	1920	995		96.1	96	0.83	362	7.0	1.5	1.3	2.4	8.1	1550
K22R 355 M6		250	2402	994		96	95.7	0.81	464	7.0	1.8	1.3	2.3	8.2	1850
K22R 355 MX6		315	3023	995		96.5	96.5	0.83	568	6.8	1.6	1.3	2.5	12.1	2200
K22R 355 LY6		355	3407	995		96	95.8	0.78	684	7.4	1.9	1.4	2.6	14	2400

Synchronous speed 750 rpm – 8-pole version															
K21R 71 K8	K20R 63 K8	0.09	1.27	675		45.5	40.3	0.51	0.56	2.1	1.9	1.9	2.1	0.0005	6.6
K21R 71 G8	K20R 63 G8	0.12	1.71	670		46.5	41.3	0.51	0.73	2.3	1.8	1.8	2.1	0.0006	8.1
K21R 80 K8	K20R 71 K8	0.18	2.49	690		56.5	53.8	0.59	0.78	2.8	2.0	2.0	2.2	0.0013	10.5
K21R 80 G8	K20R 71 G8	0.25	3.44	695		58	54	0.56	1.12	3.0	2.3	2.3	2.5	0.00175	12
K21R 90 S8	K20R 80 K8	0.37	5.05	700		61.5	56.3	0.54	1.6	3.0	1.9	1.9	2.1	0.0030	15
K21R 90 L8	K20R 80 G8	0.55	7.56	695		64.5	61.8	0.60	2.04	3.2	1.9	1.9	2.2	0.00375	18
K21R 100 L8	K20R 90 L8	0.75	10.2	705		67	64	0.60	2.7	3.3	1.8	1.8	2.2	0.00625	23
K21R 100 LX8	K20R 100 S8	1.1	14.9	705		73	72.5	0.67	3.25	4.0	2.0	2.0	2.4	0.0090	28
K21R 112 M8	K20R 100 L8	1.5	20.3	705		75.5	75.3	0.70	4.1	4.4	2.2	2.1	2.5	0.01225	33.5
K21R 132 S8 T	K20R 100 LX8	2.2	30.7	685		75.8	75.9	0.68	6.3	3.8	2.0	1.9	2.3	0.0139	39
K21R 132 S8	K20R 112 M8	2.2	29.8	705		75.5	75	0.76	5.5	4.5	1.7	1.6	2.3	0.0180	46
K21R 132 M8	K20R 112 MX8	3	40.6	705		78	78	0.75	7.4	4.5	1.7	1.6	2.3	0.023	53
K21R 160 M8	K20R 132 S8	4	53.8	710		79.3	79	0.78	9.3	4.0	1.6	1.3	1.9	0.043	70
K21R 160 MX8	K20R 132 M8	5.5	74	710		81.4	81	0.78	12.5	4.5	1.7	1.6	2.1	0.053	86
K21R 160 L8	K20R 160 S8	7.5	98.8	725		83	83	0.78	16.5	4.5	1.8	1.6	2.1	0.113	114
K21R 180 L8	K20R 160 M8	11	146	720		85	84	0.78	24	4.5	2.0	1.7	2.1	0.145	136
K21R 200 L8	K20R 180 S8	15	198	725		86.5	86	0.79	31.5	5.0	2.0	1.7	2.3	0.228	175
	K20R 180 M8	18.5	244	725		87.5	86.5	0.80	38	5.0	1.9	1.7	2.2	0.268	200
K21R 225 S8		18.5	244	725		89.2	88	0.83	36	5.5	2.0	1.6	2.2	0.44	265
K21R 225 M8	K20R 200 M8	22	290	725		89.2	89	0.84	42.5	5.0	1.8	1.5	2.2	0.44	265
K21R 250 M8	K20R 225 M8	30	395	730		90.2	90	0.79	61	5.5	2.2	1.8	2.2	0.825	360
K21R 280 S8	K20R 250 S8	37	481	735		91	90.5	0.80	73.5	5.5	2.0	1.5	2.0	1.35	465
K21R 280 M8	K20R 250 M8	45	585	735		91.5	91	0.77	92	6.0	2.3	1.8	2.4	1.55	520
K21R 315 S8	K20R 280 S8	55	710	740		93.1	92	0.80	107	6.5	1.8	1.6	2.3	2.63	690
K21R 315 M8	K20R 280 M8	75	966	740		93.3	93	0.81	143	6.0	2.0	1.6	2.3	3.33	800
K21R 315 MX8	K20R 315 S8	90	1161	740		93.5	93	0.81	172	6.0	1.9	1.6	2.2	3.6	880
K21R 315 MY8	K20R 315 M8	110	1420	740		94.6	94	0.81	207	6.5	2.1	1.8	2.4	6	1100
K21R 315 L8	K20R 315 L8	132	1704	740		95	94.3	0.83	242	6.3	2.0	1.7	2.1	6.76	1250
K21R 315 LX8	K20R 315 LX8	160	2065	740		95.2	94.5	0.79	307	7.2	2.2	1.9	2.5	8.71	1430
K22R 355 MY8		160	2054	744		95.2	95	0.80	303	6.8	1.3	1.0	2.5	9.3	1700
K22R 355 M8		200	2571	743		95.6	95.3	0.77	392	6.5	1.6	1.0	2.7	9.5	1850
K22R 355 MX8		250	3209	744		95.8	95.6	0.78	483	6.6	1.3	1.0	2.8	13.4	2200
K22R 355 LY8		280	3594	744		95.3	95.1	0.78	544	8.2	1.2	1.0	2.8	15.8	2400

Three-phase motors with squirrel-cage rotor

with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design point 480 V, 60 Hz

Type		P_B	M_B	n_B	η_B	$\cos\varphi_B$	I_B 480 V	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
		kW	Nm	rpm	%	-	A	-	-	-	-	kgm²	kg
Synchronous speed 1200 rpm – 6-pole version													
K21R 63 K6	K20R 56 K6	0.105	0.91	1105	50	0.53	0.48	2.7	2.1	2.1	2.5	0.00024	4.9
K21R 63 G6	K20R 56 G6	0.14	1.22	1100	53	0.51	0.62	2.6	2.1	2.1	2.5	0.00027	5.7
K21R 71 K6	K20R 63 K6	0.21	1.77	1135	60	0.48	0.88	3.1	1.6	1.6	2.1	0.00045	7.4
K21R 71 G6	K20R 63 G6	0.3	2.56	1120	62	0.52	1.12	3.3	2.0	2.0	2.2	0.0006	8.3
K21R 80 K6	K20R 71 K6	0.44	3.74	1125	68	0.65	1.2	3.8	2.0	2.0	2.0	0.0013	11
K21R 80 G6	K20R 71 G6	0.65	5.54	1120	70	0.64	1.75	4.0	2.3	2.2	2.4	0.00175	12.5
K21R 90 S6	K20R 80 K6	0.9	7.54	1140	71	0.60	2.55	4.8	2.4	2.4	2.6	0.00325	16
K21R 90 L6	K20R 80 G6	1.3	10.9	1135	74	0.63	3.35	4.7	2.2	2.2	2.4	0.00425	19
K21R 100 L6	K20R 90 L6	1.8	15	1145	78	0.69	4.05	4.9	2.1	2.0	2.4	0.00625	24
K21R 112 M6	K20R 100 L6	2.6	21.6	1150	81	0.74	5.2	5.6	2.2	2.1	2.7	0.01225	33.5
K21R 132 S6 T	K20R 100 LX6	3.6	30.2	1140	82.5	0.75	7	5.6	2.0	2.2	2.7	0.0139	39
K21R 132 S6	K20R 112 M6	3.6	29.8	1155	79	0.79	6.9	5.7	1.9	1.6	2.7	0.018	46
K21R 132 M6	K20R 112 MX6	4.8	39.7	1155	80	0.78	9.3	6.0	2.2	2.0	3.1	0.023	53
K21R 132 MX6	K20R 132 S6	6.6	54.8	1150	83	0.82	11.7	5.0	1.8	1.5	2.3	0.043	70
K21R 160 M6	K20R 132 M6	9	74.7	1150	84.5	0.80	16	5.5	2.0	1.6	2.5	0.053	86
K21R 160 L6	K20R 160 S6	13	107	1160	85	0.85	22	5.0	2.0	1.7	2.3	0.113	114
K21R 180 L6	K20R 160 M6	18	148	1165	86	0.80	31	6.0	2.4	2.1	2.8	0.145	136
K21R 200 L6	K20R 180 S6	21	171	1175	88.3	0.86	33	5.8	2.1	1.8	2.6	0.228	175
K21R 200 LX6	K20R 180 M6	26	211	1175	89	0.86	41	6.3	2.2	1.7	2.7	0.268	200
K21R 225 M6	K20R 200 M6	34	276	1175	90.5	0.88	51	6.5	2.2	1.7	2.6	0.443	265
K21R 250 M6	K20R 225 M6	42	341	1175	91.5	0.87	63	6.5	2.2	1.8	2.3	0.825	360
K21R 280 S6	K20R 250 S6	54	435	1185	92	0.87	81	6.0	2.0	1.5	2.0	1.28	465
K21R 280 M6	K20R 250 M6	66	534	1180	92.5	0.88	98	7.0	2.4	1.8	2.4	1.48	520
K21R 315 S6	K20R 280 S6	90	725	1185	93.5	0.87	133	7.0	2.0	1.6	2.4	2.63	690
K21R 315 M6	K20R 280 M6	108	867	1190	94.3	0.86	160	7.0	2.0	1.7	2.4	3.33	800
K21R 315 MX6	K20R 315 S6	132	1064	1185	93.5	0.87	195	7.5	2.2	1.7	2.6	3.60	880
K21R 315 MY6	K20R 315 M6	158	1268	1190	95	0.87	230	7.5	2.1	1.7	2.5	6.00	1050
K21R 315 L6	K20R 315 L6	190	1531	1185	95.2	0.89	270	7.0	2.2	1.8	2.3	6.67	1250
K21R 315 LX6	K20R 315 LX6	240	1926	1190	95	0.87	349	8.2	2.2	2.0	2.7	8.6	1460
K22R 355 MY6		240	data on request									8.1	1550
K22R 355 M6		280	2238	1195	96.1	0.8	438	7.5	1.8	1.3	2.5	8.2	1650
K22R 355 MX6		350	data on request									12.1	2200
K22R 355 LY6		400	data on request									14.0	2400

Synchronous speed 900 rpm – 8-pole version													
K21R 71 K8	K20R 63 K8	0.105	1.2	835	48	0.49	0.54	2.3	1.9	1.9	2.1	0.0005	6.6
K21R 71 G8	K20R 63 G8	0.14	1.61	830	47	0.48	0.74	2.5	1.8	1.8	2.1	0.0006	8.1
K21R 80 K8	K20R 71 K8	0.21	2.37	845	58	0.57	0.76	2.9	2.0	2.0	2.2	0.0013	10.5
K21R 80 G8	K20R 71 G8	0.3	3.39	845	61	0.54	1.1	3.3	2.3	2.3	2.5	0.00175	12
K21R 90 S8	K20R 80 K8	0.44	4.91	855	62	0.51	1.67	3.7	1.9	1.9	2.1	0.003	15
K21R 90 L8	K20R 80 G8	0.65	7.3	850	68	0.54	2.13	3.7	2.1	2.1	2.2	0.00375	18
K21R 100 L8	K20R 90 L8	0.9	10.1	855	68	0.57	2.8	3.7	2.0	2.0	2.3	0.00625	23
K21R 100 LX8	K20R 100 S8	1.3	14.5	855	75	0.64	3.25	4.4	2.0	2.0	2.4	0.009	28
K21R 112 M8	K20R 100 L8	1.8	20.2	850	78	0.67	4.15	4.6	2.2	2.1	2.5	0.01225	33.5
K21R 132 S8 T	K20R 100 LX8	2.6	29.6	840	77.3	0.66	6.15	4.1	1.6	1.6	2.1	0.0139	39
K21R 132 S8	K20R 112 M8	2.6	28.7	865	76	0.71	5.8	4.5	1.7	1.7	2.4	0.018	46
K21R 132 M8	K20R 112 MX8	3.6	40.2	855	78	0.73	7.6	4.4	1.7	1.6	2.3	0.023	53
K21R 160 M8	K20R 132 S8	4.8	53.3	860	79.5	0.73	9.9	4.0	1.6	1.3	1.9	0.043	70
K21R 160 MX8	K20R 132 M8	6.6	72.9	865	82	0.74	13.1	4.5	1.7	1.6	2.2	0.053	86
K21R 160 L8	K20R 160 S8	9	98.3	875	83	0.78	16.7	4.4	1.8	1.6	2.1	0.113	114
K21R 180 L8	K20R 160 M8	13	142	870	85	0.77	24	4.5	2.0	1.8	2.2	0.145	136
K21R 200 L8	K20R 180 S8	18	196	875	87	0.76	33	5.0	2.0	1.7	2.3	0.228	175
	K20R 180 M8	21	231	870	87.5	0.80	36	4.5	2.0	1.8	2.3	0.268	200
K21R 225 S8		22	239	880	89.5	0.81	37	5.5	2.0	1.6	2.3	0.44	265
K21R 225 M8	K20R 200 M8	26	284	875	89.5	0.83	42	5.0	1.8	1.5	2.2	0.44	265
K21R 250 M8	K20R 225 M8	36	391	880	90.5	0.77	62	5.5	2.2	1.8	2.2	0.825	360
K21R 280 S8	K20R 250 S8	44	475	885	91	0.80	73	5.5	2.1	1.5	2.1	1.35	465
K21R 280 M8	K20R 250 M8	54	583	885	91.5	0.77	92	6.0	2.3	1.8	2.3	1.55	520
K21R 315 S8	K20R 280 S8	66	708	890	93.3	0.78	109	6.5	1.8	1.6	2.2	2.63	690
K21R 315 M8	K20R 280 M8	90	977	880	93	0.80	146	6.0	2.0	1.5	2.3	3.33	800
K21R 315 MX8	K20R 315 S8	108	1165	885	93	0.80	175	6.0	1.7	1.5	2.0	3.6	880
K21R 315 MY8	K20R 315 M8	132	1416	890	94.5	0.80	210	6.5	2.1	1.8	2.5	6	1100
K21R 315 L8	K20R 315 L8	158	1695	890	94.7	0.81	248	6.5	2.0	1.7	2.2	6.76	1250
K21R 315 LX8	K20R 315 LX8	190	2039	890	95.2	0.78	308	7.2	2.2	1.9	2.5	8.71	1430
K22R 355 MY8		190	data on request									9.3	1500
K22R 355 M8		220	data on request									9.5	1600
K22R 355 MX8		275	data on request									13.4	2200
K22R 355 LY8		310	data on request									15.8	2400

Three-phase motors with squirrel-cage rotor

with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data — Design point 400 V, 50 Hz

Type		P_B	M_B	n_B	η_B	cos φ_B	I_B 400 V	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
		kW	Nm	rpm	%	-	A	-	-	-	-	kgm^2	kg
Synchronous speed 600 rpm – 10-pole version													
K21R 80 K10	K20R 71 K10	0.09	1.56	550	35.7	0.56	0.65	2.2	1.7	1.7	1.9	0.0013	11
K21R 80 G10	K20R 71 G10	0.12	2.1	545	43.9	0.58	0.68	2.2	1.6	1.6	1.8	0.00175	12.5
K21R 90 S10	K20R 80 K10	0.18	3.1	555	50.9	0.51	1	2.3	1.6	1.6	1.8	0.00325	16
K21R 90 L10	K20R 80 G10	0.25	4.3	555	49.1	0.49	1.5	2.3	1.5	1.5	1.9	0.00425	19
K21R 100 L10	K20R 90 L10	0.37	6.48	545	53	0.53	1.9	2.9	1.5	1.5	1.9	0.00625	24
K21R 100 LX10	K20R 100 S10	0.55	9.21	570	71.7	0.49	2.26	3.1	1.6	1.6	1.9	0.009	28
K21R 112 M10	K20R 100 L10	0.75	13.1	545	61.2	0.61	2.9	3.4	1.7	1.7	1.9	0.01225	33.5
K21R 112 MX10	K20R 100 LX10	1.1	19.1	550	67.6	0.61	3.85	3.1	1.4	1.4	2.0	0.0139	37
K21R 132 S10	K20R 112 M10	1.1	18.4	570	67	0.65	3.6	3.7	1.7	1.6	2.5	0.018	46
K21R 132 M10	K20R 112 MX10	1.5	25.1	570	71.5	0.65	4.7	3.8	1.8	1.8	2.6	0.023	53
K21R 132 MX10	K20R 132 S10	2.2	36.5	575	75	0.65	6.5	3.7	1.7	1.6	2.2	0.043	70
K21R 160 M10	K20R 132 M10	3	49.8	575	77	0.65	8.7	3.7	1.8	1.7	2.2	0.053	86
K21R 160 L10	K20R 160 S10	5.5	91.3	575	80.5	0.68	14.5	4.0	1.8	1.7	2.1	0.113	114
K21R 180 L10	K20R 160 M10	6	99.7	575	82	0.68	15.5	3.9	2.0	1.7	2.1	0.145	136
K21R 200 L10	K20R 180 S10	9	147	585	83	0.65	24	4.6	2.3	2.0	2.7	0.228	175
K21R 200 LX10	K20R 180 M10	13	216	575	85	0.70	31.5	4.2	1.8	1.6	2.1	0.268	200
K21R 225 M10	K20R 200 M10	17	280	580	85	0.70	41	4.3	1.7	1.5	2.1	0.44	265
K21R 250 M10	K20R 225 M10	22	362	580	87	0.69	53	3.9	1.9	1.5	1.6	0.825	360
K21R 280 S10	K20R 250 S10	27	441	585	89.5	0.70	62	4.2	1.9	1.4	1.7	1.35	465
K21R 280 M10	K20R 250 M10	34	555	585	89	0.71	77.5	4.5	2.0	1.5	2.0	1.55	520
K21R 315 S10	K20R 280 S10	45	728	590	91	0.75	95	5.2	1.5	1.5	2.3	2.63	690
K21R 315 M10	K20R 280 M10	55	887	592	92	0.74	117	6.3	1.7	1.7	2.7	3.33	800
K21R 315 MX10	K20R 315 M10	75	1214	590	92	0.75	157	5.5	1.5	1.5	2.2	3.6	880
K21R 315 L10	K20R 315 L10	90	1449	593	93	0.69	202	6.0	1.8	1.5	2.2	6.76	1250
K21R 315 LX10	K20R 315 LX10	110	1765	595	93.5	0.66	257	6.0	1.6	1.5	2.1	8.71	1430
K22R 355 MY10		110	1766	595	94.7	0.74	227	5.3	0.9	0.8	2.3	9.3	1500
K22R 355 M10		132	2119	595	94.8	0.66	305	5.5	1.1	1.0	2.6	9.5	1600
K22R 355 MX10		160	2568	595	data on request							9.5	1600
K22R 355 LY10		180	2889	595	95.3	0.74	370	5.7	1.3		2.4	11.6	2100
K22R 355 L10		200	3210	595	94.3	0.72	425	6.0	1.3	1.0	2.5	15.8	2400
Synchronous speed 500 rpm – 12-pole version													
K21R 80 K12	K20R 71 K12	0.09	1.95	440	31.1	0.58	0.72	1.9	1.6	1.6	2.0	0.0013	11
K21R 80 G12	K20R 71 G12	0.12	2.58	445	42.4	0.47	0.87	2.0	1.9	1.9	2.1	0.00175	12.5
K21R 90 S12	K20R 80 K12	0.18	3.82	450	39.2	0.51	1.3	1.8	1.6	1.6	1.9	0.00325	16
K21R 90 L12	K20R 80 G12	0.25	5.31	450	44.6	0.49	1.65	2.0	1.5	1.5	1.7	0.00425	19
K21R 100 L12	K20R 90 L12	0.37	7.85	450	50.6	0.48	2.2	2.1	1.5	1.5	1.7	0.00625	24
K21R 100 LX12	K20R 100 S12	0.55	11.5	455	53.5	0.53	2.8	2.4	1.4	1.4	1.9	0.009	28
K21R 112 M12	K20R 100 L12	0.75	15.9	450	57.1	0.55	3.45	2.5	1.4	1.4	2.0	0.01225	33.5
K21R 132 S12	K20R 112 M12	0.75	15.1	475	60	0.57	3.2	3.0	2.2	2.0	2.2	0.018	46
K21R 132 M12	K20R 112 MX12	1.1	22.4	470	63	0.60	4.2	3.2	1.6	1.6	2.4	0.023	53
K21R 132 MX12	K20R 132 S12	1.5	29.8	480	67	0.57	5.7	3.0	1.5	1.5	2.1	0.043	70
K21R 160 M12	K20R 132 M12	2.2	44.2	475	69.5	0.55	8.3	3.3	1.9	1.8	2.4	0.053	86
K21R 160 L12	K20R 160 S12	3	59.7	480	77	0.60	9.4	3.4	2.0	1.7	2.0	0.113	114
K21R 180 L12	K20R 160 M12	5.5	111	475	76	0.60	17.5	3.0	1.8	1.7	2.0	0.145	136
K21R 200 L12	K20R 180 S12	6	119	480	83	0.65	16	3.3	1.6	1.5	1.9	0.228	175
K21R 200 LX12	K20R 180 M12	9	179	480	82	0.61	26	3.8	1.9	1.8	2.2	0.268	200
K21R 225 M12	K20R 200 M12	13	259	480	83	0.68	33	3.6	1.7	1.5	1.9	0.44	265
K21R 250 M12	K20R 225 M12	17	338	480	86	0.69	41.5	3.9	1.7	1.5	1.9	0.825	360
K21R 280 S12	K20R 250 S12	20	392	487	88	0.68	48	3.8	1.8	1.4	1.7	1.35	465
K21R 280 M12	K20R 250 M12	24	470	488	87.5	0.63	63	4.0	2.1	1.6	1.9	1.55	520
K21R 315 S12	K20R 280 S12	37	721	490	91	0.71	82.5	4.2	1.2	1.1	2.0	2.63	690
K21R 315 M12	K20R 280 M12	45	877	490	91	0.72	99	4.5	1.2	1.2	1.9	3.33	800
K21R 315 MX12	K20R 315 M12	55	1083	485	91	0.74	118	4.5	1.3	1.1	1.9	3.6	880
K21R 315 L12	K20R 315 L12	75	1450	494	92	0.55	215	4.5	1.5	1.2	1.9	6.76	1250
K21R 315 LX12	K20R 315 LX12	90	1747	492	93.3	0.67	208	5.0	1.6	1.5	2.2	8.71	1430
K22R 355 MY12		90	1754	490	data on request							9.3	1500
K22R 355 M12		110	2122	495	91.7	0.53	327	4.0	1.3	1.0	1.6	9.3	1850
K22R 355 MX12		132	2573	495	data on request							9.5	1600
K22R 355 LY12		145	2826	495	data on request							15.8	2400
K22R 355 L12		160	3087	495	93.9	0.6	410	4.0	1.1	0.9	1.6	15.8	2400

Three-phase motors with squirrel-cage rotor

with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data — Design point 400 V, 50 Hz

Type		P_B	M_B	n_B	η_B	cos φ_B	I_B 400 V	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
		kW	Nm	rpm	%	-	A	-	-	-	-	kgm^2	kg
Synchronous speed 375 rpm – 16-pole version													
K21R 132 S16	K20R 112 M16	0.55	15	350	42	0.43	4.4	2.0	1.8		2.3	0.018	46
K21R 132 M16	K20R 112 MX16	0.75	20.5	350	45	0.43	5.6	2.0	1.7		2.2	0.023	53
K21R 160 M16	K20R 132 S16	0.9	24.2	355	49	0.38	7	2.0	1.3		1.9	0.043	70
K21R 160 MX16	K20R 132 M16	1.1	29.6	355	51	0.37	8.4	2.0	1.4		1.9	0.053	86
K21R 160 L16	K20R 160 S16	1.5	39.8	360	58	0.4	9.3	2.5	1.5		2.2	0.113	114
K21R 180 L16	K20R 160 M16	2.2	58.3	360	65	0.44	11	2.5	1.4		1.9	0.145	136
K21R 200 L16	K20R 180 S16	3	79.6	360	71	0.4	15	2.8	1.5		2.2	0.228	175
K21R 200 LX16	K20R 180 M16	4	106	360	73	0.4	20	2.8	1.4		2.0	0.268	200
K21R 225 M16	K20R 200 M16	5.5	144	365	74	0.41	26	2.8	1.3		2.0	0.44	265
K21R 250 M16	K20R 225 M16	7.5	196	365	75	0.37	39	2.8	1.4		2.0	0.825	360
K21R 280 S16	K20R 250 S16	9.5	245	370	76	0.35	51.5	2.8	1.5		2.1	1.35	465
K21R 280 M16	K20R 250 M16	11	284	370	77	0.36	57.5	2.9	1.5		2.1	1.55	520
K21R 315 S16	K20R 280 S16	15	387	370	82	0.4	66	3.5	1.5		2	2.63	690
K21R 315 M16	K20R 280 M16	18.5	478	370	82	0.4	81.5	3.7	1.6		2.1	3.33	800
K21R 315 MX16	K20R 315 S16	22	568	370	87.5	0.46	79	3.5	1.5	1.2	1.9	3.6	880
K21R 315 MY16	K20R 315 M16	30	774	370	87	0.38	131	3.4	2.1	1.3	2.0	6	1050
K21R 315 L16	K20R 315 L16	37	955	370	84.5	0.38	166	3.2	1.2		1.7	6.76	1250
Synchronous speed 300 rpm – 20-pole version													
K21R 160 L20	K20R 160 S20	0.75	24.5	292	51	0.32	6.6	2.1	1.6		2.3	0.113	114
K21R 180 L20	K20R 160 M20	1.1	36.1	291	52	0.33	9.3	2.1	1.6		2.2	0.145	136
K21R 200 L20	K20R 180 S20	1.5	48.9	293	55	0.31	12.5	2.2	1.6		2.4	0.228	175
K21R 200 LX20	K20R 180 M20	1.8	58.9	292	58	0.32	14	2.2	1.5		2.2	0.268	200
K21R 225 M20	K20R 200 M20	2.1	68	295	61	0.28	17.5	2.3	1.5		2.6	0.44	265
K21R 250 M20	K20R 225 M20	3	97.1	295	63	0.29	23.5	2.3	1.5		2.3	0.825	360
K21R 280 S20	K20R 250 S20	4	129	296	62	0.25	37	2.2	1.6		2.2	1.35	465
K21R 280 M20	K20R 250 M20	5.5	177	296	67	0.27	44	2.2	1.4		2.2	1.55	520
K21R 315 S20	K20R 280 S20	7.5	241	297	79	0.25	55	2.4	1.4		2.4	2.63	690
K21R 315 M20	K20R 280 M20	9.5	305	297	72	0.25	76	2.4	1.4		2.4	3.33	800
K21R 315 MX20	K20R 315 S20	12	386	297	75	0.3	77	2.7	1.4		2.7	3.6	880
K21R 315 MY20	K20R 315 M20	16	516	296	80	0.32	90	3.0	1.4		3.0	6	1050
K21R 315 L20	K20R 315 L20	18	581	296	82	0.34	93	2.8	1.2		2.8	6.76	1250
Synchronous speed 250 rpm – 24-pole version													
K21R 160 L24	K20R 160 S24	0.37	14.7	240	40	0.29	4.6	1.6	1.5		2.0	0.113	114
K21R 180 L24	K20R 160 M24	0.55	21.9	240	42	0.28	6.8	1.6	1.5		2.0	0.145	136
K21R 200 L24	K20R 180 S24	0.75	29.2	245	44	0.28	8.8	1.7	1.4		2.0	0.228	175
K21R 200 LX24	K20R 180 M24	1.1	42.8	245	46	0.27	13	1.7	1.4		2.0	0.268	200
K21R 225 M24	K20R 200 M24	1.5	58.5	245	48	0.24	19	1.7	1.3		2.1	0.44	265
K21R 250 M24	K20R 225 M24	2.2	85.8	245	53	0.23	26	1.7	1.2		1.8	0.825	360
K21R 280 S24	K20R 250 S24	2.6	101	245	54	0.21	33	1.7	1.3		1.8	1.35	465
K21R 280 M24	K20R 250 M24	3	117	245	54	0.2	40	1.7	1.4		2.0	1.55	520
K21R 315 S24	K20R 280 S24	4	156	245	63	0.23	40	2.3	1.6		2.2	2.63	690
K21R 315 M24	K20R 280 M24	5.5	214	245	66	0.24	50	2.2	1.4		2.0	3.33	800
K21R 315 MX24	K20R 315 S24	7.5	292	245	65	0.23	72.5	2.2	1.4		1.9	3.6	880
K21R 315 MY24	K20R 315 M24	9.5	370	245	69	0.22	90.3	2.2	1.2		1.7	6	1050
K21R 315 L24	K20R 315 L24	11	429	245	72	0.24	92	2.2	1.2		1.7	6.76	1250

Three-phase motors with squirrel-cage rotor

with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55, 50 Hz

Motor selection data

Partial load operational data

			efficiency, power factor in partial load operational range									
Type		P	efficiency					power factor				
		kW	1/4	2/4	3/4	4/4	5/4	1/4	2/4	3/4	4/4	5/4
Synchronous speed 3000 rpm – 2-pole version												
K21R 56 K2	-	0.09	44.0	60.0	67.5	70.0	67.0	0.37	0.52	0.67	0.74	0.82
K21R 56 G2	-	0.12	45.0	63.0	69.6	70.3	68.0	0.39	0.54	0.68	0.77	0.84
K21R 63 K2	K20R 56 K2	0.18	38.0	55.5	63.1	67.1	64.0	0.40	0.54	0.68	0.76	0.85
K21R 63 G2	K20R 56 G2	0.25	40.0	58.0	65.6	68.1	66.0	0.35	0.48	0.61	0.72	0.84
K21R 71 K2	K20R 63 K2	0.37	50.0	65.0	69.7	71.5	67.0	0.39	0.57	0.72	0.79	0.88
K21R 71 G2	K20R 63 G2	0.55	52.5	68.0	72.7	74.3	71.0	0.36	0.53	0.68	0.81	0.85
K21R 80 K2	K20R 71 K2	0.75	61.0	74.0	77.3	77.5	74.0	0.39	0.59	0.73	0.81	0.87
K21R 80 G2	K20R 71 G2	1.1	58.0	73.0	77.4	77.8	74.0	0.40	0.58	0.73	0.8	0.88
K21R 90 S2	K20R 80 K2	1.5	70.0	79.0	80.2	81.2	79.0	0.41	0.61	0.74	0.86	0.87
K21R 90 L2	K20R 80 G2	2.2	72.0	80.0	81.5	82.0	78.0	0.44	0.67	0.79	0.85	0.90
K21R 100 L2	K20R 90 L2	3.0	80.0	84.0	84.2	83.4	79.0	0.50	0.71	0.81	0.84	0.87
K21R 112 M2	K20R 100 S2	4.0	74.0	83.0	84.7	85.0	79.0	0.42	0.63	0.76	0.81	0.87
K21R 132 S2 T	-	5.5	79.0	86.0	86.6	86.3	84.0	0.42	0.65	0.77	0.84	0.87
K21R 132 SX2	K20R 112 M2	7.5	77.5	85.0	87.0	87.0	85.0	0.59	0.74	0.81	0.86	0.88
K21R 160 M2	K20R 132 M2	11.0	77.0	85.5	88.5	88.5	86.0	0.61	0.79	0.87	0.9	0.9
K21R 160 MX2	K20R 160 S2	15.0	78.0	86.5	89.4	89.4	87.5	0.65	0.81	0.87	0.9	0.91
K21R 160 L2	K20R 160 M2	18.5	82.0	87.0	89.5	90.5	89.5	0.74	0.85	0.9	0.92	0.91
K21R 180 M2	K20R 180 S2	22	80.0	88.0	91.0	91.8	90.0	0.68	0.86	0.91	0.92	0.91
K21R 200 L2	K20R 180 M2	30	87.0	90.5	92.0	92.8	92.0	0.73	0.86	0.89	0.92	0.92
K21R 200 Lx2	K20R 200 M2	37	86.0	90.5	92.0	93.0	92.5	0.70	0.85	0.89	0.9	0.89
K21R 225 M2	K20R 200 L2	45	85.5	90.5	93.0	93.7	93.0	0.71	0.85	0.89	0.91	0.90
K21R 250 M2	K20R 225 M2	55	84.0	90.5	92.5	93.7	93.5	0.70	0.85	0.88	0.91	0.91
K21R 280 S2	K20R 250 S2	75	88.5	92.0	93.5	94.6	94.0	0.74	0.87	0.91	0.92	0.92
K21R 280 M2	K20R 250 M2	90	87.5	92.0	94.2	94.7	94.8	0.70	0.86	0.89	0.91	0.92
K21R 315 S2	K20R 280 S2	110	87.5	93.0	94.5	95.4	94.5	0.73	0.84	0.88	0.91	0.90
K21R 315 M2	K20R 280 M2	132	90.0	93.5	94.5	95.4	95.0	0.72	0.86	0.89	0.91	0.90
K21R 315 MX2	K20R 315 S2	160	86.0	94.5	95.0	96.0	95.0	0.75	0.88	0.91	0.93	0.91
K21R 315 MY2	K20R 315 M2	200	86.0	94.5	95.2	96.0	95.5	0.67	0.83	0.9	0.92	0.91
K21R 315 L2	K20R 315 L2	250	94.0	95.0	95.2	96.1	95.5	0.80	0.90	0.92	0.93	0.9
K21R 315 LX2	K20R 315 LX2	315	94.5	95.0	95.5	96.7	96.7	0.79	0.90	0.93	0.92	0.92
K22R 355 MY2		315	93.5	96.0	96.6	96.8	96.8	0.68	0.82	0.87	0.88	0.87
K22R 355 M2		355	94.5	96.0	96.5	96.5	96.3	0.78	0.88	0.90	0.91	0.90
K22R 355 MX2		400	93.5	96.0	96.7	96.8	96.3	0.74	0.84	0.88	0.90	0.89
K22R 355 LY2		450	94.5	96.0	96.7	96.9	96.4	0.83	0.91	0.92	0.92	0.91
K22R 355 L2		500	95.0	96.5	97.0	97.2	96.7	0.77	0.87	0.91	0.92	0.91

Synchronous speed 1500 rpm – 4-pole version												
K21R 56 K4		0.06	35.0	46.0	56.8	60.5	60.0	0.35	0.45	0.54	0.60	0.87
K21R 56 G4		0.09	37.0	52.0	61.0	62.0	58.0	0.35	0.49	0.61	0.71	0.87
K21R 63 K4	K20R 56 K4	0.12	27.0	44.0	56.7	57.5	54.0	0.4	0.50	0.6	0.68	0.87
K21R 63 G4	K20R 56 G4	0.18	30.0	47.0	56.5	61.0	56.0	0.37	0.47	0.59	0.66	0.7
K21R 71 K4	K20R 63 K4	0.25	38.0	55.0	62.3	64.6	60.0	0.36	0.49	0.62	0.72	0.78
K21R 71 G4	K20R 63 G4	0.37	46.0	62.0	66.9	67.8	62.0	0.37	0.51	0.65	0.74	0.77
K21R 80 K4	K20R 80 K4	0.55	45.0	61.0	69.3	71.5	68.0	0.33	0.48	0.6	0.69	0.77
K21R 80 G4	K20R 80 G4	0.75	50.0	65.0	70.8	73.5	69.0	0.33	0.49	0.62	0.7	0.81
K21R 90 K4	K20R 80 K4	1.1	60.0	72.0	75.3	76.6	73.0	0.39	0.58	0.72	0.79	0.83
K21R 90 G4	K20R 80 G4	1.5	64.0	75.0	77.9	78.8	74.0	0.41	0.62	0.75	0.81	0.79
K21R 100 S4	K20R 90 L4	2.2	64.0	76.0	80.0	81.0	77.0	0.35	0.55	0.69	0.79	0.79
K21R 100 L4	K20R 100 S4	3.0	70.0	81.0	82.3	82.6	79.0	0.36	0.56	0.7	0.79	0.86
K21R 112 M4	K20R 100 L4	4.0	73.0	82.0	83.6	84.2	81.0	0.36	0.57	0.71	0.78	0.87
K21R 132 S4 T	K20R 100 LX4	5.5	75.0	84.0	85.3	86.3	82.0	0.36	0.57	0.71	0.78	0.83
K21R 132 M4	K20R 132 S4	7.5	76.5	84.5	86.0	87.0	84.0	0.45	0.68	0.78	0.84	0.86
K21R 160 M4	K20R 132 M4	11.0	79.0	86.0	88.0	88.4	86.0	0.47	0.68	0.79	0.85	0.87
K21R 160 L4	K20R 160 S4	15.0	79.0	86.5	89.0	89.4	87.5	0.54	0.73	0.81	0.86	0.87
K21R 180 M4	K20R 160 M4	18.5	77.0	87.5	89.5	90.0	88.0	0.45	0.72	0.81	0.86	0.87
K21R 180 L4	K20R 180 S4	22	82.0	89.0	90.5	90.5	90.0	0.48	0.70	0.8	0.84	0.85
K21R 200 L4	K20R 180 M4	30	84.0	90.0	91.0	91.5	91.0	0.52	0.73	0.81	0.85	0.86
K21R 225 S4	K20R 200 M4	37	85.0	90.5	91.5	92.5	91.0	0.57	0.77	0.85	0.86	0.86
K21R 225 M4	K20R 200 L4	45	85.0	91.0	92.5	93.0	92.0	0.53	0.71	0.8	0.86	0.85
K21R 250 M4	K20R 225 M4	55	87.0	92.0	93.0	93.5	93.0	0.62	0.79	0.85	0.86	0.86
K21R 280 S4	K20R 250 S4	75	87.0	92.0	93.5	94.1	93.5	0.63	0.79	0.85	0.86	0.86
K21R 280 M4	K20R 250 M4	90	87.0	91.0	93.5	94.6	94.0	0.63	0.80	0.85	0.86	0.86
K21R 315 S4	K20R 280 S4	110	89.0	93.0	94.5	95.1	94.0	0.60	0.79	0.84	0.86	0.86
K21R 315 M4	K20R 280 M4	132	90.0	93.5	94.5	95.1	94.5	0.62	0.79	0.83	0.86	0.85
K21R 315 MX4	K20R 315 S4	160	88.0	94.0	94.8	95.0	94.5	0.66	0.80	0.85	0.87	0.85
K21R 315 MY4	K20R 315 M4	200	93.0	94.5	95.0	96.0	95.5	0.66	0.82	0.86	0.88	0.87
K21R 315 L4	K20R 315 L4	250	94.0	94.5	95.0	96.1	95.7	0.67	0.87	0.87	0.9	0.88
K21R 315 LX4	K20R 315 LX4	315	95.0	95.2	95.5	96.5	95.5	0.64	0.81	0.86	0.88	0.87
K22R 355 MY4		315	91.0	94.0	95.5	95.6	96.5	0.60	0.75	0.82	0.85	0.85
K22R 355 M4		355	92.0	95.5	96.5	96.8	96.6	0.48	0.67	0.78	0.84	0.85
K22R 355 MX4		400	93.0	96.0	96.7	96.8	96.8	0.50	0.75	0.81	0.84	0.84
K22R 355 LY4		450	93.5	96.0	96.7	96.8	96.5	0.45	0.67	0.77	0.82	0.82
K22R 355 L4		500	92.5	95.5	96.4	96.7	96.3	0.45	0.61	0.72	0.79	0.79

Three-phase motors with squirrel-cage rotor

with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55, 50 Hz

Motor selection data

Partial load operational data

			efficiency, power factor in partial load operational range									
Type		P	efficiency					power factor				
		kW	1/4	2/4	3/4	4/4	5/4	1/4	2/4	3/4	4/4	5/4
Synchronous speed 1000 rpm – 6-pole version												
K21R 63 K6	K20R 56 K6	0.09	23.0	35.0	45.3	50.5	49.0	0.35	0.44	0.51	0.56	0.83
K21R 63 G6	K20R 56 G6	0.12	26.0	40.0	48.0	52.0	48.0	0.34	0.43	0.51	0.56	0.83
K21R 71 K6	K20R 63 K6	0.18	31.0	46.0	54.5	58.0	56.0	0.28	0.36	0.44	0.51	0.85
K21R 71 G6	K20R 63 G6	0.25	33.0	48.0	56.5	60.0	58.0	0.30	0.39	0.48	0.55	0.64
K21R 80 K6	K20R 71 K6	0.37	40.0	56.0	62.5	66.0	60.0	0.34	0.47	0.6	0.66	0.65
K21R 80 G6	K20R 71 G6	0.55	44.0	59.0	65.5	68.0	62.0	0.33	0.47	0.6	0.67	0.6
K21R 90 S6	K20R 80 K6	0.75	44.0	60.0	67.5	70.0	67.0	0.30	0.41	0.52	0.64	0.6
K21R 90 L6	K20R 80 G6	1.1	50.0	64.0	70.0	73.0	69.0	0.32	0.48	0.59	0.69	0.79
K21R 100 L6	K20R 90 L6	1.5	61.0	73.0	76.2	76.4	72.0	0.32	0.50	0.64	0.73	0.8
K21R 112 M6	K20R 100 S6	2.2	65.0	76.0	78.9	79.8	76.0	0.35	0.55	0.68	0.74	0.72
K21R 132 S6	K20R 112 M6	3.0	62.0	75.0	78.5	78.5	77.0	0.41	0.60	0.73	0.82	0.85
K21R 132 M6	K20R 112 MX6	4.0	60.0	74.0	79.0	80.0	80.0	0.40	0.56	0.7	0.8	0.82
K21R 132 MX6	K20R 132 S6	5.5	71.0	81.0	83.0	83.0	81.0	0.42	0.64	0.75	0.83	0.83
K21R 160 M6	K20R 132 M6	7.5	70.0	80.0	84.0	85.0	83.0	0.44	0.65	0.75	0.82	0.84
K21R 160 L6	K20R 160 S6	11.0	71.0	83.0	85.0	85.2	83.5	0.51	0.72	0.8	0.86	0.86
K21R 180 L6	K20R 160 M6	15.0	73.0	82.0	85.0	86.0	85.0	0.44	0.65	0.76	0.83	0.85
K21R 200 L6	K20R 180 S6	18.5	79.0	86.0	88.0	88.1	87.0	0.58	0.76	0.84	0.87	0.88
K21R 200 LX6	K20R 180 M6	22	78.0	86.0	88.0	88.8	87.5	0.54	0.74	0.82	0.87	0.87
K21R 225 M6	K20R 200 M6	30	81.0	88.0	90.0	90.4	89.0	0.63	0.81	0.86	0.89	0.88
K21R 250 M6	K20R 225 M6	37	81.0	88.0	90.8	91.0	90.0	0.60	0.80	0.86	0.89	0.88
K21R 280 S6	K20R 250 S6	45	84.0	90.0	92.0	92.0	91.0	0.60	0.80	0.86	0.87	0.87
K21R 280 M6	K20R 250 M6	55	85.0	90.0	92.0	92.5	92.0	0.58	0.77	0.84	0.88	0.87
K21R 315 S6	K20R 280 S6	75	88.0	92.0	93.0	93.7	93.0	0.56	0.76	0.84	0.87	0.87
K21R 315 M6	K20R 280 M6	90	86.5	92.0	93.5	94.4	93.8	0.54	0.75	0.83	0.88	0.87
K21R 315 MX6	K20R 315 S6	110	88.0	92.3	93.8	94.0	93.5	0.55	0.75	0.81	0.88	0.86
K21R 315 MY6	K20R 315 M6	132	85.0	93.5	94.7	95.0	94.5	0.62	0.80	0.86	0.88	0.88
K21R 315 L6	K20R 315 L6	160	85.0	93.8	95.0	95.3	94.5	0.63	0.80	0.86	0.89	0.88
K21R 315 LX6	K20R 315 LX6	200	90.0	94.0	94.7	95.0	94.5	0.57	0.77	0.85	0.87	0.86
K22R 355 MY6		200	93.5	95.5	96.0	96.1	96.1	0.60	0.76	0.81	0.83	0.83
K22R 355 M6		250	92.0	94.8	95.7	96.0	95.9	0.48	0.67	0.76	0.81	0.81
K22R 355 MX6		315	94.0	95.8	96.5	96.5	96.3	0.52	0.73	0.80	0.83	0.83
K22R 355 LY6		355	88.0	94.0	95.8	96.0	95.8	0.30	0.60	0.71	0.78	0.77

Synchronous speed 750 rpm – 8-pole version												
K21R 71 K8	K20R 63 K8	0.09	19.0	31.0	40.3	45.5	43.0	0.34	0.42	0.48	0.51	0.77
K21R 71 G8	K20R 63 G8	0.12	20.0	33.0	41.3	46.5	44.0	0.34	0.40	0.47	0.51	0.78
K21R 80 K8	K20R 80 K8	0.18	30.0	44.0	53.8	56.5	52.0	0.33	0.43	0.52	0.59	0.84
K21R 80 G8	K20R 80 G8	0.25	29.0	44.0	54.0	58.0	56.0	0.31	0.41	0.48	0.56	0.62
K21R 90 K8	K20R 80 K8	0.37	31.0	47.0	56.3	61.5	59.0	0.30	0.39	0.49	0.54	0.62
K21R 90 G8	K20R 80 G8	0.55	40.0	54.0	61.8	64.9	62.0	0.30	0.43	0.53	0.62	0.69
K21R 100 S8	K20R 90 L8	0.75	41.0	57.0	64.0	67.0	65.0	0.30	0.41	0.51	0.60	0.66
K21R 100 L8	K20R 100 S8	1.1	54.0	67.0	72.5	73.0	69.0	0.30	0.46	0.58	0.67	0.65
K21R 112 M8	K20R 100 L8	1.5	62.0	72.0	75.3	75.5	72.0	0.31	0.49	0.62	0.70	0.67
K21R 132 S8	K20R 112 M8	2.2	57.0	72.0	75.0	75.5	73.0	0.35	0.52	0.65	0.76	0.78
K21R 132 M8	K20R 112 MX8	3.0	63.0	75.0	78.0	78.0	74.0	0.33	0.52	0.66	0.75	0.78
K21R 160 M8	K20R 132 S8	4.0	67.0	77.0	79.0	79.3	75.0	0.40	0.60	0.73	0.78	0.79
K21R 160 MX8	K20R 132 M8	5.5	68.0	78.0	81.0	81.4	78.0	0.37	0.57	0.70	0.78	0.79
K21R 160 L8	K20R 160 S8	7.5	67.0	79.0	83.0	83.0	81.0	0.38	0.58	0.68	0.78	0.79
K21R 180 L8	K20R 160 M8	11.0	71.5	81.5	84.0	85.0	83.5	0.41	0.60	0.72	0.78	0.80
K21R 200 L8	K20R 180 S8	15.0	73.5	83.0	86.0	86.5	84.5	0.40	0.62	0.72	0.79	0.79
-	K20R 180 M8	18.5	78.0	86.0	87.0	87.5	86.0	0.46	0.67	0.75	0.80	0.82
K21R 225 S8	-	18.5	79.0	86.0	88.0	89.2	87.5	0.48	0.68	0.77	0.83	0.83
K21R 225 M8	K20R 200 M8	22	81.0	88.5	89.0	89.2	87.5	0.45	0.67	0.78	0.84	0.84
K21R 250 M8	K20R 225 M8	30	81.0	87.0	90.0	90.2	89.0	0.41	0.63	0.73	0.79	0.80
K21R 280 S8	K20R 250 S8	37	82.0	88.0	90.5	91.0	90.0	0.47	0.67	0.76	0.80	0.80
K21R 280 M8	K20R 250 M8	45	81.0	88.5	91.0	91.5	91.0	0.43	0.63	0.73	0.77	0.79
K21R 315 S8	K20R 280 S8	55	85.0	90.5	92.0	93.1	92.5	0.42	0.64	0.73	0.80	0.79
K21R 315 M8	K20R 280 M8	75	87.0	91.5	93.0	93.3	92.0	0.44	0.66	0.75	0.81	0.81
K21R 315 MX8	K20R 315 S8	90	84.0	91.5	93.0	93.5	93.0	0.44	0.67	0.76	0.81	0.81
K21R 315 MY8	K20R 315 M8	110	88.0	92.0	94.0	94.6	94.0	0.46	0.67	0.76	0.81	0.80
K21R 315 L8	K20R 315 L8	132	88.0	92.0	94.3	95.0	94.5	0.50	0.70	0.77	0.83	0.82
K21R 315 LX8	K20R 315 LX8	160	88.0	92.0	94.5	95.2	94.6	0.40	0.63	0.73	0.79	0.79
K22R 355 MY8		160	92.0	94.2	95.0	95.2	95.0	0.52	0.68	0.76	0.80	0.80
K22R 355 M8		200	92.0	94.5	95.3	95.6	95.5	0.44	0.60	0.70	0.77	0.78
K22R 355 MX8		250	93.0	94.5	95.6	95.8	95.7	0.48	0.61	0.72	0.78	0.79
K22R 355 LY8		280	90.0	94.0	95.1	95.3	95.2	0.38	0.59	0.71	0.78	0.76

Three-phase motors with squirrel-cage rotor, increased output

Design for rated voltages zone A acc. to IEC 34-1, 50 Hz
with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data — Design point 400 V, 50 Hz

Type	P	M_B	n	η	$\cos\varphi$	I 400 V	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
	kW	Nm	rpm	%	-	A	-	-	-	-	kgm²	kg
Synchronous speed 3000 rpm – 2-pole version												
K25R 56 K2	0.18	0.62	2790	67.1	0.76	0.51	4.1	1.9	1.9	2.2	0.00013	4.9
K25R 56 G2	0.25	0.85	2800	68.1	0.72	0.74	4.2	2.2	2.2	2.4	0.00015	5.2
K25R 63 K2	0.37	1.27	2780	71.5	0.79	0.94	4.4	2.1	2.1	2.3	0.00025	6.7
K25R 63 G2	0.55	1.89	2775	74.3	0.81	1.32	5.1	2.3	2.1	2.6	0.00032	7.6
K25R 71 K2	0.75	2.54	2825	77.5	0.81	1.72	5.9	2.4	2.4	2.4	0.00057	10.7
K25R 71 G2	1.1	3.71	2835	77.8	0.80	2.55	6.0	2.4	2.3	2.6	0.00072	11.5
K25R 80 K2	1.5	5.04	2840	81.2	0.86	3.1	7.0	2.5	2.5	2.8	0.00132	16
K25R 80 G2	2.2	7.37	2850	82.0	0.85	4.55	7.5	2.8	2.3	2.9	0.0017	19
K25R 90 L2	3.0	10.0	2865	83.4	0.84	6.15	6.8	2.4	2.2	2.8	0.00275	25
K25R 100 S2	4.0	13.2	2900	85.0	0.81	8.4	7.0	2.2	2.1	2.9	0.0045	32
K25R 100 L2	5.5	18.2	2890	86.3	0.84	11	7.5	2.4	2.2	3.0	0.0055	38
K25R 112 M2	7.5	24.7	2900	87.0	0.86	15	6.6	1.8	1.3	2.5	0.0110	57
K25R 132 M2	11.0	36.2	2900	88.5	0.90	20	7.0	2.4	2.0	3.0	0.0258	81
K25R 160 MY2	15.0	48.9	2930	89.4	0.90	27	7.1	2.2	1.7	2.9	0.0575	118
K25R 160 M2	18.5	60.5	2920	90.5	0.92	32	7.2	2.1	1.6	2.8	0.0675	134
K25R 180 MY2	22	71.6	2935	91.8	0.92	37.5	6.8	1.7	1.4	2.6	0.1050	165
K25R 180 M2	30	97.5	2940	92.8	0.92	50.5	7.3	2.0	1.6	2.9	0.1280	195
K25R 200 LY2	37	120	2940	93.0	0.90	64	7.0	1.8	1.3	2.4	0.1930	255
K25R 200 L2	45	146	2940	93.7	0.91	76	7.5	1.8	1.4	2.7	0.2200	290
K25R 225 M2	55	178	2955	93.7	0.91	93	7.5	2.0	1.5	2.6	0.3750	360
K25R 250 MY2	75	241	2970	94.6	0.92	124	7.5	2.0	1.6	2.6	0.6500	490
K25R 250 M2	90	289	2970	94.7	0.91	151	8.5	2.2	1.8	2.8	0.6750	510
K25R 280 S2	110	353	2975	95.4	0.91	183	8.5	1.5	1.3	2.5	1.210	720
K25R 280 M2	132	424	2975	95.4	0.91	219	8.5	2.0	1.8	2.7	1.440	800

Synchrondrehzahl 1500 min^{-1} – 4polige Ausführung												
K25R 56 K4	0.12	0.84	1370	57.5	0.68	0.44	3.2	1.9	1.8	2.2	0.00019	4.8
K25R 56 G4	0.18	1.26	1360	61.0	0.66	0.65	3.3	2.0	2.0	2.3	0.00024	5.2
K25R 63 K4	0.25	1.72	1385	64.6	0.72	0.78	3.6	1.8	1.8	2.1	0.00040	6.8
K25R 63 G4	0.37	2.58	1370	67.8	0.74	1.06	3.8	2.0	2.0	2.2	0.00050	7.8
K25R 71 K4	0.55	3.75	1400	71.5	0.69	1.60	4.1	2.1	2.0	2.3	0.00087	10.6
K25R 71 G4	0.75	5.12	1400	73.5	0.70	2.10	4.6	2.2	2.1	2.3	0.00107	11.7
K25R 80 K4	1.10	7.45	1410	76.6	0.79	2.62	5.5	2.3	2.2	2.5	0.00207	15.5
K25R 80 G4	1.50	10.2	1400	78.8	0.81	3.40	5.5	2.5	2.4	2.6	0.00260	18
K25R 90 L4	2.20	14.9	1410	81.2	0.79	4.95	6.0	2.5	2.3	2.7	0.00400	23.5
K25R 100 S4	3.00	20.0	1430	82.6	0.79	6.65	6.5	2.5	2.2	2.9	0.00725	30
K25R 100 L4	4.00	26.6	1435	84.2	0.78	8.80	6.9	2.6	2.5	3.2	0.00900	37
K25R 112 M4	5.5	27.0	1420	86.5	0.78	11.80	6.3	2.5	2.4	2.9	0.01100	47
K25R 132 S4	7.5	49.4	1450	87.0	0.84	15	6.0	2.0	1.7	2.9	0.0280	70
K25R 132 M4	11.0	72.5	1450	88.4	0.85	21.0	6.8	2.2	1.9	3.3	0.0350	92
K25R 160 MY4	15.0	97.8	1465	89.4	0.86	28.0	7.3	2.5	2.0	3.0	0.0780	120
K25R 160 M4	18.5	121	1460	90.0	0.86	35	6.8	2.5	2.0	2.9	0.0900	136
K25R 180 MY4	22	143	1465	90.5	0.84	42	6.5	2.0	1.8	2.6	0.1380	170
K25R 180 M4	30	196	1465	91.5	0.85	55.5	7.0	2.0	1.7	2.4	0.1680	220
K25R 200 LY4	37	240	1470	92.5	0.86	67	7.0	2.0	1.7	2.5	0.2750	270
K25R 200 L4	45	292	1470	93.0	0.86	81	7.0	2.0	1.7	2.5	0.3130	300
K25R 225 M4	55	356	1475	93.5	0.86	98.5	7.0	2.2	1.7	2.3	0.5250	375
K25R 250 MY4	75	484	1480	94.1	0.86	134	7.0	2.0	1.7	2.2	0.950	520
K25R 250 M4	90	581	1480	94.6	0.86	160	7.0	2.1	1.6	2.2	1.100	580
K25R 280 S4	110	707	1485	95.1	0.86	194	7.5	1.8	1.6	2.2	1.960	740
K25R 280 M4	132	849	1485	95.1	0.86	233	7.0	1.8	1.5	2.2	2.270	840

Three-phase motors with squirrel-cage rotor, increased output

Design for rated voltages zone A acc. to IEC 34-1, 50 Hz
with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data — Design point 400 V, 50 Hz

Type	P	M_B	n	η	$\cos\varphi$	I 400 V	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
	kW	Nm	rpm	%	-	A	-	-	-	-	kgm²	kg
Synchronous speed 1000 rpm – 6-pole version												
K25R 56 K6	0.09	0.96	895	50.5	0.56	0.46	2.5	2.0	2.0	2.4	0.00024	4.9
K25R 56 G6	0.12	1.30	880	52.0	0.56	0.59	2.5	2.0	2.0	2.3	0.00027	5.7
K25R 63 K6	0.18	1.86	925	58.0	0.51	0.88	2.8	1.6	1.6	2.1	0.00045	7.4
K25R 63 G6	0.25	2.61	915	60.0	0.55	1.10	2.9	2.0	2.0	2.2	0.00060	8.3
K25R 71 K6	0.37	3.86	915	66.0	0.66	1.22	3.4	2.0	2.0	2.0	0.00130	11
K25R 71 G6	0.55	5.74	915	68.0	0.67	1.73	3.7	2.2	2.2	2.4	0.00175	12.5
K25R 80 K6	0.75	7.66	935	70.0	0.64	2.43	4.5	2.4	2.4	2.6	0.00325	16
K25R 80 G6	1.10	11.2	935	73.0	0.69	3.15	4.6	2.2	2.2	2.6	0.00425	19
K25R 90 L6	1.50	15.2	945	76.4	0.73	3.90	4.6	2.1	2.0	2.4	0.00625	24
K25R 100 S6	2.20	22.1	950	79.8	0.74	5.35	5.3	2.2	2.1	2.7	0.01225	33.5
K25R 112 M6	3.0	30.0	955	78.5	0.82	6.7	5.7	1.8	1.6	2.7	0.0180	46
K25R 112 MX6	4.0	40.0	955	80.0	0.80	9	6.0	2.2	2.0	3.1	0.0230	53
K25R 132 S6	5.5	55.0	955	83.0	0.83	11.5	5.0	1.8	1.5	2.3	0.0430	70
K25R 132 M6	7.5	74.6	960	85.0	0.82	15.5	5.5	2.0	1.6	2.5	0.0530	86
K25R 160 MY6	11.0	109	965	85.2	0.86	21.5	5.0	2.0	1.7	2.3	0.1130	114
K25R 160 M6	15.0	148	965	86.0	0.83	30.5	6.0	2.4	2.1	2.7	0.1450	136
K25R 180 MY6	18.5	182	970	88.1	0.87	35.0	5.5	2.0	1.7	2.4	0.2280	175
K25R 180 M6	22	217	970	88.8	0.87	41	6.2	2.2	1.8	2.6	0.2680	200
K25R 200 L6	30	295	973	90.4	0.89	54	6.5	2.2	1.7	2.5	0.4430	265
K25R 225 M6	37	362	975	91.0	0.89	66	6.5	2.2	1.7	2.3	0.8250	360
K25R 250 MY6	45	439	980	92.0	0.87	81	6.0	2.0	1.5	2.0	1.280	465
K25R 250 M6	55	534	980	92.5	0.88	97.5	6.5	2.3	1.7	2.4	1.480	520
K25R 280 S6	75	727	985	93.7	0.87	133	7.0	2.0	1.6	2.4	2.630	690
K25R 280 M6	90	868	990	94.4	0.88	156	7.0	2.0	1.7	2.4	3.330	800

Synchronous speed 750 rpm – 8-pole version												
K25R 63 K8	0.09	1.27	675	45.5	0.51	0.56	2.1	1.9	1.9	2.1	0.00050	6.6
K25R 63 G8	0.12	1.71	670	46.5	0.51	0.73	2.3	1.8	1.8	2.1	0.00060	8.1
K25R 71 K8	0.18	2.49	690	56.5	0.59	0.78	2.8	2.0	2.0	2.2	0.00130	10.5
K25R 71 G8	0.25	3.44	695	58.0	0.56	1.12	3.0	2.3	2.3	2.5	0.00175	12
K25R 80 K8	0.37	5.05	700	61.5	0.54	1.6	3.0	1.9	1.9	2.1	0.00300	15
K25R 80 G8	0.55	7.56	695	64.5	0.60	2.04	3.2	1.9	1.9	2.2	0.00375	18
K25R 90 L8	0.75	10.2	705	67.0	0.60	2.7	3.3	1.8	1.8	2.2	0.00625	23
K25R 100 S8	1.1	14.9	705	73.0	0.67	3.25	4.0	2.0	2.0	2.4	0.00900	28
K25R 100 L8	1.5	20.3	705	75.5	0.70	4.1	4.4	2.2	2.1	2.5	0.01225	33.5
K25R 112 M8	2.2	29.8	705	75.5	0.76	5.5	4.5	1.7	1.6	2.3	0.0180	46
K25R 112 MX8	3.0	40.6	705	78.0	0.75	7.4	4.5	1.7	1.6	2.3	0.0230	53
K25R 132 S8	4.0	53.8	710	79.3	0.78	9.3	4.0	1.6	1.3	1.9	0.0430	70
K25R 132 M8	5.5	74.0	710	81.4	0.78	12.5	4.5	1.7	1.6	2.1	0.0530	86
K25R 160 MY8	7.5	98.8	725	83.0	0.78	16.5	4.5	1.8	1.6	2.1	0.1130	114
K25R 160 M8	11.0	146	720	85.0	0.78	24	4.5	2.0	1.7	2.1	0.1450	136
K25R 180 MY8	15.0	198	725	86.5	0.79	31.5	5.0	2.0	1.7	2.3	0.2280	175
K25R 180 M8	18.5	244	725	89.2	0.83	36	5.5	2.0	1.6	2.2	0.4400	265
K25R 200 M8	22	290	725	89.2	0.84	42.5	5.0	1.8	1.5	2.2	0.4400	265
K25R 225 M8	30	392	730	90.2	0.79	61	5.5	2.2	1.8	2.2	0.8250	360
K25R 250 MY8	37	481	735	91.0	0.80	73.5	5.5	2.0	1.5	2.0	1.350	465
K25R 250 M8	45	585	735	91.5	0.77	92	6.0	2.3	1.8	2.4	1.550	520
K25R 280 S8	55	710	740	93.1	0.80	107	6.5	1.8	1.6	2.3	2.630	690
K25R 280 M8	75	968	740	93.3	0.81	143	6.0	2.0	1.6	2.3	3.330	800

Three-phase motors with squirrel-cage rotor

with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design voltage range B acc. to EN 60034-1

Type		output	torque	frequency	current at							speed	efficiency	power factor	starting current	starting torque	pull-up torque	pull-out torque	moment of inertia	weight
				50	U_U 205	220	360	380	475	630	660	at	lower limit voltage U_U							
					U_B 220	230	380	400	500	660	690		design voltage U_B							
					U_O 230	240	400	420	525	690	-		upper limit voltage U_O							
				60	U_U 250	255	435	440	570		-									
					U_B 265	275	460	480	600	-	-									
					U_O 280	290	485	500	630	-	-									
		P	M_B	f	I	I	I	I	I	I	I	n	η	cos φ	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
		kW	Nm	Hz	A	A	A	A	A	A	A	rpm	%	-	-	-	-	-	kgm^2	kg
						0.44		0.25				2815	70.0	0.78	4.7	2.0	2.0	2.5		
K21O 56 K2 U		0.09	0.3	50		0.44		0.25			0.14	2840	70.0	0.74	4.9	2.3	2.3	2.8	0.00013	4.4
						0.46		0.26				2855	71.0	0.67	5.0	2.5	2.5	3.1		
						0.43		0.25				3410	70.0	0.79	5.2	2.2	2.2	2.7		
		0.105	0.29	60		0.43		0.25				3460	71.0	0.68	5.8	2.6	2.6	3.3		
						0.43		0.25				3460	72.0	0.68	5.9	2.9	2.9	3.6		
						0.59		0.34			0.20	2770	66.0	0.81	4.0	1.9	1.9	2.1		
K21R 56 G2		0.12	0.41	50		0.57		0.32			0.19	2830	70.3	0.77	4.5	2.1	2.1	2.3	0.00013	4.5
						0.57		0.33				2860	67.0	0.74	4.6	2.3	2.3	2.6		
						0.57		0.33				3410	67.0	0.83	4.6	2.0	2.0	2.4		
		0.14	0.39	60		0.56		0.32				3440	73.0	0.72	5.2	2.3	2.3	2.8		
						0.58		0.34				3460	69.0	0.69	5.1	2.6	2.6	3.1		
						0.88		0.51			0.29	2765	68.0	0.79	4.1	1.7	1.7	2.0		
K21R 63 K2	K20R 56 K2	0.18	0.62	50		0.89		0.51			0.30	2790	67.1	0.76	4.1	1.9	1.9	2.2	0.00013	4.9
						1.07		0.61			-	2820	58.0	0.70	3.9	2.1	2.1	2.4		4.5[1)]
						0.85		0.49			-	3370	70.0	0.80	4.4	2.0	1.8	2.3		
		0.21	0.59	60		0.93		0.53			-	3420	67.0	0.71	4.6	2.4	2.2	2.7		
						0.97		0.56			-	3420	63.0	0.67	4.5	2.6	2.4	2.9		
						1.24		0.72			0.41	2775	67.0	0.79	4.2	2.0	2.0	2.2		
K21R 63 G2	K20R 56 G2	0.25	0.85	50		1.29		0.74			0.43	2800	68.1	0.72	4.2	2.2	2.2	2.4	0.00015	5.2
						1.61		0.92			-	2820	56.0	0.67	3.7	2.4	2.3	2.6		4.8[1)]
						1.21		0.70			-	3390	74.0	0.76	4.3	2.0	2.0	2.3		
		0.3	0.84	60		1.36		0.78			-	3430	70.0	0.66	4.3	2.2	2.2	2.4		
						1.43		0.83			-	3440	66.0	0.63	3.7	2.3	2.3	2.5		
						1.61		0.93			0.54	2745	71.5	0.85	4.2	1.9	1.9	2.1		
K21R 71 K2	K20R 63 K2	0.37	1.27	50		1.63		0.94			0.54	2780	71.5	0.79	4.4	2.1	2.1	2.3	0.00025	6.7
						1.72		0.98			-	2805	69.5	0.75	4.4	2.3	2.3	2.5		6.3[1)]
						1.59		0.92			-	3350	74.0	0.85	4.4	1.9	1.7	2.0		
		0.44	1.24	60		1.64		0.94			-	3400	73.0	0.77	4.6	2.1	2.1	2.2		
						1.69		0.98			-	3410	71.0	0.73	4.6	2.3	2.3	2.4		
						2.30		1.33			0.77	2730	73.5	0.86	5.0	1.9	1.9	2.3		
K21R 71 G2	K20R 63 G2	0.55	1.89	50		2.30		1.32			0.77	2775	74.3	0.81	5.1	2.3	2.1	2.6	0.00032	7.6
						2.36		1.36			-	2790	72.5	0.77	4.9	2.4	2.2	2.8		7.0[1)]
						2.26		1.31			-	3300	75.0	0.87	5.3	1.9	1.9	2.3		
		0.65	1.85	60		2.28		1.32			-	3350	75.0	0.79	5.8	2.8	2.7	2.9		
						2.34		1.35			-	3370	74.0	0.75	5.9	3.1	3.0	3.2		

1) weight for K20R

Standard motors

Three-phase motors with squirrel-cage rotor

with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design voltage range B acc. to EN 60034-1

Type		output	torque	frequency	current at							speed	efficiency	power factor	starting current	starting torque	pull-up torque	pull-out torque	moment of inertia	weight
				50	U_U 205	220	360	380	475	630	660	at	lower limit voltage U_U							
					U_B 220	230	380	400	500	660	690		design voltage U_B							
					U_O 230	240	400	420	525	690	-		upper limit voltage U_O							
				60	U_U 250	255	435	440	570		-									
					U_B 265	275	460	480	600	-	-									
					U_O 280	290	485	500	630	-	-									
		P	M_B	f	I	I	I	I	I	I	I	n	η	cos φ	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
		kW	Nm	Hz	A	A	A	A	A	A	A	rpm	%	-	-	-	-	-	kgm^2	kg
						3.00		1.74			1.00	2795	77.5	0.85	5.6	2.2	2.2	2.3		
K21R 80 K2	K20R 71 K2	0.75	2.54	50		2.99		1.72			1.00	2825	77.5	0.81	5.9	2.4	2.4	2.4	0.00057	10.7
						3.10		1.77			-	2845	77.5	0.75	6.0	2.8	2.6	2.8		10.0[1)]
						3.05		1.74			-	3400	80.0	0.85	5.6	2.1	2.0	2.2		
		0.9	2.5	60		3.00		1.74			-	3440	80.0	0.78	6.4	2.6	2.4	2.4		
						3.05		1.75			-	3455	79.0	0.75	6.6	2.8	2.6	2.6		
						4.45		2.59			1.49	2810	77.0	0.84	5.6	2.2	2.1	2.4		
K21R 80 G2	K20R 71 G2	1.1	3.71	50		4.45		2.55			1.48	2835	77.8	0.80	6.0	2.4	2.3	2.6	0.00072	11.5
						4.60		2.62			-	2855	76.0	0.76	6.0	2.6	2.5	2.9		11.2[1)]
						4.40		2.54			-	3400	79.0	0.85	5.8	2.0	2.0	2.3		
		1.3	3.61	60		4.65		2.65			-	3440	79.0	0.75	6.6	2.4	2.3	2.6		
						4.85		2.80			-	3455	77.0	0.70	6.7	2.6	2.5	2.9		
						5.60		3.25			1.87	2810	80.0	0.88	6.7	2.3	2.3	2.6		
K21R 90 S2	K20R 80 K2	1.5	5.04	50		5.40		3.10			1.80	2840	81.2	0.86	7.0	2.5	2.5	2.8	0.00132	16
						5.30		3.05			-	2860	81.5	0.83	7.2	2.8	2.8	3.0		15[1)]
						5.65		3.25			-	3390	81.0	0.89	6.2	2.1	1.8	2.2		
		1.8	5.0	60		5.40		3.10			-	3440	82.0	0.85	7.0	2.5	2.2	2.7		
						5.35		3.10			-	3460	82.0	0.82	7.4	2.8	2.4	3.0		
						8.05		4.65			2.70	2830	82.0	0.88	7.0	2.6	2.1	2.6		
K21R 90 L2	K20R 80 G2	2.2	7.37	50		7.90		4.55			2.65	2850	82.0	0.85	7.5	2.8	2.3	2.9	0.0017	19
						8.05		4.60			-	2870	81.0	0.81	7.0	3.1	2.5	3.1		18.0[1)]
						8.20		4.75			-	3420	82.0	0.88	7.3	2.4	1.9	2.4		
		2.6	7.18	60		8.05		4.60			-	3460	83.0	0.82	6.9	2.9	2.3	2.9		
						8.00		4.65			-	3480	83.0	0.78	7.2	3.1	2.5	3.1		
						11.00		6.35			3.65	2840	82.5	0.87	6.4	2.2	2.1	2.5		
K21R 100 L2	K20R 90 L2	3.0	10.0	50		10.70		6.15			3.60	2865	83.4	0.84	6.8	2.4	2.2	2.8	0.00275	25
						10.90		6.20			-	2880	82.5	0.81	7.0	2.6	2.4	2.9		23.5[1)]
						10.90		6.30			-	3430	85.0	0.88	6.3	2.0	1.9	2.3		
		3.6	9.91	60		10.60		6.10			-	3470	85.5	0.83	6.1	2.5	2.4	2.8		
						10.70		6.20			-	3480	85.0	0.79	6.2	2.6	2.5	2.9		
						14.70		8.50			4.90	2885	85.5	0.85	6.7	2.0	1.9	2.6		
K21R 112 M2	K20R 100 S2	4.0	13.2	50		14.60		8.40			4.85	2900	85.0	0.81	7.0	2.2	2.1	2.9	0.0045	32
						15.20		8.70			-	2910	85.0	0.76	7.2	2.4	2.3	3.1		31[1)]
						14.90		8.65			-	3470	84.5	0.86	7.0	1.8	1.7	2.4		
		4.8	13.1	60		14.80		8.50			-	3500	85.0	0.80	7.6	2.2	2.1	2.9		
						15.00		8.70			-	3510	87.0	0.76	7.8	2.3	2.2	3.1		
						19.30		11.20			6.45	2875	85.5	0.87	7.0	2.2	2.0	2.7		
K21R 132 S2T	K20R 100 L2	5.5	18.2	50		19.10		11.00			6.40	2890	86.3	0.84	7.5	2.4	2.2	3.0	0.0055	40
(K21R 112 MX2)						19.30		11.00			-	2900	85.5	0.81	7.8	2.6	2.4	3.2		37[1)]
						19.80		11.50			-	3460	85.0	0.89	8.0	2.0	1.8	2.5		
		6.6	18.0	60		19.20		11.00			-	3500	86.0	0.84	8.8	2.4	2.2	3.0		
						19.10		11.10			-	3505	86.0	0.80	9.1	2.6	2.4	3.2		
						26.30		15.20			8.75	2855	86.0	0.87	5.8	1.3	1.1	2.4		
K21R 132 SX2T	K20R 100 LV2	7.5	24.9	50		25.70		14.80			8.60	2880	87.0	0.84	6.3	1.5	1.2	2.6	0.068	48
(K21R 112 MV2)						26.10		14.90			-	2890	86.5	0.80	6.6	1.6	1.3	2.9		45[1)]
						27.30		15.80			-	3440	86.5	0.87	5.6	1.3	1.1	2.2		
		9	24.7	60		25.80		14.80			-	3480	88.0	0.83	6.9	1.5	1.2	2.7		
						25.70		14.90			-	3490	87.2	0.80	6.8	1.6	1.3	2.9		

1) weight for K20R

3

Three-phase motors with squirrel-cage rotor

with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design voltage range B acc. to EN 60034-1

Type		output	torque	frequency	current at							speed	efficiency		power factor	starting current	starting torque	pull-up torque	pull-out torque	moment of inertia	weight
				50	U_U 205	220	360	380	475	630	660				lower limit voltage U_U						
					U_B 220	230	380	400	500	660	690		at		design voltage U_B						
					U_O 230	240	400	420	525	690	725				upper limit voltage U_O						
				60	U_U 250	265	435	460	570		-										
					U_B 265	275	460	480	600	-	-										
					U_O 280	290	485	500	630	-	-										
													Load								
													100 %	75 %	100 %						
		P	M_B	f	I	I	I	I	I	I	I	n	η	η	cos φ	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
		kW	Nm	Hz	A	A	A	A	A	A	A	rpm	%	%	-	-	-	-	-	kgm²	kg
					21	19.5	12	11.5	9.1	6.8	6.5	2850	85.7	85.7	0.86	5.0	1.6	1.4	2.0		
K21R 132 S2	-	5.5	18.4	50	19.5	18.5	11.5	11	8.6	6.5	6.2	2860	85.7	85.7	0.86	5.5	1.8	1.6	2.2	0.0081	52
					19	18.5	11	10.5	8.4	6.4	6.1	2870	84.7	84.7	0.85	5.8	2.0	1.7	2.4		
					21	19.5	12	11.5	9.2	-	-	3420	85.7	85.7	0.85	5.0	1.5	1.3	2.0		
		6.6	18.4	60	19.5	19	11.5	11	8.7	-	-	3430	85.7	85.7	0.85	5.5	1.7	1.5	2.2		
					19	18.5	11	10.5	8.5	-	-	3440	84.7	84.7	0.84	5.8	1.9	1.8	2.4		
					28.0	26.0	16.0	15.0	12.0	9.1	8.7	2890	87.0	87.0	0.87	6.1	1.6	1.2	2.3		
K21R 132 SX2	K20R 112 M2	7.5	24.7	50	26.5	25.0	15.0	14.5	11.5	8.8	8.4	2900	87.0	87.0	0.86	6.6	1.8	1.3	2.5	0.0110	57
					26.0	25.0	15.0	14.5	11.5	8.7	8.3	2910	86.0	86.0	0.84	7.0	2.0	1.4	2.7		
					27.5	26.0	16.0	15.0	12.0	-	-	3470	87.0	87.0	0.87	6.1	1.6	1.2	2.1		
		9	24.7	60	26.0	25.5	15.0	14.5	11.5	-	-	3480	87.0	87.0	0.86	6.6	1.8	1.3	2.4		
					25.5	25.0	15.0	14.5	11.5	-	-	3490	86.0	86.0	0.84	7.0	2.0	1.4	2.6		
					39.0	36.5	22.5	21.0	17.0	12.5	12.0	2890	88.0	88.0	0.90	6.4	2.2	1.7	2.7		
K21R 160 M2	K20R 132 M2	11	36.2	50	36.0	34.5	21.0	20.0	16.0	12.0	11.5	2900	88.5	88.5	0.90	7.0	2.4	2.0	3.0	0.0258	81
					36.0	34.5	20.5	19.5	15.5	12.0	11.5	2910	87.5	87.5	0.88	7.5	2.6	2.1	3.3		
					38.0	36.0	22.0	20.5	16.5	-	-	3470	87.5	87.5	0.90	6.4	2.2	1.6	2.7		
		13	35.7	60	36.0	34.5	20.5	19.5	16.0	-	-	3480	88.0	88.0	0.90	7.0	2.4	1.9	3.0		
					34.5	33.5	20.0	19.5	15.5	-	-	3490	88.0	88.0	0.88	7.5	2.6	2.0	3.3		
					52.5	49.0	30.0	28.5	22.5	17.0	16.5	2920	88.6	88.6	0.91	6.5	2.0	1.5	2.5		
K21R 160 MX2	K20R 160 S2	15	48.9	50	49.0	47.0	28.5	27.0	21.5	16.5	15.5	2930	89.4	89.4	0.90	7.1	2.2	1.7	2.9	0.0575	118
					48.0	46.0	27.5	26.5	21.0	16.0	15.0	2940	89.1	89.1	0.88	7.6	2.4	1.8	3.1		
					51.5	48.5	29.5	28.0	22.5	-	-	3525	89.6	89.6	0.90	6.6	2.0	1.5	2.6		
		18	48.7	60	48.5	47.0	28.0	27.0	21.5	-	-	3530	89.6	89.6	0.90	7.1	2.2	1.7	2.9		
					47.0	45.5	27.0	26.5	21.0	-	-	3535	89.6	89.6	0.88	7.6	2.4	1.8	3.1		
					63.5	59.0	36.0	34.0	27.5	20.5	19.5	2910	89.5	88.5	0.92	6.5	1.8	1.4	2.5		
K21R 160 L2	K20R 160 M2	18.5	60.5	50	58.5	56.0	34.0	32.0	25.5	19.5	18.5	2920	90.5	89.5	0.92	7.2	2.1	1.6	2.8	0.0675	134
					56.5	54.0	32.5	31.0	24.5	19.0	18.0	2930	90.5	89.5	0.91	7.7	2.3	1.8	3.1		
					61.5	58.0	35.5	33.5	27.0	-	-	3515	90.0	89.0	0.92	6.5	1.9	1.4	2.6		
		22	59.7	60	57.5	55.5	33.0	32.0	25.5	-	-	3520	90.5	89.5	0.92	7.2	2.1	1.6	2.8		
					54.0	52.5	31.5	30.5	24.0	-	-	3530	91.0	90.0	0.92	7.8	2.3	1.8	3.1		
					73.5	68.5	42.0	39.5	32.0	24.0	23.0	2925	91.5	90.7	0.92	6.1	1.5	1.3	2.3		
K21R 180 M2	K20R 180 S2	22	71.6	50	68.5	65.5	39.5	37.5	30.0	23.0	22.0	2935	91.8	91.0	0.92	6.8	1.7	1.4	2.6	0.105	165
					66.0	63.0	38.0	36.0	29.0	22.0	21.0	2945	92.0	91.2	0.91	7.5	1.9	1.6	2.8		
					71.0	67.0	41.0	38.5	31.0	-	-	3525	91.8	91.0	0.92	6.3	1.5	1.3	2.3		
		26	70.2	60	67.0	64.5	38.5	37.0	29.5	-	-	3535	92.0	91.2	0.92	7.0	1.7	1.4	2.6		
					64.0	62.0	37.0	36.0	28.5	-	-	3540	92.0	91.2	0.91	7.5	1.9	1.6	2.8		

LV Asynchronous motors I IEC motors with squirrel-cage rotor I Main catalogue 01-2008

Three-phase motors with squirrel-cage rotor

with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design voltage range B acc. to EN 60034-1

Type		output	torque	frequency	current at							speed	efficiency		power factor	starting current	starting torque	pull-up torque	pull-out torque	moment of inertia	weight
				50	U_U 205	220	360	380	475	630	660				lower limit voltage U_U						
					U_B 220	230	380	400	500	660	690		at		design voltage U_B						
					U_O 230	240	400	420	525	690	725				upper limit voltage U_O						
				60	U_U 250	265	435	460	570		-										
					U_B 265	275	460	480	600	-	-										
					U_O 280	290	485	500	630	-	-										
													Load								
													100 %	75 %	100 %						
		P	M_B	f	I	I	I	I	I	I	I	n	η	η	cos φ	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
		kW	Nm	Hz	A	A	A	A	A	A	A	rpm	%	%	-	-	-	-	-	kgm²	kg
					99.5	92.5	56.5	53.5	43.0	32.5	31.0	2935	92.5	91.7	0.92	6.7	1.9	1.5	2.7		
K21R 200L2	K20R 180 M2	30	97.4	50	92.0	88.0	53.5	50.5	40.5	30.5	29.5	2940	92.8	92.0	0.92	7.3	2.0	1.6	2.9	0.128	195
					89.0	85.5	51.5	49.0	39.0	29.5	28.5	2945	92.8	92.0	0.91	7.9	2.5	1.9	3.2		
					97.5	92.0	56.0	53.0	43.0	-	-	3535	92.5	91.7	0.92	6.9	2.0	1.5	2.7		
		36	96.8	60	91.5	88.5	53.0	50.5	40.5	-	-	3550	93.0	92.2	0.92	7.4	2.1	1.6	2.9		
					87.5	84.5	50.5	49.0	39.0	-	-	3555	93.0	92.2	0.91	7.8	2.4	1.8	3.2		
					125	117	71.5	67.5	54.0	40.5	39.0	2930	92.5	91.5	0.90	6.5	1.6	1.2	2.2		
K21R 200 LX2	K20R 200 M2	37	120	50	116	111	67.0	64.0	51.0	38.5	37.0	2940	93.0	92.0	0.90	7.0	1.8	1.3	2.4	0.193	255
					112	108	64.5	61.5	49.0	37.5	35.5	2950	93.0	92.0	0.89	7.6	2.1	1.4	2.6		
					120	113	69.0	65.5	52.5	-	-	3535	93.0	92.0	0.91	6.5	1.6	1.2	2.3		
		44	119	60	113	109	65.5	62.5	50.0	-	-	3545	93.0	92.0	0.91	7.0	1.8	1.3	2.4		
					108	105	62.5	60.5	48.0	-	-	3550	93.0	92.0	0.90	7.6	2.1	1.4	2.6		
					149	139	85.0	80.5	64.5	48.5	46.5	2935	93.5	92.8	0.91	6.9	1.7	1.3	2.5		
K21R 225 M2	K20R 200 L2	45	146	50	138	132	80.0	76.0	61.0	46.0	44.0	2940	93.7	93.0	0.91	7.5	1.8	1.4	2.7	0.22	290
					134	128	77.0	73.5	58.5	44.5	42.5	2945	93.7	93.0	0.90	8.5	2.1	1.7	3.1		
					148	140	85.0	80.5	65.0	-	-	3530	93.5	92.8	0.90	7.0	1.7	1.3	2.5		
		54	146	60	140	134	80.5	77.0	61.5	-	-	3535	93.7	93.0	0.90	7.5	1.8	1.4	2.7		
					134	129	77.0	75.0	59.5	-	-	3540	93.7	93.0	0.89	8.4	2.1	1.7	3.1		
					182	170	104	98	78.5	59	56.5	2945	93.5	92.3	0.91	6.8	1.8	1.4	2.3		
K21R 250 M2	K20R 225 M2	55	178	50	169	162	98	93	74.5	56.5	54	2955	93.7	92.5	0.91	7.5	2.0	1.5	2.6	0.375	360
					166	159	95	90.5	72.5	55	52.5	2965	93.7	92.5	0.89	8.1	2.2	1.6	2.8		
					181	171	104	98.5	79.5	-	-	3545	93.5	92.3	0.90	6.8	1.8	1.4	2.3		
		66	178	60	171	164	98	94	75.5	-	-	3550	93.7	92.5	0.90	7.4	2.0	1.5	2.6		
					163	158	94	91.5	72.5	-	-	3555	93.7	92.5	0.89	8.1	2.2	1.6	2.8		
					244	228	139	132	105	79.5	76	2965	94.0	92.9	0.92	6.8	1.8	1.4	2.4		
K21R 280 S2	K20R 250 S2	75	241	50	226	216	131	124	99.5	75.5	72	2970	94.6	93.5	0.92	7.5	2.0	1.6	2.6	0.650	490
					219	210	126	120	96	73	69.5	2975	94.6	93.5	0.91	8.1	2.2	1.7	2.9		
					240	227	138	131	105	-	-	3565	94.0	92.9	0.92	6.8	1.8	1.4	2.4		
		90	241	60	228	220	131	126	101	-	-	3570	94.5	93.4	0.91	7.5	2.0	1.6	2.6		
					216	208	124	121	96	-	-	3575	94.6	93.5	0.91	8.1	2.2	1.7	2.9		
					291	271	166	157	126	94.5	90.5	2965	94.7	94.2	0.92	7.6	2.0	1.6	2.6		
K21R 280 M2	K20R 250 M2	90	289	50	274	262	159	151	121	91.5	87.5	2970	94.7	94.2	0.91	8.5	2.2	1.8	2.8	0.675	510
					269	257	154	147	118	89.5	85	2975	94.5	94.0	0.89	8.9	2.5	2.0	3.1		
					282	266	162	153	124	-	-	3565	94.5	94.0	0.91	7.6	2.0	1.6	2.6		
		105	281	60	266	256	153	147	117	-	-	3570	94.5	94.0	0.91	8.5	2.2	1.8	2.8		
					257	249	149	144	114	-	-	3575	94.5	94.0	0.89	8.9	2.5	2.0	3.1		

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LV Asynchronous motors I IEC motors with squirrel-cage rotor I Main catalogue 01-2008

Three-phase motors with squirrel-cage rotor

with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design voltage range B acc. to EN 60034-1

Type		output	torque	frequency	current at							speed	efficiency	efficiency	power factor	starting current	starting torque	pull-up torque	pull-out torque	moment of inertia	weight
				50	U_U 205	220	360	380	475	630	660	at			lower limit voltage U_U						
					U_B 220	230	380	400	500	660	690				design voltage U_B						
					U_0 230	240	400	420	525	690	725				upper limit voltage U_0						
				60	U_U 250	265	435	460	570		-										
					U_B 265	275	460	480	600	-	-										
					U_0 280	290	485	500	630	-	-										
													Load 100%	Load 75%	Load 100%						
		P	M_B	f	I	I	I	I	I	I	I	n	η	η	cos φ	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
		kW	Nm	Hz	A	A	A	A	A	A	A	rpm	%	%	-	-	-	-	-	kgm^2	kg
					358	334	204	193	155	117	111	2970	95.0	94.1	0.91	7.5	1.3	1.2	2.3		
K21R 315 S2	K20R 280 S2	110	353	50	333	318	193	183	146	111	106	2975	95.4	94.5	0.91	8.5	1.5	1.3	2.5	1.21	720
					322	308	185	176	141	107	102	2977	95.4	94.5	0.90	9.2	1.6	1.4	2.8		
					353	333	203	192	155	-	-	3570	95.0	94.1	0.91	7.5	1.3	1.2	2.3		
		132	353	60	333	321	192	184	147	-	-	3575	95.0	94.1	0.91	8.5	1.5	1.3	2.5		
					318	307	184	178	141	-	-	3577	95.1	94.2	0.90	9.1	1.6	1.4	2.8		
					428	399	244	231	185	139	133	2970	95.5	94.5	0.91	7.6	1.8	1.6	2.3		
K21R 315 M2	K20R 280 M2	132	424	50	399	382	231	219	176	133	127	2975	95.4	94.5	0.91	8.5	2.0	1.8	2.7	1.44	800
					388	371	223	212	170	129	123	2980	95.0	94.1	0.90	9.3	2.2	1.9	2.9		
					420	397	242	228	184	-	-	3570	95.4	94.5	0.91	7.7	1.8	1.6	2.3		
		158	422	60	397	382	228	219	175	-	-	3575	95.4	94.5	0.91	8.5	2.0	1.8	2.6		
					381	368	220	213	169	-	-	3580	95.0	94.1	0.90	9.2	2.2	1.9	2.9		
					507	473	289	274	219	165	158	2970	95.5	94.5	0.93	7.4	1.8	1.5	2.3		
K21R 315 MX2	K20R 315 S2	160	514	50	470	450	272	259	207	157	150	2975	96.0	95.0	0.93	8.5	2.0	1.6	2.6	1.76	980
					455	436	261	249	199	152	144	2980	96.0	95.0	0.92	9.0	2.2	1.8	2.9		
		190	508	60	497	469	286	270	218	-	-	3570	96.0	95.0	0.92	7.6	1.8	1.5	2.4		
					469	452	270	259	207	-	-	3575	96.0	95.0	0.92	8.5	2.1	1.6	2.6		
					448	433	259	251	199	-	-	3577	96.0	95.0	0.91	9.0	2.2	1.8	2.9		
					638	594	363	344	275	208	198	2968	96.0	95.2	0.92	7.5	2.4	1.8	2.4		
K21R 315 MY2	K20R 315 M2	200	643	50	594	568	344	327	261	198	189	2970	96.0	95.2	0.92	8.2	2.6	2.0	2.6	2.82	1170
					574	550	330	314	252	191	182	2975	96.1	95.3	0.91	8.9	2.9	2.2	2.9		
					596	562	343	324	261	-	-	3568	95.8	95.0	0.91	8.0	2.6	2.0	2.6		
		225	602	60	562	542	324	310	248	-	-	3570	95.8	95.0	0.91	8.7	2.8	2.1	2.8		
					539	520	311	302	239	-	-	3575	95.7	94.9	0.90	9.0	3.0	2.3	3.1		
					-	-	449	425	340	257	245	2970	96.0	95.1	0.93	6.6	1.8	1.3	1.9		
K21R 315 L2	K20R 315 L2	250	803	50	-	-	425	404	323	245	234	2973	96.1	95.2	0.93	7.3	2.1	1.4	2.0	3.66	1460
					-	-	407	388	310	236	225	2977	96.3	95.4	0.92	8.0	2.4	1.6	2.2		
					-	-	451	426	344	-	-	3570	96.0	95.1	0.92	6.6	1.9	1.3	1.8		
		300	803	60	-	-	426	408	327	-	-	3570	96.1	95.2	0.92	7.3	2.2	1.4	2.0		
					-	-	408	395	314	-	-	3570	96.3	95.4	0.91	7.9	2.3	1.6	2.2		
					-	-	-	540	-	-	310	2978	96.6	96.5	0.92	8.0	2.4	1.6	2.2		
K21R 315 LX2	K20R 315 LX2	315	1011	50	-	-	-	510	-	-	295	2980	96.7	96.7	0.92	8.6	2.7	1.7	2.4	4.43	1630
					-	-	-	495	-	-	285	2983	96.7	96.6	0.91	9.4	2.9	1.9	2.7		
					-	-	-	-	-	-	-										
		340	908	60	-	-	-	460	-	-	-	3575	96.7	95.5	0.92	7.5	2.5	1.4	2.1		
					-	-	-	-	-	-	-										

Three-phase motors with squirrel-cage rotor

with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design voltage range B acc. to EN 60034-1

Type		output	torque	frequency	current at							speed	efficiency	power factor	starting current	starting torque	pull-up torque	pull-out torque	moment of inertia	weight
				50	U_U 205	220	360	380	475	630	660	at		lower limit voltage U_U						
					U_B 220	230	380	400	500	660	690			design voltage U_B						
					U_0 230	240	400	420	525	690	-			upper limit voltage U_0						
				60	U_U 250	255	435	440	570		-									
					U_B 265	275	460	480	600	-	-									
					U_0 280	290	485	500	630	-	-									
		P	M_B	f	I	I	I	I	I	I	I	n	η	cos φ	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
		kW	Nm	Hz	A	A	A	A	A	A	A	rpm	%	-	-	-	-	-	kgm^2	kg
						0.40		0.23			-	1400	61.5	0.64	3.1	2.0	2.0	2.4		
K21O 56 K4 U		0.06	0.41	50		0.42		0.24			-	1410	60.5	0.60	3.1	2.3	2.3	2.7	0.00019	4.3
						0.44		0.25			-	1420	58.5	0.56	3.1	2.5	2.5	2.9		
						0.40		0.23			-	1685	64.0	0.67	3.4	2.0	2.0	2.4		
		0.075	0.42	60		0.42		0.24			-	1710	63.0	0.60	3.5	2.5	2.5	2.9		
						0.44		0.25			-	1715	62.0	0.56	3.6	2.7	2.7	3.2		
						0.54		0.31			0.18	1360	62.0	0.71	3.0	1.7	1.7	1.9		
K21R 56 G4		0.09	0.63	50		0.54		0.31			0.18	1375	62.0	0.68	3.2	1.9	1.9	2.2	0.00019	4.4
						0.58		0.33			-	1395	61.0	0.62	3.1	2.1	2.1	2.4		
						0.53		0.30			-	1650	65.0	0.71	3.5	1.9	1.9	2.1		
		0.105	0.59	60		0.56		0.32			-	1690	63.0	0.63	3.5	2.3	2.3	2.5		
						0.57		0.33			-	1700	60.0	0.61	3.6	2.6	2.8	2.8		
						0.78		0.45			0.26	1360	57.5	0.70	3.1	1.7	1.6	2.0		
K21R 63 K4	K20R 56 K4	0.12	0.84	50		0.77		0.44			0.26	1370	57.5	0.68	3.2	1.9	1.8	2.2	0.00019	4.8
						1.00		0.57			-	1380	46.0	0.63	2.9	2.1	2.0	2.4		4.4[1)]
						0.74		0.43			-	1660	61.0	0.70	3.2	1.7	1.7	2.1		
		0.14	0.79	60		0.84		0.48			-	1685	57.0	0.62	3.2	1.9	1.8	2.2		
						0.93		0.54			-	1690	51.0	0.59	2.9	2.1	2.0	2.4		
						1.07		0.62			0.36	1340	63.0	0.70	3.2	1.8	1.8	2.1		
K21R 63 G4	K20R 56 G4	0.18	1.26	50		1.13		0.65			0.38	1360	61.0	0.66	3.3	2.0	2.0	2.3	0.00024	5.2
						1.35		0.77			-	1375	52.5	0.61	2.9	2.1	2.1	2.4		4.8[1)]
						1.07		0.62			-	1660	65.0	0.68	3.3	1.9	1.9	2.2		
		0.21	1.19	60		1.17		0.67			-	1685	62.0	0.61	3.3	2.0	2.0	2.3		
						1.29		0.75			-	1690	55.0	0.59	3.2	2.1	2.1	2.4		
						1.33		0.77			0.44	1370	64.5	0.76	3.5	1.6	1.6	1.9		
K21R 71 K4	K20R 63 K4	0.25	1.72	50		1.36		0.78			0.45	1385	64.6	0.72	3.6	1.8	1.8	2.1	0.0004	6.8
						1.54		0.88			-	1400	58.5	0.67	3.4	2.0	2.0	2.3		6.3[1)]
						1.33		0.77			-	1660	67.0	0.76	3.7	1.6	1.6	1.8		
		0.3	1.7	60		1.40		0.80			-	1690	66.0	0.68	3.7	1.8	1.8	2.1		
						1.47		0.85			-	1700	65.0	0.63	3.6	2.0	2.0	2.3		
						1.83		1.06			0.61	1345	68.0	0.78	3.6	1.8	1.8	2.0		
K21R 71 G4	K20R 63 G4	0.37	2.58	50		1.84		1.06			0.62	1370	67.8	0.74	3.8	2.0	2.0	2.2	0.0005	7.8
						1.93		1.10			-	1385	67.0	0.69	3.9	2.2	2.2	2.4		7.1[1)]
						1.83		1.06			-	1660	71.0	0.77	3.9	1.8	1.8	2.0		
		0.44	2.49	60		1.86		1.08			-	1685	71.0	0.69	4.0	2.0	2.0	2.2		
						1.93		1.12			-	1695	69.0	0.66	4.2	2.2	2.2	2.6		
						2.80		1.60			0.92	1390	70.5	0.74	4.2	2.0	1.9	2.1		
K21R 80 K4	K20R 71 K4	0.55	3.75	50		2.80		1.60			0.93	1400	71.5	0.69	4.1	2.1	2.0	2.3	0.00087	10.6
						3.15		1.80			-	1410	65.5	0.64	4.2	2.2	2.1	2.6		9.9[1)]
						2.66		1.54			-	1690	74.0	0.75	4.5	2.0	1.7	2.1		
		0.65	3.63	60		2.91		1.67			-	1710	71.0	0.66	4.5	2.1	2.0	2.2		
						3.07		1.78			-	1715	68.0	0.62	4.5	2.2	2.1	2.3		

[1)] weight for K20R

3

Three-phase motors with squirrel-cage rotor

with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design voltage range B acc. to EN 60034-1

Type		output	torque	frequency	current at							speed	efficiency	power factor	starting current	starting torque	pull-up torque	pull-out torque	moment of inertia	weight
				50	U_U 205	220	360	380	475	630	660		lower limit voltage U_U							
					U_B 220	230	380	400	500	660	690	at	design voltage U_B							
					U_O 230	240	400	420	525	690	-		upper limit voltage U_O							
				60	U_U 250	255	435	440	570		-									
					U_B 265	275	460	480	600	-	-									
					U_O 280	290	485	500	630	-	-									
		P	M_B	f	I	I	I	I	I	I	I	n	η	cos φ	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
		kW	Nm	Hz	A	A	A	A	A	A	A	rpm	%	-	-	-	-	-	kgm²	kg
						3.70		2.15			1.24	1380	71.5	0.74	4.4	2.1	2.0	2.2		
K21 80 G4	K20R 71 G4	0.75	5.12	50		3.65		2.10			1.22	1400	73.5	0.70	4.6	2.2	2.1	2.3	0.00107	11.7
						4.20		2.40			-	1410	67.5	0.64	4.3	2.3	2.2	2.4		11.0[1]
						3.55		2.05			-	1685	76.0	0.76	4.8	1.9	1.8	2.0		
		0.9	5.03	60		3.75		2.15			-	1710	74.0	0.68	5.0	2.2	2.1	2.3		
						3.93		2.28			-	1715	72.0	0.63	4.9	2.3	2.2	2.4		
						4.60		2.65			1.53	1400	75.5	0.83	5.0	2.1	2.0	2.2		
K21R 90 S4	K20R 80 K4	1.1	7.45	50		4.55		2.62			1.52	1410	76.6	0.79	5.5	2.3	2.2	2.5	0.00207	15.5
						4.75		2.70			-	1420	75.5	0.74	5.4	2.5	2.4	2.7		14.5[1]
						4.60		2.65			-	1700	78.0	0.83	5.2	1.9	1.8	2.2		
		1.3	7.22	60		4.65		2.65			-	1720	77.0	0.77	5.5	2.3	2.2	2.5		
						4.65		2.70			-	1720	76.0	0.73	5.5	2.5	2.4	2.7		
						6.05		3.50			2.02	1390	77.5	0.84	5.2	2.3	2.2	2.4		
K21R 90 L4	K20R 80 G4	1.5	10.2	50		5.90		3.40			1.97	1400	78.8	0.81	5.5	2.5	2.4	2.6	0.0026	18.0
						6.15		3.50			-	1410	77.5	0.76	5.7	2.7	2.6	2.8		17.0[1]
						6.15		3.50			-	1690	80.0	0.84	5.2	2.1	2.0	2.2		
		1.8	10.1	60		6.10		3.50			-	1710	80.0	0.77	5.6	2.5	2.4	2.6		
						6.15		3.50			-	1720	80.0	0.74	5.9	2.7	2.6	2.8		
						8.70		5.05			2.91	1395	82.0	0.81	5.6	2.2	2.0	2.3		
K21R 100 L4	K20R 90 L4	2.2	14.9	50		8.60		4.95			2.87	1410	81.2	0.79	6.0	2.5	2.3	2.7	0.004	23.5
						8.70		5.00			-	1420	80.0	0.76	6.2	2.8	2.5	3.0		22.5[1]
						8.95		5.20			-	1705	82.0	0.80	5.8	2.1	2.0	2.2		
		2.6	14.4	60		9.00		5.15			-	1720	81.0	0.75	6.4	2.6	2.3	2.7		
						9.40		5.45			-	1730	79.0	0.70	6.3	2.9	2.6	3.0		
						11.70		6.75			3.90	1420	82.0	0.82	6.1	2.3	2.0	2.6		
K21R 100 LX4	K20R 100 S4	3.0	20.0	50		11.60		6.65			3.85	1430	82.6	0.79	6.5	2.5	2.2	2.9	0.00725	30.0
						12.00		6.85			-	1440	82.0	0.74	6.6	2.8	2.4	3.2		30.0[1]
						12.00		6.95			-	1715	82.0	0.83	6.2	2.1	1.8	2.4		
		3.6	19.9	60		11.90		6.80			-	1730	84.0	0.77	6.9	2.5	2.2	2.8		
						12.10		7.00			-	1740	81.0	0.73	7.0	2.7	2.3	3.1		
						15.60		9.00			5.20	1425	83.0	0.81	6.7	2.4	2.3	2.8		
K21R 112 M4	K20R 100 L4	4.0	26.6	50		15.30		8.80			5.10	1435	84.2	0.78	6.9	2.6	2.5	3.2	0.009	37.0
						16.00		9.15			-	1440	83.0	0.72	6.9	2.8	2.7	3.2		36.0[1]
						15.60		9.00			-	1720	85.0	0.83	6.6	2.3	2.1	2.8		
		4.8	26.4	60		15.20		8.70			-	1735	85.0	0.78	7.3	2.8	2.5	3.2		
						15.50		9.00			-	1740	85.0	0.73	6.9	3.0	2.7	3.4		
						21.10		12.20			7.00	1410	85.2	0.80	5.9	2.2	2.2	2.6		
K21R 132 S4T	K20R 100 LX4	5.5	36.9	50		20.50		11.80			6.85	1425	86.3	0.78	6.3	2.5	2.4	2.9	0.011	47.0
(K21R 112 MX4)						21.50		12.30			-	1435	85.2	0.72	6.5	2.8	2.7	3.2		44.0[1]
						21.40		12.40			-	1700	85.2	0.82	6.0	2.1	2.0	2.4		
		6.6	36.6	60		21.30		12.20			-	1720	87.0	0.76	6.7	2.5	2.5	2.9		
						21.60		12.50			-	1730	84.7	0.72	6.8	2.7	2.7	3.2		

[1] weight for K20R

Three-phase motors with squirrel-cage rotor

with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design voltage range B acc. to EN 60034-1

Type		output	torque	frequency	current at							speed	efficiency		power factor	starting current	starting torque	pull-up torque	pull-out torque	moment of inertia	weight
				50	U_U 205	220	360	380	475	630	660		lower limit voltage U_U								
					U_B 220	230	380	400	500	660	690	at	design voltage U_B								
					U_O 230	240	400	420	525	690	725		upper limit voltage U_O								
				60	U_U 250	265	435	460	570		-										
					U_B 265	275	460	480	600	-	-										
					U_O 280	290	485	500	630	-	-										
													Load								
													100%	75%	100%						
		P	M_B	f	I	I	I	I	I	I	I	n	η	η	cos φ	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
		kW	Nm	Hz	A	A	A	A	A	A	A	rpm	%	%	-	-	-	-	-	kgm²	kg
					20	18.5	11.5	11	8.6	6.5	6.2	1430	86	86	0.9	5.9	1.6	1.5	2.7		
K21R 132 S4	K20R 112 M4	5.5	36.5	50	19	18	11	10.5	8.3	6.3	6	1440	85.7	85.7	0.89	6.5	1.9	1.7	3	0.015	50
					19	18	11	10.5	8.3	6.3	6	1445	84.7	84.7	0.86	7.1	2	1.9	3.3		
					20	18.5	11.5	11	8.7	-	-	1730	85.5	85.5	0.9	6.1	1.6	1.5	2.7		
		6.6	36.1	60	19	18.5	11	10.5	8.4	-	-	1745	86	86	0.88	6.5	1.9	1.7	3		
					18.5	18	11	10.5	8.3	-	-	1745	85.5	85.5	0.85	7	1.9	1.8	3.3		
					28.5	26.5	16.5	15.5	12.5	9.3	8.9	1445	86.0	85.0	0.86	5.5	1.8	1.5	2.5		
K21R 132 M4	K20R 132 S4	7.5	49.4	50	27.0	26.0	15.5	15.0	12.0	9.0	8.6	1450	87.0	86.0	0.84	6.0	2.0	1.7	2.9	0.028	70
					27.0	26.0	15.5	15.0	12.0	9.0	8.6	1455	86.0	85.0	0.81	6.4	2.2	1.9	3.2		
					28.0	26.5	16.0	15.5	12.5	-	-	1745	87.0	86.0	0.85	5.6	1.8	1.5	2.6		
		9	49.1	60	27.0	26.0	15.5	15.0	12.0	-	-	1750	87.0	86.0	0.84	6.0	2.0	1.7	2.8		
					26.5	25.5	15.0	14.5	11.5	-	-	1755	87.0	86.5	0.81	6.4	2.2	1.9	3.1		
					40.5	37.5	23.0	21.5	17.5	13.0	12.5	1445	88.4	88.0	0.87	6.2	1.9	1.7	2.9		
K21R 160 M4	K20R 132 M4	11	72.4	50	38.5	36.5	22.0	21.0	17.0	13.0	12.0	1450	88.4	88.0	0.85	6.8	2.2	1.9	3.3	0.035	92
					38.0	36.5	22.0	21.0	16.5	12.5	12.0	1455	88.4	88.0	0.82	7.3	2.4	2.1	3.6		
					39.5	37.5	22.5	21.5	17.5	-	-	1750	88.4	88.0	0.86	6.5	2.0	1.7	3.0		
		13	70.7	60	38.0	37.0	22.0	21.0	17.0	-	-	1755	88.4	88.0	0.84	6.9	2.2	1.9	3.3		
					37.5	36.5	21.5	21.0	16.5	-	-	1760	88.0	88.0	0.81	7.3	2.4	2.0	3.6		
					54.5	50.5	31.0	29.5	23.5	17.5	17.0	1460	89.4	89.0	0.87	6.9	2.4	1.8	2.7		
K21R 160 L4	K20R 160 S4	15	97.8	50	51.0	49.0	29.5	28.0	22.5	17.0	16.5	1465	89.4	89.0	0.86	7.3	2.5	2.0	3.0	0.078	120
					51.0	49.0	29.5	28.0	22.5	17.0	16.0	1470	89.0	89.0	0.83	8.0	2.8	2.2	3.4		
					53.5	50.5	30.5	29.0	23.5	-	-	1760	89.4	89.0	0.87	7.0	2.3	1.8	2.7		
		18	97.4	60	51.0	49.0	29.5	28.0	22.5	-	-	1765	89.4	89.0	0.86	7.6	2.5	2.0	3.0		
					50.0	48.5	29.0	28.0	22.5	-	-	1765	89.0	89.0	0.83	8.0	2.8	2.2	3.3		
					66.5	62.0	38.0	36.0	28.5	21.5	20.5	1455	90.0	89.5	0.87	6.2	2.2	1.7	2.5		
K21R 180 M4	K20R 160 M4	18.5	121	50	62.5	60.0	36.5	34.5	27.5	21.0	20.0	1460	90.0	89.5	0.86	6.8	2.5	2.0	2.9	0.09	136
					63.5	60.5	36.5	34.5	27.5	21.0	20.0	1465	89.5	89.0	0.82	7.1	2.7	2.2	3.1		
		22	120	60	65.0	61.0	37.5	35.5	28.5	-	-	1755	90.0	89.5	0.87	6.3	2.3	1.8	2.6		
					62.5	60.5	36.0	34.5	27.5	-	-	1760	90.0	89.5	0.85	6.7	2.5	2.0	2.8		
					61.5	59.5	35.5	34.5	27.5	-	-	1765	90.0	89.5	0.82	7.2	2.7	2.2	3.1		
					79.5	74	45.5	43	34.5	26	24.5	1460	90.5	90.5	0.86	6.0	1.8	1.6	2.3		
K21R 180 L4	K20R 180 S4	22	143	50	76	72.5	44	42	33.5	25.5	24	1465	90.5	90.5	0.84	6.5	2.0	1.8	2.6	0.138	170
					76	72.5	43.5	41.5	33	25.5	24	1470	90.0	90.0	0.81	7.0	2.3	2.0	2.9		
					78	73.5	45	42.5	34	-	-	1765	90.5	90.5	0.85	6.1	1.8	1.6	2.4		
		26	141	60	75.5	72.5	43.5	41.5	33.5	-	-	1765	90.5	90.5	0.83	6.5	2.0	1.8	2.6		
					73.5	71	42.5	41	32.5	-	-	1770	90.0	90.0	0.81	7.0	2.2	2.0	2.9		

Three-phase motors with squirrel-cage rotor

with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design voltage range B acc. to EN 60034-1

f								
50	U_U	205	220	360	380	475	630	660
	U_B	220	230	380	400	500	660	690
	U_O	230	240	400	420	525	690	725
60	U_U	250	265	435	460	570		-
	U_B	265	275	460	480	600	-	-
	U_O	280	290	485	500	630	-	-

at lower limit voltage U_U, design voltage U_B, upper limit voltage U_O

Type		output P kW	torque M_B Nm	frequency f Hz	current at I A	I A	I A	I A	I A	I A	I A	speed n rpm	efficiency (Load 100 %) η %	efficiency (Load 75 %) η %	power factor (Load 100 %) cos φ	starting current I_A/I_B	starting torque M_A/M_B	pull-up torque M_S/M_B	pull-out torque M_K/M_B	moment of inertia J kgm^2	weight m kg
					107	100	61	58	46.5	35	33.5	1460	91.5	91.0	0.86	6.4	1.8	1.5	2.1		
K21R 200 L4	K20R 180 M4	30	196	50	101	97	58.5	55.5	44.5	33.5	32.5	1465	91.5	91.0	0.85	7.0	2.0	1.7	2.4	0.168	220
					101	96.5	58	55.5	44	33.5	32	1468	91.0	90.5	0.82	7.3	2.2	1.9	2.7		
					105	99	60.5	57	46	-	-	1765	92.0	91.5	0.86	6.6	1.8	1.6	2.2		
		36	195	60	102	98.5	59	56.5	45	-	-	1765	91.5	91.0	0.84	7.0	2.0	1.7	2.4		
					99.5	96	57.5	55.5	44	-	-	1770	91.0	90.5	0.82	7.3	2.2	1.9	2.7		
					131	122	74.5	70.5	56.5	42.5	40.5	1465	92.5	91.5	0.86	6.5	1.8	1.5	2.2		
K21R 225 S4	K20R 200 M4	37	240	50	122	117	70.5	67	53.5	40.5	39	1470	92.5	91.5	0.86	7.0	2.0	1.7	2.5	0.275	270
					123	118	71	67.5	54	41	39	1475	92.0	91.0	0.82	7.3	2.2	1.9	2.8		
					128	121	73.5	69.5	56	-	-	1765	92.5	91.5	0.86	6.6	1.8	1.5	2.3		
		44	237	60	122	117	70	67.5	54	-	-	1770	92.5	91.5	0.85	7.0	2.0	1.7	2.5		
					119	115	68.5	66.5	53	-	-	1772	92.0	91.0	0.83	7.3	2.2	1.9	2.8		
					160	149	91	86.5	69	52	50	1465	92.0	91.5	0.86	6.5	1.8	1.5	2.2		
K21R 225 M4	K20R 200 L4	45	292	50	148	141	85.5	81	65	49	47	1470	93.0	92.5	0.86	7.0	2.0	1.7	2.5	0.313	300
					146	140	84	80	64	49	46.5	1475	93.0	92.5	0.83	7.3	2.2	1.9	2.8		
					158	149	90.5	85.5	69	-	-	1770	92.0	91.5	0.86	6.5	1.8	1.5	2.3		
		54	291	60	149	143	85.5	82	65.5	-	-	1770	93.0	92.5	0.85	7.0	2.0	1.7	2.5		
					144	139	83.5	81	64	-	-	1775	93.0	92.5	0.83	7.3	2.2	1.8	2.8		
					194	180	110	104	83.5	63	60	1470	93.0	92.5	0.86	6.5	2.0	1.5	2.0		
K21R 250 M4	K20R 225 M4	55	356	50	180	172	104	98.5	79	60	57	1475	93.5	93.0	0.86	7.0	2.2	1.7	2.3	0.525	375
					176	168	101	96.5	77	58.5	56	1477	93.5	93.0	0.84	7.5	2.5	1.8	2.5		
					192	181	110	104	84	-	-	1770	92.5	92.0	0.86	6.5	2.0	1.5	2.0		
		66	355	60	182	175	105	100	80.5	-	-	1775	93.0	92.5	0.85	7.0	2.2	1.7	2.3		
					174	168	101	97.5	77.5	-	-	1775	93.0	92.5	0.84	7.5	2.5	1.8	2.5		
					261	243	149	141	113	85	81	1478	94.0	93.4	0.86	6.6	1.8	1.6	1.8		
K21R 280 S4	K20R 250 S4	75	484	50	243	233	141	134	107	81	77.5	1480	94.1	93.5	0.86	7.0	2.0	1.7	2.2	0.95	520
					238	228	137	130	104	79.5	75.5	1483	94.1	93.5	0.84	7.3	2.3	1.9	2.4		
					260	245	150	141	114	-	-	1777	94.0	93.5	0.85	6.5	1.8	1.6	1.9		
		90	483	60	245	236	141	135	108	-	-	1780	94.0	93.5	0.85	7.0	2.0	1.7	2.1		
					235	227	136	132	104	-	-	1782	94.0	93.5	0.84	7.5	2.2	1.8	2.3		
					312	290	177	168	134	101	97	1477	94.6	93.5	0.86	6.5	1.9	1.4	1.9		
K21R 280 M4	K20R 250 M4	90	581	50	290	278	168	160	128	97	92.5	1480	94.6	93.5	0.86	7.0	2.1	1.6	2.2	1.1	580
					286	274	165	157	125	95.5	91	1482	94.0	92.9	0.84	7.5	2.3	1.7	2.4		
					299	282	172	162	131	-	-	1777	94.4	93.3	0.86	6.5	1.9	1.4	1.9		
		105	563	60	282	272	162	156	124	-	-	1780	94.4	93.3	0.86	7.0	2.1	1.6	2.2		
					274	265	158	154	122	-	-	1780	94.0	92.9	0.84	7.5	2.3	1.7	2.4		

Three-phase motors with squirrel-cage rotor

with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design voltage range B acc. to EN 60034-1

f								
50	U_U	205	220	360	380	475	630	660
	U_B	220	230	380	400	500	660	690
	U_O	230	240	400	420	525	690	725
60	U_U	250	265	435	460	570		-
	U_B	265	275	460	480	600	-	-
	U_O	280	290	485	500	630	-	-

at lower limit voltage U_U, design voltage U_B, upper limit voltage U_O

Type		output P kW	torque M_B Nm	frequency f Hz	current at I A	I A	I A	I A	I A	I A	I A	speed n rpm	efficiency (Load 100 %) η %	efficiency (Load 75 %) η %	power factor (Load 100 %) cos φ	starting current I_A/I_B	starting torque M_A/M_B	pull-up torque M_S/M_B	pull-out torque M_K/M_B	moment of inertia J kgm^2	weight m kg
					379	353	216	205	164	123	118	1483	95.0	94.4	0.86	7.3	1.6	1.4	2.0		
K21R 315 S4	K20R 280 S4	110	707	50	353	338	204	194	155	118	113	1485	95.1	94.5	0.86	7.5	1.8	1.6	2.2	1.96	740
					346	331	199	189	151	115	110	1487	95.1	94.5	0.84	8.0	2.0	1.8	2.4		
					378	356	217	205	166	-	-	1780	95.0	94.5	0.85	7.3	1.6	1.4	2.0		
		132	706	60	356	343	205	197	157	-	-	1785	95.0	94.5	0.85	7.5	1.8	1.6	2.2		
					341	329	197	191	152	-	-	1788	95.0	94.5	0.84	8.0	2.0	1.8	2.4		
					455	424	259	245	196	148	141	1480	95.0	94.4	0.86	6.6	1.6	1.3	2.0		
K21R 315 M4	K20R 280 M4	132	849	50	424	405	245	233	186	141	135	1485	95.1	94.5	0.86	7.0	1.8	1.5	2.2	2.27	840
					415	398	239	227	182	138	132	1485	95.1	94.5	0.84	7.5	2.0	1.7	2.4		
		158	849	60	452	426	260	246	198	-	-	1777	95.0	94.5	0.85	6.6	1.6	1.3	2.0		
					426	411	246	235	188	-	-	1780	95.0	94.5	0.85	7.0	1.8	1.5	2.2		
					408	394	236	229	181	-	-	1785	95.0	94.5	0.84	7.5	2.0	1.7	2.4		
					548	511	312	296	237	178	170	1475	94.5	94.3	0.87	6.6	1.6	1.4	1.8		
K21R 315 MX4	K20R 315 S4	160	1032	50	508	486	294	279	224	169	162	1480	95.0	94.8	0.87	7.0	1.8	1.5	2.0	2.73	1000
					497	477	286	272	218	166	158	1483	95.0	94.8	0.85	7.5	2.0	1.6	2.3		
					540	509	310	293	237	-	-	1775	94.5	94.3	0.86	6.6	1.6	1.4	1.8		
		190	1019	60	508	489	293	280	224	-	-	1780	94.8	94.6	0.86	7.0	1.8	1.5	2.0		
					491	474	283	275	218	-	-	1780	95.0	94.8	0.84	7.5	2.0	1.6	2.3		
					667	621	380	360	288	217	207	1485	96.0	95.0	0.88	7.3	1.8	1.7	2.2		
K21R 315 MY4	K20R 315 M4	200	1286	50	621	594	360	342	273	207	198	1485	96.0	95.0	0.88	7.5	2.0	1.8	2.4	4.82	1200
					608	583	350	333	266	203	193	1488	96.0	95.0	0.86	8.0	2.3	2.0	2.7		
					615	580	353	334	270	-	-	1785	96.0	95.0	0.88	7.4	1.9	1.8	2.3		
		225	1204	60	587	566	338	324	259	-	-	1785	96.0	95.0	0.87	7.7	2.1	1.9	2.5		
					562	543	324	315	250	-	-	1788	96.0	95.0	0.86	8.2	2.3	2.0	2.7		
					-	-	464	440	352	265	253	1485	96.0	94.9	0.90	7.4	1.9	1.5	2.2		
K21R 315 L4	K20R 315 L4	250	1608	50	-	-	439	417	334	253	242	1485	96.1	95.0	0.90	8.0	2.0	1.6	2.3	5.93	1450
					-	-	427	406	325	247	235	1485	96.1	95.0	0.88	9.0	2.3	1.8	2.6		
					-	-	471	445	359	-	-	1785	96.1	95.0	0.88	7.4	1.9	1.5	2.2		
		300	1605	60	-	-	445	426	341	-	-	1785	96.2	95.1	0.88	8.0	2.0	1.6	2.3		
					-	-	426	413	328	-	-	1785	96.3	95.2	0.87	8.7	2.2	1.8	2.6		
					-	-	589	558	446	336	321	1490	96.4	95.4	0.89	8.0	1.7	1.4	2.2		
K21R 315 LX4	K20R 315 LX4	315	2019	50	-	-	564	535	428	324	310	1490	96.5	95.5	0.88	8.6	1.9	1.5	2.5	6.82	1630
					-	-	541	515	412	314	298	1490	96.6	95.6	0.87	9.5	2.1	1.7	2.7		
					-	-	530	501	404	-	-	1790	96.8	95.4	0.88	8.8	1.9	1.6	2.5		
		340	1814	60	-	-	500	480	384	-	-	1790	96.9	95.5	0.88	9.5	2.1	1.7	2.8		
					-	-	480	466	370	-	-	1790	96.9	95.5	0.87	10.2	2.3	1.9	3.0		

Three-phase motors with squirrel-cage rotor

with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design voltage range B acc. to EN 60034-1

Type		output	torque	frequency	current at							speed	efficiency	power factor	starting current	starting torque	pull-up torque	pull-out torque	moment of inertia	weight
				50	U_U 205	220	360	380	475	630	660									
					U_B 220	230	380	400	500	660	690	lower limit voltage U_U								
					U_0 230	240	400	420	525	690	-	at design voltage U_B								
				60	U_U 250	255	435	440	570		-	upper limit voltage U_0								
					U_B 265	275	460	480	600	-	-									
					U_0 280	290	485	500	630	-	-									
		P	M_B	f	I	I	I	I	I	I	I	n	η	cos φ	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
		kW	Nm	Hz	A	A	A	A	A	A	A	rpm	%	-	-	-	-	-	kgm^2	kg
						0.78		0.45			0.26	880	51.5	0.59	2.4	1.9	1.9	2.2		
K21R 63 K6	K20R 56 K6	0.09	0.96	50		0.80		0.46			0.27	895	50.5	0.56	2.5	2.0	2.0	2.4	0.00024	4.9
						0.95		0.54			-	905	44.0	0.52	2.2	2.3	2.3	2.6		4.9[1]
						0.78		0.45			-	1085	53.0	0.58	2.7	1.9	1.9	2.2		
		0.105	0.91	60		0.84		0.48			-	1105	50.0	0.53	2.7	2.1	2.1	2.5		
						0.93		0.54			-	1115	45.0	0.50	2.4	2.3	2.3	2.7		
						0.98		0.57			0.33	865	52.0	0.62	2.4	1.8	1.8	2.0		
K21R 63 G6	K20R 56 G6	0.12	1.30	50		1.03		0.59			0.34	880	52.0	0.56	2.5	2.0	2.0	2.3	0.00027	5.7
						1.20		0.68			-	890	44.5	0.54	2.2	2.1	2.1	2.5		5.3[1]
						1.00		0.58			-	1080	56.0	0.57	2.5	1.9	1.9	2.1		
		0.14	1.22	60		1.08		0.62			-	1100	53.0	0.51	2.6	2.1	2.1	2.5		
						1.12		0.65			-	1110	51.0	0.49	2.5	2.3	2.3	2.7		
						1.42		0.82			0.47	920	61.0	0.55	2.8	1.5	1.5	1.8		
K21R 71 K6	K20R 63 K6	0.18	1.86	50		1.53		0.88			0.51	925	58.0	0.51	2.8	1.6	1.6	2.1	0.00045	7.4
						1.66		0.95			-	930	53.0	0.49	2.7	1.8	1.8	2.3		6.7[1]
						1.38		0.80			-	1120	65.0	0.53	3.2	1.4	1.4	1.7		
		0.21	1.77	60		1.54		0.88			-	1135	60.0	0.48	3.1	1.6	1.6	2.1		
						1.62		0.94			-	1140	56.0	0.46	3.0	1.8	1.8	2.3		
						1.85		1.07			0.62	900	61.0	0.58	2.8	1.8	1.8	2.0		
K21R 71 G6	K20R 63 G6	0.25	2.61	50		1.91		1.10			0.64	915	60.0	0.55	2.9	2.0	2.0	2.2	0.0006	8.3
						2.17		1.24			-	920	54.0	0.51	2.9	2.2	2.2	2.4		7.6[1]
						1.83		1.06			-	1100	64.0	0.58	3.2	1.6	1.6	1.8		
		0.30	2.56	60		1.94		1.12			-	1120	62.0	0.52	3.3	2.0	2.0	2.2		
						2.07		1.20			-	1125	58.0	0.50	3.0	2.2	2.2	2.4		
						2.12		1.23			0.71	905	66.0	0.69	3.3	1.8	1.8	1.8		
K21R 80 K6	K20R 71 K6	0.37	3.86	50		2.12		1.22			0.71	915	66.0	0.66	3.4	2.0	2.0	2.0	0.0013	11.0
						2.31		1.32			-	925	63.0	0.61	3.4	2.2	2.2	2.2		10.0[1]
						2.02		1.17			-	1110	67.0	0.74	3.6	1.7	1.6	1.7		
		0.44	3.74	60		2.10		1.20			-	1125	68.0	0.65	3.8	2.0	2.0	2.0		
						2.19		1.27			-	1135	65.0	0.62	3.6	2.2	2.2	2.2		
						3.00		1.74			1.00	895	67.0	0.72	3.5	2.0	2.0	2.2		
K21R 80 G6	K20R 71 G6	0.55	5.74	50		3.00		1.73			1.00	915	68.0	0.67	3.7	2.2	2.2	2.4	0.00175	12.5
						3.20		1.82			-	920	66.0	0.63	3.8	2.4	2.4	2.6		11.5[1]
						2.93		1.70			-	1110	71.0	0.71	3.8	1.9	1.8	2.0		
		0.65	5.54	60		3.05		1.75			-	1120	70.0	0.64	4.0	2.3	2.2	2.4		
						3.20		1.85			-	1130	68.0	0.60	4.1	2.5	2.4	2.6		

[1] weight for K20R

Three-phase motors with squirrel-cage rotor

with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design voltage range B acc. to EN 60034-1

Type		output	torque	frequency	current at							speed	efficiency	power factor	starting current	starting torque	pull-up torque	pull-out torque	moment of inertia	weight
				50	U_U 205	220	360	380	475	630	660									
					U_B 220	230	380	400	500	660	690	lower limit voltage U_U								
					U_0 230	240	400	420	525	690	-	at design voltage U_B								
				60	U_U 250	255	435	440	570		-	upper limit voltage U_0								
					U_B 265	275	460	480	600	-	-									
					U_0 280	290	485	500	630	-	-									
		P	M_B	f	I	I	I	I	I	I	I	n	η	cos φ	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
		kW	Nm	Hz	A	A	A	A	A	A	A	rpm	%	-	-	-	-	-	kgm^2	kg
						4.05		2.32			1.34	930	71.0	0.69	4.4	2.1	2.1	2.4		
K21R 90 S6	K20R 80 K6	0.75	7.66	50		4.20		2.43			1.41	935	70.0	0.64	4.5	2.4	2.4	2.6	0.00325	16
						4.55		2.60			-	945	66.0	0.60	4.3	2.6	2.6	2.8		15.0[1]
						4.15		2.40			-	1130	73.0	0.68	4.7	1.9	1.9	2.2		
		0.9	7.54	60		4.45		2.55			-	1140	71.0	0.60	4.8	2.4	2.4	2.6		
						4.60		2.68			-	1145	68.0	0.57	4.9	2.6	2.6	2.8		
						5.45		3.15			1.81	925	73.0	0.73	4.5	2.0	2.0	2.2		
K21R 90 L6	K20R 80 G6	1.1	11.2	50		5.50		3.15			1.83	935	73.0	0.69	4.6	2.2	2.2	2.6	0.00425	19
						6.20		3.55			-	940	68.0	0.63	4.6	2.4	2.4	2.8		18.0[1]
						5.60		3.25			-	1120	75.0	0.70	4.5	1.8	1.8	2.0		
		1.3	10.9	60		5.85		3.35			-	1135	74.0	0.63	4.7	2.2	2.2	2.4		
						6.05		3.50			-	1145	72.0	0.60	4.7	2.4	2.4	2.6		
						6.90		4.00			2.30	935	76.5	0.75	4.5	1.9	1.8	2.2		
K21R 100 L6	K20R 90 L6	1.5	15.2	50		6.80		3.90			2.26	945	76.4	0.73	4.6	2.1	2.0	2.4	0.00625	24.0
						7.20		4.10			-	950	75.5	0.67	4.6	2.3	2.2	2.6		24.0[1]
						6.90		4.00			-	1130	79.0	0.75	4.8	1.7	1.6	2.0		
		1.8	15.0	60		7.05		4.05			-	1145	78.0	0.69	4.9	2.1	2.0	2.4		
						7.05		4.10			-	1150	78.0	0.65	5.0	2.3	2.2	2.6		
						9.25		5.35			3.10	940	80.0	0.78	5.1	2.0	1.9	2.5		
K21R 112 M6	K20R 100 L6	2.2	22.1	50		9.30		5.35			3.10	950	79.8	0.74	5.3	2.2	2.1	2.7	0.01225	33.5
						9.45		5.40			-	955	80.0	0.70	5.6	2.4	2.3	3.0		32.5[1]
						8.95		5.20			-	1140	81.0	0.81	5.8	1.8	1.7	2.3		
		2.6	21.6	60		9.10		5.20			-	1150	81.0	0.74	5.6	2.2	2.1	2.7		
						9.15		5.30			-	1155	80.0	0.71	6.4	2.4	2.3	3.0		
						12.40		7.15			4.10	925	81.0	0.79	4.9	2.2	2.2	2.6		
K21R 132 S6T	K20R 100 LX6	3.0	30.6	50		12.30		7.05			4.10	935	81.9	0.75	5.2	2.5	2.5	2.9	0.0139	39.0
						12.40		7.10			-	945	81.5	0.71	5.5	2.7	2.7	3.2		36.0[1]
						12.40		7.20			-	1120	81.5	0.80	5.0	1.7	1.8	2.2		
		3.6	30.2	60		12.20		7.00			-	1140	82.5	0.75	5.6	2.0	2.2	2.7		
						12.30		7.10			-	1145	82.5	0.71	5.8	2.2	2.4	2.9		

[1] weight for K20R

3

Three-phase motors with squirrel-cage rotor

with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design voltage range B acc. to EN 60034-1

frequency		current at						
50	U_U	205	220	360	380	475	630	660
	U_B	220	230	380	400	500	660	690
	U_0	230	240	400	420	525	690	725
60	U_U	250	265	435	460	570		-
	U_B	265	275	460	480	600	-	-
	U_0	280	290	485	500	630	-	-

at lower limit voltage U_U, design voltage U_B, upper limit voltage U_0

Type		output	torque	frequency	current at							speed	efficiency		power factor	starting current	starting torque	pull-up torque	pull-out torque	moment of inertia	weight
													Load 100 %	Load 75 %	Load 100 %						
		P	M_B	f	I	I	I	I	I	I	I	n	η	η	cos φ	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
		kW	Nm	Hz	A	A	A	A	A	A	A	rpm	%	%	-	-	-	-	-	kgm²	kg
					13	12	7.4	7	5.6	4.2	4	950	78.5	78.5	0.83	5.4	1.6	1.4	2.4		
K21R 132 S6	K20R 112 M6	3	30.0	50	12	11.5	7.1	6.7	5.4	4.1	3.9	955	78.5	78.5	0.82	5.7	1.8	1.6	2.7	0.018	46
					13	12.5	7.5	7.1	5.7	4.3	4.1	960	77.0	77.0	0.75	5.8	2.1	1.8	3.0		
					13	12.5	7.5	7.1	5.7	-	-	1155	80.0	80.0	0.80	5.5	1.7	1.4	2.4		
		3.6	29.8	60	12.5	12	7.2	6.9	5.6	-	-	1155	79.0	79.0	0.79	5.7	1.9	1.6	2.7		
					12.5	12.5	7.3	7.1	5.6	-	-	1160	78.0	78.0	0.75	5.8	2.1	1.8	3.0		
					17.5	16	9.9	9.4	7.5	5.7	5.4	950	80.0	79.0	0.81	5.5	2.0	1.8	2.7		
K21R 132 M6	K20R 112 MX6	4	40.0	50	16.5	15.5	9.5	9.0	7.2	5.5	5.2	955	80.0	79.0	0.80	6.0	2.2	2.0	3.1	0.023	53
					17	16.5	9.9	9.4	7.5	5.7	5.4	960	77.0	76.0	0.76	6.1	2.4	2.4	3.3		
					17.5	16.5	10.0	9.4	7.6	-	-	1152	81.0	80.0	0.79	5.8	2.0	1.8	2.7		
		4.8	39.7	60	17	16	9.7	9.3	7.4	-	-	1155	80.0	79.0	0.78	6.0	2.2	2.0	3.1		
					17	16.5	9.9	9.6	7.6	-	-	1160	79.0	78.0	0.73	6.1	2.4	2.4	3.3		
					22.5	21	13	12	9.7	7.3	7	950	83.0	83.0	0.83	4.8	1.6	1.3	2.0		
K21R 132 MX6	K20R 132 S6	5.5	55.0	50	21	20	12	11.5	9.2	7	6.7	955	83.0	83.0	0.83	5.0	1.8	1.5	2.3	0.043	70
					22	21	12.5	12	9.7	7.4	7	960	81.0	81.0	0.77	5.3	2.0	1.7	2.6		
					22.5	21.0	13.0	12.0	9.8	-	-	1145	83.0	83.0	0.82	4.8	1.6	1.3	2.0		
		6.6	54.8	60	21.0	20.5	12.0	11.5	9.3	-	-	1150	83.0	83.0	0.82	5.0	1.8	1.5	2.3		
					22	21	12.5	12	9.7	-	-	1155	82.0	82.0	0.76	5.3	2.0	1.7	2.6		
					30	28	17	16	13	9.7	9.3	950	85.0	84.0	0.83	5.1	1.8	1.4	2.2		
K21R 160 M6	K20R 132 M6	7.5	74.6	50	28	27	16.5	15.5	12.5	9.4	9	960	85.0	84.0	0.82	5.5	2.0	1.6	2.5	0.053	86
					28.5	27	16.5	15.5	12.5	9.5	9	965	84.0	83.0	0.79	5.8	2.2	1.8	2.8		
					30	28	17	16	13	-	-	1145	85.0	84.0	0.82	5.2	1.8	1.4	2.2		
		9	74.7	60	29	28	16.5	16	13	-	-	1150	84.5	83.5	0.80	5.5	2.0	1.6	2.5		
					28.5	27.5	16.5	16	12.5	-	-	1160	84.5	83.5	0.77	5.8	2.2	1.8	2.8		
					42	39	24	22.5	18	13.5	13	962	85.2	85.0	0.87	4.6	1.8	1.5	2.0		
K21R 160 L6	K20R 160 S6	11	109	50	39.5	37.5	23	21.5	17.5	13	12.5	965	85.2	85.0	0.86	5.0	2.0	1.7	2.3	0.113	114
					39	37.5	22.5	21.5	17	13	12.5	967	85.4	85.4	0.83	5.4	2.2	1.8	2.5		
					41	38.5	23.5	22	18	-	-	1155	85.5	85.3	0.86	4.6	1.8	1.5	2.0		
		13	107	60	39	38.0	22.5	21.5	17.5	-	-	1160	85.0	84.8	0.85	5.0	2.0	1.7	2.3		
					40	38.5	23	22.5	17.5	-	-	1163	83.0	82.8	0.81	5.2	2.2	1.8	2.5		
					58	54	33	31.5	25	19	18	963	86.5	85.5	0.84	5.7	2.2	1.9	2.6		
K21R 180 L6	K20R 160 M6	15	148	50	55	53	32	30.5	24.5	18.5	17.5	965	86.0	85.0	0.83	6.0	2.4	2.1	2.7	0.145	136
					59	56.5	34	32.5	26	19.5	18.5	970	84.0	83.0	0.76	6.2	2.7	2.4	3.1		
					57.5	54.5	33	31.5	25	-	-	1165	87.0	86.0	0.83	5.8	2.2	1.9	2.6		
		18	148	60	57	55	33	31.5	25	-	-	1165	86.0	85.0	0.80	6.0	2.4	2.1	2.8		
					56.5	55	32.5	32	25	-	-	1170	85.0	84.0	0.77	6.2	2.7	2.4	3.1		

Three-phase motors with squirrel-cage rotor

with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design voltage range B acc. to EN 60034-1

frequency		current at						
50	U_U	205	220	360	380	475	630	660
	U_B	220	230	380	400	500	660	690
	U_0	230	240	400	420	525	690	725
60	U_U	250	265	435	460	570		-
	U_B	265	275	460	480	600	-	-
	U_0	280	290	485	500	630	-	-

at lower limit voltage U_U, design voltage U_B, upper limit voltage U_0

Type		output	torque	frequency	current at							speed	efficiency		power factor	starting current	starting torque	pull-up torque	pull-out torque	moment of inertia	weight
													Load 100 %	Load 75 %	Load 100 %						
		P	M_B	f	I	I	I	I	I	I	I	n	η	η	cos φ	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
		kW	Nm	Hz	A	A	A	A	A	A	A	rpm	%	%	-	-	-	-	-	kgm²	kg
					68	63.5	38.5	36.5	29.5	22	21	965	88.1	88.0	0.87	5.1	1.8	1.5	2.2		
K21R 200 L6	K20R 180 S6	18.5	182	50	63.5	60.5	36.5	35	28	21	20	970	88.1	88.0	0.87	5.5	2.0	1.7	2.4	0.228	175
					63	60.5	36.5	34.5	27.5	21	20	973	87.5	87.4	0.84	6.1	2.2	1.9	2.7		
					63	59.5	36	34.5	27.5	-	-	1168	88.4	88.3	0.87	5.5	1.9	1.6	2.3		
		21	171	60	60	58.0	34.5	33.5	26.5	-	-	1175	88.3	88.2	0.86	5.8	2.1	1.8	2.6		
					58.5	56.5	34	33	26	-	-	1177	88.0	87.9	0.84	6.2	2.3	2.0	2.8		
					80	74.5	45.5	43.5	34.5	26	25	965	88.8	88.5	0.87	5.7	1.9	1.5	2.4		
K21R 200 LX6	K20R 180 M6	22	217	50	74.5	71.5	43.5	41	33	25	24	970	88.8	88.5	0.87	6.2	2.2	1.8	2.6	0.268	200
					75	72	43	41	33	25	24	975	87.8	87.5	0.84	6.6	2.4	2.0	3.0		
					77.5	73	44.5	42	34.0	-	-	1170	89.3	89.0	0.87	5.9	1.9	1.6	2.5		
		26	211	60	74	71.5	42.5	41	32.5	-	-	1175	89.0	88.7	0.86	6.3	2.2	1.7	2.7		
					72.5	70	42	40.5	32	-	-	1175	88.0	87.7	0.84	6.6	2.4	1.8	3.0		
					105	98.5	60	57	45.5	34.5	33	968	90.0	89.6	0.89	5.7	1.9	1.5	2.3		
K21R 225 M6	K20R 200 M6	30	295	50	98	93.5	56.5	54	43	32.5	31	973	90.4	90.0	0.89	6.5	2.2	1.7	2.5	0.443	265
					96	92	55	52.5	42	32	30.5	975	90.4	90.0	0.87	6.8	2.4	1.9	2.8		
					99	93	57	53.5	43.5	-	-	1170	90.3	89.9	0.88	5.9	1.8	1.5	2.4		
		34	276	60	93	89.5	53.5	51.5	41	-	-	1175	90.5	90.1	0.88	6.5	2.2	1.7	2.6		
					89	86	51.5	50	39.5	-	-	1177	90.5	90.1	0.87	6.8	2.4	1.9	2.9		
					129	120	73.5	69.5	55.5	42	40	973	91.0	90.8	0.89	5.8	2.0	1.5	2.1		
K21R 250 M6	K20R 225 M6	37	362	50	120	115	69.5	66	53	40	38	975	91.0	90.8	0.89	6.5	2.2	1.7	2.3	0.825	360
					117	112	67.5	64	51.5	39	37	980	91.0	90.8	0.87	7.0	2.5	2.0	2.6		
					120	114	69	65.5	53	-	-	1172	91.5	91.3	0.88	5.8	2.0	1.6	2.1		
		42	341	60	115	111	66	63.5	51	-	-	1175	91.5	91.3	0.87	6.5	2.2	1.8	2.3		
					109	105	63	61	48.5	-	-	1178	91.5	91.3	0.87	7.0	2.4	2.0	2.6		
					158	148	90	85.5	68.5	51.5	49	978	92.0	92.0	0.87	5.5	1.8	1.4	1.8		
K21R 280 S6	K20R 250 S6	45	439	50	148	141	85.5	81	65	49	47	980	92.0	92.0	0.87	6.0	2.0	1.5	2.0	1.28	465
					143	137	82	78	62.5	47.5	45.5	983	92.0	92.0	0.86	6.3	2.2	1.6	2.2		
					156	147	89.5	84.5	68.5	-	-	1180	92.0	92.0	0.87	5.5	1.8	1.4	1.8		
		54	435	60	147	142	84.5	81	65	-	-	1185	92.0	92.0	0.87	6.0	2.0	1.5	2.0		
					141	136	81	79	62.5	-	-	1188	92.0	92.0	0.86	6.3	2.2	1.6	2.2		
					190	177	108	103	82	62	59	978	92.5	92.0	0.88	6.1	2.1	1.6	2.2		
K21R 280 M6	K20R 250 M6	55	536	50	177	170	103	97.5	78	59	56.5	980	92.5	92.0	0.88	6.5	2.3	1.7	2.4	1.48	520
					175	168	101	96	77	58.5	55.5	982	91.5	91.0	0.86	7.5	2.6	1.8	2.7		
					187	177	108	102	82	-	-	1180	92.5	92.0	0.88	6.5	2.2	1.7	2.2		
		66	534	60	177	170	102	97.5	78	-	-	1180	92.5	92.0	0.88	7.0	2.4	1.8	2.4		
					169	163	97.5	94.5	75	-	-	1180	92.5	92.0	0.87	7.4	2.6	1.9	2.7		

Three-phase motors with squirrel-cage rotor

with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design voltage range B acc. to EN 60034-1

f								
50	U_U	205	220	360	380	475	630	660
	U_B	220	230	380	400	500	660	690
	U_0	230	240	400	420	525	690	725
60	U_U	250	265	435	460	570		-
	U_B	265	275	460	480	600	-	-
	U_0	280	290	485	500	630	-	-

current at: lower limit voltage U_U, design voltage U_B, upper limit voltage U_0

Type		output P kW	torque M_B Nm	frequency f Hz	current at I A	I A	I A	I A	I A	I A	I A	speed n rpm	efficiency η % (Load 100 %)	η % (Load 75 %)	power factor cos φ (Load 100 %)	starting current I_A/I_B	starting torque M_A/M_B	pull-up torque M_S/M_B	pull-out torque M_K/M_B	moment of inertia J kgm²	weight m kg
					259	241	148	140	112	84.5	80.5	985	93.7	93.0	0.87	6.5	1.8	1.4	2.2		
K21R 315 S6	K20R 280 S6	75	727	50	241	231	140	133	106	80.5	77.0	985	93.7	93.0	0.87	7.0	2.0	1.6	2.4	2.63	690
					234	224	134	128	102	78	74	987	93.7	93.0	0.86	7.5	2.2	1.8	2.7		
					256	241	147	139	112	-	-	1182	93.5	92.8	0.87	6.5	1.8	1.4	2.2		
		90	725	60	241	232	139	133	106	-	-	1185	93.5	92.8	0.87	7.0	2.0	1.6	2.4		
					231	223	133	129	103	-	-	1185	93.5	92.8	0.86	7.5	2.2	1.8	2.7		
					305	284	174	165	132	99.5	95	985	94.4	93.5	0.88	6.5	1.8	1.5	2.1		
K21R 315 M6	K20R 280 M6	90	868	50	284	272	165	156	125	95	90.5	990	94.4	93.5	0.88	7.0	2.0	1.7	2.4	3.33	800
					279	268	161	153	122	93	88.5	990	94.0	93.1	0.86	7.5	2.2	1.9	2.7		
					303	286	174	165	133	-	-	1185	94.5	93.6	0.87	6.5	1.8	1.5	2.1		
		108	867	60	290	280	167	160	128	-	-	1190	94.3	93.4	0.86	7.0	2.0	1.7	2.4		
					279	269	161	156	124	-	-	1190	94.0	93.1	0.85	7.5	2.2	1.9	2.6		
					375	349	213	202	162	122	116	985	94.0	93.8	0.88	7.0	1.9	1.5	2.3		
K21R 315 MX6	K20R 315 S6	110	1061	50	349	334	202	192	154	116	111	990	94.0	93.8	0.88	7.5	2.2	1.7	2.6	3.60	880
					345	331	199	189	151	115	110	990	93.0	92.8	0.86	8.0	2.4	1.9	2.8		
					369	348	212	200	162	-	-	1185	94.0	93.8	0.88	7.0	2.0	1.6	2.4		
		132	1064	60	354	341	204	195	156	-	-	1185	93.5	93.3	0.87	7.5	2.2	1.7	2.6		
					344	332	199	193	153	-	-	1190	93.0	92.8	0.85	8.0	2.4	1.9	2.8		
					440	410	250	237	190	143	137	985	95.0	94.7	0.89	6.9	1.9	1.6	2.2		
K21R 315 MY6	K20R 315 M6	132	1273	50	414	396	240	228	182	138	132	990	95.0	94.7	0.88	7.5	2.0	1.7	2.4	6.00	1050
					403	386	232	221	177	134	128	990	94.5	94.2	0.87	8.0	2.3	1.8	2.6		
					436	412	251	237	191	-	-	1190	95.0	94.7	0.88	7.0	1.9	1.6	2.3		
		158	1268	60	416	401	240	230	184	-	-	1190	95.0	94.7	0.87	7.5	2.1	1.7	2.5		
					401	387	231	224	178	-	-	1190	94.5	94.2	0.86	7.9	2.3	1.8	2.7		
					531	495	303	287	229	173	165	985	95.3	95.0	0.89	6.9	2.1	1.7	2.2		
K21R 315 L6	K20R 315 L6	160	1551	50	495	474	287	272	218	165	158	985	95.3	95.0	0.89	7.5	2.3	1.9	2.4	6.67	1250
					487	467	280	267	214	162	155	990	94.7	94.4	0.87	8.2	2.6	2.1	2.7		
					518	489	298	281	227	-	-	1185	95.2	94.9	0.89	7.0	2.2	1.8	2.3		
		190	1531	60	494	476	285	273	218	-	-	1185	95.2	94.9	0.88	7.7	2.4	2.0	2.5		
					480	463	277	269	213	-	-	1190	95.0	94.7	0.86	8.1	2.6	2.1	2.7		
					674	628	384	363	291	219	209	985	95.0	94.7	0.88	7.7	2.0	1.8	2.4		
K21R 315 LX6	K20R 315 LX6	200	1929	50	635	607	368	349	279	212	202	990	95.0	94.7	0.87	8.3	2.2	2.0	2.7	8.6	1460
					631	605	363	346	276	210	200	990	94.7	94.4	0.84	8.8	2.5	2.2	3.0		
					654	617	376	356	287	-	-	1185	95.2	94.9	0.89	7.7	2.0	1.8	2.5		
		240	1926	60	633	610	364	349	279	-	-	1190	95.0	94.7	0.87	8.2	2.2	2.0	2.7		
					613	592	354	343	272	-	-	1190	95.0	94.7	0.85	8.8	2.4	2.2	2.9		

Three-phase motors with squirrel-cage rotor

with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design voltage range B acc. to EN 60034-1

f								
50	U_U	205	220	360	380	475	630	660
	U_B	220	230	380	400	500	660	690
	U_0	230	240	400	420	525	690	-
60	U_U	250	255	435	440	570		-
	U_B	265	275	460	480	600	-	-
	U_0	280	290	485	500	630	-	-

current at: lower limit voltage U_U, design voltage U_B, upper limit voltage U_0

Type		output P kW	torque M_B Nm	frequency f Hz	current at I A	I A	I A	I A	I A	I A	I A	speed n rpm	efficiency η %	power factor cos φ	starting current I_A/I_B	starting torque M_A/M_B	pull-up torque M_S/M_B	pull-out torque M_K/M_B	moment of inertia J kgm²	weight m kg
						0.98		0.57			0.33	665	44.4	0.54	2.1	1.7	1.7	1.9		
K21R 71 K8	K20R 63 K8	0.09	1.27	50		0.97		0.56			0.32	675	45.5	0.51	2.1	1.9	1.9	2.1	0.0005	6.6
						1.16		0.66			-	680	40.2	0.47	1.9	2.0	2.0	2.3		6.6[1)]
						0.88		0.51			-	820	50.0	0.54	2.3	1.6	1.6	1.7		
		0.105	1.20	60		0.94		0.54			-	835	48.0	0.49	2.3	1.9	1.9	2.1		
						1.05		0.61			-	840	42.0	0.47	2.3	2.0	2.0	2.3		
						1.21		0.70			0.40	660	47.6	0.55	2.3	1.6	1.6	2.0		
K21R 71 G8	K20R 63 G8	0.12	1.71	50		1.27		0.73			0.42	670	46.5	0.51	2.3	1.8	1.8	2.1	0.0006	8.1
						1.44		0.82			-	680	41.2	0.49	2.2	1.9	1.9	2.3		7.4[1)]
						1.17		0.68			-	815	51.0	0.53	2.5	1.5	1.5	1.8		
		0.14	1.61	60		1.29		0.74			-	830	47.0	0.48	2.5	1.8	1.8	2.1		
						1.41		0.82			-	835	43.0	0.46	2.4	1.9	1.9	2.3		
						1.31		0.76			0.44	675	56.5	0.64	2.7	1.8	1.8	2.0		
K21R 80 K8	K20R 71 K8	0.18	2.49	50		1.36		0.78			0.45	690	56.5	0.59	2.8	2.0	2.0	2.2	0.0013	10.5
						1.47		0.84			-	695	53.4	0.55	2.7	2.2	2.2	2.4		9.9[1)]
						1.28		0.74			-	830	60.0	0.62	2.8	1.6	1.6	1.8		
		0.21	2.37	60		1.33		0.76			-	845	58.0	0.57	2.9	2.0	2.0	2.2		
						1.38		0.80			-	850	57.0	0.53	2.9	2.2	2.2	2.4		
						1.85		1.07			0.62	685	60.1	0.59	3.0	2.1	2.1	2.3		
K21R 80 G8	K20R 71 G8	0.25	3.44	50		1.95		1.12			0.65	695	58.0	0.56	3.0	2.3	2.3	2.5	0.00175	12.0
						2.15		1.23			-	700	53.9	0.52	2.9	2.5	2.5	2.7		11.3[1)]
						1.83		1.06			-	835	62.0	0.60	3.1	1.9	1.9	2.1		
		0.3	3.39	60		1.92		1.10			-	845	61.0	0.54	3.3	2.3	2.3	2.5		
						2.09		1.21			-	850	56.0	0.51	3.2	2.5	2.5	2.7		
						2.69		1.56			0.90	695	61.5	0.59	2.9	1.7	1.7	1.9		
K21R 90 S8	K20R 80 K8	0.37	5.05	50		2.78		1.60			0.93	700	61.5	0.54	3.0	1.9	1.9	2.1	0.003	15.0
						3.20		1.83			-	705	53.1	0.52	2.8	2.1	2.1	2.3		14.0[1)]
						2.69		1.56			-	850	65.0	0.57	3.6	1.6	1.6	1.7		
		0.44	4.91	60		2.91		1.67			-	855	62.0	0.51	3.7	1.9	1.9	2.1		
						2.96		1.72			-	860	59.0	0.50	3.5	2.1	2.1	2.3		

1) weight for K20R

Three-phase motors with squirrel-cage rotor

with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design voltage range B acc. to EN 60034-1

Current at (voltages, V):

f (Hz)								
50	U_U	205	220	360	380	475	630	660
	U_B	220	230	380	400	500	660	690
	U_0	230	240	400	420	525	690	-
60	U_U	250	255	435	440	570		-
	U_B	265	275	460	480	600	-	-
	U_0	280	290	485	500	630	-	-

at: lower limit voltage U_U, design voltage U_B, upper limit voltage U_0

Type		output P kW	torque M_B Nm	frequency f Hz	I A	I A	I A	I A	I A	I A	I A	speed n rpm	efficiency η %	power factor cos φ	starting current I_A/I_B	starting torque M_A/M_B	pull-up torque M_S/M_B	pull-out torque M_K/M_B	moment of inertia J kgm²	weight m kg
						3.60		2.07			1.19	690	64.5	0.62	3.1	1.7	1.7	2.0		
K21R 90 L8	K20R 80 G8	0.55	7.56	50		3.55		2.04			1.18	695	64.5	0.60	3.2	1.9	1.9	2.2	0.00375	18.0
						4.05		2.30			-	700	59.4	0.55	3.1	2.1	2.1	2.4		17.0 1)
						3.50		2.03			-	840	70.0	0.60	3.7	1.7	1.7	1.8		
		0.65	7.30	60		3.70		2.13			-	850	68.0	0.54	3.7	2.1	2.1	2.2		
						3.80		2.20			-	855	67.0	0.51	3.8	2.3	2.3	2.4		
						4.75		2.75			1.58	700	67.0	0.62	3.2	1.8	1.8	2.1		
K21R 100 L8	K20R 90 L8	0.75	10.2	50		4.70		2.70			1.57	705	67.0	0.60	3.3	1.8	1.8	2.2	0.00625	23.0
						5.45		3.10			-	710	61.0	0.55	3.2	2.2	2.2	2.5		23.0 1)
						4.65		2.70			-	850	69.0	0.63	3.7	1.6	1.6	1.9		
		0.9	10.1	60		4.90		2.80			-	855	68.0	0.57	3.7	2.0	2.0	2.3		
						5.00		2.90			-	860	68.0	0.53	3.8	2.2	2.2	2.5		
						5.70		3.30			1.90	695	73.0	0.69	3.9	1.8	1.8	2.2		
K21R 100 LX8	K20R 100 S8	1.1	14.9	50		5.65		3.25			1.88	705	73.0	0.67	4.0	2.0	2.0	2.4	0.009	28.0
						5.95		3.40			-	710	73.0	0.61	4.0	2.2	2.2	2.6		28.0 1)
						5.60		3.25			-	850	76.0	0.69	4.2	1.6	1.6	2.0		
		1.3	14.5	60		5.70		3.25			-	855	75.0	0.64	4.4	2.0	2.0	2.4		
						5.80		3.35			-	860	75.0	0.60	4.5	2.2	2.2	2.6		
						7.25		4.20			2.42	695	74.5	0.73	4.1	2.0	1.9	2.3		
K21R 112 M8	K20R 100 L8	1.5	20.3	50		7.15		4.10			2.38	705	75.5	0.70	4.4	2.2	2.1	2.5	0.01225	33.5
						7.35		4.20			-	710	74.5	0.66	4.4	2.4	2.3	2.7		32.5 1)
						7.25		4.15			-	840	78.0	0.73	4.2	1.8	1.7	2.1		
		1.8	20.2	60		7.25		4.15			-	850	78.0	0.67	4.6	2.2	2.1	2.5		
						7.25		4.15			-	855	78.0	0.64	4.8	2.4	2.3	2.7		
						11.00		6.35			3.65	675	73.3	0.72	3.7	1.7	1.7	2.0		
K21R 132 S8T	K20R 100 LX8	2.2	30.7	50		11.00		6.30			3.65	685	75.8	0.68	3.8	2.0	1.9	2.3	0.0139	39.0
						11.20		6.40			-	695	73.8	0.64	3.9	2.1	2.1	2.5		36.0 1)
						10.80		6.25			-	825	76.2	0.72	3.7	1.3	1.3	1.8		
		2.6	29.6	60		10.60		6.15			-	840	77.3	0.66	4.1	1.6	1.6	2.1		
						10.90		6.30			-	845	77.3	0.62	4.2	1.7	1.7	2.3		

1) weight for K20R

Three-phase motors with squirrel-cage rotor

with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design voltage range B acc. to EN 60034-1

Current at (voltages, V):

f (Hz)								
50	U_U	205	220	360	380	475	630	660
	U_B	220	230	380	400	500	660	690
	U_0	230	240	400	420	525	690	725
60	U_U	250	265	435	460	570		-
	U_B	265	275	460	480	600	-	-
	U_0	280	290	485	500	630	-	-

at: lower limit voltage U_U, design voltage U_B, upper limit voltage U_0

Type		output P kW	torque M_B Nm	frequency f Hz	I A	I A	I A	I A	I A	I A	I A	speed n rpm	efficiency η % Load 100%	efficiency η % Load 75%	power factor cos φ Load 100%	starting current I_A/I_B	starting torque M_A/M_B	pull-up torque M_S/M_B	pull-out torque M_K/M_B	moment of inertia J kgm²	weight m kg
					11	10	6.1	5.8	4.7	3.5	3.4	700	75.5	75.0	0.76	4.2	1.5	1.4	2.1		
K21R 132 S8	K20R 112 M8	2.2	29.8	50	10	9.6	5.8	5.5	4.4	3.4	3.2	705	75.5	75.0	0.76	4.5	1.7	1.6	2.3	0.018	46
					11	10.5	6.2	5.9	4.7	3.6	3.4	710	73.0	72.5	0.70	4.6	1.9	1.8	2.6		
					10.5	10	6.1	5.8	4.7	-	-	855	76.5	76.0	0.74	4.3	1.6	1.5	2.2		
		2.6	28.7	60	10.5	10	6	5.8	4.6	-	-	865	76.0	75.5	0.71	4.5	1.7	1.7	2.4		
					10.5	10	6.1	5.9	4.7	-	-	865	75.0	74.5	0.68	4.6	1.9	1.9	2.6		
					14	13	7.9	7.5	6	4.5	4.3	700	78.0	78.0	0.78	4.1	1.5	1.4	2.1		
K21R 132 M8	K20R 112 MX8	3	40.6	50	13.5	13	7.8	7.4	5.9	4.5	4.3	705	78.0	78.0	0.75	4.5	1.7	1.6	2.3	0.023	53
					14	13	7.9	7.5	6	4.6	4.4	710	77.0	77.0	0.71	4.6	1.9	1.8	2.6		
					14	13	8.1	7.6	6.2	-	-	850	78.0	78.0	0.76	4.2	1.5	1.4	2.1		
		3.6	40.2	60	14	13.5	7.9	7.6	6.1	-	-	855	78.0	78.0	0.73	4.4	1.7	1.6	2.3		
					13.5	13	7.8	7.6	6	-	-	860	78.0	78.0	0.70	4.6	1.9	1.8	2.6		
					18	17	10.5	9.8	7.9	5.9	5.7	705	79.3	79.0	0.78	3.7	1.4	1.1	1.7		
K21R 160 M8	K20R 132 S8	4	53.8	50	17	16	9.8	9.3	7.5	5.7	5.4	710	79.3	79.0	0.78	4.0	1.6	1.3	1.9	0.043	70
					18	17	10.5	9.9	7.9	6	5.7	715	77.5	77.2	0.72	4.2	1.8	1.5	2.1		
					18.5	17.5	10.5	10	8.2	-	-	850	79.5	79.2	0.75	3.8	1.4	1.1	1.7		
		4.8	53.3	60	18	17.5	10.5	9.9	8	-	-	860	79.5	79.2	0.73	4.0	1.6	1.3	1.9		
					17.5	17	10	9.8	7.8	-	-	865	79.5	79.2	0.71	4.2	1.8	1.5	2.1		
					24.5	22.5	14	13	10.5	7.9	7.6	705	81.4	81.0	0.78	4.1	1.5	1.4	1.9		
K21R 160 MX8	K20R 132 M8	5.5	74.0	50	22.5	21.5	13	12.5	10	7.6	7.2	710	81.4	81.0	0.78	4.5	1.7	1.6	2.1	0.053	86
					24.5	23.5	14	13.5	10.5	8.1	7.7	715	80.0	79.6	0.71	4.6	1.9	1.7	2.4		
					24	22.5	14	13.0	10.5	-	-	860	82.3	81.6	0.77	4.1	1.5	1.4	2.0		
		6.6	72.9	60	23.5	23	13.5	13	10.5	-	-	865	82.0	81.6	0.74	4.5	1.7	1.6	2.2		
					23.5	22.5	13.5	13	10.5	-	-	866	81.5	81.1	0.71	4.7	1.9	1.7	2.4		
					32	30	18	17.5	14	10.5	9.9	720	83.5	83.5	0.79	4.1	1.6	1.4	1.9		
K21R 160 L8	K20R 160 S8	7.5	98.8	50	30.5	29	17.5	16.5	13.5	10	9.7	725	83.0	83.0	0.78	4.5	1.8	1.6	2.1	0.113	114
					30.5	29.5	17.5	17	13.5	10	9.7	730	82.0	82.0	0.75	4.7	2.0	1.7	2.3		
					31.5	29.5	18	17	14	-	-	870	83.5	83.5	0.79	4.0	1.6	1.4	1.9		
		9	98.3	60	30.5	29	17.5	16.5	13.5	-	-	875	83.0	83.0	0.78	4.4	1.8	1.6	2.1		
					30	29	17.5	17	13.5	-	-	880	82.0	82.0	0.75	4.6	2.0	1.7	2.3		
					46	42.5	26	24.5	20	15	14	715	85.5	84.5	0.79	4.1	1.8	1.5	1.9		
K21R 180 L8	K20R 160 M8	11	146	50	43.5	41.5	25	24	19	14.5	14	720	85.0	84.0	0.78	4.5	2.0	1.7	2.1	0.145	136
					44	42	25	24	19	14.5	14	725	84.0	83.0	0.75	4.7	2.2	1.8	2.3		
					45	42	25.5	24.5	19.5	-	-	865	86.0	85.0	0.78	4.1	1.8	1.6	2.0		
		13	143	60	43.5	41.5	25	24	19	-	-	870	85.0	84.0	0.77	4.5	2.0	1.8	2.2		
					42.5	41	24.5	24	19	-	-	875	84.0	83.0	0.75	4.7	2.2	1.9	2.4		

3

Three-phase motors with squirrel-cage rotor

with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design voltage range B acc. to EN 60034-1

Type		output	torque	frequency	current at							speed	efficiency		power factor	starting current	starting torque	pull-up torque	pull-out torque	moment of inertia	weight
				50	U_U 205	220	360	380	475	630	660	at	lower limit voltage U_U								
					U_B 220	230	380	400	500	660	690		design voltage U_B								
					U_O 230	240	400	420	525	690	725		upper limit voltage U_O								
				60	U_U 250	265	435	460	570		-										
					U_B 265	275	460	480	600	-	-										
					U_O 280	290	485	500	630	-	-										
													Load 100 %	Load 75 %	100 %						
		P	M_B	f	I	I	I	I	I	I	I	n	η	η	cos φ	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
		kW	Nm	Hz	A	A	A	A	A	A	A	rpm	%	%	-	-	-	-	-	kgm²	kg
					62	57.5	35	33.5	26.5	20	19	720	86.5	86.0	0.79	4.6	1.8	1.5	2.0		
K21R 200 L8	K20R 180 S8	15	198	50	57.5	55	33.5	31.5	25.5	19	18.5	725	86.5	86.0	0.79	5.0	2.0	1.7	2.3	0.228	175
					60.5	58	34.5	33	26.5	20	19	730	85.5	85.0	0.73	5.3	2.3	1.9	2.5		
					60	57	34.5	32.5	26.5	-	-	875	87.4	86.9	0.79	4.7	1.8	1.5	2.0		
		18	196	60	59.5	57	34	32.5	26	-	-	875	87.0	86.5	0.76	5.0	2.0	1.7	2.3		
					58.5	56.5	33.5	32.5	26	-	-	880	87.0	86.5	0.73	5.3	2.3	1.9	2.5		
					72.5	67.5	41.5	39	31.5	23.5	22.5	720	87.5	86.5	0.82	4.5	1.7	1.5	2.1		
-	K20R 180 M8	18.5	244	50	69.5	66.5	40	38	30.5	23	22	725	87.5	86.5	0.80	5.0	1.9	1.7	2.2	0.228	200
					69	66	39.5	37.5	30	23	22	730	87.5	86.5	0.77	5.5	2.1	1.9	2.4		
					67.5	64	39	36.5	29.5	-	-	865	87.5	86.5	0.82	4.0	1.8	1.6	2.0		
		21	231	60	65.5	63	37.5	36	29	-	-	870	87.5	86.5	0.80	4.5	2.0	1.8	2.3		
					64.5	62	37	36	28.5	-	-	875	87.5	86.5	0.77	5.0	2.2	2.0	2.4		
					70.5	65.5	40	38	30.5	23	22	720	89.2	88.0	0.83	5.0	1.7	1.4	2.0		
K21R 225 S8	-	18.5	244	50	65.5	62.5	38	36	29	22	21	725	89.2	88.0	0.83	5.5	2.0	1.6	2.2	0.44	265
					66	63.5	38	36	29	22	21	730	89.0	87.8	0.79	5.9	2.2	1.8	2.4		
					70.5	66.5	40.5	38.5	31	-	-	875	89.0	87.8	0.81	5.0	1.8	1.4	2.0		
		22	239	60	66	63.5	38	36.5	29	-	-	880	89.5	88.3	0.81	5.5	2.0	1.6	2.3		
					64	62	37	36	28.5	-	-	880	89.5	88.3	0.79	5.9	2.2	1.8	2.5		
					83	77	47	44.5	36	27	25.5	720	89.0	88.8	0.84	4.5	1.6	1.3	2.0		
K21R 225 M8	K20R 200 M8	22	290	50	77	73.5	44.5	42.5	34	25.5	24.5	725	89.2	89.0	0.84	5.0	1.8	1.5	2.2	0.44	265
					75.5	72.5	43.5	41.5	33	25	24	730	89.2	89.0	0.82	5.5	2.0	1.7	2.4		
					80	75.5	46	43.5	35	-	-	870	89.5	89.3	0.84	4.7	1.6	1.4	2.0		
		26	284	60	76.5	73.5	44	42	33.5	-	-	875	89.5	89.3	0.83	5.0	1.8	1.5	2.2		
					74.5	72	43	41.5	33	-	-	880	89.0	88.7	0.81	5.4	2.0	1.6	2.4		
					119	110	67.5	64	51	38.5	37	730	90.2	90.0	0.79	5.0	2.0	1.6	2.0		
K21R 250 M8	K20R 225 M8	30	392	50	110	106	64	61	48.5	37	35	730	90.2	90.0	0.79	5.5	2.2	1.8	2.2	0.825	360
					113	109	65	62	49.5	38	36	735	89.7	89.5	0.74	5.8	2.5	2.0	2.5		
					118	111	67.5	64	51.5	-	-	880	90.5	90.3	0.78	5.1	2.0	1.6	2.0		
		36	391	60	113	108	65	62	49.5	-	-	880	90.5	90.3	0.77	5.5	2.2	1.8	2.2		
					111	108	64.5	62.5	49.5	-	-	885	90.0	89.7	0.74	5.8	2.5	2.0	2.4		
					144	134	82	77.5	62	47	44.5	732	90.5	90.0	0.80	4.8	1.9	1.4	1.9		
K21R 280 S8	K20R 250 S8	37	481	50	133	128	77	73.5	58.5	44.5	42.5	735	91.0	90.5	0.80	5.5	2.0	1.5	2.0	1.35	465
					129	124	74.5	70.5	56.5	43	41	736	91.0	90.5	0.79	5.8	2.3	1.7	2.3		
					140	132	80.5	76.5	61.5	-	-	882	90.5	90.0	0.80	4.9	1.9	1.4	1.9		
		44	475	60	132	127	76	72.5	58	-	-	885	91.0	90.5	0.80	5.5	2.1	1.5	2.1		
					126	122	73	70.5	56	-	-	885	91.0	90.5	0.79	5.7	2.3	1.7	2.4		

Three-phase motors with squirrel-cage rotor

with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design voltage range B acc. to EN 60034-1

Type		output	torque	frequency	current at							speed	efficiency		power factor	starting current	starting torque	pull-up torque	pull-out torque	moment of inertia	weight
				50	U_U 205	220	360	380	475	630	660	at	lower limit voltage U_U								
					U_B 220	230	380	400	500	660	690		design voltage U_B								
					U_O 230	240	400	420	525	690	725		upper limit voltage U_O								
				60	U_U 250	265	435	460	570		-										
					U_B 265	275	460	480	600	-	-										
					U_O 280	290	485	500	630	-	-										
													Load 100 %	Load 75 %	100 %						
		P	M_B	f	I	I	I	I	I	I	I	n	η	η	cos φ	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
		kW	Nm	Hz	A	A	A	A	A	A	A	rpm	%	%	-	-	-	-	-	kgm²	kg
					178	165	101	96	76.5	58	55	733	91.5	91.0	0.78	5.5	2.1	1.6	2.1		
K21R 280 M8	K20R 250 M8	45	585	50	168	160	97	92	74	56	53.5	735	91.5	91.0	0.77	6.0	2.3	1.8	2.4	1.55	520
					166	159	95	90.5	72.5	55	52.5	740	91.0	90.5	0.75	6.4	2.6	2.0	2.6		
					175	165	100	95	76.5	-	-	884	91.5	91.0	0.78	5.5	2.1	1.6	2.1		
		54	583	60	167	161	96	92	74	-	-	885	91.5	91.0	0.77	6.0	2.3	1.8	2.3		
					162	157	93.5	91	72	-	-	887	91.5	91.0	0.75	6.4	2.5	1.9	2.6		
					208	194	118	112	90	67.5	64.5	739	93.1	92.0	0.80	6.0	1.6	1.5	2.0		
K21R 315 S8	K20R 280 S8	55	710	50	194	185	112	107	85.5	64.5	62	740	93.1	92.0	0.80	6.5	1.8	1.6	2.3	2.63	690
					196	188	113	108	86	65.5	63	741	92.5	91.4	0.76	6.8	2.0	1.8	2.5		
					204	193	117	111	90	-	-	889	93.3	92.2	0.80	6.1	1.6	1.5	2.0		
		66	708	60	198	190	114	109	88	-	-	890	93.3	92.2	0.78	6.5	1.8	1.6	2.2		
					193	186	111	108	86	-	-	890	93.0	91.9	0.76	6.8	1.9	1.8	2.5		
					279	260	159	151	121	91	87	740	93.3	93.0	0.81	5.7	1.8	1.4	2.0		
K21R 315 M8	K20R 280 M8	75	968	50	260	249	151	143	115	87	83	740	93.3	93.0	0.81	6.0	2.0	1.6	2.3	3.33	800
					260	249	149	142	114	86.5	83	740	93.0	92.7	0.78	6.8	2.2	1.8	2.6		
					276	260	159	150	121	-	-	879	93.0	92.7	0.81	5.7	1.8	1.4	2.0		
		90	977	60	264	254	152	146	116	-	-	880	93.0	92.7	0.80	6.0	2.0	1.5	2.3		
					252	243	145	141	112	-	-	885	93.3	93.0	0.79	6.8	2.2	1.7	2.5		
					335	312	191	181	144	109	104	738	93.5	93.0	0.81	5.4	1.8	1.5	2.0		
K21R 315 MX8	K20R 315 S8	90	1162	50	312	298	181	172	137	104	99.5	740	93.5	93.0	0.81	6.0	1.9	1.6	2.2	3.6	880
					307	295	177	168	135	102	97.5	741	93.0	92.5	0.79	6.4	2.2	1.8	2.4		
					329	311	189	179	144	-	-	883	93.5	93.0	0.81	5.4	1.6	1.4	1.8		
		108	1165	60	316	305	182	175	140	-	-	885	93.0	92.5	0.80	6.0	1.7	1.5	2.0		
					304	293	175	170	135	-	-	888	92.8	92.3	0.79	6.6	2.0	1.7	2.3		
					404	377	230	218	174	132	126	740	94.6	94.0	0.81	6.2	1.9	1.7	2.2		
K21R 315 MY8	K20R 315 M8	110	1420	50	377	360	218	207	166	126	120	740	94.6	94.0	0.81	6.5	2.1	1.8	2.4	6	1050
					375	360	216	206	164	125	119	742	94.3	93.7	0.78	7.0	2.3	2.0	2.7		
					398	376	229	216	175	-	-	888	94.5	93.9	0.81	6.3	1.9	1.7	2.3		
		132	1416	60	380	367	219	210	168	-	-	890	94.5	93.9	0.80	6.5	2.1	1.8	2.5		
					370	357	214	207	164	-	-	892	94.3	93.7	0.78	7.0	2.3	2.0	2.7		
					471	439	268	254	203	153	146	740	95.0	94.3	0.83	5.8	1.8	1.5	1.9		
K21R 315 L8	K20R 315 L8	132	1704	50	439	420	254	242	193	146	140	740	95.0	94.3	0.83	6.3	2.0	1.7	2.1	6.76	1250
					438	420	252	240	192	146	139	741	94.6	93.9	0.80	6.8	2.2	1.9	2.3		
					469	443	270	255	206	-	-	890	94.8	94.1	0.82	6.0	1.9	1.6	2.0		
		158	1695	60	449	432	259	248	198	-	-	890	94.7	94.0	0.81	6.5	2.0	1.7	2.2		
					436	421	252	244	194	-	-	891	94.6	93.9	0.79	6.9	2.2	1.9	2.4		
					592	551	337	319	255	193	184	740	95.2	94.5	0.80	6.7	2.0	1.7	2.3		
K21R 315 LX8	K20R 315 LX8	160	2065	50	558	534	323	307	246	186	178	740	95.2	94.5	0.79	7.2	2.2	1.9	2.5	8.71	1430
					562	539	323	308	246	187	178	743	95.3	94.6	0.75	7.6	2.5	2.1	2.8		
					576	543	331	313	252	-	-	890	95.3	94.6	0.80	6.8	2.0	1.7	2.3		
		190	2039	60	557	537	321	308	246	-	-	890	95.2	94.5	0.78	7.2	2.2	1.9	2.5		
					557	538	322	312	248	-	-	892	95.0	94.3	0.74	7.5	2.5	2.1	2.8		

Three-phase motors with squirrel-cage rotor

with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design voltage range B acc. to EN 60034-1

Type		output	torque	frequency	current at							speed	efficiency	power factor	starting current	starting torque	pull-up torque	pull-out torque	moment of inertia	weight
				50	U_U 205	220	360	380	475	630	660									
					U_B 220	230	380	400	500	660	690	at	lower limit voltage U_U							
					U_O 230	240	400	420	525	690	-		design voltage U_B							
				60	U_U 250	255	435	440	570		-		upper limit voltage U_O							
					U_B 265	275	460	480	600	-	-									
					U_O 280	290	485	500	630	-	-									
		P	M_B	f	I	I	I	I	I	I	I	n	η	cos φ	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
		kW	Nm	Hz	A	A	A	A	A	A	A	rpm	%	-	-	-	-	-	kgm^2	kg
					-	-	-	-	-	-	-		-	-						
K21R 132 S10	K20R 112 M10	1.1	18.4	50	6.6	6.3	3.8	3.6	2.9	2.2	2.1	570	67.0	0.65	3.7	1.7	1.6	2.5	0.018	46
					-	-	-	-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						
		1.3	21.8	60	data on request			-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						
K21R 132 M10	K20R 112 MX10	1.5	25.1	50	8.5	8.1	4.9	4.7	3.7	2.8	2.7	570	71.5	0.65	3.8	1.8	1.8	2.6	0.023	53
					-	-	-	-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						
		1.8	30.2	60	data on request			-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						
					12	11.5	6.9	6.5	5.2	3.9	3.8	570	74.0	0.69	3.5	1.5	1.4	2.0		
K21R 132MX10	K20R132 S10	2.2	36.6	50	12	11.5	6.9	6.5	5.2	3.9	3.8	575	75.0	0.65	3.7	1.7	1.6	2.2	0.043	70
					12	11.5	6.8	6.5	5.2	4	3.8	580	75.0	0.62	2.9	1.9	1.8	2.5		
					11.5	11	6.7	6.4	5.1	-	-	695	77.5	0.66	3.5	1.6	1.5	2.1		
		2.6	35.7	60	11.5	11	6.7	6.4	5.1	-	-	695	76.5	0.64	3.7	1.7	1.7	2.3		
					11.5	11	6.7	6.5	5.2	-	-	700	77.0	0.60	3.9	1.9	1.8	2.5		
					16	15	9.2	8.7	7	5.3	5	570	77.0	0.68	3.4	1.6	1.5	1.9		
K21R 160 M10	K20R 132 M10	3.0	49.8	50	15.5	15	9.1	8.7	6.9	5.2	5	575	77.0	0.65	3.7	1.8	1.7	2.2	0.053	86
					16	15.5	9.3	8.8	7.1	5.4	5.1	575	76.5	0.61	3.8	2.0	1.9	2.5		
					16	15	9.1	8.6	6.9	-	-	690	79.5	0.66	3.5	1.6	1.5	2.0		
		3.6	49.5	60	15.5	15	8.9	8.6	6.9	-	-	695	79.0	0.64	3.7	1.8	1.7	2.3		
					16	15	9.1	8.8	7	-	-	695	78.5	0.60	3.8	2.0	1.9	2.5		
					28	26	16	15	12	9.1	8.6	573	79.5	0.70	3.8	1.7	1.6	2.0		
K21R 160 L10	K20R 160 S10	5.5	91.3	50	26.5	25	15.5	14.5	11.5	8.8	8.4	575	80.5	0.68	4.0	1.8	1.7	2.1	0.113	114
					28.5	27	16.5	15.5	12.5	9.5	9	580	78.5	0.62	4.1	2.0	2.0	2.5		
					27	25.5	15.5	14.5	11.5	-	-	695	82.5	0.69	3.9	1.8	1.6	2.1		
		6.6	90.4	60	27	26	15.5	15	12	-	-	697	80.0	0.66	4.0	2.1	1.7	2.3		
					27.5	26.5	16	15.5	12.5	-	-	700	79.5	0.62	4.1	2.2	1.9	2.5		
					-	-	-	-	-	-	-		-	-						
K21R 180L10	K20R 160 M10	6.0	99.7	50	28	27	16.5	15.5	12.5	9.4	9	575	82.0	0.68	3.9	2.0	1.7	2.1	0.145	136
					-	-	-	-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						
		7.2	120	60	data on request			-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						
					45	42	25.5	24	19.5	14.5	14	580	83.0	0.68	4.4	2.0	1.7	2.4		
K21R 200L10	K20R 180 S10	9.0	147	50	44	42	25.5	24	19.5	14.5	14	585	83.0	0.65	4.6	2.3	2.0	2.7	0.228	175
					47.5	45.5	27	26	20.5	16	15	585	81.0	0.59	4.6	2.5	2.2	3.0		
					44.5	42	25.5	24	19.5	-	-	700	85.0	0.67	4.5	2.0	1.7	2.4		
		11	149	60	45.5	43.5	26	25	20	-	-	705	84.0	0.63	4.5	2.2	2.0	2.7		
					47.5	46	27.5	26.5	21	-	-	705	82.0	0.58	4.5	2.4	2.2	2.9		
					59	55	33.5	32	25.5	19	18.5	573	84.0	0.74	3.9	1.6	1.4	1.8		
K21R 200 LX10	K20R 180 M10	13	216	50	57.5	55	33	31.5	25	19	18.5	575	85.0	0.70	4.2	1.8	1.6	2.1	0.268	200
					58.5	56	33.5	32	25.5	19.5	18.5	580	83.0	0.67	4.4	2.0	1.8	2.3		
					58.5	55	33.5	32	25.5	-	-	695	85.5	0.72	4.0	1.6	1.5	1.9		
		15.6	214	60	57	55	33	31.5	25	-	-	697	85.0	0.70	4.2	1.8	1.6	2.1		
					56.5	54.5	32.5	31.5	25	-	-	700	85.0	0.67	4.4	2.0	1.8	2.3		

Three-phase motors with squirrel-cage rotor

with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design voltage range B acc. to EN 60034-1

Type		output	torque	frequency	current at							speed	efficiency	power factor	starting current	starting torque	pull-up torque	pull-out torque	moment of inertia	weight
				50	U_U 205	220	360	380	475	630	660									
					U_B 220	230	380	400	500	660	690	at	lower limit voltage U_U							
					U_O 230	240	400	420	525	690	-		design voltage U_B							
				60	U_U 250	255	435	440	570		-		upper limit voltage U_O							
					U_B 265	275	460	480	600	-	-									
					U_O 280	290	485	500	630	-	-									
		P	M_B	f	I	I	I	I	I	I	I	n	η	cos φ	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
		kW	Nm	Hz	A	A	A	A	A	A	A	rpm	%	-	-	-	-	-	kgm^2	kg
					76	71	43.5	41	33	25	23.5	575	85.0	0.74	3.9	1.5	1.3	1.9		
K21R 225M10	K20R 200 M10	17	280	50	75	71.5	43.5	41	33	25	24	580	85.0	0.70	4.3	1.7	1.5	2.1	0.44	265
					74.5	71.5	43	41	32.5	25	23.5	580	84.0	0.68	4.5	1.9	1.6	2.3		
					73	69	42	39.5	32	-	-	695	85.5	0.74	4.1	1.6	1.3	1.9		
		20	273	60	73	70	42	40	32	-	-	700	85.5	0.70	4.3	1.8	1.5	2.1		
					71.5	69	41	40	31.5	-	-	700	85.0	0.68	4.5	1.9	1.7	2.4		
					-	-	-	-	-	-	-		-	-						
K21R 250M10	K20R 225 M10	22	362	50	96	92	55.5	53	42.5	32	30.5	580	87.0	0.69	3.9	1.9	1.5	1.6	0.825	360
					-	-	-	-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						
		26	428	60	data on request			-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						
K21R 280S10	K20R 250 S10	27	441	50	113	108	65.5	62	50	37.5	36	585	89.5	0.70	4.2	1.9	1.4	1.7	1.35	465
					-	-	-	-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						
		32	522	60	data on request			-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						
K21R 280 M10	K20R 250 M10	34	555	50	141	135	81.5	77.5	62	47	45	585	89.0	0.71	4.5	2.0	1.5	2.0	1.55	520
					-	-	-	-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						
		40	653	60	data on request			-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						
					182	170	104	98.5	78.5	59.5	56.5	590	91.5	0.76	4.7	1.3	1.3	2.1		
K21R 315 S10	K20R 280 S10	45	728	50	172	165	99.5	94.5	75.5	57.5	55	590	91.5	0.75	5.2	1.5	1.5	2.3	2.63	690
					171	164	98.5	94	75	57	54.5	590	91.5	0.72	5.5	1.6	1.6	2.6		
					178	168	103	97	78	-	-	710	92.0	0.76	4.8	1.3	1.3	2.1		
		54	726	60	173	167	99.5	95.5	76.5	-	-	710	92.0	0.74	5.1	1.5	1.5	2.3		
					168	162	97	94	74.5	-	-	710	92.0	0.72	5.5	1.6	1.6	2.5		
					222	206	126	120	95.5	72	69	591	92.0	0.76	5.8	1.5	1.5	2.4		
K21R 315 M10	K20R280 M10	55	887	50	212	203	123	117	93.5	70.5	67.5	592	92.0	0.74	6.3	1.7	1.7	2.7	3.33	800
					213	204	122	116	93	71	67.5	593	91.5	0.71	6.6	1.9	3.0	1.9		
					217	205	125	118	95	-	-	712	92.5	0.76	5.9	1.5	1.5	2.5		
		66	884	60	210	202	121	116	92.5	-	-	713	92.5	0.74	6.3	1.7	1.7	2.7		
					208	201	120	117	92.5	-	-	713	92.0	0.71	6.6	1.8	1.8	2.9		
					-	-	-	-	-	-	-		-	-						
K21R 315 MX10	K20R 315 M10	75	1214	50	285	273	165	157	126	95	91	590	92.0	0.75	5.5	1.5	1.5	2.2	3.6	880
					-	-	-	-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						
		90	1457	60	data on request			-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						
K21R 315 L10	K20R 315 L10	90	1450	50	368	352	213	202	162	123	117	593	93.0	0.69	6.0	2.1	1.8	2.3	6.76	1250
					-	-	-	-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						
		110	1772	60	data on request			-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						

Three-phase motors with squirrel-cage rotor

with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design voltage range B acc. to EN 60034-1

		output	torque	frequency	current at							speed	efficiency	power factor	starting current	starting torque	pull-up torque	pull-out torque	moment of inertia	weight
Type				50	U_U 205	220	360	380	475	630	660									
					U_B 220	230	380	400	500	660	690				lower limit voltage U_U					
					U_0 230	240	400	420	525	690	-			at	design voltage U_B					
				60	U_U 250	255	435	440	570		-				upper limit voltage U_0					
					U_B 265	275	460	480	600	-	-									
					U_0 280	290	485	500	630	-	-									
		P	M_B	f	I	I	I	I	I	I	I	n	η	cos φ	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
		kW	Nm	Hz	A	A	A	A	A	A	A	rpm	%	-	-	-	-	-	kgm^2	kg
					-	-	-	-	-	-	-		-	-						
K21R 132 S12	K20R 112 M12	0.75	15.1	50	5.8	5.5	3.3	3.2	2.5	1.9	1.8	475	60.0	0.57	3.0	2.2	2.0	2.2	0.018	46
					-	-	-	-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						
		0.9	18.1	60	data on request			-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						
K21R 132 M12	K20R 112 MX12	1.1	22.4	50	7.6	7.3	4.4	4.2	3.4	2.5	2.4	470	63.0	0.60	3.2	1.6	1.6	2.4	0.023	53
					-	-	-	-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						
		1.3	26.4	60	data on request			-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						
K21R 132MX12	K20R132 S12	1.5	29.8	50	10.5	9.9	6	5.7	4.5	3.4	3.3	480	67.0	0.57	3.0	1.5	1.5	2.1	0.043	70
					-	-	-	-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						
		1.8	35.8	60	data on request			-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						
					15	14	8.6	8.1	6.5	4.9	4.7	470	71.0	0.58						
K21R 160 M12	K20R 132 M12	2.2	44.2	50	15	14.5	8.7	8.3	6.6	5	4.8	475	69.5	0.55	3.3	1.9	1.8	2.4	0.053	86
					16	15.5	9.2	8.7	7	5.3	5.1	475	68.0	0.51						
					15	14	8.6	8.1	6.6	-	-	570	73.0	0.55						
		2.6	43.2	60	15	14.5	8.7	8.3	6.6	-	-	575	72.5	0.52						
					15.5	15	9	8.7	6.9	-	-	575	69.0	0.50						
					-	-	-	-	-	-	-		-	-						
K21R 160 L12	K20R 160 S12	3	59.7	50	17	16.5	9.9	9.4	7.5	5.7	5.4	480	77.0	0.60	3.4	2.0	1.7	2.0	0.113	114
					-	-	-	-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						
		3.6	71.6	60	data on request			-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						
					32	30	18.5	17.5	14	10.5	10	470	76.5	0.63	2.9	1.6	1.5	1.8		
K21R 180L12	K20R 160 M12	5.5	111	50	31.5	30.5	18.5	17.5	14	10.5	10	475	76.0	0.60	3.0	1.8	1.7	2.0	0.145	136
					33.5	32	19	18.5	14.5	11	10.5	480	75.0	0.55	3.2	2.0	1.9	2.3		
					31	29.5	18	17	13.5	-	-	575	80.0	0.61	3.0	1.6	1.6	1.9		
		6.6	110	60	32	30.5	18.5	17.5	14	-	-	575	78.0	0.58	3.1	1.8	1.7	2.0		
					33	32	19	18.5	14.5	-	-	580	76.0	0.54	3.2	2.0	1.9	2.2		
					30	28	17	16	13	9.8	9.4	480	82.5	0.68	3.1	1.4	1.3	1.7		
K21R 200L12	K20R 180 S12	6	119	50	29	28	17	16	13	9.7	9.3	480	83.0	0.65	3.3	1.6	1.5	1.9	0.228	175
					28.5	27	16.5	15.5	12.5	9.5	9	485	83.0	0.64	3.6	1.7	1.6	2.1		
					29.5	28	17	16	13	-	-	575	84.0	0.67	3.1	1.4	1.3	1.7		
		7.2	119	60	28.5	27.5	16.5	16	12.5	-	-	580	84.0	0.65	3.3	1.6	1.5	1.9		
					28	27	16	15.5	12.5	-	-	580	84.0	0.63	3.5	1.7	1.6	2.0		
					47	44	27	25.5	20.5	15.5	14.5	478	83.0	0.65	3.3	1.6	1.4	1.8		
K21R 200 LX12	K20R 180 M12	9	179	50	47	45	27.5	26	21	15.5	15	480	82.0	0.61	3.8	1.9	1.8	2.2	0.268	200
					47.5	45.5	27.5	26	21	16	15	483	80.5	0.59	3.9	2.0	1.8	2.3		
					46.5	43.5	26.5	25	20.5	-	-	580	84.5	0.65	3.3	1.6	1.4	1.8		
		11	181	60	46.5	44.5	26.5	25.5	20.5	-	-	582	83.5	0.62	3.8	1.7	1.5	2.0		
					46.5	45	27	26	20.5	-	-	584	82.5	0.59	3.9	1.9	1.6	2.2		

Three-phase motors with squirrel-cage rotor

with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design voltage range B acc. to EN 60034-1

		output	torque	frequency	current at							speed	efficiency	power factor	starting current	starting torque	pull-up torque	pull-out torque	moment of inertia	weight
Type				50	U_U 205	220	360	380	475	630	660									
					U_B 220	230	380	400	500	660	690				lower limit voltage U_U					
					U_0 230	240	400	420	525	690	-			at	design voltage U_B					
				60	U_U 250	255	435	440	570		-				upper limit voltage U_0					
					U_B 265	275	460	480	600	-	-									
					U_0 280	290	485	500	630	-	-									
		P	M_B	f	I	I	I	I	I	I	I	n	η	cos φ	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
		kW	Nm	Hz	A	A	A	A	A	A	A	rpm	%	-	-	-	-	-	kgm^2	kg
					61	56.5	34.5	33	26.5	20	19	475	83.5	0.72	3.4	1.5	1.3	1.7		
K21R 225M12	K20R 200 M12	13	259	50	60.5	58	35	33	26.5	20	19.5	480	83.0	0.68	3.6	1.7	1.5	1.9	0.44	265
					63	60	36	34.5	27.5	21	20	482	82.5	0.63	3.7	1.9	1.7	2.1		
					61.5	58	35.5	33.5	27	-	-	575	85.0	0.69	3.4	1.5	1.4	1.7		
		15.6	259	60	59.5	57.5	34.5	33	26.5	-	-	575	84.0	0.68	3.7	1.7	1.5	1.9		
					61	59	35.5	34	27	-	-	580	83.5	0.63	3.7	1.8	1.6	2.1		
					79.5	74	45.5	43	34.5	26	24.5	480	86.0	0.70	3.6	1.5	1.3	1.7		
K21R 250M12	K20R 225 M12	17	338	50	75	72	43.5	41.5	33	25	24	480	86.0	0.69	3.9	1.7	1.5	1.9	0.825	360
					76.5	73	44	42	33.5	25.5	24	485	86.0	0.65	4.1	1.9	1.7	2.1		
					77.5	73	44.5	42	34	-	-	585	86.5	0.69	3.7	1.6	1.4	1.8		
		20	327	60	75	72.5	43.5	41.5	33	-	-	585	86.5	0.67	4.0	1.7	1.5	2.0		
					74.5	72	43	41.5	33	-	-	587	86.5	0.64	4.1	1.9	1.7	2.2		
					-	-	-	-	-	-	-		-	-						
K21R 280S12	K20R 250 S12	20	392	50	87.5	84	51	48	38.5	29	28	487	88.0	0.68	3.8	1.8	1.4	1.7	1.35	465
					-	-	-	-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						
		24	471	60	data on request			-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						
K21R 280 M12	K20R 250 M12	24	470	50	114	109	66	63	50.5	38	36.5	488	87.5	0.63	4.0	2.1	1.6	1.9	1.55	520
					-	-	-	-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						
		28	548	60	data on request			-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						
					157	146	89.5	84.5	67.5	51	48.5	487	91.0	0.73	3.8	1.1	1.0	1.7		
K21R 315 S12	K20R 280 S12	37	721	50	150	144	87	82.5	66	50	48	490	91.0	0.71	4.2	1.2	1.1	2.0	2.63	690
					148	142	85	81	65	49.5	47	490	91.0	0.69	4.4	1.3	1.3	2.2		
					153	144	88	83	67	-	-	588	91.0	0.73	3.8	1.1	1.0	1.8		
		44	712	60	148	143	85.5	82	65.5	-	-	590	91.0	0.71	4.2	1.2	1.1	2.0		
					144	140	83.5	81	64	-	-	590	91.0	0.69	4.4	1.3	1.2	2.2		
					188	175	107	102	81	61	58.5	490	91.0	0.74	4.2	1.0	1.0	1.7		
K21R 315 M12	K20R280 M12	45	877	50	180	172	104	99	79.5	60	57.5	490	91.0	0.72	4.5	1.2	1.2	1.9	3.33	800
					177	170	102	97	77.5	59	56.5	490	91.0	0.70	4.8	1.3	1.3	2.1		
					183	173	105	99.5	80.5	-	-	590	92.0	0.74	4.2	1.0	1.0	1.7		
		54	874	60	178	171	102	98	78.5	-	-	590	92.0	0.72	4.5	1.2	1.2	1.9		
					173	167	100	97	77	-	-	590	92.0	0.70	4.8	1.3	1.3	2.1		
					227	211	129	122	98	74	70.5	485	91.0	0.75	4.2	1.2	1.0	1.7		
K21R 315 MX12	K20R 315 M12	55	1083	50	214	205	124	118	94.5	71.5	68.5	485	91.0	0.74	4.5	1.3	1.1	1.9	3.6	880
					214	205	123	117	93.5	71	68	490	91.0	0.71	4.7	1.5	1.2	2.1		
					225	212	129	122	98.5	-	-	585	91.5	0.74	4.2	1.2	1.0	1.7		
		66	1068	60	215	207	124	119	95	-	-	590	91.5	0.73	4.5	1.3	1.1	1.9		
					212	205	123	119	94.5	-	-	590	91.5	0.70	4.7	1.5	1.2	2.1		
					-	-	-	-	-	-	-		-	-						
K21R 315 L12	K20R 315 L12	75	1456	50	332	318	192	183	146	111	106	492	92.5	0.64	4.5	1.5	1.2	1.6	6.76	1250
					-	-	-	-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						
		90	1747	60	data on request			-	-	-	-		-	-						
					-	-	-	-	-	-	-		-	-						

Three-phase motors with squirrel-cage rotor

pole-changing, for constant load torque
with one Δ/YY-Dahlander winding
with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design point 400 V, 50 Hz

Type				P	M_B	n	η	cos φ	I 400 V	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
				kW	Nm	rpm	%	-	A	-	-	-	-	kgm²	kg
Synchronous speed 1500/3000 rpm – 4-2-pole version															
K21R	63 G	K20R	56 G	0.12	0.82	1405	53.0	0.65	0.55	3.0	1.9	1.9	2.5	0.00024	5.2
	4-2		4-2	0.18	0.61	2840	63.0	0.82	0.50	4.2	2.0	1.8	2.2		4.8[1)]
K21R	71 K	K20R	63 K	0.17	1.16	1405	58.5	0.69	0.61	3.3	1.3	1.3	2.1	0.00040	6.8
	4-2		4-2	0.23	0.77	2840	63.5	0.82	0.64	4.3	1.5	1.5	2.0		6.3[1)]
K21R	71 G	K20R	63 G	0.30	2.06	1390	60.0	0.73	1.00	3.5	1.5	1.5	2.0	0.00050	7.8
	4-2		4-2	0.45	1.55	2770	62.0	0.88	1.20	3.8	1.1	1.1	1.6		7.1[1)]
K21R	80 K	K20R	71 K	0.48	3.29	1395	67.0	0.77	1.35	4.1	1.5	1.5	2.0	0.00087	10.6
	4-2		4-2	0.55	1.84	2855	66.0	0.86	1.40	5.1	1.3	1.3	2.1		9.9[1)]
K21R	80 G	K20R	71 G	0.70	4.78	1400	67.5	0.75	2.00	3.7	1.6	1.6	1.8	0.00107	11.7
	4-2		4-2	0.85	2.84	2860	68.0	0.84	2.15	4.9	1.4	1.4	1.7		11[1)]
K21R	90 S	K20R	80 K	1.10	7.45	1410	73.0	0.80	2.71	4.7	1.4	1.4	1.9	0.00207	15.5
	4-2		4-2	1.40	4.70	2845	70.0	0.90	3.20	5.5	1.5	1.5	1.7		14.5[1)]
K21R	90 L	K20R	80 G	1.40	9.48	1410	73.5	0.80	3.45	4.6	1.5	1.5	2.1	0.00260	18
	4-2		4-2	1.80	6.02	2855	70.0	0.90	4.15	5.6	1.7	1.7	1.9		17[1)]
K21R	100 L	K20R	90 L	2.00	13.6	1405	76.0	0.85	4.50	5.1	1.5	1.5	2.1	0.00400	23.5
	4-2		4-2	2.40	8.00	2865	74.0	0.91	5.10	5.8	1.4	1.4	2.0		22.5[1)]
K21R	100 LX	K20R	100 S	2.60	17.2	1440	80.0	0.80	5.85	6.1	1.7	1.7	2.5	0.00725	30
	4-2		4-2	3.10	10.2	2900	76.0	0.87	6.80	7.3	1.6	1.6	2.6		30[1)]
K21R	112 M	K20R	100 L	3.70	24.8	1425	80.0	0.86	7.80	5.7	1.5	1.5	2.3	0.00900	37
	4-2		4-2	4.40	14.5	2890	77.5	0.90	9.10	7.0	1.6	1.6	2.4		36[1)]
K21R	132 S	K20R	112 M	4.2	28.1	1430	83.0	0.87	8.4	6.3	1.7	1.5	2.4	0.015	50
	4-2		4-2	5.3	17.6	2870	80.0	0.92	10.5	6.5	2.1	1.3	2.6		
K21R	132 M	K20R	132 S	5.3	34.9	1450	86.0	0.84	10.5	5.3	1.7	1.4	2.2	0.028	69
	4-2		4-2	6.5	21.3	2910	81.0	0.90	13	6.2	2.0	2.0	2.4		
K21R	160 M	K20R	132 M	7.6	50.2	1445	86.0	0.86	15	5.4	1.7	1.3	2.2	0.035	86
	4-2		4-2	9.5	31.3	2900	83.0	0.92	18	6.5	1.9	1.0	2.4		
K21R	160 L	K20R	160 S	10.5	68.7	1460	88.5	0.88	19.5	5.8	1.7	1.0	2.0	0.078	120
	4-2		4-2	13.0	42.6	2915	86.0	0.91	24	6.2	1.8	0.8	1.9		
K21R	180 M	K20R	160 M	12.5	81.8	1460	89.0	0.89	23	6.1	2.0	1.4	2.3	0.090	136
	4-2		4-2	16.0	52.3	2920	86.0	0.92	29	6.7	1.9	0.8	2.2		
K21R	180 L	K20R	180 S	15.5	101	1470	90.0	0.89	28	6.0	1.4	1.1	2.2	0.138	170
	4-2		4-2	18.5	60.3	2930	89.0	0.93	32.5	7.2	1.4	0.6	2.1		
K21R	200 L	K20R	180 M	21.0	137	1465	91.0	0.89	37.5	6.0	1.5	1.1	2.1	0.168	220
	4-2		4-2	25.0	81.2	2940	90.0	0.93	43	7.4	1.7	0.7	2.3		
K21R	225 S	K20R	200 M	25.0	162	1470	92.3	0.87	45	6.6	1.8	1.4	2.4	0.275	270
	4-2		4-2	31.0	101	2940	90.0	0.91	54.5	7.2	1.6	0.8	2.2		
K21R	225 M	K20R	200 L	30.0	194	1475	92.3	0.87	54	7.0	1.8	1.4	2.4	0.313	300
	4-2		4-2	37.0	120	2945	90.0	0.91	65	8.0	1.7	0.7	2.5		
K21R	250 M	K20R	225 M	37.0	240	1475	92.5	0.86	67	6.9	1.7	1.3	2.1	0.525	375
	4-2		4-2	45.0	145	2955	87.0	0.91	82	7.8	1.7	0.5	2.1		
K21R	280 S	K20R	250 S	48.0	310	1480	93.2	0.84	88.5	7.5	1.6	1.4	2.3	0.950	520
	4-2		4-2	60.0	193	2965	89.5	0.91	106	8.1	1.3	0.8	2.5		
K21R	280 M	K20R	250 M	60.0	387	1480	93.5	0.85	109	6.9	1.6	1.4	2.1	1.11	580
	4-2		4-2	70.0	225	2965	90.0	0.92	122	8.2	1.2	0.8	2.2		
K21R	315 S	K20R	280 S	75.0	482	1485	94.5	0.84	136	6.9	1.6	1.4	2.2	1.96	740
	4-2		4-2	90.0	289	2975	93.0	0.92	152	8.0	1.7	1.2	2.8		
K21R	315 M	K20R	280 M	95.0	611	1485	95.0	0.85	170	7.8	1.7	1.6	2.3	2.27	840
	4-2		4-2	115	370	2970	93.0	0.91	196	8.5	1.8	1.0	3.2		
K21R	315 MX	K20R	315 S	110	707	1485	95.0	0.85	197	8.0	1.7	1.5	2.3	2.73	1000
	4-2		4-2	132	424	2970	93.5	0.91	224	8.5	1.8	1.0	2.9		
K21R	315 MY	K20R	315 M	135	865	1490	95.8	0.86	237	8.0	2.0	1.5	2.8	4.82	1200
	4-2		4-2	165	529	2980	94.8	0.92	273	8.5	2.1	1.1	2.9		
K21R	315 L	K20R	315 L	145	929	1490	95.7	0.87	251	8.0	1.7	1.2	2.3	5.93	1450
	4-2		4-2	190	609	2980	93.8	0.93	314	9.8	1.5	1.1	2.7		
K21R	315 LX	K20R	315 LX	160	1025	1490	95.6	0.87	278	8.5	1.7	1.4	2.4	6.82	1630
	4-2		4-2	220	705	2980	93.2	0.94	362	10.0	2.0	1.0	2.4		

1) weight for K20R

Three-phase motors with squirrel-cage rotor

pole-changing, with increased load for constant load torque
with one Δ/YY-Dahlander winding
with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design point 400 V, 50 Hz

Type				P	M_B	n	η	cos φ	I 400 V	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
				kW	Nm	rpm	%	-	A	-	-	-	-	kgm²	kg
Synchronous speed 1500/3000 rpm – 4-2-pole version															
K21R	132 S	K20R	112 M	4.9	32.6	1435	83.0	0.85	10	6.3	1.8	1.5	2.4	0.015	50
	4-2		4-2	5.9	19.5	2890	79.0	0.89	12	6.5	1.8	1.3	2.5		
K21R	132 M	K20R	132 S	6.8	45.1	1440	86.0	0.83	14	4.9	1.6	1.3	2.0	0.028	69
	4-2		4-2	8.0	26.4	2895	81.0	0.88	16	5.4	1.9	1.3	2.2		
K21R	160 M	K20R	132 M	9.5	63.0	1440	87.0	0.84	19	5.4	1.7	1.3	2.2	0.035	86
	4-2		4-2	11.0	36.2	2900	81.0	0.87	22.5	6.3	2.0	1.1	2.4		
K21R	160 L	K20R	160 S	12.5	81.8	1460	88.5	0.87	23.5	5.8	1.7	1.3	2.0	0.078	120
	4-2		4-2	15.0	49.1	2915	85.0	0.86	29.5	6.0	1.8	1.0	1.9		
K21R	180 M	K20R	160 M	15.0	98.1	1460	89.0	0.87	28	6.1	2.1	1.4	2.3	0.090	136
	4-2		4-2	19.0	62.1	2920	85.0	0.87	37	6.2	1.9	0.9	2.2		
K21R	180 L	K20R	180 S	18.5	121	1465	90.0	0.85	35	6.2	1.6	1.2	2.2	0.138	170
	4-2		4-2	22.0	71.6	2935	88.0	0.89	40.5	7.0	1.5	0.7	2.2		
K21R	200 L	K20R	180 M	25.0	162	1470	91.0	0.85	46.5	7.0	2.0	1.5	2.4	0.168	220
	4-2		4-2	30.0	97.2	2950	88.0	0.89	55.5	7.4	1.8	0.9	2.4		
K21R	225 S	K20R	200 M	30.0	195	1470	92.0	0.85	55.5	6.6	1.8	1.3	2.3	0.275	270
	4-2		4-2	35.0	114	2945	90.0	0.89	63	7.2	1.6	0.8	2.2		
K21R	225 M	K20R	200 L	36.0	235	1460	91.5	0.85	67	7.0	1.8	1.4	2.4	0.313	300
	4-2		4-2	43.0	140	2940	90.0	0.90	76.5	7.6	1.7	0.7	2.5		
K21R	250 M	K20R	225 M	47.0	304	1475	93.0	0.84	87	7.0	1.8	1.3	2.0	0.525	375
	4-2		4-2	54.0	174	2955	90.0	0.88	98.5	7.7	1.7	0.7	2.2		
K21R	280 S	K20R	250 S	60.0	386	1485	94.5	0.86	107	7.0	1.5	1.3	2.4	0.950	520
	4-2		4-2	72.0	232	2965	92.5	0.89	126	8.1	1.4	0.8	2.6		
K21R	280 M	K20R	250 M	75.0	484	1480	94.5	0.86	133	7.2	1.8	1.4	2.2	1.11	580
	4-2		4-2	85.0	274	2960	92.0	0.90	148	8.2	1.4	0.8	2.4		
K21R	315 S	K20R	280 S	85.0	547	1485	94.5	0.84	155	8.0	1.9	1.4	2.6	1.96	740
	4-2		4-2	95.0	305	2975	93.0	0.91	162	9.0	2.0	1.1	3.5		
K21R	315 M	K20R	280 M	95.0	611	1485	94.0	0.85	172	9.0	2.0	1.4	3.0	2.27	840
	4-2		4-2	115	370	2970	93.0	0.91	196	9.5	2.0	1.1	3.8		
K21R	315 MX	K20R	315 S	110	707	1485	95.0	0.85	197	9.0	1.7	1.5	2.5	2.73	1000
	4-2		4-2	132	424	2970	93.5	0.91	224	9.5	1.8	1.0	2.9		
K21R	315 MY	K20R	315 M	135	865	1490	95.8	0.85	239	9.0	2.0	1.5	2.8	4.82	1300
	4-2		4-2	165	529	2980	94.8	0.92	273	10.0	2.1	1.1	2.9		

Three-phase motors with squirrel-cage rotor

pole-changing, for quadratically increasing load torque
fan drives with one Y/YY-Dahlander winding
with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data — Design point 400 V, 50 Hz

Type				P	M_B	n	η	cos φ	I 400 V	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
				kW	Nm	rpm	%	-	A	-	-	-	-	kgm²	kg
Synchronous speed 1500/3000 rpm – 4-2-pole version															
K21R	71 K	K20R	63 K	0.08	0.54	1415	59.0	0.70	0.28	3.6	1.3	1.3	1.9	0.00040	6.8
	4-2L		4-2L	0.30	1.01	2830	56.0	0.82	0.95	4.2	1.1	1.1	1.8		6.3[1)]
K21R	71 G	K20R	63 G	0.12	0.82	1405	67.0	0.77	0.34	3.1	1.5	1.5	1.8	0.00050	7.8
	4-2L		4-2L	0.48	1.64	2795	65.0	0.88	1.21	4.2	1.6	1.6	1.9		7.1[1)]
K21R	80 K	K20R	71 K	0.18	1.22	1415	70.0	0.79	0.47	4.4	1.7	1.7	2.0	0.00087	10.6
	4-2L		4-2L	0.70	2.36	2830	66.0	0.88	1.75	5.1	1.8	1.8	2.1		9.9[1)]
K21R	80 G	K20R	71 G	0.25	1.70	1405	73.0	0.79	0.63	4.6	1.5	1.5	2.0	0.00107	11.7
	4-2L		4-2L	0.90	3.03	2840	69.0	0.86	2.19	5.8	2.0	2.0	2.1		11[1)]
K21R	90 S	K20R	80 K	0.37	2.45	1440	74.0	0.83	0.87	4.9	1.4	1.4	2.1	0.00207	15.5
	4-2L		4-2L	1.50	5.04	2840	71.0	0.89	3.45	5.0	1.5	1.5	1.7		14.5[1)]
K21R	90 L	K20R	80 G	0.50	3.34	1430	78.0	0.83	1.12	4.6	1.5	1.5	2.2	0.00260	18
	4-2L		4-2L	2.00	6.73	2840	73.0	0.89	4.45	5.5	1.5	1.5	1.8		17[1)]
K21R	100 L	K20R	90 L	0.70	4.66	1435	78.0	0.84	1.55	5.3	1.5	1.5	2.3	0.00400	23.5
	4-2L		4-2L	2.80	9.35	2860	74.0	0.89	6.10	6.3	1.5	1.5	2.0		22.5[1)]
K21R	100 LX	K20R	100 S	0.90	5.91	1455	80.0	0.82	2.00	6.1	1.5	1.5	2.3	0.00725	30
	4-2L		4-2L	3.60	11.9	2890	76.5	0.89	7.70	6.7	1.9	1.9	2.5		30[1)]
K21R	112 M	K20R	100 L	1.20	7.96	1440	80.0	0.85	2.50	5.3	1.5	1.5	2.2	0.009	37
	4-2L		4-2L	4.80	16.0	2870	74.0	0.92	10.2	7.0	1.5	1.5	2.1		36[1)]
K21R	132 S	K20R	112 M	1.5	9.88	1450	82.0	0.88	3	5.2	1.4	1.2	2.2	0.015	50
	4-2L		4-2L	5.5	18.3	2870	78.0	0.92	11	6.0	1.9	1.0	2.5		
K21R	132 M	K20R	132 S	2.2	14.4	1460	82.0	0.87	4.5	5.2	1.4	1.0	1.9	0.028	69
	4-2L		4-2L	8.2	27.0	2900	76.0	0.88	17.5	6.0	2.0	1.1	2.4		
K21R	160 M	K20R	132 M	3.3	21.7	1450	86.0	0.87	6.4	5.0	1.3	1.0	1.8	0.038	86
	4-2L		4-2L	12.0	39.7	2890	83.0	0.88	23.5	6.6	1.8	1.0	2.4		
K21R	160 L	K20R	160 S	4.3	28.2	1460	83.0	0.89	8.4	5.8	1.8	1.1	2.0	0.078	120
	4-2		4-2	17.0	55.7	2915	80.0	0.89	34.5	6.5	1.6	0.8	2.5		
K21R	180 M	K20R	160 M	5.5	35.7	1470	89.0	0.87	10.5	5.8	1.7	1.2	2.2	0.090	136
	4-2L		4-2L	20.0	65.4	2920	82.0	0.86	41	6.5	1.8	1.0	2.5		
K21R	180 L	K20R	180 S	6.4	41.3	1480	88.5	0.89	11.5	6.0	1.5	1.1	2.2	0.138	170
	4-2L		4-2L	24.0	78.1	2935	85.0	0.88	46.5	7.0	2.0	0.9	2.6		
K21R	200 L	K20R	180 M	7.8	50.5	1475	90.0	0.89	14	6.5	1.5	1.2	2.4	0.168	220
	4-2L		4-2L	30.0	97.5	2940	88.0	0.90	54.5	7.5	2.1	1.3	2.8		
K21R	225 S	K20R	200 M	9.5	61.1	1485	89.5	0.88	17.5	7.0	1.8	1.5	2.6	0.275	270
	4-2L		4-2L	37.0	120	2950	86.0	0.86	72	8.0	2.4	1.5	3.0		
K21R	225 M	K20R	200 L	12.0	77.4	1480	92.0	0.88	21.5	6.5	1.4	1.1	2.4	0.313	300
	4-2L		4-2L	45.0	146	2950	88.0	0.88	84	7.5	2.0	1.0	2.6		
K21R	250 M	K20R	225 M	15.0	96.8	1480	90.0	0.85	28.5	6.2	1.5	0.9	1.8	0.525	375
	4-2L		4-2L	55.0	178	2950	88.0	0.88	103	7.5	2.2	0.7	2.4		
K21R	280 S	K20R	250 S	20.0	128	1485	91.5	0.81	39	6.0	1.1	0.9	1.7	0.950	520
	4-2L		4-2L	75.0	242	2965	90.0	0.88	137	8.0	2.0	1.3	2.4		
K21R	280 M	K20R	250 M	24.0	154	1485	92.0	0.82	46	6.1	1.1	0.9	1.7	1.10	580
	4-2L		4-2L	90.0	290	2965	91.0	0.91	157	8.0	2.0	1.3	2.4		
K21R	315 S	K20R	280 S	29.0	186	1490	94.0	0.81	55	6.9	1.1	1.0	1.9	1.96	740
	4-2L		4-2L	110	353	2975	93.0	0.89	192	9.6	1.6	1.2	3.0		
K21R	315 M	K20R	280 M	35.0	225	1488	94.0	0.81	66.5	7.0	1.4	1.2	1.7	2.27	840
	4-2L		4-2L	132	424	2975	92.6	0.90	229	9.6	1.6	0.8	2.6		
K21R	315 MY	K20R	315 M	50.0	320	1490	95.0	0.86	88.5	7.2	1.4	1.0	2.2	4.82	1200
	4-2L		4-2L	160	513	2980	94.5	0.91	269	12.0	2.4	1.2	3.5		

1) weight for K20R

Three-phase motors with squirrel-cage rotor

pole-changing, for quadratically increasing load torque
fan drives with two separate windings, Y/Y-circuit
with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data — Design point 400 V, 50 Hz

Type				P	M_B	n	η	cos φ	I 400 V	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
				kW	Nm	rpm	%	-	A	-	-	-	-	kgm²	kg
Synchronous speed 1000/3000 rpm – 6-2-pole version															
K21R	132 S	K20R	112 M	0.55	5.36	980	65.0	0.61	2	5.2	1.5		2.9	0.015	50
	6-2L		6-2L	4.5	14.9	2890	82.0	0.89	8.9	6.6	2.2		2.4		
K21R	132 M	K20R	132 S	0.8	7.76	985	69.5	0.64	2.6	4.9	1.4		2.8	0.028	69
	6-2L		6-2L	7.0	23.6	2830	86.0	0.93	12.5	6.2	1.7		2.2		
K21R	160 M	K20R	132 M	1.2	11.7	982	72.0	0.69	3.5	5.0	1.3		2.5	0.035	86
	6-2L		6-2L	9.0	29.6	2900	87.5	0.93	16	6.5	1.8		2.3		
K21R	160 L	K20R	160 S	1.5	14.5	985	80.0	0.76	3.6	6.2	1.7		2.8	0.078	120
	6-2L		6-2L	13.0	42.8	2900	87.0	0.93	23	6.2	1.8		2.2		
K21R	180 M	K20R	160 M	2.0	19.4	983	81.0	0.79	4.5	5.7	1.5		2.5	0.090	136
	6-2L		6-2L	17.0	55.8	2910	88.0	0.93	30	6.8	2.1		2.4		
K21R	180 L	K20R	180 S	2.5	24.1	989	76.5	0.72	6.6	5.8	1.3		2.7	0.138	170
	6-2L		6-2L	22.0	71.8	2925	89.5	0.93	38	7.0	2.0		2.4		
K21R	200 L	K20R	180 M	3.5	33.8	988	80.5	0.74	8.5	6.0	1.5		2.7	0.168	220
	6-2L		6-2L	27.0	88.3	2920	90.0	0.93	46.5	6.7	1.8		2.2		
K21R	225 S	K20R	200 M	4.0	38.6	990	85.0	0.73	9.3	6.5	1.6		2.8	0.275	270
	6-2L		6-2L	32.0	104	2950	90.0	0.93	55	7.8	1.9		2.6		
K21R	225 M	K20R	200 L	4.5	43.4	990	84.0	0.74	10.5	6.4	1.6		2.7	0.313	300
	6-2L		6-2L	37.0	120	2950	90.5	0.93	63.5	7.7	1.9		2.5		
K21R	250 M	K20R	225 M	5.0	48.2	990	82.0	0.78	11.5	6.6	1.8		2.5	0.525	375
	6-2L		6-2L	45.0	146	2945	91.0	0.93	76.5	7.0	1.9		2.2		
K21R	280 S	K20R	250 S	6.5	62.6	992	86.0	0.76	14.5	7.4	2.2		2.7	0.950	520
	6-2L		6-2L	55.0	177	2965	91.0	0.93	94	7.5	1.5		2.5		
K21R	280 M	K20R	250 M	8.0	77.2	989	86.0	0.76	17.5	7.0	1.9		2.7	1.11	580
	6-2L		6-2L	75.0	242	2960	91.5	0.93	127	7.0	1.6		2.3		
K21R	315 S	K20R	280 S	10.0	96.6	989	85.5	0.81	21	6.9	1.9		2.3	1.96	740
	6-2L		6-2L	90.0	290	2960	92.0	0.93	152	7.2	1.3		2.4		
K21R	315 M	K20R	280 M	13.0	125	990	83.5	0.82	27.5	6.8	1.8		2.3	2.27	840
	6-2L		6-2L	110	354	2965	93.0	0.93	184	7.5	1.5		2.5		
K21R	315 MX	K20R	315 S	16.0	154	992	82.0	0.77	36.5	7.7	2.0		2.8	2.73	1000
	6-2L		6-2L	132	426	2960	93.5	0.93	219	7.8	1.7		2.5		
K21R	315 MY	K20R	315 M	20.0	192	993	84.5	0.83	41	7.1	2.0		2.4	4.82	1200
	6-2L		6-2L	160	515	2970	93.5	0.93	266	8.0	1.8		2.7		

Δ-circuit on request

Three-phase motors with squirrel-cage rotor

pole-changing, for constant load torque
with two separate windings, Y/Y-circuit
with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data — Design point 400 V, 50 Hz

Type				P	M_B	n	η	cos φ	I	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
									400 V						
				kW	Nm	rpm	%	-	A	-	-	-	-	kgm^2	kg
Synchronous speed 1000/1500 rpm – 6-4-pole version															
K21R	71 K	K20R	63 K	0.10	1.03	925	37.0	0.69	0.57	2.4	1.2	1.2	1.8	0.00045	7.8
	6-4		6-4	0.15	1	1440	54.0	0.70	0.57	3.2	1.2	1.2	1.8		7.1[1)]
K21R	71 G	K20R	63 G	0.13	1.35	920	41.0	0.68	0.67	2.4	1.3	1.3	1.8	0.00060	8.1
	6-4		6-4	0.20	1.34	1430	53.0	0.73	0.75	3.2	1.2	1.2	1.8		7.4[1)]
K21R	80 K	K20R	71 K	0.20	2.03	940	49.0	0.69	0.86	2.8	1.5	1.5	2.0	0.0013	11
	6-4		6-4	0.28	1.86	1440	56.0	0.69	1.05	3.5	1.3	1.3	2.0		10[1)]
K21R	80 G	K20R	71 G	0.25	2.51	950	59.0	0.66	0.93	2.8	1.6	1.6	2.1	0.00175	12.5
	6-4		6-4	0.37	2.44	1450	70.0	0.73	1.05	3.9	1.4	1.4	2.1		11.5[1)]
K21R	90 S	K20R	80 K	0.35	3.52	950	63.0	0.73	1.10	3.4	1.3	1.3	1.7	0.00325	16
	6-4		6-4	0.60	3.95	1450	69.0	0.78	1.60	4.5	1.3	1.3	1.8		15[1)]
K21R	90 L	K20R	80 G	0.50	5.05	945	63.0	0.74	1.55	3.4	1.5	1.5	1.7	0.00425	19
	6-4		6-4	0.90	5.99	1435	68.0	0.81	2.35	4.3	1.4	1.4	1.7		18[1)]
K21R	100L	K20R	90 L	0.80	7.96	960	72.0	0.73	2.20	4.1	1.4	1.4	1.9	0.00625	24
	6-4		6-4	1.20	7.93	1445	74.0	0.83	2.80	4.9	1.2	1.2	1.8		24[1)]
K21R	100 LX	K20R	100 S	1.10	10.9	965	72.0	0.74	3.00	4.1	1.3	1.3	2.0	0.00900	28
	6-4		6-4	1.60	10.5	1450	73.0	0.83	3.80	4.9	1.3	1.3	1.8		28[1)]
K21R	112 M	K20R	100 L	1.60	16.1	950	70.0	0.79	4.15	5.5	1.4	1.4	2.0	0.01225	33.5
	6-4		6-4	2.40	16.0	1435	75.0	0.87	5.30	5.5	1.6	1.6	2.0		32.5[1)]
K21R	132 S	K20R	112 M	1.5	14.8	970	74.0	0.79	3.7	5.3	1.4	1.3	2.5	0.018	46
	6-4		6-4	2.2	14.5	1445	74.5	0.91	4.7	5.4	1.1	1.0	2.2		
K21R	132 M	K20R	112 MX	2.2	21.7	965	75.0	0.80	5.3	5.6	1.4	1.3	2.6	0.023	53
	6-4		6-4	3.0	19.8	1450	78.0	0.90	6.2	6.1	1.4	1.0	2.4		
K21R	132 MX	K20R	132 S	2.6	25.6	970	79.0	0.83	5.7	5.2	1.7	1.5	2.4	0.043	70
	6-4		6-4	3.8	24.9	1460	81.0	0.90	7.5	5.5	1.4	1.1	2.2		
K21R	160 M	K20R	132 M	3.4	33.5	970	81.0	0.83	7.3	5.9	1.7	1.5	2.5	0.053	86
	6-4		6-4	5.0	32.7	1460	82.0	0.91	9.7	5.8	1.4	1.0	2.2		
K21R	160 L	K20R	160 S	5.5	54.1	970	81.0	0.87	11.5	5.2	1.6	1.3	2.1	0.113	114
	6-4		6-4	7.5	49.2	1455	82.0	0.91	14.5	5.2	1.3	1.1	2.2		
K21R	180 L	K20R	160 M	7.5	73.8	970	83.0	0.88	15	5.4	1.7	1.4	2.1	0.145	138
	6-4		6-4	10.5	68.7	1460	83.0	0.91	20	5.6	1.5	1.0	2.0		
K21R	200 L	K20R	180 S	9.0	87.7	980	86.0	0.88	17	6.0	1.7	1.1	2.3	0.228	175
	6-4		6-4	12.5	81.2	1470	84.0	0.90	24	5.8	1.5	0.7	2.4		
K21R	200 LX	K20R	180 M	11.0	107	980	86.0	0.88	21	7.2	2.1	1.5	2.7	0.268	200
	6-4		6-4	15.0	97.5	1470	86.0	0.91	27.5	7.5	1.6	1.0	2.6		
K21R	225 M	K20R	200 M	15.0	146	980	88.0	0.90	27.5	7.3	2.3	1.7	2.8	0.443	265
	6-4		6-4	20.0	130	1475	88.0	0.92	35.5	8.0	1.9	1.3	3.0		
K21R	250 M	K20R	225 M	18.0	175	985	89.0	0.88	33	7.5	2.8	2.3	2.7	0.825	360
	6-4		6-4	25.0	162	1470	89.0	0.91	44.5	6.3	1.7	1.1	2.3		
K21R	280 S	K20R	250 S	22.0	212	990	89.0	0.88	40.5	7.8	2.5	1.9	2.6	1.28	465
	6-4		6-4	30.0	193	1482	89.0	0.91	53.5	7.5	1.9	1.1	2.4		
K21R	280 M	K20R	250 M	27.0	261	988	89.5	0.89	49	8.0	2.7	2.0	2.6	1.48	520
	6-4		6-4	37.0	240	1475	89.5	0.92	65	6.1	1.6	0.8	1.9		
K21R	315 S	K20R	280 S	37.0	357	990	91.5	0.88	66.5	9.0	2.6	2.4	3.2	2.63	690
	6-4		6-4	50.0	322	1485	91.0	0.91	87	7.5	1.6	1.3	2.7		
K21R	315 M	K20R	280 M	45.0	434	990	91.5	0.86	82.5	8.1	2.0	1.8	2.6	3.33	800
	6-4		6-4	60.0	386	1485	92.0	0.91	103	6.7	1.4	0.8	2.1		
K21R	315 MX	K20R	315 S	60.0	579	990	91.4	0.88	108	8.0	2.3	2.1	3.0	3.60	880
	6-4		6-4	90.0	579	1485	90.5	0.88	163	8.0	1.8	1.3	3.0		
K21R	315 MY	K20R	315 M	75.0	724	990	92.8	0.88	133	8.0	2.2	2.0	2.8	6.00	1050
	6-4		6-4	110	706	1488	91.5	0.87	199	8.0	2.0	1.5	3.0		
K21R	315 L	K20R	315 L	100	data on request									6.76	1250
	6-4		6-4	150											

1) weight for K20R
Δ-circuit on request

Three-phase motors with squirrel-cage rotor

pole-changing, with increased load for constant load torque
with two separate windings, Y/Y-circuit
with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data — Design point 400 V, 50 Hz

Type				P	M_B	n	η	cos φ	I	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
									400 V						
				kW	Nm	rpm	%	-	A	-	-	-	-	kgm^2	kg
Synchronous speed 1000/1500 rpm – 6-4-pole version															
K21R	132 S	K20R	112 M	2.0	20.0	955	69.0	0.86	4.9	4.3	1.2	1.0	1.9	0.018	46
	6-4		6-4	3.1	20.4	1450	76.0	0.86	6.8	6.6	1.7	1.3	2.6		
K21R	132 M	K20R	112 MX	2.6	27.9	960	71.0	0.86	6.6	5.1	1.3	1.2	2.4	0.023	53
	6-4		6-4	4.2	28.3	1450	75.0	0.88	9.4	6.6	1.9	1.4	2.6		
K21R	132 MX	K20R	132 S	3.3	32.3	975	80.0	0.82	7.3	5.2	1.6	1.4	2.5	0.043	70
	6-4		6-4	4.9	31.9	1465	78.0	0.85	10.5	6.7	1.9	1.4	2.6		
K21R	160 M	K20R	132 M	4.5	44.3	970	79.0	0.81	10	5.2	1.6	1.3	2.5	0.053	86
	6-4		6-4	6.9	45.0	1465	78.0	0.89	14.5	6.6	1.8	1.4	2.4		
K21R	160 L	K20R	160 S	6.5	64.0	970	82.0	0.85	13.5	6.2	2.0	1.6	2.6	0.113	114
	6-4		6-4	9.5	62.4	1455	82.0	0.88	19	6.8	1.7	1.5	2.6		
K21R	180 L	K20R	160 M	9.5	93.1	975	84.0	0.87	19	5.3	1.6	1.2	2.0	0.145	138
	6-4		6-4	14.0	91.9	1455	84.0	0.90	26.5	5.7	1.7	1.3	2.1		
K21R	200 L	K20R	180 S	13.5	132	975	86.0	0.88	25.5	6.5	2.0	1.5	2.5	0.228	175
	6-4		6-4	16.0	104	1470	82.0	0.85	33	6.3	1.7	1.3	2.5		
K21R	200 LX	K20R	180 M	15.0	146	980	87.0	0.88	28.5	7.0	2.2	1.5	2.7	0.268	200
	6-4		6-4	18.0	117	1475	82.0	0.85	37.5	7.7	2.0	1.4	2.8		
K21R	225 M	K20R	200 M	20.0	196	975	88.0	0.89	37	7.2	2.1	1.5	2.8	0.443	265
	6-4		6-4	26.0	170	1465	88.0	0.90	47.5	7.0	1.6	1.2	2.2		
K21R	250 M	K20R	225 M	25.0	244	980	89.0	0.88	46	6.9	2.2	1.5	2.5	0.825	360
	6-4		6-4	35.0	227	1470	89.0	0.89	64	6.4	1.6	1.1	2.2		
K21R	280 S	K20R	250 S	30.0	290	987	89.0	0.87	56	7.5	2.4	1.7	2.4	1.28	465
	6-4		6-4	40.0	257	1485	84.5	0.82	83.5	7.8	2.0	1.3	2.5		
K21R	280 M	K20R	250 M	37.0	359	985	89.5	0.90	66.5	6.8	2.0	1.5	2.2	1.48	520
	6-4		6-4	45.0	289	1485	88.0	0.87	85	6.2	1.6	1.1	2.0		
K21R	315 S	K20R	280 S	55.0	532	988	91.5	0.88	98.5	7.5	2.4	1.9	2.7	2.63	690
	6-4		6-4	63.0	407	1480	91.0	0.89	112	7.5	1.6	1.1	2.7		
K21R	315 M	K20R	280 M	65.0	627	990	92.0	0.89	115	7.7	2.0	1.6	2.5	3.33	800
	6-4		6-4	80.0	513	1490	89.0	0.83	156	8.2	1.8	1.1	2.7		
K21R	315 MX	K20R	315 S	80.0	773	988	90.5	0.89	143	8.0	2.2	1.7	2.8	3.60	880
	6-4[1)]		6-4[1)]	100	642	1487	90.0	0.88	182	9.0	2.1	1.3	3.0		
K21R	315 MY	K20R	315 M	100	965	990	92.0	0.88	178	8.5	2.2	1.8	2.8	6.00	1050
	6-4		6-4	120	770	1488	88.0	0.83	237	8.0	1.9	1.5	2.9		
K21R	315 L	K20R	315 L	100	965	990	data on request							6.76	1250
	6-4		6-4	150	965	1485									

1) only available in th. cl. H
Δ-circuit on request

3

Three-phase motors with squirrel-cage rotor

pole-changing, for quadratically increasing load torque
fan drives with two separate windings, Y/Y-circuit
with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design point 400 V, 50 Hz

Type				P	M_B	n	η	cos φ	I 400 V	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
				kW	Nm	rpm	%	-	A	-	-	-	-	kgm²	kg
Synchronous speed 1000/1500 rpm – 6-4-pole version															
K21R	71 K	K20R	63 K	0.06	0.61	940	36.0	0.69	0.35	2.3	1.3	1.3	1.7	0.00045	7.8
	6-4L		6-4L	0.18	1.22	1415	62.0	0.73	0.58	3.4	1.4	1.4	1.8		7.1[1)]
K21R	71 G	K20R	63 G	0.08	0.81	945	37.5	0.67	0.46	2.4	1.4	1.4	1.8	0.00060	8.1
	6-4L		6-4L	0.25	1.70	1405	61.0	0.78	0.76	3.2	1.3	1.3	1.7		7.4[1)]
K21R	80 K	K20R	71 K	0.12	1.21	950	48.0	0.69	0.52	2.5	1.3	1.3	1.8	0.0013	11
	6-4L		6-4L	0.40	2.71	1410	60.0	0.77	1.25	3.8	1.4	1.4	1.8		10[1)]
K21R	80 G	K20R	71 G	0.16	1.60	955	53.0	0.69	0.63	3.0	1.3	1.3	1.7	0.00175	12.5
	6-4L		6-4L	0.55	3.69	1425	65.0	0.79	1.55	4.1	1.4	1.4	1.8		11.5[1)]
K21R	90 S	K20R	80 K	0.25	2.51	950	57.0	0.73	0.87	3.1	1.4	1.4	1.7	0.00325	16
	6-4L		6-4L	0.75	5.03	1425	68.5	0.83	1.90	4.8	1.5	1.5	1.8		15[1)]
K21R	90 L	K20R	80 G	0.37	3.70	955	59.0	0.73	1.25	3.4	1.3	1.3	1.6	0.00425	19
	6-4L		6-4L	1.10	7.37	1425	71.0	0.83	2.70	4.7	1.5	1.5	1.8		18[1)]
K21R	100 L	K20R	90 L	0.50	4.95	965	63.0	0.71	1.60	3.9	1.5	1.5	1.9	0.00625	24
	6-4L		6-4L	1.50	9.95	1440	76.0	0.83	3.45	5.2	1.5	1.5	1.9		24[1)]
K21R	100 LX	K20R	100 S	0.75	7.38	970	67.0	0.69	2.35	4.4	1.4	1.4	2.0	0.00900	28
	6-4L		6-4L	2.00	13.3	1440	74.5	0.85	4.55	6.1	1.8	1.8	2.4		28[1)]
K21R	112 M	K20R	100 L	1.00	9.90	965	66.0	0.77	2.85	4.0	1.2	1.2	1.7	0.01225	33.5
	6-4L		6-4L	3.00	19.9	1440	77.0	0.82	6.85	6.0	1.8	1.8	2.5		32.5[1)]
K21R	132 S	K20R	112 M	1.5	14.8	970	68.5	0.80	4	4.3	1.2	1.1	2.2	0.018	46
	6-4L		6-4L	3.7	24.5	1445	73.5	0.86	8.5	5.1	1.2	1.1	2.3		
K21R	132 MX	K20R	132 S	2.2	21.5	975	77.5	0.82	5	5.0	1.7	1.2	2.4	0.043	70
	6-4L		6-4L	6	39.2	1460	77.5	0.83	13.5	5.8	2.0	1.4	2.9		
K21R	160 M	K20R	132 M	3	29.4	975	76.5	0.84	6.7	4.6	1.4	1.1	2.0	0.053	86
	6-4L		6-4L	8.2	54.2	1445	80.0	0.88	17	5.4	1.6	1.1	2.1		
K21R	160 L	K20R	160 S	4.4	43.1	975	78.0	0.81	10	4.8	1.7	1.5	2.1	0.078	120
	6-4L		6-4L	13	85.6	1450	85.0	0.87	25.5	4.9	1.5	1.2	1.9		
K21R	180 M	K20R	160 M	5.4	52.5	982	79.0	0.76	13	5.2	1.9	1.6	2.5	0.090	136
	6-4L		6-4L	16	105	1450	86.0	0.88	30.5	4.9	1.5	1.2	1.9		
K21R	180 L	K20R	180 S	6.7	65.3	980	82.0	0.81	14.5	4.7	1.4	1.3	2.1	0.138	170
	6-4L		6-4L	20	130	1470	89.0	0.84	38.5	5.8	1.7	1.5	2.5		
K21R	200 L	K20R	180 M	9	87.3	985	84.0	0.79	19.5	5.0	1.4	1.3	2.1	0.168	220
	6-4L		6-4L	26	169	1470	90.0	0.85	49	6.4	1.6	1.5	2.5		
K21R	225 S	K20R	200 M	12	117	982	84.0	0.79	26	5.0	1.3	1.2	2.0	0.275	270
	6-4L		6-4L	34	220	1475	90.5	0.82	66	6.4	1.9	1.4	2.5		
K21R	225 M	K20R	200 L	14	136	985	86.0	0.78	30	5.4	1.8	1.5	2.3	0.313	300
	6-4L		6-4L	40	259	1475	91.0	0.86	74	6.5	1.9	1.6	2.5		
K21R	250 M	K20R	225 M	18	174	988	86.0	0.75	40.5	5.5	1.7	1.5	2.0	0.525	375
	6-4L		6-4L	50	323	1478	92.0	0.85	92.5	7.0	1.9	1.3	2.3		
K21R	280 S	K20R	250 S	23	222	988	86.0	0.74	52	5.4	1.5	1.1	1.8	0.950	520
	6-4L		6-4L	68	439	1480	92.0	0.84	127	7.0	1.8	1.6	2.4		
K21R	280 M	K20R	250 M	28	271	988	88.0	0.73	63	5.5	1.6	1.4	1.9	1.11	580
	6-4L		6-4L	80	515	1485	93.0	0.84	148	7.0	2.0	1.8	2.6		
K21R	315 S	K20R	280 S	34	329	988	87.0	0.73	77.5	5.5	1.4	1.3	1.8	1.96	740
	6-4L		6-4L	95	611	1485	93.5	0.84	175	7.0	1.6	1.3	2.2		
K21R	315 M	K20R	280 M	40	386	990	88.0	0.73	90	6.0	1.3	1.3	1.7	2.27	840
	6-4L		6-4L	115	740	1485	94.0	0.85	208	7.5	1.9	1.7	2.4		
K21R	315 MX	K20R	315 S	45	434	990	89.0	0.73	100	6.5	1.3	1.2	1.7	2.73	1000
	6-4L		6-4L	125	804	1485	94.0	0.85	226	7.5	1.9	1.7	2.4		
K21R	315 MY	K20R	315 M	55	530	992	91.5	0.77	113	6.4	1.5	1.3	2.0	4.82	1200
	6-4L		6-4L	145	931	1487	94.5	0.87	255	7.0	1.6	1.4	2.3		
K21R	315 L	K20R	315 L	55	528	995	data on request							5.93	1450
	6-4L		6-4L	185	1186	1490									

1) weight for K20R
Δ-circuit on request

Three-phase motors with squirrel-cage rotor

pole-changing, for constant load torque
with two separate windings, Y/Y-circuit
with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design point 400 V, 50 Hz

Type				P	M_B	n	η	cos φ	I 400 V	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
				kW	Nm	rpm	%	-	A	-	-	-	-	kgm²	kg
Synchronous speed750/3000 rpm – 8-2-pole version															
K21R	71 K	K20R	63 K	0.025	0.33	720	17.0	0.57	0.37	1.8	2.9		4.0	0.00040	6.8
	8-2		8-2	0.09	0.29	2950	28.5	0.65	0.71	3.5	1.9		4.0		6.3[1)]
K21R	71 G	K20R	63 G	0.04	0.54	705	27.5	0.62	0.34	2.0	1.7		2.4	0.00050	7.8
	8-2		8-2	0.16	0.52	2945	50.5	0.66	0.69	4.3	1.8		2.6		7.1[1)]
K21RW	80 K	K20RW	71 K	0.075	1.07	670	34.5	0.55	0.56	2.0	2.6		2.6	0.00087	10.6
	8-2		8-2	0.30	1.00	2855	57.5	0.77	1.00	4.6	2.5		2.6		9.9[1)]
K21RW	80 G	K20RW	71 G	0.11	1.59	660	37.0	0.56	0.77	2.0	2.3		2.4	0.00107	11.7
	8-2		8-2	0.45	1.51	2850	60.0	0.80	1.35	4.8	2.2		2.3		11[1)]
K21RW	90 S	K20RW	80 K	0.18	2.55	675	43.0	0.60	1.05	2.3	2.2		2.3	0.00207	15.5
	8-2		8-2	0.75	2.55	2805	66.0	0.87	1.89	5.0	2.0		1.9		14.5[1)]
K21RW	90 L	K20RW	80 G	0.25	3.59	665	44.0	0.61	1.35	2.6	2.4		2.8	0.00260	18
	8-2		8-2	1.00	3.40	2810	69.0	0.89	2.35	5.8	2.2		1.8		17[1)]
K21RW	100 L	K20RW	90 L	0.33	4.60	685	46.5	0.54	1.90	2.6	2.8		2.9	0.00400	23.5
	8-2		8-2	1.30	4.38	2835	72.0	0.87	3.00	5.8	2.0		2.1		22.5[1)]
K21RW	100 LX	K20RW	100 S	0.55	7.72	680	53.0	0.61	2.45	2.8	1.9		2.3	0.00725	30
	8-2		8-2	2.20	7.40	2840	73.0	0.87	5.00	6.1	2.4		2.5		30[1)]
K21RW	112 M	K20RW	100 L	0.75	10.5	680	57.0	0.60	3.15	3.0	1.9		2.4	0.00900	37
	8-2		8-2	3.00	10.1	2840	75.0	0.90	6.45	6.1	2.0		2.0		36[1)]
K21RW	112 MX	K20RW	100 LX	1.0	14.4	665	60.0	0.64	3.75	2.8	1.9		2.0	0.0111	45
	8-2		8-2	4.0	13.5	2820	75.0	0.91	8.45	6.1	2.1		2.0		44[1)]
K21R	132 S	K20R	112 M	1.1	14.5	725	61.5	0.57	4.5	3.7	1.5		2.4	0.015	50
	8-2		8-2	4.5	15.1	2850	78.0	0.92	9.1	6.0	1.8		2.1		
K21R	132 M	K20R	132 S	1.3	17.0	730	64.0	0.50	5.9	3.6	1.5		2.6	0.028	69
	8-2		8-2	5.5	18.1	2910	80.5	0.85	11.50	6.3	1.6		2.4		
K21R	160 M	K20R	132 M	1.8	23.5	730	68.5	0.50	7.6	3.8	1.5		2.6	0.035	86
	8-2		8-2	7.5	24.5	2920	83.0	0.89	14.5	7.0	1.7		2.5		
K21R	160 L	K20R	160 S	2.7	35.1	735	77.5	0.54	9.3	4.6	1.7		2.8	0.078	120
	8-2		8-2	11.0	35.9	2930	84.5	0.87	21.5	7.2	1.8		2.6		
K21R	180 M	K20R	160 M	3.7	48.1	735	76.0	0.59	12	4.4	1.5		2.5	0.090	136
	8-2		8-2	15.0	48.9	2930	84.5	0.84	30.5	7.1	1.9		2.7		
K21R	180 L	K20R	180 S	4.6	59.8	735	78.0	0.55	15.5	4.3	1.4		2.5	0.138	170
	8-2		8-2	18.5	60.2	2935	86.5	0.90	34.5	6.9	1.5		2.4		
K21R	200 L	K20R	180 M	5.5	71.5	735	80.0	0.52	19	4.6	1.6		2.7	0.168	200
	8-2		8-2	22.0	71.3	2945	88.0	0.92	39	7.8	1.7		2.8		
K21R	225 S	K20R	200 M	7.5	96.8	740	82.0	0.47	28	4.6	1.6		2.8	0.275	270
	8-2		8-2	30.0	97.2	2950	88.5	0.90	54.5	7.8	1.7		2.6		
K21R	225 M	K20R	200 L	9.2	119	740	82.5	0.50	32	4.6	1.5		2.6	0.313	300
	8-2		8-2	37.0	120	2950	89.0	0.90	66.5	7.8	1.7		2.6		
K21R	250 M	K20R	225 M	11.0	142	740	83.5	0.58	33	5.4	1.7		2.7	0.525	375
	8-2		8-2	45.0	146	2950	90.0	0.91	79.5	8.1	1.6		2.7		
K21R	280 S	K20R	250 S	13.0	168	740	85.0	0.60	37	6.5	2.0		2.8	0.95	520
	8-2		8-2	55.0	178	2955	92.0	0.92	94	7.6	1.4		2.4		
K21R	280 M	K20R	250 M	18.0	232	740	86.0	0.63	48	6.2	2.0		2.6	1.11	580
	8-2		8-2	75.0	242	2960	92.0	0.92	128	8.3	1.6		2.6		
K21R	315 S	K20R	280 S	22.0	284	740	87.5	0.64	56.5	6.6	2.0		2.6	1.96	740
	8-2		8-2	90.0	290	2965	92.0	0.92	153	8.1	1.2		2.7		
K21R	315 M	K20R	280 M	24.5	317	740	87.0	0.64	63.5	6.7	2.0		2.7	2.27	840
	8-2		8-2	100	322	2965	92.5	0.92	170	8.9	1.2		2.7		
K21R	315 MX	K20R	315 S	28	361	740	87.0	0.68	68.5	6.2	1.9		2.3	2.73	1000
	8-2		8-2	110	354	2965	92.0	0.92	188	8.1	1.3		2.6		
K21R	315 MY	K20R	315 M	37	474	745	88.5	0.67	90	6.6	2.0		2.6	4.82	1200
	8-2		8-2	145	466	2970	92.4	0.93	244	8.5	1.4		2.7		
K21R	315 L	K20R	317 L	42.5	545	745	89.0	0.65	106	6.5	1.9		2.7	5.93	1450
	8-2		8-2	170	546	2975	93.0	0.93	284	8.5	1.4		2.7		

1) weight for K20R
Δ-circuit on request

Three-phase motors with squirrel-cage rotor

pole-changing, for quadratically increasing load torque
fan drives with two separate windings, Y/Y-circuit
with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data — Design point 400 V, 50 Hz

Type				P	M_B	n	η	cos φ	I 400 V	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
				kW	Nm	rpm	%	-	A	-	-	-	-	kgm²	kg
Synchronous speed 750/3000 rpm – 8-2-pole version															
K21R	132 S	K20R	112 M	0.42	5.46	735	55.0	0.57	1.9	3.5	1.4		2.8	0.015	50
	8-2L		8-2L	4.5	15.0	2870	82.0	0.94	8.4	6.6	2.2		2.4		
K21R	132 M	K20R	132 S	0.65	8.45	735	58.0	0.57	2.8	3.5	1.4		2.6	0.028	69
	8-2L		8-2L	7.0	23.6	2830	86.0	0.93	12.5	6.2	1.7		2.2		
K21R	160 M	K20R	132 M	0.8	10.4	735	59.0	0.57	3.4	3.6	1.4		2.6	0.035	86
	8-2L		8-2L	9.0	29.6	2900	87.5	0.93	16	6.5	1.8		2.3		
K21R	160 L	K20R	160 S	1.2	15.6	735	70.0	0.69	3.6	4.0	1.5	1.3	2.0	0.078	120
	8-2L		8-2L	13.0	42.4	2925	84.0	0.87	25.5	6.2	1.8	0.8	2.3		
K21R	180 M	K20R	160 M	1.5	19.5	735	68.0	0.71	4.5	4.0	1.6	1.4	2.2	0.090	136
	8-2L		8-2L	17.0	55.8	2910	85.5	0.92	31	6.0	1.6	0.9	2.0		
K21R	180 L	K20R	180 S	1.9	24.5	740	68.0	0.61	6.6	4.2	1.3		2.5	0.138	170
	8-2L		8-2L	22.0	71.8	2925	89.5	0.93	38	7.0	2.0		2.4		
K21R	200 L	K20R	180 M	2.5	32.2	740	74.0	0.63	7.7	4.6	1.4		2.5	0.168	220
	8-2L		8-2L	27.0	88.3	2920	90.0	0.93	46.5	6.7	1.8		2.2		
K21R	225 S	K20R	200 M	3.2	41.3	740	79.0	0.59	9.9	4.8	1.5		2.6	0.275	270
	8-2L		8-2L	32.0	104	2950	90.0	0.93	55	7.8	1.9		2.6		
K21R	225 M	K20R	200 L	3.6	46.5	740	77.0	0.62	11	4.6	1.3		2.4	0.313	300
	8-2L		8-2L	37.0	120	2950	90.5	0.93	63.5	7.7	1.9		2.5		
K21R	250 M	K20R	225 M	4.0	51.6	740	79.0	0.66	11	5.5	1.8		2.5	0.525	375
	8-2L		8-2L	45.0	146	2945	91.0	0.93	76.5	7.0	1.9		2.2		
K21R	280 S	K20R	250 S	5.2	67.1	740	82.0	0.64	14.5	6.0	2.0		2.5	0.950	520
	8-2L		8-2L	55.0	177	2965	91.0	0.93	94	7.5	1.5		2.5		
K21R	280 M	K20R	250 M	6.5	83.9	740	83.0	0.66	17	5.4	1.7		2.3	1.11	580
	8-2L		8-2L	75.0	242	2960	91.5	0.93	127	7.0	1.6		2.3		
K21R	315 S	K20R	280 S	8.0	103	740	84.0	0.69	20	6.3	2.0		2.3	1.96	740
	8-2L		8-2L	90.0	290	2960	92.0	0.93	152	7.2	1.3		2.4		
K21R	315 M	K20R	280 M	10.0	128	745	81.0	0.69	26	6.0	1.9		2.3	2.27	840
	8-2L		8-2L	110	354	2965	93.0	0.93	184	7.5	1.5		2.5		
K21R	315 MX	K20R	315 S	13.0	167	745	80.0	0.65	36	6.3	2.1		2.5	2.73	1000
	8-2L		8-2L	132	612	2060	93.5	0.93	219	7.8	1.7		2.5		
K21R	315 MY	K20R	315 M	17.0	218	745	83.0	0.67	44	7.2	2.4		2.6	4.82	1200
	8-2L		8-2L	160	515	2970	93.5	0.93	266	8.0	1.8		2.7		

Δ-circuit on request

Three-phase motors with squirrel-cage rotor

pole-changing, for constant load torque
with one Δ/YY-Dahlander winding
with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data — Design point 400 V, 50 Hz

Type				P	M_B	n	η	cos φ	I 400 V	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
				kW	Nm	rpm	%	-	A	-	-	-	-	kgm²	kg
Synchronous speed 750/1500 rpm – 8-4-pole version															
K21R	71 K	K20R	63 K	0.09	1.30	660	31.0	0.64	0.66	2.0	2.0	2.0	2.1	0.00050	6.6
	8-4		8-4	0.12	0.79	1445	61.0	0.59	0.48	4.0	2.4	2.4	3.0		6.6[1)]
K21R	71 G	K20R	63 G	0.12	1.74	660	35.5	0.63	0.77	2.2	1.9	1.9	2.1	0.00060	8.3
	8-4		8-4	0.20	1.34	1425	65.5	0.72	0.61	4.2	1.8	1.8	2.3		7.6[1)]
K21R	80 K	K20R	71 K	0.18	2.51	685	44.0	0.70	0.85	2.5	1.6	1.6	2.0	0.00130	10.5
	8-4		8-4	0.30	2.05	1400	67.0	0.87	0.74	3.8	1.4	1.4	1.6		9.9[1)]
K21R	80 G	K20R	71 G	0.25	3.56	670	45.0	0.69	1.17	2.4	1.3	1.3	1.7	0.00175	12
	8-4		8-4	0.40	2.73	1400	73.0	0.84	0.94	4.1	1.3	1.3	1.8		11.3[1)]
K21R	90 S	K20R	80 K	0.35	4.78	700	53.5	0.65	1.45	2.8	1.5	1.5	1.8	0.00300	15
	8-4		8-4	0.55	3.70	1420	70.0	0.88	1.30	4.3	1.4	1.4	1.9		14[1)]
K21R	90 L	K20R	80 G	0.44	6.05	695	56.0	0.60	1.89	2.8	1.5	1.5	1.8	0.00375	18
	8-4		8-4	0.75	5.08	1410	72.0	0.86	1.74	4.2	1.3	1.3	1.7		17[1)]
K21R	100 L	K20R	90 L	0.70	9.28	720	62.5	0.55	2.95	3.5	1.8	1.8	2.3	0.00625	24
	8-4		8-4	1.10	7.22	1455	78.5	0.85	2.35	6.0	1.9	1.9	2.3		24[1)]
K21R	100 LX	K20R	100 S	1.00	13.5	705	70.0	0.68	3.00	3.7	1.5	1.5	2.0	0.00900	28
	8-4		8-4	1.50	10.1	1420	84.0	0.85	3.00	5.6	1.3	1.3	2.0		28[1)]
K21R	112 M	K20R	100 L	1.40	19.0	705	68.5	0.66	4.40	4.0	1.8	1.8	2.3	0.01225	33.5
	8-4		8-4	2.20	14.6	1435	78.5	0.90	4.50	5.8	1.3	1.3	2.2		32.5[1)]
K21R	132 S	K20R	112 M	1.7	22.9	710	72.0	0.72	4.7	4.3	1.7	1.5	2.5	0.018	46
	8-4		8-4	2.6	17.3	1435	79.0	0.91	5.2	5.8	1.5	1.3	2.5		
K21R	132 M	K20R	112 MX	2.2	29.4	715	72.0	0.71	6.2	4.4	1.8	1.7	2.6	0.023	53
	8-4		8-4	3.7	24.7	1430	78.0	0.93	7.4	5.4	1.4	1.2	2.3		
K21R	132 MX	K20R	132 S	3.1	40.8	725	76.0	0.70	8.4	4.1	1.6	1.5	2.3	0.043	70
	8-4		8-4	4.8	31.6	1450	82.0	0.91	9.3	5.6	1.5	1.1	2.3		
K21R	160 M	K20R	132 M	4.3	57.0	720	77.0	0.71	11.5	4.3	1.7	1.6	2.4	0.053	86
	8-4		8-4	6.5	42.8	1450	83.0	0.91	12.5	6.2	1.7	1.3	2.4		
K21R	160 L	K20R	160 S	6.2	81.7	725	82.0	0.76	14.5	4.7	1.8	1.6	2.2	0.113	114
	8-4		8-4	9.0	59.1	1455	83.0	0.91	17	6.0	1.7	1.3	2.4		
K21R	180 L	K20R	160 M	8.5	113	720	83.0	0.79	18.5	4.3	1.7	1.5	2.0	0.145	138
	8-4		8-4	12.5	82.3	1450	85.0	0.91	23.5	5.4	1.6	1.2	2.0		
K21R	200 L	K20R	180 S	11.0	144	730	86.0	0.78	23.5	5.0	1.8	1.5	2.1	0.228	175
	8-4		8-4	16.0	105	1460	86.0	0.91	29.5	6.2	1.8	1.2	2.2		
K21R	200 LX	K20R	180 M	13.0	170	730	87.0	0.79	27.5	5.3	1.9	1.6	2.3	0.268	220
	8-4		8-4	19.0	124	1460	88.0	0.92	34	6.9	1.6	1.2	2.7		
K21R	225 M	K20R	200 M	17.5	229	730	88.0	0.78	37	5.7	2.2	1.8	2.4	0.443	265
	8-4		8-4	25.0	162	1470	88.0	0.92	44.5	7.4	2.1	1.0	2.6		
K21R	250 M	K20R	225 M	24.0	314	730	89.0	0.81	48	5.6	2.0	1.6	2.2	0.825	360
	8-4		8-4	30.0	195	1470	89.0	0.92	53	8.2	2.5	1.4	2.8		
K21R	280 S	K20R	250 S	28.0	364	735	90.0	0.78	57.5	5.4	2.1	1.5	1.9	1.28	465
	8-4		8-4	38.0	246	1475	89.5	0.90	68	7.2	2.1	1.2	2.4		
K21R	280 M	K20R	250 M	34.0	441	737	90.5	0.79	68.5	5.4	2.1	1.5	2.1	1.48	520
	8-4		8-4	45.0	291	1478	90.0	0.90	80	7.7	2.4	1.3	2.5		
K21R	315 S	K20R	280 S	42.0	542	740	92.0	0.81	81.5	5.7	1.6	1.3	2.0	2.63	690
	8-4		8-4	55.0	355	1480	92.0	0.92	94	8.5	1.9	1.2	2.5		
K21R	315 M	K20R	280 M	55.0	710	740	92.5	0.79	109	5.8	1.7	1.5	2.1	3.33	800
	8-4		8-4	75.0	482	1485	92.5	0.91	129	7.7	2.0	1.3	2.6		
K21R	315 MX	K20R	315 S	70.0	901	742	92.5	0.76	144	7.0	2.3	1.8	2.5	3.60	880
	8-4		8-4	105	675	1485	91.5	0.89	186	8.5	2.5	1.6	3.0		
K21R	315 MY	K20R	315 M	85.0	1097	740	93.8	0.78	168	7.0	2.3	1.9	2.7	6.00	1050
	8-4		8-4	125	804	1485	92.6	0.90	216	8.5	2.5	1.6	2.8		
K21R	315 L	K20R	315 L	120	1570	730	data on request							6.76	1250
	8-4		8-4	150	965	1485									

[1)] weight for K20R

3

Three-phase motors with squirrel-cage rotor

pole-changing, with increased load for constant load torque
with Δ/YY-Dahlander winding
with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data — Design point 400 V, 50 Hz

Type				P	M_B	n	η	cos φ	I	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
									400 V						
				kW	Nm	rpm	%	-	A	-	-	-	-	kgm²	kg
Synchronous speed 750/1500 rpm – 8-4-pole version															
K21R	132 S	K20R	112 M	2.2	29.8	705	71.0	0.75	6	3.5	1.5	1.5	2.1	0.018	46
	8-4		8-4	3.3	22.1	1425	76.0	0.93	6.7	4.6	1.3	1.2	2.0		
K21R	132 M	K20R	112 MX	2.6	35.0	710	73.0	0.72	7.1	4.1	1.7	1.7	2.5	0.023	53
	8-4		8-4	4.2	28.0	1430	79.0	0.93	8.3	4.9	1.4	1.3	2.3		
K21R	132 MX	K20R	132 S	4.0	53.0	720	76.0	0.68	11	3.5	1.6	1.5	2.1	0.043	70
	8-4		8-4	6.0	40.0	1445	80.0	0.89	12	4.8	1.5	1.2	2.1		
K21R	160 M	K20R	132 M	5.0	66.8	715	76.0	0.71	13.5	4.4	1.8	1.7	2.2	0.053	86
	8-4		8-4	7.8	51.8	1440	83.0	0.91	15	5.5	1.6	1.2	2.2		
K21R	160 L	K20R	160 S	7.0	92.2	725	82.0	0.76	16	4.5	2.0	1.6	2.2	0.113	114
	8-4		8-4	11.0	72.5	1450	83.0	0.92	21	5.4	1.8	1.3	2.3		
K21R	180 L	K20R	160 M	10.0	132	725	83.0	0.75	23	4.8	2.0	1.7	2.2	0.145	138
	8-4		8-4	16.0	106	1445	85.0	0.90	30	5.4	1.8	1.2	2.3		
K21R	200 L	K20R	180 S	15.0	198	725	86.0	0.80	31.5	4.0	1.6	1.4	1.9	0.228	175
	8-4		8-4	21.0	138	1455	85.0	0.91	39	5.5	1.7	1.1	2.1		
K21R	200 LX	K20R	180 M	17.5	232	720	86.0	0.76	38.5	4.7	1.8	1.5	2.2	0.268	200
	8-4		8-4	25.0	166	1440	84.0	0.89	48.5	6.2	1.5	1.1	2.5		
K21R	225 M	K20R	200 M	22.0	290	725	87.0	0.79	46	5.1	2.0	1.7	2.2	0.443	265
	8-4		8-4	30.0	197	1455	87.0	0.89	56	6.6	1.9	0.9	2.4		
K21R	250 M	K20R	225 M	28.0	366	730	90.0	0.77	58.5	5.2	2.0	1.6	2.2	0.825	360
	8-4		8-4	38.0	247	1470	89.5	0.90	68	7.1	2.5	1.4	2.8		
K21R	280 S	K20R	250 S	35.0	455	735	91.0	0.78	71	4.8	2.0	1.5	1.8	1.28	465
	8-4		8-4	50.0	324	1475	89.0	0.90	90	6.1	2.0	1.2	2.3		
K21R	280 M	K20R	250 M	45.0	585	735	90.0	0.79	91.5	5.5	2.1	1.5	2.2	1.48	520
	8-4		8-4	60.0	389	1475	90.0	0.88	109	7.2	1.9	1.3	2.6		
K21R	315 S	K20R	280 S	55.0	710	740	92.0	0.79	109	6.0	1.6	1.5	2.2	2.63	690
	8-4		8-4	80.0	516	1480	91.0	0.91	139	7.0	1.7	1.3	2.4		
K21R	315 M	K20R	280 M	75.0	968	740	92.0	0.79	149	5.1	1.6	1.3	1.9	3.33	800
	8-4		8-4	100	643	1485	91.0	0.90	176	7.0	1.9	1.2	2.4		
K21R	315 MX	K20R	315 S	80.0	1032	740	93.0	0.77	161	6.5	2.0	1.7	2.5	3.60	880
	8-4		8-4	115	740	1485	91.5	0.90	202	7.5	1.9	1.3	2.8		
K21R	315 MY	K20R	315 M	100	1291	740	93.7	0.80	193	6.5	1.9	1.7	2.3	6.00	1050
	8-4		8-4	140	900	1485	92.7	0.91	240	7.5	2.0	1.4	2.5		
K21R	315 L	K20R	315 L	120	1549	740	data on request							6.76	1250
	8-4		8-4	150	965	1485									

Three-phase motors with squirrel-cage rotor

pole-changing, for quadratically increasing load torque
fan drives, with one Y/YY-Dahlander winding
with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data — Design point 400 V, 50 Hz

Type				P	M_B	n	η	cos φ	I	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
									400 V						
				kW	Nm	rpm	%	-	A	-	-	-	-	kgm²	kg
Synchronous speed 750/1500 rpm – 8-4-pole version															
K21R	71 K	K20R	63 K	0.05	0.70	680	39.0	0.62	0.30	1.9	1.4	1.4	1.7	0.00050	7.8
	8-4L		8-4L	0.20	1.34	1430	61.0	0.67	0.71	3.8	1.7	1.7	2.2		7.1[1]
K21R	71 G	K20R	63 G	0.075	1.07	670	40.0	0.62	0.44	2.1	1.2	1.2	1.7	0.00060	8.3
	8-4L		8-4L	0.30	2.01	1425	60.0	0.67	1.08	3.7	1.4	1.4	2.1		7.6[1]
K21R	80 K	K20R	71 K	0.12	1.65	695	50.0	0.70	0.49	2.6	1.2	1.2	2.0	0.00130	10.5
	8-4L		8-4L	0.50	3.41	1400	65.0	0.85	1.31	3.8	1.3	1.3	2.0		9.9[1]
K21R	80 G	K20R	71 G	0.18	2.51	685	56.0	0.66	0.70	2.6	1.5	1.5	1.8	0.00175	12
	8-4L		8-4L	0.70	4.76	1405	68.0	0.83	1.79	4.2	1.6	1.6	2.0		11.3[1]
K21R	90 S	K20R	80 K	0.25	3.41	700	59.0	0.63	0.97	2.7	1.1	1.1	1.5	0.00300	15
	8-4L		8-4L	1.00	6.72	1420	70.0	0.81	2.55	4.5	1.5	1.5	1.8		14[1]
K21R	90 L	K20R	80 G	0.37	5.12	690	63.0	0.64	1.33	2.6	1.2	1.2	1.4	0.00375	18
	8-4L		8-4L	1.50	10.2	1400	70.0	0.84	3.70	1.6	1.7	1.7	1.9		17[1]
K21R	100 L	K20R	90 L	0.50	6.82	700	61.0	0.60	1.80	2.8	1.2	1.2	1.9	0.004	23.5
	8-4L		8-4L	2.00	13.5	1415	74.0	0.81	4.80	5.0	1.3	1.3	1.6		22.5[1]
K21R	100 LX	K20R	100 S	0.65	8.74	710	68.0	0.58	2.38	3.2	1.3	1.3	2.0	0.00725	30
	8-4L		8-4L	2.50	16.6	1440	81.0	0.81	5.50	7.0	1.4	1.4	2.0		30[1]
K21R	112 M	K20R	100 L	0.90	12.1	710	69.0	0.57	3.30	3.3	1.7	1.7	2.3	0.00900	37
	8-4L		8-4L	3.60	23.9	1440	81.0	0.81	7.90	6.3	2.2	2.2	2.5		36[1]
K21R	132 M	K20R	112 MX	1.1	14.6	720	65.0	0.67	3.6	4.4	2.0	2.0	3.1	0.023	53
	8-4L		8-4L	4.5	29.7	1445	71.0	0.83	11	6.1	1.9	1.8	3.4		
K21R	132 MX	K20R	132 S	1.8	24.2	710	76.0	0.79	4.5	3.6	1.3	1.0	1.7	0.043	70
	8-4L		8-4L	6.5	43.1	1440	80.0	0.91	13	5.8	2.0	1.0	2.2		
K21R	160 M	K20R	132 M	2.3	30.5	720	80.0	0.76	5.5	3.6	1.5	1.2	1.7	0.053	86
	8-4L		8-4L	9.0	59.5	1445	79.5	0.88	18.5	5.4	1.8	1.2	2.3		
K21R	160 L	K20R	160 S	3.5	46.1	725	82.0	0.68	9.1	3.2	1.5	1.0	1.6	0.078	120
	8-4LF		8-4LF	12.5	81.5	1465	86.0	0.83	25.5	7.0	2.4	1.9	2.9		
K21R	180 M	K20R	160 M	4.5	59.3	725	83.0	0.69	11.5	4.0	1.5	1.3	1.8	0.090	136
	8-4LF		8-4LF	16.0	104	1470	87.0	0.82	32.5	7.5	2.4	1.8	3.0		
K21R	180 L	K20R	180 S	5.0	65.4	730	84.0	0.67	13	5.0	1.8	1.5	2.1	0.138	170
	8-4LF		8-4LF	20.0	130	1475	88.0	0.82	40	6.2	1.8	1.2	2.2		
K21R	200 L	K20R	180 M	7.2	94.2	730	87.0	0.69	17.5	5.3	1.9	1.6	2.3	0.168	220
	8-4LF		8-4LF	26.0	169	1470	89.0	0.83	51	6.9	1.6	1.2	2.7		
K21R	225 S	K20R	200 M	9.5	123	735	87.5	0.67	23.5	5.7	2.2	1.8	2.4	0.275	270
	8-4LF		8-4LF	35.0	226	1478	89.0	0.78	73	7.4	2.1	1.0	2.6		
K21R	225 M	K20R	200 L	11.5	149	735	89.0	0.67	28	5.6	2.0	1.6	2.2	0.313	300
	8-4LF		8-4LF	42.0	271	1478	90.0	0.78	86.5	8.2	2.5	1.4	2.8		
K21R	250 M	K20R	225 M	12.0	155	740	89.0	0.63	31	5.4	2.1	1.5	1.9	0.53	375
	8-4LF		8-4LF	48.0	309	1485	91.0	0.82	93	7.2	2.1	1.2	2.4		
K21R	280 S	K20R	250 S	14.0	181	738	90.0	0.80	28	5.4	2.1	1.5	2.1	1.28	465
	8-4L		8-4L	50.0	323	1480	86.0	0.86	97.5	7.7	2.4	1.3	2.5		
K21R	280 M	K20R	250 M	17.0	220	738	90.0	0.82	33	5.7	1.6	1.3	2.0	1.48	520
	8-4L		8-4L	60.0	388	1478	88.0	0.88	112	8.5	1.9	1.2	2.5		
K21R	315 S	K20R	280 S	21.0	270	742	92.0	0.78	42	5.8	1.7	1.5	2.1	2.63	690
	8-4L		8-4L	80.0	515	1485	91.0	0.89	143	7.7	2.0	1.3	2.6		
K21R	315 M	K20R	280 M	28.0	361	740	92.0	0.80	55	7.0	2.3	1.8	2.5	3.33	800
	8-4L		8-4L	95.0	611	1485	91.0	0.91	166	8.5	2.5	1.6	3.0		
K21R	315 MX	K20R	315 S	36.0	465	740	92.5	0.78	72	7.0	2.3	1.9	2.7	3.60	880
	8-4L		8-4L	110	707	1485	90.0	0.87	203	8.5	2.5	1.6	2.8		
K21R	315 MY	K20R	315 M	44.0	570	738	93.3	0.80	85	7.0	2.3	1.8	2.5	6.00	1050
	8-4L		8-4L	135	869	1485	93.0	0.90	233	8.5	2.5	1.6	2.7		
K21R	315 L	K20R	315 L	48.0	618	742	data on request							6.67	1250
	8-4L		8-4L	160	1026	1490									
K21R	315 LX	K20R	315 LX	55.0	705	745	data on request							8.60	1630
	8-4L		8-4L	220	1409	1491									

[1] weight for K20R

3

Three-phase motors with squirrel-cage rotor

pole-changing, for quadratically increasing load torque
fan drives with two separate windings, Y/Y-circuit
with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data — Design point 400 V, 50 Hz

Type				P	M_B	n	η	cos φ	I 400 V	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
				kW	Nm	rpm	%	-	A	-	-	-	-	kgm²	kg
Synchronous speed 750/1500 rpm – 8-4-pole version															
K21R	80 K	K20R	71 K	0.09	1.25	690	36.0	0.66	0.55	2.0	1.6	1.5	1.9	0.00087	10.6
	8-4L		8-4L	0.37	2.49	1420	61.0	0.76	1.15	3.7	1.3	1.3	1.8		9.9[1)]
K21R	80 G	K20R	71 G	0.12	1.66	690	40.0	0.67	0.65	2.20	1.35	1.35	1.80	0.00107	11.7
	8-4L		8-4L	0.50	3.39	1410	66.5	0.79	1.37	4.0	1.50	1.45	1.90		11[1)]
K21R	90 S	K20R	80 K	0.18	2.40	715	44.0	0.60	0.98	2.50	1.35	1.35	1.00	0.00325	16
	8-4L		8-4L	0.75	5.03	1425	69.0	0.81	1.94	4.10	1.30	1.25	1.70		15[1)]
K21R	90 L	K20R	80 G	0.25	3.32	720	51.0	0.56	1.26	2.60	1.40	1.35	1.90	0.00425	19
	8-4L		8-4L	1.00	6.65	1435	70.0	0.80	2.58	4.90	1.60	1.50	1.85		18[1)]
K21R	100 L	K20R	90 L	0.37	4.87	725	60.0	0.55	1.62	3.00	1.90	1.80	2.10	0.00625	24
	8-4L		8-4L	1.50	9.95	1440	75.5	0.81	3.55	5.20	1.40	1.30	1.85		24[1)]
K21R	100 LX	K20R	100 S	0.50	6.63	720	53.0	0.64	2.12	3.30	1.20	1.20	2.30	0.00900	28
	8-4L		8-4L	2.20	14.64	1435	72.0	0.82	5.40	5.40	1.60	1.60	2.50		28[1)]
K21R	112 M	K20R	100 L	0.62	8.22	720	52.0	0.65	2.65	3.20	1.40	1.40	2.10	0.01225	33.5
	8-4L		8-4L	3.00	20.0	1435	76.0	0.82	6.95	6.00	2.10	2.00	2.60		32.5[1)]
K21R	132 S	K20R	112 M	0.9	11.9	720	65.0	0.65	3.7	4.0	1.4	1.4	2.3	0.015	50
	8-4LZ		8-4LZ	3.6	23.6	1455	80.0	0.80	6.2	5.9	1.5	1.0	2.9		
K21R	132 M	K20R	132 S	1.1	14.3	735	65.0	0.55	4.4	3.8	2.1	1.9	2.8	0.028	69
	8-4LZ		8-4LZ	4.5	29.6	1455	83.0	0.82	9.5	5.0	1.3	1.1	2.2		
K21R	160 M	K20R	132 M	1.4	18.2	735	69.0	0.54	5.4	4.0	2.2	2.1	2.8	0.035	86
	8-4LZ		8-4LZ	6.0	39.0	1470	84.5	0.82	12.5	6.4	1.8	1.4	2.7		
K21R	160 L	K20R	160 S	2.2	28.6	735	75.5	0.67	6.3	4.3	1.7	1.5	2.2	0.078	120
	8-4LZ		8-4LZ	9.0	58.5	1470	87.0	0.87	17	6.6	2.0	1.6	2.6		
K21R	180 M	K20R	160 M	3.0	39.0	735	80.0	0.64	8.5	4.8	2.2	1.8	2.5	0.090	136
	8-4LZ		8-4LZ	11.0	70.7	1485	87.0	0.86	21	7.2	2.0	1.7	2.9		
K21R	180 L	K20R	180 S	4.5	58.1	740	80.5	0.65	12.5	4.5	1.7	1.6	2.3	0.138	170
	8-4LZ		8-4LZ	16.0	104	1475	89.0	0.85	30.5	6.8	1.9	1.7	2.7		
K21R	200 L	K20R	180 M	5.0	64.5	740	82.0	0.65	13.5	5.0	1.7	1.7	2.7	0.168	220
	8-4LZ		8-4LZ	18.5	120	1475	90.5	0.86	34.5	7.3	1.9	1.5	2.9		
K21R	225 S	K20R	200 M	7.0	90.4	740	84.0	0.56	21.5	5.3	2.2	2.0	3.0	0.275	270
	8-4LZ		8-4LZ	28.0	181	1480	90.0	0.80	56	7.4	2.0	1.8	3.0		
K21R	225 M	K20R	200 L	9.5	123	740	84.0	0.55	29.5	5.2	2.3	2.1	3.1	0.313	300
	8-4LZ		8-4LZ	35.0	226	1480	90.0	0.78	72	7.6	2.2	1.8	3.1		
K21R	250 M	K20R	225 M	11.5	149	737	85.5	0.65	30	4.5	1.4	1.2	1.6	0.525	375
	8-4LZ		8-4LZ	42.0	271	1480	92.5	0.84	78	7.8	2.2	1.6	2.6		
K21R	280 S	K20R	250 S	14.0	181	740	88.0	0.63	36.5	4.6	1.4	1.1	1.6	0.950	520
	8-4LZ		8-4LZ	48.0	309	1485	93.5	0.85	87	8.3	2.2	1.8	2.6		
K21R	280 M	K20R	250 M	19.0	245	740	86.0	0.63	50.5	4.4	1.3	1.1	1.6	1.11	580
	8-4LZ		8-4LZ	70.0	456	1465	92.0	0.82	134	8.0	2.4	1.9	2.7		
K21R	315 S	K20R	280 S	23.0	297	740	86.5	0.63	61	5.0	1.2	1.2	1.6	1.96	740
	8-4LZ		8-4LZ	83.0	534	1485	93.5	0.88	146	6.7	1.4	1.3	1.9		
K21R	315 M	K20R	280 M	28.0	360	742	88.0	0.68	67.5	5.9	1.9		2.3	2.27	840
	8-4LZ		8-4LZ	95.0	611	1485	92.5	0.87	170	7.8	1.9		2.5		
K21R	315 MX	K20R	315 S	36.0	463	742	85.5	0.61	99.5	5.0	1.4	1.3	1.7	2.73	1000
	8-4LZ		8-4LZ	110	708	1483	93.5	0.84	202	6.4	1.3	1.3	2.0		
K21R	315 MY	K20R	315 M	40.0	513	745	87.0	0.65	102	6.0	1.5		1.8	4.82	1200
	8-4LZ		8-4LZ	160	1029	1485	94.0	0.86	286	8.0	1.6		2.2		

1) weight for K20R
Δ-circuit on request

Standard motors

Three-phase motors with squirrel-cage rotor

pole-changing, for constant load torque
with two separate windings, Y/Y-circuit
with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data — Design point 400 V, 50 Hz

Type				P	M_B	n	η	cos φ	I 400 V	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
				kW	Nm	rpm	%	-	A	-	-	-	-	kgm²	kg
Synchronous speed 750/1000 rpm – 8-6-pole version															
K21R	132 S	K20R	112 M	1.3	17.2	720	65.0	0.70	4.1	4.2	1.5		2.3	0.018	46
	8-6		8-6	1.8	17.7	970	75.0	0.73	4.7	6.0	1.7		2.5		
K21R	132 M	K20R	112 MX	2.3	30.5	720	69.0	0.71	6.8	4.0	1.5		2.3	0.023	53
	8-6		8-6	3.0	29.6	970	74.0	0.74	7.9	5.2	1.6		2.6		
K21R	132 MX	K20R	132 S	2.8	37.1	720	73.0	0.74	7.5	4.4	1.8		2.5	0.043	70
	8-6		8-6	4.0	39.6	965	76.0	0.81	9.4	4.6	1.5		2.4		
K21R	160 M	K20R	132 M	4.0	53.4	715	73.5	0.76	10.5	4.3	1.7		2.4	0.053	86
	8-6		8-6	5.5	53.9	975	78.5	0.81	12.5	4.8	1.5		2.4		
K21R	160 L	K20R	160 S	6.0	79.6	720	80.0	0.76	14	5.0	1.9		2.5	0.113	114
	8-6		8-6	8.0	78.4	975	82.0	0.77	18.5	6.0	1.8		2.4		
K21R	180 L	K20R	160 M	8.0	106	720	81.0	0.81	17.5	5.2	2.0		2.5	0.145	138
	8-6		8-6	10.5	103	970	83.0	0.85	21.5	5.1	1.7		2.2		
K21R	200 L	K20R	180 S	10.5	139	720	83.0	0.83	22	5.0	1.8		2.2	0.228	175
	8-6		8-6	13.0	127	975	85.0	0.83	26.5	5.9	1.7		2.3		
K21R	200 LX	K20R	180 M	11.0	144	730	84.0	0.74	25.5	6.4	2.2		2.5	0.268	200
	8-6		8-6	15.0	146	980	85.0	0.79	32	6.4	2.0		2.5		
K21R	225 M	K20R	200 M	14.0	182	735	86.0	0.81	29	6.5	2.0		2.6	0.443	265
	8-6		8-6	18.5	179	985	86.0	0.83	37.5	7.0	3.0		3.0		
K21R	250 M	K20R	225 M	19.0	247	735	data on request							0.825	360
	8-6		8-6	25.0	242	985									
K21R	280 S	K20R	250 S	24.0	310	740	89.0	0.83	47	6.0	2.0		2.5	1.28	465
	8-6		8-6	30.0	291	985	89.0	0.87	56	6.8	2.0		2.5		
K21R	280 M	K20R	250 M	30.0	387	740	89.0	0.81	60	6.6	2.2		2.3	1.48	520
	8-6		8-6	38.0	368	985	89.0	0.82	75	7.0	2.0		2.3		
K21R	315 S	K20R	280 S	36.0	463	742	91.0	0.79	72.5	7.0	2.4		2.6	2.63	690
	8-6		8-6	45.0	435	988	92.0	0.86	82	5.9	1.3		2.2		
K21R	315 M	K20R	280 M	60.0	774	740	90.0	0.77	125	7.3	2.1		2.3	3.33	800
	8-6		8-6	80.0	773	988	92.0	0.85	148	6.5	1.7		2.4		
K21R	315 MX	K20R	315 S	65.0	839	740	90.0	0.81	129	6.4	2.0		2.1	3.60	880
	8-6		8-6	87.0	839	990	90.0	0.85	164	7.0	1.8		2.4		
K21R	315 MY	K20R	315 M	80.0	1032	740	92.0	0.80	157	7.2	2.5		2.5	6.00	1050
	8-6		8-6	110	1061	990	92.0	0.86	201	6.8	1.5		1.9		
K21R	315 L	K20R	315 L	80.0	1032	740	data on request							6.76	1250
	8-6		8-6	120	1158	990									

Δ-circuit on request

3

Three-phase motors with squirrel-cage rotor

pole-changing, for quadratically increasing load torque
fan drives with two separate windings, Y/Y-circuit
with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design point 400 V, 50 Hz

Type				P	M_B	n	η	cos φ	I 400 V	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
				kW	Nm	rpm	%	-	A	-	-	-	-	kgm²	kg
Synchronous speed 750/1000 rpm – 8-6-pole version															
K21R	71 G	K20R	63 G	0.05	0.70	685	30.0	0.65	0.37	1.9	1.7	1.7	2.0	0.00060	8.3
	8-6L		8-6L	0.11	1.17	895	36.0	0.79	0.56	2.1	1.2	1.2	1.4		7.6[1]
K21R	80 K	K20R	71 K	0.09	1.20	715	34.0	0.64	0.60	2.3	1.7	1.7	2.4	0.00130	11
	8-6L		8-6L	0.18	1.79	960	48.0	0.60	0.90	3.1	2.0	1.8	2.6		10[1]
K21R	80 G	K20R	71 G	0.12	1.64	700	44.0	0.68	0.58	2.4	1.5	1.5	1.9	0.00175	12.5
	8-6L		8-6L	0.25	2.51	950	57.0	0.67	0.94	3.4	1.7	1.7	2.1		11.5[1]
K21R	90 S	K20R	80 K	0.24	3.23	710	47.0	0.70	1.05	2.4	1.1	1.0	1.5	0.00325	16
	8-6L		8-6L	0.48	4.83	950	63.5	0.68	1.6	3.3	1.3	1.3	1.8		15[1]
K21R	90 L	K20R	80 G	0.33	4.47	705	48.0	0.66	1.5	2.6	1.3	1.3	1.8	0.00425	19
	8-6L		8-6L	0.66	6.63	950	65.0	0.66	2.25	3.7	1.6	1.6	2.0		18[1]
K21R	100 L	K20R	90 L	0.45	6.05	710	51.5	0.68	1.85	2.8	1.5	1.5	1.7	0.00625	24
	8-6L		8-6L	0.90	9.14	940	66.0	0.77	2.55	3.5	1.3	1.2	1.6		24[1]
K21R	100 LX	K20R	100 S	0.60	8.24	695	53.5	0.75	2.15	2.8	1.5	1.5	1.7	0.00900	28
	8-6L		8-6L	1.20	12.6	910	70.5	0.83	2.95	3.5	1.3	1.2	1.6		28[1]
K21R	112 M	K20R	100 L	0.80	10.7	715	59.5	0.67	2.9	3.6	1.5	1.5	2.3	0.01225	33.5
	8-6L		8-6L	1.60	16.0	955	76.0	0.76	4	4.7	1.5	1.5	2.3		32.5[1]
K21R	112 MX	K20R	100 LX	1.00	13.6	700	63.0	0.75	3.05	4.0	1.2	1.1	1.6	0.01390	37
	8-6L		8-6L	2.20	22.4	940	75.0	0.78	5.45	4.4	1.4	1.3	1.9		36[1]
K21R	132 S	K20R	112 M	1.0	13.4	710	60.0	0.79	3.05	3.6	1.1	1.0	1.9	0.018	46
	8-6L		8-6L	2.2	22.0	955	71.5	0.81	5.45	5.0	1.4	1.3	2.5		
K21R	132 M	K20R	112 MX	1.7	22.7	715	61.5	0.74	5.4	4.5	1.9	1.9	2.9	0.023	53
	8-6L		8-6L	3.5	35.2	950	73.0	0.81	8.5	4.5	1.3	1.2	2.4		
K21R	132 MX	K20R	132 S	2.2	29.0	725	70.0	0.74	6.1	4.4	1.6	1.5	2.4	0.043	70
	8-6L		8-6L	4.5	44.3	970	76.5	0.78	11	5.5	1.8	1.6	2.7		
K21R	160 M	K20R	132 M	2.5	32.7	730	72.0	0.75	6.7	4.5	1.7	1.7	2.4	0.053	86
	8-6L		8-6L	5.5	54.4	965	81.0	0.83	12	5.1	1.6	1.4	2.3		
K21R	160 L	K20R	160 S	4.5	58.9	730	78.0	0.80	10.5	5.0	1.9	1.8	2.5	0.113	114
	8-6L		8-6L	9.0	88.6	970	82.0	0.84	19	5.0	1.5	1.3	2.2		
K21R	180 L	K20R	160 M	6.0	78.5	730	77.0	0.83	13.5	4.6	1.7	1.5	2.1	0.145	138
	8-6L		8-6L	12.0	118	970	83.5	0.86	24	5.5	1.6	1.3	2.3		
K21R	200 L	K20R	180 S	7.0	91.6	730	78.0	0.85	15	4.3	1.3	1.3	1.8	0.228	175
	8-6L		8-6L	17.0	168	965	86.5	0.87	32.5	4.8	1.3	1.4	2.0		
K21R	200 LX	K20R	180 M	10.0	131	730	80.0	0.82	22	5.7	2.0	1.2	2.6	0.268	200
	8-6L		8-6L	21.0	208	965	87.0	0.87	40	5.2	1.7	1.7	2.2		
K21R	225 M	K20R	200 M	12.0	156	735	82.0	0.85	25	6.3	2.0	1.7	2.7	0.443	265
	8-6L		8-6L	26.0	253	980	87.0	0.85	50.5	6.9	2.2	1.7	3.0		
K21R	250 M	K20R	225 M	15.0	198	725	85.0	0.85	30	4.4	1.6	1.4	1.7	0.825	360
	8-6L		8-6L	35.0	343	975	89.0	0.87	65	5.4	1.6	1.3	2.0		
K21R	280 S	K20R	250 S	20.0	258	740	86.0	0.82	41	6.5	2.1	1.6	2.6	1.28	465
	8-6L		8-6L	45.0	436	985	90.0	0.83	87	6.5	2.1	1.4	2.6		
K21R	280 M	K20R	250 M	25.0	323	740	86.0	0.82	51	5.2	1.8	1.6	2.1	1.48	520
	8-6L		8-6L	55.0	533	985	90.5	0.86	102	5.7	1.8	1.4	2.1		
K21R	315 S	K20R	280 S	30.0	384	745	89.5	0.79	61	6.3	2.0	1.4	2.3	2.63	690
	8-6L		8-6L	65.0	627	990	93.0	0.85	119	7.1	1.8	1.3	2.6		
K21R	315 M	K20R	280 M	35.0	451	740	88.0	0.84	68.5	4.2	1.7	1.4	2.0	3.33	800
	8-6L		8-6L	75.0	724	990	92.0	0.86	137	7.4	1.9	1.6	2.6		
K21R	315 MX	K20R	315 S	40.0	516	740	91.0	0.79	80.5	4.0	1.4	1.2	1.7	3.60	880
	8-6L		8-6L	85.0	820	990	92.0	0.82	163	6.5	1.5	1.4	2.2		
K21R	315 MY	K20R	315 M	55.0	705	745	90.0	0.81	109	4.5	1.5	1.2	1.9	6.00	1050
	8-6L		8-6L	115	1109	990	94.0	0.82	215	7.0	1.6	1.4	2.3		

[1] weight for K20R
Δ-circuit on request

Three-phase motors with squirrel-cage rotor

pole-changing, for quadratically increasing load torque
fan drives with two separate windings, Y/Y-circuit
with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design point 400 V, 50 Hz

Type				P	M_B	n	η	cos φ	I 400 V	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
				kW	Nm	rpm	%	-	A	-	-	-	-	kgm²	kg
Synchronous speed 500/3000 rpm – 12-2-pole version															
K21R	132 S	K20R	112 M	0.25	4.92	485	34.0	0.54	2	2.2	1.7		2.5	0.015	50
	12-2L		12-2L	4.5	15.0	2870	82.0	0.93	8.5	6.6	2.2		2.4		
K21R	132 M	K20R	132 S	0.35	6.82	490	42.0	0.43	2.8	2.3	1.6		2.5	0.028	69
	12-2L		12-2L	7.0	23.1	2890	84.0	0.93	13	5.8	1.5		2.0		
K21R	160 M	K20R	132 M	0.45	8.77	490	44.0	0.44	3.4	2.4	1.5		2.5	0.035	86
	12-2L		12-2L	9.0	29.7	2895	86.0	0.93	16	6.2	1.7		2.2		
K21R	160 L	K20R	160 S	0.55	10.6	495	46.0	0.44	3.9	2.9	2.0		2.5	0.078	120
	12-2L		12-2L	12.0	39.3	2915	87.0	0.93	21.5	6.8	2.0		2.3		
K21R	180 M	K20R	160 M	0.65	12.7	490	53.0	0.47	3.8	3.0	1.7		2.5	0.090	136
	12-2L		12-2L	13.0	42.5	2920	87.0	0.93	23	7.0	2.0		2.3		
K21R	180 L	K20R	180 S	0.8	15.4	495	46.0	0.47	5.3	2.7	1.4		2.5	0.138	170
	12-2L		12-2L	17.0	55.4	2930	89.0	0.93	29.5	6.9	1.7		2.3		
K21R	200 L	K20R	180 M	1.1	21.2	495	52.0	0.44	6.9	2.9	1.7		2.5	0.168	200
	12-2L		12-2L	22.0	71.5	2940	90.0	0.93	38	8.0	2.0		2.5		
K21R	225 S	K20R	200 M	1.5	28.9	495	59.0	0.37	9.9	3.0	1.6		2.5	0.275	270
	12-2L		12-2L	28.0	91.1	2935	90.0	0.93	48.5	6.3	1.5		2.0		
K21R	225 M	K20R	200 L	1.7	32.8	495	57.0	0.38	11.5	3.0	1.6		2.5	0.313	300
	12-2L		12-2L	34.0	110	2940	90.0	0.93	58.5	6.8	1.6		2.1		
K21R	250 M	K20R	225 M	2.0	38.6	495	62.0	0.42	11	3.8	2.0		2.5	0.525	375
	12-2L		12-2L	39.0	127	2940	90.0	0.92	68	5.8	1.4		2.0		
K21R	280 S	K20R	250 S	2.5	48.2	495	67.0	0.40	13.5	4.0	2.1		2.5	0.950	520
	12-2L		12-2L	50.0	161	2965	90.0	0.92	87	8.3	1.7		2.5		
K21R	280 M	K20R	250 M	3.5	67.5	495	71.0	0.45	16	3.8	1.6		2.2	1.11	580
	12-2L		12-2L	68.0	219	2960	90.0	0.92	119	7.7	1.6		2.2		
K21R	315 S	K20R	280 S	4.0	77.1	495	72.0	0.45	18	4.8	2.3		2.5	1.96	740
	12-2L		12-2L	80.0	258	2965	91.0	0.93	136	8.0	1.5		2.5		
K21R	315 M	K20R	280 M	4.5	86.8	495	71.0	0.49	18.5	4.6	2.0		2.4	2.27	840
	12-2L		12-2L	90.0	290	2960	92.0	0.92	153	6.8	1.3		2.2		
K21R	315 MX	K20R	315 S	5.5	106	495	71.0	0.50	22.5	4.5	2.0		2.3	2.73	1000
	12-2L		12-2L	105	338	2970	92.0	0.93	177	9.5	2.0		2.5		
K21R	315 MY	K20R	315 M	6.5	125	496	74.0	0.50	25.5	4.7	2.1		2.3	4.82	1200
	12-2L		12-2L	125	402	2970	92.0	0.93	211	7.7	1.7		2.5		

Δ-circuit on request

Three-phase motors with squirrel-cage rotor

pole-changing, for constant load torque
with one Δ/YY-Dahlander winding
with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data — Design point 400 V, 50 Hz

Type				P	M_B	n	η	cos φ	I 400 V	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
				kW	Nm	rpm	%	-	A	-	-	-	-	kgm²	kg
Synchronous speed 500/1000 rpm – 12-6-pole version															
K21R	90 L	K20R	80 G	0.20	4.11	465	40.0	0.48	1.50	2.1	2.1	2.1	2.3	0.00425	19
	12-6		12-6	0.40	3.98	960	73.0	0.67	1.18	4.5	1.8	1.8	2.3		18[1)]
K21R	100 L	K20R	90 L	0.30	6.37	450	41.0	0.53	2.00	1.9	1.3	1.2	1.6	0.00625	24
	12-6		12-6	0.60	6.00	955	71.0	0.73	1.67	3.8	1.6	1.5	1.8		24[1)]
K21R	100 LX	K20R	100 S	0.50	10.4	460	49.5	0.57	2.60	2.6	1.7	1.7	2.3	0.00900	28
	12-6		12-6	1.00	10.1	950	71.5	0.80	2.55	4.5	1.5	1.5	2.1		28[1)]
K21R	112 M	K20R	100 L	0.60	12.2	470	49.0	0.49	3.60	2.8	2.5	2.5	2.9	0.01225	33.5
	12-6		12-6	1.20	11.9	965	76.0	0.72	3.15	5.5	2.0	1.9	2.6		32.5[1)]
K21R	112 MX	K20R	100 LX	0.80	16.8	455	52.0	0.56	3.95	2.5	1.8	1.8	2.1	0.01390	37
	12-6		12-6	1.50	14.9	960	76.0	0.77	3.70	4.9	1.8	1.6	2.3		36[1)]
K21R	132 S	K20R	112 M	0.7	14.1	475	55.0	0.55	3.3	2.9	1.7	1.6	2.5	0.018	46
	12-6		12-6	1.0	9.85	970	79.0	0.78	2.3	6.0	1.8	1.7	2.9		
K21R	132 M	K20R	112 MX	0.9	18.1	475	56.0	0.52	4.5	3.0	1.9	1.9	2.9	0.023	53
	12-6		12-6	1.4	13.8	970	81.0	0.79	3.2	6.2	1.9	1.9	3.0		
K21R	132 MX	K20R	132 S	1.3	25.9	480	62.0	0.53	5.7	2.4	1.6	1.5	2.2	0.043	70
	12-6		12-6	2.0	19.6	975	82.0	0.82	4.3	5.5	1.7	1.4	2.7		
K21R	160 M	K20R	132 M	1.9	38.2	475	64.0	0.57	7.5	3.0	1.6	1.5	1.9	0.053	86
	12-6		12-6	3.0	29.7	965	83.0	0.84	6.2	5.4	1.6	1.4	2.1		
K21R	160 L	K20R	160 S	3.2	63.7	480	73.0	0.60	10.5	3.3	1.7	1.5	2.0	0.113	114
	12-6		12-6	5.0	49.0	975	84.0	0.88	9.8	5.5	1.7	1.4	2.3		
K21R	180 L	K20R	160 M	4.5	89.5	480	75.0	0.60	14.5	3.1	1.9	1.7	1.9	0.145	138
	12-6		12-6	7.5	73.8	970	85.0	0.88	14.5	5.8	1.8	1.5	2.1		
K21R	200 L	K20R	180 S	5.5	108	485	82.0	0.60	16	3.9	1.9	1.3	2.2	0.228	175
	12-6		12-6	8.8	85.8	980	88.0	0.87	16.5	6.3	1.8	1.4	2.4		
K21R	200 LX	K20R	180 M	6.5	128	485	81.0	0.60	19.5	4.4	2.0	1.8	2.4	0.268	200
	12-6		12-6	10.5	102	980	87.0	0.87	20	6.8	2.0	1.5	2.7		
K21R	225 M	K20R	200 M	9.0	177	485	83.0	0.62	25	4.4	2.2	2.0	2.7	0.443	265
	12-6		12-6	14.0	136	980	88.0	0.87	26.5	7.1	2.4	1.6	3.0		
K21R	250 M	K20R	225 M	11.0	217	485	86.0	0.65	28.5	4.1	1.7	1.4	1.8	0.825	360
	12-6		12-6	17.5	171	980	89.0	0.88	32.5	6.3	1.8	1.3	2.3		
K21R	280 S	K20R	250 S	13.5	263	490	87.0	0.62	36	4.3	2.1	1.6	1.9	1.28	465
	12-6		12-6	21.0	203	987	90.0	0.87	38.5	7.0	2.0	1.4	2.3		
K21R	280 M	K20R	250 M	16.5	320	492	87.0	0.60	45.5	4.9	2.3	1.9	2.4	1.48	520
	12-6		12-6	26.0	251	990	90.5	0.87	47.5	7.8	2.4	1.7	2.7		
K21R	315 S	K20R	280 S	22.0	425	494	88.0	0.60	60	4.6	1.6	1.4	2.1	2.63	690
	12-6		12-6	35.0	338	990	92.0	0.85	64.5	6.7	1.6	1.3	2.3		
K21R	315 M	K20R	280 M	32.0	620	493	89.5	0.60	86	4.2	1.7	1.4	2.0	3.33	800
	12-6		12-6	48.0	463	991	93.5	0.86	86	7.4	1.9	1.6	2.6		
K21R	315 MX	K20R	315 S	48.0	936	490	89.5	0.66	117	4.0	1.4	1.2	1.7	3.60	880
	12-6		12-6	70.0	677	987	92.6	0.87	125	6.5	1.5	1.4	2.2		
K21R	315 MY	K20R	315 M	55.0	1072	490	90.0	0.68	130	4.5	1.5	1.2	1.9	6.00	1050
	12-6		12-6	85.0	824	985	92.6	0.88	151	7.0	1.6	1.4	2.3		
K21R	315 L	K20R	315 L	65.0	1267	490	data on request							6.76	1250
	12-6		12-6	95.0	921	985									

1) weight for K20R

Three-phase motors with squirrel-cage rotor

pole-changing, with increased load for constant load torque
with one Δ/YY-Dahlander winding
with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data — Design point 400 V, 50 Hz

Type				P	M_B	n	η	cos φ	I 400 V	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
				kW	Nm	rpm	%	-	A	-	-	-	-	kgm²	kg
Synchronous speed 500/1000 rpm – 12-6-pole version															
K21R	132 S	K20R	112 M	0.9	18.2	473	56.0	0.66	3.5	2.8	1.5	1.4	1.8	0.018	46
	12-6		12-6	1.3	13.1	950	77.0	0.85	2.9	4.8	1.4	1.3	2.0		
K21R	132 M	K20R	112 MX	1.1	22.4	470	57.0	0.59	4.7	2.9	1.5	1.5	2.5	0.023	53
	12-6		12-6	1.7	17.0	955	79.0	0.84	3.7	5.1	1.5	1.5	2.3		
K21R	132 MX	K20R	132 S	1.6	32.2	475	61.0	0.54	7	2.3	1.4	1.3	1.9	0.043	70
	12-6		12-6	2.5	24.7	965	81.0	0.85	5.2	4.9	1.5	1.2	2.3		
K21R	160 M	K20R	132 M	2.3	46.7	470	59.0	0.57	9.9	2.9	1.5	1.4	1.7	0.053	86
	12-6		12-6	3.6	36.0	955	81.0	0.83	7.7	5.2	1.6	1.4	2.0		
K21R	160 L	K20R	160 S	3.7	74.2	476	71.0	0.60	12.5	3.1	1.6	1.4	1.8	0.113	114
	12-6		12-6	6.0	59.2	968	83.0	0.87	12	3.1	1.6	1.3	1.8		
K21R	180 L	K20R	160 M	5.5	110	476	74.0	0.63	17	5.6	1.6	1.4	1.5	0.145	138
	12-6		12-6	9.0	89.2	963	84.0	0.86	18	5.3	1.6	1.4	1.8		
K21R	200 L	K20R	180 S	7.5	150	478	80.0	0.64	21	3.5	1.6	1.1	1.7	0.228	175
	12-6		12-6	11.0	108	975	87.0	0.88	20.5	5.3	1.5	1.1	1.9		
K21R	200 LX	K20R	180 M	9.5	189	480	80.0	0.63	27	3.9	1.6	1.4	1.8	0.268	200
	12-6		12-6	15.0	147	975	87.0	0.89	28	5.9	1.7	1.1	2.1		
K21R	225 M	K20R	200 M	11.0	218	482	82.0	0.63	30.5	4.1	2.1	1.9	2.4	0.443	265
	12-6		12-6	18.0	177	973	88.0	0.87	34	6.0	2.1	1.4	2.4		
K21R	250 M	K20R	225 M	13.0	256	485	81.0	0.61	38	3.8	1.8	1.4	2.0	0.825	360
	12-6		12-6	22.0	215	978	88.0	0.88	41	6.5	1.9	1.4	2.3		
K21R	280 S	K20R	250 S	16.0	313	488	86.0	0.61	44	4.3	2.2	1.7	1.9	1.28	465
	12-6		12-6	28.0	273	981	89.0	0.87	52	6.6	1.9	1.3	2.0		
K21R	280 M	K20R	250 M	20.0	392	487	86.0	0.61	55	4.8	2.4	2.0	2.3	1.48	520
	12-6		12-6	35.0	339	987	90.0	0.88	64	7.1	2.3	1.6	2.3		
K21R	315 S	K20R	280 S	27.0	522	494	89.0	0.62	70.5	4.4	1.6	1.4	2.1	2.63	690
	12-6		12-6	50.0	485	985	92.0	0.88	89	5.7	1.4	1.1	2.0		
K21R	315 M	K20R	280 M	35.0	681	491	89.0	0.59	96	4.3	1.8	1.5	1.9	3.33	800
	12-6		12-6	60.0	582	985	92.0	0.86	109	7.3	1.8	1.5	2.4		
K21R	315 MX	K20R	315 S	52.0	1011	491	89.0	0.63	134	4.5	1.8	1.6	2.0	3.60	880
	12-6		12-6	80.0	776	985	92.0	0.87	144	7.4	1.8	1.7	2.5		
K21R	315 MY	K20R	315 M	58.0	1128	491	90.0	0.66	141	4.9	1.8	1.4	2.1	6.00	1050
	12-6		12-6	95.0	921	985	93.0	0.88	168	7.3	1.7	1.5	2.3		

Three-phase motors with squirrel-cage rotor

pole-changing, for quadratically increasing load torque
fan drives with one Y/YY-Dahlander winding
with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data — Design point 400 V, 50 Hz

Type				P	M_B	n	η	cos φ	I 400 V	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
				kW	Nm	rpm	%	-	A	-	-	-	-	kgm²	kg
Synchronous speed 500/1000 rpm – 12-6-pole version															
K21R	80 K	K20R	71 K	0.04	0.87	440	28.0	0.65	0.32	1.6	1.5		1.7	0.0013	11
	12-6L		12-6L	0.20	2.03	940	53.0	0.74	0.74	3.0	1.4		2.0		10[1]
K21R	80 G	K20R	71 G	0.075	1.69	425	36.0	0.69	0.44	1.9	1.2		1.4	0.00175	12.5
	12-6L		12-6L	0.30	3.06	935	60.0	0.72	1.00	3.5	1.5		2.0		11.5[1]
K21R	90 S	K20R	80 K	0.10	2.10	455	35.0	0.55	0.75	1.7	1.0		1.2	0.00325	16
	12-6L		12-6L	0.40	3.96	965	58.5	0.58	1.70	3.9	1.8		2.3		15[1]
K21R	90 L	K20R	80 G	0.12	2.49	460	40.0	0.49	0.88	1.8	1.2		1.6	0.00425	19
	12-6L		12-6L	0.55	5.44	965	66.0	0.60	2.00	4.1	2.0		2.6		18[1]
K21R	100 L	K20R	90 L	0.18	3.74	460	46.0	0.52	1.09	1.9	1.4		1.6	0.00625	24
	12-6L		12-6L	1.10	11.20	940	72.0	0.77	2.85	4.0	1.4		1.8		24[1]
K21R	100 LX	K20R	100 S	0.33	7.00	450	49.0	0.62	1.55	2.5	1.4		2.2	0.009	28
	12-6L		12-6L	1.30	13.0	955	65.0	0.69	4.20	4.6	1.4		2.0		28[1]
K21R	112 M	K20R	100 L	0.45	9.55	450	52.0	0.63	2.00	2.9	1.2		1.5	0.01225	33.5
	12-6L		12-6L	1.80	18.0	955	69.0	0.74	5.10	4.5	1.5		2.0		32.5[1]
K21R	112 MX	K20R	100 LX	0.40	8.21	465	57.0	0.49	2.07	2.4	1.3	1.2	1.9	0.0139	37
	12-6L		12-6L	2.50	25.3	945	74.0	0.77	6.4	4.6	1.6	1.3	2.1		36[1]
K21R	132 S	K20R	112 M	0.35	7.11	470	61.0	0.61	1.4	3.0	1.7		2.2	0.018	46
	12-6L		12-6L	1.7	17.1	950	77.0	0.85	3.7	4.4	1.4		2.0		
K21R	132 M	K20R	112 MX	0.5	10.2	470	58.0	0.60	2.1	2.7	1.4		1.9	0.023	53
	12-6L		12-6L	2.3	23.1	950	78.0	0.83	5.1	5.0	1.5		2.3		
K21R	132 MX	K20R	132 S	0.7	13.9	480	69.0	0.59	2.5	2.5	1.4		1.8	0.043	70
	12-6L		12-6L	3.3	32.7	965	82.0	0.85	6.8	4.7	1.6		2.2		
K21R	160 M	K20R	132 M	0.9	17.9	480	71.0	0.58	3.2	2.5	1.4		1.5	0.053	86
	12-6L		12-6L	4.4	43.7	960	82.0	0.85	9.1	5.0	1.6		2.0		
K21R	160 L	K20R	160 S	1.1	21.7	485	75.0	0.60	3.5	3.0	1.9		1.8	0.113	114
	12-6L		12-6L	5.5	53.6	980	84.0	0.83	11.5	6.5	2.5		2.7		
K21R	180 L	K20R	160 M	2.0	39.4	485	77.0	0.60	6.2	3.1	1.9		1.8	0.145	138
	12-6L		12-6L	9.0	88.2	975	84.0	0.84	18.5	6.2	2.3		2.6		
K21R	200 L	K20R	180 S	2.3	45.3	485	82.0	0.60	6.7	4.0	1.9		2.5	0.228	175
	12-6L		12-6L	10.0	97.5	980	88.5	0.85	19	6.5	1.6		2.5		
K21R	200 LX	K20R	180 M	3.0	59.1	485	83.0	0.62	8.4	4.4	1.7		2.2	0.268	200
	12-6L		12-6L	13.0	127	980	88.0	0.85	25	6.7	2.0		2.6		
K21R	225 M	K20R	200 M	3.9	76.3	488	83.0	0.67	10	3.6	1.3		1.8	0.443	265
	12-6L		12-6L	17.0	166	980	87.0	0.88	32	5.0	1.4		2.1		
K21R	250 M	K20R	225 M	5.0	97.4	490	83.0	0.58	15	4.8	2.1		2.3	0.825	360
	12-6L		12-6L	22.0	213	985	89.5	0.83	42.5	7.9	2.2		2.5		
K21R	280 S	K20R	250 S	6.0	117	490	85.0	0.59	17.5	4.0	1.8		2.1	1.28	465
	12-6L		12-6L	26.0	251	990	90.0	0.84	49.5	6.2	1.6		2.3		
K21R	280 M	K20R	250 M	7.5	146	490	88.0	0.70	17.5	3.7	1.6		1.8	1.48	520
	12-6L		12-6L	30.0	289	990	90.5	0.88	54.5	6.0	1.5		2.3		
K21R	315 S	K20R	280 S	12.0	234	490	87.0	0.63	31.5	4.2	1.5		1.9	2.63	690
	12-6L		12-6L	52.0	502	990	91.0	0.85	97	6.8	1.9		2.1		
K21R	315 M	K20R	280 M	15.0	292	490	90.0	0.63	38	5.2	2.3		1.8	3.33	800
	12-6L		12-6L	60.0	579	990	93.0	0.87	107	7.7	2.2		2.4		
K21R	315 MX	K20R	315 S	18.0	347	495	90.0	0.60	48	5.2	2.3		1.9	3.60	880
	12-6L		12-6L	80.0	772	990	93.0	0.88	141	7.2	2.0		2.2		
K21R	315 MY	K20R	315 M	20.0	390	490	90.0	0.63	51	5.0	2.0		1.7	6.00	1050
	12-6L		12-6L	90.0	868	990	93.0	0.86	162	6.5	1.7		1.8		

[1] weight for K20R

Three-phase motors with squirrel-cage rotor

pole-changing, for constant load torque
with two separate windings, Y/Δ/YY-circuit
with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55, 50 Hz

Motor selection data — Design point 400 V, 50 Hz

Type				P	M_B	n	η	cos φ	I 400 V	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
				kW	Nm	rpm	%	-	A	-	-	-	-	kgm²	kg
Synchronous speed 750/1500/3000 rpm – 8-4-2-pole version															
K21R	80 G	K20R	71 G	0.10	1.36	700	37.0	0.59	0.66	2.3	1.5	1.5	2.3	0.00107	11.7
	8-4-2		8-4-2	0.18	1.17	1465	55.5	0.60	0.78	3.9	1.7	1.7	3.00		11[1]
				0.30	0.98	2925	64.0	0.80	0.85	5.0	1.2	1.0	2.0		
K21RW	100 L	K20RW	90 L	0.37	5.35	660	50.0	0.67	1.60	2.4	1.8	1.8	1.8	0.00400	23.5
	8-4-2		8-4-2	0.75	5.03	1425	70.5	0.73	2.10	4.8	2.2	2.0	2.45		22.5[1]
				1.50	5.22	2745	66.5	0.95	3.45	4.1	1.4	1.1	1.4		
K21RW	100 LX	K20RW	100 S	0.55	7.72	680	53.0	0.61	2.45	2.8	2.2	2.2	2.3	0.00725	30
	8-4-2		8-4-2	1.50	10.2	1405	72.0	0.81	3.70	4.7	2.0	1.8	2.1		30[1]
				1.80	6.03	2850	71.0	0.89	4.15	5.6	2.1	1.7	2.1		
K21RW	112 M	K20RW	100 L	0.70	9.69	690	59.0	0.56	3.05	3.0	2.7	2.7	2.7	0.009	37
	8-4-2		8-4-2	2.00	13.5	1410	75.0	0.80	4.80	5.0	2.0	1.7	2.1		36[1]
				2.40	7.96	2880	75.0	0.87	5.3	6.1	2.0	1.4	2.0		
K21R	132 S	K20R	112 M	1.1	14.6	720	66.0	0.74	3.3	3.6	1.4	1.3	2.3	0.018	46
	8-4-2		8-4-2	1.5	9.81	1460	76.0	0.89	3.2	5.6	1.3	1.0	2.3		
				1.8	5.93	2900	69.0	0.92	4.1	5.3	1.5	1.0	2.3		
K21R	132 M	K20R	112 MX	1.6	21.2	720	65.0	0.75	4.7	4.1	1.4	1.3	2.4	0.023	53
	8-4-2		8-4-2	2.2	14.5	1450	77.0	0.91	4.5	4.8	1.1	1.0	2.2		
				2.8	9.22	2900	71.0	0.93	6.1	4.9	1.1	0.8	2.1		
K21R	132 MX	K20R	132 S	2.2	29.0	725	72.0	0.75	5.9	4.1	1.6	1.4	2.2	0.043	70
	8-4-2		8-4-2	2.8	18.2	1470	79.0	0.89	5.7	6.2	1.6	1.1	2.5		
				3.5	11.4	2920	69.0	0.92	8.0	5.9	1.5	0.9	2.2		
K21R	160 M	K20R	132 M	2.8	36.9	725	73.0	0.75	7.4	3.4	1.6	1.5	2.0	0.053	86
	8-4-2		8-4-2	3.8	24.7	1470	81.0	0.90	7.5	5.1	1.4	1.1	2.3		
				4.5	14.7	2930	72.0	0.91	9.9	5.6	1.3	0.9	2.5		
K21R	160 L	K20R	160 S	3.7	48.4	730	78.0	0.72	9.5	3.8	1.5	1.3	1.8	0.078	120
	8-4-2		8-4-2	5.2	33.7	1475	84.0	0.87	10.5	6.4	1.5	1.2	2.5		
				6.5	21.0	2950	80.0	0.92	12.5	7.1	1.7	0.7	2.2		
K21R	180 M	K20R	160 M	4.4	57.6	730	80.0	0.72	11.0	4.0	1.6	1.4	1.8	0.090	136
	8-4-2		8-4-2	6.5	42.1	1475	85.0	0.88	12.5	6.1	1.5	1.2	2.3		
				7.5	24.3	2950	80.0	0.92	14.5	7.2	1.7	0.8	2.5		
K21R	180 L	K20R	180 S	5.3	69.3	730	83.0	0.71	13.0	3.7	1.2	1.1	1.8	0.138	170
	8-4-2		8-4-2	7.7	49.7	1480	87.0	0.83	15.5	7.5	1.7	1.4	2.9		
				9.2	29.7	2960	83.0	0.92	17.5	8.5	2.0	0.9	2.6		
K21R	200 L	K20R	180 M	7.0	91.6	730	82.0	0.69	18	4.0	1.2	1.1	1.9	0.168	200
	8-4-2		8-4-2	10.5	67.8	1480	89.0	0.89	19	7.0	1.4	1.1	2.5		
				12.5	40.6	2940	85.0	0.93	23	8.6	1.6	0.6	2.7		
K21R	225 S	K20R	200 M	8.8	114	735	86.0	0.66	22.5	4.6	1.4	1.3	2.0	0.275	270
	8-4-2		8-4-2	12.5	80.7	1480	89.0	0.86	23.5	8.0	1.6	1.3	2.9		
				15.5	49.9	2970	83.0	0.93	29.0	9.0	1.7	0.7	3.0		
K21R	225 M	K20R	200 L	11.0	143	735	86.0	0.67	27.5	4.6	1.4	1.4	2.0	0.313	300
	8-4-2		8-4-2	15.5	100	1480	90.0	0.86	29.0	7.7	1.5	1.2	2.8		
				19.0	61.1	2970	83.0	0.93	35.5	8.8	1.8	0.7	2.7		
K21R	250 M	K20R	225 M	13.0	168	740	88.0	0.63	34.0	5.0	1.7	1.3	1.8	0.525	375
	8-4-2		8-4-2	19.0	122	1485	90.0	0.84	36.5	7.3	1.6	1.3	2.3		
				23.0	73.9	2970	82.0	0.92	44.0	8.3	1.6	0.5	2.3		
K21R	280 S	K20R	250 S	18.0	233	740	89.5	0.60	48.5	5.0	1.7	1.4	1.8	0.95	520
	8-4-2		8-4-2	25.0	161	1487	90.5	0.82	48.5	6.9	1.2	1.1	2.3		
				31.0	99.7	2970	84.0	0.92	58.0	8.3	1.1	0.9	2.6		
K21R	280 M	K20R	250 M	22.0	284	740	89.0	0.60	59.5	4.7	1.5	1.2	1.6	1.1	580
	8-4-2		8-4-2	30.0	193	1487	90.5	0.82	58.5	6.4	1.3	1.1	2.1		
				38.0	122	2970	84.0	0.91	72.0	7.7	1.4	0.8	2.4		
K21R	315 S	K20R	280 S [2]	30.0	385	745	88.0	0.55	89.5	5.6	1.5		2.3	1.96	740
	8-4-2		8-4-2	44.0	283	1485	89.0	0.89	80.0	8.5	1.4		2.6		
				54.0	173	2975	89.5	0.92	94.5	9.2	1.2		2.9		
K21R	315 M	K20R	280 M [2]	35.0	449	745	88.0	0.56	103	5.6	1.5		2.3	2.27	840
	8-4-2		8-4-2	50.0	320	1490	89.5	0.89	90.5	8.5	1.4		2.6		
				62.0	199	2975	90.0	0.93	107	9.3	1.2		2.9		
K21R	315 MX	K20R	315 S [2]	40.0	513	745	88.5	0.59	111	5.4	1.3		2.2	2.73	1000
	8-4-2		8-4-2	60.0	386	1485	90.0	0.90	107	8.0	1.5		2.5		
				75.0	241	2975	90.5	0.93	129	9.0	1.2		2.9		
K21R	315 MY	K20R	315 M [2]	48.0	615	745	90.0	0.63	122	5.9	1.5		2.3	4.82	1200
	8-4-2		8-4-2	70.0	449	1490	91.0	0.91	122	8.0	1.5		2.5		
				84.0	269	2985	91.5	0.93	142	9.1	1.2		2.9		
K21R	315 L	K20R	315 L [2]	55.0	705	745	91.0	0.65	134	5.8	1.5		2.1	5.93	1450
	8-4-2		8-4-2	80.0	513	1490	91.5	0.91	139	8.3	1.6		2.5		
				100.0	320	2985	92.0	0.94	167	9.5	1.2		3.0		

[1] weight for K20R
[2] provisional operational data

Three-phase motors with squirrel-cage rotor

pole-changing, for quadratically increasing load torque
fan drives with two separate windings, Y/Y/YY-circuit
with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design point 400 V, 50 Hz

Type				P	M_B	n	η	cos φ	I 400 V	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
				kW	Nm	rpm	%	-	A	-	-	-	-	kgm²	kg
Synchronous speed 750/1500/3000 rpm – 8-4-2-pole version															
K21RW	80 K	K20RW	71 K	0.04	0.55	695	24.0	0.63	0.39	1.8	2.0	2.0	2.5	0.00087	10.6
	8-4-2L		8-4-2L	0.12	0.85	1355	63.0	0.81	0.34	3.2	1.5	1.4	1.6		9.9[1)]
				0.4	1.38	2775	62.0	0.86	1.08	4.1	1.2	1.1	1.9		
K21R	80 G	K20R	71 G	0.05	0.67	715	24.0	0.68	0.44	2.0	1.25	1.2	2.5	0.00107	11.7
	8-4-2L		8-4-2L	0.15	0.99	1440	70.0	0.75	0.41	4.3	1.6	1.5	2.2		11[1)]
				0.5	1.64	2910	68.0	0.79	1.35	5.7	2.5	2.3	3.6		
K21R	90 S	K20R	80 K	0.06	0.79	725	21.0	0.77	0.54	1.9	1.20	1.1	2.2	0.00207	15.5
	8-4-2L		8-4-2L	0.20	1.32	1445	73.0	0.80	0.5	5.1	1.7	1.6	2.4		14.5[1)]
				0.9	2.99	2870	72.0	0.91	2	5.3	1.3	1.2	2.0		
K21R	90 L	K20R	80 G	0.11	1.48	710	28.0	0.77	0.74	2.1	1.20	1.1	2.0	0.00260	18
	8-4-2L		8-4-2L	0.30	1.99	1440	75.0	0.82	0.7	5.2	1.7	1.7	2.4		17[1)]
				1.2	3.98	2880	75.0	0.91	2.55	5.9	1.6	1.3	2.2		
K21R	100 L	K20R	90 L	0.15	1.99	720	30.0	0.74	0.98	2.1	1.20	1.1	1.7	0.00400	23.5
	8-4-2L		8-4-2L	0.37	2.43	1455	76.0	0.78	0.9	5.6	1.7	1.6	2.3		22.5[1)]
				1.7	5.64	2880	73.0	0.91	3.7	6.0	1.7	1.3	1.8		
K21R	100 LX	K20R	100 S	0.18	2.37	725	32.0	0.72	1.15	2.1	1.10	1.1	1.7	0.00725	30
	8-4-2L		8-4-2L	0.45	2.93	1465	80.0	0.75	1.08	5.4	2.2	2.0	2.8		30[1)]
				2.2	7.24	2900	78.0	0.90	4.5	6.9	1.7	1.2	2.0		
K21R	112 M	K20R	100 L	0.22	2.90	725	32.0	0.71	1.4	2.3	1.10	1.0	1.6	0.009	37
	8-4-2L		8-4-2L	0.55	3.59	1465	80.0	0.75	1.32	7.0	2.2	2.0	3.1		36[1)]
				3.0	9.88	2900	80.0	0.92	5.9	6.7	1.7	1.2	2.0		
K21R	132 S	K20R	112 M	0.23	3.02	728	59.0	0.69	0.8	3.5	1.4		2.5	0.018	46
	8-4-2L		8-4-2L	0.7	4.56	1465	77.0	0.88	1.5	6.3	1.4		2.7		
				2.7	8.87	2908	64.0	0.89	6.8	4.5	1.3		2.2		
K21R	132 M	K20R	112 MX	0.35	4.60	727	60.0	0.69	1.2	4.2	1.3		2.5	0.023	53
	8-4-2L		8-4-2L	1.0	6.57	1455	78.0	0.89	2.1	6.4	1.5		3.0		
				4.0	13.2	2900	67.0	0.90	9.6	4.9	1.4		2.4		
K21R	132 MX	K20R	132 S	0.45	5.85	735	70.0	0.71	1.3	5.0	1.8		2.7	0.043	70
	8-4-2L		8-4-2L	1.3	8.44	1470	80.0	0.89	2.6	7.0	1.5		2.8		
				5.2	17.1	2905	72.0	0.88	12.0	5.0	1.3		2.1		
K21R	160 M	K20R	132 M	0.6	7.85	730	70.0	0.77	1.6	4.0	1.5		2.2	0.053	86
	8-4-2L		8-4-2L	1.8	11.7	1475	83.0	0.87	3.6	7.7	2.1		3.4		
				7.0	22.9	2925	71.0	0.83	17.0	6.0	1.9		2.8		
K21R	160 L	K20R	160 S	0.9	11.8	730	76.0	0.74	2.3	4.0	1.5		2.0	0.078	120
	8-4-2L		8-4-2L	2.9	18.8	1475	84.0	0.88	5.7	6.4	1.8		2.5		
				11.0	35.7	2945	80.0	0.91	22.0	6.5	1.8		2.5		

1) weight for K20R

Three-phase motors with squirrel-cage rotor

pole-changing, for quadratically increasing load torque
fan drives with two separate windings, Y/Y/YY-circuit
with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design point 400 V, 50 Hz

Type				P	M_B	n	η	cos φ	I 400 V	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
				kW	Nm	rpm	%	-	A	-	-	-	-	kgm²	kg
Synchronous speed 750/1500/3000 rpm – 8-4-2-pole version															
K21R	180 M	K20R	160 M	1.2	15.7	731	77.2	0.73	3.1	4.3	1.7		2.1	0.09	136
	8-4-2L		8-4-2L	3.8	24.6	1476	85.5	0.89	7.2	6.6	1.9		2.6		
				15.0	48.7	2942	83.5	0.92	28.0	6.3	1.7		2.8		
K21R	180 L	K20R	180 S	1.4	18.1	737	79.7	0.66	3.8	4.5	1.4		2.3	0.138	170
	8-4-2L		8-4-2L	4.3	27.7	1482	86.4	0.85	8.5	7.4	1.5		3.1		
				16.0	51.6	2959	84.7	0.91	30.0	7.6	1.5		2.3		
K21R	200 L	K20R	180 M [1)]	2.0	25.8	740	73.0	0.48	8.2	4.3	1.3		2.8	0.168	220
	8-4-2L		8-4-2L	6.3	40.8	1475	88.0	0.88	11.5	5.8	1.1		2.2		
				24.0	78.0	2940	88.0	0.92	43.0	6.5	1.1		2.5		
K21R	225 S	K20R	200 M [1)]	2.5	32.2	740	74.0	0.48	10.0	4.4	1.2		3.2	0.275	270
	8-4-2L		8-4-2L	8.0	51.8	1475	88.0	0.89	14.5	6.6	1.1		2.7		
				30.0	97.3	2945	87.0	0.87	57.0	6.9	1.2		2.9		
K21R	225 M	K20R	200 L [1)]	3.5	45.2	740	74.0	0.51	13.5	4.3	1.1		2.8	0.313	300
	8-4-2L		8-4-2L	12.0	78.2	1465	89.0	0.90	21.5	5.5	1.0		2.3		
				40.0	130	2940	88.0	0.87	75.5	6.6	1.1		2.9		
K21R	250 M	K20R	225 M [1)]	4.0	51.3	745	69.0	0.54	15.5	4.9	1.4		2.7	0.525	375
	8-4-2L		8-4-2L	13.0	83.9	1480	90.0	0.88	23.5	6.5	1.3		2.4		
				50.0	162	2940	89.5	0.90	89.5	6.5	1.1		2.6		
K21R	280 S	K20R	250 S [1)]	5.0	64.1	745	74.5	0.57	17.0	4.8	1.2		2.4	0.95	520
	8-4-2L		8-4-2L	16.0	103	1485	91.0	0.87	29.0	6.8	1.2		2.4		
				60.0	193	2965	91.0	0.91	105	7.3	1.0		2.6		
K21R	280 M	K20R	250 M [1)]	6.0	76.9	745	75.0	0.56	20.5	4.9	1.2		2.5	1.1	580
	8-4-2L		8-4-2L	19.0	122	1485	91.0	0.88	34.0	7.1	1.3		2.4		
				73.0	234	2970	91.5	0.91	127	7.6	1.1		2.7		
K21R	315 S	K20R	280 S [1)]	7.5	96.1	745	77.5	0.57	24.5	5.6	1.3		2.6	1.96	740
	8-4-2L		8-4-2L	23.0	147	1490	91.0	0.88	41.5	8.6	1.4		2.7		
				88.0	282	2975	91.0	0.91	153	8.7	1.0		3.1		
K21R	315 M	K20R	280 M [1)]	8.5	109	745	79.0	0.56	27.5	5.7	1.4		2.7	2.27	840
	8-4-2L		8-4-2L	27.0	174	1485	91.5	0.89	48.0	7.9	1.3		2.6		
				103	331	2975	91.5	0.92	177	8.4	1.0		2.9		
K21R	315 MX	K20R	315 S [1)]	10.0	128	745	79.5	0.57	32.0	5.7	1.3		2.6	2.73	1000
	8-4-2L		8-4-2L	30.0	193	1485	91.0	0.89	53.5	7.5	1.3		2.5		
				110	353	2975	92.0	0.92	188	8.6	1.1		3.0		
K21R	315 MY	K20R	315 M [1)]	12.0	154	745	83.5	0.65	32.0	6.2	1.5		2.5	4.82	1200
	8-4-2L		8-4-2L	35.0	224	1490	92.0	0.90	61.0	6.6	1.3		2.2		
				120	385	2980	93.0	0.93	200	8.0	1.0		2.7		
K21R	315 L	K20R	315 L [1)]	15.0	192	745	84.0	0.65	39.5	6.1	1.4		2.5	5.93	1450
	8-4-2L		8-4-2L	42.0	269	1490	92.0	0.90	73.0	7.5	1.4		2.4		
				145	464	2985	93.0	0.93	242	9.3	1.2		3.0		

1) provisional operational data

Three-phase motors with squirrel-cage rotor

pole-changing, for constant load torque
with two separate windings, Δ/Y/YY-circuit
with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data — Design point 400 V, 50 Hz

Type				P	M_B	n	η	cos φ	I 400 V	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
				kW	Nm	rpm	%	-	A	-	-	-	-	kgm²	kg
Synchronous speed 750/1000/1500 rpm – 8-6-4-pole version															
K21R	100 LX	K20R	100 S	0.60	7.85	730	56.0	0.53	2.85	4.0	a.A.	a.A.	a.A.	0.009	28
	8-6-4		8-6-4	0.8	7.88	970	66.0	0.66	2.65	4.5	1.8	1.3	2.2		28[1)]
				1.1	7.20	1460	72.0	0.82	2.65	6.5	a.A.	a.A.	a.A.		
K21R	112 M	K20R	100 L	0.9	11.9	725	59.5	0.52	4.2	3.8	2.5	2.3	3.2	0.01225	33.5
	8-6-4		8-6-4	1.2	11.8	970	65.0	0.72	3.7	4.1	1.3	1.0	1.7		32.5[1)]
				1.8	11.9	1450	78.0	0.85	3.9	6.1	1.6	1.5	2.2		
K21R	132 S	K20R	112 M	0.9	11.7	730	63.0	0.65	3.2	4.0	1.7	1.6	2.8	0.018	46
	8-6-4		8-6-4	1.1	10.8	970	71.0	0.75	3.0	4.0	1.2	1.1	2.5		
				1.4	9.16	1460	77.0	0.88	3.0	6.0	1.4	1.3	2.6		
K21R	132 M	K20R	112 MX	1.2	15.9	720	63.0	0.73	3.8	3.7	1.6	1.6	2.3	0.023	53
	8-6-4		8-6-4	1.5	14.8	970	70.0	0.76	4.1	4.0	1.3	1.2	2.5		
				2.0	13.2	1450	74.0	0.93	4.2	4.3	1.2	1.1	2.2		
K21R	132 MX	K20R	132 S	1.6	20.8	735	66.0	0.65	5.4	4.2	1.9	1.7	2.6	0.043	70
	8-6-4		8-6-4	2.1	20.5	980	76.0	0.75	5.3	5.0	1.5	1.3	2.6		
				2.8	18.3	1460	79.0	0.90	5.7	5.9	1.3	1.0	2.3		
K21R	160 M	K20R	132 M	2.3	30.1	730	71.0	0.67	7.0	4.4	1.9	1.7	2.7	0.053	86
	8-6-4		8-6-4	2.9	28.3	980	78.0	0.79	6.8	5.0	1.5	1.3	2.6		
				3.9	25.4	1465	80.0	0.90	7.8	6.0	1.3	1.0	2.3		
K21R	160 L	K20R	160 S	3.4	44.5	730	78.0	0.78	8.1	4.9	1.7	1.6	2.5	0.113	114
	8-6-4		8-6-4	4.0	39.0	980	80.0	0.84	8.6	5.1	1.2	1.1	2.1		
				5.8	37.9	1460	80.0	0.93	11.5	5.2	1.2	0.9	2.0		
K21R	180 L	K20R	160 M	4.8	62.8	730	78.0	0.79	11.0	4.7	1.6	1.4	2.1	0.145	138
	8-6-4		8-6-4	5.5	53.6	980	82.0	0.85	11.5	5.5	1.3	1.0	2.1		
				8.0	52.3	1460	80.0	0.93	15.5	4.8	1.2	0.7	1.8		
K21R	200 L	K20R	180 S	5.9	76.7	735	82.0	0.81	13.0	5.7	1.9	1.5	2.4	0.228	175
	8-6-4		8-6-4	6.6	64.0	985	85.0	0.84	13.5	6.3	1.6	1.3	2.5		
				9.0	58.5	1470	83.0	0.94	16.5	6.6	1.7	1.0	2.4		
K21R	200 LX	K20R	180 M	7.0	91.0	735	83.0	0.78	15.5	6.0	2.0	1.7	2.7	0.268	200
	8-6-4		8-6-4	7.9	76.6	985	86.0	0.82	16.0	7.1	1.8	1.4	3.0		
				11.0	71.5	1470	85.0	0.94	20.0	6.8	1.8	1.4	2.6		
K21R	225 M	K20R	200 M	9.5	132	735	85.0	0.79	20.5	6.8	2.2	1.8	2.6	0.443	265
	8-6-4		8-6-4	10.5	102	985	87.0	0.83	21.0	7.3	2.0	1.6	3.0		
				15.0	97.1	1475	86.0	0.92	27.5	7.6	2.1	1.1	2.7		
K21R	250 M	K20R	225 M	11.5	148	740	85.0	0.79	24.5	7.1	2.4	1.8	2.8	0.825	360
	8-6-4		8-6-4	13.0	125	990	89.0	0.84	25.0	8.2	2.2	1.8	3.1		
				18.5	119	1480	86.0	0.92	33.5	8.1	2.2	1.2	2.6		
K21R	280 S	K20R	250 S	14.0	181	740	88.0	0.80	28.5	6.5	2.2	1.6	2.4	1.28	465
	8-6-4		8-6-4	16.0	154	992	89.0	0.84	31.0	7.4	1.9	1.3	2.7		
				20.0	129	1483	86.0	0.92	36.5	7.9	2.0	1.0	2.5		
K21R	280 M	K20R	250 M	17.0	219	742	88.0	0.77	36.0	7.3	2.6	2.0	2.9	1.48	520
	8-6-4		8-6-4	20.0	193	990	89.0	0.84	38.5	7.7	2.2	1.4	2.9		
				25.0	161	1485	87.0	0.92	45.0	9.8	2.6	1.4	3.0		
K21R	315 S	K20R	280 S	24.0	308	744	88.0	0.77	51.0	7.0	2.2	1.9	2.8	2.63	690
	8-6-4		8-6-4	27.0	260	992	91.0	0.80	53.5	8.0	1.9	1.6	3.2		
				37.0	238	1487	89.0	0.92	65.0	8.5	1.9	1.4	2.8		
K21R	315 M	K20R	280 M	30.0	386	742	89.0	0.79	61.5	6.5	1.8	1.6	2.4	3.33	800
	8-6-4		8-6-4	36.0	347	992	91.5	0.84	67.5	6.5	1.4	1.2	2.4		
				45.0	289	1485	89.0	0.92	79.5	7.5	1.6	1.1	2.4		
K21R	315 MX	K20R	315 S	45.0	580	741	90.5	0.80	89.5	7.0	2.2	1.7	2.4	3.6	880
	8-6-4		8-6-4	55.0	531	990	91.8	0.86	101	6.0	1.2	1.0	2.1		
				68.0	437	1485	91.0	0.93	116	8.0	2.0	1.4	2.4		
K21R	315 MY	K20R	315 M	55.0	707	743	92.6	0.80	107	7.5	2.2	1.9	2.6	6	1050
	8-6-4		8-6-4	68.0	655	992	93.4	0.86	122	7.0	1.7	1.3	2.6		
				80.0	513	1488	92.3	0.92	136	8.5	2.2	1.5	2.7		

1) weight for K20R
a.A. on request

Three-phase motors with squirrel-cage rotor

pole-changing, for quadratically increasing load torque
fan drives with two separate windings, Y/Y/YY-circuit
with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data — Design point 400 V, 50 Hz

Type				P	M_B	n	η	cos φ	I 400 V	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
				kW	Nm	rpm	%	-	A	-	-	-	-	kgm²	kg
Synchronous speed 750/1000/1500 rpm – 8-6-4-pole version															
K21R	80 K	K20R	71 K	0.05	0.67	715	32.0	0.71	0.32	2.0	1.2	1.2	1.8	0.00130	11
	8-6-4L		8-6-4L	0.06	0.59	970	46.0	0.63	0.3	2.8	1.6	1.6	2.4		10[1)]
				0.21	1.38	1450	58.0	0.76	0.69	3.6	1.1	1.1	1.8		
K21R	80 G	K20R	71 G	0.09	1.25	690	38.0	0.68	0.5	2.1	1.3	1.3	1.8	0.00175	12.5
	8-6-4L		8-6-4L	0.12	1.21	945	52.0	0.72	0.46	2.8	1.3	1.2	1.8		11.5[1)]
				0.37	2.47	1430	62.0	0.76	1.12	3.7	1.1	1.1	1.9		
K21R	90 S	K20R	80 K	0.15	2.00	715	49.0	0.59	0.74	2.4	1.4	1.4	2.0	0.00325	16
	8-6-4L HL		8-6-4L HL	0.22	2.18	965	50.0	0.70	0.9	3.0	1.2	1.2	1.9		15[1)]
				0.7	4.67	1430	67.0	0.80	1.87	4.0	1.2	1.2	1.6		
K21R	90 L	K20R	80 G	0.22	2.98	705	55.0	0.63	0.92	2.7	1.4	1.4	2.0	0.00425	19
	8-6-4L HL		8-6-4L HL	0.3	2.97	965	55.0	0.71	1.11	3.2	1.2	1.2	2.0		18[1)]
				0.95	6.37	1425	71.0	0.82	2.36	4.4	1.2	1.2	2.0		
K21R	100 L	K20R	90 L	0.37	4.94	715	60.0	0.61	1.45	2.8	1.4	1.3	1.7	0.00625	24
	8-6-4L HL		8-6-4L HL	0.55	5.41	970	62.0	0.71	1.8	3.0	1.2	1.1	1.7		24[1)]
				1.5	9.91	1445	70.0	0.81	3.8	4.7	1.2	1.1	1.8		
K21R	100 LX	K20R	100 S	0.45	6.01	715	65.0	0.64	1.55	3.5	1.4	1.4	2.1	0.00900	28
	8-6-4L HL		8-6-4L HL	0.7	6.89	970	63.0	0.71	2.26	4.2	1.2	1.1	2.0		28[1)]
				1.9	12.6	1435	69.0	0.84	4.7	4.8	1.1	1.1	1.9		
K21R	112 M	K20R	100 L	0.75	10.1	710	66.0	0.68	2.4	3.6	1.6	1.6	2.2	0.01225	33.5
	8-6-4L HL		8-6-4L HL	1.1	10.9	965	63.0	0.80	3.35	3.7	1.1	1.1	1.7		32.5[1)]
				2.6	17.2	1440	66.5	0.85	6.6	5.0	1.4	1.4	2.7		
K21R	132 S	K20R	112 M	0.75	9.88	725	65.0	0.70	2.4	3.9	1.4		2.5	0.018	46
	8-6-4L		8-6-4L	1.1	10.7	980	63.0	0.66	3.8	4.6	1.4		2.9		
				3.0	19.7	1458	73.1	0.85	7.0	5.0	1.2		2.2		
K21R	132 M	K20R	112 MX	1.0	13.2	725	67.0	0.68	3.2	4.6	1.7		2.8	0.023	53
	8-6-4L		8-6-4L	1.4	13.6	980	68.5	0.75	3.9	4.9	1.4		2.8		
				4.0	26.3	1455	69.0	0.85	9.8	6.1	1.7		2.7		
K21R	132 MX	K20R	132 S	1.2	15.7	730	77.3	0.68	3.3	4.7	1.6		2.9	0.043	70
	8-6-4L		8-6-4L	1.7	16.5	983	68.8	0.71	5.0	4.7	1.1		2.6		
				5.0	32.6	1463	79.8	0.88	10.5	6.0	1.5		3.0		
K21R	160 M	K20R	132 M	1.9	25.1	723	79.0	0.75	4.6	4.3	1.4		2.4	0.053	86
	8-6-4L		8-6-4L	2.5	24.3	983	70.0	0.70	7.4	4.9	1.4		2.8		
				7.5	49.3	1453	80.0	0.90	15.0	5.7	1.6		2.7		
K21R	160 L	K20R	160 S	2.5	32.8	729	83.0	0.80	5.4	5.8	2.2		2.6	0.113	114
	8-6-4L		8-6-4L	4.0	38.8	984	76.0	0.77	9.9	5.3	1.3		2.7		
				11.0	72.4	1450	83.0	0.92	21.0	5.7	1.8		2.5		
K21R	180 L	K20R	160 M	3.5	56.3	722	83.0	0.84	7.2	4.9	1.8		2.1	0.145	138
	8-6-4L		8-6-4L	5.0	48.5	985	74.0	0.76	13.0	5.4	1.2		2.6		
				14.0	92.8	1441	83.0	0.94	26.0	5.3	1.8		2.3		
K21R	200 L	K20R	180 S	4.0	52.0	735	84.0	0.78	8.8	6.0	2.1		2.8	0.228	175
	8-6-4L		8-6-4L	6.5	63.0	985	80.0	0.82	14.5	6.0	1.5		2.7		
				18.0	117	1470	82.0	0.89	35.5	7.5	2.3		3.2		
K21R	200 LX	K20R	180 M	5.5	71.5	735	86.0	0.80	11.5	5.1	1.4		2.6	0.268	200
	8-6-4L		8-6-4L	7.5	72.4	990	76.0	0.78	18.5	6.1	1.4		2.8		
				22.0	144	1460	84.0	0.90	42.0	6.1	1.7		2.9		
K21R	225 M	K20R	200 M	7.0	91.0	735	86.5	0.82	14.0	6.2	1.7		3.2	0.443	265
	8-6-4L		8-6-4L	10.0	97.0	985	81.5	0.83	21.5	6.8	1.5		2.9		
				30.0	196	1460	86.0	0.92	54.5	7.1	1.8		3.5		
K21R	250 M	K20R	225 M	8.0	103	738	88.0	0.81	16.0	5.7	1.5		2.7	0.825	360
	8-6-4L		8-6-4L	12.0	116	988	84.0	0.85	24.5	6.6	1.4		2.6		
				35.0	227	1472	87.0	0.93	62.5	6.5	1.7		3.0		
K21R	280 S	K20R	250 S	10.0	129	740	89.0	0.81	20.0	5.7	2.0		2.4	1.28	465
	8-6-4L		8-6-4L	15.0	145	990	88.0	0.85	29.0	6.5	1.6		2.6		
				44.0	285	1475	89.0	0.92	78.0	7.0	2.0		2.5		
K21R	280 M	K20R	250 M	16.0	206	740	90.0	0.82	31.5	5.6	1.6		2.6	1.48	520
	8-6-4L		8-6-4L	22.0	212	993	86.0	0.81	45.5	6.8	1.5		2.8		
				65.0	421	1475	88.0	0.90	118	6.9	1.9		3.2		
K21R	315 S	K20R	280 S	18.0	231	744	91.5	0.77	37.0	5.6	1.6		2.3	2.63	690
	8-6-4L		8-6-4L	28.0	689	995	85.5	0.79	59.5	7.4	1.5		2.9		
				80.0	515	1485	90.5	0.90	142	6.9	1.9		2.7		
K21R	315 M	K20R	280 M	23.0	295	745	92.5	0.79	45.5	7.0	1.8		2.5	3.33	800
	8-6-4L		8-6-4L	35.0	336	995	87.5	0.83	69.5	8.5	1.6		3.0		
				100	643	1485	91.5	0.90	175	9.2	2.0		2.9		
K21R	315 MX	K20R	315 S	25.0	323	740	90.0	0.82	49.0	5.5	1.5		1.9	3.6	880
	8-6-4L		8-6-4L	35.0	336	995	87.5	0.84	69.0	7.0	1.2		2.3		
				100	645	1480	91.5	0.92	171	8.5	2.0		2.4		
K21R	315 MY	K20R	315 M	28.0	360	742	92.6	0.83	52.5	5.8	1.4		2.3	6	1050
	8-6-4L		8-6-4L	42.0	404	992	88.6	0.87	78.5	6.8	1.4		2.4		
				110	709	1482	92.3	0.93	185	7.1	1.4		2.4		

1) weight for K20R

Three-phase motors with squirrel-cage rotor

pole-changing, for constant load torque
with two separate windings, Δ/Δ/YY/YY-circuit
with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design point 400 V, 50 Hz

Type		P	M_B	n	η	cos φ	I 400 V	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
		kW	Nm	rpm	%	-	A	-	-	-	-	kgm²	kg
Synchronous speed 500/750/1000/1500 rpm – 12-8-6-4-pole version													
K21R 160 L	K20R 160 S	1.9	37.8	480	64.0	0.70	6.1	2.9	1.4	1.3	1.7	0.113	114
12-8-6-4	12-8-6-4	2.5	32.5	735	76.0	0.74	6.4	4.5	1.4	1.3	2.3		
		3.0	29.4	975	76.0	0.89	6.4	4.5	1.1	1.0	1.9		
		3.7	24.0	1475	81.0	0.92	7.2	6.2	1.2	0.9	2.3		
K21R 180 L	K20R 160 M	2.6	51.7	480	66.0	0.70	8.1	3.2	1.5	1.3	1.7	0.145	138
12-8-6-4	12-8-6-4	3.6	46.8	735	79.0	0.76	8.7	4.8	1.5	1.4	2.1		
		4.0	39.2	975	78.0	0.90	8.2	4.8	1.3	1.0	1.9		
		5.4	35.0	1475	82.0	0.92	10.5	6.0	1.5	0.9	2.2		
K21R 200 L	K20R 180 S	3.2	63.0	485	75.0	0.66	9.3	4.0	2.0	1.8	2.4	0.228	175
12-8-6-4	12-8-6-4	4.2	54.2	740	80.0	0.74	10.0	5.8	1.8	1.5	2.8		
		5.0	48.7	980	83.0	0.89	9.8	6.3	1.8	1.3	2.4		
		6.5	41.9	1480	82.0	0.91	12.5	7.4	1.6	0.9	3.0		
K21R 200 LX	K20R 180 M	3.8	74.1	490	75.0	0.64	11.5	4.3	1.9	1.6	2.3	0.268	200
12-8-6-4	12-8-6-4	5.0	64.5	740	81.0	0.72	12.5	5.9	1.8	1.6	2.9		
		5.9	57.2	985	83.0	0.87	12.0	6.6	1.8	1.5	2.6		
		7.7	49.7	1480	84.0	0.90	14.5	7.6	1.7	1.1	2.8		
K21R 225 M	K20R 200 M	5.2	101	490	78.0	0.64	15.0	4.7	2.1	1.9	2.5	0.443	265
12-8-6-4	12-8-6-4	6.9	89.1	740	84.0	0.76	15.5	6.0	1.6	1.4	2.6		
		8.1	78.5	985	86.0	0.88	15.5	7.3	1.9	1.4	2.8		
		10.5	67.8	1480	85.0	0.92	19.5	7.3	1.5	0.7	2.5		
K21R 250 M	K20R 225 M	6.5	127	490	81.0	0.67	17.5	4.2	1.7	1.4	1.7	0.825	360
12-8-6-4	12-8-6-4	8.5	110	740	85.0	0.77	18.5	5.8	1.7	1.4	2.2		
		10.0	97.5	980	85.0	0.88	19.5	6.3	1.8	1.2	2.1		
		13.0	83.9	1480	85.0	0.92	24.0	7.0	1.5	0.7	2.2		
K21R 280 S	K20R 250 S	7.8	151	492	82.0	0.65	21.0	4.6	2.1	1.6	2.1	1.28	465
12-8-6-4	12-8-6-4	10.0	128	745	86.0	0.74	22.5	6.4	2.0	1.5	2.7		
		12.0	116	990	86.0	0.88	23.0	6.8	2.0	1.4	2.4		
		15.5	99.5	1488	85.0	0.91	29.0	7.9	1.9	0.9	2.6		
K21R 280 M	K20R 250 M	9.6	186	493	82.0	0.65	26.0	4.4	2.1	1.7	2.2	1.48	520
12-8-6-4	12-8-6-4	12.5	161	743	86.0	0.75	28.0	6.3	2.1	1.5	2.7		
		15.0	145	990	87.0	0.89	28.0	7.2	2.1	1.4	2.3		
		19.0	122	1488	85.0	0.92	35.0	8.1	1.9	0.9	2.7		
K21R 315 s	K20R 280 s	13.0	251	495	84.0	0.62	36.0	4.9	1.8	1.6	2.2	2.630	690
12-8-6-4	12-8-6-4	17.0	218	744	89.0	0.74	37.5	6.5	1.4	1.3	2.5		
		20.0	193	991	89.0	0.87	37.5	7.5	1.7	1.4	2.4		
		26.0	167	1488	86.0	0.91	48.0	8.0	1.2	0.8	2.5		
K21R 315 M	K20R 280 M	18.0	348	494	84.0	0.64	48.5	4.4	1.6	1.4	2.0	3.33	800
12-8-6-4	12-8-6-4	22.0	282	745	90.0	0.74	47.5	6.3	1.3	1.2	2.5		
		26.0	250	992	90.0	0.87	48.0	7.5	1.8	1.4	2.4		
		32.0	205	1490	90.0	0.91	56.5	8.1	1.4	0.9	2.5		
K21R 315 MX	K20R 315 S	26.0	504	493	85.0	0.66	67.0	4.5	1.5	1.4	1.8	3.60	880
12-8-6-4	12-8-6-4	32.0	411	744	89.0	0.75	69.0	6.0	1.3	1.2	2.2		
		38.0	366	991	90.0	0.88	69.5	7.0	1.6	1.2	2.1		
		45.0	288	1490	90.0	0.92	78.5	7.5	1.3	0.7	2.5		
K21R 315 MY	K20R 315 M	32.0	624	490	87.0	0.70	76.0	4.3	1.4	1.1	1.6	6.00	1050
12-8-6-4	12-8-6-4	38.0	487	745	92.4	0.76	78.0	6.5	1.8	1.6	2.5		
		45.0	434	990	91.4	0.89	80.0	7.0	1.6	1.5	2.1		
		55.0	352	1491	92.5	0.92	93.5	8.5	1.6	1.4	2.8		

Energy saving motors CEMEP

Basic version

General technical data

Motor selection data
50 Hz, 2- and 4-pole
3000/1500 rpm

Motor selection data
50 Hz, 6- and 8-pole
1000/750 rpm

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	1.1 up to 90 kW, 2- and 4-pole acc. to “Voluntary Agreement of CEMEP”, 0.06 up to 315 kW acc. to works standard specification
Sizes	56 to 315
Material of housing	Grey cast iron
Rated torque	0.30 Nm to 2,062 Nm
Types of circuit	Motors with one speed are designed with Δ/Y-circuit as standard.
Insulation of stator winding	Thermal class 155, as option 155 [F(B)], 180 acc. to EN 60034-1 (IEC 60034-1)
Type of protection	IP 55 acc. to EN 60034-5 (IEC 60034-5)
Type of cooling	IC 411 acc. to EN 60034-6 (IEC 60034-6)
Coolant temperature/ altitude of site	as standard - 20 °C up to + 40 °C, altitude of site 1000 m above sea level
Rated voltage	Rated voltage range A acc. to EN 60034-1 (IEC 60034-1), standard voltage acc. to EN 60038 50 Hz, 230 V, 400 V, 500 V and 690 V
Types of construction	IM B3, IM B35, IM B5 and derived types of construction acc. to EN 60034-7
Colour system	Standard colour system “moderate”, colour shade RAL 7031, blue-grey Special colour system “ world wide”, colour shade RAL 7031, blue-grey
Vibration grade	As standard grade “A” for motors without special vibration requirements
Shaft ends	Acc. to DIN 748 (IEC 60072), balancing “with half key”
Limit speeds	Please refer to paragraph about limit speeds in the catalogue part Technical explanations.
Bearing design	Please refer to paragraph about bearings in the catalogue part Technical explanations.
Motor weights	Please refer to the technical selection lists.
Terminal boxes	Please refer to paragraph about terminal boxes in the catalogue part Technical explanations.
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 catalogue part Technical explanations.
Options	Please refer to paragraph about modifications in the catalogue part Technical explanations.

Energy saving motors according to CEMEP “High Efficiency” eff1
Efficiency determination acc. to EN 60034-2

Surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design point 400 V, 50 Hz

Synchronous speed 3000 rpm – 2-pole version

Type	P_B kW	M_B Nm	n_B rpm	EFF- -	η_B %	$\eta_{3/4}$ %	cos φ_B -	I_B 400 V A	I_A/I_B -	M_A/M_B -	M_S/M_B -	M_K/M_B -	J kgm²	m kg
W21R 56 K2	0.09	0.30	2830	-	73.0	73	0.81	0.22	5.0	2.3	2,2	2.6	0.00015	4.8
W21R 56 G2	0.12	0.41	2820	-	70.0	69	0.82	0.30	4.7	2.0	1.9	2.2	0.00015	4.8
W21R 63 K2	0.18	0.61	2840	-	75.0	74	0.82	0.42	5.7	2.4	2.3	2.7	0.00025	6.3
W21R 63 G2	0.25	0.84	2860	-	78.0	77	0.84	0.55	6.0	2.2	2.1	2.5	0.00032	7
W21R 71 K2	0.37	1.24	2860	-	81.5	78	0.86	0.76	7.1	2.9	2.7	3.1	0.00057	10
W21R 71 G2	0.55	1.83	2870	-	83.0	80	0.85	1.13	7.4	3.0	2.7	3.3	0.00072	11.2
W21R 80 K2	0.75	2.49	2880	-	84.0	84.5	0.88	1.46	7.7	2.2	2.1	2.7	0.00132	15
WE1R 80 G2	1.1	3.64	2885	1	83.7	85	0.88	2.15	7.8	2.5	2.3	2.8	0.00170	18
WE1R 90 S2	1.5	4.92	2910	1	86.4	84.6	0.86	2.90	9.0	2.8	2.4	3.4	0.00275	23.5
WE1R 90 L2	2.2	7.30	2880	1	85.8	86.5	0.87	4.25	8.0	2.5	2.3	2.9	0.00275	23.5
WE1R 100 L2	3	9.85	2910	1	87.7	87.7	0.85	5.80	7.5	2.0	1.7	2.8	0.00450	31
WE1R 112 MX2	4	13.1	2910	1	88.9	87.9	0.87	7.50	7.8	2.1	1.6	2.9	0.00550	38
WE1R 112 MV2	5.5	18.1	2900	1	89.2	88.5	0.85	10.5	7.0	2.0	1.5	2.7	0.00680	46
WE1R 132 SX2	7.5	24.6	2910	1	89.5	89.2	0.91	13.5	7.0	2.1	1.5	2.7	0.0168	75
WE1R 160 M2	11.0	35.9	2930	1	90.5	89.9	0.88	20.0	8.5	2.7	2.1	3.6	0.0258	100
WE1R 160 MX2	15.0	48.8	2935	1	91.3	91.0	0.92	26.0	7.3	2.1	1.6	2.7	0.0675	140
WE1R 160 L2	18.5	60.3	2930	1	91.8	91.7	0.91	32.0	7.5	2.2	1.6	2.8	0.0675	140
WE1R 180 M2	22	71.4	2942	1	92.7	92.8	0.90	38.0	6.6	1.8	1.4	2.6	0.105	175
WE1R 200 L2	30	97.4	2942	1	93.0	93.1	0.91	51.0	7.2	1.9	1.5	2.9	0.128	210
WE1R 200 LX2	37	120	2945	1	93.7	93.7	0.92	62.0	7.8	2.1	1.5	3.0	0.154	235
WE1R 225 M2	45	146	2945	1	93.7	93.7	0.89	78.0	7.4	1.8	1.5	3.0	0.360	300
WE1R 250 M2	55	178	2957	1	94.5	94.4	0.89	94.5	8.4	2.4	2.0	3.1	0.375	385
WE1R 280 S2	75	241	2972	1	95.2	95.0	0.90	126	8.0	2.1	1.7	3.0	0.65	510
WE1R 280 M2	90	289	2970	1	95.2	95.1	0.91	150	7.4	1.9	1.6	2.7	0.68	550
W21R 315 S2	110	354	2970	-	95.9	95.9	0.89	186	8.3	1.7	1.6	2.6	1.21	730
W21R 315 M2	132	424	2975	-	96.0	96.2	0.89	223	9.2	1.9	1.8	2.9	1.44	820
W21R 315 MX2	160	515	2970	-	96.1	96.1	0.90	267	8.2	1.6	1.5	2.4	1.76	955
W21R 315 MY2	200	640	2984	-	96.4	96.1	0.88	340	9.4	2.5	1.9	2.8	2.82	1200
W21R 315 L2	250	801	2980	-	96.6	96.5	0.92	406	8.3	1.9	1.2	2.3	3.66	1450
W21R 315 LX2	315	1010	2980	-	96.8	96.8	0.95	494	9.8	2.8	1.9	2.7	4.43	1630

Synchronous speed 1500 rpm – 4-pole version

Type	P_B kW	M_B Nm	n_B rpm	EFF- -	η_B %	$\eta_{3/4}$ %	cos φ_B -	I_B 400 V A	I_A/I_B -	M_A/M_B -	M_S/M_B -	M_K/M_B -	J kgm²	m kg
W21R 56 K4	0.06	0.41	1400	-	65.0	63.5	0.66	0.2	3.5	2.3	2.2	2.6	0.00024	4.8
W21R 56 G4	0.09	0.63	1370	-	64.0	63	0.72	0.28	3.3	1.8	1.7	2.1	0.00024	4.8
W21R 63 K4	0.12	0.82	1400	-	67.0	66.5	0.71	0.36	3.8	2.0	1.9	2.3	0.00040	6.3
W21R 63 G4	0.18	1.21	1425	-	70.0	70	0.64	0.58	4.0	2.3	2.2	2.5	0.00050	7.1
W21R 71 K4	0.25	1.67	1430	-	77.0	75	0.71	0.66	5.6	2.5	2.3	2.9	0.00087	9.9
W21R 71 G4	0.37	2.47	1430	-	80.0	77	0.68	0.98	6.2	2.8	2.6	3.2	0.00107	11
W21R 80 K4	0.55	3.67	1430	-	80.5	80.5	0.80	1.23	6.0	2.4	2.3	2.7	0.00207	14.5
W21R 80 G4	0.75	5.01	1430	-	82.0	82.5	0.80	1.65	7.0	2.9	2.8	3.2	0.00260	17
WE1R 90 S4	1.1	7.32	1435	1	83.8	83.8	0.79	2.40	6.8	2.4	2.2	2.9	0.00400	23
WE1R 90 LV4	1.5	9.91	1445	1	85.0	84.2	0.79	3.30	6.3	2.4	2.3	3.0	0.00450	24
WE1R 100 L4	2.2	14.4	1455	1	86.4	86.0	0.76	4.80	9.3	3.2	3.0	3.6	0.00900	36
WE1R 100 LX4	3.0	19.7	1455	1	87.4	87.8	0.77	6.45	9.0	3.3	3.1	3.9	0.01100	45
WE1R 112 M4	4.0	26.2	1456	1	89.0	89.2	0.86	7.5	8.6	2.7	2.4	4.2	0.0170	56
WE1R 132 S4	5.5	35.8	1465	1	89.6	89.4	0.86	10.5	7.4	2.3	1.8	3.2	0.035	90
WE1R 132 M4	7.5	48.7	1470	1	90.3	89.9	0.82	14.5	8.5	2.8	2.2	4.0	0.035	92
WE1R 160 M4	11.0	71.4	1472	1	91.0	90.4	0.83	21.0	8.5	2.8	2.3	3.4	0.078	124
WE1R 160 L4	15.0	97.5	1470	1	91.8	91.5	0.88	27.0	8.5	2.8	2.2	3.3	0.115	165
WE1R 180 M4	18.5	120	1477	1	93.0	92.7	0.86	33.5	7.0	1.9	1.7	2.9	0.168	210
WE1R 180 L4	22	142	1478	1	93.0	92.5	0.82	42.0	7.7	2.3	1.9	3.3	0.168	210
WE1R 200 L4	30	194	1479	1	93.4	93.0	0.81	57.0	7.8	2.2	2.0	3.1	0.275	280
WE1R 225 S4	37	240	1475	1	93.7	93.5	0.84	68.0	7.3	2.3	1.9	2.9	0.313	320
WE1R 225 M4	45	290	1480	1	94.8	94.7	0.84	81.5	8.1	2.0	1.9	2.6	0.525	390
WE1R 250 M4	55	354	1485	1	95.0	94.7	0.82	102	8.0	1.9	1.8	2.4	0.95	535
WE1R 280 S4	75	483	1483	1	95.4	95.5	0.82	138	7.4	1.7	1.6	2.2	0.95	550
WE1R 280 M4	90	580	1484	1	95.5	95.5	0.82	166	7.9	2.2	1.9	2.4	1.10	605
W21R 315 S4	110	708	1485	-	95.7	95.8	0.81	204	8.4	1.8	1.5	2.7	1.96	760
W21R 315 M4	132	849	1484	-	96.2	96.3	0.83	239	7.9	1.8	1.6	2.5	2.27	850
W21R 315 MX4	160	1031	1482	-	95.8	96.0	0.84	289	7.4	1.6	1.5	2.2	2.73	975
W21R 315 MY4	200	1282	1490	-	96.2	96.2	0.88	341	8.3	1.7	1.2	2.4	4.82	1270
W21R 315 L4	250	1603	1490	-	96.7	96.8	0.86	432	8.0	1.4	1.2	2.4	5.93	1450
W21R 315 LX4	315	2019	1490	-	96.8	95.8	0.87	540	8.6	1.9	1.2	2.5	6.82	1630

Energy saving motors
Efficiency determination acc. to EN 60034-2

Surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data

Design point 400 V, 50 Hz

Synchronous speed 1000 rpm – 6-pole version

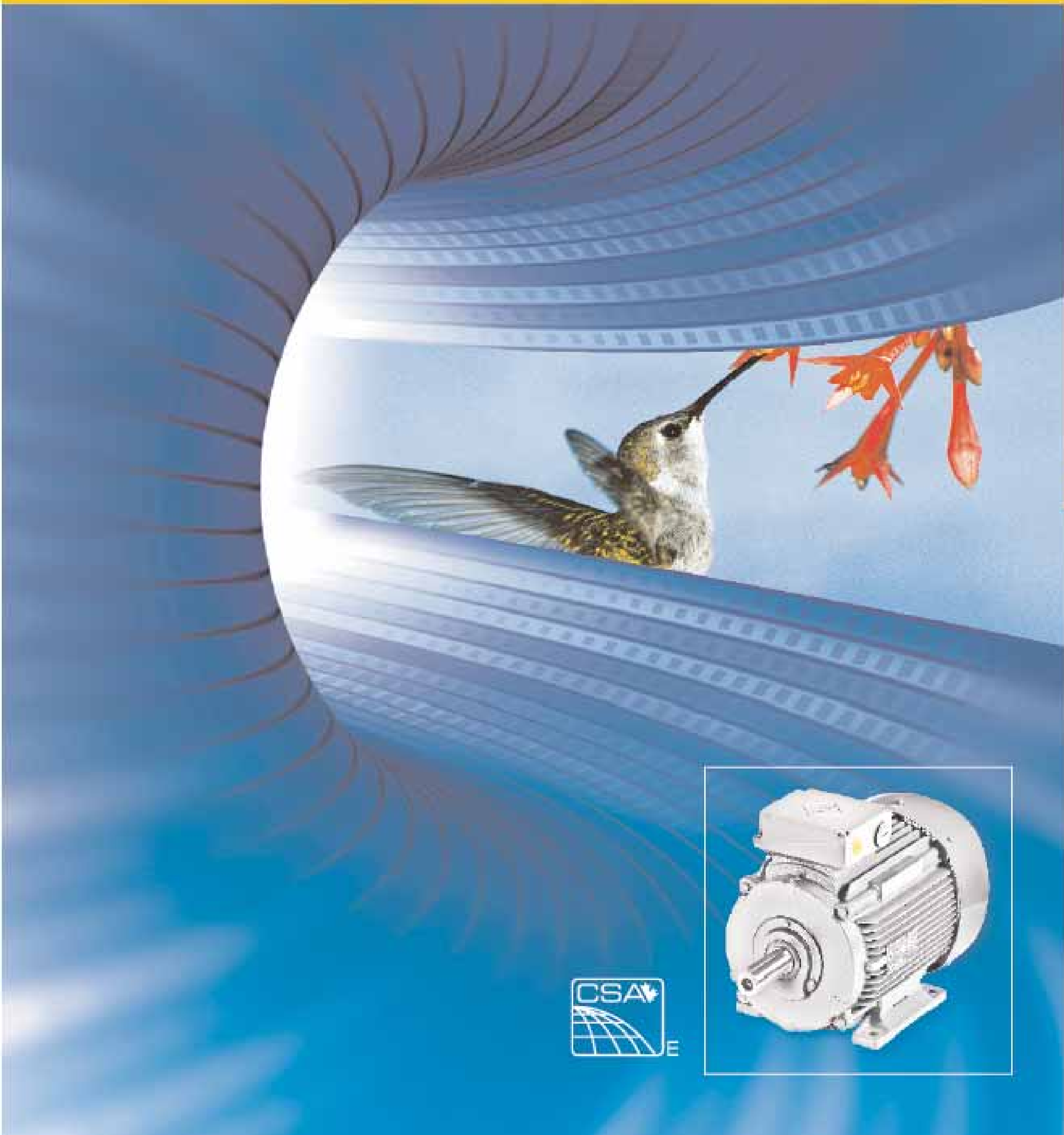
Type	P_B kW	M_B Nm	n_B rpm	η_B %	$\eta_{3/4}$ %	cos φ_B -	I_B 400 V A	I_A/I_B -	M_A/M_B -	M_S/M_B -	M_K/M_B -	J kgm²	m kg
W21R 71 K6	0.18	1.84	930	68.0	67	0.71	0.54	4.2	2.4	1.8	2.6	0.00130	11
W21R 71 G6	0.25	2.54	935	71.5	70.5	0.67	0.75	4.6	2.8	1.9	3.0	0.00175	12.5
W21R 80 K6	0.37	3.74	945	75.5		0.74	0.96	4.7	2.2	1.7	2.6	0.00325	15
W21R 80 G6	0.55	5.56	945	76.0	76.5	0.70	1.49	4.2	2.0	1.9	3.5	0.00425	18
W21R 90 S6	0.75	7.50	955	78.0	78.0	0.70	1.98	4.7	2.3	2.2	2.4	0.00625	24
W21R 90 LV6	1.1	11.1	950	79.0	79.0	0.71	2.83	5.3	2.5	2.4	2.8	0.00720	26
W21R 100 LX6	1.5	15.0	955	83.0	83.0	0.76	3.44	5.9	2.6	2.4	3.0	0.01390	36
W21R 112 MV6	2.2	22.0	955	83.0	83.0	0.71	5.4	6.2	2.7	2.6	3.5	0.01550	48
W21R 132 S6	3.0	29.8	961	85.0	85.7	0.80	6.5	5.9	2.2	2.1	3.2	0.023	54
W21R 132 M6	4.0	39.5	967	88.0	87.4	0.82	8.0	5.2	1.7	1.5	2.4	0.043	76
W21R 132 MX6	5.5	54.2	969	87.5	87.5	0.78	11.5	5.5	2.5	2.0	3.0	0.053	85
W21R 160 M6	7.5	73.4	976	89.0	88.0	0.81	15.0	6.3	2.4	2.2	3.0	0.113	118
W21R 160 L6	11.0	108	972	90.0	89.8	0.85	21.0	5.8	2.4	2.1	2.7	0.145	135
W21R 180 L6	15.0	147	975	91.0	90.0	0.85	28.0	6.3	2.4	2.0	2.9	0.228	183
W21R 200 L6	18.5	181	978	91.5	91.4	0.85	34.5	7.2	2.6	2.4	3.4	0.268	206
W21R 200 LX6	22	215	979	92.5	92.3	0.87	39.5	6.9	2.6	2.1	3.2	0.443	278
W21R 225 M6	30	291	985	93.0	92.6	0.85	54.5	7.0	2.6	2.3	3.1	0.825	360
W21R 250 M6	37	359	985	93.5	93.3	0.84	68.5	6.4	2.2	1.9	2.6	1.28	468
W21R 280 S6	45	437	983	94.0	94.0	0.85	81.0	6.2	2.1	1.8	2.5	1.48	545
W21R 280 M6	55	531	989	95.2	94.5	0.85	98.0	6.5	1.7	1.5	2.3	2.63	710
W21R 315 S6	75	726	987	95.2	94.5	0.86	132	6.6	2.0	1.6	2.4	3.33	804
W21R 315 M6	90	868	990	95.6	94.6	0.86	158	9.0	2.3	2.0	2.8	3.60	1148
W21R 315 MX6	110	1061	990	96.1	95.9	0.87	190	8.0	2.4	1.8	2.5	6.00	1210
W21R 315 MY6	132	1273	990	95.3	94.9	0.88	227	7.5	2.0	1.7	2.4	6.00	1250
W21R 315 L6	160	1551	985	95.6	95.2	0.89	271	7.5	2.3	1.9	2.4	6.67	1250
W21R 315 LX6	200	1929	990	95.4	95.1	0.85	356	7.5	2.0	1.5	2.4	8.60	1460

Synchronous speed 750 rpm – 8-pole version

Type	P_B kW	M_B Nm	n_B rpm	η_B %	$\eta_{3/4}$ %	cos φ_B -	I_B 400 V A	I_A/I_B -	M_A/M_B -	M_S/M_B -	M_K/M_B -	J kgm²	m kg
W21R 80 K8	0.18	2.42	710	68.0		0.61	0.63	3.5	1.9		2.6	0.00300	14
W21R 80 G8	0.25	3.39	705	70.0		0.63	0.82	3.5	1.9		2.4	0.00375	17
W21R 90 S8	0.37	5.05	710	73.0	73	0.63	1.16	3.1	1.7	1.6	1.8	0.00625	25
W21R 90 LV8	0.55	7.40	700	72.0		0.64	1.92	3.8	1.7		2.4	0.00720	26
W21R 100 S8	0.75	10.0	715	77.0	75.5	0.62	2.27	4.6	2.6	2.5	3.0	0.01225	33.5
W21R 100 LX8	1.1	14.8	710	79.0	78	0.63	3.20	4.3	2.0	1.9	2.6	0.01390	36
W21R 112 MV8	1.5	20.5	700	78.0	78.5	0.65	4.25	3.8	1.7	1.6	2.2	0.01550	48
W21R 132 S8	2.2	29.4	715	81.5	81	0.70	5.6	5.5	2.0		3.0	0.0180	53
W21R 132 M8	3.0	40.0	717	84.8	84.3	0.74	6.9	4.4	1.5		2.4	0.0430	70
W21R 160 M8	4	53.2	718	85.7	85.2	0.72	9.3	4.6	1.6		2.5	0.0530	86
W21R 160 MX8	5.5	73.1	719	87.3	86.9	0.81	11	4.6	1.6		2.2	0.1130	114
W21R 160 L8	7.5	98.8	725	89.0	88.5	0.77	16	5.5	2.0		2.8	0.1450	136
W21R 180 L8	11	144	730	89.8	88.8	0.76	23	5.8	2.0		2.9	0.2280	175
W21R 200 L8	15	197	727	90.0	89.5	0.77	31	5.6	2.0		2.8	0.2680	200
W21R 225 S8	18.5	242	730	91.1	90.1	0.79	37	5.6	1.7		2.8	0.44	265
W21R 225 M8	22	287	733	91.7	90.5	0.78	44.5	5.6	1.8		2.6	0.83	360
W21R 250 M8	30	389	737	92.8	92.5	0.78	59.5	5.5	1.8		2.5	1.35	465
W21R 280 S8	37	480	736	93.0	92.5	0.79	72.5	5.4	1.8		2.4	1.55	520
W21R 280 M8	45	581	740	93.9	93.4	0.81	85	6.7	2.2		2.5	2.63	690
W21R 315 S8	55	710	740	94.6	94.1	0.81	104	6.9	2.3		2.6	3.33	800
W21R 315 M8	75	968	740	93.3	93	0.81	143	6	2		2.3	3.33	800
W21R 315 MX8	90	1161	740	93.5	93	0.81	172	6	1.9		2.2	3.6	880
W21R 315 MY8	110	1420	740	94.8	94.3	0.81	207	6.5	2.1		2.4	6	1050
W21R 315 L8	132	1704	740	95.3	94.7	0.83	241	6.3	2		2.1	6.76	1250
W21R 315 LX8	160	2062	740	95.5	95	0.79	306	7.2	2.2		2.5	8.71	1430

4

Energy saving motors EPAct



Basic version

General technical data

Motor selection data
50 Hz, 2- and 4-pole
3000/1500 rpm

Motor selection data
60Hz, 2- and 4-pole
3000/1800 rpm

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	1.0 – 500 Hp
Sizes	80 to 315
Material of housing	Grey cast iron
Rated torque	2.04 Nm to 1,912 Nm
Types of circuit	Motors with one speed are designed with Δ/Y-circuit as standard.
Insulation of stator winding	Thermal class 155, as option 155 [F(B)], 180 acc. to EN 60034-1 (IEC 60034-1)
Type of protection	IP 55 acc. to EN 60034-5 (IEC 60034-5)
Type of cooling	IC 411 acc. to EN 60034-6 (IEC 60034-6)
Coolant temperature/ altitude of site	as standard -20 °C up to +40 °C, altitude of site 1000 m above sea level
Rated voltage	Standard voltage acc. to EN 60038 50 Hz, 400 V 60 Hz, 480 V
Types of construction	IM B3, IM B35, IM B5 and derived types of construction acc. to EN 60034-7
Colour system	Standard colour system “moderate”, colour shade RAL 7031, blue-grey Special colour system “world wide”, colour shade RAL 7031, blue-grey
Vibration grade	As standard grade “A” for motors without special vibration requirements
Shaft ends	Acc. to DIN 748 (IEC 60072), balancing “with half key”
Limit speeds	Please refer to paragraph about limit speeds in the catalogue part Technical explanations.
Bearing design	Please refer to paragraph about bearings in the catalogue part Technical explanations.
Motor weights	Please refer to the technical selection lists.
Terminal boxes	Please refer to paragraph about terminal boxes in the catalogue part Technical explanations.
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 catalogue part Technical explanations.
Options	Please refer to paragraph about modifications in the catalogue part Technical explanations.

Energy saving motors, High Efficiency acc. to CSA C 390 and NEMA MG 1, Tab. 12 – 10

Efficiency determination acc. to IEEE 112-1996, method B
with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55, design A

Motor selection data

Design point 400 V, 50 Hz

Type	P_B		M_B	n_B	η_{nom}	$\cos\varphi_B$	I_B 400 V	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m	CL
	Hp	kW	Nm	rpm	%	-	A	-	-	-	-	kgm^2	kg	
Synchronous speed 3000 rpm – 2-pole version														
WE1R 80 K2 EP	1.0	0.75	2.49	2880	84.2	0.88	1.46	7.6	2.4	2.3	2.6	0.0013	15.0	J
WE1R 80 G2 EP	1.5	1.12	3.71	2880	85.4	0.89	2.12	8.0	2.6	2.3	2.8	0.0017	18.0	J
WE1R 90 S2 EP	2.0	1.49	4.89	2910	87.1	0.86	2.85	9.1	3.0	2.9	3.6	0.0028	23.5	L
WE1R 90 L2 EP	3.0	2.24	7.44	2875	86.1	0.88	4.25	7.7	2.4	2.3	2.8	0.0028	23.5	J
WE1R 112 MX2 EP	5.0	3.73	12.2	2920	88.6	0.86	7.05	8.8	2.2	2.0	3.2	0.0055	38	K
WE1R 112 MV2 EP	7.5	5.59	18.5	2890	88.6	0.87	10.5	7.9	2.3	2.1	3.1	0.0068	46	J
WE1R 132 S2 EP	7.5	5.59275	18.4	2914	88.5	0.86	11.0	6.9	1.8	1.3	3.0	0.0110	58	H
WE1R 132 SX2 EP	10.0	7.457	24.5	2910	89.5	0.90	13.5	7.3	2.2	1.8	3.2	0.0168	73	H
WE1R 160 M2 EP	15.0	11.1855	36.5	2930	90.2	0.89	20.0	8.3	2.7	2.4	4.0	0.0258	100	J
WE1R 160 MX2 EP	20.0	14.914	48.3	2947	90.2	0.92	26.0	7.8	2.2	1.7	3.0	0.0675	140	H
WE1R 160 L2 EP	25.0	18.6425	60.6	2936	91.0	0.91	32.5	7.8	2.2	1.8	3.2	0.0675	140	J
WE1R 180 M2 EP	30.0	22.371	72.5	2949	91.0	0.89	40.0	7.4	1.9	1.5	3.0	0.105	175	H
WE1R 200 L2 EP	40.0	29.828	96.6	2950	91.7	0.90	52.0	8.0	1.7	1.5	2.8	0.128	210	J
WE1R 200 LX2 EP	50.0	37.285	121	2950	92.4	0.91	64.0	8.3	2.2	1.8	3.6	0.154	240	J
WE1R 225 M2 EP	60.0	44.742	145	2946	93.0	0.89	79.0	7.8	2.1	1.9	3.3	0.360	300	J
WE1R 250 M2 EP	75.0	55.9275	181	2955	93.0	0.90	97	7.8	2.1	1.8	2.8	0.375	385	J
WE1R 280 S2 EP	100.0	74.57	240	2970	93.6	0.90	128	8.0	2.2	1.8	3.1	0.650	513	J
WE1R 280 M2 EP	125.0	93.2125	300	2968	94.5	0.91	157	7.2	1.9	1.5	2.7	0.68	550	H
WE1R 315 S2 EP	150.0	111.855	359	2975	94.5	0.89	192	8.8	1.5	1.5	2.8	1.21	730	J
WE1R 315 M2 EP	180.0	134.226	431	2974	95.0	0.89	229	8.2	1.4	1.2	2.4	1.44	820	J
WE1R 315 MX2 EP	200.0	149.14	479	2972	95.0	0.90	252	8.7	1.7	1.6	2.6	1.76	955	J
WE1R 315 MY2 EP	250.0	186.425	596	2985	95.4	0.88	321	9.8	3.0	2.0	3.0	2.82	1200	K
WE1R 315 MY2 EP	300.0	223.71	717	2981	95.4	0.88	383	8.2	2.5	1.6	2.5	2.82	1200	J
WE1R 315 L2 EP	350.0	260.995	835	2985	95.4	0.92	429	9.0	1.9	1.2	2.3	3.66	1450	J
WE1R 315 LX2 EP	400.0	298.28	955	2984	95.4	0.92	491	11.2	3.5	1.9	3.0	4.43	1630	L
WE1R 315 LX2 EP	450.0	335.565	1075	2981	95.4	0.92	552	9.9	3.1	1.7	2.7	4.43	1630	K
Synchronous speed 1500 rpm – 4-pole version														
WE1R 80 G4 EP	1.0	0.75	5.01	1430	82.5	0.80	1.65	6.8	2.9	2.8	3.2	0.0026	17	J
WE1R 90 S4 EP	1.5	1.12	7.37	1450	84.0	0.74	2.57	7.5	3.3	3.2	3.9	0.0040	23	K
WE1R 90 LV4 EP	2.0	1.49	9.85	1445	84.0	0.77	3.31	7.3	3.2	3.0	3.5	0.0050	24	K
WE1R 100 L4 EP	3.0	2.24	14.7	1460	87.5	0.72	5.25	9.4	3.9	3.6	4.4	0.0090	36	M
WE1R 112 MX4 EP	5.0	3.73	24.6	1450	87.5	0.77	8.0	8.8	3.5	2.7	4.0	0.0110	45	K
WE1R 132 S4 EP	7.5	5.59275	36.6	1461	89.5	0.86	10.5	6.5	2.3	1.8	3.2	0.035	90	H
WE1R 132 M4 EP	10.0	7.457	48.6	1465	89.5	0.81	14.8	7.9	2.6	2.0	3.7	0.035	92	K
WE1R 160 M4 EP	15.0	11.1855	73.1	1462	91.0	0.83	21.5	7.6	3.1	2.6	3.4	0.078	124	J
WE1R 160 L4 EP	20.0	14.914	97.1	1467	91.0	0.89	26.5	7.7	2.8	2.1	3.1	0.115	165	J
WE1R 180 M4 EP	25.0	18.6425	121	1475	92.4	0.85	34.5	6.9	2.1	1.8	2.8	0.168	210	H
WE1R 180 L4 EP	30.0	22.371	145	1478	92.4	0.82	42.5	7.7	2.3	2.0	3.2	0.168	210	J
WE1R 200 L4 EP	40.0	29.828	193	1479	93.0	0.81	57.0	7.7	2.3	2.0	3.2	0.275	280	J
WE1R 225 S4 EP	50.0	37.285	241	1477	93.0	0.84	69.0	7.1	2.0	1.8	2.9	0.313	320	H
WE1R 225 M4 EP	60.0	44.742	289	1480	93.6	0.83	83.0	8.0	2.2	2.1	2.6	0.525	390	J
WE1R 250 M4 EP	75.0	55.9275	360	1485	94.1	0.82	105	7.9	2.0	1.8	2.5	0.525	535	J
WE1R 280 S4 EP	100.0	74.57	481	1482	94.5	0.83	137	7.4	2.0	1.8	2.5	0.95	550	J
WE1R 280 M4 EP	125.0	93.2125	601	1480	94.5	0.82	174	7.6	2.3	1.8	2.4	1.10	605	J
WE1R 315 S4 EP	150.0	111.855	720	1484	95.0	0.81	210	8.2	1.8	1.5	2.6	1.96	758	J
WE1R 315 M4 EP	175.0	130.4975	840	1484	95.0	0.83	239	8.0	1.8	1.7	2.5	2.27	849	J
WE1R 315 MX4 EP	200.0	149.14	960	1484	95.0	0.84	270	8.0	1.8	1.6	2.3	2.73	990	J
WE1R 315 MY4 EP	250.0	186.425	1194	1491	95.0	0.87	326	8.8	1.8	1.3	2.5	4.82	1270	J
WE1R 315 L4 EP	350.0	260.995	1674	1489	95.4	0.87	454	7.6	1.4	1.1	2.3	5.93	1450	H
WE1R 315 LX4 EP	400.0	298.28	1912	1490	95.4	0.84	537	8.8	2.0	1.2	2.6	6.82	1630	K

CL = Code Letter

Energy saving motors, High Efficiency acc. to CSA C 390 and NEMA MG 1, Tab. 12 – 10

Efficiency determination acc. to IEEE 112-1996, method B
with surface ventilation, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55, design A

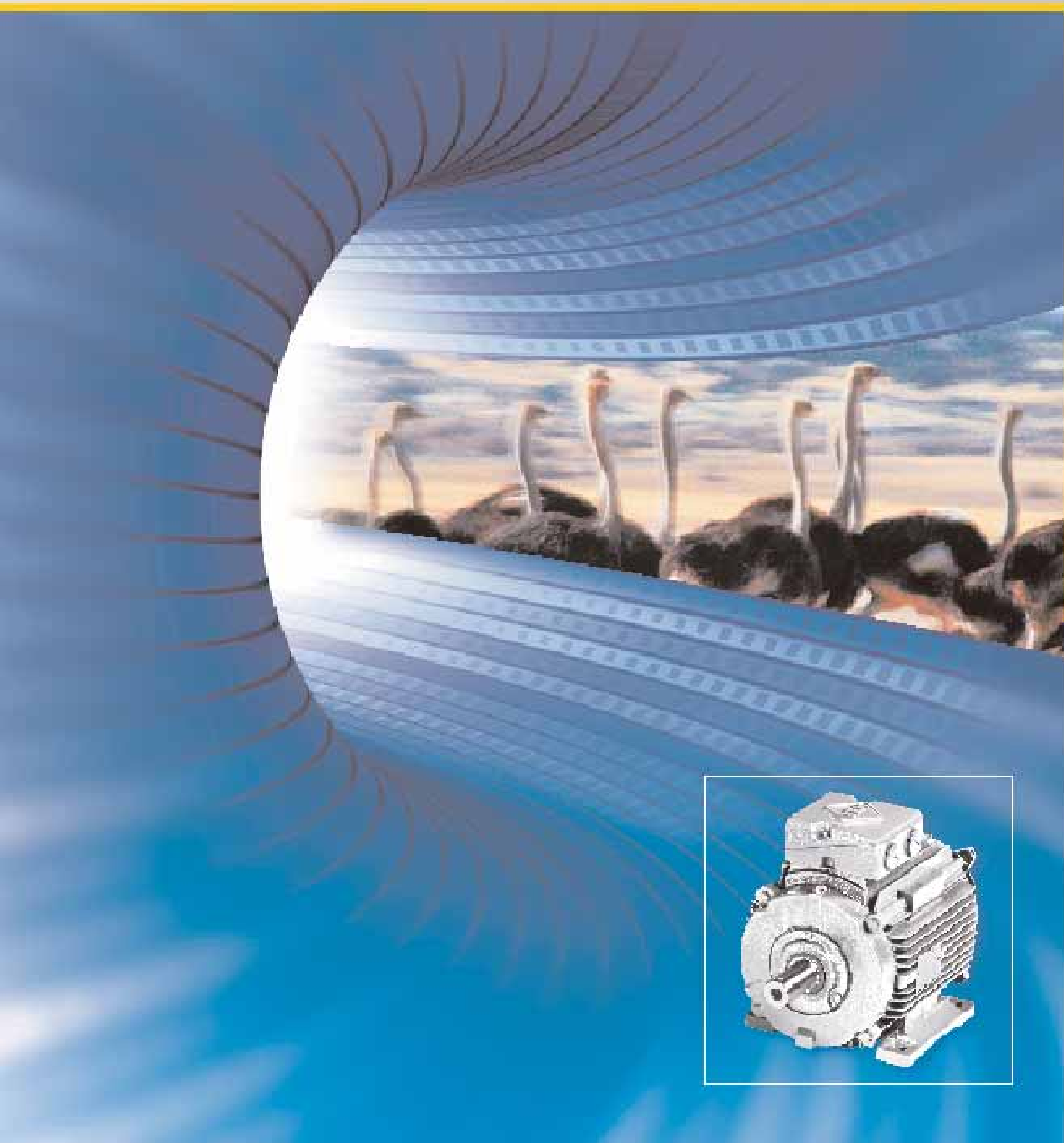
Motor selection data

Design point 480 V, 60 Hz

Type	P_B		M_B	n_B	η_{nom}	$\cos\varphi_B$	I_B 480 V	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m	CL
	Hp	kW	Nm	rpm	%	-	A	-	-	-	-	kgm^2	kg	
Synchronous speed 3600 rpm – 2-pole version														
WE1R 80 K2 EP	1.0	0.75	2.04	3510	86.0	0.85	1.23	9.3	2.8	2.3	3.2	0.00132	15	L
WE1R 80 G2 EP	1.5	1.12	3.04	3510	87.1	0.86	1.8	10.0	3.3	2.9	3.5	0.00170	18	M
WE1R 90 S2 EP	2.0	1.49	4.03	3530	88.4	0.83	2.45	10.5	2.8	2.4	3.9	0.00275	23.5	M
WE1R 90 L2 EP	3.0	2.24	9.10	3510	88.5	0.84	3.6	8.4	2.2	2.0	3.2	0.00275	23.5	K
WE1R 112 MX2 EP	5.0	3.73	10.1	3540	88.9	0.82	6.2	10.6	2.7	2.5	3.9	0.0055	38	M
WE1R 112 MV2 EP	7.5	5.59	15.2	3520	90.0	0.86	8.7	10.0	2.7	2.5	3.7	0.0068	46	L
WE1R 132 S2 EP	10.0	7.46	20.3	3503	89.5	0.87	11.5	6.5	1.7	1.2	2.8	0.0127	58	H
WE1R 160 MY2 EP	15.0	11.19	30.4	3510	90.2	0.91	16.5	7.0	2.6	2.0	3.1	0.0196	86	H
WE1R 160 M2 EP	20.0	14.91	40.5	3515	90.2	0.89	22.5	7.8	2.5	2.2	3.6	0.0258	100	J
WE1R 160 MX2 EP	25.0	18.64	50.3	3542	91.0	0.91	27.0	8.0	2.1	1.7	3.1	0.0675	140	J
WE1R 160 L2 EP	30.0	22.37	60.3	3544	91.0	0.90	33.0	8.2	2.4	1.8	3.1	0.0675	140	J
WE1R 180 M2 EP	40.0	29.83	80.3	3549	91.7	0.90	43.5	7.0	1.9	1.4	2.9	0.105	175	H
WE1R 200 L2 EP	50.0	37.29	100	3552	92.4	0.90	54.0	8.4	2.1	1.6	3.3	0.128	210	J
WE1R 200 LX2 EP	60.0	44.74	120	3552	93.0	0.90	64.5	8.3	2.2	1.8	3.6	0.154	240	J
WE1R 225 M2 EP	75.0	55.93	151	3550	93.0	0.89	82.0	7.7	2.1	1.9	3.2	0.360	300	J
WE1R 250 M2 EP	90.0	67.11	180	3556	93.6	0.90	97	8.0	2.2	1.9	2.9	0.375	385	J
WE1R 250 M2 EP	100.0	74.57	200	3549	93.6	0.90	107	7.2	2.0	1.7	2.6	0.375	385	H
WE1R 280 S2 EP	100.0	74.57	199	3577	93.6	0.89	108	9.8	2.6	2.2	3.8	0.650	513	K
WE1R 280 S2 EP	125.0	93.21	249	3569	94.5	0.90	132	7.9	2.1	1.8	3.0	0.650	513	H
WE1R 280 M2 EP	150.0	111.86	300	3567	94.5	0.91	156	7.4	1.9	1.6	2.8	0.680	550	H
WE1R 315 S2 EP	180.0	134.23	358	3580	95.0	0.89	191	9.0	1.6	1.5	2.9	1.21	730	J
WE1R 315 M2 EP	200.0	149.14	398	3578	95.0	0.90	210	9.1	1.6	1.4	2.7	1.44	820	K
WE1R 315 MX2 EP	250.0	186.43	498	3572	95.4	0.90	261	8.5	1.7	1.6	2.6	1.76	955	J
WE1R 315 MY2 EP	300.0	223.71	597	3580	95.4	0.88	321	10.0	3.0	2.0	3.1	2.82	1200	J
WE1R 315 MY2 EP	350.0	261.00	697	3578	95.4	0.89	371	8.7	2.6	1.7	2.7	2.82	1200	J
WE1R 315 L2 EP	400.0	298.28	795	3584	95.4	0.92	409	9.6	2.0	1.2	2.4	3.66	1450	K
WE1R 315 LX2 EP	450.0	335.57	894	3584	95.4	0.93	455	12.2	3.8	2.0	3.3	4.43	1630	L
WE1R 315 LX2 EP	500.0	372.85	995	3580	95.4	0.93	505	11.0	3.4	1.9	2.9	4.43	1630	L
Synchronous speed 1800 rpm – 4-pole version														
WE1R 80 G4 EP	1.0	0.75	4.09	1740	82.5	0.78	1.39	7.8	3.0	2.8	3.5	0.0026	17	K
WE1R 90 S4 EP	1.5	1.12	6.12	1745	84.0	0.77	2.08	7.4	2.9	2.3	3.4	0.0040	23	K
WE1R 90 LV4 EP	2.0	1.49	8.14	1750	84.0	0.74	2.88	8.5	3.4	3.0	3.9	0.0050	24	L
WE1R 100 L4 EP	3.0	2.24	12.2	1755	87.5	0.76	4.17	9.5	3.7	3.3	4.4	0.0090	36	M
WE1R 112 MX4 EP	5.0	3.73	20.4	1750	87.5	0.79	6.45	8.0	2.8	2.6	3.3	0.0110	45	K
WE1R 132 SY4 EP	7.5	5.59	30.2	1770	89.5	0.85	8.8	7.7	2.6	2.3	3.7	0.028	70	J
WE1R 132 S4 EP	10.0	7.46	40.5	1757	89.5	0.86	11.5	6.3	1.9	1.6	2.9	0.035	90	G
WE1R 132 M4 EP	15.0	11.19	60.8	1758	91.0	0.84	17.5	7.3	2.3	1.7	3.2	0.035	92	J
WE1R 160 M4 EP	20.0	14.91	81.1	1757	91.0	0.83	23.5	7.2	2.8	2.2	3.0	0.078	124	J
WE1R 160 L4 EP	25.0	18.64	101	1767	92.4	0.89	28.0	7.5	2.5	1.9	2.9	0.115	165	H
WE1R 180 M4 EP	30.0	22.37	120	1775	92.4	0.85	34.5	7.4	2.3	1.8	2.9	0.168	210	J
WE1R 180 L4 EP	40.0	29.83	161	1774	93.0	0.83	46.5	7.1	2.3	1.8	2.9	0.168	210	H
WE1R 200 L4 EP	50.0	37.29	200	1778	93.0	0.81	59.5	7.5	2.3	1.9	3.0	0.275	280	J
WE1R 225 S4 EP	60.0	44.74	240	1776	93.6	0.84	68.5	7.8	2.2	1.9	3.1	0.313	320	J
WE1R 225 M4 EP	75.0	55.93	300	1781	94.1	0.83	86.0	8.1	2.1	2.0	2.5	0.525	390	J
WE1R 250 M4 EP	90.0	67.11	359	1784	94.5	0.82	104	8.1	2.0	1.9	2.6	0.525	535	J
WE1R 250 M4 EP	100.0	74.57	400	1782	94.5	0.83	115	7.4	1.8	1.7	2.4	0.525	535	J
WE1R 280 S4 EP	125.0	93.21	500	1780	94.5	0.82	145	7.3	1.9	1.6	2.3	0.95	550	J
WE1R 280 M4 EP	150.0	111.86	599	1784	95.0	0.82	173	8.1	2.2	1.9	2.7	1.10	605	J
WE1R 315 S4 EP	180.0	134.23	718	1785	95.0	0.81	210	8.4	1.7	1.4	2.6	1.96	758	K
WE1R 315 M4 EP	200.0	149.14	797.027	1787	95.0	0.82	230	8.8	1.7	1.6	2.7	2.27	849	K
WE1R 315 MX4 EP	250.0	186.43	997	1786	95.0	0.84	281	7.7	1.7	1.6	2.2	2.73	990	J
WE1R 315 MY4 EP	300.0	223.71	1192	1793	95.4	0.87	324	9.2	1.9	1.4	2.6	4.82	1270	K
WE1R 315 L4 EP	400.0	298.28	1591	1790	95.4	0.86	437	8.4	1.7	1.3	2.5	5.93	1450	J
WE1R 315 LX4 EP	450.0	335.57	1788	1792	95.4	0.82	516	9.5	1.8	1.3	2.9	6.82	1630	L

CL = Code Letter

Non-ventilated motors



Basic version

General technical data

Motor selection data
50 Hz, 2- to 8-pole
3000/1500/1000/750 rpm

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
Rated output	0.04 up to 230 kW
Sizes	56 to 355
Material of housing	Grey cast iron
Rated torque	0.31 Nm to 1,795 Nm
Types of circuit	Motors with one speed are designed with Δ/Y-circuit as standard.
Insulation of stator winding	Thermal class 155, as option 155 [F(B)], 180 acc. to EN 60034-1 (IEC 60034-1)
Type of protection	IP 55 acc. to EN 60034-5 (IEC 60034-5) higher degrees of protection as an option
Type of cooling	IC 411 acc. to EN 60034-6 (IEC 60034-6)
Coolant temperature/ altitude of site	as standard -20 °C up to +40 °C, altitude of site 1000 m above sea level
Rated voltage	Rated voltage ranges A and B acc. to EN 60034-1 (IEC 60034-1), standard voltage acc. to EN 60038 50 Hz, 230 V, 400 V, 500 V and 690 V 60 Hz, 275 V, 480 V and 600 V
Types of construction	IM B3, IM B35, IM B5 and derived types of construction acc. to EN 60034-7
Colour system	Standard colour system “moderate”, colour shade RAL 7031, blue-grey Special colour system “world wide”, colour shade RAL 7031, blue-grey
Vibration grade	As standard grade “A” for motors without special vibration requirements
Shaft ends	Acc. to DIN 748 (IEC 60072), balancing “with half key”
Limit speeds	Please refer to paragraph about limit speeds in the catalogue part Technical explanations.
Bearing design	Please refer to paragraph about bearings in the catalogue part Technical explanations.
Motor weights	Please refer to the technical selection lists.
Terminal boxes	Please refer to paragraph about terminal boxes in the catalogue part Technical explanations.
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 catalogue part Technical explanations.
Options	Please refer to paragraph about modifications in the catalogue part Technical explanations.

Three-phase motors with squirrel-cage rotor, cooling method IC 410

Non-ventilated design, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data — Design point 400 V, 50 Hz

Type		P_B	M_B	n_B	η_B	cos φ_B	I_B 400 V	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
		kW	Nm	rpm	%	-	A	-	-	-	-	kgm²	kg
Synchronous speed 3000 rpm – 2-pole version													
K21O 63 K2U	K20O 56 K2U	0.09	0.31	2815	66.6	0.79	0.25	4.8	2.5	2.3	2.9	0.00013	4.8
K21O 63 G2U	K20O 56 G2U	0.12	0.40	2855	64.8	0.74	0.36	5.1	2.8	2.7	3	0.00015	5.1
K21O 71 K2U	K20O 63 K2U	0.18	0.61	2810	71.4	0.87	0.42	8.5	3.6	3.6	3.9	0.00025	6.5
K21O 71 G2U	K20O 63 G2U	0.25	0.84	2860	79.1	0.8	0.57	6.5	2.7	2.7	3.1	0.00032	7.4
K21O 80 K2U	K20O 71 K2U	0.37	1.24	2850	79.8	0.87	0.77	6.4	2.8	2.2	2.4	0.00057	10.4
K21O 80 G2U	K20O 71 G2U	0.55	1.84	2850	79.6	0.89	1.12	7.2	2.7	2.4	2.6	0.00072	11.2
K21O 90 S2U	K20O 80 K2U	0.75	2.49	2880	79.9	0.88	1.54	8.8	3.4	3.2	3.5	0.00132	15.7
K21O 90 L2U	K20O 80 G2U	1.1	3.69	2850	81.6	0.89	2.2	7.6	2.6	2.6	2.7	0.0017	18.7
K21O 100 L2U	K20O 90 L2U	1.4	4.58	2920	84.7	0.86	2.8	10.5	3.5	3.4	4	0.00275	24.5
K21O 112 M2U	K20O 100 S2U	2.05	6.68	2930	87.3	0.82	4.1	9.3	2.6	2.5	3.7	0.0045	31.4
K21O 112 MX2U	K20O 100 L2U	2.8	9.11	2935	89.4	0.85	5.3	10.8	3.0	2.6	4.1	0.0055	37.4
K21O 132 SX2	K20O 112 M2	3	9.90	2895	89.5	0.91	5.7	7.4	2.0		2.8	0.0110	57
K21O 160 M2	K20O 132 M2	4	13.2	2900	91.0	0.94	7.2	7.3	1.7		2.9	0.0258	81
K21O 160 MX2	K20O 160 S2	5.5	17.9	2935	91.5	0.93	9.9	7.8	1.9		2.9	0.0575	118
K21O 160 L2	K20O 160 M2	7.5	24.4	2935	92.5	0.93	13.2	8.1	2.1		3.0	0.0675	134
K21O 180 M2	K20O 180 S2	8.8	28.6	2935	92.5	0.93	19.3	7.7	2.0		2.6	0.105	165
K21O 200 L2	K20O 180 M2	12	39.0	2940	93.5	0.93	21	8.1	2.0		2.7	0.128	195
K21O 200 LX2	K20O 200 M2	15	48.6	2945	92.5	0.92	25.5	7.7	1.7		2.5	0.193	255
K21O 225 M2	K20O 200 L2	18.5	60.0	2945	93.0	0.92	31	8.0	1.8		2.6	0.220	290
K21O 250 M2	K20O 225 M2	22	71.1	2955	93.5	0.92	37	8.1	1.9		2.6	0.375	360
K21O 280 S2	K20O 250 S2	32	103	2965	93.5	0.93	53	8.9	1.9		2.7	0.650	490
K21O 280 M2	K20O 250 M2	40	129	2965	94.0	0.93	66	9.0	1.9		2.7	0.675	510
K21O 315 S2	K20O 280 S2	49	158	2970	94.0	0.93	81	8.8	1.6		2.7	1.21	720
K21O 315 M2	K20O 280 M2	59	190	2970	94.5	0.93	97	9.2	1.7		2.8	1.44	800
K21O 315 MX2	K20O 315 S2	70	225	2970	95.0	0.94	114	9.6	1.9		2.7	1.76	980
K21O 315 MY2	K20O 315 M2	90	289	2975	95.5	0.94	145	8.7	2.0		2.7	2.82	1170
K21O 315 L2	K20O 315 L2	120	385	2980	96.0	0.94	192	9.7	2.5		2.7	3.66	1460
K21O 315 LX2	K20O 315 LX2	145	465	2980	96.0	0.94	232	9.7	2.7		2.7	4.43	1630
K22O 355 MY2		145	464	2985	data on request							4.10	1900
K22O 355 M2		160	512	2985	data on request							4.20	2000
K22O 355 MX2		180	576	2985	data on request							5.50	2200
K22O 355 LY2		200	640	2985	data on request							7.10	2400
K22O 355 L2		230	736	2985	data on request							7.10	2400
Synchronous speed 1500 rpm – 4-pole version													
K21O 63 K4U	K20O 56 K4U	0.06	0.41	1400	57.6	0.66	0.23	3.2	2.1	2.1	2.4	0.00019	4.7
K21O 63 G4U	K20O 56 G4U	0.09	0.62	1395	61.8	0.67	0.31	3.7	2.5	2.5	2.7	0.00024	5.1
K21O 71 K4U	K20O 63 K4U	0.12	0.82	1400	64.9	0.72	0.37	4.0	2.0	2.0	2.4	0.00040	6.6
K21O 71 G4U	K20O 63 G4U	0.18	1.24	1390	67.9	0.76	0.5	4.4	2.3	2.3	2.5	0.00050	7.6
K21O 80 K4U	K20O 71 K4U	0.25	1.68	1425	70.5	0.77	0.67	5.5	2.4	2.2	2.6	0.00087	10.3
K21O 80 G4U	K20O 71 G4U	0.37	2.50	1415	75.9	0.78	0.9	6.0	2.7	2.3	2.7	0.00107	11.4
K21O 90 S4U	K20O 80 K4U	0.55	3.69	1425	78.4	0.79	1.28	6.2	2.5	2.0	2.7	0.00207	15.2
K21O 90 L4U	K20O 80 G4U	0.75	5.04	1420	79.4	0.82	1.66	6.5	2.7	2.7	2.9	0.00260	17.7
K21O 100 L4U	K20O 90 L4U	1	6.63	1440	82.1	0.74	2.4	8.3	3.8	3.6	4.2	0.00400	23.0
K21O 100 LX4U	K20O 100 S4U	1.5	9.88	1450	83.5	0.78	3.3	8.3	2.9	2.9	3.7	0.00725	29.4
K21O 112 M4U	K20O 100 L4U	2	13.1	1455	86.0	0.76	4.4	8.9	3.2	3.2	4.2	0.00900	36.4
K21O 132 S4	K20O 112 M4	2.3	15.3	1440	88.0	0.87	4.6	7.5	2.5		3.0	0.015	50
K21O 132 M4	K20O 132 S4	3.0	19.8	1445	89.0	0.86	5.9	6.6	2.2		2.3	0.028	69
K21O 160 M4	K20O 132 M4	4.4	28.9	1455	90.0	0.86	8.4	7.0	2.0		2.8	0.035	86
K21O 160 L4	K20O 160 S4	5.5	35.9	1465	91.5	0.89	10.4	7.7	2.5		3.0	0.078	120
K21O 180 M4	K20O 160 M4	8.0	52.2	1465	92.0	0.89	14.8	7.5	2.4		2.9	0.090	136
K21O 180 L4	K20O 180 S4	8.8	57.2	1470	93.0	0.89	16.1	8.5	2.4		2.9	0.138	170
K21O 200 L4	K20O 180 M4	11.0	71.5	1470	93.0	0.88	20.2	8.5	2.5		2.9	0.168	200
K21O 225 S4	K20O 200 M4	15.0	97.2	1475	92.5	0.88	26.5	7.8	2.0		2.4	0.275	270
K21O 225 M4	K20O 200 L4	18.5	120	1475	92.5	0.88	33.0	7.6	2.0		2.4	0.313	300
K21O 250 M4	K20O 225 M4	22	142	1475	93.0	0.89	38.5	7.7	2.1		2.5	0.525	375
K21O 280 S4	K20O 250 S4	32	207	1480	93.5	0.89	56.0	8.2	2.3		2.5	0.95	520
K21O 280 M4	K20O 250 M4	40	258	1480	94.0	0.89	69.5	8.5	2.5		2.5	1.10	580
K21O 315 S4	K20O 280 S4	50	323	1480	94.0	0.89	86.0	8.9	2.3		2.5	1.96	740
K21O 315 M4	K20O 280 M4	60	387	1480	94.5	0.89	103.0	9.1	2.4		2.6	2.27	840
K21O 315 MX4	K20O 315 S4	70	452	1480	94.5	0.89	121.0	9.9	2.7		2.8	2.73	1000
K21O 315 MY4	K20O 315 M4	95	611	1485	96.0	0.91	158.0	9.0	2.3		2.5	4.82	1200
K21O 315 L4	K20O 315 L4	132	849	1485	96.0	0.91	219.0	9.1	2.4		2.6	5.93	1450
K21O 315 LX4	K20O 315 LX4	150	966	1485	96.0	0.90	252.0	10.0	2.8		2.9	6.82	1630
K22O 355 MY4		150	961	1490	data on request							5.60	1950
K22O 355 LY4		160	1029	1485	data on request							10.0	2500
K22O 355 L4		180	1158	1485	data on request							10.0	2500

Three-phase motors with squirrel-cage rotor, cooling method IC 410

Non-ventilated design, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data — Design point 400 V, 50 Hz

Type		P_B	M_B	n_B	η_B	cos φ_B	I_B 400 V	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m
		kW	Nm	rpm	%	-	A	-	-	-	-	kgm²	kg
Synchronous speed 1000 rpm – 6-pole version													
K21O 63 K6U	K20O 56 K6U	0.04	0.42	920	48.7	0.52	0.23	2.5	2.1	2.1	2.6	0.00024	4.8
K21O 63 G6U	K20O 56 G6U	0.06	0.63	905	52.5	0.56	0.29	2.5	2.0	2.0	2.3	0.00027	5.6
K21O 71 K6U	K20O 63 K6U	0.09	0.91	940	59.5	0.50	0.44	3.2	2.1	2.1	2.6	0.00045	7.2
K21O 71 G6U	K20O 63 G6U	0.12	1.25	920	58.2	0.55	0.54	3.0	2.0	2.0	2.4	0.00060	8.1
K21O 80 K6U	K20O 71 K6U	0.18	1.83	940	62.8	0.66	0.63	4.3	2.3	2.3	2.8	0.00130	10.7
K21O 80 G6U	K20O 71 G6U	0.25	2.53	945	69.2	0.61	0.86	4.6	2.9	2.9	3.1	0.00175	12.2
K21O 90 S6U	K20O 80 K6U	0.37	3.76	940	72.3	0.67	1.1	4.8	2.0	2.0	2.5	0.00325	15.7
K21O 90 L6U	K20O 80 G6U	0.55	5.59	940	74.6	0.70	1.52	4.6	2.0	2.0	2.4	0.00425	18.7
K21O 100 L6U	K20O 90 L6U	0.75	7.46	960	78.5	0.66	2.1	5.1	2.3	2.3	2.7	0.00625	23.5
K21O 112 M6U	K20O 100 L6U	1.1	10.9	960	78.9	0.73	2.8	6.6	2.6	2.5	3.5	0.01225	32.9
K21O 132 S6	K20O 112 M6	1.5	14.9	960	82.5	0.78	3.5	7.0	2.9		3.6	0.018	46
K21O 132 M6	K20O 112 MX6	1.9	18.9	960	84.5	0.79	4.3	7.7	3.4		3.7	0.023	53
K21O 132 MX6	K20O 132 S6	2.6	25.9	960	86.0	0.85	5.4	6.5	2.7		2.8	0.043	70
K21O 160 M6	K20O 132 M6	3.5	34.8	960	87.0	0.84	7.1	7.2	3.1		3.2	0.053	86
K21O 160 L6	K20O 160 S6	4.8	47.5	965	89.0	0.88	9.1	7.4	2.7		3.0	0.113	114
K21O 180 L6	K20O 160 M6	6.5	64.0	970	90.0	0.88	12.3	7.8	3.0		3.2	0.145	136
K21O 200 L6	K20O 180 S6	7.6	74.4	975	91.0	0.88	14.3	7.5	2.4		3.2	0.228	175
K21O 200 LX6	K20O 180 M6	9.5	93.1	975	91.0	0.92	17.1	7.7	2.4		3.2	0.268	200
K21O 225 M6	K20O 200 M6	12.5	123	970	90.5	0.90	22.0	6.5	1.9		2.5	0.443	265
K21O 250 M6	K20O 225 M6	16.5	162	975	91.5	0.89	29.5	6.8	2.0		2.6	0.825	360
K21O 280 S6	K20O 250 S6	22	214	980	92.0	0.88	39.5	6.6	2.0		2.4	1.28	465
K21O 280 M6	K20O 250 M6	27	263	980	92.5	0.88	48.0	7.1	2.2		2.6	1.48	520
K21O 315 S6	K20O 280 S6	37	359	985	93.0	0.89	65.0	7.4	2.0		2.4	2.63	690
K21O 315 M6	K20O 280 M6	44	427	985	93.5	0.89	76.5	7.8	2.2		2.5	3.33	800
K21O 315 MX6	K20O 315 S6	48	465	985	93.5	0.89	84.0	8.6	2.5		2.7	3.60	880
K21O 315 MY6	K20O 315 M6	75	727	985	94.0	0.89	130.0	8.0	2.2		2.5	6.00	1050
K21O 315 L6	K20O 315 L6	90	873	985	95.0	0.90	153.0	7.9	2.2		2.4	6.67	1250
K21O 315 LX6	K20O 315 LX6	110	1067	985	95.0	0.90	187.0	8.6	2.4		2.6	8.60	1460
K22O 355 MY6		110	1056	995	data on request							8.1	1550
K22O 355 M6		140	1344	995	data on request							8.2	1650
K22O 355 MX6		160	1536	995	data on request							12.1	2200
K22O 355 LY6		170	1632	995	data on request							14.0	2400
Synchronous speed 750 rpm – 8-pole version													
K21O 71 K8U	K20O 63 K8U	0.04	0.55	695	40.2	0.54	0.27	2.3	2.2	2.2	2.7	0.00050	6.4
K21O 71 G8U	K20O 63 G8U	0.06	0.84	680	42.2	0.54	0.38	2.3	2.3	2.3	2.6	0.00060	7.9
K21O 80 K8U	K20O 71 K8U	0.09	1.22	705	49.5	0.60	0.44	3.0	2.0	2.0	2.6	0.00130	10.2
K21O 80 G8U	K20O 71 G8U	0.12	1.63	705	53.3	0.57	0.57	3.3	2.5	2.5	3.0	0.00175	11.7
K21O 90 S8U	K20O 80 K8U	0.18	2.44	705	60.5	0.58	0.74	3.3	1.9	1.9	2.2	0.00300	14.7
K21O 90 L8U	K20O 80 G8U	0.25	3.39	705	67.8	0.56	0.95	3.5	2.0	2.0	2.4	0.00375	17.7
K21O 100 L8U	K20O 90 L8U	0.37	4.98	710	62.5	0.60	1.43	3.2	1.7	1.7	2.1	0.00625	22.5
K21O 100 LX8U	K20O 100 S8U	0.55	7.40	710	72.9	0.63	1.73	4.5	2.5	2.5	2.7	0.00900	27.4
K21O 112 M8U	K20O 100 L8U	0.75	10.1	710	75.1	0.69	2.1	4.5	2.2	2.2	2.8	0.01225	32.9
K21O 132 S8	K20O 112 M8	1.1	14.6	720	77.5	0.66	3.3	5.5	2.8		3.5	0.018	46
K21O 132 M8	K20O 112 MX8	1.5	20.0	715	79.5	0.70	4.1	5.3	2.6		3.1	0.023	53
K21O 160 M8	K20O 132 S8	1.8	23.9	720	83.5	0.72	4.5	5.3	2.6		3.0	0.043	70
K21O 160 MX8	K20O 132 M8	2.5	33.2	720	84.0	0.74	6.0	5.0	2.3		2.7	0.053	86
K21O 160 L8	K20O 160 S8	3.6	47.4	725	86.5	0.79	8.0	5.4	2.3		2.9	0.113	114
K21O 180 L8	K20O 160 M8	5.0	65.9	725	87.5	0.79	11.0	5.5	2.3		2.8	0.145	136
K21O 200 L8	K20O 180 S8	6.5	85.6	725	89.0	0.81	13.8	6.1	2.2		2.8	0.228	175
K21O 225 S8	K20O 180 M8	7.5	98.1	730	89.5	0.80	15.9	6.5	2.4		3.0	0.440	265
K21O 225 M8	K20O 200 M8	9.0	118	730	90.0	0.81	18.0	5.9	1.8		2.6	0.440	265
K21O 250 M8	K20O 225 M8	13.0	169	735	90.0	0.81	26.0	5.9	1.9		2.5	0.825	360
K21O 280 S8	K20O 250 S8	17.5	227	735	91.0	0.76	36.5	6.1	2.0		2.7	1.35	465
K21O 280 M8	K20O 250 M8	22	286	735	91.0	0.76	46.0	6.3	2.1		2.8	1.55	520
K21O 315 S8	K20O 280 S8	28	364	735	92.0	0.79	55.5	6.8	2.1		2.4	2.63	690
K21O 315 M8	K20O 280 M8	35	452	740	92.0	0.80	68.5	6.8	2.1		2.4	3.33	800
K21O 315 MX8	K20O 315 S8	37	478	740	92.5	0.80	72.5	7.2	2.2		2.6	3.60	880
K21O 315 MY8	K20O 315 M8	55	710	740	93.0	0.82	104.0	7.3	2.1		2.4	6.00	1050
K21O 315 L8	K20O 315 L8	68	878	740	93.5	0.82	128.0	7.6	2.2		2.5	6.76	1250
K21O 315 LX8	K20O 315 LX8	85	1097	740	94.0	0.82	159.0	7.7	2.3		2.5	8.6	1430
K22O 355 MY8		85	1097	740	data on request							9.3	1500
K22O 355 M8		90	1154	745	data on request							9.5	1600
K22O 355 MX8		110	1410	745	data on request							13.4	2200
K22O 355 LY8		140	1795	745	data on request							15.8	2400

Forced-ventilated motors

Basic version

General technical data

Motor selection data
50 Hz, 2- to 12-pole
3000/1500/1000/750/600/500 rpm

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 500 kW
Sizes	63 to 355
Material of housing	Grey cast iron EN GJL-200 DIN EN 1561 with cooling ribs in horizontal-vertical array
Rated torque	0.25 Nm to 3,400 Nm
Types of circuit	Motors with one speed are designed with Δ/Y-circuit as standard.
Insulation of stator winding	Thermal class 155, as option 155 [F(B)], 180 according to EN 60034-1 (IEC 60034-1)
Type of protection	IP 55 acc. to EN 60034-5 (IEC 60034-5), design with radial fan available as option in a higher type of protection
Type of cooling	IC 416 acc. to EN 60034-6 (IEC 60034-6)
Coolant temperature/ altitude of site	as standard -20 °C up to +40 °C, altitude of site 1000 m above sea level
Rated voltage	Rated voltage ranges A and B acc. to EN 60034-1 (IEC 60034-1), standard voltage acc. to EN 60038 50 Hz, 230 V, 400 V, 500 V and 690 V 60 Hz, 275 V, 480 V and 600 V
Types of construction	IM B3, IM B35, IM B5 and derived types of construction acc. to EN 60034-7
Colour system	Standard colour system "moderate", colour shade RAL 7031, blue-grey Special colour system "world wide", colour shade RAL 7031, blue-grey
Vibration grade	As standard grade "A" for motors without special vibration requirements
Shaft ends	Acc. to DIN 748 (IEC 60072), balancing "with half key"
Limit speeds	Please refer to paragraph about limit speeds in the catalogue part Technical explanations.
Bearing design	Please refer to paragraph about bearings in the catalogue part Technical explanations.
Motor weights	Please refer to the technical selection lists.
Terminal boxes	Please refer to paragraph about terminal boxes in the catalogue part Technical explanations.
Forced ventilation unit	The forced ventilation unit FBW is ready for assembly. FBW consists of a fan cover, an air inlet grid, the fan motor with wings and a terminal box. The type of protection for mounted installation is IP 55 acc. to EN 60034-5.
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 catalogue part Technical explanations.
Options	Please refer to paragraph about modifications in the catalogue part Technical explanations.

Three-phase motors with squirrel-cage rotor, cooling method IC 416

Design version for rated voltages of zone A acc. to IEC 34-1, 50 Hz
Cooling method IC 416, forced-ventilated version, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data — Design point 400 V, 50 Hz

Type		P kW	M_B Nm	n rpm	η %	cos φ -	I 400 V A	I_A/I_B -	M_A/M_B -	M_S/M_B -	M_K/M_B -	J kgm²	m kg	Forced ventilation unit Type	P_{VFU} W	I_{VFU} A
Synchronous speed 3000 rpm – 2-pole version																
K21F 71 K2	K20F 63 K2	0.37	1.27	2780	71.5	0.79	0.94	4.4	2.1	2.1	2.3	0.00025	a.A.	Wistro	33	0.05
K21F 71 G2	K20F 63 G2	0.55	1.89	2775	74.3	0.81	1.32	5.1	2.3	2.1	2.6	0.00032	a.A.	Wistro	33	0.05
K21F 80 K2	K20F 71 K2	0.75	2.54	2825	77.5	0.81	1.72	5.9	2.4	2.4	2.4	0.00057	a.A.	Wistro	34	0.05
K21F 80 G2	K20F 71 G2	1.1	3.71	2835	77.8	0.80	2.55	6.0	2.4	2.3	2.6	0.00072	a.A.	Wistro	34	0.05
K21F 90 S2	K20F 80 K2	1.5	5.04	2840	81.2	0.86	3.1	7.0	2.5	2.5	2.8	0.00132	a.A.	Wistro	90	0.16
K21F 90 L2	K20F 80 G2	2.2	7.37	2850	82.0	0.85	4.55	7.5	2.8	2.3	2.9	0.00170	a.A.	Wistro	90	0.16
K21F 100 L2	K20F 90 L2	3.0	10.0	2865	83.4	0.84	6.15	6.8	2.4	2.2	2.8	0.00275	a.A.	Wistro	93	0.16
K21F 112 M2	K20F 100 S2	4.0	13.2	2900	85.0	0.81	8.4	7.0	2.2	2.1	2.9	0.00450	a.A.	Wistro	94	0.16
K21F 132 S2 T	K20F 100 L2	5.5	18.2	2890	86.3	0.84	11	7.5	2.4	2.2	3.0	0.00550	a.A.	Wistro	94	0.16
K21F 132 SX2T		7.5	24.9	2880	87.0	0.84	14.8	6.3	1.5	1.2	2.6	0.00680	a.A.	Wistro	94	0.16
K21F 132 S2	K20F 112MY2	5.5	18.4	2860	85.7	0.86	11.0	5.5	1.8	1.6	2.2	0.0081	56	FBW 112 IL	94	0.16
K21F 132 SX2	K20F 112 M2	7.5	24.7	2900	87.0	0.86	14.5	6.6	1.8	1.3	2.5	0.0110	61	FBW 112 IL	94	0.16
K21F 160 M2	K20F 132 M2	11.0	36.2	2900	88.5	0.90	20.0	7.0	2.4	2.0	3.0	0.0258	86	FBW 132 IL	148	0.24
K21F 160 MX2	K20F 160 S2	15.0	48.9	2930	89.4	0.90	27.0	7.1	2.2	1.7	2.9	0.0575	124	FBW 160 IL	280	0.51
K21F 160 L2	K20F 160 M2	18.5	60.5	2920	90.5	0.92	32.0	7.2	2.1	1.6	2.8	0.0675	140	FBW 160 IL	280	0.51
K21F 180 M2	K20F 180 S2	22	71.6	2935	91.8	0.92	37.5	6.8	1.7	1.4	2.6	0.105	175	FBW 180 IL	280	0.51
K21F 200 L2	K20F 180 M2	30	97.5	2940	92.8	0.92	50.5	7.3	2.0	1.6	2.9	0.128	205	FBW 180 IL	280	0.51
K21F 200 LX2	K20F 200 M2	37	120	2940	93.0	0.90	64.0	7.0	1.8	1.3	2.4	0.193	267	FBW 200 IL	255	0.44
K21F 225 M2	K20F 200 L2	45	146	2940	93.7	0.91	76.0	7.5	1.8	1.4	2.7	0.220	302	FBW 200 IL	255	0.44
K21F 250 M2	K20F 225 M2	55	178	2955	93.7	0.91	93.0	7.5	2.0	1.5	2.6	0.375	375	FBW 225 IL	255	0.44
K21F 280 S2	K20F 250 S2	75	241	2970	94.6	0.92	124	7.5	2.0	1.6	2.6	0.650	510	FBW 250 IL	370	0.63
K21F 280 M2	K20F 250 M2	90	289	2970	94.7	0.91	151	8.5	2.2	1.8	2.8	0.675	530	FBW 250 IL	370	0.63
K21F 315 S2	K20F 280 S2	110	353	2975	95.4	0.91	183	8.5	1.5	1.3	2.5	1.210	750	FBW 280 IL	370	0.63
K21F 315 M2	K20F 280 M2	132	424	2975	95.4	0.91	219	8.5	2.0	1.8	2.7	1.440	830	FBW 280 IL	370	0.63
K21F 315 MX2	K20F 315 S2	160	514	2975	96.0	0.93	259	8.5	2.0	1.6	2.6	1.8	1015	FBW 280 IL	370	0.63
K21F 315 MY2	K20F 315 M2	200	643	2970	96.0	0.92	327	8.2	2.6	2.0	2.6	2.8	1205	FBW 315 IL	370	0.63
K21F 315 L2	K20F 315 L2	250	803	2973	96.1	0.93	404	7.3	2.1	1.4	2.0	3.7	1495	FBW 315 IL	370	0.63
K21F 315 LX2	K20F 315 LX2	315	1011	2975	96.7	0.92	511	7.4	2.4	1.4	2.0	4.4	1700	FBW 315 IL	370	0.63
K22F 355 MY2		315	1007	2988	96.8	0.88	534	8.6	1.3	1.0	3.0	4.1	1945	FBW 355 IL	370	0.63
K22F 355 M2		355	1138	2980	96.5	0.91	583	7.3	1.3	1.0	2.3	4.2	2045	FBW 355 IL	370	0.63
K22F 355 MX2		400	1280	2985	96.8	0.90	663	8.5	1.9	1.3	3.2	5.5	2245	FBW 355 IL	370	0.63
K22F 355 LY2		450	1441	2983	96.9	0.92	729	7.2	1.3	1.0	2.4	7.1	2445	FBW 355 IL	370	0.63
K22F 355 L2		500	1600	2985	97.2	0.92	807	8.2	1.8	0.9	2.6	7.1	2445	FBW 355 IL	370	0.63

Synchronous speed 1500 rpm – 4-pole version																
K21F 71 K4	K20F 63 K4	0.25	1.72	1385	64.6	0.72	0.78	3.6	1.8	1.8	2.1	0.00040	a.A.	Wistro	33	0.05
K21F 71 G4	K20F 63 G4	0.37	2.56	1370	67.8	0.74	1.06	3.8	2.0	2.0	2.2	0.00050	a.A.	Wistro	33	0.05
K21F 80 K4	K20F 71 K4	0.55	3.75	1400	71.5	0.69	1.60	4.1	2.1	2.0	2.3	0.00087	a.A.	Wistro	34	0.05
K21F 80 G4	K20F 71 G4	0.75	5.12	1400	73.5	0.70	2.10	4.6	2.2	2.1	2.3	0.00107	a.A.	Wistro	34	0.05
K21F 90 S4	K20F 80 K4	1.1	7.45	1410	76.6	0.79	2.62	5.5	2.3	2.2	2.5	0.00207	a.A.	Wistro	90	0.16
K21F 90 L4	K20F 80 G4	1.5	10.2	1400	78.8	0.81	3.40	5.5	2.5	2.4	2.6	0.00260	a.A.	Wistro	90	0.16
K21F 100 L4	K20F 90 L4	2.2	14.9	1410	81.2	0.79	4.95	6.0	2.5	2.3	2.7	0.00400	a.A.	Wistro	93	0.16
K21F 100 LX4	K20F 100 S4	3.0	20.0	1430	82.6	0.79	6.65	6.5	2.5	2.2	2.9	0.00725	a.A.	Wistro	94	0.16
K21F 112 M4	K20F 100 L4	4.0	26.6	1435	84.2	0.78	8.80	6.9	2.6	2.5	3.2	0.009	a.A.	Wistro	94	0.16
K21F 132 S4 T		5.5	37.0	1420	86.3	0.78	11.8	6.3	2.5	2.4	2.9	0.011	a.A.	Wistro	94	0.16
K21F 132 S4	K20F 112 M4	5.5	36.5	1440	85.7	0.89	10.5	6.5	1.9	1.7	3.0	0.015	54	FBW 112 IL	94	0.16
K21F 132 M4	K20F 132 S4	7.5	49.4	1450	87.0	0.84	15	6.0	2.0	1.7	2.9	0.028	73	FBW 132 IL	148	0.24
K21F 160 M4	K20F 132 M4	11	72.4	1450	88.4	0.85	21	6.8	2.2	1.9	3.3	0.035	95	FBW 132 IL	148	0.24
K21F 160 L4	K20F 160 S4	15	97.8	1465	89.4	0.86	28	7.3	2.5	2.0	3.0	0.078	126	FBW 160 IL	280	0.51
K21F 180 M4	K20F 160 M4	18.5	121	1460	90.0	0.86	34.5	6.8	2.5	2.0	2.9	0.090	142	FBW 160 IL	280	0.51
K21F 180 L4	K20F 180 S4	22	143	1465	90.5	0.84	42	6.5	2.0	1.8	2.6	0.138	180	FBW 180 IL	280	0.51
K21F 200 L4	K20F 180 M4	30	196	1465	91.5	0.85	55.5	7.0	2.0	1.7	2.4	0.168	210	FBW 180 IL	255	0.44
K21F 225 S4	K20F 200 M4	37	240	1470	92.5	0.86	67	7.0	2.0	1.7	2.5	0.275	282	FBW 200 IL	255	0.44
K21F 225 M4	K20F 200 L4	45	292	1470	93.0	0.86	81	7.0	2.0	1.7	2.5	0.313	312	FBW 200 IL	255	0.44
K21F 250 M4	K20F 225 M4	55	356	1475	93.5	0.86	98.5	7.0	2.2	1.7	2.3	0.525	390	FBW 225 IL	255	0.44
K21F 280 S4	K20F 250 S4	75	484	1480	94.1	0.86	134	7.0	2.0	1.7	2.2	0.950	540	FBW 250 IL	255	0.44
K21F 280 M4	K20F 250 M4	90	581	1480	94.6	0.86	160	7.0	2.1	1.6	2.2	1.100	600	FBW 250 IL	370	0.63
K21F 315 S4	K20F 280 S4	110	707	1485	95.1	0.86	194	7.5	1.8	1.6	2.2	1.960	770	FBW 280 IL	370	0.63
K21F 315 M4	K20F 280 M4	132	849	1485	95.1	0.86	233	7.0	1.8	1.5	2.2	2.270	870	FBW 280 IL	370	0.63
K21F 315 MX4	K20F 315 S4	160	1032	1480	95.0	0.87	279	7.0	1.8	1.5	2.0	2.7	1030	FBW 280 IL	370	0.63
K21F 315 MY4	K20F 315 M4	200	1286	1485	96.0	0.88	342	7.5	2.0	1.8	2.4	4.8	1235	FBW 315 IL	370	0.63
K21F 315 L4	K20F 315 L4	250	1608	1485	96.1	0.90	417	8.0	2.0	1.6	2.3	5.9	1485	FBW 315 IL	370	0.63
K21F 315 LX4	K20F 315 LX4	315	2019	1490	96.5	0.88	535	8.6	1.9	1.5	2.5	6.8	1700	FBW 315 IL	370	0.63
K22F 355 MY4		315	2016	1492	95.60	0.85	560	7.1	1.4	1.0	2.9	5.6	1990	FBW 355 IL	370	0.63
K22F 355 M4		355	2275	1490	96.80	0.84	630	8.1	1.8	1.0	3.1	7.9	2200	FBW 355 IL	370	0.63
K22F 355 MX4		400	2557	1494	96.80	0.84	710	8.6	1.3	1.0	3.0	9.5	2445	FBW 355 IL	370	0.63
K22F 355 LY4		450	2884	1490	96.80	0.82	818	8.0	1.2	1.0	3.0	10	2545	FBW 355 IL	370	0.63
K22F 355 L4		500	3205	1490	96.70	0.79	945	7.9	1.1	1.0	3.0	10	2545	FBW 355 IL	370	0.63

a.A. on request

Forced-ventilated motors

Three-phase motors with squirrel-cage rotor, cooling method IC 416

Design version for rated voltages of zone A acc. to IEC 34-1, 50 Hz
Cooling method IC 416, forced-ventilated version, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

Motor selection data — Design point 400 V, 50 Hz

Type		P kW	M_B Nm	n rpm	η %	cos φ -	I 400 V A	I_A/I_B -	M_A/M_B -	M_S/M_B -	M_K/M_B -	J kgm²	m kg	Forced ventilation unit Type	P_{VFU} W	I_{VFU} A
Synchronous speed 1000 rpm – 6-pole version																
K21F 71 K6	K20F 63 K6	0.18	1.86	925	58.0	0.51	0.88	2.8	1.6	1.6	2.1	0.00045	a.A.	Wistro	33	0.05
K21F 71 G6	K20F 63 G6	0.25	2.61	915	60.0	0.55	1.10	2.9	2.0	2.0	2.2	0.00060	a.A.	Wistro	33	0.05
K21F 80 K6	K20F 71 K6	0.37	3.86	915	66.0	0.66	1.22	3.4	2.0	2.0	2.0	0.00130	a.A.	Wistro	34	0.05
K21F 80 G6	K20F 71 G6	0.55	5.74	915	68.0	0.67	1.73	3.7	2.2	2.2	2.4	0.00175	a.A.	Wistro	34	0.05
K21F 90 S6	K20F 80 K6	0.75	7.66	935	70.0	0.64	2.43	4.5	2.4	2.4	2.6	0.00325	a.A.	Wistro	90	0.16
K21F 90 L6	K20F 80 G6	1.1	11.2	935	73.0	0.69	3.15	4.6	2.2	2.2	2.6	0.00425	a.A.	Wistro	90	0.16
K21F 100 L6	K20F 90 L6	1.5	15.2	945	76.4	0.73	3.90	4.6	2.1	2.0	2.4	0.00625	a.A.	Wistro	93	0.16
K21F 112 M6	K20F 100 L6	2.2	22.1	950	79.8	0.74	5.35	5.3	2.2	2.1	2.7	0.01225	a.A.	Wistro	94	0.16
K21F 132 S6T		3.0	30.6	935	81.9	0.75	7.05	5.2	2.5	2.5	2.9	0.0139	a.A.	Wistro	94	0.16
K21F 132 S6	K20F 112 M6	3.0	30.0	955	78.5	0.82	6.7	5.7	1.8	1.6	2.7	0.018	50	FBW 112 IL	94	0.16
K21F 132 M6	K20F 112 MX6	4.0	40.0	955	80.0	0.80	9	6.0	2.2	2.0	3.1	0.023	57	FBW 112 IL	94	0.16
K21F 132 MX6	K20F 132 S6	5.5	55.0	955	83.0	0.83	11.5	5.0	1.8	1.5	2.3	0.043	74	FBW 132 IL	148	0.24
K21F 160 M6	K20F 132 M6	7.5	74.6	960	85.0	0.82	15.5	5.5	2.0	1.6	2.5	0.053	91	FBW 132 IL	148	0.24
K21F 160 L6	K20F 160 S6	11	109	965	85.2	0.86	21.5	5.0	2.0	1.7	2.3	0.113	120	FBW 160 IL	280	0.51
K21F 180 L6	K20F 160 M6	15	148	965	86.0	0.83	30.5	6.0	2.4	2.1	2.7	0.145	142	FBW 160 IL	280	0.51
K21F 200 L6	K20F 180 S6	18.5	182	970	88.1	0.87	35	5.5	2.0	1.7	2.4	0.228	185	FBW 180 IL	280	0.51
K21F 200 LX6	K20F 180 M6	22	217	970	88.8	0.87	41	6.2	2.2	1.8	2.6	0.268	210	FBW 180 IL	280	0.51
K21F 225 M6	K20F 200 M6	30	295	973	90.4	0.89	54	6.5	2.2	1.7	2.5	0.443	277	FBW 200 IL	255	0.44
K21F 250 M6	K20F 225 M6	37	362	975	91.0	0.89	66	6.5	2.2	1.7	2.3	0.825	375	FBW 225 IL	255	0.44
K21F 280 S6	K20F 250 S6	45	439	980	92.0	0.87	81	6.0	2.0	1.5	2.0	1.28	485	FBW 250 IL	370	0.63
K21F 280 M6	K20F 250 M6	55	536	980	92.5	0.88	97.5	6.5	2.3	1.7	2.4	1.48	540	FBW 250 IL	370	0.63
K21F 315 S6	K20F 280 S6	75	727	985	93.7	0.87	133	7.0	2.0	1.6	2.4	2.63	720	FBW 280 IL	370	0.63
K21F 315 M6	K20F 280 M6	90	868	990	94.4	0.88	156	7.0	2.0	1.7	2.4	3.33	830	FBW 280 IL	370	0.63
K21F 315 MX6	K20F 315 S6	110	1061	990	94.0	0.88	192	7.5	2.2	1.7	2.6	3.6	910	FBW 280 IL	370	0.63
K21F 315 MY6	K20F 315 M6	132	1273	990	95.0	0.88	228	7.5	2.0	1.7	2.4	6.0	1085	FBW 315 IL	370	0.63
K21F 315 L6	K20F 315 L6	160	1551	985	95.3	0.89	272	7.5	2.3	1.9	2.4	6.7	1285	FBW 315 IL	370	0.63
K21F 315 LX6	K20F 315 LX6	200	1929	990	95.0	0.87	349	8.3	2.2	2.0	2.7	8.6	1500	FBW 315 IL	370	0.63
K22F 355 MY6		200	1920	995	96.1	0.83	362	7.0	1.5	1.3	2.4	8.1	1595	FBW 355 IL	370	0.63
K22F 355 M6		250	2402	994	96.0	0.81	464	7.0	1.8	1.3	2.3	8.2	1695	FBW 355 IL	370	0.63
K22F 355 MX6		315	3023	995	96.5	0.83	568	6.8	1.6	1.3	2.5	12.1	2245	FBW 355 IL	370	0.63
K22F 355 LY6		355	3407	995	96.0	0.78	684	7.4	1.9	1.4	2.6	14.0	2445	FBW 355 IL	370	0.63

Synchronous speed 750 rpm – 8-pole version																
K21F 71 K8	K20F 63 K8	0.09	1.27	675	45.5	0.51	0.56	2.1	1.9	1.9	2.1	0.00050	a.A.	Wistro	33	0.05
K21F 71 G8	K20F 63 G8	0.12	1.71	670	46.5	0.51	0.73	2.3	1.8	1.8	2.1	0.00060	a.A.	Wistro	33	0.05
K21F 80 K8	K20F 71 K8	0.18	2.49	690	56.5	0.59	0.78	2.8	2.0	2.0	2.2	0.00130	a.A.	Wistro	34	0.05
K21F 80 G8	K20F 71 G8	0.25	3.44	695	58.0	0.56	1.12	3.0	2.3	2.3	2.5	0.00175	a.A.	Wistro	34	0.05
K21F 90 S8	K20F 80 K8	0.37	5.05	700	61.5	0.54	1.6	3.0	1.9	1.9	2.1	0.00300	a.A.	Wistro	90	0.16
K21F 90 L8	K20F 80 G8	0.55	7.56	695	64.5	0.60	2.04	3.2	1.9	1.9	2.2	0.00375	a.A.	Wistro	90	0.16
K21F 100 L8	K20F 90 L8	0.75	10.2	705	67.0	0.60	2.7	3.3	2.0	2.0	2.3	0.00625	a.A.	Wistro	93	0.16
K21F 100 LX8	K20F 100 S8	1.1	14.9	705	73.0	0.67	3.25	4.0	2.0	2.0	2.4	0.009	a.A.	Wistro	93	0.16
K21F 112 M8	K20F 100 L8	1.5	20.3	705	75.5	0.70	4.1	4.4	2.2	2.1	2.5	0.01225	a.A.	Wistro	94	0.16
K21F 132 S8T		2.2	30.7	685	75.8	0.68	6.3	3.8	2.0	1.9	2.3	0.0139	a.A.	Wistro	94	0.16
K21F 132 S8	K20F 112 M8	2.2	29.8	705	75.5	0.76	5.5	4.5	1.7	1.6	2.3	0.018	46	FBW 112 IL	94	0.16
K21F 132 M8	K20F 112 MX8	3	40.6	705	78.0	0.75	7.4	4.5	1.7	1.6	2.3	0.023	57	FBW 112 IL	94	0.16
K21F 160 M8	K20F 132 S8	4	53.8	710	79.3	0.78	9.3	4.0	1.6	1.3	1.9	0.043	75	FBW 132 IL	148	0.24
K21F 160 MX8	K20F 132 M8	5.5	74.0	710	81.4	0.78	12.5	4.5	1.7	1.6	2.1	0.053	91	FBW 132 IL	148	0.24
K21F 160 L8	K20F 160 S8	7.5	98.8	725	83.0	0.78	16.5	4.5	1.8	1.6	2.1	0.113	120	FBW 160 IL	280	0.51
K21F 180 L8	K20F 160 M8	11	146	720	85.0	0.78	24	4.5	2.0	1.7	2.1	0.145	142	FBW 160 IL	280	0.51
K21F 200 L8	K20F 180 S8	15	198	725	86.5	0.79	31.5	5.0	2.0	1.7	2.3	0.228	185	FBW 180 IL	280	0.51
	K20F 180 M8	18.5	244	725	87.5	0.80	38	5.0	1.9	1.7	2.2	0.268	210	FBW 180 IL	280	0.51
K21F 225 S8		18.5	244	725	89.2	0.83	36	5.5	2.0	1.6	2.2	0.44	267	FBW 200 IL	255	0.44
K21F 225 M8	K20F 200 M8	22	290	725	89.2	0.84	42.5	5.0	1.8	1.5	2.2	0.44	267	FBW 200 IL	255	0.44
K21F 250 M8	K20F 225 M8	30	392	730	90.2	0.79	61	5.5	2.2	1.8	2.2	0.825	375	FBW 225 IL	255	0.44
K21F 280 S8	K20F 250 S8	37	481	735	91.0	0.80	73.5	5.5	2.0	1.5	2.0	1.35	485	FBW 250 IL	370	0.63
K21F 280 M8	K20F 250 M8	45	585	735	91.5	0.77	92	6.0	2.3	1.8	2.4	1.55	540	FBW 250 IL	370	0.63
K21F 315 S8	K20F 280 S8	55	710	740	93.1	0.80	107	6.5	1.8	1.6	2.3	2.63	720	FBW 280 IL	370	0.63
K21F 315 M8	K20F 280 M8	75	968	740	93.3	0.81	143	6.0	2.0	1.6	2.3	3.33	830	FBW 280 IL	370	0.63
K21F 315 MX8	K20F 315 S8	90	1161	740	93.5	0.81	172	6.0	1.9	1.6	2.2	3.6	910	FBW 280 IL	370	0.63
K21F 315 MY8	K20F 315 M8	110	1420	740	94.6	0.81	207	6.5	2.1	1.8	2.4	6.0	1085	FBW 315 IL	370	0.63
K21F 315 L8	K20F 315 L8	132	1704	740	95.0	0.83	242	6.3	2.0	1.7	2.1	6.8	1295	FBW 315 IL	370	0.63
K21F 315 LX8	K20F 315 LX8	160	2065	740	95.2	0.79	307	7.2	2.2	1.9	2.5	8.7	1465	FBW 315 IL	370	0.63
K22F 355 MY8		160	2054	744	95.2	0.8	303	6.8	1.3	1.0	2.5	9.3	1545	FBW 355 IL	370	0.63
K22F 355 M8		200	2571	743	95.6	0.77	392	6.5	1.6	1.0	2.7	9.5	1645	FBW 355 IL	370	0.63
K22F 355 MX8		250	3209	744	95.8	0.78	483	6.6	1.3	1.0	2.8	13.4	2245	FBW 355 IL	370	0.63
K22F 355 LY8		280	3594	744	95.3	0.78	544	8.2	1.2	1.0	2.8	15.8	2445	FBW 355 IL	370	0.63

a.A. on request

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Three-phase motors with squirrel-cage rotor, cooling method IC 416

Design version for rated voltages of zone A acc. to IEC 34-1, 50 Hz
Cooling method IC 416, forced-ventilated version, mode of operation S1, continuous duty
thermal class 155, degree of protection IP 55

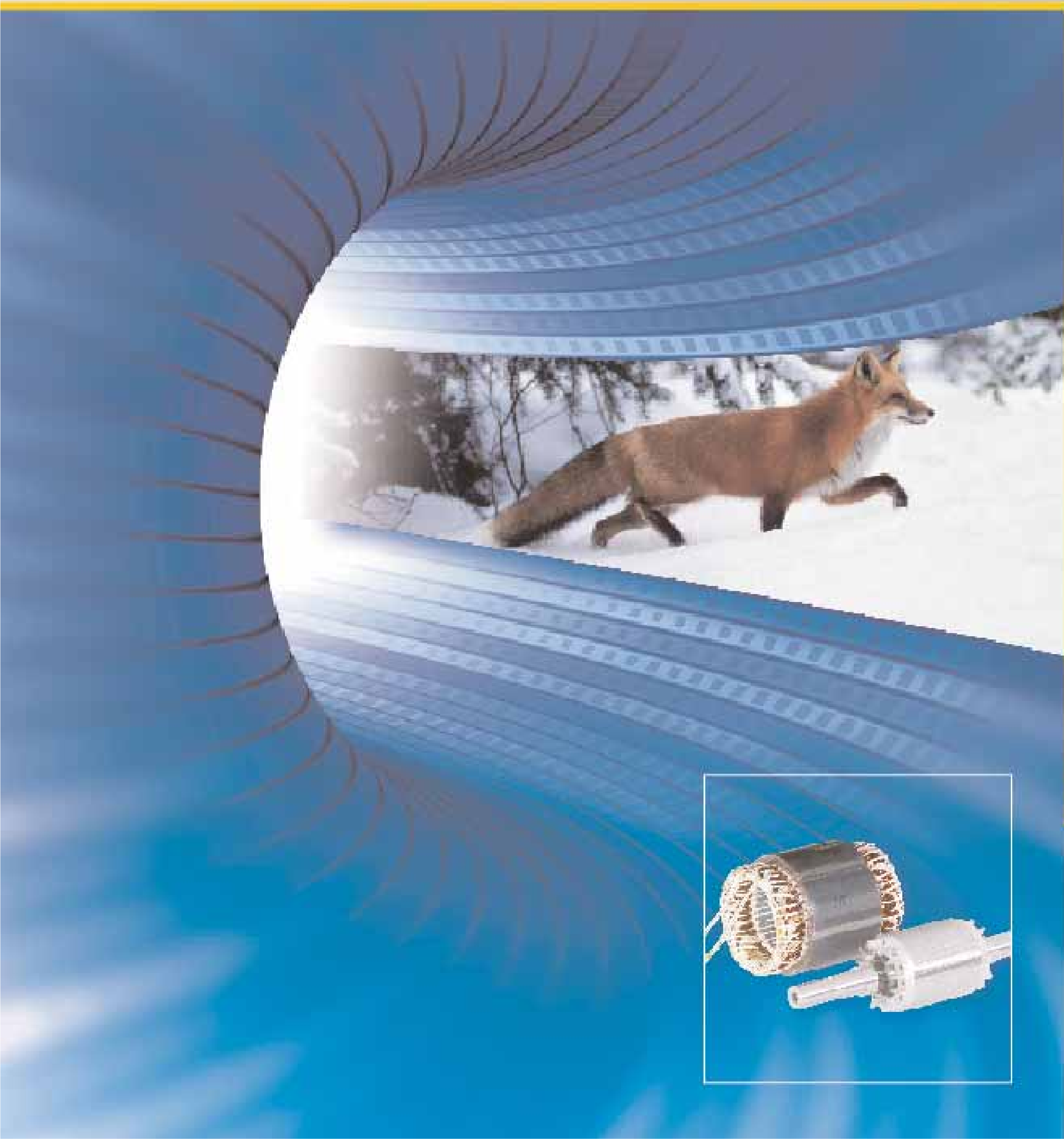
Motor selection data

Design point 400 V, 50 Hz

Type		P	M_B	n	η	cos φ	I	I_A/I_B	M_A/M_B	M_S/M_B	M_K/M_B	J	m	Forced ventilation unit		
							400 V							Type	P_{VFU}	I_{VFU}
		kW	Nm	rpm	%	-	A	-	-	-	-	kgm²	kg		W	A
Synchronous speed 600 rpm – 10-pole version																
K21F 80 K10	K20F 71 K10	0.09	1.56	550	35.7	0.56	0.65	2.2	1.7	1.7	1.9	0.00130	a.A.	Wistro	34	0.05
K21F 80 G10	K20F 71 G10	0.12	2.1	545	43.9	0.58	0.68	2.2	1.6	1.6	1.8	0.00175	a.A.	Wistro	34	0.05
K21F 90 S10	K20F 80 K10	0.18	3.1	555	50.9	0.51	1.00	2.3	1.6	1.6	1.8	0.00325	a.A.	Wistro	90	0.16
K21F 90 L10	K20F 80 G10	0.25	4.3	555	49.1	0.49	1.50	2.3	1.5	1.5	1.9	0.00425	a.A.	Wistro	90	0.16
K21F 100 L10	K20F 90 L10	0.37	6.48	545	53.0	0.53	1.90	2.9	1.5	1.5	1.9	0.00625	a.A.	Wistro	93	0.16
K21F 100 LX10	K20F 100 S10	0.55	9.21	570	71.7	0.49	2.26	3.1	1.6	1.6	1.9	0.00900	a.A.	Wistro	93	0.16
K21F 112 M10	K20F 100 L10	0.75	13.1	545	61.2	0.61	2.90	3.4	1.7	1.7	1.9	0.01225	a.A.	Wistro	94	0.16
K21F 112 MX10	K20F 100 LX10	1.1	19.1	550	67.6	0.61	3.85	3.1	1.4	1.4	2.0	0.01390	a.A.	Wistro	94	0.16
K21F 132 S10	K20F 112 M10	1.1	18.4	570	67.0	0.65	3.6	3.7	1.7	1.6	2.5	0.0180	46	FBW 112 IL	94	0.16
K21F 132 M10	K20F 112 MX10	1.5	25.1	570	71.5	0.65	4.7	3.8	1.8	1.8	2.6	0.0230	53	FBW 112 IL	94	0.16
K21F 132 MX10	K20F 132 S10	2.2	36.6	575	75.0	0.65	6.5	3.7	1.7	1.6	2.2	0.0430	70	FBW 132 IL	148	0.24
K21F 160 M10	K20F 132 M10	3	49.8	575	77.0	0.65	8.7	3.7	1.8	1.7	2.2	0.0530	86	FBW 132 IL	148	0.24
K21F 160 L10	K20F 160 S10	5.5	91.3	575	80.5	0.68	14.5	4.0	1.8	1.7	2.1	0.113	114	FBW 160 IL	280	0.51
K21F 180 L10	K20F 160 M10	6	99.7	575	82.0	0.68	15.5	3.9	2.0	1.7	2.1	0.145	136	FBW 160 IL	280	0.51
K21F 200 L10	K20F 180 S10	9	147	585	83.0	0.65	24	4.6	2.3	2.0	2.7	0.228	175	FBW 180 IL	280	0.51
K21F 200 LX10	K20F 180 M10	13	216	575	85.0	0.70	31.5	4.2	1.8	1.6	2.1	0.268	200	FBW 180 IL	280	0.51
K21F 225 M10	K20F 200 M10	17	280	580	85.0	0.70	41	4.3	1.7	1.5	2.1	0.440	265	FBW 200 IL	255	0.44
K21F 250 M10	K20F 225 M10	22	362	580	87.0	0.69	53	3.9	1.9	1.5	1.6	0.825	360	FBW 225 IL	255	0.44
K21F 280 S10	K20F 250 S10	27	441	585	89.5	0.70	62	4.2	1.9	1.4	1.7	1.35	465	FBW 250 IL	370	0.63
K21F 280 M10	K20F 250 M10	34	555	585	89.0	0.71	77.5	4.5	2.0	1.5	2.0	1.55	520	FBW 250 IL	370	0.63
K21F 315 S10	K20F 280 S10	45	728	590	91.5	0.75	94.5	5.2	1.5	1.5	2.3	2.63	690	FBW 280 IL	370	0.63
K21F 315 M10	K20F 280 M10	55	887	592	92.0	0.74	117	6.3	1.7	1.7	2.7	3.33	800	FBW 280 IL	370	0.63
K21F 315 MX10	K20F 315 M10	75	1214	590	92.0	0.75	157	5.5	1.5	1.5	2.2	3.60	910	FBW 280 IL	370	0.63
K21F 315 L10	K20F 315 L10	90	1449	593	93.0	0.69	202	6.0	2.1	1.8	2.3	6.76	1285	FBW 315 IL	370	0.63
K22F 355 MY10		110	1766	595	94.7	0.74	227	5.3	0.9		2.3	9.3	1545	FBW 355 IL	370	0.63
K22F 355 M10		135	2167	595	94.5	0.66	313	5.5	1.1	1.0	2.6	9.3	1545	FBW 355 IL	370	0.63
K22F 355 MX10		160	2568	595								9.5	1645	FBW 355 IL	370	0.63
K22F 355 LY10		180	2889	595	95.3	0.74	370	5.7	1.3		2.4	11.6	2145	FBW 355 IL	370	0.63
K22F 355 L10		200	3210	595	94.3	0.72	425	6.0	1.3	1.0	2.5	15.8	2445	FBW 355 IL	370	0.63
Synchronous speed 500 rpm – 12-pole version																
K21F 80 K12	K20F 71 K12	0.09	1.95	440	31.0	0.58	0.72	1.9	1.6	1.6	2.0	0.00130	a.A.	Wistro	34	0.05
K21F 80 G12	K20F 71 G12	0.12	2.58	445	42.0	0.47	0.87	2.0	1.9	1.9	2.1	0.00175	a.A.	Wistro	34	0.05
K21F 90 S12	K20F 80 K12	0.18	3.82	450	39.0	0.51	1.30	1.8	1.6	1.6	1.9	0.00325	a.A.	Wistro	90	0.16
K21F 90 L12	K20F 80 G12	0.25	5.31	450	44.5	0.49	1.65	2.0	1.5	1.5	1.7	0.00425	a.A.	Wistro	90	0.16
K21F 100 L12	K20F 90 L12	0.37	7.85	450	50.5	0.48	2.20	2.1	1.5	1.5	1.7	0.00625	a.A.	Wistro	93	0.16
K21F 100 LX12	K20F 100 S12	0.55	11.5	455	53.5	0.53	2.80	2.4	1.4	1.4	1.9	0.00900	a.A.	Wistro	93	0.16
K21F 112 M12	K20F 100 L12	0.75	15.9	450	57.0	0.55	3.45	2.5	1.4	1.4	2.0	0.01225	a.A.	Wistro	94	0.16
K21F 132 S12	K20F 112 M12	0.8	15.1	475	60.0	0.57	3.2	3.0	2.2	2.0	2.2	0.0180	46	FBW 112 IL	94	0.16
K21F 132 M12	K20F 112 MX12	1.1	22.4	470	63.0	0.60	4.2	3.2	1.6	1.6	2.4	0.0230	53	FBW 112 IL	94	0.16
K21F 132 MX12	K20F 132 S12	1.5	29.8	480	67.0	0.57	5.7	3.0	1.5	1.5	2.1	0.0430	70	FBW 132 IL	148	0.24
K21F 160 M12	K20F 132 M12	2.2	44.2	475	69.5	0.55	8.3	3.3	1.9	1.8	2.4	0.0530	86	FBW 132 IL	148	0.24
K21F 160 L12	K20F 160 S12	3.0	59.7	480	77.0	0.60	9.4	3.4	2.0	1.7	2.0	0.113	114	FBW 160 IL	280	0.51
K21F 180 L12	K20F 160 M12	5.5	111	475	76.0	0.60	17.5	3.0	1.8	1.7	2.0	0.145	136	FBW 160 IL	280	0.51
K21F 200 L12	K20F 180 S12	6.0	119	480	83.0	0.65	16	3.3	1.6	1.5	1.9	0.228	175	FBW 180 IL	280	0.51
K21F 200 LX12	K20F 180 M12	9.0	179	480	82.0	0.61	26	3.8	1.9	1.8	2.2	0.268	200	FBW 180 IL	280	0.51
K21F 225 M12	K20F 200 M12	13.0	259	480	83.0	0.68	33	3.6	1.7	1.5	1.9	0.440	265	FBW 200 IL	255	0.44
K21F 250 M12	K20F 225 M12	17.0	338	480	86.0	0.69	41.5	3.9	1.7	1.5	1.9	0.825	360	FBW 225 IL	255	0.44
K21F 280 S12	K20F 250 S12	20.0	392	487	88.0	0.68	48	3.8	1.8	1.4	1.7	1.35	465	FBW 250 IL	370	0.63
K21F 280 M12	K20F 250 M12	24.0	470	488	87.5	0.63	63	4.0	2.1	1.6	1.9	1.55	520	FBW 250 IL	370	0.63
K21F 315 S12	K20F 280 S12	37.0	721	490	91.0	0.71	82.5	4.2	1.2	1.1	2.0	2.63	690	FBW 280 IL	370	0.63
K21F 315 M12	K20F 280 M12	45.0	877	490	91.0	0.72	99	4.5	1.2	1.2	1.9	3.33	800	FBW 280 IL	370	0.63
K21F 315 MX12	K20F 315 M12	55.0	1083	485	91.0	0.74	118	4.5	1.3	1.1	1.9	3.60	910	FBW 280 IL	370	0.63
K21F 315 L12	K20F 315 L12	75.0	1456	492	92.5	0.64	183	4.5	1.5	1.2	1.6	6.76	1285	FBW 315 IL	370	0.63
K22F 355 MY12		90	1754	490	data on request							9.3	1545	FBW 355 IL	370	0.63
K22F 355 M12		110	2144	490	data on request							9.3	1545	FBW 355 IL	370	0.63
K22F 355 MX12		132	2573	490	data on request							9.5	1645	FBW 355 IL	370	0.63
K22F 355 LY12		145	2826	490	data on request							15.8	2445	FBW 355 IL	370	0.63
K22F 355 L12		160	3118	490	data on request							15.8	2445	FBW 355 IL	370	0.63

a.A. on request

Built-in motors



Basic version

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	0.06 kW to 355 kW
Sizes	56 to 355
Material of housing	Not applicable, built in component without housing
Rated torque	0.25 Nm to 2,400 Nm
Types of circuit	Motors with one speed are designed with Δ/Y-circuit as standard.
Insulation of stator winding	Thermal class 155, as option 155 [F(B)], 180 acc. to EN 60034-1 (IEC 60034-1)
Type of protection	IP 00 acc. to EN 60034-5 (IEC 60034-5), built-in unit, type of protection realised by customer
Type of cooling	Undefined, cooling realised by customer
Coolant temperature/ altitude of site	as standard -20 °C up to +40 °C, altitude of site 1000 m above sea level
Rated voltage	Rated voltage ranges A and B according to EN 60034-1 (IEC 60034-1), standard voltage according to EN 60038 50 Hz, 230 V, 400 V, 500 V and 690 V 60 Hz, 275 V, 480 V and 600 V
Types of construction	IM 5010
Colour system	None
Vibration grade	Determined by final equipment assembly
Shaft end	According to DIN 748 (IEC 60072), balancing “with half key”, only for delivery with complete rotor
Limit speeds	Please refer to paragraph about limit speeds in the catalogue part Technical explanations.
Bearing design	Please refer to paragraph about bearings in the catalogue part Technical explanations.
Terminal box	None
Documentation	The operation and maintenance manual of the final product is valid.
Tolerances	Please refer to paragraph about tolerances in the catalogue part Technical explanations.
Options	Please refer to paragraph about modifications in the catalogue part Technical explanations.

Three-phase motors with squirrel-cage rotor

Built-in motors without shaft

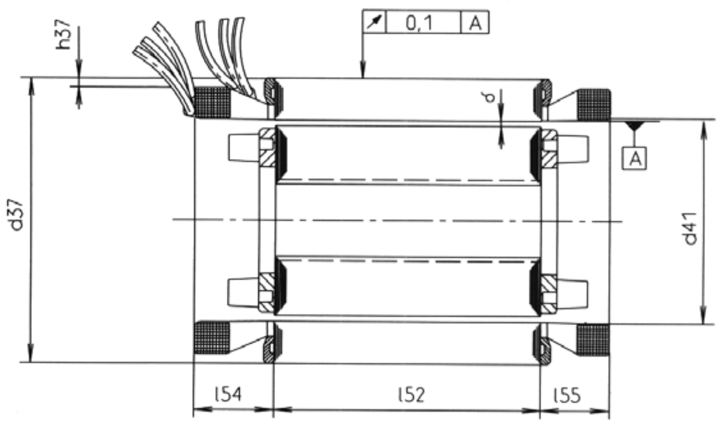
Main dimensions for winded stator core

Engineering data selection

Type	size[1]	d_{37}[2]	d_{37} turn-over dim. +0.6; -0.6	d_{41} min. dim. pole number 2	4	6	8	h_{37} min. dim.	l_{52} +0.5 / -1.0 pole number 2	4	6	8	l_{54} max. dim. pole number 2	4	6	8	l_{55} max. dim. pole number 2	4	6	8	air gap δ perm. deviation +10%; -10% pole number 2	4	6	8
KPR	56 K	84	83.8	49	54	54	-	3.5	37	37	49	-	27	27	25	-	27	27	25	-	0.25	0.2	0.17	-
KPR	56 G	84	83.8	49	54	54	-	3.5	47	49	62	-	27	27	25	-	27	27	25	-	0.25	0.2	0.17	-
KPR	63 K	96	95.8	56	62	62	62	4	43	45	62	62	35	31	24	24	35	29	24	24	0.25	0.2	0.17	0.2
KPR	63 G	96	95.8	56	62	62	62	4	59	62	76	73	31	31	25	24	31	29	25	24	0.25	0.2	0.17	0.2
KPR	71 K	110	109.8	63	70	76	76	4	60	63	66	66	36	35	30	30	35	33	30	30	0.3	0.2	0.2	0.2
KPR	71 G	110	109.8	63	70	76	76	4	81	81	91	91	36	35	30	30	35	33	30	30	0.3	0.2	0.2	0.2
KPR	80 K	126	125.8	73	82	88	88	5	80	80	89	80	43	39	36	36	42	38	35	35	0.35	0.25	0.25	0.25
KPR	80 G	126	125.8	73	82	88	88	5	108	104	120	104	43	39	36	36	42	38	35	35	0.35	0.25	0.25	0.25
KPR	90 L	140	139.8	82	90	98	98	4.5	110	110	120	110	47	43	35	35	45	42	35	35	0.45	0.3	0.25	0.25
KPR	100 S	158	157.8	92	103	-	112	5	112	112	-	100	56	49	-	40	53	48	-	40	0.55	0.35	-	0.3
KPR	100 L	158	157.8	92	103	112	112	5	146	146	139	139	56	48	41	40	53	48	40	40	0.55	0.35	0.3	0.3
KPR	112 M	176	175.8	99	111	121	121	5.5	162	142	122	122	61	64	59	59	61	56	51	51	0.6	0.35	0.3	0.3
KPR	112 MX	176	175.8	-	-	121	121	5.5	-	-	162	162	-	-	59	59	-	-	51	51	-	-	0.3	0.3
KPR	132 S	206	205.8	-	129	143	143	6	-	139	153	153	-	71	66	66	-	61	56	56	-	0.45	0.35	0.35
KPR	132 M	206	205.8	121	129	143	143	6	162	196	196	196	66	71	66	66	66	61	56	56	0.6	0.45	0.35	0.35
KPR	160 S	255	254.8	148	159	177	177	6.5	153.5	167.5	162.5	162.5	76	83	78	78	76	71	66	66	0.7	0.45	0.4	0.4
KPR	160 M	255	254.8	148	159	177	177	6.5	192.5	197.5	212.5	212.5	76	83	78	78	76	71	66	66	0.7	0.45	0.4	0.4
KPR	180 S	288	287.8	168	179	201	201	6.5	176.5	193	206.5	206.5	81	88	83	83	81	76	71	71	0.9	0.55	0.45	0.45
KPR	180 M	288	287.8	168	179	201	201	6.5	226.5	250.5	250.5	250.5	81	88	83	83	81	76	71	71	0.9	0.55	0.45	0.45
KPR	200 M	322	321.8	187	201	225	225	9	212.5	252.5	252.5	252.5	99	99	96	96	99	91	81	81	1.0	0.65	0.45	0.45
KPR	200 L	322	321.8	187	201	-	-	9	252.5	292.5	-	-	99	99	-	-	99	91	-	-	1.0	0.65	-	-
KPR	225 M	362	361.8	211	227	253	253	11	250.5	283.5	263.5	263.5	115	112	107	107	115	97	92	92	1.2	0.7	0.5	0.5
KPR	250 S	410	409.8	241	259	289	289	14	255	313	255	255	135	125	115	110	135	105	95	90	1.2	0.8	0.55	0.55
KPR	250 M	410	409.8	241	259	289	289	14	283	367	318	318	135	125	115	110	135	105	95	90	1.2	0.8	0.55	0.55
K10R	280 S	465	464.8	273	296	329	329	14	306	351	306	306	170	145	145	140	140	120	120	115	1.45	1.0	0.7	0.7
K10R	280 M	465	464.8	273	296	329	329	14	361	406	386	386	170	145	145	140	140	120	120	115	1.45	1.0	0.7	0.7
K10R	315 S	465	464.8	273	296	329	329	14	441	486	416	416	170	145	135	135	140	120	115	115	1.45	1.1	0.7	0.7
K10R	315 M	520	519.8	306	341	376	376	14	446	486	406	406	185	145	145	145	165	125	125	125	1.6	1.0	0.7	0.7
K10R	315 L	520	519.8	306	341	376	376	14	576	606	456	456	185	145	145	145	165	125	125	125	1.6	1.0	0.7	0.7
K10R	315 LX	520	519.8	306	341	376	376	14	696	696	586	486	185	145	145	145	165	125	125	125	1.6	1.0	0.7	0.7
K22R	355 MY	610	609.8	352	376	409	421	24	432	492	442	442	225	175	175	175	185	145	145	140	1.9	1.5	0.9	0.8
K22R	355 M	610	609.8	352	-	409	421	24	477	-	492	492	225	-	175	175	185	-	145	140	1.9	-	0.9	0.8

1) For this size even with different type designation technical characteristics of K20R is realised.
2) Tolerance for mounting hole of the respective grey cast iron stator H7 shaft height ≤ 112, P7 shaft height 132, S7 shaft height ≥ 160

Installation of thermocouples on request.



Three-phase motors with squirrel-cage rotor

Built-in motors without shaft

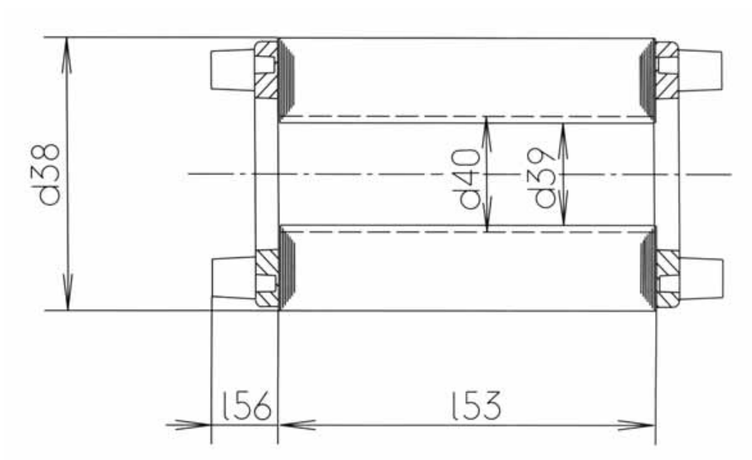
Main dimensions for winded stator core

Engineering data selection

Type	size[4]	d_{38} finished dim.[1] pole number 2	4	6	8	d_{38} delivery dim. pole number 2	4	6	8	d_{39} delivery dim.[2] pole number 2	4	6	8	d_{40} finished dim. max.[3] pole number 2	4	6	8	l_{53}[5] pole number 2	4	6	8	l_{56} pole number 2	4	6	8
KPR	56 K	45.5	50.6	50.66	-	46	51	51	-	17	17	17	-	19	20	20	-	37	37	49	-	12	10	10	-
KPR	56 G	45.5	50.6	50.66	-	46	51	51	-	17	17	17	-	19	20	20	-	47	49	62	-	12	10	10	-
KPR	63 K	52.5	58.6	58.66	58.6	53	59	59	59	20	20	20	20	23	23	24	24	43	45	62	62	16.5	15	8.5	8.5
KPR	63 G	52.5	58.6	58.66	58.6	53	59	59	59	20	20	20	20	23	23	24	24	59	62	76	73	16.5	15	8.5	8.5
KPR	71 K	59.4	66.6	72.6	72.6	60	67	73	73	25	25	25	25	27	27	30	30	60	63	66	66	17.5	17.5	12.5	12.5
KPR	71 G	59.4	66.6	72.6	72.6	60	67	73	73	25	25	25	25	27	27	30	30	81	81	91	91	17.5	17.5	12.5	12.5
KPR	80 K	68.3	77.5	85.5	85.5	69	78	86	86	30	30	30	30	32	34	36	36	80	80	89	80	19	14.5	13	13
KPR	80 G	68.3	77.5	85.5	85.5	69	78	86	86	30	30	30	30	32	34	36	36	108	104	120	104	19	14.5	13	13
KPR	90 L	77.1	85.4	94.5	94.5	78	86	95	95	32	32	32	32	34	36	40	40	110	110	120	110	24	24	19	24
KPR	100 S	86.9	98.3	-	106.4	88	99	-	107	35	35	-	35	37	39	-	43	112	112	-	100	33.5	33.5	-	20
KPR	100 L	86.9	98.3	106.4	106.4	88	99	107	107	35	35	35	35	37	39	43	43	146	146	139	139	33.5	33.5	20	20
KPR	112 M	96.8	109.3	119.4	119.4	98	110	120	120	44	44	44	44	46	46	52	52	160	140	120	120	32.5	32.5	32.5	32.5
KPR	112 MX	-	-	119.4	119.4	-	-	120	120	-	-	44	44	-	-	52	52	-	-	160	160	-	-	32.5	32.5
KPR	132 S	-	127.1	141.3	141.3	-	128	142	142	-	52	52	52	-	54	60	60	-	137	151	151	-	32.5	32.5	32.5
KPR	132 M	118.8	127.1	141.3	141.3	120	128	142	142	52	52	52	52	54	54	60	60	160	194	194	194	32.5	32.5	32.5	32.5
KPR	160 S	145.6	157.2	175.2	175.2	147	158	176	176	55	62	62	62	58	66	68	68	151	165	160	160	35	35	35	35
KPR	160 M	145.6	157.2	175.2	175.2	147	158	176	176	55	62	62	62	58	66	68	68	190	195	210	210	35	35	35	35
KPR	180 S	165.2	176.9	199.1	199.1	167	178	200	200	62	72	72	72	65	76	80	80	174	191	204	204	55	43.5	43.5	43.5
KPR	180 M	165.2	176.9	199.1	199.1	167	178	200	200	62	72	72	72	65	76	80	80	224	248	248	248	55	43.5	43.5	43.5
KPR	200 M	184	198.7	223.1	223.1	186	200	224	224	75	85	85	85	78	90	95	95	210	250	250	250	55	45	45	45
KPR	200 L	184	198.7	-	-	186	200	-	-	75	85	-	-	78	90	-	-	250	290	-	-	55	45	-	-
KPR	225 M	207.6	224.6	251	251	210	226	252	252	85	95	95	95	88	110	105	105	247	280	260	260	57.5	49	49	49
KPR	250 S	237.6	256.4	286.9	286.9	240	258	288	288	95	105	105	105	98	110	110	110	252	310	252	252	65	50	50	50
KPR	250 M	237.6	256.4	286.9	286.9	240	258	288	288	95	105	105	105	98	110	110	110	280	364	315	315	65	50	50	50
K10R	280 S	269.1	293	326.6	326.6	272	295	328	328	105	115	115	115	108	120	120	120	300	345	300	300	70	65	65	65
K10R	280 M	269.1	293	326.6	326.6	272	295	328	328	105	115	115	115	108	120	120	120	355	400	380	380	70	65	65	65
K10R	315 S	269.1	292.8	326.6	326.6	272	295	328	328	105	115	115	115	108	120	120	120	435	480	410	410	70	65	65	65
K10R	315 M	[6]	[6]	373.6	373.6	[6]	[6]	375	375	[6]	[6]	130	130	[6]	[6]	135	135	[6]	[6]	400	400	[6]	[6]	65	65
K10R	315 L	[6]	[6]	373.6	373.6	[6]	[6]	375	375	[6]	[6]	130	130	[6]	[6]	135	135	[6]	[6]	450	450	[6]	[6]	65	65
K10R	315 LX	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]
K22R	355 MY	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]
K22R	355 M	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]

After pressing the rotor body on the shaft, it has to be turned to finished dimension d 38 and dynamically balanced afterwards.
The allowable residual unbalance has to be determined by the user accounting for the requirements of the individual application area

1) Tolerance of finished dimension js8
2) size of knurling and tolerance of the knurled shaft diameter provided by manufacturer
3) maximum permissible core bore (only valid for shafts with knurled seat)
4) For this size even with different type designation technical characteristics of K20R is realised
5) Tolerance +/-0,5
6) Rotor body on request



8

Three-phase motors with squirrel-cage rotor

with surface ventilation, mode of operation S1, continuous duty
thermal class 155
coordination of output

Type	P_B kW	m stator kg	m rotor kg
Synchronous speed 3000 rpm – 2-pole version			
KPR 56 K2E	0.18	1.32	0.39
KPR 56 G2E	0.25	1.60	0.47
KPR 63 K2E	0.37	1.95	0.58
KPR 63 G2E	0.55	2.50	0.77
KPR 71 K2E	0.75	3.40	0.96
KPR 71 G2E	1.1	4.31	1.25
KPR 80 K2E	1.5	5.78	1.65
KPR 80 G2E	2.2	7.55	2.18
KPR 90 L2E	3.0	9.55	2.95
KPR 100 S2E	4.0	12.80	3.77
KPR 100 L2E	5.5	16.30	4.82
KPR 112 MY2E	5.5	16.0	5.0
KPR 112 M2E	7.5	21.0	6.5
KPR 132 M2E	11.0	27.0	10.0
KPR 160 S2E	15.0	42.5	15.5
KPR 160 M2E	18.5	52.5	19.1
KPR 180 S2E	22	61.5	23.6
KPR 180 M2E	30	77.0	29.7
KPR 200 M2E	37	99.0	34.9
KPR 200 L2E	45	113.5	40.9
KPR 225 M2E	55	145.5	50.8
KPR 250 S2E	75	192.5	67.3
KPR 250 M2E	90	210.5	74.3
K10R 280 S2E	110	290.0	104.0
K10R 280 M2E	132	330.0	122.0
K10R 315 S2E	160	400.0	150.0
K10R 315 M2E	200	520.0	-
K10R 315 L2E	250	660.0	-
K22R 355 MY2E	315	680.0	-
K22R 355 M2E	355	750.0	-

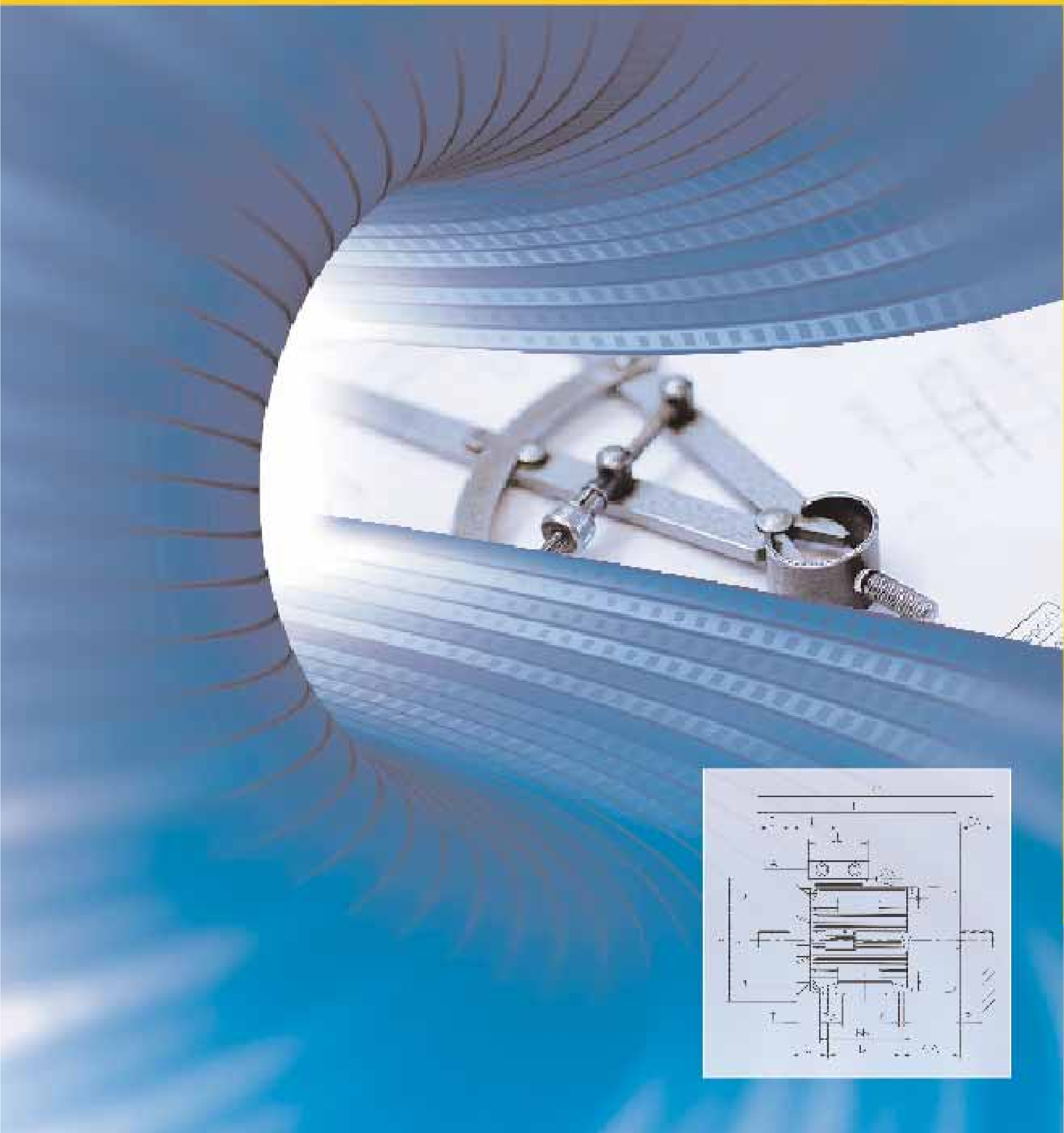
Type	P_B kW	m stator kg	m rotor kg
Synchronous speed 1500 rpm – 4-pole version			
KPR 56 K4E	0.12	1.22	0.5
KPR 56 G4E	0.18	1.52	0.63
KPR 63 K4E	0.25	1.85	0.78
KPR 63 G4E	0.37	2.43	1.05
KPR 71 K4E	0.55	3.09	1.33
KPR 71 G4E	0.75	3.88	1.66
KPR 80 K4E	1.1	4.92	2.25
KPR 80 G4E	1.5	6.23	2.88
KPR 90 L4E	2.2	8.35	3.76
KPR 100 S4E	3.0	10.60	5.21
KPR 100 L4E	4.0	13.50	6.71
KPR 100 LX4E	5.5	16.00	8.27
KPR 112 M4E	5.5	15.0	7.1
KPR 132 S4E	7.5	20.0	10.0
KPR 132 M4E	11.0	27.0	13.7
KPR 160 S4E	15.0	37.0	18.8
KPR 160 M4E	18.5	46.5	22.0
KPR 180 S4E	22	55.5	26.2
KPR 180 M4E	30	70.5	33.4
KPR 200 M4E	37	96.5	47.8
KPR 200 L4E	45	112.0	54.5
KPR 225 M4E	55	145.5	63.0
KPR 250 S4E	75	193.5	91.2
KPR 250 M4E	90	227.0	106.8
K10R 280 S4E	110	275.0	138.0
K10R 280 M4E	132	310.0	159.0
K10R 315 S4E	160	360.0	191.0
K10R 315 M4E	200	450.0	-
K10R 315 L4E	250	550.0	-
K22R 355 MY4E	315	720.0	-

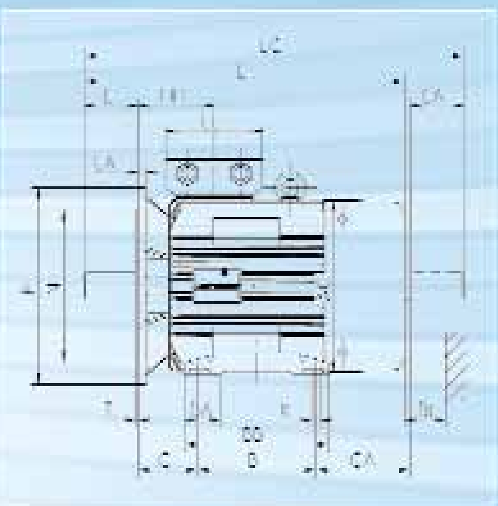
Type	P_B kW	m stator kg	m rotor kg
Synchronous speed 1000 rpm – 6-pole version			
KPR 56 K6E	0.09	1.33	0.63
KPR 56 G6E	0.12	1.83	0.79
KPR 63 K6E	0.18	2.30	0.91
KPR 63 G6E	0.25	2.83	1.25
KPR 71 K6E	0.37	2.78	1.70
KPR 71 G6E	0.55	3.75	2.33
KPR 80 K6E	0.75	4.55	3.13
KPR 80 G6E	1.1	6.07	4.15
KPR 90 L6E	1.5	7.45	5.13
KPR 100 L6E	2.2	10.70	7.63
KPR 112 M6E	3.0	12.0	8.2
KPR 112 MX6E	4.0	15.5	10.8
KPR 132 S6E	5.5	19.5	13.9
KPR 132 M6E	7.5	25.0	17.5
KPR 160 S6E	11.0	33.0	26.2
KPR 160 M6E	15.0	41.5	33.8
KPR 180 S6E	18.5	49.0	38.1
KPR 180 M6E	22	57.0	45.8
KPR 200 M6E	30	80.0	58.6
KPR 225 M6E	37	104.0	80.2
KPR 250 S6E	45	133.0	99.5
KPR 250 M6E	55	161.5	123.1
K10R 280 S6E	75	220.0	159.0
K10R 280 M6E	90	260.0	197.0
K10R 315 S6E	110	270.0	213.0
K10R 315 M6E	132	320.0	206.0
K10R 315 L6E	160	380.0	350.0
K10R 315 LX6E	200	460.0	-
K22R 355 MY6E	200	600.0	-
K22R 355 M6E	250	610.0	-

Type	P_B kW	m stator kg	m rotor kg
Synchronous speed 750 rpm – 8-pole version			
KPR 63 K8E	0.09	2.06	1.05
KPR 63 G8E	0.12	2.65	1.21
KPR 71 K8E	0.18	2.73	1.70
KPR 71 G8E	0.25	3.65	2.33
KPR 80 K8E	0.37	4.05	2.83
KPR 80 G8E	0.55	5.24	3.62
KPR 90 L8E	0.75	6.56	4.73
KPR 100 S8E	1.1	8.00	5.54
KPR 100 L8E	1.5	10.75	7.63
KPR 112 M8E	2.2	11.5	8.2
KPR 112 MX8E	3.0	15.5	10.8
KPR 132 S8E	4.0	19.5	13.9
KPR 132 M8E	5.5	24.0	17.5
KPR 160 S8E	7.5	31.0	26.2
KPR 160 M8E	11.0	40.5	33.8
KPR 180 S8E	15.0	48.0	38.1
KPR 180 M8E	18.5	57.0	45.8
KPR 200 M8E	22	77.0	58.6
KPR 225 M8E	30	101.0	80.2
KPR 250 S8E	37	129.0	99.5
KPR 250 M8E	45	159.5	123.1
K10R 280 S8E	55	220.0	159.0
K10R 280 M8E	75	260.0	197.0
K10R 315 S8E	90	270.0	213.0
K10R 315 M8E	110	320.0	206.0
K10R 315 L8E	132	380.0	350.0
K10R 315 LX8E	160	460.0	-
K22R 355 MY8E	160	510.0	-
K22R 355 M8E	200	590.0	-

Output data subject to the mounting and cooling conditions
Mass of rotor without shaft

Dimensions





Dimensions

Flange sizes
Flange coordination

Basic version IEC/DIN
Cooling method IC 411

Transnorm version
Cooling method IC 411

Energy saving motors
CEMEP

Energy saving motors
EPAct

Non-ventilated motors, cooling method IC 410
IEC/DIN version

Non-ventilated motors, cooling method IC 410
Transnorm version

Forced-ventilated motors, cooling method IC 416
IEC/DIN version

Forced-ventilated motors, cooling method IC 416
Transnorm version

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 (b_1) see respective dimensional tables
LA (c_1) length of engagement

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Flange versions

Type of construction IM B5 / IM 3001

K21R, K22R 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
K20R KPR		56	63	71	80	90	100	100	100	112	132	132	160	160	180	180	200	200	225	250	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	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]															
N	b_1	110	110	110	110	110	110	110	110															
M	e_1	130	130	130	130	130	130	130	130															
S	s_1	9	9	9	9	9	9	9	9															
P	a_1			200	200	200[1]	200[1]	200[1]	200[1]															
N	b_1			130	130	130	130	130	130															
M	e_1			165	165	165	165	165	165															
S	s_1			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	400	400[6]						
N	b_1												300	300	300	300	300	300						
M	e_1												350	350	350	350	350	350						
S	s_1												18	18	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																		550	550	550	550[5]		
N	b_1																		450	450	450	450		
M	e_1																		500	500	500	500		
S	s_1																		18	18	18	18		
P	a_1																				660	660	660	
N	b_1																				550	550	550	
M	e_1																				600	600	600	
S	s_1																				22	22	22	
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

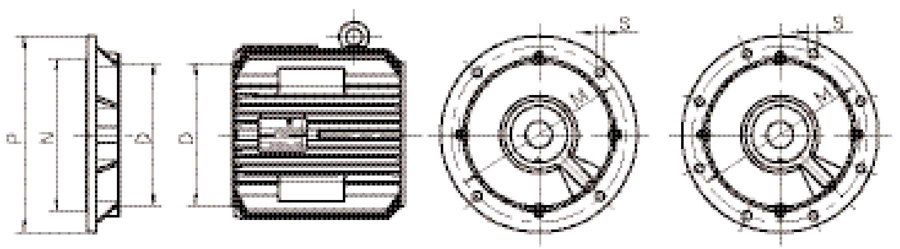
[3] for shaft end diameter 42 mm: customer's flange fixing only by studs

[4] KPR flange (with corners)

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

[6] for shaft end diameter 50 mm

Flange versions IM B5



Flange versions

Type of construction IM 2202

K21R, K22R 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
K20R KPR		56	63	71	80	90	100	100	100	112	132	132	160	160	180	180	200	200	225	250	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												350	350	350	350								
N	b_1												250	250	250	250								
M	e_1												300	300	300	300								
S	s_1												18	18	18	18								
P	a_1														400	400	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						
N	b_1																350	350						
M	e_1																400	400						
S	s_1																18	18						
P	a_1																		550	550				
N	b_1																		450	450				
M	e_1																		500	500				
S	s_1																		18	18				
P	a_1																				660	660		
N	b_1																				550	550		
M	e_1																				600	600		
S	s_1																				22	22		

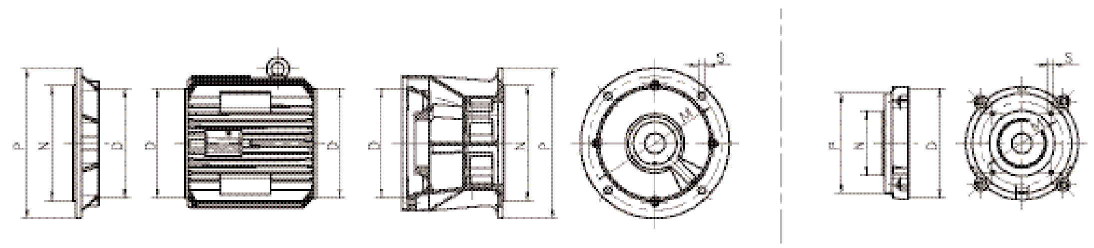
Flange versions

Type of construction IM B14 K, G

K21R, K22R 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
K20R KPR		56	63	71	80	90	100	100	100	112	132	132	160	160	180	180	200	200	225	250	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										

[1] protruding flange

Flange versions IM 2202 and IM B14



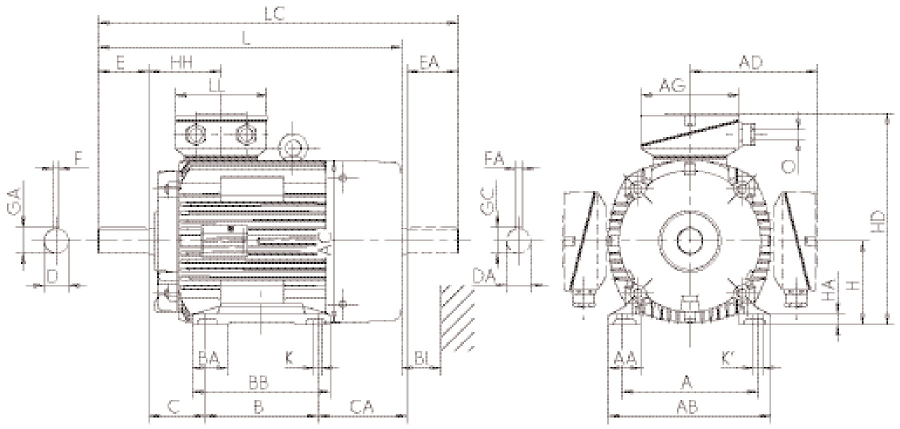
9

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

Size 56 to 280

with surface ventilation, cooling method IC 411, degree of protection P 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
K21O 56K2,4	FF 100	90	18	110	-	-	71	-	86	36	-	9	-	M3	20	-	3	-
K21R 56G2,4	FF 100	90	18	110	109	-	71	-	86	36	-	9	-	M3	20	-	3	-
K21R 63K2,4,6	FF 115	100	28	128	109	-	80	-	100	40	39	11	11	M4	23	23	4	4
K21R 63G2,4,6	FF 115	100	28	128	109	-	80	-	100	40	39	11	11	M4	23	23	4	4
K21R 71K2,4,6,8	FF 130	112	32	138	124	-	90	-	116	45	43.5	14	14	M5	30	30	5	5
K21R 71G2,4,6,8	FF 130	112	32	138	124	-	90	-	116	45	43.5	14	14	M5	30	30	5	5
K21R 80K2,4,6,8	FF 165	125	38	168	139	-	100	-	125	50	63	19	19	M6	40	40	6	6
K21R 80G2,4,6,8	FF 165	125	38	168	139	-	100	-	125	50	63	19	19	M6	40	40	6	6
K21R 90S2,4,6,8	FF 165	140	40	178	157	-	100	-	130	56	74	24	22	M8	50	50	8	6
K21R 90L2,4,6,8	FF 165	140	40	178	157	-	125	-	155	56	71	24	22	M8	50	50	8	6
K21R 100L2,4,6,8	FF 215	160	45	192	177	-	140	-	175	63	73	28	24	M10	60	50	8	8
K21R 100LX4,8	FF 215	160	32	188	196	-	140	-	171	63	102	28	28	M10	60	60	8	8
K21R 112M2	FF 215	190	50	224	196	-	140	-	180	70	95	28	28	M10	60	60	8	8
K21R 112M6,8	FF 215	190	50	224	196	-	140	-	180	70	95	28	28	M10	60	60	8	8
K21R 112MX2	FF 215	190	50	224	196	-	140	-	180	70	129	28	28	M10	60	60	8	8
K21R 112M4	FF 215	190	50	224	196	-	140	-	180	70	129	28	28	M10	60	60	8	8
K21R 132S2T	FF 265	216	50	256	196	-	140	-	180	89	129	38	28	M10	80	60	10	8
K21R 132S4T	FF 265	216	50	256	196	-	140	-	180	89	129	38	28	M10	80	60	10	8
K21R 132S2	FF 265	216	50	256	217	178	140	55	180	89	153	38	32	M12	80	80	10	10
K21R 132SX2	FF 265	216	50	256	217	178	140	55	180	89	173	38	32	M12	80	80	10	10
K21R 132S4,6,8	FF 265	216	50	256	217	178	140	55	180	89	153	38	32	M12	80	80	10	10
K21R 132M4	FF 265	216	50	256	258	199	178	55	218	89	138	38	38	M12	80	80	10	10
K21R 132MX6	FF 265	216	50	256	258	199	178	55	218	89	138	38	38	M12	80	80	10	10
K21R 132M6.8	FF 265	216	50	256	217	178	178	55	218	89	135	38	32	M12	80	80	10	10
K21R 160M2	FF 300	254	55	296	258	214	210	60	257	108	135	42	38	M16	110	80	12	10
K21R 160M4,6,8	FF 300	254	55	296	258	214	210	60	257	108	135	42	38	M16	110	80	12	10
K21R 160MX8	FF 300	254	55	296	258	199	210	60	257	108	135	42	38	M16	110	80	12	10
K21R 160MX2	FF 300	254	55	296	313	242	210	60	257	108	148	42	42	M16	110	110	12	12
K21R 160L2,4,6,8	FF 300	254	55	296	313	242	254	60	301	108	142	42	42	M16	110	110	12	12
K21R 180M2	FF 300	279	62	328	351	261	241	65	288	121	169	48	48	M16	110	110	14	14
K21R 180M4	FF 300	279	62	328	313	242	241	65	288	121	142	48	42	M16	110	110	14	12
K21R 180L4	FF 300	279	62	328	351	261	279	65	326	121	176	48	48	M16	110	110	14	14
K21R 180L6,8	FF 300	279	62	328	313	242	279	65	326	121	104	48	42	M16	110	110	14	12
K21R 200L2,4,6,8	FF 350	318	70	372	351	261	305	70	360	133	138	55	48	M20	110	110	16	14
K21R 200LX6	FF 350	318	70	372	351	261	305	70	360	133	138	55	48	M20	110	110	16	14
K21R 200LX2	FF 350	318	70	372	390	300	305	70	360	133	193	55	55	M20	110	110	16	16
K21R 225S4,8	FF 400	356	75	413	390	300	286	75	343	149	196	60	55	M20	140	110	18	16
K21R 225M2	FF 400	356	75	413	390	300	311	75	368	149	211	55	55	M20	110	110	16	16
K21R 225M4	FF 400	356	75	413	390	300	311	75	368	149	211	60	55	M20	140	110	18	16
K21R 225M6,8	FF 400	356	75	413	390	300	311	75	368	149	171	60	55	M20	140	110	18	16
K21R 250M2	FF 500	406	84	471	440	358	349	84	412	168	210	60	55	M20	140	110	18	16
K21R 250M4,6,8	FF 500	406	84	471	440	358	349	84	412	168	210	65	55	M20	140	110	18	16
K21R 280S2	FF 500	457	94	522	490	386	368	96	431	190	234	65	65	M20	140	140	18	18
K21R 280S4,6,8	FF 500	457	94	522	490	386	368	96	431	190	234	75	65	M20	140	140	20	18
K21R 280M2	FF 500	457	94	522	490	386	419	96	482	190	229	65	65	M20	140	140	18	18
K21R 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

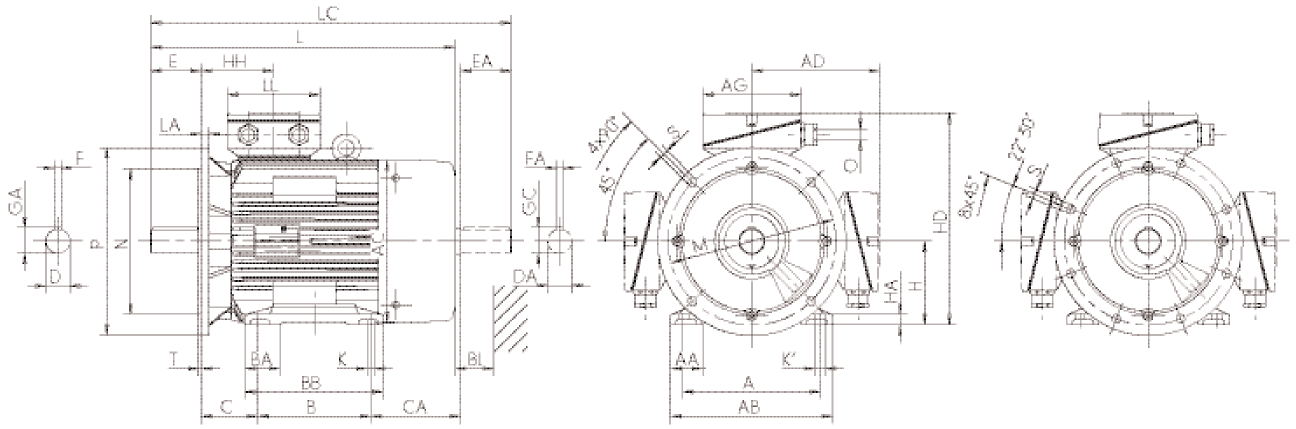
Three-phase motors with squirrel-cage rotor, basic version

Size 56 to 280

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

Type of construction IM B35 [IM 2001]

Flange dimensions see page 154/155



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
K21O 56K2,4	10.2	10.2	56	7	154	a.A.	58	6	6	152	-	KA 05	92	92	M20x1.5	4L	14
K21R 56G2,4	10.2	10.2	56	7	154	a.A.	58	6	6	176	-	KA 05	92	92	M20x1.6	4L	14
K21R 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
K21R 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
K21R 71K2,4,6,8	16	16	71	11	175	a.A.	61	8	8	206	239	KA 05	92	92	M20x1.5	4L	14
K21R 71G2,4,6,8	16	16	71	11	175	a.A.	61	8	8	206	239	KA 05	92	92	M20x1.5	4L	14
K21R 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
K21R 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
K21R 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
K21R 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
K21R 100L2,4,6,8	31	27	100	15	227	a.A.	75	12	12	331	386	KA 05	92	92	M25x1.5	4L	18
K21R 100LX4,8	31	31	100	11	237	a.A.	77	12	12	357	425	KA 05	92	92	M25x1.5	4L	20
K21R 112M2	31	31	112	18	249	a.A.	77	12	12	357	425	KA 05	92	92	M25x1.5	4L	20
K21R 112M6,8	31	31	112	18	249	a.A.	77	12	12	391	459	KA 05	92	92	M25x1.5	4L	20
K21R 112MX2	31	31	112	18	249	a.A.	77	12	12	391	459	KA 05	92	92	M25x1.5	4L	20
K21R 112M4	31	31	112	18	249	a.A.	77	12	12	391	459	KA 05	92	92	M25x1.5	4L	20
K21R 132S2T	41	31	132	18	269	a.A.	96	12	12	430	498	KA 05-13	104	112	M25x1.5	4L	20
K21R 132S4T	41	31	132	18	269	a.A.	96	12	12	460	528	KA 05-13	104	112	M25x1.5	4L	20
K21R 132S2	41	35	132	16	310	257	108	12	12	459	542	KK 25 A	156	145	M32x1.5	4L	35
K21R 132SX2	41	35	132	16	310	257	108	12	12	479	562	KK 25 A	156	145	M32x1.5	4L	35
K21R 132S4,6,8	41	35	132	16	310	257	108	12	12	459	542	KK 25 A	156	145	M32x1.5	4L	35
K21R 132M4	41	41	132	16	331	279	114	12	12	481	565	KK 25 A	156	145	M32x1.5	4L	35
K21R 132MX6	41	41	132	16	331	279	114	12	12	481	565	KK 25 A	156	145	M32x1.5	4L	35
K21R 132M6,8	41	35	132	16	310	257	108	12	12	479	562	KK 25 A	156	145	M32x1.5	4L	35
K21R 160M2	45	41	160	18	374	307	114	15	15	559	643	KK 63 A	193	167	M40x1.5	4L	35
K21R 160M4,6,8	45	41	160	18	374	307	114	15	15	559	643	KK 63 A	193	167	M40x1.5	4L	35
K21R 160MX8	45	41	160	18	374	307	114	15	15	559	643	KK 63 A	193	167	M40x1.5	4L	35
K21R 160MX2	45	45	160	18	402	336	138	15	20	571	686	KK 63 A	193	167	M40x1.5	4L	35
K21R 160L2,4,6,8	45	45	160	18	402	336	138	15	20	609	724	KK 63 A	193	167	M40x1.5	4L	35
K21R 180M2	51.5	51.5	180	20	441	369	147	15	20	635	751	KK 63 A	193	167	M40x1.5	4L	35
K21R 180M4	51.5	45	180	20	422	356	138	15	20	609	724	KK 63 A	193	167	M40x1.5	4L	35
K21R 180L4	51.5	51.5	180	20	441	369	147	15	20	680	796	KK 63 A	193	167	M40x1.5	4L	35
K21R 180L6,8	51.5	45	180	20	422	369	138	15	20	609	724	KK 63 A	193	167	M40x1.5	4L	35
K21R 200L2,4,6,8	59	51.5	200	22	461	389	147	19	25	680	796	KK 63 A	193	167	M40x1.5	4L	35
K21R 200LX6	59	51.5	200	22	461	389	147	19	25	680	796	KK 63 A	193	167	M40x1.5	4L	35
K21R 200LX2	59	59	200	22	500	417	168	19	25	727	851	KK 100 A	213	207	M50x1.5	4L	35
K21R 225S4,8	64	59	225	25	525	442	168	19	25	757	881	KK 100 A	213	207	M50x1.5	8L	40
K21R 225M2	59	59	225	25	525	442	168	19	25	767	891	KK 100 A	213	207	M50x1.5	8L	40
K21R 225M4	64	59	225	25	525	442	168	19	25	797	921	KK 100 A	213	207	M50x1.5	8L	40
K21R 225M6,8	64	59	225	25	525	442	168	19	25	757	881	KK 100 A	213	207	M50x1.5	8L	40
K21R 250M2	64	59	250	28	608	484	177	24	30	862	977	KK 200 A	282	242	M63x1.5	8L	45
K21R 250M4,6,8	69	59	250	28	608	484	177	24	30	862	977	KK 200 A	282	242	M63x1.5	8L	45
K21R 280S2	69	69	280	32	666	546	206	24	30	924	1072	KK 200 A	282	242	M63x1.5	8L	50
K21R 280S4,6,8	79.5	69	280	32	666	546	206	24	30	924	1072	KK 200 A	282	242	M63x1.5	8L	50
K21R 280M2	69	69	280	32	666	546	206	24	30	970	1118	KK 200 A	282	242	M63x1.5	8L	50
K21R 280M4,6,8	79.5	69	280	32	666	546	206	24	30	970	1118	KK 200 A	282	242	M63x1.5	8L	50

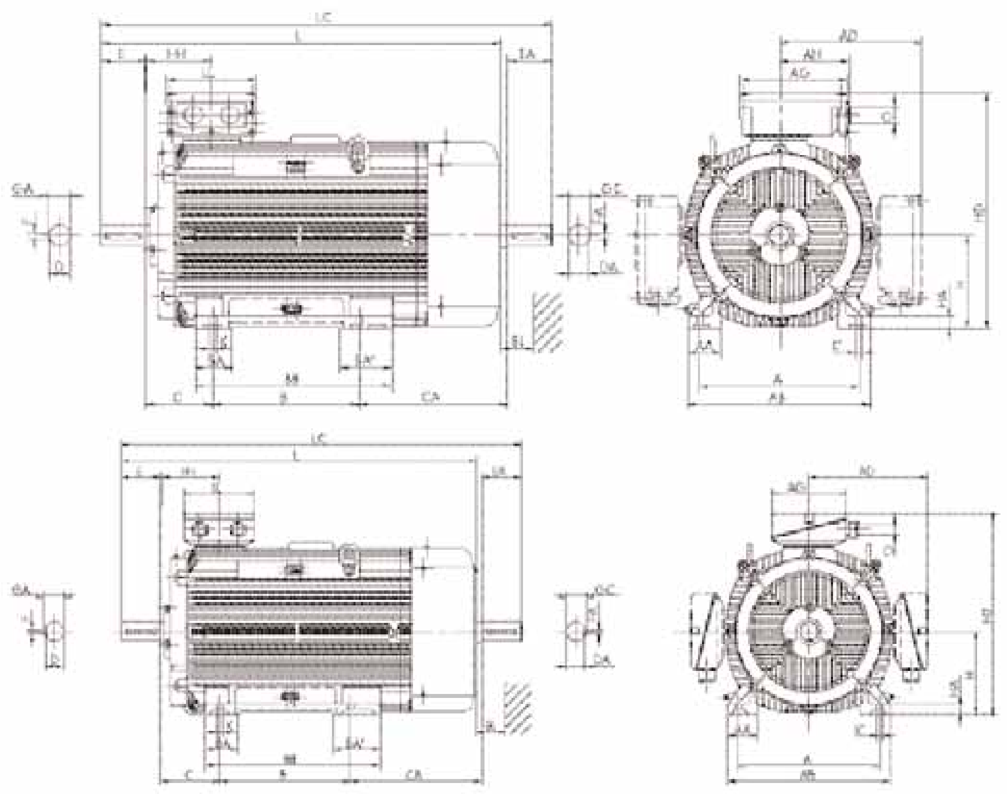
**) Terminal box left/right

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

Size 315

with surface ventilation, cooling method IC 411, degree of protection P 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
K21R 315S2	FF 600	508	126	590	550	416	406	120	-	503	216	316	65	65	M20	140	140	18	18
K21R 315S4,6,8	FF 600	508	126	590	550	416	406	120	-	503	216	316	80	70	M20	170	140	22	20
K21R 315M2	FF 600	508	126	590	550	416	457	120	-	554	216	320	65	65	M20	140	140	18	18
K21R 315M4,6,8	FF 600	508	126	590	550	416	457	120	-	554	216	320	80	70	M20	170	140	22	20
K21R 315MX2	FF 600	508	126	590	550	416	457	120	150	554	216	400	65	65	M20	140	140	18	18
K21R 315MX4	FF 600	508	126	590	550	416	457	120	150	554	216	400	80	70	M20	170	140	22	20
K21R 315MX6,8	FF 600	508	126	590	550	416	457	120	150	554	216	320	80	70	M20	170	140	22	20
K21R 315MX10,12	FF 600	508	126	590	550	416	457	120	150	554	216	320	80	70	M20	170	140	22	20
K21R 315MY2	FF 600	508	110	590	610	498	457	120	-	573	216	495	65	65	M20	140	140	18	18
K21R 315MY4,6,8	FF 600	508	110	590	610	498	457	120	-	573	216	495	80	70	M20	170	140	22	20
K21R 315L2	FF 600	508	110	590	610	498	508	120	-	624	216	539	65	65	M20	140	140	18	18
K21R 315L4,6,8	FF 600	508	110	590	610	498	508	120	-	624	216	564	80	70	M20	170	140	22	20
K21R 315LX2	FF 600	508	110	590	610	481	508	120	-	624	216	684	65	65	M20	140	140	18	18
K21R 315LX4	FF 600	508	110	590	610	481	508	120	-	624	216	689	80	70	M20	170	140	22	20
K21R 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

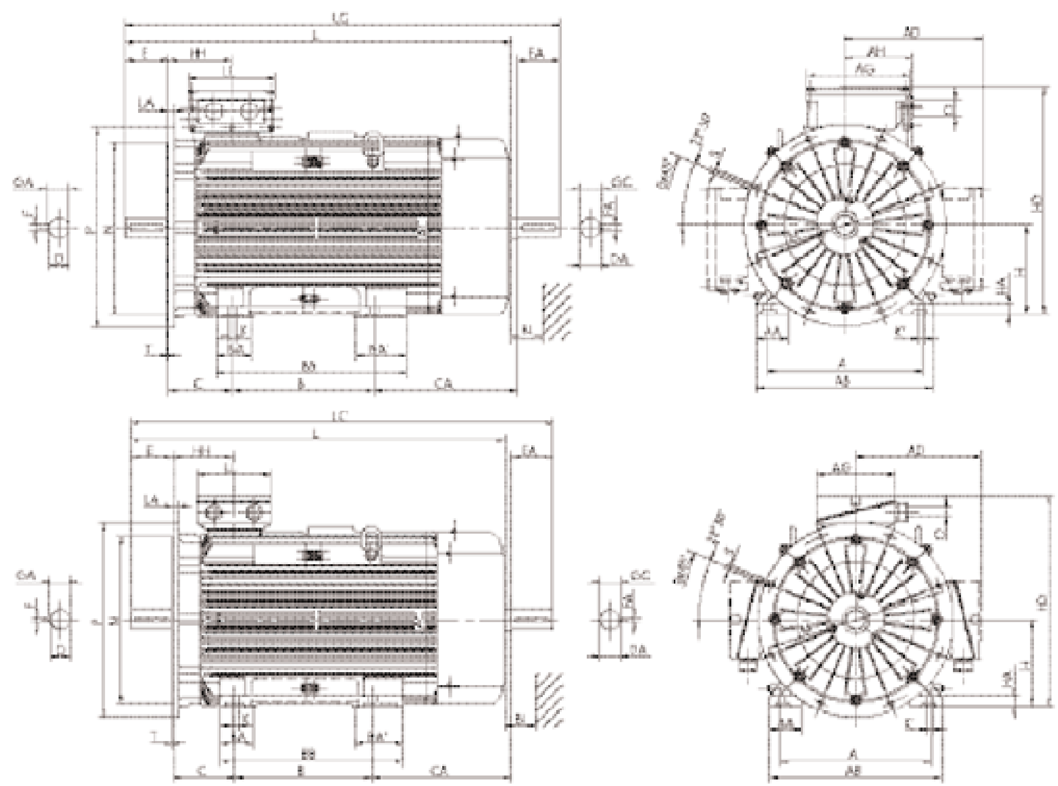
Three-phase motors with squirrel-cage rotor, basic version

Size 315

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

Type of construction IM B35 [IM 2001]

Flange dimensions see page 154/155



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
K21R 315S2	69	69	315	44	731	595	211	28	35	1050	1218	KK 200 A	282	242	-	M63x1.5	55
K21R 315S4,6,8	85	74.5	315	44	731	595	211	28	35	1080	1248	KK 200 A	282	242	-	M63x1.5	55
K21R 315M2	69	69	315	44	731	595	211	28	35	1105	1273	KK 200 A	282	242	-	M63x1.5	55
K21R 315M4,6,8	85	74.5	315	44	731	595	211	28	35	1135	1303	KK 200 A	282	242	-	M63x1.5	55
K21R 315MX2	69	69	315	44	731	595	211	28	35	1185	1353	KK 200 A	282	242	-	M63x1.5	55
K21R 315MX4	85	74.5	315	44	731	595	211	28	35	1210	1383	KK 200 A	282	242	-	M63x1.5	55
K21R 315MX6,8	85	74.5	315	44	731	595	211	28	35	1135	1303	KK 200 A	282	242	-	M63x1.5	55
K21R 315MX10,12	85	74.5	315	44	731	595	211	28	35	1135	1303	KK 200 A	282	242	-	M63x1.5	55
K21R 315MY2	69	69	315	44	774	628	230	28	35	1270	1448	KK 400 B	315	294	265	M63x1.5	55
K21R 315MY4,6,8	85	74.5	315	44	774	628	230	28	35	1300	1478	KK 400 B	315	294	265	M63x1.5	55
K21R 315L2	69	69	315	44	774	628	230	28	35	1390	1543	KK 400 B	315	294	265	M63x1.5	55
K21R 315L4,6,8	85	74.5	315	44	774	628	230	28	35	1420	1598	KK 400 B	315	294	265	M63x1.5	55
K21R 315LX2	69	69	315	44	796	628	230	28	35	1510	1688	KK 400 B	315	294	265	M63x1.5	55
K21R 315LX4	85	74.5	315	44	796	628	230	28	35	1540	1723	KK 400 B	315	294	265	M63x1.5	55
K21R 315LX6,8	85	74.5	315	44	796	628	230	28	35	1420	1598	KK 400 B	315	294	265	M63x1.5	55

**) Terminal box left/right

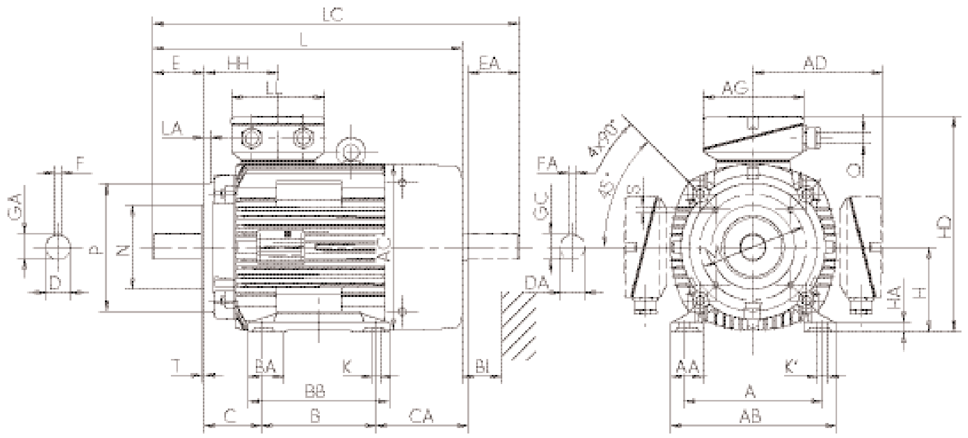
Three-phase motors with squirrel-cage rotor, basic version

Size 56 to 180

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

Type of construction IM B34 [IM 2101]

Flange dimensions see page 154/155



Type designation	Flange sizes small	Flange sizes big	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
K21O 56K2,4	FT 65	FT 85	90	18	110	-	-	71	-	86	36	-	9	-	M3	20	-	3	-
K21R 56G2,4	FT 65	-	90	18	110	109	-	71	-	86	36	-	9	-	M3	20	-	3	-
K21R 63K2,4,6	FT 75	FT 100	100	28	128	109	-	80	-	100	40	39	11	11	M4	23	23	4	4
K21R 63G2,4,6	FT 75	FT 100	100	28	128	109	-	80	-	100	40	39	11	11	M4	23	23	4	4
K21R 71K2,4,6,8	FT 85	FT 115	112	32	138	124	-	90	-	116	45	43,5	14	14	M5	30	30	5	5
K21R 71G2,4,6,8	FT 85	FT 115	112	32	138	124	-	90	-	116	45	43,5	14	14	M5	30	30	5	5
K21R 80K2,4,6,8	FT 100	FT 130	125	38	168	139	-	100	-	125	50	63	19	19	M6	40	40	6	6
K21R 80G2,4,6,8	FT 100	FT 130	125	38	168	139	-	100	-	125	50	63	19	19	M6	40	40	6	6
K21R 90S2,4,6,8	FT 115	FT 130	140	40	178	157	-	100	-	130	56	74	24	22	M8	50	50	8	6
K21R 90L2,4,6,8	FT 115	FT 130	140	40	178	157	-	125	-	155	56	71	24	22	M8	50	50	8	6
K21R 100L2,4,6,8	FT 130	FT 165	160	45	192	177	-	140	-	175	63	73	28	24	M10	60	50	8	8
K21R 100LX4,8	FT 130	FT 165	160	32	188	196	-	140	-	171	63	102	28	28	M10	60	60	8	8
K21R 112M2	FT 130	FT 165	190	50	224	196	-	140	-	180	70	95	28	28	M10	60	60	8	8
K21R 112M6,8	FT 130	FT 165	190	50	224	196	-	140	-	180	70	95	28	28	M10	60	60	8	8
K21R 112MX2	FT 130	FT 165	190	50	224	196	-	140	-	180	70	129	28	28	M10	60	60	8	8
K21R 112M4	FT 130	FT 165	190	50	224	196	-	140	-	180	70	129	28	28	M10	60	60	8	8
K21R 132S2T	FT 130	FT 165	216	50	256	196	-	140	-	180	89	129	38	28	M10	80	60	10	8
K21R 132S4T	FT 130	FT 165	216	50	256	196	-	140	-	180	89	129	38	28	M10	80	60	10	8
K21R 132S2	FT 130	FT 165	216	50	256	217	178	140	55	180	89	153	38	32	M12	80	80	10	10
K21R 132SX2	FT 130	FT 165	216	50	256	217	178	140	55	180	89	173	38	32	M12	80	80	10	10
K21R 132S4,6,8	FT 130	FT 165	216	50	256	217	178	140	55	180	89	153	38	32	M12	80	80	10	10
K21R 132M4	FT 165	FT 215	216	50	256	258	199	178	55	218	89	138	38	38	M12	80	80	10	10
K21R 132MX6	FT 165	FT 215	216	50	256	258	199	178	55	218	89	138	38	38	M12	80	80	10	10
K21R 132M6,8	FT 130	FT 165	216	50	256	217	178	178	55	218	89	135	38	32	M12	80	80	10	10
K21R 160M2	FT 165	FT 215	254	55	296	258	214	210	60	257	108	135	42	38	M16	110	80	12	10
K21R 160M4,6,8	FT 165	FT 215	254	55	296	258	214	210	60	257	108	135	42	38	M16	110	80	12	10
K21R 160MX8	FT 165	FT 215	254	55	296	258	199	210	60	257	108	135	42	38	M16	110	80	12	10
K21R 160MX2	FT 215	FT 265	254	55	296	313	242	210	60	257	108	148	42	42	M16	110	110	12	12
K21R 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
K21R 180M4	FT 265	-	279	62	328	313	242	241	65	288	121	142	48	42	M16	110	110	14	12
K21R 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

Dimensions

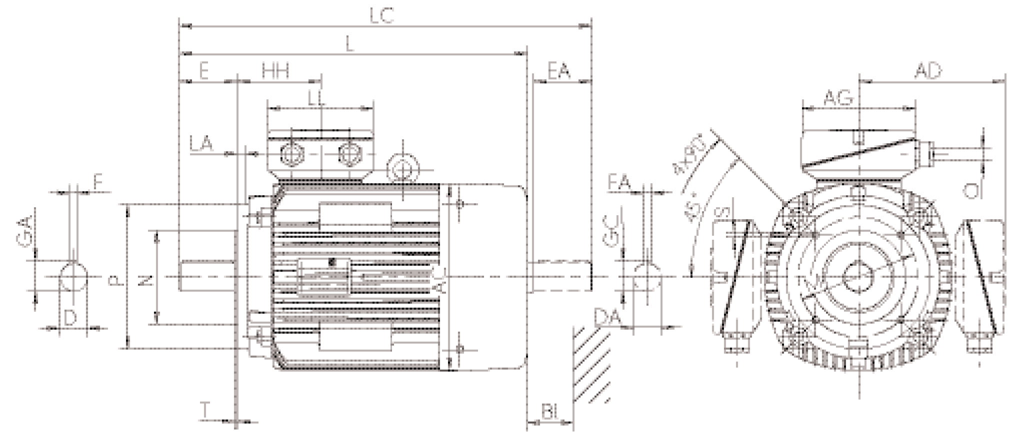
Three-phase motors with squirrel-cage rotor, basic version

Size 56 to 180

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

Type of construction IM B14 [IM 3601]

Flange dimensions see page 154/155



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.
K21O 56K2,4	10,2	10.2	56	7	154	a.A.	58	6	6	152	-	KA 05	92	92	M20x1.5	4L	14
K21R 56G2,4	10.2	10.2	56	7	154	a.A.	58	6	6	176	-	KA 05	92	92	M20x1.5	4L	14
K21R 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
K21R 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
K21R 71K2,4,6,8	16	16	71	11	184	a.A.	61	8	8	206	239	KA 05	92	92	M20x1.5	4L	14
K21R 71G2,4,6,8	16	16	71	11	184	a.A.	61	8	8	206	239	KA 05	92	92	M20x1.5	4L	14
K21R 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
K21R 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
K21R 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
K21R 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
K21R 100L2,4,6,8	31	27	100	15	252	a.A.	75	12	12	331	386	KA 05	92	92	M25x1.5	4L	18
K21R 100LX4,8	31	31	100	11	262	a.A.	77	12	12	357	425	KA 05	92	92	M25x1.5	4L	20
K21R 112M2	31	31	112	18	262	a.A.	77	12	12	357	425	KA 05	92	92	M25x1.5	4L	20
K21R 112M6,8	31	31	112	18	262	a.A.	77	12	12	391	459	KA 05	92	92	M25x1.5	4L	20
K21R 112MX2	31	31	112	18	262	a.A.	77	12	12	391	459	KA 05	92	92	M25x1.5	4L	20
K21R 112M4	31	31	112	18	262	a.A.	77	12	12	391	459	KA 05	92	92	M25x1.5	4L	20
K21R 132S2T	41	31	132	18	299	a.A.	96	12	12	430	498	KA 05-13	104	112	M25x1.5	4L	20
K21R 132S4T	41	31	132	18	299	a.A.	96	12	12	460	528	KA 05-13	104	112	M25x1.5	4L	20
K21R 132S2	41	35	132	16	328	275	108	12	12	459	542	KK 25 A	156	145	M32x1.5	4L	35
K21R 132SX2	41	35	132	16	328	275	108	12	12	479	562	KK 25 A	156	145	M32x1.5	4L	35
K21R 132S4,6,8	41	35	132	16	328	275	108	12	12	459	542	KK 25 A	156	145	M32x1.5	4L	35
K21R 132M4	41	41	132	16	349	297	114	12	12	481	565	KK 25 A	156	145	M32x1.5	4L	35
K21R 132MX6	41	41	132	16	349	297	114	12	12	481	565	KK 25 A	156	145	M32x1.5	4L	35
K21R 132M6,8	41	35	132	16	328	275	108	12	12	479	562	KK 25 A	156	145	M32x1.5	4L	35
K21R 160M2	45	41	160	18	389	322	114	15	15	559	643	KK 63 A	193	167	M40x1.5	4L	35
K21R 160M4,6,8	45	41	160	18	389	322	114	15	15	559	643	KK 63 A	193	167	M40x1.5	4L	35
K21R 160MX8	45	41	160	18	389	322	114	15	15	559	643	KK 63 A	193	167	M40x1.5	4L	35
K21R 160MX2	45	45	160	18	417	351	138	15	20	571	686	KK 63 A	193	167	M40x1.5	4L	35
K21R 160L2,4,6,8	45	45	160	18	417	351	138	15	20	609	724	KK 63 A	193	167	M40x1.5	4L	35
K21R 180M4	51.5	45	180	20	417	351	138	15	20	609	724	KK 63 A	193	167	M40x1.5	4L	35
K21R 180L6,8	51.5	45	180	20	417	364	138	15	20	609	724	KK 63 A	193	167	M40x1.5	4L	35

**) Terminal box left/right

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

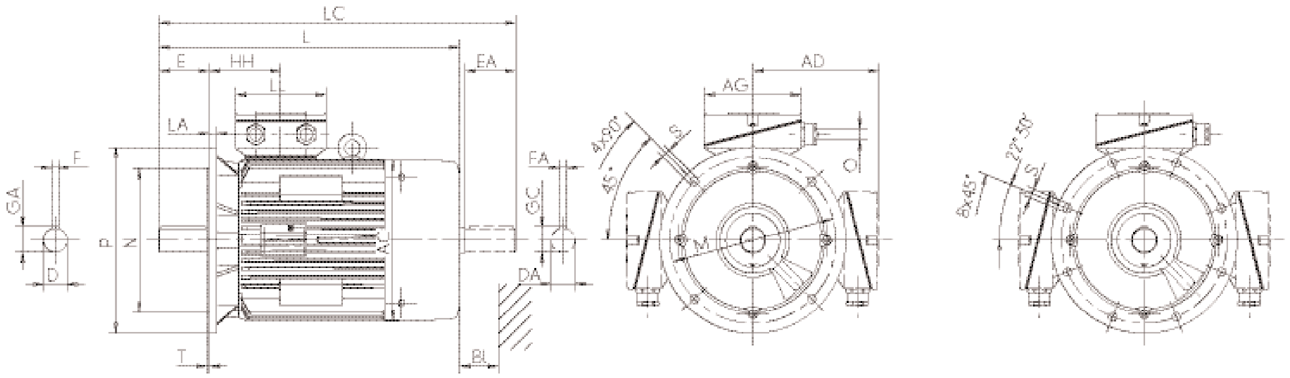
Size 56 to 280

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

Type of construction IM B5 [IM 3001]

Type of construction IM V1 [IM 3011]

Flange dimensions see page 154/155



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
K21O 56K2,4	FF 100	-	-	9	-	M3	20	-	3	-	10.2	10.2	56	58	152	-	KA 05	92	92	M20x1.5	4L	14
K21R 56G2,4	FF 100	109	-	9	-	M3	20	-	3	-	10.2	10.2	56	58	176	-	KA 05	92	92	M20x1.6	4L	14
K21R 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
K21R 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
K21R 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
K21R 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
K21R 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
K21R 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
K21R 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
K21R 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
K21R 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
K21R 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
K21R 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
K21R 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
K21R 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
K21R 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
K21R 132S2T	FF 265	196	-	38	28	M10	80	60	10	8	41	31	132	96	430	498	KA 05-13	104	112	M25x1.5	4L	20
K21R 132S4T	FF 265	196	-	38	28	M10	80	60	10	8	41	31	132	96	460	528	KA 05-13	104	112	M25x1.5	4L	20
K21R 132S2	FF 265	217	178	38	32	M12	80	80	10	10	41	35	132	108	459	542	KK 25 A	156	145	M32x1.5	4L	35
K21R 132SX2	FF 265	217	178	38	32	M12	80	80	10	10	41	35	132	108	479	562	KK 25 A	156	145	M32x1.5	4L	35
K21R 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	M32x1.5	4L	35
K21R 132M4	FF 265	258	199	38	38	M12	80	80	10	10	41	41	132	114	481	565	KK 25 A	156	145	M32x1.5	4L	35
K21R 132MX6	FF 265	258	199	38	38	M12	80	80	10	10	41	41	132	114	481	565	KK 25 A	156	145	M32x1.5	4L	35
K21R 132M6,8	FF 265	217	178	38	32	M12	80	80	10	10	41	35	132	108	479	562	KK 25 A	156	145	M32x1.5	4L	35
K21R 160M2	FF 300	258	214	42	38	M16	110	80	12	10	45	41	160	114	559	643	KK 63 A	193	167	M40x1.5	4L	35
K21R 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	M40x1.5	4L	35
K21R 160MX8	FF 300	258	199	42	38	M16	110	80	12	10	45	41	160	114	559	643	KK 63 A	193	167	M40x1.5	4L	35
K21R 160MX2	FF 300	313	242	42	42	M16	110	110	12	12	45	45	160	138	571	686	KK 63 A	193	167	M40x1.5	4L	35
K21R 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	M40x1.5	4L	35
K21R 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	M40x1.5	4L	35
K21R 180M4	FF 300	313	242	48	42	M16	110	110	14	12	51.5	45	180	138	609	724	KK 63 A	193	167	M40x1.5	4L	35
K21R 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	M40x1.5	4L	35
K21R 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	M40x1.5	4L	35
K21R 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	M40x1.5	4L	35
K21R 200LX6	FF 350	351	261	55	48	M20	110	110	16	14	59	51.5	200	147	680	796	KK 63 A	193	167	M40x1.5	4L	35
K21R 200LX2	FF 350	390	300	55	55	M20	110	110	16	16	59	59	200	168	727	851	KK 100 A	213	207	M50x1.5	4L	35
K21R 225S4,8	FF 400	390	300	60	55	M20	140	110	18	16	64	59	225	168	757	881	KK 100 A	213	207	M50x1.5	8L	40
K21R 225M2	FF 400	390	300	55	55	M20	110	110	16	16	59	59	225	168	767	891	KK 100 A	213	207	M50x1.5	8L	40
K21R 225M4	FF 400	390	300	60	55	M20	140	110	18	16	64	59	225	168	797	921	KK 100 A	213	207	M50x1.5	8L	40
K21R 225M6,8	FF 400	390	300	60	55	M20	140	110	18	16	64	59	225	168	757	881	KK 100 A	213	207	M50x1.5	8L	40
K21R 250M2	FF 500	440	358	60	55	M20	140	110	18	16	64	59	250	177	862	977	KK 200 A	282	242	M63x1.5	8L	45
K21R 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	M63x1.5	8L	45
K21R 280S2	FF 500	490	386	65	65	M20	140	140	18	18	69	69	280	206	924	1072	KK 200 A	282	242	M63x1.5	8L	50
K21R 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	M63x1.5	8L	50
K21R 280M2	FF 500	490	386	65	65	M20	140	140	18	18	69	69	280	206	970	1118	KK 200 A	282	242	M63x1.5	8L	50
K21R 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	M63x1.5	8L	50

*) Centre holes acc. to DIN 332-DS
**) Terminal box left/right

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

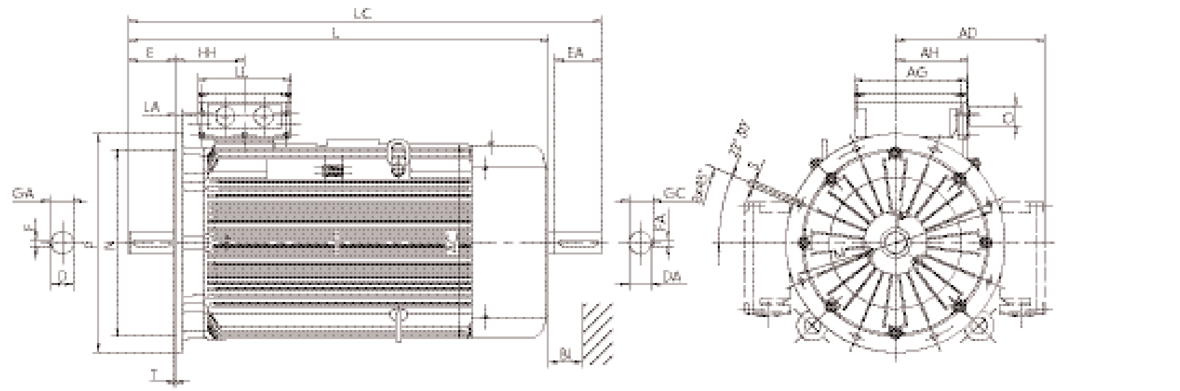
Size 315

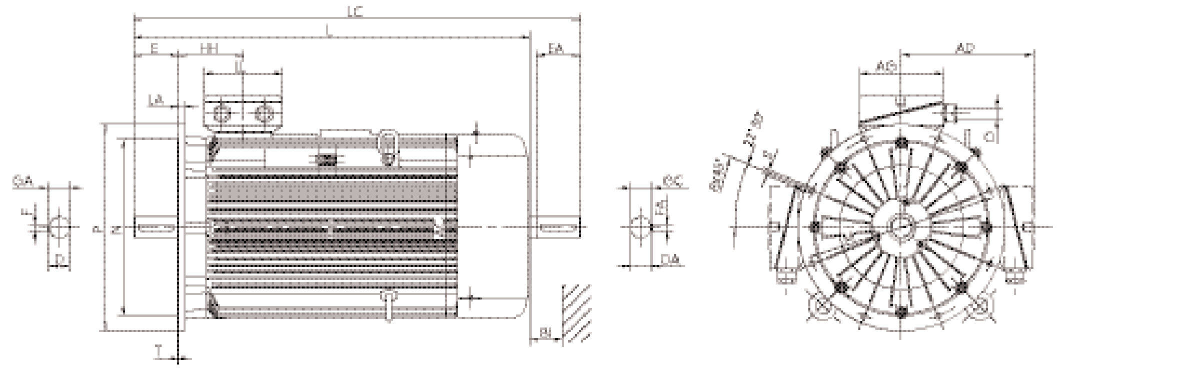
with surface ventilation, cooling method IC 411, degree of protection P 55

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

Type of construction IM V1 [IM 3011]

Flange dimensions see page 154/155





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	Bl. Bl
K21R 315S2	FF 600	550	416	65	65	M20	140	140	18	18	69	69	315	211	1050	1218	KK 200 A	282	242	-	M63x1.5	55
K21R 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	-	M63x1.5	55
K21R 315M2	FF 600	550	416	65	65	M20	140	140	18	18	69	69	315	211	1105	1273	KK 200 A	282	242	-	M63x1.5	55
K21R 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	-	M63x1.5	55
K21R 315MX2	FF 600	550	416	65	65	M20	140	140	18	18	69	69	315	211	1185	1353	KK 200 A	282	242	-	M63x1.5	55
K21R 315MX4	FF 600	550	416	80	70	M20	170	140	22	20	85	74.5	315	211	1215	1383	KK 200 A	282	242	-	M63x1.5	55
K21R 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	-	M63x1.5	55
K21R 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	-	M63x1.5	55
K21R 315MY2	FF 600	610	498	65	65	M20	140	140	18	18	69	69	315	230	1270	1448	KK 400 B	315	294	265	M63x1.5	55
K21R 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	M63x1.5	55
K21R 315L2	FF 600	610	498	65	65	M20	140	140	18	18	69	69	315	230	1390	1543	KK 400 B	315	294	265	M63x1.5	55
K21R 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	M63x1.5	55
K21R 315LX2	FF 600	610	481	65	65	M20	140	140	18	18	69	69	315	230	1510	1688	KK 400 B	315	294	265	M63x1.5	55
K21R 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	M63x1.5	55
K21R 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	M63x1.5	55

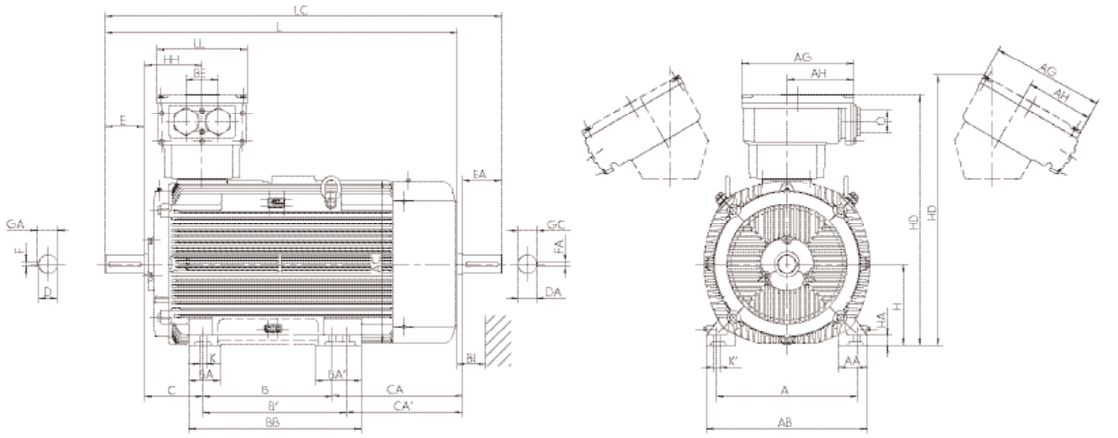
*) Centre holes acc. to DIN 332-DS
**) Terminal box left/righ

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

Size 355

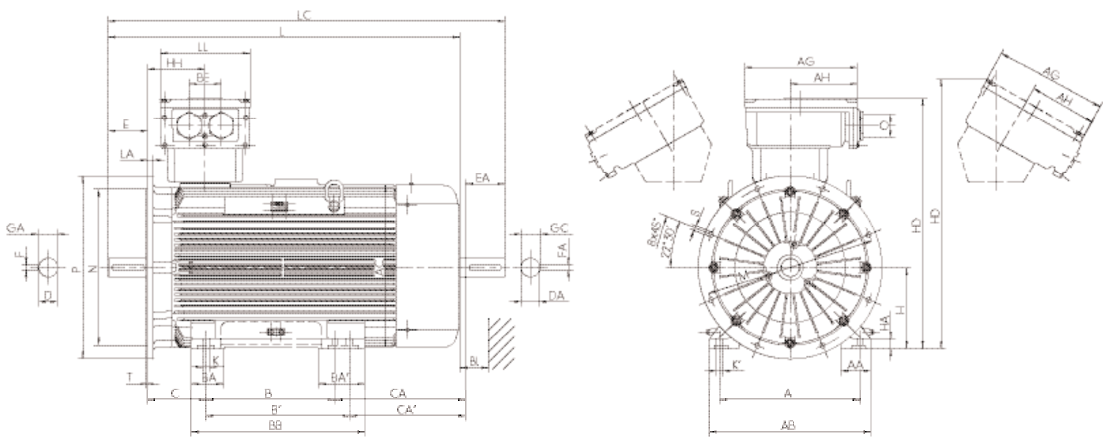
with surface ventilation, cooling method IC 411, degree of protection P 55

Type of construction IM B3 [IM 1001]



Type of construction IM B35 [IM 2001]

Flange dimensions see page 154/155



Type designation	Flange	A	AA	AB	AC	B	BA	BA'	BB	C	CA	D	DA	DB*)	E	EA	F	FA
	size	b	n	f	g	a	m	m1	e	w1	w2	d	d1		l	l1	u	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	GC	H	HA	HD	HD**)	HH	K	K'	L	LC	KK Type	AG	LL	AH	BE	O	Bl.
	t	t1	h	c	p	p	A	s	s'	k	k1		x	z	-	-	r	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 left/right

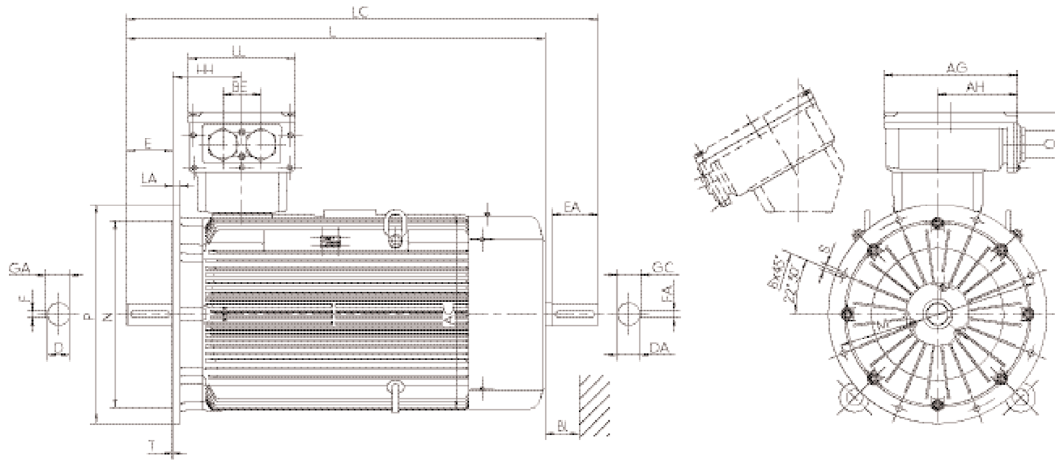
Three-phase motors with squirrel-cage rotor, basic version

Size 355

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

Type of construction IM V1 [IM 3011]

Flange dimensions see page 154/155



Type designation	Flange	AC	AD	AD**)	D	DA	DB*)	E	EA	F	FA	GA	GC	H	HH	L	LC	KK Type	AG	LL	AH	BE	O	Bl.
	size	g	g1	g1	d	d1		l	l1	u	u1	t	t1	h	A	k	k1		x	z	-	-	r	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

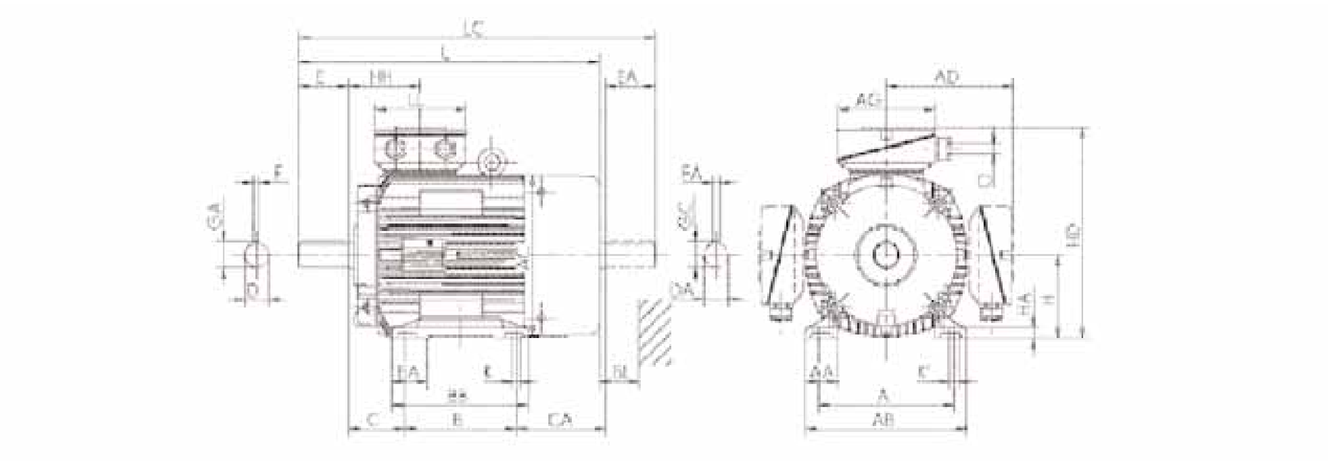
*) Centre holes acc. to DIN 332-DS
**) Terminal box left/right

Three-phase motors with squirrel-cage rotor, basic version, transnorm version

Size 56 to 250

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

Type of construction IM B3 [IM 1001]



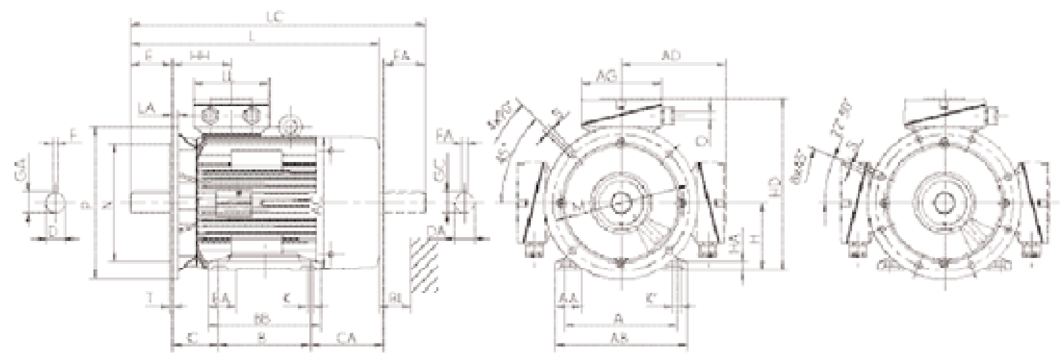
Type designation	Flange size	A b	AA n	AB f	AC g	AD g1	B a	BA m	BB e	C w1	CA w2	D d	DA d1	DB*)	E l	EA l1	F u	FA u1
K20R 56K	FF 115	90	18	110	109	-	71	-	86	36	52	11	11	M4	23	23	4	4
K20R 56G	FF 115	90	18	110	109	-	71	-	86	36	52	11	11	M4	23	23	4	4
K20R 63K	FF 130	100	21	120	124	-	80	-	95	40	59	14	14	M5	30	30	5	5
K20R 63G	FF 130	100	21	120	124	-	80	-	95	40	59	14	14	M5	30	30	5	5
K20R 71K	FF 165	112	23	135	139	-	90	-	134	45	78	19	19	M6	40	40	6	6
K20R 71G	FF 165	112	23	135	139	-	90	-	134	45	78	19	19	M6	40	40	6	6
K20R 80K	FF 165	125	26	152	157	-	100	-	124	50	80	22	22	M8	50	50	6	6
K20R 80G	FF 165	125	26	152	157	-	100	-	146	50	102	22	22	M8	50	50	6	6
K20R 90L	FF 215	140	25	167	177	-	125	-	150	56	95	24	24	M8	50	50	8	8
K20R 100S	FF 215	160	32	188	196	-	112	-	171	63	130	28	28	M10	60	60	8	8
K20R 100L2,4	FF 215	160	32	188	196	-	140	-	171	63	102	28	28	M10	60	60	8	8
K20R 100L6,8	FF 215	160	32	188	196	-	140	-	205	63	136	28	28	M10	60	60	8	8
K20R 100LX4	FF 215	160	32	188	196	-	140	-	171	63	102	28	28	M10	60	60	8	8
K20R 112M2	FF 265	190	45	226	217	178	140	42	172	70	192	32	32	M12	80	80	10	10
K20R 112M4,6,8	FF 265	190	45	226	217	178	140	42	172	70	172	32	32	M12	80	80	10	10
K20R 112MX6,8	FF 265	190	45	226	217	178	140	42	172	70	192	32	32	M12	80	80	10	10
K20R 132S	FF 300	216	50	256	258	199	140	47	180	89	176	38	38	M12	80	80	10	10
K20R 132M	FF 300	216	50	256	258	199	178	47	218	89	186	38	38	M12	80	80	10	10
K20R 160S2	FF 300	254	55	296	313	242	178	56	225	108	180	42	42	M16	110	110	12	12
K20R 160S4,6,8	FF 300	254	55	296	313	242	178	56	225	108	180	48	42	M16	110	110	14	12
K20R 160M2	FF 300	254	55	296	313	242	210	56	257	108	186	42	42	M16	110	110	12	12
K20R 160M4,6,8	FF 300	254	55	296	313	242	210	56	257	108	186	48	42	M16	110	110	14	12
K20R 180S2	FF 350	279	62	328	351	261	203	65	250	121	207	48	48	M16	110	110	14	14
K20R 180S4,6,8	FF 350	279	62	328	351	261	203	65	250	121	207	55	48	M20	110	110	16	14
K20R 180M2	FF 350	279	62	328	351	261	241	65	288	121	214	48	48	M16	110	110	14	14
K20R 180M4,6,8	FF 350	279	62	328	351	261	241	65	288	121	214	55	48	M20	110	110	16	14
K20R 200M2	FF 400	318	70	372	390	300	267	70	322	133	231	55	55	M20	110	110	16	16
K20R 200M4,6,8	FF 400	318	70	372	390	300	267	70	322	133	231	60	55	M20	140	110	18	16
K20R 200L2	FF 400	318	70	372	390	300	305	70	360	133	233	55	55	M20	110	110	16	16
K20R 200L4,6,8	FF 400	318	70	372	390	300	305	70	360	133	233	60	55	M20	140	110	18	16
K20R 225M2	FF 500	356	75	413	440	324	311	75	368	149	267	55	55	M20	110	110	16	16
K20R 225M4,6,8	FF 500	356	75	413	440	324	311	75	368	149	267	65	55	M20	140	110	18	16
K20R 250S2	FF 500	406	84	469	490	386	311	84	374	168	313	65	65	M20	140	140	18	18
K20R 250S4,6,8	FF 500	406	84	469	490	386	311	84	374	168	313	75	65	M20	140	140	20	18
K20R 250M2	FF 500	406	84	469	490	386	349	84	412	168	275	65	65	M20	140	140	18	18
K20R 250M4,6,8	FF 500	406	84	469	490	386	349	84	412	168	321	75	65	M20	140	140	20	18

*) Centre holes acc. to DIN 332-DS

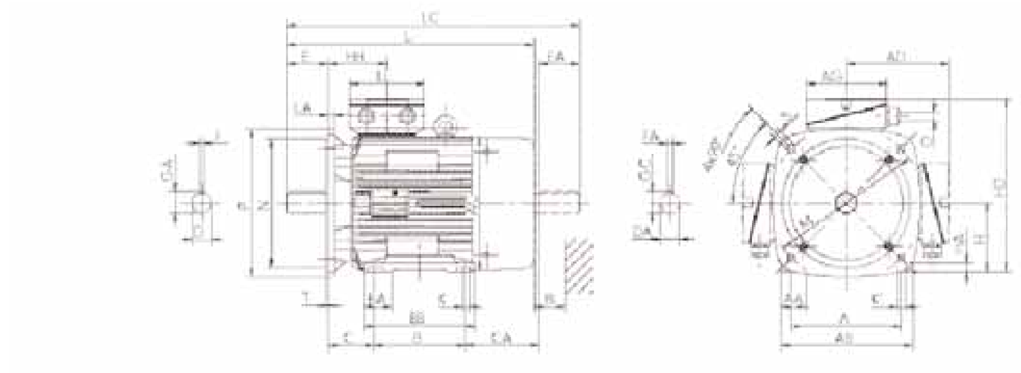
Three-phase motors with squirrel-cage rotor, basic version, transnorm version

Type of construction IM B35 [IM 2001]

Flange dimensions see page 154/155



Size 112 to 160 with crowned flange



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
K20R 56K	12.5	12.5	56	7	154	a.A.	58	6	6	179	205	KA 05	92	92	M20x1.5	4L	14
K20R 56G	12.5	12.5	56	7	154	a.A.	58	6	6	179	205	KA 05	92	92	M20x1.5	4L	14
K20R 63K	16	16	63	7.5	167	a.A.	61	7	7	206	239	KA 05	92	92	M20x1.5	4L	14
K20R 63G	16	16	63	7.5	167	a.A.	61	7	7	206	239	KA 05	92	92	M20x1.5	4L	14
K20R 71K	21.5	21.5	71	8	182	a.A.	67	7	7	249	293	KA 05	92	92	M20x1.5	4L	16
K20R 71G	21.5	21.5	71	8	182	a.A.	67	7	7	249	293	KA 05	92	92	M20x1.5	4L	16
K20R 80K	24.5	24.5	80	9	200	a.A.	70	10	10	275	330	KA 05	92	92	M20x1.5	4L	16
K20R 80G	24.5	24.5	80	9	200	a.A.	70	10	10	297	352	KA 05	92	92	M20x1.5	4L	16
K20R 90L	27	27	90	9,5	217	a.A.	75	10	10	321	376	KA 05	92	92	M20x1.5	4L	18
K20R 100S	31	31	100	11	237	a.A.	77	12	12	357	425	KA 05	92	92	M20x1.5	4L	20
K20R 100L2,4	31	31	100	11	237	a.A.	77	12	12	391	459	KA 05	92	92	M20x1.5	4L	20
K20R 100L6,8	31	31	100	11	237	a.A.	77	12	12	357	425	KA 05	92	92	M20x1.5	4L	20
K20R 100LX4	31	31	100	11	237	a.A.	77	12	12	421	489	KA 05	92	92	M20x1.5	4L	20
K20R 112M2	35	35	112	15	290	a.A.	108	12	12	479	562	KK 25 A	156	145	M32x1.5	4L	35
K20R 112M4,6,8	35	35	112	15	290	a.A.	108	12	12	459	542	KK 25 A	156	145	M32x1.5	4L	35
K20R 112MX6,8	35	35	112	15	290	a.A.	108	12	12	479	562	KK 25 A	156	145	M32x1.5	4L	35
K20R 132S	41	41	132	15	331	a.A.	114	12	12	481	565	KK 25 A	156	145	M32x1.5	4L	35
K20R 132M	41	41	132	15	331	a.A.	114	12	12	529	613	KK 25 A	156	145	M32x1.5	4L	35
K20R 160S2	45	45	160	18	402	a.A.	138	15	20	571	686	KK 63 A	193	167	M40x1.5	4L	35
K20R 160S4,6,8	51.5	45	160	18	402	a.A.	138	15	20	571	686	KK 63 A	193	167	M40x1.5	4L	35
K20R 160M2	45	45	160	18	402	a.A.	138	15	20	609	724	KK 63 A	193	167	M40x1.5	4L	35
K20R 160M4,6,8	51.5	45	160	18	402	a.A.	138	15	20	609	724	KK 63 A	193	167	M40x1.5	4L	35
K20R 180S2	51.5	51.5	180	20	441	a.A.	147	15	20	635	751	KK 63 A	193	167	M40x1.5	4L	35
K20R 180S4,6,8	59	51.5	180	20	441	a.A.	147	15	20	635	751	KK 63 A	193	167	M40x1.5	4L	35
K20R 180M2	51.5	51.5	180	20	441	a.A.	147	15	20	680	796	KK 63 A	193	167	M40x1.5	4L	35
K20R 180M4,6,8	59	51.5	180	20	441	a.A.	147	15	20	680	796	KK 63 A	193	167	M40x1.5	4L	35
K20R 200M2	59	59	200	22	500	a.A.	168	19	25	727	851	KK 100 A	213	207	M50x1.5	4L	40
K20R 200M4,6,8	64	59	200	22	500	a.A.	168	19	25	757	881	KK 100 A	213	207	M50x1.5	4L	40
K20R 200L2	59	59	200	22	500	a.A.	168	19	25	767	891	KK 100 A	213	207	M50x1.5	4L	40
K20R 200L4,6,8	64	59	200	22	500	a.A.	168	19	25	797	921	KK 100 A	213	207	M50x1.5	4L	40
K20R 225M2	59	59	225	25	549	a.A.	177	19	25	832	947	KK 100 A	213	207	M50x1.5	8L	45
K20R 225M4,6,8	69	59	225	25	549	a.A.	177	19	25	862	977	KK 100 A	213	207	M50x1.5	8L	45
K20R 250S2	69	69	250	28	636	a.A.	206	24	30	924	1072	KK 200 A	282	242	M63x1.5	8L	50
K20R 250S4,6,8	79.5	69	250	28	636	a.A.	206	24	30	924	1072	KK 200 A	282	242	M63x1.5	8L	50
K20R 250M2	69	69	250	28	636	a.A.	206	24	30	924	1072	KK 200 A	282	242	M63x1.5	8L	50
K20R 250M4,6,8	79.5	69	250	28	636	a.A.	206	24	30	970	1118	KK 200 A	282	242	M63x1.5	8L	50

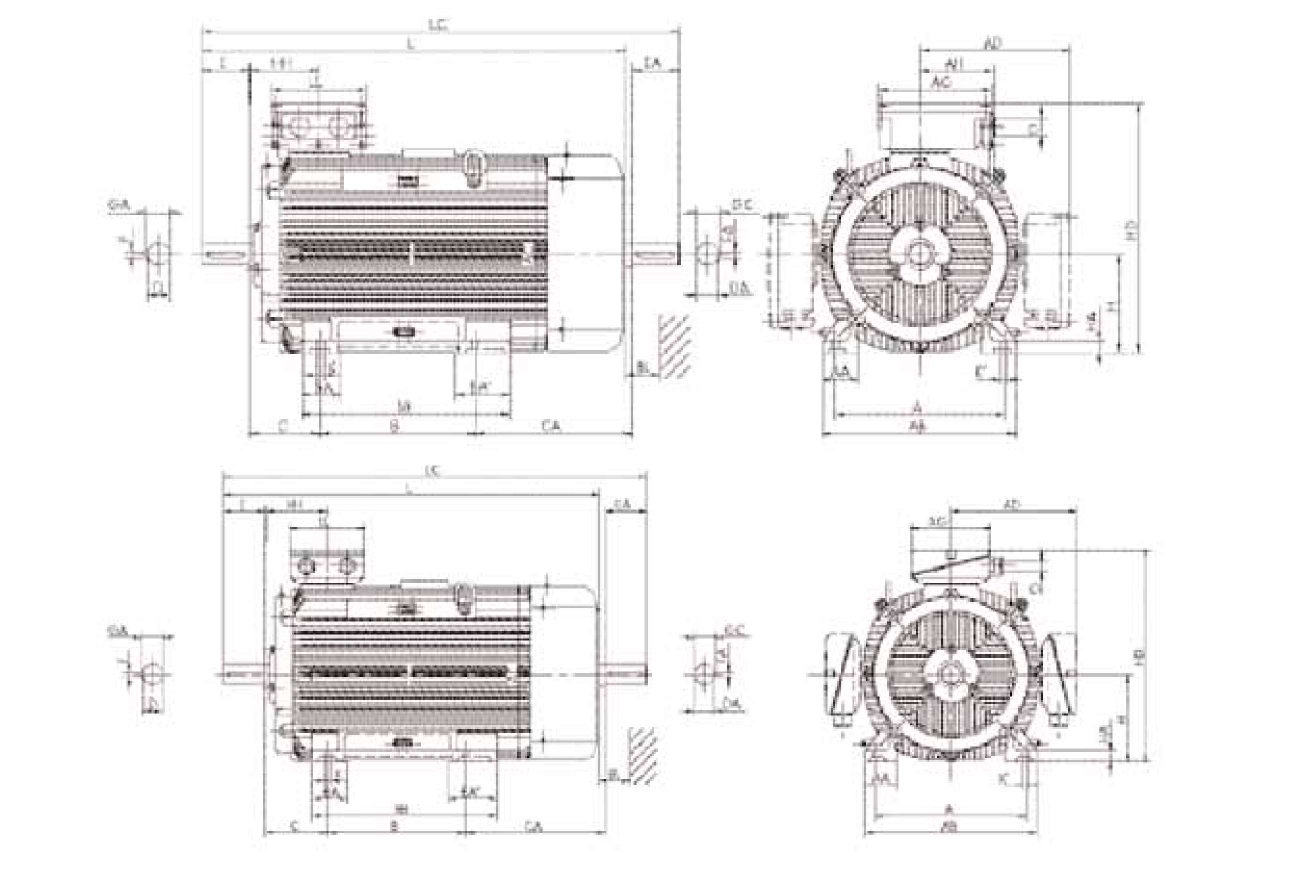
**) Terminal box left/right

Three-phase motors with squirrel-cage rotor, basic version, transnorm version

Size 280, 315

with surface ventilation, cooling method IC 411, degree of protection P 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
K20R 280S2	FF 600	457	88	522	550	416	368	94	431	55	190	380	70	70	M20	140	140	20	20
K20R 280S4,6,8	FF 600	457	88	522	550	416	368	94	431	55	190	380	80	70	M20	170	140	22	20
K20R 280M2	FF 600	457	88	522	550	416	419	94	482	55	190	384	70	70	M20	140	140	20	20
K20R 280M4,6,8	FF 600	457	88	522	550	416	419	94	482	55	190	384	80	70	M20	170	140	22	20
K20R 315S2	FF 600	508	132	590	550	416	406	120	554	55	216	451	75	70	M20	140	140	20	20
K20R 315S4	FF 600	508	132	590	550	416	406		554	55	216	451	90	70	M24	170	140	25	20
K20R 315S6,8	FF 600	508	132	590	550	416	406		554	55	216	371	90	70	M24	170	140	25	20
K20R 315M2	FF 600	508	110	590	610	498	457	120	587	55	216	495	75	75	M20	140	140	20	20
K20R 315M4,6,8	FF 600	508	110	590	610	498	457		587	55	216	495	90	75	M24	170	140	25	20
K20R 315M10,12	FF 600	508	132	590	550	498	457		554	55	216	320	90	75	M24	170	140	25	20
K20R 315L2	FF 600	508	110	590	610	498	508	120	624	55	216	564	75	75	M20	140	140	20	20
K20R 315L4,6,8	FF 600	508	110	590	610	498	508		624	55	216	564	90	75	M24	170	140	25	20
K20R 315LX2	FF 600	508	110	590	610	481	508	120	624	55	216	684	75	75	M20	140	140	20	20
K20R 315LX4	FF 600	508	110	590	610	481	508		624	55	216	684	90	75	M24	170	140	25	20
K20R 315LX6,8	FF 600	508	110	590	610	498	508		624	55	216	564	90	75	M24	170	140	25	20

*) Centre holes acc. to DIN 332-DS

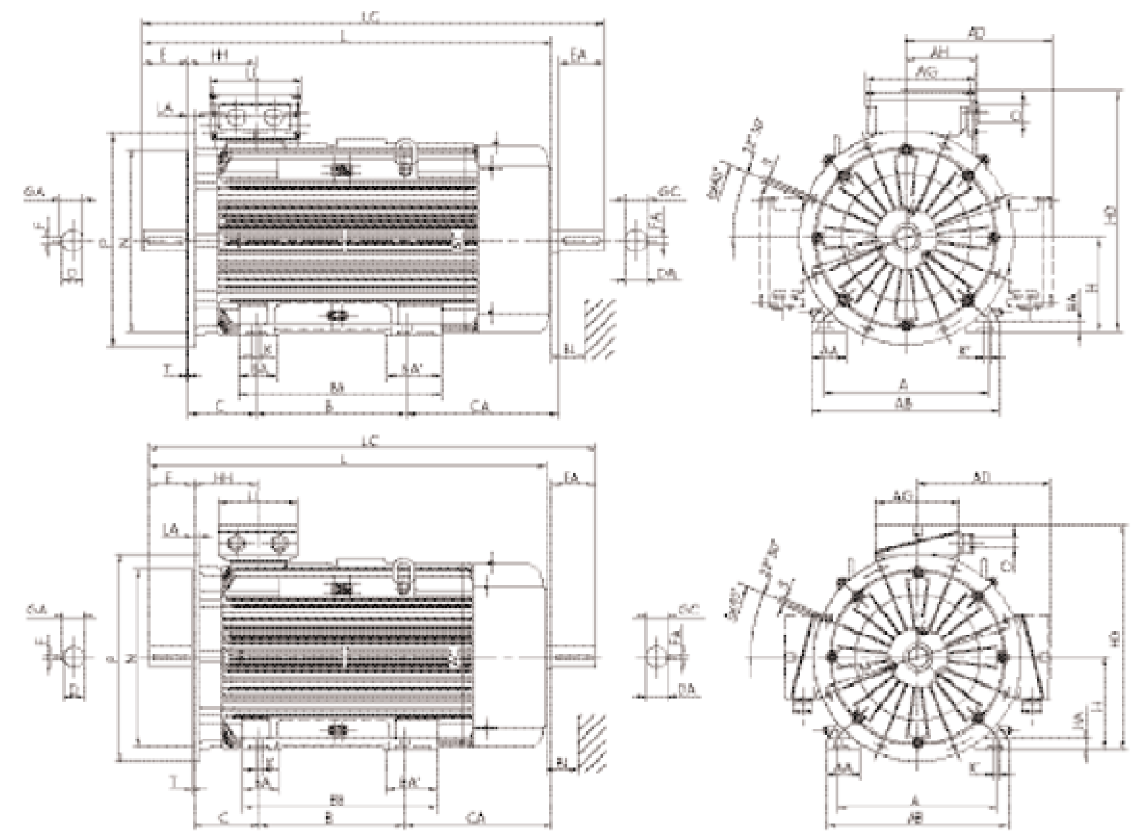
Three-phase motors with squirrel-cage rotor, basic version, transnorm version

Size 280, 315

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

Type of construction IM B35 [IM 2001]

Flange dimensions see page 154/155



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
K20R 280S2	74.5	74.5	280	40	696	a.A.	211	24	30	1050	1218	KK 200 A	282	242	-	M63x1.5	55
K20R 280S4,6,8	85	74.5	280	40	696	a.A.	211	24	30	1080	1248	KK 200 A	282	242	-	M63x1.5	55
K20R 280M2	74.5	74.5	280	40	696	a.A.	211	24	30	1105	1273	KK 200 A	282	242	-	M63x1.5	55
K20R 280M4,6,8	85	74.5	280	40	696	a.A.	211	24	30	1135	1303	KK 200 A	282	242	-	M63x1.5	55
K20R 315S2	79.5	74.5	315	44	731	a.A.	211	28	35	1185	1353	KK 200 A	282	242	-	M63x1.5	55
K20R 315S4	95	74.5	315	44	731	a.A.	211	28	35	1215	1383	KK 200 A	282	242	-	M63x1.5	55
K20R 315S6,8	95	74.5	315	44	731	a.A.	211	28	35	1135	1303	KK 200 A	282	242	-	M63x1.5	55
K20R 315M2	79.5	79.5	315	44	774	a.A.	230	28	35	1270	1448	KK 400 B	315	294	265	M63x1.5	55
K20R 315M4,6,8	95	79.5	315	44	774	a.A.	230	28	35	1300	1478	KK 400 B	315	294	265	M63x1.5	55
K20R 315M10,12	95	79.5	315	44	774	a.A.	211	28	35	1135	1303	KK 400 B	315	294	265	M63x1.5	55
K20R 315L2	79.5	79.5	315	44	774	a.A.	230	28	35	1390	1568	KK 400 B	315	294	265	M63x1.5	55
K20R 315L4,6,8	95	79.5	315	44	774	a.A.	230	28	35	1420	1598	KK 400 B	315	294	265	M63x1.5	55
K20R 315LX2	79.5	79.5	315	44	796	a.A.	230	28	35	1510	1688	KK 400 B	315	294	265	M63x1.5	55
K20R 315LX4	95	79.5	315	44	796	a.A.	230	28	35	1540	1718	KK 400 B	315	294	265	M63x1.5	55
K20R 315LX6,8	95	79.5	315	44	774	a.A.	230	28	35	1420	1598	KK 400 B	315	294	265	M63x1.5	55

**) Terminal box left/right

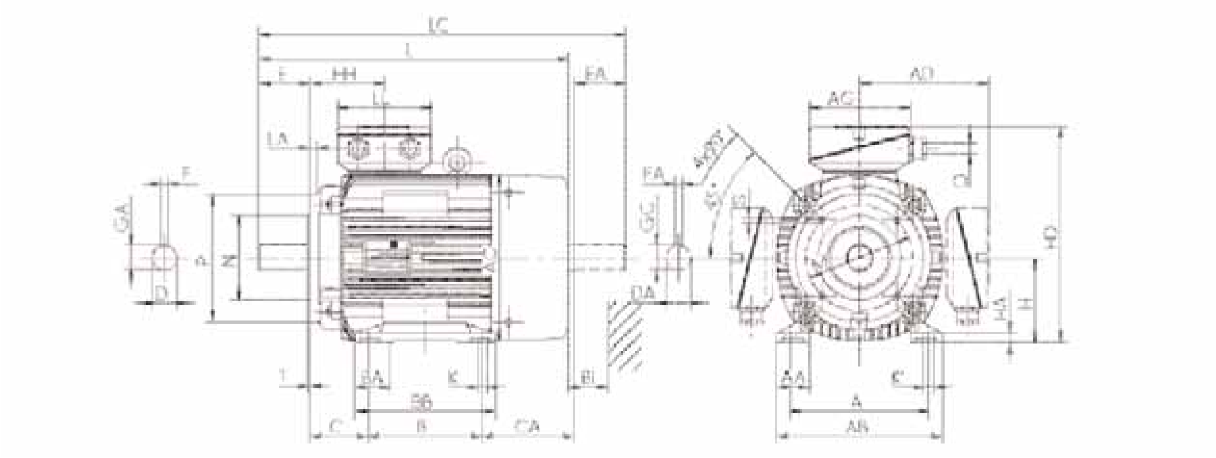
Three-phase motors with squirrel-cage rotor, basic version, transnorm version

Size 56 to 160

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

Type of construction IM B34 [IM 2101]

Flange dimensions see page 154/155



Type designation	Flange sizes small	big	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
K20R 56K	FT 65	FT 100	90	18	110	109	-	71	-	86	36	52	11	11	M4	23	23	4	4
K20R 56G	FT 65	FT 100	90	18	110	109	-	71	-	86	36	52	11	11	M4	23	23	4	4
K20R 63K	FT 75	FT 115	100	21	120	124	-	80	-	95	40	59	14	14	M5	30	30	5	5
K20R 63G	FT 75	FT 115	100	21	120	124	-	80	-	95	40	59	14	14	M5	30	30	5	5
K20R 71K	FT 85	FT 130	112	23	135	139	-	90	-	134	45	78	19	19	M6	40	40	6	6
K20R 71G	FT 85	FT 130	112	23	135	139	-	90	-	134	45	78	19	19	M6	40	40	6	6
K20R 80K	FT 100	FT 130	125	26	152	157	-	100	-	124	50	80	22	22	M8	50	50	6	6
K20R 80G	FT 100	FT 130	125	26	152	157	-	100	-	146	50	102	22	22	M8	50	50	6	6
K20R 90L	FT 115	FT 165	140	25	167	177	-	125	-	150	56	95	24	24	M8	50	50	8	8
K20R 100S	FT 130	FT 165	160	32	188	196	-	112	-	171	63	130	28	28	M10	60	60	8	8
K20R 100L2,4	FT 130	FT 165	160	32	188	196	-	140	-	171	63	102	28	28	M10	60	60	8	8
K20R 100L6,8	FT 130	FT 165	160	32	188	196	-	140	-	205	63	136	28	28	M10	60	60	8	8
K20R 100LX4	FT 130	FT 165	160	32	188	196	-	140	-	171	63	102	28	28	M10	60	60	8	8
K20R 112M2	FT 130	FT 165	190	45	226	217	178	140	42	172	70	192	32	32	M12	80	80	10	10
K20R 112M4,6,8	FT 130	FT 165	190	45	226	217	178	140	42	172	70	172	32	32	M12	80	80	10	10
K20R 112MX6,8	FT 130	FT 165	190	45	226	217	178	140	42	172	70	192	32	32	M12	80	80	10	10
K20R 132S	FT 165	FT 215	216	50	256	258	199	140	47	180	89	176	38	38	M12	80	80	10	10
K20R 132M	FT 165	FT 215	216	50	256	258	199	178	47	218	89	186	38	38	M12	80	80	10	10
K20R 160S2	FT 215	FT 265	254	55	296	313	242	178	56	225	108	180	42	42	M16	110	110	12	12
K20R 160S4,6,8	FT 215	FT 265	254	55	296	313	242	178	56	225	108	180	48	42	M16	110	110	14	12
K20R 160M2	FT 215	FT 265	254	55	296	313	242	210	56	257	108	186	42	42	M16	110	110	12	12
K20R 160M4,6,8	FT 215	FT 265	254	55	296	313	242	210	56	257	108	186	48	42	M16	110	110	14	12

*) Centre holes acc. to DIN 332-DS

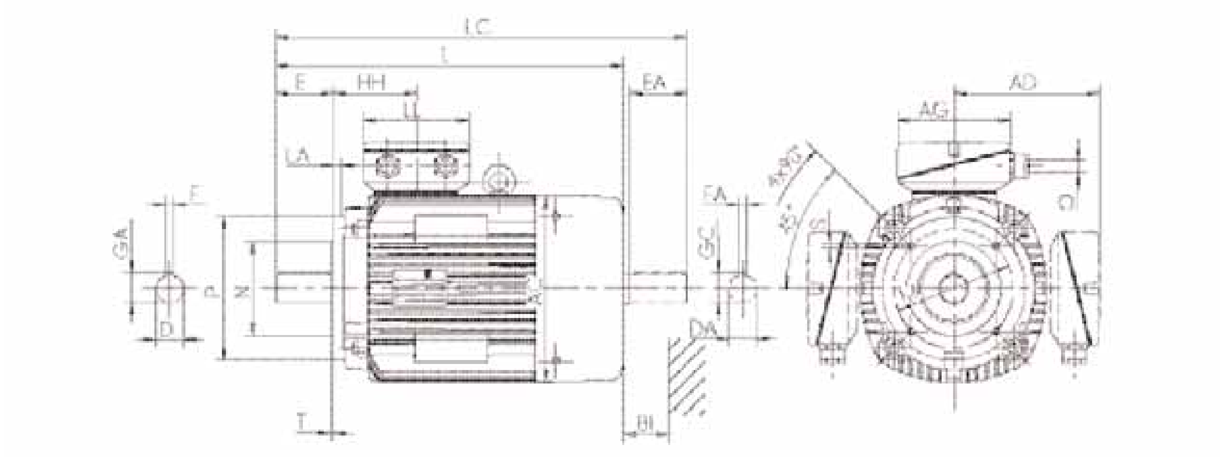
Three-phase motors with squirrel-cage rotor, basic version, transnorm version

Size 56 to 160

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

Type of construction IM B14 [IM 3601]

Flange dimensions see page 154/155



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.
K20R 56K	12.5	12.5	56	7	154	a.A.	58	6	6	179	205	KA 05	92	92	M20x1.5	4L	14
K20R 56G	12.5	12.5	56	7	154	a.A.	58	6	6	179	205	KA 05	92	92	M20x1.5	4L	14
K20R 63K	16	16	63	7.5	167	a.A.	61	7	7	206	239	KA 05	92	92	M20x1.5	4L	14
K20R 63G	16	16	63	7.5	167	a.A.	61	7	7	206	239	KA 05	92	92	M20x1.5	4L	14
K20R 71K	21.5	21.5	71	8	182	a.A.	67	7	7	249	293	KA 05	92	92	M20x1.5	4L	16
K20R 71G	21.5	21.5	71	8	182	a.A.	67	7	7	249	293	KA 05	92	92	M20x1.5	4L	16
K20R 80K	24.5	24.5	80	9	200	a.A.	70	10	10	275	330	KA 05	92	92	M25x1.5	4L	16
K20R 80G	24.5	24.5	80	9	200	a.A.	70	10	10	297	352	KA 05	92	92	M25x1.5	4L	16
K20R 90L	27	27	90	9.5	217	a.A.	75	10	10	321	376	KA 05	92	92	M25x1.5	4L	18
K20R 100S	31	31	100	11	237	a.A.	77	12	12	357	425	KA 05	92	92	M25x1.5	4L	20
K20R 100L2,4	31	31	100	11	237	a.A.	77	12	12	391	459	KA 05	92	92	M25x1.5	4L	20
K20R 100L6,8	31	31	100	11	237	a.A.	77	12	12	357	425	KA 05	92	92	M25x1.5	4L	20
K20R 100LX4	31	31	100	11	237	a.A.	77	12	12	421	489	KA 05	92	92	M25x1.5	4L	20
K20R 112M2	35	35	112	15	290	a.A.	108	12	12	479	562	KK 25 A	156	145	M32x1.5	4L	35
K20R 112M4,6,8	35	35	112	15	290	a.A.	108	12	12	459	542	KK 25 A	156	145	M32x1.5	4L	35
K20R 112MX6,8	35	35	112	15	290	a.A.	108	12	12	479	562	KK 25 A	156	145	M32x1.5	4L	35
K20R 132S	41	41	132	15	331	a.A.	114	12	12	481	565	KK 25 A	156	145	M32x1.5	4L	35
K20R 132M	41	41	132	15	331	a.A.	114	12	12	529	613	KK 25 A	156	145	M32x1.5	4L	35
K20R 160S2	45	45	160	18	402	a.A.	138	15	20	571	686	KK 63 A	193	167	M40x1.5	4L	35
K20R 160S4,6,8	51.5	45	160	18	402	a.A.	138	15	20	571	686	KK 63 A	193	167	M40x1.5	4L	35
K20R 160M2	45	45	160	18	402	a.A.	138	15	20	609	724	KK 63 A	193	167	M40x1.5	4L	35
K20R 160M4,6,8	51.5	45	160	18	402	a.A.	138	15	20	609	724	KK 63 A	193	167	M40x1.5	4L	35

**) Terminal box left/right

Three-phase motors with squirrel-cage rotor, basic version, transnorm version

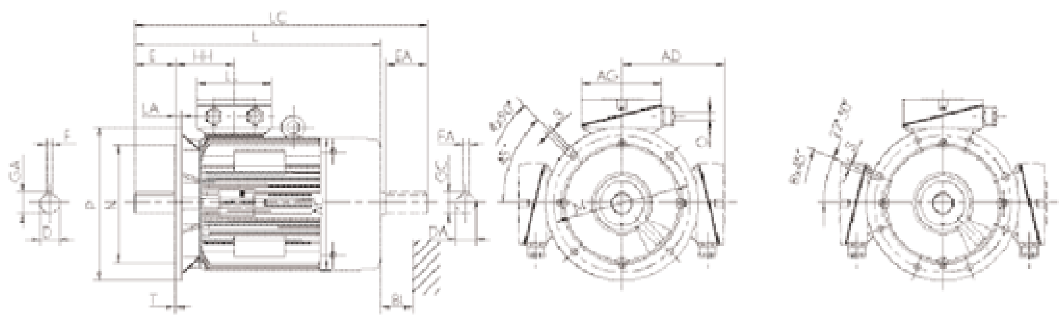
Size 56 to 250

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

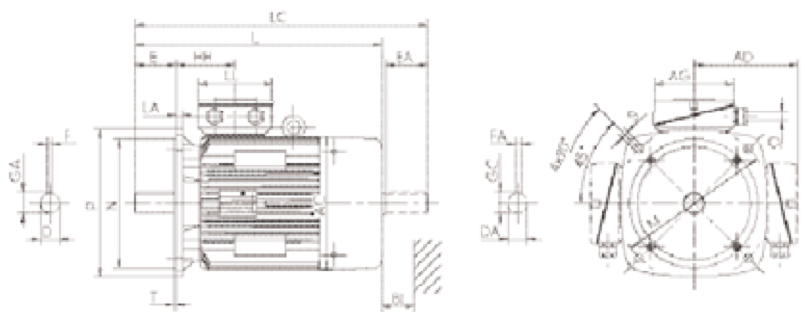
Type of construction IM B5 [IM 3001]

Type of construction IM V1 [IM 3011]

Flange dimensions see page 154/155



Size 160 with crowned flange



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
K20R 56K	FF 115	109	-	11	11	M4	23	23	4	4	12.5	12.5	56	58	179	205	KA 05	92	92	M20x1.5	4L	14
K20R 56G	FF 115	109	-	11	11	M4	23	23	4	4	12.5	12.5	56	58	179	205	KA 05	92	92	M20x1.5	4L	14
K20R 63K	FF 130	124	-	14	14	M5	30	30	5	5	16	16	63	61	206	239	KA 05	92	92	M20x1.5	4L	14
K20R 63G	FF 130	124	-	14	14	M5	30	30	5	5	16	16	63	61	206	239	KA 05	92	92	M20x1.5	4L	14
K20R 71K	FF 165	139	-	19	19	M6	40	40	6	6	21.5	21.5	71	67	249	293	KA 05	92	92	M20x1.5	4L	16
K20R 71G	FF 165	139	-	19	19	M6	40	40	6	6	21.5	21.5	71	67	249	293	KA 05	92	92	M20x1.5	4L	16
K20R 80K	FF 165	157	-	22	22	M8	50	50	6	6	24.5	24.5	80	70	275	330	KA 05	92	92	M20x1.5	4L	16
K20R 80G	FF 165	157	-	22	22	M8	50	50	6	6	24.5	24.5	80	70	297	352	KA 05	92	92	M20x1.5	4L	16
K20R 90L	FF 215	177	-	24	24	M8	50	50	8	8	27	27	90	75	321	376	KA 05	92	92	M20x1.5	4L	18
K20R 100S	FF 215	196	-	28	28	M10	60	60	8	8	31	31	100	77	357	425	KA 05	92	92	M20x1.5	4L	20
K20R 100L2,4	FF 215	196	-	28	28	M10	60	60	8	8	31	31	100	77	391	459	KA 05	92	92	M20x1.5	4L	20
K20R 100L6,8	FF 215	196	-	28	28	M10	60	60	8	8	31	31	100	77	357	425	KA 05	92	92	M20x1.5	4L	20
K20R 100LX4	FF 215	196	-	28	28	M10	60	60	8	8	31	31	100	77	421	489	KA 05	92	92	M20x1.5	4L	20
K20R 112M2	FF 265	217	178	32	32	M12	80	80	10	10	35	35	112	108	479	562	KK 25 A	156	145	M32x1.5	4L	35
K20R 112M4,6,8	FF 265	217	178	32	32	M12	80	80	10	10	35	35	112	108	459	542	KK 25 A	156	145	M32x1.5	4L	35
K20R 112MX6,8	FF 265	217	178	32	32	M12	80	80	10	10	35	35	112	108	479	562	KK 25 A	156	145	M32x1.5	4L	35
K20R 132S	FF 300	258	199	38	38	M12	80	80	10	10	41	41	132	114	481	565	KK 25 A	156	145	M32x1.5	4L	35
K20R 132M	FF 300	258	199	38	38	M12	80	80	10	10	41	41	132	114	529	613	KK 25 A	156	145	M32x1.5	4L	35
K20R 160S2	FF 300	313	242	42	42	M16	110	110	12	12	45	45	160	138	571	686	KK 63 A	193	167	M40x1.5	4L	35
K20R 160S4,6,8	FF 300	313	242	48	42	M16	110	110	14	12	51.5	45	160	138	571	686	KK 63 A	193	167	M40x1.5	4L	35
K20R 160M2	FF 300	313	242	42	42	M16	110	110	12	12	45	45	160	138	609	724	KK 63 A	193	167	M40x1.5	4L	35
K20R 160M4,6,8	FF 300	313	242	48	42	M16	110	110	14	12	51.5	45	160	138	609	724	KK 63 A	193	167	M40x1.5	4L	35
K20R 180S2	FF 350	351	261	48	48	M16	110	110	14	14	51.5	51.5	180	147	635	751	KK 63 A	193	167	M40x1.5	4L	35
K20R 180S4,6,8	FF 350	351	261	55	48	M20	110	110	16	14	59	51.5	180	147	635	751	KK 63 A	193	167	M40x1.5	4L	35
K20R 180M2	FF 350	351	261	48	48	M16	110	110	14	14	51.5	51.5	180	147	680	796	KK 63 A	193	167	M40x1.5	4L	35
K20R 180M4,6,8	FF 350	351	261	55	48	M20	110	110	16	14	59	51.5	180	147	680	796	KK 63 A	193	167	M40x1.5	4L	35
K20R 200M2	FF 400	390	300	55	55	M20	110	110	16	16	59	59	200	168	727	851	KK 100 A	213	207	M50x1.5	4L	40
K20R 200M4,6,8	FF 400	390	300	60	55	M20	140	110	18	16	64	59	200	168	757	881	KK 100 A	213	207	M50x1.5	4L	40
K20R 200L2	FF 400	390	300	55	55	M20	110	110	16	16	59	59	200	168	767	891	KK 100 A	213	207	M50x1.5	4L	40
K20R 200L4,6,8	FF 400	390	300	60	55	M20	140	110	18	16	64	59	200	168	797	921	KK 100 A	213	207	M50x1.5	4L	40
K20R 225M2	FF 500	440	324	55	55	M20	110	110	16	16	59	59	225	177	832	947	KK 100 A	213	207	M50x1.5	8L	45
K20R 225M4,6,8	FF 500	440	324	65	55	M20	140	110	18	16	69	59	225	177	862	977	KK 100 A	213	207	M50x1.5	8L	45
K20R 250S2	FF 500	490	386	65	65	M20	140	140	18	18	69	69	250	206	924	1072	KK 200 A	282	242	M63x1.5	8L	50
K20R 250S4,6,8	FF 500	490	386	75	65	M20	140	140	20	18	79.5	69	250	206	924	1072	KK 200 A	282	242	M63x1.5	8L	50
K20R 250M2	FF 500	490	386	65	65	M20	140	140	18	18	69	69	250	206	924	1072	KK 200 A	282	242	M63x1.5	8L	50
K20R 250M4,6,8	FF 500	490	386	75	65	M20	140	140	20	18	79.5	69	250	206	970	1118	KK 200 A	282	242	M63x1.5	8L	50

*) Centre holes acc. to DIN 332-DS

Three-phase motors with squirrel-cage rotor, basic version, transnorm version

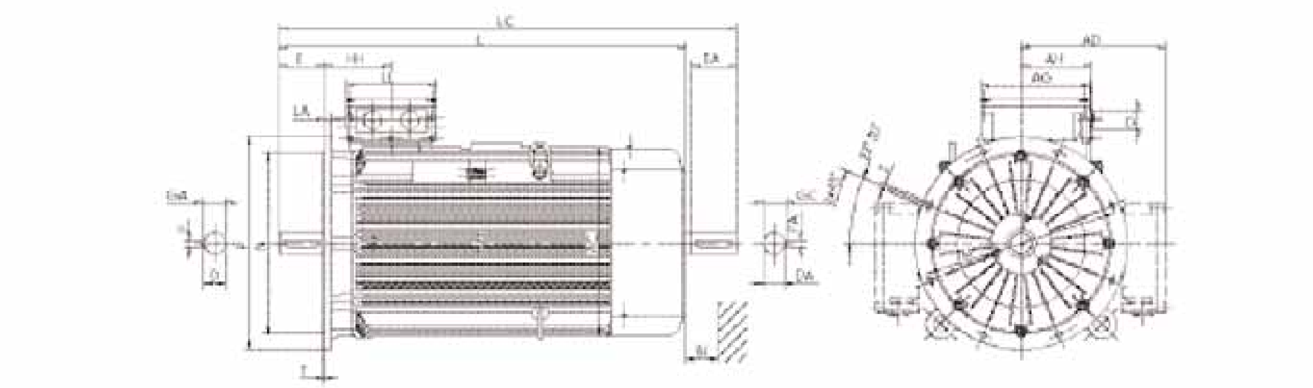
Size 280, 315

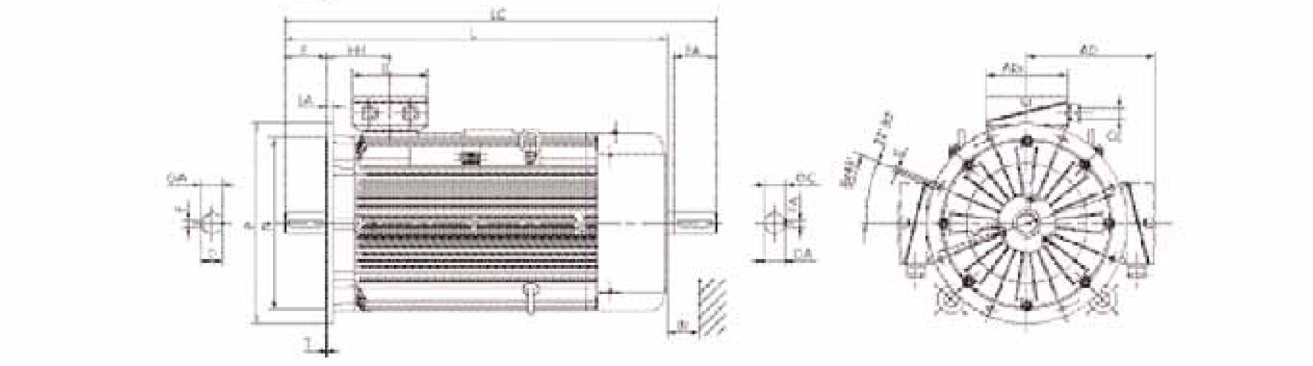
with surface ventilation, cooling method IC 411, degree of protection P 55

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

Type of construction IM V1 [IM 3011]

Flange dimensions see page 154/155





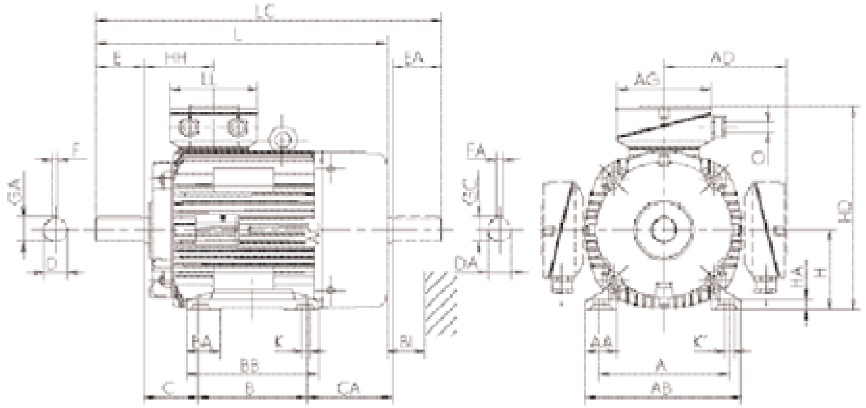
Type designation	Flange size	AC g	AD g1	D d	DA d1	DB*)	E l	EA l1	F u	FA u1	GA t	GC t1	H h	HH A	L k	LC k1	KK Type	AG x	LL z	AH -	O r	Bl. Bl
K20R 280S2	FF 600	550	416	70	70	M20	140	140	20	20	74.5	74.5	280	211	1050	1218	KK 200 A	282	242	-	M63x1.5	55
K20R 280S4,6,8	FF 600	550	416	80	70	M20	170	140	22	20	85	74.5	280	211	1080	1248	KK 200 A	282	242	-	M63x1.5	55
K20R 280M2	FF 600	550	416	70	70	M20	140	140	20	20	74.5	74.5	280	211	1105	1273	KK 200 A	282	242	-	M63x1.5	55
K20R 280M4,6,8	FF 600	550	416	80	70	M20	170	140	22	20	85	74.5	280	211	1135	1303	KK 200 A	282	242	-	M63x1.5	55
K20R 315S2	FF 600	550	416	75	70	M20	140	140	20	20	79.5	74.5	315	211	1185	1353	KK 200 A	282	242	-	M63x1.5	55
K20R 315S4	FF 600	550	416	90	70	M24	170	140	25	20	95	74.5	315	211	1215	1383	KK 200 A	282	242	-	M63x1.5	55
K20R 315S6,8	FF 600	550	416	90	70	M24	170	140	25	20	95	74.5	315	211	1135	1303	KK 200 A	282	242	-	M63x1.5	55
K20R 315M2	FF 600	610	498	75	75	M20	140	140	20	20	79.5	79.5	315	230	1270	1448	KK 400 B	315	294	265	M63x1.5	55
K20R 315M4,6,8	FF 600	610	498	90	75	M24	170	140	25	20	95	79.5	315	230	1300	1478	KK 400 B	315	294	265	M63x1.5	55
K20R 315M10,12	FF 600	550	498	90	75	M24	170	140	25	20	95	79.5	315	211	1135	1303	KK 400 B	315	294	265	M63x1.5	55
K20R 315L2	FF 600	610	498	75	75	M20	140	140	20	20	79.5	79.5	315	230	1390	1568	KK 400 B	315	294	265	M63x1.5	55
K20R 315L4,6,8	FF 600	610	498	90	75	M24	170	140	25	20	95	79.5	315	230	1420	1598	KK 400 B	315	294	265	M63x1.5	55
K20R 315LX2	FF 600	610	481	75	75	M20	140	140	20	20	79.5	79.5	315	230	1510	1688	KK 400 B	315	294	265	M63x1.5	55
K20R 315LX4	FF 600	610	481	90	75	M24	170	140	25	20	95	79.5	315	230	1540	1718	KK 400 B	315	294	265	M63x1.5	55
K20R 315LX6,8	FF 600	610	498	90	75	M24	170	140	25	20	95	79.5	315	230	1420	1598	KK 400 B	315	294	265	M63x1.5	55

*) Centre holes acc. to DIN 332-DS

Three-phase motors with squirrel-cage rotor, Energy saving motors CEMEP

Size 56 to 280, with surface ventilation, cooling method IC 411, degree of protection P 55

Type of construction IM B3 [IM 1001]



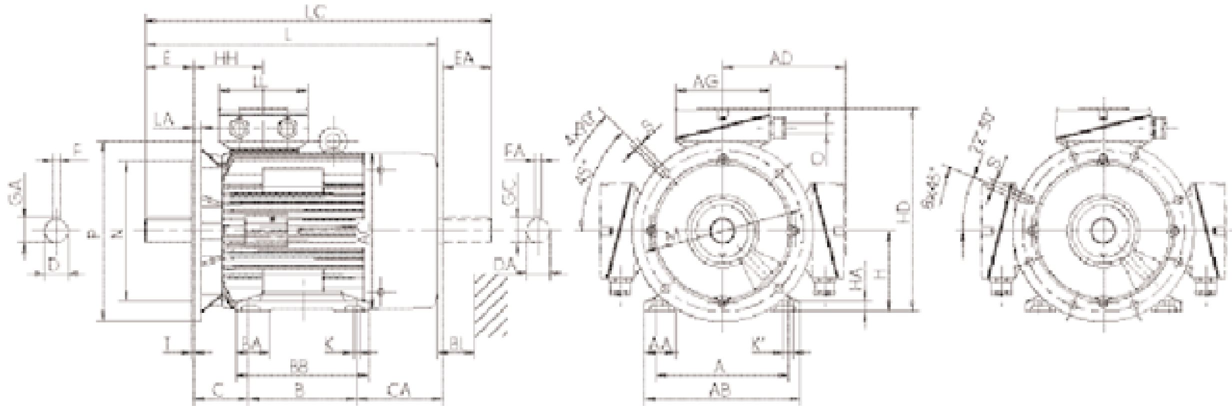
Type designation	Flange size	A b	AA n	AB f	AC g	AD g1	B a	BA m	BB e	C w1	CA w2	D d	DA d1	DB*)	E l	EA l1	F u	FA u1
W21R 56K2,4	FF 100	90	18	110	109	-	71	-	86	36	52	9	9	M3	20	20	3	3
W21R 56G2,4	FF 100	90	18	110	109	-	71	-	86	36	52	9	9	M3	20	20	3	3
W21R 63K2,4	FF 115	100	21	120	124	-	80	-	95	40	59	11	11	M4	23	23	4	4
W21R 63G2,4	FF 115	100	21	120	124	-	80	-	95	40	59	11	11	M4	23	23	4	4
W21R 71K2,4,6	FF 130	112	23	135	139	-	90	-	114	45	78	14	14	M5	30	30	5	5
W21R 71G2,4,6	FF 130	112	23	135	139	-	90	-	114	45	78	14	14	M5	30	30	5	5
W21R 80K2,4,6,8	FF 165	125	26	152	157	-	100	-	124	50	80	19	19	M6	40	40	6	6
WE1R 80G2	FF 165	125	26	152	157	-	100	-	146	50	102	19	19	M6	40	40	6	6
W21R 80G4,6,8	FF 165	125	26	152	157	-	100	-	146	50	102	19	19	M6	40	40	6	6
WE1R 90S2,4	FF 165	140	25	167	177	-	100	-	150	56	120	24	24	M8	50	50	8	8
W21R 90S6,8	FF 165	140	25	167	177	-	100	-	150	56	120	24	24	M8	50	50	8	8
WE1R 90L2	FF 165	140	25	167	177	-	125	-	150	56	95	24	24	M8	50	50	8	8
WE1R 90LV4	FF 165	140	25	167	177	-	125	-	150	56	135	24	24	M8	50	50	8	8
W21R 90LV6,8	FF 165	140	25	167	177	-	125	-	150	56	135	24	24	M8	50	50	8	8
W21R 100S8	FF 215	160	32	188	196	-	140	-	171	63	102	28	28	M10	60	60	8	8
WE1R 100L2	FF 215	160	32	188	196	-	140	-	171	63	102	28	28	M10	60	60	8	8
WE1R 100L4	FF 215	160	32	188	196	-	140	-	205	63	136	28	28	M10	60	60	8	8
WE1R 100LX4	FF 215	160	40	188	196	-	140	-	180	63	159	28	28	M10	60	60	8	8
W21R 100LX6,8	FF 215	160	32	224	196	-	140	-	180	63	136	28	28	M10	60	60	8	8
WE1R 112MX2	FF 215	190	50	224	196	-	140	-	180	70	129	28	28	M10	60	60	8	8
WE1R 112M4	FF 215	190	45	226	217	178	140	42	172	70	172	32	32	M12	80	80	10	10
W21R 112MV6,8	FF 215	190	50	224	196	-	140	-	180	70	159	28	28	M10	60	60	8	8
WE1R 132S2T	FF 265	216	50	256	196	-	140	-	180	89	159	38	28	M12	80	80	10	10
WE1R 132SX2	FF 265	216	50	256	258	199	140	47	180	89	176	38	38	M12	80	80	10	10
WE1R 132S4	FF 265	216	50	256	258	199	140	47	180	89	186	38	38	M12	80	80	10	10
W21R 132S6,8	FF 265	216	50	256	217	178	140	55	180	89	173	38	32	M12	80	80	10	10
WE1R 132M4	FF 265	216	50	256	258	199	178	55	218	89	138	38	38	M12	80	80	10	10
W21R 132M6,8	FF 265	216	50	256	258	199	178	55	218	89	138	38	38	M12	80	80	10	10
W21R 132MX6	FF 265	216	50	256	258	199	178	47	218	89	186	38	38	M12	80	80	10	10
WE1R 160M2	FF 300	254	55	296	258	214	210	60	257	108	185	42	38	M16	110	80	12	10
WE1R 160M4	FF 300	254	55	296	313	242	210	60	257	108	178	42	38	M16	110	80	12	10
W21R 160M8	FF 300	254	55	296	258	214	210	60	257	108	135	42	38	M16	110	80	12	10
W21R 160M6,MX8	FF 300	254	55	296	313	242	210	60	257	108	148	42	38	M16	110	80	12	10
WE1R 160MX2	FF 300	254	55	296	313	242	210	56	257	108	185	42	42	M16	110	110	12	12
WE1R 160L2	FF 300	254	55	296	313	242	254	60	301	108	142	42	42	M16	110	110	12	12
WE1R 160L4	FF 300	254	55	296	313	242	254	60	301	108	142	42	42	M16	110	110	12	12
W21R 160L6,8	FF 300	254	55	296	313	242	254	60	301	108	142	42	42	M16	110	110	12	12
WE1R 180M2	FF 300	279	62	328	351	261	241	65	288	121	169	48	48	M16	110	110	14	14
WE1R 180M4	FF 300	279	62	328	351	261	241	65	288	121	214	48	48	M16	110	110	14	12
WE1R 180L4	FF 300	279	62	328	351	261	279	65	326	121	176	48	48	M16	110	110	14	14
W21R 180L6,8	FF 300	279	62	328	351	261	279	65	326	121	176	48	48	M16	110	110	14	14
WE1R 200L2	FF 350	318	70	372	351	261	305	70	360	133	138	55	48	M20	110	110	16	14
WE1R 200LX2	FF 350	318	70	372	351	261	305	70	360	133	188	55	48	M20	110	110	16	14
WE1R 200L4	FF 350	318	70	372	390	300	305	70	360	133	193	55	55	M20	110	110	16	16
W21R 200LX6	FF 350	318	70	372	390	300	305	70	360	133	193	55	55	M20	110	110	16	16
W21R 200L6,8	FF 350	318	70	372	351	261	305	70	360	133	138	55	48	M20	110	110	16	14
WE1R 225M2	FF 400	356	75	413	390	300	311	75	368	149	211	55	55	M20	110	110	16	16
WE1R 225S4	FF 400	356	75	413	390	300	286	75	343	149	196	60	55	M20	140	110	18	16
WE1R 225M4	FF 400	356	75	413	440	324	286	75	343	149	262	60	55	M20	140	110	18	16
W21R 225S8	FF 400	356	75	413	390	300	311	75	368	149	211	60	55	M20	140	110	18	16
W21R 225M6	FF 400	356	75	413	440	324	311	75	368	149	267	60	55	M20	140	110	18	16
WE1R 250M2	FF 500	406	84	471	440	358	349	84	412	168	210	60	55	M20	140	110	18	16
WE1R 250M4	FF 500	406	84	469	490	386	349	84	412	168	275	65	55	M20	140	110	18	16
W21R 250M6,8	FF 500	406	84	469	490	386	349	84	412	168	275	65	55	M20	140	110	18	16
WE1R 280S2	FF 500	457	94	522	490	386	368	96	431	190	234	65	65	M20	140	140	18	18
WE1R 280M2	FF 500	457	94	522	490	386	419	96	482	190	229	65	65	M20	140	140	18	18
WE1R 280S4	FF 500	457	94	522	490	386	368	96	431	190	234	75	65	M20	140	140	20	18
WE1R 280M4	FF 500	457	94	522	490	386	419	96	482	190	229	75	65	M20	140	140	20	18
W21R 280S6	FF 500	457	94	522	490	386	419	96	482	190	229	65	65	M20	140	140	18	18
W21R 280S8	FF 500	457	94	522	490	386	419	96	482	190	229	65	65	M20	140	140	18	18
W21R 280M6,8	FF 500	457	94	522	550	416	419	96	482	190	384	75	65	M20	140	140	20	18

*) Centre holes acc. to DIN 332-DS

Three-phase motors with squirrel-cage rotor, Energy saving motors CEMEP

Size 56 to 280, with surface ventilation, cooling method IC 411, degree of protection P 55

Type of construction IM B35 [IM 2001], Flange dimensions see page 154/155



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 -	Hole pattern	Bl. Bl
W21R 56K2,4	10.2	10.2	56	7	154	a.A.	58	6	6	176	199	KA 05	92	92	M20x1.5	4L	14
W21R 56G2,4	10.2	10.2	56	7	154	a.A.	58	6	6	176	199	KA 05	92	92	M20x1.5	4L	14
W21R 63K2,4	12.5	12.5	63	7.5	167	a.A.	61	7	7	199	225	KA 05	92	92	M20x1.5	4L	14
W21R 63G2,4	12.5	12.5	63	7.5	167	a.A.	61	7	7	199	225	KA 05	92	92	M20x1.5	4L	14
W21R 71K2,4,6	16	16	71	8	182	a.A.	67	7	7	239	273	KA 05	92	92	M20x1.5	4L	16
W21R 71G2,4,6	16	16	71	8	182	a.A.	67	7	7	239	273	KA 05	92	92	M20x1.5	4L	16
W21R 80K2,4,6,8	21.5	21.5	80	9	200	a.A.	70	10	10	265	310	KA 05	92	92	M20x1.5	4L	16
WE1R 80G2	21.5	21.5	80	9	200	a.A.	70	10	10	287	332	KA 05	92	92	M20x1.5	4L	16
W21R 80G4,6,8	21.5	21.5	80	9	200	a.A.	70	10	10	287	332	KA 05	92	92	M20x1.5	4L	16
WE1R 90S2,4	27	27	90	9.5	217	a.A.	75	10	10	321	376	KA 05	92	92	M25x1.5	4L	18
W21R 90S6,8	27	27	90	9.5	217	a.A.	75	10	10	321	376	KA 05	92	92	M25x1.5	4L	18
WE1R 90L2	27	27	90	9.5	217	a.A.	75	10	10	321	376	KA 05	92	92	M25x1.5	4L	18
WE1R 90LV4	27	27	90	9.5	217	a.A.	75	10	10	362	416	KA 05	92	92	M25x1.5	4L	18
W21R 90LV6,8	27	27	90	9.5	217	a.A.	75	10	10	362	416	KA 05	92	92	M25x1.5	4L	18
W21R 100S8	31	31	100	11	237	a.A.	77	12	12	357	425	KA 05	92	92	M25x1.5	4L	20
WE1R 100L2	31	31	100	11	237	a.A.	77	12	12	357	425	KA 05	92	92	M25x1.5	4L	20
WE1R 100L4	31	31	100	11	237	a.A.	77	12	12	391	459	KA 05	92	92	M25x1.5	4L	20
WE1R 100LX4	31	31	100	18	249	a.A.	77	12	12	421	489	KA 05	92	92	M25x1.5	4L	20
W21R 100LX6,8	31	31	100	18	249	a.A.	77	12	12	357	425	KA 05	92	92	M25x1.5	4L	20
WE1R 112MX2	31	31	112	18	249	a.A.	77	12	12	391	459	KA 05	92	92	M25x1.5	4L	20
WE1R 112M4	35	35	112	15	290	a.A.	108	12	12	459	542	KK 25 A	156	145	M32x1.5	4L	35
W21R 112MV6,8	31	31	112	18	249	a.A.	77	12	12	421	489	KA 05	92	92	M25x1.5	4L	20
WE1R 132S2T	41	31	132	18	287	a.A.	96	12	12	460	528	KK Ex	104	112	M32x1.5	4L	20
WE1R 132SX2	41	41	132	15	331	a.A.	114	12	12	481	565	KK 25 A	156	145	M32x1.5	4L	35
WE1R 132S4	41	35	132	15	331	a.A.	114	12	12	529	613	KK 25 A	156	145	M32x1.5	4L	35
W21R 132S6,8	41	35	132	16	310	a.A.	108	12	12	479	562	KK 25 A	156	145	M32x1.5	4L	35
WE1R 132M4	41	41	132	16	331	a.A.	114	12	12	529	613	KK 25 A	156	145	M32x1.5	4L	35
W21R 132M6,8	41	41	132	16	331	a.A.	114	12	12	481	565	KK 25 A	156	145	M32x1.5	4L	35
W21R 132MX6	41	41	132	15	331	a.A.	114	12	12	529	613	KK 25 A	156	145	M32x1.5	4L	35
WE1R 160M2	45	41	160	18	374	a.A.	114	15	15	605	689	KK 63 A	193	167	M40x1.5	4L	35
WE1R 160M4	45	41	160	18	402	a.A.	138	15	20	571	686	KK 63 A	193	167	M40x1.5	4L	35
W21R 160M8	45	41	160	18	374	a.A.	138	15	15	559	643	KK 63 A	193	167	M40x1.5	4L	35
W21R 160M6,MX8	45	41	160	18	402	a.A.	138	15	20	571	686	KK 63 A	193	167	M40x1.5	4L	35
WE1R 160MX2	45	45	160	18	402	a.A.	138	15	20	609	724	KK 63 A	193	167	M40x1.5	4L	35
WE1R 160L2	45	45	160	18	402	a.A.	138	15	20	609	724	KK 63 A	193	167	M40x1.5	4L	35
WE1R 160L4	45	45	160	18	402	a.A.	138	15	20	667	783	KK 63 A	193	167	M40x1.5	4L	35
W21R 160L6,8	45	45	160	18	402	a.A.	138	15	20	609	724	KK 63 A	193	167	M40x1.5	4L	35
WE1R 180M2	51.5	51.5	180	20	441	a.A.	147	15	20	635	751	KK 63 A	193	167	M40x1.5	4L	35
WE1R 180M4	51.5	45	180	20	441	a.A.	147	15	20	680	796	KK 63 A	193	167	M40x1.5	4L	35
WE1R 180L4	51.5	51.5	180	20	441	a.A.	147	15	20	680	796	KK 63 A	193	167	M40x1.5	4L	35
W21R 180L6,8	51.5	51.5	180	20	441	a.A.	147	15	20	680	796	KK 63 A	193	167	M40x1.5	4L	35
WE1R 200L2	59	51.5	200	22	461	a.A.	147	19	25	680	796	KK 63 A	193	167	M50x1.5	4L	35
WE1R 200LX2	59	51.5	200	22	461	a.A.	147	19	25	730	846	KK 63 A	193	167	M50x1.5	4L	35
WE1R 200L4	59	59	200	22	500	a.A.	168	19	25	727	851	KK 100 A	213	207	M50x1.5	4L	35
W21R 200LX6	59	59	200	22	500	a.A.	168	19	25	727	851	KK 100 A	213	207	M50x1.5	4L	35
W21R 200L6,8	59	51.5	200	22	461	a.A.	147	19	25	680	796	KK 63 A	193	167	M50x1.5	4L	35
WE1R 225M2	59	59	225	25	525	a.A.	168	19	25	767	891	KK 100 A	213	207	M50x1.5	8L	40
WE1R 225S4	64	59	225	25	525	a.A.	168	19	25	757	881	KK 100 A	213	207	M50x1.5	8L	40
WE1R 225M4	64	59	225	25	549	a.A.	177	19	25	862	947	KK 100 A	213	207	M50x1.5	8L	45
W21R 225S8	64	59	225	25	525	a.A.	168	19	25	797	921	KK 100 A	213	207	M50x1.5	8L	40
W21R 225M6	64	59	225	25	549	a.A.	177	19	25	862	977	KK 100 A	213	207	M50x1.5	8L	45
WE1R 250M2	64	59	250	28	608	a.A.	177	24	30	862	977	KK 200 A	282	242	M63x1.5	8L	45
WE1R 250M4	69	59	250	28	636	a.A.	206	24	30	924	1042	KK 200 A	282	242	M63x1.5	8L	50
W21R 250M6,8	69	59	250	28	636	a.A.	206	24	30	924	1042	KK 200 A	282	242	M63x1.5	8L	50
WE1R 280S2	69	69	280	32	666	a.A.	206	24	30	924	1072	KK 200 A	282	242	M63x1.5	8L	50
WE1R 280M2	69	69	280	32	666	a.A.	206	24	30	970	1118	KK 200 A	282	242	M63x1.5	8L	50
WE1R 280S4	79.5	69	280	32	666	a.A.	206	24	30	924	1072	KK 200 A	282	242	M63x1.5	8L	50
WE1R 280M4	79.5	69	280	32	666	a.A.	206	24	30	970	1118	KK 200 A	282	242	M63x1.5	8L	50
W21R 280S6	69	69	280	32	666	a.A.	206	24	30	970	1118	KK 200 A	282	242	M63x1.5	8L	50
W21R 280S8	69	69	280	32	666	a.A.	206	24	30	970	1118	KK 200 A	282	242	M63x1.5	8L	50
W21R 280M6,8	79.5	69	280	40	696	a.A.	211	24	30	1105	1273	KK 200 A	282	242	M63x1.5	8L	55

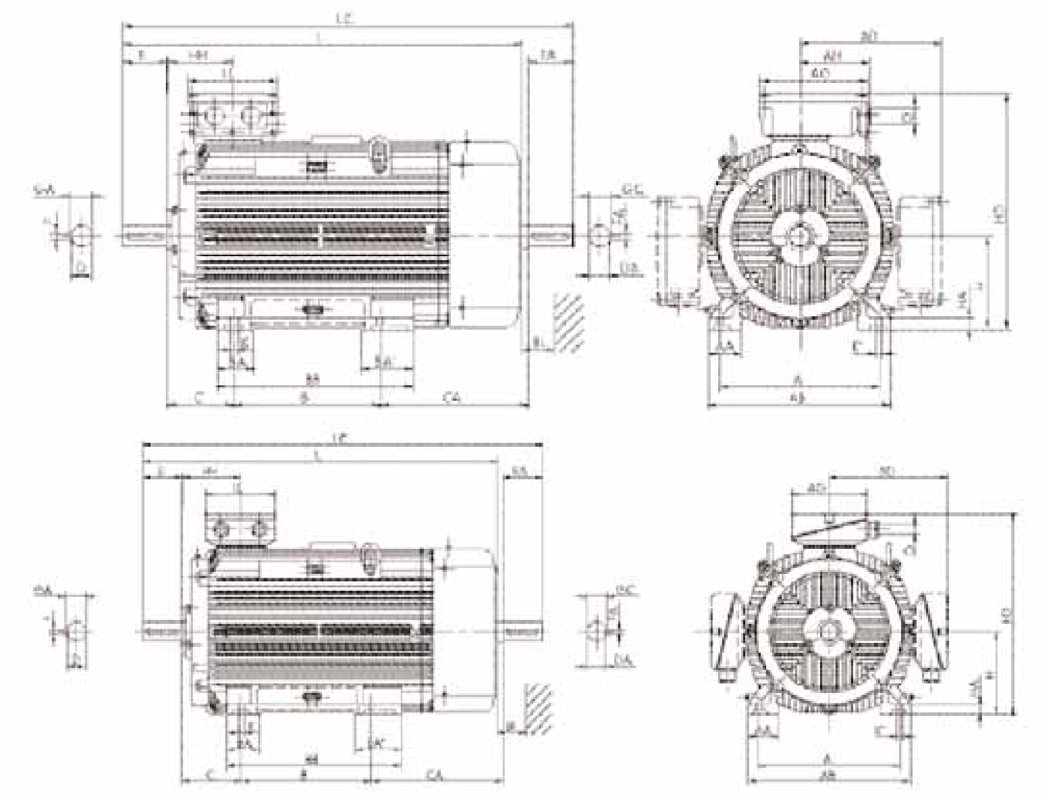
**) Terminal box left/right

Three-phase motors with squirrel-cage rotor, Energy saving motors CEMEP

Size 315

with surface ventilation, cooling method IC 411, degree of protection P 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
WE1R 315S2	FF 600	508	126	590	550	416	406	120	-	503	216	316	65	65	M20	140	140	18	18
WE1R 315M2	FF 600	508	126	590	550	416	457	120	-	554	216	320	65	65	M20	140	140	18	18
WE1R 315MX2	FF 600	508	126	590	550	416	457	120	150	554	216	400	65	65	M20	140	140	18	18
WE1R 315MY2	FF 600	508	110	590	610	498	457	120	-	573	216	495	65	65	M20	140	140	18	18
WE1R 315L2	FF 600	508	110	590	610	498	508	120	-	624	216	539	65	65	M20	140	140	18	18
WE1R 315LX2	FF 600	508	110	590	610	481	508	120	-	624	216	684	65	65	M20	140	140	18	18
WE1R 315S4	FF 600	508	126	590	550	416	406	120	-	503	216	316	80	70	M20	170	140	22	20
WE1R 315M4,M8,MX8	FF 600	508	126	590	550	416	457	120	-	554	216	320	80	70	M20	170	140	22	20
WE1R 315MX4	FF 600	508	126	590	550	416	457	120	150	554	216	400	80	70	M20	170	140	22	20
WE1R 315MY4, M6,MX6,MY6,MY8	FF 600	508	110	590	610	498	457	120	-	573	216	495	80	70	M20	170	140	22	20
WE1R 315L4,L6,8,LX6,8	FF 600	508	110	590	610	498	508	120	-	624	216	564	80	70	M20	170	140	22	20
WE1R 315LX4	FF 600	508	110	590	610	481	508	120	-	624	216	689	80	70	M20	170	140	22	20
W21R 315S6,8	FF 600	508	126	590	550	416	406	120	-	554	216	320	80	70	M20	170	140	22	20

*) Centre holes acc. to DIN 332-DS

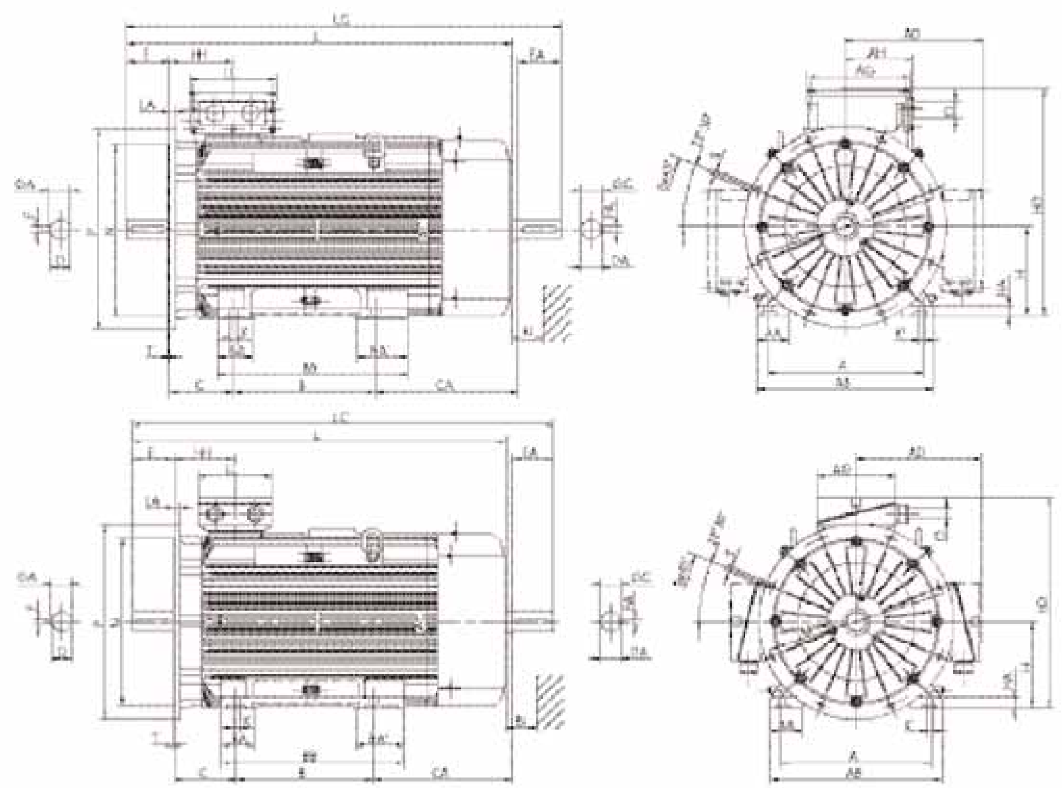
Three-phase motors with squirrel-cage rotor, Energy saving motors CEMEP

Size 315

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

Type of construction IM B35 [IM 2001]

Flange dimensions see page 154/155



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
WE1R 315S2	69	69	315	44	731	a.A.	211	28	35	1050	1218	KK 200 A	282	242	-	M63x1.5	55
WE1R 315M2	69	69	315	44	731	a.A.	211	28	35	1105	1273	KK 200 A	282	242	-	M63x1.5	55
WE1R 315MX2	69	69	315	44	731	a.A.	211	28	35	1185	1353	KK 200 A	282	242	-	M63x1.5	55
WE1R 315MY2	69	69	315	44	774	a.A.	230	28	35	1270	1448	KK 400 B	415	340	265	M63x1.5	55
WE1R 315L2	69	69	315	44	774	a.A.	230	28	35	1390	1543	KK 400 B	415	340	265	M63x1.5	55
WE1R 315LX2	69	69	315	44	796	a.A.	230	28	35	1510	1688	KK 400 B	415	340	265	M63x1.5	55
WE1R 315S4	85	74.5	315	44	731	a.A.	211	28	35	1080	1248	KK 200 A	282	242	-	M63x1.5	55
WE1R 315M4,M8,MX8	85	74.5	315	44	731	a.A.	211	28	35	1135	1303	KK 200 A	282	242	-	M63x1.5	55
WE1R 315MX4	85	74.5	315	44	731	a.A.	211	28	35	1215	1383	KK 200 A	282	242	-	M63x1.5	55
WE1R 315MY4, M6,MX6,MY6,MY8	85	74.5	315	44	774	a.A.	230	28	35	1300	1478	KK 400 B	415	340	265	M63x1.5	55
WE1R 315L4,L6,8,LX6,8	85	74.5	315	44	774	a.A.	230	28	35	1420	1598	KK 400 B	415	340	265	M63x1.5	55
WE1R 315LX4	85	74.5	315	44	796	a.A.	230	28	35	1540	1723	KK 400 B	415	340	265	M63x1.5	55
W21R 315S6,8	85	74.5	315	44	731	a.A.	211	28	35	1135	1303	KK 200 A	282	242	-	M63x1.5	55

**) Terminal box left/right

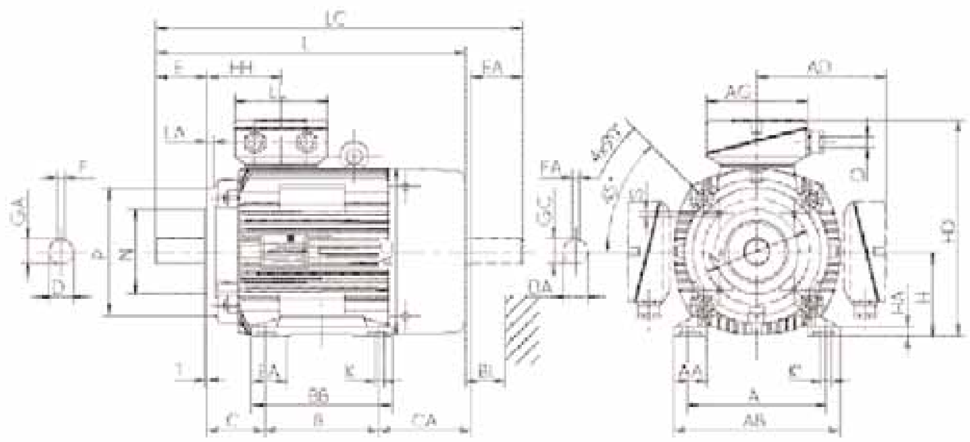
Three-phase motors with squirrel-cage rotor, Energy saving motors CEMEP

Size 56 to 180

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

Type of construction IM B34 [IM 2101]

Flange dimensions see page 154/155



Type designation	Flange sizes small	Flange sizes big	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
W21R 56K2,4	FT 65	FT 85	90	18	110	109	-	71	-	86	36	52	9	9	M3	20	20	3	3
W21R 56G2,4	FT 65	FT 85	90	18	110	109	-	71	-	86	36	52	9	9	M3	20	20	3	3
W21R 63K2,4	FT 75	FT 85	100	21	120	124	-	80	-	95	40	59	11	11	M4	23	23	4	4
W21R 63G2,4	FT 75	FT 85	100	21	120	124	-	80	-	95	40	59	11	11	M4	23	23	4	4
W21R 71K2,4,6	FT 85	FT 100	112	23	135	139	-	90	-	114	45	78	14	14	M5	30	30	5	5
W21R 71G2,4,6	FT 85	FT 100	112	23	135	139	-	90	-	114	45	78	14	14	M5	30	30	5	5
W21R 80K2,4,6,8	FT 100	FT 115	125	26	152	157	-	100	-	124	50	80	19	19	M6	40	40	6	6
WE1R 80G2	FT 100	FT 115	125	26	152	157	-	100	-	146	50	102	19	19	M6	40	40	6	6
W21R 80G4,6,8	FT 100	FT 115	125	26	152	157	-	100	-	146	50	102	19	19	M6	40	40	6	6
WE1R 90S2,4	FT 115	FT 130	140	25	167	177	-	100	-	150	56	120	24	24	M8	50	50	8	8
W21R 90S6,8	FT 115	FT 130	140	25	167	177	-	100	-	150	56	120	24	24	M8	50	50	8	8
WE1R 90L2	FT 115	FT 130	140	25	167	177	-	125	-	150	56	95	24	24	M8	50	50	8	8
WE1R 90LV4	FT 115	FT 130	140	25	167	177	-	125	-	150	56	135	24	24	M8	50	50	8	8
W21R 90LV6,8	FT 115	FT 130	140	25	167	177	-	125	-	150	56	135	24	24	M8	50	50	8	8
W21R 100S8	FT 130	FT 165	160	32	188	196	-	140	-	171	63	102	28	28	M10	60	60	8	8
WE1R 100L2	FT 130	FT 165	160	32	188	196	-	140	-	171	63	102	28	28	M10	60	60	8	8
WE1R 100L4	FT 130	FT 165	160	32	188	196	-	140	-	205	63	136	28	28	M10	60	60	8	8
WE1R 100LX4	FT 130	FT 165	160	40	188	196	-	140	-	180	63	159	28	28	M10	60	60	8	8
W21R 100LX6,8	FT 130	FT 165	160	32	224	196	-	140	-	180	63	136	28	28	M10	60	60	8	8
WE1R 112MX2	FT 130	FT 165	190	50	224	196	-	140	-	180	70	129	28	28	M10	60	60	8	8
WE1R 112M4	FT 130	FT 165	190	45	226	217	178	140	42	172	70	172	32	32	M12	80	80	10	10
W21R 112MV6,8	FT 130	FT 165	190	50	224	196	-	140	-	180	70	159	28	28	M10	60	60	8	8
WE1R 132S2T	FT 130	FT 165	216	50	256	196	-	140	-	180	89	159	38	28	M12	80	80	10	10
WE1R 132SX2	FT 130	FT 165	216	50	256	258	199	140	47	180	89	176	38	38	M12	80	80	10	10
WE1R 132S4	FT 130	FT 165	216	50	256	258	199	140	47	180	89	186	38	38	M12	80	80	10	10
W21R 132S6,8	FT 130	FT 165	216	50	256	217	178	140	55	180	89	173	38	32	M12	80	80	10	10
WE1R 132M4	FT 165	FT 215	216	50	256	258	199	178	55	218	89	138	38	38	M12	80	80	10	10
W21R 132M6,8	FT 165	FT 215	216	50	256	258	199	178	55	218	89	138	38	38	M12	80	80	10	10
W21R 132MX6	FT 165	FT 215	216	50	256	258	199	178	47	218	89	186	38	38	M12	80	80	10	10
WE1R 160M2	FT 165	FT 215	254	55	296	258	214	210	60	257	108	185	42	38	M16	110	80	12	10
WE1R 160M4	FT 165	FT 215	254	55	296	313	242	210	60	257	108	178	42	38	M16	110	80	12	10
W21R 160M8	FT 165	FT 215	254	55	296	258	214	210	60	257	108	135	42	38	M16	110	80	12	10
W21R 160M6,MX8	FT 215	FT 265	254	55	296	313	242	210	60	257	108	148	42	38	M16	110	80	12	10
WE1R 160MX2	FT 215	FT 265	254	55	296	313	242	210	56	257	108	185	42	42	M16	110	110	12	12
WE1R 160L2	FT 215	FT 265	254	55	296	313	242	254	60	301	108	142	42	42	M16	110	110	12	12
WE1R 160L4	FT 215	FT 265	254	55	296	313	242	254	60	301	108	142	42	42	M16	110	110	12	12
W21R 160L6,8	FT 215	FT 265	254	55	296	313	242	254	60	301	108	142	42	42	M16	110	110	12	12

*) Centre holes acc. to DIN 332-DS

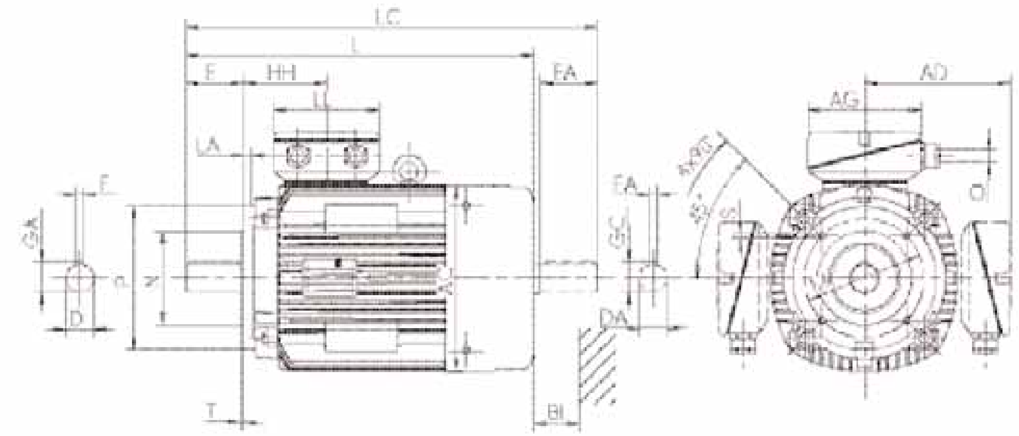
Three-phase motors with squirrel-cage rotor, Energy saving motors CEMEP

Size 56 to 180

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

Type of construction IM B14 [IM 3601]

Flange dimensions see page 154/155

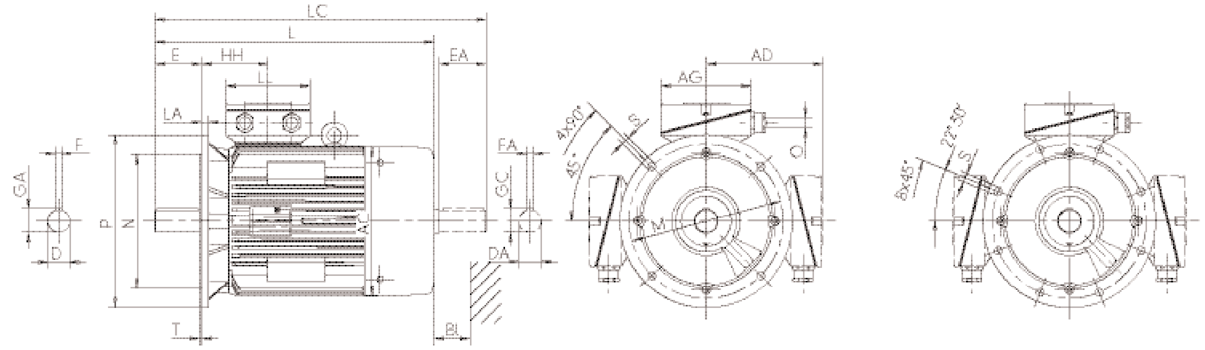


Type designation	GA t	GC t1	H h	HA c	HD p	HD**) p	HH A	K s	K' s'	L k	LC k1	KK Type	AG x	LL z	O -	Hole pattern	Bl. Bl.
W21R 56K2, 4	10.2	10.2	56	7	154	a.A.	58	6	6	176	199	KA 05	92	92	M20x1.5	4L	14
W21R 56G2, 4	10.2	10.2	56	7	154	a.A.	58	6	6	176	199	KA 05	92	92	M20x1.5	4L	14
W21R 63K2, 4	12.5	12.5	63	7.5	167	a.A.	61	7	7	199	225	KA 05	92	92	M20x1.5	4L	14
W21R 63G2, 4	12.5	12.5	63	7.5	167	a.A.	61	7	7	199	225	KA 05	92	92	M20x1.5	4L	14
W21R 71K2, 4, 6	16	16	71	8	182	a.A.	67	7	7	239	273	KA 05	92	92	M20x1.5	4L	16
W21R 71G2, 4, 6	16	16	71	8	182	a.A.	67	7	7	239	273	KA 05	92	92	M20x1.5	4L	16
W21R 80K2, 4, 6, 8	21.5	21.5	80	9	200	a.A.	70	10	10	265	310	KA 05	92	92	M20x1.5	4L	16
WE1R 80G2	21.5	21.5	80	9	200	a.A.	70	10	10	287	332	KA 05	92	92	M20x1.5	4L	16
W21R 80G4, 6, 8	21.5	21.5	80	9	200	a.A.	70	10	10	287	332	KA 05	92	92	M20x1.5	4L	16
WE1R 90S2, 4	27	27	90	9.5	217	a.A.	75	10	10	321	376	KA 05	92	92	M25x1.5	4L	18
W21R 90S6, 8	27	27	90	9.5	217	a.A.	75	10	10	321	376	KA 05	92	92	M25x1.5	4L	18
WE1R 90L2	27	27	90	9.5	217	a.A.	75	10	10	321	376	KA 05	92	92	M25x1.5	4L	18
WE1R 90LV4	27	27	90	9.5	217	a.A.	75	10	10	362	416	KA 05	92	92	M25x1.5	4L	18
W21R 90LV6, 8	27	27	90	9.5	217	a.A.	75	10	10	362	416	KA 05	92	92	M25x1.5	4L	18
W21R 100S8	31	31	100	11	237	a.A.	77	12	12	357	425	KA 05	92	92	M25x1.5	4L	20
WE1R 100L2	31	31	100	11	237	a.A.	77	12	12	357	425	KA 05	92	92	M25x1.5	4L	20
WE1R 100L4	31	31	100	11	237	a.A.	77	12	12	391	459	KA 05	92	92	M25x1.5	4L	20
WE1R 100LX4	31	31	100	18	249	a.A.	77	12	12	421	489	KA 05	92	92	M25x1.5	4L	20
W21R 100LX6, 8	31	31	100	18	249	a.A.	77	12	12	357	425	KA 05	92	92	M25x1.5	4L	20
WE1R 112MX2	31	31	112	18	249	a.A.	77	12	12	391	459	KA 05	92	92	M25x1.5	4L	20
WE1R 112M4	35	35	112	15	290	a.A.	108	12	12	459	542	KK 25 A	156	145	M32x1.5	4L	35
W21R 112MV6, 8	31	31	112	18	249	a.A.	77	12	12	421	489	KA 05	92	92	M25x1.5	4L	20
WE1R 132S2T	41	31	132	18	287	a.A.	96	12	12	460	528	KK Ex	104	112	M32x1.5	4L	20
WE1R 132SX2	41	41	132	15	331	a.A.	114	12	12	481	565	KK 25 A	156	145	M32x1.5	4L	35
WE1R 132S4	41	35	132	15	331	a.A.	114	12	12	529	613	KK 25 A	156	145	M32x1.5	4L	35
W21R 132S6, 8	41	35	132	16	310	a.A.	108	12	12	479	562	KK 25 A	156	145	M32x1.5	4L	35
WE1R 132M4	41	41	132	16	331	a.A.	114	12	12	529	613	KK 25 A	156	145	M32x1.5	4L	35
W21R 132M6, 8	41	41	132	16	331	a.A.	114	12	12	481	565	KK 25 A	156	145	M32x1.5	4L	35
W21R 132MX6	41	41	132	15	331	a.A.	114	12	12	529	613	KK 25 A	156	145	M32x1.5	4L	35
WE1R 160M2	45	41	160	18	374	a.A.	114	15	15	605	689	KK 63 A	193	167	M40x1.5	4L	35
WE1R 160M4	45	41	160	18	402	a.A.	138	15	20	571	686	KK 63 A	193	167	M40x1.5	4L	35
W21R 160M8	45	41	160	18	374	a.A.	138	15	15	559	643	KK 63 A	193	167	M40x1.5	4L	35
W21R 160M6, MX8	45	41	160	18	402	a.A.	138	15	20	571	686	KK 63 A	193	167	M40x1.5	4L	35
WE1R 160MX2	45	45	160	18	402	a.A.	138	15	20	609	724	KK 63 A	193	167	M40x1.5	4L	35
WE1R 160L2	45	45	160	18	402	a.A.	138	15	20	609	724	KK 63 A	193	167	M40x1.5	4L	35
WE1R 160L4	45	45	160	18	402	a.A.	138	15	20	667	783	KK 63 A	193	167	M40x1.5	4L	35
W21R 160L6, 8	45	45	160	18	402	a.A.	138	15	20	609	724	KK 63 A	193	167	M40x1.5	4L	35

**) Terminal box left/right

Three-phase motors with squirrel-cage rotor, Energy saving motors CEMEP

Size 56 to 280, with surface ventilation, cooling method IC 411, degree of protection P 55
Type of construction IM B5 [IM 3001]
Type of construction IM V1 [IM 3011], Flange dimensions see page 154/155

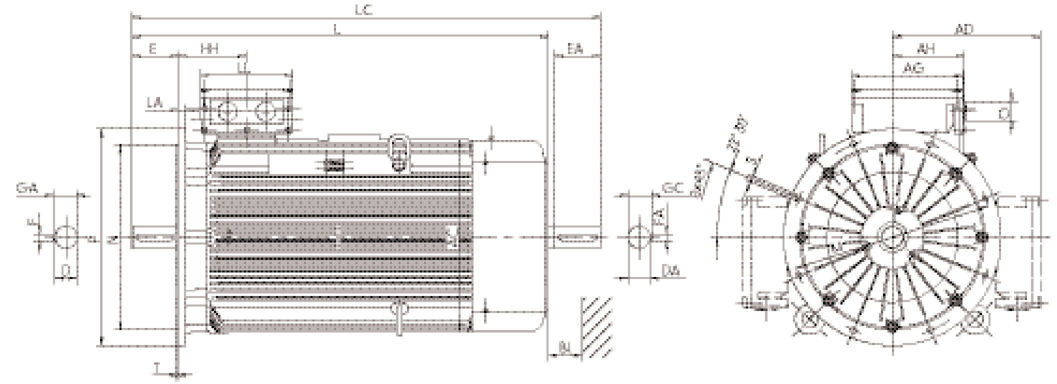


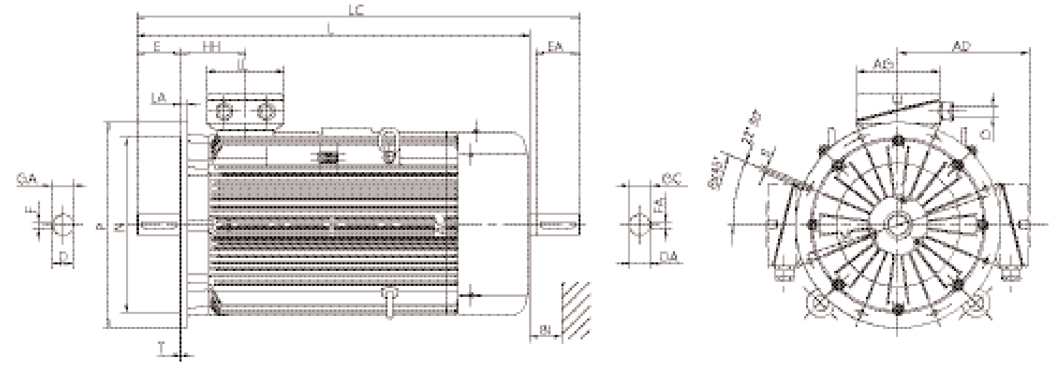
Type designation	Flange size	AC g	AD g1	D d	DA d1	DB*)	E l	EA l1	F u	FA u1	GA t	GC t1	H h	HH A	L k	LC k1	KK Type	AG x	LL z	O -	Hole pattern	Bl. Bl
W21R 56K2,4	FF 100	109	-	9	9	M3	20	20	3	3	10.2	10.2	56	81	199	222	KA 05	92	92	M20x1.5	4L	14
W21R 56G2,4	FF 100	109	-	9	9	M3	20	20	3	3	10.2	10.2	56	81	199	222	KA 05	92	92	M20x1.5	4L	14
W21R 63K2,4	FF 115	124	-	11	11	M4	23	23	4	4	12.5	12.5	63	94	232	258	KA 05	92	92	M20x1.5	4L	14
W21R 63G2,4	FF 115	124	-	11	11	M4	23	23	4	4	12.5	12.5	63	94	232	258	KA 05	92	92	M20x1.5	4L	14
W21R 71K2,4,6	FF 130	139	-	14	14	M5	30	30	5	5	16	16	71	97	269	303	KA 05	92	92	M20x1.5	4L	16
W21R 71G2,4,6	FF 130	139	-	14	14	M5	30	30	5	5	16	16	71	97	269	303	KA 05	92	92	M20x1.5	4L	16
W21R 80K2,4,6,8	FF 165	157	-	19	19	M6	40	40	6	6	21.5	21.5	80	70	265	310	KA 05	92	92	M20x1.5	4L	16
WE1R 80G2	FF 165	157	-	19	19	M6	40	40	6	6	21.5	21.5	80	70	287	332	KA 05	92	92	M20x1.5	4L	16
W21R 80G4,6,8	FF 165	157	-	19	19	M6	40	40	6	6	21.5	21.5	80	70	287	332	KA 05	92	92	M20x1.5	4L	16
WE1R 90S2,4	FF 165	177	-	24	24	M8	50	50	8	8	27	27	90	114	360	425	KA 05	92	92	M25x1.5	4L	18
W21R 90S6,8	FF 165	177	-	24	24	M8	50	50	8	8	27	27	90	114	360	425	KA 05	92	92	M25x1.5	4L	18
WE1R 90L2	FF 165	177	-	24	24	M8	50	50	8	8	27	27	90	114	360	425	KA 05	92	92	M25x1.5	4L	18
WE1R 90LV4	FF 165	177	-	24	24	M8	50	50	8	8	27	27	90	114	401	455	KA 05	92	92	M25x1.5	4L	18
W21R 90LV6,8	FF 165	177	-	24	24	M8	50	50	8	8	27	27	90	114	401	455	KA 05	92	92	M25x1.5	4L	18
W21R 100S8	FF 215	196	-	28	28	M10	60	60	8	8	31	31	100	77	357	425	KA 05	92	92	M25x1.5	4L	20
WE1R 100L2	FF 215	196	-	28	28	M10	60	60	8	8	31	31	100	77	357	425	KA 05	92	92	M25x1.5	4L	20
WE1R 100L4	FF 215	196	-	28	28	M10	60	60	8	8	31	31	100	77	391	459	KA 05	92	92	M25x1.5	4L	20
WE1R 100LX4	FF 215	196	-	28	28	M10	60	60	8	8	31	31	100	77	421	489	KA 05	92	92	M25x1.5	4L	20
W21R 100LX6,8	FF 215	196	-	28	28	M10	60	60	8	8	31	31	100	77	391	459	KA 05	92	92	M25x1.5	4L	20
WE1R 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
WE1R 112M4	FF 215	217	178	32	32	M12	80	80	10	10	35	35	112	108	459	542	KK 25 A	156	145	M32x1.5	4L	35
W21R 112MV6,8	FF 215	196	-	28	28	M10	60	60	8	8	31	31	112	77	421	489	KA 05	92	92	M25x1.5	4L	20
WE1R 132S2T	FF 265	196	-	38	28	M12	80	60	10	8	41	31	132	96	460	528	KK Ex	104	112	M32x1.5	4L	20
WE1R 132SX2	FF 265	258	199	38	38	M12	80	80	10	10	41	41	132	114	481	565	KK 25 A	156	145	M32x1.5	4L	35
WE1R 132S4	FF 265	258	199	38	38	M12	80	80	10	10	41	35	132	114	529	613	KK 25 A	156	145	M32x1.5	4L	35
W21R 132S6,8	FF 265	217	178	38	32	M12	80	80	10	10	41	35	132	108	479	562	KK 25 A	156	145	M32x1.5	4L	35
WE1R 132M4	FF 265	258	199	38	38	M12	80	80	10	10	41	41	132	114	529	613	KK 25 A	156	145	M32x1.5	4L	35
W21R 132M6,8	FF 265	258	199	38	38	M12	80	80	10	10	41	41	132	114	481	565	KK 25 A	156	145	M32x1.5	4L	35
W21R 132MX6	FF 265	258	199	38	38	M12	80	80	10	10	41	41	132	114	529	613	KK 25 A	156	145	M32x1.5	4L	35
WE1R 160M2	FF 300	258	214	42	38	M16	110	80	12	10	45	41	160	114	605	689	KK 63 A	193	167	M40x1.5	4L	35
WE1R 160M4	FF 300	313	242	42	38	M16	110	80	12	10	45	41	160	138	571	686	KK 63 A	193	167	M40x1.5	4L	35
W21R 160M8	FF 300	258	214	42	38	M16	110	80	12	10	45	41	160	138	559	643	KK 63 A	193	167	M40x1.5	4L	35
W21R 160M6,MX8	FF 300	313	242	42	38	M16	110	80	12	10	45	41	160	138	571	686	KK 63 A	193	167	M40x1.5	4L	35
WE1R 160MX2	FF 300	313	242	42	42	M16	110	110	12	12	45	45	160	138	609	724	KK 63 A	193	167	M40x1.5	4L	35
WE1R 160L2	FF 300	313	242	42	42	M16	110	110	12	12	45	45	160	138	609	724	KK 63 A	193	167	M40x1.5	4L	35
WE1R 160L4	FF 300	313	242	42	42	M16	110	110	12	12	45	45	160	138	667	783	KK 63 A	193	167	M40x1.5	4L	35
W21R 160L6,8	FF 300	313	242	42	42	M16	110	110	12	12	45	45	160	138	609	724	KK 63 A	193	167	M40x1.5	4L	35
WE1R 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	M40x1.5	4L	35
WE1R 180M4	FF 300	351	261	48	48	M16	110	110	14	12	51.5	45	180	147	680	796	KK 63 A	193	167	M40x1.5	4L	35
WE1R 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	M40x1.5	4L	35
W21R 180L6,8	FF 300	351	261	48	48	M16	110	110	14	14	51.5	51.5	180	147	680	796	KK 63 A	193	167	M40x1.5	4L	35
WE1R 200L2	FF 350	351	261	55	48	M20	110	110	16	14	59	51.5	200	147	680	796	KK 63 A	193	167	M50x1.5	4L	35
WE1R 200LX2	FF 350	351	261	55	48	M20	110	110	16	14	59	51.5	200	147	730	846	KK 63 A	193	167	M50x1.5	4L	35
WE1R 200L4	FF 350	390	300	55	55	M20	110	110	16	16	59	59	200	168	727	851	KK 100 A	213	207	M50x1.5	4L	35
W21R 200LX6	FF 350	390	300	55	55	M20	110	110	16	16	59	59	200	168	727	851	KK 100 A	213	207	M50x1.5	4L	35
W21R 200L6,8	FF 350	351	261	55	48	M20	110	110	16	14	59	51.5	200	147	680	796	KK 63 A	193	167	M50x1.5	4L	35
WE1R 225M2	FF 400	390	300	55	55	M20	110	110	16	16	59	59	225	168	767	891	KK 100 A	213	207	M50x1.5	8L	40
WE1R 225S4	FF 400	390	300	60	55	M20	140	110	18	16	64	59	225	168	757	881	KK 100 A	213	207	M50x1.5	8L	40
WE1R 225M4	FF 400	440	324	60	55	M20	140	110	18	16	64	59	225	177	862	947	KK 100 A	213	207	M50x1.5	8L	45
W21R 225S8	FF 400	390	300	60	55	M20	140	110	18	16	64	59	225	168	797	921	KK 100 A	213	207	M50x1.5	8L	40
W21R 225M6	FF 400	440	324	60	55	M20	140	110	18	16	64	59	225	177	862	977	KK 100 A	213	207	M50x1.5	8L	45
WE1R 250M2	FF 500	440	358	60	55	M20	140	110	18	16	64	59	250	177	862	977	KK 200 A	282	242	M63x1.5	8L	45
WE1R 250M4	FF 500	490	386	65	55	M20	140	110	18	16	69	59	250	206	924	1042	KK 200 A	282	242	M63x1.5	8L	50
W21R 250M6,8	FF 500	490	386	65	55	M20	140	110	18	16	69	59	250	206	924	1042	KK 200 A	282	242	M63x1.5	8L	50
WE1R 280S2	FF 500	490	386	65	65	M20	140	140	18	18	69	69	280	206	924	1072	KK 200 A	282	242	M63x1.5	8L	50
WE1R 280M2	FF 500	490	386	65	65	M20	140	140	18	18	69	69	280	206	970	1118	KK 200 A	282	242	M63x1.5	8L	50
WE1R 280S4	FF 500	490	386	75	65	M20	140	140	20	18	79.5	69	280	206	924	1072	KK 200 A	282	242	M63x1.5	8L	50
WE1R 280M4	FF 500	490	386	75	65	M20	140	140	20	18	79.5	69	280	206	970	1118	KK 200 A	282	242	M63x1.5	8L	50
W21R 280S6	FF 500	490	386	65	65	M20	140	140	18	18	69	69	280	206	970	1118	KK 200 A	282	242	M63x1.5	8L	50
W21R 280S8	FF 500	490	386	65	65	M20	140	140	18	18	69	69	280	206	970	1118	KK 200 A	282	242	M63x1.5	8L	50
W21R 280M6,8	FF 500	550	416	75	65	M20	140	140	20	18	79.5	69	280	211	1105	1273	KK 200 A	282	242	M63x1.5	8L	55

*) Centre holes acc. to DIN 332-DS

Three-phase motors with squirrel-cage rotor, Energy saving motors CEMEP

Size 315, with surface ventilation, cooling method IC 411, degree of protection P 55
Type of construction IM B5 [IM 3001] up to size 315 MY
Type of construction IM V1 [IM 3011], Flange dimensions see page 154/155





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	Bl. Bl
WE1R 315S2	FF 600	550	416	65	65	M20	140	140	18	18	69	69	315	211	1050	1218	KK 200 A	282	242	-	M63x1.5	55
WE1R 315M2	FF 600	550	416	65	65	M20	140	140	18	18	69	69	315	211	1105	1273	KK 200 A	282	242	-	M63x1.5	55
WE1R 315MX2	FF 600	550	416	65	65	M20	140	140	18	18	69	69	315	211	1185	1353	KK 200 A	282	242	-	M63x1.5	55
WE1R 315MY2	FF 600	610	498	65	65	M20	140	140	18	18	69	69	315	230	1270	1448	KK 400 B	415	340	265	M63x1.5	55
WE1R 315L2	FF 600	610	498	65	65	M20	140	140	18	18	69	69	315	230	1390	1543	KK 400 B	415	340	265	M63x1.5	55
WE1R 315LX2	FF 600	610	481	65	65	M20	140	140	18	18	69	69	315	230	1510	1688	KK 400 B	415	340	265	M63x1.5	55
WE1R 315S4	FF 600	550	416	80	70	M20	170	140	22	20	85	74.5	315	211	1080	1248	KK 200 A	282	242	-	M63x1.5	55
WE1R 315M4,M8,MX8	FF 600	550	416	80	70	M20	170	140	22	20	85	74.5	315	211	1135	1303	KK 200 A	282	242	-	M63x1.5	55
WE1R 315MX4	FF 600	550	416	80	70	M20	170	140	22	20	85	74.5	315	211	1215	1383	KK 200 A	282	242	-	M63x1.5	55
WE1R 315MY4, M6,MX6,MY6,MY8	FF 600	610	498	80	70	M20	170	140	22	20	85	74.5	315	230	1300	1478	KK 400 B	415	340	265	M63x15	55
WE1R 315L4, L6,8,LX6,8	FF 600	610	498	80	70	M20	170	140	22	20	85	74.5	315	230	1420	1598	KK 400 B	415	340	265	M63x1.5	55
WE1R 315LX4	FF 600	610	481	80	70	M20	170	140	22	20	85	74.5	315	230	1540	1723	KK 400 B	415	340	265	M63x1.5	55
W21R 315S6,8	FF 600	550	416	80	70	M20	170	140	22	20	85	74.5	315	211	1135	1303	KK 200 A	282	242	-	M63x1.5	55

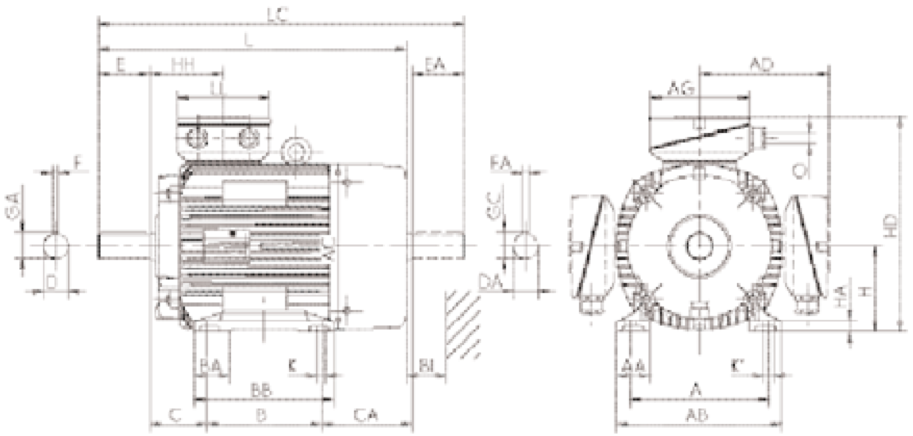
*) Centre holes acc. to DIN 332-DS

Three-phase motors with squirrel-cage rotor, Energy saving motors EPAct

Size 56 to 280

with surface ventilation, cooling method IC 411, degree of protection P 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
WE1R 80K2 EP	FF 165	125	26	152	157	-	100	-	124	50	80	19	19	M6	40	40	6	6
WE1R 80G2,4 EP	FF 165	125	26	152	157	-	100	-	146	50	102	19	19	M6	40	40	6	6
WE1R 90S2,4 EP	FF 165	140	25	167	177	-	100	-	150	56	120	24	24	M8	50	50	8	8
WE1R 90L2 EP	FF 165	140	25	167	177	-	125	-	150	56	95	24	24	M8	50	50	8	8
WE1R 90LV4 EP	FF 165	140	25	167	177	-	125	-	150	56	135	24	24	M8	50	50	8	8
WE1R 100L4 EP	FF 215	160	32	188	196	-	140	-	205	63	136	28	28	M10	60	60	8	8
WE1R 112MX2 EP	FF 215	190	50	224	196	-	140	-	180	70	129	28	28	M10	60	60	8	70
WE1R 112MV2 EP	FF 215	190	50	224	196	-	140	-	180	70	129	28	28	M10	60	60	8	70
WE1R 112MX4 EP	FF 215	190	50	224	196	-	140	-	180	70	129	28	28	M10	60	60	8	70
WE1R 132SY4 EP	FF 265	216	50	256	258	199	140	47	180	89	176	38	38	M12	80	80	10	10
WE1R 132S2 EP	FF 265	216	50	256	217	178	140	55	180	89	173	38	32	M12	80	80	10	10
WE1R 132S4 EP	FF 265	216	50	256	258	199	140	47	180	89	176	38	38	M12	80	80	10	10
WE1R 132M4 EP	FF 265	216	50	256	258	199	178	55	218	89	138	38	38	M12	80	80	10	10
WE1R 160M4 EP	FF 300	254	55	296	313	242	210	60	257	108	148	42	38	M16	110	80	12	10
WE1R 160MY2,M4 EP	FF 300	254	55	296	258	214	210	60	257	108	135	42	38	M16	110	80	12	10
WE1R 160M2 EP	FF 300	254	55	296	258	214	210	60	257	108	135	42	38	M16	110	80	12	10
WE1R 160MX2 EP	FF 300	254	55	296	313	242	210	60	257	108	185	42	38	M16	110	80	12	10
WE1R 160L2 EP	FF 300	254	55	296	313	242	254	60	301	108	142	42	42	M16	110	110	12	12
WE1R 160L4 EP	FF 300	254	55	296	313	242	254	60	301	108	202	42	42	M16	110	110	12	12
WE1R 180M2 EP	FF 300	279	62	328	351	261	241	65	288	121	169	48	48	M16	110	110	14	14
WE1R 180M4 EP	FF 300	279	62	328	351	261	241	65	288	121	176	48	42	M16	110	110	14	12
WE1R 180L4 EP	FF 300	279	62	328	351	261	279	65	326	121	176	48	48	M16	110	110	14	14
WE1R 200L2 EP	FF 350	318	70	372	351	261	305	70	360	133	138	55	48	M20	110	110	16	14
WE1R 200LX2 EP	FF 350	318	70	372	351	261	305	70	360	133	194	55	48	M20	110	110	16	14
WE1R 200 L4 EP	FF 350	318	70	372	390	300	305	70	360	133	193	55	48	M20	110	110	16	14
WE1R 225M2 EP	FF 400	356	75	413	390	300	311	75	368	149	211	55	55	M20	110	110	16	16
WE1R 225S4 EP	FF 400	356	75	413	390	300	286	75	343	149	196	60	55	M20	140	110	18	16
WE1R 225M4 EP	FF 400	356	75	413	440	324	311	75	368	149	267	60	55	M20	140	110	18	16
WE1R 250M2 EP	FF 500	406	84	471	440	358	349	84	412	168	210	60	55	M20	140	110	18	16
WE1R 250M4 EP	FF 500	406	84	471	490	386	349	84	412	168	275	65	55	M20	140	110	18	16
WE1R 280S2 EP	FF 500	457	94	522	490	386	368	96	431	190	234	65	65	M20	140	140	18	18
WE1R 280M2 EP	FF 500	457	94	522	490	386	419	96	482	190	229	65	65	M20	140	140	18	18
WE1R 280S4 EP	FF 500	457	94	522	490	386	368	96	431	190	234	75	65	M20	140	140	20	18
WE1R 280M4 EP	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

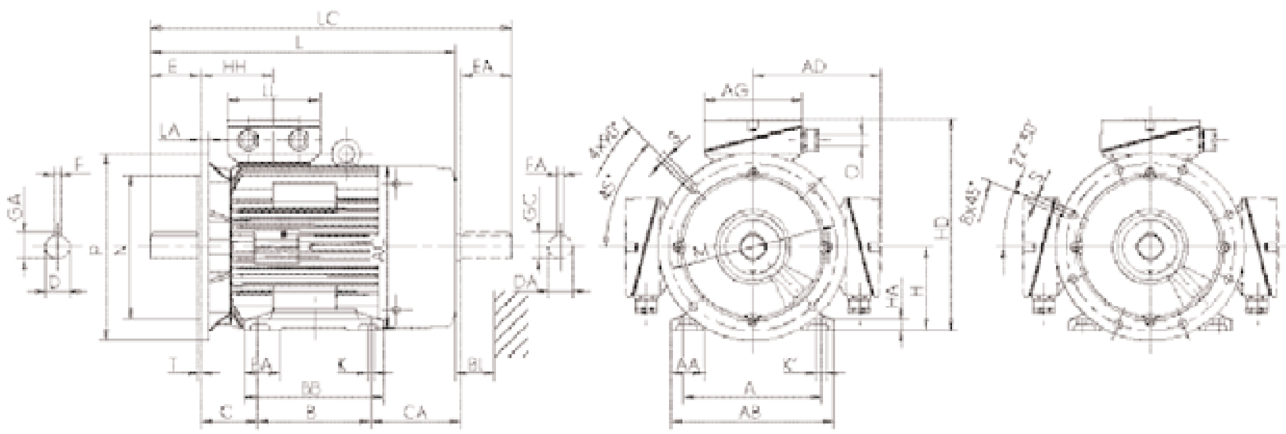
Three-phase motors with squirrel-cage rotor, Energy saving motors EPAct

Size 56 to 280

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

Type of construction IM B35 [IM 2001]

Flange dimensions see page 154/155



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
WE1R 80K2 EP	21.5	21.5	80	9	200	a.A.	70	10	10	265	310	KA 05	92	92	M20x1.5	4L	16
WE1R 80G2,4 EP	21.5	21.5	80	9	200	a.A.	70	10	10	287	332	KA 05	92	92	M20x1.5	4L	16
WE1R 90S2,4 EP	27	27	90	9.5	217	a.A.	75	10	10	321	376	KA 05	92	92	M25x1.5	4L	18
WE1R 90L2 EP	27	27	90	9.5	217	a.A.	75	10	10	321	376	KA 05	92	92	M25x1.5	4L	18
WE1R 90LV4 EP	27	27	90	9.5	217	a.A.	75	10	10	362	416	KA 05	92	92	M25x1.5	4L	18
WE1R 100L4 EP	31	31	100	11	237	a.A.	77	12	12	391	459	KA 05	92	92	M25x1.5	4L	20
WE1R 112MX2 EP	31	8	112	18	249	a.A.	77	31	31	391	459	KA 05	92	92	M25x1.5	4L	20
WE1R 112MV2 EP	31	8	112	18	249	a.A.	77	31	31	529	489	KA 05	92	92	M25x1.5	4L	20
WE1R 112MX4 EP	31	8	112	18	249	a.A.	77	31	31	529	489	KA 05	92	92	M25x1.5	4L	20
WE1R 132SY4 EP	41	41	132	15	331	a.A.	114	12	12	481	565	KK 25 A	156	145	M32x1.5	8L	35
WE1R 132S2 EP	41	35	132	16	310	a.A.	108	12	12	479	562	KK 25 A	156	145	M32x1.5	4L	35
WE1R 132S4 EP	41	41	132	15	331	a.A.	114	12	12	529	613	KK 25 A	156	145	M32x1.5	8L	35
WE1R 132M4 EP	41	41	132	16	331	a.A.	114	12	12	529	613	KK 25 A	156	145	M32x1.5	4L	35
WE1R 160M4 EP	45	41	160	18	402	a.A.	138	15	20	571	613	KK 63 A	193	167	M40x1.5	4L	35
WE1R 160MY2,M4 EP	45	41	160	18	374	a.A.	114	15	15	559	643	KK 63 A	193	167	M40x1.5	4L	35
WE1R 160M2 EP	45	41	160	18	374	a.A.	114	15	15	559	643	KK 63 A	193	167	M40x1.5	4L	35
WE1R 160MX2 EP	45	41	160	18	402	a.A.	138	15	20	571	724	KK 63 A	193	167	M40x1.5	4L	35
WE1R 160L2 EP	45	45	160	18	402	a.A.	138	15	20	609	724	KK 63 A	193	167	M40x1.5	4L	35
WE1R 160L4 EP	45	45	160	18	402	a.A.	138	15	20	669	784	KK 63 A	193	167	M40x1.5	4L	35
WE1R 180M2 EP	51.5	51.5	180	20	441	a.A.	147	15	20	635	751	KK 63 A	193	167	M40x1.5	4L	35
WE1R 180M4 EP	51.5	45	180	20	441	a.A.	147	15	20	680	796	KK 63 A	193	167	M40x1.5	4L	35
WE1R 180L4 EP	51.5	51.5	180	20	441	a.A.	147	15	20	680	796	KK 63 A	193	167	M40x1.5	4L	35
WE1R 200L2 EP	59	51.5	200	22	461	a.A.	147	19	25	680	796	KK 63 A	193	167	M50x1.5	4L	35
WE1R 200LX2 EP	59	51.5	200	22	461	a.A.	147	19	25	730	846	KK 63 A	193	167	M50x1.5	4L	35
WE1R 200 L4 EP	59	51.5	200	22	500	a.A.	147	19	25	727	851	KK 100 A	213	207	M50x1.5	4L	35
WE1R 225M2 EP	59	59	225	25	525	a.A.	168	19	25	767	891	KK 100 A	213	207	M50x1.5	8L	40
WE1R 225S4 EP	64	59	225	25	525	a.A.	168	19	25	757	881	KK 100 A	213	207	M50x1.5	8L	40
WE1R 225M4 EP	64	59	225	25	549	a.A.	177	19	25	862	947	KK 100 A	213	207	M50x1.5	8L	45
WE1R 250M2 EP	64	59	250	28	608	a.A.	177	24	30	862	977	KK 200 A	282	242	M63x1.5	8L	45
WE1R 250M4 EP	69	59	250	28	636	a.A.	206	24	30	924	1072	KK 200 A	282	242	M63x1.5	8L	45
WE1R 280S2 EP	69	69	280	32	666	a.A.	206	24	30	924	1072	KK 200 A	282	242	M63x1.5	8L	50
WE1R 280M2 EP	69	69	280	32	666	a.A.	206	24	30	970	1118	KK 200 A	282	242	M63x1.5	8L	50
WE1R 280S4 EP	79.5	69	280	32	666	a.A.	206	24	30	924	1072	KK 200 A	282	242	M63x1.5	8L	50
WE1R 280M4 EP	79.5	69	280	32	666	a.A.	206	24	30	970	1118	KK 200 A	282	242	M63x1.5	8L	50

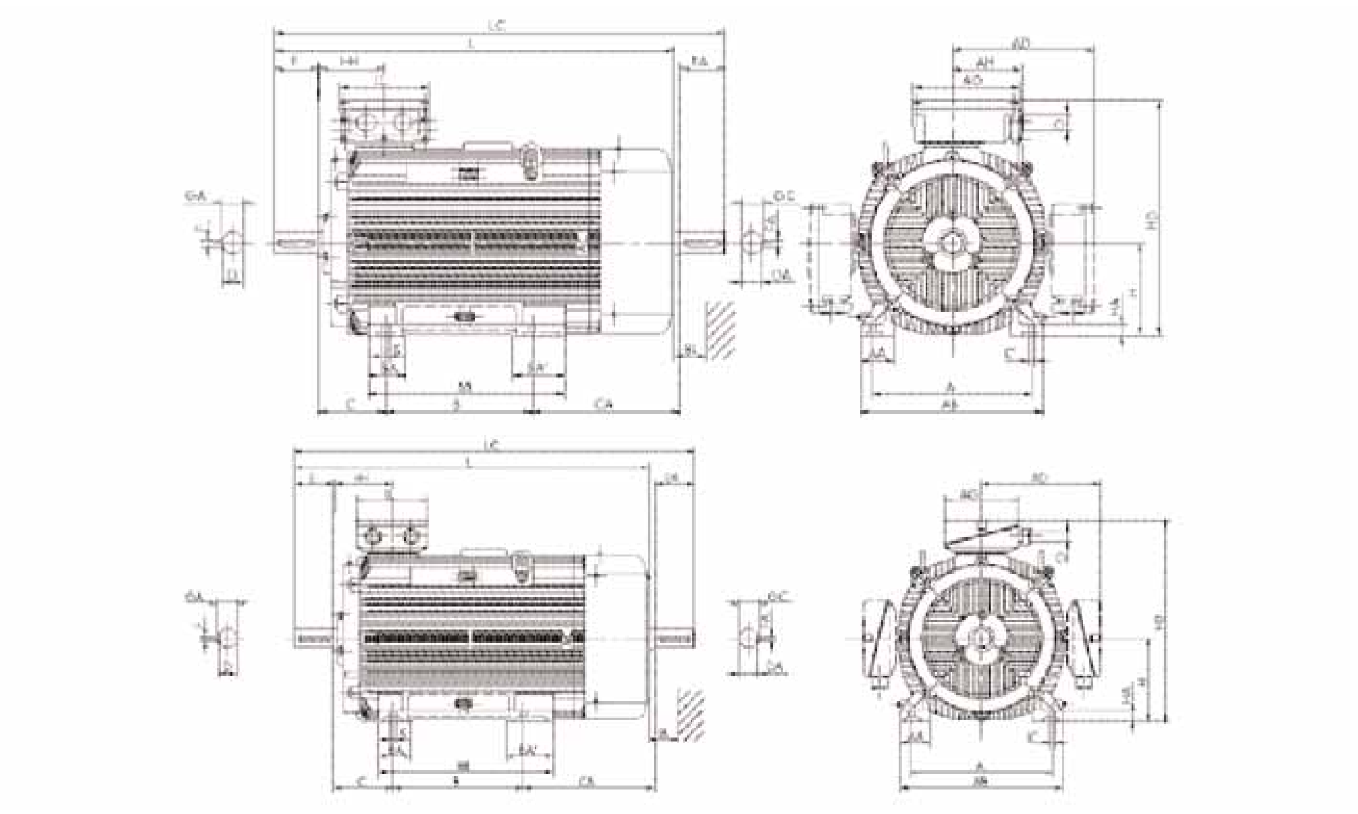
**) Terminal box left/right
a.A. on request

Three-phase motors with squirrel-cage rotor, Energy saving motors EPAct

Size 315

with surface ventilation, cooling method IC 411, degree of protection P 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
WE1R 315S2 EP	FF 600	508	126	590	550	416	406	120	-	503	216	316	65	65	M20	140	140	18	18
WE1R 315M2 EP	FF 600	508	126	590	550	416	457	120	-	554	216	320	65	65	M20	140	140	18	18
WE1R 315MX2 EP	FF 600	508	126	590	550	416	457	120	150	554	216	400	65	65	M20	140	140	18	18
WE1R 315MY2 EP	FF 600	508	110	590	610	498	457	120	-	573	216	495	65	65	M20	140	140	18	18
WE1R 315L2 EP	FF 600	508	110	590	610	498	508	120	-	624	216	539	65	65	M20	140	140	18	18
WE1R 315LX2 EP	FF 600	508	110	590	610	481	508	120	-	624	216	684	65	65	M20	140	140	18	18
WE1R 315S4 EP	FF 600	508	126	590	550	416	406	120	-	503	216	316	80	70	M20	170	140	22	20
WE1R 315M4 EP	FF 600	508	126	590	550	416	457	120	-	554	216	320	80	70	M20	170	140	22	20
WE1R 315MX4 EP	FF 600	508	126	590	550	416	457	120	150	554	216	400	80	70	M20	170	140	22	20
WE1R 315MY4 EP	FF 600	508	110	590	610	498	457	120	-	573	216	495	80	70	M20	170	140	22	20
WE1R 315L4 EP	FF 600	508	110	590	610	498	508	120	-	624	216	564	80	70	M20	170	140	22	20
WE1R 315LX4 EP	FF 600	508	110	590	610	481	508	120	-	624	216	689	80	70	M20	170	140	22	20

*) Centre holes acc. to DIN 332-DS

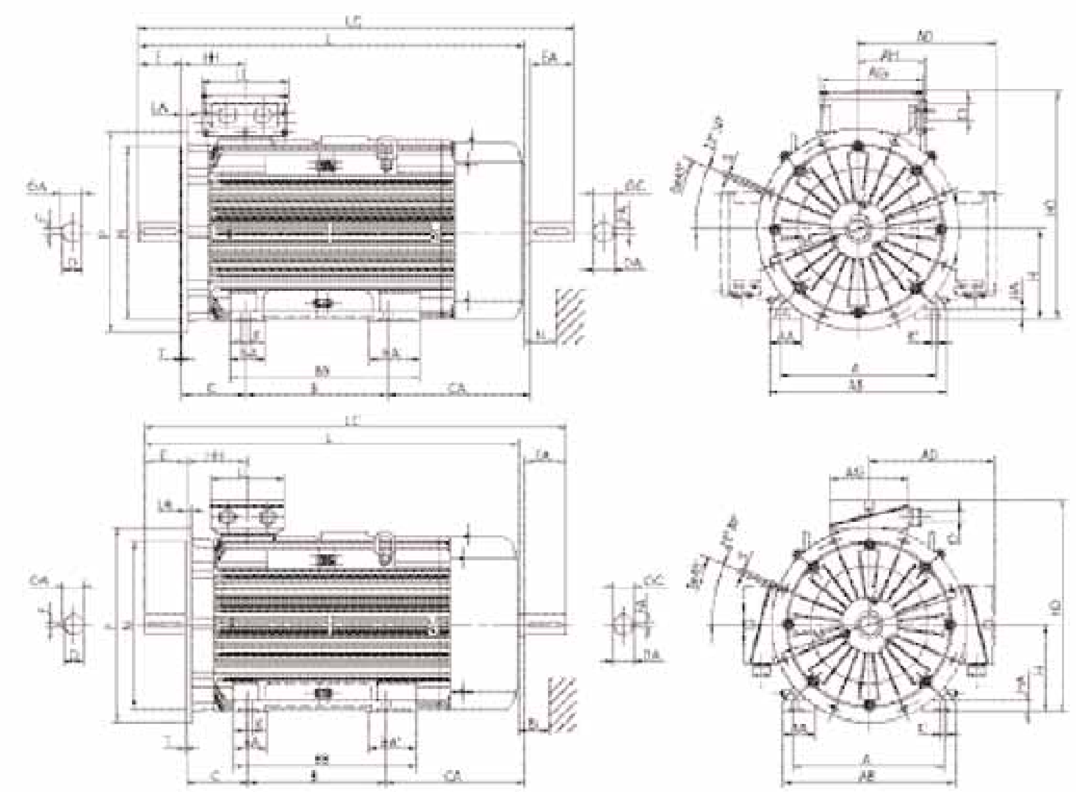
Three-phase motors with squirrel-cage rotor, Energy saving motors EPAct

Size 315

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

Type of construction IM B35 [IM 2001]

Flange dimensions see page 154/155



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
WE1R 315S2 EP	69	69	315	44	731	a.A.	211	28	35	1050	1218	KK 200 A	282	242	-	M63x1.5	55
WE1R 315M2 EP	69	69	315	44	731	a.A.	211	28	35	1105	1273	KK 200 A	282	242	-	M63x1.5	55
WE1R 315MX2 EP	69	69	315	44	731	a.A.	211	28	35	1185	1353	KK 200 A	282	242	-	M63x1.5	55
WE1R 315MY2 EP	69	69	315	44	774	a.A.	230	28	35	1270	1448	KK 400 B	415	340	265	M63x1.5	55
WE1R 315L2 EP	69	69	315	44	774	a.A.	230	28	35	1390	1543	KK 400 B	415	340	265	M63x1.5	55
WE1R 315LX2 EP	69	69	315	44	796	a.A.	230	28	35	1510	1688	KK 400 B	415	340	265	M63x1.5	55
WE1R 315S4 EP	85	74.5	315	44	731	a.A.	211	28	35	1080	1248	KK 200 A	282	242	-	M63x1.5	55
WE1R 315M4 EP	85	74.5	315	44	731	a.A.	211	28	35	1135	1303	KK 200 A	282	242	-	M63x1.5	55
WE1R 315MX4 EP	85	74.5	315	44	731	a.A.	211	28	35	1215	1383	KK 200 A	282	242	-	M63x1.5	55
WE1R 315MY4 EP	85	74.5	315	44	774	a.A.	230	28	35	1300	1478	KK 400 B	415	340	265	M63x1.5	55
WE1R 315L4 EP	85	74.5	315	44	774	a.A.	230	28	35	1420	1598	KK 400 B	415	340	265	M63x1.5	55
WE1R 315LX4 EP	85	74.5	315	44	796	a.A.	230	28	35	1540	1723	KK 400 B	415	340	265	M63x1.5	55

**) Terminal box left/right

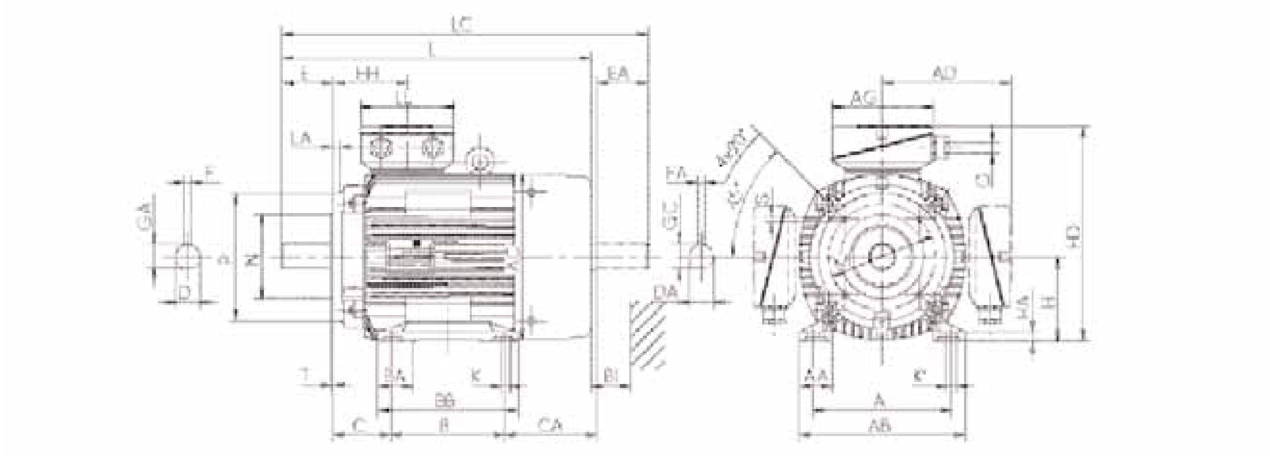
Three-phase motors with squirrel-cage rotor, Energy saving motors EPAct

Size 56 to 180

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

Type of construction IM B34 [IM 2101]

Flange dimensions see page 154/155



Type designation	Flange sizes small	big	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
WE1R 80K2 EP	FT 100	FT 115	125	26	152	157	-	100	-	124	50	80	19	19	M6	40	40	6	6
WE1R 80G2,4 EP	FT 100	FT 115	125	26	152	157	-	100	-	146	50	102	19	19	M6	40	40	6	6
WE1R 90S2,4 EP	FT 115	FT 130	140	25	167	177	-	100	-	150	56	120	24	24	M8	50	50	8	8
WE1R 90L2 EP	FT 115	FT 130	140	25	167	177	-	125	-	150	56	95	24	24	M8	50	50	8	8
WE1R 90LV4 EP	FT 115	FT 130	140	25	167	177	-	125	-	150	56	135	24	24	M8	50	50	8	8
WE1R 100L4 EP	FT 130	FT 165	160	32	188	196	-	140	-	205	63	136	28	28	M10	60	60	8	8
WE1R 112MX2 EP	FT 130	FT 165	190	50	224	196	-	140	-	180	70	129	28	28	M10	60	60	8	70
WE1R 112MV2 EP	FT 130	FT 165	190	50	224	196	-	140	-	180	70	129	28	28	M10	60	60	8	70
WE1R 112MX4 EP	FT 130	FT 165	190	50	224	196	-	140	-	180	70	129	28	28	M10	60	60	8	70
WE1R 132SY4 EP	FT 165	FT 215	216	50	256	258	199	140	47	180	89	176	38	38	M12	80	80	10	10
WE1R 132S2 EP	FT 130	FT 165	216	50	256	217	178	140	55	180	89	173	38	32	M12	80	80	10	10
WE1R 132S4 EP	FT 165	FT 215	216	50	256	258	199	140	47	180	89	176	38	38	M12	80	80	10	10
WE1R 132M4 EP	FT 165	FT 215	216	50	256	258	199	178	55	218	89	138	38	38	M12	80	80	10	10
WE1R 160M4 EP	FT 165	FT 215	254	55	296	313	242	210	60	257	108	148	42	38	M16	110	80	12	10
WE1R 160MY2,M4 EP	FT 165	FT 215	254	55	296	258	214	210	60	257	108	135	42	38	M16	110	80	12	10
WE1R 160M2 EP	FT 165	FT 215	254	55	296	258	214	210	60	257	108	135	42	38	M16	110	80	12	10
WE1R 160MX2 EP	FT 215	FT 265	254	55	296	313	242	210	60	257	108	185	42	38	M16	110	80	12	10
WE1R 160L2 EP	FT 215	FT 265	254	55	296	313	242	254	60	301	108	142	42	42	M16	110	110	12	12
WE1R 160L4 EP	FT 215	FT 265	254	55	296	313	242	254	60	301	108	202	42	42	M16	110	110	12	12

*) Centre holes acc. to DIN 332-DS

Dimensions

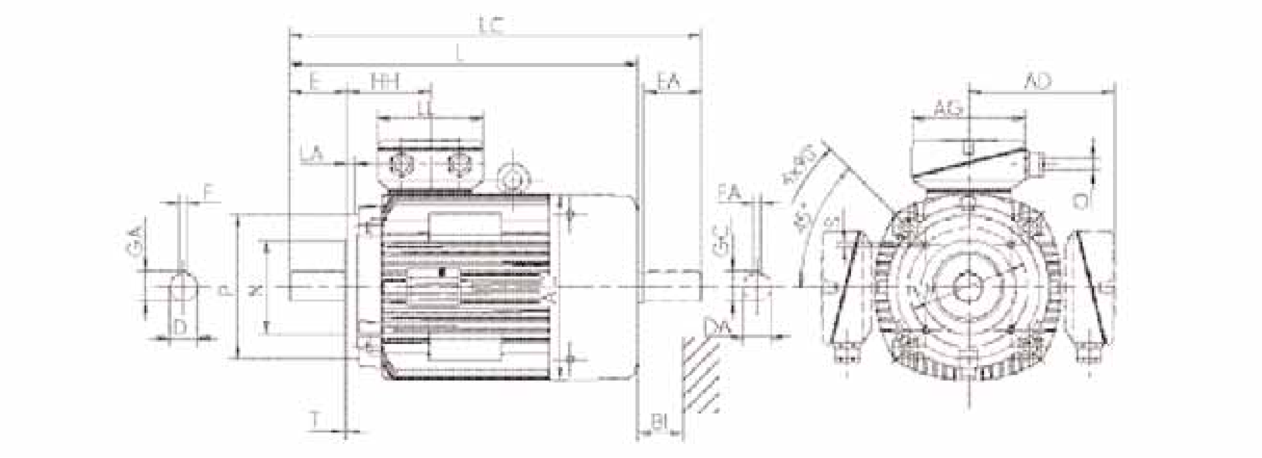
Three-phase motors with squirrel-cage rotor, Energy saving motors EPAct

Size 56 to 180

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

Type of construction IM B14 [IM 3601]

Flange dimensions see page 154/155



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.
WE1R 80K2 EP	21.5	21.5	80	9	200	a.A.	70	10	10	265	310	KA 05	92	92	M20x1.5	4L	16
WE1R 80G2,4 EP	21.5	21.5	80	9	200	a.A.	70	10	10	287	332	KA 05	92	92	M20x1.5	4L	16
WE1R 90S2,4 EP	27	27	90	9.5	217	a.A.	75	10	10	321	376	KA 05	92	92	M25x1.5	4L	18
WE1R 90L2 EP	27	27	90	9.5	217	a.A.	75	10	10	321	376	KA 05	92	92	M25x1.5	4L	18
WE1R 90LV4 EP	27	27	90	9.5	217	a.A.	75	10	10	362	416	KA 05	92	92	M25x1.5	4L	18
WE1R 100L4 EP	31	31	100	11	237	a.A.	77	12	12	391	459	KA 05	92	92	M25x1.5	4L	20
WE1R 112MX2 EP	31	8	112	18	249	a.A.	77	31	31	391	459	KA 05	92	92	M25x1.5	4L	20
WE1R 112MV2 EP	31	8	112	18	249	a.A.	77	31	31	529	489	KA 05	92	92	M25x1.5	4L	20
WE1R 112MX4 EP	31	8	112	18	249	a.A.	77	31	31	529	489	KA 05	92	92	M25x1.5	4L	20
WE1R 132SY4 EP	41	41	132	15	331	a.A.	114	12	12	481	565	KK 25 A	156	145	M32x1.5	8L	35
WE1R 132S2 EP	41	35	132	16	310	a.A.	108	12	12	479	562	KK 25 A	156	145	M32x1.5	4L	35
WE1R 132S4 EP	41	41	132	15	331	a.A.	114	12	12	529	613	KK 25 A	156	145	M32x1.5	8L	35
WE1R 132M4 EP	41	41	132	16	331	a.A.	114	12	12	529	613	KK 25 A	156	145	M32x1.5	4L	35
WE1R 160M4 EP	45	41	160	18	402	a.A.	138	15	20	571	613	KK 63 A	193	167	M40x1.5	4L	35
WE1R 160MY2,M4 EP	45	41	160	18	374	a.A.	114	15	15	559	643	KK 63 A	193	167	M40x1.5	4L	35
WE1R 160M2 EP	45	41	160	18	374	a.A.	114	15	15	559	643	KK 63 A	193	167	M40x1.5	4L	35
WE1R 160MX2 EP	45	41	160	18	402	a.A.	138	15	20	571	724	KK 63 A	193	167	M40x1.5	4L	35
WE1R 160L2 EP	45	45	160	18	402	a.A.	138	15	20	609	724	KK 63 A	193	167	M40x1.5	4L	35
WE1R 160L4 EP	45	45	160	18	402	a.A.	138	15	20	669	784	KK 63 A	193	167	M40x1.5	4L	35

**) Terminal box left/right

Three-phase motors with squirrel-cage rotor, Energy saving motors EPAct

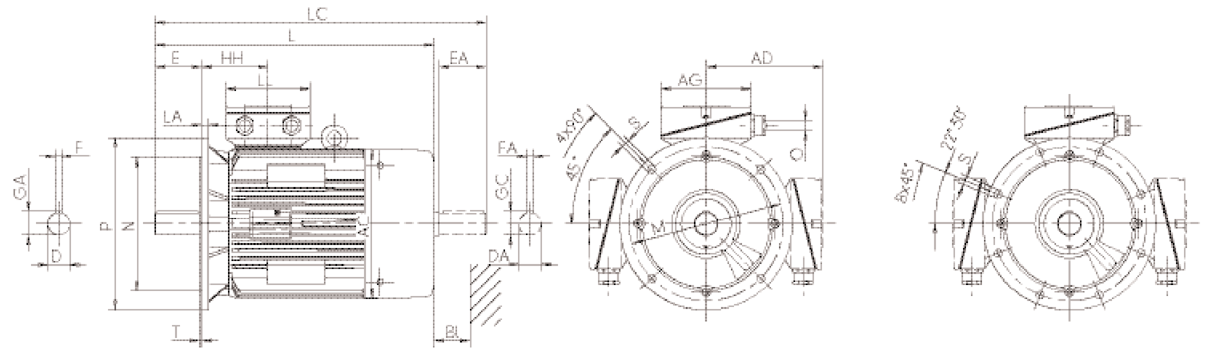
Size 56 to 280

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

Type of construction IM B5 [IM 3001]

Type of construction IM V1 [IM 3011]

Flange dimensions see page 154/155



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	O r	Hole pattern	Bl. Bl
WE1R 80K2 EP	FF 165	157	-	19	19	M6	40	40	6	6	21.5	21.5	80	70	265	310	KA 05	92	92	M20x1.5	4L	16
WE1R 80G2,4 EP	FF 165	157	-	19	19	M6	40	40	6	6	21.5	21.5	80	70	287	332	KA 05	92	92	M20x1.5	4L	16
WE1R 90S2,4 EP	FF 165	177	-	24	24	M8	50	50	8	8	27	27	90	75	321	376	KA 05	92	92	M25x1.5	4L	18
WE1R 90L2 EP	FF 165	177	-	24	24	M8	50	50	8	8	27	27	90	75	321	376	KA 05	92	92	M25x1.5	4L	18
WE1R 90LV4 EP	FF 165	177	-	24	24	M8	50	50	8	8	27	27	90	75	362	416	KA 05	92	92	M25x1.5	4L	18
WE1R 100L4 EP	FF 215	196	-	28	28	M10	60	60	8	8	31	31	100	77	391	459	KA 05	92	92	M25x1.5	4L	20
WE1R 112MX2 EP	FF 215	196	-	28	28	M10	60	60	8	70	31	8	112	77	391	459	KA 05	92	92	M25x1.5	4L	20
WE1R 112MV2 EP	FF 215	196	-	28	28	M10	60	60	8	70	31	8	112	77	529	489	KA 05	92	92	M25x1.5	4L	20
WE1R 112MX4 EP	FF 215	196	-	28	28	M10	60	60	8	70	31	8	112	77	529	489	KA 05	92	92	M25x1.5	4L	20
WE1R 132SY4 EP	FF 265	258	199	38	38	M12	80	80	10	10	41	41	132	114	481	565	KK 25 A	156	145	M32x1.5	8L	35
WE1R 132S2 EP	FF 265	217	178	38	32	M12	80	80	10	10	41	35	132	108	479	562	KK 25 A	156	145	M32x1.5	4L	35
WE1R 132S4 EP	FF 265	258	199	38	38	M12	80	80	10	10	41	41	132	114	529	613	KK 25 A	156	145	M32x1.5	8L	35
WE1R 132M4 EP	FF 265	258	199	38	38	M12	80	80	10	10	41	41	132	114	529	613	KK 25 A	156	145	M32x1.5	4L	35
WE1R 160M4 EP	FF 300	313	242	42	38	M16	110	80	12	10	45	41	160	138	571	613	KK 63 A	193	167	M40x1.5	4L	35
WE1R 160MY2,M4 EP	FF 300	258	214	42	38	M16	110	80	12	10	45	41	160	114	559	643	KK 63 A	193	167	M40x1.5	4L	35
WE1R 160M2 EP	FF 300	258	214	42	38	M16	110	80	12	10	45	41	160	114	559	643	KK 63 A	193	167	M40x1.5	4L	35
WE1R 160MX2 EP	FF 300	313	242	42	38	M16	110	80	12	10	45	41	160	138	571	724	KK 63 A	193	167	M40x1.5	4L	35
WE1R 160L2 EP	FF 300	313	242	42	42	M16	110	110	12	12	45	45	160	138	609	724	KK 63 A	193	167	M40x1.5	4L	35
WE1R 160L4 EP	FF 300	313	242	42	42	M16	110	110	12	12	45	45	160	138	669	784	KK 63 A	193	167	M40x1.5	4L	35
WE1R 180M2 EP	FF 300	351	261	48	48	M16	110	110	14	14	51.5	51.5	180	147	635	751	KK 63 A	193	167	M40x1.5	4L	35
WE1R 180M4 EP	FF 300	351	261	48	42	M16	110	110	14	12	51.5	45	180	147	680	796	KK 63 A	193	167	M40x1.5	4L	35
WE1R 180L4 EP	FF 300	351	261	48	48	M16	110	110	14	14	51.5	51.5	180	147	680	796	KK 63 A	193	167	M40x1.5	4L	35
WE1R 200L2 EP	FF 350	351	261	55	48	M20	110	110	16	14	59	51.5	200	147	680	796	KK 63 A	193	167	M50x1.5	4L	35
WE1R 200LX2 EP	FF 350	351	261	55	48	M20	110	110	16	14	59	51.5	200	147	730	846	KK 63 A	193	167	M50x1.5	4L	35
WE1R 200 L4 EP	FF 350	390	300	55	48	M20	110	110	16	14	59	51.5	200	147	727	851	KK 100 A	213	207	M50x1.5	4L	35
WE1R 225M2 EP	FF 400	390	300	55	55	M20	110	110	16	16	59	59	225	168	767	891	KK 100 A	213	207	M50x1.5	8L	40
WE1R 225S4 EP	FF 400	390	300	60	55	M20	140	110	18	16	64	59	225	168	757	881	KK 100 A	213	207	M50x1.5	8L	40
WE1R 225M4 EP	FF 400	440	324	60	55	M20	140	110	18	16	64	59	225	177	862	947	KK 100 A	213	207	M50x1.5	8L	45
WE1R 250M2 EP	FF 500	440	358	60	55	M20	140	110	18	16	64	59	250	177	862	977	KK 200 A	282	242	M63x1.5	8L	45
WE1R 250M4 EP	FF 500	490	386	65	55	M20	140	110	18	16	69	59	250	206	924	1072	KK 200 A	282	242	M63x1.5	8L	45
WE1R 280S2 EP	FF 500	490	386	65	65	M20	140	140	18	18	69	69	280	206	924	1072	KK 200 A	282	242	M63x1.5	8L	50
WE1R 280M2 EP	FF 500	490	386	65	65	M20	140	140	18	18	69	69	280	206	970	1118	KK 200 A	282	242	M63x1.5	8L	50
WE1R 280S4 EP	FF 500	490	386	75	65	M20	140	140	20	18	79.5	69	280	206	924	1072	KK 200 A	282	242	M63x1.5	8L	50
WE1R 280M4 EP	FF 500	490	386	75	65	M20	140	140	20	18	79.5	69	280	206	970	1118	KK 200 A	282	242	M63x1.5	8L	50

*) Centre holes acc. to DIN 332-DS
**) Terminal box left/right

Three-phase motors with squirrel-cage rotor, Energy saving motors EPAct

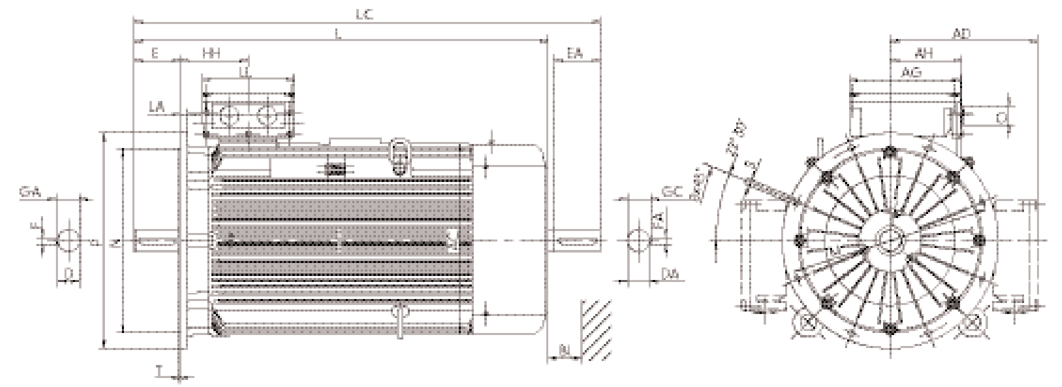
Size 315

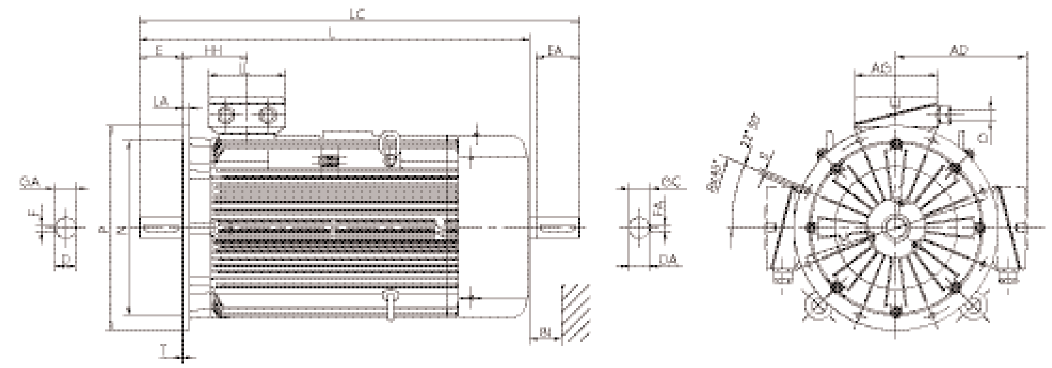
with surface ventilation, cooling method IC 411, degree of protection P 55

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

Type of construction IM V1 [IM 3011]

Flange dimensions see page 154/155





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	Bl. Bl
WE1R 315S2 EP	FF 600	550	416	65	65	M20	140	140	18	18	69	69	315	211	1050	1218	KK 200 A	282	242	-	M63x1.5	55
WE1R 315M2 EP	FF 600	550	416	65	65	M20	140	140	18	18	69	69	315	211	1105	1273	KK 200 A	282	242	-	M63x1.5	55
WE1R 315MX2 EP	FF 600	550	416	65	65	M20	140	140	18	18	69	69	315	211	1185	1353	KK 200 A	282	242	-	M63x1.5	55
WE1R 315MY2 EP	FF 600	610	498	65	65	M20	140	140	18	18	69	69	315	230	1270	1448	KK 400 B	415	340	265	M63x1.5	55
WE1R 315L2 EP	FF 600	610	498	65	65	M20	140	140	18	18	69	69	315	230	1390	1543	KK 400 B	415	340	265	M63x1.5	55
WE1R 315LX2 EP	FF 600	610	481	65	65	M20	140	140	18	18	69	69	315	230	1510	1688	KK 400 B	415	340	265	M63x1.5	55
WE1R 315S4 EP	FF 600	550	416	80	70	M20	170	140	22	20	85	74.5	315	211	1080	1248	KK 200 A	282	242	-	M63x1.5	55
WE1R 315M4 EP	FF 600	550	416	80	70	M20	170	140	22	20	85	74.5	315	211	1135	1303	KK 200 A	282	242	-	M63x1.5	55
WE1R 315MX4 EP	FF 600	550	416	80	70	M20	170	140	22	20	85	74.5	315	211	1215	1383	KK 200 A	282	242	-	M63x1.5	55
WE1R 315MY4 EP	FF 600	610	498	80	70	M20	170	140	22	20	85	74.5	315	230	1300	1478	KK 400 B	415	340	265	M63x1.5	55
WE1R 315L4 EP	FF 600	610	498	80	70	M20	170	140	22	20	85	74.5	315	230	1420	1598	KK 400 B	415	340	265	M63x1.5	55
WE1R 315LX4 EP	FF 600	610	481	80	70	M20	170	140	22	20	85	74.5	315	230	1540	1723	KK 400 B	415	340	265	M63x1.5	55

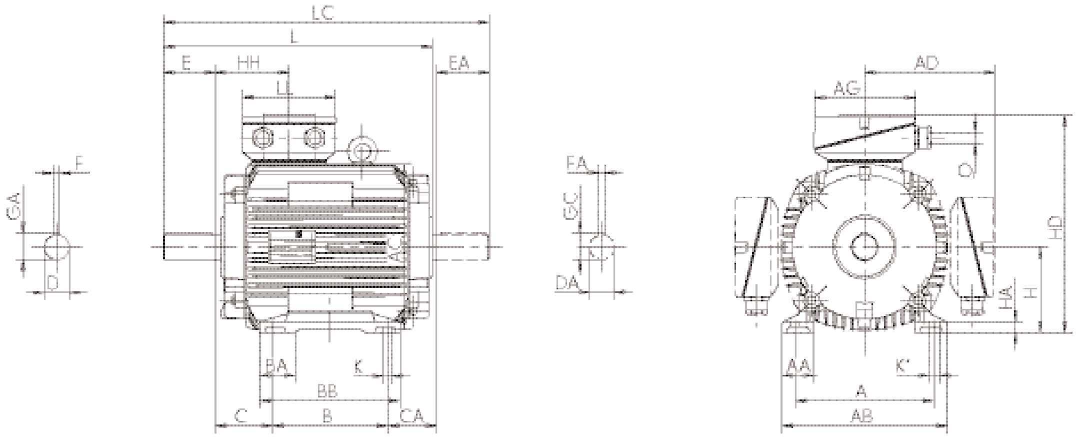
*) Centre holes acc. to DIN 332-DS
**) Terminal box left/right

Non-ventilated three-phase motors with squirrel-cage rotor, basic version

Size 56 to 280

Convective cooling, cooling method IC 410, 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
K21O 63K2,4,6 U	FF 115	100	28	128	109	98	80	-	100	40	-	11	11	M4	23	23	4	4
K21O 63G2,4,6 U	FF 115	100	28	128	109	98	80	-	100	40	-	11	11	M4	23	23	4	4
K21O 71K2,4,6,8 U	FF 130	112	32	138	124	104	90	-	116	45	-	14	14	M5	30	30	5	5
K21O 71G2,4,6,8	FF 130	112	32	138	124	104	90	-	116	45	-	14	14	M5	30	30	5	5
K21O 80K2,4,6,8 U	FF 165	125	38	168	139	111	100	-	125	50	-	19	19	M6	40	40	6	6
K21O 80G2,4,6,8 U	FF 165	125	38	168	139	111	100	-	125	50	-	19	19	M6	40	40	6	6
K21O 90S2,4,6,8 U	FF 165	140	40	178	157	119	100	-	130	56	-	24	22	M8	50	50	8	6
K21O 90L2,4,6,8 U	FF 165	140	40	178	157	119	125	-	155	56	-	24	22	M8	50	50	8	6
K21O 100L2,4,6,8 U	FF 215	160	45	192	177	126	140	-	175	63	-	28	24	M10	60	50	8	8
K21O 100LX4,8 U	FF 215	160	32	188	196	136	140	-	171	63	-	28	28	M10	60	60	8	8
K21O 112M2 U	FF 215	190	50	224	196	136	140	-	180	70	-	28	28	M10	60	60	8	8
K21O 112M6,8 U	FF 215	190	50	224	196	136	140	-	180	70	-	28	28	M10	60	60	8	8
K21O 112MX2 U	FF 215	190	50	224	196	136	140	-	180	70	-	28	28	M10	60	60	8	8
K21O 112M4 U	FF 215	190	50	224	196	136	140	-	180	70	-	28	28	M10	60	60	8	8
K21O 132S2T U	FF 265	216	50	256	196	155	140	-	180	89	-	38	28	M12	80	60	10	8
K21O 132S4T U	FF 265	216	50	256	196	155	140	-	180	89	-	38	28	M12	80	60	10	8
K21O 132S2	FF 265	216	50	256	217	178	140	55	180	89	97	38	32	M12	80	80	10	10
K21O 132SX2	FF 265	216	50	256	217	178	140	55	180	89	117	38	32	M12	80	80	10	10
K21O 132S4,6,8	FF 265	216	50	256	217	178	140	55	180	89	97	38	32	M12	80	80	10	10
K21O 132M4	FF 265	216	50	256	258	199	178	55	218	89	79	38	38	M12	80	80	10	10
K21O 132MX6	FF 265	216	50	256	258	199	178	55	218	89	79	38	38	M12	80	80	10	10
K21O 132M6,8	FF 265	216	50	256	217	178	178	55	218	89	79	38	32	M12	80	80	10	10
K21O 160M2	FF 300	254	55	296	258	214	210	60	257	108	76	42	38	M16	110	80	12	10
K21O 160M4,6,8	FF 300	254	55	296	258	214	210	60	257	108	76	42	38	M16	110	80	12	10
K21O 160MX8	FF 300	254	55	296	258	199	210	60	257	108	76	42	38	M16	110	80	12	10
K21O 160MX2	FF 300	254	55	296	313	242	210	60	257	108	87	42	42	M16	110	110	12	12
K21O 160L2,4,6,8	FF 300	254	55	296	313	242	254	60	301	108	81	42	42	M16	110	110	12	12
K21O 180M2	FF 300	279	62	328	351	261	241	65	288	121	107	48	48	M16	110	110	14	14
K21O 180M4	FF 300	279	62	328	313	242	241	65	288	121	81	48	42	M16	110	110	14	12
K21O 180L4	FF 300	279	62	328	351	261	279	65	326	121	114	48	48	M16	110	110	14	14
K21O 180L6,8	FF 300	279	62	328	313	242	279	65	326	121	43	48	42	M16	110	110	14	12
K21O 200L2,4,6,8	FF 350	318	70	372	351	261	305	70	360	133	76	55	48	M20	110	110	16	14
K21O 200LX6	FF 350	318	70	372	351	261	305	70	360	133	76	55	48	M20	110	110	16	14
K21O 200LX2	FF 350	318	70	372	390	300	305	70	360	133	139	55	55	M20	110	110	16	16
K21O 225S4,8	FF 400	356	75	413	390	300	286	75	343	149	148	60	55	M20	140	110	18	16
K21O 225M2	FF 400	356	75	413	390	300	311	75	368	149	157	55	55	M20	110	110	16	16
K21O 225M4	FF 400	356	75	413	390	300	311	75	368	149	157	60	55	M20	140	110	18	16
K21O 225M6,8	FF 400	356	75	413	390	300	311	75	368	149	117	60	55	M20	140	110	18	16
K21O 250M2	FF 500	406	84	471	440	358	349	84	412	168	90	60	55	M20	140	110	18	16
K21O 250M4,6,8	FF 500	406	84	471	440	358	349	84	412	168	90	65	55	M20	140	110	18	16
K21O 280S2	FF 500	457	94	522	490	386	368	96	431	190	113	65	65	M20	140	140	18	18
K21O 280S4,6,8	FF 500	457	94	522	490	386	368	96	431	190	113	75	65	M20	140	140	20	18
K21O 280M2	FF 500	457	94	522	490	386	419	96	482	190	108	65	65	M20	140	140	18	18
K21O 280M4,6,8	FF 500	457	94	522	490	386	419	96	482	190	108	75	65	M20	140	140	20	18

*) Centre holes acc. to DIN 332-DS

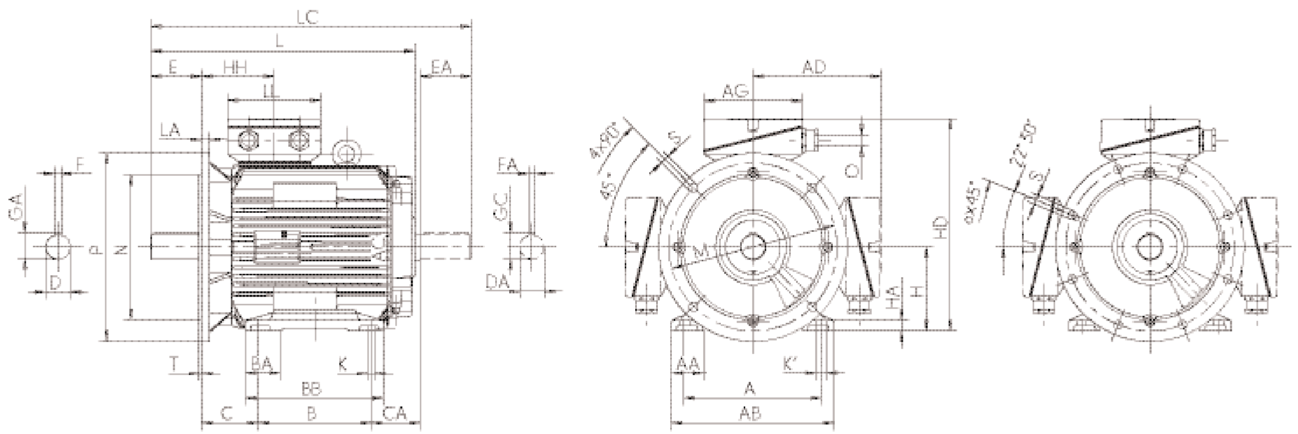
Non-ventilated three-phase motors with squirrel-cage rotor, basic version

Size 56 to 280

Convective cooling, cooling method IC 410, degree of protection IP 55

Type of construction IM B35 [IM 2001]

Flange dimensions see page 154/155



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
K21O 63K2,4,6 U	12.5	12.5	63	10	161	a.A.	58	8	8	155	a.A	KA 05	92	92	M20x1.5	4L
K21O 63G2,4,6 U	12.5	12.5	63	10	161	a.A.	58	8	8	155	a.A	KA 05	92	92	M20x1.5	4L
K21O 71K2,4,6,8 U	16	16	71	11	175	a.A.	61	8	8	177	a.A	KA 05	92	92	M20x1.5	4L
K21O 71G2,4,6,8	16	16	71	11	175	a.A.	61	8	8	177	a.A	KA 05	92	92	M20x1.5	4L
K21O 80K2,4,6,8 U	21.5	21.5	80	12	191	a.A.	67	10	10	217	a.A	KA 05	92	92	M20x1.5	4L
K21O 80G2,4,6,8 U	21.5	21.5	80	12	191	a.A.	67	10	10	217	a.A	KA 05	92	92	M20x1.5	4L
K21O 90S2,4,6,8 U	27	24.5	90	14	210	a.A.	70	10	10	241	a.A	KA 05	92	92	M25x1.5	4L
K21O 90L2,4,6,8 U	27	24.5	90	14	210	a.A.	70	10	10	263	a.A	KA 05	92	92	M25x1.5	4L
K21O 100L2,4,6,8 U	31	27	100	15	227	a.A.	75	12	12	289	a.A	KA 05	92	92	M25x1.5	4L
K21O 100LX4,8 U	31	31	100	11	237	a.A.	77	12	12	314	a.A	KA 05	92	92	M25x1.5	4L
K21O 112M2 U	31	31	112	18	249	a.A.	77	12	12	314	a.A	KA 05	92	92	M25x1.5	4L
K21O 112M6,8 U	31	31	112	18	249	a.A.	77	12	12	314	a.A	KA 05	92	92	M25x1.5	4L
K21O 112MX2 U	31	31	112	18	249	a.A.	77	12	12	348	a.A	KA 05	92	92	M25x1.5	4L
K21O 112M4 U	31	31	112	18	249	a.A.	77	12	12	348	a.A	KA 05	92	92	M25x1.5	4L
K21O 132S2T U	41	31	132	18	287	a.A.	105	12	12	387	a.A	KA 05-13	104	112	M32x1.5	4L
K21O 132S4T U	41	31	132	18	287	a.A.	105	12	12	417	a.A	KA 05-13	104	112	M32x1.5	4L
K21O 132S2	41	35	132	16	310	257	108	12	12	397	486	KK 25 A	156	145	M32x1.5	4L
K21O 132SX2	41	35	132	16	310	257	108	12	12	417	506	KK 25 A	156	145	M32x1.5	4L
K21O 132S4,6,8	41	35	132	16	310	257	108	12	12	397	486	KK 25 A	156	145	M32x1.5	4L
K21O 132M4	41	41	132	16	331	279	114	12	12	420	506	KK 25 A	156	145	M32x1.5	4L
K21O 132MX6	41	41	132	16	331	279	114	12	12	420	506	KK 25 A	156	145	M32x1.5	4L
K21O 132M6,8	41	35	132	16	310	257	108	12	12	417	506	KK 25 A	156	145	M32x1.5	4L
K21O 160M2	45	41	160	18	374	307	114	15	15	498	584	KK 63 A	193	167	M40x1.5	4L
K21O 160M4,6,8	45	41	160	18	374	307	114	15	15	498	584	KK 63 A	193	167	M40x1.5	4L
K21O 160MX8	45	41	160	18	374	307	114	15	15	498	584	KK 63 A	193	167	M40x1.5	4L
K21O 160MX2	45	45	160	18	402	336	138	15	20	502	625	KK 63 A	193	167	M40x1.5	4L
K21O 160L2,4,6,8	45	45	160	18	402	336	138	15	20	540	663	KK 63 A	193	167	M40x1.5	4L
K21O 180M2	51.5	51.5	180	20	441	369	147	15	20	562	689	KK 63 A	193	167	M40x1.5	4L
K21O 180M4	51.5	45	180	20	422	356	138	15	20	540	663	KK 63 A	193	167	M40x1.5	4L
K21O 180L4	51.5	51.5	180	20	441	369	147	15	20	607	734	KK 63 A	193	167	M40x1.5	4L
K21O 180L6,8	51.5	45	180	20	422	369	138	15	20	540	663	KK 63 A	193	167	M40x1.5	4L
K21O 200L2,4,6,8	59	51.5	200	22	461	389	147	19	25	607	734	KK 63 A	193	167	M40x1.5	4L
K21O 200LX6	59	51.5	200	22	461	389	147	19	25	607	734	KK 63 A	193	167	M40x1.5	4L
K21O 200LX2	59	59	200	22	500	417	168	19	25	661	797	KK 100 A	213	207	M50x1.5	4L
K21O 225S4,8	64	59	225	25	525	442	168	19	25	691	827	KK 100 A	213	207	M50x1.5	8L
K21O 225M2	59	59	225	25	525	442	168	19	25	701	837	KK 100 A	213	207	M50x1.5	8L
K21O 225M4	64	59	225	25	525	442	168	19	25	731	867	KK 100 A	213	207	M50x1.5	8L
K21O 225M6,8	64	59	225	25	525	442	168	19	25	691	827	KK 100 A	213	207	M50x1.5	8L
K21O 250M2	64	59	250	28	608	484	177	24	30	737	857	KK 200 A	282	242	M63x1.5	8L
K21O 250M4,6,8	69	59	250	28	608	484	177	24	30	737	857	KK 200 A	282	242	M63x1.5	8L
K21O 280S2	69	69	280	32	666	546	206	24	30	801	951	KK 200 A	282	242	M63x1.5	8L
K21O 280S4,6,8	79.5	69	280	32	666	546	206	24	30	801	951	KK 200 A	282	242	M63x1.5	8L
K21O 280M2	69	69	280	32	666	546	206	24	30	847	997	KK 200 A	282	242	M63x1.5	8L
K21O 280M4,6,8	79.5	69	280	32	666	546	206	24	30	847	997	KK 200 A	282	242	M63x1.5	8L

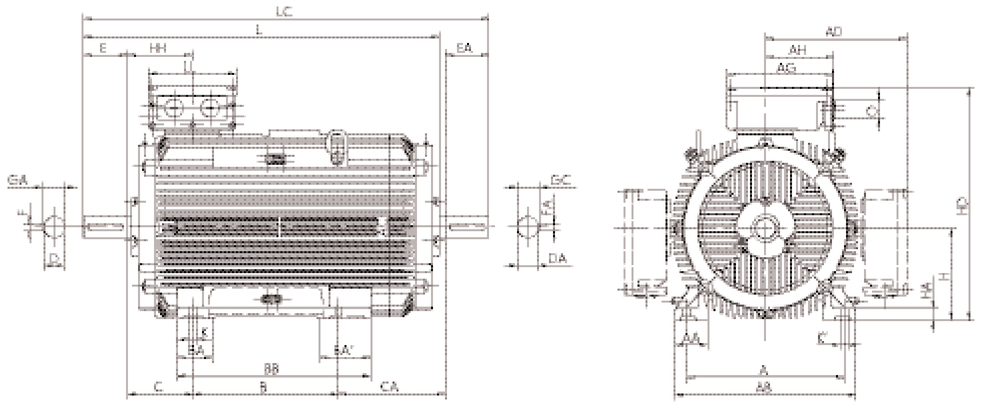
**) Terminal box left/right
a.A. on request

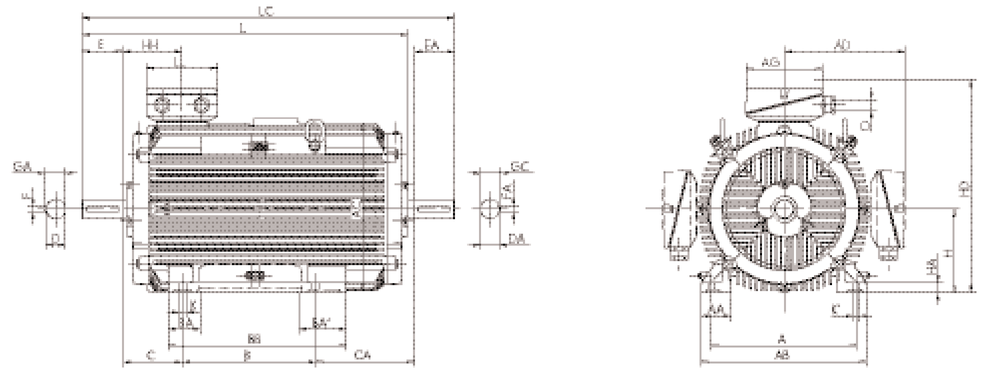
Non-ventilated three-phase motors with squirrel-cage rotor, basic version

Size 315

Convective cooling, cooling method IC 410, 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
K21O 315S2	FF 600	508	126	590	550	416	406	120	-	503	216	126	65	65	M20	140	140	18	18
K21O 315S4,6,8	FF 600	508	126	590	550	416	406	120	-	503	216	126	80	70	M20	170	140	22	20
K21O 315M2	FF 600	508	126	590	550	416	457	120	-	554	216	130	65	65	M20	140	140	18	18
K21O 315M4,6,8	FF 600	508	126	590	550	416	457	120	-	554	216	130	80	70	M20	170	140	22	20
K21O 315MX2	FF 600	508	126	590	550	416	457	120	150	554	216	208	65	65	M20	140	140	18	18
K21O 315MX4	FF 600	508	126	590	550	416	457	120	150	554	216	208	80	70	M20	170	140	22	20
K21O 315MX6,8	FF 600	508	126	590	550	416	457	120	150	554	216	128	80	70	M20	170	140	22	20
K21O 315MX10,12	FF 600	508	126	590	550	416	457	120	150	554	216	128	80	70	M20	170	140	22	20
K21O 315MY2	FF 600	508	110	590	610	494	457	120	-	573	216	307	65	65	M20	140	140	18	18
K21O 315MY4,6,8	FF 600	508	110	590	610	494	457	120	-	573	216	307	80	70	M20	170	140	22	20
K21O 315L2	FF 600	508	110	590	610	494	508	120	-	624	216	376	65	65	M20	140	140	18	18
K21O 315L4,6,8	FF 600	508	110	590	610	494	508	120	-	624	216	376	80	70	M20	170	140	22	20
K21O 315LX2	FF 600	508	110	590	610	494	508	120	-	624	216	496	65	65	M20	140	140	18	18
K21O 315LX4	FF 600	508	110	590	610	494	508	120	-	624	216	496	80	70	M20	170	140	22	20
K21O 315LX6,8	FF 600	508	110	590	610	494	508	120	-	624	216	376	80	70	M20	170	140	22	20

*) Centre holes acc. to DIN 332-DS

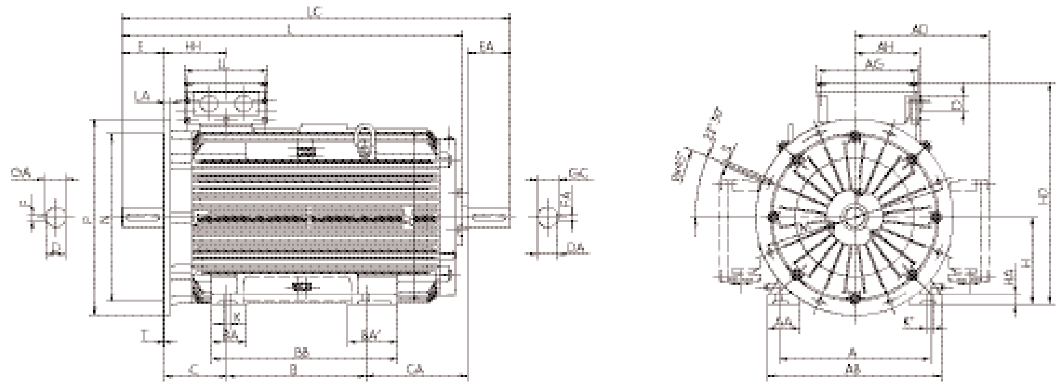
Non-ventilated three-phase motors with squirrel-cage rotor, basic version

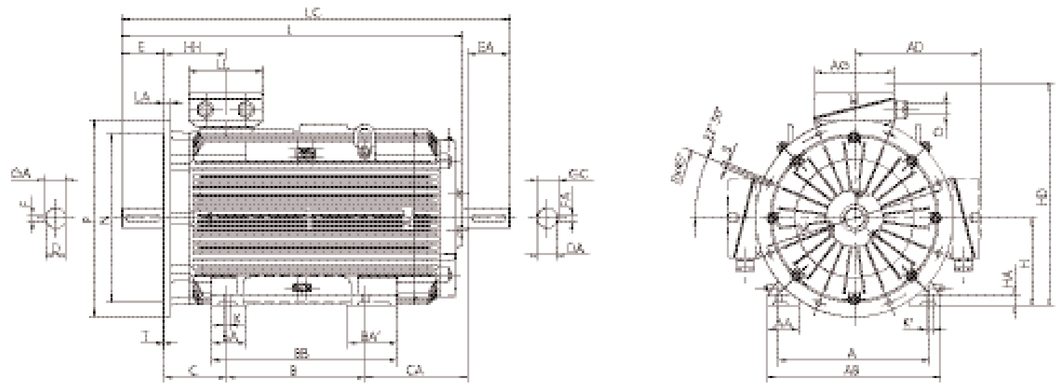
Size 315

Convective cooling, cooling method IC 410, degree of protection IP 55

Type of construction IM B35 [IM 2001]

Flange dimensions see page 154/155





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	AH -	O
K21O 315S2	69	69	315	44	731	595	211	28	35	879	1026	KK 200 A	282	242	-	M63x1.5
K21O 315S4,6,8	85	74.5	315	44	731	595	211	28	35	909	1056	KK 200 A	282	242	-	M63x1.5
K21O 315M2	69	69	315	44	731	595	211	28	35	934	1081	KK 200 A	282	242	-	M63x1.5
K21O 315M4,6,8	85	74.5	315	44	731	595	211	28	35	964	1111	KK 200 A	282	242	-	M63x1.5
K21O 315MX2	69	69	315	44	731	595	211	28	35	1014	1161	KK 200 A	282	242	-	M63x1.5
K21O 315MX4	85	74.5	315	44	731	595	211	28	35	1044	1191	KK 200 A	282	242	-	M63x1.5
K21O 315MX6,8	85	74.5	315	44	731	595	211	28	35	964	1111	KK 200 A	282	242	-	M63x1.5
K21O 315MX10,12	85	74.5	315	44	731	595	211	28	35	964	1111	KK 200 A	282	242	-	M63x1.5
K21O 315MY2	69	69	315	44	809	628	230	28	35	1116	1260	KK 400 B	415	340	265	M63x1.5
K21O 315MY4,6,8	85	74.5	315	44	809	628	230	28	35	1146	1290	KK 400 B	415	340	265	M63x1.5
K21O 315L2	69	69	315	44	809	628	230	28	35	1236	1380	KK 400 B	415	340	265	M63x1.5
K21O 315L4,6,8	85	74.5	315	44	809	628	230	28	35	1266	1410	KK 400 B	415	340	265	M63x1.5
K21O 315LX2	69	69	315	44	809	628	230	28	35	1356	1500	KK 400 B	415	340	265	M63x1.5
K21O 315LX4	85	74.5	315	44	809	628	230	28	35	1386	1530	KK 400 B	415	340	265	M63x1.5
K21O 315LX6,8	85	74.5	315	44	809	628	230	28	35	1266	1410	KK 400 B	415	340	265	M63x1.5

**) Terminal box left/right

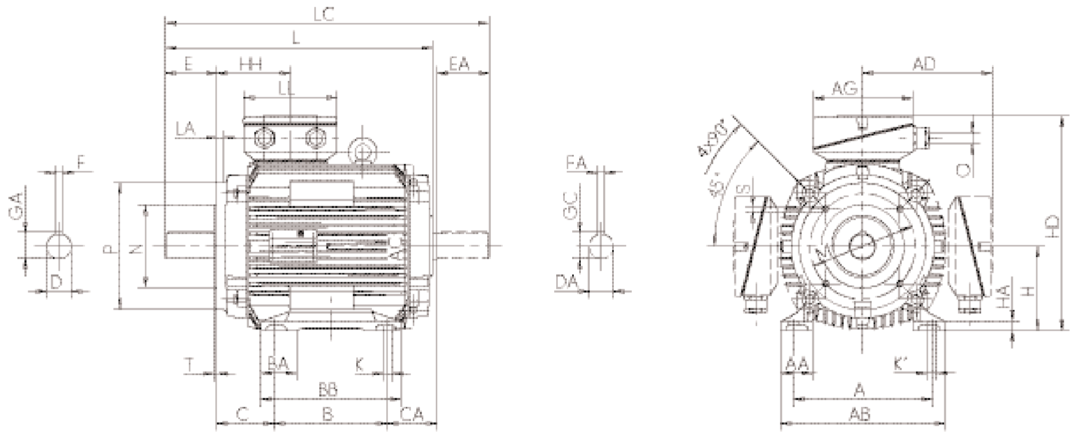
Non-ventilated three-phase motors with squirrel-cage rotor, basic version

Size 56 to 180

Convective cooling, cooling method IC 410, degree of protection IP 55

Type of construction IM B34 [IM 2101]

Flange dimensions see page 154/155



Type designation	Flange sizes small	big	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
K21O 63K2,4,6 U	FT 75	FT 100	100	28	128	109	-	80	-	100	40	-	11	11	M4	23	23	4	4
K21O 63G2,4,6 U	FT 75	FT 100	100	28	128	109	-	80	-	100	40	-	11	11	M4	23	23	4	4
K21O 71K2,4,6,8 U	FT 85	FT 115	112	32	138	124	-	90	-	116	45	-	14	14	M5	30	30	5	5
K21O 71G2,4,6,8	FT 85	FT 115	112	32	138	124	-	90	-	116	45	-	14	14	M5	30	30	5	5
K21O 80K2,4,6,8 U	FT 100	FT 130	125	38	168	139	-	100	-	125	50	-	19	19	M6	40	40	6	6
K21O 80G2,4,6,8 U	FT 100	FT 130	125	38	168	139	-	100	-	125	50	-	19	19	M6	40	40	6	6
K21O 90S2,4,6,8 U	FT 115	FT 130	140	40	178	157	-	100	-	130	56	-	24	22	M8	50	50	8	6
K21O 90L2,4,6,8 U	FT 115	FT 130	140	40	178	157	-	125	-	155	56	-	24	22	M8	50	50	8	6
K21O 100L2,4,6,8 U	FT 130	FT 165	160	45	192	177	-	140	-	175	63	-	28	24	M10	60	50	8	8
K21O 100LX4,8 U	FT 130	FT 165	160	32	188	196	-	140	-	171	63	-	28	28	M10	60	60	8	8
K21O 112M2 U	FT 130	FT 165	190	50	224	196	-	140	-	180	70	-	28	28	M10	60	60	8	8
K21O 112M6,8 U	FT 130	FT 165	190	50	224	196	-	140	-	180	70	-	28	28	M10	60	60	8	8
K21O 112MX2 U	FT 130	FT 165	190	50	224	196	-	140	-	180	70	-	28	28	M10	60	60	8	8
K21O 112M4 U	FT 130	FT 165	190	50	224	196	-	140	-	180	70	-	28	28	M10	60	60	8	8
K21O 132S2T U	FT 130	FT 165	216	50	256	196	-	140	-	180	89	-	38	28	M10	80	60	10	8
K21O 132S4T U	FT 130	FT 165	216	50	256	196	-	140	-	180	89	-	38	28	M10	80	60	10	8
K21O 132S2	FT 130	FT 165	216	50	256	217	178	140	55	180	89	97	38	32	M12	80	80	10	10
K21O 132SX2	FT 130	FT 165	216	50	256	217	178	140	55	180	89	117	38	32	M12	80	80	10	10
K21O 132S4,6,8	FT 130	FT 165	216	50	256	217	178	140	55	180	89	97	38	32	M12	80	80	10	10
K21O 132M4	FT 165	FT 215	216	50	256	258	199	178	55	218	89	79	38	38	M12	80	80	10	10
K21O 132MX6	FT 165	FT 215	216	50	256	258	199	178	55	218	89	79	38	38	M12	80	80	10	10
K21O 132M6,8	FT 130	FT 165	216	50	256	217	178	178	55	218	89	79	38	32	M12	80	80	10	10
K21O 160M2	FT 165	FT 215	254	55	296	258	214	210	60	257	108	76	42	38	M16	110	80	12	10
K21O 160M4,6,8	FT 165	FT 215	254	55	296	258	214	210	60	257	108	76	42	38	M16	110	80	12	10
K21O 160MX8	FT 165	FT 215	254	55	296	258	199	210	60	257	108	76	42	38	M16	110	80	12	10
K21O 160MX2	FT 215	FT 265	254	55	296	313	242	210	60	257	108	87	42	42	M16	110	110	12	12
K21O 160L2,4,6,8	FT 215	FT 265	254	55	296	313	242	254	60	301	108	81	42	42	M16	110	110	12	12
K21O 180M4	FT 265	-	279	62	328	313	242	241	65	288	121	81	48	42	M16	110	110	14	12
K21O 180L6,8	FT 265	-	279	62	328	313	242	279	65	326	121	43	48	42	M16	110	110	14	12

*) Centre holes acc. to DIN 332-DS

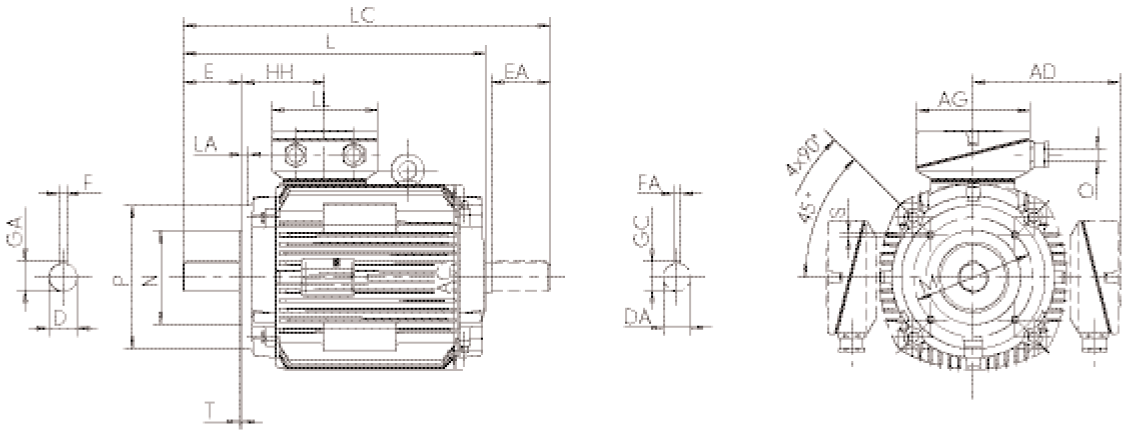
Non-ventilated three-phase motors with squirrel-cage rotor, basic version

Size 56 to 180

Convective cooling, cooling method IC 410, degree of protection IP 55

Type of construction IM B14 [IM 3601]

Flange dimensions see page 154/155



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
K21O 63K2,4,6 U	12.5	12.5	63	10	161	a.A.	58	8	8	155	a.A	KA 05	92	92	M20x1.5
K21O 63G2,4,6 U	12.5	12.5	63	10	161	a.A.	58	8	8	155	a.A	KA 05	92	92	M20x1.5
K21O 71K2,4,6,8 U	16	16	71	11	175	a.A.	61	8	8	177	a.A	KA 05	92	92	M20x1.5
K21O 71G2,4,6,8	16	16	71	11	175	a.A.	61	8	8	177	a.A	KA 05	92	92	M20x1.5
K21O 80K2,4,6,8 U	21.5	21.5	80	12	191	a.A.	67	10	10	217	a.A	KA 05	92	92	M20x1.5
K21O 80G2,4,6,8 U	21.5	21.5	80	12	191	a.A.	67	10	10	217	a.A	KA 05	92	92	M20x1.5
K21O 90S2,4,6,8 U	27	24.5	90	14	210	a.A.	70	10	10	241	a.A	KA 05	92	92	M25x1.5
K21O 90L2,4,6,8 U	27	24.5	90	14	210	a.A.	70	10	10	263	a.A	KA 05	92	92	M25x1.5
K21O 100L2,4,6,8 U	31	27	100	15	227	a.A.	75	12	12	289	a.A	KA 05	92	92	M25x1.5
K21O 100LX4,8 U	31	31	100	11	237	a.A.	77	12	12	314	a.A	KA 05	92	92	M25x1.5
K21O 112M2 U	31	31	112	18	249	a.A.	77	12	12	314	a.A	KA 05	92	92	M25x1.5
K21O 112M6,8 U	31	31	112	18	249	a.A.	77	12	12	314	a.A	KA 05	92	92	M25x1.5
K21O 112MX2 U	31	31	112	18	249	a.A.	77	12	12	348	a.A	KA 05	92	92	M25x1.5
K21O 112M4 U	31	31	112	18	249	a.A.	77	12	12	348	a.A	KA 05	92	92	M25x1.5
K21O 132S2T U	41	31	132	18	287	a.A.	105	12	12	387	a.A	KA 05-13	104	112	M32x1.5
K21O 132S4T U	41	31	132	18	287	a.A.	105	12	12	417	a.A	KA 05-13	104	112	M32x1.5
K21O 132S2	41	35	132	16	310	257	108	12	12	459	542	KK 25 A	156	145	M32x1.5
K21O 132SX2	41	35	132	16	310	257	108	12	12	479	562	KK 25 A	156	145	M32x1.5
K21O 132S4,6,8	41	35	132	16	310	257	108	12	12	459	542	KK 25 A	156	145	M32x1.5
K21O 132M4	41	41	132	16	331	279	114	12	12	481	565	KK 25 A	156	145	M32x1.5
K21O 132MX6	41	41	132	16	331	279	114	12	12	481	565	KK 25 A	156	145	M32x1.5
K21O 132M6,8	41	35	132	16	310	257	108	12	12	479	562	KK 25 A	156	145	M32x1.5
K21O 160M2	45	41	160	18	374	307	114	15	15	559	643	KK 63 A	193	167	M40x1.5
K21O 160M4,6,8	45	41	160	18	374	307	114	15	15	559	643	KK 63 A	193	167	M40x1.5
K21O 160MX8	45	41	160	18	374	307	114	15	15	559	643	KK 63 A	193	167	M40x1.5
K21O 160MX2	45	45	160	18	402	336	138	15	20	571	686	KK 63 A	193	167	M40x1.5
K21O 160L2,4,6,8	45	45	160	18	402	336	138	15	20	609	724	KK 63 A	193	167	M40x1.5
K21O 180M4	51.5	45	180	20	422	369	138	15	20	609	724	KK 63 A	193	167	M40x1.5
K21O 180L6,8	51.5	45	180	20	422	369	138	15	20	609	724	KK 63 A	193	167	M40x1.5

**) Terminal box left/right
a.A. on request

Non-ventilated three-phase motors with squirrel-cage rotor, basic version

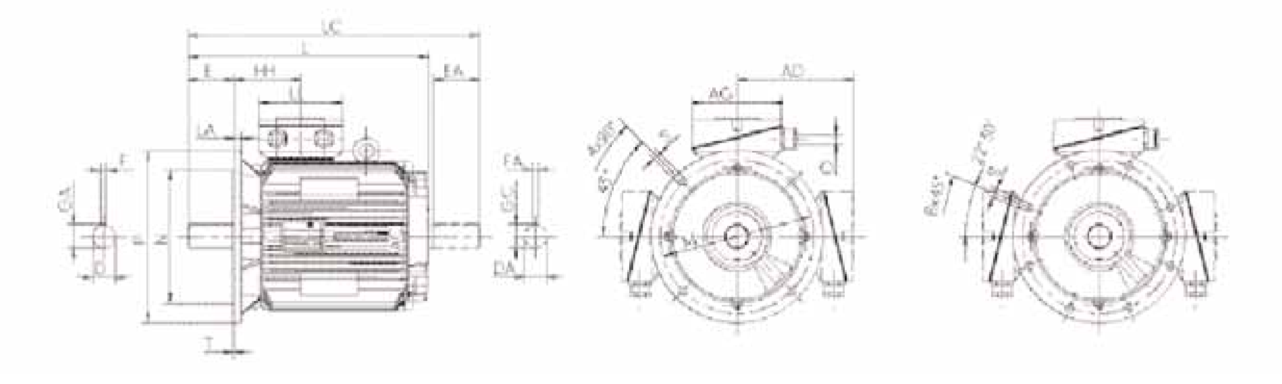
Size 56 to 280

Convective cooling, cooling method IC 410, degree of protection IP 55

Type of construction IM B5 [IM 3001]

Type of construction IM V1 [IM 3011]

Flange dimensions see page 154/155



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
K21O 63K2,4,6 U	FF 115	109	98	11	11	M4	23	23	4	4	12.5	12.5	63	58	155	a.A	KA 05	92	92	M20x1.5	4L
K21O 63G2,4,6 U	FF 115	109	98	11	11	M4	23	23	4	4	12.5	12.5	63	58	155	a.A	KA 05	92	92	M20x1.5	4L
K21O 71K2,4,6,8 U	FF 130	124	104	14	14	M5	30	30	5	5	16	16	71	61	177	a.A	KA 05	92	92	M20x1.5	4L
K21O 71G2,4,6,8	FF 130	124	104	14	14	M5	30	30	5	5	16	16	71	61	177	a.A	KA 05	92	92	M20x1.5	4L
K21O 80K2,4,6,8 U	FF 165	139	111	19	19	M6	40	40	6	6	21.5	21.5	80	67	217	a.A	KA 05	92	92	M20x1.5	4L
K21O 80G2,4,6,8 U	FF 165	139	111	19	19	M6	40	40	6	6	21.5	21.5	80	67	217	a.A	KA 05	92	92	M20x1.5	4L
K21O 90S2,4,6,8 U	FF 165	157	119	24	22	M8	50	50	8	6	27	24.5	90	70	241	a.A	KA 05	92	92	M25x1.5	4L
K21O 90L2,4,6,8 U	FF 165	157	119	24	22	M8	50	50	8	6	27	24.5	90	70	263	a.A	KA 05	92	92	M25x1.5	4L
K21O 100L2,4,6,8 U	FF 215	177	126	28	24	M10	60	50	8	8	31	27	100	75	289	a.A	KA 05	92	92	M25x1.5	4L
K21O 100LX4,8 U	FF 215	196	136	28	28	M10	60	60	8	8	31	31	100	77	314	a.A	KA 05	92	92	M25x1.5	4L
K21O 112M2 U	FF 215	196	136	28	28	M10	60	60	8	8	31	31	112	77	314	a.A	KA 05	92	92	M25x1.5	4L
K21O 112M6,8 U	FF 215	196	136	28	28	M10	60	60	8	8	31	31	112	77	314	a.A	KA 05	92	92	M25x1.5	4L
K21O 112MX2 U	FF 215	196	136	28	28	M10	60	60	8	8	31	31	112	77	348	a.A	KA 05	92	92	M25x1.5	4L
K21O 112M4 U	FF 215	196	136	28	28	M10	60	60	8	8	31	31	112	77	348	a.A	KA 05	92	92	M25x1.5	4L
K21O 132S2T U	FF 265	196	155	38	28	M12	80	60	10	8	41	31	132	105	387	a.A	KA 05-13	104	112	M32x1.5	4L
K21O 132S4T U	FF 265	196	155	38	28	M12	80	60	10	8	41	31	132	105	417	a.A	KA 05-13	104	112	M32x1.5	4L
K21O 132S2	FF 265	217	178	38	32	M12	80	80	10	10	41	35	132	108	397	486	KK 25 A	156	145	M32x1.5	4L
K21O 132SX2	FF 265	217	178	38	32	M12	80	80	10	10	41	35	132	108	417	506	KK 25 A	156	145	M32x1.5	4L
K21O 132S4,6,8	FF 265	217	178	38	32	M12	80	80	10	10	41	35	132	108	397	486	KK 25 A	156	145	M32x1.5	4L
K21O 132M4	FF 265	258	199	38	38	M12	80	80	10	10	41	41	132	114	420	506	KK 25 A	156	145	M32x1.5	4L
K21O 132MX6	FF 265	258	199	38	38	M12	80	80	10	10	41	41	132	114	420	506	KK 25 A	156	145	M32x1.5	4L
K21O 132M6,8	FF 265	217	178	38	32	M12	80	80	10	10	41	35	132	108	417	506	KK 25 A	156	145	M32x1.5	4L
K21O 160M2	FF 300	258	214	42	38	M16	110	80	12	10	45	41	160	114	498	584	KK 63 A	193	167	M40x1.5	4L
K21O 160M4,6,8	FF 300	258	214	42	38	M16	110	80	12	10	45	41	160	114	498	584	KK 63 A	193	167	M40x1.5	4L
K21O 160MX8	FF 300	258	199	42	38	M16	110	80	12	10	45	41	160	114	498	584	KK 63 A	193	167	M40x1.5	4L
K21O 160MX2	FF 300	313	242	42	42	M16	110	110	12	12	45	45	160	138	502	625	KK 63 A	193	167	M40x1.5	4L
K21O 160L2,4,6,8	FF 300	313	242	42	42	M16	110	110	12	12	45	45	160	138	540	663	KK 63 A	193	167	M40x1.5	4L
K21O 180M2	FF 300	351	261	48	48	M16	110	110	14	14	51.5	51.5	180	147	562	689	KK 63 A	193	167	M40x1.5	4L
K21O 180M4	FF 300	313	242	48	42	M16	110	110	14	12	51.5	45	180	138	540	663	KK 63 A	193	167	M40x1.5	4L
K21O 180L4	FF 300	351	261	48	48	M16	110	110	14	14	51.5	51.5	180	147	607	734	KK 63 A	193	167	M40x1.5	4L
K21O 180L6,8	FF 300	313	242	48	42	M16	110	110	14	12	51.5	45	180	138	540	663	KK 63 A	193	167	M40x1.5	4L
K21O 200L2,4,6,8	FF 350	351	261	55	48	M20	110	110	16	14	59	51.5	200	147	607	734	KK 63 A	193	167	M40x1.5	4L
K21O 200LX6	FF 350	351	261	55	48	M20	110	110	16	14	59	51.5	200	147	607	734	KK 63 A	193	167	M40x1.5	4L
K21O 200LX2	FF 350	390	300	55	55	M20	110	110	16	16	59	59	200	168	661	797	KK 100 A	213	207	M50x1.5	4L
K21O 225S4,8	FF 400	390	300	60	55	M20	140	110	18	16	64	59	225	168	691	827	KK 100 A	213	207	M50x1.5	8L
K21O 225M2	FF 400	390	300	55	55	M20	110	110	16	16	59	59	225	168	701	837	KK 100 A	213	207	M50x1.5	8L
K21O 225M4	FF 400	390	300	60	55	M20	140	110	18	16	64	59	225	168	731	867	KK 100 A	213	207	M50x1.5	8L
K21O 225M6,8	FF 400	390	300	60	55	M20	140	110	18	16	64	59	225	168	691	827	KK 100 A	213	207	M50x1.5	8L
K21O 250M2	FF 500	440	358	60	55	M20	140	110	18	16	64	59	250	177	737	857	KK 200 A	282	242	M63x1.5	8L
K21O 250M4,6,8	FF 500	440	358	65	55	M20	140	110	18	16	69	59	250	177	737	857	KK 200 A	282	242	M63x1.5	8L
K21O 280S2	FF 500	490	386	65	65	M20	140	140	18	18	69	69	280	206	801	951	KK 200 A	282	242	M63x1.5	8L
K21O 280S4,6,8	FF 500	490	386	75	65	M20	140	140	20	18	79.5	69	280	206	801	951	KK 200 A	282	242	M63x1.5	8L
K21O 280M2	FF 500	490	386	65	65	M20	140	140	18	18	69	69	280	206	847	997	KK 200 A	282	242	M63x1.5	8L
K21O 280M4,6,8	FF 500	490	386	75	65	M20	140	140	20	18	79.5	69	280	206	847	997	KK 200 A	282	242	M63x1.5	8L

*) Centre holes acc. to DIN 332-DS

Non-ventilated three-phase motors with squirrel-cage rotor, basic version

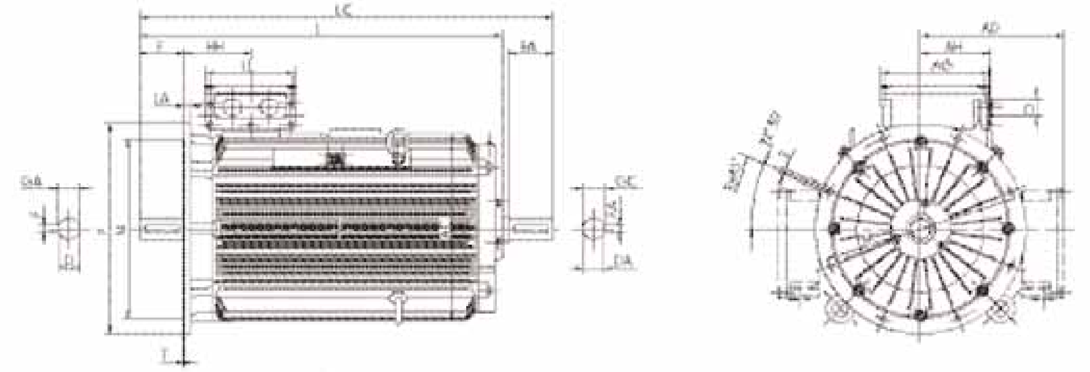
Size 315

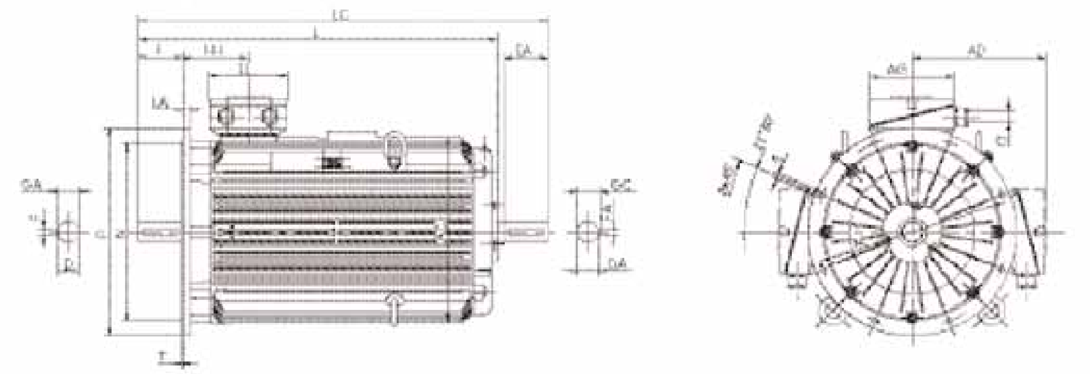
Convective cooling, cooling method IC 410, degree of protection IP 55

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

Type of construction [IM 3011]

Flange dimensions see page 154/155





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
K21O 315S2	FF 600	550	416	65	65	M20	140	140	18	18	69	69	315	211	879	1026	KK 200 A	282	242	-	M63x1.5
K21O 315S4,6,8	FF 600	550	416	80	70	M20	170	140	22	20	85	74.5	315	211	909	1056	KK 200 A	282	242	-	M63x1.5
K21O 315M2	FF 600	550	416	65	65	M20	140	140	18	18	69	69	315	211	934	1081	KK 200 A	282	242	-	M63x1.5
K21O 315M4,6,8	FF 600	550	416	80	70	M20	170	140	22	20	85	74.5	315	211	964	1111	KK 200 A	282	242	-	M63x1.5
K21O 315MX2	FF 600	550	416	65	65	M20	140	140	18	18	69	69	315	211	1014	1161	KK 200 A	282	242	-	M63x1.5
K21O 315MX4	FF 600	550	416	80	70	M20	170	140	22	20	85	74.5	315	211	1044	1191	KK 200 A	282	242	-	M63x1.5
K21O 315MX6,8	FF 600	550	416	80	70	M20	170	140	22	20	85	74.5	315	211	964	1111	KK 200 A	282	242	-	M63x1.5
K21O 315MX10,12	FF 600	550	416	80	70	M20	170	140	22	20	85	74.5	315	211	964	1111	KK 200 A	282	242	-	M63x1.5
K21O 315MY2	FF 600	610	494	65	65	M20	140	140	18	18	69	69	315	230	1116	1260	KK 400 B	415	340	265	M63x1.5
K21O 315MY4,6,8	FF 600	610	494	80	70	M20	170	140	22	20	85	74.5	315	230	1146	1290	KK 400 B	415	340	265	M63x1.5
K21O 315L2	FF 600	610	494	65	65	M20	140	140	18	18	69	69	315	230	1236	1380	KK 400 B	415	340	265	M63x1.5
K21O 315L4,6,8	FF 600	610	494	80	70	M20	170	140	22	20	85	74.5	315	230	1266	1410	KK 400 B	415	340	265	M63x1.5
K21O 315LX2	FF 600	610	494	65	65	M20	140	140	18	18	69	69	315	230	1356	1500	KK 400 B	415	340	265	M63x1.5
K21O 315LX4	FF 600	610	494	80	70	M20	170	140	22	20	85	74.5	315	230	1386	1530	KK 400 B	415	340	265	M63x1.5
K21O 315LX6,8	FF 600	610	494	80	70	M20	170	140	22	20	85	74.5	315	230	1266	1410	KK 400 B	415	340	265	M63x1.5

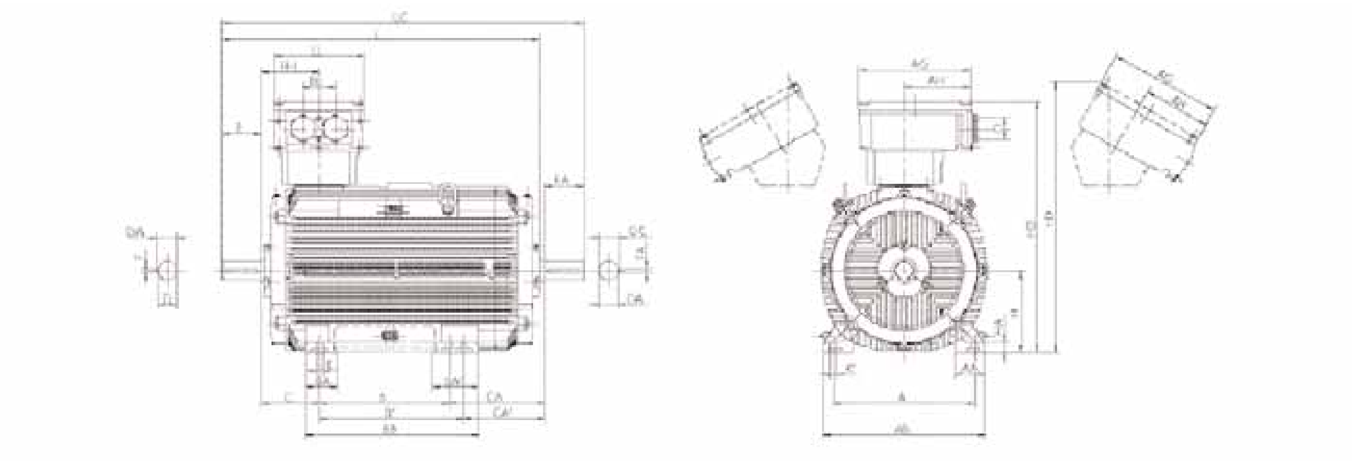
*) Centre holes acc. to DIN 332-DS

Non-ventilated three-phase motors with squirrel-cage rotor, basic version

Size 355

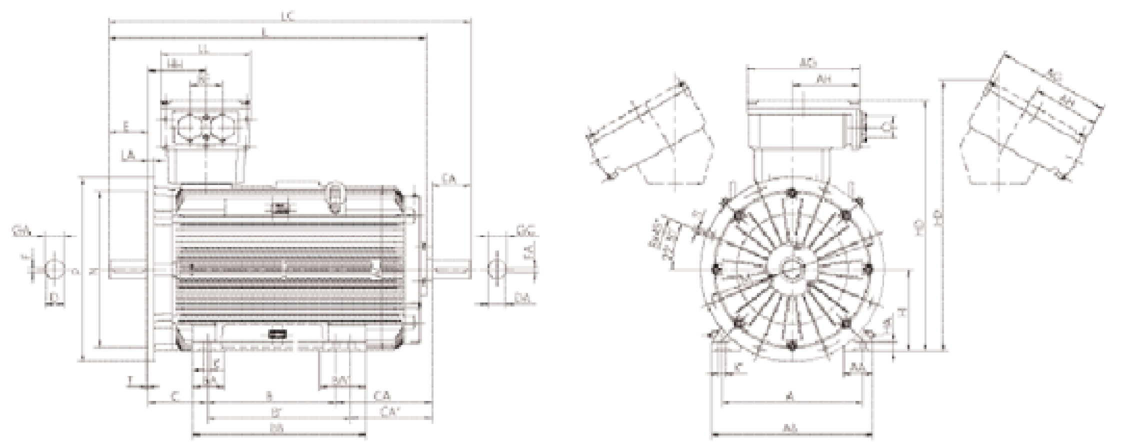
Convective cooling, cooling method IC 410, degree of protection IP 55

Type of construction IM B3 [IM 1001]



Type of construction IM B35 [IM 2001]

Flange dimensions see page 154/155



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
K22O 355MY2,M2	FF 740	610	130	700	715	560	140	200	750	254	398	80	80	M20	170	170	22	22
K22O 355MY4,6,8	FF 740	610	130	700	715	560	140	200	750	254	398	100	80	M24	210	170	28	22
K22O 355M4	FF 740	610	130	700	715	560	140	200	750	254	398	100	80	M24	210	170	28	22
K22O 355M6,8	FF 740	610	130	700	715	560	140	200	750	254	398	100	80	M24	210	170	28	22
K22O 355MX6,8	FF 740	610	130	700	715	560	140	200	750	254	518	100	80	M24	210	170	28	22
K22O 355MX2	FF 740	610	130	700	715	560	140	200	750	254	518	80	80	M20	170	170	22	22
K22O 355LY2,L2	FF 740	610	130	700	715	630	140	200	750	254	448	80	80	M20	170	170	22	22
K22O 355MX4	FF 740	610	130	700	715	560	140	200	750	254	448	100	80	M24	210	170	28	22
K22O 355LY4,6,8,L4	FF 740	610	130	700	715	630	140	200	750	254	448	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 Typ	AG x	LL z	AH -	BE -	O r
K22O 355MY2,M2	85	85	355	44	1091	1172	250	28	35	1365	1552	KK 630 A	496	390	301	140	M72x2
K22O 355MY4,6,8	106	85	355	44	1091	1172	250	28	35	1405	1592	KK 630 A	496	390	301	140	M72x2
K22O 355M4	106	85	355	44	1091	1172	250	28	35	1405	1552	KK 630 A	496	390	301	140	M72x2
K22O 355M6,8	106	85	355	44	1091	1172	250	28	35	1405	1592	KK 630 A	496	390	301	140	M72x2
K22O 355MX6,8	106	85	355	44	1091	1172	250	28	35	1525	1712	KK 630 A	496	390	301	140	M72x2
K22O 355MX2	85	85	355	44	1091	1172	250	28	35	1485	1672	KK 630 A	496	390	301	140	M72x2
K22O 355LY2,L2	85	85	355	44	1091	1172	250	28	35	1485	1672	KK 630 A	496	390	301	140	M72x2
K22O 355MX4	106	85	355	44	1091	1172	250	28	35	1525	1712	KK 630 A	496	390	301	140	M72x2
K22O 355LY4,6,8,L4	106	85	355	44	1091	1172	250	28	35	1525	1712	KK 630 A	496	390	301	140	M72x2

*) Centre holes acc. to DIN 332-DS
**) Terminal box left/right

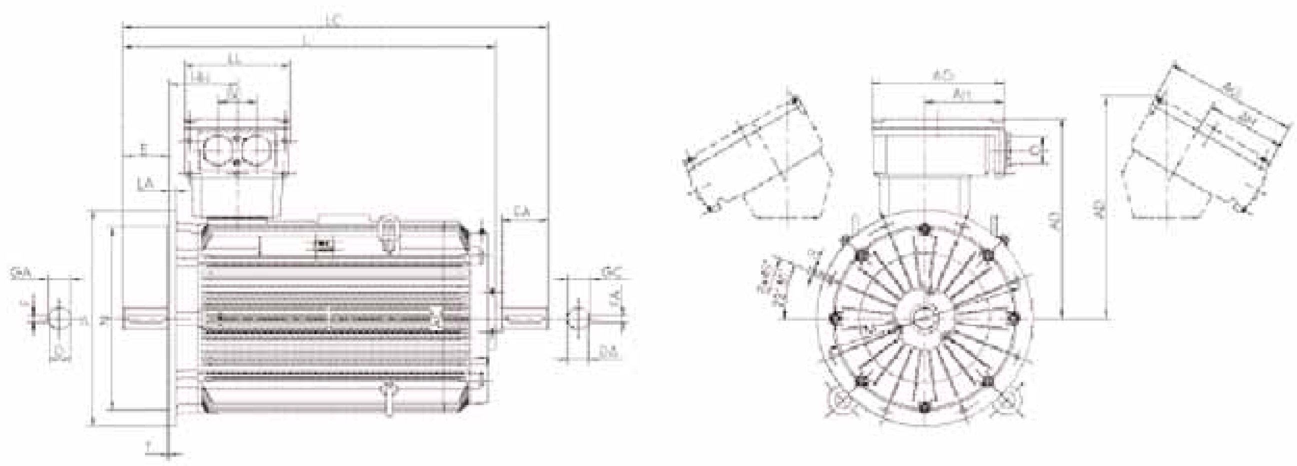
Non-ventilated three-phase motors with squirrel-cage rotor, basic version

Size 355

Convective cooling, cooling method IC 410, degree of protection IP 55

Type of construction IM V1 [IM 3011]

Flange dimensions see page 154/155



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
K22O 355MY2,M2	FF 740	715	736	817	80	80	M20	170	170	22	22	85	85	355	250	1365	1552	KK 630 A	496	390	301	140	M72x2
K22O 355MY4,6,8	FF 740	715	736	817	100	80	M24	210	170	28	22	106	85	355	250	1405	1592	KK 630 A	496	390	301	140	M72x2
K22O 355M4	FF 740	715	736	817	100	80	M24	210	170	28	22	106	85	355	250	1405	1592	KK 630 A	496	390	301	140	M72x2
K22O 355M6,8	FF 740	715	736	817	100	80	M24	210	170	28	22	106	85	355	250	1405	1592	KK 630 A	496	390	301	140	M72x2
K22O 355MX6,8	FF 740	715	736	819	100	80	M24	210	170	28	22	106	85	355	250	1525	1712	KK 630 A	496	390	301	140	M72x2
K22O 355MX2	FF 740	715	728	819	80	80	M20	170	170	22	22	85	85	355	250	1485	1712	KK 1000 A	496	390	301	140	M72x2
K22O 355LY2,L2	FF 740	715	728	819	80	80	M20	170	170	22	22	85	85	355	250	1485	1672	KK 1000 A	496	390	301	140	M72x2
K22O 355MX4	FF 740	715	728	819	100	80	M24	210	170	28	22	106	85	355	250	1525	1712	KK 1000 A	496	390	301	140	M72x2
K22O 355LY4,6,8,L4	FF 740	715	728	819	100	80	M24	210	170	28	22	106	85	355	250	1525	1712	KK 1000 A	496	390	301	140	M72x2

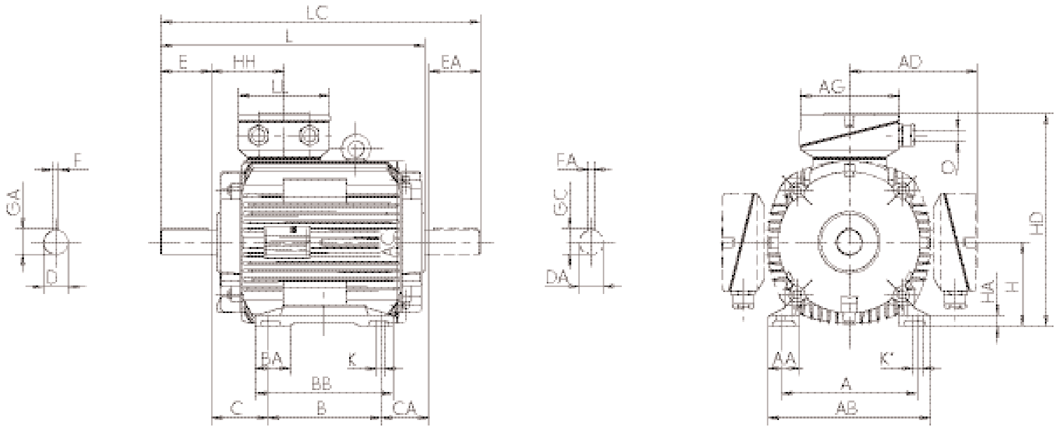
*) Centre holes acc. to DIN 332-DS
**) Terminal box left/right

Non-ventilated three-phase motors with squirrel-cage rotor, transnorm version

Size 56 to 250

Convective cooling, cooling method IC 410, 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
K200 56K U	FF 115	90	18	110	109	98	71	-	86	36	-	11	11	M4	23	23	4	4
K200 56GU	FF 115	90	18	110	109	98	71	-	86	36	-	11	11	M4	23	23	4	4
K200 63K U	FF 130	100	21	120	124	104	80	-	95	40	-	14	14	M5	30	30	5	5
K200 63G U	FF 130	100	21	120	124	104	80	-	95	40	-	14	14	M5	30	30	5	5
K200 71K U	FF 165	112	23	135	139	111	90	-	114	45	-	19	19	M6	40	40	6	6
K200 71G U	FF 165	112	23	135	139	111	90	-	114	45	-	19	19	M6	40	40	6	6
K200 80K U	FF 165	125	26	152	157	119	100	-	124	50	-	22	22	M8	50	50	6	6
K200 80G U	FF 165	125	26	152	157	119	100	-	146	50	-	22	22	M8	50	50	6	6
K200 90L U	FF 215	140	25	167	177	126	125	-	150	56	-	24	24	M8	50	50	8	8
K200 100S U	FF 215	160	32	188	196	136	112	-	171	63	-	28	28	M10	60	60	8	8
K200 100L2,4 U	FF 215	160	32	188	196	136	140	-	205	63	-	28	28	M10	60	60	8	8
K200 100L6,8 U	FF 215	160	32	188	196	136	140	-	171	63	-	28	28	M10	60	60	8	8
K200 100LX4 U	FF 215	160	40	192	196	136	140	-	175	63	-	28	28	M10	60	60	8	8
K200 112M2	FF 265	190	45	226	217	178	140	42	172	70	136	32	32	M12	80	80	10	10
K200 112M4,6,8	FF 265	190	45	226	217	178	140	42	172	70	116	32	32	M12	80	80	10	10
K200 112MX6,8	FF 265	190	45	226	217	178	140	42	172	70	136	32	32	M12	80	80	10	10
K200 132S	FF 300	216	50	256	258	199	140	47	180	89	117	38	38	M12	80	80	10	10
K200 132M	FF 300	216	50	256	258	199	178	47	218	89	127	38	38	M12	80	80	10	10
K200 160S2	FF 300	254	55	296	313	242	178	56	225	108	119	42	42	M16	110	110	12	12
K200 160S4,6,8	FF 300	254	55	296	313	242	178	56	225	108	119	48	42	M16	110	110	14	12
K200 160M2	FF 300	254	55	296	313	242	210	56	257	108	125	42	42	M16	110	110	12	12
K200 160M4,6,8	FF 300	254	55	296	313	242	210	56	257	108	125	48	42	M16	110	110	14	12
K200 180S2	FF 350	279	62	328	351	261	203	65	250	121	145	48	48	M16	110	110	14	14
K200 180S4,6,8	FF 350	279	62	328	351	261	203	65	250	121	145	55	48	M20	110	110	16	14
K200 180M2	FF 350	279	62	328	351	261	241	65	288	121	152	48	48	M16	110	110	14	14
K200 180M4,6,8	FF 350	279	62	328	351	261	241	65	288	121	152	55	48	M20	110	110	16	14
K200 200M2	FF 400	318	70	372	390	300	267	70	322	133	177	55	55	M20	110	110	16	16
K200 200M4,6,8	FF 400	318	70	372	390	300	267	70	322	133	177	60	55	M20	140	110	18	16
K200 200L2	FF 400	318	70	372	390	300	305	70	360	133	179	55	55	M20	110	110	16	16
K200 200L4,6,8	FF 400	318	70	372	390	300	305	70	360	133	179	60	55	M20	140	110	18	16
K200 225M2	FF 500	356	75	413	440	324	311	75	368	149	147	55	55	M20	110	110	16	16
K200 225M4,6,8	FF 500	356	75	413	440	324	311	75	368	149	147	65	55	M20	140	110	18	16
K200 250S2	FF 500	406	84	469	490	386	311	84	374	168	192	65	65	M20	140	140	18	18
K200 250S4,6,8	FF 500	406	84	469	490	386	311	84	374	168	192	75	65	M20	140	140	20	18
K200 250M2	FF 500	406	84	469	490	386	349	84	412	168	154	65	65	M20	140	140	18	18
K200 250M4	FF 500	406	84	469	490	386	349	84	412	168	200	75	65	M20	140	140	20	18
K200 250M6,8	FF 500	406	84	469	490	386	349	84	412	168	154	65	65	M20	140	140	18	18

*) Centre holes acc. to DIN 332-DS

Dimensions

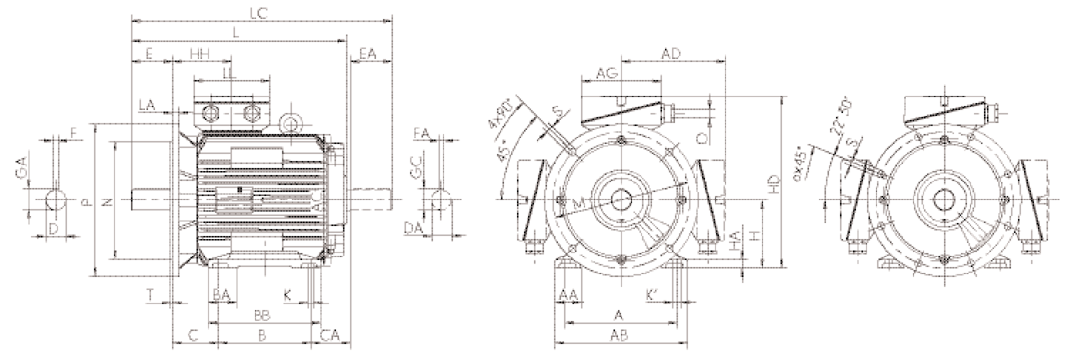
Non-ventilated three-phase motors with squirrel-cage rotor, transnorm version

Size 56 to 250

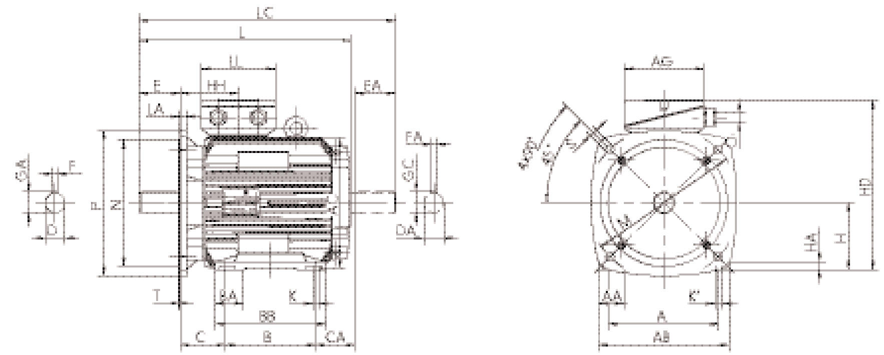
Convective cooling, cooling method IC 410, degree of protection IP 55

Type of construction IM B35 [IM 2001]

Flange dimensions see page 154/155



Size 112 to 160 with crowned flange



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
K200 56K U	12.5	12.5	56	7	154	a.A.	58	6	6	155	a.A.	KA 05	92	92	M20x1.5	4L
K200 56GU	12.5	12.5	56	7	154	a.A.	58	6	6	155	a.A.	KA 05	92	92	M20x1.5	4L
K200 63K U	16	16	63	7.5	167	a.A.	61	7	7	177	a.A.	KA 05	92	92	M20x1.5	4L
K200 63G U	16	16	63	7.5	167	a.A.	61	7	7	177	a.A.	KA 05	92	92	M20x1.5	4L
K200 71K U	21.5	21.5	71	8	182	a.A.	67	7	7	217	a.A.	KA 05	92	92	M20x1.5	4L
K200 71G U	21.5	21.5	71	8	182	a.A.	67	7	7	217	a.A.	KA 05	92	92	M20x1.5	4L
K200 80K U	24.5	24.5	80	9	200	a.A.	70	10	10	241	a.A.	KA 05	92	92	M25x1.5	4L
K200 80G U	24.5	24.5	80	9	200	a.A.	70	10	10	263	a.A.	KA 05	92	92	M25x1.5	4L
K200 90L U	27	27	90	9.5	217	a.A.	75	10	10	279	a.A.	KA 05	92	92	M25x1.5	4L
K200 100S U	31	31	100	11	237	a.A.	77	12	12	314	a.A.	KA 05	92	92	M25x1.5	4L
K200 100L2,4 U	31	31	100	11	237	a.A.	77	12	12	348	a.A.	KA 05	92	92	M25x1.5	4L
K200 100L6,8 U	31	31	100	11	237	a.A.	77	12	12	314	a.A.	KA 05	92	92	M25x1.5	4L
K200 100LX4 U	31	31	100	15	237	a.A.	77	12	12	378	a.A.	KA 05	92	92	M25x1.5	4L
K200 112M2	35	35	112	15	290	237	108	12	12	417	506	KK 25 A	156	145	M32x1.5	4L
K200 112M4,6,8	35	35	112	15	290	237	108	12	12	397	486	KK 25 A	156	145	M32x1.5	4L
K200 112MX6,8	35	35	112	15	290	237	108	12	12	417	506	KK 25 A	156	145	M32x1.5	4L
K200 132S	41	41	132	15	331	279	114	12	12	420	506	KK 25 A	156	145	M32x1.5	4L
K200 132M	41	41	132	15	331	279	114	12	12	468	554	KK 25 A	156	145	M32x1.5	4L
K200 160S2	45	45	160	18	402	336	138	15	20	502	625	KK 63 A	193	167	M40x1.5	4L
K200 160S4,6,8	51.5	45	160	18	402	336	138	15	20	502	625	KK 63 A	193	167	M40x1.5	4L
K200 160M2	45	45	160	18	402	336	138	15	20	540	663	KK 63 A	193	167	M40x1.5	4L
K200 160M4,6,8	51.5	45	160	18	402	336	138	15	20	540	663	KK 63 A	193	167	M40x1.5	4L
K200 180S2	51.5	51.5	180	20	441	369	147	15	20	562	689	KK 63 A	193	167	M40x1.5	4L
K200 180S4,6,8	59	51.5	180	20	441	369	147	15	20	562	689	KK 63 A	193	167	M40x1.5	4L
K200 180M2	51.5	51.5	180	20	441	369	147	15	20	607	734	KK 63 A	193	167	M40x1.5	4L
K200 180M4,6,8	59	51.5	180	20	441	369	147	15	20	607	734	KK 63 A	193	167	M40x1.5	4L
K200 200M2	59	59	200	22	500	417	168	19	25	661	797	KK 100 A	213	207	M50x1.5	4L
K200 200M4,6,8	64	59	200	22	500	417	168	19	25	691	827	KK 100 A	213	207	M50x1.5	4L
K200 200L2	59	59	200	22	500	417	168	19	25	701	837	KK 100 A	213	207	M50x1.5	4L
K200 200L4,6,8	64	59	200	22	500	417	168	19	25	731	867	KK 100 A	213	207	M50x1.5	4L
K200 225M2	59	59	225	25	549	459	177	19	25	707	827	KK 100 A	213	207	M50x1.5	8L
K200 225M4,6,8	69	59	225	25	549	459	177	19	25	737	857	KK 100 A	213	207	M50x1.5	8L
K200 250S2	69	69	250	28	636	516	206	24	30	801	951	KK 200 A	213	207	M50x1.5	8L
K200 250S4,6,8	79.5	69	250	28	636	516	206	24	30	801	951	KK 200 A	213	207	M50x1.5	8L
K200 250M2	69	69	250	28	636	516	206	24	30	801	951	KK 200 A	213	207	M50x1.5	8L
K200 250M4	79.5	69	250	28	636	516	206	24	30	847	997	KK 200 A	213	207	M50x1.5	8L
K200 250M6,8	69	69	250	28	636	516	206	24	30	801	951	KK 200 A	213	207	M50x1.5	8L

**) Terminal box left/right
a.A. on request

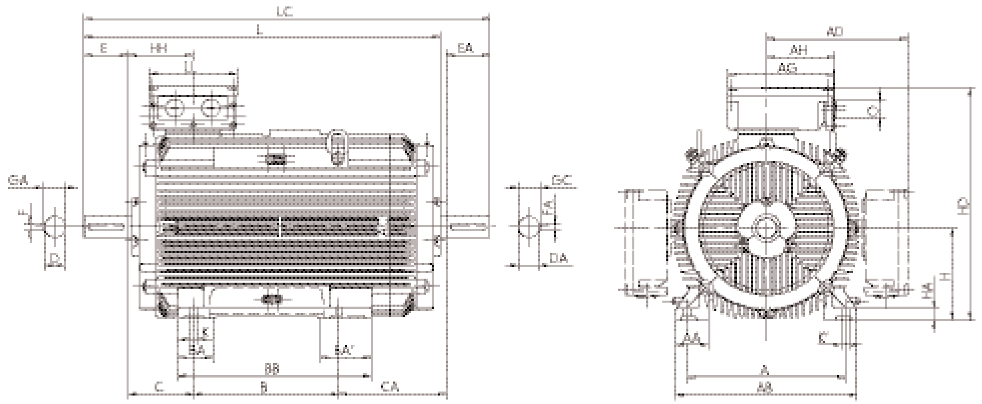
LV Asynchronous motors | IEC motors with squirrel-cage rotor | Main catalogue 01-2008

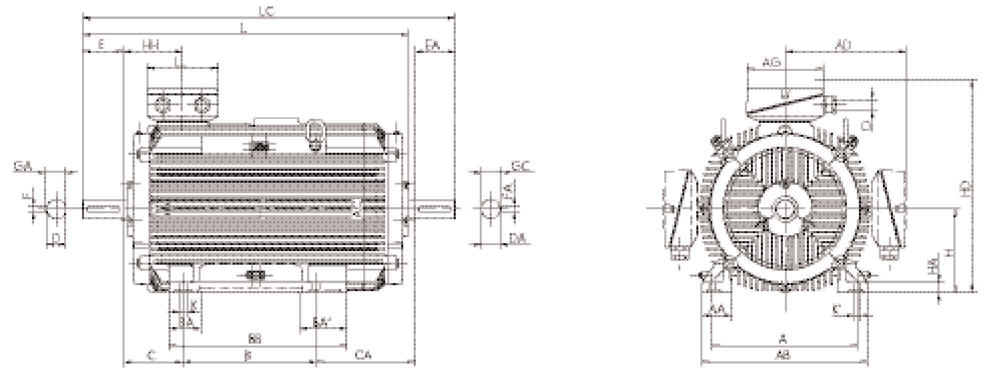
Non-ventilated three-phase motors with squirrel-cage rotor, transnorm version

Size 280, 315

Convective cooling, cooling method IC 410, 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
K20O 280S2	FF 600	457	88	522	550	416	368	94		431	190	188	70	70	M20	140	140	20	20
K20O 280S4,6,8	FF 600	457	88	522	550	416	368	94		431	190	188	80	70	M20	170	140	22	20
K20O 280M2	FF 600	457	88	522	550	416	419	94		482	190	192	70	70	M20	140	140	20	20
K20O 280M4,6,8	FF 600	457	88	522	550	416	419	94		482	190	192	80	70	M20	170	140	22	20
K20O 315S2	FF 600	508	132	590	550	416	406	120		554	216	259	75	70	M20	140	140	20	20
K20O 315S4	FF 600	508	132	590	550	416	406			554	216	259	90	70	M24	170	140	25	20
K20O 315S6,8	FF 600	508	132	590	550	416	406			554	216	179	90	70	M24	170	140	25	20
K20O 315M2	FF 600	508	110	590	610	494	457	120		587	216	307	75	75	M20	140	140	20	20
K20O 315M4,6,8	FF 600	508	110	590	610	494	457			587	216	307	90	75	M24	170	140	25	20
K20O 315M10,12	FF 600	508	132	590	550	494	457			554	216	307	90	75	M24	170	140	25	20
K20O 315L2	FF 600	508	110	590	610	494	508	120		624	216	376	75	75	M20	140	140	20	20
K20O 315L4,6,8	FF 600	508	110	590	610	494	508			624	216	376	90	75	M24	170	140	25	20
K20O 315LX2	FF 600	508	110	590	610	494	508	120		624	216	496	75	75	M20	140	140	20	20
K20O 315LX4	FF 600	508	110	590	610	494	508			624	216	496	90	75	M24	170	140	25	20
K20O 315LX6,8	FF 600	508	110	590	610	494	508			624	216	376	90	75	M24	170	140	25	20

*) Centre holes acc. to DIN 332-DS

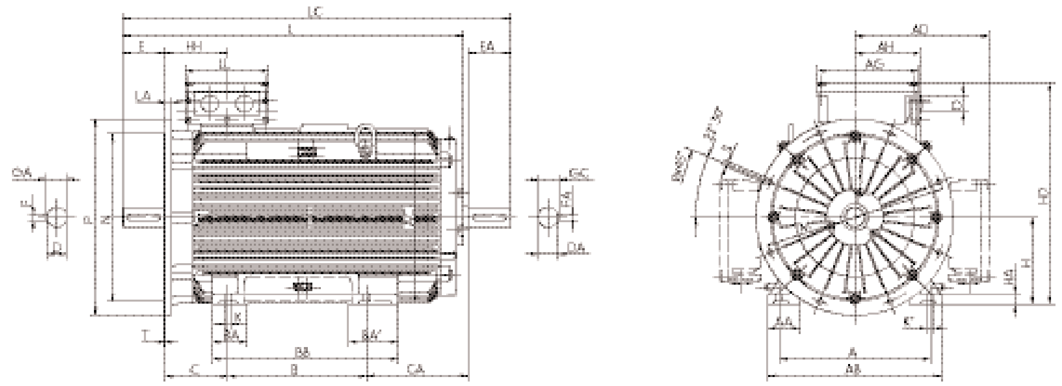
Non-ventilated three-phase motors with squirrel-cage rotor, transnorm version

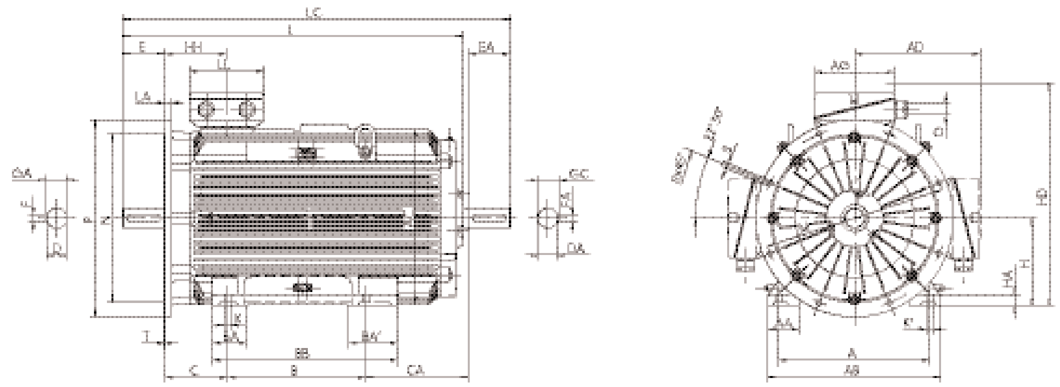
Size 280, 315

Convective cooling, cooling method IC 410, degree of protection IP 55

Type of construction IM B35 [IM 2001]

Flange dimensions see page 154/155





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
K20O 280S2	74.5	74.5	280	40	696	560	211	24	30	879	1026	KK 200 A	282	242	-	M63x1.5
K20O 280S4,6,8	85	74.5	280	40	696	560	211	24	30	909	1056	KK 200 A	282	242	-	M63x1.5
K20O 280M2	74.5	74.5	280	40	696	560	211	24	30	934	1081	KK 200 A	282	242	-	M63x1.5
K20O 280M4,6,8	85	74.5	280	40	696	560	211	24	30	964	1111	KK 200 A	282	242	-	M63x1.5
K20O 315S2	79.5	74.5	315	44	731	595	211	28	35	1014	1161	KK 200 A	282	242	-	M63x1.5
K20O 315S4	95	74.5	315	44	731	595	211	28	35	1044	1191	KK 200 A	282	242	-	M63x1.5
K20O 315S6,8	95	74.5	315	44	731	595	211	28	35	964	1111	KK 200 A	282	242	-	M63x1.5
K20O 315M2	79.5	79.5	315	44	809	628	230	28	35	1116	1260	KK 400 B	315	294	265	M63x1.5
K20O 315M4,6,8	95	79.5	315	44	809	628	230	28	35	1146	1290	KK 400 B	315	294	265	M63x1.5
K20O 315M10,12	95	79.5	315	44	809	628	211	28	35	1146	1290	KK 400 B	315	294	265	M63x1.5
K20O 315L2	79.5	79.5	315	44	809	628	230	28	35	1236	1380	KK 400 B	315	294	265	M63x1.5
K20O 315L4,6,8	95	79.5	315	44	809	628	230	28	35	1266	1410	KK 400 B	315	294	265	M63x1.5
K20O 315LX2	79.5	79.5	315	44	809	628	230	28	35	1356	1500	KK 400 B	315	294	265	M63x1.5
K20O 315LX4	95	79.5	315	44	809	628	230	28	35	1386	1530	KK 400 B	315	294	265	M63x1.5
K20O 315LX6,8	95	79.5	315	44	809	628	230	28	35	1266	1410	KK 400 B	315	294	265	M63x1.5

**) Terminal box left/right

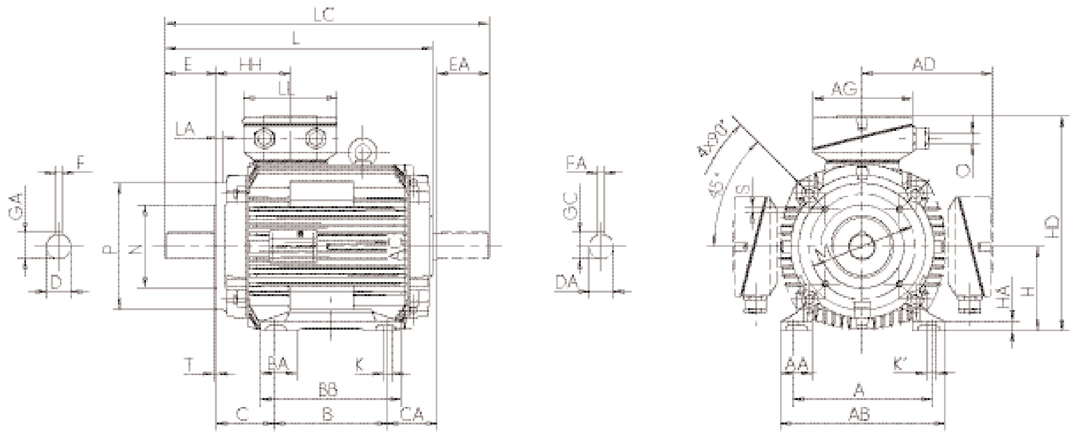
Non-ventilated three-phase motors with squirrel-cage rotor, transnorm version

Size 56 to 160

Convective cooling, cooling method IC 410, degree of protection IP 55

Type of construction IM B34 [IM 2101]

Flange dimensions see page 154/155



Type designation	Flange sizes small	big	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
K200 56K U	FT 65	FT 100	90	18	110	109	98	71	-	86	36	-	11	11	M4	23	23	4	4
K200 56G U	FT 65	FT 100	90	18	110	109	98	71	-	86	36	-	11	11	M4	23	23	4	4
K200 63K U	FT 75	FT 115	100	21	120	124	104	80	-	95	40	-	14	14	M5	30	30	5	5
K200 63G U	FT 75	FT 115	100	21	120	124	104	80	-	95	40	-	14	14	M5	30	30	5	5
K200 71K U	FT 85	FT 130	112	23	135	139	111	90	-	114	45	-	19	19	M6	40	40	6	6
K200 71G U	FT 85	FT 130	112	23	135	139	111	90	-	114	45	-	19	19	M6	40	40	6	6
K200 80K U	FT 100	FT 130	125	26	152	157	119	100	-	124	50	-	22	22	M8	50	50	6	6
K200 80G U	FT 100	FT 130	125	26	152	157	119	100	-	146	50	-	22	22	M8	50	50	6	6
K200 90L U	FT 115	FT 165	140	25	167	177	126	125	-	150	56	-	24	24	M8	50	50	8	8
K200 100S U	FT 130	FT 165	160	32	188	196	136	112	-	171	63	-	28	28	M10	60	60	8	8
K200 100L2,4 U	FT 130	FT 165	160	32	188	196	136	140	-	205	63	-	28	28	M10	60	60	8	8
K200 100L6,8 U	FT 130	FT 165	160	32	188	196	136	140	-	171	63	-	28	28	M10	60	60	8	8
K200 100LX4 U	FT 130	FT 165	160	40	192	196	136	140	-	175	63	-	28	28	M10	60	60	8	8
K200 112M2	FT 130	FT 165	190	45	226	217	178	140	42	172	70	136	32	32	M12	80	80	10	10
K200 112M4,6,8	FT 130	FT 165	190	45	226	217	178	140	42	172	70	116	32	32	M12	80	80	10	10
K200 112MX6,8	FT 130	FT 165	190	45	226	217	178	140	42	172	70	136	32	32	M12	80	80	10	10
K200 132S	FT 165	FT 215	216	50	256	258	199	140	47	180	89	117	38	38	M12	80	80	10	10
K200 132M	FT 165	FT 215	216	50	256	258	199	178	47	218	89	127	38	38	M12	80	80	10	10
K200 160S2	FT 215	FT 265	254	55	296	313	242	178	56	225	108	119	42	42	M16	110	110	12	12
K200 160S4,6,8	FT 215	FT 265	254	55	296	313	242	178	56	225	108	119	48	42	M16	110	110	14	12
K200 160M2	FT 215	FT 265	254	55	296	313	242	210	56	257	108	125	42	42	M16	110	110	12	12
K200 160M4,6,8	FT 215	FT 265	254	55	296	313	242	210	56	257	108	125	48	42	M16	110	110	14	12

*) Centre holes acc. to DIN 332-DS

Dimensions

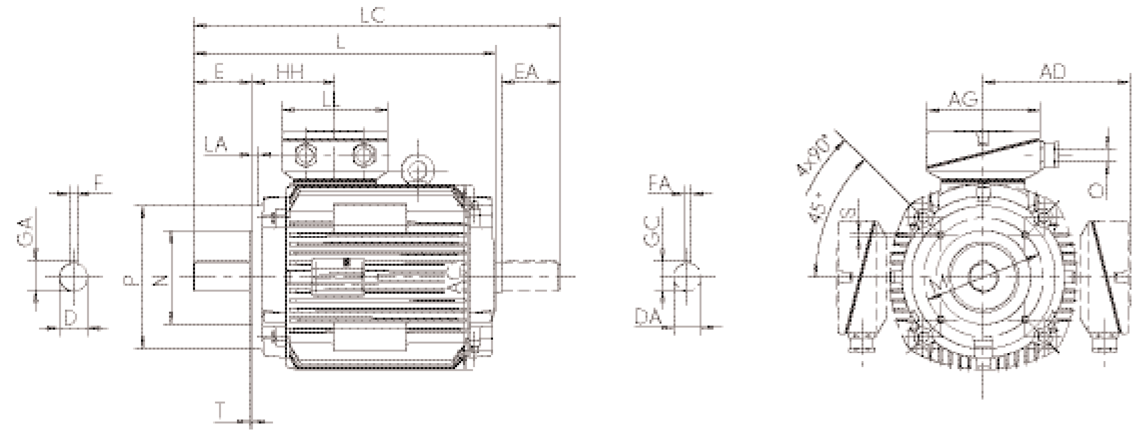
Non-ventilated three-phase motors with squirrel-cage rotor, transnorm version

Size 56 to 160

Convective cooling, cooling method IC 410, degree of protection IP 55

Type of construction IM B14 [IM 3601]

Flange dimensions see page 154/155



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
K200 56K U	12.5	12.5	56	7	154	a.A.	58	6	6	155	a.A.	KA 05	92	92	M20x1.5
K200 56G U	12.5	12.5	56	7	154	a.A.	58	6	6	155	a.A.	KA 05	92	92	M20x1.5
K200 63K U	16	16	63	7,5	167	a.A.	61	7	7	177	a.A.	KA 05	92	92	M20x1.5
K200 63G U	16	16	63	7,5	167	a.A.	61	7	7	177	a.A.	KA 05	92	92	M20x1.5
K200 71K U	21.5	21.5	71	8	182	a.A.	67	7	7	217	a.A.	KA 05	92	92	M20x1.5
K200 71G U	21.5	21.5	71	8	182	a.A.	67	7	7	217	a.A.	KA 05	92	92	M20x1.5
K200 80K U	24.5	24.5	80	9	200	a.A.	70	10	10	241	a.A.	KA 05	92	92	M25x1.5
K200 80G U	24.5	24.5	80	9	200	a.A.	70	10	10	263	a.A.	KA 05	92	92	M25x1.5
K200 90L U	27	27	90	9,5	217	a.A.	75	10	10	279	a.A.	KA 05	92	92	M25x1.5
K200 100S U	31	31	100	11	237	a.A.	77	12	12	314	a.A.	KA 05	92	92	M25x1.5
K200 100L2,4 U	31	31	100	11	237	a.A.	77	12	12	348	a.A.	KA 05	92	92	M25x1.5
K200 100L6,8 U	31	31	100	11	237	a.A.	77	12	12	314	a.A.	KA 05	92	92	M25x1.5
K200 100LX4 U	31	31	100	15	237	a.A.	77	12	12	378	a.A.	KA 05	92	92	M25x1.5
K200 112M2	35	35	112	15	290	237	108	12	12	417	506	KK 25 A	156	145	M32x1.5
K200 112M4,6,8	35	35	112	15	290	237	108	12	12	397	486	KK 25 A	156	145	M32x1.5
K200 112MX6,8	35	35	112	15	290	237	108	12	12	417	506	KK 25 A	156	145	M32x1.5
K200 132S	41	41	132	15	331	279	114	12	12	420	506	KK 25 A	156	145	M32x1.5
K200 132M	41	41	132	15	331	279	114	12	12	468	554	KK 25 A	156	145	M32x1.5
K200 160S2	45	45	160	18	402	336	138	15	20	502	625	KK 63 A	193	167	M40x1.5
K200 160S4,6,8	51.5	45	160	18	402	336	138	15	20	502	625	KK 63 A	193	167	M40x1.5
K200 160M2	45	45	160	18	402	336	138	15	20	540	663	KK 63 A	193	167	M40x1.5
K200 160M4,6,8	51.5	45	160	18	402	336	138	15	20	540	663	KK 63 A	193	167	M40x1.5

**) Terminal box left/right
a.A. on request

LV Asynchronous motors | IEC motors with squirrel-cage rotor | Main catalogue 01-2008

Non-ventilated three-phase motors with squirrel-cage rotor, transnorm version

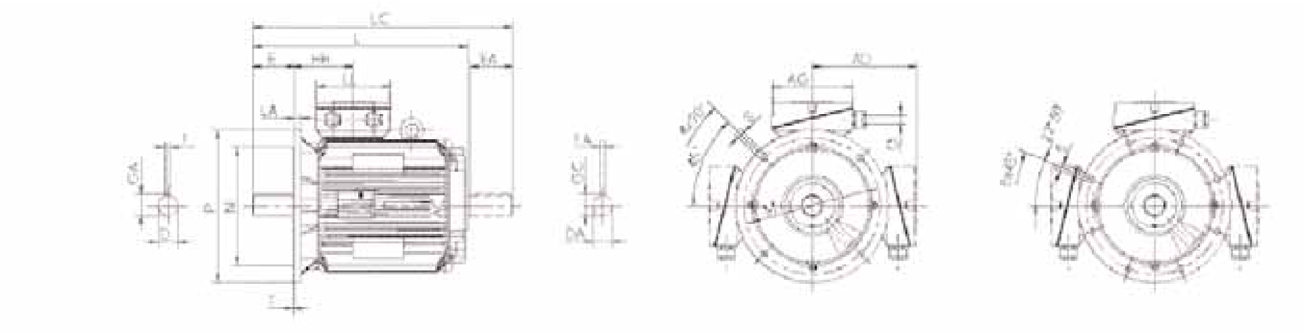
Size 56 to 250

Convective cooling, cooling method IC 410, degree of protection IP 55

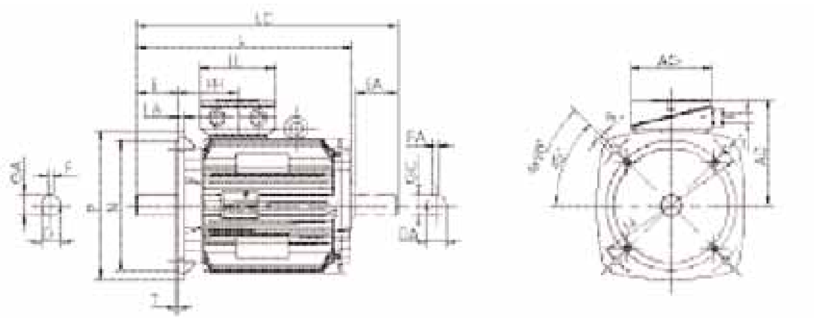
Type of construction IM B5 [IM 3001]

Type of construction IM V1 [IM 3011]

Flange dimensions see page 154/155



Size 160 with crowned flange



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
K20O 56K U	FF 115	109	98	11	11	M4	23	23	4	4	12.5	12.5	56	58	155	a.A.	KA 05	92	92	M20x1.5	4L
K20O 56G U	FF 115	109	98	11	11	M4	23	23	4	4	12.5	12.5	56	58	155	a.A.	KA 05	92	92	M20x1.5	4L
K20O 63K U	FF 130	124	104	14	14	M5	30	30	5	5	16	16	63	61	177	a.A.	KA 05	92	92	M20x1.5	4L
K20O 63G U	FF 130	124	104	14	14	M5	30	30	5	5	16	16	63	61	177	a.A.	KA 05	92	92	M20x1.5	4L
K20O 71K U	FF 165	139	111	19	19	M6	40	40	6	6	21.5	21.5	71	67	217	a.A.	KA 05	92	92	M20x1.5	4L
K20O 71G U	FF 165	139	111	19	19	M6	40	40	6	6	21.5	21.5	71	67	217	a.A.	KA 05	92	92	M20x1.5	4L
K20O 80K U	FF 165	157	119	22	22	M8	50	50	6	6	24.5	24.5	80	70	241	a.A.	KA 05	92	92	M25x1.5	4L
K20O 80G U	FF 165	157	119	22	22	M8	50	50	6	6	24.5	24.5	80	70	263	a.A.	KA 05	92	92	M25x1.5	4L
K20O 90L U	FF 215	177	126	24	24	M8	50	50	8	8	27	27	90	75	279	a.A.	KA 05	92	92	M25x1.5	4L
K20O 100S U	FF 215	196	136	28	28	M10	60	60	8	8	31	31	100	77	314	a.A.	KA 05	92	92	M25x1.5	4L
K20O 100L2,4 U	FF 215	196	136	28	28	M10	60	60	8	8	31	31	100	77	348	a.A.	KA 05	92	92	M25x1.5	4L
K20O 100L6,8 U	FF 215	196	136	28	28	M10	60	60	8	8	31	31	100	77	314	a.A.	KA 05	92	92	M25x1.5	4L
K20O 100LX4 U	FF 215	196	136	28	28	M10	60	60	8	8	31	31	100	77	378	a.A.	KA 05	92	92	M25x1.5	4L
K20O 112M2	FF 265	217	178	32	32	M12	80	80	10	10	35	35	112	108	417	506	KK 25 A	156	145	M32x1.5	4L
K20O 112M4,6,8	FF 265	217	178	32	32	M12	80	80	10	10	35	35	112	108	397	486	KK 25 A	156	145	M32x1.5	4L
K20O 112MX6,8	FF 265	217	178	32	32	M12	80	80	10	10	35	35	112	108	417	506	KK 25 A	156	145	M32x1.5	4L
K20O 132S	FF 300	258	199	38	38	M12	80	80	10	10	41	41	132	114	420	506	KK 25 A	156	145	M32x1.5	4L
K20O 132M	FF 300	258	199	38	38	M12	80	80	10	10	41	41	132	114	468	554	KK 25 A	156	145	M32x1.5	4L
K20O 160S2	FF 300	313	242	42	42	M16	110	110	12	12	45	45	160	138	502	625	KK 63 A	193	167	M40x1.5	4L
K20O 160S4,6,8	FF 300	313	242	48	42	M16	110	110	14	12	51.5	45	160	138	502	625	KK 63 A	193	167	M40x1.5	4L
K20O 160M2	FF 300	313	242	42	42	M16	110	110	12	12	45	45	160	138	540	663	KK 63 A	193	167	M40x1.5	4L
K20O 160M4,6,8	FF 300	313	242	48	42	M16	110	110	14	12	51.5	45	160	138	540	663	KK 63 A	193	167	M40x1.5	4L
K20O 180S2	FF 350	351	261	48	48	M16	110	110	14	14	51.5	51.5	180	147	562	689	KK 63 A	193	167	M40x1.5	4L
K20O 180S4,6,8	FF 350	351	261	55	48	M20	110	110	16	14	59	51.5	180	147	562	689	KK 63 A	193	167	M40x1.5	4L
K20O 180M2	FF 350	351	261	48	48	M16	110	110	14	14	51.5	51.5	180	147	607	734	KK 63 A	193	167	M40x1.5	4L
K20O 180M4,6,8	FF 350	351	261	55	48	M20	110	110	16	14	59	51.5	180	147	607	734	KK 63 A	193	167	M40x1.5	4L
K20O 200M2	FF 400	390	300	55	55	M20	110	110	16	16	59	59	200	168	661	797	KK 100 A	213	207	M50x1.5	4L
K20O 200M4,6,8	FF 400	390	300	60	55	M20	140	110	18	16	64	59	200	168	691	827	KK 100 A	213	207	M50x1.5	4L
K20O 200L2	FF 400	390	300	55	55	M20	110	110	16	16	59	59	200	168	701	837	KK 100 A	213	207	M50x1.5	4L
K20O 200L4,6,8	FF 400	390	300	60	55	M20	140	110	18	16	64	59	200	168	731	867	KK 100 A	213	207	M50x1.5	4L
K20O 225M2	FF 500	440	324	55	55	M20	110	110	16	16	59	59	225	177	707	827	KK 100 A	213	207	M50x1.5	8L
K20O 225M4,6,8	FF 500	440	324	65	55	M20	140	110	18	16	69	59	225	177	737	857	KK 100 A	213	207	M50x1.5	8L
K20O 250S2	FF 500	490	386	65	65	M20	140	140	18	18	69	69	250	206	801	951	KK 200 A	213	207	M50x1.5	8L
K20O 250S4,6,8	FF 500	490	386	75	65	M20	140	140	20	18	79.5	69	250	206	801	951	KK 200 A	213	207	M50x1.5	8L
K20O 250M2	FF 500	490	386	65	65	M20	140	140	18	18	69	69	250	206	801	951	KK 200 A	213	207	M50x1.5	8L
K20O 250M4	FF 500	490	386	75	65	M20	140	140	20	18	79.5	69	250	206	847	997	KK 200 A	213	207	M50x1.5	8L
K20O 250M6,8	FF 500	490	386	65	65	M20	140	140	18	18	69	69	250	206	801	951	KK 200 A	213	207	M50x1.5	8L

*) Centre holes acc. to DIN 332-DS
a.A. on request

Non-ventilated three-phase motors with squirrel-cage rotor, transnorm version

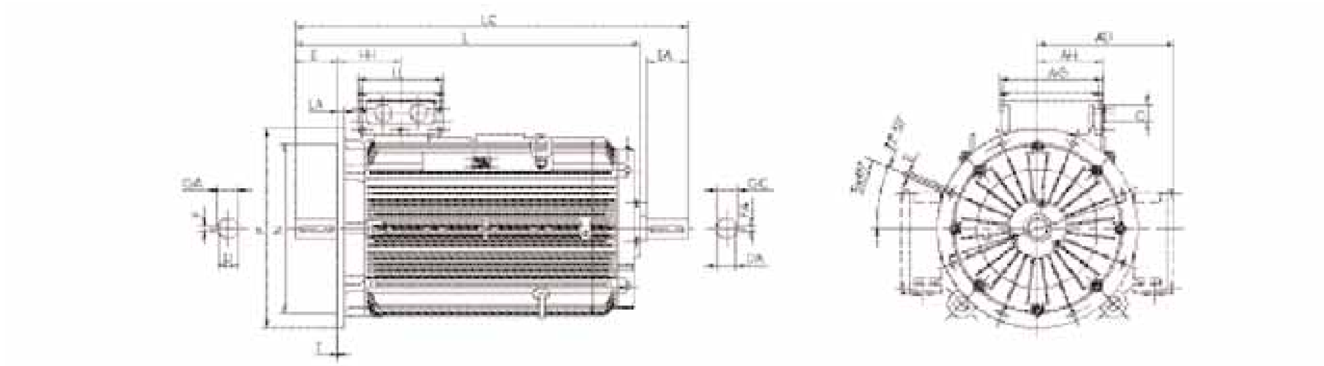
Size 280, 315

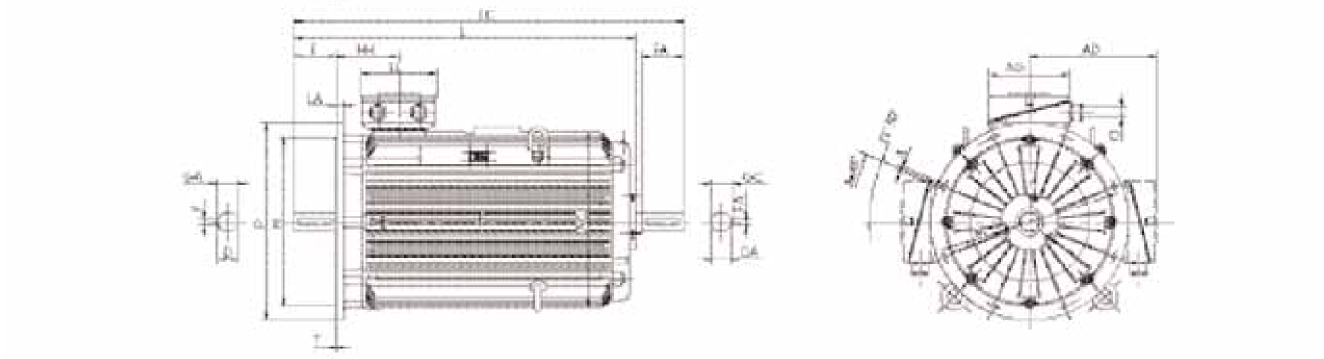
Convective cooling, cooling method IC 410, degree of protection IP 55

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

Type of construction IM V1 [IM 3011]

Flange dimensions see page 154/155





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
K20O 280S2	FF 600	550	416	70	70	M20	140	140	20	20	74.5	74.5	280	211	879	1026	KK 200 A	282	242	-	M63x1.5
K20O 280S4,6,8	FF 600	550	416	80	70	M20	170	140	22	20	85	74.5	280	211	909	1056	KK 200 A	282	242	-	M63x1.5
K20O 280M2	FF 600	550	416	70	70	M20	140	140	20	20	74.5	74.5	280	211	934	1081	KK 200 A	282	242	-	M63x1.5
K20O 280M4,6,8	FF 600	550	416	80	70	M20	170	140	22	20	85	74.5	280	211	964	1111	KK 200 A	282	242	-	M63x1.5
K20O 315S2	FF 600	550	416	75	70	M20	140	140	20	20	79.5	74.5	315	211	1014	1161	KK 200 A	282	242	-	M63x1.5
K20O 315S4	FF 600	550	416	90	70	M24	170	140	25	20	95	74.5	315	211	1044	1191	KK 200 A	282	242	-	M63x1.5
K20O 315S6,8	FF 600	550	416	90	70	M24	170	140	25	20	95	74.5	315	211	964	1111	KK 200 A	282	242	-	M63x1.5
K20O 315M2	FF 600	610	494	75	75	M20	140	140	20	20	79.5	79.5	315	230	1116	1260	KK 400 A	315	294	265	M63x1.5
K20O 315M4,6,8	FF 600	610	494	90	75	M24	170	140	25	20	95	79.5	315	230	1146	1290	KK 400 B	315	294	265	M63x1.5
K20O 315M10,12	FF 600	550	494	90	75	M24	170	140	25	20	95	79.5	315	211	1146	1290	KK 400 B	315	294	265	M63x1.5
K20O 315L2	FF 600	610	494	75	75	M20	140	140	20	20	79.5	79.5	315	230	1236	1380	KK 400 B	315	294	265	M63x1.5
K20O 315L4,6,8	FF 600	610	494	90	75	M24	170	140	25	20	95	79.5	315	230	1266	1410	KK 400 B	315	294	265	M63x1.5
K20O 315LX2	FF 600	610	494	75	75	M20	140	140	20	20	79.5	79.5	315	230	1356	1500	KK 400 B	315	294	265	M63x1.5
K20O 315LX4	FF 600	610	494	90	75	M24	170	140	25	20	95	79.5	315	230	1386	1530	KK 400 B	315	294	265	M63x1.5
K20O 315LX6,8	FF 600	610	494	90	75	M24	170	140	25	20	95	79.5	315	230	1266	1410	KK 400 B	315	294	265	M63x1.5

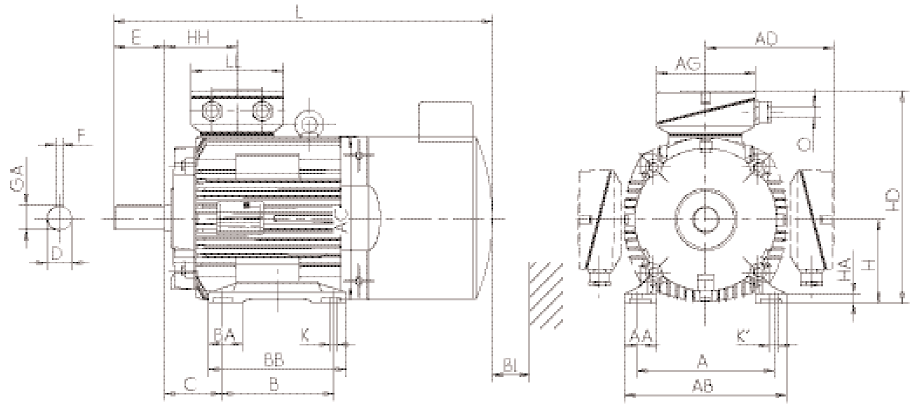
*) Centre holes acc. to DIN 332-DS

Forced-ventilated three-phase motors with squirrel-cage rotor

Size 56 to 280

with forced ventilation, cooling method IC 416, 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	D d	DB*)	E l	F u
K21F 71K2,4,6,8	FF 130	112	32	138	124	-	90	-	116	45	14	M5	30	5
K21F 71G2,4,6,8	FF 130	112	32	138	124	-	90	-	116	45	14	M5	30	5
K21F 80K2,4,6,8	FF 165	125	38	168	139	-	100	-	125	50	19	M6	40	6
K21F 80G2,4,6,8	FF 165	125	38	168	139	-	100	-	125	50	19	M6	40	6
K21F 90S2,4,6,8	FF 165	140	40	178	157	-	100	-	130	56	24	M8	50	8
K21F 90L2,4,6,8	FF 165	140	40	178	157	-	125	-	155	56	24	M8	50	8
K21F 100L2,4,6,8	FF 215	160	45	192	177	-	140	-	175	63	28	M10	60	8
K21F 100LX4,8	FF 215	160	32	188	196	-	140	-	171	63	28	M10	60	8
K21F 112M2	FF 215	190	50	224	196	-	140	-	180	70	28	M10	60	8
K21F 112M6,8	FF 215	190	50	224	196	-	140	-	180	70	28	M10	60	8
K21F 112MX2	FF 215	190	50	224	196	-	140	-	180	70	28	M10	60	8
K21F 112M4	FF 215	190	50	224	196	-	140	-	180	70	28	M10	60	8
K21F 132S2T	FF 265	216	50	256	196	-	140	-	180	89	38	M12	80	10
K21F 132S4T	FF 265	216	50	256	196	-	140	-	180	89	38	M12	80	10
K21F 132S2	FF 265	216	50	256	237	178	140	55	180	89	38	M12	80	10
K21F 132SX2	FF 265	216	50	256	237	178	140	55	180	89	38	M12	80	10
K21F 132S4,6,8	FF 265	216	50	256	237	178	140	55	180	89	38	M12	80	10
K21F 132M4	FF 265	216	50	256	281	199	178	55	218	89	38	M12	80	10
K21F 132MX6	FF 265	216	50	256	281	199	178	55	218	89	38	M12	80	10
K21F 132M6,8	FF 265	216	50	256	237	178	178	55	218	89	38	M12	80	10
K21F 160M2	FF 300	254	55	296	281	214	210	60	257	108	42	M16	110	12
K21F 160M4,6,8	FF 300	254	55	296	281	214	210	60	257	108	42	M16	110	12
K21F 160MX8	FF 300	254	55	296	281	199	210	60	257	108	42	M16	110	12
K21F 160MX2	FF 300	254	55	296	341	242	210	60	257	108	42	M16	110	12
K21F 160L2,4,6,8	FF 300	254	55	296	341	242	254	60	301	108	42	M16	110	12
K21F 180M2	FF 300	279	62	328	385	261	241	65	288	121	48	M16	110	14
K21F 180M4	FF 300	279	62	328	341	242	241	65	288	121	48	M16	110	14
K21F 180L4	FF 300	279	62	328	385	261	279	65	326	121	48	M16	110	14
K21F 180L6,8	FF 300	279	62	328	341	242	279	65	326	121	48	M16	110	14
K21F 200L2,4,6,8	FF 350	318	70	372	385	261	305	70	360	133	55	M20	110	16
K21F 200LX6	FF 350	318	70	372	385	261	305	70	360	133	55	M20	110	16
K21F 200LX2	FF 350	318	70	372	425	300	305	70	360	133	55	M20	110	16
K21F 225S4,8	FF 400	356	75	413	425	300	286	75	343	149	60	M20	140	18
K21F 225M2	FF 400	356	75	413	425	300	311	75	368	149	55	M20	110	16
K21F 225M4	FF 400	356	75	413	425	300	311	75	368	149	60	M20	140	18
K21F 225M6,8	FF 400	356	75	413	425	300	311	75	368	149	60	M20	140	18
K21F 250M2	FF 500	406	84	471	481	358	349	84	412	168	60	M20	140	18
K21F 250M4,6,8	FF 500	406	84	471	481	358	349	84	412	168	65	M20	140	18
K21F 280S2	FF 500	457	94	522	540	386	368	96	431	190	65	M20	140	18
K21F 280S4,6,8	FF 500	457	94	522	540	386	368	96	431	190	75	M20	140	20
K21F 280M2	FF 500	457	94	522	540	386	419	96	482	190	65	M20	140	18
K21F 280M4,6,8	FF 500	457	94	522	540	386	419	96	482	190	75	M20	140	20

*) Centre holes acc. to DIN 332-DS

Dimensions

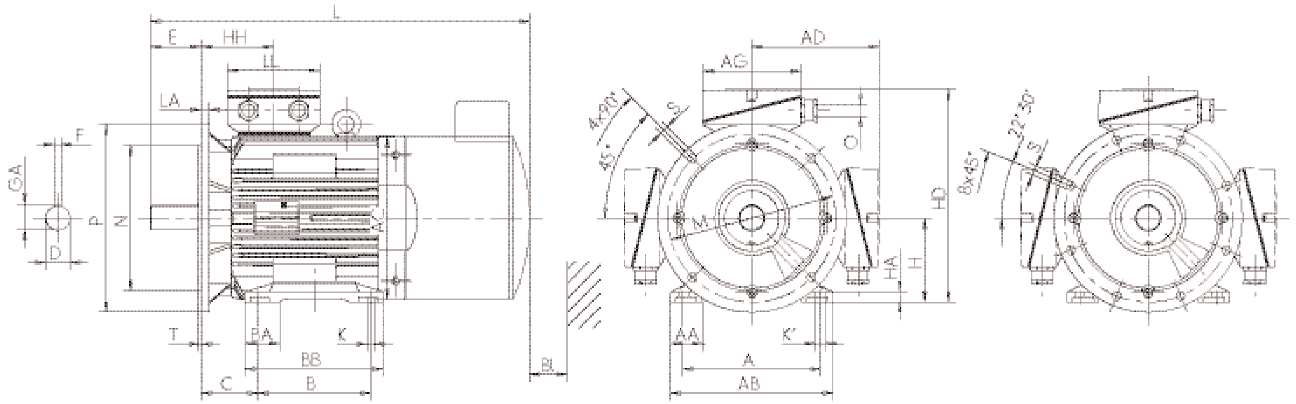
Forced-ventilated three-phase motors with squirrel-cage rotor

Size 56 to 280

with forced ventilation, cooling method IC 416, degree of protection IP 55

Type of construction IM B35 [IM 2001]

Flange dimensions see page 154/155



Type designation	GA t	H h	HA c	HD p	HD**) p	HH A	K s	K' s'	L k	KK Type	AG	LL	O	Hole pattern	Bl. Bl
K21F 71K2,4,6,8	16	71	11	175	a.A.	61	8	8	308	KA 05	92	92	M20x1.5	4L	14
K21F 71G2,4,6,8	16	71	11	175	a.A.	61	8	8	308	KA 05	92	92	M20x1.5	4L	14
K21F 80K2,4,6,8	21.5	80	12	191	a.A.	67	10	10	354	KA 05	92	92	M20x1.5	4L	16
K21F 80G2,4,6,8	21.5	80	12	191	a.A.	67	10	10	354	KA 05	92	92	M20x1.5	4L	16
K21F 90S2,4,6,8	27	90	14	210	a.A.	70	10	10	382	KA 05	92	92	M25x1.5	4L	16
K21F 90L2,4,6,8	27	90	14	210	a.A.	70	10	10	404	KA 05	92	92	M25x1.5	4L	16
K21F 100L2,4,6,8	31	100	15	227	a.A.	75	12	12	437	KA 05	92	92	M25x1.5	4L	18
K21F 100LX4,8	31	100	11	237	a.A.	77	12	12	461	KA 05	92	92	M25x1.5	4L	20
K21F 112M2	31	112	18	249	a.A.	77	12	12	463	KA 05	92	92	M25x1.5	4L	20
K21F 112M6,8	31	112	18	249	a.A.	77	12	12	463	KA 05	92	92	M25x1.5	4L	20
K21F 112MX2	31	112	18	249	a.A.	77	12	12	497	KA 05	92	92	M25x1.5	4L	20
K21F 112M4	31	112	18	249	a.A.	77	12	12	497	KA 05	92	92	M25x1.5	4L	20
K21F 132S2T	41	132	18	287	a.A.	105	12	12	534	KA 05-13	104	112	M32x1.5	4L	20
K21F 132S4T	41	132	18	287	a.A.	105	12	12	564	KA 05-13	104	112	M32x1.5	4L	20
K21F 132S2	41	132	16	310	257	108	12	12	594	KK 25 A	156	145	M32x1.5	4L	35
K21F 132SX2	41	132	16	310	257	108	12	12	614	KK 25 A	156	145	M32x1.5	4L	35
K21F 132S4,6,8	41	132	16	310	257	108	12	12	594	KK 25 A	156	145	M32x1.5	4L	35
K21F 132M4	41	132	16	331	279	114	12	12	621	KK 25 A	156	145	M32x1.5	4L	35
K21F 132MX6	41	132	16	331	279	114	12	12	621	KK 25 A	156	145	M32x1.5	4L	35
K21F 132M6,8	41	132	16	310	257	108	12	12	614	KK 25 A	156	145	M32x1.5	4L	35
K21F 160M2	45	160	18	374	307	114	15	15	699	KK 63 A	193	167	M40x1.5	4L	35
K21F 160M4,6,8	45	160	18	374	307	114	15	15	699	KK 63 A	193	167	M40x1.5	4L	35
K21F 160MX8	45	160	18	374	307	114	15	15	621	KK 63 A	193	167	M40x1.5	4L	35
K21F 160MX2	45	160	18	402	336	138	15	20	747	KK 63 A	193	167	M40x1.5	4L	35
K21F 160L2,4,6,8	45	160	18	402	336	138	15	20	785	KK 63 A	193	167	M40x1.5	4L	35
K21F 180M2	51.5	180	20	441	369	147	15	20	808	KK 63 A	193	167	M40x1.5	4L	35
K21F 180M4	51.5	180	20	422	356	138	15	20	785	KK 63 A	193	167	M40x1.5	4L	35
K21F 180L4	51.5	180	20	441	369	147	15	20	853	KK 63 A	193	167	M40x1.5	4L	35
K21F 180L6,8	51.5	180	20	422	369	138	15	20	785	KK 63 A	193	167	M40x1.5	4L	35
K21F 200L2,4,6,8	59	200	22	461	389	147	19	25	853	KK 63 A	193	167	M40x1.5	4L	35
K21F 200LX6	59	200	22	461	389	147	19	25	853	KK 63 A	193	167	M40x1.5	4L	35
K21F 200LX2	59	200	22	500	417	168	19	25	922	KK 100 A	213	207	M50x1.5	4L	35
K21F 225S4,8	64	225	25	525	442	168	19	25	951	KK 100 A	213	207	M50x1.5	8L	40
K21F 225M2	59	225	25	525	442	168	19	25	961	KK 100 A	213	207	M50x1.5	8L	40
K21F 225M4	64	225	25	525	442	168	19	25	991	KK 100 A	213	207	M50x1.5	8L	40
K21F 225M6,8	64	225	25	525	442	168	19	25	951	KK 100 A	213	207	M50x1.5	8L	40
K21F 250M2	64	250	28	608	484	177	24	30	1017	KK 200 A	282	242	M63x1.5	8L	45
K21F 250M4,6,8	69	250	28	608	484	177	24	30	1017	KK 200 A	282	242	M63x1.5	8L	45
K21F 280S2	69	280	32	666	546	206	24	30	1119	KK 200 A	282	242	M63x1.5	8L	50
K21F 280S4,6,8	79.5	280	32	666	546	206	24	30	1119	KK 200 A	282	242	M63x1.5	8L	50
K21F 280M2	69	280	32	666	546	206	24	30	1165	KK 200 A	282	242	M63x1.5	8L	50
K21F 280M4,6,8	79.5	280	32	666	546	206	24	30	1165	KK 200 A	282	242	M63x1.5	8L	50

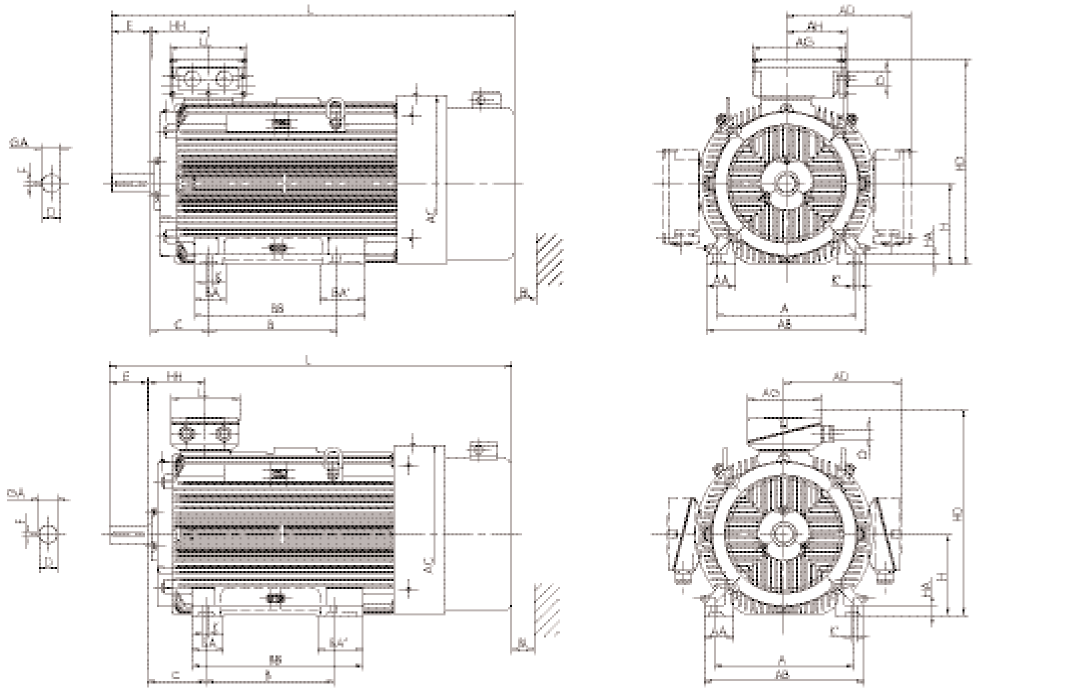
**) Terminal box left/right
a.A. on request

Forced-ventilated three-phase motors with squirrel-cage rotor

Size 315

with forced ventilation, cooling method IC 416, 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	D d	DB*)	E l	F u
K21F 315S2	FF 600	508	126	590	609	416	406	120	-	503	216	65	M20	140	18
K21F 315S4,6,8	FF 600	508	126	590	609	416	406	120	-	503	216	80	M20	170	22
K21F 315M2	FF 600	508	126	590	609	416	457	120	-	554	216	65	M20	140	18
K21F 315M4,6,8	FF 600	508	126	590	609	416	457	120	-	554	216	80	M20	170	22
K21F 315MX2	FF 600	508	126	590	609	416	457	120	150	554	216	65	M20	140	18
K21F 315MX4	FF 600	508	126	590	609	416	457	120	150	554	216	80	M20	170	22
K21F 315MX6,8	FF 600	508	126	590	609	416	457	120	150	554	216	80	M20	170	22
K21F 315MX10,12	FF 600	508	126	590	609	416	457	120	150	554	216	80	M20	170	22
K21F 315MY2	FF 600	508	110	590	674	494	457	120	-	573	216	65	M20	140	18
K21F 315MY4,6,8	FF 600	508	110	590	674	494	457	120	-	573	216	80	M20	170	22
K21F 315L2	FF 600	508	110	590	674	494	508	120	-	624	216	65	M20	140	18
K21F 315L4,6,8	FF 600	508	110	590	674	494	508	120	-	624	216	80	M20	170	22
K21F 315LX2	FF 600	508	110	590	674	494	508	120	-	624	216	65	M20	140	18
K21F 315LX4	FF 600	508	110	590	674	494	508	120	-	624	216	80	M20	170	22
K21F 315LX6,8	FF 600	508	110	590	674	494	508	120	-	624	216	80	M20	170	22

*) Centre holes acc. to DIN 332-DS

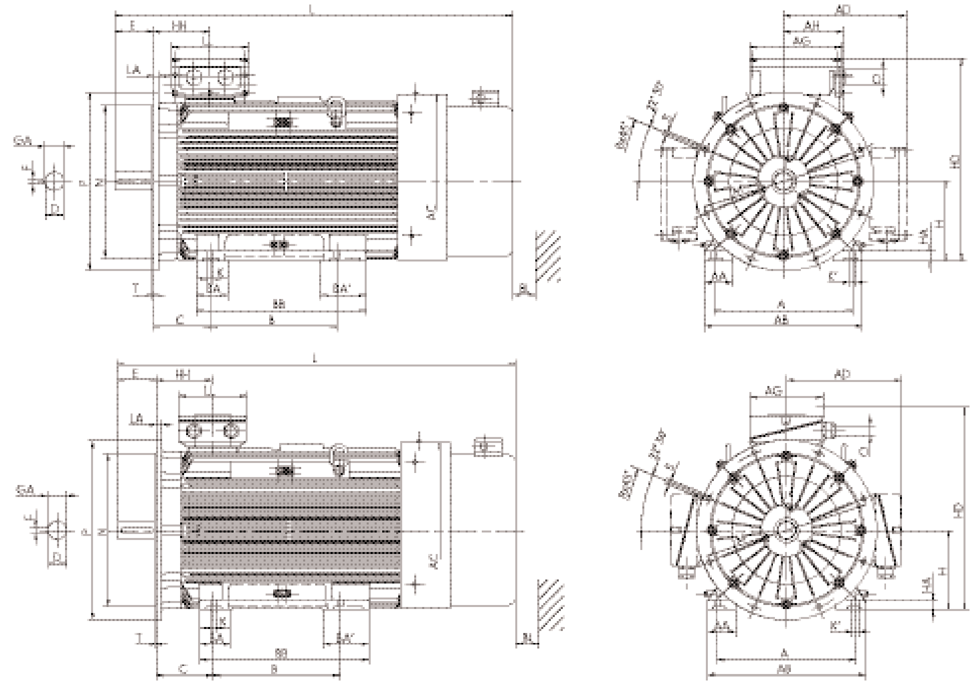
Forced-ventilated three-phase motors with squirrel-cage rotor

Size 315

with forced ventilation, cooling method IC 416, degree of protection IP 55

Type of construction IM B35 [IM 2001]

Flange dimensions see page 154/155



Type designation	GA t	H h	HA c	HD p	HD**) p	HH A	K s	K' s'	L k	KK Type	AG x	LL z	AH -	O r	Bl. Bl
K21F 315S2	69	315	44	731	595	211	28	35	1194	KK 200 A	282	242	-	M63x1.5	55
K21F 315S4,6,8	85	315	44	731	595	211	28	35	1224	KK 200 A	282	242	-	M63x1.5	55
K21F 315M2	69	315	44	731	595	211	28	35	1249	KK 200 A	282	242	-	M63x1.5	55
K21F 315M4,6,8	85	315	44	731	595	211	28	35	1279	KK 200 A	282	242	-	M63x1.5	55
K21F 315MX2	69	315	44	731	595	211	28	35	1329	KK 200 A	282	242	-	M63x1.5	55
K21F 315MX4	85	315	44	731	595	211	28	35	1359	KK 200 A	282	242	-	M63x1.5	55
K21F 315MX6,8	85	315	44	731	595	211	28	35	1279	KK 200 A	282	242	-	M63x1.5	55
K21F 315MX10,12	85	315	44	731	595	211	28	35	1279	KK 200 A	282	242	-	M63x1.5	55
K21F 315MY2	69	315	44	809	628	230	28	35	1419	KK 400 B	315	294	265	M63x1.5	55
K21F 315MY4,6,8	85	315	44	809	628	230	28	35	1449	KK 400 B	315	294	265	M63x1.5	55
K21F 315L2	69	315	44	809	628	230	28	35	1539	KK 400 B	315	294	265	M63x1.5	55
K21F 315L4,6,8	85	315	44	809	628	230	28	35	1569	KK 400 B	315	294	265	M63x1.5	55
K21F 315LX2	69	315	44	809	628	230	28	35	1659	KK 400 B	315	294	265	M63x1.5	55
K21F 315LX4	85	315	44	809	628	230	28	35	1689	KK 400 B	315	294	265	M63x1.5	55
K21F 315LX6,8	85	315	44	809	628	230	28	35	1569	KK 400 B	315	294	265	M63x1.5	55

**) Terminal box left/right

Forced-ventilated three-phase motors with squirrel-cage rotor

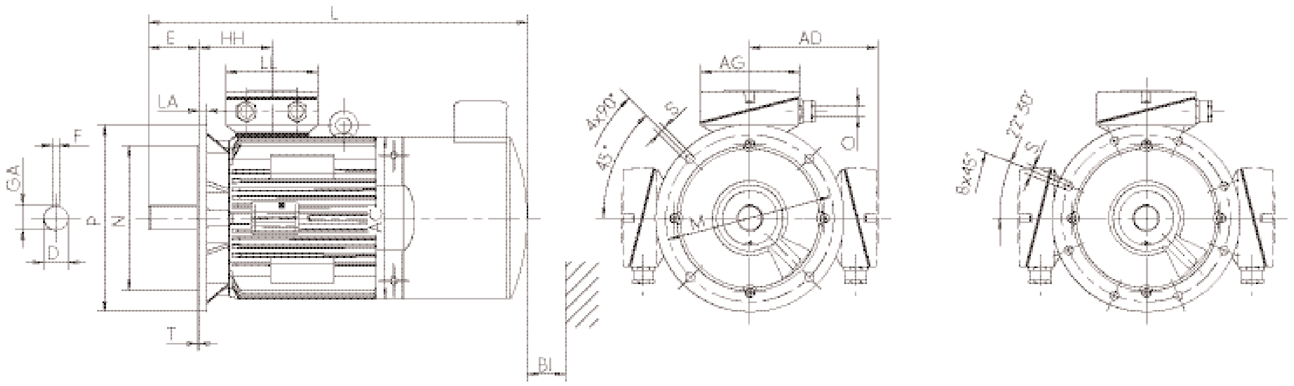
Size 56 to 280

with forced ventilation, cooling method IC 416, degree of protection IP 55

Type of construction IM B5 [IM 3001]

Type of construction IM V1 [IM 3011]

Flange dimensions see page 154/155



Type designation	Flange sizes	AC g	AD g1	D d	DB*)	E l	F u	GA t	H h	HH A	L k	KK Type	AG	LL	O	Hole pattern	Bl. Bl
K21F 71K2,4,6,8	FF 130	124	-	14	M5	30	5	16	71	61	308	KA 05	92	92	M20x1.5	4L	14
K21F 71G2,4,6,8	FF 130	124	-	14	M5	30	5	16	71	61	308	KA 05	92	92	M20x1.5	4L	14
K21F 80K2,4,6,8	FF 165	139	-	19	M6	40	6	21.5	80	67	354	KA 05	92	92	M20x1.5	4L	16
K21F 80G2,4,6,8	FF 165	139	-	19	M6	40	6	21.5	80	67	354	KA 05	92	92	M20x1.5	4L	16
K21F 90S2,4,6,8	FF 165	157	-	24	M8	50	8	27	90	70	382	KA 05	92	92	M25x1.5	4L	16
K21F 90L2,4,6,8	FF 165	157	-	24	M8	50	8	27	90	70	404	KA 05	92	92	M25x1.5	4L	16
K21F 100L2,4,6,8	FF 215	177	-	28	M10	60	8	31	100	75	437	KA 05	92	92	M25x1.5	4L	18
K21F 100LX4,8	FF 215	196	-	28	M10	60	8	31	100	77	461	KA 05	92	92	M25x1.5	4L	20
K21F 112M2	FF 215	196	-	28	M10	60	8	31	112	77	463	KA 05	92	92	M25x1.5	4L	20
K21F 112M6,8	FF 215	196	-	28	M10	60	8	31	112	77	463	KA 05	92	92	M25x1.5	4L	20
K21F 112MX2	FF 215	196	-	28	M10	60	8	31	112	77	497	KA 05	92	92	M25x1.5	4L	20
K21F 112M4	FF 215	196	-	28	M10	60	8	31	112	77	497	KA 05	92	92	M25x1.5	4L	20
K21F 132S2T	FF 265	196	-	38	M12	80	10	41	132	105	534	KA 05-13	104	112	M32x1.5	4L	20
K21F 132S4T	FF 265	196	-	38	M12	80	10	41	132	105	564	KA 05-13	104	112	M32x1.5	4L	20
K21F 132S2	FF 265	237	178	38	M12	80	10	41	132	108	595	KK 25 A	156	145	M32x1.5	4L	35
K21F 132SX2	FF 265	237	178	38	M12	80	10	41	132	108	615	KK 25 A	156	145	M32x1.5	4L	35
K21F 132S4,6,8	FF 265	237	178	38	M12	80	10	41	132	108	595	KK 25 A	156	145	M32x1.5	4L	35
K21F 132M4	FF 265	281	199	38	M12	80	10	41	132	114	622	KK 25 A	156	145	M32x1.5	4L	35
K21F 132MX6	FF 265	281	199	38	M12	80	10	41	132	114	622	KK 25 A	156	145	M32x1.5	4L	35
K21F 132M6,8	FF 265	237	178	38	M12	80	10	41	132	108	615	KK 25 A	156	145	M32x1.5	4L	35
K21F 160M2	FF 300	281	214	42	M16	110	12	45	160	114	700	KK 63 A	193	167	M40x1.5	4L	35
K21F 160M4,6,8	FF 300	281	214	42	M16	110	12	45	160	114	700	KK 63 A	193	167	M40x1.5	4L	35
K21F 160MX8	FF 300	281	199	42	M16	110	12	45	160	114	700	KK 63 A	193	167	M40x1.5	4L	35
K21F 160MX2	FF 300	341	242	42	M16	110	12	45	160	138	748	KK 63 A	193	167	M40x1.5	4L	35
K21F 160L2,4,6,8	FF 300	341	242	42	M16	110	12	45	160	138	786	KK 63 A	193	167	M40x1.5	4L	35
K21F 180M2	FF 300	385	261	48	M16	110	14	51.5	180	147	809	KK 63 A	193	167	M40x1.5	4L	35
K21F 180M4	FF 300	341	242	48	M16	110	14	51.5	180	138	786	KK 63 A	193	167	M40x1.5	4L	35
K21F 180L4	FF 300	385	261	48	M16	110	14	51.5	180	147	854	KK 63 A	193	167	M40x1.5	4L	35
K21F 180L6,8	FF 300	341	242	48	M16	110	14	51.5	180	138		KK 63 A	193	167	M40x1.5	4L	35
K21F 200L2,4,6,8	FF 350	385	261	55	M20	110	16	59	200	147	854	KK 63 A	193	167	M40x1.5	4L	35
K21F 200LX6	FF 350	385	261	55	M20	110	16	59	200	147	854	KK 63 A	193	167	M40x1.5	4L	35
K21F 200LX2	FF 350	425	300	55	M20	110	16	59	200	168	922	KK 100 A	213	207	M50x1.5	4L	35
K21F 225S4,8	FF 400	425	300	60	M20	140	18	64	225	168	952	KK 100 A	213	207	M50x1.5	8L	40
K21F 225M2	FF 400	425	300	55	M20	110	16	59	225	168	962	KK 100 A	213	207	M50x1.5	8L	40
K21F 225M4	FF 400	425	300	60	M20	140	18	64	225	168	992	KK 100 A	213	207	M50x1.5	8L	40
K21F 225M6,8	FF 400	425	300	60	M20	140	18	64	225	168	952	KK 100 A	213	207	M50x1.5	8L	40
K21F 250M2	FF 500	481	358	60	M20	140	18	64	250	177	1017	KK 200 A	282	242	M63x1.5	8L	45
K21F 250M4,6,8	FF 500	481	358	65	M20	140	18	69	250	177	1017	KK 200 A	282	242	M63x1.5	8L	45
K21F 280S2	FF 500	540	386	65	M20	140	18	69	280	206	1119	KK 200 A	282	242	M63x1.5	8L	50
K21F 280S4,6,8	FF 500	540	386	75	M20	140	20	79.5	280	206	1119	KK 200 A	282	242	M63x1.5	8L	50
K21F 280M2	FF 500	540	386	65	M20	140	18	69	280	206	1165	KK 200 A	282	242	M63x1.5	8L	50
K21F 280M4,6,8	FF 500	540	386	75	M20	140	20	79.5	280	206	1165	KK 200 A	282	242	M63x1.5	8L	50

*) Centre holes acc. to DIN 332-DS

Forced-ventilated three-phase motors with squirrel-cage rotor

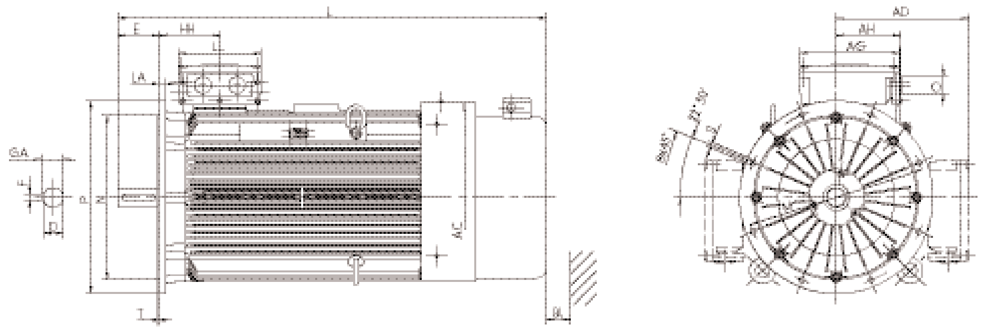
Size 315

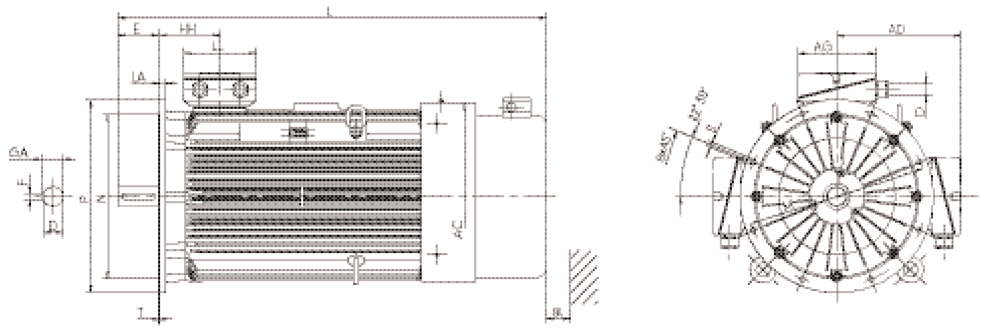
with forced ventilation, cooling method IC 416, degree of protection IP 55

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

Type of construction IM V1 [IM 3011]

Flange dimensions see page 154/155





Type designation	Flange sizes	AC g	AD g1	D d	DB*)	E l	F u	GA t	H h	HH A	L k	KK Type	AG x	LL z	AH -	O r	Bl. Bl
K21F 315S2	FF 600	609	416	65	M20	140	18	69	315	211	1194	KK 200 A	282	242	-	M63x1.5	55
K21F 315S4,6,8	FF 600	609	416	80	M20	170	22	85	315	211	1224	KK 200 A	282	242	-	M63x1.5	55
K21F 315M2	FF 600	609	416	65	M20	140	18	69	315	211	1249	KK 200 A	282	242	-	M63x1.5	55
K21F 315M4,6,8	FF 600	609	416	80	M20	170	22	85	315	211	1279	KK 200 A	282	242	-	M63x1.5	55
K21F 315MX2	FF 600	609	416	65	M20	140	18	69	315	211	1329	KK 200 A	282	242	-	M63x1.5	55
K21F 315MX4	FF 600	609	416	80	M20	170	22	85	315	211	1359	KK 200 A	282	242	-	M63x1.5	55
K21F 315MX6,8	FF 600	609	416	80	M20	170	22	85	315	211	1279	KK 200 A	282	242	-	M63x1.5	55
K21F 315MX10,12	FF 600	609	416	80	M20	170	22	85	315	211	1279	KK 200 A	282	242	-	M63x1.5	55
K21F 315MY2	FF 600	674	498	65	M20	140	18	69	315	230	1419	KK 400 B	315	294	265	M63x1.5	55
K21F 315MY4,6,8	FF 600	674	498	80	M20	170	22	85	315	230	1449	KK 400 B	315	294	265	M63x1.5	55
K21F 315L2	FF 600	674	498	65	M20	140	18	69	315	230	1539	KK 400 B	315	294	265	M63x1.5	55
K21F 315L4,6,8	FF 600	674	498	80	M20	170	22	85	315	230	1569	KK 400 B	315	294	265	M63x1.5	55
K21F 315LX2	FF 600	674	481	65	M20	140	18	69	315	230	1659	KK 400 B	315	294	265	M63x1.5	55
K21F 315LX4	FF 600	674	481	80	M20	170	22	85	315	230	1689	KK 400 B	315	294	265	M63x1.5	55
K21F 315LX6,8	FF 600	674	498	80	M20	170	22	85	315	230	1569	KK 400 B	315	294	265	M63x1.5	55

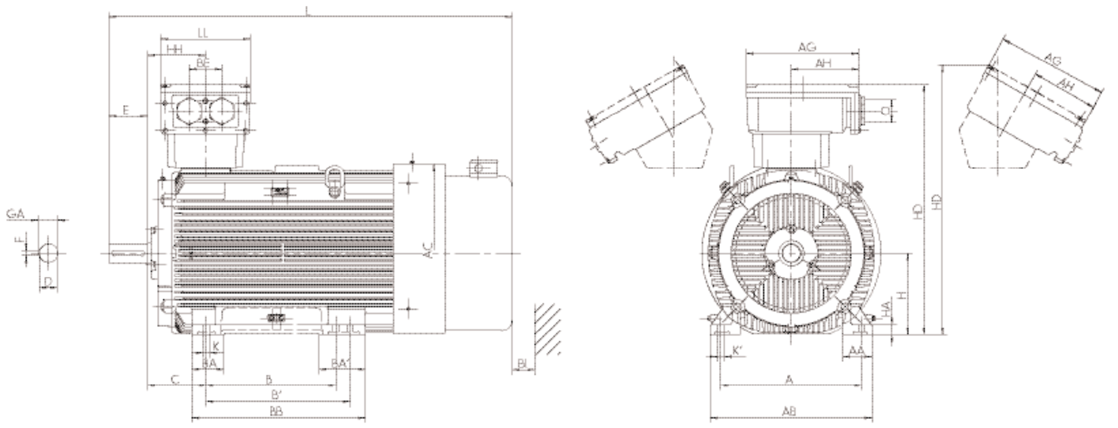
*) Centre holes acc. to DIN 332-DS

Forced-ventilated three-phase motors with squirrel-cage rotor

Size 355

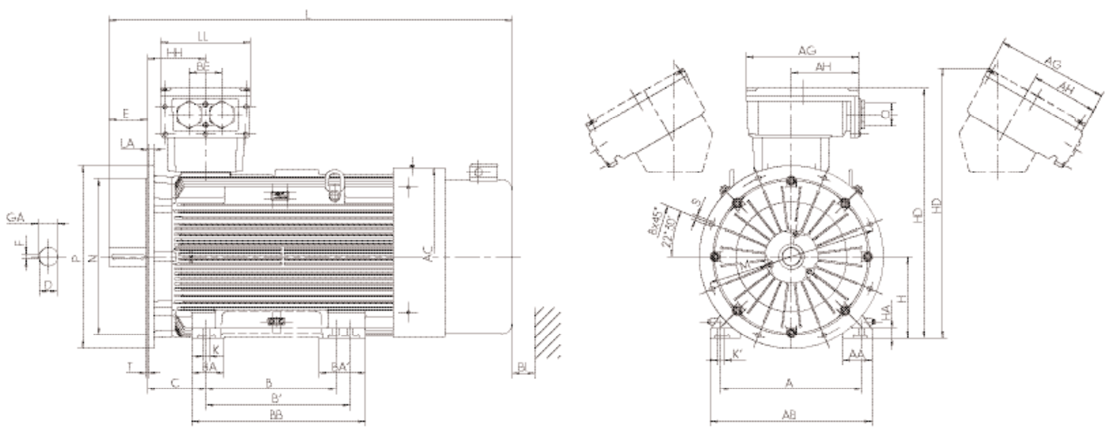
with forced ventilation, cooling method IC 416, degree of protection IP 55

Type of construction IM B3 [IM 1001]



Type of construction IM B35 [IM 2001]

Flange dimensions see page 154/155



Type designation	Flange sizes	A b	AA n	AB f	AC g	B a	BA m	BA' m1	BB e	C w1	D d	DB*)	E l	F u	GA t
K22F 355MY2,M2	FF 740	610	130	700	768	560	140	200	750	254	80	M20	170	22	85
K22F 355MY4,6,8	FF 740	610	130	700	768	560	140	200	750	254	100	M24	210	28	106
K22F 355M4	FF 740	610	130	700	768	560	140	200	750	254	100	M24	210	28	106
K22F 355M6,8	FF 740	610	130	700	768	560	140	200	750	254	100	M24	210	28	106
K22F 355MX6,8	FF 740	610	130	700	768	560	140	200	750	254	100	M24	210	28	106
K22F 355MX2	FF 740	610	130	700	768	560	140	200	750	254	80	M20	170	22	85
K22F 355LY2,L2	FF 740	610	130	700	768	630	140	200	750	254	80	M20	170	22	85
K22F 355MX4	FF 740	610	130	700	768	560	140	200	750	254	100	M24	210	28	106
K22F 355LY4,6,8,L4	FF 740	610	130	700	768	630	140	200	750	254	100	M24	210	28	106

Type designation	H h	HA c	HD p	HD**) p	HH A	K s	K' s'	L k	KK Type	AG x	LL z	AH -	BE -	O r	Bl. Bl
K22F 355MY2,M2	355	44	1091	1172	250	28	35	1890	KK 630 A	496	390	301	140	M72x2	60
K22F 355MY4,6,8	355	44	1091	1172	250	28	35	1890	KK 630 A	496	390	301	140	M72x2	60
K22F 355M4	355	44	1091	1172	250	28	35	1890	KK 630 A	496	390	301	140	M72x2	60
K22F 355M6,8	355	44	1091	1172	250	28	35	1890	KK 630 A	496	390	301	140	M72x2	60
K22F 355MX6,8	355	44	1091	1172	327	28	35	1890	KK 630 A	496	390	301	140	M72x2	60
K22F 355MX2	355	44	1083	1174	327	28	35	1890	KK 1000 A	615	474	385	200	M72x2	60
K22F 355LY2,L2	355	44	1083	1174	327	28	35	1890	KK 1000 A	615	474	385	200	M72x2	60
K22F 355MX4	355	44	1083	1174	327	28	35	1890	KK 1000 A	615	474	385	200	M72x2	60
K22F 355LY4,6,8,L4	355	44	1083	1174	327	28	35	1890	KK 1000 A	615	474	385	200	M72x2	60

*) Centre holes acc. to DIN 332-DS
**) Terminal box left/right

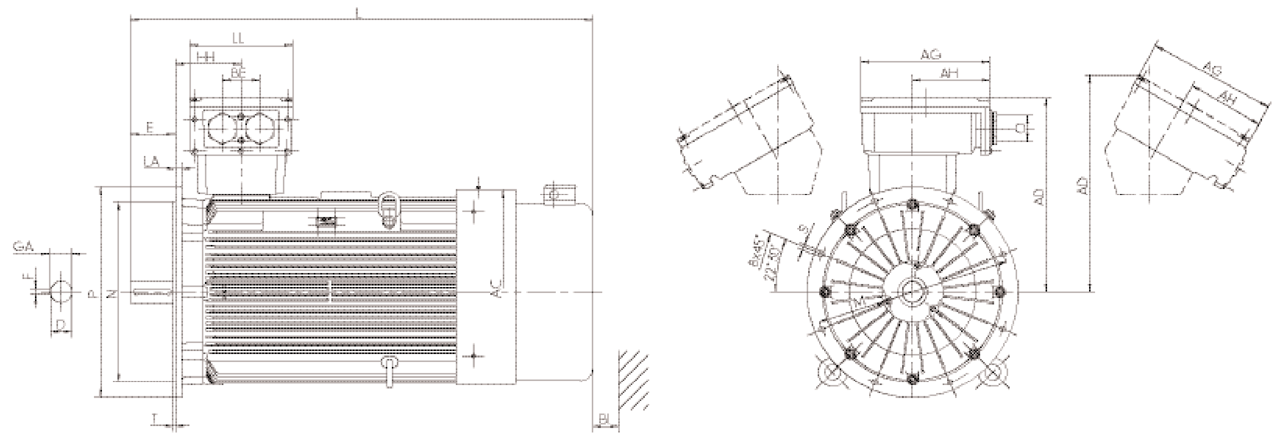
Forced-ventilated three-phase motors with squirrel-cage rotor

Size 355

with forced ventilation, cooling method IC 416, degree of protection IP 55

Type of construction IM V1 [IM 3011]

Flange dimensions see page 154/155



Type designation	Flange size	AC g	AD g1	AD**) g1	D d	DB*)	E l	F u	GA t	H h	HH A	L k	KK Type	AG x	LL z	AH -	BE -	O r	Bl. Bl
K22F 355MY2,M2	FF 740	768	736	817	80	M20	170	22	85	355	250	1850	KK 630 A	496	390	301	140	M72x2	60
K22F 355MY4,6,8	FF 740	768	736	817	100	M24	210	28	106	355	250	1890	KK 630 A	496	390	301	140	M72x2	60
K22F 355M4	FF 740	768	736	817	100	M24	210	28	106	355	250	1890	KK 630 A	496	390	301	140	M72x2	60
K22F 355M6,8	FF 740	768	736	817	100	M24	210	28	106	355	250	1890	KK 630 A	496	390	301	140	M72x2	60
K22F 355MX6,8	FF 740	768	736	817	100	M24	210	28	106	355	327	1890	KK 630 A	496	390	301	140	M72x2	60
K22F 355MX2	FF 740	768	728	819	80	M20	170	22	85	355	327	1850	KK 1000 A	615	474	385	200	M72x2	60
K22F 355LY2,L2	FF 740	768	728	819	80	M20	170	22	85	355	327	1850	KK 1000 A	615	474	385	200	M72x2	60
K22F 355MX4	FF 740	768	728	819	100	M24	210	28	106	355	327	1890	KK 1000 A	615	474	385	200	M72x2	60
K22F 355LY4,6,8,L4	FF 740	768	728	819	100	M24	210	28	106	355	327	1890	KK 1000 A	615	474	385	200	M72x2	60

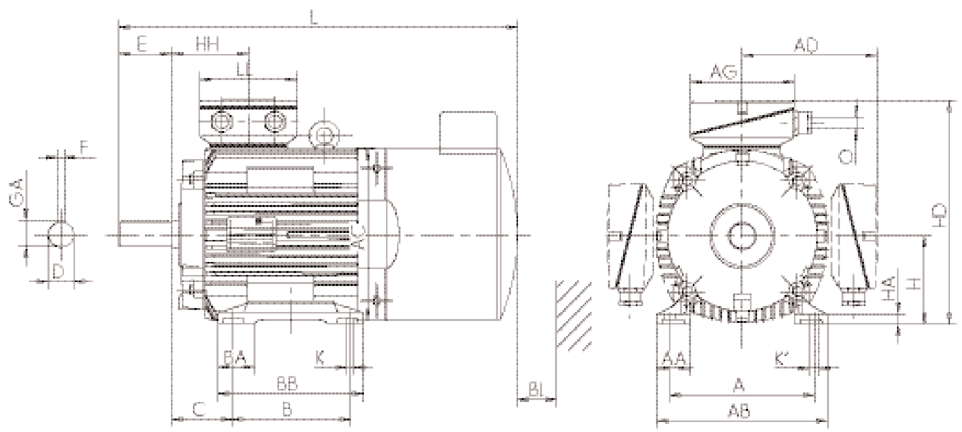
*) Centre holes acc. to DIN 332-DS
**) Terminal box left/right

Forced-ventilated three-phase motors with squirrel-cage rotor, transnorm version

Size 56 to 280

with forced ventilation, cooling method IC 416, 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	D d	DB*)	E l	F u
K20F 63K	FF 130	100	21	120	124	-	80	-	95	40	14	M5	30	5
K20F 63G	FF 130	100	21	120	124	-	80	-	95	40	14	M5	30	5
K20F 71K	FF 165	112	23	135	139	-	90	-	114	45	19	M6	40	6
K20F 71G	FF 165	112	23	135	139	-	90	-	114	45	19	M6	40	6
K20F 80K	FF 165	125	26	152	157	-	100	-	124	50	22	M8	50	6
K20F 80G	FF 165	125	26	152	157	-	100	-	146	50	22	M8	50	6
K20F 90L	FF 215	140	26	167	177	-	125	-	150	56	24	M8	50	8
K20F 100S	FF 215	160	32	188	196	-	112	-	171	63	28	M10	60	8
K20F 100L2,4	FF 215	160	32	188	196	-	140	-	171	63	28	M10	60	8
K20F 100L6,8	FF 215	160	32	188	196	-	140	-	205	63	28	M10	60	8
K20F 100LX4	FF 215	160	32	192	196	-	140	-	175	63	28	M10	60	8
K20F 112M2	FF 265	190	45	226	237	178	140	42	172	70	32	M12	80	10
K20F 112M4,6,8	FF 265	190	45	226	237	178	140	42	172	70	32	M12	80	10
K20F 112MX6,8	FF 265	190	45	226	237	178	140	42	172	70	32	M12	80	10
K20F 132S	FF 300	216	50	256	281	199	140	47	180	89	38	M12	80	10
K20F 132M	FF 300	216	50	256	281	199	178	47	218	89	38	M12	80	10
K20F 160S2	FF 300	254	55	296	341	242	178	56	225	108	42	M16	110	12
K20F 160S4,6,8	FF 300	254	55	296	341	242	178	56	225	108	48	M16	110	14
K20F 160M2	FF 300	254	55	296	341	242	210	56	257	108	42	M16	110	12
K20F 160M4,6,8	FF 300	254	55	296	341	242	210	56	257	108	48	M16	110	14
K20F 180S2	FF 350	279	62	328	385	261	203	65	250	121	48	M16	110	14
K20F 180S4,6,8	FF 350	279	62	328	385	261	203	65	250	121	55	M20	110	16
K20F 180M2	FF 350	279	62	328	385	261	241	65	288	121	48	M16	110	14
K20F 180M4,6,8	FF 350	279	62	328	385	261	241	65	288	121	55	M20	110	16
K20F 200M2	FF 400	318	70	372	425	300	267	70	322	133	55	M20	110	16
K20F 200M4,6,8	FF 400	318	70	372	425	300	267	70	322	133	60	M20	140	18
K20F 200L2	FF 400	318	70	372	425	300	305	70	360	133	55	M20	110	16
K20F 200L4,6,8	FF 400	318	70	372	425	300	305	70	360	133	60	M20	140	18
K20F 225M2	FF 500	356	75	413	481	324	311	75	368	149	55	M20	110	16
K20F 225M4,6,8	FF 500	356	75	413	481	324	311	75	368	149	65	M20	140	18
K20F 250S2	FF 500	406	84	469	540	386	311	84	374	168	65	M20	140	18
K20F 250S4,6,8	FF 500	406	84	469	540	386	311	84	374	168	75	M20	140	20
K20F 250M2	FF 500	406	84	469	540	386	349	84	412	168	65	M20	140	18
K20F 250M4	FF 500	406	84	469	540	386	349	84	412	168	75	M20	140	20
K20F 250M6,8	FF 500	406	84	469	540	386	349	84	412	168	75	M20	140	20

*) Centre holes acc. to DIN 332-DS

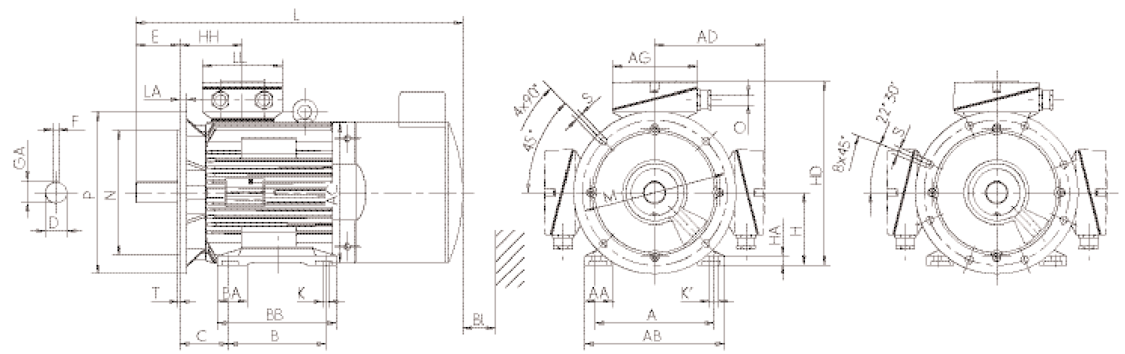
Forced-ventilated three-phase motors with squirrel-cage rotor, transnorm version

Size 56 to 280

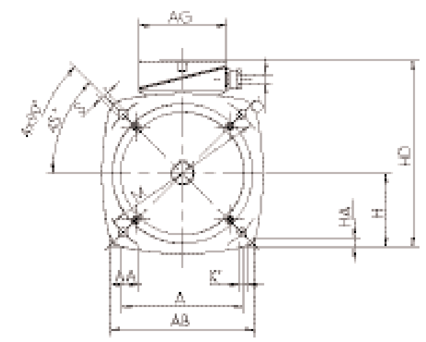
with forced ventilation, cooling method IC 416, degree of protection IP 55

Type of construction IM B35 [IM 2001]

Flange dimensions see page 154/155



Size 112 to 160 with crowned flange

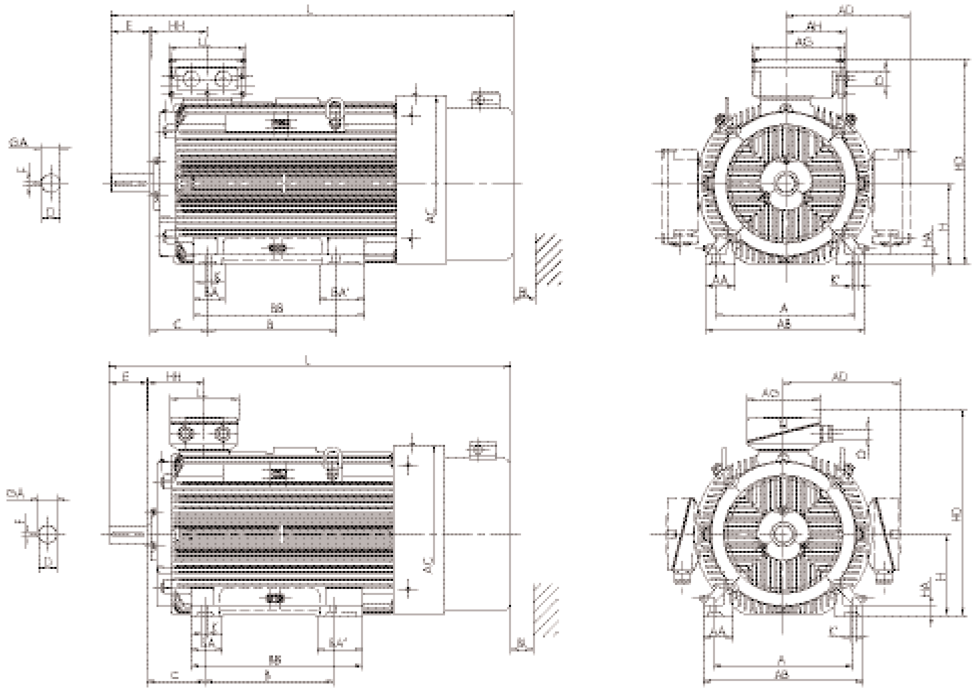


Type designation	GA t	H h	HA c	HD	HD**) p (IM B5)	HH A	K s	K' s'	L k	KK Type	AG x	LL z	O r	Hole pattern	Bl. Bl
K20F 63K	16	63	7.5	167	184	61	7	7	307	KA 05	92	92	M20x1.5	4L	14
K20F 63G	16	63	7.5	167	184	61	7	7	307	KA 05	92	92	M20x1.5	4L	14
K20F 71K	21.5	71	8	182	211	67	7	7	354	KA 05	92	92	M20x1.5	4L	16
K20F 71G	21.5	71	8	182	211	67	7	7	354	KA 05	92	92	M20x1.5	4L	16
K20F 80K	24.5	80	9	200	220	70	10	10	382	KA 05	92	92	M25x1.5	4L	16
K20F 80G	24.5	80	9	200	220	70	10	10	404	KA 05	92	92	M25x1.5	4L	16
K20F 90L	27	90	9.5	217	252	75	10	10	427	KA 05	92	92	M25x1.5	4L	18
K20F 100S	31	100	11	237	262	77	12	12	461	KA 05	92	92	M25x1.5	4L	20
K20F 100L2,4	31	100	11	237	262	77	12	12	495	KA 05	92	92	M25x1.5	4L	20
K20F 100L6,8	31	100	11	237	262	77	12	12	461	KA 05	92	92	M25x1.5	4L	20
K20F 100LX4	31	100	11	237	262	77	12	12	525	KA 05	92	92	M25x1.5	4L	20
K20F 112M2	35	112	15	290	328	108	12	12	614	KK 25 A	156	145	M32x1.5	4L	35
K20F 112M4,6,8	35	112	15	290	328	108	12	12	594	KK 25 A	156	145	M32x1.5	4L	35
K20F 112MX6,8	35	112	15	290	328	108	12	12	614	KK 25 A	156	145	M32x1.5	4L	35
K20F 132S	41	132	15	331	374	114	12	12	621	KK 25 A	156	145	M32x1.5	4L	35
K20F 132M	41	132	15	331	374	114	12	12	669	KK 25 A	156	145	M32x1.5	4L	35
K20F 160S2	45	160	18	402	442	138	15	20	747	KK 63 A	193	167	M40x1.5	4L	35
K20F 160S4,6,8	51.5	160	18	402	442	138	15	20	747	KK 63 A	193	167	M40x1.5	4L	35
K20F 160M2	45	160	18	402	442	138	15	20	785	KK 63 A	193	167	M40x1.5	4L	35
K20F 160M4,6,8	51.5	160	18	402	442	138	15	20	785	KK 63 A	193	167	M40x1.5	4L	35
K20F 180S2	51.5	180	20	441	486	147	15	20	808	KK 63 A	193	167	M40x1.5	4L	35
K20F 180S4,6,8	59	180	20	441	486	147	15	20	853	KK 63 A	193	167	M40x1.5	4L	35
K20F 180M2	51.5	180	20	441	486	147	15	20	853	KK 63 A	193	167	M40x1.5	4L	35
K20F 180M4,6,8	59	180	20	441	486	147	15	20	853	KK 63 A	193	167	M40x1.5	4L	35
K20F 200M2	59	200	22	500	525	168	19	25	922	KK 100 A	213	207	M50x1.5	4L	40
K20F 200M4,6,8	64	200	22	500	525	168	19	25	951	KK 100 A	213	207	M50x1.5	4L	40
K20F 200L2	59	200	22	500	525	168	19	25	961	KK 100 A	213	207	M50x1.5	4L	40
K20F 200L4,6,8	64	200	22	500	525	168	19	25	991	KK 100 A	213	207	M50x1.5	4L	40
K20F 225M2	59	225	25	549	599	177	19	25	987	KK 100 A	213	207	M50x1.5	8L	45
K20F 225M4,6,8	69	225	25	549	599	177	19	25	1017	KK 100 A	213	207	M50x1.5	8L	45
K20F 250S2	69	250	28	636	661	206	24	30	1119	KK 200 A	282	242	M63x1.5	8L	50
K20F 250S4,6,8	79.5	250	28	636	661	206	24	30	1119	KK 200 A	282	242	M63x1.5	8L	50
K20F 250M2	69	250	28	636	661	206	24	30	1119	KK 200 A	282	242	M63x1.5	8L	50
K20F 250M4	79.5	250	28	636	661	206	24	30	1165	KK 200 A	282	242	M63x1.5	8L	50
K20F 250M6,8	79.5	250	28	636	661	206	24	30	1119	KK 200 A	282	242	M63x1.5	8L	50

**) Terminal box left/right

Forced-ventilated three-phase motors with squirrel-cage rotor, transnorm version

Size 280, 315
with forced ventilation, cooling method IC 416, degree of protection IP 55
Type of construction IM B3 [IM 1001]



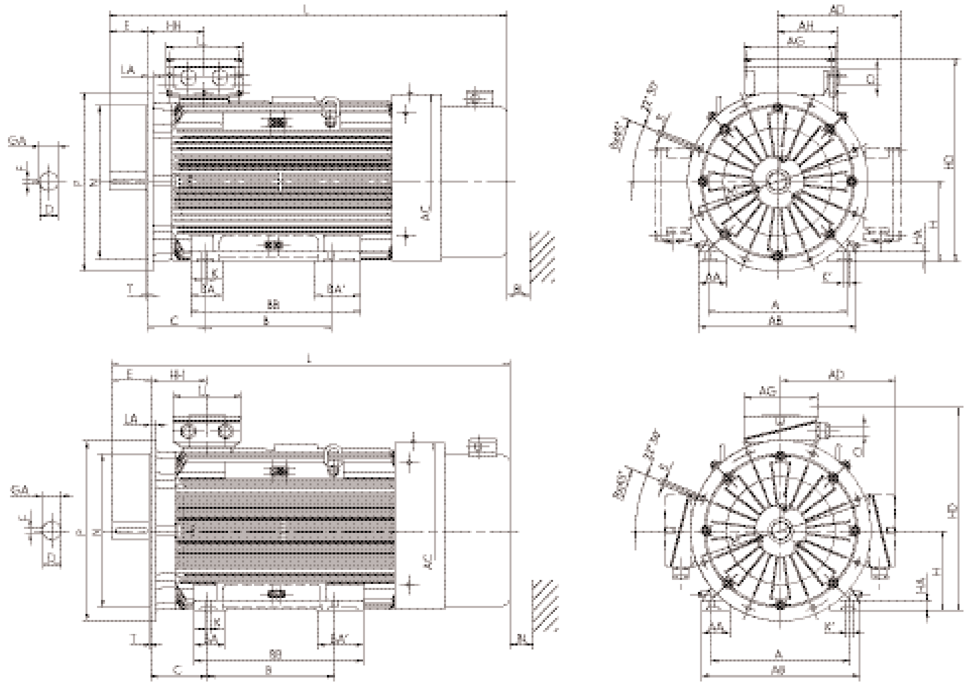
Type designation	Flange size	A b	AA n	AB f	AC g	AD g1	B a	BA m	BA' m1	BB e	C w1	D d	DB*)	E l	F u
K20F 280S2	FF 600	457	88	522	609	416	368	94	431	55	190	70	M20	140	20
K20F 280S4,6,8	FF 600	457	88	522	609	416	368	94	431	55	190	80	M20	170	22
K20F 280M2	FF 600	457	88	522	609	416	419	94	482	55	190	70	M20	140	20
K20F 280M4,6,8	FF 600	457	88	522	609	416	419	94	482	55	190	80	M20	170	22
K20F 315S2	FF 600	508	132	590	609	416	406	120	554	55	216	75	M20	140	20
K20F 315S4	FF 600	508	132	590	609	416	406		554	55	216	90	M24	170	25
K20F 315S6,8	FF 600	508	132	590	609	416	406		554	55	216	90	M24	170	25
K20F 315M2	FF 600	508	110	590	674	498	457	120	587	55	216	75	M20	140	20
K20F 315M4,6,8	FF 600	508	110	590	674	498	457		587	55	216	90	M24	170	25
K20F 315M10,12	FF 600	508	132	590	609	498	457		554	55	216	90	M24	170	25
K20F 315L2	FF 600	508	110	590	674	498	508	120	624	55	216	75	M20	140	20
K20F 315L4,6,8	FF 600	508	110	590	674	498	508		624	55	216	90	M24	170	25
K20F 315LX2	FF 600	508	110	590	674	481	508	120	624	55	216	75	M20	140	20
K20F 315LX4	FF 600	508	110	590	674	481	508		624	55	216	90	M24	170	25
K20F 315LX6,8	FF 600	508	110	590	674	498	508		624	55	216	90	M24	170	25

*) Centre holes acc. to DIN 332-DS

Forced-ventilated three-phase motors with squirrel-cage rotor, transnorm version

Size 280, 315
with forced ventilation, cooling method IC 416, degree of protection IP 55
Type of construction IM B35 [IM 2001]

Flange dimensions see page 154/155



Type designation	GA t	H h	HA c	HD p	HD**) p	HH A	K s	K' s'	L k	KK Type	AG x	LL z	AH -	O r	Bl. Bl
K20F 280S2	74.5	280	40	731	595	211	24	30	1194	KK 200 A	282	242	-	M63x1.5	55
K20F 280S4,6,8	85	280	40	731	595	211	24	30	1224	KK 200 A	282	242	-	M63x1.5	55
K20F 280M2	74.5	280	40	731	595	211	24	30	1249	KK 200 A	282	242	-	M63x1.5	55
K20F 280M4,6,8	85	280	40	731	595	211	24	30	1279	KK 200 A	282	242	-	M63x1.5	55
K20F 315S2	79.5	315	44	731	595	211	28	35	1329	KK 200 A	282	242	-	M63x1.5	55
K20F 315S4	95	315	44	731	595	211	28	35	1359	KK 200 A	282	242	-	M63x1.5	55
K20F 315S6,8	95	315	44	731	595	211	28	35	1279	KK 200 A	282	242	-	M63x1.5	55
K20F 315M2	79.5	315	44	731	595	230	28	35	1419	KK 200 A	282	242	-	M63x1.5	55
K20F 315M4,6,8	95	315	44	774	628	230	28	35	1449	KK 400 B	315	294	265	M63x1.5	55
K20F 315M10,12	95	315	44	774	628	211	28	35	1359	KK 400 B	315	294	265	M63x1.5	55
K20F 315L2	79.5	315	44	774	628	230	28	35	1539	KK 400 B	315	294	265	M63x1.5	55
K20F 315L4,6,8	95	315	44	774	628	230	28	35	1569	KK 400 B	315	294	265	M63x1.5	55
K20F 315LX2	79.5	315	44	796	628	230	28	35	1659	KK 400 B	315	294	265	M63x1.5	55
K20F 315LX4	95	315	44	796	628	230	28	35	1689	KK 400 B	315	294	265	M63x1.5	55
K20F 315LX6,8	95	315	44	796	628	230	28	35	1569	KK 400 B	315	294	265	M63x1.5	55

**) Terminal box left/right

Forced-ventilated three-phase motors with squirrel-cage rotor, transnorm version

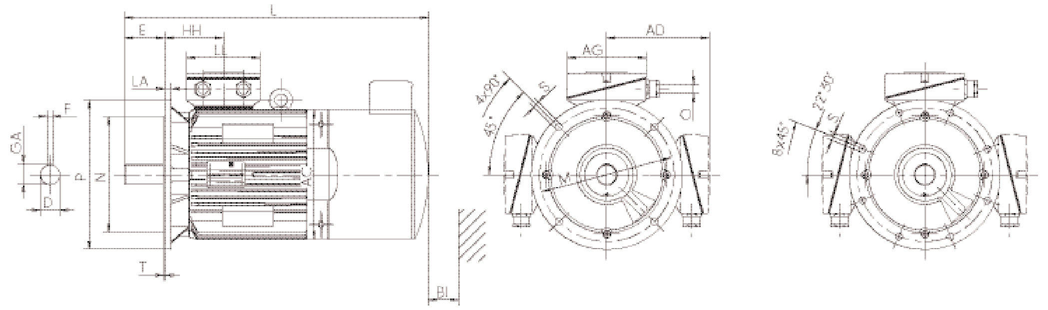
Size 56 to 250

with forced ventilation, cooling method IC 416, degree of protection IP 55

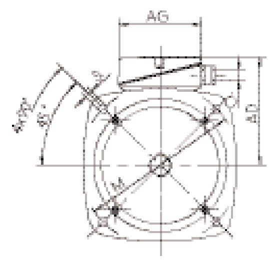
Type of construction IM B5 [IM 3001]

Type of construction IM V1 [IM 3011]

Flange dimensions see page 154/155



Size 160 with crowned flange



Type designation	Flange sizes	AC g	AD g1	D d	DA d1	DB*)	E l	F u	GA t	H h	HH A	L k	KK Type	AG	LL	O	Hole pattern	Bl. Bl
K20F 63K	FF 130	124	-	14	14	M5	30	5	16	63	61	307	KA 05	92	92	M20x1.5	4L	14
K20F 63G	FF 130	124	-	14	14	M5	30	5	16	63	61	307	KA 05	92	92	M20x1.5	4L	14
K20F 71K	FF 165	139	-	19	19	M6	40	6	21.5	71	67	354	KA 05	92	92	M20x1.5	4L	16
K20F 71G	FF 165	139	-	19	19	M6	40	6	21.5	71	67	354	KA 05	92	92	M20x1.5	4L	16
K20F 80K	FF 165	157	-	22	22	M8	50	6	24.5	80	70	382	KA 05	92	92	M25x1.5	4L	16
K20F 80G	FF 165	157	-	22	22	M8	50	6	24.5	80	70	404	KA 05	92	92	M25x1.5	4L	16
K20F 90L	FF 215	177	-	24	24	M8	50	8	27	90	75	427	KA 05	92	92	M25x1.5	4L	18
K20F 100S	FF 215	196	-	28	28	M10	60	8	31	100	77	461	KA 05	92	92	M25x1.5	4L	20
K20F 100L2,4	FF 215	196	-	28	28	M10	60	8	31	100	77	495	KA 05	92	92	M25x1.5	4L	20
K20F 100L6,8	FF 215	196	-	28	28	M10	60	8	31	100	77	461	KA 05	92	92	M25x1.5	4L	20
K20F 100LX4	FF 215	196	-	28	28	M10	60	8	31	100	77	525	KA 05	92	92	M25x1.5	4L	20
K20F 112M2	FF 265	237	178	32	32	M12	80	10	35	112	108		KK 25 A	156	145	M32x1.5	4L	35
K20F 112M4,6,8	FF 265	237	178	32	32	M12	80	10	35	112	108		KK 25 A	156	145	M32x1.5	4L	35
K20F 112MX6,8	FF 265	237	178	32	32	M12	80	10	35	112	108		KK 25 A	156	145	M32x1.5	4L	35
K20F 132S	FF 300	281	199	38	38	M12	80	10	41	132	114		KK 25 A	156	145	M32x1.5	4L	35
K20F 132M	FF 300	281	199	38	38	M12	80	10	41	132	114		KK 25 A	156	145	M32x1.5	4L	35
K20F 160S2	FF 300	341	242	42	42	M16	110	12	45	160	138		KK 63 A	193	167	M40x1.5	4L	35
K20F 160S4,6,8	FF 300	341	242	48	42	M16	110	14	51.5	160	138		KK 63 A	193	167	M40x1.5	4L	35
K20F 160M2	FF 300	341	242	42	42	M16	110	12	45	160	138		KK 63 A	193	167	M40x1.5	4L	35
K20F 160M4,6,8	FF 300	341	242	48	42	M16	110	14	51.5	160	138		KK 63 A	193	167	M40x1.5	4L	35
K20F 180S2	FF 350	385	261	48	48	M16	110	14	51.5	180	147		KK 63 A	193	167	M40x1.5	4L	35
K20F 180S4,6,8	FF 350	385	261	55	48	M20	110	16	59	180	147		KK 63 A	193	167	M40x1.5	4L	35
K20F 180M2	FF 350	385	261	48	48	M16	110	14	51.5	180	147		KK 63 A	193	167	M40x1.5	4L	35
K20F 180M4,6,8	FF 350	385	261	55	48	M20	110	16	59	180	147		KK 63 A	193	167	M40x1.5	4L	35
K20F 200M2	FF 400	425	300	55	55	M20	110	16	59	200	168		KK 100 A	213	207	M50x1.5	4L	40
K20F 200M4,6,8	FF 400	425	300	60	55	M20	140	18	64	200	168		KK 100 A	213	207	M50x1.5	4L	40
K20F 200L2	FF 400	425	300	55	55	M20	110	16	59	200	168		KK 100 A	213	207	M50x1.5	4L	40
K20F 200L4,6,8	FF 400	425	300	60	55	M20	140	18	64	200	168		KK 100 A	213	207	M50x1.5	4L	40
K20F 225M2	FF 500	481	324	55	55	M20	110	16	59	225	177		KK 100 A	213	207	M50x1.5	8L	45
K20F 225M4,6,8	FF 500	481	324	65	55	M20	140	18	69	225	177		KK 100 A	213	207	M50x1.5	8L	45
K20F 250S2	FF 500	540	386	65	65	M20	140	18	69	250	206		KK 200 A	282	242	M63x1.5	8L	50
K20F 250S4,6,8	FF 500	540	386	75	65	M20	140	20	79.5	250	206		KK 200 A	282	242	M63x1.5	8L	50
K20F 250M2	FF 500	540	386	65	65	M20	140	18	69	250	206		KK 200 A	282	242	M63x1.5	8L	50
K20F 250M4,6,8	FF 500	540	386	75	65	M20	140	20	79.5	250	206		KK 200 A	282	242	M63x1.5	8L	50

*) Centre holes acc. to DIN 332-DS

Forced-ventilated three-phase motors with squirrel-cage rotor, transnorm version

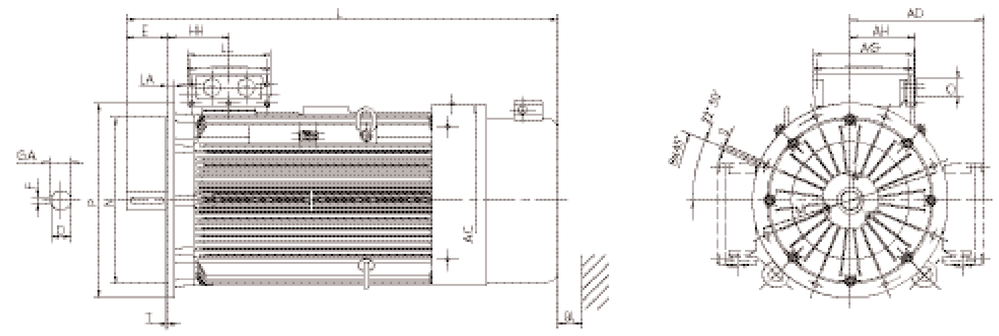
Size 280, 315

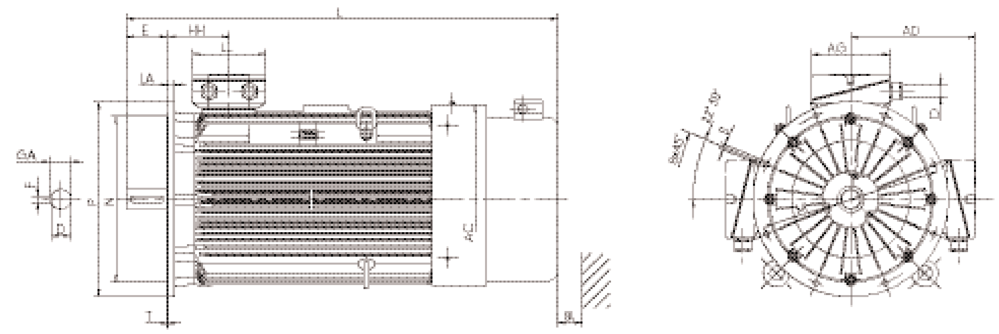
with forced ventilation, cooling method IC 416, degree of protection IP 55

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

Type of construction IM V1 [IM 3011]

Flange dimensions see page 154/155

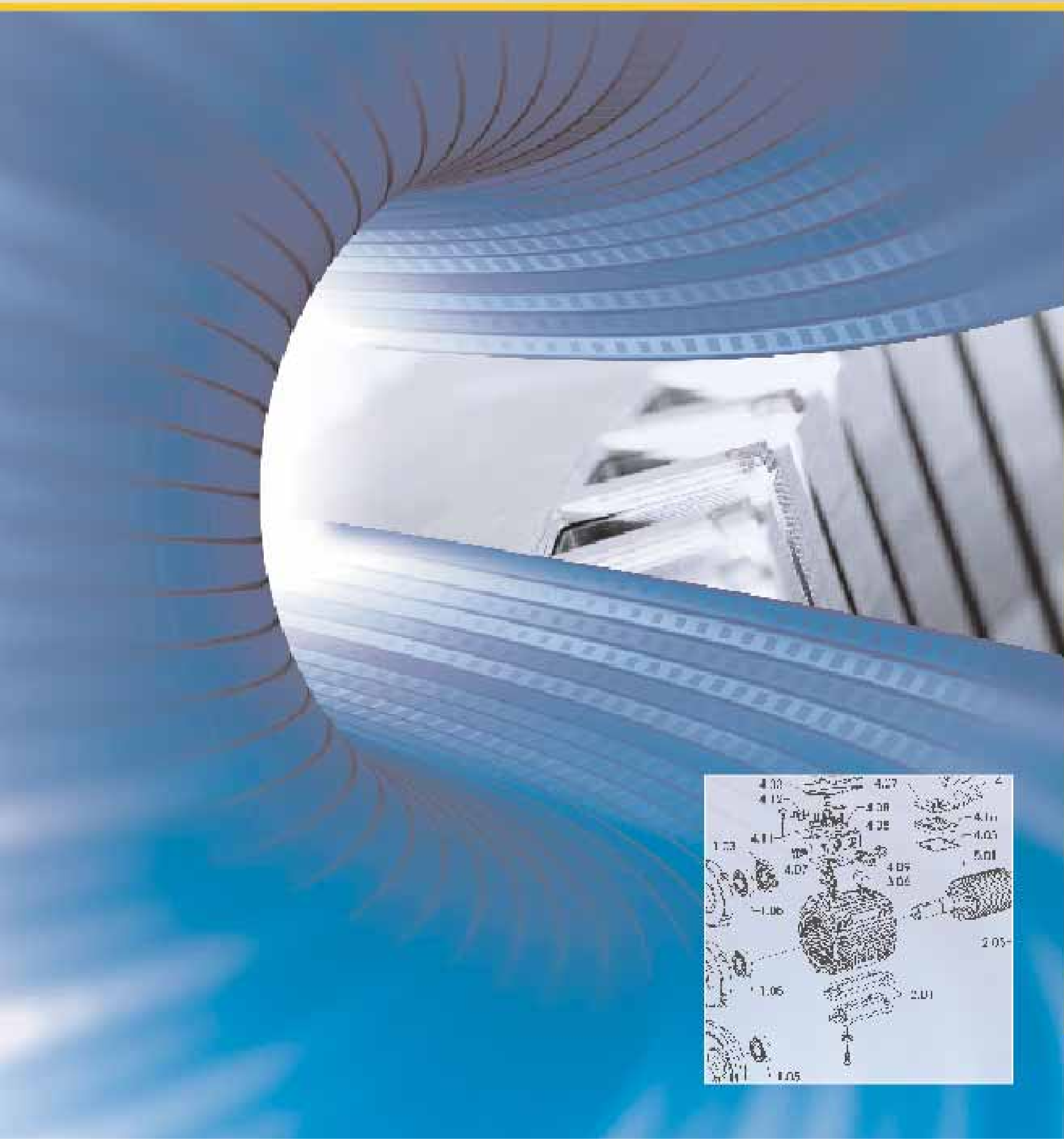




Type designation	Flange size	AC g	AD g1	D d	DA d1	DB*)	E l	F u	GA t	H h	HH A	L k	KK Type	AG x	LL z	AH -	O r	Bl. Bl
K20F 280S2	FF 600	609	416	70	70	M20	140	20	74.5	280	211		KK 200 A	282	242	-	M63x1.5	55
K20F 280S4,6,8	FF 600	609	416	80	70	M20	170	22	85	280	211		KK 200 A	282	242	-	M63x1.5	55
K20F 280M2	FF 600	609	416	70	70	M20	140	20	74.5	280	211		KK 200 A	282	242	-	M63x1.5	55
K20F 280M4,6,8	FF 600	609	416	80	70	M20	170	22	85	280	211		KK 200 A	282	242	-	M63x1.5	55
K20F 315S2	FF 600	609	416	75	70	M20	140	20	79.5	315	211		KK 200 A	282	242	-	M63x1.5	55
K20F 315S4	FF 600	609	416	90	70	M24	170	25	95	315	211		KK 200 A	282	242	-	M63x1.5	55
K20F 315S6,8	FF 600	609	416	90	70	M24	170	25	95	315	211		KK 200 A	282	242	-	M63x1.5	55
K20F 315M2	FF 600	674	498	75	75	M20	140	20	79.5	315	230		KK 200 A	282	242	-	M63x1.5	55
K20F 315M4,6,8	FF 600	674	498	90	75	M24	170	25	95	315	230		KK 400 B	315	294	265	M63x1.5	55
K20F 315M10,12	FF 600	609	498	90	75	M24	170	25	95	315	211		KK 400 B	315	294	265	M63x1.5	55
K20F 315L2	FF 600	674	498	75	75	M20	140	20	79.5	315	230		KK 400 B	315	294	265	M63x1.5	55
K20F 315L4,6,8	FF 600	674	498	90	75	M24	170	25	95	315	230		KK 400 B	315	294	265	M63x1.5	55
K20F 315LX2	FF 600	674	481	75	75	M20	140	20	79.5	315	230		KK 400 B	315	294	265	M63x1.5	55
K20F 315LX4	FF 600	674	481	90	75	M24	170	25	95	315	230		KK 400 B	315	294	265	M63x1.5	55
K20F 315LX6,8	FF 600	674	498	90	75	M24	170	25	95	315	230		KK 400 B	315	294	265	M63x1.5	55

*) Centre holes acc. to DIN 332-DS

Spare parts



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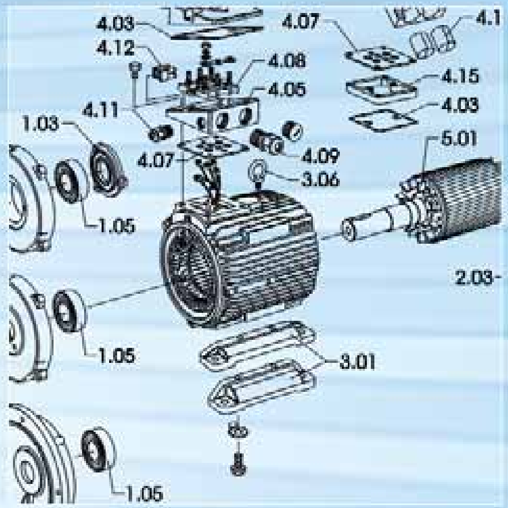


Spare parts

Spare parts summary

Survey of spare parts K2.R 56 up to 132T

Survey of spare parts
K1.R, K2.R, K.2R 132 up to 355

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.

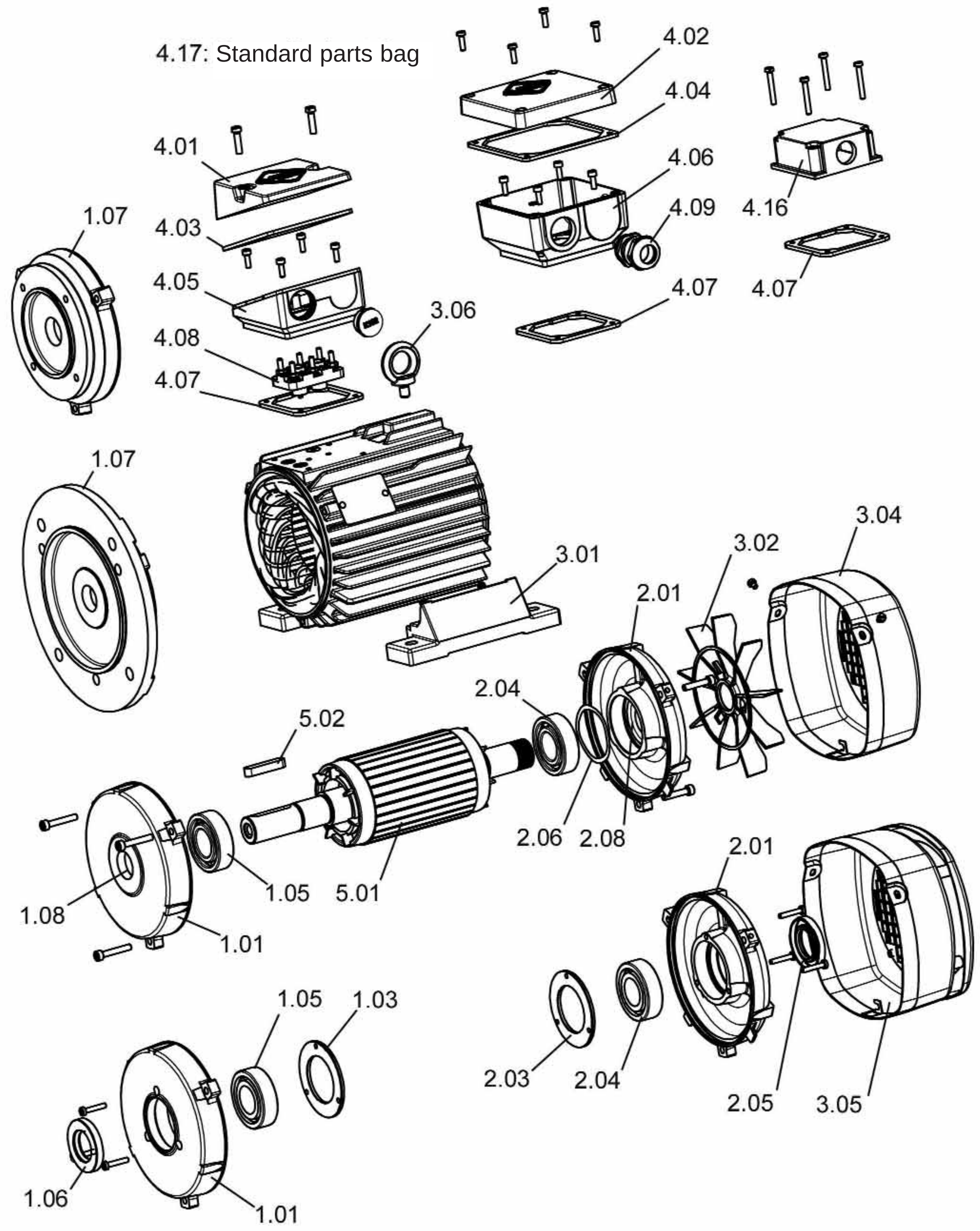
Data for spare part order
Ordering spare parts, the following data must be specified:
– Motor designation and motor number (factory number)
– Designation of the spare part
– Year of manufacturing

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

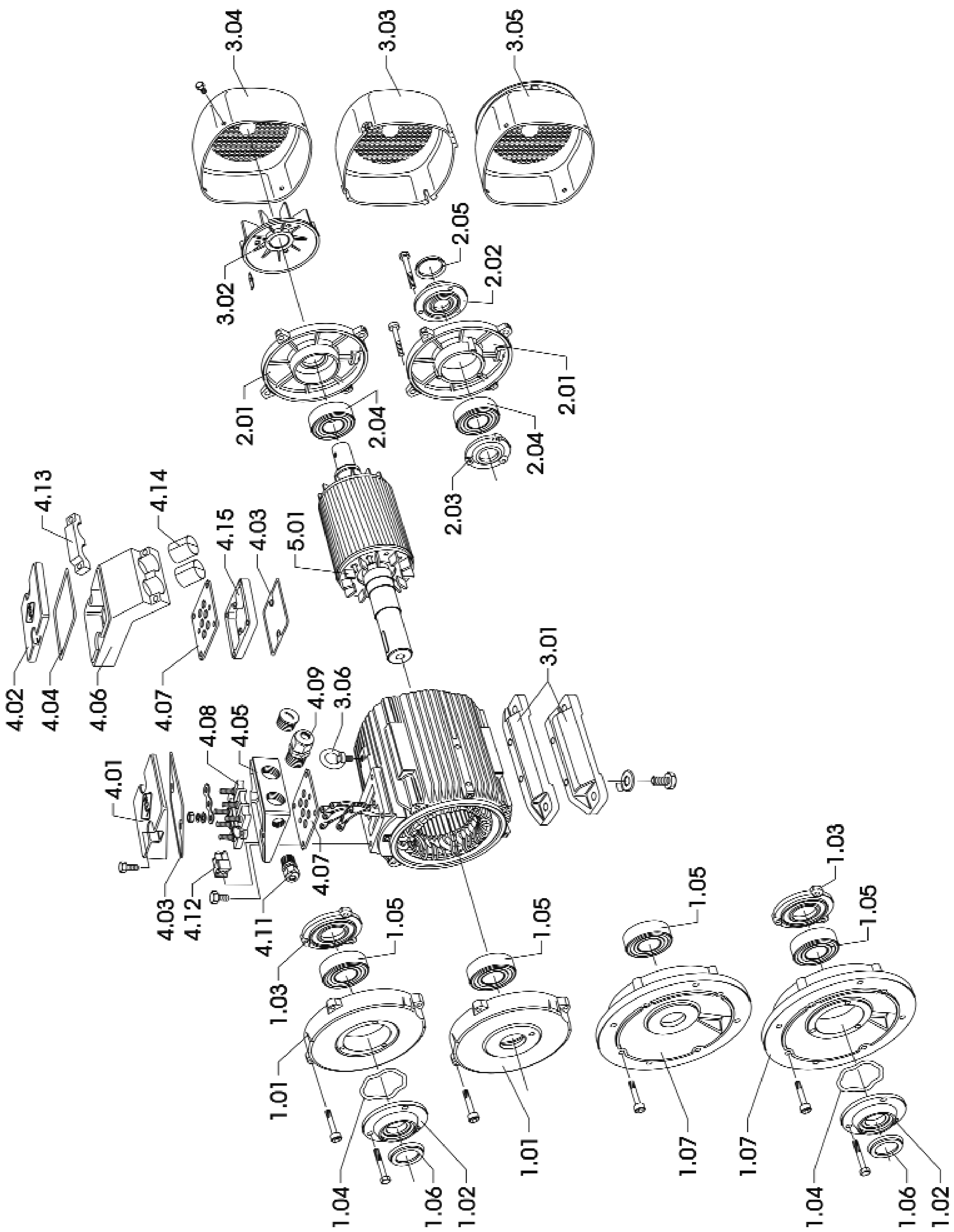
Three-phase asynchronous motor with squirrel-cage rotor, basic version K2.R 56 – 132T

(Example, delivered version may differ in details)

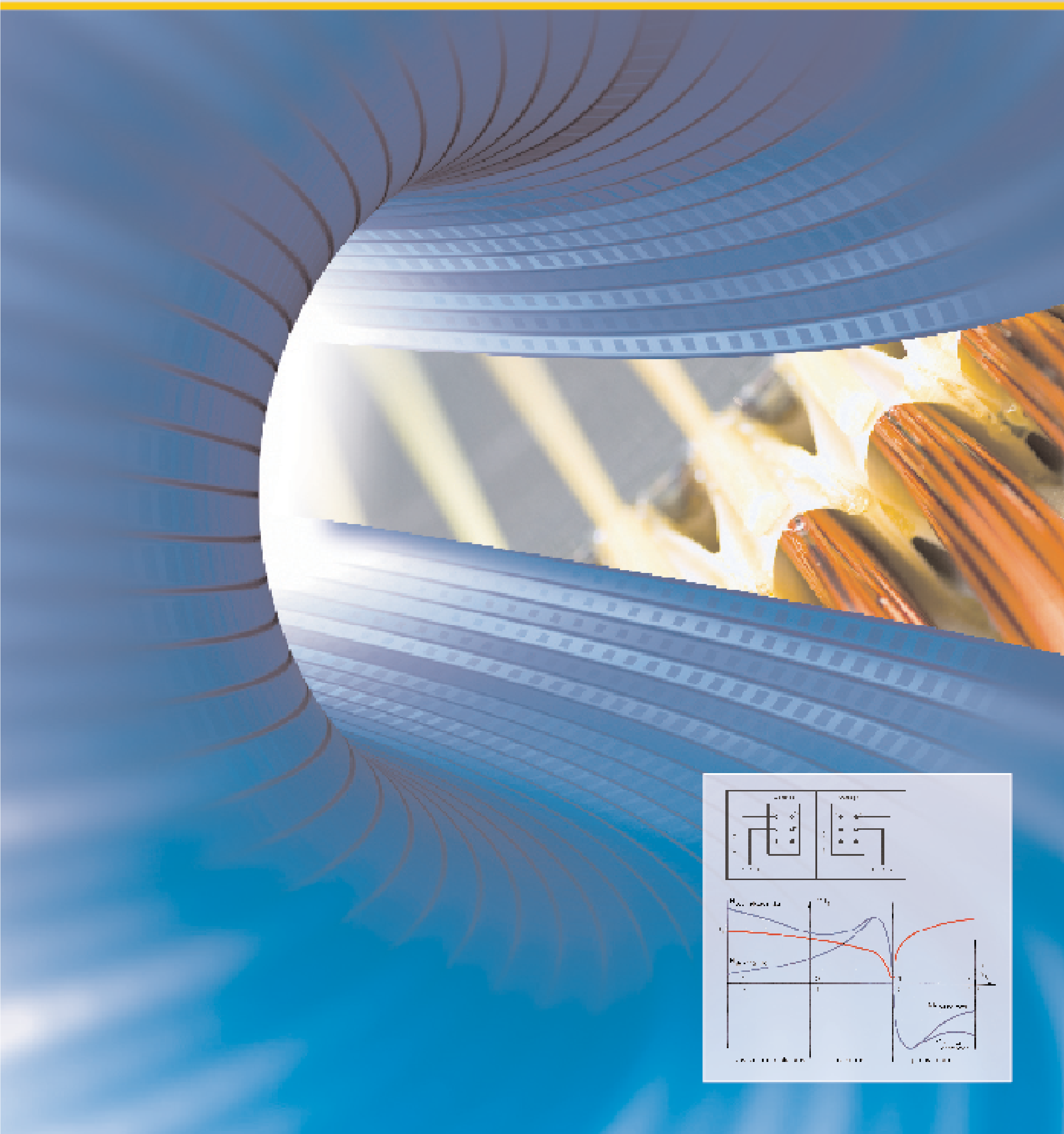


Three-phase asynchronous motor with squirrel-cage rotor, basic version K1.R / K2.R 112 – 355

(Example, delivered version may differ in details)



Annex



11

Characteristics, conversions and formulae of technical units of measurement

in SI units of measurement (Systeme Internationale d'Unitée)

Power
1 kW = 1.36 h.p. = 102 kpm/s = 1,000 Nm/s
1 h.p. = 0.736 kW = 75 kpm/s = 736 Nm/s

Work
1 kWh = 3.6 x 106 J = 3.6 x 106 Nm
= 0.367 x 106 kpm
1 Ws = 1 J = 1 Nm = 0.102 kpm

Force
1 N = 0.102 kp
1 kp = 9.81 N

Torque
1 Nm = 0.102 kpm = 1 Ws
1 kpm = 9.81 Nm = 9.81 Ws

Pressure
1 Pa = 1 N/m^2
1 bar = 10^5 Pa
1 mm water gauge = 9.81 Pa

Temperature/temperature differences
1 deg = 1 K = 1 °C

Moment of inertia
1 kgm^2 = 1 Ws^3 = 1 Nms^2 = 0.102 kpms^2

Characteristics of drive engineering

P_1 …	power input [kW]
P_2 …	power output [kW]
P_B …	rated power [kW]
P …	effective power [kW]
S …	apparent power [kVA]
Q …	reactive power [kvar]
U …	voltage [V]
U_U …	lower voltage limit [V]
U_B …	rated voltage [V]
U_O …	upper voltage limit [V]
I_B …	rated [nominal] current [A]
f_B …	rated frequency
$\cos\varphi$ …	power factor [-]
$\cos\varphi_B$ …	rated power factor [-]
η …	efficiency [%]
η_B …	rated efficiency [%]
n_S …	synchronous speed [rpm]
n_B …	rated [nominal] speed [rpm]
M_B …	rated [nominal] torque [Nm]
M_A …	starting torque [Nm]
M_S …	pull-up torque [Nm]
M_K …	pull-out torque [Nm]
I_A …	starting current [A]
s_N …	rated slip [%]
J …	motor moment of inertia [kgm^2]

Equivalent circuit diagram data

R_{1w} …	stator winding equivalent resistance at operating temperature in ohms [at 120 °C winding temperature]
R_{2w} …	rotor winding equivalent resistance at operating temperature, referred to stator side, in ohms [at 120 °C winding temperature]
R_{Fe} …	ohmic equivalent resistance [also iron equivalent resistance]
X_{1s} …	stator winding leakage reactance in ohms
X_{2s} …	rotor winding leakage reactance in ohms, referred to stator side
X_{1h} …	stator winding main reactance

Specific quantities

M_A/M_B …	relative starting torque [-]
M_S/M_B …	relative pull-up torque [-]
M_K/M_B …	relative pull-out torque [-]
I_A/I_B …	relative starting current [-]

Formulae from drive engineering

Power input
$P_1 = U \times I \times \cos\varphi \times \sqrt{3} \times 10^{-3}$ [kW]

Power output
$$P_2 = \frac{P_1 \times \eta}{100} \text{ [KW]}$$

Power loss
$P_V = P_1 - P_2$ [KW]

Effective power
$$P = \frac{P_2 \times 100}{\eta} \text{ [kW]}$$

Apparent power
$$S = \frac{U \times I \times \sqrt{3}}{1{,}000} \text{ [kVA]} \quad \text{or} \quad S = \frac{100 \times P_2}{\eta \times \cos\varphi} \text{ [kVA]}$$

Reactive power
$$Q = \frac{P_1 \times \tan\varphi \times 100}{\eta} \text{ [kvar]}$$

Current consumption
$$I = \frac{P \times 1{,}000}{U \times \cos\varphi \times \sqrt{3}} \text{ [A]} \quad \text{or} \quad I = \frac{P_2 \times 1{,}000 \times 100}{U \times \eta \times \cos\varphi \times \sqrt{3}} \text{ [A]}$$

Rated slip
$$s_N = \frac{n_S - n_B}{n_S} \times 100 \text{ [\%]}$$

Rated torque
$$M_B = 9.55 \times P_B \times \frac{1{,}000}{n_B} \text{ [Nm]}$$

Characteristics, conversions and formulae of technical units of measurement

in SI units of measurement (Systeme Internationale d'Unitée)

Power demand of some machines

Lifting movement
$$P = \frac{F \times v}{\eta} \times 10^{-3} \text{ [kW]}$$

Rotating movement
$$P = \frac{M \times n}{9{,}550 \times \eta} \text{ [kW]}$$

Fan drive
$$P = \frac{V \times p}{\eta} \times 10^{-3} \text{ [kW]}$$

Pump drive
$$P = \frac{V \times p}{\eta} \times 10^{-3} \text{ [kW]}$$

P …	power [kW]
F …	force [N]
v …	velocity [m/s]
η …	efficiency
M …	torque [Nm]
n …	speed [rpm]
V …	delivery rate [m^3/s]
p …	total counterpressure to be overcome [N/m^2]

Torques

Conversion of torques for step-down gearing and step-up gearing
$$M_2 = \frac{M_1 \times n_1}{n_2}$$

n_1 …	motor speed [rpm]
M_1 …	motor torque [Nm]
n_2 …	working speed [rpm]
M_2 …	torque at n_2 [Nm]

Moment of inertia

related to rotative moment
$$J = \frac{GD^2}{4}$$

J …	moment of inertia [kgm^2]
GD^2 …	rotative moment [kpm^2]

Conversion of moments of inertia to another speed for step-down gearing or step-up gearing
$$J_2 = J_1 \times \left(\frac{n_1}{n_2}\right)^2$$

n_1 …	motor speed
J_1 …	moment of inertia at n_1
n_2 …	working speed
J_2 …	moment of inertia at n_2

Inertia factor
$$FI = \frac{J_{mot} + J_{ext}}{J_{mot}}$$

J_{mot} …	moment of inertia of motor [kgm^2]
J_{ext} …	moment of inertia of machine [kgm^2]

$J_{total} = J_{ext} + J_{mot}$

Starting time
$$t_A \approx \frac{J_{total} \cdot n_B}{9.55 \times M_{b_m}} \text{ in [s]}$$

J_{total} =	total moment of inertia to be accelerated in kgm^2
n_B =	rated speed in rpm
M_{b_m} =	moment of acceleration in Nm

Formulae from acoustics

Sound pressure level
$$L_p = 20 \log \frac{p}{p_0} \text{ [dB]}$$
Reference sound pressure $p_0 = 2 \times 10^{-5}$ [Pa]

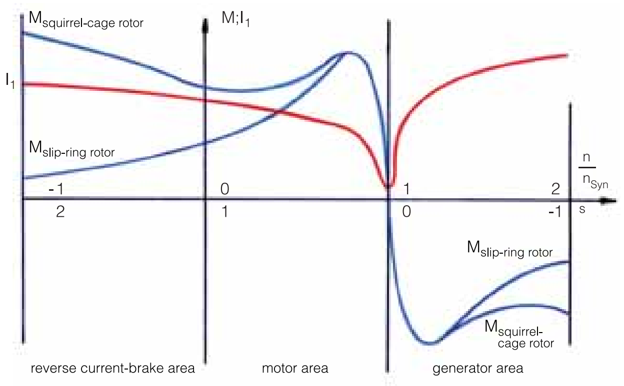
Sound power level
$$L_W = 10 \log \frac{P}{P_0} = L_P + L_S \text{ [dB]}$$
Reference sound power $P_0 = 10^{-12}$ [W]

Measuring-surface level
$$L_S = 10 \log \frac{S}{S_0} \text{ [dB]}$$
Reference surface $S_0 = 1$ m^2

L_p …	sound pressure level [dB]
P …	sound pressure [Pa]
P_0 …	reference sound pressure [Pa]
L_w …	sound power level [dB]
P …	sound power [W]
P_0 …	reference sound power [W]
L_s …	measuring-surface level [dB]
S …	measuring surface [m^2]
S_o …	reference surface [m^2]

1. Torque behavior and starting current

Fig. 1 shows characteristic behavior of torque/current in asynchronous machines for all areas of practical interest.



M = Torque
I_1 = Stator current
n/n_{Syn} = Ratio speed/synchronous speed
s = Slip

Fig. 1 Characteristic behavior of torque/current in three-phase asynchronous motors

Torque characteristics for squirrel-cage and slip-ring motors greatly vary over the range $1.2 < n/n_s < 0.8$ because of the specific current displacement effect in squirrel-cage motors which is due to cage design. By contrast, the characteristic current behavior of the two machine types is practically the same.

From these curves, characteristic quantities in the motor range are identified for three-phase motors. These are explained in Fig. 2 using the basic characteristic of a squirrel-cage motor.

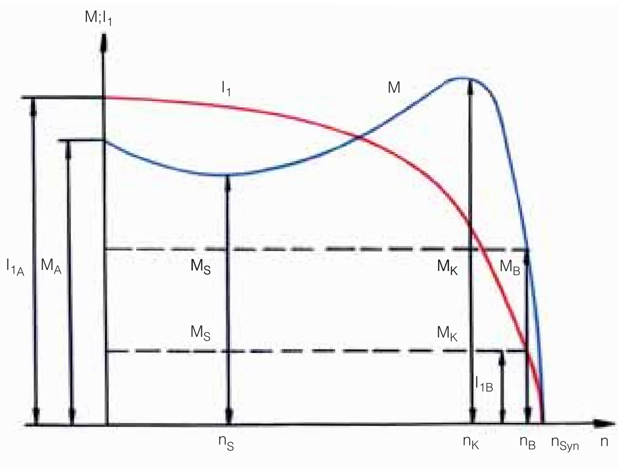


Fig. 2 Characteristic behavior of torque/current in a squirrel-cage motor

I_A = Starting current (also known as short-circuit current). Max. current absorbed by motor at standstill when supplied with design voltage/design frequency in all possible rotor positions after transient reactions have died down.
M_A = Starting torque (also known as stalled torque). Smallest torque occurring on shaft end when motor is supplied with design voltage/design frequency in all possible rotor positions after transient reactions have died down.
M_S = Pull-up torque (also known as starting torque). Smallest torque occurring on shaft end of motor supplied with design voltage/design frequency over range between standstill and sweep speed when speed changes slowly.
n_S = Pull-up speed related to pull-up torque
M_K = Pull-out torque
First torque max. on shaft end of machine supplied with design voltage/design frequency when speed is slowly reduced starting from synchronous speed.
M_B = Design torque
n_B = Design speed
n_{Syn} = Synchronous speed

It is standard practice to relate torque and current quantities to the design data of a motor:

Relative starting current $i_A = \frac{I_A}{I_B}$

Relative starting torque $m_A = \frac{M_A}{M_B}$

Relative pull-up torque $m_S = \frac{M_S}{M_B}$

Relative pull-out torque $m_K = \frac{M_K}{M_B}$

Minima of relative pull-out/pull-up/starting torques for three-phase motors are specified in DIN EN 60034-12.

The actual characteristics of today's standard motors generally far exceed these min. requirements. Current and torque behavior characteristics for squirrel-cage motors are given in the Technical Data, making it possible to design the speed-torque characteristic for squirrel-cage motors, for instance in order to judge starting behavior, with sufficient accuracy.

2. Operating characteristics

These designate the variation of the essential operating values of a motor over the stable working range between no-load running and a region near the design output. These values are normally plotted as a function of output (Fig. 3).

Operating characteristics largely help to judge drives, and particularly part-load and overload behavior. Part load readings for cos φ and standard motor efficiency are listed in Chapter 3 of this catalogue. All other operating values, particularly output and thus actual load, are easy to determine by measuring the absorbed power or stator current. Operating characteristics for standard motors are listed in our electronic catalogue, you may also inquire with the motor manufacturer.

Essential operating values such as efficiency η and power factor cos φ have been so defined in motor design as to reach an optimum at design output P_{2B}.

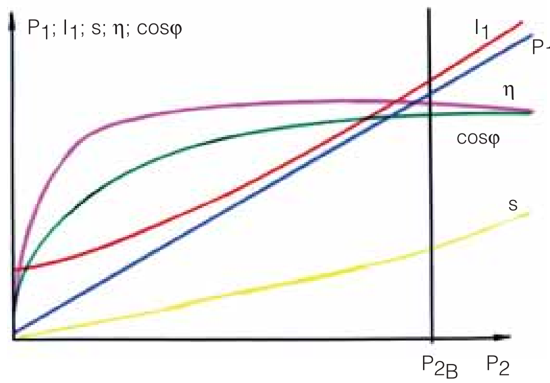


Fig. 3 Operating characteristics of an asynchronous motor

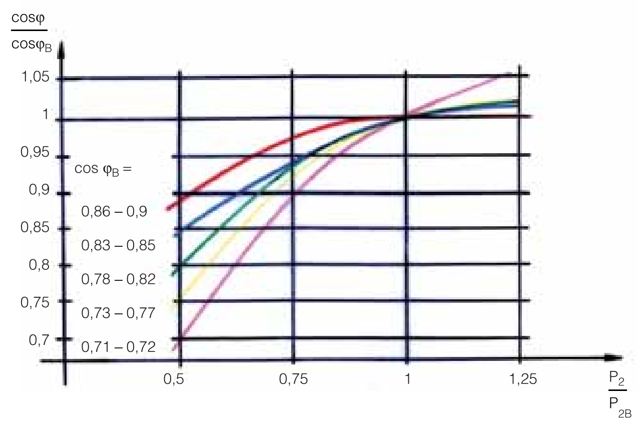


Fig. 5 Power factors in the part load/overload range

While efficiency in this connection only varies slightly over a comparatively wide range, a major drop should be expected for the power factor in the part-load region. Figs. 4 and 5 provide figures for most cases.

Design operating values can be found in related technical information literature, or on the rating plates of motors. Where the efficiency of a motor is not given on the rating plate, it may be determined from standard data as follows:

$$\eta_B = \frac{P_{2B}}{\sqrt{3} \cdot U_{1B} \cdot I_{1B} \cdot \cos\varphi_B} \cdot 100\,\%$$

Most operating characteristics list slip s so that the related speed may be determined as follows:

$n = n_{Syn}(1 – s)$
n_{Syn} = synchronous speed

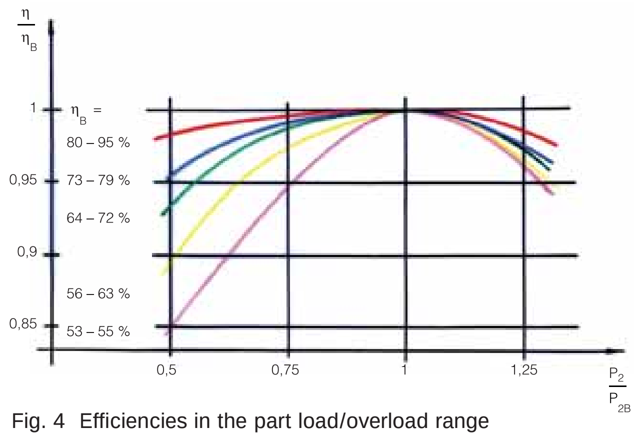


Fig. 4 Efficiencies in the part load/overload range

3. Pole changing motors

These use a similar mechanical construction as the basic versions of squirrel-cage motors so that mounting and assembly dimensions are identical, with the exception of a few versions having three or four speeds. The latter require larger terminal boxes, and dimensions HD (p) and O (r) deviate from dimensioned drawings for basic versions.

Pole changing is achieved by designing stator windings accordingly. Motors with two speeds and a ratio of 1:2 are preferably given a Dahlander winding. Where the two speeds have other rations, the motor uses two separate windings. Two windings, one or both of the Dahlander type, are needed where a motor has three or more speeds.

Pole changing motors are designed for direct starting (min. speed), and higher speeds should basically be reached by going through the lower stages first. For switching back (braking) see item 10.

Connecting terminals are designated pursuant to DIN EN 60034-8.

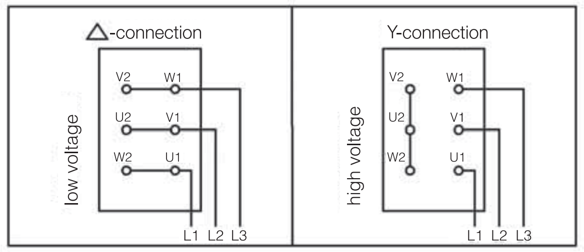
Examples of terminal connection plans are shown in Fig. 6.

As regards individual nos. of poles/speeds, what has been said in item 1. applies to pole changing motors, with the exception of specified minima for relative pull-out, pull-up and starting torques expressly exempted from DIN EN 60034-12.

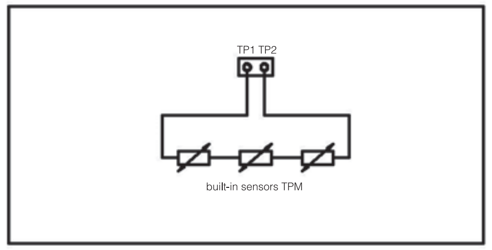
Pole changing squirrel-cage motors have uses, for instance, as machine tool drives and may replace indexing drives or considerably widen their control ranges.

In many drives they may substitute for slip-ring motors, the advantage being better efficiency at lower speeds. Pole changing motors combine the basic robustness of squirrel-cage motors with stepped speed control, which is why they are used in many special drives:

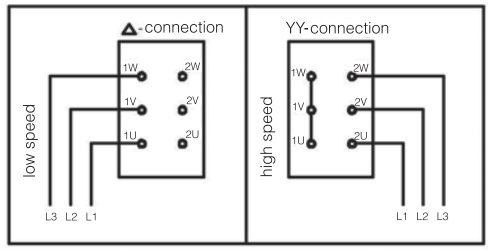
- lifting gear motors (exact motion at floor height at low, travel at high speed)
- slide rest adjustment (move forward at low, backward at high speed)
- planers (operating at low, reversing at high speed)
- pumps, fans, textile machines, etc.



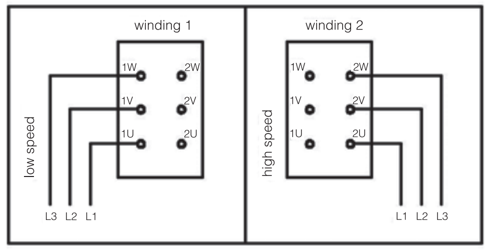
KP 0001 Standard motor in connection Δ/Y



KP 1000 One set of thermal winding protection



KP 0003 Pole changing motor, Dahlander connection



KP 0006 Pole changing motor with 2 windings

Fig. 6 Terminal connection plans (examples)

On an ever growing scale, squirrel-cage motors are used for speed control and/or operating variable-speed motors in conjunction with a frequency inverter. By programming the inverter accordingly, the drive can be optimally adapted and designed for each speed point. For example, the operating point of a drive for pumps and fans may be adjusted to the volume flow required at any one time. Compared with volume flow control via throttles or pole changing motors, this gives considerable power savings. For details of inverter operation see our main catalogue 06 – "Variable-speed drives".

4. Voltage switchable motors

These may be operated from mains having different voltages while giving the same design output. Construction is similar to that of motors in basic versions so that mounting and assembly dimensions are identical, with the exception of several sizes requiring larger terminal boxes because they use terminal sockets with 9 or 12 connecting bolts. In these versions, dimensions HD (p) and O (r) deviate from dimensioned drawings of basic versions.

Voltage switching is achieved by designing stator windings accordingly. The winding is manufactured in two groups which are connected in series or parallel as required.

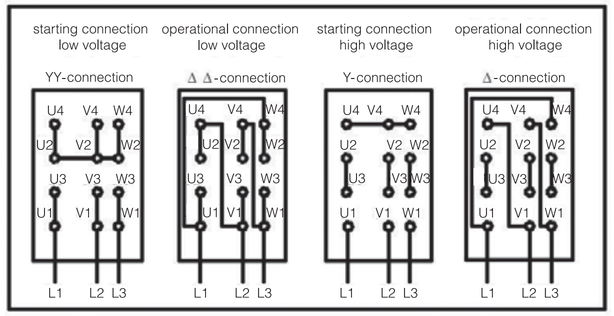


Fig. 7 Terminal connection plans for 2 voltages and Y-Δ-starting

The following voltage combinations are used:

- 400/690 V in winding circuit Δ/Y
  This is identical to the basic version and suitable for 400 V for direct Y/Δ-starting 690 V only for direct starting with no reduction in output.
- 230/400 V in winding circuit Δ/Y
  similar to 400/690 V in winding circuit Δ/Y
- 230/460 V in winding circuit ΔΔ/Δ
  similar to 230/400 V in winding circuit ΔΔ/Δ, but without reduced output.

For other voltages inquire with the manufacturer.

Voltage switchable electric motors have proven their worth mainly in mobile (for instance marine) applications where operation requires connection to mains having different voltages.

5. Use of standard three-phase asynchronous motors as single-phase motors

Each three-phase squirrel-cage motor may basically operate from a single-phase mains if the required phase shift is generated by an operating capacitor ("Steinmetz circuit"). The circuit is shown in Fig. 8.

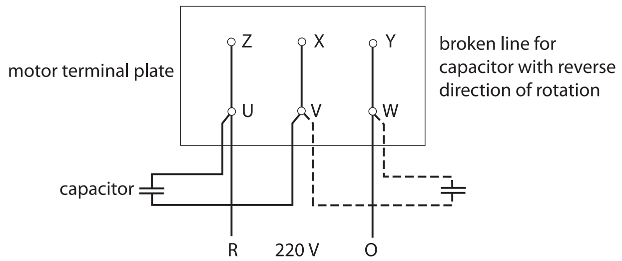


Fig. 8 Connecting of a 230/400 V three-phase motor as a single-phase motor with operating capacitor

Capacitor size is important for smooth operation. To obtain the related starting torque, large capacity is needed for short-circuit current phase shift. For a phase shift matching the design operation of the motor, the capacity chosen for the capacitor should not be too large. To improve starting behavior, a starting capacitor which is switched off after startup may be connected in parallel to the operating capacitor. Selecting capacitor size from the table below gives the following operating behavior:

- Max. output 70 % of three-phase current output
- Starting torque approx. 20 – 30 % of design torque in single-phase operation

Due to low initial torques and unfavorable main characteristics these motors may only be used with reduced starting loads, e.g. for fan drives.

Motor operating capacitors should normally be designed for continuous operating voltages of 1.2 – 1.5 times the mains voltage, i.e. at least 276 V for a 230 V mains. For other mains voltages the capacitor size should be converted as the inverse ratio of the square of the mains voltage.

On technical and economic grounds, the use of three-phase motors with continuous operating capacitors as single-phase motors is only meaningful up to about 1 – 2 kW single-phase output.

Output P_2 for single-phase operation, kW	Capacity C in µF at 3,000 rpm	Capacity C in µF at 1,500 and 1,000 rpm
0.2	16 – 20	20 – 30
0.4	25 – 40	30 – 40
0.6	40 – 50	50 – 60
0.8	60 – 80	70 – 90
1.0	80 – 100	90 – 100
1.2	100 – 120	120 – 140
1.4	120 – 140	140 – 160

6. Selecting a motor

Drive design and the right choice of a motor are instrumental in the cost-benefit ratio, prevent operating malfunctions and play a decisive role in economic efficiency. When making your choice, allow for all contributing factors such as power demand, operating mode, speed, mains/starting/braking/control conditions, bearing/shaft loads and ambient conditions.

The right choice will often be the basic version. It is therefore assumed for the different operating modes that there is a return to duty type S1 (continuous) so that motors are used in the basic mode.

7. Reaction torque, power consumption, moment of inertia

The mechanical power required by a driven machine for continuous duty or at equilibrium in any operating mode is basically governed by the following relation:

$$P_A = \frac{M_g \cdot n_A}{9550} \text{ in kW}$$

where M_g = reaction torque of driven machine in Nm
n_A = speed of driven machine in rpm

In directly coupled drives this is also the power consumption ($P_A = P_2$) of the motor. If a torque converter (gear unit, belt drive) is arranged between the machine and drive motor, the power consumption of the motor is

$$P_2 = \frac{P_A}{\eta_G} = \frac{M_g \cdot n_A}{9550 \cdot \eta_G} \text{ in kW}$$

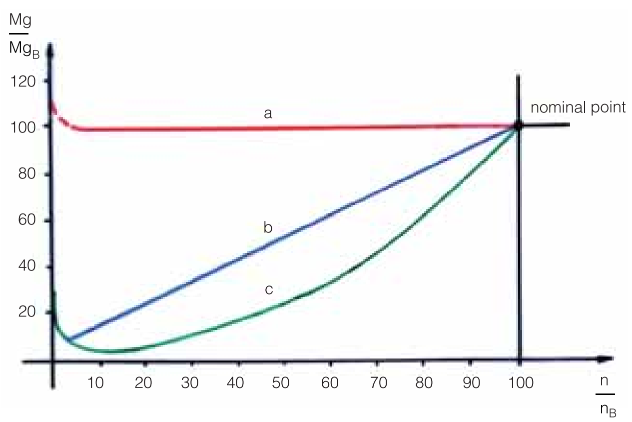
where η_G = torque converter efficiency

Whereas the a.m. relations apply only to purely rotational motions, the reaction torque for straight-moving machines should be determined as follows:

$$M_g = 9{,}56 \cdot \frac{F_A \cdot v}{n_M \cdot \eta_G} \text{ in Nm}$$

where F_A = load in N
v = speed in m/s
n_M = motor speed in rpm

The reaction torque power consumption of machines is generally a function of speed. To improve understanding between manufacturers and users of motors, some characteristic reaction torque behavior should be described (Fig. 9)



- Torque practically constant over speed (a)
  This is found, for example, in lifting gear, winches, conveyor belts, compressors, when conveying against constant pressures, etc.
- Linear rise of torque with speed (b)
  for example in drives of generators working against constant loads, frequency converters, etc.
- Torque rises at a specific power (e.g. parabolic) of speed (c)
  Found in drives of fans/rotary pumps/centrifuges, etc.

Fig. 9 Reaction torque characteristics of machines

Other types of torque behavior are possible in practice, but these are of lesser importance or traceable to the characteristics explained. Please note that elevated friction or adhesion torques may occur at speeds near 0 which are known as breakaway torques and may reach considerable levels (as in starting a piston compressor at low temperatures). These breakaway torques should be known as accurately as possible and taken into consideration when judging startup.

The total moment of inertia of a drive is composed of

$$J = J_M + J_F$$

where J_M = motor moment of inertia (see Technical Data for motor series in question)
J_F = motor speed related sum of moments of inertia of driven components

Once the moment of inertia of a driven machine has been determined using known procedures for the speed of the machine, the following conversion can be made to the motor shaft speed:

$$J_F = \left(\frac{n_A}{n_M}\right)^2 J_A$$

where J_A = moment of inertia of driven machine at n_A

8. Motor selection for different duty types

Selection here is for electric/thermal loads. The decisive quantity when determining motor output is not just load at equilibrium. Allowance should also be made for dynamic processes, the final criterion being conformance to permissible winding heating.

One condition for assignment to a duty type is the load diagram or working cycle showing the torques/outputs required by the drive, related to the desired motor speed and as a function of variation in time.

8.1. Motor output for continuous duty (duty type S1)

Here selection is easy because load does not change or simply fluctuates. Use the technical data to choose a motor with an output equal to, or greater than the constant or effective load. The following then applies to motor choice for constant load:

$$P_{2B} \geq P_A = \frac{M_g \cdot n_A}{9550}$$

where M_g = reaction torque of machine in Nm
P_{2B} = motor design output (list output) in kW
P_A = power consumption of a machine in kW
n_A = machine speed in rpm

If loads fluctuate, use the following criteria for selection:

$$P_{2B} \geq P_{Am} = \frac{M_{geff} \cdot n_A}{9550}$$

$$M_{geff} = \sqrt{\frac{M_1^2 \cdot t_1 + M_2^2 \cdot t_2 + \ldots + M_n^2 \cdot t_n}{t_1 + t_2 + \ldots + t_n}}$$

where M_{geff} = effective reaction torque in Nm
P_{Am} = mean power consumption of machine in kW

The individual load portions should be sufficiently small, i.e. $t_n < \tau_1$ or $t_n \ll \tau_2$, with τ_1 and τ_2 standing for the thermal time constants of the motor. For the basic series K21R the values for τ_1 and τ_2 as well as other data for the intermittent duty calculation are given at the end of this chapter. If t_n is greater, select the motor acc. to the highest occurring load portion.

When selecting motors for continuous duty make sure

- that their design output is as closely above their power consumption as possible because severely underloaded motors give poor operating values. On the other hand, there is very little room for overloading because today's motors feature high degrees of utilization;
- attention is given to the starting frequency of the drive. If, depending on the difficulty of starting, several start-ups are made per hour, for example, inquire with the manufacturer. Design work should follow the rules for the switching mode below, as this is no longer S1 operation.

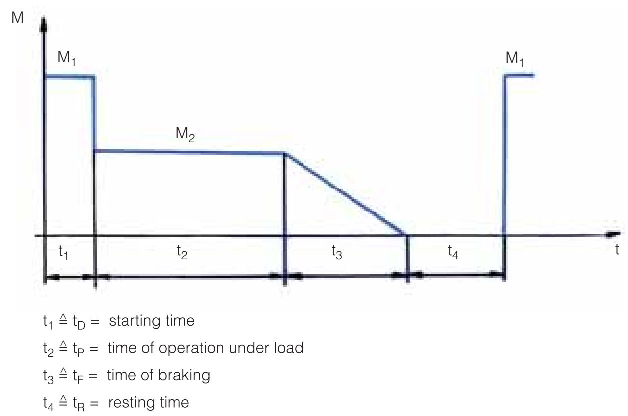


Fig. 10 Example of a working cycle

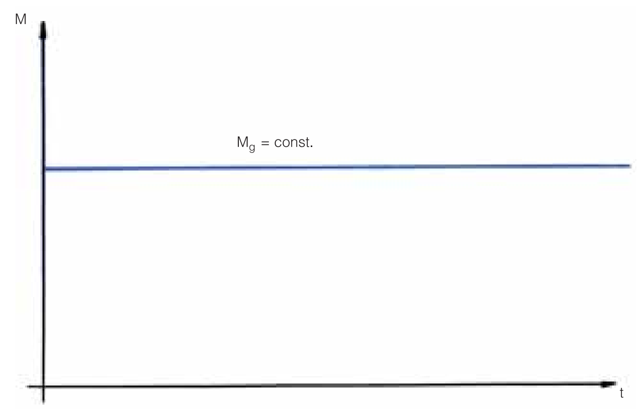


Fig. 11 Reaction torque in continuous duty S1

8.2. Motor output in short-time duty (duty type S2)

First use power consumption P2 for the load phase in S1 as determined from the relations above to select a motor, then check to see if conditions exist for duty type S2.

The following applies:

operating time $t_P < 3 * \tau_2$
interval time $t_R > 3 * \tau_{2St}$
where τ_2 = thermal time constant of motor in operation
τ_{2St} = thermal time constant of motor at standstill (cooling)

In general, operating periods up to about 60 mins. and accordingly longer interval times meet the conditions for short-time duty S2. Preferred values for operating periods are given in the next table. The permissible output PS2 for the selected motor in duty type S2 should be determined with this relation:

$$P_{S2} = P_{2B} \cdot \sqrt{\left(1+\frac{K_1}{K_2}\right)\cdot q - \frac{K_1}{K_2}}$$

where $$q = \left(1-\frac{\Theta_2}{\Theta}\cdot e^{-\frac{t_{S2}}{\tau_2}}\right)^{-1}$$

q = loss factor
P_{2B} = motor design output in S1 acc. to technical data
K_1/K_2 = no-load running to load loss ratio in design operation of motors
Θ_2/Θ = ratio of overtemperature of process occurring at τ_2 to total overtemperature
t_{2S} = loading time in S2

The right motor was chosen if $P_{S2} \geq P_A$, with P_A being the actual power consumption. If necessary, recalculate for neighboring motor sizes.

Output in short-time duty S2 is greater than motor design output P_{2B}. As a further boundary condition, make allowance for the relative pull-out torque.
The following applies pursuant to DIN EN 60034-1:

$$\frac{M_K}{M_{BS2}} \geq 1{,}6$$

where M_K = pull-out torque of motor selected
M_{BS2} = design torque of motor at P_{S2}

If this requirement is not met, choose a larger motor regardless of thermal utilization.

Symbol								Design data	
								Type	Preferred value
S1								Operating time	continuous
	S2							Operating time	0.5; 1; 3; 5; 10; 30; 60; 90 mins
		S3			S6			Period of one cycle	10 mins
			S4	S5		S7	S8	Switching rate	60, 90, 120, 240, 600 c/h
		S3	S4	S5	S6			Relative on period	15%; 25%; 40%; 60%
			S4	S5		S7	S8	Moment of inertia factor FI	1.2; 1.6; 2; 2.5; 4

8.3. Motor output in switching mode (duty types S3, S4, S5, S7)

Assuming that load diagrams (working cycles) for transient processes may be incomplete, a rough selection of motors should first be made. For this the a. m. effective torque method may be used.

$$M_{geff} = \sqrt{\frac{M_1^2\cdot t_1 + M_2^2\cdot t_2 + M_3^2\cdot t_3 + \ldots + M_n^2\cdot t_n}{t_1+t_2+t_3+\ldots+t_n}}$$

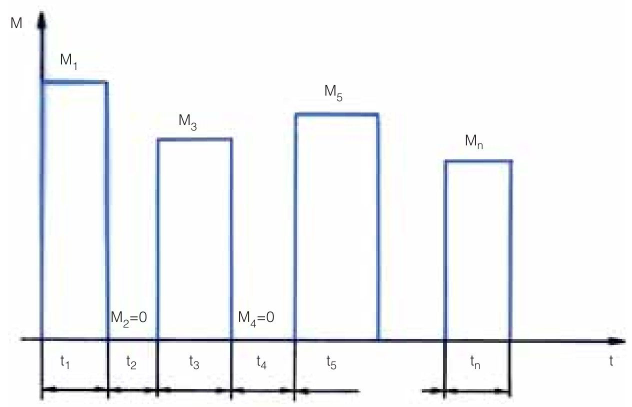


Fig. 12 Simplified reaction torque behavior in extinction/switching mode

Trapezoidal and triangular sections of the working cycle may be converted to a constant torque during the load phase here.

$$M_{Tr} = \sqrt{\frac{M_a^2 + M_a\cdot M_b + M_b^2}{3}}$$

$$M_{Dr} = \frac{M_a}{\sqrt{3}}$$

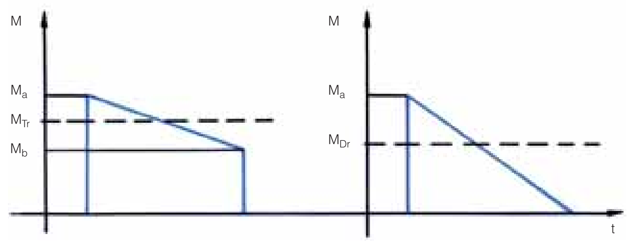


Fig. 13 Trapezoidal and triangular reaction torques

The output roughly results as

$$P_A = \frac{M_{geff}\cdot n_A}{9550} \text{ in kW}$$

With a view to frequent transient processes, a larger motor may already have to be chosen.
Now the permissible switching rate of the selected motor may be calculated under the prevailing conditions.

$$Z_{zul} = \frac{1}{FI}\cdot f_B \cdot f_S \cdot Z_0 \qquad FI = (J_M + J_F) / J_M$$

where Z_{zul} = permissible switching rate
FI = moment of inertia factor
f_B = load factor
f_S = switching factor for type of connection
Z_0 = no-load switching rate in c/h

Load factor f_B allows for the relative on period (ED) of the drive and the loss factor f_V of the selected motor.
It is defined as

$$f_B = (1-m_g^2)\frac{ED}{100\%} + f_V\left(1-\frac{ED}{100\%}\right)$$

The switching factor f_S makes particular allowance for the type of braking used.

$$f_S = 1 - \frac{m_g}{\overline{m}_A}$$ for switching mode with mechanical braking (e.g. S4)

$$f_S = 1 - \left(\frac{m_g}{\overline{m}_R}\right)^2$$ for switching mode with countercurrent braking or reversing operation (e.g. S5, S7)

$$f_S = 1{,}08\,\frac{\left(1+\frac{m_g}{\overline{m}_B}\right)\left(1-\frac{m_g}{\overline{m}_A}\right)}{2+\frac{m_g}{\overline{m}_B}-\frac{m_g}{\overline{m}_A}}$$ for switching mode with direct current braking

If the reaction torque during starting and/or run-up is less than during operation at design speed, proceed as follows:

- Calculate switching factor f_S with the mean relative reaction torque during run-up.
- Determine load factor f_B with the relative reaction torque occurring at design speed.

In switching modes with mechanical and direct current braking use Z_{0A} for Z_0, in switching mode with countercurrent braking and reversible switching use Z_{0R}.

m_g = relative resistance (load) moment with reference to the design torque of the motor
ED = relative on period in %
f_V = loss factor
$\overline{m}_A$ = mean relative starting torque
$\overline{m}_R$ = mean relative reversing torque
$\overline{m}_B$ = mean relative direct current braking torque

To complete the load diagram and accurately calculate the relative on period ED, determine transition process times as follows:

Starting time $$t_D = T_{AN}\frac{FI}{\overline{m}_A - m_g}$$

Reversing time $$t_{Rev} = 2T_{AN}\frac{FI}{(\overline{m}_R - m_g)(1+m_g/\overline{m}_R)}$$

Braking time $$t_F = T_{AN}\frac{FI}{\overline{m}_B + m_g}$$

where $T_{AN} = \frac{J_M\cdot n_B}{9{,}55\cdot M_B}$ = normal motor starting time in secs.

J_M = moment of inertia of motor in Nm^2
n_B = design speed in rpm
M_B = design torque in Nm

The magnitude of $\overline{m}_B$ depends on the braking circuit used and the level of the exciting current and can not be given in general (see also item 10.).

Finally check for provision of sufficient torque overload capacity.

The following applies $\frac{M_K}{M_{g\,max}} \geq 1{,}6$

where M_K = pull-out torque of selected motor
M_{gmax} = max. reaction torque in working cycle

Particularly in intermittent duty S3, the effective torque procedure is sufficient to determine the required motor output. As per definition, switching operations need not be taken into consideration here.

$$M_{geff} = \sqrt{\frac{M_g^2\cdot t_P}{t_p + t_R}}$$

where t_P = loading time
t_R = interval time

The following then applies to motor selection:

$$P_{2B} \geq P_A = \frac{M_{geff}\cdot n_A}{9550} \text{ in kW}$$

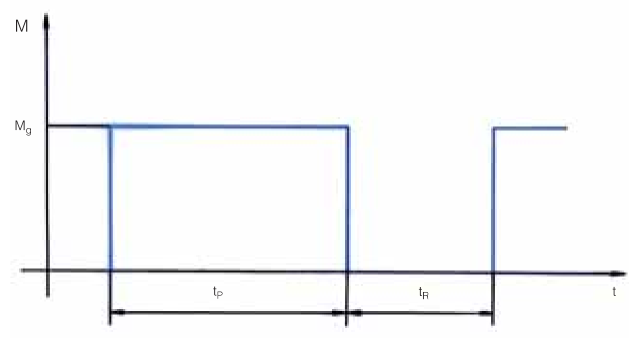


Fig. 14 Working cycle in duty type S3

8.4. Motor output in continuous periodic duty (duty type S6)

The effective torque procedure is suitable for determining the required motor output, with allowance made for losses in the no-load running phase. After preselecting a motor, the effective torque results as

$$M_{geff} = \sqrt{\frac{M_g^2 \cdot t_P + (f_0 \cdot M_B)^2 \cdot t_V}{t_P + t_V}}$$

where M_g = reaction torque (load)
M_B = motor design torque
t_P = loading time
t_V = no-load running time
f_0 = ratio of no-load running losses to total design torque losses at design torque (generally assumed to be from 0.4 to 0.5)

The following applies to the right selection: $P_{2B} \geq P_A = \frac{M_{geff} \cdot n_A}{9550}$ in kW.

Check for torque overloads as in 8.3.

8.5. Motor output in continuous periodic duty with load/speed variations (duty type S8)

No general rules may be given for choosing a motor for this mode because, due to high thermal loads, motor size largely depends on transient processes. Please inquire with the manufacturer giving this data:

- machine
- full working cycle (reaction torques/operating times at specific motor speeds)
- moment of inertia of the machine incl. transfer members stating reference speed
- on period per working cycle, planned switching rate
- possible braking processes at the end of the working cycle; type of braking, braking torque

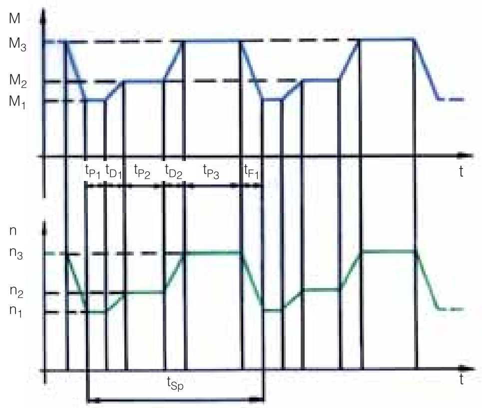


Fig. 15 Working cycle in duty type S8

8.6. Operation with non-periodic load/speed changes (duty type S9) and individual constant loads (S10)

For this select a constant-load motor to suit mode S1 making allowance for frequent overloads during operation.

9. Squirrel-cage motor starting

Direct Starting
Here the motor connects directly to the mains acc. to its design voltage. This is the simplest and most reliable type of starting for squirrel-cage motors and should be preferred. The full capacity of the motor is used for run-up, and the thermal load is normally at a minimum. This is a must when starting against constant or steeply rising reaction torques as a function of speed and when accelerating large centrifugal masses (heavy load starting).

The mains, of course, then has to handle the full starting current of the motor which, depending on size and no. of poles, may generally reach 4 – 8 times the motor design current. In today's stable mains it may be assumed that this convenient type of starting may be used almost universally.

Following are a number of procedures for mains and driving conditions which do not allow direct starting.

Star-delta starting
Y/Δ-starting is suitable only for motors whose operational winding is connected in Δ, with all 6 winding ends run out to the terminal board (i.e. for instance 230 Δ, 400 Δ, 500 Δ). When starting the winding is first connected to mains in Y-connection, causing the starting current and starting torque to drop to about 30 % of their design values. After run-up to a speed close to the design speed, the winding is switched over to the operational Δ-connection. For Y/Δ-starting be sure to observe the following:

- Since the starting torque has been reduced to about 30 % (which applies also to the complete torque behavior of the motor), start only with load reduction or a low reaction torque moment so that enough acceleration torque is left for run-up. At each stage of the run-up curve, the motor torque should be about double the reaction torque moment being applied at the time so as to obtain reasonable starting times and avoid inadmissible heating of the motor winding.
- When in doubt, you can ask manufacturers for the torque-speed characteristics of a motor (inquire if possible).

  Be sure not to switch over from Y to Δ until run-up to approximate design speed. Early switchover makes you lose the effect of starting current reduction. On the other hand, do not spend too much time at the Y stage to avoid inadmissible heating of motor windings. Determine the switchover point from the starting time calculation (below), through a test or by current measurement (for manual switching).
  Y/Δ-starting may use manual switches or contactor control, for related circuit diagrams see the technical literature.

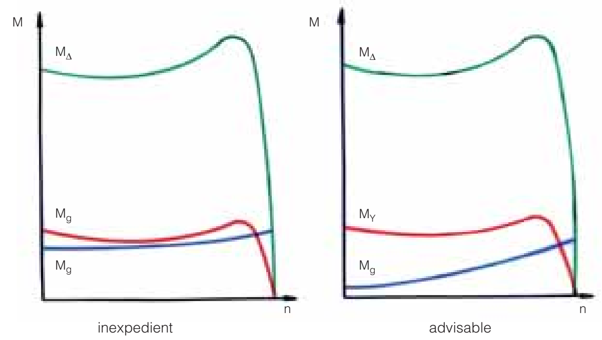


Fig. 16 (Un)suitable Y/Δ-starting at different reaction torques

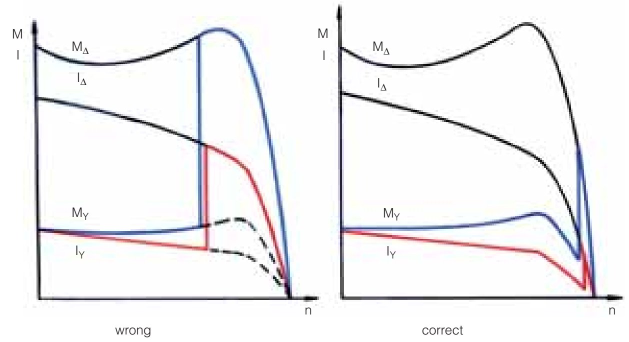


Fig. 17 Right choice of switchover point for Y/Δ-connection

Soft starters
The fundamental mode of the motor terminal voltage is controlled via three-phase AC choppers so that the starting current is reduced, while certain adjustments can be made to the load characteristic. Due to reduced torques during starting, follow the instructions given for Y-Δ-starting. A check on starting is vital here, too. Torque data for standard motors can be found in technical lists and/or the electronic catalogue which also contains related characteristics. For special designs inquire with the manufacturer.

Starting with frequency converter
During run-up in this arrangement, the drive can be accelerated frequency-proportional up to design speed using an optimal U/f assignment. In design current run-up the design torque is available over the entire speed range; higher values are possible and depend on the frequency converter used and its programming.

Starting time calculation
For most drives, starting time may be determined using a mean acceleration torque resulting from the torque behavior of the motor and the reaction torque behavior. The approximate starting time with these values is

$$t_D \approx \frac{J_{ges} \cdot n_B}{9{,}55 \times M_{bm}} \text{ in [s]}$$

where J_{ges} = total moment of inertia to be accelerated in kgm^2
n_B = design speed in 1/min
M_{bm} = mean acceleration torque in Nm

Starting time is proportional to the total moment of inertia and inversely proportional to the acceleration torque. In this connection, the total moment of inertia J_{ges} for the drive results from the moment of inertia of the motor and the external moment of inertia related to the drive shaft. Mean motor and reaction torques may be found using suitable procedures for arithmetic mean value formation.

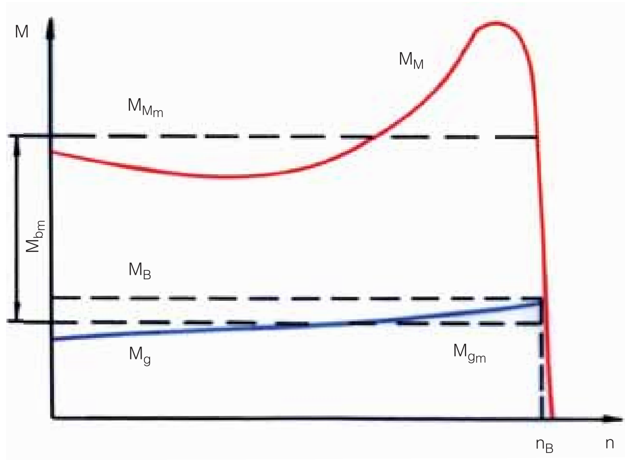


Fig. 18 Simplified starting time determination

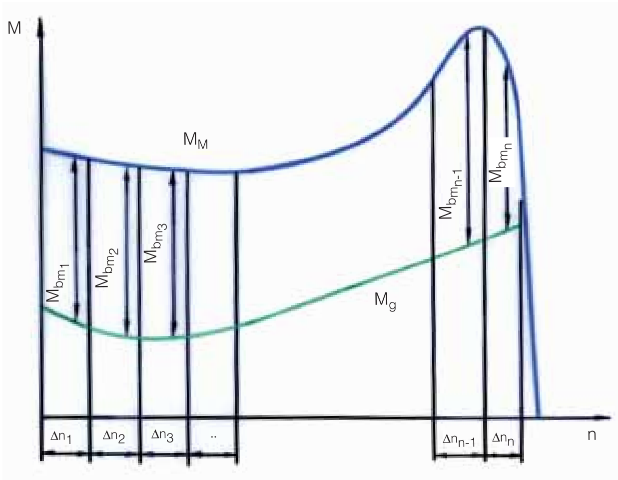


Fig. 19 Accurate starting time determination

In many practical applications, the mean motor torque may be determined with sufficient accuracy using the formula:

$$M_m \approx \frac{M_A + M_K + 4 \times M_S}{6}$$

This starting time calculation is not sufficient in a number of cases such as specific reaction torque behaviors and low acceleration torques.

Starting time should then be determined in separate sections and results from

$$t_D = \sum_{i=1}^{i=n} \Delta t_{D_i} \text{ where } \Delta t_{D_i} \approx \frac{J_{ges} \cdot \Delta n_i}{9{,}55 \times M_{b_{mi}}}$$

Δt_{Di} = starting time in section Δn_i in secs
Δn_i = speed section in rpm
$M_{b_{mi}}$ = mean acceleration torque in section Δn_i in Nm

The torque behavior of the squirrel-cage motor may be constructed with sufficient accuracy from the values for M_A, M_S and M_K given in the technical data. If necessary, inquire with the manufacturer.

10. Brakes

In a number of drive applications, the motor or motor-machine drive unit may not be left to themselves for shutdown. For safety reasons, there is a need to decelerate drives quickly. Standstill can be achieved as follows:

- allow to come to a stop freely
- mechanical braking
- electric braking
- combining several braking methods (e.g. countercurrent braking in connection with a mechanical brake)

Each of these methods has its advantages and drawbacks, and no general comments may be made. When designing a drive, a type of brake should be chosen to suit the prevailing operating conditions.

The same technical relationships apply to all braking procedures, with braking time inversely proportional to the resulting braking torque and braking time resulting from

$$t_F = \frac{J_{ges} \cdot n_B}{9{,}55 \cdot M_{BrRes}} \text{ in secs}$$

where J_{ges} = total moment of inertia in Nm^2
n_B = design speed in rpm
M_{BrRes} = mean resulting braking torque in Nm

10.1. Coming to a stop freely, mechanical braking

The braking torque for these methods stems from the mean reaction torque of the machine, mechanical losses of the motor, and the mechanical brake.

Use of these two methods has no effect on motor design as losses cause no thermal loads on the motor.

10.2. Electric braking

Here the braking torque applied acts in the same direction as the reaction torque of the machine. The resulting braking torque then is

$$M_{BrRes} = M_{Brm} + M_g$$

where M_{Brm} = mean acceleration torque

To design electric brakes, the following should be known:

- max. occurring load torque
- moment of inertia to be decelerated
- braking time
- speed, switching rate, voltage, frequency

These methods work without wear or maintenance. No specific brake is needed, but there is more switching. Designers should note the extra thermal load on motors.

Countercurrent braking
This may be used for squirrel-cage and slip-ring motors and is easy to install by interchanging two of the three three-phase current connecting leads. While the centrifugal masses of the drive continue in the old direction, the torque is already counteracting. When speed is zero, the motor should be switched off electrically to avoid run-up in the opposite direction (use a speed monitor). Braking characteristics depend on rotor design.

- In squirrel-cage motors
  characteristics depend on the rotor slot shape in particular, which gives rise to different assessments in the technical literature ranging from “modest” to “very powerful” braking action. In practice, testing is advisable.

- In slip-ring motors
  characteristics are affected by additional resistors. Starting and control resistors may be used, and the braking effect is greatest if resistances change during braking.

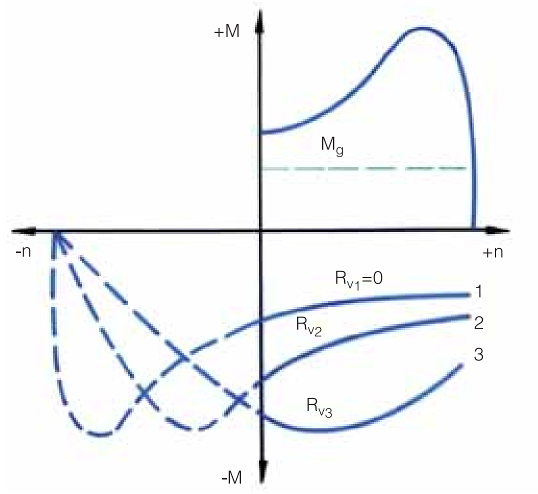


Fig. 20 Countercurrent braking characteristics

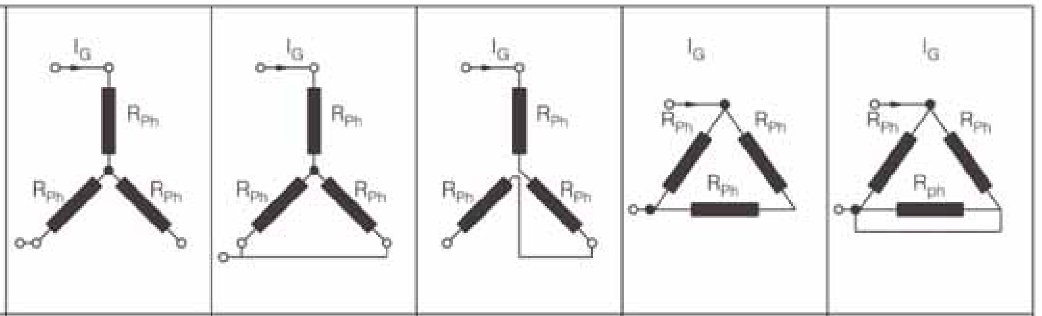
As regards thermal motor loads please note that additional heating is about 2 to 3 times that of startups, particularly of squirrel-cage motors, whereas slip-ring motors produce most of the heat outside in the additional resistor. If braking occurs in the duty type S5, observe instructions in 8.3. In occasional countercurrent braking time should not exceed 10 secs.

Direct current braking
Here the stator of the motor is disconnected from the three-phase current mains and supplied with DC after a short interval. Resulting switching modes are shown in Fig. 21. The braking action may be modified by DC selection. The recommended value is 2 to 2.5 times the motor design current.

The necessary excitation voltage results as

$$U_G = I_G \cdot R_{ges} \cdot 1{,}3$$

where I_G = excitation DC
R_{ges} = total resistance depending on braking circuit (Fig. 21)
R_{Ph} = phase resistance (Fig. 21)



Factor K	$\sqrt{\frac{2}{3}} = 0{,}816$	$\frac{1}{\sqrt{2}} = 0{,}707$	$\frac{2}{3}\sqrt{2} = 0{,}944$	$\frac{\sqrt{2}}{3} = 0{,}472$	$\frac{1}{\sqrt{6}} = 0{,}408$
Rges.	$2\ R_{Ph}$	$\frac{3}{2}\ R_{Ph}$	$3\ R_{Ph}$	$\frac{2}{3}\ R_{Ph}$	$\frac{1}{2}\ R_{Ph}$

Fig. 21 Winding circuits for direct current braking

The braking characteristic may be constructed point by point from the motor characteristics M = f(n) and I_1 = f(n). The braking torque results as

$$M_{Br} = M\left(\frac{K \cdot I_G}{I_1}\right)^2$$

where M = motor torque
K = braking circuit factor (Fig. 21)
I_1 = motor current

The braking action is gentler than in countercurrent braking, there are no shocks acting on the gear unit and/or coupling, and there is no starting in the opposite direction. Additional mechanical braking may be required toward the end of the braking process. Whether braking is better with DC or countercurrent can only be decided in specific cases. There is doubtless a thermal advantage because the resulting losses are approximately the same as for a startup. For direct current braking in duty type S5 observe 8.3. during design.

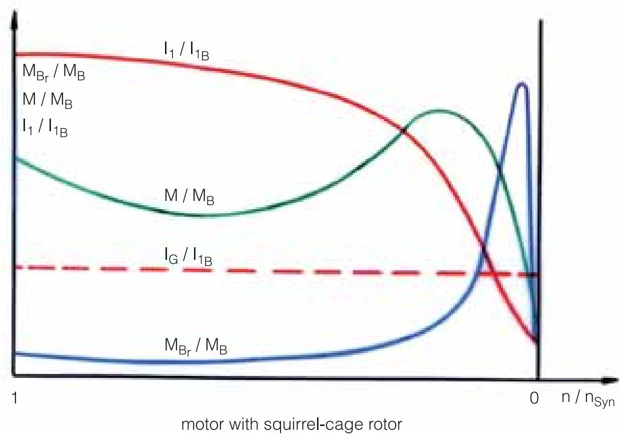


Fig. 22 Characteristics for direct current braking of a squirrel-cage motor

Supersynchronous braking
Three-phase asynchronous motors operate in the supersynchronous range if
- a passing load accelerates the motor beyond its synchronous speed,
- the mains frequency is suddenly reduced, or
- a pole changing motor is switched from a higher to a lower speed.

Transition to the generator range causes a braking effect above the synchronous speed (see also Fig. 1), there is no braking to standstill.

Fig. 23 shows braking characteristics for a dual pole changing motor. If the lesser speed is already low, absolute standstill may be brought about by subsequent mechanical braking. For supersynchronous braking it is an advantage that the generator braking torques are greater than the torques in motor operation. More effects can be achieved through additional rotor resistance or changes in the stator winding circuit.

When switching pole changing motors back from higher to lower speeds, the resulting braking torques may for short periods far exceed the design torque but may be reduced by switching back through stage “0”, possibly with a delay.

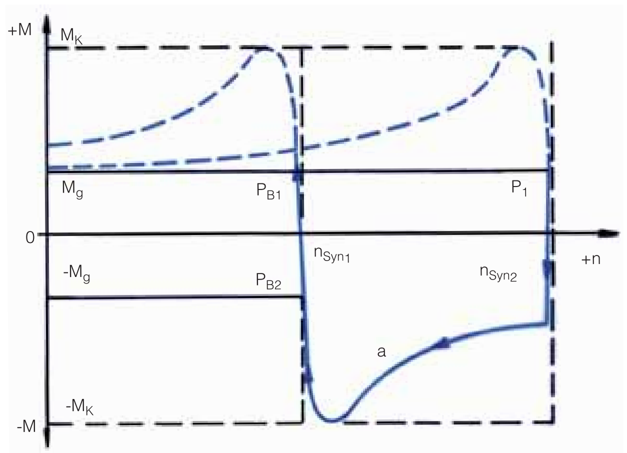


Fig. 23 Supersynchronous braking

Subsynchronous braking
Related switching arrangements use slip-ring motors exclusively and have uses particularly in cranes. In this application it is imperative that two phases of the motor are connected to the mains throughout to prevent a free-wheel position. The following is possible:

- Single-phase braking circuit or subsynchronous countertorque lowering:
  Interconnect the three phases as shown in Fig. 24 and connect to two line conductors. The rotor is connected to a three-phase resistor.

- Double motor circuit:
  Two three-phase current machines work together, one as a drive motor, the other as a braking generator.

- Unsymmetric three-phase braking circuit (Fig. 25):
  Here the double motor circuit is embodied in one machine. The beginning and end of a phase in a delta connected stator winding are interchanged.

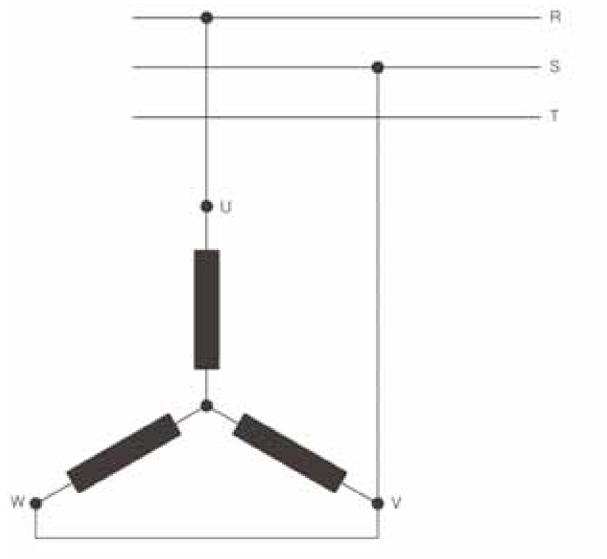


Fig. 24 Single-phase braking circuit of stator winding

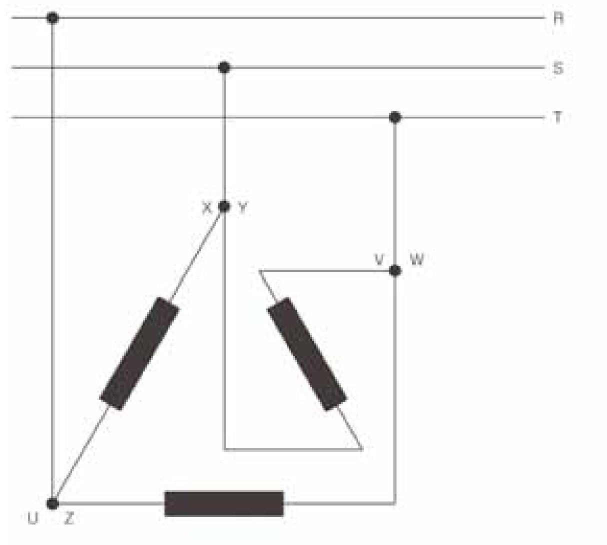


Fig. 25 Unsymmetric three-phase braking circuit

11. Generators

An asynchronous machine exceeding its synchronous speed changes over to generator operation. The drive may come from a hydraulic motor, diesel unit, etc. The torque depends on the amount of supersynchronous slip and, just as the torque in motor operation, has a maximum which is somewhat greater than the motor pull-out torque. The operation of squirrel-cage motors as asynchronous generators calls for a live mains or excitation via capacitors which supply the reactive current required for magnetization.

In mains operation, the frequency and voltage of the generator match the related mains data. The active power output depends only on speed, which automatically adjusts itself to the available drive power unless the drive torque exceeds the generator pull-out torque.

Speed is approx. 1 to 3 % above the synchronous speed. When working from the public mains, discuss the supply with the mains operator in advance. For more details see “Technische Anschlussbedingungen für den Anschluss an das Niederspannungsnetz (TAB 2000)”.

In isolated operation, the magnetization current comes from capacitors whose size depends on the generator's reactive power consumption and the size and type of consumers to be supplied. In addition, the dielectric strength of the capacitors should be set to the peak value of the voltage produced to suit their circuit. Careful design is required here as the system (generator – capacitor – load) reacts to speed and load changes with major voltage and frequency variations.

12. Mechanical transmission members

For smooth, shock-free running the motor should stand on a strictly level surface. Transmission members to be mounted on the shaft end should be well (dynamically) balanced. If this is neglected, (antifriction) bearings will suffer additional loads and damage.

Motor output is largely transmitted to the machine via
- couplings
- belts
- chains
- gears.

It is up to the designer to make allowance for structural and economic factors and find the optimal drive solution. As a matter of principle, the outer contours of transmission members to be mounted on the motor shaft end must not project beyond the shaft end shoulder and only standard transmission members should be used. Where self-designed parts are used as an exception, these should meet the requirements of applicable standards as regards manufacturing accuracy, balancing, limits of use, etc.

The following describes the effect of driving element masses and forces (F_G in N) on radial (F_r) and axial forces (F_a) for horizontal and vertical shafts. Where the angle of the motor axis is inclined >15° relative to the horizontal/vertical, the force (F_G) generated by the mass of the driving elements should be geometrically apportioned to F_r and F_a.

12.1. Coupling drives

Direct couplings are mostly used for driving and driven machines. Basically, only flexible or elastic positive special couplings should be used. Couplings require very careful aligning of individual machines, i.e. shaft centers should be in alignment.

Depending on the type of coupling, certain inaccuracies in individual machines may be compensated but may nevertheless cause considerable loads on bearings and shafts and uneven/unsteady running. This will more or less destroy bearings, motor shafts and the transmission members of couplings. The better the alignment of machines connected by couplings, the less extra load may be expected and the more reliable is the machine.

As a matter of principle, rigid couplings should not be used as they can not even compensate the smallest misalignment. Motors experience linear extension of shafts as they go from a cold to an operating condition. Rigid couplings may quickly destroy the bearings of the motor or the driven machine, their use is therefore not authorized by the motor manufacturer.

When using torsionally flexible (plate or bolt) couplings please note that they and the masses they connect form vibrating systems with a certain natural frequency which is reduced by softer couplings and increased by harder ones. Where drives experience periodic shock, make sure that the frequency of shock moments does not coincide with the natural frequency. Resonance or near-resonance may cause large vibration amplitudes and loads in the system.

Size selection of a coupling is based on the motor shaft design torque.

$$M_B = \frac{9550 * P_{2B}}{n_B}$$

where M_B = motor design torque [Nm]
P_{2B} = motor design output [kW]
n_B = design speed [rpm]

Make allowance for operational loads by selecting a coupling size.

12.2. Belt drives

These are mainly used where
- different speeds are required between driving and other machines,
- shafts are not in one plane,
- flexible power transmission is needed, and
- shock and vibration damping are sought.

Flat and V-belts in a variety of designs and materials are mainly used. Which of the two types is preferred depends on specific properties and is dealt with in the technical literature.

The following should be observed when designing belt drives:
- Initial belt tension should be adjustable. e.g. by tension rails, tensioning rolls or rockers.
- The shafts of driving and other machines should be strictly parallel.
- Where several belts are used on a pulley, endless belts are recommended which should be kept in stock/replaced in sets.

With these steps you can counteract uncontrolled reduction of the service life of belts and uncontrolled loads on shaft ends and bearings which often cause premature damage to driving and other machines.

Determining pulley dimensions
Pulleys should be so dimensioned that the permissible values for F_r and F_a on the shaft end are not exceeded. The radial force F_{rR} in belt drives is composed of the pull and initial tension of the belt. For the latter, allowance is made with the factor c_V in determining F_{rR}.

Approximate values are
- 2…2.5 for V-belts
- 2.5…3 for standard flat leather belts with tensioning rolls
- 4…5 for standard flat leather belts, rubber belts, etc. without tensioning rolls

The radial force for a given pulley may be determined as

$$F_{rR} = 2 \cdot 10^7 \, \frac{P_{2B} \cdot c_V}{n_B \cdot D}$$

where F_{rR} = radial force [N]
P_{2B} = motor design output [kW]
c_V = belt initial tension factor
n_B = motor design speed [rpm]
D = pulley dia. [mm]

The inertia force results as

$$F_{MR} = m_R \times g$$

where F_{MR} = inertia force [N]
m_R = pulley weight [kg]
g = gravitational acceleration [9.81 ms^{-2}]

Geometric addition is possible for very large pulleys. The effective direction of F_{rR} is invariably in the direction of the driving end. Shaft loads F_r and F_a result as shown in Fig. 28. The dimension x is the pulley center to shaft shoulder distance.
Values F_r, F_a and x may be used to check on the admissibility of loads pursuant to “Technical explanations”.

If the admissible load is exceeded and loads can not be modified substantially by choosing a different belt with a different initial tension, select a pulley with a larger diameter.

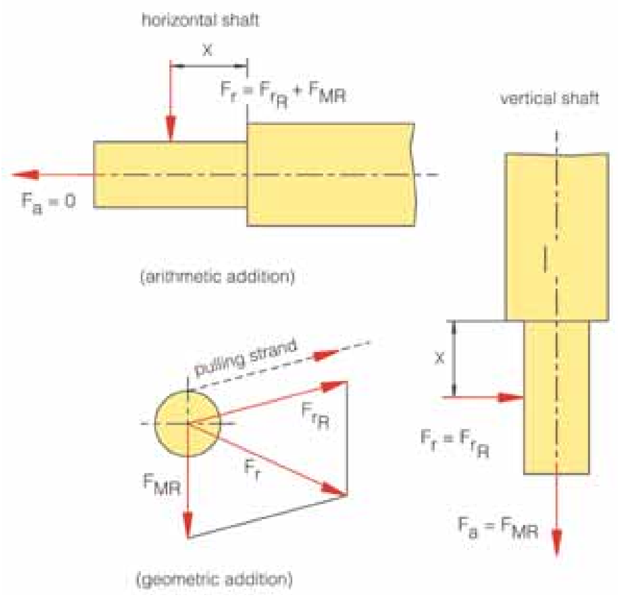


Fig. 26 Shaft loading in belt drives

12.3. Chain drives

Unlike belt drives, these are positive transmission members with no slip even if axle bases are small and gear ratios are large. Compared with gearwheel drives, chain drives are to some extent elastic and may also span larger axle bases without intermediate sprockets.

The radial force acting on the motor shaft end results as

$$F_{rKe} = 2 \cdot 10^7 \, \frac{P_{2B}}{n_B \cdot D} \cdot c_k \cdot c_d$$

where F_{rKe} = radial force [N]
P_{2B} = motor design output [kW]
c_k = factor which makes allowance for additional force generated in chain drive itself
c_d = factor which makes allowance for additional force generated by the machine
n_B = motor design speed [rpm]
D = reference circle dia. of chain wheel used [mm]

The effective direction of F_{rKe} is invariably in the direction of the driving end.
In motors having horizontal shafts F_a= 0, in vertically oriented motors $F_a = F_{MKe}$.
By analogy, the representation in Fig. 28 applies to determining F_r, F_a and x.

F_{MKe} = inertia force of chain wheel [N]

If the admissible shaft load is exceeded, increase the chain wheel reference circle diameter.

No. of engagements	Type of teeth	Factor c_k
1	Precision gearwheels (pitch errors/form defects < 0.02 mm)	1.05 … 1.1
	Standard planed/milled gearwheels and chain wheels (error 0.02–0.10 mm)	1.1…1.3
	Cast gearwheels (error > 0.10mm)	1.5 to 2.2
2	Precision gearwheels	0.6 …0.7
	Standard planed/milled gearwheels	0.7 …0.8
Lower values are for low tooth speeds of v ≤ 2 m/s		

Factor c_k for chain wheel/gearwheel drives

Type of machine	c_d
Prime movers	
Electric machines, turbines	1.0 … 1.1
Electric traction motors in engine frames	1.1 … 1.2
Electric traction motors in axle suspension/combustion engines/piston steam engines	1.2 … 1.5
Transmission systems	
for driving larger groups of machines	1.1 … 1.3
Conveyors, lifting gear	
Conveyor belts, ropeways, centrifugal pumps, blowers, turbocompressors	1.0 … 1.2
Mine fans	1.1 … 1.3
Elevators, cranes	1.2 … 1.3
Piston compressors	1.2 … 1.5
Reciprocating pumps, depending on balancing	1.5 … 1.6
Hoisting equipment	1.5 … 1.8
Oscillating conveyors	1.5 … 2.5

Factor c_d for chain wheel/gearwheel drives

12.4. Gearwheel drives

These transmit outputs and speeds without slip and are used particularly where smaller shaft bases require different speeds between driving and other machines.

One can basically differentiate between

- straight spur gears where only radial forces occur in power transmission
- helical spur gears, bevel gears etc., i.e. gears where radial and axial forces occur in power transmission

Straight spur gear drives
The radial force which occurs F_{rZg} is determined as

$$F_{rZg} = 2 \cdot 10^7 \cdot \frac{P_{2B}}{n_N \cdot D_T} \cdot c_k \cdot c_d$$

where
F_{rZg} = radial force [N]
P_{2B} = motor design output [kW]
c_k = factor which makes allowance for the additional force generated in the gearing
c_d = factor which makes allowance for the additional force generated by the machine
n_B = motor design speed [rpm]
D_T = toothed gear reference circle diameter [mm]

The effective direction of radial force F_{rZg} is shown in Fig. 27.

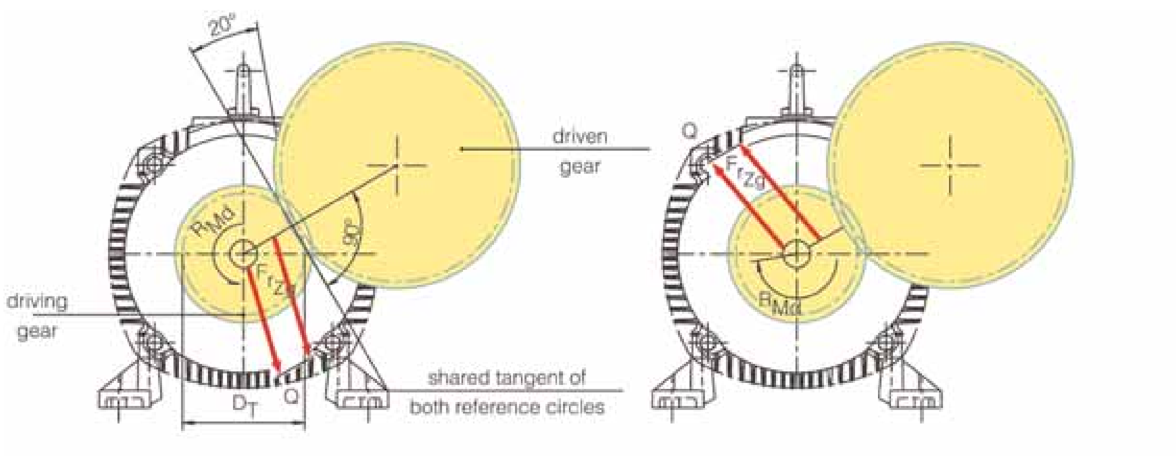


Fig. 27 Effective direction of radial force in spur gears

The radial force F_{rZg} for spur gears is invariably at 20° to the joint tangent of the reference circles of the driving and the driven gear.

For gears with great inertia forces, F_{rZg} and F_{MZ} may also be added geometrically.

The following loading diagrams result when allowance is made for the inertia force of toothed gear F_{MZ}:

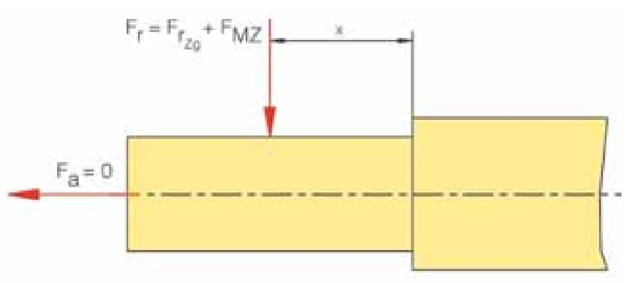


Fig. 28 Mechanical drive for a horizontal shaft (spur gears)

Helical spur gear drives
Here radial and axial forces always occur at the same time, but the latter do not act in the motor shaft axis.

Where bevel gears etc. are used, you will also have to inquire with the motor manufacturer giving analog values as for helical spur gears.

The following should generally be observed for gear drives:
– The shafts of the two machines must be strictly in parallel.
– The pinion and mating gear must run absolutely true.
– The pinion teeth must not seize in the mating gear in any position.

If this is neglected, you may expect inadmissible loads on bearings, vibration, shocks and disturbing noise. When a paper strip as wide as the pinion and mating gear is inserted between the two, turning the wheels will show up points of misengagement. Be sure to test all teeth of both wheels. Depending on the test results, align the machine until uniform smooth engagement is achieved for all teeth.

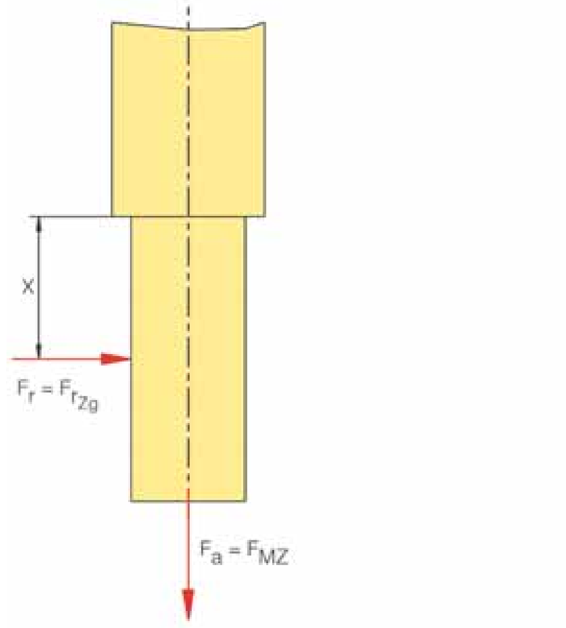


Fig. 29 Mechanical drive for a vertical shaft (spur gears)

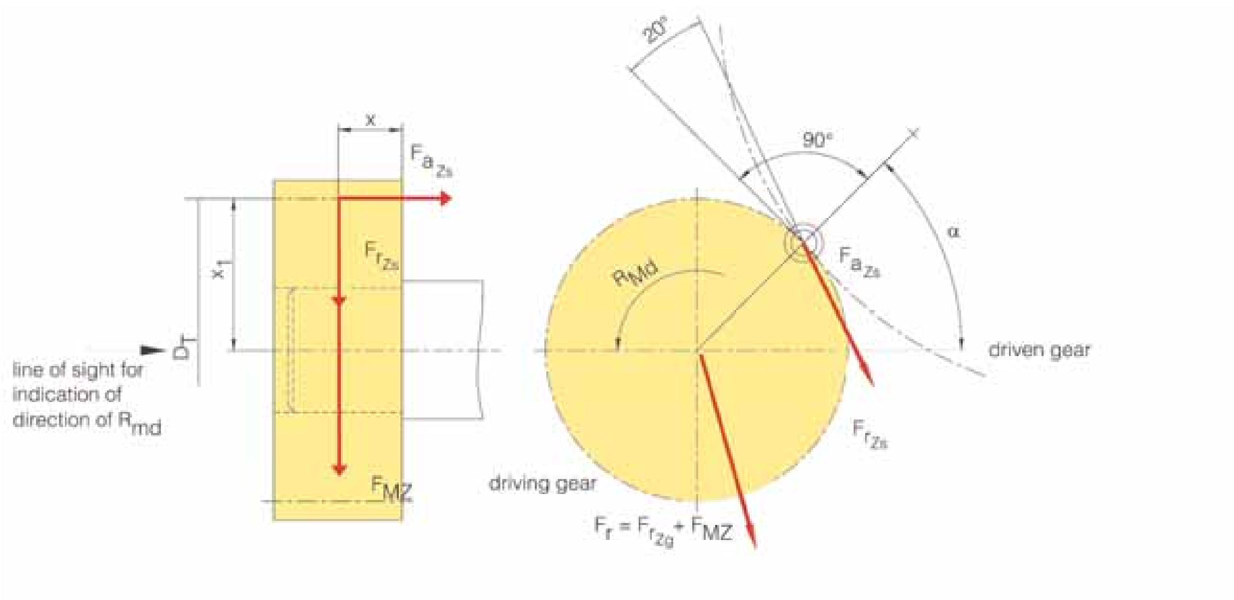


Fig. 30 Application of force in helical spur gears with explanations

Characteristic values for intermittent duty calculation (series K21R)

	P_{2B} kW	K_1/K_2	τ_2 min	$\tau_{2\,St}$ min	Θ_2/Θ	f_V	r_{St}	$\overline{m_A}$	$\overline{m_R}$	Z_{0A} c/h	Z_{0R} c/h	T_{AN} ms
K21R 63 K2	0.18	1	12	48	0.53	1.05	0.52	2.1	2.1	12000	4100	67
K21R 63 G2	0.25	3.7	12	48	0.54	2.34	0.5	2.1	2.2	5300	1700	56
K21R 71 K2	0.37	0.86	13	51	0.55	0.78	0.42	2.0	2.0	8900	2800	61
K21R 71 G2	0.55	0.83	13	51	0.57	0.73	0.4	2.1	2.2	9200	2900	54
K21R 80 K2	0.75	0.57	13	55	0.58	0.55	0.35	2.4	2.5	7300	2300	71
K21R 80 G2	1.1	0.6	14	55	0.60	0.56	0.35	2.4	2.5	6500	2100	61
K21R 90 S2	1.5	0.71	15	60	0.61	0.53	0.31	2.2	2.6	3900	1300	83
K21R 90 L2	2.2	0.53	16	60	0.63	0.49	0.32	2.3	2.6	5300	1700	72
K21R 100 L2	3	0.47	17	68	0.64	0.44	0.3	2.1	2.2	4100	1300	86
K21R 112 M2	4	0.61	18	77	0.65	0.42	0.26	2.0	2.0	3000	920	110
K21R 132 S2	5.5	0.35	19	85	0.68	0.28	0.2	1.9	2.0	2800	820	130
K21R 132 SX2	7.5	0.37	22	90	0.68	0.33	0.24	2.1	2.2	2700	800	134
K21R 160 M2	11	0.52	25	110	0.69	0.41	0.27	2.4	2.4	1200	360	215
K21R 160 MX2	15	0.45	28	150	0.71	0.32	0.22	2.2	2.2	710	210	358
K21R 160 L2	18.5	0.41	31	150	0.71	0.38	0.27	2.1	2.2	710	210	339
K21R 180 M2	22	0.48	33	180	0.72	0.31	0.21	1.9	1.8	540	150	450
K21R 200 L2	30	0.46	38	180	0.73	0.38	0.26	2.0	2.0	510	150	398
K21R 200 LX2	37	0.46	42	220	0.74	0.29	0.2	1.8	1.8	420	120	491
K21R 225 M2	45	0.58	45	220	0.75	0.41	0.26	1.9	1.9	400	110	465
K21R 250 M2	55	0.55	49	260	0.76	0.31	0.2	2.2	2.4	260	70	648
K21R 280 S2	75	0.6	56	300	0.77	0.32	0.2	2.3	2.2	180	49	831
K21R 280 M2	90	0.58	60	300	0.78	0.41	0.26	1.7	1.7	190	53	725
K21R 315 S2	110	0.7	65	340	0.79	0.34	0.2	2.0	1.8	110	30	1119
K21R 315 M2	132	0.57	69	340	0.79	0.41	0.26	1.9	1.8	110	90	1061
K21R 315 MX2	160	0.52	70	330	0.80	0.41	0.26	1.8	1.7	110	29	1067
K21R 315 MY2	200	0.49	72	360	0.80	0.37	0.26	2.0	1.9	90	25	1364
K21R 315 L2	250	0.4	74	400	0.80	0.37	0.26	1.5	1.4	90	25	1419
K21R 315 LX2	315	0.34	76	430	0.80	0.37	0.26	2.0	1.9	90	25	1369
K21R 63 K4	0.12	3.6	18	48	0.70	3.20	0.7	1.9	1.9	13000	4200	36
K21R 63 G4	0.18	3.3	18	48	0.70	2.80	0.65	2.1	2.1	14000	4500	30
K21R 71 K4	0.25	2.3	18	51	0.71	1.80	0.55	1.9	1.9	12000	3700	36
K21R 71 G4	0.37	1.1	18	51	0.72	1.10	0.52	1.9	1.9	20000	6200	30
K21R 80 K4	0.55	1.2	18	55	0.72	1.00	0.45	2.0	2.1	11000	3600	37
K21R 80 G4	0.75	1.1	18	55	0.73	0.92	0.44	2.1	2.2	13000	4100	33
K21R 90 S4	1.1	1	20	60	0.73	0.81	0.4	2.4	2.6	8800	2800	44
K21R 90 L4	1.5	1.2	20	60	0.74	0.88	0.4	2.5	2.5	8400	2600	40
K21R 100 L4	2.2	1.3	22	68	0.74	0.89	0.39	2.3	2.3	6600	2000	42
K21R 100 LX4	3	0.74	24	77	0.75	0.61	0.35	2.1	2.2	6200	1900	58
K21R 112 M4	4	0.67	25	77	0.75	0.62	0.37	2.4	2.5	6600	2000	53
K21R 132 S4	5.5	1.2	27	90	0.75	0.70	0.32	2.4	2.3	4000	1200	62
K21R 132 M4	7.5	0.49	29	110	0.76	0.46	0.31	1.7	1.8	4200	1200	83
K21R 160 M4	11	0.55	32	110	0.76	0.54	0.35	2.2	2.2	4500	1300	72
K21R 160 L4	15	0.57	35	150	0.77	0.47	0.3	2.0	2.1	2500	720	120
K21R 180 M4	18.5	0.56	38	150	0.77	0.53	0.34	2.0	2.3	2400	700	113
K21R 180 L4	22	0.86	40	180	0.77	0.54	0.29	2.0	2.1	1400	410	148
K21R 200 L4	30	0.68	45	180	0.78	0.57	0.34	1.9	1.9	1700	490	130
K21R 225 S4	37	0.72	49	220	0.78	0.48	0.28	1.9	2.0	1100	320	176
K21R 225 M4	45	0.64	52	220	0.78	0.54	0.33	1.9	2.1	1200	340	164
K21R 250 M4	55	0.5	55	260	0.79	0.42	0.28	2.4	2.8	850	240	226
K21R 280 S4	75	0.68	62	300	0.79	0.47	0.28	2.2	2.5	580	160	300
K21R 280 M4	90	0.58	66	300	0.79	0.52	0.33	2.4	2.6	540	150	293
K21R 315 S4	110	0.74	70	340	0.80	0.47	0.27	2.3	2.6	320	88	435
K21R 315 M4	132	0.64	75	340	0.80	0.54	0.33	2.2	2.4	340	95	418
K21R 315 MX4	160	0.45	75	360	0.81	0.45	0.32	1.7	1.7	340	100	410
K21R 315 MY4	200	0.39	80	360	0.81	0.47	0.32	1.8	1.7	210	60	583
K21R 315 L4	250	0.34	82	400	0.81	0.42	0.32	1.6	1.5	210	60	574
K21R 315 LX4	315	0.32	84	430	0.81	0.42	0.32	1.5	1.4	210	60	527

Characteristic values for intermittent duty calculation (series K21R)

	P_{2B} kW	K_1/K_2	τ_2 min	$\tau_{2\,St}$ min	Θ_2/Θ	f_V	r_{St}	$\overline{m_A}$	$\overline{m_R}$	Z_{0A} c/h	Z_{0R} c/h	T_{AN} ms
K21R 63 K6	0.09	3.1	21	48	0.70	3.30	0.8	1.9	1.9	25000	8100	23
K21R 63 G6	0.12	2.9	21	48	0.70	3.00	0.76	2.0	2.1	25000	8000	22
K21R 71 K6	0.18	2	21	51	0.70	1.80	0.6	1.9	1.9	25000	8100	25
K21R 71 G6	0.25	2.7	21	51	0.71	2.20	0.59	2.2	2.3	19000	5800	23
K21R 80 K6	0.37	1.8	21	55	0.72	1.40	0.5	2.2	2.3	13000	4400	36
K21R 80 G6	0.55	2	22	55	0.72	1.40	0.47	2.6	2.7	13000	4200	32
K21R 90 S6	0.75	1.2	22	60	0.73	0.93	0.43	2.2	2.3	11000	3500	45
K21R 90 L6	1.1	1.3	23	60	0.73	0.96	0.42	2.1	2.2	11000	3400	40
K21R 100 L6	1.5	0.85	24	68	0.74	0.74	0.4	2.0	2.1	8900	2800	43
K21R 112 M6	2.2	0.72	25	77	0.74	0.67	0.39	2.0	2.0	8000	2400	58
K21R 132 S6	3	0.92	27	90	0.75	0.67	0.35	2.1	2.0	5900	1800	62
K21R 132 M6	4	1.1	28	90	0.75	0.78	0.37	2.4	2.3	5300	1600	57
K21R 132 MX6	5.5	0.59	30	110	0.75	0.51	0.32	1.9	1.9	5100	1500	78
K21R 160 M6	7.5	0.57	33	110	0.76	0.55	0.35	2.0	1.9	5200	1500	71
K21R 160 L6	11	0.64	37	150	0.76	0.49	0.3	1.8	1.9	3400	1000	104
K21R 180 L6	15	0.76	41	150	0.77	0.60	0.34	2.0	2.0	3000	870	99
K21R 200 L6	18.5	0.62	44	180	0.77	0.47	0.29	1.9	2.0	2500	720	127
K21R 200 LX6	22	0.82	47	180	0.77	0.62	0.34	2.1	2.2	2200	630	125
K21R 225 M6	30	0.75	53	220	0.78	0.49	0.28	2.0	2.1	1600	450	152
K21R 250 M6	37	0.57	57	260	0.78	0.44	0.28	2.1	2.5	1000	300	232
K21R 280 S6	45	0.57	61	300	0.78	0.44	0.28	1.9	2.2	800	230	298
K21R 280 M6	55	0.71	66	300	0.79	0.58	0.34	1.8	2.2	740	220	282
K21R 315 S6	75	0.72	73	340	0.79	0.48	0.28	2.2	2.3	410	120	404
K21R 315 M6	90	0.76	78	340	0.79	0.58	0.34	2.1	2.3	390	110	392
K21R 315 MX6	110	0.47	75	360	0.80	0.60	0.33	1.9	1.8	400	110	352
K21R 315 MY6	132	0.44	80	360	0.80	0.50	0.33	2.0	1.8	350	100	488
K21R 315 L6	160	0.4	82	400	0.80	0.48	0.33	1.9	1.8	350	100	443
K21R 315 LX6	200	0.45	84	430	0.80	0.48	0.33	1.9	1.8	350	100	462
K21R 71 K8	0.09	2.1	23	51	0.70	2.50	0.8	1.7	1.7	32000	10000	28
K21R 71 G8	0.12	2.5	23	51	0.70	2.60	0.76	2.0	2.1	5700	1800	28
K21R 80 K8	0.18	3.5	23	55	0.70	2.70	0.6	2.0	2.0	9800	3100	41
K21R 80 G8	0.25	2.4	23	55	0.71	2.00	0.59	2.3	2.3	12000	4000	39
K21R 90 S8	0.37	2	24	60	0.72	1.50	0.5	1.9	1.9	9900	3100	47
K21R 90 L8	0.55	1.6	25	60	0.72	1.20	0.47	1.9	2.0	14000	4400	39
K21R 100 L8	0.75	1.2	25	68	0.73	0.96	0.44	1.8	1.8	12000	3700	48
K21R 100 LX8	1.1	1.1	27	77	0.73	0.84	0.4	2.2	2.2	11000	3400	47
K21R 112 M8	1.5	0.87	28	77	0.74	0.75	0.4	2.1	2.1	12000	3600	47
K21R 132 S8	2.2	1.1	30	90	0.74	0.77	0.36	1.9	1.8	7500	2300	46
K21R 132 M8	3	0.95	32	90	0.75	0.74	0.38	1.8	1.7	8200	2500	41
K21R 160 M8	4	0.68	34	110	0.75	0.57	0.34	1.6	1.6	7100	2100	59
K21R 160 MX8	5.5	0.83	37	110	0.75	0.66	0.36	1.8	1.7	6700	2000	54
K21R 160 L8	7.5	0.64	40	150	0.76	0.51	0.31	1.7	1.8	4600	1400	86
K21R 180 L8	11	0.91	44	150	0.76	0.67	0.35	1.8	1.9	4200	1200	76
K21R 200 L8	15	0.77	50	180	0.77	0.53	0.3	1.8	1.9	3600	1000	87
K21R 225 S8	18.5	0.71	54	180	0.77	0.53	0.29	1.9	1.9	2400	690	136
K21R 225 M8	22	0.83	58	220	0.77	0.53	0.29	1.9	1.9	2400	690	117
K21R 250 M8	30	0.82	66	260	0.78	0.51	0.28	2.0	2.4	1500	440	160
K21R 280 S8	37	0.61	71	300	0.78	0.45	0.28	1.9	2.2	1300	370	213
K21R 280 M8	45	0.69	77	300	0.78	0.56	0.33	1.7	2.0	1100	320	201
K21R 315 S8	55	0.79	83	340	0.79	0.50	0.28	2.1	2.3	730	210	290
K21R 315 M8	75	0.73	94	340	0.79	0.57	0.33	1.8	2.0	650	180	278
K21R 315 MX8	90	0.55	94	360	0.80	0.56	0.33	1.8	1.7	700	200	240
K21R 315 MY8	110	0.44	94	360	0.80	0.52	0.33	2.0	1.9	630	160	328
K21R 315 L8	132	0.39	96	400	0.80	0.48	0.33	1.8	1.7	630	160	307
K21R 315 LX8	160	0.42	98	430	0.80	0.48	0.33	1.9	1.8	630	160	327

The instructions for design and use given in Chapter 11 of this catalogue are by no means complete. They are meant to make the user understand drive problems for a competent preselection of a three-phase current electric motor for his or her drive application. While the text was compiled and checked with utmost care, we can not accept liability for possible errors or inconsistencies.

Contact us

Wherever our customers require electric machinery, we assist them as partners and support and accompany their projects. It does not matter where these projects are – in Europe, the Middle East, Africa, Asia, the Americas or Australia. In response to VEM's rising market shares outside Germany we are expanding our marketing network by establishing our own companies or entering strategic alliances. We have now reached a stage where customers around the globe can find competent personnel nearby who attend to their requests. This is true of VEM subsidiaries in Finland, Britain, Norway, Austria, Sweden and Singapore, and a dense distribution and service network with agencies in over 40 countries.

Germany

VEM motors GmbH
Carl-Friedrich-Gauss-Strasse 1
38855 Wernigerode
Postfach 101252
38842 Wernigerode

Phone: +49-(0)39 43-68-0
Fax: +49-(0)39 43-68 21 20
motors@vem-group.com

Jürgen Sander
Phone: +49-(0)39 43-68 32 90
Fax: +49-(0)39 43-68 24 40
sander@vem-group.com

VEM Competence Centre Berlin
Bühringstrasse 12
13086 Berlin

Ulrich T. Beholz
Phone: +49-(0)30-47 90 89 41
Fax: +49-(0)30-47 90 89 50
beholz@vem-group.com

VEM Competence Centre North
Schützenstrasse 20
30853 Langenhagen/Hannover

Ulrich T. Beholz
Phone: +49-(0)5 11-72 63 57 21
Fax: +49-(0)5 11-72 63 57 50
beholz@vem-group.com

VEM Competence Centre East
Bitterfelder Strasse 1
04129 Leipzig

Uwe Macion
Phone: +49-(0)3 41-9 17 79 15
Fax: +49-(0)3 41-9 17 79 48
Fax: +49-(0)3 41-9 17 79 49
macion@vem-group.com

VEM Competence Centre West
Gothaer Strasse 4
40880 Ratingen

Frank Steuer
Phone: +49-(0)21 02-99 76 70
Fax: +49-(0)21 02-99 76 15
steuer@vem-group.com

VEM Competence Centre South
Max-Planck-Strasse 17
85716 Unterschleißheim

Hans-Christian Weber
Phone: +49-(0)89-31 81 28 10
Fax: +49-(0)89-31 81 28 29
hcweber@vem-group.com

VEM Competence Centre Siegen
Weidenauer Strasse 174
57076 Siegen

Ulrich Leifer
Phone: +49-(0)2 71-8 80 49 11
Fax: +49-(0)2 71-8 80 49 50
leifer@vem-group.com

Western Europe

Germany
VEM motors GmbH
Carl-Friedrich-Gauss-Strasse 1
38855 Wernigerode — Phone: +49-(0)39 43-68 32 90
Postfach 101252 — Fax: +49-(0)39 43-68 24 40
38842 Wernigerode — motors@vem-group.com

Austria
VEM motors Austria GmbH — Phone: +43-22 36-6 36 40
IZ NÖ-Süd, Strasse 2, Obj. M6 — Fax: +43-22 36-6 29 18
2351 Wiener Neudorf — austria@vem-group.com

Michael Völker

Belgium
Motoren Francoys — Phone: +32-92-30 99 19
Akkerstraat 10 — Fax: +32-92-31 41 68
9010 Melle — info@motoren-francoys.be

Denmark
R. Frimodt Pedersen a/s
Ndr. Stationsvej 3 — Phone: +45-7 58-95-4 44
P.O.Box 17 — Fax: +45-7 58-95-8 31
8721 Daugård — rfp@frimodt-p.dk

Finland
VEM motors Finland OY
Kehänreuna 4
02430 Masala — Phone: +3 58-9-61 32 66
P.O.Box 35 — Fax: +3 58-9-61 32 67 00
02431 Masala — info@vem.fi

Kari Randell

France
SERMES
B.P. 177 — Phone: +33-388-40 72 00
14, rue des Frères Eberts — Fax: +33-388-40 73 29
67025 Strasbourg Cedex — direction-commerciale@sermes.fr

Greece
Elmo Ltd. — Phone: +30-2 10-4 12 01 50
18, Athinon — Fax: +30-2 10-4 17 63 19
18540-Piräus — elmoldt@ath.forthnet.gr

Iceland
Fálkinn H.F.
Suðurlandsbraut 8 — Phone: +35 4-5 65-70 00
P.O.Box 8420 — Fax: +35 4-5 40-70 31
128 Reykjavik — falkinn@falkinn.is

Italy
SOVEM S. r. l. — Phone: +39 03 31-43 63 63
Via dell´industria 17/17a/17b — Fax: +39 03 31-43 03 33
20020 Villa Cortese (Milano) — sovem@sovem.it

PARTISANI S. p. A. — Phone: +39 05 43-79 61 65
Via Ugo Buli 2 — Fax: +39 05 43-7 23 23 70
47100 Forli (FO) — info@partisani.com

Netherlands
Dutchi Motors B.V.
Van Oldenbarneveldtstraat 85a
6828 ZN Arnhem — Phone: +31-26-3 54 16 00
Postbus 5390 — Fax: +31-26-3 54 16 50
6802 EJ Arnhem — dutchi.motors@dutchi.nl

Norway
Representative of VEM motors GmbH
Mårstien 11
2014 Blystadlia
Mobil: +47-91 87 15 38
Bjørn Aahlin — bjaahlin@online.no

Spain
COSGRA S.A. — Phone: +34-9 02-40 52 05
Ctra. de Banyoles a Figueres — +34-9 72-59 78 07
km 9 — Fax: +34-9 72-59 72 33
17832 CRESPIÀ (Girona) — cosgra@cosgra.com

Project Partner
Sintec
Suministros y Servicios
Integrales Técnicos, S.L.
Pol. Ind. Rio de Janeiro — Phone: +34-91-6 28-18 18
C/Pelaya, N° 6 — Fax: +34-91-6 28-40 17
28110 Alegete – Madrid — sintec@sintec.es

Sweden
VEM motors Sweden AB
Hanögatan 2A
Box 9023 — Phone: +46-40-6 71 29 11
20039 Malmö — Fax: +46-40-22 99 44
k.svensson@vemsweden.se

Kermith Svensson

Switzerland
Elektron AG — Phone: +41-44-7 81 01 11
Riedhofstrasse 11 — Fax: +41-44-7 81 02 02
8804 Au ZH — info@elektron.ch

United Kingdom
VEM motors UK Ltd.
Grosvenor House
Prospect Hill — Phone: +44-15 27-59 07 77
Redditch — Fax: +44-15 27-59 66 21
Worcestershire B 97 4DL — sales.uk@vem-group.com

Eastern Europe

Germany
VEM motors GmbH
Export Europa Ost
Carl-Friedrich-Gauss-Strasse 1
38855 Wernigerode
Postfach 101252 — Phone: +49-(0)39 43-68-23 81
38842 Wernigerode — Fax: +49-(0)39 43-68-23 83
seschmidt@vem-group.com

Sebastian Schmidt

GUS / Russia
VEM motors GmbH
Office Moskau — Phone: +70 95-9 36 24 51
Leninskij Prospekt 95a — Fax: +70 95-9 36 26 19
119313 Moskva — vem-motors.rus@co.ru

Alexander Tschekmassov

Hungary
S & SZ Hajtástechnika KFT
2045 Törökbálint — Phone: +36 23-33 59 56
Katona József u.1. — Fax: +36 23-51 01 56

Ferenc Szuhai

Poland
VEM motors GmbH
Office Warschau
ul. Grojecka 22/24 M 16 — Phone: +48 22-8 22 49 84
02-301 Warszawa — Fax: +48 22-8 22 49 85
b-janas-vem@wp.pl

Barbara Janas

Romania
VEM motors GmbH
Office Bukarest — Phone: +40 21-3 15 47 63
Bd. Carol/30/ap. 21 — Fax: +40 21-3 15 47 51
703342 Bucuresti — vemr@rdslink.ro

Alexandrù Minculescu

Ukraine
Evrograd LTD — Phone: +38-0 44-5 01 91 36
Kiev st.Novozabarskaya 2/6 — Fax: +38-0 44-5 01 89 28
Office 320 — evrograd@mail.ru

Pavel Dribnokhod

Overseas

Germany
VEM motors GmbH
Vertrieb Übersee
Carl-Friedrich-Gauss-Strasse 1
38855 Wernigerode — Phone: +49-(0)39 43-68 24 33
Postfach 101252 — Fax: +49-(0)39 43-68 22 86
38842 Wernigerode — +49-(0)39 43-68 23 60
wklammer@vem-group.com

Wolfgang Klammer

Argentina
Service Partner
TECSTRA S.A. — Phone: +54-11 47-17 13 99
Arengreen 1548 Dto. 3 — Fax: +54-11 47-17 23 39
1405 Buenos Aires, Argentina — info@tecstra.com.ar

Canada
ALLTRA ENGINEERING SERVICES LTD.
4028-4th Street SE — Phone: +1-403-287-1510
Calgary/Alberta — Fax: +1-403-243-8623
Canada T2G 2W3 — alltra@cadvision.com

Canada
NU START Electric Motors Ltd.
1415 Bonhill Rd. — Phone: +1-905-670-2145
Unit# 12-14 — or -9655
Mississauga, Ontario — Fax: +1-905-670-2879
Canada L5T 1R2 — info@nustartelectric.com

Brazil
Grupo C+Tecnologia
Av. Pedroso de Moraes,
433 – 13° andar — Phone: +55-11-3815-6554
CEP 05419-000 — Fax: +55-11-3815-4979
Sao Paulo / SP / Brasilien — info@ctecnologia.com.br

Chile
LUREYE Electromecánica S.A. — Phone: +56-2-556 1729
Vicuña Mackenna 1503 — Fax: +56-2-555 2465
Santiago / Chile — info@lureye.cl

Peoples Republic of China
(Except Guang Dong Province and Hong Kong)
PEAK INTERNATIONAL TRADE (TIANJIN) CO., LTD.
7 Xinyili — Phone: +86-22-27 12 98 76-77- 78
Yingkou Road — Fax: +86-22-27 12 89 99
Heping District — -89 88 66 60
TIANJIN / P.R. of China — peak@public.tpt.tj.cn

Hong Kong
Peter, Charles & Co.
Hong Kong Head Office
2nd Floor
China Aerospace Centre
143 Hoi Bun Road — Phone: +852-2369 4050 (10 Lines)
Kwun Tong, Kowloon — Fax: +852-2722 4080
Hong Kong — pcc@pcc.com.hk

Guangzhou Branch
Flat C,10/F., Block A9
Glorious City Garden
858, Dongfeng Road East
Guangzhou 510600/ — Phone: +86-20-87 34-94 50
P.R. China — Fax: +86-20-87 34-95 59

ABBA Drive E&M Co., Ltd.
Room 908, Nan Fung Commercial Centre
19 Lam Lok Street — Phone: +852-2 75-1 79 17
Kowloon Bay — Fax: +852-2 75-9 53 35
Hong Kong — abba@vem-motor.com.hk

Egypt
Ahmed Daoud & Co.
Engineering and Trade Agencies
11, El-Sherifein St. — Phone: +202-392 1550
P.O.Box 752 — Fax: +202-392 1501
Cairo/Egypt — daoud&co@brainy1.ie-eg.com

Indonesia
PT GUNA ELEKTRO
Jl. Arjuna Utara 50
Jakarta Barat 11510 — Phone: +62-21-564 4838
P.O.Box 2280/JKT 10022 — Fax: +62-21-565 5030
Indonesia — IrwanWibisono@GAE.Co.id

Iran
IFCO
Iran Fareast Co., Ltd.
Unit 901, 9th. Floor
Anahita Tower (No. 184) Phone: +98-21-88 70 732
Africa Avenue Fax: +98-21-88 70 733
19176 Tehran/Iran ifcoir@yahoo.com

Morocco
PLUS TRADE
100, Boulevard Abdelmoumen Phone: +212-22-25 80 10-23 13 96
Casablanca-20100 Fax: +212-22-25 13 99
Morocco plustrade@plus-trade.com

SMADIA
60, Boulevard Yacoub El Mansour Phone: +212-22-25 2611-12
Casablanca-20100 Fax: +212-22-25 1651
Morocco smadia@connectcom.net.ma

Qatar
Q.M. CONTROLS Phone: +974-4 43 23 26
P.O.Box 6429 +974-437 28 95
Doha-Qatar Fax: +974-4432460
Arabian Gulf qmcontrol@qatar.net.qa

Saudi Arabia
BAGHANEM CORPORATION
For Agriculture and Commerce
King Fahd St./Baghanem Building Phone: +966-2-6 43 06 41
Jeddah-Alammariah -6 43 62 75
P.O.Box 18126 Jeddah 21417 Fax: +966-2-6 43 92 58
Saudi Arabia baghanem@awalnet.net.sa

Singapore
VEM S.E. Asia Pte. Ltd
51 Lorong 21 Geylang Phone: +65-68 22 3593
#02-01 +65-68 22 3594
Singapore 388466 Fax: +65-68 22 3592
vemdx@singnet.com.sg
Tony Martin vemtm@singnet.com.sg

South Africa
EMAC
Electric Motors & Components Ltd.
P.O.Box 15300 Phone: +27-11-97 48 48 7-9
Hurleyvale 1611 Fax: +27-11-97 49 70 4
Republic of South Africa emac@global.co.za

Syria
ELIAS BROTHERS CO.
Al Kowatly St. (2) Phone: +963-31-27 71-004..06
P.O.Box 4282 Fax: +963-31-27 71-003
Homs / Syria eliasiew@scs-net.org

Thailand
ACCURATE ENGINEERING CO., LTD.
544 Sri Nakharint Road
Suanluang, Suanluang
P.O.Box 24-117 Phone: +66-2-374 00 77-80
Bangkok 10250 Fax: +66-2-374 46 53
Thailand accurate_eng@hotmail.com

Thailand
ENSYS MOTORS & DRIVES CO., LTD
636/4 Soi Ramkhamhaeng 39 (Thepleela 1)
Pracha Uthit Rd.
Wangthonglang, Wangthonglang
Bangkok 10310 Phone: +66-29 34-5 82 0-1
Thailand Fax: +66-29 34-51 92

Tunesia
SOCOS Industrie
Représentation et Distribution
d' Equipement Industriel Phone: ++216-71-39 34 16
12, Avenue Abou Zakaria El Hafsi Fax: ++216-71-39 79 11
1008 Montfleury-Tunis socos.ind@gnet.tn

Turkey
SI-MA Mechanical Electrical Industry
and Trade Co., Ltd.
Ortaklar Cad., Denizhan sok.
Denizhan Apt. 5/3 Phone: +90 (212) 213 92 92
80290 Mecidiyeköy Istanbul Fax: +90 (212) 216 89 27
Turkey si-ma@si-ma.com

Israel
Shir Techni Trade
34 Hahofer St.
Industrial Area Holon
P.O.Box 1905 Phone: +972 3 550 1440
Holon 8117 Fax: +972 3 550 1421
Israel shimon_s@techni-trade.biz

United Arab Emirates
M.A.H.Y. Khoory & Co.
Salahuddin Street Phone: +971-4-2 66 63 00
P.O.Box 41 Fax: +971-4-2 66 14 62
Dubai / U.A.E. sarfraz@emirates.net.ae

USA
KEB America, Inc. Phone: +1-952-224-1400
5100 Valley Industrial Blvd. South Fax: +1-952-224-1499
Shakopee, MN 55379 / USA info@kebamerica.com

Motors Accessories &
Components LLC Phone: +1-804-35 80 26 0
3330 Park Avenue Fax: +1-804-35 83 58 9
Richmond, VA 23221 / USA sales@mac-usa.biz

Allied Electrical & Power INC Phone: +1-479-47 45 27 1
2320 Industrial Park road Fax: +1-479-47 40 19 3
Van Buren, AR 72956 / USA dhopikins@alliede-p.com

Service Partner
ELECTRIC MOTOR CORPORATION Phone: +1-773-7 25-10 50
3865 N. Milwaukee Ave. Fax: +1-773-7 25-20 14
Chicago, IL 60641-2883 / USA emc_eostrea@yahoo.com

VEM motors GmbH
Carl-Friedrich-Gauss-Strasse 1
38855 Wernigerode
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

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